

ASTRO[®] 25

APX[™] CPS Radio Management User Guide

APRIL 2024

© 2024 Motorola Solutions, Inc. All Rights Reserved.



MN003621A01-AV

Intellectual Property and Regulatory Notices

Copyrights

The Motorola Solutions products described in this document may include copyrighted Motorola Solutions computer programs. Laws in the United States and other countries preserve for Motorola Solutions certain exclusive rights for copyrighted computer programs. Accordingly, any copyrighted Motorola Solutions computer programs contained in the Motorola Solutions products described in this document may not be copied or reproduced in any manner without the express written permission of Motorola Solutions.

No part of this document may be reproduced, transmitted, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, without the prior written permission of Motorola Solutions, Inc.

Trademarks

MOTOROLA, MOTO, MOTOROLA SOLUTIONS, and the Stylized M Logo are trademarks or registered trademarks of Motorola Trademark Holdings, LLC and are used under license. All other trademarks are the property of their respective owners.

License Rights

The purchase of Motorola Solutions products shall not be deemed to grant either directly or by implication, estoppel or otherwise, any license under the copyrights, patents or patent applications of Motorola Solutions, except for the normal nonexclusive, royalty-free license to use that arises by operation of law in the sale of a product.

Open Source Content

This product may contain Open Source software used under license. Refer to the product installation media for full Open Source Legal Notices and Attribution content.

European Union (EU) and United Kingdom (UK) Waste of Electrical and Electronic Equipment (WEEE) Directive



The European Union's WEEE directive and the UK's WEEE regulation require that products sold into EU countries and the UK must have the crossed-out wheeled bin label on the product (or the package in some cases). As defined by the WEEE directive, this crossed-out wheeled bin label means that customers and end users in EU and UK countries should not dispose of electronic and electrical equipment or accessories in household waste.

Customers or end users in EU and UK countries should contact their local equipment supplier representative or service center for information about the waste collection system in their country.

Disclaimer

Please note that certain features, facilities, and capabilities described in this document may not be applicable to or licensed for use on a specific system, or may be dependent upon the characteristics of a specific mobile subscriber unit or configuration of certain parameters. Please refer to your Motorola Solutions contact for further information.

© 2024 Motorola Solutions, Inc. All Rights Reserved

Contents

Intellectual Property and Regulatory Notices	2
List of Figures	68
List of Tables	69
Portable or Mobile Radio Features	81
Chapter 1: Introduction to CPS	82
1.1 CPS Overview.....	82
1.1.1 The Motorola Solution Windows Security and User Backup Information.....	82
1.1.2 Navigation.....	82
1.1.2.1 Home Mode.....	83
1.1.2.2 Codeplug Configuration Mode.....	83
1.1.2.3 Custom View Configuration Mode.....	83
1.1.3 Application Button.....	84
1.1.3.1 Import From XML.....	85
1.1.3.2 Export to XML	86
1.1.4 Themes Menu.....	86
1.1.4.1 Themes.....	86
1.1.5 Codeplug.....	87
1.1.5.1 Edit Menu.....	87
1.1.5.2 Restore Menu.....	87
1.1.5.3 Codeplug Comparison Menu.....	87
1.1.5.4 Feature Set Menu.....	89
1.1.5.5 Password Menu.....	89
1.1.5.6 Call List Import Menu.....	91
1.1.5.7 Codeplug View Menu.....	94
1.1.6 Read or Write Menu.....	94
1.1.6.1 Read Device.....	94
1.1.6.2 Write Device.....	95
1.1.6.3 Communication Method.....	95
1.1.6.4 IP Address.....	95
1.1.7 System Key Menu.....	95
1.1.7.1 Load Advanced Keys.....	96
1.1.7.2 Load Software Keys.....	96
1.1.8 Reports Menu.....	96
1.1.8.1 Radio Information.....	96
1.1.8.2 Radio Handout	96

1.1.8.3 User-Defined Report.....	97
1.1.8.4 Print Choices.....	97
1.1.9 Reset Password Menu.....	98
1.1.10 Options Window.....	98
1.1.10.1 General Page.....	98
1.1.10.2 Admin Page.....	99
1.1.10.3 Language Page.....	99
1.1.11 Reports Window.....	102
1.1.11.1 Output Report.....	103
1.1.11.2 Invalid Fields Report.....	103
1.1.11.3 Drag and Drop Report.....	103
1.1.11.4 Comparator Report.....	104
1.1.11.5 Import/Export Report.....	105
1.1.11.6 Find Results Report.....	105
1.1.11.7 Fill Up/Fill Down Report.....	105
1.1.11.8 System Key Report.....	105
1.2 CPS Features.....	106
1.2.1 Cloning Menu.....	106
1.2.1.1 Clone Radio Window.....	106
1.2.1.2 Clone Express Window.....	116
1.2.1.3 Communication Method.....	117
1.2.1.4 Internet Protocol (IP) Address.....	117
1.2.2 FLASHport Menu.....	118
1.2.2.1 Radio Configuration Window.....	118
1.2.2.2 The FLASHkey Configuration Window.....	119
1.2.2.3 FLASHport Upgrade Window.....	121
1.2.2.4 Radio Software Refresh Window.....	123
1.2.2.5 Radio Write Protect Menu.....	124
1.2.3 POP25 Batch Programming Menu.....	127
1.2.3.1 POP25 Batch Programming Radio List Window.....	127
1.2.3.2 POP25 Batch Programming Scheduler Window.....	128
1.2.4 Voice Announcement.....	129
1.2.4.1 Voice Announcement Converter Utility.....	130
1.2.4.2 Voice Announcement Codeplug Usage Window.....	130
1.2.4.3 Voice Announcement Download Utility Window.....	131
1.2.5 CPS Name Field Data Validation.....	131
1.2.6 Cross-Application Drag and Drop.....	134
1.2.6.1 Copying Codeplug Data using Cross-Application Drag and Drop.....	134
1.2.7 Intelligent Lighting.....	134

1.2.8 Trunking Frequency Constraints.....	134
1.2.9 Ultra High Frequency Bands.....	137
1.2.10 Cloud Exchange Format File.....	138
Chapter 2: Introduction to Radio Management.....	139
2.1 Radio Management Server.....	139
2.2 Radio Management Server Utility.....	140
2.2.1 Radio Management System Management.....	140
2.2.2 Radio Management Database Management.....	141
2.2.2.1 Backing Up the Radio Management Server Database.....	141
2.3 Radio Management Client.....	141
2.3.1 Icon Indicators.....	142
2.3.2 Radio View.....	142
2.3.2.1 Right-Click Menu.....	143
2.3.2.2 Serial Number.....	144
2.3.2.3 Radio Alias.....	144
2.3.2.4 Template.....	144
2.3.2.5 Group.....	144
2.3.2.6 Modified.....	144
2.3.2.7 Job Status.....	144
2.3.2.8 Job Name.....	145
2.3.2.9 Model Number.....	145
2.3.2.10 FLASHCode.....	145
2.3.2.11 Over the Air Fixed IP.....	145
2.3.2.12 Serial Link 1 Subscriber IP Address.....	146
2.3.2.13 Owner System ID.....	147
2.3.2.14 DSP Version.....	147
2.3.2.15 Secure Version.....	147
2.3.2.16 Secure Hardware Version.....	147
2.3.2.17 Bootloader Version.....	148
2.3.2.18 Option Board Version.....	148
2.3.2.19 Group Data Talk Group.....	148
2.3.2.20 OTAR ID.....	148
2.3.2.21 Peer IP Serial Link 1 Address.....	149
2.3.2.22 Bluetooth DUN Subscriber IP Address.....	149
2.3.2.23 Bluetooth DUN Peer IP Address.....	150
2.3.2.24 Bluetooth Friendly Name.....	151
2.3.2.25 Username.....	152
2.3.2.26 User PIN.....	153
2.3.2.27 User Login Unit ID.....	154

2.3.2.28 ASK Required.....	154
2.3.2.29 Firmware Version.....	155
2.3.2.30 Codeplug Version.....	155
2.3.2.31 Tuning Version.....	155
2.3.2.32 Comments.....	155
2.3.2.33 Owner System Key Type.....	156
2.3.2.34 Write Protect.....	156
2.3.3 System View.....	156
2.3.3.1 Serial Number.....	157
2.3.3.2 Sub System Type.....	157
2.3.3.3 Status.....	157
2.3.3.4 System Name.....	158
2.3.3.5 Template.....	158
2.3.3.6 System ID.....	158
2.3.3.7 Radio Alias.....	158
2.3.3.8 Radio ID.....	159
2.3.3.9 Communication Type.....	160
2.3.4 Data Profiles View.....	160
2.3.4.1 Serial Number.....	160
2.3.5 Job View.....	166
2.3.6 Action Menu.....	167
2.3.7 Radio Details.....	170
2.3.8 Settings.....	172
2.3.8.1 Connections.....	172
2.3.9 Schedule Job Window.....	173
2.3.9.1 Job Type.....	174
2.3.9.2 Force Immediate Update.....	174
2.3.9.3 Maximum Number of Deferrals.....	175
2.3.9.4 Time Zone.....	175
2.3.9.5 Connection Method.....	175
2.3.9.6 Start After.....	175
2.3.9.7 Job Name.....	176
2.3.9.8 End Before.....	176
2.4 Device Programmer or Device Monitor.....	176
2.4.1 Setting Up Device Programmer.....	177
2.4.2 Settings.....	177
2.4.2.1 RM Server.....	178
2.4.2.2 Communication Method.....	179
2.4.2.3 Manage Offline Jobs.....	179

2.4.2.4 Assigned Radio Group.....	181
2.4.2.5 Auto Process Jobs (USB and Wireless).....	181
2.4.2.6 Job Pacing.....	181
2.4.2.7 Language.....	182
2.4.2.8 ARS and Systems.....	182
2.5 Job Processor.....	184
2.5.1 Test Connection Button.....	185
2.5.2 Concurrent Jobs.....	185
2.5.3 RM Server.....	185
2.5.4 Language.....	186
2.5.5 Port.....	186
2.5.6 Authentication Method.....	187
2.5.7 One-Time Password.....	187
2.6 Radio Management Common Task.....	187
2.6.1 Accessing the Radio Management Client.....	187
2.6.2 Radio Management Client to Server Configuration.....	187
2.6.2.1 Configuring the Radio Management Client to the Server Connection.....	187
2.6.3 Configuring Device Programmer or Job Processor to the Server Connection.....	189
2.6.4 Recover Radio Licenses.....	189
2.6.5 Recovering Application Licenses.....	189
2.6.6 Adding New Radios to Radio Management.....	189
2.6.7 Importing Radios.....	190
2.6.8 Importing CSV or Excel.....	190
2.6.9 Deleting Radios.....	190
2.6.10 Creating and Managing Radio Groups.....	190
2.6.10.1 Assigning Radios to a Group.....	191
2.6.11 Manage Data.....	192
2.6.11.1 Exporting Grid to File.....	192
2.6.11.2 Exporting Radio Data.....	192
2.6.11.3 Exporting DVRS Data.....	193
2.6.11.4 Exporting Radio System View Grid to File.....	193
2.6.11.5 Exporting Data Profile View Grid to File.....	193
2.6.12 Importing DVRS Files.....	193
2.6.13 Manage Templates.....	194
2.6.13.1 Managing Templates.....	195
2.6.13.2 Editing Templates.....	195
2.6.13.3 Renaming Templates.....	195
2.6.13.4 Deleting Templates.....	195
2.6.13.5 Importing Templates.....	196

2.6.14	Templates Selection Window.....	196
2.6.14.1	Selecting Templates.....	196
2.6.15	Firmware Management.....	197
2.6.15.1	Managing Firmware.....	197
2.6.16	Voice Announcements Management.....	197
2.6.16.1	Managing Voice Announcements.....	198
2.6.16.2	Importing Voice Files.....	198
2.6.17	Manage Language Packs.....	198
2.6.17.1	Managing Language Packs.....	199
2.6.18	Manage DVRS Files.....	199
2.6.18.1	Managing DVRS Files.....	200
2.6.19	Sort, Hide and Unhide Column Data.....	200
2.6.19.1	Sorting a Column.....	200
2.6.19.2	Hiding a Column.....	200
2.6.19.3	Unhiding a Column.....	200
2.6.20	Radio Management OTAP/POP25.....	201
2.6.21	Programming for Radio Management Wi-Fi (LAN).....	201
2.6.22	Launching Scheduling Job Window.....	202
2.6.23	Scheduling Jobs in Radio Management.....	202
2.6.24	Out-of-the-Box Provisioning Over Wi-Fi.....	204
2.6.24.1	Adding Wi-Fi Enabled Radios to Radio Management.....	204
2.6.24.2	Connecting Radios to a Wi-Fi Access Point.....	205
2.6.25	Recommended Procedure Using Wi-Fi.....	205
2.6.26	Write Protect and Owner ID.....	206
2.6.26.1	Viewing the Radio Write Protect Status, Key Type and Owner System ID.....	206
2.6.26.2	Enabling or Disabling the Radio's Write Protection.....	206
2.6.26.3	Updating the Key Type and Owner ID.....	207
2.6.26.4	Key Type.....	207
2.6.26.5	Owner ID.....	207
2.6.26.6	Write Protect.....	208
2.6.26.7	Update Radio Data Button.....	208
2.6.27	Cancel Jobs.....	208
2.6.28	Using the Radio Management Client	208
2.6.29	Radio Management Client Tools.....	209
2.6.30	RM Device Programmer or Monitor.....	212
2.6.31	Searching or Filtering Radio Codeplug Data.....	212
2.6.32	Using RM Server Backup and Server Settings.....	213
2.6.32.1	Radio Management System Management.....	213
2.6.32.2	Radio Management Database Management.....	214

2.6.32.3 System Key Administration.....	216
2.6.32.4 User Authorization.....	222
2.6.32.5 Machine Authorization.....	226
2.6.32.6 Network Settings.....	230
2.7 Radio Management Troubleshooting.....	231
2.7.1 Radio Management Connection Problems.....	231
2.7.1.1 Windows Firewall and RM Ports.....	232
2.7.1.2 Port Conflict by Multiple Applications.....	232
2.7.1.3 Unable to Validate Server SSL Certificate.....	232
2.7.1.4 Coordinated Time for Distributed Radio Management.....	233
2.7.1.5 Radio Management Windows Services.....	233
2.7.1.6 Certificates and License Server.....	233
2.7.2 Delete Button is Grayed Out.....	234
2.7.3 Prevent USB LAN as the Default LAN for USB Connection.....	234
2.7.4 Radio Resets Twice After a Write Job.....	234

Chapter 3: Radio Features.....235

3.1 Keystone Topics.....	235
3.2 Action Consolidation.....	235
3.3 Automatic Registration Service (ARS) Feature.....	235
3.3.1 ARS/UNS Record Type.....	236
3.3.5 Group Data Gateway Record Type.....	238
3.3.7 Provisioning Manager Record Type.....	238
3.3.9 Intelligent MiddleWare Record Type.....	239
3.4 APX Firmware Download Over The Air.....	249
3.5 APX POP25 RM Device Programmer.....	250
3.5.1 Connecting to Intelligent Middleware (IMW).....	251
3.5.2 Mandatory Dependencies.....	251
3.6 Aux Control.....	252
3.7 Bluetooth Feature.....	253
3.8 Configuring SmartConnect.....	254
3.9 Consolette.....	255
3.10 Conventional Mixed Vote Scan.....	255
3.11 MPL Configuration.....	256
3.11.1 General.....	256
3.11.2 MPL List	257
3.12 Data Modem Collaboration over Wi-Fi.....	257
3.12.1 Configuring Data Profile.....	258
3.12.2 Configuring Data Wide	258
3.13 Digital Vehicular Repeater System (DVRS) Feature.....	258

3.14 Dual Radio Operation Feature.....	261
3.14.1 Dual Radio Communication Examples.....	263
3.14.2 Dual Radio Configuration.....	264
3.15 Dynamic Regrouping Feature.....	266
3.16 Emergency Call Termination.....	267
3.16.1 Configuring Trunking System	267
3.16.2 Configuring Conventional System.....	268
3.17 FCC Narrowbanding Mandate Feature.....	268
3.18 FLASHport.....	269
3.19 Front Panel Programming (FPP) Feature.....	269
3.20 Intra-WACN Roaming Feature.....	269
3.20.1 Defining Trunking Channels for Intra-WACN Roaming.....	270
3.21 Inter-WACN Roaming Feature.....	270
3.21.1 Defining Trunking Channels for Inter-WACN Roaming.....	271
3.22 Location.....	272
3.23 LTE Broadband Feature.....	272
3.23.1 Accessing the LTE Broadband Feature.....	274
3.24 Fall Alert Feature.....	275
3.25 Message.....	275
3.25.1 Accessing the Message Feature (Conventional).....	276
3.25.2 Accessing the Message Feature (Trunking).....	276
3.26 Mission Critical GeoFence Feature.....	276
3.26.1 Geofence Boundary.....	277
3.26.2 Geofence Entry and Exit Actions.....	277
3.26.3 Configuring a Geofence.....	278
3.27 O7 Control Head with Siren/Lights Keypad.....	280
3.28 O9 Control Head.....	282
3.29 Personnel Accountability Feature.....	284
3.30 POP25 Programming over P25 Systems.....	285
3.31 Radio Profiles.....	288
3.31.1 General.....	288
3.31.2 Audio Settings.....	288
3.31.2.1 Speaker Audio Equalization Group Setting.....	288
3.31.2.2 Mic Audio Equalization Group Setting	289
3.31.2.3 High Frequency Band.....	289
3.31.2.4 Analog Mid Frequency Band (Radio).....	290
3.31.2.5 Digital Mid Frequency Band.....	290
3.32 Recent Calls.....	290
3.33 Remote Site Interface (RSI) Feature.....	290

3.34 Site Alias.....	293
3.35 Site Selectable Alerts Feature.....	293
3.36 Smart Key Fob Feature.....	294
3.37 Status Feature.....	294
3.38 Tactical Inhibit Kill Feature.....	295
3.38.1 Restoring Radio from "Kill" and "Direct Kill" Command.....	295
3.39 Tactical Inhibit Stun Feature.....	296
3.40 Tactical Public Safety Feature.....	296
3.41 Text Messaging Feature.....	297
3.42 The Advanced Keys Administrator.....	298
3.43 The Intercom Feature.....	299
3.44 The Message Feature.....	299
3.45 The Status Feature.....	300
3.46 The Tone Signaling Feature.....	300
3.46.1 Configuring Tone Signaling.....	301
3.47 Transmit Power Levels.....	302
3.48 Unified Call List (UCL) Feature.....	302
3.49 Universal Relay Controller (URC).....	303
3.50 User Authentication Feature.....	303
3.51 Voice Announcement Feature.....	304
3.52 Voice Mute.....	305
3.53 Write Protect and the Owner ID.....	305
3.54 Zone Bank Feature.....	307
3.55 Zone to Zone Cloning.....	308
Chapter 4: Codeplug Configuration.....	311
4.1 Radio Information.....	311
4.1.1 General.....	311
4.1.1.1 Codeplug Alias.....	311
4.1.1.2 Model Number.....	311
4.1.1.3 Maximum Channels.....	311
4.1.1.4 Serial Number.....	312
4.1.1.5 VHF Enable.....	312
4.1.1.6 UHF1 Enable.....	312
4.1.1.7 UHF2 Enable.....	312
4.1.1.8 700 MHz Enable.....	312
4.1.1.9 800 MHz Enable.....	312
4.1.1.10 MAC Address.....	312
4.1.1.11 Secure Hardware Version.....	313
4.1.1.12 Option Board Name.....	313

4.1.1.13 Display Codeplug Alias.....	313
4.1.1.14 Primary Frequency Band.....	313
4.1.1.15 Secondary Frequency Band.....	313
4.1.1.16 Codeplug Version.....	313
4.1.1.17 Firmware Version.....	313
4.1.1.18 DSP Version.....	314
4.1.1.19 Secure Version.....	314
4.1.1.20 Tuning Version.....	314
4.1.1.21 PSDT Version.....	314
4.1.1.22 Bootloader Version.....	314
4.1.1.23 Regional Governance.....	314
4.1.1.24 Wi-Fi Regulatory Region.....	314
4.1.1.25 Secure Hardware Type.....	315
4.1.1.26 Secure Hardware Version.....	315
4.1.1.27 TXM Certificate.....	315
4.1.1.28 Option Board Version.....	315
4.1.2 Tracking.....	315
4.1.2.1 Last Programmed Time and Date.....	315
4.1.2.2 Last Programmed Source.....	315
4.1.2.3 Original Programmed Time and Date.....	316
4.1.2.4 Original Programmed Codeplug Version.....	316
4.1.2.5 Original Programmed Source.....	316
4.1.3 FLASHport.....	316
4.1.3.1 FLASHcode.....	317
4.1.3.2 Number of Times Flashed.....	317
4.1.3.3 I-Button.....	317
4.1.3.4 Last Upgrade Source.....	317
4.1.3.5 Last FLASHed Time and Date.....	317
4.1.4 Advanced System Key Info.....	317
4.1.4.1 Last Programmed Time and Date.....	318
4.1.4.2 Serial Number.....	318
4.1.5 Frequency Ranges.....	319
4.1.5.1 Allow Invalid Frequencies.....	319
4.1.5.2 VHF Used in Codeplug.....	319
4.1.5.3 UHF1 Used in Codeplug.....	320
4.1.5.4 UHF2 Used in Codeplug.....	320
4.1.5.5 700 MHz Used in Codeplug.....	320
4.1.5.6 7/800 MHz Used in Codeplug.....	321
4.1.5.7 800 MHz Used in Codeplug.....	321

4.1.5.8 8/900 MHz Used in Codeplug.....	321
4.1.5.9 900 MHz Used in Codeplug.....	322
4.1.5.10 Extended 700 MHz Range.....	322
4.1.6 Option/Expansion Board.....	322
4.1.6.1 Board Name.....	322
4.1.6.2 Board Type.....	323
4.1.6.3 Board Firmware Version.....	323
4.2 Radio Wide.....	323
4.2.1 General.....	323
4.2.1.1 Log Dispatch Calls Enable.....	323
4.2.1.2 Motorcycle Radio.....	324
4.2.1.3 Time Format.....	324
4.2.1.4 Date Format.....	324
4.2.1.5 Ultra Narrow Intermediate Freq Filter.....	325
4.2.1.6 ASK Required.....	325
4.2.1.7 Owner Advanced Key Type.....	325
4.2.1.8 Owner System ID.....	325
4.2.1.9 Owner WACN ID.....	326
4.2.1.10 Connection Path.....	326
4.2.1.11 Recent Call List Delete Enable.....	326
4.2.1.12 Configurable Preset Zone and Channel.....	326
4.2.2 Alert Tones.....	326
4.2.2.1 Alert Tones.....	327
4.2.2.2 Volume Adjust Tone Offset.....	327
4.2.2.3 Power-Up Self Test Alert Tone.....	327
4.2.2.4 Scan Alert Tone Enable.....	327
4.2.2.5 Call Alert Tone Auto Reset.....	327
4.2.2.6 Rotary Alert.....	328
4.2.2.7 Enhanced Mute Tones Operation.....	328
4.2.2.8 Out of Range Tone.....	328
4.2.2.9 Talk Prohibit Tone.....	329
4.2.2.10 Low Battery LED.....	329
4.2.2.11 Low Battery Tx Chirp	329
4.2.2.12 Low Battery Standby Chirp	330
4.2.2.13 Smart-Low Battery Alert.....	330
4.2.2.14 PTT Warning Tone.....	330
4.2.2.15 RSM Volume Set Tones.....	331
4.2.3 User Information and Passwords.....	331
4.2.3.1 Soft ID/Username.....	331

4.2.3.2 PIN/Password.....	332
4.2.3.3 User Login Unit ID Enable.....	332
4.2.3.4 User Login Unit ID.....	332
4.2.3.5 Radio Alias Enable.....	333
4.2.3.6 Radio Alias.....	333
4.2.3.7 Protected Zone Password.....	333
4.2.3.8 Radio Lock Enable.....	334
4.2.3.9 Radio Lock Mandatory Password.....	335
4.2.3.10 Conventional Dynamic ID with Password	336
4.2.3.11 Radio Lock Attempts Allowed.....	336
4.2.3.12 Radio Lock Maximum Password Length.....	336
4.2.3.13 Radio Lock Unlock Password.....	336
4.2.3.14 Tactical Inhibit Enable	337
4.2.3.15 Tactical Inhibit Encode Password.....	338
4.2.3.16 Password Required For Gunlock.....	339
4.2.3.17 Password Required For Lightbar.....	340
4.2.3.18 Password Required For Siren.....	340
4.2.3.19 Secure Hardware Auto Login.....	341
4.2.3.20 Cached Credentials User Login Mode.....	341
4.2.3.21 Radio Lock Radio Inhibit On Deadlock.....	342
4.2.3.22 Radio Lock Force Change Password.....	342
4.2.3.23 Encode Password.....	343
4.2.4 Features.....	343
4.2.4.1 Block Pending CA/PC.....	343
4.2.4.2 Rotary Switch (Scan Program).....	343
4.2.4.3 Evacuation Tone.....	343
4.2.4.4 FPP Enable.....	344
4.2.4.5 Zone Clone Enable.....	344
4.2.4.6 Disable Plug and Play.....	345
4.2.4.7 Cyclic Keying.....	345
4.2.4.8 Ignition Switch.....	345
4.2.4.9 Channel Change on HUB Target Zone.....	347
4.2.4.10 Channel Change on HUB Target Channel.....	348
4.2.4.11 Inactivity Auto Power Off.....	348
4.2.4.12 Ignition Auto Power Off.....	349
4.2.4.13 RF Modem.....	349
4.2.4.14 Record Audio.....	350
4.2.4.15 Pre-Amp.....	350
4.2.4.16 Pre-Amp VHF.....	350

4.2.4.17 Pre-Amp UHF.....	350
4.2.4.18 Power Down Standby Mode (hours).....	350
4.2.4.19 Dynamic Icons.....	351
4.2.4.20 Accessory Cable Configuration.....	351
4.2.4.21 Overlap Region Band Preference.....	352
4.2.4.22 Channel Change on HUB Enable.....	353
4.2.4.23 Target Zone.....	354
4.2.4.24 Target Channel.....	355
4.2.4.25 Voice Absence Timer.....	355
4.2.4.26 External RF Routing.....	355
4.2.4.27 Radio Certification Type.....	356
4.2.4.28 Record Playback Audio Buffer Size.....	356
4.2.4.29 Analog Wideband Data.....	356
4.2.4.30 Display Last Acknowledged User Status or Message.....	357
4.2.4.31 Disable Ignition Auto Power Off Alert.....	357
4.2.4.32 Power Down Standby Mode (hours).....	357
4.2.4.33 SmartMessaging Mode.....	357
4.2.4.34 ViQi: Voice Control Priority.....	358
4.2.4.35 ViQi: Virtual Partner Mode.....	358
4.2.4.36 ViQi: Virtual Partner Audio Priority.....	358
4.2.4.37 ViQi: Virtual Partner Inactivity Timer (sec).....	359
4.2.4.38 11.4 kHz VLIF PLOSS.....	359
4.2.4.39 Custom Power Up Image Enable.....	359
4.2.4.40 Channel Fallback Enable.....	360
4.2.4.41 Custom Radio Inhibit Display Enable.....	360
4.2.4.42 Custom Radio Inhibit Display Text Line 1.....	360
4.2.4.43 Custom Radio Inhibit Display Text Line 2.....	361
4.2.4.44 Enable Invalid SIM Notification.....	361
4.2.5 Dual Radio.....	361
4.2.5.1 Radio Selection.....	361
4.2.5.2 Emergency Radio.....	362
4.2.5.3 Talkgroup Mute Option.....	363
4.2.5.4 Enable Secondary Radio Tx.....	363
4.2.5.5 Cross Band Mute Option.....	364
4.2.5.6 Fixed Swap Menu.....	364
4.2.6 Location.....	365
4.2.6.1 Location Enable.....	365
4.2.6.2 Display Peer Location.....	365
4.2.6.3 User Selectable Location Enable.....	366

4.2.6.4 Mapping Mode.....	366
4.2.6.5 Location Display Format.....	366
4.2.6.6 Distance Unit.....	366
4.2.6.7 Exit Location Menu on PTT.....	367
4.2.6.8 GPS Fail Tone Interval.....	367
4.2.6.9 P25 Location Reporting.....	367
4.2.6.10 Geofence Action Operation.....	368
4.2.6.11 Geocoded Location Format.....	368
4.2.6.12 System Managed Geofence.....	369
4.2.6.13 SmartLocate Reporting.....	369
4.2.6.14 Server Assisted Location.....	369
4.2.7 Audio Options.....	369
4.2.7.1 Concurrent Rx Enable.....	370
4.2.7.2 Tx Digital/Analog Balance.....	370
4.2.7.3 Auxiliary PTT Audio Source.....	370
4.2.7.4 Auxiliary Transmit Sensitivity.....	371
4.2.7.5 Audio Configuration Level.....	371
4.2.7.6 Combine Tx with Rx Filtered Audio.....	372
4.2.7.7 Bluetooth Microphone for Auxiliary PTT Audio Source.....	372
4.2.7.8 Mute ICUA on PowerUp.....	372
4.2.8 Sensor.....	372
4.2.8.1 Sensor Event Disable Time.....	372
4.2.8.2 Sensor Event Notification Enable.....	373
4.2.9 Transmit Power Levels.....	373
4.2.9.1 Band Plan Selection.....	374
4.2.9.2 Frequency Band.....	374
4.2.9.3 Frequency Range Start (MHz).....	375
4.2.9.4 Frequency Range End (MHz).....	375
4.2.9.5 Tx Power Level Minimum (W).....	375
4.2.9.6 Tx Power Level Low (W).....	375
4.2.9.7 Cnv Tx Power Level Minimum (W).....	376
4.2.9.8 Trk Tx Power Level Minimum (W).....	376
4.2.9.9 Cnv Tx Power Level Low (W).....	376
4.2.9.10 Trk Tx Power Level Low (W).....	377
4.2.9.11 Tx Power Level High (W).....	377
4.2.9.12 Tx Power Level Maximum (W).....	378
4.2.10 Tx Power Levels.....	378
4.2.10.1 Frequency Band.....	379
4.2.10.2 Frequency Range Start (MHz).....	380

4.2.10.3 Frequency Range End (MHz).....	380
4.2.10.4 Tx Power Level Minimum (W).....	380
4.2.10.5 Tx Power Level Low (W).....	381
4.2.10.6 Tx Power Level High (W).....	381
4.2.10.7 Tx Power Level Maximum (W).....	381
4.2.11 Universal Relay Controller.....	382
4.2.11.1 Universal Relay Controller Equipped.....	382
4.2.11.2 Relay Name.....	383
4.2.11.3 Relay 1-10.....	383
4.2.11.4 Relay 2.....	385
4.2.11.5 Relay 3.....	386
4.2.11.6 Relay 4.....	386
4.2.11.7 Relay 5.....	386
4.2.11.8 Relay 1-10.....	386
4.2.11.9 Relay 1-10.....	388
4.2.11.10 Relay 1-10.....	390
4.2.11.11 Relay 1-10.....	392
4.2.11.12 Relay 10.....	394
4.2.12 Gunlock.....	394
4.2.12.1 Relock Timer.....	395
4.2.13 Bluetooth.....	396
4.2.13.1 Bluetooth Enable.....	396
4.2.13.2 Bluetooth Tones.....	396
4.2.13.3 Bluetooth Pairing Type.....	396
4.2.13.4 MPP Pairing Only with LTE.....	397
4.2.13.5 Bluetooth Re-Pair Timer.....	397
4.2.13.6 Bluetooth Drop Timer.....	397
4.2.13.7 Bluetooth Friendly Name Editable.....	398
4.2.13.8 Bluetooth Friendly Name.....	398
4.2.13.9 Bluetooth Replace Pairing Info.....	399
4.2.13.10 Bluetooth Device Search Duration.....	399
4.2.13.11 Bluetooth Radio Visibility Duration.....	400
4.2.13.12 Bluetooth PAN Network Base Address.....	400
4.2.13.13 Remote Speaker Microphone Bluetooth LED.....	400
4.2.13.14 Legacy Bluetooth PIN Pairing.....	400
4.2.13.15 Standard NFC Touch Pairing.....	401
4.2.13.16 Secure NFC Touch Pairing.....	401
4.2.13.17 Bluetooth Audio Backwards Compatibility.....	401
4.2.13.18 Increase Audio Latency.....	401

4.2.14 Tactical Public Safety.....	401
4.2.14.1 Voice Tx End Tone.....	402
4.2.14.2 Audible Emergency Beacon.....	402
4.2.14.3 Audible Emergency Beacon Routing.....	402
4.2.14.4 Emergency Alarm Retry Rate.....	403
4.2.14.5 Emergency Call De-key Sidetone.....	403
4.2.14.6 TPS PTT Transmission.....	404
4.2.14.7 TPS Emergency PTT Transmission.....	404
4.2.15 Personnel Accountability.....	404
4.2.15.1 Periodic Update Timer.....	405
4.2.15.2 Respond To Polls.....	405
4.2.15.3 Evacuation Acknowledgment.....	406
4.2.15.4 Personnel Accountability PTT Transmission.....	406
4.2.15.5 Personnel Accountability Emergency PTT Transmission.....	407
4.2.15.6 Acknowledge Alerts on PTT.....	407
4.2.16 Rx Frequency Split.....	407
4.2.17 Tx Frequency Split.....	408
4.3 Factory Overrides.....	408
4.3.1 General.....	408
4.3.1.1 Factory Overrides Enable.....	408
4.3.2 Rx Synthesizer Reference Divider List.....	408
4.3.2.1 Rx Freq.....	408
4.3.2.2 Rx Ref Div.....	409
4.3.3 Tx Synthesizer Reference Divider List.....	409
4.3.3.1 Tx Ref Div.....	410
4.3.3.2 Tx Freq.....	410
4.3.4 Second LO Injection Frequency List.....	410
4.3.4.1 Second LO Injection Frequency.....	411
4.3.5 Tx SSI Clock Rate List.....	411
4.3.5.1 Tx Frequency.....	411
4.3.5.2 Tx SSI Clock Rate.....	412
4.3.6 Rx SSI Clock Rate List.....	412
4.3.6.1 Rx Frequency.....	413
4.3.6.2 Rx SSI Clock Rate.....	413
4.3.7 Rx SSI Clock Rate List : Tx Mode.....	414
4.3.7.1 Tx Frequency.....	414
4.3.7.2 Rx SSI Clock Rate.....	414
4.4 Radio Ergonomics Wide.....	415
4.4.1 Home Mode.....	415

4.4.1.1 Home Mode Selection.....	415
4.4.1.2 Home Mode Zone.....	415
4.4.1.3 Home Mode Channel.....	416
4.4.2 Control Head.....	416
4.4.2.1 Multi Control Head.....	416
4.4.2.2 Intercom Timeout Timer.....	417
4.4.2.3 Control Head(s) Required for Power Up.....	417
4.4.2.4 Remote Mic Source.....	418
4.4.2.5 Multi-CH Tx Audio Routing.....	418
4.4.2.6 Control Head VIP Input Source.....	418
4.4.2.7 Aggregate Cable Length.....	419
4.4.2.8 Transceiver Volume Control.....	419
4.4.2.9 Expected Number of Control Heads.....	420
4.4.2.10 Transceiver DEK Dim Control.....	420
4.4.2.11 Multiple Control Head Style.....	420
4.4.2.12 Control Head Alias.....	421
4.4.2.13 Bluetooth Control.....	421
4.4.2.14 Control Head Power-up Brightness.....	421
4.4.2.15 Block Darkest Dim Level.....	422
4.4.3 PA/Siren.....	422
4.4.3.1 Siren Operation.....	422
4.4.3.2 Options Audio Muting.....	423
4.4.3.3 External Radio Ignition.....	423
4.4.3.4 PA Ignition Sense.....	424
4.4.3.5 Default PA Volume Level.....	424
4.4.3.6 Siren PA After Reset.....	424
4.4.3.7 HiLo Airhorn Tones.....	425
4.4.3.8 Manual Tone.....	425
4.4.3.9 Siren Ignition Sense.....	426
4.4.4 Horns and Lights.....	426
4.4.4.1 Horn and Lights.....	426
4.4.4.2 Permanent Horn and Lights.....	427
4.4.4.3 Horn Duration.....	427
4.4.4.4 Light Duration.....	427
4.4.4.5 Two Alarm Option.....	428
4.4.4.6 Alarm Type.....	428
4.4.4.7 Alarm Re-arm Option.....	428
4.4.4.8 External Alarm Delay.....	429
4.4.5 Stealth.....	429

4.4.5.1 Disable Lights/LEDs.....	429
4.4.5.2 Disable Tones.....	429
4.4.5.3 Save Stealth Mode.....	430
4.4.6 Advanced.....	430
4.4.6.1 Short Keypress Duration.....	430
4.4.6.2 Power Up On Last Selected Zone and Channel.....	430
4.4.6.3 Power Up in Hazard Zone Mode.....	431
4.4.6.4 Short Keypress Duration for Emergency.....	431
4.4.6.5 Volume Control Lockout with Accessory.....	431
4.4.6.6 Long Keypress Duration.....	432
4.4.6.7 Channel Control Lockout with Accessory.....	432
4.4.6.8 Long Keypress Duration for Emergency.....	433
4.4.6.9 Active Mic for Radio PTT.....	433
4.4.6.10 Power Off Keypress Duration.....	434
4.4.6.11 External Accessory Enable.....	434
4.4.6.12 Short Keypress Duration for MFK.....	434
4.4.6.13 Keypad/Controls Lock Keypress Type.....	435
4.4.6.14 Long Keypress Duration for MFK.....	435
4.4.6.15 Zone Bank Operation.....	435
4.4.6.16 MFK Inactivity Timeout.....	436
4.4.6.17 Number of Zone Banks.....	437
4.4.6.18 Multi Function Button Inactivity Timeout.....	437
4.4.6.19 Console Enable.....	438
4.4.6.20 Soft Power Off.....	438
4.4.6.21 Fixed Volume Enable.....	438
4.4.6.22 Logical Switch 2.....	439
4.4.6.23 Fixed Volume Level.....	439
4.4.6.24 Rotary Switch Lock Enable.....	440
4.4.6.25 Default Control Head HUB State.....	440
4.4.6.26 Last Selected Channel Per Zone Enable.....	440
4.4.6.27 Night Vision Goggles Backlight Brightness Level.....	441
4.4.6.28 Side and Speaker Grille Buttons Lock Enable.....	441
4.4.6.29 MOSCAD Data Enable.....	441
4.4.6.30 Active Mic for Bluetooth PTT.....	442
4.4.6.31 Active Mic for Indirect PTT.....	442
4.4.6.32 Active Mic for RSM PTT.....	443
4.4.6.33 Bluetooth Receive Audio.....	443
4.4.6.34 Covert Profile.....	443
4.4.6.35 Default Profile.....	444

4.4.6.36 Touch Screen Lock Enable.....	445
4.4.6.37 Toggle Switch Lock Enable.....	445
4.4.7 Aux Control.....	445
4.4.7.1 Active Duration.....	445
4.4.7.2 Abbreviated Aux On Alias.....	446
4.4.7.3 Aux On Alias.....	447
4.4.7.4 Aux Off Alias.....	447
4.4.8 ViQi: Virtual Partner Alert.....	448
4.4.8.1 Virtual Partner Alert List Name.....	448
4.4.9 Logical Profile Configuration.....	448
4.4.9.1 Loud Audio Profile.....	448
4.4.9.2 Surveillance Profile.....	449
4.4.10 Preset Zone and Channel.....	449
4.4.10.1 MS#.....	449
4.4.10.2 Preset Zone.....	450
4.4.10.3 Preset Channel.....	450
4.5 Action Consolidation.....	450
4.5.1 Action Allowed on Response Selector.....	450
4.5.2 GPS Report.....	451
4.5.3 Consolidated Action Name.....	451
4.5.4 GPS Report Error Strategy.....	451
4.5.5 Relay Pattern.....	452
4.5.6 Action ID.....	452
4.5.7 Relay Pattern Error Strategy.....	454
4.5.8 Index.....	454
4.5.9 Siren Type.....	455
4.5.10 Zone.....	456
4.5.11 Siren Type Error Strategy.....	457
4.5.12 Channel.....	457
4.5.13 Third Party Notification.....	457
4.5.14 Error Strategy.....	458
4.5.15 Third Party Notification Error Strategy.....	458
4.5.16 Backlight Color.....	458
4.5.17 Alert Interval.....	459
4.5.18 Mute Site Selectable Alert.....	459
4.5.19 Alert Audio File.....	460
4.5.20 Transmit Power Level.....	460
4.5.21 Text Message.....	460
4.5.22 Action Type.....	460

4.6 Mission Critical Geofence.....	461
4.6.1 Geofence Alias Name.....	462
4.6.2 Radius (Meters).....	462
4.6.3 Priority.....	462
4.6.4 Entry Action.....	462
4.6.5 Exit Action.....	463
4.6.6 Longitude.....	463
4.6.7 Latitude.....	463
4.7 Personnel Accountability.....	463
4.7.1 Personnel Accountability List Name.....	464
4.7.2 AC List Selection.....	464
4.8 Controls (Portable).....	464
4.8.1 Buttons.....	465
4.8.1.1 Button Name.....	465
4.8.1.2 Buttons (Conventional).....	465
4.8.1.3 Buttons (Trunking).....	465
4.8.1.4 Short Keypress Duration.....	466
4.8.1.5 Long Keypress Duration.....	466
4.8.1.6 Data Button Name.....	466
4.8.1.7 Data Buttons (Conventional).....	467
4.8.1.8 Data Buttons (Trunking).....	467
4.8.1.9 Short Keypress Duration.....	467
4.8.1.10 Long Keypress Duration.....	467
4.8.1.11 Button Selections.....	468
4.8.1.12 Side Arrow Button (Primary).....	499
4.8.1.13 Side Arrow Button (Secondary).....	499
4.8.1.14 Side Arrow Button Selections.....	500
4.8.2 Switches.....	501
4.8.2.1 Rotary Control Feature.....	501
4.8.2.2 Concentric Switch Position A (Conventional).....	502
4.8.2.3 Concentric Switch Position B (Conventional).....	502
4.8.2.4 Toggle Switch Position A (Conventional).....	502
4.8.2.5 Toggle Switch Position B (Conventional).....	503
4.8.2.6 Toggle Switch Position C (Conventional).....	503
4.8.2.7 Concentric Switch Position A (Trunking).....	503
4.8.2.8 Concentric Switch Position B (Trunking).....	504
4.8.2.9 Toggle Switch Position A (Trunking).....	504
4.8.2.10 Toggle Switch Position B (Trunking).....	504
4.8.2.11 Toggle Switch Position C (Trunking).....	505

4.8.2.12 Switch Selections.....	505
4.8.3 Menu Items.....	513
4.8.3.1 Conventional Selected Menu Items.....	514
4.8.3.2 Trunking Selected Menu Items.....	514
4.8.3.3 Menu Item Selections.....	515
4.8.4 Keypad Button Feature.....	542
4.8.4.1 Airhorn.....	543
4.8.4.2 Blank.....	544
4.8.4.3 Direct Ext Radio.....	544
4.8.4.4 Direct Hi/Lo.....	544
4.8.4.5 Direct Manual.....	545
4.8.4.6 Direct Wail.....	545
4.8.4.7 Direct Yelp.....	546
4.8.4.8 Gunlock (1,2,3, or All).....	546
4.8.4.9 Keypad Digit.....	546
4.8.4.10 MS01–MS13.....	547
4.8.4.11 Public Address (PA).....	547
4.8.4.12 Relay Pattern.....	547
4.8.4.13 Third Party.....	548
4.8.5 Accessory Buttons.....	548
4.8.5.1 Accessory Buttons (Conventional).....	548
4.8.5.2 Accessory Buttons (Trunking).....	548
4.8.5.3 Short Keypress Duration.....	548
4.8.5.4 Long Keypress Duration.....	549
4.8.6 Smart Key Fob Buttons.....	549
4.8.6.1 Smart Key Fob Graphical View	549
4.8.6.2 Smart Key Fob Buttons (Conventional).....	550
4.8.6.3 Smart Key Fob Buttons (Trunking).....	550
4.8.7 Multi-Function Knob (MFK) Selections.....	550
4.8.7.1 Blank.....	551
4.8.7.2 Zone Select.....	551
4.8.7.3 Channel Select.....	551
4.8.7.4 Volume Select.....	552
4.9 Controls (Mobile).....	552
4.9.1 Control Head Graphical View.....	552
4.9.2 Control Head - O2.....	553
4.9.2.1 Orange Button (Control Head - O2).....	553
4.9.2.2 Multi-Function Knob (Control Head - O2).....	553
4.9.2.3 Multi-Function Knob Press Behavior (Control Head - O2).....	554

4.9.2.4 Navigation Controls (Control Head - O2).....	554
4.9.3 Control Head - O3.....	554
4.9.3.1 General Conventional Feature Buttons (Control Head - O3).....	554
4.9.3.2 General Trunking Feature Buttons (Control Head - O3).....	555
4.9.3.3 Data Conventional Feature Button (Control Head - O3).....	555
4.9.3.4 Data Conventional Index Button (Control Head - O3).....	555
4.9.3.5 Data Trunking Feature Button (Control Head - O3)	555
4.9.3.6 Data Trunking Index Button (Control Head - O3).....	556
4.9.3.7 Navigation Controls (Control Head - O3).....	556
4.9.4 Control Head - O5.....	556
4.9.4.1 Orange Button (Control Head - O5).....	556
4.9.4.2 Navigation Controls (Control Head - O5).....	557
4.9.5 Control Head - O7.....	557
4.9.5.1 Orange Button (Control Head - O7).....	557
4.9.5.2 Data Conventional Feature Button (Control Head - O7).....	557
4.9.5.3 Data Conventional Index Button (Control Head - O7).....	557
4.9.5.4 Data Trunking Feature Button (Control Head - O7).....	558
4.9.5.5 Data Trunking Index Button (Control Head - O7).....	558
4.9.5.6 Multi-Function Knob (Control Head - O7).....	559
4.9.5.7 Navigation Controls (Control Head - O7).....	559
4.9.6 Control Head - O9.....	559
4.9.6.1 Orange Button (Control Head - O9).....	559
4.9.6.2 Data Conventional Feature Button (Control Head - O9).....	560
4.9.6.3 Data Conventional Index Button (Control Head - O9).....	560
4.9.6.4 Data Trunking Feature Button (Control Head - O9).....	560
4.9.6.5 Data Trunking Index Button (Control Head - O9).....	560
4.9.6.6 Top Function Programmable Button Label Line 1 (Control Head - O9).....	561
4.9.6.7 Top Function Programmable Button Label Line 2 (Control Head - O9).....	561
4.9.6.8 Top Function Programmable Button Feature (Control Head - O9).....	562
4.9.6.9 Top Function Programmable Button Index (Control Head - O9).....	562
4.9.6.10 Top Function Programmable Button Sts/Msg Index (Control Head - O9).....	562
4.9.6.11 Top Function Programmable Button Zone (Control Head - O9).....	562
4.9.6.12 Top Function Programmable Button Channel (Control Head - O9).....	563
4.9.6.13 Bottom Function Programmable Button Feature (Control Head - O9).....	563
4.9.6.14 Bottom Function Programmable Button Index (Control Head - O9).....	563
4.9.6.15 Response Selector Feature (Control Head - O9).....	564
4.9.6.16 Response Selector Index (Control Head - O9).....	564
4.9.6.17 Directional Buttons Feature (Control Head - O9).....	565
4.9.6.18 Directional Buttons Index (Control Head - O9).....	565

4.9.6.19 PA/Siren Buttons Feature (Control Head - O9).....	565
4.9.6.20 Navigation Controls (Control Head - O9).....	572
4.9.7 Control Head - E5.....	572
4.9.7.1 Orange Button (Control Head - E5).....	572
4.9.7.2 Bottom Function Programmable Button Feature (Control Head - E5).....	572
4.9.7.3 Bottom Function Programmable Button Index (Control Head - E5).....	572
4.9.7.4 Navigation Controls (Control Head - E5).....	573
4.9.8 Orange Button Selections.....	573
4.9.8.1 Action Consolidation.....	588
4.9.8.2 Aux Control (1-3).....	589
4.9.8.3 Blank.....	589
4.9.8.4 Bluetooth Audio Reroute.....	589
4.9.8.5 Bluetooth Configuration.....	589
4.9.8.6 Bluetooth Discoverable On/Off.....	590
4.9.8.7 Bluetooth Headset PTT.....	590
4.9.8.8 Bluetooth Inquiry On/Off.....	590
4.9.8.9 Bluetooth On/Off.....	590
4.9.8.10 Call Alert.....	590
4.9.8.11 Call Response.....	591
4.9.8.12 Channel Announcement.....	591
4.9.8.13 Channel Search.....	591
4.9.8.14 Channel Select.....	591
4.9.8.15 Contacts.....	591
4.9.8.16 Dim.....	592
4.9.8.17 Direct Ext Radio.....	592
4.9.8.18 Direct Hi/Lo.....	592
4.9.8.19 Direct Manual.....	593
4.9.8.20 Direct Message.....	593
4.9.8.21 Direct Mode (Mode).....	594
4.9.8.22 Direct Status.....	594
4.9.8.23 Direct Wail.....	594
4.9.8.24 Direct Yelp.....	595
4.9.8.25 DTMF Tone.....	595
4.9.8.26 Digital Vehicular Repeater System (DVRS).....	595
4.9.8.27 Dynamic ID.....	596
4.9.8.28 Dynamic Priority.....	596
4.9.8.29 Emergency.....	596
4.9.8.30 Emergency Supervisor Clear.....	596
4.9.8.31 External Radio (Ext Radio).....	596

4.9.8.32 Front/Rear (F/R).....	597
4.9.8.33 Horn Lights.....	597
4.9.8.34 In Car Monitor (ICM).....	597
4.9.8.35 Information.....	597
4.9.8.36 Intercom.....	598
4.9.8.37 Internet Protocol Address (IP).....	598
4.9.8.38 Location.....	598
4.9.8.39 Message.....	598
4.9.8.40 Modem On and Off.....	599
4.9.8.41 Monitor.....	599
4.9.8.42 Multiple Private Line (MPL).....	599
4.9.8.43 MS01–MS13.....	599
4.9.8.44 Nuisance Delete.....	599
4.9.8.45 One Touch 1–16.....	600
4.9.8.46 Phone.....	600
4.9.8.47 Repeater Access Button 1 (RAB1).....	600
4.9.8.48 Repeater Access Button 2 (RAB2).....	600
4.9.8.49 Radio Profiles.....	601
4.9.8.50 Radio Swap.....	601
4.9.8.51 Recent Calls.....	601
4.9.8.52 Rekey Request.....	601
4.9.8.53 Relay Pattern.....	601
4.9.8.54 Reprogram Request.....	602
4.9.8.55 Request-To-Talk (RTT).....	602
4.9.8.56 Scan.....	602
4.9.8.57 Secure Tx Select.....	602
4.9.8.58 Select/Private Call.....	603
4.9.8.59 Siren.....	603
4.9.8.60 Site Display/Srch.....	603
4.9.8.61 Site Lock/Unlock.....	603
4.9.8.62 Status.....	604
4.9.8.63 Talkaround/Direct.....	604
4.9.8.64 Talkgroup.....	604
4.9.8.65 Third Party.....	604
4.9.8.66 Text Messaging Service (TMS).....	604
4.9.8.67 TMS Query.....	604
4.9.8.68 TMS Quick Text.....	605
4.9.8.69 Tx Low Power.....	605
4.9.8.70 Unprogrammed.....	605

4.9.8.71 User.....	605
4.9.8.72 Voice Mute.....	606
4.9.8.73 Wail.....	606
4.9.8.74 Wi-Fi On/Off.....	606
4.9.8.75 Yelp.....	606
4.9.8.76 Zone Down.....	607
4.9.8.77 Zone Up.....	607
4.9.9 Multi-Function Knob Selections.....	607
4.9.10 General Conventional Feature Buttons Selections.....	608
4.9.11 General Trunking Feature Buttons Selections.....	623
4.9.11.1 Action Consolidation.....	638
4.9.11.2 Aux Control (1-3).....	639
4.9.11.3 Blank.....	639
4.9.11.4 Call Alert.....	639
4.9.11.5 Call Response.....	639
4.9.11.6 Channel Announcement.....	640
4.9.11.7 Channel Search.....	640
4.9.11.8 Channel Select.....	640
4.9.11.9 Contacts.....	640
4.9.11.10 DTMF Tone.....	640
4.9.11.11 Digital Vehicular Repeater System (DVRS).....	641
4.9.11.12 Dynamic ID.....	641
4.9.11.13 Dynamic Priority.....	641
4.9.11.14 Emergency.....	641
4.9.11.15 Emergency Supervisor Clear.....	641
4.9.11.16 Front/Rear (F/R).....	641
4.9.11.17 Horn Lights.....	642
4.9.11.18 In Car Monitor (ICM).....	642
4.9.11.19 Information.....	642
4.9.11.20 Intercom.....	643
4.9.11.21 Internet Protocol Address (IP).....	643
4.9.11.22 Location.....	643
4.9.11.23 Message.....	643
4.9.11.24 Modem On and Off.....	643
4.9.11.25 Monitor.....	643
4.9.11.26 Multiple Private Line (MPL).....	644
4.9.11.27 MS01–MS13.....	644
4.9.11.28 Nuisance Delete.....	644
4.9.11.29 One Touch 1–16.....	645

4.9.11.30 Phone.....	645
4.9.11.31 Repeater Access Button 1 (RAB1).....	645
4.9.11.32 Repeater Access Button 2 (RAB2).....	645
4.9.11.33 Radio Profiles.....	645
4.9.11.34 Radio Swap.....	645
4.9.11.35 Recent Calls.....	646
4.9.11.36 Rekey Request.....	646
4.9.11.37 Reprogram Request.....	646
4.9.11.38 Request-To-Talk (RTT).....	646
4.9.11.39 Scan.....	646
4.9.11.40 Secure Tx Select.....	647
4.9.11.41 Select/Private Call.....	647
4.9.11.42 Site Display/Srch.....	647
4.9.11.43 Site Lock/Unlock.....	647
4.9.11.44 Status.....	648
4.9.11.45 Talkaround/Direct.....	648
4.9.11.46 Talkgroup.....	648
4.9.11.47 Third Party.....	648
4.9.11.48 Text Messaging Service (TMS).....	648
4.9.11.49 TMS Query.....	648
4.9.11.50 TMS Quick Text.....	649
4.9.11.51 Tx Low Power.....	649
4.9.11.52 Unprogrammed.....	649
4.9.11.53 User.....	649
4.9.11.54 Voice Mute.....	650
4.9.11.55 Wi-Fi On/Off.....	650
4.9.11.56 Zone Down.....	650
4.9.11.57 Zone Up.....	650
4.9.12 Top Function Programmable Button Feature Selections.....	650
4.9.13 Bottom Function Programmable Button Feature Selections.....	665
4.9.13.1 Action Consolidation.....	680
4.9.13.2 Automatic Channel Fallback Enable/Disable.....	681
4.9.13.3 Aux Control (1-3).....	681
4.9.13.4 Blank.....	682
4.9.13.5 Call Alert.....	682
4.9.13.6 Call Response.....	682
4.9.13.7 Channel Announcement.....	682
4.9.13.8 Channel Fallback Manual/Revert.....	683
4.9.13.9 Channel Search.....	683

4.9.13.10 Channel Select.....	683
4.9.13.11 Contacts.....	683
4.9.13.12 Dim.....	683
4.9.13.13 Direct Ext Radio.....	684
4.9.13.14 Direct Hi/Lo.....	684
4.9.13.15 Direct Manual.....	685
4.9.13.16 Direct Message.....	685
4.9.13.17 Direct Mode (Mode).....	685
4.9.13.18 Direct Status.....	686
4.9.13.19 Direct Wail.....	686
4.9.13.20 Direct Yelp.....	686
4.9.13.21 DTMF Tone.....	687
4.9.13.22 Digital Vehicular Repeater System (DVRS).....	687
4.9.13.23 Dynamic ID.....	687
4.9.13.24 Dynamic Priority.....	687
4.9.13.25 Emergency.....	687
4.9.13.26 Emergency Supervisor Clear.....	688
4.9.13.27 External Radio (Ext Radio).....	688
4.9.13.28 Front/Rear (F/R).....	688
4.9.13.29 Horn Lights.....	688
4.9.13.30 In Car Monitor (ICM).....	689
4.9.13.31 Information.....	689
4.9.13.32 Intercom.....	689
4.9.13.33 Internet Protocol Address (IP).....	690
4.9.13.34 Location.....	690
4.9.13.35 Message.....	690
4.9.13.36 Modem On and Off.....	690
4.9.13.37 Monitor.....	690
4.9.13.38 Multiple Private Line (MPL).....	691
4.9.13.39 MS01–MS13.....	691
4.9.13.40 Nuisance Delete.....	691
4.9.13.41 One Touch 1–16.....	691
4.9.13.42 Phone.....	692
4.9.13.43 Repeater Access Button 1 (RAB1).....	692
4.9.13.44 Repeater Access Button 2 (RAB2).....	692
4.9.13.45 Radio Profiles.....	692
4.9.13.46 Radio Swap.....	692
4.9.13.47 Recent Calls.....	692
4.9.13.48 Rekey Request.....	693

4.9.13.49 Remote Emergency.....	693
4.9.13.50 Reprogram Request.....	693
4.9.13.51 Request-To-Talk (RTT).....	693
4.9.13.52 Scan.....	693
4.9.13.53 Secure Tx Select.....	694
4.9.13.54 Select/Private Call.....	694
4.9.13.55 Siren.....	694
4.9.13.56 Site Display/Srch.....	694
4.9.13.57 Site Lock/Unlock.....	694
4.9.13.58 Status.....	695
4.9.13.59 Talkaround/Direct.....	695
4.9.13.60 Talkgroup.....	695
4.9.13.61 Third Party.....	695
4.9.13.62 Text Messaging Service (TMS).....	695
4.9.13.63 TMS Query.....	696
4.9.13.64 TMS Quick Text.....	696
4.9.13.65 Tx Low Power.....	696
4.9.13.66 Unprogrammed.....	696
4.9.13.67 User.....	696
4.9.13.68 Voice Mute.....	697
4.9.13.69 Wail.....	697
4.9.13.70 Wi-Fi On/Off.....	697
4.9.13.71 Yelp.....	697
4.9.13.72 Zone Down.....	698
4.9.13.73 Zone Up.....	698
4.9.14 Data Feature Button Selections.....	698
4.9.15 Navigation Controls Selections.....	700
4.9.15.1 Blank.....	702
4.9.15.2 Up.....	702
4.9.15.3 Channel Up.....	702
4.9.15.4 Zone Up.....	703
4.9.15.5 Volume Up.....	703
4.9.16 Menu Items.....	703
4.9.16.1 Conventional Selected Menu Items.....	704
4.9.16.2 Trunking Selected Menu Items.....	704
4.9.16.3 Menu Item Selections.....	705
4.9.17 Keypad Mic and Accessories.....	731
4.9.17.1 General Conventional Feature Buttons (Keypad Mic and Accessories).....	732
4.9.17.2 General Trunking Feature Buttons (Keypad Mic and Accessories).....	732

4.9.17.3 Data Conventional Feature Button (Keypad Mic and Accessories).....	732
4.9.17.4 Data Conventional Index Button (Keypad Mic and Accessories).....	733
4.9.17.5 Data Trunking Feature Button (Keypad Mic and Accessories).....	733
4.9.17.6 Data Trunking Index Button (Keypad Mic and Accessories).....	733
4.9.17.7 Navigation Controls (Keypad Mic and Accessories).....	734
4.9.18 DEK.....	734
4.9.18.1 General.....	734
4.9.18.2 DEK VIP.....	747
4.9.19 Radio VIPs.....	755
4.9.19.1 Radio VIPs Input Feature.....	755
4.9.19.2 Radio VIPs Output Feature.....	759
4.9.19.3 GCAI VIPs Input Feature.....	764
4.10 Keypad.....	765
4.10.1 General Keypad Feature (Keypad).....	766
4.10.1.1 Airhorn.....	767
4.10.1.2 Blank.....	768
4.10.1.3 Direct Ext Radio.....	768
4.10.1.4 Direct Hi/Lo.....	768
4.10.1.5 Direct Manual.....	768
4.10.1.6 Direct Wail.....	769
4.10.1.7 Direct Yelp.....	769
4.10.1.8 Gunlock (1,2,3, or All).....	770
4.10.1.9 Keypad Digit.....	770
4.10.1.10 MS01–MS13.....	770
4.10.1.11 Public Address (PA).....	771
4.10.1.12 Relay Pattern.....	771
4.10.1.13 Third Party.....	772
4.10.2 General Keypad Index (Keypad).....	772
4.11 Multi-Function Knob (MFK).....	772
4.12 Display.....	772
4.12.1 General.....	772
4.12.1.1 Zone Text Size.....	773
4.12.1.2 Slow Scroll Count.....	773
4.12.1.3 Channel Text Size.....	773
4.12.1.4 Out of Range Indicator.....	773
4.12.1.5 Searching Site Indicator.....	774
4.12.1.6 Out of Range Early Detection.....	774
4.12.1.7 Top Zone Text Size.....	774
4.12.1.8 Out Of Range Hold Off Timer.....	775

4.12.1.9 Imbalanced Coverage Indicator.....	775
4.12.1.10 Top Channel Text Size.....	775
4.12.1.11 Site Trunking Indicator.....	776
4.12.1.12 Top Display Orientation.....	776
4.12.1.13 Save Day Night Mode.....	777
4.12.1.14 DRSM Display Orientation.....	777
4.12.1.15 System Registration Indicator.....	777
4.12.1.16 Slow Scroll Rate.....	778
4.12.1.17 DVRS Local Only Indicator.....	778
4.12.1.18 Lock Menu Item.....	778
4.12.1.19 Fast Scroll Rate.....	779
4.12.2 Advanced	779
4.12.2.1 Radio Display Language.....	780
4.12.2.2 Temporary Message Display Time.....	781
4.12.2.3 Auto Light.....	781
4.12.2.4 Independent Top Light.....	781
4.12.2.5 Backlight While in VA.....	782
4.12.2.6 Feature Inactivity Timeout.....	782
4.12.2.7 Display Light Time.....	782
4.12.2.8 Feature Inactivity Alert Tone Selection.....	783
4.12.2.9 Alternating Display Time.....	783
4.12.2.10 Status Auto Exit.....	784
4.12.2.11 Channel Color Backlight.....	784
4.12.2.12 Channel Color Backlight (E5).....	784
4.12.3 ID Display.....	785
4.12.3.1 PTT ID Display.....	785
4.12.3.2 End of Voice Timer.....	786
4.12.3.3 Talkgroup Display On PTT.....	786
4.12.3.4 Prefix ID Text Size.....	786
4.12.3.5 Talkgroup Display On Mode Change.....	786
4.12.3.6 Display.....	787
4.12.3.7 Talkgroup Display On Receive.....	787
4.12.4 Backlight Color Control.....	787
4.12.4.1 Default Backlight Color.....	787
4.12.4.2 Color Text.....	788
4.12.4.3 Red %.....	789
4.12.4.4 Green %.....	789
4.12.5 Test Mode.....	789
4.12.5.1 Test Mode Password Enabled.....	790

4.12.5.2 Test Mode Password.....	790
4.13 Noise Reduction Configuration.....	791
4.13.1 Radio Noise Reduction Profile.....	791
4.13.1.1 Radio Noise Reduction Profile Name.....	791
4.13.1.2 Status VAD DET COUNT.....	792
4.13.1.3 E Wind MAXS VECTOR.....	792
4.13.1.4 Bad Mic INACTIVE THRESH DBQ8.....	793
4.13.1.5 E Wind NBANDS.....	793
4.13.1.6 Bad Mic SDIFF THRESH DBQ8.....	794
4.13.1.7 DINC ABF SS.....	794
4.13.1.8 Bad Mic NDIFF THRESH DBQ8.....	795
4.13.1.9 HOTBEAM DET THRESH DBQ8.....	795
4.13.1.10 Bad Mic R THRESH DBQ8.....	796
4.13.1.11 DWF MIN GAIN.....	796
4.13.1.12 DINC OUTPUT EQ VECTOR.....	797
4.13.1.13 DWF EXPANSION DEGREE.....	797
4.13.1.14 DINC EP VECTOR.....	797
4.13.1.15 Status VAD DET THRESH DBQ8.....	798
4.13.1.16 RADIO AUTO MIN GAIN VECTOR.....	798
4.13.1.17 RADIO AUTO NOISE BOUNDS DBQ8.....	798
4.13.1.18 RADIO AUTO RELAXATION BOUNDS.....	799
4.13.1.19 RADIO HOT BEAM MAX ATTENUATION DBQ8.....	799
4.13.1.20 RADIO HOT BEAM MIX RATE.....	799
4.13.1.21 RADIO PASS FILTER START.....	800
4.13.1.22 RADIO SAM CUTOVER FREQUENCY.....	800
4.13.1.23 RADIO SAM MIX MODE.....	800
4.13.2 Accessory Noise Reduction Profile.....	800
4.13.2.1 Accessory Noise Reduction Profile Name.....	801
4.13.2.2 Status VAD DET COUNT.....	801
4.13.2.3 E Wind DINC EWIND NBANDS.....	802
4.13.2.4 Bad Mic INACTIVE THRESH DBQ8.....	802
4.13.2.5 E Wind MAXS VECTOR.....	803
4.13.2.6 Bad Mic SDIFF THRESH DBQ8.....	803
4.13.2.7 DINC ABF SS.....	803
4.13.2.8 Bad Mic NDIFF THRESH DBQ8.....	804
4.13.2.9 HOTBEAM DET THRESH DBQ8.....	804
4.13.2.10 Bad Mic R THRESH DBQ8.....	805
4.13.2.11 DWF MIN GAIN.....	805
4.13.2.12 DINC OUTPUT EQ VECTOR.....	806

4.13.2.13 DWF EXPANSION DEGREE.....	806
4.13.2.14 DINC EP VECTOR.....	806
4.13.2.15 Status VAD DET THRESH DBQ8.....	807
4.13.2.16 ACCESSORY AUTO MIN GAIN VECTOR.....	807
4.13.2.17 ACCESSORY AUTO NOISE BOUNDS DBQ8.....	807
4.13.2.18 ACCESSORY AUTO RELAXATION BOUNDS.....	808
4.13.2.19 ACCESSORY PASS FILTER START.....	808
4.13.3 Global Noise Reduction Profile.....	808
4.13.3.1 DINC SPATIAL EQ1 VECTOR.....	809
4.13.3.2 DINC BF EQ VECTOR.....	809
4.13.3.3 DINC SPATIAL EQ1 VECTOR CONT.....	809
4.13.3.4 DINC HOTBEAM HYSTERESIS.....	809
4.13.3.5 DINC SPATIAL EQ2 VECTOR.....	810
4.13.3.6 DINC BAD MIC HYSTERESIS.....	810
4.13.3.7 DINC SPATIAL EQ2 VECTOR CONT.....	810
4.14 Radio Profiles.....	811
4.14.1 General.....	811
4.14.1.1 Radio Profile Name.....	811
4.14.1.2 Noise Sensing Volume Control.....	811
4.14.1.3 Disable Lights.....	812
4.14.1.4 Night Vision Goggles Enable.....	812
4.14.1.5 Disable Tones.....	812
4.14.1.6 Permanent Front Display Backlight.....	812
4.14.1.7 Permanent Top Display Backlight.....	813
4.14.1.8 Disable Emergency Notification.....	813
4.14.1.9 Permanent Disable Tx/Rx LED.....	813
4.14.1.10 Disable Critical Notification.....	813
4.14.1.11 Speaker Audio Routing.....	814
4.14.1.12 Disable Call Notification.....	814
4.14.2 Audio Settings.....	814
4.14.2.1 Custom Global Noise Reduction Enable.....	814
4.14.2.2 Securenet AGC.....	815
4.14.2.3 Securenet AGC (Accessory).....	815
4.14.2.4 Bluetooth Mic Gain Level.....	815
4.14.2.5 Mic HW AGC.....	816
4.14.2.6 Mic Audio Equalization Group Setting.....	816
4.14.2.7 Noise Reduction Group Setting.....	816
4.14.2.8 Low Frequency Band.....	818
4.14.2.9 Custom Noise Reduction.....	818

4.14.2.10 Background Noise Reduction Level (Radio).....	818
4.14.2.11 Background Noise Reduction Level (Accessory).....	819
4.14.2.12 Mid Frequency Band.....	820
4.14.2.13 High Frequency Band.....	821
4.14.2.14 Wind Noise Reduction Level (Radio).....	821
4.14.2.15 Wind Noise Reduction Level (Accessory).....	821
4.14.2.16 PASS Alarm Filter (Radio).....	822
4.14.2.17 PASS Alarm Filter (Accessory).....	822
4.14.2.18 Minimum Audio Volume.....	823
4.14.2.19 Noise Reduction Profile Selection.....	823
4.14.2.20 Noise Reduction Profile Selection (Accessory).....	823
4.14.2.21 Background Noise Reduction Mode (Radio).....	824
4.14.2.22 Background Noise Reduction Mode (Accessory).....	824
4.14.2.23 Volume Offset (dB).....	824
4.14.2.24 Minimum Volume.....	824
4.14.2.25 Wind Noise Reduction Mode (Radio).....	825
4.14.2.26 Wind Noise Reduction Mode (Accessory).....	825
4.14.2.27 Source Mode (Radio).....	826
4.14.2.28 Source Mode (Accessory).....	826
4.14.2.29 Source Mode.....	826
4.14.2.30 Maximum Audio Volume.....	826
4.14.2.31 Maximum Alert Tone Volume.....	827
4.14.2.32 Speaker Audio Equalization Group Setting.....	828
4.14.2.33 Directivity Mode.....	828
4.14.2.34 Directivity Mode (Radio).....	829
4.14.2.35 Directivity Mode (Accessory).....	829
4.14.2.36 Analog Low Frequency Band (Radio).....	829
4.14.2.37 Analog Low Frequency Band (Accessory).....	829
4.14.2.38 Gain Sensitivity Group Setting.....	830
4.14.2.39 Gain Sensitivity Group Setting.....	830
4.14.2.40 Analog Mid Frequency Band.....	831
4.14.2.41 Analog AGC.....	831
4.14.2.42 Analog High Frequency Band.....	831
4.14.2.43 Digital AGC.....	832
4.14.2.44 Digital Low Frequency Band (Radio).....	833
4.14.2.45 Digital Low Frequency Band (Accessory).....	833
4.14.2.46 Digital Mid Frequency Band.....	833
4.14.2.47 Digital High Frequency Band.....	833
4.14.2.48 AGC Gain Control Output (Radio).....	834

4.14.2.49 AGC Gain Control Output (Accessory).....	835
4.14.2.50 AGC Gain Control Total (Radio).....	835
4.14.2.51 AGC Gain Control Total (Accessory).....	836
4.14.2.52 Securenet Low Frequency Band (Radio).....	837
4.14.2.53 Securenet Low Frequency Band (Accessory).....	837
4.14.2.54 Analog Fixed Gain.....	837
4.14.2.55 Securenet Mid Frequency Band.....	838
4.14.2.56 Digital Fixed Gain.....	838
4.14.2.57 Securenet High Frequency Band (Radio).....	838
4.14.2.58 Acoustic Feedback Suppression.....	839
4.14.2.59 Securenet Fixed Gain (Radio).....	839
4.14.2.60 Securenet Fixed Gain (Accessory).....	840
4.14.2.61 SAM Mode.....	840
4.14.2.62 Digital/Analog Balance	840
4.14.2.63 Overload Comp (Radio).....	841
4.14.2.64 Auto Mode.....	841
4.14.2.65 Speaker Gain Control Group Setting (Radio).....	842
4.14.2.66 Speaker Gain Control Group Setting (Accessory).....	842
4.14.2.67 Speaker AGC Gain Control Output (Radio).....	843
4.14.2.68 Speaker AGC Gain Control Output (Accessory).....	843
4.14.2.69 Speaker AGC Gain Control Total (Radio).....	843
4.14.2.70 Speaker AGC Gain Control Total (Accessory).....	844
4.15 Tone Signaling List.....	844
4.15.1 Tone List Alias.....	844
4.15.2 Tone Alias.....	844
4.15.3 Tone 1 Freq.....	845
4.15.3.1 List of Unsupported Tone Frequencies.....	846
4.15.3.2 TDMA-applicable Standard Frequencies and Group Ranges.....	846
4.15.3.3 FDMA-applicable Standard Frequencies and Group Ranges.....	848
4.15.4 Tone 2 Freq.....	850
4.15.5 Unmute Enable.....	851
4.15.6 Alert Tone.....	851
4.15.7 External Control.....	852
4.15.8 Tone List Type.....	852
4.15.9 Tone Freq.....	852
4.15.10 Tone Duration.....	853
4.15.11 Tone Pretime.....	853
4.16 Voice Announcements.....	853
4.16.1 Voice Announcement Wide.....	853

4.16.1.1 Voice Announcement Priority.....	853
4.16.1.2 Suppress Replay.....	854
4.16.1.3 Scan On.....	854
4.16.1.4 Scan On TTS Announcement.....	855
4.16.1.5 Scan Off.....	855
4.16.1.6 Scan Off TTS Announcement.....	856
4.16.1.7 Monitor On.....	856
4.16.1.8 Monitor On TTS Announcement.....	857
4.16.1.9 Monitor Off.....	857
4.16.1.10 Monitor Off TTS Announcement.....	858
4.16.1.11 Direct Mode On.....	858
4.16.1.12 Direct Mode On TTS Announcement.....	859
4.16.1.13 Direct Mode Off.....	859
4.16.1.14 Direct Mode Off TTS Announcement.....	859
4.16.1.15 Tx Inhibit On.....	860
4.16.1.16 Tx Inhibit On TTS Announcement.....	860
4.16.1.17 Tx Inhibit Off.....	861
4.16.1.18 Tx Inhibit Off TTS Announcement.....	861
4.16.1.19 Emergency On.....	861
4.16.1.20 Emergency On TTS Announcement.....	862
4.16.1.21 In-Call User Alert On.....	862
4.16.1.22 In-Call User Alert On TTS Announcement.....	863
4.16.1.23 In-Call User Alert Off.....	863
4.16.1.24 In-Call User Alert Off TTS Announcement.....	864
4.16.1.25 Secure Tx Select On.....	864
4.16.1.26 Secure Tx Select On TTS Announcement.....	864
4.16.1.27 Secure Tx Select Off.....	865
4.16.1.28 Secure Tx Select Off TTS Announcement.....	865
4.16.1.29 Keypad/Controls Lock On.....	866
4.16.1.30 Keypad/Controls Lock On TTS Announcement.....	866
4.16.1.31 Keypad/Controls Lock Off.....	867
4.16.1.32 Keypad/Controls Lock Off TTS Announcement.....	867
4.16.1.33 Multi-Functional Button Primary Mode.....	868
4.16.1.34 Multi-Functional Button Primary Mode TTS Announcement.....	868
4.16.1.35 Multi-Functional Button Secondary Mode.....	869
4.16.1.36 Multi-Functional Button Secondary Mode TTS Announcement.....	869
4.16.1.37 Exit Hazard Zone Mode.....	869
4.16.1.38 Exit Hazard Zone Mode TTS.....	870
4.16.1.39 Self Check Failure.....	870

4.16.1.40 Self Check Failure TTS.....	870
4.16.1.41 Accessory Failure.....	870
4.16.1.42 Accessory Failure TTS.....	871
4.16.1.43 Out of Range.....	871
4.16.1.44 Out of Range TTS.....	871
4.16.1.45 Over Temperature.....	871
4.16.1.46 Over Temperature TTS.....	872
4.16.1.47 Power Down.....	872
4.16.1.48 Power Down TTS.....	872
4.16.1.49 Antenna Failure.....	872
4.16.1.50 Antenna Failure TTS.....	872
4.16.1.51 Channel Fallback On.....	873
4.16.1.52 Channel Fallback On TTS Announcement.....	873
4.16.1.53 Channel Fallback Off.....	873
4.16.1.54 Channel Fallback Off TTS Announcement.....	874
4.16.1.55 RF Device Cumulative Over Temperature.....	874
4.16.1.56 RF Device Cumulative Over Temperature TTS.....	875
4.16.1.57 Optional Component Cumulative Over Temperature.....	875
4.16.1.58 Optional Component Cumulative Over Temperature TTS.....	875
4.16.1.59 Battery Cumulative Over Temperature.....	875
4.16.1.60 Battery Cumulative Over Temperature TTS.....	876
4.16.1.61 Non-Hazard Mode Accessory.....	876
4.16.1.62 Non-Hazard Mode Accessory TTS.....	876
4.16.1.63 Site Selectable Alert Allowed in Out of Range.....	876
4.16.2 Site Selectable Alert List.....	877
4.16.2.1 Site Selectable Alert List Name.....	877
4.16.2.2 Alert Alias.....	878
4.16.2.3 Alert Audio File.....	878
4.16.2.4 Alert Period.....	878
4.16.2.5 Subscriber Encodable.....	879
4.16.3 Voice Announcement List.....	879
4.16.3.1 Voice File Name.....	879
4.16.3.2 Voice File Browse Button.....	879
4.17 Secure Wide.....	880
4.17.1 General.....	880
4.17.1.1 Secure Operation.....	880
4.17.1.2 OTAR Generate Key-Loss-Key.....	881
4.17.1.3 KVL - FIPS Level 3 Approved Mode.....	881
4.17.1.4 Enhanced SW Key Erase on Radio Inhibit.....	881

4.17.1.5 Advanced Digital Privacy.....	882
4.17.1.6 Advanced Encrypted Standard (AES256).....	882
4.17.1.7 Keyloading Source.....	882
4.17.1.8 KVL Keyloading UDP Port.....	883
4.17.1.9 Over-The-Air-Rekeying (OTAR) Operation.....	883
4.17.1.10 Infinite UKEK Retention.....	884
4.17.1.11 Erase Previous On User Change.....	884
4.17.1.12 Keypad - User Selectable.....	885
4.17.1.13 Erase All Keys.....	885
4.17.1.14 Data Encryption Standard (DES).....	886
4.17.2 Features.....	886
4.17.2.1 Infinite Key Retention.....	886
4.17.2.2 Ignore Secure/Clear Switch When Strapped.....	886
4.17.2.3 Disable Hard Key Zeroize.....	887
4.17.2.4 Non-XL Scan Unsquelch Duration.....	887
4.17.2.5 Periodic Keyfail Alert Tone.....	887
4.17.2.6 XL Scan Unsquelch Duration.....	887
4.17.2.7 Clear Alert Tones.....	888
4.17.3 Multikey.....	888
4.17.3.1 Display On Mode Change.....	888
4.17.3.2 PID Key Management for ASN Mode.....	889
4.17.3.3 Display On PTT.....	889
4.17.3.4 Key ID - Rx Hang Time.....	890
4.17.3.5 Display On Secure Switch Select.....	890
4.17.3.6 Keypad ID - Tx Hang Time.....	891
4.17.3.7 Erase Previous Index on Index Change.....	891
4.17.4 ASTRO OTAR	892
4.17.4.1 Radio Inhibit via ASTRO OTAR.....	892
4.17.4.2 Individual ASTRO OTAR Radio ID.....	892
4.17.5 MDC OTAR.....	893
4.17.5.1 Radio Inhibit via MDC OTAR.....	893
4.17.5.2 Rekey Request Mode.....	893
4.17.5.3 OTAR Acknowledgements Enable.....	894
4.17.5.4 Rekey Request Status Alert Tone.....	894
4.17.5.5 OTAR Acknowledgements Encrypted Only.....	894
4.17.5.6 Erase Previous Index on Index Change.....	895
4.17.5.7 OTAR Acknowledgements Power-Up.....	895
4.17.5.8 KMC ID.....	896
4.17.5.9 MDC OTAR System.....	896

4.17.6 Encryption Key List.....	896
4.17.6.1 Key Name.....	897
4.17.6.2 Slot B.....	897
4.17.6.3 CKR Number.....	897
4.17.6.4 Selectable ADP Key Data.....	898
4.17.6.5 Indexed.....	899
4.17.6.6 Selectable ADP Key ID.....	899
4.17.6.7 Slot A.....	900
4.17.6.8 Algorithm.....	901
4.18 ASTRO OTAR Profile.....	901
4.18.1 General.....	901
4.18.1.1 ASTRO OTAR Profile.....	902
4.18.1.2 Independent Key List.....	902
4.18.1.3 Erase All Keys.....	902
4.18.1.4 Infinite UKEK Retention.....	902
4.18.1.5 OTAR Generate Key-Loss Key.....	903
4.18.1.6 KVL - FIPS Level 3 Approved Mode.....	903
4.18.1.7 Keyset - User Selectable.....	903
4.18.1.8 Erase Previous On User Change.....	904
4.18.1.9 Secure Profile GUID.....	904
4.18.2 ASTRO OTAR Information.....	905
4.18.2.1 Erase Previous Keyset on OTAR Changeover.....	905
4.18.2.2 Radio Inhibit via ASTRO OTAR.....	905
4.18.2.3 Individual ASTRO OTAR Radio ID.....	906
4.18.2.4 Number of Attempts.....	906
4.18.2.5 OTAR Inactivity Timer.....	907
4.18.2.6 OTAR Rx Security Level.....	907
4.18.2.7 OTAR Tx Security Level.....	908
4.18.2.8 Rekey Request Status Alert Tone.....	908
4.18.2.9 Response Kind.....	908
4.18.2.10 Time Between Attempts.....	909
4.18.2.11 User Selectable Rekey Request.....	909
4.18.3 Data Transport.....	910
4.18.3.1 KMF IP Address.....	910
4.18.3.2 KMF UDP Port.....	910
4.18.3.3 Subscriber OTAR Port.....	911
4.18.3.4 OTAR Transport.....	911
4.18.3.5 KMF Broadband ID.....	911
4.18.4 Encryption Key List.....	912

4.18.4.1 Key Name.....	912
4.18.4.2 CKR Number.....	912
4.18.4.3 Algorithm.....	913
4.18.4.4 Selectable ADP Key ID.....	913
4.18.4.5 Selectable ADP Key Data.....	913
4.18.5 Secure Encryption Key Reference List.....	914
4.18.5.1 CKR Number.....	915
4.18.5.2 Encryption Key Reference.....	915
4.19 CA Certificate.....	915
4.19.1 Certificate Name.....	916
4.19.2 Certificate Filename.....	916
4.20 FIPS Modes of Operation.....	916
4.21 Emergency Wide.....	917
4.21.1 General.....	917
4.21.1.1 Emergency Alarm Rx Indicator Type.....	917
4.21.1.2 Unmute Option.....	918
4.21.1.3 Silent Alarm.....	918
4.21.1.4 Channel Delay.....	919
4.21.1.5 Disable Emergency Call Indications.....	919
4.21.1.6 Emergency Power Up.....	919
4.21.1.7 Keep Alive.....	919
4.21.1.8 Emergency Call Receive.....	920
4.21.1.9 Distinguish Emergency Type.....	920
4.21.2 Fall Alert.....	920
4.21.2.1 Fall Alert Trigger.....	921
4.21.2.2 Pre-Alert Timer.....	922
4.21.2.3 Post-Alert Timer.....	922
4.21.2.4 Pre-Alert Tone.....	923
4.21.2.5 Fall Alert Configurability Level.....	923
4.21.3 Customizable Emergency Tones.....	924
4.21.3.1 Fall Alert Emergency Tone Trigger.....	924
4.21.4 Impact Detection.....	924
4.21.4.1 Configurability Level.....	924
4.21.4.2 Configurability Level.....	925
4.21.4.3 Emergency Tone Trigger.....	925
4.21.4.4 Pre-Alert Timer.....	925
4.21.4.5 Post-Alert Timer.....	925
4.21.4.6 Pre-Alert Tone.....	925
4.22 Conventional Emergency Profiles.....	926

4.22.1	General.....	926
4.22.1.1	Emergency Profile Name.....	926
4.22.1.2	Fall Alert Enable.....	927
4.22.1.3	Emergency Type.....	927
4.22.1.4	Emergency Auto Transmit Mode.....	928
4.22.1.5	Console Ack Required (DVRS).....	929
4.22.1.6	Hot Mic Tx Period.....	929
4.22.1.7	Acknowledge Alert Tone.....	930
4.22.1.8	Silent Audio Tx Period.....	930
4.22.1.9	Polite Retries.....	930
4.22.1.10	Hot Aux Mic Activation.....	931
4.22.1.11	Impolite Retries.....	931
4.22.1.12	Tx Multiplier Enable.....	932
4.22.1.13	Tx Multiplier Factor.....	932
4.22.1.14	Emergency Find Me	932
4.22.1.15	Transmit Enable.....	933
4.22.1.16	Receive Enable.....	933
4.22.1.17	Impact Detection Enable	933
4.22.1.18	Emergency Exit on Channel Change.....	934
4.22.1.19	Remote Activation of Emergency.....	934
4.22.2	MDC	934
4.22.2.1	Emergency PTT-ID Sidetone.....	934
4.22.2.2	Emergency Remote Monitor Tx Base Time.....	935
4.22.2.3	Emergency Remote Monitor Rx Base Time.....	935
4.22.2.4	Emergency Remote Monitor Enable.....	936
4.22.3	Emergency Tone List.....	936
4.22.3.1	Trigger.....	937
4.22.3.2	Tone.....	937
4.22.3.3	Tone Minimum Volume.....	938
4.22.3.4	Tone Period.....	938
4.22.3.5	Audio Routing.....	938
4.22.4	Emergency Compatibility Options.....	939
4.22.4.1	Emergency Exit Control.....	939
4.22.4.2	Emergency Hot Mic Restart.....	939
4.23	Trunking Emergency Profiles.....	939
4.23.1	General.....	940
4.23.1.1	Emergency Profiles Name.....	940
4.23.1.2	Fall Alert Enable.....	940
4.23.1.3	Emergency Operation.....	940

4.23.1.4	Emergency Auto Transmit Mode.....	941
4.23.1.5	Retry Counter.....	942
4.23.1.6	Hot Mic Tx Period.....	942
4.23.1.7	Console Ack Required.....	943
4.23.1.8	Silent Audio Tx Period.....	943
4.23.1.9	Emergency Talkback.....	943
4.23.1.10	Hot Aux Mic Activation.....	944
4.23.1.11	Revert PTT ID.....	944
4.23.1.12	Emergency Find Me	945
4.23.1.13	Transmit Enable.....	945
4.23.1.14	Receive Enable.....	945
4.23.1.15	Impact Detection Enable.....	946
4.23.1.16	Emergency Exit on Channel Change.....	946
4.23.1.17	Remote Activation of Emergency.....	946
4.23.2	Emergency Tone List.....	946
4.23.2.1	Trigger.....	947
4.23.2.2	Tone.....	947
4.23.2.3	Tone Minimum Volume.....	948
4.23.2.4	Tone Period.....	948
4.23.2.5	Audio Routing.....	948
4.23.3	Emergency Compatibility Options.....	949
4.23.3.1	Emergency Exit Control.....	949
4.23.3.2	Emergency Hot Mic Restart.....	949
4.24	Data Wide.....	950
4.24.1	General.....	950
4.24.1.1	SNMP Traps.....	950
4.24.1.2	Bluetooth Subscriber IP Address.....	950
4.24.1.3	Context Deactivation Alert Tone.....	951
4.24.1.4	Bluetooth Peer IP Address.....	951
4.24.1.5	ICMP Echo.....	952
4.24.1.6	Bluetooth Peer IP Address Assignment Type.....	952
4.24.1.7	Delete Messages When Session Ends.....	953
4.24.1.8	Peer IP Address 1.....	953
4.24.1.9	Internal Radio Subnet.....	954
4.24.1.10	Peer IP Address Assignment Type 1.....	954
4.24.1.11	APCO Avalanche Time.....	955
4.24.1.12	Subscriber IP Address 2.....	955
4.24.1.13	Direct TMS Content Display.....	956
4.24.1.14	Peer IP Address 2.....	957

4.24.1.15 External Text Messaging Broadcast.....	957
4.24.1.16 Peer IP Address Assignment Type 2.....	958
4.24.1.17 Sensor Measurement Reporting.....	958
4.24.1.18 Broadband Checkback Time.....	958
4.24.1.19 Acknowledged Gun Holster State Reporting Enable.....	959
4.24.1.20 Acknowledged Stun Gun State Reporting Enable.....	959
4.24.1.21 Acknowledged Weapon Fired Event Reporting Enable	959
4.24.2 LTE.....	959
4.24.2.1 Broadband Checkback Time.....	959
4.24.2.2 LTE Out-Of-Range Threshold Time.....	960
4.24.2.3 Access Point Name.....	960
4.24.2.4 Data On Roaming.....	961
4.24.3 POP25/Wireless Programming.....	961
4.24.3.1 POP25/Wireless Programming Reject Enable.....	961
4.24.3.2 POP25/Wireless Programming Indications.....	961
4.24.3.3 Auto Reset Enable.....	961
4.24.4 NAT List.....	962
4.24.4.1 LAN Port.....	962
4.24.4.2 Static NAT IP Address.....	963
4.24.4.3 WAN Port.....	963
4.24.5 Data User List.....	964
4.24.5.1 Data User Name.....	964
4.24.6 Quick Text Message List.....	964
4.24.6.1 Quick Text Message.....	965
4.24.7 Data Protocol Configuration.....	965
4.24.7.1 Max # of Non-TCP IP Header Compression Contexts.....	966
4.24.7.2 Max Time Between Full Headers.....	966
4.24.7.3 Max # of Compressed Headers Between Full Headers.....	967
4.24.7.4 Max Setup Time for Controlled Channel Access.....	967
4.24.7.5 Max Header Size Allowed for Compression.....	967
4.24.7.6 Time Source Variation.....	968
4.24.8 Wi-Fi.....	968
4.24.8.1 Wi-Fi Enable.....	968
4.24.8.2 Allow User Control.....	969
4.24.8.3 Network SSID.....	969
4.24.8.4 Network Priority.....	969
4.24.8.5 Security Type.....	969
4.24.8.6 Encrypted Network Password.....	970
4.24.8.7 Hidden Network.....	970

4.24.9 Port Configuration.....	970
4.24.9.1 Authentication UDP Port.....	970
4.24.9.2 P25 Location Reporting UDP Port.....	971
4.24.9.3 Wireless Programming TCP Port.....	971
4.24.9.4 Sensor Measurement Reporting UDP Port.....	972
4.24.10 External Data Modem.....	972
4.24.10.1 Modem Connection Type.....	972
4.24.10.2 Wired Modem Configuration Modem Type.....	973
4.24.10.3 Wireless Powerup Max Guard Time.....	973
4.24.10.4 Wired Modem Configuration Modem Port.....	973
4.24.10.5 Network Priority.....	974
4.24.10.6 Wired Modem Configuration Modem Password.....	974
4.24.10.7 Network SSID.....	974
4.24.10.8 Wired Modem Configuration Modem VPN Tunnel.....	975
4.24.10.9 Security Type.....	975
4.24.10.10 Wired Modem Configuration Modem Out-Of-Range Threshold.....	975
4.24.10.11 Encrypted Network Password.....	976
4.24.10.12 Wired Modem Configuration Modem Powerup Max Guard Time.....	976
4.24.10.13 Modem Type.....	976
4.24.10.14 Wired Modem Configuration Modem Open Max Guard Time.....	977
4.24.10.15 Modem Password.....	977
4.24.10.16 VPN Friendly Name.....	977
4.24.10.17 Modem Port.....	978
4.24.10.18 Modem LTE Friendly Name.....	978
4.24.10.19 VPN Tunnel.....	979
4.24.10.20 MG90 Satellite Enabled.....	979
4.24.10.21 Modem Out-Of-Range Threshold.....	979
4.24.10.22 MG90 Satellite Friendly Name.....	979
4.24.10.23 Hidden Network.....	980
4.24.10.24 Modem Open Max Guard Time.....	980
4.25 Data Profiles.....	980
4.25.1 General.....	981
4.25.1.1 Data Profile Name.....	981
4.25.1.2 Intersystem Data.....	981
4.25.1.3 Data Profile Type.....	982
4.25.1.4 Random Holdoff Time.....	982
4.25.1.5 Packet Data Mode.....	982
4.25.1.6 Context Activation Holdoff Time.....	983
4.25.1.7 Packet Data Registration Version.....	983

4.25.1.8 IP Header Compression Enable.....	983
4.25.1.9 Queue Dwell Timer.....	984
4.25.1.10 Subscriber IP Address.....	984
4.25.1.11 Subscriber IP Address 1.....	985
4.25.1.12 Data Scan Preamble Length.....	986
4.25.1.13 Peer IP Address.....	986
4.25.1.14 Rx Voice Interrupts Data.....	987
4.25.1.15 Peer IP Address Assignment Type.....	987
4.25.1.16 Priority Scan RX Voice Interrupts Data.....	988
4.25.1.17 Bluetooth Subscriber IP Address.....	988
4.25.1.18 Limited Broadcast.....	989
4.25.1.19 Bluetooth Peer IP Address.....	989
4.25.1.20 Auto Generate IP Address.....	990
4.25.1.21 Bluetooth Peer IP Address Assignment Type.....	990
4.25.1.22 NAT Enable.....	991
4.25.1.23 Subscriber Air-Interface IP Address.....	991
4.25.1.24 Auto Generate Target IP Address.....	992
4.25.2 Features.....	992
4.25.2.1 Terminal Data.....	992
4.25.2.2 PAD Start Sequence.....	992
4.25.2.3 POP25 Retransmission Timer.....	993
4.25.2.4 PAD Stop Sequence.....	993
4.25.2.5 Retry Long Timer.....	993
4.25.2.6 PAD Escape Sequence.....	994
4.25.2.7 Retry Short Timer.....	994
4.25.2.8 PAD Receive Idle TimeOut.....	994
4.25.2.9 Retry Number of Attempts.....	995
4.25.2.10 PAD Transmission Inhibit Value.....	995
4.25.2.11 ARS Mode.....	995
4.25.2.12 Maximum Buffer Threshold.....	996
4.25.2.13 Automatic Registration Server Address.....	996
4.25.2.14 PAD Destination Address.....	997
4.25.2.15 Direct Location Registration.....	997
4.25.2.16 PAD Destination Port.....	997
4.25.2.17 Location Server IP Address.....	997
4.25.2.18 Context Activation Holdoff Mode.....	998
4.25.2.19 PAD Mode.....	999
4.25.3 CCAP DAC.....	999
4.25.3.1 Operational Mode.....	1000

4.25.3.2 Slot Size.....	1000
4.25.4 Trunking Group ID.....	1001
4.25.4.1 ASTRO 25 Data Group ID.....	1001
4.25.5 Broadband.....	1002
4.25.5.1 Broadband Source.....	1002
4.25.5.2 SmartConnect Gateway Hostname.....	1002
4.25.5.3 SmartConnect Gateway TLS Port Number.....	1003
4.25.6 Network Layer Security.....	1003
4.25.6.1 Allow Rx Clear Packet Data.....	1003
4.25.6.2 ASTRO OTAR Profile Selection.....	1003
4.25.6.3 Encrypted Gateway Address.....	1004
4.25.6.4 Key Selection.....	1005
4.25.6.5 Secure/Clear Strapping.....	1005
4.25.6.6 VPN Dead Peer Detection Interval.....	1006
4.25.6.7 VPN Gateway IP Address.....	1006
4.25.6.8 VPN Key Selection.....	1007
4.25.6.9 VPN Message Re-transmission Attempts.....	1007
4.25.6.10 VPN Message Re-transmission Time.....	1008
4.25.6.11 VPN Re-Key attempts.....	1008
4.25.6.12 VPN Rekey Margin.....	1009
4.25.6.13 VPN Secure/Clear Strapping.....	1009
4.25.7 Bypass List	1010
4.25.7.1 IP Address.....	1010
4.25.7.2 Address Type.....	1011
4.25.8 Enhanced Data.....	1011
4.25.8.1 Port List Selection.....	1012
4.25.8.2 Allow Enhanced Data On Classic Data Channel.....	1012
4.25.8.3 Enhanced Data Queue Dwell Timer.....	1012
4.25.9 ATAK Data Enable/Disable.....	1012
4.26 Enhanced Data Port List.....	1013
4.26.1 Port List Alias.....	1013
4.26.2 Port Number.....	1013
4.27 Phone Wide.....	1014
4.27.1 General.....	1014
4.27.1.1 Display Format.....	1014
4.27.1.2 Manual Access Live Dialing.....	1014
4.27.1.3 Phone Dialing.....	1015
4.27.1.4 ASTRO 25 Phone Overdial Type.....	1015
4.27.2 DTMF Timing.....	1016

4.27.2.1 DTMF Pause Time.....	1016
4.27.2.2 Initial Delay.....	1016
4.27.2.3 DTMF Digit Hang Time.....	1016
4.27.2.4 Digit Duration.....	1017
4.27.2.5 DTMF Timing Name.....	1017
4.27.2.6 Interdigit Delay.....	1017
4.27.3 DTMF Codes (Access/Deaccess).....	1018
4.27.3.1 DTMF Codes Name.....	1018
4.27.3.2 Access Code.....	1018
4.27.3.3 Deaccess Code.....	1018
4.28 DVRS Wide.....	1019
4.28.1 General.....	1019
4.28.1.1 DVRS Hardware Enable.....	1019
4.28.1.2 VIP Control of DVRS.....	1019
4.28.1.3 In Car Monitor.....	1020
4.29 DVRS Profiles.....	1021
4.29.1 General.....	1021
4.29.1.1 DVRS Profile Name.....	1021
4.29.1.2 MSU System PTT in Local Mode.....	1021
4.29.1.3 DVRS Remote Activation.....	1022
4.29.1.4 Local Tx Fallback.....	1022
4.29.1.5 Generate Status on DVRS Mode Change.....	1023
4.29.1.6 Proxy Time Out Timer.....	1023
4.29.1.7 Generate Status on DVRS Mode Change Holdoff.....	1023
4.29.1.8 Proxy Limited Patience.....	1024
4.29.1.9 ICM Allowed.....	1024
4.29.1.10 Proxy RFSS Response Time.....	1025
4.29.1.11 Outbound System Repeat in Local Mode.....	1025
4.29.1.12 Suspend Scan on DVRS Active.....	1025
4.29.1.13 Channel Only Display.....	1025
4.29.1.14 Generate Status Alternate Mode.....	1026
4.30 Conventional Wide.....	1026
4.30.1 General.....	1026
4.30.1.1 Monitor Type.....	1026
4.30.1.2 Direct Frequency Enable.....	1026
4.30.1.3 HUB Defeats PL.....	1027
4.30.1.4 Squelch Per Personality.....	1027
4.30.1.5 Latch Enable Tone.....	1027
4.30.1.6 Latch Enable Time	1028

4.30.1.7 MPL Recall Mode.....	1028
4.30.2 Features.....	1028
4.30.2.1 Smart PTT Quick Key Timer.....	1029
4.30.2.2 Smart PTT Retry Timer.....	1029
4.30.2.3 Soft ID Feature Enable.....	1029
4.30.2.4 Status Number of Attempts.....	1029
4.30.2.5 ASTRO OTAC.....	1030
4.30.2.6 OTACS Feature.....	1030
4.30.2.7 OTACR Feature.....	1030
4.30.2.8 Radio Inhibit Revert Enable.....	1030
4.30.2.9 Radio Inhibit Revert Zone.....	1030
4.30.2.10 Radio Inhibit Revert Channel.....	1030
4.30.3 ASTRO Data.....	1031
4.30.3.1 CAI Data Max Tx Attempts.....	1031
4.30.3.2 CAI Data Response Timer.....	1031
4.30.3.3 CAI Data Min Response Timer.....	1031
4.30.3.4 Max Packet Size.....	1032
4.30.3.5 Frame Sync Seek Period.....	1032
4.30.3.6 Tx Short Random Range.....	1032
4.30.3.7 Tx Long Random Range	1033
4.30.3.8 Tx Resp Random Range.....	1033
4.30.3.9 Tx Limited Patience.....	1033
4.30.3.10 ARP Cache Depth.....	1034
4.30.3.11 ARP Cache Time.....	1034
4.30.3.12 Conventional Customer ID (hex).....	1034
4.30.4 ASTRO Group ID.....	1035
4.30.4.1 Group ID.....	1035
4.31 MPL Configuration.....	1035
4.31.1 General.....	1035
4.31.1.1 MPL Select Mode.....	1035
4.31.1.2 Preset MPL Entry.....	1036
4.31.2 MPL List	1036
4.31.2.1 MPL Alias.....	1037
4.31.2.2 Rx/TA Squelch Type.....	1037
4.31.2.3 Rx/TA PL Frequency.....	1037
4.31.2.4 Rx/TA PL Code.....	1039
4.31.2.5 Rx/TA DPL Code.....	1040
4.31.2.6 Rx/TA DPL Invert.....	1042
4.31.2.7 Tx Squelch Type.....	1042

4.31.2.8 Tx PL Frequency.....	1042
4.31.2.9 Tx PL Code.....	1043
4.31.2.10 Tx DPL Code.....	1045
4.31.2.11 Tx DPL Invert.....	1046
4.31.2.12 Direct Squelch Type.....	1046
4.31.2.13 Direct PL Frequency.....	1046
4.31.2.14 Direct PL Code.....	1047
4.31.2.15 Direct DPL Code.....	1048
4.31.2.16 Direct DPL Invert.....	1049
4.32 Conventional Alias List	1050
4.32.1 Message Alias List.....	1050
4.32.1.1 Message Alias Number.....	1051
4.32.1.2 Message Alias Text.....	1051
4.32.2 Status Alias List.....	1051
4.32.2.1 Status Alias Number.....	1052
4.32.2.2 Status Alias Text.....	1052
4.33 Repeater ID List.....	1052
4.33.1 Repeater ID.....	1052
4.34 ASTRO Talkgroup List	1053
4.34.1 General.....	1053
4.34.1.1 ASTRO Talkgroup List Name.....	1053
4.34.1.2 Talkgroup Alias.....	1053
4.34.1.3 ASTRO OTAR Profile Index.....	1054
4.34.2 Talkgroup List.....	1054
4.34.2.1 Talkgroup Alias Text.....	1054
4.34.2.2 Talkgroup ID.....	1055
4.34.2.3 Voice Secure/Clear Strapping.....	1055
4.34.2.4 Key Select.....	1056
4.35 Conventional System.....	1056
4.35.1 General.....	1056
4.35.1.1 System Type.....	1056
4.35.1.2 ASTRO System.....	1057
4.35.1.3 MDC System.....	1062
4.35.2 DVRS.....	1068
4.35.2.1 Talk Permit Tone.....	1068
4.35.2.2 Emergency Blocked in Failsoft.....	1068
4.35.2.3 Call Type.....	1068
4.35.2.4 TA After DVRS No Communication Attempts.....	1069
4.35.2.5 Out of DVRS Range Time	1069

4.35.2.6 End Out of Range on Analog Rx.....	1070
4.35.2.7 Fast Retry Time.....	1070
4.35.2.8 Attachment Retries.....	1070
4.35.2.9 Bypass Quick Key Voice Channel Access.....	1071
4.35.2.10 Phase 2 System Compatibility.....	1071
4.35.2.11 Dynamic Regrouping Enable.....	1072
4.35.2.12 Dynamic Regrouping Zone.....	1072
4.35.2.13 Dynamic Regrouping Channel.....	1073
4.35.2.14 Individual Call Max Target Ring Time.....	1073
4.35.2.15 Private Call Max Initial Ring.....	1074
4.35.2.16 Force Unmute Time	1074
4.35.2.17 PTT Warning Time.....	1074
4.35.2.18 Busy Update Time	1075
4.35.2.19 DVR Sync NAC Matching.....	1075
4.35.2.20 Talkaround Audio Mode.....	1075
4.35.2.21 Prefer Talkaround in NoComms.....	1076
4.35.2.22 Response Pending Time.....	1076
4.35.3 Quik-Call II.....	1077
4.35.3.1 Call Format.....	1077
4.35.3.2 Frequency.....	1077
4.35.3.3 Code.....	1078
4.35.3.4 Name (Quik-Call II).....	1079
4.35.3.5 QCII Decode.....	1079
4.35.4 Features.....	1079
4.35.4.1 Radio Inhibit.....	1079
4.35.4.2 Text Messaging Service.....	1080
4.35.4.3 Radio Check.....	1080
4.35.4.4 Send Location to Peer.....	1081
4.35.4.5 Status.....	1081
4.35.4.6 Select Call/In-Call Reset.....	1081
4.35.4.7 Status Request.....	1083
4.35.4.8 Auto Reset Time.....	1083
4.35.4.9 Message.....	1083
4.35.4.10 Remote Radio Mode.....	1084
4.35.4.11 Dynamic ID Enable.....	1084
4.35.4.12 Tx Base Time.....	1084
4.35.4.13 Emergency Alarm Rx Indicator.....	1085
4.35.4.14 Data Operated Squelch (DOS).....	1085
4.35.4.15 Emergency Ack Enable.....	1085

4.35.4.16 DOS Operation.....	1086
4.35.4.17 POP25 Enable.....	1086
4.35.4.18 DOS Coast Time.....	1086
4.35.4.19 CAI Data Registration.....	1086
4.35.4.20 Extended Dispatch Enable.....	1087
4.35.4.21 Group Text Messaging Service.....	1087
4.35.4.22 Personnel Accountability List Selection.....	1088
4.35.4.23 OTA Radio Alias Update Enable.....	1088
4.35.4.24 Qualify Emergency Alarm Rx.....	1088
4.35.5 Secure.....	1088
4.35.5.1 ASTRO OTAR Profile Index.....	1088
4.35.5.2 Patch Key Select.....	1089
4.35.5.3 Failsoft Key Select.....	1089
4.35.5.4 Private Call Key Select.....	1090
4.35.5.5 Interconnect Key Select.....	1090
4.35.5.6 Dynamic Talkgroup Key Select.....	1090
4.36 Conventional Personality.....	1091
4.36.1 General.....	1091
4.36.1.1 Conventional Personality Name.....	1091
4.36.1.2 DVRS Profile	1091
4.36.1.3 Conventional Personality Type.....	1091
4.36.2 ASTRO Call.....	1092
4.36.2.1 Selective Call Rx/Tx.....	1092
4.36.2.2 Tactical Inhibit Kill Operation.....	1092
4.36.2.3 Auto Selective Call Transmit.....	1093
4.36.2.4 Tactical Inhibit Stun Operation.....	1094
4.36.2.5 Call Alert Rx/Tx.....	1095
4.36.2.6 ASTRO Unlimited Calling.....	1095
4.36.2.7 In-Call User Alert Enable.....	1096
4.36.2.8 ASTRO Call Hot List.....	1097
4.36.2.9 Tactical Services Operation.....	1097
4.36.2.10 Radio Uninhibit Decode Action.....	1097
4.36.2.11 Remote Monitor Frequency Option.....	1098
4.36.2.12 Remote Monitor Tx/Rx Timer (sec).....	1098
4.36.3 ASTRO Talkgroup.....	1098
4.36.3.1 Talkgroup.....	1098
4.36.3.2 Selection Type.....	1099
4.36.3.3 Talkgroup List.....	1099
4.36.4 Tx Options.....	1099

4.36.4.1 Tx Voice/Signal Type.....	1100
4.36.4.2 Time Out Timer.....	1100
4.36.4.3 Transmit Pre-Emphasis.....	1101
4.36.4.4 Reverse Burst/Turn-Off Code.....	1101
4.36.4.5 Transmit Power Level.....	1101
4.36.4.6 Adaptive Power.....	1101
4.36.4.7 Talk Permit Tone.....	1102
4.36.5 Signaling.....	1102
4.36.5.1 ASTRO System.....	1102
4.36.5.2 Emergency PTT ID.....	1103
4.36.5.3 ASTRO Digital Modulator Type.....	1103
4.36.5.4 Emergency Revert Type.....	1103
4.36.5.5 ASTRO Rx Unmute Rule.....	1104
4.36.5.6 Emergency Revert Zone.....	1105
4.36.5.7 ASTRO Late Entry Fast Unmute.....	1105
4.36.5.8 Emergency Revert Channel.....	1105
4.36.5.9 Tone Signaling List.....	1106
4.36.5.10 Revert Talkgroup.....	1106
4.36.5.11 Non-ASTRO Signaling Type	1107
4.36.5.12 Revert TG Secure/Clear Strapping.....	1107
4.36.5.13 System Number.....	1108
4.36.5.14 Revert TG Key Select.....	1108
4.36.5.15 Non-ASTRO PTT ID.....	1108
4.36.6 Secure.....	1108
4.36.6.1 Secure Voice/Signal Type.....	1109
4.36.6.2 XL Transmit.....	1109
4.36.6.3 DES-XL Tx Default.....	1109
4.36.6.4 Voice Secure/Clear Strapping.....	1110
4.36.6.5 Voice Key Strapping.....	1110
4.36.6.6 Voice Key Select.....	1111
4.36.6.7 Ignore Rx Clear Voice.....	1111
4.36.6.8 Packet Data Secure/Clear Strapping.....	1111
4.36.6.9 Packet Data Key Select.....	1112
4.36.6.10 Ignore Rx Clear Packet Data.....	1112
4.36.6.11 Proper Code Detect.....	1113
4.36.6.12 OTAR Tx.....	1113
4.36.6.13 ASTRO OTAR.....	1114
4.36.6.14 ASTRO OTAR Profile Index.....	1115
4.36.6.15 Echo Mute Time.....	1115

4.36.6.16 Scan Select.....	1116
4.36.6.17 Scan Holdoff Strapping.....	1116
4.36.6.18 Key ID.....	1117
4.36.6.19 XL Delay Following Key ID.....	1117
4.36.6.20 Broadband ASTRO OTAR.....	1117
4.36.7 Non-ASTRO Call.....	1118
4.36.7.1 Selective Call Rx/Tx	1118
4.36.7.2 MDC RTT Button Access.....	1119
4.36.7.3 Unmute Type.....	1119
4.36.7.4 MDC Auto Select Call Transmit.....	1120
4.36.7.5 Call Alert Rx/Tx.....	1120
4.36.7.6 MDC Unlimited Calling.....	1121
4.36.7.7 In-Call User Alert Enable.....	1121
4.36.7.8 Non-ASTRO Call Hot List.....	1122
4.36.8 Advanced.....	1122
4.36.8.1 Advanced RF AGC.....	1122
4.36.8.2 Broadband Protection.....	1122
4.36.8.3 Second LO Side Injection.....	1123
4.36.8.4 Analog Flat Audio.....	1123
4.36.8.5 Analog Wideband Data.....	1124
4.36.8.6 Disable High Pass Filter.....	1124
4.36.9 Frequency Options.....	1125
4.36.9.1 LTE Interference Frequency Present.....	1125
4.36.9.2 Rx/TA DPL Code.....	1125
4.36.9.3 Frequency Options Name.....	1127
4.36.9.4 Rx/TA DPL Invert.....	1128
4.36.9.5 Rx/TA Frequency.....	1128
4.36.9.6 Tx Squelch Type.....	1129
4.36.9.7 Tx Frequency.....	1130
4.36.9.8 Tx PL Frequency.....	1130
4.36.9.9 Direct/Talkaround.....	1132
4.36.9.10 Tx PL Code.....	1133
4.36.9.11 Tx Deviation/Channel Spacing.....	1134
4.36.9.12 Tx DPL Code.....	1135
4.36.9.13 Rx Network ID.....	1136
4.36.9.14 Tx DPL Invert.....	1137
4.36.9.15 Tx Network ID.....	1137
4.36.9.16 Mixed Vote Scan Persistent Member.....	1138
4.36.9.17 Direct Network ID.....	1138

4.36.9.18 Direct Frequency.....	1139
4.36.9.19 ASTRO Talkgroup ID.....	1140
4.36.9.20 Direct Squelch Type.....	1141
4.36.9.21 User Selectable PL [MPL].....	1142
4.36.9.22 Direct PL Frequency.....	1143
4.36.9.23 Rx/TA Squelch Type.....	1144
4.36.9.24 Direct PL Code.....	1145
4.36.9.25 Rx/TA PL Frequency.....	1146
4.36.9.26 Direct DPL Code.....	1148
4.36.9.27 Rx/TA PL Code.....	1149
4.36.9.28 Direct DPL Invert.....	1151
4.36.10 Features.....	1151
4.36.10.1 Tactical Rekey Enable.....	1152
4.36.10.2 Hot Keypad.....	1152
4.36.10.3 DTMF Mic Enable.....	1152
4.36.10.4 End Tx on Voice Absence.....	1152
4.36.10.5 RF Modem.....	1153
4.36.10.6 Scan List Selection.....	1153
4.36.10.7 Automatic Scan.....	1155
4.36.10.8 Mixed Vote Scan Enable.....	1155
4.36.10.9 Mixed Vote Scan Tx Steering.....	1155
4.36.10.10 Smart PTT Type.....	1156
4.36.10.11 Quick Key Override.....	1157
4.36.10.12 Incident Signaling Type.....	1157
4.36.10.13 Tactical Public Safety UI Enable.....	1158
4.36.10.14 Personnel Accountability Registration.....	1158
4.36.10.15 Tx Voice Type.....	1159
4.36.10.16 OTA Radio Alias Type.....	1159
4.36.10.17 OTA Radio Alias Update Enable.....	1160
4.36.10.18 Conventional RSSI Display.....	1160
4.36.10.19 RSSI Display Timer.....	1160
4.36.10.20 Hazard Zone Mode Personality.....	1161
4.36.10.21 Polite DVRS Inbound PTT Request.....	1161
4.36.10.22 OTACR/OTACS Messaging.....	1161
4.36.11 Rx Options.....	1162
4.36.11.1 Receive Only Personality.....	1162
4.36.11.2 Rx Voice/Signal Type.....	1162
4.36.11.3 Unmute/Mute Type.....	1163
4.36.11.4 Rx Unmute Delay.....	1163

4.36.11.5 Squelch (Fine Tune).....	1163
4.36.11.6 Busy LED.....	1164
4.36.11.7 Rx De-Emphasis.....	1164
4.36.11.8 HearClear.....	1164
4.36.11.9 Concurrent Rx Enable.....	1165
4.36.12 Phone.....	1165
4.36.12.1 Phone Operation.....	1165
4.36.12.2 DTMF Timing Select.....	1166
4.36.12.3 Auto Access Code Select.....	1166
4.36.13 One Touch.....	1166
4.36.13.1 One Touch Button Feature.....	1167
4.36.13.2 One Touch Button Index.....	1168
4.36.13.3 Abbreviated One Touch Alias.....	1168
4.36.14 Repeater Access (RAC).....	1169
4.36.14.1 Repeater Access.....	1169
4.36.14.2 Access Type.....	1169
4.36.14.3 Singleton List Selection.....	1170
4.36.14.4 Code Type 1 for Repeater Access Button 1 (RAB1) or PTT.....	1170
4.36.14.5 MDC Repeater ID 1 for RAB1 or PTT.....	1170
4.36.14.6 Singleton Alias Selection for RAB1 or PTT.....	1171
4.36.14.7 Code Type 2 for RAB2.....	1171
4.36.14.8 MDC Repeater ID 2 for RAB2.....	1172
4.36.14.9 Singleton Alias Selection for Repeater Access Button 2 (RAB2).....	1172
4.37 Trunking Wide.....	1172
4.37.1 General.....	1172
4.37.1.1 Individual Call Max Target Ring Time.....	1173
4.37.1.2 Private Call Max Initial Ring.....	1173
4.37.1.3 Phone Auto Dial Holdoff.....	1173
4.37.1.4 Emergency Blocked In Failsoft.....	1174
4.37.1.5 AFC Disable.....	1174
4.37.1.6 Bypass Quick Key Voice Channel Access.....	1174
4.37.2 CAI Data.....	1175
4.37.2.1 Max Tx Attempts.....	1175
4.37.2.2 Response Timer.....	1175
4.37.2.3 Min Response Time.....	1175
4.37.2.4 Frame Sync Seek Period.....	1176
4.37.2.5 Tx Short Random Range.....	1176
4.37.2.6 Tx Long Random Range.....	1176
4.37.2.7 Tx Resp Random Range.....	1177

4.37.2.8 Tx Limited Patience.....	1177
4.37.3 Filter Constants.....	1178
4.37.3.1 Filter Constant K1.....	1178
4.37.3.2 Filter Constant K2.....	1178
4.37.3.3 Filter Constant K3.....	1179
4.37.3.4 Filter Threshold Constant T1.....	1179
4.37.3.5 Filter Threshold Constant T2.....	1180
4.37.3.6 Filter Threshold Constant T3.....	1181
4.37.4 RSSI Thresholds.....	1182
4.37.4.1 RSSI OSW Counter.....	1182
4.37.4.2 RSSI OSP Counter.....	1182
4.37.4.3 Desense Timer.....	1182
4.37.4.4 RSSI Acceptable Threshold.....	1183
4.37.4.5 RSSI Good Threshold.....	1183
4.37.4.6 RSSI Very Good Threshold.....	1184
4.37.4.7 RSSI Excellent Threshold.....	1184
4.37.4.8 Strong Signal Roaming.....	1184
4.37.4.9 Leave LMR RSSI Threshold.....	1185
4.37.5 Advanced.....	1185
4.37.5.1 SmartZone Failsoft Inactivity.....	1185
4.37.5.2 SmartZone Affiliation Hold Off.....	1185
4.37.5.3 SmartZone Full Spectrum Control Channel Scan.....	1186
4.37.5.4 SmartZone Full Spectrum Control Channel Scan Timer.....	1186
4.37.5.5 SmartZone Internal Radio Holdoff.....	1186
4.37.5.6 SmartZone Holdoff Delay.....	1187
4.37.5.7 ISW Window Adjustment.....	1187
4.37.5.8 ViQi: Virtual Partner Call Activity Timer (sec).....	1187
4.38 Trunking System.....	1188
4.38.1 General.....	1188
4.38.1.1 Trunking System Name.....	1188
4.38.1.2 Unit ID.....	1189
4.38.1.3 System Key Type.....	1189
4.38.1.4 Type II Frequency Band.....	1189
4.38.1.5 System Key Present.....	1189
4.38.1.6 Connect Tone.....	1190
4.38.1.7 System Type.....	1190
4.38.1.8 Failsoft Connect Tone.....	1190
4.38.1.9 Coverage Type.....	1190
4.38.1.10 Network ID.....	1192

4.38.1.11 Home WACN ID.....	1192
4.38.1.12 RFSS Response Time.....	1193
4.38.1.13 System ID.....	1193
4.38.1.14 RFSS Debounce Timer.....	1193
4.38.1.15 RFSS ID.....	1193
4.38.1.16 Non-Adjacent Site Search.....	1194
4.38.1.17 Site ID.....	1194
4.38.1.18 Data Profile Selection.....	1195
4.38.1.19 ASK Required.....	1195
4.38.2 OBT Channel Assignment.....	1195
4.38.2.1 Rx Enable.....	1196
4.38.2.2 Tx Enable.....	1196
4.38.2.3 Rx Spacing.....	1196
4.38.2.4 Tx Spacing.....	1197
4.38.2.5 Rx Start Frequency.....	1197
4.38.2.6 Tx Start Frequency.....	1197
4.38.2.7 Rx End Frequency.....	1198
4.38.2.8 Tx End Frequency.....	1198
4.38.3 Control Channels.....	1198
4.38.3.1 Rx Frequency.....	1198
4.38.3.2 Tx Frequency.....	1199
4.38.4 ASTRO 25 Channel ID.....	1199
4.38.4.1 LTE Interference Frequency Present.....	1199
4.38.4.2 Transmit Offset.....	1200
4.38.4.3 Identifier Enable.....	1200
4.38.4.4 Channel Spacing.....	1200
4.38.4.5 Channel Type.....	1200
4.38.4.6 Base Frequency.....	1201
4.38.4.7 Transmit Offset Sign.....	1201
4.38.5 ASTRO 25.....	1201
4.38.5.1 Motorola Proprietary Features.....	1202
4.38.5.2 Default RCM ID.....	1202
4.38.5.3 ISP Sequence Length.....	1202
4.38.5.4 End X2 TDMA Transmit On Out of Range.....	1202
4.38.5.5 Maximum Slot Size.....	1203
4.38.5.6 X2 Voice Capable.....	1203
4.38.5.7 Force Unmute Time.....	1203
4.38.5.8 End Phase 2 TDMA Transmit On Out Of Range.....	1204
4.38.5.9 Quick Fade Protect.....	1204

4.38.5.10 Phase 2 Voice Capable.....	1204
4.38.5.11 PTT Warning Time.....	1204
4.38.5.12 Validate NAC Against System ID.....	1205
4.38.5.13 Busy Update Time.....	1205
4.38.5.14 WUID Validity Support.....	1206
4.38.5.15 Response Pending Time.....	1206
4.38.5.16 Geofence Mode.....	1206
4.38.6 Features.....	1207
4.38.6.1 DTMF Timing Select.....	1207
4.38.6.2 Emergency Alarm Rx Indicator.....	1208
4.38.6.3 Radio Inhibit.....	1208
4.38.6.4 Secure LED.....	1209
4.38.6.5 POP25 Enable.....	1209
4.38.6.6 ICUA Reset.....	1209
4.38.6.7 Text Messaging Service.....	1210
4.38.6.8 ICUA Auto Reset Time.....	1210
4.38.6.9 TX Power Level.....	1211
4.38.6.10 Site Selectable Alert List Selection.....	1211
4.38.6.11 HearClear.....	1211
4.38.6.12 Busy LED.....	1212
4.38.6.13 Dynamic Regrouping Enable.....	1212
4.38.6.14 Remote Monitor/Radio Trace Enable.....	1213
4.38.6.15 Dynamic Regrouping Zone.....	1213
4.38.6.16 Remote Monitor/Radio Trace Tx Base Time.....	1214
4.38.6.17 Dynamic Regrouping Channel.....	1214
4.38.6.18 Group Text Messaging Service.....	1215
4.38.6.19 OTA Radio Alias Type.....	1215
4.38.6.20 Personnel Accountability List Selection.....	1215
4.38.6.21 Location on PTT.....	1215
4.38.6.22 OTA Radio Alias Update Enable.....	1216
4.38.6.23 Enable Intermediate Hunt.....	1216
4.38.7 Message Alias.....	1216
4.38.7.1 Message Alias Enable.....	1217
4.38.7.2 Message Alias Number.....	1217
4.38.7.3 Message Alias Text.....	1217
4.38.8 Status Alias.....	1218
4.38.8.1 Status Alias Enable.....	1218
4.38.8.2 Status Alias Number.....	1218
4.38.8.3 Status Alias Text.....	1219

4.38.9 Type II Channel Setup.....	1219
4.38.9.1 Splinter Channel.....	1220
4.38.9.2 Shuffled Band Plan.....	1220
4.38.9.3 Legacy Transit System.....	1220
4.38.9.4 Channel Bandwidth.....	1220
4.38.9.5 NPSPAC Channel Bandwidth.....	1221
4.38.9.6 Channel Assignment Type.....	1221
4.38.10 Site Alias.....	1222
4.38.10.1 Site Alias Enable.....	1222
4.38.10.2 RFSS Alias Number.....	1222
4.38.10.3 Site ID.....	1223
4.38.10.4 Site Alias Text.....	1223
4.38.10.5 Site Alias Type.....	1223
4.38.10.6 System Number.....	1224
4.38.10.7 Home RAS WACN Number.....	1225
4.38.11 Digital.....	1225
4.38.11.1 Adaptive Power.....	1225
4.38.11.2 High Deviation Tx.....	1226
4.38.11.3 Preamble Length.....	1226
4.38.11.4 Digital Modulator Type.....	1226
4.38.11.5 TDMA Frame Sync BER Threshold.....	1227
4.38.11.6 FDMA Frame Sync/NID BER Threshold.....	1227
4.38.12 Secure/Multikey.....	1227
4.38.12.1 DES-XL Tx/Rx Default.....	1227
4.38.12.2 Private Call Key Select.....	1228
4.38.12.3 OTAR Tx.....	1228
4.38.12.4 Interconnect Key Select.....	1228
4.38.12.5 ASTRO OTAR Profile Index.....	1229
4.38.12.6 System Wide Key Select.....	1230
4.38.12.7 Patch Key Select.....	1230
4.38.12.8 Dynamic Talkgroup Key Select.....	1231
4.38.12.9 Failsoft Key Select.....	1231
4.38.12.10 Dynamic AG Key Select.....	1232
4.38.12.11 Failsoft Secure/Clear Strapping.....	1232
4.38.12.12 Auto Key ID Rx.....	1232
4.38.12.13 Interconnect Secure/Clear Strapping.....	1232
4.38.12.14 Private Call Secure/Clear Strapping.....	1233
4.38.12.15 Dynamic Regrouping Secure/Clear Strapping.....	1233
4.38.12.16 Secure/Clear Strapping.....	1233

4.38.13 One Touch.....	1234
4.38.13.1 One Touch Button Feature.....	1234
4.38.13.2 One Touch Button Index.....	1234
4.38.13.3 Abbreviated One Touch Alias.....	1235
4.39 Trunking Personality.....	1235
4.39.1 General.....	1236
4.39.1.1 System.....	1236
4.39.1.2 Rx Failsft Frequency by Personality.....	1236
4.39.1.3 Protocol Type.....	1237
4.39.1.4 Tx Failsft Frequency by Personality.....	1237
4.39.1.5 Unit ID.....	1237
4.39.1.6 Secondary Failsft by Personality.....	1237
4.39.1.7 System ID.....	1238
4.39.1.8 Secondary Rx Failsft Frequency by Personality.....	1238
4.39.1.9 Trunking Personality Name.....	1238
4.39.1.10 Secondary Tx Failsft Frequency by Personality.....	1239
4.39.1.11 Time Out Timer.....	1239
4.39.1.12 Advanced RF AGC.....	1239
4.39.1.13 Emergency Talkback Revert Talkgroup ID.....	1240
4.39.1.14 Emergency Talkback Revert Voice/Signal Type.....	1240
4.39.1.15 Conversation Type.....	1240
4.39.1.16 Emergency Talkback Revert Secure/Clear Strapping.....	1241
4.39.1.17 Failsft Type.....	1241
4.39.1.18 Emergency Talkback Revert Key Select.....	1243
4.39.1.19 Transmit Mode.....	1243
4.39.1.20 Emergency System Revert Zone.....	1244
4.39.1.21 Emergency Profile Selection.....	1244
4.39.1.22 Emergency System Revert Channel.....	1245
4.39.1.23 Emergency Revert Type.....	1245
4.39.1.24 DVRS Profile.....	1246
4.39.1.25 Strict Failsft by Talkgroup.....	1246
4.39.2 Announcement Group.....	1246
4.39.2.1 Announcement Group.....	1246
4.39.2.2 AG Failsft Tx Frequency.....	1247
4.39.2.3 AG Voice/Signal Type.....	1247
4.39.2.4 AG Secondary Failsft.....	1247
4.39.2.5 AG Secure/Clear Strapping.....	1247
4.39.2.6 AG Secondary F/S Rx Frequency.....	1248
4.39.2.7 AG Key Select.....	1248

4.39.2.8 AG Secondary F/S Tx Frequency.....	1249
4.39.2.9 Announcement Group Failsoft.....	1249
4.39.2.10 AG System ID.....	1250
4.39.2.11 AG Failsoft Rx Frequency.....	1250
4.39.2.12 AG WACN ID.....	1250
4.39.2.13 ASTRO OTAR Profile Index.....	1250
4.39.3 Talkgroup.....	1251
4.39.3.1 Talkgroup Name.....	1251
4.39.3.2 Failsoft Tx Frequency.....	1251
4.39.3.3 Talkgroup ID.....	1252
4.39.3.4 TG Secondary Failsoft.....	1252
4.39.3.5 Tx Voice/Signal Type.....	1252
4.39.3.6 Secondary Failsoft Rx Frequency.....	1252
4.39.3.7 Secure/Clear Strapping.....	1253
4.39.3.8 Secondary Failsoft Tx Frequency.....	1253
4.39.3.9 Key Select.....	1253
4.39.3.10 TG System ID.....	1254
4.39.3.11 Talkgroup Failsoft.....	1254
4.39.3.12 TG WACN ID.....	1255
4.39.3.13 Failsoft Rx Frequency.....	1255
4.39.3.14 Priority Talkgroup.....	1255
4.39.3.15 ASTRO OTAR Profile Index.....	1255
4.39.4 Call/Page.....	1256
4.39.4.1 Private Call Type.....	1256
4.39.4.2 In-Call User Alert Enable.....	1257
4.39.4.3 Private Call Operation.....	1257
4.39.4.4 Automatic Call Alert.....	1258
4.39.4.5 Call Alert/Page Operation.....	1258
4.39.4.6 Tone Signaling List.....	1259
4.39.4.7 Trunking Call Hot List.....	1259
4.39.5 Features.....	1259
4.39.5.1 Phone Operation.....	1259
4.39.5.2 Secure Proper Code Detect.....	1260
4.39.5.3 Scan List Selection.....	1260
4.39.5.4 Ignore Rx Clear Voice.....	1261
4.39.5.5 Automatic Scan.....	1261
4.39.5.6 DTMF Mic Enable.....	1262
4.39.5.7 Status Enable.....	1262
4.39.5.8 Hot Keypad (DTMF).....	1262

4.39.5.9 Message Enable.....	1262
4.39.5.10 End Tx on Voice Absence.....	1263
4.39.5.11 Talk Permit Tone.....	1263
4.39.5.12 Tactical Public Safety UI Enable.....	1263
4.39.5.13 Priority Dispatch Time Out Timer.....	1263
4.39.5.14 SmartConnect Operation.....	1264
4.39.5.15 Hazard Zone Mode Personality.....	1264
4.39.6 Preferred Sites.....	1264
4.39.6.1 Ignore Site Resource Preference.....	1265
4.39.6.2 Site ID.....	1265
4.39.6.3 Preferred Status.....	1265
4.39.6.4 RFSS ID.....	1266
4.39.6.5 System ID.....	1266
4.39.6.6 RAS WACN ID.....	1267
4.39.6.7 Site List Type.....	1267
4.39.6.8 Allow Emergency at Blocked Site.....	1268
4.39.6.9 Wildcard.....	1268
4.39.7 Advanced.....	1268
4.39.7.1 Broadband Protection.....	1268
4.40 Call List Wide.....	1268
4.40.1 UCL Editable.....	1269
4.40.2 Hot List Editable.....	1269
4.40.3 Phone Number Editable.....	1269
4.40.4 Radio ID Editable.....	1269
4.40.5 Contact Data Order Indicator.....	1269
4.41 Unified Call List.....	1270
4.41.1 General.....	1270
4.41.1.1 Contact Name.....	1270
4.41.2 ASTRO 25 Trunking ID.....	1271
4.41.2.1 System Name.....	1271
4.41.2.2 RAS WACN ID.....	1271
4.41.2.3 Custom WACN ID.....	1272
4.41.2.4 System ID.....	1272
4.41.2.5 Custom System ID.....	1272
4.41.2.6 Unit ID.....	1272
4.41.2.7 Call ID (Hidden Field).....	1273
4.41.3 Type II Trunking ID.....	1273
4.41.3.1 System Name.....	1273
4.41.3.2 System ID.....	1274

4.41.3.3 Custom System ID.....	1274
4.41.3.4 Unit ID.....	1274
4.41.4 ASTRO Conventional ID.....	1274
4.41.4.1 System Name.....	1275
4.41.4.2 System Group Number.....	1275
4.41.4.3 Custom Group Number.....	1275
4.41.4.4 Individual ID.....	1275
4.41.4.5 Call Type.....	1276
4.41.5 MDC Conventional ID.....	1276
4.41.5.1 System Name.....	1276
4.41.5.2 System Group Number.....	1277
4.41.5.3 Custom Group Number.....	1277
4.41.5.4 Primary ID.....	1277
4.41.6 Phone Number.....	1277
4.41.6.1 Number.....	1278
4.41.6.2 Category.....	1278
4.41.6.3 Call ID (Hidden Field).....	1278
4.42 ASTRO 25 Trunking Hot List	1278
4.42.1 Hot List Alias.....	1279
4.42.2 Contact.....	1279
4.42.3 Call ID.....	1279
4.43 Type II Trunking Hot List.....	1279
4.43.1 Hot List Alias.....	1280
4.43.2 Contact.....	1280
4.43.3 Call ID.....	1280
4.44 ASTRO Conventional Hot List.....	1280
4.44.1 Hot List Alias.....	1281
4.44.2 Contact.....	1281
4.44.3 Call ID.....	1281
4.45 MDC Conventional Hot List.....	1281
4.45.1 Hot List Alias.....	1282
4.45.2 Contact.....	1282
4.45.3 Call ID.....	1282
4.46 Phone Hot List.....	1282
4.46.1 Contact.....	1283
4.46.2 Call ID.....	1283
4.47 Zones Channel Assignment.....	1283
4.47.1 Zone.....	1284
4.47.1.1 Position.....	1284

4.47.1.2 Zone Names.....	1284
4.47.1.3 Top Display Zone Name.....	1284
4.47.1.4 Dynamic Zone Enable.....	1285
4.47.1.5 Clone Enable.....	1285
4.47.1.6 Zone Announcement.....	1286
4.47.1.7 Zone Voice Control Name or TTS Announcement.....	1287
4.47.2 FPP/Protection.....	1287
4.47.2.1 Protected Zone.....	1287
4.47.2.2 FPP Enable.....	1287
4.47.3 Remote Site Interface.....	1288
4.47.3.1 RSI Mode.....	1289
4.47.3.2 Transmit Indication.....	1289
4.47.3.3 Site Number.....	1290
4.47.3.4 Autodial Enabled.....	1290
4.47.3.5 Time Between Dial Attempts.....	1291
4.47.3.6 Alternate Comparator DTLS Port Number.....	1291
4.47.3.7 Main Comparator Hostname.....	1292
4.47.3.8 Main Comparator DTLS Port Number.....	1292
4.47.3.9 Alternate Comparator Hostname.....	1292
4.47.3.10 Comparator Channel Number.....	1293
4.47.3.11 DTR Toggle Time.....	1293
4.47.4 Channels.....	1294
4.47.4.1 Position.....	1294
4.47.4.2 Conventional Frequency Option.....	1294
4.47.4.3 Channel Name.....	1294
4.47.4.4 Radio Profile Selection.....	1295
4.47.4.5 Channel Type.....	1295
4.47.4.6 Top Display Channel Name.....	1296
4.47.4.7 Personality.....	1296
4.47.4.8 Channel Announcement.....	1296
4.47.4.9 Channel Voice Control Name or TTS Announcement.....	1297
4.47.4.10 Trunking Talkgroup.....	1297
4.47.4.11 Personnel Accountability Sector ID.....	1298
4.47.4.12 Fallback Zone.....	1299
4.47.4.13 Fallback Channel.....	1299
4.47.4.14 Channel Color Backlight Selection.....	1299
4.47.4.15 Channel Color Backlight Selection (E5).....	1299
4.47.4.16 Wi-Fi.....	1300
4.48 Scan Wide.....	1300

4.48.1	General.....	1300
4.48.1.1	Priority Scan Alert.....	1301
4.48.1.2	HUB Suspends Scan.....	1301
4.48.1.3	Suspend All Scan.....	1301
4.48.1.4	Voice Rx Tx Hold Time.....	1301
4.48.1.5	Data Rx Tx Hold Time.....	1302
4.48.2	Conventional.....	1302
4.48.2.1	Carrier Detect Required.....	1302
4.48.2.2	Priority Channel Marking.....	1302
4.48.2.3	Monitor Hold Time.....	1303
4.48.2.4	Time Between Priority Samples.....	1303
4.48.2.5	RSSI Voting Threshold.....	1304
4.48.3	Trunking.....	1304
4.48.3.1	Failsoft Hold Time.....	1304
4.48.3.2	System Search Time.....	1305
4.49	Scan List.....	1305
4.49.1	General.....	1306
4.49.1.1	Scan List Alias.....	1306
4.49.1.2	Scan Type.....	1306
4.49.1.3	Trunking System Record.....	1309
4.49.1.4	Trunking System Type.....	1309
4.49.1.5	Dynamic Priority.....	1309
4.49.1.6	Priority 1 - Type.....	1309
4.49.1.7	Priority Member 1.....	1310
4.49.1.8	Priority 2 - Type.....	1310
4.49.1.9	Priority Member 2.....	1311
4.49.1.10	Non-Priority Members.....	1311
4.49.1.11	Designated Voice Tx Member Type.....	1311
4.49.1.12	Designated Voice Tx Member.....	1312
4.49.1.13	Designated Data Rx/Tx Type.....	1313
4.49.1.14	Designated Data Member.....	1313
4.49.2	Advanced.....	1313
4.49.2.1	Data Tx Limited Patience Timer.....	1314
4.49.2.2	Voting Scan Delay Timer.....	1314
4.49.2.3	Display Strongest Voted Channel.....	1314
4.49.2.4	Tx Steering.....	1315
4.49.2.5	Mixed Conventional Vote Scan Inactivity Timer.....	1315
4.49.3	Scan List Members.....	1315
4.49.3.1	Zone.....	1316

4.49.3.2 Channel..... 1316

Glossary..... 1318

List of Figures

Figure 1: Geofence Entry/Exit Events.....	277
Figure 2: TXM 2000 Transportable Mobile.....	1291

List of Tables

Table 1: Portable or Mobile Radio Features.....	81
Table 2: Selections.....	84
Table 3: Types of System.....	92
Table 4: Error Message.....	104
Table 5: Selections.....	111
Table 6: RM Services.....	140
Table 7: Status Selection.....	140
Table 8: Status Selection Buttons.....	141
Table 9: Selections of Right-Click Menu.....	143
Table 10: Serial Link 1 Subscriber IP Address and Network ID Portion.....	146
Table 11: Owner System ID Selections.....	147
Table 12: Range.....	148
Table 13: For Conventional System Type ASTRO or DVRS:.....	159
Table 14: For Conventional System Type MDC:.....	159
Table 15: For Trunking System:.....	160
Table 16: Data Profile Status.....	161
Table 17: Serial Link 1 Subscriber IP Address and Network ID Portion.....	161
Table 18: Serial Link 1 Peer IP Address and Network ID Portion.....	162
Table 19: Bluetooth DUN Subscriber IP Address and Network ID Portion.....	163
Table 20: Bluetooth DUN Peer IP Address and Network ID Portion.....	164
Table 21: Columns of Job View.....	166
Table 22: Columns of Radio.....	166
Table 23: Selections of Action Menu.....	167
Table 24: Columns of the Radio Details.....	171
Table 25: Buttons of the Radio View.....	172
Table 26: Job Types.....	173
Table 27: Range.....	185
Table 28: Managing groups and subgroups.....	190
Table 29: Assigning radios to groups and subgroups.....	191
Table 30: Selections of Templates.....	194
Table 31:	209
Table 32: RM Services.....	213
Table 33: Status Selection.....	213
Table 34: Status Selection Buttons.....	214
Table 35: Selections.....	216
Table 36: Geofence Fields.....	278

Table 37: Geofence Entry and Exit Actions.....	278
Table 38: Default Keypad Button Assignments.....	281
Table 39: Default Relay Patterns.....	281
Table 40: Default Relay Patterns.....	282
Table 41: Range.....	290
Table 42: Range.....	290
Table 43: Range.....	290
Table 44: Range.....	330
Table 45: Types of Tones Selection.....	331
Table 46: Range.....	332
Table 47: Range.....	332
Table 48: Range.....	334
Table 49: Range.....	336
Table 50: Range.....	336
Table 51: Range.....	348
Table 52: Range.....	349
Table 53: Range.....	351
Table 54: Icon Placement.....	351
Table 55: Defaults when Dual-Band is UHF R1 Mid Power / UHF R2 Mid Power.....	352
Table 56: Defaults when Dual-Band is UHF R1 High Power / UHF R2 Mid Power.....	353
Table 57: Range.....	355
Table 58: Range.....	356
Table 59: Range.....	357
Table 60: Range.....	359
Table 61: Range.....	373
Table 62: Example Relay Pattern.....	384
Table 63: Example Relay Pattern.....	387
Table 64: Example Relay Pattern.....	389
Table 65: Example Relay Pattern.....	391
Table 66: Example Relay Pattern.....	393
Table 67: Range.....	395
Table 68: Range.....	399
Table 69: Range.....	400
Table 70: Range.....	402
Table 71: Range.....	403
Table 72: Range.....	405
Table 73: Range.....	417
Table 74: Range.....	424
Table 75: Range.....	429

Table 76: Range.....	430
Table 77: Range.....	431
Table 78: Range.....	432
Table 79: Range.....	433
Table 80: Range.....	434
Table 81: Range.....	435
Table 82: Range.....	435
Table 83: Range.....	436
Table 84: Range.....	437
Table 85: Range.....	437
Table 86: Range.....	439
Table 87: Examples.....	453
Table 88: Examples.....	455
Table 89: Range.....	459
Table 90: Range.....	462
Table 91: Range.....	462
Table 92: Range.....	466
Table 93: Range.....	466
Table 94: Range.....	467
Table 95: Range.....	468
Table 96: Legend for Button Selection Symbols.....	468
Table 97: Button Selections.....	469
Table 98: Legend for Menu Item Selection Symbols.....	515
Table 99: Range.....	549
Table 100: Range.....	549
Table 101: Legend for Button Selection Symbols.....	573
Table 102: Button Selections.....	574
Table 103: Legend for Button Selection Symbols.....	608
Table 104: Button Selections.....	609
Table 105: Legend for Button Selection Symbols.....	623
Table 106: Button Selections.....	624
Table 107: Legend for Button Selection Symbols.....	651
Table 108: Button Selections.....	652
Table 109: Legend for Button Selection Symbols.....	666
Table 110: Button Selections.....	667
Table 111: Mobile Control Head O3/O7/O9 and Keypad Mic Functions.....	699
Table 112: Legend for Menu Item Selection Symbols.....	705
Table 113: Range.....	773
Table 114: Types of Alert Selections.....	774

Table 115: Range.....	778
Table 116: Range.....	779
Table 117: Range.....	781
Table 118: Range.....	783
Table 119: Selections.....	783
Table 120: Range.....	786
Table 121: Range.....	792
Table 122: Range.....	793
Table 123: Range.....	793
Table 124: Range.....	794
Table 125: Range.....	794
Table 126: Range.....	795
Table 127: Range.....	795
Table 128: Range.....	796
Table 129: Range.....	796
Table 130: Range.....	797
Table 131: Range.....	798
Table 132: Range.....	799
Table 133: Range.....	799
Table 134: Range.....	799
Table 135: Range.....	800
Table 136: Range.....	800
Table 137: Range.....	800
Table 138: Range.....	801
Table 139: Range.....	802
Table 140: Range.....	802
Table 141: Range.....	803
Table 142: Range.....	804
Table 143: Range.....	804
Table 144: Range.....	804
Table 145: Range.....	805
Table 146: Range.....	805
Table 147: Range.....	806
Table 148: Range.....	807
Table 149: Range.....	808
Table 150: Range.....	810
Table 151: Range.....	810
Table 152: Range.....	816
Table 153: Range.....	818

Table 154: Range.....	820
Table 155: Range.....	821
Table 156: Range.....	823
Table 157: Range.....	824
Table 158: Range.....	825
Table 159: Range.....	827
Table 160: Range.....	828
Table 161: Range.....	829
Table 162: Range.....	829
Table 163: Range.....	831
Table 164: Range.....	832
Table 165: Range.....	833
Table 166: Range.....	833
Table 167: Range.....	833
Table 168: Range.....	834
Table 169: Range.....	835
Table 170: Range.....	835
Table 171: Range.....	836
Table 172: Range.....	837
Table 173: Range.....	837
Table 174: Range.....	837
Table 175: Range.....	838
Table 176: Range.....	838
Table 177: Range.....	838
Table 178: Range.....	839
Table 179: Acoustic Feedback Suppression Supported Accessory Models.....	839
Table 180: Range.....	839
Table 181: Range.....	840
Table 182: Range.....	845
Table 183: Frequencies.....	846
Table 184: Frequencies.....	848
Table 185: Range.....	851
Table 186: Range.....	853
Table 187: Range.....	853
Table 188: Range.....	853
Table 189: Range.....	878
Table 190: Range.....	887
Table 191: Range.....	888
Table 192: Range.....	890

Table 193: Range.....	891
Table 194: Range.....	893
Table 195: Range.....	896
Table 196: Range.....	898
Table 197: Range.....	899
Table 198: Range.....	900
Table 199: Range.....	907
Table 200: Range.....	907
Table 201: Range.....	909
Table 202: Range.....	911
Table 203: Range.....	911
Table 204: Range.....	912
Table 205: Range.....	913
Table 206: Range.....	914
Table 207: Range.....	919
Table 208: Range.....	922
Table 209: Range.....	922
Table 210: Range.....	930
Table 211: Range.....	930
Table 212: Range.....	930
Table 213: Range.....	931
Table 214: Range.....	932
Table 215: Range.....	932
Table 216: Range.....	935
Table 217: Range.....	936
Table 218: Range.....	938
Table 219: Range.....	938
Table 220: Range.....	942
Table 221: Range.....	942
Table 222: Range.....	942
Table 223: Range.....	943
Table 224: Range.....	948
Table 225: Range.....	948
Table 226: Range.....	960
Table 227: Range.....	960
Table 228: Range.....	963
Table 229: Range.....	963
Table 230: Range.....	966
Table 231: Range.....	966

Table 232: Range.....	967
Table 233: Range.....	967
Table 234: Range.....	967
Table 235: Range.....	968
Table 236: Range.....	969
Table 237: Range.....	971
Table 238: Range.....	971
Table 239: Range.....	972
Table 240: Range.....	973
Table 241: Range.....	974
Table 242: Range.....	974
Table 243: Range.....	976
Table 244: Range.....	976
Table 245: Range.....	977
Table 246: Range.....	978
Table 247: Range.....	979
Table 248: Range.....	979
Table 249: Range.....	980
Table 250: Range.....	983
Table 251: Range.....	984
Table 252: Range.....	986
Table 253: Range.....	993
Table 254: Range.....	994
Table 255: Range.....	994
Table 256: Range.....	995
Table 257: Range.....	995
Table 258: Range.....	995
Table 259: Range.....	996
Table 260: Range.....	997
Table 261: Range.....	1002
Table 262: Range.....	1003
Table 263: Range.....	1006
Table 264: Range.....	1008
Table 265: Range.....	1008
Table 266: Range.....	1009
Table 267: Range.....	1009
Table 268: Range.....	1012
Table 269: Range.....	1013
Table 270: Range.....	1016

Table 271: Range.....	1016
Table 272: Range.....	1017
Table 273: Range.....	1017
Table 274: Range.....	1018
Table 275: Range.....	1024
Table 276: Range.....	1024
Table 277: Range.....	1025
Table 278: Range.....	1028
Table 279: Range.....	1029
Table 280: Range.....	1029
Table 281: Range.....	1030
Table 282: Range.....	1031
Table 283: Range.....	1031
Table 284: Range.....	1032
Table 285: Range.....	1032
Table 286: Range.....	1032
Table 287: Range.....	1032
Table 288: Range.....	1033
Table 289: Range.....	1033
Table 290: Range.....	1033
Table 291: Range.....	1034
Table 292: Range.....	1034
Table 293: TPL Squelch Frequencies & Codes.....	1038
Table 294: TPL Squelch Frequencies & Codes.....	1039
Table 295: DPL Squelch Code.....	1040
Table 296: TPL Squelch Frequencies & Codes.....	1043
Table 297: TPL Squelch Frequencies & Codes.....	1044
Table 298: DPL Squelch Code.....	1045
Table 299: DPL Squelch Code.....	1049
Table 300: Range.....	1052
Table 301: Range.....	1055
Table 302: Range.....	1058
Table 303: Range.....	1058
Table 304: Range.....	1060
Table 305: Range.....	1060
Table 306: Range.....	1061
Table 307: Range.....	1061
Table 308: Range.....	1062
Table 309: Range.....	1062

Table 310: Range.....	1063
Table 311: Range.....	1063
Table 312: Range.....	1063
Table 313: Range.....	1064
Table 314: Range.....	1065
Table 315: Range.....	1067
Table 316: Range.....	1067
Table 317: Range.....	1068
Table 318:	1069
Table 319: Range.....	1070
Table 320: Range.....	1070
Table 321: Range.....	1071
Table 322: Range.....	1074
Table 323: Range.....	1074
Table 324: Range.....	1074
Table 325: SELECTIONS.....	1075
Table 326: SELECTIONS.....	1075
Table 327: SELECTIONS.....	1076
Table 328: Range.....	1077
Table 329: Range.....	1083
Table 330: Range.....	1084
Table 331: Range.....	1086
Table 332: Range.....	1098
Table 333: SELECTIONS.....	1100
Table 334: Range.....	1107
Table 335: Range.....	1116
Table 336: Range.....	1117
Table 337: DPL Squelch Codes.....	1126
Table 338: TPL Squelch Frequencies & Codes.....	1131
Table 339: TPL Squelch Frequencies & Codes.....	1133
Table 340: DPL Squelch Codes.....	1135
Table 341: Range.....	1137
Table 342: Range.....	1138
Table 343: Range.....	1139
Table 344: TPL Squelch Frequencies & Codes.....	1143
Table 345: TPL Squelch Frequencies & Codes.....	1145
Table 346: TPL Squelch Frequencies & Codes.....	1147
Table 347: DPL Squelch Codes.....	1148
Table 348: TPL Squelch Frequencies & Codes.....	1150

Table 349: Range.....	1160
Table 350: Range.....	1163
Table 351: Range.....	1163
Table 352: Range.....	1173
Table 353: Range.....	1173
Table 354: Range.....	1174
Table 355: Range.....	1175
Table 356: Range.....	1175
Table 357: Range.....	1176
Table 358: Range.....	1176
Table 359: Range.....	1176
Table 360: Range.....	1177
Table 361: Range.....	1177
Table 362: Range.....	1177
Table 363: Range.....	1178
Table 364: Range.....	1179
Table 365: Range.....	1179
Table 366: Range.....	1180
Table 367: Range.....	1181
Table 368: Range.....	1181
Table 369: Range.....	1182
Table 370: Range.....	1182
Table 371: Range.....	1183
Table 372: Range.....	1183
Table 373: Range.....	1184
Table 374: Range.....	1184
Table 375: Range.....	1184
Table 376: Range.....	1185
Table 377: Range.....	1185
Table 378: Range.....	1186
Table 379: Range.....	1187
Table 380: Range.....	1187
Table 381: Range.....	1187
Table 382: Range.....	1188
Table 383: Range.....	1189
Table 384: Range.....	1192
Table 385: Range.....	1193
Table 386: Range.....	1193
Table 387: Range.....	1194

Table 388: Range.....	1194
Table 389: Range.....	1202
Table 390: Range.....	1202
Table 391: Range.....	1203
Table 392: Range.....	1204
Table 393: Range.....	1204
Table 394: Range.....	1205
Table 395: Range.....	1205
Table 396: Range.....	1206
Table 397: Range.....	1210
Table 398: Range.....	1223
Table 399: Range.....	1223
Table 400: Range.....	1225
Table 401: Range.....	1225
Table 402: Range.....	1226
Table 403: Range.....	1227
Table 404: Range.....	1227
Table 405: Range.....	1240
Table 406: Range.....	1247
Table 407: Range.....	1250
Table 408: Range.....	1250
Table 409: Range.....	1252
Table 410: Range.....	1254
Table 411: Range.....	1255
Table 412: Range.....	1263
Table 413: Range.....	1265
Table 414: Range.....	1266
Table 415: Range.....	1267
Table 416: Range.....	1267
Table 417: Range.....	1272
Table 418: Range.....	1273
Table 419: Range.....	1274
Table 420: Range.....	1276
Table 421: Range.....	1277
Table 422: Range.....	1290
Table 423: Range.....	1290
Table 424: Range.....	1291
Table 425: Selections.....	1292
Table 426: Selections.....	1293

Table 427: Range.....	1293
Table 428: Range.....	1299
Table 429: Range.....	1301
Table 430: Range.....	1302
Table 431: Range.....	1303
Table 432: Range.....	1304
Table 433: Range.....	1304
Table 434: Range.....	1305
Table 435: Range.....	1305
Table 436: Range.....	1314
Table 437: Range.....	1314
Table 438: Range.....	1315

Portable or Mobile Radio Features

Some features are applicable for portable or mobile radio only.

Table 1: Portable or Mobile Radio Features

Icon	Description
	This feature is applicable for portable radio only.
	This feature is applicable for mobile radio only.

Chapter 1

Introduction to CPS

1.1

CPS Overview

This section covers an overview by Customer Programming Software (CPS).

1.1.1

The Motorola Solution Windows Security and User Backup Information

Your Windows operating systems and the application offer you the following Security and Backup Features

Administrator Only Topics

The application has certain features that may only be accessed with administrative rights on the current application system:

- Advanced Keys Administrator
- ARS (Automatic Registration Server) Data Administrator tool



NOTE: In order to gain access to these features, launch the application and select Run As Administrator. This launch selection only appears when you right-click the application selection in the Window's Start menu, or when right-clicking the application shortcut on your Window's desktop.

Windows User Accounts

Your Microsoft Window's (operating system) User Accounts are managed by the computer. The application does not have a built-in user accounts.

It is strongly recommended that any User Accounts that have not been authenticated within the past 90 days to be deactivated.

You must implement a frequent and consistent plan to ensure a full recovery in the case of a catastrophic failure of the system.

1.1.2

Navigation

Navigation provides convenient controls for accessing radio codeplug programming features, navigating the application codeplug fields, and customizing the codeplug View.



NOTE:

- By default this window is embedded in the application window and pinned with the pushpin icon. The pushpin is to embed the Navigation window as part of the user interface.
- This window can be run in an unpinned fly-out mode. Unpin the pushpin to run the navigation in an on demand fly-out mode. Once unpinned for retrieval, hover-on or click-on the **Navigation** tab.

- This window can also be run in an undocked floating-window mode. Double-clicking on the Navigation window's title bar allows you to undock or float the window independently of the application window. Double-clicking the title bar again re-docks the window within the application.
- If completely closed, you can reopen the Navigation Window. (**CPS Menubar** → **View** → **Windows** → **Navigation**.)

1.1.2.1

Home Mode

Home Mode allows for quick-access to radio codeplug programming features.

These features include:

- Browsing your computer for previously saved codeplug files. The Home Mode also keeps track and allows you to easily re-open any of the last-four **Recent Codeplug** files that have been used.
- Reading a codeplug from a radio.
- Refreshing (FLASHing) the radio software or cloning a Radio that is currently connected to your computer's USB port

The Home Mode also keeps track and allows you to easily re-open any of the last-four **Recent Codeplug** files that have been used. The Home Mode can be accessed at any time by clicking **Home Mode** within the [Navigation on page 82](#).

1.1.2.2

Codeplug Configuration Mode

The Codeplug Configuration Mode is a tree view of the codeplug's features and fields.

This mode is accessed by clicking the **Codeplug Configuration Mode** within [Navigation on page 82](#)

If a codeplug file is not already loaded for the current programming session, the Windows **Open File** dialog box will prompt you for a codeplug file selection. Whenever a codeplug file is open in Codeplug Configuration Mode, the tree view appears within the Navigation Window.

1.1.2.3

Custom View Configuration Mode

The Custom View Configuration Mode starts put with a pre-defined application codeplug views. You can then remove or add pages and fields as desired to create a Custom View Configuration File.

These configuration files can then be exported to an XML file format, and later imported into the application to provide a Custom View of the codeplug. You can configure multiple custom views and can be transferred from one computer to another.



NOTE: The Custom View Configuration Mode is initiated by clicking the button that appears within [Navigation on page 82](#). A new Custom View tab will appear in the application Ribbon. If the **Custom View Configuration Mode** button is disabled, you must first close the current codeplug (see [Application Button on page 84](#)).

1.1.2.3.1

Opening Custom View File

Allows you to open an existing Custom View Configuration File for modification. These configuration files are stored in an XML file format.

Procedure:

1. Navigation Window → Custom View Configuration Mode



NOTE: If this button is disabled (grayed out) you must first close the current codeplug.

2. From the Ribbon, select **Open Custom View File to launch the **Open File** dialog box.**

3. Next select **Custom View → Open**



NOTE: This file must be an XML file type.

4. From the **View Manager tree view you can add or remove fields by enabling or disabling the checkbox beside a field. Repeat this step for each desired field.**

5. Save your modified Custom View Configuration File by selecting **Save As in the Ribbon.**

1.1.2.3.2

Creating New Custom View File

Allows you to create a new Custom View configuration file. These configuration files are saved to an XML file format, and then imported into the application.

Procedure:

1. Navigation Window → Custom View Configuration Mode



NOTE: If this button is disabled (grayed out) you must first close the current codeplug.

2. From the Ribbon, select **Create New Custom View File to launch the **Create Custom View File** wizard.**

3. Select a baseline view in the wizard. This can be one of the pre-defined codeplug views or an existing custom view.

4. Press **OK to create an initial custom view using your selected baseline.**

5. By navigating the View Manager tree view you can now add or remove fields to your custom view by enabling or disabling the checkbox beside a field. Repeat this step for each desired field.

6. Save the new Custom View Configuration File by selecting **Save As in the Ribbon.**

1.1.3

Application Button

The Application Button, located on the top-left corner of the application window provides access to basic functionality.

This includes opening and saving codeplug files, printing, and exiting the application.

Table 2: Selections

Menu Item	Action Summary
Open	Retrieves a codeplug data file.
Save	Transfers programmed application information to a codeplug file. The same action can be done by Ribbon → Codeplug → Archive → Save.
Import	Allows you to retrieve selected codeplug data from an XML file format.

Menu Item	Action Summary
Export	Allows you to covert selected codeplug data to an XML file format.
Radio Management	Launches the Radio Management Client (RMC) component.
Print	Provides options for viewing Radio Information and Radio Handout sheets and printing them to a hard-copy or saving them in the XPS file format. User-defined reports and custom printing templates can also be built that would include or exclude specific CPS Windows, Pages, and Fields. These same selections are also provided by Ribbon > Tools > Reports
Close	Ends the current codeplug programming session without exiting the application. If you have made changes to the codeplug data without saving, a dialog box will first prompt you to save the codeplug before closing it.
Options	Opens the Options Window, which allows you to view or modify certain application optional settings. The same action is also provided by clicking the Options button under Ribbon > Tools > CPS Options .
Exit	Exits the application. Alternately, you can click the X in the top right-hand corner of the application window. If you have made changes to the codeplug data without saving, a dialog box will first prompt you to save the codeplug before closing the application.

1.1.3.1

Import From XML

Allows you to import codeplug data from an XML file format.



WARNING:

- Prior to performing an Import From XML, the appropriate Software System Key File or Advanced (Hardware) Key(s) must be loaded in the appropriate Trunking System(s) System ID or Home WACN ID field(s), depending on the required System Key Type. Failure to follow this instruction causes System Key protected field data to not be Imported from the XML file.
- For fields that are editable, importing codeplug data into the CPS overwrites the existing field data.
- Other software applications can allow for different data structures; however data must be specifically organized to be compatible (for import) with the CPS codeplug data structure. Currently the only file extension supported for CPS import is an XML file.

1.1.3.1.1

Importing From XML

Procedure:

1. From the Application Button, select **Import**.



NOTE: If this selection is disabled (grayed out), you must first open a codeplug file or read a radio codeplug into the CPS.

2. In the **Import from XML file** dialog box, click the CPS node.
3. Click on the **Import** button to import all field data from the selected nodes.



NOTE: The results of the Import can be viewed from the Import/Export Report.

1.1.3.2

Export to XML

Allows you export CPS-codeplug data to an XML file format.

Exporting codeplug data in an XML format can allow for customized reporting capability in other software applications that support this file format, such as Microsoft's Excel. See also: Import From XML.



WARNING: Before exporting to XML, the appropriate Software System Key File or Advanced (Hardware) Key(s) must be loaded in the appropriate Trunking System(s) System ID or Home WACN ID field(s) depending on the required System Key Type. Failure to follow this instruction causes System Key protected field data to not be Exported to the XML file.

1.1.3.2.1

Exporting to XML

Procedure:

1. From the Application Button, select **Export**.



NOTE: If this selection is disabled (grayed out) you must first open a codeplug file or read a radio codeplug into the CPS.

2. In **Export from XML file** dialog box, click on a CPS node that you desire.
3. Click on the **Export** button to import all field data from the selected nodes.



NOTE: The results of the Export can be viewed from the Import/Export Report.

1.1.4

Themes Menu

This menu allows you to select a color scheme for the user interface from different sets of included visual themes.

1.1.4.1

Themes

The **Individual Visual Themes** allows you to select a different visual theme user interface to a new color scheme.

1.1.5

Codeplug

This chapter explains the codeplug functionality.

1.1.5.1

Edit Menu

This feature allows you to undo or redo any changes that were made to the application field values during the current programming session.

Undo Button

Allows you to undo changes made to one or more application field values and restoring them to their previous selection state.

Pressing the **Undo** button repeatedly allows you to undo changes all the way back to the beginning of the codeplug programming session or to the last state. Changes are undone in the exact reverse order in which they were done.



NOTE: The Undo buffer is cleared when a codeplug is closed, written to a radio, saved to an archive, or a special operation such as drag and drop, or FLASHport is performed, or when the memory limits of your computer are approached.

Redo Button

Allows you to redo changes made to the application field values. Pressing the Redo Button repeatedly will redo changes in the exact reverse order in which they were undone.

1.1.5.2

Restore Menu

The Restore Menu allows you to selectively restore the application field values back to their original factory default setting.

Restore to Default

Allows you to selectively restore the application field values back to their original factory default setting.

Show/Hide Restore to Default Buttons

Toggles between displaying or hiding the Restore to Default icon next to applicable fields. Once the icon is displayed, clicking on the icon returns the field to its factory default value.

Restore All Fields (Current Page)

Allows you to restore all field values to their factory default values. This option applies only to the current application feature page, and is only accessible when the Restore to Default icon is being displayed.

Restore All Invalid Fields

Allows you to restore all invalid field values to their factory default values. This option applies to the whole application.

1.1.5.3

Codeplug Comparison Menu

The Codeplug Comparison Menu features allow you to compare and update field values between a primary and secondary codeplug.

The results of the Codeplug Comparison are then listed in the Comparator Report.

1.1.5.3.1

Start/End Comparator

Provides a button-toggle for starting and terminating a codeplug comparison session.

Comparisons in field values are made between a primary radio codeplug already loaded into the application and a secondary codeplug archived on your computer's hard disk drive. Icons at the tree view, page, and field level will alert you with comparatively matching and non-matching fields or nodes. Values in the secondary codeplug are displayed next to the icons as well as in the Comparator Report.



NOTE:

- The Comparator Warning icons are displayed in the application next to the affected tree nodes and pages that contain fields that are different between the two codeplugs.
- Fields displaying the Matching Fields Value icon have matching field values between the primary and secondary codeplugs.
- Fields displaying the Non-Matching Fields Value icon have different field values between the primary and secondary codeplugs. Clicking the Non-Matching Field Values icon copies values from the secondary codeplug to the primary.

These selections are supported:

Start Comparator

Initiates a comparison of field values between the same fields in two codeplugs. Open a codeplug and click the **Start Comparator** button and select a secondary codeplug.

End Comparator

Terminates the Codeplug Comparison feature. Any changes made to the primary codeplug during the Codeplug Comparison operation are not automatically saved. Save your changes manually.

1.1.5.3.2

Hide/Unhide

When comparing field values of the same fields between a primary and a secondary codeplug, these options allow you to show or hide the Matching field values.



NOTE: Fields displaying the Matching Fields Value icon have matching field values between the primary and secondary codeplugs.

These selections are supported:

Hide Matches

Hides all fields having the same matching field value in the comparison between the primary and the secondary codeplug.

Unhide Matches

Show all fields. This displays any matching value in the comparison between the primary and the secondary codeplug.

1.1.5.3.3

Copy All Fields

This option allows you to transfer all differing values from the secondary codeplug to the primary codeplug when comparing field values of the same fields.



WARNING: For multiple record nodes, this selection applies only for the currently selected record/row. This selection applies for all fields of the application currently selected node.



NOTE: Fields displaying the Matching Fields Value icon have matching field values between the primary and secondary codeplugs.

1.1.5.4

Feature Set Menu

The Feature Set Menu allows you to view both the Purchased and Extended Features available to the current application codeplug.



IMPORTANT: Within the Motorola APX™ family of radios, certain features/options that are purchasable in Entry and Mid-tier models are included in High-tier models. Only features that have been purchased will appear in the list on the Feature Set Page.

1.1.5.4.1

Show Feature Set/Feature Set Window

The Feature Set Window allows you to view both the Purchased and Extended Features available to the current application codeplug.

Purchased features are the available System Option enhancements, represented by the codeplug's Purchased and Used FLASHcode values, as listed on the Feature Set Page. Extended Features, as listed on the Extended Feature Set Page, manage the introduction of new features or enhanced capabilities to the radio, but without an associated cost.

1.1.5.5

Password Menu

These utilities allow you to view or define codeplug permissions for the current application codeplug.

1.1.5.5.1

Read/Write Password

This feature allows you to view or define codeplug permissions for the current application codeplug

When defining the Read/Write Password for an individual codeplug, you may grant permission to that codeplug for any one, or all three of the following application features:

- Reading from the radio.
- Writing to the radio.
- Reading a codeplug file.

Once defined, before you can access the codeplug's protected features, or modify its existing permissions. You are prompted to enter the codeplug's password in the **Enter Read/Write Password Window**. Defining and/or changing the Password for the current codeplug can also be accessed from this Window.



WARNING: When executing a POP25 Single Radio Programming or a Batch Radio Programming session, you will need to know the password of an in-the-field radio in order for a successful read, write, or clone to occur.



IMPORTANT: From firmware R29.00.00 or higher, if Read or Write Password is enabled, this setting applies to both read and write operations. For example, the password cannot be enabled for just read, or just write.

- Password changes take effect only after the codeplug is saved to a file or written to the radio.
- Create a process for tracking and storing a codeplug password reference document. This document would be available for reference purposes.
- Disabling all of the permissions clears the codeplug password.

Included Fields

- [Read Radio on page 90](#)

- [Write Radio on page 90](#)
- [Read File on page 90](#)

Included Buttons

- [Initialize Permissions Button on page 90](#)
- [Modify Permissions Button on page 90](#)
- [Change Password Button on page 91](#)
- [OK Button](#)
- [Cancel Button](#)

1.1.5.5.1.1

Read Radio

Enables codeplug password protection when reading the application's current codeplug from a radio.



IMPORTANT: Password changes take effect only after the codeplug is saved to a file or written to the radio.

1.1.5.5.1.2

Write Radio

Enables codeplug password protection when writing the current application codeplug to a radio.



IMPORTANT: Password changes take effect only after the codeplug is saved to a file or written to the radio.

1.1.5.5.1.3

Read File

Enables codeplug password protection when opening the current application codeplug file.



NOTE: Password changes take effect only after the codeplug is saved to a file or written to the radio.

1.1.5.5.1.4

Initialize Permissions Button

This feature allows you to define the current application codeplug password for the first time.



NOTE: Once the password has been defined for the current codeplug, from the Read/Write Password Window you may grant permissions to that codeplug for any one, or all three of the following application features:

- Reading from the radio
- Writing to the radio
- Reading a codeplug file

1.1.5.5.1.5

Modify Permissions Button

This feature allows you to enter the Codeplug Password and granting access to the current codeplug's password-protected permissions.

This includes any one or all three of the following application features:

- Reading from the radio

- Writing to the radio
- Reading a codeplug file

This window will also prompt you to enter the Codeplug Password before you can modify the current codeplug permissions.

1.1.5.5.1.6

Change Password Button

This feature allows you to change the currently-defined password for the current application codeplug.

1.1.5.6

Call List Import Menu

The Call List **Import From Console** feature allows you to import Trunking Call List content exported from the dispatcher console system into the program. You can append or update the Unified Call List (UCL) and Hot List (HL) too.

The Call List file is stored in `.CSV` extension.

Accessed Only: When the radio codeplug contains at least one Trunking System.



NOTE:

The following UCL and HL aliases are subject to change:

- UCL Contact Name
- ASTRO 25 (HL Alias, and the HL Contact)
- Type II (HL Alias, and the HL Contact)

The following UCL and HL Call ID fields are subject to change:

- ASTRO 25 (UCL System ID, UCL WACN ID, UCL Unit ID, and the HL Call ID)
- Type II (UCL System ID, UCL Unit ID, and the HL Call ID)

This section contains the following fields and buttons:

1.1.5.6.1

Console Aliases List File Path

This field allows you to view the folder path in `.CSV` file.

The `.CSV` file contains the Call IDs and Contacts list. You can update the `.CSV` file in the existing Unified Call List (UCL) and Hot List (HL) codeplug.

1.1.5.6.2

Browse Button

The **Browse** button is for navigating through a folder, and selecting the `.CSV` file.

1.1.5.6.3

System Type

This field allows you to select the System Type to be updated in the Unified Call List (UCL) and Hot List (HL) content.

Table 3: Types of System

Radio System	System Type	Definition
Trunking Systems	ASTRO 25	Allows you to view System ID and Home WACN ID only.
	Type II	Allows you to view System ID only.
Customized	ASTRO 25	Allows you to enter a Custom System ID and a Custom Home WACN ID.
	Type II	Allows you to enter a Custom System ID.

 **NOTE:** A Custom Call ID references to an in-the-field Trunking System that is not defined in the codeplug. The Custom Call ID is useful when roaming outside of its normal Systems.

1.1.5.6.4

Custom System ID

This field allows you to retrieve the updated Unified Call List (UCL) and Hot List (HL) content when using matching Custom System ID.

The System Type can be defined as **ASTRO 25** or **Type II**.

For **ASTRO 25** system type, the custom Home WACN ID is included when updating content using matching Call ID.

 **NOTE:** A Custom Call ID references to an in-the-field Trunking System that is not defined in the codeplug. The Custom Call ID is useful when roaming outside of its normal Systems.

Accessed Only: When the **System Name** field is set to **<Customized>**.

1.1.5.6.5

System Name

This field allows you to select the Trunking System from the current codeplug or retrieve a customized **System ID**.

1.1.5.6.6

Custom Home WACN ID

This field allows you to define ASTRO 25 Custom Home WACN ID.

The Custom Home WACN ID allows you to retrieve the updated Unified Call List (UCL) and Hot List (HL) content that is using the same Custom Home WACN ID.

The Custom System ID is included when updating content using matching Call ID.

 **NOTE:** A Custom Call ID references to an in-the-field Trunking System that is not defined in the codeplug. The Custom Call ID is useful when roaming outside of its normal Systems.

Accessed Only: When the System Type field is set to **ASTRO 25** and the **System Name** field is set to **<Customized>**.

1.1.5.6.7

System ID

This field allows you to view the System ID of the Trunking System selected in the **System Name** field. The **System ID** field can be defined as **ASTRO 25** or **Type II**.

1.1.5.6.8

Delete Extra Call ID or Contact

This field allows you to remove any unused Unified Call List (UCL) and Hot List (HL) content from the codeplug during import process.

An unused status is determined by a dispatcher or console content being imported from .CSV file.

The selected .CSV file appears in the Console Aliases List File Patch field.

1.1.5.6.9

Home WACN ID

This field allows you to view the Home WACN ID of the Trunking System selected in the **System Name** field. The Home WACN ID can be defined as **ASTRO 25**.

Accessed Only: When the System Type is **ASTRO 25**.

1.1.5.6.10

Import Button

The **Import** button is to initiate the Import process.

1.1.5.6.11

Importing Call List from Console Window

Procedure:

1. To open an exported Call List file from the console system, click **Browse**.
2. Select *<preferred Call List>* file.
The path to the file appears in the Console Aliases List File Path field.
3. Select one of the following options:
 - **ASTRO 25**
 - **Type II**
 - **<Customized>** for ASTRO 25
 - **<Customized>** for Type II

If you select **ASTRO 25**, the program retrieves the System ID, and Home WACN ID.

If you select **Type II**, the program retrieves the System ID.

If you select **<Customized>** for ASTRO 25, the program retrieves Custom System ID and Custom Home WACN ID.

If you select **<Customized>** for Type II, the program retrieves Custom System ID.

4. Click **Import**.

1.1.5.7

Codeplug View Menu

This menu allows you to select the predefined views of the application.

The Codeplug View is consists of the following predefined views:

- **Basic**
- **Intermediate**
- **Full**
- **Expert**
- **Custom**

1.1.5.7.1

Codeplug View

Each Codeplug View selection has different subsets of programming fields.

Codeplug View	Descriptions
Basic	Allows you to view and configure basic fields for the radio to transmit and receive.
Intermediate	Allows you to view and configure all fields in Basic view, and complex features.
Full	Allows you to view and configure all fields in Basic view, Intermediate view, and infrequent complex features.
Expert	This View is only for Qualified Service Personnel to configure.
Custom	Allows you to start from one of the predefined co-deplug views, and add or remove pages and fields.

1.1.6

Read or Write Menu

This menu allows you to transfer field data between the codeplug and the application through a Communication Method.

This section contains the following fields:

1.1.6.1

Read Device

Read Device transfers field data from the codeplug to the application through a Communication Method.



NOTE:

If the codeplug data is loaded into the application for the programming session, the Read Device button is disabled.

Any changes made to the codeplug date only take effects when the codeplug is saved to a file or written to the radio.

1.1.6.2

Write Device

Write Device transfers field data from the application to the codeplug through a Communication Method.



NOTE: It takes a longer time to Write or Clone non-English language.

1.1.6.3

Communication Method

Communication Method is a technique that the application uses when reading or writing codeplug data to the radio.

Communication Method	Description
USB	The radio is directly connected to the computer through programming cable and the computer USB port.
POP25	The radio codeplug data is transmitted through Over the Air Programming (OTAP) without using programming cable. Accessed Only: When an Advanced Conventional Key (ACK) or POP25 is loaded in the application.
Bluetooth	The radio codeplug data is transmitted through Bluetooth connection. The Bluetooth programming requires Bluetooth version 2.1 and above. Accessed Only: When the radio is added to Personal Area Network (PAN) on the Bluetooth enabled computer.



NOTE: The application prioritizes USB over POP25 or Bluetooth when reading or writing codeplug data to the radio.

1.1.6.4

IP Address

IP Address allows you to define the Internet Protocol (IP) Address of the radio Bluetooth Personal Area Network (PAN), once the radio is paired with the host.



The IP Address is required when Bluetooth is selected as the Communication Method.



NOTE:
Ensure that the IP Address is unique.

169.254.X.X subnet is reserved for Zone to Zone Cloning feature.

1.1.7

System Key Menu

In the System Key Menu, you can load the Software System Key Files and Advanced Keys into the program.

You can view the current System Key loaded into the program from the System Key Report.

This section contains the following features:

1.1.7.1

Load Advanced Keys

In the Load Advanced Keys feature, you can manually load the Advanced (Hardware) Keys from the Key Device during the current programming session. The Key Device is inserted into a USB Key Device Reader that is attached to your computer USB port.



NOTE:

When the Key Device is attached, the Advanced Keys are automatically loaded when the program is opened.

You can view the current System Key loaded into the program from the System Key Report.

1.1.7.2

Load Software Keys

In the Load Software Keys feature, you can load Software System Key Files during the current programming session.



NOTE:

The Software Key Files Location feature allows the Software System Keys to be automatically loaded when the program is opened.

You can view the current System Key loaded into the program from the System Key Report.

1.1.8

Reports Menu

The Reports Menu provides the option for you to view, print, or save the Radio Information and Handout sheets in XML format.

Your defined reports and custom printing templates can be build to include or exclude specific windows, pages, and fields.

This section contains the following features:

1.1.8.1

Radio Information

The Radio Information Report lists the data found in Radio Information Window including General, Tracking, and FLASH port data.

The Report is viewed in the program Reports Viewer window. You can print, or save the report in XPS file format.

1.1.8.2

Radio Handout

The Radio Handout offers a graphical representation of the Button or Data Button Selections, and Rotary or Switch Selections.

The Radio Handout provides a reference on the available radio functionality.

The Report is viewed in the program Reports Viewer window. You can print, or save the report in XPS file format.

1.1.8.3

User-Defined Report

User-Defined Report allows you to define the report template in Microsoft Word .docx format. You can choose and save the codeplug data that you want to include in the report.

1.1.8.3.1

Creating User-Defined Reports

Procedure:

1. Select **Tools** → **Reports** → **User Defined Report**.
2. In the program Feature window, right-click on *<preferred field>* that you want to include in the template document.
3. Select **Copy Public Tag**.
4. Return to the template document, and delete the field name between the double quotes.
5. Keep the cursor between the double quotes.
6. Select **Microsoft Word Ribbon** → **Insert** → **Reference** → **Footnotes**.
7. In the **Custom Mark** box, insert a number of texts that identify the footnote, and click **Insert**.
The cursor is positioned in the **Footnote** section at the bottom of the template document.

8. Right-click, and paste the field tag onto the clipboard.
The footnote Custom Mark appears between the double quotes where the field name was deleted.

 **NOTE:** To add more field, repeat [step 2](#) to [step 8](#).

9. Save the template document.
The field values are displayed within the double quotes.

1.1.8.4

Print Choices

The Print Choices feature allows you to print or save fields, values, or create custom print templates by selecting preferred program Windows/Nodes.

1.1.8.4.1

Printing Field Value Reports from Window or Node

Procedure:

1. Click **Features** → **Select All**.
2. Click the *<preferred Window or Node>*.
3. To launch the Report Viewer window, click **Print Preview** → **Print**.

1.1.8.4.2

Creating Custom Print Templates

Procedure:

Click **Templates** → **Create Template**.

1.1.9

Reset Password Menu

From the firmware R29.00.00 or higher, the radio programming protocol is changed to an encrypted connection. This window allows you to reset password on radios with encrypted communication.



WARNING: The password reset file provided by Motorola Solutions Support is a one-time use for a device with a specific Serial Number.



NOTE: This feature is available from Firmware R29.00.00 or higher. To reset the password on a device, you need a password reset file provided by Motorola Solutions Support.

1.1.10

Options Window

The Options Window allows you to view or modify the user interface settings.

1.1.10.1

General Page

The General Page allows you to view or modify the default folder or file location of the Software System Key files, and the Home Screen logo.

1.1.10.1.1

Software Key Files Location

The Software Key Files Location allows you to view or modify the path or location of a folder on your computer system. The file is saved in `.key` extension.

The Software Key files are automatically loaded into the program from the Software System Key Files Location when the program is opened.

The individual System Key Files can be selected for specific Trunking System from the System ID field.

You can view the Software System Key Files from the System Key Report.



NOTE: Restart your program when a new selection is made.

1.1.10.1.2

DVRS Export Location

The Digital Vehicular Repeater System (DVRS) Export Location allows you to view or modify the path or location of the DVRS Export files.

Accessed Only: When the DVRS Hardware Enable field is **Enabled** and when the radio is a model or option capable.

1.1.10.1.3

Home Screen Logo

The Home Screen Logo allows you to replace or restore the default logo on the Home Screen.

1.1.10.2

Admin Page

This page allows you to launch the Advanced Keys Administrator Tool and the Automatic Registration Server (ARS) Data Administrator Tool.

Accessed Only: When launching the application and selecting to **Run As Administrator**. This page only appears when:

- Right-clicking the application selection in the Window's Start menu
- Right-clicking the application's Shortcut on your Window desktop.

1.1.10.2.1

Advanced Keys Administrator

This button launches the Advanced Key Administrator tool.



WARNING: Before you can run the Advanced Keys Administrator tool, you must have administrator privileges on the computer where the application is installed.

Accessed Only: When launching the application and selecting **Run As Administrator**. This launch selection only appears either when you right-click the application selection in the Window's Start menu, or when you right-click the application's Shortcut on your Windows desktop.

1.1.10.2.2

ARS Data Administrator

This button launches the Automatic Registration Server (ARS) Data Admin tool.

This tool allows you to define ARS configuration parameters. These ARS Servers can be selected for use from the **POP25 Batch Programmer's Automatic Registration Server** field, and from the **POP25: Access Radio (Single Radio Programmer) Window's ARS** field.



WARNING: Before you can run the ARS Data Administrator tool, you must have administrator privileges on the computer where the application is installed.

Accessed Only: When launching the application and selecting **Run As Administrator**. This launch selection only appears either when you right-click the application selection in the Windows Start menu, or when you right-click the application's Shortcut on your Window's desktop.



NOTE: An ARS Server is also known as a Presence Notification (PN) Server because this type of server has the ability to notify as to whether a specific radio is present or not.

1.1.10.3

Language Page

This page allows you to view or select the language of the application user-interface, and the radio Reports.

1.1.10.3.1

Language

This field selects the language for the application.



WARNING:

When a new application's language selection is made, you must restart the application in order for the change to take effect.

Non-English language selections are only available if the application has been installed with full language support.

The Computer's Input Language Warning: The input language depends on the keyboard selection made in your computer's operating system, and not this language selection; however, numbers entered into the application's text field are always shown in the form 0–9, regardless of the language selection, including **Arabic**.

Hebrew and Arabic Guidelines: When the [Radio Display Language](#) is set to **Hebrew** or **Arabic**, the application's language should also be set to match the **Hebrew** or **Arabic** selection, so that character strings (such as [Zone Names on page 1284](#)) are displayed using the same Right-to-Left rules on the radio display and the application.

Diacritics: Diacritics are not supported in the application as the radio's display is unable to represent them.

Codeplug Prior to R07.00.00 Warning: Opening a non-English codeplug `.mc` file that was saved from Release prior to R07.00.00 is only allowed when the application's Language is set to **English**. To update an older non-English codeplug to be compatible, open the codeplug in Release R07.00.00 or later with the language set to **English**, and then click Save. Once saved, that same codeplug file will now open with the application's language set to other non-English languages.



NOTE: It is always possible to read a pre-R07.00.00 codeplug from a radio with the application's language set to any language; it is only codeplug `.mc` files that have this limitation.

The following language selections are supported:

- English
- French
- Spanish
- Portuguese
- Hebrew
- Russian
- Chinese (Traditional)
- Arabic

1.1.10.3.2

Reports Language

This field selects the language for the application's Reports section.



NOTE: Non-English Reports Language selections are only available if the application has been installed with full language support.

The following selections are supported:

- **Prompt Me**



NOTE: Causes the **Select Reports Language** window to launch whenever a Report is run.

- English
- French
- Spanish
- Portuguese
- Hebrew
- Russian
- Chinese (Traditional)
- Arabic

1.1.10.3.2.1

Select Reports Language Window

This window selects the language for the application Report section.



IMPORTANT: Non-English Reports Language selections are only available if the application has been installed with full language support.

Accessed Only: When the [Reports Language on page 100](#) field is set to **Prompt Me**.

The following selections are supported:

- English
- French
- Spanish
- Portuguese
- Hebrew
- Russian
- Chinese (Traditional)
- Arabic

1.1.10.3.3

Upgrade Radio Language

This field allows you to select how the application installs or maintains radio non-English Language Pack (LP) files during application-to-radio codeplug Write, a codeplug Clone, or a FLASHing operation.



NOTE:

For a Radio Display Language supported only in the application version R10.00.00 or later (for example, **Arabic**), the version of the Language Pack (LP) files must be equal to or earlier than the radio firmware version.

The following selections are supported when the Radio Display Language in the radio is not **English**:

When Newer Version in CPS (default)

During a codeplug-Write, codeplug-Clone, or FLASHing, if the application has a newer (non-English) version of LP files than is currently in the radio, the application upgrades the radio LP files.

During a codeplug-Write, codeplug-Clone, or FLASHing, when the **critical update** parameter is set in the *.LPK file, the application upgrades the radio's (non-English) LP files.

When you change the Radio Display Language to a new non-English language, then during a codeplug-Write, codeplug-Clone, or FLASHing, the application upgrades the radio's (non-English) LP files.

Only When Required

During a codeplug-Write, codeplug-Clone, or FLASHing, only when the **critical update** parameter is set in the *.LPK file, the application upgrades the radio (non-English) LP files.

When you change the Radio Display Language to a new non-English language, then during a codeplug-Write, codeplug-Clone, or FLASHing, the application upgrades the radio (non-English) LP files.

Always Overwrite

During a codeplug-Write, codeplug-Clone, or FLASHing the application always deletes all LP files in the radio and writes the current LP files. This overwrite occurs regardless of the LP Dates or LP Critical Update parameter status.



NOTE: This selection has the greatest impact on radio Write and Clone times, and should only be used when other selections have failed to correct a radio language problem.

Application to Radio Communication Method:

When you update the non-English LP files, the Communication Method must be set to **USB**. Updating a radio LP files is not possible with POP25 communications. If POP25 is the selected Communication Method and the Radio Display Language is set to a non-English language, a codeplug-Write or codeplug-Clone can occur, however the LP files are not transferred to the radio.

Write, Clone or FLASHing Error Messages:

If, during application to radio codeplug-Write, codeplug-Clone, or a FLASHing (when the Radio Display Language is set to a non-English language), you receive the error message `RadioLanguagePacks` folder of the CPS install is empty, or you receive the error message `One or more files in the RadioLanguagePacks folder of the CPS install is corrupted`, then you must re-install the application version R08.00.00 or later.



NOTE:

The application's installation copies all supported radio LPs (encrypted *.LPK files) to your computer.

When Radio Display Language is **English**, no LP files are written to the radio since English is the radio's default language. Therefore, any time a non-English LP is not successfully installed on the radio, English text is always available to appear in the radio's display.

Write, Clone or FLASHing Error Messages:

If, during a radio codeplug-Write, codeplug-Clone, or a FLASHing, you receive the error message `Radio does not have enough free space to support the Radio Display Language selected`, you must select another Radio Display Language and then perform a Write or Clone again.

1.1.11

Reports Window

The **Reports** Window in the bottom area of the application contains several informational Reports organized by tabs.

Clicking on a specific tab, such as [System Key Report on page 105](#), allows you to view the associated Report.



NOTE:

By default this window is embedded in the application's window and pinned with the pushpin icon.



(Pin the pushpin to embed this Reports window as part of the user interface.)



This window can be run in an unpinned fly-out mode. (Unpin the pushpin to run this Reports window in an on demand fly-out mode. When unpinned, for retrieval, hover-on or click-on the **any report** tab.)

This window can also be run in an undocked floating-window mode. (Double-clicking on this Reports window's title bar allows you to undock or float the window independently of the application's window. Double-clicking the title bar again redocks the window within the application.)

If completely closed, you can easily reopen the Reports Window. From the application, go to **Menu Bar** → **View** → **Windows** → **any Report**, then uncheck **Hide**.)

1.1.11.1

Output Report

This report allows you to view informational and error messages that result from various operations in the application.

The type of message and a message description are listed.



IMPORTANT: If the Output Report is not visible in the Reports Window, from the application Ribbon open **View** → **Windows** → **Output Report**, and uncheck the **Hide** option.

1.1.11.2

Invalid Fields Report

This report allows you to view, at any time, all field entries or selections that are invalid in the codeplug that is currently open in the application.



NOTE:

Double-clicking on a field in this report opens the page in the application that contains that invalid field, allowing you to take the corrective action.

Clicking the **Restore to Default** icon next to an invalid application field in this report allows you to selectively restore that field's value back to its original factory default setting.



IMPORTANT:

When attempting to Write a codeplug which has invalid entries to a radio, the Output Report warns you of the error and the Write operation fails. You must correct the invalid field entries first.

You can save an archive with incorrect field inputs without receiving a warning.

If the Invalid Fields Report is not visible in the Reports Window, from the application Ribbon open **View** → **Windows** → **Invalid Fields Report**, and uncheck the **Hide** option.

1.1.11.3

Drag and Drop Report

This report allows you to view the results of a cross-application Drag and Drop process.

The Report lists the **Results** of field values that could not be copied, or where field values may have changed during the copy procedure.



IMPORTANT:

When you drag and drop across codeplugs, two applications programs must be open at the same time.

All application windows must be closed before performing a cross-application Drag and Drop.

If the Drag and Drop Report is not visible in the Reports Window, from the application Ribbon, open **View** → **Windows** → **Drag and Drop Report**, and select the **Hide** option.

1.1.11.3.1

Location

This field lists the location of the field values that were not copied or became invalid during the Drag and Drop procedure.

These results apply only to the latest Drag and Drop attempt.

1.1.11.3.2

Field

This field lists the application field name of the field values that were not copied or became invalid during the Drag and Drop procedure.

These results apply only to the latest Drag and Drop attempt.

1.1.11.3.3

Field Value

This field lists the application field values that were not copied or became invalid during the Drag and Drop procedure.

These results apply only to the latest Drag and Drop attempt.

1.1.11.3.4

Drag and Drop Results

This field lists explanations as to why a field value was not successfully transferred from the source codeplug to the destination codeplug.

The drag and drop results lists field values that became invalid during the drag and drop procedure. These results apply only to the most recent Drag and Drop attempt.

Table 4: Error Message

Error Message	Explanation of Error
Value was not copied. Destination field was not editable.	The source codeplug has field values that do not apply in the destination codeplug. For example, fields that are radio model dependent or fields from application nodes that do not exist in the destination codeplug.

1.1.11.4

Comparator Report

This report allows you to view the results of a Codeplug Comparison session.

Any field values which were a mismatch between the primary and secondary codeplugs are listed in the report, along with their location and field names.

This report also lists explanations as to why a field value could not be successfully compared between the primary and secondary codeplugs.

 **NOTE:** Double-clicking on a field in this report opens the page in the application that contains that specific field.

 **IMPORTANT:** If the Comparator Report is not visible in the Reports Window, from the application Ribbon open **View** → **Windows** → **Comparator Report**, and uncheck the **Hide** option.

1.1.11.5

Import/Export Report

This report allows you to view information pertaining to the latest Import From XML or Export To XML process.

 **IMPORTANT:** If the Import/Export Report is not visible in the Reports Window, from the application Ribbon open **View** → **Windows** → **Import/Export Report**, and uncheck the **Hide** option.

1.1.11.6

Find Results Report

This report lists the results of a successful search by using the application Find feature.

 **NOTE:** When you double-click on a field in this report, it opens the page in the application that contains that specific field.

 **IMPORTANT:** If the Find Results Report is not visible in the Reports Window, from the application Ribbon open **View** → **Windows** → **Find Results**, and unselect the **Hide** option.

1.1.11.7

Fill Up/Fill Down Report

This report allows you to view the results of a Fill Up/Fill Down operation, including explanations as to why a field value from one record/row could not be successfully transferred to another record.

The Fill Up/Fill Down feature is only available for a multiple record node, such as the Trunking Personality node, and when that node is in the Table View.

 **IMPORTANT:** If the Fill Up/Fill Down Report is not visible in the Reports Window, from the application Ribbon open **View** → **Windows** → **Fill Up/Fill Down Report**, and uncheck the **Hide** option.

1.1.11.8

System Key Report

This report allows you to view all Software System Key Files and Advanced Keys (Advanced System Keys, Advanced WACN Keys, and Advanced Conventional Keys) that are loaded into the current application programming session.

The System Key Report lists:

- The System Key Type; either **Advanced System Key (ASK)**, **Advanced WACN Key (AWK)**, **Advanced Conventional Key" (ACK)**, or **Legacy Software System Key**.
- The System Key's System ID (for Software System Keys and ASKs), or Home WACN ID (for AWKs).
- The Field Access Level; either Limited or Unlimited for ASKs and AWKs, or Unlimited for Legacy Software System Key.

- Whether an ASK or AWK has been set to Write Protect the radio; see also Advanced Keys Administrator.
- The Key Device Serial Number for each ASK or AWK that has been loaded (either **None** or 16-characters).



IMPORTANT: If the System Key Report is not visible in the Reports Window, from the application Ribbon open **View** → **Windows** → **System Key Report**, and unselect the **Hide** option.

1.2

CPS Features

This section covers features of Customer Programming Software (CPS).

1.2.1

Cloning Menu

These utilities allow you to transfer (clone) a radio's partial or complete codeplug data to another radio using the application.

1.2.1.1

Clone Radio Window

The Clone Radio Window allows you to view or define settings in preparation and initiating the cloning process.

Cloning is the ability to transfer a radio partial or complete codeplug data to another radio (or file) with the CPS. Cloning feature is not possible if the radio has a System ID for a Trunking System set to **Cloning Not allowed**.



IMPORTANT:

- Cloning is only possible between radios with identical Model Numbers.
- Only radios with compatible FLASHcodes can be cloned. **Compatible FLASHcodes** refers to the target radio having a FLASHcode that is equal-to or greater-than the FLASHcode of the source radio/codeplug. Greater-than refers to the source codeplug's "In Use" FLASHcode Feature Set. This is a sub-set of the target radio's "Purchased" FLASHcode Feature Set.
- When a target radio supports a certain Extended Feature, the Clone operation is allowed. If the target radio does not support the Extended Feature, the Clone operation is only allowed when the source codeplug also does not support that Feature, when the source codeplug does support that Extended Feature, and the Extended Feature is not being used in the codeplug (the Used in Codeplug field is **No**).
- For 12.5 kHz FCC Narrowbanding Mandate, cloning is not possible when the source radio/codeplug does not have the FCC Narrowbanding option enabled. This also applies when:
 - The source radio/codeplug has **Allow Invalid Frequencies** enabled.
 - The Primary Frequency Band or Secondary Frequency Band of the target radio is VHF, UHF1 or UHF2.
- Inhibited radios cannot be cloned.
- Cloning is not possible between a source radio that is Trunking-capable to a target radio that is Conventional only.
- Cloning is not possible between a source radio that is SmartZone Trunking-capable to a target radio that is SmartNet Trunking-capable only (in other words, when the Coverage Type of the target radio is set to "Disabled").

- All source radio Trunking Systems must first have a valid Advanced (Hardware) Key selected in the Trunking System and System ID field.
- ADP (Advanced Digital Privacy) Keys (listed in the Selectable ADP Key Data table) are not Cloned to the target radio when the source codeplug is read from a radio. When a codeplug containing ADP Keys is read from a radio, the ADP Keys are not loaded into the application, which causes the Selectable ADP Key Data field(s) to appear in all asterisks (*). In this situation, the key data will not be cloned to a target radio. If sending ADP Key Data to the target radio is desired, you must re-enter the appropriate ADP Keys into the CPS prior to initiating the Clone Radio process. Source codeplug ADP Key Data will overwrite the target radio's ADP Key Data when present. However, when a codeplug file containing ADP Keys is opened into the application, the ADP Keys are loaded into the CPS, and are therefore able to be cloned to the target radio. Source codeplug ADP Key Data will overwrite the target radio's ADP Key Data when present.
- Cloning feature is not possible if the radio has a System ID for a Trunking System set to **Cloning Not allowed**.



NOTE: To clone a radio, you must:

- Connect the radio to a computer using a Programming USB cable with the desired codeplug image opened into the application. Clicking the **Read Radio IDs** button allows you to view and retain the currently-connected radio's Trunking and Conventional IDs and data-related IP addresses prior to starting the cloning process.
- Next, click the **Clone** button on clone the application codeplug to the currently-connected radio, or click the **Save As** button to clone the application codeplug to a codeplug file.

1.2.1.1.1

Multiple Radio Clone Page

Multiple Radio Clone Page allows you to increment the MDC Primary ID, ASTRO Individual IDs, Individual ASTRO OTAR Radio IDs, and Trunking Unit IDs on successive cloning operations (by the number entered in the selected field).

1.2.1.1.1.1

Trunking System Unit ID Increment

Selects a number that is added to every Trunking System Unit ID that appears within the Clone Radio Window.

This creates a new Trunking System Unit ID for every Trunking System Name listed. This increment amount is added each time the **OK** button is clicked. This is most useful when cloning several radios in the same programming session.

1.2.1.1.1.2

Conventional System ASTRO ID Increment

This field selects a number that is added to every ASTRO Individual ID that currently appears within the Clone Radio Window.

This creates a new Individual ID for every Conventional System Type of type **ASTRO** listed. This increment amount is added each time the **OK** button is clicked. This is most useful when cloning several radios in the same programming session.

1.2.1.1.1.3

Conventional System MDC ID Increment

Selects a number that is added to every MDC Primary ID that currently appears within the Clone Radio Window.

This creates a new Primary ID for every Conventional System Type of type **MDC** listed. This increment amount is added each time the **OK** button is clicked. This is most useful when cloning several radios in the same programming session.

1.2.1.1.1.4 Individual ASTRO OTAR Radio ID Increment

Selects a number that is added to every Individual ASTRO OTAR Radio ID within the Clone Radio Window. This creates a new Individual ASTRO OTAR Radio ID for every ASTRO OTAR Profile listed. This increment amount is added each time the **OK** button is clicked. This is most useful when cloning several radios in the same programming session.

1.2.1.1.2 File Clone Page

The File Clone Page allows you to view or modify setting for the File Cloning process. File cloning creates an archive codeplug file that can be written to a radio at a later date.



NOTE:

When File Cloning is desired:

- Click the **Read Radio IDs** button to view and retain the currently-connected radio's Trunking and Conventional IDs and data-related IP addresses before starting the cloning process, and
- Enable the "File Clone Enable" field, and enter an appropriate "Serial Number".
- Afterwards, click the **Save As** button to clone the application codeplug to a codeplug file.

1.2.1.1.2.1 File Clone Enable

Allows you to divert the normal radio cloning process to a file cloning process. File cloning creates an archive codeplug file that can be loaded in the application and written to a radio at a later date.



NOTE:

When File Clone Enable is desired:

- Click the **Read Radio IDs** button to view and retain the currently-connected radio's Trunking and Conventional IDs and data-related IP addresses before starting the cloning process, and
- Enable the "File Clone Enable" field, and enter an appropriate "Serial Number".
- Afterwards, click the **Save As** button to clone the application codeplug to a codeplug file.



NOTE: All source radio Trunking Systems must have a valid System Key selected in the Trunking System, System ID field, and the System Key selected for each Trunking System must be loaded in the application when the File Clone **Save As** button is clicked.

1.2.1.1.2.2

Serial Number

Allows you enter an appropriate serial number for the targeted codeplug file resulting from the file cloning process. File cloning creates an archive codeplug file that can be loaded in the application and written to a radio at a later date.



Access Only:

- When the File Clone Enable field is Enabled, and
- When a System Key (selected in the Trunking System, System ID field) is currently loaded in the CPS for all of the codeplug's Trunking Systems.

1.2.1.1.3

Trunking System ID List

The Trunking Systems ID List Page allows you to view or define Trunking System data in preparation for the Cloning process.

These settings applies only for radios capable of Trunking communications.

1.2.1.1.3.1

Trunking System Name

The application retrieves and allows you to view the Trunking System Name for individual Trunking Systems retrieved from the current application codeplug or read from the connected radio.

This information is needed in preparation for the cloning process. Each row in the Trunking System ID list represents one Trunking System defined in the current application codeplug.

Access Only:

When the radio is model/option capable.

1.2.1.1.3.2

Trunking System ID

The application retrieves and allows you to view the Trunking System Name for individual Trunking Systems retrieved from the current application codeplug or read from the connected radio.

This information is needed in preparation for the cloning process. Each row in the Trunking System ID list represents one Trunking System defined in the current source codeplug.

Access Only:

When the radio is model/option capable.

1.2.1.1.3.3

Unit ID

Allows you to view or modify the target radio Unit IDs for individual Trunking Systems retrieved from the current application codeplug or read from the connected radio.

This is required for the cloning process. Each row in the Trunking System ID List represents one Trunking System defined in the current source codeplug.

Access Only:

When the radio is model/option capable.

1.2.1.1.4

Conventional System ID List

This page allows you to view or define Conventional System data in preparation for the Cloning process.

These settings are only for Conventional communications radios.

1.2.1.1.4.1

Conventional System Name

The application retrieves and allows you to view the Conventional System Name for individual Conventional Systems retrieved from the current application codeplug or read from the connected radio.

This information is used in preparation for the cloning process. Each row in the Conventional System ID List represents one Conventional System defined in the current source codeplug.

1.2.1.1.4.2

Conventional System Type

The application retrieves and allows you to view the Conventional System Type for individual Conventional Systems retrieved from the current application codeplug or read from the connected radio.

This information is used in preparation for the cloning process. Each row in the Conventional System ID List represents one Conventional System defined in the current source codeplug.

1.2.1.1.4.3

ASTRO Individual ID

Allows you to view or modify the Individual ID for individual ASTRO or DVRS Conventional Systems retrieved from the current application codeplug or read from the connected radio.

This information is needed in preparation for the cloning process. Each row in the Conventional System ID List with Conventional System Type **ASTRO** or **DVRS** represents one Conventional ASTRO or DVRS System defined in the current source codeplug.

Access Only:

When the radio is model/option capable.

1.2.1.1.4.4

MDC Primary ID

Allows you to view or modify the MDC Primary IDs for individual MDC Systems retrieved from the current application codeplug or read from the connected radio.

This information is needed in preparation for the cloning process. Each row in the Conventional System ID List with Conventional System Type **MDC** represents one Conventional MDC System defined in the current source codeplug.

Access Only:

When the radio is model/option capable.

1.2.1.1.5

Individual ASTRO OTAR Radio ID List

This page allows you to view or define ASTRO OTAR (Over-The-Air-Rekeying) data in preparation for the Cloning process.

1.2.1.1.5.1

ASTRO OTAR Profile

The application retrieves and allows you to view the ASTRO OTAR Profiles retrieved from the current application codeplug or read from the connected radio.

Each row in the Individual ASTRO OTAR Radio ID List represents one ASTRO OTAR Profile defined in the current source codeplug.

 **IMPORTANT:** This feature only appears when ASTRO OTAR Profiles are an available option.

Access Only:

- When the Secure Operation field is set to **Hardware**, and
- When the OTAR Operation field is set to **ASTRO Only** or **ASTRO & MDC**, and
- When the radio is model/option capable.

1.2.1.1.5.2

Individual ASTRO OTAR Radio ID

Allows you to view or modify the ASTRO OTAR (Over-The-Air-Rekeying) ID that the radio is listed under in the KMF (Key Management Facility). This is useful in preparation for the Cloning process.

 **IMPORTANT:** This feature only appears when ASTRO OTAR Profiles are an available option.

Access Only:

- When the Secure Operation field is set to **Hardware**, and
- When the OTAR Operation field is set to **ASTRO Only** or **ASTRO & MDC**, and
- When Multikey is present, and
- When the radio is model/option capable.

Table 5: Selections

Minimum	Maximum
1	9999998

This selection is for MS OTAR.

1.2.1.1.6

Data Wide

This page allows you to view or modify Serial Link 1 IP address data in preparation for the Cloning process.

The IP addresses are initially read from the connected radio. It also can then be modified, before cloning a target radio.

1.2.1.1.6.1

Subscriber IP Address 1

Allows you to view or modify the Data Wide Subscriber IP Address 1 that was read from the connected radio by clicking the **Read Radio ID** button.

This information is needed in preparation for the Cloning process.

 **NOTE:**

- When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.
- 169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature. Any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

1.2.1.1.6.2

Peer IP Address 1

Allows you to view or modify the Data Wide Peer IP Address 1 that was read from the connected radio by clicking the **Read Radio ID** button.

This information is needed in preparation for the cloning process.

NOTE:

- When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.
- 169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature. Any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

1.2.1.1.6.3

Bluetooth Subscriber IP Address

Allows you to view or modify the Data Wide Bluetooth Subscriber IP Address that was read from the connected radio by clicking the **Read Radio ID** button.

This information is needed in preparation for the cloning process.

NOTE:

- When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.
- 169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature. Any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

1.2.1.1.6.4

Bluetooth Peer IP Address

Allows you to view or modify the Data Wide Bluetooth Peer IP Address that was read from the connected radio by clicking the **Read Radio ID** button.

This information is needed in preparation for the cloning process.

NOTE:

- When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

- 169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature. Any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

1.2.1.1.7

Data Profiles List

This page allows you to view or modify IP address data for individual Data Profiles in preparation for the Cloning process.

The IP addresses are initially retrieved from the currently-loaded application codeplug or read from the connected radio. The IP address can then be modified before cloning a target radio. Each row in the Data Profiles List represents one Data Profile defined for the application cloning process.

1.2.1.1.7.1

Data Profile Name

The application retrieves and allows you to view the Data Profile Names for individual Data Profiles that was retrieved from the current application codeplug or was read from the connected radio.

This is useful when preparing for the cloning process. Each row in the Data Profiles List represents one Data Profile defined for the application cloning process.

1.2.1.1.7.2

Subscriber IP Address

Allows you to view or modify the Subscriber IP Address for individual Data Profiles that was retrieved from the current application codeplug or was read from the connected radio.

This is useful when preparing for the cloning process. Each row in the Data Profiles List represents one Data Profile defined for the application cloning process.



NOTE:

- When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.
- 169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature. Any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

1.2.1.1.7.3

Peer IP Address

Allows you to view or modify the Peer IP Address for individual Data Profiles that was retrieved from the current application codeplug or was read from the connected radio.

This is useful when preparing for the cloning process. Each row in the Data Profiles List represents one Data Profile defined for the application cloning process.



NOTE:

- When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.
- 169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature. Any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

1.2.1.1.7.4

Bluetooth Subscriber IP Address

Allows you to view or modify the Bluetooth Subscriber IP Address for individual Data Profiles that was retrieved from the current application codeplug or was read from the connected radio.

This is useful when preparing for the cloning process. Each row in the Data Profiles List represents one Data Profile defined for the application cloning process.

NOTE:

- When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.
- 169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature. Any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Access Only:

When the radio is model/option capable.

1.2.1.1.7.5

Bluetooth Peer IP Address

Allows you to view or modify the Bluetooth Peer IP Address for individual Data Profiles that was retrieved from the current application codeplug or was read from the connected radio.

This is useful when preparing for the cloning process. Each row in the Data Profiles List represents one Data Profile defined for the application cloning process.

NOTE:

- When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.
- 169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature. Any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Access Only:

When the radio is model/option capable.

1.2.1.1.7.6

Subscriber Air-Interface IP Address

Allows you to view or modify the Subscriber Air-Interface IP Address for individual Data Profiles that was retrieved from the current application codeplug or was read from the connected radio.

This is useful when preparing for the cloning process. Each row in the Data Profiles List represents one Data Profile defined for the application cloning process.

NOTE:

- When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

- 169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature. Any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

1.2.1.1.8

User Information

This page allows you to view or modify radio wide user and password information in preparation for the cloning process.

This information is retrieved from the loaded application codeplug or read from the connected radio. User Information can then be modified, before cloning a target radio.

1.2.1.1.8.1

Soft ID/Username

Allows you to view or modify the Soft ID/Username that was retrieved from the current application codeplug or was read from the connected radio.

This information is needed in preparation for the cloning process.

1.2.1.1.8.2

PIN/Password

Allows you to view or modify the PIN/Password that was retrieved from the current application codeplug or was read from the connected radio. This information is needed in preparation for the cloning process.

1.2.1.1.8.3

User Login Unit ID

Allows you to view or modify the User Login Unit ID that was retrieved from the current application codeplug or was read from the connected radio.

This information is needed in preparation for the cloning process.

Access Only:

When the User Login Unit ID Enable field is **Enabled**.

1.2.1.1.8.4

Radio Alias

This field allows you to view or modify the Radio Alias that was retrieved from the current application codeplug or was read from the connected radio.

For portable radios, this alias is shown on the display. The My Radio Identification menu-selection causes the Radio ID Alias to appear in the radio's display. This information is needed in preparation for the cloning process.

Accessed Only:

- When the Radio Alias Enable field is enabled and when the radio is model/option capable.



NOTE: Example: FTL 32F, NYC 555E, CHI 070P

- For this field, characters, numbers, and spaces can be used.
- The number of characters of the alias is determined by the display size of the radio.

1.2.1.1.9

Bluetooth

This page allows you to view or modify settings related to Bluetooth technology.

Access Only:

When the radio is model/option capable.

1.2.1.1.9.1

Bluetooth Friendly Name

Allow you to view or modify your Bluetooth Friendly Name for the radio. This is retrieved from the current application codeplug or read from the connected radio.

This information is needed in preparation for the Cloning process.

Access Only:

- When the Bluetooth Enable field is **Enabled**, and
- When the radio is model/option capable.



NOTE: Example: APX Radio, NYC 555E, CHI 070P

- Characters, numbers, spaces, and special characters can be used.
- The allowable length (number of characters) of the alias is determined by the display size of the radio.

1.2.1.2

Clone Express Window

The Clone Express feature offers the quickest method of cloning the application currently open codeplug to an attached radio.

The target radio serial number and Radio IDs are read from the radio to the application codeplug. Then, the entire codeplug with the serial number and IDs are written back to the radio. In order for Radio IDs to be retained in the target radio, the name of the Conventional System (System Name and System Type) and/or Trunking System must match between the current application loaded codeplug and the target radio.



IMPORTANT:

- The radio must first be connected to the computer through a selected USB port using the Programming Cable, with the desired codeplug image opened into the CPS. Ensure that **Communication Method** is selected once connected.
- If you wish to have the ability to modify Radio IDs during the cloning process, use the Clone Radio feature.

1.2.1.2.1

Clone Express Button

Once the target radio is connected, click the **Clone Express** button to program the radio with the currently open codeplug template.

1.2.1.2.2

Clone Express Status

The Clone Express Status allows you to view the current status of the Clone Express process.

Once the **Clone Express** button is clicked, Clone Express will read the attached radio's Serial Number, MDC Primary IDs, ASTRO / DVRS Individual IDs, Individual ASTRO OTAR Radio IDs, and Trunking Radio IDs.

If any problems occur, a specific error message appears in a pop-up dialog box. Once the problem is corrected, click the **Clone Express** button again. The Serial Number and IDs appear in the status area of the Clone Express Window once the Clone Express process is successful.

1.2.1.3

Communication Method

Selects the communication method between the application and a radio to facilitate the Cloning operation.

The target radio serial number and Radio IDs are read from the radio to the application codeplug. Then, the entire codeplug with the serial number and IDs are written back to the radio. In order for Radio IDs to be retained in the target radio, the name of the Conventional System (System Name and System Type) and/or Trunking System must match between the current application loaded codeplug and the target radio.

The following selections are supported:

USB

The radio is directly connected to the computer with the Programming Cable and the computer's USB port.

POP25

Radio codeplug data is transmitted to and from the radio directly over the air without the need of programming cables, using Motorola's Over The Air Programming (OTAP) feature. OTAP is part of the Programming Over Project 25 (POP25) feature set.

Bluetooth

Radio codeplug data is transmitted to and from the radio directly using a Bluetooth connection. Bluetooth programming requires Bluetooth Version 2.1 and above.

1.2.1.4

Internet Protocol (IP) Address

This feature allows you to define the Internet Protocol (IP) Address of the radio Bluetooth Personal Area Network (PAN).



This can be done once the radio has been paired with the computer that hosts the application. This is required to facilitate the Cloning operation when "Bluetooth" is the selected Communication Method. See also the Bluetooth PAN Network Base Address field.

NOTE:

- When assigning an IP address, ensure that the IP address does not conflict with any other IP address or subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or subnets are in use, data features can not be guaranteed to work reliably.
- 169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

1.2.2

FLASHport Menu

This feature allows you to refresh a radio software or to upgrade its software capabilities.

FLASHport also allows you to read and view the Radio and/or FLASHkey configurations.



NOTE: Within the Motorola APX™ family of radios, certain features/options that are purchasable in Entry and Mid-tier models are included in High-tier models. Only features that have been purchased will appear in the radio FLASHcode.

1.2.2.1

Radio Configuration Window

The **Read Radio Configuration** selection retrieves the Radio Configuration Window.

This window will also allow you to view-only the connected radio's current System Options information.



NOTE: Viewing the radio's configuration allows you to view information that is needed prior-to or after executing a FLASHport Upgrade process.

1.2.2.1.1

General

The Radio Configuration General Page allows you to view-only the radio's model number and FLASHcode.

This window will also allow you to view-only the connected radio's current System Options information.



NOTE: Viewing the radio's configuration allows you to view information that is needed prior-to or after executing a FLASHport Upgrade process.

1.2.2.1.1.1

Model Number

The application retrieves and allows you to view-only the connected radio's Model Number. The Model Number is the Motorola-assigned number that identifies the type of radio.

This information is stored in the radio's codeplug.

1.2.2.1.1.2

FLASHcode

The application retrieves and allows you to view a number that reflects the currently-connected radio FLASHcode Feature Set or System Options information.

This information is stored in the radio's codeplug. The FLASHcode number should match the current Radio Information, FLASHcode value.

1.2.2.1.2

The FLASHcode Features Page

The Radio Configuration FLASHcode Features Page allows you to view-only the decoded FLASHcode Feature Set/System Options information for the currently-connected radio.



NOTE: Viewing the radio's configuration allows you to view information that is needed prior-to or after executing a FLASHport Upgrade process.



IMPORTANT: Within the Motorola Solutions APX™ family of radios, certain features/options that are purchasable in Entry and Mid-tier models are included in High-tier models. Only features that have been purchased appear in this list.

1.2.2.1.2.1

Enabled Features

The application retrieves and allows you to view-only the decoded FLASHcode Feature Set / System Options for features that are currently enabled in the radio's FLASHcode.



IMPORTANT: Within the Motorola Solutions APX™ family of radios, certain features/options that are purchasable in Entry and Mid-tier models are included in High-tier models. Only features that have been purchased appear in this list.

1.2.2.2

The FLASHkey Configuration Window

The **Read FLASHkey Configuration** selection retrieves the FLASHkey Configuration Window.

The FLASHkey Configuration Window allows you to view-only FLASHkey information that is needed before or after executing a FLASHport Upgrade process.



NOTE: The FLASHport Key Device Reader which holds the Key Device containing the FLASHkey information must first be attached to your computer's USB port.

1.2.2.2.1

General Page

The FLASHkey Configuration General Page allows you to view-only FLASHkey information in preparation for the FLASHport Upgrade process.

The FLASHport Key Device reader which holds the Key Device containing the FLASHkey information must first be attached to your computer's USB port.

1.2.2.2.1.1

Factory Order Number

The application retrieves and allows you to view the number assigned to this FLASHport Upgrade purchase.

1.2.2.2.1.2

Model Number

The application retrieves and allows you to view the Model Number that identifies the type of radio to receive the FLASHport Upgrade.

1.2.2.2.1.3

New Model Number

The application retrieves and allows you to view the Model Number to be upgraded to the radio through the FLASHport Upgrade process.

1.2.2.2.1.4

Current FLASHcode

The application retrieves and allows you to view the number that reflects the radio's current Feature Set/ System Options.

The Current FLASHcode number identifies the Feature Set previously stored in the radio during the last FLASHport Upgrade process.

1.2.2.2.1.5

New FLASHcode

The application retrieves and allows you to view the number that reflects the radio's new Feature Set/System Options.

The new FLASHcode number identifies the Feature Set to be stored in the radio during the next FLASHport Upgrade process.

1.2.2.2.1.6

Upgrades Purchased

The application retrieves and allows you to view the number of upgrades received for the purpose of radio FLASHport Upgrades.

This number also determines how many radios in total may be upgraded with this FLASHkey.

1.2.2.2.1.7

Upgrades Remaining

The application retrieves and allows you to view the number of FLASHport Upgrades that are still available within the currently connected FLASHkey Upgrade Module.

1.2.2.2.2

FLASHcode Features

This section allows you to view the decoded FLASHcode Feature Set/System Options information in preparation for the FLASHport Upgrade process.



IMPORTANT:

Within the Motorola Solutions APX™ family of radios, certain features/options that are purchasable in Entry- and Mid-tier models are included in High-tier models. Therefore, only features that have been purchased appear in this list.

The FLASHport Key Device Reader which holds the Key Device containing the FLASHkey information must first be attached to your computer's USB port.

A feature is shown in the [FLASHcode Information](#) list only when it is enabled in either the Current or New FLASHcode.

1.2.2.2.2.1

FLASHcode Information (Feature Set)

The field allows you to view the decoded FLASHcode Feature Set or System Options for both the Current and New FLASHcode Features.



IMPORTANT:

Within the Motorola Solutions APX™ family of radios, certain features or options that are purchasable in Entry- and Mid-tier models are included in High-tier models. Therefore, only features that have been purchased appear in this list.

A Feature is shown in the FLASHcode Information list only when it is enabled in either the Current or New FLASHcode.

1.2.2.2.2.2

Current (Feature Set)

The field allows you to view which of the radio FLASHcode Features or System Options that are currently enabled.

The feature or option status is based on the FLASHcode Information for the same row.



IMPORTANT: A Feature is shown in the [FLASHcode Information](#) list only when it is enabled in either the Current or New FLASHcode.

1.2.2.2.2.3

New (Feature Set)

This field allows you to view which FLASHcode Features or System Options that are enabled in the new FLASHkey.

The feature or option status is based on the FLASHcode Information for the same row.



IMPORTANT: A Feature is shown in the [FLASHcode Information](#) list only when it is enabled in either the Current or New FLASHcode.

1.2.2.3

FLASHport Upgrade Window

This window allows you to view or define the FLASHport-related file location and to initiate the process of FLASHing a radio with a Feature Set Upgrade.

The FLASHport Upgrade process allows you to upgrade the radio System Options, Firmware, Option/Expansion Board, and Secure Encryption capabilities.



NOTE: The [FLASHport Upgrade Progress Window on page 121](#) is automatically launched when the FLASHport Upgrade process begins.



IMPORTANT:

When performing a FLASHport Upgrade, a FLASHkey (attached to your computer's USB port) and a Firmware Upgrade File (.bbf or .cvn) are required so that the radio can be upgraded with the aftermarket capabilities.

See [FLASHkey Configuration Window](#) and [Radio Configuration Window on page 118](#).

1.2.2.3.1

FLASHport Upgrade Progress Window

This window allows you to view the progress of the FLASHport upgrade process.

The FLASHport upgrade process (also known as FLASHing) allows you to upgrade the radio system options, firmware, option or expansion board, and secure encryption capabilities.



IMPORTANT:

A FLASHkey and CVN Firmware Upgrade File are required when performing a FLASHport upgrade, so that the radio can be upgraded with the aftermarket capabilities.

For more information, see [FLASHkey Configuration Window](#) and [Radio Configuration Window on page 118](#).

1.2.2.3.1.1

Model Number

This field allows you to view the Model Number of the connected radio that is receiving the FLASHport Upgrade.

The Model Number is the Motorola Solutions-assigned number that identifies the type of radio. This information is stored in the radio codeplug.

1.2.2.3.1.2

Serial Number

The field allows you to view the connected radio Serial Number.

Each radio has its own unique Serial Number stored in the radio codeplug.

1.2.2.3.1.3

FLASHcode

The field allows you to view the current FLASHcode number of the radio that is receiving the FLASHport Upgrade.

1.2.2.3.1.4

FLASHport Progress

This field provides progress indication for the major operations that occur during the FLASHport Upgrade process.

FLASHport upgrade process includes:

- Connection to the radio.
- Reading the radio codeplug data.
- Writing the radio codeplug.
- Upgrading of radio components.
- Final upgrade validation.

1.2.2.3.2

Select Radio Software File

This field allows you to view the current path to the appropriate file or software needed for the FLASHport Upgrade process.

This file is supplied on a CD-ROM included with your FLASHport Upgrade Kit. Click the **Browse** button to modify this location.

1.2.2.3.3

Flash Radio Button

This button allows you to initiate the radio FLASHing process for a FLASHport Upgrade, which in turn launches the FLASHport Upgrade Progress Window.

1.2.2.4

Radio Software Refresh Window

This window allows you to view or define the FLASHport related file location and to initiate the process of refreshing a radio's firmware.



NOTE: This process (also known as "FLASHing" the radio) allows you to refresh the radio's software, without upgrading or modifying the existing radio Features or System Options. See [FLASHport on page 269](#).



IMPORTANT:

A FLASHkey is not required when performing a Radio Software Refresh process, and the existing radio Feature Set is not modified by this process.

The Radio Software Refresh process may also be initiated by clicking on the **Refresh a Radio** button from [Home Mode on page 83](#).

1.2.2.4.1

Radio Software Refresh Progress Window

This window allows you to view the progress of the Radio Software Refresh process.



IMPORTANT:

A FLASHkey is not required when performing a Radio Software Refresh process, and the existing radio Feature Set is not modified by this process.

The Radio Software Refresh process may also be initiated by clicking on the **Refresh a Radio** button from [Home Mode on page 83](#).

1.2.2.4.1.1

Model Number

This field allows you to view the Model Number of the connected radio that is receiving the Radio Software Refresh.

The Model Number is the Motorola Solutions-assigned number that identifies the type of radio. This information is stored in the radio's codeplug.

1.2.2.4.1.2

Serial Number

This field allows you to view the connected radio's Serial Number.

Each radio has its own unique Serial Number stored in the radio codeplug.

1.2.2.4.1.3

FLASHcode

This field allows you to view the current FLASHcode number of the radio that is receiving the Radio Software Refresh.

1.2.2.4.1.4

Radio Software Refresh Progress

This field provides progress indication for the major operations that occur during the Radio Software Refresh process, including: connection to the radio, reading the radio codeplug data, writing the radio codeplug, and final refresh validation.

1.2.2.4.2

Select Radio Software File

The field allows you to view the current path to the appropriate file or software needed for the Radio Software Refresh process.

1.2.2.4.3

Refresh Radio Button

This button initiates the radio FLASHing process for a Radio Software Refresh, which in turn launches the Radio Software Refresh Progress Window.

1.2.2.5

Radio Write Protect Menu

This feature allows you to view or modify the radio current Owner Advanced Key Type, Owner System ID, Owner WACN ID and Write Protection for the radio.

Accessed Only: When an **Unlimited Access** Advanced Key is loaded into the application, and when a codeplug file is not currently open.

1.2.2.5.1

Query/Update Radio Data

This feature allows you to view or modify a radio Owner Advanced Key Type or Owner ID. It also allows you to enable or disable a radio Write Protection.



NOTE: The Owner Advanced **Key Type** and its corresponding **Owner System ID** or **Owner WACN ID** are initially determined for the radio and its codeplugs at the time of the radio's original purchase.

Accessed Only: When an **Unlimited Access** Advanced Key is loaded into the application (see [System Key Report on page 105](#)), and when a codeplug is not currently open.

- See [Viewing the Radio Write Protect Status, Key Type and Owner System ID on page 124](#)
- See [Enabling Radio Write Protection on page 124](#)
- See [Updating the Key Type and Owner ID on page 125](#)

1.2.2.5.1.1

Viewing the Radio Write Protect Status, Key Type and Owner System ID

Prerequisites: Ensure that an **Unlimited Access** Advanced Key is loaded in the application (see [System Key Report on page 105](#)) and attached to your computer USB port.

Procedure:

Click the **Query Radio** button.

1.2.2.5.1.2

Enabling Radio Write Protection

Prerequisites:

- Ensure that an **Unlimited Access** Advanced Key that has a **System ID** that matches the radio current [Key Type on page 125](#).
- Ensure that [Owner ID on page 126](#) is loaded in the application (see [System Key Report on page 105](#)) and attached to your computer USB port.

Procedure:

1. To enable the write protection, select the **Write Protect** field.
2. To initiate the Update Radio Data operation, click **Update Radio Data** button.

1.2.2.5.1.3

Updating the Key Type and Owner ID

Prerequisites:

- Ensure that an **Unlimited Access** Advanced Key that has a **System ID** matches the radio current [Key Type on page 125](#) and [Owner ID on page 126](#) is loaded in the application (see [System Key Report on page 105](#)) and attached to your computer USB port.
- Ensure that a **Limited** or **Unlimited** Advanced Key matches the new [Key Type on page 125](#) or [Owner System ID](#) (if being changed) is loaded in the application (see [System Key Report on page 105](#)) and attached to your computer USB port.

Procedure:

1. From the drop-down list, select the **Key Type** and **Owner ID**.
2. To initiate the Update Radio Data operation, click **Update Radio Data** button.

1.2.2.5.1.4

Key Type

This field allows you to view the current Owner Advanced Key Type of a connected radio (with the Query Radio button), or select a new Key Type in order to update the radio's Key Type and Owner ID (with the Update Radio Data button).



IMPORTANT: Owner IDs are needed when Write Protecting radios and apply only to Trunking dispatch capable radios.



NOTE: The Owner Advanced **Key Type** and its corresponding **Owner System ID** or **Owner WACN ID** are initially determined for the radio and its codeplugs at the time of the radio's original purchase.

Accessed Only: When an **Unlimited Access** Advanced Key is loaded into the application (see [System Key Report on page 105](#)), and when a codeplug is not currently open.

The following selections are supported:

None

This is the initial default value.

Advanced System/WACN Key

Available selections are based on any **Limited** or **Unlimited** Advanced Keys that have been loaded into the application (see [System Key Report on page 105](#)).

Select the appropriate new [Owner ID on page 126](#) based on this Key Type selection. See [Write Protect and the Owner ID on page 305](#).

1.2.2.5.1.5

Owner ID

This field allows you to view the current Owner ID (Owner System ID or Owner WACN ID) of a connected radio (with the Query Radio button), or select a new Owner ID in order to update the radio's Owner ID (with the Update Radio Data button).



IMPORTANT: Owner IDs are needed when Write Protecting radios and apply only to Trunking dispatch capable radios.



NOTE: The Owner Advanced **Key Type** and its corresponding **Owner System ID** or **Owner WACN ID** are initially determined for the radio and its codeplugs at the time of the radio original purchase.

Accessed Only: When an **Unlimited Access** Advanced Key is loaded into the application (as seen in the [System Key Report on page 105](#)), and when a codeplug is not currently open.

The following selections are supported:

0

This is the initial default value.

Advanced System/WACN Key

To select a new Owner ID, first select the appropriate [Key Type on page 125](#).

- Available selections are based on any **Limited** or **Unlimited** Advanced Keys that are loaded into the application (as seen in the [System Key Report on page 105](#)).
- Available selections are also filtered by the [Key Type on page 125](#) selection: **Advanced System** or **Advanced WACN**.

1.2.2.5.1.6

Write Protect

This field allows you to view the current Write Protect status of a connected radio (with the Query Radio button), or change the Write Protect status of the radio (with the Update Radio Data button).



NOTE:

When enabled, it indicates that the radio is currently Write Protected, and is used to Write Protect the radio.

When disabled, it indicates that the radio is currently not Write Protected, and is used to disable Write Protect for the radio.

Accessed Only: When an **Unlimited Access** Advanced Key is loaded into the application (as seen in the [System Key Report on page 105](#)), and when a codeplug is not currently open.

1.2.2.5.1.7

Query Radio Button

This button allows the application to query the attached radio to retrieve its Key Type, Owner System ID and Write Protect Status. The radio must be turned on and attached with a USB connection.

1.2.2.5.1.8

Update Radio Data Button

This button causes the application to write to the attached radio in order to update its codeplug for the Key Type, Owner ID or Write Protection status. This button remains unavailable until changes are made to one of these three fields.

1.2.3

POP25 Batch Programming Menu

This menu allows you to create a group of radios to be programmed during a specific date and time through POP25 communications.

The target radio serial number and ID are read from the radio to the codeplug. Then, the codeplug is written to the radio.

1.2.3.1

POP25 Batch Programming Radio List Window

This window allows you to create or edit lists of targeted radio using radio ID or radio IP Address.

Once the radio list is created, you can open the list from the POP25 Batch Programming Scheduler window. This window is for scheduling POP25 Batch Programming on date and time basis.

This section contains the following fields and buttons:

1.2.3.1.1

Radio List File Path

This field allows you to view the location or path of the current POP25 Batch Programming Radio List.

1.2.3.1.2

Radio ID

This field allows you to enter a targeted Radio ID in Batch Programming Radio List.

1.2.3.1.3

Radio IP Address

This field allows you to enter a targeted Radio IP Address in Batch Programming Radio List.

1.2.3.1.4

Creating POP25 Batch Programming Radio List

Procedure:

1. To locate and open the previous created Radio List, click **Browse**.
2. Enter the Radio ID and or the Radio IP addresses in the record.
3. When creating a new Radio List, perform one of the following actions:
 - To remove all radio records or rows, click **Delete All**. Click **Save** to create a new file name or path.
 - To remove specific records or row, click *<preferred record or row>* → **Delete**.
4. Click **Save As**.



NOTE: Files can only be saved in .XML file extension.

5. To close the POP25 Batch Programmer Radio List window, click **Done**.

1.2.3.2

POP25 Batch Programming Scheduler Window

This window allows you to schedule a date and time for a group of radio to program through POP25 communications.

If the radio is password protected with a read or write password feature, you are required to enter the password during the POP25 programming session.



NOTE:

To select the Automatic Registration Server, you must define the server in the ARS Data Administrator tool. The tool is launched from the Menubar, Tools, Options, Admin, or ARS Data Administrator button.

The Batch Programming Progress window is automatically launched.

This section contains the following fields and buttons:

1.2.3.2.1

Select Schedule Date and Time

This field allows you to select the date and time for Batch Programmer to program all radios in the Selected Radios column.

1.2.3.2.2

Radio List File Path

This field allows you to view the location of the current POP25 Batch Programming Radio list.

1.2.3.2.3

Automatic Registration Server

This field selects an Automatic Registration Server (ARS) to connect to the server and determines the radio or radio IP Address during Batch Programming session. The Radio IP Address corresponds with its Radio ID in Radios List.

1.2.3.2.4

Enable ARS Server IP Address

This field enables the Batch Programmer to determine the radio or Radio IP Address using Automatic Registration Service (ARS) server during Batch Programming session. The Radio IP Address corresponds with its Radio ID in Radios List.

1.2.3.2.5

Connection Type

This field allows you to view the type of connection in Automatic Registration Server (ARS). The connection is either Secure or Clear.

1.2.3.2.6

Available Radios

This field allows you to view all radios from the currently loaded Radio List that are not added to the Selected Radios column. The radios are in Radio ID or Radio IP Address format.

1.2.3.2.7

Selected Radios

This field allows you to view all radios from the Radio List that are added in the Available Radios. The radios are in Radio ID or Radio IP Address format.

1.2.3.2.8

Number of Retries for Failed Radios

This field allows you to enter the number of times that the application attempts to program a nonresponsive radio.

The application continues to retry until it receives an acknowledgement confirming the successful receipt of transmission, or until the selected number of retries is reached.

1.2.3.2.9

Write Protect Radios

This field enables the POP25 Batch Programmer to Write Protect the radio in the Selected Radios list. When this field is enabled, an Owner ID Advanced Key must exist for each target radio.

1.2.3.2.10

Opening POP25 Batch Programming Scheduler

Prerequisites: You need to create Radio List in the **Batch Programming Radio List Window**.

Procedure:

1. To open a Radio List, click **Browse**.
2. Choose **Select Schedule Date and Time**.
3. Select **Automatic Registration Server**.
4. From the Available Radio Column, move the *<required radio>* to Selected Radios column. To configure the Selected Radio column, perform one of the following options:
 - **Add**
 - **Add All**
 - **Remove**
 - **Remove All**
5. Select **Number of Retries for Failed Radios**.
6. If Write Protected Key is attached, select **Write Protect Radios**.
7. To initiate the Batch Programming, click **Start**.

1.2.4

Voice Announcement

This feature allows you to manage Voice Announcement utilities.

This section contains the following features:

1.2.4.1

Voice Announcement Converter Utility

The Voice Announcement Converter Utility allows you to convert audio files from the * .WAV format to Motorola Solutions * .WVA Voice Announcement audio file format. The audio file can be loaded to the current codeplug from the Voice Announcement List page.

The audio file must be prerecorded in * .WAV format.



NOTE:

- Only * .WVA format is compatible with the radio codeplug.
- The * .WAV file format parameters must be 8000 samples per second, 16 bits per sample, Monochannel PCM, and less than 3 seconds.
- The Site Selectable Alerts (SSAs) are voice announcement that repeats periodically. The SSAs may occur when receiving voice transmission. When mixing SSAs with received voice audio, the SSAs are reduced in volume to ensure that the voice message is heard. It is important that the SSAs audio files are created with clear loud audio to ensure that they can be heard clearly when played at reduced levels.

1.2.4.1.1

Converting Audio File Format

Procedure:

1. From Voice Announcement Source File Location, select **Browse** → *<required audio file>*.



NOTE: All .WAV files is listed in the Available WAV Files list.

2. From Voice Announcement Output Directory, select **Browse***<required directory>*.
3. From the Avialable WAV Files list, select *<required file>* → **Convert**.



NOTE:

To select multiples files, hold **CTRL** key and select *<required file>*.

The Voice Announcement File Convert Results displays the conversion status of each file.

1.2.4.2

Voice Announcement Codeplug Usage Window

This window allows you to view the total duration of all Voice Announcement files loaded in the program codeplug. The unit measurement for the duration is in seconds.

You can load Motorola Voice Announcement (.MVA) files into the codeplug.



NOTE:

Only Voice Announcement Converter Utility can generate .MVA from .WAV.

Only Voice Annoucnemt List Page can load .MVA files to the codeplug.

Once the voice files are loaded to the Voice Announcement List page, the files are available in the following sections:

- Voice Announcement fields on the Voice Announcement Wide Page
- Zone Channel Assignments
- Channel Announcement

- Zone Announcement fields



NOTE: The .MVA voice files are not compatible with .MVF voice files for channel announcements in older radio models.

1.2.4.3

Voice Announcement Download Utility Window

This window allows you to download voice or audio files stored in the application codeplug.

The list of Voice Announcement files is identical to the list in the Radio Ergonomic Configuration in Voice Announcement List.

1.2.4.3.1

Downloading Audio Files

Procedure:

1. Select *<required file>* → **Download**.
2. To select a directory, click **Browse**.
3. To select multiple files, press **CTRL** key, and select *<required files>*.
4. To see the download status, click **Voice Announcement Download Results**.

1.2.5

CPS Name Field Data Validation

A validation system for the data you have entered in the name field.

The CPS typically supplies a unique and generic name for fields that make up a record/row.

For easier identification, Name or Alias fields are selectable from another location and allows radios recognizable names to be entered.

For example, the [Trunking System Name on page 1188](#) (which you may redefine) identifies a record field describing a particular Trunking System. The individual Trunking Systems is then assigned through the Trunking Personality [System on page 1236](#) field by selecting the desired [Trunking System Name on page 1188](#).



NOTE:

The Name Fields Include:

- [Alert Alias on page 878](#)
- [ASTRO Talkgroup List Name on page 1053](#)
- [Channel Name on page 1294](#)
- [Color Text on page 788](#)
- [Consolidated Action Name on page 451](#)
- [Contact Name on page 1270](#)
- [Control Head Alias on page 421](#)
- [Conventional Personality Name on page 1091](#)
- [Conventional System Name on page 1060](#)
- [Data Profile Name on page 981](#)
- [Data User Name on page 964](#)
- [DTMF Codes Name on page 1018](#)
- [DTMF Timing Name on page 1017](#)
- [Emergency Profile Name on page 926 - Conventional](#)
- [Emergency Profiles Name on page 940 - Trunking](#)
- [External Mic Noise Reduction Profile Name](#)
- [Frequency Options Name on page 1127](#)
- [Hot List Alias - ASTRO 25](#)
- [Hot List Alias - ASTRO Conventional](#)
- [Hot List Alias - MDC Conventional](#)
- [Hot List Alias - Type II](#)
- [Internal Mic Noise Reduction Profile Name](#)
- [Key Name on page 897](#)
- [Port List Alias on page 1013](#)
- [Message Alias Text on page 1051 - Conventional](#)
- [Message Alias Text on page 1217 - Trunking](#)
- [MPL Alias on page 1037](#)
- [Radio Alias on page 333](#)
- [Radio Profile Name on page 811](#)
- [Relay Name on page 383](#)
- [Scan List Alias on page 1306](#)
- [ASTRO OTAR Profile on page 902](#)
- [Site Alias Text on page 1223](#)
- [Site Selectable Alert List Name on page 877](#)
- [Status Alias Text - Conventional](#)

- [Status Alias Text on page 1219](#) - Trunking
- [Talkgroup Alias Text on page 1054](#)
- [Talkgroup Name on page 1251](#)
- [Tone List Alias on page 844](#)
- [Top Display Channel Name on page 1296](#)
- [Top Display Zone Name on page 1284](#)
- [Trunking Personality Name on page 1238](#)
- [Trunking System Name on page 1188](#)
- [Zone Names on page 1284](#)



WARNING:

General Warning:

All Name Fields are validated by CPS and duplicated Name Fields for the same record type are considered invalid.

- Duplicate names are not accepted by the CPS.
- The CPS does not copy a record Name Field in the Table View when using Copy and Paste or Fill Up and Fill Down feature.
- When adding new records using **Current** as the Copy Type, the CPS does not duplicate the record name; instead, it uses the Default value for the new record.

The Computer's Input Language Warning:

The input language depends on the keyboard selection made in your computer's operating system, and not this language selection; however, numbers entered into a CPS text field are always shown in the form 0–9, regardless of the CPS language selection, including **Arabic**.

The Computer's Input Language Warning:

The input language depends on the keyboard selection made in your computer's operating system, and not this language selection; however, numbers entered into a CPS text field are always shown in the form 0–9, regardless of the CPS language selection, including **Arabic**.

Chinese and Arabic Character Restrictions:

When the Radio Display Language is set to **Chinese (Traditional)** or **Arabic**, for radio recognizable Name or Alias Fields where you are able to validly enter up to 14, 8, or 4 characters into the text box (the limit depends on the particular field), if you enter text containing Chinese (Traditional) or Arabic characters, then only 8, 6 or 2 characters respectively can be displayed on the radio. Therefore, you must decide how to abbreviate the text appropriately so that the meaning is not lost to the radio.

Diacritics:

These are not supported in the CPS as the radio's display is unable to represent them.

Older Codeplug Data:

It is possible that older codeplugs may contain duplicate Name Fields. When using a Drag and Drop or Import From XML process to bring in record data from such codeplugs, the CPS does allow duplicate Name Fields to be copied over to the new codeplug; therefore, a certain amount of manual clean-up may be required before writing codeplug data to a radio. The Invalid Fields Report is always the indicator of which fields must be corrected.

1.2.6

Cross-Application Drag and Drop

A feature that allows you to copy codeplug data using a cross-application (CPS-codeplug to CPS-codeplug) Drag and Drop process.

Dragging and Dropping data increases your efficiency by greatly reducing repetitive programming.

 **WARNING:** Prior to performing a Cross Application Drag and Drop, the appropriate Software System Key File(s) or Advanced (Hardware) Key(s) must be loaded in the appropriate Trunking System's [System ID on page 1274](#) or [Home WACN ID on page 1192](#) fields depending on the required [System Key Type on page 1189](#); this must be true for both the Source and the Target application. Failure to follow this instruction causes System Key protected field data to not copy to the destination application.

1.2.6.1

Copying Codeplug Data using Cross-Application Drag and Drop

Prerequisites: Ensure all CPS windows are closed.

Procedure:

1. Open two application instances, one containing the source codeplug, and the other the target codeplug.
2. From the source codeplug, click and hold the left mouse button on the node containing the data to be copied over to the target codeplug.
3. Drag the node from the source codeplug and drop it onto the same node in the target codeplug.

The [Drag and Drop Report on page 103](#) at the bottom of the application contains the results of the Drag and Drop operation. See also [CPS Name Field Data Validation on page 131](#).

1.2.7

Intelligent Lighting

A feature that uses color alerts to notify you of the radio mode, potential emergencies, or specific events – providing important information at a glance.

Supported by both Mobile control heads and Portable radios.

Color alerts include a color bar that highlights text in the main display, as well as a temporary change in the color of backlights for keypads and the Portable's top display.

Example 1: The Mobile O9 Control Head uses red highlighted text on the display as well as red backlights behind the keypad and programmable buttons to indicate an Out-of-Range condition.

Example 2: The dual-display Portable uses color highlighted text on the front display, (in addition to color changes in backlighting, for the following alert notifications:

- Green - **Call Received**
- Orange - **Emergency**
- Red - **Low Battery**

1.2.8

Trunking Frequency Constraints

The CPS uses internal rules to validate all Control Channel and Failsoft frequencies entered by the user.

The particular rules applied depend on the Trunking System's System Type (and hence, the Trunking Personality's Protocol Type) and the current frequency band (OBT/700/800/900 MHz).

Protocol Type:	Frequency Band	Band Control Channel and Failsafe Frequency Constraints:
Type II	OBT	<ul style="list-style-type: none"> Rx / Tx frequencies are validated against frequency parameters entered in the OBT Channel Assignment list defined for the referenced Trunking System. In addition, that System's Type II Frequency Band field must be set to the desired band: VHF, UHF1, or UHF2.
Type II	800 MHz	<ul style="list-style-type: none"> Rx frequencies must be valid values for the frequency range predefined for the radio's codeplug. Tx frequencies must be set to exactly 45 MHz less than the corresponding Rx frequency. In addition, that System's Type II Frequency Band field must be set to 700 / 800 MHz. Type II is not supported in the 700 MHz band.
Type II	900 MHz	<ul style="list-style-type: none"> Rx frequencies must be valid values for the frequency range predefined for the radio's codeplug. Tx frequencies must be set to exactly 39 MHz less than the corresponding Rx frequency. In addition, that System's Type II Frequency Band field must be set to "900 MHz".
ASTRO 25	700/800/900 MHz	<ul style="list-style-type: none"> Rx frequencies must be valid values for the frequency range predefined for the radio's codeplug. In the 700 MHz range, Tx frequencies must be set ex-

Protocol Type:	Frequency Band	Band Control Channel and Failsafe Frequency Constraints:
ASTRO 25	OBT/700/800/900 Rx	<p>actly 30 MHz higher than the corresponding Rx frequency.</p> <ul style="list-style-type: none"> ● In the 800 MHz range, Tx frequencies must be set exactly 45 MHz less than the corresponding Rx frequency. ● In the 900 MHz range, Tx frequencies must be set exactly 39 MHz less than the corresponding Rx frequency. <hr/> <ul style="list-style-type: none"> ● Rx frequencies must be valid values for the frequency range(s) predefined for the radio's codeplug ● Rx frequencies are validated against all ASTRO 25 Channel ID records/rows previously defined for the referenced Trunking System, in the range defined by: <ul style="list-style-type: none"> ○ Minimum Frequency = Base Frequency. ○ Maximum Frequency = Base + (Channel Spacing times 4095), V ○ The (Maximum Frequency - Minimum Frequency) range value must be evenly divisible by the Channel Spacing.
ASTRO 25	OBT Tx	<ul style="list-style-type: none"> ● Tx frequencies must fall within the same bandsplit as the corresponding RX Frequency ● Tx frequencies are validated against all ASTRO 25 Channel ID records/rows previously defined for the referenced Trunking System, in the range defined by: <ul style="list-style-type: none"> ○ The same rules as OBT Rx

Protocol Type:	Frequency Band	Band Control Channel and Failsafe Frequency Constraints:
		<ul style="list-style-type: none"> ○ The Minimum Frequency and Maximum Frequency may be offset (plus or minus) by an amount / direction determined by the Transmit Offset / Transmit Offset Sign.

1.2.9

Ultra High Frequency Bands

Ultra High Frequency (UHF) is the next higher frequency range to VHF, within the radio spectrum.

UHF equipment operates in the frequency range from 300 MHz to 3000 MHz (3 GHz). However, in the context of land mobile radio (LMR) usage, UHF primarily refers to one of two frequency bands (UHF1/UHF R1 (UHF Range 1) and UHF2/UHF R2 (UHF Range 2).

More recent LMR UHF bands include 700 MHz, 800 MHz, and 900 MHz. In addition to LMR usage (which includes Federal and business users), more recent UHF uses include digital TV, Global Positioning Systems (GPS), Bluetooth, cellular and cordless phones, the Family Radio Service (FRS) and Wi-Fi. UHF1 and UHF2 radios came into usage following WWII.

7/800 MHz radios came into usage starting in the 1970's and 1980's, primarily to support Association of Public-Safety Communications Officials (APCO) Project 25-compliant Trunking systems, which allow for better equipment interoperability between different radio manufacturers.

The UHF Bands are as follows:

- UHF1: 380 – 470 MHz
- UHF2: 450 – 520 MHz
- 700 MHz: Rx/Tx: 764 – 776 MHz
 - Tx Only: 794 – 806 MHz
- 800 MHz: Rx/Tx: 851 – 870 MHz
 - Tx Only: 806 – 825 MHz
 - Tx Only for APX 8500: 804 – 825 MHz
- 900 MHz: 896 – 941 MHz



NOTE:

- The end value of UHF1 extends to 472 MHz when the radio/codeplug supports the **Extended UHF Range 1 Capable** Extended Feature. In this case, the Regional Governance is **ACMA**.
- The end value of UHF1 extends to 480MHz when the radio model is APX6000B and the Regional Governance is **RTTE**. If the radio uses this expanded frequency, the radio needs to be retuned.

1.2.10

Cloud Exchange Format File

This new file format is used for transferring codeplug configurations between Customer Programming Software (CPS) and RadioCentral. It contains only shareable configuration items, without device-specific data such as ID assignments. Due to this limitation, a Cloud Exchange Format (CXF) file opened in CPS cannot be used to write the configuration to the device as device operations are disabled. CXF files are always password protected regardless of whether a codeplug password is configured or not. If a configuration with codeplug password is saved as a CXF file, CPS shows two password prompts to open the file.



NOTE: The CXF password must contain from 10 to 32 characters.

Chapter 2

Introduction to Radio Management

The Radio Management (RM) allows you to configure and program multiple radios at the same time. The radio codeplug are stored on a central database server allowing for remote data configuration and remote radio program.

A single radio codeplug can be used as a template, and shared across multiple radios.

The changes to the template or to a radio can be scheduled as a programming job through Over-The-Air (OTAP), USB, or Wi-Fi connection.

When using USB or Wi-Fi connection, Gang Programming and Gang FLASHing allow simultaneous programming and software upgrade of up to 16 radios.

The CPS RM system is designed to allow the following components to be located on one computer, or on multiple computers:

- RM server
- RM clients
- Device Programmer
- Job Processors

The **AutoUpdate Enable** feature in RM ensures that all components are connected to the RM server are running compatible software versions.

The **AutoUpdate Enable** feature is selected during the installation of the RM suite.

2.1

Radio Management Server

The Radio Management (RM) Server provides storage for all radio codeplug or template data that are read from a radio or written to a radio.

The RM Client Radio Details Window provides information on the radio read and write history, and the ability to restore a radio to previous codeplug status.

When the Device Programmer detects a radio, the RM Server transfers job instructions and or job data.

The jobs stored in the RM Server use the Time Zone of the RM Server.

The following components may exist on several different computers or devices, which are connected to the same RM server:

- Job Processors
- Device Programmers
- RM Clients



NOTE: It is recommended to have the following components on a separate CPU device:

- RM Server
- RM Client
- Device Programmer
- Job Processor

2.2

Radio Management Server Utility

The Radio Management Server Utility allows you to view the current Radio Management Server status, settings, and manage Radio Management Server multicomputer access and database tasks.

2.2.1

Radio Management System Management

The **Status** selection allows you to monitor the Radio Management (RM) services installed on the computer.

The following services are available in RM:

Table 6: RM Services

Services	Description
Discovery Server	This service provides authentication functions to RM.
Job Server	This service handles connections to RM Devices Programmers and RM Job Processors.
RM Server	This service handles connections to RM Clients.
RM Server Database	This service identifies the location and version for the RM database.

The following **Status** selections are available in RM:

Table 7: Status Selection

Status	Description
Service Name	This status defines the name of RM service.
Location	This status defines the URL of the service on the computer.
Registered Status	This status displays the service within the RM system. The status is either <i>Available</i> , <i>Unavailable</i> , or <i>Unknown</i> .
Service Status	This status displays the current operational state of the service within the RM System. The status is either <i>Running</i> or <i>Stopped</i> .
Version	This status displays the current version of the RM service running on the computer. The status is either <i>Unavailable</i> , or <i>Unknown</i> .

The following buttons are available for **Status** selections in RM:

Table 8: Status Selection Buttons

Buttons	Description
Stop All or Start All	<p>The Stop All button is used to refresh all RM services on the computer. It resets all server connections.</p> <p> NOTE: Only use the Stop All button when there is no job running.</p> <p>Once the services are stopped, the text on the button changes to Start All. The Start All button restarts all RM services.</p>
Refresh	This button updates the table display to show the current settings.

2.2.2

Radio Management Database Management

The **Database Settings** selection serves to backup and restore the Radio Management (RM) database, and clear RM database locks.

 **NOTE:** It is recommended to back up the server when new radio and data are added to the RM system.

2.2.2.1

Backing Up the Radio Management Server Database

Procedure:

1. To locate or create a new folder to store backup, select **RM Server Utility** → **Database Settings** → **Database Backup** → **Browse**.

 **NOTE:** To protect the backup folder, select **Enable Password** → *<preferred password>*. The eye icon allows you to view the password.
2. To initiate the backup operation, select **Backup**.

The display shows a warning message and warns against performing any operations using the RM Client during backup operation.
3. To confirm the backup operation, select **Yes**.

Result: A backup folder is created with the current date and time in the **Destination** folder.

2.3

Radio Management Client

The Radio Management (RM) Client allows you to view and define codeplug or template values for radios that are within your fleet.

The codeplug values modified from the RM Client are specific values such as Radio ID and IP addresses.

The generic codeplug values are contained within RM templates, which can be applicable to multiple radios.

The template codeplug values can be modified from the program's main user interface.

The codeplug and template values are stored in the RM Server database.

The RM Client allows scheduling of read or write codeplug, or template data.

 **NOTE:** There could be more than one RM Client in an RM Server.

2.3.1

Icon Indicators

Icon	Name	Description
	Actions	Provides tools for adding, editing, deleting, organizing, and maintaining of codeplug or template records and value.
	Data View	Allows you to view and define Data Profile information in the RM Server.
	Groups	Allows you to select the specific group.
	Job View	Allows you to view scheduled programming jobs in the RM server.
	OTAR View	Allows you to view and define OTAR Profile information of the radios in the RM Server.
	Radio View	Allows you to view and define Templates, Groups, Radio ID, and Data-Wide IP Address of the radios in the RM Server.
	Scheduled a Job	Allows you to create a new Read or Write codeplug event for the radio.
	Search	Allows you to filter the data that you want to see in the RM Server.
	System View	Allows you to view and define Conventional or Trunking Radio ID of the radios in the RM Server.

2.3.2

Radio View

The Radio View in Radio Management (RM) Client allows you to view and define templates, Radio ID, and IP addresses for radios within the RM Server database.

The Job Processor automatically validates and saves all data edits when entered.

This section contains the following fields:

2.3.2.1

Right-Click Menu

The Right-Click menu provides tools to maintain the highlighted radio codeplug or template records and values in the Radio Management (RM) Server. The Menu is available from the RM Client Radio View only.

Table 9: Selections of Right-Click Menu

Menu Selections	Keyboard Shortcut	Definitions
Show Details	Ctrl+W	Launches the Radio Details window.
Delete	Del	Deletes the radio from the server.
Select Group	Ctrl+Alt+G	Allows you to select a radio into a new group.
Edit Template	Ctrl+G	Launches the main program interface to edit or view template.
Select Template	Ctrl+M	Launches the Select Template window to apply a new Template for the radio.
Discard Changes	Ctrl+L	Discards any recent changes made for the radio.
Schedule Job	Ctrl+J	Launches the Schedule a Job window to create a new read or write programming job for the radio.
Cancel Job	Alt+Shift+J	Allows you to cancel a job.
Complete Job	Ctrl+Alt+B	Allows you to manually move the state of the selected radio from the transferred state to the completed state.
Update Radio Data	Not available	Launches the Query/Update Radio Data window.
Upgrade → Upgrade Firmware	Not available	Allows you to upgrade the firmware template.
Upgrade → FLASHport Upgrade	Not available	Allows you to upgrade the FLASHport feature set.
Upgrade Language Pack	Not available	Updates the Language Pack to the latest version and sets the Language Packs Modified flag.
Export → Radios	Ctrl+Shift+R	Allows you to export the radio to the codeplug file format.
Export → DVRS		
Export → Grid to File		
Modify Radio Password	Not available	Launches the Modify Radio Password window to override the current radio password.

2.3.2.2

Serial Number

This field displays the radio Serial Number of all radio codeplug in Radio View.

Each record or row represents one codeplug.

2.3.2.3

Radio Alias

This field allows you to view or modify the radio name of all radio codeplug in Radio View.

The **My Radio Identification** menu selection causes the Radio ID Alias to appear in the radio display.

Each record or row represents one codeplug.



NOTE: This field is not editable in Edit Template mode.

Accessed Only: When the **Radio Alias Enable** field is enabled.



NOTE: Characters, numbers, and spaces are allowed when creating radio alias.

The number of characters of the alias is determined by the display size of the radio.

2.3.2.4

Template

This field allows you to view or define the Template of all radio codeplug in Radio View.

The Template contains generic radio codeplug values, which can be applied to multiple radios. The Template codeplug values are viewed and modified in the main program's user interface.

Each record or row represents one codeplug.

2.3.2.5

Group

This field allows you to assign selected radio to a group or subgroup.

Each record or row represents one codeplug.

2.3.2.6

Modified

This field allows you to view the color-based indicators alerting modified status for all radio codeplug in Radio View.

Each record or row represents one codeplug.

2.3.2.7

Job Status

This field allows you to view the current Job Status of all radio codeplug in Radio View.

Each record or row represents one codeplug.

The following statuses are available for job status:

- Scheduled

- Scheduled, Processing Job
- Running, Waiting for RM Device Programmer
- Running, Waiting for Radio
- Running, Reading Radio
- Running, Waiting for Job Processor
- Running, Processing Job
- Expired
- Failed
- Cancelled
- Completed

2.3.2.8

Job Name

This field allows you to view the Job Name of all radio codeplug in Radio View. The job name is created in the Schedule Job dialog's Job Name field.

Each record or row represents one codeplug.

2.3.2.9

Model Number

This field allows you to view the Model Number of all radio codeplug in Radio View. The Model Numbers are read from codeplugs.

Each record or row represents one codeplug.

2.3.2.10

FLASHCode

This field allows you to view the current FLASHCode of all Radio Management (RM) templates in Radio View.

The FLASHCode number reflects the entire list of features or system options that a codeplug is capable of using.

See Register Radio Licenses feature to upgrade a template or radio to a **New FLASHcode** or Feature Set.

Each record or row represents one codeplug.



NOTE:

Hover over the radio FLASHcode or go to Manage Radio Licenses window to see the entire Feature Set of the radio.

2.3.2.11

Over the Air Fixed IP

This field allows you to view or define the radio Over the Air (OTA) Fixed IP address (FIP) for all codeplug in Radio View.

The IP address is used for direct Device Programmer-POP 25 or OTAP for the radio to communicate, and eliminate the need for ARS or FIP Mode.

Each record or row represents one codeplug.



NOTE:

This field is a nontemplate value. Each radio has a unique IP address.

Selections are valid when the following is true:

- The four octets must be in the range: [1-223] . [0-255] . [0-255] . [0-255]
- IP Address cannot be the Limited Broadcast Address: 255 . 255 . 255 . 255

And, IP Address must be a valid Class A, B, or C address:

- The IP Address is considered Class A when octet 1 is between 0-127; the Network ID is then this first octet:
 - when the IP Address is Class A, then the IP Address can be 1 . 0 . 0 . 1 to 126 . 255 . 255 . 254
 - when the IP Address is Class A, then the IP Address cannot be 0 . xxx . xxx . xxx or xxx . 255 . 255 . 255 or xxx . 0 . 0 . 0 or 127 . xxx . xxx . xxx
- The IP Address is considered Class B when octet 1 is between 128-191; the Network ID is then the first 2 octets:
 - when the IP Address is Class B, then the IP Address can be 128 . 1 . 0 . 1 to 191 . 255 . 255 . 254
 - when the IP Address is Class B, then the IP Address cannot be 128 . 0 . xxx . xxx or xxx . xxx . 255 . 255 or xxx . xxx . 0 . 0
- The IP Address is considered Class C when octet 1 is between 192 -223; the Network ID is then the first 3 octets:
 - when the IP Address is Class C, then the IP Address can be 192 . 0 . 1 . 1 to 223 . 255 . 255 . 254
 - when the IP Address is Class C, then the IP Address cannot be 192 . 0 . 0 . xxx or xxx . xxx . xxx . 255 or xxx . xxx . xxx . 0

2.3.2.12

Serial Link 1 Subscriber IP Address

This field allows you to view or define the Serial Link 1 Subscriber IP Address of all radio codeplug in Radio View. This IP Address is assigned to the Subscriber Unit (SU) end of the serial link 1.

This IP Address default value is 192.168.128.1.

Each record or row represents one codeplug.



NOTE: This field is not editable in Edit Template mode.

The Network ID Octets of the Serial Link 1 Subscriber IP Address must match the Network ID octets of the Peer IP Address field for the current Data Profile.

Table 10: Serial Link 1 Subscriber IP Address and Network ID Portion

IP Address First Octet	IP Address Class	Network ID
0-127	Class A	First 1 octet
128-191	Class B	First 2 octets
192-223	Class C	First 3 octets

The Serial Link 1 Subscriber IP Address cannot be the same as the following IP Addresses:

- Peer IP Address

- Bluetooth Subscriber IP Address
- Bluetooth Peer IP Address
- Subscriber Air-Interface IP Address

The octet values of the Serial Link 1 Subscriber IP Address must comply the following conditions:

- Value is between 0-255.
- Value cannot all be 0.
- Value cannot all be 255.

2.3.2.13

Owner System ID

This field allows you to view the Owner System ID of all codeplug in Radio View.

The Owner Advanced Key Type, Owner System ID, Owner WACN ID, of the radio and the codeplug are determined at first purchase.

Accessed Only: When an Unlimited Access Advanced Key is loaded into the program and the selected radio ASK Required field is applicable.

Table 11: Owner System ID Selections

Selection	Definition
0	This is the initial default value.
Advanced System or WACN Keys	The available selections are based on Limited or Unlimited Advanced Keys that are loaded into the CPS. The available selections are also filtered the Key Type selection which are Advanced System or Advanced WACN .

2.3.2.14

DSP Version

This field allows you to view the software Digital Signal Processing (DSP) version of the currently attached radio.

This information is stored in the radio internal codeplug.

2.3.2.15

Secure Version

This field allows you to view the version of the secure-related Universal Cryptographic Module (UCM) of the attached radio.

This information is stored in the radio internal codeplug.

2.3.2.16

Secure Hardware Version

This field allows you to view the attached radio's current secure hardware version number.

2.3.2.17

Bootloader Version

This field allows you to view the software Bootloader version of the attached radio.

This information is stored in the radio internal codeplug.

2.3.2.18

Option Board Version

This field allows you to view the firmware version of the Option board in the radio.

The firmware version of the Option board can only be modified with a FLASHport Upgrade.



NOTE: When the application reads this information from a codeplug file (not from a radio), this field displays N/A.

Accessed Only: When the radio is model/option capable.

2.3.2.19

Group Data Talk Group

This field displays the talk group that is used for the Group Data session to transmit the firmware (and optionally language pack) over the air through the Group Data Gateway.

This value is not editable and gets updated once the radio has started downloading the firmware.

2.3.2.20

OTAR ID

This field allows you to view or define the Over-The-Air-Rekeying (OTAR) ID of all ASTRO OTAR radio-codeplug (record/rows) in Radio View.

This ID is needed for radio communication with the Key Management Facility (KMF).



IMPORTANT: This feature is a non-template type value, from the main application interface, the Secure Wide ASTRO OTAR [Individual ASTRO OTAR Radio ID on page 892](#) field is not editable when accessing the application in an Edit Template mode (see Manage Templates).



NOTE:
Each record/row in this Radio View represents one codeplug.

See Radio Management [Column Data Options](#) (Sorting, Hiding and Unhiding columns).

See [Creating and Managing Radio Groups on page 190](#).

Accessed Only:

- [Secure Operation on page 880](#) field is set to **Hardware**.
- [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only**.
- Radio is model/option capable.

Table 12: Range

Minimum	Maximum
1	9999998

2.3.2.21

Peer IP Serial Link 1 Address

This field allows you to view or define the Serial Link 1 Peer Internet Protocol (IP) Address of all radio-codeplug (record/rows) in Radio View.

This IP Address is assigned to the Mobile Computer (MC) end of the serial link1.



WARNING: This feature applies in all cases except the following:

- [Conventional Systems](#) having a selected [Data Profile](#).
- A Conventional System does not have a Data Profile selected in the [Data Profile Selection on page 1059](#) field.
- The Conventional System then uses the Peer IP Address defined in the Data Profile View Peer IP Address field.



IMPORTANT: This feature is a non-template type value, from the main application's interface, the Data Wide - (Serial Link 1 Address) [Peer IP](#) field is not editable when accessing the application in an Edit Template mode (see [Manage Templates](#)).



NOTE:

Each record/row in this Radio View represents one codeplug.

See Radio Management [Column Data Options](#) (Sorting, Hiding and Unhiding columns).

See [Creating and Managing Radio Groups on page 190](#).

The Network ID octets of this IP Address must match the Network ID octets of the Subscriber IP Address field for the current [Data Profile](#) (record/row).

- The Network ID portion of an IP Address is defined as follows:
 - When octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
 - When octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
 - When octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets

The Serial Link 1 Peer IP Address cannot be the same as the following IP Addresses:

- Subscriber IP Address.
- Bluetooth DUN Subscriber IP Address.
- Bluetooth DUN Peer.
- Subscriber Air-Interface IP Address.

The octet values of the Serial Link 1 Subscriber IP Address must comply the following conditions:

- Value is between 0-255.
- Value cannot all be 0.
- Value cannot all be 255.
- Last octet value cannot be 255, which is reserved for directed broadcast for the associated Network ID Portion of the Address.

2.3.2.22

Bluetooth DUN Subscriber IP Address

This field allows you to view or define the Bluetooth Dial Up Network (DUN) Subscriber Internet Protocol (IP) Address of all radio-codeplug (record/rows) in Radio View.

This IP Address is assigned to the Subscriber Unit (SU = radio) end of the Bluetooth (BT) link.



WARNING: This feature applies in all cases except the following:

- [Conventional Systems](#) having a selected [Data Profile](#).
- A Conventional System does not have a Data Profile selected in the [Data Profile Selection on page 1059](#) field.
- The Conventional System then uses the Peer IP Address defined in the Data Profile View Peer IP Address field.



IMPORTANT: This feature is a non-template type value, from the main application's interface, the Data Wide - [Bluetooth DUN Subscriber IP Address](#) field is not editable when accessing the application in an Edit Template mode (see Manage Templates).



NOTE:

Each record/row in this Radio View represents one codeplug.

See Radio Management [Column Data Options](#) (Sorting, Hiding and Unhiding columns).

See [Creating and Managing Radio Groups on page 190](#).

Accessed Only: When [Bluetooth Enable](#) is **Enabled**, and when the radio is model/option capable.

The Network ID octets of this IP Address must match the Network ID octets of the [Bluetooth Peer IP Address](#) field for the current [Data Profile](#) (record/row).

- The Network ID portion of an IP Address is defined as follows:
 - When octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
 - When octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
 - When octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets

The Bluetooth DUN Subscriber IP Address cannot be the same as the following IP Addresses:

- Bluetooth DUN Peer IP Address.
- Bluetooth DUN Subscriber IP Address.
- Peer IP Address.

The octet values of the Serial Link 1 Subscriber IP Address must comply the following conditions:

- Value is between 0-255.
- Value cannot all be 0.
- Value cannot all be 255.
- Last octet value cannot be 255, which is reserved for directed broadcast for the associated Network ID Portion of the Address.

2.3.2.23

Bluetooth DUN Peer IP Address

This field allows you to view or define the Bluetooth Dial Up Network (DUN) Peer Internet Protocol (IP) Address of all radio-codeplug (record/rows) in Radio View.

This IP Address is assigned to the Mobile Computer (MC) end of the Bluetooth (BT) link and is also used to address the MC with over-the-air packet data.



WARNING: This feature applies in all cases except the following:

- [Conventional Systems](#) having a selected [Data Profile](#).
- A Conventional System does have a Data Profile selected in the [Data Profile Selection on page 1059](#) field.
- The Conventional System then uses the Peer IP Address defined in the Data Profile View Peer IP Address field.



IMPORTANT: This feature is a non-template type value, from the main application's interface, the Data Wide - [Bluetooth DUN Peer IP Address](#) field is not editable when accessing the application in an Edit Template mode (see [Manage Templates](#)).



NOTE:

Each record/row in this Radio View represents one codeplug.

See Radio Management [Column Data Options](#) (Sorting, Hiding and Unhiding columns).

See [Creating and Managing Radio Groups on page 190](#).

Accessed Only:

- [Bluetooth Enable](#) is **Enabled**.
- [Bluetooth Peer IP Address Assignment Type on page 952](#) field is set to **Dynamic**.
- Radio is model/option capable.

The Network ID octets of this IP Address must match the Network ID octets of the [Bluetooth Subscriber IP Address](#) field for the current [Data Profile](#) (record/row).

- The Network ID portion of an IP Address is defined as follows:
 - When octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
 - When octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
 - When octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets

The Bluetooth DUN Peer IP Address cannot be the same as the following IP Addresses:

- Bluetooth DUN Subscriber IP Address.
- Bluetooth DUN Peer IP Address.
- Peer IP Address.

The octet values of the Serial Link 1 Subscriber IP Address must comply the following conditions:

- Value is between 0-255.
- Value cannot all be 0.
- Value cannot all be 255.
- Last octet value cannot be 255, which is reserved for directed broadcast for the associated Network ID Portion of the Address.

2.3.2.24

Bluetooth Friendly Name

This field allows you to view or define recognizable Bluetooth names of all radio-codeplug (record/rows) in Radio View.

This name identifies the radio to a paired (see Pairing Type) and connected Bluetooth device.



IMPORTANT: This feature is a non-template type value, from the main application's interface, the Radio Wide [Bluetooth Friendly Name](#) field is not editable when accessing the application in an Edit Template mode (see [Manage Templates on page 194](#)).



NOTE:

Each record/row in this Radio View represents one codeplug.

See Radio Management [Column Data Options](#) (Sorting, Hiding and Unhiding columns).

See [Creating and Managing Radio Groups on page 190](#).

Accessed Only:

- [Bluetooth Enable](#) field is set to **Enabled**.
- Radio is model/option capable.



NOTE:

Examples: APX Radio, NYC 555E, CHI 070P.

Characters, numbers, spaces, and special characters can be used in this field.

The number of characters of the alias is determined by the display size of the radio.

2.3.2.25

Username

This field allows you to enter an Automatic Registration Service or User Authentication default login Username for all radio-codeplug (record/rows) within this Radio View.

This Username can apply for all ARS Server-enabled [Data Profiles on page 980](#) (see [ARS Mode on page 995](#)). When the [Soft ID Feature](#) is enabled, this Username is also used for all Conventional dispatch ASTRO-enabled channels.



IMPORTANT: This field is not editable in Edit Template mode. See [Manage Templates on page 194](#).



NOTE:

For Automatic Registration Service, and for User Authentication, this Username corresponds with the [PIN](#) entries in this Radio View same record/row.

For User Authentication, this Username corresponds with [Password](#) and the [User Login Unit ID on page 154](#) entries in this Radio View same record/row.

Each record/row in this Radio View represents one codeplug.

See the Radio Management [Column Data Options](#) (Sorting, Hiding and Unhiding columns).

See [Creating and Managing Radio Groups on page 190](#).



NOTE:

The [User on page 496](#) button-press and the [User on page 540](#) menu-selection allow you to login to a specific Automatic Registration Service server or a User Authentication Unified Network Services (UNS) server with the appropriate Username, [PIN/Password](#) and [Unit ID](#) combination.

- Usernames and User Login Unit ID may be selected from the programmed Data User List entries.
- Usernames, PIN/Passwords and Unit IDs may be manually entered from the radio's keypad.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Minimum Number of Characters	Maximum Number of Characters when Soft ID Feature is Enabled	Maximum Number of Characters when Soft ID Feature is Disabled
1	8	20

**NOTE:**

A to Z, a to z (English alphabet only), 0 to 9, -, *, #, &, \$, /, +, % and spaces can be used in this field.

Must not be blank or consist of spaces only.

Usernames are not case-sensitive in Server mode, but are case sensitive in Non-server mode (see [ARS Mode on page 995](#) selections).

2.3.2.26

User PIN

This field allows you to enter a default Automatic Registration Service login Personal Identification Number (PIN) or a User Authentication PIN/Password for all radio-codeplug (record/rows) in Radio View.

This PIN/Password can apply for all ARS Server enabled Data Profiles (see [ARS Mode on page 995](#)).



IMPORTANT: This field is not editable in Edit Template mode. See [Manage Templates on page 194](#).

**NOTE:**

For Automatic Registration Service, and for User Authentication, this PIN corresponds with the [Username](#) entries in this Radio View same record/row.

For User Authentication, this Password corresponds with the Username and the [User Login Unit ID on page 154](#) entries in this Radio View same record/row.

Each record/row in this Radio View represents one codeplug.

See the Radio Management [Column Data Options](#) (Sorting, Hiding and Unhiding columns).

See [Creating and Managing Radio Groups on page 190](#).

**NOTE:**

The [User on page 496](#) button-press and the [User on page 540](#) menu-selection allow you to login to a specific User Authentication Unified Network Services (UNS) server with the appropriate [Username](#), PIN/Password and [Unit ID](#) combination.

- Usernames and User Login Unit ID may be selected from the programmed Data User List entries, or
- Usernames, PIN/Passwords and Unit IDs may be manually entered from the radio keypad.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Minimum Number of Digits/Characters	Maximum Digits when used as Automatic Registration Service PIN	Maximum Characters when used as a User Authentication Password
0 (blank)	4 (numbers only)	20
		A to Z, a to z (English alphabet only), 0 to 9, -, *, #, &, \$, /, +, % and spaces can be used.

2.3.2.27

User Login Unit ID

This field allows you to enter a User Authentication default login Unit ID for all radio-codeplug (record/rows) in Radio View.

This ID can be used to designate all radio-uses within a specific vehicle or squad. This ID applies for all ARS Server enabled Data Profiles (see [ARS Mode on page 995](#)).



IMPORTANT: This field is not editable in Edit Template mode. See [Manage Templates on page 194](#).



NOTE:

This Unit ID corresponds with the [Username](#) entry and with the [PIN/Password](#) (for User Authentication) entered in this Radio View same record/row.

Each record/row in this Radio View represents one codeplug.

See the Radio Management [Column Data Options](#) (Sorting, Hiding and Unhiding columns).

See [Creating and Managing Radio Groups on page 190](#).



NOTE:

The [User on page 496](#) button-press and the [User on page 540](#) menu-selection allow you to login to a specific User Authentication UNS (Unified Network Services) server with the appropriate [Username](#), [PIN/Password](#) and [Unit ID](#) combination.

- Usernames and User Login Unit ID may be selected from the programmed [Data User List](#) entries, or
- Usernames, PIN/Passwords and Unit IDs may be manually entered from the radio's keypad.

Accessed Only: When the [User Login Unit ID on page 154](#) field is **Enabled**.



NOTE:

Examples: EMT-001, #500-Fire, Electric101.

A to Z, a to z (English alphabet only), 0 to 9, -, *, #, &, \$, /, +, % and spaces can be used in this field.

Up to 20 characters are possible; this field can also be blank.

This field cannot consist of spaces only.

2.3.2.28

ASK Required

This field allows you to view the Owner System Key Type, Owner System ID, Write Protect, and Advanced System Key (ASK) required status of all codeplug (record/rows) in Radio View.

When this field is enabled, you can load the Advanced (Hardware) Key into the application, and assign it for use in the Trunking System. The Software System Key file is not assignable.

When this field is disabled, you can load the Software key and Hardware key into the application, and assign the keys for use in the Trunking System's System ID field. You can disable the radio write protected status too.



IMPORTANT: This field is not editable from the application in the Edit Template mode.



NOTE:

When this feature is applicable, the Query Update Radio Data feature is available.

Each record/row in this Radio View represents one codeplug.

See the Radio Management [Column Data Options](#) for Sorting, Hiding and Unhiding columns.

See [Creating and Managing Radio Groups on page 190](#).

Accessed Only:

- An **Unlimited Access** Advanced Key that exactly matches the [Owner System ID](#) or [Owner WACN ID](#) is loaded into the application and attached to the computer.
- The radio is model/option capable.

2.3.2.29

Firmware Version

This field allows you to view-only the firmware version (alphanumeric number) of all RM template (record/rows) in Radio View.

When the application reads a codeplug file that is not from radio, **Unknown** appears in this field. See [Importing Radios on page 190](#).

To upgrade a template or radio to a new Firmware Version see the Manage Firmware feature, and the [Right-Click Menu](#) selection.

**NOTE:**

Each record/row in this Radio View represents one codeplug, however Firmware is selected for RM templates.

See the Radio Management [Column Data Options](#) for Sorting, Hiding and Unhiding columns.

See [Creating and Managing Radio Groups on page 190](#).

Accessed Only: When the radio is model/option capable.

2.3.2.30

Codeplug Version

This field allows you to view the codeplug version (alphanumeric number) of all codeplug (record/rows) in Radio View.

This information is obtained when reading a radio, or when adding a radio. See [Adding Radios](#) and see [Importing Radios](#).

**NOTE:**

Each record/row in this Radio View represents one codeplug.

See the Radio Management [Column Data Options](#) for Sorting, Hiding and Unhiding columns.

See [Creating and Managing Radio Groups on page 190](#).

Accessed Only: When the radio is model/option capable.

2.3.2.31

Tuning Version

This field allows you to view the attached radio current software tuning version number.

This is stored in the radio internal codeplug.

2.3.2.32

Comments

This field allows you to view or create programmer notes for all radio-codeplug (record/rows) in Radio View.

These comments or programmer notes are permanently attached, and archived with each version of each codeplug history that is stored within the RM Server Database.



NOTE:

The is a non-template value.

Each record/row in this Radio View represents one codeplug.

See the Radio Management [Column Data Options](#) for Sorting, Hiding and Unhiding columns.

See [Creating and Managing Radio Groups on page 190](#).

2.3.2.33

Owner System Key Type

This field allows you to view the Owner System Key Type of all codeplug (record/rows) in Radio View.



NOTE: The Owner Advanced **Key Type** and its corresponding **Owner System ID** or **Owner WACN ID** are initially determined for the radio and its codeplugs at the time of the radio first purchase.

Accessed Only: When an Unlimited Access Advanced Key is loaded into the application (see [System Key Report on page 105](#)), and when the selected radio [ASK Required on page 154](#) field is applicable.

This field supports the following selections:

None

This is the initial default value.

Advanced System or WACN Key

This key selection is for any available Limited or Unlimited Advanced keys that are loaded into the application. Ssee [System Key Report on page 105](#).

This key selects the appropriate new Owner ID based on the key type selection.

2.3.2.34

Write Protect

This field allows you to view the Write Protect of all codeplug (record/rows) in Radio View.



NOTE: When you disabled [ASK Required on page 154](#) field, the Write-Protected status in the radio is disabled too.

Accessed Only: When an Unlimited Access Advanced Key is loaded into the application, and when the selected radio [ASK Required on page 154](#) field is applicable.

2.3.3

System View

The Radio Management Client's System View allows you to view and define radio specific Conventional or Trunking Radio IDs for all radio within the RM Server database.

Your Radio Management grouping strategy organizes and determines the Server codeplug-data access in this View .Each **record/row** in this System View represents one application created Conventional System or one Trunking System. In this View, when there is more than one System per codeplug, multiple rows represent the same codeplug. All data edits are automatically validated and saved by the Job Processor when entered.

Other Radio Management Tools available in this View include:

- Actions
- Search

- Groups

2.3.3.1

Serial Number

Radio Management allows you to view the serial number of all codeplug within this System View.

Serial Numbers are read from the application codeplugs. When adding a new radio from the Radio Management Client, the serial number is manually entered.



NOTE:

- There are no templates for serial number.
- Each record/row in this System View represents one application created Conventional System and / or Trunking System. This is not a System specific field. Codeplugs can contain more than one System.

2.3.3.2

Sub System Type

Radio Management allows you to view the Sub System Type of all System within this System View.

The addressing scheme type is for [Trunking Personality on page 1235](#) (Type II or ASTRO 25) and/or [Conventional System on page 1056](#) (ASTRO, DVRS, or MDC).



IMPORTANT: Sub System Types are not modifiable in any **View** of this Radio Management Client. RM Template values are only modifiable from the main application interface. In the **Trunking Systems System Type** field, or in the **Conventional Systems System Type** field from an Edit Template mode.



NOTE: Each record/row in this System View represents one application created Conventional System and/or Trunking System. This is not a System-specific field. Codeplugs can contain more than one system.

2.3.3.3

Status

Radio Management allows you to view the current radio status for all codeplug within the System View.

Types of status:

New

A new radio has been added to the Radio Management Server database. However, a codeplug is not associated with the radio yet.

Ready

The radio is available to be scheduled for a job.

Modified

The radio's codeplug template or non-template values have been modified.



NOTE: Each record/row in this System View represents one application created Conventional System and/or Trunking System. This is not a system specific field. Codeplugs can contain more than one system.

2.3.3.4

System Name

Radio Management allows you to view this user recognizable name of all System within this System View.



IMPORTANT: System Names are not modifiable in any **View** of this Radio Management Client. RM Template values are only modifiable from the main application interface, and in the Trunking Systems **System Name** field or in the Conventional Systems **System Name** field from an Edit Template mode.



NOTE: Each record/row in this System View represents one application created Conventional System and/or Trunking System. This is not a System-specific field. Codeplugs can contain more than one system.

2.3.3.5

Template

Radio Management allows you to view the currently selected template of all codeplug within this System View.

The more generic radio codeplug values (less radio-specific) are contained within Radio Management templates. Template codeplug values are viewed and modified in the main application interface. Radio Management templates can be applicable to multiple radios. Templates are only selected for radios in the Radio Management's Radio View.



NOTE: Each record/row in this System View represents one application created Conventional System and/or Trunking System. This is not a System-specific field. Codeplugs can contain more than one system.

2.3.3.6

System ID

Radio Management allows you to view the System ID of all Trunking System within this System View.

ID number is targeted for **in-the-field** Type II or ASTRO 25 Trunking System on which this radio normally operates. Because this ID is only applicable to Trunking Communications, when the "**record/row**" is a Conventional System, the field's value appears as **0**.



IMPORTANT:

- When a Trunking System's Coverage Type field is set to **Intra-WACN Roaming**, the Home WACN ID then appears in this field.
- System IDs and WACN IDs are not modifiable in any **View** of this Radio Management Client. RM Template IDs are only modifiable from the main application user-interface, and in the Trunking System **System ID** or **Home WACN ID** field in an Edit Template mode.



NOTE: Each record/row in this System View represents one application created Conventional System and/or Trunking System. This is not a System-specific field. Codeplugs can contain more than one system.

2.3.3.7

Radio Alias

Radio Management allows you to view-only this radio-user recognizable name of all codeplug within this System View.

The My Radio Identification menu-selection causes the Radio ID Alias to appear in the radio's display. This field is only modifiable from the Radio Management Radio View.

 **IMPORTANT:** This feature is a non-template type value. The main interface, the Radio Wide - User Information and Passwords - Radio Alias field is not editable when accessing the application in an Edit Template mode.

 **NOTE:** Each record/row in this System View represents one application created Conventional System and/or Trunking System. This is not a System-specific field. Codeplugs can contain more than one system.

2.3.3.8

Radio ID

Radio Management allows you to view or modify the Radio ID of all System within this System View.

 **IMPORTANT:**

- This feature is a non-template type value. The main application interface, the Conventional System (ASTRO or DVRS) Individual ID, and the Conventional System MDC Primary ID are not editable when accessing the application in an **Edit Template** mode.
- The main application interface, the Trunking System Unit ID field is not editable when accessing the application in an **Edit Template** mode (see Manage Templates).

 **NOTE:** Each record/row in this System View represents one application created Conventional System and/or Trunking System. This is not a System-specific field. Codeplugs can contain more than one system.

Accessed Only:

For Conventional Systems:

When the System Type field is set to **ASTRO** or **DVRS**, or **MDC**.

For Trunking Systems:

- When the System Type field is set to **Type II** or **ASTRO 25**
- When a Software System Key File or an Advanced System Key with access is selected in the **System ID** field.
- Advanced WACN Key with access is selected in the **Home WACN ID** field, and when the radio is model or option capable.

Selections:

Table 13: For Conventional System Type ASTRO or DVRS:

Minimum	Maximum
1	9999999

Table 14: For Conventional System Type MDC:

Minimum	Maximum
0001 (Hex)	DEEE (Hex)

Table 15: For Trunking System:

System Type	Minimum	Maximum
ASTRO 25	000001 (Hex)	FFFFFFB (Hex)
Type II	0001 (Hex)	FFFE (Hex)

 **WARNING:** The selection range may be modified on a per Advanced Key basis by the **Advanced System Key Administrator** tool.

2.3.3.9

Communication Type

Radio Management allows you to view the Communication Type of all System within this System View.



NOTE: Each record/row in this System View represents one application created Conventional System and/or Trunking System. This is not a System-specific field. Codeplugs can contain more than one system.

2.3.4

Data Profiles View

The Data Profiles View allows you to view and define radio-specific information in the RM Server database.

Your Radio Management grouping strategy organizes and determines the codeplug data access. Each record or row in Data Profiles View represents a program created in Data Profile. Multiple rows represent the same codeplug when there is more than one Data Profile.

The Job Processor automatically validates and saves data edits when entered.

2.3.4.1

Serial Number

This field allows you to view the radio Serial Number of all Data Profile in Data Profile View.

Each record or row represents one codeplug.

2.3.4.1.1

Auto Generate IP Addresses

This field allows you to view the status of Auto Generate IP Addresses of all Conventional Data Profile in Data Profile View.

When this feature is enabled, the radio host software for the conventional Data Profile generates the Subscriber Air-Interface IP Address and the Mobile Computer Peer IP Address.

Each record or row represents one codeplug.



NOTE: You can edit this field in the main program and Edit Template mode.

This field is only applicable when the Data Profile Type field is Conventional.

2.3.4.1.2

Status

This field allows you to view the current radio status of all Data Profile in Data Profile View.

Each record or row represents one codeplug.

Table 16: Data Profile Status

Status	Description
New	A new radio is added to the Radio Management Server database. No codeplug is associated to the radio.
Ready	The radio is available for Schedule Job.
Modified	The codeplug template or nontemplate values are modified.

2.3.4.1.3

Serial Link 1 Subscriber IP Address

This field allows you to view or define the Serial Link 1 Subscriber IP Address of all Conventional Data Profile in Data Profile View. This IP Address is assigned to the Subscriber Unit (SU) end of the serial link 1.

This IP Address default value is 0.0.0.0.

Each record or row represents one codeplug.



NOTE: This field is not editable in Edit Template mode.

Accessed Only: When you set the following settings:

- Data Profile Type (System Type) field is Conventional or Conventional & Broadband.
- Auto Generate IP Address is disabled.
- NAT Enable field is disabled or Packet Data Mode field is not FNE.
- The radio is model or option capable.

The Network ID Octets of the Serial Link 1 Subscriber IP Address must match the Network ID octets of the Peer IP Address field for the current Data Profile.

Table 17: Serial Link 1 Subscriber IP Address and Network ID Portion

IP Address First Octet	IP Address Class	Network ID
0-127	Class A	First 1 octet
128-191	Class B	First 2 octets
192-223	Class C	First 3 octets

The Serial Link 1 Subscriber IP Address cannot be the same as the following IP Addresses:

- Peer IP Address
- Bluetooth DUN Subscriber IP Address
- Bluetooth DUN Peer IP Address
- Subscriber Air-Interface IP Address

The octet values of the Serial Link 1 Subscriber IP Address must comply the following conditions:

- Value is between 0-255.
- Value cannot all be 0.
- Value cannot all be 255.

- Last octet value cannot be 255, which is reserved for directed broadcast for the associated Network ID portion of the Address.

2.3.4.1.4 Template

This field allows you to view the current template of all Data Profile in Data Profile View.

The Template contains generic radio codeplug values, which can be applied to multiple radios. The Template codeplug values are viewed and modified in the main program's user interface.

The Template is only selected for radios that are in the Radio Management Radio View.

Each record or row represents one codeplug.

2.3.4.1.5 Serial Link 1 Peer IP Address

This field allows you to view or define the Serial Link 1 Peer IP Address of all Conventional Data Profile in Data Profile View. This IP Address is assigned to the Mobile Computer (MC) end of the serial link 1, and send the MC through Over-the-Air packet data.

This IP Address default value is 0.0.0.0.

Each record or row represents one codeplug.



NOTE: This field is not editable in Edit Template mode.

Accessed Only: When you set the following settings:

- Data Profile Type (System Type) field is Conventional or Conventional & Broadband.
- Auto Generate IP Address is disabled.
- NAT Enable field is disabled or Packet Data Mode field is not FNE.
- The radio is model or option capable.

The Network ID Octets of the Serial Link 1 Peer IP Address must match the Network ID octets of the Subscriber IP Address field for the current Data Profile.

Table 18: Serial Link 1 Peer IP Address and Network ID Portion

IP Address First Octet	IP Address Class	Network ID
0-127	Class A	First 1 octet
128-191	Class B	First 2 octets
192-223	Class C	First 3 octets

The Serial Link 1 Peer IP Address cannot be the same as the following IP Addresses:

- Subscriber IP Address
- Bluetooth DUN Subscriber IP Address
- Bluetooth DUN Peer IP Address
- Subscriber Air-Interface IP Address

The octet values of the Serial Link 1 Peer IP Address must comply the following conditions:

- Value is between 0-255.
- Value cannot all be 0.

- Value cannot all be 255.
- Last octet value cannot be 255, which is reserved for directed broadcast for the associated Network ID portion of the Address.

2.3.4.1.6

Radio Alias

This field allows you to view the radio name of all Data Profile in Data Profile View. You can modify the Radio Alias in Radio View.

The **My Radio Identification** menu selection causes the Radio ID Alias to appear in the radio display.

Each record or row represents one codeplug.



NOTE: This field is not editable in Edit Template mode.

2.3.4.1.7

Bluetooth DUN Subscriber IP Address

This field allows you to view or define the Bluetooth Dial Up Network (DUN) Subscriber IP Address of all Conventional Data Profile in Data Profile View. This IP Address is assigned to the Subscriber Unit (SU) end of the Bluetooth link.

This IP Address default value is 192.168.130.1.

Each record or row represents one codeplug.



NOTE: This field is not editable in Edit Template mode.

Accessed Only: When you set the following settings:

- Bluetooth is enabled.
- Data Profile Type is Conventional or Conventional & Broadband.
- Auto Generate IP Address is disabled.
- NAT Enable field is disabled or Packet Data Mode field is not FNE.
- The radio is model or option capable.

The Network ID Octets of the Bluetooth DUN Subscriber IP Address must match the Network ID octets of the Bluetooth Peer IP Address field for the current Data Profile.

Table 19: Bluetooth DUN Subscriber IP Address and Network ID Portion

IP Address First Octet	IP Address Class	Network ID
0-127	Class A	First 1 octet
128-191	Class B	First 2 octets
192-223	Class C	First 3 octets

The Bluetooth DUN Subscriber IP Address cannot be the same as the following IP Addresses:

- Bluetooth Peer IP Address
- Subscriber IP Address
- Peer IP Address
- Subscriber Air-Interface IP Address

The octet values of the Bluetooth DUN Subscriber IP Address must comply the following conditions:

- Value is between 0-255.
- Value cannot all be 0.
- Value cannot all be 255.
- Last octet value cannot be 255, which is reserved for directed broadcast for the associated Network ID portion of the Address.

2.3.4.1.8

Profile Type

This field allows you to view the Profile Type of all Data Profile in Data Profile View. The Profile type is Conventional or Trunking.

Each record or row represents one codeplug.



NOTE:

You can edit this field in the main program and Edit Template mode.

2.3.4.1.9

Bluetooth DUN Peer IP Address

This field allows you to view or define the Bluetooth Dial Up Network (DUN) Peer IP Address of all Conventional Data Profile in Data Profile View. This IP Address is assigned to the Mobile Computer (MC) end of the serial link 1, and send the MC through Over-the-Air packet data.

This IP Address default value is 192.168.128.2.

Each record or row represents one codeplug.



NOTE: This field is not editable in Edit Template mode.

Accessed Only: When you set the following settings:

- Bluetooth is enabled.
- Data Profile Type is Conventional or Conventional & Broadband.
- Auto Generate IP Address is disabled.
- NAT Enable field is disabled or Packet Data Mode field is not FNE.
- Bluetooth Peer IP Address Assignment Type is Dynamic.
- The radio is model or option capable.

The Network ID Octets of the Bluetooth DUN Subscriber IP Address must match the Network ID octets of the Bluetooth Subscriber IP Address field for the current Data Profile.

Table 20: Bluetooth DUN Peer IP Address and Network ID Portion

IP Address First Octet	IP Address Class	Network ID
0-127	Class A	First 1 octet
128-191	Class B	First 2 octets
192-223	Class C	First 3 octets

The Bluetooth DUN Peer IP Address cannot be the same as the following IP Addresses:

- Bluetooth Subscriber IP Address

- Subscriber IP Address
- Peer IP Address
- Subscriber Air-Interface IP Address

The octet values of the Bluetooth DUN Peer IP Address must comply the following conditions:

- Value is between 0-255.
- Value cannot all be 0.
- Value cannot all be 255.
- Last octet value cannot be 255, which is reserved for directed broadcast for the associated Network ID portion of the Address.

2.3.4.1.10

Profile Name

This field allows you to view the Data Profile Name of all Data Profile in Data Profile View.

Each record or row represents one codeplug.

 **NOTE:** This field is not editable in Edit Template mode.

2.3.4.1.11

Subscriber Air Interface IP Address

This field allows you to view or define the Subscriber Air Interface IP Address of all Conventional Data Profile in Data Profile View. This IP Address is needed for Over-the-Air-Packet data communication with the radio.

This IP Address default value is 0.0.0.0.

Each record or row represents one codeplug.

 **NOTE:** This field is not editable in Edit Template mode.

Accessed Only: When you set the following settings:

- Data Profile Type is Conventional or Conventional & Broadband.
- Auto Generate IP Address is disabled.
- The radio is model or option capable.

The Subscriber Air Interface IP Address cannot be the same as the following IP Address:

- Bluetooth DUN Subscriber IP Address
- Bluetooth DUN Peer IP Address
- Subscriber IP Address
- Peer IP Address
- Radio View Data Wide Subscriber IP Address 1 or Peer IP Address 1

The octet values of the Subscriber Air Interface IP Address must comply the following conditions:

- The values must be between 0-255.
- The values cannot all be 0.
- The values cannot all be 255.
- The last octet cannot be 255, which is reserved for directed broadcast for the associated Network ID portion of the Address.

2.3.5

Job View

This feature allows you to view the current scheduled programming jobs in Radio Management (RM) Server. Your RM grouping strategy organizes and determines the server codeplug in Job View.

Table 21: Columns of Job View

Column	Description
Job Name	Allows you to view the Job Name for job level records.
Creation Date	Allows you to view the job creation date and time for job level rows. When creating a new Read or Write job, the creation date and time stamp are generated by the system.
Start Time	Allows you to view the Start Time for job level rows. The Start Time is defined in Schedule Job window.
End Time	Allows you to view the End Time for job level rows. This End Time is defined in the Schedule Job window.
Job Status	Allows you to view the current status for job level rows. The Job View feature includes the following Job Status: <ul style="list-style-type: none">• Scheduled• Scheduled, Processing Job• Running, Waiting, for Device Programmer• Running, Waiting for Radio• Running, Reading Radio• Running, Waiting for Job Processor• Running, Processing Job• Expired• Failed• Canceled• Completed
Job Type	Allows you to view the Job Type for job level rows. The Job Type are either Read or Write. The types are defined in the Schedule Job window.

Table 22: Columns of Radio

Column	Description
Model Number	Allows you to view the Model Number for radio job rows. The Model Numbers are read from codeplug.

Column	Description
Serial Number	Allows you to view the Serial Number for radio codeplug job rows. The Serial Numbers are read from codeplug.
Template	Allows you to view Templates that are currently selected for all radio codeplug job rows. The Templates are only selected for radios in the Radio View.
Radio Alias	Allows you to view the name of radio codeplug job rows. The My Radio Identification menu selection causes the Radio ID Alias to appear in the radio display.
Job Status	Allows you to view the Job Status for radio codeplug job rows. The radio Job View feature includes the following Job Status: <ul style="list-style-type: none"> • Scheduled • Scheduled, Processing Job • Running, Waiting for Device Programmer • Running, Waiting for Radio • Running, Reading Radio • Running, Waiting for Job Processor • Running, Processing Job • Expired • Failed • Canceled • Completed
Executed Date	Allows you to view the actual job execution date and time for radio codeplug job rows.
Failure Reason	Allows you to view the reason for radio codeplug job row failures.

2.3.6

Action Menu

The Action Menu provides tools for adding, editing, deleting, organizing, and maintaining of codeplug or template records and values. The records and values are stored in Radio Management (RM) Server.

The Action Menu is accessed by clicking on the **Actions** button from the five main views.

Only certain menu selections are available from all views.

Table 23: Selections of Action Menu

Menu Selections	Keyboard Shortcut	Description
New Radio	Alt+N	Allows you to add a new radio entry to the RM Server.

Menu Selections	Keyboard Shortcut	Description
Import → Excel	Ctrl+H	Allows you to import radio codeplug data from .XLSX or .XLS format. The codeplug data that is exported from RM can be modified in Microsoft Excel application.
Import → CSV	Ctrl+H	Allows you to import radio codeplug from .CSV file format. The codeplug data that is exported from RM can be modified in Microsoft Excel application and saved as .CSV file.
Import → Radios	Ctrl+I	Allows you to add new radio entry to the RM Server by importing a codeplug in .MC file.
Import → DVRS	Ctrl+Shift+U	Allows you to import new versions of DVRS files to the RM Server.
Export → Grid to file	Ctrl+Shift+S	Allows you to export RM Client Radio View data to a standard spreadsheet format.
Export → Radio	Ctrl+Shift+R	Allows you to export the currently highlighted RM Client record to a codeplug .MC file format.
Export → DVRS	Ctrl+Shift+D	Allows you to export the currently highlighted RM Client record to a .XML file format.
Print → Print	Ctrl+P	Allows you to send the current view RM Client Group of record to the printer. Use the Search feature to filter data before print.  NOTE: This feature is only available from RM Client Radio View.
Print → Print Preview	Alt+Shift+P	Allows you to see print preview of the RM Client record data. The data is printed based on the selected Group. Use the Search feature to filter data before print.  NOTE: This feature is only available from RM Client Radio View.
Radio Details	Ctrl+W	Launches the Radio Details window highlighted in the radio codeplug record.
Edit Template	Ctrl+T	Launches the main program interface where the Template co-

Menu Selections	Keyboard Shortcut	Description
		deplug values can be viewed and edited.
Select Template	Ctrl+M	Launches the Select Template window where the new Template can be applied to the highlighted radio.
Discard Changes	Ctrl+L	Discards any recent changes made to the highlighted radio record. This is applicable to all Template-related changes, and Non-Template data. A Group change is not restored.  NOTE: Any pending features added from FLASHport are permanently lost. The FLASH-key is decremented and cannot be reversed. Any pending features added through Radio Licensing can be recovered from Settings.
Reset Identifiers	Ctrl+Shift+I	Allows you to enter the Read or Write codeplug password when the radio codeplug is password protected. The codeplug passwords are determined on a per codeplug basis from the Read or Write Password feature.  NOTE: This feature is only available from the RM Client Radio View, and when the codeplug record is highlighted.
Help	F1	Allows you to retrieve the Online Help System window.
Group → Add	Ctrl+Shift+G	Adds a new Group to the RM Client.
Group → Rename	F2	Allows you to edit a Group name.
Group → Select Group	Ctrl+J	Allows you to assign a Group to a radio.  NOTE: This feature is only available from the RM Client Radio View, and when the codeplug is highlighted.

Menu Selections	Keyboard Shortcut	Description
Manage → Templates	Alt+T	Allow you to edit, delete, rename and import Templates, and upgrade language packs for templates.
Manage → Firmware	Alt+F	Allows you to view and import all Firmware versions stored in RM server.
Manage → Voice Announcements	Alt+V	Allows you to view and import all Voice Announcements files stored in the RM Server.
Manage → Language Packs	Alt+L	Allows you to view and import all Language Pack files stored in the RM Server.
Manage → Licenses	Alt+R (Radio Licenses) Alt+A (Application Licenses)	Allows you to add the following licenses: <ul style="list-style-type: none"> • Application Licenses (Radio Management) • Radio Licenses (FLASHcode Upgrades) • Manage Radio Licenses (FLASHcode Upgrades)
Manage → DVRS	Alt+U	Allows you to automatically view imported DVRS files stored in the RM Server, and manually import new DVRS Files to the RM Server. You can add,edit, or delete DVRS files.
Delete	Del	Deletes the highlighted radio from the RM Server.
Settings	Alt+E	Launches the RM Client to RM Server Settings window for modifications.
Refresh	F5	Refreshes the data record of the following view in RM Client: <ul style="list-style-type: none"> • Radio View • System View • Data View • Job View

2.3.7

Radio Details

Radio Details window allows you to view radio-specific job history of any radio in Radio Management (RM) Server.

Each read or write radio codeplug occurrence is represented as a record. You can highlight any job record and choose to restore the radio to the archived status.

Table 24: Columns of the Radio Details

Column	Description
Radio Alias	Allows you to view the name of the selected radio. This name is stored in the radio codeplug and only modifiable from the Radio View.
Serial Number	Allows you to view the serial number of the selected radio.
Last Programmed Date	Allows you to view the most recent date and time of which the selected radio was programmed.
Job Name	Allows you to view the job name of selected radio. The job name is created in Schedule Job.
Executed Date	Allows you to view the job execution date of the selected radio.
Job Status	Allows you to view the job status of the selected radio. The Radio View feature includes the following Job Status: <ul style="list-style-type: none"> • Scheduled • Scheduled, Processing Job • Running, Waiting for Device Programmer • Running, Waiting for Radio • Running, Reading Radio • Running, Waiting for Job Processor • Running, Processing Job • Expired • Failed • Canceled • Completed
Job Type	Allows you to view the job types of selected radio.
Creation Date	Allows you to view the job creation date and time of selected radio. When creating a new Read or Write job, the creation date and time stamp are generated by the system.
Start Time	Allows you to view the job Start Time of the selected radio. The Start Time is defined in Schedule Job window.
End Time	Allows you to view the job End Time of the selected radio. This End Time is defined in the Schedule Job window.
Codeplug File Name	Allows you to view the job codeplug file name of selected radio.

Column	Description
Firmware Version	Allows you to view the job firmware version of selected radio.
Codeplug Version	Allows you to view the job codeplug version of selected radio. The information is obtained when reading a radio or when adding a radio. The version is in alphanumeric.

Table 25: Buttons of the Radio View

Button	Description
Restore	Allows you to restore the current radio codeplug to previous state. A Write-only version of the Schedule Job is automatically opened to provide Start Time and End Time.
Close	Closes the Radio Details window.

2.3.8

Settings

The Settings window allows you to view or modify communications between the Radio Management (RM) Client and the RM Server database. You can recover Application Licenses and Radio Licenses too.

This window is accessed from the Actions Menu in Settings selection.

2.3.8.1

Connections

Connections settings allow you to view or modify communications between the Radio Management (RM) Client and RM Server database.

When RM Client is launched, it automatically attempts to connect to the RM Server database using these settings.

2.3.8.1.1

Server Address

This field allows you to view or modify the Internet Protocol (IP) address as part of the Address-Port combination.

The server address is specified by either the IP address or the Domain Name System (DNS) name.

2.3.8.1.2

Port Address Connections

This field allows you to view or modify the Port of the Internet Protocol (IP) address port combination.

2.3.8.1.3

Authentication Method

This field allows you to select the authentication method that the Radio Management (RM) Server can accept from the RM Client. The authentication method uses the same key for both encryption and decryption.

Implement authentication using one of the following methods:

- Certificate
- Windows Credentials
- One-Time Password

2.3.8.1.4

One Time Password

This field allows you to enter the password required for the Radio Management (RM) Client to communicate with the RM Server.

The password is created in the RM Server Utility. Once the password is entered, the RM Client retains the password, unless the RM Server is uninstalled or moved to another host.

Accessed Only: When Authentication Method is set to `One-Time Password`.

2.3.8.1.5

Always Remember

This field allows you to enable or disabled the Always Remember feature.

When this field is enabled, the Radio Management (RM) Client and Authentication Method are automatically used when logging into the RM Server.



NOTE: If the connection is unsuccessful, the Settings window prompt a message.

When this field is disabled, the Settings window prompt a message each time the RM Client is launched.

2.3.9

Schedule Job Window

This window allows you to create a new codeplug-Read or codeplug-Write event for radios.

This feature can only be launched from the Radio Management Client (RMC) Radio View.

Scheduled Jobs are executed through the Device Programmer.

Table 26: Job Types

Job Type	Description
Write	<p>When choosing a codeplug Write Job Type, multiple codeplugs with multiple templates may be selected. See Cancel Jobs on page 208.</p> <p>May initiate a FLASHport Feature Set Upgrade and/or a Refresh Firmware Upgrade (See Firmware Management on page 197 and Right-Click Menu Upgrade selections).</p> <p>The Force Immediate Update checkbox is only available for a Write job of a single APX NEXT radio in the Schedule Job window. See Force Immediate Update on page 174.</p>

Job Type	Description
	<p>The Max # of deferrals setting is only available for a Write job, a firmware update, and APX NEXT radios in the Job Schedule window. See Maximum Number of Deferrals on page 175.</p> <p> NOTE: When selected, the Advanced Key rules are in force for applicable Trunking Systems and Trunking Personalities.</p> <p>When selected and the Connection Method is Over the Air Programming (OTAP), very specific OTAP rules are in force. See Radio Management OTAP/POP25 on page 201.</p>
Read	<p>The RM Device Programmer retrieves the codeplug of each radio associated with the job. Once the codeplug is uploaded to the RM Server, the previous template association for the selected radios is lost (see Select Template).</p>

 **WARNING:**
When reading a codeplug containing ADP Keys from a radio, the ADP Keys are not loaded into the RMC, which causes the Selectable ADP Key Data fields to appear in all asterisks (*).
In this situation, writing this codeplug's template to another radio, the ADP Key Data will not be written. Unless you re-enter the appropriate ADP Keys into this template's Selectable ADP Key Data fields, before initiating the "Write" job. Template ADP Key Data overwrites a target radio ADP Key Data when present.
When a codeplug file containing ADP Keys is imported into the RMC and loaded into the application, it can be written to the target radios. Template ADP Key Data overwrites a radio ADP Key Data when present.

Preloaded Secure Encryption Keys are ERASED from the Radio:

- When the [Secure Operation on page 880](#) field is set to **Hardware** in a radio, and a "Write" job upgrades the radio firmware with a FLASHport Feature Set Upgrade and/or a Refresh Firmware Upgrade. The target radios Secure Encryption Keys must be reprogrammed with a Key-Variable Loader (KVL) following completion of the scheduled job.

See [Launching Scheduling Job Window on page 202](#).

2.3.9.1 Job Type

This setting allows you to select whether the current job will **Read** or **Write** the codeplug or template changes to the target radios.

This selection applies for the current radios selected for this job in the Schedule Job window.

2.3.9.2 Force Immediate Update

If this field is enabled, after downloading the update, the target radio restarts immediately. This restart occurs without user confirmation.

This setting is only available for a Write job of a single APX NEXT radio in the Schedule Job window.

2.3.9.3

Maximum Number of Deferrals

This field allows you to set the maximum number of times a user can delay a firmware update. This setting is only available for a Write job and APX NEXT radios in the Job Schedule window.

2.3.9.4

Time Zone

This setting allows you to select the Time Zone of the current job event. This selection applies for the current radio selected for this job in the Schedule Job window.

2.3.9.5

Connection Method

This setting allows you to select the connection method for the current job event. This selection applies for the current radio selected for this job in the Schedule Job window. The Connection Method supports the following selections:

USB + Wireless (LAN)

Configure the RM Device Programmer with this setting if you want to program a radio through a USB port or Wi-Fi. See [Auto Process Jobs \(USB and Wireless\) on page 181](#).

POP25

Through a POP25 or OTAP wireless connection on a certain Device Programmer, radio(s) can be read or written-to (see Job Type).



NOTE:

POP25 becomes active when scheduling jobs that are for firmware only or firmware and language pack.

Language Packs can only be sent Over The Air in combination with firmware. If the firmware does not need to be updated, a USB connection is required.

ANY

The Device Programmer searches for both types of connection methods, and ultimately proceeds with the first available connection type: Wired or Over the Air.

2.3.9.6

Start After

This setting selects the date (in day-month-year format) and time (in a 24-hour format) for the start of the active job interval.

This selection applies for the current radio selected for this job in the Schedule Job window.



NOTE:

To launch the Schedule Job window, in order to create a read or write job: From the Radio Management Client Radio View, with the desired radio record or row highlighted, click the orange Schedule Job button, or right-click directly on a highlighted radio and then select **Schedule** in the pop-up menu.

To select multiple radios, hold down the **CTRL** key, then select the desired radios.

2.3.9.7

Job Name

This setting allows you to select a name for the current job.

This selection applies for the current radio selected for this job in the Schedule Job window.



NOTE:

To launch the Schedule Job window, in order to create a read or write job: From the Radio Management Client's Radio View, with the desired radio record or row highlighted, click the orange Schedule Job button, or right-click directly on a highlighted radio and then select **Schedule** in the pop-up menu.

To select multiple radios, hold down the **CTRL** key, then select the desired radios.

2.3.9.8

End Before

This setting selects the date (in day-month-year format) and time (in a 24-hour format) for the end of the active job interval.

If a scheduled job has not started by this end date and time, the job expires and cannot be executed.

This selection applies for the current radio selected for this job in the Schedule Job window.



NOTE:

To launch the Schedule Job window, in order to create a read or write job: From the Radio Management Client's Radio View, with the desired radio record or row highlighted, click the orange Schedule Job button, or right-click directly on a highlighted radio and then select **Schedule** in the pop-up menu.

To select multiple radios, hold down the **CTRL** key, then select the desired radios.

2.4

Device Programmer or Device Monitor

The main functions of Device Programmer or Device Monitor are to monitor for radio presence and to execute programming jobs.

Monitoring includes listening for the presence of radios, and qualifying any detected radios that are in the Radio Management system radio fleet. Executing programming jobs includes matching detected Radio Management fleet radios with applicable and current Radio Management Read and Write events.



IMPORTANT: The APX POP25 Device Programmer or Device Monitor must run independently.



NOTE:

Many Device Programmers are installed within a single Radio Management (one Server) configuration, and are running on multiple remotely located computers or devices.

The Device Programmer facilitates the processing of scheduled Read and Write jobs even when the computer is unattended or you are not logged on.

The Device Monitor user-interface does not need to be running in order for scheduled jobs to be performed by the Device Programmer.

When a Radio status is **No Manage Radio** within the Device Monitor window, this indicates that the Device Programmer has detected the presence of this radio. However, the radio is not part of the current Radio Management fleet. The radio can be added to the Server database using one of the Radio Management Add Radio features .

See [Setting Up Device Programmer on page 177](#).

2.4.1

Setting Up Device Programmer

Procedure:

1. From your window task bar, an icon  is available to launch the Device Monitor window. From your window's Start menu under **Motorola** → **RM Device Programmer** → **RM Device Monitor**, you may also launch this Device Monitor window.
2. The Device Monitor window **Settings** button allows you to view or modify Device Programmer connection settings to the RM Server.
3. From the Device Monitor window, you may define the Radio Connection Method of all jobs to be executed on that specific Device Programmer. Device Programmer-to-Radio communications can occur to one or several radios connected by USB cabling, either directly or with a battery-charging or programming station.



NOTE: Fails to Detect:

On a very rare occasion, it is possible that a radio may fail to be detected by the Device Programmer. If this occurs, disconnect and power down the radio, then reconnect and power the radio on. On an even more rare occasion, you may need to restart the Device Programmer PC.

Device Programmer-to-Radio communications can also occur over-the-air, with Over the Air Programming (OTAP). For OTAP requirements, see also: Programming for Radio Management OTAP

4. When the Device Programmer status is **Online**, and when a radio presence is detected, a scheduled job for the radio is downloaded from the RM Server. Read and Write Jobs are created in the Radio Management Client **Schedule a Job** window.
5. If a radio's presence is detected:
 - A scheduled job's Date and Time interval for the radio falls within the current Data and Time, the job is downloaded from the RM Server and the job can occur.
 - A scheduled job's Start Date and Time has passed but the End Date and Time has not passed, this is considered to be within the active job interval. The job is downloaded from the RM Server and the job can occur.
 - A scheduled job's Date and Time interval for the radio falls outside of the current Data and Time, the job is not downloaded from the RM Server and therefore the job cannot occur.
6. The Device Programmer allows the computer to program radios, regardless of whether you are logged onto the computer or not; however the Device Programmer's Automatically Process Jobs feature can also be set to force jobs to be manually executed by you.
7. The Device Monitor window allows you to view the status of radio programming jobs.

2.4.2

Settings

The Server Settings window allows you to view or modify the Device Programmer to RM Server data communications, the Device Programmer to radio communications, and the Device Monitor language preference settings.

This window is accessed from the Device Monitor Window's **Settings** button.

**IMPORTANT:**

Motorola Solutions recommends that only one Device Programmer to read or write devices over Wireless (LAN). This is to avoid concurrence download job issue that will lead to low performance.

If there are more than one Device Programmer to read or write devices over Wireless (LAN), Motorola Solutions recommends that each radio group is assigned to a unique Device Programmer.

See [ARS Configuration when Using Windows Firewall](#) and [Configuring Device Programmer to the Server Connection](#).

FIP Mode Programming Configuration

- The OTA Fixed IP Address must be defined for a radio's codeplug.
- The Scheduled Job Connection Method must be set to **POP25** or **Any** for that radio.
- FIP Mode is available in the following Device Programmer (DP) or Device Monitor:
 - When the Communication Method is set to **Over the Air**.
 - When the ARS Alias is set to **None**. In this scenario, once the presence of a radio with a defined OTA Fixed IP Address is detected, only FIP Mode jobs are sent from the Server to be executed.

2.4.2.1

RM Server

This section provides information on RM Server settings.

2.4.2.1.1

Address

This field allows you to view or modify the Internet Protocol (IP) Address part of the Address-Port combination that is used by the Device Programmer to communicate with the RM Server's database.



NOTE: This address can be specified by either the IP Address or the Domain Name System (DNS) host name.



IMPORTANT: Changing RM Server settings when a job is **Running** is not possible.

2.4.2.1.2

Port

This field allows you to view or modify the Port part of the Internet Protocol (IP) Address-Port combination that is used by the Radio Management Client to communicate with the RM Server's database.

The default Port value of 443 is used for most deployments.

**IMPORTANT:**

Changing RM Server settings when a job is Running is not possible.

Previous releases of Radio Management used port 8675. Port 8675 is no longer supported as the default port for establishing a connection to the RM Server

2.4.2.1.3

Authentication Method

This field allows you to select the cryptography (Authentication) method that the RM Server can accept from the current Device Programmer.

The authentication key is the same for encryption and decryption.

The Authentication Method supports the following selections:

- Certificate
- Windows Credentials
- One-Time Password

2.4.2.1.4

One-Time Password

This field allows you to enter the password needed for the Device Programmer (DP) to communicate with the RM Server's database.

This password is created in the RM Server Utility

Once entered, the DP remembers the password unless the Server is uninstalled or moved to another Host.



IMPORTANT: Changing RM Server settings when a job is Running is not possible.

Accessed Only: When the [Authentication Method](#) is set to One-Time Password.

2.4.2.1.5

Test Connection Button

This button attempts to connect the Device Programmer to the RM Server's database based-on the Server Name or IP Address and Port information defined in this Device Monitor Window.

2.4.2.2

Communication Method

This field selects the Communication type of job that the current Device Programmer can accept from the RM Server.

The selections are **Wired** using USB, Wireless (LAN), USB with Wireless (LAN), or **Over the Air** (OTAP).



IMPORTANT:

Only one Device Programmer can be set for **Over the Air** (OTAP) per RM System.

OTAP is not possible if there are any downloaded and pending Offline Jobs.

Trunking OTAP utilizes the Programming Over Project 25 (POP25) for codeplug updates and Group Services for firmware updates.



NOTE:

USB or Wi-Fi can allow for nearly simultaneous programming events.

OTAP communications occurs to one radio at a time per Device Programmer.

Trunking OTAP is accomplished with the Programming Over Project 25 (POP25) communication method.

2.4.2.3

Manage Offline Jobs

This window allows you to select programming jobs from the RM Server to be downloaded to the Device Programmer (DP).

Once downloaded, the Personal Computer (PC) containing the DP may be disconnected and offline when the programming of these jobs occurs; this is also known as local programming.

You can also use the offline programming with a DP that is permanently disconnected from the RM Server.



NOTE: This feature is accessed from the Device Monitor Settings window's **Advanced** selection.

Accessed Only: When the [Radio Connection Method](#) is set to USB, Wireless (LAN), or USB + Wireless (LAN).

2.4.2.3.1

Offline Jobs Rules

This section provides rules for managing offline jobs.

- Local offline programming can only occur in a Distributive RM Deployment, which is when the Device Programmer (DP) is installed on a separate PC from the RM Server, Radio Management Clients (RMC), Job Processors.
- Downloading jobs scheduled in the **Future** is possible.
- Downloading Write jobs that include FLASHcode upgrades are not possible.
- Once a job is downloaded, canceling the job from the RMC is not recommended. The DP's Communication Method cannot be re-configured for **Over The Air** when there are downloaded and still pending jobs.
- If the Device Programmer (DP) is in offline mode, the DP can no longer connect to the RM server.

2.4.2.3.2

Manage Temporary Offline Jobs

This section provides information on managing temporary offline jobs.

Programming Jobs that qualify for local offline programming must be defined for a Job Connection Method of either USB or any.

In the Device Programmer (DP) Settings window, the communication method must not be over-the-air.

Download button is used to select and download jobs that need to be programmed.

You can move to another location without the RM Server with the PC containing the DP and plug in the radios that needs programming.

The radios are programmed and the programming results and data are stored in the DP.

Reconnect to the RM Server and upload the programming results and data.

2.4.2.3.3

Manage Permanent Offline Jobs

This section provides information on managing permanent offline jobs.

Programming Jobs that qualify for local offline programming must be defined for a Job Connection Method of either USB or any.

In the permanently offline Device Programmer (DP) Settings window, the communication method must not be over-the-air.

Download the job through an online DP from RM Server and export the downloaded jobs to offline packages.

Do not choose jobs that are actively being read or written.

You can export the jobs into the offline packages and then import the results into an online DP once jobs are completed.

Reconnect to the RM Server and upload the programming results and data.

2.4.2.4

Assigned Radio Group

This field allows you to select an RM Client defined Group or subgroup for the current RM Device Programmer.

Selecting a specific group or subgroup creates a filter that only allows jobs for the selected group or subgroup. Selecting **All** eliminates any group filtering. See [Assigning Radios to a Group on page 191](#).

2.4.2.5

Auto Process Jobs (USB and Wireless)

When this field is enabled, the Device Programmer processes all scheduled jobs without requiring your confirmation.

When disabled, you must manually start each job on a per-radio basis using the Device Monitor's Execute Job Button.

Accessed Only: When the [Radio Connection Method](#) is set to **USB, Wireless (LAN), or USB + Wireless (LAN)**.

2.4.2.6

Job Pacing

This field defines a time delay between multiple jobs from 0-10 minutes.

Accessed Only: When the [Connection Method](#) is set to **Over the Air**.

2.4.2.7

Language

This field selects the language for the application.



WARNING:

When a new application's language selection is made, you must restart the application in order for the change to take effect.

Non-English language selections are only available if the application has been installed with full language support.

The Computer's Input Language Warning: The input language depends on the keyboard selection made in your computer's operating system, and not this language selection; however, numbers entered into the application's text field are always shown in the form 0–9, regardless of the language selection, including **Arabic**.

Hebrew and Arabic Guidelines: When the [Radio Display Language](#) is set to **Hebrew** or **Arabic**, the application's language should also be set to match the **Hebrew** or **Arabic** selection, so that character strings (such as [Zone Names on page 1284](#)) are displayed using the same Right-to-Left rules on the radio display and the application.

Diacritics: Diacritics are not supported in the application as the radio's display is unable to represent them.

Codeplug Prior to R07.00.00 Warning: Opening a non-English codeplug `.mc` file that was saved from Release prior to R07.00.00 is only allowed when the application's Language is set to **English**. To update an older non-English codeplug to be compatible, open the codeplug in Release R07.00.00 or later with the language set to **English**, and then click Save. Once saved, that same codeplug file will now open with the application's language set to other non-English languages.



NOTE: It is always possible to read a pre-R07.00.00 codeplug from a radio with the application's language set to any language; it is only codeplug `.mc` files that have this limitation.

The following language selections are supported:

- English
- French
- Spanish
- Portuguese
- Hebrew
- Russian
- Chinese (Traditional)
- Arabic

2.4.2.8

ARS and Systems

This section provides settings on ARS and Systems.

2.4.2.8.1

ARS Alias

This field allows you to select an Automatic Registration Server (ARS) for the current Device Programmer. An ARS is also known as a Presence Notification Server or PN Server.

This selected server attempts to determine a radio's or several radio's IP Address during an OTAP (Over the Air Programming) communication. A radio's IP Address corresponds with its Radio ID (see the System View [Radio ID on page 159](#) field).



NOTE: The ARS Server is defined in the [ARS Data Administrator on page 99](#) tool.

Accessed Only: When the [Radio Connection Method](#) is set to **Over the Air**.

None

Allows for Fixed IP mode programming (see the [Over the Air Fixed IP on page 145](#) field).

2.4.2.8.2

System Type

This field allows you to select the System Type (Trunking or Conventional) that is used for **Over The Air** communication for the current Device Programmer.

Accessed Only: When the [Radio Connection Method](#) is set to **Over the Air**.

2.4.2.8.3

System ID

This field allows you to view or modify the ID of the in-the-field Trunking System to for the Device Programmer to Trunking System to Radio communications for Over The Air Programming (OTAP).



WARNING:

Radio IDs vary on a per Trunking System basis within a single radio. This preferred System or System ID for Over the Air communications (see [Radio Connection Method](#)) must be specified.

Radio Management Over the Air communications are triggered based on radio-presence. The Presence Notification (PN) server only detects radios operating on this defined System or System ID.

A radio must have a System ID that matches this System ID in order for Over the Air communications to occur.

Accessed Only: When the [Radio Connection Method](#) is set to **Over the Air**, and when the [System Type](#) is set to **Trunking**.

2.4.2.8.4

Group System Number

This field allows you to view or modify the ID of the appropriate in-the-field Conventional System to be used for Device Programmer to Conventional System to Radio communications for OTAP (Over The Air Programming).



WARNING:

Radio IDs vary on a per Trunking System basis within a single radio. This preferred System or System ID for Over the Air communications (see [Radio Connection Method](#)) must be specified.

Radio Management Over the Air communications are triggered based on radio-presence. The Presence Notification (PN) server only detects radios operating on this defined System or System ID.

A radio must have a System ID that matches this System ID in order for Over the Air communications to occur.

Accessed Only: When the [Radio Connection Method](#) is set to **Over the Air**, and when the [System Type](#) is set to **Conventional**.

2.4.2.8.5

Group Data Gateway

This field allows you to select a record that defines an endpoint to the Group Data Gateway (GDG) service.



NOTE: The endpoint definition for the GDG is configured using the ARS Data Administrator application.

2.4.2.8.6

Provisioning Manager

This field allows you to select a record that defines an endpoint to the Provisioning Manager (PM) service.



NOTE: The endpoint definition for the PM Server is configured using the ARS Data Administrator application.

2.5

Job Processor

The main function of this component is to validate all codeplug or template data as it is being created and organized in the Radio Management Client, and to validate all job-codeplug and job-template data being retrieved from the RM Server, or being sent to the RM Server.

Additionally, the Job Processor verifies all job **Write** codeplug information and data as it is being sent from the RM Server to the Device Programmer, and then to a radio.

The Job Processor verifies all job **Read** codeplug information and data as it is being retrieved from a radio, through the Device Programmer, and then sent back to the RM Server.



IMPORTANT:

For optimal performance, Motorola Solutions recommends deploying the RM Job Processor on the same computer as the RM Server. If the RM Job Processor is deployed on a different computer, ensure that it is co-located with the RM Server and is connected to the same network equipment.

Deploying too many RM Job Processors is not recommended for the following reasons:

- Responding to JP requests and sending updated events to 40 RM Job Processors can cause the RM Server to stop functioning.
- Performance is impacted when managing too many RM Job Processors.

Deploying multiple RM Job Processors across a Wide Area Network (WAN) is not supported due to the potential for network errors when transferring large amounts of data between the RM Job Processor and the RM Server.



NOTE:

Validation of radio codeplug or template data can be very CPU intensive, it can be beneficial to isolate the application or Radio Management Client, the Device Programmer, and this Job Processor on separate CPU devices.

Many Job Processors may exist on several different computers or devices, all of which are connected to the same RM Server.

To view or modify Job Processor connection settings to the RM Server, from your Window's Start Menu select **Motorola** → **RM Job Processor** → **RM Job Processor Config**.

Job Processor Settings

The Server settings window allows you to view or modify the Job Processor to RM Server data communications, as well as the Job Processor language preference settings.

Whenever the Job Processor service is launched, it automatically attempts to connect to the RM Server's database using the configured **RM Server** and **Port** settings.

 **NOTE:** To access this window, from your Window's Start Menu select **Motorola** → **RM Job Processor** → **RM Job Processor Config**.

2.5.1

Test Connection Button

This button attempts to connect the Job Processor to the RM Server's database based-on the Server Name or IP Address and Port information defined in this Job Processor Settings window.

Anytime the Job Processor is launched, based on these settings, the Job Processor always attempts to connect to the RM Server's database.

2.5.2

Concurrent Jobs

This field selects the number of Job Processors that are configured to connect to the same RM Server, and consequently the number of jobs that can run concurrently.

 **NOTE:** Configuring multiple Job Processors, each installed on a separate computer, to connect to the same RM Server enables load balancing of programming jobs.

Table 27: Range

Minimum	Maximum
1	4

2.5.3

RM Server

This field allows you to view or modify the Internet Protocol (IP) Address part of the Address-Port combination that is used by the Job Processor to communicate with the RM Server's database.

 **NOTE:** This address can be specified by either the IP Address or the Domain Name System (DNS) host name. This setting applies to the Device Programmer on a specific node.

 **IMPORTANT:** Changing RM Server settings when a job is **Running** is not possible.

2.5.4

Language

This field selects the language for the application.



WARNING:

When a new application's language selection is made, you must restart the application in order for the change to take effect.

Non-English language selections are only available if the application has been installed with full language support.

The Computer's Input Language Warning: The input language depends on the keyboard selection made in your computer's operating system, and not this language selection; however, numbers entered into the application's text field are always shown in the form 0–9, regardless of the language selection, including **Arabic**.

Hebrew and Arabic Guidelines: When the [Radio Display Language](#) is set to **Hebrew** or **Arabic**, the application's language should also be set to match the **Hebrew** or **Arabic** selection, so that character strings (such as [Zone Names on page 1284](#)) are displayed using the same Right-to-Left rules on the radio display and the application.

Diacritics: Diacritics are not supported in the application as the radio's display is unable to represent them.

Codeplug Prior to R07.00.00 Warning: Opening a non-English codeplug `.mc` file that was saved from Release prior to R07.00.00 is only allowed when the application's Language is set to **English**. To update an older non-English codeplug to be compatible, open the codeplug in Release R07.00.00 or later with the language set to **English**, and then click Save. Once saved, that same codeplug file will now open with the application's language set to other non-English languages.



NOTE: It is always possible to read a pre-R07.00.00 codeplug from a radio with the application's language set to any language; it is only codeplug `.mc` files that have this limitation.

The following language selections are supported:

- English
- French
- Spanish
- Portuguese
- Hebrew
- Russian
- Chinese (Traditional)
- Arabic

2.5.5

Port

This field allows you to view or modify the Port part of the Internet Protocol (IP) Address-Port combination that is used by the Job Processor to communicate with the RM Server's database.

This setting applies to the Device Programmer on a specific node.



IMPORTANT: Changing RM Server settings when a job is **Running** is not possible.

2.5.6

Authentication Method

This field allows you to select the cryptography (Authentication) method that the RM Server can accept from the current Job Processor.

The authentication key is the same for encryption and decryption.

The Authentication Method supports the following selections:

- Certificate
- Windows Credentials
- One-Time Password

2.5.7

One-Time Password

This field allows you to enter the **Off-domain** password needed for the Job Processor (JP) to communicate with the RM Server's database.

This password is created in the RM Server Utility. Once the password is entered, the JP remembers the password unless the Server is uninstalled or moved to another Host.

2.6

Radio Management Common Task

2.6.1

Accessing the Radio Management Client

Prerequisites: Enter the RM Server Address and Port communications settings.

Procedure:

Select **Ribbon Bar** → **Tools** → **Radio Management**

2.6.2

Radio Management Client to Server Configuration

This window allows you to view or modify communications between the Radio Management Client (RMC) and the RM Server database, and recover Application Licenses and Radio Licenses.



NOTE: You can access this window from the Actions Menu in **Settings**.

2.6.2.1

Configuring the Radio Management Client to the Server Connection

Procedure:

1. From the connections page, enter the Server Address Internet Protocol (IP) Address or Domain Name Server (DNS) host name.
2. Enter the **Port** number.

3. Enter the **Authentication Method/Type** and click **OK**.

2.6.2.1.1

Server Address

This field allows you to view or modify the Internet Protocol (IP) Address part of the Address-Port combination that is used by the Radio Management Client to communicate with the RM Server database.



NOTE: This address can be specified by either the IP Address or the Domain Name System (DNS) name.

2.6.2.1.2

Port Address

This field allows you to view or modify the Port part of the Internet Protocol (IP) Address-Port combination that is used by the Radio Management Client to communicate with the RM Server database.

2.6.2.1.3

Authentication Method/Type

This field allows you to select the cryptography (Authentication) method that the RM Server can accept from the current Radio Management Client.

The authentication key is the same for encryption and decryption.

The Authentication Method/Type supports the following selections:

- Certificate
- Windows Credentials
- One-Time Password

2.6.2.1.4

One-Time Password

This field allows you to enter the Off-domain password needed for the Radio Management Client to communicate with the RM Server database.

You can create the password in the RM Server Utility page.

The RM Client remembers the password, unless the Server is uninstalled or moved to another Host.

Accessed Only: When the [Authentication Method](#) is set to **One-Time Password**.

2.6.2.1.5

Always Remember

When enabled, the current Radio Management Client: Server Address, Port Address, and Authentication Method/Type are automatically used when logging into the RM Server.

When disabled, you are prompted with this Settings Window each time the Radio Management Client is launched; any desired changes may then be made.

2.6.3

Configuring Device Programmer or Job Processor to the Server Connection

Procedure:

1. Enter the **RM Server** Internet Protocol (IP) Address or Domain Name Server (DNS host name) for the Device Programmer or Job Processor to RM Server database communications.
2. Enter the **Port** number.
3. Select the **Authentication Method** number.
4. Click the **Test Connection** button to manually initiate the connection.

2.6.4

Recover Radio Licenses

This feature allows you to recover all radio licenses to the RM server when reformatting your RM server hard-drive.

When a radio license has been registered and it is unintentionally deleted from the RM Server prior to certain FLASHcode changes being written to the radio, this recover is needed in order to activate radio licenses.



NOTE:

Once the radio is brought back into Radio Management this recover can be run.

Once this recover process is complete, you must also run the Manage Radio Licenses Restore in order to change the Radio Licenses from a **Status of Registered** to **Ready for Activation**.

2.6.5

Recovering Application Licenses

Procedure:

1. From the RMC, select **Manage** → **Licenses**.
2. Select **From EID** to be your licenses retrieval method.
3. Enter your **Entitlement ID** in the entry field.
4. Select the **Recover Application Licenses** button.
5. Verify that the amount of licenses have been retrieved from Motorola Solutions and transfer the available licenses to the server field.

2.6.6

Adding New Radios to Radio Management

Procedure:

1. From the Radio Management (RM) Client Radio View, select **Actions**.
2. From the Actions Menu, select **New Radio**.

The **New Radio** window appears prompting for:

- Serial Number, and Codeplug Read Password when needed.
- With only these values entered, you may Schedule a Job to read the radio's codeplug to retrieve all template and non-template data into the Radio Management database.

3. To add a new radio record or row to the Radio View, select **OK**.
This is stored within the RM Server's database.

2.6.7

Importing Radios

Procedure:

1. From the Radio Management Client's - Radio View, click the **Actions** button.
2. From the Actions Menu, select **Import** → **Radios**

2.6.8

Importing CSV or Excel

Procedure:

1. From Radio Management Client's - Radio View, select **Actions**.
2. From the Actions Menu, select **Import** → **File To Grid**.

2.6.9

Deleting Radios

Procedure:

1. From the Radio Management Client's - Radio View, highlight the desired record/row and click the **Actions** button.
2. Perform one of the following actions:
 - From the **Actions Menu**, select **Delete Radio**
 - Right-click on the radio record/row, and select **Delete Radio**.

2.6.10

Creating and Managing Radio Groups

Radio groups and subgroups are created and managed within the Group navigation pane. Once radio groups and subgroups are created, they can be renamed, deleted, or moved within the tree view structure.

Prerequisites: Radios must first be imported or read into the RM Server before they can be assigned to a group or subgroup.

Procedure:

1. Click the **Radio View** icon to display the Radio view table.
2. From the Radio view table, create, manage, or move a group or subgroup.

Table 28: Managing groups and subgroups

If...	Then...
If you want to create a group	perform the following actions: <ol style="list-style-type: none">a. Right-click the relevant group or subgroup and select New Group.

If...	Then...
	<ol style="list-style-type: none"> b. Enter a name for the new group.
If you want to create a subgroup	perform the following actions: <ol style="list-style-type: none"> a. Right-click the relevant group or subgroup and select New Group. b. Enter a name for the new group.
If you want to delete a group or subgroup	perform the following actions: <ol style="list-style-type: none"> a. Select the relevant group or subgroup. b. Right-click and select Delete.
If you want to rename a group or subgroup	perform the following actions: <ol style="list-style-type: none"> a. Select the relevant group or subgroup. b. Right-click and select Rename. c. Enter a new name for the group or subgroup.
If you want to move a group or subgroup	perform the following actions: <ol style="list-style-type: none"> a. Select the relevant group or subgroup. b. Drag and drop the group or subgroup to its new location.

 **NOTE:** A radio can only be assigned to one group or subgroup.

2.6.10.1

Assigning Radios to a Group

Individual radios can be listed into a specific group or subgroups.

Prerequisites: Radios must first be imported or read into the RM Server before they can be assigned to a group or subgroup.

Procedure:

1. Click the **Radio View** icon to display the Radio view table.
2. Perform one of the following actions:

Table 29: Assigning radios to groups and subgroups

To assign a single radio

- a.** From the navigation pane, select **All** to display all radios in the RM system.
- b.** From the table, select the Group column drop-down list for a radio, expand the nodes if necessary, and select the relevant group or subgroup.
- c.** Repeat step 'a' and 'b' until all radios for the group or subgroup are assigned.

To assign a multiple radios

- a. From the navigation pane, select **All** to display all radios in the RM system.
- b. Select all the relevant radios in the table.
- c. Right-click any highlighted row and click **Select Group**.
- d. From the **Select Group** window, expand the nodes if necessary, and select the relevant group or subgroup.
- e. Click **OK**



NOTE: A radio can only be assigned to one group or subgroup.

2.6.11

Manage Data

You can export data from the RM Server to a spreadsheet. You can save the data to a local hard drive as a codeplug archive.

2.6.11.1

Exporting Grid to File

You can convert the grid view into your desired file format inside your computer.

When and where to use:

Procedure:

1. From the Radio Management Client's - Radio View, highlight the desired record/rows and click the **Actions** button.
2. From the **Actions Menu**, select **Export** → **Grid To File**.
3. Once the **Save As** window pops up, you can select your desired storage device/folder.
4. Decide the desired file extension to be either **.XLSX**, or **.XLS**, or **.CSV**.
5. Enter the filename and click the **Save** button.

2.6.11.2

Exporting Radio Data

Procedure:

1. From the Radio Management Client's - Radio View, perform one of the following actions
 - Highlight the desired record/rows and click the **Actions** button.
 - Right-click directly on the desired radio record/row, then select **Export Radio** from the pop-up menu.
2. From the **Actions Menu**, select **Export** → **Radio**.
3. Once the **Save As** window pops up, you can select your desired storage device/folder.
4. Enter the filename and click the **Save** button.

2.6.11.3

Exporting DVRS Data

Procedure:

1. From the Radio Management Client's - Radio View, highlight the desired record/rows and click the **Actions** button.
2. From the **Actions Menu**, select **Export** → **DVRS**.
 **NOTE:** Exporting multiple radio records/rows is **not** possible.
3. Once the **Save As** window pops up, you can select your desired storage device/folder for the .XML file to be stored.
4. Enter the filename and click the **Save** button.

2.6.11.4

Exporting Radio System View Grid to File

Procedure:

1. From the Radio Management Client's - Radio System View, highlight the desired record/rows and click the **Grid to File** button from the **Operational Buttons**.
2. From the **Save As** window pops up, you can select your desired storage device/folder.
3. Decide the desired file extension to be either .XLSX, .XLS, or .CSV.
4. Enter the desired filename and click the **Save** button.

 **NOTE:** Only selected data that is viewable within the Radio System View once it is exported. This exported file cannot be used to perform Import Excel, or Import CSV under Radio View.

2.6.11.5

Exporting Data Profile View Grid to File

Procedure:

1. From the Radio Management Client's - Data Profile View, highlight the desired record/rows and click the **Grid to File** button from the **Operational Buttons**.
2. From the **Save As** window pops up, you can select your desired storage device/folder.
3. Decide the desired file extension to be either .XLSX, .XLS, or .CSV.
4. Enter the desired filename and click the **Save** button.

 **NOTE:** Only selected data that is viewable within the Radio System View once it is exported. This exported file cannot be used to perform Import Excel, or Import CSV under Radio View.

2.6.12

Importing DVRS Files

Procedure:

From the Radio Management Client-Radio View, click **Action** → **Manage** → **DVRS Files** → **Add** → **Open**.

2.6.13

Manage Templates

The **Manage Templates** feature allows you to view template information.

You can rename, edit, delete, and import templates. The template records are stored in the Radio Management (RM) Server.

Table 30: Selections of Templates

Selections	Definitions
Model Number	Allows you to view the radio model number of each template. Templates can only be shared by radios with the same model number.
Template Firmware Version	Allows you to view Firmware Version of each template.
Language Packs	This displays the available language pack for each template. Language Packs determine the language that appears within a radio's display.
Voice Announcements	The number of Voice Announcement .MVA files stored in the current template, and their total size in kBytes.
Template Codeplug Version	Allows you to view the version number of each template or codeplug.
Creation Date	The date that a template is created. Whenever a template is edited and saved, a new version of the template is created.
In Use (Radios)	The number of radios in the RM Server database that share the current template.
DVRS Hash	<p>Allows you to view the hash that is calculated internally for each template based on the values of a specific set of fields that affect the DVRS feature.</p> <p> NOTE: This hash is calculated on a template when the DVRS Hardware Enable field is enabled.</p>
DVRS File	<p>Upon each action to change the system Synchronization Data at RM/CPS, RM/CPS prompts you to attach the DVR configuration file. The System Synchronize Data refers to the following data in the codeplug:</p> <ul style="list-style-type: none"> ● Zone Number ● Zone Name ● Channel Number ● Channel Type ● Talkgroup ID ● Outbound System Repeat in Local Mode

Selections

Definitions

- MSU System PTT in Local Mode
 - Radio Display Language
 - Overlap Region Band Preference
 - Frequency Band
-

2.6.13.1

Managing Templates

Procedure:

1. From the Radio Management Client, click the **Actions** button
2. In the Actions Menu, select **Manage** → **Templates**.

2.6.13.2

Editing Templates

Procedure:

1. From Manage Templates, right-click on the required template and choose **Edit Template**.



NOTE: You can only edit Non-Template features in the three edit-capable views of the RMC.

2. To return to the Radio Management Client, click **Save**.



NOTE: Radio Management forces you to save the modified template with a new name.

2.6.13.3

Renaming Templates

Procedure:

1. From Manage Templates, right-click on the template, and click **Rename Template**.
2. Type in a new template name.

2.6.13.4

Deleting Templates

Procedure:

From Manage Templates, right-click on the required template, and click **Delete**.



NOTE: You can only delete templates that are not applied to any radio.

2.6.13.5

Importing Templates

Procedure:

From Manage Templates, **Import Templates** → `<.mc>` → **OK**



NOTE: These codeplug/template files are imported in to the current RM Server in a template only format.

2.6.14

Templates Selection Window

The **Select Template** window allows you to select a template for the selected radio.

Most of the codeplug feature-values are contained within a Radio Management template. These templates can be used for multiple radios. The more generic codeplug feature-values (less radio-specific) are contained within Radio Management templates.

Template codeplug values are modified from the main application user-interface. Template codeplug values have a view-only status in the Radio Management Client's (RMC). Non-template radio-specific codeplug values such as Radio IDs and IP Addresses are maintained on a per codeplug basis in the RMC's three edit-capable views.

Template

Allows you to view the name of each template.

Model Number

Allows you to view the radio model number of each template.

Template Firmware Version

Allows you to view the radio model number of each template.

Template Codeplug Version

Allows you to view the version number of each template/codeplug.

Creation Date

Allows you to view-only the date and time that each template is created.

In Use (Radios)

Allows you to view-only how many managed radios are using each template.

2.6.14.1

Selecting Templates

Procedure:

1. From the Radio Management Client's Radio View, highlight the appropriate radio-codeplug record/row.
2. Perform one of the following actions:
 - Select **Actions** → **Select Template**.
 - Right-click on the highlighted record/row(s), and choose **Select Template**.
3. **Select Template** → **OK**.



NOTE: Only templates with compatible FLASHcodes and Model Numbers are shown as available selections. **Compatible FLASHcodes** refers to the target radio(s) that is selecting the new (source) template having a FLASHcode that is equal-to or greater-than the FLASHcode of the source template.

2.6.15

Firmware Management

This feature allows you to view the current versions of firmware stored in the RM Server, and manually import new versions of firmware to the RM Server.

Firmware upgrades will include upgrading the radio's Secure Encryption Module's firmware when needed.

Template codeplug values are modified from the main application user-interface. Template codeplug values have a view-only status in the Radio Management Client's (RMC). Non-template radio-specific codeplug values such as Radio IDs and IP Addresses are maintained on a per codeplug basis in the RMC's three edit-capable views.



NOTE: Template firmware upgrades and template FLASHport Feature Set Upgrades are initiated from the **Right-Click** menu's **Upgrade** selections.

Firmware Name

Allows you to view the name of all available firmware versions.

Firmware Version

Allows you to view the version number of all available firmware versions.

Size

Allows you to view the file size of all firmware versions.

Imported Date

Allows you to view the date and time that all firmware versions were imported.

Model

Allows you to view all firmware versions for portable and mobile.

MACE

Allows you to view the Motorola Advanced Cryptographic Engine (MACE) module version of each firmware file.

In Use (Radios)

Allows you to view current number of radios with a pending job tied to a firmware file. This is useful for determining when a firmware file can be deleted as the counter must be set to zero.

Comments

Allows you to add comments on a per firmware file basis.

Import Firmware

Import Firmware button allows you to browse and import a .CVN Firmware Upgrade Files.

2.6.15.1

Managing Firmware

Procedure:

From the Radio Management Client, click **Actions** → **Manage** → **Firmware**.

2.6.16

Voice Announcements Management

This feature allows you to view automatically-imported Voice Announcement files stored in the RM Server. You can also manually import new Voice Announcement files to the RM Server.

There are two methods of storing Voice Announcement files to the RM Server:

- **Automatic Import:** Each time a radio is added to the Radio Management Server, Voice Announcement will automatically added. It is then available for other managed radios

- **Manual Import:** Using the **Import Voice Files** feature (see feature below).

Voice File Name

Allows you to view the name of each Voice Announcement file.

Voice File Size

Allows you to view the size of each Voice Announcement file.

Imported Date

Allows you to view the date and time that all Voice Announcement files were imported.

In Use (Templates)

Allows you to view how many templates are using each Voice Announcement file.

Comments

Allows you to add comments on a per Voice Announcement file basis.

Import Voice files

Import Voice Files button allows you to browse and import .mva and .wav file(s).

2.6.16.1

Managing Voice Announcements

Procedure:

From the Radio Management Client, click **Actions** → **Manage** → **Voice Announcements**.

2.6.16.2

Importing Voice Files

Procedure:

1. Highlight the required .mva and/or .wav file.
2. To import the Voice Announcement file, click **Open**.



NOTE: .wav files are automatically converted to the .mva format during the import process.

2.6.17

Manage Language Packs

This feature allows you to view automatically-imported language packs files stored in the RM Server. You can also manually import new versions of Language Packs files to the RM Server.

There are two methods of storing language pack files to the RM Server:

- **Automatic Import:** Each time a radio is added to the Radio Management Server, language packs will automatically added. It is then available for other managed radios
- **Manual Import:** Using the **Import Language Packs** feature (see feature below).



NOTE: To access this feature: **Radio Management Client** → **Actions** → **Manage** → **Language Packs**

Language Pack File Name

Allows you to view the name of each language pack file.

Language Pack Locale

Allows you to view the language and the language's region.

Language Pack Version

Allows you to view the current version number of each language pack.

Language Pack Size

Allows you to view the size of each language pack file.

Imported Date

Allows you to view the actual date and time that all language pack files were imported.

In Use (Templates)

Allows you to view how many templates are using each language pack file.

Comments

Allows you to add comments on a per Voice Announcement file basis.

Import Language Packs

Allows you to import all language packs to the RM Server that are currently installed with the current application.

2.6.17.1

Managing Language Packs

Procedure:

From the Radio Management Client, click **Actions** → **Manage** → **Language Packs**.



NOTE: Right-click on a template allows you to **Upgrade Language Packs** when a newer version of the template Language Packs exist in the RM Server.

2.6.18

Manage DVRS Files

The Manage DVRS Files feature allows you to view and import imported DVRS Files stored in the RM Server.

There are two methods of storing DVRS files to the RM Server:



NOTE: DVRS files cannot be automatically or manually imported when a file name match already exists in the RM Server. This importing is true even if the content of the file is different.

- **Automatic Import:** Each time a radio is added to the Radio Management Server, the DVRS files will be automatically added. It is then available for other managed radios
- **Manual Import:** Using the **Import DVRS Files** feature (see feature below).

Name

Allows you to view the name of all available DVRS files.

Size

Allows you to view the file size of all available DVRS Files.

Imported Date

Allows you to view the date and time that all DVRS files were imported.

In Use Templates and Radios

Allows you to view the number of templates and radios using each DVRS Files.

In-Use Templates (Template Mode)

Allows you to view the number of templates using each DVRS files.

In-Use Radios (Template Mode)

Allows you to view the number of radios using each DVRS files.

DVRS Hash

Allows you to view the hashcode that is extracted from the imported DVRS files. The hash is generated during the DVRS export operation. This value is also dependent on the settings within the template.



NOTE: When using the DVRS File, the hash in the template must match the hash in the DVRS File.

Comments

Allows you to add comments on a per DVRS files basis.

2.6.18.1

Managing DVRS Files

Procedure:

From the Radio Management Client, click **Actions** → **Manage** → **DVRS Files**.

2.6.19

Sort, Hide and Unhide Column Data

The Radio Management Client's column data management options include sorting columns, hiding columns, and unhiding columns.



NOTE: Hiding and unhiding columns is only available from the Radio Management Client's - Radio View.

2.6.19.1

Sorting a Column

Procedure:

To sort a column, left-click on a column's heading to toggle between sorting the column data in ascending or descending order.



NOTE: Sorting multiple columns is not supported and is available in the five main Radio Management **Views**.

2.6.19.2

Hiding a Column

When and where to use:

To hide a column:

Procedure:

1. Right-click on the header of any column.
2. From the window containing a list of column names, click to uncheck any column name that you wish to hide.

2.6.19.3

Unhiding a Column

Procedure:

1. To unhide a column, right-click on the header of any column.

2. From the window containing a list of column names, click to check any column name that you wish to unhide.

2.6.20

Radio Management OTAP/POP25

Programming Over Project 25 (POP25) or Over the Air Programming (OTAP) allows for wireless reading or writing of radio codeplug data within the CPS Radio Management.

This read or write communication is possible anywhere within the radio's coverage area using an **ASTRO 25** Trunking Communications system, or within the radio's coverage area using an **ASTRO** Conventional System. Trunking OTAP is accomplished with the POP25 communication method.



WARNING:

- The CPS fields must be programmed or considered in order for POP25/OTAP to be possible.
- CPS fields are edited from the Radio Management tool, using the **Edit Template** feature.
- If you experience difficulties accessing a radio's IP address during a POP25 operation, depending on your system's firewall you may need to manually add the Motorola Solutions CPS as an exception to the firewall's exception list.
- Over-the-air programming can rely on TCP Data Retransmission attempts to help ensure successful POP25 operation in the face of network (voice) activity and other network latencies. On supported Windows operating systems, Motorola Solutions recommends setting the **TCPMaxDataRetransmissions** registry value to 5 or more.
- Changing TCP/IP registry values affects all applications that require TCP/IP services. In addition, improperly configuring or editing the registry could cause serious problems or performance degradation. For added protection, back up the registry before attempting to modify it.



IMPORTANT:

- **Must Be In Range:** For POP25 to be accomplished on an **ASTRO 25** Trunking System, POP25 targeted in-the-field radios must be in active Trunking Communication or Conventional Communication with an in-the-field POP25-capable and Data-capable Trunking System or Conventional System.
- **Must Be Pre-Programmed** in POP25 targeted radio's RM Template / Codeplug prior to these radios going out in-the-field:
 - The **POP25 Enable** field must be enabled on a radio's programmed Trunking System or Conventional System. This allows communication with the in-the-field Trunking System or Conventional System.
- **Must Be Programmed** within an RM Template/Codeplug at the actual time of scheduling the Read or Write Job. This must be true for each radio included:
 - When ARS is needed to retrieve the Radio's IP Address during POP25, also consider these two Data Profile POP25 related settings: ARS Mode and ARS Address.
 - Or when the Radio's IP Address is known and therefore ARS is not needed, enter the IP Address in the OTA Fixed IP field.

2.6.21

Programming for Radio Management Wi-Fi (LAN)

Within CPS Radio Management, Wi-Fi Programming allows for wireless reading or writing of codeplug data and firmware updates. Wi-Fi is a registered trademark of Wi-Fi Alliance ®.

Procedure:

1. Set up an operational Wi-Fi Access Point.



NOTE: The radio must be connected to an operational Wi-Fi Access Point to program the radio through Wi-Fi connection.

2. Connect a Device Programmer (DP) to the operational Wi-Fi access point.



NOTE: The Device Programmer must be installed on a machine with network (LAN) connection to the Wi-Fi Access Point. If the Out-of-the-Box Wi-Fi Provisioning option (QA09001/GA09001) has been ordered along with the radios, please refer to the Out-of-the-Box Provisioning Over Wi-Fi to review the steps to initially provision the radios over Wi-Fi in a secure manner.

3. Add radios to Radio Management with the Radio Management Client (RMC).
4. Schedule a read job for the radios with RMC.
5. Configure the CPS Wi-Fi related fields to enable Wi-Fi programming. The following fields values must be configured in CPS:
 - Wi-Fi Enable
 - Network Priority
 - Encrypted Network Password
 - Network SSID
 - Security Type

6. Schedule a write job for the radios with RMC.



NOTE: Connection Method field must be set as **USB + Wireless (LAN)** to support Wi-Fi Connection.

7. Connect each radio to the Device Programmer (DP) with USB cable to program the radio. After the programming is complete, you can connect the radio to the Wi-Fi hotspot.

2.6.22

Launching Scheduling Job Window

Procedure:

Perform one of the following actions:

- From the Radio Management Client Radio View, click **Schedule Job** button.
- Right-click directly on a highlighted radio and select **Schedule** in the pop-up menu.

You can select multiple radios by holding CTRL key. A radio cannot be selected for more than one job at a time.

2.6.23

Scheduling Jobs in Radio Management

The scheduling of jobs is performed within the **Schedule Job** window of **Radio View**.

Jobs can be scheduled to occur immediately or within a specific window of time.

 **NOTE:** The RM Device Programmer processes scheduled jobs when the presence of the radio is detected.



CAUTION:

When upgrading the radio firmware and modifying the configuration, using the **USB + Wireless (LAN)** connection method, it is highly recommended to perform two separate write jobs. Performing these tasks in a single write job causes the radio to reset twice.

First, upgrade the radio firmware by scheduling a write job. When the firmware write job is complete, register the new feature, configure the radio settings for the new feature, and then schedule a second write job.

Procedure:

1. From **Radio View**, select the relevant radio or radios.
2. Select the **Scheduler** menu.



NOTE: The **Schedule Job** window can also be opened by right-clicking on the selected radios and selecting **Schedule Job** from the pop-up menu or by selecting the **Schedule job** shortcut above the search field.

3. From the **Job Type** section, perform one of the following actions:
4. Select the preferred **Connection Method**.

The following connection methods are supported:

- **USB + Wireless (LAN)**

See [Scheduler in Radio Management](#) for connection method descriptions.

5. In the **Job Name** field, enter a relevant name for the job.
6. In the **Time Zone** field, select the relevant time zone from the drop-down list.
7. In the **Start after** fields, select the start date (in day-month-year format) and start time (in a 24-hour format).



NOTE: Clicking in the date field, enables a drop-down arrow that allows the user to select the date from a calendar. The time can be manually entered or selected, in one minute increments, using the up and down arrows.

8. In the **End after** fields, select the end date (in day-month-year format) and end time (in a 24-hour format).
9. In the **Force Immediate Update** field, to allow the target radio to restart immediately after downloading the update, enable this field.

This restart occurs without user confirmation. This setting is only available for a Write job of a single APX NEXT radio in the Schedule Job window.

10. In the **Max # of deferrals** field, set the maximum number of times a user can delay a firmware update.

This setting is only available for a Write job and APX NEXT radios in the Job Schedule window.

11. Click **OK**.

2.6.24

Out-of-the-Box Provisioning Over Wi-Fi

Out-of-the-Box Provisioning Over Wi-Fi allows you to configure Wi-Fi enabled radios that must be ordered with the Out-of-the-Box Wi-Fi Provisioning option (QA09001/GA09001).



IMPORTANT: A radio ordered with the Wi-Fi option and the Out-of-the-Box Provisioning over Wi-Fi option will come with the following default codeplug configuration:

- Wi-Fi Enable field is set to **Enabled**.
- Network SSID is set to “MyNetwork” and Security Type is set to **None**.
- Wi-Fi field is set to **On**.

For security reasons, it is recommended that the first update of the radio over the insecure **MyNetwork** access point only include the agency’s secure Network SSID and password. This will transfer the radio to the secure network before provisioning it with the final customized codeplug. It is also recommended that the machine used to host the Device Programmer (DP) does not contain the RM Server in order to protect the codeplug data.



NOTE:

- For recommendations regarding the Wi-Fi setup, refer to the Recommended Procedure for Radio Management Over Wi-Fi.
- Refer to The Wi-Fi Page for more information regarding the Wi-Fi fields.

Basic Setup Requirements

- The person responsible for radio provisioning must have basic knowledge of the Radio Management (RM) System. This basic knowledge includes an understanding of the computer network topology of the Radio Management Server, Device Programmer (DP), and other components of the RM.
- A Wi-Fi router is required to connect the Wi-Fi capable radio to the DP. The Wi-Fi router must be provisioned with the Network SSID set to “MyNetwork” with no password enabled.

2.6.24.1

Adding Wi-Fi Enabled Radios to Radio Management

Procedure:

1. Access the Radio Management Client (RMC) on the secure network and import radios to Radios Management (RM).
2. Schedule a **Read** job for these radios with RMC.
3. In the **Device Monitor**, download the jobs using the **Offline Mode** functionality
4. Disconnect the machine hosting the Device Programmer (DP) from the secure Wi-Fi access point.
5. Connect the machine to the **MyNetwork** access point.
6. Turn on the radios. This allows the DP to **Read** each radio when it is connected to the Wi-Fi access point.
7. Disconnect the machine that runs the DP from the **MyNetwork** access point.
8. Reconnect the machine to the secure Wi-Fi access point. This allows the DP and the RM Server to re-synchronize.

9. Assign a template provisioned only with an SSID and Password/Security settings of the secure Wi-Fi access point to the radios added in step 2.

 **NOTE:** Ensure that the new secure SSID is set to a higher priority than **MyNetwork** or remove **MyNetwork** from the template.

10. Schedule a **Write** job for the radios using RMC.
11. In the **Device Monitor**, download the jobs to the DP using the **Offline Mode** .
12. Disconnect the machine that runs the DP from the secure Wi-Fi access point.
13. Reconnect the machine to the **MyNetwork** access point.

 **NOTE:** After the DP is reconnected, it will program the radios.

14. Select **Upgrade** on each radio to apply the changes. After the changes have been made and the radios are reset, the radios will connect to the secure Wi-Fi access point.
15. Reconnect the DP to the secure Wi-Fi access point. This allows the DP and the RM Server to resynchronize.
16. Assign the final template to the radios modified in step 6.
17. Schedule a **Write** job for the radios with RMC.
18. **Write** the radios using the secure Wi-Fi access point.

2.6.24.2

Connecting Radios to a Wi-Fi Access Point

Procedure:

1. Remove the radio from the box.
2. Insert a battery.
3. Turn the radio on.
4. Scan the radio for the pre-provisioned access point namely **MyNetwork**.

 **NOTE:**

- If **MyNetwork** cannot be found, the radio displays **No Wi-Fi Service**. If **MyNetwork** is found, the radio connects and present ergonomic indications in the form of a display and an icon.
- For the ergonomics pertaining to specific radios models, such as differences between models with front display and models with top display only, refer to the User Manual.
- Refer to the user manual for more information about differences in ergonomics amongst a specific radio such as front display and top display.

2.6.25

Recommended Procedure Using Wi-Fi

For codeplug and radio firmware update using wi-fi, apply the following recommendations:

 **IMPORTANT:**

- Motorola Solutions recommends that the Wi-Fi network used for radio provisioning be configured as a secure network.

- The radio can add up to 20 Wi-Fi access points. If the radio is within range of multiple pre-configured networks, it connects to the network with the highest priority (1 = highest priority). If the radio is within the range of multiple networks of the same priority, it connects to the network with the highest signal strength.
- When the radio connects to the Wi-Fi network, the radio notifies the Device Programmer (DP). If the DP has any scheduled jobs for that radio, the job works in the background.
- For codeplug only updates, the codeplug updates after you turn on the radio.
- For firmware updates, if the radio has a front display, you can choose to **Accept** or **Delay**. Radios with a top display will show **Update?** and the user needs to press the long key press of the top side button of the radio to accept the update.



NOTE: The radio is out of service for several minutes during the firmware updates.

2.6.26

Write Protect and Owner ID

This feature allows you to modify a radio's Owner Advanced Key Type and Owner System ID, and enable or disable a radio's Write Protection.



NOTE:

- Multiple records/rows selection is only allowed for records/rows that have the same Key Type and Owner System ID values. If the selected records/rows don't have matching Key Type and Owner System ID values, the Query/Update Radio data context menu item will be grayed out.
- The Owner Advanced **Key Type** and its corresponding **Owner System ID** or **Owner WACN ID** are initially determined for the radio and its codeplugs at the time of the radio's original purchase.

Accessed Only:

- When an **Unlimited Access** Advanced Key is loaded into the CPS.
- When the selected radio's ASK Required field is applicable.

2.6.26.1

Viewing the Radio Write Protect Status, Key Type and Owner System ID

Prerequisites: Load an **Unlimited Access** Advanced Key in the CPS and attach it your computer's USB port.

Procedure:

Click the Query Radio button.

2.6.26.2

Enabling or Disabling the Radio's Write Protection

Prerequisites: Load an **Unlimited Access** Advanced Key that has a **System ID** which matches the radio's current Key Type and Owner ID and attached it to your computer's USB port.

Procedure:

1. Select the required Write Protect field.

2. To initiate the Update Radio Data operation, click the **Update Radio Data** button

 **NOTE:** A **Write** job must be scheduled and completed to finalize this update.

2.6.26.3

Updating the Key Type and Owner ID

Prerequisites: Load an **Unlimited Access** Advanced Key that has a **System ID** that matches the radio's current Key Type and Owner ID and attach it to your computer's USB port.

 **NOTE:** A **Limited** or **Unlimited** Advanced Key which matches the new Key Type/Owner System ID must be loaded in the CPS and also attached to your computer's USB port.

Procedure:

1. Select the required Key Type
2. Then select the required Owner ID from the drop-down list.
3. To initiate the Update Radio Data operation, click the **Update Radio Data** button.

 **NOTE:** A **Write** job must be scheduled and completed to finalize this update

2.6.26.4

Key Type

This field allows you to select a new Key Type in order to update the radio Key Type and Owner ID.

Owner IDs are needed when Write Protecting radios and apply only to Trunking dispatch capable radios.

 **NOTE:** The Owner Advanced **Key Type** and its corresponding **Owner System ID** or **Owner WACN ID** are initially determined for the radio and its codeplugs at the time of the radio's original purchase.

Accessed Only:

- When an **Unlimited Access** Advanced Key is loaded into the application.

The following selections are supported:

None

This is the initial default value.

Advanced System Key

Available selections are based on any "Limited" or "Unlimited" Advanced Keys that have been loaded into the application.

Advanced WACN Key

Select the appropriate new Owner ID based on this Key Type selection.

2.6.26.5

Owner ID

This field allows you to select a new Owner ID in order to update the radio Owner ID (with the Update Radio Data button).

Owner IDs are needed when Write Protecting radios. This applies only to Trunking dispatch capable radios.

 **NOTE:** The Owner Advanced **Key Type** and its corresponding **Owner System ID** or **Owner WACN ID** is determined for the radio and its codeplugs at the time of the radio first purchase.

Accessed Only:

When an **Unlimited Access** Advanced Key is loaded into the CPS (as seen in the System Key Report).

This field supports the following selections:

0

This is the initial default value.

Advanced System/WACN Keys

A new Owner ID is available based on any **Limited** or **Unlimited** Advanced Keys that are loaded into the application.

2.6.26.6

Write Protect

Allows you to change the **Write Protect** status of the radio (using the **Update Radio Data** button).

Owner IDs are needed when Write Protecting radios and apply only to Trunking dispatch capable radios.

Accessed Only:

- When an **Unlimited Access** Advanced Key is loaded into the application (as seen in the System Key Report).

2.6.26.7

Update Radio Data Button

Clicking this causes the selected radio's Key Type, Owner ID and/or Write Protection status to be updated in the RM Server.

This button remains unavailable until changes are made to one of these fields.

2.6.27

Cancel Jobs

Cancel Job selection allows you to remove a Scheduled Job from the RM Server's database.

This feature can be used when a radio's Status is **Scheduled** or **Scheduled, Processing Job**. This selection is only available when accessed from the Radio Management Client's - Radio View. Once a scheduled Job has been sent from the RM Server to the Device Programmer, the Job can no longer be canceled.



NOTE: To cancel a job, from the Radio Management Client's - Radio View, right-click directly on the desired radio's record/row, then select **Cancel Job** from the pop-up menu.

2.6.28

Using the Radio Management Client

The Radio Management Client allows you to view and define certain codeplug/template values of all radios within your radio fleet.

Codeplug values modified from this RMC are the radio-specific values such as Radio IDs and IP Addresses. All other more generic codeplug values are contained within Radio Management templates. Radio Management templates can be applicable to multiple radios. Template codeplug values are able to be modified from the main user interface.

All Radio Management codeplug and template values are stored within the Radio Management Server database. This Radio Management Client also allows for the scheduling of a Read or a Write of codeplug/template data.

This window offers five main **Views** from which to access Radio Management radio codeplug values. Radio codeplug record/rows accessed in these views are based-on the currently selected group of radios.

2.6.29

Radio Management Client Tools

The Radio Management Client's Actions Menu provides the necessary tools for adding, editing, deleting, organizing and general maintenance of codeplug/template records within the RM Server database.

This menu is accessed by clicking the Actions Button from the five main views:



Table 31:

Menu Selections	Keyboard Shortcut	Definitions
New Radio	Alt+N	Allows you to add a new radio entry to the RM Server database.
Import Excel	Ctrl+H	Allows you to Import radio codeplug data from an .XLSX or .XLS file format. Codeplug data that is exported from Radio Management can be modified in Microsoft's Excel program
Import CSV	Ctrl+H	Allows you to Import radio codeplug data from a .csv file format. Codeplug data that is exported from Radio Management be modified in Microsoft's Excel program.
Import Radios	Ctrl+I	Allows you to add a new radio entry to the RM Server database by importing a codeplug.
Import DVRS	Ctrl+Shift+U	Allows you to import new versions of DVRS Files to the RM Server.
Export Grid to file	Ctrl+Shift+S	Allows you to export Radio Management Client - Radio View - data to a standard spreadsheet.
Export Radios	Ctrl+Shift+R	Allows you to export the currently highlighted Radio Management Client data to a codeplug file.
Export DVRS	Ctrl+Shift+D	Allows you to export the currently highlighted Radio Management Client - record / row to an (.XML) file format.
Print	Ctrl+P	Sends the currently viewed Radio Management Client Group of

Menu Selections	Keyboard Shortcut	Definitions
		<p>record/row data to the computer's printer.</p> <p> NOTE: This feature is only available from the Radio Management Client's Radio View.</p>
Print Preview	Alt+Shift+P	<p>Allows you to see exactly how the current Radio Management Client - record/row data will look when it is printed. Data is printed based-on the currently selected Group.</p> <p> NOTE: This feature is only available from the Radio Management Client's Radio View.</p>
Radio Details	Ctrl+W	<p>Launches the Radio Details window for the currently-highlighted radio-codeplug record/row.</p>
Edit Template	Ctrl+T	<p>Launches the main application interface where template codeplug values can be viewed and edited.</p>
Select Template	Ctrl+M	<p>Launches the Select Template window where you may select a new template to be applied to the highlighted radio(s).</p>
Discard Changes	Ctrl+L	<p>Discards any recent changes made to the highlighted radio record/row. This is true for all template-related changes and non-template-related data. However a Group change is not restored.</p> <p> WARNING: Any pending features added with FLASHport will be permanently lost. The FLASHkey has already been decremented and cannot be reversed. Pending features added with Radio Licensing can be recovered using Settings.</p>
Reset Identifiers	Ctrl+Shift+I	<p>Allows you to enter the read or write codeplug password when a radio's codeplug is password protected. Codeplug passwords</p>

Menu Selections	Keyboard Shortcut	Definitions
		<p>are determined on a per codeplug basis from the application's Read/Write Password feature.</p> <p> NOTE: This feature is only available from the Radio Management Client's Radio View, and only when the desired codeplug record / row is highlighted.</p>
Help	F1	Retrieves the Online Help System window.
Add Groups	Ctrl+Shift+G	Adds a new Group to the Radio Management Client.
Rename Groups	F2	Allows you to edit a Group's name.
Select Groups	Ctrl+J	<p>Allows you to assign a radio to a group.</p> <p> NOTE: This feature is only available from the Radio Management Client's Radio View, and only when a desired codeplug record/row is highlighted.</p>
Manage Templates	Alt+T	Allows you to Edit templates, Delete templates, Rename templates, Upgrade Language Packs for templates, and Import templates.
Manage Firmware	Alt+F	Allows you to view and Import all Firmware versions stored in the current RM Server.
Manage Voice Announcements	Alt+V	Allows you to view and Import all Voice Announcement files stored in the current RM Server.
Manage Language Packs	Alt+L	Allows you to view and Import all Language Pack files stored in the current RM Server.
Manage Licenses	Alt+R (Radio Licenses) or Alt+A (Application Licenses)	<p>Allows you to:</p> <ul style="list-style-type: none"> • Add Application Licenses (more radios to Radio Management) • Add Radio Licenses (FLASHcode Upgrades)

Menu Selections	Keyboard Shortcut	Definitions
		<ul style="list-style-type: none">• Manage Radio Licenses (FLASHcode Upgrades)
Manage DVRS	Alt+U	Allows you to view automatically imported DVRS Files stored in the RM Server, and to manually import new DVRS Files to the RM Server.
Delete	DEL	Deletes the currently highlighted radio(s) from the Server database.
Settings	Alt+E	Launches the Radio Management Client to RM Server "Server Settings" Window for modifications.
Refresh	F5	Refreshes the RM Server's data to the record/row data of the Radio Management Client's Radio View, System View, Data View or Job View.

2.6.30

RM Device Programmer or Monitor

The Device Programmer component has two main functions:

- Monitor for radio (Device) presence
- Execute Programming jobs.



NOTE: The Device Programmer/Monitor for APX POP25 cannot run at the same time as The Device Programmer/Monitor.

2.6.31

Searching or Filtering Radio Codeplug Data

Allows you to search through the entire RM Server database.

Any radio-codeplug (record/row) containing a match for the searched characters, word or phrase, remain visible within the Radio Management Client. The search feature is a filter allowing you to see only data matching your search parameters.



NOTE:

- This feature is only available when accessed from the Radio Management Client's - Radio View. The filtered results are carried into the Data Profiles View and the System View.
- Search may be further filtered by the currently viewed group.

To search your desired content:

Type in a character string, word or phrase, in the Search feature's entry area, then click the magnifying glass icon to begin the search.

2.6.32

Using RM Server Backup and Server Settings

Allows you to view the current RM Server status and settings, as well as manage RM Server multi-computer access and database backup related tasks.

To launch the RM Server Utility, from the **Window's Start Menu** → **Motorola** → **RM Server** → **RM Server Utility**.

2.6.32.1

Radio Management System Management

The **Status** selection allows you to monitor the Radio Management (RM) services installed on the computer.

The following services are available in RM:

Table 32: RM Services

Services	Description
Discovery Server	This service provides authentication functions to RM.
Job Server	This service handles connections to RM Devices Programmers and RM Job Processors.
RM Server	This service handles connections to RM Clients.
RM Server Database	This service identifies the location and version for the RM database.

The following **Status** selections are available in RM:

Table 33: Status Selection

Status	Description
Service Name	This status defines the name of RM service.
Location	This status defines the URL of the service on the computer.
Registered Status	This status displays the service within the RM system. The status is either <i>Available</i> , <i>Unavailable</i> , or <i>Unknown</i> .
Service Status	This status displays the current operational state of the service within the RM System. The status is either <i>Running</i> or <i>Stopped</i> .
Version	This status displays the current version of the RM service running on the computer. The status is either <i>Unavailable</i> , or <i>Unknown</i> .

The following buttons are available for **Status** selections in RM:

Table 34: Status Selection Buttons

Buttons	Description
Stop All or Start All	<p>The Stop All button is used to refresh all RM services on the computer. It resets all server connections.</p> <p> NOTE: Only use the Stop All button when there is no job running.</p> <p>Once the services are stopped, the text on the button changes to Start All. The Start All button restarts all RM services.</p>
Refresh	<p>This button updates the table display to show the current settings.</p>

2.6.32.2

Radio Management Database Management

The **Database Settings** selection serves to backup and restore the Radio Management (RM) database, and clear RM database locks.



NOTE: It is recommended to back up the server when new radio and data are added to the RM system.

2.6.32.2.1

Backing Up the RM Server Database

The RM Server database should be backed up when new radios and data are added to the RM system.

This operation ensures that the RM system can be restored to its operation state in the event of a database error, when the RM system is updated to a newer version.

Procedure:

1. From the **RM Server Utility**, select **RM Database Management** → **Database Backup** → **Browse**.
The **Browse For Folder** window opens, where you can select an existing folder location or create a new folder to store the backup.
2. Optional: Select the **Enable Password** check box and enter a **Password** to password protect the backup folder.
3. To initiate the backup operation, click **Backup**.
A confirmation Warning message appears and warns against performing any operations when using the RMC Client while the backup operation is in progress.
4. To confirm the backup operation, click **Yes**.
A folder is created and named with the current date and time in the **Destination** folder.

2.6.32.2.2

Restoring the RM Server Database

Restoring the RM Server database allows an administrator to populate the database with a good known backup.

Procedure:

1. From the **RM Server Utility**, select **Database Settings** → **Database Restore** → **Browse**.
2. Locate the **Source** folder that contains the RM Server database backup folder.
3. To initiate the restore operation, click **Restore** → **Yes**.

If a password was assigned to the backup folder, a **Restore** password window opens.

4. If the backup folder was password protection, enter the **Password** and click **OK**.



NOTE: In the event of an error during the Restore operation, a valid backup must be restored to populate the database with usable data.

The backup of the RM Server database is restored and the RM Server Utility restarts.

2.6.32.2.3

Database Backup

The Database Backup section is used to back up the RM database.

This function is used to back up the RM database when other backup capabilities are not available. The RM database cannot be backed up using this function when deployed on a remote database server.



NOTE: When performing a back up function, do not make updates that uses the Radio Management application as it may affect the database records.

Selections:

Destination

Defines the name of a Windows folder, either on the local computer or the full path of a network share.

Browse Button

Allows you to browse for a folder location on the computer or network.

Enable Password Check box

Allows you to enable the database backup password feature. When enabled, the Password field becomes visible and allows you to add a password for the database backup.

Backup Button

Performs the backup function for the RM database to the specified destination. A confirmation message is displayed when selected.

2.6.32.2.4

Database Restore

The Database Restore section is used to restore the RM database from a backup.

This function is used to back up the RM database when other backup capabilities are not available. The RM database cannot be backed up by using this function when deployed on a remote database server.

Selections:

Destination

Defines the name of a Windows folder.

Browse Button

Allows you to browse for a folder location on the computer or network.

Enable Password Check box

Allows you to enable the database backup password feature. When enabled, the Password field becomes visible and allows you to add a password for the database backup.

Backup Button

Performs the backup function for the RM database to the specified destination. A confirmation message is displayed when selected.

2.6.32.2.5

Clear Database Locks

Locks are applied to shared RM components, such as Configurations and Sets, when they are edited. You can maintain a lock indefinitely, or an error can lock a shared RM component after editing.

RM components that are locked are not available for Jobs.

Selections:

Clear Locks Button

Allows you to remove the locks on all RM database components.

2.6.32.2.6

Add Local Administrators and Restart the Application

This feature is used to ensure that all administrators of the local machine are assigned the role of RM Administrators.

When the **Add and Restart** button is selected, all administrators of the local machine are assigned the role of RM Administrators. Once all local administrators are added, the RM Server Utility shuts down and restarts automatically.

2.6.32.2.7

Rebuild Database Indexes

This feature allows an administrator to run a defragmentation of the RM Server database indexes.

Perform this operation when functions such as the listing of data from any RM view or the modification of a configuration is very slow. The duration of the operation is dependent on the amount of data stored on the database and the level of defragmentation that exists. The operation can last from several minutes to half an hour.

 **WARNING:** Before running this feature, ensure that no jobs are scheduled or running and that no users are accessing the RM Server.

2.6.32.3

System Key Administration

The System Key Administration selection allows an RM administrator to configure **Advanced Keys** .

This allows or deny programming of certain Trunking System and Trunking Personality protected-fields and features, and allow for certain Conventional-dispatch feature access.

Table 35: Selections

Selections	Definitions
Advanced System Keys (ASK) and Advanced WACN Keys (AWK)	System keys that allow for programming restrictions and/or access to key protected fields. Using the System Key Administration, the RM administrator can selectively enable which fields can be accessed for certain ASTRO trunking features, defines allowable ranges, and radio write protection.

Selections
Definitions

The administration of system keys requires the loading of master keys that are encoded onto a USB key device.

- Advanced System Keys are required to fully program radios that communicate within all Trunking System Coverage Types except **Intra-WACN Roaming**. The Key ID for the ASK identifies the actual System ID for the trunking system. Trunking Personality protected fields are controlled by the System Key selected by its referenced Trunking System.
- Advanced WACN Keys are required to fully program radios that communicate (roam) within certain non-Motorola Wide Area Communications Networks (WACNs). The Key ID for the AWK identifies the actual Home WACN ID of the Wide Area Communication Network. AWKs are only applicable when **Intra-WACN Roaming** is the selected Coverage Type. Trunking Personality protected fields are controlled by the System Key selected by its referenced Trunking System.
- When an Advanced Conventional Key (ACK) has a Key ID matching the Conventional Customer ID, a radio is then capable of Tactical Inhibit **Stun** and **Kill** functionality. Regardless of the Key ID number, all Conventional Keys allow for Radio Management to Radio Conventional Programming Over Project 25 (POP25) communications. ACKs have unlimited access; however, write protecting a radio is not possible with Advanced Conventional Keys.

Software Keys

File-based (*.key) System Keys that allow **Unlimited Access** to key protected fields. Software system keys are assigned to the relevant trunking system from the System ID field. When the ASK required field is available, it must be Disabled to allow the use of Software System Keys.



NOTE: Certain radio models and/or options may allow Software System Keys without the ASK Required field setting.

2.6.32.3.1

Enabling System Key Administration Feature

Prerequisites: The following conditions must be met in order to use the RM Server Utility for user authorization.

- The RM Server Utility application must run on the RM Server machine.
- The user must be a local Administrator on the RM Server machine.

When and where to use:

Perform the steps below to verify that the user is a local Administrator:

Procedure:

1. Open a **cmd prompt** window on the RM Server machine.
2. Enter `lusrmgr.msc`. The **Local Users and Groups (Local)** management console opens.
3. Select the **Groups** folder from the left pane.
4. From the right pane, right-click **Administrators** and select **Properties**.
5. Verify that the user account is listed in the **Members** section.



NOTE: The user account must be listed as an individual member of this group. If the current user is not a member of the Administrators group, either add the user to the group or log on to the server machine using an account of the group member.

2.6.32.3.2

Loading Master Keys

Prerequisites: Obtain the relevant USB key device that contains the master keys for the RM system.

Procedure:

1. Select **All Programs** → **Motorola** → **RM Server** → **RM Server Utility**.
2. Select **System Key Administration**.
3. Insert the USB key device, containing the master keys, into the USB port of the computer.
4. From the **System Key Administration** window, select **File** → **Load Master Key(s)**.

The master keys that are encoded in the USB key device are loaded. The loaded master keys can be viewed by selecting the **Master Keys Available** tab at the bottom of the **System Key Administration** window.

2.6.32.3.3

Importing Software System Keys

Prerequisites: Obtain the following items:

- Master keys for relevant system
- System properties for selecting and configuring trunking system and trunking personality protected fields

Procedure:

1. Ensure that the master keys that match the software system key are loaded.
See [Loading Master Keys on page 218](#).
2. Click **File** → **Import Software Key(s)**.
3. From the **Open** window, select the relevant software system key file `key`, and click **Open**.
The system key record appears in the System Key Administration table.
4. If required, edit the software system key.
5. Click **Save**.

If any required fields are missing, a dialog box opens and notifies you.

6. Click **Close**.

The newly created system key record appears in the System Key Administration table. Any errors or confirmations appear in the **Message** tab below the table.

2.6.32.3.4

Default RM Administrator Role Members

By default, all local Windows administrators on the server machine are automatically assigned the RM Administrator role when the RM Server Utility is launched for the first time.

However, new local Windows administrators added to the machine after the initial launch of the RM Server Utility are not automatically assigned the RM Administrator role.

RM Administrator Role Assignment for New Local Administrators

To assign additional local Windows administrators the RM Administrator role, the current user of the RM Server Utility must have RM Administrator role privileges. See [Assigning Local Administrators to the RM Administrator Role](#).

Reinitialization of RM Administrator Role

The RM Administrator role can be repopulated by automatically assigning all local Windows administrators on the server machine to the RM Administrator role. See [Reinitializing the RM Administrator Role](#).

2.6.32.3.5

File Menu for System Key Administration

The **File** menu in the **System Key Administration** window is used to load, import, generate, and fulfill system keys into the RM system.

The following selections are available under the **File** menu:

Load Master Key(s)

Allows the administrator to load master keys into the RM Server Utility, from the USB key device attached to the computer. Master keys allow for the creation and distribution of Advanced Keys, with the same Key ID, to other USB key devices. Different master key types are possible based on the specific conventional or trunking dispatch needs.

View Device Parameters

Allows the administrator to read all system key related parameters from the connected radio.

Import Advanced Key(s)

Allows the administrator to import the master keys from the USB key device into the RM Server database. Imported master keys can only be edited while the original master keys are loaded to the RM Server Utility. See [Loading Master Keys on page 218](#). Otherwise, all fields are read-only.

Import Software System Key(s)

Allows the administrator to load file-based (*.key) system keys from a file. Software keys are supported as a Legacy Software System Key and can only be edited while the original master keys are loaded to the RM Server Utility. Otherwise, all fields are read-only.

Import Requested System Key(s)

Allows the requester of a system key to import the file (*.xml) containing the system key into their system. The file was created using the **Fulfill System Key Request** menu selection.

Generate System Key Request

Allows for the request of a system key from the system administrator. The originator would have to specify the **System ID** and **System Type** for the system key. The request is saved to a file that is emailed to the system administrator for fulfillment.

Fulfill System Key Request

Allows the system administrator to create the requested system key from the **Generate System Key Request** menu selection. The master key for the requested **System ID** and **System Type** must be loaded to the RM Server Utility. The created system key is saved to a file (*.xml) and also loaded to the RM Server database. The file is sent to the requestor, where they can import the requested system key by using the **Import Requested System Key(s)** menu selection.

2.6.32.3.6

Configuring Advanced System Keys

This procedure allows an administrator to configure an Advanced System Key (ASK) to protect against unauthorized programming of certain ASTRO Trunking System and Trunking Personality key protected fields.

ASKs are required to fully program radios that communicate within all trunking system coverage.



NOTE: A master key matching the ASK must be loaded before you can edit the Advanced System Key .

Prerequisites: Obtain the following items:

- Master keys for relevant system
- System properties for selecting and configuring trunking system and trunking personality protected fields



NOTE: For a list of protected fields, See [Trunking System Protected Fields](#) and [Trunking Personality Protected Fields](#) .

Procedure:

1. Ensure that the master keys for the relevant system are loaded.
 See [Loading Master Keys on page 218](#).
2. Click the **Add System Key**  button.
3. Under the **General** section, enter a **System Key Name** for the advanced system key.
4. From the **Key ID** drop-down list, select an ASK from the available list.
5. Configure the expiration date for the system key by performing the following actions

If...	Then...
If the system key does not require an expiration date,	check the Never Expires check box. Never Expires is the default setting.
If the system key must have an expiration date,	perform the following actions: a. If checked, uncheck the Never Expires check box. b. In the Expire On field, click the calendar icon to the right and select a date from the calendar.

6. Under the **Permissions** section, select **Access Level** from the drop-down list.

The supported access levels are as follows:

Unlimited Access

This access type enables all the protected fields for all trunking features within the Trunking System and Trunking Personality categories. The system key allows read and write access to all protected trunking features in the codeplug.

Unlimited Access Without Write Protection

This access type enables all the protected fields for all trunking features within the Trunking System and Trunking Personality categories. This selection does not allow for the radio to be write protected.

Limited

This access type allows the administrator to selectively enable protected fields for all trunking features within the Trunking System and Trunking Personality categories. The administrator can also limit the range of values for fields that support ranges. The system key allows access to the field but limits the value to the specified range. When Limited access level is selected, the **Select All Function And Fields** and **Copy Permissions from another System Key** options appear.

7. Optional: For **Limited** Access Level, perform one of the following actions:

If...	Then...
If you want to enable all protected fields and selectively disable fields,	click Select All Function And Fields and then disable protected fields.  NOTE: When selected, the Enable Cloning Operations and the Write Protect Radio options are selected. Uncheck any option if necessary.
If you want to duplicate the selected protected fields from another system key,	perform the following actions: a. Click Copy Permissions from another System Key . b. From the System Keys window, select the system key from the list. c. Click OK .
If you want to manually select protected fields,	perform the following actions: a. Click the relevant trunking feature (for example, General) to display all protect fields. b. Select all relevant fields. c. For fields that allow ranges, click the down arrow next the field. d. Enter a Minimum and Maximum value. e. Click Add to configure additional ranges.  NOTE: To delete a range from a list of multiple entries, select the right arrow for the relevant row and click Remove . Click Remove All to delete all range entries.

8. Click **Save**.

If any required fields are missing, a notification dialog box opens.

9. Click **Close**.

The newly created system key record appears in the System Key Administration table. Any errors or confirmations appear in the **Message** tab below the table.

2.6.32.3.7

Sharing System Keys between Sites

The **System Key Administration** allows the sharing of advanced system keys (ASK) between RM systems. This process allows an administrator to request an advanced system key for a different RM system. Once the requested ASK is imported, the administrator can configure the ASTRO protected fields to allows radios to communicate within different system.

Process:

1. Generate a system key request for the relevant system.

See [Generating a System Key Request](#).

2. Fulfill the customer system key request.
See [Fulfilling a System Key Request](#).
3. Import the requested system key.
See [Importing a Requested System Key](#).

2.6.32.4

User Authorization

The **User Authorization** selection allows an administrator to configure users and roles for accessing the RM system. Local machine, domain, or non-domain users can be configured to access the RM system. **User Authorization** displays a list of users or roles that have access to the RM System.

**IMPORTANT:**

The user must be an administrator of the local machine and have an RM Administrator role to enable this feature.

See [Enabling User Authorization Feature on page 222](#).

Users and **Roles** can be viewed by selecting the relevant radio button.

The administrator can **Add** , **Edit** , or **Delete**  users and roles from the RM system.



NOTE: By default, the **RM Server Utility** provides **RM Client User** and **RM Administrator** roles.

The following operations are supported:

2.6.32.4.1

Enabling User Authorization Feature

This feature is enabled when the user running the RM Server Utility has an **RM Administrator** role.

Prerequisites: The following conditions must be met in order to use the RM Server Utility for user authorization:

- The RM Server Utility application must run on the RM Server machine.
- The user must be a local Administrator on the RM Server machine.

When and where to use:

Use this procedure to verify that the user is a local Administrator.

Procedure:

1. Open a **cmd prompt** window on the RM Server machine.
2. Enter `lusrmgr.msc`
The **Local Users and Groups (Local)** management console opens.
3. From the left panel, select the **Groups** folder.
4. From the right pane, right-click **Administrators** and select **Properties**.
5. Verify that the user account is listed in the **Members** section.



NOTE: The user account must be listed as an individual member of this group. If the current user is not a member of the Administrators group, either add the user to the group or log in to the server machine by using an account that is a member of the group.

2.6.32.4.2

Adding Users to the RM System

Access to the RM Server requires users to be added to the RM system under the **User Authorization** section of the RM Server Utility.

Prerequisites: Perform a search in Windows for **RM Server Utility** and launch the application.

Procedure:

1. From the **RM Server Utility**, select **User Authorization**.
2. Ensure that **View by** is set to **Users**.
3. Click the **Add** icon to add users. Perform the following actions:



NOTE:

The selections available from the **Add** icon depend on whether the RM system is connected to a domain or a local network.

If...	Then...
To add a domain user,	perform the following actions: <ol style="list-style-type: none"> a. Select Add Users from Domain. b. From the Select Users window, click Advanced. c. In the Common Queries section, enter the name of a user as identified in the domain. d. Click Find Now. e. From the Search results section, select one or more users from the list. f. Click OK. The user now appears in the list of users in the User Authorization window.
To add a non-domain user,	perform the following actions: <ol style="list-style-type: none"> a. Select Add Non Domain User. b. In the New User window, enter the users credentials. The following fields are required: <ul style="list-style-type: none"> ● Username ● Password (seven characters minimum) ● Confirm New Password c. Click OK. The user now appears in the list of users in the User Authorization window.

If...	Then...
To add a local computer user,	perform the following actions: <ol style="list-style-type: none">a. Select Add Users from Local Computer.b. From the Select Users window, click Advanced.c. From the Common Queries section, click Find Now.d. From the Search results section, select one or more users from the list.e. Click OK.f. From the Select Users window, click OK. The user now appears in the list of users in the User Authorization window.

Postrequisites: Assign a role to the newly added user to provide the required permissions. See [Updating Authorized Users and Assigning Roles](#).

2.6.32.4.3

Deleting Users from the RM System

When and where to use: The RM Server Utility is collocated with the RM Server.

Procedure:

1. From the **RM Server Utility**, select **User Authorization**.
2. Ensure that **View by** is set to **Users**.
3. Select one or more users from the list.
4. Click the **Delete** icon.
A **Member Deletion Warning** confirmation window opens.
5. Click **Yes**

2.6.32.4.4

Updating Authorized Computers and Assigning Roles

The RM administrator can update and configure additional settings for each computer after the computers are added to the list of Authorized Computers.

Procedure:

1. From the **Authorized Computers** window, select a computer from the list.
2. Click the **Edit** icon.
3. From the **General** section, update or configure the following fields:

Name

This read-only field is the host name of the computer.

Disabled

Valid only for non-domain computers.

Allows the administrator to disable an authorized computer.

Locked Out

Valid only for non-domain computers.

When enabled (checked), the computer has exceeded the maximum number of incorrect password entries. Only an administrator can unlock the account.

 **NOTE:** The maximum number of invalid password entries is a Windows feature and is set in the Local Security Policy by the system administrator. The default setting is 0 (Disabled) up to a maximum of 999 before a lockout occurs.

Registered

Valid only for non-domain computers.

When enabled (checked), the machine has been registered with the RM system using the One-Time Password. See [Registering a Non-Domain Computer using a One-Time Password on page 229](#).

Reset Password

Valid only for non-domain users.

The **Reset Password** button allows the administrator to create a new password for the computer.

4. From the **Roles** section, check one or more roles (Device Programmer, Job Processor) for the selected computer.
5. Click **Save** and then **Close**.

2.6.32.4.5

Adding Roles in User Authorization

The creation of roles in an RM system allows an administrator to group users and configure permissions for accessing authorization screens in the RM Server Utility and perform certain functions in an RM system.

 **NOTE:** By default, the **RM Server Utility** provides **RM Client User** and **RM Administrator** roles.

Procedure:

1. From the **RM Server Utility**, select **User Authorization**.
2. From **View by**, select the **Roles** radio button.
3. Click the **Add** icon.
4. In the **Add Role** window, enter a **name** for the role and a **description**.
5. Click **OK**.

2.6.32.4.6

Default RM Administrator Role Members

By default, all local Windows administrators on the server machine are automatically assigned the RM Administrator role when the RM Server Utility is launched for the first time.

However, new local Windows administrators added to the machine after the initial launch of the RM Server Utility are not automatically assigned the RM Administrator role.

RM Administrator Role Assignment for New Local Administrators

To assign additional local Windows administrators the RM Administrator role, the current user of the RM Server Utility must have RM Administrator role privileges. See [Assigning Local Administrators to the RM Administrator Role](#).

Reinitialization of RM Administrator Role

The RM Administrator role can be repopulated by automatically assigning all local Windows administrators on the server machine to the RM Administrator role. See [Reinitializing the RM Administrator Role](#).

2.6.32.5

Machine Authorization

The **Machine Authorization** selection opens the **Authorized Computers** window and allows an RM administrator to secure the RM system by allowing only authorized computers to run the RM Device Programmer and/or RM Job Processor Windows services.



IMPORTANT:

You must be an administrator of the local machine and have an RM Administrator role to enable this feature.

See [Enabling Machine Authorization Feature](#).



NOTE: By default, any computer running the RMC Client and connected to the RM Server can install and run the RM Device Programmer and/or RM Job Processor services. To prevent unauthorized operation of these RM components, the RM administrator must check the **Enable computer authorization** check box.

2.6.32.5.1

Enabling User Authorization Feature

This feature is enabled when the user running the RM Server Utility has an **RM Administrator** role.

Prerequisites: The following conditions must be met in order to use the RM Server Utility for user authorization:

- The RM Server Utility application must run on the RM Server machine.
- The user must be a local Administrator on the RM Server machine.

When and where to use:

Use this procedure to verify that the user is a local Administrator.

Procedure:

1. Open a **cmd prompt** window on the RM Server machine.
2. Enter `lusrmgr.msc`
The **Local Users and Groups (Local)** management console opens.
3. From the left panel, select the **Groups** folder.
4. From the right pane, right-click **Administrators** and select **Properties**.
5. Verify that the user account is listed in the **Members** section.



NOTE: The user account must be listed as an individual member of this group. If the current user is not a member of the Administrators group, either add the user to the group or log in to the server machine by using an account that is a member of the group.

2.6.32.5.2

Adding Computers to Machine Authorization

When and where to use: Users from the local computer, domain, or non-domain must be added to access the RM system.

Procedure:

1. From the **RM Server Utility**, select **Machine Authorization**.
2. Check **Enable computer authorization**.

3. Click the **Add** icon and perform one of the following actions:

**NOTE:**

The selections available from the **Add** icon depend on whether the RM system is connected to a domain or a local network.

If...	Then...
If adding a domain computer,	<p>Perform the following actions:</p> <ol style="list-style-type: none"> a. Select Add Computers from Domain. b. From the Select Computer window, click Advanced. c. From the Common Queries section, enter the name of a computer as identified in the domain. d. Click Find Now. e. From the Search results section, select one or more computers from the list. f. Press OK. g. From the Select Computer window, click OK. The computer now appears in the list in the User Authorization window. h. Select one or both of the RM system Windows services (Device Programmer, Job Processor).
If adding a non-domain computer,	<p>Perform the following actions:</p> <ol style="list-style-type: none"> a. Select Add Non Domain Computer. b. From the Off-domain machine registration window, enter the machine credentials as they appear in the window. <ul style="list-style-type: none"> • Host Name • Password • Confirm Password <p> IMPORTANT: This password must then be entered into the One-Time Password field of the RM Component (Job Processor or Device Programmer) configuration in order to register the computer running the component. See Registering a Non-Domain Computer using a One-Time Password on page 229.</p> <p> NOTE: The Show Password check box can be used to view the password text for verification purposes.</p> c. Press OK. The computer now appears in the list in the User Authorization window. d. Select one or both of the RM system Windows services (Device Programmer, Job Processor).

2.6.32.5.3

Deleting Computers from the RM System

When and where to use: The RM Server Utility is collocated with the RM Server. Perform a search in Windows for **RM Server Utility** and launch the application.

Procedure:

1. From the **RM Server Utility**, select **Machine Authorization**.
2. Select one or more computers from the list.
3. Click the **Delete** icon.
A **Member Deletion Warning** confirmation window opens.
4. Click **Yes** to confirm.

2.6.32.5.4

Updating Authorized Computers and Assigning Roles

The RM administrator can update and configure additional settings for each computer after the computers are added to the list of Authorized Computers.

Procedure:

1. From the **Authorized Computers** window, select a computer from the list.
2. Click the **Edit** icon.
3. From the **General** section, update or configure the following fields:

Name

This read-only field is the host name of the computer.

Disabled

Valid only for non-domain computers.

Allows the administrator to disable an authorized computer.

Locked Out

Valid only for non-domain computers.

When enabled (checked), the computer has exceeded the maximum number of incorrect password entries. Only an administrator can unlock the account.



NOTE: The maximum number of invalid password entries is a Windows feature and is set in the Local Security Policy by the system administrator. The default setting is 0 (Disabled) up to a maximum of 999 before a lockout occurs.

Registered

Valid only for non-domain computers.

When enabled (checked), the machine has been registered with the RM system using the One-Time Password. See [Registering a Non-Domain Computer using a One-Time Password on page 229](#).

Reset Password

Valid only for non-domain users.

The **Reset Password** button allows the administrator to create a new password for the computer.

4. From the **Roles** section, check one or more roles (Device Programmer, Job Processor) for the selected computer.
5. Click **Save** and then **Close**.

2.6.32.5.5

Registering a Non-Domain Computer using a One-Time Password

The registration of a non-domain computer is required for the computer to access the Device Programmer and/or Job Processor.

Prerequisites:

After a non-domain computer (running Device Programmer or Job Processor) is added to the list of authorized computers, the non-domain computer must be registered with the RM Server using the password created in the [Adding Computers to Machine Authorization on page 226](#) procedure.

This is a one-time operation that must be performed after the following:

- A new non-domain computer has added to the list of authorized computer.
- Password Reset of an existing computer.

Procedure:

1. For Device Programmer, preform the following actions:
 - a. Select **Start** → **All Programs** → **Motorola** → **RM Device Programmer** → **RM Device Monitor**.
 - b. Click **Settings**.
2. For Job Processor, select **Start** → **All Programs** → **Motorola** → **RM Job Processor** → **RM Job Processor Config**.
3. Enter the **Address** and **Port** of the RM server.
4. In the **Authentication Method** field, select **One-Time Password**.
5. Enter the password used when the computer was added to the list of Authorized Computers.
6. Click **Test Connection**.

A pop-up window opens displaying `Connection was successful`.
7. Click **OK**.

The RM component service restarts.

2.6.32.5.6

Default RM Administrator Role Members

By default, all local Windows administrators on the server machine are automatically assigned the RM Administrator role when the RM Server Utility is launched for the first time.

However, new local Windows administrators added to the machine after the initial launch of the RM Server Utility are not automatically assigned the RM Administrator role.

RM Administrator Role Assignment for New Local Administrators

To assign additional local Windows administrators the RM Administrator role, the current user of the RM Server Utility must have RM Administrator role privileges. See [Assigning Local Administrators to the RM Administrator Role](#).

Reinitialization of RM Administrator Role

The RM Administrator role can be repopulated by automatically assigning all local Windows administrators on the server machine to the RM Administrator role. See [Reinitializing the RM Administrator Role](#).

2.6.32.6

Network Settings

The **Network Settings** selection allows you to define specific ports and/or a range of ports on the Windows firewall that are open for communication access to the RM Server and Job Server services.

RM Server

This Windows service handles all request coming from the RM Configuration Client.

The **Port Range** field is preconfigured with common TCP ports that are typically open and available for communication. The following TCP ports and TCP port ranges are defined by default for the RM Server:

- 49202
- 49205-49210
- 51020-51030
- 50003
- 65534

You can use these default TCP ports or enter specific TCP ports opened on the Windows firewall. The **Apply** button is used to accept new TCP port values.



NOTE: The **HTTPS (Port 443)** field is only visible for RM Servers running on the following operating systems:

- Window 8.1 and above
- Windows Server 2012 and above

Job Server

This Windows service handles all requests coming from the RM Device Programmer.

The **Port Range** field is preconfigured with common TCP ports that are typically open and available for communication. The following TCP ports and TCP port ranges are defined by default for the Job Server:

- 49202
- 49205-49210
- 51020-51030
- 65534

The user can use these default TCP ports or enter specific TCP ports opened on the Windows firewall. The **Apply** button is used to accept new TCP port values.



NOTE: The **HTTPS (Port 443)** field is only visible for RM Servers running on the following operating systems:

- Window 8.1 and above
- Windows Server 2012 and above

HTTPS (Port 443) - HTTPS Protocol Support



NOTE: The **HTTPS (Port 443)** field is only visible for RM Servers running on the following operating systems:

- Window 8.1 and above
- Windows Server 2012 and above

Enabling the **HTTPS (Port 443)** field allows the RM Windows services (RM Server or Job Server) to communicate using the HTTPS protocol. You can selectively choose which RM Windows service should

communicate using the HTTPS protocol. The HTTPS port 443 is typically open on the computer firewall and allows for easier configuring of an RM system. In the event that port 443 is unavailable on the Windows firewall, you must manually configure the port.

 **NOTE:** For customers that do not want to transmit data over the HTTPS protocol, the **HTTPS (Port 443)** field must be disabled. Once disabled, the RM system uses only the TCP protocol.

See [HTTPS Protocol Support on page 231](#) for the feature description.

2.6.32.6.1

HTTPS Protocol Support

In addition to the TCP protocol, Radio Management supports the HTTPS protocol to allow RM clients (RM Configuration Client, RM Device Programmer and RM Job Processor) to communicate with the RM Windows services (RM Server and Job Server).

 **IMPORTANT:** The HTTPS protocol is only supported when the Windows services of the RM Server and the RM clients are running on computers using Windows Server 2012 and above.

When the HTTPS protocol is enabled (default setting), the Windows service listens for requests on the HTTPS and TCP channels. When the HTTPS protocol is disabled, the Windows service listens for requests only on the TCP channel. The HTTPS protocol is set in the **Network Settings** window of the RM Server Utility.

See [Configuring the HTTPS Protocol](#).

The RM client request is transparently routed to the appropriate channel based on the capabilities of the Windows service and the operating system running on the RM client computer. If the Windows service is listening on the HTTPS and TCP channels and the RM client is running on Windows Server 2012 and above, the RM client request is routed to the HTTPS channel. Otherwise, the RM client request is routed to the TCP channel.

 **NOTE:** RM clients are now required to connect to the RM Server on port **443** instead of port **8675**.

The following troubleshooting topics are related to the HTTPS protocol feature:

- [Port Conflict by Multiple Applications](#)
- [Unable to Validate Server SSL Certificate](#)

2.7

Radio Management Troubleshooting

This section covers various troubleshooting related topics in Radio Management that are intended to provide information and resolution.

2.7.1

Radio Management Connection Problems

The Radio Management Client and the RM Device Programmer may experience issues connecting to the RM Server in a distributed environment.

These issues may be caused by a number of factors and the error messages that are displayed do not provide the necessary information to resolve the issue.

2.7.1.1

Windows Firewall and RM Ports

If there are instances where the Radio Management Client cannot communicate with the RM Server due to a Windows firewall error:

- Ensure the following HTTPS and TCP ports to be opened in the Windows Firewall on both the client and server computers:
 - HTTPS Protocol:
 - 443
 - TCP Protocol:
 - 49202
 - 49205-49210
 - 50003
 - 51020-51030
 - 65534
 - 8675
 - 3416

2.7.1.2

Port Conflict by Multiple Applications

Port conflicts can occur when the RM Server is deployed on a computer running other services concurrently.

Issue:

The RM Windows services do not start. An error is logged in the service log file indicating that the service port is in use by another application.

Resolution:

Review the service log, identify the application using the port and stop the application. Launch the RM Server Utility and Start All the services from the Status.

2.7.1.3

Unable to Validate Server SSL Certificate

The RM Client (RM Client, RM Device Programmer, and RM Job Processor) must establish a trust relationship for the SSL Certificate used by the RM Windows services.



IMPORTANT: This error can occur when using the HTTPS Protocol Support feature that uses port 443 to connect to the RM Server.

Issue:

The RM client is unable to start and an error is reported in the client log file. The error indicating that a trust relationship could not be established for the SSL/TLS secure channel. This error can occur when the default port 443 has been registered with another application on the client machine.

Resolution:

Install the Trusted Root Certification Authority of the SSL certificate on the client machine. Contact Motorola Solutions Service Center for assistance.

2.7.1.4

Coordinated Time for Distributed Radio Management

Any computer running Radio Management components (such as RM Client, RM Device Programmer, or RM Job Processor) must have its time set to within 5 minutes of the time on the computer running the RM Server.

IMPORTANT:

- This synchronization of time ensures that the Radio Management components connect to the RM Server.
- Computers may exist in different time zones. However, their time must be set to within 5 minutes of the RM Server's time accounting for the difference in time zones. For example, an RM Server in Chicago is set to 1:15 p.m. (CST). Ensure that the computers running the DP and JP in California are set to 11:15 a.m. (PST).

2.7.1.5

Radio Management Windows Services

Issue:

Communication with any of the RM components has failed. One or more of the Motorola RM services may have stopped running.

Resolution:

Verify that the following Motorola RM Windows services are running on the server:

- Motorola RM Discovery Service
- Motorola RM Server
- Motorola RM Job Server
- Motorola RM Job Processor
- Motorola RM Device Programmer

If any of the above mention services is not running, open Windows services on the server, stop all the Motorola RM services, and restart them in the order listed above.

 **NOTE:** If the Motorola RM services do not start, there is a problem with the installation and no further action can be performed. Contact Motorola Solutions Service Center for assistance.

2.7.1.6

Certificates and License Server

Digital Certificates

Radio Management uses digital certificates to authenticate the RM Device Programmer. Occasionally, the certificates can become corrupted, or they can expire. Contact customer support to have the digital certificates manually reinstalled.

Connection Problems with the License Server

If the server is in a separate network than the client, it may be necessary to create a route to the server in the client's Windows Route Table. Refer to Windows documentation to perform this task. The URL to the license server is <https://licensing.motorolasolutions.com>.

2.7.2

Delete Button is Grayed Out

There are many reasons why a delete button is grayed out. The following sections describe the common reasons:

- In **Radio View**, the **delete** button can be grayed out when the selected radio has a scheduled job that is waiting to be completed.



NOTE: Radio View is displayed when the **Radio View** icon is selected.

- In **Configuration View**, the **delete** button can be grayed out when the selected Configuration is assigned to a radio.



NOTE: Configuration View is displayed when you select a radio is from **Radio View** and click **Edit Configuration**.

- In **Set View**, the **delete** button can be grayed out when a selected Set is referenced in a Configuration.



NOTE: Set View is displayed when you select **Actions** → **Manage** → **Sets** within the programming pane.

2.7.3

Prevent USB LAN as the Default LAN for USB Connection

If you select direct cable (USB) instead of wireless (Wi-Fi) connection as the interface between the RM tool and the device, the device will work as a modem (USB tethering).

Issue:

USB tethering prevents the PC from connecting to the internet because Windows uses the USB LAN as a default LAN. When there are no valid internet connection, it may cause errors during license registration or license recovery.

Resolution:

- Register or recover license(s) first without USB connection between PC and device
- Disconnect USB connection and use Wi-Fi as the RM tool-device interface medium.

2.7.4

Radio Resets Twice After a Write Job

The radio resets twice after a firmware and configuration job is written.

Problem:

After performing a firmware and configuration write job using the **USB+Wireless(LAN)** connection method, the radio is resetting twice.

Resolution:

When upgrading the radio firmware and modifying the configuration, it is highly recommended to perform two separate write jobs. First, upgrade the radio firmware and schedule a write job. When the firmware upgrade write job is complete, register the new feature, configure the radio settings for the new feature, and then schedule a second write job.

Chapter 3

Radio Features

APX Customer Programming Software supports a wide range of ASTRO APX radio features. These feature descriptions contain related information along with feature fields and fields that may be impacted by a specific feature.

3.1

Keystone Topics

This section provides the links to topics with Keystone.

- [Digital Vehicular Repeater System \(DVRS\) Feature on page 258](#)
- [Fall Alert Feature on page 275](#)
- [O7 Control Head with Siren/Lights Keypad on page 280](#)
- [Site Alias on page 293](#)
- [User Authentication Feature on page 303](#)

3.2

Action Consolidation

The Action Consolidated feature allows you to define specific sequences of radio actions, known as Consolidated Actions.



These actions might include activating a [Relay Pattern on page 452](#), [Siren Type on page 455](#), and sending Status messages and GPS location information to a dispatcher – all with a single button-press or [O9 Control Head on page 282](#) - Response Selector mode. Within each Consolidated Action, these individual actions are designed to execute (in the radio) one-by-one in a specific order. Multiple Consolidation Actions may be created.

Related Features

[Action Consolidation](#)

Action Consolidation Controls:

- [Action Consolidation on page 588](#) button
- [Response Selector \(CH-O9\)](#) button
- [Data Button](#)

3.3

Automatic Registration Service (ARS) Feature

The Automatic Registration Service is a generic name for a server that implements the Automatic Registration Server (ARS) features.

With [POP25 Programming over P25 Systems on page 285](#) communications and with features such as the [Text Messaging Feature on page 297](#), an ARS is responsible for device registration also known as Presence Notification (PN) and also be referred to as the Presence Notifier (PN). With Text Messaging, an ARS is responsible for Radio-User system registration, allowing for you to be recognized as operating on a specific radio. See also the [User Authentication Feature on page 303](#).

For POP25 Communications:



NOTE:

The Automatic Registration Servers are defined in the ARS Data Administrator tool.

Automatic Registration Servers are selected for Single Radio POP25 from the POP25 Access Radio Window's select Automatic Registration Server field.

Automatic Registration Servers are selected for Multiple Radio POP25 "Batch" Programming from the POP25 Batch Programming Scheduler Window's select Automatic Registration Server field.

For Text Messaging Communications:

- [Data User List on page 964](#)
- [User on page 496](#) button-press and [User on page 540](#) menu-selection
- [ARS Mode](#)
- [Soft ID/Username on page 331](#)
- [PIN/Password on page 332](#)

For Record Type

- [ARS/UNS Record Type on page 236](#)
- [Group Data Gateway Record Type on page 238](#)
- [Provisioning Manager Record Type on page 238](#)
- [Intelligent MiddleWare Record Type on page 239](#)
- [Importing a SSL Certificate in Microsoft Window on page 240](#)

3.3.1

ARS/UNS Record Type

The Automatic Registration Server (ARS)/Unified Notification Server (UNS) allow you to keep track of radios and provide presence to the connected Device Programmer of radios on the server.

Selections	Definitions
Server Alias	This required field allows you to use a recognizable name to the record for reference when selecting in the settings window for device programmer configuration.
IP Address	An IP (Internet Protocol) Address's dotted decimal format facilitates unique identifiers for connectivity purposes on an IP network. The 4 decimal values (separated by decimal points) are known as octets. Example: 140.179.220.200
Port Number	This required field must match the port for the ARS/UNS service.
Connection Type	This field has two options; Secure and Clear for the ARS/UNS record.

See [Adding ARS/UNS Record on page 237](#), [Modifying an existing ARS/UNS Record on page 237](#), [Testing an existing ARS/UNS Record on page 237](#).

3.3.2

Adding ARS/UNS Record

Procedure:

1. Click the **New** Button to create a new record.
2. Select **ARS/UNS** in the **Record Type** section (the default choice).
3. Enter a recognizable name in the **Server Alias Name** field for the record.
4. Enter the **IP Address** for the ARS/UNS.
5. Enter the **Port Number** for the ARS/UNS.
6. Import the certificate matching those installed on the IMW configuration into the Microsoft Certification Store.

See [Importing a SSL Certificate in Microsoft Window on page 240](#)

7. Click the **Save** button to save the settings.

The new record appears in the Server List window.

3.3.3

Modifying an existing ARS/UNS Record

Procedure:

1. Click on the desired record in the List of Servers window.

The Server's parameters appears just below the list in the central region of the window.

2. Modify the values of the fields as necessary.
3. Click the **Save** button to save the settings.

The new record appears in the Server List window.

3.3.4

Testing an existing ARS/UNS Record

Procedure:

1. Click on the desired record in the List of Servers window.
2. Click the **Test** button to verify the Server's connectivity settings.

The record must be saved before the test can begin. This test relies on a radio device ID which is provisioned on the server must be entered in the [Device ID on page 249](#) field. If this test fails, verify that :

- this default radio was created in the presence server
- connection parameters are correct
- the machine hosting the device programmer has uninhibited connectivity to the machine hosting the presence server

This tool provides dynamic feedback in the **Messages** window near the bottom of the screen.

3.3.5

Group Data Gateway Record Type

The Group Data Gateway (GDG) allows you to manage and maintain firmware updates to the radios.

Selections	Definitions
Server Alias	This required field allows you to use a recognizable name to the record for reference when selecting in the settings window for device programmer configuration.
Hostname	This required field must match the hostname of the machine hosting the GDG services. It must not use the fully qualified domain name.
Port	This required field must match the port for the GDG service.
Connection Type	This field can only be Secure for the GDG record.

See [Adding GDG Record on page 238](#).

3.3.6

Adding GDG Record

Procedure:

1. Click the **New** Button to create a new record.
2. Select **GDG** in the Record Type section (the default choice).
3. Enter a recognizable name in the **Server Alias Name** field for the record.
4. Enter the **Hostname** for the GDG service, use the hostname and not the fully qualified domain name.
5. Enter the **Port Number** for the GDG.
6. Import the certificate matching those installed on the IMW configuration into the Microsoft Certification Store.
See [Importing a SSL Certificate in Microsoft Window on page 240](#).
7. Click the **Save** button to save the settings.
The new record appears in the Server List window.

3.3.7

Provisioning Manager Record Type

Provisioning Manager allows you to keep track of the radio and radio status for the purpose of providing firmware pushes for Firmware Download (FWDL) operations.

Selections	Definitions
Server Alias	This required field allows you to use a recognizable name to the record for reference when selecting in the settings window for device programmer configuration.
Hostname	This required field must match the hostname of the machine hosting the PM services. It must not use the fully qualified domain name.
Port	This required field must match the port for the PM service.

Selections	Definitions
Connection Type	This field can only be Secure for the PM record.

See [Adding Provisioning Manager Record on page 239](#).

3.3.8

Adding Provisioning Manager Record

Procedure:

1. Click the **New** Button to create a new record.
2. Select **PM** in the Record Type section (the default choice).
3. Enter a recognizable name in the **Server Alias Name** field for the record.
4. Enter the **Hostname** for the PM service, use the hostname and not the fully qualified domain name.
5. Enter the **Port Number** for the PM.
6. Import the certificate matching those installed on the IMW configuration into the Microsoft Certification Store.
See [Importing a SSL Certificate in Microsoft Window on page 240](#)
7. Click the **Save** button to save the settings.
The new record appears in the Server List window.

3.3.9

Intelligent MiddleWare Record Type

The Intelligent MiddleWare allows you to receive event driven notifications and site information related to radios.

Presence and Group Management Service	Definitions
Server Alias	This required field allows you to use a recognizable name to the record for reference when selecting in the settings window for device programmer configuration.
Hostname	This required field must match the hostname of the machine hosting the IMW presence and group management service. It must not use the fully qualified domain name.
Group Management Port	This required field must match the port for the MGM service.
Subscriber Port	This required field must match the port for the Presence service.

Authorization and Authentication Service	Definitions
Hostname	This required field must match the hostname of the machine hosting the IMW Authorization and Authentication Service. It must not use the fully qualified domain name.
Port Number	This required field must match the port for the IMW Authorization and Authentication Service.

Authorization and Authentication Service	Definitions
Client ID	This required field must match the Client ID as defined by the IMW admin in the IMW Authorization and Authentication Service.
Client Password	This required field must match the Client Password as defined by the IMW admin in the IMW Authorization and Authentication Service.

See [Adding Intelligent MiddleWare Record on page 240](#).

3.3.10

Adding Intelligent MiddleWare Record

Procedure:

1. Click the **New** Button to create a new record.
2. Select **IMW** in the Record Type section.
3. Enter a recognizable name in the **Server Alias Name** field for the record.
4. Enter the **Hostname** for the IMW Presence and Group Management service within the Presence and Group Management Service section, use the hostname and not the fully qualified domain name.
5. Enter the **Port Number** for the Multiple Group Management service in the Group Management Port field within the Presence and Group Management Service section.
6. Enter the **Port Number** for the Subscriber service in the Subscriber Port field within the Presence and Group Management Service section.
7. Enter the **Hostname** for the IMW Authorization and Authentication service within the Authorization and Authentication Service section, use the hostname and not the fully qualified domain name.
8. Enter the **Port Number** for the IMW Authorization and Authentication service within the Authorization and Authentication Service section.
9. Enter the Client ID and Client Password to match the credentials created in the IMW by the administrator for the APX POP25 RM Device Programmer service client within the Authorization and Authentication Service section.
10. Import the certificate matching those installed on the IMW configuration into the Microsoft Certification Store.
See [Importing a SSL Certificate in Microsoft Window on page 240](#).
11. Click the **Save** button to save the settings.
The new record appears in the Server List window.

3.3.11

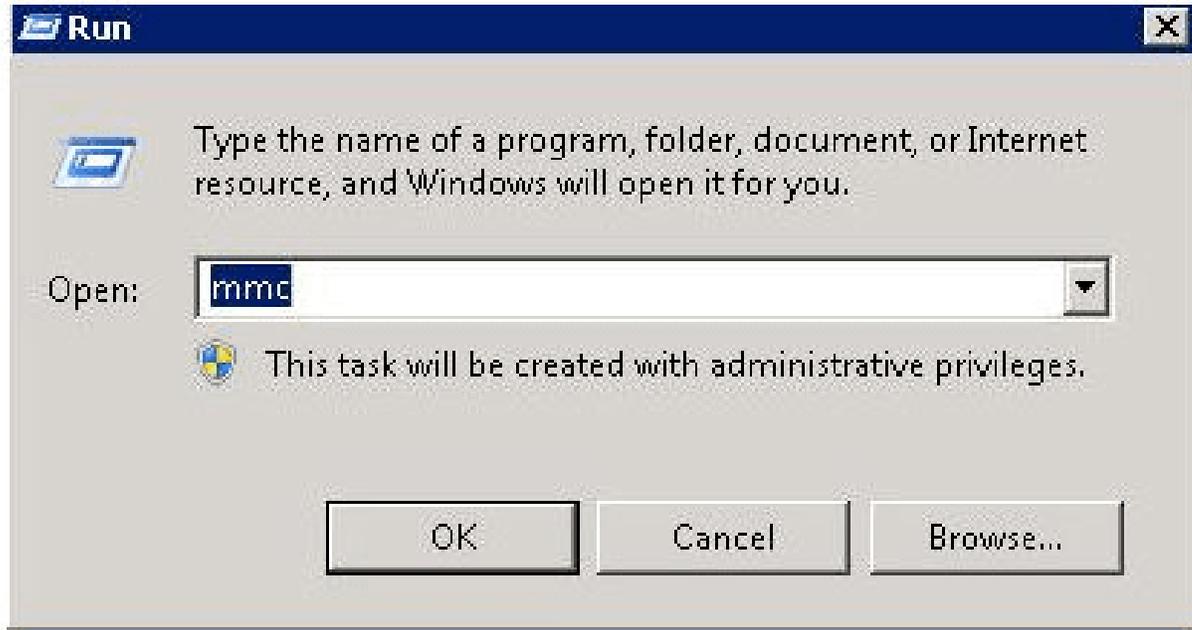
Importing a SSL Certificate in Microsoft Window

This field allows you to import certificates to connect to IMW services. User must import the certificate matching those installed on the IMW configuration into the Microsoft Certification Store.

The steps below are for importing a Root Certificate. If you want to import an Intermediate Certificate, place it in the correct store. If you have trouble determining types of certificate that must be imported or the location of the certificate store, please contact the system administrator.

Procedure:

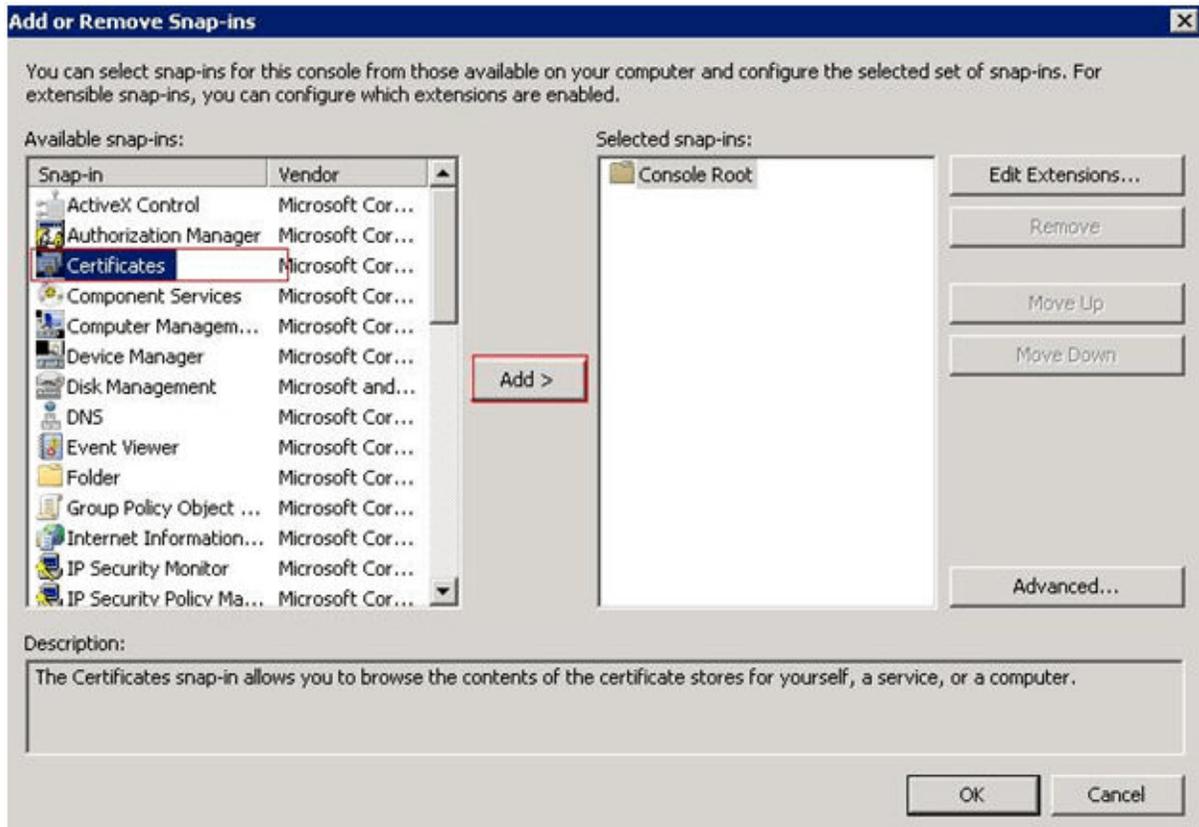
1. Open the **Microsoft Management Console (MMC)**. Click **Start** → **Run** → **MMC**.



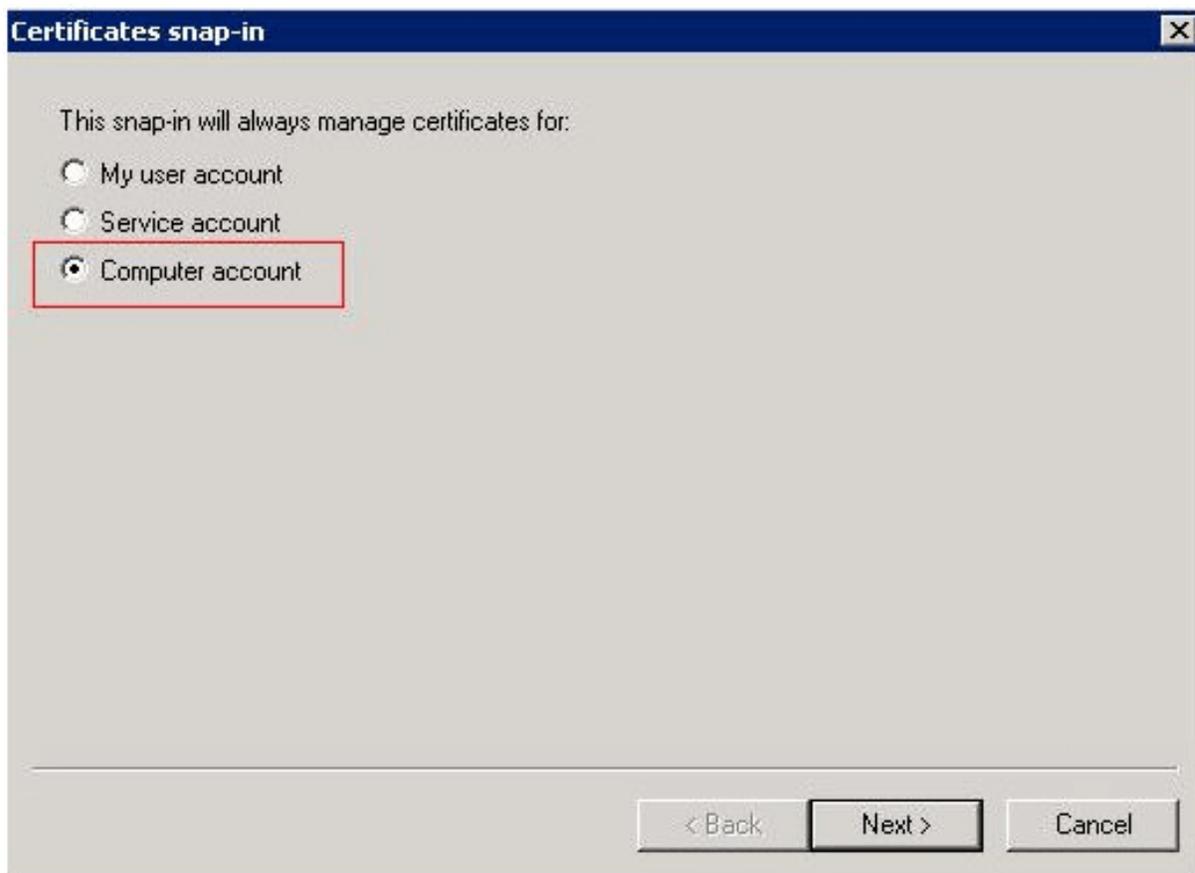
2. Go to **File** → **Add/Remove Snap In**.



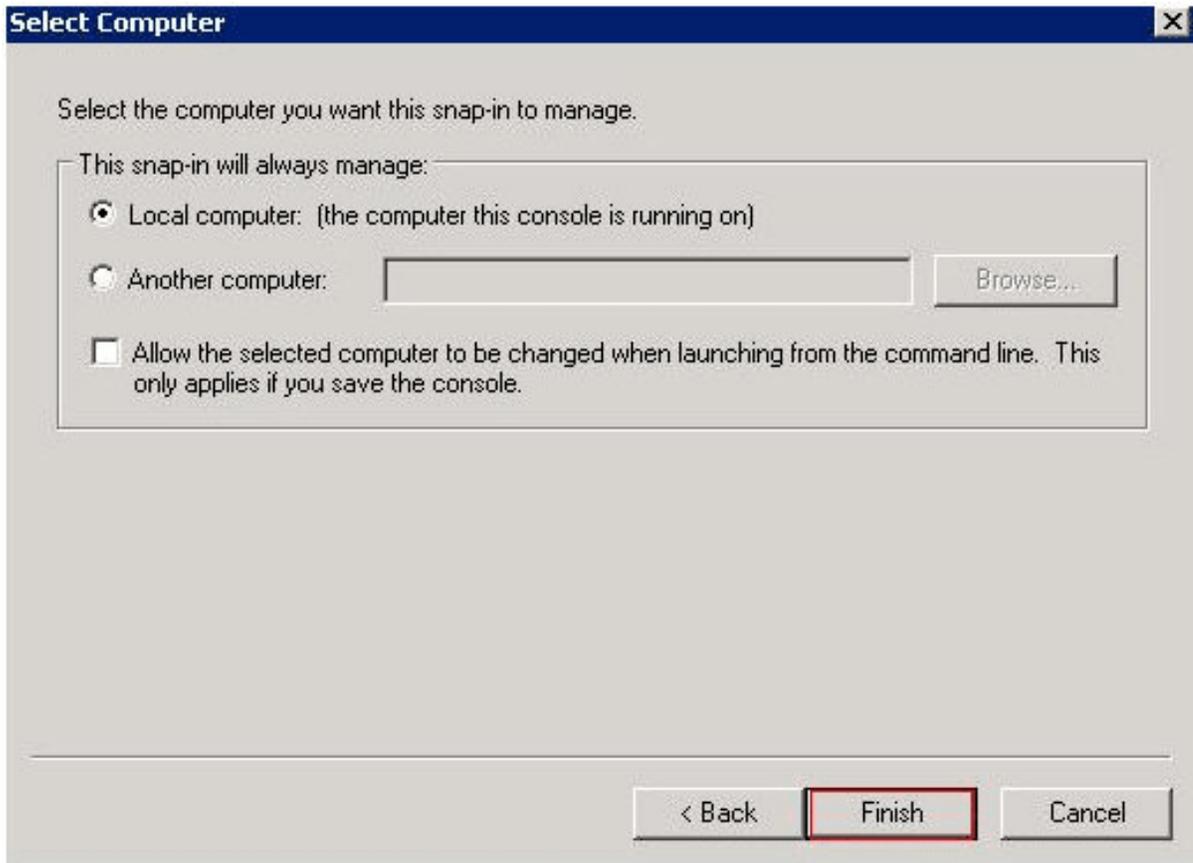
3. Double click **Certificates**.



4. Select **Computer Account**.

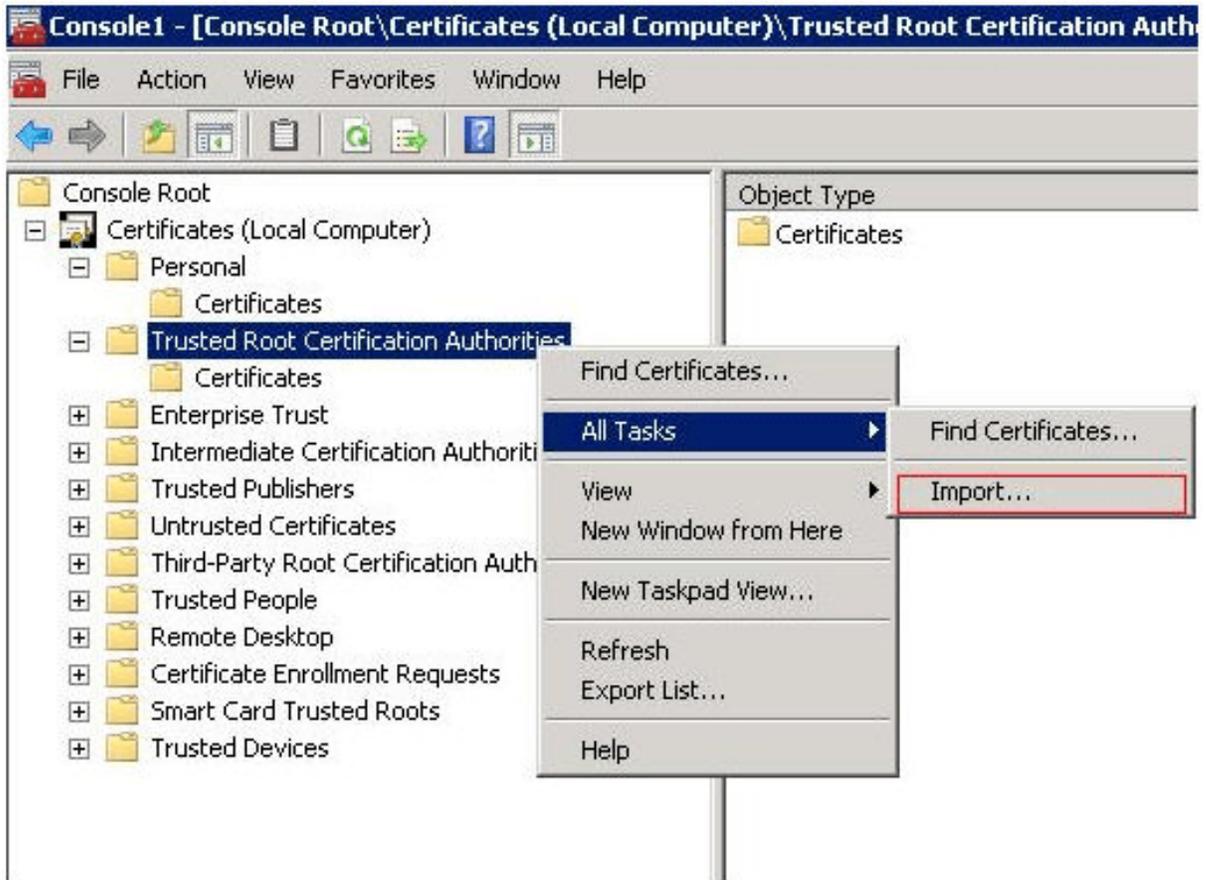


5. Select **Local Computer** → **Finish** .

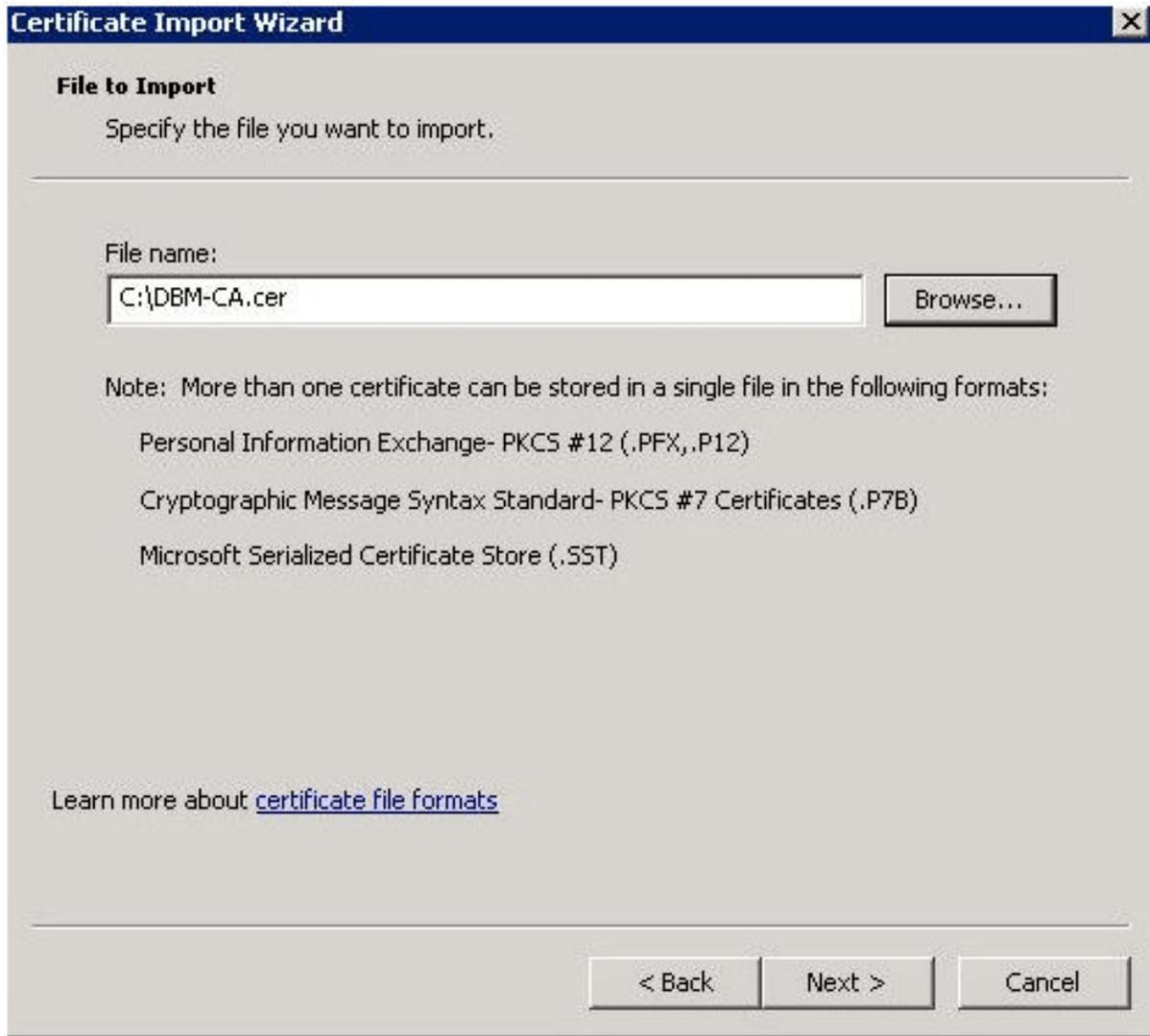


6. Click **OK** to exit the Snap-In window.
7. Click [+] next to **Certificates** → **Trusted Root Certification Authorities** → **Certificates**.

8. Right click on *Certificates* and select **All Tasks** → **Import**.



9. Click **Next** and click **Browse**.



10. Select either `.cer`, `.crt`, or `.pfx` files. Click **Open**.
11. Click **Next** and select **Place all certificates in the following store** (this is based on the type of certificate that you are importing).
12. Click **Finish** and click **OK**.

The certificate is now visible in IIS.

3.3.12

Device ID

Device ID identifies the radio that you provision for testing purposes.

 **NOTE:** If you attempt to test the connection for ARS/UNS Record Type to the UNS, the ARS Tool will attempt to get the radio status of the Device ID in the UNS. If the device is not present, you will be notified that the test connection failed. You need to check the device ID to make sure that the device entered is provisioned correctly in the UNS.

3.4

APX Firmware Download Over The Air

The ASTRO Infrastructure, APX radios, and Radio Management support the upgrading of subscriber firmware and language packs Over the Air (OTAP) through Programming Over Project (POP) 25 and Group Services Channel.

Feature Requirements

In order to enable OTAP firmware updates, the radio and the RM Device Programmer must meet the following requirements:

- **Radio Software Option Requirements**
 - Option G996 - Over the Air Provisioning (OTAP) for POP25
 - Option H38 - Smart Zone Trunking for portables
 - Option Q361 - P25 Trunking
 - Option QA09008 - Group Services

 **NOTE:** The Group Services option is required to enable support for this feature, but it is not required to be in the radio at the time of the upgrade. It can be added during the upgrade.

- **RM Device Programmer Requirements**
 - Must be configured for **Over The Air** and connected to the RM Server
 - Have a valid endpoint connection to the Presence Notifier (PN)
 - Have a valid endpoint connection to the Group Data Gateway (GDG)
 - Have a valid endpoint connection to the Provisioning Manager (PM)
 - See [Configuring the RM Device Programmer](#).

 **NOTE:** Endpoint definitions for the PN, GDG and PM are configured using the ARS Data Administrator application.

Feature Process

The following steps outline the process:

1. Firmware and language packs are assigned to the radio.

2. A write job is scheduled for **POP25**.
3. The RM Device Programmer must be configured for **Over The Air** with connections to the Presence Notifier, Provisioning Manager, and Group Data Gateway.
4. The radio codeplug is updated over the integrated voice and data channel.
5. The firmware is updated over the group services channel.

Both updates occur in the background without interfering with normal radio operations.



NOTE: The downloading of the firmware over the group data channel may take several hours to several days, depending on the idle time of the radio.

Once the downloads for both the codeplug and the radio firmware are complete, the radio prompts you to install the updates. This prompt allows you to accept or defer the installation of the updates. If you defer the installation, the radio prompts you on each radio power up. If you accept the installation, the radio proceeds with the installation.



NOTE: The installation can take several minutes, during which time, the radio is not accessible.

Related Features

RM Device Programmer Settings

- **ARS Alias** for Presence Notifier, **Group Data Gateway** (GCD) and **Provisioning Manager** (PM) fields in the **ARS and System** section must be configured.
- See [The Settings Window](#).

RM Configuration Client Settings and Information

- **RM Job Scheduler**
 - **POP25** Connection Method
 -  **NOTE:** POP25 becomes active when scheduling jobs that are for firmware only or firmware and language pack.
 - See [The Schedule Job Window](#).
- [Group Data Talk Group on page 148](#) column in [The Radio View](#).

3.5

APX POP25 RM Device Programmer

APX POP25 RM Device Programmer allows for more than one POP25 session to run at the same time and improves the respond time of the Radio Management program scheduling.

The APX POP25 RM Device Programmer service interfaces with the Intelligent Middleware(IMW) version 5.2 (see [Connecting to Intelligent Middleware\(IMW\)](#)) to determine the number of concurrent jobs allowed based on the site affiliation of each radio to be programmed and the availability of capacity on each site. One POP25 programming session is allowed per site rather than system wide.

APX POP25 RM Device Programmer service also determines which radios to program by subscribing to receive event messages from the IMW. The event messages are messages that are sent whenever the presence status for a radio of interest changes. Presence status of the radio consists of:

- Whether the radio is actively affiliated with the system
- IP address of the radio on the system network
- The site with which the radio is affiliated

See [Connecting to Intelligent Middleware \(IMW\) on page 251](#).



CAUTION:

- The APX POP25 RM Device Programmer is applicable for Trunking System only and not applicable in Conventional System.
- Only available if the IMW is connected to the Provisioning Manager (PM) AKA UCS through the CADI (Computer Aided Dispatch Interface). If the IMW is not connected, the APX POP25 RM Device Programmer service will continue to execute POP25 programming session, but APX POP25 RM Device Programmer service will execute one at a time for the whole system.
- Only applicable for connecting to the Intelligent Middleware(IMW) version 5.2.
- The APX POP25 RM Device Programmer service can only be installed on Windows 10 (or Windows Server 2016) and newer.
- The Device Programmer/Monitor for APX POP25 cannot run at the same time as The Device Programmer/Monitor.

See [Mandatory Dependencies on page 251](#).

Related Features

[ARS/UNS Record Type on page 236](#)

[Group Data Gateway Record Type on page 238](#)

[Provisioning Manager Record Type on page 238](#)

[Intelligent MiddleWare Record Type on page 239](#)

3.5.1

Connecting to Intelligent Middleware (IMW)

Procedure:

1. Manage the Client ID and Client Password in the IMW Authorization and Authentication administrative configuration section.
See [Intelligent MiddleWare Record Type on page 239](#).
2. Define the endpoint parameters to connect to the Authorization and Authentication service, and to the Presence and Group Management service with the ARS Data Administrator application.
3. Select the record created using the ARS Data Administrator application for connecting to the IMW through the APX POP25 RM Device Programmer settings window.

3.5.2

Mandatory Dependencies

Ensure that the following mandatory **Range**, **Pre-programmed**, and **Programmed** dependencies are considered:

1. Ensure the following **Range** dependency:
For POP25 to be accomplished on an [ASTRO 25 Trunking System](#), POP25 targeted in-the-field radios must be in active Trunking Communication with an in-the-field POP25-capable and Data-capable Trunking System.
2. Ensure the following **Pre-programmed** dependency in POP25 targeted radio codeplugs prior to these radios going out "in-the-field":
The [POP25 Enable on page 1209](#) field must be enabled on a radio's programmed [ASTRO 25 Trunking System](#) that communicates with the "in-the-field" Trunking System.

3. Optional: Ensure the following **Pre-programmed** dependencies in Data Wide, POP25/Wireless Programming Page preferences related to an in-the-field radio receiving a Read, Write or Clone include:
 - [Data Wide on page 950](#) - POP25 [POP25/Wireless Programming Reject Enable on page 961](#)
 - [Data Wide on page 950](#) - POP25 [POP25/Wireless Programming Indications on page 961](#)
 - [Auto Reset Enable on page 961](#) (applies to [Consolelette on page 255](#))
 - [POP25 Retransmission Timer on page 993](#)
4. Ensure the following **Programmed** dependency in the codeplug prior to "over-the-air" Reading, Writing, and Cloning of "in-the-field" radios:
The [POP25 Enable on page 1209](#) field must be enabled for the same [ASTRO 25 Trunking System](#). Therefore, the System ID must be the same for this source codeplug's "POP25 Enabled" Trunking System, the in-the-field Trunking System, and in the Trunking System of the targeted radio.
5. An Advanced Key with OTAP/POP25 capability must be currently loaded (see [System Key Administration](#)).
6. Ensure that the connection method is set to **POP25** in order for Over the Air (OTA) communication to occur. See [Scheduler in Radio Management](#).

3.6

Aux Control

This section allows you to view or define parameters for the radio's and DEK's Vehicular Interface Port (VIP) Outputs that are set to an **Aux Control** (See Aux Control 1-3).



When you initiate an Aux Control button-press or Aux Control menu-selection, the corresponding VIP Output is activated for the duration determined by the **Active Duration** field.

During this activation time, the radio displays the corresponding **Aux On Alias** and **Abbreviated Aux On Alias**.

When the VIP Output is deactivated, the radio displays the corresponding **Aux Off Alias** (provided **Active Duration** is not set to **Momentary**).



WARNING:

For a Dual Radio configuration:

When the [Radio Selection on page 361](#) field is set to **Secondary Radio**, the radio's VIP Outputs are disabled and these features are configurable on the **Primary Radio** only.

However, the Aux Control button-press is programmable for both the **Primary** and the **Secondary** radios, and must be configured the same for both radios.

And the Aux Control menu-selection is programmable on the **Primary Radio** only.



NOTE:

An **Aux Control** VIP Output may also be triggered when the radio has decoded a Tone Signaling tone or tone pair and External Control is not set to **None**.

The Consolelette uses Auxiliary Control features.

Accessed Only: When the radio is model/option capable.

3.7

Bluetooth Feature

The Bluetooth feature allows portable radios to communicate with Motorola Solutions-proprietary wireless accessories.



Accessories such as a wireless earpiece or Smart Key Fob (see the [Smart Key Fob Feature on page 294](#)), as well as a variety of Commercial Off The Shelf (COTS) Bluetooth devices, such as headsets, barcode readers, environmental sensors, cameras, and finger print readers.

The radio also supports a Personal Area Network (PAN) access point, providing IPv4-based networking capabilities for connected Bluetooth devices, such as a PC. Additionally, this PAN capability makes it possible to perform RM programming of the radio through the "Bluetooth" Communication Method. Bluetooth allows voice and data to be transmitted and received over short ranges.



NOTE: Bluetooth programming requires Bluetooth Version 2.1 and above. See to the individual Radio User Guide for a list of approved Bluetooth Device.

Related Features

Radio Wide - Bluetooth:

- [Bluetooth Enable on page 396](#)
- [Bluetooth Tones on page 396](#)
- [Bluetooth Pairing Type on page 396](#)
- [Bluetooth Re-Pair Timer on page 397](#)
- [Bluetooth Drop Timer on page 397](#)
- [Active RSM / Internal Mic if No Bluetooth Mic](#)
- [Bluetooth Replace Pairing Info on page 399](#)
- [Bluetooth Friendly Name Editable on page 398](#)
- [Bluetooth Friendly Name on page 398](#)
- [Bluetooth Device Search Duration on page 399](#)
- [Bluetooth Radio Visibility Duration on page 400](#)
- [Bluetooth PAN Network Base Address on page 400](#)

Radio Profiles:

- [Bluetooth Mic Gain Level on page 815](#)

Data Wide - General:

- [Bluetooth Subscriber IP Address on page 950](#)
- [Bluetooth Peer IP Address on page 951](#)
- [Bluetooth Peer IP Address Assignment Type on page 952](#)

Data Profiles - General:

- [Bluetooth Subscriber IP Address on page 988](#)
- [Bluetooth Peer IP Address on page 989](#)
- [Bluetooth Peer IP Address Assignment Type on page 990](#)

Clone Radio Fields:

- [Communication Method on page 117](#), **Bluetooth** selection added in R11.00.00
- [Internet Protocol \(IP\) Address on page 117](#)
- Data Wide [Bluetooth Subscriber IP Address on page 112](#)
- Data Wide [Bluetooth Peer IP Address on page 112](#)
- Data Profiles List [Bluetooth Subscriber IP Address on page 114](#)
- Data Profiles List [Bluetooth Peer IP Address on page 114](#)

Read or Write Radio Fields:

- [Communication Method on page 95](#), **Bluetooth** selection added in R11.00.00
- [IP Address on page 95](#)

Radio-User (Ergonomic) Feature Access - Portable Control:

- [Bluetooth on page 525](#) Menu Item
- [Bluetooth Discoverable On/Off on page 525](#) Menu Item
- [Bluetooth Audio Reroute on page 483](#) Button Press
- [Bluetooth Inquiry On/Off on page 526](#) Menu Item
- [Bluetooth Configuration on page 483](#) Button Press
- [Bluetooth Headset PTT on page 483](#) Button Press
- [Bluetooth On/Off on page 484](#) Button Press
- [Bluetooth Discoverable On/Off on page 483](#) Button Press
- [Bluetooth Inquiry On/Off on page 483](#) Button Press

3.8

Configuring SmartConnect

Procedure:

1. From the Set categories, select **Data Configuration** → **Data Profiles**.
2. Under **General**, set the **Data Profile Type** field to **Trunking**.
3. From the **Broadband** tab, set the following:
 - a. Set the **SmartConnect Gateway Hostname** according to the correct Fully Qualified Domain Name (FQDN)/Hostname of the cloud-based Gateway. See [SmartConnect Gateway Hostname](#).
 - b. Set the **SmartConnect Gateway TLS Port Number** to the default value. See [SmartConnect Gateway TLS Port Number on page 1003](#).
4. From **Broadband**, leave the **SmartConnect Gateway Port Number** field empty.
5. Select **Trunking Configuration** → **Common Trunking Wide**.
6. Set the **RSSI SmartConnect Fallback Threshold** to **52**.

The [Leave LMR RSSI Threshold on page 1185](#) and [Return To LMR RSSI Threshold](#) default value may not be the same for each user. The value depends on duration preference.
7. Select **Trunking Configuration** → **ASTRO 25 Trunking System**.
8. Select the system that is used with SmartConnect, right-click and select **Edit**.
9. In the **Data Profile Selection**, select the Data Profile name that was created in step 1.
10. Select **Trunking Configuration** → **ASTRO 25 Trunking Personality**.

11. Select the system that was created in step 1, right-click and select **Edit**.
12. Set **SmartConnect Operation** to either **LMR Only** (default) or **LMR Preferred**.
13. In the [Zones Channel Assignment on page 1283](#), select an existing zone or create a zone to assign the trunking personality that was created in step 1 and talkgroups.

3.9

Consolette

A Consolette is a small footprint entry level desktop console intended for Project 25-compatible radio dispatch, emergency backup operations, or as a fire station alerting system.

The Consolette consists of a mobile transceiver, a power supply, control head components, and options boards (such as a Consolette Controller board) which provide for Tone Remote Control (TRC) and other control functions. The Consolette may be configured for local desktop control (through an internal O5-style control head), for use with a digital remote IP Deskset controller, for use with a device that supports tone remote control, or for use with a Console through its digital interface.

Related Features

Radio Ergonomics Wide - Advance:

- [Consolette Enable on page 438](#)
- [Fixed Volume Enable on page 438](#)
- [Fixed Volume Level on page 439](#)
- [Default Control Head HUB State on page 440](#)

Data Wide - POP25:

- [Auto Reset Enable on page 961](#)

Radio VIP Output Selection:

- [Aux Control \(1-3\) on page 751](#) for Mobile Control - Radio VIP selections

Radio-User (Ergonomics) Feature Access:

- [Aux Control \(1-3\) on page 589](#) button-press
- [Aux Control on page 525](#) menu-selection

Conventional System - Features:

- [Extended Dispatch Enable on page 1087](#)
- [Emergency Ack Enable on page 1085](#)

Radio Ergonomics Wide - Auxiliary Control Fields

- [Active Duration on page 445](#)
- [Abbreviated Aux On Alias on page 446](#)
- [Aux On Alias on page 447](#)
- [Aux Off Alias on page 447](#)

3.10

Conventional Mixed Vote Scan

The Conventional Mixed Vote Scan feature allows for two types of Conventional Scan List Members: Voting Scan and Non-Voting Scan.



Conventional Personalities can be set as Voting Scan enabled with [Mixed Vote Scan Enable on page 1155](#) field. A Voting Scan enabled Conventional Personality then allows for all of its Frequency Options (records/rows) to be actively scanned as part of the Scan List where its Personality is assigned as a Scan List Member [Channel on page 1316](#).



WARNING: A Scan List that includes Voting Scan enabled Conventional Personalities must be set to a conventional [Scan Type on page 1306](#).

Related Features

Conventional Personality - Features

- [Mixed Vote Scan Enable on page 1155](#)
- [Mixed Vote Scan Tx Steering on page 1155](#)

Conventional Personality - Frequency Options

- [Mixed Vote Scan Persistent Member on page 1138](#)

Scan List - Advanced

- [Mixed Conventional Vote Scan Inactivity Timer on page 1315](#)

3.11

MPL Configuration

The conventional **Multiple Private Line (MPL) Configuration** allows you to view or define up to sixteen sets of Private Line (PL) functionality.

User Selectable PL [MPL] can then be enabled on per frequency options profile basis. User Selectable PL allows you to use one of these predefined PL sets for transmitting and receiving Conventional communications; see also the MPL Recall Mode selections.



IMPORTANT:

When the Direct Frequency Enable field is enabled, and when operating in Direct/Talkaround mode, the radio uses the MPL Direct/Talkaround parameters of the currently-applicable MPL List.

When the Direct Frequency Enable field is disabled, the values of the MPL Rx parameter fields of the currently-applicable MPL List are used for Direct/Talkaround and normal Repeater functionality.



NOTE:

Choose the appropriate MPL Recall Mode selection.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.

3.11.1

General

This section allows you to view or define high-level functionality for all of the MPL (Multiple Private Line) Lists.



IMPORTANT: User Selectable PL [MPL] can be enabled on a per frequency options profile basis.



NOTE: The Multiple Private Line button-press or the Multiple Private Line menu-item selection allows you to select the desired PL settings/list.

3.11.2

MPL List

This section allows you to view or define up to sixteen individual sets of Private Line (PL) functionality.

User Selectable PL [MPL] can then be enabled on a per frequency options profile basis. User Selectable PL allows you to select one of these predefined PL sets for transmitting and receiving Conventional communications.



NOTE: Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed to allow you to select the desired PL settings/list.

3.12

Data Modem Collaboration over Wi-Fi

The Data Modem Collaboration over Wi-Fi feature allows Wi-Fi capable APX radios to connect to external data modems (for example, Sierra Wireless Airlink GX450, Motorola VML750) over a Wi-Fi connection.

This collaboration allows the radio to leverage the data pipeline provided by the external data modems. Users can program radios, FLASHport upgrades, re-key, and use other data applications over the LTE network.

Required H-options

- GA01545 – VML Data Modem
- GA09011 – Third party Data Modem (includes internal GA011545)
- GA09001 or QA09001 (Wi-Fi option)

Feature Support

- Supports all Wi-Fi capable portable radios and the APX 8500 mobile.
- Supported Data Modems:
 - Motorola VML750 (supports 6 radios at a time over Wi-Fi)
 - Sierra Wireless Airlink GX450 (supports 1 radio at a time over Wi-Fi)
- When connected to a data modem, the APX radio data services (OTAP, OTAR, ARS/TMS/SA, terminal data) can be offloaded from the LMR system to the modem's LTE data pipe.
- Preferred Wi-Fi network can be selected through a menu application.



NOTE: Wi-Fi SSIDs and passwords must be pre-configured in the codeplug.

Related Features

- [Modem Connection Type on page 972](#)
- [External Data Modem Page](#)
- [Wired Modem Configuration Modem Type on page 973](#)
- [Wired Modem Configuration Modem Port on page 973](#)
- [Wired Modem Configuration Modem Password on page 974](#)
- [Wired Modem Configuration Modem VPN Tunnel on page 975](#)
- [Wired Modem Configuration Modem Out-Of-Range Threshold on page 975](#)
- [Wired Modem Configuration Modem Powerup Max Guard Time on page 976](#)
- [Wired Modem Configuration Modem Open Max Guard Time on page 977](#)

- [Wireless Powerup Max Guard Time on page 973](#)
- [Network Priority on page 974](#)
- [Network SSID on page 974](#)
- [Security Type on page 975](#)
- [Encrypted Network Password on page 976](#)
- [Modem Type on page 976](#)
- [Modem Password on page 977](#)
- [Modem Port on page 978](#)
- [VPN Tunnel on page 979](#)
- [Modem Out-Of-Range Threshold on page 979](#)
- [Modem Open Max Guard Time on page 980](#)

3.12.1

Configuring Data Profile

Procedure:

1. In the Data Profiles, click **General** → **Data Profile Type**.
2. Select **Broadband** → **Broadband Source** → **External Data Modem (ETH)**.

3.12.2

Configuring Data Wide

Procedure:

1. Click **External Data Modem** → **Modem Connection Type** → **Wireless**.
2. Configure the relevant Wireless Modem Configuration parameters.

3.13

Digital Vehicular Repeater System (DVRS) Feature

The Digital Vehicular Repeater System (DVRS) feature allows for an on-demand transportable repeater system, which allows Portable Subscriber Units (PSUs) operating within range to communicate through this repeater either locally, or even with previously out-of-range Fixed Network Equipment (FNE) systems.

A Digital Vehicular Repeater System includes a third-party Digital Vehicular Repeater (DVR) connected to a Motorola Solutions Mobile Subscriber Unit (MSU) transceiver that facilitates the system. These two hardware units are typically mounted remotely in a vehicle's trunk space.

The DVRS supports three modes of operation:

System

When the DVRS is in the FNE "System" mode, there is full connectivity from PSUs communicating with the DVR (within the DVRS coverage area) to the dispatchers or FNE system.

Local

When the DVRS is in the "Local" mode, the DVR facilitates communications between PSUs within its coverage area only. Communications between the PSUs and the MSU (attached to the DVR) are also possible; however, none of these radios can communicate with the FNE system.



NOTE: This mode is meant for local communications where system-wide communication is not possible or necessary, such as [Personnel Accountability Feature on page 284](#) communications. (See also the [MSU System PTT in Local Mode on page 1021](#) field and [Outbound System Repeat in Local Mode on page 1025](#) field.)

Off

When the DVRS is in the "Off" mode, the DVR is completely disabled.

Related Features

[Portable Subscriber Unit \(PSU\) on page 259](#)

[Mobile Subscriber Unit \(MSU\) on page 260](#)

3.13.1

Portable Subscriber Unit (PSU)

The following portable subscriber unit fields are supported for the Digital Vehicular Repeater System (DVRS) Feature:

Conventional System - General:

- [System Type on page 1056](#) for DVRS System
- [Data Profile Selection on page 1059](#) for DVRS System Type validity

Conventional System - DVRS:

- [DVRS on page 1068](#)
- [End Out of Range on Analog Rx on page 1070](#)
- [Out of DVRS Range Time on page 1069](#)

Conventional System - Secure:

- [Secure on page 1088](#)

Display - General:

- [DVRS Local Only Indicator on page 778](#)

Conventional Emergency Profiles - General:

- [Console Ack Required \(DVRS\) on page 929](#)

Conventional Personality - Phone:

- [Phone Operation on page 1165](#), **Answer Only** selection

Conventional Personality - Signaling:

- [Emergency Revert Type on page 1103](#), **Revert Talkgroup** selection
- [Revert Talkgroup on page 1106](#)
- [Revert TG Secure/Clear Strapping on page 1107](#)
- [Revert TG Key Select on page 1108](#)

3.13.2

Mobile Subscriber Unit (MSU)

The following mobile subscriber unit fields are supported for the Digital Vehicular Repeater System (DVRS) Feature:

Mobile Control - Keypad Mic and Accessories:

- [Digital Vehicular Repeater System \(DVRS\) on page 595](#) button-press
- [In Car Monitor \(ICM\) on page 597](#) button-press

Mobile Control - Menu Items:

- [Digital Vehicular Repeater System on page 528](#) menu-selection
- [In Car Monitor on page 529](#) menu-selection

Mobile Control - Radio VIPs:

- [DVRS Activation on page 748](#)

Mobile Control - DEK VIPs:

- [DVRS Activation on page 748](#)

DVRS Wide:

- [DVRS Wide on page 1019](#)

DVRS Profile:

- [DVRS Profiles on page 1021](#)

Conventional Personality - Advanced:

- [Analog Flat Audio on page 1123](#)

Conventional Personality - General:

- [DVRS Profile on page 1091](#)

Conventional Personality - ASTRO Call:

- [Call Alert Rx/Tx on page 1095](#)

Conventional Personality - Non-ASTRO Call:

- [Call Alert Rx/Tx on page 1120](#)

Conventional Personality - Rx Options:

- [HearClear on page 1164](#)

Conventional Personality - Signaling:

-

- [ASTRO System on page 1102](#)

Conventional System - General - ASTRO:

- [Data Profile Selection on page 1059](#) for DVRS System Type validity

Conventional System - Features:

- [Dynamic ID Enable on page 1084](#)

Data Wide - General:

- [Subscriber IP Address 2 on page 955](#)
- [Peer IP Address 2 on page 957](#)
- [Peer IP Address Assignment Type 2 on page 958](#)

Radio Ergonomics Wide - Advanced:

- [Consolette Enable on page 438](#)

Radio Ergonomics Wide - Control Head:

- [Expected Number of Control Heads on page 420](#)

Radio Wide - Feature:

- [RF Modem on page 349](#)

Scan List - Scan List Members:

- [Channel on page 1316](#)

3.14

Dual Radio Operation Feature

A Dual Radio configuration allows two APX™ Mobile radios to operate together with a single APX™ Control Head.



The two radios can be either the APX 7500 model radios, APX 6500 model radios, or the APX 8500 model radios, and the single Control Head must be an O7 Control Head. This unique configuration allows for different combinations of simultaneous Rx audio, simultaneous Tx audio and data, and simultaneous receive and transmit of audio and data.



NOTE: Dual Radio configuration is [Phase 2 Voice Capable on page 1204](#) - TDMA.

The sum of both radio's frequency bands within a Dual Radio configuration are considered as either "In-Band" or "Cross-Band".

Dual Radio "In-Band" versus "Cross-Band" Examples

Dual radios are considered to be "in-band" when at least one frequency band of one radio overlaps with any one band of the other radio (single band or dual band). Dual radios are considered to be "cross-band" when entirely different frequency bands exist for the two radios (single band or dual band). This is based on each radio's available frequency band(s) ([Primary Frequency Band on page 313](#) and [Secondary Frequency Band on page 313](#)), regardless of the frequencies being used in each radio's codeplug. A "cross band" scenario is capable of many more communication advantages than an "in band" scenario.

See [Dual Radio Communication Examples on page 263](#).



NOTE: Due to potential frequency band overlap, the combination of "UHF1" and "UHF2" on dual radios is considered "in-band".

When the radios are "in-band", due to potential RF interference, the functionality of one of the radios is limited when the other radio is transmitting.

Dual Radio Configuration

In a dual radio configuration, the two radios (or bricks) must be programmed separately due to system reset during the codeplug and firmware updating.

See [Dual Radio Configuration on page 264](#)

Related Features

Radio Wide:

- [Radio Selection on page 361](#)
- [Emergency Radio on page 362](#)
- [Talkgroup Mute Option on page 363](#)
- [Enable Secondary Radio Tx on page 363](#)
- [Cross Band Mute Option on page 364](#)
- [Fixed Swap Menu on page 364](#)
- [Ignition Switch on page 345](#), see the Dual Radio Configuration Warning.
- [Ignition Auto Power Off on page 349](#), see the Dual Radio Configuration important note.
- [Record Audio on page 350](#), see the Accessed Only section.
- [Inactivity Auto Power Off on page 348](#), see the Accessed Only section.
- [Universal Relay Controller Equipped on page 382](#), see the Accessed Only Warning.
- [Gunlock Relock Timer on page 395](#), see the warning and Accessed Only section.
- [Radio Lock Enable on page 334](#), see the Accessed Only Warning.

Radio Ergonomics Wide:

- [Siren Operation on page 422](#), see the Accessed Only Warning.
- [Horn and Lights on page 426](#), see the Accessed Only Warning.
- [External Accessory Enable on page 434](#), see the Accessed Only.
- [Multi Control Head on page 416](#), see the Accessed Only Warning.
- [Transceiver Volume Control on page 419](#), see the Warning.
- [Transceiver DEK Dim Control on page 420](#), see the Warning.
- [Control Head VIP Input Source on page 418](#), see the Warning.
- [Remote Mic Source on page 418](#), see the Warning.
- [Aggregate Cable Length on page 419](#), see the Accessed Only Warning.

Action Consolidation:

- [Siren Type on page 455](#), see the Warning.
- [Relay Pattern on page 452](#), see the Warning.

Display:

- [Save Day Night Mode on page 777](#), see the Warning.

Conventional System:

- [Data Profile Selection on page 1059](#), see the Warning.

Trunking System:

- [Data Profile Selection on page 1195](#), see the Warning.
- [Coverage Type on page 1190](#), see the "Intra-WACN Roaming" and "Inter-WACN Roaming" selections.

Radio-User (Ergonomic) Feature Access:

- [Radio Swap on page 601](#) Button Press

- [Aux Control \(1-3\) on page 589](#) Button Press, see the Warning.
-
- [Third Party on page 495](#) Button Press, see the Warning.
- [Radio Swap on page 535](#) Menu Selection
- [DEK VIP Output Selections \(DEK\)](#), see the Accessed Only.
- [Radio VIP Output Selections](#), see the Accessed Only.

3.14.1

Dual Radio Communication Examples

The Dual Radio scenarios in this section help illustrate the support between Cross-Band and In-Band methods.



Method	Types	Examples	Cross-Band	In-Band
Simultaneous Rx	Voice	Receive audio on both radios at the same time	Yes	Yes
Simultaneous Tx	Voice	Press PTT and have both radios transmit	No	No
	Data	Both radios transmit GPS data	Yes	No
	Voice & Data	When pressing PTT on the selected radio to transmit voice, the unselected radio can transmit GPS data	Yes	No
Simultaneous Rx & Tx	Voice	When pressing PTT on the selected radio to transmit voice, and the unselected radio can receive audio and unmute its speaker (see Cross Band Mute Option on page 364 , "Disabled")	Configurable	No
	Data	When the one radio is receiving OTAR (ASTRO OTAR on page 1114 in Con-	Yes	No

Method	Types	Examples	Cross-Band	In-Band
		ventional Personality and ASTRO OTAR Trunking System), the other radio can transmit OTAR (OTAR Tx on page 1113 in Conventional Personality and OTAR Tx on page 1228 Trunking System) request		
	Voice & Data	When one radio is receiving voice, the other radio can transmit GPS data	Yes	No
	Voice & Data	When pressing PTT on the selected radio to transmit voice, the unselected radio can receive OTAR (ASTRO OTAR on page 1114 in Conventional Personality and ASTRO OTAR Trunking System)	Yes	No



NOTE:

The control head uses unique icons to reflect which radio is currently selected, and which radio is receiving audio. This allows you to easily decide how to respond to incoming calls.

If the unselected radio is transmitting, the transmit indicator does appear in the radio display.

3.14.2

Dual Radio Configuration

In a Dual Radio configuration, the two radios (or bricks) must be programmed separately due to system reset during the codeplug and firmware updating.

The following prerequisites must be observed:

- The two radios must have matching firmware versions.
- The two radios must use the same radio display language through language packs.
- The following features are mutually exclusive with Dual Radio:
 - [Multi Control Head on page 416](#)
 - [Digital Vehicular Repeater System \(DVRS\) Feature on page 258](#)

- [Consolette on page 255](#)
- [Remote Site Interface \(RSI\) Feature on page 290](#)
- [RF Modem on page 349](#)
- When one radio is inhibited, the other radio becomes inhibited; conversely, when one radio is uninhibited, the other radio becomes uninhibited.
- Since simultaneous Voice transmissions from both radios is not possible, remote monitor is only allowed on one of the radios at any given time; in other words, when one radio is transmitting voice (either through a PTT button-press, or Emergency Auto Transmit, or due to remote-monitoring), the other radio cannot be remote-monitored.

Primary and Secondary Radio Configuration

One radio is defined as the "Primary Radio" and the other radio must be programmed as the "Secondary Radio". Dual Radio features must be defined on the "Primary Radio", or the "Secondary Radio", or sometimes on both radios.

- The [Radio Selection on page 361](#) field sets either "Primary" or the "Secondary" to be designated for each radio's codeplug.
- The [Emergency Radio on page 362](#) field selects which radio handles Emergency Mode operation, however is only programmed on the "Primary" radio.



WARNING: See Warnings for "Emergency Evacuation Tone" and "Emergency Silent Alarm".

- The [Talkgroup Mute Option on page 363](#) is only programmed on the "Secondary" radio.
- The [Enable Secondary Radio Tx on page 363](#) is only programmed on the "Secondary" radio.
- The [Cross Band Mute Option on page 364](#) is programmed on the "Primary" radio and the "Secondary" radio.
- The [Fixed Swap Menu on page 364](#) is programmed on the "Primary" radio and the "Secondary" radio.
- The [Radio Swap on page 601](#) button-press and [Radio Swap on page 535](#) menu selection allows you to switch between the "Primary" and "Secondary" and must be programmed on both radios.
- A unique [Codeplug Alias on page 311](#) should be defined for each radio. When you swapped, the selected radio Alias appears momentarily in the Control Head's display, and Intelligent Lighting also differentiates the Primary radio from the Secondary radio.



NOTE: Both the Primary and Secondary Display Alternating Timer durations must be set to the same value for E5 Dual Radio configuration.

Primary Radio Configuration

The following features are configured on the "Primary" radio only:

- All VIP output pins for [DEK \(Mobile Control\)](#) and [Radio VIPs \(Mobile Control\)](#).
- The [PA/Siren on page 422](#) fields and the [Universal Relay Controller \(URC\) on page 303](#) features; additionally, the hardware devices for these features must be connected to the "Primary" radio.
- The [Gunlock on page 394](#), [Horns and Lights on page 426](#), and [Aux Control on page 252](#) features, and their corresponding VIP output pins for [DEK \(Mobile Control\)](#) and [Radio VIPs \(Mobile Control\)](#).
- The [Save Day Night Mode on page 777](#) feature.
- The [Radio Lock Enable on page 334](#) feature (if the "Primary" radio is locked, then both radios are locked).

- The "Primary" radio arbitrates power-up and power-off for both radios through its [Ignition Switch on page 345](#) and [Ignition Auto Power Off on page 349](#) selections.



WARNING:

However, button-press or menu-selections related to all of the above Radio Wide features (and also Dim) are programmable for both the "Primary" and the "Secondary" radios, and must be configured the same for both radios. In this way, you may seamlessly operate these features regardless of the current radio selection, and swapping the selected radio does not change the current state of these features.

When programming any button selections or menu-item selections, in order to avoid confusion and to promote seamless operation, it is strongly recommended to configure all of the button selections the same on both radios.

3.15

Dynamic Regrouping Feature

The Dynamic Regrouping feature allows for all Talkgroups that are affiliated to a specific "in-the-field" Trunking System to be combined into one very specific talkgroup during emergencies and or special operations; after a regrouping is established, all radios operating on the System are able to communicate simultaneously on the Dynamic Regrouping talkgroup.



WARNING:

A zone and its channel that are defined to be a designated Regrouping Zone and Channel mode, you must be able to be "mechanically" accessed in order for navigation from the regrouped channel.

For instance:

- After the radio is Dynamically Regrouped, you must "mechanically" change the radio to the regrouped zone and channel (with a Switch or Channel Selector) to be able to navigate from the regrouped channel to another channel.
- If the Zone and Channel are only assigned to "non-mechanical" positions (such as Side Buttons and Menu Buttons), access to the regrouped channel, you cannot navigate from the regrouped channel to another channel



IMPORTANT:

Only one Dynamic Regrouping channel can be created for each Trunking System. Dynamic Regrouping is initiated by a dispatcher/console operator, or requested by you.

You can request a Dynamic Regrouping assignment from the dispatcher with a [Reprogram Request on page 492](#) button-press or a [Reprogram Request on page 536](#) menu-selection.

When a radio is dynamically regrouped, the radio automatically switches to the Trunking System's [Dynamic Regrouping Zone on page 1213](#)/[Dynamic Regrouping Channel on page 1214](#).

The actual Talkgroup parameters are transmitted by the dispatcher to all applicable radios.



NOTE: When the radio is regrouped, there is a "gurgle" alert tone sound, and the regrouped channel name appears in the radio display.

When the dispatcher cancels Dynamic Regrouping, the radio automatically returns to the zone and channel that were being used before the radio was dynamically regrouped.

Related Features

Trunking System:

- [Dynamic Regrouping Enable on page 1212](#)
- [Dynamic Regrouping Zone on page 1213](#)
- [Dynamic Regrouping Channel on page 1214](#)

Zone Channel:

- [Trunking Talkgroup on page 1297](#)

Radio-User (Ergonomic) Controls:

- [Reprogram Request on page 492](#) Button Press
- [Reprogram Request on page 536](#) Menu Selection

3.16

Emergency Call Termination

The Emergency Call Termination feature allows dispatchers to clear inadvertent emergency activations remotely from the dispatch position.

Feature Support

- On Harris systems, if the emergency is cleared at the console, all subsequent calls clear the emergency status bit in all grants and updates for the Talk Group (TG) (OSPs, LCs, and MACs).
- Subscriber stays in emergency until a non-emergency call to the TG is made, or until you clear it locally.
- Once the console operator clears the emergency, the emergency status bit in subsequent calls is cleared. Subscriber exit emergency when a non-emergency voice call is decoded, on selected TG.

Related Features

Conventional Emergency Profiles:

- [Emergency Compatibility Options on page 939](#)
- [Emergency Exit Control on page 939](#)
- [Emergency Hot Mic Restart on page 939](#)

Trunking Emergency Profiles:

- [Emergency Compatibility Options on page 949](#)
- [Emergency Exit Control on page 949](#)
- [Emergency Hot Mic Restart on page 949](#)

3.16.1

Configuring Trunking System

Procedure:

1. From the **Trunking Configuration** → **Trunking System**, perform the following actions:
 - a. From the **General** section, set **System Type** to ASTRO 25.
 - b. From the **ASTRO 25** section, disable Motorola Proprietary Features.
2. From the **Emergency Configuration** → **Trunking Emergency Profile**, perform the following actions:
 - a. From the **General** section, set **Emergency Operation** to Call Only or Alarm and Call.
 - b. From the **Emergency Compatibility Options** section, set **Emergency Exit Control** to Subscriber Only.
3. From the **Trunking Configuration** → **Trunking Personality**, perform the following action:
 - a. From the **General** section, assign the **Trunking Emergency Profile Selection** from the previous step.

3.16.2

Configuring Conventional System

Procedure:

1. From the **Conventional Configuration** → **Conventional System**, perform the following actions:
 - a. From the **General** section, set **System Type** to DVRS.
2. From the **Emergency Configuration** → **Conventional Emergency Profile**, perform the following actions:
 - a. From the **General** section, set **Emergency Operation** to Call Only or Alarm and Call.
 - b. From the **Emergency Compatibility Options** section, set **Emergency Exit Control** to Subscriber Only.
3. From the **Conventional Configuration** → **Conventional Personality**, perform the following action:
 - a. From the **General** section, assign the **Emergency Profile Selection** from the previous step.

3.17

FCC Narrowbanding Mandate Feature

Effective January 1, 2013: Per the Federal Communications Commission (FCC) Rule Part 90 mandate on narrowbanding, in an effort to promote greater spectrum efficiency, the FCC requires that all Public Safety and Industrial/Business license must transmit on a 12.5 kHz channel bandwidth.

The exception to this Part 90 narrowbanding mandate applies only for radios operating within 470–512 MHz frequencies (T-Band), which will continue to support a 25 kHz channel bandwidth, and specific exception frequencies noted below. The FCC requires that a radio be certified to operate on Part 90 VHF or UHF radio systems, and that you have an FCC license to operate the radio on those frequencies.



IMPORTANT: All radio codeplugs that are subject to this mandate are identifiable by a "Q507/G507 - 12.5 kHz FCC Mandate" option in the codeplug's Purchased Feature Name list.



WARNING:

After FLASHport Upgrading the radio to add the "Q507/G507 - 12.5 kHz FCC Mandate" option, you must revisit the transmit bandwidth of all assigned channels to ensure that they comply with the FCC Narrowbanding Mandate.

Cloning to a target radio which has the "Q507/G507 - 12.5 kHz FCC Mandate" option from a source radio or codeplug that does not have this option holds certain restrictions.



NOTE:

The impacted FCC Part 90 Frequency ranges are:

- **VHF:** 150.8000 to 162.0125 MHz, and 173.2000 to 173.4000 MHz
- **UHF1/UHF2:** 421.0000 to 469.9950 MHz

EXCEPTIONS: After the FCC mandate takes effect, specific frequencies in the above VHF and UHF ranges that are not subject to Part 90 narrowbanding, or have a Part 90 exception noted below, are still allowed to operate at 25 kHz. Examples include: Part 22 frequencies, Part 74 frequencies, Part 80 marine frequencies, FRS/GMRS and MURS, Part 97 amateur frequencies, and NOAA weather channels. (See also: the [Tx Deviation/Channel Spacing on page 1134](#) field.)

3.18

FLASHport

There are two types of FLASHport Upgrades, a Refresh software upgrade and a FLASHcode Feature Set upgrade.

Refresh Upgrade, upgrades the radio's internal software or firmware, and the radio's Secure Encryption Module's firmware. A FLASHcode Feature Set upgrade changes the radio's potential set of features (System Options/Option - Expansion Board). This Upgrade may also upgrade the radio's Secure Encryption module's firmware. FLASHport also allows you to read and view the current Radio and FLASHkey configurations.

 **IMPORTANT:** Certain features or options that are purchasable in Entry- and Mid-tier models are included in High-tier models. Only features that have been purchased appear in the radio FLASHcode.

Related Features

FLASHport Utilities Available from the Ribbon Menu:

- [Radio Software Refresh Window on page 123](#)
- [FLASHkey Configuration Window](#)
- [Radio Configuration Window on page 118](#)
- [FLASHport Upgrade Window on page 121](#)

FLASHport Required Components:

- [FLASHkey Upgrade Module](#)
- [CVN Firmware Upgrade File](#)

3.19

Front Panel Programming (FPP) Feature

The FPP feature allows you to modify Conventional channel parameters directly through the radio's front panel, the radio's menu navigation, and keypad buttons.

You can select FPP with the [Front Panel Programming on page 529](#) menu item selection.

 **NOTE:** Only channels of FPP-enabled Zones can be Front Panel Programmed.

FPP password protection is possible; see the Radio Wide, [Protected Zone Password on page 333](#) field.

 **IMPORTANT:** The FCC requires that an FPP Dongle be attached to the radio for you to access this feature. This does not apply to you unless exempted from the FCC compliance.

3.20

Intra-WACN Roaming Feature

Intra-WACN Roaming allows Motorola Solutions radios to operate on certain non-Motorola Solutions (Project 25 compatible) Trunking Systems. With these non-Motorola Solutions hardware configurations, the **Home WACN ID** is the unique ID that requires a Key ID match, as opposed to Motorola Solutions hardware, where the **System ID** is the unique ID that requires a Key ID match. Motorola Solutions Trunking Systems typically do not have unique Home WACN IDs.

Feature Operations

When programming for non-Motorola Solutions systems, be aware that the [Home WACN ID on page 1192](#) acts like a typical Motorola Solutions System ID, which is why an [Advanced WACN Key](#) contains the Key

ID that allows for communication access. When programming for Motorola Solutions systems, the [Advanced System Key Info on page 317](#) contains the Key ID that allows for communication access.

- When programming for these non-Motorola Solutions systems, sites can also have unique System IDs.
- There are no home or foreign Trunking Systems with non-Motorola Solutions systems. All Trunking Systems (sites) in a given WACN re-use the same Working Unit IDs (WUIDs) and Working Group IDs (WUIDs) and are essentially treated as the Home System, where each System becomes another site within the network.

3.20.1

Defining Trunking Channels for Intra-WACN Roaming

When and where to use:

Procedure:

1. On the Trunking System, General page, set the value of the [Home WACN ID on page 1192](#) field to match the Key ID of an [Advanced WACN Key](#). See the **System Key Report**.
 **NOTE:** All in-the-field Motorola Solutions Trunking Systems use the same Home WACN ID. However, certain non-Motorola Solutions vendors deploy their Trunking Systems with unique Home WACN IDs and their sites have unique System IDs within that WACN.
2. Set the [Coverage Type on page 1190](#) of the current trunking system to **Inter-WACN Roaming**.
3. Ensure that the [System ID on page 1274](#) and the [Unit ID on page 1272](#) are also set to their appropriate values.

 **NOTE:** The combination of the [Home WACN ID on page 1192](#), the System ID, and the Unit ID identify a radio and its Home System as it roams within a given Wide Area Communications Network.

3.21

Inter-WACN Roaming Feature

Inter-WACN Roaming (also known as Inter Sub System Interface or ISSI) allows a radio to automatically roam across different Wide Area Communications Networks (WACNs) or ASTRO Trunking Systems with no manual channel change required.

Feature Operations

WACN roaming is accomplished using Project 25 and Inter-RF Subsystem Interface (ISSI) links. ISSI operations provide support for actions such as registration, affiliation, queries, and de-registration.

- Every Trunking System has a **Home WACN** or Trunking System defined by its [Home WACN ID on page 1192](#) and [System ID on page 1274](#). When the radio is operating on the System, every other WACN or Trunking System is foreign to that radio. This foreign scenario is managed with a Working Unit ID (WUID).
- Each ASTRO 25[®] Trunking talkgroup has a Home [TG WACN ID on page 1255](#) and [TG System ID on page 1254](#) defined to match the [Home WACN ID on page 1192](#) and [System ID on page 1274](#). If the Home WACN ID and System ID do not match, the WACN or System is considered foreign to that talkgroup. This foreign scenario is handled with a Working Group ID.

Feature Considerations

- The [Dynamic Regrouping Feature on page 266](#) is blocked when the radio is registered on a foreign WACN or Trunking System and the channel selector cannot be locked. The radio may only be dynamically regrouped while registered on its Home WACN or Trunking System. If the radio is

dynamically regrouped and subsequently roams to a foreign system, then the radio remains regrouped, but the channel selector will become unlocked.

- Call features such as [Phone Operation on page 1259](#), [Status Enable on page 1262](#), private calls, and call alerts are blocked when the radio is registered on a foreign WACN or Trunking System.
- Foreign talkgroups are not allowed in the Scan List Member Channels when the [Scan Type on page 1306](#) is set to **Multi-System Talkgroup**.
- The X2-TDMA (Time Division Multiple Access) protocol is not supported with Inter-WACN Roaming. See the [X2 Voice Capable on page 1203](#) field.
- The [Validate NAC Against System ID on page 1205](#) must be disabled to be considered valid.
- The [WUID Validity Support on page 1206](#) field must be disabled to be considered valid.

Related Features

ISSI 8000 - NGI Trunking System List:

- [Coverage Type on page 1190](#)
- [Site Alias Type on page 1223](#)
- [Home RAS WACN Number on page 1225](#)

ISSI 8000 - NGI Trunking Personality List:

- [RAS WACN ID on page 1267](#)
- [TG System ID on page 1254](#)
- [TG WACN ID on page 1255](#)
- [AG System ID on page 1250](#)
- [AG WACN ID on page 1250](#)

3.21.1

Defining Trunking Channels for Inter-WACN Roaming

When and where to use:

Procedure:

1. From the [General \(Type II Trunking System\)](#) section of the [Type II Trunking System](#), set the value of the [System ID on page 1274](#) field to match the **Key ID** of one of the loaded [Advanced System Keys](#). See the **System Key Report**.
2. Set the [Coverage Type on page 1190](#) of the current trunking system to **Inter-WACN Roaming**.
3. Ensure that the [Home WACN ID on page 1192](#) and the [Unit ID on page 1189](#) are also set to their appropriate values.



NOTE: The combination of the Home WACN ID, the [System ID on page 1274](#), and the Unit ID are known as the Subscriber Unit ID or SUID. The SUID identifies a radio and its Home System as it roams within a given Wide Area Communications Network. For more information, see the Working Unit ID.

4. When [site aliasing](#) is enabled on a given [General \(Type II Trunking System\)](#), ensure that the [Home RAS WACN Number on page 1225](#), the [System Number on page 1224](#), the [RFSS Alias Number on](#)

[page 1222](#) and the [Site ID on page 1223](#) are set to their appropriate values for each site that may be encountered as the radio roams.



NOTE: This allows you to view descriptive [Site Alias \(Type II Trunking System\)](#) text that identifies the currently registered site by pressing the **Site Display/Srch** button. When the [Site Alias Type on page 1223](#) is set to **system**, only the [Home RAS WACN Number on page 1225](#) and the [System Number on page 1224](#) are required. The radio may then use this system alias to display the system alias or site ID of the currently registered site when the radio roams to a different system or WACN, or it may use this system alias to build PTT IDs to identify calls from foreign radios where an individual alias is not defined.

5. For each [Talkgroup \(ASTRO 25 Trunking Personality\)](#), ensure that the **TG WACN ID**, the **TG System ID**, and the [Talkgroup ID](#) are set to their appropriate values for each talkgroup defined in the list. For more information, see the **Working Group ID**.
6. For each [Talkgroup \(ASTRO 25 Trunking Personality\)](#) Announcement Group page, ensure that the [AG WACN ID on page 1250](#), the [AG System ID on page 1250](#), and the [Announcement Group on page 1246](#) ID are set to their appropriate values for the announcement group defined for that personality.
7. For each [Talkgroup \(ASTRO 25 Trunking Personality\)](#) Preferred Sites page, ensure that the [RAS WACN ID on page 1267](#), the [System ID on page 1274](#), the [RFSS ID on page 1266](#), and the [Site ID on page 1223](#) are set to their appropriate values for each site in a multi-site system.

For systems using the Inter-WACN Roaming [Coverage Type on page 1190](#), sites in this list are identified by the combination of these four IDs.

If a site is **not** listed, then that site will have **no** preference.

A site found within the home WACN or trunking system will have a default [Preferred Status on page 1265](#) of **Preferred**, meaning that site will be preferred if its RSSI polling samples are at least as strong as that of the current site.

3.22

Location

This section allows you to view or modify settings related to any radio-based (or radio accessory-based) location-determining technology.

For example, Global Positioning System (GPS) is a location-determining technology.

3.23

LTE Broadband Feature

Long Term Broadband (LTE) Broadband is another wireless data infrastructure solution for Land Mobile Radio (LMR) data applications and services.



LTE Broadband can also apply for Data Applications and Data Services such as [Text Messaging Feature on page 297](#), [Location Enable on page 365](#), [Automatic Registration Service \(ARS\) Feature on page 235](#), and [Over-The-Air-Rekeying \(OTAR\) Operation](#).

Broadband interfaces with standard cell phone infrastructure to provide wireless, high-speed, IP address-based connections.

Radio voice communications are not possible with LTE Broadband; therefore, digital voice communications do continue over the ASTRO Conventional or ASTRO 25 Trunking LMR infrastructure.

 **WARNING:** LTE-capable radios do not support Commercial Off The Shelf (COTS) [Bluetooth Feature on page 253](#) devices. However, the Low Frequency Motorola Proprietary Pairing (LF MPP) [Bluetooth Pairing Type on page 396](#) is possible on LTE Broadband enabled channels.

 **IMPORTANT:** LTE is currently only available for APX 7000L portable radios.

See also [Accessing the LTE Broadband Feature on page 274](#).

Related Features

Data Wide Fields:

- [Internal Radio Subnet on page 954](#)
- [APCO Avalanche Time on page 955](#)
- [Access Point Name on page 960](#)
- [LTE Checkback Time](#)
- [LTE Out-Of-Range Threshold Time on page 960](#)

Data Profiles Fields:

- [Data Profile Type on page 982](#)
- [Broadband Source on page 1002](#)
- [VPN Secure/Clear Strapping on page 1009](#)
- [VPN Key Selection on page 1007](#)
- [VPN Gateway IP Address on page 1006](#)
- [VPN Message Re-transmission Time on page 1008](#)
- [VPN Message Re-transmission Attempts on page 1007](#)
- [VPN Dead Peer Detection Interval on page 1006](#)
- [VPN Rekey Margin on page 1009](#)
- [IP Address on page 1010](#)
- [Address Type on page 1011](#)

Radio Wide Field:

- [MPP Pairing Only with LTE on page 397](#)

Conventional Fields Fields:

- [LTE Interference Frequency Present on page 1125](#)
- Fourth and fifth Warning section in [Scan List Selection on page 1153](#)

Trunking System Fields:

- [LTE Interference Frequency Present on page 1199](#)
- Warning section in [Coverage Type on page 1190](#)
- Warning section in [Data Profile Selection on page 1195](#)

Trunking Personality Fields:

- [Scan List Selection on page 1260](#)

Radio Ergonomics Feature Access:

- [LTE on page 488](#) button press

- [LTE on page 531](#) menu selection

Scan List Field:

- [Channel on page 1316](#)

3.23.1

Accessing the LTE Broadband Feature

Procedure:

1. Enabled the [Broadband Source on page 1002](#) field.
 - a. For the Trunking channels, select **Broadband-Only** or **Trunking & Broadband** in [Data Profile Type on page 982](#).
 - b. For the Conventional channels, select **Broadband-Only** or **Conventional & Broadband** in [Data Profile Type on page 982](#).
 2. **Optional:** Perform the following actions:
 - a. If secure-encrypted data connections are required across an LTE network, select **Secure** in the [VPN Secure/Clear Strapping on page 1009](#) field.
 - b. With encryption enabled, additional Network Layer Security fields must be defined to establish a secure Virtual Private Network (VPN) tunnel between the radio and the VPN gateway in the Customer Enterprise Network (CEN). The VPN fields are: [VPN Secure/Clear Strapping on page 1009](#), [VPN Key Selection on page 1007](#), [VPN Gateway IP Address on page 1006](#), [VPN Message Re-transmission Time on page 1008](#), [VPN Message Re-transmission Attempts on page 1007](#), [VPN Dead Peer Detection Interval on page 1006](#), [VPN Rekey Margin on page 1009](#), and [VPN Re-Key attempts on page 1008](#).
 3. Edit the [Data Wide on page 950](#) page to determine how radio data communications transitions between the LTE Broadband data network and the Land Mobile Radio (LMR) data network. The fields are: [Internal Radio Subnet on page 954](#)[APCO Avalanche Time on page 955](#)[Access Point Name on page 960](#)[LTE Out-Of-Range Threshold Time on page 960](#)
 4.  **NOTE: Interference Mitigation in the 700 MHz Frequency Band:**
The 700 MHz band is adjacent to LTE bands Class 13/14, with a guard band that is insufficient to avoid RF interference, therefore:
 - a. LTE-enabled Trunking and Conventional channels must not contain any 700 MHz frequencies.
 - b. Any Scan List that contains a Scan List Member that uses a frequency in the 700 MHz band is considered to be incompatible with an LTE system/radio channel.
 - c. Trunking System [LTE Interference Frequency Present on page 1199](#) is automatically defined.
- Optional:** Enabled [LTE Interference Frequency Present on page 1125](#) for Conventional Personality when appropriate.
5. Select the LTE feature with a [LTE on page 488](#) button-press, and a [LTE on page 531](#) menu-selection to enable or disable the LTE Broadband feature.

3.24

Fall Alert Feature

The Fall Alert feature allows you to view or define Emergency Mode Fall Alert functionality.



IMPORTANT: The Fall Alert feature can be configured to operate on a radio-wide basis or on a per [Conventional Emergency Profiles on page 926](#) or [Trunking Emergency Profiles on page 939](#) basis that includes customizable Alert Tones (see also the [Fall Alert Configurability Level on page 923](#) field and the [Customizable Emergency Tones on page 924](#).



NOTE: The Fall Alert feature transmits an emergency based on a portable radio and its operator considered as being in a horizontal position, or in a horizontal position and motionless. Therefore a Fall Alert Emergency Mode alerts dispatchers and other radios that a Fall Alert situation has occurred.

The [Fall Alert Trigger on page 921](#) field enables the feature and determines if a motion sensitivity threshold is also required to complete the Fall Alert condition. The Fall Alert Configurability Level, the Pre-Alert Timer, the Pre-Alert Tone, and the Post-Alert Timer must also be defined.

In-the-field: You are alerted both audibly and visually that the radio's programmed Fall Alert condition(s) have been met for the duration of the Pre-Alert Timer. After the Pre-Alert Timer has expired, the Post-Alert Timer begins. The radio begins to transmit in Emergency Mode after the Post-Alert Timer has expired.

- At anytime during the period when the required Fall Alert conditions are considered to be true, if the Fall Alert conditions are interrupted due to repositioning of the radio, or a radio initiated Fall Alert Clear button-press, then the Fall Alert feature is automatically reset and no emergency transmission is sent.
- If the emergency is already being transmitted but not yet acknowledged, and the Fall Alert conditions are interrupted due to up-righting of the radio, or a radio initiated Fall Alert Clear button-press, then the emergency transmission is canceled.
- The angles of operation that determine an upright radio verses a horizontal radio are factory programmed.
- The motion sensitivity threshold is factory programmed.



IMPORTANT:

- Conventional Emergency Profiles are selected for use from the Conventional System's and Emergency Profile Selection field.
- Trunking Emergency Profiles are selected for use from the Trunking Personality's and Emergency Profile Selection field.
- See [Emergency on page 486](#), [Emergency Supervisor Clear on page 596](#), [Emergency Power Up on page 919](#).

Related Features

[Fall Alert Trigger on page 921](#)

[Pre-Alert Timer on page 922](#)

[Post-Alert Timer on page 922](#)

[Pre-Alert Tone on page 923](#)

[Fall Alert Configurability Level on page 923](#)

3.25

Message

Examples of messages are "SEND TOW TRUCK", "LEAVING STATION", etc. When the dispatcher receives the message, an appropriate response is sent. The radio will provide audible and visual indications that the message was acknowledged.



NOTE:

- A Message transmission makes more efficient use of a Channel as compared to a voice transmission.
- Messages can be sent from a dispatcher to a portable or mobile unit, or from a portable or mobile unit to a dispatcher. Messages cannot be sent from a portable or mobile unit to another portable or mobile unit.
- Messages are only applicable to display models.

See also [Accessing the Message Feature \(Conventional\) on page 276](#) and [Accessing the Message Feature \(Trunking\) on page 276](#).

3.25.1

Accessing the Message Feature (Conventional)

Procedure:

1. Select the **Message** feature in (MDC/ASTRO/DVRS type) Conventional System basis.
2. Edit the individual message functionality in the [Conventional Alias List on page 1050](#).
3. Select the message feature with a [Message on page 488](#) button-press, a [Direct Message on page 739](#) button-press, or a [Message on page 532](#) menu-selection.

3.25.2

Accessing the Message Feature (Trunking)

Procedure:

1. Select the **Message** feature in (Type II type) Trunking System basis with the [Message Alias Enable on page 1217](#) field.
This feature applies only when the Trunking Personality that references this Trunking System has its [Message Enable on page 1262](#) field enabled.
2. Select the message feature with a [Message on page 488](#) button-press, a [Direct Message on page 739](#) button-press, or a [Message on page 532](#) menu-selection.

3.26

Mission Critical GeoFence Feature

The Mission Critical Geofence feature allows you to define a virtual perimeter for a real-world geographical area, such as a point location, a specific structure, a neighborhood, a city, etc.

Geofence coordinates (latitude/longitude) and associated entry/exit actions are programmed directly into the radio. Once configured, the radio internally performs Geofence checks and actions every time it receives a new GPS location, which is every second.

See [Configuring a Geofence on page 278](#).

Software Requirements

The Geofence feature is supported by all APX portable and mobile radios with the following software requirements:

Requirement	Description
Radio firmware version	R15.00.00 or later
	R15.00.00 or later
Radio options	QA00782/GA00229 (GPS Activation)
	QA09012/GA09012 (Mission Critical Geofence)

Related Features:

See [Mission Critical Geofence on page 461](#) for related fields and settings.

Refer to the following descriptions for more Geofence information:

3.26.1

Geofence Boundary

APX radios can be programmed with up to 100 Geofences.

The following Geofence geographical boundaries are supported:

Circle

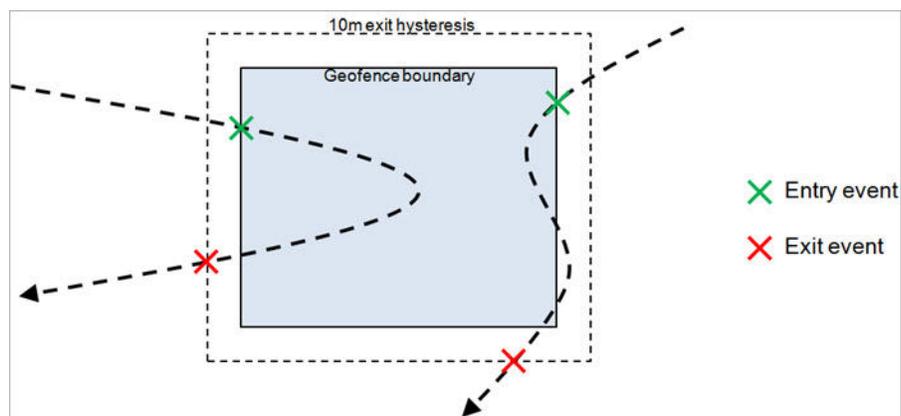
Geofence boundary defined by its center coordinates and radius, in meters.

Polygon

Geofence boundary with three or more straight sides; defined by the coordinates for each vertex (corner), with a maximum of 100 vertices.

Geofence entry detection occurs at the first location point inside the Geofence boundary. However, Geofence exit detection only occurs at least 10 meters (approx. 33 feet) outside of the Geofence boundary. This hysteresis is required to ensure that no inside/outside chatter occurs when the radio is near the Geofence boundary.

Figure 1: Geofence Entry/Exit Events



See [Geofence Entry and Exit Actions on page 277](#) for action type examples.

3.26.2

Geofence Entry and Exit Actions

You can define the fields and actions that can be performed on a Geofence entry or exit action.

Table 36: Geofence Fields

Field	Description	Entry Action	Exit Action
Action Type	Defines the Geofence direction type	General	Exit Geofence
Consolidated Action Name	Display Geofence name (<= 14 chars)	Yes	Yes
Backlight Color	Color (Disabled/Red/Green/Amber) behind Geofence name	Yes	N/A

Table 37: Geofence Entry and Exit Actions

Action ID	Description	Entry Action	Exit Action
Mode	Go to specified zone/channel/talkgroup	Yes	Revert to your selection
Direct Status	Set radio to specified status number and send to system	Yes	Yes
Direct Message	Send specified message number to system	Yes	Yes
Voice Announcement	Play voice announcement (with optional repeat interval)	Yes	Yes (one shot only)
Text Message	Display text message	Yes	Yes
TX Power Level	Set TX power to specified level	Yes	Revert to normal power level

3.26.3

Configuring a Geofence

Prerequisites: Radios to be programmed must have the required options. See [Software Requirements on page 276](#).

Procedure:

- 1.
2. From **Radio View**, select the relevant radio from table.
3. Right-click the record in the table and select **Edit Configuration**.
4. Select **Radio Wide** from the Configuration.
5. From the Location section, check **Location Enable**.
6. Manually configure the Geofence coordinates. Perform the following actions:
 - a. Expand **Radio Ergonomics Configuration**.
 - b. Select a **Mission Critical Geofence** set record.
 - c. Right-click the record and select **Edit**.
 - d. From the General section, set the **Geofence Alias Name** and **Priority** fields.

- e. Set a **Radius** for circular Geofences.



NOTE: **Entry Action** and **Exit Action** selections are set later in the procedure.

- f. From the Coordinates table, select the **Add** icon to add records for **Longitude** and **Latitude**.



NOTE: Add a record for each vertex in the Geofence boundary for polygon shaped Geofences. For a circle shaped Geofence, enter a record for the center and set a **Radius** to define the Geofence boundary. See [Geofence Boundary on page 277](#) for additional information.

- g. Enter the **Longitude** and **Latitude** coordinates.



NOTE: Use decimal degrees with up to seven decimal places. Positive values indicate North (latitude) or East (longitude). Negative values indicate South (latitude) or West (longitude). All coordinates must be entered as though traveling around the Geofence boundary in a clockwise or counterclockwise direction.

The **Export Map File**  icon can be used to verify the shape of a manually entered Geofence boundary by exporting a KML file and viewing it with Google Earth.

- 7. Optional: Use Google Earth to identify a geographical area. Perform the following actions:

- a. Download and install Google Earth.
- b. Start Google Earth and locate the geographical area.
- c. Select **Add** → **Polygon** and draw the Geofence boundary on the map.
Make sure to only click on each Geofence corner. Do not click and drag to create the Geofence boundary.
- d. Enter a name for the defined area and click **OK**.
- e. Under **Places**, right-click on the name and select **Save Place As**.
- f. Save the file on the machine running the APX CPS application.

- g. From the **Mission Critical Geofence** window, select the **Import Map File** icon .
- h. Select the KML or KMZ file created in Google Earth and click **Open**.

- 8. Configure a Geofence entry action record. Perform the following actions:

- a. From the Set Categories navigation, right-click **Action Consolidation** and select **Create New Set**.
- b. Set **Action Type** to **General**.
- c. Set all other relevant fields.
- d. From the Consolidation Actions table, click the **Add** icon and select an **Action ID** and set all relevant fields.
See [Table 37: Geofence Entry and Exit Actions on page 278](#) for supported types.
- e. Click **Close**, select **Save this Set** and click **OK**.

- 9. Optional: Configure a Geofence exit action record. Perform the following actions:

- a. From Action Consolidation, click the **Add** icon.
- b. Set **Action Type** to **Exit Geofence**.
- c. Set all other relevant fields.
- d. From the Consolidation Actions table, click the **Add** icon and select an **Action ID** and set all relevant fields.
- e. Click **Close**, select **Save this Set** and click **OK**.

10. Select the entry and exit actions for the relevant Geofence. Perform the following actions:
 - a. Under **Mission Critical Geofence**, select the relevant Geofence record.
 - b. Right-click the record and select **Edit**.
 - c. Select the **Entry Action** drop-down and select **<Browse...>**.
 - d. Select the relevant entry action under the **Consolidated Action** column and click **OK**.
 - e. Select the **Exit Action** drop-down and select **<Browse...>**.
 - f. Select the relevant exit action under the **Consolidated Action** column and click **OK**.
11. Click **Close**.
12. Click to **Radio View** icon.
13. From the **Leave Configuration** window, select **Save this Configuration** and click **OK**.
14. Save the new configuration.

3.27

O7 Control Head with Siren/Lights Keypad

A mobile radio may come factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad. This can maximize functionality for you while reducing the amount of equipment required in the vehicle.

See the image below:



The following features are pre-configured to have specific default values:

- [PA/Siren on page 422](#) defaults:

The [Siren Operation on page 422](#) field defaults to **Siren/PA** and [HiLo Airhorn Tones on page 425](#) field defaults to "Enabled".

- **Default Keypad Button Assignments:**

The default button assignments are pre-configured.

Table 38: Default Keypad Button Assignments

Keypad Button	Keypad Button Feature	Keypad Button Index
One (1)	Relay Pattern on page 547	Pattern 1
Two (2)	Relay Pattern on page 547	Pattern 2
Three (3)	Relay Pattern on page 547	Pattern 3
Four (4)	Airhorn on page 543	N/A
Five (5)	Direct Manual on page 545	N/A
Six (6)	Direct Wail on page 545	N/A
Seven (7)	Public Address (PA) on page 547	N/A
Eight (8)	Gunlock (1,2,3, or All) on page 546	N/A
Nine (9)	Direct Ext Radio on page 544	N/A
Star (*)	Relay Pattern on page 547	Pattern 4
Zero (0)	Relay Pattern on page 547	Pattern 5
Pound/Hash (#)	Relay Pattern on page 547	Pattern 6

 **NOTE:** Refer to the Default Relay Patterns shown below for the corresponding relay settings.

Keypad Button	Data Button Feature	Data Button Index
Data Button	Action Consolidation	AC ALL OFF

 **NOTE:** Refer to the Action Consolidation Feature shown below for the corresponding Consolidated Action settings.

- **Universal Relay Controller Defaults**

The [Universal Relay Controller \(URC\) on page 303](#) is a separate hardware device that can control lightbars and strobes, through the programmable Keypad buttons and [Action Consolidation on page 588](#) feature.

The [Universal Relay Controller Equipped on page 382](#) field defaults to **Enabled**.

The [Relay 1-10 on page 383](#) to [Relay 10 on page 394](#) fields are pre-configured for the following Relay Patterns:

Table 39: Default Relay Patterns

Name	Relay 1 Warning 1	Relay 2 Warning 2	Relay 3 Left Alley	Relay 4 Take-down	Relay 5 Right Alley
Pattern 1	ON	CS	CS	CS	CS
Pattern 2	OFF	ON	CS	CS	CS
Pattern 3	ON	ON	CS	CS	CS

Name	Relay 1 Warning 1	Relay 2 Warning 2	Relay 3 Left Alley	Relay 4 Take-down	Relay 5 Right Alley
Pattern 4	CS	CS	ON	CS	CS
Pattern 5	CS	CS	CS	ON	CS
Pattern 6	CS	CS	CS	CS	ON
ALL OFF	OFF	OFF	OFF	OFF	OFF

Table 40: Default Relay Patterns

Name	Relay 6	Relay 7	Relay 8	Relay 9	Relay 10
Pattern 1	CS	CS	CS	CS	CS
Pattern 2	CS	CS	CS	CS	CS
Pattern 3	CS	CS	CS	CS	CS
Pattern 4	CS	CS	CS	CS	CS
Pattern 5	CS	CS	CS	CS	CS
Pattern 6	CS	CS	CS	CS	CS
ALL OFF	OFF	OFF	OFF	OFF	OFF



NOTE: CS = Current State

- **Action Consolidation Defaults**

A default "AC ALL OFF" in [Consolidated Action Name on page 451](#) field, have the following characteristics, is added and assigned to the Data Button Index (refer to the Default Keypad Button Assignments shown above) the default Relay Pattern is "ALL OFF" (refer to the Universal Relay Controller Defaults shown above for the corresponding relay settings) and the default [Siren Type on page 455](#) is "Siren Off".

See also the [Action Consolidation on page 235](#).

- **GunLock Defaults**

The [VIP Output Selections](#) defaults to **GunLock 1**.

The [Relock Timer on page 395](#) defaults to **8** seconds.

3.28

O9 Control Head

The O9 Control Head incorporates a complete set of controls in one integrated unit. This can maximize functionality for you while reducing the amount of equipment required in the vehicle.

For convenient access to the programmable button features, the [Mobile Control Set](#) provides a graphical view of all available Control Heads, including the O9 Control Head.



IMPORTANT: The O9 Control Head is supported by the APX™ 7500 and APX 8500. It is also supported by the APX 6500/5500 (but not the APX 6500Li, or other models) provided the applicable radio's firmware has been upgraded to R11.05.00 or later (to remove compatibility restrictions), and the radio's default codeplug version is R11.01.00 or later.



Related Information

O9 Control Head Control Groupings:

- [Directional Buttons \(CH-O9\)](#)
- [Response Selector \(CH-O9\)](#)
- [Top Function Programmable Button \(CH-O9\)](#)
- [Bottom Function Programmable Button](#)
- [Data Button](#)
- [Menu Selections](#)
- [Stealth on page 429](#)

GunLock Feature:

- [Gunlock on page 394](#) in Radio Wide Set
- [Gunlock \(1,2,3, or All\) on page 546](#) button selection
- [Gunlock \(1-3\) on page 753](#) for Radio VIP output selection
- [Gunlock \(1-3\) on page 753](#) for DEK VIP output selection

Authentication (Radio Lock) Feature:

- [Password Required For Gunlock on page 339](#) in Radio Wide Set
- [Password Required For Lightbar on page 340](#) in Radio Wide Set
- [Password Required For Siren on page 340](#) in Radio Wide Set

Action Consolidation Feature:

The O9 Control Head includes programmable buttons that can replace a series of actions with one touch, that can be used to sequentially operate lightbars and Sirens, and send Status messages and GPS coordinates to a dispatcher.

- [Action Consolidation on page 235](#)

Universal Relay Controller:

The Universal Relay Controller is a separate hardware device that can control lightbars and strobes, with the programmable buttons, Response Selector, and Action Consolidation feature of the O9 Control Head.

- [Universal Relay Controller \(URC\)](#)

3.29

Personnel Accountability Feature

Personnel Accountability takes Tactical Public Safety (TPS) to the next level, greatly improving situational awareness and resource management of Conventional communications at the scene of an incident.



See [Tactical Public Safety Feature on page 296](#).

With an RF modem connected to a laptop containing an Incident Command Terminal (ICT) application, the Incident Commander is able to manage and transmit real-time information from a single location, constantly accounting for all personnel and resources present at a particular incident scene.

For example, during a residential structure fire, the Incident Commander can assign a unique [Personnel Accountability Sector ID on page 1298](#) to each radio channel that can then be assigned to an Alias in the ICT application, such as 'Roof' for Sector 1, and 'Interior' for Sector 2. Firefighters can then be grouped and accounted-for as part of the 'Interior Sector', or as part of the 'Roof Sector' at the scene.

The ICT application also allows individual radio to be polled to determine if they are still on line (see [Respond To Polls on page 405](#)), and can also issue evacuation notifications, and keep track of each radio that responds with you acknowledging through PTT (see [Evacuation Acknowledgment on page 406](#)). Personnel Accountability Signaling (see [Incident Signaling Type on page 1157](#)) uses Packet Data Units (PDUs) which may contain, in addition to the radio ID, a Sector ID, the radio's battery level, confirmed responses, registration information, and evacuation commands and acknowledgements. Personnel Accountability may also benefit from enabling certain TPS-related features (see [Tactical Public Safety UI Enable on page 1158](#)).



IMPORTANT: When operating in talkaround/direct mode and in close proximity of other radios, it is recommended to configure additional preamble of 160 to the ASTRO system configured with Personnel Accountability enabled channels.

Related Features

Conventional Personality - Features:

- [Incident Signaling Type on page 1157](#)
- [Personnel Accountability Registration on page 1158](#)
- [Tx Voice Type on page 1159](#)
- [Tactical Public Safety UI Enable on page 1158](#)

Radio Wide - Personnel Accountability:

- [Periodic Update Timer on page 405](#)
- [Respond To Polls on page 405](#)
- [Evacuation Acknowledgment on page 406](#)
- [Personnel Accountability PTT Transmission on page 406](#)
- [Personnel Accountability Emergency PTT Transmission on page 407](#)

Zone Channel Assignment - Channels:

- [Personnel Accountability Sector ID on page 1298](#)

Radio Wide - Tactical Public Safety:

- [Audible Emergency Beacon on page 402](#)
- [Emergency Alarm Retry Rate on page 403](#)
- [Emergency Call De-key Sidetone on page 403](#)
- [Voice Tx End Tone on page 402](#)

Related Feature:

- [Tactical Public Safety Feature on page 296](#)

3.30

POP25 Programming over P25 Systems

The Programming Over Project 25 (POP25) feature allows for wireless radio programming, which includes "over-the-air" Reading, Writing, and Cloning of in-the-field radios.

This Over The Air Programming (OTAP) is possible to or from a single radio, or to multiple radios. Programming is accomplished from a computer through a multitude of possible hardware communication scenarios, which ultimately transmit and receive codeplug data to these in-the-field radios. The POP25 Batch Programming feature allows you to set up an in-the-future wireless programming of single or multiple "in-the-field" radios at a desired date and time that is convenient to others.



NOTE: Trunking OTAP is accomplished with the Programming Over Project 25 (POP25) communication method.

[Batch Programming Warnings on page 286.](#)

[POP25 on Conventional Systems on page 286.](#)

[Mandatory Dependencies on page 287.](#)

Related Features

Firmware Download Over The Air

Support the upgrading of subscriber firmware and language packs Over the Air (OTAP) through Programming Over Project (POP) 25 and Group Services Channel. See [APX Firmware Download Over The Air on page 249](#).

POP25 of a Single Radio:

1. See the following [Data Profiles on page 980](#) POP25 related settings. Data Profiles are selected on a per-System basis from an [ASTRO 25 Trunking System - Data Profile Selection on page 1195](#) field, or from the [Conventional System on page 1056 - Data Profile Selection on page 1059](#) field:
 - [ARS Mode on page 995](#)
 - [Automatic Registration Server Address on page 996](#)
2. When proceeding with a Read, Write, or Clone selection, the application prompts you with the POP25: Access Radio Window.

POP25 of Multiple Radios:

- [POP25 Batch Programming Radio List Window](#)
- [POP25 Batch Programming Scheduler Window](#)
- [POP25 Batch Programming Progress Window](#)

APX POP25 Presence Interface Improvements:

- [The Device Programmer/Monitor for APX POP25](#)
- [APX POP25 RM Device Programmer Settings Window](#)
- [APX POP25 RM Device Programmer on page 250](#)

3.30.1

Batch Programming Warnings

Batch programming should not be used to add or modify system names and types in the radio, in order for the Radio IDs to be retained in the target radios, the Conventional System ([Conventional System Name on page 1060](#) and [System Type on page 1056](#)) and the Trunking System ([Trunking System Name on page 1188](#)) must match between the currently loaded codeplug and the target radios.



WARNING:

If difficulties accessing a radio's IP address is experienced during a POP25 operation, depending on the system's firewall, you may need to manually add the Radio Management Client as an exception to the firewall's exception list.

Over-the-air programming can rely on TCP Data Retransmission attempts to help ensure successful POP25 operation in the face of network (voice) activity and other network latencies. On supported Windows operating systems, Motorola Solutions recommends setting the **TCPMaxDataRetransmissions** registry value to 5 or more.

- For supported Windows operating systems, refer to the Microsoft Knowledge Base article at <https://support.microsoft.com/en-us/kb/170359>.

Changing TCP/IP registry values affects all applications that require TCP/IP services. In addition, improperly configuring or editing the registry could cause serious problems or performance degradation. For added protection, back up the registry before attempting to modify it.

3.30.2

POP25 on Conventional Systems

The Windows operating system (Windows 7 and Vista) uses MTUs (Maximum Transmission Units) to determine the maximum size of the largest data packet (including any encryption header) that can be transmitted over the underlying network layer. The MTU size of over-the-air data packets for Conventional POP25 must not be larger than 512 bytes each; otherwise POP25 programming may fail.

Set the maximum MTU size allowed by the computer's operating system. See [Setting the Maximum MTU on page 286](#).

3.30.2.1

Setting the Maximum MTU

Windows operating systems use Maximum Transmission Units (MTUs) to determine the maximum size of the largest data packet (including any encryption header) that can be transmitted over the underlying network layer.

When and where to use:

Use this procedure to set the maximum MTU size allowed by the computer's operating system.

Procedure:

1. Open a command-line window in administrator mode by clicking the **Start Menu**, then right-click on **All Programs** → **Accessories** → **Command Prompt**, and selecting **Run as administrator**.
2. Type the command

```
netsh interface ipv4 set subinterface "Local Area Connection" mtu=512  
store=persistent
```

3. Type `netsh interface ipv4 show subinterfaces` to verify that the change to the MTU size has been successfully saved.

3.30.3

Mandatory Dependencies

Ensure that the following mandatory **Range**, **Pre-programmed**, and **Programmed** dependencies are considered:

1. Ensure the following **Range** dependencies:
 - a. For POP25 to be accomplished on an [ASTRO 25 Trunking System](#), POP25 targeted in-the-field radios must be in active Trunking Communication with an in-the-field POP25-capable and Data-capable Trunking System, or
 - b. For POP25 to be accomplished on an [ASTRO Conventional System on page 1056](#), POP25 targeted in-the-field radios must be in active Conventional Communication with an in-the-field POP25-capable and Data-capable Conventional System.
2. Ensure the following **Pre-programmed** dependencies in POP25 targeted radio codeplugs prior to these radios going out "in-the-field":
 - a. The [POP25 Enable on page 1209](#) field must be enabled on a radio's programmed [ASTRO 25 Trunking System](#) that communicates with the "in-the-field" Trunking System; See [1.a on page 287](#), or
 - b. The [POP25 Enable on page 1086](#) field must be enabled on a radio's programmed [Conventional System on page 1056](#) that communicates with the "in-the-field" Conventional System; See [1.b on page 287](#).
3. Optional: Ensure the following **Pre-programmed** dependencies in Data Wide, POP25/Wireless Programming Page preferences related to an in-the-field radio receiving a Read, Write or Clone include:
 - [Data Wide on page 950](#) - POP25 [POP25/Wireless Programming Reject Enable on page 961](#)
 - [Data Wide on page 950](#) - POP25 [POP25/Wireless Programming Indications on page 961](#)
 - [Auto Reset Enable on page 961](#) (applies to [Consolette on page 255](#))
 - [POP25 Retransmission Timer on page 993](#)
4. Ensure the following **Programmed** dependencies in the codeplug prior to "over-the-air" Reading, Writing, and Cloning of "in-the-field" radios:
 - The [POP25 Enable on page 1209](#) field must be enabled for the same [ASTRO 25 Trunking System](#) as mentioned in [1.a on page 287](#) and [2.a on page 287](#). Therefore, the System ID must be the same for this source codeplug's "POP25 Enabled" Trunking System, the in-the-field Trunking System (see [1.a on page 287](#)), and in the Trunking System of the targeted radio (see [2.a on page 287](#)).
 - For Conventional-only radios, the [POP25 Enable on page 1086](#) field must be enabled for the same [Conventional System on page 1056](#) as mentioned just in [1.b on page 287](#) and [2.b on page 287](#).
5. An Advanced Key with OTAP/POP25 capability must be currently loaded (see [System Key Administration](#)).
6. Ensure that the connection method is set to **POP25** in order for Over the Air (OTA) communication to occur. See [Scheduler in Radio Management](#).

3.31

Radio Profiles

The **Radio Profiles** section allows you to view or define individual Radio Profiles. Radio profiles allow for intended groupings of audio and indicator settings to be assembled for specific radio channels and or specific in-the-field usage scenarios.



NOTE:

Radio profiles are selected for use on a per channel basis from the Zone Channel Assignment Radio Profile field.

The Radio Profiles button-press or the Radio Profiles menu-selection allows you to modify a channel's Radio Profile assignment.

3.31.1

General

This section allows you to view or modify settings for individual Radio Profiles.



NOTE:

Radio profiles are selected for use on a per channel basis from the Zone Channel Assignment Radio Profile field.

The Radio Profiles button-press or the Radio Profiles menu-selection allows you to modify a channel's Radio Profile assignment.

3.31.2

Audio Settings

This section allows you to view or modify various microphone and audio settings, alert tone volume settings, and custom microphone and audio settings that apply to individual radio profiles.



NOTE:

Radio profiles are selected for use on a per channel basis from the Zone Channel Assignment Radio Profile field.

The Radio Profiles button-press or the Radio Profiles menu-selection allows you to modify a channel's Radio Profile assignment.

3.31.2.1

Speaker Audio Equalization Group Setting

The purpose of this field is to predefine a set of value for Audio Equalization Section fields under Speaker / RX Settings Group.

When the Group Setting value changes from **Custom**, the value of the fields on that section change accordingly. When the group setting is not set to **Custom**, then all fields should become view-only.

The following selections list the selections and definitions for the Audio Equalization Group Settings (Radio) and Audio Equalization Group Setting (Accessory) under Speaker / RX Settings Group.

Normal

The value of the following fields is set to: [Analog Low Frequency Band \(Accessory\) on page 829](#) is **0**, [Analog Mid Frequency Band \(Accessory\)](#) is **0**, [Analog High Frequency Band \(Accessory\)](#) is **0**, Digital Low Frequency Band is **0**, Digital Mid Frequency Band is **0**, Digital High Frequency Band is **0**, Securenet Low Frequency Band is **0**, Securenet Mid Frequency Band is **0**, and Securenet High Frequency Band is **0**.

Treble Boost

The value of the following fields is set to: [Analog Low Frequency Band \(Accessory\) on page 829](#) is **0**, [Analog Mid Frequency Band \(Accessory\)](#) is **0**, [Analog High Frequency Band \(Accessory\)](#) is **6**, Digital Low Frequency Band is **0**, Digital Mid Frequency Band is **0**, Digital High Frequency Band is **6**, Securenet Low Frequency Band is **0**, Securenet Mid Frequency Band is **0**, and SecureNet High Frequency Band is **6**.

Low Cut

The value of the following fields is set to: [Analog Low Frequency Band \(Accessory\) on page 829](#) is **-9**, [Analog Mid Frequency Band \(Accessory\)](#) is **0**, [Analog High Frequency Band \(Accessory\)](#) is **0**, Digital Low Frequency Band is **-9**, Digital Mid Frequency Band is **0**, Digital High Frequency Band is **0**, Securenet Low Frequency Band **-9**, Securenet Mid Frequency Band **0**, and Securenet High Frequency Band is **0**.

Reduce Feedback

The value of the following fields is set to: [Analog Low Frequency Band \(Accessory\) on page 829](#) is **-6**, [Analog Mid Frequency Band \(Accessory\)](#) is **0**, [Analog High Frequency Band \(Accessory\)](#) is **-6**, Digital Low Frequency Band is **-6**, Digital Mid Frequency Band is **0**, Digital High Frequency Band is **-6**, Securenet Low Frequency Band is **-6**, Securenet Mid Frequency Band is **0**, and Securenet High Frequency Band is **-6**.

Custom

Use the Custom option to individually set unique Speaker Audio Equalization gain settings for the radio that are not supported by the other options in the Group Setting menu. It is highly recommended to avoid Maximum settings for same Frequency Bands between the Microphone and Speaker Equalizations.

3.31.2.2

Mic Audio Equalization Group Setting

The purpose of this field is to predefine a set of value for Audio Equalization Section fields under Microphone / TX Settings Group.

When the Group Setting value changes from **Custom**, the value of the fields on that section change accordingly. All fields should become Non-editable, when the group setting is not set to **Custom**.



NOTE: For **Custom** setting, it is highly recommended to avoid Maximum settings for same Frequency Bands between the Microphone and Speaker Equalizations.

The following list the selections and definitions for the Audio Equalization Group Settings (Radio) and Audio Equalization Group Settings (Accessory) under Microphone / TX Settings Group.

Normal

Low Frequency Band is **0**, Mid Frequency Band is **0**, and High Frequency Band is **0**.

Treble Boost

Low Frequency Band is **0**, Mid Frequency Band is **0**, and High Frequency Band is **6**.

Low Cut

Low Frequency Band is **-9**, Mid Frequency Band is **0**, and High Frequency Band is **0**.

XTS

Low Frequency Band is **-3**, Mid Frequency Band is **0**, and High Frequency Band is **6**.

Accessed Only: This is an advanced setting which is only available in Full View (see Codeplug View).

3.31.2.3

High Frequency Band

Selects the sound level of calls transmitted in Analog/Digital/Securenet environment.

This selection applies to the current Radio Profile.

The following selections are supported:

Table 41: Range

Minimum	Maximum
-12	12

3.31.2.4

Analog Mid Frequency Band (Radio)

Selects the sound level of calls received in an analog environment.

This selection applies to the current Radio Profile.

Table 42: Range

Minimum	Maximum
-12	12

3.31.2.5

Digital Mid Frequency Band

Selects the sound level of calls received in a digital environment.

This selection applies to the current Radio Profile.

Table 43: Range

Minimum	Maximum
-12	12

3.32

Recent Calls

This menu-selection allows you to access the recent incoming and outgoing call information for the following call types: Call Alerts, Selective/Private Calls and (outgoing only) Phone calls.

This feature applies while operating in Conventional or Trunking communications mode.

3.33

Remote Site Interface (RSI) Feature

The Remote Site Interface (RSI) feature configures a TXM 2000 Transportable Mobile to operate as a remote Conventional transceiver for extended infrastructure applications including: natural disaster support, event security, surveillance support, etc.



In RSI Mode, the TXM 2000 sends-on audio/data to the Fixed Network Equipment (FNE) on behalf of companion portables that would otherwise be out-of range of a Trunking System. Direct connection back to the FNE is accomplished with a V.24/modem link.

 **NOTE:** The TXM 2000 includes an O3 Handheld Control Head, transceiver, internal switchable power supply and control board for battery gauge, and external panel-mounted volume, channel, and coded switch controls, all packaged in a rugged aluminum enclosure.

RSI Dependencies

The Zone Channel Assignment's [RSI Mode on page 1289](#) field allows you to designate a zone and all of its channels for RSI usage.



WARNING:

RSI channels are not capable of Scan Mode and therefore the [Scan List Selection on page 1153](#) is not available.

[Scan List Members](#) cannot select RSI capable [Zone on page 1316](#) or their [Channel on page 1316](#).

RSI channels are not capable of Phone Mode (see [Phone Operation on page 1165](#)).

RSI channels are not capable for the [Voice Announcement Feature on page 304](#) (see [Channel Announcement on page 1296](#)).

You cannot modify RSI zones using the [Front Panel Programming \(FPP\) Feature on page 269](#).

All [Channels on page 1294](#) within an RSI enabled zone can only have referenced [Conventional Personality on page 1091](#) (selected in the [Personality on page 1296](#) field) that have their [Rx Voice/Signal Type on page 1162](#) set to **ASTRO**.

All channels within an RSI enabled zone can only have a referenced [Conventional System on page 1056](#) that have [System Type on page 1056](#) = **ASTRO** and [Remote Site Interface System on page 1057](#) enabled.



WARNING:

RSI channels are not capable of Emergency Mode transmissions and therefore their referenced Conventional System cannot select an [Emergency Profile Selection on page 1058](#).

RSI channels are not capable of CAI Data functionality and therefore their referenced Conventional System cannot select a [Data Profile Selection on page 1059](#).

Related Features

Zone Set - Remote Site Interface:

- [RSI Mode on page 1289](#)
- [Transmit Indication on page 1289](#)
- [Site Number on page 1290](#)
- [Autodial Enabled on page 1290](#)
- [Time Between Dial Attempts on page 1291](#)
- [DTR Toggle Time on page 1293](#)

Conventional System:

- [Remote Site Interface System on page 1057](#)

Radio Information:

- [MAC Address on page 312](#)

Radio VIP:

- [VIP Output Selections](#)

Incompatible Fields with RSI

Zone Features / Field Selections NOT Capable of Using RSI Zones:

- Radio Ergonomic Wide - Home Mode [Home Mode Zone on page 415](#)
- The Conventional [Digital Vehicular Repeater System \(DVRS\) Feature on page 258](#) System's [Dynamic Regrouping Zone on page 1072](#)
- The Trunking System's [Dynamic Regrouping Zone on page 1213](#)
- The Scan List Member's [Zone on page 1316](#)
- The Action Consolidation's [Zone on page 456](#)

Fields NOT Compatible with RSI:

- **Incompatible Zone Channel Assignment Fields:**
 - [Channel Announcement on page 1296](#)
- **Incompatible Conventional System Fields:**
 - [Emergency Profile Selection on page 1058](#)
 - [Data Profile Selection on page 1059](#)
 - [CAI Data Registration on page 1086](#)
 - [Radio Inhibit on page 1079](#)
- **Incompatible Conventional Personality Fields:**
 - [Scan List Selection on page 1153](#)
 - [Mixed Vote Scan Enable on page 1155](#)
 - [Direct/Talkaround on page 1132](#)
 - [Adaptive Power on page 1101](#)
 - [Time Out Timer on page 1100](#)
 - [Selective Call Rx/Tx on page 1092](#)
 - [Auto Selective Call Transmit on page 1093](#)
 - [Call Alert Rx/Tx on page 1095](#)
 - [In-Call User Alert Enable on page 1096](#)
 - [ASTRO Unlimited Calling on page 1095](#)
 - [ASTRO Call Hot List on page 1097](#)
 - [Talkgroup on page 1098](#)
 - [Smart PTT Type on page 1156](#)
 - [Quick Key Override on page 1157](#)
 - [Phone Operation on page 1165](#)
 - [DTMF Timing Select on page 1166](#)
 - [Auto Access Code Select on page 1166](#)
 - [One Touch One Touch Button Feature on page 1167](#)
 - [One Touch One Touch Button Index on page 1168](#)
 - [Voice Secure/Clear Strapping on page 1110](#)
 - [Ignore Rx Clear Voice on page 1111](#)

3.34

Site Alias

This section allows you to view or define user-friendly aliases that identify either Trunking Systems or individual sites within those Systems that a radio may encounter as it roams across sites, Trunking Systems or even Wide Area Communications Networks (WACNs).

Aliases can also identify calls (with PTT IDs) received from radios outside of the radio's selected (home) Trunking System.



IMPORTANT: Only Site Aliases defined in your current-selected Trunking System are available to the radio.



NOTE:

The Site Alias Type determines what the Site Alias Text is being assigned to, either a Trunking System or a site within a System.



IMPORTANT: A Trunking System is always defined by its Home RAS WACN Number and System Number, while a site is defined by specific combinations of its Home RAS WACN Number, System Number, RFSS Alias Number and Site ID, depending on the current Trunking System's Coverage Type and System Type.

Viewing the current Site Alias and its corresponding received signal strength indicator (RSSI), or changing the current site, is activated with a Site Display/Srch button-press. You can activate Site Lock/Unlock button-press or a Site menu-selection can view or change the current site lock status.

Individual Trunking Systems are referenced to a Trunking Personality. These Trunking Systems settings can then become functional for all channel types within that Trunking Personality.

3.35

Site Selectable Alerts Feature

The Site Selectable Alerts (SSAs) feature broadcast to all radios at a Trunking Dispatch site, notifying you when there is a special or hazardous situation that they need to be aware of.



IMPORTANT: The Voice Announcement Utilities provide the means for converting and importing the audio files used by Site Selectable Alerts.



WARNING: SSAs may occur when receiving a voice transmission. When mixing SSA with received voice audio, SSA alerts are reduced in volume to ensure that the voice message is heard clearly. The SSA audio files must be created with clear loud audio to ensure that the audio files can be heard clearly when played at reduced levels.

Site Selectable Alert List Field

- [Site Selectable Alert List on page 877](#)
- [Site Selectable Alert List Name on page 877](#)
- [Alert Alias on page 878](#)
- [Alert Audio File on page 878](#)
- [Alert Period on page 878](#)
- [Subscriber Encodable on page 879](#)

Voice Announcement Field

- [Site Selectable Alert Allowed in Out of Range on page 876](#)
- [Voice Announcement List on page 879](#), (see the second Workflow Note).

Trunking System Field

- [Site Selectable Alert List Selection on page 1211](#)

Radio -User (Ergonomic) Feature Access

- [Site Selectable Alerts on page 538](#)

Related Feature

- [Voice Announcement Feature on page 304](#)

3.36

Smart Key Fob Feature

The Smart Key Fob (SKF) feature allows you to remotely control the features of a Bluetooth-enabled Portable radio with the six programmable buttons on a wireless Smart Key Fob.



This feature is useful for covert/surveillance operations.



NOTE: A tone is generated through the Bluetooth earpiece when the battery in the SKF is low.

Related Features

Radio-User (Ergonomic) Feature Access - Portable Control:

- [Smart Key Fob Buttons \(Portable Control\)](#)

Also see [Bluetooth Feature on page 253](#)

3.37

Status Feature

When the dispatcher receives the Status message, an appropriate acknowledgment response is sent. The radio provides audible and visual indications that the Status was acknowledged after receiving the response.



NOTE:

- A Status transmission makes more efficient use of a channel as compared to a voice transmission.
- Your Status can only be sent from a portable or mobile unit to a dispatcher.
- For non-keypad models, the Status feature can only be used with the One Touch Button feature.

The Status feature is selected on a per (MDC/ASTRO/DVRS type) Conventional System basis with the Status field. The Status Alias List then allows you to define Status functionality for individual Conventional Systems (see also [Status Number of Attempts on page 1029](#)).

The Status feature is selected on a per (ASTRO 25/Type II type) Trunking System basis with the Status Alias Enable field. The Status Alias Page then allows you to define Status functionality for individual Trunking Systems. This feature applies only when the Trunking Personality that references this Trunking System has its Status Enable field enabled.

Once defined, you can access the Status feature with a [Status on page 494](#) button-press, a [Direct Status on page 739](#) button-press, a [Status on page 539](#) menu-selection, or through the One Touch Button feature (see also [Status Auto Exit on page 784](#)).

3.38

Tactical Inhibit Kill Feature



A radio that has been permanently disabled with the "Kill" command prevents transmitting or receiving of any messages and ensuring that vital communications are not compromised.

Radios must first be programmed with the ability to "encode" and "decode" the Tactical Inhibit Kill command (see [Tactical Inhibit Kill Operation on page 1092](#)).

The [Kill on page 531](#) menu-selection allows you to transmit the "Kill" command and disabled the radio. User must enter the Tactical Inhibit Encode Password before transmitting the Kill command. This password can be changed through [Password on page 534](#) menu-selection.

Using the "Direct Kill" method, you may self-inflict the "Kill" command to a radio. You can accomplish Direct Kill by pressing the radio's "Top (Orange) Button" and "Side Top (Select) Button" simultaneously. The radio is then completely disabled.

For radio codeplugs that have this Tactical Inhibit Kill feature, do not program Channel Up, Channel Down, Zone Up, Zone Down, Zone Bank Up or Zone Bank Down on the "Side Top (Select) Button", as this will prevent you from activating "Direct Kill".

After a radio has been disabled with the "Kill" command, the radio is no longer unmutes to received voice calls and no longer responds to any activity. The radio also erases all of the encryption keys (including ADP keys). The radio responds to the "Kill" command even in Emergency Mode. See [Restoring Radio from "Kill" and "Direct Kill" Command on page 295](#).

Related Features

Radio Wide Fields:

- [Tactical Inhibit Enable on page 337](#)
- [Tactical Inhibit Encode Password on page 338](#)

Conventional Wide Field:

- [Conventional Customer ID \(hex\) on page 1034](#)

Conventional Personality Field

- [Tactical Inhibit Kill Operation on page 1092](#)

Radio Ergonomics Feature Access

- [Kill on page 531](#)

See also [Tactical Inhibit Stun Feature on page 296](#)

3.38.1

Restoring Radio from "Kill" and "Direct Kill" Command

The radio can only be restored to full functionality with the use of an Advanced Conventional Key (ACK).

Procedure:

1. Insert Key Devices into a USB Port Key Device Reader to access ACKs .
2. Perform a Read and Write job for the radio.
3. The ACK loaded must be an exact match for the ACK originally programmed in the radio from the Conventional Customer ID field.

3.39

Tactical Inhibit Stun Feature

The Tactical Inhibit Stun feature allows a radio that has been misplaced to be temporarily disabled through remote commands from another radio.



A radio that has been temporarily disabled with the "Stun" command prevents transmitting or receiving of any messages ensuring that vital communications are not compromised.

The [Stun on page 539](#) menu-selection allows you to transmit the "Stun" command and the radio will be in the Stun mode. User must enter the Tactical Inhibit Encode Password before transmitting the Kill command. This password can be changed through [Password on page 534](#) menu-selection.

Once the Stun command is decoded, the receiving radio is then prompted with a password entry screen; this prevents any unauthorized radio usage. Entering the correct Radio Lock Unlock Password un-Stuns the radio immediately.

If the password is entered unsuccessfully in three consecutive attempts, the radio must be powered off and back on before another attempt may be tried.

While Stunned, the radio no longer unmutes to received voice calls and no longer responds to any of your activity except Radio Lock Unlock Password entries, or your radio initiated "Direct Kill". The radio is still able to decode and respond to a "Kill" command.

Related Features

Radio Wide Fields:

- [Tactical Inhibit Enable on page 337](#)
- [Tactical Inhibit Encode Password on page 338](#)

Conventional Wide Field:

- [Conventional Customer ID \(hex\) on page 1034](#)

Conventional Personality Field [Tactical Inhibit Stun Operation on page 1094](#)

Radio Ergonomics Feature Access

- [Stun on page 539](#)

See also [Tactical Inhibit Kill Feature on page 295](#)

3.40

Tactical Public Safety Feature

The Tactical Public Safety (TPS) feature provides the ability for an Incident Commander to automatically monitor and log Conventional radio communications by radio IDs at the scene of an incident.

In conjunction with analog voice, TPS signaling (see [Incident Signaling Type on page 1157](#)) allows digital packet data Trunking Signaling Blocks (TSBKs) containing the radio IDs to be transmitted upon a PTT button press. These TPS data packets can be sent on the leading edge and the trailing edge of the transmission for both normal calls (see [Radio Wide on page 323](#), [TPS PTT Transmission on page 404](#)) and Emergency Mode calls (see [Radio Wide](#), [TPS Emergency PTT Transmission on page 404](#)). An RF modem, connected to a laptop, monitors radio communications and decodes the TPS TSBKs (including Conventional Alarm TSBKs),

passing the radio IDs to a laptop application that can create automatic communications logs which can later be used when generating incident reports (see also the [Personnel Accountability Feature on page 284](#)).

 **IMPORTANT:** The following Tactical Public Safety fields became available on Portable radios such as the APX™ 7000XE in release R09.00.00. These fields are also available for the APX™ 7500 Mobile radio in release R11.01.00 or later, and APX™ 8500 Mobile radio in R15.00.00 or later.

Related Features

Conventional Personality - Features:

- [Incident Signaling Type on page 1157](#)
- [Tactical Public Safety UI Enable on page 1158](#)

Radio Wide - Tactical Public Safety:

- [Audible Emergency Beacon on page 402](#)
- [Audible Emergency Beacon Routing on page 402](#)
- [Emergency Alarm Retry Rate on page 403](#)
- [Emergency Call De-key Sidetone on page 403](#)
- [TPS PTT Transmission on page 404](#)
- [TPS Emergency PTT Transmission on page 404](#)
- [Voice Tx End Tone on page 402](#)

3.41

Text Messaging Feature

Text Messaging allows you to compose their own messages, or select from a list of predefined text/query messages.

Text Messaging supplies an Inbox Folder for storing received messages, a Draft Folder for storing messages being created, and a Sent Folder for retaining a history of transmitted messages.



NOTE:

A Text Messaging feature is selected on a per (ASTRO type) [Conventional System on page 1056](#) basis with the [Text Messaging Service on page 1080](#) field.

A Text Messaging feature is selected on a per [ASTRO 25 Trunking System](#) basis with the Text Messaging Service field.

The [Data User List on page 964](#) table allows you to view or define [Automatic Registration Service \(ARS\) Feature on page 235](#) and for [User Authentication Feature on page 303](#) Usernames and Unit IDs to be selected for use when alternate-server login credentials are needed.

The [User on page 496](#) button-press and the [User on page 540](#) menu-selection allow you to login to a specific Automatic Registration Service server or a [User Authentication Feature on page 303](#) Unified Network Services (UNS) server with the appropriate Usernames, PIN/Password, and User Login Unit ID combination. Usernames, PINs, and Unit IDs may also be manually entered from the radio's keypad.

You can access Text Messaging with the [Text Messaging Service \(TMS\) on page 604](#) button-press, or the [Text Messaging Service on page 540](#) menu-selection. When [Direct TMS Content Display on page 956](#) is enabled, the Inbox Folder may also be accessed directly upon receiving a text message.

Quick Text Messages and **Text Queries** are defined in the [Quick Text Message List Set](#). The [TMS Quick Text on page 495](#) and [TMS Query on page 495](#) button-press allows for you to directly access the Quick Text and the Query Message features.

3.42

The Advanced Keys Administrator

The Advanced Keys Administrator program allows you to create Advanced (Hardware) Keys, which includes Advanced System Keys (ASKs), Advanced WACN Keys (AWKs) and Advanced Conventional Keys (ACKs).

Advanced Keys allow or deny Trunking System and Trunking Personality Key Protected Fields, and Advanced Conventional Keys allow for certain Conventional feature access.

The Advanced Keys Administrator program allows for customizing of field restriction or access, field range inputs and radio write protection. Once created, Keys are distributed to CPS programmers through a Key Device. The Advanced Keys Administrator program is launched from the CPS Ribbon, Tools, Options, Admin, Advanced Keys Administrator button.

Related Features

- Create an Access Level Definition
- Load a Master System Key from a Key Device (Conventional or Trunking)
- Assign an Access Level (Trunking Dispatch Keys)
- Assign an Access Level (Conventional Dispatch Keys)
- Create an Advanced Key (ASK, AWK, or ACK)
- Password-Protect Advanced Keys

Key Protected Fields Include:

The Trunking System Protected Fields

- [System ID on page 1274](#)
- [Connect Tone on page 1190](#)
- [Home WACN ID on page 1192](#)
- [Unit ID on page 1189](#)
- [Coverage Type on page 1190](#)
- [Site ID on page 1194](#)
- [RFSS ID on page 1193](#)
- [Splinter Channel on page 1220](#)
- [Identifier Enable on page 1200](#)
- [Transmit Offset Sign on page 1201](#)
- [Base Frequency on page 1201](#)
- [Channel Spacing on page 1200](#)
- [Transmit Offset on page 1200](#)
- [Rx Frequency on page 1198](#)
- [Tx Frequency on page 1199](#)
- [POP25 Enable on page 1209](#)

The Trunking Personality Protected Fields

- [Failsoft Type on page 1241](#)
- [Rx Failsoft Frequency by Personality on page 1236](#)
- [Tx Failsoft Frequency by Personality on page 1237](#)

- [Emergency Talkback Revert Talkgroup ID on page 1240](#)
- [Announcement Group on page 1246](#)
- [Announcement Group Failsoft on page 1249](#)
- [AG Failsoft Rx Frequency on page 1250](#)
- [AG Failsoft Tx Frequency on page 1247](#)
- [Talkgroup Failsoft on page 1254](#)
- [Failsoft Rx Frequency on page 1255](#)
- [Failsoft Tx Frequency on page 1251](#)
- [Talkgroup ID on page 1252](#)
- [Secure/Clear Strapping on page 1253](#)
- [Key Select on page 1253](#)

For printing purposes

- [System Key Protected Fields Topic](#)

3.43

The Intercom Feature

The Intercom feature takes advantage of multiple control heads by allowing multiple radios to communicate through a single transceiver without an actual transmissions taking place.

Radio-recognizable aliases may be defined so that during intercom calls, the alias of the calling control head appears in the displays of all other control heads within the local group.

See the Radio Ergonomics Wide, [Control Head on page 416](#) Page for settings related to a multi-control-head to one transceiver configuration; See also the [Intercom Timeout Timer on page 417](#) field.



NOTE: You can access this feature is with the [Intercom on page 598](#) button-press or [Intercom on page 530](#) menu-selection.

3.44

The Message Feature

The Message Feature allows you to select and transmit data messages to the Fixed Network Equipment (FNE)/dispatcher, as a request or an indication that a significant event occurred.

Examples of the messages are:

SEND TOW TRUCK", "LEAVING STATION.

When the dispatcher receives the message, response is sent. The radio will then provide audible and visual indications that the Message was acknowledged.



NOTE:

A Message transmission makes more efficient use of a channel as compared to a voice transmission.

Messages can be sent from a dispatcher to a portable or mobile unit, or from a portable or mobile unit to a dispatcher. However, a Message cannot be sent from a portable or mobile unit to another portable or mobile unit.

Messages are only applicable to display models.



IMPORTANT:

Select the Message feature on (MDC /ASTRO /DVRS type) Conventional System basis from the Message field. The Message Alias List defines Message functionality for individual Conventional Systems.

Select the Message feature on (ASTRO 25/Type II type) Trunking System basis from the Message Alias Enable field. The Message Alias Page defines Message functionality for individual Trunking Systems. This feature applies only when the Trunking Personality that references this Trunking System has the Message Enable field enabled.

After programmed, you can access the Message feature with a Message button-press, a Direct Message button-press, or a Message menu-selection.

3.45

The Status Feature

The Status Feature allows you to select and transmit Status messages to the Fixed Network Equipment (FNE)/dispatcher.

When the dispatcher receives the Status message, an appropriate acknowledgment response is sent. Upon receipt of this response, the radio provides audible and visual indications that the Status was acknowledged.



NOTE:

A Status transmission makes more efficient use of a channel as compared to a voice transmission.

Your status can only be sent from a portable or mobile unit to a dispatcher.

For non-keypad models, the Status feature can only be used with the One Touch Button feature.



IMPORTANT:

Select the Status feature on (MDC /ASTRO /DVRS type) Conventional System basis from the Status field. The Status Alias List defines Status functionality for individual Conventional Systems.

Select the Status feature on (ASTRO 25/Type II type) Trunking System basis from the Status Alias Enable field. The Status Alias Page defines Status functionality for individual Trunking Systems. This feature applies only when the Trunking Personality that references this Trunking System has the Status Enable field enabled.

After programmed, you can access the Status feature with a Status button-press, a Direct Status button-press, a Status menu-selection, or through the One Touch Button feature.

3.46

The Tone Signaling Feature

Tone Signaling provides a Project 25-compatible variant of (analog) Quik-Call II decoding functionality, designed to operate on ASTRO Conventional and ASTRO 25 Trunking digital networks.

As with Quik-Call II, Tone Signaling is commonly used in the Fire Service Industry to selectively alert first responders to an incident by broadcasting a series of distinct, recognizable tones followed by a

voice transmission from dispatch. This allows an entire fire department to be simultaneously alerted to an emergency situation, as opposed to unit-to-unit dispatch.

There is also a provision to allow you to keep your radio in a muted mode until a specific tone or tone pair has been decoded by the radio. Following the alert, the dispatcher can transmit their dispatch information to the radio group.



IMPORTANT: Currently, only Tone Signaling Decode is supported by APX radios, as the signaling tones are initiated by a dispatch console only. Singletone, two-tone entries, and controlling an external device (through a VIP Output connection) are possible whenever valid tones are decoded.

Related Features

Radio Ergonomics Configuration - Tone Signaling List:

- [Tone List Alias on page 844](#)
- [Tone 1 Freq on page 845](#)
- [Tone 2 Freq on page 850](#)
- [Unmute Enable on page 851](#)
- [Alert Tone on page 851](#)
- [External Control on page 852](#)

Conventional Personality Field:

- [Tone Signaling List on page 1106](#)
- [In-Call User Alert Enable on page 1096](#), see the Accessed Only

Trunking Personality Field:

- [Tone Signaling List on page 1259](#)
- [In-Call User Alert Enable on page 1257](#), see the Accessed Only

Radio VIP Output Selection:

- [Aux Control \(1-3\) on page 760](#)

Radio-User (Ergonomic) Feature Access:

- [Aux Control](#) button-press
- [Aux Control on page 525](#) menu-selection

3.46.1

Configuring Tone Signaling

Settings on the Tone Signaling List determine the specific tone frequencies that unmute the radio and play alert tone whenever the radio decodes matching tone broadcast from the dispatch console.

Procedure:

1. Perform one of the following actions:
 - For ASTRO 25 Trunking, select channels and individual Tone Signaling Lists for Trunking from the Digital Tone Signaling List field. Enable the In-Call User Alert Enable to stay muted.
 - For ASTRO Conventional, select channels and individual Tone Signaling Lists for Conventional from the Tone Signaling List field. Enable the In-Call User Alert Enable to stay muted.
2. Set VIP Output to an "Aux Control" for External Control.
3. Set the Voice Mute button-press or Voice Mute menu-selection to toggle on and off the Voice Mute functionality on In-Call User Alert-enabled channels.

3.47

Transmit Power Levels

This section allows you to view or define transmit (Tx) low and transmit high power settings, within predefined limits.



IMPORTANT:

There are unique Transmit Power Level configurations (records/rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug apply and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency bands supported by the radio.

Due to high variation of power capabilities across all models supported by this application, and multiple band variations within each model, the entire Tx Power Levels table is blocked during data transfer operations such as Drag and Drop and Import/Export.



NOTE:

To fully comply with regulatory output power level requirements, Part 80 Marine users operating between 154 – 162.025 MHz (VHF Band) and 454 – 470 MHz (UHF Band) must program the transmit power from the defaults to a level not exceeding the values given in the table below.

Note that this reduced power restriction applies only to certain models of the radio and strictly for Part 80 Marine frequencies. Check your license for any additional restrictions on output power.

Product Family Description	FCC/IC	Frequency Range/Output Power
APX NEXT	AZ489FT7147/109U-89FT714 7	156 – 162.025 MHz/5 W 454 – 470 MHz/2 W
APX4500/APX6500 Mid Power (VHF)	AZ492FT7130/109U-92FT713 0	156 – 162.025 MHz/47.5 W
APX4500/APX6500 Mid Power (UHF R1)	AZ492FT7129/109U-92FT712 9	454 – 470 MHz/1 W

3.48

Unified Call List (UCL) Feature

The Unified Call List and Hot List Feature allows you to create a list of up to 2500 Contacts.

Each contact contains up to five Call IDs with information of Conventional signaling types, Trunking coverage types, and Phone connectivity parameters. After the Contacts/Call IDs have been defined, the Contacts/Call IDs are used to build individual Call Hot Lists which are then selected for Conventional or Trunking Personalities.

User access to the Call Hot Lists is initiated with a [Contacts on page 485](#) button-press or [Contacts on page 528](#) menu-selection. Depending on the currently-selected Personality (Conventional or Trunking), individual Call Hot Lists facilitate one or more of the four types of radio calls:

- Phone Call
- Selective Call
- Private Call
- Call Alert

Related Features

- [Unified Call List on page 1270](#)
- [Call List Wide on page 1268](#)
- [Contact](#)
- [ASTRO 25 Trunking Hot List on page 1278](#)
- [Type II Trunking Hot List on page 1279](#)
- [ASTRO Conventional Hot List on page 1280](#)
- [MDC Conventional Hot List on page 1281](#)
- [Phone Hot List on page 1282](#)

3.49

Universal Relay Controller (URC)

The Universal Relay Controller (URC) is a hardware device consisting of 10 relays that, when connected to a Motorola Solutions mobile transceiver with the Global Core Accessory Interface (GCAI) connector, facilitates control of first-responder vehicular equipment such as lightbars and strobe lights.



Up to 25 different Relay Patterns are configurable, where each pattern can toggle the URC's 10 relays to a unique set of states.

Using the [O9 Control Head on page 282](#), you are then able to control the Relay Patterns with a [Relay Pattern on page 547](#) button-press, which includes the three dedicated [Directional Buttons \(CH-O9\)](#). Multiple relay patterns may be active at the same time. Alternately, a [Relay Pattern on page 452](#) action may be included within a Consolidated Action, which you can then activate with an [Action Consolidation on page 588](#) button-press or Response Selector position.

Related Features

Radio Wide:

- [Universal Relay Controller on page 382](#) section

Action Consolidation:

- [Relay Pattern on page 452](#)

O9 Control Head Controls:

- [Relay Pattern on page 547](#)
 - See also [Directional Buttons \(CH-O9\)](#) section
- [Action Consolidation on page 588](#) Button Press or [Response Selector Feature](#)
 - See also [Response Selector \(CH-O9\)](#) section

3.50

User Authentication Feature

The User Authentication feature includes two levels of authentication: Single Factor Authentication and Two Factor Authentication.

User Authentication expands upon legacy [Automatic Registration Service \(ARS\) Feature on page 235](#) capabilities by providing enhanced data services, and allowing for stricter User Authentication policies whenever you access sensitive data over-the-air.

Single Factor Authentication adds another level of radio grouping as compared to the ARS legacy protocol, which includes the [User Login Unit ID on page 332](#).

Two Factor Authentication also includes the Unit ID credential and adds another level of radio verification as compared to Single Factor Authentication in the form of an additional passcode. This passcode is never stored in the radio.



NOTE:

At a system level, Unified Network Services (UNS) replaces the legacy Presence Notification (PN)/ARS server by implementing the same legacy functionality. Additionally, UNS provides communication with a PremierOne server, which provides for enhanced data related services such as [Text Messaging Feature on page 297](#) (TMS) - [TMS Query on page 495](#) and Dispatch Text Messaging Service (TMS).

As is the case with legacy [Automatic Registration Service \(ARS\) Feature on page 235](#), User Authentication allows you to be associated with the radio so that the various data services (such as [Text Messaging Feature on page 297](#)) may take advantage of a friendly [Username](#) that is independent of the IP address assigned to the radio itself.

Related Features

- [Soft ID/Username on page 331](#)
- [PIN/Password on page 332](#)
- [User Login Unit ID Enable on page 332](#)
- [User Login Unit ID on page 332](#)
- [Delete Messages When Session Ends on page 953](#)
- [Cached Credentials User Login Mode on page 341](#)
- [Quick Text Message on page 965](#) feature and the [TMS Query on page 495](#) button selection
- [Text Messaging Feature on page 297](#)
- [Data User List on page 964](#)
- [User on page 496](#) button-press and the [User on page 540](#) menu selection
- [ARS Mode on page 995](#)

3.51

Voice Announcement Feature

The Voice Announcement feature allows you to convert, import, and assign audio prompts after a zone or channel change and status change of certain radio features.

The audio prompts automatically play when you change the radio's zone or channel to a zone or channel with audio file assigned. [Channel Announcement on page 484](#) button-press also allows you to listen to the current channel's audio announcement whenever needed.



NOTE: The Voice Announcement Utilities also provide the means for converting and importing the audio files used by [Site Selectable Alerts Feature on page 293](#).

Individual voice files have a maximum duration of 3 seconds.

Related Features

Voice Announcement Utilities:

- [Voice Announcement Converter](#)
- [Voice Announcement List on page 879](#)
- [Voice Announcement Codeplug Usage Window on page 130](#)
- [Voice Announcement Download](#)

Voice Announcement for Zones and Channels Fields:

- Zone Channel Assignment's [Zone Announcement on page 1286](#)
- Zone Channel Assignment's [Channel Announcement on page 1296](#)

Voice Announcement for Radio Features:

- [Voice Announcement Priority on page 853](#)
- [Scan On on page 854](#) and [Scan Off on page 855](#)
- [Monitor On on page 856](#) and [Monitor Off on page 857](#)
- [Direct Mode On on page 858](#) and [Direct Mode Off on page 859](#)
- [Tx Inhibit On on page 860](#) and [Tx Inhibit Off on page 861](#)
- [In-Call User Alert On on page 862](#) and [In-Call User Alert Off on page 863](#)
- [Emergency On on page 861](#)
- [Secure Tx Select On on page 864](#) and [Secure Tx Select Off on page 865](#)
- [Keypad/Controls Lock On on page 866](#) and [Keypad/Controls Lock Off on page 867](#)
- [Multi-Functional Button Primary Mode on page 868](#) and [Multi-Functional Button Secondary Mode on page 869](#)
- [Site Selectable Alert Allowed in Out of Range on page 876](#)

3.52

Voice Mute

This menu-selection allows you to toggle on and off Voice Mute functionality for In-Call User Alert-enabled channels.

When Voice Mute is active, the radio remains muted to all Conventional communications calls and affiliated Trunking Talkgroup calls. Group and individual Call Alert/Pages do unmute the radio for the alert tone; also, when Voice Mute is active, the radio does unmute to individual radio-to-radio calls such as Selective/Private Calls and Interconnect (phone mode) calls.

3.53

Write Protect and the Owner ID

Write Protection for a radio is used to guard against unauthorized codeplug modifications in the event of radio theft.

The radio's write protect status is tied to the radio's Owner ID, both of which may be viewed and/or defined with two distinct methods: Codeplug Open or Codeplug Closed.

For both methods, the write protection process begins by creating an **Owner ID** Advanced Key in the Advanced Keys Administrator program.



NOTE: A radio's Write Protection can also be cleared by an authorized Motorola Solutions Service Center.

The Codeplug Closed Method

View or Modify a Radio's Write Protect Status and/or the Radio's Owner ID



NOTE:

When Viewing the radio's [Write Protect on page 126](#) Status, [Key Type on page 125](#) and [Owner ID](#):

- An **Unlimited Access** Advanced Key must be loaded in the application (see the [System Key Report on page 105](#)) and also attached to your computer's USB port.
- Click the [Query Radio Button on page 126](#) (from the [Query/Update Radio Data on page 124](#) page).

When enabling or disabling the radio's Write Protection:

- An **Unlimited Access** Advanced Key that has a **System ID** that matches the radio's current [Key Type on page 125](#) and [Owner ID on page 126](#) must be loaded in the application (see the [System Key Report on page 105](#)) and also attached to your computer's USB port.
- Make the appropriate [Write Protect on page 126](#) field selection (from the [Query/Update Radio Data on page 124](#) page).
- Click the [Update Radio Data Button on page 126](#).

When updating the [Key Type on page 125](#) and/or updating an [Owner ID on page 126](#):

- An **Unlimited Access** Advanced Key that has a **System ID** that matches the radio's current [Key Type on page 125](#) and [Owner ID on page 126](#) must be loaded in the application (see the [System Key Report on page 105](#)) and also attached to your computer's USB port.
- A **Limited** or **Unlimited** Advanced Key which matches the new [Key Type on page 125/Owner System ID](#) (if being changed) must be loaded in the application (see the [System Key Report on page 105](#)) and also attached to your computer's USB port.
- First select the desired [Key Type on page 125](#) (from the [Query/Update Radio Data on page 124](#) page), then select the desired [Owner ID on page 126](#) from the drop-down list.
- Click the [Update Radio Data Button on page 126](#).

The Codeplug Open Method

View the Radio's Owner ID and Modify a Radio's Write Protect Status



NOTE:

When Write-Protecting Radios and Writing to Write Protected Radios the following must be true:

1. An **Unlimited Access** and **Write Protect** enabled Advanced Key (see the [Advanced Keys Administrator](#)) that also has a **System ID** that matches the [Owner System ID on page 325](#) or the [Owner WACN ID on page 326](#) is currently loaded into the application (see the [System Key Report on page 105](#)).



NOTE: This Advanced Key does not have to be currently assigned to one of the codeplug's [Trunking Systems](#).

2. The [ASK Required on page 325](#) field must be enabled.
3. When clicking the application's Write Device button to Write Protect the Radio, the Key Device containing the Write-Protect-enabled Advanced Key, defined in Step 1 is currently attached to your system's USB port with the Key Device Reader.



NOTE: Write protecting multiple radios is also possible with the POP25 Batch Programming operation. In order to write protect during Batch Programming, the Write Protect Radios If Write Protected Key is Attached field must be enabled, and the an Owner ID Key match (loaded and attached) must exist for each target radio when scheduling the Batch Programming.

Disabling a Radio's Write Protection:

1. An **Unlimited Access** and **Write Protect** disabled Advanced Key (see the [Advanced Keys Administrator](#)) that also has a **System ID** that matches the [Owner System ID on page 325](#) or the [Owner WACN ID on page 326](#) is currently loaded into the application (see the [System Key Report on page 105](#)).



NOTE: This Advanced Key does not have to be currently assigned to one of the codeplug's [Trunking Systems](#).

2. The [ASK Required on page 325](#) field must be enabled.
3. When clicking the application's **Write Device** button to Write Protect the Radio, the Key Device containing the Write-Protect-enabled Advanced Key, defined in Step 1 is currently attached to your system's USB port with the Key Device Reader.

3.54

Zone Bank Feature

The Zone Bank Feature allows for more efficient use of buttons, switches and rotary of zone navigation and zone/channel selection.



NOTE:

- A Zone Bank consists of three zones. For Example: The [Zone Bank Up on page 498](#) and the [Zone Bank Down on page 497](#) programmable button selection allows you to change the "three zone set" that is currently available to the Position A/B/C toggle switch.
- Only one "Zone Bank" button needs to be programmed; either **Zone Bank Up** or **Zone Bank Down**; therefore with consecutive button presses, you are able to scroll through the entire list of Zone Banks.

When the [Zone Bank Operation on page 435](#) field is set to **Enhanced**, faster scrolling through Zone Banks is possible with a Long Keypress Duration of a Zone Bank Up or a Zone Bank Down programmable button.



IMPORTANT:

- When assigning Zone Bank Up or Zone Bank Down to a programmable button, Zone Select is automatically assigned to the Position A/B/C Toggle switch.
- The Rotary may then only be set to the Channel Select selection. Only 16 channels are possible per zone when using the Rotary as the channel selector.

Related Feature

- [Zone Bank Operation on page 435](#)
- [Number of Zone Banks on page 437](#)
- [Zone Bank Up on page 498](#)
- [Zone Bank Down on page 497](#)
- [Switch Selections](#)
- [Zone Select on page 513](#)
- [Rotary Selections](#)
- [Channel Select on page 509](#)

3.55

Zone to Zone Cloning

The Zone Cloning feature allows you to duplicate zones and all of its channels and channel programming, from one radio to another radio without using the application.

You must enable [Zone Clone Enable on page 344](#) and select [Zone Cloning \(CLON\) on page 541](#) menu item. Zone Cloning is only possible on a per zone basis if [Clone Enable on page 1285](#) field is enabled. Zone Cloning password protection is possible; see the [Protected Zone Password on page 333](#) field.



IMPORTANT:

Talkgroup, ASTRO System, Personalities, and Channels are automatically created when you enable this feature.

You cannot manually delete or move the automatically created records.

This feature is supported by Model 2 and above.

When cloning zones from a radio without a Keypad, if the target radio has protected zones, the protected zones are not copied and ignored.

Clonable zones must be continuous, and start with first zone.

To protect cloning data integrity, drag and drop operation is disabled for every Zone with Clone Enable flag set and drag is disabled for Zone Channel Assignment if any Zone has Clone Enable flag set in the source codeplug. Drop is disabled for Zone Channel Assignment if any Zone is Clone Enabled in target codeplug. Import operation is allowed only when cloning feature is disabled both in codeplug from the source XML and the target codeplug for every zone.

If both source and target codeplug do not have cloning disable, drag and drop operation is allowed. This also applies to import operation.

Each dynamic clonable zone reduces the maximum number of personalities by 16.

The zone can be set as cloned when:

- The total number of channels on the radio is less or equal than (maximum channels and number of channel in a zone is 16)
- The total number of personalities on the radio is less or equal than (maximum personalities is 16)



NOTE: This feature only supports 15 clone enable zone. Since this feature will automatically add Channels and Conventional Personalities, ASTRO Talkgroup, and Conventional System, make sure the remaining records of each table is enough. You will receive an error or warning if there are not enough remaining records to be added. There must be at least 1 remaining record for ASTRO Talkgroup and Conventional System and 16 remaining records for Channels and Conventional Personalities.

Related information

Radio Wide - Zone Cloning Feature:

- [Zone Clone Enable on page 344](#)
- [Protected Zone Password on page 333](#)

Radio-User menu-selection:

- [Zone Cloning \(CLON\) on page 541](#) menu-selection

Zone/Channel Assignment - Zone Cloning Feature:

- [Clone Enable on page 1285](#)
- [Personality on page 1296](#)
- [Channel Type on page 1295](#)

Conventional Personality Features Impacted by Zone Cloning Feature:

- [Receive Only Personality on page 1162](#)
- [Frequency Options on page 1125](#)
- [ASTRO System on page 1102](#)
- [Non-ASTRO Signaling Type on page 1107](#)

- [Selective Call Rx/Tx on page 1092](#)
- [Talkgroup List on page 1099](#)
- [User Selectable PL \[MPL\] on page 1142](#)
- [ASTRO Talkgroup ID on page 1140](#)
- [Selection Type on page 1099](#)
- [Mixed Vote Scan Enable on page 1155](#)
- [Voice Secure/Clear Strapping on page 1110](#)
- [Packet Data Secure/Clear Strapping on page 1111](#)
- [ASTRO OTAR on page 1114](#)
- [Analog Flat Audio on page 1123](#)
- [RF Modem on page 1153](#)
- [Incident Signaling Type on page 1157](#)
- [Scan List Selection on page 1153](#)

Chapter 4

Codeplug Configuration

4.1

Radio Information

This section allows you to view radio identity information used when programming or troubleshooting a radio.



NOTE: The Radio Information is only visible when editing a radio Configuration.

4.1.1

General

This section displays read-only model, serial number and version information for the attached radio.

4.1.1.1

Codeplug Alias

This field allows you to define recognizable names for the codeplug.

In addition, the serial number for the radio appears at the top of the Tree View.

This alias stays with a codeplug even when the codeplug is cloned to another radio.



NOTE:

Characters, numbers, spaces, and special characters can be used.

31 characters in total are possible.

4.1.1.2

Model Number

The application retrieves and displays the read-only attached radio's model number.

The model number identifies the type of radio. This information is stored in the radio's codeplug.

4.1.1.3

Maximum Channels

The application retrieves and displays the read-only maximum number of Conventional and Trunking communications channels possible for the currently attached radio.

This maximum channel number applies when defining zones and channels in the Zone Channel Assignment window.



IMPORTANT: This maximum number of channels are determined by the radio model and is only changeable through a FLASHport Upgrade.

Accessed Only: When the radio is model / option capable.

4.1.1.4

Serial Number

The application retrieves and allows you to view the attached radio's serial number. Each radio has its own unique serial number stored in the radio's codeplug.

4.1.1.5

VHF Enable

This field specifies whether the VHF Band is enabled on the radio.

Accessed Only: When the radio is model/option capable.

4.1.1.6

UHF1 Enable

This field specifies whether the UHF1 Band is enabled on the radio.

Accessed Only: When the radio is model/option capable.

4.1.1.7

UHF2 Enable

This field specifies whether the UHF2 Band is enabled on the radio.

Accessed Only: When the radio is model/option capable.

4.1.1.8

700 MHz Enable

This field specifies whether the 700 MHz frequency band is enabled on the radio.

Accessed Only: When the radio is model/option capable.

4.1.1.9

800 MHz Enable

This field specifies whether the 800 MHz frequency band is enabled on the radio.

Accessed Only: When the radio is model/option capable.

4.1.1.10

MAC Address

The application retrieves and displays the unique 6-byte Ethernet Media Access Control (MAC) Address. This information is read-only.



This information is stored in the radio codeplug, that identifies the mobile radio to the network.



NOTE: If the Ethernet MAC address field is not assigned, the Wi-Fi MAC address is applied. The Ethernet and Wi-Fi connection cannot be used on the same network simultaneously.

Applies Only: When the radio is a mobile radio.

4.1.1.11

Secure Hardware Version

The application retrieves and displays the attached radio's current secure hardware version number in the read-only mode.

4.1.1.12

Option Board Name

The application retrieves and allows you to view the list of options available in the Option board in the currently attached radio.



NOTE: When the application reads this information from a codeplug file, this field displays **N/A**.

Accessed Only: When the radio is model/option capable.

4.1.1.13

Display Codeplug Alias

This check box enables you to display the text saved in the Codeplug Version field in the codeplug for a short period on radio displays during the radio power-up process.

4.1.1.14

Primary Frequency Band

The application retrieves and displays the read-only primary frequency band possible for use in the current radio.

4.1.1.15

Secondary Frequency Band

The application retrieves and displays the read-only secondary frequency band possible for use in the current radio.

This field is only applicable for Dual Band radios.

Accessed Only: When the radio is model/option capable.

4.1.1.16

Codeplug Version

The application retrieves and displays the attached radio's current codeplug version number in the the read-only mode.

This is stored in the radio's internal codeplug.

4.1.1.17

Firmware Version

The application retrieves and displays the read-only firmware version of the currently attached radio.

Firmware is a software that controls the internal hardware components of the radio. Firmware can only be modified by a FLASHport Upgrade.

When the the application reads this information from a codeplug file (not from a radio), this field displays **Unknown**.

4.1.1.18

DSP Version

The application retrieves and displays the read-only software DSP (Digital Signal Processing) version of the currently attached radio.

This information is stored in the radio's internal codeplug.

4.1.1.19

Secure Version

The application retrieves and displays the attached radio's current secure hardware version number in the read-only mode.

4.1.1.20

Tuning Version

The application retrieves and displays the attached radio's current software tuning version number in the read-only mode.

This is stored in the radio's internal codeplug.

4.1.1.21

PSDT Version

The application retrieves and displays the read-only software PSDT version of the attached radio.

This information is stored in the radio's internal codeplug.

4.1.1.22

Bootloader Version

The application retrieves and displays the read-only software Bootloader version of the attached radio.

This information is stored in the radio's internal codeplug.

4.1.1.23

Regional Governance

The application retrieves and displays the read-only whether the radio is compliant with the regulations and standards.

The regulations and standards the radio may comply are of the Federal Communications Commission (FCC) / Telecommunications Industry Association (TIA), the Radio and Telecommunications Terminal Equipment Directive (RTTE) / European Telecommunications Standards Institute (ETSI), or the Australian Communications and Media Authority (ACMA).



NOTE: When this field is set to **ACMA**, the radio/codeplug supports the "Extended UHF Range 1 Capable" Extended Feature, and the Used in Codeplug field is set to **Permanently Enabled**. In this case, the end value of UHF Range 1 extends to 472 MHz.

4.1.1.24

Wi-Fi Regulatory Region

This field specifies the Wi-Fi Regulatory Region used by the Wi-Fi controller in the radio.

The following channels will be used in the 2 GHz Spectrum:

- Federal Communications Commission (FCC) = Channels 1 - 11
- European Telecommunications Standards Institute (ETSI) = Channels 1 - 13

4.1.1.25

Secure Hardware Type

The application retrieves and displays the attached radio's current secure hardware type in the read-only mode.

4.1.1.26

Secure Hardware Version

The application retrieves and displays the attached radio's current secure hardware version number in the read-only mode.

4.1.1.27

TXM Certificate

This field enables the user to view the name of the RSI device certificate installed in the radio.

4.1.1.28

Option Board Version

The application retrieves and allows you to view the firmware version of the Option board in the currently attached radio.

Firmware is software that controls the internal hardware components of the Option board. Firmware can only be modified with a FLASHport Upgrade.



NOTE: When the application reads this information from a codeplug file, this field displays **N/A**.

Accessed Only: When the radio is model/option capable.

4.1.2

Tracking

This section displays Date and Time-stamped information and codeplug version useful when programming and troubleshooting the radio Configuration.

4.1.2.1

Last Programmed Time and Date

The application retrieves and allows you to view the most recent time and date (in day-month-year format) at which the currently attached radio was programmed.

This information is sometimes useful in preparation for the cloning process. This information is stored in the radio's codeplug.

4.1.2.2

Last Programmed Source

The application retrieves and allows you to view the most recent source used to program the currently attached radio.

This information is stored in the radio's codeplug.

The following source are displayed:

CPS

Programmed by a standard CPS.

Factory

Programmed in the factory.

Lab

Programmed using special development version.

FTR Key

Programmed using an FTR System Key.

4.1.2.3

Original Programmed Time and Date

The application retrieves and allows you to view the original time and date (in day-month-year format) on which the currently attached radio was programmed for the first time.

This information is sometimes useful in preparation for the Cloning process. This information is stored in the radio's codeplug.

4.1.2.4

Original Programmed Codeplug Version

The application retrieves and displays the read-only current codeplug version number of the attached radio's.

This is stored in the radio internal codeplug.

4.1.2.5

Original Programmed Source

The application retrieves and allows you to view the original source used to program the currently attached radio.

This information is stored in the radio's codeplug.

The following source are displayed:

CPS

Programmed by a standard CPS.

Factory

Programmed in the factory.

Lab

Programmed using special development version.

FTR Key

Programmed using an FTR System Key.

Hosted

Programmed using Hosted Depot Software.

4.1.3

FLASHport

This section displays read-only information about the most recent FLASHport Upgrade process.

The FLASHport process (also known as FLASHing) allows the programmer to upgrade the currently attached radio's System Package, System Options, Firmware and Secure Encryption capability.

4.1.3.1

FLASHcode

The application retrieves and displays the read-only number that identifies the Feature Set for the purchased FLASHcode in the currently attached radio.

This information is stored in the radio's codeplug.



IMPORTANT: Within the Motorola Solutions APX™ family of radios, certain features/options that are purchasable in Entry- and Mid-tier models are included in High-tier models. Only features that have been purchased appear in the FLASHcode.

4.1.3.2

Number of Times Flashed

The application retrieves and displays the total number of times the attached radio was upgraded in the read-only mode.

This information is stored in the radio's codeplug.

4.1.3.3

I-Button

The application retrieves and displays the read-only serial number of the Key Device - FLASHkey or Depot Key that last flashed in the currently attached radio.

This information is stored in the radio's codeplug and is only applicable when the radio has been upgraded. Before upgrade, this serial number contains all zeros.

4.1.3.4

Last Upgrade Source

The application retrieves and displays the most current upgrade source in read-only mode for the currently attached radio.

This information is stored in the radio's codeplug.

4.1.3.5

Last FLASHed Time and Date

The application retrieves and displays the read-only most recent time and date (in day-month-year format) at which the currently attached radio was upgraded (also known as FLASHing).

This information is stored in the radio's codeplug.

4.1.4

Advanced System Key Info

This section displays read-only radio programming history for operations that require an Advanced Key.

The programming history data includes: the date of programming and the Serial Number of the Key device (of the Advanced Key) that allowed the operation to be performed. Up to 25 programming dates are possible.



IMPORTANT:

Programming operations that require an Advanced Key include: write protecting a radio, writing to a write-protected radio, and enabling/disabling the ASK Required field in a radio.

Programming operations that do not require an Advanced Key do not record any data.

This feature is useful when looking at the program history of a radio that may have been stolen and then recovered. This is true as long as the serial number and the Advanced Key information of the Key Device used to program the radio was recorded for tracking purposes.

4.1.4.1

Last Programmed Time and Date

The application displays the read-only programming times/dates (in day-month-year format) of the current codeplug for operations that required an Advanced Key.

Up to 25 of the latest programming times and dates are retained by the codeplug.



IMPORTANT:

- Programming operations that require an Advanced Key include: write protecting a radio, writing to a write-protected radio, and enabling/disabling the ASK Required field in a radio.
- Whenever an operation that requires an Advanced Key is performed on a radio, the new time and date is added to the radio's programming history, and may be reviewed by reading the radio codeplug once the write or cloning operation is completed.

4.1.4.2

Serial Number

The application retrieves and displays the read-only Serial Number of the Key Devices(s) containing the Advanced (Hardware) Key(s) used for past programming operations that required an Advanced Key.

Only one Key Device Serial Number is stored per operation; the specific Serial Number stored is of the Key Device containing the Owner System ID or the Owner WACN ID Advanced Key.

Up to 25 of the latest Key Device Serial Numbers are retained in the codeplug.



IMPORTANT:

- Programming operations that require an Advanced Key include: write protecting a radio, writing to a write-protected radio, and enabling/disabling the ASK Required field in a radio.
- Whenever an operation that requires an Advanced Key is performed on a radio, the new Key Device Serial Number is added to the radio's programming history, and may be reviewed by reading the radio codeplug once the write or cloning operation is completed.

4.1.5

Frequency Ranges

This section allows you to set up frequencies within the codeplug that are outside the frequency band capabilities of a particular radio.

 **NOTE:** This is useful where a Trunking or Conventional system supports dual frequency bands but specific radios in that system are single band. In this case, you are still able to read and write codeplugs, and clone between radios, even when some frequency bands in the codeplug are invalid.

 **WARNING:** When the Allow Invalid Frequencies field is enabled, there is no warning when you attempt to write to the codeplug (write, clone, or FLASHport) and there are channels programmed that will not function in the radio.

4.1.5.1

Allow Invalid Frequencies

This field enables you to enter frequencies for bands that are not supported by the capabilities of the radio.

 **WARNING:** The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

When disabled, then only the frequencies supported by the radio are allowed.

 **WARNING:** When this feature is enabled, there is no warning when you attempt to write to the codeplug (write, clone, or FLASHport) and there are channels programmed that will not function in the radio.

4.1.5.2

VHF Used in Codeplug

This check box enables you to enter frequencies from the VHF frequency band into the codeplug, regardless of the radio's capabilities.

 **WARNING:** The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

 **IMPORTANT:** Enabling this field and programming VHF frequencies into the radio will not allow a radio to operate within the VHF frequency range. The radio must have the necessary hardware and supporting FLASHcode to support this band.

 **NOTE:** If the frequency band has already been purchased for the radio as represented in the FLASHcode, then this field will be enabled and will not be editable.

Accessed Only: When the Allow Invalid Frequencies field is **Enabled** and when the radio is model/option capable.

4.1.5.3

UHF1 Used in Codeplug

This check box enables you to enter frequencies from the UHF1 frequency band into the codeplug, regardless of the radio's capabilities.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.



IMPORTANT: Enabling this field and programming UHF1 frequencies into the radio will not allow a radio to operate within the UHF1 frequency range. The radio must have the necessary hardware and supporting FLASHcode to support this band.



NOTE: If the frequency band has already been purchased for the radio as represented in the FLASHcode, then this field will be enabled and will not be editable.

Accessed Only: When the Allow Invalid Frequencies field is **Enabled** and when the radio is model/option capable.

4.1.5.4

UHF2 Used in Codeplug

This check box enables you to enter frequencies from the UHF2 frequency band into the codeplug, regardless of the radio's capabilities.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.



IMPORTANT: Enabling this field and programming UHF2 frequencies into the radio will not allow a radio to operate within the UHF2 frequency range. The radio must have the necessary hardware and supporting FLASHcode to support this band.



NOTE: If the frequency band has already been purchased for the radio as represented in the FLASHcode, then this field will be enabled and will not be editable.

Accessed Only: When the Allow Invalid Frequencies field is **Enabled** and when the radio is model/option capable.

4.1.5.5

700 MHz Used in Codeplug

This check box enables you to enter frequencies from the 700 MHz frequency band into the codeplug, regardless of the radio's capabilities.



IMPORTANT: Enabling this field and programming 700 MHz frequencies into the radio will not allow a radio to operate within the 700 MHz frequency range. The radio must have the necessary hardware and supporting FLASHcode to support this band.



NOTE:

Currently, there is only one available H-Option QA00569 for 7/800 MHz. Therefore, you should enable or disable both 700 MHz Used in Codeplug and 800 MHz Used in Codeplug at the same time.

If the frequency band has already been purchased for the radio as represented in the FLASHcode, then this field will be enabled and will not be editable.

Accessed Only: When the Allow Invalid Frequencies field is **Enabled** and when the radio is model/option capable.

4.1.5.6

7/800 MHz Used in Codeplug

This check box enables you to enter frequencies from the 7/800 MHz frequency bands into the codeplug, regardless of the radio's capabilities.



IMPORTANT: Enabling this field and programming 7/800 MHz frequencies into the radio will not allow a radio to operate within the 7/800 MHz frequency range. The radio must have the necessary hardware and supporting FLASHcode to support this band.



NOTE: If the frequency band has already been purchased for the radio as represented in the FLASHcode, then this field will be enabled and will not be editable.

Accessed Only: When the [Allow Invalid Frequencies on page 319](#) field is **Enabled** and when the radio is model/option capable.

4.1.5.7

800 MHz Used in Codeplug

This check box enables you to enter frequencies from the 800 MHz frequency band into the codeplug, regardless of the radio's capabilities.



IMPORTANT: Enabling this field and programming 800 MHz frequencies into the radio will not allow a radio to operate within the 800 MHz frequency range. The radio must have the necessary hardware and supporting FLASHcode to support this band.



NOTE: Currently, there is only one available H-Option QA00569 for 7/800 MHz. Therefore, you should enable or disable both 700 MHz Used in Codeplug and 800 MHz Used in Codeplug at the same time.

If the frequency band has already been purchased for the radio as represented in the FLASHcode, then this field will be enabled and will not be editable.

Accessed Only: When the Allow Invalid Frequencies field is **Enabled** and when the radio is model/option capable.

4.1.5.8

8/900 MHz Used in Codeplug

This check box enables you to enter frequencies from the 8/900 MHz frequency band into the codeplug, regardless of the radio's capabilities.



IMPORTANT: Enabling this field and programming 8/900 MHz frequencies into the radio will not allow a radio to operate within the 8/900 MHz frequency range. The radio must have the necessary hardware and supporting FLASHcode to support this band.



NOTE: If the frequency band has already been purchased for the radio as represented in the FLASHcode, then this field will be enabled and will not be editable.

Accessed Only: When the [Allow Invalid Frequencies on page 319](#) field is **Enabled** and when the radio is model/option capable.

4.1.5.9

900 MHz Used in Codeplug

This check box enables you to enter frequencies from the 900 MHz frequency band into the codeplug, regardless of the radio's capabilities.



IMPORTANT: Enabling this field and programming 900 MHz frequencies into the radio will not allow a radio to operate within the 900 MHz frequency. The radio must have the necessary hardware and supporting flashcode to support this band.



NOTE: If the frequency band has already been purchased for the radio as represented in the FLASHcode, then this field will be enabled and will not be editable.

Accessed Only: When the [Allow Invalid Frequencies on page 319](#) field is **Enabled** and when the radio is model/option capable.

4.1.5.10

Extended 700 MHz Range

This field indicates if the Extended 700 MHz Range feature is purchased.



NOTE: Currently, there is one available PCI-Option QA07468 for Extended 700 MHz Range.

4.1.6

Option/Expansion Board

This section displays certain read-only hardware and firmware information for an Option/Expansion board, when applicable to the current radio.



An Expansion Board is a built-in radio component that cannot be removed. An Option Board is an add-on radio component that can be removed and replaced with another Option Board. Option Boards facilitate optional features such as Bluetooth.



NOTE: Option Boards apply to APX 7000 radios, Expansion Boards apply to APX 6000 radios.



IMPORTANT: You can access this information through Information menu-selection, or through the radio's Test Mode.

4.1.6.1

Board Name

The application retrieves and displays the read-only list of options available in the Option/Expansion board in the currently attached radio.



NOTE: When the application reads this information from a codeplug file (not from a radio), this field displays NA.

Accessed Only: When the radio is model/option capable.

4.1.6.2

Board Type

The application retrieves and displays the read-only type of Option/Expansion board installed in the currently attached radio; for example, "BTOB" (Bluetooth Option Board).



 **NOTE:** When the the application reads this information from a codeplug file (not from a radio), this field displays NA.

Accessed Only: When the radio is model/option capable.

4.1.6.3

Board Firmware Version

The application retrieves and displays the read-only firmware version of the Option/Expansion board in the currently attached radio.



Firmware is a software that controls the internal hardware components of the Option/Expansion board. Firmware can only be modified with a FLASHport Upgrade.

 **NOTE:** When the the application reads this information from a codeplug file (not from a radio), this field displays NA.

Accessed Only: When the radio is model/option capable.

4.2

Radio Wide

This section allows you to view or define radio-wide functionality that applies to both conventional and trunking communication modes.

All features are not common to both communication modes.

4.2.1

General

This section allows you to view or define basic radio-wide functionality.

4.2.1.1

Log Dispatch Calls Enable

When this field is enabled, IDs received during Dispatch or Scan are logged in the Recent Calls list. When disabled, only IDs received through a Private Call or Call Alert are logged.

This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

4.2.1.2

Motorcycle Radio

The application retrieves and allows you view if the codeplug is defined as a motorcycle radio codeplug.



Accessed Only: When the radio is model or option capable.

4.2.1.3

Time Format

This field selects the format for the time (hour, minutes) that appears in the radio's display.



This feature applies on a radio-wide basis.



NOTE: The Clock menu-selection allows you access to the other clock settings.



IMPORTANT:

When this field is set to **Disabled**, the Clock feature does not appear in the radio's display.

Radio models without a keypad do not support this clock feature.

Accessed Only: When the radio is model or option capable.

The following selections are supported:

- Disabled
- 12 Hour
- 24 Hour

4.2.1.4

Date Format

This field selects the format for the date (day, month and year) that appears in the radio's display.



This feature applies on a radio-wide basis.

Accessed Only: When the radio is model or option capable.

The following selections are supported:

- mm/dd/yy Domestic
- yy-mm-dd International
- dd/mm/yy Latin American

4.2.1.5

Ultra Narrow Intermediate Freq Filter

This field selects the appropriate Ultra Narrow Intermediate Frequency Filter Bandwidth value to be used on a radio-wide basis.

The following selections are supported:

7.8 kHz

Designed for radios operating on channels with narrow bandwidths in environments where adjacent channel interference is not a major problem.

5.76 kHz

Designed to provide greater levels of adjacent channel interference protection for radios operating on channels with narrow bandwidths.

4.2.1.6

ASK Required

When this field is enabled, it ensures that only Advanced (Hardware) Keys can be loaded and assigned for use to Trunking Systems; Software System Key Files are not able to be assigned. This feature applies on a radio-wide basis.

When disabled, both Software Keys and Hardware Keys loaded may be assigned for use in a Trunking System's System ID field. Disabling this feature also disables a radio's Write-Protected status.



IMPORTANT: For Managed Radios this feature is defined in the RMC's ASK Required field.



NOTE: Enabling this feature is one of the requirements of write-protecting a radio.

Accessed Only: When an "Unlimited Access" Advanced Key that exactly matches the Owner System ID or the Owner WACN ID is loaded and attached to the computer, and when the radio is model/option capable.

4.2.1.7

Owner Advanced Key Type

This field allows you to view the radio's type of Owner ID, Owner System ID or Owner WACN ID.

The Owner ID Advanced System or WACN Key is needed when Write Protecting a radio, when writing to a radio that has previously been write-protected, and when "unwrite" protecting a radio. Write Protection and Owner IDs apply only to Trunking dispatch capable radios.



NOTE:

The Owner ID and Write Protect status can be modified through Radio Write Protect menu.

The Owner Advanced **Key Type** and its corresponding Owner System ID or Owner WACN ID are initially determined for the radio and codeplug at the time of the radio original purchase.

Accessed Only: When an **Unlimited Access** Advanced Key that exactly matches the Owner System ID or the Owner WACN ID is loaded and attached to the computer, and when the radio is model/option capable.

4.2.1.8

Owner System ID

This field allows you to view the radio's Owner System ID.

The Owner ID Advanced System or WACN Key is needed when Write Protecting a radio, when writing to a radio that has previously been write-protected, and when "unwrite" protecting a radio. Write Protection and Owner IDs apply only to Trunking dispatch capable radios.



NOTE:

The Owner ID and Write Protect status can be modified through Radio Write Protect menu.

The Owner Advanced **Key Type** and its corresponding Owner System ID or Owner WACN ID are initially determined for the radio and codeplug at the time of the radio original purchase.

Accessed Only: When the Owner Advanced Key Type field is set to **Advanced System Key**, and when the radio is model/option capable.

4.2.1.9

Owner WACN ID

This field allows you to view the radio's Owner WACN ID.

The Owner ID Advanced System or WACN Key is needed when Write Protecting a radio, when writing to a radio that has previously been write-protected, and when "unwrite" protecting a radio. Write Protection and Owner IDs apply only to Trunking dispatch capable radios.



NOTE:

The Owner ID and Write Protect status can be modified through Radio Write Protect menu.

The Owner Advanced **Key Type** and its corresponding Owner System ID or Owner WACN ID are initially determined for the radio and codeplug at the time of the radio original purchase.

Accessed Only: When the Owner Advanced Key Type field is set to **Advanced WACN Key**, and when the radio is model/option capable.

4.2.1.10

Connection Path

This field shows that your radio can be programmed by RadioCentral and CPS, or CPS only.



NOTE: This field is only applicable for APX NEXT radios.

4.2.1.11

Recent Call List Delete Enable

When this field is enabled, you can clear the recent call list.

Accessed Only: When the radio is model or option capable.

4.2.1.12

Configurable Preset Zone and Channel

If this field is enabled, you are able to press and hold the **mode select** button to reprogram to current channel.

If this field is disabled, the **mode select** button is set to the zone and channel programed in Customer Programming Software (CPS) and cannot be reprogrammed by the radio user.

4.2.2

Alert Tones

This section allows you to view or define alert tone functionality that applies on a radio-wide basis.

4.2.2.1

Alert Tones

This field enables the radio Alert Tone capabilities.

This feature applies on a radio-wide basis.

4.2.2.2

Volume Adjust Tone Offset

This field enables the sampling of the volume level for radio alert tones.

When enabled, the Volume Set Tone button-press allows you to sample the volume level of the radio's alert tones. The alert tone volume can vary from the current volume setting for incoming transmissions based on the Volume Offset (dB) setting. Therefore, when the Volume Set Tone button is pressed, a tone sounds at the current volume level for incoming transmissions plus or minus the Alert Tone Volume Offset amount.



NOTE: The Volume Set Tone follows the Volume Offset (dB) amount only as long as the tone does not go below the Minimum Volume setting.

When disabled, the Volume Set Tone button-press allows you to sample the radio's current volume level for incoming transmissions that unmute to the radio's speaker.

Accessed Only: When the [Alert Tones on page 327](#) field is **Enabled**.

4.2.2.3

Power-Up Self Test Alert Tone

This field enables the radio Self-Test Alert Tone to chirp when the self-test is completed and the radio is ready to transmit or receive.



This feature applies on a radio-wide basis.

Accessed Only: When the [Alert Tones on page 327](#) field is **Enabled**, and when the radio is model/option capable.

4.2.2.4

Scan Alert Tone Enable

This field causes the radio to emit an alert tone each time scan mode is entered or exited with a Scan button-press or Scan switch-toggle.

This alert tone is not applicable for a Scan menu-selection. This feature applies on a radio-wide basis.

Accessed Only: When the [Alert Tones on page 327](#) field is **Enabled**.

4.2.2.5

Call Alert Tone Auto Reset

This field causes the radio to generate just one sequence of the Call Alert tone.

Normally, the Call Alert Tone is a repeating tone. This feature applies on a radio-wide basis.

4.2.2.6

Rotary Alert

This field selects the type of alert produced when the radio's Rotary Switch is turned from the last programmed channel to an un-programmed rotary position.



This selection applies on a radio-wide basis.

Accessed Only: When the radio is model or option capable.

The following selections are supported:

None

The radio's rotary control has no alert tones.

Electric Stop

Turning the rotary control past the first programmed position in either direction causes an alert tone (beep).

Rollover Alert

Turning the rotary control past all programmed positions in either direction causes an alert tone (beep).

4.2.2.7

Enhanced Mute Tones Operation

This field selects the types of alert tones, such as keypad tones, that you can disabled (muted).

This Mute feature is available to you with the Mute switch-toggle or Mute menu-selection. This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Disabled

The Mute feature is disabled.

Keypad Tones

The Mute feature only mutes keypad and other non-signaling tones.

VA Tones

The Mute feature only mutes Voice Announcements.

All Tones

The Mute feature mutes all signaling and non-signaling tones, including keypad tones, Voice Announcements, talk permit tones, and other tones.

4.2.2.8

Out of Range Tone

This field selects the alert tone that sounds, immediately upon pressing the PTT button, whenever the radio is outside of the coverage range of the Trunking System and cannot sync with a Control Channel.

The alert tone continues to sound for as long as the PTT button is still pressed. See also Out of Range Indicator. This feature applies on a radio-wide basis for Trunking and DVRS-enabled P25 Conventional communications.



IMPORTANT: You can avoid confusion by selecting a desirable tone that is different from the Talk Prohibit Tone.

Accessed Only: When the radio is model or option capable.

The following selections are supported:

OOR Tone 1

The radio plays the legacy Out of Range tone.

OOR Tone 2

Repeating 800 Hz alert tone.

4.2.2.9

Talk Prohibit Tone

This field selects the alert tone that sounds whenever radio transmissions are not allowed, either immediately upon pressing the PTT button, or when the preset Time Out Timer has expired and the radio ends the current transmission.

The alert tone continues to sound for as long as the PTT button is still pressed. This feature applies on a radio-wide basis.

Accessed Only: When the radio is model or option capable.



IMPORTANT: You can avoid confusion by selecting a desirable tone that is different from the Out of Range Tone.

The following selections are supported:

TP Tone 1

Legacy continuous 300 Hz alert tone.

TP Tone 2

Repeating 600 Hz alert tone.

4.2.2.10

Low Battery LED

This field enables the radio to visually notify you when the radio's battery is running low.



That is, the Transmit LED flashes red when a low battery condition is detected and only while the radio is transmitting. The feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

4.2.2.11

Low Battery Tx Chirp

This field enables the radio to sound a beep immediately after the PTT button is released, but only when a low battery condition is detected during the transmission.

See also [Low Battery Standby Chirp on page 330](#).



IMPORTANT: For Mobile radios, see the DEK VIP Input or Radio VIPs Input "Low Battery Alert" selection.

Accessed Only: When the radio is model/option capable.

4.2.2.12

Low Battery Standby Chirp

This field selects how often the radio sounds the Standby low battery alert chirp (a short, high-pitched tone). Your valid direct entries are also allowed.



IMPORTANT: For Mobile radios, see the DEK VIP Input or Radio VIPs Input **Low Battery Alert** selection.

Accessed Only: When the radio is model/option capable.

Table 44: Range

Minimum	Maximum	Increments
0 seconds	930 seconds	30 seconds

4.2.2.13

Smart-Low Battery Alert

This field selects the point at which the radio's battery power level causes a low battery chirp to be heard.



This feature applies on a radio-wide basis.

Accessed Only: When the radio is model or option capable.

The following selections are supported:

Standard

10% battery power left.

Early Warning

15% battery power left.

4.2.2.14

PTT Warning Tone

This field selects the alert tone that sounds whenever the following conditions are met:

- The Push-to-Talk (PTT) Warning Timer expires.
- The PTT is depressed while the radio is performing the Inbound Signal Data (ISD) sequence or the Response Pending Timer is active.

The alert tone starts sounding anytime after the conditions are met. The alert tone stops when one of the following situations occurs:

- You release PTT after the PTT Warning Timer expires.
- The radio receives the appropriate grant.
- The radio is busy after the PTT Warning Timer expires.

The following selections are supported:

PTT Warning Tone 1

The radio plays the legacy talk prohibit tone.

PTT Warning Tone 2

The radio plays a repeating 500 Hz alert tone with 100 ms (on) and 700 ms (off).

4.2.2.15

RSM Volume Set Tones

This field allows you to select the alert tone when pressing the button or rocker for volume adjust on a portable radio Remote Speaker Microphone (RSM).

This feature applies on a radio-wide basis.

Table 45: Types of Tones Selection

Tone Selection Types	Description
Volume Set Tone 1	Supports the 911 Hz feedback alert tone. Legacy behavior.
Volume Set Tone 2	Supports the 410 Hz feedback alert tone. Same as the mobile volume set tone.



NOTE: You can select Volume Set Tone 2 to differentiate from the MDC PTT-ID sidetone. Some RSMs are not affected by this field and always play Volume Set Tone 2.

4.2.3

User Information and Passwords

This section allows you to view or define functionality related to **User Information**, **Zone Protection**, **Radio Lock**, **Tactical Inhibit**, and **Password Required**.

4.2.3.1

Soft ID/Username

This field allows you to enter a default login username for this radio for Automatic Registration Service or for User Authentication.

This username can apply for all ARS "Server" enabled Data Profiles. When the Soft ID Feature is enabled, this username is also used for all Conventional dispatch ASTRO-enabled channels.



NOTE:

- For Automatic Registration Service and for User Authentication, this username corresponds with the PIN entry.
- For User Authentication this username corresponds with Password and the User Login Unit ID entry.
- For Managed Radios, this feature is defined in your Name field.



NOTE: Your button-press and menu-selection allow you to login to a specific Automatic Registration Service server or a User Authentication UNS (Unified Network Services) server with the appropriate Username, PIN/Password, and User Login Unit ID combination.

- Usernames and User Login Unit ID may be selected from Data User List entries, or
- Usernames, PIN/Passwords and Unit IDs may be manually entered from the radio's keypad.

Accessed Only: When the radio is model/option capable.

Table 46: Range

Minimum Number of Character	Maximum Number of Characters when Soft ID Feature is enabled	Maximum Number of Characters when Soft ID Feature is disabled
1	8	20

4.2.3.2

PIN/Password

This field allows you to enter a default Automatic Registration Service login PIN (Personal Identification Number) or a User Authentication Password for this radio.

This username can apply for all ARS "Server" enabled Data Profiles.



NOTE:

- For Automatic Registration Service and for User Authentication, this PIN corresponds with the PIN entry.
- For User Authentication this username corresponds with Password and the User Login Unit ID entry.
- For Managed Radios, this feature is defined in your Name field.



NOTE: Your button-press and menu-selection allow you to login to a specific Automatic Registration Service server or a User Authentication UNS (Unified Network Services) server with the appropriate Username, PIN/Password, and User Login Unit ID combination.

- Usernames and User Login Unit ID may be selected from Data User List entries, or
- Usernames, PIN/Passwords and Unit IDs may be manually entered from the radio's keypad.

Accessed Only: When the radio is model/option capable.

Table 47: Range

Minimum Number of Digits/Character	Maximum Digits when used as Automatic Registration Service PIN	Maximum Characters when used as a User Authentication Password
0 (blank)	4 (numbers only)	20 A to Z, a to z (English alphabet only), 0 to 9, -, *, #, &, \$, /, +, % and spaces can be used.

4.2.3.3

User Login Unit ID Enable

This Unit ID is used in the User Authentication login credentials process.

This Unit ID can apply for all ARS "Server" enabled Data Profiles (see ARS Mode).

When enabled, you can define and use a User Login Unit ID.

When disabled, you are never prompted to enter a User Login Unit ID.

4.2.3.4

User Login Unit ID

This field allows you to enter a default login Unit ID for radios used for User Authentication.

This ID can be used to designate all radio-uses within a specific vehicle or squad. This ID applies for all ARS "Server" enabled Data Profiles.



NOTE:

- This Unit ID corresponds with your name entry and with the Password for User Authentication.
- For Managed Radios, this feature is defined in your Name field.



NOTE: Your button-press and menu-selection allow you to login to a specific Automatic Registration Service server or a User Authentication UNS (Unified Network Services) server with the appropriate Username, PIN/Password, and User Login Unit ID combination.

- Usernames and User Login Unit ID may be selected from Data User List entries, or
- Usernames, PIN/Passwords and Unit IDs may be manually entered from the radio's keypad.

Accessed Only: When the [User Login Unit ID Enable on page 332](#) field is "Enabled".

4.2.3.5

Radio Alias Enable

This field enables the Radio Alias field.

This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

4.2.3.6

Radio Alias

This field selects recognizable names that identifies this radio.

My Radio Identification menu-selection causes the Radio Alias to appear in the radio's display.

Accessed Only: When the [Radio Alias Enable on page 333](#) field is **Enabled**, and when the radio is model/option capable.



NOTE:

Examples: FTL 32F, NYC 555E, CHI 070P.

Characters, numbers, spaces, and special characters can be used.

The allowable length (number of characters) of the alias is determined by the display size of the radio.

4.2.3.7

Protected Zone Password

This field defines your needed password that applies to FPP (Front Panel Programming) access on a radio-wide basis.

Individual zones can then be password protected on a per zone basis with the Zone Channel Assignment's, Protected Zone field. Therefore, when you are attempting to FPP a Protected Zone, you are prompted for this password; correct entry of this password then allows for FPP access.

 **NOTE:** Passwords can only contain the numeric characters 0-9.

 **IMPORTANT:** You may modify the current password as long as it is known through the Password (PSWD) menu-selection.

For codeplugs/radios that must be FCC compliant, this password must be defined and is always needed for FPP regardless of whether or not the Zone Channel Assignment's, Protected Zone field is enabled or disabled.

For security purposes, as the password is entered into CPS , or when a codeplug is read from a radio, only asterisks (*) are displayed in this field, regardless of the password that is stored in the codeplug.

If [FPP Enable on page 344](#), Non-Federal FPP, [Zone Clone Enable on page 344](#), and Zone Cloning are enabled, the Protected Zone Password must not be blank.

Accessed Only: When the radio is model/option capable.

Table 48: Range

Minimum Number of Digits	Maximum Number of Digits
1	8

4.2.3.8

Radio Lock Enable

This field enables the radio to allow you to enter a password on power-up to Unlock the radio, and this password may also be used to Un-stun the radio.

If the password is not correctly entered, the radio remains locked and/or stunned. This feature applies on a radio-wide basis.

 **WARNING:** When the Tactical Inhibit field is **Enabled**, this field is mandatory for Un-stun purposes, and therefore must be enabled to be considered valid.

 **NOTE:** You may change the initial password that set in the Unlock Password field through the Password menu-selection. However, when the Secure Operation field is set to **Hardware** and Tactical Inhibit Enable is **Disabled**, the password must be initially created with the radio's Password (PSWD) menu-selection. This is due to the password being stored in the radio's hardware encryption module.

When the [Secure Operation on page 880](#) field is to set **ADP** or **Disabled** and the Radio Lock Mandatory Password field is disabled, you can disable the Radio Lock feature by selecting the Password (PSWD) menu-selection and entering a "NULL" (zero-length) password.

When the [Secure Operation on page 880](#) field is set to **Hardware** and Tactical Inhibit Enable is **Disabled**, and the Secure Hardware Auto Login field is enabled, you can disable or enable this Radio Lock feature through the Auto Login (LOGF) menu-selection.

Accessed Only: When the radio is model/option capable.

Secure Keys Lost



WARNING:

When the [Secure Operation on page 880](#) field is set to **Hardware** and Tactical Inhibit Enable is not available or is **Disabled**, the Unlock/Un-stun password is stored in the radio hardware encryption module. In this case the password must be initially created and modified with the radio Password menu-selection.

Pre-loaded Secure Encryption Keys can be ERASED from the Radio

- When performing a FLASHport upgrade which adds the Tactical Inhibit feature, or
- When the [Secure Operation on page 880](#) field is set to **Hardware** and Tactical Inhibit Enable is **Disabled** and Writing to a radio to disable the Radio Lock feature, or
- When the [Secure Operation on page 880](#) field is set to **Hardware** and Tactical Inhibit Enable is **Disabled** and Writing to a radio to enable the Tactical Inhibit feature, and change the Unlock/Un-stun Password.

To Avoid Losing Pre-loaded Keys

Before performing any of the above radio-programming procedures, you must first reset the radio Secure **Hardware** Radio Lock password to the default password **01234567** through the Password menu-selection. If secure keys are lost, they must be reloaded with a Key-Variable Loader (KVL) or through Over-The-Air-Rekeying (OTAR).

Dual Radio Configuration



WARNING:

When the Radio Selection field is set to **Secondary Radio**, this field must be **Disabled**, otherwise it is considered invalid. Disabling this field makes it inaccessible.

Only the **Primary Radio** is configurable for this feature. When the **Primary Radio** is locked, the Radio Swap button-press and Radio Swap menu selection are disabled, which in effect disallows access to the **Secondary Radio**.

4.2.3.9

Radio Lock Mandatory Password

This field requires you to enter the Unlock/Un-stun Password from the radio keypad each time the radio is powered-up, and requires you to enter the Tactical Inhibit Encode Password in order to send a Stun or Kill command from the radio.

This feature applies on a radio-wide basis.

When disabled, you may avoid entering the Unlock/Un-stun Password by setting a NULL (zero-length) password from the radio's Password menu-selection.



NOTE: You may modify the Unlock/Un-stun Password and the Tactical Inhibit Encode Password through the Password (PSWD) menu-selection.

Accessed Only:

- When the radio is model/option capable and when the [Radio Lock Enable on page 334](#) field is **Enabled**.
- And, one of the following scenarios:
 - When the **Secure Operation** field is not set to "Hardware".
 - When the **Tactical Inhibit Enable** field is enabled.

4.2.3.10

Conventional Dynamic ID with Password

This field selects the password that you entered when the radio is in Dynamic ID mode.



If the password is entered correctly, you can view and edit the radio's Individual ID and MDC Primary ID for the current ASTRO and MDC system.

4.2.3.11

Radio Lock Attempts Allowed

This field allows you to configure the number of failed attempts that you are allowed to enter a password before deadlock.

Table 49: Range

Default	Minimum	Maximum	Increments
3	3	15	1

4.2.3.12

Radio Lock Maximum Password Length

This field selects the largest number of possible characters for the radio's Unlock/Un-Stun Password and for the Tactical Inhibit Encode Password.

Accessed Only:

- When the radio is model/option capable and when the [Radio Lock Enable on page 334](#) field is **Enabled**.
- And,
 - When the **Secure Operation** field is not set to "Hardware".
 - When the **Tactical Inhibit Enable** field is enabled.

Table 50: Range

Feature	Minimum	Maximum
Unlock / Un-Stun Password	1 character	10 characters
Tactical Inhibit Encode Password	1 character	8 characters

4.2.3.13

Radio Lock Unlock Password

This field selects the initial password that you entered in order for the radio to Unlock following power-on, and this password may be used to Un-stun the radio (see Tactical Inhibit).

If the password is not correctly entered, the radio remains locked.



IMPORTANT: For security purposes, as the password is entered into the RM, or when a codeplug is read from a radio, only asterisks (*) are displayed in this field, regardless of the password that is stored by the codeplug. Select the show password icon to see the values.



NOTE:

The password's largest possible value is determined in the [Radio Lock Maximum Password Length on page 336](#) field.

You may modify this password and the Tactical Inhibit Encode Password through the Password (PSWD) menu-selection.

When the [Secure Operation on page 880](#) field is set to **ADP** or **Disabled** and the Radio Lock [Radio Lock Mandatory Password on page 335](#) is **disabled**, you may avoid entering this password and the Tactical Inhibit Encode Password by setting a "NULL" (zero-length) password from the radio's Password (PSWD) menu-selection.

Accessed Only:

- When the radio is model/option capable, and when the [Radio Lock Enable on page 334](#) field is **Enabled**, and
- When the [Secure Operation on page 880](#) field is not set to **Hardware**, or when the Tactical Inhibit Enable field is **enabled**.



NOTE: This password must be comprised of numeric values that can only be entered from the radio keypad.

Secure Keys Lost



WARNING:

When the [Secure Operation on page 880](#) field is set to **Hardware** and Tactical Inhibit Enable is not available or is **Disabled**, this password is stored in the radio's hardware encryption module. (In this case the password must be initially created and modified with the radio Password menu-selection).

Pre-loaded Secure Encryption Keys can be ERASED from the Radio

- When performing a FLASHport upgrade which adds the Tactical Inhibit feature, or
- When the [Secure Operation on page 880](#) field is set to **Hardware** and Tactical Inhibit Enable is **Disabled** and Writing to a radio to disable the Radio Lock feature, or
- When the [Secure Operation on page 880](#) field is set to **Hardware** and Tactical Inhibit Enable is **Disabled** and Writing to a radio to enable the Tactical Inhibit feature, and change this Unlock/Unstun Password

To Avoid Losing Pre-loaded Keys

Before performing any of the above radio-programming procedures, you must first reset the radio's Secure **Hardware** Radio Lock password to the default password **01234567** through the Password menu-selection. If secure keys are lost, they must be reloaded using a Key-Variable Loader (KVL) or through Over-The-Air-Rekeying (OTAR).

4.2.3.14

Tactical Inhibit Enable

This field enables Tactical Inhibit Stun and Tactical Inhibit Kill features on a radio-wide basis.



These Tactical Inhibit features may be password-protected with the Tactical Inhibit Encode Password field.



NOTE:

Tactical Inhibit Stun Operation and/or Tactical Inhibit Kill Operation must also be CPS-defined on a per Conventional Personality basis.

The user can then access these features using the Stun and/or Kill menu-selections.

Accessed Only: When an Advanced Conventional Key (ACK) is loaded in CPS (see System Key Report) and when the radio is model/option capable.



WARNING: In order to write the codeplug to the radio, an Advanced Conventional Key (ACK) must be loaded in RM (see System Key Report), and the "System ID" of the ACK must be an exact match to the ACK number defined in the Conventional Wide's Conventional Customer ID field.

Secure Keys Lost



WARNING:

When the [Secure Operation on page 880](#) field is set to **Hardware** and Tactical Inhibit Enable is not available or is **Disabled**, the Unlock/Un-stun password is stored in the radio's hardware encryption module. In this case, the password must be initially created and modified with the radio Password menu-selection.

Pre-loaded Secure Encryption Keys can be ERASED from the Radio

- When performing a FLASHport upgrade which adds the Tactical Inhibit feature, or
- When the [Secure Operation on page 880](#) field is set to **Hardware** and Tactical Inhibit Enable is **Disabled** and Writing to a radio to disable the Radio Lock feature, or
- When the [Secure Operation on page 880](#) field is set to **Hardware** and Tactical Inhibit Enable is **Disabled**, and Writing to a radio to enable the Tactical Inhibit feature, and change the Unlock/Un-stun Password.

To Avoid Losing Pre-loaded Keys

Before performing any of the above radio-programming procedures, you must first reset the radio Secure **Hardware** Radio Lock password to the default password **01234567** through the Password menu-selection. If secure keys are lost, they must be reloaded using a Key-Variable Loader (KVL) or through Over-The-Air-Rekeying (OTAR).

4.2.3.15

Tactical Inhibit Encode Password

This field allows you to define a password that you must enter prior to a Tactical Inhibit Stun command or a Tactical Inhibit Kill command being transmitted.



When you select either of the Stun or Kill menu-selections, you are then prompted for this password. This feature applies on a radio-wide basis.



NOTE:

The password's largest possible value is determined in the [Radio Lock Maximum Password Length on page 336](#) field.

Tactical Inhibit Stun Operation and/or Tactical Inhibit Kill Operation must also be CPS-defined on as per Conventional Personality basis.

You may modify this password and the Unlock/Un-stun Password through the **Password (PSWD)** menu-selection.

When the **Secure Operation** field is to set **ADP** or **Disabled** and the Radio Lock [Radio Lock Mandatory Password on page 335](#) is disabled, you may avoid entering this password and the Unlock/Un-stun Password by setting a "NULL" (zero-length) password from the radio's **Password (PSWD)** menu-selection.

Accessed Only:

- When the **Tactical Inhibit Enable** field is **Enabled**, and
- When an Advanced Conventional Key (ACK) is loaded in the application (as can be seen from the System Key Report), and
- When the radio is model/option capable.



NOTE: This password must be comprised of numeric values only that may be easily entered from the radio keypad.

4.2.3.16

Password Required For Gunlock

When this field is enabled, the GunLock feature is disabled whenever the radio is locked.



In order to initiate this feature when the radio is powered-on and in a radio-locked state, the radio must first be unlocked (with a valid password entered from the keypad).

When disabled, a GunLock button-press programmed on a Bottom Function Programmable Button initiates this feature, regardless of a radio-locked state.



WARNING: The Top Function Programmable Buttons are always disabled by Radio Lock, regardless of the state of this feature; therefore, if there is a requirement to bypass a radio-locked state, GunLock must be programmed on a Bottom Function Programmable Button.



IMPORTANT:

When the [Secure Operation on page 880](#) field is set to **Disabled** or **ADP**, the Radio Lock password is stored in the radio's codeplug. The initial password is set in the Unlock Password field, and you may change it through the Password menu-selection.

When the [Secure Operation on page 880](#) field is set to **Hardware**, the Radio Lock password is stored in the hardware encryption module for added security; therefore, it is not directly accessible by the application. The password must be manually set in the hardware encryption module with the radio keypad and the Password menu-selection.

Accessed Only: When the [Radio Lock Enable on page 334](#) field is **Enabled** and when the radio is model/option capable.

4.2.3.17

Password Required For Lightbar

When this field is enabled, the Lightbar/Relay Pattern feature, which is configured by the Universal Relay Controller (URC), is disabled whenever the radio is locked.



In order to initiate this feature when the radio is powered-on and in a radio-locked state, the radio must first be unlocked (with a valid password entered from the keypad).

Once the radio is unlocked, you can activate a specific relay pattern with the corresponding **Relay Pattern** button-press, or as a [Relay Pattern on page 452](#) - Consolidated Action with the Action Consolidation selection defined on the **Response Selector** or on a button-press (See also: [Action Consolidation](#)). This feature applies on a radio-wide basis.

When disabled, a Relay Pattern button-press/Consolidated Action initiates this feature, regardless of a radio-locked state.

 **WARNING:** The **Top Function Programmable** Buttons are always disabled by Radio Lock, regardless of the state of this feature; therefore, if there is a requirement to bypass a radio-locked state, then a Relay Pattern must be programmed on a **Bottom Function Programmable** Button or as a Relay Pattern - Consolidated Action with the Action Consolidation selection defined on the Response Selector or on a **Bottom Function Programmable** Button.

 **IMPORTANT:** When the **Secure Operation** field is set to **Disabled** or **ADP**, the Radio Lock password is stored in the radio's codeplug. You may change the initial password that is set in the **Unlock Password** field through the **Password** menu-selection.

When the **Secure Operation** field is set to **Hardware**, the Radio Lock password is stored in the hardware encryption module for added security; therefore, it is not directly accessible by the application. The password must be manually set in the hardware encryption module with the radio keypad and the Password menu-selection.

Accessed Only: When the [Radio Lock Enable on page 334](#) field is **Enabled** and When the radio is model/option capable.

4.2.3.18

Password Required For Siren

When this field is enabled, the Siren feature is disabled whenever the radio is locked.



In order to initiate this feature when the radio is powered-on and in a radio-locked state, the radio must first be unlocked (with a valid password entered from the keypad). Once the radio is unlocked, you can activate the feature with a **Siren** button-press, or as a Siren Type action with the Action Consolidation selection

defined on the Response Selector or on a button-press (See also: [Action Consolidation](#)). This feature applies on a radio-wide basis.



WARNING: The **Top Function Programmable** button are always disabled by Radio Lock, regardless of the state of this feature; therefore, if there is a requirement for Siren to bypass a radio-locked state, the Siren feature must be programmed as a Siren Type action with the Action Consolidation selection defined on the Response Selector or on a **Bottom Function Programmable** button.



NOTE:

When the **Secure Operation** field is set to **Disabled** or **ADP**, the Radio Lock password is stored in the radio's codeplug. You may change the initial password that is set in the [Radio Lock Unlock Password on page 336](#) field through the **Password** menu-selection.

When the **Secure Operation** field is set to **Hardware**, the Radio Lock password is stored in the hardware encryption module for added security; therefore, it is not directly accessible by the application. The password must be manually set in the hardware encryption module with the radio keypad and the **Password** menu-selection.

Accessed Only: When the [Radio Lock Enable on page 334](#) field is **Enabled** and when the radio is model/option capable.

4.2.3.19

Secure Hardware Auto Login

This field enables the Radio Lock feature to be bypassed on power-up for radios equipped with Secure **Hardware** encryption.

The Auto Login (LOGF) menu-selection allows you to enable or bypass the Unlock Password (created with the radio Password (PSWD) menu-selection). This feature applies on a radio-wide basis.

When disabled, Radio Lock requires that the Unlock Password (created with the radio Password (PSWD) menu-selection) be entered upon radio power-up. If the password is not correctly entered, the radio remains locked.

Accessed Only:

- When the [Secure Operation on page 880](#) field is set to **Hardware**, and
- When the [Radio Lock Enable on page 334](#) field is enabled, and
- When the [Tactical Inhibit Enable on page 337](#) field is disabled, and
- When the radio is model/option capable.

4.2.3.20

Cached Credentials User Login Mode

This field selects the best approach when attempting radio-to-server User Login based-on the expected server(s) User Login protocol type(s): legacy Automatic Registration Service, and/or User Authentication.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

Accessed Only: This is an advanced setting which is only available in Expert View (see Codeplug View).

This selection applies for all ARS Mode capable channels.

The following selections are supported:

Last Mode (Factory Default)

- With this selection, the radio assumes that the server it is attempting to communicate with has the same User Login Credential protocol type as the last server that it contacted: a legacy Presence

Notification (PN) Automatic Registration Service (ARS) server, or a UNS (Unified Network Services) User Authentication server.

- Upon the radio's first power-up after a codeplug write, the radio will have an unknown previous User Login Credential protocol type. In this case, the radio assumes that it was communicating with a legacy PN server, and therefore first attempts a PN protocol User Login. Once the radio has learned the correct login protocol, the radio continues to use the last successful mode.
- If you are switching between systems that use different User Login server types, upon arriving at a new server protocol type, the protocol will be incorrect:
 - When expecting legacy PN but finding UNS, the radio is blocked from User Authentication functionality for the first login attempt only.
 - When expecting UNS but finding a legacy PN, the radio will login with the correct mode, but will send extra messages to do so.
- This selection is the most safe and the most efficient choice when both User Login server protocols are expected.

Legacy

- This selection assumes that all of the radio's ARS capable channels (see ARS Mode) will be accessing a legacy Presence Notification (PN) Automatic Registration Service (ARS) server.
- If a UNS (Unified Network Services) server is encountered, the radio will not be capable of User Authentication Login.
- This is the best selection when only legacy ARS servers are expected.

User Authentication

- With this selection, you will always login using the appropriate protocol:
 - If the server is using legacy Presence Notification (PN) Automatic Registration Service (ARS), then the legacy ARS protocol is used.
 - If the server is UNS, then the User Authentication protocol is used.
- When expecting UNS but finding a legacy PN, the radio will login with the correct mode, but will send extra messages to do so.
- This selection is the best choice when the radio will almost always be using a UNS server.

4.2.3.21

Radio Lock Radio Inhibit On Deadlock

This field enables the radio to enter an inhibited state if you reach the maximum number of attempts allowed to enter the radio unlock password.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.

4.2.3.22

Radio Lock Force Change Password

This field allows you to change the password from the default value once the radio is unlocked successfully with the default password.

You must also change the password after a password reset has occurred after reaching the maximum number of failed attempts.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.

4.2.3.23

Encode Password

This field allows you to define a password that you must enter before selecting a Tactical Service Operation command. When you select the **Tactical Service** menu or button selection, you are prompted for this password.

This feature applies on a radio wide basis. The maximum length for the password is eight characters and the default is null or zero length password. Passwords can only contain the numeric characters 0–9.

4.2.4

Features

This section allows you to view or define basic radio-wide functionality.

4.2.4.1

Block Pending CA/PC

This field enables your call blocking for Call Alert or Private Call.

The first Call Alert or Private Call data received by the unattended radio is held by the radio. Successive Call Alert or Private Call data is ignored unless the source information of the call is identical to the original source data received. This feature applies on a radio-wide basis.

When disabled, the last Call Alert or Private Call data received is the call data that is stored. Therefore, previously stored call information is overwritten in the radio's memory.

4.2.4.2

Rotary Switch (Scan Program)

This field selects which mode element (**Zones** or **Channels**) the Rotary switch on the radio and/or optional Display Remote Speaker Microphone (DRSM) selects while you are operating the radio in the Scan List Programming or Edit mode.



You can access the Scan List Programming or Edit mode with a Long Keypress of the Scan button-press, with a Scan List Programming switch-toggle, or with a Scan List menu-selection. This feature applies on a radio-wide basis.



IMPORTANT: For radios that have a Multi-Function Knob (MFK), this feature is only applicable to the Rotary switch on the optional DRSM accessory.

Accessed Only: When the radio is model or option capable.

The following selections are supported:

- Channel
- Zone

4.2.4.3

Evacuation Tone

This field enables the Evacuation Tone to be heard on the transmitting radio and on any radio that is able to receive the tone instruction.

The tone begins and is transmitted when the PTT button and the "Orange Button" are simultaneously pressed. Once the tone begins to sound, if the orange button is released the tone continues to alarm on all radios within the talkgroup, until the PTT button is released.



NOTE:

This evacuation tone instruction is transmitted to the radio's entire talkgroup (for the current channel); the type of talkgroup is dependent on the radio's current communications mode. It applies to both analog voice and digital voice channels, in trunking and conventional systems, and both FDMA and TDMA APCO systems.

When the current channel is "Securenet" (analog secure), the tone audio will be transmitted in "Clear" selection.

4.2.4.4

FPP Enable

This field enables Front Panel Programming (FPP) on a radio-wide basis.

Once enabled, FPP can be enabled or disabled on the per zone basis from the Zone Channel Assignment FPP Enable field. You can select FPP using the Front Panel Programming menu-selection. FPP is a Conventional communications feature only.



WARNING: When the 12.5 kHz FCC Narrowbanding Mandate applies for the codeplug, programming of exception frequencies must be carried out using RM, and not the FPP feature.



IMPORTANT:

The same Conventional Personality can be assigned to multiple channels (from the Channels Page), and those channels may be in FPP-enabled zones or non-FPP zones. Therefore, be aware that if a Personality is changed with FPP, those changes will affect all channels that reference that Personality, in both FPP-enabled zones and non-FPP zones.

You are able to configure the Tx Power Level with an FPP channel. The Tx Low Power button-press, the Tx Low Power switch-toggle and the Power menu-selection, when selected, do not take precedence over this FPP-enabled channel setting.

FPP Enable is disabled if a codeplug with version lower than R16.00.00 is imported or FLASHport upgrades a radio codeplug to version R16.00.00 and the following conditions exist:

- FPP Enable is enabled, and
- Non-Federal FPP and Zone Cloning are enabled in the FLASHcode, and
- Protected Zone Password is blank

Accessed Only: When the radio is model or option capable.

4.2.4.5

Zone Clone Enable

When this field is enabled, you can duplicate zones from one radio to another radio without using the application.

When enabled, an ASTRO Talkgroup List with 240 entries and an ASTRO System added in the first record. The automatically added record is marked for Zone Clone Feature used only, hence, it cannot be deleted and moved.



IMPORTANT:

For your access to this feature, the [Zone Cloning \(CLON\) on page 541](#) selection for [Menu Items on page 513](#) (Conventional dispatch only) must be programmed.

Your access to this feature (with the Zone Cloning (CLON) menu item selection) is only possible when the cloning cable is attached to the radio.

Zone Clone Enable and [Direct Frequency Enable on page 1026](#) in the [Conventional Wide on page 1026](#) are mutually exclusive.

When you enable Zone Clone Enable, there must be one clone enabled zone.

When you enable Zone Clone Enable, [Protected Zone Password on page 333](#) cannot be blank.

Accessed Only: When the radio is model/option capable.

4.2.4.6

Disable Plug and Play

This field disables all the bias voltage from GCAI pins if no GCAI accessory is attached to the radio within 1 minute of power up.



IMPORTANT: If enabled and APX Vehicular Adapter is not connected to the radio after being powered up, the GCAI functionality is disabled. The radio will not be able to detect the present of an APX Vehicular Adapter.

Accessed Only: When the radio is model or option capable.

4.2.4.7

Cyclic Keying

This field enables power ramp up and ramp down of transmit power in order to meet both the ETS-300 and FTZ Cyclic Keying requirements.

This selection applies on a radio-wide basis.



NOTE: Cyclic Keying should be enabled only for radios used in Europe.

4.2.4.8

Ignition Switch

This field selects the radio's functionality based on the state of the Ignition Switch in your vehicle.



Ignition is present when the vehicle's ignition switch/key is turned ON and not present (removed) when the vehicle's ignition switch/key is turned OFF.



WARNING:

Emergency Power Up feature is not allowed when either **Tx Inhibit** or **PTT Tx Inhibit** are selected.

This field must not be set to **Tx Inhibit** or **PTT Tx inhibit** when a Conventional or Trunking Tx Inhibit (TxIN) menu-selection configured; otherwise' the RM considers it to be invalid.

For a Dual Radio configuration:

- When the Radio Selection field is set to "Secondary Radio" and Enable Secondary Radio Tx is enabled, this field must be set to **Blank**, **Tx Inhibit** or **PTT Tx inhibit** in order to be considered valid. However, when the Radio Selection field is set to "Secondary Radio" and Enable Secondary Radio Tx is disabled, **Blank** is the only valid selection.
- Only the "Primary Radio" checks for an Emergency Power Up footswitch-press or if the "Ignition" state is present (or removed), to determine whether the radio can power-on (or power-off).
- When the Dual Radio configuration powers-on, the selected radio always defaults to the "Primary Radio".

Accessed Only: When the radio is model or option capable.

The following selections are supported:

Blank

- You can power on the Radio with Power button-press, or with an Emergency Power Up footswitch-press.
- You can power off the Radio with Power button press, or when the Inactivity Auto Power Off timer expires.

Tx Inhibit

-  **NOTE:** Available only when the radio is model/option capable.
- You can power on the Radio with Power On button/knob selection.
- You can power off the Radio with Power Off button/knob selection, or when the Inactivity Auto Power Off timer expires.
- While **Ignition** is not present, certain communications are not possible:
 - The radio does not register with ASTRO 25 (APCO) - Trunking Systems and therefore cannot receive this type of Trunking communications (see the System Type field), however Type II Trunking Systems can receive dispatch without being registered.
 - Also, the radio cannot be powered-on with the Emergency Power Up feature, and Emergency Alarm transmissions using the Emergency Power Up footswitch are not possible.

PTT Tx Inhibit

-  **NOTE:** Available only when the radio is model/option capable.
- You can power on the Radio with Power On button/knob selection.
- You can power off the Radio with Power Off button/knob selection, or when the Inactivity Auto Power Off timer expires.
- While **Ignition** is not present, all PTT button transmissions are inhibited:
 - The radio does not register with ASTRO 25 (APCO) - Trunking Systems and therefore cannot receive this type of Trunking communications (see the System Type field), however Type II Trunking Systems can receive dispatch without being registered.

- Also, the radio cannot be powered-on with an Emergency Power Up footswitch-press; however, the footswitch can be used to initiate Emergency Alarm transmissions.

Soft Power Off

- Radio powers-on when **Ignition** is present.
- You can power on the Radio with Power On button/knob selection.
- You can power on the Radio when the Emergency Power Up field is enabled, with an emergency footswitch-press.
- You can power off the Radio powers-off when **Ignition** is removed, or with Power Off button/knob selection, or when the Inactivity Auto Power Off timer expires, or when the Ignition Auto Power Off timer expires.

When the Emergency Power Up field is disabled:

- Radio powers on with an Emergency footswitch-press and launches emergency mode:
 - when the radio was powered off with a Power Off button/knob selection, and
 - when **Ignition** is present.

Required

- You can power on the Radio with Power On button/knob selection only if **Ignition** is present, or
- Radio automatically powers-on when **Ignition** is present only if the radio powered-off due to **Ignition** being removed, or
- Radio powers-on with the Emergency Power Up feature.
- You can power off the Radio with Power Off button/knob selection.
- Radio powers-off when **Ignition** is removed.
- Radio powers-off when the Inactivity Auto Power Off timer expires.
- Radio powers-off when the Ignition Auto Power Off timer expires.

Ignition Only Power-Up

- Radio powers-on when **Ignition** is present, or with the Emergency Power Up feature.
- Radio powers-off when **Ignition** is removed.
- Radio powers-off when the Inactivity Auto Power Off timer expires.
- Radio powers-off when the Ignition Auto Power Off timer expires.
- Radio does not power on or off with Power Off button/knob selection, except under the following condition:
 - While **Ignition** is not present, you can power off the radio with Power Off button/knob selection only if the radio was powered-on with an Emergency Power Up footswitch-press, or if the Ignition Auto Power Off timer is running.
 - While **Ignition** is present, you can power on the radio with Power On button/knob selection only if the radio was powered-off by the Inactivity Auto Power Off timer.

4.2.4.9

Channel Change on HUB Target Zone

This field selects the target zone that the radio automatically switches to whenever the microphone is removed from the Hang-Up Box (HUB).



Select a channel after this zone is selected. This feature applies on a radio-wide basis.

 **WARNING:** Dynamic Zones are invalid and cannot be selected (zones that have Dynamic Zone Enable enabled).

Accessed Only: When the radio is not a TXM 2000 Transportable Mobile, and when the [Channel Change on HUB Enable on page 353](#) is enabled.

4.2.4.10

Channel Change on HUB Target Channel

This field selects the target channel that the radio automatically switches to whenever the microphone is removed from its Hang-Up Box (HUB).



The Channel Change on HUB Target Zone field must be selected before this channel selection is possible. This feature applies on a radio-wide basis.

Accessed Only: When the radio is not a TXM 2000 Transportable Mobile, and when the [Channel Change on HUB Enable on page 353](#) is enabled, and when the [Channel Change on HUB Target Zone on page 347](#) field is not set to "Unassigned" or a Dynamic Zone or a Remote Site Interface-enabled zone.

4.2.4.11

Inactivity Auto Power Off

This field selects the amount of time the radio waits before automatically powering off due to the lack of radio-user interaction.



This timer begins once a lack of interaction is determined by the radio. While the timer is active any button release on the radio resets the timer. During the last two minutes of this timer countdown, the radio generates audible and visual warnings until the timer expires or is reset. This selection applies on a radio-wide basis for all Conventional and Trunking communications channels.

The Inactivity Auto Power Off requires use of an MSI control head. This field will not work properly with third party control heads.

Accessed Only: When the Dual Radio - [Radio Selection on page 361](#) field is not set to **Secondary Radio** and when the radio is model/option capable.



NOTE: Inactivity Auto Power Off is disabled when set to **0 -Disabled** (default).

Table 51: Range

Minimum	Maximum	Increments
15 minutes	840 minutes	1 minute

4.2.4.12

Ignition Auto Power Off

This field allows you to select the amount of time that the radio waits before automatically powering off once the voltage at Ignition Sense is removed.



This timer begins once the voltage at Ignition Sense is removed, and a lack of interaction is determined by the radio thereafter. While the timer is active any button release on the radio resets the timer. During the last two minutes of this timer countdown, the radio generates audible and visual warnings until the timer expires or is reset. This selection applies on a radio-wide basis for all Conventional and Trunking communications channels.



IMPORTANT:

Timer functionality is based on the Ignition Switch state of your vehicle.

In a Dual Radio configuration, this functionality is only configurable on the **Primary Radio**.

Accessed Only: When the [Ignition Switch on page 345](#) field is set to **Ignition Only Power-Up, Required**, or **Soft Power Off**, and when the radio is model/option capable.



NOTE: Inactivity Auto Power Off is disabled when set to **0 -Disabled** (default).

Table 52: Range

Minimum	Maximum	Increments
3 minutes	840 minutes	1 minute

4.2.4.13

RF Modem

This field enables the radio to operate as an RF (Radio Frequency) Modem.

This functionality is possible when the radio is cabled to a computer and activated by applicable software, and allows the radio-user to receive control channel data on a computer, and to transmit specific Conventional - ASTRO data packets. This functionality facilitates applications such as Personnel Accountability (PA); Personnel Accountability improves resource management on the scene of an incident. This feature applies on a radio-wide basis for Conventional ASTRO data packets.

Accessed Only:

- When the CPS version is lower than 23.00.00 and the DVRS Hardware Enable field is disabled.
- When the Dual Radio - Radio Selection field is not set to **Primary Radio**
- When the radio is model/option capable.



NOTE: When CPS is equal or greater than 23.00.00 the DVRS Hardware Enable field does not have to be disabled.

Disabled

This selection disable the radio to not operate as an RF (Radio Frequency) Modem.

APCO Project 25 Mode

This selection is invalid when DVRS Hardware Enable field is enabled and CPS version is lower than 23.00.00.

4.2.4.14

Record Audio

This field allows you to select which audio type is recorded by the radio.



This selection applies on a radio-wide basis.

Transmit (Tx) Audio is not recorded from a Bluetooth microphone.

Accessed Only: When the Dual Radio [Radio Selection on page 361](#) field is not set to **Secondary Radio**, and when the radio is model/option capable.

The Record Audio supports the following selections:

- Disabled (default)
- Rx Audio
- Tx+Rx Audio

4.2.4.15

Pre-Amp

This field enables the radio to boost the receive signal strength when necessary.



The type of Pre-Amp is programmed by the RF AGC field selection on an individual Trunking Personality or an individual Conventional Personality basis.

When disabled, the radio always operates with Pre-Amp off.

Accessed Only: The radio is model or option capable.

4.2.4.16

Pre-Amp VHF

This field enables the radio to boost the receive signal strength when the radio is on a VHF frequency.

Accessed Only: When the radio is model/option capable.

4.2.4.17

Pre-Amp UHF

This field enables the radio to boost the receive signal strength when the radio is on a UHF frequency.

Accessed Only: When the radio is model/option capable.

4.2.4.18

Power Down Standby Mode (hours)

This feature allows the Land Mobile Radio (LMR) modem to be powered off while the applications processor is in a low-power mode to allow for a quicker device power-up. This feature also allows you to set the time for power down standby mode.

Table 53: Range

Minimum	Maximum	Increments
1 (hour)	8 (hours)	1 (hour)

 **NOTE:** If the radio stays in this mode for the selected duration, the radio is turned off automatically. If the value is set to 0, the radio is powered down immediately. If set to a value other than 0, the radio is kept in a low-power mode for the selected duration. If the radio knob is turned on while the radio is in standby, the radio fully functions within a few seconds.

The radio requires a cold-start power-up in the following shutdown scenarios:

- The battery is disconnected.
- Battery is drained.
- Power Down Standby Mode feature is disabled in the codeplug.
- Radio has been in standby mode for longer than the configured range for Power Down Standby Mode feature.

4.2.4.19

Dynamic Icons

This field allows the icons on your radio to change position according to the priority. Mission critical icon has the top priority, followed by the device specific icons, and the notification icons.

 **NOTE:**

- Only RSSI and battery for portable radios icons are displayed in a fixed position. When a mission critical feature is turned off, the position of the icon is replaced with another icon according to the priority.
- If this field is disabled, the icons are displayed in a fixed position that is pre-defined according to the radio firmware or control head firmware.

In a Dual Radio configuration:

If the Primary Radio is present during power up, the Secondary Radio will overwrite its own Dynamic Icons setting in the codeplug to match with the Primary Radio's setting.

If the Primary Radio is missing during power up, the Secondary Radio will refer to its own Dynamic Icons codeplug setting.

Table 54: Icon Placement

Radio	Mission Critical Icons	Device Specific Icons	Notification Icons
Radio with One Line Display	Left to right	Right to left	Right to left
Radio with Two Line Display	Left to right on Line 1	Right to left on Line 1 (continues on Line 2 if needed)	Right to left on Line 2.

4.2.4.20

Accessory Cable Configuration

This field selects the accessory cable configuration as it applies to the GPIO-3 (General-Purpose Input/Output) and the GPIO-4 pins on the J700 connector of the Mobile radio Transceiver Interconnect Board (TIB).



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

The J700 connector is also referred to as the (data-only) Global Common Accessory Interface (GCAI) connector or the Mobile Microphone Port (MMP). This selection applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

4-Wire RS-232 (default)

In addition to the standard RS-232 data lines (TXD and RXD), the GPIO-3 and GPIO-4 pins on the J700 connector provide the accessory cable with access to the two RS-232 hardware flow control lines (RTS and CTS).

2-Wire RS-232 with PTT and HUB

Only 2-wire RS-232 (the TXD and RXD data lines) is available on the radio. The GPIO-3 pin on the J700 connector is configured for Push-to-Talk (PTT). The GPIO-4 pin is configured for Hang-Up Box (HUB) functionality on the accessory cable.

In this configuration, the RS-232 hardware flow control lines (RTS and CTS) are not supported on the J700 connector or the 25-pin J600 connector of the TIB, or on J2, the radio's rear MAP (Mobile Accessory Port).

4.2.4.21

Overlap Region Band Preference

This field selects the preferred frequency band in a UHF dual-band-capable radio for Rx/Tx frequencies that fall within the overlap region of the two UHF frequency bands, Range 1 (R1) and Range 2 (R2).



This selection applies on a radio-wide basis.

NOTE: The overlap region for UHF R1 and UHF R2 is 450-470 MHz. Therefore, for example, if the Rx/Tx frequencies are set to 450.0625 MHz, the preferred frequency band for these frequencies is defined by this field.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

UHF R1

Selects UHF Range 1 (380-470 MHz) as the preferred frequency band for frequencies that fall within the overlap region.

UHF R2

Selects UHF Range 2 (450-520 MHz) as the preferred band for frequencies that fall within the overlap region.

Table 55: Defaults when Dual-Band is UHF R1 Mid Power / UHF R2 Mid Power

Dual Frequency Bands		Default Overlap Region Band Preference
Primary	Secondary	
UHF R2 MP	UHF R1 MP	UHF R2 MP

Dual Frequency Bands		Default Overlap Region Band Preference
Primary	Secondary	
UHF R1 MP	UHF R2 MP	UHF R2 MP

Table 56: Defaults when Dual-Band is UHF R1 High Power / UHF R2 Mid Power

Dual Frequency Bands		Default Overlap Region Band Preference
Primary	Secondary	
UHF R2 MP	UHF R1 HP	UHF R1 HP
UHF R1 HP	UHF R2 MP	UHF R1 MP

4.2.4.22
Channel Change on HUB Enable

This field enables a radio channel change to automatically occur, based on the state of the microphone's HUB (Hang Up Box).



Specifically, whenever the microphone is removed from the HUB (in other words, "off-hook"), the radio automatically switches to the CPS-defined "Channel Change on HUB" Target Zone and Target Channel, and

reverts back to the previously-selected zone/channel once the radio's microphone is placed back on the HUB ("on-hook"). This feature applies on a radio-wide basis.



IMPORTANT:
When more than one HUB exists:

For example in a Multi Control Head configuration, the radio's HUB state is considered to be "off hook" when any one HUB goes off-hook; conversely, the radio's HUB state is considered to be "on-hook" only when all the HUBs are on-hook.

In a Dual Radio configuration:

- The HUB state for the unselected radio is always considered to be "on-hook" while the HUB states for the selected radio always reflects the actual states of the HUB ("off-hook" or "on-hook").
- When the HUB state is "off-hook" and there is a radio switch, if this field is enabled, the new selected radio switches to the Target Zone and Target Channel, and the new unselected radio reverts back to the last radio-user selected channel prior to the "off-hook" condition.

While the microphone is "off-hook", a manual channel change is allowed. Once the microphone goes "on-hook", the radio reverts back to your last selected channel prior to the "off-hook" condition. For example, if the radio is on Channel 1 and the microphone is taken "off-hook", the radio then switches to Channel 2 (per the Target Zone/Target Channel selections). If you manually change the radio to Channel 4, when the microphone is placed back on the HUB, the radio reverts back to channel 1.

If the radio is powering up with the HUB "off-hook", the radio switches to the specified Target Zone/Target Channel. Once the HUB is "on-hook", the radio switches to the last-selected channel before the power cycle occurred.

If the Default Control Head HUB State field is set to **Off Hook**, the radio powers up on the specified Target Zone/Target Channel, regardless of which state the HUB is in, and no channel changes are triggered when the HUB goes "on-hook" or "off-hook".

If a channel change has occurred due to a HUB "off-hook" state, and HUB Defeats PL and HUB Suspends Scan is enabled on the original channel (prior to the off-hook state). These two features work on the new channel according to that channel's configuration.

When the radio is in one of these states: Emergency Mode active, Tactical Inhibit Stun, Tactical Inhibit Kill, Radio Lock, or an external Key Variable Loader (KVL) is attached, the HUB state is ignored. Therefore, a HUB state change does not trigger a channel change. However, once the radio exits one of these states, the HUB state ("on-hook" or "off-hook") is taken into account.

When Dynamic Regrouping is active and the radio's channel selector is locked, the HUB state is ignored. Therefore, a HUB state change does not trigger a channel change.

Once it is enabled, a valid zone must be selected.

Deskset Microphone RMN5070 is not compatible with this feature.

Accessed Only: When the radio is not a TXM 2000 Transportable Mobile.

4.2.4.23

Target Zone

This field selects the target zone that the radio automatically switches to whenever the microphone is removed from its Hang-Up Box (HUB).

Once this zone is selected, a channel from the zone must be selected. This feature applies on a radio-wide basis.



WARNING: Dynamic Zones are invalid and cannot be selected (zones that have Dynamic Zone Enable enabled).

Accessed Only: When the radio is not a TXM 2000 Transportable Mobile and when the [Channel Change on HUB Enable on page 353](#) field is **enabled**.

4.2.4.24

Target Channel

This field selects the target channel that the radio automatically switches to whenever the microphone is removed from its Hang-Up Box (HUB).

The Channel Change on HUB Target Zone field must be selected before this channel selection is possible. This feature applies on a radio-wide basis.

Accessed Only: When the radio is not a TXM 2000 Transportable Mobile, when the [Channel Change on HUB Enable on page 353](#) field is **enabled**, and when the [Target Zone on page 354](#) field is not set to **Unassigned** or a Dynamic Zone or a Remote Site Interface-enabled zone.

4.2.4.25

Voice Absence Timer

This field selects the amount of time, during a radio transmission, that the Digital Signal Processor (DSP) waits while detecting a lack of voice from the microphone before declaring a No Voice event.

This may be used to trigger End Tx on Voice Absence. This selection applies on a radio-wide basis for all Conventional and Trunking communications channels.

Accessed Only: When the radio is model/option capable.

Table 57: Range

Minimum	Maximum	Increments
5 seconds (default)	60 seconds	1 second

4.2.4.26

External RF Routing

This field is used to determine the RF band that will be routed to the external antenna when the radio is attached to the Vehicular Adapter (VA) or Public Safety Microphone with Antenna (PSM).

This selection applies to Portable radios that support multiple bands. This feature is only editable for multiple bands and uneditable for single band.

The following selections are supported:

7/800

It is valid only if 7/800 MHz is a purchased band.

UHF

It is valid only if either UHF1 or UHF2 is a purchased band.

VHF

It is valid only if VHF is a purchased band. VHF will only be routed externally when a Vehicular Adapter is attached.

ALL_BANDS

Routes all purchased bands externally. Only valid for multiband radios that support the Vehicular Adapter.

4.2.4.27

Radio Certification Type

This feature allows you to configure the Radio Certification Type.

Radio Certification Type is set to None by default. Select FM or UL to enable this feature. If a mismatched battery is attached, a wrong battery alert is triggered.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

None

Radio supports any kind of batteries.

FM

Radio only support FM certified batteries.

UL Div 1

Radio only support UL-Div 1 certified batteries.

UL Div 2

Radio only support UL Div 2 certified batteries only.

4.2.4.28

Record Playback Audio Buffer Size

This field specifies the last number of seconds of the current incoming call to be recorded by the Instant Recall feature.

This feature applies on a radio-wide basis. The Instant Recall feature is enabled when this field is set to any value other than **Disabled** default.

 **WARNING:** All calls are recorded for the duration of configured time until next power up cycle or until overwritten by more recent receive audio.

Accessed Only: When the radio is model or option capable.

Table 58: Range

Minimum	Maximum	Increments
10 sec	60 sec	1 sec

4.2.4.29

Analog Wideband Data

The Analog Wideband Data (AWD) causes the analog transmit and receive calls to bypass the Digital Signal Processor (DSP) filters as in regular flat audio mode. The filters optimize audio during voice call operation. In AWD mode, audio is processed at 16 KHz sampling rate at all times. In normal analog voice mode, sampling rate is converted to 8 KHz for audio processing.

The AWD prioritizes the key and dekey attack time. This field enables you to use the feature in the Conventional Personality using the radio as a data modem for Transit CAD operations.

 **WARNING:** This field must only be used by XCMP licensed users. Enabling this feature will disable support for MSI control heads.

4.2.4.30

Display Last Acknowledged User Status or Message



This field allows you to enable or disable the display of the last acknowledged user status or message.

This field is not applicable to O5 Control Head.

4.2.4.31

Disable Ignition Auto Power Off Alert

When this field is checked, it disables the auto power off audio and visual warnings in the final 2 minutes of the radio powering off due to removal of voltage at Ignition Sense.

This field can be modified when **Ignition Auto Power Off** is accessible and not set to **Disabled**.

4.2.4.32

Power Down Standby Mode (hours)

This feature allows the Land Mobile Radio (LMR) modem to be powered off while the applications processor is in a low-power mode to allow for a quicker device power-up. This feature also allows you to set the time for power down standby mode.

Table 59: Range

Minimum	Maximum	Increments
1 (hour)	8 (hours)	1 (hour)



NOTE: If the radio stays in this mode for the selected duration, the radio is turned off automatically. If the value is set to 0, the radio is powered down immediately. If set to a value other than 0, the radio is kept in a low-power mode for the selected duration. If the radio knob is turned on while the radio is in standby, the radio fully functions within a few seconds.

The radio requires a cold-start power-up in the following shutdown scenarios:

- The battery is disconnected.
- Battery is drained.
- Power Down Standby Mode feature is disabled in the codeplug.
- Radio has been in standby mode for longer than the configured range for Power Down Standby Mode feature.

4.2.4.33

SmartMessaging Mode

Allows the user to select the type of the message transmission routing.

LMR

Messages transmits according to the settings of the Conventional or Trunking channel.



NOTE: LMR is a narrowband network that has limited capability for data intensive applications.

SmartMessaging

Messages transmits through the default broadband messaging application.



NOTE: LTE is a broadband network that can handle data intensive applications.

4.2.4.34

ViQi: Voice Control Priority

Allow you to select the priority of Voice Control over LMR. Allow the user to select the priority of Voice Control over LMR.

The following selections are supported:

Low

LMR audio has priority. LMR receive audio will cancel or block the voice control feature when the radio is actively receiving.

High

Voice Control has priority. While the voice control button is held down (voice control is active), LMR receive audio will be muted.

Disabled

Voice Control feature is disabled.

4.2.4.35

ViQi: Virtual Partner Mode

Allow the user to select the operation of Virtual Partner Mode. Allows you to select the operation of Virtual Partner Mode.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

The following selections are supported:

Disabled

Disables the Virtual Partner feature from operating.

Broadband

All Virtual Partner requests and responses will only use LTE or Wi-Fi connections.

4.2.4.36

ViQi: Virtual Partner Audio Priority

Configures how the Virtual Partner feedback audio is prioritized against LMR audio.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

The following selections are supported:

ViQi Only

Plays ViQi at 100% and mutes any LMR RX audio.

ViQi Priority

Plays LMR Rx audio and ViQi audio concurrently. The LMR Rx audio level will be attenuated below the ViQi audio level.

ViQi Equal

Plays LMR Rx audio and ViQi audio concurrently at equal audio levels.

LMR Priority

Plays LMR Rx audio and ViQi audio concurrently. The ViQi audio level will be attenuated below the LMR Rx audio level.

4.2.4.37

ViQi: Virtual Partner Inactivity Timer (sec)

Selects the amount of time that the user will remain inactive in the Virtual Partner feature before exiting and begin listening to the selected dispatch channel.

 **NOTE:** This field is only applicable for APX NEXT and APX N70 radios.

Accessed Only: When **Broadband** is selected in [ViQi: Virtual Partner Mode on page 358](#) field and when the radio is model/option capable.

Table 60: Range

Minimum	Maximum	Increments
5 seconds (default)	255 seconds	1 second

 **NOTE:** While the user is using the Virtual Partner feature, all normal dispatch voice traffic will be missed.

4.2.4.38

11.4 kHz VLIF PLOSS

This field selects for better Rx performance.

Accessed Only: When the radio is model or option capable.

The following selections are supported:

Immediate Switching

Fast detection and reduction of adjacent channel interference.

Natural Switching

Detection and smoother reduction of adjacent channel interference.

Fixed High injection

Reduces interference from signals present at 25 kHz lower than the active receive frequency.

Fixed Low injection

Reduces interference from signals present at 25 kHz higher than the active receive frequency.

4.2.4.39

Custom Power Up Image Enable

If this field is enabled, you can upload an image to appear at the end of the power-up sequence.

4.2.4.40

Channel Fallback Enable

This field enables the Auto Channel Fallback feature. This feature allows you to associate a system-based channel with a Fallback Channel. The radio can switch to a Fallback Channel when it is unable to communicate with the Land Mobile Radio (LMR) network.



WARNING: You are **not** recommended to configure a Fallback Channel as a channel on the same system. If the radio automatically cannot communicate with the system on a talkgroup, then the radio is also not able to communicate on a different talkgroup.



IMPORTANT:

The Auto Channel Fallback feature is turned off for all channels by default. After enabling this field, you must choose a Fallback Zone and Fallback Channel for a given channel in the Zone Channel Assignment.

The radio can perform nested fallbacks. If the selected Fallback Channel is unable to communicate with the LMR network, the radio can perform a Channel Fallback if a Fallback Channel is assigned to it.

After the radio performs a Channel Fallback, the radio waits a short duration before attempting another Channel Fallback to avoid switching too frequently.

On a Fallback-enabled channel, the feature can be activated by pressing the **Automatic Channel Fallback Enable/Disable** button. Pressing and holding this button deactivates the feature and reverts the radio back to the last user-selected channel.

Pressing the **Channel Fallback Manual/Revert** button causes the radio to manually switch to the assigned Fallback Channel regardless of current network conditions and activation state. Pressing and holding this button reverts the radio back to the last user-selected channel.

On the following system-based channels, the radio is unable to communicate with the LMR network and switches to the Fallback Channel automatically. On any other channel type, only Manual Channel Fallback is available.

- P25 Trunking
- Type II Trunking
- DVRS-Enabled PSU

4.2.4.41

Custom Radio Inhibit Display Enable

When this field is enabled, you can view the Custom Radio Inhibit Display in RadioCentral Programming.



IMPORTANT: Customer Programming Software (CPS), Radio Management (RM), and RadioCentral (RC) are available in read-only mode.

After receiving the inhibit command, your radio will disable most functionalities and display a custom image on the screen.



NOTE: This field is only applicable for APX N70 and APX NEXT radios.

4.2.4.42

Custom Radio Inhibit Display Text Line 1

This field allows you to view whether Custom Radio Inhibit Display Text Line 1 is set to **Enabled** in RadioCentral Programming. You can also view the corresponding value.



IMPORTANT: Customer Programming Software (CPS), Radio Management (RM), and RadioCentral (RC) are available in read-only mode.

After receiving the inhibit command, your radio will disable most functionalities and display a custom message on the top screen.

 **NOTE:** This field is only applicable for APX N70 and APX NEXT radios.

Accessed Only: When **Custom Radio Inhibit Display** field is enabled.

4.2.4.43

Custom Radio Inhibit Display Text Line 2

This field allows you to view whether Custom Radio Inhibit Display Text Line 2 is set to **Enabled** in RadioCentral Programming. You can also view the corresponding value.

 **IMPORTANT:** Customer Programming Software (CPS), Radio Management (RM), and RadioCentral (RC) are available in read-only mode.

After receiving the inhibit command, your radio will disable most functionalities and display a custom message on the top screen.

 **NOTE:** This field is only applicable for APX N70 and APX NEXT radios.

Accessed Only: When **Custom Radio Inhibit Display** field is enabled.

4.2.4.44

Enable Invalid SIM Notification

This field enables the SIM Invalid/Removed Trigger for your radio and will only work if LTE is enabled. Action Consolidation must be configured for Invalid SIM notifications.

Accessed Only: For APX NEXT radios only. APX N70 radios must have LTE HW Enablement option.

The default value is **Disabled**.

4.2.5

Dual Radio

This section allows you to view or modify settings related to a Dual Radio configuration.



4.2.5.1

Radio Selection

In a Dual Radio configuration, this selection determines which radio is the **Primary Radio** and which radio is the **Secondary Radio**.



Switching between the two radios is initiated with a Radio Swap button-press or a Radio Swap menu-selection.

 **IMPORTANT:** In a Dual Radio configuration, only one radio may be selected as the "Primary" radio, and only one radio may be selected as the "Secondary" radio.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Standalone Radio

Selects the current radio to operate the same as a single radio, even though the Dual Radio option is present.

Primary Radio

Selects the current radio to be the first radio used by the control head upon dual radio power up, which is why the Ignition Switch feature must be programmed for this radio, and therefore determines power on and power off for the dual radio system.

Radio Wide features such as the PA/Siren and the Universal Relay Controller are CPS-defined for this radio codeplug only.

Additionally, all external hardware devices for these types of features must be connected to the "Primary" radio.

Secondary Radio

Selects the current radio to be the second (auxiliary) radio used by the control head.

4.2.5.2

Emergency Radio

This field selects which radio in a Dual Radio configuration will handle Emergency Mode operation, either a predetermined radio or the currently-selected radio is possible.



This feature applies on a radio-wide basis.



WARNING:

For Emergency Evacuation Tone being enabled in Dual Radio configuration, when Emergency is programmed on the "Orange Button", Evacuation Tone must be programmed as follows.

When this Emergency Radio choice is ...

- "Primary Radio", Evacuation Tone must be programmed on the "Primary Radio"
- "Secondary Radio", Evacuation Tone must be programmed on the "Secondary Radio"
- "Selected Radio", Evacuation Tone has no "Orange Button" restrictions and can be programmed on both radios, or on either radio as needed.

The Emergency Mode "Radio Swap" Rule for All Emergency Radio Selections:

When one of the radios is in Emergency Mode, and when that radio is in the Emergency "Call" state (see Emergency Type = "Call Only" or "Alarm & Call"), a Radio Swap button-press and a Radio Swap menu-selection is possible. However, "Radio Swap" is not possible when that radio is in the Emergency Alarm state (see Emergency Type = "Alarm & Call" or "Alarm Only"), and "Radio Swap" is not possible when that radio's channel is in the "Hot Mic" state or in the "Emergency via Silent Audio" state.

The Emergency Mode "Silent Alarm" and "Unmute Option" Rule for All Emergency Radio Selections:

When the Selected Radio is in Silent Alarm - Emergency Mode, both the Selected Radio and the Unselected Radio follow the Unmute Option setting of the Selected Radio.

Accessed Only: When the [Radio Selection on page 361](#) field is set to **Primary Radio**, and when the radio is model/option capable.

The following selections are supported:

Selected Radio

When Emergency Mode is activated, the emergency transmission is sent on your selected radio.

Both radios cannot enter Emergency Mode at the same time; therefore emergency must be exited on one radio before it can be initiated on the other radio. Exiting Emergency Mode is accomplished with the normal methods.

Primary Radio

When Emergency Mode is activated, the emergency transmission is always sent on the "Primary Radio" (see the Radio Selection field).

If emergency is activated and the Primary Radio is not currently the Selected Radio, the radios are automatically swapped making the Primary Radio the Selected Radio, and then emergency is transmitted.

Exiting Emergency Mode is accomplished with the normal methods.

Secondary Radio

When Emergency Mode is activated, the emergency transmission is always sent on the "Secondary Radio" (see the Radio Selection field).

If emergency is activated and the Secondary Radio is not currently selected, the radios are automatically swapped making the Secondary Radio the Selected Radio, and then emergency is transmitted.

Exiting Emergency Mode is accomplished with the normal methods.

4.2.5.3

Talkgroup Mute Option

This field selects the Dual Radio - Trunking dispatch rule that determines when the "Secondary Radio" mutes and unmutes its speaker.



This is only true when both radios are programmed with an identical Trunking Talkgroup (based-on the Talkgroup ID) and Announcement Group (based-on the Announcement Group ID), regardless of which Talkgroup(s) for these radios are operating in-the-field. This selection applies for Trunking dispatch on a radio-wide basis.

Accessed Only: When the [Radio Selection on page 361](#) field is set to **Secondary Radio**, and when the radio is model/option capable.

The following selections are supported:

Never Mute

The "Secondary Radio" mutes or unmutes according to normal group call operation; in other words, muting is never forced.

Always Mute

The "Secondary Radio" remains muted when both radios are programmed with an identical Trunking Talkgroup (based-on the Talkgroup ID) and Announcement Group (based-on the Announcement Group ID), regardless of which Talkgroup(s) for these radios are operating in-the-field; however, the Secondary Radio can still unmutes to individual calls such as Selective / Private Calls, Call Alerts / Pages, Phone calls, alert tones and Voice Announcements.

The Secondary Radio remains muted even when the Primary Radio is not able to unmute due to its normal unmute rules not being satisfied.

4.2.5.4

Enable Secondary Radio Tx

This field allows the Secondary radio in a Dual Radio configuration to transmit on a radio-wide basis.



When disabled, all transmissions from the Secondary radio are disabled, and the Secondary radio becomes capable of receive-only. This receive-only radio is also known as the Hot Red Receiver. See also the [Talkgroup Mute Option on page 363](#).

Accessed Only: When the [Radio Selection on page 361](#) field is set to **Secondary Radio**, and when the radio is model/option capable.

4.2.5.5

Cross Band Mute Option

In a Dual Radio **Cross Band** configuration, when the current radio is transmitting either **Primary** or **Secondary** Radio Selection, the speaker of the other radio remains muted to received audio.



See [Radio Selection on page 361](#). This selection does not apply to alert tones or Voice Announcements.



NOTE:

Dual radios are considered to be "cross-band" when entirely different frequency bands exist for the two radios (single band or dual band). This is based on each radio's available frequency band(s) (Primary Frequency Band and Secondary Frequency Band), regardless of the frequencies being used in each radio's codeplug.

Dual radios are considered to be "in-band" when at least one frequency band of one radio overlaps with any one band of the other radio (single band or dual band). This is based on each radio's available frequency band(s) (Primary Frequency Band and Secondary Frequency Band), regardless of the frequencies being used in each radio's codeplug.

Due to potential frequency band overlap, the combination of "UHF1" and "UHF2" on dual radios is considered "in-band".

In a Dual Radio "Cross Band" configuration, when the current radio is transmitting, the speaker of the other radio is able to unmute to received audio.



WARNING: When the two radios are "in-band", in order to avoid potential audio feedback and RF interference issues, when one radio is transmitting audio, the other radio's speaker is always muted to received audio.

Accessed Only: When the [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, and when the radio is model/option capable.

4.2.5.6

Fixed Swap Menu

This field enables a Dual Radio **Radio Swap** menu-selection to always appear in the left-most menu position of the control head in a Dual Radio configuration, even as you scroll through the soft-menu buttons.



This menu-selection appears regardless of whether or not the Radio Swap menu-selection is defined in the application. This feature applies on a radio-wide basis.

Accessed Only: When the [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, and when the radio is model/option capable.

4.2.6

Location

This section allows you to view or modify settings related to any radio-based (or radio accessory-based) location-determining technology.

For example, Global Positioning System (GPS) is a location-determining technology.

4.2.6.1

Location Enable

This field enables the GPS receiver in the radio for all Location-related features including Location Request Response Protocol (LRRP) requests from the Fixed Network Equipment (FNE) and the Location menu.

The Location menu is available to you with the Location button-press or Location menu-item selection.



NOTE: LRRP is a Motorola Solutions Proprietary protocol used to exchange location information (longitude and latitude) between the radio and a data device such as a Mobile Computer in the Customer Enterprise Network (CEN). This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

4.2.6.2

Display Peer Location

This field enables the radio, upon receiving an ASTRO voice transmission, to show the location coordinates of the transmitting (peer) radio in the Location Display Format, and possibly its relative distance and bearing in the selected Distance Unit.

This feature still operates when Scan Mode is active; therefore, the radio shows the peer location coordinates in landed scan mode. This feature applies on a radio-wide basis.



IMPORTANT:

The **Mixed Mode** Rx Voice/Signal Type allows a radio to receive both ASTRO and Non-ASTRO signaling types; however, only ASTRO voice streams encode location coordinate data.

Only ASTRO radio-to-radio voice transmissions support encoding the location coordinates in the voice stream, which means Conventional Pages and Selective Calls support this feature. DVRS, phone mode and other infrastructure-dependent features do not support this feature.

If the radio's GPS receiver is inactive (either because Location Enable is disabled, or User Selectable Location Enable is enabled and you have turned OFF the GPS feature with Location button-press or Location menu-selection), the radio does not display the relative distance/bearing of the transmitting radio as its own location is unknown.

When the location coordinates in the received voice stream are marked as "stale" (past a certain threshold since the last location update), the radio provides a visual indication that the transmitting radio's location data is stale.

When the radio receives a voice transmission that does not contain location coordinates, the radio provides a visual indication that the transmitting radio's location is unknown.

If the voice transmission is terminated while location coordinates appear on the display, this information remains for the End of Voice Timer duration.

Accessed Only: When the radio is model/option capable.

4.2.6.3

User Selectable Location Enable

This field enables you to turn the radio's location functionality ON or OFF on a radio-wide basis.

Location may be used in conjunction with a location-determining technology such as Global Positioning System (GPS).

 **WARNING:** The Location menu is available to you with the Location button-press or Location menu-selection. One of these controls must be programmed, otherwise, this field will be invalid. This feature applies on a radio-wide basis.

Accessed Only: When the [Location Enable on page 365](#) field is enabled, and when the radio is model/option capable.

4.2.6.4

Mapping Mode

Mapping Mode allows the user to view their location or location of others on the map.

Accessed Only: When the [Location Enable on page 365](#) field is enabled.

The following selections are supported:

- None
- SmartMapping

4.2.6.5

Location Display Format

This field selects the format for viewing and editing the coordinates in the location menu and to display location formats.

 **WARNING:** The Location menu is available to you with the Location button-press or Location menu-item selection. This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable, and when the [Location Enable on page 365](#) field or the [Display Peer Location on page 365](#) field is enabled.

The following selections are supported:

- Latitude/Longitude
- Latitude/Longitude (DMD)
- Latitude/Longitude (DMS)
- Latitude/Longitude (DD)
- UTM
- MGRS (Military Grid Reference System)

4.2.6.6

Distance Unit

This field selects the unit of measurement to be used when displaying the distance between waypoints in the radio's Location menu.

The Location menu is available to you with the Location button-press or Location menu-item selection. This feature applies on a radio-wide basis.

Accessed Only: When the [Location Enable on page 365](#) field is enabled, and when the radio is model/option capable.

The following selections are supported:

- Kilometers
- Miles

4.2.6.7

Exit Location Menu on PTT

This field causes the radio Location menu to exit in the event that you press the PTT button to begin a transmission.

If disabled, the radio will remain in the Location menu.

This feature is available to you with the Location button-press or Location menu-item selection. This feature applies on a radio-wide basis.

Accessed Only: When the [Location Enable on page 365](#) field is enabled, and when the radio is model/option capable.

4.2.6.8

GPS Fail Tone Interval

This field selects the amount of time that the radio pauses between sounding the Global Positioning System (GPS) fail tones, which play whenever the GPS signal has been lost.

This feature applies on a radio-wide basis.



NOTE: The radio stops sounding the repetitive tones once the GPS signal has resumed, or if you toggle Location functionality Off with the Location button-press or Location menu-item selection.

Accessed Only: When the Location Enable field is enabled, and when the radio is model/option capable.

The following selections are supported:

Disabled:

The GPS fail tone is disabled - 0 (zero seconds)

Timed Selections Include:

30 (seconds) to 930 (seconds)

In Increments = 30 (seconds)

4.2.6.9

P25 Location Reporting

This field enables the radio to process Location Request or Response Protocol (LRRP) messages using the Project 25 (P25) Location Reporting data format, in addition to the legacy Motorola Location Reporting data format.

This is required when the radio exchanges LRRP location information with a Location Server within a Conventional or Trunking communications infrastructure that is only compliant with P25 Tier 2 Location Services Specifications (as published by the Telecommunications Industry Association). This feature applies on a radio-wide basis.

When disabled, the radio only supports LRRP messages using the legacy Motorola Location Reporting data format.



NOTE:

When the Location Server communicates with the radio at the port specified in the P25 Location Reporting UDP Port field, then the radio interprets the data as being P25 Location Reporting data (the default P25-specified port number for this port is 49198).

When the Location Server communicates with the radio at static port 4001, then the radio interprets the data as “Motorola legacy Location Reporting” data.

When the Location Server makes a request for location information from a radio at the port specified in the P25 Location Reporting UDP Port field, then the radio interprets the data as being P25 Location Reporting data (the default P25-specified port number for this port is 49198), and the radio encodes or decodes the LRRP messages between the radio and the Location Server using the “P25 Location Reporting” data format.

Direct Location Registration feature allows the radios to send the Presence notification to the Location Server when the ARS application is not present, by using the “Protocol Version Messaging” LRRP message which is encoded using “P25 Location Reporting” method.

Accessed Only: When the [Location Enable on page 365](#) field is enabled, and when the radio is model/option capable.

4.2.6.10

Geofence Action Operation

This field selects the option to determine if the Subscriber Unit (SU) will automatically perform a zone/channel change or requires you to manually accept the zone or channel change by pressing a menu/button.

Accessed Only: When the radio is model/option capable, and when the [Location Enable on page 365](#) field is enabled.

The following selections are supported:

Automatic (default)

All Geofence actions will be performed automatically upon geofence entry/exit.

Manual

If a geofence uses either the zone/channel or talkgroup (UNS only) actions, you must manually accept or reject the action upon entering any geofence where that action is used. The accept or reject operation will be handled by a new pop-up menu (model 3.5 and model 2.5 only). All the other actions (Voice Announcement, Status, Message, etc.) will be processed automatically without any of your choice.

User Defined

The radio will initially default to **Automatic** mode. However, you may toggle between manual and automatic mode by using a new option within the LOC (GPS location) menu (model 3.5 and model 2.5 only). Furthermore, automatic mode can be enabled as a choice within the accept/reject menu that pops up when manual mode is enabled. Your selection will be remembered in the radio across power cycles and will apply to all geofences.

4.2.6.11

Geocoded Location Format

Geocoded Location Format allows user to select format for reverse geocoding.

Accessed Only: When the [Location Enable on page 365](#) field is enabled.

The following selections are supported:

- Disabled

- Street Address
- Intersection

4.2.6.12

System Managed Geofence

This field enables the radio to support the Geofence from UNS.

When SU performs the ARS User Login with the presence server, the information to indicate whether SU is capable of supporting the System Managed Geofence transmits with the ARS.



WARNING: When enabling System Managed Geofence, [ARS Mode on page 995](#) must be set as **Enhanced Server** in at least one of the Data Profile record to prevent invalid Fields Report.

Accessed Only: When the radio is model/option capable, and when the ARS Mode is Enhanced Server in at least one of the Data Profiles, and when the [Location Enable on page 365](#) field is enabled.

4.2.6.13

SmartLocate Reporting

This field allows you to select the operation of SmartLocate Reporting.

The following selections are supported:

LMR Only

When [Location Enable on page 365](#) is enabled, the radio is configured to report device location using Motorola Solutions proprietary Location Request Response Protocol (LRRP) over ASTRO system to Command Central Aware.

Broadband Only

When this selection is enabled, the radio is configured to report device location as device-to-cloud telemetry messages using Broadband (WiFi or Cellular LTE) service to Command Central Aware.

Broadband Preferred

When [Location Enable on page 365](#) is enabled and Broadband service is available, the radio is configured to report device location as device-to-cloud telemetry messages using Broadband service to Command Central Aware. If Broadband service is not available, the radio is configured to report device location using Motorola Solutions proprietary Location Request Response Protocol (LRRP) over ASTRO system to Command Central Aware.

Accessed Only: When the [Location Enable on page 365](#) field is enabled, and when the radio is model/option capable.

4.2.6.14

Server Assisted Location

When enabled, the radio uses a broadband internet connection to provide the location of the radio. When GNSS is unavailable, telemetry data is sent to the location server to approximate the position of the radio. Locations are sent to the location server for reverse geocoding.

Accessed Only: When the [Location Enable on page 365](#) field is enabled.

4.2.7

Audio Options

This section allows you to view or define receive and transmit audio control parameters that apply on a radio wide basis.

4.2.7.1

Concurrent Rx Enable

This field enables the radio to remain unmuted even when multiple transmissions occur at the same time and on the same channel.

This is only true when operating on analog Direct/Talkaround channels. These simultaneous transmissions are only heard when their received signal strengths are relatively strong and equal. This feature applies on a radio-wide basis.



IMPORTANT:

Enabling this feature will cause some weak signals that are normally received by the radio to remain muted; therefore, it is only recommended to enable this feature if the ability to receive concurrent transmissions has been identified as necessary.

For radio models containing firmware prior to version R12.00.00, this feature is applicable only to 25 kHz channels (see also the Tx Deviation/Channel Spacing field). For radio models with R12.00.00 firmware or later, this field applies to both 12.5 kHz and 25 kHz channels.



NOTE: The audio from these concurrent transmissions is mostly unintelligible. Receiving simultaneous transmissions is sometimes needed when managing on-scene incidents where it may be very important to receive all communications. For example, having this feature enabled may be crucial to incident management where analog-only communications are used, chaotic conditions are expected, and any received transmission is better than no transmission at all.

4.2.7.2

Tx Digital/Analog Balance

This field enables the audio transmission level to equalize or balance when switching between analog and digital.

This feature may be applied on a radio-wide basis or a per Radio Profile basis.



WARNING: When **Radio Wide** is selected, Digital AGC (Radio), Analog AGC (Radio), Digital AGC (Accessory), and Analog AGC (Accessory) must be "Disabled" for each record of Radio Profiles; otherwise, this selection is considered invalid.

The following selections are supported:

Off

The feature is disabled.

Radio Wide

Balancing of the audio transmission level occurs on a radio-wide basis.

Per Profile

With this selection, the Digital/Analog Balance field may then be enabled or disabled on any of the existing Radio Profile records.

4.2.7.3

Auxiliary PTT Audio Source

This field selects the source of PTT audio. The selection applies on a radio-wide basis.



Accessed Only: When the radio is model/option capable.

The following selections are supported:

AUX_MIC
Auxiliary Microphone

AUX_TX
Auxiliary Transmit

4.2.7.4

Auxiliary Transmit Sensitivity

This field selects the transmit audio level associated with the auxiliary (Aux) microphone.



The selection applies on a radio-wide basis.

WARNING: This is only true when the [Auxiliary PTT Audio Source on page 370](#) field is set to **AUX_MIC** (Auxiliary Microphone). When the Aux PTT Audio Source field is set to **AUX_TX**, this field must be set to **300 mV**; otherwise, this field's value becomes invalid.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

- 80 mV
- 300 mV

4.2.7.5

Audio Configuration Level

This field allows you to configure the radio's audio level.

Accessed Only: This is a setting which is only available in Full View (see Codeplug View).

The following selections are supported:

Enhanced

Enables the audio enhancement feature.

If you make the selection from **Enhanced** to **Basic**, then Gain Sensitivity Group Settings values and Audio Equalization Group Settings (Speaker) values are synchronized from the Radio column to the Accessory column.

Basic

Choosing **Basic** disables the audio enhancement feature, and the following fields are non-applicable:
The following fields are non-applicable:

- **Digital Low Frequency Band for both Radio and Accessory**
- **Digital Mid Frequency Band for both Radio and Accessory**
- **Low Frequency Band for Radio and Accessory**
- **Digital High Frequency Band for Accessory**
- **Mid Frequency Band for Radio and Accessory**
- **Securenet Low Frequency Band for both Radio and Accessory**
- **High Frequency Band for both Radio and Accessory**
- **Securenet Mid Frequency Band for both Radio and Accessory**
- **Audio Equalization Group Settings (Mic)**
- **Analog Low Frequency Band for both Radio and Accessory**

- **Audio Equalization Group Settings (Speaker)**
- **Analog Mid Frequency Band for both Radio and Accessory**

The following fields are non-editable:

- **AGC Gain Control Output for Accessory**
- **AGC Gain Control Total for Accessory**
- **Digital / Analog Balance for Accessory**
- **Analog High Frequency Band for Accessory**
- **Securenet High Frequency Band for Accessory**
- **Digital High Frequency Band for Accessory**

4.2.7.6

Combine Tx with Rx Filtered Audio

When this field is enabled, Tx audio is combined with Rx audio on the filtered Rx audio output line.

When disabled, only the Rx filtered audio will be available. For TXM3000, this controls the audio provided to the audio recorder output port.

4.2.7.7

Bluetooth Microphone for Auxiliary PTT Audio Source

This field allows you to select the Bluetooth microphone as the source if the PTT audio source is auxiliary (Aux).

Aux PTT Audio Source selection is used for PTT audio if the Bluetooth microphone is not connected.

4.2.7.8

Mute ICUA on PowerUp

When this field is enabled, your radio powers up with Voice Mute turned on, muting all received traffic. The radio remains muted until it is unmuted by user selection, when receiving a Quik Call II tone, when receiving a Call Alert, or PTT is pressed.



NOTE: This field can only be enabled for channels that have In Call User Alert enabled.

Accessed Only: To enable on ICUA enabled channels.

4.2.8

Sensor

This section allows you to view or define Sensor functionality.

4.2.8.1

Sensor Event Disable Time

This field allows you to specify the amount of time you have to wait for an event to occur while in temporary disable mode.

If an event does not occur, the temporary disable is canceled. The default value is 30.

Accessed Only: When the radio is model/option capable.

Table 61: Range

Minimum	Maximum	Increments
5 seconds	300 seconds	5 seconds

4.2.8.2

Sensor Event Notification Enable

This field allows you to enable the local notification if there are any context event from the connected sensor devices.

Accessed Only: When the radio is model/option capable.

4.2.9

Transmit Power Levels

This section allows you to view or define transmit (Tx) low and transmit high power settings, within predefined limits.



IMPORTANT:

There are unique Transmit Power Level configurations (records/rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug apply and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency bands supported by the radio.

Due to high variation of power capabilities across all models supported by this application, and multiple band variations within each model, the entire Tx Power Levels table is blocked during data transfer operations such as Drag and Drop and Import/Export.



NOTE:

To fully comply with regulatory output power level requirements, Part 80 Marine users operating between 154 – 162.025 MHz (VHF Band) and 454 – 470 MHz (UHF Band) must program the transmit power from the defaults to a level not exceeding the values given in the table below.

Note that this reduced power restriction applies only to certain models of the radio and strictly for Part 80 Marine frequencies. Check your license for any additional restrictions on output power.

Product Family Description	FCC/IC	Frequency Range/Output Power
APX NEXT	AZ489FT7147/109U-89FT7147	156 – 162.025 MHz/5 W 454 – 470 MHz/2 W
APX4500/APX6500 Mid Power (VHF)	AZ492FT7130/109U-92FT7130	156 – 162.025 MHz/47.5 W
APX4500/APX6500 Mid Power (UHF R1)	AZ492FT7129/109U-92FT7129	454 – 470 MHz/1 W

4.2.9.1

Band Plan Selection

This field selects the appropriate 7/800 MHz frequency band - band plan that the radio is licensed to operate under, which then determines which of two Transmit Power Level configuration tables is available to the radio's codeplug.



This value applies on a radio-wide basis.

 **WARNING:** In 2007, the Federal Communications Commission's (FCC) 700 MHz band plan rebanded the 7/800 MHz frequency band, in part to allocate the 700 MHz "D-Block" Broadband frequencies for public safety use; however, certain agencies in the U.S. and Canada may have licences / waivers that allow them to use the original 700 MHz band plan.

 **IMPORTANT:** There are unique Transmit Power Level configurations (records / rows) for each of the possible frequency ranges within a given frequency band; however, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug will apply and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

The following selections are supported:

Old

The original 7/800 MHz band plan (see the Warning), and therefore the original Transmit Power Level Transmit Power Level configurations, are applicable to the radio's codeplug.

New

The latest 7/800 MHz band plan (see the Warning), and therefore the Tx Power Level (New Band Plan) configurations, are applicable to the radio's codeplug.

Accessed Only:

- When the Primary Frequency Band or the Secondary Frequency Band is "7/800 MHz".
- When **Allow Invalid Frequencies** is enabled, and when 7/800 MHz Used in Codeplug is enabled.
- When **700 MHz Enable or 800 MHz Enable** is enabled).
- When **Allow Invalid Frequencies** is enabled.
- When **700 MHz Used in Codeplug or 800 MHzUsed in Codeplug** is enabled.
- When the radio is model/option capable.

4.2.9.2

Frequency Band

The application retrieves and displays the read-only frequency band, where each range has a unique Transmit Power Level configuration (record/row).

The current frequency range is defined by [Frequency Range Start \(MHz\) on page 375](#) and [Frequency Range End \(MHz\) on page 375](#). Dual-band radios have support for more than one frequency band (see also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio). This value applies on a radio-wide basis.

 **IMPORTANT:** There are unique Transmit Power Level configurations (records/rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified.

4.2.9.3

Frequency Range Start (MHz)

The application retrieves and displays the read-only Frequency Range Start value for the frequency band of the current record/row.

These values are fixed for this radio model. This value applies on a radio-wide basis.

 **IMPORTANT:** There are unique Transmit Power Level configurations (records/rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

4.2.9.4

Frequency Range End (MHz)

The application retrieves and displays the read-only Frequency Range End value for the frequency band of the current record/row.

These values are fixed for this radio model. This value applies on a radio-wide basis.

 **IMPORTANT:** There are unique Transmit Power Level configurations (records/rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

4.2.9.5

Tx Power Level Minimum (W)

The application retrieves and displays the read-only Tx Power Level Minimum value.

This value is fixed for this radio model, and applies only to channels in the frequency band of the current record/row.

 **IMPORTANT:** There are unique Transmit Power Level configurations (records/rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

4.2.9.6

Tx Power Level Low (W)

This field allows you to enter the transmit (Tx) low power level.

This value applies only to channels in the frequency band of the current record/row.

 **WARNING:** To be considered valid, Tx Power Level Low must be greater than or equal to [Tx Power Level Minimum \(W\) on page 375](#), and less than or equal to [Tx Power Level High \(W\) on page 377](#) and [Tx Power Level Maximum \(W\) on page 378](#).

 **IMPORTANT:** There are unique Transmit Power Level configurations (records/rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

4.2.9.7

Cnv Tx Power Level Minimum (W)

The application retrieves and displays the read-only Conventional Tx Power Level Minimum value.



This value is fixed for this radio model, and applies only to Conventional communications channels in the frequency band of the current record / row.



IMPORTANT:

There are unique Transmit Power Level configurations (records / rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

Be sure to see the "Ultra Low Power" (ULP) in the "Used in Codeplug" Important Note for the SRX 2200 radio.

Accessed Only: When the radio is an SRX 2200 model.

4.2.9.8

Trk Tx Power Level Minimum (W)

The application retrieves and displays the read-only Trunking Tx Power Level Minimum value.



This value is fixed for this radio model, and applies only to Trunking communications channels in the frequency band of the current record / row.



IMPORTANT:

There are unique Transmit Power Level configurations (records / rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

Be sure to see the "Ultra Low Power" (ULP) in the "Used in Codeplug" Important Note for the SRX 2200 radio.

Accessed Only: When the radio is an SRX 2200 model.

4.2.9.9

Cnv Tx Power Level Low (W)

This field allows you to enter the Conventional Tx (transmit) low power level.



This value applies only to Conventional communications channels in the frequency band of the current record / row.

 **WARNING:** Tx Power Level Low must be greater than or equal to [Tx Power Level Minimum \(W\) on page 375](#), and less than or equal to [Tx Power Level High \(W\) on page 377](#) and [Tx Power Level Maximum \(W\) on page 378](#).

 **IMPORTANT:** There are unique Transmit Power Level configurations (records / rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

See the "Ultra Low Power" (ULP) in the "Used in Codeplug" Important Note for the SRX 2200 radio.

Accessed Only: When the radio is an SRX 2200 model.

4.2.9.10

Trk Tx Power Level Low (W)

This field allows you to enter the Trunking Tx (transmit) low power level.



This value applies only to Trunking communications channels in the frequency band of the current record / row.

 **WARNING:** Trk Tx Power Level Low must be greater than or equal to [Tx Power Level Minimum \(W\) on page 375](#), and less than or equal to [Tx Power Level High \(W\) on page 377](#) and [Tx Power Level Maximum \(W\) on page 381](#).

 **IMPORTANT:** There are unique Transmit Power Level configurations (records / rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

Be sure to see the "Ultra Low Power" (ULP) in the "Used in Codeplug" Important Note for the SRX 2200 radio.

Accessed Only: When the radio is an SRX 2200 model.

4.2.9.11

Tx Power Level High (W)

This field allows you to enter the transmit (Tx) high power level.

This value applies only to channels in the frequency band of the current record/row.



There are unique Transmit Power Level configurations (records/rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

If the Tx high power setting is increased, current limits must be re-tuned using the Tuner application so that the desired power level can be achieved.

If the Tx high power setting is decreased, current limits may be re-tuned to increase current-limiting protection.

Accessed Only: When the radio is model/option capable, and when the [Band Plan Selection on page 374](#) field is set to **Old**.

4.2.9.12

Tx Power Level Maximum (W)

The application retrieves and displays the read-only Tx Power Level Maximum value.

This value is fixed for this radio model, and applies only to channels in the frequency band of the current record/row.



NOTE: There are unique Transmit Power Level configurations (records/rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

4.2.10

Tx Power Levels

This section allows you to set the **Band Plan Selection** and view or define transmit (Tx) low and transmit high power settings, within pre-defined limits within the Transmit Power Levels table.



Within the 7/800 MHz frequency band, certain public safety frequencies have been rebanded as part of the latest Federal Communications Commission (FCC) 7/800 MHz band plan.



There are unique Transmit Power Level configurations (records/rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug apply and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

See the "Ultra Low Power" (ULP) used in codeplug important note for the SRX 2200 radio.

Accessed Only: When the radio is model/option capable, and when the [Band Plan Selection on page 374](#) field is set to **New**.



NOTE:

To fully comply with regulatory output power level requirements, Part 80 Marine users operating between 154 – 162.025 MHz (VHF Band) and 454 – 470 MHz (UHF Band) must program the transmit power from the defaults to a level not exceeding the values given in the table below.

Note that this reduced power restriction applies only to certain models of the radio and strictly for Part 80 Marine frequencies. Also, check your license for any additional restrictions on output power.

Product Family Description	FCC/IC	Frequency Range/Output Power
APX Next	AZ489FT7147/109U-89FT7147	156 – 162.025 MHz/5 W 454 – 470 MHz/2 W
APX8500 High Power	AZ492FT7118	156 – 162.025 MHz/5 W 454 – 470 MHz/3.2 W
APX8500 Mid Power	AZ492FT7089/109U-92FT7089	156 – 162.025 MHz/50 W 454 – 470 MHz/1 W
APX4500/APX6500 Mid Power (VHF)	AZ492FT7130/109U-92FT7130	156 – 162.025 MHz/47.5 W
APX4500/APX6500 Mid Power (UHF R1)	AZ492FT7129/109U-92FT7129	454 – 470 MHz/1 W

The following fields are supported:

4.2.10.1

Frequency Band

The application retrieves and displays the read-only frequency band, where each range has a unique Transmit Power Level configuration (record/row).



The current frequency range is defined by [Frequency Range Start \(MHz\) on page 380](#) and [Frequency Range End \(MHz\) on page 380](#). Dual-band radios have support for more than one frequency band (see also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio). This value applies on a radio-wide basis.



IMPORTANT: There are unique Transmit Power Level configurations (records/rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified.

Accessed Only: When the radio is model/option capable, and when (if applicable) the [Band Plan Selection on page 374](#) field is set to **New**.

4.2.10.2

Frequency Range Start (MHz)

The application retrieves and displays the read-only Frequency Range Start value for the frequency band of the current record/row.



These values are fixed for this radio model. This value applies on a radio-wide basis.



IMPORTANT: There are unique Transmit Power Level configurations (records/rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

Accessed Only: When the radio is model/option capable, and when (if applicable) the [Band Plan Selection on page 374](#) field is set to **New**.

4.2.10.3

Frequency Range End (MHz)

The application retrieves and displays the read-only Frequency Range End value for the frequency band of the current record/row.



These values are fixed for this radio model. This value applies on a radio-wide basis.



IMPORTANT: There are unique Transmit Power Level configurations (records / rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

Accessed Only: When the radio is model/option capable, and when (if applicable) the [Band Plan Selection on page 374](#) field is set to **New**.

4.2.10.4

Tx Power Level Minimum (W)

The application retrieves and displays the read-only Tx Power Level Minimum value.



This value is fixed for this radio model, and applies only to channels in the frequency band of the current record / row.



IMPORTANT: There are unique Transmit Power Level configurations (records / rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

Accessed Only: When the radio is model/option capable, and when (if applicable) the [Band Plan Selection on page 374](#) field is set to **New**.

4.2.10.5

Tx Power Level Low (W)

This field allows you to enter the Tx (transmit) low power level.



This value applies only to channels in the frequency band of the current record / row.

WARNING: Tx Power Level Low must be greater than or equal to [Tx Power Level Minimum \(W\) on page 380](#), and less than or equal to [Tx Power Level High \(W\) on page 381](#) and [Tx Power Level Maximum \(W\) on page 381](#).

IMPORTANT: There are unique Transmit Power Level configurations (records / rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

Accessed Only: When the radio is model/option capable, and when (if applicable) the [Band Plan Selection on page 374](#) is set to **New**.

4.2.10.6

Tx Power Level High (W)

This field allows you to enter the Tx (transmit) high power level.



This value applies only to channels in the frequency band of the current record / row.

WARNING: Tx Power Level High must be less than or equal to [Tx Power Level Maximum \(W\) on page 381](#), and greater than or equal to [Tx Power Level Low \(W\) on page 381](#) and [Tx Power Level Minimum \(W\) on page 380](#).

IMPORTANT: There are unique Transmit Power Level configurations (records / rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

If the Tx high power setting is increased, current limits must be re-tuned using the Tuner application so that the desired power level can be achieved.

If the Tx high power setting is decreased, current limits may be re-tuned to increase current-limiting protection.

Accessed Only: When (if applicable) the [Band Plan Selection on page 374](#) field is set to **New**.

4.2.10.7

Tx Power Level Maximum (W)

The application retrieves and displays the read-only Tx Power Level Maximum value.



This value is fixed for this radio model, and applies only to channels in the frequency band of the current record / row.



NOTE: There are unique Transmit Power Level configurations (records / rows) for each of the possible frequency ranges within a given frequency band. However, only those Transmit Power Level configurations for the frequency band (or bands) supported by the current codeplug applies and, in some cases, can be modified. See also Primary Frequency Band and Secondary Frequency Band for the frequency band(s) supported by the radio.

Accessed Only: When (if applicable) the [Band Plan Selection on page 374](#) field is set to **New**.

4.2.11

Universal Relay Controller

This section allows you to view or configure Universal Relay Controller (URC) functionality to create unique Relay Patterns.



Configuring up to 25 different Relay Patterns is possible. This feature applies to both communications modes, Conventional and Trunking.



NOTE:

You can activate a specific Relay Pattern with the corresponding **Relay Pattern** button-press. When a Relay Pattern is active, pressing the button again deactivates that Relay Pattern.

Alternately, a Relay Pattern action may be included in a Consolidated Action which you can then activate with an **Action Consolidation** button-press or Response Selector position.

When a Consolidated Action is activated through a button-press, pressing the **Action Consolidation** button again does not deactivate any of the actions; instead, it reactivates the sequence of actions, including the Relay Pattern. Therefore, a separate Consolidated Action must be programmed that turns all Relay Patterns, Siren tones, GPS Reports, Mode changes and Direct Status to an "Unassigned" or Disabled state.

When a Consolidated Action is activated with a Response Selector position, changing that position does deactivate the Consolidated Action assigned to the previous Response Selector position, and the Consolidated Action assigned to the new position is activated. Therefore, it is recommended that the Response Selector's "0" position be assigned a Consolidated Action that turns all Relay Patterns, Siren tones, GPS Reports, Mode changes and Direct Status to an "Unassigned" or Disabled state.

Accessed Only: When the radio is model/option capable.

4.2.11.1

Universal Relay Controller Equipped

This field enables the radio to detect the connection of a Universal Relay Controller (URC) during radio power-up and normal operation.



If enabled and the URC is not connected at power-up, or is disconnected while the radio is on, a temporary error message is shown in the display. This feature applies on a radio-wide basis.

When disabled, the radio does not check for a connection to the URC, and no visual or audible alerts are issued. Select this setting only if the normal radio installation does not include connection to a URC.



IMPORTANT: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, this feature's default value is **Enabled**.



NOTE:

Configuring up to 25 different relay patterns is possible. You can activate a specific Relay Pattern with the corresponding **Relay Pattern** button-press. Once activated, pressing the button again deactivates the Relay Pattern; this also applies to the **Directional** Buttons.

Alternately, you can activate a Relay Pattern action that may be included in a Consolidated Action with an **Action Consolidation** button-press or Response Selector position.

When a Consolidated Action is active, pressing the **Action Consolidation** button again does not deactivate any of the actions; instead, it reactivates the sequence of actions, including the Relay Pattern; therefore, a separate Consolidated Action must be programmed that turns all Relay Patterns, Siren tones, GPS Reports, Mode changes and Direct Status to an "Unassigned" or Disabled state.

Accessed Only: When the radio is model/option capable, and...



WARNING:

For a Dual Radio configuration:

- When the Radio Selection field is set to **Secondary Radio**, this field must be **Disabled**, otherwise it is considered invalid. Disabling this field then makes it inaccessible.
- Although the URC hardware must be connected to the Primary Radio, and only the Primary Radio processes the programmed relay patterns, you can still activate/deactivate these relay patterns independent of the current radio selection. Provided the corresponding **Relay Pattern** button-presses are configured identically for both radios. Additionally, an active relay pattern does not change state when the radio selection is swapped.

4.2.11.2

Relay Name

This field allows you to define a recognizable name for the current Relay (Lightbar) Pattern.



This value applies for the current record/row which applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.



NOTE:

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.2.11.3

Relay 1-10

This field selects the state for ten relays in the Universal Relay Controller (URC) which together comprise the current Relay Pattern (record/row).



Configuring up to 25 different Relay Patterns is possible.

Relay Patterns are used to control all Lightbar functions in the O9 Control Head, and you may activate multiple Relay Patterns may at the same time. The Lightbar icon appears in the radio's display as long as there is one or more relays in an "On" state. The Directional Buttons are typically used for Take Down/Alley Light functions (See Rows 1, 2, and 3 in the Example below). These selected values apply on a radio-wide basis.



WARNING: For any invalid selection status, see the Selection Definitions below.



NOTE:

You can activate a specific Relay Pattern with the corresponding Relay Pattern button-press. Once activated, pressing the button again deactivates the Relay Pattern; this also applies to the Directional Buttons.

Alternately, you can activate a Relay Pattern action that may be included in a Consolidated Action with an Action Consolidation button-press or Response Selector position.

When a Consolidated Action is activated through a button-press, pressing the Action Consolidation button again does not deactivate any of the actions, including the Relay Pattern; therefore, a separate Consolidated Action must be programmed that deactivates the Relay Pattern.

When a Consolidated Action is activated through a Response Selector position, changing that position does deactivate the Consolidated Action assigned to the previous Response Selector position, and the Consolidated Action assigned to the new position is activated. Therefore, it is recommended that the Response Selector's "0" position be assigned a Consolidated Action that turns all Relay Patterns, Siren tones, GPS Reports, Mode changes and Direct Status to an "Unassigned" or Disabled state.

The following example shows how Relay Patterns might be created that are independent of each other (where one or more Relay Patterns may be active at the same time), or mutually exclusive, or that interact across different Relay Patterns. This latter example is useful when assigning Consolidated Actions to the different Response Selector positions, where it is desirable to also assign one position (Position 0) to be "ALL OFF". Be aware that programming of the Relay Patterns is dependent on the specific Lightbars or other equipment being connected to the URC.

Table 62: Example Relay Pattern

Row	Name	Re- lay 1	Re- lay 2	Re- lay 3	Re- lay 4	Re- lay 5	Re- lay 6	Re- lay 7	Re- lay 8	Re- lay 9	Re- lay 10
1	Left Alley	ON	CS								
2	Right Alley	CS	ON	CS							
3	Take down	CS	CS	ON	CS						
4	Arr Left	CS	CS	CS	ON	OFF	ON	CS	CS	CS	CS
5	Arr Cntr	CS	CS	CS	OFF	OFF	ON	CS	CS	CS	CS
6	Arr Right	CS	CS	CS	OFF	ON	ON	CS	CS	CS	CS
7	Mode 1	CS	CS	CS	CS	CS	CS	O-S	ON	CS	CS
8	Mode 2	CS	CS	CS	CS	CS	CS	O-S	CS	ON	CS

Row	Name	Re- lay 1	Re- lay 2	Re- lay 3	Re- lay 4	Re- lay 5	Re- lay 6	Re- lay 7	Re- lay 8	Re- lay 9	Re- lay 10
9	Mode 3	CS	CS	CS	CS	CS	CS	O-S	ON	CS	ON
10	ALL OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
CS = Current State O-S = On (Shared)						Pattern Interactions: Independent Patterns: Rows 1, 2, 3 Mutually-Exclusive Patterns: Rows 4, 5, 6 Shared Patterns: Rows 7, 8, 9					

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Current State

When the current Relay Pattern is activated or deactivated, this relay remains "as is".

On (Shared)

When the current Relay Pattern is activated, this relay turns ON.

When the current Relay Pattern is deactivated, this relay turns OFF only if it is not being used by another active pattern which has the same relay configured as "On (Shared)".

Once a relay has been configured as "On (Shared)" in one Relay Pattern, "On" becomes an invalid selection for the same relay in all other patterns.

This relay selection is needed only by certain Lightbar types that use a "shared" relay / control wire for different lighting patterns. In that way, one pattern may be deactivated without affecting another pattern that requires one or more shared relays to still be in an ON state.

On

When the current Relay Pattern is activated, this relay turns ON.

When the current Relay Pattern is deactivated, this relay turns OFF.

Once a relay has been configured as "On" in one Relay Pattern, "On (Shared)" becomes an invalid selection for the same relay in all other patterns.

Off

When the current Relay Pattern is activated, this relay turns OFF.



NOTE: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, these Relay 1-10 fields are pre-configured with default Relay Patterns designed to correspond with the Keypad's graphics.

4.2.11.4

Relay 2

Selects the state for one of ten relays in the Universal Relay Controller (URC) which together comprise the current Relay Pattern (record / row).

See [Relay 1-10 on page 383](#) for a complete description and examples.

4.2.11.5

Relay 3

Selects the state for one of ten relays in the Universal Relay Controller (URC) which together comprise the current Relay Pattern (record / row).

See [Relay 1-10 on page 383](#) for a complete description and examples.

4.2.11.6

Relay 4

Selects the state for one of ten relays in the Universal Relay Controller (URC) which together comprise the current Relay Pattern (record / row).

See [Relay 1-10 on page 383](#) for a complete description and examples.

4.2.11.7

Relay 5

Selects the state for one of ten relays in the Universal Relay Controller (URC) which together comprise the current Relay Pattern (record / row).

See [Relay 1-10 on page 383](#) for a complete description and examples.

4.2.11.8

Relay 1-10

This field selects the state for ten relays in the Universal Relay Controller (URC) which together comprise the current Relay Pattern (record/row).



Configuring up to 25 different Relay Patterns is possible.

Relay Patterns are used to control all Lightbar functions in the O9 Control Head, and you may activate multiple Relay Patterns may at the same time. The Lightbar icon appears in the radio's display as long as there is one or more relays in an "On" state. The Directional Buttons are typically used for Take Down/Alley

Light functions (See Rows 1, 2, and 3 in the Example below). These selected values apply on a radio-wide basis.

 **WARNING:** For any invalid selection status, see the Selection Definitions below.

 **NOTE:** You can activate a specific Relay Pattern with the corresponding Relay Pattern button-press. Once activated, pressing the button again deactivates the Relay Pattern; this also applies to the Directional Buttons.

Alternately, you can activate a Relay Pattern action that may be included in a Consolidated Action with an Action Consolidation button-press or Response Selector position.

When a Consolidated Action is activated through a button-press, pressing the Action Consolidation button again does not deactivate any of the actions, including the Relay Pattern; therefore, a separate Consolidated Action must be programmed that deactivates the Relay Pattern.

When a Consolidated Action is activated through a Response Selector position, changing that position does deactivate the Consolidated Action assigned to the previous Response Selector position, and the Consolidated Action assigned to the new position is activated. Therefore, it is recommended that the Response Selector's "0" position be assigned a Consolidated Action that turns all Relay Patterns, Siren tones, GPS Reports, Mode changes and Direct Status to an "Unassigned" or Disabled state.

The following example shows how Relay Patterns might be created that are independent of each other (where one or more Relay Patterns may be active at the same time), or mutually exclusive, or that interact across different Relay Patterns. This latter example is useful when assigning Consolidated Actions to the different Response Selector positions, where it is desirable to also assign one position (Position 0) to be "ALL OFF". Be aware that programming of the Relay Patterns is dependent on the specific Lightbars or other equipment being connected to the URC.

Table 63: Example Relay Pattern

Row	Name	Re- lay 1	Re- lay 2	Re- lay 3	Re- lay 4	Re- lay 5	Re- lay 6	Re- lay 7	Re- lay 8	Re- lay 9	Re- lay 10
1	Left Alley	ON	CS								
2	Right Alley	CS	ON	CS							
3	Take down	CS	CS	ON	CS						
4	Arr Left	CS	CS	CS	ON	OFF	ON	CS	CS	CS	CS
5	Arr Cntr	CS	CS	CS	OFF	OFF	ON	CS	CS	CS	CS
6	Arr Right	CS	CS	CS	OFF	ON	ON	CS	CS	CS	CS
7	Mode 1	CS	CS	CS	CS	CS	CS	O-S	ON	CS	CS
8	Mode 2	CS	CS	CS	CS	CS	CS	O-S	CS	ON	CS
9	Mode 3	CS	CS	CS	CS	CS	CS	O-S	ON	CS	ON

Row	Name	Re- lay 1	Re- lay 2	Re- lay 3	Re- lay 4	Re- lay 5	Re- lay 6	Re- lay 7	Re- lay 8	Re- lay 9	Re- lay 10
10	ALL OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
CS = Current State O-S = On (Shared)						Pattern Interactions: Independent Patterns: Rows 1, 2, 3 Mutually-Exclusive Patterns: Rows 4, 5, 6 Shared Patterns: Rows 7, 8, 9					

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Current State

When the current Relay Pattern is activated or deactivated, this relay remains "as is".

On (Shared)

When the current Relay Pattern is activated, this relay turns ON.

When the current Relay Pattern is deactivated, this relay turns OFF only if it is not being used by another active pattern which has the same relay configured as "On (Shared)".

Once a relay has been configured as "On (Shared)" in one Relay Pattern, "On" becomes an invalid selection for the same relay in all other patterns.

This relay selection is needed only by certain Lightbar types that use a "shared" relay / control wire for different lighting patterns. In that way, one pattern may be deactivated without affecting another pattern that requires one or more shared relays to still be in an ON state.

On

When the current Relay Pattern is activated, this relay turns ON.

When the current Relay Pattern is deactivated, this relay turns OFF.

Once a relay has been configured as "On" in one Relay Pattern, "On (Shared)" becomes an invalid selection for the same relay in all other patterns.

Off

When the current Relay Pattern is activated, this relay turns OFF.



NOTE: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, these Relay 1-10 fields are pre-configured with default Relay Patterns designed to correspond with the Keypad's graphics.

4.2.11.9

Relay 1-10

This field selects the state for ten relays in the Universal Relay Controller (URC) which together comprise the current Relay Pattern (record/row).



Configuring up to 25 different Relay Patterns is possible.

Relay Patterns are used to control all Lightbar functions in the O9 Control Head, and you may activate multiple Relay Patterns may at the same time. The Lightbar icon appears in the radio's display as long as there is one or more relays in an "On" state. The Directional Buttons are typically used for Take Down/Alley

Light functions (See Rows 1, 2, and 3 in the Example below). These selected values apply on a radio-wide basis.

 **WARNING:** For any invalid selection status, see the Selection Definitions below.

 **NOTE:** You can activate a specific Relay Pattern with the corresponding Relay Pattern button-press. Once activated, pressing the button again deactivates the Relay Pattern; this also applies to the Directional Buttons.

Alternately, you can activate a Relay Pattern action that may be included in a Consolidated Action with an Action Consolidation button-press or Response Selector position.

When a Consolidated Action is activated through a button-press, pressing the Action Consolidation button again does not deactivate any of the actions, including the Relay Pattern; therefore, a separate Consolidated Action must be programmed that deactivates the Relay Pattern.

When a Consolidated Action is activated through a Response Selector position, changing that position does deactivate the Consolidated Action assigned to the previous Response Selector position, and the Consolidated Action assigned to the new position is activated. Therefore, it is recommended that the Response Selector's "0" position be assigned a Consolidated Action that turns all Relay Patterns, Siren tones, GPS Reports, Mode changes and Direct Status to an "Unassigned" or Disabled state.

The following example shows how Relay Patterns might be created that are independent of each other (where one or more Relay Patterns may be active at the same time), or mutually exclusive, or that interact across different Relay Patterns. This latter example is useful when assigning Consolidated Actions to the different Response Selector positions, where it is desirable to also assign one position (Position 0) to be "ALL OFF". Be aware that programming of the Relay Patterns is dependent on the specific Lightbars or other equipment being connected to the URC.

Table 64: Example Relay Pattern

Row	Name	Re- lay 1	Re- lay 2	Re- lay 3	Re- lay 4	Re- lay 5	Re- lay 6	Re- lay 7	Re- lay 8	Re- lay 9	Re- lay 10
1	Left Alley	ON	CS								
2	Right Alley	CS	ON	CS							
3	Take down	CS	CS	ON	CS						
4	Arr Left	CS	CS	CS	ON	OFF	ON	CS	CS	CS	CS
5	Arr Cntr	CS	CS	CS	OFF	OFF	ON	CS	CS	CS	CS
6	Arr Right	CS	CS	CS	OFF	ON	ON	CS	CS	CS	CS
7	Mode 1	CS	CS	CS	CS	CS	CS	O-S	ON	CS	CS
8	Mode 2	CS	CS	CS	CS	CS	CS	O-S	CS	ON	CS
9	Mode 3	CS	CS	CS	CS	CS	CS	O-S	ON	CS	ON

Row	Name	Re- lay 1	Re- lay 2	Re- lay 3	Re- lay 4	Re- lay 5	Re- lay 6	Re- lay 7	Re- lay 8	Re- lay 9	Re- lay 10
10	ALL OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
CS = Current State O-S = On (Shared)						Pattern Interactions: Independent Patterns: Rows 1, 2, 3 Mutually-Exclusive Patterns: Rows 4, 5, 6 Shared Patterns: Rows 7, 8, 9					

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Current State

When the current Relay Pattern is activated or deactivated, this relay remains "as is".

On (Shared)

When the current Relay Pattern is activated, this relay turns ON.

When the current Relay Pattern is deactivated, this relay turns OFF only if it is not being used by another active pattern which has the same relay configured as "On (Shared)".

Once a relay has been configured as "On (Shared)" in one Relay Pattern, "On" becomes an invalid selection for the same relay in all other patterns.

This relay selection is needed only by certain Lightbar types that use a "shared" relay / control wire for different lighting patterns. In that way, one pattern may be deactivated without affecting another pattern that requires one or more shared relays to still be in an ON state.

On

When the current Relay Pattern is activated, this relay turns ON.

When the current Relay Pattern is deactivated, this relay turns OFF.

Once a relay has been configured as "On" in one Relay Pattern, "On (Shared)" becomes an invalid selection for the same relay in all other patterns.

Off

When the current Relay Pattern is activated, this relay turns OFF.



NOTE: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, these Relay 1-10 fields are pre-configured with default Relay Patterns designed to correspond with the Keypad's graphics.

4.2.11.10

Relay 1-10

This field selects the state for ten relays in the Universal Relay Controller (URC) which together comprise the current Relay Pattern (record/row).



Configuring up to 25 different Relay Patterns is possible.

Relay Patterns are used to control all Lightbar functions in the O9 Control Head, and you may activate multiple Relay Patterns may at the same time. The Lightbar icon appears in the radio's display as long as there is one or more relays in an "On" state. The Directional Buttons are typically used for Take Down/Alley

Light functions (See Rows 1, 2, and 3 in the Example below). These selected values apply on a radio-wide basis.



WARNING: For any invalid selection status, see the Selection Definitions below.



NOTE:

You can activate a specific Relay Pattern with the corresponding Relay Pattern button-press. Once activated, pressing the button again deactivates the Relay Pattern; this also applies to the Directional Buttons.

Alternately, you can activate a Relay Pattern action that may be included in a Consolidated Action with an Action Consolidation button-press or Response Selector position.

When a Consolidated Action is activated through a button-press, pressing the Action Consolidation button again does not deactivate any of the actions, including the Relay Pattern; therefore, a separate Consolidated Action must be programmed that deactivates the Relay Pattern.

When a Consolidated Action is activated through a Response Selector position, changing that position does deactivate the Consolidated Action assigned to the previous Response Selector position, and the Consolidated Action assigned to the new position is activated. Therefore, it is recommended that the Response Selector's "0" position be assigned a Consolidated Action that turns all Relay Patterns, Siren tones, GPS Reports, Mode changes and Direct Status to an "Unassigned" or Disabled state.

The following example shows how Relay Patterns might be created that are independent of each other (where one or more Relay Patterns may be active at the same time), or mutually exclusive, or that interact across different Relay Patterns. This latter example is useful when assigning Consolidated Actions to the different Response Selector positions, where it is desirable to also assign one position (Position 0) to be "ALL OFF". Be aware that programming of the Relay Patterns is dependent on the specific Lightbars or other equipment being connected to the URC.

Table 65: Example Relay Pattern

Row	Name	Re- lay 1	Re- lay 2	Re- lay 3	Re- lay 4	Re- lay 5	Re- lay 6	Re- lay 7	Re- lay 8	Re- lay 9	Re- lay 10
1	Left Alley	ON	CS								
2	Right Alley	CS	ON	CS							
3	Take down	CS	CS	ON	CS						
4	Arr Left	CS	CS	CS	ON	OFF	ON	CS	CS	CS	CS
5	Arr Cntr	CS	CS	CS	OFF	OFF	ON	CS	CS	CS	CS
6	Arr Right	CS	CS	CS	OFF	ON	ON	CS	CS	CS	CS
7	Mode 1	CS	CS	CS	CS	CS	CS	O-S	ON	CS	CS
8	Mode 2	CS	CS	CS	CS	CS	CS	O-S	CS	ON	CS
9	Mode 3	CS	CS	CS	CS	CS	CS	O-S	ON	CS	ON

Row	Name	Re- lay 1	Re- lay 2	Re- lay 3	Re- lay 4	Re- lay 5	Re- lay 6	Re- lay 7	Re- lay 8	Re- lay 9	Re- lay 10
10	ALL OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
CS = Current State O-S = On (Shared)						Pattern Interactions: Independent Patterns: Rows 1, 2, 3 Mutually-Exclusive Patterns: Rows 4, 5, 6 Shared Patterns: Rows 7, 8, 9					

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Current State

When the current Relay Pattern is activated or deactivated, this relay remains "as is".

On (Shared)

When the current Relay Pattern is activated, this relay turns ON.

When the current Relay Pattern is deactivated, this relay turns OFF only if it is not being used by another active pattern which has the same relay configured as "On (Shared)".

Once a relay has been configured as "On (Shared)" in one Relay Pattern, "On" becomes an invalid selection for the same relay in all other patterns.

This relay selection is needed only by certain Lightbar types that use a "shared" relay / control wire for different lighting patterns. In that way, one pattern may be deactivated without affecting another pattern that requires one or more shared relays to still be in an ON state.

On

When the current Relay Pattern is activated, this relay turns ON.

When the current Relay Pattern is deactivated, this relay turns OFF.

Once a relay has been configured as "On" in one Relay Pattern, "On (Shared)" becomes an invalid selection for the same relay in all other patterns.

Off

When the current Relay Pattern is activated, this relay turns OFF.



NOTE: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, these Relay 1-10 fields are pre-configured with default Relay Patterns designed to correspond with the Keypad's graphics.

4.2.11.11

Relay 1-10

This field selects the state for ten relays in the Universal Relay Controller (URC) which together comprise the current Relay Pattern (record/row).



Configuring up to 25 different Relay Patterns is possible.

Relay Patterns are used to control all Lightbar functions in the O9 Control Head, and you may activate multiple Relay Patterns may at the same time. The Lightbar icon appears in the radio's display as long as there is one or more relays in an "On" state. The Directional Buttons are typically used for Take Down/Alley

Light functions (See Rows 1, 2, and 3 in the Example below). These selected values apply on a radio-wide basis.



WARNING: For any invalid selection status, see the Selection Definitions below.



NOTE:

You can activate a specific Relay Pattern with the corresponding Relay Pattern button-press. Once activated, pressing the button again deactivates the Relay Pattern; this also applies to the Directional Buttons.

Alternately, you can activate a Relay Pattern action that may be included in a Consolidated Action with an Action Consolidation button-press or Response Selector position.

When a Consolidated Action is activated through a button-press, pressing the Action Consolidation button again does not deactivate any of the actions, including the Relay Pattern; therefore, a separate Consolidated Action must be programmed that deactivates the Relay Pattern.

When a Consolidated Action is activated through a Response Selector position, changing that position does deactivate the Consolidated Action assigned to the previous Response Selector position, and the Consolidated Action assigned to the new position is activated. Therefore, it is recommended that the Response Selector's "0" position be assigned a Consolidated Action that turns all Relay Patterns, Siren tones, GPS Reports, Mode changes and Direct Status to an "Unassigned" or Disabled state.

The following example shows how Relay Patterns might be created that are independent of each other (where one or more Relay Patterns may be active at the same time), or mutually exclusive, or that interact across different Relay Patterns. This latter example is useful when assigning Consolidated Actions to the different Response Selector positions, where it is desirable to also assign one position (Position 0) to be "ALL OFF". Be aware that programming of the Relay Patterns is dependent on the specific Lightbars or other equipment being connected to the URC.

Table 66: Example Relay Pattern

Row	Name	Re- lay 1	Re- lay 2	Re- lay 3	Re- lay 4	Re- lay 5	Re- lay 6	Re- lay 7	Re- lay 8	Re- lay 9	Re- lay 10
1	Left Alley	ON	CS								
2	Right Alley	CS	ON	CS							
3	Take down	CS	CS	ON	CS						
4	Arr Left	CS	CS	CS	ON	OFF	ON	CS	CS	CS	CS
5	Arr Cntr	CS	CS	CS	OFF	OFF	ON	CS	CS	CS	CS
6	Arr Right	CS	CS	CS	OFF	ON	ON	CS	CS	CS	CS
7	Mode 1	CS	CS	CS	CS	CS	CS	O-S	ON	CS	CS
8	Mode 2	CS	CS	CS	CS	CS	CS	O-S	CS	ON	CS
9	Mode 3	CS	CS	CS	CS	CS	CS	O-S	ON	CS	ON

Row	Name	Re- lay 1	Re- lay 2	Re- lay 3	Re- lay 4	Re- lay 5	Re- lay 6	Re- lay 7	Re- lay 8	Re- lay 9	Re- lay 10
10	ALL OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
CS = Current State O-S = On (Shared)						Pattern Interactions: Independent Patterns: Rows 1, 2, 3 Mutually-Exclusive Patterns: Rows 4, 5, 6 Shared Patterns: Rows 7, 8, 9					

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Current State

When the current Relay Pattern is activated or deactivated, this relay remains "as is".

On (Shared)

When the current Relay Pattern is activated, this relay turns ON.

When the current Relay Pattern is deactivated, this relay turns OFF only if it is not being used by another active pattern which has the same relay configured as "On (Shared)".

Once a relay has been configured as "On (Shared)" in one Relay Pattern, "On" becomes an invalid selection for the same relay in all other patterns.

This relay selection is needed only by certain Lightbar types that use a "shared" relay / control wire for different lighting patterns. In that way, one pattern may be deactivated without affecting another pattern that requires one or more shared relays to still be in an ON state.

On

When the current Relay Pattern is activated, this relay turns ON.

When the current Relay Pattern is deactivated, this relay turns OFF.

Once a relay has been configured as "On" in one Relay Pattern, "On (Shared)" becomes an invalid selection for the same relay in all other patterns.

Off

When the current Relay Pattern is activated, this relay turns OFF.



NOTE: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, these Relay 1-10 fields are pre-configured with default Relay Patterns designed to correspond with the Keypad's graphics.

4.2.11.12

Relay 10

Selects the state for one of ten relays in the Universal Relay Controller (URC) which together comprise the current Relay Pattern (record / row).

See [Relay 1-10 on page 383](#) for a complete description and examples.

4.2.12

Gunlock

This section allows you to view or define GunLock functionality.



Accessed Only: When the radio is model/option capable.

4.2.12.1 Relock Timer

This field selects the minimum amount of time that the corresponding GunLock can be locked again after it has been unlocked.



You can initiate to unlock a GunLock (1, 2, 3 or All) with the corresponding GunLock button-press. The first record/row, Relock Timer 1, applies to a GunLock 1 button-press, and so on. This feature applies on a radio-wide basis. Time is in seconds.

WARNING: Control of a GunLock is accomplished through one of the radio's VIP Out pins programmed for GunLock (1-3), where a GunLock 1 button-press activates the VIP Out chosen as "GunLock 1", and so on. Therefore, you must first select GunLock 1, GunLock 2, or GunLock 3 as a VIP Out; otherwise the corresponding button selection is invalid.

For a Dual Radio configuration: When the [Radio Selection on page 361](#) field is set to **Secondary Radio** the radio's VIP Outputs are disabled; therefore, this feature and the GunLock (1-3) VIP Out pins are only configurable on the **Primary Radio** only.

Accessed Only: When the radio is model/option capable, and when the Dual Radio - [Radio Selection on page 361](#) field is set to **Primary Radio**.

The following selections are supported:

0 - Momentary

The corresponding VIP Out deactivates immediately with the release of a GunLock button-press (thereby re-locking the GunLock); you must keep the button pressed with one hand while using the other hand to remove the gun.

Table 67: Range

Minimum	Maximum	Increment
1	255	1

IMPORTANT: Immediately following a GunLock button-press, the corresponding VIP Out remains active for the selected amount of time.

- "Relock Timer 1" (that is, the first record/row) applies to a GunLock 1 button-press, and so on.
- While the VIP Out is still active, pressing the corresponding GunLock button again restarts this Timer.

When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, the default value of Radio VIP 1 Output is "GunLock 1", and the default value of Relock Timer 1 is "8" seconds.

4.2.13

Bluetooth

This section allows you to view or modify settings related to Bluetooth technology.



IMPORTANT: Refer to the radio User Guide for list of COTS approved devices and new supported profiles.

Accessed Only: When the radio is model/option capable.

4.2.13.1

Bluetooth Enable

This field allows you to enable the Bluetooth feature in the radio.

Bluetooth Enable allows the radio to pair and communicate with a Bluetooth-enabled accessory, such as an earpiece or Remote Speaker Microphone (RSM). This feature applies on a radio-wide basis.

4.2.13.2

Bluetooth Tones

This field allows you to enable the Bluetooth tones.

This feature applies on a radio-wide basis.

Accessed Only: When the [Bluetooth Enable on page 396](#) field is **Enabled**, and when the radio is model/option capable.

4.2.13.3

Bluetooth Pairing Type

The application retrieves and displays the read-only Bluetooth (BT) Pairing Type.

Pairing is the process of establishing a new communications relationship between two Bluetooth-enabled devices. This feature applies on a radio-wide basis.

During this process, a "link key" is exchanged that "bonds" the two devices together. Your radio can be paired with one or more Bluetooth accessories at a time. However, there is a limitation on the type of Bluetooth accessories that can be paired and connected at the same time.

Accessed Only: When the [Bluetooth Enable on page 396](#) field is **Enabled**, when the radio is model/option capable.

The Bluetooth Pairing Type supports the following selections:



NOTE: The availability of selections varies by radio model.

LF MPP

Low Frequency Motorola Proprietary Pairing mode, typically used by Motorola Solutions proprietary Bluetooth accessories, such as the wireless earpiece. Pairing is secured against Person-in-the-Middle (PITM) attacks.

Standard

Industry-standard Secure Simple Pairing (SSP) mode, which supports a variety Commercial Off-The-Shelf (COTS) Bluetooth devices. Pairing is not secured against PITM attacks.

4.2.13.4

MPP Pairing Only with LTE

The application retrieves and displays the read-only Bluetooth Low Frequency Motorola Proprietary Pairing (MPP) Pairing Type for this LTE Broadband capable codeplug.



This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

4.2.13.5

Bluetooth Re-Pair Timer

This field determines the pairing behavior of the radio and connected Bluetooth accessory regarding the retention of pairing information.



NOTE:

This feature is only applicable to Motorola Solutions accessories that are paired using Low Frequency Motorola Proprietary Pairing (LF MPP) and Secure Near-Field Communication (NFC).

This feature does not affect the operation of devices that are paired using standard pairing and standard NFC pairing.

Accessed Only: When the [Bluetooth Enable on page 396](#) field is **Enabled**, and when the radio is model/option capable.

The Bluetooth Re-Pair Timer supports the following selections:

Immediate

If any of the following conditions occur, the radio and accessory delete the pairing information for the connected accessory. You must perform a new touch-pairing operation to pair the accessory to the radio again.

- You turn off the Remote Speaker Microphone (RSM).
- The RSM automatically turns off due to a link drop while paired to a radio.
- The radio is properly turned off.

When the radio is properly turned off, the radio deletes the pairing information. If the RSM is connected and in range, the RSM also unpairs and turns off.

If the radio turns off unexpectedly, the pairing information is usually not lost. For example, if the radio unexpectedly turns off due to dropping or battery disconnection.

Infinite

The radio or accessory does not automatically delete pairing information.

4.2.13.6

Bluetooth Drop Timer

This field determines the duration in which the accessory waits for the host radio to reconnect after the accessory loses connection with the radio.



NOTE: This feature is only applicable to more outdated Low Frequency Motorola Proprietary Pairing (LF MPP) accessories.

In this duration, the accessory remains turned on. If the **Bluetooth Re-Pair Timer** field is set to **Immediate**, the accessory does not delete the radio pairing information. This function allows the radio to return into range

and automatically reconnect. The user does not have to turn on and pair the accessory to the host radio again.

The radio automatically deletes the pairing information associated with the accessory that is timed out if the following conditions are met:

- The **Bluetooth Re-Pair Timer** field is set to **Immediate**.
- The accessory is not reconnected when the Bluetooth Drop Timer expires.

Newer accessories combining Motorola Proprietary Pairing (MPP) and Secure Near-Field Communication (NFC), such as the WM800, wait an extended time for the radio to return into range before automatically turning off. If the user manually turns off the corresponding radio, the radio automatically deletes the pairing information. This field is then not applicable.

Although the Bluetooth Drop Timer is not expired, the accessory pairing information is deleted when the following conditions are met:

- The accessory is manually turned off while the radio is disconnected.
- The **Bluetooth Re-Pair Timer** field is set to **Immediate**.

Although the Bluetooth Drop Timer is not expired, the radio pairing information is also deleted if the radio is manually turned off.

This selection applies on a radio-wide basis. The time is in hours or minutes. An example of a Bluetooth accessory is the wireless earpiece.

The Bluetooth Drop Timer supports the following selections:

"Immediate" = 0 (Zero Time)

Always Available

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 minutes

Always Available

2, 4, or 8 hours

These selections are available when the [Bluetooth Re-Pair Timer on page 397](#) value is set to **Infinite**. When Bluetooth Re-Pair Timer is set to **Immediate**, these selections are not valid.

Accessed Only: When the [Bluetooth Enable on page 396](#) field is set to **Enabled** and the radio supports MPP.

4.2.13.7

Bluetooth Friendly Name Editable

This field allows you to edit the contents of the Bluetooth Friendly Name field through the radio menu or keypad.

This feature applies on a radio-wide basis.

Accessed Only: When the [Bluetooth Enable on page 396](#) field is **Enabled**, and when the radio is model/option capable.

4.2.13.8

Bluetooth Friendly Name

This field allows you to define recognizable Bluetooth names for the radio.

This name identifies the radio to a paired and connected Bluetooth device.



NOTE: For Managed Radios, this feature is defined in the **Bluetooth Friendly Name** field.

Accessed Only: When the [Bluetooth Enable on page 396](#) is **Enabled**, and when the radio is model/option capable.



NOTE:

Examples: APX Radio, NYC 555E, CHI 070P.

Characters, numbers, spaces, and special characters can be used.

The allowable length (number of characters) of the alias is determined by the display size of the radio.

4.2.13.9

Bluetooth Replace Pairing Info

This feature is only applicable to Motorola Solutions accessories paired using Low Frequency Motorola Proprietary Pairing (LF MPP) and Secure Near-Field Communication (NFC).

This field allows you to enable existing Bluetooth pairing info to be replaced when another accessory of the same type attempts to pair with the radio.

This occurrence only happens when the previously connected accessory is disconnected, and if Bluetooth Drop Timer expires. Pairing is the process of establishing a new communication relationship between two Bluetooth-enabled devices. This feature applies on a radio-wide basis.

When disabled, the previous pairing information is still saved for the next time when the radio and Bluetooth accessory are in range and able to connect.

Accessed Only: When the [Bluetooth Enable on page 396](#) field is **Enabled**, when the [Bluetooth Re-Pair Timer on page 397](#) field is set to **Infinite**, and when the radio is model/option capable.

4.2.13.10

Bluetooth Device Search Duration

This field selects the amount of time that, once activated, the radio searches (known as "inquiry mode") for nearby commercial-off-the-shelf (COTS) Bluetooth devices before the process times out.

You can activate this process with a Bluetooth Inquiry On/Off button-press, or a Bluetooth Inquiry On/Off menu-selection.

During this process, inquiries are sent out and nearby Bluetooth devices in "discoverable mode" responds with all the necessary information required for pairing and connection. See [Bluetooth Radio Visibility Duration on page 400](#).

This selection applies on a radio-wide basis.



IMPORTANT:

This process is only used when pairing with COTS Bluetooth devices. This includes headsets, barcode readers, environmental sensors, cameras, and finger print readers.

It is not used by Low Frequency Motorola Proprietary Pairing (LF MPP) only devices such as the mission critical wireless earpiece.

Your radio can be paired and connected to other Bluetooth devices while device inquiry is ongoing.

Accessed Only: When the [Bluetooth Enable on page 396](#) field is **Enabled**, when the [Bluetooth Pairing Type on page 396](#) field is set to **Standard** or **LF MPP & Standard**, and when the radio is model/option capable.

Table 68: Range

Minimum	Maximum	Increments
5 seconds	60 seconds	5 seconds

4.2.13.11

Bluetooth Radio Visibility Duration

This field allows you to select the amount of time that the radio is visible (discoverable) to a nearby Bluetooth device (typically a Bluetooth-enabled PC) before the process times out.

You can activate discoverable mode with a Bluetooth Discoverable On/Off button-press, or a **Bluetooth Discoverable On/Off** menu-selection (see also [Bluetooth Device Search Duration on page 399](#)). This selection applies on a radio-wide basis.

Accessed Only: When the [Bluetooth Enable on page 396](#) field is **Enabled**, when the [Bluetooth Pairing Type on page 396](#) field is set to **Standard** or **LF MPP & Standard**, when the radio is not **LTE Broadband** capable, and when the radio is model/option capable.

Table 69: Range

Minimum	Maximum	Increments
1 minute	10 minutes	1 minute

4.2.13.12

Bluetooth PAN Network Base Address

This field allows you to define the base Personal Area Network (PAN) Internet Protocol (IP) address for the radio. This feature applies to both Mobile and Portable radios.

This feature can also define the radio PAN IP addresses for connected data-capable Bluetooth devices, in order to provide IPv4-based networking capabilities over a Bluetooth link.

This selection applies on a radio-wide basis.



NOTE: This field cannot be set to the same IP address or to be in the same IP subnet as any other radio interface.

Accessed Only: When the [Bluetooth Enable on page 396](#) field is **Enabled**, when the radio is not LTE Broadband capable, and when the radio is model/option capable.

The Bluetooth PAN Network Base Address supports the following selections:

The First Octet: Must be between: [1-223]

The Remaining Octets: Must be between: [0-255] and the last octet is not configurable and is fixed at 1.

This IP Address's Default Value = 192.168.132.1

4.2.13.13

Remote Speaker Microphone Bluetooth LED

The Remote Speaker Microphone (RSM) Bluetooth LED illuminates when there is radio Bluetooth connectivity.

Accessed Only: When the RSM is model/option capable.

4.2.13.14

Legacy Bluetooth PIN Pairing

This field allows you to enable the Legacy Bluetooth PIN pairing.

You can pair the radio with Bluetooth enabled accessory that uses Bluetooth Core Specification 2.0 and earlier.

This feature applies on a radio-wide basis.

4.2.13.15

Standard NFC Touch Pairing

This field allows Commercial-Off-The-Shelf (COTS) and Near Field Communication (NFC) devices to be paired with the radio through touch pairing. Such pairing is not secure against Person-in-the-Middle (PITM) attacks.

The pairing information is stored in your radio. However, you can configure your radio to force a new pairing operation on each power cycle.

Accessed Only: When the radio is Bluetooth enabled, and when the radio is model/option capable.

4.2.13.16

Secure NFC Touch Pairing

This field allows selected Motorola Solutions accessories to pair using Near Field Communication (NFC) with enhanced security. Such pairing is secured against Person-in-the-Middle (PITM) attacks.

The pairing information is stored in your radio. However, you can configure your radio to force a new pairing operation on each power cycle.

Accessed Only: When the radio is Bluetooth enabled, and when the radio is model/option capable.

4.2.13.17

Bluetooth Audio Backwards Compatibility

If this field is enabled, the current operation with LEX, Si500, Si700, and special Self-Contained Breathing Apparatus (SCBA) is maintained. Handsfree Profile (HFP) Mode is disabled.

If this field is disabled, the legacy logic is removed and HFP Mode is enabled. This function allows WM800, future SCBA, and Commercial-Off-The-Shelf (COTS) devices to operate.



NOTE:

This field affects non-touch radios only. Devices paired with Low Frequency Motorola Proprietary Pairing (LF-MPP) are also not affected by this field.

Accessed Only: When the radio is Bluetooth enabled, and when the radio is model/option capable.

4.2.13.18

Increase Audio Latency

If this field is enabled, the Bluetooth audio link is disconnected and reconnected as needed. This function can cause loss of audio and must only be used in special situations.

Accessed Only: When the radio is Bluetooth enabled, and when the radio is model/option capable.

4.2.14

Tactical Public Safety

This section allows you to view or modify Tactical Public Safety (TPS) parameters.



NOTE: TPS settings are then defined on an individual Conventional Personality basis. See the Conventional Personality, Incident Signaling Type and Tactical Public Safety UI Enable fields.

Accessed Only: When the radio is model/option capable.

4.2.14.1

Voice Tx End Tone

This field enables the radio to sound an alert tone at the end of a voice transmission.

This tone sounds once the PTT button is released for both Conventional analog and digital mode (see the Tx Voice/Signal Type field), independent of any Incident Signaling Type selection, including "Disabled". This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

4.2.14.2

Audible Emergency Beacon

This field enables your ability to generate emergency alert tones during an Emergency Mode transmission; and allows you to select the amount of time between these unique repeating tones.

These alert tones play from the radio's speaker to provide an audible search-and-rescue mechanism that continues until you cancel the emergency: see also Audible Emergency Beacon Routing. This selection applies on a radio-wide basis. Time is in seconds.



IMPORTANT:

For Mobile radios, the Emergency Beacon sounds at the radio's current volume level.

For Portable radios, the Emergency Beacon sounds at the radio's maximum volume level setting.

Applies only:

- When the radio is operating in Emergency Mode and only when operating on a Conventional Personality where the Tactical Public Safety UI Enable field is enabled.
- (For Mobile radios only) When the "Audible Emergency Beacon" Extended Feature appears in the Extended Feature Name field.

Accessed Only: When the radio is model/option capable.



NOTE: Audible Emergency Beacon is disabled when set to **0 -Disabled** (default).

Table 70: Range

Minimum	Maximum	Increments
1 (seconds)	255 (seconds)	1 second

4.2.14.3

Audible Emergency Beacon Routing

This field selects the routing of "Audible Emergency Beacon" alert tones and incoming audio to a specific speaker when an Emergency Mode transmission is active.



This selection applies on a radio-wide basis.

Applies only: When the radio is operating in Emergency Mode and only when operating on a Conventional Personality where the Tactical Public Safety UI Enable field is enabled.

Accessed Only:

- When the "Audible Emergency Beacon Routing" Extended Feature appears in the Extended Feature Name field.
- When the [Audible Emergency Beacon on page 402](#) field is not set to **Disabled**.
- When the radio is model/option capable.

The following selections are supported:

External Speaker

Emergency Beacon alert tones are routed to an External Speaker (if attached, otherwise the Internal Speaker is used)

Internal Speaker Only

Emergency Beacon alert tones sound on the Internal Speaker only (regardless of External Speaker availability).

4.2.14.4

Emergency Alarm Retry Rate

This field selects the amount of time that the radio waits between Emergency Alarm Retry transmissions. This selection applies on a radio-wide basis.



NOTE:

Once Emergency Mode is entered on a Conventional Personality, this wait time applies to both the Polite and Impolite Emergency retries defined in the referenced Conventional Emergency Profile of the Personality's referenced Conventional System.

Emergency Alarm Retries then continue until an acknowledgment (Ack) of a successful emergency transmission is received back to the radio or until the number of Polite and Impolite Emergency retries has been exhausted.

Applies only: When the radio is operating in Emergency Mode and only when operating on a Conventional Personality where the Tactical Public Safety UI Enable field is enabled.

Accessed Only: When the radio is model/option capable.



NOTE: Emergency Alarm Retry Rate is disabled when set to **4 -Disabled** (default).

Table 71: Range

Minimum	Maximum	Increments
5 (seconds)	64 (seconds)	1 second

4.2.14.5

Emergency Call De-key Sidetone

This field enables the radio to sound a unique alert tone reminding you that Emergency Mode is still active.

This alert tone sounds when you release the PTT button from an Emergency Call transmission.



IMPORTANT:

For Mobile radios, this Emergency Sidetone sounds at the radio's current volume level.

For Portable radios, this Emergency Sidetone sounds at the radio's Maximum Volume setting (see also Volume Offset (dB)).

Applies only: When the radio is operating in Emergency Mode and only when operating on a Conventional Personality where the Tactical Public Safety UI Enable field is enabled.

Accessed Only: When the radio is model/option capable.

4.2.14.6

TPS PTT Transmission

This field selects when a Tactical Public Safety (TPS) packet is transmitted in relation to a non-emergency voice transmission.

This feature applies on a radio-wide basis to TPS-enabled channels.

Applies only: When the radio is operating on a Conventional Personality where the Incident Signaling Type field is set to **Tactical Public Safety**.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

None

No TPS packet is transmitted.

Leading Edge

The TPS packet is transmitted once the PTT button is pressed and just prior to any voice transmission.

Trailing Edge

The TPS packet is transmitted just after the PTT button is released.

Both

The TPS packet is transmitted once the PTT button is pressed and just prior to any voice transmission and again just after the PTT button is released.

4.2.14.7

TPS Emergency PTT Transmission

This field selects when a Tactical Public Safety (TPS) packet is transmitted in relation to an Emergency "Call" (voice) transmission (see also Emergency Type).

This feature applies on a radio-wide basis to Emergency "Call" (voice) transmissions on TPS-enabled channels.

Applies only: When the radio is operating in Emergency Mode and only when operating on a Conventional Personality where the Incident Signaling Type field is set to **Tactical Public Safety**.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

None

No TPS packet is transmitted.

Leading Edge

The TPS packet is transmitted once the PTT button is pressed and just prior to any Emergency Call (voice) transmission.

Trailing Edge

The TPS packet is transmitted just after the PTT button is released in any Emergency Call (voice) transmission.

Both

The TPS packet is transmitted once the PTT button is pressed and just prior to any Emergency Call (voice) transmission and again just after the PTT button is released.

4.2.15

Personnel Accountability

This section allows you to view or define functionality relating to the Personnel Accountability Feature.



These settings apply on a radio-wide basis to Personnel Accountability-enabled channels.

IMPORTANT: When operating in talkaround/direct mode and in close proximity of other radios, it is recommended to configure additional preamble of 160 to the ASTRO system configured with Personnel Accountability enabled channels.

NOTE: Personnel Accountability settings must be defined on an individual Conventional Personality basis. See the Conventional Personality, Incident Signaling Type, Personnel Accountability Registration, and Tx Voice Type fields.

Accessed Only: When the radio is model/option capable.

The following fields are supported:

4.2.15.1 Periodic Update Timer

This field selects the amount of time that determines how often (in minutes) the radio sends out an unsolicited and no-confirmation-required Personnel Accountability (PA) packet to the Incident Command Terminal (ICT).



This is only true once a successful PA Registration has already occurred. If the PA Registration attempt has failed, this timer is then used to determine how often (in minutes) that the radio will retry PA Registration. This feature applies on a radio-wide basis to Personnel Accountability-enabled channels.

Applies only: When the radio is operating on a Conventional Personality where both the Incident Signaling Type field is set to **Personnel Accountability** and the Personnel Accountability Registration field is enabled.

Accessed Only: When the radio is model/option capable.

NOTE: Periodic Update Timer is disabled when set to **0 -Disabled** (default). The radio does not send out unsolicited or no-confirmation-required Personnel Accountability (PA) packets; nor does it retry PA Registration.

Table 72: Range

Minimum	Maximum	Increments
1 minute	20 minutes	1 minute

4.2.15.2 Respond To Polls

This field enables the radio to send back a response immediately after receiving a Personnel Accountability poll.



Personnel Accountability polling is initiated by the Incident Commander (IC) and is used to query radios confirming their ability to communicate. This feature applies on a radio-wide basis to Personnel Accountability-enabled channels.

Applies only: When the radio is operating on a Conventional Personality where the Incident Signaling Type field is set to **Personnel Accountability**.

Accessed Only: When the radio is model/option capable.

4.2.15.3

Evacuation Acknowledgment

This field selects ways the radio responds to Personnel Accountability Evacuation messages.



Personnel Accountability Evacuation messages are sent by the Incident Commander (IC). This feature applies on a radio-wide basis to Personnel Accountability-enabled channels.

Applies only: When the radio is operating on a Conventional Personality where the Incident Signaling Type field is set to **Personnel Accountability**.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Disabled

The radio does not respond to an Evacuation message.

Manual

The radio responds to an Evacuation message upon your intervention through a PTT button press.

4.2.15.4

Personnel Accountability PTT Transmission

This field selects when an unconfirmed (no acknowledgment expected) Personnel Accountability (PA) packet is transmitted in relation to a non-emergency voice transmission.



This feature applies on a radio-wide basis to Personnel Accountability-enabled channels.

Applies only: When the radio is operating on a Conventional Personality where the Incident Signaling Type field is set to **Personnel Accountability**.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

None

No PA packet is transmitted.

Leading Edge

The PA packet is transmitted once the PTT button is pressed and just prior to any non-emergency voice transmission.

Trailing Edge

The PA packet is transmitted just after the PTT button is released.

Both

The PA packet is transmitted once the PTT button is pressed and just prior to any non-emergency voice transmission and again just after the PTT button is released.

4.2.15.5

Personnel Accountability Emergency PTT Transmission

This field selects when an unconfirmed (no acknowledgment expected) Personnel Accountability (PA) packet is transmitted in relation to an Emergency.



This feature applies on a radio-wide basis for Emergency Call transmissions on Personnel Accountability-enabled channels.

Applies only: When the radio is operating in Emergency Mode and only when operating on a Conventional Personality where the Incident Signaling Type field is set to **Personnel Accountability**.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

None

No PA packet is transmitted.

Leading Edge

The PA packet is transmitted once the PTT button is pressed and just prior to any Emergency Call transmission.

Trailing Edge

The PA packet is transmitted just after the PTT button is released.

Both

The PA packet is transmitted once the PTT button is pressed and just prior to any Emergency Call transmission and again just after the PTT button is released.

4.2.15.6

Acknowledge Alerts on PTT

This field allows you to configure the PTT button to acknowledge the fireground alerts.



When enabled, the PTT, Side Top (Purple) button on portable radio or accessories, and the 1-Dot Programmable Button on RSM can be used to acknowledge these alerts.

There are 16 programmable alerts that can be sent from the client and received by the radios. The alerts include tone, backlight, vibrating, voice announcement, text, LED, etc.

Accessed Only: When the radio is model/option capable.

4.2.16

Rx Frequency Split

This field displays the starting and ending frequency of the Receive Frequency Split. Each row is applicable to the specified frequency band.

These values are fixed for the radio model on a radio-wide basis.

4.2.17

Tx Frequency Split

This field displays the starting and ending frequency of the Transmit Frequency Split. Each row is applicable to the specified frequency band.

These values are fixed for the radio model on a radio-wide basis.

4.3

Factory Overrides

The **Factory Overrides** is used to enter factory override information for certain radio signal algorithms on a radio-wide basis.



WARNING: Factory overrides should not be entered unless deemed necessary. Procedures to enter factory override information should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

4.3.1

General

This section enables you to enter factory override information.

4.3.1.1

Factory Overrides Enable

This field enables you to enter factory override information in the Factory Overrides lists.

This selection applies on a radio-wide basis. When disabled, all Factory Override settings are disregarded.



WARNING: This field should not be enabled unless deemed necessary. Procedures to enter factory override information in the Factory Overrides menu should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

Accessed Only: This is an advanced setting which is only available in Expert View.

4.3.2

Rx Synthesizer Reference Divider List

This section allows you to view and define receive frequencies and their respective reference divider values on a radio-wide basis.



WARNING: Factory overrides should not be entered unless deemed necessary. Procedures to enter factory override information should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

4.3.2.1

Rx Freq

This field allows you to enter a Receive (Rx) frequency (in MHz) for the respective Rx Synthesizer Reference Divider frequency value.

This selection applies for the current record/row which applies on a radio-wide basis.



WARNING:

This field should not be enabled unless deemed necessary. Procedures to enter factory override information in the Factory Overrides menu should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

From R09.01.00, 6.25 kHz step size for Conventional frequencies in the 800 MHz frequency band is allowed to meet the regulatory compliance in certain (non-FCC) countries. Two radios operating on adjacent channels separated by 6.25 kHz only may experience an undesirable crosstalk phenomena.



IMPORTANT:

Duplicate frequencies are not allowed. Therefore, when selecting a frequency, if a frequency has already been entered into the list, then that frequency will no longer be a valid choice for the current field.

Refer to the Motorola Solutions Catalog Sheets/Price Pages or Manual for valid Frequencies for the current model.

For optimal performance, the frequencies should be entered in ascending order.

Accessed Only: When the [Factory Overrides Enable on page 408](#) field is **Enabled** and when the radio is model/option capable.

4.3.2.2

Rx Ref Div

This field selects the Receive (Rx) Synthesizer Reference Divider frequency (in MHz) for the respective Rx Frequency.

This selection applies for the current record/row which applies on a radio-wide basis.



WARNING: This field should not be enabled unless deemed necessary. Procedures to enter factory override information in the Factory Overrides menu should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

Accessed Only: When the [Factory Overrides Enable on page 408](#) field is **Enabled** and when the radio is model/option capable.

The following selections are supported:

5.6 MHz

8.4 MHz

16.8 MHz

4.3.3

Tx Synthesizer Reference Divider List

This section allows you to enter transmit frequencies and their respective reference divider values on a radio-wide basis.



WARNING: Factory overrides should not be entered unless deemed necessary. Procedures to enter factory override information should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

4.3.3.1

Tx Ref Div

This field selects the Transmit (Tx) Synthesizer Reference Divider frequency (in MHz) for the respective Tx Frequency.

This selection applies for the current record/row which applies on a radio-wide basis.

 **WARNING:** This field should not be enabled unless deemed necessary. Procedures to enter factory override information in the Factory Overrides menu should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

Accessed Only: When the [Factory Overrides Enable on page 408](#) field is **enabled**.

The following selections are supported:

- 5.6 MHz
- 8.4 MHz
- 16.8 MHz

4.3.3.2

Tx Freq

This field allows you to enter a Transmit (Tx) frequency (in MHz) for the respective Tx Synthesizer Reference Divider frequency value.

This selection applies for the current record/row which applies on a radio-wide basis.

 **WARNING:** This field should not be enabled unless deemed necessary. Procedures to enter factory override information in the Factory Overrides menu should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

From R09.01.00, 6.25 kHz step size for Conventional frequencies in the 800 MHz frequency band is allowed to meet the regulatory compliance in certain (non-FCC) countries. Two radios operating on adjacent channels separated by 6.25 kHz only may experience an undesirable crosstalk phenomena.

 **IMPORTANT:** Duplicate frequencies are not allowed. Therefore, when selecting a frequency, if a frequency has already been entered into the list, then that frequency will no longer be a valid choice for the current field.

Refer to the Motorola Solutions Catalog Sheets / Price Pages or Manual for valid Frequencies for the current model.

For optimal performance, the frequencies should be entered in ascending order.

Accessed Only: When the [Factory Overrides Enable on page 408](#) field is **Enabled** and when the radio is model/option capable.

4.3.4

Second LO Injection Frequency List

This section allows you to view or modify individual Rx (Receive) frequencies for which the opposite second LO injection frequency will be used instead of the default.

This feature applies on a radio-wide basis.

 **WARNING:** Factory overrides should not be entered unless deemed necessary. Procedures to enter factory override information should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

4.3.4.1

Second LO Injection Frequency

This field allows you to enter an individual receive (Rx) frequency (in MHz) for which the opposite second LO injection frequency will be used instead of the default.

This selection applies for the current record/row which applies on a radio-wide basis.

 **WARNING:** This field should not be enabled unless deemed necessary. Procedures to enter factory override information in the Factory Overrides menu should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

From R09.01.00, 6.25 kHz step size for Conventional frequencies in the 800 MHz frequency band is allowed to meet the regulatory compliance in certain (non-FCC) countries. Two radios operating on adjacent channels separated by 6.25 kHz only may experience an undesirable crosstalk phenomena.

Accessed Only: When the [Factory Overrides Enable on page 408](#) field is **Enabled**, and when the radio is model/option capable.

4.3.5

Tx SSI Clock Rate List

This section allows you to enter transmit frequencies, and their respective reference divider values, for frequencies at which a crosstalk phenomenon occurs.

Crosstalk occurs when a signal transmitted on one channel creates an undesired effect on another channel. These fields apply on a radio-wide basis.

 **WARNING:** Factory overrides should not be entered unless deemed necessary. Procedures to enter factory override information should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

4.3.5.1

Tx Frequency

This field allows you to enter a Transmit (Tx) frequency (in MHz) at which a crosstalk phenomenon occurs, for the respective Tx SSI Clock Rate frequency value.

This selection applies for the current record/row which applies on a radio-wide basis.



WARNING:

This field should not be enabled unless deemed necessary. Procedures to enter factory override information in the Factory Overrides menu should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

6.25 kHz step size for the 800 MHz frequency band:

Starting with Release R09.01.00, the application allows a 6.25 kHz step size for Conventional frequencies in the 800 MHz frequency band, to meet regulatory compliance in certain (non-FCC) countries; however, be aware that two radios operating on adjacent channels separated by 6.25 kHz only may experience an undesirable crosstalk phenomena.



IMPORTANT:

Duplicate frequencies are not allowed. Therefore, when selecting a frequency, if a frequency has already been entered into the list, then that frequency will no longer be a valid choice for the current field.

Refer to the Motorola Solutions Catalog Sheets/Price Pages or Manual for valid Frequencies for the current model.

For optimal performance, the frequencies should be entered in ascending order.

Accessed Only: When the [Factory Overrides Enable on page 408](#) field is **Enabled** and when the radio is model/option capable. This is an advanced setting which is only available in Expert View (see Codeplug View).

4.3.5.2

Tx SSI Clock Rate

This field selects the Transmit (Tx) synthesizer SSI Clock Rate frequency (in MHz) for the respective Tx Frequency at which the crosstalk phenomenon occurs.

This selection applies for the current record/row which applies on a radio-wide basis.



WARNING: This field should not be enabled unless deemed necessary. Procedures to enter factory override information in the Factory Overrides menu should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

Accessed Only: When the [Factory Overrides Enable on page 408](#) field is **Enabled** and when the radio is model/option capable. This is an advanced setting which is only available in Expert View (see Codeplug View).

The following selections are supported:

- 2.40 MHz
- 3.36 MHz
- 8.40 MHz
- 1.92 MHz

4.3.6

Rx SSI Clock Rate List

This section allows you to enter transmit frequencies, and their respective reference divider values, for frequencies at which a crosstalk phenomenon occurs.

Crosstalk occurs when a signal transmitted on one channel creates an undesired effect on another channel. These fields apply on a radio-wide basis.

 **WARNING:** Factory overrides should not be entered unless deemed necessary. Procedures to enter factory override information should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

4.3.6.1

Rx Frequency

This field allows you to enter an Receive (Rx) frequency (in MHz) at which a crosstalk phenomenon occurs for the respective Rx SSI Clock Rate frequency value.

This selection applies for the current record / row which applies on a radio-wide basis.

 **WARNING:** This field should not be enabled unless deemed necessary. Procedures to enter factory override information in the Factory Overrides menu should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

From R09.01.00, 6.25 kHz step size for Conventional frequencies in the 800 MHz frequency band is allowed to meet the regulatory compliance in certain (non-FCC) countries. Two radios operating on adjacent channels separated by 6.25 kHz only may experience an undesirable crosstalk phenomena.

 **IMPORTANT:** Duplicate frequencies are not allowed. Therefore, when selecting a frequency, if a frequency has already been entered into the list, then that frequency will no longer be a valid choice for the current field.

Refer to the Motorola Solutions Catalog Sheets/Price Pages or Manual for valid Frequencies for the current model.

For optimal performance, the frequencies should be entered in ascending order.

Accessed Only When the [Factory Overrides Enable on page 408](#) field is **Enabled** and when the radio is model / option capable.

4.3.6.2

Rx SSI Clock Rate

This field selects the Receive (Rx) synthesizer SSI Clock Rate frequency (in MHz) for the respective Rx Frequency at which the crosstalk phenomenon occurs.

This selection applies for the current record/row which applies on a radio-wide basis.

 **WARNING:** This field should not be enabled unless deemed necessary. Procedures to enter factory override information in the Factory Overrides menu should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

Access Only: When the [Factory Overrides Enable on page 408](#) field is enabled and when the radio is model/option capable.

The following selections are supported:

- 1.2 MHz
- 1.5 MHz
- 1.8 MHz
- 6.4 MHz
- 9.6 MHz

4.3.7

Rx SSI Clock Rate List : Tx Mode

This section allows you to enter transmit frequencies, and their respective reference divider values, for frequencies at which a crosstalk phenomenon occurs.

Crosstalk occurs when a signal transmitted on one channel creates an undesired effect on another channel. These fields apply on a radio-wide basis.

 **WARNING:** Factory overrides should not be entered unless deemed necessary. Procedures to enter factory override information should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

4.3.7.1

Tx Frequency

This field allows you to enter a Transmit (Tx) frequency (in MHz) at which a crosstalk phenomenon occurs, for the respective Tx SSI Clock Rate frequency value.

This selection applies for the current record/row which applies on a radio-wide basis.

 **WARNING:** This field should not be enabled unless deemed necessary. Procedures to enter factory override information in the Factory Overrides menu should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

From R09.01.00, 6.25 kHz step size for Conventional frequencies in the 800 MHz frequency band is allowed to meet the regulatory compliance in certain (non-FCC) countries. Two radios operating on adjacent channels separated by 6.25 kHz only may experience an undesirable crosstalk phenomena.

 **IMPORTANT:** Duplicate frequencies are not allowed. Therefore, when selecting a frequency, if a frequency has already been entered into the list, then that frequency will no longer be a valid choice for the current field.

Refer to the Motorola Solutions Catalog Sheets/Price Pages or Manual for valid Frequencies for the current model.

For optimal performance, the frequencies should be entered in ascending order.

Accessed Only: When the [Factory Overrides Enable on page 408](#) field is **Enabled** and when the radio is model/option capable. This is an advanced setting which is only available in Expert View (see Codeplug View).

4.3.7.2

Rx SSI Clock Rate

This field selects the Receive (Rx) synthesizer SSI Clock Rate frequency (in MHz) for the respective Rx Frequency at which the crosstalk phenomenon occurs.

This selection applies for the current record/row which applies on a radio-wide basis.

 **WARNING:** This field should not be enabled unless deemed necessary. Procedures to enter factory override information in the Factory Overrides menu should only be attempted by Qualified Service Personnel. Failure to perform procedures properly may seriously degrade the radio and/or system performance.

Accessed Only: When the [Factory Overrides Enable on page 408](#) field is **Enabled**, and when the radio is model/option capable and when the radio is model/option capable.

The following selections are supported:

- 6.4 MHz
- 9.6 MHz

4.4

Radio Ergonomics Wide

This section allows you to view or define radio-wide functionality that applies to both conventional and trunking communications modes.

4.4.1

Home Mode

This section allows you to select a specific zone and channel that are then considered the radio's Home Mode.

Mode is another name for a certain zone and channel. Zones and Channels must first be defined in the Zone Channel Assignment Window. This feature then applies on a radio-wide basis.



NOTE: You can access this programmed Home Mode with a long keypress of the radio's Home button. A short keypress of the radio's Home button may also verify a current radio selection when using features such as changing channels, changing zones, or selecting Priority Members/channels for a Scan List.

4.4.1.1

Home Mode Selection

This field enables the Home Mode feature allowing the radio to easily jump to the programmed Home Mode Zone and Home Mode Channel.

Mode is another name for a certain zone and channel. This selection applies on a radio-wide basis.



NOTE: You are then easily able to access this programmed Home Mode with a long keypress of the radio Home button. A short keypress of the radio Home button may also verify a current radio selection when using features such as changing channels, changing zones, or selecting Priority Members/channels for a Scan List.

If the radio is the latest Fire Service Standards models, the Home Mode is checked and grayed out by default. The Home Mode's **Zone and Channel** must be set to a channel that is tied to a Hazard Zone Mode personality (Hazard Zone Mode Personality field is checked).

The latest Fire Service Standards radio model powers up to the Hazard Zone Mode channel. Home **Zone and Channel** is selected if the previous channel is not a Hazard Zone Mode channel.

Accessed Only: When radio is model or option capable.

4.4.1.2

Home Mode Zone

This field allows you to select a Home Mode Zone for the radio.

Once the Zone is selected, the Home Mode Channel may then be selected. Mode is another name for a certain zone and channel. This selection applies on a radio-wide basis.

 **NOTE:** You are then easily able to access this programmed Home Mode with a long keypress of the radio's Home button. A short keypress of the radio's Home button may also verify a current radio selection when using features such as changing channels, changing zones, or selecting Priority Members/channels for a Scan List.

 **WARNING:**
Dynamic Zones are invalid and cannot be selected (zones that have Dynamic Zone Enable enabled).
Remote Site Interface (RSI) zones are invalid and cannot be selected (zones that have RSI Mode enabled).

Accessed Only: When the Home Mode Selection field is enabled, and when radio is model/option capable.

4.4.1.3

Home Mode Channel

This field selects a Home Mode Channel for the radio.

The Home Mode Zone must be selected first. Mode is another name for a certain zone and channel. This selection applies on a radio-wide basis.

If **Power Up in Hazard Zone Mode** channel is enabled, then the Home Mode Channel personality must have **Hazard Zone Mode Personality** enabled.

 **NOTE:** You are then easily able to access this programmed Home Mode with a long keypress of the radio's Home button. A short keypress of the radio's Home button may also verify a current radio selection when using features such as changing channels, changing zones, or selecting Priority Members/channels for a Scan List.

Accessed Only: When the [Home Mode Selection on page 415](#) field is **enabled**, and when the [Home Mode Zone on page 415](#) field is not set to a **Dynamic Zone**, and when radio is model/option capable.

4.4.2

Control Head

This section allows you to view or modify settings related to a multi-control-head to one transceiver configuration.



Accessed Only: When the radio is model or option capable.

4.4.2.1

Multi Control Head

This field enables Multi Control Head operation, thus allowing you to change command between two control heads.



You can accomplished in changing control head command with a Front/Rear button-press or a menu-selection. The commanding control head presents the current zone/channel in its display. The de-selected

control head is then the remote control head that presents **REMOTE** in its display. This feature applies only in a multi-control-head to one transceiver configuration.



NOTE:

Once enabled, the [Multi-CH Tx Audio Routing on page 418](#), [Expected Number of Control Heads on page 420](#), [Multiple Control Head Style on page 420](#), and Control Head Alias fields must also be configured.

Once enabled, the F/R Spkr Control feature, when assigned to DEK A VIP Output 2, allows the front/rear speaker audio to follow the active control head.

Accessed Only: When the radio is model/option capable, and



WARNING:

For a Dual Radio configuration:

- When the [Radio Selection on page 361](#) a field is set to **Primary Radio** or **Secondary Radio**, this field must be **Disabled**. Otherwise, it is considered invalid. "Disabling" this field then makes it inaccessible.
- Only one control head is shared by both radios (known as the "bricks").

4.4.2.2

Intercom Timeout Timer

This field selects the amount of inactivity time used when the Intercom feature is active.



When the intercom feature is active and no activity occurs for the specified duration, the radio then exits the intercom feature. The intercom feature allows multiple control heads to talk to each other with the control heads in a multi-control head setup. This feature is accessed with the Intercom button-press or Intercom menu-selection. This selection applies only in a multi-control-head to one transceiver configuration. Time is in seconds.

Accessed Only:

When the radio is model/option capable, when the [Multi Control Head on page 416](#) field is **disabled**, or

When the Multi Control Head field is **enabled**, and when the Multiple Control Head Style field is set to **All Active**.



NOTE: When set to **0-Disabled**, no timer is used; you manually exits the Intercom feature.

Table 73: Range

Minimum	Maximum	Increment
10 seconds	120 seconds	10 seconds

4.4.2.3

Control Head(s) Required for Power Up

This field causes the radio to require at least one control head to be attached in order for the radio to power up.



Removing all control heads before powering-up causes the radio to power down.

Accessed Only: When the radio is model/option capable, and the [Radio Selection on page 361](#) field is not set to **Secondary Radio**.

4.4.2.4

Remote Mic Source

This field selects the control head whose microphone is used during remote key-up.



This selection determines the appropriate control head/microphone for features such as: Remote Monitor, Hot Mic Emergency, and Emergency Power Up (footswitch). This selection applies only in a multi-control-head to one transceiver configuration.

WARNING: When the Dual Radio - Radio Selection field is set to **Primary Radio** or **Secondary Radio**, this selection must be **Disabled** or **Control Head 1**. Otherwise, it is considered to be Invalid.

Accessed Only:

When the radio is model/option capable, and when the [Multi Control Head on page 416](#) field is disabled), or

When the Multi Control Head field is enabled, and when the [Multiple Control Head Style on page 420](#) field is set to **All Active**.

The following selections are supported:

Disabled

Control Head 1

4.4.2.5

Multi-CH Tx Audio Routing

This field allows you to enable Transmit (Tx) audio sent from Control Head 1 to be heard from all other control heads connected to the transceiver.



This feature applies only in a multiple-control-head to one transceiver configuration and does not apply when using a Bluetooth microphone.

WARNING: This selection is only valid when the [Multi Control Head on page 416](#) field is **Enabled**, and when the [Multiple Control Head Style on page 420](#) field is set to **All Active**.

Accessed Only: When the radio is model/option capable.

4.4.2.6

Control Head VIP Input Source

This field selects which Control Head's VIP (Vehicular Interface Port) Inputs are functional (either Radio VIP Inputs or DEK VIP Inputs).



All other Control Head VIP input sources in this multi-control head setup are ignored. This selection applies only in a multi-control-head to one transceiver configuration.

 **WARNING:** When the Dual Radio - [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, Control Head VIP Input Source must be Disabled or Control Head 1; otherwise, it is considered to be Invalid.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

NONE

 **NOTE:** Select None if VIP inputs are used with a DEK (DEKs are always attached to the transceiver through a Siren/PA accessory).

Control Head 1 through 4

4.4.2.7

Aggregate Cable Length

This field selects the total length of control head cabling allowed in a remote mount installation.



This feature applies only in a multi-control-head to one transceiver configuration.

Accessed Only: When the radio is model/option capable, and

 **WARNING:** When the Dual Radio - [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, this selection must be **Up to 40 m (131 ft)**. Otherwise, it is considered to be Invalid. Selecting **Up to 40 m (131 ft)** then makes this field **inaccessible**. This satisfies the unique Dual Radio control head cabling requirements.

The following selections are supported:

Up to 40 m (131 ft)

The combined length of Control Head cabling is 40 meters (131 feet) or less.

Greater than 40 m (131 ft)

The combined length of Control Head cabling is greater than 40 meters (131 feet).

 **NOTE:** Valid only when the ID for control head one is set to A and the ID for control head two is set to B.

4.4.2.8

Transceiver Volume Control

This field selects which control head controls the transceiver's volume in a multi-control-head setup.



This selection applies only when programming a multiple-control-head to one transceiver configuration.

 **WARNING:** When the Dual Radio - [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, Transceiver Volume Control must be **Disabled** or **Control Head 1**. Otherwise, it is considered to be Invalid.

Accessed Only: When the radio is model/option capable.

4.4.2.9

Expected Number of Control Heads

This field selects the number of Control Heads that the radio should expect to register when powering-up.



If the radio registers less than this number of Control Heads when powering-up, a non-fatal error appears in the displays of all working control heads. This selection applies only when programming a multiple-control-head to one transceiver configuration.

WARNING: For the expected number of control heads to be set to **3**, or **4**, the Multiple Control Head Style field must be set to **All Active**, and DVRS Hardware Enable must be disabled. Otherwise, the application considers this selection invalid.

The following selections are supported:

1,2,3 or **4**



IMPORTANT: When the Maritime Radio Software Extended Feature appears in the Extended Feature Name field, the expected number of control heads is limited to 2 (see also the Maritime Radio Software Important Note in the Used in Codeplug field).

4.4.2.10

Transceiver DEK Dim Control

This field selects the desired control head whose fixed (not programmed) "Dim" button will control the brightness of the DEK's light emitting diodes (LEDs).



This selection applies only in a multi-control-head to one transceiver configuration.

WARNING: When the Dual Radio - [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, Transceiver DEK Dim Control must be **Disabled** or **Control Head 1**. Otherwise, it is considered to be Invalid.



IMPORTANT: DEKs are always attached to the transceiver through a Siren/PA accessory; therefore, this field does not apply if a Siren/PA accessory is not present in this multi control head setup.

Accessed Only: When the radio is model/option capable.

4.4.2.11

Multiple Control Head Style

This field selects the control head configuration for the current radio.



The Front/Rear button-press or [Front/Rear on page 529](#) menu-selection allows you to determine which is the currently active control head in a two-control head, one radio configuration.

This selection applies only in a multi-control-head to one transceiver configuration.

Accessed Only: When the radio is model/option capable, and when the [Multi Control Head on page 416](#) is **enabled**.

The following selections are supported:

One Active

For this selection, the Front/Rear button or Front/Rear menu-selection must be programmed.

All Active

Only available when the radio is model/option capable.

4.4.2.12

Control Head Alias

This field allows you to define unique recognizable names for each Control Head in a multi-control-head to one transceiver configuration.



Features like Intercom can take advantage of Control Head Aliases. For example, during an intercom call the Control Head Alias (the control head whose microphone is active currently) appears in the displays of all other control heads within the local group. This Alias is also seen on an alternating basis with the Zone Name in the display of Control Head #1. This selection applies only in a multi-control-head to one transceiver configuration.



IMPORTANT:

The Front Panel Programming (FPP) mode allows you to define which control head in a Multi-Control Head setup becomes Control Head Number 1, Control Head Number 2, Control Head Number 3, and Control Head Number 4.

You can select FPP with the Front Panel Programming menu-selection.

Accessed Only: When the Multi-Control Head field is enabled and when the radio is model/option capable.



NOTE:

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.4.2.13

Bluetooth Control

This field allows you to select the control head for Low Frequency Motorola Proprietary Pairing (LF MPP).



Bluetooth Control also associates the Bluetooth speaker and microphone to the selected control head.

This selection applies only in a multiple-control-head to one transceiver configuration.

4.4.2.14

Control Head Power-up Brightness

This feature allows each control head to power up with the previously selected brightness or minimum brightness.

If the previous user selected minimum brightness or higher, then the control head powers up with the same brightness.

Each control head at least powers up with the minimum brightness. If any control head's previous user selected brightness is equal to minimum, then that control head shall power up with the minimum brightness.

If any control head's previous user selected brightness is above Minimum, then that control head shall power up with last user selected brightness.

 **NOTE:** This field is not available if **Secondary Radio** is selected under the **Dual Radio - Radio Selection** field.

Last Mode (Default)

Control head powers up and maintain the last selected brightness.

Minimum

Control head powers up with the minimum brightness if it was in **Dark mode** or maintain the level that it was in before.

4.4.2.15

Block Darkest Dim Level

This selection is used to skip the lowest brightness setting (blackout) when adjusting brightness by using the **dim** button on the mobile control head.

 **NOTE:** In a dual radio system, this selection follows the primary radio setting. This is applicable to O2, O7, and E5 only.

4.4.3

PA/Siren

This section allows you to view or define Accessory Connector functionality related to Public Address and Siren settings that apply on a radio wide basis.



Accessed Only: When the radio is model/option capable.

4.4.3.1

Siren Operation

This field selects the desired functionality for the radio's Siren and/or Public Address (PA) system.



This selection applies on a radio-wide basis.

 **NOTE:** Siren mode may be activated/deactivated with a Siren button-press once the desired tone has been pre-selected with an Airhorn, Hi/Lo, Manual, Wail, or Yelp button-press. These buttons are also used to switch to a different tone while the Siren is sounding.

Siren mode may alternately be activated/deactivated with one of the Direct Siren functions, which simultaneously turn on/off the Siren amplifier while also selecting the desired tone: Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp button-presses.

External Radio mode is activated/deactivated either with an External Radio button-press, in conjunction with a Siren button-press, or directly with a Direct Ext Radio button-press.

PA system functionality is activated/deactivated with a Public Address button-press.

Accessed Only: When the radio is model/option capable, and



WARNING: For a Dual Radio configuration:

When the Radio Selection field is set to "Secondary Radio", this field must be set to **Disabled**. Otherwise, it is considered invalid. Selecting **Disabled** then makes this field inaccessible.

Although the Siren box must be connected to the Primary Radio, you can still operate any of the Siren/PA system functions (defined in Notes above) independent of the current radio selection, provided these button features are configured identically for both radios; additionally, the Siren does not change state when the radio selection is swapped.

The following selections are supported:

Disabled

Siren and Public Address (PA) system functions are unavailable.

Siren/PA

Both Siren and PA system functions are possible.

PA Only

Only PA system functions (including External Radio mode) are possible.



NOTE: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, this feature's default value is **Siren/PA**.

4.4.3.2

Options Audio Muting

When this field is enabled, the Options Audio is not heard over the external Siren/Public Address (PA) system speaker when the radio is operating in External Radio mode.



When disabled, all audio is routed to the Siren/PA speaker when in External Radio mode.

Options Audio Types include **deciphered SecureNet™** audio.

This feature applies on a radio-wide basis.



NOTE: You can initiate External Radio mode with an External Radio button-press in conjunction with Siren button-press (which enables the external Siren/PA speaker) or directly with a Direct Ext Radio button-press (which simultaneously enables the external Siren/PA speaker).

Accessed Only: When the [Siren Operation on page 422](#) field is not set to **Disabled**, and when the radio is model/option capable.

4.4.3.3

External Radio Ignition

This field enables Public Address (PA) system ignition sense when in External Radio mode.



Therefore, External Radio mode is only operable when the vehicle's ignition is turned ON. This feature applies on a radio-wide basis. When disabled, External Radio mode is operable with the ignition switch ON or OFF.



NOTE: You can initiate External Radio mode with an External Radio button-press in conjunction with Siren button-press (which enables the external Siren/PA speaker), or directly with a Direct Ext Radio button-press (which simultaneously enables the external Siren/PA speaker).

Accessed Only: When the [Siren Operation on page 422](#) field is not set to **Disabled** and when the radio is model/option capable.

4.4.3.4

PA Ignition Sense

When enabled, the constant Public Address (PA) system ignition sense is enabled.



Therefore, excluding External Radio mode (see also [External Radio Ignition on page 423](#)), the PA system is only operable when the vehicle's ignition is turned ON. This feature applies on a radio wide basis.

When disabled, the Public Address system is operable with the ignition switch ON or OFF.

Accessed Only: When the [Siren Operation on page 422](#) field is not set to **Disabled** and when the radio is model/option capable.

4.4.3.5

Default PA Volume Level

This field selects the initial audio level each time the Public Address (PA) system is used.



You are then able to adjust the audio level with the radio's volume selector. This feature applies on a radio-wide basis.

Accessed Only: When the [Siren Operation on page 422](#) field is not set to **Disabled** and when the radio is model/option capable.

Table 74: Range

Minimum	Maximum
0	15

4.4.3.6

Siren PA After Reset

This field selects the radio's power-on Emergency Siren and Public Address (PA) system status.



This feature applies on a radio-wide basis.

Accessed Only: When the [Siren Operation on page 422](#) field is not set to **Disabled** and when the radio is model/option capable.

The following selections are supported:

Off

When the radio is powered-off, the Emergency Siren and PA is reset to the Off status.

Last State

When the radio is powered-off, the radio's current Emergency Siren is stored by the radio. When the radio is powered back on, the stored Siren status is re-instated. The PA's status is set to Off.

This selection is incompatible with and therefore should not be used in conjunction with a Siren Switchbox (for example. HLN6819B) connected to the Aux Siren SW VIP input.

4.4.3.7

HiLo Airhorn Tones

This field enables the radio to produce the HiLo and/or Airhorn Siren tones.



You are then able to initiate these tones with the Hi/Lo button-press, Direct Hi/Lo button-press and Airhorn button-press. This feature applies on a radio-wide basis.

When disabled, the HiLo and Airhorn Siren Tones cannot be produced; therefore, a Hi/Lo button-press, Direct Hi/Lo button-press or Airhorn button-press cannot be programmed (the selection will be invalid). This allows these Siren tones to be disabled for applications in which they are not desired or allowed.



IMPORTANT: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, this feature's default value is **Enabled**.

Accessed Only: When the [Siren Operation on page 422](#) field is set to **Siren/PA** and when the radio is model/option capable.

4.4.3.8

Manual Tone

This field selects the tone that is heard during Manual Siren Tone operation.



This feature applies on a radio-wide basis.



IMPORTANT:

When a VIP Input is programmed for Horn Ring operation, Manual Siren operation is activated with an initiated Manual button-press; the selected Manual Tone then sounds when the vehicle's Horn Ring is pressed, and ends when the Horn Ring is released.

On the O9 Control Head, when a VIP Input is not programmed for Horn Ring operation, Manual Siren operation is activated with an initiated Manual button-press; the selected Manual Tone sounds when the Manual button is pressed, and ends when the button is released.

The following selections are supported:

Wail

Yelp

Airhorn

Accessed Only: When the [Siren Operation on page 422](#) field is set to **Siren/PA** and when the radio is model/option capable.

4.4.3.9

Siren Ignition Sense

This field enables constant Emergency Siren ignition sense.



Therefore, Emergency Siren is only operable when the vehicle's ignition is turned On. This feature applies on a radio-wide basis.

When disabled, you can activate the Siren when the vehicle's ignition is On or Off.

Accessed Only: When the [Siren Operation on page 422](#) field is set to **Siren/PA** and when the radio is model/option capable.

4.4.4

Horns and Lights

This section allows you to view or define horn and light functionality on the receiving radio that applies on a radio-wide basis.



Accessed Only: When the radio is model/option capable.

4.4.4.1

Horn and Lights

This field enables the External Horn and Lights Alarm feature on a radio-wide basis.



The External Alarm is activated (on the receiving radio) by an incoming Call Alert/Page, Selective/Private Call, Phone Call, or Message. Once activated, the External Alarm can trigger flashing headlights, a siren, or a horn.



NOTE:

You can access this feature with a Horn Lights button-press or a Horn and Lights menu selection.

This feature may also be automatically armed at power-up by enabling Permanent Horn and Lights.

The **Horn** or **Lights** selections may also be programmed in the Controls, Radio VIP Out or DEK VIP Out fields.

Accessed Only: When the radio is model/option capable, and



WARNING:

For a Dual Radio configuration:

When the [Radio Selection on page 361](#) field is set to **Secondary Radio**, Horn and Lights must be **Disabled**. Otherwise, it is considered invalid. Selecting **Disabled** then makes this field inaccessible.

Only the **Primary Radio** is configurable for the Horn and Lights Alarm feature, including the **Horn** and **Lights** VIP Outputs selections, and the Horn Lights button-press or Horn and Lights menu selection.

4.4.4.2

Permanent Horn and Lights

This field causes the radio to always power-up with the External Horn and Lights Alarm in an armed state.



This feature applies on a radio-wide basis.

Accessed Only: When the [Horn and Lights on page 426](#) field is enabled, and when the radio is model/option capable.

4.4.4.3

Horn Duration

This field selects the maximum amount of time that the Horn Alarm is active (see Horn and Lights).



When you respond to the incoming call (keys up the radio), the Horn Alarm is automatically disabled. This feature applies on a radio wide basis. Time is in seconds.

Accessed Only: When the [Horn and Lights on page 426](#) field is enabled and when the radio is model/option capable.

The following selections are supported:

Timed Selections Include:

1 (second) to 255 (seconds). In Increments = 1 (second).

Infinite

The Horn Alarm may be active for an unlimited amount of time.

4.4.4.4

Light Duration

This field selects the maximum amount of time that the Light Alarm is active.



When your respond to the call (keys up the radio), the Light Alarm is automatically disabled. This feature applies on a radio-wide basis. Time is in seconds.

Accessed Only: When the Horn and Lights field is enabled, and when the radio is model/option capable.

The following selections are supported:

Timed Selections Include:

1 (second) To 255 (seconds) In Increments = 1 (second).

Infinite:

The Light Alarm remains active until you respond to the call (keys up the radio).

4.4.4.5

Two Alarm Option

This field enables both the Horn and the Light Alarms to be activated when the External Horn and Lights Alarm is triggered.



When disabled, either the Horn or the Light Alarm is available, as determined by the Alarm Type field selection.

Accessed Only: When the [Horn and Lights on page 426](#) field is enabled and when the radio is model/option capable.

4.4.4.6

Alarm Type

This field selects to enable either the Horn Alarm or the Light Alarm.



This is only true when the Two Alarm Option field is disabled. This feature applies on a radio-wide basis.

Accessed Only:

When the Horn and Lights field is enabled, when the [Two Alarm Option on page 428](#) field is disabled, and when the radio is model/option capable.

The following selections are supported:

Lights

Horn

4.4.4.7

Alarm Re-arm Option

This field allows you to enable the Alarm Re-arm option.



When enabled, the External Horn and Lights Alarm feature will re-load itself once you (PTT or any Control Head) button-press has deactivated an External Alarm. When the Horn and Lights field is enabled and when you activate the Horn and Lights feature, an incoming call first initiates the alarm. This feature applies on a radio-wide channel basis.

When disabled, the External Horn and Lights Alarm is initiated by an incoming call, and then deactivated by a button press. However, you must manually re-activate (re-load) the alarm with a Horn Lights button-press or a Horn and Lights menu-selection.

Accessed Only: When the [Horn and Lights on page 426](#) field is enabled and when the radio is model/option capable.

4.4.4.8

External Alarm Delay

This field selects the amount of time that elapses between the radio receiving a call and when the External Horn and Lights Alarm is activated.



This feature applies on a radio wide basis. Time is in seconds.

Accessed Only: When the [Horn and Lights on page 426](#) field is enabled and when the radio is model/option capable.

Table 75: Range

Minimum	Maximum
0 seconds	15 seconds

4.4.5

Stealth

This section allows you to view or define Stealth Mode functionality for the O9 Control Head that applies on a radio-wide basis.



Accessed Only: When the radio is model/option capable.

4.4.5.1

Disable Lights/LEDs

This field enables your ability to toggle Off or On all of the radio's backlights and LEDs with the O9 Control Head's Covert or Stealth Mode button.



This feature is useful for covert or surveillance operations. This feature applies on a radio-wide basis.

IMPORTANT: When Stealth Mode is toggled On, this selection overrides the Disable Lights and Intelligent Lighting settings of the current Radio Profile. Once the Stealth Mode is toggled Off, the radio reverts back to the current Radio Profile settings.

Accessed Only:When the radio is model/option capable.

4.4.5.2

Disable Tones

This field enables your ability to toggle Off or On all of the radio's alert tones, sidetones, and keypad tones with the O9 Control Head's Covert or Stealth Mode button.



This feature is useful for covert or surveillance operations. This feature applies on a radio-wide basis.



IMPORTANT: When Stealth Mode is toggled On, this selection overrides the Disable Tones selection of the current Radio Profile. Once the Stealth Mode is toggled Off, the radio reverts back to the current Radio Profile settings.

Accessed Only: When the radio is model/option capable.

4.4.5.3

Save Stealth Mode

This field enables the radio to save the O9 Control Head's Stealth Mode state over a radio power cycle.



You can toggle this state with the Control Head's dedicated Stealth Mode button. When disabled, the O9 Control Head always powers up in Stealth Mode OFF state. This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

4.4.6

Advanced

This section allows you to view or define diverse functionality that applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

4.4.6.1

Short Keypress Duration

This field selects the amount of time that defines how long you must press and hold a radio-button in order for the action to be recognized as a short keypress by the radio.

Time is in milliseconds (ms). This selection applies on a radio-wide basis.



IMPORTANT: This short keypress duration must always be a shorter period of time than the Long Keypress Duration field setting.

The following selections are supported:

Table 76: Range

Minimum	Maximum	Increments
0 (ms)	6200 (ms)	50 (ms)

4.4.6.2

Power Up On Last Selected Zone and Channel

When this field is enabled, it causes the radio's current Zone and Channel switch positions to be ignored during power up.



This field also causes the radio to power up on the radio's last-selected Zone and Channel switch positions just prior to the radio being powered down. When disabled, the radio powers up on the radio's currently-selected Zone and Channel switch positions. This feature applies on a radio-wide basis.

WARNING: The Zone Select and Channel Select Rotary/switch-toggle selections must be programmed.

Accessed Only: When Last Selected Channel Per Zone Enable is **Disabled** and when the radio is model/option capable.

NOTE: When Last Selected Channel Per Zone Enable is **Enabled**, this field also becomes Enabled and view-only/not modifiable.

4.4.6.3

Power Up in Hazard Zone Mode

If this field is enabled, the radio powers up on a Hazard Zone Mode channel. If the last selected channel is not a Hazard Zone Mode channel, then the radio powers up on the Home Mode channel.

4.4.6.4

Short Keypress Duration for Emergency

This field selects the amount of time that defines how long you must press and hold the Emergency button before the radio activates the emergency mode operation.

A long keypress of the same Emergency button de-activates the radio's emergency mode. Time is in milliseconds (ms). This feature applies on a radio-wide basis.

NOTE: Either this short keypress duration must be a shorter period of time than the Long Keypress Duration for Emergency field setting, or the Long Keypress Duration for Emergency must be disabled (set to 0).

The following selections are supported:

Table 77: Range

Radio	Minimum	Maximum	Increments
General	50 ms	6200 ms	50 ms
APX NEXT XN	1000 ms	3000 ms	50 ms

4.4.6.5

Volume Control Lockout with Accessory

This field selects which volume control(s) can set the radio's volume level when an accessory is connected to the radio.



This feature applies on a radio-wide basis.



IMPORTANT:

When the radio is plugged into a Vehicular Adapter (VA), this selection is ignored by the radio. With a keypad mic (KPM) connected to the VA, both the radio's volume control knob and the mic's Up/Down Arrow keys can set the volume level.

This field setting is not supported for third party accessories. Any changes in the settings must be done through your accessory developer.

Accessed Only:When the microphone is model / option capable.

The following selections are supported:

None

Both the radio's and an accessory's volume controls can select the radio volume.

Lock Radio Only

When an accessory with volume control is attached, the radio's volume control becomes inoperable and the accessory's volume control selects the radio volume.

4.4.6.6

Long Keypress Duration

This field selects the amount of time that defines how long you must press and hold a programmable button before the radio recognizes a valid long press.

The radio's preprogrammed Home button is an example of a button that takes advantage of Long Keypress functionality. Time is in milliseconds (ms). This feature applies on a radio-wide basis.



IMPORTANT: This long keypress duration must always be a longer period of time than the [Short Keypress Duration on page 430](#) field setting.

The following selections are supported:

Table 78: Range

Minimum	Maximum	Increments
250 (ms)	6250 (ms)	250 (ms)

4.4.6.7

Channel Control Lockout with Accessory

This field enables a radio accessory's "channel control" to override and lock out the radio's channel control.



This feature applies on a radio-wide basis.



NOTE: This field should not be enabled if the RMN5067 microphone is in use, since this microphone has no channel control knob.

Accessed Only:When the microphone is model/option capable.

The following selections are supported:

None

Both the radio's and an accessory's channel controls can select the radio channels.

Lock Radio Only

When an accessory with channel control is attached, the radio's channel control becomes inoperable and the accessory's channel control selects the radio channels.

4.4.6.8

Long Keypress Duration for Emergency

This field selects the amount of time that defines how long you must press and hold an Emergency button before the radio deactivates the radio's emergency mode operation.

A short keypress of the Emergency button activates the radio's emergency mode operation. This feature applies on a radio-wide basis. Time is in milliseconds (ms).



IMPORTANT:

When not set to **0**, this long keypress duration must be a longer period of time than the Short Keypress Duration for Emergency field setting.

Selecting **0** causes emergency mode exit with a long keypress to be disabled. Emergency exit may still be accomplished by powering off the radio.

The following selections are supported:

Table 79: Range

Minimum	Maximum	Increments
0 (ms)	63750 (ms)	250 (ms)

4.4.6.9

Active Mic for Radio PTT

This field selects which microphone is active when you press the PTT button.



This feature applies on a radio-wide basis.



IMPORTANT: This field setting is not supported for third party accessories. Any changes in the settings must be done through your accessory developer.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Radio Mic

The radio's internal microphone will be active.

RSM Mic

The Remote Speaker Microphone (RSM) will be active.

The radio's internal microphone provides contingency operation if an RSM is unavailable when you press the PTT button.

When the radio is plugged into a Vehicular Adapter (VA) that has a microphone attached to its Mobile Microphone Port (MMP), that microphone will be active.

Wireless Mic

The wireless microphone will be active.

The radio's internal microphone provides contingency operation if a wireless microphone is unavailable when you press the PTT button.

4.4.6.10

Power Off Keypress Duration

This field selects the amount of time that defines how long you must press and hold down the radio's power button in order for the radio to power off.



This feature helps you to avoid accidentally shutting down the radio when inadvertently bumping or pressing down the power button. Time is in milliseconds (ms). This feature applies on a radio-wide basis.



IMPORTANT: This feature does not apply during radio power-up or radio maintenance mode; in these two instances, when the radio's power button is pressed the radio immediately powers-off.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Table 80: Range

Minimum	Maximum	Increments
0 (ms)	5000 (ms)	500 (ms)

4.4.6.11

External Accessory Enable

This field enables the radio to delay power-up while it waits for an external accessory to connect.

This wait time is needed by certain external accessories that must be present during radio power-up in order to receive radio status and display information. The external accessory is given a minimum of 5 seconds from radio power-up to establish a connection; the actual wait time may be longer than 5 seconds, but never less than 5 seconds. This feature applies on a radio-wide basis.



IMPORTANT:

When this field is enabled, if the radio does not detect an external accessory connected at power-up within this 5 second window, a temporary error message will appear in the radio's display.

This field is not applicable to the currently shipping Motorola Solutions Remote Speaker Mic (RSM) accessories.

Please refer to the specific accessory's documentation to determine if the accessory needs to be present at radio power-up, and therefore if this field should be enabled.

Accessed Only: When the Dual Radio - Radio Selection field is not set to **Secondary Radio**.

4.4.6.12

Short Keypress Duration for MFK

This field selects the amount of time that defines how long you must press and hold the programmable Multi-Function Knob (MFK) before the radio recognizes a valid short press.

This feature applies on a radio-wide basis. Time is in milliseconds (ms).



NOTE: A Short Keypress Duration button-press toggles between the Multi-Function Knob's Primary and Secondary functions, as defined in the MFK Selections. Upon radio power-up, the Multi-Function Knob always defaults to its programmed Primary function.

Accessed Only: When the radio is model/option capable, and when the Radio Selection field is not set to **Secondary Radio**.

The following selections are supported:

Table 81: Range

Minimum	Maximum	Increments
50 (ms)	6200 (ms)	50 (ms)

 **NOTE:** This [Short Keypress Duration on page 430](#) must always be a shorter period of time than the Long Keypress Duration for MFK field setting (applicable only to portable radios).

4.4.6.13

Keypad/Controls Lock Keypress Type

This field selects your initiated keypress required for a Keypad/Controls Lock button-press to lock (or unlock) the portable radio's controls.

This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Short Keypress

A Short Keypress Duration is required to lock/unlock the radio controls.

Long Keypress

A Long Keypress Duration is required to lock/unlock the radio controls.

4.4.6.14

Long Keypress Duration for MFK

This field selects the amount of time that defines how long you must press and hold the programmable Multi-Function Knob (MFK) before the portable radio recognizes a valid long press.

A Long Keypress Duration button-press is only used to power OFF the radio. This feature applies on a radio-wide basis. Time is in milliseconds (ms).

 **NOTE:** If Rotary Switch Lock Enable is enabled, then the MFK must first be unlocked (with a initiated Keypad/Controls Lock button-press) before powering OFF the radio is possible.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Table 82: Range

Maximum	Minimum	Increments
1000 (ms)	6250 (ms)	250 (ms)

 **NOTE:** This Long Keypress Duration must always be a longer period of time than the Short Keypress Duration for MFK field setting.

4.4.6.15

Zone Bank Operation

This field allows you to select the desired Zone Bank Operation type: **Basic**, **Enhanced**, or **Disabled**.



This feature applies on a radio-wide basis.



NOTE:

When assigning Zone Bank Up or Zone Bank Down to a programmable button, Zone Select is automatically assigned to the Three Position A/B/C Toggle switch.

The Rotary may then only be set to the Channel/Sub Select selection. Only 16 channels are possible per zone when using the Rotary as the channel selector.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Disabled

Disables multiple Zone Banks. When this feature is disabled and Zone Select is selected for a Two-Position or Three-Position Switch, only the first two or the first three zones defined in Zone Channel Assignment are available on the switch. This selection applies only when the radio's firmware is greater than or equal to R06.00.00 (see also Firmware Version).

Basic

Two Zone Banks are available to you. The first Bank is the first set of three Zones defined in the Zone Channel Assignment window (record/row 1, 2, and 3) and the second Bank is the second set of three Zones defined in the Zone Channel Assignment window (record/row 4, 5, and 6). The Zone/Zone Bank indicator in the top display shows the current zone.

Enhanced

Up to 25 Zone Banks are possible. The first Bank is the first set of three Zones defined in the Zone Channel Assignment window (record/row 1, 2, and 3), the second Bank is the second set of three Zones defined in the Zone Channel Assignment window (record/row 4, 5, and 6), and so on, up to a maximum selected by the Number of Zone Banks field. Allows for faster scrolling through Zone Banks with a Long Keypress Duration of a Zone Bank Up or Zone Bank Down programmable button. The Zone/Zone Bank indicator in the top display shows the current Zone Bank.

Accessed Only: When the radio is model/option capable.

4.4.6.16

MFK Inactivity Timeout

This field selects the amount of time the radio waits for your input from the Multi-Function Knob (MFK) before exiting its programmed Secondary function and returning to its Primary function.

This feature applies on a radio-wide basis. Time is in seconds.



NOTE: A Short Keypress Duration for MFK button-press toggles between the Multi-Function Knob's Primary and Secondary functions, as defined in the Multi-Function Knob (MFK) Selections. Upon radio power-up, the Multi-Function Knob always defaults to its programmed Primary function. The MFK's concentric ring LED blinks in green when the MFK is set to the Secondary function, except when Intelligent Lighting is activated.

Accessed Only: When the radio is model/option capable, and when the Radio Selection field is not set to **Secondary Radio**.

The following selections are supported:

Table 83: Range

Minimum	Maximum	Increment
5 seconds	120 seconds	1 second

4.4.6.17

Number of Zone Banks

This field selects the number of Zone Banks to be used when "Enhanced" Zone Bank Operation is selected.



A Zone Bank consists of three zones. It is not a required that there be enough Zone Banks to include all of the codeplug's current zones (see the Zone Channel Assignment window); and if there are not enough Zones available to complete a Zone Bank, **Unprogrammed** will appear in the radio's display if and when these empty positions are selected by the Zone Select switch. This feature applies on a radio-wide basis.



NOTE:

When assigning Zone Bank Up or Zone Bank Down to a programmable button, Zone Select is automatically assigned to the Three Position A/B/C Toggle switch.

The Rotary may then only be set to the Channel/Sub Select selection. Only 16 channels are possible per zone when using the Rotary as the channel selector.

Accessed Only: When the Zone Bank Operation field is set to **Enhanced**, and when the radio is model/option capable.

The following selections are supported:

Table 84: Range

Minimum	Maximum	Increments
3	25	1

4.4.6.18

Multi Function Button Inactivity Timeout

This field selects the amount of time the radio waits for your input from the APX™ 3000 Portable's Multi Function Side Up/Down Arrow buttons before exiting their programmed Secondary functions and returning to their Primary functions.



This feature applies on a radio-wide basis. Time is in seconds.



NOTE: A Multi Function Button Toggle button-press toggles between the Multi Function Side Up/Down Arrow buttons' Primary and Secondary functions, as defined in the Side Arrow Button Selections. Upon radio power-up, the Multi Function Side Up/Down Arrow Buttons always default to their programmed Primary function.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Table 85: Range

Minimum	Maximum	Increments
5 seconds	120 seconds	1

4.4.6.19

Consolette Enable

This field enables the mobile transceiver to operate within a Consolette configuration, causing its serial bus to detect the presence of the Consolette option on power-up.



If the Consolette option is not present in the radio, then a non-fatal error is produced. This feature applies on a radio-wide basis.

Accessed Only:

When the radio is model/option capable.

When DVRS Hardware Enable is disabled.

When the Radio Selection field is not set to **Primary Radio** or **Secondary Radio**.

4.4.6.20

Soft Power Off

This field selects a specific radio button that you must pressed (after the Power knob is placed in the "Off" position) in order to power down the radio.



This selection applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Disabled

Positioning the Power knob at the "Off" position shuts the radio off.

Side Button 1

To turn the radio off, the Side Top Button must be pressed after the Power knob is placed in the "Off" position. The User Guide refers to this as Top Side (Select) Button.

Side Button 2

To turn the radio off, the Side Middle Button must be pressed after the Power knob is placed in the "Off" position. The User Guide refers to this as Side Button 1.

Side Button 3

To turn the radio off, the Side Bottom Button must be pressed after the Power knob is placed in the "Off" position. The User Guide refers to this as Side Button 2.

4.4.6.21

Fixed Volume Enable

This field enables you to select a fixed volume setting for the radio's rear speaker.



This is often used for radios in a [Consolette on page 255](#) configuration. This feature applies on a radio-wide basis.

 **NOTE:** The Fixed Volume Level field then selects the desired volume setting.

Accessed Only: When the radio is model/option capable.

4.4.6.22

Logical Switch 2

This field selects the setting used in conjunction with the Radio or DEK VIP (Vehicular Interface Port) Input Feature when one of the VIP Ins are set to **Logical Switch 2**.



Both the low power setting and high power setting are adjusted on the Transmit Power Level alignment screen. This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Blank

Select when **Logical Switch 2** is not in use.

Low Power - Open

Used for radio low power transmissions when the VIP input is open-circuited (not connected to ground).

The radio uses the tuned high power setting for transmissions when the VIP input is closed (connected to ground).

Low Power - Closed

Used for radio low power transmissions when the VIP input is closed-circuited (connected to ground). The radio uses the tuned high power setting for transmissions when the VIP input is open.

4.4.6.23

Fixed Volume Level

This field selects the desired fixed audio level for the radio's rear speaker.



This is often used for radios in a [Consolette on page 255](#) configuration. This feature applies on a radio-wide basis.

Accessed Only: When the Fixed Volume Enable field is **Enabled** and when the radio is model/option capable.

Table 86: Range

Minimum	Maximum	Increments
0	255	1

4.4.6.24

Rotary Switch Lock Enable

This field enables either the radio's current Rotary Selection (zone or channel) to be locked in place even when the rotary switch position is moved, or the radio's Multi-Function Knob (MFK) Selections and Short Keypress/Long Keypress functionality to be locked on the Multi-Function Knob.



You can initiate this feature by toggling on and off with the Keypad/Controls Lock button-press or Keypad/Controls Lock switch-toggle. This feature applies on a radio-wide basis.



IMPORTANT: If this feature is enabled on portable radios with a MFK, the MFK must be unlocked before you can power Off the radio.

Accessed Only: When the radio is model/option capable.

4.4.6.25

Default Control Head HUB State

This field selects the default Control Head Hang-Up Box (HUB) state for the radio at power-up.



Specifically, it selects whether J100-22 on the Control Head is to be used for HUB (active-high) or Monitor (active-low), On-Hook and Off-Hook respectively. This selection applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

On Hook

Select this for radios that do not have a HUB device attached to J100-22; otherwise, the radio will be placed in an Off-Hook (Monitor) state all the time.

This feature defaults to this selection for a [Consolette on page 255](#) and all Mobile models except Motorcycle Radio enabled models.

Off Hook

Select this for radios that do have a HUB device attached to J100-22; otherwise, the radio will be placed in an On-Hook state all the time.

Defaults to this selection for Motorcycle Radio enabled models.

4.4.6.26

Last Selected Channel Per Zone Enable

This field enables your most recent selected channel for each zone to automatically appear in the radio's display.

When scrolling through the radio's zones, the last-selected channel for each zone is remembered by the radio and is immediately available to you. You may then select any other desired channel within a zone. This feature applies on a your basis.

When disabled, the radio remains on the currently selected channel # when changing to a new zone. For example, the radio is on channel 14 in zone 3; if the zone is changed to zone 15, the channel is now on

channel 14 in zone 15. Note that: if zone 15 does not have a channel 14, then **UNPROGRAMMED** appears in the radio's display; you must then change to a channel that is available in the new zone.

 **NOTE:** When this feature is enabled, the [Power Up On Last Selected Zone and Channel on page 430](#) and [Home Mode Channel on page 416](#) field also becomes enabled and view-only/not modifiable.

4.4.6.27

Night Vision Goggles Backlight Brightness Level

This field selects the backlight brightness level that is applied to the radio front display, top display and keypad, with the appropriate individual Radio Profile(s), in order to accommodate Night Vision Goggles (NVG).



This selection applies only to individual Radio Profiles that have the Night Vision Goggles Enable field **Enabled**.

 **NOTE:** Radio profiles are selected for use on a per-channel basis from the Zone Channel Assignment Radio Profile field.

The Radio Profiles button-press or the Radio Profiles menu-selection allow you to modify a channel's Radio Profile assignment.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Night Vision - Low

Night Vision - Medium

Night Vision - High

Night Operation - Low

Night Operation - High

4.4.6.28

Side and Speaker Grille Buttons Lock Enable

This field enables the lock feature for the radio Side Top, Side Middle, Side Bottom, and Speaker Grille buttons.



 **NOTE:** The buttons that are programmed with ViQi Voice Control and ViQi Virtual Partner features remain unlocked.

You can initiate this feature by toggling on and off with the Keypad/Controls Lock button-press or Keypad/Controls Lock switch-toggle. This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

4.4.6.29

MOSCAD Data Enable

This field enables the Motorola Supervision, Control, and Data Acquisition (MOSCAD) feature on a radio-wide basis.



When enabled, the radio connects to a MOSCAD data device and it allows MOSCAD data to transmit by the radio.



IMPORTANT: The Radio VIP Out 1 field must be set to **MOSCAD CG** and The Radio VIP Out 2 field must be set to **MOSCAD TXE/CM**.

Accessed Only: When the Expected Number of Control Heads field is set to **1**, and when the RF Modem field is set to **Disabled**, and when the RF Modem field is set to **Disabled**, and when the Number of DEK Boxes field is set to **0**, and when the radio is model/option capable.

4.4.6.30

Active Mic for Bluetooth PTT

This field selects which microphone is active when you press the PTT button on the Bluetooth device.



This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Radio Mic

The radio's internal microphone will be active.

RSM Mic

The RSM (Remote Speaker Microphone) will be active.

The radio's internal microphone provides contingency operation if an RSM is unavailable when you press the PTT button.

When the radio is plugged into a Vehicular Adapter (VA) that has a microphone attached to its MMP (Mobile Microphone Port), that microphone will be active.

Wireless Mic

The wireless microphone will be active.

The radio's internal microphone provides contingency operation if a wireless microphone is unavailable when you press the PTT button.

Wireless Mic Only

Only the wireless microphone will be active.

4.4.6.31

Active Mic for Indirect PTT

Selects the microphones to be activated when a radio enters indirect PTT event like emergency hot mic.



Radio Mic

Radio internal microphone will be active.

RSM Mic

Radio internal microphone will be active.

Wireless Mic

Bluetooth wireless microphone will be active if connected to a radio. Otherwise, RSM or internal radio microphone will be active if the RSM is not connected.

4.4.6.32

Active Mic for RSM PTT

This field selects which microphone is active when you press the PTT button on the Remote Speaker Microphone (RSM).



This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Radio Mic

The radio's internal microphone will be active.

RSM Mic

The RSM will be active.

The radio's internal microphone provides contingency operation if an RSM is unavailable when you press the PTT button.

When the radio is plugged into a Vehicular Adapter (VA) that has a microphone attached to its MMP (Mobile Microphone Port), that microphone will be active.

Wireless Mic

The wireless microphone will be active.

The radio's internal microphone provides contingency operation if a wireless microphone is unavailable when you press the PTT button.

4.4.6.33

Bluetooth Receive Audio

This field allows you to select which device's speaker is used to receive audio.

This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

The Bluetooth Receive Audio supports the following selections:

Bluetooth Speaker

The Bluetooth device's speaker will be active.

RSM Mic

The Remote Speaker Microphone (RSM) or Internal speaker will be active.

4.4.6.34

Covert Profile

When a covert profile is selected for current channel, or radio switches to a channel using covert profile, the radio sends the Covert Profile setting to the Si Video device.



This feature applies on a radio-wide basis.



IMPORTANT:

The Covert Profile and [Default Profile on page 444](#) must not be set to the same profile.

The Covert Profile settings include, [Speaker Audio Routing on page 814](#), [Disable Lights on page 812](#), and [Disable Tones on page 812](#).

Enter Covert Mode and **Exit Covert Mode** profile commands in the Si Video Device determines the profile selection. User need to select **Enter Covert Mode** to enter covert mode and **Exit Covert Mode** to exit covert mode which is the default mode.

The following selections are supported:

Disabled

When this field is set to **Disabled**, the radio does not support Covert Mode.

Last Selected

The first record/row in [Radio Profiles on page 811](#) (regardless of the profile name) is used until you change to a different profile. After that, it locks your current profile selection to the channel until the profile selection is changed again.

Other Profile names

Three pre-named profile records have been supplied for your convenience: **Default**, **Surveillance** and **Loud Audio**. These profiles can be renamed, and should be defined according to your needs; more profiles may be created.

4.4.6.35

Default Profile

This field allows you to determine a profile that is selected when the Voice Control Basic command “Default Profile” is recognized. When a default profile is selected for current channel, or radio switches to a channel using default profile, the radio sends the Default Profile setting to the Si Video device.



This feature applies on a radio-wide basis.



IMPORTANT:

The Default Profile and [Covert Profile on page 443](#) must not be set to the same profile.

Enter Covert Mode and **Exit Covert Mode** profile commands in the Si Video Device determines the profile selection. User need to select **Enter Covert Mode** to enter covert mode and **Exit Covert Mode** to exit covert mode which is the default mode.

The following selections are supported:

Other Profile Names

Three pre-named profile records have been supplied for your convenience: **Default**, **Surveillance** and **Loud Audio**. These profiles can be renamed, and should be defined according to your needs; more profiles may be created. When a specific profile is assigned to a channel, you may select another profile, however once the channel is changed or the radio is powered-down, the channel reverts back to the application assigned profile.



NOTE: When a specific profile is assigned to a channel, you can select another profile, however once the channel is changed or the radio is off, the channel reverts back to the application assigned profile.

4.4.6.36

Touch Screen Lock Enable

This field allows you to unlock and lock the touch screen.

4.4.6.37

Toggle Switch Lock Enable

Enables the radio's current Toggle Switch selection to be locked in place even when the toggle switch position is moved.

This feature can be toggled on and off with a radio-user initiated Keypad/Controls Lock button-press or Keypad/Controls Lock switch-toggle. This feature applies on a radio-wide basis.

4.4.7

Aux Control

This section allows you to view or define parameters for the radio's and DEK's Vehicular Interface Port (VIP) Outputs that are set to an **Aux Control** (See Aux Control 1-3).



When you initiate an Aux Control button-press or Aux Control menu-selection, the corresponding VIP Output is activated for the duration determined by the **Active Duration** field.

During this activation time, the radio displays the corresponding **Aux On Alias** and **Abbreviated Aux On Alias**.

When the VIP Output is deactivated, the radio displays the corresponding **Aux Off Alias** (provided **Active Duration** is not set to **Momentary**).



WARNING:

For a Dual Radio configuration:

When the [Radio Selection on page 361](#) field is set to **Secondary Radio**, the radio's VIP Outputs are disabled and these features are configurable on the **Primary Radio** only.

However, the Aux Control button-press is programmable for both the **Primary** and the **Secondary** radios, and must be configured the same for both radios.

And the Aux Control menu-selection is programmable on the **Primary Radio** only.



NOTE:

An **Aux Control** VIP Output may also be triggered when the radio has decoded a Tone Signaling tone or tone pair and External Control is not set to **None**.

The Console uses Auxiliary Control features.

Accessed Only: When the radio is model/option capable.

4.4.7.1

Active Duration

This field selects the amount of time that a radio Vehicular Interface Port (VIP) Output set to an **Aux Control** is kept active (See Aux Control 1-3).



Once a VIP Output is defined for an **Aux Control**, you may initiate the control with either the Aux Control button-press or the Aux Control menu-selection. This timer begins once the button-press/menu selection is released. This selection applies to the current Auxiliary Control (record/row) and on a radio-wide basis. Time is in milliseconds.



NOTE:

An **Aux Control** VIP Output may also be triggered when the radio has decoded a Tone Signaling tone or tone pair and External Control is not set to **None**.

The Consolette uses Auxiliary Control features.

Accessed Only: When the radio is model/option capable and when the Dual Radio - Radio Selection field is not set to **Secondary Radio**.

The following selections are supported:

"Momentary" = 0 (Zero Time):

The VIP Output is activated as long as the Aux Control button/menu is pressed, and deactivated when the button/menu is released. If **Momentary** is selected and an associated **Aux Control** VIP Output is triggered by External Control, the VIP Out is kept momentarily active for the duration of the [Long Keypress Duration on page 432](#).

Timed Selections Include:

100 (ms) To 10000 (ms). In Increments = 100 (ms) (ms = milliseconds)

"Toggle":

Once activated with an Aux Control button/menu press, a subsequent button/menu press is required to deactivate the VIP Output.

4.4.7.2

Abbreviated Aux On Alias

This field allows you to define a recognizable **short-version** prompt that appears in the radio's display when the Auxiliary Control is activated.



Abbreviated aliases allow the ON state of more than one Aux Control VIP Output to appear in the radio's display at the same time. A Vehicular Interface Port (VIP) Output must be set to **Aux Control** (See Aux Control 1-3). You may initiate the control with either the Aux Control button-press, or the Aux Control menu-selection. This selection applies to the current Auxiliary Control (record/row) and on a radio-wide basis.



IMPORTANT:

An **Aux Control** VIP Output may also be triggered when the radio has decoded a Tone Signaling tone or tone pair and External Control is not set to **None**.

The Consolette uses Auxiliary Control features.

Accessed Only: When the radio is model/option capable, and when the Dual Radio - Radio Selection field is not set to **Secondary Radio**.

The following selections (for example, AUX1, Ctr1) are supported:

Characters, numbers, spaces, and special characters can be used.

The 05 Control Head only accepts upper case characters.

Up to 4 characters are possible.

4.4.7.3

Aux On Alias

This field allows you to define a recognizable prompt that appears in the radio's display when the Auxiliary Control is activated.



A Vehicular Interface Port (VIP) Output must be set to **Aux Control** (See Aux Control 1-3). You may initiate the control with either the Aux Control button-press, or the Aux Control menu-selection. This selection applies to the current Auxiliary Control (record/row) and on a radio-wide basis.



IMPORTANT:

An **Aux Control** VIP Output may also be triggered when the radio has decoded a Tone Signaling tone or tone pair and External Control is not set to **None**.

The Consolette uses Auxiliary Control features.

Accessed Only: When the radio is model/option capable, and when the Dual Radio - Radio Selection field is not set to **Secondary Radio**.

The following selections (for example, Control 1 On, Consolette On, Aux 1 On) are supported:

Characters, numbers, spaces, and special characters can be used.

The 05 Control Head only accepts upper case characters.

Up to 14 characters are possible.

4.4.7.4

Aux Off Alias

This field allows you to define a recognizable prompt that appears in the radio's display when the Auxiliary Control is deactivated.



A Vehicular Interface Port (VIP) Output must be set to **Aux Control** (See Aux Control 1-3). You may initiate the control with either the Aux Control button-press, or the Aux Control menu-selection. This selection applies to the current Auxiliary Control (record/row) and on a radio-wide basis.



NOTE:

An **Aux Control** VIP Output may also be triggered when the radio has decoded a Tone Signaling tone or tone pair and External Control is not set to **None**.

The Consolette uses Auxiliary Control features.

Accessed Only: When the radio is model/option capable, and when the Active Duration field is not set to **Momentary**, and when the Dual Radio - Radio Selection field is not set to **Secondary Radio**.

The following selections (for example, Control 1 Off, Consolette Off, Aux 1 Off) are supported:

Characters, numbers, spaces, and special characters can be used.

The 05 Control Head only accepts upper case characters. Up to 14 characters are possible.

4.4.8

ViQi: Virtual Partner Alert

The **ViQi: Virtual Partner Alert** set allows users to create a ViQi Virtual Partner Alert list with corresponding Alert Actions that are defined under **Action Consolidation**. ViQi Virtual Partner handles the initiation of a ViQi Virtual Partner Call by a user and remains active until the call ends.



NOTE:

The Alert list is a fixed set of 16 alerts that correspond to ViQi Virtual Partner Alerts from the system. Each Alert has an Alert Action which is a ViQi Virtual Partner action in the Action Consolidation table, and is performed on the radio when the corresponding ViQi Virtual Partner Alert is received from the system.

4.4.8.1

Virtual Partner Alert List Name

This field allows you to view or define the user recognizable name for the current Virtual Partner Alert List.



NOTE:

The default value is "Virtual Partner List 1".

Characters, numbers, spaces, and special characters can be used.

A total of 14 characters are possible.

4.4.8.1.1

Alert Alias

This field allows you to define the radio-user recognizable name when a Virtual Partner alert is received from the system.



NOTE:

Characters, numbers, spaces, and special characters can be used.

A total of 14 characters are possible.

4.4.8.1.2

Alert Action

This field allows you to specify the action to be performed on the radio when a Virtual Partner alert is received from the system.



IMPORTANT: This field is a reference to a Virtual Partner action record in the Action Consolidation table. The default value is **Unassigned**.

4.4.9

Logical Profile Configuration

This section allows you to configure various logical profiles on a radio-wide basis.

4.4.9.1

Loud Audio Profile

This field allows you to determine a profile that is selected when the Voice Control Basic command "Loud Audio Profile" is recognized.

Covert, Default, Loud Audio, and Surveillance must not be set to the same profile.

The following selection is supported:

Other Profile names

Three pre-named profile records are available for your convenience: **Default**, **Surveillance**, and **Loud Audio**. These profiles can be renamed and must be defined according to your needs. More profiles can be created.

 **NOTE:** When a specific profile is assigned to a channel, you can select another profile. However, when the channel is changed or the radio is powered down, the channel reverts back to the application-assigned profile.

4.4.9.2

Surveillance Profile

This field allows you to determine a profile that is selected when the Voice Control Basic command “Surveillance Profile” is recognized.

Covert, **Default**, **Loud Audio**, and **Surveillance** must not be set to the same profile.

The following selection is supported:

Other Profile names

Three pre-named profile records are available for your convenience: **Default**, **Surveillance**, and **Loud Audio**. These profiles can be renamed and must be defined according to your needs. More profiles can be created.

 **NOTE:** When a specific profile is assigned to a channel, you can select another profile. However, when the channel is changed or the radio is powered down, the channel reverts back to the application-assigned profile.

4.4.10

Preset Zone and Channel

This table allows the Mode Select feature to pre-provision the zone and channel associated with a particular **Mode Select** button or menu. Depending on the setting for configurable **Preset Zone** and **Preset Channel** fields, you are able to configure the Mode Selects.

4.4.10.1

MS#

This field indicates the button assignment that is associated with the assigned preset zone and channel. The values range from MS01–MS13.

For more information on the MS01–MS13 button assignments, refer to [MS01–MS13 on page 489](#).

4.4.10.2

Preset Zone

This field specifies the zone that the radio changes to for a particular Mode Select (MS). **<Selected Zone>** causes the radio to use the currently selected zone number while changing to the specified channel.



NOTE: Selecting **<Selected Zone>** and **<Selected Chan>** represents an unprogrammed Mode Select.

4.4.10.3

Preset Channel

This field specifies the channel that the radio changes to for a particular Mode Select (MS). **<Selected Chan>** causes the radio to use the currently selected channel number while changing to the specified zone.



NOTE: Selecting **<Selected Zone>** and **<Selected Chan>** represents an unprogrammed Mode Select.

4.5

Action Consolidation

The **Action Consolidation** allows you to view and define specific sequences of radio actions; known as Consolidated Actions. Within a Consolidated Action, these individual actions may be designed to execute (in the radio) one-by-one in a specific order. Multiple Consolidation Actions may be created. You may easily execute a Consolidated Action's sequence of radio actions may with minimal.



NOTE:

You may execute a Consolidated Action with the Action Consolidation selection defined on the Response Selector or on a button-press, Mission Critical Geofence entry/exit event or Personnel Accountability EVAC/PAR command.

It is strongly recommended that the Response Selector's **0** position be assigned a Consolidated Action that turns all Relay Patterns, Siren tones, GPS Reports, Mode changes and Direct Status to an **Unassigned** or ALL OFF state. It may also be desirable to assign this Action to a button-press.

Accessed Only: When the radio is model/option capable.



NOTE: When the radio is powered up, any Consolidation Action assigned to the Response Selector's current position is executed.

No matter if a Consolidation Action is completed or canceled, if there are any required channel/mode changes in the action, the radio always returns to its original channel/mode.

Once initiated, a Consolidation Action may be canceled, however the individual actions typically happen so quickly, that the likelihood of terminating any part of the Action is nearly impossible.

- A Consolidation Action may be terminated by a Home button-press, a menu EXIT, a PTT button-press (provided the Public Address mode is not active), the engagement of Emergency Mode, or a change to the Fallback Zone/Channel. If the Mode Change Action is used, a zone or channel without a Fallback Zone/Channel must be selected.
- The Relay Pattern, Siren Type, or GPS Report actions are the first to launch and are therefore nearly immediate.

4.5.1

Action Allowed on Response Selector

The application retrieves and allows you to view the availability of the current Consolidated Action for assignment to the Response Selector.

If any Action ID (record/row) is set to **Mode** for the current Consolidated Action, then this field is unchecked, indicating that the Response Selector is not available for the current Consolidated Action. When this field is checked, it indicates that the Response Selector is available for the current Consolidated Action.

Accessed Only: When the radio is model/option capable and the [Action Type on page 460](#) field is set to **Control**.

4.5.2

GPS Report

This field enables the Global Positioning System (GPS) Action to be executed in the current Consolidated Action.



This GPS action causes the radio to send the radio's current location coordinates (longitude and latitude) to the dispatcher. The GPS action is always the last executed action.

WARNING: This feature becomes invalid if any Action ID (record/row) is set to **Mode** for the current Consolidated Action.



NOTE: You may execute a Consolidated Action with the Action Consolidation selection defined on the Response Selector or on a button-press.

Accessed Only: When the radio is model/option capable and the [Action Type on page 460](#) field is set to **Control**.

4.5.3

Consolidated Action Name

This field allows you to define recognizable names for the current Consolidated Action.



This field is also used as Personnel Accountability alert alias to highlight text in the display when the Action Consolidation is a Personnel Accountability action type.

Accessed Only: When the radio is model/option capable.



NOTE: Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

Examples: Traffic Stop, In Pursuit, #510

4.5.4

GPS Report Error Strategy

This field selects the Error Strategy type for the Location feature of the current Consolidated Action.



This Location feature is selected in the GPS Report field.

Accessed Only: When the GPS Report field is enabled, the [Action Type on page 460](#) is set to **Control**, and the radio is option/model capable.

The following selections are available:

Exit Upon Error

Upon a GPS Report Error, the radio immediately exits the current Consolidated Action without executing the remainder of the actions.

Continue Upon Error

Upon a GPS Report Error, the radio does not exit the current Consolidated Action; therefore, the remainder of the actions are executed.

4.5.5

Relay Pattern

This field selects a Relay (Lightbar) Pattern for the current Consolidated Action.



The Siren Action is always the first executed action, and then the Relay Pattern Action is executed. If no Siren Action is chosen, then the Relay Pattern is the first action executed.



NOTE: The Relay Pattern is defined in the Universal Relay Controller Page. You may execute a Consolidated Action with the Action Consolidation selection defined on the Response Selector or on a button-press.

Accessed Only: When the radio is model/option capable, and when the Action Type field is set to **Control**.

The following selections are available:

<Unassigned>

No Relay Pattern Action

Available Relay (Lightbar) Patterns

Lists all possible records/rows defined in the Universal Relay Controller Page. This selection is invalid if the following scenario is true: When the Universal Relay Controller Equipped field is **Disabled**.



WARNING: In a Dual Radio configuration only, when the Radio Selection field is set to **Secondary Radio** and the Universal Relay Controller Equipped field is **Disabled**, all available Relay Patterns are considered valid. Selections made for the Secondary Radio for each Consolidated Action (record/row) must match the selections made for the Primary Radio's codeplug.



IMPORTANT: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, a default Consolidated Action **AC ALL OFF** is added, where the default value of Siren Type is **Siren Off**, and the default Relay Pattern is **ALL OFF**. See also the O7 Siren/Lights Keypad Keystone Concept.

4.5.6

Action ID

This field selects the Action type for the current Action ID (record/row) of the current Consolidated Action.



Multiple Action IDs (Direct Status and Mode changes) may be defined within a single Consolidated Action. Multiple Action IDs allow the radio to automatically send a Direct Status on the appropriate radio mode. When

defining multiple Action IDs, each action is executed in a top-down order. You may execute a Consolidated Action with the Action Consolidation selection defined on the Response Selector or on a button-press.

Example: This example shows an Action Consolidation containing multiple Action IDs. In this case the radio has three channels (Trunking 800 MHz, Trunking VHF, and Conventional ASTRO) and the goal is to automatically broadcast the **At Scene** status to all three channels from the same Consolidated Action.

Table 87: Examples

Action ID Setting:	Further Action ID Setting:	Radio Action
Row 1 = "Mode"	Mode to desired Trunking 800 MHz channel	Radio changes to desired mode
Row 2 = "Direct Status"	Direct Status to "At Scene"	Radio transmits Status on desired mode
Row 3 = "Mode"	Mode to desired Trunking VHF channel	Radio changes to desired mode
Row 4 = "Direct Status"	Direct Status to "At Scene"	Radio transmits Status on desired mode
Row 5 = "Mode"	Mode to desired Conventional ASTRO channel	Radio changes to desired mode
Row 6 = "Direct Status"	Direct Status to "At Scene"	Radio transmits Status on desired mode
Row 7 = "Mode"	Mode to desired Trunking 800 MHz channel	Radio changes to desired mode

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Direct Status

Transmits a Status for the current Consolidated Action. The Index selection for the current Consolidated Action (record/row) determines which Direct Status is transmitted.

- When operating in Conventional Mode, the Index number selection correlates with the same Status Number within the Conventional Status Alias List. There is only one Status Alias List for Conventional communications; therefore, the Status Alias List's Status Numbers apply for all Conventional Personalities.
- When operating in Trunking Mode, the Index number selection correlates with the same Status Number within the Trunking Mode's Status Alias List. Trunking allows for one Status Alias List per Trunking System; therefore, Status Text may vary with the same Status Number on a per Trunking System basis.

Mode

Causes the radio to change channel/mode as part of the current Consolidated Action. The Zone and Channel selections determine the actual modes available to you. Once the Consolidated Action is exited, the radio returns to the Mode (Zone/Channel) that the radio was operating on just prior to the Consolidated Action being launched.



NOTE: Once the Consolidated Action is exited, the radio returns to the Mode (Zone/Channel) that the radio was operating on just before to the Consolidated Action being launched.

Direct Message

Causes the radio transmit the message defined in Conventional or Trunking Message Alias List as a part of the current Consolidated Action.

Voice Announcement

Causes the radio to play a designed voice announcement as a part of the current Consolidated Action.

Text Message

Allows you to define a text message, which is displayed when the current Consolidated Action is triggered.

Transmit Power Level

Causes the radio to change Transmit Power Level as part of the current Consolidated Action.

Mute Site Selectable Alert

Causes the radio to mute site selectable alert as part of the current Consolidated Action.

When the [Action Type on page 460](#) is set to **General**, **Exit Geofence**, **Control**, or **Invalid SIM** and the [Action ID on page 452](#) is set to **Direct Status** or **Direct Message**.

When **Invalid SIM** is selected as the [Action Type on page 460](#), the valid options for [Action ID on page 452](#) are **Mode**, **Direct Status**, and **Voice Announcement**.

The default value is set to **General**.

4.5.7

Relay Pattern Error Strategy

This field selects the Error Strategy type for the Relay Pattern selection of the current Consolidated Action.



NOTE:

The Relay Pattern is selected in the [Relay Pattern on page 452](#) field.

The Relay Pattern is defined in the Universal Relay Controller Page.

Accessed Only: When the Relay Pattern field is not set to **<Unassigned>**, and when the radio is model/option capable, and when the Action Type field is set to **Control**.

The following selections are supported:

Exit Upon Error

Upon a Relay Pattern Error, the radio immediately exits the current Consolidated Action without executing the remainder of the actions.

Continue Upon Error

Upon a Relay Pattern Error, the radio does not exit the current Consolidated Action; therefore the remainder of the actions are executed.

4.5.8

Index

This field selects the Status or Message to be automatically transmitted for the current Action ID (record/row) of the current Consolidated Action.

You may execute a Consolidated Action with the Action Consolidation selection defined on the Response Selector or on a button-press, on the trigger of Subscriber Unit (SU) entry/exit the Mission Critical Geofence, or on the Personnel Accountability EVAC/PAR command.



IMPORTANT:

- When operating in Conventional Mode, this Index number selection correlates with the same Status Number within the Conventional Status Alias List. There is only one Status Alias List for Conventional communications; therefore, the Status Alias List's Status Numbers apply for all Conventional Personalities.
- When operating in Trunking Mode, this Index number selection correlates with the same Status Number within the Trunking Mode's Status Alias List. Trunking allows for one Status Alias List per Trunking System; therefore, Status Text may vary with same Status Number on a per Trunking System basis.

Example: This example shows an Action Consolidation containing multiple Action IDs. In this case the radio has three channels (Trunking 800 MHz, Trunking VHF, and Conventional ASTRO) and the goal is to automatically broadcast the **At Scene** status to all three channels from the same Consolidated Action.

Table 88: Examples

Action ID Setting:	Further Action ID Setting:	Radio Action
Row 1 = "Mode"	Mode to desired Trunking 800 Mhz channel	Radio changes to desired mode
Row 2 = "Direct Status"	Direct Status to "At Scene"	Radio transmits Status on de-sired mode
Row 3 = "Mode"	Mode to desired Trunking VHF channel	Radio changes to desired mode
Row 4 = "Direct Status"	Direct Status to "At Scene"	Radio transmits Status on de-sired mode
Row 5 = "Mode"	Mode to desired Conventional ASTRO channel	Radio changes to desired mode
Row 6 = "Direct Status"	Direct Status to "At Scene"	Radio transmits Status on de-sired mode
Row 7 = "Mode"	Mode to desired Trunking 800 Mhz channel	Radio changes to desired mode



NOTE:

Once the Consolidated Action is exited, the radio returns to the Mode (Zone/Channel) that the radio was operating on just prior to the Consolidated Action being launched.

Accessed Only: When the [Action Type on page 460](#) is set to **General, Exit Geofence, Control, or Invalid SIM** and the [Action ID on page 452](#) is set to **Direct Status** or **Direct Message**.

The default value is **0**.

4.5.9

Siren Type

This field selects the desired Siren to be executed for the current Consolidated Action.



The Siren Action is always the first executed action. You may execute a Consolidated Action with the Action Consolidation selection defined on the Response Selector or on a button-press.

Accessed Only: When the radio is model/option capable, and when the Action Type field is set to **Control** (see also the "Selections - Available When" just below).

The following selections are supported:

No Change

The currently active Siren is left unchanged.

Only valid when Siren Operation is set to **Siren/PA** and **PA Only**.

Wail On

The "Wail" Siren tone becomes the selected type, and the Siren is turned ON.

Only valid when Siren Operation is set to **Siren/PA**.

Siren On

The Siren is turned ON and broadcasts your current selected tone, which is selected from the O9 Control Head's Siren Mode Keypad.

Only valid when Siren Operation is set to **Siren/PA**.

Yelp On

The **Yelp** Siren tone becomes the selected type, and the Siren is turned ON.

Only valid when Siren Operation is set to **Siren/PA**.

Hilo On

The **Hi/Lo** Siren tone becomes the selected type, and the Siren is turned ON.

Only valid when the Siren Operation field is set to **Siren/PA**, and when the Hi Lo Airhorn Tones field is enabled.

Manual

Manual Siren operation becomes the selected type: When a VIP Input is programmed for Horn Ring operation, the Manual Tone sounds when the vehicle's Horn Ring is pressed, and ends when the Horn Ring is released. When a VIP Input is not programmed for Horn Ring operation, the Manual Tone sounds with a Manual button-press and ends when the button is released.

Only valid when Siren Operation is set to **Siren/PA**.

Siren Off

The Siren is turned OFF.

Only valid when Siren Operation is set to **Siren/PA**.

All Off

All Sirens and the PA are turned OFF for both Siren Operation settings: **Siren/PA** and **PA Only**

Only valid when Siren Operation is set to **Siren/PA** and **PA Only**.



WARNING: In a Dual Radio configuration only, when the Radio Selection field is set to **Secondary Radio** and the Siren Operation field is set to **Disabled**, all selections are considered valid. Selections made for the Secondary Radio for each Consolidated Action (record/row) should match the selections made for the Primary Radio's codeplug.



IMPORTANT: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, a default Consolidated Action **AC ALL OFF** is added, where the default value of Siren Type is **Siren Off**, and the default Relay Pattern is **ALL OFF**.

4.5.10

Zone

This field selects the Zone change for the current Action ID (record/row) of the current Consolidated Action.

Once the Zone is selected, the Channel must be for current record/row. You may execute a Consolidated Action with the Action Consolidation selection defined on the Response Selector or on a **button**-press or on the trigger of the Subscriber Unit entry for the Mission Critical Geofence.



WARNING: Remote Site Interface (RSI) zones are invalid and cannot be selected (zones that have RSI Mode enabled).

Accessed Only: When the [Action ID on page 452](#) field for the current record/row is set to **Mode**, and the [Action Type on page 460](#) field is select to **General,Control**, or **Invalid SIM** and when the radio is model/option capable.

4.5.11

Siren Type Error Strategy

This field selects the Error Strategy type for the Siren selection of the current Consolidated Action. The Siren is selected in the Siren Type field.



Accessed Only: When the [Siren Type on page 455](#) field is not set to **No Change**, and when the Action Type field is set to **Control**, and the radio is model/option capable.

The following selections are supported:

Exit Upon Error

Upon a Siren Error, the radio immediately exits the current Consolidated Action without executing the remainder of the actions.

Continue Upon Error

Upon a Siren Error, the radio does not exit the current Consolidated Action; therefore the remainder of the actions are executed.

4.5.12

Channel

This field selects the Channel change for the current Action ID (record/row) of the current Consolidated Action.

The Zone selection for the current record/row must be chosen before defining this channel.

Accessed Only: When the [Action ID on page 452](#) field for the current record/row is set to **Mode**, and the [Action Type on page 460](#) field is select to **General,Control**, or **Invalid SIM** and when the radio is model/option capable.

The Zone field for the current record/row is not unassigned.

4.5.13

Third Party Notification



You may execute a Consolidated Action with the Action Consolidation selection defined on the Response Selector or on a button-press.

Accessed Only: When the radio is model/option capable, and when the Action Type field is set to **Control**.

The following options are supported:

None

The feature is disabled.

All

The Action Consolidation Response Selector or button-press event is broadcast to all third-party accessories.

4.5.14

Error Strategy

This field selects the desired Error Strategy for the current Action ID (record/row) of the current Consolidated Action.



Accessed Only: When the radio is model/option capable.

The following selections are supported:

Exit Upon Error

Upon an Error, the radio immediately exits the current Consolidated Action without executing the remainder of the actions.

Continue Upon Error

Upon an Error, the radio does not exit the current Consolidated Action; therefore the remainder of the actions are executed.

4.5.15

Third Party Notification Error Strategy

This field selects the Error Strategy type for the Third Party Notification selection of the current Consolidated Action.



Accessed Only: When the Third Party Notification field is not set to **None**, and when the Action Type is set to **Control**, and when the radio is model/option capable.

The following selections are supported:

Exit Upon Error

Upon a Broadcast Error, the radio immediately exits the current Consolidated Action without executing the remainder of the actions.

Continue Upon Error

Upon a Broadcast Error, the radio does not exit the current Consolidated Action; therefore the remainder of the actions are executed.

4.5.16

Backlight Color

This field allows you to select a backlight when the consolidated action is triggered.



Accessed Only: When Action Type is **General** or **Personnel Accountability**, and when the radio is model/option capable.

The following options are supported:

- Disabled
- Red
- Amber
- Green

When **Invalid SIM** is selected as the [Action Type on page 460](#), the valid options for [Action ID on page 452](#) are **Mode**, **Direct Status**, and **Voice Announcement**.

The default value is **0**.

4.5.17

Alert Interval

This field allows you to select the amount of time between the repeating personnel accountability alerts.



Accessed Only: When [Action Type on page 460](#) is **General**, **Exit Geofence**, or **Personnel Accountability**, and when the [Action ID on page 452](#) field for the current record/row is set to **Voice Announcement** and when the radio is model/option capable.

WARNING: In the current Action Consolidation, only 1 action is allowed which consists of the range from 1 to 254 or "Continuous".

The following selections are supported:

255

Momentary

0

Continuous

Table 89: Range

Minimum	Maximum	Increments
1 second	254 seconds	1 second

4.5.18

Mute Site Selectable Alert

If the Mute Site Selectable Alert is selected in the Action ID field when entering Geofence, the subscriber unit (SU) mutes the current site selectable alert.



When exiting Geofence, if the SU has previously muted a site selectable alert due to the entry actions, the SU shall unmute the site selectable alert.

Accessed Only: When the [Action ID on page 452](#) field for the current record/row is set to **Mute Site Selectable Alert**, and the [Action Type on page 460](#) is set to **General**, and the radio is model/option capable.

4.5.19

Alert Audio File

This field allows you to select which Motorola Voice Announcement (*.MVA) file as the current personnel accountability alert (record/row) of the personnel accountability list.



The alert prompt plays when the radio receives Evacuation (EVAC) or Personnel Accountability Report (PAR) command from incident commander.

Accessed Only: When [Action Type on page 460](#) is **General**, **Exit Geofence**, or **Personnel Accountability**, and the [Action ID on page 452](#) field for the current record/row is set to **Voice Announcement** and the radio is model/option capable.

4.5.20

Transmit Power Level

If a Transmit Power Level is selected when entering Geofence, the power level switches to the specified power level (high or low).

When exiting Geofence, if the Transmit Power Level of the subscriber unit was changed on entry, it returns to the last user-selected transmit power level.

Accessed Only: When the [Action ID on page 452](#) field for the current record/row is set to **Transmit Power Level**, the [Action Type on page 460](#) is set to **General**, and the radio is model/option capable.

The following selections are supported:

Switch to Low

Switch the Transmit Power Level to low.

Switch to High

Switch the Transmit Power Level to high.

4.5.21

Text Message

This field allows you to view or define Text Message for the current Action ID (record/row) of the current Consolidated Action.

You may execute a Consolidated Action with the Action Consolidation selection defined on the trigger of Subscriber Unit (SU) entry or exit the Mission Critical Geofence.

Accessed Only: When the **Action ID** field for the current record/row is set to **Text Message**, and when the Action Type is set to **General** or **Exit Geofence**, and when the radio is model/option capable.

4.5.22

Action Type

This field determines the type of the current Action Consolidation that will be used.



The following selections are available:

General

The Action Consolidation is applied to Enter Action on Mission Critical Geofence.

Exit Geofence

The Action Consolidation is applied to Exit Action or Enter Action on Mission Critical Geofence.

Personnel Accountability

The Action Consolidation is applied to as AC List Selection on Personnel Accountability or Enter Action on Mission Critical Geofence.

ViQi: Virtual Partner

The Action Consolidation is applied when the radio receives a Virtual Partner Alert from the system.

Invalid SIM

You can create UI and/or Voice Announcements for authorized users to fix and/or resolve scenarios when the radio cannot read the SIM card.

Accessed Only: For APX NEXT and APX N70 radios only. APX N70 radios must have LTE HW Enablement option.

4.6

Mission Critical Geofence

The **Mission Critical Geofence** allows you to view and define Mission Critical Geofence Profiles, including Geofence Alias Name, Priority, Radius (Meters), Entry Action, Exit Action, Longitude and Latitude.

The Mission Critical Geofence feature defines a virtual perimeter for a real-world geographical area.

Geofence coordinates (latitude/longitude) and associated entry or exit actions are programmed directly into the radio.

Once configured, the radio internally performs Geofence checks and actions every time it receives a new GPS location, which is every second.

Mission Critical Geofence has two shapes in geographic area: **Circle** and **Polygon**. If there is only one coordinate in Coordinate table, then it is regarded as center of Circle Geofence, and you can manually enter the radius.

If there are only two coordinates in Coordinate table, then the 1st coordinate is regarded as the center of Circle Geofence, and the distance between the 1st and 2nd coordinate is calculated automatically and regarded as the radius.

If there are 3–100 coordinates in Coordinate table, then it is regarded as the Polygon Geofence and Polygon Geofence is connected by the coordinates from one by one.



NOTE:

You can edit the Mission Critical Geofence Profiles manually.

You can click **Import Map File**  to import the Google Earth File with Keyhole Markup Language (KML) or Keyhole Markup language Zipped (KMZ) format from local disk into Mission Critical Geofence.

You can click **Export Map File**  to export current Mission Critical Geofence Profile to local disk with KML format.

Accessed Only: When the radio is model/option capable, and when the Location Enable field is **Enabled**.

See [Mission Critical GeoFence Feature on page 276](#)

4.6.1

Geofence Alias Name

This field allows you to view or define recognizable names for the current Mission Critical Geofence.

Accessed Only: When the radio is model/option capable and when the Location Enable field is enabled.

4.6.2

Radius (Meters)

This field allows you to determine the radius for the Circle Geofence.



IMPORTANT:

- **Circle Geofence:** Only one or two coordinates are listed in the Coordinates table.
Circle Geofence with only one coordinate - The coordinate is regarded as the center of Circle Geofence, and you can manually enter the radius.
Circle Geofence with only two coordinates - The first coordinate is regarded as the center of this Circle Geofence, and the distance between the first and second coordinates is calculated automatically and regarded as the radius for this Circle Geofence.
- **Polygon Geofence:** Three or more coordinates are listed in the Coordinates table.
The Radius sets as **Disabled** automatically when the Geofence is polygon shape.

Table 90: Range

Range	Increments	Disabled
10-500000 (meters)	1 (meters)	No radius used for Circle Geofence

Accessed Only: When the radio is model/option capable and when the Location Enable field is enabled.

4.6.3

Priority

This field allows you to determine the Geofence that is executed when there are more than one overlapping geofence areas.



IMPORTANT:

- The Priority for each Geofence profile must be mutually exclusive.

Table 91: Range

Minimum	Maximum	Increments
1	100	1

Accessed Only: When the radio is model/option capable and when the Location Enable field is enabled.

4.6.4

Entry Action

This field selects the Action Consolidation to be used with current Mission Critical Geofence when triggered by the radio entering one Geofence.

The following selections are supported:

Unassigned

No Entry Action will be triggered.

Available Action Consolidations

All action consolidation whose Action Type is NOT **Control**.

Accessed Only: When the radio is model/option capable, and when the Location Enable field is enabled.

4.6.5

Exit Action

This field selects the Action Consolidation to be used with current Mission Critical Geofence when triggered by the radio exiting one Geofence.

The following selections are supported:

Unassigned

No Exit Action will be triggered.

Available Action Consolidations

All action consolidation whose Action Type is **Exit Geofence**.

Accessed Only: When the radio is model/option capable and when the Location Enable field is enabled.

4.6.6

Longitude

This field allows you to enter one longitude value for one coordinate.

The following selections are supported:

Minimum

-180.0000000.

Maximum

180.0000000.

Accessed Only: When the radio is model/option capable, and when the Location Enable field is enabled.

4.6.7

Latitude

This field allows you to enter one latitude value for one coordinate.

The following selections are supported:

Minimum

-90.0000000.

Maximum

90.0000000.

Accessed Only: When the radio is model/option capable, and when the Location Enable field is enabled.

4.7

Personnel Accountability

When subscriber receives Evacuation (EVAC) or Personnel Accountability Report (PAR) command on voice channel or data channel, it will provide the visible display and audible tone to first responder.



When the first responder press PTT, the radio will transmit an acknowledgement response ("Ack") to inform incident commander that the command is received.



IMPORTANT:

AC List Selection are selected is an Action Consolidation that Action Type is Personnel Accountability.

When operating in talkaround/direct mode and in close proximity of other radios, it is recommended to configure additional preamble of 160 to the ASTRO system configured with Personnel Accountability enabled channels.

4.7.1

Personnel Accountability List Name

This field allows you to create a recognizable name for the current personnel accountability list.



Personnel accountability alert list is selected from the Conventional or Trunking System's Personnel Accountability List Selection field.

Accessed Only: When the radio is model/option capable.

4.7.2

AC List Selection

This field allows you to select 0-16 Action Consolidation for Personnel Accountability List.



Accessed Only: When the radio is model/option capable.

WARNING: This field must reference an Action Consolidation where **Action Type** is set to **Personnel Accountability**.

4.8

Controls (Portable)

The **Buttons**, **Switched**, **Menu Items**, **Keypad**, **Smart Key Fob Buttons**, or **Accessory Buttons** sections are used to view or select radio-wide programmable button functionality for both conventional and trunking communications modes.



IMPORTANT: For the **Buttons**, **Smart Key Fob Buttons**, and **Accessory Buttons** sections, button functionality is selected and operates separately for each of the two radio communications modes. That is, when the radio is operating on a conventional channel, only the selected conventional features are available to you. Likewise, when the radio is operating on a trunking channel, only the selected trunking features are available. For the **Keypad**, button functionality is selected once and operates for both of the two radio communications modes.



NOTE: Some selections are model/option dependent on a per radio basis.

4.8.1

Buttons

This section allows you to view or select radio-wide programmable button functionality for both Conventional and Trunking communications modes.



For the Buttons and Accessory Buttons Windows, button functionality is selected and operates separately for each of the two radio communications modes. That is, when the radio is operating on a Conventional channel, only the selected Conventional features are available you. Likewise, when the radio is operating on a Trunking channel, only the selected Trunking features are available.

For the Keypad Window, button functionality is selected once and operates for both of the two radio communications modes.



NOTE: Some selections are model/option dependent on a per radio basis.

4.8.1.1

Button Name

This field indicates the name of the programmable button.

4.8.1.2

Buttons (Conventional)

This field determines the feature selected for the corresponding programmable button in Conventional Mode. See [Button Selections on page 468](#) for a list of supported selections.

4.8.1.3

Buttons (Trunking)

This field determines the feature selected for the corresponding programmable button in Trunking Mode. See [Button Selections on page 468](#) for a list of supported selections.

4.8.1.4

Short Keypress Duration

This field determines the amount of time needed to press and hold the corresponding radio button for the radio to recognize this action as a short keypress. The unit of this value is in milliseconds.

When this field is set to **Radio Wide**, the value used is from **Short Keypress Duration** at **Radio Ergonomics Wide** → **Advanced**.

This feature is not applicable if Emergency is assigned to the radio button. The value from **Short Keypress Duration for Emergency** at **Radio Ergonomics Wide** → **Advanced**, is always used for emergency.

This field is not applicable to the following features that have specific keypress durations:

- ViQi Virtual Partner
- ViQi Voice Control

Accessed Only: When the short keypress duration is shorter than the long keypress duration setting.

Table 92: Range

Minimum	Maximum	Increments
0 milliseconds	6200 milliseconds	50 milliseconds



NOTE: The default value is **Radio Wide**.

4.8.1.5

Long Keypress Duration

This field determines the amount of time needed to press and hold the corresponding radio button for the radio to recognize this action as a short keypress. The unit of this value is in milliseconds.

When this field is set to **Radio Wide**, the value used is from **Long Keypress Duration** at **Radio Ergonomics Wide** → **Advanced**.

This feature is not applicable if Emergency is assigned to the radio button. The value from **Long Keypress Duration for Emergency** at **Radio Ergonomics Wide** → **Advanced**, is always used for emergency.

This field is not applicable to the following features that have specific keypress durations:

- ViQi Virtual Partner
- ViQi Voice Control

Accessed Only: When the long keypress duration is longer than the short keypress duration setting.

Table 93: Range

Minimum	Maximum	Increments
0 milliseconds	6250 milliseconds	250 milliseconds



NOTE: The default value is **Radio Wide**.

4.8.1.6

Data Button Name

This field indicates the name of the programmable button.

4.8.1.7

Data Buttons (Conventional)

This field determines the feature selected for the corresponding programmable button in Conventional Mode. See [Button Selections on page 468](#) for a list of supported selections.

4.8.1.8

Data Buttons (Trunking)

This field determines the feature selected for the corresponding programmable button in Trunking Mode. See [Button Selections on page 468](#) for a list of supported selections.

4.8.1.9

Short Keypress Duration

This field determines the amount of time needed to press and hold the corresponding radio button for the radio to recognize this action as a short keypress. The unit of this value is in milliseconds.

When this field is set to **Radio Wide**, the value used is from **Short Keypress Duration at Radio Ergonomics Wide → Advanced**.

This feature is not applicable if Emergency is assigned to the radio button. The value from **Short Keypress Duration for Emergency at Radio Ergonomics Wide → Advanced**, is always used for emergency.

This field is not applicable to the following features that have specific keypress durations:

- ViQi Virtual Partner
- ViQi Voice Control

Accessed Only: When the short keypress duration is shorter than the long keypress duration setting.

Table 94: Range

Minimum	Maximum	Increments
0 milliseconds	6200 milliseconds	50 milliseconds

 **NOTE:** The default value is **Radio Wide**.

4.8.1.10

Long Keypress Duration

This field determines the amount of time needed to press and hold the corresponding radio button for the radio to recognize this action as a short keypress. The unit of this value is in milliseconds.

When this field is set to **Radio Wide**, the value used is from **Long Keypress Duration at Radio Ergonomics Wide → Advanced**.

This feature is not applicable if Emergency is assigned to the radio button. The value from **Long Keypress Duration for Emergency at Radio Ergonomics Wide → Advanced**, is always used for emergency.

This field is not applicable to the following features that have specific keypress durations:

- ViQi Virtual Partner
- ViQi Voice Control

Accessed Only: When the long keypress duration is longer than the short keypress duration setting.

Table 95: Range

Minimum	Maximum	Increments
0 milliseconds	6250 milliseconds	250 milliseconds

 **NOTE:** The default value is **Radio Wide**.

4.8.1.11

Button Selections

This field selects the function for the Top and Side Portable radio buttons, the Portable Accessories buttons (Accy 1-dot, Accy 2-dot, and Accy 3-dot), the Smart Key Fob (SKF) buttons, and P1–P6 buttons that are programmable.

 **WARNING:** You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This may cause incorrect radio operation.

 **NOTE:**
 The P1 button and P2 button are applicable for APX N30 and APX N50. The P1–P6 buttons are applicable for APX N70. The default values for Conventional and Trunking P1–P6 buttons are set to **Unprogrammed**.

The Accessory "Accy Orange" Button selection automatically follows the Portable's "Top Button" selection. These selections apply while operating in Conventional or Trunking communications mode, as noted in the table below.

Table 96: Legend for Button Selection Symbols

Symbol	Description
	Conventional Mode
	Trunking Mode
	Conventional and Trunking Mode
	Full Keypad Radio Model
	Non-Keypad Radio Model
	Limited Keypad Radio Model
	Li Radio Model
	Accessory
	Covert Mode
	Smart Key Fob
	Control Head

Table 97: Button Selections

Button Se- lections:	This selection is only valid in the applica- tion, and/or available to you:	Selections are Based on Availability to Current Hardware:
Automatic Channel Fallback Enable/Disable 	When the Channel Fallback Enable field is enabled.	  
Beacon on page 482 	When the radio model/option capable.	 
Blank on page 483 	(Intended for controls that are not in use.)	 
Bluetooth Audio Re-route on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	  
Bluetooth Configuration on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	 
Bluetooth Discoverable On/Off on page 483 	When the Bluetooth Enable on page 396 field is Enabled and when the radio is not LTE-capable.  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	 

Button Selections:	This selection is only valid in the application, and/or available to you:	Selections are Based on Availability to Current Hardware:
<p>Bluetooth Headset PTT on page 483</p> <p>C & T</p>	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	<p>Port * Port □ Port ◇ Acc.</p> <p>3000 SKF</p> <p>O2 O3 O5 O7 O9 E5</p>
<p>Bluetooth Inquiry On/Off on page 483</p> <p>C & T</p>	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button. Therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	<p>Port * Port □ Port ◇ SKF</p> <p>O2 O3 O5 O7 O9 E5</p>
<p>Bluetooth On/Off on page 484</p> <p>C & T</p>	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	<p>Port * Port □ Port ◇ Acc.</p> <p>3000</p> <p>O2 O3 O5 O7 O9 E5</p>
<p>Call Alert on page 484</p> <p>C & T</p>	<p>Conv. When the Conventional Personality, ASTRO Call Alert Rx/Tx on page 1095 field is set to Encode or Encode & Decode, or when the Conventional Personality, Call Alert Rx/Tx on page 1120 field is set to Encode or Encode & Decode for the radio's current channel.</p> <p>Trunk. When the Trunking Personality, Call Alert/Page Operation on page 1258 field is set to List Only or Unlimited for the radio's current channel.</p>	<p>Port * Port ◇ Acc. SKF</p>
<p>Call Response on page 484</p> <p>C & T</p>	<p>Conv. When the Phone Operation on page 1165 field is not set to None for the radio's current channel.</p> <p>Trunk. When the Trunking Personality, Phone Operation on page 1259 field is not set to Disabled, or when the Trunking Personality, Private Call Type on page 1256 field is not set to Disabled for the radio's current channel.</p>	<p>Port * Port □ Port ◇ Port □</p> <p>Acc. 3000 SKF</p>

Button Se- lections:	This selection is only valid in the applica- tion, and/or available to you:	Selections are Based on Availability to Current Hardware:
Channel Announcement on page 484 	When a Voice Announcement file has been selected in the Zone Channel Assignment, Channel Announcement on page 1296 field for the radio's current channel.	 
Channel Down on page 484 	 WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set. Availability is model/option dependent.	 
Channel Fallback Manual/ Revert 	When the Channel Fallback Enable field is enabled.	  
Channel Search on page 485 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Channel Up on page 485 	 WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set. Availability is model/option dependent.	 
Contacts on page 485 	When selected, always available to you, and therefore not dependent on any feature or selection.	
DTMF Tone on page 485 	There are 12 DTMF tones; namely DTMF Tone 0 to 9, DTMF Tone *, and DTMF Tone #. When selected, you can send out DTMF code of the assigned DTMF value. For example, when DTMF Tone 9 is selected, you can send out DTMF Tone 9. Selection is only available when DTMF Mic Enable on page 1152 is Enabled .	 

Button Selections:	This selection is only valid in the application, and/or available to you:	Selections are Based on Availability to Current Hardware:
Dynamic ID on page 486 	When operating in Conventional communications mode, and when the Conventional System, Dynamic ID Enable on page 1084 field is enabled for the radio's current channel.	  
Dynamic Priority on page 486 	When Scan Mode is Enabled , and when the Scan Type on page 1306 is Conventional , and when the Scan List, Dynamic Priority on page 1309 field is Enabled for the radio's current landed scan channel.	     
Emergency on page 486 	<p> When the Conventional System, Emergency Profile Selection on page 1058 field is not set to Emergency Tx Disabled for the radio's current channel.</p> <p> When the Trunking Personality, Emergency Profile Selection on page 1244 field is not set to Emergency Tx Disabled for the radio's current channel.</p> <p> IMPORTANT: For Trunking, Emergency is not available when Failsoft Mode is active and Emergency Blocked In Failsoft on page 1174 is Enabled.</p>	      
Emergency Supervisor Clear on page 596	Selection is only valid in the application, and always available to you. It is selected for Side Middle Button or Accy 1-dot. Emergency Exit Control is set to Supervisor .	     
Information on page 486 (Info) 	When selected, always available to you, and therefore not dependent on any feature or selection.	   
Internet Protocol Address (IP) on page 486 (IP) 	When selected, always available to you, and therefore not dependent on any feature or selection.	     
Keypad/ Controls Lock on page 487	When the Radio Ergonomics Wide, Rotary Switch Lock Enable on page 440 field is Enabled (all models), or when the Radio Ergonomics Wide, Side and Speaker Grille Buttons Lock Enable on page 441 field is Enabled (all mod-	      

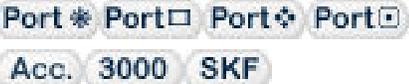
Button Se- lections:	This selection is only valid in the applica- tion, and/or available to you:	Selections are Based on Availability to Current Hardware:
	els), or when the radio has a keypad (model-specific).	
<p>Light/Flip (Display) on page 487</p>  <p>Long Key-press Duration on page 432 vs Short Keypress Duration on page 430</p>	When the Auto Light on page 781 field is Disabled .	     
<p>Location on page 487</p> 	When the Radio Wide, Location Enable on page 365 field is Enabled .	   
<p>LTE on page 488</p> 	<p> When the Data Profile Type on page 982 of the Conventional System's referenced Data Profile is Conventional & Broadband or Broadband-Only, and when the radio is a model APX 7000L.</p> <p> When the Data Profile Type on page 982 of the Trunking System's referenced Data Profile is Trunking & Broadband or Broadband-Only, and when the radio is a model APX 7000L.</p>	   
<p>Fall Alert Clear on page 488</p> 	When the Emergency Wide, Fall Alert Trigger on page 921 field is Enabled .	    
<p>Message on page 488</p> 	<p> When the Conventional System, Message on page 1083 field is Enabled for the radio's current channel.</p> <p> When the Trunking Personality, Message Enable on page 1262 field is Enabled for the radio's current channel.</p>	   

Button Selections:	This selection is only valid in the application, and/or available to you:	Selections are Based on Availability to Current Hardware:
<p>Monitor on page 488</p> <p></p> <p>See Latch Enable Time on page 1028</p>	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	<p>   </p> <p>  </p>
<p>Multi Function Button Toggle on page 489</p> <p></p>	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	<p> </p>
<p>MS01–MS13 on page 489 (Mode Select)</p> <p></p>	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p> <p> IMPORTANT: The APX™ 3000 Portable only supports MS01 and MS02.</p>	<p>   </p> <p>  </p>
<p>Multiple Private Line (MPL) on page 489</p> <p></p>	<p>When the Conventional Personality, Rx Voice/Signal Type on page 1162 field is set to Non-AS-TRO or Mixed Mode, and when the Conventional Personality, User Selectable PL [MPL] on page 1142 field is Enabled for the radio's current channel.</p>	<p>   </p>
<p>Nuisance Delete on page 489</p> <p></p>	<p>When Scan Mode is Enabled.</p>	<p>   </p> <p>  </p>
<p>One Touch 1–16 on page 600</p> <p></p>	<p> When at least one Conventional Personality, One Touch Button One Touch Button Feature on page 1167 is not set to Disabled for the radio's current channel.</p> <p> When at least one Trunking System, One Touch Button One Touch Button Feature</p>	<p>   </p> <p>  </p>

Button Se- lections:	This selection is only valid in the applica- tion, and/or available to you:	Selections are Based on Availability to Current Hardware:
	<p>on page 1234 is not set to Disabled for the radio's current channel.</p> <p> IMPORTANT: For the APX™ 3000 Portable, or Portables having just a top display or a front display and menu buttons only, this selection is limited to RAB, MDC RTT Button Access on page 1119 and Status selections as a Conventional feature, and the Status selection as a Trunking feature.</p>	
<p>Phone on page 490</p> <p></p>	<p> When the Conventional Personality, Phone Operation on page 1165 field is not set to None for the radio's current channel.</p> <p> When the Trunking Personality, Phone Operation on page 1259 field is not set to Disabled for the radio's current channel.</p>	<p>   </p>
<p>PL Disable on page 490</p> <p></p>	<p>When operating in Conventional communications mode, and when the radio is model/option capable.</p>	<p>   </p> <p></p>
<p>Priority Channel PTT on page 490</p> <p></p>	<p>When operating in Conventional communications mode, and when there is a Priority Member 1 on page 1310 Scan List Member in the current channel's Scan List.</p>	<p>   </p> <p></p>
<p>Priority Dispatch</p>	<p>This button-press selection is valid only for side buttons including the Side Top Button, Side Middle Button, and Side Bottom Button.</p>	<p>   </p> <p>  </p>
<p>Radio Profiles on page 491</p> <p></p>	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	<p>   </p>
<p>Recent Calls on page 491</p> <p></p>	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	<p>   </p>
<p>Rekey Request on page 492</p> <p></p>	<p>When the ASTRO OTAR Information, User Selectable Rekey Request on page 909 is not set to Disabled, or when the MDC OTAR, Rekey</p>	<p>   </p> <p> </p>

Button Selections:	This selection is only valid in the application, and/or available to you:	Selections are Based on Availability to Current Hardware:
	<p>Request Mode on page 893 is not set to Disabled.</p> <p> NOTE: Requires a Long Keypress Duration on page 432</p>	
<p>Remote Emergency on page 492</p> <p></p>	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	<p>Port * Port □ Port ⚡ Acc.</p> <p>3000 SKF</p>
<p>Repeater Access Button 1 (RAB1) on page 492</p> <p></p>	<p>When the Conventional Personality, Repeater Access on page 1169 field is Enabled, and when the Access Type on page 1169 is set to Manual for the radio's current channel.</p> <p> NOTE: This feature is not available on Side Button 1 when Radio Lock Enable on page 334 is Enabled.</p>	<p>Port * Port □ Port ⚡ Port □</p> <p>Acc. SKF</p>
<p>Repeater Access Button 2 (RAB2) on page 492</p> <p></p>	<p>When the Conventional Personality, Repeater Access on page 1169 field is Enabled, and when the Access Type on page 1169 is set to Manual for the radio's current channel.</p> <p> NOTE: This feature is not available on Side Button 1 when Radio Lock Enable on page 334 is Enabled.</p>	<p>Port * Port □ Port ⚡ Port □</p> <p>Acc. SKF</p>
<p>Reprogram Request on page 492</p> <p></p>	<p>When the Trunking System, System Type is ASTRO 25, and when the Trunking System, Dynamic Regrouping Enable on page 1212 field is Enabled for the radio's current channel.</p>	<p>Port * Port □ Port ⚡ Port □</p> <p>Acc. 3000 SKF</p>
<p>Request-To-Talk (RTT) on page 492</p> <p></p>	<p>When the Conventional Personality, MDC RTT Button Access on page 1119 field is set to Manual for the radio's current channel, and when that Personality is not a Receive Only Personality on page 1162, and when Tx Inhibit is not Enabled.</p>	<p>Port * Port □ Port ⚡ Port □</p> <p>Acc. SKF</p>
<p>Scan on page 493</p> <p></p> <p>Long Keypress Duration on page 432 vs Short Keypress</p>	<p> When the Scan Type on page 1306 is not set to Voting Scan, and when the Conventional Personality, Scan List Selection on page 1153 field is not set to None, and when the Conventional Personality, Automatic Scan on page 1155 field is Disabled for the radio's current channel.</p>	<p>Port * Port □ Port ⚡ Port □</p> <p>Acc. 3000 SKF</p>

Button Selections:	This selection is only valid in the application, and/or available to you:	Selections are Based on Availability to Current Hardware:
<p>Duration on page 430</p>	<p>Trunk. When the Trunking Personality, Scan List Selection on page 1260 field is not set to None, and when the Trunking Personality, Automatic Scan on page 1261 field is Disabled for the radio's current channel.</p> <p> IMPORTANT: This selection cannot be set concurrently on Buttons, Switches and Menu Items; however, it can be set concurrently on Portable and Accessory Buttons.</p>	
<p>Secure Tx Select on page 493</p> <p>C & T</p>	<p>Conv. When any one of the Conventional Secure/Clear Strapping fields is set to Select for the radio's current channel, and when the radio is model/option capable.</p> <p>Trunk. When any one of the Trunking Secure/Clear Strapping fields is set to Select for the radio's current channel, and when the radio is model/option capable.</p>	<p>Port * Port Port Acc.</p> <p>3000 SKF</p>
<p>Select/Private Call on page 493</p> <p>C & T</p>	<p>Conv. When the Conventional Personality, ASTRO Selective Call Rx/Tx on page 1092 is set to Encode or Encode & Decode, or when the Conventional Personality, Selective Call Rx/Tx on page 1118 is set to Encode or Encode & Decode for the radio's current channel.</p> <p>Trunk. When the Trunking Personality, Private Call Type on page 1256 is not set to Disabled for the radio's current channel.</p>	<p>Port * Port Acc. SKF</p>
<p>Sensor on page 537</p> <p>C & T</p>	<p>When the radio is model/option capable.</p>	<p>Port * Port Port Port</p> <p>Acc. 3000 SKF</p>
<p>Site Display/Srch on page 493</p> <p>Trunk.</p> <p>Long Key-press Duration on page 432 vs Short Keypress Duration</p>	<p>When the Trunking System, Site Alias Enable on page 1222 field is Enabled for the radio's current channel.</p>	<p>Port * Port Port Port</p> <p>Acc. SKF</p>

Button Se- lections:	This selection is only valid in the applica- tion, and/or available to you:	Selections are Based on Availability to Current Hardware:
on page 430		
Site Lock/Unlock on page 493  Long Key-press Du-ration on page 432 vs Short Keypress Duration on page 430	When the Trunking System, Site Alias Enable on page 1222 field is Enabled for the radio's current channel.	
Status on page 494 	 When the Conventional System Sta-tus on page 1081 field is Enabled for the radio's current channel.  When the Trunking Personality Sta-tus Enable on page 1262 field is Enabled for the radio's current channel.	
Tactical Services on page 494 	When the Tactical Services Operation on page 1097 field is set to Encode or Decode & En-code . When the radio is model or option capable.	
Talk-around/Direct on page 494 	When operating in Conventional communica-tions mode, and when the Conventional Person-ality, Direct/Talkaround on page 1132 field is En-abled for the radio's current channel.  IMPORTANT: This selection cannot be set concurrently on Buttons, Switches and Menu Items; however, it can be set concurrently on Portable and Accessory Buttons.	
Talkgroup on page 494 	When the Conventional Personality, ASTRO Talkgroup Selection Type on page 1099 field is set to Selectable for the radio's current chan-nel.	
Text Mes-saging Service	 When the Conventional System, Text Messaging Service on page 1080 field is set	

Button Se- lections:	This selection is only valid in the applica- tion, and/or available to you:	Selections are Based on Availability to Current Hardware:
<p>(TMS) on page 494</p> <p>C & T</p> <p>Long Key-press Du-ration on page 432 vs Short Keypress Duration on page 430</p>	<p>to List Only or Unlimited, and when that Sys-tem's Data Profile Selection on page 1059 is not set to Data Disabled for the radio's current channel.</p> <p>Trunk. When the Trunking System, Text Messaging Service on page 1210 field is set to List Only or Unlimited, and when that Sys-tem's Data Profile Selection on page 1195 is not set to Data Disabled for the radio's current channel.</p>	
<p>Third Party on page 495</p> <p>C & T</p>	<p>When selected, always available to you, and therefore not dependent on any feature or se-lection.</p>	<p>Port * Port □ Port ◆ Port ▢</p> <p>Acc. 3000 SKF</p>
<p>TMS Query on page 495</p> <p>C & T</p>	<p>Conv. When the Conventional System, Text Messaging Service on page 1080 field is set to List Only or Unlimited, and when that Sys-tem's Data Profile Selection on page 1059 is not set to Data Disabled for the radio's current channel.</p> <p>Trunk. When the Trunking System, Text Messaging Service on page 1210 field is set to List Only or Unlimited, and when that Sys-tem's Data Profile Selection on page 1195 is not set to Data Disabled for the radio's current channel.</p>	<p>Port * Port ◆ Acc. SKF</p>
<p>TMS Quick Text on page 495</p> <p>C & T</p>	<p>Conv. When the Conventional System, Text Messaging Service on page 1080 field is set to List Only or Unlimited, and when that Sys-tem's Data Profile Selection on page 1059 is not set to Data Disabled for the radio's current channel.</p> <p>Trunk. When the Trunking System, Text Messaging Service on page 1210 field is set to List Only or Unlimited, and when that Sys-tem's Data Profile Selection on page 1195 is not set to Data Disabled for the radio's current channel.</p>	<p>Port * Port ◆ Acc. SKF</p>

Button Se- lections:	This selection is only valid in the applica- tion, and/or available to you:	Selections are Based on Availability to Current Hardware:
<p>Tx Inhibit on page 495</p> <p></p>	<p> WARNING: This selection must be set on the Con- ventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunk- ing selection is automatically set.</p> <p>Availability is model/option dependent.</p>	<p> </p>
<p>Unprog- rammed on page 496</p> <p></p>	<p>(Intended for controls that are not in use.)</p>	<p>   </p> <p>  </p>
<p>User on page 496</p> <p></p>	<p>When selected, always available to you, and therefore not dependent on any feature or se- lection.</p>	<p>   </p>
<p>Voice Mute on page 496</p> <p></p>	<p> When the Conventional Personality, ASTRO Call, In-Call User Alert Enable on page 1096 field is Enabled for the radio's current channel, or when the Conventional Personality, Non-ASTRO Call In-Call User Alert Enable on page 1121 field is Enabled for the radio's current channel.</p> <p> When the Trunking Personality, In- Call User Alert Enable on page 1257 field is Ena- bled for the radio's current channel.</p>	<p>   </p> <p>  </p>
<p>Volume Down on page 496</p> <p></p>	<p> WARNING: This selection must be set on the Con- ventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunk- ing selection is automatically set.</p> <p>Availability is model/option dependent.</p>	<p> </p>
<p>Volume Set Tone on page 496</p> <p></p>	<p>When selected, always available to you, and therefore not dependent on any feature or se- lection.</p>	<p>   </p> <p> </p>

Button Se- lections:	This selection is only valid in the applica- tion, and/or available to you:	Selections are Based on Availability to Current Hardware:
Volume Up on page 497 	 WARNING: This selection must be set on the Con- ventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunk- ing selection is automatically set. Availability is model/option dependent.	 
Wi-Fi On/Off on page 497	This button-press activates and deactivates Wi- Fi capability of the radio.	     
Zone Bank	 IMPORTANT: This legacy selection has been replaced by Zone Bank Up on page 498 .	
Zone Bank Down on page 497 	 WARNING: This selection must be set on the Conventional and Trunking fea- tures at the same time. If you set this selection on Conventional, the corre- sponding Trunking selection is automat- ically set.  IMPORTANT: In order for Zone Bank Down to be set on an Accessory Button, this selection should first be set on a Portable Button. When Zone Bank Down is set on a Button, Zone Select on page 513 is au- tomatically set on Conventional and Trunking Toggle Switches and it cannot be set on Conventional and Trunking Concentric Switches, or the Rotary Switch.	  

Button Selections:	This selection is only valid in the application, and/or available to you:	Selections are Based on Availability to Current Hardware:
<p>Zone Bank Up on page 498</p> <p></p>	<p> WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.</p> <p> IMPORTANT: In order for Zone Bank Up to be set on an Accessory Button, this selection should first be set on a Portable Button.</p> <p>When Zone Bank Up is set on a Button, Zone Select on page 513 is automatically set on Conventional and Trunking Toggle Switches and it cannot be set on Conventional and Trunking Concentric Switches, or the Rotary Switch.</p>	<p>  </p>
<p>Zone Down on page 498</p> <p></p>	<p> WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.</p> <p>Availability is model/option dependent.</p>	<p>      </p>
<p>Zone Up on page 498</p> <p></p>	<p> WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.</p> <p>Availability is model/option dependent.</p>	<p>      </p>

4.8.1.11.1 Automatic Channel Fallback Enable/Disable

On a Channel Fallback-enabled channel, pressing this button activates Automatic Channel Fallback. Pressing and holding this button deactivates the feature and reverts the radio back to the last user-selected channel.

4.8.1.11.2 Beacon

This button-press allows you to check the details of any recently received Emergency Beacons. This feature is available for Conventional or Trunking communications mode.

4.8.1.11.3

Blank

Select this feature for a radio button that is not in use.

You will hear a chirp tone when pressing this button. This feature is available for Conventional or Trunking communications mode.

4.8.1.11.4

Bluetooth Audio Reroute

This button-press allows you to cycle active speaker audio between a portable radio's internal speaker or external (RSM/DRSM) speaker, and a Bluetooth accessory's wireless speakers.

This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.5

Bluetooth Configuration

This button-press provides you with a list of Bluetooth status/information and Bluetooth options.

This feature is available while operating in Conventional or Trunking communications mode.

The following features are included:

Bluetooth Status

Allows you to turn on and off Bluetooth radio to Bluetooth device functionality.

Device Active

Allows you to view a list of all currently active (paired) Bluetooth devices.

Bluetooth Speaker

Allows you to turn on and off a Bluetooth device's speaker.

4.8.1.11.6

Bluetooth Discoverable On/Off

This button-press allows you to activate or deactivate Bluetooth discoverable mode.

When activated, the radio listens for inquiry requests coming from other Bluetooth devices within its range, and responds with its address, name, and all the necessary information required for pairing and connection. Provided you do not deactivate discoverable mode and it remains activated for the duration specified in the [Bluetooth Radio Visibility Duration on page 400](#) field. This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.7

Bluetooth Headset PTT

This button-press serves as the primary, or as an additional, PTT button for a Bluetooth wireless headset; therefore this button-press allows you to key up the radio while using the Bluetooth headset's microphone as the audio source.

This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.8

Bluetooth Inquiry On/Off

This button-press allows you to activate or deactivate Bluetooth Inquiry mode.

When activated, the radio sends out inquiry requests in search of all Bluetooth devices within its range (called "access points"). Provided you do not deactivate Inquiry mode and it remains activated for the duration specified in the [Bluetooth Device Search Duration on page 399](#) field. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: For radios with no front display only, pressing and holding this button-press for more than 3 seconds allows you to activate **discoverable** mode, which is then deactivated once the button is released.

4.8.1.11.9

Bluetooth On/Off

This button-press activates and deactivates the radio's Bluetooth capabilities.

This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.10

Call Alert

This button-press allows you to transmit a Call Alert for Conventional modes, or a Call Alert/Page for Trunking modes.



NOTE:

Call Alert/Pages allow a dispatcher or radio caller to notify you (or group of users) of a missed call.

Receiving radios are targeted based on radio and system information managed by the Contacts and Call IDs in the radio's Call Hot Lists. You can directly enter or select Call IDs from the channel's Hot List.

The receiving radio responds with both alert tones and visual alerts to you. The visual alert (flashing LED) persists until reset by your interaction with the radio.

4.8.1.11.11

Call Response

This button-press allows you to respond to (and hang up from) a received Phone Call (Conventional or Trunking) or Private Call. (Trunking only).

4.8.1.11.12

Channel Announcement

This button-press allows you to hear the Voice Announcement audio file that is assigned to the radio's current channel/mode.



IMPORTANT: Voice files are assigned to channels from the Zone Channel Assignment, [Channel Announcement on page 1296](#) Channel Announcement field.

4.8.1.11.13

Channel Down

This button-press on the APX™ 3000 Portable allows you to scroll downward through the channels in the radio.



Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the last channel in the list, continued scrolling causes the list to wrap around to the first channel. Channels are defined in the Zone Channel Assignment Window's Channels Page.

4.8.1.11.14

Channel Fallback Manual/Revert

On a Channel Fallback-enabled channel, pressing this button causes the radio to switch to the assigned Fallback Channel regardless of current network conditions and activation state. Pressing and holding this button reverts the radio back to the last user-selected channel.

4.8.1.11.15

Channel Search

This button-press allows you to search for a channel/mode based on its programmed channel name, and directly switch to the found channel.

This feature is available while operating in Conventional or Trunking communications mode.



NOTE: These [Channel Name on page 1294](#) can be viewed in the Zone Channel Assignment Window's Channels Page, on a per zone basis.

4.8.1.11.16

Channel Up

This button-press on the APX™ 3000 Portable allows you to scroll upward through the channels in the radio.



Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the last channel in the list, continued scrolling causes the list to wrap around to the first channel. Channels are defined in the Zone Channel Assignment Window's Channels Page.

4.8.1.11.17

Contacts

This button press allows you to view or edit the Contacts of the radio's current channel.

Contacts must be programmed in the Unified Call List. Contacts make up the members of Call Hot Lists. Hot List members/Contacts are selectable by you, allowing for call types such as Phone Calls, Selective Calls, Call Alerts, Private Calls and Pages to individual radios or to groups of radios.



IMPORTANT: This feature is not available for Portable radios having only a top display.

4.8.1.11.18

DTMF Tone

This button-press allows you to send out DTMF code of the assigned DTMF value.



There are 12 DTMF tones; namely DTMF Tone 0 to 9, DTMF Tone *, and DTMF Tone #. This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.19

Dynamic ID

This button-press allows for entry into the Dynamic ID edit mode, which allows you to view and/or edit the radio's Individual ID and/or MDC Primary ID for the current ASTRO and/or MDC system.

This feature is available while operating in Conventional communications mode.

4.8.1.11.20

Dynamic Priority

This button-press allows you to select the Dynamic Priority scan assignment.

This feature is available while operating in Conventional communications mode.

4.8.1.11.21

Emergency

This button-press allows you to enter and also exit emergency mode operation.

See also the [Short Keypress Duration for Emergency on page 431](#) and the [Long Keypress Duration for Emergency on page 433](#) features. This feature is available while operating in Conventional or Trunking communications mode.



WARNING:

When a Mission Critical WRSM is wirelessly connected to the Mobile Microphone with Bluetooth Gateway, pressing the Orange Programmable button on the WRSM will trigger the event set in 2-dot Button of a KPM.

When the Dual Radio-Radio Selection field is set to **Primary Radio** or **Secondary Radio**, this selection is invalid for the Side Top (Purple) button on a .

4.8.1.11.22

Information

This button-press allows you to retrieve and view basic radio information such as IP-related information and buttons/switches control mapping, as well as view or modify the Soft ID.

This feature applies only when operating on ASTRO - Conventional Systems. This is a Portable radio only feature.



IMPORTANT:

Modifying the Soft ID changes the radio's Username for Automatic Registration Service server or a User Authentication Unified Network Services (UNS) server logon. When editing the Username this way, the PIN/Password and Unit ID are blanked. Therefore, this can only be used when the server is expecting a blank PIN/Password and you do not want to use Unit ID.

This feature is not available for Portable radios having only a top display.

4.8.1.11.23

Internet Protocol Address (IP)

This button-press allows you to retrieve and view (in the radio's display) the radio's current IP Address, device name and status.

This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.24

Keypad/Controls Lock

This button-press allows you to lock (or unlock) the radio's keypad (when available).



Additional control-locking functionality is possible (for all models) when the [Rotary Switch Lock Enable on page 440](#) field and/or [Side and Speaker Grille Buttons Lock Enable on page 441](#) field is **Enabled**.

This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

When Rotary Switch Lock Enable is **Enabled** on radios with a rotary switch, this feature also locks the radio's currently-operating [Rotary Selections](#) (zone or channel) even when the rotary switch is moved to another position.

When Rotary Switch Lock Enable is **Enabled** on radios with a Multi-Function Knob (MFK), this feature also disables the [Short Keypress Duration for MFK on page 434](#) and [Long Keypress Duration for MFK on page 435](#) functionality, [Multi-Function Knob Primary Function](#) and [Multi-Function Knob Secondary Function](#).

When Side Button Lock Enable is **Enabled**, this feature also locks the radio's Side Top, Side Middle, and Side Bottom buttons.

4.8.1.11.25

Light/Flip (Display)

This button's Short Keypress Duration Light feature allows you to toggle on and off the lights that illuminate the radio's Rotary switch, display, top display and keypad.



This button's [Long Keypress Duration on page 432](#) Flip (Display) feature allows you to toggle back and forth the viewing perspective of the radio's top display by 180 degrees. This is particularly useful for viewing the top display while the radio is still in the carry holder.

This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

The [Display Light Time on page 782](#) determines the amount of time that the lights remain illuminated, when set to **Infinite** pressing this button again turns off the lights.

For Rotary switch and top display, see also the [Independent Top Light on page 781](#) setting.

For all portable radio models, the Light and Flip (Display) features also apply to a portable Accessory that has a display, such as the Display Remote Speaker Microphone (DRSM).

4.8.1.11.26

Location

This button-press allows you to determine their current location (latitude, longitude, time and date) and also the distance and bearing to another location.

This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: If the Radio Wide, [User Selectable Location Enable on page 366](#) field is **Enabled**, you are also allowed to turn the outdoor location/Global Positioning System (GPS) functionality on or off for all location/GPS enabled Conventional or Trunking communications channels.

4.8.1.11.27

LTE

This button-press activates and deactivates the radio's LTE Broadband data capabilities.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

This button-selection is only operational when a channel that is configured for LTE Broadband operation is selected. When a non-LTE channel is selected, the menu is hidden from you.

A channel is LTE capable when its Data Profile's [Data Profile Type on page 982](#) field is set to **Conventional & Broadband**, or **Trunking & Broadband**, or **Broadband-Only**, and its [Broadband Source on page 1002](#) is **Internal LTE Modem**.

4.8.1.11.28

Fall Alert Clear

This button-press allows you to clear (deactivate) the Fall Alert Emergency mode alarm.



This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.29

Message

This button-press allows you to select from the Message Alias List of the current channel/mode.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Message Alias List is used.

While operating in Trunking communications mode, the Trunking System-Message Alias List selected for the current Trunking Personality is used.

4.8.1.11.30

Monitor

This button-press allows you to hear most or even all carrier activity on the radio's current channel.

The [Monitor Type on page 1026](#) field selection determines if only the channel-receive requirement of a Private Line (PL) encoded match is temporarily ignored, or if the requirement of PL and carrier squelch is temporarily ignored. This feature is available while operating in Conventional communications mode.



IMPORTANT: When holding the Monitor button for the [Latch Enable Time on page 1028](#) duration, the radio becomes latched in continuous monitor mode. The radio remains latched in monitor mode until released with a Monitor button short-press. Initiating Emergency, Phone, Scan, or a Call Alert or Selective Call also cancels continuous monitor mode. See also the [Latch Enable Tone on page 1027](#) field.

4.8.1.11.31

Multi Function Button Toggle

This button-press allows you to toggle the Primary and Secondary functions of the APX™ 3000 Portable's Multi Function Side Up/Down Arrow buttons.



This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.32

MS01–MS13

These button assignments allows you to program these buttons with frequently used or any desired zone and channel combination.

The programming and use of these buttons is very similar to the programming and use of a car radio's preset buttons. That is, a long-press programs a button with the radio's current zone and channels; then once programmed, the short-press of that button jumps the radio to the programmed zone and channel. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

The [Short Keypress Duration on page 430](#) and [Long Keypress Duration on page 432](#) are both programmed.

The APX™ 3000 Portable only supports MS01 and MS02.

4.8.1.11.33

Multiple Private Line (MPL)

This button-press allows for your access to a listing of the available MPL Lists.



IMPORTANT: Each list is represented by a recognizable name . You are then able to select the desired Alias/PL settings. This feature is available while operating in Conventional communications mode.

4.8.1.11.34

Nuisance Delete

This button-press allows you to temporarily remove the channel from the current Active Scan when it continually generates unwanted carrier noise.

This is accomplished by pressing this Nuisance Delete button while in Landed Scan Mode on the Scan List Member to be removed. This feature applies for the current Scan List while operating in Conventional or Trunking communications mode.



IMPORTANT:

Switching to another channel on the radio's channel selector, turning scan mode off and then back on, or turning the radio off and then back on effectively brings that temporarily removed Scan List Member channel back to an actively scanned status.

Nuisance Delete is not possible:

- For a Priority #1, or Priority #2 Scan List Member channel.
- When the [Designated Voice Tx Member Type on page 1311](#) field is set to **Selected Channel** and the Landed Scan channel's Tx Frequency is the same as the Tx Frequency of the radio's currently-selected channel.
- If the current Scan List does not contain at least two members before a Nuisance Delete occurs.

4.8.1.11.35

One Touch 1–4



These four separately programmed button-presses allow you to launch a specific feature with one single button-press.

These button-presses allow you to enter One Touch features such as Status, Message, Selective/Private Call, Call Alert/Page, Phone, Repeater Access (RAC), and MDC RTT Button Access with the touch of one button. One to four buttons can be programmed for each Conventional Personality, and one to four buttons can be programmed for each Trunking System.



IMPORTANT: Pressing a One Touch button while the radio is already in the selected feature causes the radio to abort the feature.

4.8.1.11.36

Phone

This button-press allows you to initiate Phone Mode while operating in Conventional or Trunking communications mode.

4.8.1.11.37

PL Disable

This button-press allows you to disable PL/DPL carrier squelch.



This feature is available while operating in Conventional communications mode.

4.8.1.11.38

Priority Channel PTT

If the radio is currently operating in Scan Mode, and there is Priority Member 1 Scan List Member in the current channel's Scan List, then pressing this button causes the radio to key up on the Priority 1 Scan List Member channel, therefore allowing transmission of voice communications; otherwise, the radio blocks the transmission and sounds the Talk Prohibit Tone.

This feature is available while operating in Conventional communications mode.



IMPORTANT:

Priority Channel PTT operation is mutually exclusive with the Intercom, [Siren Operation on page 422](#) and Public Address (PA) functions.

For all APX radios, Priority Channel PTT operation will not perform sending/calling operation when any of the following functions are active in the radio:

- Emergency
- Call Alert
- Selective Call
- Recent Call
- Phone
- Stun/Kill
- TMS
- Status/Message
- Siren
- Public Address (PA)
- Unified Call List
- Rekey Request
- Evacuation Tone

For the O3 mobile control head, Priority Channel PTT will not perform Hot Keypad sending operation. This is because the O3 mobile control head does not support multi-button press between the side button, the menu softkey, the arrow key, or the keypad. This limitation also impacts other features that need two or more button press at the same time.

The radio handles the first PTT press and release, and ignores the second PTT press and release when the two PTT actions are a different type; in other words:

- whenever the radio is already transmitting due to a primary PTT button-press, the Priority Channel PTT button-press is ignored by the radio.
- conversely, whenever the radio is already transmitting on the Priority 1 Scan List Member channel, due to a Priority Channel PTT button-press, a primary PTT button-press is ignored by the radio.

Priority Channel PTT button must not be used in DVRS channel.

4.8.1.11.39

Radio Profiles

This button-press allows you to select one of the programmed Radio Profiles.

This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.40

Recent Calls

This button-press allows you to access the recent incoming and outgoing call information for the following call types: Call Alert, Selective Calls, Private Calls, and (outgoing only) Phone calls.

This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.41

Rekey Request

This button-press allows you to transmit an Over-The-Air-Rekeying (OTAR) rekey request to the dispatcher's (KMF or KMC) console while operating in Conventional or Trunking communications mode.



IMPORTANT:

For MDC OTAR (Conventional communications) the request protocol is determined by the [Rekey Request Mode on page 893](#) field.

For ASTRO OTAR (Conventional or Trunking communications) the [User Selectable Rekey Request on page 909](#) field must be **Enabled**, and the request protocol is determined by the [OTAR Tx Security Level on page 908](#) field.

4.8.1.11.42

Remote Emergency

This button-press activates the Remote Emergency Activation feature so an authorized user to encode this command can cause a target radio to initiate the Emergency feature without target user intervention.



NOTE: Remote Emergency is only supported on ASTRO Conventional and ASTRO 25 Trunking channels.

4.8.1.11.43

Repeater Access Button 1 (RAB1)

This button-press allows you to manually send a repeater access codeword.

This feature is available while operating in Conventional communications mode.

4.8.1.11.44

Repeater Access Button 2 (RAB2)

This button-press allows you to manually send a repeater access codeword.

This feature is available while operating in Conventional communications mode.

4.8.1.11.45

Reprogram Request

This button-press allows you to send a request to the dispatcher for reassignment of Dynamic Regrouping.

The available features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher/console. The radio then automatically changes to the Dynamic Regrouping Zone and Dynamic Regrouping Channel. This feature is available while operating in Trunking communications mode.



IMPORTANT: For Trunking Systems, this Zone and Channel are defined by setting a Zone Channel Assignment's [Trunking Talkgroup on page 1297](#) field to **DYN**. The Trunking Personality considered in this scenario must have this same Trunking [System on page 1236](#) selected in its System field. Hence, only one Dynamic Regrouping channel may be defined per Trunking System.

4.8.1.11.46

Request-To-Talk (RTT)

This button-press allows you to send a Request-To-Talk (RTT) signaling packet to the dispatcher/console, requesting the ability to transmit voice.

This selection applies only when operating on an MDC System in Conventional communications mode.

4.8.1.11.47

Scan

Short Key-pressing this button allows you to toggle Scan Mode on and off for the radio's current channel.

Long Key-pressing this button allows for entry to the Scan List Edit mode for the radio's current channel's Scan List, which allows you to add or remove individual Scan List Member channels and modify scan priority.

4.8.1.11.48

Secure Tx Select

This button-press allows you to choose secure encrypted (or clear) transmissions.



This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.49

Select/Private Call

This button-press allows you to transmit a Conventional - Selective Call or a Trunking - Private Call.

You must select the required Contact/Call ID and then press the PTT button to initiate the Call. A Selective/Private Call is typically used when the majority of transmissions are between you and a dispatcher, or a group of users. You can directly enter or select Radio IDs for use in the radio's Call Hot Lists.



NOTE: Selective/Private Calls are intended not so much to ensure privacy but rather to eliminate the annoyance of receiving traffic that does not pertain to them. See also: Conventional - Selective Call Rx/Tx and Trunking - Private Call.

4.8.1.11.50

Site Display/Srch

This button's Short Keypress Duration **Site Display** allows you to momentarily view the current Site ID and its corresponding received signal strength indicator (RSSI) on the radio's display.

This button's Long Keypress Duration **Site Search** enables a Site search for SmartZone operation. This feature is available while operating in Trunking communications mode.

4.8.1.11.51

Site Lock/Unlock

This button-press Short Keypress Duration **Site** allows you to view the lock status of the current Trunking site.

This button's Long Keypress Duration **Site Lock/Unlock** allows you to toggle between lock and unlock mode when using the SmartZone option.



IMPORTANT: Locking a site inhibits roaming to another site in a wide-area System. This feature is available while operating in Trunking communications mode.

4.8.1.11.52

Status

This button-press allows you to select from the Status Alias List of the current channel/mode.



NOTE: For your convenience, as part of this feature the display initially shows the last acknowledged Status call, or the first Status in the list. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Status Alias List is used.

While operating in Trunking communications mode, the Trunking System-Status Alias List selected for the current Trunking Personality is used.

4.8.1.11.53

Tactical Services

This button-press allows your radio to enter the Tactical Services state depending on the configuration in the **Tactical Services Operation** field. This feature is available while operating in Conventional communications mode.



The **Tactical Services** selection is only applicable when the **Tactical Services Operation** field is set to **Encode** or **Decode & Encode**.

4.8.1.11.54

Talkaround/Direct

This button-press allows you to enable or disable the Direct/Talkaround mode for the current channel options profile.

This feature is available while operating in Conventional communications mode.

4.8.1.11.55

Talkgroup

This button-press allows you to switch from the preset Talkgroup to another Talkgroup from within the Conventional Personality's current Talkgroup List.

All Conventional Personalities using the same Talkgroup List are automatically switched to the selected Talkgroup.

4.8.1.11.56

Text Messaging Service (TMS)

This button's Short Keypress Duration **TMS** allows you to access the radio's TMS mode, seen in the radio's display.

This button's Long Keypress Duration allows you to directly enter the TMS **Inbox**, in order to view received text messages and access the programmed [Quick Text Message on page 965](#) entries (seen within the radio's display). See also the Trunking System or Conventional System, Text Messaging Service feature.

4.8.1.11.57

Third Party

This button-press allows you to initiate functionality in third-party accessories, such as compatible Whelen® Sirens.



WARNING: When the Dual Radio [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, this selection must be made for both Conventional and Trunking, where applicable, in order to be considered valid.

4.8.1.11.58

TMS Query

This button-press jumps you directly to the programmed Query Message entries of the Text Messaging Service feature.

You are then able to select from the list of predefined entries and easily transmit a Query with minimal effort.



NOTE: A TMS Query allows you to specify information in a pre-formatted query template and send this as a Message to a Query Server; the Server then responds with a text message containing the requested information.

When the Trunking System or Conventional System, Text Messaging Service feature is enabled on the radio's current channel, and when the TMS Query Service is currently available to the radio.

4.8.1.11.59

TMS Quick Text

This button-press jumps you directly to the Quick Text Message entries of the Text Messaging Service feature.

You are then able to select from the list of predefined entries and easily transmit a Quick Text Message with minimal effort.

When the Trunking System or Conventional System, Text Messaging Service feature is enabled on the radio's current channel.

4.8.1.11.60

Tx Inhibit

This button-press allows you to disable all radio transmissions while operating in Conventional or Trunking communications mode.



IMPORTANT: This action may be necessary when entering hazardous environments with high sensitivity to RF fields, where a radio transmission could initiate an explosion or other dangerous reaction.



NOTE:

If you attempt to key up the radio while Tx Inhibit is **Enabled**, the radio generates a long, low-pitched "Talk Prohibit" Tone, indicating that transmissions are currently not allow.

The Voice Announcement feature provides the ability to play a [Tx Inhibit On on page 860](#) or [Tx Inhibit Off on page 861](#) voice prompt when you toggle Tx Inhibit On or Off.

4.8.1.11.61

Unprogrammed

Select this feature for a radio button that is not in use.



You will hear a chirp tone when pressing this button. This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.62

User

This button-press allows you to login to a specific Automatic Registration Service server or a User Authentication Unified Network Services (UNS) server with the appropriate Username, PIN/Password, and User Login Unit ID combination.

You may select Usernames and Unit ID from the programmed Data User List entries, or Usernames, PINs/Password and Unit IDs may be manually entered from the radio's keypad.

 **WARNING:** This feature functions only when the radio's current (Conventional or Trunking) channel has its referenced Data Profile's, [ARS Mode on page 995](#) field is set to **Server**.

4.8.1.11.63

Voice Mute

This button-press allows you to toggle on and off Voice Mute functionality for In-Call User Alert-enabled channels.

When Voice Mute is active, the radio remains muted to all Conventional communications calls and affiliated Trunking Talkgroup calls. Group and individual Call Alert/Pages do unmute the radio for the alert tone; also, when Voice Mute is active, the radio does unmute to individual radio-to-radio calls such as Selective/Private Calls and Interconnect (phone mode) calls.

4.8.1.11.64

Volume Down

This button-press allows you to decrease the volume of the radio.



This feature is available while operating in Conventional or Trunking communications mode.

 **IMPORTANT:** When selecting Volume Up for the Up Button of the APX™ 3000 Portable's multi-function Side Arrow buttons, the Down Button feature is automatically set to this feature and is view-only. Therefore, for the Side Arrow buttons only the Up Button feature can be modified in the CPS.

4.8.1.11.65

Volume Set Tone

This button-press causes one-or-the-other of the following radio behaviors.



When the [Volume Adjust Tone Offset on page 327](#) field is **Disabled**, this button-press allows you to sample the radio's current volume level for incoming transmissions unmuting to the radio's speaker. When this button is pressed, the tone sounds at the radio's current setting for as long as the button is held; as you adjust the volume, the tone's audio level is simultaneously adjusted.

Or When the Volume Adjust Tone Offset field is **Enabled**, this button-press allows you to sample the volume level of the radio's alert tones. The radio's alert tone volume can vary from the radio's current volume setting for incoming transmissions based-on the Radio Wide, [Volume Offset \(dB\) on page 824](#) setting. Therefore, when this button is pressed, a tone sounds at the radio's current volume level for incoming transmissions (plus or minus the Volume Offset (dB) amount) for as long as the button is held; as you adjusts the volume, the tone's audio level is simultaneously adjusted.

This Volume Set Tone follows the Volume Offset (dB) amount, as long as the tone does not go below the [Minimum Volume on page 824](#) setting.

4.8.1.11.66

Volume Up

This button-press allows you to increase the volume of the radio.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: When selecting this feature for the Up Button of the APX™ 3000 Portable's multi-function Side Arrow buttons, the Down Button feature is automatically set to **Volume Down** and is view-only. Therefore, for the Side Arrow buttons only the Up Button feature can be modified.

4.8.1.11.67

Wi-Fi On/Off

This button-press allows you to activate and deactivate Wi-Fi capability.



This feature is available while operating in Conventional or Trunking communications mode.

4.8.1.11.68

Zone Bank Down

This button-press allows you to move-down (scroll in descending order) through the radio's Zone Banks.



When the Zone Bank Operations field is set to **Enhanced**, faster scrolling (in ascending order) is possible with a [Long Keypress Duration on page 432](#) of the button.

 **NOTE:** The [Zone Bank Up on page 498](#) programmable button allows you to move-up (scroll in ascending order) through the radio's Zone Banks. This feature is available while operating in Conventional or Trunking communications mode.

 **IMPORTANT:** When assigning Zone Bank Up or Zone Bank Down to a programmable button, [Zone Select on page 513](#) is automatically assigned to the Three Position A/B/C Toggle switch.

The Rotary may then only be set to the [Channel Select on page 509](#) selection. Only 16 channels are possible per zone when using the Rotary as the channel selector.

4.8.1.11.69

Zone Bank Up

This button-press allows you to move-up (scroll in ascending order) through the radio's Zone Banks.



When the Zone Bank Operations field is set to **Enhanced**, faster scrolling (in ascending order) is possible with a [Long Keypress Duration on page 432](#) of the button.

 **NOTE:** The [Zone Bank Down on page 497](#) programmable button allows you to move-down (scroll in descending order) through the radio's Zone Banks. This feature is available while operating in Conventional or Trunking communications mode.

 **IMPORTANT:** When assigning Zone Bank Up or Zone Bank Down to a programmable button, [Zone Select on page 513](#) is automatically assigned to the Three Position A/B/C Toggle switch.

The Rotary may then only be set to the [Channel Select on page 509](#) selection. Only 16 channels are possible per zone when using the Rotary as the channel selector.

4.8.1.11.70

Zone Down

This button-press allows you to scroll downward through the Zones in the radio.

Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the first Zone in the list, continued scrolling causes the list to wrap around to the last Zone. Zones are defined in the Zone Channel Assignment Window.

 **NOTE:** In certain Portable radios, Zones may also be grouped into Zone Banks, where individual banks can be selected with a [Zone Bank Up on page 498](#) or [Zone Bank Down on page 497](#) button-press.

4.8.1.11.71

Zone Up

This button-press allows you to scroll upward through the Zones in the radio.

Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the last Zone in the list, continued scrolling causes the list to wrap around to the first Zone. Zones are defined in the Zone Channel Assignment Window's Zone Page. This feature is available while operating in Conventional or Trunking communications mode.

 **NOTE:** In certain Portable radios, Zones may also be grouped into Zone Banks, where individual banks can be selected with a [Zone Bank Up on page 498](#) or [Zone Bank Down on page 497](#) button-press.

4.8.1.11.72

ViQi: Voice Control

This button allows access to the Voice Control and the Virtual Partner feature.

When the radio is not in the Virtual Partner feature, all presses of this button will activate the Voice Control feature. When the user enters the Virtual Partner feature through a Voice Control command, the subsequent presses of the button will apply only to the Virtual Partner feature. Once Virtual partner session is over, this button will apply to Voice Control.

This feature is available for Conventional or Trunking communications mode.

Accessed Only: When the radio is model/option capable.

4.8.1.11.73

ViQi: Virtual Partner

This button allows access to the Virtual Partner feature.

4.8.1.12

Side Arrow Button (Primary)

Selects the Primary function for APX™ 3000 Portable's Multi-Function Side Up/Down Arrow Button.



IMPORTANT: When the Up Button is configured for an Up-function (for example, **Zone Up**), the RM automatically configures the Down Button to the corresponding Down-function (in this case, **Zone Down**). Therefore, only the Up Button feature can be modified in the RM. These selections apply to Conventional and Trunking communications modes.



WARNING:

For dual-function operation: Provided the Primary and Secondary functions are not the same, any Primary function in combination with any Secondary function is considered valid.

For single-function operation: Any Primary function in combination with **Blank** as the Secondary function is considered valid.

See [Side Arrow Button Selections on page 500](#) for a list of supported selections.

4.8.1.13

Side Arrow Button (Secondary)

Selects the Primary and Secondary functions assigned to the APX™ 3000 Portable's Multi-Function Side Up/Down Arrow buttons.



IMPORTANT: When the "Up Button" is configured for an Up-function (for example, "Zone Up"), the application automatically configures the "Down Button" to the corresponding Down-function (in this case, "Zone Down"). Therefore, only the Up Button feature can be modified. These selections apply to Conventional and Trunking communications modes.



WARNING:
For dual-function operation:

Provided the Primary and Secondary functions are not the same, any Primary function in combination with any Secondary function is considered valid.

For dual-function operation:

Any Primary function in combination with **Blank** as the Secondary function is considered valid.

See [Side Arrow Button Selections on page 500](#) for a list of supported selections.

4.8.1.14

Side Arrow Button Selections

Button Selections	Selections available to you
Blank on page 483	Intended for functions that are not in use. WARNING: Blank is not a valid selection for the Primary function.
Channel Up on page 485	When selected, always available to you, and therefore not dependent on any feature or selection.
Volume Up on page 497	When selected, always available to you, and therefore not dependent on any feature or selection.
Zone Up on page 498	When selected, always available to you, and therefore not dependent on any feature or selection.

4.8.1.14.1

Blank

Select this feature for a radio button that is not in use.

You will hear a chirp tone when pressing this button. This feature is available for Conventional or Trunking communications mode.

4.8.1.14.2

Channel Up

This button-press on the APX™ 3000 Portable allows you to scroll upward through the channels in the radio.



Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the last channel in the list, continued scrolling causes the list to wrap around to the first channel. Channels are defined in the Zone Channel Assignment Window's Channels Page.

4.8.1.14.3

Volume Up

This button-press allows you to increase the volume of the radio.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: When selecting this feature for the Up Button of the APX™ 3000 Portable's multi-function Side Arrow buttons, the Down Button feature is automatically set to **Volume Down** and is view-only. Therefore, for the Side Arrow buttons only the Up Button feature can be modified.

4.8.1.14.4

Zone Up

This button-press allows you to scroll upward through the Zones in the radio.

Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the last Zone in the list, continued scrolling causes the list to wrap around to the first Zone. Zones are defined in the Zone Channel Assignment Window's Zone Page. This feature is available while operating in Conventional or Trunking communications mode.



NOTE: In certain Portable radios, Zones may also be grouped into Zone Banks, where individual banks can be selected with a [Zone Bank Up on page 498](#) or [Zone Bank Down on page 497](#) button-press.

4.8.2

Switches

This section allows you to assign functionality to the radio Rotary, Toggle, Multi-Function, and Concentric switches.



The Rotary and Multi-Function Knob (MFK) assignment apply while the radio is operating in Conventional or Trunking communications mode. For the radio's Toggle and Concentric switches, there are separate selections for Conventional and Trunking modes.



NOTE: These selections are model/option dependent on a per-radio basis.

4.8.2.1

Rotary Control Feature

This field allows you to select the function of the Rotary Switch for Conventional and Trunking communications mode.



WARNING: You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This can cause incorrect radio operation.

The following selections are supported:

Blank on page 509

(Intended for controls that are not in use.)

Channel/Sub Select (Channel Select on page 509)

When the radio is model/option capable.



WARNING: This selection cannot be set concurrently on the Rotary Switch, Concentric Switches, and Toggle Switch.

Zone/Sys Select (Zone Select on page 513)

When the radio is model/option capable.



WARNING: This selection cannot be set concurrently on the Rotary Switch, Concentric Switches, and Toggle Switch.

This is not a valid selection when [Zone Bank Up on page 498](#) or, [Zone Bank Down on page 497](#) is set on a programmable button.



NOTE: These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes.

4.8.2.2

Concentric Switch Position A (Conventional)

This selection allows you to assign functionality to the Portable radio's Toggle and Concentric switches.



These assignments can be selected for the Conventional and Trunking communications mode.



WARNING: You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This can cause incorrect radio operation.

See [Switch Selections on page 505](#) for a list of supported selections.



NOTE: These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes (except where noted).

4.8.2.3

Concentric Switch Position B (Conventional)



These assignments can be selected for the Conventional and Trunking communications mode.



WARNING: You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This can cause incorrect radio operation.

See [Switch Selections on page 505](#) for a list of supported selections.



NOTE: These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes (except where noted).

4.8.2.4

Toggle Switch Position A (Conventional)

This selection allows you to assign functionality to the Portable radio's Toggle and Concentric switches.



These assignments can be selected for the Conventional and Trunking communications mode.

WARNING: You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This can cause incorrect radio operation.

See [Switch Selections on page 505](#) for a list of supported selections.

NOTE: These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes (except where noted).

4.8.2.5

Toggle Switch Position B (Conventional)

This selection allows you to assign functionality to the Portable radio's Toggle and Concentric switches.



These assignments can be selected for the Conventional and Trunking communications mode.

WARNING: You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This can cause incorrect radio operation.

See [Switch Selections on page 505](#) for a list of supported selections.

NOTE: These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes (except where noted).

4.8.2.6

Toggle Switch Position C (Conventional)

This selection allows you to assign functionality to the Portable radio's Toggle and Concentric switches.



These assignments can be selected for the Conventional and Trunking communications mode.

WARNING: You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This can cause incorrect radio operation.

See [Switch Selections on page 505](#) for a list of supported selections.

NOTE: These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes (except where noted).

4.8.2.7

Concentric Switch Position A (Trunking)

This selection allows you to assign functionality to the Portable radio's Toggle and Concentric switches.



These assignments can be selected for the Conventional and Trunking communications mode.



WARNING: You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This can cause incorrect radio operation.

See [Switch Selections on page 505](#) for a list of supported selections.



NOTE: These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes (except where noted).

4.8.2.8

Concentric Switch Position B (Trunking)

This selection allows you to assign functionality to the Portable radio's Toggle and Concentric switches.



These assignments can be selected for the Conventional and/or Trunking communications mode.



WARNING: You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This can cause incorrect radio operation.

See [Switch Selections on page 505](#) for a list of supported selections.



NOTE: These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes (except where noted).

4.8.2.9

Toggle Switch Position A (Trunking)

This selection allows you to assign functionality to the Portable radio's Toggle and Concentric switches.



These assignments can be selected for the Conventional and Trunking communications mode.



WARNING: You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This can cause incorrect radio operation.

See [Switch Selections on page 505](#) for a list of supported selections.



NOTE: These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes (except where noted).

4.8.2.10

Toggle Switch Position B (Trunking)

This selection allows you to assign functionality to the Portable radio's Toggle and Concentric switches.



These assignments can be selected for the Conventional and Trunking communications mode.



WARNING: You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This can cause incorrect radio operation.

See [Switch Selections on page 505](#) for a list of supported selections.

 **NOTE:** These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes (except where noted).

4.8.2.11
Toggle Switch Position C (Trunking)

This selection allows you to assign functionality to the Portable radio's Toggle and Concentric switches.



These assignments can be selected for the Conventional and Trunking communications mode.

 **WARNING:** You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This can cause incorrect radio operation.

See [Switch Selections on page 505](#) for a list of supported selections.

 **NOTE:** These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes (except where noted).

4.8.2.12
Switch Selections

This field lists the switch selections and when the selections are available to the users.

Switch Selections:	This selection is only valid in the application, and/or available to the user:
Blank on page 509	(Intended for controls that are not in use.)
Channel Select on page 509	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p> <p> WARNING: This selection cannot be set concurrently on the Rotary Switch, Concentric Switch, and Toggle Switch.</p> <p>This selection must be assigned for both Conventional and Trunking communications modes and for all positions of the chosen switch.</p> <p>This is not a valid selection for the Two Position or Three Position Toggle switch, or on the concentric switch when Zone Bank Up on page 498 or Zone Bank Down on page 497 is set on a programmable button.</p> <p> IMPORTANT: When Conventional Concentric Switch Position A is set to Channel Select, the Conventional Concentric Switch Position B and the Trunking Concentric Switch Position A and Position B are automatically set to Channel Select and become view-only. Therefore, only Conventional Concentric Switch Position A can then be modified.</p> <p>When Conventional Toggle Switch Position A is set to Channel Select, the Conventional Toggle Switch Position B and Position C and the Trunking Toggle Switch Position A, Position B, and Position C are automatically set to Channel Select and become view-only. Therefore, only Conventional Toggle Switch Position A can then be modified.</p>

Switch Selections:	This selection is only valid in the application, and/or available to the user:
<p>Clear Tx Select on page 510</p>	<p> NOTE: This selection is only available from the Conventional or Trunking Concentric Position B field.</p> <p> Conv. When any one of the Conventional Secure/Clear Strapping fields is set to Select for the radio's current channel.</p> <p> Trunk. When any one of the Trunking Secure/Clear Strapping fields is set to Select for the radio's current channel.</p> <p> WARNING: This selection is only valid for Conventional and Trunking Concentric Switch Position B. Secure Tx Select must be selected on Conventional and Trunking Concentric Switch Position A for this selection to be valid.</p> <p> IMPORTANT: When Secure Tx Select is selected on the Conventional Concentric Switch Position A, the Trunking Concentric Switch Position A is automatically set to Secure Tx Select and becomes view-only and the Conventional and Trunking Concentric Switch Position B are automatically set to Clear Tx Select and also become view-only. Therefore, only Conventional Concentric Switch Position A can then be modified.</p> <p> WARNING: This must be configured this way in order for Secure communication to occur.</p>
<p>Keypad/Controls Lock on page 510</p>	<p>When the Radio Ergonomics Wide, Rotary Switch Lock Enable on page 440 field is Enabled (all models), or when the Radio Ergonomics Wide, Side and Speaker Grille Buttons Lock Enable on page 441 field is Enabled (all models), or when the radio has a keypad (model-specific).</p> <p> WARNING: This selection must not be set concurrently on both Position A and Position B of the Concentric Switch, or on all positions of the Toggle Switch; otherwise, you are unable to operate the Buttons, Menu Items, and Rotary Knob.</p>
<p>Mute on page 510</p>	<p> NOTE: Concentric Switches only.</p> <p>When the Radio Wide, Enhanced Mute Tones Operation on page 328 field is not Disabled.</p>
<p>PL Disable on page 511</p>	<p>When operating in Conventional communications mode.</p>
<p>Scan on page 511</p>	<p> Conv. When the Scan Type on page 1306 is not set to Voting Scan, and when the Conventional Personality, Scan List Selection on page 1153 field is not set to None, and when the Conventional Personality, Automatic Scan on page 1155 field is Disabled for the radio's current channel.</p>

Switch Selections:	This selection is only valid in the application, and/or available to the user:
	<p> When the Trunking Personality, Scan List Selection on page 1260 field is not set to None, and when the Trunking Personality, Automatic Scan on page 1261 field is Disabled for the radio's current channel.</p> <p> WARNING: This selection cannot be programmed concurrently on Buttons, Switches, and Menu Items. However, it can be set concurrently on Portable and Accessory Buttons.</p> <p> IMPORTANT: This selection can be set on the Conventional Concentric Switch (one position only) or the Conventional Toggle Switch (two positions maximum) but not both. The same constraint applies to Trunking switches.</p> <p>This selection can be set concurrently on the Conventional and Trunking Concentric and/or Toggle Switches, noting the previous constraint.</p>
Scan List Programming on page 511	<p> When the Conventional Personality, Scan List Selection on page 1153 field is not set to None for the radio's current channel.</p> <p> When the Trunking Personality, Scan List Selection on page 1260 field is not set to None for the radio's current channel.</p>
Secure Tx Select on page 511	<p> NOTE: This selection is only available from the Conventional or Trunking Concentric Position A field.</p> <p> This selection is only valid for Conventional and Trunking Concentric Switch Position A.</p> <p> When any one of the Trunking Secure/Clear Strapping fields is set to Select for the radio's current channel.</p> <p> WARNING: This selection is only valid for Conventional and Trunking Concentric Switch Position A.</p> <p> IMPORTANT: When Secure Tx Select is selected on the Conventional Concentric Switch Position A, the Trunking Concentric Switch Position A is automatically set to Secure Tx Select and becomes view-only and the Conventional and Trunking Concentric Switch Position B are automatically set to Clear Tx Select and also become view-only. Therefore only Conventional Concentric Switch Position A can then be modified.</p> <p> WARNING: This must be configured this way in order for Secure communication to occur.</p>
Talkaround/Direct on page 511	<p>When operating in Conventional communications mode, and when the Conventional Personality, Direct/Talkaround on page 1132 field is Enabled for the radio's current channel.</p> <p> WARNING: This selection cannot be set concurrently on Buttons, Switches and Menu Items; however, it can be set concurrently on Portable and Accessory Buttons.</p> <p>This selection can only be set on one switch.</p>

Switch Selections:	This selection is only valid in the application, and/or available to the user:
Tx Inhibit on page 512	<p> NOTE: This selection is only available from the Conventional or Trunking Concentric Position A field.</p> <p> IMPORTANT: When Tx Inhibit is selected on Conventional Concentric Switch Position A, the Trunking Concentric Switch Position A is automatically set to Tx Inhibit and becomes view-only. Conventional and Trunking Concentric Switch Position B are automatically set to Tx Inhibit Disabled and also become view-only. Therefore, only Conventional Concentric Switch Position A can then be modified.</p> <p> WARNING: This selection cannot be set concurrently with the Tx Inhibit on page 540 Menu Item.</p>
Tx Inhibit Disabled on page 512	<p> NOTE: This selection is only available from the Conventional or Trunking Concentric Position B field.</p> <p> IMPORTANT: When Tx Inhibit is selected on switch Position A only (for Conventional or Trunking switch selections), the other switch Position A (Conventional or Trunking) is automatically set to Tx Inhibit and becomes read-only. All other switch positions for that switch are automatically set to Tx Inhibit Disabled and also become read-only. Therefore, only Position A can then be modified.</p> <p> WARNING: Tx Inhibit must be selected on Conventional and Trunking Position A for this selection to be valid.</p> <p>This selection cannot be set concurrently with the Tx Inhibit on page 540 Menu Item.</p> <p> IMPORTANT: When Tx Inhibit is selected on Conventional Concentric Switch Position A, the Trunking Concentric Switch Position A is automatically set to Tx Inhibit and becomes view-only. Conventional and Trunking Concentric Switch Position B are automatically set to Tx Inhibit Disabled and also become view-only. Therefore, only Conventional Concentric Switch Position A can then be modified.</p>
Tx Low Power on page 512	<p>When selected, always available to you, and therefore not dependent on any RM feature or selection.</p>
Unprogrammed on page 512	<p>(Intended for controls that are not in use.)</p>

Switch Selections:	This selection is only valid in the application, and/or available to the user:
Zone Select on page 513	<p>When selected, always available to you, and therefore not dependent on any RM feature or selection.</p> <p> WARNING: This selection must be set for both Conventional and Trunking communications modes and for all positions of the selected switch.</p> <p>This selection cannot be set concurrently on the Rotary Switch, Concentric Switch and Toggle Switch.</p> <p>This is not a valid selection for the Concentric Switch when Zone Bank Up on page 498 or Zone Bank Down on page 497 is set on a Button.</p> <p> IMPORTANT: When assigning Zone Bank Up or Zone Bank Down to a programmable button, Zone Select is automatically assigned to the three Position A/B/C Toggle switch.</p> <p>When Conventional Concentric Switch Position A is set to Zone Select, the Trunking Concentric Switch Position A and Position B and the Conventional Concentric Switch Position B are automatically set to Zone Select and become view-only. Therefore, only Conventional Concentric Switch Position A can then be modified.</p> <p>When Conventional Toggle Switch Position A is set to Zone Select, the Trunking Toggle Switch Position A, Position B, and Position C and the Conventional Toggle Switch Position B and Position C are automatically set to Zone Select and become view-only. Therefore, only Conventional Toggle Switch Position A can then be modified.</p>
Volume Select on page 513	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>

4.8.2.12.1

Blank

Select this feature for a rotary, concentric or toggle switch, or Multi-Function Knob (MFK) function, that is not in use.



This feature is available for Conventional or Trunking communications mode.

4.8.2.12.2

Channel Select

This Rotary/switch-toggle or Multi-Function Knob (MFK) selection allows you to change the radio's channel.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

When defined for a Rotary switch, only the first 16 channels (see the Channels Page) defined for each zone are available on the Rotary.

When defined for a Two Position or Three Position Switch, only the first two or the first three channels (see the Channels Page) defined for each zone are available on the switch.

When selected for a Two Position or Three Position Switch, it must be selected for Conventional and Trunking and for all positions of that switch.

This selection may only be set to the radio's Rotary switch when either **Zone Bank Up** or **Zone Bank Down** is set to a programmable button. Only 16 channels are possible per zone when using the Rotary switch as the channel selector.

When selected as the Primary Function for an MFK, **Volume Select** must be selected as the Secondary Function in order to be considered valid.

4.8.2.12.3

Clear Tx Select

This switch-toggle allows you to disable secure transmissions.



This feature is available while operating in Conventional or Trunking communications mode.

4.8.2.12.4

Keypad/Controls Lock

This switch-toggle allows you to lock (or unlock) the radio's keypad (when available).



Additional control-locking functionality is possible (for all models) when the Rotary Switch Lock Enable field and/or Side Buttons Lock Enable field is **Enabled** (see Important Note). This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

When Rotary Switch Lock Enable is **Enabled**, this feature also locks in the radio's currently operating channel even when the rotary switch is moved to another position.

When Side Button Lock Enable is **Enabled**, this feature also locks the radio's Side Top, Side Middle, and Side Bottom buttons.

4.8.2.12.5

Mute

This switch-toggle allows you to enable or disable certain radio tones (for example, the keypad tones), as configured by the Enhanced Mute Tones Operation selection.



This feature is available for Conventional or Trunking communications mode.

4.8.2.12.6

PL Disable

This switch-toggle allows you to disable PL/DPL carrier squelch.



This feature is available while operating in Conventional communications mode.

4.8.2.12.7

Scan

This switch-toggle allows you to select Scan Lists and toggle Scan Mode on and off while operating in Conventional or Trunking communications mode.



4.8.2.12.8

Scan List Programming

This switch-toggle places the radio in a **Scan List Edit** mode.



While in this edit mode, you are able to add or remove individual Scan List members in the Scan List and modify the scan priority of any member. Over-the-Air communications are not possible when in this Scan List Edit Mode. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: The radio's Top Side Button automatically becomes the designated Select button while editing a scan list channel. This is only true while the radio is operating in this Scan List Programming mode.

4.8.2.12.9

Secure Tx Select

This switch-toggle allows you to choose secure encrypted (or clear) transmissions.



This feature is available while operating in Conventional or Trunking communications mode.

4.8.2.12.10

Talkaround/Direct

This switch-toggle allows you to enable or disable the Direct/Talkaround mode for the current channel options profile.



This feature is available while operating in Conventional communications mode.

4.8.2.12.11

Tx Inhibit

This switch-toggle allows you to disable all radio transmissions while operating in Conventional or Trunking communications mode.



IMPORTANT: This action may be necessary when entering hazardous environments with high sensitivity to RF fields, where a radio transmission could initiate an explosion or other dangerous reaction.



NOTE:

If you attempt to key up the radio while Tx Inhibit is **Enabled**, the radio generates a long, low-pitched Talk Prohibit Tone, indicating that transmissions are currently not allow.

4.8.2.12.12

Tx Inhibit Disabled

This switch-toggle allows you to enable all radio transmissions while operating in Conventional or Trunking communications mode.



4.8.2.12.13

Tx Low Power

This switch-toggle allows you to change the radio's transmission power from low to high and back on a radio-wide basis.



Once initiated, this Low Power setting takes precedence over all individual Conventional Personality [Transmit Power Level on page 1101](#) and Trunking System [TX Power Level on page 1211](#) settings. The radio's power setting will also change to high power on a radio-wide basis when the switch is move to another programmed selection. Powering off and back-on the radio resets all of the radio's channels to their programmed power setting.

4.8.2.12.14

Unprogrammed

Select this feature for a toggle switch that is not in use.



This feature is available while operating in Conventional or Trunking communications mode.

4.8.2.12.15

Zone Select

This Rotary/switch-toggle or Multi-Function Knob (MFK) selection allows you to select a Zone.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

When defined for a switch, only the first two or the first three zones defined in Zone Channel Assignment are available on the switch. See also Zone Bank, Zone Bank Up and Zone Bank Down.

When selected for a Two Position or Three Position Switch, it must be selected for Conventional and Trunking and for all positions of that switch.

This selection is automatically set to the radio's Three Position A/B/C Toggle switch when either **Zone Bank Up** or **Zone Bank Down** is set to a programmable button. See also the Zone Bank Keystone Concept.

When selected as the Primary Function for an MFK, **Volume Select** must be selected as the Secondary Function in order to be considered valid.

4.8.2.12.16

Volume Select

This Multi-Function Knob (MFK) selection allows you to change the radio's volume.



This feature is available while operating in Conventional or Trunking communications mode.



WARNING:

For dual-function operation:

- If the MFK's Primary Function is assigned with either **Zone Select** or **Channel Select**, then the Secondary Function must be assigned with **Volume Select** in order to be considered valid.
- If the MFK's Primary Function is assigned with **Volume Select**, then the Secondary Function must be assigned with either **Zone Select** or **Channel Select** in order to be considered valid.

For single-function operation: You must select **Volume Select** as the Primary function and **Blank** as the Secondary function in order to be considered valid.

4.8.3

Menu Items

The **Menu Items** section allows you to view or choose the selections that define menu functionality or features available in the radio's display.

Radio menu functionality is defined and operates separately for each of the two radio communications modes, Conventional and Trunking. That is, when the radio is operating on a Conventional channel, only

the selected Conventional features are available to you. Likewise, when the radio is operating on a Trunking channel, only the selected Trunking features are available.



IMPORTANT:

Certain Menu Item selections are automatically removed from the **Selected** Menu Item column if the selection is duplicated in the Button Selections or Switch Selections; however, certain Menu Item selections may be duplicated to accommodate your preference or convenience.

The APX™ 1000 1.5, APX™ 2000 1.5, and APX™ 4000Li 1.5 Portable models support a maximum of three (3) menu soft key selections (the normal limit is 24). When modifying these models' codeplugs in the application, if you attempt to select more than three menu items, the **Selected** field will become invalid.



NOTE: Some selections are model/option dependent on a per radio basis.

4.8.3.1

Conventional Selected Menu Items

This field allows you to select available features to be displayed in the radio menu.

At the **Available** column, you can select features that appear on the radio display while operating in Conventional communication mode.

Clicking the **Add** or **Remove** button allows you to add or remove the selected menu items to or from the **Selected** column. The selected features are available to you for use.

Refer to [Menu Item Selections on page 515](#) for information on each menu item.



IMPORTANT:

Certain menu item selections are automatically removed from the **Selected** column if the selection is duplicated in the Button Selections or Switch Selections. However, certain menu item selections can be duplicated to accommodate your preference or convenience.

The APX™ 1000 1.5, APX™ 2000 1.5, and APX™ 4000Li 1.5 Portable models support a maximum of three (3) menu soft key selections (the normal limit is 24). When modifying the codeplugs of these models, if you attempt to select more than three menu items, the **Selected** column becomes invalid.



NOTE: The **Selected** column must have at least one menu item.

4.8.3.2

Trunking Selected Menu Items

This field allows you to select available features to be displayed in the radio menu.

At the **Available** column, you can select features that appear on the radio display while operating in Trunking communication mode.

Clicking the **Add** or **Remove** button allows you to add or remove the selected menu items to or from the **Selected** column. The selected features are available to you for use.

Refer to [Menu Item Selections on page 515](#) for information on each menu item.



IMPORTANT:

Certain menu item selections are automatically removed from the **Selected** column if the selection is duplicated in the Button Selections or Switch Selections. However, certain menu item selections can be duplicated to accommodate your preference or convenience.

The APX™ 1000 1.5, APX™ 2000 1.5, and APX™ 4000Li 1.5 Portable models support a maximum of three (3) menu soft key selections (the normal limit is 24). When modifying the codeplugs of these models, if you attempt to select more than three menu items, the **Selected** column becomes invalid.



NOTE: The **Selected** column must have at least one menu item.

4.8.3.3

Menu Item Selections

This section contains the functions of menu item selections while operating in Conventional or Trunking communication mode, as noted in the following table.

Table 98: Legend for Menu Item Selection Symbols

Symbol	Description
	Conventional Mode
	Trunking Mode
	Conventional and Trunking Mode
	Portable Radios
	Mobile Radios
	Portable and Mobile Radios

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Auto Login on page 525 (LOGF) 	When the Radio Wide, Radio Lock Enable on page 334 field is Enabled , and when the Radio Wide, Secure Hardware Auto Login on page 341 field is Enabled , and when Hardware is the selected Secure Operation on page 880 .	
Aux Control on page 525 (AUX1-AUX3) 	When the VIP Output Selections are set to an Aux Control . See Aux Control (1-3) on page 589 .	
Battery on page 525 (BATT) 	When selected, always available to you, and therefore not dependent on any RM feature or selection.	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Bluetooth on page 525 (BT) <input type="checkbox"/> C & T	When the Bluetooth Enable on page 396 field is Enabled .	<input type="checkbox"/> P & M
Bluetooth Discoverable On/Off on page 525 (BT/D) <input type="checkbox"/> C & T	When the Bluetooth Enable on page 396 field is Enabled , and when the radio is not LTE-capable.	<input type="checkbox"/> Portable
Bluetooth Inquiry On/Off on page 526 (BT/I) <input type="checkbox"/> C & T	When the Bluetooth Enable on page 396 field is Enabled .	<input type="checkbox"/> Portable
Beacon on page 526 (BCON) <input type="checkbox"/> C & T	When the radio model/option capable.	<input type="checkbox"/> Portable
Select/Private Call on page 526 (CALL) <input type="checkbox"/> C & T	<input type="checkbox"/> Conv. When the Conventional Personality, ASTRO Selective Call Rx/Tx on page 1092 is set to Encode or Encode & Decode , or when the Conventional Personality, Non-ASTRO Selective Call Rx/Tx on page 1118 is set to Encode or Encode & Decode for the radio's current channel. <input type="checkbox"/> Trunk. When the Trunking Personality, Private Call Type on page 1256 is not set to Disabled for the radio's current channel.	<input type="checkbox"/> P & M
Channel Down on page 526 (CHDN) <input type="checkbox"/> C & T	When selected, always available to you, and therefore not dependent on any feature or selection.	<input type="checkbox"/> P & M
Channel Search on page 527 (CHSR) <input type="checkbox"/> C & T	When selected, always available to you, and therefore not dependent on any feature or selection.	<input type="checkbox"/> P & M
Channel Select on page 527 (CHAN) <input type="checkbox"/> C & T	When selected, always available to you, and therefore not dependent on any feature or selection.	<input type="checkbox"/> P & M
Channel Up on page 527	When selected, always available to you, and therefore not dependent on any feature or selection.	<input type="checkbox"/> P & M

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
(CHUP) 		
Clock on page 527 (CLCK) 	When the Radio Wide, Time Format on page 324 field is not set to Disabled .	
Color on page 527 (COLR) 	When selected, always available to you, and therefore not dependent on any feature or selection.  IMPORTANT: This selection is only available on the O5 Control Head. In a Multi-Control Head system, the O5 Control Head must be the selected CH for this feature to be available.  NOTE: See also the Front/Rear on page 529 selection.	
Contacts on page 528 (CNTS) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Digital Vehicular Repeater System on page 528 (DVRS) 	When the DVRS Wide, DVRS Hardware Enable on page 1019 field is Enabled .	
Direct/Talk-around on page 528 (DIR) 	When operating in Conventional communications mode, and when the Conventional Personality, Direct/Talkaround on page 1132 field is Enabled for the radio's current channel.  IMPORTANT: This selection cannot be programmed concurrently on Buttons, Switches, and Menu Items.	
Dynamic ID on page 528 (DYID) 	When operating in Conventional communications mode, and when the Conventional System, Dynamic ID Enable on page 1084 field is Enabled for the radio's current channel.	
Dynamic Priority on page 528 (DYNP) 	When Scan Mode is enabled, and when the Scan Type on page 1306 is Conventional , and when the Scan List, Dynamic Priority on page 1309 field is enabled for the radio's current landed scan channel.	
Dynamic Zone Programming on page 528 (ZNPR) 	When the Zone Channel Assignment, Dynamic Zone Enable on page 1285 field has been Enabled for one or more radio zones.	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Erase on page 529 (ERAS) 	When the Secure Wide, Secure Operation on page 880 field is set to Hardware or Software and Advanced Encrypted Standard (AES256) on page 882 is enabled.	
Front Panel Programming on page 529 (FPP) 	When Radio Wide, FPP Enable on page 344 is Enabled , and when the Zone Channel Assignment, FPP Enable on page 1287 field has been Enabled for the radio's current zone.  IMPORTANT: An FPP dongle or cloning cable must be attached to the radio.	
Front/Rear on page 529 (F/R) 	When the Radio Ergonomics Wide, Multi Control Head on page 416 field is Enabled , and when the Multiple Control Head Style on page 420 field is set to One Active .	
Horn and Lights on page 529 (H/L) 	When the Radio Ergonomics Wide, Horn and Lights on page 426 field is Enabled .	
In Car Monitor on page 529 (ICM) 	When the DVRS Wide, DVRS Hardware Enable on page 1019 field is Enabled , and when the DVRS Wide, In Car Monitor on page 1020 field is set to ICM Button/Menu Controlled .	
Information on page 530 (INFO) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Intercom on page 530 (INTC) 	When the Radio Ergonomics Wide, Multi Control Head on page 416 field is Disabled , or (when the Radio Ergonomics Wide, Multi Control Head field is Enabled , and when the Multiple Control Head Style on page 420 field is set to All Active).	
Internet Protocol Address on page 530 (IP) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Key on page 531 (KEY) 	When the Conventional Personality, Voice Voice Key Strapping on page 1110 field is set to Select for the radio's current channel.	
Keypad on page 531 (KSET) 	When the Secure Wide, Secure Operation on page 880 field is set to Hardware or Software , and Advanced Encrypted Standard (AES256) on page 882 is enabled, and Keypad - User Selectable on page 885 is enabled.	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Kill on page 531 (KILL) Conv.	When the Radio Wide, Tactical Inhibit Enable on page 337 field is Enabled , and when the Conventional Personality, Tactical Inhibit Kill Operation on page 1092 field is set to Encode or Decode & Encode , and when the radio is model/option capable.	Portable
Location on page 531 (LOC) C & T	When the Radio Wide, Location Enable on page 365 field is Enabled .	P & M
LTE on page 531 (LTE) C & T	Conv. When the Data Profile Type on page 982 of the Conventional System's referenced Data Profile is Conventional & Broadband or Broadband-Only , and when the radio is a model APX 7000L. Trunk. When the Data Profile Type of the Trunking System's referenced Data Profile is Trunking & Broadband or Broadband-Only , and when the radio is a model APX 7000L.	Portable
Message on page 532 (MSG) C & T	Conv. When the Conventional System, Message on page 1083 field is Enabled for the radio's current channel. Trunk. When the Trunking Personality, Message Enable on page 1262 Message Enable field is Enabled for the radio's current channel.	P & M
Mode Select on page 532 (MS01–MS05) C & T	When selected, always available to you, and therefore not dependent on any feature or selection.	P & M
Mode Select Preset (MSPR)	When selected, always available to you, and therefore allows you to configure Mode Select in the preset list.	P & M
External Data Modem on page 532 (MODM) C & T	This menu-selection provides you with Data Modem information and options. This field is only Enabled when the Modem Type field is not available.	P & M
Monitor on page 532 (MON) Conv.	When selected, always available to you, and therefore not dependent on any feature or selection.	Mobile
Multiple Private Line on page 533 (MPL) Conv.	When the Conventional Personality, Rx Voice/Signal Type on page 1162 field is set to Non-ASTRO or Mixed Mode , and when the Conventional Personality, User Selectable PL [MPL] on page 1142 field is Enabled for the radio's current channel.	P & M

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Mute on page 533 (MUTE) 	When the Radio Wide, Enhanced Mute Tones Operation on page 328 field is not Disabled .	
My Radio Identification (MyID) on page 533 (MYID) 	When the Radio Wide, Radio Alias field has an alias name defined.	
Nuisance Delete on page 533 (NUIS) 	When Scan Mode is Enabled .	
Page on page 534 (PAGE) 	<p> When the Conventional Personality, ASTRO Call Alert Rx/Tx on page 1095 field is set to Encode or Encode & Decode, or when the Conventional Personality, Non-ASTRO Call Alert Rx/Tx on page 1120 field is set to Encode or Encode & Decode for the radio's current channel.</p> <p> When the Trunking Personality, Call Alert/Page Operation on page 1258 field is set to List Only or Unlimited for the radio's current channel.</p>	
Password on page 534 (PSWD) 	When the Radio Wide, Radio Lock Enable on page 334 field is Enabled .	
Phone on page 534 (PHON) 	<p> When the Conventional Personality, Phone Operation on page 1165 field is not set to None for the radio's current channel.</p> <p> When the Trunking Personality, Phone Operation on page 1259 field is not set to Disabled for the radio's current channel.</p>	
Power on page 534 (PWR) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Quik Call II on page 535 (QCII) 	When selected, the QCII is initiated by pressing PTT, which transmits the tones over the radio network. <p> When the Conventional Personality, Tone Signaling List on page 1106 field is set to a specific Tone Signaling List, and when the radio is model/option capable.</p>	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
	 When the Trunking Personality, Tone Signaling List on page 1259 field is set to a specific Tone Signaling List, and when the radio is model/option capable.	
Radio Profiles on page 535 (PRFL) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Radio Swap on page 535 (SWAP) 	When the Radio Selection on page 361 field is set to Primary Radio or Secondary Radio .	
Recent Calls on page 290 (RCNT) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Rekey Request on page 535 (REKY) 	When the ASTRO OTAR Information, User Selectable Rekey Request on page 909 is not set to Disabled , or when the MDC OTAR, Rekey Request Mode on page 893 is not set to Disabled .	
Remote Emergency on page 536 (REMG) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Repeater Access Button 1 on page 536 (RAB1) 	When the Conventional Personality, Repeater Access on page 1169 field is Enabled , and when the Access Type on page 1169 is set to Manual for the radio's current channel.	
Repeater Access Button 2 on page 536 (RAB2) 	When the Conventional Personality, Repeater Access on page 1169 field is Enabled , and when the Access Type on page 1169 is set to Manual for the radio's current channel.	
Reprogram Request on page 536 (RPGM) 	When the Trunking System, System Type is ASTRO 25 , and when the Trunking System, Dynamic Regrouping Enable on page 1212 field is Enabled for the radio's current channel.	
Received Signal Strength Indicator on	When the Trunking System, Coverage Type on page 1190 is not set to Disabled for the radio's current channel.	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
page 536 (RSSI) Trunk.		
Request-To-Talk on page 537 (RTT) Conv.	When the Conventional Personality, MDC RTT Button Access on page 1119 field is set to Manual for the radio's current channel, and when that Personality is not a Receive Only Personality on page 1162 , and when Tx Inhibit is not Enabled .	Mobile
Scan on page 537 (SCAN) C & T	<p>Conv. When the Scan Type on page 1306 is not set to Voting Scan, and when the Conventional Personality, Scan List Selection on page 1153 field is not set to None, and when the Conventional Personality, Automatic Scan on page 1155 field is Disabled for the radio's current channel.</p> <p>Trunk. When the Trunking Personality, Scan List Selection on page 1260 field is not set to None, and when the Trunking Personality, Automatic Scan on page 1261 field is Disabled for the radio's current channel.</p> <p> IMPORTANT: This selection cannot be set concurrently on Buttons, Switches, and and Menu Items; however, it can be set concurrently on Portable and Accessory Buttons.</p>	P & M
Scan List on page 537 (SCNL) C & T	<p>Conv. When the Conventional Personality, Scan List Selection on page 1153 field is not set to None for the radio's current channel.</p> <p>Trunk. When the Trunking Personality, Scan List Selection on page 1260 field is not set to None for the radio's current channel.</p>	Portable
Secure on page 537 (SEC) C & T	<p>Conv. When any one of the Conventional Secure/Clear Strapping fields is set to Select for the radio's current channel.</p> <p>Trunk. When any one of the Trunking Secure/Clear Strapping fields is set to Select for the radio's current channel.</p>	Mobile
Sensor on page 537 (SEN) C & T	When the radio is model/option capable.	Portable
One Touch (SIG1-SIG4/DISP) on page 538 C & T	<p>Conv. When at least one of the Conventional Personality, One Touch Button One Touch Button Feature on page 1167 is not set to Disabled for the radio's current channel.</p> <p>Trunk. When at least one of the Trunking System, One Touch Button One Touch Button Feature on page 1234 is not set to Disabled for the radio's current channel.</p>	Mobile

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Site on page 538 (SITE) 	When the Trunking System, Site Alias Enable on page 1222 field is Enabled for the radio's current channel.	
Site Selectable Alerts on page 538 (SSA) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Squelch Fine Tune on page 538 (SQL) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Status on page 539 (STS) 	 When the Conventional System Status on page 1081 field is Enabled for the radio's current channel.  When the Trunking Personality Status Enable on page 1262 field is Enabled for the radio's current channel.	
Stun on page 539 (STUN) 	When the Radio Wide, Tactical Inhibit Enable on page 337 field is Enabled , when the Conventional Personality, Tactical Inhibit Stun Operation on page 1094 field is set to Encode or Decode & Encode , and when the radio is model/option capable.	
Tactical Services on page 539 (SVCS) 	When the Tactical Services Operation on page 1097 field is set to Encode or Decode & Encode . When the radio is model or option capable.	
Talkgroup on page 539 (TGRP) 	When the Conventional Personality, ASTRO Talkgroup Selection Type on page 1099 field is set to Selectable for the radio's current channel.	
One Touch (TCH1–TCH4) on page 540 	 When at least one of the Conventional Personality, One Touch Button One Touch Button Feature on page 1167 is not set to Disabled for the radio's current channel.	
One Touch (TCH1–TCH16) on page 729 	 When at least one of the Trunking System, One Touch Button One Touch Button Feature on page 1234 is not set to Disabled for the radio's current channel.	
Text Messaging Service on page 540	 When the Conventional System, Text Messaging Service on page 1080 field is set to List Only or Unlimited , and when that Sys-	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
(TMS) 	tem's Data Profile Selection on page 1059 is not set to Data Disabled for the radio's current channel.  When the Trunking System, Text Messaging Service on page 1210 field is set to List Only or Unlimited , and when that System's Data Profile Selection on page 1195 is not set to Data Disabled for the radio's current channel.	
Tx Inhibit on page 540 (TxIN) 	For a Mobile codeplug: when the Radio Selection on page 361 field is not set to Secondary Radio , or when the Enable Secondary Radio Tx on page 363 field is Enabled .  IMPORTANT: For a Portable codeplug: this selection cannot be set concurrently with a Tx Inhibit on page 512 Switch selection.	
User on page 540 (USER) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Voice Mute on page 305 (VMUT) 	 When the Conventional Personality, ASTRO Call, In-Call User Alert Enable on page 1096 field is Enabled for the radio's current channel, or when the Conventional Personality, Non-ASTRO Call In-Call User Alert Enable on page 1121 field is Enabled for the radio's current channel. When the Trunking Personality, In-Call User Alert Enable on page 1257 field is Enabled for the radio's current channel.	
Wi-Fi On/Off on page 497 (WIFI) 	This menu-selection provides you with Wi-Fi information and options. This field is only enabled when the Wi-Fi Enable on page 968 field is Enabled .	
Zone Cloning (CLON) on page 541 	This menu item selection allows you to duplicate zones from one radio to another radio without using the application.	
Zone Down on page 541 (ZNDN) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Zone Select on page 541 (ZONE) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Zone Up on page 541 (ZNUP) 	When selected, always available to you, and therefore not dependent on any feature or selection.	

4.8.3.3.1

Auto Login

This menu-selection allows you to either enter or by-pass the Radio Lock password on radios that have secure hardware encryption enabled.

This feature applies while operating in Conventional or Trunking communications mode.

4.8.3.3.2

Aux Control

These three menu-selections allow you to individually activate and deactivate radio Vehicular Interface Port (VIP) Outputs that are set to an **Aux Control** (See Aux Control 1-3).



The VIP Output is activated for the duration determined by the [Active Duration on page 445](#) field. See Also The Auxiliary Control Page fields. This feature is available for Conventional or Trunking communications mode.



IMPORTANT:

An **Aux Control** VIP Output may also be triggered when the radio has decoded a Tone Signaling tone or tone pair and [External Control on page 852](#) is not set to **None**.

The [Consolette on page 255](#) also uses Auxiliary Control features.

4.8.3.3.3

Battery

This menu-selection allows you to check the battery power level while operating in Conventional or Trunking communications mode.



4.8.3.3.4

Bluetooth

This menu-selection provides you with a list of Bluetooth status/information and Bluetooth options.

This feature is available while operating in Conventional or Trunking communications mode.

Bluetooth Configuration features include:

Bluetooth Status

Allows you to turn On and Off Bluetooth radio to Bluetooth device functionality.

Device Active

Allows you to view a list of all currently active (paired) Bluetooth devices.

Bluetooth Speaker

Allows you to turn On and Off a Bluetooth device's speaker.

4.8.3.3.5

Bluetooth Discoverable On/Off

This menu-selection allows you to activate or deactivate Bluetooth discoverable mode.



When activated, the radio listens for inquiry requests coming from other Bluetooth devices within its range, and responds with its address, name, and all the necessary information required for pairing and connection. Provided you do not deactivate discoverable mode and it remains activated for the duration specified in the [Bluetooth Radio Visibility Duration on page 400](#) field.

This feature is available while operating in Conventional or Trunking communications mode.

4.8.3.3.6

Bluetooth Inquiry On/Off

This menu-selection allows you to activate or deactivate Bluetooth Inquiry mode.



When activated, the radio sends out inquiry requests in search of all Bluetooth devices within its range (called "access points"). Provided you do not deactivate Inquiry mode and it remains activated for the duration specified in the [Bluetooth Device Search Duration on page 399](#) field.

This feature is available while operating in Conventional or Trunking communications mode.

4.8.3.3.7

Beacon

This menu-selection allows you to check the details of any recently received Emergency beacons.



This feature is available for Conventional or Trunking communications mode.

4.8.3.3.8

Select/Private Call

This menu-selection allows you to transmit a Conventional - Selective Call or a Trunking - Private Call.

You must select the required Contact/Call ID and then press the PTT button to initiate the Call.

Select Calls and Private Calls are typically used when the majority of transmissions are between you and a dispatcher, or a group of users.

You can directly enter or select targeted Calls based on the Call ID from the channel's Call Hot List. Select Calls and Private Calls are intended not so much to ensure privacy but rather to eliminate the annoyance of receiving traffic that does not pertain to them. See also Conventional - Selective Call Rx/Tx and Trunking - Private Call.

4.8.3.3.9

Channel Down

This menu-selection allows you to scroll down to other channels within the radio's current Zone.

Channels are defined in the Zone Channel Assignment Window. This feature is available while operating in Conventional or Trunking communications mode.

4.8.3.3.10

Channel Search

This menu-selection allows you to search for a channel/mode based on its programmed channel name, and directly switch to the found channel.

This feature is available while operating in Conventional or Trunking communications mode.



NOTE: These [Channel Name on page 1294](#) can be viewed in the Zone Channel Assignment Window's Channels Page on a per zone basis.

4.8.3.3.11

Channel Select

This menu-selection allows you to jump to a channel in the radio by entering the channel number on the radio's keypad.

This feature applies while operating in Conventional or Trunking communications mode.



NOTE: These channel numbers must be programmed and can be viewed in the Zone Channel Assignment Window's Channels Page on a per zone basis.

4.8.3.3.12

Channel Up

This menu-selection allows you to scroll up to other channels within the radio's current Zone.

Channels are defined in the Zone Channel Assignment Window. This feature is available while operating in Conventional or Trunking communications mode.

4.8.3.3.13

Clock

This menu-selection allows you to view and modify clock settings.



The Time Format defines the default time mode within the radio's display. This feature applies while operating in Conventional or Trunking communications mode.



IMPORTANT: The Clock feature only appears in the radio's display when the Radio Wide, Time Format field is not set to **Disabled**.

4.8.3.3.14

Color

This menu-selection allows you to select the radio's backlight color that illuminates the radio's display.



This feature applies while operating in Conventional or Trunking communications mode. See also: The Backlight Color Control pages.

4.8.3.3.15

Contacts

This menu-selection allows you to view/edit the Contacts of the radio's current channel.

Contacts are programmed in the Unified Call List. Contacts make up the members of Call Hot Lists.

You can select Hot List members/Contacts, allowing for call types such as Phone Calls, Selective/Private Calls, and Call Alerts/Pages to individual radios or to groups of radios. This feature applies while operating in Conventional or Trunking communications mode.



IMPORTANT: This feature is not available for Portable radios having only a top display.

4.8.3.3.16

Digital Vehicular Repeater System

This menu-selection allows you to switch between the Digital Vehicle Repeater System (DVRS) modes.



The DVRS Modes include System, Local, and Off. Other DVRS settings are also possible. This feature is available while operating in Conventional or Trunking communications mode.

4.8.3.3.17

Direct/Talkaround

This menu-selection allows you to enable or disable the Direct/Talkaround mode for the current channel options profile.

This feature is available while operating in Conventional communications mode.

4.8.3.3.18

Dynamic ID

This menu-selection allows for entry into the Dynamic ID edit mode, which allows you to view and/or edit the radio's Individual ID and/or MDC Primary ID for the current ASTRO and/or MDC system.

This feature is available while operating in Conventional communications mode.

4.8.3.3.19

Dynamic Priority

This menu-selection allows you to select the Dynamic Priority scan assignment.



This feature is available while operating in Conventional communications mode.

4.8.3.3.20

Dynamic Zone Programming

This menu-selection allows you to view or edit the channels in the radio's Dynamic Zone(s).

Dynamic Zones are enabled in the Zone Channel Assignment Window's Zone Page.

4.8.3.3.21

Erase

This menu-selection allows you to remove the current secure encryption key that is being used by the radio, or all of the radio's current encryption keys.

This selection applies while operating in Conventional or Trunking communications mode.

4.8.3.3.22

Front Panel Programming

This menu-selection allows you to enter the radio's Front Panel Programming (FPP) mode.

FPP allows you to modify Conventional communications channel parameters without using the Radio Management. See also [Protected Zone on page 1287](#) and [Protected Zone Password on page 333](#).



IMPORTANT: The FCC requires that either an FPP Dongle or a cloning cable be attached to the radio in order for you to access this feature. This is true unless exempt from FCC compliance.

4.8.3.3.23

Front/Rear

This menu-selection allows you to switch the radio's focus between control heads, thus allowing one of two control heads to be active at one time.



WARNING: This selection is only applicable when the Radio Ergonomics Wide, [Multi Control Head on page 416](#) field is **Enabled**, and when the [Multiple Control Head Style on page 420](#) field is set to **One Active**.

4.8.3.3.24

Horn and Lights

This menu-selection allows you to turn the Horn and Lights external alarms ON/OFF.



This option is used with the Conventional and/or Trunking external alarm option. These alarms are activated when Call Alerts/Pages, Selective/Private Calls, Phone Calls, or Messages are received. This feature applies while operating in Conventional or Trunking communications mode.

4.8.3.3.25

In Car Monitor

This menu-selection allows you to toggle between the two In Car Monitor (ICM) modes: **ICM All** and **ICM Selected**.



This feature is available while operating in Conventional or Trunking communications mode.



NOTE:

ICM All allows your Mobile Subscriber Unit (MSU) to monitor Portable Subscriber Unit (PSU) voice traffic originating from all PSU group calls.

ICM Selected allows your MSU to only monitor PSU group calls where the MSU and PSU Talkgroups match.

This menu selection is only applicable when [In Car Monitor on page 1020](#) is set to **ICM Button/Menu Controlled** and will only operate on Personalities/channels where [ICM Allowed on page 1024](#) is **Enabled**.

4.8.3.3.26

Information

This menu-selection allows you to retrieve and view basic radio information such as IP-related information and buttons/switches control mapping, as well as view or modify the Soft ID.

This feature applies only when operating on ASTRO - Conventional Systems. This is a Portable radio only feature.



IMPORTANT:

Modifying the Soft ID changes the radio's Username for Automatic Registration Service server or a User Authentication Unified Network Services (UNS) server logon. When editing the Username this way, the PIN/Password and Unit ID are blanked. Therefore, this can only be used when the server is expecting a blank PIN/Password and you do not want to use Unit ID.

This feature is not available for Portable radios having only a top display.

4.8.3.3.27

Intercom

This menu-selection allows you access the Intercom feature.



The intercom feature allows multiple control heads to talk to each other with the control heads in a multi-control head setup. This feature applies while operating in Conventional or Trunking communications mode.



NOTE: See also the [Intercom Timeout Timer on page 417](#) field.

4.8.3.3.28

Internet Protocol Address

This menu-selection allows you to retrieve and view (in the radio's display) the radio's current IP address, device name and status.



This feature applies while operating in Conventional or Trunking communications mode.

4.8.3.3.29

Key

This menu-selection allows you to change the secure encryption Key for the current Conventional communications channel.



IMPORTANT:

These selectable Keys are uniquely defined with the [CKR Number on page 897](#) field.

When you select a new Key, all of the radio's Conventional channels having their [Voice Key Strapping on page 1110](#) field is set to **Select** are automatically re-keyed with your same selected key.

Changing Keys is sometimes useful when an encryption key is known to be compromised.

4.8.3.3.30

Keypad

This menu-selection allows you to change to an alternate secure encryption Keypad when operating in Conventional or Trunking communications mode.

The selected Keypad then applies for both Conventional and Trunking communications modes.



IMPORTANT:

Alternate Keypads are available because of [PID Key Management for ASN Mode on page 889](#) PID Key Management compatibility or Over The Air Rekeying (OTAR).

Changing Keypads is sometimes useful when an encryption key is known to be compromised.

4.8.3.3.31

Kill

This menu-selection allows you to initiate a Tactical Inhibit Kill command to a specific radio or group of radios.



IMPORTANT: This is only possible when the application's Conventional Personality, [Tactical Inhibit Kill Operation on page 1092](#) field is set to **Encode** or **Decode & Encode**. Tactical Inhibit Kill Operation is defined on per Conventional Personality basis.

4.8.3.3.32

Location

This menu-selection allows you to determine their current location (latitude, longitude, time and date) and also the distance and bearing to another location ("waypoint").

This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: If the Radio Wide, [User Selectable Location Enable on page 366](#) field is **Enabled**, you are also allowed to turn the outdoor location/Global Positioning System (GPS) functionality on or off for all location/GPS enabled Conventional or Trunking communications channels.

4.8.3.3.33

LTE

This menu-selection activates and deactivates the radio's LTE Broadband data capabilities.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

This menu-selection is only operational when a channel that is configured for LTE Broadband operation is selected. When a non-LTE channel is selected, the menu is hidden from you.

A channel is LTE capable when its Data Profile's [Data Profile Type on page 982](#) field is set to **Conventional & Broadband**, or **Trunking & Broadband**, or **Broadband-Only**, and its [Broadband Source on page 1002](#) is **Internal LTE Modem**.

4.8.3.3.34

Message

This menu-selection allows you to display the last Message transmitted by the radio and acknowledged by the base station while operating in Conventional or Trunking communications mode.

4.8.3.3.35

Mode Select

These five menu-selections (MS01–MS05) allow you to program frequently-used or any desired zone and channel combination. If MSPR is selected, you can preset the configuration for MS01–MS05 on the radio.

Each of the menu selections may be programmed with a different zone/channel combination for later retrieval. The programming and use of these menu selections is very similar to the programming and use of a car radio's preset buttons. That is, once you navigate to an MSx option in the menu, a long-press of the Menu Select button programs the radio's current zone and channels into that MSx menu option; then once programmed, a short-press of the Menu Select button jumps the radio to the programmed zone and channel.

This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: The [Short Keypress Duration on page 430](#) and [Long Keypress Duration on page 432](#) are both programmed.

4.8.3.3.36

External Data Modem

This menu-selection provides you with External Data Modem information and options.



This field is only enabled when the Modem Type field is available.

4.8.3.3.37

Monitor

This menu-selection allows you to hear most or even all carrier activity on the radio's current channel.



Any channel-receive requirement for a Private Line (PL) encoded match (for the current channel) is ignored by the radio; this allows you to monitor the channel activity even more. This feature is available while operating in Conventional communications mode.

 **NOTE:** The busy indicator is illuminated when channel activity is present or when the radio is unscelched.

4.8.3.3.38

Multiple Private Line

This menu-selection allows you to access a listing of the available MPL Lists.

 **NOTE:** Each list is represented by a recognizable name . You are then able to select the desired Alias/PL settings. This feature is available while operating in Conventional communications mode.

4.8.3.3.39

Mute

This menu-selection allows you to enable or disable certain radio tones (for example, the keypad tones), as configured by the Enhanced Mute Tones Operation selection.

This feature is available for Conventional and Trunking communications modes.

4.8.3.3.40

My Radio Identification (MyID)

This menu-selection allows you to cause the Radio ID Alias to appear in the radio's display.

This feature applies while operating in Conventional or Trunking communications mode.

4.8.3.3.41

Nuisance Delete

This menu-selection allows you to temporarily remove a Scan List Member channel that continually generates unwanted carrier noise from the current Active Scan.

This feature applies while operating in Conventional or Trunking communications mode.



IMPORTANT:

Switching to another channel on the radio's channel selector, turning off scan mode and then back on, or turning off the radio and then back on effectively brings that temporarily removed Scan List Member channel back to an actively scanned status.

Nuisance Delete is not possible:

- For a Priority #1, or Priority #2 Scan List Member channel.
- When the [Designated Voice Tx Member Type on page 1311](#) field is set to **Selected Channel** and the Landed Scan channel's Tx Frequency is the same as the Tx Frequency of the radio's currently-selected channel.
- If the current Scan List does not contain at least two members before a Nuisance Delete occurs.

4.8.3.3.42

Page

This menu-selection allows you to transmit a Call Alert for Conventional modes, or a Call Alert/Page for Trunking modes.



NOTE: Call Alert/Pages allow a dispatcher or radio-caller to notify you (or group of users) of a missed call. Receiving radios are targeted based on radio and system information managed by the Contacts and Call IDs in the radio's Call Hot Lists. You can directly enter or select Call IDs from the channel's Hot List. The receiving radio responds with both alert tones and visual alerts. The visual alert (flashing LED) persists until reset by your interaction with the radio.

4.8.3.3.43

Password

This menu-selection allows you to modify the Radio Lock/Tactical Inhibit Stun Unlock Password, and to modify the Tactical Inhibit Encode Password.

This feature applies while operating in Conventional or Trunking communications mode.



IMPORTANT:

This password must be composed of numeric values only that may be easily entered from the radio keypad. The password's largest possible value is determined in the Maximum Password Length field.

In the secure encryption version of the Radio Lock feature (see the Important Note in the Enable (Radio Lock) topic), the password must be manually set in the hardware encryption module with the radio keypad and this Password menu-selection.

In the clear/Tactical Inhibit version of the Radio Lock feature, the initial password must be programmed in the Unlock Password field.

4.8.3.3.44

Phone

This menu-selection allows you to initiate Phone Mode while operating in Conventional or Trunking communications mode.

4.8.3.3.45

Power

This menu-selection allows you to toggle the radio's transmission power from low to high and back for all Conventional Personalities or referenced Trunking Systems on a radio-wide basis.



IMPORTANT:

Once the setting in the radio's display has been change, this high or low power setting takes precedence over all individual Conventional [Transmit Power Level on page 1101](#) settings or Trunking [TX Power Level on page 1211](#) settings. That is, when you made the radio's **PWR** menu-selection, the radio displays `High Power` or `Low Power` depending on the status of the radio's current channel. You may then select to transmit in high or low power by selecting either choice from the radio's display.

Powering off and back-on the radio resets all the radio's channels to their programmed power setting.

4.8.3.3.46

Quik Call II

This option enables the launching of the QCII application and allows you to choose the tone to be transmitted.

This feature applies while operating in Conventional or Trunking communications mode.

4.8.3.3.47

Radio Profiles

This menu-selection allows you to select one of the programmed Radio Profiles in Zone-Channel Assignment, provided that the Radio Profile Selection field is set to Last Selected.

This feature applies while operating in Conventional or Trunking communications mode.

4.8.3.3.48

Radio Swap

This menu-selection allows you to switch back and forth between two radios (known as "the brick" part of the radio) that are attached to the same control head in a Dual Radio configuration.



This feature applies while operating in Conventional or Trunking communications mode.

 **IMPORTANT:** If the Fixed Swap Menu field is **Enabled**, then a **Radio Swap** menu-selection always appears at the left-most menu position, even as you scroll through the soft-menu buttons, and regardless of whether this feature is programmed or not; however, if the Fixed Swap Menu field is **Disabled**, then this menu-selection is accessible with the standard scrolling menu.

4.8.3.3.49

Recent Calls

This menu-selection allows you to access the recent incoming and outgoing call information for the following call types: Call Alerts, Selective/Private Calls and (outgoing only) Phone calls.

This feature applies while operating in Conventional or Trunking communications mode.

4.8.3.3.50

Rekey Request

This menu-selection allows you to transmit an Over-The-Air-Rekeying (OTAR) rekey request to the dispatcher's (KMF or KMC) console while operating in Conventional or Trunking communications mode.

 **IMPORTANT:**
For MDC OTAR (Conventional communications), the request protocol is determined by the [Rekey Request Mode on page 893](#) field.
For ASTRO OTAR (Conventional or Trunking communications), the [User Selectable Rekey Request on page 909](#) field must be **Enabled**, and the request protocol is determined by the [OTAR Tx Security Level on page 908](#) field.

4.8.3.3.51

Remote Emergency

This menu-selection activates the Remote Emergency Activation feature so an authorized user to encode this command can cause a target radio to initiate the Emergency feature without target user intervention.



NOTE: Remote Emergency is only supported on ASTRO Conventional and ASTRO 25 Trunking channels.

4.8.3.3.52

Repeater Access Button 1

This menu-selection allows you to manually send a repeater access codeword.



This feature is available while operating in Conventional communications mode.

4.8.3.3.53

Repeater Access Button 2

This menu-selection allows you to manually send a repeater access codeword.



This feature is available while operating in Conventional communications mode.

4.8.3.3.54

Reprogram Request

This menu-selection allows you to send a request to the dispatcher for reassignment of Dynamic Regrouping.

The available features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher/console. The radio then automatically changes to the Dynamic Regrouping [Dynamic Regrouping Zone on page 1213](#) and Dynamic Regrouping [Dynamic Regrouping Channel on page 1214](#).

This feature is available while operating in Trunking communications mode.



IMPORTANT: For Trunking Systems, this Zone and Channel are defined by setting a Zone Channel Assignment's [Trunking Talkgroup on page 1297](#) field to **DYN**. The Trunking Personality considered in this scenario must have this same Trunking System selected in its [System on page 1236](#) field. Hence, only one Dynamic Regrouping channel may be defined per Trunking System.

4.8.3.3.55

Received Signal Strength Indicator

This menu item selection allows you to view the current site and its received signal strength indication (RSSI).



This selection applies while the radio is operating in Trunking communications mode.

4.8.3.3.56

Request-To-Talk

This menu-selection allows you to send a Request-To-Talk (RTT) signaling packet to the dispatcher/console, requesting the ability to transmit voice.



This selection applies only when operating on an MDC System in Conventional communications mode.

4.8.3.3.57

Scan

This menu-selection allows you to select Scan Lists and turn Scan Mode ON/OFF while operating in Conventional or Trunking communications mode.

4.8.3.3.58

Scan List

This menu-selection allows you to view individual Scan List members in the Scan List and also places the radio in a Scan List Edit mode.



While in this edit mode, you are able to add or remove scan list members and modify the scan priority of any member. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: The radio's Top Side Button automatically becomes the designated Select button while editing a scan list channel. This is only true while the radio is operating in this Scan List Programming mode.

4.8.3.3.59

Secure

This menu-selection allows you to switch between clear (Off) and coded (On) secure encryption operation.



This feature applies while operating in Conventional or Trunking communications mode.

4.8.3.3.60

Sensor

This button-press allows you to select the time of the Sensor Event Disable Time operation.



The [Sensor Event Disable Time on page 372](#) is a Radio Wide field. This feature applies while operating in Conventional or Trunking communications mode.

4.8.3.3.61

One Touch (SIG1-SIG4/DISP)

These One Touch menu-selections (Signaling 1 - Signaling 4/DISP) allow you to initiate a programmed feature with little effort.



These menu-selections allow you to enter features such as Status, Message, Selective/Private Call, Call Alert/Page, Phone, [Repeater Access on page 1169](#) (RAC), and [MDC RTT Button Access on page 1119](#) with one selection. One to four menu-selections can be programmed for Trunking One Touch, and one to four menu-selections can be programmed for Conventional One Touch. Each menu-selection may be programmed with a different feature. This feature applies while operating in Conventional or Trunking communications mode. See [One Touch \(TCH1–TCH16\) on page 729](#).



NOTE: In the radio:

Signaling 1 appears as SIG1

Signaling 2 appears as SIG2

Signaling 3 appears as SIG3

Signaling 4 appears as DISP (Dispatch)

4.8.3.3.62

Site

This menu-selection allows you to view the lock status and toggle between lock and unlock mode when using the SmartZone option.



IMPORTANT: Locking a site inhibits roaming to another site in a wide-area System. This feature is available while operating in Trunking communications mode.

4.8.3.3.63

Site Selectable Alerts

This menu-selection allows you to activate (broadcast), or later deactivate, a Site Selectable Alert at one specific site or all available sites within a specific Zone.



IMPORTANT: Only [Alert Alias on page 878](#) that have the corresponding [Subscriber Encodable on page 879](#) field **Enabled** appear in the menu, and therefore be encodable for broadcast. This feature is available while operating in Trunking communications mode.

4.8.3.3.64

Squelch Fine Tune

This menu-selection allows you to select (and adjust) how much carrier energy is required in order for the radio's speaker to unmute.



When you select a higher value, a stronger carrier signal is then required for the radio's carrier threshold to be reached and for the radio's speaker to unmute; this helps to reduce interference and unwanted noise. This feature applies while operating in Conventional communications mode.



NOTE: The radio may have other requirements before unmuting may occur.

4.8.3.3.65

Status

This menu-selection allows you to select from the Status Alias List of the current channel/mode.



NOTE: For your convenience, as part of this feature the display initially shows the last acknowledged Status call, or the first Status in the list. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Status Alias List is used.

While operating in Trunking communications mode, the Trunking System - Status Alias List selected for the current Trunking Personality is used.

4.8.3.3.66

Stun

This menu-selection allows you to transmit a Tactical Inhibit Stun command to a specific radio or group of radios.



IMPORTANT: This is only possible when the application's Conventional Personality, Tactical Inhibit Stun Operation field is set to **Encode** or **Decode & Encode**. Tactical Inhibit Stun Operation is defined on per Conventional Personality basis.

4.8.3.3.67

Tactical Services

This menu-selection allows your radio to enter the Tactical Services state depending on the configuration in the **Tactical Services Operation** field. This feature is available while operating in Conventional communications mode.



The **Tactical Services** selection is only applicable when the **Tactical Services Operation** field is set to **Encode** or **Decode & Encode**.

4.8.3.3.68

Talkgroup

This menu-selection allows you to switch from the preset Talkgroup to another Talkgroup from within the Conventional Personality's current Talkgroup List.

All Conventional Personalities using the same Talkgroup List are automatically switched to the selected Talkgroup.

4.8.3.3.69

One Touch (TCH1–TCH4)



These One Touch menu-selections (TCH1–TCH4) allow you to initiate a programmed feature with little effort.

These menu-selections allow you to enter One Touch features such as Status, Message, Selective/Private Call, Call Alert/Page, Phone, [Repeater Access on page 1169](#) (RAC), and [MDC RTT Button Access on page 1119](#) with one selection. One to four menu-selections can be programmed for Trunking One Touch, and one to four menu-selections can be programmed for Conventional One Touch. Each menu-selection may be programmed with a different feature. This feature applies while operating in Conventional or Trunking communications mode.



NOTE: In the radio:

TCH 1 appears as 1

TCH 2 appears as 2

TCH 3 appears as 3

TCH 4 appears as 4

4.8.3.3.70

Text Messaging Service

This menu-selection allows you to access the radio's TMS mode, seen in the radio's display.

See also the Trunking System or Conventional System, Text Messaging Service feature.

4.8.3.3.71

Tx Inhibit

This menu-selection allows you to disable all radio transmissions while operating in Conventional or Trunking communications mode.



IMPORTANT: This action may be necessary when entering hazardous environments with high sensitivity to RF fields, where a radio transmission could initiate an explosion or other dangerous reaction.



NOTE:

If you attempt to key up the radio while Tx Inhibit is **Enabled**, the radio generates a long, low-pitched Talk Prohibit Tone, indicating that transmissions are currently not allow.

4.8.3.3.72

User

This menu-selection allows you to log in to different Automatic Registration Service (ARS) Servers with the appropriate Username and Password (PIN) combination.

Usernames and PINs may be manually entered from the radio's keypad, or Usernames may be selected from [Data User List on page 964](#) entries (the PIN is then manually entered). This feature is available while operating in Conventional or Trunking communications mode. See also the Soft ID/Username field.



WARNING: This feature functions only when the Data Profiles, [ARS Mode on page 995](#) field is not set to **Disabled**.

4.8.3.3.73

Voice Mute

This menu-selection allows you to toggle on and off Voice Mute functionality for In-Call User Alert-enabled channels.

When Voice Mute is active, the radio remains muted to all Conventional communications calls and affiliated Trunking Talkgroup calls. Group and individual Call Alert/Pages do unmute the radio for the alert tone; also, when Voice Mute is active, the radio does unmute to individual radio-to-radio calls such as Selective/Private Calls and Interconnect (phone mode) calls.

4.8.3.3.74

Zone Cloning (CLON)

This menu item selection allows you to duplicate zones from one radio to another radio without using RM.

See [Zone Clone Enable on page 344](#).

A cloning cable must be attached to the radio in order for you to access this feature. See also [Clone Enable on page 1285](#), [Protected Zone Password on page 333](#), and Protected Zone.

4.8.3.3.75

Zone Down

This menu-selection allows you to scroll downward through the Zones in the radio.

Upon reaching the first Zone in the list, continued scrolling causes the list to wrap around to the last Zone. Zones are defined in the Zone Channel Assignment Window.

4.8.3.3.76

Zone Select

This menu-selection allows you to select a Zone while operating in Conventional or Trunking communications mode.

Zones are defined in the Zone Channel Assignment Window.

4.8.3.3.77

Zone Up

This menu-selection allows you to advance upward through the Zones in the radio.

Upon reaching the last Zone in the list, continued scrolling causes the list to wrap around to the first Zone. Zones are defined in the Zone Channel Assignment Window.

4.8.4

Kepad Button Feature

Selects the function for a 3x4 alphanumeric Keypad button (0 through 9, # and *) on a Portable radio, Mobile Control Head or Keypad Mic (KPM), as noted in the table below. These selections apply while operating in Conventional or Trunking communications mode.

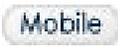


NOTE: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, the default Keypad button assignments are pre-configured to correspond with the Keypad's graphics. See the O7 Siren/Lights Keypad Keystone Concept.



WARNING: For a Dual Radio Configuration:

- Button functions for Radio Wide features (Siren-related buttons, Aux Control (1-3), Dim, GunLock (1, 2, 3, or All), Relay Pattern, Radio Swap, and Third Party) must be configured the same for the Primary and Secondary radios; additionally, it is strongly recommended to configure all of the button functions the same for both radios, in order to avoid confusion.
- When the Radio Selection field is set to **Secondary Radio** and the Siren Operation field is set to **Disabled**, all Siren-related Keypad selections are considered valid. (Although the Siren box only connects to the Primary Radio, Siren/PA operation is independent of the current radio selection, and therefore the Siren/PA still operates when the Secondary Radio is selected.)

Button Se- lections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Airhorn on page 543	When the Radio Ergonomics Wide, Siren Operation on page 422 field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones on page 425 field is Enabled .	
Blank on page 483 	(Intended for controls that are not in use.)	
Direct Ext Radio on page 544	When the Radio Ergonomics Wide, Siren Operation on page 422 field is not set to Disabled .	
Direct Hi/Lo on page 544	When the Radio Ergonomics Wide, Siren Operation on page 422 field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones on page 425 field is Enabled .	
Direct Man- ual on page 545	When the Radio Ergonomics Wide, Siren Operation on page 422 field is set to Siren/PA .	
Direct Wait on page 545	When the Radio Ergonomics Wide, Siren Operation on page 422 field is set to Siren/PA .	
Direct Yelp on page 546	When the Radio Ergonomics Wide, Siren Operation on page 422 field is set to Siren/PA .	

Button Se- lections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Gunlock (1,2,3, or All) on page 546	<p>(When at least one of the radio's VIP Out pins has been programmed for the corresponding GunLock function), or (when the Radio Selection on page 361 field is set to Secondary Radio).</p> <p> NOTE: See also: Password Required For Gunlock on page 339.</p> <p>You cannot duplicate the same Relay Pattern on more than one Di- rectional Button, Top Function Programmable Button, or Bottom Func- tion Programmable Button Index selection; however, Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button.</p>	
Keypad Digit on page 546	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
MS01–MS13 on page 489 (Mode Se-lect)	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
Public Ad- dress (PA) on page 547 (PA)	<p>When the Radio Ergonomics Wide, Siren Operation on page 422 field is not set to Disabled.</p>	
Relay Pat- tern on page 547	<p>(When the Universal Relay Controller Equipped on page 382 field is Enabled and a URC is connected to the radio), or (when the Radio Selection on page 361 field is set to Secondary Radio, and when the Universal Relay Controller Equipped field is Disabled and a URC is connected to the Primary Radio of a Dual Radio configuration).</p> <p>You cannot duplicate the same Relay Pattern on more than one Di- rectional Button, Top Function Programmable Button, or Bottom Func- tion Programmable Button Index selection; however, Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button.</p> <p>Once selected, the appropriate Keypad Button Index for the same re- cord/row must also be defined.</p> <p> NOTE: See also: Password Required for Password Required For Lightbar on page 340.</p>	
Third Party on page 495	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	

4.8.4.1

Airhorn

This button-press allows you to activate and deactivate the Airhorn Siren tone.



This feature is available on a radio-wide basis.



WARNING: The HiLo Airhorn Tones field must be enabled. Otherwise, the Hi/Lo, Direct Hi/Lo, and Airhorn button selections will be invalid.



NOTE: In addition to this programmable button selection, the O9 Control Head has a dedicated "Airhorn" button on its Siren Mode Keypad.

4.8.4.2

Blank

Select this feature for a radio button that is not in use.

You will hear a chirp tone when pressing this button. This feature is available for Conventional or Trunking communications mode.

4.8.4.3

Direct Ext Radio

This button-press allows you to directly activate and deactivate External Radio mode.



See also the [External Radio \(Ext Radio\) on page 596](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

The External Radio feature is not available with a Siren switchbox.

See also: [Options Audio Muting on page 423](#) and [External Radio Ignition on page 423](#).

4.8.4.4

Direct Hi/Lo

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds "Hi/Lo" Siren tones.



See also the [Hi/Lo on page 569](#) button-press. This feature is available on a radio-wide basis.



WARNING: The [HiLo Airhorn Tones on page 425](#) field must be **Enabled**. Otherwise, the Hi/Lo, Direct Hi/Lo, and Airhorn button selections will be invalid.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Hi/Lo** button on its Siren Mode Keypad.

The Hi/Lo Siren tones can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.8.4.5

Direct Manual

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds the RM-defined Manual Tone of the Siren option.



See also the [Manual on page 570](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

When a VIP Input is programmed for Horn Ring operation, an initiated Direct Manual button-press activates Siren operation and selects the RM-defined Manual Tone. This Manual Tone then sounds when the vehicle's Horn Ring is pressed, and ends when the Horn Ring is released.

When a VIP Input is not programmed for Horn Ring operation, an initiated Direct Manual button-press activates Siren operation and selects the RM-defined Manual Tone. This Manual Tone sounds when the Direct Manual button is pressed and ends when the button is released.

If the radio is already sounding a Direct Wail, Direct Yelp, or Direct Hi/Lo Siren tone, the selected Siren tone is changed by pressing the Direct Manual button.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Manual** button on its Siren Mode Keypad.

The Manual Siren mode can also be enabled as one of a sequence of radio actions, known as Consolidated Actions.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.8.4.6

Direct Wail

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds a "Wail" Siren tone.



See also the [Wail on page 571](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Wail** button on its Siren Mode Keypad.

The Wail Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.8.4.7

Direct Yelp

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds a "Yelp" Siren tone.



See also the [Yelp on page 571](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Yelp** button on its Siren Mode Keypad.

The Yelp Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.8.4.8

Gunlock (1,2,3, or All)

These four separately programmed button-presses, Gunlock 1, Gunlock 2, Gunlock 3 and Gunlock All, allow you to unlock Gunlock 1, 2, or 3, or all Gunlocks simultaneously.

This feature is available while operating in Conventional or Trunking communications mode.



WARNING: Control of a Gunlock is accomplished through one of the radio's VIP Out pins, where a "Gunlock 1" button-press activates the VIP Out chosen as "Gunlock 1", and so on. Therefore, first select Gunlock 1, Gunlock 2, or Gunlock 3 as a VIP Out; otherwise the corresponding button selection is invalid.



IMPORTANT:

Immediately following the button-press, the corresponding VIP Out remains active for the amount of time selected in the [Relock Timer on page 395](#) field.

- "Relock Timer 1" (that is, the first record/row) applies to a Gunlock 1 button-press, and so on.
- While the VIP Out is still active, pressing the corresponding Gunlock button again restarts the Relock Timer.
- If the Relock Timer field is set to "Momentary", the corresponding VIP Out deactivates immediately with the release of the Gunlock button (thereby re-locking the Gunlock); you must keep the button pressed with one hand while using the other hand to remove the gun.

4.8.4.9

Keypad Digit

Select this function to retain the standard operation for the associated Keypad button.



IMPORTANT: On a Portable radio, this is the only available function of the Star (*) and Pound/Hash (#) buttons.

4.8.4.10

MS01–MS13

These button assignments allows you to program these buttons with frequently used or any desired zone and channel combination.

The programming and use of these buttons is very similar to the programming and use of a car radio's preset buttons. That is, a long-press programs a button with the radio's current zone and channels; then once programmed, the short-press of that button jumps the radio to the programmed zone and channel. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

The [Short Keypress Duration on page 430](#) and [Long Keypress Duration on page 432](#) are both programmed.

The APX™ 3000 Portable only supports MS01 and MS02.

4.8.4.11

Public Address (PA)

This button-press allows you to activate and deactivate the Public Address (PA) system, which routes microphone audio through an external speaker system.



This feature is available on a radio-wide basis.



IMPORTANT: If the Public Address and Siren options are both on at the same time, pressing the PTT button overrides any Siren function. Any Siren tone or incoming radio signals (if in External Radio mode) is abruptly muted to give the Public Address priority operation.



NOTE: In addition to this programmable button selection, the O9 Control Head has a dedicated **Public Address** button.

4.8.4.12

Relay Pattern

This button-press allows you to activate and deactivate a Relay (Lightbar) Pattern.



NOTE: The dedicated Directional Buttons on the O9 Control Head are typically assigned Left Alley, Right Alley, and Take Down Relay (Lightbar) Patterns.



WARNING: You cannot duplicate the same Relay Pattern on more than one Directional Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection; however, Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button.



NOTE:

Relay Patterns are defined in the Universal Relay Controller Page.

You may also execute a Relay Pattern as one of a sequence of radio actions, known as Consolidated Actions. See also: Relay Pattern.



IMPORTANT: If the [Universal Relay Controller Equipped on page 382](#) field is **Enabled** and the URC is not connected at power-up, or is disconnected while the radio is on, then initiating a Relay Pattern button-press causes the radio to sound a bad "bonk".

4.8.4.13

Third Party

This button-press allows you to initiate functionality in third-party accessories, such as compatible Whelen® Sirens.

 **WARNING:** When the Dual Radio [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, this selection must be made for both Conventional and Trunking, where applicable, in order to be considered valid.

4.8.5

Accessory Buttons

This node contains selections for accessory buttons.

4.8.5.1

Accessory Buttons (Conventional)

This field selects the function for the Portable Accessories buttons (Accy 1-dot, Accy 2-dot, and Accy 3-dot) that are programmable.

 **WARNING:** You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This may cause incorrect radio operation.

 **NOTE:** The Accessory "Accy Orange" Button selection automatically follows the Portable's "Top Button" selection. These selections apply while operating in Conventional or Trunking communications mode, as noted in the table below.

See [Button Selections on page 468](#) for the list of supported selections.

4.8.5.2

Accessory Buttons (Trunking)

This field selects the function for the Portable Accessories buttons (Accy 1-dot, Accy 2-dot, and Accy 3-dot) that are programmable.

 **WARNING:** You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This may cause incorrect radio operation.

 **NOTE:** The Accessory "Accy Orange" Button selection automatically follows the Portable's "Top Button" selection. These selections apply while operating in Conventional or Trunking communications mode, as noted in the table below.

See [Button Selections on page 468](#) for the list of supported selections.

4.8.5.3

Short Keypress Duration

This field determines the amount of time needed to press and hold the corresponding radio button for the radio to recognize this action as a short keypress. The unit of this value is in milliseconds.

When this field is set to **Radio Wide**, the value used is from **Short Keypress Duration at Radio Ergonomics Wide** → **Advanced**.

This feature is not applicable if Emergency is assigned to the radio button. The value from **Short Keypress Duration for Emergency at Radio Ergonomics Wide** → **Advanced**, is always used for emergency.

This field is not applicable to the following features that have specific keypress durations:

- ViQi Virtual Partner

- ViQi Voice Control

Accessed Only: When the short keypress duration is shorter than the long keypress duration setting.

Table 99: Range

Minimum	Maximum	Increments
0 milliseconds	6200 milliseconds	50 milliseconds

 **NOTE:** The default value is **Radio Wide**.

4.8.5.4

Long Keypress Duration

This field determines the amount of time needed to press and hold the corresponding radio button for the radio to recognize this action as a short keypress. The unit of this value is in milliseconds.

When this field is set to **Radio Wide**, the value used is from **Long Keypress Duration** at **Radio Ergonomics Wide** → **Advanced**.

This feature is not applicable if Emergency is assigned to the radio button. The value from **Long Keypress Duration for Emergency** at **Radio Ergonomics Wide** → **Advanced**, is always used for emergency.

This field is not applicable to the following features that have specific keypress durations:

- ViQi Virtual Partner
- ViQi Voice Control

Accessed Only: When the long keypress duration is longer than the short keypress duration setting.

Table 100: Range

Minimum	Maximum	Increments
0 milliseconds	6250 milliseconds	250 milliseconds

 **NOTE:** The default value is **Radio Wide**.

4.8.6

Smart Key Fob Buttons

This node contains selections for Smart Key Fob (SKF) buttons.

4.8.6.1

Smart Key Fob Graphical View

This section contains an interactive image offering an alternative method of viewing and defining your features for buttons on the Smart Key Fob.



NOTE:

Hovering the mouse pointer on a programmable button reveals the currently-assigned feature.

Clicking a programmable button allows you to define or redefine the feature.

Clicking the **Show All** button reveals all of the defined features.

Some selections are radio model/option dependent.

Some selections are communication mode dependent: Conventional and/or Trunking

4.8.6.2

Smart Key Fob Buttons (Conventional)

This field selects the function for the Smart Key Fob (SKF) buttons that are programmable.



WARNING: You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This may cause incorrect radio operation.

See [Button Selections on page 468](#) for the list of supported selections.

4.8.6.3

Smart Key Fob Buttons (Trunking)

This field selects the function for the Smart Key Fob (SKF) buttons that are programmable.



WARNING: You must not duplicate a function on multiple controls, i.e., on more than one button, on more than one switch or on a button and a switch. This may cause incorrect radio operation.

See [Button Selections on page 468](#) for the list of supported selections.

4.8.7

Multi-Function Knob (MFK) Selections

Selects the Primary and Second functions assigned to the Multi-Function Knob (MFK).



NOTE: It is also possible to program the MFK as a single-function Volume control knob (see the Warning). These selections apply to Conventional and Trunking communications mode.



WARNING:

For dual-function operation:

- If the MFK's Primary Function is assigned with either **Zone Select** or **Channel Select**, then the Secondary Function must be assigned with **Volume Select** in order to be considered valid.
- If the MFK's Primary Function is assigned with **Volume Select**, then the Secondary Function must be assigned with either **Zone Select** or **Channel Select** in order to be considered valid.

For single-function operation: You must select **Volume Select** as the Primary function and **Blank** as the Secondary function in order to be considered valid.

The following selections are supported:

Blank on page 509

(Intended for functions that are not in use.)



WARNING:

Blank is not a valid selection for the Primary function.

Blank is only valid as the Secondary function when **Volume Select** is selected as the Primary function.

Zone Select on page 513

When selected, always available to you, and therefore not dependent on any feature or selection.

Channel Select on page 509

When selected, always available to you, and therefore not dependent on any feature or selection.

Volume Select on page 513

When selected, always available to you, and therefore not dependent on any feature or selection.



NOTE: These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes.

4.8.7.1

Blank

Select this feature for a rotary, concentric or toggle switch, or Multi-Function Knob (MFK) function, that is not in use.



This feature is available for Conventional or Trunking communications mode.

4.8.7.2

Zone Select

This Rotary/switch-toggle or Multi-Function Knob (MFK) selection allows you to select a Zone.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

When defined for a switch, only the first two or the first three zones defined in Zone Channel Assignment are available on the switch. See also Zone Bank, Zone Bank Up and Zone Bank Down.

When selected for a Two Position or Three Position Switch, it must be selected for Conventional and Trunking and for all positions of that switch.

This selection is automatically set to the radio's Three Position A/B/C Toggle switch when either **Zone Bank Up** or **Zone Bank Down** is set to a programmable button. See also the Zone Bank Keystone Concept.

When selected as the Primary Function for an MFK, **Volume Select** must be selected as the Secondary Function in order to be considered valid.

4.8.7.3

Channel Select

This Rotary/switch-toggle or Multi-Function Knob (MFK) selection allows you to change the radio's channel.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

When defined for a Rotary switch, only the first 16 channels (see the Channels Page) defined for each zone are available on the Rotary.

When defined for a Two Position or Three Position Switch, only the first two or the first three channels (see the Channels Page) defined for each zone are available on the switch.

When selected for a Two Position or Three Position Switch, it must be selected for Conventional and Trunking and for all positions of that switch.

This selection may only be set to the radio's Rotary switch when either **Zone Bank Up** or **Zone Bank Down** is set to a programmable button. Only 16 channels are possible per zone when using the Rotary switch as the channel selector.

When selected as the Primary Function for an MFK, **Volume Select** must be selected as the Secondary Function in order to be considered valid.

4.8.7.4

Volume Select

This Multi-Function Knob (MFK) selection allows you to change the radio's volume.



This feature is available while operating in Conventional or Trunking communications mode.



WARNING:

For dual-function operation:

- If the MFK's Primary Function is assigned with either **Zone Select** or **Channel Select**, then the Secondary Function must be assigned with **Volume Select** in order to be considered valid.
- If the MFK's Primary Function is assigned with **Volume Select**, then the Secondary Function must be assigned with either **Zone Select** or **Zone Select** in order to be considered valid.

For single-function operation: You must select **Volume Select** as the Primary function and **Blank** as the Secondary function in order to be considered valid.

4.9

Controls (Mobile)

4.9.1

Control Head Graphical View

The **Control Head Graphical View** section contains an interactive image offering an alternative method of viewing and defining your features for buttons and controls on the O2, O3, O5, O7, O9, or E5 Mobile Control Head.



NOTE:

Hovering the mouse pointer on a programmable button/control reveals the currently-assigned feature.

Clicking a programmable button or control allows you to define or redefine the feature.

Clicking the **Show All** button reveals all of the defined features.

Some selections are radio model/option dependent.

Some selections are communication mode dependent: Conventional and/or Trunking

4.9.2

Control Head - O2

This node contains selections for controls on the Control Head - O2.

4.9.2.1

Orange Button (Control Head - O2)



This field allows you to assign a function for the Orange button on the Control Head - O2, Keypad Mic (KPM), or both.

See [Orange Button Selections on page 573](#) for a list of supported selections.

4.9.2.2

Multi-Function Knob (Control Head - O2)



This field selects the Primary and Secondary rotary functions assigned to the Multi-Function Knob (MFK) for the Mobile Control Head - O2.

See [Multi-Function Knob Selections on page 607](#) for a list of supported selections.

4.9.2.3

Multi-Function Knob Press Behavior (Control Head - O2)

You must first select the Multi-Function Knob (MFK) Press Behavior. It is also possible to program the MFK to trigger Emergency Mode with the button-press, and/or as a single-function rotary control knob (see the Warnings). These selections apply to Conventional and Trunking communications mode.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.



WARNING:

When MFK Press Behavior is set to **Rotary Feature Select:**

- **For dual-function rotary operation**, provided a "Volume" function is assigned to a Control Head button (either Volume Select must be assigned to the Primary or Secondary function of the MFK, or Volume Up / Down must be assigned to the Navigation Controls), any Primary function in combination with any Secondary function is considered valid.
- **For single-function rotary operation**, provided a "Volume" function is assigned to a Control Head button (either Volume Select must be assigned to the Primary function of the MFK, or Volume Up / Down must be assigned to the Navigation Controls), any Primary function in combination with Blank as the Secondary function is considered valid.

When MFK Press Behavior is set to **Emergency:**

The button-press triggers Emergency Mode, the Secondary rotary function is unavailable, and any selection for the Primary rotary function (including Blank) is considered valid.

4.9.2.4

Navigation Controls (Control Head - O2)



This field allows you to assign a function for the Up/Down Navigation Controls on a Control Head - O2 and Keypad Mic (KPM).

See [Navigation Controls Selections on page 700](#) for a list of supported selections.

4.9.3

Control Head - O3

This section contains selections for controls on the Control Head - O3.

4.9.3.1

General Conventional Feature Buttons (Control Head - O3)



This field allows you to assign a function for the General Conventional Feature buttons on a Control Head - O3 and Keypad Mic (KPM).

See [General Conventional Feature Buttons Selections on page 608](#).

4.9.3.2

General Trunking Feature Buttons (Control Head - O3)



This field allows you to assign a function for the General Trunking Feature buttons on a Control Head - O3 and Keypad Mic (KPM).

See [General Trunking Feature Buttons Selections on page 623](#).

4.9.3.3

Data Conventional Feature Button (Control Head - O3)



This field allows you to assign a function for the Data button on a Control Head - O3 and Keypad Mic (KPM).

See [Data Feature Button Selections on page 698](#) for a list of supported selections.

4.9.3.4

Data Conventional Index Button (Control Head - O3)

This field allows you to assign the Action Consolidation List member (by name) for the Data button on a Control Head - O3 and Keypad Mic (KPM). The Data Button Feature of the same record/row must first be set to Action Consolidation. These selections apply on a radio-wide basis.



WARNING:

You can duplicate the same Consolidated Action on a Response Selector position and a button. However, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection.

The only valid Consolidated Action selection for the Data Button is one that selects an **ALL OFF** condition (regardless of whether its name is **ALL OFF**, or not). This means that every relay in the same Relay Pattern (record/row) must be in the **Off** state, and the Siren Type must be **All Off**.

Accessed Only: When the Data Button Feature field is set to **Action Consolidation** for the current record/row.

4.9.3.5

Data Trunking Feature Button (Control Head - O3)



This field allows you to assign a function for the Data button on a Control Head - O3 and Keypad Mic (KPM).

See [Data Feature Button Selections on page 698](#) for a list of supported selections.

4.9.3.6

Data Trunking Index Button (Control Head - O3)

This field allows you to assign the Action Consolidation List member (by name) for the Data button on a Control Head - O3 and Keypad Mic (KPM). The Data Button Feature of the same record/row must first be set to Action Consolidation. These selections apply on a radio-wide basis.



WARNING:

You can duplicate the same Consolidated Action on a Response Selector position and a button. However, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection.

The only valid Consolidated Action selection for the Data Button is one that selects an **ALL OFF** condition (regardless of whether its name is **ALL OFF**, or not). This means that every relay in the same Relay Pattern (record/row) must be in the **Off** state, and the Siren Type must be **All Off**.

Accessed Only: When the Data Button Feature field is set to **Action Consolidation** for the current record/row.

4.9.3.7

Navigation Controls (Control Head - O3)



This field allows you to assign a function for the Up/Down Navigation Controls on a Control Head - O3 and Keypad Mic (KPM).

See [Navigation Controls Selections on page 700](#) for a list of supported selections.

4.9.4

Control Head - O5

This node contains selections for controls on the Control Head - O5.

4.9.4.1

Orange Button (Control Head - O5)



This field allows you to assign a function for the Orange button on the Control Head - O5, Keypad Mic (KPM), or both.

See [Orange Button Selections on page 573](#) for a list of supported selections.

4.9.4.2

Navigation Controls (Control Head - O5)



This field allows you to assign a function for the Up/Down Navigation Controls on a Control Head - O5 and Keypad Mic (KPM).

See [Navigation Controls Selections on page 700](#) for a list of supported selections.

4.9.5

Control Head - O7

This section contains selections for controls on the Control Head - O7.

4.9.5.1

Orange Button (Control Head - O7)

This field allows you to assign a function for the Orange button on the Control Head - O7, Keypad Mic (KPM), or both.



See [Orange Button Selections on page 573](#) for a list of supported selections.

4.9.5.2

Data Conventional Feature Button (Control Head - O7)



This field allows you to assign a function for the Data button on a Control Head - O7 and Keypad Mic (KPM).

See [Data Feature Button Selections on page 698](#) for a list of supported selections.

4.9.5.3

Data Conventional Index Button (Control Head - O7)

This field allows you to assign the Action Consolidation List member (by name) for the Data Button on a Control Head - O7 and Keypad Mic (KPM). The Data Button Feature of the same record/row must first be set to Action Consolidation. These selections apply on a radio-wide basis.



WARNING: You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection.

The only valid Consolidated Action selection for the Data Button is one that selects an **ALL OFF** condition (regardless of whether its name is **ALL OFF** or not). This means that every relay in the same Relay Pattern (record/row) must be in the **Off** state, and the Siren Type must be **All Off**.

IMPORTANT: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, the Data Button Feature defaults to **Action Consolidation** and this Data Button Index defaults to **AC ALL OFF**. See also the O7 Siren/Lights Keypad Keystone Concept.

Accessed Only:When the Data Button Feature field is set to **Action Consolidation** for the current record/row.

4.9.5.4

Data Trunking Feature Button (Control Head - O7)



This field allows you to assign a function for the Data Button on a Control Head - O7 and Keypad Mic (KPM).

See [Data Feature Button Selections on page 698](#) for a list of supported selections.

4.9.5.5

Data Trunking Index Button (Control Head - O7)

This field allows you to assign the Action Consolidation List member (by name) for the Data Button on a Control Head - O7 and Keypad Mic (KPM). The Data Button Feature of the same record/row must first be set to Action Consolidation. These selections apply on a radio-wide basis.



WARNING: You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection.

The only valid Consolidated Action selection for the Data Button is one that selects an **ALL OFF** condition (regardless of whether its name is **ALL OFF** or not). This means that every relay in the same Relay Pattern (record/row) must be in the **Off** state, and the Siren Type must be **All Off**.

IMPORTANT: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, the Data Button Feature defaults to **Action Consolidation** and this Data Button Index defaults to **AC ALL OFF**. See also the O7 Siren/Lights Keypad Keystone Concept.

Accessed Only:When the Data Button Feature field is set to **Action Consolidation** for the current record/row.

4.9.5.6

Multi-Function Knob (Control Head - O7)

Selects the Primary and Secondary rotary functions assigned to the Multi-Function Knob (MFK) for Mobile Control Head - O7.



First, the MFK Press Behavior must be selected. It is also possible to program the MFK to trigger Emergency Mode with the button-press, and/or as a single-function rotary control knob (see the Warnings). These selections apply to Conventional and Trunking communications mode.



WARNING:

When MFK Press Behavior is set to **Rotary Feature Select**:

- **For dual-function rotary operation**, provided a **Volume** function is assigned to a Control Head button (either Volume Select must be assigned to the Primary or Secondary function of the MFK, or Volume Up/Down must be assigned to the Navigation Controls), any Primary function in combination with any Secondary function is considered valid.
- **For single-function rotary operation**, provided a **Volume** function is assigned to a Control Head button (either Volume Select must be assigned to the Primary function of the MFK, or Volume Up/Down must be assigned to the Navigation Controls), any Primary function in combination with Blank as the Secondary function is considered valid.

When MFK Press Behavior is set to **Emergency**:

The button-press triggers Emergency Mode, the Secondary rotary function is unavailable, and any selection for the Primary rotary function (including Blank) is considered valid.

See [Multi-Function Knob Selections on page 607](#) for a list of supported selections.

4.9.5.7

Navigation Controls (Control Head - O7)



This field allows you to assign a function for the Up/Down Navigation Controls on a Control Head - O7 and Keypad Mic (KPM).

See [Navigation Controls Selections on page 700](#) for a list of supported selections.

4.9.6

Control Head - O9

This section contains selections for controls on the Control Head - O3.

4.9.6.1

Orange Button (Control Head - O9)



This field allows you to assign a function for the Orange button on the Control Head - O9, Keypad Mic (KPM), or both.

See [Orange Button Selections on page 573](#) for a list of supported selections.

4.9.6.2

Data Conventional Feature Button (Control Head - O9)



This field allows you to assign a function for the Data button on a Control Head - O9 and Keypad Mic (KPM).

See [Data Feature Button Selections on page 698](#) for a list of supported selections.

4.9.6.3

Data Conventional Index Button (Control Head - O9)

This field allows you to assign the Action Consolidation List member (by name) for the Data button on a Control Head - O9 and Keypad Mic (KPM). The Data Button Feature of the same record/row must first be set to Action Consolidation. These selections apply on a radio-wide basis.



WARNING:

You can duplicate the same Consolidated Action on a Response Selector position and a button. However, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection.

The only valid Consolidated Action selection for the Data Button is one that selects an **ALL OFF** condition (regardless of whether its name is **ALL OFF**, or not). This means that every relay in the same Relay Pattern (record/row) must be in the **Off** state, and the Siren Type must be **All Off**.

Accessed Only: When the Data Button Feature field is set to **Action Consolidation** for the current record/row.

4.9.6.4

Data Trunking Feature Button (Control Head - O9)



This field allows you to assign a function for the Data button on a Control Head - O9 and Keypad Mic (KPM).

See [Data Feature Button Selections on page 698](#) for a list of supported selections.

4.9.6.5

Data Trunking Index Button (Control Head - O9)

This field allows you to assign the Action Consolidation List member (by name) for the Data button on a Control Head - O9 and Keypad Mic (KPM). The Data Button Feature of the same record/row must first be set to Action Consolidation. These selections apply on a radio-wide basis.



WARNING:

You can duplicate the same Consolidated Action on a Response Selector position and a button. However, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection.

The only valid Consolidated Action selection for the Data Button is one that selects an **ALL OFF** condition (regardless of whether its name is **ALL OFF**, or not). This means that every relay in the same Relay Pattern (record/row) must be in the **Off** state, and the Siren Type must be **All Off**.

Accessed Only:When the Data Button Feature field is set to **Action Consolidation** for the current record/row.

4.9.6.6

Top Function Programmable Button Label Line 1 (Control Head - 09)

This field allows you to define recognizable labels for the current Top Function Programmable button record/row.



This label is then displayed on the first line of a Top Function Programmable Button. Whenever the associated button function is active, the label's backlight color is inverted.



NOTE:

Examples: Home, Call, Backup, # 192.

Characters, numbers, spaces, and special characters can be used.

Up to 6 characters are possible.

4.9.6.7

Top Function Programmable Button Label Line 2 (Control Head - 09)

This field allows you to define recognizable labels for the current Top Function Programmable button record/row.



This label is then displayed on the second line of a Top Function Programmable Button. Whenever the associated button function is active, the label's backlight color is inverted.



NOTE:

Examples: Chan, Backup, Down, # 192.

Characters, numbers, spaces, and special characters can be used.

Up to 6 characters are possible.

4.9.6.8

Top Function Programmable Button Feature (Control Head - O9)



This field allows you to assign a function for the Top Function Programmable button on a Control Head - O9 and Keypad Mic (KPM).

See [Top Function Programmable Button Feature Selections on page 650](#).

4.9.6.9

Top Function Programmable Button Index (Control Head - O9)

This field allows you to select the Index List member when specific button features are assigned to a Top Function Programmable button.



Index List members are based on the selection made in the Button Feature field of the same record/row, and are only needed when either Action Consolidation or Relay Pattern are selected. When Action Consolidation is selected, the Action Type field in Action Consolidation record must be selected as **Control**, otherwise it becomes invalid.

Accessed Only: When the Button Feature field is either **Action Consolidation** or **Relay Pattern**.

4.9.6.10

Top Function Programmable Button Sts/Msg Index (Control Head - O9)

This field allows you to select the Status or Message Index List member for a Top Function Programmable button. The Index List members are based on the selection made in the Button Feature field of the same record/row, and are only needed when either Direct Message or Direct Status is selected.



WARNING: More than one button cannot be defined with the same Index selection. Otherwise the selection is considered invalid.

Accessed Only: When the Top Function Programmable Button's Feature field is either **Direct Message** or **Direct Status**.

4.9.6.11

Top Function Programmable Button Zone (Control Head - O9)

This field allows you to select the desired Zone for the current Top Function Programmable button (record/row). Once the Zone is selected, the Channel must then be selected for the current record/row, to define the channel/mode. The Zone and Channel need to be defined only when the Feature field of the Top Function Programmable button is set to **Mode**.



WARNING:

Do not duplicate a function on multiple control types, on more than one Control Head button, or on more than one DEK button, or on more than one VIP Input, or on more than one VIP Output. This can cause you confusion and can sometimes disable a feature.

Only non-Dynamic Zones (zones that have Dynamic Zone Enable disabled) can be selected. Otherwise, this field becomes invalid.

Accessed Only: When the Feature field of the Top Function Programmable button is set to **Mode**.

4.9.6.12

Top Function Programmable Button Channel (Control Head - O9)

This field allows you to select the desired channel for the current Top Function Programmable button. The Zone selection for the current record/row must be chosen prior to defining this channel.



Once the Zone and Channel are selected, the channel/mode is then defined. The Zone and Channel need to be defined only when the Top Function Programmable Button's Feature field is set to **Mode**.



WARNING: Do not duplicate a function on multiple control types, on more than one Control Head button, or on more than one DEK button, or on more than one VIP Input, or on more than one VIP Output. This can cause you confusion and can sometimes disable a feature.

Accessed Only: When the Top Function Programmable Button's Feature field is set to **Mode**, and when the Zone field is not set to a **Dynamic Zone**.

4.9.6.13

Bottom Function Programmable Button Feature (Control Head - O9)



This field allows you to assign a function for the Bottom Function Programmable button on a Control Head - O9 and Keypad Mic (KPM).

See [Bottom Function Programmable Button Feature Selections on page 665](#).

4.9.6.14

Bottom Function Programmable Button Index (Control Head - O9)

This field allows you to select the Index List member when specific button features are assigned to a Top Function Programmable Button.



Index List members are based on the selection made in the Button Feature field of the same record/row, and are only needed when either Action Consolidation or Relay Pattern are selected. When Action Consolidation is selected, the Action Type field in Action Consolidation record must be selected as **Control**, otherwise it becomes invalid.

Accessed Only: When the Button Feature field is either **Action Consolidation** or **Relay Pattern**.

4.9.6.15

Response Selector Feature (Control Head - O9)

This field allows you to assign a function for the Response Selector on the Control Head - O9, for Position 0 through 3. These selections apply on a radio-wide basis.



WARNING: Do not duplicate a function on multiple control types, or on more than one Control Head button. This can cause you confusion and can sometimes disable a radio feature.

Only an Action Consolidation with Action Allowed on Response Selector set to **Yes** can be assigned to a Response Selector position; otherwise, this selection becomes invalid.

The following selections are supported:

Unassigned

No action is assigned to this position.

Action Consolidation

When selected, always available to you, and therefore not dependent on any feature or selection.

Once selected, the Response Selector Index for the same record/row must also be defined. When you move the Response Selector to this position, the assigned Consolidated Actions are executed. When the radio is powered up, the Consolidated Action assigned to the current Response Selector position is executed.

4.9.6.16

Response Selector Index (Control Head - O9)

This field allows you to assign the Action Consolidation List member (by name) for the Response Selector on the Control Head - O9, for Position 0 through 3.



The Response Selector Feature of the same record/row must first be set to Action Consolidation. These selections apply while operating in Conventional or Trunking communications mode.

WARNING: The selected Action Consolidation can have only one Action ID and it must be set to **Direct Status** and the Action Type must be set to **Control**. Otherwise, this selection becomes invalid. This is only for the Response Selector.

Accessed Only: When the Response Selector Feature field is set to **Action Consolidation** for the current record/row.

4.9.6.17

Directional Buttons Feature (Control Head - O9)

This field allows you to assign a function for the Directional buttons on the Control Head - O9, when used in conjunction with a Universal Relay Controller (URC).



These selections apply while operating in Conventional or Trunking communications mode.

WARNING: Do not duplicate the same Relay Pattern on more than one Directional Button, Top Function Programmable Button, or Bottom Function Programmable Button "Index" selection. However, Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button.

IMPORTANT: If the Universal Relay Controller Equipped field is "Enabled" and the URC is not connected at power-up, or is disconnected while the radio is on, then pressing a Directional Button configured for a Relay Pattern causes the radio to sound a bad "bonk".

The following selections are supported:

Blank

(Intended for functions that are not in use.)

Relay Pattern

When the Universal Relay Controller Equipped field is enabled. Once selected, the Directional Button Index for the same record/row must also be defined.

Third Party

When selected, always available to you, and therefore not dependent on any feature or selection.

Unprogrammed

When selected, always available to you, and therefore not dependent on any feature or selection.

4.9.6.18

Directional Buttons Index (Control Head - O9)

This field allows you to select the Index List member when specific button features are assigned to a Directional button.



Index List members are based on the selection made in the Button Feature field of the same record/row, and are only needed when Relay Pattern is selected.

WARNING: Do not duplicate the same Relay Pattern on more than one Directional Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection. However, Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button.

Accessed Only: When the Universal Relay Controller Equipped field is enabled, and when the Directional Button Feature field is set to **Relay Pattern**.

4.9.6.19

PA/Siren Buttons Feature (Control Head - O9)

Selects the function for the Mobile Control Head and Public Address (PA) button and siren Mode Keypad. These selections apply while operating in Conventional or Trunking communications mode, as noted in the table below.



Button Selections	This selection is only valid in the application, and available to you:	Selections are available Based on Availability to Current Hardware:
Airhorn on page 543	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.	
Blank on page 567	(Intended for controls that are not in use.)	All PA/Siren Mode buttons.
Direct Hi/Lo on page 544	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.	
Direct Manual on page 545	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Direct Wail on page 545	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Direct Yelp on page 546	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Hi/Lo on page 569	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.	
Manual on page 570	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Public Address (PA) on page 547	When the Radio Ergonomics Wide, Siren Operation field is set to Disabled .	
Third Party on page 495	When selected, always available to you, and therefore not dependent on any feature or selection.	All PA/Siren mode buttons.
Unprogrammed on page 496	(Intended for controls that are not in use.)	All PA/Siren mode buttons.
Wail on page 571	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	

Button Selections	This selection is only valid in the application, and available to you:	Selections are available Based on Availability to Current Hardware:
Yelp on page 571	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	

4.9.6.19.1

Airhorn

This button-press allows you to activate and deactivate the Airhorn Siren tone.



This feature is available on a radio-wide basis.

WARNING: The HiLo Airhorn Tones field must be enabled. Otherwise, the Hi/Lo, Direct Hi/Lo, and Airhorn button selections will be invalid.

NOTE: In addition to this programmable button selection, the O9 Control Head has a dedicated "Airhorn" button on its Siren Mode Keypad.

4.9.6.19.2

Blank

Select this feature for a radio button that is not in use.



You hear a chirp tone when pressing this button. This feature is available for Conventional or Trunking communications mode.

4.9.6.19.3

Direct Hi/Lo

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds "Hi/Lo" Siren tones.



See also the [Hi/Lo on page 569](#) button-press. This feature is available on a radio-wide basis.



WARNING: The [HiLo Airhorn Tones on page 425](#) field must be **Enabled**. Otherwise, the Hi/Lo, Direct Hi/Lo, and Airhorn button selections will be invalid.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Hi/Lo** button on its Siren Mode Keypad.

The Hi/Lo Siren tones can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.6.19.4

Direct Manual

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds the RM-defined Manual Tone of the Siren option.



See also the [Manual on page 570](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

When a VIP Input is programmed for Horn Ring operation, an initiated Direct Manual button-press activates Siren operation and selects the RM-defined Manual Tone. This Manual Tone then sounds when the vehicle's Horn Ring is pressed, and ends when the Horn Ring is released.

When a VIP Input is not programmed for Horn Ring operation, an initiated Direct Manual button-press activates Siren operation and selects the RM-defined Manual Tone. This Manual Tone sounds when the Direct Manual button is pressed and ends when the button is released.

If the radio is already sounding a Direct Wail, Direct Yelp, or Direct Hi/Lo Siren tone, the selected Siren tone is changed by pressing the Direct Manual button.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Manual** button on its Siren Mode Keypad.

The Manual Siren mode can also be enabled as one of a sequence of radio actions, known as Consolidated Actions.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.6.19.5

Direct Wail

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds a "Wail" Siren tone.



See also the [Wail on page 571](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Wail** button on its Siren Mode Keypad.

The Wail Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.6.19.6

Direct Yelp

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds a "Yelp" Siren tone.



See also the [Yelp on page 571](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Yelp** button on its Siren Mode Keypad.

The Yelp Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.6.19.7

Hi/Lo

This button-press allows you to select the Hi/Lo Siren tones.



A Siren broadcast is activated and deactivated with a Siren button-press. This feature is available on a radio-wide basis.



WARNING: The [HiLo Airhorn Tones on page 425](#) field must be **Enabled**. Otherwise, the Hi/Lo, Direct Hi/Lo, and Airhorn button selections will be invalid.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Hi/Lo** button on its Siren Mode Keypad.

The Hi/Lo Siren tones can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

4.9.6.19.8

Manual

This button-press allows you to activate and deactivate the RM-defined Manual Tone of the Siren option.



See also the [Direct Manual on page 545](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

When a VIP Input is programmed for Horn Ring operation, first an initiated Siren button-press activates Siren operation, and a Manual button-press selects the programmed Manual Tone. The Manual Tone then sounds when the vehicle's Horn Ring is pressed, and ends when the Horn Ring is released.

When a VIP Input is not programmed for Horn Ring operation, first an initiated Siren button-press activates Siren operation, and a Manual button-press selects the programmed Manual Tone. The Manual Tone sounds when the Manual button is pressed and ends when the button is released.

If the radio is already sounding a Wail, Yelp, or Hi/Lo Siren tone (activated by selecting one of these Siren types accompanied by a Siren button-press), the selected Siren tone is changed by pressing the Manual button.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Manual** button on its Siren Mode Keypad.

The Manual Siren mode can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

4.9.6.19.9

Public Address (PA)

This button-press allows you to activate and deactivate the Public Address (PA) system, which routes microphone audio through an external speaker system.



This feature is available on a radio-wide basis.



IMPORTANT: If the Public Address and Siren options are both on at the same time, pressing the PTT button overrides any Siren function. Any Siren tone or incoming radio signals (if in External Radio mode) is abruptly muted to give the Public Address priority operation.



NOTE: In addition to this programmable button selection, the O9 Control Head has a dedicated **Public Address** button.

4.9.6.19.10

Third Party

This button-press allows you to initiate functionality in third-party accessories, such as compatible Whelen® Sirens.



WARNING: When the Dual Radio [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, this selection must be made for both Conventional and Trunking, where applicable, in order to be considered valid.

4.9.6.19.11

Unprogrammed

Select this feature for a radio button that is not in use.



You will hear a chirp tone when pressing this button. This feature is available while operating in Conventional or Trunking communications mode.

4.9.6.19.12

Wail

This button-press allows you to select the Wail Siren tone.



NOTE: A Siren broadcast is activated and deactivated with a Siren button-press.

See also the [Direct Wail on page 545](#) button-press. This feature is available on a radio-wide basis.



NOTE: In addition to this programmable button selection, the O9 Control Head has a dedicated **Wail** button on its Siren Mode Keypad.

The Wail Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

4.9.6.19.13

Yelp

This button-press allows you to select the Yelp Siren tones.



NOTE: A Siren broadcast is activated and deactivated with a Siren button-press.

See also the [Direct Yelp on page 546](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Yelp** button on its Siren Mode Keypad.

The Yelp Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

4.9.6.20

Navigation Controls (Control Head - O9)



This field allows you to assign a function for the Up/Down Navigation Controls on a Control Head - O9 and Keypad Mic (KPM).

See [Navigation Controls Selections on page 700](#) for a list of supported selections.

4.9.7

Control Head - E5

This node contains selections for controls on the Control Head - E5.

4.9.7.1

Orange Button (Control Head - E5)



This field allows you to assign a function for the Orange button on the Control Head - E5, Keypad Mic (KPM), or both.

See [Orange Button Selections on page 573](#) for a list of supported selections.

4.9.7.2

Bottom Function Programmable Button Feature (Control Head - E5)



This field allows you to assign a function for the Bottom Function Programmable button on a Control Head - E5 and Keypad Mic (KPM).

See [Bottom Function Programmable Button Feature Selections on page 665](#) for a list of supported selections.

4.9.7.3

Bottom Function Programmable Button Index (Control Head - E5)

Selects the Index List member when specific button features are assigned to a Top Function Programmable Button.



Index List members are based on the selection made in the Button Feature field of the same record/row, and are only needed when either Action Consolidation or Relay Pattern are selected. When Action Consolidation is selected, the Action Type field in Action Consolidation record must be selected as **Control**, otherwise it becomes invalid.

Accessed Only: When the Button Feature field is either **Action Consolidation** or **Relay Pattern**.

4.9.7.4

Navigation Controls (Control Head - E5)



This field allows you to assign a function for the Up/Down Navigation Controls on a Control Head - E5 and Keypad Mic (KPM).

See [Navigation Controls Selections on page 700](#) for a list of supported selections.

4.9.8

Orange Button Selections

This section provides you with selection functions for the Mobile Control Head and/or Keypad Mic (KPM) buttons. These selections apply while operating in Conventional or Trunking communications mode, as noted in the table below.



WARNING:

You should not duplicate a function on multiple control types, or on more than one Control Head button. This may cause you confusion and may sometimes disable a radio feature.

For a Dual Radio configuration:

- When the Radio Selection field is set to **Primary Radio** or **Secondary Radio**, only the O7 Control Head button selections are configurable.
- Button functions for Radio Wide features (Siren-related buttons, Aux Control (1-3), Dim, GunLock (1, 2, 3, or All), Radio Swap, Relay Pattern, and Third Party) must be configured the same on both radios.
- It is strongly recommended to configure all of the button functions the same way on both radios, in order to avoid confusion.



NOTE:

When a Mission Critical WRSM is wirelessly connected to the Mobile Microphone with Bluetooth Gateway, pressing the Orange Programmable button on the WRSM will trigger the event set in 2-dot Button of a KPM.

Table 101: Legend for Button Selection Symbols

Symbol	Description
	Conventional Mode

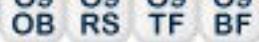
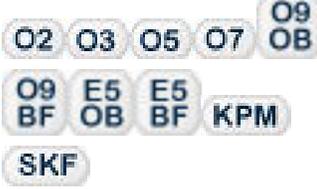
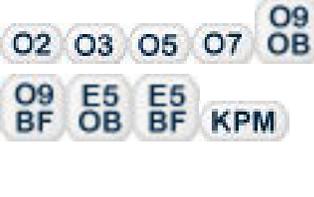
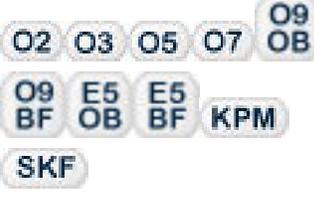
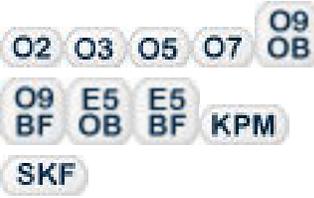
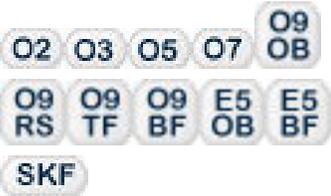
Symbol	Description
	Trunking Mode
	Conventional and Trunking Mode
	O2 Control Head
	O3 Control Head
	O5 Control Head
	O7 Control Head
	O9 Control Head
	E5 Control Head
	Keypad Mic
	Smart Key Fob

Table 102: Button Selections

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Action Consolidation on page 588 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p> <p>Once selected, the appropriate Index for the same record/row must also be defined.</p> <p>You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button Index selection.</p> <p> NOTE: When you press this button, the assigned Consolidated Actions are executed.</p>	
Airhorn on page 543 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA, and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.</p>	

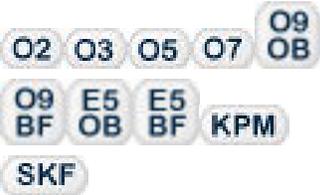
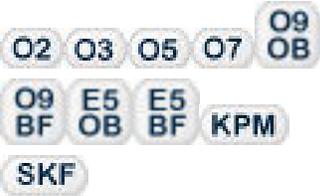
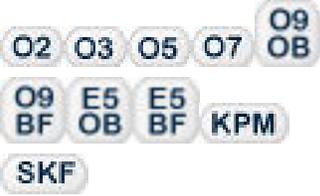
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Automatic Channel Fallback Enable/Disable 	When the Channel Fallback Enable field is enabled.	
Aux Control (1-3) on page 589 	When the Radio Vehicular Interface Port (VIP) Outputs are set to an Aux Control . When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio , this selection becomes valid when it is selected for both Conventional and Trunking It also becomes valid when not selected for the Orange button on the O7 Control Head, and when not selected for the Side Top (Purple) button on the  .	
Blank on page 567 	Intended for controls that are not in use.	
Bluetooth Audio Re-route on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Bluetooth Configuration on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Bluetooth Discoverable On/Off on page 483 	When the Bluetooth Enable on page 396 field is Enabled and when the radio is not LTE-capable.  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Bluetooth Headset PTT on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Bluetooth Inquiry On/Off on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Bluetooth On/Off on page 484 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Call Alert on page 590 	For Conventional Feature, when the Conventional Personality, ASTRO Call Alert Rx/Tx field is set to Encode or Encode & Decode , or when the Conventional Personality, Non-ASTRO Call Alert Rx/Tx field is set to Encode or Encode & Decode for the current channel. For Trunking Feature, when the Trunking Personality, Call Alert/Page Operation field is set to List Only or Unlimited for the current channel.	
Call Response on page 591 	When the Phone Operation field is not set to None for the current channel.	
Channel Announcement on page 484 	When a Voice Announcement file has been selected in the Zone Channel Assignment, Channel Announcement field for the current channel.	

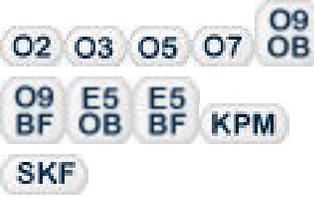
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Channel Fallback Manual/Revert 	When the Channel Fallback Enable field is enabled.	
Channel Search on page 485 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Channel Select on page 591 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Contacts on page 485 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Dim on page 592 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p> <p>When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio, this selection is only valid when it is selected for both Conventional and Trunking, and when it is not selected for the Side Top (Purple) button on the .</p>	
Direct Ext Radio on page 544 	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled .	
Direct Hi/Lo on page 544 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is Enabled .	
Direct Manual on page 545	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
C & T		
Direct Message on page 593	<p>When the Sts/Msg Index field is set to a unique value (not assigned to other DEK Direct Message buttons).</p> <p>For Conventional Feature, the Conventional System Message field must be enabled.</p> <p>For Trunking Feature, the Trunking Personality Message Enabled field must be enabled.</p>	O9 TF
C & T		
Direct Mode (Mode) on page 594	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	O9 TF
C & T		
Direct Status on page 594	<p>When the Sts/Msg Index field is set to a unique value (not assigned to other DEK Direct Status buttons).</p> <p>For Conventional Feature, the Conventional System Message field must be enabled.</p> <p>For Trunking Feature, the Trunking Personality Message Enabled field must be enabled.</p>	O9 TF
C & T		
Direct Wail on page 545	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p>	O3 O7 O9 TF KPM SKF
C & T		
Direct Yelp on page 546	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p>	O3 O7 O9 TF KPM SKF
C & T		
Digital Vehicular Repeater System (DVRS) on page 595	<p>When the DVRS Wide, DVRS Hardware Enable field is enabled.</p>	O2 O3 O5 O7 O9 OB O9 BF E5 OB E5 BF KPM SKF
C & T		
DTMF Tone on page 485	<p>There are 12 DTMF tones; namely DTMF Tone 0 to 9, DTMF Tone *, and DTMF Tone #.</p> <p>When selected, you can send out DTMF code of the assigned DTMF value. For example, when DTMF Tone 9 is selected, you can send out DTMF code 9.</p> <p>Selection is only available when DTMF Mic Enable is checked.</p>	O2 O3 O5 O7 O9 OB O9 TF O9 BF E5 OB E5 BF
C & T		

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Dynamic ID on page 486 	When operating in Conventional communications mode, and when the Conventional System, Dynamic ID Enable field is enabled for the current channel.	
Dynamic Priority on page 486 	When Scan Mode is enabled, when the Scan Type is Conventional , and when the Scan List, Dynamic Priority field is enabled for the current landed scan channel.	
Emergency on page 486 	<p>When the Conventional System, Emergency Profile Selection field is not set to Emergency Tx Disabled for the current channel.</p> <p>When the Trunking Personality, Emergency Profile Selection field is not set to Emergency Tx Disabled for the radio's current channel.</p> <p>For Trunking, Emergency is not available when Failsoft Mode is active and Emergency Blocked in Failsoft is enabled.</p> <p>When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio, this selection is invalid for the Side Top (Purple) button of a .</p>	
Emergency Supervisor Clear on page 596 	<p>Selection is only valid in the application, and always available to you.</p> <p>It is selected for Side Middle Button or Accy 1-dot. Emergency Exit Control is set to Supervisor.</p>	
External Radio (Ext Radio) on page 596 	When the Radio Ergonomics Wide, Siren Operation field is set to Disabled .	
Front/Rear (F/R) on page 597 	When the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to One Active .	

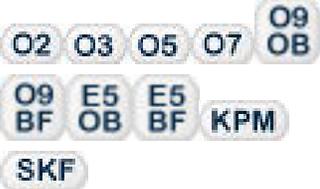
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Gunlock (1,2,3, or All) on page 546 	When at least one of the radio VIP Out pins has been programmed for the corresponding GunLock function. (Refer also to Password Required For GunLock.)	
Hi/Lo on page 569 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.	
Horn Lights on page 597 	When the Radio Ergonomics Wide, Horn and Lights field is enabled.	
In Car Monitor (ICM) on page 597 	When the DVRS Wide, DVRS Hardware Enable field is enabled, and when the DVRS Wide, In Car Monitor field is set to ICM Button/Menu Controlled .	
Information on page 486 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Intercom on page 598 	When the Radio Ergonomics Wide, Multi Control Head field is disabled, or when the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to All Active .	
Internet Protocol Address (IP) on page 486 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Location on page 487 	When the Radio Wide, Location Enable field is enabled.	

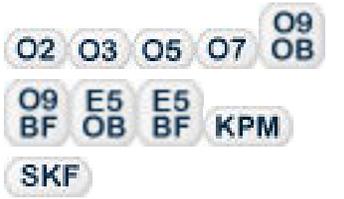
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Manual on page 570 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Message on page 488 	When the Conventional System, Message field is enabled for the radio's current channel. When the Trunking Personality, Message Enable field is enabled for the radio's current channel.	  
Modem On and Off on page 599	This button-press activates and deactivates Data Modem capability of the radio.	  
Monitor on page 488  See Latch Enable Time on page 1028	When selected, always available to you, and therefore not dependent on any feature or selection.	  
MS01–MS13 on page 489 (Mode Select) 	When selected, always available to you, and therefore not dependent on any feature or selection.	  
Multiple Private Line (MPL) on page 489 	When the Conventional Personality, Rx Voice/Signal Type field is set to Non-ASTRO or Mixed Mode , and when the Conventional Personality, User Selectable PL [MPL] field is enabled for the radio's current channel.	  
Nuisance Delete on page 489 	When Scan Mode is enabled.	  

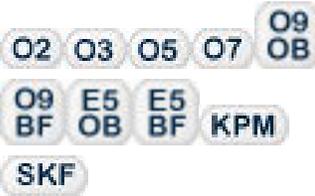
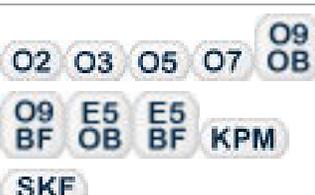
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
One Touch 1–16 on page 600 	When at least one of the Conventional Personality, One Touch Button Features is not set to Disabled for the current channel. When at least one of the Trunking System, One Touch Button Features is not set to Disabled for the radio's current channel.	
Priority Channel PTT on page 490 	When operating in Conventional communications mode, and when there is a Priority Member 1 Scan List Member in the current channel Scan List.	
Priority Dispatch 	Selection is valid only for Side Top Button, Side Middle Button, and Side Bottom Button.	
Public Address (PA) on page 547 	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled .	
Phone on page 490 	When the Conventional Personality, Phone Operation field is not set to None for the current channel. When the Trunking Personality, Phone Operation field is not set to Disabled for the current channel.	
Radio Profiles on page 491 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Radio Swap on page 601 	When the Radio Selection field is set to Primary Radio or Secondary Radio in a Dual Radio configuration. Where applicable, this selection must be selected for both Conventional and Trunking in order to be considered valid.	
Recent Calls on page 491 	When selected, always available to you, and therefore not dependent on any feature or selection.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
<p>Rekey Request on page 492</p> <p>C & T</p> <p>Requires a radio-user Long Key-press Duration on page 432.</p>	<p>When the ASTRO OTAR Information, User Selectable Rekey Request is not set to Disabled, or when the MDC OTAR, Rekey Request Mode is not set to Disabled.</p>	
<p>Relay Pattern on page 547</p> <p>C & T</p>	<p>When the Universal Relay Controller Equipped field is enabled and a URC is connected to the radio.</p> <p>You cannot duplicate the same Relay Pattern on more than one Directional Button, Top Function Programmable Button, or Bottom Function Programmable Button Index selection.</p> <p>Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button.</p> <p>Once selected, the appropriate Index for the same record/row must also be defined.</p> <p>See also: Password Required For Lightbar on page 340.</p>	
<p>Repeater Access Button 1 (RAB1) on page 492</p> <p>Conv.</p>	<p>When the Conventional Personality, Repeater Access field is enabled, and when the Access Type is set to Manual for the radio's current channel.</p> <p>This feature is not available on Side Button 1 when Radio Lock is enabled.</p>	
<p>Repeater Access Button 2 (RAB2) on page 492</p> <p>Conv.</p>	<p>When the Conventional Personality, Repeater Access field is enabled, and when the Access Type is set to Manual for the current channel.</p> <p>This feature is not available on Side Button 1 when Radio Lock is enabled.</p>	
<p>Reprogram Request on page 492</p> <p>Trunk.</p>	<p>When the Trunking System, System Type is ASTRO 25, and when the Trunking System, Dynamic Re-grouping Enable field is enabled for the current channel.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Request-To-Talk (RTT) on page 492 	When the Conventional Personality, MDC RTT Button Access field is set to Manual for the radio's current channel, and when that Personality is not a Receive Only Personality, and when Tx Inhibit is not enabled.	
Scan on page 493  Long Key-press Duration on page 432 vs Short Keypress Duration on page 430	When the Scan Type is not set to Voting Scan , and when the Conventional Personality, Scan List Selection field is not set to None , and when the Conventional Personality, Automatic Scan field is disabled for the radio's current channel.	
Secure Tx Select on page 602  Long Key-press Duration on page 432 vs Short Keypress Duration on page 430	When any one of the Conventional Secure/Clear Strapping fields is set to Select for the current channel. When any one of the Trunking Secure/Clear Strapping fields is set to Select for the current channel.	
Select/Private Call on page 493 	When the Conventional Personality, ASTRO Selective Call Rx/Tx is set to Encode or Encode & Decode , or when the Conventional Personality, Non-ASTRO Selective Call Rx/Tx is set to Encode or Encode & Decode for the current channel. When the Trunking Personality, Private Call Type is not set to Disabled for the current channel.	
Siren on page 603 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA . See also Password Required For Siren .	
Site Display/Srch on page 493  Long Key-press Dura-	When the Trunking System, Site Alias Enable field is enabled for the current channel.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
tion on page 432 vs Short Keypress Duration on page 430		
Site Lock/Unlock on page 493  Long Keypress Duration on page 432 vs Short Keypress Duration on page 430	<p>When the Trunking System, Site Alias Enable field is enabled for the current channel.</p>	
Status on page 494 	<p>When the Conventional System Status field is enabled for the current channel.</p> <p>When the Trunking Personality Status Enable field is enabled for the current channel.</p>	
Talkaround/Direct on page 494 	<p>When operating in Conventional communications mode, and when the Conventional Personality, Direct/Talkaround field is enabled for the current channel.</p> <p>This selection can not be set concurrently on Buttons, Switches and Menu Items</p> <p>It can be set concurrently on Portable and Accessory Buttons.</p>	
Talkgroup on page 494 	<p>When the Conventional Personality, ASTRO Talkgroup Selection Type field is set to Selectable for the current channel.</p>	
Text Messaging Service (TMS) on page 604  Long Keypress Duration on page	<p>When the Conventional System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p> <p>When the Trunking System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
432 vs Short Keypress Duration on page 430	When selected, always available to you, and therefore not dependent on any feature or selection.	
Third Party on page 495 	In a Dual Radio configuration, when the Radio Selection field is set to Primary Radio or Secondary Radio , this selection must be selected for both Conventional and Trunking in order to be considered valid.	
TMS Query on page 495 	When the Conventional System, Text Messaging Service field is set to List Only or Unlimited , and when that System Data Profile Selection is not set to Data Disabled for the current channel. When the Trunking System, Text Messaging Service field is set to List Only or Unlimited , and when that System Data Profile Selection is not set to Data Disabled for the current channel.	
TMS Quick Text on page 495 	When the Conventional System, Text Messaging Service field is set to List Only or Unlimited , and when that System's Data Profile Selection is not set to Data Disabled for the radio's current channel. When the Trunking System, Text Messaging Service field is set to List Only or Unlimited , and when that System Data Profile Selection is not set to Data Disabled for the current channel.	
Tx Low Power on page 605 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Unprogrammed on page 496 	Intended for controls that are not in use.	
User on page 496 	When selected, always available to you, and therefore not dependent on any feature or selection.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Voice Mute on page 496 	<p>When the Conventional Personality, ASTRO Call, In-Call User Alert Enable field is enabled for the current channel, or when the Conventional Personality, Non-ASTRO Call In-Call User Alert Enable field is enabled for the current channel.</p> <p>When the Trunking Personality, In-Call User Alert Enable field is enabled for the current channel.</p>	
Volume Down on page 496 	<p> NOTE: This function is available on Mobile radios and only applicable to SKF.</p> <p> WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.</p>	
Volume Up on page 497 	<p> NOTE: This function is available on Mobile radios and only applicable to SKF.</p> <p> WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.</p>	
Wail on page 571 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p>	
Wi-Fi On/Off on page 497 	<p>This button-press activates and deactivates Wi-Fi capability of the radio.</p>	
Yelp on page 571 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p>	
Zone Down on page 498 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Zone Up on page 498 	When selected, always available to you, and therefore not dependent on any feature or selection.	

4.9.8.1

Action Consolidation

This button-press, or O9 Control Head Response Selector position, allows you to initiate a programmed sequence of Consolidated Actions.



You may easily execute a Consolidated Action's sequence of radio actions with minimal effort. This feature applies while operating in Conventional or Trunking communications mode.

WARNING: You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Response Selector, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection.



NOTE: For the O9 Control Head, it is strongly recommended that the Response Selector's **0** position be assigned a Consolidated Action that turns all Relay Patterns, Siren tones, GPS Reports, Mode changes and Direct Status to an **Unassigned** or **ALL OFF** state. It may also be desirable to assign this Consolidated Action to a button-press.



IMPORTANT:

When a Consolidated Action is activated with a button-press, pressing the Action Consolidation button again does not deactivate any of the actions; instead, it reactivates the sequence of actions.

When a Consolidated Action is activated with a Response Selector position on the O9 Control Head, changing that position does deactivate the Consolidated Action assigned to the previous Response Selector position, and the Consolidated Action assigned to the new position is activated.

When the radio is powered up, any Consolidated Action assigned to the Response Selector's current position is executed.

No matter if a Consolidated Action is completed or canceled, if there are any required channel/mode changes in the action, the radio always returns to its original channel/mode.

Once initiated, a Consolidated Action may be canceled, however the individual actions typically happen so quickly, that the likelihood of terminating any part of the Action is nearly impossible.

- A Consolidated Action may be terminated by a Home button-press, a menu EXIT, a PTT button-press (provided the Public Address mode is not active), or the engagement of Emergency Mode.
- The Relay Pattern, Siren Type, or GPS Report actions are the first to launch and are therefore nearly immediate.

4.9.8.2

Aux Control (1-3)

These three button-selections allow you to individually activate and deactivate radio Vehicular Interface Port (VIP) Outputs that are set to an **Aux Control**.



The VIP Output is activated for the duration determined by the Active Duration field. See Also The Auxiliary Control Page fields. This feature is available for Conventional or Trunking communications mode.



WARNING: When the Dual Radio - Radio Selection field is set to **Primary Radio** or **Secondary Radio**, this selection is only considered to be valid when it is selected for both Conventional and Trunking, and when it is not selected for the Orange button on the O7 Control Head, and when it is not selected for the Side Top (Purple) button of a Keypad Mic (KPM).



IMPORTANT:

An **Aux Control** VIP Output may also be triggered when the radio has decoded a Tone Signaling tone or tone pair and External Control is not set to **None**.

The [Consolette on page 255](#) also uses Auxiliary Control features.

4.9.8.3

Blank

Select this feature for a radio button that is not in use.



You hear a chirp tone when pressing this button. This feature is available for Conventional or Trunking communications mode.

4.9.8.4

Bluetooth Audio Reroute

This button-press allows you to cycle active speaker audio between a portable radio's internal speaker or external (RSM/DRSM) speaker, and a Bluetooth accessory's wireless speakers.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.5

Bluetooth Configuration

This button-press provides you with a list of Bluetooth status/information and Bluetooth options.

This feature is available while operating in Conventional or Trunking communications mode.

The following features are included:

Bluetooth Status

Allows you to turn on and off Bluetooth radio to Bluetooth device functionality.

Device Active

Allows you to view a list of all currently active (paired) Bluetooth devices.

Bluetooth Speaker

Allows you to turn on and off a Bluetooth device's speaker.

4.9.8.6

Bluetooth Discoverable On/Off

This button-press allows you to activate or deactivate Bluetooth discoverable mode.

When activated, the radio listens for inquiry requests coming from other Bluetooth devices within its range, and responds with its address, name, and all the necessary information required for pairing and connection. Provided you do not deactivate discoverable mode and it remains activated for the duration specified in the [Bluetooth Radio Visibility Duration on page 400](#) field. This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.7

Bluetooth Headset PTT

This button-press serves as the primary, or as an additional, PTT button for a Bluetooth wireless headset; therefore this button-press allows you to key up the radio while using the Bluetooth headset's microphone as the audio source.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.8

Bluetooth Inquiry On/Off

This button-press allows you to activate or deactivate Bluetooth Inquiry mode.

When activated, the radio sends out inquiry requests in search of all Bluetooth devices within its range (called "access points"). Provided you do not deactivate Inquiry mode and it remains activated for the duration specified in the [Bluetooth Device Search Duration on page 399](#) field. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: For radios with no front display only, pressing and holding this button-press for more than 3 seconds allows you to activate **discoverable** mode, which is then deactivated once the button is released.

4.9.8.9

Bluetooth On/Off

This button-press activates and deactivates the radio's Bluetooth capabilities.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.10

Call Alert

This button-press allows you to transmit a Call Alert for Conventional modes, or a Call Alert/Page for Trunking modes.



NOTE: Call Alert/Pages allow a dispatcher or radio-caller to notify you (or group of radios-users) of a missed call. Receiving radios are targeted based on radio and system information managed by the Contacts and Call IDs in the radio's Call Hot Lists.

You can directly enter or select Call IDs from the channel's Hot List. The receiving radio responds with both alert tones and visual alerts to you. The visual alert (flashing LED) persists until reset by your interaction with the radio.

4.9.8.11

Call Response

This button-press allows you to respond to (and hang up from) a received Phone Call (Conventional or Trunking) or Private Call.

Valid for **Trunking** only.

4.9.8.12

Channel Announcement

This button-press allows you to hear the Voice Announcement audio file that is assigned to the radio's current channel/mode.

 **IMPORTANT:** Voice files are assigned to channels from the Zone Channel Assignment, [Channel Announcement on page 1296](#) Channel Announcement field.

4.9.8.13

Channel Search

This button-press allows you to search for a channel/mode based on its programmed channel name, and directly switch to the found channel.

This feature is available while operating in Conventional or Trunking communications mode.

 **NOTE:** These [Channel Name on page 1294](#) can be viewed in the Zone Channel Assignment Window's Channels Page, on a per zone basis.

4.9.8.14

Channel Select

This button-press allows you to enter the desired radio channel.



Once the **Channel Select** button is selected, you are then able to enter the desired channel number on the radio's keypad. The number entered applies to the radio's current zone. This feature applies while operating in Conventional or Trunking communications mode.

 **NOTE:** These channel numbers must be programmed and can be viewed in the Zone Channel Assignment Window's Channels Page on a per zone basis.

4.9.8.15

Contacts

This button press allows you to view or edit the Contacts of the radio's current channel.

Contacts must be programmed in the Unified Call List. Contacts make up the members of Call Hot Lists. Hot List members/Contacts are selectable by you, allowing for call types such as Phone Calls, Selective Calls, Call Alerts, Private Calls and Pages to individual radios or to groups of radios.

 **IMPORTANT:** This feature is not available for Portable radios having only a top display.

4.9.8.16

Dim

This button-press allows you to change the illumination level of the radio's backlight. When in the lights-off position, the radio's backlight and display are completely shut down; this is useful when a complete stealth-mode is desired.



Depending on the model of your radio, the available levels of illumination may vary. Also see the Backlight Color Control feature.



WARNING:

This feature does not apply when a **KPM** is attached to an **O9** Control Head.

When the Dual Radio - Radio Selection field is set to **Primary Radio** or **Secondary**, this selection is only considered to be valid:

- when it is selected for both Conventional and Trunking, and
- when it is not selected for the Side Top (Purple) button of a **KPM**.

4.9.8.17

Direct Ext Radio

This button-press allows you to directly activate and deactivate External Radio mode.



See also the [External Radio \(Ext Radio\) on page 596](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

The External Radio feature is not available with a Siren switchbox.

See also: [Options Audio Muting on page 423](#) and [External Radio Ignition on page 423](#).

4.9.8.18

Direct Hi/Lo

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds "Hi/Lo" Siren tones.



See also the [Hi/Lo on page 569](#) button-press. This feature is available on a radio-wide basis.



WARNING: The [HiLo Airhorn Tones on page 425](#) field must be **Enabled**. Otherwise, the Hi/Lo, Direct Hi/Lo, and Airhorn button selections will be invalid.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Hi/Lo** button on its Siren Mode Keypad.

The Hi/Lo Siren tones can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.8.19

Direct Manual

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds the RM-defined Manual Tone of the Siren option.



See also the [Manual on page 570](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

When a VIP Input is programmed for Horn Ring operation, an initiated Direct Manual button-press activates Siren operation and selects the RM-defined Manual Tone. This Manual Tone then sounds when the vehicle's Horn Ring is pressed, and ends when the Horn Ring is released.

When a VIP Input is not programmed for Horn Ring operation, an initiated Direct Manual button-press activates Siren operation and selects the RM-defined Manual Tone. This Manual Tone sounds when the Direct Manual button is pressed and ends when the button is released.

If the radio is already sounding a Direct Wail, Direct Yelp, or Direct Hi/Lo Siren tone, the selected Siren tone is changed by pressing the Direct Manual button.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Manual** button on its Siren Mode Keypad.

The Manual Siren mode can also be enabled as one of a sequence of radio actions, known as Consolidated Actions.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.8.20

Direct Message

This button-press allows you to transmit the Message member specified in the button's Sts/Msg Index field.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Message Alias List is used.

While operating in Trunking communications mode, the Trunking System - Message Alias List selected for the current Trunking Personality is used.

4.9.8.21

Direct Mode (Mode)

This button-press allows you to switch to the channel/mode specified in this Top Function Programmable Button's Zone, and Channel fields.



This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.22

Direct Status

This button-press allows you to transmit the Status member specified in the button's Sts/Msg Index field.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Status Alias List is used.

While operating in Trunking communications mode, the Trunking System - Status Alias List selected for the current Trunking Personality is used.

4.9.8.23

Direct Wail

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds a "Wail" Siren tone.



See also the [Wail on page 571](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Wail** button on its Siren Mode Keypad.

The Wail Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.8.24

Direct Yelp

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds a "Yelp" Siren tone.



See also the [Yelp on page 571](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Yelp** button on its Siren Mode Keypad.

The Yelp Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.8.25

DTMF Tone

This button-press allows you to send out DTMF code of the assigned DTMF value.



There are 12 DTMF tones; namely DTMF Tone 0 to 9, DTMF Tone *, and DTMF Tone #. This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.26

Digital Vehicular Repeater System (DVRS)

This button-press allows you to switch between the DVRS (Digital Vehicle Repeater System) modes.



The DVRS Modes include **System**, **Local**, and **Off**. Other DVRS settings are also possible. This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.27

Dynamic ID

This button-press allows for entry into the Dynamic ID edit mode, which allows you to view and/or edit the radio's Individual ID and/or MDC Primary ID for the current ASTRO and/or MDC system.

This feature is available while operating in Conventional communications mode.

4.9.8.28

Dynamic Priority

This button-press allows you to select the Dynamic Priority scan assignment.

This feature is available while operating in Conventional communications mode.

4.9.8.29

Emergency

This button-press allows you to enter and also exit emergency mode operation.

See also the [Short Keypress Duration for Emergency on page 431](#) and the [Long Keypress Duration for Emergency on page 433](#) features. This feature is available while operating in Conventional or Trunking communications mode.



WARNING:

When a Mission Critical WRSM is wirelessly connected to the Mobile Microphone with Bluetooth Gateway, pressing the Orange Programmable button on the WRSM will trigger the event set in 2-dot Button of a KPM.

When the Dual Radio-Radio Selection field is set to **Primary Radio** or **Secondary Radio**, this selection is invalid for the Side Top (Purple) button on a .

4.9.8.30

Emergency Supervisor Clear

This button-press is selected for Side Middle Button or Accy 1-dot. Emergency Exit Control is set to "Supervisor".

This feature is available while operating in Trunking communications mode.

4.9.8.31

External Radio (Ext Radio)

This button-press, in conjunction with a Siren button-press, allows you to activate and deactivate External Radio mode.



See [Direct Ext Radio on page 544](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

The External Radio feature is not available with a Siren switchbox.

See also: [Options Audio Muting on page 423](#) and [External Radio Ignition on page 423](#).

4.9.8.32

Front/Rear (F/R)

This button-press allows you to switch the radio's focus between control heads, thus allowing one of two control heads to be active at one time.



WARNING: This selection is only considered to be valid when the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to **One Active**.

4.9.8.33

Horn Lights

This button-press allows you to turn the Radio Ergonomics Wide, Horn and Lights external alarms ON/OFF.



These external alarms are activated when a Call Alerts/Page, Selective/Private Call, Phone Call, or Message is received. This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.34

In Car Monitor (ICM)

This button-press allows you to toggle between the two In Car Monitor (ICM) modes: **ICM All** and **ICM Selected**.



This feature is available while operating in Conventional or Trunking communications mode.



NOTE:

ICM All allows your Mobile Subscriber Unit (MSU) to monitor Portable Subscriber Unit (PSU) voice traffic originating from all PSU group calls.

ICM Selected allows your MSU to only monitor PSU group calls where the MSU and PSU Talkgroups match.

This button selection is only applicable when In Car Monitor is set to **ICM Button/Menu Controlled** and only operate on Personalities/Channels where ICM Allowed is enabled.

4.9.8.35

Information

This button-press allows you to retrieve and view basic radio information such as IP-related information and buttons/switches control mapping, as well as view or modify the Soft ID.

This feature applies only when operating on ASTRO - Conventional Systems. This is a Portable radio only feature.



IMPORTANT:

Modifying the Soft ID changes the radio's Username for Automatic Registration Service server or a User Authentication Unified Network Services (UNS) server logon. When editing the Username this way, the PIN/Password and Unit ID are blanked. Therefore, this can only be used when the server is expecting a blank PIN/Password and you do not want to use Unit ID.

This feature is not available for Portable radios having only a top display.

4.9.8.36

Intercom

This button-press allows you to access the Intercom feature.



The Intercom feature allows multiple control heads to talk to each other with the control heads in a multi-control head setup. This feature applies while operating in Conventional or Trunking communications mode.



NOTE: See also the Intercom Timeout Timer field.

4.9.8.37

Internet Protocol Address (IP)

This button-press allows you to retrieve and view (in the radio's display) the radio's current IP Address, device name and status.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.38

Location

This button-press allows you to determine their current location (latitude, longitude, time and date) and also the distance and bearing to another location.

This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: If the Radio Wide, [User Selectable Location Enable on page 366](#) field is **Enabled**, you are also allowed to turn the outdoor location/Global Positioning System (GPS) functionality on or off for all location/GPS enabled Conventional or Trunking communications channels.

4.9.8.39

Message

This button-press allows you to select from the Message Alias List of the current channel/mode.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Message Alias List is used.

While operating in Trunking communications mode, the Trunking System-Message Alias List selected for the current Trunking Personality is used.

4.9.8.40

Modem On and Off

This button-press allows you to activate and deactivate Modem capability.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.41

Monitor

This button-press allows you to hear most or even all carrier activity on the radio's current channel.

The [Monitor Type on page 1026](#) field selection determines if only the channel-receive requirement of a Private Line (PL) encoded match is temporarily ignored, or if the requirement of PL and carrier squelch is temporarily ignored. This feature is available while operating in Conventional communications mode.

 **IMPORTANT:** When holding the Monitor button for the [Latch Enable Time on page 1028](#) duration, the radio becomes latched in continuous monitor mode. The radio remains latched in monitor mode until released with a Monitor button short-press. Initiating Emergency, Phone, Scan, or a Call Alert or Selective Call also cancels continuous monitor mode. See also the [Latch Enable Tone on page 1027](#) field.

4.9.8.42

Multiple Private Line (MPL)

This button-press allows for your access to a listing of the available MPL Lists.

 **IMPORTANT:** Each list is represented by a recognizable name . You are then able to select the desired Alias/PL settings. This feature is available while operating in Conventional communications mode.

4.9.8.43

MS01–MS13

These button assignments allows you to program these buttons with frequently used or any desired zone and channel combination.

The programming and use of these buttons is very similar to the programming and use of a car radio's preset buttons. That is, a long-press programs a button with the radio's current zone and channels; then once programmed, the short-press of that button jumps the radio to the programmed zone and channel. This feature is available while operating in Conventional or Trunking communications mode.

 **IMPORTANT:**
The [Short Keypress Duration on page 430](#) and [Long Keypress Duration on page 432](#) are both programmed.

The APX™ 3000 Portable only supports MS01 and MS02.

4.9.8.44

Nuisance Delete

This button-press allows you to temporarily remove the channel from the current Active Scan when it continually generates unwanted carrier noise.

This is accomplished by pressing this Nuisance Delete button while in Landed Scan Mode on the Scan List Member to be removed. This feature applies for the current Scan List while operating in Conventional or Trunking communications mode.



IMPORTANT:

Switching to another channel on the radio's channel selector, turning scan mode off and then back on, or turning the radio off and then back on effectively brings that temporarily removed Scan List Member channel back to an actively scanned status.

Nuisance Delete is not possible:

- For a Priority #1, or Priority #2 Scan List Member channel.
- When the [Designated Voice Tx Member Type on page 1311](#) field is set to **Selected Channel** and the Landed Scan channel's Tx Frequency is the same as the Tx Frequency of the radio's currently-selected channel.
- If the current Scan List does not contain at least two members before a Nuisance Delete occurs.

4.9.8.45

One Touch 1–16



These 16 separately programmed button-presses allow you to launch a specific feature with one single button-press.

These button-presses allow you to enter One Touch features such as Status, Message, Selective/Private Call, Call Alert/Page, Phone, Repeater Access (RAC) and MDC RTT Button Access with the touch of one button. One to sixteen buttons can be programmed for each Conventional Personality, and one to four buttons can be programmed for each Trunking System.



IMPORTANT: Pressing a One Touch button while the radio is already in the selected feature causes the radio to abort the feature.

4.9.8.46

Phone

This button-press allows you to initiate Phone Mode while operating in Conventional or Trunking communications mode.

4.9.8.47

Repeater Access Button 1 (RAB1)

This button-press allows you to manually send a repeater access codeword.

This feature is available while operating in Conventional communications mode.

4.9.8.48

Repeater Access Button 2 (RAB2)

This button-press allows you to manually send a repeater access codeword.

This feature is available while operating in Conventional communications mode.

4.9.8.49

Radio Profiles

This button-press allows you to select one of the programmed Radio Profiles.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.50

Radio Swap

This button's Short Keypress Duration allows you to switch back and forth between two radios (known as "the brick" part of the radio) that are attached to the same control head in a Dual Radio configuration.



This button's Long Keypress Duration causes the programmed Radio Alias for the selected radio to temporarily appear in the control head display. This feature is available while operating in Conventional or Trunking communications mode.



WARNING: When the Dual Radio - Radio Selection field is set to **Primary Radio** or **Secondary Radio**, this selection must be made for both Conventional and Trunking, where applicable, to be considered valid.

4.9.8.51

Recent Calls

This button-press allows you to access the recent incoming and outgoing call information for the following call types: Call Alert, Selective Calls, Private Calls, and (outgoing only) Phone calls.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.52

Rekey Request

This button-press allows you to transmit an Over-The-Air-Rekeying (OTAR) rekey request to the dispatcher's (KMF or KMC) console while operating in Conventional or Trunking communications mode.



IMPORTANT:

For MDC OTAR (Conventional communications) the request protocol is determined by the [Rekey Request Mode on page 893](#) field.

For ASTRO OTAR (Conventional or Trunking communications) the [User Selectable Rekey Request on page 909](#) field must be **Enabled**, and the request protocol is determined by the [OTAR Tx Security Level on page 908](#) field.

4.9.8.53

Relay Pattern

This button-press allows you to activate and deactivate a Relay (Lightbar) Pattern.



NOTE: The dedicated Directional Buttons on the O9 Control Head are typically assigned Left Alley, Right Alley, and Take Down Relay (Lightbar) Patterns.

WARNING: You cannot duplicate the same Relay Pattern on more than one Directional Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection; however, Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button.

NOTE:
Relay Patterns are defined in the Universal Relay Controller Page.

You may also execute a Relay Pattern as one of a sequence of radio actions, known as Consolidated Actions. See also: Relay Pattern.

IMPORTANT: If the [Universal Relay Controller Equipped on page 382](#) field is **Enabled** and the URC is not connected at power-up, or is disconnected while the radio is on, then initiating a Relay Pattern button-press causes the radio to sound a bad "bonk".

4.9.8.54

Reprogram Request

This button-press allows you to send a request to the dispatcher for reassignment of Dynamic Regrouping.

The available features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher/console. The radio then automatically changes to the Dynamic Regrouping Zone and Dynamic Regrouping Channel. This feature is available while operating in Trunking communications mode.

IMPORTANT: For Trunking Systems, this Zone and Channel are defined by setting a Zone Channel Assignment's [Trunking Talkgroup on page 1297](#) field to **DYN**. The Trunking Personality considered in this scenario must have this same Trunking [System on page 1236](#) selected in its System field. Hence, only one Dynamic Regrouping channel may be defined per Trunking System.

4.9.8.55

Request-To-Talk (RTT)

This button-press allows you to send a Request-To-Talk (RTT) signaling packet to the dispatcher/console, requesting the ability to transmit voice.

This selection applies only when operating on an MDC System in Conventional communications mode.

4.9.8.56

Scan

Short Key-pressing this button allows you to toggle Scan Mode on and off for the radio's current channel.

Long Key-pressing this button allows for entry to the Scan List Edit mode for the radio's current channel's Scan List, which allows you to add or remove individual Scan List Member channels and modify scan priority.

4.9.8.57

Secure Tx Select

This button-press allows you to switch between clear (Off) and coded (On) secure encrypted transmissions.



 **NOTE:** In Mobile radios, this button's Long Keypress Duration enters and shows the Secure feature screen in the radio's display.

This feature applies while operating in Conventional or Trunking communications mode.

4.9.8.58

Select/Private Call

This button-press allows you to transmit a Conventional - Selective Call or a Trunking - Private Call.

You must select the required Contact/Call ID and then press the PTT button to initiate the Call. A Selective/Private Call is typically used when the majority of transmissions are between you and a dispatcher, or a group of users. You can directly enter or select Radio IDs for use in the radio's Call Hot Lists.

 **NOTE:** Selective/Private Calls are intended not so much to ensure privacy but rather to eliminate the annoyance of receiving traffic that does not pertain to them. See also: Conventional - Selective Call Rx/Tx and Trunking - Private Call.

4.9.8.59

Siren

This button-press allows you to activate and deactivate the external Siren alert tones.



In conjunction with an External Radio button-press, it is also used to activate and deactivate External Radio mode. Siren mode functionality is determined in the Radio Ergonomics Wide, Siren Operation field.

 **NOTE:** On the O9 Control Head, the Siren tones can also be enabled as one of a sequence of radio actions, known as Consolidated Actions.

4.9.8.60

Site Display/Srch

This button's Short Keypress Duration **Site Display** allows you to momentarily view the current Site ID and its corresponding received signal strength indicator (RSSI) on the radio's display.

This button's Long Keypress Duration **Site Search** enables a Site search for SmartZone operation. This feature is available while operating in Trunking communications mode.

4.9.8.61

Site Lock/Unlock

This button-press Short Keypress Duration **Site** allows you to view the lock status of the current Trunking site.

This button's Long Keypress Duration **Site Lock/Unlock** allows you to toggle between lock and unlock mode when using the SmartZone option.

 **IMPORTANT:** Locking a site inhibits roaming to another site in a wide-area System. This feature is available while operating in Trunking communications mode.

4.9.8.62

Status

This button-press allows you to select from the Status Alias List of the current channel/mode.



NOTE: For your convenience, as part of this feature the display initially shows the last acknowledged Status call, or the first Status in the list. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Status Alias List is used.

While operating in Trunking communications mode, the Trunking System-Status Alias List selected for the current Trunking Personality is used.

4.9.8.63

Talkaround/Direct

This button-press allows you to enable or disable the Direct/Talkaround mode for the current channel options profile.

This feature is available while operating in Conventional communications mode.

4.9.8.64

Talkgroup

This button-press allows you to switch from the preset Talkgroup to another Talkgroup from within the Conventional Personality's current Talkgroup List.

All Conventional Personalities using the same Talkgroup List are automatically switched to the selected Talkgroup.

4.9.8.65

Third Party

This button-press allows you to initiate functionality in third-party accessories, such as compatible Whelen® Sirens.



WARNING: When the Dual Radio [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, this selection must be made for both Conventional and Trunking, where applicable, in order to be considered valid.

4.9.8.66

Text Messaging Service (TMS)

This button's Short Keypress Duration **TMS** allows you to access the radio's Text Messaging Service (TMS) mode, seen in the radio's display.

This button's Long Keypress Duration allows you to directly enter the TMS **Inbox**, in order to view received text messages and access the programmed Quick Text Message entries (seen within the radio's display).

4.9.8.67

TMS Query

This button-press jumps you directly to the programmed Query Message entries of the Text Messaging Service feature.

You are then able to select from the list of predefined entries and easily transmit a Query with minimal effort.

 **NOTE:** A TMS Query allows you to specify information in a pre-formatted query template and send this as a Message to a Query Server; the Server then responds with a text message containing the requested information.

When the Trunking System or Conventional System, Text Messaging Service feature is enabled on the radio's current channel, and when the TMS Query Service is currently available to the radio.

4.9.8.68

TMS Quick Text

This button-press jumps you directly to the Quick Text Message entries of the Text Messaging Service feature.

You are then able to select from the list of predefined entries and easily transmit a Quick Text Message with minimal effort.

When the Trunking System or Conventional System, Text Messaging Service feature is enabled on the radio's current channel.

4.9.8.69

Tx Low Power

This button-press allows you to change the radio's transmission power from low to high and back on a radio-wide basis.



Once you initiate Tx Low Power, the setting takes precedence over all individual Conventional Personality Transmit Power Levels and Trunking System Tx Power Levels settings. Powering off and back-on the radio resets all the radio's channels to their programmed power setting.

4.9.8.70

Unprogrammed

Select this feature for a radio button that is not in use.



You will hear a chirp tone when pressing this button. This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.71

User

This button-press allows you to login to a specific Automatic Registration Service server or a User Authentication Unified Network Services (UNS) server with the appropriate Username, PIN/Password, and User Login Unit ID combination.

You may select Usernames and Unit ID from the programmed Data User List entries, or Usernames, PINs/Password and Unit IDs may be manually entered from the radio's keypad.

 **WARNING:** This feature functions only when the radio's current (Conventional or Trunking) channel has its referenced Data Profile's, [ARS Mode on page 995](#) field is set to **Server**.

4.9.8.72

Voice Mute

This button-press allows you to toggle on and off Voice Mute functionality for In-Call User Alert-enabled channels.

When Voice Mute is active, the radio remains muted to all Conventional communications calls and affiliated Trunking Talkgroup calls. Group and individual Call Alert/Pages do unmute the radio for the alert tone; also, when Voice Mute is active, the radio does unmute to individual radio-to-radio calls such as Selective/Private Calls and Interconnect (phone mode) calls.

4.9.8.73

Wail

This button-press allows you to select the Wail Siren tone.



 **NOTE:** A Siren broadcast is activated and deactivated with a Siren button-press.

See also the [Direct Wail on page 545](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Wail** button on its Siren Mode Keypad.

The Wail Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

4.9.8.74

Wi-Fi On/Off

This button-press allows you to activate and deactivate Wi-Fi capability.



This feature is available while operating in Conventional or Trunking communications mode.

4.9.8.75

Yelp

This button-press allows you to select the Yelp Siren tones.



 **NOTE:** A Siren broadcast is activated and deactivated with a Siren button-press.

See also the [Direct Yelp on page 546](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Yelp** button on its Siren Mode Keypad.

The Yelp Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

4.9.8.76

Zone Down

This button-press allows you to scroll downward through the Zones in the radio.

Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the first Zone in the list, continued scrolling causes the list to wrap around to the last Zone. Zones are defined in the Zone Channel Assignment Window.



NOTE: In certain Portable radios, Zones may also be grouped into Zone Banks, where individual banks can be selected with a [Zone Bank Up on page 498](#) or [Zone Bank Down on page 497](#) button-press.

4.9.8.77

Zone Up

This button-press allows you to scroll upward through the Zones in the radio.

Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the last Zone in the list, continued scrolling causes the list to wrap around to the first Zone. Zones are defined in the Zone Channel Assignment Window's Zone Page. This feature is available while operating in Conventional or Trunking communications mode.



NOTE: In certain Portable radios, Zones may also be grouped into Zone Banks, where individual banks can be selected with a [Zone Bank Up on page 498](#) or [Zone Bank Down on page 497](#) button-press.

4.9.9

Multi-Function Knob Selections

This section lists the selections available for the primary and secondary function of the Multi-Function Knob.



NOTE: These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes.

The following selections are supported:

Blank

Intended for functions that are not in use.



WARNING:

When the MFK Press Behavior field is set to **Rotary Feature Select**, **Blank** is not a valid selection for the Primary function.

Blank is only valid as the Secondary function when Volume Select is selected as the Primary function on the MFK.

Zone Select

Selection allows you to select a Zone. When selected, always available to you, and therefore not dependent on any feature or selection.



WARNING: When selected as the Primary Function for a Multi-Function Knob (MFK), Volume Select must be selected as the Secondary Function in order to be considered valid.

Channel Select

Selection allows you to change the radio's channel. When selected, always available to you, and therefore not dependent on any feature or selection.



WARNING: When selected as the Primary Function for a Multi-Function Knob (MFK), Volume Select must be selected as the Secondary Function in order to be considered valid.

Volume Select

Selection allows you to change the radio's volume. When selected, always available to you, and therefore not dependent on any feature or selection.



WARNING:
For dual-function operation:

- If the MFK's Primary Function is assigned with either Zone Select or Channel Select, then the Secondary Function must be assigned with Volume Select in order to be considered valid.
- If the MFK's Primary Function is assigned with Volume Select, then the Secondary Function must be assigned with either Zone Select or Channel Select in order to be considered valid.

For single-function operation: You must select Volume Select as the Primary function and Blank as the Secondary function in order to be considered valid.

4.9.10

General Conventional Feature Buttons Selections

This section provides you with selection functions for the Mobile Control Head and/or Keypad Mic (KPM) buttons. These selections apply while operating in Conventional or Trunking communications mode, as noted in the table below.



WARNING:

You should not duplicate a function on multiple control types, or on more than one Control Head button. This may cause you confusion and may sometimes disable a radio feature.

For a Dual Radio configuration:

- When the Radio Selection field is set to **Primary Radio** or **Secondary Radio**, only the O7 Control Head button selections are configurable.
- Button functions for Radio Wide features (Siren-related buttons, Aux Control (1-3), Dim, GunLock (1, 2, 3, or All), Radio Swap, Relay Pattern, and Third Party) must be configured the same on both radios.
- It is strongly recommended to configure all of the button functions the same way on both radios, in order to avoid confusion.



NOTE:

When a Mission Critical WRSM is wirelessly connected to the Mobile Microphone with Bluetooth Gateway, pressing the Orange Programmable button on the WRSM will trigger the event set in 2-dot Button of a KPM.

Table 103: Legend for Button Selection Symbols

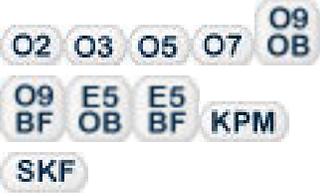
Symbol	Description
	Conventional Mode

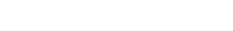
Symbol	Description
	Trunking Mode
	Conventional and Trunking Mode
	O2 Control Head
	O3 Control Head
	O5 Control Head
	O7 Control Head
	O9 Control Head
	E5 Control Head
	Keypad Mic
	Smart Key Fob

Table 104: Button Selections

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Action Consolidation on page 588 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p> <p>Once selected, the appropriate Index for the same record/row must also be defined.</p> <p>You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button Index selection.</p> <p> NOTE: When you press this button, the assigned Consolidated Actions are executed.</p>	
Airhorn on page 543 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA, and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.</p>	

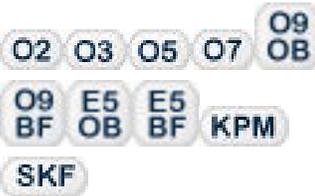
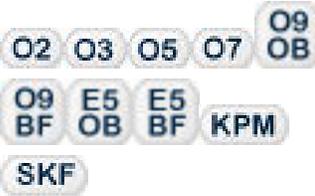
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Automatic Channel Fallback Enable/Disable 	When the Channel Fallback Enable field is enabled.	
Aux Control (1-3) on page 589 	When the Radio Vehicular Interface Port (VIP) Outputs are set to an Aux Control . When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio , this selection becomes valid when it is selected for both Conventional and Trunking It also becomes valid when not selected for the Orange button on the O7 Control Head, and when not selected for the Side Top (Purple) button on the  .	
Blank on page 567 	Intended for controls that are not in use.	
Bluetooth Audio Re-route on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Bluetooth Configuration on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Bluetooth Discoverable On/Off on page 483 	When the Bluetooth Enable on page 396 field is Enabled and when the radio is not LTE-capable.  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Bluetooth Headset PTT on page 483 	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	
Bluetooth Inquiry On/Off on page 483 	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	
Bluetooth On/Off on page 484 	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	
Call Alert on page 590 	<p>For Conventional Feature, when the Conventional Personality, ASTRO Call Alert Rx/Tx field is set to Encode or Encode & Decode, or when the Conventional Personality, Non-ASTRO Call Alert Rx/Tx field is set to Encode or Encode & Decode for the current channel.</p> <p>For Trunking Feature, when the Trunking Personality, Call Alert/Page Operation field is set to List Only or Unlimited for the current channel.</p>	
Call Response on page 591 	<p>When the Phone Operation field is not set to None for the current channel.</p>	
Channel Announcement on page 484 	<p>When a Voice Announcement file has been selected in the Zone Channel Assignment, Channel Announcement field for the current channel.</p>	

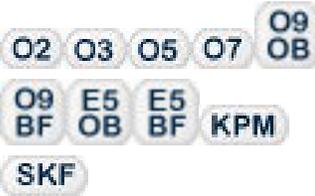
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Channel Fallback Manual/Revert 	When the Channel Fallback Enable field is enabled.	
Channel Search on page 485 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Channel Select on page 591 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Contacts on page 485 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Dim on page 592 	When selected, always available to you, and therefore not dependent on any feature or selection.	
 <p>When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio, this selection is only valid when it is selected for both Conventional and Trunking, and when it is not selected for the Side Top (Purple) button on the .</p>		
Direct Ext Radio on page 544 	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled .	
Direct Hi/Lo on page 544 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is Enabled .	
Direct Manual on page 545	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
<p>C & T</p>	<p>When the Sts/Msg Index field is set to a unique value (not assigned to other DEK Direct Message buttons).</p> <p>For Conventional Feature, the Conventional System Message field must be enabled.</p> <p>For Trunking Feature, the Trunking Personality Message Enabled field must be enabled.</p>	<p>O9 TF</p>
<p>Direct Message on page 593</p> <p>C & T</p>	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	<p>O9 TF</p>
<p>Direct Mode (Mode) on page 594</p> <p>C & T</p>	<p>When the Sts/Msg Index field is set to a unique value (not assigned to other DEK Direct Status buttons).</p> <p>For Conventional Feature, the Conventional System Message field must be enabled.</p> <p>For Trunking Feature, the Trunking Personality Message Enabled field must be enabled.</p>	<p>O9 TF</p>
<p>Direct Status on page 594</p> <p>C & T</p>	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p>	<p>O3 O7 O9 TF KPM SKF</p>
<p>Direct Yelp on page 546</p> <p>C & T</p>	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p>	<p>O3 O7 O9 TF KPM SKF</p>
<p>Digital Vehicular Repeater System (DVRs) on page 595</p> <p>C & T</p>	<p>When the DVRs Wide, DVRs Hardware Enable field is enabled.</p>	<p>O2 O3 O5 O7 O9 OB O9 BF E5 OB E5 BF KPM SKF</p>
<p>DTMF Tone on page 485</p> <p>C & T</p>	<p>There are 12 DTMF tones; namely DTMF Tone 0 to 9, DTMF Tone *, and DTMF Tone #.</p> <p>When selected, you can send out DTMF code of the assigned DTMF value. For example, when DTMF Tone 9 is selected, you can send out DTMF code 9.</p> <p>Selection is only available when DTMF Mic Enable is checked.</p>	<p>O2 O3 O5 O7 O9 OB O9 TF O9 BF E5 OB E5 BF</p>

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Dynamic ID on page 486 	When operating in Conventional communications mode, and when the Conventional System, Dynamic ID Enable field is enabled for the current channel.	
Dynamic Priority on page 486 	When Scan Mode is enabled, when the Scan Type is Conventional , and when the Scan List, Dynamic Priority field is enabled for the current landed scan channel.	
Emergency on page 486 	When the Conventional System, Emergency Profile Selection field is not set to Emergency Tx Disabled for the current channel. When the Trunking Personality, Emergency Profile Selection field is not set to Emergency Tx Disabled for the radio's current channel. For Trunking, Emergency is not available when Failsoft Mode is active and Emergency Blocked in Failsoft is enabled. When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio , this selection is invalid for the Side Top (Purple) button of a  .	
Emergency Supervisor Clear on page 596 	Selection is only valid in the application, and always available to you. It is selected for Side Middle Button or Accy 1-dot. Emergency Exit Control is set to Supervisor .	
External Radio (Ext Radio) on page 596 	When the Radio Ergonomics Wide, Siren Operation field is set to Disabled .	
Front/Rear (F/R) on page 597 	When the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to One Active .	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Gunlock (1,2,3, or All) on page 546 	When at least one of the radio VIP Out pins has been programmed for the corresponding GunLock function. (Refer also to Password Required For GunLock.)	
Hi/Lo on page 569 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.	
Horn Lights on page 597 	When the Radio Ergonomics Wide, Horn and Lights field is enabled.	
In Car Monitor (ICM) on page 597 	When the DVRS Wide, DVRS Hardware Enable field is enabled, and when the DVRS Wide, In Car Monitor field is set to ICM Button/Menu Controlled .	
Information on page 486 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Intercom on page 598 	When the Radio Ergonomics Wide, Multi Control Head field is disabled, or when the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to All Active .	
Internet Protocol Address (IP) on page 486 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Location on page 487 	When the Radio Wide, Location Enable field is enabled.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Manual on page 570 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Message on page 488 	When the Conventional System, Message field is enabled for the radio's current channel. When the Trunking Personality, Message Enable field is enabled for the radio's current channel.	  
Modem On and Off on page 599	This button-press activates and deactivates Data Modem capability of the radio.	  
Monitor on page 488  See Latch Enable Time on page 1028	When selected, always available to you, and therefore not dependent on any feature or selection.	  
MS01–MS13 on page 489 (Mode Select) 	When selected, always available to you, and therefore not dependent on any feature or selection.	  
Multiple Private Line (MPL) on page 489 	When the Conventional Personality, Rx Voice/Signal Type field is set to Non-ASTRO or Mixed Mode , and when the Conventional Personality, User Selectable PL [MPL] field is enabled for the radio's current channel.	  
Nuisance Delete on page 489 	When Scan Mode is enabled.	  

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
One Touch 1–16 on page 600 	<p>When at least one of the Conventional Personality, One Touch Button Features is not set to Disabled for the current channel.</p> <p>When at least one of the Trunking System, One Touch Button Features is not set to Disabled for the radio's current channel.</p>	
Priority Channel PTT on page 490 	<p>When operating in Conventional communications mode, and when there is a Priority Member 1 Scan List Member in the current channel Scan List.</p>	
Priority Dispatch 	<p>Selection is valid only for Side Top Button, Side Middle Button, and Side Bottom Button.</p>	
Public Address (PA) on page 547 	<p>When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled.</p>	
Phone on page 490 	<p>When the Conventional Personality, Phone Operation field is not set to None for the current channel.</p> <p>When the Trunking Personality, Phone Operation field is not set to Disabled for the current channel.</p>	
Radio Profiles on page 491 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
Radio Swap on page 601 	<p>When the Radio Selection field is set to Primary Radio or Secondary Radio in a Dual Radio configuration.</p> <p>Where applicable, this selection must be selected for both Conventional and Trunking in order to be considered valid.</p>	
Recent Calls on page 491 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	

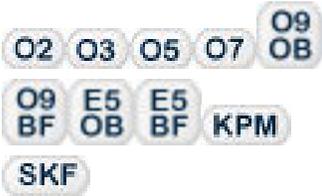
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Rekey Request on page 492 	When the ASTRO OTAR Information, User Selectable Rekey Request is not set to Disabled , or when the MDC OTAR, Rekey Request Mode is not set to Disabled .	
Requires a radio-user Long Key-press Duration on page 432.		
Relay Pattern on page 547 	When the Universal Relay Controller Equipped field is enabled and a URC is connected to the radio. You cannot duplicate the same Relay Pattern on more than one Directional Button, Top Function Programmable Button, or Bottom Function Programmable Button Index selection. Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button. Once selected, the appropriate Index for the same record/row must also be defined. See also: Password Required For Lightbar on page 340 .	
Repeater Access Button 1 (RAB1) on page 492 	When the Conventional Personality, Repeater Access field is enabled, and when the Access Type is set to Manual for the radio's current channel. This feature is not available on Side Button 1 when Radio Lock is enabled.	
Repeater Access Button 2 (RAB2) on page 492 	When the Conventional Personality, Repeater Access field is enabled, and when the Access Type is set to Manual for the current channel. This feature is not available on Side Button 1 when Radio Lock is enabled.	
Reprogram Request on page 492 	When the Trunking System, System Type is ASTRO 25 , and when the Trunking System, Dynamic Re-grouping Enable field is enabled for the current channel.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
<p>Request-To-Talk (RTT) on page 492</p> <p>Conv.</p>	<p>When the Conventional Personality, MDC RTT Button Access field is set to Manual for the radio's current channel, and when that Personality is not a Receive Only Personality, and when Tx Inhibit is not enabled.</p>	
<p>Scan on page 493</p> <p>C & T</p> <p>Long Key-press Duration on page 432 vs Short Keypress Duration on page 430</p>	<p>When the Scan Type is not set to Voting Scan, and when the Conventional Personality, Scan List Selection field is not set to None, and when the Conventional Personality, Automatic Scan field is disabled for the radio's current channel.</p>	
<p>Secure Tx Select on page 602</p> <p>C & T</p> <p>Long Key-press Duration on page 432 vs Short Keypress Duration on page 430</p>	<p>When any one of the Conventional Secure/Clear Strapping fields is set to Select for the current channel.</p> <p>When any one of the Trunking Secure/Clear Strapping fields is set to Select for the current channel.</p>	
<p>Select/Private Call on page 493</p> <p>C & T</p>	<p>When the Conventional Personality, ASTRO Selective Call Rx/Tx is set to Encode or Encode & Decode, or when the Conventional Personality, Non-ASTRO Selective Call Rx/Tx is set to Encode or Encode & Decode for the current channel.</p> <p>When the Trunking Personality, Private Call Type is not set to Disabled for the current channel.</p>	
<p>Siren on page 603</p> <p>C & T</p>	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p> <p>See also Password Required For Siren.</p>	
<p>Site Display/Srch on page 493</p> <p>Trunk.</p> <p>Long Key-press Dura-</p>	<p>When the Trunking System, Site Alias Enable field is enabled for the current channel.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
tion on page 432 vs Short Keypress Duration on page 430	When the Trunking System, Site Alias Enable field is enabled for the current channel.	
Site Lock/Unlock on page 493  Long Keypress Duration on page 432 vs Short Keypress Duration on page 430	When the Trunking System, Site Alias Enable field is enabled for the current channel.	
Status on page 494 	When the Conventional System Status field is enabled for the current channel.	
Talkaround/Direct on page 494 	When operating in Conventional communications mode, and when the Conventional Personality, Direct/Talkaround field is enabled for the current channel. This selection can not be set concurrently on Buttons, Switches and Menu Items It can be set concurrently on Portable and Accessory Buttons.	
Talkgroup on page 494 	When the Conventional Personality, ASTRO Talkgroup Selection Type field is set to Selectable for the current channel.	
Text Messaging Service (TMS) on page 604  Long Keypress Duration on page	When the Conventional System, Text Messaging Service field is set to List Only or Unlimited , and when that System Data Profile Selection is not set to Data Disabled for the current channel. When the Trunking System, Text Messaging Service field is set to List Only or Unlimited , and when that System Data Profile Selection is not set to Data Disabled for the current channel.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
432 vs Short Keypress Duration on page 430	When selected, always available to you, and therefore not dependent on any feature or selection.	
Third Party on page 495	In a Dual Radio configuration, when the Radio Selection field is set to Primary Radio or Secondary Radio , this selection must be selected for both Conventional and Trunking in order to be considered valid.	
TMS Query on page 495	When the Conventional System, Text Messaging Service field is set to List Only or Unlimited , and when that System Data Profile Selection is not set to Data Disabled for the current channel. When the Trunking System, Text Messaging Service field is set to List Only or Unlimited , and when that System Data Profile Selection is not set to Data Disabled for the current channel.	
TMS Quick Text on page 495	When the Conventional System, Text Messaging Service field is set to List Only or Unlimited , and when that System's Data Profile Selection is not set to Data Disabled for the radio's current channel. When the Trunking System, Text Messaging Service field is set to List Only or Unlimited , and when that System Data Profile Selection is not set to Data Disabled for the current channel.	
Tx Low Power on page 605	When selected, always available to you, and therefore not dependent on any feature or selection.	
Unprogrammed on page 496	Intended for controls that are not in use.	
User on page 496	When selected, always available to you, and therefore not dependent on any feature or selection.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Voice Mute on page 496 	<p>When the Conventional Personality, ASTRO Call, In-Call User Alert Enable field is enabled for the current channel, or when the Conventional Personality, Non-ASTRO Call In-Call User Alert Enable field is enabled for the current channel.</p> <p>When the Trunking Personality, In-Call User Alert Enable field is enabled for the current channel.</p>	
Volume Down on page 496 	<p> NOTE: This function is available on Mobile radios and only applicable to SKF.</p> <p> WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.</p>	
Volume Up on page 497 	<p> NOTE: This function is available on Mobile radios and only applicable to SKF.</p> <p> WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.</p>	
Wail on page 571 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p>	
Wi-Fi On/Off on page 497 	<p>This button-press activates and deactivates Wi-Fi capability of the radio.</p>	
Yelp on page 571 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p>	
Zone Down on page 498 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Zone Up on page 498 	When selected, always available to you, and therefore not dependent on any feature or selection.	

4.9.11

General Trunking Feature Buttons Selections

This section provides you with selection functions for the Mobile Control Head and/or Keypad Mic (KPM) buttons. These selections apply while operating in Conventional or Trunking communications mode, as noted in the table below.



WARNING:

You should not duplicate a function on multiple control types, or on more than one Control Head button. This may cause you confusion and may sometimes disable a radio feature.

For a Dual Radio configuration:

- When the Radio Selection field is set to **Primary Radio** or **Secondary Radio**, only the O7 Control Head button selections are configurable.
- Button functions for Radio Wide features (Siren-related buttons, Aux Control (1-3), Dim, GunLock (1, 2, 3, or All), Radio Swap, Relay Pattern, and Third Party) must be configured the same on both radios.
- It is strongly recommended to configure all of the button functions the same way on both radios, in order to avoid confusion.



NOTE:

When a Mission Critical WRSM is wirelessly connected to the Mobile Microphone with Bluetooth Gateway, pressing the Orange Programmable button on the WRSM will trigger the event set in 2-dot Button of a KPM.

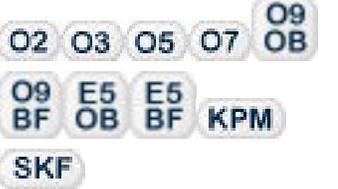
Table 105: Legend for Button Selection Symbols

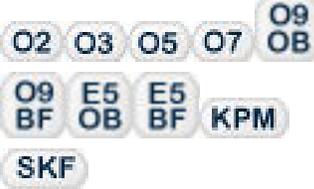
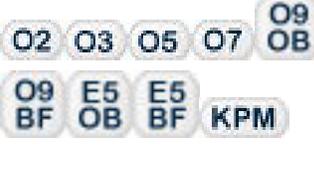
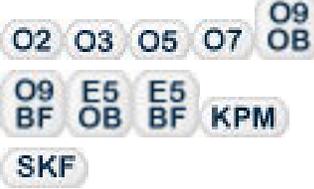
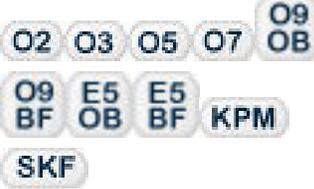
Symbol	Description
	Conventional Mode
	Trunking Mode
	Conventional and Trunking Mode
	O2 Control Head
	O3 Control Head

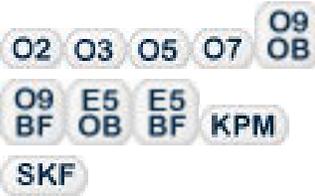
Symbol	Description
	O5 Control Head
	O7 Control Head
	O9 Control Head
	E5 Control Head
	Keypad Mic
	Smart Key Fob

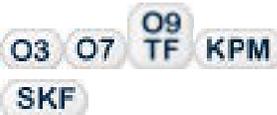
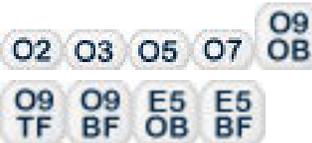
Table 106: Button Selections

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Action Consolidation on page 588 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p> <p>Once selected, the appropriate Index for the same record/row must also be defined.</p> <p>You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button Index selection.</p> <p> NOTE: When you press this button, the assigned Consolidated Actions are executed.</p>	
Airhorn on page 543 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA, and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.</p>	
Automatic Channel Fallback Enable/Disable 	<p>When the Channel Fallback Enable field is enabled.</p>	
Aux Control (1-3) on page 589 	<p>When the Radio Vehicular Interface Port (VIP) Outputs are set to an Aux Control.</p> <p>When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio, this selection becomes valid when it is selected for both Conventional and Trunking</p>	

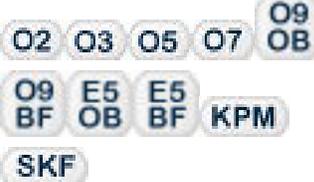
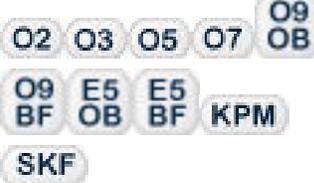
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
	<p>It also becomes valid when not selected for the Orange button on the O7 Control Head, and when not selected for the Side Top (Purple) button on the .</p>	
<p>Blank on page 567</p> 	<p>Intended for controls that are not in use.</p>	
<p>Bluetooth Audio Re-route on page 483</p> 	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	
<p>Bluetooth Configuration on page 483</p> 	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	
<p>Bluetooth Discoverable On/Off on page 483</p> 	<p>When the Bluetooth Enable on page 396 field is Enabled and when the radio is not LTE-capable.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	
<p>Bluetooth Headset PTT on page 483</p> 	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	

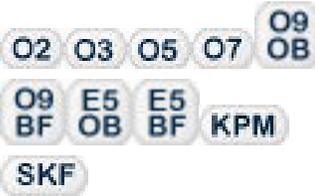
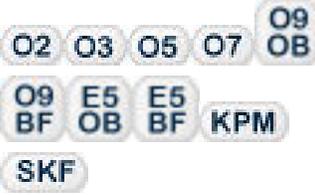
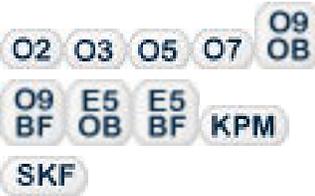
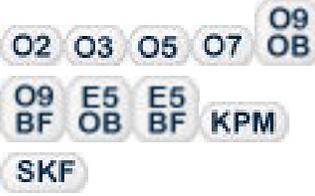
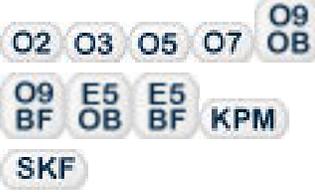
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Bluetooth Inquiry On/Off on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Bluetooth On/Off on page 484 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Call Alert on page 590 	For Conventional Feature, when the Conventional Personality, ASTRO Call Alert Rx/Tx field is set to Encode or Encode & Decode , or when the Conventional Personality, Non-ASTRO Call Alert Rx/Tx field is set to Encode or Encode & Decode for the current channel. For Trunking Feature, when the Trunking Personality, Call Alert/Page Operation field is set to List Only or Unlimited for the current channel.	
Call Response on page 591 	When the Phone Operation field is not set to None for the current channel.	
Channel Announcement on page 484 	When a Voice Announcement file has been selected in the Zone Channel Assignment, Channel Announcement field for the current channel.	
Channel Fallback Manual/Revert 	When the Channel Fallback Enable field is enabled.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Channel Search on page 485 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Channel Select on page 591 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Contacts on page 485 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Dim on page 592 	When selected, always available to you, and therefore not dependent on any feature or selection. When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio , this selection is only valid when it is selected for both Conventional and Trunking, and when it is not selected for the Side Top (Purple) button on the  .	
Direct Ext Radio on page 544 	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled .	
Direct Hi/Lo on page 544 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is Enabled .	
Direct Manual on page 545 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Direct Message on page 593 	When the Sts/Msg Index field is set to a unique value (not assigned to other DEK Direct Message buttons). For Conventional Feature, the Conventional System Message field must be enabled.	

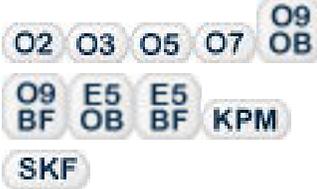
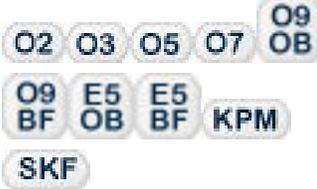
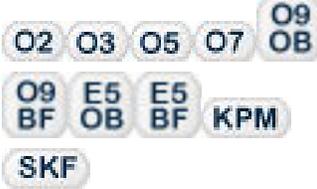
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
	For Trunking Feature, the Trunking Personality Message Enabled field must be enabled.	
Direct Mode (Mode) on page 594 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Direct Status on page 594 	When the Sts/Msg Index field is set to a unique value (not assigned to other DEK Direct Status buttons). For Conventional Feature, the Conventional System Message field must be enabled. For Trunking Feature, the Trunking Personality Message Enabled field must be enabled.	
Direct Wail on page 545 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Direct Yelp on page 546 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Digital Vehicular Repeater System (DVRS) on page 595 	When the DVRS Wide, DVRS Hardware Enable field is enabled.	
DTMF Tone on page 485 	There are 12 DTMF tones; namely DTMF Tone 0 to 9, DTMF Tone *, and DTMF Tone #. When selected, you can send out DTMF code of the assigned DTMF value. For example, when DTMF Tone 9 is selected, you can send out DTMF code 9. Selection is only available when DTMF Mic Enable is checked.	
Dynamic ID on page 486 	When operating in Conventional communications mode, and when the Conventional System, Dynamic ID Enable field is enabled for the current channel.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Dynamic Priority on page 486 	<p>When Scan Mode is enabled, when the Scan Type is Conventional, and when the Scan List, Dynamic Priority field is enabled for the current landed scan channel.</p>	
Emergency on page 486 	<p>When the Conventional System, Emergency Profile Selection field is not set to Emergency Tx Disabled for the current channel.</p> <p>When the Trunking Personality, Emergency Profile Selection field is not set to Emergency Tx Disabled for the radio's current channel.</p> <p>For Trunking, Emergency is not available when Failsoft Mode is active and Emergency Blocked in Failsoft is enabled.</p> <p>When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio, this selection is invalid for the Side Top (Purple) button of a .</p>	
Emergency Supervisor Clear on page 596 	<p>Selection is only valid in the application, and always available to you.</p> <p>It is selected for Side Middle Button or Accy 1-dot. Emergency Exit Control is set to Supervisor.</p>	
External Radio (Ext Radio) on page 596 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Disabled.</p>	
Front/Rear (F/R) on page 597 	<p>When the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to One Active.</p>	
Gunlock (1,2,3, or All) on page 546 	<p>When at least one of the radio VIP Out pins has been programmed for the corresponding GunLock function. (Refer also to Password Required For GunLock.)</p>	
Hi/Lo on page 569 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA, and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Horn Lights on page 597 	When the Radio Ergonomics Wide, Horn and Lights field is enabled.	
In Car Monitor (ICM) on page 597 	When the DVRS Wide, DVRS Hardware Enable field is enabled, and when the DVRS Wide, In Car Monitor field is set to ICM Button/Menu Controlled .	
Information on page 486 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Intercom on page 598 	When the Radio Ergonomics Wide, Multi Control Head field is disabled, or when the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to All Active .	
Internet Protocol Address (IP) on page 486 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Location on page 487 	When the Radio Wide, Location Enable field is enabled.	
Manual on page 570 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	

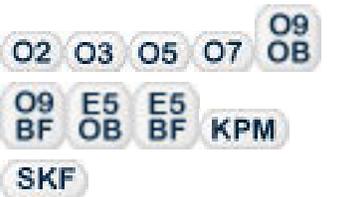
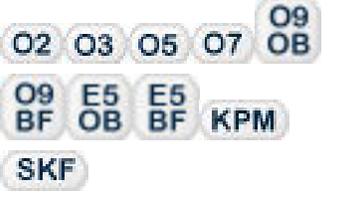
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Message on page 488 	<p>When the Conventional System, Message field is enabled for the radio's current channel.</p> <p>When the Trunking Personality, Message Enable field is enabled for the radio's current channel.</p>	
Modem On and Off on page 599	<p>This button-press activates and deactivates Data Modem capability of the radio.</p>	
Monitor on page 488  <p>See Latch Enable Time on page 1028</p>	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
MS01–MS13 on page 489 (Mode Select) 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
Multiple Private Line (MPL) on page 489 	<p>When the Conventional Personality, Rx Voice/Signal Type field is set to Non-ASTRO or Mixed Mode, and when the Conventional Personality, User Selectable PL [MPL] field is enabled for the radio's current channel.</p>	
Nuisance Delete on page 489 	<p>When Scan Mode is enabled.</p>	
One Touch 1–16 on page 600 	<p>When at least one of the Conventional Personality, One Touch Button Features is not set to Disabled for the current channel.</p> <p>When at least one of the Trunking System, One Touch Button Features is not set to Disabled for the radio's current channel.</p>	

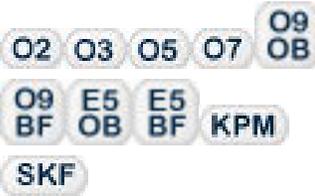
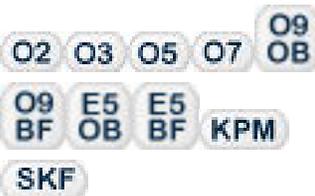
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Priority Channel PTT on page 490 	When operating in Conventional communications mode, and when there is a Priority Member 1 Scan List Member in the current channel Scan List.	  
Priority Dispatch 	Selection is valid only for Side Top Button, Side Middle Button, and Side Bottom Button.	  
Public Address (PA) on page 547 	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled .	    
Phone on page 490 	When the Conventional Personality, Phone Operation field is not set to None for the current channel. When the Trunking Personality, Phone Operation field is not set to Disabled for the current channel.	         
Radio Profiles on page 491 	When selected, always available to you, and therefore not dependent on any feature or selection.	         
Radio Swap on page 601 	When the Radio Selection field is set to Primary Radio or Secondary Radio in a Dual Radio configuration. Where applicable, this selection must be selected for both Conventional and Trunking in order to be considered valid.	    
Recent Calls on page 491 	When selected, always available to you, and therefore not dependent on any feature or selection.	         
Rekey Request on page 492  Requires a radio-user	When the ASTRO OTAR Information, User Selectable Rekey Request is not set to Disabled , or when the MDC OTAR, Rekey Request Mode is not set to Disabled .	         

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Long Key-press Duration on page 432.		
Relay Pattern on page 547 	<p>When the Universal Relay Controller Equipped field is enabled and a URC is connected to the radio.</p> <p>You cannot duplicate the same Relay Pattern on more than one Directional Button, Top Function Programmable Button, or Bottom Function Programmable Button Index selection.</p> <p>Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button.</p> <p>Once selected, the appropriate Index for the same record/row must also be defined.</p> <p>See also: Password Required For Lightbar on page 340.</p>	
Repeater Access Button 1 (RAB1) on page 492 	<p>When the Conventional Personality, Repeater Access field is enabled, and when the Access Type is set to Manual for the radio's current channel.</p> <p>This feature is not available on Side Button 1 when Radio Lock is enabled.</p>	
Repeater Access Button 2 (RAB2) on page 492 	<p>When the Conventional Personality, Repeater Access field is enabled, and when the Access Type is set to Manual for the current channel.</p> <p>This feature is not available on Side Button 1 when Radio Lock is enabled.</p>	
Reprogram Request on page 492 	<p>When the Trunking System, System Type is ASTRO 25, and when the Trunking System, Dynamic Re-grouping Enable field is enabled for the current channel.</p>	
Request-To-Talk (RTT) on page 492 	<p>When the Conventional Personality, MDC RTT Button Access field is set to Manual for the radio's current channel, and when that Personality is not a Receive Only Personality, and when Tx Inhibit is not enabled.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
<p>Scan on page 493</p> <p>C & T</p> <p>Long Key-press Duration on page 432 vs Short Keypress Duration on page 430</p>	<p>When the Scan Type is not set to Voting Scan, and when the Conventional Personality, Scan List Selection field is not set to None, and when the Conventional Personality, Automatic Scan field is disabled for the radio's current channel.</p>	
<p>Secure Tx Select on page 602</p> <p>C & T</p> <p>Long Key-press Duration on page 432 vs Short Keypress Duration on page 430</p>	<p>When any one of the Conventional Secure/Clear Strapping fields is set to Select for the current channel.</p> <p>When any one of the Trunking Secure/Clear Strapping fields is set to Select for the current channel.</p>	
<p>Select/Private Call on page 493</p> <p>C & T</p>	<p>When the Conventional Personality, ASTRO Selective Call Rx/Tx is set to Encode or Encode & Decode, or when the Conventional Personality, Non-ASTRO Selective Call Rx/Tx is set to Encode or Encode & Decode for the current channel.</p> <p>When the Trunking Personality, Private Call Type is not set to Disabled for the current channel.</p>	
<p>Siren on page 603</p> <p>C & T</p>	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p> <p>See also Password Required For Siren.</p>	
<p>Site Display/Srch on page 493</p> <p>Trunk.</p> <p>Long Key-press Duration on page 432 vs Short Keypress Duration on page 430</p>	<p>When the Trunking System, Site Alias Enable field is enabled for the current channel.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
<p>Site Lock/Unlock on page 493</p> <p>Trunk.</p> <p>Long Key-press Duration on page 432 vs Short Keypress Duration on page 430</p>	<p>When the Trunking System, Site Alias Enable field is enabled for the current channel.</p>	
<p>Status on page 494</p> <p>C & T</p>	<p>When the Conventional System Status field is enabled for the current channel.</p> <p>When the Trunking Personality Status Enable field is enabled for the current channel.</p>	
<p>Talkaround/Direct on page 494</p> <p>Conv.</p>	<p>When operating in Conventional communications mode, and when the Conventional Personality, Direct/Talkaround field is enabled for the current channel.</p> <p>This selection can not be set concurrently on Buttons, Switches and Menu Items</p> <p>It can be set concurrently on Portable and Accessory Buttons.</p>	
<p>Talkgroup on page 494</p> <p>Conv.</p>	<p>When the Conventional Personality, ASTRO Talkgroup Selection Type field is set to Selectable for the current channel.</p>	
<p>Text Messaging Service (TMS) on page 604</p> <p>C & T</p> <p>Long Key-press Duration on page 432 vs Short Keypress Duration on page 430</p>	<p>When the Conventional System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p> <p>When the Trunking System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Third Party on page 495 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p> <p>In a Dual Radio configuration, when the Radio Selection field is set to Primary Radio or Secondary Radio, this selection must be selected for both Conventional and Trunking in order to be considered valid.</p>	
TMS Query on page 495 	<p>When the Conventional System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p> <p>When the Trunking System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p>	
TMS Quick Text on page 495 	<p>When the Conventional System, Text Messaging Service field is set to List Only or Unlimited, and when that System's Data Profile Selection is not set to Data Disabled for the radio's current channel.</p> <p>When the Trunking System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p>	
Tx Low Power on page 605 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
Unprogrammed on page 496 	<p>Intended for controls that are not in use.</p>	
User on page 496 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Voice Mute on page 496 	<p>When the Conventional Personality, ASTRO Call, In-Call User Alert Enable field is enabled for the current channel, or when the Conventional Personality, Non-ASTRO Call In-Call User Alert Enable field is enabled for the current channel.</p> <p>When the Trunking Personality, In-Call User Alert Enable field is enabled for the current channel.</p>	
Volume Down on page 496 	<p> NOTE: This function is available on Mobile radios and only applicable to SKF.</p> <p> WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.</p>	
Volume Up on page 497 	<p> NOTE: This function is available on Mobile radios and only applicable to SKF.</p> <p> WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.</p>	
Wail on page 571 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p>	
Wi-Fi On/Off on page 497 	<p>This button-press activates and deactivates Wi-Fi capability of the radio.</p>	
Yelp on page 571 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p>	
Zone Down on page 498 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Zone Up on page 498 	When selected, always available to you, and therefore not dependent on any feature or selection.	

4.9.11.1

Action Consolidation

This button-press, or O9 Control Head Response Selector position, allows you to initiate a programmed sequence of Consolidated Actions.



You may easily execute a Consolidated Action's sequence of radio actions with minimal effort. This feature applies while operating in Conventional or Trunking communications mode.

WARNING: You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Response Selector, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection.



NOTE: For the O9 Control Head, it is strongly recommended that the Response Selector's **0** position be assigned a Consolidated Action that turns all Relay Patterns, Siren tones, GPS Reports, Mode changes and Direct Status to an **Unassigned** or **ALL OFF** state. It may also be desirable to assign this Consolidated Action to a button-press.



IMPORTANT:

When a Consolidated Action is activated with a button-press, pressing the Action Consolidation button again does not deactivate any of the actions; instead, it reactivates the sequence of actions.

When a Consolidated Action is activated with a Response Selector position on the O9 Control Head, changing that position does deactivate the Consolidated Action assigned to the previous Response Selector position, and the Consolidated Action assigned to the new position is activated.

When the radio is powered up, any Consolidated Action assigned to the Response Selector's current position is executed.

No matter if a Consolidated Action is completed or canceled, if there are any required channel/mode changes in the action, the radio always returns to its original channel/mode.

Once initiated, a Consolidated Action may be canceled, however the individual actions typically happen so quickly, that the likelihood of terminating any part of the Action is nearly impossible.

- A Consolidated Action may be terminated by a Home button-press, a menu EXIT, a PTT button-press (provided the Public Address mode is not active), or the engagement of Emergency Mode.
- The Relay Pattern, Siren Type, or GPS Report actions are the first to launch and are therefore nearly immediate.

4.9.11.2

Aux Control (1-3)

These three button-selections allow you to individually activate and deactivate radio Vehicular Interface Port (VIP) Outputs that are set to an **Aux Control**.



The VIP Output is activated for the duration determined by the Active Duration field. See Also The Auxiliary Control Page fields. This feature is available for Conventional or Trunking communications mode.

WARNING: When the Dual Radio - Radio Selection field is set to **Primary Radio** or **Secondary Radio**, this selection is only considered to be valid when it is selected for both Conventional and Trunking, and when it is not selected for the Orange button on the O7 Control Head, and when it is not selected for the Side Top (Purple) button of a Keypad Mic (KPM).

IMPORTANT: An **Aux Control** VIP Output may also be triggered when the radio has decoded a Tone Signaling tone or tone pair and External Control is not set to **None**.

The [Consolette on page 255](#) also uses Auxiliary Control features.

4.9.11.3

Blank

Select this feature for a radio button that is not in use.



You hear a chirp tone when pressing this button. This feature is available for Conventional or Trunking communications mode.

4.9.11.4

Call Alert

This button-press allows you to transmit a Call Alert for Conventional modes, or a Call Alert/Page for Trunking modes.

NOTE: Call Alert/Pages allow a dispatcher or radio-caller to notify you (or group of radios-users) of a missed call. Receiving radios are targeted based on radio and system information managed by the Contacts and Call IDs in the radio's Call Hot Lists.

You can directly enter or select Call IDs from the channel's Hot List. The receiving radio responds with both alert tones and visual alerts to you. The visual alert (flashing LED) persists until reset by your interaction with the radio.

4.9.11.5

Call Response

This button-press allows you to respond to (and hang up from) a received Phone Call (Conventional or Trunking) or Private Call.

Valid for **Trunking** only.

4.9.11.6

Channel Announcement

This button-press allows you to hear the Voice Announcement audio file that is assigned to the radio's current channel/mode.



IMPORTANT: Voice files are assigned to channels from the Zone Channel Assignment, [Channel Announcement on page 1296](#) Channel Announcement field.

4.9.11.7

Channel Search

This button-press allows you to search for a channel/mode based on its programmed channel name, and directly switch to the found channel.

This feature is available while operating in Conventional or Trunking communications mode.



NOTE: These [Channel Name on page 1294](#) can be viewed in the Zone Channel Assignment Window's Channels Page, on a per zone basis.

4.9.11.8

Channel Select

This button-press allows you to enter the desired radio channel.



Once the **Channel Select** button is selected, you are then able to enter the desired channel number on the radio's keypad. The number entered applies to the radio's current zone. This feature applies while operating in Conventional or Trunking communications mode.



NOTE: These channel numbers must be programmed and can be viewed in the Zone Channel Assignment Window's Channels Page on a per zone basis.

4.9.11.9

Contacts

This button press allows you to view or edit the Contacts of the radio's current channel.

Contacts must be programmed in the Unified Call List. Contacts make up the members of Call Hot Lists. Hot List members/Contacts are selectable by you, allowing for call types such as Phone Calls, Selective Calls, Call Alerts, Private Calls and Pages to individual radios or to groups of radios.



IMPORTANT: This feature is not available for Portable radios having only a top display.

4.9.11.10

DTMF Tone

This button-press allows you to send out DTMF code of the assigned DTMF value.



There are 12 DTMF tones; namely DTMF Tone 0 to 9, DTMF Tone *, and DTMF Tone #. This feature is available while operating in Conventional or Trunking communications mode.

4.9.11.11

Digital Vehicular Repeater System (DVRS)

This button-press allows you to switch between the DVRS (Digital Vehicle Repeater System) modes.



The DVRS Modes include **System**, **Local**, and **Off**. Other DVRS settings are also possible. This feature is available while operating in Conventional or Trunking communications mode.

4.9.11.12

Dynamic ID

This button-press allows for entry into the Dynamic ID edit mode, which allows you to view and/or edit the radio's Individual ID and/or MDC Primary ID for the current ASTRO and/or MDC system.

This feature is available while operating in Conventional communications mode.

4.9.11.13

Dynamic Priority

This button-press allows you to select the Dynamic Priority scan assignment.

This feature is available while operating in Conventional communications mode.

4.9.11.14

Emergency

This button-press allows you to enter and also exit emergency mode operation.

See also the [Short Keypress Duration for Emergency on page 431](#) and the [Long Keypress Duration for Emergency on page 433](#) features. This feature is available while operating in Conventional or Trunking communications mode.



WARNING:

When a Mission Critical WRSM is wirelessly connected to the Mobile Microphone with Bluetooth Gateway, pressing the Orange Programmable button on the WRSM will trigger the event set in 2-dot Button of a KPM.

When the Dual Radio-Radio Selection field is set to **Primary Radio** or **Secondary Radio**, this selection is invalid for the Side Top (Purple) button on a .

4.9.11.15

Emergency Supervisor Clear

This button-press is selected for Side Middle Button or Accy 1-dot. Emergency Exit Control is set to "Supervisor".

This feature is available while operating in Trunking communications mode.

4.9.11.16

Front/Rear (F/R)

This button-press allows you to switch the radio's focus between control heads, thus allowing one of two control heads to be active at one time.



WARNING: This selection is only considered to be valid when the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to **One Active**.

4.9.11.17

Horn Lights

This button-press allows you to turn the Radio Ergonomics Wide, Horn and Lights external alarms ON/OFF.



These external alarms are activated when a Call Alerts/Page, Selective/Private Call, Phone Call, or Message is received. This feature is available while operating in Conventional or Trunking communications mode.

4.9.11.18

In Car Monitor (ICM)

This button-press allows your to toggle between the two In Car Monitor (ICM) modes: **ICM All** and **ICM Selected**.



This feature is available while operating in Conventional or Trunking communications mode.



NOTE:

ICM All allows your Mobile Subscriber Unit (MSU) to monitor Portable Subscriber Unit (PSU) voice traffic originating from all PSU group calls.

ICM Selected allows your MSU to only monitor PSU group calls where the MSU and PSU Talkgroups match.

This button selection is only applicable when In Car Monitor is set to **ICM Button/Menu Controlled** and only operate on Personalities/Channels where ICM Allowed is enabled.

4.9.11.19

Information

This button-press allows you to retrieve and view basic radio information such as IP-related information and buttons/switches control mapping, as well as view or modify the Soft ID.

This feature applies only when operating on ASTRO - Conventional Systems. This is a Portable radio only feature.



IMPORTANT:

Modifying the Soft ID changes the radio's Username for Automatic Registration Service server or a User Authentication Unified Network Services (UNS) server logon. When editing the Username this way, the PIN/Password and Unit ID are blanked. Therefore, this can only be used when the server is expecting a blank PIN/Password and you do not want to use Unit ID.

This feature is not available for Portable radios having only a top display.

4.9.11.20

Intercom

This button-press allows you to access the Intercom feature.



The Intercom feature allows multiple control heads to talk to each other with the control heads in a multi-control head setup. This feature applies while operating in Conventional or Trunking communications mode.

 **NOTE:** See also the Intercom Timeout Timer field.

4.9.11.21

Internet Protocol Address (IP)

This button-press allows you to retrieve and view (in the radio's display) the radio's current IP Address, device name and status.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.11.22

Location

This button-press allows you to determine their current location (latitude, longitude, time and date) and also the distance and bearing to another location.

This feature is available while operating in Conventional or Trunking communications mode.

 **IMPORTANT:** If the Radio Wide, [User Selectable Location Enable on page 366](#) field is **Enabled**, you are also allowed to turn the outdoor location/Global Positioning System (GPS) functionality on or off for all location/GPS enabled Conventional or Trunking communications channels.

4.9.11.23

Message

This button-press allows you to select from the Message Alias List of the current channel/mode.

 **IMPORTANT:** While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Message Alias List is used.

While operating in Trunking communications mode, the Trunking System-Message Alias List selected for the current Trunking Personality is used.

4.9.11.24

Modem On and Off

This button-press allows you to activate and deactivate Modem capability.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.11.25

Monitor

This button-press allows you to hear most or even all carrier activity on the radio's current channel.

The [Monitor Type on page 1026](#) field selection determines if only the channel-receive requirement of a Private Line (PL) encoded match is temporarily ignored, or if the requirement of PL and carrier squelch is temporarily ignored. This feature is available while operating in Conventional communications mode.

 **IMPORTANT:** When holding the Monitor button for the [Latch Enable Time on page 1028](#) duration, the radio becomes latched in continuous monitor mode. The radio remains latched in monitor mode until released with a Monitor button short-press. Initiating Emergency, Phone, Scan, or a Call Alert or Selective Call also cancels continuous monitor mode. See also the [Latch Enable Tone on page 1027](#) field.

4.9.11.26

Multiple Private Line (MPL)

This button-press allows for your access to a listing of the available MPL Lists.

 **IMPORTANT:** Each list is represented by a recognizable name . You are then able to select the desired Alias/PL settings. This feature is available while operating in Conventional communications mode.

4.9.11.27

MS01–MS13

These button assignments allows you to program these buttons with frequently used or any desired zone and channel combination.

The programming and use of these buttons is very similar to the programming and use of a car radio's preset buttons. That is, a long-press programs a button with the radio's current zone and channels; then once programmed, the short-press of that button jumps the radio to the programmed zone and channel. This feature is available while operating in Conventional or Trunking communications mode.

 **IMPORTANT:** The [Short Keypress Duration on page 430](#) and [Long Keypress Duration on page 432](#) are both programmed.

The APX™ 3000 Portable only supports MS01 and MS02.

4.9.11.28

Nuisance Delete

This button-press allows you to temporarily remove the channel from the current Active Scan when it continually generates unwanted carrier noise.

This is accomplished by pressing this Nuisance Delete button while in Landed Scan Mode on the Scan List Member to be removed. This feature applies for the current Scan List while operating in Conventional or Trunking communications mode.

 **IMPORTANT:** Switching to another channel on the radio's channel selector, turning scan mode off and then back on, or turning the radio off and then back on effectively brings that temporarily removed Scan List Member channel back to an actively scanned status.

Nuisance Delete is not possible:

- For a Priority #1, or Priority #2 Scan List Member channel.
- When the [Designated Voice Tx Member Type on page 1311](#) field is set to **Selected Channel** and the Landed Scan channel's Tx Frequency is the same as the Tx Frequency of the radio's currently-selected channel.
- If the current Scan List does not contain at least two members before a Nuisance Delete occurs.

4.9.11.29

One Touch 1–16



These 16 separately programmed button-presses allow you to launch a specific feature with one single button-press.

These button-presses allow you to enter One Touch features such as Status, Message, Selective/Private Call, Call Alert/Page, Phone, Repeater Access (RAC) and MDC RTT Button Access with the touch of one button. One to sixteen buttons can be programmed for each Conventional Personality, and one to four buttons can be programmed for each Trunking System.



IMPORTANT: Pressing a One Touch button while the radio is already in the selected feature causes the radio to abort the feature.

4.9.11.30

Phone

This button-press allows you to initiate Phone Mode while operating in Conventional or Trunking communications mode.

4.9.11.31

Repeater Access Button 1 (RAB1)

This button-press allows you to manually send a repeater access codeword.

This feature is available while operating in Conventional communications mode.

4.9.11.32

Repeater Access Button 2 (RAB2)

This button-press allows you to manually send a repeater access codeword.

This feature is available while operating in Conventional communications mode.

4.9.11.33

Radio Profiles

This button-press allows you to select one of the programmed Radio Profiles.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.11.34

Radio Swap

This button's Short Keypress Duration allows you to switch back and forth between two radios (known as "the brick" part of the radio) that are attached to the same control head in a Dual Radio configuration.



This button's Long Keypress Duration causes the programmed Radio Alias for the selected radio to temporarily appear in the control head display. This feature is available while operating in Conventional or Trunking communications mode.



WARNING: When the Dual Radio - Radio Selection field is set to **Primary Radio** or **Secondary Radio**, this selection must be made for both Conventional and Trunking, where applicable, to be considered valid.

4.9.11.35

Recent Calls

This button-press allows you to access the recent incoming and outgoing call information for the following call types: Call Alert, Selective Calls, Private Calls, and (outgoing only) Phone calls.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.11.36

Rekey Request

This button-press allows you to transmit an Over-The-Air-Rekeying (OTAR) rekey request to the dispatcher's (KMF or KMC) console while operating in Conventional or Trunking communications mode.



IMPORTANT:

For MDC OTAR (Conventional communications) the request protocol is determined by the [Rekey Request Mode on page 893](#) field.

For ASTRO OTAR (Conventional or Trunking communications) the [User Selectable Rekey Request on page 909](#) field must be **Enabled**, and the request protocol is determined by the [OTAR Tx Security Level on page 908](#) field.

4.9.11.37

Reprogram Request

This button-press allows you to send a request to the dispatcher for reassignment of Dynamic Regrouping.

The available features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher/console. The radio then automatically changes to the Dynamic Regrouping Zone and Dynamic Regrouping Channel. This feature is available while operating in Trunking communications mode.



IMPORTANT: For Trunking Systems, this Zone and Channel are defined by setting a Zone Channel Assignment's [Trunking Talkgroup on page 1297](#) field to **DYN**. The Trunking Personality considered in this scenario must have this same Trunking [System on page 1236](#) selected in its System field. Hence, only one Dynamic Regrouping channel may be defined per Trunking System.

4.9.11.38

Request-To-Talk (RTT)

This button-press allows you to send a Request-To-Talk (RTT) signaling packet to the dispatcher/console, requesting the ability to transmit voice.

This selection applies only when operating on an MDC System in Conventional communications mode.

4.9.11.39

Scan

Short Key-pressing this button allows you to toggle Scan Mode on and off for the radio's current channel.

Long Key-pressing this button allows for entry to the Scan List Edit mode for the radio's current channel's Scan List, which allows you to add or remove individual Scan List Member channels and modify scan priority.

4.9.11.40

Secure Tx Select

This button-press allows you to switch between clear (Off) and coded (On) secure encrypted transmissions.



 **NOTE:** In Mobile radios, this button's Long Keypress Duration enters and shows the Secure feature screen in the radio's display.

This feature applies while operating in Conventional or Trunking communications mode.

4.9.11.41

Select/Private Call

This button-press allows you to transmit a Conventional - Selective Call or a Trunking - Private Call.

You must select the required Contact/Call ID and then press the PTT button to initiate the Call. A Selective/Private Call is typically used when the majority of transmissions are between you and a dispatcher, or a group of users. You can directly enter or select Radio IDs for use in the radio's Call Hot Lists.

 **NOTE:** Selective/Private Calls are intended not so much to ensure privacy but rather to eliminate the annoyance of receiving traffic that does not pertain to them. See also: Conventional - Selective Call Rx/Tx and Trunking - Private Call.

4.9.11.42

Site Display/Srch

This button's Short Keypress Duration **Site Display** allows you to momentarily view the current Site ID and its corresponding received signal strength indicator (RSSI) on the radio's display.

This button's Long Keypress Duration **Site Search** enables a Site search for SmartZone operation. This feature is available while operating in Trunking communications mode.

4.9.11.43

Site Lock/Unlock

This button-press Short Keypress Duration **Site** allows you to view the lock status of the current Trunking site.

This button's Long Keypress Duration **Site Lock/Unlock** allows you to toggle between lock and unlock mode when using the SmartZone option.

 **IMPORTANT:** Locking a site inhibits roaming to another site in a wide-area System. This feature is available while operating in Trunking communications mode.

4.9.11.44

Status

This button-press allows you to select from the Status Alias List of the current channel/mode.



NOTE: For your convenience, as part of this feature the display initially shows the last acknowledged Status call, or the first Status in the list. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Status Alias List is used.

While operating in Trunking communications mode, the Trunking System-Status Alias List selected for the current Trunking Personality is used.

4.9.11.45

Talkaround/Direct

This button-press allows you to enable or disable the Direct/Talkaround mode for the current channel options profile.

This feature is available while operating in Conventional communications mode.

4.9.11.46

Talkgroup

This button-press allows you to switch from the preset Talkgroup to another Talkgroup from within the Conventional Personality's current Talkgroup List.

All Conventional Personalities using the same Talkgroup List are automatically switched to the selected Talkgroup.

4.9.11.47

Third Party

This button-press allows you to initiate functionality in third-party accessories, such as compatible Whelen® Sirens.



WARNING: When the Dual Radio [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, this selection must be made for both Conventional and Trunking, where applicable, in order to be considered valid.

4.9.11.48

Text Messaging Service (TMS)

This button's Short Keypress Duration **TMS** allows you to access the radio's Text Messaging Service (TMS) mode, seen in the radio's display.

This button's Long Keypress Duration allows you to directly enter the TMS **Inbox**, in order to view received text messages and access the programmed Quick Text Message entries (seen within the radio's display).

4.9.11.49

TMS Query

This button-press jumps you directly to the programmed Query Message entries of the Text Messaging Service feature.

You are then able to select from the list of predefined entries and easily transmit a Query with minimal effort.



NOTE: A TMS Query allows you to specify information in a pre-formatted query template and send this as a Message to a Query Server; the Server then responds with a text message containing the requested information.

When the Trunking System or Conventional System, Text Messaging Service feature is enabled on the radio's current channel, and when the TMS Query Service is currently available to the radio.

4.9.11.50

TMS Quick Text

This button-press jumps you directly to the Quick Text Message entries of the Text Messaging Service feature.

You are then able to select from the list of predefined entries and easily transmit a Quick Text Message with minimal effort.

When the Trunking System or Conventional System, Text Messaging Service feature is enabled on the radio's current channel.

4.9.11.51

Tx Low Power

This button-press allows you to change the radio's transmission power from low to high and back on a radio-wide basis.



Once you initiate Tx Low Power, the setting takes precedence over all individual Conventional Personality Transmit Power Levels and Trunking System Tx Power Levels settings. Powering off and back-on the radio resets all the radio's channels to their programmed power setting.

4.9.11.52

Unprogrammed

Select this feature for a radio button that is not in use.



You will hear a chirp tone when pressing this button. This feature is available while operating in Conventional or Trunking communications mode.

4.9.11.53

User

This button-press allows you to login to a specific Automatic Registration Service server or a User Authentication Unified Network Services (UNS) server with the appropriate Username, PIN/Password, and User Login Unit ID combination.

You may select Usernames and Unit ID from the programmed Data User List entries, or Usernames, PINs/Password and Unit IDs may be manually entered from the radio's keypad.



WARNING: This feature functions only when the radio's current (Conventional or Trunking) channel has its referenced Data Profile's, [ARS Mode on page 995](#) field is set to **Server**.

4.9.11.54

Voice Mute

This button-press allows you to toggle on and off Voice Mute functionality for In-Call User Alert-enabled channels.

When Voice Mute is active, the radio remains muted to all Conventional communications calls and affiliated Trunking Talkgroup calls. Group and individual Call Alert/Pages do unmute the radio for the alert tone; also, when Voice Mute is active, the radio does unmute to individual radio-to-radio calls such as Selective/Private Calls and Interconnect (phone mode) calls.

4.9.11.55

Wi-Fi On/Off

This button-press allows you to activate and deactivate Wi-Fi capability.



This feature is available while operating in Conventional or Trunking communications mode.

4.9.11.56

Zone Down

This button-press allows you to scroll downward through the Zones in the radio.

Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the first Zone in the list, continued scrolling causes the list to wrap around to the last Zone. Zones are defined in the Zone Channel Assignment Window.



NOTE: In certain Portable radios, Zones may also be grouped into Zone Banks, where individual banks can be selected with a [Zone Bank Up on page 498](#) or [Zone Bank Down on page 497](#) button-press.

4.9.11.57

Zone Up

This button-press allows you to scroll upward through the Zones in the radio.

Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the last Zone in the list, continued scrolling causes the list to wrap around to the first Zone. Zones are defined in the Zone Channel Assignment Window's Zone Page. This feature is available while operating in Conventional or Trunking communications mode.



NOTE: In certain Portable radios, Zones may also be grouped into Zone Banks, where individual banks can be selected with a [Zone Bank Up on page 498](#) or [Zone Bank Down on page 497](#) button-press.

4.9.12

Top Function Programmable Button Feature Selections

This sections provides you with selection functions for the Mobile Control Head and/or Keypad Mic (KPM) buttons. These selections apply while operating in Conventional or Trunking communications mode, as noted in the table below.



WARNING: You should not duplicate a function on multiple control types, or on more than one Control Head button. This may cause you confusion and may sometimes disable a radio feature.

For a Dual Radio configuration:

- When the Radio Selection field is set to **Primary Radio** or **Secondary Radio**, only the O7 Control Head button selections are configurable.
- Button functions for Radio Wide features (Siren-related buttons, Aux Control (1-3), Dim, GunLock (1, 2, 3, or All), Radio Swap, Relay Pattern, and Third Party) must be configured the same on both radios.
- It is strongly recommended to configure all of the button functions the same way on both radios, in order to avoid confusion.

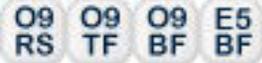


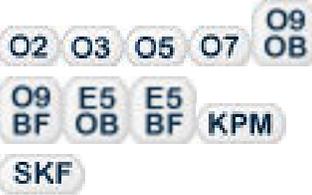
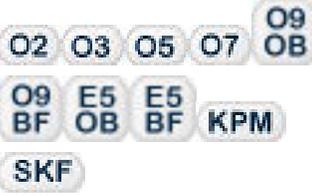
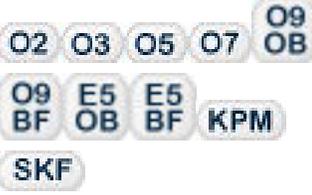
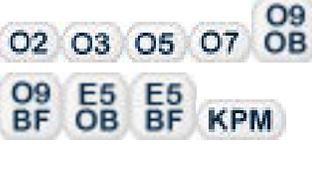
NOTE: When a Mission Critical WRSM is wirelessly connected to the Mobile Microphone with Bluetooth Gateway, pressing the Orange Programmable button on the WRSM will trigger the event set in 2-dot Button of a KPM

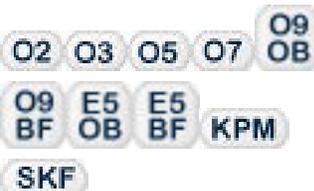
Table 107: Legend for Button Selection Symbols

Symbol	Description
	Conventional Mode
	Trunking Mode
	Conventional and Trunking Mode
	O2 Control Head
	O3 Control Head
	O5 Control Head
	O7 Control Head
	O9 Control Head
	E5 Control Head
	Keypad Mic
	Smart Key Fob

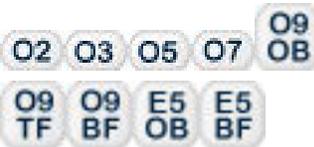
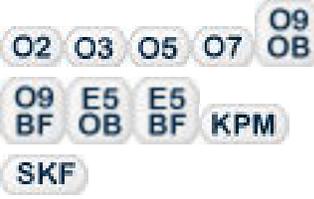
Table 108: Button Selections

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Action Consolidation on page 588 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p> <p>Once selected, the appropriate Index for the same record/row must also be defined.</p> <p>You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button Index selection.</p>	
Airhorn on page 543 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA, and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.</p>	
Automatic Channel Fallback Enable/Disable 	<p>When the Channel Fallback Enable field is enabled.</p>	
Aux Control (1-3) on page 589 	<p>When the Radio Vehicular Interface Port (VIP) Outputs are set to an Aux Control.</p> <p>When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio, this selection becomes valid when it is selected for both Conventional and Trunking</p> <p>It also becomes valid when not selected for the Orange button on the O7 Control Head, and when not selected for the Side Top (Purple) button on the </p>	
Blank on page 567 	<p>Intended for controls that are not in use.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Bluetooth Audio Re-route on page 483 	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	
Bluetooth Configuration on page 483 	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	
Bluetooth Discoverable On/Off on page 483 	<p>When the Bluetooth Enable on page 396 field is Enabled and when the radio is not LTE-capable.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	
Bluetooth Headset PTT on page 483 	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	
Bluetooth Inquiry On/Off on page 483 	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	
Bluetooth On/Off on page 484 	<p>When the Bluetooth Enable on page 396 field is Enabled.</p> <p> IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional, it automatically sets the corresponding Trunking button selection.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Call Alert on page 590 	For Conventional Feature, when the Conventional Personality, ASTRO Call Alert Rx/Tx field is set to Encode or Encode & Decode , or when the Conventional Personality, Non-ASTRO Call Alert Rx/Tx field is set to Encode or Encode & Decode for the current channel. For Trunking Feature, when the Trunking Personality, Call Alert/Page Operation field is set to List Only or Unlimited for the current channel.	
Call Response on page 591 	When the Phone Operation field is not set to None for the current channel.	
Channel Announcement on page 484 	When a Voice Announcement file has been selected in the Zone Channel Assignment, Channel Announcement field for the current channel.	
Channel Fallback Manual/Revert 	When the Channel Fallback Enable field is enabled.	
Channel Search on page 485 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Channel Select on page 591 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Contacts on page 485 	When selected, always available to you, and therefore not dependent on any feature or selection.	

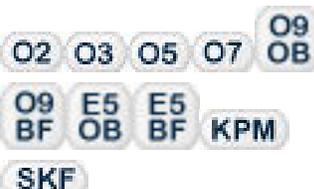
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Dim on page 592 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p> <p>When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio, this selection is only valid when it is selected for both Conventional and Trunking, and when it is not selected for the Side Top (Purple) button on the .</p>	  
Direct Ext Radio on page 544 	<p>When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled.</p>	    
Direct Hi/Lo on page 544 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA, and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is Enabled.</p>	    
Direct Manual on page 545 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p>	    
Direct Message on page 593 	<p>When the Sts/Msg Index field is set to a unique value (not assigned to other DEK Direct Message buttons). For Conventional Feature, the Conventional System Message field must be enabled. For Trunking Feature, the Trunking Personality Message Enabled field must be enabled.</p>	
Direct Mode (Mode) on page 594 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
Direct Status on page 594 	<p>When the Sts/Msg Index field is set to a unique value (not assigned to other DEK Direct Status buttons). For Conventional Feature, the Conventional System Message field must be enabled. For Trunking Feature, the Trunking Personality Message Enabled field must be enabled.</p>	
Direct Wait on page 545 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p>	    

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Direct Yelp on page 546 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Digital Vehicular Repeater System (DVRs) on page 595 	When the DVRs Wide, DVRs Hardware Enable field is enabled.	
DTMF Tone on page 485 	There are 12 DTMF tones; namely DTMF Tone 0 to 9, DTMF Tone *, and DTMF Tone #. When selected, you can send out DTMF code of the assigned DTMF value. For example, when DTMF Tone 9 is selected, you can send out DTMF code 9. Selection is only available when DTMF Mic Enable is checked.	
Dynamic ID on page 486 	When operating in Conventional communications mode, and when the Conventional System, Dynamic ID Enable field is enabled for the current channel.	
Dynamic Priority on page 486 	When Scan Mode is enabled, when the Scan Type is Conventional , and when the Scan List, Dynamic Priority field is enabled for the current landed scan channel.	
Emergency on page 486 	When the Conventional System, Emergency Profile Selection field is not set to Emergency Tx Disabled for the current channel. When the Trunking Personality, Emergency Profile Selection field is not set to Emergency Tx Disabled for the radio's current channel. For Trunking, Emergency is not available when Failsoft Mode is active and Emergency Blocked in Failsoft is enabled. When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio , this selection is invalid for the Side Top (Purple) button of a  .	
Emergency Supervisor	Selection is only valid in the application, and always available to you.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Clear on page 596 	It is selected for Side Middle Button or Accy 1-dot. Emergency Exit Control is set to Supervisor .	
External Radio (Ext Radio) on page 596 	When the Radio Ergonomics Wide, Siren Operation field is set to Disabled .	
Front/Rear (F/R) on page 597 	When the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to One Active .	  
Gunlock (1,2,3, or All) on page 546 	When at least one of the radio VIP Out pins has been programmed for the corresponding GunLock function. (Refer also to Password Required For GunLock.)	 
Hi/Lo on page 569 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.	
Horn Lights on page 597 	When the Radio Ergonomics Wide, Horn and Lights field is enabled.	  
In Car Monitor (ICM) on page 597 	When the DVRS Wide, DVRS Hardware Enable field is enabled, and when the DVRS Wide, In Car Monitor field is set to ICM Button/Menu Controlled .	  
Information on page 486 	When selected, always available to you, and therefore not dependent on any feature or selection.	  

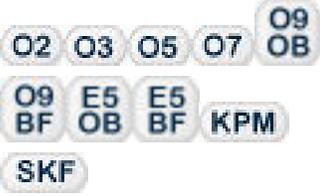
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Intercom on page 598 	When the Radio Ergonomics Wide, Multi Control Head field is disabled, or when the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to All Active .	
Internet Protocol Address (IP) on page 486 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Location on page 487 	When the Radio Wide, Location Enable field is enabled.	
Manual on page 570 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Message on page 488 	When the Conventional System, Message field is enabled for the radio's current channel. When the Trunking Personality, Message Enable field is enabled for the radio's current channel.	
Modem On and Off on page 599	This button-press activates and deactivates Data Modem capability of the radio.	
Monitor on page 488  See Latch Enable Time on page 1028	When selected, always available to you, and therefore not dependent on any feature or selection.	

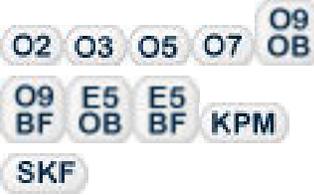
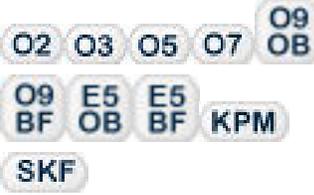
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
MS01–MS13 on page 489 (Mode Select)	When selected, always available to you, and therefore not dependent on any feature or selection.	
Multiple Private Line (MPL) on page 489	When the Conventional Personality, Rx Voice/Signal Type field is set to Non-ASTRO or Mixed Mode , and when the Conventional Personality, User Selectable PL [MPL] field is enabled for the radio's current channel.	
Nuisance Delete on page 489	When Scan Mode is enabled.	
One Touch 1–16 on page 600	When at least one of the Conventional Personality, One Touch Button Features is not set to Disabled for the current channel. When at least one of the Trunking System, One Touch Button Features is not set to Disabled for the radio's current channel.	
Priority Channel PTT on page 490	When operating in Conventional communications mode, and when there is a Priority Member 1 Scan List Member in the current channel Scan List.	
Priority Dispatch	Selection is valid only for Side Top Button, Side Middle Button, and Side Bottom Button.	
Public Address (PA) on page 547	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled .	
Phone on page 490	When the Conventional Personality, Phone Operation field is not set to None for the current channel. When the Trunking Personality, Phone Operation field is not set to Disabled for the current channel.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Radio Profiles on page 491 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Radio Swap on page 601 	When the Radio Selection field is set to Primary Radio or Secondary Radio in a Dual Radio configuration. Where applicable, this selection must be selected for both Conventional and Trunking in order to be considered valid.	
Recent Calls on page 491 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Rekey Request on page 492  Requires a radio-user Long Key-press Duration on page 432 .	When the ASTRO OTAR Information, User Selectable Rekey Request is not set to Disabled , or when the MDC OTAR, Rekey Request Mode is not set to Disabled .	
Relay Pattern on page 547 	When the Universal Relay Controller Equipped field is enabled and a URC is connected to the radio. You cannot duplicate the same Relay Pattern on more than one Directional Button, Top Function Programmable Button, or Bottom Function Programmable Button Index selection. Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button. Once selected, the appropriate Index for the same record/row must also be defined. See also: Password Required For Lightbar on page 340 .	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Repeater Access Button 1 (RAB1) on page 492 	<p>When the Conventional Personality, Repeater Access field is enabled, and when the Access Type is set to Manual for the radio's current channel.</p> <p>This feature is not available on Side Button 1 when Radio Lock is enabled.</p>	
Repeater Access Button 2 (RAB2) on page 492 	<p>When the Conventional Personality, Repeater Access field is enabled, and when the Access Type is set to Manual for the current channel.</p> <p>This feature is not available on Side Button 1 when Radio Lock is enabled.</p>	
Reprogram Request on page 492 	<p>When the Trunking System, System Type is ASTRO 25, and when the Trunking System, Dynamic Re-grouping Enable field is enabled for the current channel.</p>	
Request-To-Talk (RTT) on page 492 	<p>When the Conventional Personality, MDC RTT Button Access field is set to Manual for the radio's current channel, and when that Personality is not a Receive Only Personality, and when Tx Inhibit is not enabled.</p>	
Scan on page 493  Long Key-press Duration on page 432 vs Short Keypress Duration on page 430	<p>When the Scan Type is not set to Voting Scan, and when the Conventional Personality, Scan List Selection field is not set to None, and when the Conventional Personality, Automatic Scan field is disabled for the radio's current channel.</p>	
Secure Tx Select on page 602  Long Key-press Duration on page 432 vs Short Keypress	<p>When any one of the Conventional Secure/Clear Strapping fields is set to Select for the current channel.</p> <p>When any one of the Trunking Secure/Clear Strapping fields is set to Select for the current channel.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Duration on page 430	<p>When the Conventional Personality, ASTRO Selective Call Rx/Tx is set to Encode or Encode & Decode, or when the Conventional Personality, Non-ASTRO Selective Call Rx/Tx is set to Encode or Encode & Decode for the current channel.</p> <p>When the Trunking Personality, Private Call Type is not set to Disabled for the current channel.</p>	
Siren on page 603	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p> <p>See also Password Required For Siren.</p>	
Site Display/Srch on page 493	<p>When the Trunking System, Site Alias Enable field is enabled for the current channel.</p>	
<p>Trunk.</p> <p>Long Key-press Duration on page 432 vs Short Keypress Duration on page 430</p>	<p>When the Trunking System, Site Alias Enable field is enabled for the current channel.</p>	
<p>Trunk.</p> <p>Long Key-press Duration on page 432 vs Short Keypress Duration on page 430</p>	<p>When the Conventional System Status field is enabled for the current channel.</p> <p>When the Trunking Personality Status Enable field is enabled for the current channel.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Talkaround/ Direct on page 494 	<p>When operating in Conventional communications mode, and when the Conventional Personality, Direct/Talkaround field is enabled for the current channel.</p> <p>This selection can not be set concurrently on Buttons, Switches and Menu Items</p> <p>It can be set concurrently on Portable and Accessory Buttons.</p>	
Talkgroup on page 494 	<p>When the Conventional Personality, ASTRO Talkgroup Selection Type field is set to Selectable for the current channel.</p>	
Text Messag- ing Service (TMS) on page 604  Long Key- press Dura- tion on page 432 vs Short Keypress Duration on page 430	<p>When the Conventional System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p> <p>When the Trunking System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p>	
Third Party on page 495 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p> <p>In a Dual Radio configuration, when the Radio Selection field is set to Primary Radio or Secondary Radio, this selection must be selected for both Conventional and Trunking in order to be considered valid.</p>	
TMS Query on page 495 	<p>When the Conventional System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p> <p>When the Trunking System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
TMS Quick Text on page 495 	<p>When the Conventional System, Text Messaging Service field is set to List Only or Unlimited, and when that System's Data Profile Selection is not set to Data Disabled for the radio's current channel.</p> <p>When the Trunking System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p>	
Tx Low Power on page 605 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
Unprogrammed on page 496 	<p>Intended for controls that are not in use.</p>	
User on page 496 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
Voice Mute on page 496 	<p>When the Conventional Personality, ASTRO Call, In-Call User Alert Enable field is enabled for the current channel, or when the Conventional Personality, Non-ASTRO Call In-Call User Alert Enable field is enabled for the current channel.</p> <p>When the Trunking Personality, In-Call User Alert Enable field is enabled for the current channel.</p>	
Volume Down on page 496 	<p> NOTE: This function is available on Mobile radios and only applicable to SKF.</p> <p> WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Volume Up on page 497 	 NOTE: This function is available on Mobile radios and only applicable to SKF.  WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.	
Wail on page 571 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Wi-Fi On/Off on page 497 	This button-press activates and deactivates Wi-Fi capability of the radio.	  
Yelp on page 571 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Zone Down on page 498 	When selected, always available to you, and therefore not dependent on any feature or selection.	  
Zone Up on page 498 	When selected, always available to you, and therefore not dependent on any feature or selection.	  

4.9.13

Bottom Function Programmable Button Feature Selections

This sections provides you with selection functions for the Mobile Control Head and/or Keypad Mic (KPM) buttons. These selections apply while operating in Conventional or Trunking communications mode, as noted in the table below.



WARNING:

You should not duplicate a function on multiple control types, or on more than one Control Head button. This may cause you confusion and may sometimes disable a radio feature.

For a Dual Radio configuration:

- When the Radio Selection field is set to **Primary Radio** or **Secondary Radio**, only the O7 Control Head button selections are configurable.
- Button functions for Radio Wide features (Siren-related buttons, Aux Control (1-3), Dim, GunLock (1, 2, 3, or All), Radio Swap, Relay Pattern, and Third Party) must be configured the same on both radios.
- It is strongly recommended to configure all of the button functions the same way on both radios, in order to avoid confusion.



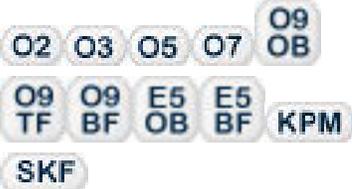
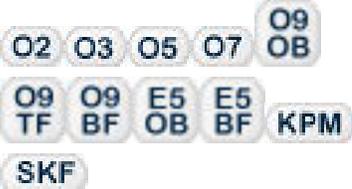
NOTE:

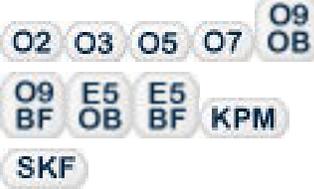
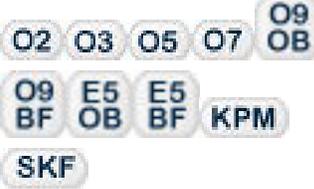
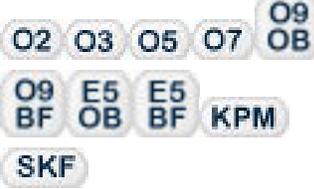
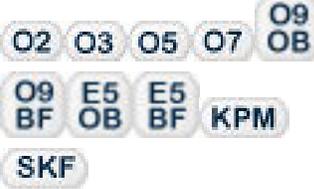
When a Mission Critical WRSM is wirelessly connected to the Mobile Microphone with Bluetooth Gateway, pressing the Orange Programmable button on the WRSM will trigger the event set in 2-dot Button of a KPM.

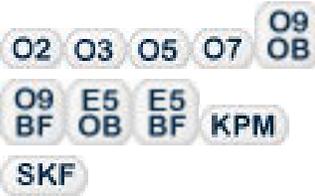
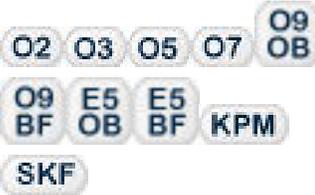
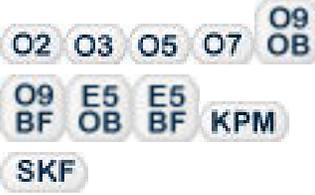
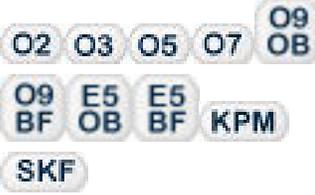
Table 109: Legend for Button Selection Symbols

Symbol	Description
	Conventional Mode
	Trunking Mode
	Conventional and Trunking Mode
	O2 Control Head
	O3 Control Head
	O5 Control Head
	O7 Control Head
	O9 Control Head
	E5 Control Head
	Keypad Mic
	Smart Key Fob

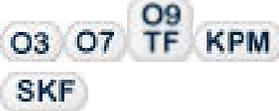
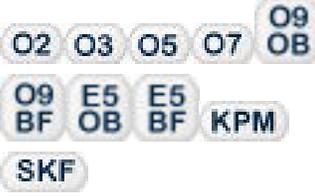
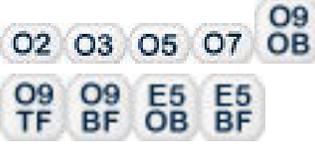
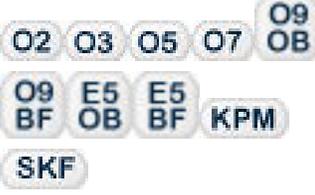
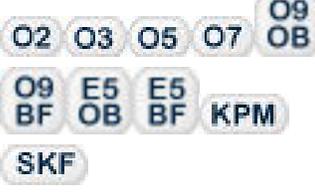
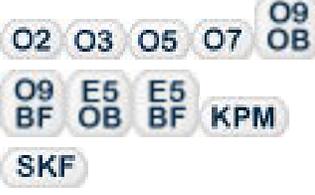
Table 110: Button Selections

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Action Consolidation on page 588 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p> <p>Once selected, the appropriate Index for the same record/row must also be defined.</p> <p>You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button Index selection.</p>	
Airhorn on page 543 	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA, and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.</p>	
Automatic Channel Fallback Enable/Disable 	<p>When the Channel Fallback Enable field is enabled.</p>	
Aux Control (1-3) on page 589 	<p>When the Radio Vehicular Interface Port (VIP) Outputs are set to an Aux Control.</p> <p>When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio, this selection becomes valid when it is selected for both Conventional and Trunking</p> <p>It also becomes valid when not selected for the Orange button on the O7 Control Head, and when not selected for the Side Top (Purple) button on the </p>	
Blank on page 567 	<p>Intended for controls that are not in use.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Bluetooth Audio Re-route on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Bluetooth Configuration on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Bluetooth Discoverable On/Off on page 483 	When the Bluetooth Enable on page 396 field is Enabled and when the radio is not LTE-capable.  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Bluetooth Headset PTT on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Bluetooth Inquiry On/Off on page 483 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	
Bluetooth On/Off on page 484 	When the Bluetooth Enable on page 396 field is Enabled .  IMPORTANT: This selection must be set for Conventional and Trunking on the same button; therefore, when selected for Conventional , it automatically sets the corresponding Trunking button selection.	

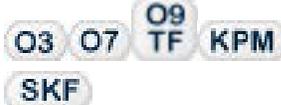
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Call Alert on page 590 	<p>For Conventional Feature, when the Conventional Personality, ASTRO Call Alert Rx/Tx field is set to Encode or Encode & Decode, or when the Conventional Personality, Non-ASTRO Call Alert Rx/Tx field is set to Encode or Encode & Decode for the current channel.</p> <p>For Trunking Feature, when the Trunking Personality, Call Alert/Page Operation field is set to List Only or Unlimited for the current channel.</p>	
Call Response on page 591 	<p>When the Phone Operation field is not set to None for the current channel.</p>	
Channel Announcement on page 484 	<p>When a Voice Announcement file has been selected in the Zone Channel Assignment, Channel Announcement field for the current channel.</p>	
Channel Fallback Manual/Revert 	<p>When the Channel Fallback Enable field is enabled.</p>	
Channel Search on page 485 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
Channel Select on page 591 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
Contacts on page 485 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	

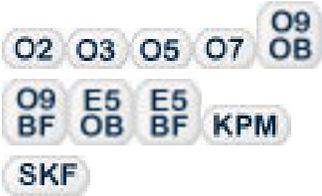
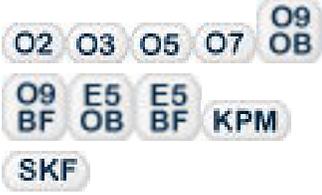
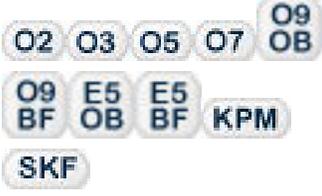
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Dim on page 592 	When selected, always available to you, and therefore not dependent on any feature or selection. When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio , this selection is only valid when it is selected for both Conventional and Trunking, and when it is not selected for the Side Top (Purple) button on the  .	  
Direct Ext Radio on page 544 	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled .	    
Direct Hi/Lo on page 544 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is Enabled .	    
Direct Manual on page 545 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	    
Direct Message on page 593 	When the Sts/Msg Index field is set to a unique value (not assigned to other DEK Direct Message buttons). For Conventional Feature, the Conventional System Message field must be enabled. For Trunking Feature, the Trunking Personality Message Enabled field must be enabled.	
Direct Mode (Mode) on page 594 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Direct Status on page 594 	When the Sts/Msg Index field is set to a unique value (not assigned to other DEK Direct Status buttons). For Conventional Feature, the Conventional System Message field must be enabled. For Trunking Feature, the Trunking Personality Message Enabled field must be enabled.	
Direct Wail on page 545 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	    

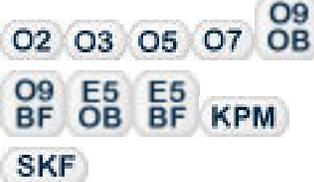
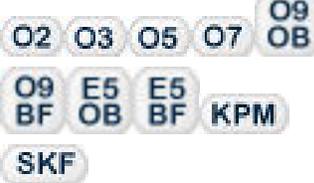
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Direct Yelp on page 546 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Digital Vehicular Repeater System (DVRS) on page 595 	When the DVRS Wide, DVRS Hardware Enable field is enabled.	
DTMF Tone on page 485 	<p>There are 12 DTMF tones; namely DTMF Tone 0 to 9, DTMF Tone *, and DTMF Tone #.</p> <p>When selected, you can send out DTMF code of the assigned DTMF value. For example, when DTMF Tone 9 is selected, you can send out DTMF code 9.</p> <p>Selection is only available when DTMF Mic Enable is checked.</p>	
Dynamic ID on page 486 	When operating in Conventional communications mode, and when the Conventional System, Dynamic ID Enable field is enabled for the current channel.	
Dynamic Priority on page 486 	When Scan Mode is enabled, when the Scan Type is Conventional , and when the Scan List, Dynamic Priority field is enabled for the current landed scan channel.	
Emergency on page 486 	<p>When the Conventional System, Emergency Profile Selection field is not set to Emergency Tx Disabled for the current channel.</p> <p>When the Trunking Personality, Emergency Profile Selection field is not set to Emergency Tx Disabled for the radio's current channel.</p> <p>For Trunking, Emergency is not available when Failsoft Mode is active and Emergency Blocked in Failsoft is enabled.</p> <p>When the Dual Radio - Radio Selection field is set to Primary Radio or Secondary Radio, this selection is invalid for the Side Top (Purple) button of a .</p>	
Emergency Supervisor	Selection is only valid in the application, and always available to you.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Clear on page 596 	It is selected for Side Middle Button or Accy 1-dot. Emergency Exit Control is set to Supervisor .	
External Radio (Ext Radio) on page 596 	When the Radio Ergonomics Wide, Siren Operation field is set to Disabled .	
Front/Rear (F/R) on page 597 	When the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to One Active .	  
Gunlock (1,2,3, or All) on page 546 	When at least one of the radio VIP Out pins has been programmed for the corresponding GunLock function. (Refer also to Password Required For GunLock.)	 
Hi/Lo on page 569 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.	
Horn Lights on page 597 	When the Radio Ergonomics Wide, Horn and Lights field is enabled.	  
In Car Monitor (ICM) on page 597 	When the DVRS Wide, DVRS Hardware Enable field is enabled, and when the DVRS Wide, In Car Monitor field is set to ICM Button/Menu Controlled .	  
Information on page 486 	When selected, always available to you, and therefore not dependent on any feature or selection.	  

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Intercom on page 598 	When the Radio Ergonomics Wide, Multi Control Head field is disabled, or when the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to All Active .	
Internet Protocol Address (IP) on page 486 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Location on page 487 	When the Radio Wide, Location Enable field is enabled.	
Manual on page 570 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Message on page 488 	When the Conventional System, Message field is enabled for the radio's current channel. When the Trunking Personality, Message Enable field is enabled for the radio's current channel.	
Modem On and Off on page 599	This button-press activates and deactivates Data Modem capability of the radio.	
Monitor on page 488  See Latch Enable Time on page 1028	When selected, always available to you, and therefore not dependent on any feature or selection.	

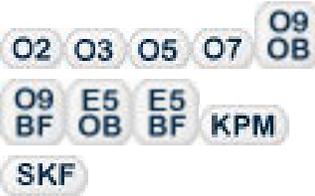
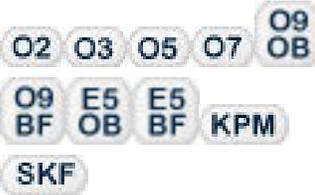
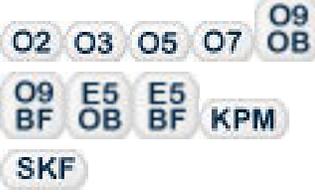
Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
MS01–MS13 on page 489 (Mode Select)	When selected, always available to you, and therefore not dependent on any feature or selection.	
		
Multiple Private Line (MPL) on page 489	When the Conventional Personality, Rx Voice/Signal Type field is set to Non-ASTRO or Mixed Mode , and when the Conventional Personality, User Selectable PL [MPL] field is enabled for the radio's current channel.	
		
Nuisance Delete on page 489	When Scan Mode is enabled.	
		
One Touch 1–16 on page 600	When at least one of the Conventional Personality, One Touch Button Features is not set to Disabled for the current channel.	
	When at least one of the Trunking System, One Touch Button Features is not set to Disabled for the radio's current channel.	
Priority Channel PTT on page 490	When operating in Conventional communications mode, and when there is a Priority Member 1 Scan List Member in the current channel Scan List.	
		
Priority Dispatch	Selection is valid only for Side Top Button, Side Middle Button, and Side Bottom Button.	
		
Public Address (PA) on page 547	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled .	
		
Phone on page 490	When the Conventional Personality, Phone Operation field is not set to None for the current channel.	
	When the Trunking Personality, Phone Operation field is not set to Disabled for the current channel.	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Radio Profiles on page 491 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Radio Swap on page 601 	When the Radio Selection field is set to Primary Radio or Secondary Radio in a Dual Radio configuration. Where applicable, this selection must be selected for both Conventional and Trunking in order to be considered valid.	
Recent Calls on page 491 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Rekey Request on page 492  Requires a radio-user Long Key-press Duration on page 432.	When the ASTRO OTAR Information, User Selectable Rekey Request is not set to Disabled , or when the MDC OTAR, Rekey Request Mode is not set to Disabled .	
Relay Pattern on page 547 	When the Universal Relay Controller Equipped field is enabled and a URC is connected to the radio. You cannot duplicate the same Relay Pattern on more than one Directional Button, Top Function Programmable Button, or Bottom Function Programmable Button Index selection. Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button. Once selected, the appropriate Index for the same record/row must also be defined. See also: Password Required For Lightbar on page 340 .	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Repeater Access Button 1 (RAB1) on page 492 	<p>When the Conventional Personality, Repeater Access field is enabled, and when the Access Type is set to Manual for the radio's current channel.</p> <p>This feature is not available on Side Button 1 when Radio Lock is enabled.</p>	
Repeater Access Button 2 (RAB2) on page 492 	<p>When the Conventional Personality, Repeater Access field is enabled, and when the Access Type is set to Manual for the current channel.</p> <p>This feature is not available on Side Button 1 when Radio Lock is enabled.</p>	
Reprogram Request on page 492 	<p>When the Trunking System, System Type is ASTRO 25, and when the Trunking System, Dynamic Re-grouping Enable field is enabled for the current channel.</p>	
Request-To-Talk (RTT) on page 492 	<p>When the Conventional Personality, MDC RTT Button Access field is set to Manual for the radio's current channel, and when that Personality is not a Receive Only Personality, and when Tx Inhibit is not enabled.</p>	
Scan on page 493  Long Key-press Duration on page 432 vs Short Keypress Duration on page 430	<p>When the Scan Type is not set to Voting Scan, and when the Conventional Personality, Scan List Selection field is not set to None, and when the Conventional Personality, Automatic Scan field is disabled for the radio's current channel.</p>	
Secure Tx Select on page 602  Long Key-press Duration on page 432 vs Short Keypress	<p>When any one of the Conventional Secure/Clear Strapping fields is set to Select for the current channel.</p> <p>When any one of the Trunking Secure/Clear Strapping fields is set to Select for the current channel.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Duration on page 430	<p>When the Conventional Personality, ASTRO Selective Call Rx/Tx is set to Encode or Encode & Decode, or when the Conventional Personality, Non-ASTRO Selective Call Rx/Tx is set to Encode or Encode & Decode for the current channel.</p> <p>When the Trunking Personality, Private Call Type is not set to Disabled for the current channel.</p>	
Siren on page 603	<p>When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA.</p> <p>See also Password Required For Siren.</p>	
Site Display/ Srch on page 493	<p>When the Trunking System, Site Alias Enable field is enabled for the current channel.</p>	
<p>Trunk.</p> <p>Long Key-press Duration on page 432 vs Short Keypress Duration on page 430</p>	<p>When the Trunking System, Site Alias Enable field is enabled for the current channel.</p>	
Status on page 494	<p>When the Conventional System Status field is enabled for the current channel.</p> <p>When the Trunking Personality Status Enable field is enabled for the current channel.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Talkaround/ Direct on page 494 	<p>When operating in Conventional communications mode, and when the Conventional Personality, Direct/Talkaround field is enabled for the current channel.</p> <p>This selection can not be set concurrently on Buttons, Switches and Menu Items</p> <p>It can be set concurrently on Portable and Accessory Buttons.</p>	
Talkgroup on page 494 	<p>When the Conventional Personality, ASTRO Talkgroup Selection Type field is set to Selectable for the current channel.</p>	
Text Messaging Service (TMS) on page 604  Long Key-press Duration on page 432 vs Short Keypress Duration on page 430	<p>When the Conventional System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p> <p>When the Trunking System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p>	
Third Party on page 495 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p> <p>In a Dual Radio configuration, when the Radio Selection field is set to Primary Radio or Secondary Radio, this selection must be selected for both Conventional and Trunking in order to be considered valid.</p>	
TMS Query on page 495 	<p>When the Conventional System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p> <p>When the Trunking System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
TMS Quick Text on page 495 	<p>When the Conventional System, Text Messaging Service field is set to List Only or Unlimited, and when that System's Data Profile Selection is not set to Data Disabled for the radio's current channel.</p> <p>When the Trunking System, Text Messaging Service field is set to List Only or Unlimited, and when that System Data Profile Selection is not set to Data Disabled for the current channel.</p>	
Tx Low Power on page 605 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
Unprogrammed on page 496 	<p>Intended for controls that are not in use.</p>	
User on page 496 	<p>When selected, always available to you, and therefore not dependent on any feature or selection.</p>	
Voice Mute on page 496 	<p>When the Conventional Personality, ASTRO Call, In-Call User Alert Enable field is enabled for the current channel, or when the Conventional Personality, Non-ASTRO Call In-Call User Alert Enable field is enabled for the current channel.</p> <p>When the Trunking Personality, In-Call User Alert Enable field is enabled for the current channel.</p>	
Volume Down on page 496 	<p> NOTE: This function is available on Mobile radios and only applicable to SKF.</p> <p> WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.</p>	

Function	Selection valid only the application, and available to you:	Selections available Based on Availability to Current Hardware:
Volume Up on page 497 	 NOTE: This function is available on Mobile radios and only applicable to SKF.  WARNING: This selection must be set on the Conventional and Trunking features at the same time. If you set this selection on Conventional, the corresponding Trunking selection is automatically set.	
Wail on page 571 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Wi-Fi On/Off on page 497 	This button-press activates and deactivates Wi-Fi capability of the radio.	  
Yelp on page 571 	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .	
Zone Down on page 498 	When selected, always available to you, and therefore not dependent on any feature or selection.	  
Zone Up on page 498 	When selected, always available to you, and therefore not dependent on any feature or selection.	  

4.9.13.1

Action Consolidation

This button-press, or O9 Control Head Response Selector position, allows you to initiate a programmed sequence of Consolidated Actions.



You may easily execute a Consolidated Action's sequence of radio actions with minimal effort. This feature applies while operating in Conventional or Trunking communications mode.



WARNING: You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Response Selector, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection.



NOTE: For the O9 Control Head, it is strongly recommended that the Response Selector's **0** position be assigned a Consolidated Action that turns all Relay Patterns, Siren tones, GPS Reports, Mode changes and Direct Status to an **Unassigned** or **ALL OFF** state. It may also be desirable to assign this Consolidated Action to a button-press.



IMPORTANT:

When a Consolidated Action is activated with a button-press, pressing the Action Consolidation button again does not deactivate any of the actions; instead, it reactivates the sequence of actions.

When a Consolidated Action is activated with a Response Selector position on the O9 Control Head, changing that position does deactivate the Consolidated Action assigned to the previous Response Selector position, and the Consolidated Action assigned to the new position is activated.

When the radio is powered up, any Consolidated Action assigned to the Response Selector's current position is executed.

No matter if a Consolidated Action is completed or canceled, if there are any required channel/mode changes in the action, the radio always returns to its original channel/mode.

Once initiated, a Consolidated Action may be canceled, however the individual actions typically happen so quickly, that the likelihood of terminating any part of the Action is nearly impossible.

- A Consolidated Action may be terminated by a Home button-press, a menu EXIT, a PTT button-press (provided the Public Address mode is not active), or the engagement of Emergency Mode.
- The Relay Pattern, Siren Type, or GPS Report actions are the first to launch and are therefore nearly immediate.

4.9.13.2

Automatic Channel Fallback Enable/Disable

On a Channel Fallback-enabled channel, pressing this button activates Automatic Channel Fallback. Pressing and holding this button deactivates the feature and reverts the radio back to the last user-selected channel.

4.9.13.3

Aux Control (1-3)

These three button-selections allow you to individually activate and deactivate radio Vehicular Interface Port (VIP) Outputs that are set to an **Aux Control**.



The VIP Output is activated for the duration determined by the Active Duration field. See Also The Auxiliary Control Page fields. This feature is available for Conventional or Trunking communications mode.



WARNING: When the Dual Radio - Radio Selection field is set to **Primary Radio** or **Secondary Radio**, this selection is only considered to be valid when it is selected for both Conventional and Trunking, and when it is not selected for the Orange button on the O7 Control Head, and when it is not selected for the Side Top (Purple) button of a Keypad Mic (KPM).



IMPORTANT:

An **Aux Control** VIP Output may also be triggered when the radio has decoded a Tone Signaling tone or tone pair and External Control is not set to **None**.

The [Console on page 255](#) also uses Auxiliary Control features.

4.9.13.4

Blank

Select this feature for a radio button that is not in use.



You hear a chirp tone when pressing this button. This feature is available for Conventional or Trunking communications mode.

4.9.13.5

Call Alert

This button-press allows you to transmit a Call Alert for Conventional modes, or a Call Alert/Page for Trunking modes.



NOTE: Call Alert/Pages allow a dispatcher or radio-caller to notify you (or group of radios-users) of a missed call. Receiving radios are targeted based on radio and system information managed by the Contacts and Call IDs in the radio's Call Hot Lists.

You can directly enter or select Call IDs from the channel's Hot List. The receiving radio responds with both alert tones and visual alerts to you. The visual alert (flashing LED) persists until reset by your interaction with the radio.

4.9.13.6

Call Response

This button-press allows you to respond to (and hang up from) a received Phone Call (Conventional or Trunking) or Private Call.

Valid for **Trunking** only.

4.9.13.7

Channel Announcement

This button-press allows you to hear the Voice Announcement audio file that is assigned to the radio's current channel/mode.



IMPORTANT: Voice files are assigned to channels from the Zone Channel Assignment, [Channel Announcement on page 1296](#) Channel Announcement field.

4.9.13.8

Channel Fallback Manual/Revert

On a Channel Fallback-enabled channel, pressing this button causes the radio to switch to the assigned Fallback Channel regardless of current network conditions and activation state. Pressing and holding this button reverts the radio back to the last user-selected channel.

4.9.13.9

Channel Search

This button-press allows you to search for a channel/mode based on its programmed channel name, and directly switch to the found channel.

This feature is available while operating in Conventional or Trunking communications mode.



NOTE: These [Channel Name on page 1294](#) can be viewed in the Zone Channel Assignment Window's Channels Page, on a per zone basis.

4.9.13.10

Channel Select

This button-press allows you to enter the desired radio channel.



Once the **Channel Select** button is selected, you are then able to enter the desired channel number on the radio's keypad. The number entered applies to the radio's current zone. This feature applies while operating in Conventional or Trunking communications mode.



NOTE: These channel numbers must be programmed and can be viewed in the Zone Channel Assignment Window's Channels Page on a per zone basis.

4.9.13.11

Contacts

This button press allows you to view or edit the Contacts of the radio's current channel.

Contacts must be programmed in the Unified Call List. Contacts make up the members of Call Hot Lists. Hot List members/Contacts are selectable by you, allowing for call types such as Phone Calls, Selective Calls, Call Alerts, Private Calls and Pages to individual radios or to groups of radios.



IMPORTANT: This feature is not available for Portable radios having only a top display.

4.9.13.12

Dim

This button-press allows you to change the illumination level of the radio's backlight. When in the lights-off position, the radio's backlight and display are completely shut down; this is useful when a complete stealth-mode is desired.



Depending on the model of your radio, the available levels of illumination may vary. Also see the Backlight Color Control feature.



WARNING:

This feature does not apply when a **KPM** is attached to an **O9** Control Head.

When the Dual Radio - Radio Selection field is set to **Primary Radio** or **Secondary**, this selection is only considered to be valid:

- when it is selected for both Conventional and Trunking, and
- when it is not selected for the Side Top (Purple) button of a **KPM**.

4.9.13.13

Direct Ext Radio

This button-press allows you to directly activate and deactivate External Radio mode.



See also the [External Radio \(Ext Radio\) on page 596](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

The External Radio feature is not available with a Siren switchbox.

See also: [Options Audio Muting on page 423](#) and [External Radio Ignition on page 423](#).

4.9.13.14

Direct Hi/Lo

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds "Hi/Lo" Siren tones.



See also the [Hi/Lo on page 569](#) button-press. This feature is available on a radio-wide basis.



WARNING: The [HiLo Airhorn Tones on page 425](#) field must be **Enabled**. Otherwise, the Hi/Lo, Direct Hi/Lo, and Airhorn button selections will be invalid.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Hi/Lo** button on its Siren Mode Keypad.

The Hi/Lo Siren tones can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.13.15

Direct Manual

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds the RM-defined Manual Tone of the Siren option.



See also the [Manual on page 570](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

When a VIP Input is programmed for Horn Ring operation, an initiated Direct Manual button-press activates Siren operation and selects the RM-defined Manual Tone. This Manual Tone then sounds when the vehicle's Horn Ring is pressed, and ends when the Horn Ring is released.

When a VIP Input is not programmed for Horn Ring operation, an initiated Direct Manual button-press activates Siren operation and selects the RM-defined Manual Tone. This Manual Tone sounds when the Direct Manual button is pressed and ends when the button is released.

If the radio is already sounding a Direct Wail, Direct Yelp, or Direct Hi/Lo Siren tone, the selected Siren tone is changed by pressing the Direct Manual button.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Manual** button on its Siren Mode Keypad.

The Manual Siren mode can also be enabled as one of a sequence of radio actions, known as Consolidated Actions.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.13.16

Direct Message

This button-press allows you to transmit the Message member specified in the button's Sts/Msg Index field.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Message Alias List is used.

While operating in Trunking communications mode, the Trunking System - Message Alias List selected for the current Trunking Personality is used.

4.9.13.17

Direct Mode (Mode)

This button-press allows you to switch to the channel/mode specified in this Top Function Programmable Button's Zone, and Channel fields.



This feature is available while operating in Conventional or Trunking communications mode.

4.9.13.18

Direct Status

This button-press allows you to transmit the Status member specified in the button's Sts/Msg Index field.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Status Alias List is used.

While operating in Trunking communications mode, the Trunking System - Status Alias List selected for the current Trunking Personality is used.

4.9.13.19

Direct Wail

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds a "Wail" Siren tone.



See also the [Wail on page 571](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Wail** button on its Siren Mode Keypad.

The Wail Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.13.20

Direct Yelp

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds a "Yelp" Siren tone.



See also the [Yelp on page 571](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Yelp** button on its Siren Mode Keypad.

The Yelp Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.13.21

DTMF Tone

This button-press allows you to send out DTMF code of the assigned DTMF value.



There are 12 DTMF tones; namely DTMF Tone 0 to 9, DTMF Tone *, and DTMF Tone #. This feature is available while operating in Conventional or Trunking communications mode.

4.9.13.22

Digital Vehicular Repeater System (DVRS)

This button-press allows you to switch between the DVRS (Digital Vehicle Repeater System) modes.



The DVRS Modes include **System**, **Local**, and **Off**. Other DVRS settings are also possible. This feature is available while operating in Conventional or Trunking communications mode.

4.9.13.23

Dynamic ID

This button-press allows for entry into the Dynamic ID edit mode, which allows you to view and/or edit the radio's Individual ID and/or MDC Primary ID for the current ASTRO and/or MDC system.

This feature is available while operating in Conventional communications mode.

4.9.13.24

Dynamic Priority

This button-press allows you to select the Dynamic Priority scan assignment.

This feature is available while operating in Conventional communications mode.

4.9.13.25

Emergency

This button-press allows you to enter and also exit emergency mode operation.

See also the [Short Keypress Duration for Emergency on page 431](#) and the [Long Keypress Duration for Emergency on page 433](#) features. This feature is available while operating in Conventional or Trunking communications mode.



WARNING:

When a Mission Critical WRSM is wirelessly connected to the Mobile Microphone with Bluetooth Gateway, pressing the Orange Programmable button on the WRSM will trigger the event set in 2-dot Button of a KPM.

When the Dual Radio-Radio Selection field is set to **Primary Radio** or **Secondary Radio**, this selection is invalid for the Side Top (Purple) button on a .

4.9.13.26

Emergency Supervisor Clear

This button-press is selected for Side Middle Button or Accy 1-dot. Emergency Exit Control is set to "Supervisor".

This feature is available while operating in Trunking communications mode.

4.9.13.27

External Radio (Ext Radio)

This button-press, in conjunction with a Siren button-press, allows you to activate and deactivate External Radio mode.



See [Direct Ext Radio on page 544](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

The External Radio feature is not available with a Siren switchbox.

See also: [Options Audio Muting on page 423](#) and [External Radio Ignition on page 423](#).

4.9.13.28

Front/Rear (F/R)

This button-press allows you to switch the radio's focus between control heads, thus allowing one of two control heads to be active at one time.



WARNING: This selection is only considered to be valid when the Radio Ergonomics Wide, Multi Control Head field is enabled, and when the Multiple Control Head Style field is set to **One Active**.

4.9.13.29

Horn Lights

This button-press allows you to turn the Radio Ergonomics Wide, Horn and Lights external alarms ON/OFF.



These external alarms are activated when a Call Alerts/Page, Selective/Private Call, Phone Call, or Message is received. This feature is available while operating in Conventional or Trunking communications mode.

4.9.13.30

In Car Monitor (ICM)

This button-press allows your to toggle between the two In Car Monitor (ICM) modes: **ICM All** and **ICM Selected**.



This feature is available while operating in Conventional or Trunking communications mode.



NOTE:

ICM All allows your Mobile Subscriber Unit (MSU) to monitor Portable Subscriber Unit (PSU) voice traffic originating from all PSU group calls.

ICM Selected allows your MSU to only monitor PSU group calls where the MSU and PSU Talkgroups match.

This button selection is only applicable when In Car Monitor is set to **ICM Button/Menu Controlled** and only operate on Personalities/Channels where ICM Allowed is enabled.

4.9.13.31

Information

This button-press allows you to retrieve and view basic radio information such as IP-related information and buttons/switches control mapping, as well as view or modify the Soft ID.

This feature applies only when operating on ASTRO - Conventional Systems. This is a Portable radio only feature.



IMPORTANT:

Modifying the Soft ID changes the radio's Username for Automatic Registration Service server or a User Authentication Unified Network Services (UNS) server logon. When editing the Username this way, the PIN/Password and Unit ID are blanked. Therefore, this can only be used when the server is expecting a blank PIN/Password and you do not want to use Unit ID.

This feature is not available for Portable radios having only a top display.

4.9.13.32

Intercom

This button-press allows you to access the Intercom feature.



The Intercom feature allows multiple control heads to talk to each other with the control heads in a multi-control head setup. This feature applies while operating in Conventional or Trunking communications mode.



NOTE: See also the Intercom Timeout Timer field.

4.9.13.33

Internet Protocol Address (IP)

This button-press allows you to retrieve and view (in the radio's display) the radio's current IP Address, device name and status.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.13.34

Location

This button-press allows you to determine their current location (latitude, longitude, time and date) and also the distance and bearing to another location.

This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: If the Radio Wide, [User Selectable Location Enable on page 366](#) field is **Enabled**, you are also allowed to turn the outdoor location/Global Positioning System (GPS) functionality on or off for all location/GPS enabled Conventional or Trunking communications channels.

4.9.13.35

Message

This button-press allows you to select from the Message Alias List of the current channel/mode.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Message Alias List is used.

While operating in Trunking communications mode, the Trunking System-Message Alias List selected for the current Trunking Personality is used.

4.9.13.36

Modem On and Off

This button-press allows you to activate and deactivate Modem capability.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.13.37

Monitor

This button-press allows you to hear most or even all carrier activity on the radio's current channel.

The [Monitor Type on page 1026](#) field selection determines if only the channel-receive requirement of a Private Line (PL) encoded match is temporarily ignored, or if the requirement of PL and carrier squelch is temporarily ignored. This feature is available while operating in Conventional communications mode.



IMPORTANT: When holding the Monitor button for the [Latch Enable Time on page 1028](#) duration, the radio becomes latched in continuous monitor mode. The radio remains latched in monitor mode until released with a Monitor button short-press. Initiating Emergency, Phone, Scan, or a Call Alert or Selective Call also cancels continuous monitor mode. See also the [Latch Enable Tone on page 1027](#) field.

4.9.13.38

Multiple Private Line (MPL)

This button-press allows for your access to a listing of the available MPL Lists.



IMPORTANT: Each list is represented by a recognizable name . You are then able to select the desired Alias/PL settings. This feature is available while operating in Conventional communications mode.

4.9.13.39

MS01–MS13

These button assignments allows you to program these buttons with frequently used or any desired zone and channel combination.

The programming and use of these buttons is very similar to the programming and use of a car radio's preset buttons. That is, a long-press programs a button with the radio's current zone and channels; then once programmed, the short-press of that button jumps the radio to the programmed zone and channel. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

The [Short Keypress Duration on page 430](#) and [Long Keypress Duration on page 432](#) are both programmed.

The APX™ 3000 Portable only supports MS01 and MS02.

4.9.13.40

Nuisance Delete

This button-press allows you to temporarily remove the channel from the current Active Scan when it continually generates unwanted carrier noise.

This is accomplished by pressing this Nuisance Delete button while in Landed Scan Mode on the Scan List Member to be removed. This feature applies for the current Scan List while operating in Conventional or Trunking communications mode.



IMPORTANT:

Switching to another channel on the radio's channel selector, turning scan mode off and then back on, or turning the radio off and then back on effectively brings that temporarily removed Scan List Member channel back to an actively scanned status.

Nuisance Delete is not possible:

- For a Priority #1, or Priority #2 Scan List Member channel.
- When the [Designated Voice Tx Member Type on page 1311](#) field is set to **Selected Channel** and the Landed Scan channel's Tx Frequency is the same as the Tx Frequency of the radio's currently-selected channel.
- If the current Scan List does not contain at least two members before a Nuisance Delete occurs.

4.9.13.41

One Touch 1–16



These 16 separately programmed button-presses allow you to launch a specific feature with one single button-press.

These button-presses allow you to enter One Touch features such as Status, Message, Selective/Private Call, Call Alert/Page, Phone, Repeater Access (RAC) and MDC RTT Button Access with the touch of one

button. One to sixteen buttons can be programmed for each Conventional Personality, and one to four buttons can be programmed for each Trunking System.



IMPORTANT: Pressing a One Touch button while the radio is already in the selected feature causes the radio to abort the feature.

4.9.13.42

Phone

This button-press allows you to initiate Phone Mode while operating in Conventional or Trunking communications mode.

4.9.13.43

Repeater Access Button 1 (RAB1)

This button-press allows you to manually send a repeater access codeword.

This feature is available while operating in Conventional communications mode.

4.9.13.44

Repeater Access Button 2 (RAB2)

This button-press allows you to manually send a repeater access codeword.

This feature is available while operating in Conventional communications mode.

4.9.13.45

Radio Profiles

This button-press allows you to select one of the programmed Radio Profiles.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.13.46

Radio Swap

This button's Short Keypress Duration allows you to switch back and forth between two radios (known as "the brick" part of the radio) that are attached to the same control head in a Dual Radio configuration.



This button's Long Keypress Duration causes the programmed Radio Alias for the selected radio to temporarily appear in the control head display. This feature is available while operating in Conventional or Trunking communications mode.



WARNING: When the Dual Radio - Radio Selection field is set to **Primary Radio** or **Secondary Radio**, this selection must be made for both Conventional and Trunking, where applicable, to be considered valid.

4.9.13.47

Recent Calls

This button-press allows you to access the recent incoming and outgoing call information for the following call types: Call Alert, Selective Calls, Private Calls, and (outgoing only) Phone calls.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.13.48

Rekey Request

This button-press allows you to transmit an Over-The-Air-Rekeying (OTAR) rekey request to the dispatcher's (KMF or KMC) console while operating in Conventional or Trunking communications mode.



IMPORTANT:

For MDC OTAR (Conventional communications) the request protocol is determined by the [Rekey Request Mode on page 893](#) field.

For ASTRO OTAR (Conventional or Trunking communications) the [User Selectable Rekey Request on page 909](#) field must be **Enabled**, and the request protocol is determined by the [OTAR Tx Security Level on page 908](#) field.

4.9.13.49

Remote Emergency

This button-press activates the Remote Emergency Activation feature so an authorized user to encode this command can cause a target radio to initiate the Emergency feature without target user intervention.



NOTE: Remote Emergency is only supported on ASTRO Conventional and ASTRO 25 Trunking channels.

4.9.13.50

Reprogram Request

This button-press allows you to send a request to the dispatcher for reassignment of Dynamic Regrouping.

The available features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher/console. The radio then automatically changes to the Dynamic Regrouping Zone and Dynamic Regrouping Channel. This feature is available while operating in Trunking communications mode.



IMPORTANT: For Trunking Systems, this Zone and Channel are defined by setting a Zone Channel Assignment's [Trunking Talkgroup on page 1297](#) field to **DYN**. The Trunking Personality considered in this scenario must have this same Trunking [System on page 1236](#) selected in its System field. Hence, only one Dynamic Regrouping channel may be defined per Trunking System.

4.9.13.51

Request-To-Talk (RTT)

This button-press allows you to send a Request-To-Talk (RTT) signaling packet to the dispatcher/console, requesting the ability to transmit voice.

This selection applies only when operating on an MDC System in Conventional communications mode.

4.9.13.52

Scan

Short Key-pressing this button allows you to toggle Scan Mode on and off for the radio's current channel.

Long Key-pressing this button allows for entry to the Scan List Edit mode for the radio's current channel's Scan List, which allows you to add or remove individual Scan List Member channels and modify scan priority.

4.9.13.53

Secure Tx Select

This button-press allows you to switch between clear (Off) and coded (On) secure encrypted transmissions.



 **NOTE:** In Mobile radios, this button's Long Keypress Duration enters and shows the Secure feature screen in the radio's display.

This feature applies while operating in Conventional or Trunking communications mode.

4.9.13.54

Select/Private Call

This button-press allows you to transmit a Conventional - Selective Call or a Trunking - Private Call.

You must select the required Contact/Call ID and then press the PTT button to initiate the Call. A Selective/Private Call is typically used when the majority of transmissions are between you and a dispatcher, or a group of users. You can directly enter or select Radio IDs for use in the radio's Call Hot Lists.

 **NOTE:** Selective/Private Calls are intended not so much to ensure privacy but rather to eliminate the annoyance of receiving traffic that does not pertain to them. See also: Conventional - Selective Call Rx/Tx and Trunking - Private Call.

4.9.13.55

Siren

This button-press allows you to activate and deactivate the external Siren alert tones.



In conjunction with an External Radio button-press, it is also used to activate and deactivate External Radio mode. Siren mode functionality is determined in the Radio Ergonomics Wide, Siren Operation field.

 **NOTE:** On the O9 Control Head, the Siren tones can also be enabled as one of a sequence of radio actions, known as Consolidated Actions.

4.9.13.56

Site Display/Srch

This button's Short Keypress Duration **Site Display** allows you to momentarily view the current Site ID and its corresponding received signal strength indicator (RSSI) on the radio's display.

This button's Long Keypress Duration **Site Search** enables a Site search for SmartZone operation. This feature is available while operating in Trunking communications mode.

4.9.13.57

Site Lock/Unlock

This button-press Short Keypress Duration **Site** allows you to view the lock status of the current Trunking site.

This button's Long Keypress Duration **Site Lock/Unlock** allows you to toggle between lock and unlock mode when using the SmartZone option.

 **IMPORTANT:** Locking a site inhibits roaming to another site in a wide-area System. This feature is available while operating in Trunking communications mode.

4.9.13.58

Status

This button-press allows you to select from the Status Alias List of the current channel/mode.

 **NOTE:** For your convenience, as part of this feature the display initially shows the last acknowledged Status call, or the first Status in the list. This feature is available while operating in Conventional or Trunking communications mode.

 **IMPORTANT:** While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Status Alias List is used.

While operating in Trunking communications mode, the Trunking System-Status Alias List selected for the current Trunking Personality is used.

4.9.13.59

Talkaround/Direct

This button-press allows you to enable or disable the Direct/Talkaround mode for the current channel options profile.

This feature is available while operating in Conventional communications mode.

4.9.13.60

Talkgroup

This button-press allows you to switch from the preset Talkgroup to another Talkgroup from within the Conventional Personality's current Talkgroup List.

All Conventional Personalities using the same Talkgroup List are automatically switched to the selected Talkgroup.

4.9.13.61

Third Party

This button-press allows you to initiate functionality in third-party accessories, such as compatible Whelen® Sirens.

 **WARNING:** When the Dual Radio [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, this selection must be made for both Conventional and Trunking, where applicable, in order to be considered valid.

4.9.13.62

Text Messaging Service (TMS)

This button's Short Keypress Duration **TMS** allows you to access the radio's Text Messaging Service (TMS) mode, seen in the radio's display.

This button's Long Keypress Duration allows you to directly enter the TMS **Inbox**, in order to view received text messages and access the programmed Quick Text Message entries (seen within the radio's display).

4.9.13.63

TMS Query

This button-press jumps you directly to the programmed Query Message entries of the Text Messaging Service feature.

You are then able to select from the list of predefined entries and easily transmit a Query with minimal effort.



NOTE: A TMS Query allows you to specify information in a pre-formatted query template and send this as a Message to a Query Server; the Server then responds with a text message containing the requested information.

When the Trunking System or Conventional System, Text Messaging Service feature is enabled on the radio's current channel, and when the TMS Query Service is currently available to the radio.

4.9.13.64

TMS Quick Text

This button-press jumps you directly to the Quick Text Message entries of the Text Messaging Service feature.

You are then able to select from the list of predefined entries and easily transmit a Quick Text Message with minimal effort.

When the Trunking System or Conventional System, Text Messaging Service feature is enabled on the radio's current channel.

4.9.13.65

Tx Low Power

This button-press allows you to change the radio's transmission power from low to high and back on a radio-wide basis.



Once you initiate Tx Low Power, the setting takes precedence over all individual Conventional Personality Transmit Power Levels and Trunking System Tx Power Levels settings. Powering off and back-on the radio resets all the radio's channels to their programmed power setting.

4.9.13.66

Unprogrammed

Select this feature for a radio button that is not in use.



You will hear a chirp tone when pressing this button. This feature is available while operating in Conventional or Trunking communications mode.

4.9.13.67

User

This button-press allows you to login to a specific Automatic Registration Service server or a User Authentication Unified Network Services (UNS) server with the appropriate Username, PIN/Password, and User Login Unit ID combination.

You may select Usernames and Unit ID from the programmed Data User List entries, or Usernames, PINs/ Password and Unit IDs may be manually entered from the radio's keypad.

 **WARNING:** This feature functions only when the radio's current (Conventional or Trunking) channel has its referenced Data Profile's, [ARS Mode on page 995](#) field is set to **Server**.

4.9.13.68

Voice Mute

This button-press allows you to toggle on and off Voice Mute functionality for In-Call User Alert-enabled channels.

When Voice Mute is active, the radio remains muted to all Conventional communications calls and affiliated Trunking Talkgroup calls. Group and individual Call Alert/Pages do unmute the radio for the alert tone; also, when Voice Mute is active, the radio does unmute to individual radio-to-radio calls such as Selective/Private Calls and Interconnect (phone mode) calls.

4.9.13.69

Wail

This button-press allows you to select the Wail Siren tone.



 **NOTE:** A Siren broadcast is activated and deactivated with a Siren button-press.

See also the [Direct Wail on page 545](#) button-press. This feature is available on a radio-wide basis.

 **NOTE:** In addition to this programmable button selection, the O9 Control Head has a dedicated **Wail** button on its Siren Mode Keypad.

The Wail Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

4.9.13.70

Wi-Fi On/Off

This button-press allows you to activate and deactivate Wi-Fi capability.



This feature is available while operating in Conventional or Trunking communications mode.

4.9.13.71

Yelp

This button-press allows you to select the Yelp Siren tones.



 **NOTE:** A Siren broadcast is activated and deactivated with a Siren button-press.

See also the [Direct Yelp on page 546](#) button-press. This feature is available on a radio-wide basis.

 **NOTE:**
In addition to this programmable button selection, the O9 Control Head has a dedicated **Yelp** button on its Siren Mode Keypad.

The Yelp Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

4.9.13.72

Zone Down

This button-press allows you to scroll downward through the Zones in the radio.

Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the first Zone in the list, continued scrolling causes the list to wrap around to the last Zone. Zones are defined in the Zone Channel Assignment Window.

 **NOTE:** In certain Portable radios, Zones may also be grouped into Zone Banks, where individual banks can be selected with a [Zone Bank Up on page 498](#) or [Zone Bank Down on page 497](#) button-press.

4.9.13.73

Zone Up

This button-press allows you to scroll upward through the Zones in the radio.

Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the last Zone in the list, continued scrolling causes the list to wrap around to the first Zone. Zones are defined in the Zone Channel Assignment Window's Zone Page. This feature is available while operating in Conventional or Trunking communications mode.

 **NOTE:** In certain Portable radios, Zones may also be grouped into Zone Banks, where individual banks can be selected with a [Zone Bank Up on page 498](#) or [Zone Bank Down on page 497](#) button-press.

4.9.14

Data Feature Button Selections

Selects the feature for the Data Button on the Keypad Mic and O3, O7 or O9 Mobile Control Heads. The TMS (Text Messaging Service) selection applies to Conventional and/or Trunking communications channels; the Action Consolidation selection applies on a radio-wide basis



IMPORTANT:

When programmed for TMS (Text Messaging Service), a long keypress of the Data Button jumps you directly to the programmed Quick Text Message entries of the Text Messaging Service mode seen within the radio's display.

When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, this Data Button Feature defaults to **Action Consolidation** and the Data Button Index defaults to **AC ALL OFF**. See also the O7 Siren/Lights Keypad Keystone Concept.

Table 111: Mobile Control Head O3/O7/O9 and Keypad Mic Functions

Button Selections	This selection is only valid in the application, and available to you:	Selections are available Based on Availability to Current Hardware:
<p>Action Consolidation on page 588</p> <p>C & T</p>	<p>When selected, always available to you, and therefore not dependent on any feature or selection. Once selected, the Data Button Index for the same record/row must also be defined.</p> <p>WARNING: You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button Index selection.</p> <p>This selection must be selected for both Conventional and Trunking in order to be considered valid.</p> <p>The valid Consolidated Action selection for the Data Button is that the Action Type field must be set to Control.</p> <p>IMPORTANT: When you press the Data Button, the assigned Consolidated Actions are executed.</p>	<p>O3 O7 O9 KPM</p>
<p>Blank on page 567</p> <p>C & T</p>	<p>(Intended for controls that are not in use.)</p>	<p>O3 O7 O9 KPM</p>
<p>Radio Swap on page 601</p> <p>C & T</p>	<p>When the Radio Selection field is set to Primary Radio or Secondary Radio in a Dual Radio configuration.</p> <p>WARNING: This selection must be selected for both Conventional and Trunking in order to be considered valid.</p>	<p>O7 KPM</p>
<p>Remote Emergency on page 492</p>	<p>-</p>	<p>O3 O7 O9 KPM</p>

Button Selections	This selection is only valid in the application, and available to you:	Selections are available Based on Availability to Current Hardware:
-------------------	--	---

C & T

[Third Party on page 495](#)

When the Radio Selection field is set to **Primary Radio** or **Secondary Radio** in a Dual Radio configuration.

O3 O7 O9 KPM

C & T

 **WARNING:** When the Radio Selection field is set to **Primary Radio** or **Secondary Radio** in a Dual Radio configuration, this selection must be selected for both Conventional and Trunking in order to be considered valid.

[Text Messaging Service \(TMS\) on page 604](#)

When the Conventional System, Text Messaging Service field is set to **List Only** or **Unlimited**, and when that System's Data Profile Selection is not set to **Data Disabled** for the radio's current channel.

O3 O7 O9 KPM

Long Keypress vs Short Keypress

When the Trunking System, Text Messaging Service field is set to **List Only** or **Unlimited**, and when that System's Data Profile Selection is not set to **Data Disabled** for the radio's current channel.

C & T

4.9.15

Navigation Controls Selections

Selects the radio-wide programmable-button functionality for the Up/Down Navigation Controls on a Control Head (O2, O3, O5, O7, O9, or E5) and Keypad Mic (KPM) for Conventional and/or Trunking communications channels.



 **NOTE:**

This selection applies only when the radio is operating in normal Conventional or Trunking Dispatch mode; in radio Menu navigation mode, this selection provides traditional list scrolling functions.

When selecting the Up Button feature, the Down Button feature is automatically set to the opposing feature and is view-only. Therefore, only the Up Button feature can be modified.

Function	This selection is only valid in the application, and available to you:	Selections are available Based on Availability to Current Hardware:
----------	--	---

[Blank on page 567](#)

(Intended for functions that are not in use.)

O2 O3 O5 O7 O9



IMPORTANT: Selecting **Blank** for the Up Button feature automatically sets **Blank** for the Down Button feature.

E5

Function	This selection is only valid in the application, and available to you:	Selections are available Based on Availability to Current Hardware:
Up on page 702	When selected, always available to you, and therefore not dependent on any feature or selection.	O2 O3 O5 O7 O9 KPM E5
Channel Up on page 485	When selected, always available to you, and therefore not dependent on any feature or selection.	O2 O3 O5 O7 O9 KPM E5
Zone Up on page 703	When selected, always available to you, and therefore not dependent on any feature or selection.	O2 O3 O5 O7 O9 KPM E5
Volume Up on page 703	When selected, always available to you, and therefore not dependent on any feature or selection.	O2 O3 O5 O7 O9 KPM E5



WARNING:

When MFK Press Behavior is **Rotary Feature Select**:

- **For dual-function rotary operation**, provided a **Volume** function is assigned to a Control Head button (either Volume Select must be assigned to the Primary or Secondary function of the MFK, or Volume Up/Down must be assigned to the Navigation Controls), any Primary function in combination with any Secondary function is considered valid.
- **For single-function rotary operation**, provided a **Volume** function is assigned to a Control Head button (either Volume Select must be assigned to the Primary function of the MFK, or Volume Up/Down must be assigned to the Navigation Controls), any Primary function in combination with Blank as the Secondary function is considered valid.

When MFK Press Behavior is **Emergency**:

The button-press triggers Emergency Mode, the Secondary rotary function is unavailable, and any selection for the Primary rotary function (including Blank) is considered valid.

The following selections are supported:



NOTE: These selections are model/option dependent on a per radio basis, and apply to Conventional and Trunking communications modes.

Blank

Intended for functions that are not in use.



WARNING:

When the MFK Press Behavior field is set to **Rotary Feature Select**, **Blank** is not a valid selection for the Primary function.

Blank is only valid as the Secondary function when Volume Select is selected as the Primary function on the MFK.

Zone Select

Selection allows you to select a Zone. When selected, always available to you, and therefore not dependent on any feature or selection.



WARNING: When selected as the Primary Function for a Multi-Function Knob (MFK), Volume Select must be selected as the Secondary Function in order to be considered valid.

Channel Select

Selection allows you to change the radio's channel. When selected, always available to you, and therefore not dependent on any feature or selection.



WARNING: When selected as the Primary Function for a Multi-Function Knob (MFK), Volume Select must be selected as the Secondary Function in order to be considered valid.

Volume Select

Selection allows you to change the radio's volume. When selected, always available to you, and therefore not dependent on any feature or selection.



WARNING:
For dual-function operation:

- If the MFK's Primary Function is assigned with either Zone Select or Channel Select, then the Secondary Function must be assigned with Volume Select in order to be considered valid.
- If the MFK's Primary Function is assigned with Volume Select, then the Secondary Function must be assigned with either Zone Select or Channel Select in order to be considered valid.

For single-function operation: You must select Volume Select as the Primary function and Blank as the Secondary function in order to be considered valid.

4.9.15.1

Blank

Select this feature for a radio button that is not in use.



You hear a chirp tone when pressing this button. This feature is available for Conventional or Trunking communications mode.

4.9.15.2

Up

This Navigation Controls button-press allows you to move upward through the radio's in-display menu selections.



Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the last Zone in the list, continued scrolling causes the list to wrap around to the first Zone. Zones are defined in the Zone Channel Assignment Window's Zone Page.



IMPORTANT:

This selection applies only when the radio is operating in normal Conventional or Trunking Dispatch mode; in Configuration mode, this button provides traditional list scrolling functions.

When selecting this feature for the Up Button, the Down Button feature is automatically set to **Zone Down** and is view-only. Therefore, only the Up Button feature can be modified.

4.9.15.3

Channel Up

This Navigation Controls button-press allows you to scroll upward through the channels in the radio.



Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the last channel in the list, continued scrolling causes the list to wrap around to the first channel. Channels are defined in the Zone Channel Assignment Window's Channels Page.



IMPORTANT:

This selection applies only when the radio is operating in normal Conventional or Trunking Dispatch mode; in Configuration mode, this button provides traditional list scrolling functions.

When selecting this feature for the Up Button, the Down Button feature is automatically set to **Channel Down** and is view-only. Therefore, only the Up Button feature can be modified.

4.9.15.4

Zone Up

This Navigation Controls button-press allows you to advance upward through the Zones in the radio.



Faster scrolling is possible with a [Long Keypress Duration on page 432](#) of the button. Upon reaching the last Zone in the list, continued scrolling causes the list to wrap around to the first Zone. Zones are defined in the Zone Channel Assignment Window's Zone Page.



IMPORTANT:

This selection applies only when the radio is operating in normal Conventional or Trunking Dispatch mode; in Configuration mode, this button provides traditional list scrolling functions.

When selecting this feature for the Up Button, the Down Button feature is automatically set to **Channel Down** and is view-only. Therefore, only the Up Button feature can be modified.

4.9.15.5

Volume Up

This Navigation Controls button-press allows you to increase the volume of the radio.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

This selection applies only when the radio is operating in normal Conventional or Trunking Dispatch mode; in Configuration mode, this button provides traditional list scrolling functions.

When selecting this feature for the Up Button, the Down Button feature is automatically set to **Channel Down** and is view-only. Therefore, only the Up Button feature can be modified.

4.9.16

Menu Items

The **Menu Items** section allows you to view or choose the selections that define menu functionality or features available in the radio's display.

Radio menu functionality is defined and operates separately for each of the two radio communications modes, Conventional and Trunking. That is, when the radio is operating on a Conventional channel, only

the selected Conventional features are available to you. Likewise, when the radio is operating on a Trunking channel, only the selected Trunking features are available.



IMPORTANT:

Certain Menu Item selections are automatically removed from the **Selected** Menu Item column if the selection is duplicated in the Button Selections or Switch Selections; however, certain Menu Item selections may be duplicated to accommodate your preference or convenience.

The APX™ 1000 1.5, APX™ 2000 1.5, and APX™ 4000Li 1.5 Portable models support a maximum of three (3) menu soft key selections (the normal limit is 24). When modifying these models' codeplugs in the application, if you attempt to select more than three menu items, the **Selected** field will become invalid.



NOTE: Some selections are model/option dependent on a per radio basis.

4.9.16.1

Conventional Selected Menu Items

This field allows you to select available features to be displayed in the radio menu.

At the **Available** column, you can select features that appear on the radio display while operating in Conventional communication mode.

Clicking the **Add** or **Remove** button allows you to add or remove the selected menu items to or from the **Selected** column. The selected features are available to you for use.

Refer to [Menu Item Selections on page 515](#) for information on each menu item.



IMPORTANT:

Certain menu item selections are automatically removed from the **Selected** column if the selection is duplicated in the Button Selections or Switch Selections. However, certain menu item selections can be duplicated to accommodate your preference or convenience.

The APX™ 1000 1.5, APX™ 2000 1.5, and APX™ 4000Li 1.5 Portable models support a maximum of three (3) menu soft key selections (the normal limit is 24). When modifying the codeplugs of these models, if you attempt to select more than three menu items, the **Selected** column becomes invalid.



NOTE: The **Selected** column must have at least one menu item.

4.9.16.2

Trunking Selected Menu Items

This field allows you to select available features to be displayed in the radio menu.

At the **Available** column, you can select features that appear on the radio display while operating in Trunking communication mode.

Clicking the **Add** or **Remove** button allows you to add or remove the selected menu items to or from the **Selected** column. The selected features are available to you for use.

Refer to [Menu Item Selections on page 515](#) for information on each menu item.



IMPORTANT:

Certain menu item selections are automatically removed from the **Selected** column if the selection is duplicated in the Button Selections or Switch Selections. However, certain menu item selections can be duplicated to accommodate your preference or convenience.

The APX™ 1000 1.5, APX™ 2000 1.5, and APX™ 4000Li 1.5 Portable models support a maximum of three (3) menu soft key selections (the normal limit is 24). When modifying the codeplugs of these models, if you attempt to select more than three menu items, the **Selected** column becomes invalid.



NOTE: The **Selected** column must have at least one menu item.

4.9.16.3

Menu Item Selections

This section contains the functions of menu item selections while operating in Conventional or Trunking communication mode, as noted in the following table.

Table 112: Legend for Menu Item Selection Symbols

Symbol	Description
	Conventional Mode
	Trunking Mode
	Conventional and Trunking Mode
	Portable Radios
	Mobile Radios
	Portable and Mobile Radios

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Auto Login on page 525 (LOGF) 	When the Radio Wide, Radio Lock Enable on page 334 field is Enabled , and when the Radio Wide, Secure Hardware Auto Login on page 341 field is Enabled , and when Hardware is the selected Secure Operation on page 880 .	
Aux Control on page 525 (AUX1-AUX3) 	When the VIP Output Selections are set to an Aux Control . See Aux Control (1-3) on page 589 .	
Battery on page 525 (BATT) 	When selected, always available to you, and therefore not dependent on any RM feature or selection.	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Bluetooth on page 525 (BT) <input type="checkbox"/> C & T	When the Bluetooth Enable on page 396 field is Enabled .	<input type="checkbox"/> P & M
Bluetooth Discoverable On/Off on page 525 (BT/D) <input type="checkbox"/> C & T	When the Bluetooth Enable on page 396 field is Enabled , and when the radio is not LTE-capable.	<input type="checkbox"/> Portable
Bluetooth Inquiry On/Off on page 526 (BT/I) <input type="checkbox"/> C & T	When the Bluetooth Enable on page 396 field is Enabled .	<input type="checkbox"/> Portable
Beacon on page 526 (BCON) <input type="checkbox"/> C & T	When the radio model/option capable.	<input type="checkbox"/> Portable
Select/Private Call on page 526 (CALL) <input type="checkbox"/> C & T	<input type="checkbox"/> Conv. When the Conventional Personality, ASTRO Selective Call Rx/Tx on page 1092 is set to Encode or Encode & Decode , or when the Conventional Personality, Non-ASTRO Selective Call Rx/Tx on page 1118 is set to Encode or Encode & Decode for the radio's current channel. <input type="checkbox"/> Trunk. When the Trunking Personality, Private Call Type on page 1256 is not set to Disabled for the radio's current channel.	<input type="checkbox"/> P & M
Channel Down on page 526 (CHDN) <input type="checkbox"/> C & T	When selected, always available to you, and therefore not dependent on any feature or selection.	<input type="checkbox"/> P & M
Channel Search on page 527 (CHSR) <input type="checkbox"/> C & T	When selected, always available to you, and therefore not dependent on any feature or selection.	<input type="checkbox"/> P & M
Channel Select on page 527 (CHAN) <input type="checkbox"/> C & T	When selected, always available to you, and therefore not dependent on any feature or selection.	<input type="checkbox"/> P & M
Channel Up on page 527	When selected, always available to you, and therefore not dependent on any feature or selection.	<input type="checkbox"/> P & M

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
(CHUP) 		
Clock on page 527 (CLCK) 	When the Radio Wide, Time Format on page 324 field is not set to Disabled .	
Color on page 527 (COLR) 	When selected, always available to you, and therefore not dependent on any feature or selection.  IMPORTANT: This selection is only available on the O5 Control Head. In a Multi-Contol Head system, the O5 Control Head must be the selected CH for this feature to be available.  NOTE: See also the Front/Rear on page 529 selection.	
Contacts on page 528 (CNTS) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Digital Vehicular Repeater System on page 528 (DVRS) 	When the DVRS Wide, DVRS Hardware Enable on page 1019 field is Enabled .	
Direct/Talk-around on page 528 (DIR) 	When operating in Conventional communications mode, and when the Conventional Personality, Direct/Talkaround on page 1132 field is Enabled for the radio's current channel.  IMPORTANT: This selection cannot be programmed concurrently on Buttons, Switches, and Menu Items.	
Dynamic ID on page 528 (DYID) 	When operating in Conventional communications mode, and when the Conventional System, Dynamic ID Enable on page 1084 field is Enabled for the radio's current channel.	
Dynamic Priority on page 528 (DYNP) 	When Scan Mode is enabled, and when the Scan Type on page 1306 is Conventional , and when the Scan List, Dynamic Priority on page 1309 field is enabled for the radio's current landed scan channel.	
Dynamic Zone Programming on page 528 (ZNPR) 	When the Zone Channel Assignment, Dynamic Zone Enable on page 1285 field has been Enabled for one or more radio zones.	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Erase on page 529 (ERAS) 	When the Secure Wide, Secure Operation on page 880 field is set to Hardware or Software and Advanced Encrypted Standard (AES256) on page 882 is enabled.	
Front Panel Programming on page 529 (FPP) 	When Radio Wide, FPP Enable on page 344 is Enabled , and when the Zone Channel Assignment, FPP Enable on page 1287 field has been Enabled for the radio's current zone.  IMPORTANT: An FPP dongle or cloning cable must be attached to the radio.	
Front/Rear on page 529 (F/R) 	When the Radio Ergonomics Wide, Multi Control Head on page 416 field is Enabled , and when the Multiple Control Head Style on page 420 field is set to One Active .	
Horn and Lights on page 529 (H/L) 	When the Radio Ergonomics Wide, Horn and Lights on page 426 field is Enabled .	
In Car Monitor on page 529 (ICM) 	When the DVRS Wide, DVRS Hardware Enable on page 1019 field is Enabled , and when the DVRS Wide, In Car Monitor on page 1020 field is set to ICM Button/Menu Controlled .	
Information on page 530 (INFO) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Intercom on page 530 (INTC) 	When the Radio Ergonomics Wide, Multi Control Head on page 416 field is Disabled , or (when the Radio Ergonomics Wide, Multi Control Head field is Enabled , and when the Multiple Control Head Style on page 420 field is set to All Active).	
Internet Protocol Address on page 530 (IP) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Key on page 531 (KEY) 	When the Conventional Personality, Voice Voice Key Strapping on page 1110 field is set to Select for the radio's current channel.	
Keypad on page 531 (KSET) 	When the Secure Wide, Secure Operation on page 880 field is set to Hardware or Software , and Advanced Encrypted Standard (AES256) on page 882 is enabled, and Keypad - User Selectable on page 885 is enabled.	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Kill on page 531 (KILL) 	When the Radio Wide, Tactical Inhibit Enable on page 337 field is Enabled , and when the Conventional Personality, Tactical Inhibit Kill Operation on page 1092 field is set to Encode or Decode & Encode , and when the radio is model/option capable.	
Location on page 531 (LOC) 	When the Radio Wide, Location Enable on page 365 field is Enabled .	
LTE on page 531 (LTE) 	 When the Data Profile Type on page 982 of the Conventional System's referenced Data Profile is Conventional & Broadband or Broadband-Only , and when the radio is a model APX 7000L.  When the Data Profile Type of the Trunking System's referenced Data Profile is Trunking & Broadband or Broadband-Only , and when the radio is a model APX 7000L.	
Message on page 532 (MSG) 	 When the Conventional System, Message on page 1083 field is Enabled for the radio's current channel.  When the Trunking Personality, Message Enable on page 1262 Message Enable field is Enabled for the radio's current channel.	
Mode Select on page 532 (MS01–MS05) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Mode Select Preset (MSPR)	When selected, always available to you, and therefore allows you to configure Mode Select in the preset list.	
External Data Modem on page 532 (MODM) 	This menu-selection provides you with Data Modem information and options. This field is only Enabled when the Modem Type field is not available.	
Monitor on page 532 (MON) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Multiple Private Line on page 533 (MPL) 	When the Conventional Personality, Rx Voice/Signal Type on page 1162 field is set to Non-ASTRO or Mixed Mode , and when the Conventional Personality, User Selectable PL [MPL] on page 1142 field is Enabled for the radio's current channel.	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Mute on page 533 (MUTE) 	When the Radio Wide, Enhanced Mute Tones Operation on page 328 field is not Disabled .	
My Radio Identification (MyID) on page 533 (MYID) 	When the Radio Wide, Radio Alias field has an alias name defined.	
Nuisance Delete on page 533 (NUIS) 	When Scan Mode is Enabled .	
Page on page 534 (PAGE) 	 When the Conventional Personality, ASTRO Call Alert Rx/Tx on page 1095 field is set to Encode or Encode & Decode , or when the Conventional Personality, Non-ASTRO Call Alert Rx/Tx on page 1120 field is set to Encode or Encode & Decode for the radio's current channel.  When the Trunking Personality, Call Alert/Page Operation on page 1258 field is set to List Only or Unlimited for the radio's current channel.	
Password on page 534 (PSWD) 	When the Radio Wide, Radio Lock Enable on page 334 field is Enabled .	
Phone on page 534 (PHON) 	 When the Conventional Personality, Phone Operation on page 1165 field is not set to None for the radio's current channel.  When the Trunking Personality, Phone Operation on page 1259 field is not set to Disabled for the radio's current channel.	
Power on page 534 (PWR) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Quik Call II on page 535 (QCII) 	When selected, the QCII is initiated by pressing PTT, which transmits the tones over the radio network.  When the Conventional Personality, Tone Signaling List on page 1106 field is set to a specific Tone Signaling List, and when the radio is model/option capable.	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
	 When the Trunking Personality, Tone Signaling List on page 1259 field is set to a specific Tone Signaling List, and when the radio is model/option capable.	
Radio Profiles on page 535 (PRFL) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Radio Swap on page 535 (SWAP) 	When the Radio Selection on page 361 field is set to Primary Radio or Secondary Radio .	
Recent Calls on page 290 (RCNT) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Rekey Request on page 535 (REKY) 	When the ASTRO OTAR Information, User Selectable Rekey Request on page 909 is not set to Disabled , or when the MDC OTAR, Rekey Request Mode on page 893 is not set to Disabled .	
Remote Emergency on page 536 (REMG) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Repeater Access Button 1 on page 536 (RAB1) 	When the Conventional Personality, Repeater Access on page 1169 field is Enabled , and when the Access Type on page 1169 is set to Manual for the radio's current channel.	
Repeater Access Button 2 on page 536 (RAB2) 	When the Conventional Personality, Repeater Access on page 1169 field is Enabled , and when the Access Type on page 1169 is set to Manual for the radio's current channel.	
Reprogram Request on page 536 (RPGM) 	When the Trunking System, System Type is ASTRO 25 , and when the Trunking System, Dynamic Regrouping Enable on page 1212 field is Enabled for the radio's current channel.	
Received Signal Strength Indicator on	When the Trunking System, Coverage Type on page 1190 is not set to Disabled for the radio's current channel.	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
page 536 (RSSI) Trunk.		
Request-To-Talk on page 537 (RTT) Conv.	When the Conventional Personality, MDC RTT Button Access on page 1119 field is set to Manual for the radio's current channel, and when that Personality is not a Receive Only Personality on page 1162 , and when Tx Inhibit is not Enabled .	Mobile
Scan on page 537 (SCAN) C & T	<p>Conv. When the Scan Type on page 1306 is not set to Voting Scan, and when the Conventional Personality, Scan List Selection on page 1153 field is not set to None, and when the Conventional Personality, Automatic Scan on page 1155 field is Disabled for the radio's current channel.</p> <p>Trunk. When the Trunking Personality, Scan List Selection on page 1260 field is not set to None, and when the Trunking Personality, Automatic Scan on page 1261 field is Disabled for the radio's current channel.</p> <p> IMPORTANT: This selection cannot be set concurrently on Buttons, Switches, and and Menu Items; however, it can be set concurrently on Portable and Accessory Buttons.</p>	P & M
Scan List on page 537 (SCNL) C & T	<p>Conv. When the Conventional Personality, Scan List Selection on page 1153 field is not set to None for the radio's current channel.</p> <p>Trunk. When the Trunking Personality, Scan List Selection on page 1260 field is not set to None for the radio's current channel.</p>	Portable
Secure on page 537 (SEC) C & T	<p>Conv. When any one of the Conventional Secure/Clear Strapping fields is set to Select for the radio's current channel.</p> <p>Trunk. When any one of the Trunking Secure/Clear Strapping fields is set to Select for the radio's current channel.</p>	Mobile
Sensor on page 537 (SEN) C & T	When the radio is model/option capable.	Portable
One Touch (SIG1-SIG4/ DISP) on page 538 C & T	<p>Conv. When at least one of the Conventional Personality, One Touch Button One Touch Button Feature on page 1167 is not set to Disabled for the radio's current channel.</p> <p>Trunk. When at least one of the Trunking System, One Touch Button One Touch Button Feature on page 1234 is not set to Disabled for the radio's current channel.</p>	Mobile

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Site on page 538 (SITE) 	When the Trunking System, Site Alias Enable on page 1222 field is Enabled for the radio's current channel.	
Site Selectable Alerts on page 538 (SSA) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Squelch Fine Tune on page 538 (SQL) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Status on page 539 (STS) 	 When the Conventional System Status on page 1081 field is Enabled for the radio's current channel.  When the Trunking Personality Status Enable on page 1262 field is Enabled for the radio's current channel.	
Stun on page 539 (STUN) 	When the Radio Wide, Tactical Inhibit Enable on page 337 field is Enabled , when the Conventional Personality, Tactical Inhibit Stun Operation on page 1094 field is set to Encode or Decode & Encode , and when the radio is model/option capable.	
Tactical Services on page 539 (SVCS) 	When the Tactical Services Operation on page 1097 field is set to Encode or Decode & Encode . When the radio is model or option capable.	
Talkgroup on page 539 (TGRP) 	When the Conventional Personality, ASTRO Talkgroup Selection Type on page 1099 field is set to Selectable for the radio's current channel.	
One Touch (TCH1–TCH4) on page 540 	 When at least one of the Conventional Personality, One Touch Button One Touch Button Feature on page 1167 is not set to Disabled for the radio's current channel.  When at least one of the Trunking System, One Touch Button One Touch Button Feature on page 1234 is not set to Disabled for the radio's current channel.	
One Touch (TCH1–TCH16) on page 729 		
Text Messaging Service on page 540	 When the Conventional System, Text Messaging Service on page 1080 field is set to List Only or Unlimited , and when that Sys-	

Menu Item Selections:	This selection is only valid in the application, and/or available to you:	Radio Type:
(TMS) 	tem's Data Profile Selection on page 1059 is not set to Data Disabled for the radio's current channel.  When the Trunking System, Text Messaging Service on page 1210 field is set to List Only or Unlimited , and when that System's Data Profile Selection on page 1195 is not set to Data Disabled for the radio's current channel.	
Tx Inhibit on page 540 (TxIN) 	For a Mobile codeplug: when the Radio Selection on page 361 field is not set to Secondary Radio , or when the Enable Secondary Radio Tx on page 363 field is Enabled .  IMPORTANT: For a Portable codeplug: this selection cannot be set concurrently with a Tx Inhibit on page 512 Switch selection.	
User on page 540 (USER) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Voice Mute on page 305 (VMUT) 	 When the Conventional Personality, ASTRO Call, In-Call User Alert Enable on page 1096 field is Enabled for the radio's current channel, or when the Conventional Personality, Non-ASTRO Call In-Call User Alert Enable on page 1121 field is Enabled for the radio's current channel. When the Trunking Personality, In-Call User Alert Enable on page 1257 field is Enabled for the radio's current channel.	
Wi-Fi On/Off on page 497 (WIFI) 	This menu-selection provides you with Wi-Fi information and options. This field is only enabled when the Wi-Fi Enable on page 968 field is Enabled .	
Zone Cloning (CLON) on page 541 	This menu item selection allows you to duplicate zones from one radio to another radio without using the application.	
Zone Down on page 541 (ZNDN) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Zone Select on page 541 (ZONE) 	When selected, always available to you, and therefore not dependent on any feature or selection.	
Zone Up on page 541 (ZNUP) 	When selected, always available to you, and therefore not dependent on any feature or selection.	

4.9.16.3.1

Auto Login

This menu-selection allows you to either enter or by-pass the Radio Lock password on radios that have secure hardware encryption enabled.

This feature applies while operating in Conventional or Trunking communications mode.

4.9.16.3.2

Aux Control

These three menu-selections allow you to individually activate and deactivate radio Vehicular Interface Port (VIP) Outputs that are set to an **Aux Control** (See Aux Control 1-3).



The VIP Output is activated for the duration determined by the [Active Duration on page 445](#) field. See Also The Auxiliary Control Page fields. This feature is available for Conventional or Trunking communications mode.



IMPORTANT:

An **Aux Control** VIP Output may also be triggered when the radio has decoded a Tone Signaling tone or tone pair and [External Control on page 852](#) is not set to **None**.

The [Consolette on page 255](#) also uses Auxiliary Control features.

4.9.16.3.3

Battery

This menu-selection allows you to check the battery power level while operating in Conventional or Trunking communications mode.



4.9.16.3.4

Bluetooth

This menu-selection provides you with a list of Bluetooth status/information and Bluetooth options.

This feature is available while operating in Conventional or Trunking communications mode.

Bluetooth Configuration features include:

Bluetooth Status

Allows you to turn On and Off Bluetooth radio to Bluetooth device functionality.

Device Active

Allows you to view a list of all currently active (paired) Bluetooth devices.

Bluetooth Speaker

Allows you to turn On and Off a Bluetooth device's speaker.

4.9.16.3.5

Bluetooth Discoverable On/Off

This menu-selection allows you to activate or deactivate Bluetooth discoverable mode.



When activated, the radio listens for inquiry requests coming from other Bluetooth devices within its range, and responds with its address, name, and all the necessary information required for pairing and connection. Provided you do not deactivate discoverable mode and it remains activated for the duration specified in the [Bluetooth Radio Visibility Duration on page 400](#) field.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.16.3.6

Bluetooth Inquiry On/Off

This menu-selection allows you to activate or deactivate Bluetooth Inquiry mode.



When activated, the radio sends out inquiry requests in search of all Bluetooth devices within its range (called "access points"). Provided you do not deactivate Inquiry mode and it remains activated for the duration specified in the [Bluetooth Device Search Duration on page 399](#) field.

This feature is available while operating in Conventional or Trunking communications mode.

4.9.16.3.7

Beacon

This menu-selection allows you to check the details of any recently received Emergency beacons.



This feature is available for Conventional or Trunking communications mode.

4.9.16.3.8

Select/Private Call

This menu-selection allows you to transmit a Conventional - Selective Call or a Trunking - Private Call.

You must select the required Contact/Call ID and then press the PTT button to initiate the Call.

Select Calls and Private Calls are typically used when the majority of transmissions are between you and a dispatcher, or a group of users.

You can directly enter or select targeted Calls based on the Call ID from the channel's Call Hot List. Select Calls and Private Calls are intended not so much to ensure privacy but rather to eliminate the annoyance of receiving traffic that does not pertain to them. See also Conventional - Selective Call Rx/Tx and Trunking - Private Call.

4.9.16.3.9

Channel Down

This menu-selection allows you to scroll down to other channels within the radio's current Zone.

Channels are defined in the Zone Channel Assignment Window. This feature is available while operating in Conventional or Trunking communications mode.

4.9.16.3.10

Channel Search

This menu-selection allows you to search for a channel/mode based on its programmed channel name, and directly switch to the found channel.

This feature is available while operating in Conventional or Trunking communications mode.



NOTE: These [Channel Name on page 1294](#) can be viewed in the Zone Channel Assignment Window's Channels Page on a per zone basis.

4.9.16.3.11

Channel Select

This menu-selection allows you to jump to a channel in the radio by entering the channel number on the radio's keypad.

This feature applies while operating in Conventional or Trunking communications mode.



NOTE: These channel numbers must be programmed and can be viewed in the Zone Channel Assignment Window's Channels Page on a per zone basis.

4.9.16.3.12

Channel Up

This menu-selection allows you to scroll up to other channels within the radio's current Zone.

Channels are defined in the Zone Channel Assignment Window. This feature is available while operating in Conventional or Trunking communications mode.

4.9.16.3.13

Clock

This menu-selection allows you to view and modify clock settings.



The Time Format defines the default time mode within the radio's display. This feature applies while operating in Conventional or Trunking communications mode.



IMPORTANT: The Clock feature only appears in the radio's display when the Radio Wide, Time Format field is not set to **Disabled**.

4.9.16.3.14

Color

This menu-selection allows you to select the radio's backlight color that illuminates the radio's display.



This feature applies while operating in Conventional or Trunking communications mode. See also: The Backlight Color Control pages.

4.9.16.3.15

Contacts

This menu-selection allows you to view/edit the Contacts of the radio's current channel.

Contacts are programmed in the Unified Call List. Contacts make up the members of Call Hot Lists.

You can select Hot List members/Contacts, allowing for call types such as Phone Calls, Selective/Private Calls, and Call Alerts/Pages to individual radios or to groups of radios. This feature applies while operating in Conventional or Trunking communications mode.



IMPORTANT: This feature is not available for Portable radios having only a top display.

4.9.16.3.16

Digital Vehicular Repeater System

This menu-selection allows you to switch between the Digital Vehicle Repeater System (DVRS) modes.



The DVRS Modes include System, Local, and Off. Other DVRS settings are also possible. This feature is available while operating in Conventional or Trunking communications mode.

4.9.16.3.17

Direct/Talkaround

This menu-selection allows you to enable or disable the Direct/Talkaround mode for the current channel options profile.

This feature is available while operating in Conventional communications mode.

4.9.16.3.18

Dynamic ID

This menu-selection allows for entry into the Dynamic ID edit mode, which allows you to view and/or edit the radio's Individual ID and/or MDC Primary ID for the current ASTRO and/or MDC system.

This feature is available while operating in Conventional communications mode.

4.9.16.3.19

Dynamic Priority

This menu-selection allows you to select the Dynamic Priority scan assignment.



This feature is available while operating in Conventional communications mode.

4.9.16.3.20

Dynamic Zone Programming

This menu-selection allows you to view or edit the channels in the radio's Dynamic Zone(s).

Dynamic Zones are enabled in the Zone Channel Assignment Window's Zone Page.

4.9.16.3.21

Erase

This menu-selection allows you to remove the current secure encryption key that is being used by the radio, or all of the radio's current encryption keys.

This selection applies while operating in Conventional or Trunking communications mode.

4.9.16.3.22

Front Panel Programming

This menu-selection allows you to enter the radio's Front Panel Programming (FPP) mode.

FPP allows you to modify Conventional communications channel parameters without using the Radio Management. See also [Protected Zone on page 1287](#) and [Protected Zone Password on page 333](#).



IMPORTANT: The FCC requires that either an FPP Dongle or a cloning cable be attached to the radio in order for you to access this feature. This is true unless exempt from FCC compliance.

4.9.16.3.23

Front/Rear

This menu-selection allows you to switch the radio's focus between control heads, thus allowing one of two control heads to be active at one time.



WARNING: This selection is only applicable when the Radio Ergonomics Wide, [Multi Control Head on page 416](#) field is **Enabled**, and when the [Multiple Control Head Style on page 420](#) field is set to **One Active**.

4.9.16.3.24

Horn and Lights

This menu-selection allows you to turn the Horn and Lights external alarms ON/OFF.



This option is used with the Conventional and/or Trunking external alarm option. These alarms are activated when Call Alerts/Pages, Selective/Private Calls, Phone Calls, or Messages are received. This feature applies while operating in Conventional or Trunking communications mode.

4.9.16.3.25

In Car Monitor

This menu-selection allows you to toggle between the two In Car Monitor (ICM) modes: **ICM All** and **ICM Selected**.



This feature is available while operating in Conventional or Trunking communications mode.



NOTE:

ICM All allows your Mobile Subscriber Unit (MSU) to monitor Portable Subscriber Unit (PSU) voice traffic originating from all PSU group calls.

ICM Selected allows your MSU to only monitor PSU group calls where the MSU and PSU Talkgroups match.

This menu selection is only applicable when [In Car Monitor on page 1020](#) is set to **ICM Button/Menu Controlled** and will only operate on Personalities/channels where [ICM Allowed on page 1024](#) is **Enabled**.

4.9.16.3.26

Information

This menu-selection allows you to retrieve and view basic radio information such as IP-related information and buttons/switches control mapping, as well as view or modify the Soft ID.

This feature applies only when operating on ASTRO - Conventional Systems. This is a Portable radio only feature.



IMPORTANT:

Modifying the Soft ID changes the radio's Username for Automatic Registration Service server or a User Authentication Unified Network Services (UNS) server logon. When editing the Username this way, the PIN/Password and Unit ID are blanked. Therefore, this can only be used when the server is expecting a blank PIN/Password and you do not want to use Unit ID.

This feature is not available for Portable radios having only a top display.

4.9.16.3.27

Intercom

This menu-selection allows you access the Intercom feature.



The intercom feature allows multiple control heads to talk to each other with the control heads in a multi-control head setup. This feature applies while operating in Conventional or Trunking communications mode.



NOTE: See also the [Intercom Timeout Timer on page 417](#) field.

4.9.16.3.28

Internet Protocol Address

This menu-selection allows you to retrieve and view (in the radio's display) the radio's current IP address, device name and status.



This feature applies while operating in Conventional or Trunking communications mode.

4.9.16.3.29

Key

This menu-selection allows you to change the secure encryption Key for the current Conventional communications channel.



IMPORTANT:

These selectable Keys are uniquely defined with the [CKR Number on page 897](#) field.

When you select a new Key, all of the radio's Conventional channels having their [Voice Key Strapping on page 1110](#) field is set to **Select** are automatically re-keyed with your same selected key.

Changing Keys is sometimes useful when an encryption key is known to be compromised.

4.9.16.3.30

Keypad

This menu-selection allows you to change to an alternate secure encryption Keypad when operating in Conventional or Trunking communications mode.

The selected Keypad then applies for both Conventional and Trunking communications modes.



IMPORTANT:

Alternate Keypads are available because of [PID Key Management for ASN Mode on page 889](#) PID Key Management compatibility or Over The Air Rekeying (OTAR).

Changing Keypads is sometimes useful when an encryption key is known to be compromised.

4.9.16.3.31

Kill

This menu-selection allows you to initiate a Tactical Inhibit Kill command to a specific radio or group of radios.



IMPORTANT: This is only possible when the application's Conventional Personality, [Tactical Inhibit Kill Operation on page 1092](#) field is set to **Encode** or **Decode & Encode**. Tactical Inhibit Kill Operation is defined on per Conventional Personality basis.

4.9.16.3.32

Location

This menu-selection allows you to determine their current location (latitude, longitude, time and date) and also the distance and bearing to another location ("waypoint").

This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: If the Radio Wide, [User Selectable Location Enable on page 366](#) field is **Enabled**, you are also allowed to turn the outdoor location/Global Positioning System (GPS) functionality on or off for all location/GPS enabled Conventional or Trunking communications channels.

4.9.16.3.33

LTE

This menu-selection activates and deactivates the radio's LTE Broadband data capabilities.



This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

This menu-selection is only operational when a channel that is configured for LTE Broadband operation is selected. When a non-LTE channel is selected, the menu is hidden from you.

A channel is LTE capable when its Data Profile's [Data Profile Type on page 982](#) field is set to **Conventional & Broadband**, or **Trunking & Broadband**, or **Broadband-Only**, and its [Broadband Source on page 1002](#) is **Internal LTE Modem**.

4.9.16.3.34

Message

This menu-selection allows you to display the last Message transmitted by the radio and acknowledged by the base station while operating in Conventional or Trunking communications mode.

4.9.16.3.35

Mode Select

These five menu-selections (MS01–MS05) allow you to program frequently-used or any desired zone and channel combination. If MSPR is selected, you can preset the configuration for MS01–MS05 on the radio.

Each of the menu selections may be programmed with a different zone/channel combination for later retrieval. The programming and use of these menu selections is very similar to the programming and use of a car radio's preset buttons. That is, once you navigate to an MSx option in the menu, a long-press of the Menu Select button programs the radio's current zone and channels into that MSx menu option; then once programmed, a short-press of the Menu Select button jumps the radio to the programmed zone and channel.

This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: The [Short Keypress Duration on page 430](#) and [Long Keypress Duration on page 432](#) are both programmed.

4.9.16.3.36

External Data Modem

This menu-selection provides you with External Data Modem information and options.



This field is only enabled when the Modem Type field is available.

4.9.16.3.37

Monitor

This menu-selection allows you to hear most or even all carrier activity on the radio's current channel.



Any channel-receive requirement for a Private Line (PL) encoded match (for the current channel) is ignored by the radio; this allows you to monitor the channel activity even more. This feature is available while operating in Conventional communications mode.

 **NOTE:** The busy indicator is illuminated when channel activity is present or when the radio is unscelched.

4.9.16.3.38

Multiple Private Line

This menu-selection allows you to access a listing of the available MPL Lists.

 **NOTE:** Each list is represented by a recognizable name . You are then able to select the desired Alias/PL settings. This feature is available while operating in Conventional communications mode.

4.9.16.3.39

Mute

This menu-selection allows you to enable or disable certain radio tones (for example, the keypad tones), as configured by the Enhanced Mute Tones Operation selection.

This feature is available for Conventional and Trunking communications modes.

4.9.16.3.40

My Radio Identification (MyID)

This menu-selection allows you to cause the Radio ID Alias to appear in the radio's display.

This feature applies while operating in Conventional or Trunking communications mode.

4.9.16.3.41

Nuisance Delete

This menu-selection allows you to temporarily remove a Scan List Member channel that continually generates unwanted carrier noise from the current Active Scan.

This feature applies while operating in Conventional or Trunking communications mode.



IMPORTANT:

Switching to another channel on the radio's channel selector, turning off scan mode and then back on, or turning off the radio and then back on effectively brings that temporarily removed Scan List Member channel back to an actively scanned status.

Nuisance Delete is not possible:

- For a Priority #1, or Priority #2 Scan List Member channel.
- When the [Designated Voice Tx Member Type on page 1311](#) field is set to **Selected Channel** and the Landed Scan channel's Tx Frequency is the same as the Tx Frequency of the radio's currently-selected channel.
- If the current Scan List does not contain at least two members before a Nuisance Delete occurs.

4.9.16.3.42

Page

This menu-selection allows you to transmit a Call Alert for Conventional modes, or a Call Alert/Page for Trunking modes.



NOTE: Call Alert/Pages allow a dispatcher or radio-caller to notify you (or group of users) of a missed call. Receiving radios are targeted based on radio and system information managed by the Contacts and Call IDs in the radio's Call Hot Lists. You can directly enter or select Call IDs from the channel's Hot List. The receiving radio responds with both alert tones and visual alerts. The visual alert (flashing LED) persists until reset by your interaction with the radio.

4.9.16.3.43

Password

This menu-selection allows you to modify the Radio Lock/Tactical Inhibit Stun Unlock Password, and to modify the Tactical Inhibit Encode Password.

This feature applies while operating in Conventional or Trunking communications mode.



IMPORTANT:

This password must be composed of numeric values only that may be easily entered from the radio keypad. The password's largest possible value is determined in the Maximum Password Length field.

In the secure encryption version of the Radio Lock feature (see the Important Note in the Enable (Radio Lock) topic), the password must be manually set in the hardware encryption module with the radio keypad and this Password menu-selection.

In the clear/Tactical Inhibit version of the Radio Lock feature, the initial password must be programmed in the Unlock Password field.

4.9.16.3.44

Phone

This menu-selection allows you to initiate Phone Mode while operating in Conventional or Trunking communications mode.

4.9.16.3.45

Power

This menu-selection allows you to toggle the radio's transmission power from low to high and back for all Conventional Personalities or referenced Trunking Systems on a radio-wide basis.



IMPORTANT:

Once the setting in the radio's display has been change, this high or low power setting takes precedence over all individual Conventional [Transmit Power Level on page 1101](#) settings or Trunking [TX Power Level on page 1211](#) settings. That is, when you made the radio's **PWR** menu-selection, the radio displays *High Power* or *Low Power* depending on the status of the radio's current channel. You may then select to transmit in high or low power by selecting either choice from the radio's display.

Powering off and back-on the radio resets all the radio's channels to their programmed power setting.

4.9.16.3.46

Quik Call II

This option enables the launching of the QCII application and allows you to choose the tone to be transmitted.

This feature applies while operating in Conventional or Trunking communications mode.

4.9.16.3.47

Radio Profiles

This menu-selection allows you to select one of the programmed Radio Profiles in Zone-Channel Assignment, provided that the Radio Profile Selection field is set to Last Selected.

This feature applies while operating in Conventional or Trunking communications mode.

4.9.16.3.48

Radio Swap

This menu-selection allows you to switch back and forth between two radios (known as "the brick" part of the radio) that are attached to the same control head in a Dual Radio configuration.



This feature applies while operating in Conventional or Trunking communications mode.

 **IMPORTANT:** If the Fixed Swap Menu field is **Enabled**, then a **Radio Swap** menu-selection always appears at the left-most menu position, even as you scroll through the soft-menu buttons, and regardless of whether this feature is programmed or not; however, if the Fixed Swap Menu field is **Disabled**, then this menu-selection is accessible with the standard scrolling menu.

4.9.16.3.49

Recent Calls

This menu-selection allows you to access the recent incoming and outgoing call information for the following call types: Call Alerts, Selective/Private Calls and (outgoing only) Phone calls.

This feature applies while operating in Conventional or Trunking communications mode.

4.9.16.3.50

Rekey Request

This menu-selection allows you to transmit an Over-The-Air-Rekeying (OTAR) rekey request to the dispatcher's (KMF or KMC) console while operating in Conventional or Trunking communications mode.

 **IMPORTANT:**
For MDC OTAR (Conventional communications), the request protocol is determined by the [Rekey Request Mode on page 893](#) field.
For ASTRO OTAR (Conventional or Trunking communications), the [User Selectable Rekey Request on page 909](#) field must be **Enabled**, and the request protocol is determined by the [OTAR Tx Security Level on page 908](#) field.

4.9.16.3.51

Remote Emergency

This menu-selection activates the Remote Emergency Activation feature so an authorized user to encode this command can cause a target radio to initiate the Emergency feature without target user intervention.



NOTE: Remote Emergency is only supported on ASTRO Conventional and ASTRO 25 Trunking channels.

4.9.16.3.52

Repeater Access Button 1

This menu-selection allows you to manually send a repeater access codeword.



This feature is available while operating in Conventional communications mode.

4.9.16.3.53

Repeater Access Button 2

This menu-selection allows you to manually send a repeater access codeword.



This feature is available while operating in Conventional communications mode.

4.9.16.3.54

Reprogram Request

This menu-selection allows you to send a request to the dispatcher for reassignment of Dynamic Regrouping.

The available features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher/console. The radio then automatically changes to the Dynamic Regrouping [Dynamic Regrouping Zone on page 1213](#) and Dynamic Regrouping [Dynamic Regrouping Channel on page 1214](#).

This feature is available while operating in Trunking communications mode.



IMPORTANT: For Trunking Systems, this Zone and Channel are defined by setting a Zone Channel Assignment's [Trunking Talkgroup on page 1297](#) field to **DYN**. The Trunking Personality considered in this scenario must have this same Trunking System selected in its [System on page 1236](#) field. Hence, only one Dynamic Regrouping channel may be defined per Trunking System.

4.9.16.3.55

Received Signal Strength Indicator

This menu item selection allows you to view the current site and its received signal strength indication (RSSI).



This selection applies while the radio is operating in Trunking communications mode.

4.9.16.3.56

Request-To-Talk

This menu-selection allows you to send a Request-To-Talk (RTT) signaling packet to the dispatcher/console, requesting the ability to transmit voice.



This selection applies only when operating on an MDC System in Conventional communications mode.

4.9.16.3.57

Scan

This menu-selection allows you to select Scan Lists and turn Scan Mode ON/OFF while operating in Conventional or Trunking communications mode.

4.9.16.3.58

Scan List

This menu-selection allows you to view individual Scan List members in the Scan List and also places the radio in a Scan List Edit mode.



While in this edit mode, you are able to add or remove scan list members and modify the scan priority of any member. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT: The radio's Top Side Button automatically becomes the designated Select button while editing a scan list channel. This is only true while the radio is operating in this Scan List Programming mode.

4.9.16.3.59

Secure

This menu-selection allows you to switch between clear (Off) and coded (On) secure encryption operation.



This feature applies while operating in Conventional or Trunking communications mode.

4.9.16.3.60

Sensor

This button-press allows you to select the time of the Sensor Event Disable Time operation.



The [Sensor Event Disable Time on page 372](#) is a Radio Wide field. This feature applies while operating in Conventional or Trunking communications mode.

4.9.16.3.61

One Touch (SIG1-SIG4/DISP)

These One Touch menu-selections (Signaling 1 - Signaling 4/DISP) allow you to initiate a programmed feature with little effort.



These menu-selections allow you to enter features such as Status, Message, Selective/Private Call, Call Alert/Page, Phone, [Repeater Access on page 1169](#) (RAC), and [MDC RTT Button Access on page 1119](#) with one selection. One to four menu-selections can be programmed for Trunking One Touch, and one to four menu-selections can be programmed for Conventional One Touch. Each menu-selection may be programmed with a different feature. This feature applies while operating in Conventional or Trunking communications mode. See [One Touch \(TCH1–TCH16\) on page 729](#).



NOTE: In the radio:

Signaling 1 appears as SIG1

Signaling 2 appears as SIG2

Signaling 3 appears as SIG3

Signaling 4 appears as DISP (Dispatch)

4.9.16.3.62

Site

This menu-selection allows you to view the lock status and toggle between lock and unlock mode when using the SmartZone option.



IMPORTANT: Locking a site inhibits roaming to another site in a wide-area System. This feature is available while operating in Trunking communications mode.

4.9.16.3.63

Site Selectable Alerts

This menu-selection allows you to activate (broadcast), or later deactivate, a Site Selectable Alert at one specific site or all available sites within a specific Zone.



IMPORTANT: Only [Alert Alias on page 878](#) that have the corresponding [Subscriber Encodable on page 879](#) field **Enabled** appear in the menu, and therefore be encodable for broadcast. This feature is available while operating in Trunking communications mode.

4.9.16.3.64

Squelch Fine Tune

This menu-selection allows you to select (and adjust) how much carrier energy is required in order for the radio's speaker to unmute.



When you select a higher value, a stronger carrier signal is then required for the radio's carrier threshold to be reached and for the radio's speaker to unmute; this helps to reduce interference and unwanted noise. This feature applies while operating in Conventional communications mode.



NOTE: The radio may have other requirements before unmuting may occur.

4.9.16.3.65

Status

This menu-selection allows you to select from the Status Alias List of the current channel/mode.



NOTE: For your convenience, as part of this feature the display initially shows the last acknowledged Status call, or the first Status in the list. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Status Alias List is used.

While operating in Trunking communications mode, the Trunking System - Status Alias List selected for the current Trunking Personality is used.

4.9.16.3.66

Stun

This menu-selection allows you to transmit a Tactical Inhibit Stun command to a specific radio or group of radios.



IMPORTANT: This is only possible when the application's Conventional Personality, Tactical Inhibit Stun Operation field is set to **Encode** or **Decode & Encode**. Tactical Inhibit Stun Operation is defined on per Conventional Personality basis.

4.9.16.3.67

Talkgroup

This menu-selection allows you to switch from the preset Talkgroup to another Talkgroup from within the Conventional Personality's current Talkgroup List.

All Conventional Personalities using the same Talkgroup List are automatically switched to the selected Talkgroup.

4.9.16.3.68

One Touch (TCH1–TCH16)



These One Touch menu-selections (TCH1–TCH16) allow you to initiate a programmed feature with little effort.

These menu-selections allow you to enter One Touch features such as Status, Message, Selective/Private Call, Call Alert/Page, Phone, [Repeater Access on page 1169 \(RAC\)](#), and [MDC RTT Button Access on page 1119](#) with one selection. One to sixteen menu-selections can be programmed for Trunking One Touch, and one to sixteen menu-selections can be programmed for Conventional One Touch. Each menu-selection may

be programmed with a different feature. This feature applies while operating in Conventional or Trunking communications mode.



NOTE: In the radio, the One Touch Index is used by default. You can also configure the alias in the respective One Touch entry.

TCH 1 appears as 1

TCH 2 appears as 2

TCH 3 appears as 3

TCH 4 appears as 4

TCH 5 appears as 5

TCH 6 appears as 6

TCH 7 appears as 7

TCH 8 appears as 8

TCH 9 appears as 9

TCH 10 appears as 10

TCH 11 appears as 11

TCH 12 appears as 12

TCH 13 appears as 13

TCH 14 appears as 14

TCH 15 appears as 15

TCH 16 appears as 16

4.9.16.3.69

Text Messaging Service

This menu-selection allows you to access the radio's TMS mode, seen in the radio's display.

See also the Trunking System or Conventional System, Text Messaging Service feature.

4.9.16.3.70

Tx Inhibit

This menu-selection allows you to disable all radio transmissions while operating in Conventional or Trunking communications mode.



IMPORTANT: This action may be necessary when entering hazardous environments with high sensitivity to RF fields, where a radio transmission could initiate an explosion or other dangerous reaction.



NOTE:

If you attempt to key up the radio while Tx Inhibit is **Enabled**, the radio generates a long, low-pitched Talk Prohibit Tone, indicating that transmissions are currently not allowed.

4.9.16.3.71

User

This menu-selection allows you to log in to different Automatic Registration Service (ARS) Servers with the appropriate Username and Password (PIN) combination.

Usernames and PINs may be manually entered from the radio's keypad, or Usernames may be selected from [Data User List on page 964](#) entries (the PIN is then manually entered). This feature is available while operating in Conventional or Trunking communications mode. See also the Soft ID/Username field.



WARNING: This feature functions only when the Data Profiles, [ARS Mode on page 995](#) field is not set to **Disabled**.

4.9.16.3.72

Voice Mute

This menu-selection allows you to toggle on and off Voice Mute functionality for In-Call User Alert-enabled channels.

When Voice Mute is active, the radio remains muted to all Conventional communications calls and affiliated Trunking Talkgroup calls. Group and individual Call Alert/Pages do unmute the radio for the alert tone; also, when Voice Mute is active, the radio does unmute to individual radio-to-radio calls such as Selective/Private Calls and Interconnect (phone mode) calls.

4.9.16.3.73

Zone Cloning (CLON)

This menu item selection allows you to duplicate zones from one radio to another radio without using RM.

See [Zone Clone Enable on page 344](#).

A cloning cable must be attached to the radio in order for you to access this feature. See also [Clone Enable on page 1285](#), [Protected Zone Password on page 333](#), and Protected Zone.

4.9.16.3.74

Zone Down

This menu-selection allows you to scroll downward through the Zones in the radio.

Upon reaching the first Zone in the list, continued scrolling causes the list to wrap around to the last Zone. Zones are defined in the Zone Channel Assignment Window.

4.9.16.3.75

Zone Select

This menu-selection allows you to select a Zone while operating in Conventional or Trunking communications mode.

Zones are defined in the Zone Channel Assignment Window.

4.9.16.3.76

Zone Up

This menu-selection allows you to advance upward through the Zones in the radio.

Upon reaching the last Zone in the list, continued scrolling causes the list to wrap around to the first Zone. Zones are defined in the Zone Channel Assignment Window.

4.9.17

Keypad Mic and Accessories

This section allows you to view or select radio-wide programmable button functionality for both Conventional and Trunking communications modes.



NOTE:

For the Keypad Mic and Accessories sections, button functionality is selected and operates separately for each of the two radio communications modes. That is, when the radio is operating on a Conventional channel, only the selected Conventional features are available to you.

Likewise, when the radio is operating on a Trunking channel, only the selected Trunking features are available to you.

For the Keypad Window, button functionality is selected once and operates for both of the two radio communications modes.

Some selections are model/option dependent on a per radio basis.

4.9.17.1

General Conventional Feature Buttons (Keypad Mic and Accessories)



This field allows you to assign a function for the General button the Keypad Mic (KPM) and Accessories buttons.

See [General Conventional Feature Buttons Selections on page 608](#) for a list of supported selections.

4.9.17.2

General Trunking Feature Buttons (Keypad Mic and Accessories)



This field allows you to assign a function a function for the General button the Keypad Mic (KPM) and Accessories buttons.

See [General Trunking Feature Buttons Selections on page 623](#) for a list of supported selections.

4.9.17.3

Data Conventional Feature Button (Keypad Mic and Accessories)



This field allows you to assign a function for the Data button on Keypad Mic (KPM) and Accessories.

See [Data Feature Button Selections on page 698](#) for a list of supported selections.

4.9.17.4

Data Conventional Index Button (Keypad Mic and Accessories)

Selects the Action Consolidation List member (by name) for the Data Button on the Keypad Mic and Accessories. The Data Button Feature of the same record/row must first be set to Action Consolidation. These selections apply on a radio-wide basis.



WARNING:

You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection.

The only valid Consolidated Action selection for the Data Button is one that selects an **ALL OFF** condition (regardless of whether its name is **ALL OFF** or not). This means that every relay in the same Relay Pattern (record/row) must be in the **Off** state, and the Siren Type must be **All Off**.

Accessed Only:When the Data Button Feature field is set to **Action Consolidation** for the current record/row.

4.9.17.5

Data Trunking Feature Button (Keypad Mic and Accessories)



This field allows you to assign a function for the Data button on Keypad Mic (KPM) and Accessories.

See [Data Feature Button Selections on page 698](#) for a list of supported selections.

4.9.17.6

Data Trunking Index Button (Keypad Mic and Accessories)

Selects the Action Consolidation List member by name for the Data Button on the Keypad Mic and Accessories. The Data Button Feature of the same record/row must first be set to Action Consolidation. These selections apply on a radio-wide basis.



WARNING:

You can duplicate the same Consolidated Action on a Response Selector position and a button; however, you cannot duplicate the same Consolidated Action on more than one Data Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection.

The only valid Consolidated Action selection for the Data Button is one that selects an **ALL OFF** condition (regardless of whether its name is **ALL OFF** or not). This means that every relay in the same Relay Pattern (record/row) must be in the **Off** state, and the Siren Type must be **All Off**.

Accessed Only:When the Data Button Feature field is set to **Action Consolidation** for the current record/row.

4.9.17.7

Navigation Controls (Keypad Mic and Accessories)



This field allows you to assign a function for the Up/Down Navigation Controls on a Keypad Mic (KPM) and Accessories.

See [Navigation Controls Selections on page 700](#) for a list of supported selections.

4.9.18

DEK

The **Direct Entry Keypad (DEK)** section allows you to view or define radio-wide DEK button functionality, applicable for both Conventional and Trunking communications modes.



DEK boxes allow the radio to have more programmable features and access these features with a single button press. These selections are model/option dependent on a per radio basis.



IMPORTANT: Do not duplicate a function on multiple control types, or on more than one Control Head button, or on more than one DEK button, or on more than one VIP Input, or on more than one VIP Output. This may cause you confusion and may sometimes disable a feature.

4.9.18.1

General

The **General** section allows you to view or define the number of DEK boxes connected to the radio and to program each DEK button to have a specific function.



These selections apply for both Conventional and Trunking communications modes, and are model option dependent on a per-radio basis.



IMPORTANT: Do not duplicate a function on more than one VIP In, or on more than one VIP Out, as this may cause you confusion.

When retrieving and using codeplug data configured prior to Release R04.00.01 (for instance when reading a radio, or opening a codeplug file, or using the Codeplug Comparison feature, or the Import feature) be sure to verify all DEK and VIP settings for accuracy.

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to: **1** = DEK Box A, **2** = DEK Boxes A and B, or **3** = DEK Boxes A, B, and C.

4.9.18.1.1

Number of DEK Boxes

Selects to indicate to the number of DEK Boxes that will be connected to the radio.



DEK Boxes allow for more programmable button features, which you can then access with a single button-press. Button functionality selections are made for DEK Box A, B, or C in the DEK Feature field. Each DEK Box can allow for up to eight programmable DEK button features.



IMPORTANT: Do not duplicate a function on more than one VIP In, or on more than one VIP Out, as this may cause you confusion.



NOTE:

When the Number of DEK Boxes is set to greater than **0**, the Radio VIPs In and Radio VIPs Out Radio VIP Out selections are set to their default values (**Blank** and **NULL** respectively).

When the Number of DEK Boxes is set to **0**, the DEK VIP In and DEK VIP Out selections are set to their default values (**Blank** and **NULL** respectively).

The following selections are supported:

- 0**
No DEK boxes
- 1**
DEK Box A
- 2**
DEK Box A and B
- 3**
DEK Box A, B, and C

4.9.18.1.2

DEK Feature

This field selects the feature associated with individual DEK buttons. Certain features will also require further defining in the DEK Index, DEK Zone, and DEK Channel fields.



IMPORTANT: Do not duplicate a function on multiple control types, or on more than one Control Head button, or on more than one DEK button, or on more than one VIP Input, or on more than one VIP Output. This may cause you confusion and may sometimes disable a feature.



WARNING: For a Dual Radio configuration:

- Button functions for Radio Wide features (Siren-related buttons, Aux Control (1-3), Dim, GunLock (1, 2, 3, or All), Relay Pattern, Radio Swap, and Third Party) must be configured the same for the Primary and Secondary radios; additionally, it is strongly recommended to configure all of the button functions the same for both radios, in order to avoid confusion.
- When the Radio Selection field is set to **Secondary Radio** and the Siren Operation field is set to **Disabled**, all DEK Siren-related button selections are considered valid. (Although the Siren box must be connected to the Primary Radio, Siren/PA operation is independent of the current radio selection, and therefore the Siren/PA still operates when the Secondary Radio is selected.)

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to: **1** = DEK Box A, **2** = DEK Boxes A and B, or **3** = DEK Boxes A, B, and C.

The following selections are supported:

Button Selections	Available to the User (for Dual Radio configurations, see the Warning):
Airhorn on page 543	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.
Blank on page 567	Always available.
Direct Ext Radio on page 544	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled , Or when the Radio Ergonomics Wide, Siren Operation field is set to Disabled , and when the Radio Selection field is set to Secondary Radio .
Direct Hi/Lo on page 544	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled , Or when the Radio Ergonomics Wide, Siren Operation field is set to Disabled , and when the Radio Selection field is set to Secondary Radio and when the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is Enabled .
Direct Manual on page 545	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , Or when the Radio Ergonomics Wide, Siren Operation field is set to Disabled , and when the Radio Selection field is set to Secondary Radio .
Direct Message on page 739	When the DEK Index field is set to a unique value (not assigned to other DEK Direct Message buttons), And <ul style="list-style-type: none"> • For Conventional, when the Conventional System, Message field is enabled. • For Trunking, when the Trunking Personality, Message Enable field is enabled.
Direct Mode on page 739	Always available.
Direct Status on page 739	When the DEK Index field is set to a unique value (not assigned to other DEK Direct Message buttons), And <ul style="list-style-type: none"> • For Conventional, when the Conventional System, Status field is enabled. • For Trunking, when the Trunking Personality, Status Enable field is enabled.
Direct Wait on page 545	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .
Direct Yelp on page 546	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .
External Radio (Ext Radio) on page 596	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled .
Hi/Lo on page 569	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.
Manual on page 570	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .

Button Selections	Available to the User (for Dual Radio configurations, see the Warning):
Public Address (PA) on page 547	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled .
Radio Swap on page 601	When the Radio Selection field is set to Primary Radio or Secondary Radio .
Siren on page 603	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .
Third Party on page 495	Always available.
Unprogrammed on page 496	Always available.
Wail on page 571	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .
Yelp on page 571	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .

 **NOTE:** These selections are model/option dependent on a per-radio basis.

4.9.18.1.2.1

Airhorn

This button-press allows you to activate and deactivate the Airhorn Siren tone.



This feature is available on a radio-wide basis.

 **WARNING:** The HiLo Airhorn Tones field must be enabled. Otherwise, the Hi/Lo, Direct Hi/Lo, and Airhorn button selections will be invalid.

 **NOTE:** In addition to this programmable button selection, the O9 Control Head has a dedicated "Airhorn" button on its Siren Mode Keypad.

4.9.18.1.2.2

Blank

Select this feature for a radio button that is not in use.



You hear a chirp tone when pressing this button. This feature is available for Conventional or Trunking communications mode.

4.9.18.1.2.3

Direct Ext Radio

This button-press allows you to directly activate and deactivate External Radio mode.



See also the [External Radio \(Ext Radio\) on page 596](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

The External Radio feature is not available with a Siren switchbox.

See also: [Options Audio Muting on page 423](#) and [External Radio Ignition on page 423](#).

4.9.18.1.2.4

Direct Hi/Lo

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds "Hi/Lo" Siren tones.



See also the [Hi/Lo on page 569](#) button-press. This feature is available on a radio-wide basis.



WARNING: The [HiLo Airhorn Tones on page 425](#) field must be **Enabled**. Otherwise, the Hi/Lo, Direct Hi/Lo, and Airhorn button selections will be invalid.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Hi/Lo** button on its Siren Mode Keypad.

The Hi/Lo Siren tones can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.18.1.2.5

Direct Manual

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds the RM-defined Manual Tone of the Siren option.



See also the [Manual on page 570](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

When a VIP Input is programmed for Horn Ring operation, an initiated Direct Manual button-press activates Siren operation and selects the RM-defined Manual Tone. This Manual Tone then sounds when the vehicle's Horn Ring is pressed, and ends when the Horn Ring is released.

When a VIP Input is not programmed for Horn Ring operation, an initiated Direct Manual button-press activates Siren operation and selects the RM-defined Manual Tone. This Manual Tone sounds when the Direct Manual button is pressed and ends when the button is released.

If the radio is already sounding a Direct Wail, Direct Yelp, or Direct Hi/Lo Siren tone, the selected Siren tone is changed by pressing the Direct Manual button.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Manual** button on its Siren Mode Keypad.

The Manual Siren mode can also be enabled as one of a sequence of radio actions, known as Consolidated Actions.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.18.1.2.6

Direct Message

This button-press allows you to transmit the Message member specified in the button's DEK Index field.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Message Alias List is used.

While operating in Trunking communications mode, the Trunking System - Message Alias List selected for the current Trunking Personality is used.

4.9.18.1.2.7

Direct Mode

This button-press allows you to switch to the channel/mode specified in this DEK button's DEK Zone, and DEK Channel fields.



This feature is available while operating in Conventional or Trunking communications mode.

4.9.18.1.2.8

Direct Status

This button-press allows you to transmit the Status member specified in the button's DEK Index field.



IMPORTANT:

While operating in Conventional communications mode with MDC/ASTRO/DVRS Signaling, the Conventional Status Alias List is used.

While operating in Trunking communications mode, the Trunking System - Status Alias List selected for the current Trunking Personality is used.

4.9.18.1.2.9

Direct Wail

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds a "Wail" Siren tone.



See also the [Wail on page 571](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Wail** button on its Siren Mode Keypad.

The Wail Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.18.1.2.10

Direct Yelp

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds a "Yelp" Siren tone.



See also the [Yelp on page 571](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Yelp** button on its Siren Mode Keypad.

The Yelp Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.9.18.1.2.11

DTMF Tone

This button-press allows you to send out DTMF code of the assigned DTMF value.



There are 12 DTMF tones; namely DTMF Tone 0 to 9, DTMF Tone *, and DTMF Tone #. This feature is available while operating in Conventional or Trunking communications mode.

4.9.18.1.2.12

External Radio (Ext Radio)

This button-press, in conjunction with a Siren button-press, allows you to activate and deactivate External Radio mode.



See [Direct Ext Radio on page 544](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

The External Radio feature is not available with a Siren switchbox.

See also: [Options Audio Muting on page 423](#) and [External Radio Ignition on page 423](#).

4.9.18.1.2.13

Hi/Lo

This button-press allows you to select the Hi/Lo Siren tones.



A Siren broadcast is activated and deactivated with a Siren button-press. This feature is available on a radio-wide basis.



WARNING: The [HiLo Airhorn Tones on page 425](#) field must be **Enabled**. Otherwise, the Hi/Lo, Direct Hi/Lo, and Airhorn button selections will be invalid.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Hi/Lo** button on its Siren Mode Keypad.

The Hi/Lo Siren tones can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

4.9.18.1.2.14

Manual

This button-press allows you to activate and deactivate the RM-defined Manual Tone of the Siren option.



See also the [Direct Manual on page 545](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

When a VIP Input is programmed for Horn Ring operation, first an initiated Siren button-press activates Siren operation, and a Manual button-press selects the programmed Manual Tone. The Manual Tone then sounds when the vehicle's Horn Ring is pressed, and ends when the Horn Ring is released.

When a VIP Input is not programmed for Horn Ring operation, first an initiated Siren button-press activates Siren operation, and a Manual button-press selects the programmed Manual Tone. The Manual Tone sounds when the Manual button is pressed and ends when the button is released.

If the radio is already sounding a Wail, Yelp, or Hi/Lo Siren tone (activated by selecting one of these Siren types accompanied by a Siren button-press), the selected Siren tone is changed by pressing the Manual button.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Manual** button on its Siren Mode Keypad.

The Manual Siren mode can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

4.9.18.1.2.15

Public Address (PA)

This button-press allows you to activate and deactivate the Public Address (PA) system, which routes microphone audio through an external speaker system.



This feature is available on a radio-wide basis.



IMPORTANT: If the Public Address and Siren options are both on at the same time, pressing the PTT button overrides any Siren function. Any Siren tone or incoming radio signals (if in External Radio mode) is abruptly muted to give the Public Address priority operation.



NOTE: In addition to this programmable button selection, the O9 Control Head has a dedicated **Public Address** button.

4.9.18.1.2.16

Radio Swap

This button's Short Keypress Duration allows you to switch back and forth between two radios (known as "the brick" part of the radio) that are attached to the same control head in a Dual Radio configuration.



This button's Long Keypress Duration causes the programmed Radio Alias for the selected radio to temporarily appear in the control head display. This feature is available while operating in Conventional or Trunking communications mode.



WARNING: When the Dual Radio - Radio Selection field is set to **Primary Radio** or **Secondary Radio**, this selection must be made for both Conventional and Trunking, where applicable, to be considered valid.

4.9.18.1.2.17

Siren

This button-press allows you to activate and deactivate the external Siren alert tones.



In conjunction with an External Radio button-press, it is also used to activate and deactivate External Radio mode. Siren mode functionality is determined in the Radio Ergonomics Wide, Siren Operation field.

 **NOTE:** On the O9 Control Head, the Siren tones can also be enabled as one of a sequence of radio actions, known as Consolidated Actions.

4.9.18.1.2.18

Third Party

This button-press allows you to initiate functionality in third-party accessories, such as compatible Whelen® Sirens.

 **WARNING:** When the Dual Radio [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, this selection must be made for both Conventional and Trunking, where applicable, in order to be considered valid.

4.9.18.1.2.19

Unprogrammed

Select this feature for a radio button that is not in use.



You will hear a chirp tone when pressing this button. This feature is available while operating in Conventional or Trunking communications mode.

4.9.18.1.2.20

Wail

This button-press allows you to select the Wail Siren tone.



 **NOTE:** A Siren broadcast is activated and deactivated with a Siren button-press.

See also the [Direct Wail on page 545](#) button-press. This feature is available on a radio-wide basis.

 **NOTE:** In addition to this programmable button selection, the O9 Control Head has a dedicated **Wail** button on its Siren Mode Keypad.

The Wail Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

4.9.18.1.2.21

Yelp

This button-press allows you to select the Yelp Siren tones.



NOTE: A Siren broadcast is activated and deactivated with a Siren button-press.

See also the [Direct Yelp on page 546](#) button-press. This feature is available on a radio-wide basis.

NOTE: In addition to this programmable button selection, the O9 Control Head has a dedicated **Yelp** button on its Siren Mode Keypad.

The Yelp Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

4.9.18.1.3 DEK Feature

This field selects the feature associated with individual DEK buttons. Certain features will also require further defining in the DEK Index, DEK Zone, and DEK Channel fields.



IMPORTANT: Do not duplicate a function on multiple control types, or on more than one Control Head button, or on more than one DEK button, or on more than one VIP Input, or on more than one VIP Output. This may cause you confusion and may sometimes disable a feature.

WARNING: For a Dual Radio configuration:

- Button functions for Radio Wide features (Siren-related buttons, Aux Control (1-3), Dim, GunLock (1, 2, 3, or All), Relay Pattern, Radio Swap, and Third Party) must be configured the same for the Primary and Secondary radios; additionally, it is strongly recommended to configure all of the button functions the same for both radios, in order to avoid confusion.
- When the Radio Selection field is set to **Secondary Radio** and the Siren Operation field is set to **Disabled**, all DEK Siren-related button selections are considered valid. (Although the Siren box must be connected to the Primary Radio, Siren/PA operation is independent of the current radio selection, and therefore the Siren/PA still operates when the Secondary Radio is selected.)

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to: **1** = DEK Box A, **2** = DEK Boxes A and B, or **3** = DEK Boxes A, B, and C.

The following selections are supported:

Button Selections	Available to the User (for Dual Radio configurations, see the Warning):
Airhorn on page 543	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.
Blank on page 567	Always available.
Direct Ext Radio on page 544	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled , Or when the Radio Ergonomics Wide, Siren Operation field is set to Disabled , and when the Radio Selection field is set to Secondary Radio .

Button Selections	Available to the User (for Dual Radio configurations, see the Warning):
Direct Hi/Lo on page 544	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled , Or when the Radio Ergonomics Wide, Siren Operation field is set to Disabled , and when the Radio Selection field is set to Secondary Radio and when the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is Enabled .
Direct Manual on page 545	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , Or when the Radio Ergonomics Wide, Siren Operation field is set to Disabled , and when the Radio Selection field is set to Secondary Radio .
Direct Message on page 739	When the DEK Index field is set to a unique value (not assigned to other DEK Direct Message buttons), And <ul style="list-style-type: none"> • For Conventional, when the Conventional System, Message field is enabled. • For Trunking, when the Trunking Personality, Message Enable field is enabled.
Direct Mode on page 739	Always available.
Direct Status on page 739	When the DEK Index field is set to a unique value (not assigned to other DEK Direct Message buttons), And <ul style="list-style-type: none"> • For Conventional, when the Conventional System, Status field is enabled. • For Trunking, when the Trunking Personality, Status Enable field is enabled.
Direct Wail on page 545	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .
Direct Yelp on page 546	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .
External Radio (Ext Radio) on page 596	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled .
Hi/Lo on page 569	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones field is enabled.
Manual on page 570	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .
Public Address (PA) on page 547	When the Radio Ergonomics Wide, Siren Operation field is not set to Disabled .
Radio Swap on page 601	When the Radio Selection field is set to Primary Radio or Secondary Radio .
Siren on page 603	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .
Third Party on page 495	Always available.
Unprogrammed on page 496	Always available.

Button Selections	Available to the User (for Dual Radio configurations, see the Warning):
Wail on page 571	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .
Yelp on page 571	When the Radio Ergonomics Wide, Siren Operation field is set to Siren/PA .

 **NOTE:** These selections are model/option dependent on a per-radio basis.

4.9.18.1.4

DEK Index

Selects the Index List member for any of the DEK Box buttons 1 through 8. Index List members are based on the selection made in the DEK Feature field. Index List selections are only needed when either the Direct Message or the Direct Status is chosen in the DEK Feature field.



 **IMPORTANT:** More than one button cannot be defined with the same DEK Index selection.

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to: **1** = DEK Box A, **2** = DEK Boxes A and B, or **3** = DEK Boxes A, B, and C, and when the DEK Feature field is set to **Direct Message** or **Direct Status**

4.9.18.1.5

DEK Zone

This field selects the desired Zone for either DEK Box A, B, or C and then for any of the DEK buttons 1 through 8.



Once the Zone is selected, the DEK Channel must then be selected for the current record/row, to define the Channel/Mode. The Zone and Channel need to be defined only when the DEK Feature field is set to **Mode**.

 **WARNING:** Only non-Dynamic Zones (zones that have Dynamic Zone Enable disabled) can be selected; otherwise, this field becomes invalid.

 **IMPORTANT:** Do not duplicate a function on multiple control types, or on more than one Control Head button, or on more than one DEK button, or on more than one VIP Input, or on more than one VIP Output. This may cause you confusion and may sometimes disable a feature.

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to: **1** = DEK Box A, **2** = DEK Boxes A and B, or **3** = DEK Boxes A, B, and C, and when the DEK Feature field is set to **Mode**.

4.9.18.1.6

DEK Channel

This field selects the desired Channel to be used for either DEK Box A, B, or C and then for any of the DEK buttons 1 through 8.



The [DEK Zone on page 746](#) must be defined first. Once both the Zone and Channel are selected, the Channel/Mode is then defined. The Zone and Channel need to be defined only when the DEK feature field is set to **Mode**.

IMPORTANT: Do not duplicate a function on multiple control types, or on more than one Control Head button, or on more than one DEK button, or on more than one VIP Input, or on more than one VIP Output. This may cause you confusion and may sometimes disable a feature.

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to: **1** = DEK Box A, **2** = DEK Boxes A and B, or **3** = DEK Boxes A, B, and C, and when the DEK Feature field is set to **Mode**, and when the [DEK Zone on page 746](#) field is not set to a **Dynamic Zone**.

4.9.18.2

DEK VIP

The DEK VIP section provides features that allow the vehicle to control radio functionality through the DEK boxes' VIPs (Vehicular Interface Ports).



These selections apply for both Conventional and Trunking communications modes, and are model option dependent on a per-radio basis.

IMPORTANT: Do not duplicate a function on more than one VIP In, or on more than one VIP Out, as this may cause you confusion.
When retrieving and using codeplug data configured prior to Release R04.00.01 (for instance when reading a radio, or opening a codeplug file, or using the Codeplug Comparison feature, or the Import feature) be sure to verify all DEK and VIP settings for accuracy.

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to: **1** = DEK Box A, **2** = DEK Boxes A and B, or **3** = DEK Boxes A, B, and C.

4.9.18.2.1

DEK VIP Input Feature

This field selects a feature that allows the vehicle to control radio functionality through the radio's VIP (Vehicular Interface Port) Inputs. The data direction for this interface port is input-only and active-low.



These selections are model/option dependent on a per-radio basis.

IMPORTANT: Do not duplicate a function on multiple control types, or on more than one Control Head button, or on more than one DEK button, or on more than one VIP Input, or on more than one VIP Output. This may cause you confusion and may sometimes disable a feature.

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to: **1** = DEK Box A, **2** = DEK Boxes A and B, or **3** = DEK Boxes A, B, and C.

The following selections are supported:

VIP Input Selections	Available to the User:
Auxiliary Siren SW on page 748	Always available.
Blank on page 567	Always available.
DVRS Activation on page 748	When the DVRS Wide, DVRS Hardware Enable field is enabled.
Horn Ring on page 749	When this feature's VIP Out selection is set to Horn Ring Trns.
Logical Switch 2 on page 749	When the Radio Ergonomics Wide, Logical Switch 2 field is not set to Blank .
Low Battery Alert on page 749	Always available.

4.9.18.2.1.1

Auxiliary Siren SW

This feature provides an input for an auxiliary siren On/Off switch for the Siren option.



IMPORTANT: Since VIP (Vehicular Interface Port) Inputs are active-low, the auxiliary switch must ground the selected VIP Input to activate the Siren, and idle high to deactivate the Siren. When the DEK or Control Head reports the VIP Input state change (active or inactive) the transceiver sends an SB9600 bus message to the Siren/PA unit to change the Siren state On or Off.

4.9.18.2.1.2

Blank

Select this feature for a radio button that is not in use.



You hear a chirp tone when pressing this button. This feature is available for Conventional or Trunking communications mode.

4.9.18.2.1.3

DVRS Activation

This feature is used to activate or de-activate the Digital Vehicular Repeater (DVR) within a DVRS configuration.



IMPORTANT: The VIP Input can be configured for either "Active Open" or "Active Closed" VIP logic, as determined by the VIP Control of DVRS selection.

The switch that triggers the selected VIP input could be the opening of the car door, the removal of the Portable Subscriber Unit (PSU) from its charger, or even a manual switch. In addition, multiple conditions can be logically ANDed by wiring switches in series, such as 'PSU removed from Charger AND Driver's door opened'.

4.9.18.2.1.4

Horn Ring

This feature is used by the Siren option to monitor the state of the vehicle's Horn Ring, typically through a relay controlled by the Horn Ring Transfer VIP Output (alternately, a momentary-contact pushbutton switch may be installed, in a location convenient to the driver).



IMPORTANT:

While broadcasting a Siren tone (activated with your initiated Siren button-press), the selected Siren tone is changed by pressing the vehicle's Horn-Ring.

During Manual Siren Tone operation (activated with your initiated Manual button-press), the selected Manual Tone sounds when the vehicle's Horn Ring is pressed, and ends when the Horn Ring is released.

4.9.18.2.1.5

Logical Switch 2

Selects the setting used in conjunction with the Radio or DEK Vehicular Interface Port (VIP) Input Feature when one of the VIP Ins are set to **Logical Switch 2**.



Both the low power setting and high power setting are adjusted on the Transmit Power Level alignment screen. This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Blank

Select when "Logical Switch 2" is not in use.

Low Power - Open

Used for radio low power transmissions when the VIP input is open-circuited (not connected to ground).

The radio uses the tuned high power setting for transmissions when the VIP input is closed (connected to ground).

Low Power - Closed

Used for radio low power transmissions when the VIP input is closed-circuited (connected to ground). The radio uses the tuned high power setting for transmissions when the VIP input is open.

4.9.18.2.1.6

Low Battery Alert

This feature provides an input for a vehicular low-battery-alert device.



IMPORTANT:

Since VIP (Vehicular Interface Port) Inputs are active-low, the external low-battery-alert device must ground the selected VIP Input to activate the alert, and idle high to deactivate the alert.

The external low-battery-alert device monitors the vehicle's battery voltage and when the voltage goes below a set threshold, the device asserts a DEK VIP Input (or a Radio VIP Input) set to "Low Battery Alert". As long as the VIP Input remains asserted (low battery condition) and does not return to the idle state (good battery) before a 15 second internal timer expires, the radio's display then shows a temporary "low battery" alert and periodically sounds the Low Battery Standby Chirp until the VIP Input returns to the idle state when the battery voltage achieves normal levels. See also Low Battery Tx Chirp.

4.9.18.2.2

DEK VIP Input Feature

This field selects a feature that allows the vehicle to control radio functionality through the radio's VIP (Vehicular Interface Port) Inputs. The data direction for this interface port is input-only and active-low.



These selections are model/option dependent on a per-radio basis.



IMPORTANT: Do not duplicate a function on multiple control types, or on more than one Control Head button, or on more than one DEK button, or on more than one VIP Input, or on more than one VIP Output. This may cause you confusion and may sometimes disable a feature.

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to: **1** = DEK Box A, **2** = DEK Boxes A and B, or **3** = DEK Boxes A, B, and C.

The following selections are supported:

VIP Input Selections	Available to the User:
Auxiliary Siren SW on page 748	Always available.
Blank on page 567	Always available.
DVRS Activation on page 748	When the DVRS Wide, DVRS Hardware Enable field is enabled.
Horn Ring on page 749	When this feature's VIP Out selection is set to Horn Ring Trns .
Logical Switch 2 on page 749	When the Radio Ergonomics Wide, Logical Switch 2 field is not set to Blank .
Low Battery Alert on page 749	Always available.

4.9.18.2.3

DEK VIP Output Feature

This field selects a feature that allows the radio to control vehicle functionality through the radio Vehicular Interface Port (VIP) Outputs. The data direction for this interface port is output-only.



These selections are model/option dependent on a per-radio basis.

IMPORTANT: Do not duplicate a function on multiple control types, or on more than one Control Head button, or on more than one DEK button, or on more than one VIP Input, or on more than one VIP Output. This may cause you confusion and may sometimes disable a feature.

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to: **1** = DEK Box A, **2** = DEK Boxes A and B, or **3** = DEK Boxes A, B, and C, and when the Dual Radio - Radio Selection field is not set to **Secondary Radio**; VIP Outputs are only configure on the **Primary Radio**.

The following selections are supported:

VIP Output Selections	Available to the User:
Aux Control (1-3) on page 751	Always available.
Emergency Alarm Rx on page 752	When the Emergency Wide, Emergency Alarm Rx Indicator Type is not set to No Indication .
External Tx Attenuator on page 752	When the radio is model/option capable.
Failsoft on page 752	Always available.
F/R Speaker Control on page 752	When the Radio Ergonomics Wide, Multi Control Head field is enabled.
Gunlock (1-3) on page 753	Always available.
Horn on page 753	When the Radio Ergonomics Wide, Horn and Lights on page 426 field is enabled.
Horn Ring Transfer (Trns) on page 753	When this feature's VIP In selection is set to Horn Ring .
Lights on page 753	When the Radio Ergonomics Wide, Horn and Lights on page 426 field is enabled.
NULL on page 754	Always available.
Out Of Range on page 754	Always available.
Site Trunking on page 754	Always available.

4.9.18.2.3.1

Aux Control (1-3)

This feature allows you to activate or deactivate up to three DEK Vehicular Interface Port (VIP) Outputs; these three outputs are defined by the Auxiliary Control Page feature settings.



You activate one of these VIP Outputs with a corresponding Aux Control (1-3) button-press or Aux Control (1-3) menu-selection. This in turn causes the corresponding VIP Output to activate for the duration selected in the Active Duration field. This feature is available on a radio-wide basis.

NOTE: The [Consolette on page 255](#) also uses Auxiliary Control features.

4.9.18.2.3.2

Emergency Alarm Rx

This selection causes the current Vehicular Interface Port (VIP) Out to activate when an Emergency Alarm is received by the radio.



This is only possible on a Trunking channel or a Conventional ASTRO System channel that has its Emergency Alarm Rx Indicator field enabled.



IMPORTANT:

The Emergency Alarm Rx Indicator time lasts for 10 seconds. During these 10 seconds, you can deactivate the indicator by pressing any of the radio's buttons except **Volume** and **Light**.

Once the indicator clears or is cleared, retried emergency alarms from the same ASTRO System Individual ID or Trunking System Radio ID are ignored for the next 20 seconds.

Emergency alarms are not detected while the radio is in Scan Mode.

Emergency alarms are not detected while the radio is active on a voice channel.

Accessed Only: When the Emergency Wide, [Emergency Alarm Rx Indicator Type on page 917](#) field is not set to **No Indication**.

4.9.18.2.3.3

External Tx Attenuator

The functionality of this selection is only available in certain geographic areas and requires an external transmit attenuator.



This feature is available while operating in Conventional communications mode.

4.9.18.2.3.4

Failsoft

This selection causes the current VIP (Vehicular Interface Port) Out to activate during Failsoft mode.



4.9.18.2.3.5

F/R Speaker Control

This feature, when used in conjunction with "speaker audio switching pods", activates the front or rear speaker according to which control head is active in a Multi Control Head configuration.



WARNING: The relay-controlled "speaker audio switching pods" are wired to connect to the DEK's VIP Output 2; therefore, this selection is only valid on DEK A VIP Output 2.

4.9.18.2.3.6 **Gunlock (1-3)**

This selection is used to trigger the release of the corresponding GunLock (1 to 3).



Your initiated GunLock button-press causes the current Vehicular Interface Port (VIP) Out to activate for the amount of time selected in the Relock Timer field. This feature is available on a radio-wide basis.



IMPORTANT:

The VIP Out pins provide a ground when activated and are not intended to provide current to the GunLock. Depending on the specific GunLock, it may be necessary to connect the VIP Out to an external relay which in turn controls the GunLock. Consult the GunLock manufacturer's specifications for details concerning installation.

GunLock control is only available on the radio's VIP Out pins; it is not currently available on the Universal Relay Controller.

4.9.18.2.3.7 **Horn**

This feature is used with the Radio Ergonomics Wide, Horn and Lights external alarm option to turn the vehicle's horn ON/OFF.



This alarm is activated when Call Alerts/Pages, Selective/Private Calls, Phone Calls, or Messages are received.

4.9.18.2.3.8 **Horn Ring Transfer (Trns)**

This feature is used by the Siren option to control the vehicle's Horn Ring function during Manual Siren operation.



4.9.18.2.3.9 **Lights**

This feature is used with the Radio Ergonomics Wide, Horn and Lights external alarm option to turn the headlights alarm ON/OFF.



This alarm is activated when Call Alerts/Pages, Selective/Private Calls, Interconnect Phone Calls, or Messages are received.

4.9.18.2.3.10

NULL

Select this feature for a DEK VIP Output that is not in use.



4.9.18.2.3.11

Out Of Range

This selection causes the current Vehicular Interface Port (VIP) Out to activate whenever the radio is outside of the coverage range of the Fixed Network Equipment (FNE).



4.9.18.2.3.12

Site Trunking

This selection causes the current Vehicular Interface Port (VIP) Out to activate during Site Trunking mode. "Site Trunking" is a unique Trunking mode that provides a backup mode during system component failures such as failure of telephone or other communications links to the zone controller.



Site Trunking is considered to be an interim mode between SmartZone and Failsoft mode.

4.9.18.2.4

DEK VIP Output Feature

This field selects a feature that allows the radio to control vehicle functionality through the radio Vehicular Interface Port (VIP) Outputs. The data direction for this interface port is output-only.



These selections are model/option dependent on a per-radio basis.



IMPORTANT: Do not duplicate a function on multiple control types, or on more than one Control Head button, or on more than one DEK button, or on more than one VIP Input, or on more than one VIP Output. This may cause you confusion and may sometimes disable a feature.

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to: **1** = DEK Box A, **2** = DEK Boxes A and B, or **3** = DEK Boxes A, B, and C, and when the Dual Radio - Radio Selection field is not set to **Secondary Radio**; VIP Outputs are only configure on the **Primary Radio**.

The following selections are supported:

VIP Output Selections	Available to the User:
Aux Control (1-3) on page 751	Always available.
Emergency Alarm Rx on page 752	When the Emergency Wide, Emergency Alarm Rx Indicator Type is not set to No Indication .

VIP Output Selections	Available to the User:
External Tx Attenuator on page 752	When the radio is model/option capable.
Failsoft on page 752	Always available.
F/R Speaker Control on page 752	When the Radio Ergonomics Wide, Multi Control Head field is enabled.
Gunlock (1-3) on page 753	Always available.
Horn on page 753	When the Radio Ergonomics Wide, Horn and Lights on page 426 field is enabled.
Horn Ring Transfer (Trns) on page 753	When this feature's VIP In selection is set to Horn Ring .
Lights on page 753	When the Radio Ergonomics Wide, Horn and Lights on page 426 field is enabled.
NULL on page 754	Always available.
Out Of Range on page 754	Always available.
Site Trunking on page 754	Always available.

4.9.19

Radio VIPs

This section allows you to view or define electrical inputs and outputs to specific functionality.



IMPORTANT: Do not duplicate a function on more than one VIP In, or on more than one VIP Out, as this may cause you confusion.

When retrieving and using codeplug data configured prior to Release R04.00.01 (for instance when reading a radio, or opening a codeplug file, or using the Codeplug Comparison feature, or the Import feature) be sure to verify all DEK and VIP settings for accuracy.

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to: **0**, and when the radio is model/option capable.

4.9.19.1

Radio VIPs Input Feature

This field allows you to select a feature that allows the vehicle to control radio functionality through the radio Vehicular Interface Port (VIP) Inputs. The data direction for this interface port is input-only.



NOTE: Do not duplicate a function on:

- Multiple control types
- More than one Control Head button
- More than one DEK button, or on more than one VIP Input
- More than one VIP Output, or on more than one GCAI VIP input

This may cause you confusion and may sometimes disable a feature.

Accessed Only: When the [Number of DEK Boxes on page 734](#) field is set to **0**, and when the radio is model/option capable.

The following selections are supported:

VIP Output Selections	Available selections to you
Auxiliary Siren SW on page 748	When GCAI VIPs Input Feature is not set to Aux Siren SW .
Blank on page 567	Always available.
DVRS Activation on page 748	When the DVRS Wide, DVRS Hardware Enable on page 1019 field is enabled.
Horn Ring on page 749	When this feature VIP Out selection is set to Horn Ring Transfer (Trns) on page 753 , and when GCAI VIPs Input Feature is not set to Horn Ring .
Logical Switch 2 on page 749	When the Radio Ergonomics Wide, Logical Switch 2 on page 439 field is not set to Blank , and when GCAI VIPs Input Feature is not set to Logical Switch 2 .
Low Battery Alert on page 749	When GCAI VIPs Input Feature is not set to Low Battery Alert .
Monitor on page 532	When the radio is model/option capable.
Tx Inhibit on page 495	When the Dual Radio - Radio Selection option field is not set to Primary Radio or Secondary Radio , and when the Consolette Enable on page 438 field is unchecked, and when the DVRS Hardware Enable on page 1019 field is unchecked.

4.9.19.1.1

Auxiliary Siren SW

This feature provides an input for an auxiliary siren On/Off switch for the Siren option.



IMPORTANT: Since VIP (Vehicular Interface Port) Inputs are active-low, the auxiliary switch must ground the selected VIP Input to activate the Siren, and idle high to deactivate the Siren. When the DEK or Control Head reports the VIP Input state change (active or inactive) the transceiver sends an SB9600 bus message to the Siren/PA unit to change the Siren state On or Off.

4.9.19.1.2

Blank

Select this feature for a radio button that is not in use.



You hear a chirp tone when pressing this button. This feature is available for Conventional or Trunking communications mode.

4.9.19.1.3

DVRS Activation

This feature is used to activate or de-activate the Digital Vehicular Repeater (DVR) within a DVRS configuration.



IMPORTANT: The VIP Input can be configured for either "Active Open" or "Active Closed" VIP logic, as determined by the VIP Control of DVRS selection.

The switch that triggers the selected VIP input could be the opening of the car door, the removal of the Portable Subscriber Unit (PSU) from its charger, or even a manual switch. In addition, multiple conditions can be logically ANDed by wiring switches in series, such as 'PSU removed from Charger AND Driver's door opened'.

4.9.19.1.4

Horn Ring

This feature is used by the Siren option to monitor the state of the vehicle's Horn Ring, typically through a relay controlled by the Horn Ring Transfer VIP Output (alternately, a momentary-contact pushbutton switch may be installed, in a location convenient to the driver).



IMPORTANT: While broadcasting a Siren tone (activated with your initiated Siren button-press), the selected Siren tone is changed by pressing the vehicle's Horn-Ring.

During Manual Siren Tone operation (activated with your initiated Manual button-press), the selected Manual Tone sounds when the vehicle's Horn Ring is pressed, and ends when the Horn Ring is released.

4.9.19.1.5

Logical Switch 2

Selects the setting used in conjunction with the Radio or DEK Vehicular Interface Port (VIP) Input Feature when one of the VIP Ins are set to **Logical Switch 2**.



Both the low power setting and high power setting are adjusted on the Transmit Power Level alignment screen. This feature applies on a radio-wide basis.

Accessed Only:When the radio is model/option capable.

The following selections are supported:

Blank

Select when "Logical Switch 2" is not in use.

Low Power - Open

Used for radio low power transmissions when the VIP input is open-circuited (not connected to ground). The radio uses the tuned high power setting for transmissions when the VIP input is closed (connected to ground).

Low Power - Closed

Used for radio low power transmissions when the VIP input is closed-circuited (connected to ground). The radio uses the tuned high power setting for transmissions when the VIP input is open.

4.9.19.1.6

Low Battery Alert

This feature provides an input for a vehicular low-battery-alert device.



IMPORTANT:

Since VIP (Vehicular Interface Port) Inputs are active-low, the external low-battery-alert device must ground the selected VIP Input to activate the alert, and idle high to deactivate the alert.

The external low-battery-alert device monitors the vehicle's battery voltage and when the voltage goes below a set threshold, the device asserts a DEK VIP Input (or a Radio VIP Input) set to "Low Battery Alert". As long as the VIP Input remains asserted (low battery condition) and does not return to the idle state (good battery) before a 15 second internal timer expires, the radio's display then shows a temporary "low battery" alert and periodically sounds the Low Battery Standby Chirp until the VIP Input returns to the idle state when the battery voltage achieves normal levels. See also Low Battery Tx Chirp.

4.9.19.1.7

Monitor

This menu-selection allows you to hear most or even all carrier activity on the radio's current channel.



Any channel-receive requirement for a Private Line (PL) encoded match (for the current channel) is ignored by the radio; this allows you to monitor the channel activity even more. This feature is available while operating in Conventional communications mode.

 **NOTE:** The busy indicator is illuminated when channel activity is present or when the radio is unscelched.

4.9.19.1.8

Tx Inhibit

This button-press allows you to disable all radio transmissions while operating in Conventional or Trunking communications mode.



 **IMPORTANT:** This action may be necessary when entering hazardous environments with high sensitivity to RF fields, where a radio transmission could initiate an explosion or other dangerous reaction.

 **NOTE:** If you attempt to key up the radio while Tx Inhibit is **Enabled**, the radio generates a long, low-pitched "Talk Prohibit" Tone, indicating that transmissions are currently not allow.

The Voice Announcement feature provides the ability to play a [Tx Inhibit On on page 860](#) or [Tx Inhibit Off on page 861](#) voice prompt when you toggle Tx Inhibit On or Off.

4.9.19.2

Radio VIPs Output Feature

This field allows you to select a feature that allows the radio to control vehicle functionality through the radio Vehicular Interface Port (VIP) Outputs. The data direction for this interface port is output-only.



 **NOTE:** Do not duplicate the function on:

- Multiple control types
- More than one Control Head button
- More than one DEK button
- More than one VIP Input
- More than one VIP Output

This may cause you confusion and may sometimes disable the feature.

Accessed Only: When the radio is model/option capable, the [Number of DEK Boxes on page 734](#) field is set to **0**, and the Dual Radio - Radio Selection field is not set to **Secondary Radio**. VIP Outputs are only configured on the **Primary**.

The following selections are supported:

VIP Output Selections	Available selections to you
Aux Control (1-3) on page 760	Always available.
Channel Activity on page 761	When the radio is model/option capable.

VIP Output Selections	Available selections to you
Emergency Alarm Rx on page 752	When the Emergency Wide, Emergency Alarm Rx Indicator Type on page 917 field is not set to No Indication .
External Tx Attenuator on page 752	When the radio is model/option capable.
Failsoft on page 752	Always available.
Gunlock (1-3) on page 753	Always available.
Horn on page 753	When the Radio Ergonomics Wide, Horn and Lights on page 426 field is enabled.
Horn Ring Transfer (Trns) on page 753	When this feature VIP In selection is set to Horn Ring on page 749 .
Lights on page 753	When the Radio Ergonomics Wide, Horn and Lights on page 426 field is enabled.
NULL on page 754	Always available.
Out Of Range on page 754	Always available.
RSI Autodial on page 763	When the radio is model/option capable.  WARNING: This selection is only valid on Radio VIP 1 Output.
Site Trunking on page 754	Always available.
Tx Inhibit Status on page 763	When the Dual Radio - Radio Selection option field is not set to Primary Radio or Secondary Radio , and when the Consolette Enable on page 438 field is unchecked, and when the DVRS Hardware Enable on page 1019 field is unchecked.
VRM Enabled on page 764	When the radio is model/option capable.
MOSCAD CG on page 764	When MOSCAD Data Enabled field is enabled.
MOSCAD TXE/CM on page 764	When MOSCAD Data Enabled field is enabled.

 **NOTE:** When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, the default value of Radio VIP 1 Output is **Gunlock 1**, and the default value of Relock Timer 1 is **8** seconds.

4.9.19.2.1

Aux Control (1-3)

This feature allows you to activate or deactivate up to three Radio Vehicular Interface Port (VIP) Outputs; these three outputs are defined by the Auxiliary Control Page feature settings.



You activate one of these VIP Outputs with a corresponding Aux Control (1-3) button-press or Aux Control (1-3) menu-selection. This in turn causes the corresponding VIP Output to activate for the duration selected in the Active Duration field. This feature is available on a radio-wide basis.

 **NOTE:** The [Consolette on page 255](#) also uses Auxiliary Control features.

4.9.19.2.2

Channel Activity

This selection is only valid on Radio VIP 4 Output.



4.9.19.2.3

Emergency Alarm Rx

This selection causes the current Vehicular Interface Port (VIP) Out to activate when an Emergency Alarm is received by the radio.



This is only possible on a Trunking channel or a Conventional ASTRO System channel that has its Emergency Alarm Rx Indicator field enabled.



IMPORTANT:

The Emergency Alarm Rx Indicator time lasts for 10 seconds. During these 10 seconds, you can deactivate the indicator by pressing any of the radio's buttons except **Volume** and **Light**.

Once the indicator clears or is cleared, retried emergency alarms from the same ASTRO System Individual ID or Trunking System Radio ID are ignored for the next 20 seconds.

Emergency alarms are not detected while the radio is in Scan Mode.

Emergency alarms are not detected while the radio is active on a voice channel.

Accessed Only: When the Emergency Wide, [Emergency Alarm Rx Indicator Type on page 917](#) field is not set to **No Indication**.

4.9.19.2.4

External Tx Attenuator

The functionality of this selection is only available in certain geographic areas and requires an external transmit attenuator.



This feature is available while operating in Conventional communications mode.

4.9.19.2.5

Failsoft

This selection causes the current VIP (Vehicular Interface Port) Out to activate during Failsoft mode.



4.9.19.2.6

Gunlock (1-3)

This selection is used to trigger the release of the corresponding GunLock (1 to 3).



Your initiated GunLock button-press causes the current Vehicular Interface Port (VIP) Out to activate for the amount of time selected in the Relock Timer field. This feature is available on a radio-wide basis.



IMPORTANT:

The VIP Out pins provide a ground when activated and are not intended to provide current to the GunLock. Depending on the specific GunLock, it may be necessary to connect the VIP Out to an external relay which in turn controls the GunLock. Consult the GunLock manufacturer's specifications for details concerning installation.

GunLock control is only available on the radio's VIP Out pins; it is not currently available on the Universal Relay Controller.

4.9.19.2.7

Horn

This feature is used with the Radio Ergonomics Wide, Horn and Lights external alarm option to turn the vehicle's horn ON/OFF.



This alarm is activated when Call Alerts/Pages, Selective/Private Calls, Phone Calls, or Messages are received.

4.9.19.2.8

Horn Ring Transfer (Trns)

This feature is used by the Siren option to control the vehicle's Horn Ring function during Manual Siren operation.



4.9.19.2.9

Lights

This feature is used with the Radio Ergonomics Wide, Horn and Lights external alarm option to turn the headlights alarm ON/OFF.



This alarm is activated when Call Alerts/Pages, Selective/Private Calls, Interconnect Phone Calls, or Messages are received.

4.9.19.2.10

NULL

Select this feature for a DEK VIP Output that is not in use.



4.9.19.2.11

Out Of Range

This selection causes the current Vehicular Interface Port (VIP) Out to activate whenever the radio is outside of the coverage range of the Fixed Network Equipment (FNE).



4.9.19.2.12

RSI Autodial

This selection causes the current Vehicular Interface Port (VIP) Out to autodial the Fixed Network Equipment (FNE) with the Remote Site Interface (RSI).



 **WARNING:** This selection is only valid on Radio VIP 1 Output.

4.9.19.2.13

Site Trunking

This selection causes the current Vehicular Interface Port (VIP) Out to activate during Site Trunking mode. "Site Trunking" is a unique Trunking mode that provides a backup mode during system component failures such as failure of telephone or other communications links to the zone controller.



Site Trunking is considered to be an interim mode between SmartZone and Failsoft mode.

4.9.19.2.14

Tx Inhibit Status

This button-press allows you to disable all radio transmissions while operating in Conventional or Trunking communications mode.



This action may be necessary when entering hazardous environments with high sensitivity to RF fields, where a radio transmission could initiate an explosion or other dangerous reaction.



NOTE:

If you attempt to key up the radio while TX Inhibit is enabled, the radio generates a long, low-pitched "Talk Prohibit" Tone, indicating that transmissions are currently not allowed.

The Voice Announcement feature provides the ability to play a Tx Inhibit On or Tx Inhibit Off voice prompt when you toggle Tx Inhibit On or Off.

4.9.19.2.15

VRM Enabled

This selection causes the current Vehicular Interface Port (VIP) Out to activate on radio power-up.



The VIP Out remains enabled until the radio is powered down. This feature should only be used in a Vehicular Radio Modem (VRM) accessory configuration.

4.9.19.2.16

MOSCAD CG

This feature is valid when Radio Wide and MOSCAD Data Enable field are enabled.



4.9.19.2.17

MOSCAD TXE/CM

This feature is valid when Radio Wide and MOSCAD Data Enable field are enabled.



4.9.19.3

GCAI VIPs Input Feature

This field allows you to select a feature that allows the vehicle to control radio functionality through the Global Core Accessory Interface (GCAI) VIP Inputs. The data direction for this interface port is input-only.



NOTE: Do not duplicate a function on:

- Multiple control types
- More than one Control Head button
- More than one DEK button, or on more than one VIP Input
- More than one VIP Output, or on more than one GCAI VIP input

This may cause you confusion and may sometimes disable a feature.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

VIP Output Selections	Available to the User:
Auxiliary Siren SW on page 748	When Radio VIPs Input Feature on page 755 is not set to Aux Siren SW .
Blank on page 567	Always available.
DVRS Activation on page 748	When the Radio VIPs Input Feature on page 755 or the DEK VIP Input Feature on page 747 is not set to DVRS Activation , and when the DVRS Hardware Enable on page 1019 field is enabled.
Horn Ring on page 749	When the VIP Out selection for this feature is set to Horn Ring Transfer (Trns) on page 753 , and when Radio VIPs Input Feature on page 755 , or the DEK VIP Input Feature on page 747 is not set to Horn Ring .
Logical Switch 2 on page 749	When the Radio Ergonomics Wide, Logical Switch 2 on page 439 field is not set to Blank , and when Radio VIPs Input Feature on page 755 or the DEK VIP Input Feature on page 747 is not set to Logical Switch 2 .
Low Battery Alert on page 749	When Radio VIPs Input Feature on page 755 or the DEK VIP Input Feature on page 747 is not set to Low Battery Alert .
Tx Inhibit on page 495	When the Dual Radio- Radio Selection option field is not set to Primary Radio or Secondary Radio , and when the Consolette Enable on page 438 field is unchecked, and when the DVRS Hardware Enable on page 1019 field is unchecked.

4.10

Keypad

The **Keypad Button** section allows you to view or define features for the 3x4 alphanumeric Keypad buttons (0 through 9, # and *) on a Portable radio, Mobile Control Head, or Keypad Mic (KPM).

These selections apply for both Conventional and Trunking communications modes, and are model option dependent on a per-radio basis.



WARNING: Do not duplicate the same Relay Pattern on more than one Directional Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection; however, Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button.

4.10.1

General Keypad Feature (Keypad)

Selects the function for a 3x4 alphanumeric Keypad button (0 through 9, # and *) on a Portable radio, Mobile Control Head or Keypad Mic (KPM), as noted in the table below. These selections apply while operating in Conventional or Trunking communications mode.

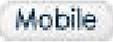
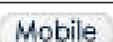


NOTE: When a radio comes factory-equipped with an O7 Control Head that has the optional Siren and Lights Keypad, the default Keypad button assignments are pre-configured to correspond with the Keypad's graphics. See the O7 Siren/Lights Keypad Keystone Concept.



WARNING: For a Dual Radio Configuration:

- Button functions for Radio Wide features (Siren-related buttons, Aux Control (1-3), Dim, GunLock (1, 2, 3, or All), Relay Pattern, Radio Swap, and Third Party) must be configured the same for the Primary and Secondary radios; additionally, it is strongly recommended to configure all of the button functions the same for both radios, in order to avoid confusion.
- When the Radio Selection field is set to **Secondary Radio** and the Siren Operation field is set to **Disabled**, all Siren-related Keypad selections are considered valid. (Although the Siren box only connects to the Primary Radio, Siren/PA operation is independent of the current radio selection, and therefore the Siren/PA still operates when the Secondary Radio is selected.)

Button Se- lections:	This selection is only valid in the application, and/or available to you:	Radio Type:
Airhorn on page 543	When the Radio Ergonomics Wide, Siren Operation on page 422 field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones on page 425 field is Enabled .	
Blank on page 483 	(Intended for controls that are not in use.)	
Direct Ext Radio on page 544	When the Radio Ergonomics Wide, Siren Operation on page 422 field is not set to Disabled .	
Direct Hi/Lo on page 544	When the Radio Ergonomics Wide, Siren Operation on page 422 field is set to Siren/PA , and when the Radio Ergonomics Wide, HiLo Airhorn Tones on page 425 field is Enabled .	
Direct Man- ual on page 545	When the Radio Ergonomics Wide, Siren Operation on page 422 field is set to Siren/PA .	
Direct Wait on page 545	When the Radio Ergonomics Wide, Siren Operation on page 422 field is set to Siren/PA .	
Direct Yelp on page 546	When the Radio Ergonomics Wide, Siren Operation on page 422 field is set to Siren/PA .	
Gunlock (1,2,3, or All) on page 546	(When at least one of the radio's VIP Out pins has been programmed for the corresponding GunLock function), or (when the Radio Selection on page 361 field is set to Secondary Radio).  NOTE: See also: Password Required For Gunlock on page 339 .	

Button Se- lections:	This selection is only valid in the application, and/or available to you:	Radio Type:
	You cannot duplicate the same Relay Pattern on more than one Di- rectional Button, Top Function Programmable Button, or Bottom Func- tion Programmable Button Index selection; however, Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button.	
Keypad Digit on page 546	When selected, always available to you, and therefore not dependent on any feature or selection.	P & M
MS01–MS13 on page 489 (Mode Se- lect)	When selected, always available to you, and therefore not dependent on any feature or selection.	P & M
Public Ad- dress (PA) on page 547 (PA)	When the Radio Ergonomics Wide, Siren Operation on page 422 field is not set to Disabled .	Mobile
Relay Pat- tern on page 547	(When the Universal Relay Controller Equipped on page 382 field is Enabled and a URC is connected to the radio), or (when the Radio Selection on page 361 field is set to Secondary Radio , and when the Universal Relay Controller Equipped field is Disabled and a URC is connected to the Primary Radio of a Dual Radio configuration). You cannot duplicate the same Relay Pattern on more than one Di- rectional Button, Top Function Programmable Button, or Bottom Func- tion Programmable Button Index selection; however, Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button. Once selected, the appropriate Keypad Button Index for the same re- cord/row must also be defined.  NOTE: See also: Password Required for Password Required For Lightbar on page 340 .	Mobile
Third Party on page 495	When selected, always available to you, and therefore not dependent on any feature or selection.	P & M

4.10.1.1

Airhorn

This button-press allows you to activate and deactivate the Airhorn Siren tone.



This feature is available on a radio-wide basis.



WARNING: The HiLo Airhorn Tones field must be enabled. Otherwise, the Hi/Lo, Direct Hi/Lo, and Airhorn button selections will be invalid.



NOTE: In addition to this programmable button selection, the O9 Control Head has a dedicated "Airhorn" button on its Siren Mode Keypad.

4.10.1.2

Blank

Select this feature for a radio button that is not in use.

You will hear a chirp tone when pressing this button. This feature is available for Conventional or Trunking communications mode.

4.10.1.3

Direct Ext Radio

This button-press allows you to directly activate and deactivate External Radio mode.



See also the [External Radio \(Ext Radio\) on page 596](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

The External Radio feature is not available with a Siren switchbox.

See also: [Options Audio Muting on page 423](#) and [External Radio Ignition on page 423](#).

4.10.1.4

Direct Hi/Lo

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds "Hi/Lo" Siren tones.



See also the [Hi/Lo on page 569](#) button-press. This feature is available on a radio-wide basis.



WARNING: The [HiLo Airhorn Tones on page 425](#) field must be **Enabled**. Otherwise, the Hi/Lo, Direct Hi/Lo, and Airhorn button selections will be invalid.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Hi/Lo** button on its Siren Mode Keypad.

The Hi/Lo Siren tones can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.10.1.5

Direct Manual

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds the RM-defined Manual Tone of the Siren option.



See also the [Manual on page 570](#) button-press. This feature is available on a radio-wide basis.



IMPORTANT:

When a VIP Input is programmed for Horn Ring operation, an initiated Direct Manual button-press activates Siren operation and selects the RM-defined Manual Tone. This Manual Tone then sounds when the vehicle's Horn Ring is pressed, and ends when the Horn Ring is released.

When a VIP Input is not programmed for Horn Ring operation, an initiated Direct Manual button-press activates Siren operation and selects the RM-defined Manual Tone. This Manual Tone sounds when the Direct Manual button is pressed and ends when the button is released.

If the radio is already sounding a Direct Wail, Direct Yelp, or Direct Hi/Lo Siren tone, the selected Siren tone is changed by pressing the Direct Manual button.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Manual** button on its Siren Mode Keypad.

The Manual Siren mode can also be enabled as one of a sequence of radio actions, known as Consolidated Actions.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.10.1.6

Direct Wail

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds a "Wail" Siren tone.



See also the [Wail on page 571](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Wail** button on its Siren Mode Keypad.

The Wail Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.10.1.7

Direct Yelp

This button-press allows you to directly activate and deactivate a Siren broadcast that sounds a "Yelp" Siren tone.



See also the [Yelp on page 571](#) button-press. This feature is available on a radio-wide basis.



NOTE:

In addition to this programmable button selection, the O9 Control Head has a dedicated **Yelp** button on its Siren Mode Keypad.

The Yelp Siren tone can also be enabled as one of a sequence of radio actions, known as Consolidated Actions. See also: Siren Type.

If the Siren is already on, pressing a Direct Siren function (Direct Hi/Lo, Direct Manual, Direct Wail, or Direct Yelp) that is different from the current selection leaves the Siren on and switches to the selected Siren function.

If the Siren is already on, pressing the Direct Siren function that is currently selected turns the Siren Off.

4.10.1.8

Gunlock (1,2,3, or All)

These four separately programmed button-presses, Gunlock 1, Gunlock 2, Gunlock 3 and Gunlock All, allow you to unlock Gunlock 1, 2, or 3, or all Gunlocks simultaneously.

This feature is available while operating in Conventional or Trunking communications mode.



WARNING: Control of a Gunlock is accomplished through one of the radio's VIP Out pins, where a "Gunlock 1" button-press activates the VIP Out chosen as "Gunlock 1", and so on. Therefore, first select Gunlock 1, Gunlock 2, or Gunlock 3 as a VIP Out; otherwise the corresponding button selection is invalid.



IMPORTANT:

Immediately following the button-press, the corresponding VIP Out remains active for the amount of time selected in the [Relock Timer on page 395](#) field.

- "Relock Timer 1" (that is, the first record/row) applies to a Gunlock 1 button-press, and so on.
- While the VIP Out is still active, pressing the corresponding Gunlock button again restarts the Relock Timer.
- If the Relock Timer field is set to "Momentary", the corresponding VIP Out deactivates immediately with the release of the Gunlock button (thereby re-locking the Gunlock); you must keep the button pressed with one hand while using the other hand to remove the gun.

4.10.1.9

Keypad Digit

Select this function to retain the standard operation for the associated Keypad button.



IMPORTANT: On a Portable radio, this is the only available function of the Star (*) and Pound/Hash (#) buttons.

4.10.1.10

MS01–MS13

These button assignments allows you to program these buttons with frequently used or any desired zone and channel combination.

The programming and use of these buttons is very similar to the programming and use of a car radio's preset buttons. That is, a long-press programs a button with the radio's current zone and channels; then

once programmed, the short-press of that button jumps the radio to the programmed zone and channel. This feature is available while operating in Conventional or Trunking communications mode.



IMPORTANT:

The [Short Keypress Duration on page 430](#) and [Long Keypress Duration on page 432](#) are both programmed.

The APX™ 3000 Portable only supports MS01 and MS02.

4.10.1.11

Public Address (PA)

This button-press allows you to activate and deactivate the Public Address (PA) system, which routes microphone audio through an external speaker system.



This feature is available on a radio-wide basis.



IMPORTANT: If the Public Address and Siren options are both on at the same time, pressing the PTT button overrides any Siren function. Any Siren tone or incoming radio signals (if in External Radio mode) is abruptly muted to give the Public Address priority operation.



NOTE: In addition to this programmable button selection, the O9 Control Head has a dedicated **Public Address** button.

4.10.1.12

Relay Pattern

This button-press allows you to activate and deactivate a Relay (Lightbar) Pattern.



NOTE: The dedicated Directional Buttons on the O9 Control Head are typically assigned Left Alley, Right Alley, and Take Down Relay (Lightbar) Patterns.



WARNING: You cannot duplicate the same Relay Pattern on more than one Directional Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection; however, Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button.



NOTE:

Relay Patterns are defined in the Universal Relay Controller Page.

You may also execute a Relay Pattern as one of a sequence of radio actions, known as Consolidated Actions. See also: Relay Pattern.



IMPORTANT: If the [Universal Relay Controller Equipped on page 382](#) field is **Enabled** and the URC is not connected at power-up, or is disconnected while the radio is on, then initiating a Relay Pattern button-press causes the radio to sound a bad "bonk".

4.10.1.13

Third Party

This button-press allows you to initiate functionality in third-party accessories, such as compatible Whelen® Sirens.

 **WARNING:** When the Dual Radio [Radio Selection on page 361](#) field is set to **Primary Radio** or **Secondary Radio**, this selection must be made for both Conventional and Trunking, where applicable, in order to be considered valid.

4.10.2

General Keypad Index (Keypad)

Selects the Relay Pattern List member (by name) for a 3x4 alphanumeric Keypad button (0 through 9, # and *) on a Mobile Control Head or Keypad Mic (KPM). The Keypad Button Feature of the same record/row must first be set to Relay Pattern. This selection applies on a radio-wide basis.



 **WARNING:** Do not duplicate the same Relay Pattern on more than one Directional Button, Top Function Programmable Button, or Bottom Function Programmable Button **Index** selection; however, Relay Patterns assigned to one of these programmable buttons can be duplicated on a Keypad Button.

4.11

Multi-Function Knob (MFK)

This section allows you to view or define the button-press and rotary functions for the Multi-Function Knob (MFK), available on O2 and O7 Mobile Control Heads.



This selection applies to Conventional and Trunking communications mode, and are model/option dependent on a per-radio basis.

 **WARNING:** Do not duplicate a function on multiple user-control types, or on more than one Control Head button. This may cause you confusion and may sometimes disable a radio feature.

4.12

Display

The **Display** allows you to view or modify settings on a radio-wide basis for a radio's display and menu options.

4.12.1

General

This section allows you to view or define basic radio-wide settings relating to the appearance and the functionality of the radio's display.

4.12.1.1

Zone Text Size

This field selects the maximum number of characters allocated in the radio's front display for Zone Names. This selection applies on a radio-wide basis.

 **NOTE:** Zone names/descriptions are defined in the Zone Channel Assignment [Zone Names on page 1284](#) field.

You can select Zones with a [Zone Select on page 513](#) switch-toggle or Zone Select menu-selection.

Accessed Only: When the radio is model/option capable.

Whole numbers 0 to 14 are supported.

4.12.1.2

Slow Scroll Count

This field selects the number of menus scrolled through on the display before the radio switches to the Fast Scroll Rate.

This feature applies on a radio-wide basis for Conventional and Trunking communications modes.

Table 113: Range

Minimum	Maximum
0 menus	255 menus

4.12.1.3

Channel Text Size

This field selects the maximum number of characters allocated in the radio's front display for the Channel names.

This selection applies on a radio-wide basis.

 **NOTE:** Channel names/descriptions are defined in the Zone Channel Assignment Channel Name field. You can select channels with a Channel Select button-press, Channel Select switch-toggle or Channel Select menu-selection.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Range

Whole numbers 1 to 14.

4.12.1.4

Out of Range Indicator

This field selects the alert type used by the radio to indicate when it has left the coverage area of the Trunking System.

This feature applies for Trunking and DVRS-enabled P25 Conventional communications.

The following selections are supported:

No Indication

Feature disabled (in other words, no indication is given to you when the radio is in an out-of-range condition).

Alert Only

Audible indicator only. See also Out of Range Tone.

Display Only

The radio's display alternates between showing **NO SYS** (No System) and the radio's current zone and channel.

Alert & Display

Audible and visual indicators (see "Alert Only" and "Display Only" above).

4.12.1.5

Searching Site Indicator

This field allows you to select the alert type used by the radio to indicate when the radio is not usable when searching for a control channel in Land Mobile Radio (LMR) or connecting to SmartConnect.

Table 114: Types of Alert Selections

Alert Selection Types	Description
No Indication	The feature is disabled and no indication is displayed when the radio is searching for an LMR site or connecting to SmartConnect.
Display Only	The display shows <i>Searching Site</i> .

4.12.1.6

Out of Range Early Detection

If this field is checked, the radio performs quicker detection of an Out of Range condition in less than one minute.

If this field is unchecked, the radio performs the traditional detection of an Out of Range condition.

4.12.1.7

Top Zone Text Size

This field selects the maximum number of characters that can compose the Top Display Zone Name field for the radio's top display, and/or the optional Display Remote Speaker Microphone (DRSM).



 **IMPORTANT:**

- Zone names for the radio's top display are defined in the Zone Channel Assignment Top Display Zone Name field. Entries to that string field that are greater than this Top Zone Text Size value are considered invalid by the CPS.
- When the total number of characters of this Top Zone Text Size field and the Top Channel Text Size field is less than 8, then the Top Display Zone Name and the Top Display Channel Name can appear at the same time in the radio's top display. The Zone Name appears to the left of the Channel Name.
- When the total number of characters of this Top Zone Text Size field and the Top Channel Text Size field is greater than 8, then the Top Display Zone Name and the Top Display Channel Name alternate in the radio's top display.

Whole numbers 0 to 8 are supported.

4.12.1.8

Out Of Range Hold Off Timer

Selects the amount of hold off time for the Out of Range indicators to be prompted.

4.12.1.9

Imbalanced Coverage Indicator

This field selects the alert type used by the radio to indicate reduced communications due to unaffiliated status of the radio.

The unaffiliated status occurs when the radio is operating in an area of imbalanced coverage. This condition is detected upon retry failure of inbound communications. Imbalanced Coverage may take a few minutes to clear. This feature applies for Trunking and DVRS-enabled P25 Conventional communications.



NOTE: An Out of Range Indicator should be enabled when using this feature to indicate to you that Imbalanced Coverage Indicators alerts have stopped because the radio is out of range.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

No Indication

Feature disabled No indication is given to you when the radio is in an imbalanced coverage condition.

Alert Only

Audible indicator only.

Display Only

The radio's display alternates between showing **NO COMMS** (No Communications) and the radio's current zone and channel.

Alert & Display

Audible and Visual indicators (see "Alert Only" and "Display Only" above).

4.12.1.10

Top Channel Text Size

This field selects the maximum number of characters that can compose the Top Display Channel Name field for the radio top display, and/or the optional Display Remote Speaker Microphone (DRSM).



IMPORTANT:

- Channel names for the radio's top display are defined in the Zone Channel Assignment Top Display Channel Name field. Entries to that string field that are greater than this Top Channel Text Size value are considered invalid by the CPS.
- When the total number of characters of the Top Zone Text Size field and this Top Channel Text Size field is less than 8, then the Top Display Zone Name and the Top Display Channel Name can appear at the same time in the radio's top display. The Zone Name appears to the left of the Channel Name.
- When the total number of characters of the Top Zone Text Size field and this Top Channel Text Size field is greater than 8, then the Top Display Zone Name and the Top Display Channel Name alternate in the radio's top display.

Accessed Only: When the radio is model/option capable.

Whole numbers 0 to 8 are supported.

4.12.1.11

Site Trunking Indicator

This field selects the type of Site Trunking Indicator. Site Trunking is a unique Trunking mode that is considered to be an interim mode between SmartZone and Failsoft mode.

On a SmartZone system, if the zone controller goes down, the current site sends out a message indicating that it is now in Site Trunked mode. It will continue to send out this message until the zone controller comes back on-line. This selection applies when in SmartZone operation for all Trunking Systems and Trunking Personalities.



IMPORTANT: If Site Trunking communications should also fail, the radio goes into a Failsoft mode.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

No Indication

Feature disabled.

Alert Only

Audible indicator only.

Display Only

Enables the "Site Trunking" message to appear in the radio's display.

Alert & Display

Audible and Visual indicators (see "Alert Only" and "Display Only" above).

4.12.1.12

Top Display Orientation

This field selects the default orientation of the top display of the radio, allowing you to flip the visual arrangement by 180 degrees, depending on your preference.



The Light/Flip (Display) programmable button selection allows you to change this orientation when needed. This selection applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

- Normal
- Inverted

4.12.1.13

Save Day Night Mode

This field enables the radio to save the state of the O2/O7/O9 Control Head's Day/Night Mode over a radio power cycle.



You can toggle this state with the O9 Control Head's dedicated Day/Night Mode button, or with a long keypress of the Brightness button on the O2/O7/E5 Control Heads. This feature applies on a radio-wide basis. When disabled, the Control Head always powers up in Day Mode.

Accessed Only: When the radio is model/option capable, and when the Dual Radio - Radio Selection field is not set to **Secondary Radio**.

4.12.1.14

DRSM Display Orientation

This field selects the default orientation of the display on a Display Remote Speaker Microphone (DRSM), allowing you to flip the visual arrangement by 180 degrees, depending on your preference.



The Light/Flip (Display) programmable button selection allows you to change this orientation when needed. This selection applies on a radio-wide basis.

Applies Only: When a DRSM is attached to the radio.

Accessed Only: When the radio is model/option capable.

Selections

- Normal
- Inverted

4.12.1.15

System Registration Indicator

This field selects the alert type used by the radio to indicate the status of the system registration process in the event that the subscriber failed to register on the system.

This feature applies to APCO P25 (ASTRO 25) Trunking communications.

The following selections are supported:

No Indication

Feature disabled.

Alert Only

Audible indicator only.

Display Only

The radio's display shows one of two possible messages: "Sys Reg Refused" (System Registration Refused) or "Sys Auth Failed" (System Authentication Failed).

Alert & Display

Audible and visual indicators (see "Alert Only" and "Display Only" above).

4.12.1.16

Slow Scroll Rate

This field selects the rate the display Slow Scrolls through a list.

The radio first Slow Scrolls, then it Fast Scrolls after the Slow Scroll Count expires. This feature applies on a radio-wide basis for Conventional and Trunking communications modes.

Table 115: Range

Minimum	Maximum	Increments
250 (ms)	6250 (ms)	250 (ms)



NOTE: The Slow Scroll Rate must be higher than or equal to the Fast Scroll Rate.

4.12.1.17

DVRS Local Only Indicator

This field selects the alert type used by the radio to indicate a Digital Vehicular Repeater System (DVRS) **Local Mode** condition.

This feature applies to DVRS Conventional communications.

Selections

No Indication

Feature disabled.

Alert Only

Audible indicator only.

Display Only

The radio's display shows one of two possible messages.

Alert & Display

Audible and visual indicators (see "Alert Only" and "Display Only" above).

4.12.1.18

Lock Menu Item

This field determines the item from the Selected Menu Items and sets that item to always appear in the radio menu. This display occurs even as you scroll through the soft menu buttons.



NOTE:

If the selected item is not enabled on the current radio personality, this item does not appear in the radio menu.

This field is only applicable for APX Standard and APX N30/N50 radios.

The following selections are supported:

None

No menu items are locked to the soft menu buttons.

1

The first item of the Selected Menu Items is locked to the first soft menu button.

2

The second item of the Selected Menu Items is locked to the second soft menu button.

3

The third item of the Selected Menu Items is locked to the third soft menu button.

4

The fourth item of the Selected Menu Items is locked to the fourth soft menu button.

5

The fifth item of the Selected Menu Items is locked to the fifth soft menu button.

4.12.1.19

Fast Scroll Rate

This field selects the rate the display Fast Scrolls through a list.

The radio first Slow Scrolls, then it Fast Scrolls after the Slow Scroll Count expires. This feature applies on a radio-wide basis for Conventional and Trunking communications modes.

Table 116: Range

Minimum	Maximum	Increments
250 (ms)	6250 (ms)	250 (ms)



NOTE: The Fast Scroll Rate must be lower than or equal to the Slow Scroll Rate.

4.12.2

Advanced

This section allows you to view or define diverse and complex radio display functionality on a radio-wide basis.

4.12.2.1

Radio Display Language

This field allows you to select the language to be used in the radio display. This selection applies on a radio-wide basis.



NOTE:

Prior to Release R08.00.00, English and non-English language support was embedded in the radio's firmware.

Starting with Release R08.00.00, non-English language support is accomplished with external Language Pack (LP) files. Therefore, when the Radio Display Language is not English, the appropriate LP files are copied to the radio during a Write, Clone, or FLASHing (see also: Upgrade Radio Language).



WARNING:

Chinese and Arabic Character Restrictions: When the Radio Display Language is set to **Chinese (Traditional)** or **Arabic**, for recognizable Name/Alias Fields where you are able to validly enter up to 14, 8, or 4 characters into the text box (the limit depends on the particular field), if you enter text containing Chinese (Traditional) or Arabic characters, then only 8, 6 or 2 characters respectively can fit in the radio's display.

Hebrew and Arabic Guidelines: When the Radio Display Language is set to **Hebrew** or **Arabic**, the application language should also be set to match the **Hebrew** or **Arabic** selection so that character strings (such as [Zone Names on page 1284](#)) will be displayed using the same Right-to-Left rules on the radio display and in the application.

Diacritics: Diacritics are not supported as the radio's display is unable to represent them.

Numbers: Numbers entered from the radio's keypad are always shown as 0–9.

Write, Clone or FLASHing Error Messages: If during a radio codeplug-Write, codeplug-Clone, or a FLASHing and you receive the error message **Radio does not have enough free space to support the Radio Display Language selected**, you must select another Radio Display Language and then perform a Write or Clone again.

Write, Clone or FLASHing Error Messages: If during the application to radio codeplug-Write, codeplug-Clone, or a FLASHing (when this Radio Display Language is set to a non-English language) and you receive the error message **RadioLanguagePacks folder of the CPS install is empty**, or you receive the error message **One or more files in the RadioLanguagePacks folder of the CPS install is corrupted**, then you must re-install the application version R08.00.00 or later.



NOTE: The application installation copies all supported radio Language Packs (encrypted *.LPK files) to your computer system.



NOTE: When Radio Display Language is **English**, no Language Pack (LP) files are written to the radio since English is the radio's default language. Therefore, anytime a non-English LP is not successfully installed on the radio, English text is always available to appear in the radio's display.

The application supports the following languages:

- English
- French
- Spanish
- Portuguese
- Hebrew
- Russian
- Chinese (Traditional)
- Arabic

The radios support the following languages:

- English (Australia)
- English (United States)
- French (Canada)
- Portuguese (Brazil)
- Spanish (Argentina)
- Spanish (Chile)
- Spanish (Colombia)
- Spanish (Mexico)



NOTE:

When the Radio Display Language is first set to a non-English language, the Write, Clone, FLASHing times take noticeably longer.

Depending on the Upgrade Radio Language setting, subsequent updates can be quicker.

4.12.2.2

Temporary Message Display Time

This field selects the length of time that a temporary message appears in the radio display.

This selection applies on a radio-wide basis.

Table 117: Range

Minimum	Maximum	Increments
250 (ms)	6250 (ms)	250 (ms)

4.12.2.3

Auto Light

This field causes the radio front display, keypad, rotary switch, and top display backlight to illuminate each time a button, switch, or keypad button is pressed (except for the PTT button, Emergency button, or Monitor).



The lights stay illuminated for the amount of time specified in the [Display Light Time on page 782](#) field. When disabled, the Light/Flip (Display) selection turns the displays and keypad light on and off.

This selection also applies to a portable Accessory that has a display, such as the Display Remote Speaker Microphone (DRSM). This selection applies on a radio-wide basis.

Accessed Only: When the [Display Light Time on page 782](#) field is not set to **Infinite**, and the radio is model/option capable.

4.12.2.4

Independent Top Light

This field enables you to initiate radio's Rotary switch to illuminate its rotary light and top display light, and a turn of the Rotary switch on the optional Display Remote Speaker Microphone (DRSM) to illuminate its display light.



The radio's front display and keypad do not light up. This selection applies to both Conventional and Trunking communications modes on a radio-wide basis.



IMPORTANT: The light(s) stay illuminated for the amount of time specified in the Display Light Time field. When the Disable Lights field is enabled, this feature will not turn on.

Accessed Only: When the radio is model/option capable.

4.12.2.5

Backlight While in VA

This field enables the radio's display to have its backlight continuously on when the radio is plugged into the Vehicular Adapter (VA).



Any key press that would normally affect the status of the backlight is ignored (see also [Auto Light on page 781](#), Independent Top Light, and the Light / Flip (Display) button-press). When the radio is removed from the VA, button-presses affecting the backlight resume normal operation.

Accessed Only: When the radio is model/option capable.

4.12.2.6

Feature Inactivity Timeout

This field selects the amount of time the radio waits for your input before exiting to the highest level of the menu's navigation.

This selection applies on a radio-wide basis.



NOTE: This selection is also referenced by the [Feature Inactivity Alert Tone Selection on page 783](#) Selection.

The following selections are supported:

Timed Selections Include:

3 (seconds) To 120 (seconds)

In Increments = 1 (seconds)

"Infinite":

Menu navigation does not timeout

4.12.2.7

Display Light Time

This field selects the amount of time that the radio's Rotary switch, displays, and keypad lights remain illuminated once you press the Light/Flip (Display) button.



NOTE: This feature also applies to the display light on the Display Remote Speaker Microphone (DRSM) accessory. Time is in seconds. This selection applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

 **NOTE:** When set to **Infinite**, the display and keypad lights remains on until the [Light/Flip \(Display\) on page 487](#)) button is pressed.

Table 118: Range

Minimum	Maximum	Increments
5 sec	60 sec	5 sec

4.12.2.8

Feature Inactivity Alert Tone Selection

This field selects the Feature Inactivity Alert Tone type for the radio's Feature configuration menus.

This selection applies on a radio-wide basis.

 **IMPORTANT:** Currently the periodic **Inactive Alert Tone** applies to the Call Alert/Page, Select/Private Call, Phone, Status, Message, and TMS configuration menus. Currently the **Feature Inactivity Exit Tone** applies to the Call Alert/Page, Select/Private Call, Phone, Status, Message, TMS, Zone Select, Channel Select, Location, Information, Radio Profiles, Recent Calls, and Contacts configuration menus.

The following selections are supported:

Disabled

Feature Alert Tones are deactivated. This selection is only valid when the Feature Inactivity Timeout field is not set to **Infinite**.

Exit Only

Enables a Feature Inactivity Exit Tone to notify you when the feature menu exits after the menu has been idle for the duration set in the Feature Inactivity Timeout. This selection is only valid when the Feature Inactivity Timeout field is not set to **Infinite**.

Inactivity Only (Factory Default)

Enables a periodic Inactive Alert Tone to notify you that the feature menu is idle.

Inactivity & Exit

Enables both an Inactive Alert Tone and a Feature Inactivity Exit Tone. This selection is only valid when the Feature Inactivity Timeout field is not set to **Infinite**.

4.12.2.9

Alternating Display Time

This field selects the length of time that alternating messages appear in the radio's display.

The Emergency Alarm Rx Indicator Type field is an example of a feature that uses the alternating display functionality, but only when it is set to **Display Only** or **Alert & Display**. This selection applies on a radio-wide basis.

Table 119: Selections

Minimum	Maximum	Increments
250 (ms)	6250 (ms)	250 (ms)

 **NOTE:** ms = milliseconds

4.12.2.10

Status Auto Exit

This field selects the method of how the radio exits the Status configuration menu Status has been sent to the dispatcher.

This selection applies on a radio-wide basis.

Accessed Only: When the [Feature Inactivity Timeout on page 782](#) is set to **Infinite**.

The following selections are supported:

On Successful Ack

The Status menu exits and the radio returns to normal dispatch operation only upon a successful acknowledgement from the Fixed Network Equipment (FNE)/dispatcher; the Status menu remains active if an acknowledgment is not received or the Status is denied.

Always

The Status menu automatically exits once an acknowledgement is received, or (in the case of Conventional dispatch) after all Status Number of Attempts have completed.

4.12.2.11

Channel Color Backlight

This field enables the backlight color for supported devices to change per channel.



Colors are configured on a per channel basis from the [Channels on page 1294 - Channel Color Backlight Selection on page 1299](#) field.

When changing channels, the backlight for the following devices changes to the assigned color:

- Top display
- Keypad (on supported models only)
- Top light bar indicator
- Accessories such as Display Remote Speaker Microphone (DSRM) and Human Interface Device (HID) Keypad Mic that are attached to a Vehicular Adapter (VA)



WARNING: When this field is enabled, the following fields must be enabled;

- [Independent Top Light on page 781](#)
- [Disable Emergency Notification on page 813](#)
- [Disable Critical Notification on page 813](#)
- [Disable Call Notification on page 814](#)

4.12.2.12

Channel Color Backlight (E5)

This field enables the font color for the channel name and the background color of the soft menus on the E5 Control Head change per channel on a radio wide basis.



IMPORTANT: This feature is only applicable to the E5 Control Head.

The colors can only be configured through the application. Colors are selected for use on a per channel basis from the [Channel Color Backlight Selection on page 1299](#) field.

When changing channels, the font color for the channel name, the background color of the soft menus, the backlight on the control knobs and buttons, Accessories with backlight capability such as Human Interface Device (HID) Keypad Mic or Handset that is attached to the E5 Control Head will change to the color assigned in the [Channel Color Backlight Selection on page 1299](#).

Accessed Only: When Radio Selection is set to Standalone Radio.

The following selections are supported:

Disabled

Feature is disabled.

Use Accessory Keypad Backlight

The font color for the channel name, the background color of the soft menus, the backlight on the control knobs and buttons, Accessories with backlight capability such as Human Interface Device (HID) Keypad Mic or Handset that is attached to the E5 Control Head will change to the color assigned in the [Channel Color Backlight Selection on page 1299](#).

Expanded Color Options

The font color for the channel name and the background color of the soft menus will change to the color assigned in the [Channel Color Backlight Selection on page 1299](#). The backlight color of the control knobs and buttons, Accessories with backlight capability such as HID Keypad Mic or Handset that is attached to the E5 Control Head remains the default one.

4.12.3

ID Display

This section allows you to view or modify PTT ID and Talkgroup functionality on the radio's display.

A PTT ID is transmitted when the PTT button is pressed for an MDC or ASTRO type Conventional System; therefore these PTT ID features apply only for Conventional communications channels.

4.12.3.1

PTT ID Display

This field selects the type of incoming transmission that qualifies for PTT ID display.

PTT ID Display enables the Caller ID of a Call List Contact Name to appear within the radio's display; if no Call List Contact Name exists, then the current Caller's PTT ID is displayed. This feature applies on a radio-wide basis for Conventional communications channels.

The following selections are supported:

- Disabled
- Dispatch
- Dispatch and Scan

4.12.3.2

End of Voice Timer

This field selects the amount of time that a PTT ID from another radio appears in this radio's display once the transmission is terminated.

This feature applies on a radio-wide basis for Conventional communications channels.



IMPORTANT: When this field is set to **0** seconds, a PTT-ID set to **Trailing Edge** sent from other radios does not have time to be seen within the current radio's display.

Accessed Only: When the [PTT ID Display on page 785](#) field is set to **Dispatch** or **Dispatch & Scan**, or when the Display Peer Location field is enabled.

Table 120: Range

Minimum	Maximum	Increments
0 seconds	7 seconds	1 second

4.12.3.3

Talkgroup Display On PTT

This field enables display of the ASTRO Talkgroup List, Talkgroup Alias Text or the Talkgroup ID when the PTT button is pressed.

If the Talkgroup Alias feature is enabled, then the Talkgroup Alias Text will be displayed. Otherwise, the Talkgroup ID will be displayed. Enabling this field will take precedence over the setting of the Display On PTT field. This feature applies on a radio-wide basis for Conventional communications channels.

Accessed Only: When the radio is model/option capable.

4.12.3.4

Prefix ID Text Size

This field selects the number of characters to be used for the Radio IDs, Call Alerts, and Emergency Mode numbers.

This feature applies on a radio-wide basis for Conventional communications channels.

Accessed Only: When the PTT ID Display field is set to **Dispatch** or **Dispatch & Scan**

Whole numbers 1 to 6 are supported.

4.12.3.5

Talkgroup Display On Mode Change

This field enables display of the ASTRO Talkgroup List, Talkgroup Alias Text or the Talkgroup ID upon channel change.

If the Talkgroup Alias feature is enabled, then the Talkgroup Alias Text will be displayed. Otherwise, the Talkgroup ID will be displayed. Enabling this field will take precedence over the setting of the Display on Mode Change field. This feature applies on a radio-wide basis for Conventional communications channels.

Accessed Only: When the radio is model/option capable.

4.12.3.6

Display

This field allows you to define recognizable text that prefixes the displayed PTT ID, Emergency ID or Call Alert ID number in the current record/row of the ID Display Table.

The field's length is determined by the Prefix ID Text Size field. This feature applies on a radio-wide basis for Conventional communications channels.

Accessed Only: When the PTT ID Display field is set to **Dispatch** or **Dispatch and Scan**.



NOTE:

Up to six (6) characters (as determined by the Prefix ID Text Size field), including numbers, letters and special characters may be used.

Examples: ID, EMERG, Elec01, CALL

4.12.3.7

Talkgroup Display On Receive

This field enables display of the ASTRO Talkgroup List, the Talkgroup Alias Text or the Talkgroup ID upon unmuting to a call.

If the Talkgroup Alias feature is enabled, then the Talkgroup Alias Text will be displayed. Otherwise, the Talkgroup ID will be displayed. This feature applies on a radio-wide basis for Conventional communications channels.

Accessed Only: When the radio is model/option capable.

4.12.4

Backlight Color Control

This section allows you to view or define the settings related to the desired color for the radio's display window.



This feature allows you to change the radio backlight color with the Color menu-selection.

4.12.4.1

Default Backlight Color

This field selects the default color of the light that illuminates the background area of the radio's display.



This is accomplished by the composition of backlight colors illuminating from Red and Green LEDs. The intensity level of each LED is represented by a percentage number. By raising or lowering the percent intensity of the Red or the Green LED, you can select from the possible colors.



IMPORTANT:

- The Default Backlight Color can only be one of first five record/row selections in the Backlight Color table, either one of the four pre-defined colors or the **Custom** color (record 5). You cannot change the composition of backlight color for these five colors. In this way, you can determine the default backlight color composition for all radios. You can rename the color through the Color Text field.
- You can change the composition of the colors of the five **My Color** selections, but cannot be selected as the Default Backlight Color. You can select any of the 10 backlight color selections through the Color menu-selection, but the default will be the one defined by the Default Backlight Color field.
- The codeplug's dynamic block restores the last setting. If the backlight color is changed through the Color menu-selection, the default value must also be changed to a new selection before the radio is reprogrammed. Otherwise, the radio will power up with the last-selected backlight color, not the default color value.

Accessed Only: When the radio is model/option capable.

Selections

- Amber
- Red
- Green
- Orange
- Custom

4.12.4.2

Color Text

This field allows you to define recognizable names for the current Backlight Color (record/row).



IMPORTANT:

The [Default Backlight Color on page 787](#) can only be one of the first five record/row selections in the Backlight Color table, either one of the four pre-defined colors or the **Custom** color (record 5). You cannot change the composition of the backlight color for these five colors. In this way, you can determine the default backlight color composition for all radios under their control.

You can change the composition of colors for any of the last five record/row selections in the Backlight Color table (by default, these are named **My Color** 1 through 5). These selections cannot be selected as the [Default Backlight Color on page 787](#).

You may select any of the ten backlight color selections with the Color menu-selection.

Accessed Only: When the radio is model/option capable.

Examples: Apple, Yellow.

Characters, numbers, spaces, and special characters can be used.

A total of 14 characters are possible.

4.12.4.3

Red %

This field selects the intensity level of the Red backlight LED within the radio's display.



When combined with the selected [Green % on page 789](#) intensity of the Green backlight LED (also within the radio's display), this combination of Green and Red determines the color that will illuminate the background area of the radio's display. The intensity level of each LED is represented by a percentage number.



IMPORTANT:

You can change the composition of colors for any of the last five record/row selections in the Backlight Color table (by default, these are named **My Color** 1 through 5); hence, these selections cannot be selected as the [Default Backlight Color on page 787](#).

You may select any of the ten backlight color selections with the Color menu-selection.

Accessed Only: When a record/row from the 5th to 10th is selected in the Backlight Color table and when the radio is model/option capable.

4.12.4.4

Green %

This field selects the intensity level of the Green backlight LED within the radio's display.



When combined with the selected [Red % on page 789](#) intensity of the Red backlight LED (also within the radio's display), this combination of Green and Red determines the color of the **Custom** or **My Color** selection that will illuminate the background area of the radio's display. The intensity level of each LED is represented by a percentage number.



IMPORTANT:

You can change the composition of colors for any of the last five record / row selections in the Backlight Color table (by default, these are named **My Color** 1 through 5); hence, these selections cannot be selected as the [Default Backlight Color on page 787](#).

You may select any of the ten backlight color selections with the Color menu-selection.

Accessed Only: When a record/row from the 5th to 10th is selected in the Backlight Color table, and when the radio is model/option capable.

4.12.5

Test Mode

This section allows you to view or define a password requirement for entering the radio's Test Mode.

On a portable, the Test Mode is entered by pressing the Side-Bottom button 5 times.



WARNING:

This password must be comprised of standard numeric values that can be easily entered from the radio keypad.

You are not allowed access to the radio's Test Mode if the Test Mode [Test Mode Password on page 790](#) field is left blank. In this case, entering Test Mode causes the radio to show `Password:Incorrect.`

If the [Test Mode Password Enabled on page 790](#) feature is enabled on a radio that does not have a keypad, you are still prompted for a password. However, you have no means to enter the required password and the radio is effectively blocked from entering Test Mode. You must power the radio off then on to return to the normal operating mode.

4.12.5.1

Test Mode Password Enabled

This field enables the requirement of a password in order to access the radio's Test Mode.

On a portable, the Test Mode is entered by pressing the Side-Bottom button 5 times. This setting applies on a radio-wide basis.



WARNING:

- This password must be comprised of numeric values only that may be easily entered from the radio keypad.
- You are not allowed access to the radio's Test Mode if the Test Mode Password field is left blank. In this case, entering Test Mode causes the radio to show **Password:Incorrect.**
 - If this feature is enabled on a radio that does not have a keypad, you are still prompted for a password. However, they have no means to enter the required password and the radio is effectively blocked from entering Test Mode. You must power the radio off then on to return to the normal operating mode.

4.12.5.2

Test Mode Password

This field defines your needed password that grants access to the radio's Test Mode.

On a portable, the Test Mode is entered by pressing the Side-Bottom button 5 times. This setting applies on a radio-wide basis.



WARNING:

This password must be comprised of numeric values only that may be easily entered from the radio keypad.

You are not allowed access to the radio's Test Mode if this password field is left blank. In this case, entering Test Mode causes the radio to show **Password:Incorrect.**

If the Test Mode Password Enabled feature is enabled on a radio that does not have a keypad, you are still prompted for a password. However, they have no means to enter the required password and the radio is effectively blocked from entering Test Mode. You must power the radio off then on to return to the normal operating mode.

Accessed Only: When the Test Mode Password Enabled field is **Enabled**.

4.13

Noise Reduction Configuration

4.13.1

Radio Noise Reduction Profile

This section allows you to view or define transmit noise reduction parameters for the internal microphones that target specific noise conditions.

These settings apply on a radio-wide basis.



NOTE: Noise Reduction improves voice clarity by reducing background noise. Noise Reduction occurs on the transmitting radio before transmission (in analog mode) and before voice coding (in digital mode). Not only does reducing background noise improve voice clarity for an analog mode transmission. In digital mode, a cleaner speech signal going into the voice-encoder (vocoder) results in clearer voice being received and decoded in the receiver.



WARNING:

These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.13.1.1

Radio Noise Reduction Profile Name

This field allows you to view or define recognizable names for the current Radio Noise Reduction Profile.



IMPORTANT: The [Radio Profiles on page 811](#) - Internal Mic Noise Reduction Settings are recommended for most noise environments.



WARNING:

These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.



NOTE:

Examples: PER-001, #500, Ext Mic NR 3, # A5

Characters, numbers, spaces, and special characters can be used.

A total of 14 characters are possible.

4.13.1.2

Status VAD DET COUNT

These settings allow you to adjust noise reduction parameters for specific noise conditions.



IMPORTANT:

The [Radio Profiles on page 811](#) - Radio Noise Reduction Settings are recommended for most noise environments.



WARNING:

These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 121: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.1.3

E Wind MAXS VECTOR

These settings allow you to adjust noise reduction parameters for specific noise conditions.



IMPORTANT:

The [Radio Profiles on page 811](#) - Radio Noise Reduction Settings are recommended for most noise environments.

This parameter has an effective range of 31 coefficient values of 16 bits each, which translates into 124 BCH (4-bit nibble) characters. However, this requires entering 32 coefficient values. When entering in the coefficients for this vector, the 32nd value is the right-most (or least significant) value - in other words, the last four BCH characters. Be sure to make this 32nd value the same as the 31st. The digital signal processor (DSP) of the radio ignores the 32nd value.



WARNING:

These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.13.1.4

Bad Mic INACTIVE THRESH DBQ8

These settings allow you to adjust noise reduction parameters for specific noise conditions.

 **IMPORTANT:**
The [Radio Profiles on page 811](#) - Radio Noise Reduction Settings are recommended for most noise environments.

 **WARNING:**
These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 122: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.1.5

E Wind NBANDS

These settings allow you to adjust noise reduction parameters for specific noise conditions.

 **IMPORTANT:**
The [Radio Profiles on page 811](#) - Radio Noise Reduction Settings are recommended for most noise environments.

 **WARNING:**
These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 123: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.1.6

Bad Mic SDIFF THRESH DBQ8

These settings allow you to adjust noise reduction parameters for specific noise conditions.



IMPORTANT:

The [Radio Profiles on page 811](#) - Radio Noise Reduction Settings are recommended for most noise environments.



WARNING:

These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 124: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.1.7

DINC ABF SS

These settings allow you to adjust noise reduction parameters for specific noise conditions.



IMPORTANT:

The [Radio Profiles on page 811](#) - Radio Noise Reduction Settings are recommended for most noise environments.



WARNING:

These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 125: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.1.8

Bad Mic NDIFF THRESH DBQ8

These settings allow you to adjust noise reduction parameters for specific noise conditions.

 **IMPORTANT:**
The [Radio Profiles on page 811](#) - Radio Noise Reduction Settings are recommended for most noise environments.

 **WARNING:**
These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 126: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.1.9

HOTBEAM DET THRESH DBQ8

These settings allow you to adjust noise reduction parameters for specific noise conditions.

 **IMPORTANT:**
The [Radio Profiles on page 811](#) - Radio Noise Reduction Settings are recommended for most noise environments.

 **WARNING:**
These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 127: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.1.10

Bad Mic R THRESH DBQ8

These settings allow you to adjust noise reduction parameters for specific noise conditions.



IMPORTANT:

The [Radio Profiles on page 811](#) - Radio Noise Reduction Settings are recommended for most noise environments.

Although this field shows the value as an unsigned value, the radio firmware interprets the Hex value as a signed value. Therefore, enter the desired signed value in the Hex (right-most) box, not the Decimal box. For example, if you want to enter -1E00 (-7680), you would enter E200 (the 2's complement) in the Hex box. The Decimal box still shows 57856 but the firmware interprets E200 as a negative number in the radio.



WARNING:

These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 128: Range

Minimum	Maximum
-1E00 (Hex)	0

4.13.1.11

DWF MIN GAIN

These settings allow you to adjust noise reduction parameters for specific noise conditions.



IMPORTANT:

The [Radio Profiles on page 491](#) - Radio Noise Reduction Settings are recommended for most noise environments.



WARNING:

These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 129: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.1.12

DINC OUTPUT EQ VECTOR

This setting allows you to change the DINC (Dual Input Noise Canceller) OUTPUT EQ VECTOR parameter for the internal microphone.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail. Go to the Radio Noise Reduction Window.

4.13.1.13

DWF EXPANSION DEGREE

These settings allow you to adjust noise reduction parameters for specific noise conditions.



IMPORTANT:

The [Radio Profiles on page 811](#) - Radio Noise Reduction Settings are recommended for most noise environments.



WARNING:

These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 130: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.1.14

DINC EP VECTOR

This setting allows you to change the DINC (Dual Input Noise Canceller) EP VECTOR parameter for the internal microphone.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail. Go to the Radio Noise Reduction Window.

4.13.1.15

Status VAD DET THRESH DBQ8

These settings allow you to adjust noise reduction parameters for specific noise conditions.



WARNING:

These custom settings apply only when the Custom Noise Reduction (Radio) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.



IMPORTANT:

The [Radio Profiles on page 811](#) - Radio Noise Reduction Settings are recommended for most noise environments.

Although this field shows the value as an unsigned value, the radio firmware interprets the Hex value as a signed value. Therefore, enter the desired signed value in the Hex (right-most) box, not the Decimal box. For example, if you want to enter -1E00 (-7680), you would enter E200 (the 2's complement) in the Hex box. The Decimal box still shows 57856 but the firmware interprets E200 as a negative number in the radio.

Table 131: Range

Minimum	Maximum
FB50 (Hex, signed)	04B0 (Hex, signed)

4.13.1.16

RADIO AUTO MIN GAIN VECTOR

This vector sets the limits on the min gain for the auto mode of noise suppression.

The following selections are supported:

- RADIO AUTO MIN GAIN VECTOR length must be equal to 8, and
- [X] of RADIO AUTO MIN GAIN VECTOR is from "0" to "32767", and
- [Y] of RADIO AUTO MIN GAIN VECTOR is from "0" to "32767", and
- [Y] is NOT greater than [X].



NOTE: RADIO AUTO MIN GAIN VECTOR is the vector of two 16-bit integers:

Each four hexadecimal numbers represents a 16-bit signed integer. The range for each of the two numbers ([X] and [Y]) is from 0 to 32767 in decimal.

Accessed Only: When the radio is model and option capable.

4.13.1.17

RADIO AUTO NOISE BOUNDS DBQ8

This pair of numbers set the lower and upper noise bounds (in dB relative to full scale) for the automatic control of the noise reduction levels.

The following selections are supported:

- RADIO AUTO NOISE BOUNDS DBQ8 length must be equal to 8, and
- [X] of RADIO AUTO NOISE BOUNDS DBQ8 is from "-23040" to "0", and
- [Y] of RADIO AUTO NOISE BOUNDS DBQ8 is from "-23040" to "0", and

- [X] is NOT greater than [Y].

 **NOTE:** RADIO AUTO NOISE BOUNDS DBQ8 is the vector of two 16-bit integers. Each four hexadecimal numbers represents a 16-bit signed integer. The range for each of the two numbers ([X] and [Y]) is -23040 to 0 inclusive.

Accessed Only: When the radio is model and option capable.

4.13.1.18 **RADIO AUTO RELAXATION BOUNDS**

This vector sets the limits on relaxation with frequency for the auto mode of noise suppression.

The following selections are supported:

- RADIO AUTO RELAXATION BOUNDS length must be equal to 4, and
- [X] of RADIO AUTO RELAXATION BOUNDS is from "0" to "10", and
- [Y] of RADIO AUTO RELAXATION BOUNDS is from "0" to "10", and
- [X] is NOT greater than [Y].

 **NOTE:** RADIO AUTO RELAXATION BOUNDS is the vector of two 8-bit integers. Each two hexadecimal numbers represents an 8-bit signed integer. The range for each of the two numbers ([X] and [Y]) is 0 to 10 inclusive.

Accessed Only: When the radio is model and option capable.

4.13.1.19 **RADIO HOT BEAM MAX ATTENUATION DBQ8**

This field sets the maximum level of attenuation that can be applied to either beam.

Table 132: Range

Minimum	Maximum
1	7680

Accessed Only: When the radio is model/option capable.

4.13.1.20 **RADIO HOT BEAM MIX RATE**

This field controls the automatic hot-beam detection. The higher number switches slowly

Table 133: Range

Minimum	Maximum
1	250

Accessed Only: When the radio is model/option capable.

Table 134: Range

Minimum	Maximum
1	250

4.13.1.21

RADIO PASS FILTER START

This field defines the frequency that is applied by the automatic PASS filter.

Table 135: Range

Minimum	Maximum
1	3999

Accessed Only: When the radio is model/option capable.

4.13.1.22

RADIO SAM CUTOVER FREQUENCY

This field defines the frequency used by the Speaker-as-Mic input.

Table 136: Range

Minimum	Maximum
1	3999

Accessed Only: When the radio is model/option capable.

4.13.1.23

RADIO SAM MIX MODE

This parameter controls how the audio input signal from the Speaker-as-Mic is formed.

Table 137: Range

Minimum	Maximum
0	2

Accessed Only: When the radio is model/option capable.

4.13.2

Accessory Noise Reduction Profile

This section allows you to view or define transmit noise reduction parameters for external microphones that target specific noise conditions.

These settings apply on a radio-wide basis.

 **NOTE:** Noise Reduction improves voice clarity by reducing background noise. Noise Reduction occurs on the transmitting radio before transmission (in analog mode) and before voice coding (in digital mode). Not only does reducing background noise improve voice clarity for an analog mode transmission. In digital mode, a cleaner speech signal going into the voice-encoder (vocoder) results in clearer voice being received and decoded in the receiver.

 **WARNING:** These custom settings apply only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.13.2.1

Accessory Noise Reduction Profile Name

This field allows you to view or define recognizable names for the current Accessory Noise Reduction Profile.

 **WARNING:** The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

 **IMPORTANT:** The Radio Profiles - External Mic Noise Reduction Settings are recommended for most noise environments.

 **WARNING:** These custom settings apply only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

 **NOTE:**
Examples: NRP-001, #500, Ext Mic NR 3, # A5

Characters, numbers, spaces, and special characters can be used.

A total of 14 characters are possible.

4.13.2.2

Status VAD DET COUNT

These settings allow you to adjust noise reduction parameters for specific noise conditions. The Radio Profiles - Accessory Noise Reduction Settings are recommended for most noise environments.

 **WARNING:** This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 138: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.2.3

E Wind DINC EWIND NBANDS

These settings allow you to adjust noise reduction parameters for specific noise conditions. The Radio Profiles - Noise Reduction Settings (Accessory) are recommended for most noise environments.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 139: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.2.4

Bad Mic INACTIVE THRESH DBQ8

These settings allow you to adjust noise reduction parameters for specific noise conditions. The Radio Profiles - Accessory Noise Reduction Settings are recommended for most noise environments.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 140: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.2.5

E Wind MAXS VECTOR

These settings allow you to adjust noise reduction parameters for specific noise conditions.



IMPORTANT:

The Radio Profiles - Accessory Noise Reduction Settings are recommended for most noise environments.

This parameter has an effective range of 31 coefficient values of 16 bits each, which translates into 124 BCH (4-bit nibble) characters. However, this requires entering 32 coefficient values. When entering in the coefficients for this vector, the 32nd value is the right-most (or least significant) value - in other words, the last four BCH characters. Be sure to make this 32nd value the same as the 31st. The digital signal processor (DSP) of the radio ignores the 32nd value.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.13.2.6

Bad Mic SDIFF THRESH DBQ8

These settings allow you to adjust noise reduction parameters for specific noise conditions. The Radio Profiles - Accessory Noise Reduction Settings are recommended for most noise environments.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 141: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.2.7

DINC ABF SS

These settings allow you to adjust noise reduction parameters for specific noise conditions. The Radio Profiles - Accessory Noise Reduction Settings are recommended for most noise environments.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 142: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.2.8

Bad Mic NDIFF THRESH DBQ8

These settings allow you to adjust noise reduction parameters for specific noise conditions. The Radio Profiles - Accessory Noise Reduction Settings are recommended for most noise environments.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 143: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.2.9

HOTBEAM DET THRESH DBQ8

These settings allow you to adjust noise reduction parameters for specific noise conditions. The Radio Profiles - Accessory Noise Reduction Settings are recommended for most noise environments.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 144: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.2.10

Bad Mic R THRESH DBQ8

These settings allow you to adjust noise reduction parameters for specific noise conditions.

 **IMPORTANT:**
The Radio Profiles - Accessory Noise Reduction Settings are recommended for most noise environments.

Although this field shows the value as an unsigned value, the radio firmware interprets the Hex value as a signed value. Therefore, enter the desired signed value in the Hex (right-most) box, not the Decimal box. For example, if you want to enter -1E00 (-7680), you would enter E200 (the 2's complement) in the Hex box. The Decimal box still shows 57856 but the firmware interprets E200 as a negative number in the radio.

 **WARNING:**
This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 145: Range

Minimum	Maximum
E200 (Hex, signed)	0

4.13.2.11

DWF MIN GAIN

These settings allow you to adjust noise reduction parameters for specific noise conditions. The Radio Profiles - Accessory Noise Reduction Settings are recommended for most noise environments.

 **WARNING:**
This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 146: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.2.12

DINC OUTPUT EQ VECTOR

This setting allows you to change the DINC (Dual Input Noise Canceller) OUTPUT EQ VECTOR parameter for the external microphone.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.13.2.13

DWF EXPANSION DEGREE

These settings allow you to adjust noise reduction parameters for specific noise conditions. The Radio Profiles - Accessory Noise Reduction Settings are recommended for most noise environments.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 147: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.2.14

DINC EP VECTOR

This setting allows you to change the DINC (Dual Input Noise Canceller) EP VECTOR parameter for the external microphone.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.13.2.15

Status VAD DET THRESH DBQ8

These settings allow you to adjust noise reduction parameters for specific noise conditions.



WARNING:

This custom setting applies only when the Custom Noise Reduction (Accessory) field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.



IMPORTANT:

The Radio Profiles - Accessory Noise Reduction Settings are recommended for most noise environments.

Although this field shows the value as an unsigned value, the radio firmware interprets the Hex value as a signed value. Therefore, enter the desired signed value in the Hex (right-most) box, not the Decimal box. For example, if you want to enter $-1E00$ (-7680), you would enter $E200$ (the 2's complement) in the Hex box. The Decimal box still shows 57856 but the firmware interprets $E200$ as a negative number in the radio.

Table 148: Range

Minimum	Maximum
FB50 (Hex, signed)	04B0 (Hex, signed)

4.13.2.16

ACCESSORY AUTO MIN GAIN VECTOR

This vector sets the limits on the min gain for the auto mode of noise suppression.

The following selections are supported:

- ACCESSORY AUTO MIN GAIN VECTOR length must be equal to 8, and
- [X] of ACCESSORY AUTO MIN GAIN VECTOR is from "0" to "32767", and
- [Y] of ACCESSORY AUTO MIN GAIN VECTOR is from "0" to "32767", and
- [Y] is NOT greater than [X].



NOTE: ACCESSORY AUTO MIN GAIN VECTOR is the vector of two 16 bit integers:

Each four hexadecimal numbers represents a 16 bit signed integer. The range for each of the two numbers ([X] and [Y]) is from 0 to 32767 in decimal.

Accessed Only: When the radio is model and option capable.

4.13.2.17

ACCESSORY AUTO NOISE BOUNDS DBQ8

This pair of numbers set the lower and upper noise bounds (in dB relative to full scale) for the automatic control of the noise reduction levels.

The following selections are supported:

- ACCESSORY AUTO NOISE BOUNDS DBQ8 length must be equal to 8, and
- [X] of ACCESSORY AUTO NOISE BOUNDS DBQ8 is from "-23040" to "0", and
- [Y] of ACCESSORY AUTO NOISE BOUNDS DBQ8 is from "-23040" to "0", and

- [X] is NOT greater than [Y].



NOTE: ACCESSORY AUTO NOISE BOUNDS DBQ8 is the vector of two 16-bit integers. Each four hexadecimal numbers represents a 16-bit signed integer. The range for each of the two numbers ([X] and [Y]) is -23040 to 0 inclusive.

Accessed Only: When the radio is model and option capable.

4.13.2.18

ACCESSORY AUTO RELAXATION BOUNDS

This vector sets the limits on relaxation with frequency for the auto mode of noise suppression.

The following selections are supported:

- ACCESSORY AUTO RELAXATION BOUNDS length must be equal to 4, and
- [X] of ACCESSORY AUTO RELAXATION BOUNDS is from "0" to "10", and
- [Y] of ACCESSORY AUTO RELAXATION BOUNDS is from "0" to "10", and
- [X] is NOT greater than [Y].



NOTE: ACCESSORY AUTO RELAXATION BOUNDS is the vector of two 8-bit integers. Each two hexadecimal numbers represents a 8-bit signed integer. The range for each of the two numbers ([X] and [Y]) is 0 to 10 inclusive.

Accessed Only: When the radio is model and option capable.

4.13.2.19

ACCESSORY PASS FILTER START

This field defines the frequency that is applied by the automatic PASS filter.

Table 149: Range

Minimum	Maximum
0	FFFF (Hex)

Accessed Only: When the radio is model/option capable.

4.13.3

Global Noise Reduction Profile

This section allows you to view or define custom DINC (Dual Input Noise Canceller) parameters.

These settings apply on a radio-wide basis.



NOTE: Noise Reduction improves voice clarity by reducing background noise. Noise Reduction occurs on the transmitting radio before transmission (in analog mode) and before voice coding (in digital mode). Not only does reducing background noise improve voice clarity for an analog mode transmission. In digital mode, a cleaner speech signal going into the voice-encoder (vocoder) results in clearer voice being received and decoded in the receiver.



WARNING:

These custom settings apply only when the Custom Global Noise Reduction Enable field is selected in the referenced Radio Profile.

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.13.3.1

DINC SPATIAL EQ1 VECTOR

This setting allows you to change the internal DINC (Dual Input Noise Canceller) SPATIAL EQ1 VECTOR parameter.



WARNING:

This custom setting applies only when the Custom Global Noise Reduction Enable field is selected in the referenced [Radio Profiles on page 811](#).

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.13.3.2

DINC BF EQ VECTOR

This setting allows you to change the internal DINC (Dual Input Noise Canceller) BF EQ VECTOR parameter.



WARNING:

This custom setting applies only when the Custom Global Noise Reduction Enable field is selected in the referenced [Radio Profiles on page 811](#).

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.13.3.3

DINC SPATIAL EQ1 VECTOR CONT

This setting allows you to change the internal DINC (Dual Input Noise Canceller) SPATIAL EQ1 VECTOR parameter.

The value of this field will be appended to the value of the [DINC SPATIAL EQ1 VECTOR on page 809](#) parameter to create the full sixty-six coefficients of the Spatial Vector.



WARNING:

This custom setting applies only when the Custom Global Noise Reduction Enable field is selected in the referenced [Radio Profiles on page 811](#).

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.13.3.4

DINC HOTBEAM HYSTERESIS

This setting allows you to change the internal DINC (Dual Input Noise Canceller) HOTBEAM HYSTERESIS parameter.



WARNING:

This custom setting applies only when the Custom Global Noise Reduction Enable field is selected in the referenced [Radio Profiles on page 811](#).

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 150: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.3.5

DINC SPATIAL EQ2 VECTOR

This setting allows you to change the internal DINC (Dual Input Noise Canceller) SPATIAL EQ2 VECTOR parameter.



WARNING:

This custom setting applies only when the Custom Global Noise Reduction Enable field is selected in the referenced [Radio Profiles on page 811](#).

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.13.3.6

DINC BAD MIC HYSTERESIS

This setting allows you to change the internal DINC (Dual Input Noise Canceller) BAD MIC HYSTERESIS parameter.



WARNING:

This custom setting applies only when the Custom Global Noise Reduction Enable field is selected in the referenced [Radio Profiles on page 811](#).

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Table 151: Range

Minimum	Maximum
0	FFFF (Hex)

4.13.3.7

DINC SPATIAL EQ2 VECTOR CONT

This setting allows you to change the internal DINC (Dual Input Noise Canceller) SPATIAL EQ2 VECTOR parameter.

The value of this field will be appended to the value of the [DINC SPATIAL EQ2 VECTOR on page 810](#) parameter to create the full sixty-six coefficients of the Spatial Vector.



WARNING:

This custom setting applies only when the Custom Global Noise Reduction Enable field is selected in the referenced [Radio Profiles on page 811](#).

Do not modify Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.14

Radio Profiles

The **Radio Profiles** section allows you to view or define individual Radio Profiles. Radio profiles allow for intended groupings of audio and indicator settings to be assembled for specific radio channels and or specific in-the-field usage scenarios.



NOTE:

Radio profiles are selected for use on a per channel basis from the Zone Channel Assignment Radio Profile field.

The Radio Profiles button-press or the Radio Profiles menu-selection allows you to modify a channel's Radio Profile assignment.

4.14.1

General

This section allows you to view or modify settings for individual Radio Profiles.



NOTE:

Radio profiles are selected for use on a per channel basis from the Zone Channel Assignment Radio Profile field.

The Radio Profiles button-press or the Radio Profiles menu-selection allows you to modify a channel's Radio Profile assignment.

4.14.1.1

Radio Profile Name

This field allows you to view or define recognizable names for the current Radio Profile.

Radio profiles are selected for use on a per channel basis from the Zone Channel Assignment Radio Profile field.



NOTE: Three pre-named radio profile records have been supplied for your convenience: **Default**, **Surveillance**, and **Loud Audio**. You can rename all suggested names. These profiles should be defined according to your needs; more profiles may be created.



NOTE:

Examples: PROFILE-001, #500, Electric1, # A5.

Characters, numbers, spaces, and special characters can be used.

A total of 14 characters are possible.

The Radio Profile Name appears in the front display.

4.14.1.2

Noise Sensing Volume Control

If this field is enabled, the radio automatically sets the speaker volume to a level appropriate for the listening environment.

This feature is not supported on wireless speakers or wired Radio Speaker Microphones (RSM).

Accessed Only: When the radio is model or option capable.

4.14.1.3

Disable Lights

This field causes all of the LEDs and backlights of a radio and its accessories, such as a DRSM, to be disabled for the current Radio Profile.

This feature is useful during covert/surveillance operations.



IMPORTANT:

When disabled, radios equipped with Type 1 Encryption do not function. Type 1 Encryption requires that you are able to distinguish (from LED colors) a Type 1 incoming or outgoing encryption call.

On the Mobile O9 Control Head, the Stealth Mode Disable Lights/LEDs selection overrides this selection whenever the dedicated Stealth Mode button is toggled ON. Once the Stealth Mode is toggled OFF, the radio reverts back to its current Radio Profile settings.

4.14.1.4

Night Vision Goggles Enable

This field causes the backlight of the radio front display, top display and keypad to illuminate in dim state (see the Night Vision Goggles Backlight Brightness Level field), which allows you to see the display through Night Vision Goggles (NVG).



This selection applies to the current Radio Profile.



WARNING:

When this field is enabled, the following fields must be disabled; otherwise, it considers them invalid: (a) the Disable Lights field. (b) the Permanent Front Display Backlight field.

When this field is enabled, the following fields must be enabled; otherwise, it considers them invalid: (a) the Permanent Disable Tx/Rx LED field. (b) the Intelligent Lighting, Disable Emergency Notification, Disable Critical Notification and Disable Call Notification fields.

Accessed Only: When the radio is model/option capable.

4.14.1.5

Disable Tones

This field causes all of the radio alert tones, sidetones, and keypad tones to be disabled for the current Radio Profile.

This selection is useful during covert/surveillance operations.



NOTE: On the Mobile O9 Control Head, the Stealth Mode Disable Tones selection overrides this selection whenever the dedicated Stealth Mode button is toggled ON. Once the Stealth Mode is toggled OFF, the radio reverts back to its current Radio Profile settings.

4.14.1.6

Permanent Front Display Backlight

This field causes the radio front display backlight to permanently illuminate.



This selection applies to the current Radio Profile.



IMPORTANT:

When this field is enabled, an approximate 20 minute drain in the standard battery life for a normal duty cycle will occur.

When the Disable Lights field is enabled, this feature will not apply.

Accessed Only: When the radio is model/option capable.

4.14.1.7

Permanent Top Display Backlight

If enabled, this field allows the radio top display backlight to permanently illuminate.

This selection applies to the current Radio Profile.



IMPORTANT:

When this field is enabled, an approximate 20 minute drain in the standard battery life for a normal duty cycle will occur.

When the Disable Lights field is enabled, this feature will not apply.

Accessed Only: When the radio is model/option capable.

4.14.1.8

Disable Emergency Notification

This field causes Intelligent Lighting that indicates Emergency Mode to be disabled.

This selection applies to the current Radio Profile.



NOTE: When the Disable Lights field is enabled, the colored backlight will not turn on.

4.14.1.9

Permanent Disable Tx/Rx LED

This field causes the radio to permanently disable the Tx/Rx LED for the current Radio Profile.



WARNING: When the Night Vision Goggles Enable field is enabled, this field must be enabled; otherwise, it considers it invalid.

Accessed Only: When the [Disable Lights on page 812](#) field is disabled and when the radio is model/option capable.

4.14.1.10

Disable Critical Notification

This field causes Intelligent Lighting for self-diagnostic and failure detection to be disabled. This is applicable when the radio is the latest Fire Service Standards model and in Non-Hazard Mode capable channel.

This selection applies to the current Radio Profile.



NOTE: When the Disable Lights field is enabled, the colored backlight is disabled.

4.14.1.11

Speaker Audio Routing

This field selects the audio routing to the radio's internal speakers.



This selection applies to the current Radio Profile.



IMPORTANT:

The dual-display portable is equipped with two internal speakers, one on either side of the radio. For this model, you can route audio to either (or both) speakers independently.

The top display portable is equipped with a single speaker. For this model, you can enable or disable the audio to this speaker.

Accessed Only: When the radio is model/option capable.

4.14.1.12

Disable Call Notification

This field causes Intelligent Lighting for received calls to be disabled.

This selection applies to the current Radio Profile.



IMPORTANT: When the [Disable Lights on page 812](#) field is enabled, the colored backlight will not turn on.

4.14.2

Audio Settings

This section allows you to view or modify various microphone and audio settings, alert tone volume settings, and custom microphone and audio settings that apply to individual radio profiles.



NOTE:

Radio profiles are selected for use on a per channel basis from the Zone Channel Assignment Radio Profile field.

The Radio Profiles button-press or the Radio Profiles menu-selection allows you to modify a channel's Radio Profile assignment.

4.14.2.1

Custom Global Noise Reduction Enable

This field enables the radio to override the standard global Dual Input Noise Canceller (DINC) parameters; in this case, the custom DINC parameters in the Global Noise Reduction Profile are used for noise reduction instead of the standard parameters.

This selection applies to the current Radio Profile.



WARNING: Custom Global Noise Reduction settings should only be attempted by Qualified Service Personnel. Failure to configure the settings properly may seriously degrade DINC operation and consequently the intelligibility of transmitted speech.

4.14.2.2

Securenet AGC

This field allows you to enable Automatic Gain Control (AGC) to be used for the radio internal or external microphone.

This selection only applies while the radio is transmitting in Securenet mode. AGC compensates for differences in voice level and operational style. As a result of AGC, audio is transmitted and then received at the same audio/decibel level. This selection applies to the current Radio Profile.



IMPORTANT:

The Tx Gain Control Total level (also known as pure gain) is applied before AGC has occurred. For microphone input below the nominal level: actual microphone output = microphone input + Tx Gain Control Total.

The Tx Gain Control Output level is applied after AGC has occurred. Tx Gain Control Output implements an infinity:1 dB ratio when microphone input is above the nominal level. That is, for any input above nominal, the output will never go above the level set via this parameter.

Accessed Only: When the radio is model/option capable.

4.14.2.3

Securenet AGC (Accessory)

Enables Automatic Gain Control (AGC) to be used for the radio's internal or external microphone.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection only applies while the radio is transmitting in Securenet mode. AGC compensates for differences in voice level and operational style. As a result of AGC, audio is transmitted and then received at the same audio/decibel level. This selection applies to the current Radio Profile.



NOTE:

The Tx Gain Control Total level (also known as pure gain) is applied before AGC has occurred. For microphone input below the nominal level: actual microphone output = microphone input + Tx Gain Control Total.

The Tx Gain Control Output level is applied after AGC has occurred. Tx Gain Control Output implements an infinity:1 dB ratio when microphone input is above the nominal level. That is, for any input above nominal, the output will never go above the level set via this parameter.

Accessed Only: When the radio is model / option capable.

4.14.2.4

Bluetooth Mic Gain Level

This field allows you to select the default amount of audio gain to be used by the microphone on both commercial-off-the-shelf (COTS) and Motorola Solutions-proprietary Bluetooth devices when that device is paired and connected to the radio.

This selection applies to the current Radio Profile.

Applies only:

When the Bluetooth Enable field is **Enabled**, and when the radio is not LTE-capable, and when the radio is model/option capable.

Table 152: Range

Minimum	Maximum	Increments
-12 decibels	12 decibels	3 decibels

4.14.2.5

Mic HW AGC

This field enables HW Automatic Gain Control (AGC) to be used on a per-profile basis.



This selection applies only to portable radios, and while the radio is transmitting. When enabled, extremely loud audio is attenuated in order to prevent audio clipping.

Accessed Only: When the radio is model/option capable.

4.14.2.6

Mic Audio Equalization Group Setting

This field predefines a set of value for Audio Equalization Section fields under Microphone/TX Settings Group.

When the Group Setting value changes from Custom, the value of the fields on that section change accordingly. All fields should become Non-editable, when the group setting is not set to **Custom**.

The following selections list the selections and definitions for the Audio Equalization Group Settings (Radio) and Audio Equalization Group Settings (Accessory) under Microphone/TX Settings Group.

Normal

Low Frequency Band is **0**, Mid Frequency Band is **0**, and High Frequency Band is **0**.

Treble Boost

Low Frequency Band is **0**, Mid Frequency Band is **0**, and High Frequency Band is **6**.

Low Cut

Low Frequency Band is **-9**, Mid Frequency Band is **0**, and High Frequency Band is **0**.

XTS

Low Frequency Band is **-3**, Mid Frequency Band is **0**, and High Frequency Band is **6**.

Accessed Only: This is an advanced setting which is only available in Full View (see Codeplug View).

4.14.2.7

Noise Reduction Group Setting

This field predefines a set of value for Noise Reduction Section fields under Microphone/TX Settings Group.

When the Group Setting value changes from **Custom**, the value of the fields on that section change accordingly. When the group setting is not set to **Custom**, then all fields will become view-only.

The following list shows the selections and definitions for Noise Reduction Group Settings (Radio).

Off

The value of the following fields is set to: Custom Noise Reduction is **Disabled**, Background Noise Reduction Level is **Off**, Wind Noise Reduction Level is **Off**, PASS Alarm is **Disabled**, Noise Reduction Profile Selection is **Radio NR 1**, Background Noise Reduction Mode is **On/Applied**, Wind Noise Reduction Mode is **On/Active**, Source Mode is **Full Automatic**, and Directivity Mode is **On/Adapting**.

Normal

The value of the following fields is set to: Custom Noise Reduction is **Disabled**, Background Noise Reduction Level is **Normal**, Wind Noise Reduction Level is **Normal**, PASS Alarm is **Disabled**, Noise Reduction Profile Selection is **Radio NR 1**, Background Noise Reduction Mode is **On/Applied**, Wind Noise Reduction Mode is **On/Active**, Source Mode is **Full Automatic**, and Directivity Mode is **On/Adapting**.

Aggressive

The value of the following fields is set to: Custom Noise Reduction is **Disabled**, Background Noise Reduction Level is **Aggressive**, Wind Noise Reduction Level is **Normal**, PASS Alarm is **Disabled**, Noise Reduction Profile Selection is **Radio NR 1**, Background Noise Reduction Mode is **On/Applied**, Wind Noise Reduction Mode is **On/Active**, Source Mode is **Full Automatic**, and Directivity Mode is **On/Adapting**.

Extreme

The value of the following fields is set to: Custom Noise Reduction is **Disabled**, Background Noise Reduction Level is **Extreme_1-sided**, Wind Noise Reduction Level is **Normal**, PASS Alarm is **Enabled**, Noise Reduction Profile Selection is **Radio NR 1**, Background Noise Reduction Mode is **On/Applied**, Wind Noise Reduction Mode is **On/Active**, Source Mode is **Full Automatic**, and Directivity Mode is **On/Adapting**.

Auto

The value of the following fields is set to: Custom Noise Reduction is **Disabled**, Background Noise Reduction Level is **Auto**, Wind Noise Reduction Level is **Normal**, and PASS Alarm is **Enabled**. Enables the auto-aggressiveness profile of noise reduction. This selection applies only when the radio is model/option capable.

The following list shows the selections and definitions for Noise Reduction Group Settings (Accessory).

Off

The value of the following fields is set to: Custom Noise Reduction is **Disabled**, Background Noise Reduction Level is **Off**, Wind Noise Reduction Level is **Off**, PASS Alarm is **Disabled**, Noise Reduction Profile Selection is **Acc NR 1**, Background Noise Reduction Mode is **On/Applied**, Wind Noise Reduction Mode is **On/Active**, Source Mode is **Mic 1**, and Directivity Mode is **On/Adapting**.

Normal

The value of the following fields is set to: Custom Noise Reduction is **Disabled**, Background Noise Reduction Level is **Normal**, Wind Noise Reduction Level is **Normal**, PASS Alarm is **Disabled**, Noise Reduction Profile Selection is **Acc NR 1**, Background Noise Reduction Mode is **On/Applied**, Wind Noise Reduction Mode is **On/Active**, Source Mode is **Mic 1**, and Directivity Mode is **On/Adapting**.

Aggressive

The value of the following fields is set to: Custom Noise Reduction is **Disabled**, Background Noise Reduction Level is **Aggressive**, Wind Noise Reduction Level is **Normal**, PASS Alarm is **Disabled**, Noise Reduction Profile Selection is **Acc NR 1**, Background Noise Reduction Mode is **On/Applied**, Wind Noise Reduction Mode is **On/Active**, Source Mode is **Mic 1**, and Directivity Mode is **On/Adapting**.

Extreme

The value of the following fields is set to: Custom Noise Reduction is **Disabled**, Background Noise Reduction Level is **Extreme_1-sided**, Wind Noise Reduction Level is **Normal**, PASS Alarm is **Enabled**, Noise Reduction Profile Selection is **Acc NR 1**, Background Noise Reduction Mode is **On/Applied**, Wind Noise Reduction Mode is **On/Active**, Source Mode is **Mic 1**, and Directivity Mode is **On/Adapting**.

Auto

The value of the following fields is set to: Custom Noise Reduction is **Disabled**, Background Noise Reduction Level is **Auto**, Wind Noise Reduction Level is **Normal**, and PASS Alarm is **Enabled**. Enables the auto-aggressiveness profile of noise reduction. This selection applies only when the radio is model/option capable.

Accessed Only: This is an advanced setting which is only available in Full View (see Codeplug View).

4.14.2.8

Low Frequency Band

Selects the sound level of calls transmitted in Analog/Digital/SecureNet environment.

This selection applies to the current Radio Profile.

Table 153: Range

Minimum	Maximum
-12	12

4.14.2.9

Custom Noise Reduction

This field enables the radio Radio or Accessory microphones to use a custom Radio Noise Reduction Profile or Accessory Noise Reduction Profile that target specific noise conditions.

 **WARNING:** Custom Mic Noise Reduction settings should only be attempted by Qualified Service Personnel. Failure to configure the settings properly may seriously degrade mic noise suppression and consequently the intelligibility of transmitted speech.

The Radio Noise Reduction Settings and Accessory Noise Reduction Settings are recommended for most noise environments.

 **NOTE:** Noise Reduction improves voice clarity by reducing background noise. Noise Reduction occurs on the transmitting radio prior to transmission (in analog mode) and prior to voice coding (in digital mode). Not only does reducing background noise improve voice clarity for an analog mode transmission, in digital mode a cleaner speech signal going into the voice-encoder (vocoder) results in clearer voice being received and decoded in the receiver.

4.14.2.10

Background Noise Reduction Level (Radio)

Selects the level of background noise reduction that is applied to the internal dual-microphones and an external microphone.

 **WARNING:** The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to the current Radio Profile.

 **NOTE:** Noise Reduction improves voice clarity by reducing background noise. Noise Reduction occurs on the transmitting radio prior to transmission (in analog mode) and prior to voice coding (in digital mode). Not only does reducing background noise improve voice clarity for an analog mode transmission, in digital mode a cleaner speech signal going into the voice-encoder (vocoder) results in clearer voice being received and decoded in the receiver.

Accessed Only: When the Custom Noise Reduction field is disabled.

The following list shows the selections and definitions for Background Noise Reduction Level (Radio).

Off

Disables dual-microphone background noise reduction. Both microphones remain active, and the radio-user can speak into either side of the radio, but no background noise reduction is applied.

Normal

Both microphones are active and continuously adapt to the voice signal for optimal clarity over a wide range of background noise. Recommended setting for most noise environments.

Aggressive

An increased level of background noise reduction is enabled. Recommended for VERY HIGH noise environments.

Xtreme 1_Sided

The Maximum amount of background noise reduction is enabled. Recommended for EXTREME HIGH noise environments, for example: Firefighter PASS (Personal Alert Safety System) alarm, low air alerts, pumper truck, gas fan, saw.

 **NOTE:** This Setting requires the radio-user to speak into the side of the radio containing the large loudspeaker. This selection applies only when the radio is model/option capable.

Auto

Enables the auto-aggressiveness profile of noise reduction.

 **NOTE:** This selection applies only when the radio is model/option capable.

The following list shows the selections and definitions for Background Noise Reduction Level (Accessory).

Off

Disables background noise reduction. The external microphone remains active, but no noise reduction is applied.

Normal

The external microphone continuously adapts to the voice signal for optimal clarity over a wide range of background noise. Recommended setting for most noise environments.

Xtreme 1_Sided

The Maximum amount of background noise reduction is enabled. Recommended for EXTREME HIGH noise environments, for example: Firefighter PASS alarm, low air alerts, pumper truck, gas fan, saw.

 **NOTE:** This Setting requires the radio-user to speak into the side of the radio containing the large loudspeaker. This selection applies only when the radio is model/option capable.

Auto

Enables the auto-aggressiveness profile of noise reduction.

 **NOTE:** This selection applies only when the radio is model/option capable.

4.14.2.11

Background Noise Reduction Level (Accessory)

Selects the level of background noise reduction that is applied to the internal dual-microphones and an external microphone.

 **WARNING:** The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to the current Radio Profile.

 **NOTE:** Noise Reduction improves voice clarity by reducing background noise. Noise Reduction occurs on the transmitting radio prior to transmission (in analog mode) and prior to voice coding (in digital mode). Not only does reducing background noise improve voice clarity for an analog mode transmission, in digital mode a cleaner speech signal going into the voice-encoder (vocoder) results in clearer voice being received and decoded in the receiver.

Accessed Only: When the Custom Noise Reduction field is disabled.

The following list shows the selections and definitions for Background Noise Reduction Level (Radio).

Off

Disables dual-microphone background noise reduction. Both microphones remain active, and the radio-user can speak into either side of the radio, but no background noise reduction is applied.

Normal

Both microphones are active and continuously adapt to the voice signal for optimal clarity over a wide range of background noise. Recommended setting for most noise environments.

Aggressive

An increased level of background noise reduction is enabled. Recommended for VERY HIGH noise environments.

Xtreme 1_Sided

The Maximum amount of background noise reduction is enabled. Recommended for EXTREME HIGH noise environments, for example: Firefighter Personal Alert Safety System (PASS) alarm, low air alerts, pumper truck, gas fan, saw.



NOTE: This Setting requires the radio-user to speak into the side of the radio containing the large loudspeaker. This selection applies only when the radio is model/option capable.

Auto

Enables the auto-aggressiveness profile of noise reduction.



NOTE: This selection applies only when the radio is model/option capable.

The following list shows the selections and definitions for Background Noise Reduction Level (Accessory).

Off

Disables background noise reduction. The external microphone remains active, but no noise reduction is applied.

Normal

The external microphone continuously adapts to the voice signal for optimal clarity over a wide range of background noise. Recommended setting for most noise environments.

Aggressive

An increased level of background noise reduction is enabled. Recommended for VERY HIGH noise environments.

Xtreme 1_Sided

The Maximum amount of background noise reduction is enabled. Recommended for EXTREME HIGH noise environments, for example: Firefighter PASS alarm, low air alerts, pumper truck, gas fan, saw.



NOTE: This Setting requires the radio-user to speak into the side of the radio containing the large loudspeaker. This selection applies only when the radio is model/option capable.

Auto

Enables the auto-aggressiveness profile of noise reduction.



NOTE: This selection applies only when the radio is model/option capable.

4.14.2.12

Mid Frequency Band

Selects the sound level of calls transmitted in Analog/Digital/Securenet environment.

This selection applies to the current Radio Profile.

Table 154: Range

Minimum	Maximum
-12	12

4.14.2.13

High Frequency Band

This field selects the sound level of calls transmitted in Analog/Digital/SecureNet environment.

This selection applies to the current Radio Profile.

The following selections are supported:

Table 155: Range

Minimum	Maximum
-12	12

4.14.2.14

Wind Noise Reduction Level (Radio)

Selects the level of wind noise reduction that is applied to the internal dual-microphones and the external microphone.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to the current Radio Profile.



NOTE: Noise Reduction improves voice clarity by reducing background noise. Noise Reduction occurs on the transmitting radio prior to transmission (in analog mode) and prior to voice coding (in digital mode). Not only does reducing background noise improve voice clarity for an analog mode transmission, in digital mode a cleaner speech signal going into the voice-encoder (vocoder) results in clearer voice being received and decoded in the receiver.

Accessed Only: When the Custom Noise Reduction field is disabled.

The following list shows the selections and definitions for Wind Noise Reduction Settings (Radio).

Off

Disables dual-microphone wind noise reduction. Both microphones remain active, and the radio-user can speak into either side of the radio, but no wind noise reduction is applied.

Normal

Both microphones are active and continuously adapt to the voice signal for optimal clarity over a wide range of noise.



NOTE: Recommended setting for most environments.

Aggressive

An increased level of wind noise reduction is enabled.



NOTE: Recommended for very high noise environments.

4.14.2.15

Wind Noise Reduction Level (Accessory)

The following table lists the selection and definition for Wind Noise Reduction Level (Accessory).



NOTE: This is a non-configurable field and the default setting is set to **Off**.

Off

Disables wind noise reduction. The external microphone remains active, but no wind noise reduction is applied.

4.14.2.16

PASS Alarm Filter (Radio)

Personal Alert Safety System (PASS) Alarm Filter (Radio) enables background noise reduction for the radio's internal microphone whenever the radio is transmitting in the presence of an active PASS alarm.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

PASS Alarm Filter (Accessory) enables background noise reduction for the radio's external microphone whenever the radio is transmitting in the presence of an active PASS alarm. This selection applies to the current Radio Profile.

The selections supported are **Disabled** and **Enabled**.



NOTE: Noise Reduction improves voice clarity by reducing background noise. Noise Reduction occurs on the transmitting radio prior to transmission (in analog mode) and prior to voice coding (in digital mode). Not only does reducing background noise improve voice clarity for an analog mode transmission, in digital mode a cleaner speech signal going into the voice-encoder (vocoder) results in clearer voice being received and decoded in the receiver.

Accessed Only:

When the Custom Noise Reduction Enable field is disabled, and

(When the Background Noise Reduction Level field is not set to **Off**, and when the Wind Noise Reduction Level field is not set to **Off**).

4.14.2.17

PASS Alarm Filter (Accessory)

Personal Alert Safety System (PASS) Alarm Filter enables background noise reduction for the radio's internal microphone whenever the radio is transmitting in the presence of an active PASS alarm.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

PASS Alarm Filter (Accessory) enables background noise reduction for the radio's external microphone whenever the radio is transmitting in the presence of an active PASS alarm. This selection applies to the current Radio Profile.

The selections supported are **Enabled** and **Disabled**.



NOTE: Noise Reduction improves voice clarity by reducing background noise. Noise Reduction occurs on the transmitting radio prior to transmission (in analog mode) and prior to voice coding (in digital mode). Not only does reducing background noise improve voice clarity for an analog mode transmission, in digital mode a cleaner speech signal going into the voice-encoder (vocoder) results in clearer voice being received and decoded in the receiver.

Accessed Only:

When the Custom Noise Reduction Enable field is disabled, and

(When the Background Noise Reduction Level field is not set to **Off**, and when the Wind Noise Reduction Level field is not set to **Off**).

4.14.2.18

Minimum Audio Volume

This field selects the radio minimum Rx (Receive) audio level.

The radio's volume level never falls below this level, even when you set the radio's volume control to **0** (Zero). See also the Volume Adjust Tone Offset field setting. This selection applies to the current Radio Profile.



WARNING: This setting must be lower than the Maximum Audio Volume setting otherwise both fields become invalid.



IMPORTANT:

In order to have the radio's Minimum Volume at a constant level higher or lower than the radio's minimum receive voice volume (set in this field) you must use the Volume Offset (dB) feature.

When the Volume Offset (dB) feature is set to **0** (zero), the radio always uses this Minimum Audio Volume setting for the Minimum Volume, regardless of the Minimum Volume field's setting.

The following selections are supported:

Table 156: Range

Minimum	Maximum
0	200



NOTE: 5=1 decibel (dB)

4.14.2.19

Noise Reduction Profile Selection

These custom settings apply only when the Custom Noise Reduction field is selected in the referenced Radio Profile.



WARNING: Do not modify Custom Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.14.2.20

Noise Reduction Profile Selection (Accessory)

Enables the radio's Radio/Accessory microphones to use a custom Radio Noise Reduction Profile or Accessory Noise Reduction Profile that target specific noise conditions.



WARNING: Custom Mic Noise Reduction settings should only be attempted by Qualified Service Personnel. Failure to configure the settings properly may seriously degrade mic noise suppression and consequently the intelligibility of transmitted speech.

The Radio Noise Reduction Settings and Accessory Noise Reduction Settings are recommended for most noise environments.



NOTE: Noise Reduction improves voice clarity by reducing background noise. Noise Reduction occurs on the transmitting radio prior to transmission (in analog mode) and prior to voice coding (in digital mode). Not only does reducing background noise improve voice clarity for an analog mode transmission, in digital mode a cleaner speech signal going into the voice-encoder (vocoder) results in clearer voice being received and decoded in the receiver.

4.14.2.21

Background Noise Reduction Mode (Radio)

These custom settings apply only when the Custom Noise Reduction field is selected in the referenced Radio Profile.



WARNING: Do not modify Custom Noise Reduction settings unless the user is a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Radio Profiles are referenced to a specific channel with the Zone Channel Assignment, Channel Page's **Radio Profile Selection** field.

4.14.2.22

Background Noise Reduction Mode (Accessory)

These custom settings apply only when the Custom Noise Reduction field is selected in the referenced Radio Profile.



WARNING: Do not modify Custom Noise Reduction settings unless the user is a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Radio Profiles are referenced to a specific channel with the Zone Channel Assignment, Channel Page's **Radio Profile Selection** field.

4.14.2.23

Volume Offset (dB)

This field selects the value in decibels (dB) that raises or lowers the volume of an alert tone in comparison to your selected receive audio volume.

See also the Volume Adjust Tone Offset field setting. This selection applies to the current Radio Profile.

When a higher or lower alert tones volume is desired: Set the Maximum Volume field and the Maximum Audio Volume field to the same value, and set the Minimum Volume field and the Minimum Audio Volume field to the same value, then use this Alert Tone Volume Offset setting to have the radio's alert tones at a constant level higher or lower than the radio's receive voice volume.



IMPORTANT: When this Alert Tone Volume Offset field is set to 0 (zero):

The radio always uses Maximum Audio Volume setting for the Maximum Volume, regardless of the Maximum Alert Tone Volume field's setting.

The radio always uses Minimum Audio Volume setting for the Minimum Volume, regardless of the Minimum Alert Tone Volume field's setting.

Accessed only: When the Alert Tones field is **Enabled**.

The following selections are supported:

Table 157: Range

Minimum	Maximum	Increments
-26 dB	26 dB	1 dB

4.14.2.24

Minimum Volume

This field selects the minimum receive alert tone level, regardless of how low you set the volume.

See also the Volume Adjust Tone Offset field setting. This selection applies to the current Radio Profile.

 **WARNING:** This setting must be lower than the Maximum Volume setting otherwise both fields become invalid.

 **IMPORTANT:**
 In order to have the radio's Minimum Volume (set in this field) at a constant level higher or lower than the radio's minimum receive voice volume (set in the Minimum Audio Volume field) you must use the Volume Offset (dB) feature.

When the Volume Offset (dB) feature is set to **0** (zero), the radio always uses the Minimum Audio Volume setting for this Minimum Volume, regardless of this Minimum Volume field's setting.

Accessed Only: When the Alert Tones field is **Enabled**.

The following selections are supported:

Table 158: Range

Minimum	Maximum
0	200

 **NOTE:** 5 = 1 decibel (dB)

4.14.2.25

Wind Noise Reduction Mode (Radio)

These custom settings apply only when the Custom Noise Reduction field is selected in the referenced Radio Profile.

 **WARNING:** Do not modify Custom Noise Reduction settings unless the user is a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Radio Profiles are referenced to a specific channel with the Zone Channel Assignment, Channel Page's **Radio Profile Selection** field.

4.14.2.26

Wind Noise Reduction Mode (Accessory)

These custom settings apply only when the Custom Noise Reduction field is selected in the referenced Radio Profile.

 **WARNING:** Do not modify Custom Noise Reduction settings unless the user is a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Radio Profiles are referenced to a specific channel with the Zone Channel Assignment, Channel Page's **Radio Profile Selection** field.

4.14.2.27

Source Mode (Radio)

These custom settings apply only when the Custom Noise Reduction field is selected in the referenced Radio Profile.



WARNING: Do not modify Custom Noise Reduction settings unless the user is a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Radio Profiles are referenced to a specific channel with the Zone Channel Assignment, Channel Page's Radio Profile Selection field.

The following selections are supported:

- Beam 1
- Beam 2
- Full Automatic
- Mic 1
- Mic 1 & Mic 2
- Mic 2
- Mic 3
- Off
- Proximity Mic 1
- Proximity Mic 2

4.14.2.28

Source Mode (Accessory)

These custom settings apply only when the Custom Noise Reduction field is selected in the referenced Radio Profile.



WARNING: Do not modify Custom Noise Reduction settings unless the user is Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.14.2.29

Source Mode

These custom settings apply only when the Custom Noise Reduction field is selected in the referenced Radio Profile.



WARNING: Do not modify Custom Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.14.2.30

Maximum Audio Volume

This field selects the highest possible receive-voice volume level of the radio.

The receive-voice volume level of the radio does not rise above the selected level.



NOTE: See also the Volume Adjust Tone Offset field setting. This selection applies to the current Radio Profile.



WARNING:

This setting must be higher than the Minimum Audio Volume setting otherwise both fields become invalid.

IMPORTANT INFORMATION FOR MOTORCYCLE HELMET HEADSET CONFIGURATIONS:

CAUTION: If your radio is being used with a motorcycle helmet headset, do not set the radio at its highest possible receive-voice volume level. To avoid possible injury to your hearing, you must reduce the receive-voice volume level value to no higher than 130.

IMPORTANT INFORMATION WHEN USING IMPRES SURVEILLANCE AUDIO KITS: RLN4941_XL, RLN5882, RLN5883, RLN5886, RLN6483, RLN6424_XL, RLN6484, PMLN5111, PMLN5112, PMLN6123, PMLN6124, PMLN6129, PMLN6130, PMLN8120, PMLN8650, PMLN8652, LOW NOISE KIT RLN5886, ZMN6038, ZMN6039, ZMN6032, ZMN6031, BDN6665, BDN6727, BDN6670, BDN6669, and the BDN6731:

If your APX radio is being used with the above audio accessories, do not set the radio at its highest possible receive-voice volume level. To avoid possible injury to your hearing, you must reduce the receive-voice volume level value to no higher than 160.



IMPORTANT:

In order to have the radio's Maximum Volume at a constant level higher or lower than the radio's maximum receive voice volume (set in this field) you must use the Volume Offset (dB) feature.

When the Volume Offset (dB) feature is set to **0** (zero), the radio always uses this Maximum Audio Volume setting for the Maximum Volume, regardless of the Maximum Alert Tone Volume field's setting.

The following selections are supported:

Table 159: Range

Minimum	Maximum
1	255



NOTE: 5=1 decibel (dB)

4.14.2.31

Maximum Alert Tone Volume

Selects the radio's highest possible alert tone volume level. The Volume Offset (dB) field setting may override this setting.

See also the Volume Adjust Tone Offset field setting. This selection applies to the current Radio Profile.



WARNING: This setting must be higher than the Minimum Volume setting otherwise both fields become invalid.



NOTE:

In order to have the radio's Maximum Volume (set in this field) at a constant level higher or lower than the radio's receive voice volume (set in the Maximum Audio Volume field) the user must use the Volume Offset (dB) feature.

When the Volume Offset (dB) feature is set to **0** (zero), the radio always uses the Maximum Audio Volume setting for this Maximum Volume, regardless of this Maximum Volume field's setting.

The following selections are supported:

Table 160: Range

Minimum	Maximum
0	255

 **NOTE:** 5 = 1 decibel (dB)

4.14.2.32

Speaker Audio Equalization Group Setting

This field predefines a set of value for Audio Equalization Section fields under Speaker/RX Settings Group.

When the Group Setting value changes from Custom, the value of the fields on that section change accordingly. When the group setting is not set to Custom, then all fields should become view-only.

The following selections list the selections and definitions for the Audio Equalization Group Settings (Radio) and Audio Equalization Group Setting (Accessory) under Speaker/RX Settings Group.

Normal

The value of the following fields is set to: [Analog Low Frequency Band](#) is **0**, [Analog Mid Frequency Band on page 831](#) is **0**, [Analog High Frequency Band](#) is **0**, [Digital Low Frequency Band](#) is **0**, [Digital High Frequency Band](#) is **0**, [Securenet Low Frequency Band](#) is **0**, [Securenet Mid Frequency Band](#) is **0**, and [Securenet High Frequency Band](#) is **0**.

Treble Boost

The value of the following fields is set to: [Analog Low Frequency Band](#) is **0**, [Analog Mid Frequency Band on page 831](#) is **0**, [Analog High Frequency Band](#) is **6**, [Digital Low Frequency Band](#) is **0**, [Digital Mid Frequency Band on page 833](#) is **0**, [Digital High Frequency Band](#) is **6**, [Securenet Low Frequency Band](#) is **0**, [Securenet Mid Frequency Band](#) is **0**, and [Securenet High Frequency Band](#) is **6**.

Low Cut

The value of the following fields is set to: [Analog Low Frequency Band](#) is **-9**, [Analog Mid Frequency Band on page 831](#) is **0**, [Analog High Frequency Band](#) is **0**, [Digital Low Frequency Band](#) is **-9**, [Digital Mid Frequency Band on page 833](#) is **0**, [Digital High Frequency Band](#) is **0**, [Securenet Low Frequency Band](#) is **-9**, [Securenet Mid Frequency Band](#) is **0**, and [Securenet High Frequency Band](#) is **0**.

Reduce Feedback

The value of the following fields is set to: [Analog Low Frequency Band](#) is **-6**, [Analog Mid Frequency Band on page 831](#) is **0**, [Analog High Frequency Band](#) is **-6**, [Digital Low Frequency Band](#) is **-6**, [Digital Mid Frequency Band on page 833](#) is **0**, [Digital High Frequency Band](#) is **-6**, [Securenet Low Frequency Band](#) is **-6**, [Securenet Mid Frequency Band](#) is **0**, and [Securenet High Frequency Band](#) is **-6**.

Accessed Only: This is an advanced setting which is only available in Full View (see Codeplug View).

4.14.2.33

Directivity Mode

These custom settings apply only when the Custom Noise Reduction field is selected in the referenced Radio Profile.

 **WARNING:** Do not modify Custom Noise Reduction settings unless you are a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.14.2.34

Directivity Mode (Radio)

These custom settings apply only when the Custom Noise Reduction field is selected in the referenced Radio Profile.

 **WARNING:** Do not modify Custom Noise Reduction settings unless the user is a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

Radio Profiles are referenced to a specific channel with the Zone Channel Assignment, Channel Page's **Radio Profile Selection** field.

4.14.2.35

Directivity Mode (Accessory)

These custom settings apply only when the Custom Noise Reduction field is selected in the referenced Radio Profile.

 **WARNING:** Do not modify Custom Noise Reduction settings unless the user is a Qualified Service Personnel. Improper settings can cause high levels of background noise to be transmitted with voice, which can cause communications to fail.

4.14.2.36

Analog Low Frequency Band (Radio)

Selects the sound level of calls received in an analog environment.

 **WARNING:** The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to the current Radio Profile.

Table 161: Range

Minimum	Maximum
-12	12

4.14.2.37

Analog Low Frequency Band (Accessory)

Selects the sound level of calls received in an analog environment.

 **WARNING:** The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to the current Radio Profile.

Table 162: Range

Minimum	Maximum
-12	12

4.14.2.38

Gain Sensitivity Group Setting

This field predefines a set of value for Gain Sensitivity Section fields under Microphone/TX Settings Group.

When the Group Setting value changes from **Custom**, the value of the fields on that section change accordingly. When the group setting is not set to **Custom**, then all fields will become view-only.

The following lists the selections and definitions for both Gain Sensitivity Group Settings (Radio) and Gain Sensitivity Group Settings (Accessory).

Normal

The value of the following fields is set to: Analog AGC is **Enabled**, Digital AGC is **Enabled**, SecureNet AGC is **Enabled**, Analog Fixed Gain is **0**, Digital Fixed Gain is **0**, SecureNet Fixed Gain is **0**, Gain Control Output is **0**, Gain Control Total is **6**, and Digital/Analog Balance is **Disabled**.

Noise Optimize

The value of the following fields is set to: Analog AGC is **Disabled**, Digital AGC is **Disabled**, SecureNet AGC is **Disabled**, Analog Fixed Gain is **-6**, Digital Fixed Gain is **-6**, SecureNet Fixed Gain is **-6**, Gain Control Output is **0**, Gain Control Total is **6**, and Digital/Analog Balance is **Enabled**.

Loud Output

The value of the following fields is set to: Analog AGC is **Enabled**, Digital AGC is **Enabled**, SecureNet AGC is **Enabled**, Analog Fixed Gain is **0**, Digital Fixed Gain is **0**, SecureNet Fixed Gain is **0**, Gain Control Output is **6**, Gain Control Total is **9**, and Digital/Analog Balance is **Disabled**.

Reduced Feedback

The value of the following fields is set to: Analog AGC is **Disabled**, Digital AGC is **Disabled**, SecureNet AGC is **Disabled**, Analog Fixed Gain is **-9**, Digital Fixed Gain is **-9**, SecureNet Fixed Gain is **-9**, Gain Control Output is **0**, Gain Control Total is **6**, and Digital/Analog Balance is **Enabled**.

Accessed Only: This is an advanced setting which is only available in Full View (see Codeplug View).

4.14.2.39

Gain Sensitivity Group Setting

This field predefines a set of value for Gain Sensitivity Section fields under Microphone/TX Settings Group.

When the Group Setting value is changed other than **Custom**, the value of the fields on that section change accordingly. When the group setting is not set to **Custom**, then all fields will become view-only.

The following lists the selections and definitions for both Gain Sensitivity Group Settings (Radio) and Gain Sensitivity Group Settings (Accessory).

Normal

The value of the following fields is set to: Analog AGC is **Enabled**, Digital AGC is **Enabled**, SecureNet AGC is **Enabled**, Analog Fixed Gain is **0**, Digital Fixed Gain is **0**, SecureNet Fixed Gain is **0**, Gain Control Output is **0**, Gain Control Total is **6**, and Digital / Analog Balance is **Disabled**.

Noise Optimize

The value of the following fields is set to: Analog AGC is **Disabled**, Digital AGC is **Disabled**, SecureNet AGC is **Disabled**, Analog Fixed Gain is **-6**, Digital Fixed Gain is **-6**, SecureNet Fixed Gain is **-6**, Gain Control Output is **0**, Gain Control Total is **6**, and Digital/Analog Balance is **Enabled**.

Loud Output

The value of the following fields is set to: Analog AGC is **Enabled**, Digital AGC is **Enabled**, SecureNet AGC is **Enabled**, Analog Fixed Gain is **0**, Digital Fixed Gain is **0**, SecureNet Fixed Gain is **0**, Gain Control Output is **6**, Gain Control Total is **9**, and Digital/Analog Balance is **Disabled**.

Reduce Feedback

The value of the following fields is set to: Analog AGC is **Disabled**, Digital AGC is **Disabled**, SecureNet AGC is **Disabled**, Analog Fixed Gain is **-9**, Digital Fixed Gain is **-9**, SecureNet Fixed Gain is **-9**, Gain Control Output is **0**, Gain Control Total is **6**, and Digital/Analog Balance is **Enabled**.

Accessed Only: This is an advanced setting which is only available in Full View (see Codeplug View).

4.14.2.40

Analog Mid Frequency Band

This field selects the sound level of calls received in an analog environment.

This selection applies to the current Radio Profile.

The following selections are supported:

Table 163: Range

Minimum	Maximum
-12	12

4.14.2.41

Analog AGC

This field enables Automatic Gain Control (AGC) to be used for the radio's internal or external microphone.

This selection only applies while the radio is transmitting in analog mode. AGC compensates for differences in voice level and operational style. As a result of AGC, audio is transmitted and then received at the same audio/decibel level. This selection applies to the current Radio Profile.



WARNING:

(If you set the Audio Configuration Level to **Basic**) When enabled, the Radio Wide, Tx Digital/Analog Balance field must not be set to **Radio Wide**, and Tx Digital/Analog Balance in the same Radio Profile record/row must be **Disabled**. Otherwise, this selection is considered invalid.

(If you set the Audio Configuration Level to **Enhanced**) When enabled, the Radio Wide, Tx Digital/Analog Balance field must not be set to **Radio Wide**, and Tx Digital/Analog Balance in the same Radio Profile record/row must be **Disabled**. Otherwise, this selection is considered invalid.



IMPORTANT:

The Tx Gain Control Total level (also known as pure gain) is applied before AGC has occurred. For microphone input below the nominal level: actual microphone output = microphone input + Tx Gain Control Total.

The Tx Gain Control Output level is applied after AGC has occurred. Tx Gain Control Output implements an infinity:1 dB ratio when microphone input is above the nominal level. That is, for any input above nominal, the output will never go above the level set via this parameter.

4.14.2.42

Analog High Frequency Band

This field selects the sound level of calls received in an analog environment.

This selection applies to the current Radio Profile.



NOTE:

If you set the Audio Configuration Level is set to **Basic**, then the Analog High Frequency Band (Accessory) field is read-only (except for APX3000 radios only).

For Non-APX3000 radios, the Analog High Frequency Band (Accessory) value is synchronized from the Analog High Frequency Band (Radio).

For APX3000 radios, the Analog High Frequency Band (Accessory) value is synchronized to the Analog High Frequency Band (Radio).

Accessed Only:

(If you set the Audio Configuration Level to **Basic**) When one of the enable AGC field is enabled, then this field is enabled; or

(If you set the Audio Configuration Level to **Enhanced**) When one of the enable AGC (Radio) field is enabled, then the Analog High Frequency Band (Radio) field is enabled. When any one of the enable AGC (Accessory) field is enabled, then the Digital High Frequency Band (Accessory) field is enabled.

The following selections are supported:

Table 164: Range

Minimum	Maximum
-12	12

4.14.2.43

Digital AGC

This field enables Automatic Gain Control (AGC) to be used for the radio's internal or external microphone.

This selection only applies while the radio is transmitting in digital mode. AGC compensates for differences in voice level and operational style. As a result of AGC, audio is transmitted and then received at the same audio/decibel level. This selection applies to the current Radio Profile.



NOTE:

(If the user set the Audio Configuration Level to **Basic**) When enabled, the Radio Wide, Tx Digital/Analog Balance field must not be set to **Radio Wide**, and Tx Digital/Analog Balance in the same Radio Profile record/row must be **Disabled**. Otherwise, this selection is considered invalid.

(If the user set the Audio Configuration Level to **Enhanced**) When enabled, the Radio Wide, Tx Digital/Analog Balance field must not be set to **Radio Wide**, and Tx Digital/Analog Balance in the same Radio Profile record/row must be **Disabled**. Otherwise, this selection is considered invalid.



NOTE:

The Tx Gain Control Total level (also known as pure gain) is applied before AGC has occurred. For microphone input below the nominal level: actual microphone output = microphone input + Tx Gain Control Total.

The Tx Gain Control Output level is applied after AGC has occurred. Tx Gain Control Output implements an infinity:1 dB ratio when microphone input is above the nominal level. That is, for any input above nominal, the output will never go above the level set via this parameter.

4.14.2.44

Digital Low Frequency Band (Radio)

Selects the sound level of calls received in a digital environment.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to the current Radio Profile.

Table 165: Range

Minimum	Maximum
-12	12

4.14.2.45

Digital Low Frequency Band (Accessory)

Selects the sound level of calls received in a digital environment.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to the current Radio Profile.

Table 166: Range

Mimumum	Maximum
-12	12

4.14.2.46

Digital Mid Frequency Band

This field selects the sound level of calls received in a digital environment.

This selection applies to the current Radio Profile.

The following selections are supported:

Table 167: Range

Minimum	Maximum
-12	12

4.14.2.47

Digital High Frequency Band

This field selects the sound level of calls received in a digital environment.

This selection applies to the current Radio Profile.



NOTE:

If you set the Audio Configuration Level is set to "Basic", then the Digital High Frequency Band (Accessory) field is read-only (except for APX3000 radios only).

For Non-APX3000 radios, the Digital High Frequency Band (Accessory) value is synchronized from the Digital High Frequency Band (Radio).

For APX3000 radios, the Digital High Frequency Band (Accessory) value is synchronized to the Digital High Frequency Band (Radio).

Accessed Only:

(If you set the Audio Configuration Level to **Basic**) When one of the enable AGC field is enabled, then this field is enabled; or

(If you set the Audio Configuration Level to **Enhanced**) When one of the enable AGC (Radio) field is enabled, then the Digital High Frequency Band (Radio) field is enabled. When any one of the enable AGC (Accessory) field is enabled, then the Digital High Frequency Band (Accessory) field is enabled.

Table 168: Range

Minimum	Maximum
-12	12

4.14.2.48

AGC Gain Control Output (Radio)

Selects gain for the radio's microphones to either increase (positive values), decrease (negative values), or stay the same (0).



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

The AGC Gain Control Output level is applied after AGC (Automatic Gain Control) has occurred. AGC Gain Control Output implements an infinity:1 dB ratio when microphone input is above the nominal level. That is, for any input above nominal, the output will never go above the level set via this parameter. This selection applies to the current Radio Profile.



NOTE:

If the user set the Audio Configuration Level is set to **Basic**, then the AGC Gain Control Output (Accessory) field is read-only (except for APX3000 radios only).

For Non-APX3000 radios, the AGC Gain Control Total (Accessory) value is synchronized from the AGC Gain Control Output (Radio).

For APX3000 radios, the AGC Gain Control Total (Accessory) value is synchronized to the AGC Gain Control Output (Radio).

AGC Gain Control Output is applied to any of the AGC Fields.

Accessed Only:

(If the user set the Audio Configuration Level to **Basic**) When one of the enable AGC field is enabled, then this field is enabled; or

(If the user set the Audio Configuration Level to **Enhanced**) When one of the enable AGC (Radio) field is enabled, then the AGC Gain Control Output (Radio) field is enabled. When any one of the enable AGC (Accessory) field is enabled, then the AGC Gain Control Output (Accessory) field is enabled.

Table 169: Range

Minimum	Maximum	Increments
-12 decibels	12 decibels	3 decibels

4.14.2.49

AGC Gain Control Output (Accessory)

Selects gain for the radio's microphones to either increase (positive values), decrease (negative values), or stay the same ("0").



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

The AGC Gain Control Output level is applied after AGC (Automatic Gain Control) has occurred. AGC Gain Control Output implements an infinity:1 dB ratio when microphone input is above the nominal level. That is, for any input above nominal, the output will never go above the level set via this parameter. This selection applies to the current Radio Profile.



NOTE:

If the user set the Audio Configuration Level is set to **Basic**, then the AGC Gain Control Output (Accessory) field is read-only (except for APX3000 radios only).

For Non-APX3000 radios, the AGC Gain Control Total (Accessory) value is synchronized from the AGC Gain Control Output (Radio).

For APX3000 radios, the AGC Gain Control Total (Accessory) value is synchronized to the AGC Gain Control Output (Radio).

AGC Gain Control Output is applied to any of the AGC Fields.

Accessed Only:

(If the user sets the Audio Configuration Level to **Basic**) When one of the enable AGC field is enabled, then this field is enabled; or

(If the user sets the Audio Configuration Level to **Enhanced**) When one of the enable AGC (Radio) field is enabled, then the AGC Gain Control Output (Radio) field is enabled. When any one of the enable AGC (Accessory) field is enabled, then the AGC Gain Control Output (Accessory) field is enabled.

Table 170: Range

Minimum	Maximum	Increments
-12 decibels	12 decibels	3 decibels

4.14.2.50

AGC Gain Control Total (Radio)

Selects gain for the radio's microphones to either increase (positive values), decrease (negative values), or stay the same (0), for the current Radio Profile.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

The AGC Gain Control Total level (also known as pure gain) is applied before AGC (Automatic Gain Control) has occurred. For microphone input below the nominal level: actual microphone output = microphone input + AGC Gain Control Total.



NOTE:

If the user set the Audio Configuration Level is set to **Basic**, then the AGC Gain Control Total (Accessory) field is read-only (except for APX3000 radios only).

For Non-APX3000 radios, the AGC Gain Control Total (Accessory) value is synchronized from the AGC Gain Control Total (Radio).

For APX3000 radios, the AGC Gain Control Total (Accessory) value is synchronized to the AGC Gain Control Total (Radio).

There are separate AGC Gain Control Total values for each of the AGC Fields.

Accessed Only:

(If the user set the Audio Configuration Level to **Basic**) When one of the enable AGC field is enabled, then this field is enabled; or

(If the user set the Audio Configuration Level to **Enhanced**) When one of the enable AGC (Radio) field is enabled, then the AGC Gain Control Total (Radio) field is enabled. When any one of the enable AGC (Accessory) field is enabled, then the AGC Gain Control Total (Accessory) field is enabled.

The following table lists the minimum and maximum values for the AGC Gain Control Output as well as sample audio clips when the user enter specific values.

Table 171: Range

Minimum	Maximum	Increments
-12 decibels	12 decibels	3 decibels

4.14.2.51

AGC Gain Control Total (Accessory)

Selects gain for the radio's microphones to either increase (positive values), decrease (negative values), or stay the same (0), for the current Radio Profile.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

The AGC Gain Control Total level (also known as pure gain) is applied before AGC (Automatic Gain Control) has occurred. For microphone input below the nominal level: actual microphone output = microphone input + AGC Gain Control Total.



NOTE:

If the user sets the Audio Configuration Level is set to **Basic**, then the AGC Gain Control Total (Accessory) field is read-only (except for APX3000 radios only).

For Non-APX3000 radios, the AGC Gain Control Total (Accessory) value is synchronized from the AGC Gain Control Total (Radio).

For APX3000 radios, the AGC Gain Control Total (Accessory) value is synchronized to the AGC Gain Control Total (Radio).

There are separate AGC Gain Control Total values for each of the AGC Fields.

Accessed Only:

(If the user set the Audio Configuration Level to **Basic**) When one of the enable AGC field is enabled, then this field is enabled; or

(If the user set the Audio Configuration Level to **Enhanced**) When one of the enable AGC (Radio) field is enabled, then the AGC Gain Control Total (Radio) field is enabled. When any one of the enable AGC (Accessory) field is enabled, then the AGC Gain Control Total (Accessory) field is enabled.

The following selections are supported:

Table 172: Range

Minimum	Maximum	Increments
-12 decibels	12 decibels	3 decibels

4.14.2.52

Securenet Low Frequency Band (Radio)

Selects the sound level of calls received in an Securenet environment.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to the current Radio Profile.

Table 173: Range

Minimum	Maximum
-12	12

4.14.2.53

Securenet Low Frequency Band (Accessory)

Selects the sound level of calls received in an Securenet environment.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to the current Radio Profile.

Table 174: Range

Minimum	Maximum
-12	12

4.14.2.54

Analog Fixed Gain

This field selects the amount of fixed audio gain (also known as linear) to be used for the radio's internal or external microphone.

This selection only applies while the radio is transmitting in analog mode. Linear is useful for adding pure gain to the signal. This selection applies to the current Radio Profile.

Accessed Only: When the Analog AGC field is disabled.

The following selections are supported:

Table 175: Range

Minimum	Maximum	Increments
-12 decibels	12 decibels	3 decibels

4.14.2.55

Securenet Mid Frequency Band

This field selects the sound level of calls received in an Securenet environment.

This selection applies to the current Radio Profile.

Table 176: Range

Minimum	Maximum
-12	12

4.14.2.56

Digital Fixed Gain

This field selects the amount of fixed audio gain (also known as linear) to be used for the radio's internal or external microphone.

This selection only applies while the radio is transmitting in digital mode. Linear is useful for adding pure gain to the signal. This selection applies to the current Radio Profile.

Accessed Only: When the [Digital AGC on page 832](#) field is disabled.

Table 177: Range

Minimum	Maximum	Increments
-12 decibels	12 decibels	3 decibels

4.14.2.57

Securenet High Frequency Band (Radio)

Selects the sound level of calls received in a Securenet environment.

 **WARNING:** The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to the current Radio Profile.



NOTE:

If the user set the Audio Configuration Level is set to **Basic**, then the Securenet High Frequency Band (Accessory) field is read-only (except for APX3000 radios only).

For Non-APX3000 radios, the Securenet High Frequency Band (Accessory) value is synchronized from the Securenet High Frequency Band (Radio).

For APX3000 radios, the Securenet High Frequency Band (Accessory) value is synchronized to the Securenet High Frequency Band (Radio).

Accessed Only:

(If the user set the Audio Configuration Level to **Basic**) When one of the enable AGC field is enabled, then this field is enabled; or]

(If the user set the Audio Configuration Level to **Enhanced**) When one of the enable AGC (Radio) field is enabled, then the Securenet High Frequency Band (Radio) field is enabled. When any one of the enable AGC (Accessory) field is enabled, then the Securenet High Frequency Band (Accessory) field is enabled.

Table 178: Range

Minimum	Maximum
-12	12

4.14.2.58

Acoustic Feedback Suppression

When enabled, Acoustic Feedback Suppression suppresses feedback or howling that results from radios being in a call while in close proximity of each other.

This feature is supported in the following accessory models for the following radios:

Table 179: Acoustic Feedback Suppression Supported Accessory Models

Radios	Accessory Models
APX NEXT	XV, XVP850, XVP830, XVE500, XVN500
APX N30	XVP730, XVP750, RM760, RM780
APX N50	
APX N70	

Acoustic Feedback Suppression is not supported for Securenet signaling mode, wireless audio accessories, or both.

For optimal Acoustic Feedback Suppression performance, you are recommended to select **Normal** as the Group Setting for Microphone and Speaker Audio Equalization. Apply the recommended Normal Group Setting to both radio and accessory configurations. Do not select the **Custom Group Setting** for Gain Control under Speaker Settings for the accessory configuration.

4.14.2.59

Securenet Fixed Gain (Radio)

Selects the amount of fixed audio gain (also known as linear) to be used for the radio's internal or external microphone.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection only applies while the radio is transmitting in Securenet mode. Linear is useful for adding pure gain to the signal. This selection applies to the current Radio Profile.

Accessed Only: When the [Securenet AGC on page 815](#) field is disabled and when the radio is model/option capable.

Table 180: Range

Minimum	Maximum	Increments
-12 decibels	12 decibels	3 decibels

4.14.2.60

Securenet Fixed Gain (Accessory)

Selects the amount of fixed audio gain (also known as linear) to be used for the radio's internal or external microphone.

 **WARNING:** The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection only applies while the radio is transmitting in Securenet mode. Linear is useful for adding pure gain to the signal. This selection applies to the current Radio Profile.

Accessed Only: When the Securenet AGC field is disabled and when the radio is model/option capable.

Table 181: Range

Minimum	Maximum	Increments
-12 decibels	12 decibels	3 decibels

4.14.2.61

SAM Mode

Speaker-As-Microphone (SAM) is an alternative audio source.

The audio performance improves in wind noise when you use the SAM Mode.

The available selections are **Off**, **On**, and **Wind_On**.

When you set this feature to **Wind_On**, the SAM audio input functions only in a windy condition.

Accessed Only: When the radio is model/option capable and when [Custom Noise Reduction on page 818](#) is **Enabled**.

4.14.2.62

Digital/Analog Balance

This field enables the audio transmission level to equalize or balance when switching between analog and digital and back, on a per Radio Profile basis.

The following table lists the selections and the sample audio clip for Digital/Analog Balance.

The selection is either **disabled** or **enabled**.



WARNING:

(If you set the Audio Configuration Level to **Basic**) When this field is enabled, then the Digital AGC (both Radio and Accessory), Analog AGC (both Radio and Accessory) in the same Radio Profile record / row must all be **Disabled**; otherwise, this selection is considered invalid.

(If you set the Audio Configuration Level to **Enhanced**) When Digital/Analog Balance (Radio) field is enabled, then the Digital AGC (Radio), Analog AGC (Radio) in the same Radio Profile record / row must all be **Disabled**; otherwise, this selection is considered invalid.

(If you set the Audio Configuration Level to **Enhanced**) When enabled, Digital/Analog Balance (Accessory) field is enabled, then the Digital AGC (Accessory) and Analog AGC (Accessory) in the same Radio Profile record / row must all be **Disabled**; otherwise, this selection is considered invalid.



NOTE:

If you set the Audio Configuration Level is set to **Basic**, then the Digital/Analog Balance (Accessory) field is read-only (except for APX3000 radios only).

For Non-APX3000 radios, the Digital/Analog Balance (Accessory) value is synchronized from the Digital/Analog Balance (Radio).

For APX3000 radios, the Digital/Analog Balance (Accessory) value is synchronized to the Digital/Analog Balance (Radio).

AGC Gain Control Total is applied to any of the AGC Fields.

Accessed Only:

(If the Audio Configuration Level is set to **Basic**) When any one of the enable AGC fields is enabled, then the Digital/Analog Balance fields are enabled; or

(If the Audio Configuration Level is set to **Enhanced**) When any one of the enable AGC (Radio) fields is enabled, then the Digital/Analog Balance fields are enabled. When any one of the enable AGC (Accessory) fields is enabled, then the Digital/Analog Balance (Accessory) field is enabled; or

When the Radio Wide, Digital/Analog Balance field is set to **Per Profile**.

4.14.2.63

Overload Comp (Radio)

This field enables Automatic compensation for mic overload to improve performance of the noise reduction in very loud conditions.

The selections are **Off** and **On**.

Accessed Only: When the radio is model/option capable and when [Custom Noise Reduction on page 818](#) is **Enabled**.

4.14.2.64

Auto Mode

This section allows you to view the automatic setting of the Noise suppression aggressiveness level for the radio and accessory.

4.14.2.64.1

Radio Mic Auto Mode

Radio Mic Auto Mode refers to the automatic setting of the Noise suppression aggressiveness for the radio.

The available selections are **Off** and **On**.

Accessed Only: When the radio is model/option capable and when [Custom Noise Reduction on page 818](#) is **Enabled**.

4.14.2.64.2

Accessory Mic Auto Mode

Accessory Mic Auto Mode refers to the automatic setting of the Noise suppression aggressiveness level for accessory.

The available selections are **Off** and **On**.

Accessed Only: When the radio is model/option capable and when [Custom Noise Reduction \(Accessory\)](#) is **Enabled**.

4.14.2.65

Speaker Gain Control Group Setting (Radio)

This field predefines a set of values for Speaker Gain Control.

For best results, you must set the volume knob to a comfortable listening level and allow incoming audio levels to automatically adjust.

When you set Group Setting to **Normal** or **Extended**, the values of AGC Gain Control Output and AGC Gain Control Total change accordingly.

The following selections are available:

Normal

This selection is preset as part of the default radio profile. This selection is suitable for most environments and use cases. AGC Gain Control Output is set to 0 and AGC Gain Control Total is set to 15.

Extended

This selection extends the range of the feature by allowing very low incoming audio signals to be boosted to comfortable listening levels. AGC Gain Control Output is set to 0 and AGC Gain Control Total is set to 21.

Off

This selection disables the Gain Control feature. The level of incoming audio is not adjusted.

Custom

This selection allows you to set individual total gain and output levels.

Accessed Only: This setting is an advanced setting that is only available in Expert View (see Codeplug View).

4.14.2.66

Speaker Gain Control Group Setting (Accessory)

This field predefines a set of values for Speaker Gain Control.

For best results, you must set the volume knob to a comfortable listening level and allow incoming audio levels to automatically adjust.

When you set Group Setting to **Normal** or **Extended**, the values of AGC Gain Control Output and AGC Gain Control Total change accordingly.

The following selections are available:

Normal

This selection is preset as part of the default radio profile. This selection is suitable for most environments and use cases. AGC Gain Control Output is set to 0 and AGC Gain Control Total is set to 15.

Extended

This selection extends the range of the feature by allowing very low incoming audio signals to be boosted to comfortable listening levels. AGC Gain Control Output is set to 0 and AGC Gain Control Total is set to 21.

Off

This selection disables the Gain Control feature. The level of incoming audio is not adjusted.

Custom

This selection allows you to set individual total gain and output levels.

Accessed Only: This setting is an advanced setting that is only available in Expert View (see Codeplug View).

4.14.2.67

Speaker AGC Gain Control Output (Radio)

This field selects a target output level for the speaker path.



WARNING: This field must only be modified by Qualified Service Personnel. Incorrect settings can cause unpredictable results to the radio.

The Speaker Automatic Gain Control (AGC) Gain Control Output is enforced after the Speaker AGC Gain Control Total is applied. If applying the Speaker AGC Gain Control Total causes the resulting level to exceed the output level, then the overall speaker output is limited to the output level.

The level set by this parameter is enforced as an offset to the current volume knob position. An increase in this parameter (positive values) has little noticeable effect at maximum volume. Similarly, a decrease in this parameter (negative values) has little noticeable effect at low volume.

For best use of this feature, you must set the volume knob to a comfortable listening level and allow incoming audio levels to automatically adjust.

4.14.2.68

Speaker AGC Gain Control Output (Accessory)

This field selects a target output level for the speaker path.



WARNING: This field must only be modified by Qualified Service Personnel. Incorrect settings can cause unpredictable results to the radio.

The Speaker Automatic Gain Control (AGC) Gain Control Output is enforced after the Speaker AGC Gain Control Total is applied. If applying the Speaker AGC Gain Control Total causes the resulting level to exceed the output level, then the overall speaker output is limited to the output level.

The level set by this parameter is enforced as an offset to the current volume knob position. An increase in this parameter (positive values) has little noticeable effect at maximum volume. Similarly, a decrease in this parameter (negative values) has little noticeable effect at low volume.

For best use of this feature, you must set the volume knob to a comfortable listening level and allow incoming audio levels to automatically adjust.

4.14.2.69

Speaker AGC Gain Control Total (Radio)

Speaker Automatic Gain Control (AGC) Gain Control Total is the amount of gain applied to the audio stream.

For incoming speaker levels that are below the output level, the actual speaker path output is: Speaker Output = Incoming Audio Stream + Speaker AGC Gain Control Total.

4.14.2.70

Speaker AGC Gain Control Total (Accessory)

Speaker Automatic Gain Control (AGC) Gain Control Total is the amount of gain applied to the audio stream.

For incoming speaker levels that are below the output level, the actual speaker path output is: Speaker Output = Incoming Audio Stream + Speaker AGC Gain Control Total.

4.15

Tone Signaling List

This section allows you to define individual Tone Signaling Lists. A maximum of 1000 records can be added in all Tone Signaling Lists.



NOTE:

When the Tone List Type is **Quik-Call II**, 10 separate Tone Signaling Lists are possible, with a maximum of 100 records each.

Individual Tone Signaling Lists are then selectable for Conventional and Trunking Personalities with their respective Tone Signaling List field.

For trunking communications, tone signaling applies only for trunking personalities that reference a trunking system and has its System Type field set to **ASTRO 25**.

When the Tone List Type is **Singletone**, maximum of 100 entries are allowed in one Tone Signaling List. Singletone Signaling Lists and Tone Alias records are then selectable for Conventional Personalities with their respective Tone Signaling Selection field.



NOTE: The radio can decode 1-10 tones in each list set and can encode all tones when Tone List Type is **Quik-Call II**.

4.15.1

Tone List Alias

This field allows you to define recognizable names for the current Tone Signaling List.

Once defined, individual Tone Signaling lists are then selectable for ASTRO Conventional and ASTRO 25 Trunking Personalities with their respective **Tone Signaling List** field.

Accessed Only: When the radio is model/option capable.

The following selections are supported:



NOTE:

EMT-001, #500, Electric1, # A5.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.15.2

Tone Alias

This field allows you to define the Tone text for a single tone in the Tone Signaling Table.

Accessed Only: When the radio is model/option capable.

4.15.3

Tone 1 Freq

This field selects the receive Tone 1 frequency for the current Tone Signaling List (record/row).

Once selected, a two-tone sequence requires the selection of the Tone 2 Freq.

This selection applies only for ASTRO Conventional and ASTRO 25 Trunking communications.



WARNING:

The digital AMBE Vocoder technology used by both the dispatch console and the radio does not precisely encode/decode the corresponding (analog) Quik-Call II frequencies; instead, within the relevant range of frequencies available for Tone1 Freq and Tone2 Freq (265.625 Hz – 3109.375 Hz), the vocoder transforms evenly distributed groups of frequencies into a set of "standard" frequencies, where each group has an allowable frequency range, and a standard frequency is defined at the center of each group.

Therefore, when a programmed tone frequency is within the allowable range of one of the standard frequencies, it is decoded by the radio as that frequency.

Optimally, the programmed tone frequencies of the radio should match the tone frequencies programmed into the dispatch console, to avoid potentially missing a call.

Specific tone frequency group definitions are dependent on the Channel Type and, therefore TDMA (Time Division Multiple Access) versus FDMA (Frequency Division Multiple Access) channels.

- For TDMA channels, there are 91 groups, where each group covers a 31.25 Hz range.
- For FDMA channels, there are 72 groups, where some groups cover a 31.25 Hz range, and some groups cover a 62.5 Hz range.

When configuring tone frequencies:

- For a single two-tone frequency record, a combination where both Tone1 Freq and Tone2 Freq are configured as the same tone must be avoided, as that two-tone entry cannot be decoded by the radio.
- For a single two-tone frequency record, a combination where both Tone1 Freq and Tone2 Freq fall within the same frequency group must be avoided as they are decoded as the same tone. For example, a two-tone frequency record having 927 Hz and 940 Hz are both decoded to be 937.5 Hz.
- For two separate tone records, a combination where Tone1 Freq and Tone2 Freq in the two records respectively fall within the same frequency group must be avoided as they are decoded as the same tone sequence. For example, if the first record is 927 Hz and 1240 Hz, and the second record is 940 Hz and 1260 Hz, both records are decoded as 937.5 Hz and 1250 Hz.
- In certain cases, a digital tone frequency cannot be consistently decoded to a specific frequency value, instead it is decoded randomly to one of two different values. The table lists the tone frequencies that must be avoided for both FDMA and TDMA channels.

See [List of Unsupported Tone Frequencies on page 846](#).

Accessed Only: When [Tone List Type on page 852](#) is **Quik-Call II**, and when the radio is model/option capable.

Table 182: Range

Minimum	Maximum	Increments
288.5 Hz	3086.0 Hz	0.1 Hz

See [TDMA-applicable Standard Frequencies and Group Ranges on page 846](#).

See [FDMA-applicable Standard Frequencies and Group Ranges on page 848](#).

4.15.3.1

List of Unsupported Tone Frequencies

Unsupported Frequencies (Hz) for TDMA/FDMA.

Do NOT attempt to program the following frequencies:

Frequencies (Hz)			
296.8	578.1	1140.6	1953.1
296.9	578.2	1171.9	2015.6
297	609.4	1203.1	2046.9
328.1	640.6	1265.6	2171.9
328.2	640.7	1328.1	2234.4
359.3	703.1	1359.4	2296.9
359.4	703.2	1390.6	2328.1
359.5	765.6	1421.9	2390.6
390.6	765.7	1453.1	2546.9
421.8	796.9	1484.4	2609.4
421.9	828.1	1546.9	2671.9
422	859.4	1609.4	2734.4
484.3	890.6	1671.9	2796.9
484.4	921.9	1703.1	2859.4
484.5	984.4	1734.4	2921.9
515.6	1046.9	1765.6	
546.8	1078.1	1828.1	
546.9	1109.4	1890.6	

4.15.3.2

TDMA-applicable Standard Frequencies and Group Ranges

For TDMA channels, there are 91 groups of frequencies, where each group covers a 31.25 Hz range. The table lists the standard frequency, and the corresponding minimum and maximum frequency, for each group.

Table 183: Frequencies

Index	Freq Range (Hz)	Decoded Freq (Hz)	Index	Freq Range (Hz)	Decoded Freq (Hz)	Index	Freq Range (Hz)	Decoded Freq (Hz)
1	265.7 - 296.8	281.25	32	1234.4 - 1265.6	1250	63	2203.2 - 2234.3	2218.75
2	296.9 - 328.1	312.5	33	1265.7 - 1296.8	1281.25	64	2234.4 - 2265.6	2250
3	328.2 - 359.3	343.75	34	1296.9 - 1328.1	1312.5	65	2265.7 - 2296.8	2281.25

Index	Freq Range (Hz)	Decoded Freq (Hz)	Index	Freq Range (Hz)	Decoded Freq (Hz)	Index	Freq Range (Hz)	Decoded Freq (Hz)
4	359.4 - 390.6	375	35	1328.2 - 1359.3	1343.75	66	2296.9 - 2328.1	2312.5
5	390.7 - 421.8	406.25	36	1359.4 - 1390.6	1375	67	2328.2 - 2359.3	2343.75
6	421.9 - 453.1	437.5	37	1390.7 - 1421.8	1406.25	68	2359.4 - 2390.6	2375
7	453.2 - 484.3	468.75	38	1421.9 - 1453.1	1437.5	69	2390.7 - 2421.8	2406.25
8	484.4 - 515.6	500	39	1453.2 - 1484.3	1468.75	70	2421.9 - 2453.1	2437.5
9	515.7 - 546.8	531.25	40	1484.4 - 1515.6	1500	71	2453.2 - 2484.3	2468.75
10	546.9 - 578.1	562.5	41	1515.7 - 1546.8	1531.25	72	2484.4 - 2515.6	2500
11	578.2 - 609.3	593.75	42	1546.9 - 1578.1	1562.5	73	2515.7 - 2546.8	2531.25
12	609.4 - 640.6	625	43	1578.2 - 1609.3	1593.75	74	2546.9 - 2578.1	2562.5
13	640.7 - 671.8	656.25	44	1609.4 - 1640.6	1625	75	2578.2 - 2609.3	2593.75
14	671.9 - 703.1	687.5	45	1640.7 - 1671.8	1656.25	76	2609.4 - 2640.6	2635
15	703.2 - 734.3	718.75	46	1671.9 - 1703.1	1687.5	77	2640.7 - 2671.8	2656.25
16	734.4 - 765.6	750	47	1703.2 - 1734.3	1718.75	78	2671.9 - 2703.1	2687.5
17	765.7 - 796.8	781.25	48	1734.4 - 1765.6	1750	79	2703.2 - 2734.3	2718.75
18	796.9 - 828.1	812.5	49	1765.7 - 1796.8	1781.75	80	2734.4 - 2765.6	2750
19	828.2 - 859.3	843.75	50	1796.9 - 1828.1	1812.5	81	2765.7 - 2796.8	2781.25
20	859.4 - 890.6	875	51	1828.2 - 1859.3	1843.75	82	2796.9 - 2828.1	2812.25
21	890.7 - 921.8	906.25	52	1859.4 - 1890.6	1875	83	2828.2 - 2859.3	2843.75
22	921.9 - 953.1	937.5	53	1890.7 - 1921.8	1906.25	84	2859.4 - 2890.6	2875
23	953.2 - 984.3	968.75	54	1921.9 - 1953.1	1937.5	85	2890.7 - 2921.8	2906.25
24	984.4 - 1015.6	1000	55	1953.2 - 1984.3	1968.75	86	2921.9 - 2953.1	2937.5

Index	Freq Range (Hz)	Decoded Freq (Hz)	Index	Freq Range (Hz)	Decoded Freq (Hz)	Index	Freq Range (Hz)	Decoded Freq (Hz)
25	1015.7 - 1046.8	1031.25	56	1984.4 - 2015.6	2000	87	2953.2 - 2984.3	2968.75
26	1046.9 - 1078.1	1062.5	57	2015.7 - 2046.8	2031.25	88	2984.4 - 3015.6	3000
27	1078.2 - 1109.3	1093.75	58	2046.9 - 2078.1	2062.5	89	3015.7 - 3046.8	3031.25
28	1109.4 - 1140.6	1125	59	2078.2 - 2109.3	2093.75	90	3046.9 - 3078.1	3062.5
29	1140.7 - 1171.8	1156.25	60	2109.4 - 2140.6	2125	91	3078.2 - 3109.3	3093.75
30	1171.9 - 1203.1	1187.5	61	2140.7 - 2171.8	2156.25			
31	1203.2 - 1234.3	1218.75	62	2171.9 - 2203.1	2187.5			



IMPORTANT:

When received by the radio, any tone frequency within a specific group (range) are decoded as the standard frequency for that group. For example, 937.5 Hz is a standard vocoder-supported tone frequency (for TDMA channels); therefore, any received tone frequency between 921.875 Hz and 953.125 Hz is decoded as a 937.5 Hz tone.

The Quik-Call II tone frequency range is 288.5 Hz – 3086 Hz. Per the above table, 288.5 Hz – 296.875 Hz is decoded by radio as 281.25 Hz, while 3046.875 Hz – 3086 Hz is decoded by radio as 3093.75 Hz.

4.15.3.3

FDMA-applicable Standard Frequencies and Group Ranges

For FDMA channels, there are 72 groups of frequencies, where some groups cover a 31.25 Hz, and some groups cover a 62.5 Hz range (bolded text below). The table lists the standard frequency, and the corresponding minimum and maximum frequency, for each group.

Table 184: Frequencies

Index	Freq Range (Hz)	Decoded Freq (Hz)	Index	Freq Range (Hz)	Decoded Freq (Hz)	Index	Freq Range (Hz)	Decoded Freq (Hz)
1	265.7 - 296.8	283	25	1015.7 - 1046.8	1032.5	49	1828.2 - 1859.3	1838.25
2	296.9 - 328.1	310.75	26	1046.9 - 1078.1	1055	50	1859.4 - 1890.6	1881.25
3	328.2 - 359.3	344.25	27	1078.2 - 1109.3	1103	51	1890.7 - 1953.1	1926.5
4	359.4 - 390.6	376.25	28	1109.4 - 1140.6	1128.75	52	1953.2 - 2015.6	1974
5	390.7 - 421.8	407.5	29	1140.7 - 1171.8	1155.75	53	2015.7 - 2046.8	2021.75

Index	Freq Range (Hz)	Decoded Freq (Hz)	Index	Freq Range (Hz)	Decoded Freq (Hz)	Index	Freq Range (Hz)	Decoded Freq (Hz)
6	421.9 – 453.1	435.25	30	1171.9 - 1203.1	1184.5	54	2046.9 - 2078.1	2065
7	453.2 – 484.3	467.25	31	1203.2 - 1234.3	1219	55	2078.2 - 2140.6	2110
8	484.4 – 515.6	496.25	32	1234.4 - 1265.6	1242.75	56	2140.7 - 2171.8	2156.75
9	515.7 – 546.8	528.5	33	1265.7 - 1296.8	1293.25	57	2171.9 - 2234.3	2205.75
10	546.9 – 578.1	566	34	1296.9 - 1328.1	1320	58	2234.4 - 2296.8	2257.5
11	578.2 – 609.3	598	35	1328.2 - 1359.3	1347.75	59	2296.9 - 2328.1	2311.75
12	609.4 – 640.6	621.5	36	1359.4 - 1390.6	1376.75	60	2328.2 - 2390.6	2369
13	640.7 – 671.8	660	37	1390.7 - 1421.8	1406.5	61	2390.7 - 2421.8	2409.25
14	671.9 – 703.1	688.25	38	1421.9 - 1453.1	1437.75	62	2421.9 - 2484.3	2461.5
15	703.2 – 734.3	719	39	1453.2 - 1484.3	1470.5	63	2484.4 - 2546.8	2516.25
16	734.4 – 765.6	752.5	40	1484.4 - 1515.6	1505	64	2546.9 - 2609.3	2573.5
17	765.7 – 796.8	789.75	41	1515.7 - 1546.8	1541.25	65	2609.4 - 2671.8	2633.75
18	796.9 – 828.1	806.25	42	1546.9 - 1609.3	1579.25	66	2671.9 - 2734.3	2697
19	828.2 – 859.3	849	43	1609.4 - 1640.6	1616.75	67	2734.4 - 2796.8	2763.75
20	859.4 – 890.6	880.5	44	1640.7 - 1671.8	1650	68	2796.9 - 2859.3	2813.25
21	890.7 – 921.8	914.25	45	1671.9 - 1703.1	1684.75	69	2859.4 - 2921.8	2875.5
22	921.9 – 953.1	932	46	1703.2 - 1734.3	1721	70	2921.9 - 2984.3	2941.25
23	953.2 – 984.3	970	47	1734.4 - 1765.6	1758.25	71	2984.4 - 3046.8	3010
24	984.4 - 1015.6	1011	48	1765.7 - 1828.1	1797.25	72	3046.9 - 3109.3	3082.25



IMPORTANT:

When received by the radio, any tone frequency within a specific group (range) will be decoded as the standard frequency for that group. For example, 932 Hz is a standard vocoder-supported tone

frequency (for FDMA channels); therefore, any received tone frequency between 921.875 Hz and 953.125 Hz will be decoded as a 932 Hz tone.

The Quik-Call II tone frequency range is 288.5 Hz – 3086 Hz. Per the above table, 288.5 Hz – 296.875 Hz is decoded by radio as 283 Hz, while 3046.875 Hz – 3086 Hz is decoded by radio as 3082.25 Hz.

4.15.4

Tone 2 Freq

This field selects the receive Tone 2 frequency for the current Tone Signaling List (record/row).

This is only required when a two-tone sequence is required, where Tone1 Freq and Tone2 Freq collectively define the desired sequence of tones in the current Tone Signaling List.

This selection applies only for ASTRO Conventional and ASTRO 25 Trunking communications.



WARNING:

The digital AMBE Vocoder technology used by both the dispatch console and the radio does not precisely encode/decode the corresponding (analog) Quik-Call II frequencies; instead, within the relevant range of frequencies available for Tone1 Freq and Tone2 Freq (265.625 Hz – 3109.375 Hz), the vocoder transforms evenly-distributed groups of frequencies into a set of "standard" frequencies, where each group has an allowable frequency range, and a standard frequency is defined at the center of each group.

Therefore, when a programmed tone frequency is within the allowable range of one of the standard frequencies, it is decoded by the radio as that frequency.

Optimally, the programmed tone frequencies of the radio should match the tone frequencies programmed into the dispatch console, to avoid potentially missing a call.

Specific tone frequency group definitions are dependent on the Channel Type and, therefore TDMA (Time Division Multiple Access) versus FDMA (Frequency Division Multiple Access) channels.

- For TDMA channels, there are 91 groups, where each group covers a 31.25 Hz range.
- For FDMA channels, there are 72 groups, where some groups cover a 31.25 Hz range, and some groups cover a 62.5 Hz range.

When configuring tone frequencies:

- For a single two-tone frequency record, a combination where both Tone1 Freq and Tone2 Freq are configured as the same tone must be avoided, as that two-tone entry cannot be decoded by the radio.
- For a single two-tone frequency record, a combination where both Tone1 Freq and Tone2 Freq fall within the same frequency group must be avoided as they are decoded as the same tone. For example, a two-tone frequency record having 927 Hz and 940 Hz are both decoded to be 937.5 Hz.
- For two separate tone records, a combination where Tone1 Freq and Tone2 Freq in the two records respectively fall within the same frequency group must be avoided as they are decoded as the same tone sequence. For example, if the first record is 927 Hz and 1240 Hz, and the second record is 940 Hz and 1260 Hz, both records are decoded as 937.5 Hz and 1250 Hz.
- In certain cases, a digital tone frequency cannot be consistently decoded to a specific frequency value, instead it is decoded randomly to one of two different values. The table lists the tone frequencies that must be avoided for both FDMA and TDMA channels.

See [List of Unsupported Tone Frequencies on page 846](#).

Accessed Only: When [Tone List Type on page 852](#) is **Quik-Call II**, and when the radio is model/option capable.

Table 185: Range

Minimum	Maximum	Increments
288.5 Hz	3086.0 Hz	0.1 Hz

See [TDMA-applicable Standard Frequencies and Group Ranges on page 846](#).

See [FDMA-applicable Standard Frequencies and Group Ranges on page 848](#).

4.15.5

Unmute Enable

This field enables the radio to remain muted to all received Conventional dispatch calls and affiliated Trunking group calls until the radio decodes the incoming Tone Signaling tones defined in the current record or row.

This selection applies only for ASTRO Conventional and ASTRO 25 Trunking communications.

NOTE:

- In situations where dispatch needs to sequentially transmit multiple signaling tones, the first qualified single tone or tone pair that matches the defined tones, unmutes the radio. You can hear subsequent tones before the voice message. An example of a situation is during an All-Call.
- This feature only operates on In-Call User Alert enabled channels where Voice Mute is active.
- The **Voice Mute** button or **Voice Mute** menu selection allows you to toggle on and off the Voice Mute functionality for In-Call User Alert enabled channels.
- The radio can decode and can encode all tones, when model applicable.

Accessed Only: When [Tone List Type on page 852](#) is **Quik-Call II**, and when the radio is model or option capable.

4.15.6

Alert Tone

This field selects a specific alert tone to play on receiving the Tone Signaling tones defined in the current record or row.

When the radio decodes the tones, it unmutes the speaker and plays the associated alert tone, followed by any voice audio.

This selection applies only for ASTRO Conventional and ASTRO 25 Trunking communications.

The following selections are supported:

- Disabled
- Standard
- Continuous
- Tone 1 to Tone 8

NOTE: The radio can decode and can encode all tones, when model applicable.

Accessed Only: When [Tone List Type on page 852](#) is **Quik-Call II**, and when the radio is model or option capable.

4.15.7

External Control

This field selects the Vehicular Interface Port (VIP) Output that is activated when the radio decodes the incoming Tone Signaling tones defined in the current record or row.



This field allows you to control an external device attached to the corresponding VIP Output pin.

This selection applies only for ASTRO Conventional and ASTRO 25 Trunking communications.

The following selections are supported:

None

VIP Output control is disabled.

Aux Control 1–3

Selects an "Aux Control" VIP Output activation when the corresponding tone (or tone pair) is decoded.

- The corresponding "Aux Control" VIP Output must be set to match this selection.
- The VIP Output is activated for the duration determined by the **Active Duration** field.



NOTE: The radio can decode and can encode all tones, when model applicable.

Accessed Only: When [Tone List Type on page 852](#) is **Quik-Call II**, and when the radio is model or option capable.

4.15.8

Tone List Type

This field selects the tone signaling type in the current Tone Signaling List.

Tone Signaling List are selected in Conventional/Trunking Personalities Tone Signaling List, or selected in Conventional Personalities Repeater Access (RAC) Singletone List Selection.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Singletone

One of the Tone Signaling that allows you to selectively access repeaters in all Conventional analog signaling.

Quik-Call II

One of the individual Tone Signaling.

4.15.9

Tone Freq

This field allows you to define the Singletone frequency for the Tone Signaling List.

Accessed Only: When [Tone List Type on page 852](#) is **Singletone**, and when the radio is model/option capable.

Table 186: Range

Minimum	Maximum	Increments
288.5 Hz	3086.0 Hz	0.1 Hz

4.15.10

Tone Duration

This field allows you to define the amount of time that the radio transmits a Singletone frequency tone.

Accessed Only: When [Tone List Type on page 852](#) is **Singletone**, and when the radio is model/option capable.

Table 187: Range

Minimum	Maximum	Increments
25 ms	6375 ms	25 ms

4.15.11

Tone Pretime

This field allows you to define the amount of time that the radio waits before sending a Singletone frequency tone.

Accessed Only: When [Tone List Type on page 852](#) is **Singletone**, and when the radio is model/option capable.

Table 188: Range

Minimum	Maximum	Increments
25 ms	6375 ms	25 ms

4.16

Voice Announcements

4.16.1

Voice Announcement Wide

This section allows you to view or assign Motorola Voice Announcement (*.MVA) files to specific radio features.

You can hear these voice prompts when one of the assigned features is selected. These selection apply on a radio wide basis.



NOTE: The Voice Announcement List allows you to load Motorola Voice Announcement (*.MVA) files into the current codeplug.

4.16.1.1

Voice Announcement Priority

This field selects whether or not Voice Announcement audio playback takes priority over the radio normal Receive (Rx) audio.

This selection applies on a radio wide basis.



IMPORTANT: This setting does not influence Voice Announcement interactions with alert tones. Momentary alert tones have higher priority than Voice Announcement audio, while Voice Announcement audio has higher priority than continuous alert tones.

The following selections are supported:

Low

Normal radio receive audio has priority.

High

Voice Announcement audio playback has priority.

4.16.1.2

Suppress Replay

When this field is enabled, Voice Announcement suppresses replay when interrupted by a momentary tone such as a button press tone.

When disabled and the radio plays a momentary tone in the middle of a voice announcement playback, the radio stops the voice announcement playback and plays the momentary alert tone.

After the momentary alert tone ends, the radio replays the voice announcement.

Examples of momentary alert tones:

- Keypress (Good Key/Bad Bonk) Tone
- Acknowledgment Received Tone
- Dynamic Regrouped Tone

Accessed Only: When the radio is Voice Announcement capable.



NOTE: This field is disabled by default.

4.16.1.3

Scan On

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to a Scan Mode ON operation.

When you toggle Scan Mode On, a voice prompt plays.

You can toggle Scan Mode On with a Scan button-press or a Scan switch-toggle or a Scan menu-selection. If Text-to-Speech (TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio. This feature is not applicable when Automatic Scan is enabled on the operating channel of the radio.

This selection applies on a radio wide basis.



NOTE: The Voice Announcement List Page allows you to load Motorola Voice Announcement (*.MVA) files into the application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Scan On is played as audio.

Motorola Voice Announcement (*.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.4

Scan On TTS Announcement

A common spoken word to reference the Scan On field for Text-to-Speech (TTS) announcements.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- [Scan On on page 854](#) is set to **TTS**.
- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.5

Scan Off

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to a Scan Mode OFF operation.

When you toggle Scan Mode Off, a voice prompt plays.

You can toggle Scan Mode Off with a Scan button-press or a Scan switch-toggle or a Scan menu-selection. If Text-to-Speech (TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio. This feature is not applicable when Automatic Scan is enabled on the operating channel of the radio.

This selection applies on a radio wide basis.



NOTE: The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Scan Off is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.6

Scan Off TTS Announcement

A common spoken word to reference the Scan Off field for Text-to-Speech (TTS) announcements.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- [Scan Off on page 855](#) is set to **TTS**.
- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.7

Monitor On

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to Monitor Mode On operation.

If Text-to-Speech (TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio. Monitor Mode is also known as PL Defeat. Monitor Mode allows you to monitor all carrier squelch activity on the current channel of the radio.

When you toggle Monitor Mode/PL Defeat On, a voice prompt plays. This selection applies only to Conventional communications.



WARNING:

- For Mobile radios the Voice Announcement file is only initiated on a Monitor button-press or a Monitor menu-selection.
- For Portable radios the Voice Announcement file is only initiated on a PL Disable switch-toggle.



NOTE:

- The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.
- In Mobiles radios, you can toggle Monitor Mode Off with a Monitor button-press or a Monitor menu-selection.
- In Portable radios, you can toggle PL Defeat Off with a PL Disable switch-toggle.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Monitor On is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.8

Monitor On TTS Announcement

A common spoken word to reference the Monitor On field for Text-to-Speech (TTS) announcements.

 **NOTE:** This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- [Monitor On on page 856](#) is set to **TTS**.
- The radio is model or option capable.

 **NOTE:**
The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.9

Monitor Off

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to Monitor Mode OFF operation.

If Text-to-Speech (TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio. Monitor Mode is also known as PL Defeat. Monitor Mode allows you to monitor all carrier squelch activity on the current channel of the radio.

When you toggle Monitor Mode/PL Defeat Off a voice prompt plays. This selection applies only to Conventional communications.

WARNING:

- For Mobile radios the Voice Announcement file is only initiated on a Monitor button-press or a Monitor menu-selection.
- For Portable radios the Voice Announcement file is only initiated on a PL Disable switch-toggle.

 **NOTE:**

- The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.
- In Mobiles radios, you can toggle Monitor Mode Off with a Monitor button-press or a Monitor menu-selection.
- In Portable radios, you can toggle PL Defeat Off with a PL Disable switch-toggle.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Monitor Off is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.10

Monitor Off TTS Announcement

A common spoken word to reference the Monitor Off field for Text-to-Speech (TTS) announcements.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- [Monitor Off on page 857](#) is set to **TTS**.
- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.11

Direct Mode On

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to a Direct Mode ON operation.

If Text-to-Speech (TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio. When you toggle Direct Mode On, a voice prompt plays. You can toggle Direct Mode On with a Direct Mode DEK (Direct Entry Keypad) button-press.

This selection applies on a radio wide basis.



NOTE: The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Direct Mode On is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.12

Direct Mode On TTS Announcement

A common spoken word to reference the Direct Mode On field for Text-to-Speech (TTS) announcements.

 **NOTE:** This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- [Direct Mode On on page 858](#) is set to **TTS**.
- The radio is model or option capable.

 **NOTE:**
The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.13

Direct Mode Off

This field selects which Motorola Voice Announcement (*.MVA*) file, if any, is assigned to a Direct Mode OFF operation.

If Text-to-Speech (TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio. When you toggle Direct Mode Off, a voice prompt plays. You can toggle Direct Mode Off with a Direct Mode DEK (Direct Entry Keypad) button-press.

This selection applies on a radio wide basis.

 **NOTE:** The Voice Announcement List Page allows you to load Motorola Voice Announcement (*.MVA*) files into the current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Direct Mode Off is played as audio.

Motorola Voice Announcement (*.MVA*) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.14

Direct Mode Off TTS Announcement

A common spoken word to reference the Direct Mode Off field for Text-to-Speech (TTS) announcements.

 **NOTE:** This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- [Direct Mode Off on page 859](#) is set to **TTS**.
- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.15

Tx Inhibit On

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to a Tx Inhibit On operation.

When you toggle Tx Inhibit On, a voice prompt plays. You can toggle Tx Inhibit On with a Tx Inhibit switch-toggle or a Tx Inhibit menu-selection.

This selection applies on a radio wide basis.



NOTE: The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Tx Inhibit On is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.16

Tx Inhibit On TTS Announcement

A common spoken word to reference the Tx Inhibit On field for Text-to-Speech (TTS) announcements.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- The corresponding Voice Announcement field is set to **TTS**.
- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.17

Tx Inhibit Off

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to a Tx Inhibit Off (disabled) operation.

When you toggle Tx Inhibit Off, a voice prompt plays. You can toggle Tx Inhibit Off with a Tx Inhibit Disabled switch-toggle or a Tx Inhibit menu-selection.

This selection applies on a radio wide basis.



NOTE: The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Tx Inhibit Off is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.18

Tx Inhibit Off TTS Announcement

A common spoken word to reference the Tx Inhibit Off field for Text-to-Speech (TTS) announcements.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- The corresponding Voice Announcement field is set to **TTS**.
- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.19

Emergency On

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to an Emergency Mode ON operation.

If Text-to-Speech (TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio. When you toggle Emergency Mode On, a voice prompt plays.

You can initiate an Emergency transmission with an Emergency button-press, or a press of a footswitch, or even without your direct interaction with the emergency alarm Fall Alert feature.

This selection applies on a radio wide basis.

 **NOTE:** The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Emergency On is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.20

Emergency On TTS Announcement

A common spoken word to reference the Emergency On field for Text-to-Speech (TTS) announcements.

 **NOTE:** This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- [Emergency On on page 861](#) is set to **TTS**.
- The radio is model or option capable.

 **NOTE:**
The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.21

In-Call User Alert On

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned when Voice Mute functionality is toggled ON for In-Call User Alert-enabled channels.

If Text-to-Speech (TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio. When you toggle Voice Mute On for an In-Call User Alert-enabled channel, a voice prompt plays.

You can toggle Voice Mute On with a Voice Mute button-press or the Voice Mute menu-selection. This selection applies on a radio wide basis.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for In-Call User Alert On is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.22

In-Call User Alert On TTS Announcement

A common spoken word to reference the In-Call User Alert On field for Text-to-Speech (TTS) announcements.

 **NOTE:** This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- The corresponding Voice Announcement field is set to **TTS**.
- The radio is model or option capable.

 **NOTE:**
The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.23

In-Call User Alert Off

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned when Voice Mute functionality is toggled OFF for In-Call User Alert-enabled channels.

If Text-to-Speech (TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio. When you toggles Voice Mute Off for an In-Call User Alert-enabled channel, a voice prompt plays.

You can toggle Voice Mute Off with a Voice Mute button-press or the Voice Mute menu-selection.

This selection applies on a radio wide basis.

 **NOTE:** The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for In-Call User Alert Off is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.24

In-Call User Alert Off TTS Announcement

A common spoken word to reference the In-Call User Alert Off field for Text-to-Speech (TTS) announcements.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- The corresponding Voice Announcement field is set to **TTS**.
- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.25

Secure Tx Select On

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to toggling secure encrypted transmissions ON.

If Text-to-Speech (TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio. When you toggle secure encrypted transmissions On, a voice prompt plays.

You can toggle secure encrypted transmissions with a Secure Tx Select button-press or a Secure Tx Select switch-toggle, or the Secure menu-selection.

This selection applies on a radio wide basis.



NOTE: The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Secure Tx Select On is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.26

Secure Tx Select On TTS Announcement

A common spoken word to reference the Secure Tx Select On field for Text-to-Speech (TTS) announcements.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- [Secure Tx Select On on page 864](#) is set to **TTS**.
- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.27

Secure Tx Select Off

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to toggling secure encrypted transmissions OFF (in other words, enabling "clear" transmissions).

If Text-to-Speech (TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio. When you toggle Secure Encrypted Transmissions Off, a voice prompt plays.

You can toggle Secure Encrypted Transmissions OFF with a Secure Tx Select button-press or a Secure Tx Select switch-toggle, or the Secure menu-selection.

This selection applies on a radio wide basis.



NOTE: The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Secure Tx Select Off is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.28

Secure Tx Select Off TTS Announcement

A common spoken word to reference the Secure Tx Select Off field for Text-to-Speech (TTS) announcements.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- [Secure Tx Select Off on page 865](#) is set to **TTS**.

- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.29

Keypad/Controls Lock On

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to a Keypad/Controls Lock On operation.



When you toggle Keypad/Controls Lock ON, a voice prompt plays.

You can toggle Keypad/Controls Lock On with a Keypad/Controls Lock button-press or a Keypad/Controls Lock switch-toggle.

This selection applies on a radio wide basis.



NOTE: The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Keypad/Controls Lock On is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.30

Keypad/Controls Lock On TTS Announcement

A common spoken word to reference the Keypad/Controls Lock On field for Text-to-Speech (TTS) announcements.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- The corresponding Voice Announcement field is set to **TTS**.

- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.31

Keypad/Controls Lock Off

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to a Keypad/Controls Lock Off operation.



When you toggle Keypad/Controls Lock Off, a voice prompt plays.

You can toggle Keypad/Controls Lock Off with a Keypad/Controls Lock button-press or a Keypad/Controls Lock switch-toggle.

This selection applies on a radio wide basis.



NOTE: The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Keypad/Controls Lock Off is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.32

Keypad/Controls Lock Off TTS Announcement

A common spoken word to reference the Keypad/Controls Lock Off field for Text-to-Speech (TTS) announcements.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- The corresponding Voice Announcement field is set to **TTS**.

- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.33

Multi-Functional Button Primary Mode



When you toggle Primary Mode On, a voice prompt plays.

You can toggle Primary Mode On with a Multi Function Button Toggle button-press.

This selection applies on a radio wide basis.



NOTE: The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Multi-Functional Button Primary Mode is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.34

Multi-Functional Button Primary Mode TTS Announcement

A common spoken word to reference the Multi-Functional Button Primary Mode field for Text-to-Speech (TTS) announcements.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- The corresponding Voice Announcement field is set to **TTS**.
- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.35

Multi-Functional Button Secondary Mode

This field selects which Motorola Voice Announcement (.MVA) file, if any, is assigned to Secondary Mode operation for the APX™3000 Portable's Multi Function Arrow Buttons.



When you toggle Secondary Mode On, a voice prompt plays.

You can toggle Secondary Mode On with a Multi Function Button Toggle button-press.

This selection applies on a radio wide basis.



NOTE: The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the application's current codeplug.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Multi-Functional Button Secondary Mode is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

4.16.1.36

Multi-Functional Button Secondary Mode TTS Announcement

A common spoken word to reference the Multi-Functional Button Secondary Mode field for Text-to-Speech (TTS) announcements.



NOTE: This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

Accessed Only:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- The corresponding Voice Announcement field is set to **TTS**.
- The radio is model or option capable.



NOTE:

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.37

Exit Hazard Zone Mode

This field allows you to select the predefined Motorola Voice Announcement (.MVA) file that is assigned to the Exit Hazard Zone Mode event.

The radio prompts voice announcement when you toggle the two-way concentric switch to exit the mode.



NOTE: For the latest Fire Service Standards models, selecting **NONE** is disabled.

4.16.1.38

Exit Hazard Zone Mode TTS

A common spoken word to reference the Exit Hazard Zone Mode field for Text-to-Speech (TTS) announcements.



NOTE:

This field is only applicable for APX NEXT and APX N70 radios.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.39

Self Check Failure

This field allows you to select the predefined Motorola Voice Announcement (.MVA) file that is assigned to the Self Check Failure operation. The radio prompts voice announcement when any of the operations fails.

The Self Check operation verifies the following:

- RSM Connection to the RF device.
- Loss of antenna connection to the RF device.
- Temperature is over the manufacturer recommended overheat temperature.
- Battery with at least 50% of the total capacity available (power-up only).



NOTE: For the latest Fire Service Standards models, selecting **NONE** is disabled.

4.16.1.40

Self Check Failure TTS

A common spoken word to reference the Self Check Failure field for Text-to-Speech (TTS) announcements.



NOTE:

This field is only applicable for APX NEXT and APX N70 radios.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.41

Accessory Failure

This field allows you to select the predefined Motorola Voice Announcement (.MVA) file that is assigned to the Accessory Failure event. The radio prompts voice announcement when the event occurs.



NOTE: For the latest Fire Service Standards models, selecting **NONE** is disabled.

4.16.1.42

Accessory Failure TTS

A common spoken word to reference the Accessory Failure field for Text-to-Speech announcements.



NOTE:

This field is only applicable for APX NEXT and APX N70 radios.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.43

Out of Range

This field allows you to select the predefined Motorola Voice Announcement (.MVA) file that is assigned to the Out of Range event. The radio prompts voice announcement when the event occurs.



NOTE:

For the latest Fire Service Standards models, selecting **NONE** is disabled.

The Voice Over is heard when the Out of Range Indicator is set to **Alert or Alert & Display**.

When out of range is on the **Hazard Zone Mode** channel, the radio prompts voice announcement when the event occurs.

4.16.1.44

Out of Range TTS

A common spoken word to reference the Out of Range field for Text-to-Speech (TTS) announcements.



NOTE:

This field is only applicable for APX NEXT and APX N70 radios.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.45

Over Temperature

This field allows you to select the predefined Motorola Voice Announcement (.MVA) file that is assigned to the Over Temperature event. The radio prompts voice announcement when the event occurs.



NOTE: For the latest Fire Service Standards models, selecting **NONE** is disabled.

4.16.1.46

Over Temperature TTS

A common spoken word to reference the Over Temperature TTS field for Text-to-Speech (TTS) announcements.



NOTE:

This field is only applicable for APX NEXT and APX N70 radios.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.47

Power Down

This field allows you to select the predefined Motorola Voice Announcement (.MVA) file that is assigned to the Power Down event. The radio prompts voice announcement when the event occurs.



NOTE: For the latest Fire Service Standards models, selecting **NONE** is disabled.

4.16.1.48

Power Down TTS

A common spoken word to reference the Power Down field for Text-to-Speech (TTS) announcements.



NOTE:

This field is only applicable for APX NEXT and APX N70 radios.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.49

Antenna Failure

This field allows you to select the predefined Motorola Voice Announcement (.MVA) file that is assigned to the Antenna Failure operation. The radio prompts voice announcement when the operations occur.



NOTE: This field is applicable for APX NEXT NFPA radios only.

4.16.1.50

Antenna Failure TTS

A common spoken word to reference the Antenna Failure TTS field for Text-to-Speech (TTS) announcements.



NOTE:

This field is only applicable for APX NEXT and APX N70 radios.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.51

Channel Fallback On

This field determines the available Motorola Voice Announcement (.MVA) file that is assigned to a Channel Fallback On operation.

If Text-to-Speech (TTS) is selected, the text in the corresponding **Voice Command** field is converted to speech and played as audio. When you toggle Channel Fallback On, a voice prompt plays. You can toggle Channel Fallback On by pressing the **Automatic Channel Fallback Enable** button.

This selection applies on a radio-wide basis.

 **NOTE:** The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the current codeplug of the application.

The following selections are supported:

None

No voice prompt is needed for this feature.

TTS

When the Voice Control feature is enabled, the text in the **Voice Command** field for Channel Fallback On is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

Accessed Only: TTS is only visible when the codeplug has the Voice Control or Voice Control Basic options.

4.16.1.52

Channel Fallback On TTS Announcement

A common spoken word to reference the Channel Fallback On field for Text-to-Speech (TTS) announcements.

 **NOTE:** This field is only applicable for APX NEXT and APX N70 radios.

When you click the **Play**  button, the application converts the text in the voice command field to speech and plays it through the speaker.

 **NOTE:** The default value is blank. You can use up to 35 alphanumeric unicode characters.

Accessed Only: You can access this field only when the following conditions are met:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- The corresponding Voice Announcement field is set to **TTS**.
- The radio is model or option capable.

4.16.1.53

Channel Fallback Off

This field determines the available Motorola Voice Announcement (.MVA) file that is assigned to a Channel Fallback Off operation.

If Text-to-Speech (TTS) is selected, the text in the corresponding **Voice Command** field is converted to speech and played as audio. When you toggle Channel Fallback Off, a voice prompt plays. You can toggle Channel Fallback Off by pressing and holding the **Automatic Channel Fallback Disable** button.

This selection applies on a radio-wide basis.

 **NOTE:** The Voice Announcement List Page allows you to load Motorola Voice Announcement (.MVA) files into the current codeplug of the application.

The following selections are supported:

None

No voice prompt is needed for this radio feature.

TTS

When the Voice Control feature is enabled, the text in the **Voice Command** field for Channel Fallback Off is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the Voice Announcement File List Page.

Accessed Only: TTS is only visible when the codeplug has the Voice Control or Voice Control Basic options.

4.16.1.54

Channel Fallback Off TTS Announcement

A common spoken word to reference the Channel Fallback Off field for Text-to-Speech (TTS) announcements.

 **NOTE:** This field is only applicable for APX NEXT and APX N70 radios.

When the **Play**  button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

 **NOTE:**
The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

Accessed Only: You can access this field only when the following conditions are met:

- [ViQi: Voice Control Priority on page 358](#) is not set to **Disabled**.
- The corresponding Voice Announcement field is set to **TTS**.
- The radio is model or option capable.

4.16.1.55

RF Device Cumulative Over Temperature

This field allows you to select the predefined Motorola Voice Announcement (.MVA) file that is assigned to the RF Device Cumulative Over Temperature event. The radio prompts voice announcement when the event occurs.

 **NOTE:**
This field is only applicable for APX NEXT XN radios.

For the latest Fire Service Standards models, selecting **NONE** is disabled.

4.16.1.56

RF Device Cumulative Over Temperature TTS

A common spoken word to reference the RF Device Cumulative Over Temperature TTS field for Text-to-Speech (TTS) announcements.



NOTE:

This field is only applicable for APX NEXT XN radios.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.57

Optional Component Cumulative Over Temperature

This field allows you to select the Motorola Voice Announcement (.MVA) file that is assigned to the Optional Component Cumulative Over Temperature operation. The radio prompts voice announcement when the operation occurs.



NOTE:

This field is only applicable for APX NEXT XN radios.

For the latest Fire Service Standards models, selecting **NONE** is disabled.

4.16.1.58

Optional Component Cumulative Over Temperature TTS

A common spoken word to reference the Optional Component Cumulative Over Temperature field for Text-to-Speech (TTS) announcements.



NOTE:

This field is only applicable for APX NEXT XN radios.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.59

Battery Cumulative Over Temperature

This field allows you to select the Motorola Voice Announcement (.MVA) file that is assigned to the Battery Cumulative Over Temperature event. The radio prompts voice announcement when the event occurs.



NOTE:

This field is only applicable for APX NEXT XN radios.

For the latest Fire Service Standards models, selecting **NONE** is disabled.

4.16.1.60

Battery Cumulative Over Temperature TTS

A common spoken word to reference the Battery Cumulative Over Temperature field for Text-to-Speech (TTS) announcements.



NOTE:

This field is only applicable for APX NEXT XN radios.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.61

Non-Hazard Mode Accessory

This field allows you to select the predefined Motorola Voice Announcement (.MVA) file that is assigned to the Non-Hazard Mode Accessory event. The radio prompts voice announcement when the event occurs.



NOTE:

This field is only applicable for APX NEXT XN radios.

For the latest Fire Service Standards models, selecting **NONE** is disabled.

4.16.1.62

Non-Hazard Mode Accessory TTS

A common spoken word to reference the Non-Hazard Mode Accessory field for Text-to-Speech (TTS) announcements.



NOTE:

This field is only applicable for APX NEXT XN radios.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.16.1.63

Site Selectable Alert Allowed in Out of Range

This field enables the radio to continue providing ergonomic feedback associated with the last received Site Selectable Alert (SSA), in the event that, during the Alert, the radio has roamed outside the Site's coverage range.

Ergonomic feedback of the decoded SSA includes sounding the recurring Voice Announcement associated with the SSA, and displaying its Alert Alias with intelligent lighting, if enabled. This selection applies for Trunking communications.

When disabled, the radio stops providing ergonomic feedback for the last Site Selectable Alert once the radio has roamed outside the Site's coverage range.



NOTE:

- A Site Selectable Alert List is assigned to an ASTRO 25 Trunking System through its Site Selectable Alert List Selection field.
- You can activate and deactivate Site Selectable Alerts which have their **Subscriber Encodable** field **enabled** with a Site Selectable Alert menu-selection. Either a single site or all available sites in the Zone can be selected for activating or deactivating a Site Selectable Alert.

Accessed Only: When the radio is model/option capable.

4.16.2

Site Selectable Alert List

This section allows you to view or define individual Site Selectable Alerts for ASTRO 25 Trunking communications.

This feature applies for Trunking communications.



IMPORTANT:

Up to fifteen different Site Selectable Alerts (SSA) per List may be defined for encoding and/or decoding by the radio; however, you can only select an SSA that has its Subscriber Encodable field **enabled** for encoding (sending to the FNE). Once the FNE receives an SSA from a radio, it then broadcasts it to all radios at a site using a proprietary Motorola Solutions System Broadcast OSP (Outbound Signaling Packet) on the outbound Control Channel.

Audio from a standard Voice Announcement (a one-time event) is always given priority over Site Selectable Alert audio (a recurring event).

Only one Site Selectable Alert can be active at a site at any given time.



NOTE:

The appropriate Motorola Voice Announcement Files (*.MVA) must first be loaded into the Voice Announcement List before it can be selected for a Site Selectable Alert List record/row from the corresponding Alert Audio File field.

A Site Selectable Alert List can be assigned to a trunking system through its Site Selectable Alert List Selection field.

You can activate and deactivate Site Selectable Alerts which have their Subscriber Encodable field **enable** with a Site Selectable Alert menu-selection. Either a single site or all available sites in the Zone can be selected for activating or deactivating a Site Selectable Alert.

4.16.2.1

Site Selectable Alert List Name

This field allows you to view or define recognizable names for the current Site Selectable Alert in the current Site Selectable Alert List.

Site Selectable Alert Lists are selected for use from a Trunking System's **Site Selectable Alert List** selection field.



NOTE:

Iron Ore Mine, Copper Mine, SSA List #3.

Characters, numbers, spaces, and special characters can be used.

A total of 14 characters are possible.

4.16.2.2

Alert Alias

This field allows you to define recognizable names for the current Site Selectable Alert (record/row) of the current Site Selectable Alert List.

This Alias then appears in the radio's display when you scroll through the Site Selectable Alert List, or when the radio receives a Site Selectable Alert broadcast from the Fixed Network Equipment (FNE).

This selection applies for Trunking communications.



NOTE:

Evacuate, Park Up, Tornado Siren, Alert #1.

Characters, numbers, spaces, and special characters can be used.

A total of 14 characters are possible.

The Alert Alias appears in the display.

4.16.2.3

Alert Audio File

This field selects which Motorola Voice Announcement (*.MVA) file, if any, is assigned to the current Site Selectable Alert (record/row) of the current Site Selectable Alert List.

When the radio receives a Site Selectable Alert broadcast from the Fixed Network Equipment (FNE), the corresponding audio/voice prompt plays.

This selection applies for Trunking communications.



NOTE: The appropriate Motorola Voice Announcement Files (*.MVA) must first be loaded into the Voice Announcement List before they may be selected for a Site Selectable Alert List record/row.

The following selections are supported:

None

No audio/voice alert is needed for this radio feature.

Motorola Voice Announcement (*.MVA) file

Lists all possible audio/voice files loaded into the Voice Announcement File List Page.

4.16.2.4

Alert Period

This field selects the amount of time that the radio waits before replaying the Alert Audio File for the current Site Selectable Alert (record/row) in the current Site Selectable Alert List.

This selection applies for Trunking communications.



WARNING: The lower the Alert Period value, the more frequently the audio is played. Constant playing of the audio over hours/days can eventually diminish radio battery life.

Table 189: Range

Minimum	Maximum	Increments	Default Value
5 seconds	255 seconds	1 second	15 seconds

4.16.2.5

Subscriber Encodable

This field enables the Alert Alias of the current Site Selectable Alert (record/row) to be shown in the radio (subscriber unit) display, therefore making the selected Alert encodable for broadcast.

Using the Site Selectable Alerts menu-selection, you may then scroll through all encodable Alerts in the Site Selectable Alert List and activate, or subsequently deactivate, a selected Alert.

This selection applies for Trunking communications.

4.16.3

Voice Announcement List

This section allows you to load Motorola Voice Announcement (*.MVA) files into the current codeplug.



NOTE:

During a Codeplug Comparison operation, this Voice Announcement List only supports the **Copy All Fields** functionality (that is, there will not be individual Copy buttons beside the voice file names). When the **Copy All Fields** feature is initiated, all voice files in the secondary codeplug are copied to the primary codeplug.



NOTE:

A Motorola Voice Announcement File (*.MVA) can only be generated from a *.WAV file using the Voice Announcement Converter Utility.

Once loaded into this list, voice/audio files are available for selection from any of the Voice Announcement fields on the Voice Announcement Wide Set, from the Alert Audio File field of the Site Selectable Alert List, and from the Zone Channel Assignment's, Channel Announcement and Zone Announcement fields.



NOTE:

Add a Voice File:

- The plus button on the Multiple Record Toolbar - Table View allows you to add one or more voice/audio files (and record/rows) to the current application codeplug.
- A Windows file selection dialog opens allowing you to navigate your computer's file system for the desired voice files

4.16.3.1

Voice File Name

This field allows you to view or rename recognizable names for the Motorola Voice Announcement (*.MVA) voice or audio file (record/row).

By default, each voice/audio file record inherits the filename of the *.mva file that was originally loaded.

Clicking and then typing text into this **Voice Filename** field, allows you to change the name that is given to a voice or audio file record.

However, this does not change the data of the originally selected voice or audio file.

4.16.3.2

Voice File Browse Button

This field allows you to select a new Motorola Voice Announcement (*.MVA) voice/audio file for the current record/row.

A Windows file selection dialog opens allowing you to navigate your computer's file system for the desired voice file.

4.17

Secure Wide

This section allows you to view and define functionality for secure encoded transmit and receive communications.



NOTE: When a Secure/Clear Strapping field is set to **Select** for a certain channel, either the Secure Tx Select button-press, Secure Tx Select switch-toggle, or the Secure menu-selection allows you to toggle between Secure or Clear communications for that channel.

Accessed Only: When the radio is a model or option capable.

4.17.1

General

This section allows you to view or define basic secure encryption functionality.



NOTE: When a Secure/Clear Strapping field is set to **Select** for a certain channel, either the Secure Tx Select button-press, Secure Tx Select switch-toggle, or the Secure menu-selection allows you to toggle between Secure or Clear communications for that channel.

Accessed Only: When the radio is a model/option capable.

4.17.1.1

Secure Operation

This field selects the secure encrypted communications mode that is used on a radio-wide basis.



NOTE: When a [Secure/Clear Strapping on page 1005](#) field is set to **Select** for a certain channel, either the Secure Tx Select button-press, [Secure Tx Select on page 511](#) switch-toggle, or the Secure menu-selection allows you to toggle between Secure or Clear communications for that channel.



WARNING: When the Tactical Inhibit Enable field is enabled, this field can only be set to **Disabled** or **Hardware**. Otherwise, the application considers it invalid.

Accessed Only: When the radio is a model/option capable.

The following selections are supported:

Disabled

Secure encryption is not possible.

Hardware

Encryption Services are performed by a separate hardware IC that is certified at FIPS (Federal Information Processing Standard) 140-2 levels 2 and 3, depending on the configuration of the Red Key Fill parameter, and can support multiple drop-in encryption algorithms for higher security.

Software



WARNING: Not possible for Type II Trunking.

The following software encryption algorithms are supported:

Advanced Digital Privacy (ADP)

Encryption Services are performed by a software implementation of the RC-4 algorithm that is not subject to any FIPS certification level.

Data Encryption Standard (DES-OFB)

Encryption Services are performed by a software implementation of the DES algorithm.

Advanced Encryption Standard (AES256)

Encryption Services are performed by a software implementation of the AES algorithm and is certified at FIPS 140-1.



NOTE: DES-OFB and AES256 require KVL keyloading source.

4.17.1.2

OTAR Generate Key-Loss-Key

This field enables the radio to automatically transmit a Key-Loss Key signal notifying the ASTRO Over-The-Air-Rekeying (OTAR) Key Management Facility (KMF) or the MDC OTAR Key Management Controller (KMC) that the radio needs a new encryption key.

This new encryption key is used for encrypting OTAR messages. Once the Key-Loss Key signal is received, a new encryption key is transmitted to the radio for the purpose of receiving additional encryption keys. OTAR is possible from an MDC or ASTRO - Conventional channel, or an ASTRO 25 - Trunking channel.



WARNING: When disabled, the OTAR rekey of the radio is prevented if the radio loses all of its keys.



WARNING: Changes to the setting for this field may potentially impact the FIPS Mode of operation in the device, which will cause all critical security parameters (key material and password) to be erased. See FIPS Modes of Operation for more information.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** and when the OTAR Operation field is not set to **Disabled**, and the radio is model/option capable.

4.17.1.3

KVL - FIPS Level 3 Approved Mode

This field enables Federal Information Processing Standard (FIPS) Level 3 encryption requiring that key fills with the Key-Variable Loader (KVL) transfer the keys to the radio in an encrypted mode.



WARNING: This requires that a KVL 3000 Plus or KVL 4000 that also supports and is configured for FIPS Level 3 encryption are used.



WARNING: Changes to the setting for this field may potentially impact the FIPS Mode of operation in the device, which will cause all critical security parameters (key material and password) to be erased. See FIPS Modes of Operation for more information.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** and the radio is model/option capable.

4.17.1.4

Enhanced SW Key Erase on Radio Inhibit

When enabled, the radio erases all Advanced Digital Privacy (ADP) or Advanced Encryption Standard (AES) encryption keys when the radio enters a Radio Inhibit state.

Radio Inhibit is enabled on a per Conventional System and/or Trunking System basis.

When disabled, all ADP or AES encryption keys are retained by the radio when the radio enters a Radio Inhibit state.



WARNING: This field is mutually-exclusive with [Over-The-Air-Rekeying \(OTAR\) Operation](#) being **Enabled**.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Software** and the radio is a model/option capable, and
when the [Advanced Digital Privacy on page 882](#) field is enabled, or
when the [Advanced Encrypted Standard \(AES256\) on page 882](#) is enabled but the [Over-The-Air-Rekeying \(OTAR\) Operation](#) field is **Disabled**.

4.17.1.5

Advanced Digital Privacy

This field enables the radio to use SW ADP Algorithm for encrypted voice.



WARNING: When the [Secure Operation on page 880](#) field is set to **Software**, enable Advanced Digital Privacy (ADP), [Advanced Encrypted Standard \(AES256\) on page 882](#), or [Data Encryption Standard \(DES\) on page 886](#).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Software**, and when the radio is model/option capable.

4.17.1.6

Advanced Encrypted Standard (AES256)

This field enables the radio to transmit and received encrypted voice and data.



WARNING: When the [Secure Operation on page 880](#) field is set to **Software**, enable [Advanced Digital Privacy on page 882](#), [Data Encryption Standard \(DES\) on page 886](#), or Advanced Encrypted Standard (AES256).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Software**, and when the radio is model/option capable.

4.17.1.7

Keyloading Source

This field allows you to select the Keyloading Source.

The following selections are supported:

Encryption Key List

Allows you to enter secure keys in Encryption Key List. Only available for Advanced Digital Privacy (ADP).

KVL

Allows you to load software keys using Key Variable Loader (KVL) or Encryption Key List (only available for ADP).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Software**, and when the radio is model or option capable.

4.17.1.8

KVL Keyloading UDP Port

This field selects the User Datagram Protocol (UDP) port number for the Key-Variable Loader (KVL) Keyloading. This selection applies to Conventional and Trunking communications mode.



WARNING: The KVL Keyloading UDP Port value must not be equal to any of the following fields:

- [LAN Port on page 962](#)
- [WAN Port on page 963](#)
- [Authentication UDP Port on page 970](#)
- [P25 Location Reporting UDP Port on page 971](#)
- [Wireless Programming TCP Port on page 971](#)
- [Port Number on page 1013](#)
- [Subscriber OTAR Port on page 911](#)
- [KMF UDP Port on page 910](#)
- [PAD Destination Port on page 997](#)
- [Sensor Measurement Reporting UDP Port on page 972](#)

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Software**, and when the [Keyloading Source on page 882](#) is set to **KVL**, and when the radio is model/option capable.

4.17.1.9

Over-The-Air-Rekeying (OTAR) Operation

This field enables the Over-The-Air-Rekeying (OTAR) Operation mode. The selections are Disabled, MDC Only, ASTRO Only, and ASTRO & MDC.



WARNING: Changes to the setting for this field may potentially impact the FIPS Mode of operation in the device, which will cause all critical security parameters (key material and password) to be erased. See FIPS Modes of Operation for more information.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** and AES Algorithm is enabled, and when the radio is model/option capable.

The following selections are supported:

Disabled

OTAR Operation is not available.

MDC Only

Enables the MDC signaling version of the OTAR feature. This feature applies to secure encrypted mode for MDC OTAR communications.



NOTE: MDC OTAR is enabled on a per Conventional Personality by way of the Non-ASTRO Signaling Type field. The radio is further configured to initiate OTAR commands by enabling that Personality's OTAR Tx field.

ASTRO Only

Enables secure encrypted OTAR for ASTRO - Conventional and for ASTRO 25 - Trunking digital communications.



NOTE:

ASTRO OTAR is enabled on a per Conventional Personality based on the Rx Voice/Signal Type field. The radio is further configured to initiate OTAR commands by enabling that Personality ASTRO OTAR and or OTAR Tx fields.

ASTRO OTAR is enabled on a per Trunking System basis from the ASTRO OTAR field and the OTAR Tx fields.

ASTRO & MDC

Enables the Conventional - ASTRO OTAR and/or the Conventional MDC OTAR and/or the Trunking - ASTRO 25 OTAR feature on a radio-wide basis.



NOTE:

On an individual Conventional Personality basis, ASTRO OTAR and or MDC OTAR is enabled with the personality ASTRO OTAR and OTAR Tx fields.

On an individual Trunking System basis, OTAR is enabled from the ASTRO OTAR field and the OTAR Tx fields.

4.17.1.10

Infinite UKEK Retention

This field enables the radio to permanently store UKEK (Unique Key Encryption Key) keys even when the radio's battery is removed.

A radio that possesses only UKEKs can be Over The Air Rekeyed (OTAR) but can not transmit or receive any other secure voice or data calls. When disabled, encryption keys are erased or retained according to the setting of the Infinite Key Retention field. When both fields are disabled, all encryption keys are erased whenever the radio's battery is removed or when the radio is reprogrammed.



WARNING: When the [Infinite Key Retention on page 886](#) field is enabled, this field must be disabled. Otherwise, the application considers it invalid. These two features are mutually exclusive.



WARNING: Changes to the setting for this field may potentially impact the FIPS Mode of operation in the device, which will cause all critical security parameters (key material and password) to be erased. See FIPS Modes of Operation for more information.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** and the radio is model/option capable.

4.17.1.11

Erase Previous On User Change

This field enables the erasing of ALL secure encryption keys in the previously active keyset (see Slot A, Slot B, and Indexed fields) after you initiate the keyset change.

You can initiate the keyset change with a Keyset menu-selection. This feature applies on a radio-wide basis.



WARNING:

When this field is enabled and when the MDC OTAR Erase Previous Index on Index Change is enabled, it is possible for you to erase both keysets and be momentarily without any secure encryption keys.

EXAMPLE:

The radio is currently operating on Keyset 1 when an OTAR Keyset Change occurs. It changes the radio to Keyset 2 and erases the radio's previous Keyset 1. Then, if you manually change back to Keyset 1 that has been erased, and the Erase Previous on User Change feature erases the previous Keyset 2, the radio remains keyless until you manually load new keys or request a manual OTAR Rekey.

Accessed Only: When the radio is model /option capable.

4.17.1.12

Keyset - User Selectable

This field enables you to change the current Keyset.

You can initiate a keyset change with the [Keyset on page 531](#) menu-selection. This feature applies to secure encryption mode on a radio-wide basis.

Accessed Only: When the radio is model/option capable, and when the [Secure Operation on page 880](#) field is set to **Hardware**, or

When the radio is model/option capable, and when the [Secure Operation on page 880](#) field is set to **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled.

4.17.1.13

Erase All Keys

When this field is enabled, Motorola Advanced Cryptographic Engine (MACE) will delete all the keys in all key list, this includes Secure Wide Keys and Independent Key List in the independent ASTRO OTAR Profiles.

If the ASTRO OTAR Profile Index value in selected Personality of the current Channel is any valid selected Profile and not **Disabled** or channel with ASTRO OTAR Profile's Independent Key List is disabled, then enabling Erase All Keys field and erasing all keys with erase key menu on the radio will erase keys in all other ASTRO OTAR Profile where [Independent Key List on page 902](#) is enabled. ASTRO OTAR Profiles is created by enabling the [Independent Key List on page 902](#) field.



IMPORTANT:

Erase All Keys field applies to Multi-System OTAR feature given that you have created an Independent ASTRO OTAR Profiles. When enabled, if you are on a channel with OTAR disabled or channel with ASTRO OTAR Profile's [Independent Key List on page 902](#) is disabled, then erasing all keys with erase key menu on the radio will erase keys in all other ASTRO OTAR Profile where [Independent Key List on page 902](#) is enabled. Independent

Erase All Keys field also applies to personalities or systems where the ASTRO OTAR Profile Index is Disabled. Hence, keys in the shared KDB that are referenced by secure wide list is also deleted.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** and when [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) is set to **ASTRO Only** or **Astro Only and MDC** .

4.17.1.14

Data Encryption Standard (DES)

This field enables the radio to transmit and received encrypted voice and data.



WARNING: When the [Secure Operation on page 880](#) field is set to **Software**, enable [Advanced Digital Privacy on page 882](#), [Advanced Encrypted Standard \(AES256\) on page 882](#), or Data Encryption Standard (DES).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Software**, and when the radio is model/option capable.

4.17.2

Features

This section allows you to view or define diverse and sometimes complex secure encryption settings.



NOTE: When a Secure/Clear Strapping field is set to **Select** for a certain channel, either the Secure Tx Select button-press, Secure Tx Select switch-toggle, or the Secure menu-selection allows you to toggle between Secure or Clear communications for that channel.

Accessed Only: When the radio is a model/option capable.

4.17.2.1

Infinite Key Retention

If this field is enabled, the radio permanently stores encryption keys, even when the radio battery is removed or when the radio is reprogrammed. This feature requires hardware encryption.

When disabled, Unique Key Encryption Key (UKEK) encryption keys are erased or retained according to the setting of the Infinite UKEK Retention field.



WARNING:

When this feature is enabled, enabling the Infinite UKEK Retention field causes that field to become invalid. These two features are mutually exclusive.

Changes to the setting for this field can potentially impact the FIPS Mode of operation in the device.

This impact causes all critical security parameters (key material and password) to be erased. See FIPS Modes of Operation for more information.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** and the radio is model/option capable.

4.17.2.2

Ignore Secure/Clear Switch When Strapped

This field enables the radio to ignore the setting of the Secure Tx Select switch-toggle.



This causes the radio's transmission mode to be based on the current channel's - [Secure/Clear Strapping on page 1005](#) field setting, **Secure** or **Clear**. This feature applies on a radio-wide basis.



WARNING: If this feature is disabled and the radio's active channel/mode is strapped to **Secure** or **Clear** (not selectable), the radio checks the position of the **Secure Tx Select** switch. If the active channel's strapped value does not match the setting of the switch, the radio will not transmit. The factory default is Disabled.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, a Conventional or Trunking "Position A" Concentric Switch is set to **Secure Tx Select**, and the radio is model/option capable.

4.17.2.3

Disable Hard Key Zeroize

This field allows you to zeroize the encryption keys on a radio by pressing the Side Top (Purple) and Orange Button simultaneously.

Press the Side Top (Purple) first to prevent initiating an emergency call.

Accessed Only: When the Secure Operation field is set to **Hardware**, and when the [Infinite Key Retention on page 886](#) field is set to **Enabled**, and when the [Tactical Inhibit Enable on page 337](#) field is set to **Disabled**,

Or the Secure Operation field is set to **Software**, and when the [Tactical Inhibit Enable on page 337](#) field is set to **Disabled**.

4.17.2.4

Non-XL Scan Unsquelch Duration

This field selects the amount of time that the radio waits in active scan mode for a SecureNet-encrypted Non-XL (non-range extended) Cipher Feedback signal to be detected following a carrier detect.

This feature applies for conventional communications on a radio-wide basis. Time is in milliseconds.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** and the radio is model/option capable.

Table 190: Range

Minimum	Maximum	Increments
0 (ms)	6375 (ms)	25 (ms)

4.17.2.5

Periodic Keyfail Alert Tone

This field enables a periodic alert tone to sound whenever the current radio channel has lost its secure encryption key.

And, when either of the following conditions is met: The current channel's [Secure/Clear Strapping on page 1005](#) is set to **Secure**. Or when the current channel's [Secure/Clear Strapping on page 1005](#) is set to **Select** and the radio's Secure Tx Select button-press or Secure Tx Select switch-toggle or Secure menu-selection is set to Secure mode (not clear).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** and the radio is model/option capable.

4.17.2.6

XL Scan Unsquelch Duration

This field selects the amount of time that the radio waits in active scan mode for a SecureNet-encrypted Non-XL (non-range extended) Cipher Feedback signal to be detected following a carrier detect.

This feature applies for Conventional communications on a radio-wide basis. Time is in milliseconds.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Advanced Digital Privacy** and the radio is model/option capable.

Table 191: Range

Minimum	Maximum	Increments
0 (ms)	6375 (ms)	25 (ms)

4.17.2.7

Clear Alert Tones

This field enables an alert tone to sound having to do with transmitting and or receiving secure encrypted mode communications versus clear mode communication.

Clear mode refers to standard non-encrypted communications. This selection applies on a radio-wide basis.



NOTE: When a Secure/Clear Strapping field is set to **Select** for a certain channel, the Secure Tx Select button-press or the Secure Tx Select switch-toggle or the Secure menu-selection allows you to toggle between Secure or Clear communications for that channel.



WARNING: When the Tactical Inhibit Enable field is enabled, this field can only be set to **Rx Only** or **Tx & Rx**. Otherwise, the application considers it invalid.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** and the radio is model/option capable.

The following selections are supported:

None

No Clear Alert Tones are enabled.

Tx Only

Enables an alert tone to sound when the PTT button is pressed, alerting you when the radio is about to transmit in clear mode.

Rx Only

For Conventional analog signaling (MDC, DTMF, Quik-Call II), this feature applies only when the radio's current operating channel's analog Conventional Systems has its System Pretime set less than 1500 ms.

Tx & Rx

See "Tx Only" and "Rx Only" definitions above.

4.17.3

Multikey

This section allows you to view or define Multikey parameters which affect secure encrypted operations.



NOTE: When a Secure/Clear Strapping field is set to **Select** for a certain channel, either the Secure Tx Select button-press, Secure Tx Select switch-toggle, or the Secure menu-selection allows you to toggle between Secure or Clear communications for that channel.

Accessed Only: When the radio is a model/option capable.

4.17.3.1

Display On Mode Change

This field selects the type of information that appears in the radio's display when you change the radio's channel or mode to a channel that is strapped to secure encrypted mode (see Secure/Clear Strapping).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** and the radio is model/option capable.

The following selections are supported:

Key Name

The content defined in the Key Name field appears in the radio's display.



WARNING: This selection is only valid when the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.

Keypad Name

The Keypad Name appears in the radio display. Keypad assignments are typically organized by a Key Management Facility (KMF) operator and transmitted with Over-the-Air Rekeying (OTAR). Keypad Names are by default "kset 1" and "kset 2".



WARNING: This selection is only valid when the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** with the [Advanced Encrypted Standard \(AES256\) on page 882](#) field enabled.

Disabled

Nothing appears in the radio's display.

4.17.3.2

PID Key Management for ASN Mode

When this field is selected, it enables the use of Physical ID (PID) Key Management in the radio.

This feature applies to secure encryption mode on a radio-wide basis. PID key management is a legacy mechanism for managing keys that limits the radio to 16 keys with Physical IDs. When disabled, CKR (Common Key Reference) Key Management is used solely by the radio during secure encrypted communications. CKR Key management allows for more than 16 keys to be referenced and is required to be used with ASTRO OTAR (Over-The-Air-Rekeying).



IMPORTANT: When using the ASN (Advanced SecureNet) mode in the KVL 3000 or the KVL 3000 Plus Key-Variable Loader (KVL) device, encryption keys can only be loaded to the radio when PID Key Management has been enabled in the radio.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** and the radio is model/option capable.

4.17.3.3

Display On PTT

This field selects the type of information that appears in the radio's display when you press the PTT button while the radio's current channel is operating in secure encryption mode.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** and the radio is model/option capable.

The following selections are supported:

Key Name

The content defined in the Key Name field appears in the radio's display.



WARNING: This selection is only valid when the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.

Keyset Name

The Keyset Name appears in the radio's display. Keyset assignments are typically organized by a Key Management Facility (KMF) operator and transmitted with Over-the-Air Rekeying (OTAR). Keyset Names are by default "kset 1" and "kset 2".



WARNING: This selection is only valid when the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** with the [Advanced Encrypted Standard \(AES256\) on page 882](#) field enabled.

Disabled

Nothing appears in the radio's display.

4.17.3.4

Key ID - Rx Hang Time

This field selects the amount of time that the radio waits once a received secure call has ended before reloading your last selected or saved encryption key.



IMPORTANT: This hang time is only needed when the radio had to temporarily switch to another encryption key in order to receive a call that was transmitted with a different key. This feature applies to secure encryption mode for Conventional communications. Time is in milliseconds.



NOTE: This feature applies to secure encryption mode ([Secure Wide on page 880](#)) for Conventional and Trunking communications when [Auto Key ID Rx on page 1232](#) is enabled.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** and the radio is model/option capable.

Table 192: Range

Minimum	Maximum	Increments
0 (ms)	10000 (ms)	250 (ms)

4.17.3.5

Display On Secure Switch Select

This field selects the type of information that appears in the radio's display when you switch the radio's current channel to secure encrypted mode.

When a Secure/Clear Strapping field is set to **Select** for a certain channel, a Secure Tx Select button-press or a [Secure Tx Select on page 511](#) switch-toggle or a Secure menu-selection to secure mode causes this information to appear in the radio's display. This selection applies on a radio-wide basis.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Advanced Digital Privacy**, and the radio is model/option capable.

The following selections are supported:

Key Name

The content defined in the Key Name field appears in the radio's display.



WARNING: This selection is only valid when the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.

Keypad Name

The Keypad Name appears in the radio's display. Keypad assignments are typically organized by a Key Management Facility (KMF) operator and transmitted with Over-the-Air Rekeying (OTAR). Keypad Names are by default "kset 1" and "kset 2".



WARNING: This selection is only valid when the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** with the [Advanced Encrypted Standard \(AES256\) on page 882](#) field enabled.

Disabled

Nothing appears in the radio's display.

4.17.3.6

Keypad ID - Tx Hang Time

This field selects the amount of time that the radio waits once a transmitted secure call has ended before reloading your last selected or saved encryption key.



IMPORTANT: This hang time is only needed when the radio temporarily switches to another encryption key in order to receive a call that was transmitted with a different key, and then the radio continued to use that switched-to encryption key for the return transmission. Time is in milliseconds.



NOTE: This feature applies to secure encryption mode ([Secure Wide on page 880](#)) for Conventional and Trunking communications when [Auto Key ID Rx on page 1232](#) is enabled.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** and the radio is model/option capable.

Table 193: Range

Minimum	Maximum	Increments
0 (ms)	10000 (ms)	250 (ms)

4.17.3.7

Erase Previous Index on Index Change

This field enables the erasing of all encryption keys in the previously active Keypad after an MDC OTAR (Over-The-Air-Rekeying) keypad change occurs.

This feature does not affect non-indexed keys (see Indexed). This feature applies to secure encrypted mode MDC OTAR communications. You can initiate an OTAR keypad change from the Key Management Controller (KMC) or with a Radio Manager programmable Conventional Rekey menu-selection.



WARNING: When this Erase Previous Keypad on Index Change field is enabled and when the Erase Previous (Keypad) On User Change is enabled, it is possible for you to erase both keypads and be momentarily without any secure encryption keys.

Example: The radio is currently operating on Keypad 1 when an OTAR Keypad Change occurs. It changes the radio to Keypad 2 and erases the radio's previous Keypad 1. If you manually change back to Keypad 1 that has been erased, the Erase Previous on User Change feature erases the previous Keypad 2. Then the radio remains keyless until you manually load new keys or request a manual OTAR Rekey.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **MDC Only** or **ASTRO & MDC**, and the radio is model/option capable.

4.17.4

ASTRO OTAR

The **ASTRO OTAR** section allows you to view or define Over-The-Air-Rekeying (OTAR) ASTRO - Conventional and ASTRO 25 - Trunking communications features.

ASTRO uses a digital secure encrypted protocol. In addition to Rekey Requests, OTAR transmissions include: Delayed Acknowledgments and Power-up Acknowledgments.

 **WARNING:** Some of the options selected may also need to be set up at the KMF (Key Management Facility) site to work properly.

 **NOTE:** OTAR is enabled when a valid ASTRO OTAR Profile is selected for Conventional Personality or for a Trunking System.

Accessed Only: When the radio is a model/option capable.

4.17.4.1

Radio Inhibit via ASTRO OTAR

This field enables the radio to receive and respond to an ASTRO Over-The-Air-Rekeying (OTAR) radio inhibit command.

This command is typically transmitted from a dispatcher or Key Management Facility (KMF) operator causing the radio to be inoperable. This feature applies to secure encrypted mode for ASTRO - Conventional and ASTRO 25 - Trunking communications.

 **WARNING:** When this field is enabled and the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC** for any Trunking Systems, Radio Inhibit is accomplished "via ASTRO OTAR".

When this field is enabled and the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is not set to **ASTRO Only** nor **ASTRO & MDC** for any Trunking Systems, the Radio Inhibit fields for those Trunking Systems must be enabled. This ensures that Radio Inhibit is possible via standard "Clear" (non-secure encrypted) ASTRO 25 Trunking.

When the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC** for any Trunking Systems and the Radio Inhibit field for those Trunking Systems is disabled, this field becomes view locked in an enabled state. This ensures that for those systems, Radio Inhibit is accomplished "via ASTRO OTAR".

 **IMPORTANT:** In order to clear the inhibited state of the radio, send an uninhibit command to the radio or redo the Read/Write process of the radio.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and the radio is model/option capable, or

When the [Secure Operation on page 880](#) field is set to **Software**, the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled, the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and the radio is model/option capable.

4.17.4.2

Individual ASTRO OTAR Radio ID

This field selects the ASTRO Over-The-Air-Rekeying (OTAR) ID that the radio is listed under in the Key Management Facility (KMF).

For MS OTAR, use the corresponding field in ASTRO OTAR Profile section.

 **NOTE:** For Managed Radios, this feature is defined in the RMC's [OTAR ID on page 148](#) field.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the radio is model/option capable.

Table 194: Range

Minimum	Maximum
1	9999998

4.17.5

MDC OTAR

This section allows you to view or define MDC Over-The-Air Rekeying (OTAR) features.

MDC OTAR features apply only when operating in secure encrypted mode and only for Conventional communications. In addition to Rekey Requests, OTAR transmissions include: Delayed Acknowledgments, and Power-up Acknowledgments.

 **NOTE:** MDC OTAR is enabled on a per Conventional Personality by way of the Non-ASTRO Signaling Type field. The radio is further configured to initiate OTAR commands by enabling that Personality's OTAR Tx field.

When a Secure/Clear Strapping field is set to **Select** for a certain channel, either the Secure Tx Select button-press, Secure Tx Select switch-toggle, or the Secure menu-selection allows you to toggle between Secure or Clear communications for that channel.

Accessed Only: When the radio is a model/option capable.

4.17.5.1

Radio Inhibit via MDC OTAR

This field enables the radio to receive and respond to an MDC Over-The-Air-Rekeying (OTAR) radio inhibit command that temporarily causes the radio to be inoperable.

This command is typically transmitted from a dispatcher or Key Management Controller (KMC) operator. This feature applies to secure encrypted mode MDC OTAR communications.

 **IMPORTANT:** In order to clear the inhibited state of the radio, send an uninhibit command to the radio or redo the Read/Write process of the radio.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, the OTAR Operation field is set to **MDC Only** or **ASTRO & MDC**, and the radio is model/option capable.

4.17.5.2

Rekey Request Mode

This field selects the protocol that is used when the radio transmits the MDC Over-The-Air-Rekeying (OTAR) Rekey Request.

A data transmission is sent to the dispatcher's Key Management Controller (KMC) console requesting OTAR rekeying of the radio. These features apply to secure encrypted mode MDC OTAR communications.

 **NOTE:** You can initiate a Rekey Request with either a Rekey Request button-press or a [Rekey Request on page 535](#) menu-selection.

Accessed Only:

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, the OTAR Operation field is set to **MDC Only** or **ASTRO & MDC**, and the radio is model/option capable.

The following selections are supported:

Encrypted

The Rekey Request is secure encrypted.

Clear

The Rekey Request is not encrypted.

Disabled

The Rekey procedure may only be initiated by the KMC operator.

4.17.5.3

OTAR Acknowledgements Enable

This field enables the radio to acknowledge all MDC OTAR (Over-The-Air-Rekeying) messages that request an acknowledgement.

This feature applies to secure encrypted mode MDC OTAR communications.

 **WARNING:** When disabled, you must ensure that all Stat-Alert features are also disabled in order to prevent compromising security. Stat-Alert features include: Radio Check, Remote Radio Mode; MDC Auto Select Call Transmit, Call Alert Rx/Tx, and Selective Call Rx/Tx.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, the OTAR Operation field is set to **MDC Only** or **ASTRO & MDC**, and the radio is model/option capable.

4.17.5.4

Rekey Request Status Alert Tone

This field enables the radio to generate a success or failure alert tone once the Rekey Request process is completed.

Selecting to enable this feature only affects the sounding of this alert tone when the Rekey Request section of the radio's menu is exited before the rekey request process is completed. Note that when the Rekey Request section of the radio's menu is not exited prior to the rekey request process being complete, the status alert tone is sounded regardless of the setting of this field. The status of the Rekey process also appears as a visual alert in the radio's display. These features apply to secure encrypted mode MDC OTAR communications.

 **NOTE:** You can initiate the Rekey Request command with the Rekey menu-selection.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, the OTAR Operation field is set to **MDC Only** or **ASTRO & MDC**, and the radio is model/option capable.

4.17.5.5

OTAR Acknowledgements Encrypted Only

This field enables the radio to encrypt all MDC OTAR acknowledgements.

This feature applies to secure encrypted mode MDC OTAR communications. When disabled, the radio sends MDC OTAR encrypted or clear acknowledgements as directed by the Key dispatcher's Key Management Controller (KMC).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, the OTAR Operation field is set to **MDC Only** or **ASTRO & MDC**, and when the [OTAR Acknowledgements Enable on page 894](#) field is enabled, and the radio is model/option capable.

4.17.5.6

Erase Previous Index on Index Change

This field enables the erasing of all encryption keys in the previously active Keypset after an MDC Over-The-Air-Rekeying (OTAR) keyset change occurs.

This feature does not affect non-indexed keys (see [Indexed on page 899](#)).

This feature applies to secure encrypted mode MDC OTAR communications.

An OTAR keyset change is initiated either from the Key Management Controller (KMC) or is initiated by you with a programmable Conventional Rekey menu-selection.



WARNING: When this Erase Previous Keypset on Index Change field is enabled and when the Erase Previous (Keypset) On User Change is enabled, it is possible for you to erase both keysets and be momentarily without any secure encryption keys.

Example: The radio is currently operating on Keypset 1 when an OTAR Keypset Change occurs; it changes the radio to Keypset 2 and erases the radio's previous Keypset 1. Then if you manually change back to Keypset 1 that has been erased, and the Erase Previous on User Change feature erases the previous Keypset 2, then the radio would remain keyless until you manually load new keys, or request a manual OTAR Rekey.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, the OTAR Operation field is set to **MDC Only** or **ASTRO & MDC**, and the radio is model/option capable.

4.17.5.7

OTAR Acknowledgements Power-Up

This field selects exactly when the radio sends an MDC Over-The-Air-Rekeying (OTAR) Power-up acknowledgement to the Key Manager Controller (KMC).

This acknowledgement (Ack) allows the radio to log into the KMC for OTAR purposes. This feature applies to secure encrypted mode MDC OTAR communications.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, the OTAR Operation field is set to **MDC Only** or **ASTRO & MDC**, and the radio is model/option capable.

The following selections are supported:

Disabled

No Power-up Acks are sent.

Immediate

The Power-up Ack is sent when the radio is turned-on and once the radio has completed its power-up sequence.

Delayed

The radio transmits the Power-up Ack when a PTT button transmission is sent on an OTAR-enabled channel.

4.17.5.8

KMC ID

This field selects the radio's Key Manager Controller (KMC) ID allowing the radio to be uniquely identified by the KMC.

Each radio in a system should have a unique KMC ID, allowing each radio to communicate MDC OTAR commands to and from the KMC on an individual basis. This feature applies to secure encrypted mode MDC OTAR communications.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, the OTAR Operation field is set to **MDC Only** or **ASTRO & MDC**, and the radio is model/option capable.

Table 195: Range

Minimum	Maximum
0000 Hex	FFFF Hex

4.17.5.9

MDC OTAR System

This field selects the MDC Conventional System to be used by MDC Over-The-Air-Rekeying (OTAR) commands.

This feature applies to secure encrypted mode conventional communications.



IMPORTANT: An MDC OTAR System must have its Expanded MDC ID Range feature **Disabled**. Otherwise, the selection is considered to be invalid. These two features are incompatible.



NOTE:

Only MDC type Conventional Systems may be selected (see the System Type field). Once defined, Conventional Systems are referenced to Conventional Personalities.

MDC OTAR is then enabled on a per conventional personality by way of the Non-ASTRO Signaling Type field. The radio is further configured to initiate OTAR commands by enabling that personality's OTAR Tx field.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, the OTAR Operation field is set to **MDC Only** or **ASTRO & MDC**, and the radio is model/option capable.

4.17.6

Encryption Key List

This section allows you to configure multiple Hardware or Software encryption keys for the purpose of secure encrypted voice and data communications.



NOTE:

The number of available encryption keys depends on the model tier of the radio: High tier = 128, Mid tier = 64, and Low tier = 48.

When a Secure/Clear Strapping field is set to **Select** for a certain channel, either the Secure Tx Select button-press, Secure Tx Select switch-toggle, or the Secure menu-selection allows you to toggle between Secure or Clear communications for that channel.

Accessed Only: When the radio is a model/option capable.

4.17.6.1

Key Name

This field allows you to define recognizable Key names for the current key (record/row) within the Encryption Key List.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** and the radio is model/option capable.

The following selections are supported:

- Characters, numbers, spaces, and special characters can be used.
- The number of possible characters is radio model dependent.

4.17.6.2

Slot B

The application retrieves and allows you to view the Physical Identification (PID) Hardware key number for the current key (record/row) within the Encryption Key List.

This value is affected by the Indexed field's setting for the current record/row, enabled or disabled. When the Indexed field is enabled, it allows for two unique sets of keys ('Keysets') to exist; one in Slot A and one in Slot B.



IMPORTANT:

When the Conventional Key menu-selection is programmed and when a pair of "Indexed" keys is selected for a certain channel, you are then able to alternate from the encryption key in Keyset A to the encryption key in Keyset B (and back) without changing the radio's channel. This is only possible for Conventional channels.

When the Conventional or Trunking Keyset menu-selection is programmed, you are then able to change the Keyset on a radio-wide basis.

When both the Conventional and the Trunking Keyset selections are programmed, you can then change the Keyset for the entire radio, regardless of which channel the radio is currently operating.

Only eight keys can be indexed to Slot B, and only 16 keys total are possible between Slot A and Slot B.

Accessed Only: When the radio is model/option capable.

4.17.6.3

CKR Number

This field allows you to define a key number for the current Common Key Reference (CKR) key (record/row) within the Encryption Key List.

This CKR number is referenced to personalities, talkgroups, or features, independent of the physical storage location of the key. This removes the radio programmer's need for mapping encryption keys to physical storage locations for different secure devices in the same in-the-field communications system.



WARNING: The application automatically assigns a "Blank" default "CKR Number" value. Each CKR number that exists must be defined as a number value in order to write or save to the current codeplug. Each CKR Number must have a unique value.

Accessed Only: When the radio is model/option capable, and when the [Secure Operation on page 880](#) field is set to **Hardware**, or

When the radio is model/option capable, and when the [Secure Operation on page 880](#) field is set to **Software**, and the [Keyloading Source on page 882](#) field is set to **KVL**.

Table 196: Range

Minimum	Maximum
0001	4095

4.17.6.4

Selectable ADP Key Data

This field allows you to define the Advanced Digital Privacy (ADP) key pattern for the current key (record or row) within the Encryption Key List.

Key patterns are a required element within the ADP secure algorithm for successful voice encryption communications.



NOTE:

ADP Keys are not cloned to the target radio when the source codeplug is read from a radio. When a codeplug containing ADP Keys is read from a radio, the ADP Keys are not loaded, which causes these ADP keys to appear in all asterisks (*). In this situation, the key data will not be cloned to a target radio. To send ADP Key Data to the target radio, you must reenter the appropriate ADP Keys prior to initiating the Clone Radio process. Source codeplug ADP Key Data will overwrite the target radio's ADP Key Data when present.

When a codeplug file containing ADP Keys is opened, the ADP Keys are loaded and can be cloned to the target radio. Source codeplug ADP Key Data will overwrite the target radio's ADP Key Data when present.



IMPORTANT:

When this field shows ten (10) asterisks "*****", there is no pattern defined.

To enter no Key Data pattern, enter ten (10) asterisks "*****".

For security purposes, when a codeplug is read from a radio, "*****" is displayed in this field, regardless of the data pattern that might be saved in the radio.

Whenever the Selectable ADP Key ID is modified, the Key Data pattern for the same row/record becomes invalid and must be redefined.

For details about maximum key count, refer to [Encryption Key List on page 896](#).

There is no mechanism to erase an ADP key from the radio. A field with "*****" simply implies it will not overwrite whatever key might actually be in the radio.

Accessed Only: When the [Secure Operation on page 880](#) field is set to either one of the following:

- **Software** and the [Keyloading Source on page 882](#) field is set to **Encryption Key List**, and the radio is model or option capable.
- **Hardware** and the [Algorithm on page 901](#) field for the current key (record or row) within the [Encryption Key List on page 896](#) is set to **ADP/RC4**, and the radio is model or option capable.
- The following conditions are met:
 - **Software** and the [Keyloading Source on page 882](#) field is set to **KVL**.
 - [Advanced Digital Privacy on page 882](#) is enabled.
 - The [Algorithm on page 901](#) field for the current key (record or row) in the [Encryption Key List on page 896](#) is set to **ADP/RC4**.
 - The radio is model or option capable.

Table 197: Range

Minimum	Maximum
0000000000 Hex	FFFFFFFF Hex

4.17.6.5

Indexed

This field enables indexing for the current Hardware encryption key (record/row) within the Encryption Key List.

Indexing allows for two unique sets of keys (Keysets) to exist within the radio. One Keyset exists in the Slot A field and the other exists in the Slot B field. Once Indexing is enabled for the current key (row/record), a second and unique encryption key is populated in the alternate Keyset "Slot B". Indexing also allows for two unique keys to exist per radio channel, instead of one key.



IMPORTANT:

When the Conventional Key menu-selection is programmed and when a pair of "Indexed" keys is selected for a certain channel, you are then able to alternate from the encryption key in Keyset A to the encryption key in Keyset B (and back) without changing the radio's channel. This is only possible for Conventional channels.

When the Keyset menu-selection is programmed on either Conventional or Trunking communications, then rekeying of the radio's current keyset is only possible on that type of communications channel. A Keyset does apply on a radio-wide basis and to both types of channels.

When both the Conventional and the Trunking Keyset selections are programmed, you can then change the Keyset for the entire radio, regardless of which channel the radio is currently operating.

Only eight keys can be indexed to Slot B and only 16 keys total are possible between Slot A and Slot B.

Accessed Only: When the radio is model/option capable, and when the [Secure Operation on page 880](#) field is set to **Hardware**, or

When the radio is model/option capable, and when the [Secure Operation on page 880](#) field is set to **Software**, and the [Keyloading Source on page 882](#) field is set to **KVL**.

4.17.6.6

Selectable ADP Key ID

This field allows you to define the ID number that represents the Advanced Digital Privacy (ADP) key for the current key (record or row) within the Encryption Key List.

The Key ID is transmitted along with the encrypted voice communications. Receiving radios recovering the Key ID are able to load the correct Selectable ADP Key Data pattern and thus decrypt the incoming voice call.



IMPORTANT:

All Selectable ADP Key IDs must be unique.

For details about maximum key count, refer to [Encryption Key List on page 896](#).

Accessed Only: When the [Secure Operation on page 880](#) field is set to either one of the following:

- **Software** and the [Keyloading Source on page 882](#) field is set to **Encryption Key List**, and the radio is model or option capable.
- **Hardware** and the **Algorithm** field for the current key (record or row) within the [Encryption Key List](#) is set to **ADP/RC4**, and the radio is model or option capable.
- The following conditions are met:

- The **Software** and the [Keyloading Source](#) field is set to **KVL**.
- The [Advanced Digital Privacy on page 882](#) field is enabled.
- The [Algorithm](#) field for the current key (record or row) within the [Encryption Key List](#) is set to **ADP/RC4**.
- The radio is model or option capable.

Table 198: Range

Minimum	Maximum
0000 Hex	FFFF Hex

4.17.6.7

Slot A

The application retrieves and allows you to view the Physical Identification (PID) Hardware key number for the current key (record/row) within the Encryption Key List.

This value is affected by the Indexed field's setting for the current record/row, enabled or disabled. When the Indexed field is enabled, it allows for two unique sets of keys ('Keysets') to exist, one in Slot A and one in Slot B.



IMPORTANT:

When the Conventional Key menu-selection is programmed and when a pair of "Indexed" keys is selected for a certain channel, you are then able to alternate from the encryption key in Keyset A to the encryption key in Keyset B (and back) without changing the radio's channel. This is only possible for conventional channels.

When the Conventional or Trunking Keyset menu-selection is programmed, you are able to change the Keyset on a radio-wide basis.

When both the Conventional and the Trunking Keyset selections are programmed, you can then change the Keyset for the entire radio, regardless of which channel the radio is currently operating.

Only eight keys can be indexed to Slot B and only 16 keys total are possible between Slot A and Slot B.

Accessed Only:

When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software** and when the [Keyloading Source on page 882](#) field is set to **KVL**, and when the [PID Key Management for ASN Mode on page 889](#) field is enabled,

And

When the number of records in the Encryption Key List is less than 9, or when the record number of the key in the [Secure Hardware Encryption Key References List](#) is between 9 and 16, and

- If anyone of the first eight [Indexed on page 899](#) fields is "Enabled", then Slot A of record 16 is inapplicable, or
- If any two of the first eight Indexed fields are "Enabled", then Slot A of records 15 and 16 is inapplicable, or
- If any three of the first eight Indexed fields are "Enabled", then Slot A of records 14, 15 and 16 is inapplicable (the remaining records follow the same rule,

Or

when the record number of the key in the Secure Hardware Encryption Key References List is greater than 16, then Slot A of that record cannot be accessed),

And, when the radio is model/option capable.

4.17.6.8

Algorithm

This field allows the Advanced Digital Privacy (ADP) key data of the selected entry to be sent to the Hardware Security Module (HSM) of the radio.

Currently, only ADP keys can be programmed into the HSM through Customer Programming Software (CPS). All other keys must be delivered to the radio from a Key Variable Loader (KVL) or Key Management Facility (KMF).

Accessed Only: When the [Secure Operation on page 880](#) field is set to either one of the following:

- **Software** and the [Keyloading Source on page 882](#) field is set to **KVL**, and the [Advanced Digital Privacy on page 882](#) is enabled, and the radio is model or option capable.
- Hardware and the radio are model or option capable.

4.18

ASTRO OTAR Profile

The **ASTRO Over-The-Air-Rekeying (OTAR) Profile** section allows you to view or define ASTRO OTAR parameters pertaining to ASTRO OTAR Profiles.

ASTRO OTAR Profiles are defined to communicate with specific KMF Server on Trunking or Conventional System. Up to 19 ASTRO OTAR Profiles are possible.



WARNING: This entire node and all of its features are only available when the Secure Wide OTAR Operation field is set to **ASTRO Only** or **ASTRO & MDC**.



IMPORTANT:

This note is only applicable when Independent Key List field is disabled.

The intent of ASTRO OTAR Profiles is to allow the radio to operate with different ASTRO OTAR, possibly on different systems. The drawback to this functionality is that the underlying encryption hardware cannot manage having multiple versions of the same key; for example, you could not have the same CKR Number managed by both ASTRO OTAR#1 and ASTRO OTAR#2. Therefore, operators of ASTRO OTAR#1 and ASTRO OTAR#2, in this example, would have to agree not to manage the same CKR (Common Key Reference) numbers.



NOTE:

Once defined, Secure ASTRO OTAR Profiles are selected from the Trunking ASTRO OTAR Profile Index, the Conventional ASTRO OTAR Profile Index, Data Profile ASTRO OTAR Profile Selection, and the ASTRO Talkgroup List ASTRO OTAR Profile Index fields.

ASTRO OTAR is enabled on a per Conventional Personality based on the Rx Voice/Signal Type field. The radio is further configured to initiate OTAR commands by enabling that Personality's valid ASTRO OTAR Profile Index selection of Index field or OTAR Tx fields.

ASTRO OTAR is enabled on a per Trunking System basis by a valid ASTRO OTAR Profile Index selection and the OTAR Tx fields.

4.18.1

General

This section allows you to view or define basic ASTRO Over-The-Air-Rekeying (OTAR) functionality.

Accessed Only: When the radio is a model/option capable.

4.18.1.1

ASTRO OTAR Profile

This field allows you to create recognizable names for the current ASTRO Over-The-Air-Rekeying (OTAR) Profile.



NOTE:

Once defined, ASTRO OTAR Profiles are selected from the Trunking [ASTRO OTAR Profile Index on page 1054](#), the Conventional [ASTRO OTAR Profile Index on page 1054](#), and the ASTRO Talkgroup List [ASTRO OTAR Profile Index on page 1054](#) fields.

Accessed Only: When the radio is model/option capable.

The following selections are supported:



NOTE:

Examples: Profile-05, Electric1, #510

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.18.1.2

Independent Key List

When this field is enabled, Motorola Advanced Cryptographic Engine (MACE) will create a Key Database that can be configured and selected through ASTRO OTAR Profile.

To select this Key Database, you must select this ASTRO OTAR profile in the Conventional or Trunking channel.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, [Over-The-Air-Rekeying \(OTAR\) Operation](#) is not set to **Disabled**, and MS OTAR H-Option is present.

4.18.1.3

Erase All Keys

When this field is enabled, Motorola Advanced Cryptographic Engine (MACE) will delete all the keys in all ASTRO OTAR Profiles.

Erase All Keys field only applies to Multi-System OTAR feature if you have created an Independent ASTRO OTAR Profiles. Independent ASTRO OTAR Profiles is created by enabling the Independent Key List field.



IMPORTANT: Erase All Keys field also applies to personalities or systems where the ASTRO OTAR Profile Index is Disabled. Hence, keys in the shared KDB that are referenced by secure wide list is also deleted.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, and when the OTAR Operation field is not set to **Disabled**, and when the Independent Key List field is enabled, and when the radio is model/option capable.

4.18.1.4

Infinite UKEK Retention

This field enables the radio to permanently store Unique Key Encryption Key (UKEK) keys even when the radio battery is removed.

A radio that possesses only UKEKs can be Over The Air Rekeyed (OTAR) but can not transmit or receive any other secure voice or data calls.

When disabled, encryption keys are erased or retained according to the setting of the Infinite Key Retention field. When both fields are disabled, all encryption keys are erased whenever the radio's battery is removed or when the radio is reprogrammed.



IMPORTANT:

When the Infinite Key Retention field is enabled, this field must be disabled; otherwise it considers to be invalid. These two features are mutually exclusive.

Changes to the setting for this field may potentially impact the FIPS Mode of operation in the device, which will cause all critical security parameters (key material and password) to be erased. See FIPS Modes of Operation for more information.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, and when the [Independent Key List on page 902](#) field is enabled, and when the OTAR Operation field is not set to **Disabled**, and when the radio is model/option capable.

4.18.1.5

OTAR Generate Key-Loss Key

This field enables the radio to automatically transmit a Key-Loss Key signal notifying the ASTRO Over-The-Air-Rekeying (OTAR) Key Management Facility (KMF) or the MDC OTAR Key Management Controller (KMC) that the radio needs a new encryption key.

This new encryption key is used for encrypting OTAR messages. Once the Key-Loss Key signal is received, a new encryption key is transmitted to the radio for the purpose of receiving additional encryption keys. OTAR is possible from an MDC or ASTRO - Conventional channel, or an ASTRO 25 - Trunking channel.



WARNING:

When disabled, the OTAR rekey of the radio is prevented if the radio loses all of its keys.

Changes to the setting for this field may potentially impact the FIPS Mode of operation in the device, which will cause all critical security parameters (key material and password) to be erased. See FIPS Modes of Operation for more information.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, and when the [Independent Key List on page 902](#) field is enabled, and when the OTAR Operation field is not set to **Disabled**, and when the radio is model/option capable.

4.18.1.6

KVL - FIPS Level 3 Approved Mode

This field enables Federal Information Processing Standard (FIPS) Level 3 encryption requiring that key fills with the Key-Variable Loader (KVL) transfer the keys to the radio in an encrypted mode.



WARNING:

This requires that the customer uses a KVL that also supports and is configured for FIPS Level 3 encryption.

Changes to the setting for this field may potentially impact the FIPS Mode of operation in the device, which will cause all critical security parameters (key material and password) to be erased. See FIPS Modes of Operation for more information.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, and when the [Independent Key List on page 902](#) field is enabled, and when the OTAR Operation field is not set to **Disabled**, and when the radio is model/option capable.

4.18.1.7

Keypad - User Selectable

This field enables you to change the current Keypad.

You can initiate a keyset change with the Keyset menu-selection. This feature applies to secure encryption mode on a radio-wide basis.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, and when the OTAR Operation field is not set to **ASTRO Only** or **ASTRO and MDC**, and when the [Independent Key List on page 902](#) field is enabled, and when the radio is model/option capable.

4.18.1.8

Erase Previous On User Change

This field enables you to erase all secure encryption keys in the previously active keyset after initiating the keyset change occurs.

You can initiate keyset change with a Keyset menu-selection. This feature applies on a radio-wide basis.



WARNING:

When this field is enabled and when the MDC OTAR [Erase Previous Index on Index Change on page 895](#) is enabled, it is possible for the user to erase both keysets and be momentarily without any secure encryption keys.

Example:

The radio is currently operating on Keyset 1 when an OTAR Keyset Change occurs

It changes the radio to Keyset 2 and erases the radio previous Keyset 1. Then if you manually change back to Keyset 1 that has been erased, and the Erase Previous on User Change feature erases the previous Keyset 2, then the radio remains keyless until you manually load new keys, or requests a manual OTAR Rekey.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, and when the OTAR Operation field is not set to **ASTRO Only** or **ASTRO and MDC**, and when the [Independent Key List on page 902](#) field is enabled, and when the radio is model/option capable.

4.18.1.9

Secure Profile GUID

Globally Unique Identifier (GUID) is a unique Key Database Identifier. If a Key Database with this Identifier exist in Motorola Advanced Cryptographic Engine (MACE), then the keys are preserved after you perform a write job in the application.

MACE will remove any Key Database if the GUID for that Key Database is not found in any of ASTRO OTAR Profiles.

This field is not editable.

4.18.2

ASTRO OTAR Information

This section allows you to view or define parameters for individual ASTRO Over-The-Air-Rekeying (OTAR) Profile.



NOTE:

Once defined, Secure ASTRO OTAR Profiles are selected from the Trunking [ASTRO OTAR Profile Index on page 1229](#), the Conventional ASTRO OTAR Profile Index, Data Profile [ASTRO OTAR Profile Selection](#), and the ASTRO Talkgroup List ASTRO OTAR Profile Index fields.

ASTRO OTAR is enabled on a per Conventional Personality based on the [Rx Voice/Signal Type on page 1162](#) field. The radio is further configured to initiate OTAR commands by enabling that Personality's valid ASTRO OTAR Profile selection of Index field or [OTAR Tx on page 1113](#) fields.

ASTRO OTAR is enabled on a per Trunking System basis by a valid ASTRO OTAR Profile selection of Index field and the [OTAR Tx on page 1228](#) fields.

4.18.2.1

Erase Previous Keypad on OTAR Changeover

This field enables the erasing of ALL encryption keys in the previously active Keypad after an ASTRO OTAR (Over-The-Air-Rekeying) keypad change has occurred.

This feature applies to ASTRO OTAR operation for the current [ASTRO OTAR Profile](#).



NOTE: You can initiate an OTAR keypad change from the Key Management Facility (KMF) or a programmable Rekey menu selection.



IMPORTANT:

When this Erase Previous Keypad on OTAR Changeover field is enabled and when the Erase Previous On User Change is enabled, it is possible for you to erase both keypads and be momentarily without any secure encryption keys.

Example: The radio is operating on Keypad 1 when an OTAR Keypad Change occurs; it changes the radio to Keypad 2 and erases the radio's previous Keypad 1. Then if you manually change back to Keypad 1 that has been erased, and the Erase Previous on User Change feature erases the previous Keypad 2, then the radio would remain keyless until you manually load new keys, or request a manual OTAR Rekey.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the radio is model/option capable.

4.18.2.2

Radio Inhibit via ASTRO OTAR

This field enables the radio to receive and respond to an ASTRO Over-The-Air-Rekeying (OTAR) radio inhibit command.

This command is typically transmitted from a dispatcher or Key Management Facility (KMF) operator causing the radio to be inoperable. This feature applies to secure encrypted mode for ASTRO - Conventional and ASTRO 25 - Trunking communications.



WARNING:

When this field is enabled and the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC** for any Trunking Systems, Radio Inhibit is accomplished "via ASTRO OTAR".

When this field is enabled and the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is not set to **ASTRO Only** nor **ASTRO & MDC** for any Trunking Systems, the Radio Inhibit fields for those Trunking Systems must be enabled. This ensures that Radio Inhibit is possible via standard "Clear" (non-secure encrypted) ASTRO 25 Trunking.

When the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC** for any Trunking Systems and the Radio Inhibit field for those Trunking Systems is disabled, this field becomes view locked in an enabled state. This ensures that for those systems, Radio Inhibit is accomplished "via ASTRO OTAR".



IMPORTANT: In order to clear the inhibited state of the radio, send an uninhibit command to the radio or redo the Read/Write process of the radio.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and the radio is model/option capable, or

When the [Secure Operation on page 880](#) field is set to **Software**, the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled, the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and the radio is model/option capable.

4.18.2.3

Individual ASTRO OTAR Radio ID

The application retrieves and allows you to view the Individual ASTRO Over-The-Air-Rekeying (OTAR) Radio ID that is listed for the radio in the Key Management Facility (KMF).

The value is defined in the Individual ASTRO OTAR Radio ID field. This feature applies to ASTRO OTAR operation for the current [ASTRO OTAR Profile](#). For MS OTAR, use the corresponding field in [ASTRO OTAR Profile](#).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is set to **Enabled**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the radio is model/option capable.

4.18.2.4

Number of Attempts

This field selects the number of attempts that the radio makes while waiting for registration confirmation from the Key Management Facility (KMF).

This feature applies to ASTRO OTAR operation for the current [ASTRO OTAR Profile](#).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is set to **Enabled**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the [Response Kind on page 908](#) field is set to **Confirmed**, and when the radio is model/option capable.

Table 199: Range

Minimum	Maximum
1	10

4.18.2.5

OTAR Inactivity Timer

This field selects the amount of time that the Key Management Facility (KMF) has to communicate with the radio.

If the radio does not receive any information from the KMF when the timer has expired, the radio will try to re-establish communication.

This feature applies to ASTRO OTAR operation for the current [ASTRO OTAR Profile](#).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is set to **Enabled**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the radio is model/option capable.

Table 200: Range

Minimum (hours)	Maximum (hours)
1	10

4.18.2.6

OTAR Rx Security Level

This field selects the receive security policy levels for Key Management Messages (KMMs).

This feature applies to ASTRO OTAR operation for the current [ASTRO OTAR Profile](#).



NOTE: At this time Rekey Request, Registration and Unable to Decrypt KMMs are always **Encrypted and Authenticated**.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is set to **Enabled**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the radio is model/option capable.

The following selections are supported:

Basic

The radio receives any format of KMM that is allowed by the Project 25 standard.

Enhanced

This selection is invalid when [Secure Operation on page 880](#) is set to **Software**.

The radio only receives the following KMMs:

- **Encrypted and Authenticated**
- **Encrypted Only**
- **Authenticated Only**

4.18.2.7

OTAR Tx Security Level

This field selects the receive security policy levels for Key Management Messages (KMMs).

This feature applies to ASTRO OTAR operation for the current [ASTRO OTAR Profile](#).



NOTE: At this time Rekey Request, Registration and Unable to Decrypt KMMs are always **Encrypted and Authenticated**.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is set to **Enabled**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the radio is model/option capable.

The following selections are supported:

Basic

The radio receives any format of KMM that is allowed by the Project 25 standard.

Enhanced

This selection is invalid when [Secure Operation on page 880](#) is set to **Software**.

The radio only receives the following KMMs:

- **Encrypted and Authenticated**
- **Encrypted Only**
- **Authenticated Only**

4.18.2.8

Rekey Request Status Alert Tone

This field enables the radio to generate a success or failure alert tone regarding rekey request completion.

This feature only affects the sounding of this alert tone when the Rekey Request section of the radio's menu is exited before the rekey request process is completed. When the Rekey Request section of the radio's menu is not exited before the rekey request process being complete, this status alert tone is sounded regardless of the setting of this field. This feature applies to ASTRO OTAR operation for the current [ASTRO OTAR Profile](#).



NOTE:

The status of the Rekey process also appears as a visual alert in the display of the radio.

An OTAR encryption rekey operation is performed from the Key Management Facility (KMF) by the dispatcher upon receiving a rekey request from you.

You can initiate a Rekey Request with either a [Rekey Request on page 535](#) button-press or a [Rekey Request on page 535](#) menu-selection.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the radio is model/option capable.

4.18.2.9

Response Kind

This field selects the kind of response used when the radio communicates with the Key Management Facility (KMF).

This feature applies to ASTRO OTAR operation for the current [ASTRO OTAR Profile](#).

The following selections are supported:

Unconfirmed

ASTRO OTAR transmissions sent to the KMF (from the radio) are not confirmed/acknowledged indicating a transmission successfully received.

Confirmed

ASTRO OTAR transmissions sent to the KMF (from the radio) require a confirmation/acknowledgement be sent back to the radio indicating a transmission successfully received.

When the [OTAR Transport on page 911](#) field is set to **Broadband Only** or **Broadband Preferred** and the radio performs Over-The-Air-Rekeying (OTAR) using broadband, the radio uses **Confirmed** as the Response Kind.

When the radio performs OTAR over Land Mobile Radio (LMR), the radio uses the value of this field as the Response Kind.

Accessed Only: When the following conditions are met:

- The [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.
- The [Advanced Encrypted Standard \(AES256\) on page 882](#) field is set to **Enabled**.
- The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**.
- The radio is model or option capable.

4.18.2.10

Time Between Attempts

This field selects the amount of time that the radio waits before sending a retry of the last message.

This feature applies to ASTRO OTAR operation for the current [ASTRO OTAR Profile](#).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is set to **Enabled**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the [Response Kind on page 908](#) field is set to **Confirmed**, and radio is model/option capable.

Table 201: Range

Minimum	Maximum	Increments
5 seconds	90 seconds	5 seconds

4.18.2.11

User Selectable Rekey Request

This field enables the radio to transmit the ASTRO Over-The-Air-Rekeying (OTAR) Rekey Request.

The request is sent to the dispatcher's Key Management Facility (KMF) console. This feature applies to ASTRO OTAR operation for the current [ASTRO OTAR Profile](#).



NOTE: You can initiate a Rekey Request with either a [Rekey Request on page 492](#) button-press or a [Rekey Request on page 535](#) menu-selection.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is set to **Enabled**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the radio is model/option capable.

4.18.3

Data Transport

This section allows you to view or define settings to be used in sending and receiving Key Management Messages (KMMs) to and from the Key Management Facility (KMF).



IMPORTANT: These Data Transport settings apply only to Trunking ASTRO Over-The-Air-Rekeying (OTAR), which is an Internet Protocol (IP)-based data application in the radio; Conventional ASTRO OTAR communicates with the subscriber using the P25 Common Air Interface (CAI) protocol, and is not IP-based.

These selections apply for individual ASTRO OTAR Profile.



NOTE: Once defined, Secure ASTRO OTAR Profiles are selected from the Trunking [ASTRO OTAR Profile Index on page 1229](#), the Conventional ASTRO OTAR Profile Index, and the ASTRO Talkgroup List ASTRO OTAR Profile Index fields.

4.18.3.1

KMF IP Address

This field selects the Internet Protocol (IP) address of the Key Management Facility (KMF).

This selection applies to ASTRO Over-The-Air-Rekeying (OTAR) functionality and for the current [ASTRO OTAR Profile](#).



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features cannot be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is set to **Enabled**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the radio is model/option capable.

The following selections are supported:

- Valid IP Addresses whose values for each octet is between: [0-223] . [0-255] . [0-255] . [0-255]

4.18.3.2

KMF UDP Port

This field selects the User Datagram Protocol (UDP) port number.

The radio transmits KMMs (Key Management Messages) to this port when communicating to the KMF (Key Management Facility). This selection applies to ASTRO OTAR (Over-The-Air-Rekeying) functionality and for the current [ASTRO OTAR Profile](#).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is set to **Enabled**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the radio is model/option capable.

Table 202: Range

Minimum	Maximum
0	65535

4.18.3.3

Subscriber OTAR Port

This field selects the Mobile Subscriber Unit (MSU) Over-The-Air-Rekeying (OTAR) port number to be used.

The radio receives KMMs (Key Management Messages) to this port when communicating with the KMF (Key Management Facility). This selection applies to ASTRO OTAR functionality and for the current [ASTRO OTAR Profile](#).

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is set to **Enabled**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the radio is model/option capable.

Table 203: Range

Minimum	Maximum
0	65535

4.18.3.4

OTAR Transport

This field selects the transport type for Over-The-Air-Rekeying (OTAR).

The following options are available:

LMR Only

OTAR is performed over Land Mobile Radio (LMR) only.

Broadband Only

OTAR is performed over Cellular Long Term Evolution (LTE) or Wi-Fi.

Accessed Only: When the following conditions are met:

- The radio model supports OTAR such as the Radio Next model.
- The [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.
- The [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled.
- The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**.

4.18.3.5

KMF Broadband ID

This field allows you to enter a globally unique identifier of the Key Management Facility (KMF). The radio communicates with the KMF for Over-The-Air-Rekeying (OTAR) using broadband.

Accessed Only: When the following conditions are met:

- The radio model supports OTAR such as the Radio Next model.
- The [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.
- The [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled.

- The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**.
- The [OTAR Transport on page 911](#) field is not set to **LMR Only**.

4.18.4

Encryption Key List

This section allows you to configure multiple Hardware keys for the purpose of secure encrypted voice and data communications.



NOTE: The number of available encryption keys depends on the model tier of the radio: High tier = 128, Mid tier = 64, and Low tier = 48.

Accessed Only: When the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **Hardware**, and when the [Independent Key List on page 902](#) field is enabled, and when the MS OTAR H-Option is present.

4.18.4.1

Key Name

This field allows you to define recognizable Key names for the current key (record/row) within the Encryption Key List.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** and when the [Independent Key List on page 902](#) field is enabled.

The following selections are supported:

- Characters, numbers, spaces, and special characters can be used.
- The number of possible characters is radio model dependent.

4.18.4.2

CKR Number

This field allows the to define a key number for the current Common Key Reference (CKR) key (record/row) within the Encryption Key List.

This CKR number is referenced to personalities, talkgroups, or features, independent of the physical storage location of the key. This removes the radio programmer's need for mapping encryption keys to physical storage locations for different secure devices in the same in-the-field communications system.



WARNING:

The application automatically assigns a **Blank** default **CKR Number** value; however each CKR number that exists must be defined as a number value in order to write or save to the current codeplug.

Each CKR Number must have a unique value.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** and when the [Independent Key List on page 902](#) field is enabled.

Table 204: Range

Minimum	Maximum
0001	4095

4.18.4.3

Algorithm

This field allows the Advanced Digital Privacy (ADP) key data of the selected entry to be sent to the Hardware Security Module (HSM) of the radio.

Currently, only ADP keys can be programmed into the HSM through Customer Programming Software (CPS). All other keys must be delivered to the radio from a Key Variable Loader (KVL) or Key Management Facility (KMF).

Accessed Only: You can access this field only when the following conditions are met:

- The [Secure Operation](#) field is set to **Hardware**.
- The [Independent Key List](#) field is enabled.
- The radio is model or option capable.

4.18.4.4

Selectable ADP Key ID

This field allows you to define the ID number that represents the Advanced Digital Privacy (ADP) key for the current key (record/row) within the Encryption Key List.

The Key ID is transmitted along with the encrypted voice communications. Receiving radios recovering the Key ID are able to load the correct Selectable ADP Key Data pattern and thus decrypt the incoming voice call.



IMPORTANT:

All Selectable ADP Key IDs must be unique.

For details about maximum key count, refer to [Encryption Key List on page 912](#).

Accessed Only: You can access this field when the following conditions are met:

- The [Secure Operation](#) field is set to **Hardware**.
- The [Independent Key List](#) field is enabled.
- The [Algorithm](#) field for the current key (record/row) in the [Encryption Key List](#) is set to **ADP/RC4**.
- The radio is model or option capable.

Table 205: Range

Minimum	Maximum
0000 Hex	FFFF Hex

4.18.4.5

Selectable ADP Key Data

This field allows you to define the Advanced Digital Privacy (ADP) key pattern for the current key (record/row) within the Encryption Key List.

Key patterns are a required element within the ADP secure algorithm for successful voice encryption communications to be possible.



WARNING:

ADP Keys are not cloned to the target radio when the source codeplug is read from a radio. When a codeplug containing ADP Keys is read from a radio, the ADP Keys are not loaded, which causes these ADP keys to appear in all asterisks (*). In this situation, the key data will not be cloned to a target radio. To send ADP Key Data to the target radio, you must re-enter the appropriate ADP Keys prior to initiating the Clone Radio process. Source codeplug ADP Key Data will overwrite the target radio's ADP Key Data when present.

When a codeplug file containing ADP Keys is opened, the ADP Keys are loaded and can be cloned to the target radio. Source codeplug ADP Key Data will overwrite the target radio's ADP Key Data when present.



IMPORTANT:

When this field shows ten (10) asterisks "*****", there is no pattern defined.

To enter no Key Data pattern, enter ten (10) asterisks "*****".

For security purposes, when a codeplug is read from a radio, "*****" is displayed in this field, regardless of the data pattern that might be saved in the radio.

Whenever the Selectable ADP Key ID is modified, the Key Data pattern for the same row/record becomes invalid and must be redefined.

For details about maximum key count, refer to [Encryption Key List on page 912](#).

There is no mechanism to erase an ADP key from the radio. A field with "*****" simply implies it will not overwrite whatever key might actually be in the radio.

Accessed Only:

- When the [Secure Operation on page 880](#) field is set to **Hardware**.
- When [Independent Key List on page 902](#) field is enabled and the [Algorithm on page 901](#) field for the current key (record/row) within the [Encryption Key List on page 912](#) is set to **ADP / RC4**.
- The radio is model or option capable.

Table 206: Range

Minimum	Maximum
000000000 Hex	FFFFFFFFFFF Hex

4.18.5

Secure Encryption Key Reference List

This section allows you to view or define the set of Common Key References (CKRs) that this ASTRO Over-The-Air-Rekeying (OTAR) Profile can access.

Encryption keys are thus referenced for use through a ASTRO OTAR Profile's Secure Encryption Key References List, which in turn references the underlying hardware keys of the [Secure Encryption Key List](#).

Each Key References List assigned to a ASTRO OTAR profile is defined to communicate with a specific KMF. When a KMF maintains the same CKRs, the KMF operator is able to control that radio from an ASTRO OTAR perspective.

Other KMF profiles communicate to other KMFs that can control different sets of CKRs for the radio



IMPORTANT:

The maximum number of Secure Encryption Keys possible is equal to the current number of Secure Hardware Keys available in the [Secure Encryption Key List](#).

Once defined, ASTRO OTAR Profiles are selected from the Trunking [ASTRO OTAR Profile Index on page 1229](#), the Conventional ASTRO OTAR Profile Index, and the ASTRO Talkgroup List ASTRO OTAR Profile Index fields.

For Conventional - channels having their [Voice Key Strapping](#) field set to **Select**, a new Encryption [Key on page 531](#) is selectable for you from the Key menu-selection.

4.18.5.1

CKR Number

The application retrieves and displays the read-only Common Key Reference (CKR) values.

Each CKR value is based on the [Encryption Key Reference on page 915](#) field selection made for the same record/row of the current Secure Encryption Key References List, which applies to the current [ASTRO OTAR Profile](#).



NOTE:

This CKR value is defined in the [Secure Encryption Key List - CKR #](#) field.

Accessed Only: When the radio is model/option capable.

4.18.5.2

Encryption Key Reference

This field selects a Hardware Key or AES Key from the Secure Encryption Key List.

This selection applies for this record/row of the current Secure Hardware Encryption Key References List, which applies to the current [ASTRO OTAR Profile](#).



IMPORTANT:

Each Hardware Key and AES Key selection must be unique for the current ASTRO OTAR Profiles. Therefore the maximum number of Secure Encryption Keys (records/rows) possible is equal to the current number of Secure Keys available in the [Secure Encryption Key List](#).

Once defined, ASTRO OTAR Profiles are selected from the Trunking [ASTRO OTAR Profile Index on page 1229](#), the Conventional ASTRO OTAR Profile Index, Data Profile ASTRO OTAR Profile Selection, and the ASTRO Talkgroup List [ASTRO OTAR Profile Index on page 1054](#) fields.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is set to **Enabled**, and when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**, and when the radio is model/option capable.

4.19

CA Certificate

This section allows you to load CA Certificate files into the current codeplug.

The maximum number of CA Certificate files that can be added in a codeplug is 20. CA Certificate files in the radio's codeplug are used by the radio to authenticate the SmartConnect Gateway server during a TLS session.

4.19.1

Certificate Name

This field allows you to define recognizable names of the CA Certificate file.

The following selections are supported:



NOTE:

Examples: EMT-001, #500, Electric1, # A5.

Maximum of 50 ASCII characters, numbers, spaces, and special characters can be used.

4.19.2

Certificate Filename

This field allows you to view or rename the CA Certificate file.

The following selections are supported:



NOTE:

Examples: EMT-001, #500, Electric1, # A5.

Maximum of 255 characters, numbers, spaces, and special characters can be used.

4.20

FIPS Modes of Operation

Changes to certain fields may potentially impact the FIPS Mode of operation in the radio. Changing the FIPS Mode of operation causes all critical security parameters (key material and password) to be erased. The radio can be configured to operate in FIPS 140-2 Approved modes.

Accessed only:

FIPS 140-2 Level 3 Approved Mode:

To configure the MACE into a Level 3 Approved mode, use the Radio Configuration service to ensure:

- OTAR Operation MDC must be disabled (Secure Wide).
- Infinite UKEK Retention must be disabled (Secure Wide and on all ASTRO OTAR Profiles when applicable).
- OTAR Generate Key-Loss-Key must be disabled (Secure Wide and on all ASTRO OTAR Profiles when applicable).
- KVL - FIPS Level 3 Approved Mode must be enabled (Secure Wide and on all ASTRO OTAR Profiles when applicable).
- Must only have an approved Algorithm installed (AES256).

FIPS 140-2 Level 2 Approved Mode:

To configure the MACE into an Level 2 Approved mode, use the Radio Configuration service to ensure:

- OTAR Operation MDC must be disabled (Secure Wide).
- Infinite UKEK Retention must be disabled (Secure Wide and on all ASTRO OTAR Profiles when applicable).
- OTAR Generate Key-Loss-Key must be disabled (Secure Wide and on all ASTRO OTAR Profiles when applicable).
- KVL - FIPS Level 3 Approved Mode must be disabled (Secure Wide and on all ASTRO OTAR Profiles when applicable).

- Must only have an approved Algorithm installed (AES256).

FIPS 140-2 Non-Approved Mode

- This is the mode of operation if the conditions for level 2 or level 3 are not met.

4.21

Emergency Wide

This section allows you to view or define emergency mode functionality that applies for both Conventional Emergency Profiles and Trunking Emergency Profiles.

These Emergency Profiles can then apply while operating in Conventional and Trunking communications.



NOTE:

Conventional Emergency Profiles are selected for use from the Conventional System Emergency Profile Selection field.

Trunking Emergency Profiles are selected for use from the Trunking Personality Emergency Profile Selection field.

Emergency mode functionality is launched with a programmed radio or by you initiating the feature.

4.21.1

General

This section allows you to view or define emergency mode functionality that applies for both Conventional Emergency Profiles and Trunking Emergency Profiles.

These Emergency Profiles can then apply while operating in Conventional and or Trunking communications.



NOTE:

Conventional Emergency Profiles are selected for use from the Conventional System's Emergency Profile Selection field.

Trunking Emergency Profiles are selected for use from the Trunking Personality's Emergency Profile Selection field.

Emergency mode functionality is launched with a programmed radio or by you initiating the feature.

4.21.1.1

Emergency Alarm Rx Indicator Type

This field selects the type of notification that you hear and or see when an Emergency alarm is received from another radio.

This feature must also be enabled (when appropriate) for the Individual MDC System or ASTRO System from the Emergency Alarm Rx Indicator field, or for the Trunking System from the Emergency Alarm Rx Indicator field. This selection applies while operating in Emergency Mode for both Conventional and Trunking communications.



IMPORTANT:

The Emergency Alarm Rx Indicator time lasts for 10 seconds. During these 10 seconds, you can deactivate the indicator by pressing any of the buttons of the radio except **Volume** and **Light** buttons.

Once the indicator clears or is cleared, retried emergency alarms from the same MDC Primary ID, or ASTRO System Individual ID, or Trunking Unit ID are ignored for the next 20 seconds.

Emergency alarms are not detected while the radio is in scan mode.

Emergency alarms are not detected while the radio is active on a voice channel.

The following selections are supported:

No Indication

No alerts are heard or seen.

Alert Only

Sounds an audio alert.

Display Only

A visual alert appears. The visual alert applies only for display model radios.

Alert & Display

Emergency alarms are not detected while the radio is active on a voice channel.



NOTE:

For the **Display Only** and the **Alert and Display** selections the following are true:

- When the radio detected an Emergency Alarm, `EA-RCVD` (Emergency Alarm Received) appears in the display of the radio.
- When the radio detected an Emergency Beacon, `BCON RX` (Emergency Find Me Beacon Received) appears in the display of the radio.

`EA-RCVD` is displayed alternately with either the MDC Primary ID, ASTRO System Individual ID, or the Trunking Unit ID of the radio that sent the Emergency Alarm, and continues for ten seconds. Reverse Aliasing/Caller ID is also possible.

4.21.1.2

Unmute Option

This field enables the radio to unmute to voice traffic when operating in Silent Alarm mode.

The Unmute Option allows the dispatcher to provide feedback to your initiated emergency state through code words, and without drawing undesirable attention.

This selection applies while operating in Emergency Mode for both Conventional and Trunking communications.



WARNING: When the [Disable Emergency Call Indications on page 919](#) field is enabled, this Unmute Option field must be enabled; otherwise the application considers the value invalid.

Accessed Only: When the Silent Alarm field is enabled.

4.21.1.3

Silent Alarm

This field enables the radio to operate in a stealth-like manner while transmitting in an emergency alarm state (see Emergency Type), including the emergency alarm state of a Fall Alert situation.

During this emergency alarm state, there is no audible or visual indication of the emergency alarm transmission. This selection applies while operating in emergency mode for both Conventional and Trunking communications.



WARNING:

This Silent Emergency Alarm mode continues until either one of the following occurs:

- Pressing and releasing the radio's PTT button to exit this mode and enter Emergency Call or regular dispatch mode.
- Pressing and holding the Emergency button for the programmed Long Keypress Duration for Emergency to exit emergency mode (if enabled).
- Initiating Hot Mic Emergency transmission (if enabled).

Accessed Only: When the Emergency Call Receive field is disabled.

4.21.1.4

Channel Delay

This field selects the amount of time that the radio waits before transmitting emergency mode data when you are changing the channel of the radio.

This feature prevents the radio from unintentionally transmitting emergency data on channels when in emergency mode, and when you are changing the channel of the radio. This selection applies while operating in emergency mode for both Conventional and Trunking transmissions. Time is in second.

Accessed Only: When the radio is model/option capable.

Table 207: Range

Minimum	Maximum	Increment
0 sec	7 sec	1 sec

4.21.1.5

Disable Emergency Call Indications

This field enables all indications (display, LED alerts, and tones) normally associated with an Emergency Call (see Emergency Type) to be disabled when operating in Silent Alarm mode.

Only the audible and visual indications which occur during a standard Talkgroup/Conventional call are available; therefore, during the Emergency Call, it appears like an ordinary dispatch call is taking place. This selection applies while operating in emergency mode for both Conventional and Trunking communications.



WARNING: This Silent Emergency Call mode continues until you press and hold the Emergency button for the programmed Long Keypress Duration for Emergency to exit emergency mode.



IMPORTANT: When this selection is Enabled, the Disable Emergency Call Indications Extended Feature is **Used in Codeplug = Yes**.

Accessed Only: When the **Disable Emergency Call Indications** Extended Feature appears in the Extended Feature Name field and when the Silent Alarm field is enabled (if Disabled, then this selection must be Disabled; else, this field becomes invalid).

4.21.1.6

Emergency Power Up

This field enables you to have the ability to power-up the radio and automatically transmit an emergency mode transmission with the use of a footswitch.



WARNING: This feature is only valid when the Radio Wide, Ignition Switch field is not set to either **Tx Inhibit** or **PTT Tx Inhibit**.

Accessed Only: When the radio is model/option capable and when the Radio Selection field is not set to **Secondary Radio**.

4.21.1.7

Keep Alive

This field enables the radio to remain powered-on during an emergency mode transmission, regardless of the position of the power switch.



If the power switch of the radio is turned to the **OFF** position, the radio powers down once emergency mode is exited with a long keypress of the Emergency button. This selection applies while operating in emergency mode for both Conventional and Trunking communications.

Accessed Only: When the radio is model/option capable.

4.21.1.8

Emergency Call Receive

This field causes the display of the radio to alternate between `EMER RECEIVED` and the current Trunking channel when it unmutes on an emergency call.

This selection applies while operating in Emergency Mode on a Trunking communications channel.

Accessed Only: When the [Silent Alarm on page 918](#) field is **Disabled**.

4.21.1.9

Distinguish Emergency Type

This field enables the radio to receive emergency alerts to distinguish the type of emergency triggered by the source radio.



The radio status events include textual display of the condition, and the received emergency tone plays on the selected speaker for the duration of alarms.

Accessed Only: When the **Emergency Alarm Rx Indicator Type** field is **Display Only** or **Alert & Display**.

4.21.2

Fall Alert

This section allows you to view or define Emergency Mode Fall Alert functionality.



The Fall Alert feature transmits an emergency based on a portable radio and its operator considered as being in a horizontal position, or in a horizontal position and motionless.

Therefore a Fall Alert Emergency Mode alerts dispatchers and other radios that a Fall Alert situation has occurred.



IMPORTANT: The Fall Alert feature can be configured to operate on a radio-wide basis or on a per Emergency Profile basis that includes customizable Alert Tones. See the Fall Alert Configurability Level field and the Customizable Emergency Tones Page.



NOTE:

The Fall Alert Trigger field enables the feature and determines if a motion sensitivity threshold is also required to complete the Fall Alert condition. The Fall Alert Configurability Level, the Pre-Alert Timer, the Pre-Alert Tone and the Post-Alert Timer must also be defined.

In-the-field: You are alerted both audibly and visually that the radio's programmed Fall Alert condition(s) have been met for the duration of the Pre-Alert Timer. Once the Pre-Alert Timer has expired, the Post-Alert Timer begins. Once the Post-Alert Timer has expired, the radio begins to transmit in Emergency Mode.

- At anytime during the period when the required Fall Alert conditions are considered to be true, if the Fall Alert conditions are interrupted due to repositioning of the radio, or you initiating the Fall Alert Clear button-press, then the Fall Alert feature is automatically reset and no emergency transmission is sent.
- If the emergency is already being transmitted but not yet acknowledged, and the Fall Alert conditions are interrupted due to up-righting of the radio, or you initiating the Fall Alert Clear button-press, then the emergency transmission is canceled.

The angles of operation that determine an upright radio versus a horizontal radio are factory programmed.

The motion sensitivity threshold is factory programmed.



NOTE:

Conventional Emergency Profiles are selected for use from the Conventional System's Emergency Profile Selection field.

Trunking Emergency Profiles are selected for use from the Trunking Personality's Emergency Profile Selection field.

Emergency mode functionality is launched with a programmed radio or by you initiating the feature.

4.21.2.1

Fall Alert Trigger

This field selects the type of Fall Alert condition that initiates the Emergency Mode Fall Alert feature.



This selection applies for both Conventional and Trunking communications.

The following selections are supported:

Disabled

Disables the Fall Alert feature.

Horizontal Only

An emergency is transmitted when the radio is tilted to a horizontal position.

Horizontal and Motionless

An emergency is transmitted if the radio is tilted to a horizontal position, and the measured movement of the radio does not reach the factory-programmed movement sensitivity threshold. Any radio motion that does not meet the movement threshold is considered as "Motionless".

The motion sensitivity threshold is factory programmed.

 **NOTE:** The angles of operation that determine an upright radio versus a horizontal radio are factory programmed.

Accessed Only: When the radio is model or option capable.

4.21.2.2

Pre-Alert Timer

This field selects the amount of time that a Fall Alert condition must be present before you are notified with the selected Pre-Alert Tone.



This alert tone is also complimented visually with `Fall Alert` text appearing in the display of the radio. These alerts are to warn you that an Emergency Mode is about to be activated, therefore allowing you to bring the radio into a more vertical position and possibly avoid a false Emergency transmission.

This selection applies for both Conventional and Trunking communications.

 **IMPORTANT:** In-the-field: If the Fall Alert condition is interrupted due to repositioning of the radio, or by you initiating the Fall Alert Clear button-press, then the Fall Alert condition, the timers and alerts are reset, and the Emergency Mode transmission is canceled.

Accessed Only: When the radio is model/option capable and when the [Fall Alert Trigger on page 921](#) field is not **Disabled**.

Table 208: Range

Minimum	Maximum	Increment
5 seconds	120 seconds	1 second

4.21.2.3

Post-Alert Timer

This field selects the amount of time after the Pre-Alert Timer has expired that a radio needs to remain in a Fall Alert condition before the Emergency Mode transmission begins.



This selection applies while operating for both Conventional and Trunking communications. Time is in seconds.

 **IMPORTANT: In-the-field:** If the Fall Alert condition is interrupted due to repositioning of the radio, or by you initiating the Fall Alert Clear button-press, then the Fall Alert condition, the timers, and alerts are reset, and the Emergency Mode transmission is canceled.

Accessed Only: When the radio is model/option capable and when the [Fall Alert Trigger on page 921](#) field is not **Disabled**.

Table 209: Range

Minimum	Maximum	Increment
1 second	120 seconds	1 second

4.21.2.4

Pre-Alert Tone

This field selects the type of alert tone that sounds after the Pre-Alert Timer has expired.



The Pre-Alert Timer begins once the programmed Fall Alert condition is met (see [Fall Alert Trigger on page 921](#)). Once this timer period expires, this selected alert tone is sounded. This alert tone is also complimented visually with `Fall Alert` text appearing in the display of the radio.

These audible and visual alerts are to warn you that an Emergency Mode is about to be activated, therefore allowing you to bring the radio into a more vertical position and possibly avoid a false Emergency transmission. This selection applies for both Conventional and Trunking communications.



IMPORTANT: To ensure that you hear this tone even when the radio volume is low, it is recommended to increase the Minimum Volume setting or the Volume Offset (dB) setting.

Accessed Only: When the radio is model/option capable and when the [Fall Alert Trigger on page 921](#) field is not **Disabled**.

The following selections are supported:

Single Warning Tone

One tone is sounded at the expiration of the [Pre-Alert Timer on page 922](#).

Continuous Warning Tone

A continuous tone is sounded at the expiration of the [Pre-Alert Timer on page 922](#) and for the duration of the [Post-Alert Timer on page 922](#). Therefore, this alert tone ends once the Emergency Mode transmission begins.

4.21.2.5

Fall Alert Configurability Level

This field selects either the Emergency Mode Fall Alert feature is defined on a radio-wide basis or on a per Emergency Profile basis.



This selection applies for both Conventional and Trunking communications.

The following selections are supported:

Radio Wide

The Fall Alert feature operates on a radio-wide basis.

Per Emergency Profile

Allows the Fall Alert feature to be enabled on a per Conventional Emergency Profile or per Trunking Emergency Profile basis by selecting the corresponding **Fall Alert Enable** field. See also the [Fall Alert Emergency Tone Trigger on page 924](#).

Accessed Only: When the radio is model or option capable and when the [Fall Alert Trigger on page 921](#) field is not **Disabled**.

4.21.3

Customizable Emergency Tones

This section allows you to view or define Emergency Mode Fall Alert functionality related to the per Emergency Profile Emergency Tone Lists.



NOTE:

Conventional Emergency Profiles are selected for use from the Conventional System's Emergency Profile Selection field.

Trunking Emergency Profiles are selected for use from the Trunking Personality's Emergency Profile Selection field.

Emergency mode functionality is launched with a programmed radio or by you initiating the feature.

4.21.3.1

Fall Alert Emergency Tone Trigger

This field enables a customizable Emergency Tone List to be used, on a per Emergency Profile basis, when Emergency Mode is initiated by a Fall Alert situation.



This selection applies while operating in Emergency Mode for both Conventional and Trunking communications.

Accessed Only: You can access this field only when the following conditions are met:

- The [Fall Alert Trigger on page 921](#) field is not set to **Disabled**.
- The [Fall Alert Configurability Level on page 923](#) field is set to **Per Emergency Profile**.
- The radio is model or option capable.

4.21.4

Impact Detection

This section allows you to view or define the Emergency Mode impact detection feature.

When working with Dual radios, the Impact Detection feature is only supported by the primary radio.

The Emergency Radio feature is always set to Primary radio if the Impact Detection feature is enabled in the **Primary radio**.

This feature is not supported in the **Secondary Radio**.

4.21.4.1

Configurability Level

The following are the options available:

Disabled

The feature is disabled for the radio.

Radio Wide

The feature is enabled for the radio on all channels or personality.

Per Emergency Profile

The emergency profile controls the Impact Detection feature through the Impact Detection Enable field. This option allows the ability to enable or disable the Impact Detection feature in an emergency profile assigned to channels or personalities.

4.21.4.2

Configurability Level

The following are the options available:

Disabled

The feature is disabled for the radio.

Radio Wide

The feature is enabled for the radio on all channels or personality.

Per Emergency Profile

The emergency profile controls the Impact Detection feature through the Impact Detection Enable field. This option allows the ability to enable or disable the Impact Detection feature in an emergency profile assigned to channels or personalities.

4.21.4.3

Emergency Tone Trigger

This field enables the use of a customizable Emergency Tone List, on a per Emergency Profile basis, when Emergency Mode has been initiated by an impact detected situation.

This selection applies while operating in Emergency Mode for both Conventional and Trunking communications.

Accessed Only: When Configurability Level is set to **Per Emergency Profile**.

4.21.4.4

Pre-Alert Timer

This field displays the amount of time, in seconds, from when the initial impact detected situation is detected until you are alerted.

This is a non-configurable field and set to **0** seconds, by default.

4.21.4.5

Post-Alert Timer

This field sets the amount of time a radio remains in a impact detected condition before the Emergency Mode transmission begins.

This selection applies while operating for both Conventional and Trunking communications. Time is in seconds.

4.21.4.6

Pre-Alert Tone

This field sets the alert tone that sounds once a radio enters into the post alert stage.

This alert tone is also complimented visually with **Impact Detected** text appearing in the radio's display. These audible and visual alerts are intended to warn you that an emergency mode is about to be activated, therefore allowing you to clear the **Impact Detected** stage and possibly avoid a false emergency transmission.

This selection applies for both Conventional and Trunking communications.

The following selections are supported:

Single Warning Tone

One tone is played at the moment the radio enters the post alert stage.

Continuous Warning Tone

A continuous tone is played once the radio enters the post alert stage and for the duration of the Post-Alert Timer. Therefore, this alert tone ends once the Emergency Mode transmission begins.

4.22

Conventional Emergency Profiles

The **Conventional Emergency Profiles** allows you to view or modify Conventional - emergency mode functionality.

Emergency transmissions have many possible defined settings. A variety of emergency profiles may be created.



NOTE: [Emergency Wide on page 917](#) features and settings apply to these profiles.

Emergency Conventional Profiles are selected from the Conventional System's Emergency Profile Selection field.

Conventional Systems are referenced to Conventional Personalities from either the ASTRO System field or the Non-ASTRO System field; only ASTRO and MDC are capable of emergency mode transmissions.

Emergency mode functionality is launched with a programmed radio or by initiating the feature.

4.22.1

General

This section allows you to view or modify Conventional Emergency features for individual Conventional Emergency Profiles.



NOTE: [Emergency Wide on page 917](#) features and settings apply to these profiles.

Emergency Conventional Profiles are selected from the Conventional System's Emergency Profile Selection field.

Conventional Systems are referenced to Conventional Personalities from either the ASTRO System field or the Non-ASTRO System field; only ASTRO and MDC are capable of emergency mode transmissions.

Emergency mode functionality is launched with a programmed radio or by you initiating the feature.

4.22.1.1

Emergency Profile Name

This field allows you to create recognizable names for the current Conventional Emergency Profiles.

Conventional Emergency Profiles are selected for use from the Conventional System Emergency Profile Selection field.



NOTE:

Examples: EMT-001, #500, Electric1, # A5.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.22.1.2

Fall Alert Enable

This field enables Emergency Mode Fall Alert operation for the current Conventional Emergency Profiles.



Accessed Only: You can access this field only when the following conditions are met:

- The **Fall Alert Trigger** field is not set to **Disabled**.
- The **Fall Alert Configurability Level** field is set to **Per Emergency Profile**.
- The radio is model or option capable.

4.22.1.3

Emergency Type

This field selects the desired radio functionality that occurs when you initiate emergency mode.

This selection applies for the current [Conventional Emergency Profiles on page 926](#).



IMPORTANT:

Both selections support Emergency Revert Channel, that is, transmitting emergency on a predetermined channel.

Once the radio has begun Emergency Call operation, only your long-press of the emergency button (see the Long Keypress Duration for Emergency field) or a radio power-down ceases this functionality.

The following selections are supported:

Alarm Only

Upon an Emergency button-press, an emergency alarm data packet initiating an emergency communication is repeatedly sent to the base station until it is canceled by one of the following choices:

- Both the programmed [Polite Retries on page 930](#) and [Impolite Retries on page 931](#) have been exhausted.
- An acknowledgement confirming the successful transmission of the emergency data packet is received back from the base station.
- A PTT button-press.
- A long-press of the emergency button (see the Long Keypress Duration for Emergency field).

Alarm & Call

Upon an Emergency button-press an emergency alarm data packet initiating an emergency communication is repeatedly sent to the base station until it is canceled by one of the following choices:

- Both the programmed [Polite Retries on page 930](#) and [Impolite Retries on page 931](#) have been exhausted.
- An acknowledgement confirming the successful transmission of the emergency data packet is received back from the base station.
- A PTT button-press.

When the Alarm data packet has ceased, then voice (Call) is able to transmit on the channel.

4.22.1.4

Emergency Auto Transmit Mode

This field selects an additional and specific emergency transmission operation for the current Conventional Emergency Profiles set.

Emergency Hot Mic or Hot Mic Silent Audio are possible.

 **WARNING:** When this feature is not disabled, the selected functionality overrides/enhances the emergency functionality described for the [Emergency Type on page 927](#) field's **Alarm and Emergency Call** selection.

 **IMPORTANT:** This field setting is not supported for third party accessories. Any changes in the settings must be done through your accessory developer.

The following selections are supported:

Disabled

No additional Auto Transmit functionality is selected.

Hot Mic Emergency

Once you initiate emergency mode with an Emergency button-press, after only one emergency alarm impolite transmission, this selection causes the radio to automatically key-up and transmit an emergency Call (see [Emergency Type on page 927](#)). The radio transmits with its microphone remaining automatically unmuted/open for the time selected by the Hot Mic Tx Period field. The radio is then in normal emergency Call mode. This is also known as Emergency with Voice to Follow.

When the Long Keypress for Emergency field is not set to **0**, the Emergency Call Mode is exited with a long-keypress of the Emergency button.

Available For: ASTRO and MDC - Conventional Systems.

 **WARNING:** The Emergency Type field for the current profile must be set to **Alarm and Call** or this selection becomes invalid.

Conventional Personalities using Hot Mic should have their transmit Time Out Timer set to a value greater than Hot Mic Tx Period; otherwise the Hot Mic transmission aborts when the Time Out Timer expires.

 **NOTE:** The settings of [Polite Retries on page 930](#)/[Impolite Retries on page 931](#) are ignored when entering the Hot Mic state. Once Hot Mic or the emergency call state is exited, the values of the Polite Retries/Impolite Retries fields are restored to the profile/radio channel.

Emergency via Silent Audio

Once you initiate emergency mode with an Emergency button-press, after only one emergency alarm impolite transmission, this selection causes the radio to automatically key-up into emergency mode with its microphone remaining muted/closed. This transmission continues for the amount of time specified in the Silent Audio Tx Period field. The radio is then in normal emergency Call mode.

When the Long Keypress for Emergency field is not set to **0**, the Emergency Call Mode is exited with a long-keypress of the Emergency button.

Available For: ASTRO - Conventional Systems only.



WARNING:

The Emergency Type field for the current profile must be set to **Alarm and Call** or this selection becomes invalid.

Conventional Personalities using this feature should have the Time Out Timer set to a value greater than [Silent Audio Tx Period on page 930](#), otherwise the transmission aborts when the Time Out Timer expires.



NOTE: The settings of [Polite Retries on page 930](#)/[Impolite Retries on page 931](#) are ignored when entering the Silent Audio state. Once Silent Audio or the emergency call state is exited, the values of the Polite Retries/Impolite Retries fields are restored to the profile/radio channel.

4.22.1.5

Console Ack Required (DVRs)

This field causes an extra console acknowledgement response ("console Ack") to be required when you initiate emergency mode.

When an emergency alarm has been sent (see the Emergency Type field), the radio always requires an acknowledgement from the Fixed Network Equipment (FNE); this feature requires an extra console Ack to be required from the dispatch/console application.

Receiving an FNE Ack confirms to you that the radio's current site has received the emergency alarm packet; receiving a console Ack ensures that the dispatch/console application is displaying the emergency condition to the dispatcher. Once the console Ack is received the radio sounds a four-beep alert tone.

This selection applies for the current Conventional Emergency Profile.



IMPORTANT:

This field is only applicable when the radio's current channel is operating on a Conventional Digital Vehicular Repeater System (DVRs) (that is, the current Conventional Personality references a DVRs Conventional System). This field has no impact on a non-DVRs Conventional System.

This feature must be disabled for **Hot Mic Emergency** or **Emergency via Silent Audio** to function properly. See the [Emergency Auto Transmit Mode on page 928](#) field.

4.22.1.6

Hot Mic Tx Period

This field selects the amount of time that the radio automatically keys-up and transmits while operating in the Hot Mic emergency mode (see Emergency Auto Transmit Mode).

This selection applies for the current [Conventional Emergency Profiles on page 926](#).



IMPORTANT: Conventional Personalities using this feature should have the Time Out Timer set to a value greater than [Silent Audio Tx Period on page 930](#), otherwise the transmission aborts when the Time Out Timer expires.

Accessed Only: When the [Emergency Type on page 927](#) field is set to **Alarm and Call**, and when the [Emergency Auto Transmit Mode on page 928](#) field is set to **Hot Mic Emergency**.



IMPORTANT: Older version of the codeplug must use the parameters below:

Table 210: Range

Minimum	Maximum	Increments
10 seconds	120 seconds	10 seconds



IMPORTANT: This applies to the codeplug version 19.00.00 and above:

Table 211: Range

Minimum	Maximum	Incremenst
1 seconds	120 seconds	10 seconds

4.22.1.7

Acknowledge Alert Tone

This field enables the radio to sound an audio tone once an emergency mode message has been received and a confirmation of the received message has arrived back to the radio from the base station.

An emergency acknowledge is a confirmation that the radio Emergency Alarm (see [Emergency Type on page 927](#)) has been successfully received by the base station. This feature applies for the current Conventional Emergency Profile.

4.22.1.8

Silent Audio Tx Period

This field selects the amount of time that the radio automatically keys-up and transmits while operating in the **Emergency via Silent Audio** Enable Emergency Mode.

See [Emergency Auto Transmit Mode on page 928](#).

This selection applies for the current [Conventional Emergency Profiles on page 926](#) and is only possible for ASTRO signaling systems.

Accessed Only: When the [Emergency Type on page 927](#) field is set to **Alarm and Call**, and when the [Emergency Auto Transmit Mode on page 928](#) field is set to **Emergency via Silent Audio**.

Table 212: Range

Minimum	Maximum
1 seconds	5 seconds

4.22.1.9

Polite Retries

This field selects the number of times that the radio attempts to transmit a polite emergency mode Call (see Emergency Type).

A polite call is when the radio waits for a channel to be free of radio traffic before attempting to transmit. Polite Retries are aborted when an acknowledgment (Ack) of a successful emergency transmission is received back to the radio.

This selection applies for the current [Conventional Emergency Profiles on page 926](#).

 **IMPORTANT:** If impolite emergency retries are complete before the Limited Patience timer expires, the radio will use polite transmission until the timer expires. After the timer expires, any remaining polite retries will be sent impolitely.

Table 213: Range

Minimum	Maximum
0 Attempt	14 or infinite attempts

4.22.1.10

Hot Aux Mic Activation

This field selects the desired initiation method and audio source (microphone) type for **Hot Mic** emergency mode.



See also [Emergency Auto Transmit Mode on page 928](#). This feature applies for the current [Conventional Emergency Profiles on page 926](#).

Accessed Only: When the **Emergency Hot Aux Mic** Extended Feature appears in the Extended Feature Name field, and when the Emergency Auto Transmit Mode field is set to **Hot Mic Emergency**.

The following sections are supported:

Disable

Hot Mic transmission audio is routed through the radio from the default internal microphone.

External Switch

When initiated from an external switch, Hot Mic transmission audio is routed through the radio from an auxiliary microphone.

Button

When initiated from an Emergency button-press, Hot Mic transmission audio is routed through the radio from an auxiliary microphone.

All

When initiated from an external switch or from an Emergency button-press, Hot Mic transmission audio is routed through the radio from an auxiliary microphone.

4.22.1.11

Impolite Retries

This field selects the number of times that the radio attempts to transmit an impolite emergency mode Call (see the Emergency Type field selections).

An impolite call is when the radio sends a transmission even when the channel is busy with other radio traffic. These transmissions proceed by stepping on other channel traffic. Impolite Retries are aborted when an acknowledgment (Ack) of a successful emergency transmission is received back to the radio.

This selection applies for the current [Conventional Emergency Profiles on page 926](#).

 **IMPORTANT:** If impolite emergency retries are complete before the Limited Patience timer expires, the radio will use polite transmission until the timer expires. After the timer expires, any remaining polite retries will be sent impolitely.

Table 214: Range

Minimum	Maximum
1 Attempt	15 attempts

4.22.1.12

Tx Multiplier Enable

This field causes the selected Tx Multiplier Factor value to be doubled, which then determines how long the radio automatically continues to key up and transmit an Impolite Emergency Call (see Emergency Type).

This selection applies for the current [Conventional Emergency Profiles on page 926](#).

4.22.1.13

Tx Multiplier Factor

This field selects how long the radio to automatically continues to key up and transmit an Impolite Emergency Call (see Emergency Type).

This time begins only once the radio has exhausted all Emergency [Polite Retries on page 930](#) and [Impolite Retries on page 931](#) without receiving an acknowledge.

This selection applies for the current [Conventional Emergency Profiles on page 926](#).



IMPORTANT: When the Remote Radio Mode field is set to **Radio Trace** or **Radio Monitor**, this number is multiplied by the Tx Base Time to give a value in seconds.

The following selections are

Table 215: Range

Minimum	Maximum
0	3

4.22.1.14

Emergency Find Me

The Emergency Find Me feature provides an indication that notifies you when someone in your vicinity has an emergency activation.

When this feature is enabled, you can perform the following actions:

- Transmit a Bluetooth Low Energy (BLE) beacon every two seconds while the radio is in the Emergency feature.
- Receive emergency beacons and view the Beacon Received notification.
- Receive an alert tone when any beacon is received in the last ten seconds.
- Enter into menu option to view all the receiving beacons.
- Dismiss the notification to stop receiving the tones and display.

To enable the Emergency Find Me feature, you must enable the **Transmit Enable** and **Receive Enable** fields in the Emergency Find Me section of the Conventional Emergency Profile.

4.22.1.15

Transmit Enable

When this field is enabled, the radio can transmit the Emergency Find Me Beacon during emergency.



Emergency Beacon transmission is triggered through the Emergency feature such as pressing the Emergency switch or button, and Fall Alert Emergency. When you enter emergency, no additional action is required. When the radio enters emergency mode, Bluetooth is automatically turned on, and the beacons are sent. Emergency Beacons are sent every two seconds while the radio is in emergency mode.

For more information on the Emergency Find Me Feature, refer to [Emergency Find Me on page 932](#).

Accessed Only: When the radio is model/option capable.

4.22.1.16

Receive Enable

When this field is enabled, the radio receives the Emergency Find Me Beacon during emergency.



When you change to a channel in which Beacon Receive is enabled, Bluetooth is automatically turned on. When you receive an emergency beacon, the radio plays a tone and displays `Beacon Received` on the Top Display and Front Display Radio Control widget. The radio continues to play a tone every ten seconds while actively receiving beacons.

If the receiver dismisses the notification or if no beacons are received for four minutes, the Beacon Received notification disappears. If multiple beacons are available, the display shows the ID or alias of the device that enters emergency most recently.

For more information on the Emergency Find Me Feature, refer to [Emergency Find Me on page 932](#).



NOTE:

On APX Standard radios with front display, you can use the menu to view the radio ID of the transmitting radio and the Bluetooth Received Signal Strength Indicator (RSSI) level.

On APX NEXT radios, you can dismiss the beacon by tapping **DISMISS** in the notification. You can also view the list of senders by tapping **DETAILS**.

Accessed Only: When the radio is model/option capable.

4.22.1.17

Impact Detection Enable

This field enables Emergency Mode Impact Detection operation for Conventional or Trunking Emergency Profile.

Accessed Only:

- When H-Option QA01843 is enabled
- when the Impact Detection Configurability Level field is set to **Per Emergency Profile**
- When the radio is model/option capable.

4.22.1.18

Emergency Exit on Channel Change

This field allows the radio to exit Emergency on mode change.

4.22.1.19

Remote Activation of Emergency

This field selects specific functionality of the Remote Emergency Activation feature for the current Emergency Profile set. This feature will allow a source (encoding) radio to activate the Emergency feature on a target (decoding) radio via over the air communication as if the target user pressed the Emergency button.

This field is only valid when the radio is model or option capable with APCO 25 Conventional and/or APCO 25 Trunking operation.

The following selections are supported:

Disabled

No Remote Emergency Activation functionality is selected.

Encode Only

A radio is only allowed to initiate Remote Emergency communications to a target radio.

Decode Only

A radio is only allowed to receive Remote Emergency communications from a source radio and upon decoding the communications, the radio will immediately launch the Emergency feature.

Encode and Decode

A radio is allowed to both initiate Remote Emergency communications to a target radio and to receive Remote Emergency communications from a source radio.



NOTE: This field is disabled by default.

4.22.2

MDC

This section allows you to view or modify MDC - Conventional Emergency features for individual Conventional Emergency Profiles.



NOTE:

Emergency Wide features and settings apply to these profiles.

Emergency Conventional Profiles are selected from the Conventional System's Emergency Profile Selection field.

MDC type Conventional Systems are referenced to Conventional Personalities from the Non-ASTRO System field.

Emergency mode functionality is launched with a programmed radio or by you initiating the feature.

4.22.2.1

Emergency PTT-ID Sidetone

This field enables an alert tone to sound while transmitting an Emergency PTT ID and when the radio is in emergency mode.

The alert tone sounds when PTT button is pressed and continues until the Emergency PTT ID has transmitted. During this brief time, the radio's microphone and therefore voice transmission is automatically disabled. When the alert tone stops, it is meant to notify you that the radio's speaker is ready to accept voice for transmission.

This selection applies for the current [Conventional Emergency Profiles on page 926](#).



WARNING: This feature applies only when the Non-ASTRO Emergency PTT ID field is enabled in a Conventional Personality that references a Conventional System that references this Conventional Emergency Profile.

Accessed Only: When the [Emergency Type on page 927](#) field is set to **Alarm and Call**.

4.22.2.2

Emergency Remote Monitor Tx Base Time

This field selects a number used by the radio to calculate the amount of time that the radio automatically keys-up in the MDC Emergency Remote Monitor mode.



Once this transmit time has expired, the radio then de-keys for the amount of time defined by the [Emergency Remote Monitor Rx Base Time on page 935](#). This feature applies for the current Conventional Emergency Profile. Time is in seconds.



IMPORTANT:

The radio uses the Tx Multiplier value (delivered to the radio within an Emergency Call Acknowledgement **Ack**, or within a dispatcher sent Remote Monitor Command) multiplied by this Tx Base Time to determine the amount of Emergency Remote Monitor transmission time.

And if the Global Multiplier (delivered to the radio within an Emergency Call Acknowledgement **Ack**, or within a dispatcher sent Remote Monitor Command) is set to **True**, this calculated transmission time is doubled.

Accessed Only: When the Emergency Type field is set to **Alarm and Call**, and when the radio is model/option capable.

Table 216: Range

Minimum	Maximum	Increments
10 sec	120 sec	10 sec

4.22.2.3

Emergency Remote Monitor Rx Base Time

This field selects a number used by the radio to calculate the amount of time that the radio automatically de-keys and waits in the Emergency Remote Monitor mode.



This receive/wait time begins once the [Emergency Remote Monitor Tx Base Time on page 935](#) has expired. This feature applies for the current Conventional Emergency Profile. Time is in seconds.



IMPORTANT:

The radio uses the Rx Multiplier value (delivered to the radio within an Emergency Call Acknowledgement **Ack**, or within a dispatcher sent Remote Monitor Command) multiplied by this Rx Base Time to determine the amount of Emergency Remote Monitor receive/wait time.

And if the Global Multiplier (delivered to the radio within an Emergency Call Acknowledgement **Ack**, or within a dispatcher sent Remote Monitor Command) is set to **True**, the calculated receive/wait time is doubled.

Accessed Only: When the Emergency Type field is set to **Alarm and Call**, and when the radio is model/option capable.

Table 217: Range

Minimum	Maximum	Increments
10 sec	120 sec	10 sec

4.22.2.4

Emergency Remote Monitor Enable

This field enables emergency mode Remote Monitor operation.



Emergency Remote Monitor occurs on the radio once one of the two following scenarios is true. First, when an Emergency Alarm (see Alarm and Call in [Emergency Type on page 927](#)) is successfully received by the dispatcher/console, and then an Emergency Alarm Ack (acknowledge) is successfully received back to the radio. Second, when an MDC Remote Monitor Command has been received (by the radio) during emergency mode. Once the radio is in Emergency Remote Monitor mode, the radio automatically keys-up and transmits surrounding audio from its "hot" microphone. This feature applies for the current [Conventional Emergency Profiles on page 926](#).

 **WARNING:** The [Emergency Type on page 927](#) field must be set to **Alarm and Call** for this selection to be valid.

 **IMPORTANT:** Both the "Ack" and the "Remote Monitor Command" contain a Tx Multiplier value, an Rx Multiplier value and a Global Multiplier (set to **True** or **False**). These values are defined by the dispatcher/console.

The radio uses the Tx Multiplier (delivered by the Ack or the Remote Monitor Command) multiplied by the programmed Tx Base Time to determine the amount of time of this "hot" microphone transmission. If the Global Multiplier (delivered by the Ack or the Remote Monitor Command) is set to **True**, the calculated transmission time is doubled.

Once this transmit time has expired, the radio de-keys for the specific receive/wait-time. This receive/wait-time is determined by multiplying the Rx Multiplier (delivered by the Ack or the Remote Monitor Command) by the programmed Rx Base Time. Again, if the Global Multiplier (delivered by the Ack or the Remote Monitor Command) is set to **True**, the calculated receive/wait-time is doubled.

Once this transmit-time-period and then the receive/wait-time-period have both occurred, the radio then goes into an Emergency Alarm sequence (see Emergency Type **Alarm & Call**).

The Emergency Remote Monitor cycle begins again when either an Emergency Alarm Ack is received by the radio, or a Remote Monitor Command is received by the radio (during Emergency mode).

This Emergency Remote Monitor cycle is ended by either the dispatcher sending an Emergency Alarm Ack with a zero **0** Tx Multiplier value, and a zero **0** Rx Multiplier value (also known as the **Dispatch Console Values**), or when you press the PTT button is detected by the radio.

Accessed Only: When the radio is model/option capable.

4.22.3

Emergency Tone List

This section allows you to view or modify Emergency Mode Trigger and Alert Tone features for individual Conventional Emergency Profiles.



NOTE:

Emergency Wide features and settings apply to these profiles.

Emergency Conventional Profiles are selected from the Conventional System's Emergency Profile Selection field.

MDC type Conventional Systems are referenced to Conventional Personalities from the Non-ASTRO System field.

Emergency mode functionality is launched with a programmed radio or by you initiating the feature.

4.22.3.1

Trigger

This field selects the condition or trigger that initiates Emergency Mode in the current Conventional Emergency Profile.



Depending on the selected Emergency Tone type, the Tone Minimum Volume, Tone Period, and Audio Routing may also be configured in the same record/row of the Emergency Tone List.

Accessed Only: When the Fall Alert Trigger field is not set to **Disabled**, and when the Fall Alert Emergency Tone Trigger is **Enabled**, and when the radio is model/option capable.

The following selection is supported:

Fall Alert

A Fall Alert condition initiates Emergency Mode in the current [Conventional Emergency Profiles on page 926](#).

Applies Only: When the [Fall Alert Enable on page 927](#) field is enabled in the current Conventional Emergency Profile.

4.22.3.2

Tone

This field selects the type of Alert Tone that sounds once an Emergency Mode transmission has commenced with the corresponding Trigger selection.



This selection applies for the current Conventional Emergency Profile.

Accessed Only: When the Fall Alert Trigger field is not set to **Disabled**, and when the Fall Alert Emergency Tone Trigger is enabled, and when the radio is model/option capable.

The following selections are supported:

Legacy Emergency Tone

The legacy Emergency Alert Tone and audio levels are used.

Critical Emergency Tone

The Critical Emergency Alert Tone sounds. The Tone Minimum Volume, Tone Period, and Audio Routing must also be defined.

4.22.3.3

Tone Minimum Volume

This field selects the minimum audio level for sounding the corresponding Emergency Mode Alert Tone.



If the value is higher than the radio's current volume level, then the value is used, otherwise, the radio's current volume level is used. This feature applies for the current [Conventional Emergency Profiles on page 926](#).

Accessed Only: When the [Tone on page 937](#) field is set to **Critical Emergency Tone**, and when the radio is model/option capable.

Table 218: Range

Minimum	Maximum	Increments
0	255	1

4.22.3.4

Tone Period

This field allows you to select the specified Emergency Mode Alert Tone to a temporary tone or a repetitive tone.



User can determine the periodic timer of the repetitive tone. This feature applies for the current Conventional Emergency Profile.

Accessed Only: When the [Tone on page 937](#) field is set to **Critical Emergency Tone**, and when the radio is model/option capable.



NOTE: When set to **0-Once** (Zero Time), the alert tone specified in the Tone field sounds only once while emergency mode is active.

Table 219: Range

Minimum	Maximum	Increment
5	255	1

4.22.3.5

Audio Routing

This field selects the routing of the Alert Tone and incoming audio to a specific speaker when an Emergency Mode transmission begins through the corresponding Trigger selection.



This selection applies for the current Conventional Emergency Profile Set.

Accessed Only: When the [Tone on page 937](#) field is set to **Critical Emergency Tone**, and when the [Tone Period on page 938](#) field is not set to **Once**, and when the radio is model/option capable.

The following selections are supported:

Normal Audio Routing

The Alert Tone and any incoming audio are routed according to the radio's current speaker audio routing selections (see also Speaker Audio Routing and the Bluetooth Audio Reroute button-press).

Internal Speaker Audio Routing

The Alert Tone and any incoming audio are routed to the radio's internal speaker, regardless of any external accessory that may be connected, or the channel's current Speaker Audio Routing selection.

4.22.4

Emergency Compatibility Options

This section is intended for Harris system interoperability.

It allows you to control the cancellation of Emergency Call (by you, console or both) and re-initiate Hot Mic.



NOTE: [Emergency Wide on page 917](#) features and settings apply to these profiles.

Emergency Conventional Profiles are selected from the Conventional System's Emergency Profile Selection field.

Conventional Systems are referenced to Conventional Personalities from either the ASTRO System field or the Non-ASTRO System field; only ASTRO and MDC are capable of emergency mode transmissions.

Emergency mode functionality is launched with a programmed radio or by you initiating the feature.

4.22.4.1

Emergency Exit Control

This field allows configuration in the radio to exit emergency by you, console or both.

The following selections are supported:

Subscriber Only

Default value

Console Only

Selectable if Emergency Operation is set to Emergency Alarm and Call, System Type is DVRS and Signal Type is ASTRO.

Both Subscriber and Console

Selectable if Emergency Operation is set to Emergency Alarm and Call, System Type is DVRS and Signal Type is ASTRO.

Accessed Only: When the radio is model/option capable.

4.22.4.2

Emergency Hot Mic Restart

This field allows hot mic audio to be retransmitted upon emergency button press while in an emergency.

Accessed Only: When [Emergency Type on page 927](#) field is set to **Alarm and Call**, and when the System Type field is set to **DVRS**, and when the Rx Voice/Signal Type and Tx Voice/Signal Type field is set to **ASTRO**, and when the radio is model/option capable.

4.23

Trunking Emergency Profiles

The **Trunking Emergency Profiles** allows you to view or modify Trunking - emergency mode functionality.

Emergency transmissions have many possible programmed settings. A variety of emergency profiles may be created. Both Trunking communications Protocol Types **ASTRO 25** and **Type II** are capable of emergency mode transmissions.

4.23.1

General

This section allows you to view or modify Trunking Emergency features for individual Trunking Emergency Profiles.

Both Trunking communications Protocol Types **ASTRO 25** and **Type II** are capable of emergency mode transmissions.



NOTE: [Emergency Wide on page 917](#) features and settings apply to these profiles.

Emergency Trunking Profiles are selected from the Trunking Personality's Emergency Profile Selection field.

Emergency mode functionality is launched with a programmed radio or by you initiating the feature.

4.23.1.1

Emergency Profiles Name

This field allows you to create recognizable names for the current Trunking Emergency Profile.

Emergency Trunking Profiles are selected from the Trunking Personality's Emergency Profile Selection field.



NOTE:

Examples: EMT-001, #500, Electric1, # A5.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.23.1.2

Fall Alert Enable

This field enables Emergency Mode Fall Alert operation for the current Trunking Emergency Profile.

Accessed Only: You can access this field only when the following conditions are met:

- The **Fall Alert Trigger** field is not set to **Disabled**.
- The **Fall Alert Configurability Level** field is set to **Per Emergency Profile**.
- The radio is model or option capable.

4.23.1.3

Emergency Operation

This field selects the desired radio functionality that occurs when you initiate emergency mode.

This selection applies for the current Trunking Emergency Profile.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Alarm Only

Upon an Emergency button-press, transmits an Emergency Alarm packet to the dispatcher. The emergency alarm packet is retried until an acknowledgement is received or until a number of attempts specified by the Retry Counter are exhausted. The type of acknowledgement expected is governed by the **Console Acknowledge Required** field.

Call Only

Upon an Emergency button-press, the radio enters into the Emergency Call mode. In this mode, PTT requests and voice transmissions from you or other radios are marked as emergency, and it gets emergency level priority on the current Trunking - Talkgroup.

Alarm and Call

Upon an Emergency button-press, once the Emergency Alarm sequence has been acknowledged or retries have been exhausted, the radio enters into Emergency Call mode.

4.23.1.4

Emergency Auto Transmit Mode

This field selects an additional and specific emergency mode transmission operation for the current Trunking Emergency Profile.

Emergency Hot Mic or Hot Mic Silent Audio is possible.



WARNING: When this feature is not disabled, the selected functionality overrides/enhances the emergency functionality described for the **Emergency Operation** field's "Alarm and Call" selection.



IMPORTANT: This field setting is not supported for third party accessories. Any changes in the settings must be done through your accessory developer.

Accessed Only: For radio models with R16.00.00 or higher software version, when the [Emergency Operation on page 940](#) field is set to **Alarm and Call**, and when the [Console Ack Required on page 943](#) field is **Disabled**, and when the [Revert PTT ID on page 944](#) field is **Enabled**.

The following selections are supported:

Disabled

No additional Auto Transmit functionality is selected.

Hot Mic Emergency

Once emergency mode has been initiated with an Emergency button press, and then once an Emergency Alarm acknowledge has been received back to the radio (from the dispatcher/console), or all alarm retries have been exhausted, Hot Mic Emergency causes the radio to automatically key-up and transmit an emergency Call. The radio transmits with its microphone remaining automatically unmuted/open for the time selected by the **Hot Mic Tx Period** field. The radio is then in normal emergency Call mode. This is also known as Emergency with Voice to Follow.

When the Long Keypress for Emergency field is not set to **0**, the Emergency Call Mode is exited with a long-keypress of the Emergency button.



NOTE: This is also known as "Trunking Emergency with Voice to Follow".



WARNING:

Another press of the Emergency button does not re-initiate another Emergency Hot Mic transmission. Emergency mode must be exited and then re-initiated in order for the "automatic key-up" Hot Mic transmission to re-occur.

Exiting emergency mode is accomplished with a Long Keypress Duration of the Emergency Button or by powering-off the radio.

Emergency via Silent Audio

Once emergency mode has been initiated with an Emergency button-press, and then once an emergency alarm acknowledge has been received back to the radio (from the dispatcher/console), or all alarm retries have been exhausted, the radio automatically keys-up into this emergency mode with its microphone remaining muted/closed. This transmission continues for the amount of time specified in the Silent Audio Tx Period field. The radio is then in normal emergency Call mode.

When the Long Keypress for Emergency field is not set to **0**, the Emergency Call Mode is exited with a long-keypress of the Emergency button.

 **IMPORTANT:** Available for ASTRO 25 Trunking communications ONLY.

4.23.1.5

Retry Counter

This field selects how many times that the Emergency Alarm is transmitted when an acknowledgement "Ack" of a successful emergency alarm transmission has not been received.

 **NOTE:** For a normal Trunking call, if the radio is unsuccessful in sending a transmission, the radio retries for one Inbound Signal Data (ISD) sequence before quitting. For Emergency Alarms, the radio retries for the number of ISD sequences selected for this counter.

This selection applies for the current Trunking Emergency Profile.

Accessed Only: When the radio is model/option capable.

Table 220: Range

Minimum	Maximum	Increments
1	255	1

 **NOTE:** When set to **Infinite**, the Number of Retries is Unlimited.

4.23.1.6

Hot Mic Tx Period

This field selects the amount of time that the radio automatically keys up/transmits during "Hot Mic Emergency" operation.

Selects a specific emergency mode transmission operation for the current Trunking Emergency Profile.

Accessed Only: When the Emergency Auto Transmit Mode field is set to **Hot Mic Emergency**, and when the Emergency Operation field is **Alarm and Call**, and when the Revert PTT ID field is **Enabled**, and when the Console Acknowledge Required field is **Disabled**, and when the radio is model/option capable.

 **IMPORTANT:** Older version of the codeplug must use the parameters below:

Table 221: Range

Minimum	Maximum	Increment
10 seconds	120 seconds	10 seconds

 **IMPORTANT:** This applies to the codeplug version 19.00.00 and above:

Table 222: Range

Minimum	Maximum	Increment
1 seconds	120 seconds	10 seconds

4.23.1.7

Console Ack Required

This field causes an additional console acknowledgement response ("console Ack") to be required.

When an emergency alarm has been sent, the radio always requires an acknowledgement from the Fixed Network Equipment (FNE). This feature requires an additional Ack to be required from the dispatch application. Receiving an FNE Ack assures you that the radio's current site has received the emergency alarm packet. Receiving a console Ack ensures that the dispatch application is displaying the emergency condition to the dispatcher. Once the console Ack is received the radio sounds a four beep alert tone. This selection applies for the current Trunking Emergency Profile.



IMPORTANT: This feature must be disabled for **Hot Mic Emergency** or **Emergency via Silent Audio** to function properly.

Accessed Only: When the Emergency Operation field is set to **Alarm Only** or **Alarm and Call**, and when the radio is model/option capable.

4.23.1.8

Silent Audio Tx Period

This field selects the amount of time that the radio automatically keys- up/transmits (with its microphone remaining muted/closed) during **Emergency via Silent Audio** operation.

Selects a specific emergency mode transmission operation for the current Trunking Emergency Profile.

Accessed Only: When the Emergency Auto Transmit Mode field is set to **Emergency via Silent Audio**, and when the Emergency Operation field is **Alarm and Call**, and when the Revert PTT ID field is **Enabled**, and when the Console Acknowledge Required field is **Disabled**, and when the radio is model/option capable.

Table 223: Range

Minimum	Maximum
1 sec	5 sec

4.23.1.9

Emergency Talkback

This field selects the desired transmit channel/channel type (Tactical or Non-Tactical) that the radio uses while operating in emergency mode.

This selection applies for the current Trunking Emergency Profile.



IMPORTANT: If emergency mode is entered from an Announcement Group or from a Dynamic Regrouping, the Emergency Talkback Revert Talkgroup (of the Trunking Personality that references this Trunking Emergency Profile) is used for these transmissions, whether this field is set to **Tactical** Emergency or **Revert** Non-Tactical Emergency.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Tactical

Emergency Alarms and Emergency Calls are transmitted on the radio's currently selected channel/Talkgroup.

This is also known as Tactical Emergency.



WARNING: Tactical does not work if the radio's current Trunking channel has its Transmit Mode field set to **TG/AG Disabled**.

Revert (Non-Tactical)

Emergency Alarms and Emergency Calls are transmitted on a specific channel. This channel is determined by the Emergency Revert Type field selection of the Trunking Personality that references this Trunking Emergency Profile.

 **NOTE:** This is also known as Non-Tactical Emergency.

4.23.1.10

Hot Aux Mic Activation

This field selects the desired initiation method and audio source (microphone) type for **Hot Mic** emergency mode.



This feature applies for the current Trunking Emergency Profile.

Accessed Only: When the **Emergency Hot Aux Mic** Extended Feature appears in the **Extended Feature Name** field, and when the Emergency Auto Transmit Mode field is set to **Hot Mic Emergency**.

The following selections are supported:

Disabled

Hot Mic transmission audio is routed through the radio from the default internal microphone.

External Switch

When initiated from an external switch, Hot Mic transmission audio is routed through the radio from an auxiliary microphone.

Button

When initiated from an Emergency button-press, Hot Mic transmission audio is routed through the radio from an auxiliary microphone.

All

When initiated from an external switch OR from an Emergency button-press, Hot Mic transmission audio is routed through the radio from an auxiliary microphone.

4.23.1.11

Revert PTT ID

This field causes the Emergency Talkback Revert Talkgroup of the Trunking Personality that references this Trunking Emergency Profile to use the "PTT-ID" Conversation Type while in Emergency Call mode.

This selection applies for the current Trunking Emergency Profile.

When disabled and while operating in Emergency Call mode, if the Trunking Personality that references this Emergency Profile is using the "Transmission" Conversation Type, the radio forces the "PTT-ID" Conversation Type. This selection applies for the current Trunking Emergency Profile or this personality's selected Announcement Group.

 **NOTE:** This feature is also known as "Default PTT ID".



WARNING: This feature applies only when the Emergency Talkback field is set to **Revert**.

Accessed Only: When the radio is model/option capable.

4.23.1.12

Emergency Find Me

The Emergency Find Me feature provides an indication that notifies you when someone in your vicinity has an emergency activation.

When this feature is enabled, you can perform the following actions:

- Transmit a Bluetooth Low Energy (BLE) beacon every two seconds while the radio is in the Emergency feature.
- Receive emergency beacons and view the Beacon Received notification.
- Receive an alert tone when any beacon is received in the last ten seconds.
- Enter into menu option to view all the receiving beacons.
- Dismiss the notification to stop receiving the tones and display.

To enable the Emergency Find Me feature, you must enable the **Transmit Enable** and **Receive Enable** fields in the Emergency Find Me section of the Trunking Emergency Profile.

4.23.1.13

Transmit Enable

When this field is enabled, the radio can transmit the Emergency Find Me Beacon during emergency.

Emergency Beacon transmission is triggered through the Emergency feature such as pressing the Emergency switch or button, and Fall Alert Emergency. When you enter emergency, no additional action is required. When the radio enters emergency mode, Bluetooth is automatically turned on, and the beacons are sent. Emergency Beacons are sent every two seconds while the radio is in emergency mode.

For more information on the Emergency Find Me Feature, refer to [Emergency Find Me on page 945](#).

Accessed Only: When the radio is model/option capable.

4.23.1.14

Receive Enable

When this field is enabled, the radio receives the Emergency Find Me Beacon during emergency.

When you change to a channel in which Beacon Receive is enabled, Bluetooth is automatically turned on. When you receive an emergency beacon, the radio plays a tone and displays `Beacon Received` on the Top Display and Front Display Radio Control widget. The radio continues to play a tone every ten seconds while actively receiving beacons.

If the receiver dismisses the notification or if no beacons are received for four minutes, the Beacon Received notification disappears. If multiple beacons are available, the display shows the ID or alias of the device that enters emergency most recently.

For more information on the Emergency Find Me Feature, refer to [Emergency Find Me on page 945](#).



NOTE:

On APX Standard radios with front display, you can use the menu to view the radio ID of the transmitting radio and the Bluetooth Received Signal Strength Indicator (RSSI) level.

On APX NEXT radios, you can dismiss the beacon by tapping **DISMISS** in the notification. You can also view the list of senders by tapping **DETAILS**.

Accessed Only: When the radio is model/option capable.

4.23.1.15

Impact Detection Enable

This field enables Emergency Mode Impact Detection operation for Conventional or Trunking Emergency Profile.

Accessed Only:

- When H-Option QA01843 is enabled
- when the Impact Detection Configurability Level field is set to **Per Emergency Profile**
- When the radio is model/option capable.

4.23.1.16

Emergency Exit on Channel Change

This field allows the radio to exit Emergency on mode change.

4.23.1.17

Remote Activation of Emergency

This field selects specific functionality of the Remote Emergency Activation feature for the current Emergency Profile set. This feature will allow a source (encoding) radio to activate the Emergency feature on a target (decoding) radio via over the air communication as if the target user pressed the Emergency button.

This field is only valid when the radio is model or option capable with APCO 25 Conventional and/or APCO 25 Trunking operation.

The following selections are supported:

Disabled

No Remote Emergency Activation functionality is selected.

Encode Only

A radio is only allowed to initiate Remote Emergency communications to a target radio.

Decode Only

A radio is only allowed to receive Remote Emergency communications from a source radio and upon decoding the communications, the radio will immediately launch the Emergency feature.

Encode and Decode

A radio is allowed to both initiate Remote Emergency communications to a target radio and to receive Remote Emergency communications from a source radio.



NOTE: This field is disabled by default.

4.23.2

Emergency Tone List

This section allows you to view or modify Emergency Mode Trigger and Alert Tone features for individual Trunking Emergency Profiles.



NOTE: [Emergency Wide on page 917](#) features and settings apply to these profiles. Emergency Trunking Profiles are selected from the Trunking Personality's Emergency Profile Selection field.

Emergency mode functionality is launched with a programmed radio or by you initiating the feature.

4.23.2.1

Trigger

This field selects the condition or trigger that initiates Emergency Mode in the current Trunking Emergency Profile.



Depending on the selected Emergency Tone type, the Tone Minimum Volume, Tone Period, and Audio Routing can also be configured in the same record or row of the Emergency Tone List.

The following selections are supported:

Fall Alert

A Fall Alert condition initiates Emergency Mode in the current Trunking Emergency Profile.

Applies Only: When the **Fall Alert Enable** field is **Enabled** in the current Trunking Emergency Profile.

Accessed Only: You can access this field only when the following conditions are met:

- The **Fall Alert Trigger** field is not set to **Disabled**.
- The **Fall Alert Emergency Tone Trigger** field is set to **Enabled**.
- The radio is model or option capable.

4.23.2.2

Tone

This field selects the type of Alert Tone that sounds once an Emergency Mode transmission has commenced with the corresponding Trigger selection.



This selection applies for the current Trunking Emergency Profile.

Accessed Only: When the Fall Alert Trigger field is not set to **Disabled**, and when the Fall Alert Emergency Tone Trigger is **Enabled**, and when the radio is model/option capable.

Legacy Emergency Tone

The legacy Emergency Alert Tone and audio levels are used.

Critical Emergency Tone

The Critical Emergency Alert Tone sounds. The Tone Minimum Volume, Tone Period, and Audio Routing must also be defined.

4.23.2.3

Tone Minimum Volume

This field selects the minimum audio level for sounding the corresponding Emergency Mode Alert Tone.



If this value is higher than the radio's current volume level, then this value is used; otherwise, the radio's current volume level is used. This feature applies for the current Trunking Emergency Profile.

Accessed Only: When the Tone field is set to **Critical Emergency Tone**, and when the radio is model/option capable.

Table 224: Range

Minimum	Maximum	Increments
0	255	1

4.23.2.4

Tone Period

This field selects whether the specified Emergency Mode Alert Tone will be a temporary tone or a repetitive tone.



You can determine the periodic timer of the repetitive tone.

This feature applies for the current Trunking Emergency Profile.

Accessed Only: When the Tone field is set to **Critical Emergency Tone**, and when the radio is model/option capable.



NOTE: When set to **0 = Once** (Zero Time), the alert tone specified in the Tone field sounds only once while Emergency Mode is active.

Table 225: Range

Minimum	Maximum	Increments
5	255	1

4.23.2.5

Audio Routing

This field selects the routing of the Alert Tone and incoming audio to a specific speaker when an Emergency Mode transmission has commenced with the corresponding Trigger selection.



This selection applies for the current Trunking Emergency Profile.

Accessed Only: When the Tone field is set to **Critical Emergency Tone**, and when the Tone Period field is not set to **Once**, and when the radio is model/option capable.

Normal Audio Routing

The Alert Tone and any incoming audio are routed according to the radio's current speaker audio routing selections.

Internal Speaker Audio Routing

The Alert Tone and any incoming audio are routed to the radio's internal speaker, regardless of any external accessory that may be connected, or the channel's current Speaker Audio Routing selection.

4.23.3

Emergency Compatibility Options

This section is intended for Harris system interoperability.

It allows you to control the cancellation of Emergency Call (by you, console or both) and re-initiate Hot Mic.



NOTE: [Emergency Wide on page 917](#) features and settings apply to these profiles.

Emergency Trunking Profiles are selected from the Trunking Personality's Emergency Profile Selection field.

Emergency mode functionality is launched with a programmed radio or by you initiating the feature.

4.23.3.1

Emergency Exit Control

This field allows configuration in the radio to exit emergency by you, console or both.

The following selections are supported:

Subscriber Only

Default value

Console Only

Selectable if Emergency Operation field is set to **Call Only** or **Emergency Alarm and Call**, on P25 trunking system and Motorola Proprietary Features is disabled.

Both Subscriber and Console

Selectable if Emergency Operation field is set to **Call Only** or **Emergency Alarm and Call**, on P25 trunking system and Motorola Proprietary Features is disabled.

Supervisor

Selectable if Emergency Operation field is set to **Call Only** or **Alarm and Call** on P25 trunking system, Motorola Proprietary Features is disabled and DVRS Profile Selection is **DVRS Disabled**. For Dual Radio, Radio Selection is set to **Standalone Radio** or **Primary Radio**.

Accessed Only: When the radio is model/option capable.

4.23.3.2

Emergency Hot Mic Restart

This field allows hot mic audio to be retransmitted upon emergency button press while in emergency.

Accessed Only: When [Emergency Type on page 927](#) field is set to **Call Only**, **Alarm and Call**, and when the Emergency Auto Transmit Mode field is set to **Hot Mic Emergency**, and when the System Type field is set to **ASTRO 25**, and when the Motorola Proprietary Features field is disabled, and when the radio is model/option capable.

4.24

Data Wide

This section allows you to view or modify data settings that apply for all Data Profiles.

Data Profiles are defined to communicate radio data over Conventional or Trunking channels, and communicate radio data over an LTE Broadband network.



IMPORTANT:

Data Profiles are selected from the Trunking System Data Profile Selection field, or from the Conventional System Data Profile Selection field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.24.1

General

This section allows you to view or modify data settings that apply for all Data Profiles.



IMPORTANT:

Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.24.1.1

SNMP Traps

When this field is selected, it enables Simple Network Management Protocol (SNMP) trap generation over the serial link.

This feature applies for all Data Profiles.

When not selected, the radio does not generate traps unless requested with the trap registration Management Information Base (MIB).

4.24.1.2

Bluetooth Subscriber IP Address

This field allows you to define the Internet Protocol (IP) Address to be assigned to the Mobile Computer (MC) end of the Bluetooth link.

This feature applies in all cases except Conventional Systems having a selected Data Profile. When a Conventional System has a Data Profile selected in the **Data Profile Selection** field, the Conventional System then uses the Bluetooth Subscriber IP Address defined in the Data Profile [Bluetooth Subscriber IP Address on page 988](#) field.

For Managed Radios, this feature is defined in the RMC **Bluetooth DUN Peer IP** field.



NOTE:

For Managed Radios, this feature is defined in the RMC **Bluetooth DUN Subscriber IP** field.

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or subnets are in use, data features cannot be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only:

- When Bluetooth is **Enabled**
- When the Bluetooth Peer IP Address Assignment Type field is set to **Dynamic**
- When the radio is model/option capable.

The Network ID octets of this IP Address must match the Network ID octets of the [Bluetooth Peer IP Address](#) field.

- The Network ID portion of an IP Address is defined as follows:
 - When octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
 - When octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
 - When octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets
- This IP Address:
 - Cannot be completely equal to the [Bluetooth Peer IP Address](#)
 - Cannot be equal to this page's [Subscriber IP Address 1](#) or [Peer IP Address 1 on page 953](#)
- Octet Values also:
 - Must be between: [0-255]
 - Cannot all be 0
 - Cannot all be 255
- This IP Address's Default Value = 192.168.130.1

4.24.1.3

Context Deactivation Alert Tone

This field enables the radio to sound an alert tone when a data session has ended.

A data session is considered active once data communications are established. This feature applies for all Data Profiles.

4.24.1.4

Bluetooth Peer IP Address

This field allows you to define the Internet Protocol (IP) Address to be assigned to the Mobile Computer (MC) end of the Bluetooth link.

This feature applies in all cases except Conventional Systems having a selected Data Profile. When a Conventional System has a Data Profile selected in the **Data Profile Selection** field, the Conventional System then uses the Bluetooth Peer IP Address defined in the Data Profile [Bluetooth Peer IP Address on page 989](#) field.

For Managed Radios, this feature is defined in the RMC **Bluetooth DUN Peer IP** field.



NOTE:

For Managed Radios, this feature is defined in the RMC **Bluetooth DUN Peer IP** field.

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or subnets are in use, data features cannot be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only:

- When Bluetooth is **Enabled**
- When the [Bluetooth Peer IP Address Assignment Type on page 952](#) field is set to **Dynamic**
- When the radio is model/option capable.

The Network ID octets of this IP Address must match the Network ID octets of the [Bluetooth Subscriber IP Address on page 950](#) field.

- The Network ID portion of an IP Address is defined as follows:
 - When octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
 - When octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
 - When octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets
- This IP Address:
 - Cannot be completely equal to the [Bluetooth Subscriber IP Address on page 950](#)
 - Cannot be equal to this page's [Subscriber IP Address 1](#) or [Peer IP Address 1 on page 953](#)
- Octet Values also:
 - Must be between: [0-255]
 - Cannot all be 0
 - Cannot all be 255
- This IP Address's Default Value = 192.168.130.1

4.24.1.5

ICMP Echo

This field enables the radio to send back an acknowledgement (Ack) when an Internet Control Message Protocol (ICMP) echo request (ping) has been received.

For APX NEXT and APX N70 radios, this feature only applies to LMR data.

This feature applies for all Data Profiles.

4.24.1.6

Bluetooth Peer IP Address Assignment Type

This field allows you to select the Internet Protocol (IP) Address Assignment method assigned to the Mobile Computer (MC) end of the Bluetooth link.

This feature applies in all cases except Conventional Systems having a selected Data Profile. When a Conventional System has a Data Profile selected in the **Data Profile Selection** field, the Conventional

System then uses the Peer IP Address Assignment Type defined in the Data Profile [Bluetooth Peer IP Address Assignment Type on page 990](#) field.



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or subnets are in use, data features cannot be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only: When Bluetooth Enable is **Enabled** and the radio is model/option capable.

The Bluetooth Peer IP Address Assignment Type supports the following selections:

Dynamic

The radio assigns the Bluetooth Peer IP Address to the MC upon Bluetooth link establishment.

Static

The MC inserts an IP Address to use upon Bluetooth link establishment. This selection applies only for RS-232/PPP based serial links.

4.24.1.7

Delete Messages When Session Ends

This field enables the radio to delete all Text Messaging Service (TMS) messages from the Inbox, Drafts, and Sent Items folders when your session ends with the server.

Session end scenarios include: logout, radio power-down, registration failure, server-initiated logout, and changing or clearing the Username with the Soft ID Feature. This feature applies for all Data Profiles and for both Automatic Registration Service and User Authentication communication protocols.

When disabled, you are prompted with the option whether or not to delete TMS messages upon manually logging out with the User Login feature. If the login session ends for some other reason (such as canceling a login process or a server-initiated timeout), then the TMS messages are not deleted (there is no prompt).

4.24.1.8

Peer IP Address 1

This field allows you to define the Internet Protocol (IP) Address to be assigned to the Mobile Computer (MC) end of the serial link1.



IMPORTANT: This feature applies in all cases except Conventional Systems having a selected Data Profile; when a Conventional System has a Data Profile selected in the Data Profile Selection field, the Conventional System then uses the Peer IP Address defined in the Data Profile's [Peer IP Address on page 986](#) field.



NOTE:

For Managed Radios this feature is defined in the RMC's Peer IP Address field.

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

The Network ID octets of this IP Address must match the Network ID octets of the [Subscriber IP Address 1](#) field.

- The Network ID portion of an IP Address is defined as follows:
 - When octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
 - When octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
 - When octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets
- This IP Address:
 - Cannot be completely equal to the [Subscriber IP Address 1](#) field (see above)
 - Cannot be equal to the [Bluetooth Subscriber IP Address on page 950](#), or the [Bluetooth Peer IP Address](#)
 - Cannot be equal to the [Subscriber Air-Interface IP Address on page 991](#) on any [Data Profile](#).
- Octet Values also:
 - Must be between: [0-255]
 - Cannot all be 0
 - Cannot all be 255
 - The last octet cannot be 255 which is reserved for directed broadcast for the associated Network ID portion of the Address.
- The Default IP Address = 192.168.128.2

4.24.1.9

Internal Radio Subnet

This field allows you to define the internal radio subnet (first three octets) of the Internet Protocol (IP) Address that is used at radio power-up to establish internal communications between the radio and its Option Board.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies for Broadband communications.

Accessed Only: When the radio is model/option capable.



NOTE: This is an advanced setting which is only available in Expert View (see [Codeplug View on page 94](#)).

The following values are supported:

- The three octets of this IP Address Subnet must be in the range of 193.0.0 to 207.255.255 inclusive.
- This IP Address Subnet cannot be equal to the first three octets of any other IP Addresses defined for the radio. Otherwise, the application considers this value invalid.
- This Subnet's Default Value = 199.0.0

4.24.1.10

Peer IP Address Assignment Type 1

This field selects the Internet Protocol (IP) Address assignment method assigned to the Subscriber Unit (SU) end of serial link1.

This feature applies in all cases except Conventional Systems having a selected Data Profile. When a Conventional System has a Data Profile selected, the Conventional System uses the Peer IP Address defined in the Data Profile Peer IP Address field.



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

The following selections are supported:

Dynamic

The radio assigns the Peer IP Address to the Mobile Computer (MC) upon serial link establishment.

Static

The MC inserts an IP Address to use upon serial link establishment. This selection applies only for RS-232/PPP based serial links.

4.24.1.11

APCO Avalanche Time

This field selects the upper bound of the minimum time after leaving an LTE Broadband network (possibly due to an out-of-range condition) before switching to an APCO (digital land mobile radio) network.



The lower bound is implied to be zero. The radio will choose a random value between the lower bound and the upper bound. This selection applies for all **Broadband** Data Profile Type - Data Profiles. Time is in seconds.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Disabled:

There is no APCO Avalanche time - 0 (zero seconds)

Timed Selections Include:

1 (second) To 3600 (seconds)

In Increments = 1 (second)

4.24.1.12

Subscriber IP Address 2

This field allows you to define the Internet Protocol (IP) Address to be assigned to the Mobile Subscriber Unit (MSU) end of the Serial Link 2.



The MSU is the mobile radio/transceiver being used as part of a Digital Vehicular Repeater System (DVRS) configuration.



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only: When the DVRS Hardware Enable field is **Enabled** and the radio is model/option capable.

The Network ID octets of this IP Address must match the Network ID octets of the Peer IP Address (Serial Link 2) field.

- The Network ID portion of an IP Address is defined as follows:
 - When octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
 - When octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
 - When octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets
- This IP Address:
 - Cannot be completely equal to the [Peer IP Address 2 on page 957](#) field
 - Cannot be equal to the Subscriber IP Address (Serial Link 1) or the Peer IP Address (Serial Link 1)
- Octet Values also:
 - Must be between: 0-255
 - Cannot all be 0
 - Cannot all be 255
- The Default IP Address = 192.168.129.1

4.24.1.13

Direct TMS Content Display

This field enables the radio to directly access its Text Messaging Service (TMS) Inbox and immediately see the content of the text message without your interaction.

This feature applies for all Data Profiles.



NOTE:

The display's **Unread** icon is removed since the text message's contents are already displayed.

When the radio is in this display state and another incoming text message is received, the display is updated to show the latest incoming message. You still have the ability to navigate to other messages in the radio's Inbox.

This state exits when there is a mode change, when you launch another Menu configuration feature, or when you press the **Home** button or selects the **Exit** soft menu.

When disabled, you must follow the standard TMS procedures for accessing text messages in the radio's Inbox.

4.24.1.14

Peer IP Address 2

This field allows you to define the Internet Protocol (IP) address for the third-party hardware repeater that is being used as part of the Digital Vehicular Repeater System (DVRS).



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

When the DVRS Hardware Enable field is **Enabled** and the radio is model/option capable.

The Network ID octets of this IP Address must match the Network ID octets of the Subscriber IP Address (Serial Link 2) field.

- The Network ID portion of an IP Address is defined as follows:
 - When octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
 - When octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
 - When octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets
- This IP Address:
 - Cannot be completely equal to the Subscriber IP Address (Serial Link 2) field
 - Cannot be equal to the Subscriber IP Address (Serial Link 1) or the Peer IP Address (Serial Link 1)
- Octet values also:
 - Must be between: 0-255
 - Cannot all be 0
 - Cannot all be 255
- The Default IP Address = 192.168.129.2

4.24.1.15

External Text Messaging Broadcast

This field enables a Text Messaging Service (TMS) capable radio to broadcast TMS messages received from another radio or TMS Server to all attached third-party external accessories that are TMS-capable.

This feature applies for all Data Profiles.



NOTE: This selection does not affect the ability of an attached TMS-capable accessory to send text messaging requests to the radio for transmission to another radio.

Accessed Only: When the radio is model/option capable.

4.24.1.16

Peer IP Address Assignment Type 2

This field selects the Internet Protocol (IP) Address assignment method assigned to the Digital Vehicular Repeater (DVR) end of Serial Link 2.



Accessed Only: When the DVRS Hardware Enable field is **Enabled** and the radio is model/option capable.



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

The following selections are supported:

Dynamic

The radio assigns the [Peer IP Address 2 on page 957](#) to the DVR upon serial link establishment.

Static

The DVR asserts an IP Address to use upon serial link establishment. This selection applies only for RS-232/PPP based serial links.

4.24.1.17

Sensor Measurement Reporting

This field enables the radio to process Sensor Data messages.



This is required when the radio exchanges Sensor Data information with a Sensor Data Server within a Conventional and Trunking communications infrastructure. This feature applies on a radio-wide basis.

Accessed Only: When the radio is model/option capable.

4.24.1.18

Broadband Checkback Time

This field selects the upper bound of the minimum time after leaving a Broadband network (possibly due to an out-of-range condition) before checking if the Broadband network is back in range and switching back to it.



The lower bound is implied to be zero. The radio chooses a random value between the lower bound and the upper bound. This selection applies for all **Broadband** Data Profile Type - Data Profile . Time is in seconds.

Accessed Only: when the radio is model/option capable.

The following values are supported:

Disabled:

There is no Broadband Checkback time - 0 (zero seconds)

Timed Selections Include:

- 1 (second) To 3600 (seconds)
- In Increments = 1 (second)

4.24.1.19

Acknowledged Gun Holster State Reporting Enable

This feature enables sending gun holster state to Fixed Network Equipment (FNE) by Trunking Signalling Blocks (TSBK) in control channel.

Accessed Only: When the radio is model/option capable and Sensor Measurement Reporting field is enabled.

4.24.1.20

Acknowledged Stun Gun State Reporting Enable

This feature enables sending taser state to Fixed Network Equipment (FNE) by Trunking Signalling Blocks (TSBK) in control channel.

Accessed Only: When the radio is model/option capable and Sensor Measurement Reporting field is enabled.

4.24.1.21

Acknowledged Weapon Fired Event Reporting Enable

This feature enables weapon fired events to be transmitted in the control channel.

Accessed Only: When the radio is model/option capable and Sensor Measurement Reporting field is enabled.

4.24.2

LTE

The Long Term Evolution (LTE) section allows you to view or define LTE functionality.



These settings apply for all **Broadband** Data Profile Type - Data Profiles.



IMPORTANT:

Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.24.2.1

Broadband Checkback Time

This field selects the upper bound of the minimum time after leaving the LTE Broadband network (possibly due to an out-of-range condition) before checking if the LTE network is back in range and switching back to it.



The lower bound is implied to be zero. The radio will choose a random value between the lower bound and the upper bound. This selection applies for all "Broadband" [Data Profile Type on page 982 - Data Profiles on page 980](#). Time is in seconds.

Accessed Only: When the radio is model/option capable.



NOTE: When set to **0-Disabled**, there is no LTE Checkback time - 0 (zero seconds).

Table 226: Range

Minimum	Maximum	Increments
1 (second)	3600 (seconds)	1 (second)

4.24.2.2

LTE Out-Of-Range Threshold Time

This field selects the amount of time that an LTE Broadband signal is lost before determining that the radio is out-of-range of LTE coverage.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies for all "Broadband" Data Profile Type - Data Profiles. Time is in seconds.

Accessed Only: When the radio is model/option capable.

This selection is only available in Expert View (see Codeplug View).

Table 227: Range

Minimum	Maximum
60 (seconds)	3600 (seconds)

4.24.2.3

Access Point Name

This field allows you to define recognizable names used by the radio for a Class 3 LTE connection.



WARNING: The value in this field must only be modified by Qualified Service Personnel at the request of the LTE carrier. Improper settings can cause unpredictable results in the radio.



WARNING: This value should only be modified by field technicians at the request of the LTE carrier.

This selection applies for all "Broadband" Data Profile Type - Data Profiles.

Accessed Only: When the radio is model/option capable.

This selection is only available in Expert View (see Codeplug View).

4.24.2.4

Data On Roaming

Data On Roaming allows the user to enable user data (not attach) while roaming.

4.24.3

POP25/Wireless Programming

This section allows you to view or modify Over the Air Programming (OTAP) settings that apply for all Data Profiles.



IMPORTANT:

Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.24.3.1

POP25/Wireless Programming Reject Enable

This field enables you to have the ability to reject or accept a Programming Over Project 25 (POP25) communication.

This feature applies for all Data Profiles.

Accessed Only: When the [POP25/Wireless Programming Indications on page 961](#) field is set to **Alert & Display** and the radio is model/option capable.

4.24.3.2

POP25/Wireless Programming Indications

This field selects the type of alert that you encounter (sees or hears) as the radio receives a Programming Over Project 25 (POP25) communication.

This feature applies for all Data Profiles.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Alert Only

The radio sounds an alert tone.

Alert & Display

The radio sounds an alert tone and an alert appears in the radio's display.

4.24.3.3

Auto Reset Enable

This field enables the mobile transceiver inside the Consolette to automatically reset after the in-the-field radio has been programmed with the POP25 feature.



This feature applies for all Data Profiles.

Accessed Only: When the [Consolette Enable on page 438](#) field is **Enabled**, and when the radio is model/option capable.

4.24.4

NAT List

This section allows you to view or define up to 16 sets of static port-based Network Address Translation (NAT) rules for the NAT List.

These settings apply for all Trunking - [Data Profiles on page 980](#), or for all Conventional - [Data Profiles on page 980](#) when the Data Profiles, NAT Enable field is **Enabled**.



IMPORTANT:

When any of the 5 following features is enabled, one of the possible 16 NAT rules (record/rows) is used by :

- Text Message Service (TMS)
- Automatic Registration Service (ARS) – see the **ARS Mode** field
- [Location Enable on page 365](#)
- Over The Air Rekeying (OTAR) – see the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field

Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.24.4.1

LAN Port

This field selects the Local Area Network (LAN) Port for the current Network Address Translation (NAT) rule (record/row) of the NAT List.

Example: Static NATing can forward all external requests coming into port 90 of the radio to port 80 of the MC (Mobile Computer). In this example, the static NAT IP Address would be the MC's IP Address, the LAN Port would be the MC's port (80), and the WAN port would be the radio's external port (90).

Applies Only:

- For all Trunking-Data Profiles
- For all Conventional-Data Profiles when the Data Profiles NAT Enable field is **Enabled**.

Accessed Only: When the radio is model/option capable.

Table 228: Range

Minimum	Maximum
1	65535



WARNING: The Default of "0" is considered to be invalid by the Radio Manager and must be properly defined.

4.24.4.2

Static NAT IP Address

This field selects the Network Address Translation (NAT) Local Area Network (LAN) Internet Protocol (IP) address that provides a mapping between internal application or Mobile Computer (MC) IP Addresses and system-assigned IP Addresses.

This selection applies for the current NAT rule (record/row) of the NAT List.

Example: Static NATing can forward all external requests coming into port 90 of the radio to port 80 of the MC. In this example, the static NAT IP Address would be the MC's IP Address, the LAN Port would be the MC's port (80) and the WAN port would be the radio's external port (90).

Applies Only:

- For all Trunking - Data Profiles
- For all Conventional - Data Profiles when the Data Profiles NAT Enable field is **Enabled**

Accessed Only: When the radio is model/option capable.



NOTE: Each Octet of the IP Address must be between: [0-223] . [0-255] . [0-255] . [0-255]



WARNING: The Default of 0 . 0 . 0 . 0 is considered invalid by the Radio Manager and must be properly defined.

4.24.4.3

WAN Port

This field selects the Wide Area Network (WAN) Port for the current Network Address Translation (NAT) rule (record/row) of the NAT List.

Example: Static NATing can forward all external requests coming into port 90 of the radio to port 80 of the mobile computer. In this example, the static NAT IP Address would be the MC's IP Address, the LAN Port would be the MC's port (80), and the WAN port would be the radio's external port (90).

Applies Only:

- For all Trunking - Data Profiles
- For all Conventional - Data Profiles when the Data Profiles NAT Enable field is **Enabled**

Accessed Only: When the radio is model/option capable.

Table 229: Range

Minimum	Maximum
1	65535



WARNING: The Default of "0" is considered to be invalid by the Radio Manager and must be properly defined.

4.24.5

Data User List

This section you to view or define Automatic Registration Service and for User Authentication Usernames and Unit IDs to be selected for use when alternate-server login credentials are needed.

Additionally, targeted radio Radio IDs (see Conventional System - ASTRO - Individual IDs, and the Trunking System - ASTRO 25 - Unit IDs) can also be defined for selection. These Usernames and Unit IDs and Radio IDs are used for data-related applications such as Text Messaging.



NOTE:

Default Usernames and Unit ID values can be programmed.

Data Profiles may be selected from the Trunking System's Data Profile Selection field.

Data Profiles may be selected from the Conventional System's Data Profile Selection field.

The User button-press and the User menu-selection allow you to login to a specific Automatic Registration Service server or a User Authentication UNS (Unified Network Services) server with the appropriate Usernames, PIN/Password, and User Login Unit ID combination. Usernames, PINs and Unit IDs may also be manually entered from the radio's keypad.

4.24.5.1

Data User Name

This field allows you to view or define Automatic Registration Service and for User Authentication Usernames and Unit IDs to be selected for use when alternate server login credentials are needed.

Additionally, targeted radio Radio IDs (see Conventional System - ASTRO - Individual IDs, and the Trunking System - ASTRO 25 - Unit IDs) can also be defined for selection. These Usernames, Unit IDs, and Radio IDs are used for data-related applications such as Text Messaging.



NOTE:

Default Usernames and Unit ID values can be programmed.

Data Profiles may be selected from the Trunking System's Data Profile Selection field.

Data Profiles may be selected from the Conventional System's Data Profile Selection field.

The User button-press and the User menu-selection allows you to login to a specific Automatic Registration Service server or a User Authentication UNS (Unified Network Services) server with the appropriate Usernames, PIN/Password, and User Login Unit ID combination. Usernames, PINs and Unit IDs may also be manually entered from the radio's keypad.

Accessed Only: When the radio is model/option capable.



NOTE:

Examples: EMT-001, #500, DATAUSER 1, # A5

A to Z, a to z, 0 to 9, -, *, #, &, \$, /, +, % and spaces can be used for Usernames.

Up to 40 characters are possible.

Minimum number of List entries is 1, to a Maximum of 100.

4.24.6

Quick Text Message List

This section allows you to view or define Quick Text/Query Messages that contain frequently needed Text Message Service content.

You are then able to select from the list of Quick Text/Query Messages and easily transmit a message with minimal effort.

Once selected, you may edit a Quick Text/Query Messages prior to transmission (provided the Text Messaging Service is set to **Unlimited**); edits apply only for that transmission; the original remains as defined in this table.

A TMS Query allows you to specify information in a pre-formatted query template and send this as a Message to a Query Server; the Server then responds with a text message containing the requested information.

Applies only: When the TMS Query Service is only available with Single Factor or Two Factor User Authentication.



NOTE:

The Text Messaging Service feature is enabled on a per [Trunking System on page 1188](#) or [Conventional System on page 1056](#) basis.

You can access Text Messaging with the [Text Messaging Service](#) button-press, or the [Text Messaging Service on page 540](#) menu-selection.

The [TMS Quick Text on page 495](#) and [TMS Query on page 495](#) button-press allows you to directly access to the Quick Text and the Query Message features. Default Usernames and Unit ID values can be programmed.

4.24.6.1

Quick Text Message

This field allows you to view or define Quick Text/Query Messages that contain frequently needed Text Message Service content.

You are then able to select from the list of Quick Text/Query Messages and easily transmit a message with minimal effort.

Once selected, you may edit a Quick Text/Query Messages prior to transmission (provided the Text Messaging Service is set to **Unlimited**). Edits apply only for that transmission. The original remains as defined. A TMS Query allows you to specify information in a pre-formatted query template and send this as a Message to a Query Server. The Server then responds with a text message containing the requested information.

Accessed Only: When the radio is model/option capable and when the TMS Query Service is only available with Single Factor or Two Factor User Authentication.



NOTE:

The Text Messaging Service feature is enabled on a per [Trunking System on page 1188](#) or [Conventional System on page 1056](#) basis.

You can access Text Messaging with the [Text Messaging Service](#) button-press, or the [Text Messaging Service on page 540](#) menu-selection.

The [TMS Quick Text on page 495](#) and [TMS Query on page 495](#) button-press allows you to directly access to the Quick Text and the Query Message features. Default Usernames and Unit ID values can be programmed.

4.24.7

Data Protocol Configuration

This section allows you to view or modify settings related to Internet Protocol (IP) Header Compression Algorithms.

These selections apply for all Data Profiles.



IMPORTANT:

Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.



WARNING: These settings should only be modified as necessary by Qualified Service Personnel. Failure to accurately configure the Data Protocol Configuration may seriously degrade the radio and/or system performance.

4.24.7.1

Max # of Non-TCP IP Header Compression Contexts

This field selects the maximum number of non-TCP IP (Transmission Control Protocol - Internet Protocol) header compression contexts allowed per subscriber.

Guidelines are in accordance with document RFC2507 created and maintained by the IETF (Internet Engineering Task Force). The RFC2507 document describes standards for IP Header Compression Algorithms. This selection applies for all Data Profiles.



WARNING: This field should only be modified when deemed necessary by Qualified Service Personnel. Failure to accurately configure the Data Protocol Configuration may seriously degrade the radio and/or system performance.

Table 230: Range

Minimum	Maximum
0	16

4.24.7.2

Max Time Between Full Headers

This field selects the maximum time between full headers compression contexts.

Compressed non-TCP headers may not be sent after this amount of time has expired after sending the last full header. Guidelines are in accordance with document RFC2507 created and maintained by the IETF (Internet Engineering Task Force). The RFC2507 document describes standards for IP (Internet Protocol) Header Compression Algorithms. This selection applies for all Data Profiles. Time is in seconds.



WARNING: This field should only be modified when deemed necessary by Qualified Service Personnel. Failure to accurately configure the Data Protocol Configuration may seriously degrade the radio and/or system performance.

Table 231: Range

Minimum	Maximum	Increments
0 (seconds)	1275 (seconds)	5 (seconds)

4.24.7.3

Max # of Compressed Headers Between Full Headers

This field selects the maximum number of compressed non-TCP IP (Transmission Control Protocol - Internet Protocol) headers sent between full headers.

Guidelines are in accordance with document RFC2507 created and maintained by the IETF (Internet Engineering Task Force). The RFC2507 document describes standards for IP Header Compression Algorithms. This selection applies for all Data Profiles.



WARNING: This field should only be modified when deemed necessary by Qualified Service Personnel. Failure to accurately configure the Data Protocol Configuration may seriously degrade the radio and/or system performance.

Table 232: Range

Minimum	Maximum	Increments
0	4080	16

4.24.7.4

Max Setup Time for Controlled Channel Access

This field selects the time required to access the controlled channel access packet data channel for slotted data transmission.

The radio uses this field to determine if packet data channel access timing can delay the transmission past the required slot. If so, controlled channel access procedures are not initiated. This selection applies for all Data Profiles. Time is in milliseconds.



WARNING: This field should only be modified when deemed necessary by Qualified Service Personnel. Failure to accurately configure the Data Protocol Configuration may seriously degrade the radio and/or system performance.

Table 233: Range

Minimum	Maximum
0 (ms)	65535 (ms)

4.24.7.5

Max Header Size Allowed for Compression

This field selects the maximum header size that may be compressed for header compression.

Guidelines are in accordance with document RFC2507 created and maintained by the IETF (Internet Engineering Task Force). The RFC2507 document describes standards for IP (Internet Protocol) Header Compression Algorithms. This selection applies for all Data Profiles.



WARNING: This field should only be modified when deemed necessary by Qualified Service Personnel. Failure to accurately configure the Data Protocol Configuration may seriously degrade the radio and/or system performance.

Table 234: Range

Minimum	Maximum
60	255

4.24.7.6

Time Source Variation

This field selects the amount of time (microslots) before and after microslot zero during which the two clock sources that generate sync broadcast time are misaligned.

This entire time period is considered a vulnerability window during which sync broadcasts may contain faulty or misleading information. All sync broadcasts received during this period are ignored by the DSP (Digital Signal Processor) and are not used to establish or maintain synchronization with the system time. This selection applies for all Data Profiles.

 **WARNING:** This field should only be modified when deemed necessary by Qualified Service Personnel. Failure to accurately configure the Data Protocol Configuration may seriously degrade the radio and/or system performance.

Table 235: Range

Minimum	Maximum	Increments
0 (microslots)	268 (microslots)	2 (microslots)

 **NOTE:** One microslot is equal to 7.5 milliseconds.

4.24.8

Wi-Fi

This section allows you to view or modify Wi-Fi settings that apply for all Data Profiles.



 **IMPORTANT:** Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

For security reasons, assigning templates and importing *.csv files are allowed if you enter the correct password(s) of each network entry in the Wi-Fi table. You must also enter the correct password(s) in the Standalone application for Clone/Clone Express and Batch Programming tasks.

4.24.8.1

Wi-Fi Enable

This field specifies whether Wi-Fi is enabled or disabled on the radio.



This feature applies for all Data Profiles.

Accessed Only: When the radio is model/option capable.

4.24.8.2

Allow User Control

This field allows user to control the Wi-Fi.

This feature applies for all Data Profiles.

Accessed Only: When the radio is model/option capable.

4.24.8.3

Network SSID

This field specifies the network name (SSID) of a Wi-Fi network in the list of configured networks.



NOTE:

The SSID cannot be saved if left blank or empty.

The SSID must be ASCII characters and duplicated SSIDs are not accepted.

Accessed Only: When the [Wi-Fi Enable on page 968](#) field is **Enabled** and the radio is model/option capable.

4.24.8.4

Network Priority

This field defines the priority of the available Wi-Fi networks.



The lower the number, the higher the priority.

Accessed Only: When the [Wi-Fi Enable on page 968](#) field is **Enabled** and the radio is model/option capable.

Table 236: Range

Minimum	Maximum	Increments
1	255	1

4.24.8.5

Security Type

This field specifies the security protocol used for the Wi-Fi network.



The following selections are supported:

- **None**
- **WEP**
- **WPA/WPA2**
- **WPA3-SAE** – Applicable only for APX NEXT and APX N70 radios.

Accessed Only: When the [Wi-Fi Enable on page 968](#) field is **Enabled** and the radio is model or option capable.

4.24.8.6

Encrypted Network Password

The 63-character password for the Wi-Fi network.



NOTE:

For Security Type **WEP**, the password will be either 5 characters or 13 characters long. For every other type, password will be at least 8 characters and cannot be left blank or null. For all security types, ASCII are allowed.

The Subscriber Unit (SU) supports WEP key configuration in ASCII mode only for the WEP security. Therefore, WEP40 (5-character key such as “abcde”) or WEP104 (13-character key such as “1234567890123”) ASCII configuration are supported in the SU. The SU does not support the WEP Hex key configuration.

Accessed Only: When the [Wi-Fi Enable on page 968](#) field is **Enabled**, the [Security Type on page 969](#) is anything other than **None**, and the radio is model/option capable.

4.24.8.7

Hidden Network

This field can be enabled to allow APX Wi-Fi enabled radios to access the hidden Wi-Fi Networks.



Accessed Only: When the Wi-Fi Enable field is **Enabled**, and when the radio is model/option capable.

4.24.9

Port Configuration

This section you to view or define settings used in transferring Keys between a Key Variable Loader (KVL) and a radio. These settings apply for all Data Profiles.



IMPORTANT:

Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.24.9.1

Authentication UDP Port

This field selects the User Datagram Protocol (UDP) port number for the port used to communicate with the Key Variable Loader (KVL).

A KVL is used for supplying Authentication Keys to the radio. This feature applies for APCO P25 (ASTRO 25) Trunking Systems.

Accessed Only: When the radio is model/option capable.

Table 237: Range

Minimum	Maximum
49152	65535

4.24.9.2

P25 Location Reporting UDP Port

This field selects the User Datagram Protocol (UDP) port number for the Location Server to which the radio listens to and transmits P25 Location Reporting data.

This feature applies for ASTRO 25 (APCO P25) Trunking Systems.

 **WARNING:** This selection is only valid when it is not equal to the value of the Authentication UDP Port, LAN Port, WAN Port, PAD Destination Port, Subscriber OTAR Port, KMF UDP Port, or the KMF/OTAR Server Port (64414) and when it is not equal to the reserved UDP Port values used by any other Service, as follows:

- 0161 SNMP Agent Application – GET/SET
- 0162 SNMP Agent – Traps reported
- 4000 UDP Loopback Port (for internal tests)
- 4001 Position Services Application within the Global Core Platform
- 4002 Diagnostics Application – expected to handle diagnostics delivered from internal radio components to a Mobile Computer.
- 4003 System Application – offers services for accessing internal resources of the subscriber unit such as keys, displays, communications, etc.
- 4004 A "proxy" port number that the System Application starts on behalf of a third-party application running on a non-IP capable peripheral device.
- 4005 PN Server (ARS)
- 4006 Dynamic Host Configuration Protocol (DHCP) Server
- 4007 APCO Text Messaging Service
- 4011 UDP Diagnostic Request Reply
- 4012 UDP Diagnostic Broadcast
- 4050 OTAR Application
- 49223 Send/Receive User Authentication messages

Accessed Only: When the Location Enable field is enabled, the P25 Location Reporting field is enabled, and the radio is model/option capable.

Table 238: Range

Minimum	Maximum
1	65535

4.24.9.3

Wireless Programming TCP Port

This field holds the port number used for wireless programming Over-the-Air-Programming (OTAP) over Wi-Fi.

This feature applies only to APX8000.

4.24.9.4

Sensor Measurement Reporting UDP Port

This field selects the User Datagram Protocol (UDP) port number for the Sensor Data Server to which the radio listens and transmits Sensor Reporting data.



This field applies to both Conventional and Trunking communications infrastructure.



NOTE:

This field will be applicable when [Sensor Measurement Reporting on page 958](#) is enabled.

The Sensor Management Reporting UDP Port value should not be equal to the value of any of these fields (configurable): LAN Port, WAN Port, Authentication UDP Port, P25 Location Reporting UDP Port, Wireless Programming TCP Port, Port Number, Subscriber OTAR Port, KMF UDP Port, and PAD Destination Port.

Table 239: Range

Minimum	Maximum
49625	65535

Accessed Only: When the radio is model/option capable, and when the Sensor Measurement Reporting field is enabled.

4.24.10

External Data Modem

This section allows you to view or modify external data modem settings that apply for all Data Profiles.



IMPORTANT:

Data Profiles are selected from the Trunking System's [Data Profile Selection on page 1195](#) field, or from the Conventional System's [Data Profile Selection on page 1059](#) field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.24.10.1

Modem Connection Type

This field selects the connection type for the external data modem.



The following selections are supported:

- **Wired:** Always available
- **Wireless:** When the [Wi-Fi Enable on page 968](#) is **Enabled**.
- **Disabled:** Always available

Accessed Only: When the radio is model/option capable.

4.24.10.2

Wired Modem Configuration Modem Type

This field sets the modem type used in a wired modem configuration.



WARNING: If the modem is set up for Band Class 14 and the LMR channel is set up for 700 MHz talk-around, you may experience interference issues.

The following selections are supported:

- **Disabled**
- **Motorola VML**
- **Sierra Wireless Airlink**
- **Sierra Wireless MG90/XR80/XR90 modems**

Accessed Only: When the radio is model/option capable and when the [Modem Connection Type on page 972](#) is **Wired**.

The H-Options for third-party modems are required.

4.24.10.3

Wireless Powerup Max Guard Time

This field selects the time duration for the external modem to power up in a wireless modem configuration.



Table 240: Range

Minimum	Maximum	Increments
1 second	300 seconds	1 second

Accessed Only: When [Wi-Fi Enable on page 968](#) is **Enabled**, and when the [Modem Connection Type on page 972](#) is **Wireless**, and when the radio is model/option capable.

4.24.10.4

Wired Modem Configuration Modem Port

This field allows you to set the modem port for third party modems in a wired configuration.



Table 241: Range

Minimum	Maximum
0	65535

Accessed Only: When the [Modem Connection Type on page 972](#) is **Wired**, and when [Wired Modem Configuration Modem Type on page 973](#) is **Sierra Wireless Airlink**, and when the radio is model/option capable.

4.24.10.5

Network Priority

This field defines the priority of the available Wi-Fi networks in a wireless modem configuration.



The lower the number, the higher will be the priority.

Table 242: Range

Minimum	Maximum	Increments
1	255	1

Accessed Only: When the [Wi-Fi Enable on page 968](#) is **Enabled**, and when the [Modem Connection Type on page 972](#) is **Wireless**, and when the radio is model/option capable.

4.24.10.6

Wired Modem Configuration Modem Password

This field requires you to enter a password for the third party external data modem used in a wired modem configuration.



WARNING: The password must be 4-32 characters long.

Accessed Only: When the [Modem Connection Type on page 972](#) is **Wired**, and when [Wired Modem Configuration Modem Type on page 973](#) is **Sierra Wireless Airlink**, and when the radio is models/option capable.

The default value is **Disabled**.

4.24.10.7

Network SSID

This field specifies the network name (SSID) of a Wi-Fi network in a wireless modem configuration.



NOTE:

The Network SSID cannot be saved if it is left empty.

The SSID must be "ASCII" characters and duplicated SSIDs are not accepted by Radio Management.

Accessed Only: When the [Wi-Fi Enable on page 968](#) is **Enabled**, and when the [Modem Connection Type on page 972](#) is **Wireless**, and when the radio is model/option capable.

4.24.10.8

Wired Modem Configuration Modem VPN Tunnel

This field allows you to select the Virtual Private Network (VPN) Tunnel used by the radio in a wired modem configuration.



The value must match the VPN configuration of the external data modem.

Accessed Only: When the [Modem Connection Type on page 972](#) is **Wired**, and when [Wired Modem Configuration Modem Type on page 973](#) is **Sierra Wireless Airlink**, and when the radio is models/option capable.

4.24.10.9

Security Type

This field defines the security protocol used for the Wi-Fi network in a wireless modem configuration.



The following selections are supported:

- **NONE**
- **WEP**
- **WPA2/WPA**

Accessed Only: When the [Wi-Fi Enable on page 968](#) is **Enabled**, and when the [Modem Connection Type on page 972](#) is **Wireless**, and when the radio is model/option capable.

4.24.10.10

Wired Modem Configuration Modem Out-Of-Range Threshold

This field sets the time duration for when the data modem signal is lost or low before determining if the radio is out-of-range from broadband coverage in a wired modem configuration.



Table 243: Range

Minimum	Maximum	Increments
60 seconds	3600 seconds	1 second

Accessed Only: When the [Modem Connection Type on page 972](#) is **Wired**, and when [Wired Modem Configuration Modem Type on page 973](#) is not **Disabled**, and when the radio is model/option capable.

4.24.10.11

Encrypted Network Password

This field defines the password for the Wi-Fi network in a wireless modem configuration.



NOTE:

When the [Security Type on page 975](#) is **WEP**, the password will be either 5 characters or 13 characters long. For every other type, password will be at least 8 characters and cannot be left blank or null. For all security types, ASCII are allowed.

The Subscriber Unit (SU) supports WEP key configuration in ASCII mode only for the WEP security. Therefore, WEP40 (5-character key such as “abcde”) or WEP104 (13-character key such as “1234567890123”) ASCII configuration are supported in the SU. The SU does not support WEP Hex key configuration.

Accessed Only: When the [Wi-Fi Enable on page 968](#) is **Enabled**, and when the [Modem Connection Type on page 972](#) is **Wireless**, and when the [Security Type on page 975](#) is not **None**, and when the radio is model/option capable.

4.24.10.12

Wired Modem Configuration Modem Powerup Max Guard Time

This field sets the time duration for the external modem to power up in a wired modem configuration.



Table 244: Range

Minimum	Maximum	Increments
1 second	300 seconds	1 second

Accessed Only: When the [Modem Connection Type on page 972](#) is **Wired**, and when [Wired Modem Configuration Modem Type on page 973](#) is not **Disabled**, and when the radio is model/option capable.

4.24.10.13

Modem Type

This field sets the external modem model that the radio uses in a wired or wireless modem configuration.



WARNING: If the modem is set up for Band Class 14 and the LMR channel is set up for 700 MHz talk-around, you may experience interference issues.

The following selections are supported:

- **Motorola VML**
- **Sierra Wireless Airlink**
- **Sierra Wireless MG90/XR80/XR90 modems**

Accessed Only: When the [Wi-Fi Enable on page 968](#) field is **Enabled**, when [Modem Connection Type on page 972](#) is **Wireless**, and the radio is model/option capable.

The H-Options for third-party modems are required.

4.24.10.14

Wired Modem Configuration Modem Open Max Guard Time

This field selects the amount of time for external modem to connect to a network in a wired modem configuration.



Table 245: Range

Minimum	Maximum	Increments
1 second	100 seconds	1 second

Accessed Only: When the [Modem Connection Type on page 972](#) is **Wired**, and when [Wired Modem Configuration Modem Type on page 973](#) is not **Disabled**, and when the radio is model/option capable.

4.24.10.15

Modem Password

This field requires you to enter a password for the third party external data modem in a wireless configuration.



WARNING: The password must be 4-32 characters long.

Accessed Only: When the [Wi-Fi Enable on page 968](#) field is **Enabled**, and when the [Modem Connection Type on page 972](#) is **Wireless**, and when the radio is model/option capable.

The default value is **Disabled**.

4.24.10.16

VPN Friendly Name

This string allows the radio to recognize the friendly name of the Virtual Private Network (VPN).



A null string indicates that the radio is to use the VPN friendly name presented by the modem. When a non-null string is present, the radio uses the friendly name configured to match with the VPN names from the MG90 modem.

For the VPN name matching to work correctly, the MG90 modem needs to be configured with MGOS software 4.3.2 or later.



NOTE:

Examples: EMT-001, #500, Electric1, # A5.

All ASCII characters all allowed.

Accessed Only: When the radio is model/option capable.

4.24.10.17

Modem Port

This field selects the Port for third party external data modem in a wireless configuration.



WARNING: The value for Modem Port cannot be 49480 if the Modem Type is VML.

Table 246: Range

Minimum	Maximum
0	65535

Accessed Only: When the [Modem Connection Type on page 972](#) is **Wireless**, and when [Modem Type on page 976](#) is **Sierra Wireless Airlink**, and when the radio is model/option capable.

4.24.10.18

Modem LTE Friendly Name

This string configures the friendly name for the LTE connection in the MG90.



This field is required and must not be a null string.

This string is used to configure the friendly name for the LTE connection in the MG90 modem.

When this string matches a network friendly name provided by the MG90 modem, the radio uses the network as the primary broadband data connection.

When the **LTE Friendly Name** is configured with a value of *, then the radio uses any non-Satellite network presented by the MG90 as the primary data connection.



NOTE:

Examples: EMT-001, #500, Electric1, # A5.

All ASCII characters all allowed.

Accessed Only: When the radio is model/option capable.

4.24.10.19

VPN Tunnel

This field allows you to select the VPN tunnel used by the radio in a wireless modem configuration.



The value must match the VPN configuration of the external data modem.

Table 247: Range

Minimum	Maximum
1	5

Accessed Only: When the [Wi-Fi Enable on page 968](#) is **Enabled**, and when the [Modem Connection Type on page 972](#) is **Wireless**, and when Modem Type is **Sierra Wireless Airlink**, and when the radio is model/option capable.

4.24.10.20

MG90 Satellite Enabled

This check box enables the Satellite connection for the MG90.



4.24.10.21

Modem Out-Of-Range Threshold

This field sets the time duration when the data modem signal is lost or low before determining if the radio is out-of-range from the broadband coverage in a wireless configuration.



Table 248: Range

Minimum	Maximum	Increments
30 seconds	3600 seconds	1 second

Accessed Only: When the [Wi-Fi Enable on page 968](#) is **Enabled**, and when the [Modem Connection Type on page 972](#) is **Wireless**, and when Modem Type is **Sierra Wireless Airlink**, and when the radio is model/option capable.

4.24.10.22

MG90 Satellite Friendly Name

This string configures the friendly name for the Satellite connection in the MG90.



This field is required and must not be a null string.



NOTE:

Examples: EMT-001, #500, Electric1, # A5.

All ASCII characters all allowed.

Accessed Only: When the radio is model/option capable.

4.24.10.23

Hidden Network

This field can be enabled to allow APX Wi-Fi enabled radios to access the hidden Wi-Fi Networks.



Accessed Only:

- When the Wi-Fi Enable field is **Enabled** and when the radio is model/option capable.

4.24.10.24

Modem Open Max Guard Time

This field sets the amount of time for the external modem to connect to a network in a wireless configuration.



Table 249: Range

Minimum	Maximum	Increments
1 second	100 seconds	1 second

Accessed Only: When the [Wi-Fi Enable on page 968](#) is **Enabled**, and when the [Modem Connection Type on page 972](#) is **Wireless**, and when Modem Type is **Sierra Wireless Airlink**, and when the radio is model/option capable.

4.25

Data Profiles

The **Data Profiles** allows you to define individual data profiles for different types and requirements of data communications.

Ultimately, Data Profiles are defined to communicate radio data over Conventional or Trunking channels, and/or communicate radio data over an LTE Broadband network.



IMPORTANT:

Data Wide Features and Selections can apply to all Data Profiles.

Depending on the Data Profile Type selection, Data Profiles are selected from the Trunking System's Data Profile Selection field and/or from the Conventional System's Data Profile Selection field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.25.1

General

This section allows you to view or modify data settings for individual Data Profiles.



NOTE:

Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.25.1.1

Data Profile Name

This field allows you to create a recognizable name for the current Data Profile.

Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

The following selections are available:

- Characters, numbers, spaces, and special characters can be used.
- Up to 14 characters are possible.
- **Examples:** EMT-001, #500, Electric1, # A5
- See also: Name Field Data Validation.

4.25.1.2

Intersystem Data

This field enables a radio to automatically attempt context activation while roaming on a foreign Trunking System.

Facilitates access to data services (such as Location and OTAR) on that system (see also Inter-WACN Roaming). Applies only to ISSI 8000-connected ASTRO 25 systems that operate within a combined (foreign + home system) Customer Enterprise Network (CEN). Selection applies for the current Trunking - Data Profile.



IMPORTANT: If context activation succeeds on the foreign Trunking System, the radio can typically access all available data services on that system. It does not respond to system-wide data broadcasts.

Accessed Only: When the [Data Profile Type on page 982](#) field is set to **Trunking** or **Trunking & Broadband** and the radio is model/option capable.

4.25.1.3

Data Profile Type

This field selects the radio data communications capabilities for the current Data Profile.

Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

Accessed Only: When the radio is model/option capable.

The following selections are available:

Conventional

The radio sends and receives data (and voice) only over an ASTRO Conventional FNE (Fixed Network Equipment) System.

Trunking

The radio sends and receives data (and voice) only over an ASTRO 25 Trunking IV&D (Integrated Voice & Data) System.

Broadband-Only

The radio sends and receives data only over an LTE Broadband data network (voice operations continue over the ASTRO Conventional or ASTRO 25 Trunking System).

Conventional & Broadband

The radio can send and receive data over an ASTRO Conventional FNE system or an LTE Broadband data network (voice operations continue over the ASTRO Conventional FNE System). When both systems/networks are available for data transmissions, the LTE network is given priority.



WARNING: When selected, the Packet Data Mode field must be set to "FNE".

Trunking & Broadband

The radio can send and receive data over an ASTRO 25 Trunking IV&D System or an LTE Broadband data network (voice operations continue over the ASTRO 25 Trunking System). When both systems/networks are available for data transmissions, the LTE network is given priority.

4.25.1.4

Random Holdoff Time

This field enables the radio to calculate a random hold off value between 0 (zero) and the Context Activation Hold Off Time that is used during system context activation.

This feature applies only for the current Trunking - Data Profile. When disabled, the Context Activation Hold Off Time value is used.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**.

4.25.1.5

Packet Data Mode

This field selects the type of Packet Data Mode that is used for the current Conventional - Data Profile.



WARNING: When the [Data Profile Type on page 982](#) field is set to **Conventional & Broadband**, this field must be set to **FNE**. Otherwise, the application considers this selection to be invalid.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Conventional** or **Conventional & Broadband** and the radio is model/option capable.

The following selections are available:

FNE

The radio communicates with the Fixed Network Equipment (the FNE is also referred to as the "System") on the repeater frequency programmed in the radio.

Repeated

The radio communicates with another radio through the repeater (i.e., on the repeater frequency programmed in the radio).

Direct

The radio communicates with another radio on the direct (or talkaround) frequency programmed in the radio.

4.25.1.6

Context Activation Holdoff Time

This field selects the maximum amount of time that the radio may hold off attempts at system context activation.

The timer starts following the first rejected context activation request. The Random Hold Off Time field may further define how this value is used. The Context Activation Holdoff Mode selection may further determine when this value is used. This selection applies only for the current Trunking - Data Profile. Time is in minutes.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**.

Table 250: Range

Disabled	Minimum	Maximum
0 - Disabled	1 min	60 min

4.25.1.7

Packet Data Registration Version

This field selects between two Sub Network Dependent Convergence Protocol (SNDCP) versions for slotted data.

This selection applies only for the current Trunking - Data Profile.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**.

The following selections are available:

SNDCPv1

SNDCP Version 1 allows for packet data registration messages to be exchanged with a pre-7.3 ASTRO 25 system. This selection is invalid if the following scenario is true: Data Profile Type is set to **Trunking** or **Trunking & Broadband** and the Enhanced Data - Port List Selection is not **Disabled**.

SNDCPv3

SNDCP Version 3 allows for packet data registration messages to be exchanged with an ASTRO 25 7.3 system or later.

4.25.1.8

IP Header Compression Enable

This field enables the radio to provide a more efficient transfer of messages by reducing a relatively large number of active data users per packet data channel.

Excess UDP (User Datagram Protocol)/IP (Internet Protocol) headers are compressed before transmission to their destination. This selection applies only for the current Trunking - Data Profile.



WARNING: This feature is not compatible with Secure/Clear Strapping being set to **Secure**.

Accessed Only: When the [Data Profile Type on page 982](#) field is set to **Trunking** or **Trunking & Broadband**, and when the [Packet Data Registration Version on page 983](#) field is set to **SNDIPv3**.

4.25.1.9

Queue Dwell Timer

This field selects the amount of time an IP (Internet Protocol) datagram stays in the radio's queue.

This setting determines how long data is allowed to wait in the radio without being transmitted before the data is purged from the queue. When data is sent from the Mobile Computer (MC) to the radio, the radio sometimes receives the data faster than it can send it, and the data must then wait in the radio's queue. This selection applies for the current Data Profile. Time is in seconds.

Accessed Only: When the [Data Profile Type on page 982](#) field is not set to **Broadband-Only** and the radio is model/option capable.

Table 251: Range

Minimum	Maximum
15 seconds	120 seconds

4.25.1.10

Subscriber IP Address

This field allows you to define the Internet Protocol (IP) Address to be assigned to the Subscriber Unit (SU) end of the serial link1.

This feature applies for the current Conventional Data Profile.



NOTE:

For Managed Radios, this feature is defined in the Subscriber IP Address field.

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or subnets are in use, data features cannot be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only: When the [Data Profile Type on page 982](#) field is set to **Conventional** or **Conventional & Broadband**, the [Auto Generate IP Address on page 990](#) field is **Disabled**, and (when the [NAT Enable on page 991](#) field is **Disabled**, or when the [Packet Data Mode on page 982](#) field is not set to **FNE**), and when the radio is model/option capable.

The Network ID octets of this IP Address must match the Network ID octets of the Peer IP Address field.

- The Network ID portion of an IP Address is defined as follows:
 - Octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
 - Octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
 - Octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets

- This IP Address:
 - Cannot be completely equal to the Peer IP Address for the current Data Profile (record/row)
 - Cannot equal the Bluetooth Subscriber IP Address for the current Data Profile (record/row)
 - Cannot equal the Bluetooth Peer IP Address for the current Data Profile (record/row)
 - Cannot equal the Subscriber Air-Interface IP Address for the current Data Profile (record/row)
- Octet Values also:
 - Must be between: [0-255]
 - Cannot all be 0
 - Cannot all be 255
- This IP Address's Default Value = 0.0.0.0, so it must be defined.

4.25.1.11

Subscriber IP Address 1

This feature allows you to define the Internet Protocol (IP) Address to be assigned to the Subscriber Unit (SU) end of the serial link1.

This feature applies in all cases except for [Conventional System on page 1056](#) having a selected [Data Profiles on page 980](#). When a Conventional System has a Data Profile selected in the [Data Profile Selection on page 1059](#) field, the Conventional System then uses the Subscriber IP Address IP Address defined in the Data Profile's [Subscriber IP Address on page 984](#) field.

For Managed Radios this feature is defined in the RMC's Bluetooth DUN Peer IP field.



NOTE:

For Managed Radios this feature is defined in the RMC's Subscriber IP Address 1 field.

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

The Network ID octets of this IP Address must match the Network ID octets of the Peer IP Address 1 field.

- The Network ID portion of an IP Address is defined as follows:
 - When octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
 - When octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
 - When octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets
- This IP Address:
 - Cannot be completely equal to the Peer IP Address 1
 - Cannot be equal to this page's [Bluetooth Subscriber IP Address on page 950](#) or [Bluetooth Peer IP Address](#)
 - Cannot be equal to the [Subscriber Air-Interface IP Address on page 991](#) on any [Data Profiles on page 980](#).
- Octet Values also:
 - Must be between: [0-255]

- Cannot all be 0
- Cannot all be 255
- This IP Address's Default Value = 192.168.128.1

4.25.1.12

Data Scan Preamble Length

This field selects a number that determines the length of time that Data Scan Preambles are transmitted by the radio.

The number selected is multiplied by 100 to give the preamble time in milliseconds. These Data Scan Preambles allow transmitting and receiving radios to synchronize with each other, and are therefore transmitted just prior to transmitting conventional packet data. This selection applies for the current Conventional - Data Profile.



IMPORTANT: Data Scan Preambles are only transmitted on a Designated Data Member channel when the "Designated Data" channel is Data enabled (see the Data Profile Selection field) and does not have its [Packet Data Mode on page 982](#) field set to **FNE**. The Designated Data Member channel of a Conventional Personality's selected Scan List can be set to always default to the radio's currently "Selected Channel" or to a specific channel within the Scan List.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Conventional** or **Conventional & Broadband** and when the radio is model/option capable.

Table 252: Range

Disabled	Minimum	Maximum
0 - meaning no preambles are transmitted	1	100

4.25.1.13

Peer IP Address

This field allows you to define the Internet Protocol (IP) Address to be assigned to the Mobile Computer (MC) end of the serial link1.

This IP Address is also used to address the MC with over-the-air packet data. This feature applies for the current Conventional - Data Profile.



NOTE:

For Managed Radios this feature is defined in the Subscriber IP Address field.

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only: When the [Data Profile Type on page 982](#) field is set to **Conventional** or **Conventional & Broadband**, the [Auto Generate IP Address on page 990](#) field is **Disabled**, the NAT Enable field is **Disabled** or the Packet Data Mode field is not set to **FNE**, and the radio is model/option capable.

The Network ID octets of this IP Address must match the Network ID octets of the Subscriber IP Address field.

- The Network ID portion of an IP Address is defined as follows:

- Octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
- Octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
- Octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets
- This IP Address:
 - Cannot be completely equal to the Subscriber IP Address (see above) for the current Data Profile (record/row),
 - Cannot equal the Bluetooth Subscriber IP Address for the current Data Profile (record/row)
 - Cannot equal the Bluetooth Peer IP Address for the current Data Profile (record/row)
 - Cannot equal the Subscriber Air-Interface IP Address for the current Data Profile (record/row).
- Octet values also:
 - Must be between: [0-255]
 - Cannot all be 0
 - Cannot all be 255

The last octet cannot be 255 which is reserved for directed broadcast for the associated Network ID portion of the Address.
- This IP Address's Default Value = 0 . 0 . 0 . 0, so it must be defined.

4.25.1.14

Rx Voice Interrupts Data

This field enables a received (Rx) voice transmission to interrupt a data communication.

Data communications are interrupted whenever an appropriate incoming voice transmission is sensed by the radio. This feature applies for the current Trunking - Data Profiles.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband** and the radio is model/option capable.



IMPORTANT: If the radio is in Priority Monitor Scan (see Scan Type), only the selected talkgroup voice activity interrupts a data communication.

4.25.1.15

Peer IP Address Assignment Type

This field selects the Internet Protocol (IP) Address Assignment method for the current Conventional - Data Profile.



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169 . 254 . X . X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169 . 254 . X . X. otherwise this field will be invalid.

Accessed Only: When the [Data Profile Type on page 982](#) field is set to **Conventional** or **Conventional & Broadband**, the [Auto Generate IP Address on page 990](#) field is **Disabled**, the [NAT Enable on page 991](#) field is **Disabled** or the [Packet Data Mode on page 982](#) field is not set to **FNE**, and the radio is model/option capable.

The following selections are available:

Dynamic

The radio assigns the Peer IP Address to the MC (Mobile Computer) upon serial link establishment.

Static

The MC inserts an IP Address to use upon serial link establishment. This selection applies only for RS-232/PPP based serial links.

4.25.1.16

Priority Scan RX Voice Interrupts Data

This field enables a received (Rx) voice transmission to interrupt a data communication when radio is in priority monitor scan and receiving the priority member activity.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband** and [Rx Voice Interrupts Data on page 987](#) is enabled.

4.25.1.17

Bluetooth Subscriber IP Address

This field allows you to define the Internet Protocol (IP) Address to be assigned to the Subscriber Unit (SU) end of the Bluetooth (BT) link.

This feature applies for the current Conventional Data Profile. See Data Wide [Bluetooth Subscriber IP Address on page 950](#) field.



NOTE:

For Managed Radios, this feature is defined in the RMC **Bluetooth DUN Subscriber IP Address** field.

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or subnets are in use, data features cannot be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only: When the Bluetooth Enable field is **Enabled**, and when the [Data Profile Type on page 982](#) field is set to **Conventional** or **Conventional & Broadband**, and when the [Auto Generate IP Address on page 990](#) field is **Disabled**, when the [NAT Enable on page 991](#) field is **Disabled** or the [Packet Data Mode on page 982](#) field is not set to **FNE**, and the radio is model/option capable.

The Network ID octets of this IP Address must match the Network ID octets of the [Bluetooth Peer IP Address on page 989](#) field.

- The Network ID portion of an IP Address is defined as follows:
 - Octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
 - Octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
 - Octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets
- This IP Address:
 - Cannot be completely equal to the [Peer IP Address on page 986](#) for the current Data Profile (record/row)
 - Cannot equal the [Subscriber IP Address on page 984](#) for the current Data Profile (record/row)
 - Cannot equal the [Peer IP Address on page 986](#) for the current Data Profile (record/row)
 - Cannot equal the [Subscriber Air-Interface IP Address on page 991](#) for the current Data Profile (record/row)
- Octet Values also:

- Must be between: [0-255]
- Cannot all be 0
- Cannot all be 255
- This IP Address's Default Value = 192.168.130.1

4.25.1.18

Limited Broadcast

This field enables the radio to route limited broadcast datagrams from the Mobile Computer (MC) over the air. The feature applies for the current Data Profile.

When disabled, limited broadcast datagrams from the MC are blocked from being sent over the air.

Accessed Only: When the [Data Profile Type on page 982](#) field is not set to **Broadband-only** and when the radio is model/option capable.

4.25.1.19

Bluetooth Peer IP Address

This field allows you to define the Internet Protocol (IP) Address to be assigned to the Mobile Computer (MC) end of the Bluetooth (BT) link.

This IP Address is also used to address the MC with over-the-air packet data. This feature applies for the current Conventional Data Profile. See Data Wide [Bluetooth Peer IP Address on page 951](#) field.



NOTE:

For Managed Radios, this feature is defined in the RMC **Bluetooth DUN Peer IP Address** field.

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or subnets are in use, data features cannot be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only: When the Bluetooth Enable field is **Enabled**, the Data Profile Type field is set to **Conventional** or **Conventional & Broadband**, the Auto Generate IP Address field is **Disabled**, and (when the NAT Enable field is **Disabled**, or when the Packet Data Mode field is not set to **FNE**), the Bluetooth Peer IP Address Assignment Type field is set to **Dynamic**, and. when the radio is model/option capable.

The Network ID octets of this IP Address must match the Network ID octets of the Bluetooth Subscriber IP Address field.

- The Network ID portion of an IP Address is defined as follows:
 - Octet1 is between 0-127, the IP Address = Class A and the Network ID = the first 1 octet
 - Octet1 is between 128-191, the IP Address = Class B and the Network ID = the first 2 octets
 - Octet1 is between 192-223, the IP Address = Class C and the Network ID = the first 3 octets
- This IP Address:
 - Cannot be completely equal to the Bluetooth Subscriber IP Address for the current Data Profile (record/row),
 - Cannot equal the [Subscriber IP Address on page 984](#) for the current Data Profile (record/row)
 - Cannot equal the [Peer IP Address on page 986](#) for the current Data Profile (record/row)

- Cannot equal the [Subscriber Air-Interface IP Address on page 991](#) for the current Data Profile (record/row).
- Octet values also:
 - Must be between: [0-255]
 - Cannot all be 0
 - Cannot all be 255

The last octet cannot be 255 which is reserved for directed broadcast for the associated Network ID portion of the Address.

- This IP Address's Default Value = 192.168.128.2.

4.25.1.20

Auto Generate IP Address

This field enables the Subscriber Air-Interface Internet Protocol (IP) Address and the Mobile Computer (MC) IP Address to be generated by the radio's Host Software for the current Conventional - Data Profile.



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only: When the [Data Profile Type on page 982](#) field is set to **Conventional** or **Conventional & Broadband** and the radio is model/option capable.

4.25.1.21

Bluetooth Peer IP Address Assignment Type

This field selects the Internet Protocol (IP) Address Assignment method assigned to the Mobile Computer (MC) end of the Bluetooth link for the current Conventional Data Profile.



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or subnets are in use, data features cannot be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

See Data Wide [Bluetooth Peer IP Address Assignment Type on page 952](#) field.

Accessed Only: When the Bluetooth Enable field is **Enabled**, the [Data Profile Type on page 982](#) field is set to **Conventional** or **Conventional & Broadband**, the [Auto Generate IP Address on page 990](#) field is **Disabled**, the NAT Enable field is **Disabled** or the [Packet Data Mode on page 982](#) field is not set to **FNE**, and the radio is model/option capable.

The Bluetooth Peer IP Address Assignment Type supports the following selections:

Dynamic

The radio assigns the Bluetooth Peer IP Address to the MC upon the Bluetooth link establishment.

Static

The MC asserts an IP Address to use upon Bluetooth link establishment. This selection applies only for RS-232/PPP based serial links.

4.25.1.22

NAT Enable

This field enables the current Data Profile to use Network Address Translation (NAT).

See also the Data Wide, [NAT List on page 962](#) Page.



WARNING: When the [Data Profile Type on page 982](#) is set to **Conventional & Broadband** or **Broadband-Only**, the Broadband Source is **Internal LTE Modem**. This field must be **Enabled**, otherwise, the RM considers it to be invalid.

Accessed Only: When the radio is model/option capable, the [Data Profile Type on page 982](#) field is set to **Conventional** or **Conventional & Broadband**, and the [Packet Data Mode on page 982](#) field is set to **FNE**, or when the [Data Profile Type on page 982](#) field is set to **Broadband-Only**.

4.25.1.23

Subscriber Air-Interface IP Address

This field allows you to define the Internet Protocol (IP) Address for over-the-air-packet data communication with the radio.

This feature applies for the current Conventional - Data Profile.



NOTE:

For Managed Radios this feature is defined in the RMC's Air Interface Subscriber IP Address field.

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only: When the [Data Profile Type on page 982](#) field is set to **Conventional** or **Conventional & Broadband**, the [Auto Generate IP Address on page 990](#) field is **Disabled**, and the radio is model/option capable.

The following applies:

- This IP address:
 - Cannot equal the Bluetooth Subscriber IP Address for the current Data Profile (record/row)
 - Cannot equal the Bluetooth Peer IP Address for the current Data Profile (record/row)
 - Cannot equal the Subscriber IP Address for the current Data Profile (record/row)
 - Cannot equal the [Peer IP Address on page 986](#) for the current Data Profile (record/row)
 - Cannot equal the Data Wide Subscriber IP Address 1 field or the Peer IP Address 1 field
- Octet values also:
 - Must be between: [0-255]
 - Cannot all be 0
 - Cannot all be 255
- This IP Address's Default Value = 0.0.0.0, so it must be defined.

4.25.1.24

Auto Generate Target IP Address

This field enables the Internet Protocol (IP) Address of a target radio to be generated by the radio Host Software for the current Conventional - Data Profile.



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only: When the [Data Profile Type on page 982](#) field is set to **Conventional** or **Conventional & Broadband**, the [Auto Generate IP Address on page 990](#) field is **Enabled**, and the radio is model/option capable.

4.25.2

Features

This section allows you to view or modify data settings for individual Data Profiles.



NOTE:

Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.25.2.1

Terminal Data

This field enables the Mobile Computer (MC) to transmit or receive packet data over-the-air.

This feature applies for the current Data Profile.

When disabled, the MC is still able to communicate with radio internal data applications; radio internal data applications can still communicate over-the-air.

Accessed Only: When the radio is model/option capable.

4.25.2.2

PAD Start Sequence

This field allows you to enter the Start Sequence for the **Sentence** Protocol Assembler/Disassembler (PAD) Mode.

This entry is used by the Networking PAD Application to detect the Start of the 'Sentence' in the Data by matching up this sequence of byte values. The Start and [PAD Stop Sequence on page 993](#) must both be defined for the "Sentence" PAD Mode. This selection applies for the current Data Profile.

Accessed Only: When the [PAD Mode on page 999](#) field is set to **Sentence**.

The following selections are supported:

- Entries must be hexadecimal, (0 thru 9 and A thru F)

- Entries must be an even number of characters
- Entries must be:
 - a minimum of 2 characters
 - a maximum of 18 characters

4.25.2.3

POP25 Retransmission Timer

This field selects the amount of time that the in-the-field radio waits for POP25 data packets before timing-out the connection.

This selection applies for the current Data Profile.

Accessed Only: When the radio is model/option capable.

Table 253: Range

Minimum	Maximum	Increments
5 seconds	90 seconds	1 second

4.25.2.4

PAD Stop Sequence

This field allows you to enter the Stop Sequence for the **Sentence** Protocol Assembler/Disassembler (PAD) Mode.

This entry is used by the Networking PAD Application to detect the Stop of the 'Sentence' in the Data by matching up this sequence of byte values. The [PAD Start Sequence on page 992](#) and Stop Sequence must both be defined for the "Sentence" PAD Mode. This selection applies for the current Data Profile.

Accessed Only: When the [PAD Mode on page 999](#) field is set to **Sentence**.

The following selections are supported:

- Entries must be hexadecimal, (0 thru 9 and A thru F)
- Entries must be an even number of characters
- Entries must be:
 - a minimum of 2 characters
 - a maximum of 18 characters

4.25.2.5

Retry Long Timer

This field selects the amount of time that the radio waits after all registration retries to the Automatic Registration Server fail.

There are a total of five registration tries hard-coded (not modifiable) in the radio, one initial try and four retries. The timer begins after the fourth retry is transmitted. This selection applies for the current Data Profile.

Accessed Only: When the radio is model/option capable.

The following selections are available:

 **NOTE:** When set to **0-Disabled**, the radio no longer waits for ARS Server registration to occur - 0 (zero minutes)

Table 254: Range

Minimum	Maximum	Increments
5 (minutes)	300 (minutes)	1 (minute)

4.25.2.6

PAD Escape Sequence

This field allows you to enter the Escape Sequence for the **Sentence** Protocol Assembler/Disassembler (PAD) Mode.

This optional byte sequence is used to 'escape' or bypass the detection of any Start and the Stop Sequences should they occur as part of regular data, so that they are not mistaken as Sentence Start or Stop. This selection applies for the current Data Profile.

Accessed Only: When the [PAD Mode on page 999](#) field is set to **Sentence**.

The following selections are supported:

- Entries must be hexadecimal, (0 thru 9 and A thru F)
- Entries must be an even number of characters
- Entries must be between:
 - a minimum of 0 characters
 - a maximum of 10 characters

4.25.2.7

Retry Short Timer

This field selects the amount of time between the Retry Number of Attempts.

Retries are sometimes needed for certain data application procedures. This selection applies for the current Data Profile.

Accessed Only: When the radio is model/option capable.

Table 255: Range

Minimum	Maximum	Increments
5 seconds	90 seconds	5 seconds

4.25.2.8

PAD Receive Idle TimeOut

This field selects the timeout value used in the **Continuous** and **Sentence** Protocol Assembler/Disassembler (PAD) Modes .

In **Continuous** [PAD Mode on page 999](#), this timeout is used to trigger the transmission of the data collected by the PAD Application even though it has not reached the Maximum buffer threshold. This selection applies for the current Data Profile. Time is in milliseconds.

Accessed Only: When the [PAD Mode on page 999](#) field is set to **Sentence** or **Continuous**.

Table 256: Range

Minimum	Maximum
0 (ms) (0 = Disabled)	15000 (ms)

4.25.2.9

Retry Number of Attempts

This field selects the number of attempts that the radio pursues (until successful) for certain data application procedures.

The amount of time that the radio waits between these attempts is determined by the [Retry Short Timer on page 994](#) field. This selection applies for the current Data Profile.

Accessed Only: When the radio is model/option capable.

Table 257: Range

Minimum	Maximum
1	10

4.25.2.10

PAD Transmission Inhibit Value

This field selects the amount of time that a data chunk transmission (sent from the Protocol Assembler/Disassembler (PAD) Application) is delayed from the previous data chunk transmission, evenly spacing these transmissions (flow control).

Therefore, the PAD application can only send (at most) one data chunk within this amount of time. This amount of time is used to delay transmissions in all PAD Modes. This selection applies for the current Data Profile.

Accessed Only: When the [PAD Mode on page 999](#) field is not set to **Disabled**.

Table 258: Range

Minimum	Maximum
0 (ms) (0=Disabled)	15000 (ms)

4.25.2.11

ARS Mode

This field selects the Automatic Registration Service (ARS) mode for the current Data Profile.

Accessed Only: When the radio is model/option capable.

The following selections are available:

Disabled

ARS mode is disabled.

Server

Use this setting when an ARS is being utilized in the system. This selection is applicable to both a legacy ARS Presence Notification (PN) server and a User Authentication server.

Non-Server

Use this setting when name resolution services are required and an ARS is not available. This selection is only valid: When the Data Profile Type is **Conventional** or **Conventional & Broadband**, and when the Packet Data Mode field is not set to **FNE**.

Enhanced Server

Enables the enhanced ARS registration that is only supported by UNS software version 5.1 or above.

4.25.2.12

Maximum Buffer Threshold

This field selects the maximum buffer threshold (in bytes) that is used to trigger transmissions in the "Continuous" PAD Mode.

This selection represents the length of data collected in the "Continuous" PAD Mode before the data is sent out. As soon as this buffered data threshold is reached, the PAD application sends the buffer (only applicable in Continuous Mode). This selection applies for the current Data Profile.

Accessed Only: When the [PAD Mode on page 999](#) field is set to **Sentence** or **Continuous**.

Table 259: Range

Minimum	Maximum
1 byte	3000 bytes

4.25.2.13

Automatic Registration Server Address

This field allows you to define the IP (Internet Protocol) address of the Automatic Registration Server (ARS) for the current Data Profile.

Accessed Only: When the [ARS Mode on page 995](#) field is set to **Server** and the radio is model/option capable.

Selections are valid when the following is true:

- The four octets must be in the range: [1-223] . [0-255] . [0-255] . [0-255]
- IP Address cannot be the Limited Broadcast Address: 255.255.255.255

And, IP Address must be a valid Class A, B, or C address:

- The IP Address is considered Class A when octet 1 is between 0-127; the Network ID is then this first octet:
 - When the IP Address is Class A, then the IP Address can be 1.0.0.1 to 126.255.255.254
 - When the IP Address is Class A, then the IP Address cannot be 0.xxx.xxx.xxx or xxx.255.255.255 or xxx.0.0.0 or 127.xxx.xxx.xxx
- The IP Address is considered Class B when octet 1 is between 128-191; the Network ID is then the first 2 octets:
 - when the IP Address is Class B, then the IP Address can be 128.1.0.1 to 191.255.255.254
 - when the IP Address is Class B, then the IP Address cannot be 128.0.xxx.xxx or xxx.xxx.255.255 or xxx.xxx.0.0
- The IP Address is considered Class C when octet 1 is between 192 -223; the Network ID is then the first 3 octets:
 - when the IP Address is Class C, then the IP Address can be 192.0.1.1 to 223.255.255.254

- when the IP Address is Class C, then the IP Address cannot be 192.0.0.XXX or XXX.XXX.XXX.255 or XXX.XXX.XXX.0

4.25.2.14

PAD Destination Address

This field allows you to enter the IP Destination Address (remote end) for the PAD (Protocol Assembler/Disassembler) application.

This entry represents the address part in the address-port combination that makes up the destination (remote end) for the data packets generated by the PAD application. This selection applies for the current Data Profile.

Accessed Only: When the [PAD Mode on page 999](#) field is not set to **Disabled**.



NOTE:

The IP address can be any valid address entered in dotted decimal format.

4.25.2.15

Direct Location Registration

This field enables the radio to directly register on a Location Server that supports the P25 (Project 25) Location Reporting data format (see also P25 Location Reporting).

The radio notifies the Location Server through an LRRP (Location Request/Response Protocol) message about its availability and then registers on the Server. This feature applies for the current Data Profile.

Accessed Only: When the Location Enable field is enabled, the P25 Location Reporting field is enabled, the [ARS Mode on page 995](#) field is not set to **Server**, and the radio is model/option capable.

4.25.2.16

PAD Destination Port

This field allows you to enter the IP Destination Port (remote end) for the PAD (Protocol Assembler/Disassembler) application.

This entry represents the port part in the address-port combination that makes up the destination (remote end) for the data packets generated by the PAD application. This selection applies for the current Data Profile.

Accessed Only: When the [PAD Mode on page 999](#) field is not set to **Disabled**.

Table 260: Range

Minimum	Maximum
1	65535



IMPORTANT: The Default Value of "0" is an invalid entry. When this field is applicable, the value must be changed to a valid entry.

4.25.2.17

Location Server IP Address

This field allows you to define the IP (Internet Protocol) Address of the Location Server to which the radio will directly register when an ARS (Automatic Registration Server) or UNS (Unified Network Services) server is unavailable (see also Direct Location Registration).

This feature applies for the current Data Profile.



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning, so any IP address cannot start with 169. 254. X. X otherwise this field will be invalid.

Accessed Only: When the following fields are enabled: Location Enable, P25 Location Reporting, and Direct Location Registration. The [ARS Mode on page 995](#) field is not set to **Server**. The radio is model/option capable.

Selections are valid when the following is true:

- The four octets must be in the range: [1-223] . [0-255] . [0-255] . [0-255], and
- this IP Address cannot be the Limited Broadcast Address: 255.255.255.255

And, this IP Address:

- Cannot be completely equal to the Subscriber IP Address 1, and
- Cannot be completely equal to the Subscriber IP Address, and
- Cannot be equal to the Subscriber Air-Interface IP Address, and
- Cannot be equal to the Bluetooth Subscriber IP Address, or the Bluetooth Subscriber IP Address, and
- Cannot be equal to the Bluetooth PAN Network Base Address, and
- Cannot be completely equal to the Internal Radio Subnet on any Data Profile.
- Cannot be equal to the Serial Link IP Address 1 and Serial Link IP Address 2

And, the IP Address must be a valid Class A, B, or C address:

- **The IP Address is considered Class A when octet 1 is between 0-127; the Network ID is then this first octet:**
 - when the IP Address is Class A, then the IP Address can be 1.0.0.1 to 126.255.255.254
 - when the IP Address is Class A, then the IP Address cannot be 0.xxx.xxx.xxx or xxx.255.255.255 or xxx.0.0.0 or 127.xxx.xxx.xxx
- **The IP Address is considered Class B when octet 1 is between 128-191; the Network ID is then the first 2 octets:**
 - when the IP Address is Class B, then the IP Address can be 128.1.0.1 to 191.255.255.254
 - when the IP Address is Class B, then the IP Address cannot be 128.0.xxx.xxx or xxx.xxx.255.255 or xxx.xxx.0.0
- **The IP Address is considered Class C when octet 1 is between 192 -223; the Network ID is then the first 3 octets:**
 - when the IP Address is Class C, then the IP Address can be 192.0.1.1 to 223.255.255.254
 - when the IP Address is Class C, then the IP Address cannot be 192.0.0.xxx or xxx.xxx.xxx.255 or xxx.xxx.xxx.0

4.25.2.18

Context Activation Holdoff Mode

This field selects the conditions as to when the Context Activation Hold Off Time is used by the radio.

The timer and this selected Holdoff Mode limit radio requests for system context activation. The Random Hold Off Time field setting determines how the Context Activation Holdoff Time is used for the current Trunking System. This selection applies for the current Data Profile.

The following selections are available:

Holdoff Always

The radio uses the Context Activation Hold Off Time: failed attempt at initial System Context Activation, context has failed, or loss of context due to a context deactivation command received by the system and reactivation is needed.

Holdoff Upon Failure

The radio uses the Context Activation Hold Off Time only once System Context Activation has failed.

4.25.2.19

PAD Mode

This field selects the mode of operation for Protocol Assembler/Disassembler (PAD) application.

The [PAD Destination Address on page 997](#) and the [PAD Destination Port on page 997](#) must be defined whenever this field is not **Disabled**. This selection applies for the current Data Profile.



WARNING: When the [Data Profile Type on page 982](#) is **Broadband-Only** or **Conventional & Broadband** or **Trunking & Broadband**, this field must be set to **Disabled**. Otherwise, the application considers it to be invalid.

The following selections are supported:

Disabled

PAD Mode is not used.

Continuous

Used for devices/applications that need to transmit packet data of certain fixed length every time.

Sentence

Used for sending packet data based on certain start and stop characters (like a sentence in GPS data). The PAD Start Sequence and the PAD Stop Sequence must be defined.

Immediate

A raw data transfer where all the data (regardless of the size) is transmitted as is.

4.25.3

CCAP DAC

The **Controlled Channel Access Protocol (CCAP) Data Access Channel (DAC)** section allows you to view or modify Packet Data Channel Steering function on Sub Network Dependent Convergence Protocol (SNDCCP) v3 capable systems.

This function steers subscribers to either "Classic APCO 25" unscheduled transmit, or "Controlled Channel Access" scheduled transmit Packet Data Channel (PDCH). The Slot Size is a configurable parameter on a per-DAC bit basis. The subscriber is configured with a particular DAC code or codes, which is received during the Context Activation. The entries on the **DAC** list tell the subscriber which of the DAC codes in the context

activation should be used when accessing the PDCH. These selections apply only for the current Trunking - Data Profile.



NOTE:

Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.25.3.1

Operational Mode

This field selects the desired Data Access Channel (DAC) Operational Mode for the current DAC (record/row) in the DAC table.

Operational modes are channel type identifiers that differentiate between Packet Data Channel (PDCH) methods. Each DAC in this table corresponds with a Data Steering Profile in the Site Controller (SC). DAC 1 corresponds to Data Steering Profile 1, DAC 2 corresponds to Data Steering Profile 2, and so on. This selection applies only for the current Trunking - Data Profile.



IMPORTANT:

When a DAC is enabled for a radio as indicated by DAC information being received from the Packet Data Router (PDR) during SNDCP packet data registration, this selected Operational Mode for the DAC must match the Operational Mode for the corresponding Data Steering Profile in the Site Controller (SC). For example, if DAC 2 is set to "Controlled Channel Access," then Data Steering Profile 2 in the SC should be set up for the same "Controlled Channel Access" operational mode.

For compatibility with older systems, DAC Mode 1 (the first record/row) is always restricted to "Classic APCO 25".

For slotted data, "Controlled Channel Access" should be selected, otherwise "Classic APCO 25" should be selected.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**, and the [Port List Selection on page 1012](#) field is **Disabled**.

The following selections are supported:

Classic APCO 25

For Transit users at commission time, DAC bits 1-8 should be configured for Classic APCO 25.

Controlled Channel Access

For Transit users at commission time, DAC bits 9-16 should be configured for Controlled Channel Access to allow for future CCA expansion without the need to reconfigure the radio to the DAC Operational Mode.

This selection becomes invalid if one of the following scenarios is true: When the [Data Profile Type on page 982](#) is set to **Trunking** and the [Port List Selection on page 1012](#) field is referencing a valid Enhanced Data Port List, or the [Data Profile Type on page 982](#) is set to **Trunking & Broadband**.

Selecting **Classic APCO 25** then makes this field inaccessible.

This selection is not compatible with Secure/Clear Strapping being set to **Secure**, and therefore causes the Strapping setting to be invalid.

4.25.3.2

Slot Size

This field selects the amount of time the radio uses for slotted data transmissions for the current record/row in the DAC table.

Slot Size dictates the message data size that can fit within a slot of a Controlled Channel Access Packet Data Channel (PDCH). This selection applies only for the current Trunking - Data Profile. Time is in milliseconds.



IMPORTANT:

Defining this time is a coordination effort that should be designed to prevent slotted data transmissions (between this radio and other radios) from interfering with each other. Each DAC Slot Size in this table corresponds with a Data Steering Profile in the Site Controller (SC). DAC 1 corresponds to Data Steering Profile 1, DAC 2 corresponds to Data Steering Profile 2, and so on.

The Slot Size for records/rows in this DAC table should be the same for all radios using the same DAC table records/rows.

The Slot Size is not applicable for Classic PDCH in the radio.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband** and the [Operational Mode on page 1000](#) field for the same record/row in this table is set to **Controlled Channel Access**.

The following values are supported:

- None
- 105, 120, 150, 165, 195, 210, or 240 ms

4.25.4

Trunking Group ID

This section allows you to view or modify ASTRO 25 Common Air Interface (CAI) Data Group IDs 1 through 8.

These Group IDs are used for address decoding pertaining only to receiving data.



NOTE: Data Groups allow the radio to receive group data messages sent to these Data Group IDs, and to receive broadcast packets sent to the radio's ALL CALL ID (IP = 255.255.255.255). These selections apply only for the current Trunking - Data Profile.



IMPORTANT:

Trunking Data Profiles are selected from the Trunking System's Data Profile Selection field.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.25.4.1

ASTRO 25 Data Group ID

This field selects (in decimal or hex format) the ASTRO 25 Common Air Interface (CAI) Data Group ID for the current record/row (1 through 8).

This Group ID is used for address decoding pertaining only to receiving data. Data Groups allow the radio to receive group data messages sent to these Data Group IDs and to receive broadcast packets sent to the radio's ALL CALL ID (IP = 255.255.255.255). This selection applies only for the current Trunking - Data Profile.



IMPORTANT: 6777215 (0xFFFFFFF Hex) is the ALL CALL ID; this ID may not be entered because it already exists in the radio.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**.

Table 261: Range

Minimum	Maximum
10000000 (989680 Hex)	16777214 (FFFFFFE Hex)

4.25.5

Broadband

This section allows you to view or define LTE (Long Term Evolution) functionality. These settings apply only to individual Data Profiles.



IMPORTANT:

Data Profiles are selected from the Trunking System's Data Profile Selection field.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.25.5.1

Broadband Source

This field selects External Modem or Internal LTE as broadband source.

Accessed Only: When the radio is model/option capable.



WARNING: When the Data Profile Type is **Broadband-Only, Conventional & Broadband** or **Trunking & Broadband** and, Broadband Source is either **External Mode** and, when Modem Connection Type is **Wired** and Wired Modem Configuration Modem Type is not **Disabled**, or when Modem Connection Type Type is **Wireless** and Wi-Fi Enable is **Enabled**. When the Data Profile Type is **Broadband-Only, Conventional & Broadband** or **Trunking & Broadband**, and when the Broadband Source is **Internal LTE**.

The following selection is available:

Disabled

Broadband feature is not functional.

Internal LTE Modem

Internal LTE Modem when the radio is model/option capable.

External Data Modem (USB)

External Data Modem when the radio is model/option capable.

4.25.5.2

SmartConnect Gateway Hostname

SmartConnect Gateway Hostname defines the location of the SmartConnect Gateway in the form of a fully qualified domain hostname (FQDN).

The maximum number of ASCII characters is 63.

Accessed Only: When the radio is model/option capable.

4.25.5.3

SmartConnect Gateway TLS Port Number

This field allows you to select the TLS port number used for the SmartConnect feature.

The SmartConnect Gateway TLS Port Number should be unique to any other configurable port in the application.

Table 262: Range

Default	Minimum	Maximum	Increments
49665	1	65535	1

Accessed Only: When the radio is model/option capable.

4.25.6

Network Layer Security

This section allows you to view or modify the data settings for secure encrypted data communications, and for secure-encrypted data communications with a Virtual Private Network (VPN).

See also [LTE Broadband Feature on page 272](#).

These settings apply for individual Data Profiles.



NOTE:

Data Profiles are selected from the Trunking System's Data Profile Selection field, or from the Conventional System's Data Profile Selection field.

For Conventional communications, Data Profiles apply only for Conventional Systems that have their System Type field set to **ASTRO**.

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

4.25.6.1

Allow Rx Clear Packet Data

This field enables the receiving of clear (un-encrypted) Packet Data, even when **Secure** strapping has been selected in the Packet Data Secure/Clear Strapping field.

This feature applies for the current Trunking - Data Profiles.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**, the [Secure/Clear Strapping on page 1005](#) is applicable and set to **Secure**, and the radio is model option capable.

4.25.6.2

ASTRO OTAR Profile Selection

Selects the ASTRO OTAR Profile to be associated with the current Trunking - Data Profile.

Secure encrypted Packet Data is transmitted within the Network Layer (Layer Three) of the OSI (Open Systems Interconnection) Seven Layer Model for layered communications.



WARNING: This field is invalid when the selected Secure KMF Profile's - KMF IP Address field is set to 0.0.0.0



IMPORTANT:

When this field is not set to **Disabled**, the [Key Selection on page 1005](#) field for the current Data Profile can only select keys from the Secure Hardware Encryption Key References List of this selected ASTRO OTAR Profile.

The application is actually pointing to the Keys of the Encryption Key List for this selection. Individual Keys from the Secure Hardware Encryption Key References List reference the Encryption Key List Keys from the Encryption Key Reference field. Any key selected when ASTRO OTAR is enabled, must first be defined in the Secure Hardware Encryption Key References List.

When this field is set to **Disabled**, the [Key Selection on page 1005](#) value for the current Data Profile is directly chosen from the Secure Wide Window's Encryption Key List.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**, the [Secure/Clear Strapping on page 1005](#) field is applicable and set to **Secure**, and the radio is model/option capable.

The following selections are available:

Disabled

See Important Note above.

ASTRO OTAR Profile

ASTRO OTAR Profile selections apply only when the OTAR Operation field is set to **ASTRO Only** or **ASTRO & MDC**.

4.25.6.3

Encrypted Gateway Address

This field allows you to enter the Internet Protocol version 4 (IPv4) Destination Address of the encrypted Packet Data gateway.

This feature applies for the current Trunking - Data Profiles.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**, [Secure/Clear Strapping on page 1005](#) field is applicable and set to **Secure**, and the radio is model/option capable.

Selections are valid when the following is true:

- The four octets must be in the range: [1-223] . [0-255] . [0-255] . [0-255]
- This IP Address cannot be the Limited Broadcast Address: 225.255.255.255

The IP Address must be a valid Class A, B, or C address:

- The IP Address is considered Class A under these circumstances:
 - Octet 1 is between 0-127; the Network ID is then this first octet
 - The IP Address is Class A, then the IP Address can be 1.0.0.0 to 126.255.255.255
 - The IP Address cannot be 0.xxx.xxx.xxx or 127.xxx.xxx.xxx
- The IP Address is considered Class B under these circumstances:
 - Octet 1 is between 128-191; the Network ID is then the first 2 octets
 - The IP Address can be 128.0.0.0 to 191.255.255.255
 - The IP Address cannot be x.x.255.255

- The IP Address is considered Class C under these circumstances:
 - Octet 1 is between 192 -223; the Network ID is then the first 3 octets
 - The IP Address is Class C, then the IP can be 192.0.0.0 to 223.255.255.255
 - The IP Address cannot be x.x.x.255

4.25.6.4

Key Selection

This field selects the secure encryption key to be used for Packet Data being transmitted and received.

Secure encrypted Packet Data is transmitted within the Network Layer (Layer Three) of the Open Systems Interconnection (OSI) Seven Layer Model for layered communications. This selection applies for the current Trunking - Data Profile.



IMPORTANT:

When the ASTRO OTAR Profile Selection field is not set to **Disabled**, this field, for the current Data Profile can only select keys from the Secure Hardware Encryption Key References List of this selected Secure ASTRO OTAR Profile.

The application is actually pointing to the Keys of the Encryption Key List for this selection. individual Keys from the Secure Encryption Key References List reference the Encryption Key List's Keys from the Encryption Key Reference field. Therefore any key selected when ASTRO OTAR Profile Index field is enabled, must first be defined in the Secure Encryption Key References List. Keys taken from ASTRO OTAR Profile with Independent Key List field enabled are available.

When the ASTRO OTAR Profile Selection field is set to **Disabled**, this value for the current Data Profile is directly chosen from the Secure Wide Window's Encryption Key List.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**, the [Secure/Clear Strapping on page 1005](#) field is applicable and set to **Secure**, and the radio is model/option capable.

4.25.6.5

Secure/Clear Strapping

This field selects secure encryption or no secure encryption for Packet Data being transmitted and received.

Secure encrypted Packet Data is transmitted within the Network Layer (Layer Three) of the Open Systems Interconnection (OSI) Seven Layer Model for layered communications. This feature applies for the current Trunking - Data Profiles.

Accessed Only: When [Secure Operation on page 880](#) is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled,

And

when the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**, and the radio is model/option capable.

The following selections are available:

Clear

Straps or commits the Trunking APCO 25 Packet Data transmission to be normal (clear/not encrypted).

Secure

Straps or commits the Trunking APCO 25 Packet Data transmissions to be encrypted.



WARNING: Only valid when the IP Header Compression Enable field is disabled and all DAC Operation Mode - records are not set to **Controlled Channel Access**.

4.25.6.6

VPN Dead Peer Detection Interval

This field selects the maximum amount of idle time before the determination that the Virtual Private Network (VPN) connection has been lost.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to secure encryption for LTE Broadband data communications, and only for the current Data Profile. Time is in minutes.

Accessed Only: When Secure Operation is set to **Hardware**, the [Data Profile Type on page 982](#) field is set to **Broadband-Only** or **Conventional & Broadband** or **Trunking & Broadband**, the [VPN Secure/Clear Strapping on page 1009](#) field is set to **Secure**, and the radio is model/option capable.

Table 263: Range

Minimum	Maximum	Increments
5 (minutes)	60 (minutes)	1 (minute)

4.25.6.7

VPN Gateway IP Address

This field allows you to enter the Internet Protocol version 4 (IPv4) Destination Address of the Virtual Private Network (VPN) Gateway that resides in the Customer Enterprise Network (CEN).



This selection applies to secure encryption for LTE Broadband data communications, and only for the current Data Profile.



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169. 254. X. X. Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169. 254. X. X. otherwise this field will be invalid.

Accessed Only: When Secure Operation is set to **Hardware**, and when the [Data Profile Type on page 982](#) field is set to **Broadband-Only** or **Conventional & Broadband** or **Trunking & Broadband**, [VPN Secure/Clear Strapping on page 1009](#) is set to **Secure**, and the radio is model/option capable.

Selections are valid when the following is true:

- The four octets must be in the range: [1-223] . [0-255] . [0-255] . [0-255]
- This IP Address's Default Value = 0.0.0.0 and must be defined.

The IP Address must be a valid Class A, B, or C address:

- The IP Address is considered Class A under these circumstances:
 - Octet 1 is between 0-127; the Network ID is then this first octet

- The IP Address is Class A, then the IP Address can be 1.0.0.1 to 126.255.255.254
- The IP Address cannot be 0.xxx.xxx.xxx or 127.xxx.xxx.xxx
- The IP Address is considered Class B under these circumstances:
 - Octet 1 is between 128-191; the Network ID is then the first 2 octets
 - The IP Address is Class B, then the IP Address can be 128.1.1.0 to 191.255.255.254
- The IP Address is considered Class C under these circumstances:
 - Octet 1 is between 192 -223; the Network ID is then the first 3 octets
 - The IP Address is Class C, then the IP can be 192.0.1.1 to 223.255.255.254
 - The IP Address cannot be x.x.x.0 or x.x.x.255

4.25.6.8

VPN Key Selection

This field selects the secure encryption key that will be used in the Authentication phase of the IKE (Internet Key Exchange) protocol while establishing a secure tunnel with the Virtual Private Network (VPN) Gateway.



It is not the key that will be used to secure the tunnel with the VPN gateway, as those keys are derived session keys which are part of the IKE standard. This selection applies to secure encryption for LTE Broadband data communications and only for the current Data Profile.



IMPORTANT: This key must be an Advanced Encryption Standard AES-256 key for this feature to work. Otherwise, an error message displays while attempting to establish the tunnel with the VPN Gateway. The VPN Key Selection value for the current Data Profile is directly chosen from the Secure Wide Window Encryption Key List.

Accessed Only: When Secure Operation is set to **Hardware**; the [Data Profile Type on page 982](#) field is set to **Broadband-Only**, **Conventional & Broadband**, or **Trunking & Broadband**; [VPN Secure/Clear Strapping on page 1009](#) is set to **Secure**; and the radio is model/option capable.

4.25.6.9

VPN Message Re-transmission Attempts

This field selects the maximum number of times that a Virtual Private Network (VPN) message is retransmitted in intervals before considering the remote end as unresponsive.



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

These retries continue until an acknowledgement confirming the successful receipt of transmission or until the selected number of attempts is reached. This selection applies to secure encryption for LTE Broadband data communications and only for the current Data Profile.

Accessed Only: When Secure Operation is set to **Hardware**; the [Data Profile Type on page 982](#) field is set to **Broadband-Only**, **Conventional & Broadband**, or **Trunking & Broadband**; [VPN Secure/Clear Strapping on page 1009](#) is set to **Secure**, and the radio is model/option capable.

Table 264: Range

Minimum	Maximum
2	10

4.25.6.10

VPN Message Re-transmission Time

This field selects the Virtual Private Network (VPN) message re-transmission attempt and retry interval.



See [VPN Message Re-transmission Attempts on page 1007](#).

WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to secure encryption for LTE Broadband data communications and only for the current Data Profile.

Accessed Only: When Secure Operation is set to **Hardware**; the [Data Profile Type on page 982](#) field is set to **Broadband-Only, Conventional & Broadband**, or **Trunking & Broadband**; [VPN Secure/Clear Strapping on page 1009](#) is set to **Secure**, and the radio is model/option capable.

Table 265: Range

Minimum	Maximum	Increments
10 (seconds)	60 (seconds)	1 (second)

4.25.6.11

VPN Re-Key attempts

This field selects the number of attempts to negotiate a Virtual Private Network (VPN) connection, or a replacement for one, before giving up.



See [VPN Rekey Margin on page 1009](#).

WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies to secure encryption for LTE Broadband data communications and only for the current Data Profile.

Accessed Only: When Secure Operation is set to **Hardware**; the [Data Profile Type on page 982](#) field is set to **Broadband-Only, Conventional & Broadband**, or **Trunking & Broadband**; [VPN Secure/Clear Strapping on page 1009](#) is set to **Secure**, and the radio is model/option capable.



NOTE: This feature is only available in Expert View (see Codeplug View)

Table 266: Range

Minimum	Maximum
1	10

4.25.6.12

VPN Rekey Margin

This field selects the time before the Virtual Private Network (VPN) connection or keying-channel terminates before attempting to renegotiate a connection/rekey.



See [VPN Re-Key attempts on page 1008](#).

This selection applies to secure encryption for LTE Broadband data communications and only for the current Data Profile. Time is in minutes.

Accessed Only: When Secure Operation is set to **Hardware**; the [Data Profile Type on page 982](#) field is set to **Broadband-Only, Conventional & Broadband**, or **Trunking & Broadband**; [VPN Secure/Clear Strapping on page 1009](#) is set to **Secure**; and the radio is model/option capable.



NOTE: This feature is only available in Expert View (see Codeplug View)

Table 267: Range

Minimum	Maximum	Increments
1 (minute)	9 (minutes)	1 (minute)

4.25.6.13

VPN Secure/Clear Strapping

This field selects secure encryption or no secure encryption for LTE Broadband data being transmitted and received over a Virtual Private Network (VPN).



NOTE: Following authentication using a secure key during the Internet Key Exchange (IKE) negotiations (see [VPN Key Selection on page 1007](#)), broadband data is secure-encrypted using Internet Protocol Security (IPsec) protocols and transmitted across the LTE Network through a secure VPN tunnel that connects the radio to a VPN gateway residing within the Customer Enterprise Network (CEN). This feature applies for the current Data Profile.

Accessed Only: When Secure Operation is set to **Hardware**; the [Data Profile Type on page 982](#) field is set to **Broadband-Only, Conventional & Broadband**, or **Trunking & Broadband**; and the radio is model/option capable.

The following selections are available:

Clear

Straps or commits the LTE Broadband data transmission to be normal (clear/not encrypted).

Secure

Straps or commits the LTE Broadband data transmissions to be encrypted.

4.25.7

Bypass List

This section allows you to view or modify the Internet Protocol version 4 (IPv4) source address, destination address, or both, of data packets that should bypass secure processing.

The Bypass List feature applies only to **Trunking**, **Broadband Only** and **Trunking & Broadband Data Profile Types** where profiles are defined to communicate radio data over Trunking channels, and/or communicate radio data over an LTE Broadband network.

Accessed Only: When the radio is model/option capable, and

- When the [Data Profile Type on page 982](#) is set to **Trunking**, and when the [Secure/Clear Strapping on page 1005](#) field is set to **Secure**, or
- When the Data Profile Type is set to **Broadband Only** or **Conventional & Broadband**, and when the [VPN Secure/Clear Strapping on page 1009](#) field is set to **Secure**, or
- When the Data Profile Type is set to **Trunking & Broadband**, and when the Secure/Clear Strapping field is set to **Secure** or the VPN Secure/Clear Strapping field is set to **Secure**.

4.25.7.1

IP Address

This field allows you to define Bypass Internet Protocol version 4 (IPv4) addresses for the current Data Profile.

Bypass IP Addresses are designed for data packets that are allowed to bypass secure processing. Multiple Bypass IP Address (record/rows) may be created for the Bypass list/table of each Data Profile.



NOTE:

When assigning an IP address, ensure that the IP address does not conflict with any other IP address or Subnet used by the radio. External devices such as Wi-Fi, External Data Modem, and Si500 can assign IP Addresses to some interface. If conflicting IP addresses or Subnets are in use, data features can not be guaranteed to work reliably.

169 . 254 . X . X . Subnet is reserved for Zone to Zone Cloning feature, so any IP address cannot start with 169 . 254 . X . X . otherwise this field will be invalid.

Accessed Only: When the radio is model/option capable. and

- The [Data Profile Type on page 982](#) is set to **Trunking** and the [Secure/Clear Strapping on page 1005](#) field is set to **Secure**, or
- The [Data Profile Type on page 982](#) is set to **Broadband Only** or **Conventional & Broadband** and the [VPN Secure/Clear Strapping on page 1009](#) field is set to **Secure**, or
- The [Data Profile Type on page 982](#) is set to **Trunking & Broadband** and the [Secure/Clear Strapping on page 1005](#) field is set to **Secure** or the [VPN Secure/Clear Strapping on page 1009](#) field is set to **Secure**

Selections are valid when the following is true:

- The four octets must be in the range: [1-223] . [0-255] . [0-255] . [0-255]
- This IP Address can be the Limited Broadcast Address: 255.255.255.255
- The IP Address must be a valid Class A, B, or C address:
 - The IP Address is considered Class A when:
 - Octet 1 is between 0-127; the Network ID is then this first octet
 - The IP Address can be 1.0.0.0 to 126.255.255.255
 - The IP Address cannot be 0 . XXX . XXX . XXX or 127 . XXX . XXX . XXX

- The IP Address is considered Class B when octet 1 is between 128-191; the Network ID is then the first 2 octets
 - The IP Address is Class B, then the IP Address can be 128.0.0.0 to 191.255.255.255
- The IP Address is considered Class C when octet 1 is between 192 -223; the Network ID is then the first 3 octets
 - The IP Address is Class C, then the IP Address can be 192.0.0.0 to 223.255.255.255

4.25.7.2

Address Type

This field selects the IP Bypass Address Type for the current Bypass IP address (record/row).

Bypass IP Addresses are designed for data packets that are allowed to bypass secure processing. Multiple Bypass IP Address (record/rows) may be created within the Bypass list/table of each Data Profile.

Accessed Only: When the radio is model/option capable and:

- The [Data Profile Type on page 982](#) is set to **Trunking** and the [Secure/Clear Strapping on page 1005](#) field is set to **Secure** or
- The [Data Profile Type on page 982](#) is set to **Broadband Only** or **Conventional & Broadband** and the [VPN Secure/Clear Strapping on page 1009](#) field is set to **Secure**, or
- The [Data Profile Type on page 982](#) is set to **Trunking & Broadband** and the [Secure/Clear Strapping on page 1005](#) field is set to **Secure** or the [VPN Secure/Clear Strapping on page 1009](#) field is set to **Secure**

The following selections are supported:

Source

Allows the current Bypass IP Address (record/row) to not require secure encryption when receiving data packets. Therefore, data packets may be received in an un-encrypted clear mode.

Destination

Allows the current Bypass IP Address (record/row) to not require secure encryption when transmitting data packets. Therefore, data packets may be transmitted in an un-encrypted clear mode.

Both

Allows the current Bypass IP Address (record/row) to not require secure encryption when both transmitting and receiving data packets. Therefore, data packets may be both transmitted and received in an un-encrypted clear mode.

4.25.8

Enhanced Data

This section allows you to view or modify Enhanced Data functionality.



NOTE: Enhanced Data provides a P25 Phase 2 TDMA (time-division multiple access) slotted data communications channel, which offers greater capacity and improved reliability compared to a Phase 1 FDMA (frequency-division multiple access) data channel.



IMPORTANT:

Enhanced Data procedures only apply to short inbound (radio-to-infrastructure) messages, such as GPS location updates, using reserved slots assigned by the Fixed Network Equipment (FNE). These settings apply only to individual Data Profiles used for Trunking communications.



IMPORTANT:

For Trunking communications, Data Profiles apply only for Trunking Systems that have their System Type field set to **ASTRO 25**.

Data Profiles are selected from the Trunking System's Data Profile Selection field.

4.25.8.1

Port List Selection

This field allows you to select the appropriate Enhanced Data Port List to be used with the current Data Profile.



NOTE: The names that appear for selection are defined in the Port List Alias field.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband** and the radio is model/option capable.

The following selections are supported:

- Disabled
- Browse (Available Enhanced Data Port Lists)

4.25.8.2

Allow Enhanced Data On Classic Data Channel

This field enables an inbound datagram destined for one of the programmed Enhanced Data Ports to be sent over a P25 Classic Data channel.

Occurs when an Enhanced Data channel is not available or when the radio is already on a P25 Classic Data channel. This feature applies to the current Data Profile.

When disabled, the datagram is discarded when:

- The radio is already on a P25 Classic Data channel, and the inbound Enhanced Data datagram is forced over an Enhanced Data Channel, or
- An Enhanced Data channel is not available

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**, the [Port List Selection on page 1012](#) is not **Disabled**, and the radio is model/option capable.

4.25.8.3

Enhanced Data Queue Dwell Timer

This field selects the amount of time an Enhanced Data datagram is allowed to wait in the radio's queue without being transmitted before the datagram is purged from the queue.



NOTE: When data comes from an internal application, or is sent from a Mobile Computer (MC) to the radio, the radio sometimes receives the data faster than it can send it. The data must then sometimes wait in the radio's queue. This selection applies for the current Data Profile. Time is in seconds.

Accessed Only: When the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**, the [Port List Selection on page 1012](#) is not **Disabled**, and the radio is model/option capable.

Table 268: Range

Minimum	Maximum	Increments
5 seconds	120 seconds	1 second

4.25.9

ATAK Data Enable/Disable

This field enables or disables ATAK Data from the ATAK application on the radio.

4.26

Enhanced Data Port List

The **Enhanced Data Port List** allows you to view or define lists of UDP (User Datagram Protocol) destination ports for which Enhanced Data transmission is allowed. Up to twenty Enhanced Data Port Lists are possible.



NOTE: Once defined, an Enhanced Data Port List is then selectable on a per Data Profile basis from the Port List Selection field.

4.26.1

Port List Alias

This field allows you to define recognizable names for the current Enhanced Data Port List.

Once defined, an Enhanced Data Port List is then selectable on a per [Data Profiles on page 980](#) basis from the [Port List Selection on page 1012](#) field.

Accessed Only: When the radio is model/option capable.



NOTE:

Examples: GPS 5, Port List 1, Enh Data #14

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.26.2

Port Number

This field selects a UDP (User Datagram Protocol) destination port number for a port associated with sending Enhanced Data for the current record/row of the current Enhanced Data Port List.

Once defined, an Enhanced Data Port List is then selectable on a per [Data Profiles on page 980](#) basis from the [Port List Selection on page 1012](#) field.



WARNING:

This selection is only valid:

When the value is unique for each Enhanced Data Port List record/row, and

When it is not equal to the value of the [Authentication UDP Port on page 970](#), [Subscriber OTAR Port on page 911](#), or [KMF UDP Port on page 910](#), and

When it is not equal to the value of a Port used by any other Service: **4005** (PN Server (ARS)), **4007** (Text Messaging Service), **4000** (UDP Loopback Port), **64414** (KMF Server (OTAR)), **162** (SNMP (Simple Network Management Protocol) Agent), **49223** (User Authentication), and **49165** (Radio Authentication).

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Table 269: Range

Minimum	Maximum	Increments
1	65535	1

4.27

Phone Wide

This section allows you to view or define the radio Phone Mode or Phone System connectivity parameters.

Phone Mode is possible on both Conventional and Trunking communications channels.



NOTE:

For Conventional Personalities, various Phones features further define phone system and phone mode functionality.

For Trunking Personalities, the Phone Operation field further defines phone mode operation.

You can initiate Phone Mode with a Call Response or Phone button-press or Phone menu-selection.

4.27.1

General

This section allows you to view or define basic Phone Mode settings relating to phone number display format (on a radio-wide basis) and manual dialing (for Conventional communications only).



NOTE: You can initiate Phone Mode with a Call Response or Phone button-press or Phone menu-selection.

4.27.1.1

Display Format

This field selects the format for displaying telephone numbers.

This feature is especially useful when the length of the number exceeds the maximum characters for the radio's display. This feature applies while operating in phone mode.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

None

No formatting is applied to the Phone numbers.

USA

Phone numbers will be assumed to have area code/number.

4.27.1.2

Manual Access Live Dialing

This field enables manual entry of phone system access digits and live transmission of DTMF keypad digits (the phone number) when pressed.

This feature applies when accessing phone mode and only for Conventional communications. You can initiate Phone mode with a Call Response or Phone button-press or Phone menu-selection.



WARNING: This feature functions only when a Conventional Personality's Phone Operation field is set to **Unlimited**.



IMPORTANT:

Once Manual Access Live Dialing is enabled, the Phone Operation field can only be set to **None** or **Unlimited** for all Conventional Personalities.

In Trunking communications mode, phone system access is automatic.

Accessed Only: When the radio is model/option capable.

4.27.1.3

Phone Dialing

This field selects the method used by the radio, upon entering phone mode, to access a phone system (for Conventional communications) and the method used to transmit the phone number digits (for Conventional and Trunking communications).

You can initiate Phone Mode with a Call Response or Phone button-press or Phone menu-selection.

Accessed Only: When the radio is model/option capable.

The following selections are supported:



NOTE: ASTRO 25 Trunking communications will always use Delayed Buffered mode regardless of this setting.

Delayed Buffered

To enter Phone Mode in Trunking mode, you must key in the individual phone system access number digits and the phone number digits from the keypad. Once the radio's PTT button is pressed, the Phone System access number digits along with the phone number digits are transmitted. To enter Phone Mode in Conventional mode, only the access number digits are sent in the first PTT press; once Phone System access is gained, you must press PTT a second time in order for the entered phone number digits to be sent.

Immediate Buffered

When entering Phone Mode the radio automatically connects to the Phone System (for Conventional mode). You can enter the phone number from the keypad. Once the PTT button is pressed the DTMF digits are then transmitted.

Immediate Live

When entering Phone Mode the radio automatically connects to the Phone System (for Conventional mode). The phone number digits are automatically transmitted as the DTMF keypad digits are pressed.

4.27.1.4

ASTRO 25 Phone Overdial Type

This field selects the method used by the radio once a phone call is in progress to send digits on the voice channel, such as when you dials an extension.

This feature applies while operating in phone mode for Trunking communications.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Buffered

Allows you to enter the entire number and then press the PTT Button to transmit the number.

Live

Causes the radio to transmit each number as it is entered on the keypad.

4.27.2

DTMF Timing

This section allows you to view or define radio-wide settings relating to automatic and manual phone system access and telephone interconnect dialing functionality, while operating in phone mode.



NOTE:

For [Conventional Personality on page 1091](#), DTMF Timings are selected from the DTMF Timing Select field.

For [ASTRO 25 Trunking System](#), DTMF Timings are selected from the DTMF Timing Select field.

You can initiate Phone Mode with a Call Response or Phone button-press or Phone menu-selection.

4.27.2.1

DTMF Pause Time

This field selects the amount of time that the radio waits during a sometimes-needed DTMF digit dialing pause.

This allows the radio to wait just after phone system access (for a dial tone), and prior to the radio sending pre-programmed speed dial phone number digits, or when automatically dialing a phone number with an extension number through a phone switchboard. This feature applies while operating in phone mode for Conventional communications. Time is in milliseconds (ms).



NOTE: This pause is inserted into a Phone Numbers page, Number field as a **P** character.

Accessed Only: When the radio is model/option capable.

Table 270: Range

Minimum	Maximum	Increments
500 (ms)	4000 (ms)	500 (ms)

4.27.2.2

Initial Delay

This field selects the amount of time that carrier is transmitted prior to a DTMF digit(s) being transmitted.

This allows the receiving phone system to stabilize prior to receiving DTMF data. This selection applies for the current DTMF Timings (record/row). DTMF Timings are then selected for use from the DTMF Timing Select fields. Time is in milliseconds (ms).

Accessed Only: When the radio is model/option capable.

Table 271: Range

Minimum	Maximum	Increments
25 (ms)	6375 (ms)	25 (ms)

4.27.2.3

DTMF Digit Hang Time

This field selects the amount of time when you manually dials a phone number, in which the radio continues to transmit carrier once a DTMF digit has been transmitted.

If a DTMF keypad key-press is not made within this timed period, carrier drops and you must redial. This feature applies while operating in phone mode for Conventional communications.

Accessed Only: When the radio is model/option capable.

Table 272: Range

Minimum	Maximum	Increments
25 (ms)	6375 (ms)	25 (ms)

4.27.2.4

Digit Duration

This field selects the amount of time that a DTMF digit is transmitted regardless of how long you press a keypad key.

The digit duration also applies to DTMF digits that are Buffer dialed (see Phone Dialing). This selection applies for the current DTMF Timings (record/row). DTMF Timings are then selected for use from the DTMF Timing Select fields. Time is in milliseconds (ms).

Accessed Only: When the radio is model/option capable.

Table 273: Range

Minimum	Maximum	Increments
25 (ms)	6375 (ms)	25 (ms)

4.27.2.5

DTMF Timing Name

This field allows you to define recognizable names for the current DTMF Timings (record/row).

DTMF Timings are then selected for use from the DTMF Timing Select fields.

Accessed Only: When the radio is model/option capable.



NOTE:

Examples: EMT-001, #500, Electric1, #A5.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.27.2.6

Interdigit Delay

This field selects the amount of time between DTMF digit transmission in a DTMF digit transmission sequence or speed dial.

This interdigit duration also applies to DTMF digits that are manually dialed (see Phone Dialing). This selection applies for the current DTMF Timings (record/row). DTMF Timings are then selected for use from the DTMF Timing Select fields. Time is in milliseconds (ms).

Accessed Only: When the radio is model/option capable.

Table 274: Range

Minimum	Maximum	Increments
25 (ms)	6375 (ms)	25 (ms)

4.27.3

DTMF Codes (Access/Deaccess)

This section allows you to view or define DTMF Access and Deaccess Codes in paired code sets. Access and Deaccess Codes facilitate radio use of a Phone System for the purpose of making telephone calls in phone mode.

Access and Deaccess selections apply only to Conventional communications.



NOTE:

A Code set is selected for use by individual [Conventional Personality on page 1091](#) with the Auto Access Code Select field.

You can initiate Phone Mode with a Call Response or Phone button-press or Phone menu-selection.

4.27.3.1

DTMF Codes Name

This field allows you to define recognizable names for the current Access and Deaccess DTMF code set (record/row).

A DTMF code set can then be selected for use with individual Conventional Personalities from the Auto Access Code Select field.

Accessed Only: When the radio is model/option capable.



NOTE:

Examples: DTMFCODE1, Electric1, #510.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.27.3.2

Access Code

This field allows you to define the DTMF code that facilitates radio access to a phone system for the purpose of making telephone calls in phone mode.

A DTMF code set can then be selected for use with individual Conventional Personalities from the Auto Access Code Select field. This selection applies for the current DTMF code set (record/row) while operating in Conventional mode.

Accessed Only: When the radio is model/option capable.

4.27.3.3

Deaccess Code

This field allows you to define the DTMF code that facilitates radio disconnect from a phone system following completion of a phone call in phone mode.

A DTMF code set can then be selected for use with individual Conventional Personalities from the Auto Access Code Select field. This selection applies for the current DTMF code set (record/row) while operating in conventional mode.

Accessed Only: When the radio is model/option capable.

4.28

DVRS Wide

This section allows you to view or define Digital Vehicular Repeater System (DVRS) functionality that applies to all Mobile Subscriber Units (MSUs) on a radio-wide basis.



NOTE:

DVRS functionality is then further defined in the [DVRS Profiles on page 1021](#).

DVRS Profiles are selected from the Trunking Personality's [DVRS Profile on page 1246](#) Selection field, or from the Conventional Personality's [DVRS Profile on page 1091](#) Selection field.

4.28.1

General

This section allows you to view or define basic DVRS Mobile Subscriber Unit (MSU) functionality.



NOTE:

DVRS functionality is then further defined in the [DVRS Profiles on page 1021](#).

DVRS Profiles are selected from the Trunking Personality's [DVRS Profile on page 1246](#) Selection field, or from the Conventional Personality's [DVRS Profile on page 1091](#) Selection field.

4.28.1.1

DVRS Hardware Enable

This field enables a Mobile Subscriber Unit (MSU) to operate as part of a DVRS (Digital Vehicular Repeater System).



WARNING: The DVRS Hardware Enable is invalid when:

- The CPS version is lower than 23.00.00 and when the **RF Modem** is enabled.
- When DVRS Hardware Enable field is set to **Enabled**.

4.28.1.2

VIP Control of DVRS

This field selects the physical setup for the DEK or Radio VIP Inputs relating to Digital Vehicular Repeater System (DVRS) activation.



IMPORTANT: The DVRS Activation selection must also be made in the appropriate DEK or Radio VIP Input field. This selection applies in a DVRS deployment.

Accessed Only: When the DVRS Hardware Enable field is "Enabled" and the radio is a model/option capable.

The following selections are supported:

Active Closed

The Digital Vehicular Repeater (DVR) is activated when the corresponding DEK/Radio VIP Input switch is closed, and de-activated when the VIP switch is open.

Active Open

The Digital Vehicular Repeater (DVR) is activated when the corresponding DEK/Radio VIP Input switch is open, and de-activated when the VIP switch is closed.

4.28.1.3

In Car Monitor

This field selects the DVRS method that your Mobile Subscriber Unit (MSU) uses to switch between two **In Car Monitor** (ICM) modes (monitoring of voice traffic to and from the Fixed Network Equipment (FNE) and/or other PSUs).



The **ICM All** mode allows your MSU to monitor all Portable Subscriber Unit (PSU) voice group calls. The "ICM Selected" mode allows your MSU to only monitor PSU group calls where the MSU and PSU Talkgroups match. This selection applies to DVRS Profiles in a DVRS deployment.

NOTE: ICM operation can then be allowed or blocked on specific Personalities or channels with the ICM Allowed selection.

Accessed Only: When the DVRS Hardware Enable field is **Enabled** and the radio is a model/option capable.

The following selections are supported:

HUB Controlled

The HUB (Hang-up Box) controls the toggling of the ICM modes.

- When the HUB is on-hook, the **ICM Selected** applies where the MSU speaker unmutes to PSU group audio only when the Talkgroup selected on the PSU matches the Talkgroup selected on the MSU.
- When the HUB is off-hook, **ICM All** applies, where the MSU speaker unmutes to PSU group audio regardless of the PSU's Talkgroup.

IMPORTANT: The HUB is multifunctional, and in addition to controlling ICM, may also control HUB Defeats PL, HUB Suspends Scan, and so on, if enabled.

ICM Button/Menu Controlled

The In Car Monitor button selection and/or In Car Monitor menu selection controls the toggling of the ICM modes (All or Selected). If no button or menu selection is defined, the radio's default will be **ICM Selected**.

NOTE: Upon ICM mode change, the new ICM state momentarily appears on the MSU's display.

4.29

DVRS Profiles

The **DVRS Profiles** allows you to define individual DVRS (Digital Vehicular Repeater System) profiles for Conventional or Trunking Personalities.



NOTE:

DVRS Wide Features and Selections apply to all DVRS Profiles.

DVRS Profiles are selected from the Trunking Personality's DVRS Profile field, or from the Conventional Personality's DVRS Profile field.

4.29.1

General

This section allows you to define individual Digital Vehicular Repeater System (DVRS) profiles for Conventional or Trunking Personalities.



NOTE:

DVRS Wide Features and Selections apply to all DVRS Profiles.

DVRS Profiles are selected from the Trunking Personality's DVRS Profile field, or from the Conventional Personality's DVRS Profile field.

4.29.1.1

DVRS Profile Name

This field allows you to create recognizable names for the current DVRS Profile.



DVRS Profiles are selected from the Trunking Personality's DVRS Profile Selection field or from the Conventional Personality's DVRS Profile Selection field.

The following selections are supported:

Examples: EMT-001, #500, Electric1, #A5.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.29.1.2

MSU System PTT in Local Mode

This field when enabled, causes the Mobile Subscriber Unit (MSU), while in "Local" DVRS mode, to route MSU-initiated dispatch calls to the Fixed Network Equipment (FNE).



In other words, the MSU behaves as though it is operating in "System" mode for MSU-initiated calls. This selection applies only for the current DVRS Profile.

When disabled, the MSU follows the normal DVRS rules. More specifically, when the DVRS is "Off", or in "System" mode, MSU-initiated calls are directed to the FNE system, and when the DVRS is in "Local" mode, all audio is repeated only locally to other radios.

WARNING: This selection is only valid when the Outbound System Repeat in Local Mode field is enabled.

Accessed Only: When the [DVRS Hardware Enable on page 1019](#) field is **Enabled** and the radio is model/option capable.

4.29.1.3

DVRS Remote Activation

This field enables a Call Alert from the Fixed Network Equipment (FNE) addressed to the Mobile Subscriber Unit's (MSU) Radio ID that instructs the Digital Vehicular Repeater (DVR) to change operational modes.



The DVRS operational modes include **System**, **Local**, and **Off**. Each consecutive Call Alert received changes the DVRS mode from **System**, to **Local**, to **Off** and then back to **System** again. This selection applies only for the current DVRS Profile.

Accessed Only: When the [DVRS Hardware Enable on page 1019](#) field is **Enabled** and when the radio is model/option capable.

The following selections are supported:

Disabled

Call Alerts from the FNE addressed to the MSU's Radio ID are handled in the same way that a regular Call Alert is handled.

Via Call Alert

Call Alerts from the FNE addressed to the MSU's Radio ID cause the Digital Vehicular Repeater (DVR) to cycle through the DVRS operational Modes: **System**, **Local**, and **Off**.

4.29.1.4

Local Tx Fallback

This field enabling this causes a Mobile Subscriber Unit (MSU) operating in DVRS "System" mode to revert to "Local" mode for MSU-initiated calls in the event that communication with the Fixed Network Equipment (FNE) fails.



FNE communications failure includes: Trunking imbalanced coverage, out-of-range, FNE deny, Conventional receive-only, and Trunking/Conventional Transmit Inhibit. This feature ensures that communication between the DVRS and radios using the System will continue uninterrupted operation, without the need to manually switch the DVRS to "Local Mode". The transition from "System" to "Local" mode is automatic and temporary; upon completion of the call, the MSU immediately reverts back to "System" mode. This selection applies only for the current DVRS Profile.

When disabled, upon an MSU-initiated call, if the MSU fails to access the FNE, the DVRS will fail your PTT attempt.



WARNING: This selection is only valid when the MSU System PTT in Local Mode field is disabled.

Accessed Only: When the [DVRS Hardware Enable on page 1019](#) field is **Enabled** and the radio is model/option capable.

4.29.1.5

Generate Status on DVRS Mode Change

This field enables a Status Update to be sent to the Fixed Network Equipment (FNE) whenever the Digital Vehicular Repeater System (DVRS) operational mode changes.



The DVRS modes include **System**, **Local**, and **Off**. This selection applies only for the current DVRS Profile.



NOTE: The mapping of the Status Updates is as follows:

- "Status 1" indicates the "DVR (Digital Vehicular Repeater) is in Off or Disabled Mode"
- "Status 2" indicates the "DVR is in Local Mode"
- "Status 3" indicates the "DVR is in System Mode".

Accessed Only: When the [DVRS Hardware Enable on page 1019](#) field is **Enabled** and the radio is model/option capable.

4.29.1.6

Proxy Time Out Timer

This field selects the amount of time that the Mobile Subscriber Unit (MSU) is able to transmit a "proxied" audio call, in other words, group voice audio from a Portable Subscriber Unit (with the Digital Vehicular Repeater) to the Fixed Network Equipment system.



This selection applies only for the current DVRS Profile. Time is in seconds.

Accessed Only: When the [DVRS Hardware Enable on page 1019](#) field is **Enabled** and the radio is model/option capable.

The following selections are supported:

Timed Selections Include:

15 seconds - 465 seconds (In Increments = 15 seconds)

Infinite:

No timer used; therefore an infinite talk time

4.29.1.7

Generate Status on DVRS Mode Change Holdoff

This field selects how long the Mobile Subscriber Unit (MSU) in a Digital Vehicular Repeater System (DVRS) configuration will wait before sending a Status Update to the Fixed Network Equipment (FNE).



WARNING: The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This selection applies only for the current DVRS Profile.

Accessed Only: When the [DVRS Hardware Enable on page 1019](#) field is **Enabled**, and the [Generate Status on DVRS Mode Change on page 1023](#) field is **Enabled**, and the radio is model/option capable.

Table 275: Range

Minimum	Maximum	Increments
2 (seconds)	60 (seconds)	1 second

4.29.1.8

Proxy Limited Patience

This field selects the amount of time that the Mobile Subscriber Unit (MSU) waits for a busy Conventional channel to become available for a Portable Subscriber Unit (Proxy) transmission request before failing the transmission.



This selection applies only for the current DVRS Profile. Time is in seconds.

Accessed Only: When the [DVRS Hardware Enable on page 1019](#) field is **Enabled** and the radio is model/option capable.

Table 276: Range

Minimum	Maximum	Increments
1 second	60 seconds	1 second

4.29.1.9

ICM Allowed

This field enables **In Car Monitoring**, where the Mobile Subscriber Unit (MSU) speaker unmutes to Portable Subscriber Unit (PSU) group audio.



This selection applies only for the current DVRS Profile.



NOTE: When enabled, unmuting to PSU audio on Talkgroups not matching the MSU's active Talkgroup is controlled with the DVRS Wide, In Car Monitor selection.

Accessed Only: When the [DVRS Hardware Enable on page 1019](#) field is **Enabled** and the radio is model/option capable.

4.29.1.10

Proxy RFSS Response Time

This field selects the amount of time allowed for the Mobile Subscriber Unit (MSU) to stay on the control channel in order to proxy a system response for a given signaling request from a Portable Subscriber Unit (PSU).



This selection applies only for the current DVRS Profile. Time is in milliseconds (ms).

Accessed Only: When the [DVRS Hardware Enable on page 1019](#) field is **Enabled** and the radio is model/option capable.

Table 277: Range

Minimum	Maximum	Increments
0 (ms)	6375 (ms)	25 (ms)

4.29.1.11

Outbound System Repeat in Local Mode

This field causes Fixed Network Equipment (FNE) initiated (outbound) dispatch calls to be repeated to the Portable Subscriber Units (PSUs) when the Digital Vehicular Repeater System (DVRS) is in "Local" mode.



This selection applies only for the current DVRS Profile.

Accessed Only: When the [DVRS Hardware Enable on page 1019](#) field is **Enabled** and the radio is model/option capable.

4.29.1.12

Suspend Scan on DVRS Active

This field causes Scan Mode to be disabled on a DVRS Profile wide basis whenever the DVRS is operating "Local" or "System" mode.



This selection applies only for the current DVRS Profile.

Accessed Only: When the [DVRS Hardware Enable on page 1019](#) field is **Enabled** and the radio is model/option capable.

4.29.1.13

Channel Only Display

If this field is enabled, the mobile radio displays the channel name only and suppresses the zone name.

When a mobile radio connects to a Digital Vehicular Repeater System (DVRS), the display of the radio alters. The first line of the display is reserved for showing the status of the DVRS. The zone name that is normally

shown in the first line of the display now appears in the second line on the display. The display of the zone name alternates with the channel name, unless this field is enabled.

4.29.1.14

Generate Status Alternate Mode

This field allows you to generate status on DVRS Mode Change feature using the legacy mode. Status Ergonomics are not shown on the MSU display. Motorola recommends that this mode not be used in combination with the **User Selectable Status**.

4.30

Conventional Wide

This section allows you to view or define functionality applying on a radio-wide basis to all Conventional Personalities.

This functionality does not apply while operating in Trunking communications mode.

4.30.1

General

This section allows you to view or define basic radio-wide functionality applying only to the Conventional communications mode.

4.30.1.1

Monitor Type

This field selects how the radio unmutes when the Monitor button is pressed. Silent Monitor, also called PL Defeat, allows you to monitor the channel before transmitting.



This selection applies for Conventional communications.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Silent

Disables PL or DPL

Open Squelch

Disables squelch which unmutes the radio speaker to any carrier signal currently on the channel regardless of signal strength. If no carrier signal is present, then the radio unmutes to noise.

4.30.1.2

Direct Frequency Enable

This field allows the Direct/Talkaround Direct Talkaround parameters to be individually defined for all Frequency Options profile.

When disabled, all Direct/Talkaround parameters revert to the settings of the Rx parameter fields for Direct/Talkaround functionality. This feature applies on a radio-wide basis only while operating in Conventional communications mode.



NOTE:

The Conventional Personality Direct/Talkaround field toggles Direct/Talkaround mode on or off on a per Conventional Personality Frequency Options basis.

You can select Direct/Talkaround with the Direct/Talkaround button-press, the Talkaround /Direct switch-selection, or the Direct/Talkaround menu-selection.

This field is not applicable to cloneable personalities.

4.30.1.3

HUB Defeats PL

This field enables the radio to unmute to all carrier squelch activity on a Conventional communications channel when the microphone is off the hook.



This is true even when the selected radio channel's Unmute/Mute rule requires Private Line (PL). This allows for monitoring of a Conventional channel to prevent transmitting during another conversation.



NOTE: This same functionality is also known as "Monitor" and you can also initiate by Monitor button-press or Monitor menu-selection.

Accessed Only: When the radio is model/option capable.

4.30.1.4

Squelch Per Personality

This field enables the radio's squelch setting to be defined on a per Conventional Personality basis.



Once this field is enabled, the Squelch (Fine Tune) may then be defined for each personality. This feature applies on a radio-wide basis only while operating in Conventional communications mode.

Accessed Only: When the radio is model/option capable.

4.30.1.5

Latch Enable Tone

This field causes the radio to emit an alert tone each time the "Monitor" feature is latched (see the Monitor Type feature).



Pressing the Monitor button for the Latch Enable Time latches the Monitor feature; this alert tone indicates that latching has occurred. Once "Monitor" is latched, pressing the Monitor button again cancels the latched mode. This feature also applies for Conventional communications.

Accessed Only: When the radio is model/option capable.

4.30.1.6

Latch Enable Time

This field selects the amount of time that you must press the Monitor button in order for the **Monitor** feature to remain continuously latched.



When this time threshold is reached, you may release the Monitor button and the "Monitor" mode remains active. If this time threshold is not reached, then releasing the Monitor button, ends the Monitor mode (latching does not occur) and the radio returns to normal operation. Once "Monitor" is latched, pressing the Monitor button again cancels the latched mode. This feature also applies for Conventional communications.

See the [Monitor Type on page 1026](#) selection for further reference.

Accessed Only: When the radio is model/option capable.



NOTE: When set to Disabled, there is no timer - 0 (zero seconds). "Monitor" latches immediately with a Monitor button-press.

Table 278: Range

Minimum	Maximum	Increments
0.5 sec	6 sec	0.5 sec

4.30.1.7

MPL Recall Mode

This field selects whether your most-recently selected MPL Configuration List applies on a per Conventional analog channel basis, or applies to all Conventional channels.

You can select MPL Lists with the Multiple Private Line button-press or the Multiple Private Line menu-selection.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Per MPL List

Your most recent MPL List selection applies to all of the radio's Conventional analog channels.



IMPORTANT: When the channel is changed on the radio, the momentary display of the [MPL Alias on page 1037](#) is disabled.

Per Channel

Your most recent MPL List selection applies to the radio's current Conventional analog channel only; therefore it is possible for different MPL List selections to apply to different channels.



IMPORTANT: When the channel is changed on the radio, the momentary display of the MPL Alias is enabled.

4.30.2

Features

This section allows you to view or modify functionality that can apply to all Conventional Personalities.

4.30.2.1

Smart PTT Quick Key Timer

This field selects the maximum amount of time between PTT button-presses that determines how fast you must press the PTT button to effect a Quick Key press.

A Quick Key (double press) of the PTT button can override the Smart PTT Type, **Tx Inhibit** on selection for a chosen Conventional Personality, thus allowing the radio to transmit when the current channel is busy (see also Smart PTT Retry Timer).

Table 279: Range

Minimum	Maximum	Increments
100 ms	5000 ms	100 ms

4.30.2.2

Smart PTT Retry Timer

This field selects the amount of time at which the radio samples for an empty channel (with no carrier).

This timer is used when one of the Smart PTT Type, **Tx Inhibit** on selections is chosen for a Conventional Personality. When the PTT button is pressed, and this sampling time determines that the current channel is busy, the radio automatically sounds a continuous alert tone until the PTT button is released.



IMPORTANT: The Quick Key Override field is an override feature that allows you to transmit regardless of the currently-selected Smart PTT Type, Tx "Inhibit on" rule. See also Smart PTT Quick Key Timer.

Table 280: Range

Minimum	Maximum	Increments
0 ms	5000 ms	25 ms

4.30.2.3

Soft ID Feature Enable

This field enables the Soft ID to be transmitted with each PTT button-press and for other features.

The Soft ID is programmed in the Radio Wide Soft ID/Username field. When this feature is enabled, the Information (INFO) menu-item or Information (Info) button-press, also allows you to edit the radio's Soft ID. This feature applies for all ASTRO - Conventional Systems.

Accessed Only: When the radio is model/option capable.

4.30.2.4

Status Number of Attempts

This field selects the maximum number of times that the radio attempts to send an Status.

The radio continues these retries until it receives an acknowledgement confirming the successful receipt of the Status transmission, or until the selected number of Status attempts is reached. See also Status Auto Exit. This selection applies for all Conventional Systems.

Table 281: Range

Minimum	Maximum
1 attempt	14 attempts

4.30.2.5

ASTRO OTAC

The **ASTRO OTAC** section of the Conventional Wide set allows the user to view or modify functionality that can apply to all ASTRO type Conventional Systems and therefore to all [Conventional Personality on page 1091](#)s having ASTRO System functionality.

Accessed Only: When the radio is model/option capable.

4.30.2.6

OTACS Feature

Enables the (OTACS) Over-The-Air-Channel-Steering feature. This selection applies for all ASTRO type Conventional Systems.

Accessed Only: When the radio is model/option capable.

4.30.2.7

OTACR Feature

Enables the (OTACR) Over-The-Air-Channel-Reassignment feature. This selection applies for all ASTRO type Conventional Systems.

Accessed Only: When the radio is model/option capable.

4.30.2.8

Radio Inhibit Revert Enable

This field enables the designated Trunking system to inhibit the radio while in conventional operation. The radio temporarily powers up on the designated trunking channel to receive the inhibit status.

4.30.2.9

Radio Inhibit Revert Zone

This field selects the trunking zone that the radio will temporarily power up on in order to receive its inhibit status.

Dynamic zones and RSI zones are invalid.

When **Radio Inhibit Revert Enable** is enabled, a **Radio Inhibit Revert Zone** and **Radio Inhibit Revert Channel** must be selected.

4.30.2.10

Radio Inhibit Revert Channel

This field selects the trunking channel that the radio will temporarily power up on in order to receive its inhibit status.

Conventional channels are invalid.

When **Radio Inhibit Revert Enable** is enabled, a **Radio Inhibit Revert Zone** and **Radio Inhibit Revert Channel** must be selected.

4.30.3

ASTRO Data

This section allows you to view or modify functionality that can apply to all ASTRO type Conventional Systems and therefore to all Conventional Personalities having ASTRO System functionality.

 **NOTE:** For more details on data channel access operation, refer to the APCO 25 Common Air Interface Operational Description for Conventional communications channels.

Accessed Only: When the radio is model/option capable.

4.30.3.1

CAI Data Max Tx Attempts

This field selects the maximum number of times that the radio attempts to send a Common Air Interface (CAI) data packet transmission.

The radio continues these retries until it receives an acknowledgment confirming the successful receipt of transmission, or until the selected number of Tx Attempts is reached.

 **NOTE:** This selection applies for all ASTRO type Conventional Systems.

Table 282: Range

Minimum	Maximum	
2 attempts	10 attempts	

4.30.3.2

CAI Data Response Timer

This field selects the amount of time that the radio waits for an acknowledge of a successful Common Air Interface (CAI) transmission before re-sending another CAI data packet.

 **NOTE:** This selection applies for all ASTRO type Conventional Systems.

Table 283: Range

Minimum	Maximum	Increments
100 ms	5000 ms	100 ms

4.30.3.3

CAI Data Min Response Timer

This field selects the minimum amount of time that the radio waits for an acknowledgment of a successful Common Air Interface (CAI) to be sent across the channel.

This parameter should be slightly greater than the Data Throughout Delay from the RNC (Radio Network Controller) to the radio. This selection applies for all ASTRO type Conventional Systems.

 **IMPORTANT:** Do not attempt to change this setting without first verifying the particular throughout the system.

Table 284: Range

Minimum	Maximum	Increments
50 ms	2000 ms	50 ms

4.30.3.4

Max Packet Size

This field selects the maximum number of bytes that can be transported in a single Common Air Interface (CAI) data packet. This selection applies for all ASTRO type Conventional Systems.

Table 285: Range

Minimum	Maximum	Increments
16 bytes	512 bytes	16 bytes

4.30.3.5

Frame Sync Seek Period

This field selects the amount of time that the radio listens for a Frame Sync Sequence. A Frame Sync Sequence on the channel indicates that there is channel activity.

If a Frame Sync Sequence is not detected within this time, the radio assumes the channel is idle and then transmits the next Common Air Interface (CAI) packet queued for transmission. This selection applies for all ASTRO type Conventional Systems. Time is in milliseconds.



IMPORTANT: This value should be set to the maximum over-the-air Data Packet Duration. Example: For a maximum CAI packet size of 512 bytes, this value should be set to 750 ms. For proper operation on a channel with ASTRO voice present, due to the ASTRO voice frame size, this value should be set greater than 200 ms.

Table 286: Range

Minimum	Maximum	Increments
0 ms	5000 ms	50 ms

4.30.3.6

Tx Short Random Range

This field selects the maximum amount of time that the radio waits to transmit once the first qualified Frame Sync Sequence has been received indicating that the channel is clear.

The radio randomly checks channel access status based on this maximum wait time. This selection applies for all ASTRO type Conventional Systems. Time is in milliseconds.



IMPORTANT: Increasing this value reduces the potential of collision with other radios attempting to transmit data (seize the channel), but it also increases the channel access delay.

Table 287: Range

Minimum	Maximum	Increments
50 ms	500 ms	50 ms

4.30.3.7

Tx Long Random Range

This field selects the maximum amount of time the radio waits before rechecking a channel's status once a Busy Channel Status Symbol has been received.

Once a clear channel status has been received, the radio is then able to transmit the next Common Air Interface (CAI) packet queued for transmission. The radio randomly checks channel access status based on this maximum wait time. This selection applies for all ASTRO type Conventional Systems. Time is in milliseconds.

Table 288: Range

Minimum	Maximum	Increments
50 ms	5000 ms	50 ms

4.30.3.8

Tx Resp Random Range

This field selects the maximum amount of time the radio waits before rechecking a channel's status once a busy Channel Status Symbol has been received.

This selection applies only to Common Air Interface (CAI) acknowledgements. Once a clear channel status has been received, the radio is then able to transmit the next Common Air Interface (CAI) acknowledgment queued for transmission. The radio randomly checks channel access status based on this maximum wait time. This selection applies for all ASTRO type Conventional Systems. Time is in milliseconds.



IMPORTANT: Increasing this value reduces the potential of conflict with other radios attempting to transmit data (seize the channel), but it also increases the channel access delay.

Table 289: Range

Minimum	Maximum	Increments
50 ms	1000 ms	50 ms

4.30.3.9

Tx Limited Patience

This field selects the maximum amount of time that the radio attempts to transmit a Common Air Interface (CAI) data packet.

Once this time expires, the radio ceases to attempt transmissions. This selection applies for all ASTRO type Conventional Systems. Time is in seconds.

Accessed Only: When the radio is model/option capable.



NOTE: When set to **Infinite**, no timer is used, therefore there is no transmit time limit.

Table 290: Range

Minimum	Maximum	Increments
2 secs	255 secs	1 sec

4.30.3.10

ARP Cache Depth

This field selects how many entries are stored in the radio's Address Resolution Protocol (ARP) Table.

The radio's ARP Table is a memory cache that stores mappings between IP addresses and Individual IDs. The ARP Cache Depth allows the radio to be most efficient when its number equals the expected number of devices (with unique IP addresses) that the radio communicates with. This selection applies for all ASTRO type Conventional Systems.

Accessed Only: When the radio is model/option capable.

Table 291: Range

Minimum	Maximum
0	50



NOTE: Selecting a Cache Depth of "0" indicates that no IP Addresses can be cached; thus effectively disabling ARP caching.

4.30.3.11

ARP Cache Time

This field selects the amount of time that cache entries are stored in the ARP Cache Depth. If all communicating devices in a network have static/fixed IP addresses, then it is recommended to set this Cache Time to **Infinite** (an infinite cache time), this allows the ARP Cache entries to continually remained cached.

If the ARP Cache Time in not set to **Infinite**, then ARP Cache entries are purged when this timer expires. This selection applies for all ASTRO type Conventional Systems. Time is in hours.

Accessed Only: When the radio is model/option capable, and when the ARP Cache Depth field is not set to **0**.



NOTE: When set to Infinite, the ARP Cache entries remain cached indefinitely.

Table 292: Range

Minimum	Maximum	Increments
1 hour	24 hours	1 hour

4.30.3.12

Conventional Customer ID (hex)

This field selects a valid Advanced Conventional Key (ACK) "System ID" number (see System Key Report) which allows for Tactical Services Operation - Inhibit command.



An ACK's "System ID" number can only be selected when the ACK is currently loaded . ACKs are loaded through the USB port of the computer with the use of Key Devices inserted into a USB Port Key Device Reader. This selection applies radio wide for all ASTRO - Conventional Systems.



WARNING:

Once the Tactical Services Operation field is either **Decode** or **Decode and Encode**, and the Radio Uninhibit Decode Action is **Disabled**, this field must contain a valid ACK number.

4.30.4

ASTRO Group ID

This section allows you to view or modify functionality that can apply to all ASTRO type Conventional Systems and therefore to all Conventional Personalities having ASTRO System functionality.

Accessed Only: When the radio is model/option capable.

4.30.4.1

Group ID

This field selects (in decimal or Hex format) the Common Air Interface (CAI) Data Group ID used only when address decoding on data receives.

This Group ID number associates the radio with a specific data group for group addressing of data messages. When data is being transmitted by the radio, the Data Group ID is not used. This selection applies for the current Group ID (record/row) which applies for ASTRO type Conventional Systems.

4.31

MPL Configuration

The conventional **Multiple Private Line (MPL) Configuration** allows you to view or define up to sixteen sets of Private Line (PL) functionality.

User Selectable PL [MPL] can then be enabled on per frequency options profile basis. User Selectable PL allows you to use one of these predefined PL sets for transmitting and receiving Conventional communications; see also the MPL Recall Mode selections.



IMPORTANT:

When the Direct Frequency Enable field is enabled, and when operating in Direct/Talkaround mode, the radio uses the MPL Direct/Talkaround parameters of the currently-applicable MPL List.

When the Direct Frequency Enable field is disabled, the values of the MPL Rx parameter fields of the currently-applicable MPL List are used for Direct/Talkaround and normal Repeater functionality.



NOTE:

Choose the appropriate MPL Recall Mode selection.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.

4.31.1

General

This section allows you to view or define high-level functionality for all of the MPL (Multiple Private Line) Lists.



IMPORTANT: User Selectable PL [MPL] can be enabled on a per frequency options profile basis.



NOTE: The Multiple Private Line button-press or the Multiple Private Line menu-item selection allows you to select the desired PL settings/list.

4.31.1.1

MPL Select Mode

This field selects specific functionality for the radio's menu-item selections, specifically when navigating the MPL (Multiple Private Line) List within the radio's display.

This selected functionality applies only when you have entered into the MPL section of the radio's menu. The MPL section of the radio's menu structure is first accessed by a Multiple Private Line button-press or a Multiple Private Line menu-selection. This selection applies for all MPL Lists.



NOTE: MPL Lists are represented in the radio's display by the programmed MPL Alias.



WARNING: You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO** or **Mixed Mode**, and has its User Selectable PL [MPL] field enabled.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Dynamic

The MPL List selection/functionality is automatically updated (and active on the radio's current channel) as you scroll through the available MPL List selections.

Static

While you are scrolling through the radio's available MPL List selections, MPL functionality does not change until a new MPL List is manually selected.

4.31.1.2

Preset MPL Entry

This field selects the default MPL (Multiple Private Line) List to be used while operating on any analog Conventional Personality.

You may change to another MPL List with either an Multiple Private Line button-press or a Multiple Private Line menu-selection.



NOTE: MPL Lists are represented in the radio's display by the programmed MPL Alias.



WARNING: You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO**, and has its User Selectable PL [MPL] field enabled.

Accessed Only: When the radio is model/option capable.

4.31.2

MPL List

This section allows you to view or define up to sixteen individual sets of Private Line (PL) functionality.

User Selectable PL [MPL] can then be enabled on a per frequency options profile basis. User Selectable PL allows you to select one of these predefined PL sets for transmitting and receiving Conventional communications.



NOTE: Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed to allow you to select the desired PL settings/list.

4.31.2.1

MPL Alias

This field allows you to enter recognizable names of the current MPL (Multiple Private Line) List - (record/row). MPL Lists are represented in the radio's display by this MPL Alias.



WARNING: You can only access the MPL menu when you are operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO** and has its User Selectable PL [MPL] field enabled.

Accessed Only: When the radio is model/option capable.



NOTE:

Examples: MPL-005, MPL Entry 04, #510

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.31.2.2

Rx/TA Squelch Type

This field selects the type of Private Line (PL) or carrier squelch needed to receive a call while operating on the current MPL (Multiple Private Line) List - (record/row).



NOTE: The selected Unmute/Mute Type rule for the personality also determines if a call can be received.



WARNING:

You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO**, and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.



IMPORTANT:

When the Direct Frequency field is enabled, the MPL Direct/Talkaround can then be modified on a per MPL List basis. Once modified, the radio may then be transmitting and receiving on a different carrier frequency and or frequency parameters while operating in Direct/Talkaround mode.

When the Direct Frequency field is disabled, the settings for MPL Rx parameter fields are also used for Direct Talkaround functionality. Therefore when in Direct/Talkaround mode, the radio is transmitting and receiving on the same carrier frequency and frequency parameters.

Direct/Talkaround must be enabled on a frequency options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the Direct/Talkaround button-press, the Talkaround / Direct switch-selection, or the Direct/Talkaround menu-selection.

The following selections are supported:

- (CSQ) Carrier Squelch
- (PL)/Tone Private Line (TPL)
- (DPL) Digital Private Line

4.31.2.3

Rx/TA PL Frequency

This field selects a designated frequency used when receiving Private Line (PL) encoding for the current Multiple Private Line (MPL) List - (record/row).

This frequency directly correlates to the Rx/TA PL Code. Selecting a value for this field automatically selects an Rx/TA PL Code.

 **WARNING:** You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO**, and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.

 **IMPORTANT:** When the Direct Frequency field is enabled, the MPL Direct/Talkaround parameters can then be modified on a per MPL List basis. Once modified, the radio may then be transmitting and receiving on a different carrier frequency and or frequency parameters while operating in Direct/Talkaround mode.

When the Direct Frequency field is disabled, the settings for MPL Rx parameter fields are also used for Direct Talkaround functionality. Therefore when in Direct/Talkaround mode, the radio is transmitting and receiving on the same carrier frequency and frequency parameters.

Direct/Talkaround must be enabled on a frequency options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the Direct/Talkaround button-press, the Talkaround/Direct switch-selection, or the Direct/Talkaround menu-selection.

Accessed Only: When Rx/TA Squelch Type field is set to **PL**, and when the radio is model/option capable. The following selections are supported:

Table 293: TPL Squelch Frequencies & Codes

Freq (Hz) = Code	Freq (Hz) = Code	Freq (Hz) = Code
67.0 = XZ	131.8 = 3B	183.1 = 183.1
69.3 = WZ	134.2 = 134.2	183.5 = 183.5
71.9 = XA	136.5 = 4Z	186.2 = 7Z
74.4 = WA	138.9 = 138.9	189.5 = 189.5
77.0 = XB	141.3 = 4A	189.9 = 189.9
79.7 = WB	143.8 = 143.8	192.8 = 7A
82.5 = YZ	146.2 = 4B	196.6 = 196.6
85.4 = YA	148.8 = 148.8	198.2 = 198.2
88.5 = YB	150 = 150	199.5 = 199.5
91.5 = ZZ	151.4 = 5Z	203.5 = M1
94.8 = ZA	156.7 = 5A	206.5 = 8Z
97.4 = ZB	159.5 = 159.5	210.7 = M2
100.0 = 1Z	159.8 = 159.8	213.8 = 213.8
103.5 = 1A	162.2 = 5B	218.1 = M3
105.4 = 105.4	165.1 = 165.1	221.3 = 221.3
107.2 = 1B	165.5 = 165.5	225.7 = M4
109.1 = 109.1	167.9 = 6Z	229.1 = 9Z
110.9 = 2Z	170.9 = 170.9	233.6 = M5
114.8 = 2A	171.3 = 171.3	237.1 = 237.1

Freq (Hz) = Code	Freq (Hz) = Code	Freq (Hz) = Code
118.8 = 2B	173.8 = 6A	241.8 = M6
123.0 = 3Z	176.9 = 176.9	245.5 = 245.5
127.3 = 3A	177.3 = 177.3	250.3 = M7
129.6 = 129.6	179.9 = 6B	254.1 = 0Z

4.31.2.4

Rx/TA PL Code

This field selects the specific code accepted when receiving Private Line (PL) encoding while operating on the current Multiple Private Line (MPL) List - (record/row).

This code directly correlates to the Rx/TA PL Frequency. Selecting a value for this field automatically selects an Rx PL Frequency.



WARNING:

You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO**, and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.



IMPORTANT:

When the Direct Frequency field is enabled, the MPL Direct/Talkaround parameters can then be modified on a per MPL List basis. Once modified, the radio may then be transmitting and receiving on a different carrier frequency and or frequency parameters while operating in Direct/Talkaround mode.

When the Direct Frequency field is disabled, the settings for MPL Rx parameter fields are also used for Direct Talkaround functionality. Therefore when in Direct/Talkaround mode, the radio is transmitting and receiving on the same carrier frequency and frequency parameters.

Direct/Talkaround must be enabled on a frequency options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the Direct/Talkaround button-press, the Talkaround/Direct switch-selection, or the Direct/Talkaround menu-selection.

Accessed Only: When Rx/TA Squelch Type field is set to **PL**, and when the radio is model/option capable.

The following selections are supported:

Table 294: TPL Squelch Frequencies & Codes

Freq (Hz) = Code	Freq (Hz) = Code	Freq (Hz) = Code
67.0 = XZ	131.8 = 3B	183.1 = 183.1
69.3 = WZ	134.2 = 134.2	183.5 = 183.5
71.9 = XA	136.5 = 4Z	186.2 = 7Z
74.4 = WA	138.9 = 138.9	189.5 = 189.5
77.0 = XB	141.3 = 4A	189.9 = 189.9
79.7 = WB	143.8 = 143.8	192.8 = 7A
82.5 = YZ	146.2 = 4B	196.6 = 196.6
85.4 = YA	148.8 = 148.8	198.2 = 198.2
88.5 = YB	150 = 150	199.5 = 199.5

Freq (Hz) = Code	Freq (Hz) = Code	Freq (Hz) = Code
91.5 = ZZ	151.4 = 5Z	203.5 = M1
94.8 = ZA	156.7 = 5A	206.5 = 8Z
97.4 = ZB	159.5 = 159.5	210.7 = M2
100.0 = 1Z	159.8 = 159.8	213.8 = 213.8
103.5 = 1A	162.2 = 5B	218.1 = M3
105.4 = 105.4	165.1 = 165.1	221.3 = 221.3
107.2 = 1B	165.5 = 165.5	225.7 = M4
109.1 = 109.1	167.9 = 6Z	229.1 = 9Z
110.9 = 2Z	170.9 = 170.9	233.6 = M5
114.8 = 2A	171.3 = 171.3	237.1 = 237.1
118.8 = 2B	173.8 = 6A	241.8 = M6
123.0 = 3Z	176.9 = 176.9	245.5 = 245.5
127.3 = 3A	177.3 = 177.3	250.3 = M7
129.6 = 129.6	179.9 = 6B	254.1 = 0Z

4.31.2.5

Rx/TA DPL Code

This field selects the specific code accepted when receiving Digital Private Line (PL) encoding while operating on the current Multiple Private Line (MPL) List - (record/row).



WARNING:

You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO**, and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.



IMPORTANT:

When the Direct Frequency field is enabled, the MPL Direct/Talkaround parameters can then be modified on a per MPL List basis. Once modified, the radio may then be transmitting and receiving on a different carrier frequency and or frequency parameters while operating in Direct/Talkaround mode.

When the Direct Frequency field is disabled, the settings for MPL Rx parameter fields are also used for Direct Talkaround functionality. Therefore when in Direct/Talkaround mode, the radio is transmitting and receiving on the same carrier frequency and frequency parameters.

Direct/Talkaround must be enabled on a frequency options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the Direct/Talkaround button-press, the Talkaround/Direct switch-selection, or the Direct/Talkaround menu-selection.

Accessed Only: When Rx/TA Squelch Type field is set to **DPL**, and when the radio is model/option capable.

The following selections are supported:

Table 295: DPL Squelch Code

Code	Code	Code	Code
23	152	343	565

Code	Code	Code	Code
25	155	346	606
26	156	351	612
31	162	364	624
32	165	365	627
43	172	371	631
47	174	411	632
51	205	412	645*
54	223	413	654
65	226	423	662
71	243	431	664
72	244	432	703
73	245	445	712
74	251	464	723
114	261	465	731
115	263	466	732
116	265	503	734
125	271	506	743
131	306	516	754
132	311	525*	
134	315	532	
143	331	546	



NOTE: The codes marked with an asterisk are not part of the 83 standard EIA/TIA-603 codes.

4.31.2.6

Rx/TA DPL Invert

This field selects for Digital Private Line (DPL) signals to be inverted when they are received by the radio while operating on the current Multiple Private Line (MPL) List - (record/row). Inverted coding allows for more traffic/usage on frequencies.



WARNING:

DPL Invert must be set on both receiving and transmitting radios for communication to occur.

You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO**, and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.



IMPORTANT:

When the Direct Frequency field is enabled, the MPL Direct/Talkaround parameters can then be modified on a per MPL List basis. Once modified, the radio may then be transmitting and receiving on a different carrier frequency and or frequency parameters while operating in Direct/Talkaround mode.

You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO**, and has its User Selectable PL [MPL] field enabled.

Direct/Talkaround must be enabled on a frequency options profile in order to be available to you for a radio channel. Direct/Talkaround mode is selected by you with the Direct/Talkaround button-press, the Talkaround/Direct switch-selection, or the Direct/Talkaround menu selection.

Accessed Only: When Rx/TA Squelch Type is set to **DPL**, and when the radio is model/option capable.

4.31.2.7

Tx Squelch Type

This field selects the type of Private Line (PL) or Carrier Squelch that the radio transmits while operating on the current Multiple Private Line (MPL) List - (record/row).



WARNING:

You can only access the MPL menu when the radio is operating on a Conventional channel that has its Rx Voice/Signal Type field set to **Non-ASTRO** and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

- Disabled = Carrier Squelch
- (PL)/Tone Private Line (TPL)
- (DPL) Digital Private Line

4.31.2.8

Tx PL Frequency

This field selects a designated frequency used to transmit Private Line (PL) encoding while operating on the current Multiple Private Line (MPL) List - (record/row).

This frequency directly correlates to the Tx PL Code. Selecting a value for this field automatically selects a Tx PL Code.



WARNING:

You can only access the MPL menu when the radio is operating on a Conventional channel that has its Rx Voice/Signal Type field set to **Non-ASTRO** and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.

Accessed Only: When Tx Squelch Type is set to **PL**, and when the radio is model/option capable.

The following selections are supported:

Table 296: TPL Squelch Frequencies & Codes

Freq (Hz) = Code	Freq (Hz) = Code	Freq (Hz) = Code
67.0 = XZ	131.8 = 3B	183.1 = 183.1
69.3 = WZ	134.2 = 134.2	183.5 = 183.5
71.9 = XA	136.5 = 4Z	186.2 = 7Z
74.4 = WA	138.9 = 138.9	189.5 = 189.5
77.0 = XB	141.3 = 4A	189.9 = 189.9
79.7 = WB	143.8 = 143.8	192.8 = 7A
82.5 = YZ	146.2 = 4B	196.6 = 196.6
85.4 = YA	148.8 = 148.8	198.2 = 198.2
88.5 = YB	150 = 150	199.5 = 199.5
91.5 = ZZ	151.4 = 5Z	203.5 = M1
94.8 = ZA	156.7 = 5A	206.5 = 8Z
97.4 = ZB	159.5 = 159.5	210.7 = M2
100.0 = 1Z	159.8 = 159.8	213.8 = 213.8
103.5 = 1A	162.2 = 5B	218.1 = M3
105.4 = 105.4	165.1 = 165.1	221.3 = 221.3
107.2 = 1B	165.5 = 165.5	225.7 = M4
109.1 = 109.1	167.9 = 6Z	229.1 = 9Z
110.9 = 2Z	170.9 = 170.9	233.6 = M5
114.8 = 2A	171.3 = 171.3	237.1 = 237.1
118.8 = 2B	173.8 = 6A	241.8 = M6
123.0 = 3Z	176.9 = 176.9	245.5 = 245.5
127.3 = 3A	177.3 = 177.3	250.3 = M7
129.6 = 129.6	179.9 = 6B	254.1 = 0Z

4.31.2.9

Tx PL Code

This field selects the Private Line (PL) code that transmits while operating on the current Multiple Private Line (MPL) List - (record/row).

This code directly correlates to the Tx PL Frequency. Selecting a value for this field automatically selects a Tx PL Frequency.

 **WARNING:** You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO** and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.

Accessed Only: When Tx Squelch Type is set to **PL**, and when the radio is model/option capable.

The following selections are supported:

Table 297: TPL Squelch Frequencies & Codes

Freq (Hz) = Code	Freq (Hz) = Code	Freq (Hz) = Code
67.0 = XZ	131.8 = 3B	183.1 = 183.1
69.3 = WZ	134.2 = 134.2	183.5 = 183.5
71.9 = XA	136.5 = 4Z	186.2 = 7Z
74.4 = WA	138.9 = 138.9	189.5 = 189.5
77.0 = XB	141.3 = 4A	189.9 = 189.9
79.7 = WB	143.8 = 143.8	192.8 = 7A
82.5 = YZ	146.2 = 4B	196.6 = 196.6
85.4 = YA	148.8 = 148.8	198.2 = 198.2
88.5 = YB	150 = 150	199.5 = 199.5
91.5 = ZZ	151.4 = 5Z	203.5 = M1
94.8 = ZA	156.7 = 5A	206.5 = 8Z
97.4 = ZB	159.5 = 159.5	210.7 = M2
100.0 = 1Z	159.8 = 159.8	213.8 = 213.8
103.5 = 1A	162.2 = 5B	218.1 = M3
105.4 = 105.4	165.1 = 165.1	221.3 = 221.3
107.2 = 1B	165.5 = 165.5	225.7 = M4
109.1 = 109.1	167.9 = 6Z	229.1 = 9Z
110.9 = 2Z	170.9 = 170.9	233.6 = M5
114.8 = 2A	171.3 = 171.3	237.1 = 237.1
118.8 = 2B	173.8 = 6A	241.8 = M6
123.0 = 3Z	176.9 = 176.9	245.5 = 245.5
127.3 = 3A	177.3 = 177.3	250.3 = M7
129.6 = 129.6	179.9 = 6B	254.1 = 0Z

4.31.2.10

Tx DPL Code

This field selects the Digital Private Line (DPL) code that transmits while operating on the current Multiple Private Line (MPL) List - (record/row).



WARNING:

You can only access the MPL menu when the radio is operating on a Conventional channel that has its Rx Voice/Signal Type field set to **Non-ASTRO** and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.

Accessed Only: When Tx Squelch Type is set to **DPL**, and when the radio is model/option capable.

The following selections are supported:

Table 298: DPL Squelch Code

Code	Code	Code	Code
023	153	343	565
025	155	346	606
026	156	351	612
031	162	364	624
032	165	365	627
043	172	371	631
047	174	411	632
051	205	412	645*
054	223	413	654
065	226	423	662
071	243	431	664
072	244	432	703
073	245	445	712
074	251	464	723
114	261	465	731
115	263	466	732
116	265	503	734
125	271	506	743
131	306	516	754
132	311	525*	
134	315	532	
143	331	546	



NOTE: The codes marked with an asterisk are not part of the 83 standard EIA/TIA-603 codes.

4.31.2.11

Tx DPL Invert

This field selects for Digital Private Line (DPL) signals to be inverted before they are transmitted from the radio while operating on the current Multiple Private Line (MPL) List - (record/row).

Inverted coding allows for more traffic/usage on frequencies.



WARNING:

DPL Invert must be set on both receiving and transmitting radios for communication to occur.

You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO** and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.

Accessed Only: When Tx Squelch Type is set to **DPL**, and when the radio is model/option capable

4.31.2.12

Direct Squelch Type

This field selects the type of receive and transmit Private Line (PL) or Carrier Squelch that the radio uses when in Direct/Talkaround Mode for the current Multiple Private Line (MPL) List - (record/row).



WARNING:

You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO**, and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.



IMPORTANT:

When the Direct Frequency field is enabled, the MPL Direct/Talkaround parameters can then be modified on a per MPL List basis. Once modified, the radio may then be transmitting and receiving on a different carrier frequency and or frequency parameters while operating in Direct/Talkaround mode. See also MPL Recall Mode.

When the Direct Frequency field is disabled, the settings for the MPL Rx parameter fields are also used for Direct Talkaround functionality. Therefore when in Direct/Talkaround mode, the radio is transmitting and receiving on the same carrier frequency and frequency parameters. See also MPL Recall Mode.

Direct/Talkaround must be enabled on a frequency options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the Direct/Talkaround button-press, the Talkaround/Direct switch-selection, or the Direct/Talkaround menu-selection.

Accessed Only: When the Direct Frequency field is **Enabled**, and when the radio is model/option capable.

The following selections are supported:

- Disabled = Carrier Squelch
- (PL)/Tone Private Line (TPL)
- (DPL) Digital Private Line

4.31.2.13

Direct PL Frequency

This field selects a designated frequency used to receive and transmit Private Line (PL) while operating in Direct/Talkaround Mode for the current Multiple Private Line (MPL) List - (record/row).

This code directly correlates to the Direct PL Code. Selecting a value for this field automatically selects a Direct PL Code.



WARNING:

You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO**, and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.



IMPORTANT:

When the Direct Frequency field is enabled, the MPL Direct/Talkaround parameters can then be modified on a per MPL List basis. Once modified, the radio may then be transmitting and receiving on a different carrier frequency and or frequency parameters while operating in Direct/Talkaround mode. See also MPL Recall Mode.

When the Direct Frequency field is disabled, the settings for the MPL Rx parameter fields are also used for Direct Talkaround functionality. Therefore when in Direct/Talkaround mode, the radio is transmitting and receiving on the same carrier frequency and frequency parameters. See also MPL Recall Mode.

Direct/Talkaround must be enabled on a frequency options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the Direct/Talkaround button-press, the Talkaround/Direct switch-selection, or the Direct/Talkaround menu-selection.

Accessed Only: When the Direct Frequency field is **Enabled**, and when the radio is model/option capable.

The following selections are supported:

- Disabled = Carrier Squelch
- (PL)/Tone Private Line (TPL)
- (DPL) Digital Private Line

4.31.2.14

Direct PL Code

This field selects the Private Line (PL) code used to receive and transmit while operating in Direct/Talkaround Mode for the current Multiple Private Line (MPL) List - (record/row).

This code directly correlates to the Direct PL Frequency. Selecting a value for this field automatically selects a Direct PL Frequency.



WARNING:

You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO**, and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.



IMPORTANT:

When the Direct Frequency field is enabled, the MPL Direct/Talkaround parameters can then be modified on a per MPL List basis. Once modified, the radio may then be transmitting and receiving on a different carrier frequency and or frequency parameters while operating in Direct/Talkaround mode. See also MPL Recall Mode.

When the Direct Frequency field is disabled, the settings for the MPL Rx parameter fields are also used for Direct Talkaround functionality. Therefore when in Direct/Talkaround mode, the radio is transmitting and receiving on the same carrier frequency and frequency parameters. See also MPL Recall Mode.

Direct/Talkaround must be enabled on a frequency options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the Direct/Talkaround button-press, the Talkaround/Direct switch-selection, or the Direct/Talkaround menu-selection.

Accessed Only: When the Direct Frequency field is **Enabled**, when the Direct Squelch Type field is set to **PL**, and when the radio is model/option capable.

4.31.2.15

Direct DPL Code

This field selects the Digital Private Line (DPL) code that transmits while operating in Direct/Talkaround Mode for the current Multiple Private Line (MPL) List - (record/row).



WARNING:

You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO**, and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.



IMPORTANT:

When the Direct Frequency field is enabled, the MPL Direct/Talkaround parameters can then be modified on a per MPL List basis. Once modified, the radio may then be transmitting and receiving on a different carrier frequency and or frequency parameters while operating in Direct/Talkaround mode. See also MPL Recall Mode.

When the Direct Frequency field is disabled, the settings for the MPL Rx parameter fields are also used for Direct Talkaround functionality. Therefore when in Direct/Talkaround mode, the radio is transmitting and receiving on the same carrier frequency and frequency parameters. See also MPL Recall Mode.

Direct/Talkaround must be enabled on a frequency options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the Direct/Talkaround button-press, the Talkaround/Direct switch-selection, or the Direct/Talkaround menu-selection.

Accessed Only: When the Direct Frequency field is **Enabled**, when the Direct Squelch Type field is set to **DPL**, and when the radio is model/option capable.

The following selections are supported:

Table 299: DPL Squelch Code

Code	Code	Code	Code
023	152	343	565
025	155	346	606
026	156	351	612
031	162	364	624
032	165	365	627
043	172	371	631
047	174	411	632
051	205	412	645*
054	223	413	654
065	226	423	662
071	243	431	664
072	244	432	703
073	245	445	712
074	251	464	723
114	261	465	731
115	263	466	732
116	265	503	734
125	271	506	743
131	306	516	754
132	311	525*	
134	315	532	
143	331	546	

 **NOTE:** The codes marked with an asterisk are not part of the 83 standard EIA/TIA-603 codes.

4.31.2.16

Direct DPL Invert

This field selects the Digital Private Line (DPL) signals that are inverted before they are transmitted from the radio while operating in Direct/Talkaround Mode for the current MPL (Multiple Private Line) List - (record/row).

Inverted coding allows for more traffic/usage on frequencies.



WARNING:

DPL Invert must be set on both receiving and transmitting radios for communication to occur.

You can only access the MPL menu when the radio is operating on a Conventional communications channel that has its Rx Voice/Signal Type field set to **Non-ASTRO**, and has its User Selectable PL [MPL] field enabled.

Either the Multiple Private Line button-press or the Multiple Private Line menu-selection must be programmed thus allowing you to select the desired PL settings/list.



IMPORTANT:

When the Direct Frequency field is enabled, the MPL Direct/Talkaround parameters can then be modified on a per MPL List basis. Once modified, the radio may then be transmitting and receiving on a different carrier frequency and or frequency parameters while operating in Direct/Talkaround mode. See also MPL Recall Mode.

When the Direct Frequency field is disabled, the settings for the MPL Rx parameter fields are also used for Direct Talkaround functionality. Therefore when in Direct/Talkaround mode, the radio is transmitting and receiving on the same carrier frequency and frequency parameters. See also MPL Recall Mode.

Direct/Talkaround must be enabled on a frequency options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the Direct/Talkaround button-press, the Talkaround/Direct switch-selection, or the Direct/Talkaround menu-selection.

Accessed Only: When the Direct Frequency field is **Enabled**, and when the Direct Squelch Type field is set to **DPL**, and when the radio is model/option capable.

4.32

Conventional Alias List

The **Conventional Alias Lists** allows you to view or define Conventional Messages. These Messages can be transmitted from a radio unit to a dispatcher (base unit).

Message transmissions typically indicate a temporary condition and/or a response. Messages make more efficient use of a channel as compared to a voice transmission. This feature applies only when operating in Conventional communications mode.



NOTE:

Message and Status Aliases must be set up identically (or with the same meaning) for the dispatcher and the radio units.

MDC, DVRS and ASTRO Messages are enabled individually on a per [Conventional System on page 1056](#) basis from the [Message on page 1083](#) field.

You can activate the Message feature with a Message button-press, a Direct Message button-press, or a Message menu-selection.

MDC, DVRS and ASTRO Statuses are enabled individually on a per Conventional Systems basis from the Status field.

You can activate the Status feature with a Status button-press, a Direct Status button-press, or a Status menu-selection.

4.32.1

Message Alias List

This section allows you to view or define Conventional Messages.

These Messages can be transmitted from a radio unit to a dispatcher (base unit). Message transmissions typically indicate a temporary condition and/or a response. Messages make more efficient use of a

channel as compared to a voice transmission. This feature applies only when operating in Conventional communications mode.



IMPORTANT:

The Messages must be set up identically (or with the same meaning) for the dispatcher and the radio units. That is, the Message 1 Alias from the dispatching unit must be identical to (or have the same meaning as) the Message 1 Alias for the radio unit.

MDC, DVRS and ASTRO Messages are enabled individually on a per [Conventional System on page 1056](#) basis from the [Message on page 1083](#) field.

You can activate the Message feature with a Message button-press, Direct Message button-press, or a Message menu-selection.

4.32.1.1

Message Alias Number

This field selects a unique number for the current Message (record/row).

This number is matched up between the transmitting and the receiving radios; this match then determines which Message Alias Text appears in the receiving radio's display.

Accessed Only: When the radio is model/option capable.

4.32.1.2

Message Alias Text

This field allows you to define recognizable names for the current Message (record/row).

The Message Alias Number is matched between the transmitting and the receiving radios; this match then determines the Message Alias Text that appears in the receiving radio's display.

Accessed Only: When the radio is model/option capable.



NOTE:

Examples: MESSAGE-5, #510, Electric1

Characters, numbers, spaces, and special characters can be used.

A total of 14 characters are possible.

See also: [CPS Name Field Data Validation on page 131](#)

4.32.2

Status Alias List

This section allows you to view or define Conventional Statuses.

Your status can only be transmitted from a radio unit to a dispatcher (base unit) and makes more efficient use of a channel as compared to a voice transmission. This feature applies only when operating in Conventional communications mode.



IMPORTANT:

The Status Alias must be set up identically (or with the same meaning) for the dispatcher and the radio units. That is, the Status 1 Alias from the dispatching unit must be identical (or have the same meaning) as the Status 1 Alias for the radio unit.

MDC, DVRS and ASTRO Messages are enabled individually on a per [Conventional System on page 1056](#) basis from the [Message on page 1083](#) field.

You can activate the Status feature with a Status button-press, Direct Status button-press, or a Status menu-selection (see also [Status Number of Attempts on page 1029](#) and [Status Auto Exit on page 784](#)).

4.32.2.1

Status Alias Number

This field selects a unique number for the current Status (record/row).

This number is matched up between the transmitting and the receiving radios; this match then determines which Status Alias Text appears in the receiving radio's display.

Accessed Only: When the radio is model/option capable.

4.32.2.2

Status Alias Text

This field allows you to define recognizable names for the current Status (record/row).

The [Status Alias Number on page 1052](#) is matched between the transmitting and the receiving radios; this match then determines the Status Alias Text that appears in the receiving radio's display.

Accessed Only: When the radio is model/option capable.



NOTE:

Examples: STATUS-03, #510, Electric1

Characters, numbers, spaces, and special characters can be used.

A total of 14 characters are possible.

See also: [CPS Name Field Data Validation on page 131](#)

4.33

Repeater ID List

The **Repeater ID List** allows you to view or define IDs for accessing repeaters while operating in conventional communications mode.

This is only true when one or both of the Conventional Personality repeater access Code Type fields is set to **MDC** for any individual Conventional Personality.



NOTE: Repeater IDs are selected for use in the Conventional Personality MDC Repeater ID fields.

4.33.1

Repeater ID

This field selects the Repeater ID (record/row) that is transmitted by the radio to gain repeater access to a Conventional communications channel.

Repeater IDs must then be selected for use with specific Conventional channels from the Conventional Personality MDC Repeater ID fields. A Repeater Access Code (RAC) allows the radio to access a specific repeater(s).



IMPORTANT: This is only true when one or both of the Conventional Personality repeater access Code Type fields is set to **MDC** for any individual Conventional Personality.

Table 300: Range

Minimum	Maximum	
1	9999	

4.34

ASTRO Talkgroup List

The **ASTRO Talkgroup List** allows you to define functionality for individual ASTRO Talkgroup Lists as well as the Talkgroup Members within each list.

ASTRO Talkgroups are only used with Conventional Personalities using ASTRO type Conventional Systems. ASTRO Talkgroup List Members are available to you for Selective Call or Call Alert operations. Depending on the Conventional Personality Selection Type field choice, you will have the ability to access an entire Talkgroup List or a single Talkgroup strapped to that channel.



NOTE:

A Talkgroup List may be referenced to a Conventional Personality with the Talkgroup List field.

Once a Talkgroup List is selected for a personality, a default Talkgroup may then be selected for that same personality from the Frequency Option's ASTRO Talkgroup ID field.

4.34.1

General

This section allows you to view or define functionality that applies to the current ASTRO System ASTRO Talkgroup List.

ASTRO Talkgroups are only used with Conventional Personalities using ASTRO type Conventional Systems.



NOTE:

A Talkgroup List may be referenced to a Conventional Personality with the Talkgroup List field. Once a Talkgroup List is selected for a personality, a default Talkgroup may then be selected for that same personality from the Channel Option's ASTRO Talkgroup field.

Depending on the Conventional Personality Selection Type field choice, you will have the ability to access an entire Talkgroup List or a single Talkgroup strapped to that channel.

4.34.1.1

ASTRO Talkgroup List Name

This field allows you to create recognizable names for the current ASTRO Talkgroup List.

ASTRO Talkgroup List are selected for use from the Conventional Personality's ASTRO Talkgroup List field.



NOTE:

Examples: FireTG005, Electric1, #510.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.34.1.2

Talkgroup Alias

This field enables the Talkgroup Alias Text information to appear in the display.

This feature applies for the current ASTRO Talkgroup List.

When disabled, the Talkgroup IDs appear in the radio display.

Accessed Only: When the radio is model/option capable.

4.34.1.3

ASTRO OTAR Profile Index

This field selects the ASTRO OTAR Profile to be used by the current ASTRO Talkgroup List.



IMPORTANT:

When this field is not set to **Disabled**, the Key Select field for the current ASTRO Talkgroup List can only select keys from the Secure Hardware Encryption Key References List of this selected ASTRO OTAR Profile

Be aware that The the programme is actually pointing to the Keys of the Encryption Key List for this selection; individual Keys from the Secure Encryption Key References List reference the Encryption Key List's Keys from the Hardware Key Reference field. Therefore any key selected when this field is not set to **Disabled**, must first be defined in the Secure Hardware Encryption Key References List or in the Encryption Key List if the selected ASTRO OTAR Profile has Independent Key List field enabled.

When this field is set to **Disabled** or not applicable (grayed-out), the Key Select field value is directly chosen from the Secure Wide Window's Encryption Key List.

Accessed Only: This feature can be accessed only when the following conditions are met:

- The [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.
- [Advanced Encrypted Standard \(AES256\) on page 882](#) is enabled.
- The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**.
- The radio is model/option capable.

4.34.2

Talkgroup List

This section allows you to define functionality for individual talkgroup members within the current ASTRO Talkgroup List.

ASTRO Talkgroups are only used with Conventional Personalities using ASTRO type Conventional Systems.



NOTE:

A Talkgroup List may be referenced to a Conventional Personality with the Talkgroup List field. Once a Talkgroup List is selected for a personality, a default Talkgroup may then be selected for that same personality from the Frequency Option's ASTRO Talkgroup ID field.

Depending on the Conventional Personality Selection Type field choice, you will have the ability to access an entire Talkgroup List or a single Talkgroup strapped to that channel.

4.34.2.1

Talkgroup Alias Text

This field allows you to define recognizable names for the current talkgroup.

The benefit of this feature is the information appears in the display of the radio when you are scrolling through the [ASTRO Talkgroup List on page 1053](#). This selection applies for the current talkgroup (record/row) of the current ASTRO Talkgroup List Set.



WARNING: You only have the ability to scroll through the Talkgroup List when the Selection Type field is set to **Selectable** for the Conventional Personality that references this Talkgroup List.



NOTE:

Examples: TG-001, Talkgroup 12, Electric1, # A5.

Characters, numbers, spaces, and special characters can be used.

A total of 14 characters are possible.

Accessed Only: When the [Talkgroup Alias on page 1053](#) field is set to **Enable**.

4.34.2.2

Talkgroup ID

This field selects (in decimal or hex format) a unique identification number for the current talkgroup.

This selection applies for the current talkgroup (record/row) of the current [ASTRO Talkgroup List on page 1053](#).

Table 301: Range

Minimum	Maximum
0	65535



IMPORTANT:

Talkgroup "65535" (FFFF Hex) is a System Wide "All-Call" Talkgroup. All other talkgroups unmute to a Talkgroup "65535" transmission and a talkgroup set to "65535" unmutesto any and all Talkgroup IDs..

Talkgroup "0" is a System Wide 'Receive-Only' talkgroup that receives "All-Call" transmissions sent on the "65535" talkgroup. Talkgroup "0" also receives Selective Call transmissions sent to your particular ASTRO Individual ID. This condition is only possible when the ASTRO Rx Unmute Rule of a channel/ personality that has this Talkgroup ID selected is set to **Selective Squelch**.

Accessed Only: When the radio is model/option capable.

4.34.2.3

Voice Secure/Clear Strapping

This field selects the transmit mode for the current talkgroup.

This selection applies for the current talkgroup (record/row) of the current [ASTRO Talkgroup List on page 1053](#).

The following selections are supported:

Select

Allows you to toggle on or off secure encrypted communications.



NOTE:

Either the Secure Tx Select button-press or the Secure Tx Select switch-toggle or the Secure menu-selection allows for your access to secure-encrypted communications.

Clear

Straps or commits the channel to normal (non-secure) Conventional communications operation.

Secure

Straps or commits the channel to secure encrypted operation.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.

4.34.2.4

Key Select

This field selects the secure encryption key to be used while operating in secure encryption mode for the current talkgroup.

This selection applies for the current talkgroup (record/row) of the current ASTRO Talkgroup List.



IMPORTANT:

When the [ASTRO OTAR Profile Index on page 1054](#) field is not Disabled for the current ASTRO Talkgroup List, this Key Select value is chosen from the Secure Encryption Key References List of the ASTRO OTAR Profile selected in the ASTRO OTAR Profile Index field.



WARNING: Be aware that the application is actually pointing to the Keys of the [Encryption Key List on page 896](#) for this selection; individual Keys from the Secure Encryption Key References List reference the Encryption Key List's Keys from the Hardware Key Reference field. Therefore any key selected when ASTRO OTAR Profile Index field is not "Disabled", must first be defined in the Secure Encryption Key References List. Keys taken from OTAR Profile with Independent Key List field enabled are available.

When the ASTRO OTAR Profile Index field is Disabled or not applicable (grayed-out) for the current ASTRO Talkgroup List, this Key Select value is directly chosen from the Secure Encryption Key List.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Voice Secure/Clear Strapping on page 1055](#) field is set to **Secure** or **Select**, and when the radio is model/option capable.

4.35

Conventional System

The **Conventional Systems** allows you to view or define individual Signaling Systems.

Signaling system types include: **ASTRO**, **MDC**, **DVRS**, and **Quik-Call II**. Individual Signaling Systems are selected for use with Conventional Personalities.



NOTE: Conventional Systems are selected for use from the Conventional Personality's ASTRO System field or Non-ASTRO System field.

4.35.1

General

The **General** section allows you to view or define basic functionality for individual Conventional communications signaling systems.

Signaling system types include: ASTRO, MDC, DTMF, Quik-Call II, and Singletone.



NOTE:

Conventional Systems are selected for use from the Conventional Personality's ASTRO System field or Non-ASTRO System field.

4.35.1.1

System Type

This field allows you to select the desired System Type for the current Conventional System.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

- ASTRO
- MDC
- DVRS
- DTMF
- Quik-Call II
- Singletone

 **NOTE:** These selections are model/option dependent.

4.35.1.2

ASTRO System

The following fields are supported when System Type is set to **ASTRO**.

4.35.1.2.1

Remote Site Interface System

This field enables Remote Site Interface (RSI) Mode operation for the TXM 2000 Transportable Mobile on the current ASTRO Conventional System.



 **WARNING:** Set Up RSI & Radio Feature Warnings:

The Zone Channel Assignment's RSI Mode field allows you to designate a zone and all of its channels for RSI usage.

- RSI channels are not capable of Scan Mode and therefore the Scan List Selection is not available.
- Scan List Members cannot select RSI capable Zones or their Channels.
- RSI channels are not capable of Phone Mode (see Phone Operation).
- RSI channels are not capable of Voice Announcement (see Channel Announcement).
- RSI zones cannot be FPP modified.

All channels within an RSI enabled zone can only have referenced Conventional Personalities (selected in the Personality field) that have their Rx Voice/Signal Type set to **ASTRO**.

All channels within an RSI enabled zone can only have a referenced Conventional System that are System Type = **ASTRO** and **Remote Site Interface System** enabled.

- RSI channels are not capable of Emergency Mode transmissions and therefore their referenced Conventional System cannot select an Emergency Profile.
- RSI channels are not capable of CAI Data functionality and therefore their referenced Conventional System cannot select a Data Profile.

See the list of Incompatible RM fields from the [Remote Site Interface \(RSI\) Feature on page 290](#).

Accessed Only: When the System Type field is set to **ASTRO**, and when the radio is model/option capable.

4.35.1.2.2

Limited Patience

This field selects the amount of time that the radio politely waits for the current channel traffic to clear.

Examples of transmissions using this value are: Call Alerts, Selective Calls, Messages, Statuses, and Emergency transmissions. This selection applies for the current Conventional System. In the emergency case, the radio politely waits after the Impolite Retries expires.

Accessed Only: When the System Type field is set to **ASTRO**, **DVRS** or **MDC**.

Table 302: Range

Minimum	Maximum	Increments
1 s		1

4.35.1.2.3

System Group Number

This field selects (in decimal or hex format) the System Group Number for the current Conventional System.

The System Group Number provides a way to logically group multiple Conventional Systems in the codeplug that are really the same over-the-air system.



IMPORTANT:

All of the [Conventional System on page 1056](#) in the codeplug that represent the same over-the-air system should use the same System Group Number.

This System Group Number is used in Caller ID. If multiple Conventional Systems have an overlap in the Call IDs (for example, two different users on different Conventional Systems have the same ID), the radio uses the System Group Number associated with the receive channel to determine which [Contact Name on page 1270](#) to display.

Accessed Only: When the [System Type on page 1056](#) field is set to **ASTRO** or **MDC**.

Table 303: Range

Minimum	Maximum
1 (Hex)	FFFF (Hex)

4.35.1.2.4

Emergency Profile Selection

This field allows you to select the appropriate Conventional Emergency Profile to be used with the current Conventional System.

You can initiate Emergency Mode with the Emergency button-press



NOTE: The name(s) that appear for selection are defined in the Emergency Profile Name field.

Accessed Only: When the System Type field is set to **DVRS** or **MDC**, or (when the System Type field is set to **ASTRO**, and when the Remote Site Interface System field is disabled), and when the Remote Site Interface System field is disabled).

The following selections are supported:

- Emergency Tx Disabled
- Available Conventional Emergency Profiles

4.35.1.2.5

System Wide Talkgroup Hang Time

This field selects the amount of time that the radio waits once a system wide Talkgroup call has ended.

During this wait time, Talkgroup ID 65535 (FFFF Hex) is used for all ASTRO Talkgroup calls. This selection applies while operating on the current ASTRO Conventional System. Time is in seconds.

Accessed Only: When the System Type field is set to **ASTRO**, and when the radio is model/option capable.

Minimum	Maximum	Increments
0.000	6.375	0.025

 **NOTE:** The time is in seconds.

4.35.1.2.6

Data Profile Selection

This field allows you to select the appropriate Data Profile to be used with the current ASTRO or DVRS Conventional System.



WARNING:

For the **DVRS** System Type, a Data Profile is only valid when Data Profile Type is set to **Trunking**, and when Rx Voice Interrupts Data is **Enabled**, and when Limited Broadcast is **Disabled**, and when IP Header Compression Enable is **Disabled**, and when Terminal Data is **Disabled**, and when PAD Mode is set to **Disabled**, and when all of the DAC List entries have Operational Mode set to **Classic APCO 25**, and when the (Packet Data APCO 25) Secure/Clear Strapping is set to **Clear** or **Secure**, and when the Port List Selection is set to **Disabled**.

When the Dual Radio - Radio Selection field is set to **Secondary Radio** and the Enable Secondary Radio Tx field is **Disabled**, this field must be set to **Data Disabled** to be considered valid.



IMPORTANT: ASTRO and DVRS Conventional Systems are selected for use from the Conventional Personality's ASTRO System field.

Accessed Only: When the System Type field is set to **DVRS**, or (when the System Type field is set to **ASTRO**, and when the Remote Site Interface System field is disabled).

The following selections are supported:

- Data Disabled
- Available Data Profiles

4.35.1.2.7

Individual ID

This field selects the unique ID for the radio while transmitting or receiving ASTRO calls on the current Conventional System.

This ID is used for both voice and data signaling operation. C

 **NOTE:** For Managed Radios this feature is defined in the RMC's Radio ID field.

 **NOTE:** This Individual ID is configured into the Unified Call List's ASTRO Conventional Call ID set with the Individual ID field. This Call ID set makes Caller ID possible.

ASTRO Conventional Call ID sets are selected from the Conventional ASTRO Call Hot List - Call ID field.

Accessed Only: When the System Type field is set to **DVRS**, the field range will be from 1 to 16777211. Otherwise, the field range will be from 1 to 9999999, and when the radio is model/option capable.

Table 304: Range

Minimum	Maximum
1	16777211

4.35.1.2.8

Conventional System Name

This field allows you to create recognizable names for the current Conventional System.

Conventional Systems are selected for use from the Conventional Personality's ASTRO System field or Non-ASTRO System field.

 **NOTE:** **Examples:** Byrne004, Power03, #510

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.35.1.2.9

Preamble Length

This field selects the amount of time that determines the minimum number of bit sync preamble packets that are sent at the beginning of all ASTRO transmissions.

These packets allow transmitting and receiving radios to synchronize with each other prior to an ASTRO Systems transmission. The amount of time is equal to this Preamble Length setting multiplied by 0.2083 milliseconds (ms). This selection applies while operating on the current ASTRO Conventional System.

 **IMPORTANT:** When the [Secure Operation on page 880](#) field is set to **Hardware** or Software, the radio transmits a minimum of 50 milliseconds of preamble due to the delays encountered when encrypting the data stream.

When the APX radio uses a DVRS configuration, the Preamble length must be set to less than 900.

Accessed Only: When the System Type field is set to **ASTRO** or **DVRS**.

Table 305: Range

Minimum	Maximum
0	1275

4.35.1.2.10

Home WACN ID

This field selects (in decimal or hex format) the identification number of the ASTRO 25 Home WACN (Wide Area Communication Network) within which the conventional DVRS PSU normally operates.

This selection applies for the current Conventional DVRS System and therefore to all referenced Conventional DVRS PSU Personalities.

 **NOTE:** DVRS PSU uses the Home WACN ID, the System ID and the Unit ID to identify itself for authentication key loading and to identify to the FNE (Fixed Network Equipment) when performing authentication.

A WACN is made up of one or more Systems.

 **WARNING:** WACN ID is used for authentication key loading only. Must be set to non-zero value for authentication feature to work.

0 is a default value indicating that authentication keys cannot be loaded.

Accessed Only: When the radio is model/(DVRS PSU & Radio Authentication) option capable, and when the [System Type on page 1056](#) field is set to **DVRS**.

When the [System Type on page 1056](#) field is set to **DVRS** and therefore the System Key Type field is **System Key**, the selections are:

Table 306: Range

Minimum	Maximum
00001 (Hex)	FFFFE (Hex)

4.35.1.2.11

System ID

This field selects (in decimal or hex format) the identification number of the targeted “in-the-field” ASTRO 25 Trunking System on which this conventional DVRS PSU normally operates.

This selection applies for the current Conventional DVRS System and therefore to all referenced Conventional DVRS PSU Personalities to all referenced Conventional.

 **NOTE:** DVRS PSU uses this Home WACN ID, the System ID and the Unit ID to identify itself for authentication key loading and to identify to the FNE (Fixed Network Equipment) when performing authentication.

 **WARNING:** System ID is used for authentication key loading only. Must set to non-zero value for authentication feature to work.

0 is a default value indicating that authentication keys cannot be loaded.

Accessed Only: When the radio is model/(DVRS PSU & Radio Authentication) option capable, and when the [System Type on page 1056](#) field is set to **DVRS**.

When the [System Type on page 1056](#) field is set to **DVRS** and therefore the System Key Type field is **System Key**, the selections are:

Table 307: Range

Minimum	Maximum
001 (Hex)	FFE (Hex)

4.35.1.3

MDC System

The following MDC System fields are supported when System Type is set to **MDC**:

4.35.1.3.1

System Group Number

This field selects (in decimal or hex format) the System Group Number for the current Conventional System.

The System Group Number provides a way to logically group multiple Conventional Systems in the codeplug that are really the same over-the-air system.



IMPORTANT:

All of the [Conventional System on page 1056](#) in the codeplug that represent the same over-the-air system should use the same System Group Number.

This System Group Number is used in Caller ID. If multiple Conventional Systems have an overlap in the Call IDs (for example, two different users on different Conventional Systems have the same ID), the radio uses the System Group Number associated with the receive channel to determine which [Contact Name on page 1270](#) to display.

Accessed Only: When the [System Type on page 1056](#) field is set to **ASTRO** or **MDC**.

Table 308: Range

Minimum	Maximum
1 (Hex)	FFFF (Hex)

4.35.1.3.2

MDC Ack Pretime

This field selects the amount of time the radio waits before sending an acknowledge back to the system/repeater.

This timer begins once an MDC data packet has been received. This selection applies while operating on the current MDC Conventional System. Time is in milliseconds.

Accessed Only: When the System Type field is set to **MDC**.

Table 309: Range

Minimum	Maximum	Increments
0 ms	6350 ms	50 ms

4.35.1.3.3

MDC Primary ID

This field selects the unique ID (hex format) that identifies the radio while transmitting or receiving MDC calls on the current Conventional System.

Examples of transmissions using this value are: Call Alerts, Selective Calls, Message, Status, and Emergency.

 **NOTE:** For Managed Radios this feature is defined in the RMC's Radio ID field.

 **NOTE:** This Primary ID is configured into the Unified Call List's MDC Conventional Call ID set with the Primary ID field. This Call ID set makes Caller ID possible.

MDC Conventional Call ID sets are selected from the Conventional MDC Call Hot List - Call ID field.

Accessed Only: When the System Type field is set to **MDC**.

Table 310: Range

When Expanded MDC ID Range is:	Maximum	Increments
Disabled	0001 Hex	DEEE Hex
Enabled	0001 Hex	FFFE Hex

 **NOTE:** This is a hexadecimal (Hex) number where the least significant F (right most position) is reserved by the base station system.

4.35.1.3.4 Inter-Packet Time

Selects the amount of time that will separate consecutively transmitted MDC Messages. This feature applies for the current MDC Conventional System. Time is in milliseconds.

Accessed Only: When the System Type field is set to **MDC**.

Table 311: Range

Minimum	Maximum	Increments
0 ms	6350 ms	50 ms

4.35.1.3.5 Secondary ID

This field selects the unique Secondary ID in hex format that identifies the radio while transmitting or receiving MDC calls on the current Conventional System.

Examples of transmissions using this value are: Call Alerts, Selective Calls, Messages, Statuses, and Emergency transmissions.

Accessed Only: When the System Type field is set to **MDC**.

Table 312: Range

Minimum	Maximum
00000000 (Hex)	0EEEEEEE (Hex)

4.35.1.3.6

Emergency Profile Selection

This field allows you to select the appropriate Conventional Emergency Profile to be used with the current Conventional System.

You can initiate Emergency Mode with the Emergency button-press



NOTE: The name(s) that appear for selection are defined in the Emergency Profile Name field.

Accessed Only: When the System Type field is set to **DVRS** or **MDC**, or (when the System Type field is set to **ASTRO**, and when the Remote Site Interface System field is disabled), and when the Remote Site Interface System field is disabled).

The following selections are supported:

- Emergency Tx Disabled
- Available Conventional Emergency Profiles

4.35.1.3.7

Variable ID

This field selects the three digit ID (in decimal or hex format) that identifies the radio as belonging to a unique group while receiving and transmitting MDC calls on the current MDC Conventional System.

Examples of transmissions using this value are: Call Alerts, Selective Calls, Messages, Statuses, and Emergency transmissions.



IMPORTANT: On a dispatched system which uses fleets and groups, the first digit of the ID represents the fleet, and the last two digits represent the group; for example: Variable ID = FGG, where F = Fleet and G = Group.



NOTE: When receiving an MDC transmission, the Variable ID allows the radio to identify the incoming call as being addressed to it, as well as being addressed to other radios in the Group.

Accessed Only: When the System Type field is set to **MDC**, and when the Expanded MDC ID Range field is **Disabled**.

Table 313: Range

Minimum	Maximum
000 (Hex)	EEE (Hex)



IMPORTANT: This is a hexadecimal (Hex) number where F is reserved by the base station system.

4.35.1.3.8

Repeater Access Pretime

This field selects the amount of time between a PTT button-press and transmission of the first digit of an MDC Repeater Access (RAC) data packet.

This time allows the repeater to receive carrier and stabilize before receiving data. This applies for the current MDC Conventional System. Time is in milliseconds.

Accessed Only: When the System Type field is set to **MDC**.

Table 314: Range

Minimum	Maximum	Increments
0 ms	6350 ms	50 ms

4.35.1.3.9

Expanded MDC ID Range

This field enables additional MDC Primary ID's by allowing the range to contain E (Hex) in the least significant (right most) position and F in any other position.

This selection applies for the current MDC Conventional System.



WARNING:

Selective Call Rx/Tx and Call Alert Rx/Tx must be set to **Disabled** when this feature is enabled.

An MDC Conventional System with this feature enabled cannot be selected as an MDC OTAR System.

The Contacts menu-selection and Contacts button-press are blocked from you when the selected channel has this feature enabled.

The radio decodes the target address with an MDC Primary ID which contains F in any position or E in the most significant position as being an individual ID.

Accessed Only: When the System Type field is set to **MDC**, and when the **Expanded MDC1200 E & F** Extended Feature appears in the Extended Feature Name field.

4.35.1.3.10

Conventional System Name

This field allows you to create recognizable names for the current Conventional System.

Conventional Systems are selected for use from the Conventional Personality's ASTRO System field or Non-ASTRO System field.



NOTE:

Examples: Byrne004, Power03, #510

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.35.1.3.11

PTT-ID

This field selects the method of transmitting a PTT ID data packet with a DTMF or MDC transmission.

Following each of your PTT button press, the radio then transmits the radio's current PTT ID (the programmed Primary ID) using this selected method. Transmitting the Primary ID allows for Caller ID on the receiving radio. This feature applies while operating on the current DTMF or MDC Conventional System.



WARNING: This feature only applies when Conventional Personality that references this system has its Non-ASTRO PTT ID field enabled.

Accessed Only: When the System Type field is set to **MDC** or **DTMF**.

The following selections are supported:

None

PTT IDs are not sent.

Leading Edge

Causes the radio to transmit a PTT ID data packet prior to the transmission of other packet data. Therefore, immediately following each of your PTT button press, the radio then transmits the radio's current PTT ID (Primary ID).

Trailing Edge

Causes the radio to transmit a PTT ID data packet following each transmission of other packet data. Therefore, each time you release the PTT button the radio then transmits the radio's current PTT ID (Primary ID).

Both

Combines both the Leading and Trailing method for transmitting PTT IDs (Primary ID)



NOTE: The Sidetones field allows you to define **PTT-ID Sidetones** and **PTT-ID Short Sidetones** when selecting **Leading Edge** or **Both**.

4.35.1.3.12

Preamble Enable

This field enables synchronized packets to be sent during MDC System Pretime.

Synchronizing packets allow transmitting and receiving radios to synchronize with each other prior to MDC data packet transmission. This selection applies for the current MDC Conventional System.



WARNING: Do not attempt to modify this setting unless you have complete knowledge of the radio's system configuration.

Accessed Only: When the System Type field is set to **MDC**.

4.35.1.3.13

Sidetones

This field selects the type or types of alert tone that sounds while the DTMF or MDC or Quik-Call II PTT ID is being transmitting.

During PTT ID transmission the radio's microphone is disabled and therefore voice transmission is not possible. Sidetone selections should be based-on your preference. This feature applies only while operating on the current Conventional System.



WARNING: For MDC and DTMF Systems, Sidetones only apply when the PTT-ID field is set to "Leading Edge" or "Both"



NOTE: For MDC and DTMF, following each of your PTT button-press, the radio then transmits the radio's current PTT ID (the CPS-defined Primary ID).

Accessed Only:

When the System Type field is set to "MDC" and "DTMF":

When the PTT-ID field is set to **Leading Edge** or **Both**, and when the radio is model/option capable.

When the System Type field is set to "Quik-Call II":

when the radio is model/option capable.

The following selections are supported:

None

No sidetones are sounded.

PTT-ID Sidetone

Causes the radio to sound an alert tone while the PTT ID is being transmitting; the PTT ID is the Primary ID of the current System. The PTT ID begins transmitting as soon as the PTT button is pressed; therefore the alert tone begins sounding as soon as PTT is pressed, and continues until the PTT ID data has completely transmitted. The tone ceasing is an indication to you that the microphone is open and voice transmission is now possible.

PTT-ID Short Sidetone

Causes the radio to sound one short alert tone immediately after the PTT ID is transmitted; the PTT ID is the Primary ID of the current System. The PTT ID begins transmitting as soon as the PTT button is pressed. This short alert tone sounds as soon as the PTT ID data has completely transmitted. This short tone is an indication to you that the microphone is open and voice transmission is now possible.

Both

Causes the radio to sound both the PTT ID Sidetone and the PTT ID Short Sidetone (see above).

4.35.1.3.14

Preambles

This field selects the number of synchronizing packets sent during the MDC System Pretime for the current MDC Conventional System.

Synchronizing packets allow transmitting and receiving radios to synchronize with each other prior to MDC data packet transmission.

Accessed Only: When the System Type field is set to **MDC**.

Table 315: Range

Minimum	Maximum
0	255

4.35.1.3.15

Limited Patience

This field selects the amount of time that the radio politely waits for the current channel traffic to clear.

Examples of transmissions using this value are: Call Alerts, Selective Calls, Messages, Statuses, and Emergency transmissions. This selection applies for the current Conventional System. In the emergency case, the radio politely waits after the Impolite Retries expires.

Accessed Only: When the System Type field is set to **ASTRO**, **DVRS** or **MDC**.

Table 316: Range

Minimum	Maximum	Increments
1 s		1

4.35.1.3.16

Courtesy Tone

This field allows to differentiate you and others from using the same MDC PTT-ID in their codeplug.

Recordings of the voice traffic are analyzed if an incident occurs. One user will have the Courtesy Tone enabled, while the other user will not.

Accessed Only: When the [System Type on page 1056](#) field is set to **MDC**, and when the **PTT-ID** is set **Leading Edge**, **Training Edge**, or **Both**.

4.35.1.3.17

MDC System Pretime

This field selects the amount of time between PTT button-press and transmission of the first digit of an MDC data packet.

This time allows the receiving radio time to receive carrier and stabilize before receiving data. This applies for the current MDC Conventional System. Time is in milliseconds.



IMPORTANT: When [Repeater Access on page 1169](#) is enabled for a Conventional Personality, the RAC data packet is transmitted, and then this timer begins. Also see [Repeater Access Pretime on page 1064](#).

Accessed Only: When the System Type field is set to **MDC**.

Table 317: Range

Minimum	Maximum	Increments
0 ms	6350 ms	50 ms

4.35.2

DVRS

This section allows you to view or define basic functionality of individual Conventional Digital Vehicular Repeater Systems (DVRS).

DVRS "System" mode replicates Trunking communications and therefore requires features to be defined that are normally Trunking-only features.



NOTE:

DVRS Conventional Systems are selected for use from the Conventional Personality's ASTRO System field.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.

The following fields are supported:

4.35.2.1

Talk Permit Tone

This field allows you to enable the radio to sound an alert tone when a Voice Channel access grant has been received from the DVRS.

This feature applies for the current DVRS Conventional System.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.

4.35.2.2

Emergency Blocked in Failsoft

This field allows you to disable Emergency Mode when Failsoft mode is active. This features applies for the current DVRS Conventional System.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.

4.35.2.3

Call Type

This field allows you to select the type of Private Call for the current DVRS Portable Subscriber Unit (PSU)-enabled Conventional System.

You can initiate a private Call with a Select/Private Call button-press or a Select/Private Call menu-selection. You in turn responds to a Private Call with a Call Response button-press.

The following selections are supported:

Enhanced Private Call

Enhanced Private Call or Unit-to-Unit Private Call.

PCII Private Call

PCII Private Call permits calls between talkgroups and sends an initiator ID so the person receiving the call knows who sent it.

Private Call w/Call Alert

Selective Call

 **IMPORTANT:** DVRS PSU Operation Enabled radio's "Call Type" Selection must match the DVRS Mobile Subscriber Unit's (MSU) "Private Call Type" selection and "Private Call Type" supported by the particular system for proper operation.

4.35.2.4

TA After DVRS No Communication Attempts

This field allows you to specify the total number of attempts at communication with the DVRS that the radio makes, when that communication has been interrupted, before the radio automatically reverts to Talkaround (TA) mode.

This feature applies for the current DVRS Conventional System.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.

 **NOTE:** When set to **Disabled**, the radio disables Talkaround (TA) upon no DVRS communication.

Table 318:

SELECTIONS:	DEFINITIONS:
"Disabled":	Disables Talkaround (TA) upon no DVRS communication.
Numbered Selections Include:	1 To 5 (The total number of attempts before the radio reverts to Talkaround mode.)

 **NOTE:** The total number of attempts before the radio reverts to Talkaround mode.

4.35.2.5

Out of DVRS Range Time

This field allows you to select the amount of time that must pass without any receive activity from the DVR before **Out-of-Range** appears in the radio display.

This feature applies for the current DVRS Conventional System. Time is in seconds.



IMPORTANT:

Setting a non-zero Network Status Reporting Interval in the APX DVR configuration (Tweaker) software overrides this Out of DVRS Range Time selection. In this case, the DVRS PSU indicates **Out-of-Range** once 2 x the selected Network Status Reporting Interval time without any receive activity from the DVR has passed.

When the "Network Status Reporting Interval" is set to **0** this feature must be set to **Disabled**, otherwise this feature behaves improperly in the DVRS PSU.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.



NOTE: When set to **Disabled**, DVRS Out-of-Range detection is disabled.

Table 319: Range

Selections	Definition
Disabled	DVRS Out-of-Range detection is disabled
Timed Selections Include	10 (seconds) To 120 (seconds)

4.35.2.6

End Out of Range on Analog Rx

This field causes the Portable Subscriber Unit (PSU) to consider the received analog audio as a valid DVRS signal, therefore ending the out-of-range condition or resetting the out-of-range detection mechanism. This features applies for the current DVRS Conventional System.

When disabled, the PSU considers the received analog audio to be from an unknown source; therefore it is disregarded in relation to a DVRS out-of-range condition.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.

4.35.2.7

Fast Retry Time

This field selects the amount of time that the radio waits for a response from the DVRS before retrying its data packet during Fast Retries.

This feature applies for the current DVRS Conventional System. Time is in milliseconds (ms).

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.

Table 320: Range

Selection	Definition
Timed Selections Include	25 (ms) To 6375 (ms) In Increments = 25 (ms). (ms = milliseconds)

4.35.2.8

Attachment Retries

This field selects the number of times the radio retries an Attachment (Registration/Affiliation) request after a response is not received from the DVRS.

The primary purpose of Attachment is to provide a means of informing the DVRS of a presence of the radio, therefore allowing the DVRS to restrict service access to valid radios only. This selection applies for the current DVRS Conventional System.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.

Table 321: Range

Minimum	Maximum
1	10

4.35.2.9

Bypass Quick Key Voice Channel Access

When enabled, the Quick Key feature is disabled (bypassed) for group voice calls, or when the Portable Subscriber Unit (PSU) has reverted to Talkaround (TA) mode following an interruption in communications with the DVRS. Therefore, upon receiving a Voice Channel access grant to a Dispatch Voice channel request, and the PTT button is no longer pressed, the PSU ends the request sequence and returns to the idle state. This features applies for the current DVRS Conventional System.

Therefore, upon receiving a Voice Channel access grant to a Dispatch Voice channel request, and the PTT button is no longer pressed, the PSU ends the request sequence and returns to the idle state. This features applies for the current DVRS Conventional System. When disabled, the Quick Key feature is enabled during group voice calls, or when the PSU has reverted to Talkaround (TA) mode following an interruption in communications with the DVRS.



IMPORTANT:

In a busy condition, a significant amount of time may pass between the initial PTT button-press that sends a Dispatch Voice request to the FNE and receipt of the Voice Channel access grant that allocates a voice channel to the requesting PSU, you may decide to de-key the PSU rather than allow the PTT Warning Time to expire. When the Voice Channel access grant is eventually received, the PSU plays a Talk Permit Tone and the Quick Key feature causes the PSU to begin transmitting silent audio for 3 seconds, even though the PTT button is no longer pressed. If you press the PTT button before the Quick Key timer expires, the PSU continues transmitting but with an active microphone; otherwise, the PSU stops transmitting.

The Quick Key feature is always enabled for private calls and phone mode.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model /option capable. This is an advanced setting which is only available in Expert View (see Codeplug View).

4.35.2.10

Phase 2 System Compatibility

This field enables a DVRS Enhanced PSU to process clear or encrypted digital calls from a DVRS MSU operating on a Phase 2 Time Division Multiple Address (TDMA) talkgroup.

This field will be visible when System Type is set to DVRS.

Accessed Only: When the radio is model/option capable.

4.35.2.11

Dynamic Regrouping Enable

This field enables a **Dynamic Regrouping** talkgroup for a DVRS Personality/channel that references the current DVRS Conventional System.



NOTE:

When Dynamic Regrouping Enable is enabled, a Dynamic Regrouping Zone and Dynamic Regrouping Channel must be selected for this Conventional System.

You may request a new Dynamic Regrouping assignment from the dispatcher with a Reprogram Request button-press or a Reprogram Request menu-selection. The actual features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher.

For the Dynamic Regrouping talkgroup to be capable of transmitting in Secure mode, the Secure Tx Select button-press or the Secure Tx Select switch-toggle or the Secure menu-selection is needed; otherwise Dynamic Regrouping talkgroup transmissions are strapped to transmitting in "Clear" mode.



WARNING: A Dynamic Regrouping configuration is only valid when one of the Conventional Personalities referenced to a channel has its ASTRO Talkgroup ID field set to **DYN** (Dynamic Regrouping), and that Personality's selected Zone and Channel match the selections for Dynamic Regrouping Zone and Dynamic Regrouping Channel in the Personalities' referenced DVRS Conventional System. Therefore, only one channel (within a given Trunking System) can be the Dynamic Regrouping channel.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.

4.35.2.12

Dynamic Regrouping Zone

Selects the Dynamic Regrouping zone of the DVRS Personality or channel that references the current DVRS Conventional System.



WARNING: Remote Site Interface (RSI) zones are invalid and cannot be selected (zones that have [RSI Mode on page 1289](#) enabled).



IMPORTANT:

When [Dynamic Regrouping Enable on page 1072](#) is enabled, a Dynamic Regrouping Zone and [Dynamic Regrouping Channel on page 1073](#) must be selected for this Conventional System.



WARNING:

Zones selected in this field must have Dynamic Zone Enable disabled; otherwise, this field becomes invalid.

A Dynamic Regrouping configuration is only valid:

- When one of the Conventional Personalities referenced to a channel has its ASTRO Talkgroup ID field set to "DYN" (Dynamic Regrouping), and that Personality's selected Zone and Channel match the selections for Dynamic Regrouping Zone and [Dynamic Regrouping Channel on page 1073](#) in the Personalities' referenced DVRS Conventional System, and selected Zone.

Therefore, only one channel (within a given Trunking System) can be the Dynamic Regrouping channel.



NOTE:

You may request a new Dynamic Regrouping assignment from the dispatcher with a Reprogram Request button-press or a Reprogram Request menu-selection. The actual features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher.

For the Dynamic Regrouping talkgroup to be capable of transmitting in Secure mode, the Secure Tx Select button-press or the Secure Tx Select switch-toggle or the Secure menu-selection is needed; otherwise Dynamic Regrouping talkgroup transmissions are strapped to transmitting in "Clear" mode.

Accessed Only: When the [System Type on page 1056](#) field is set to **DVRS**, and when the [Dynamic Regrouping Enable on page 1072](#) field is enabled, and when the radio is model/option capable.

See also [Dynamic Regrouping Feature on page 266](#).

4.35.2.13

Dynamic Regrouping Channel

This field selects a Dynamic Regrouping DVRS Personality/channel that references the current DVRS Conventional System.

See also [Dynamic Regrouping Zone on page 1072](#) and [Dynamic Regrouping Feature on page 266](#).



WARNING: For APX 3000™ Portable codeplugs, only the first 48 channels in the selected Dynamic Regrouping Zone are considered valid selections by RM.



IMPORTANT:

When [Dynamic Regrouping Enable on page 1072](#) is enabled, a [Dynamic Regrouping Zone on page 1072](#) and Channel Dynamic Regrouping Channel must be selected for this Conventional System.



WARNING:

A Dynamic Regrouping configuration is only valid:

- When one of the Conventional Personalities referenced to a channel has its ASTRO Talkgroup ID field set to "DYN" (Dynamic Regrouping), and that Personality's selected Zone and Channel match the selections for [Dynamic Regrouping Zone on page 1072](#) and [Dynamic Regrouping Channel on page 1073](#) in the Personalities' referenced DVRS Conventional System.

Therefore, only one channel (within a given Trunking System) can be the Dynamic Regrouping channel.



NOTE:

You may request a new Dynamic Regrouping assignment from the dispatcher with a Reprogram Request button-press or a Reprogram Request menu-selection. The actual features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher.

For the Dynamic Regrouping talkgroup to be capable of transmitting in Secure mode, the Secure Tx Select button-press or the Secure Tx Select switch-toggle or the Secure menu-selection is needed; otherwise Dynamic Regrouping talkgroup transmissions are strapped to transmitting in "Clear" mode.

Accessed Only: When the [System Type on page 1056](#) field is set to **DVRS**, and when the [Dynamic Regrouping Enable on page 1072](#) field is enabled, and when the [Dynamic Zone Enable on page 1285](#) field is not set to a Dynamic Zone, and when the radio is model/option capable.

4.35.2.14

Individual Call Max Target Ring Time

This field selects the maximum amount of time that the radio rings upon receipt of an Individual Call.

An Individual Call includes both Phone and unit-to-unit calls. If you answer the call before the timer expires, the timer and ring are both stopped. This feature applies for the current DVRS Conventional Systems. Time is in seconds.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.



NOTE: When set to **Infinite**, the Ring Time is unlimited.

Table 322: Range

Minimum	Maximum	Increments
61 s	120 s	1 s

4.35.2.15

Private Call Max Initial Ring

This field selects the maximum amount of time that the radio rings upon receipt of a Private Call.

If you answer the call before the timer expires, the timer and ring are both stopped. This feature applies for the current DVRS Conventional Systems. Time is in seconds.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.



NOTE: When set to **Infinite**, the Ring Time is unlimited.

Table 323: Range

Minimum	Maximum	Increments
1 s	255 s	1 s

4.35.2.16

Force Unmute Time

This field allows you to select the maximum amount of time that the radio remains muted to a potential echo due to system throughput delay.

Force Unmute Time should be configured if an echo is heard in the following situations:

- A single DVRS configuration. You may hear the tail end of your transmission when releasing PTT through a full duplex DVR.
- A multi-DVRS configuration with the DVR feature "PSU NAC Linking Support" enabled. You may hear the tail end of your transmission or the tail end of a received call upon releasing PTT.

This selection applies for the current DVRS Conventional Systems. Time is in milliseconds (ms).

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.



NOTE: When set to **0-Immediate**, no mute time after transmission.

Table 324: Range

Selections	Definitions
Immediate = 0 (Zero Time)	No mute time after transmission.
Timed Selections Include	25 (ms) To 6375 (ms) In Increments = 25 (ms). (ms = milliseconds)

4.35.2.17

PTT Warning Time

This field selects the amount of time that the radio waits before sounding a "Talk Prohibit" alert tone to warn you that a PTT request is being processed and you should release the PTT button.

This selection applies for the current DVRS Conventional System. Time is in milliseconds (ms).

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.

 **NOTE:** When set to **Disabled**, no warning is sounded.

Table 325: SELECTIONS

SELECTIONS:	DEFINITIONS:
"DISABLED"	No warning is sounded.
Timed Selections Include:	25 (ms) To 6375 (ms) In Increments = 25 (ms). *ms = milliseconds

4.35.2.18

Busy Update Time

This field selects the amount of time that the radio waits in the busy state for a response from the Fixed Network Equipment (FNE) or Digital Vehicular Repeater (DVR).

If this time expires, the radio no longer expects a response and retries the transmission. This feature applies for the current DVRS Conventional System. Time is in seconds.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.

Table 326: SELECTIONS

SELECTIONS:	DEFINITIONS:
Timed Selections Include:	15 (seconds) To 945 (seconds), In Increments = 15 (seconds)
Timed Selections Include:	The radio waits indefinitely for a response.

4.35.2.19

DVR Sync NAC Matching

This field allows Digital Vehicular Repeater Network Access Code (DVRS NAC) syncing functionality of the Portable Subscriber Unit (PSU) and Digital Vehicular Repeater (DVR).

Portables in the coverage area of a specific DVR can negotiate a unique Network Access Code that is different from the codeplug programmed value for communication. This allows PSU in range of multiple DVRS to be heard by one DVR. When this field is enabled, the PSU unmutes to audio with any Network Access Code, regardless of the codeplug configured NAC value.

This ensures when PSU and DVR are set up for NAC syncing, the PSU detects audio from surrounding DVRS even if it is not registered with any DVR.

 **NOTE:** The PSU's Digital unmute rules for matching talkgroups apply in this mode of operation.

Accessed Only:

- When DVRS H-option is enabled, and when the Conventional System Type is set as DVRS.

4.35.2.20

Talkaround Audio Mode

This field allows the user to select the talkaround audio mode in the Conventional System.

Selections:

Phase 1 FDMA

All talkaround calls must use Phase 1 FDMA audio.

Phase 2 TDMA Compatible

All talkaround calls must use Phase 2 TDMA compatible audio.

Last Granted

Talkaround calls use the last granted rate. Use this option when using Dynamic Dual Mode talkgroups on the trunking system. In this mode, the PSU default to Phase1 FDMA before it's first inbound transmission through the DVR.

4.35.2.21

Prefer Talkaround in NoComms

This field removes PTT delays after the radio is unable to reach the DVR with an inbound transmission.

Once Talkaround is entered due to TA After DVRS No Communication Attempts, the Portable Subscriber Unit (PSU) will continue keying up in Talkaround mode on subsequent PTTs. This operation continues until the PSU connects with the DVR, after PTT is released. This feature also enables PSU to stay in Talkaround mode even after disconnected from DVR.

Accessed Only:

- When DVRS H-option is enabled.
- When the Conventional System Type is set as DVRS.
- When TA After DVRS No Communication Attempts is not set as **Disabled**.

4.35.2.22

Response Pending Time

This field selects the amount of time that the radio waits when expecting a further response from the Fixed Network Equipment (FNE) or Digital Vehicular Repeater (DVR), after having received an Acknowledge Response that its request is being processed and a further response is pending.

If this time expires, the radio no longer expects a response. This selection applies for the current DVRS Conventional System. Time is in seconds.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.



NOTE: When set to **Infinite**, the radio waits indefinitely for a further response from the FNE.

Table 327: SELECTIONS

SELECTIONS:	DEFINITIONS:
Timed Selections Include:	1 (second) To 255 (seconds). In Increments = 1 (second)
"Infinite":	The radio waits indefinitely for a further response from the FNE

4.35.3

Quik-Call II

This section allows you to view or define Quik-Call II (QCII) Tone functionality for individual QCII Conventional Systems.

 **NOTE:** Quik-Call II Conventional Systems are selected for use from the Conventional Personality's Non-ASTRO System field.

Accessed Only: When the System Type field is set to **Quik-Call II**, and when the radio is model/option capable.

4.35.3.1

Call Format

This field selects the Quik-Call II (QCII) Call Format (the specific sequence of tone frequencies) used by the current QCII Conventional System.

 **NOTE:** Once the appropriate Call Format is selected, the corresponding QCII Codes/Frequencies for Tone A and Tone B, and possibly for Tone C and Tone D, must be defined.

Accessed Only: When the [System Type on page 1056](#) field is set to **Quik-Call II**.

The following selections are supported:

- A-B
- A-B/A-C
- A-B/C-B
- A-B/Long B
- A-B/Long C
- A-B/A-C/Long C
- A-B/Long B/Long C
- A-B/A-C/Long B/Long C
- A-B/A-D/C-D
- A-B/C-D

4.35.3.2

Frequency

This field selects the receive Tone frequency for the current record/row, Tone A, B, C, or D, which collectively define the Quik-Call II (QCII) Call Format for the current QCII Conventional System.

 **NOTE:** Where applicable, selecting a value for this field automatically selects a value for the corresponding Tone [Code on page 1078](#) field (some Frequency vales do not have a corresponding Code, causing "None" to display in the Code field).

Accessed Only: When the [System Type on page 1056](#) field is set to **Quik-Call II**.

Table 328: Range

Minimum	Maximum	Increments
288.5 Hz	3086.0 Hz	0.1 Hz

4.35.3.3

Code

This field selects the receive Tone Code for the current record / row (Tone A, B, C, or D) for the current Quik-Call II (QCII) Conventional System.

Accessed Only: When the [System Type on page 1056](#) field is set to **Quik-Call II**.

See [Quik-Call II Standard Codes/Frequency Tones on page 1078](#) for a list of standard codes.

4.35.3.3.1

Quik-Call II Standard Codes/Frequency Tones

Freq (Hz)	Code										
288.5	138	441.6	EA	582.1	HZ	716.7	KZ	892.5	A5	1357.6	197
296.5	108	445.7	146	584.8	151	726.8	155	903.2	159	1395.0	198
304.7	139	457.1	EB	592.5	A1	727.5	A8	907.5	C5	1433.4	199
313.0	109	457.9	116	600.9	121	741.3	KA	912.0	MA	1472.9	170
321.7	140	470.5	147	602.6	HA	746.8	125	922.5	B5	1513.5	171
330.5	110	473.2	FZ	607.5	B1	757.5	A2	928.1	129	1555.2	172
339.6	141	483.5	117	617.4	152	767.4	156	937.5	A6	1598.0	173
346.7	CZ	489.8	FA	622.5	C9	772.5	C2	944.1	MB	1642.0	174
349.0	111	496.8	148	623.7	HB	787.5	B2	952.5	C6	1687.2	175
358.6	142	507.0	FB	634.5	122	788.5	126	953.7	160	1733.7	176
358.9	CA	510.5	118	637.5	A9	794.3	LZ	967.5	B6	1781.5	177
368.5	112	517.5	B7	645.7	JZ	802.5	A3	979.9	130	1830.5	178
371.5	CB	524.6	149	651.9	153	810.2	157	1006.9	161	1881.0	179
378.6	143	524.8	GZ	652.5	B0	817.5	C3	1034.7	131	1930.2	200
384.6	DZ	532.5	C7	667.5	C0	822.2	LA	1063.2	162	1989.1	201
389.0	113	539.0	119	668.3	JA	832.5	127	1092.4	189	2043.8	202

398. 1	DA	543. 3	GA	669. 9	123	847. 5	A4	1122 .5	190	2094 .5	203
399. 8	144	547. 5	A7	682. 5	A0	851. 1	LB	1153 .4	191	2155 .6	204
410. 8	114	553. 9	150	688. 3	154	855. 5	158	1185 .2	192	2212 .2	205
412. 1	DB	562. 3	GB	691. 8	JB	862. 5	C4	1217 .8	193	2271 .7	206
422. 1	145	562. 5	B8	697. 5	B9	877. 5	B4	1251 .4	194	2334 .6	207
426. 6	EZ	569. 1	120	707. 3	124	879. 0	128	1285 .8	195	2401 .0	208
433. 7	115	577. 5	C8	712. 5	C1	881. 0	MZ	1321 .2	196	2468 .2	209

4.35.3.4

Name (Quik-Call II)

This field displays the name assigned by RM for the Individual ID Tone added to the Quik-Call II list.



NOTE: Quik-Call II Conventional Systems are selected for use from the Conventional Personality's Non-ASTRO System field.

Accessed Only: When the [System Type on page 1056](#) field is set to **Quik-Call II**, and when the radio is model/option capable.

4.35.3.5

QCII Decode

This feature refers to the available Quik-Call II (QCII) system that will co-exist with the selected Motorola Data Communications (MDC). This feature provides the ability to decode and encode QCII, and to encode or decode MDC on the same channel.

If this feature is enabled, you can select Call Format. It also allows you to select the different tones available in Digital Tone Signaling in Analog.



NOTE: This feature cannot be enabled with Instant Recall.

4.35.4

Features

This section allows you to view or define basic functionality of individual ASTRO Signaling Systems.



NOTE: Conventional Systems are selected for use from the Conventional Personality's ASTRO System field or Non-ASTRO System field.

4.35.4.1

Radio Inhibit

This field enables the radio to receive a remote Inhibit signal while operating on the current Conventional System.

This inhibit signal is a shutdown command sent from the dispatcher unit. Upon receipt of this command, the radio transmits a quick acknowledgement to the dispatch equipment. The radio then goes into a dormant state during which the receiver audio is muted and the transmit audio path is blocked. While inhibited all your controls are rendered inoperative; Scan mode is stopped on the operating mode/channel which received the command, and all Radio LED's are turned off.



IMPORTANT: In order to clear the inhibited state of the radio, send an uninhibit command to the radio or redo the Read/Write process of the radio.

Accessed Only: When the System Type field is set to **DVRS** or **MDC**) or (when the System Type field is set to **ASTRO**, and when the Remote Site Interface System field is disabled.)

4.35.4.2

Text Messaging Service

This field selects the Text Messaging mode for the current ASTRO Conventional System.



WARNING: When Text Messaging Service is used while in Data Scan and the Data Scan Preamble Length is increased or decreased from the default value, the Retry Short Timer needs to be increased or decreased accordingly. For example in Direct Data Mode of operation (see Packet Data Mode), if the value of the Data Scan Preamble Length is increased to 30 (from the default of 20), then the Retry Short Timer should be increased to 25 seconds (from the default of 15). For every 10 units added for Data Scan Preamble Length, the Retry Short Timer should be increased by 10 seconds.



IMPORTANT:

You can access Text Messaging with the Text Messaging Service button-press, or the Text Messaging Service menu-selection.

You can access Quick Text Messaging with the TMS Quick Text button-press.

You can access Query Messaging with the TMS Query button-press.

Accessed Only: When the System Type field is set to **ASTRO**, and when a valid referenced Data Profile has been selected for the current System, , and when the radio is model/option capable.

The following selections are supported:

None

Feature is disabled.

List Only

Allows you to only select Text Messages from the programmed Quick Text Messages List.

Unlimited

Allows you to select from the Quick Text Messages, and enter your own text message from the radio keypad.



WARNING: This selection is only available on radios that have a keypad or Keypad Mic.



NOTE: This selection is not applicable to APX N70.

4.35.4.3

Radio Check

This field allows the radio to decode and automatically respond to a Radio Check.

Radio Checks allow a dispatcher to check the state of the radio (turned on or off), as long as the radio is within the range of the system. This feature applies for the current Conventional System.

Accessed Only: When the System Type field is set to **DVRS** or **MDC**) or (when the System Type field is set to **ASTRO**, and when the Remote Site Interface System field is disabled.)

4.35.4.4

Send Location to Peer

ASTRO system enables a transmitting radio to encode its location coordinates in its ASTRO voice transmissions in a manner similar to PTT ID (see also Display Peer Location).

This feature operates when Scan Mode is active; therefore, the radio encodes its location coordinates when transmitting in landed scan mode. This selection applies for the current Conventional System. DVRS system enables APX radios to transmit the GPS location to infrastructure through voice frames on the voice channel after PTT operation, so that their location can be seen on the mapping application.



WARNING: ARS Mode must be set as **Enhanced Server** in the Data Profile record to prevent invalid Fields Report when System Type is DVRS.



IMPORTANT:

In ASTRO system, the radio-to-radio voice transmissions support encoding the location coordinates in the voice stream; in other words, Conventional Pages and Selective Calls support Display Peer Location, however, DVRS, phone mode and other infrastructure-dependent features do not support Display Peer Location. In DVRS system, the radio-to-infrastructure voice transmission supports encoding the location coordinates in the voice stream.

If location coordinates are not obtainable from the radio's GPS receiver (either because the GPS signal is disrupted in some way, or User Selectable Location Enable is enabled and you have turned OFF the GPS feature with Location button-press or Location menu-selection), the radio encodes the last-saved location coordinates into the voice stream.

If the update interval since the last-saved location coordinates exceeds an internal timer, then the radio marks the location coordinates in the voice stream as being "stale"; if there are no saved location coordinates, the radio sends the voice stream without any location data.



NOTE: The location on PTT transmits the location information unencrypted.

Accessed Only: When the radio is model/option capable, and when the System Type field is set to **ASTRO**, and when the System Type field is set to **DVRS**, and ARS Mode is **Enhanced Server** in its Data Profile, and when the Location Enable field is enabled.

4.35.4.5

Status

This field enables the Status feature for the current Conventional System.

The Status feature allows you to select and transmit a specific Status from the programmed Status Alias List Window. You can activate the Status feature with a Status button-press, a Direct Status button-press, or a Status menu-selection (see also Status Number of Attempts and Status Auto Exit).

Accessed Only: When the radio is model/option capable, and ((when the System Type field is set to **DVRS** or **MDC**), or (when the System Type field is set to **ASTRO**, and when the Remote Site Interface System field is disabled)).

4.35.4.6

Select Call/In-Call Reset

This field selects a timed or manual unmute-exception to the programmed Conventional Personality ASTRO Rx Unmute Rule, and a timed or manual Unmute-exception for call alerts when you activate the channel Voice Mute (see the Conventional Personality In-Call User Alert Enable feature).

The exception time (timed or manual) is known as the Release Squelch State. For the two timed selections below, the Auto Reset Time field partially determines how long the Release Squelch State continues. This selection applies for the current Conventional System.



NOTE: ASTRO and DVRS Conventional Systems are selected for use from the Conventional Personality's ASTRO System field.



IMPORTANT:

For call alerts, the Release Squelch State begins when the Voice Mute In-Call User Alert Enable feature is active and the radio has un-muted.

For ASTRO System Calls when the Voice Mute In-Call User Alert feature is not active, the Release Squelch State begins when the Personality's ASTRO Rx Unmute Rule are met and the radio has un-muted. When you activate the Voice Mute In-Call User Alert feature, the Release Squelch state applies only to Call Alerts. This is true due to the Voice Mute feature only allowing the radio to unmute to Call Alerts.

Accessed Only:

- When the System Type field is set to **DVRS**, or
- When the System Type field is set to **ASTRO**, and when the Remote Site Interface System field is disabled.

The following selections are supported:

Selective Call : For the two timed selections, while the Auto Reset Time is running, whenever the radio's PTT button is pressed the timer is stopped and reset; once the PTT button is released the timer is then re-started (from zero) thus extending the Release Squelch State even further.

Manual

- For Mobile: Currently this selection does not apply for Selective Calls.
- For Portable: Pressing the "Monitor" button ends the Release Squelch State.

Auto

If the timer expires regardless of whether the radio is muted or un-muted, the Release Squelch State is ended and the radio's ASTRO Rx Unmute Rules are again required in order to unmute to any future transmissions.

Auto w/carrier

If the radio is un-muted when the timer expires (due to carrier override) the radio remains un-muted until carrier is dropped. Once carrier is dropped and the radio is muted, the timer is reset and re-started in-effect extending the Release Squelch state again; if the radio then remains muted for an entire timer period (without any carrier override), the Release Squelch State is ended and the ASTRO Rx Unmute Rules are again required in order to unmute to any future transmissions.

Call Alert

Manual

The following two manual methods of ending the Release Squelch State, also apply to you when "Auto" or "Auto w/carrier" are selected.

- When the Voice Mute In-Call User Alert Enable feature is active, pressing the Voice Mute button, or the Voice Mute menu-selection deactivates Voice Mute and ends the Release Squelch State.
- Pressing the PTT button ends the Release Squelch State.

Auto

If the timer expires, regardless of whether the radio is muted or un-muted, the Release Squelch State is ended and the Voice Mute In-Call User Alert Enable rules are again required in order to unmute to any future transmissions.

Auto w/carrier

If the radio is unmuted when the timer expires (due to carrier override) the radio remains unmuted until carrier is dropped. Once carrier is dropped and the radio is muted, the timer is reset and re-started in-effect extending the Release Squelch state again; if the radio then remains muted for an entire timer period (without any carrier override), the Release Squelch State is ended and the Voice Mute In-Call User Alert Enable rules are again required in order to unmute to any future transmissions.

4.35.4.7

Status Request

This field enables the radio to automatically respond to a remote status interrogation with the last attempted status. This feature applies for the current Conventional System.

Accessed Only: When the radio is model/option capable, and when the Status field is enabled, and ((when the System Type field is set to **DVRS** or **MDC**), or (when the System Type field is set to **ASTRO**, and when the Remote Site Interface System field is disabled)).

4.35.4.8

Auto Reset Time

This field selects an amount of time used during the unmute-exception to the programmed ASTRO Rx Unmute Rule or Non-ASTRO Unmute Type and selects an amount of time used during the Unmute-exception for Call Alerts when you activate the channel Voice Mute (see the ASTRO In-Call User Alert Enable field or the Non-ASTRO In-Call User Alert Enable).

The exception time is known as the Release Squelch State. This timer is only relevant to the two Select Call/In-Call Reset timed selections. This selection applies for the current Conventional System. Time is measured in seconds.

Accessed Only: When the Select Call/In-Call Reset field is not set to **Manual**, when the System Type field is set to **DVRS**, **MDC**, **DTMF**, **Quik-Call II**, or **ASTRO**, and when the Remote Site Interface System field is disabled.

Table 329: Range

Minimum	Maximum
0 s	255 s

4.35.4.9

Message

This field enables the Message feature for the current Conventional System.

The Message feature allows you to select and transmit a specific message from the programmed Message Alias List Window. You can activate the Message feature with a Message button-press, a Direct Message button-press, or a Message menu-selection.

Accessed Only: When the radio is model/option capable, and ((when the System Type field is set to "DVRS" or "MDC"), or (when the System Type field is set to **ASTRO**, and when the Remote Site Interface System field is **Disabled**)).

4.35.4.10

Remote Radio Mode

This field allows the radio to decode a Remote Monitor or Radio Trace command for the current Conventional System.



The radio's Tx LED becomes solid red indicating that the radio is transmitting in this Remote Monitor mode.

You can break out of a Remote Monitor mode with a manual channel change or by powering-off the radio.

This CPS field setting is not supported for third party accessories. Any changes in the settings must be done through your accessory developer.

Accessed Only: When the System Type field is set to **ASTRO** or **MDC**, and when the radio is model/option capable.

The following selections are supported:

Disabled

Remote Radio Mode is not available.

Radio Trace (Not possible for MDC)

The radio automatically keys-up sending unmodulated carrier allowing a lost or stolen radio to be found.

The radio keys-up for the time selected by the Tx Base Time.

Remote Monitor

The radio automatically keys-up transmitting audio. This is especially useful in an emergency Fall Alert situation. The radio keys-up for the time selected by the Tx Base Time.

4.35.4.11

Dynamic ID Enable

This field enables the Dynamic ID feature for the current Conventional System.

The Dynamic ID feature allows you to change the Individual ID and/or MDC Primary ID for the current Conventional System, without going through the application. You can activate the Dynamic ID feature with a Dynamic ID button-press or a Dynamic ID menu-selection. Your programmed ID is then used on the predetermined channels for data/voice transmission and receiving.

Accessed Only: (When the radio is model/option capable and when the DVRS Hardware Enable field is disabled), and ((when the System Type field is set to **DVRS** or **MDC**), or when the System Type field is set to **ASTRO** and when the Remote Site Interface System field is disabled.))

4.35.4.12

Tx Base Time

This field selects the amount of time that the radio remains keyed-up once a Remote Radio Mode command has been received.

This selection applies for the current Conventional System. Time is in seconds.

Accessed Only: When the System Type field is set to **ASTRO** or **MDC**, and when the Remote Radio Mode field is set to **Radio Trace** or **Remote Monitor**, and when the radio is model/option capable.

Table 330: Range

Minimum	Maximum	Increments
10 sec	120 sec	10 sec

4.35.4.13

Emergency Alarm Rx Indicator

This field enables an audio or visual (or both) indicator to occur on the radio when an emergency mode Alarm is detected and received from another radio.

The type of emergency Indicator is determined by the Emergency Alarm Rx Indicator Type field setting. This feature applies for the current Conventional System.



IMPORTANT:

The Emergency Alarm Rx Indicator time lasts for 10 seconds. During these 10 seconds, you can deactivate the indicator by pressing any of the radio's buttons except **volume** and **light**.

Once the indicator clears or is cleared, retried emergency alarms from the same MDC Primary ID, or ASTRO System Individual ID, are ignored for the next 20 seconds.

Emergency alarms are not detected while the radio is in scan mode.

Emergency alarms may not be detected any time the radio is not monitoring or decoding the control channel (for example, activity on a voice or data channel, RSSI sampling, etc).



NOTE: When the Emergency Alarm Rx Indicator Type field is not set to "No Indication", And ((when the System Type field is set to "DVRS" or "MDC"), Or (when the System Type field is set to "ASTRO", and when the Remote Site Interface System field is disabled)).

4.35.4.14

Data Operated Squelch (DOS)

This field causes the radio to automatically mute while receiving MDC signaling data.

This muting period is known as the Data Operated Squelch (DOS) period. This feature applies for the current Conventional System.

Accessed Only: When the System Type field is set to **MDC**.

4.35.4.15

Emergency Ack Enable

This field enables an IP Deskset in a Conventional System to be used to generate the emergency mode acknowledgement response ("Ack") to the radio, following an emergency alert being sent to the dispatcher, when a fully-featured dispatch console and/or base station is unavailable. This feature applies for the current Conventional System.



IMPORTANT: When the Extended Dispatch Enable field is **Enabled**, this field is **Enabled** and becomes view-only.

Applies Only: When the [Consolette Enable on page 438](#) field is **Enabled**.

Accessed Only: When the [System Type on page 1056](#) field is set to **ASTRO** or **MDC**, when the [Extended Dispatch Enable on page 1087](#) field is **Disabled**, and when the radio is model/option capable.

4.35.4.16

DOS Operation

This field selects the frequency type used to determine Data Operated Squelch (DOS) activation for the current Conventional System.

 **WARNING:** If you do not have complete knowledge of the system configuration that this radio will be operating on, do not attempt to modify this setting.

Accessed Only: When the System Type field is set to **MDC** and when the Data Operated Squelch (DOS) field is enabled.

The following selections are supported:

1800 hz

This selection is needed for backward compatibility to earlier radios. Therefore it is rarely used.

1200 / 1800 Hz

4.35.4.17

POP25 Enable

This field enables the radio to receive Programming Over Project 25 (POP25) communications while operating on the current ASTRO Conventional System.

POP25 is also referred to as OTAP (Over The Air Programming).

 **IMPORTANT:** For POP25 to be accomplished on an ASTRO System, an Advanced Conventional Key (ACK) or an Advanced System Key (ASK) with OTAP / POP25 access must be loaded in the CPS.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, when the System Type field is set to **ASTRO**, and when a valid referenced Data Profile has been selected for the current System, when the Remote Site Interface System field is disabled, and when the radio is model/option capable.

4.35.4.18

DOS Coast Time

This field selects an amount of time that the radio continues to wait in a muted state when the Data Operated Squelch (DOS) signal has faded.

If DOS is re-detected while this timer is running, this timer and the Rx Unmute Delay timer are stopped and reset. This helps to prevent temporary loss of Data in areas of poor signal strength, or high multi-path distortion. This selection applies for the current Conventional System. Time is in milliseconds.

 **WARNING:** If you do not have complete knowledge of the system configuration that this radio will be operating on, do not attempt to modify this setting.

Accessed Only: When the System Type field is set to **MDC**, and when the Data Operated Squelch (DOS) field is enabled.

Table 331: Range

Minimum	Maximum	Increments
0 ms	6375 ms	25 ms

4.35.4.19

CAI Data Registration

This field enables the radio to register on the data portion of the Fixed Network Equipment (FNE) infrastructure; the FNE is also referred to as "The System".

The data portion of the system then sends a Common Air Interface (CAI) Data Registration response or acknowledgement confirming the registration back to the radio. The radio events that trigger this registration include: radio power up, mode change, exiting scan, and radio power down. This feature applies for the current Conventional System.



WARNING:

This field becomes invalid if one of the following scenarios is true:

- When the System Type is set to **ASTRO**, when the referenced Data Profile's Data Profile Type is **Broadband-Only**, and when this field is set to **Enabled**.
- When the System Type is set to **ASTRO**, and when the referenced Data Profile's Data Profile Type is **Conventional & Broadband**, and when this field is set to **Disabled**.



IMPORTANT:

The radio only attempts CAI Data Registration when there is a data feature enabled on the radio's selected personality/channel.

The radio's data features are only available once the radio successfully registers with the system, and then when the radio receives back an acknowledgement of successful registration from the system.

Accessed Only: When the System Type field is set to **ASTRO**, when the Remote Site Interface System field is disabled, and when the radio is model/option capable.

4.35.4.20

Extended Dispatch Enable

This field enables the radio host within the Consolette to relay Trunked Signalling Blocks (TSBKs) over the air, as requested by a dispatch console.



TSBKs are digital signalling control packets that include Emergency Alarm Acks, Call Alerts, Statuses/ Messages, Radio Checks and Radio Inhibit / Uninhibit packets. With the exception of Call Alert, enabling the transmission of these packets over the air by the radio is programmed using this field. Call Alert packets are always transmitted when requested. This feature applies for the current Conventional System.

Applied Only: When the [Consolette Enable on page 438](#) field is **Enabled**.

Accessed Only: When the [System Type on page 1056](#) field is set to **ASTRO** or **MDC**, and when the radio is model/option capable.

4.35.4.21

Group Text Messaging Service

This field selects the Group Text Messaging mode for the current ASTRO or DVRS Conventional System.

Accessed Only: When the System Type field is set to **ASTRO** or **DVRS**, and when the radio is model/option capable.

The following selections are supported:

Disabled

Group Text Message will not be received.

Full Decode

Group Text Message will be received.

4.35.4.22

Personnel Accountability List Selection

This field allows you to select a personnel accountability list to be used while operating Conventional System.

Accessed Only: When the System Type field is set to **ASTRO** or **DVRS**, and when the radio is model/option capable.

The following selections are supported:

- Disabled
- Available Personnel Accountability

4.35.4.23

OTA Radio Alias Update Enable

This field allows the current system to update the radio alias.

Accessed Only: When the Radio ID Enable is enabled, and when [Rx Voice/Signal Type on page 1162](#) is not **Non-ASTRO**, and [ASTRO System on page 1102](#) is referencing a DVRS system, and when [OTA Radio Alias Type on page 1159](#) is not **Disabled**, and when the radio is model/option capable.

4.35.4.24

Qualify Emergency Alarm Rx

If this field is enabled, the radio is restricted from receiving Motorola Data Communications (MDC) Emergency Alarms when the incoming transmission fails to be Private Line (PL) or Digital Private Line (DPL) qualified by the radio. This qualification means that the incoming transmission must match the RX/TA Squelch Type and RX/TA Squelch Code of the Conventional Personality.

When appropriate, you must also enable this feature from the **Emergency Alarm Rx Indicator** field. This selection applies to the current Conventional MDC System.



IMPORTANT: If this field is enabled and the incoming signal fails the PL or DPL qualification, the emergency alarms are not detected.

4.35.5

Secure

This section allows you to view or define security and multikey functionality for secure-encoded transmit and receive communications on a per-DVRS Conventional System basis.



NOTE: Individual Conventional Systems are referenced to a Conventional Personality. These Conventional System settings can then become functional for all channel types within that Conventional Personality.

Accessed Only: When the System Type field is set to **DVRS**, and when the radio is model/option capable.

4.35.5.1

ASTRO OTAR Profile Index

This field selects the ASTRO OTAR Profile to be used while operating in ASTRO Over-The-Air-Rekeying (OTAR) mode.

This selection applies for the current DVRS Conventional System. All ASTRO OTAR parameters specified in the selected KMF profile then apply for the current Conventional System.



IMPORTANT:

When this ASTRO OTAR Profile Index is applicable and not set to **Disabled** for the current Conventional System, DVRS Hardware Key Select values for this System are chosen from a Hardware Key Reference in the Secure Encryption Key References List of the selected ASTRO OTAR Profile.

When this ASTRO OTAR Profile Index is non-applicable or **Disabled**, DVRS Hardware Key Select values are directly chosen from the Secure Wide Window's Encryption Key List.

Accessed Only: This field can be accessed only when the following conditions are met:

- The [System Type on page 1056](#) field is set to **DVRS**.
- The [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.
- The [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled.
- The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** or **ASTRO & MDC**.
- The current Conventional System has a referenced Data Profile.
- The radio is model/option capable.

4.35.5.2

Patch Key Select

This field selects the secure encryption key to be used during Patch Talkgroup communications while operating in secure encrypted mode.

Patch Talkgroups allow a dispatcher to join multiple talkgroups or users together so that all may communicate as one talkgroup. This selection applies for the current DVRS Conventional System.



IMPORTANT:

When the ASTRO OTAR Profile Index is applicable and not set to "Disabled" for the current Conventional System, this Key Select value is chosen from a Hardware Key Reference in the Secure Encryption Key References List of the selected ASTRO OTAR Profile.

When the ASTRO OTAR Profile Index is non-applicable or "Disabled", this Key Select value is directly chosen from a key in the Secure Wide Window's Encryption Key List.

Accessed Only: When the System Type field is set to **DVRS**, and when the [Secure Operation on page 880](#) field is not set to **Disabled**, and when the radio is model/option capable.

4.35.5.3

Failsoft Key Select

This field selects the secure encryption key to be used for failsoft mode while operating in secure encrypted mode.

This selection applies for the current DVRS Conventional System.



IMPORTANT:

When the ASTRO OTAR Profile Index is applicable and not set to "Disabled" for the current Conventional System, this Key Select value is chosen from a Hardware Key Reference in the Secure Encryption Key References List of the selected ASTRO OTAR Profile.

When the ASTRO OTAR Profile Index is non-applicable or "Disabled", this Key Select value is directly chosen from a key in the Secure Wide Window's Encryption Key List.

Accessed Only: When the System Type field is set to **DVRS**, when the [Secure Operation on page 880](#) field is not set to **Disabled**, and when the radio is model/option capable.

4.35.5.4

Private Call Key Select

This field selects the secure encryption key to be used for Private Call while operating in secure encrypted mode.

This selection applies for the current DVRS Conventional System.



IMPORTANT:

When the ASTRO OTAR Profile Index is applicable and not set to "Disabled" for the current Conventional System, this Key Select value is chosen from a Hardware Key Reference in the Secure Hardware Encryption Key References List of the selected ASTRO OTAR Profile.

When the ASTRO OTAR Profile Index is non-applicable or "Disabled", this Key Select value is directly chosen from a key in the Secure Wide Window's Encryption Key List.

Accessed Only: When the System Type field is set to **DVRS**, when the [Secure Operation on page 880](#) field is not set to **Disabled**, and when the radio is model/option capable.

4.35.5.5

Interconnect Key Select

This field selects the secure encryption key to be used for a Telephone Interconnect call (phone mode) while operating in secure encrypted mode.

This selection applies for the current DVRS Conventional System.



IMPORTANT:

When the ASTRO OTAR Profile Index is applicable and not set to "Disabled" for the current Conventional System, this Key Select value is chosen from a Hardware Key Reference in the Secure Encryption Key References List of the selected ASTRO OTAR Profile.

When the ASTRO OTAR Profile Index is non-applicable or "Disabled", this Key Select value is directly chosen from a key in the Secure Wide Window's Encryption Key List.

Accessed Only: When the System Type field is set to **DVRS**, when the [Secure Operation on page 880](#) field is not set to **Disabled**, and when the radio is model/option capable.

4.35.5.6

Dynamic Talkgroup Key Select

This field selects the secure encryption key to be used for a Dynamic Regrouping (Dynamic Talkgroup) while operating in secure encrypted mode.

This selection applies for the current DVRS Conventional System.



IMPORTANT:

When the ASTRO OTAR Profile Index is applicable and not set to "Disabled" for the current Conventional System, this Key Select value is chosen from a Hardware Key Reference in the Secure Encryption Key References List of the selected ASTRO OTAR Profile.

When the ASTRO OTAR Profile Index is non-applicable or "Disabled", this Key Select value is directly chosen from a key in the Secure Wide Window's Encryption Key List.

Accessed Only: When the System Type field is set to **DVRS**, when the [Secure Operation on page 880](#) field is not set to **Disabled**, when the Dynamic Regrouping Enable field is **Enabled**, and when the radio is model/option capable.

4.36

Conventional Personality

The **Conventional Personality** allows you to create and delete Conventional Personalities, as well as define individual Conventional Personalities. Conventional and Trunking are the two radio communications modes.



NOTE:

Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

4.36.1

General

This section allows you to view or define functionality for individual Conventional Personalities.



NOTE: Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

4.36.1.1

Conventional Personality Name

This field allows you to define a recognizable name for the current Conventional Personality.



NOTE:

Examples: Fire005, Electric1, #510.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.36.1.2

DVRS Profile

This field selects the DVRS Profile to be used with the current Conventional Personality.

Accessed Only: When the DVRS Hardware Enable field is **Enabled**, and when the radio is model/option capable.

The following selections are supported:

- DVRS Disabled
- Available DVRS Profiles

4.36.1.3

Conventional Personality Type

This field displays the type that was selected when the personality was created.

Conventional Personalities types include **ASTRO**, **DVRS**, **Mixed Mode**, **MDC**, **Quik-Call II**, and **No Signaling**.

4.36.2

ASTRO Call

This section allows you to view or define ASTRO or DVRS Call Alert and Selective Call functionality for individual Conventional Personalities.



NOTE:

Conventional Systems defined as having the "ASTRO" or "DVRS" System Type may be selected from the Conventional Personality's ASTRO System field, allowing for ASTRO Systems communications to occur.

Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

4.36.2.1

Selective Call Rx/Tx

This field selects whether an ASTRO/DVRS - Call can be transmitted, received, or both.

This feature applies while operating in ASTRO System or DVRS mode and on the current Conventional Personality.



IMPORTANT:

When the referenced Conventional System is an ASTRO System Type, this feature enables Conventional Selective Call functionality.

When the referenced Conventional System is a DVRS System Type, this feature enables Trunking Private Call functionality.



NOTE: You can activate a Selective or Private Call with a Select/Private Call button-press or a Select/Private Call menu-selection.

Accessed Only: When the radio is model/option capable, and when the personality is not automatically created by Zone Cloning feature, and

((when the [Rx Voice/Signal Type on page 1162](#) field is set to **Mixed Mode**), or (when the Rx Voice/Signal Type field is set to **ASTRO**, and when the Remote Site Interface System field in the referenced Conventional System is **Disabled**)).

The following selections are supported:

Disabled

No Selective/Private Calls are possible on the current Personality.

Decode

Selective/Private Calls may only be received (decoded).

Encode

Selective/Private Calls may only be transmitted (encoded).

Decode & Encode

Selective/Private Calls may be received and transmitted.

4.36.2.2

Tactical Inhibit Kill Operation

This field selects whether an ASTRO Tactical Inhibit Kill command can be transmitted or received (or both).



This feature applies while operating in ASTRO System mode and on the current Conventional Personality.



IMPORTANT: When the radio has been enabled to receive (Decode) or transmit (Encode) a Tactical Inhibit Kill command, either **Clear** or **Secure** Encryption may be selected in the [Packet Data Secure/Clear Strapping on page 1111](#) field.

Accessed Only: When the Tactical Inhibit Enable field is **Enabled**, and when the [Rx Voice/Signal Type on page 1162](#) field is **ASTRO** or **Mixed Mode**, and when the referenced Conventional System selected in the [ASTRO System on page 1102](#) field is not a DVRS System Type, and when the radio is model/option capable.



WARNING:

Selections are only valid when the referenced Conventional System selected in the ASTRO System field has a valid referenced Data Profile selected that has its Packet Data Mode field set to **Direct**, and has its Auto Generate IP Address field and its Auto Generate Target IP Address field **Enabled**.

For the **Encode** or **Decode & Encode** selections to be valid, the [Tx Voice/Signal Type on page 1100](#) field must be set to **ASTRO**.

The following selections are supported:

Disabled

Transmitting or receiving Tactical Inhibit Kill commands is not possible on the current Conventional Personality.



NOTE: This selection is always valid.

Decode

Enables the radio to receive a Tactical Inhibit Kill command. The over-the-air Kill command is initiated with a Kill menu-selection (see the Encode selection). You may also self-inflict a Kill command to his or her radio using the Direct Kill method. A Direct Kill is accomplished by pressing the radio's Top (Orange) Button and Side Top (Select) Button simultaneously. The feature applies only while operating in ASTRO Signaling mode and when on the current Conventional Personality.



WARNING: Do not program Channel Up, Channel Down, Zone Up, Zone Down, Zone Bank Up or Zone Bank Down on the Side Top (Select) Button, as this will prevent you from activating Direct Kill.

Encode

Enables the radio to transmit a Tactical Inhibit Kill command to a specific radio or group of radios. You can initiate the over-the-air Kill command with a Kill menu-selection. Only radios programmed to decode this Kill command are in fact Killed (see the Decode selection). You can select targeted radios from the [ASTRO Call Hot List on page 1097](#) or by a direct entry of an ASTRO System, Radio ID (from the radio's keypad). The feature applies only while operating in ASTRO Signaling mode and when on the current Conventional Personality.



IMPORTANT: Your initiate must successfully enter the programmed Tactical Inhibit Encode Password in order for the radio to transmit the Kill command.

Decode & Encode

Tactical Inhibit Kill commands may be received (see the Decode selection) and transmitted (see the Encode selection) on the current Conventional Personality.

4.36.2.3

Auto Selective Call Transmit

When enabled, once you select to send an ASTRO - Selective Call and selects a call recipient from the ASTRO Call Hot List, a Selective Call data packet is transmitted each time the radio's PTT button is pressed.

This feature applies while operating in ASTRO System mode and when on the current Conventional Personality.

When disabled, a Selective Call data packet is transmitted only when you initiate a Selective Call. That is, when you select to send a Selective Call, selects a call recipient from the Call Hot List, and then presses

the PTT button, the Selective Call data packet is transmitted once. Subsequent PTT presses do not send a Selective Call data packet.

 **NOTE:** You can activate Selective Call with a Select/Private Call button-press or a Select/Private Call menu-selection.

Accessed Only: (When the radio is model/option capable, and when the [Selective Call Rx/Tx on page 1092](#) field is **Encode** or **Decode and Encode**, and when the referenced Conventional System selected in the ASTRO System field is not a **DVRS** System Type), and ((when the [Rx Voice/Signal Type on page 1162](#) field is set to **Mixed Mode**), or (when the Rx Voice/Signal Type field is set to **ASTRO**, and when the Remote Site Interface System field in the referenced Conventional System is **Disabled**)).

4.36.2.4

Tactical Inhibit Stun Operation

This field selects whether an ASTRO Tactical Inhibit Stun command can be transmitted or received (or both).



This feature applies while operating in ASTRO System mode and on the current Conventional Personality.



IMPORTANT: When the radio has been enabled to receive (Decode) or transmit (Encode) a Tactical Inhibit Stun command, either **Clear** or **Secure** Encryption may be selected in the [Packet Data Secure/Clear Strapping on page 1111](#) field.

Accessed Only: When the Tactical Inhibit Enable field is **Enabled**, and when the [Rx Voice/Signal Type on page 1162](#) field is **ASTRO** or **Mixed Mode**, and when the referenced Conventional System selected in the ASTRO System field is not a DVRS System Type, and when the radio is model/option capable.



WARNING:

Selections are only valid when the referenced Conventional System selected in the [ASTRO System on page 1102](#) field has a valid referenced Data Profile selected that has its Packet Data Mode field set to **Direct**, and has its Auto Generate IP Address field and its Auto Generate Target IP Address field **Enabled**.

For the **Encode** or **Decode & Encode** selections to be valid, the [Tx Voice/Signal Type on page 1100](#) field must be set to **ASTRO**.

The following selections are supported:

Disabled

Transmitting or receiving Tactical Inhibit Stun commands is not possible on the current Conventional Personality.



NOTE: This selection is always valid.

Decode

Enables the radio to receive a Tactical Inhibit Stun command. The over-the-air Stun command is initiated with a Stun menu-selection (see the Encode selection). The feature applies only while operating in ASTRO Signaling mode and when on the current Conventional Personality.



NOTE:

Once you enter the correct Radio Lock Unlock Password the radio is immediately un-stunned.

The Password menu-selection allows you to change the Radio Lock Unlock Password.

Encode

Enables the radio to transmit a Tactical Inhibit Stun command to a specific radio or group of radios. The over-the-air Stun command is initiated with a Stun menu-selection. Only radios programmed to decode this Stun command are in fact Stunned (see the Decode selection). You can select targeted radios from

the [ASTRO Call Hot List on page 1097](#) or by a direct entry of an ASTRO System, Radio ID (from the radio's keypad). The feature applies only while operating in ASTRO Signaling mode and when on the current Conventional Personality.



IMPORTANT: Your initiate must successfully enter the programmed Tactical Inhibit Encode Password in order for the radio to transmit the Stun command.

Decode & Encode

Tactical Inhibit Stun commands may be received (see the Decode selection) and transmitted (see the Encode selection) on the current Personality.

4.36.2.5

Call Alert Rx/Tx

This field selects whether Call Alerts (also known as Pages), can be transmitted or received, (or both).

This feature applies while operating in ASTRO System mode and when on the current Conventional Personality.



NOTE: You can activate Call Alert with a Call Alert button-press or Page (Call Alert) menu-selection.

Accessed Only: When the radio is model/option capable, and ((when the [Rx Voice/Signal Type on page 1162](#) field is set to **Mixed Mode**), or (when the Rx Voice/Signal Type field is set to **ASTRO**, and when the Remote Site Interface System field in the referenced Conventional System is **Disabled**)), and ((when the DVRS Hardware Enable field is **Disabled**), or (when the DVRS Hardware Enable field is **Enabled**, and when the current Personality's referenced DVRS Profile has its DVRS Remote Activation field set to **Disabled**)).

The following selections are supported:

Disabled

No Call Alerts are possible on the current Personality.

Decode

Call Alerts may only be received (decoded).

Encode

Call Alerts may only be transmitted (encoded).

Decode & Encode

Call Alerts may be received and transmitted.

4.36.2.6

ASTRO Unlimited Calling

This field allows you to manually enter the ID of a targeted radio for a Selective Call, Call Alert, or Tactical Services. The action is known as a direct entry.

Once the call type is selected and the ASTRO Call Hot List appears in the radio display, direct entry of a desired ASTRO Radio ID (with a keypad) is possible. For Selective Call and Call Alert, pressing the **PTT** button transmits the call to one or more target radios of the entered ID. For Tactical Services, pressing the **Send** softkey menu transmits the Tactical Services command to one or more target radios of the entered ID.

The feature applies while operating in ASTRO System or DVRS mode, and on the current Conventional Personality.



IMPORTANT: When the referenced Conventional System is a DVRS System Type, then this feature enables Trunking Private Call functionality.

Accessed Only: This field can be accessed when the radio is model or option capable, and when one of the following conditions are met:

- The [Rx Voice/Signal Type on page 1162](#) field is set to **Mixed Mode**.

- The Rx Voice/Signal Type field is set to **ASTRO**, and the Remote Site Interface System field in the referenced Conventional System is **Disabled**.
- The [Selective Call Rx/Tx on page 1092](#) field, or the [Call Alert Rx/Tx on page 1095](#) field is set to **Encode**, or **Decode & Encode**.
- The Kill Operation field, or the Stun Operation field is set to **Encode**, or **Decode & Encode**.
- The Tactical Services Operation field is set to **Encode**, or **Decode & Encode**.

4.36.2.7

In-Call User Alert Enable

This field causes the radio to remain muted to normal dispatch calls whenever you activate the Voice Mute functionality.

Group and individual Call Alerts do unmute the radio for the alert tone to sound. The radio also unmutes for individual radio-to-radio calls such as Selective Calls, Tone Signaling calls and Interconnect (Phone Mode) calls. This feature is useful when you prefer not to hear affiliated talkgroup traffic but need to be in radio contact. This feature applies while operating in ASTRO System mode and on the current Conventional Personality.

When disabled, you are not able to toggle-on this feature for the current Conventional Personality.



NOTE: The Voice Mute button-press or Voice Mute menu-selection allows you to toggle on and off the Voice Mute functionality for an In-Call User Alert enabled channel.



WARNING: This ASTRO In-Call User Alert field must be **Enabled** when the [Rx Voice/Signal Type on page 1162](#) field is set to **Mixed Mode** and when the Signaling Type field is set to either **MDC** or **DTMF** or **Quik-Call II**.



IMPORTANT: When Voice Mute is active, Individual or Group Call Alerts decoded by the radio unmute the radio for the Release Squelch period. The Release Squelch period is defined by this personality's ASTRO System Select Call/In-Call Reset field selection. When the Call Alert (sent as an individual call or a group call) unmutes the radio, a voice call that follows can then be a group call. This group call is heard over the radio speaker but only until the Release Squelch period ends.

If the radio channel is changed and the radio deactivates Voice Mute, Voice Mute must be reactivated if desired when returning to the channel.

If you press the **PTT** button, launch Emergency Mode, or turn the radio off and back on, the radio deactivates Voice Mute.

ASTRO Radio Inhibit functionality is available.

The Scan mode and Monitor mode features are not available.

Other display indications from group call such as receiving LED and PTT-ID (if enabled) function normally.

Accessed Only: You can access this field only if the following conditions are met:

- The radio is model or option capable.
- The [Call Alert Rx/Tx on page 1095](#) field is set to **Decode** or **Decode and Encode**.
- The [Rx Voice/Signal Type on page 1162](#) field is set to **Mixed Mode**, or the **Call Alert Rx/Tx** field is set to **Decode** or **Decode and Encode**.
- The **Rx Voice/Signal Type** field is set to **ASTRO**.
- The **Remote Site Interface System** field in the referenced Conventional System is set to **Disabled** or the **Rx Voice/Signal Type** field is not set to **Non-ASTRO**.
- The **Tone Signaling List** field of the current Conventional Personality is referencing a Tone Signaling List that has at least one record or row where **Unmute Enable** is **Enabled**.

4.36.2.8

ASTRO Call Hot List

This field selects the ASTRO Conventional Hot List to be used for the current Conventional Personality.

You are able to select individual Call List members while operating in Conventional communications mode. Call List Members allow for Selective Call, Call Alert, or Tactical Services communications to one or more radios. The feature applies while operating in ASTRO System mode and on the current Conventional Personality.

Accessed Only: This field can be accessed when the radio is model or option capable, and when one of the following conditions are met:

- The [Rx Voice/Signal Type on page 1162](#) field is set to **Mixed Mode**.
- The Rx Voice/Signal Type field is set to **ASTRO**, and when the Remote Site Interface System field in the referenced Conventional System is **Disabled**.

4.36.2.9

Tactical Services Operation

This field allows you to select whether to disable, transmit (Encode), receive (Decode), or both (Encode & Decode).

Tactical Services Operation consists of :

- Radio Inhibit
- Radio Uninhibit
- Remote Monitor
- Radio Check

Disabled

Transmitting and receiving Tactical Services Operation is not possible on the current Conventional Personality.

Decode

Enables your radio to receive a Tactical Services Operation command.

Encode

Enables your radio to transmit a Tactical Services Operation command to a specific radio.



NOTE:

This feature applies while operating in an ASTRO system, and on the current Conventional Personality.

You can access these features using the menu or button selections.

4.36.2.10

Radio Uninhibit Decode Action

This field determines whether the compromised radio can be revived by using the Radio Uninhibit command. The inhibited radio is inoperable and the screen is blacked out.

The following selections are available:

Disabled

When the radio receives the Radio Uninhibit command, the inhibited radio is unchanged.

Unlock

When the radio receives the Radio Uninhibit command, the inhibited radio recovers and enters the Home Screen.

Lock

When the radio receives the Radio Uninhibit command, the inhibited radio enters the Lock Screen. To unlock the radio, you must enter the correct password. The radio then recovers and enters the Home Screen.

4.36.2.11

Remote Monitor Frequency Option

This field selects the desired Conventional Personality Frequency Option for Remote Monitor Tactical Services Operation to transmit and receive.



NOTE: Both Tx and Rx radios have to be programmed with the same frequency option in its codeplug configuration in order for the Tx radio to listen and monitor the Rx radio.

4.36.2.12

Remote Monitor Tx/Rx Timer (sec)

This field selects the amount of time that the radio remains keyed-up once a Remote Monitor Tactical Services Operation Command is received.

This selection applies for the current Conventional Personality. The time is in seconds.

Table 332: Range

Minimum	Maximum	Increments
10 seconds	120 seconds	5 seconds

4.36.3

ASTRO Talkgroup

This section allows you to view or define ASTRO System ASTRO Talkgroup List functionality for individual Conventional Personalities.



NOTE:

Conventional Systems defined as having the **ASTRO** System Type can be selected from the Conventional Personality's ASTRO System field, allowing for ASTRO Systems communications to occur.

Once the features of the Conventional Personalities have been uniquely defined, each personality can then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

4.36.3.1

Talkgroup

This field enables talkgroup functionality while operating in ASTRO System mode and on the current Conventional Personality.



NOTE: ASTRO Systems are selected for individual Conventional Personalities from the ASTRO System field.



WARNING: The [Rx Voice/Signal Type on page 1162](#) must be set to **ASTRO** or **Mixed Mode** for the current Personality; otherwise, this field's value becomes invalid.

Accessed Only: When the radio is model/option capable, and (when the Remote Site Interface System field in the referenced Conventional System is **Disabled**; if **Enabled**, then the Rx Voice/Signal Type field must be set to **ASTRO**, and this Talkgroup selection must be **Disabled**; else, this field becomes invalid).

4.36.3.2

Selection Type

This field allows you the ability to choose a talkgroup from the selected ASTRO Talkgroup List, or to not give you the ability to change the talkgroup.

The Talkgroup List is selected from the [Talkgroup List on page 1099](#) on this same page. This selection applies while operating in ASTRO System mode and on the current Conventional Personality.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO** or **Mixed Mode**, and when the [Talkgroup on page 1098](#) field is **Enabled**, and when the personality is not automatically created by the Zone Cloning feature.

The following selections are supported:

Strapped

The Talkgroup selected by the ASTRO Talkgroup ID field is strapped to the current Conventional Personality and cannot be changed.

Selectable

You are able to switch from the preset Talkgroup ID to another Talkgroup ID from within the Conventional Personality's Talkgroup List, selected on this same page.

You are only able to switch Talkgroups with a Talkgroup button-press or Talkgroup menu-selection.

4.36.3.3

Talkgroup List

This field selects an ASTRO Talkgroup List to be used while operating in ASTRO System mode and on the current Conventional Personality.



WARNING:

When the [ASTRO OTAR on page 1114](#) field is **Enabled** for the current Conventional Personality, only those ASTRO Talkgroup Lists that are referencing the same ASTRO OTAR Profile, from the Talkgroup List's ASTRO OTAR Profile field, that the current Conventional Personality is referencing (from the Personality's ASTRO OTAR Profile field) may be selected.

When the ASTRO OTAR field is **Disabled** for the current Conventional Personality, any Talkgroup List may be selected.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO** or **Mixed Mode**, and when the [Talkgroup on page 1098](#) field is **Enabled**, when the personality is not automatically created by the Zone Cloning feature.

4.36.4

Tx Options

This section allows you to view or define functionality having only to do with the radio's transmit mode for individual Conventional Personalities.



NOTE: Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

Accessed Only: When the Receive Only Personality field is **Disabled**.

4.36.4.1

Tx Voice/Signal Type

This field selects the voice-transmit (Tx) signaling mode that applies when the Rx Voice/Signal Type field for the current Conventional Personality is set to **Mixed Mode**.



IMPORTANT:

When the [Rx Voice/Signal Type on page 1162](#) field is set to **Non-ASTRO** or **ASTRO** mode, this selection must exactly follow the Rx Voice/Signal Type selection for the current Conventional Personality in order to be considered valid by the RM.

This field remains accessible even when this personality's [Receive Only Personality on page 1162](#) field is **Enabled**, because this personality will still be capable of initiating Emergency Mode when the [Emergency Revert Type on page 1103](#) is set to **Revert Channel**, [Emergency Revert Zone on page 1105](#) and [Emergency Revert Channel on page 1105](#) assignments are defined for this personality.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

ASTRO

Only ASTRO System digital signals are transmitted.

Non-ASTRO

Analog signals are transmitted.



NOTE: Depending on the version in use and/or the capability of the radio, Phone Mode operation may be unavailable in **ASTRO** mode.

4.36.4.2

Time Out Timer

This field selects the amount of time that the radio is able to transmit.

When this timer expires, the radio is automatically de-keyed and a continuous alert tone is sounded for as long as the PTT button is pressed. To continue transmitting, the PTT button must be released and the radio re-keyed. This feature applies for the current Conventional Personality. Time is in seconds.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**, and (if the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO**, then the Remote Site Interface System field in the referenced Conventional System must be **Disabled**).

Table 333: SELECTIONS

SELECTIONS	DEFINITIONS
Time Selections Include	<ul style="list-style-type: none"> • 15 (seconds) To 465 (seconds) (For Non-APX4000XH Radios) • 15 (seconds) To 60 (seconds) (For APX4000XH Radios) In Increments = 15 (seconds)
"Infinite":	<ul style="list-style-type: none"> • No timer used; therefore an infinite talk time(For Non-APX4000XH Radios) • Invalid (For APX4000XH Radios)

4.36.4.3

Transmit Pre-Emphasis

This field enables transmit (Tx) pre-emphasis audio filtering for the current Conventional Personality.

 **NOTE:** Pre-emphasis increases the signal-to-noise ratio for higher frequencies; that is, the lower frequencies noise is reduced and the higher frequencies voice is increased.

 **NOTE:** [Rx De-Emphasis on page 1164](#) reverses a pre-emphasized signal when received by the radio.

 **WARNING:** When this feature is enabled, it becomes invalid when the Analog Flat Audio field is also **Enabled**. Therefore both features may not be enabled on the same Personality.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**.

4.36.4.4

Reverse Burst/Turn-Off Code

This field enables either the Tone Private Line (TPL) Reverse Burst or Digital Private Line (DPL) Turn-Off Code to be transmitted when the radio is de-keyed.

This is based on the [Tx Squelch Type on page 1129](#) (TPL or DPL) selected for the current Conventional Personality.

 **NOTE:** Both features transmit a sub-audible tone that causes the receiving radio to mute its speaker before loss of a carrier is detected. Muting the speaker eliminates unwanted noise (squelch tail) during loss of carrier detection.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**.

4.36.4.5

Transmit Power Level

This field selects the radio's power level for transmitting while operating on the current Conventional Personality.

 **NOTE:** The Tx Low Power button-press, the Tx Low Power switch-toggle, and the Power menu-selection take precedence over this setting when selected by you.

During Emergency Mode the radio automatically transmits at high power.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**.

The following selections are supported:

Low

Used when communicating in close proximity, and to keep the radio from transmitting into other geographical groups operating on the same frequency.

High

Used when a stronger signal is needed to extend transmission distances.

4.36.4.6

Adaptive Power

This field enables the radio to use a mid-power operation level if the signal strength report from the dispatch station indicates a strong received signal.

The radio always transmits initially with full power. Once the radio de-keys it looks for a data message from the station. If the station reports that the last reception was strong, the radio automatically switches to a

mid-power setting. This feature applies while operating in ASTRO Signaling mode and when on the current Conventional Personality.

 **NOTE:** Adaptive power is only available on ASTRO Tx channels.

Accessed Only: (When the radio is model/option capable, and when the [Transmit Power Level on page 1101](#) field is **High**), and ((when the [Rx Voice/Signal Type on page 1162](#) field is **Mixed Mode**), or (when the Rx Voice/Signal Type field is **ASTRO**, and when the Remote Site Interface System field in the referenced Conventional System is **Disabled**)).

4.36.4.7

Talk Permit Tone

If this field is enabled, you can access talk permit tone for Digital Conventional System.

This field allows you to recognize that you are not out of range after pressing the **PTT** button on the repeater frequency that is programmed on the radio.

 **NOTE:** Digital Conventional PTT Tone must be disabled on a P25 Conventional channel intended for voice communication through Digital Vehicular Repeater System (DVRS).

When this field is enabled, the repeater's drop out delay must be enabled with the delay set to at least 1 s.

Accessed Only: When the System Type for the current Conventional System is selected as **ASTRO**, and when the radio is model/option capable.

4.36.5

Signaling

This section allows you to view or define ASTRO Signaling and Non-ASTRO Signaling (MDC, DTMF, Quik-Call II, and Singletone) functionality for individual Conventional Personalities.

 **NOTE:** Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

4.36.5.1

ASTRO System

This field selects the desired ASTRO or DVRS Signaling System to be used for the current Conventional Personality.

This previously-defined Conventional System and all of its programmed settings then apply for this channel.

 **IMPORTANT:** Only Conventional Systems having an ASTRO or DVRS System type (previously defined in the System's System Type field) may be selected in this field.

 **NOTE:** The value of the ASTRO System is referred to the first Conventional System record if the personality is not automatically created by the Zone Cloning feature. The value cannot be changed.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **ASTRO** or **Mixed Mode**, and when the radio is model/option capable.

4.36.5.2

Emergency PTT ID

This field enables the radio's currently-selected MDC Unit/Primary ID Primary ID to transmit with each Emergency Mode Call.

Therefore, Emergency PTT ID only applies when the Emergency Type field is set to **Alarm & Call**. This feature applies for the current Conventional Personality.

 **NOTE:** The actual transmitted Emergency PTT ID is determined by the current Conventional Personality's selected (MDC only) System Number.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO** or **Mixed Mode**, and when the Non-ASTRO Signaling Type field is **MDC**, and when an **MDC** System Type referenced Conventional System having a referenced Conventional Emergency Profile has been selected, and when that referenced Emergency Profile has its Emergency Type field set to **Alarm & Call**.

4.36.5.3

ASTRO Digital Modulator Type

This field selects the Digital Modulator Type while operating in ASTRO signaling mode and on the current Conventional Personality.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **ASTRO** or **Mixed Mode**, and when the radio is model/option capable.

The following selections are supported:

C4FM

Continuous 4-Level Frequency Modulation for non-simulcast operation.

CQPSK

Compatible Quadrature Phase Shift Keying for narrowband simulcast operation. Available when the radio model is equipped for Common Air Interface (CAI) Digital Operation.

WIDE

Wideband simulcast operation. Available when the [Tx Deviation/Channel Spacing on page 1134](#) field is not set to **2.5 kHz**.



WARNING: This selection is invalid if the following is true when the Rx Voice/Signal Type field is **ASTRO** or **Mixed Mode**, and ((when the Primary Frequency Band is **900 MHz**), or (when the Allow Invalid Frequencies field is **Enabled**, and when the 900 MHz Used in Codeplug field is **Enabled**)).

4.36.5.4

Emergency Revert Type

This field selects the type of emergency revert to be used for the current Conventional Personality.

Accessed Only: (When the [Tx Voice/Signal Type on page 1100](#) field is set to **ASTRO**, and when an ASTRO System Type referenced Conventional System having a referenced Conventional Emergency Profile has been selected) or (when the Tx Voice / Signal Type field is set to **Non-ASTRO**, and when the Non-ASTRO Signaling Type field is set to **MDC**, and when an MDC System Type referenced Conventional System having a referenced Conventional Emergency Profile has been selected.)

The following selections are supported:

Selected Channel

No Revert Channel is used; emergencies transmit on the radio's currently-selected channel.

Revert Channel

The [Emergency Revert Zone on page 1105](#) and [Emergency Revert Channel on page 1105](#) selected for this Personality are used for emergency transmissions.

Revert Talkgroup

The Revert Talkgroup selected for this Personality is used for emergency transmissions.

This selection is Accessed Only when the radio is DVRS Portable Subscriber Unit (PSU) capable.



WARNING: This selection is only valid when a **DVRS** System Type referenced Conventional System having a referenced Conventional Emergency Profile has been selected, and the [Talkgroup on page 1098](#) field is **Enabled**.

4.36.5.5

ASTRO Rx Unmute Rule

This field selects the radio's ASTRO receive (Rx) unmute mode while operating in ASTRO or DVRS signaling mode and when on the current Conventional Personality.



WARNING:

When the System Wide All-Call Talkgroup ID **65535** is selected for the current channel/personality (selected in the ASTRO Talkgroup ID field), and when the [Selection Type on page 1099](#) field is **Strapped, Normal Squelch** is the only valid selection for this field.

When the System Wide Receive-Only Talkgroup ID **0** (a receive-only Talkgroup) is selected for the current channel/personality, **Selective Squelch** is the only valid selection for this field.

When PSU (Conventional Personality is DVRS) turns on Scan, subscriber firmware will set ASTRO Rx Unmute Rule to "Normal Squelch".



NOTE: When transmitting on the System Wide All-Call Talkgroup ID **65535** (for the current channel/personality), the radio automatically receives ASTRO voice on the **Normal Squelch** setting, regardless of the setting of this field.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **ASTRO** or **Mixed Mode**, and when the radio is model/option capable.

The following selections are supported:

Normal Squelch

The radio unmutes upon decoding a [Rx Network ID on page 1136](#) match. The radio unmutes even when it is expecting DES-XL but receives DES-OFB (see the [DES-XL Tx Default on page 1109](#) field).



NOTE: Available when the [Talkgroup on page 1098](#) field or the [Selective Call Rx/Tx on page 1092](#) field is **Enabled**.

Selective Squelch

The radio unmutes upon decoding a Network ID match and (either a Talkgroup ID match or a Selective Call.) If the DES-XL Tx Default selection determines the type of encryption algorithm that the radio expects to receive when in this mode.



NOTE: Available when the Talkgroup field or the Selective Call Rx/Tx field is **Enabled**.

Data And Squelch

The radio unmutes upon decoding a Network ID match and a Selective Call.



NOTE: Available when the Selective Call Rx/Tx field is **Enabled**.

Digital CSQ

The radio unmutes to all Digital CAI Operation compliant voice signals.

4.36.5.6

Emergency Revert Zone

This field selects Zone that is used for the duration of an emergency mode transmission.

This selection applies for the current Conventional Personality.



NOTE:

Once the zone is selected, the [Emergency Revert Channel on page 1105](#) may then be selected.

Zones and their channels must be previously defined in the Zone Channel Assignment Window.



WARNING: Only non-Dynamic Zones (zones that have Dynamic Zone Enable **Disabled**) can be selected; otherwise, this field becomes invalid.

Accessed Only: When the [Emergency Revert Type on page 1103](#) field is set to **Revert Channel**, and (when the [Tx Voice/Signal Type on page 1100](#) field is set to **ASTRO**, and when an ASTRO System Type referenced Conventional System having a referenced Conventional Emergency Profile has been selected) or (when the Tx Voice/Signal Type field is set to **Non-ASTRO**, and when the Non-ASTRO Signaling Type field is set to **MDC**, and when an MDC System Type referenced Conventional System having a referenced Conventional Emergency Profile has been selected).

4.36.5.7

ASTRO Late Entry Fast Unmute

This field enables the radio to unmute to a call already in progress prior to determining if the call is a Secure call.

This feature allows calls to unmute 180 to 360 ms faster. This feature applies while operating in ASTRO signaling mode and on the current Conventional Personality.



IMPORTANT: It is recommended that this feature only be used on non-secure channels because radios receiving secure calls will unmute to unintelligible audio until the call is recognized as secure.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **ASTRO** or **Mixed Mode**, and when the radio is model/option capable.

4.36.5.8

Emergency Revert Channel

This field selects a designated Conventional channel that is used for the duration of an emergency mode transmission.

This selection applies for the current Conventional Personality.



NOTE:

The Emergency Revert Channel must be selected prior to selecting this channel.

Zones and their channels must be previously defined in the Zone Channel Assignment.



WARNING:

In order for a Trunking channel to be selected as the Emergency Revert Channel, the **Multiple Emergency Revert** Extended Feature must appear in the Extended Feature Name field.

For APX™ 3000 Portable codeplugs, only the first 48 channels in the selected Revert Zone are considered valid selections by the application.

This Emergency Revert Channel selection is only considered valid when the Trunking Talkgroup field for the selected Trunking Personality/channel is not set to **DYN** or **ATG**, and when the [Receive Only Personality on page 1162](#) field for the selected Conventional Personality/channel is **Disabled**, and when the ASTRO Talkgroup ID field for the selected Conventional Personality/channel is not set to **DYN** or **ATG**, and when the Transmit Mode field for the selected Trunking Personality/channel is not set to **TG/AG Disabled (Listen-Only)**, and when the Emergency Profile Selection for the selected channel is not **Emergency TX Disabled**.

Accessed Only: When the [Emergency Revert Type on page 1103](#) field is set to **Revert Channel**, and when the Revert Zone field is not set to a Dynamic Zone, and (When the [Tx Voice/Signal Type on page 1100](#) field is set to **ASTRO**, and when an ASTRO System Type referenced Conventional System having a referenced Conventional Emergency Profile has been selected) or (when the Tx Voice/Signal Type field is set to **Non-ASTRO**, and when the Non-ASTRO Signaling Type field is set to **MDC**, and when an MDC System Type referenced Conventional System having a referenced Conventional Emergency Profile has been selected.)

4.36.5.9

Tone Signaling List

This field selects the Tone Signaling List to be used on the current Conventional Personality.



NOTE: Tone Signaling List functionality is defined in the Tone Signaling List Page.

Accessed Only: When the Tone Signaling List is set to **Tone Signaling Disabled**, or when the [Rx Voice/Signal Type on page 1162](#) field is set to **Non-ASTRO**, and when the Signaling Type is set to **Quik-Call II**, or when the Rx Voice/Signal Type field is set to **Mixed Mode**, and when the [Tx Voice/Signal Type on page 1100](#) is set to **Non-ASTRO**, and when the Signaling Type is set to **Quik-Call II** or when the Rx Voice/Signal Type field is not set to **Non-ASTRO**, or when the radio is a model/option capable.

The following selections are supported:

- Tone Signaling Disabled
- Available Tone Signaling Lists

4.36.5.10

Revert Talkgroup

This field selects (in decimal or hex format) the ID for the Revert Talkgroup to be used while operating in emergency mode.

Emergency Alarms and Emergency Calls revert and transmit on this Talkgroup.

 **IMPORTANT:** This only applies when the referenced Trunking Emergency Profile has its Emergency Talkback field set to **Revert**.

 **NOTE:** Revert Emergency Talkback is also known as **Non-Tactical Emergency**. This selection applies for the current Conventional Personality.

 **IMPORTANT:** This Revert Talkgroup ID is also used when emergency mode is entered from an Announcement Group or from a Dynamic Regrouping. This is true no matter if the referenced Trunking Emergency Profile has its Emergency Talkback field set to **Tactical** Emergency or **Revert** Emergency.

Accessed Only: When a **DVRS** System Type referenced Conventional System having a referenced Conventional Emergency Profile has been selected, and when the [Talkgroup on page 1098](#) field is **Enabled**, and when the radio is model/option capable.

Table 334: Range

Minimum	Maximum
1 Hex	FFFE Hex

4.36.5.11

Non-ASTRO Signaling Type

This field selects the type of analog signaling system used for receive and transmit communications while operating on the current Conventional Personality.

 **WARNING:** When the Analog Flat Audio field is **Enabled**, this field must be set to **None**; otherwise it becomes invalid. Therefore both features may not be enabled on the same Personality.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO** or **Mixed Mode** and the personality is not automatically created by the Zone Cloning feature.

The following selections are supported:

- None
- MDC
- DTMF
- Quik-Call II

 **NOTE:** Selections are radio model/option dependent.

4.36.5.12

Revert TG Secure/Clear Strapping

This field selects the transmit mode while operating in emergency mode for the Revert Talkgroup.

This selection applies for the current Conventional Personality.

Accessed Only: When a DVRS System Type referenced Conventional System having a referenced Conventional Emergency Profile has been selected, and when the [Emergency Revert Type on page 1103](#) field is set to **Revert Talkgroup**, and when the Secure Operation field is not set to **None**, and when the radio is model or option capable.

The following selections are supported:

Clear

Straps or commits the [Revert Talkgroup on page 1106](#)/channel to normal (non-secure) Conventional operation.

Select

Allows you to toggle on or off secure encrypted operation for the current the talkgroup.

The Secure Tx Select button-press or the Secure Tx Select switch-toggle or the Secure menu-selection allows you to toggle on or off Secure encrypted communications.

Secure

Straps or commits the talkgroup to Secure encrypted operation.

4.36.5.13

System Number

4.36.5.14

Revert TG Key Select

This field selects the secure encryption key used while operating in emergency mode for the Revert Talkgroup.

This selection applies for the current Conventional Personality.



IMPORTANT:

When the ASTRO OTAR Profile Index is applicable for the current Conventional Personality, this Key Select value is chosen from a Hardware Key Reference in the Secure Encryption Key References List of the selected ASTRO OTAR Profile.

When the ASTRO OTAR Profile Index is not applicable, this Key Select value is directly chosen from a key in the Secure Wide Window's Encryption Key List.

Accessed Only: When a DVRS System Type referenced Conventional System having a referenced Conventional Emergency Profile has been selected, and when [Revert TG Secure/Clear Strapping on page 1107](#) is applicable and not set to **Clear**, and when the radio is model/option capable.

4.36.5.15

Non-ASTRO PTT ID

This field enables the MDC or DTMF PTT ID to transmit with each outbound communication.



NOTE: The PTT ID is equivalent to the CPS-defined Primary ID. Transmitting the Primary ID allows for Caller ID on the receiving radio. This feature applies for the current Conventional Personality.



NOTE:

When the PTT-ID field selection is **Leading Edge** or **Both**, the PTT ID is transmitted each time the PTT button is pressed/keyed.

When the PTT-ID field selection is **Trailing Edge** or **Both**, c



WARNING: The PTT-ID must not be set to **None** in the referenced MDC or DTMF Conventional System.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO** or **Mixed Mode**, and when the Non-ASTRO Signaling Type field is **MDC** or **DTMF**, and when the [Receive Only Personality on page 1162](#) field is **Disabled**.

4.36.6

Secure

This section allows you to view or define security functionality for secure transmit and receive encoded communications.

This functionality can be customized for individual Conventional Personality.



NOTE: Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

4.36.6.1

Secure Voice/Signal Type

This field selects the secure encrypted voice signaling mode for the current Conventional Personality.



WARNING:

When the [Rx Voice/Signal Type on page 1162](#) field is **ASTRO** or **Mixed Mode**, ASTRO becomes the valid Secure Voice/Signal mode.

When the Rx Voice/Signal Type field is **Non-ASTRO**, SecureNet becomes the valid Secure Voice/Signal mode.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, or (when the [Secure Operation on page 880](#) field is set to **Software**, and when the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO** or **Mixed Mode**).

The following selections are supported:

ASTRO

When the Rx Voice/Signal Type field is set to **ASTRO** or **Mixed Mode**.

SecureNet

When the Rx Voice/Signal Type field is set to **Non-ASTRO**.

4.36.6.2

XL Transmit

This field enables analog/SecureNet™ Data Encryption Standard - Extended Range (DES-XL) for the current Conventional Personality.

DES XL is a Type 3 encryption standard (mid-level).

When disabled, analog/SecureNet Data Encryption Standard (DES) applies for the current Conventional Personality.



NOTE: The receive communications of the secure XL chip need not be configured since it automatically decrypts both XL and Non-XL data streams.

Accessed Only: When the Secure Operation field is set to **Hardware**, and when the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO**, and when the [Voice Secure/Clear Strapping on page 1110](#) field is not **Clear**, and when the [Secure Voice/Signal Type on page 1109](#) field is **Securenet**, and when the radio is model/option capable.

4.36.6.3

DES-XL Tx Default

This field enables digital Data Encryption Standard - Extended Range (DES-XL) algorithm as the default for all encrypted voice and data transmissions while operating on the current Conventional Personality.

This is only true when you do not initiate transmission during the Key ID - Rx Hang Time. DES XL is a Type 3 encryption standard (mid-level).

When disabled, digital Data Encryption Standard - Output Feedback (DES-OFB) applies for the current Conventional Personality.



IMPORTANT: This feature only applies when the radio is equipped with a DES-XL/DES-OFB dual algorithm encryption module.

Accessed Only: When the radio is model/option capable, and when the [Rx Voice/Signal Type on page 1162](#) is **ASTRO** or **Mixed Mode**, and when the [Secure Operation on page 880](#) field is set to **Hardware**, and (when the [Secure Voice/Signal Type on page 1109](#) field is **ASTRO**, and when the [ASTRO Talkgroup on page 1098](#) field is **Enabled**, or when the [Voice Secure/Clear Strapping on page 1110](#) field is **Select** or **Secure**, or (when an **ASTRO** System Type referenced Conventional System having a valid referenced Data Profile has been selected, and when the Terminal Data field in that Data Profile is **Enabled**), and when the [Packet Data Secure/Clear Strapping on page 1111](#) field is **Select** or **Secure**)).

4.36.6.4

Voice Secure/Clear Strapping

This field selects the secure encryption transmit mode for the current Conventional Personality.



WARNING:

When the Analog Flat Audio field is **Enabled**, this field must be set to **Clear**; otherwise, it becomes invalid. Therefore both features may not be enabled on the same Personality.

(When the Primary Frequency Band is **900MHz**), or (when Allow Invalid Frequencies is **Enabled**, and when 900 MHz Used in Codeplug is **Enabled**), and (when the Secure Operation field is set to **Hardware**, and when the [Rx Voice/Signal Type on page 1162](#) field is set to **Non-ASTRO**, and when the [Tx Deviation/Channel Spacing on page 1134](#) for one of the current Frequency Options profiles (records/rows) is set to **2.5khz / 12.5khz**), then this field must be set to **Clear**; otherwise, it becomes invalid.

Accessed Only: (When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Talkgroup on page 1098](#) field is disabled, and when the personality is not automatically created by the Zone Cloning feature, and

(when the [Rx Voice/Signal Type on page 1162](#) field is **Mixed Mode** or **ASTRO**, and

when the Remote Site Interface System field in the referenced Conventional System is disabled)),

Or

(when the [Secure Operation on page 880](#) field is set to **Hardware**, and when the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO**).

The following selections are supported:

Select

Allows you to toggle on or off secure encrypted communications.

Either the Secure Tx Select button-press or the Secure Tx Select switch-toggle or the Secure menu-selection allows you to toggle between Secure or Clear communications for that channel.

Clear

Straps or commits the channel to normal (non-secure) Conventional operation.

Secure

Straps or commits the channel to secure encrypted operation.

4.36.6.5

Voice Key Strapping

This field selects if you can select the voice encryption key or not while operating on the current Conventional Personality.

Accessed Only: When the [Voice Secure/Clear Strapping on page 1110](#) field is applicable and not set to **Clear**, and when the radio is model/option capable.

The following selections are supported:

Select

Allows you to select the appropriate secure encryption key.

Strapped

The key selected from the [Voice Key Select on page 1111](#) field is permanently strapped to the current Conventional Personality.



WARNING: The key menu-selection must be chosen in order for you to be able to select keys for the current Conventional Personality.

4.36.6.6

Voice Key Select

This field selects the voice encryption key that applies while operating on the current Conventional Personality.

These keys are programmed in the Secure Encryption Key List.



IMPORTANT:

When the [ASTRO OTAR on page 1114](#) field is **Enabled** for the current Conventional Personality, this Key Select value is chosen from the Secure Hardware Encryption Key References List of the Secure KMF Profile selected in the KMF Profile Index field for the current Conventional Personality.



WARNING: Be aware that the application is actually pointing to the Keys of the Encryption Key List for this selection; individual Keys from the Secure Hardware Encryption Key References List reference the Encryption Key List's Keys from the Encryption Key Reference field. Therefore any key selected when ASTRO OTAR is **Enabled**, must first be defined in the Secure Hardware Encryption Key References List.

When the ASTRO OTAR field is **Disabled** for the current Conventional Personality, this Key Select value is directly chosen from the Secure Wide Window's Encryption Key List.

Accessed Only: When the [Voice Secure/Clear Strapping on page 1110](#) field is applicable and not set to **Clear**, and when the radio is model/option capable.

4.36.6.7

Ignore Rx Clear Voice

This field causes the radio to ignore all "Clear" (non-secure encrypted) voice communication while operating on the current Conventional Personality.



Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and (IF the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO**, THEN the Remote Site Interface System field in the referenced Conventional System must be disabled).

4.36.6.8

Packet Data Secure/Clear Strapping

This field selects the Association of Public-Safety Communications Officials (APCO) Packet Data transmit mode for the current Conventional Personality.

The following selections are supported:

Clear

The radio transmits APCO Packet Data in non-secure mode.

Secure

The radio transmits APCO Packet Data in secure encryption mode.

Accessed Only: This feature can be accessed only when the following conditions are met:

- The radio is model or option capable.
- The [Rx Voice/Signal Type on page 1162](#) is set to **ASTRO Mode** or **Mixed Mode**.
- The [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.
- The referenced Conventional System is not a DVRS System Type.
- The personality is not automatically created by the Zone Cloning feature.
- The **Tactical Inhibit Enable** field is enabled, or when the referenced Conventional System has a valid referenced [Data Profiles on page 980](#) selected.
- The [Terminal Data on page 992](#) field in that Data Profile is enabled.

4.36.6.9

Packet Data Key Select

This field selects the encryption key to be used for Association of Public-Safety Communications Officials (APCO) Packet Data transmissions.

This selection applies for the current Conventional Personality.



IMPORTANT:

When the [ASTRO OTAR on page 1114](#) field is **Enabled** for the current Conventional Personality, this Key Select value is chosen from the Secure Hardware Encryption Key References List of the Secure KMF Profile selected in the [ASTRO OTAR Profile Index on page 1115](#) field for the current Conventional Personality.



WARNING: Be aware that the application is actually pointing to the Keys of the Encryption Key List for this selection; individual Keys from the Secure Hardware Encryption Key References List reference the Encryption Key List's Keys from the Encryption Key Reference field. Therefore any key selected when ASTRO OTAR is **Enabled**, must first be defined in the Secure Hardware Encryption Key References List.

When the ASTRO OTAR field is **Disabled** for the current Conventional Personality, this Key Select value is directly chosen from the Secure Wide Window's Encryption Key List.

Accessed Only: (When the radio is model/option capable, and when the [Rx Voice/Signal Type on page 1162](#) is set to **ASTRO Mode** or **Mixed Mode**, and when the [Secure Operation on page 880](#) field is set to **Hardware**, and when the referenced Conventional System is not a DVRS System Type), and ((when the Tactical Inhibit Enable field is **Enabled**), or (when the referenced Conventional System has a valid referenced Data Profile selected, and when the Terminal Data field in that Data Profile is **Enabled**..))

4.36.6.10

Ignore Rx Clear Packet Data

This field causes the radio to ignore all "Clear" (non-secure encrypted) ASTRO Conventional Packet Data communications while operating on the current Conventional Personality.



NOTE: For more information on ASTRO Conventional Packet Data, see the Data Profile Window and the Conventional System. ASTRO, Data Profile Selection field.

Accessed Only: (When the [Rx Voice/Signal Type on page 1162](#) is set to **ASTRO Mode** or **Mixed Mode**, and when the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Packet Data Secure/Clear Strapping on page 1111](#) field is **Secure**, and when the radio is model/option capable),

And

(when the referenced Conventional System is not a DVRS System Type, and

when that referenced Conventional System has a valid referenced Data Profile selected, and

when the [Terminal Data on page 992](#) field in that Data Profile is enabled).

4.36.6.11

Proper Code Detect

This field causes the radio's speaker to unmute only on SecureNet™ data when the data is encrypted with the correct security key.

The encrypted security key is hard-coded to the radio with an internal encryption chip or a Key-Variable Loader (KVL) device. This feature applies for the current Conventional Personality.

Accessed Only: When the Secure Operation field is set to **Hardware**, and when the [Secure Voice/Signal Type on page 1109](#) field is **Securenet**, and when the radio is model/option capable.

4.36.6.12

OTAR Tx

This field enables the radio to transmit ASTRO and MDC Over-The-Air-Rekeying (OTAR) for the current Conventional Personality.

OTAR transmissions include: Rekey Requests, Delayed Acks, or Power-up Acks.



WARNING: Your ability to initiate Rekey Requests must be programmed.



NOTE:

Rekey Requests: When the [ASTRO OTAR on page 1114](#) field is enabled for the current channel, and ASTRO and MDC are both available to the channel (see [Rx Voice/Signal Type on page 1162 Mixed Mode](#)), your initiated Rekey Requests are always transmitted using ASTRO OTAR. However, when the radio is responding to an OTAR transmission, the radio always transmits using the same type of OTAR that it had received.

Setting Up ASTRO and MDC Mixed Mode: When the Rx Voice/Signal Type field is set to **Mixed Mode**, an ASTRO System Type Conventional System must be selected in the [ASTRO System on page 1102](#) field, and **MDC** must be selected in the Non-ASTRO Signaling Type field allowing an MDC System Type Conventional System to be selected in the Non-ASTRO System field.

Conventional System is not a DVRS System Type

Accessed Only: This feature can be accessed only when the following conditions are met:

- The [Secure Operation on page 880](#) field is **Hardware** or **Software**.
- The [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled.
- The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is enabled.
- The [Receive Only Personality on page 1162](#) field is disabled.
- The radio is model/option capable
- One of the following sets of conditions is met:
 - The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO & MDC**.

- The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** and the [Rx Voice/Signal Type on page 1162](#) is **ASTRO** or **Mixed Mode**.
- The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **MDC Only**, the Rx Voice/Signal Type is **Non-ASTRO** or **Mixed Mode**, and the [Non-ASTRO Signaling Type on page 1107](#) field is **MDC**.

Conventional System is a DVRS System Type

Accessed Only: This feature can be accessed only when the following conditions are met:

- The [Secure Operation on page 880](#) field is **Hardware** or **Software**.
- The [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled.
- The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is enabled.
- The [Receive Only Personality on page 1162](#) field is disabled.
- The radio is model/option capable.
- One of the following sets of conditions is met:
 - The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO & MDC**, the [Rx Voice/Signal Type on page 1162](#) is **Mixed Mode**, and the [Non-ASTRO Signaling Type on page 1107](#) field is **MDC**.
 - The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) field is set to **ASTRO Only** and the [Rx Voice/Signal Type on page 1162](#) is not set to **Non-ASTRO**.

4.36.6.13

ASTRO OTAR

This field enables the radio's ability to receive ASTRO Over-The-Air-Rekeying (OTAR) and/or to receive MDC OTAR for the current Conventional Personality.



WARNING: Be aware that is actually pointing to the Keys of the [Encryption Key List on page 896](#) for this selection; individual Keys from the Secure Hardware Encryption Key References List reference the Encryption Key List's Keys from the [Encryption Key Reference on page 915](#) field. Therefore any key selected when ASTRO OTAR is enabled, must first be defined in the Secure Hardware Encryption Key References List.



NOTE:

This field is enabled when a valid ASTRO OTAR Profile is selected.

In order for both ASTRO OTAR and MDC OTAR receive capability on the same channel, the [Rx Voice/Signal Type on page 1162](#) field must be set to **Mixed Mode**. ASTRO OTAR takes precedence over MDC OTAR, however, if MDC OTAR is received, the radio will first try to respond with MDC OTAR.

Accessed Only: This field can be accessed only when the following conditions are met:

- The [Secure Operation on page 880](#) field is **Hardware** or **Software**.
- [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled.
- [Rx Voice/Signal Type on page 1162](#) is **ASTRO Mode** or **Mixed Mode**.
- The [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) is set to **ASTRO Only** or **ASTRO & MDC**.
- The personality is not automatically created by the Zone Cloning feature.
- The radio is model/option capable.

4.36.6.14

ASTRO OTAR Profile Index

This field selects the Secure Key Management Facility (KMF) Profile to be used while operating in ASTRO Over the Air Rekeying (OTAR) mode.

This selection applies while operating on the current Conventional Personality. All ASTRO OTAR parameters specified in the selected KMF profile then apply to the current Conventional Personality.



WARNING:

This field is invalid when this personality references a Conventional System (having a System Type of **ASTRO**), which references a Data Profile (having a Data Profile Type of **Conventional & Broadband** or **Broadband Only**), and when the KMF IP Address field is set to 0.0.0.0.

Be aware that the application is actually pointing to the Keys of the Encryption Key List for this selection; individual Keys from the Secure Hardware Encryption Key References List reference the Encryption Key List's Keys from the Encryption Key Reference field. Therefore any key selected when ASTRO OTAR is **Enabled** must first be defined in the Secure Hardware Encryption Key References List.



NOTE: OTAR is enabled when a valid ASTRO OTAR Profile is selected.

Accessed Only: This field can be accessed only when the following conditions are met:

- The [Secure Operation on page 880](#) field is **Hardware** or **Software**.
- The [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled.
- The **ASTRO OTAR** field is **Enabled** and applicable.
- [Rx Voice/Signal Type on page 1162](#) is **ASTRO** or **Mixed Mode**.
- [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) is set to **ASTRO Only** or **ASTRO & MDC**.
- The **Tactical Rekey Enable** field is disabled.
- The radio is model/option capable.

The following selections are supported:

- **Disabled**
- **Available Secure KMF Profiles**

4.36.6.15

Echo Mute Time

This field selects the amount of time that the radio's speaker remains muted immediately following a secure encrypted transmission.

That is, for repeater systems having a large amount of data throughput delay, the tail end of your encrypted voice transmission may be heard again following de-keying. This time can allow for repeater system delays thus muting this possible echoing effect. This time begins once the PTT button is released. This selection applies for the current Conventional Personality.

Accessed Only: (When the ASTRO [Talkgroup on page 1098](#) field is **Enabled**, or when the ASTRO Talkgroup field is **Disabled**, and when the [Voice Secure/Clear Strapping on page 1110](#) field is **Select** or **Secure**), and

(when the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO** or **Mixed Mode**).

Table 335: Range

Minimum	Maximum	Increments
0 ms	1500 ms	50 ms

4.36.6.16

Scan Select

This field selects the amount of time that the radio waits during active scan mode for a SecureNet™ encoded (Non- ASTRO) transmission to be detected.

This wait period begins once carrier squelch has been detected. This feature applies to the selected [Scan List Selection on page 1153](#) of the current Conventional Personality and only when scanning a SecureNet-encoded scan list member channel.

Accessed Only: When the Secure Operation field is set to **Hardware**, and when the [XL Transmit on page 1109](#) field is **Disabled**, and when the [Secure Voice/Signal Type on page 1109](#) field is **Securenet**, and when the radio is model/option capable.

The following selections are supported:

Non-XL

If a Scan List member channel is set to Non-XL SecureNet, the radio waits for the time period specified by the Non-XL Scan Unsquelch Duration field.

Non-XL & XL

If a Scan List member channel is set to Non-XL & XL SecureNet, then it waits for the time period specified by the field XL Scan Unsquelch Duration.



NOTE: XL requires a longer wait period.

4.36.6.17

Scan Holdoff Strapping

This field selects to optimize the scan unmuting algorithm having to do with SecureNet™ (Non-ASTRO) encoded calls.

The algorithm is also based on the selected [Unmute Type on page 1119](#) setting for the current Conventional Personality. This functionality applies when attempting to unmute on Scan List Member (Conventional only) channels. This selection applies for the current Conventional Personality.

Accessed Only: When the Secure Operation field is set to **Hardware**, and when the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO**, and when the radio is model/option capable.

The following selections are supported:

Both

This selection is the least efficient due to the consideration of all possible scan types.

Clear Only

Internal radio settings apply for PL, DPL, carrier squelch (CSQ) and Signaling.

Secure Only

Uses the appropriate Unsquelch Duration based on the XL or Non-XL [Scan Select on page 1116](#) field selection.

4.36.6.18

Key ID

This field selects the Key ID method while operating on the current Conventional Personality.

Accessed Only: When the Secure Operation is set to **Hardware**, and when the Non-ASTRO Signaling Type field is **MDC**, and when the field is **Securenet**, and when the radio is model/option capable.

The following selections are supported:

Tx Only (Transmit)

Transmit the Key ID at the start of each transmission.

Rx Only (Receive)

Change its Key ID to that specified at the start of each receive message. If the received message does not specify a Key ID, the radio will use its current Key ID.

Tx & Rx (Receive/Transmit)

Selects both of the above features.

None

Selects none of the above features.

4.36.6.19

XL Delay Following Key ID

This field selects the amount of time that the radio waits following a Key ID opcode transmission before transmitting extended range (XL) encrypted audio.

This selection applies while operating on the current Conventional Personality.

Accessed Only: When the Secure Operation field is set to **Hardware**, and when the [Rx Voice/Signal Type on page 1162](#) is **Non-ASTRO**, and when the Non-ASTRO Signaling Type is **MDC**, and when the [Voice Secure/Clear Strapping on page 1110](#) field is not **Clear**, and when the [XL Transmit on page 1109](#) field is **Enabled**, and when the [Secure Voice/Signal Type on page 1109](#) field is **Securenet**, and when the [Key ID on page 1117](#) field is **Tx Only** or **Tx & Rx**, and when the radio is model/option capable.

Table 336: Range

Minimum	Maximum
0	200

4.36.6.20

Broadband ASTRO OTAR

If this field is enabled, you can use Over-The-Air-Rekeying (OTAR) over broadband on analog channels.

Accessed Only: When the following conditions are met.

- The radio is model/option capable.
- The Secure Operation field is set to **Hardware** or it is set to **Software** and Advanced Encryption Standard (AES) Enable is enabled.
- when the [Over-The-Air-Rekeying \(OTAR\) Operation on page 883](#) is set to **ASTRO Only** or **ASTRO & MDC**.
- The Conventional Personality, Rx Voice/Signal Type field is set to **Non-ASTRO**.
- The Receive Only Personality is disabled.

4.36.7

Non-ASTRO Call

This section allows you to view or define features relating to Non-ASTRO or analog mode signaling such as: MDC, DTMF, Quik-Call II and Singletone.



NOTE:

Conventional Systems defined as having the **MDC**, **DTMF**, **Quik-Call II** or **Singletone** System Type can be selected from the Conventional Personality's Non-ASTRO System field, allowing for that specific System Type communications to occur.

Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

4.36.7.1

Selective Call Rx/Tx

This field selects whether Non-ASTRO (MDC, DTMF, and Quik-Call II) Selective Calls can be transmitted or received (or both) for the current Conventional Personality.



WARNING:

When the Expanded MDC ID Range field is **Enabled**, this field must be set to **Disabled** otherwise it is considered to be invalid by the CPS . These two features are incompatible.

When the Non-ASTRO Signaling Type field is **Quik-Call II**, and when the DVRS Hardware Enable field is **Enabled**, and when the current Personality's referenced DVRS Profile has its DVRS Remote Activation field set to **Via Call Alert**, this feature must be **Disabled** otherwise it is considered to be invalid by the CPS . These two features are incompatible.

When the Non-ASTRO Signaling Type field is **Quik-Call II**, this feature and [Call Alert Rx/Tx on page 1120](#) are mutually exclusive; therefore, one of these features must be **Disabled**, otherwise both features are considered to be invalid.



NOTE: You can activate a Selective Call encode (transmit) with a Select/Private Call button-press or Select/Private Call menu-selection.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO** or **Mixed Mode**, and when the Non-ASTRO Signaling Type field is **MDC**, **DTMF**, or **Quik-Call II**, and when the radio is model/option capable.

The following selections are supported:

Disabled

No Call Alerts are possible on the current Personality.

Decode

Selective Calls may only be received (decoded).

Encode

Selective Calls may only be transmitted (encoded).



WARNING: When the Non-ASTRO Signaling Type field is **Quik-Call II**, this selection is invalid.

Decode & Encode

Selective Calls may be received and transmitted.



WARNING: When the Non-ASTRO Signaling Type field is **Quik-Call II**, this selection is invalid.

4.36.7.2

MDC RTT Button Access

This field selects the Request-To-Talk (RTT) mode for the current Conventional Personality.

When enabled with either the **Manual** (the MDC RTT button-press or [Request-To-Talk on page 537](#) menu-selection) or the **Auto** (PTT button) selections, the radio sends an RTT signaling packet to the dispatcher requesting the ability to transmit voice on the channel. The radio's microphone then immediately keys-up for 2 to 3 seconds allowing you the time to pick up the microphone and begin a voice transmission. From this point, the radio has "normal" voice access to this channel.

 **NOTE:** This feature allows the dispatcher to manage channel traffic for voice communications. This feature applies while operating in MDC System mode and on the current Conventional Personality.

 **WARNING:** If the [Access Type on page 1169](#) field is set to **Auto**, this field may not be set to **Auto**. These two field settings are mutually exclusive.

Accessed Only: When the [Tx Voice/Signal Type on page 1100](#) is set to **Non-ASTRO**, and when the Non-ASTRO Signaling Type field for the current personality is set to **MDC**.

The following selections are supported:

None

Feature is disabled.

Manual

Each time you initiate the RTT button-press or RTT menu-selection, the RTT signaling packet is transmitted to the dispatcher/console requesting the ability to transmit voice.

 **WARNING:** This selection is only valid when [Receive Only Personality on page 1162](#) is **Disabled**, and when [Repeater Access on page 1169](#) is **Enabled**.

Auto

Each time you press the PTT button, the RTT signaling packet is transmitted to the dispatcher/console requesting the ability to transmit voice.

 **WARNING:** This selection is only valid when Receive Only Personality is **Disabled**, when Repeater Access is **Enabled**, and when [Access Type on page 1169](#) is not set to **Auto**.

4.36.7.3

Unmute Type

This field selects the unmute condition for the current Non-ASTRO (MDC, DTMF, or Quik-Call II) Conventional Personality.

This unmute rule applies only to the detection of Selective Calls.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO** or **Mixed Mode**, and when the Non-ASTRO Signaling Type field is **MDC**, **DTMF**, or **Quik-Call II**, and when the [Selective Call Rx/Tx on page 1118](#) field is set to **Decode** or **Decode & Encode**, and when the radio is model/option capable.

The following selections are supported:

And

Both the current personality's selected [Unmute/Mute Type on page 1163](#) rule, and Selective Call detection must be satisfied before unmute occurs.

Or

Either the current personality's selected Unmute/Mute Type rule, or Selective Call detection will unmute the radio's speaker to receive audio.

4.36.7.4

MDC Auto Select Call Transmit

When enabled, once you select to send an MDC - Selective Call, and selects a call recipient from the Non-ASTRO Call Hot List, a Selective Call data packet is transmitted each time the radio's PTT button is pressed.

This feature applies while operating in MDC System mode and on the current Conventional Personality.

When disabled, an MDC Selective Call data packet is transmitted only when a Selective Call is initiated. That is, the Selective Call data packet is transmitted once you select to send a Selective Call, selects a call recipient from the Call List, and then presses the PTT button. Subsequent PTT presses do not send a Selective Call data packet.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO** or **Mixed Mode**, and when the Non-ASTRO Signaling Type for the current personality is set to **MDC**, and when the [Selective Call Rx/Tx on page 1118](#) field is set to **Encode** or **Decode & Encode**, and when the radio is model/option capable.

4.36.7.5

Call Alert Rx/Tx

This field selects whether Non-ASTRO (MDC, DTMF, Quik-Call II, and Singletone) Call Alerts can be transmitted or received (or both) for the current Conventional Personality.



WARNING:

When the Expanded MDC ID Range field is **Enabled**, this field must be set to **Disabled** otherwise it is considered to be invalid by the CPS . These two features are incompatible.

When the Non-ASTRO Signaling Type field is **Quik-Call II**, this feature and [Selective Call Rx/Tx on page 1118](#) are mutually exclusive; therefore, one of these features must be **Disabled**, otherwise both features are considered to be invalid by the CPS .



NOTE: Call Alert is activated with a Call Alert button-press or Page (Call Alert) menu-selection.

Accessed Only: (When the radio is model/option capable, and when the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO** or **Mixed Mode**, and when the Non-ASTRO Signaling Type field is **MDC**, **DTMF**, or **Quik-Call II** for the current personality), and (when the DVRS Hardware Enable field is **Disabled**), or (when the DVRS Hardware Enable field is **Enabled**, and when the current Personality's referenced DVRS Profile has its DVRS Remote Activation field set to **Disabled**.)

The following selections are supported:

Disabled

No Call Alerts are possible on the current Personality.

Decode

Call Alerts may only be received (decoded).

Encode

Call Alerts may only be transmitted (encoded).



WARNING: When the Non-ASTRO Signaling Type field is **Quik-Call II**, this selection is invalid.

Decode & Encode

Call Alerts may be received and transmitted.



WARNING: When the Non-ASTRO Signaling Type field is **Quik-Call II**, this selection is invalid.

4.36.7.6

MDC Unlimited Calling

This field allows you to manually enter the ID of a targeted radio for a Selective Call or a Call Alert, also known as a direct entry.

Once the Call type is selected and the MDC Call Hot List appears in the radio display, direct entry of a desired MDC Radio ID (with a keypad) is then possible. Pressing the PTT button then transmits the call to the target radio(s) of the entered ID. This feature applies while operating in MDC System mode and on the current Conventional Personality.

Accessed Only: When the [Selective Call Rx/Tx on page 1118](#) field is set to **Encode** or **Decode & Encode**, or when the [Call Alert Rx/Tx on page 1120](#) field is set to **Encode** or **Decode & Encode**, and when the [Rx Voice/Signal Type on page 1162](#) field is set to **Non-ASTRO** or **Mixed Mode**, and when the Non-ASTRO Signaling Type field is set to **MDC**, and when the radio is model/option capable.

4.36.7.7

In-Call User Alert Enable

This field causes the radio to remain muted to normal dispatch calls whenever you activate the Voice Mute functionality.

Group and individual Call Alerts do unmute the radio for the alert tone to sound. The radio also unmutes to individual radio-to-radio calls such as Selective Calls and Interconnect (Phone Mode) calls. This feature is very useful when you prefer not to hear normal dispatch traffic, however needs to remain in radio contact. This feature applies while operating in Non-ASTRO System mode (MDC, DTMF, and QCII) and when on the current Conventional Personality.

When disabled, you are not able to toggle-on this feature for the current Conventional Personality.



NOTE: The Voice Mute button-press or the Voice Mute menu-selection allows you to toggle on and off the Voice Mute functionality for an In-Call User Alert enabled channel.



WARNING: This Non-ASTRO In-Call User Alert field must be **Enabled** when the [Rx Voice/Signal Type on page 1162](#) field is set to **Mixed Mode** and when the Signaling Type field is set to either **MDC** or **DTMF** or **Quik-Call II**.



IMPORTANT: When Voice Mute is Active, Individual or Group Call Alerts decoded by the radio do unmute the radio for the Release Squelch period. The Release Squelch period is defined by this personality's ASTRO System Select Call/In-Call Reset field selection. Once the Call Alert (sent as an individual call or a group call) unmutes the radio, a voice call that follows can then be a group call that is heard over the speaker of the radio, but only until the Release Squelch period has ended.

If the radio's channel is changed, Voice Mute is deactivated by the radio; Voice Mute must be reactivated if desired when returning to the channel.

If you press the PTT button, launch Emergency Mode, or power the radio off and back on, Voice Mute is deactivated by the radio.

MDC Radio Inhibit functionality is available.

The Scan mode and Monitor mode features are not available.

Other display indications (from group calls) such as receiving LED and PTT-ID (if enabled) function normally.

Accessed Only: When the [Call Alert Rx/Tx on page 1120](#) field is set to **Decode** or **Decode & Encode**, and when the [Rx Voice/Signal Type on page 1162](#) field is set to **Non-ASTRO** or **Mixed Mode**, and when the [Non-ASTRO Signaling Type on page 1107](#) field is set to **MDC** or **Quik-Call II** or **DTMF**.

4.36.7.8

Non-ASTRO Call Hot List

This field selects the Non-ASTRO Hot List (MDC, DTMF, or Quik-Call II) to be used for the current Conventional Personality.

You are then able to select individual Call Hot List members while operating in Conventional communications mode. Call Hot List Members allow for Selective Call or Call Alert communications to individual or groups of radios.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO** or **Mixed Mode**, and when the Non-ASTRO Signaling Type field is not equal to **None**.

4.36.8

Advanced

This section allows you to view or define diverse and sometimes complex functionality for individual Conventional Personalities.



NOTE: Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

4.36.8.1

Advanced RF AGC

This field selects the type of Receive Frequency (RF) Automatic Gain Control (AGC) that applies for the current Conventional Personality.

The following selections are supported:

Disabled

Even when **Disabled**, the radio uses a basic form of AGC built into the radio's receiver. This built-in protection helps to avoid signal clipping and receiver saturation that may damage radio components.

Standard

Enables an Advanced form of RF AGC, which attempts to protect against intermodulation (IM) interference by detecting and removing any received interference due to external sources.

Enhanced

Enables the radio to use additional schemes to reduce IM interference, which cleans up the signal.

Smart

Enables the radio to use a unique scheme to improve interference immunity when close to Linear Simulcast and APCO phase 2 Base stations. Smart option is mutually exclusive to the Broadband Protection checkbox.



IMPORTANT: **Standard** and **Enhanced** Advanced RF AGC may degrade performance on channels that do not experience any IM interference. Therefore, only enable these selections on channels known to experience IM interference.

4.36.8.2

Broadband Protection

This field allows you to enable Broadband Protection of the current Conventional Personality.

Broadband Protection enhances Advanced Radio Frequency Automatic Gain Control (RF AGC) by adding a high selectivity broadband filter when receiving at selected frequencies in the 700 MHz and 800 MHz bands.

 **NOTE:** This feature is only available for radio models that have the required hardware.

4.36.8.3

Second LO Side Injection

This field enables Second LO (Local Oscillator) Side Injection operation, thus allowing the radio to override otherwise regular radio signal algorithms that results in the reduction of interference from very near units operating on different but fairly close (within 900 kHz separation) frequencies.



This feature applies while operating on this current [Conventional Personality on page 1091](#).



WARNING: Second LO Side Injection controls a very important aspect of the frequencies associated with this personality and should not be enabled unless verified as necessary.

Accessed Only: When the radio is model/option capable.

4.36.8.4

Analog Flat Audio

This field causes analog transmissions to bypass the Digital Signaling Processor (DSP) filters that optimize the transmissions for voice.



NOTE:

Analog transmissions include signaling types such as MDC, Quik-Call II, DTMF and Singletone. This selection applies while operating on the current Conventional Personality.



WARNING:

This feature only functions when the [Auxiliary PTT Audio Source on page 370](#) field is set to **AUX_TX**.



WARNING: Additionally, when this field is **Enabled**:

The [Scan List Selection on page 1153](#) field must be set to **None** for the current Personality, otherwise the Scan List Selection field's value becomes invalid.

The [Non-ASTRO Signaling Type on page 1107](#) field must be set to **None** for the current Personality, otherwise the Signaling Type field's value becomes invalid.

The [Rx Voice/Signal Type on page 1162](#) must be set to **Non-ASTRO** for the current Personality, otherwise the Rx Voice/Signal Type field's value becomes invalid.

The [Voice Secure/Clear Strapping on page 1110](#) field must be set to **Clear** for the current Personality, otherwise the Secure/Clear Strapping (Voice) field's value becomes invalid.

The Transmit Pre-Emphasis field must be set to **Disabled** for the current personality, otherwise the Transmit Pre-Emphasis field becomes invalid.

The Rx De-Emphasis field must be set to **Disabled** for the current personality, otherwise the Rx De-Emphasis field becomes invalid.

Accessed Only:

- The radio is model/option capable.
- The [DVRS Hardware Enable on page 1019](#) field is **Disabled**.
- The personality is not automatically created by the Zone Cloning feature.

4.36.8.5

Analog Wideband Data



The analog wideband data prioritizes the key and dekey attack time to be under 30 ms. It applies when operating on the current Conventional Personality using the radio as a data modem for transit computer aided dispatch (CAD) operations.

Analog Wideband Data is to be used with third-party control heads.

Moreover Bluetooth is not supported if the mobile radio has at least one conventional personality with the Analog Wideband Data feature enabled.

 **WARNING:** When enabled, channels using this personality must not be added to a scan list. Scanning is not allowed on channels with this feature enabled.

The Analog Wideband Data (AWD) mode causes analog transmit and receive calls to bypass the Digital Signal Processor (DSP) filters, as in regular flat audio mode. These filters optimize audio during voice call operation. In AWD mode, audio is processed at 16 kHz sampling rate at all times. This process is unlike normal analog voice mode in which sampling rate is converted to 8 kHz for audio processing.



NOTE:

Additionally, when this field is **Enabled**:

The Transmit Pre-Emphasis field must be set to **Disabled** for the current personality. Otherwise the Transmit Pre-Emphasis field becomes invalid.

The Rx De-Emphasis field must be set to **Disabled** for the current personality. Otherwise the Rx De-Emphasis field becomes invalid.

The [Scan List Selection on page 1153](#) field must be set to **None** for the current personality. Otherwise the Scan List Selection field value becomes invalid.

The [Non-ASTRO Signaling Type on page 1107](#) field must be set to **None** for the current personality, otherwise the Signaling Type field's value becomes invalid.

The [Rx Voice/Signal Type on page 1162](#) must be set to **Non-ASTRO** for the current personality. Otherwise the Rx Voice/Signal Type field value becomes invalid.

The [Voice Secure/Clear Strapping on page 1110](#) field must be set to **Clear** for the current personality. Otherwise the Secure/Clear Strapping (Voice) field value becomes invalid.

The Analog Flat Audio field must be set to **Disabled** for the current personality. Otherwise the Analog Flat Audio field value becomes invalid.

4.36.8.6

Disable High Pass Filter

This field causes the High Pass Filter to be disabled for the purpose of improving analog data performance.



This selection works together with the Analog Flat Audio field selection to improve even further analog data performance.



NOTE: Analog data types include: MDC, Quik-Call II, DTMF and Singletone. This selection applies while operating on the current Conventional Personality.

Accessed Only: When the [Analog Flat Audio on page 1123](#) field is **Enabled**, and when the radio is model/option capable.

4.36.9

Frequency Options

This section allows you to view or define many Conventional transmit, receive and Direct/Talkaround settings within unique profiles for the current Conventional Personality.



IMPORTANT: If [Mixed Vote Scan Enable on page 1155](#) is **Enabled** for the current Personality, then all of the Frequency Options records/rows associated with the current Personality are used to form the Voting Scan list. The maximum number of Frequency Options is limited to 15.



NOTE:

Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the [Channels on page 1294](#) section of the [Zones Channel Assignment on page 1283](#).

If the personality is created by the Zone Cloning feature, the Frequency Option List can only contain one record.

4.36.9.1

LTE Interference Frequency Present

This field enabling this feature makes the aware that this Frequency Options table contains one or more 700MHz frequencies on this non-LTE Broadband-enabled personality/channel.



Due to LTE also operating on the 700MHz band, frequency interference detrimental to radio communications is possible. This feature applies for all Frequency Options profiles (record/rows) of the current Conventional Personality.

When this personality/channel is LTE Broadband-enabled, this feature must be **Disabled**, otherwise, it becomes invalid.



NOTE: A Conventional channel is LTE enabled when the Personality's referenced ASTRO - Conventional System has a referenced Data Profile having a Data Profile Type equal to **Conventional & Broadband** or **Broadband-Only**, and when that Data Profile's Broadband Source is **Internal LTE Modem**.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the Personality field, and then the Frequency Options profile is selected in the Frequency Options field.

Accessed Only: When the radio is model/option capable.

4.36.9.2

Rx/TA DPL Code

This field selects the specific code accepted when receiving a Digital Private Line (DPL) communication from another radio.

This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



WARNING: When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the application considers this field's value invalid.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296 Conventional Frequency Option on page 1294](#) field.



IMPORTANT: When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the Direct/Talkaround parameters can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the Direct Frequency (MHz) using these frequency parameters.

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the settings for the Rx parameter fields are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.

Accessed Only: When the [Rx/TA Squelch Type on page 1144](#) field is **DPL**, and when the User-Selectable PL [MPL] field is **Disabled** or **Tx**.

The following selections are supported:

Table 337: DPL Squelch Codes

Code	Code	Code	Code
023	152	343	565
025	155	346	606
026	156	351	612
031	162	364	624
032	165	365	627
043	172	371	631
047	174	411	632
051	205	412	645*
054	223	413	654
065	226	423	662
071	243	431	664
072	244	432	703
073	245	445	712
074	251	464	723
114	261	465	731
115	263	466	732
116	265	503	734

Code	Code	Code	Code
125	271	506	743
131	306	516	754
132	311	525*	
134	315	532	
143	331	546	

 **NOTE:** The codes marked with an asterisk are not part of the 83 standard EIA/TIA-603 codes.

4.36.9.3

Frequency Options Name

This field allows you to define recognizable names for the current Frequency Options profile (record/row) within the current Conventional Personality.

 **NOTE:** Frequency Option profiles can be selected for use within the Zone Channel Assignment's [Channels](#) Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Frequency Options](#) field.

 **NOTE:**
Examples: Fire005, FreqOption10, #510.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are supported.

4.36.9.4

Rx/TA DPL Invert

This field causes Digital Private Line (DPL) signals to be inverted when they are received by the radio.



NOTE: Inverted coding allows for more traffic/usage on frequencies.



IMPORTANT: DPL Invert must be set on both receiving and transmitting radios for communication to occur. This feature applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



WARNING: When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the considers this field's value invalid.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.



IMPORTANT: When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the Direct/Talkaround parameters can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the Direct Frequency using these frequency parameters.

When Direct / Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency field is **Disabled**, the settings for the Rx parameter fields are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.

Accessed Only: When the [Rx/TA Squelch Type on page 1144](#) field is **DPL**, and when the User-Selectable PL [MPL] field is **Disabled** or **Tx**.

4.36.9.5

Rx/TA Frequency

This field selects the designated frequency used for receiving the carrier signal of a radio communication, and optionally for transmitting the carrier signal while Direct/Talkaround is activated on the channel.

This selection applies only for the current Frequency Options profile (record/row) of the current Conventional Personality.



WARNING: 6.25 kHz step size for the 800 MHz frequency band:

Starting with Release R09.01.00, when the [Tx Deviation/Channel Spacing on page 1134](#) is **2.5 kHz / 12.5 kHz**, the allows a 6.25 kHz step size for Conventional frequencies in the 800 MHz frequency band, to meet regulatory compliance in certain (non-FCC) countries; however, be aware that two radios operating on adjacent channels separated by 6.25 kHz only may experience undesirable crosstalk phenomena.



NOTE: Frequency Option profiles are selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.



IMPORTANT: (applicable to ASTRO Signaling)

When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the Direct Network ID can then be modified on a per Frequency Options profile basis. When you initiates Direct/Talkaround mode, the radio then transmits and receives on the Direct Frequency instead of this Rx/TA Frequency.

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency field is **Disabled**, the Rx/TA Frequency and [Rx Network ID on page 1136](#) settings are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.



IMPORTANT: applicable to Non-ASTRO (MDC, DTMF, Quik-Call II, and Singletone) Signaling

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency field is **Enabled**, the Direct/Talkaround parameters can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the Direct Frequency using these frequency parameters.

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the settings for the Rx parameter fields are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the Direct/Talkaround button-press, the Talkaround/Direct switch-selection, or the Direct/Talkaround menu-selection.

Accessed Only: When the radio is model/option capable.

4.36.9.6

Tx Squelch Type

This field selects the type of transmit Private Line (PL) or carrier squelch needed to communicate with another radio.



IMPORTANT: The selected [Unmute/Mute Type on page 1163](#) for the personality also determines if a call can be received. This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



WARNING: When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the considers this field's value invalid.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO** or **Mixed Mode**, and when the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the User-Selectable PL [MPL] field is **Disabled** or **Rx**.

The following selections are supported:

- Disabled
- PL (Tone Private Line)
- DPL (Digital Private Line)

4.36.9.7

Tx Frequency

This field selects the designated frequency used for transmitting the carrier signal of a radio communication.

This selection applies only for current [Frequency Options on page 1125](#) profile (record/row) of the current [Conventional Personality on page 1091](#).



WARNING:

When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the application considers this field's value invalid.

6.25 kHz step size for the 800 MHz frequency band:

Starting with Release R09.01.00, when the [Tx Deviation/Channel Spacing on page 1134](#) is **2.5 kHz / 12.5 kHz**, the application allows a 6.25 kHz step size for Conventional frequencies in the 800 MHz frequency band, to meet regulatory compliance in certain (non-FCC) countries; however, be aware that two radios operating on adjacent channels separated by 6.25 kHz only may experience undesirable crosstalk phenomena.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the radio is model/option capable.

4.36.9.8

Tx PL Frequency

This field selects a designated frequency used to transmit a Private Line (PL) communication to another radio.



NOTE: This frequency directly correlates to the [Tx PL Code on page 1133](#); selecting a value for this field automatically selects a Tx PL Code and vice versa. This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



WARNING: When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the considers this field's value invalid.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Tx Squelch Type on page 1129](#) field is **PL**, and when the User-Selectable PL [MPL] field is **Disabled** or **Rx**.

The following selections are supported:

Table 338: TPL Squelch Frequencies & Codes

Freq (Hz) = Code		Freq (Hz) = Code	
67.0	XZ	159.8	159.8
69.3	WZ	162.2	5B
71.9	XA	165.1	165.1
74.4	WA	165.5	165.5
77.0	XB	167.9	6Z
79.7	WB	170.9	170.9
82.5	YZ	171.3	171.3
85.4	YA	173.8	6A
88.5	YB	176.9	176.9
91.5	ZZ	177.3	177.3
94.8	ZA	179.9	6B
97.4	ZB	183.1	183.1
100.0	1Z	183.5	183.5
103.5	1A	186.2	7Z
105.4	105.4	189.5	189.5
107.2	1B	189.9	189.9
109.1	109.1	192.8	7A
110.9	2Z	196.6	196.6
114.8	2A	198.2	198.2
118.8	2B	199.5	199.5
123.0	3Z	203.5	M1
127.3	3A	206.5	8Z
129.6	129.6	210.7	M2
131.8	3B	213.8	213.8
134.2	134.2	218.1	M3
136.5	4Z	221.3	221.3
138.9	138.9	225.7	M4
141.3	4A	229.1	9Z
143.8	143.8	233.6	M5
146.2	4B	237.1	237.1
148.8	148.8	241.8	M6
150.0	150.0	245.5	245.5
151.4	5Z	250.3	M7
156.7	5A	254.1	0Z
159.5	159.5		

4.36.9.9

Direct/Talkaround

This field enables Direct/Talkaround functionality for the current Frequency Options profile.

Direct/Talkaround is typically initiated by you for direct radio-to-radio communications in close proximity or when a repeater is not operational or is out of range. This feature applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.



IMPORTANT: (applicable to ASTRO Signaling)

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the Direct Network ID can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the Direct Frequency instead of the [Rx/TA Frequency on page 1128](#).

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency field is **Disabled**, the Rx/TA Frequency and [Rx Network ID on page 1136](#) settings are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.



IMPORTANT: applicable to Non-ASTRO (MDC, DTMF, Quik-Call II, and Singletone) Signaling

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Enabled**, the Direct/Talkaround parameters can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the Direct Frequency using these frequency parameters.

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the settings for the Rx parameter fields are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the Direct/Talkaround button-press, the Talkaround/Direct switch-selection, or the Direct/Talkaround menu-selection.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**, and (if the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO**, then the Remote Site Interface System field in the referenced Conventional System must be **Disabled**), and (when the [Tx Voice/Signal Type on page 1100](#) field is **Non-ASTRO**, and when the [Rx/TA Frequency on page 1128](#) field is not equal to the [Tx Frequency on page 1130](#) field, or when the [Rx/TA Squelch Type on page 1144](#) index is not equal to the [Tx Squelch Type on page 1129](#) index, or when Rx/TA Squelch Type is not **CSQ**, and ((when Rx/TA Squelch Type is not PL or the [Rx/TA PL Frequency on page 1146](#) index is not equal to the [Tx PL Frequency on page 1130](#) index), and (when Rx/TA Squelch Type is not **DPL** or the [Rx/TA PL Code on page 1149](#) index is not equal to [Tx DPL Code on page 1135](#) index or the [Rx/TA DPL Invert on page 1128](#) value is not equal to the [Tx DPL Invert on page 1137](#) value.))) or (when [Tx Voice/Signal Type on page 1100](#) is not **Non-ASTRO**, and (Rx/TA Frequency is not equal to Tx Frequency, or [Rx Network ID on page 1136](#) is not equal to [Tx Network ID on page 1137](#).)

4.36.9.10

Tx PL Code

This field selects the specific code used when transmitting a Private Line (PL) communication to another radio.

 **NOTE:** This code directly correlates to the [Tx PL Frequency on page 1130](#); selecting a value for this field automatically selects a Tx PL Frequency and vice versa. This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.

 **WARNING:** When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the considers this field's value invalid.

 **NOTE:** Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Tx Squelch Type on page 1129](#) field is **PL**, and when the User-Selectable PL [MPL] field is **Disabled** or **Rx**.

The following selections are supported:

Table 339: TPL Squelch Frequencies & Codes

Freq (Hz) = Code		Freq (Hz) = Code	
67.0	XZ	159.8	159.8
69.3	WZ	162.2	5B
71.9	XA	165.1	165.1
74.4	WA	165.5	165.5
77.0	XB	167.9	6Z
79.7	WB	170.9	170.9
82.5	YZ	171.3	171.3
85.4	YA	173.8	6A
88.5	YB	176.9	176.9
91.5	ZZ	177.3	177.3
94.8	ZA	179.9	6B
97.4	ZB	183.1	183.1
100.0	1Z	183.5	183.5
103.5	1A	186.2	7Z
105.4	105.4	189.5	189.5
107.2	1B	189.9	189.9
109.1	109.1	192.8	7A
110.9	2Z	196.6	196.6
114.8	2A	198.2	198.2
118.8	2B	199.5	199.5
123.0	3Z	203.5	M1

Freq (Hz) = Code		Freq (Hz) = Code	
127.3	3A	206.5	8Z
129.6	129.6	210.7	M2
131.8	3B	213.8	213.8
134.2	134.2	218.1	M3
136.5	4Z	221.3	221.3
138.9	138.9	225.7	M4
141.3	4A	229.1	9Z
143.8	143.8	233.6	M5
146.2	4B	237.1	237.1
148.8	148.8	241.8	M6
150.0	150.0	245.5	245.5
151.4	5Z	250.3	M7
156.7	5A	254.1	0Z
159.5	159.5		

4.36.9.11

Tx Deviation/Channel Spacing

This field selects the transmit (Tx) deviation and corresponding channel spacing for the current Frequency Options profile (record/row) of the current Conventional Personality.

The Tx deviation is the maximum variation (in kHz) that the selected carrier - frequency can differ or swing from its un-modulated center frequency. Channel spacing refers to the allotted frequency difference between adjacent channels within a specific frequency band.



NOTE: The radio also uses the selected Tx Deviation/Channel Spacing values when this personality is operating in [Direct/Talkaround on page 1132](#) mode.



WARNING: When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the considers this field's value invalid.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**.

The following selections are supported:

4 kHz / 20 kHz

821 MHz Band using 20 kHz Channel Spacing.



WARNING: This selection is invalid if the following scenario is true when the 12.5 kHz FCC Narrowbanding Mandate applies for this codeplug, and when the value of the [Tx Frequency on page 1130](#) or ([Direct Frequency on page 1139](#) or [Rx/TA Frequency on page 1128](#) when enabled for Direct/Talkaround operation) falls into one of the FCC Requirement ranges.

5 kHz / 25 kHz

VHF, UHF, and 800 MHz Bands using 30/25/25 kHz Channel Spacing.



WARNING: This selection is invalid if the following scenario is true when the 12.5 kHz FCC Narrowbanding Mandate applies for this codeplug, and when the value of the Tx Frequency or (Direct Frequency or TA Frequency when enabled for Direct/Talkaround operation) falls into one of the FCC Requirement ranges.

2.5 kHz / 12.5 kHz

VHF, UHF, 800 MHz, and 900 MHz Band Analog and 12.5 kHz Channel Spacing.



WARNING: When Tx Frequency falls within the 900 MHz Band, this is the only valid selection and this field becomes view-only.

This selection is invalid if either of the following scenarios is true:

(When the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO Mode**, and when the [Secure Operation on page 880](#) field is set to **Hardware**, and when the [Voice Secure/Clear Strapping on page 1110](#) field is not set to **Clear**) or (when the [Rx Voice/Signal Type on page 1162](#) field is **Mixed Mode** or **ASTRO Mode**, and when the [ASTRO ASTRO Digital Modulator Type on page 1103](#) field is **Wide**).

4.36.9.12

Tx DPL Code

This field selects the Digital Private Line (DPL) code that transmits once the PTT button is pressed.

This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



WARNING: When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the considers this field's value invalid.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Tx Squelch Type on page 1129](#) field is **DPL**, and when the User-Selectable PL [MPL] field is **Disabled** or **Rx**.

The following selections are supported:

Table 340: DPL Squelch Codes

Code	Code	Code	Code
023	152	343	565
025	155	346	606
026	156	351	612
031	162	364	624
032	165	365	627
043	172	371	631
047	174	411	632
051	205	412	645*
054	223	413	654

Code	Code	Code	Code
065	226	423	662
071	243	431	664
072	244	432	703
073	245	445	712
074	251	464	723
114	261	465	731
115	263	466	732
116	265	503	734
125	271	506	743
131	306	516	754
132	311	525*	
134	315	532	
143	331	546	

 **NOTE:** The codes marked with an asterisk are not part of the 83 standard EIA/TIA-603 codes.

4.36.9.13

Rx Network ID

This field selects (in decimal or hex format) a Receive (Rx) Network Access Code (NAC) ID to be used while operating in ASTRO System (digital) mode.

This allows the radio to selectively access one of several repeaters within overlapping coverage areas, thus allowing the radio to listen to a specific repeater. Ultimately, this ID allows for the separation of addressing modes among co-channel and adjacent channel users; this serves the same purpose as Private Line (PL), which is used in analog mode. This selection applies only for the current Frequency Options profile (record/row) of the current Conventional Personality.

 **WARNING:** When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the application considers this field's value invalid.

 **NOTE:** Frequency Options profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.

 **IMPORTANT:** When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the Direct Network ID can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the Direct Frequency (MHz) instead of the [Rx/TA Frequency on page 1128](#).

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency field is **Disabled**, the Rx/TA Frequency and this Rx/TA Network ID setting are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **ASTRO Mode** or **Mixed Mode**, and when the radio is model/option capable.

The following selections are supported:

Table 341: Range

Minimum	Maximum	NAC Monitor
0 Hex	FFF Hex	F7E Hex

 **IMPORTANT:** When this Rx NAC ID is set to **F7E**, the radio unmutes to any ASTRO call regardless of the call's NAC ID or the radio's [ASTRO Rx Unmute Rule on page 1104](#) set for the current Frequency Options profile.

4.36.9.14

Tx DPL Invert

This field causes Digital Private Line (DPL) signals to be inverted before they are transmitted.

 **NOTE:** Inverted coding allows for more traffic/usage on frequencies.

 **IMPORTANT:** Tx DPL Invert must be set on both receiving and transmitting radios for communication to occur. This feature applies only for current Frequency Options profile (record/row) of the current Conventional Personality.

 **WARNING:** When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the considers this field's value invalid.

 **NOTE:** Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Tx Squelch Type on page 1129](#) field is **DPL**, and when the User-Selectable PL [MPL] field is **Disabled** or **Rx**.

4.36.9.15

Tx Network ID

This field selects (in decimal or hex format) a transmit (Tx) Network Access Code (NAC) ID number to be used while operating in ASTRO System (digital) mode.

This allows the radio to selectively access one of several repeaters within overlapping coverage areas, thus allowing the radio to cause a specific repeater to re-transmit the signal. Ultimately, this ID allows for the separation of addressing modes among co-channel and adjacent channel users; this serves the same purpose as Private Line (PL), which is used in analog mode. This selection applies only for the current Frequency Options profile (record/row) of the current Conventional Personality.

 **WARNING:** When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the considers this field's value invalid.

 **NOTE:** Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **ASTRO** or **Mixed Mode**, and when the radio is model/option capable.

The following selections are supported:

Table 342: Range

Minimum	Maximum
0 Hex	FFF Hex



WARNING: **F7E** is an invalid selection; for more information see the [Rx Network ID on page 1136](#) field.

4.36.9.16

Mixed Vote Scan Persistent Member

This field causes the radio to always check the selected Rx/TA Frequency (of this record/row) when operating in Scan Mode and actively scanning this Mixed Vote Scan Enabled Conventional Personality.

This is even true when there are stronger frequencies/channels found in the same Scan List where this Conventional Personality is selected. This feature applies only for the current Frequency Options profile (record/row) of the current Conventional Personality.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the Personality field, and then the Frequency Options profile is selected in the Frequency Options field.

Accessed Only: When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled**.

4.36.9.17

Direct Network ID

This field selects (in decimal or hex format) a Network ID number to be used when the Conventional Wide, Direct Frequency field is **Enabled** and while operating in Direct/Talkaround mode and ASTRO System (digital) mode.

This ID signifies that a [Direct Frequency on page 1139](#), which may be different from the [Rx/TA Frequency on page 1128](#), is in use. Ultimately, this ID allows for the separation of addressing modes among co-channel and adjacent channel users; this serves the same purpose as Private Line (PL), which is used in analog mode. This selection applies only for the current Frequency Options profile (record/row) of the current Conventional Personality.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.



IMPORTANT:

When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, this Direct Network ID can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the Direct Frequency instead of the Rx/TA Frequency.

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency field is **Disabled**, the Rx/TA Frequency and the [Rx Network ID on page 1136](#) settings are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.

Accessed Only: When the Direct Frequency field is **Enabled**, and when the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Rx Voice/Signal Type on page 1162](#) field is **ASTRO Mode** or **Mixed Mode**, and when the Direct/Talkaround field is **Enabled**, and when the radio is model/option capable.

The following selections are supported:

Table 343: Range

Minimum	Maximum
0 Hex	FFF Hex

 **WARNING: F7E** is an invalid selection; for more information see the Rx/TA Network ID field.

4.36.9.18

Direct Frequency

This field selects a substitute transmit/receive frequency, which may be different from the Rx/TA Frequency, to be used when operating in Direct/Talkaround mode.

This selection applies only for the current Frequency Options profile (record/row) of the current Conventional Personality.



WARNING: 6.25 kHz step size for the 800 MHz frequency band:
Starting with Release R09.01.00, when the [Tx Deviation/Channel Spacing on page 1134](#) is **2.5 kHz / 12.5 kHz**, the CPS allows a 6.25 kHz step size for Conventional frequencies in the 800 MHz frequency band, to meet regulatory compliance in certain (non-FCC) countries; however, be aware that two radios operating on adjacent channels separated by 6.25 kHz only may experience undesirable crosstalk phenomena.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.



IMPORTANT: (applicable to ASTRO Signaling)
When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the Direct Frequency field is **Enabled**, the [Direct Network ID on page 1138](#) can then be modified on a per Frequency Options profile basis. When you initiates Direct/Talkaround mode, the radio then transmits and receives on this Direct Frequency instead of the [Rx/TA Frequency on page 1128](#).

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the Rx / TA Frequency and [Rx Network ID on page 1136](#) settings are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.



IMPORTANT: (applicable to Non-ASTRO (MDC, DTMF, Quik-Call II, and Singletone) Signaling)
When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Enabled**, the Direct/Talkaround parameters can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the Direct Frequency using these frequency parameters.

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the settings for the Rx parameter fields are used whenever you initiates Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the Direct/Talkaround button-press, the Talkaround/Direct switch-selection, or the Direct/Talkaround menu-selection.

Accessed Only: When the Direct Frequency field is **Enabled**, and when the Direct/Talkaround field is **Enabled**, and when the [Receive Only Personality on page 1162](#) field is **Disabled**, or when the Radio is no slaved, or when the [User Selectable PL \[MPL\] on page 1142](#) is not **Disabled**, and when the radio is model/option capable.

4.36.9.19

ASTRO Talkgroup ID

This field selects a default talkgroup from the ASTRO Talkgroup List selected in this personality's Talkgroup List field.

This selection always applies for you when the Talkgroup [Selection Type on page 1099](#) field is set to **Strapped**. However, when the Selection Type field is set to **Selectable**, this talkgroup only applies until you

choose another ID from the selected Talkgroup List. This selection applies only for current Frequency Options profile (record / row) of the current Conventional Personality.

 **NOTE:** Frequency Option profiles can be selected for use within the [Channels on page 1294](#) section of the [Zones Channel Assignment on page 1283](#) page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the Frequency Options field.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO** or **Mixed Mode**, and when the Talkgroup field is enabled, and when the personality is not automatically created by the Zone Cloning feature.

The following selections are supported:

Talkgroup Selections

Talkgroups appearing for selection are based on the ASTRO Talkgroup List selected in this personality's Talkgroup List field.

DYN (Dynamic Regrouping)



WARNING: A Dynamic Regrouping configuration is only valid when Dynamic Regrouping Enable is enabled.



NOTE: Only one Dynamic Regrouping channel may be defined per referenced Trunking System.

You may request a new Dynamic Regrouping assignment from the dispatcher with a Reprogram Request button-press or a Reprogram Request menu-selection. The available features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher

For the Dynamic Regrouping talkgroup to be capable of transmitting in Secure mode, either the Secure Tx Select button-press or the Secure Tx Select switch-toggle or the Secure menu-selection is needed; otherwise Dynamic Regrouping talkgroup transmissions are strapped to transmitting in "Clear" mode.

ATG (Announcement Group)

Currently not supported

4.36.9.20

Direct Squelch Type

This field selects the type of receive and transmit Private Line (PL) or carrier squelch that the radio uses when operating in Direct/Talkaround mode.

This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.



IMPORTANT:

When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the [Direct Network ID on page 1138](#) can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the [Direct Frequency on page 1139](#) instead of the [Rx/TA Frequency on page 1128](#).

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the Rx/TA Frequency and the [Rx Network ID on page 1136](#) setting are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.

Accessed Only: When the Direct Frequency field is **Enabled**, and when the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO Mode** or **Mixed Mode**, and when the Direct/Talkaround field is **Enabled**, and when the [User Selectable PL \[MPL\] on page 1142](#) field is **Disabled** or **Rx**.

The following selections are supported:

- Disabled
- PL (Tone Private Line)
- DPL (Digital Private Line)

4.36.9.21

User Selectable PL [MPL]

This field causes the radio to ignore the Private Line (PL) settings of the current Conventional channel.

You are then able to select the desired PL settings that are programmed in the Multiple Private Line (MPL) List Window. See also MPL Recall Mode. This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



WARNING: When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled**, this field must be **Disabled**; otherwise the application considers this field's value invalid.



NOTE:

Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.

The [Multiple Private Line \(MPL\) on page 489](#) button-press or the [Multiple Private Line on page 533](#) menu-selection allows you to select the desired PL settings/list.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO** or **Mixed Mode**, and when the radio is model/option capable.

The following selections are supported:



NOTE:

Selecting an option automatically enables [User Selectable PL \(MPL\)](#).

Disabled

Uses the PL setting of the current Conventional channel.

Rx

Selects the desired PL settings that are programmed in the MPL List Window as Rx PL.

Tx

Selects the desired PL settings that are programmed in the MPL List Window as Tx PL.

All

Selects the desired PL settings that are programmed in the MPL List Window as Rx and Tx PL.

4.36.9.22

Direct PL Frequency

This field selects a designated frequency used to receive and transmit Private Line (PL) communication from another radio when operating in Direct/Talkaround mode.



NOTE: This code directly correlates to the [Direct PL Code on page 1145](#); selecting a value for this field automatically selects a Direct PL Code and vice versa. This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.



IMPORTANT:

When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the [Direct Network ID on page 1138](#) can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the [Direct Frequency on page 1139](#) instead of the [Rx/TA Frequency on page 1128](#).

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the Rx/TA Frequency and the [Rx Network ID on page 1136](#) setting are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.

Accessed Only: When the Direct Frequency field is **Enabled**, and when the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO Mode** or **Mixed Mode**, and when the Direct/Talkaround field is **Enabled**, and when the [User Selectable PL \[MPL\] on page 1142](#) field is **Disabled** or **Rx**, and when the [Direct Squelch Type on page 1141](#) field is **PL**.

The following selections are supported:

Table 344: TPL Squelch Frequencies & Codes

Freq (Hz) = Code		Freq (Hz) = Code	
67.0	XZ	136.5	4Z
69.3	WZ	141.3	4A
71.9	XA	146.2	4B
74.4	WA	151.4	5Z
77.0	XB	156.7	5A

Freq (Hz) = Code		Freq (Hz) = Code	
79.7	WB	162.2	5B
82.5	YZ	167.9	6Z
85.4	YA	173.8	6A
88.5	YB	179.9	6B
91.5	ZZ	186.2	7Z
94.8	ZA	192.8	7A
97.4	ZB	203.5	M1
100.0	1Z	206.5	8Z
103.5	1A	210.7	M2
107.2	1B	218.1	M3
110.9	2Z	225.7	M4
114.8	2A	229.1	9Z
118.8	2B	233.6	M5
123.0	3Z	241.8	M6
127.3	3A	250.3	M7
131.8	3B	254.1	0Z

4.36.9.23

Rx/TA Squelch Type

This field selects the type of receive Private Line (PL) or carrier squelch needed to communicate with another radio.



IMPORTANT: The selected [Unmute/Mute Type on page 1163](#) for the personality also determines if a call can be received. This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



WARNING: When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the considers this field's value invalid.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.



IMPORTANT: When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the Direct/Talkaround parameters can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the Direct Frequency using these frequency parameters.

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the settings for the Rx parameter fields are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO** or **Mixed Mode**, and when the User-Selectable PL [MPL] field is **Disabled** or **Tx**.

The following selections are supported:

- CSQ (Carrier Squelch)
- PL (Tone Private Line)
- DPL (Digital Private Line)

4.36.9.24

Direct PL Code

This field selects the specific code accepted when receiving a Private Line (PL) communication from another radio when operating in Direct/Talkaround mode.

 **NOTE:** This code directly correlates to the [Direct PL Frequency on page 1143](#); selecting a value for this field automatically selects a Direct PL Frequency and vice versa. This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.

 **NOTE:** Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.

 **IMPORTANT:** When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the [Direct Network ID on page 1138](#) can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the [Direct Frequency on page 1139](#) instead of the [Rx/TA Frequency on page 1128](#).

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the Rx/TA Frequency and the [Rx Network ID on page 1136](#) setting are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.

Accessed Only: When the Direct Frequency field is **Enabled**, and when the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the field is **Non-ASTRO Mode** or **Mixed Mode**, and when the Direct/Talkaround field is **Enabled**, and when the [User Selectable PL \[MPL\] on page 1142](#) field is **Disabled** or **Rx**, and when the [Direct Squelch Type on page 1141](#) field is **PL**.

The following selections are supported:

Table 345: TPL Squelch Frequencies & Codes

Freq (Hz) = Code		Freq (Hz) = Code	
67.0	XZ	136.5	4Z
69.3	WZ	141.3	4A
71.9	XA	146.2	4B
74.4	WA	151.4	5Z
77.0	XB	156.7	5A
79.7	WB	162.2	5B

Freq (Hz) = Code		Freq (Hz) = Code	
82.5	YZ	167.9	6Z
85.4	YA	173.8	6A
88.5	YB	179.9	6B
91.5	ZZ	186.2	7Z
94.8	ZA	192.8	7A
97.4	ZB	203.5	M1
100.0	1Z	206.5	8Z
103.5	1A	210.7	M2
107.2	1B	218.1	M3
110.9	2Z	225.7	M4
114.8	2A	229.1	9Z
118.8	2B	233.6	M5
123.0	3Z	241.8	M6
127.3	3A	250.3	M7
131.8	3B	254.1	0Z

4.36.9.25

Rx/TA PL Frequency

This field selects a designated frequency used when receiving a Private Line (PL) communication from another radio.



NOTE: This frequency directly correlates to the [Rx/TA PL Code on page 1149](#); selecting a value for this field automatically selects an Rx PL Code and vice versa. This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



WARNING: When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the considers this field's value invalid.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.



IMPORTANT:

When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the Direct/Talkaround parameters can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the Direct Frequency (MHz) using these frequency parameters.

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the settings for the Rx parameter fields are used whenever you initiates Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.

Accessed Only: When the [Rx/TA Squelch Type on page 1144](#) field is **PL**, and when the User-Selectable PL [MPL] field is **Disabled** or **Tx**.

The following selections are supported:

Table 346: TPL Squelch Frequencies & Codes

Freq (Hz) = Code		Freq (Hz) = Code	
67.0	XZ	159.8	159.8
69.3	WZ	162.2	5B
71.9	XA	165.1	165.1
74.4	WA	165.5	165.5
77.0	XB	167.9	6Z
79.7	WB	170.9	170.9
82.5	YZ	171.3	171.3
85.4	YA	173.8	6A
88.5	YB	176.9	176.9
91.5	ZZ	177.3	177.3
94.8	ZA	179.9	6B
97.4	ZB	183.1	183.1
100.0	1Z	183.5	183.5
103.5	1A	186.2	7Z
105.4	105.4	189.5	189.5
107.2	1B	189.9	189.9
109.1	109.1	192.8	7A
110.9	2Z	196.6	196.6
114.8	2A	198.2	198.2
118.8	2B	199.5	199.5
123.0	3Z	203.5	M1
127.3	3A	206.5	8Z
129.6	129.6	210.7	M2
131.8	3B	213.8	213.8
134.2	134.2	218.1	M3
136.5	4Z	221.3	221.3
138.9	138.9	225.7	M4
141.3	4A	229.1	9Z
143.8	143.8	233.6	M5
146.2	4B	237.1	237.1
148.8	148.8	241.8	M6
150.0	150.0	245.5	245.5

Freq (Hz) = Code		Freq (Hz) = Code	
151.4	5Z	250.3	M7
156.7	5A	254.1	0Z
159.5	159.5		

4.36.9.26

Direct DPL Code

This field selects the specific code accepted when receiving a Digital Private Line (DPL) communication from another radio when operating in Direct/Talkaround mode.

This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.



IMPORTANT:

When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the [Direct Network ID on page 1138](#) can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the [Direct Frequency on page 1139](#) instead of the [Rx/TA Frequency on page 1128](#).

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the Rx/TA Frequency and the [Rx Network ID on page 1136](#) setting are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.

Accessed Only: When the Direct Frequency field is **Enabled**, and when the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO Mode** or **Mixed Mode**, and when the Direct/Talkaround field is **Enabled**, and when the [User Selectable PL \[MPL\] on page 1142](#) field is **Disabled** or **Rx**, and when the [Direct Squelch Type on page 1141](#) field is **DPL**.

The following selections are supported:

Table 347: DPL Squelch Codes

Code	Code	Code	Code
023	152	343	565
025	155	346	606
026	156	351	612
031	162	364	624
032	165	365	627
043	172	371	631
047	174	411	632
051	205	412	645*

Code	Code	Code	Code
054	223	413	654
065	226	423	662
071	243	431	664
072	244	432	703
073	245	445	712
074	251	464	723
114	261	465	731
115	263	466	732
116	265	503	734
125	271	506	743
131	306	516	754
132	311	525*	
134	315	532	
143	331	546	

 **NOTE:** The codes marked with an asterisk are not part of the 83 standard EIA/TIA-603 codes.

4.36.9.27

Rx/TA PL Code

This field selects the specific code accepted when receiving a Private Line (PL) communication from another radio.

 **NOTE:** This code directly correlates to the [Rx/TA PL Frequency on page 1146](#); selecting a value for this field automatically selects an Rx/TA PL Frequency and vice versa. This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.

 **WARNING:** When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** and the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled**, this field must be a match for all Frequency Options in the current Personality; otherwise the considers this field's value invalid.

 **NOTE:** Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.

 **IMPORTANT:** When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the Direct/Talkaround parameters can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the Direct Frequency (MHz) using these frequency parameters.

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the settings for the Rx parameter fields are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.

Accessed Only: When the [Rx/TA Squelch Type on page 1144](#) field is **PL**, and when the User-Selectable PL [MPL] field is **Disabled** or **Tx**.

The following selections are supported:

Table 348: TPL Squelch Frequencies & Codes

Freq (Hz) = Code		Freq (Hz) = Code	
67.0	XZ	159.8	159.8
69.3	WZ	162.2	5B
71.9	XA	165.1	165.1
74.4	WA	165.5	165.5
77.0	XB	167.9	6Z
79.7	WB	170.9	170.9
82.5	YZ	171.3	171.3
85.4	YA	173.8	6A
88.5	YB	176.9	176.9
91.5	ZZ	177.3	177.3
94.8	ZA	179.9	6B
97.4	ZB	183.1	183.1
100.0	1Z	183.5	183.5
103.5	1A	186.2	7Z
105.4	105.4	189.5	189.5
107.2	1B	189.9	189.9
109.1	109.1	192.8	7A
110.9	2Z	196.6	196.6
114.8	2A	198.2	198.2
118.8	2B	199.5	199.5
123.0	3Z	203.5	M1
127.3	3A	206.5	8Z
129.6	129.6	210.7	M2
131.8	3B	213.8	213.8
134.2	134.2	218.1	M3
136.5	4Z	221.3	221.3
138.9	138.9	225.7	M4
141.3	4A	229.1	9Z
143.8	143.8	233.6	M5
146.2	4B	237.1	237.1
148.8	148.8	241.8	M6
150.0	150.0	245.5	245.5

Freq (Hz) = Code		Freq (Hz) = Code	
151.4	5Z	250.3	M7
156.7	5A	254.1	OZ
159.5	159.5		

4.36.9.28

Direct DPL Invert

This field causes Digital Private Line (DPL) signals to be inverted before they are transmitted and once they are received while operating in Direct/Talkaround mode.



NOTE: Inverted coding allows for more traffic/usage on frequencies.



IMPORTANT: Direct DPL Invert must be set on both receiving and transmitting radios for communication to occur. This selection applies only for current Frequency Options profile (record/row) of the current Conventional Personality.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the personality is selected in the [Personality on page 1296](#) field, and then the Frequency Options profile is selected in the [Conventional Frequency Option on page 1294](#) field.



IMPORTANT:

When [Direct/Talkaround on page 1132](#) is **Enabled** for this Frequency Options profile and the [Direct Frequency Enable on page 1026](#) field is **Enabled**, the [Direct Network ID on page 1138](#) can then be modified on a per Frequency Options profile basis. When you initiate Direct/Talkaround mode, the radio then transmits and receives on the [Direct Frequency on page 1139](#) instead of the [Rx/TA Frequency on page 1128](#).

When Direct/Talkaround is **Enabled** for this Frequency Options profile and the Direct Frequency Enable field is **Disabled**, the Rx/TA Frequency and the [Rx Network ID on page 1136](#) setting are used whenever you initiate Direct/Talkaround mode.

Direct/Talkaround must be **Enabled** on a Frequency Options profile in order to be available to you for a radio channel. You can select Direct/Talkaround mode with the [Talkaround/Direct on page 494](#) button-press, the [Talkaround/Direct on page 511](#) switch-selection, or the [Direct/Talkaround on page 528](#) menu-selection.

Accessed Only: When the Direct Frequency field is **Enabled**, and when the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Rx Voice/Signal Type on page 1162](#) field is **Non-ASTRO Mode** or **Mixed Mode**, and when the Direct/Talkaround field is **Enabled**, and when the [User Selectable PL \[MPL\] on page 1142](#) field is **Disabled** or **Rx**, and when the [Direct Squelch Type on page 1141](#) field is **DPL**.

4.36.10

Features

This section allows you to view or define miscellaneous Conventional communications features.



NOTE: Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

4.36.10.1

Tactical Rekey Enable

This field enables the radio to receive Rekey commands that have been sent from other radios or Subscriber Units (SUs) rather than from a Fixed Network Equipment (FNE) or a Key Management Facility (KMF).

Rekeying is the process of changing the radio's current secure encryption keys. Secure encryption keys allow for secure communications to occur.



NOTE: In order to use this radio as an RF modem to transmit Tactical Rekey commands, please refer to the Terminal Data field.

Accessed Only: When the Secure Operation field is **Hardware**, and when the [Rx Voice/Signal Type on page 1162](#) is **ASTRO** or **Mixed Mode**, and when the [Tx Voice/Signal Type on page 1100](#) field is **ASTRO**, and when an ASTRO System Type referenced Conventional System having a valid referenced Data Profile has been selected, and when the Data Profile Type is **Conventional** in that referenced Data Profile, and when the radio is model/option capable.

4.36.10.2

Hot Keypad

This field enables you to enter telephone numbers using the radio's keypad, even when the radio is not in Phone Mode.

This hot keypad mode is initiated by pressing and holding the PTT button while pressing the required numbers. This feature applies while operating on the current Conventional Personality.

Accessed Only: When [Receive Only Personality on page 1162](#) field is **Disabled**, and Tone Signaling H-Option is present, and when the radio is model/option capable.

4.36.10.3

DTMF Mic Enable

This field allows you to transmit DTMF tones using the radio's keypad, even when the radio is not in Phone Mode.

You can initiate DTMF Mic by pressing and holding the Top or Side or Control Head button, while the required DTMF keypad number is sent out. This selection applies while operating on the current Conventional Personality.

Accessed Only: When [Receive Only Personality on page 1162](#) field is **Disabled**, and Tone Signaling H-Option is present, and when the radio is model/option capable.

4.36.10.4

End Tx on Voice Absence

This field enables the radio, during a Conventional voice transmission, to automatically de-key when its on-board Digital Signal Processor (DSP) detects a lack of voice from the microphone for a period that exceeds the Voice Absence Timer.

This selection applies while operating on the current Conventional Personality.



WARNING: The feature does not operate when an in-the-field radio:

- Is operating in Emergency Mode and either **Hot Mic Emergency** or **Emergency via Silent Audio** is currently active (see also Emergency Auto Transmit Mode), or
- Is currently being remotely-monitored (see also Remote Radio Mode and Emergency Remote Monitor Enable).

Accessed Only: When the radio is model/option capable.

4.36.10.5

RF Modem

This field enables the radio to operate as a Radio Frequency (RF) Modem.

This functionality is possible when the radio is cabled to a computer and activated by applicable software, and allows you to receive control channel data on a computer, and to transmit specific Conventional - ASTRO data packets. This functionality facilitates applications such as Personnel Accountability (PA); PA improves resource management on the scene of an incident. This feature applies on a radio-wide basis for Conventional ASTRO data packets.

Accessed Only: When the [RF Modem on page 349](#) field is **Disabled**, and when the [DVRS Hardware Enable on page 1019](#) field is **Disabled**, and when the [Dual Radio - Radio Selection on page 361](#) field is not set to **Primary Radio** or **Secondary Radio**, and when the [Rx Voice/Signal Type on page 1162](#) field is not set to **Non-ASTRO**, and when [Remote Site Interface System on page 1057](#) field is not set to **Enabled**, and when the personality is not automatically created by the Zone Cloning feature, and when the radio is model/option capable.

The following selections are supported:

- Disabled
- APCO Project 25 Mode

4.36.10.6

Scan List Selection

This field selects which Scan List is used by the radio while operating in Scan Mode for the current Conventional Personality.

This Scan List then determines which calls the radio scans for (actively listens for), and considers unmuting to the current Conventional channel.



WARNING:

When the Analog Flat Audio field is **Enabled**, this field must be set to **None**; otherwise, it becomes invalid. Therefore both features may not be enabled on the same Personality.

When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled** for the current Personality, this field must be set to a [Conventional Scan Type on page 1306](#); otherwise, it becomes invalid.

When the referenced Conventional System selected in the [ASTRO System on page 1102](#) field is a DVRS System Type, this field must be set to **None**; otherwise, it becomes invalid.

The CPS considers this selection invalid when this personality is LTE Broadband-enabled, and this selected Scan List has any Scan List Member Channels having the following condition:

- their Conventional Personality's [LTE Interference Frequency Present on page 1125](#) field set to **Enabled**, or
- their Trunking System's LTE Interference Freq Present field is **True**, or
- their Trunking System's Coverage Type field set to **Inter-WACN Roaming**.



NOTE: A conventional channel is LTE enabled when the Personality's referenced ASTRO-Conventional System has a referenced Data Profile having a Data Profile Type selection equal to **Conventional & Broadband** or **Broadband-Only**, and when that Data Profile's Broadband Source is **Internal LTE Modem**.

The CPS considers this selection invalid when the current Conventional Personality's LTE Interference Frequency Present field is **Enabled**, and this Scan List Selection is referencing a Scan List with a Designated Data Member LTE Broadband-enabled channel.



NOTE: A conventional channel is LTE enabled when the Personality's referenced ASTRO-Conventional System has a referenced Data Profile having a Data Profile Type equal to **Conventional & Broadband** or **Broadband-Only**, and when that Data Profile's LTE Enable field is **Enabled**.

The CPS considers this selection invalid when referenced Conventional System in Conventional Personality is of type DVRS and when

- The DVRS PSU Conventional Scan Enabled option is set to **Disabled**, or
- The selected Scan List has Scan Type field is NOT set as **Conventional**, or
- The selected Scan List has any Scan List Member Channels with their conventional Personality's ASTRO System field is a **DVRS** System, or
- The Scan List Selection is referencing a Scan List in which:
 - Dynamic Priority field is set as **Enabled**, or
 - Priority 1- Type field is not set as **Selected Chan**, or
 - Priority 2- Type field is not set as **Disabled**, or
 - Designated Voice Tx Member Type field is not set as **Selected Channel**, or
 - Designated Data Rx/Tx Type field is not set as **None**, or
- The Conventional Personality's Mixed Vote Scan Enable field is set as **Enabled**.



NOTE:

Scan List and Scan List Member functionality are defined in the Scan List Window.

Only Scan Lists having the **Conventional** or **Talkgroup** selection in the Scan Type field are valid Scan List Selections for the current Conventional Personality.

Scan Lists having the **Intelligent Priority** selection in the Scan Type field are valid Scan List Selections for the current Conventional Personality without DVRS system.

You can initiate Scan List editing with a Scan List Programming switch-toggle, a Scan List menu-selection, or a long keypress duration of a Scan button-press.

No Sharing of Scan List between Conventional and DVRS Personality.

Accessed Only: When the Remote Site Interface System field in the referenced Conventional System is **Disabled**;

if **Enabled**, then the [Rx Voice/Signal Type on page 1162](#) field must be set to **ASTRO**, and this Scan List Selection must be **None**; else, this field becomes invalid.

When the **Conventional System** being referenced by the **Conventional Personality** is DVRS, the DVRS PSU Conventional Scan Enabled option must be available. Otherwise, the Scan List Selection field will be inapplicable

4.36.10.7

Automatic Scan

This field causes the radio to automatically enter scan mode when you select (with the channel selector) the current Conventional Personality.

Auto Scan is also invoked when the radio is powered-on to the current Personality.

When disabled, you are able to invoke Scan Mode operation through a Scan button-press, a Scan switch-toggle or a Scan menu-selection, while operating on the current Conventional Personality.

Accessed Only: When the [Scan List Selection on page 1153](#) field is not set to **None**.

4.36.10.8

Mixed Vote Scan Enable

This field enables Conventional Mixed Vote Scan for the current Conventional Personality.

When this field is **Enabled**, all of the Frequency Options (records/rows) in the current Personality are used to form the Voting Scan list.



IMPORTANT: Additionally, when this field is enabled, the maximum number of Frequency Options is limited to 15.



NOTE: Frequency Option profiles can be selected for use within the Zone Channel Assignment's Channels Page; first, the Personality is selected in the Personality field, and then the Frequency Options profile is selected in the Frequency Options field.

Accessed Only: When the radio is model/option capable, and when the personality is not automatically created by the Zone Cloning feature, and

(when the Remote Site Interface System field in the referenced Conventional System is **Disabled**; if **Enabled**, then the [Rx Voice/Signal Type on page 1162](#) field must be set to **ASTRO**, and this Mixed Vote Scan Enable selection must be **Disabled**; else, this field becomes invalid).

4.36.10.9

Mixed Vote Scan Tx Steering

This field enables the Frequency Options profiles of the current Conventional Personality to vary when that Personality has been Conventional Mixed Vote Scan enabled.

See the [Mixed Vote Scan Enable on page 1155](#) field. When disabled, all Tx Frequency Options, and specific Rx Frequency Options, for the current Conventional Personality must be the same.

Accessed Only: When the Mixed Vote Scan Enable field is **Enabled**.

4.36.10.10

Smart PTT Type

This field allows you to select a channel lockout rule that prevents the radio from transmitting while the selected Tx **Inhibit On** condition exists.

This selection applies while operating on the current Conventional Personality.



IMPORTANT: The [Quick Key Override on page 1157](#) field is an override feature pertaining to these Tx **Inhibit On** selections. This override feature allows you to transmit regardless of the currently-selected **Inhibit On** rule.



NOTE:

If you attempt to transmit (by pressing the PTT Button) while a selected Tx **Inhibit On** rule is disallowing that transmission, the radio will exhibit one of two behaviors:

- If the selected Tx **Inhibit On** condition is met but the radio is currently muted, a continuous alert tone sounds until the PTT button is released. This would include, for example, cases where the repeater is busy with an encrypted conversation, but the radio remains muted due to a lack of secure support (**Inhibit on Status Symbols**).
- If the radio is currently receiving and unmuted to a voice transmission, pressing the PTT button causes a short alert tone to sound; this is because the radio unmutes to the higher-priority voice audio after a brief interval.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**, and if the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO**, then the Remote Site Interface System field in the referenced Conventional System must be **Disabled**.

The Smart PTT Type supports the following selections:

Disabled

Allows transmission when any transmission is detected on the current channel.

Inhibit On Wrong PL

For analog (Non-ASTRO) voice calls: Prevents transmission when carrier squelch is detected with a PL code that does not match for the current personality/channel; If the busy channel PL code is a match for the current personality, radio transmissions are permitted.

For digital (ASTRO) voice calls: Prevents transmission when the radio does not unmute due to receiving a Talkgroup ID that does not match the current personality/channel's Talkgroup ID. If the busy channel Talkgroup is a match for the current personality/channel's Talkgroup ID, radio transmissions are permitted.



NOTE: Permissible Talkgroups are determined by the personality's referenced ASTRO Talkgroup List.

Inhibit On Carrier

Prevents transmission when carrier squelch is detected on the current channel.

Inhibit on Correct NAC

Prevents transmission while the radio is receiving a digital (ASTRO) voice call that has a matching Network Access Code (NAC) for the current channel (see [Rx Network ID on page 1136](#)).

Inhibit on Status Symbols

Prevents transmission while receiving a digital (ASTRO) voice call and when the 'last-received' signal status bit recorded was either **inbound busy** or **unknown**.

This setting is not applicable for analog (Non-Astro) voice calls.



NOTE:

Receiving analog signals is only possible when the Rx Voice/Signal Type field is **Non-ASTRO** or **Mixed Mode**, and an MDC or QCII System Type has been selected in the Non-ASTRO Signaling Type field, and the corresponding Non-ASTRO System has been selected for the current Conventional Personality.

Receiving digital signals is only possible when the Rx Voice/Signal Type field is set to **ASTRO Mode** or **Mixed Mode**, and an ASTRO - Conventional System has been selected in the [ASTRO System on page 1102](#) field.

4.36.10.11

Quick Key Override

This field allows you to override the selected Smart PTT Type field **Inhibit On** rule, thus allowing a transmission to be sent on a busy channel in an impolite fashion.

You can accomplish this by quick-keying the PTT button. Quick-keying is when the PTT button is pressed, released and quickly re-pressed, within the time specified by the Smart PTT Quick Key Timer field. This feature applies for the current Conventional Personality.

Accessed Only: When the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Smart PTT Type on page 1156](#) field is not **Disabled**, and if the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO**, then the Remote Site Interface System field in the referenced Conventional System must be **Disabled**.

4.36.10.12

Incident Signaling Type

This field selects either the Personnel Accountability or the Tactical Public Safety (TPS) signaling type for the current Conventional Personality.



NOTE: None of these selections have any influence on the [Tactical Public Safety UI Enable on page 1158](#) feature.

Accessed Only: When the personality is not automatically created by the Zone Cloning feature and when the radio is model/option capable.

The following selections are supported:

Disabled

No Personnel Accountability or TPS Signaling is available to the radio.

Personnel Accountability

Enables Personnel Accountability Signaling for the current Conventional Personality.



WARNING: This selection is only valid when [Phone Operation on page 1165](#) is set to **None**, and when [Tx Voice/Signal Type on page 1100](#) is set to **ASTRO**, and

when the referenced Conventional System is not a DVRS System Type, and

when that Conventional System's referenced Data Profile has the **Conventional & Broadband** or **Broadband Only**.

Personnel Accountability with MDC

Enables Personnel accountability with MDC for the current Conventional Personality



WARNING: This selection is only valid when [Phone Operation on page 1165](#) is set to **None**, and when [Tx Voice/Signal Type on page 1100](#) is set to **ASTRO**, and when the Rx Voice / Signal Type is set to **Mixed Mode**, and when the Personnel Accountability Tx voice Type is set to **Analog** and when the Non-ASTRO signalling type is set to **MDC** and when the RAC/Repeater Access is disabled, and when the referenced Conventional System is set to ASTRO System Type, and when that Conventional System's referenced Data Profile has the **Conventional & Broadband or Broadband Only**.

Tactical Public Safety

Enables TPS Signaling for the current Conventional Personality.



WARNING: This selection is only valid when [Rx Voice/Signal Type on page 1162](#) is set to **Mixed Mode**, and when Tx Voice/Signal Type is set to **ASTRO**, and when Non-ASTRO Signaling Type is set to **None**, and when the [Talkgroup on page 1098](#) field is **Disabled**, and when the [Selective Call Rx/Tx on page 1092](#) field is set to **Disabled** or **Decode**, and when the referenced Conventional System is not a DVRS System Type, and when that Conventional System's referenced Data Profile has the **Conventional & Broadband or Broadband Only**, and (when Secure Operation field is **Disabled**), or (when Secure Operation is set to **Hardware** or Software, and when [Voice Secure/Clear Strapping on page 1110](#) is set to **Clear**.)

4.36.10.13

Tactical Public Safety UI Enable

This field enables several Tactical Public Safety (TPS) features that are related to Emergency Mode operation for the current Conventional Personality.

These features include the Radio Wide, Tactical Public Safety: Audible Emergency Beacon, Audible Emergency Beacon Routing, Emergency Call De-key Sidetone, and Emergency Alarm Retry Rate.



IMPORTANT: This feature applies for the current Conventional Personality regardless of this Personality's [Incident Signaling Type on page 1157](#) selection.

Accessed Only: When the radio is model/option capable.

4.36.10.14

Personnel Accountability Registration

This field enables the radio to register with the Personnel Accountability (PA) Incident Command Terminal (ICT).



Registration is accomplished by transmitting PA registration packets to the ICT with the expectation of receiving an

acknowledgement from the ICT of a successful registration transmission. If the registration packet transmission is not acknowledged, the radio continues to retry the packet transmission for the number of times defined in the Trunking Wide, [Max Tx Attempts on page 1175](#) field. This feature applies when operating on the current Conventional Personality.



NOTE: The Radio Wide, Respond to Polls field determines how often (in minutes) that the registration attempt will re-occur.

Accessed Only: When the [Incident Signaling Type on page 1157](#) field is set to **Personnel Accountability** or **Personnel Accountability with MDC**, and when the CAI Data Registration field in the current Conventional Personality's referenced Conventional System is **Disabled**, and when that Conventional System's referenced Data Profile has its ARS Mode field **Disabled**, and when the radio is model/option capable.

4.36.10.15

Tx Voice Type

This field selects the Transmit (Tx) Voice mode that is used during Personnel Accountability operation for the current Conventional Personality.



Accessed Only: When the [Incident Signaling Type on page 1157](#) field is set to **Personnel Accountability** or **Personnel Accountability with MDC**, and when the radio is model/option capable.

The following selections are supported:

Digital

ASTRO digital mode is used to transmit voice during Personnel Accountability operation.

Analog

Non-ASTRO analog mode is used to transmit voice during Personnel Accountability or Personnel Accountability with MDC operation.



WARNING: This selection is only valid per a Conventional Personality basis when the [Rx Voice/Signal Type on page 1162](#) field is set to **Mixed Mode**, and when the [Talkgroup on page 1098](#) field is **Disabled**, and when the [Selective Call Rx/Tx on page 1092](#) field is not set to **Encode** or **Decode & Encode**.

4.36.10.16

OTA Radio Alias Type

This field configures the encoding (transmitting) and decoding (receiving) of the Over-the-Air (OTA) Radio Alias feature.



WARNING: Radio cannot display alias if the radio receives duplicated IDs until the duplication is removed. Writing the codeplug to the radio will cause the call list to return to its original state and all OTA alias updates will be lost.



IMPORTANT: If OTA alias update did not show up on the display, you must update the radio call list in RadioCentral or provisioning manager.

The following selections are supported:

Disabled

The radio does not transmit or receive the Radio Alias data.

Leading Only

Radio Alias data transmits before voice only.



WARNING: This selection is only valid when the [Tx Voice/Signal Type on page 1100](#) field is set to **ASTRO**, and when the referenced Conventional System is not DVRS.

Trailing Only

Radio Alias data transmits after voice only.



WARNING: This selection is only valid when the Tx Voice/Signal Type field is set to **ASTRO**, and when the referenced Conventional System is not DVRS.

Leading and Trailing

Radio Alias data transmits before and after voice.



WARNING: This selection is only valid when the Tx Voice/Signal Type field is set to **ASTRO**, and when the referenced Conventional System is not DVRS.

Decode Only

Radio Alias data receives the data without limitation.

Accessed Only: When the radio is model/option capable.

4.36.10.17

OTA Radio Alias Update Enable

This field allows the current system to update the radio alias.

Accessed Only: When the Radio ID Enable is enabled, and when [Rx Voice/Signal Type on page 1162](#) is not **Non-ASTRO**, and [ASTRO System on page 1102](#) is referencing a DVRS system, and when [OTA Radio Alias Type on page 1159](#) is not **Disabled**, and when the radio is model/option capable.

4.36.10.18

Conventional RSSI Display

This field enables the radio to display the Received Signal Strength Indication (RSSI) value on Conventional Channel.

4.36.10.19

RSSI Display Timer

This field sets the duration to display the Received Signal Strength Indication (RSSI) value during hang time.

Table 349: Range

Minimum	Maximum	Increments
1 sec	255 sec	1 sec

Accessed Only: When the [Conventional RSSI Display on page 1160](#) is **Enabled**.

4.36.10.20

Hazard Zone Mode Personality

This field allows you to turn on the Hazard Zone Mode (HZM) using the concentric switch while operating on the current Conventional Personality.

 **NOTE:** This field is only applicable for APX NEXT XN radio.

 **IMPORTANT:** When HZM is **Enabled**, the following conditions must be fulfilled. ASTRO System field in Conventional Personality is set to an ASTRO system with the following settings:

- Emergency Profile Selection field is connected to a conventional emergency profile.
- Emergency Profile Selection field is not set to **Emergency Tx Disabled**.
- Emergency Alarm Rx Indicator field is **Enabled**.

Tx Voice/Signal Type and Rx Voice/Signal Type field is set to **ASTRO** or Incident Signaling Type field is not set to **Disabled**.

When HZM Personality field is checked, the Emergency Revert Type field is set to **Selected Channel**, or to another channel tied to a HZM personality.

Accessed Only: When the radio is the latest Fire Service Standards model and the [Fire Service Standards Compliant](#) field is **Enabled**.

4.36.10.21

Polite DVRS Inbound PTT Request

This field enables Polite PTT for Conventional DVRS mode. Polite Voice Access Requests are sent using Fast Retry instead of Limited Patience.

Accessed only: This field becomes applicable when the ASTRO System references a DVRS System.

4.36.10.22

OTACR/OTACS Messaging

Enables Over-The-Air-Channel-Reassignment (OTACR) and Over-The-Air-Channel-Steering (OTACS) Messaging.

 **WARNING:** This feature is currently not available.

This feature applies while operating on the current [Conventional Personality on page 1091](#).

 **WARNING:** When the referenced [Conventional System on page 1056](#) (selected in the [ASTRO System on page 1102](#) field) has a referenced [Data Profile](#) whose [Data Profile Type on page 982](#) is **Conventional & Broadband** or **Broadband-Only**, this field must be set to **Disabled**; otherwise, it is considered invalid.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) is **ASTRO** or **Mixed Mode**, and when the [OTACR Feature on page 1030](#) is **Enabled** or the [OTACS Feature on page 1030](#) is **Enabled**, and when the referenced [Conventional System on page 1056](#) selected in the [ASTRO System on page 1102](#) field is not a DVRS [System Type on page 1056](#), and when the radio is model/option capable.

4.36.11

Rx Options

This section allows you to view or define functionality having to do only with the radio's receive (Rx) mode for individual Conventional Personalities.



NOTE: Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

4.36.11.1

Receive Only Personality

This field causes the radio to not have transmit capability while operating on the current Conventional Personality.

Receiving calls will be the only operation permitted on this personality.



NOTE: If the personality is created by the Zone Cloning feature, the personality cannot be a Receive Only Personality.

Accessed Only: When the personality is not created by the Zone Cloning feature.

4.36.11.2

Rx Voice/Signal Type

This field selects the signaling mode when receiving (Rx) voice for the current Conventional Personality.



WARNING:

When the Remote Site Interface (RSI) System field in the referenced Conventional System is **Enabled**, this field must be set to **ASTRO**; otherwise the considers this field's value invalid.

When the Analog Flat Audio field is **Enabled**, this field must be set to **Non-ASTRO**; otherwise the considers this field's value invalid.

When the [Mixed Vote Scan Enable on page 1155](#) field is **Enabled**, this field must be set to **Non-ASTRO** or **ASTRO**; otherwise the considers this field's value invalid.

The following selections are supported:

Non-ASTRO

Only Non-ASTRO analog type signals are received.

An **MDC** or **QCII** System Type must be selected in the Non-ASTRO Signaling Type and then a Non-ASTRO System must be selected.

Mixed Mode

Both ASTRO digital and Non-ASTRO analog type signals can be received.

An ASTRO - Conventional Systems must be selected in the ASTRO System field, and an **MDC** or **QCII** System Type must be selected in the Non-ASTRO Signaling Type and then a Non-ASTRO System must be selected.



IMPORTANT: ASTRO communications take priority over receiving Non-ASTRO Signaling Type communications.

ASTRO

Only ASTRO digital type signals are received.

An ASTRO - Conventional Systems must be selected in the [ASTRO System on page 1102](#) field.

4.36.11.3

Unmute/Mute Type

This field selects the rule that determines when a radio opens and closes its speaker to receive audio for the current Conventional Personality.

The Unmute/Mute rules apply only when PL is the selected [Rx/TA Squelch Type on page 1144](#) for the current Conventional channel.

 **NOTE:** Unmuting opens the radio's speaker to receive audio. Muting closes the radio's speaker to receive audio.

The following selections are supported:

Standard

To unmute on Proper Private Line (PL) code detection, and to mute on loss of proper PL code.

Unmute, Standard Mute

To unmute on Proper PL code detection and carrier squelch detect, and to mute on loss of proper PL code.

Unmute, Or Mute

To unmute on Proper PL code detection and Carrier Squelch detect, and to mute on loss of proper PL code or loss of Carrier Squelch detect.

 **NOTE:** Proper refers to there being a code match between the transmitting radio's [Tx PL Code on page 1133](#), and the receiving radio's [Rx/TA PL Code on page 1149](#). The transmitting radio's [Tx Squelch Type on page 1129](#) and the receiving radio's Rx/TA Squelch Type must also be a match; that is, Tx TPL for Rx TPL, or Tx DPL for Rx DPL.

4.36.11.4

Rx Unmute Delay

This field selects the amount of time that the radio stays muted once carrier squelch has been detected for the current Conventional Personality.

This delay is sometimes needed to allow signaling data to arrive silently. Time is in milliseconds.

Table 350: Range

Minimum	Maximum
0 ms	2150 ms

4.36.11.5

Squelch (Fine Tune)

This field selects the value that is combined with the master squelch value that determines the overall carrier squelch threshold for the current Conventional Personality.

The higher this number is set, the tighter the squelch threshold. A tighter threshold causes a stronger carrier signal to be required for the radio's speaker to unmute. This helps to reduce interference.

Accessed Only: When the Squelch Per Personality field is **Enabled**.

Table 351: Range

Minimum	Maximum
0	15

4.36.11.6

Busy LED

This field enables the yellow LED to indicate the presence of a carrier (busy channel) for the current Conventional Personality.

4.36.11.7

Rx De-Emphasis

This field enables Receive (Rx) De-Emphasis for the current Conventional Personality.



NOTE:

De-emphasis reverses a pre-emphasized signal when received by the radio.

Transmit emphasis audio filtering ([Transmit Pre-Emphasis on page 1101](#)) increases the signal-to-noise ratio for higher frequencies. More simply put, the lower frequency's "noise" is reduced and the higher frequency's "voice" is increased.

4.36.11.8

HearClear

This field selects to enhance audio clarity by applying a compression/expansion algorithm to the transmitted and received signals respectively.

This feature applies for the current Conventional Personality.



IMPORTANT: With companding, the dynamic range of the transmit audio is compressed and then expanded to its original level in the receive audio. Therefore, companding must be enabled on both the transmitting and the receiving radios or distorted audio will result. Since the compression/expansion algorithm is active both on transmit and receive audio, expanding uncompressed audio or compressing audio without subsequently expanding it will both result in unnatural-sounding audio output. The audio path to the dispatcher must also be companded.

This feature applies only for analog signals.

Accessed Only: When the [Rx Voice/Signal Type on page 1162](#) field is set to **Non-ASTRO** or **Mixed Mode**, and when the referenced Conventional System selected in the ASTRO System field is not a DVRS System Type, and when the DVRS Hardware Enable field is **Disabled**.

The following selections are supported:

Disabled

No noise canceling or companding is applied to the transmit/receive signals.

Companding Only

Companding is applied to both the transmit and receive audio (see Important Note).

Noise Cancellation Only

Noise cancellation is applied to the receive audio.

Companding and Noise Cancellation

Companding is applied to both the transmit and receive audio (see Important Note) and noise cancellation is applied to the receive audio.



NOTE: The **Noise Cancellation Only** and **Companding and Noise Cancellation** settings can only be applied if all frequencies on the current personality are in the 900 MHz range.

4.36.11.9

Concurrent Rx Enable

When this field is enabled together with the [Concurrent Rx Enable](#) field in Radio Wide, you can control Concurrent Rx on a personality basis instead of a radio-wide basis.

 **NOTE:** This field is enabled by default.

Accessed Only: When Concurrent Rx Enable field in Radio Wide is enabled.

4.36.12

Phone

This section allows you to view or define phone system or telephone dialing functionality for individual Conventional Personalities.

These settings apply when operating in Phone Mode.

 **NOTE:** Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

You can activate Phone Mode with a Call Response or Phone button-press or Phone menu-selection.

The following fields are supported:

4.36.12.1

Phone Operation

This field selects your phone functionality when operating in Phone Mode for the current Conventional Personality.

You can activate Phone Mode with a Call Response or Phone button-press or Phone menu-selection.

 **IMPORTANT:** If the Call List Wide, Phone Number Editable field is **Enabled**, you can modify the Phone Numbers within the radio's Unified Call List.

Accessed Only: When the radio is model/option capable, and (if the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO**, then the Remote Site Interface System field in the referenced Conventional System must be **Disabled**).

The following selections are supported:

None

Phone is disabled.

List Only

You may only call pre-programmed numbers from the radio's Phone Hot List. See the above Important Note.

 **WARNING:** This selection is only valid when the [Receive Only Personality on page 1162](#) field and the Manual Access Live Dialing field are **Disabled**, and when [Tactical Inhibit Kill Operation on page 1092](#) is not applicable or not set to **Decode** or **Decode & Encode**, and when [Tactical Inhibit Stun Operation on page 1094](#) is not applicable or not set to **Decode** or **Decode & Encode**.

Unlimited

You may call phone numbers from the Phone List, or directly enter a phone number with the keypad. See the above Important Note.



WARNING: This selection is only valid when the Receive Only Personality field is **Disabled**, and when Kill Operation is not applicable or not set to **Decode** or **Decode & Encode**, and when Stun Operation is not applicable or not set to **Decode** or **Decode & Encode**.

Answer Only

Allows the radio to accept Calls only.



WARNING: This selection is only valid when the referenced Conventional System selected in the ASTRO System field is a DVRS System Type.

4.36.12.2

DTMF Timing Select

This field selects a predefined set of DTMF timing parameters from the Phone Wide, DTMF Timing Page.

Each set defines parameters in the following three fields: Initial Delay, Digit Duration, and Interdigit Delay. This selection applies while operating in Phone Mode for the current Conventional Personality.

Accessed Only: (When the radio is model/option capable, and when the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Phone Operation on page 1165](#) field is set to **List Only** or **Unlimited**, and when the referenced Conventional System selected in the ASTRO System field is not a DVRS System Type), and (if the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO**, then the Remote Site Interface System field in the referenced Conventional System must be **Disabled**).

4.36.12.3

Auto Access Code Select

This field selects a set of predefined DTMF - Access and Deaccess codes to be used in Phone Mode for communicating with a phone system.

Phone System Access and Deaccess codes are paired in sets that are named in the DTMF Codes Name field. This selection applies while operating in Phone Mode for the current Conventional Personality.

Accessed Only: (When the radio is model/option capable, and when the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Phone Operation on page 1165](#) field is set to **List Only** or **Unlimited**, and when the referenced Conventional System selected in the ASTRO System field is not a DVRS System Type), and (if the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO**, then the Remote Site Interface System field in the referenced Conventional System must be **Disabled**).

4.36.13

One Touch

This section allows you to view or define specific One Touch **Feature** and **Index** selections for up to four One Touch button-presses or One Touch menu-selections.

One Touch allows you to create menu-navigation and/or button shortcuts. These shortcuts can greatly reduce your effort involved in launching a radio feature. A One Touch button-press or menu-selection can reduce down to a single button press, the launching of a radio feature; this same process might otherwise take many menu navigation steps to achieve. These selections apply for the current Conventional Personality.



NOTE: Once the features of the Conventional Personalities have been uniquely defined, each personality may then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

4.36.13.1

One Touch Button Feature

This field selects the One Touch Feature for your One Touch button-press or One Touch menu-selection.

This selection applies for the current record/row, which applies for the current Conventional Personality.



IMPORTANT: Conventional One Touch Button 1, in other words, the first record/row would correspond to a One Touch 1 button-press, and/or a TCH1 or SIG1 menu-selection, and so on.



NOTE:

When any of the following One Touch Button Feature types is selected, a [One Touch Button Index on page 1168](#) Index/List Member selection is also required for the current personality: Phone, Selective Call, Call Alert, Status, or Message.

The available One Touch Button Feature selections are model/option dependent.

Accessed Only: When the radio is model/option capable and (if the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO**, then the [Remote Site Interface System on page 1057](#) field in the referenced Conventional System must be **Disabled**).

The following selections are supported:

Disabled

One Touch is not available for the current Button selection.

Phone

The [Phone Operation on page 1259](#) feature is enabled for the current personality.

Select Call

The [Selective Call Rx/Tx on page 1118](#) feature is set to **Decode & Encode** or **Encode**.



IMPORTANT: When the referenced Conventional System is a "DVRS" System Type, then this feature associates Trunking Private Call functionality with the One Touch button-press or [One Touch \(SIG1-SIG4/DISP\) on page 538](#) menu-selection.

Call Alert

The Call Alert Rx/Tx feature is set to "Decode & Encode" or "Encode". For the APX™ 3000 and Model 1.5 Portable buttons, this selection is valid when Feature Inactivity Alert Tone is not set to "Disabled".

Status

The [Status on page 1081](#) feature of the referenced Conventional System (to the current personality) is **Enabled**.

Message

The [Message on page 1083](#) feature of the referenced Conventional System (to the current personality) is **Enabled**.

RAB1 (Repeater Access Button)

The [Repeater Access on page 1169](#) feature is enabled for the current personality. When the [Access Type on page 1169](#) field is set to **Auto**, this selection becomes invalid. When the Access Type field is **Manual**, the Code Type 1 for RAB1 selection applies to this button-press.

RAB2

The Repeater Access feature is enabled for the current personality. When the Access Type field is set to **Auto** and or Code Type 2 for RAB2 is set to **None**, this selection becomes invalid.

RTT (Request-To-Talk)

The Repeater Access feature is enabled and the Access Type feature is set to **Manual** for the current personality.

4.36.13.2

One Touch Button Index

This field selects the One Touch Index/List member for your One Touch button-press or One Touch menu-selection, pertaining to the selected One Touch Button Feature.

Index refers to the actual record/row of the list determined by the One Touch Button Feature selection. This selection applies for the current Conventional Personality.



IMPORTANT: Conventional One Touch Button 1, the first record/row will correspond to a One Touch 1 button-press, and a TCH1 or SIG1 menu-selection.

Accessed Only: When the [One Touch Button Feature on page 1167](#) field is not **Disabled**, **RAB1**, **RAB2**, or **RTT**,

and if the [Rx Voice/Signal Type on page 1162](#) field is set to **ASTRO**, then the [Remote Site Interface System on page 1057](#) field in the referenced Conventional System must be disabled.

The following selections are supported:

Select Call

This "Index" number correlates to the row number of the Call Hot List.

Available to you when the [Selective Call Rx/Tx on page 1118](#) is set to **Decode & Encode** or **Encode** for the current personality.



IMPORTANT: The Hot List Selection fields determine which Call Hot List is used for the current Personality.

Call Alert

This "Index" number correlates to the row number of the Call Hot List.

Available to you when the [Call Alert Rx/Tx on page 1120](#) is set to "Decode & Encode" or "Encode" for the current personality.



IMPORTANT: The Hot List Selection fields determine which Call Hot List is used for the current Personality.

Phone

This "Index" number correlates to the row number of the Phone Call Hot List.

Available to you when the [Phone Operation on page 1165](#) feature is enabled for the current personality.

Status

This "Index" number correlates to the row number of the Status Alias List.

Available to you when the [Status on page 1081](#) feature of the referenced [Conventional System on page 1056](#) (to the current personality) is enabled.

Message

This "Index" number correlates to the row number of the Message Alias List.

Available to you when the [Message on page 1083](#) feature of the referenced [Conventional System on page 1056](#) (to the current personality) is enabled.

4.36.13.3

Abbreviated One Touch Alias



The display shows the abbreviated alias text in the menu item to represent the assigned One Touch feature.



NOTE: The abbreviated alias text has a maximum of four characters.

4.36.14

Repeater Access (RAC)

This section allows you to view or define repeater access for individual Conventional Personalities.



NOTE:

Once the features of the Conventional Personalities have been uniquely defined, each personality can then be assigned to the desired position of the radio's channel selector. This is accomplished from the Zone Channel Assignment's Channels Page.

You can initiate RAC access with a Repeater Access Button 1 or Repeater Access Button 2 button-press, or a Repeater Access Button 1 or Repeater Access Button 2 menu-selection, or automatically with the PTT button-press transmission.

The following fields are supported:

4.36.14.1

Repeater Access

This field enables repeater-based communications for the current Conventional Personality.



WARNING: This feature is only valid when the [Tx Voice/Signal Type on page 1100](#) field is set to **Non-ASTRO**, and when the Non-ASTRO Signaling Type field for the current personality is set to **MDC**.

Accessed Only: When the System Type field of the referenced Conventional System is not set to DVRS.

4.36.14.2

Access Type

This field selects whether repeater access is gained manually, or automatically.

This selection applies for the current Conventional Personality.



IMPORTANT: If this field is set to **Auto**, and the MDC RTT Button Access field is also set to **Auto**, then the MDC RTT Button Access field becomes invalid (see also the [Invalid Fields Report on page 103](#)). These two field settings are mutually exclusive.

Accessed Only: When [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Tx Voice/Signal Type on page 1100](#) field is **Non-ASTRO**, and when the referenced Conventional System selected in the ASTRO System field is not a DVRS System Type, and when the [Repeater Access on page 1169](#) field is **Enabled**.

The following selections are supported:

Manual

The MDC Repeater Access Codeword or Singletone Repeater Access Codeword is sent when the Repeater Access Button 1 button-press, or Repeater Access Button 2 button-press, or Repeater Access Button 1 menu-selection or Repeater Access Button 2 menu-selection is selected.

Auto

A PTT button-press automatically sends the selected Repeater Access Codeword defined for Repeater Access Button 1. The codeword then automatically precedes for all your initiated transmission for the current Conventional Personality.



IMPORTANT: The Repeater Access Codeword is still sent in an "Automatic" mode for data transmissions such as Emergency, MDC Status, or Message transmissions.

4.36.14.3

Singleton List Selection

This field selects the Tone Signaling List to be used for the current Conventional Personality Repeater Access Control.

Accessed Only: When [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Tx Voice/Signal Type on page 1100](#) field is **Non-ASTRO**, and when the [Repeater Access on page 1169](#) field is **Enabled**. When the Tx Voice/Signal Type field is "Non-ASTRO", and when the radio is model/option capable.



WARNING: The Tone List Type in the Tone Signaling List must be "Singletone".



NOTE: Tone Signaling List functionality is defined in the Tone Signaling List Page.

The following selections are supported:

- Tone Signaling Disabled
- Available Tone Signaling Lists

4.36.14.4

Code Type 1 for Repeater Access Button 1 (RAB1) or PTT

This field selects the Signaling System type used during Repeater Access (RAC) for the current Conventional Personality.

When the [Access Type on page 1169](#) field is **Auto**, this selection applies to a PTT button press. When the Access Type field is **Manual**, this selection applies to the Repeater Access Button 1 button-press or Repeater Access Button 1 menu-selection.

Accessed Only: When [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Tx Voice/Signal Type on page 1100](#) field is **Non-ASTRO**, and when the referenced Conventional System selected in the ASTRO System field is not a DVRS System Type, and when the [Repeater Access on page 1169](#) field is **Enabled**.

The following selections are supported:

- MDC
- Singletone



NOTE:

- The MDC selection is only valid when the Signaling Type in Non-ASTRO Signaling Type field is **MDC**.
- The Singletone selection is valid when Singletone List Selection is referencing to a Tone Signaling record that Tone List Type is **Singletone**.

4.36.14.5

MDC Repeater ID 1 for RAB1 or PTT

This field selects an MDC Repeater ID List number corresponding to a Repeater ID.

This Repeater ID is used for MDC Repeater Access for the current Conventional Personality. When the [Access Type on page 1169](#) field is **Auto**, this selection applies to a PTT button-press. When the Access Type field is **Manual**, this selection applies to the Repeater Access Button 1 button-press or Repeater Access Button 1 menu-selection.

Accessed Only: When the [Repeater Access on page 1169](#) field is **Enabled**, and when the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Tx Voice/Signal Type on page 1100](#) field is **Non-ASTRO**, and when the Non-ASTRO Signaling Type field is **MDC**, and when the [Code Type 1 for](#)

[Repeater Access Button 1 \(RAB1\) or PTT on page 1170](#) field is **MDC**, and when the referenced Conventional System selected in the ASTRO System field is not a DVRS System Type.

4.36.14.6

Singletone Alias Selection for RAB1 or PTT

This field selects the Tone Alias record in one of the pre-selected Tone Signaling List for the current Conventional Personality Repeater Access Control.

Accessed Only: When the [Repeater Access on page 1169](#) field is **Enabled**, and when [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Tx Voice/Signal Type on page 1100](#) field is **Non-ASTRO**, and when [Singletone List Selection on page 1170](#) is referencing to a Tone Signaling record that Tone List Type is "Singletone", and when [Code Type 1 for Repeater Access Button 1 \(RAB1\) or PTT on page 1170](#) is **Singletone**, and when the radio is model/option capable.



WARNING: The Tone List Type in the Tone Signaling List must be "Singletone".



NOTE: Tone Signaling List functionality is defined in the Tone Signaling List Page.

The following selections are supported:

- Available Tone Signaling Lists
- Disabled



NOTE: Disabled is always invalid when Singletone Alias Selection field is applicable.

4.36.14.7

Code Type 2 for RAB2

This field selects the Signaling System type used during Repeater Access (RAC) for the current Conventional Personality.

When the [Access Type on page 1169](#) field is **Manual**, this selection applies to the Repeater Access Button 2 button-press or Repeater Access Button 2 menu-selection. When the Access Type field is **Auto**, this selection does not apply.

Accessed Only: When [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Tx Voice/Signal Type on page 1100](#) field is **Non-ASTRO**, and when the [Repeater Access on page 1169](#) field is **Enabled**, and when the Access Type field is set to **Manual**, and when the referenced Conventional System selected in the ASTRO System field is not a DVRS System Type.

The following selections are supported:

- None
- MDC
- Singletone



WARNING:

- The MDC selection is only valid when the Non-ASTRO Signaling Type field is **MDC**
- The Singletone selection is valid when Singletone List Selection is referencing to a Tone Signaling record that Tone List Type is "Singletone".

4.36.14.8

MDC Repeater ID 2 for RAB2

This field selects an MDC Repeater ID List number corresponding to a Repeater ID.

This Repeater ID is used for MDC Repeater Access for the current Conventional Personality. When the [Access Type on page 1169](#) field is **Manual**, this selection applies to the Repeater Access Button 2 button-press or Repeater Access Button 2 menu-selection. When the Access Type field is **Auto**, this selection does not apply.

Accessed Only: When the [Repeater Access on page 1169](#) field is **Enabled**, and when the [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Tx Voice/Signal Type on page 1100](#) field is **Non-ASTRO**, and when the Non-ASTRO Signaling Type field is set to **MDC**, and when the Access Type field is **Manual**, and when the [Code Type 2 for RAB2 on page 1171](#) field is set to **MDC**, and when the referenced Conventional System selected in the ASTRO System field is not a DVRS System Type.

4.36.14.9

Singleton Alias Selection for Repeater Access Button 2 (RAB2)

This field selects the Tone Alias record in one of the pre-selected Tone Signaling List for the current Conventional Personality Repeater Access Control.

Accessed Only: When the [Repeater Access on page 1169](#) field is **Enabled**, and when [Receive Only Personality on page 1162](#) field is **Disabled**, and when the [Tx Voice/Signal Type on page 1100](#) field is **Non-ASTRO**, and when the [Access Type on page 1169](#) field is **Manual**, and when [Singleton List Selection on page 1170](#) is referencing to a Tone Signaling record that Tone List Type is "Singleton", and when [Code Type 2 for RAB2 on page 1171](#) is **Singleton**, and when the radio is model/option capable.



WARNING: The Tone List Type in the Tone Signaling List must be "Singleton".



NOTE: Tone Signaling List functionality is defined in the Tone Signaling List Page.

The following selections are supported:

- Available Tone Signaling Lists
- Disabled



NOTE: Disabled is always invalid when Singleton Alias Selection field is applicable.

4.37

Trunking Wide

This section allows you to view or define functionality that can apply to all Trunking Systems and therefore to all Trunking Personalities.

4.37.1

General

This section allows you to view or define basic functionality that can apply to all Trunking Systems and therefore to all Trunking Personalities.

4.37.1.1

Individual Call Max Target Ring Time

This field selects the maximum amount of time that the subscriber unit (SU) rings upon receipt of an Individual Call request.

 **IMPORTANT:** An Individual Call includes both Phone and unit-to-unit calls. If you answer the call before the timer expires, the timer and ring are both stopped. This selection applies for all Trunking Systems and therefore to all Trunking Personalities. Time is in seconds.

Accessed Only: When the radio is model/option capable.

 **NOTE:** When set to **Infinite**, the ring time is unlimited.

Table 352: Range

Minimum	Maximum	Increments
61 sec	120 sec	1 sec

4.37.1.2

Private Call Max Initial Ring

This field selects the amount of time that the subscriber unit rings after initiating a unit-to-unit call request.

 **IMPORTANT:** Phone call requests are not included. If the timer expires before the call is answered by the intended radio, the call attempt is dropped. The timer and the ring are both stopped if the target unit answers the call before the timer expires. This selection applies for all Trunking Systems and therefore to all Trunking Personalities. Time is in seconds.

Accessed Only: When the radio is model/option capable.

 **NOTE:** When set to **Infinite**, the ring time is unlimited.

Table 353: Range

Minimum	Maximum	Increments
1 sec	255 sec	1 sec

4.37.1.3

Phone Auto Dial Holdoff

This field selects the amount of time that the radio waits once digital voice channel access has been granted to the phone system.

Once this timer expires, Type II Call Hot List-selected, pre-entered (speed dial), or [Hot Keypad \(DTMF\) on page 1262](#) numbers are then transmitted.

 **IMPORTANT:** This selection only applies to Digital Phone within Type II Trunking Systems and therefore to all Type II Trunking Personalities. See also the Trunking System, System Type field. Time is in milliseconds.

Accessed Only: When the radio is model/option capable.

Table 354: Range

Minimum	Maximum	Increments
0 ms	6375 ms	25 ms

4.37.1.4

Emergency Blocked In Failsoft

This field causes the radio to ignore any attempt to enter the Trunking communications Emergency Mode feature when the network is in the Failsoft condition.

This selection applies for all Trunking Systems and therefore to all Trunking Personalities.

Accessed Only: When the radio is model/option capable.

4.37.1.5

AFC Disable

This field causes the radio Automatic Frequency Control (AFC) algorithm to be disabled.

 **WARNING:** The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

AFC automatically corrects drifting of the radio's Reference Oscillator (RO) by resolving the frequency of the received RF signal and providing feedback on an error signal proportional to the degree to which the RO is mistuned, which in turn reduces the tuning error. However, it may be beneficial to disable AFC for noisy environments, where the error signal may track to an interference frequency instead of the allocated one.

 **IMPORTANT:** When AFC is **Disabled**, the Reference Oscillator must be kept accurately tuned. This selection applies for all Trunking Systems and therefore to all Trunking Personalities.

Accessed Only: When the radio is model/option capable.

4.37.1.6

Bypass Quick Key Voice Channel Access

When enabling this field, the Quick Key feature is disabled (bypassed) for group voice calls.

 **WARNING:** The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

Therefore, upon receiving a Voice Channel access grant to a Dispatch Voice channel request, and the PTT button is no longer pressed, the radio ends the request sequence and returns to the idle state. This selection applies for all Trunking Systems and therefore to all Trunking Personalities.

When disabled, the Quick Key feature is enabled during group voice calls.

 **IMPORTANT:** Since, especially in a busy condition, a significant amount of time may pass between the initial PTT button-press that sends a Dispatch Voice request to the Trunking System and receipt of the Voice Channel access grant that allocates a voice channel to the requesting radio, you may decide to de-key the radio rather than allow the [Time Out Timer on page 1100](#) to expire. When the Voice Channel access grant is eventually received, the radio plays a [Talk Permit Tone on page 1263](#) and the Quick Key feature causes the radio to begin transmitting silent audio for three seconds, even though the PTT button is no longer pressed. If you press the PTT button before the Quick Key timer expires, the radio continues transmitting but with an active microphone; otherwise, the radio stops transmitting.

The Quick Key feature is always enabled for private calls and phone mode.

Accessed Only: When the radio is model/option capable.

 **NOTE:** This is an advanced setting which is only available in Expert View (see Codeplug View).

4.37.2

CAI Data

The **Common Air Interface (CAI) Data** section allows you to view or define parameters that define the functionality or rules for data packets that are transmitted using the CAI protocol.

These selections can apply to all Trunking Systems and therefore to all Trunking Personalities.

4.37.2.1

Max Tx Attempts

This field selects the maximum numbers of times that the radio attempts to send a Common Air Interface (CAI) data packet transmission.

The radio continues these retries until it receives an acknowledgement confirming the successful receipt of transmission, or until this selected number of Tx Attempts is reached. This selection applies when in CAI operation for all Trunking Systems and Trunking Personalities.

Accessed Only: When the radio is model/option capable.

Table 355: Range

Minimum	Maximum
2	10

4.37.2.2

Response Timer

This field selects the amount of time that the radio waits for an acknowledge of a successful Common Air Interface (CAI) transmission before re-sending another CAI data packet.

This selection applies when in CAI operation for all Trunking Systems and Trunking Personalities. Time is in milliseconds.

Accessed Only: When the radio is model/option capable.

Table 356: Range

Minimum	Maximum	Increments
100 ms	5000 ms	100 ms

4.37.2.3

Min Response Time

This field selects the minimum amount of time that the radio waits for an acknowledgement of a successful Common Air Interface (CAI) to be sent across the channel.

This parameter should be slightly greater than the Data Throughput Delay from the Radio Network Controller - RNC (the data controller) to the radio. This selection applies when in CAI operation for all Trunking Systems and Trunking Personalities. Time is in milliseconds.



WARNING: Do not attempt to change this setting without first verifying the particular throughout of your system.

Accessed Only: When the radio is model/option capable.

Table 357: Range

Minimum	Maximum	Increments
50 ms	2000 ms	50 ms

4.37.2.4

Frame Sync Seek Period

This field selects the amount of time that the radio listens for a Frame Sync Sequence (FSS).

The presence of an FSS on a channel indicates that voice or data is currently being transmitted. If an FSS is not detected within this seek period, the radio assumes the channel is idle and then transmits the next Common Air Interface (CAI) packet queued for transmission. This selection applies when in CAI operation for all Trunking Systems and Trunking Personalities. Time is in milliseconds.

Accessed Only: When the radio is model/option capable.

Table 358: Range

Minimum	Maximum	Increments
0 ms	5000 ms	50 ms

4.37.2.5

Tx Short Random Range

This field selects the maximum amount of time that the radio waits to transmit once the first qualified Frame Sync Sequence (FSS) has been received indicating that the channel is clear.

The radio randomly checks channel access status based on this maximum wait time. This selection applies when in Common Air Interface (CAI) operation for all Trunking Systems and Trunking Personalities. Time is in milliseconds.

Accessed Only: When the radio is model/option capable.

Table 359: Range

Minimum	Maximum	Increments
50 ms	500 ms	50 ms

4.37.2.6

Tx Long Random Range

This field selects the upper bound of the uniform random range.

When the radio senses a busy channel-status, the radio then uses a random-time selection process within this range known as the "back off delay", to determine when to re-attempt to transmit the Common Air

Interface (CAI) data message. This selection applies when in CAI operation for all Trunking Systems and Trunking Personalities. Time is in milliseconds.



IMPORTANT: The minimum value of this range is automatically set to 50 ms, and the uniform values of this range are in 50 ms increments.

Accessed Only: When the radio is model/option capable.

Table 360: Range

Minimum	Maximum	Increments
50 ms	5000 ms	50 ms

4.37.2.7

Tx Resp Random Range

This field selects the upper bound of the uniform random range.

When the radio senses a busy channel-status, the radio then uses a random-time selection process within this range known as the "back off delay", to determine when to re-attempt to transmit the Response Common Air Interface (CAI) data message. The Response is usually an Acknowledgment "Ack" to a message sent from the system. This selection applies when in CAI operation for all Trunking Systems and Trunking Personalities Time is in milliseconds.



IMPORTANT: The minimum value of this range is automatically set to 50 ms, and the uniform values of this range are in 50 ms increments.

Accessed Only: When the radio is model/option capable.

Table 361: Range

Minimum	Maximum	Increments
50 ms	1000 ms	50 ms

4.37.2.8

Tx Limited Patience

This field selects the maximum amount of time that the radio attempts to transmit a Common Air Interface (CAI) data packet.

Once this time expires, the radio ceases to attempt transmissions. This selection applies when in CAI operation for all Trunking Systems and Trunking Personalities. Time is in seconds.

Accessed Only: When the radio is model/option capable.



NOTE: When set to **Infinite**, no timer is used; therefore, there is no transmit time limit.

Table 362: Range

Minimum	Maximum	Increments
1 sec	255 sec	1 sec

4.37.3

Filter Constants

This section allows you to view or define SmartZone functionality that can apply to all Trunking Systems and therefore to all Trunking Personalities.

SmartZone Received Signal Strength Indication (RSSI) Filter Constants allow the radio to interpret SmartZone receive communications based SmartZone Trunking System operating rules and configurations. In a SmartZone system, the constants K1, K2, and K3 are designed to reduce filter damping as time between RSSI sampling increases.

4.37.3.1

Filter Constant K1

This field selects the K1 Filter Constant value, which is used when less than eight seconds elapses between the Received Signal Strength Indication (RSSI) samples.

The selected Filter Constant K1 value is used by the [Filter Threshold Constant T1 on page 1179](#). This selection can apply for all Trunking Systems and therefore to all Trunking Personalities.



WARNING: Modifications of Filter Constants should only be performed by a Motorola Solutions Field Technical Representative.

Accessed Only: When the radio is model/option capable.

Table 363: Range

Minimum	Maximum
0	9



NOTE:

The RSSI filter has the following characteristic $\text{Filter Val.} = (\text{Filter Val.} * K + \text{Current Reading} * (10 - K))/10$ where the domain of K is $\{K: K = K1, K2, K3\}$ and 0 (no filter) $\leq K3 \leq K2 \leq K1 \leq 9$ (heavily damped filter).

In a SmartZone system, the constants K1, K2, and K3 are designed to reduce filter damping as time between sampling increases.

- K1 is used when less than 8 seconds elapses between RSSI samples.
- [Filter Constant K2 on page 1178](#) is used when 8 to 16 seconds elapse between RSSI samples.
- [Filter Constant K3 on page 1179](#) is used when more than 16 seconds elapse between RSSI samples.

4.37.3.2

Filter Constant K2

This field selects the K2 Filter Constant value, which is used when 8 to 16 seconds elapse between Received Signal Strength Indication (RSSI) samples.

The selected Filter Constant K2 value is used by the [Filter Threshold Constant T2 on page 1180](#). This selection can apply for all Trunking Systems and therefore to all Trunking Personalities.



WARNING: Modifications of Filter Constants should only be performed by a Motorola Solutions Field Technical Representative.

Accessed Only: When the radio is model/option capable.

Table 364: Range

Minimum	Maximum
0	9



NOTE:

The RSSI filter has the following characteristic $\text{Filter Val.} = (\text{Filter Val.} * K + \text{Current Reading} * (10 - K))/10$ where the domain of K is {K: K = K1, K2, K3} and $0 \text{ (no filter)} \leq K3 \leq K2 \leq K1 \leq 9$ (heavily damped filter).

In a SmartZone system, the constants K1, K2, and K3 are designed to reduce filter damping as time between sampling increases.

- [Filter Constant K1 on page 1178](#) is used when less than 8 seconds elapses between RSSI samples.
- K2 is used when 8 to 16 seconds elapse between RSSI samples.
- [Filter Constant K3 on page 1179](#) is used when more than 16 seconds elapse between RSSI samples.

4.37.3.3

Filter Constant K3

This field selects the K3 Filter Constant value, which is used when more than 16 seconds elapse between Received Signal Strength Indication (RSSI) samples.

The selected Filter Constant K3 value is used by the [Filter Threshold Constant T3 on page 1181](#). This selection can apply for all Trunking Systems and therefore to all Trunking Personalities.



WARNING: Modifications of Filter Constants should only be performed by a Motorola Solutions Field Technical Representative.

Accessed Only: When the radio is model/option capable.

Table 365: Range

Minimum	Maximum
0	9



NOTE:

The RSSI filter has the following characteristic $\text{Filter Val.} = (\text{Filter Val.} * K + \text{Current Reading} * (10 - K))/10$ where the domain of K is {K: K = K1, K2, K3} and $0 \text{ (no filter)} \leq K3 \leq K2 \leq K1 \leq 9$ (heavily damped filter).

In a SmartZone system, the constants K1, K2, and K3 are designed to reduce filter damping as time between sampling increases.

- [Filter Constant K1 on page 1178](#) is used when less than 8 seconds elapses between RSSI samples.
- [Filter Constant K2 on page 1178](#) is used when 8 to 16 seconds elapse between RSSI samples.
- K3 is used when more than 16 seconds elapse between RSSI samples.

4.37.3.4

Filter Threshold Constant T1

This field selects a value that creates a timed window that Received Signal Strength (RSS) samples must fall within to be considered valid.

This window is centered on the selected Received Signal Strength Indication (RSSI) [Filter Constant K1 on page 1178](#) value. The window size is twice the value of the threshold constant. This T1 constant is used when less than eight seconds elapses between RSSI samples. This selection can apply for all Trunking Systems and therefore to all Trunking Personalities.



WARNING: Modifications of Filter Constants should only be performed by a Motorola Solutions Field Technical Representative.

Accessed Only: When the radio is model/option capable.

Table 366: Range

Minimum	Maximum
0 (hex)	FF (hex)



IMPORTANT: The Filter Threshold Constants (T1, T2, T3) are hexadecimal numbers ranging from 0 to FF and should only be modified in accordance with the following: (00 <= T1 <= T2 <= T3 <= FF)



NOTE: T1, T2, and T3 create a window that RSS samples must fall within to be considered valid. The window is centered on the current RSSI Filter Constant value ([Filter Constant K1 on page 1178](#), [Filter Constant K2 on page 1178](#), or [Filter Constant K3 on page 1179](#)). The window size is twice the value of the threshold constant.

- T1 is used when less than 8 seconds elapse between RSSI samples.
- [Filter Threshold Constant T2 on page 1180](#) is used when 8 to 16 seconds elapse between RSSI samples.
- [Filter Threshold Constant T3 on page 1181](#) is used when more than 16 seconds elapse between RSSI samples.

4.37.3.5

Filter Threshold Constant T2

This field selects a value that creates a timed window that Received Signal Strength (RSS) samples must fall within to be considered valid.

This window is centered on the selected Received Signal Strength Indication (RSSI) [Filter Constant K2 on page 1178](#) value. The window size is twice the value of the threshold constant. This T2 constant is used when 8 to 16 seconds elapse between RSSI samples. This selection can apply for all Trunking Systems and therefore to all Trunking Personalities.



WARNING: Modifications of Filter Constants should only be performed by a Motorola Solutions Field Technical Representative.

Accessed Only: When the radio is model/option capable.

Table 367: Range

Minimum	Maximum
0 (hex)	FF (hex)



IMPORTANT: The Filter Threshold Constants (T1, T2, T3) are hexadecimal numbers ranging from 0 to FF and should only be modified in accordance with the following: (00 <= T1 <= T2 <= T3 <= FF)



NOTE: T1, T2, and T3 create a window that RSS samples must fall within to be considered valid. The window is centered on the current RSSI Filter Constant value ([Filter Constant K1 on page 1178](#), [Filter Constant K2 on page 1178](#)K2, or [Filter Constant K3 on page 1179](#)K3). The window size is twice the value of the threshold constant.

- [Filter Threshold Constant T1 on page 1179](#) is used when less than 8 seconds elapse between RSSI samples.
- T2 is used when 8 to 16 seconds elapse between RSSI samples.
- [Filter Threshold Constant T3 on page 1181](#) is used when more than 16 seconds elapse between RSSI samples.

4.37.3.6

Filter Threshold Constant T3

This field selects a value that creates a timed window that Received Signal Strength (RSS) samples must fall within to be considered valid.

This window is centered on the selected Received Signal Strength Indication (RSSI) [Filter Constant K3 on page 1179](#) value. The window size is twice the value of the threshold constant. This T3 constant is used when more than 16 seconds elapse between RSSI samples. This selection can apply for all Trunking Systems and therefore to all Trunking Personalities.



WARNING: Modifications of Filter Constants should only be performed by a Motorola Solutions Field Technical Representative.

Accessed Only: When the radio is model/option capable.

Table 368: Range

Minimum	Maximum
0 (hex)	FF (hex)



IMPORTANT: The Filter Threshold Constants (T1, T2, T3) are hexadecimal numbers ranging from 0 to FF and should only be modified in accordance with the following: (00 <= T1 <= T2 <= T3 <= FF)



NOTE: T1, T2, and T3 create a window that RSS samples must fall within to be considered valid. The window is centered on the current RSSI Filter Constant value ([Filter Constant K1 on page 1178](#), [Filter Constant K2 on page 1178](#), or [Filter Constant K3 on page 1179](#)). The window size is twice the value of the threshold constant.

- [Filter Threshold Constant T1 on page 1179](#) is used when less than 8 seconds elapse between RSSI samples.
- [Filter Threshold Constant T2 on page 1180](#) is used when 8 to 16 seconds elapse between RSSI samples.
- T3 is used when more than 16 seconds elapse between RSSI samples.

4.37.4

RSSI Thresholds

This section allows you to view or define the Received Signal Strength Indication (RSSI) functionality that can apply to all Trunking Systems and therefore to all Trunking Personalities.

RSSI Thresholds functionality allows the radio to interpret receive SmartZone communications based-on SmartZone Trunking System operating rules and configurations.

4.37.4.1

RSSI OSW Counter

This field selects the number of Outbound Signal Word (OSW) - (23 ms) intervals that the radio remains inactive on the Control Channel, before a set of Received Signal Strength Indication (RSSI) samples is taken.

Once these OSW intervals are completed, RSSI samples measure the strength of the current incoming signal. This selection can apply for all Trunking Systems and therefore to all Trunking Personalities.

 **WARNING:** Do not attempt to modify this RSSI setting unless you are very knowledgeable in the workings of this feature. Incorrect settings may cause your radio to be incapable of communications with the Fixed Network Equipment (FNE).

Accessed Only: When the radio is model/option capable.

Table 369: Range

Minimum	Maximum
60	255

4.37.4.2

RSSI OSP Counter

This field selects the number of ASTRO 25 OSPs RSSI Outbound Signaling Packets (OSP) for which the radio must remain inactive on the Control Channel before a set of RSSI samples is taken.

This value should be set with the assumption of single Trunking Signaling Block (TSBK) channel format (1 OSP = 37.5 ms). If the channel is actually double or triple TSBK format, the codeplug value will be scaled so that the time interval the radio uses to remain inactive is equal to: RSSI OSP Counter * 37.5 ms. This selection can apply for all Trunking Systems and therefore to all Trunking Personalities.

 **WARNING:** Do not attempt to modify this RSSI setting unless you are very knowledgeable in the workings of this feature. Incorrect settings may cause your radio to be incapable of communications with the Fixed Network Equipment (FNE).

Accessed Only: When the radio is model/option capable.

Table 370: Range

Minimum	Maximum
40	255

4.37.4.3

Desense Timer

This field selects the amount of time the radio continues scanning the current site after it has become desensed.

The radio is considered to be desensed if it encounters a strong RF signal which muffles out the control channel. Such a condition may arise if another high-power radio is transmitting in close physical proximity, not necessarily on the same frequency. The radio exits the desense condition if it finds a valid control channel at the home site or it finds failsoft. If the timer expires while the radio is still desensed, it looks for a valid control channel at an adjacent site, if any exist. This selection can apply for all Trunking Systems and therefore to all Trunking Personalities. Time is in seconds.

 **WARNING:** Do not attempt to modify this RSSI setting unless you are very knowledgeable in the workings of this feature. Incorrect settings may cause your radio to be incapable of communications with the Fixed Network Equipment (FNE).

 **IMPORTANT:** This field's value will not be copied when a Drag and Drop Across Frequency Bands procedure is performed (e.g. 700/800 to UHF).

Accessed Only: When the radio is model/option capable.

 **NOTE:** When set to **Disabled**, the timer is disabled (0 sec).

Table 371: Range

Minimum	Maximum	Increments
1 sec	30 sec	1 sec

4.37.4.4

RSSI Acceptable Threshold

This field selects a signal strength that defines a receive SmartZone signal to be at the Poor/Acceptable Threshold.

The SmartZone Trunking System then uses this information when determining signal priority. Received Signal Strength Indication (RSSI) is a measurement of incoming signal strength. This selection can apply for all Trunking Systems and therefore to all Trunking Personalities.

 **WARNING:** Do not attempt to modify this RSSI setting unless the you are very knowledgeable in the workings of this feature. Incorrect settings may cause your radio to be incapable of communications with the Fixed Network Equipment (FNE).

Accessed Only: When the radio is model/option capable.

Table 372: Range

Minimum	Maximum
0 (hex)	FF (hex)

4.37.4.5

RSSI Good Threshold

This field selects a signal strength that defines a receive SmartZone signal to be at the Acceptable/Good Threshold.

The SmartZone Trunking System then uses this information when determining signal priority. Received Signal Strength Indication (RSSI) is a measurement of incoming signal strength. This selection can apply for all Trunking Systems and therefore to all Trunking Personalities.

 **WARNING:** Do not attempt to modify this RSSI setting unless you are very knowledgeable in the workings of this feature. Incorrect settings may cause your radio to be incapable of communications with the Fixed Network Equipment (FNE).

Accessed Only: When the radio is model/option capable.

Table 373: Range

Minimum	Maximum
0 (hex)	FF (hex)

4.37.4.6

RSSI Very Good Threshold

This field selects a signal strength that defines a receive SmartZone signal to be at the Good/Very Good Threshold.

The SmartZone Trunking System then uses this information when determining signal priority. Received Signal Strength Indication (RSSI) is a measurement of incoming signal strength. This selection can apply for all Trunking Systems and therefore to all Trunking Personalities.

 **WARNING:** Do not attempt to modify this RSSI setting unless you are very knowledgeable in the workings of this feature. Incorrect settings may cause your radio to be incapable of communications with the Fixed Network Equipment (FNE).

Accessed Only: When the radio is model/option capable.

Table 374: Range

Minimum	Maximum
0 (hex)	FF (hex)

4.37.4.7

RSSI Excellent Threshold

This field selects a signal strength that defines a receive SmartZone signal to be at the Very Good/Excellent Threshold.

The SmartZone Trunking System then uses this information when determining signal priority. Received Signal Strength Indication (RSSI) is a measurement of incoming signal strength. This selection can apply for all Trunking Systems and therefore to all Trunking Personalities.

 **WARNING:** Do not attempt to modify this RSSI setting unless you are very knowledgeable in the workings of this feature. Incorrect settings may cause your radio to be incapable of communications with the Fixed Network Equipment (FNE).

Accessed Only: When the radio is model/option capable.

Table 375: Range

Minimum	Maximum
0 (hex)	FF (hex)

4.37.4.8

Strong Signal Roaming

When enabled this field activates additional Receive Signal Strength Indication (RSSI).

Thresholds derived at regular intervals above the currently configured Very Good/Excellent Thresholds. This provides additional site switching among Strong Signal sites. Although there will be additional site switches

when this field is enabled, two levels of improvement are required for a site switch to occur, to prevent excessive site switching.

When disabled, RSSI-based site switching is limited to improving signals up to the configured Excellent level. This selection applies for all Trunking Systems, and therefore to all Trunking Personalities.

4.37.4.9

Leave LMR RSSI Threshold

When the radio detects that all LMR sites filtered RSSI signal strength is less than the Leave LMR RSSI Threshold, the radio will automatically switch from LMR operation to broadband operation if available.

Table 376: Range

Default	Minimum	Maximum	Increments
34 (Hex)	0	FF (Hex)	1

Accessed Only: When the radio is model/option capable.

4.37.5

Advanced

This section allows you to view or define SmartZone functionality that can apply to all Trunking Systems and therefore to all Trunking Personalities.



IMPORTANT: SmartZone is selected on a per Trunking System basis from the Coverage Type field.

4.37.5.1

SmartZone Failsoft Inactivity

This field selects the amount of Failsoft Mode inactivity time that determines when the radio attempts to search for a valid and active control channel.

This timer begins once all Failsoft receive and transmit communications have ceased; if the timer expires before any Failsoft communications occur, the radio begins searching for an available control channel. If communications do occur during this timer period, the timer is reset. This selection applies when in SmartZone operation for all Trunking Systems and Trunking Personalities. Time is in seconds.

Accessed Only: When the radio is model/option capable.

Table 377: Range

Minimum	Maximum
0 sec	255 sec

4.37.5.2

SmartZone Affiliation Hold Off

This field selects the amount of time that the radio waits before connecting to a new Trunking site.

This timer begins once the radio leaves the current Trunking site due to a control channel connection failure. This selected time is used by the radio as a randomized average. This selection applies only when in SmartZone operation for "Type II" Trunking Systems and therefore to all "Type II" Trunking Personalities.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

- 1 sec
- 3 sec
- 7 sec
- 15 sec
- 31 sec
- 63 sec
- 127 sec
- 255 sec

4.37.5.3

SmartZone Full Spectrum Control Channel Scan

This field enables the radio to automatically perform a Full Spectrum Control Channel Scan when the radio goes out of range of all its currently programmed controller information.

This feature causes the radio to search its entire codeplug for all channel definitions, while also scanning for any valid control channel activity on each channel definition found. This selection applies when in SmartZone operation for all Trunking Systems and Trunking Personalities.

Accessed Only: When the radio is model/option capable.

4.37.5.4

SmartZone Full Spectrum Control Channel Scan Timer

This field selects the amount of time that the radio is allocated to perform a Full Spectrum Control Channel Scan.

Once this timer has expired, the radio returns to normal control channel operations. This selection applies when in SmartZone operation for all Trunking Systems and Trunking Personalities. Time is in seconds.

Accessed Only: When the radio is model/option capable.

Table 378: Range

Minimum	Maximum
5 sec	31 sec

4.37.5.5

SmartZone Internal Radio Holdoff

This field selects the amount of Internal Radio Random Holdoff Time (IRHOT) that the radio should delay before registering at a new site when leaving a site which just incurred a failure or returning to a site which just recovered from a failure.

The radio then calculates a random value between 0 and the IRHOT value to wait before it registers after a site failure or recovery. IRHOT is only used if the [SmartZone Holdoff Delay on page 1187](#) expires without the radio receiving an over-the-air packet indicating the holdoff period. This selection applies when in SmartZone operation and only to APCO Trunking Systems and Trunking Personalities. Time is in minutes.

Accessed Only: When the radio is model/option capable.

Table 379: Range

Minimum	Maximum
0 min	60 min

4.37.5.6

SmartZone Holdoff Delay

This field selects the amount of time that the radio should delay starting a holdoff time for registration or affiliation.

During this time, the radio waits for an over-the-air packet indicating the holdoff period. If an over-the-air value is not received by the end of the Holdoff Delay, the [SmartZone Internal Radio Holdoff on page 1186](#) time will be used. This selection applies when in SmartZone operation and only to APCO Trunking Systems and Trunking Personalities. Time is in seconds.

Accessed Only: When the radio is model/option capable.

Table 380: Range

Minimum	Maximum
5 sec	60 sec

4.37.5.7

ISW Window Adjustment

This field selects in decimal or hex format, a value that fine tunes the Inbound Signal Word (ISW) Window for the purpose of improving Trunking System performance.

The ISW Window is an amount of time that is synchronized between the radio and the Central Controller. This amount of time is allotted for the purpose of synchronizing the ISW transmission within the Central Controller's expected ISW arrival time. This selection applies only for Type II Trunking Systems and therefore to all Type II Trunking Personalities.

 **WARNING:** Do not modify unless you are a Motorola Solutions Field Technical Representative. Improper adjustment can reduce Trunking System performance.

Accessed Only: When the radio is model/option capable.

Table 381: Range

Minimum	Maximum
0 (Hex)	FFFF (Hex)

4.37.5.8

ViQi: Virtual Partner Call Activity Timer (sec)

This field allows you to select the amount of time that you can remain active in the Virtual Partner channel before reverting to the selected talkgroup.

 **NOTE:** This field is only applicable for APX NEXT and APX N70 radios.

Table 382: Range

Default Value	Minimum Value	Maximum Value	Increments
5 sec	5 sec	30 sec	1 sec

4.38

Trunking System

The **Trunking System** allows you to create and delete Trunking Systems, as well as define individual Trunking System functionality.

Trunking Systems are virtual configurations that mirror actual (in-the-field) Trunking System configurations and functionality; defining the systems enables the radio to communicate with the actual systems.

 **WARNING:** If a Trunking System's, System Type field is modified, any Trunking Personalities previously assigned to that specific Trunking System will have to be reassigned to another system that carries the appropriate System Type selection. Otherwise, a codeplug error will occur when writing the codeplug to the radio. Trunking System addressing schemes can be either Type II, or ASTRO 25.

 **NOTE:** Trunking Systems are referenced to a Trunking Personality. Trunking Systems settings can then become functional for all Trunking - channel types.

4.38.1

General

This section you to view or define basic functionality for individual Trunking Systems.

 **NOTE:** Individual Trunking Systems are referenced to a Trunking Personality. Once reference, these Trunking Systems settings can become functional for all channel types within that Trunking Personality.

4.38.1.1

Trunking System Name

This field allows you to define a recognizable name for the current Trunking System.

 **NOTE:** Individual Trunking Systems are assigned to a Trunking Personality through the System field by selecting this name. These Trunking Systems settings can then become functional for all channel types within that Trunking Personality.

When **Priority Monitor** is selected as the Scan Type for Scan List Member channels, this Trunking System name must be selected for the current Scan List through the Trunking System Record field.

Accessed Only: When the radio is model/option capable.

 **NOTE:** Examples: EMT-001, #500, Electric1, # A5

Characters, numbers, spaces, and special characters can be used.

Leading blanks are substituted with underscores in the radio's display.

Leading periods do not appear in the radio's display.

4.38.1.2

Unit ID

This field selects in decimal or hex format, the identification number that uniquely identifies the radio unit when operating in Type II mode or ASTRO 25 mode within its Home System.

The System Type field allows you to select either **ASTRO 25** or **Type II** for the current Trunking System.



NOTE:

The decimal value of the Unit ID is used for the radio's Private Call Call ID.

For Managed Radios this feature is defined in the RMC's Radio ID field.

Accessed Only: When a Software System Key File or an Advanced System Key with access is selected in the System ID field, or an Advanced WACN Key with access is selected in the Home WACN ID field, and when the radio is model/option capable.

The following selections are supported:

Table 383: Range

System Type	Minimum	Maximum
ASTRO 25	000001 (Hex)	FFFFFFB (Hex)
Type II	0001 (Hex)	FFFE (Hex)



WARNING: The selection range may be modified on a per Advanced Key basis by the Advanced Keys Administrator program.

4.38.1.3

System Key Type

This field displays the read-only of selected System Key Type for the current Trunking System; either **System Key** or **WACN Key**.

When the [Coverage Type on page 1190](#) is set to **Intra-WACN Roaming**, then the System Key Type is **WACN Key**, otherwise it is **System Key**.

Accessed Only: When the radio is model/option capable.

4.38.1.4

Type II Frequency Band

This field selects the operating frequency band of the current Type II Trunking System.



IMPORTANT: Type II Trunking Systems may only operate on a single frequency band. This selection applies for the current Trunking System.

Accessed Only: When the System Type field is set to **Type II**, and when the radio is model/option capable.

The following selection is supported: VHF, UHF1, UHF2, 700/800 MHz, 900 MHz

4.38.1.5

System Key Present

The application retrieves and displays the read-only if a Software System Key File or Advanced (Hardware) Key is loaded and is a match for the ID selected in the System ID or Home WACN ID field for the current Trunking System.

See also [System Key Type on page 1189](#).

Accessed Only: When the radio is model/option capable.

4.38.1.6

Connect Tone

This field selects the Connect Tone frequency for the current Type II Trunking System.

This selection must match the tone expected on the traffic channel by the Trunking System's central controller, to verify that a radio transmission is occurring. Frequency is in Hz.

Accessed Only: When a Software System Key File or an Advanced System Key with access has been selected in the System ID field. When the System Type field is set to **Type II**, and when the radio is model/option capable.

4.38.1.7

System Type

This field selects the addressing scheme type for the current Trunking System.



IMPORTANT: If this System Type selection is modified, any previously attached Trunking System (selected in the Trunking Personality - System field) may have to be re-selected. Trunking Personality 'System' selections require a System Type and a Trunking Personality, Protocol Type match; otherwise an error will occur when writing the codeplug.



WARNING:

For the APX6000Li / APX6500Li radio models:

Only one System Type (**Type II** or **ASTRO 25**) is possible for all [Trunking System on page 1188](#). Therefore once the first Trunking System's System Type is defined, all other Trunking Systems in this codeplug must be defined with the same System Type.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Type II

Available when the radio is model/option capable.

ASTRO 25

Available when the radio is model/option capable.

4.38.1.8

Failsoft Connect Tone

This field selects the Failsoft Mode Connect Tone frequency for the current Trunking System.

Accessed Only: When the System Type field is set to **Type II**, and when the radio is model/option capable.

The following selection is supported:

Default

When the System Coverage Type is set to **SmartZone**, the "Default" selection uses 105.88 Hz.

When the System Coverage Type is set to **Disabled**, the "Default" selection uses the [Connect Tone on page 1190](#) as the Failsoft Connect Tone.

4.38.1.9

Coverage Type

This field selects the geographic Coverage Type of the radio and therefore specific methods of determining radio-to-radio communications within Trunking Systems.

Coverage Type applies for the current Trunking System.

Accessed Only: When the radio is model/option capable, and when a Software System Key File or an Advanced System Key with access is selected in the System ID field or, an Advanced WACN Key with access is selected in the Home WACN ID field.

 **NOTE:** These selections are radio model/option dependent.

The following selections are supported:

Disabled = SmartNet

When the radio is model/option capable of SmartZone, disabling this field causes the Trunking System to use SmartNet.

 **NOTE:** SmartNet operation amounts to single site SmartZone.

SmartZone

SmartZone operation allows the radio to determine through Received Signal Strength Indication (RSSI) polling samples, the best Trunking Site to be used for SmartZone-enabled Trunking channels.

 **NOTE:**
For ASTRO 25 Systems: Operation is limited to Sites within a single Zone of a single Trunking System.

For Type II Systems: Operation is limited to the Sites within a single Trunking System.

SmartZone and OmniLink

gives the SmartZone-capable radio the ability to roam from one SmartZone Zone to another SmartZone Zone within the same OmniLink System. OmniLink applies for OmniLink-enabled Trunking channels.

 **NOTE:**
For ASTRO 25 Systems: Operation is limited to Sites and Zones within a single OmniLink System.

For Type II Systems: Operation is limited to Sites within a set of interconnected Trunking Systems.

Intra-WACN Roaming

Intra-WACN Roaming gives the Project 25-capable radio the ability to automatically roam between all the System IDs within the same Wide Area Communication Network (WACN) without any of your intervention. See also Home WACN ID.

 **NOTE:** For ASTRO 25 Systems: Operation is limited to Trunking Systems within a single WACN.



WARNING: Intra-WACN Roaming is invalid if one of the following scenarios is true:

When the System Type is Type II, or

When the DVRS Hardware Enable field is **Enabled**, or

When the Dual Radio - Radio Selection field is set to **Secondary Radio** and when the Enable Secondary Radio Tx field is **Disabled**.

Inter-WACN Roaming

Inter-WACN Roaming gives Project 25-capable radios on selected talkgroups the ability to automatically roam across different Wide Area Communications Networks (WACNs) without any of your intervention.



WARNING: Inter-WACN Roaming is invalid if one of the following scenarios is true:

When the System Type is Type II, or

When the DVRS Hardware Enable field is **Enabled**, or

When the Dual Radio - Radio Selection field is set to **Secondary Radio** and when the Enable Secondary Radio Tx field is **Disabled**, or

When this System is LTE Broadband **Enabled**.

A Trunking System is LTE enabled when a referenced Data Profile having a Data Profile Type selection equal to **Trunking and Broadband** or **Broadband-Only**, and when that Data Profile's Broadband Source is **Internal LTE Modem**.

SmartZone-capable and Project 25-capable systems are also configured from the Trunking Wide SmartZone fields and from the Trunking Wide Filter Constants fields.

4.38.1.10

Network ID

The application retrieves and allows you to view (in decimal and hex format) the Type II Network ID for the current Trunking System.

Accessed Only: When the System Type field is set to **Type II**, and when the radio is model/option capable.

4.38.1.11

Home WACN ID

This field selects (in decimal or hex format) the identification number of the ASTRO 25 Home WACN (Wide Area Communication Network) within which the radio normally operates.

When the [Coverage Type on page 1190](#) field is set to **Intra-WACN Roaming**, this ID selection also serves as the "System Key" for all System Key Protected Trunking Fields. This selection applies for the current [Trunking System on page 1188](#).



NOTE:

The radio uses this Home WACN ID, the [System ID on page 1274](#) and the [Unit ID on page 1189](#) to identify itself to the FNE (Fixed Network Equipment) when performing registration and authentication.

A WACN is made up of one or more Systems.



WARNING: When the [Coverage Type on page 1190](#) field is set to **Intra-WACN Roaming** this selection is only valid when it matches the **System ID** (see the System Key Report) of a currently-loaded **Advanced WACN Key**. See also the Intra-WACN Roaming Keystone Concept.

Accessed Only: When the radio is model/option capable, and when the [System Key](#) field is set to **ASTRO 25**, and when the [Coverage Type on page 1190](#) field is not set to **Intra-WACN Roaming** and therefore the [System Key Type on page 1189](#) field is **System Key**, then a Software System Key File or an Advanced System Key with access, must be selected in the [System ID on page 1274](#) field, or when the [Coverage Type on page 1190](#) field is set to **Intra-WACN Roaming** and therefore the [System Key Type on page 1189](#) field is **WACN Key**, then an Advanced WACN Key with access, must be selected in this Home WACN ID field.

When the [Coverage Type on page 1190](#) field is set to **Intra-WACN Roaming** and therefore the [System Key Type on page 1189](#) field is **WACN Key**, selections are based on the access of the WACN Key selected in this field for this Trunking System. The System Key Report allows you to view all currently-available System Keys, or when the [Coverage Type on page 1190](#) field is not set to **Intra-WACN Roaming** and therefore the [System Key Type on page 1189](#) field is **System Key**, the selections are:



WARNING: The selection range may be modified on a per Advanced Key basis by the Advanced Keys Administrator program.

Table 384: Range

Minimum	Maximum
00001 (Hex)	FFFFE (Hex)

4.38.1.12

RFSS Response Time

This field selects the Radio Frequency Sub-System (RFSS) Response Time.

This is the base (minimum amount of) response time that the receiving radio (fixed end) waits between retries for the Fixed Network Equipment (FNE) to respond to the radio's Inbound Signaling Packet.

 **NOTE:** An additional random time is added to this base time to prevent all radios in the system from attempting a retry at the same time. This selection applies for the current Trunking System. Time is in milliseconds.

Accessed Only: When the radio is model/option capable.

Table 385: Range

Minimum	Maximum	Increments
25 ms	6375 ms	25 ms

4.38.1.13

System ID

This field allows you to view the in-the-field ASTRO 25 - System ID and Type II - System ID for the currently selected Trunking System.

The System Name field selects the desired Trunking System for the current record/row. This value applies to the current Call ID set (record/row) of the current Contact within the Unified Call List. This Call ID set can then be selected from the [Call ID on page 1279](#) (ASTRO 25) [Call ID](#) (Type II) field.

Accessed Only: When the System Name field is not set to **Customized**, and when the radio is model/option capable.

4.38.1.14

RFSS Debounce Timer

This field selects the minimum amount of time that the radio's Radio Frequency Sub-System (RFSS) Debounce Timer holds off its registration/affiliation when bouncing between different RF Sub-Systems.

 **NOTE:** After a radio affiliates with an RFSS, a request to switch to a different RFSS will not be sent to the system until this timer has expired. This selection applies for the current Trunking System.

Accessed Only: When the [Coverage Type on page 1190](#) field is set to **SmartZone and OmniLink** or **Intra-WACN Roaming** or **Inter-WACN Roaming**, and when the radio is model/option capable.

Table 386: Range

Minimum	Maximum
1 sec	10 sec

4.38.1.15

RFSS ID

This field selects in decimal or hex format, the identification number of the ASTRO 25 Trunking Radio Frequency Sub-System (RFSS).

 **NOTE:** An RFSS is made up of one or more sites. This selection applies for the current Trunking System.

Accessed Only: When a Software System Key File or an Advanced System Key with access is selected in the System ID field or, an Advanced WACN Key with access is selected in the Home WACN ID field, when the System Type field is set to **ASTRO 25**, and when the [Coverage Type on page 1190](#) field is set to **SmartZone** or **Disabled**, and when the radio is model/option capable.

 **WARNING:** The selection range may be modified on a per Advanced Key basis by the Advanced Keys Administrator program.

Table 387: Range

Minimum	Maximum
01 (Hex)	FE (Hex)

4.38.1.16

Non-Adjacent Site Search

This field enables the radio to search its programmed list of Control Channels for a site with a stronger signal.

This allows the radio the ability to roam-to and use a site that is not Fixed Network Equipment (FNE) defined as being adjacent to the radio's current home site, but does have an "Acceptable" or stronger signal.

 **NOTE:** This is only true when the current home site and its FNE-defined adjacent sites are all registering at a certain threshold amount below the RSSI Acceptable Threshold level. This feature applies for the current Trunking System.

 **IMPORTANT:** When operating in a poor coverage area, this feature causes the radio to search the programmed list of Control Channels approximately once every two minutes. During this search time, the radio is not monitoring the home site's control channel and therefore may miss some audio. Based on the number of Control Channels contained within the appropriate Control Channels list for this Trunking System, this search could take up to four seconds.

Accessed Only: When the [Coverage Type on page 1190](#) field is not set to **Disabled**, and when the radio is model/option capable.

4.38.1.17

Site ID

Selects (in decimal or hex format) the identification number of the preferred Status Site for the current ASTRO 25 - Trunking System.

Accessed Only: When a Software System Key File or an Advanced System Key with access is selected in the System ID field, or an Advanced WACN Key with access is selected in the Home WACN ID field, when the System Type field is set to **ASTRO 25**, and when the [Coverage Type on page 1190](#) field is set to **Disabled**, and when the radio is model/option capable.

 **WARNING:** This selection range may be modified on a per Advanced Key basis by the Advanced Keys Administrator tool.

Table 388: Range

Minimum	Maximum
01 (Hex)	FE (Hex)

4.38.1.18

Data Profile Selection

This field selects the Data Profile to be used with the current ASTRO 25 - Trunking System.



WARNING: When the Dual Radio - Radio Selection field is set to **Secondary Radio** and the Enable Secondary Radio Tx field is **Disabled**, this field must be set to **Data Disabled**, otherwise it is considered invalid.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

The following selections are supported:

Data Disabled

No data capabilities.

Available Data Profiles



WARNING:

An LTE Broadband-enabled Data Profile cannot be selected when the current Trunking System's [Coverage Type on page 1190](#) is set to **Inter-WACN Roaming**, or when the current Trunking System's LTE Interference Frequency Present field is **True**.

A Data Profile is LTE enabled for a Trunking System when the Data Profile has a Data Profile Type selection equal to **Trunking & Broadband** or **Broadband-Only**.

4.38.1.19

ASK Required

If this field is enabled, it ensures that only Advanced (Hardware) Keys can be loaded and assigned for use to Trunking Systems.

Limited ASK enables a change to system settings. Unlimited ASK enables a change to all system settings.

Accessed Only: When an "Unlimited Access" Advanced Key that exactly matches the System ID of the selected system is loaded, and when the radio is model/option capable.

4.38.2

OBT Channel Assignment

The **Other Band Trunking (OBT) Channel Assignment** section allows you to view or define frequency-related parameters for OBT Type II communications.



IMPORTANT: The OBT Channel Assignment section is only viewable when the radio is operating within a UHF/VHF - frequency band.



NOTE:

These parameters are used to validate all OBT Type II Control Channel and Failsoft frequencies that are entered. These settings apply for individual Trunking Systems.

Once the parameters for the OBT channel assignments are defined, Trunking System Control Channel frequencies and Trunking Personality Failsoft frequencies may be defined.

Trunking Systems are referenced to a Trunking Personality. Trunking Systems settings can then become functional for all Trunking - channel types.

Accessed Only: When the System Type Field is set to **Type II**, and when the Type II Frequency Band field is set to a VHF/UHF - frequency band.

4.38.2.1

Rx Enable

This field enables a frequency split for the current OBT Receive (Rx) Channel Range.

This selection applies for the current [Type II Trunking System](#).



WARNING:

The first record/row within this OBT Channel Assignment section must be enabled to be considered valid.

This setting must exactly match the same Central Controller setting for Trunking System communications to be possible.

Accessed Only: When the System Type field is set to **Type II**, and when the [Type II Frequency Band on page 1189](#) field is set to a **VHF**, **UHF1** or **UHF2** OBT - frequency band, and when the radio is model/option capable.

4.38.2.2

Tx Enable

This field enables a frequency split for the current OBT Receive (Tx) Channel Range.

This selection applies for the current [Type II Trunking System](#).



WARNING:

The first record/row within this OBT Channel Assignment section must be enabled to be considered valid.

This setting must exactly match the same Central Controller setting for Trunking System communications to be possible.

Accessed Only: When the System Type field is set to **Type II**, and when the [Type II Frequency Band on page 1189](#) field is set to a **VHF**, **UHF1** or **UHF2** OBT - frequency band, and when the radio is model/option capable.

4.38.2.3

Rx Spacing

This field selects the spacing (in kHz) between Receive (Rx) frequencies for the current OBT - Channel Range.



IMPORTANT: The [Rx Start Frequency on page 1197](#) and [Rx End Frequency on page 1198](#) define the current receive frequency range. This selection applies for the current Trunking System.



NOTE: The ([Rx End Frequency on page 1198](#) - [Rx Start Frequency on page 1197](#)) range value must be evenly divisible by this channel spacing. This allows the range to be divided into an integer value to properly assign the Control Channel number.



WARNING: This setting must exactly match the same Central Controller setting for Trunking System communications to be possible.

Accessed Only: When the System Type field is set to **Type II**, and when the [Type II Frequency Band on page 1189](#) field is set to a **VHF**, **UHF1** or **UHF2** OBT - frequency band, and when the radio is model/option capable.

4.38.2.4

Tx Spacing

This field selects the spacing (in kHz) between Receive (Tx) frequencies for the current OBT - Channel Range.



IMPORTANT: The [Tx Start Frequency on page 1197](#) and [Tx End Frequency on page 1198](#) define the current receive frequency range. This selection applies for the current Trunking System.



NOTE: The ([Tx End Frequency on page 1198](#) - [Tx Start Frequency on page 1197](#)) range value must be evenly divisible by this channel spacing. This allows the range to be divided into an integer value to properly assign the Control Channel number.



WARNING: This setting must exactly match the same Central Controller setting for Trunking System communications to be possible.

Accessed Only: When the System Type field is set to **Type II**, and when the [Type II Frequency Band on page 1189](#) field is set to a **VHF**, **UHF1** or **UHF2** OBT - frequency band, and when the radio is model/option capable.

4.38.2.5

Rx Start Frequency

This field allows you to enter the start point (in MHz) for the Receive (Rx) frequency range for the current OBT - Channel Range.



IMPORTANT: The Rx Start Frequency must be less than or equal to the [Rx End Frequency on page 1198](#). This selection applies for the current Trunking System.



WARNING: This setting must exactly match the same Central Controller setting for Trunking System communications to be possible.

Accessed Only: When the System Type field is set to **Type II**, and when the [Type II Frequency Band on page 1189](#) field is set to a **VHF**, **UHF1** or **UHF2** OBT - frequency band, and when the radio is model/option capable.

4.38.2.6

Tx Start Frequency

This field selects the spacing (in kHz) between Receive (Tx) frequencies for the current OBT - Channel Range.



IMPORTANT: The [Tx Start Frequency on page 1197](#) and [Tx End Frequency on page 1198](#) define the current receive frequency range. This selection applies for the current Trunking System.



NOTE: The ([Tx End Frequency on page 1198](#) - [Tx Start Frequency on page 1197](#)) range value must be evenly divisible by this channel spacing. This allows the range to be divided into an integer value to properly assign the Control Channel number.



WARNING: This setting must exactly match the same Central Controller setting for Trunking System communications to be possible.

Accessed Only: When the System Type field is set to **Type II**, and when the [Type II Frequency Band on page 1189](#) field is set to a **VHF**, **UHF1** or **UHF2** OBT - frequency band, and when the radio is model/option capable.

4.38.2.7

Rx End Frequency

This field allows you to enter the end point (in MHz) for the Receive (Rx) frequency range for the current OBT - Channel Range.



IMPORTANT: The Rx End Frequency must be greater than or equal to the [Rx Spacing on page 1196](#). This selection applies for the current Trunking System.



WARNING: This setting must exactly match the same Central Controller setting for Trunking System communications to be possible.

Accessed Only: When the System Type field is set to **Type II**, and when the [Type II Frequency Band on page 1189](#) field is set to a **VHF**, **UHF1** or **UHF2** OBT - frequency band, and when the radio is model/option capable.

4.38.2.8

Tx End Frequency

This field allows you to enter the end point (in MHz) for the Receive (Tx) frequency range for the current OBT - Channel Range.



IMPORTANT: The Tx End Frequency must be greater than or equal to the [Tx Spacing on page 1197](#). This selection applies for the current Trunking System.



WARNING: This setting must exactly match the same Central Controller setting for Trunking System communications to be possible.

Accessed Only: When the System Type field is set to **Type II**, and when the [Type II Frequency Band on page 1189](#) field is set to a **VHF**, **UHF1** or **UHF2** OBT - frequency band, and when the radio is model/option capable.

4.38.3

Control Channels

This section allows you to view or define Receive and Transmit frequencies for Control Channels.

Up to a maximum of 250 Control Channels may be created for individual Trunking Systems, as required.



NOTE: For radio models containing firmware prior to version R12.01.00, the maximum number of Control Channels is 128.



IMPORTANT:

Individual Trunking Systems are referenced to a Trunking Personality. Once reference, these Trunking Systems settings can become functional for all channel types within that Trunking Personality.

It is beneficial to sort the control channel frequencies in ascending order in a SmartZone system. In a Failsoft situation, the radio uses the first channel from the Control Channel as its Failsoft channel. If channels are sorted (or at least sorted in an order designed to facilitate Failsoft operations), potential problems such as having multiple radios on different Failsoft channels can be avoided.

4.38.3.1

Rx Frequency

This field allows you to enter a Control Channel Rx (Receive) Frequency for the current Trunking System.



WARNING: The Trunking Frequency Constraints applies to this selection are determined by this System's frequency band.

Accessed Only: (When a Software System Key File or an Advanced System Key with access is selected in the System ID field or, an Advanced WACN Key with access is selected in the Home WACN ID field), and when the radio is model/option capable.

4.38.3.2

Tx Frequency

This field selects a Control Channel Tx (Transmit) Frequency for the current Trunking System.



WARNING: The Trunking Frequency Constraints applies to this selection are determined by this System's System Type and frequency band. For Type II Trunking Systems, this field is a view-only status when [Type II Frequency Band on page 1189](#) is 700/800 MHz or 900 MHz.

Accessed Only: When a Software System Key File or an Advanced System Key with access is selected in the System ID field or an Advanced WACN Key with access is selected in the Home WACN ID field, When the System Type field is set to **Type II**, and [Type II Frequency Band on page 1189](#) field is not set to **700/800** MHz or **900** MHz, and when the radio is model/option capable.

4.38.4

ASTRO 25 Channel ID

This section allows you to view or define frequency-related parameters for ASTRO 25 communications.



WARNING: These parameters are used to validate all Other Band Trunking (OBT) or 700/800/900 MHz ASTRO 25 Control Channel and Failsoft frequencies that are entered. These settings apply for individual Trunking Systems.



NOTE:

Once the parameters for these ASTRO 25 Channel IDs are defined, Trunking System Control Channel frequencies and Trunking Personality Failsoft frequencies may be defined.

Individual Trunking Systems are referenced to a Trunking Personality. These Trunking Systems settings can then become functional for all channel types within that Trunking Personality.



WARNING: Each record of Channel ID selections contains frequency-related parameters that are used - Trunking frequency constraint rules to validate all ASTRO 25 OBT or 700/800/900 MHz Control Channel and Failsoft frequencies entered.

Accessed Only: When the System Type field is set to **ASTRO 25**.

4.38.4.1

LTE Interference Frequency Present

The application allows you to view (True or False) when the ASTRO 25 Channel ID table contains a 700MHz Base Frequency that can cause interference on this LTE Broadband channel.



A referenced Data Profile to a Trunking System having a **Broadband** Data Profile Type and Broadband Source is **Internal LTE Modem** creates an LTE Broadband capable Trunking channel. Therefore when LTE Broadband capability is the case, and any Base Frequency in the table contains a frequency in the 700MHz frequency band, this field warns **True** of potential frequency interference. This feature applies for the current ASTRO 25 Trunking System.

Accessed Only: When the radio is model/option capable.



IMPORTANT: This feature is only available in Expert View (see Codeplug View).

4.38.4.2

Transmit Offset

This field allows you to enter the Transmit Offset value (in MHz) for the current ASTRO 25 Channel ID (record/row).

This selection applies for the current ASTRO 25 Trunking System.

 **WARNING:** Each record of Channel ID selections contains frequency-related parameters - trunking frequency constraint rules to validate all ASTRO 25 OBT or 700/800/900 MHz Control Channel and Failsoft frequencies entered.

Accessed Only: ((When a Software System Key File or an Advanced System Key with access is selected in the System ID field) or (an Advanced WACN Key with access is selected in the Home WACN ID field)), when the System Type field is set to **ASTRO 25**, and when the [Identifier Enable on page 1200](#) field is enabled for the current ASTRO 25 Channel ID (record/row), and when the radio is model/option capable.

4.38.4.3

Identifier Enable

This field enables the Channel Identifier (ID) selections for the same Channel ID (record/row).

This selection applies for the current ASTRO 25 Trunking System.

 **WARNING:** Each record of Channel ID selections contains frequency-related parameters - trunking frequency constraint rules to validate all ASTRO 25 OBT or 700/800/900 MHz Control Channel and Failsoft frequencies entered.



NOTE:

The first record/row within this ASTRO 25 Channel ID page must be enabled to be considered valid.

Once the records/rows of ASTRO 25 Channel ID parameters are defined, Trunking System Control Channel frequencies and Trunking Personality Failsoft frequencies may be defined.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when a Software System Key File or an Advanced System Key with access is selected in the System ID field or an Advanced WACN Key with access is selected in the Home WACN ID field, and when the radio is model/option capable.

4.38.4.4

Channel Spacing

This field allows you to enter the Channel Spacing value for the current ASTRO 25 Channel ID (record/row).

This selection applies for the current ASTRO 25 Trunking System.

 **WARNING:** Each record of Channel ID selections contains frequency-related parameters - trunking frequency constraint rules to validate all ASTRO 25 OBT or 700/800/900 MHz Control Channel and Failsoft frequencies entered.

Accessed Only: ((When a Software System Key File or an Advanced System Key with access is selected in the System ID field) or (an Advanced WACN Key with access is selected in the Home WACN ID field)), when the System Type field is set to **ASTRO 25**, and when the [Identifier Enable on page 1200](#) field is enabled for the current ASTRO 25 Channel ID (record/row), and when the radio is model/option capable.

4.38.4.5

Channel Type

This field selects the type of traffic channel protocol to be used for the current ASTRO 25 Channel ID (record/row), either Frequency Division Multiple Access (FDMA) or Time Division Multiple Access (TDMA).

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the [Identifier Enable on page 1200](#) field is enabled for the current ASTRO 25 Channel ID (record/row), and when the radio is model/option capable.

The following selections are supported:

FDMA

Selects for Frequency Division Multiple Access Trunking System compatibility.

TDMA

Selects for Time Division Multiple Access Trunking System compatibility.



NOTE: This applies to the voice channel.

4.38.4.6

Base Frequency

This field allows you to enter any frequency within the range of the radio's frequency band(s) as the Base Frequency value for the current ASTRO 25 Channel ID (record/row).



WARNING: Each record of Channel ID selections contains frequency-related parameters - trunking frequency constraint rules to validate all ASTRO 25 OBT or 700/800/900 MHz Control Channel and Failsoft frequencies entered.



IMPORTANT:

Once the records/rows of ASTRO 25 Channel ID parameters are defined, Trunking System Control Channel frequencies and Trunking Personality Failsoft frequencies may be defined.

In order for the internal algorithm to be valid, this Base Frequency must be equal to or smaller in value than the Control Channel and Failsoft Receive frequencies.

Accessed Only: When the System Type field is set to **ASTRO 25**, and ((when a Software System Key File or an Advanced System Key with access is selected in the System ID field) or (an Advanced WACN Key with access is selected in the Home WACN ID field)), and when the [Identifier Enable on page 1200](#) field is enabled for the current ASTRO 25 Channel ID (record/row), and when the radio is model/option capable.

Any frequency within the range of the radio's frequency band(s).

4.38.4.7

Transmit Offset Sign

This field selects the Transmit Offset Sign (plus or minus) for the current ASTRO 25 Channel ID (record/row).

This selection applies for the current ASTRO 25 Trunking System.



WARNING: Each record of Channel ID selections contains frequency-related parameters - trunking frequency constraint rules to validate all ASTRO 25 OBT or 700/800/900 MHz Control Channel and Failsoft frequencies entered.

Accessed Only: ((When a Software System Key File or an Advanced System Key with access is selected in the System ID field) or (an Advanced WACN Key with access is selected in the Home WACN ID field)), when the System Type field is set to **ASTRO 25**, and when the [Identifier Enable on page 1200](#) field is enabled for the current ASTRO 25 Channel ID (record/row), and when the radio is model/option capable.

4.38.5

ASTRO 25

This section allows you to view or modify basic functionality used while operating in ASTRO 25 mode.

These settings apply for individual Trunking Systems.



NOTE: Individual Trunking Systems are referenced to a Trunking Personality. These Trunking Systems settings can then become functional for all channel types within that Trunking Personality.

4.38.5.1

Motorola Proprietary Features

This field enables Motorola Proprietary Inbound Signaling Packet (ISP) transmissions to be sent by the radio.

This feature applies for the current Trunking System.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

4.38.5.2

Default RCM ID

This field selects the Radio Control Manager (RCM) address used as the target address of Inbound Signaling Packet (ISP) transmissions directed to the FNE, for example, Status and Message transmissions.

This selection applies for the current Trunking System.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

Table 389: Range

Minimum	Maximum
000000 (Hex)	FFFFFF (Hex)

4.38.5.3

ISP Sequence Length

This field selects the maximum time allowed per site for an Inbound Signaling Packet (ISP) retry sequence.

The radio retries five times or until this time expires, whichever comes first. This selection applies for the current Trunking System. Time is in seconds.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.



NOTE: When set to **Infinite**, timer does not expire.

Table 390: Range

Minimum	Maximum	Increments
1 (second)	255 (seconds)	1 (second)

4.38.5.4

End X2 TDMA Transmit On Out of Range

This field enables the radio to stop an ongoing X2 TDMA (Time Division Multiple Access) transmission and alert you in the event that, during the transmission, the radio has roamed outside of the coverage range of the Fixed Network Equipment (FNE).

An audible alert tone persists for as long as the PTT button is held. This selection applies for the current [Trunking System on page 1188](#).

Accessed Only: When the [System Type on page 1190](#) field is set to **ASTRO 25**, and when the [X2 Voice Capable on page 1203](#) field is enabled.

4.38.5.5

Maximum Slot Size

This field selects the maximum Inbound Signaling Packet (ISP) slot size the radio can use.



IMPORTANT: This value cannot be greater than the slot size allowed by the System.



NOTE: This value is used to speed the radio firmware's slot finding process. This selection applies for the current Trunking System. Time is in milliseconds.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.



NOTE: When set to **Unbounded**, the slot size is unlimited.

Table 391: Range

Minimum	Maximum	Increments
37.5 (milliseconds)	142.5 (milliseconds)	7.5 (milliseconds)

4.38.5.6

X2 Voice Capable

This field enables the radio to transmit on a Trunking System that supports X2-Time Division Multiple Access (TDMA) voice communications.



NOTE: X2-TDMA uses a Motorola-specific protocol. See also [Phase 2 Voice Capable on page 1204](#). This selection applies for the current Trunking System.



WARNING: When the [Coverage Type on page 1190](#) field is set to **Inter-WACN Roaming**, this selection must be **Disabled**; otherwise the application considers this selection invalid.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

4.38.5.7

Force Unmute Time

This field selects the maximum amount of time a radio remains muted to receive audio in anticipation of system throughput delay.

The timer begins just after the radio sends a transmission. If the radio's firmware confirms by other means that incoming audio is not its own, this time is disregarded. This selection applies for the current Trunking System. Time is in milliseconds.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.



NOTE: When set to **Immediate** which means 0 (Zero Time), there is no mute time after transmission.

Table 392: Range

Minimum	Maximum	Increments
25 (ms)	6375 (ms)	25 (ms)

4.38.5.8

End Phase 2 TDMA Transmit On Out Of Range

This field enables the radio to stop an ongoing Phase 2 TDMA (Time Division Multiple Access) transmission.

 **WARNING:** The value in this field must only be modified by Qualified Service Personnel. Improper settings can cause unpredictable results in the radio.

This function also alerts you that during the transmission, the radio has roamed outside of the coverage range of the Fixed Network Equipment (FNE). An audible alert tone persists for as long as the PTT button is held. This selection applies for the current Trunking System.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the [Phase 2 Voice Capable on page 1204](#) field is **Enabled**.

4.38.5.9

Quick Fade Protect

This field selects the amount of time the radio remains on the control channel once synchronization is lost and before attempting to re-synch.

This allows the radio time to recover the signal without a full re-synchronization of the channel. This selection applies for the current Trunking System. Time is in milliseconds.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

Table 393: Range

Minimum	Maximum	Increments
200 ms	6375 ms	25 ms

4.38.5.10

Phase 2 Voice Capable

This field enables the radio to transmit on a Trunking System that supports Project 25-standard Phase 2 Time Division Multiple Access (TDMA) voice communications.



NOTE: Phase 2 TDMA uses a two-slot TDMA protocol on a 12.5 kHz channel, which allows double the voice capacity compared to the Phase 1 Frequency Division Multiple Access (FDMA) implementation. This selection applies for the current Trunking System.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

4.38.5.11

PTT Warning Time

This field selects the amount of time that the radio waits before sounding a Talk Prohibit Tone to warn you that a PTT request is being processed and you should release the PTT button.

This selection applies for the current Trunking System. Time is in milliseconds.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

 **NOTE:** When set to **Disabled**, no warning is sounded.

Table 394: Range

Minimum	Maximum	Increments
	6375 ms	25 ms

4.38.5.12

Validate NAC Against System ID

This field causes the radio to validate the upper 8 bits of the 16-bit System ID against the upper 8 bits of the 12-bit Network Access Code (NAC) received on the Trunking - control channel.

If a match is not found, the radio does not attempt to register/affiliate to the Trunking site. Therefore enabling this field allows the radio to quickly match a site's NAC code with its System ID and quickly reject interfering Trunking System control channels. This selection applies for the current Trunking System.

 **WARNING:** If any site in the Trunking System is not configured this way then this field must be disabled.

When disabled, the radio does not attempt to match the upper 8 bits of the 16-bit System ID with the upper 8 bits of the 12-bit NAC code. This allows the radio to operate on control channels having a NAC that is independent of this Trunking System's System ID. The radio may take longer to reject interfering Trunking System control channels. This selection applies for the current Trunking System.

 **WARNING:** When the [Coverage Type on page 1190](#) field is set to **Inter-WACN Roaming**, this selection must be disabled; otherwise it considers this selection invalid.

When the [Coverage Type on page 1190](#) field is set to **Intra-WACN Roaming**, and DVRS Hardware Enable field is enabled, this selection must be disabled; otherwise it considers this selection invalid.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

4.38.5.13

Busy Update Time

This field selects the amount of time that the radio waits in the busy state for a grant, reject, or another busy update from the Fixed Network Equipment (FNE).

If this time expires, the radio no longer expects a response from the FNE and retries the transmission. This selection applies for the current Trunking System. Time is in seconds.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

 **NOTE:** When set to **Infinite**, the radio waits indefinitely for a response.

Table 395: Range

Minimum	Maximum	Increments
15 (seconds)	945 (seconds)	15 (seconds)

4.38.5.14

WUID Validity Support

This field causes the radio to periodically revalidate its Working Unit ID (WUID) with the Fixed Network Equipment (FNE).

A WUID is assigned to a radio during initial FNE registration/affiliation activity; any inbound Signaling Packet (ISP) request to the FNE containing the radio's WUID revalidates it with its current in-the-field Trunking System.



IMPORTANT: This selection is only required for an FNE that relies on the radio to track periods of inactivity and revalidate its WUID before it expires. This selection applies for the current Trunking System.

When disabled, the radio does not automatically revalidate its WUID because it is expecting the type of FNE that queries the radio after a period of inactivity before de-registering and removing the WUID from the Trunking System.



WARNING: When the [Coverage Type on page 1190](#) field is set to **Inter-WACN Roaming**, this selection must be disabled; otherwise it considers this selection invalid.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

4.38.5.15

Response Pending Time

This field selects the amount of time that the radio waits when expecting a further response to a request from the Fixed Network Equipment (FNE).

This situation occurs when the FNE sends an indication to the radio that its request is being processed and that further signaling is on the way. If this time expires, the radio no longer expects a response from the FNE and returns to an idle state. This selection applies for the current Trunking System. Time is in seconds.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.



NOTE: When set to **Infinite**, the radio waits indefinitely for a further response from the FNE.

Table 396: Range

Minimum	Maximum	Increments
1 (second)	255 (seconds)	1 (second)

4.38.5.16

Geofence Mode

This field selects for additional Dynamic Regrouping functionality, which is triggered when a radio enters a Geofence.

This has the benefit of minimizing your interaction with the radio as it enters locations requiring the use of a pre-determined Talkgroup, for example when entering a dangerous area of a mine. This selection applies for the current ASTRO 25 Trunking System.



WARNING: In the event of a loss of the GPS signal, the radio generates a repetitive tone to alert you. See also GPS Fail Tone Interval.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

The following selections are supported:

Disabled:

Geofence functionality is disabled.



IMPORTANT: If the radio receives a Dynamic Regrouping command, it will handle it in the customary manner.

Automatic:

When the radio receives the Dynamic Regrouping command from the FNE, as a result of entering the pre-defined Geofence, it automatically moves to the [Dynamic Regrouping Channel on page 1214](#), a "gurgle" alert tone is sounded, the regrouped Channel Name temporarily appears in the display (see Temporary Message Display Time), and the RM-defined Voice Announcement sounds to indicate the change.



NOTE:

The radio first searches the current zone that the radio has moved to, for the first channel with the same Trunking Talkgroup assignment as the Trunking Talkgroup which was dynamically assigned by the referenced Trunking System, then shows the Channel Name of the first matched channel on the display. If no matching channel is found, the radio shows the Channel Name of the channel position which is assigned as the **DYN** target channel for the dynamic regrouping command, with green intelligent backlighting for models which support Intelligent Lighting.

The radio also searches the current zone for the channel with same Trunking Talkgroup assignment as the Trunking talkgroup which was dynamically assigned by the referenced Trunking System, and then plays the Channel Announcement assigned to the matching channel. If no matching channel is found, the radio plays the Channel Announcement (if there is one) assigned to the channel position which is assigned as the **DYN** target channel for the dynamic regrouping command.

The Text Messaging Service (TMS) Server may also be configured to send a TMS notification to the radio, the content of which appears directly in the display without your interaction, when the Direct TMS Content Display field is enabled.

Once the radio has moved to the Dynamic Regrouping channel, radio operation behaves in the customary Dynamic Regrouping manner.

The radio remains on this Dynamic Regrouping channel until the radio exits the Geofence; at this point, the FNE cancels Dynamic Regrouping or re-assigns the radio with another Dynamic Regrouping command, and the radio automatically returns to the zone and channel that were being using before the radio was dynamically regrouped or is correspondingly re-assigned.

4.38.6

Features

This section allows you to view or modify settings for individual Trunking System.



NOTE: Individual Trunking Systems are referenced to a Trunking Personality. These Trunking Systems settings can then become functional for all channel types within that Trunking Personality.

4.38.6.1

DTMF Timing Select

This field selects the desired DTMF (Dual Tone Multiple Frequency) set of timings.

These Timing sets are defined in the Phone Wide [DTMF Timing on page 1016](#) section; sets include [Initial Delay on page 1016](#), [Digit Duration on page 1017](#), and [Interdigit Delay on page 1017](#). This selection applies while operating in Phone Mode for the current Trunking System.



NOTE: You can activate Phone Mode with a Call Response or Phone button-press or Phone menu-selection.

Accessed Only: When the System Type field is set to **Type II**, and when the radio is model/option capable.

4.38.6.2

Emergency Alarm Rx Indicator

This field enables an audio or visual, or both indicator to occur on the radio when an Emergency Alarm is detected and received from another radio.

The type of Emergency Indicator is determined by the Emergency Alarm Rx Indicator Type setting. This feature applies for the current Trunking System.



IMPORTANT:

The Emergency Alarm Rx Indicator time lasts for 10 seconds. During these 10 seconds, you can deactivate the indicator by pressing any of the radio's buttons except Volume and Light/Flip (Display).

Once the indicator clears or is cleared, retried emergency alarms from the same Trunking System Unit ID are ignored for the next 20 seconds.

Emergency alarms are not detected while the radio is in scan mode.

Emergency alarms may not be detected any time the radio is not monitoring or decoding the control channel, for example, activity on a voice or data channel, RSSI sampling, etc.

Accessed Only: When the Emergency Alarm Rx Indicator Type field is not set to **No Indication**, and when the radio is model/option capable.

4.38.6.3

Radio Inhibit

This field enables the radio to receive and respond to a Remote Inhibit command while operating on the current Trunking System.

This inhibit command is sent from the dispatcher. Upon successful receipt, the radio transmits an acknowledgement back to the dispatch equipment and then goes into a dormant state. While inhibited, the receiver audio is muted and the transmit audio path is blocked; all your controls are rendered inoperative; scan mode is stopped on the operating channel which received the command, and all Radio LED's are turned off.



WARNING:

When the System Type field is set to **ASTRO 25** and when the **ASTRO OTAR Profile Index** field is enabled (for the current Trunking System), and when the Secure Configuration, **Radio Inhibit via ASTRO OTAR** is enabled, this field may be disabled. In this case, Radio Inhibit is accomplished "via ASTRO OTAR".

When the System Type field is set to **ASTRO 25** and when the ASTRO OTAR Profile Index field is disabled (for the current Trunking System), this field must be enabled. This insures that Radio Inhibit is possible with **ASTRO 25** Trunking.

When the System Type field is set to **Type II** and when the value of the Trunking System's System ID field matches the **Key ID** of one of the loaded Software System Key Files or Advanced System Keys (see the System Key Report), this field may be disabled. In this case, Radio Inhibit commands received on this Trunking System will be ignored, and the radio continues to operate normally.

When the Secure Configuration, **Radio Inhibit via ASTRO OTAR Profile Index** is enabled, and when the **ASTRO OTAR Profile Index field** is enabled (for the current Trunking System), this field may be disabled. In this case Radio Inhibit is accomplished "via ASTRO OTAR".

When the ASTRO OTAR Profile Index field is disabled (for the current Trunking System), this field must be enabled. This insures that Radio Inhibit is possible with **ASTRO 25** Trunking.



IMPORTANT: In order to clear this inhibited state on the radio, an uninhibit command must be sent to the radio.

Accessed Only: When the radio is model/option capable.

4.38.6.4

Secure LED

This field enables the yellow busy LED to flash whenever a secure encrypted voice call is received, and will continue to flash as long as the current voice activity is secure.

The yellow busy LED will flash under these conditions regardless of whether the specific radio can unmute the voice signal. Secure LED applies for the current Trunking System.

Accessed Only: When the radio is model/option capable.

4.38.6.5

POP25 Enable

This field enables the radio to receive Programming Over Project 25 (POP25) communications for the current Trunking System.



NOTE: POP25 is also referred to as Over The Air Programming (OTAP).



WARNING: If you experience difficulties accessing a radio's IP address during a POP25 operation, depending on the system's firewall, you may need to manually add as an exception to the firewall's exception list.



IMPORTANT: This field displays the read-only status when an Advanced (Hardware) Key without OTAP access enabled has been selected in the Trunking System, System ID field.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the current Trunking System has a referenced Data Profile, and when a Software System Key File or an Advanced System Key with access is selected in the System ID field, or an Advanced WACN Key with access is selected in the Home WACN ID field, and when the radio is model/option capable.

4.38.6.6

ICUA Reset

This field selects a timed or manual unmute, exception for Trunking call alerts/pages when the channel is Voice Mute In-Call User Alert Enabled.

The exception time (timed or manual) is known as the Release Squelch State. For the two timed selections, the [ICUA Auto Reset Time on page 1210](#) field (for this Trunking System) partially determines how long the Release Squelch State continues. The Release Squelch State begins when the Voice Mute In-Call User Alert feature is active and the radio has un-muted. This selection applies for the current Trunking System.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Manual

When the Voice Mute In-Call User Alert Enabled feature is active, Voice Mute button is pressed, or the Voice Mute menu-selection deactivates Voice Mute and ends the Release Squelch State. Pressing the PTT button ends the Release Squelch State.

Auto

If the timer expires regardless of whether the radio is muted or un-muted, the Release Squelch State is ended and the Voice Mute In-Call User Alert Enabled rules are again required in order to unmute to any future transmissions.

Auto with carrier

If the radio is unmuted when the timer expires due to Carrier Squelch being satisfied, the radio remains unmuted until carrier is dropped. Once carrier is dropped and the radio is muted, the timer is reset and re-started, in effect extending the Release Squelch State again; if the radio then remains muted for an entire timer period without any carrier override, the Release Squelch State is ended and the Voice Mute In-Call User Alert Enabled rules are again required in order to unmute to any future transmissions.

4.38.6.7

Text Messaging Service

This field selects the Text Messaging mode for the current Trunking System.



NOTE:

Text Messaging is accessed by you with the Text Messaging Service button-press, or the Text Messaging Service menu-selection.

Quick Text Messaging is accessed by you with the TMS Quick Text button-press.

Query Messaging is accessed by you with the TMS Query button-press.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the current Trunking System has a referenced Data Profile, and when Data Profile Selection is not set to **Data Disabled**.

The following selections are supported:

None

The feature is disabled.

List Only

Allows you to only select Text Messages from the Quick Text Messages List.

Unlimited

Allows you to select from the Quick Text Messages, and enter your own text message from the radio keypad.



WARNING: This selection is only available on radios that have a keypad or Keypad Mic.



NOTE: This selection is not applicable to APX N70.

4.38.6.8

ICUA Auto Reset Time

This field selects an amount of time used during the unmute-exception for Trunking call alerts/pages when the channel is Voice Mute In-Call User Alert Enabled.

The exception time is known as the Release Squelch State. This timer is only relevant to the two In-Call Reset timed selections. This selection applies for the current Trunking System. Time is in seconds.

Accessed Only: When the [ICUA Reset on page 1209](#) field is not set to **Manual**, and when the radio is model/option capable.

Table 397: Range

Minimum	Maximum	Increments
0 sec	255 sec	1 sec

4.38.6.9

TX Power Level

This field selects the radio's power level for transmitting for the current Trunking System.

The Tx Low Power button-press, the Tx Low Power switch-toggle, and the Power menu-selection take precedence over this setting when selected by you.



NOTE:

During Emergency Mode the radio automatically transmits at high power.

The transmit power may be reduced 1 watt for 800 models, and 2 watts for VHF and UHF models.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Low

Used when communicating in close proximity, and to keep the radio from transmitting into other geographical groups operating on the same frequency.

High

Used when a stronger signal is needed to extend transmission distances.

4.38.6.10

Site Selectable Alert List Selection

This field selects the Site Selectable Alert List to be used with the current ASTRO 25 Trunking System.



NOTE:

Site Selectable Alert List functionality is defined in the Site Selectable Alert List Page.

You can activate or deactivate Site Selectable Alerts with a Site Selectable Alert menu-selection. Either a single site or all available sites in the Zone can be selected for activating or deactivating a Site Selectable Alert.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

The following selections are supported:

- Disabled
- Available Site Selectable Alert Lists



WARNING: List selections may only be made when the [Coverage Type on page 1190](#) field is set to **Disabled**, or when the Coverage Type field is not set to **Disabled**, and when the [Site Alias Enable on page 1222](#) field is **Enabled**. Otherwise, a List selection is considered invalid.

4.38.6.11

HearClear

This field selects to enhance audio clarity by applying noise cancellation and/or a companding algorithm to the radio signal.

This feature applies for the current Trunking System.



IMPORTANT: With companding, the dynamic range of the transmit audio is compressed and then expanded to its original level in the receive audio. Therefore, companding must be enabled on both the transmitting and the receiving radios or distorted audio will result. Since the compression/expansion algorithm is active both on transmit and receive audio, expanding uncompressed audio or compressing audio without subsequently expanding it will both result in unnatural-sounding audio output. The audio path to the dispatcher must also be companded.

Accessed Only: When the System Type field is set to **Type II**, and when the DVRS Hardware Enable field is disabled.

The following selections are supported:

Disabled

No noise canceling or companding is applied to the transmit/receive signals.

Companding Only

Companding is applied to both the transmit and receive audio. See Important Note.

Noise Cancellation Only

Noise cancellation is applied to the receive audio.

Companding and Noise Cancellation

Companding is applied to both the transmit and receive audio (see Important Note) and noise cancellation is applied to the receive audio.



NOTE: The **Noise Cancellation Only** and **Companding and Noise Cancellation** settings can only be applied if all frequencies on the current personality are in the 900 MHz range.

4.38.6.12

Busy LED

When this field is enabled, the yellow busy LED illuminates whenever a clear and non-encrypted voice call is received.

4.38.6.13

Dynamic Regrouping Enable

This field enables a Dynamic Regrouping talkgroup for a Trunking Personality or channel that references the current Trunking System.



NOTE:

When this field is enabled, a [Dynamic Regrouping Zone on page 1213](#) and [Dynamic Regrouping Channel on page 1214](#) must be selected for that Trunking System.



WARNING: A Dynamic Regrouping configuration is only valid: when one of the Trunking Personalities referenced to a channel has its Trunking Talkgroup field set to **DYN** (Dynamic Regrouping), and that Personality's selected Zone and Channel match the selections for Dynamic Regrouping Zone and Dynamic Regrouping Channel in the Personalities' referenced Trunking System.



IMPORTANT: Therefore, only one channel within a given Trunking System, can be the Dynamic Regrouping channel.

You may request a new Dynamic Regrouping assignment from the dispatcher with a Reprogram Request button-press or a Reprogram Request menu-selection. The actual features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher.

For the Dynamic Regrouping talkgroup to be capable of transmitting in Secure mode, the Secure Tx Select button-press or the Secure Tx Select switch-toggle or the Secure menu-selection is needed; otherwise Dynamic Regrouping talkgroup transmissions are strapped to transmitting in **Clear** mode.

Accessed Only: When the radio is model/option capable.

4.38.6.14

Remote Monitor/Radio Trace Enable

This field enables the radio to decode a Remote Monitor or Radio Trace command for the current Trunking System.



WARNING: **Radio Trace** applies only for System Type **Type II**. Also only for a **Type II** System, and applying to both **Remote Monitor** and **Radio Trace**, the radio keys-up for the time selected by the Remote Monitor/Radio Trace Tx Base Time.



NOTE:

For a **ASTRO 25** System Type, the in-the-field radio's transmit time is defined by a dispatcher and contained within the transmitted **Remote Monitor** command.

When a **Remote Monitor** command has been received, the radio automatically keys-up and transmits surrounding audio from its "hot" microphone. This is especially useful in an emergency Fall Alert situation.

Remote Monitor is also known as **Radio Unit Monitor**.

When a **Radio Trace** command has been received, the radio automatically keys-up, sending unmodulated carrier, allowing a lost or stolen radio to be found. **Radio Trace** applies only for System Type **Type II**.

4.38.6.15

Dynamic Regrouping Zone

This field selects the zone of the Dynamic Regrouping Trunking Personality/channel that references the current Trunking System.



WARNING: Remote Site Interface (RSI) zones are invalid and cannot be selected (zones that have RSI Mode enabled).



NOTE:

You may request a new Dynamic Regrouping assignment from the dispatcher with a Reprogram Request button-press or a Reprogram Request menu-selection. The actual features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher.

For the Dynamic Regrouping talkgroup to be capable of transmitting in Secure mode, the Secure Tx Select button-press or the Secure Tx Select switch-toggle or the Secure menu-selection is needed; otherwise Dynamic Regrouping talkgroup transmissions are strapped to transmitting in **Clear** mode.

When [Dynamic Regrouping Enable on page 1212](#) is **Enabled**, a Dynamic Regrouping Zone and [Dynamic Regrouping Channel on page 1214](#) must be selected for that Trunking System.



WARNING:

Zones selected in this field must have Dynamic Zone Enable disabled; otherwise, this field becomes invalid.

A Dynamic Regrouping configuration is only valid when one of the Trunking Personalities referenced to a channel has its Trunking Talkgroup field set to **DYN** (Dynamic Regrouping), and that Personality's selected Zone and Channel match the selections for Dynamic Regrouping Zone and Dynamic Regrouping Channel in the Personalities' referenced Trunking System.



IMPORTANT: Therefore, only one channel (within a given Trunking System) can be the Dynamic Regrouping channel.

Accessed Only: When the [Dynamic Regrouping Enable on page 1212](#) field is set to **Enabled**, and when the radio is model/option capable.

4.38.6.16

Remote Monitor/Radio Trace Tx Base Time

This field selects the amount of time that the remotely-monitored radio transmits once a Remote Monitor or Radio Trace command has been received for the current Trunking System.



NOTE: This application field setting is not supported for third party accessories. Any changes in the settings must be done through your accessory developer.

Applies only:

For APX 7000XE and APX 6000, this feature applies only when System Option H43 is available to the radio. In addition, the radio requires firmware version R05.xx.xx or higher, and the APX must be R05.xx.xx or higher.

For APX 6500 this feature applies only when System Option G170 is available to the radio. In addition, the radio requires firmware version R05.xx.xx or higher, and the APX must be R05.xx.xx or higher.

Accessed Only: When the System Type field is set to **Type II**, and when the Remote Monitor/Radio Trace Enable field is enabled, and when the radio is model/option capable.

The following selections are supported:

- 15
- 30
- 45
- 60

4.38.6.17

Dynamic Regrouping Channel

This field selects a Dynamic Regrouping Trunking Personality/channel that references the current Trunking System.

See also [Dynamic Regrouping Zone on page 1213](#) and [Dynamic Regrouping Feature on page 266](#).



NOTE:

When [Dynamic Regrouping Enable on page 1212](#) is **Enabled**, a Dynamic Regrouping Zone and Dynamic Regrouping Channel must be selected for that Trunking System.



WARNING: A Dynamic Regrouping configuration is only valid when one of the Trunking Personalities referenced to a channel has its Trunking Talkgroup field set to **DYN** (Dynamic Regrouping), and that Personality's selected Zone and Channel match the selections for Dynamic Regrouping Zone and Dynamic Regrouping Channel in the Personalities' referenced Trunking System.



IMPORTANT: Therefore, only one channel (within a given Trunking System) can be the Dynamic Regrouping channel.

You may request a new Dynamic Regrouping assignment from the dispatcher with a Reprogram Request button-press or a Reprogram Request menu-selection. The actual features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher.

For the Dynamic Regrouping talkgroup to be capable of transmitting in Secure mode, the Secure Tx Select button-press or the Secure Tx Select switch-toggle or the Secure menu-selection is needed; otherwise Dynamic Regrouping talkgroup transmissions are strapped to transmitting in **Clear** mode.

Accessed Only: When the [Dynamic Regrouping Enable on page 1212](#) field is set to **Enabled**, and when the Dynamic Regrouping Zone field is not set to a Dynamic Zone, and when the radio is model/option capable.

4.38.6.18

Group Text Messaging Service

This field selects the Group Text Messaging Service mode for the current ASTRO25 Trunking System.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

The following selections are supported:

Disabled

Group Text Message will not be received.

Full Decode

Group Text Message will be received.

4.38.6.19

OTA Radio Alias Type

This field configures the encoding (transmitting) and decoding (receiving) of the Over the Air (OTA) Radio Alias feature.



WARNING: Radio cannot display alias if the radio receives duplicated IDs until the duplication is removed. Writing the application's codeplug to a radio will cause the call list to return to its original state and all OTA alias updates will be lost.



IMPORTANT: If OTA alias update did not show up on the display, you must update the radio call list or provisioning manager.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Disabled

The radio does not transmit or receive the Radio Alias data.

Decode Only

Radio Alias data receives the data without limitation.

4.38.6.20

Personnel Accountability List Selection

This field allows you to select a personnel accountability list to be used while operating Trunking System.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

The following selections are supported:

- Disabled
- Available Personnel Accountability

4.38.6.21

Location on PTT

ASTRO 25 system enables APX radios to transmit the GPS location to infrastructure through voice frames on the voice channel after PTT operation.

This allows the transmitting radio's location to be seen on the mapping application.



WARNING: ARS Mode must be set as **Enhanced Server** in the Data Profile record to prevent invalid Fields Report.



NOTE: The location on PTT transmits the location information unencrypted.

Accessed Only: When the radio is model/option capable, and when the System Type field is set to **ASTRO 25**, and when the ARS Mode is **Enhanced Server** in its Data Profile, and when the [Location Enable on page 365](#) field is enabled.

4.38.6.22

OTA Radio Alias Update Enable

This field allows the current system to update the radio alias.

Accessed Only: When [Radio Alias Enable on page 333](#) is enabled, and System Type is **ASTRO 25**, and [OTA Radio Alias Type on page 1215](#) field is not **Disabled** and when the radio is model/option capable.

4.38.6.23

Enable Intermediate Hunt

When this field is enabled, your radio uses a list of frequencies while searching for a valid control channel and a list of control channel frequencies in the Trunking System of the codeplug configuration. The list is populated with the codeplug-provisioned control channel frequencies and frequencies that the radio learns through Over-The-Air (OTA) events. Some examples of frequencies through OTA events are the adjacent site frequency broadcasts, backup control channel frequency broadcasts, and frequencies found using full spectrum scan. The radio manages the intermediate hunt list by prioritizing control channels that have higher activities.

If this field is disabled, the radio uses only the list of control channel frequencies in the Trunking System from the codeplug configuration as listed while searching for a valid control channel.



NOTE: This field can only be enabled for ASTRO 25 system types.

Accessed Only: On portable and mobile radios that are microcontroller based..

4.38.7

Message Alias

This section allows you to view or define Message functionality for individual Trunking Systems.

You are then able to select and transmit these Messages. Messages can be sent from a dispatcher unit to a portable or mobile unit, or from a portable or mobile unit to a dispatcher unit. However, a Message may not be sent from a portable or mobile unit to a portable or mobile unit.



WARNING:

This feature applies only when the [Type II Trunking Personality](#) that references this Trunking System has its Message Enable field enabled.

Each Message Alias must be set up identically (or with the same meaning) for the dispatcher and the portable or mobile units. That is, the Message 1 Alias from the dispatching unit must be identical (or have the same meaning) as the Message 1 Alias for the portable or mobile unit.



NOTE:

A Message transmission makes more efficient use of a channel as compared to a voice transmission.

Messages are only applicable to display models.

Accessed Only: When [Message Alias Enable on page 1217](#) field is enabled, and when the System Type field is set to **Type II**, and when the radio is model/option capable.

4.38.7.1

Message Alias Enable

This field enables the ability to define Messages for the current Trunking System.



WARNING:

This feature applies only when the [Type II Trunking Personality](#) that references this Trunking System has its Message Enable field enabled.

Once enabled, you must then set up each radio Message Alias (Message Alias Name and Message Alias Number of the same record/row) to match identically (or have the same meaning) as the corresponding dispatcher unit Message Alias.

Once defined, you can access the Message feature with a [Message on page 488](#) button-press, a Direct Message button-press, or a [Message on page 532](#) menu-selection.

Accessed Only: When the System Type field is set to **Type II**, and when the radio is model/option capable.

4.38.7.2

Message Alias Number

This field selects a number that identifies the current Message.

This selection applies for the current message (record/row) which applies for the current Trunking System.



WARNING:

This feature applies only when the Trunking Personality that references this Trunking System has its [Message Enable on page 1262](#) field enabled.

Once defined, you can access the Message feature with a Message button-press, a Direct Message button-press, or a Message menu-selection.

Accessed Only: When [Message Alias Enable](#) field is enabled, and when the System Type field is set to **Type II**, and when the radio is model/option capable.

4.38.7.3

Message Alias Text

This field allows you to define recognizable names for the current Message (record/row).

This selection applies for the current Trunking System.



WARNING:

This feature applies only when the Trunking Personality that references this Trunking System has its [Message Enable on page 1262](#) field enabled.

Once defined, you can access the Message feature with a Message button-press, a Direct Message button-press, or a Message menu-selection.



NOTE: The Message Alias must be set up identically (or with the same meaning) for the dispatcher and the portable or mobile units. That is, the Message 1 Alias from the dispatching unit must be identical (or have the same meaning) as the Message 1 Alias for the portable or mobile unit.

Accessed Only: When [Message Alias Enable](#) field is enabled, and when the System Type field is set to **Type II**, and when the radio is model/option capable.



NOTE:

Examples: MESSAGE-01, Electric1, #510

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.38.8

Status Alias

This section allows you to view or define Statuses for individual Trunking Systems.

Users are then able to select and transmit their current Status to a dispatcher (base unit) with a Status button-press, a Direct Status button-press, or a Status menu-selection.



NOTE:

Status transmissions make more efficient use of a channel as compared to a voice transmission.

For non-keypad models this feature can be used only with the One Touch Button Feature.



WARNING:

This feature applies only when the Trunking Personality that references this Trunking System has its Status Enable field enabled.

Each Status Alias must be set up identically (or with the same meaning) for the dispatcher and the portable or mobile units. That is, the Status 1 Alias from the dispatching unit must be identical (or have the same meaning) as the Status 1 Alias for the portable or mobile unit.

Accessed Only: When the radio is model/option capable.

4.38.8.1

Status Alias Enable

This field enables the ability to define Status for the current Trunking System.



WARNING:

This feature applies only when the Trunking Personality that references this Trunking System has its Status Enable field enabled.

Once enabled, you must then set up each radio Status Alias (Status Alias Name and Status Alias Number of the same record/row) to match identically or have the same meaning as the corresponding dispatcher unit Status Alias.

Once defined, you can access the Status feature with a Status button-press, a Direct Status button-press, or a Status menu-selection.

For non-keypad models, the Status feature can be used only with the One Touch Button feature.

Accessed Only: When the radio is model/option capable.

4.38.8.2

Status Alias Number

This field selects a number that identifies the current Status.

This selection applies for the current Status (record/row) which applies for the current trunking system.



WARNING:

- This feature applies only when the trunking personality that references this trunking system has its Status Enable field enabled.
- Once defined, you can access the status feature with a status button-press, a direct status button-press, or a status menu-selection.



IMPORTANT: The Status Alias must be set up identically (or with the same meaning) for the dispatcher and the portable or mobile units. That is, the Status 1 Alias from the dispatching unit must be identical (or have the same meaning) as the Status 1 Alias for the portable or mobile unit.

Accessed Only: When [Status Alias Enable on page 1218](#) field is enabled, and when the radio is model/option capable.

4.38.8.3

Status Alias Text

This field allows you to define recognizable names for the current Status (record/row).

This selection applies for the current trunking system.



NOTE:

- This feature applies only when the Trunking Personality that references this Trunking System has its Status Enable field enabled.
- Once defined, you can access the Status feature with a Status button-press, a Direct Status button-press, or a Status menu-selection.



IMPORTANT: The Status Alias must be set up identically (or with the same meaning) for the dispatcher and the portable or mobile units. That is, the Status 1 Alias from the dispatching unit must be identical (or have the same meaning) as the Status 1 Alias for the portable or mobile unit.

Accessed Only: When [Status Alias Enable on page 1218](#) field is enabled, and when the radio is model/option capable.



NOTE:

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

Examples: STATUS-01, Electric1, #510

4.38.9

Type II Channel Setup

This section allows you to view or define features specific to the Type II Trunking System.



IMPORTANT: Individual Trunking Systems are referenced to a Trunking Personality. These Trunking Systems settings can then become functional for all channel types within that [Type II Trunking Personality](#).

Accessed Only: When the System Type field is set to **Type II**, and when the radio is model/option capable.

4.38.9.1

Splinter Channel

This field enables Splinter Channel operation for supporting Trunking Systems that operate as a "splinter system" (800 MHz only).



NOTE: In this case, Control channel frequencies and Failsafe frequencies operate using "splinter channels" which are in between the "normal" frequencies of the 800 MHz band plan, and are hence shifted down 12.5 kHz. The radio then interprets the channel numbers received over the air as splinter channels. This feature applies to the current Trunking System.

Accessed Only: When the radio is operating within the 800 MHz frequencies band, and when a Software System Key File or an Advanced System Key with access has been selected in the System ID field, and when the System Type field is set to **Type II**, and when the radio is model/option capable.

4.38.9.2

Shuffled Band Plan

This field enables the radio's ability to purposely render obscure channel numbers for the current Trunking System.

This is intended to lock out unauthorized radios from the in-the-field Trunking Systems.

Accessed Only: When the System Type field is set to **Type II**, and when the radio is model/option capable.

4.38.9.3

Legacy Transit System

This field enabling this feature restricts the use of the current Trunking System to the legacy frequency format for compatibility with legacy transit systems.



WARNING: DO NOT MODIFY this feature unless explicitly instructed by a Motorola Solutions Field Technical Representative.

Accessed Only: When the System Type field is set to **Type II**, and when the radio is model/option capable.

4.38.9.4

Channel Bandwidth

This field selects the Channel Bandwidth for the current Trunking System.

For the 800 MHz domestic trunked system configuration, this field is the designated 806 Channel Bandwidth; that is, this selection specifies the Channel Bandwidth of the frequencies in the range of 806 MHz–821 MHz.



IMPORTANT:

The bandwidth for the frequencies in the range 821 MHz to 824 MHz are set in the [NPSPAC Channel Bandwidth on page 1221](#) field.

When **12.5 kHz** is selected and when a group's Voice and Signal Type is set to **Analog**, the [AG Secure/Clear Strapping on page 1247](#) field and the Talkgroup Secure/Clear Strapping fields are forced to **Clear**.

Accessed Only: When the System Type field is set to **Type II**, and when the radio is not operating within the 900 MHz frequency band, and when an Advanced System Key with access has been selected in the System ID field, and when the radio is model/option capable.

The following selections are supported:

25.0 kHz
20.0 kHz



WARNING:

20.0 kHz and 25.0 kHz are invalid if the following scenario is true:

When the 12.5 kHz FCC Narrowbanding Mandate applies for this codeplug, and

when the Trunking System, [Type II Frequency Band on page 1189](#) is Other Band Trunking (OBT), and

when any of the records/rows on the OBT Channel Assignment Page has its: ([Tx Enable on page 1196](#) field **Enabled**, and [Tx Start Frequency on page 1197](#) OR [Tx End Frequency on page 1198](#) falls into one of FCC Requirement ranges).

12.5 kHz

Always available

4.38.9.5

NPSPAC Channel Bandwidth

This field selects the National Public Safety Planning Advisor Committee (NPSPAC) Channel Bandwidth for the current Trunking System.

This selection specifies the Channel Bandwidth of the frequencies in the range of 821 MHz to 824 MHz.



NOTE:

The bandwidth for the frequencies in the range 806 MHz to 821 MHz are set in the [Channel Bandwidth on page 1220](#) field.

When **12.5 kHz** is selected and when a group's Voice and Signal Type is set to **Analog**, the [AG Secure/Clear Strapping on page 1247](#) field and the Talkgroup Secure/Clear Strapping fields are forced to **Clear**.

Accessed Only: When the System Type field is set to **Type II**, and when the radio is operating within the 800 MHz frequency band, and when the radio is model/option capable.

The following selections are supported:

- 20.0 kHz
- 12.5 kHz

4.38.9.6

Channel Assignment Type

This field selects a slight variation in frequency band split (in MHz) and also adjusts channel spacing bandwidth (in kHz).

This selection applies for the current Trunking System.

Accessed Only: When the System Type field is set to **Type II**, and when the radio is operating within the 800 MHz frequency band, and when the radio is model/option capable.

The following selections are supported:

Domestic

25.0 kHz Channel Spacing used in the USA.

International

12.5 kHz Channel Spacing used outside the USA.

4.38.10

Site Alias

This section allows you to view or define user-friendly aliases that identify either Trunking Systems or individual sites within those Systems that a radio may encounter as it roams across sites, Trunking Systems or even Wide Area Communications Networks (WACNs).

Aliases can also identify calls (with PTT IDs) received from radios outside of the radio's selected (home) Trunking System.



IMPORTANT: Only Site Aliases defined in your current-selected Trunking System are available to the radio.



NOTE:

The Site Alias Type determines what the Site Alias Text is being assigned to, either a Trunking System or a site within a System.



IMPORTANT: A Trunking System is always defined by its Home RAS WACN Number and System Number, while a site is defined by specific combinations of its Home RAS WACN Number, System Number, RFSS Alias Number and Site ID, depending on the current Trunking System's Coverage Type and System Type.

Viewing the current Site Alias and its corresponding received signal strength indicator (RSSI), or changing the current site, is activated with a Site Display/Srch button-press. You can activate Site Lock/Unlock button-press or a Site menu-selection can view or change the current site lock status.

Individual Trunking Systems are referenced to a Trunking Personality. These Trunking Systems settings can then become functional for all channel types within that Trunking Personality.

4.38.10.1

Site Alias Enable

This field enables the Site Alias fields for the current Site ID (record/row), which also applies to the current Trunking System.



NOTE:

Viewing the current Site Alias and its corresponding received signal strength indicator (RSSI), or changing the current site, is activated with a Site Display/Srch button-press.

A Site Lock/Unlock button-press or a Site menu-selection can view or change the current site lock status.



NOTE: Automatic Multiple Site Select (AMSS) is not supported in this product.

Accessed Only: When the System Type field is set to **Type II**, and when the [Coverage Type on page 1190](#) field is set to **SmartZone**, and when the radio is model/option capable,

Or when the System Type field is set to **ASTRO 25**, and when the Coverage Type field is not set to **Disabled**, and when the radio is model/option capable.

4.38.10.2

RFSS Alias Number

This field allows you to enter (in decimal format) the RFSS (Radio Frequency Sub-System) number that corresponds to the current Site ID (record/row).

To support roaming between different RFSS's within a Trunking System, each RFSS must have a unique number. An RFSS is made up of one or more sites. This selection also applies the current Trunking System.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the Coverage Type field is set to **SmartZone & OmniLink** or **Intra-WACN Roaming** or **Inter-WACN Roaming**, and when the [Site Alias](#)

[Enable on page 1222](#) field is enabled, and when the [Site Alias Type on page 1223](#) field is set to **Site**, and when the radio is model/option capable.

Table 398: Range

Minimum	Maximum
1	254

4.38.10.3

Site ID

This field allows you to enter (in decimal or hex format) the ID number that identifies the site for the current (record/row).

To support roaming between different sites, each Site ID must be unique within a Radio Frequency Sub-System (RFSS). This selection also applies the current Trunking System.

Accessed Only: When the [Site Alias Enable on page 1222](#) field is enabled, and when the System Type field is set to **Type II**, and when the Coverage Type field is set to **SmartZone**, and when the radio is model/option capable,

Or when the [Site Alias Enable on page 1222](#) field is enabled, and when the [Site Alias Type on page 1223](#) field is set to **Site**, and when the System Type field is set to **ASTRO 25**, and when the Coverage Type field is not set to **Disabled**, and when the radio is model/option capable.

Table 399: Range

Minimum	Maximum
0 (Hex)	FE (Hex)

4.38.10.4

Site Alias Text

This field allows you to define recognizable names for the current Site Alias (record/row) which applies to the current Trunking System.

See also [Site Alias Type on page 1223](#). You can activate the Site Alias Text with Site Display/Srch button-press, Site Lock/Unlock button-press, and the Site menu-selection features.

Accessed Only: When the [Site Alias Enable on page 1222](#) field is enabled, and when the System Type field is set to **Type II**, and when the Coverage Type field is set to **SmartZone**, and when the radio is model/option capable,

Or when the [Site Alias Enable on page 1222](#) field is enabled, and when the System Type field is set to **ASTRO 25**, and when the Coverage Type field is not set to **Disabled**, and when the radio is model/option capable.



NOTE:

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

Examples: EMT-001, #500, Electric1, Site Alias 01

4.38.10.5

Site Alias Type

This field selects the assignment of the Site Alias Text, either to a Trunking System or a site within a System.

You may view the radio's current site alias or system alias with the Site Display/Srch button-press. This selection applies for the current site alias (record/row) which applies for the current Trunking System.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the Coverage Type is not set to **Disabled**, and when the [Site Alias Enable on page 1222](#) field is enabled, and when the radio is model/option capable,

The following selections are supported:

Site

The is used as a "Site alias" for the radio's currently registered site. The Trunking System's Coverage Type selection determines how a site must be defined for site aliasing.

- For **SmartZone**, only the Site ID is needed.
- For **SmartZone & OmniLink**, the RFSS Alias Number and Site ID are needed.
- For **Intra-WACN Roaming**, the System Number, RFSS Alias Number, and Site ID are needed.
- For **Inter-WACN Roaming**, the System Number, RFSS Alias Number, Site ID and Home RAS WACN Number are needed.

System

The [Site Alias Text on page 1223](#) is used as a system alias for the radio's currently registered foreign Trunking System. System aliases are defined by their Home RAS WACN Number and System Number. Only the Trunking System Coverage Type of **Inter-WACN Roaming** is possible for the System Alias Type. System Aliases are used to create a PTT-ID or a site alias:

- When the radio receives a call from a foreign radio, and a site alias for the site in the specified Trunking System is not defined, then this system alias and the Unit ID appears in the receiving radio's display, identifying the calling radio. If a system alias is not defined, the entire Subscriber Unit ID (SUID) of the foreign radio appears in the receiving radio's display; the SUID is a combination of the Home WACN ID, System ID and Unit ID.
- If the radio has roamed to a foreign Trunking System where no site alias is available for the current site, then this system alias, the Site ID and its corresponding received signal strength indicator (RSSI) level appears in the radio's display when you initiates a Site Display/Srch button-press. If a system alias is not defined for the currently registered foreign system, then the entire site ID (Home RAS WACN Number + System Number + Site ID + RSSI level) appears in the radio's display.

4.38.10.6

System Number

This field allows you to enter (in decimal or hex format) the System ID that corresponds to the current Site ID (record/row).

To support roaming between different trunking systems composing Wide Area Communications Networks (WACNs). Each trunking system must have a unique System ID. A trunking system is made up of one or more Radio Frequency Sub-Systems (RFSS). This selection also applies the current trunking system.

Accessed Only: When the radio is model/option capable, and when the [Site Alias Enable on page 1222](#) field is enabled, and when the System Type field is set to **ASTRO 25**,

And when the Coverage Type field is set to **Intra-WACN Roaming** or **Inter-WACN Roaming**, and when the [Site Alias Type on page 1223](#) field is set to **Site**,

Or when the Coverage Type field is not set to **Disabled**, and when the [Site Alias Type on page 1223](#) field is set to **System**.

Table 400: Range

Minimum	Maximum
000 (Hex)	FFE (Hex)

 **IMPORTANT:** A value of "0" causes the radio to copy the value of the System ID field for the current trunking system to this field.

4.38.10.7

Home RAS WACN Number

This field allows you to enter (in decimal or hex format) the Home Remote Access Server (RAS) Wide Area Communications Networks (WACN) ID that corresponds to the current Site ID (record/row).

To support roaming between different WACNs (see also Inter-WACN Roaming), each WACN must have a unique number. A WACN is made up of one or more Trunking Systems. This selection also applies for the current Trunking System.

Accessed Only: When the radio is model/option capable, and when the [Site Alias Enable on page 1222](#) field is enabled, when the System Type field is set to **ASTRO 25**, and

And when the Coverage Type field is set to **Inter-WACN Roaming**, and when the [Site Alias Type on page 1223](#) field is set to **Site**,

Or when the Coverage Type field is not set to **Disabled**, and when the [Site Alias Type on page 1223](#) field is set to **System**.

Table 401: Range

Minimum	Maximum
00000 (Hex)	FFFFE (Hex)

 **IMPORTANT:** Factory Default = 1. A value of "0" causes the radio to copy the value of the Home WACN ID field for the current Trunking System to this field.

4.38.11

Digital

This section allows you to view or define digital communication functionality.

 **NOTE:** Individual Trunking Systems are referenced to a Trunking Personality. These Trunking Systems settings can then become functional for all channel types within that Trunking Personality.

4.38.11.1

Adaptive Power

This field enables the radio to automatically adjust its transmitter power level on the voice channel, not on the control channel, based on the signal strength of the Auto Power Adaptation Link Control (APA LC) information received over the air.

If the signal strength is better than the acceptable threshold, the radio transmits in mid power instead of high power. This selection applies for the current Trunking System.

 **NOTE:** If you press the PTT button a second time within 30 seconds when APA is enabled for F2 TDMA secure mode, the radio transmits on medium power if the current power level is set to high. If the time exceeds 30 seconds, the power level remains high.

Accessed Only: When the [TX Power Level on page 1211](#) Tx Power Level field is not set to **Low**, and when the radio is model/option capable.

4.38.11.2

High Deviation Tx

This field enables the radio to transmit ASTRO voice and/or data with increased deviation.

A high transmit deviation is only necessary if the radio is to be used in vehicles or applications which subject the unit to a speed in excess of 160 mph (approx. 257 km/h). This feature applies for the current Trunking System.

 **WARNING:** Do not enable this field unless the physical radio system has been similarly configured and increased transmit deviation has been identified as necessary. Enabling this parameter indiscriminately may result in severe degradation of radio performance.

Accessed Only: When the System Type field is set to **Type II**, and when the radio is model/option capable.

4.38.11.3

Preamble Length

This field selects a number that determines the amount of time that bit sync preamble packets are sent at the beginning of all ASTRO 25 Voice Channel transmissions for the current Trunking System.

These packets allow transmitting and receiving radios to synchronize with each other before an ASTRO 25 transmission.



NOTE: The Preamble duration is equal to this Preamble Length value multiplied by 0.2083 ms.

Accessed Only: When the radio is model/option capable.

Table 402: Range

Minimum	Maximum
0	255

4.38.11.4

Digital Modulator Type

This field selects the Digital Modulator Type for the current Trunking System.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

C4FM (Factory Default for Type II Trunking)

Continuous 4-Level Frequency Modulation for non-simulcast operation.

CQPSK (Factory Default for ASTRO 25 Trunking)

Compatible Quadrature Phase Shift Keying for narrowband simulcast operation and non-simulcast operation.



IMPORTANT: This selection is only available to radio models equipped with Common Air Interface (CAI) Digital Operation.

WIDE

Wideband simulcast operation.



IMPORTANT: This selection cannot be chosen if a Channel Bandwidth of 12.5 kHz is selected.

4.38.11.5

TDMA Frame Sync BER Threshold

This field selects the maximum allowable Time Division Multiple Access (TDMA) Bit Error Rate (BER) tolerated by a radio on an X2 or Phase 2 TDMA voice channel.



NOTE: The TDMA BER is calculated during the frame sync portion of a TDMA voice transmission. If a BER greater than this maximum is detected, the radio attempts to switch to a better site when available. This selection applies for the current Trunking System.

Accessed Only: When the System Type field is set to **ASTRO 25**, and when the [Phase 2 Voice Capable on page 1204](#) field is **Enabled** and when the radio is model/option capable.

Table 403: Range

Minimum	Maximum	Increments
Disabled	25.4%	0.1%

4.38.11.6

FDMA Frame Sync/NID BER Threshold

This field selects the maximum allowable Frequency Division Multiple Access (FDMA) Frame Sync/Network ID (NID) Bit Error Rate (BER) tolerated by a radio on a Trunking site.

This maximum applies to both the control channel and the voice channel. If a BER greater than this maximum is detected, the radio attempts to switch to a better site when available. This selection applies for the current Trunking System.

Accessed Only: When the [Coverage Type on page 1190](#) field is not set to **Disabled**, and when the radio is model/option capable.

Table 404: Range

Minimum	Maximum	Increments
Disabled	25.4%	0.1%

4.38.12

Secure/Multikey

This section allows you to view or define security and multikey functionality for secure-encoded transmit and receive communications.

This functionality can be customized on a per Trunking System basis.



NOTE: Individual Trunking Systems are referenced to a Trunking Personality. These Trunking Systems settings can then become functional for all channel types within that Trunking Personality.

4.38.12.1

DES-XL Tx/Rx Default

This field enables only digital Data Encryption Standard - Extended Range (DES-XL) to be used for all secure encrypted voice calls.

DES-XL is a Type 3 encryption standard (mid-level). This selection applies for the current Trunking System.

When disabled, only digital Data Encryption Standard - Output Feedback (DES-OFB) is used for all secure encrypted voice calls. DES-OFB is a Type 3 encryption standard (mid-level).



WARNING: This feature only applies when the radio is equipped with a DES-XL/DES-OFB dual algorithm encryption module.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, and when the radio is model/option capable.

4.38.12.2

Private Call Key Select

This field selects the secure encryption key to be used for Private Call while operating in secure encrypted mode.

This selection applies for the current Trunking System. When the ASTRO OTAR Profile Index field for the current Trunking System is set to **Enabled**, the value for this field is selected from the Secure Encryption Key Reference List.



IMPORTANT: The application points to the Keys of the Encryption Key List for this selection. Individual Keys from the Secure Encryption Key References List reference the keys of the Encryption Key List from the Encryption Key References field. Therefore, keys must be defined in the Secure Encryption Key References List before the keys are available for selection. Keys taken from OTAR Profile with Independent Key List field enabled are available.

When the ASTRO OTAR Profile Index field for the current Trunking system is **Disabled**, the value for this field is selected from the Encryption Key List within the Secure Wide window.

Accessed Only: When the radio is model/option capable, and when the [Secure Operation on page 880](#) field is set to **Hardware**,

Or when the [Secure Operation on page 880](#) field is set to **Software**, and when the System Type field is set to **ASTRO 25**, and when the Private Secure/Clear Strapping field is not set to **Hardware**

4.38.12.3

OTAR Tx

This field enables the radio to transmit ASTRO Over-The-Air-Rekeying (OTAR) information for the current Trunking System.

OTAR transmissions include: Rekey Requests and Delayed Acks.



WARNING: Your ability to initiate Rekey Requests must be programmed.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled, and

when the OTAR Operation field is set to **ASTRO Only** or **ASTRO & MDC**, and

when the System Type field is set to **ASTRO 25**, and

when the ASTRO OTAR Profile Index field is enabled, and

when the current Trunking System has a referenced Data Profile, and

when the radio is model/option capable.

4.38.12.4

Interconnect Key Select

This field selects the secure encryption key to be used for an Interconnect call (phone mode) while operating in secure encrypted mode.

This selection applies for the current Trunking System.



IMPORTANT:

When the ASTRO OTAR Profile Index field is **Enabled** for the current Trunking System, this Key Select value is chosen from the Secure Encryption Key References List of the ASTRO OTAR Profile selected in the ASTRO OTAR Profile Index field for the current Trunking System.



WARNING: Be aware that it is actually pointing to the Keys of the Encryption Key List for this selection; individual Keys from the Secure Encryption Key References List reference the Encryption Key List's Keys from the Hardware Key Reference field. Therefore any key selected when ASTRO OTAR Profile Index is enabled must first be defined in the Secure Encryption Key References List. Keys taken from OTAR Profile with Independent Key List field enabled are available.

The application points to the Keys of the Encryption Key List for this selection. Individual Keys from the Secure Encryption Key References List reference the keys of the Encryption Key List from the Encryption Key References field. Therefore, keys must be defined in the Secure Encryption Key References List before the keys are available for selection.

When the ASTRO OTAR Profile Index field for the current Trunking system is **Disabled**, the value for this field is selected from the Encryption Key List within the Secure Wide window.

Accessed Only: When the radio is model/option capable, and when the [Secure Operation on page 880](#) field is set to **Hardware**,

Or when the [Secure Operation on page 880](#) field is set to **Software**, and when the System Type field is set to **ASTRO 25**, and when the Interconnect Secure/Clear Strapping field is not set to **Hardware**

4.38.12.5

ASTRO OTAR Profile Index

This field selects the Secure Key Management Facility (KMF) Profile to be used while operating in ASTRO OTAR mode.

This selection applies for the current Trunking System. All ASTRO OTAR parameters specified in the selected KMF profile then apply for the current Trunking System.



WARNING:

This field is invalid when this system references a Data Profile having a Data Profile Type of **Trunking**, **Trunking & Broadband** or **Broadband Only**, and when the KMF IP Address field is set to 0.0.0.0.

Be aware that it is actually pointing to the Keys of the Encryption Key List for this selection; individual Keys from the Secure Hardware Encryption Key References List reference the Encryption Key List's Keys from the Hardware Key Reference field. Therefore any key selected when ASTRO OTAR is enabled, must first be defined in the Secure Hardware Encryption Key References List.



IMPORTANT:

When the **ASTRO OTAR Profile Index** field is **Disabled** for the current Trunking System, Hardware Key Select values are directly chosen from the Secure Wide Window's Encryption Key List.

When the **ASTRO OTAR Profile Index** is selected for the current Trunking System, Hardware Key Select values for this System use the Secure Hardware Encryption Key References List of the Secure KMF Profile selected in this [ASTRO OTAR Profile Index on page 1229](#) field for the current Trunking System.

Accessed Only: This field can be accessed when the following conditions are met:

- The [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.
- [Advanced Encrypted Standard \(AES256\) on page 882](#) is enabled.
- The OTAR Operation field is set to **ASTRO Only** or **ASTRO & MDC**.
- The System Type is **ASTRO 25**.

- The current Trunking System has a referenced Data Profile.
- The radio is model/option capable.

The following selections are supported:

- **Disabled**
- **ASTRO OTAR Profiles**

4.38.12.6

System Wide Key Select

This field selects the secure encryption key to be used for a System Wide call while operating in secure encrypted mode.

This selection applies for the current Trunking System.



IMPORTANT:

When the [ASTRO OTAR](#) field is **Enabled** for the current Trunking System, this Key Select value is chosen from the Secure Hardware Encryption Key References List of the Secure KMF Profile selected in the [ASTRO OTAR Profile Index on page 1229](#) field for the current Trunking System.



WARNING: Be aware that the RM is actually pointing to the Keys of the Encryption Key List for this selection; individual Keys from the Secure Hardware Encryption Key References List reference the Encryption Key List's Keys from the Encryption Key Reference field. Therefore any key selected when ASTRO OTAR is enabled must first be defined in the Secure Hardware Encryption Key References List.

When the ASTRO OTAR field is **Disabled** for the current Trunking System, this Key Select value is directly chosen from the Secure Wide Window's Encryption Key List.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, and when the radio is model/option capable.

4.38.12.7

Patch Key Select

This field selects the secure encryption key to be used during Patch Talkgroup communications while operating in secure encrypted mode. This field is also referred to as the SuperGroup Call Secure Key in infrastructure.

Patch Talkgroups allow a dispatcher to join multiple talkgroups or users together so that all may communicate as one talkgroup. This selection applies for the current Trunking System.



IMPORTANT:

When the [ASTRO OTAR](#) field is **Enabled** for the current Trunking System, this Key Select value is chosen from the Secure Hardware Encryption Key References List of the Secure KMF Profile selected in the [ASTRO OTAR Profile Index on page 1229](#) field for the current Trunking System.



WARNING: Be aware that it is actually pointing to the Keys of the Encryption Key List for this selection; individual Keys from the Secure Hardware Encryption Key References List reference the Encryption Key List's Keys from the Encryption Key Reference field. Therefore any key selected when ASTRO OTAR is enabled, must first be defined in the Secure Hardware Encryption Key References List.

When this ASTRO OTAR field is **Disabled** for the current Trunking System, Hardware Key Select values are directly chosen from Encryption Key List from the Secure Wide window.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware**, and when the radio is model/option capable,

Or when the [Secure Operation on page 880](#) field is set to **Software**, and when the System Type field is set to **ASTRO 25**, and when the radio is model/option capable.

4.38.12.8

Dynamic Talkgroup Key Select

This field selects the secure encryption key to be used for a Dynamic Regrouping (Dynamic Talkgroup) while operating in secure encrypted mode.

This selection applies for the current Trunking System.



IMPORTANT:

When the [ASTRO OTAR](#) field is **Enabled** for the current Trunking System, this Key Select value is chosen from the Secure Hardware Encryption Key References List of the Secure KMF Profile selected in the [ASTRO OTAR Profile Index on page 1229](#) field for the current Trunking System.



WARNING: Be aware that it is actually pointing to the Keys of the Encryption Key List for this selection; individual Keys from the Secure Hardware Encryption Key References List reference the Encryption Key List's Keys from the Encryption Key Reference field. Therefore any key selected when ASTRO OTAR is enabled must first be defined in the Secure Hardware Encryption Key References List.

When the ASTRO OTAR field is **Disabled** for the current Trunking System, this Key Select value is directly chosen from the Secure Wide Window's Encryption Key List.

Accessed Only: When the radio is model/option capable, when the [Dynamic Regrouping Enable on page 1212](#) field is **Enabled**, and when the Secure Operation field is set to **Hardware**,

Or when the [Secure Operation on page 880](#) field is set to **Software**, and when the System Type field is set to **ASTRO 25**, and when the Dynamic Regrouping Secure/Clear Strapping field is not set to **Hardware**

4.38.12.9

Failsoft Key Select

This field selects the secure encryption key to be used for failsoft mode while operating in secure encrypted mode.

This selection applies for the current Trunking System.



IMPORTANT:

When the [ASTRO OTAR](#) field is **Enabled** for the current Trunking System, this Key Select value is chosen from the Secure Hardware Encryption Key References List of the Secure KMF Profile selected in the [ASTRO OTAR Profile Index on page 1229](#) field for the current Trunking System.



WARNING: Be aware that it is actually pointing to the Keys of the Encryption Key List for this selection; individual Keys from the Secure Hardware Encryption Key References List reference the Encryption Key List's Keys from the Hardware Key Reference field. Therefore any key selected when ASTRO OTAR is enabled must first be defined in the Secure Hardware Encryption Key References List.

When the ASTRO OTAR field is **Disabled** for the current Trunking System, this Key Select value is directly chosen from the Secure Wide Window's Encryption Key List.

Accessed Only: When the radio is model/option capable, and when the [Secure Operation on page 880](#) field is set to **Hardware**,

Or when the [Secure Operation on page 880](#) field is set to **Software**, and when the System Type field is set to **ASTRO 25**, and when the Failsoft Secure/Clear Strapping field is not set to **Clear**

4.38.12.10

Dynamic AG Key Select

This field selects the secure encryption key to be used for a Dynamic Announcement Grouping while operating in secure encrypted mode.

This selection applies for the current Trunking System.



IMPORTANT:

When the [ASTRO OTAR](#) field is **Enabled** for the current Trunking System, this Key Select value is chosen from the [Secure Hardware Encryption Key References List](#) of the Secure KMF Profile Set selected in the [ASTRO OTAR Profile Index on page 1229](#) field for the current Trunking System.



WARNING: Be aware that it is actually pointing to the Keys of the [Encryption Key List on page 896](#) for this selection; individual Keys from the [Secure Hardware Encryption Key References List](#) reference the Encryption Key List's Keys from the [Encryption Key Reference on page 915](#) field. Therefore any key selected when ASTRO OTAR is enabled must first be defined in the Secure Hardware Encryption Key References.

When the ASTRO OTAR field is **Disabled** for the current Trunking System, this Key Select value is directly chosen from the Secure Wide Window's Encryption Key List.

Accessed Only: When the [Dynamic Regrouping Enable on page 1212](#) field is enabled, and when the [Secure Operation on page 880](#) field is set to **Hardware**, and when the System Type field is set to **Type II**, and when the Dynamic Regrouping Secure/Clear Strapping field is set to **Type II**, and when the radio is model/option capable.

4.38.12.11

Failsoft Secure/Clear Strapping

This field selects the strapping type used for Failsoft.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

- Select
- Clear
- Secure

4.38.12.12

Auto Key ID Rx

This field allows the radio to unmute Key ID (KID) and Algorithm ID (ALGID) received Over the Air (OTA) and Talkback using the OTA KID and ALGID during the configured Rx or Tx Key ID Hang Time.



NOTE: Receiving another call with a different Mismatch Key during either [Key ID - Rx Hang Time on page 890](#) or [Keyset ID - Tx Hang Time on page 891](#) overwrites the previously Mismatch Key with the new Key.

Accessed Only: When the [Secure Operation on page 880](#) field is not **Disabled**, and when the System Type field is set to "ASTRO 25", and the radio is model/option capable.

4.38.12.13

Interconnect Secure/Clear Strapping

This field selects the strapping type used for Interconnect.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

- Select
- Clear
- Secure

4.38.12.14

Private Call Secure/Clear Strapping

This field selects the strapping type used for Private Call.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

- Select
- Clear
- Secure

4.38.12.15

Dynamic Regrouping Secure/Clear Strapping

This field selects the strapping type used for Dynamic Regrouping.

When the radio is model/option capable.

The following selections are supported:

- Select
- Clear
- Secure

4.38.12.16

Secure/Clear Strapping

This field selects secure encryption or no secure encryption for Packet Data being transmitted and received.

Secure encrypted Packet Data is transmitted within the Network Layer (Layer Three) of the Open Systems Interconnection (OSI) Seven Layer Model for layered communications. This feature applies for the current Trunking - Data Profiles.

Accessed Only: When [Secure Operation on page 880](#) is set to **Hardware** or **Software**, and when the [Advanced Encrypted Standard \(AES256\) on page 882](#) field is enabled,

And

when the [Data Profile Type on page 982](#) is set to **Trunking** or **Trunking & Broadband**, and the radio is model/option capable.

The following selections are available:

Clear

Straps or commits the Trunking APCO 25 Packet Data transmission to be normal (clear/not encrypted).

Secure

Straps or commits the Trunking APCO 25 Packet Data transmissions to be encrypted.



WARNING: Only valid when the IP Header Compression Enable field is disabled and all DAC Operation Mode - records are not set to **Controlled Channel Access**.

4.38.13

One Touch

This section allows you to view or define specific One Touch **Feature** and **Index** selections for up to four One Touch button-presses or One Touch menu-selections.

One Touch allows you to create menu-navigation and button shortcuts. These shortcuts can greatly reduce your effort involved in launching a radio feature.

A One Touch button-press or menu-selection can reduce down to a single button press, the launching of a radio feature; this same process might otherwise take many menu navigation steps to achieve. These selections apply for the current Trunking System.



NOTE: Individual Trunking Systems are referenced to a Trunking Personality. These Trunking Systems settings can then become functional for all channel types within that Trunking Personality.

4.38.13.1

One Touch Button Feature

This field selects the One Touch Feature for your One Touch button-press or One Touch menu-selection.

This selection applies for the current record/row, which applies for the current Trunking System.



IMPORTANT: Trunking One Touch Button 1, in other words, the first record/row would correspond to a One Touch 1 button-press, and/or a TCH1 or SIG1 menu-selection, and so on.



NOTE: With any of these Feature selections, the One Touch Button Index selection must also be defined.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Disabled

One Touch is not available for the current Button selection.

Phone

The [Phone Operation on page 1259](#) feature is set to **List Only** or **Unlimited** for the referenced Trunking Personality.

Private Call

The [Private Call Type on page 1256](#) is not **Disabled**, and the [Private Call Operation on page 1257](#) field is set to **List Only** or **Unlimited** for the referenced Trunking Personality.

Call Alert

The [Call Alert/Page Operation on page 1258](#) field is set to **List Only** or **Unlimited** for the referenced Trunking Personality.

Status

The [Status Alias Enable on page 1218](#) feature is enabled for the current Trunking System.

Message

The Message feature is enabled for the current Trunking System.



NOTE: The available One Touch Button Feature selections are model/option dependent.

4.38.13.2

One Touch Button Index

This field selects the One Touch Index/List member for your One Touch button-press or One Touch menu-selection, pertaining to the selected One Touch Button Feature.

Index refers to the actual record/row of the list determined by the One Touch Button Feature selection. This selection applies for the current Trunking System.

 **IMPORTANT:** Trunking One Touch Button 1, the first record/row will correspond to a One Touch 1 button-press, and a TCH1 or SIG1 menu-selection.

Accessed Only: When the [One Touch Button Feature on page 1234](#) field for the current record/row is not set to **Disabled**, and when the radio is model/option capable.

The following selections are supported:

Private Call

This Index number correlates to the row number of the Type II, or ASTRO 25 Call Hot List.

 **IMPORTANT:** The [Trunking Call Hot List on page 1259](#) selection determines which Call Hot List is used for the referenced Trunking Personality.

Available to you when the [Private Call Type on page 1256](#) is not **Disabled**, and the [Private Call Operation on page 1257](#) field is set to **List Only** or **Unlimited** for the referenced Trunking Personality.

Call Alert

This Index number correlates to the row number of the Type II, or ASTRO 25 Call Hot List.

 **IMPORTANT:** The Trunking Call Hot List selection which Call Hot List is used for the referenced Trunking Personality.

Available to you when the [Call Alert/Page Operation on page 1258](#) field is set to **List Only** or **Unlimited** for the referenced Trunking Personality.

Phone

This Index number correlates to the row number of the Phone Call Hot List.

Available to you when the [Phone Operation on page 1259](#) feature is set to **List Only** or **Unlimited** for the referenced Trunking Personality.

Status

This Index number correlates to the position/row number of the Status Alias List members.

Available to you when the [Status Alias Enable on page 1218](#) feature is **Enabled** for the current Trunking System.

Message

This Index number correlates to the position/row number of the Message Alias List members.

Available to you when the Message feature is **Enabled** for the current Trunking System.

4.38.13.3

Abbreviated One Touch Alias



The display shows the abbreviated alias text in the menu item to represent the assigned One Touch feature.



NOTE: The abbreviated alias text has a maximum of four characters.

4.39

Trunking Personality

The **Trunking Personality** allows you to create and delete Trunking Personalities, as well as define individual Trunking Personalities.

Trunking and Conventional are the two radio communications modes.



NOTE:

Trunking Systems are referenced to a Trunking Personalities. Trunking System settings can then become functional for all Trunking - channel types.

Once the features of the Trunking Personalities have been uniquely defined, each Personality may then be assigned to the desired position of the radio's channel selector with the Zone Channel Assignment feature.

4.39.1

General

This section allows you to view or define basic functionality for individual Trunking Personalities.



NOTE: Once the features of the Trunking Personalities have been uniquely defined, each Personality can then be assigned to the desired position of the radio's channel selector using the Zone Channel Assignment feature.

4.39.1.1

System

This field selects the programmed Trunking System for the current Trunking Personality.



IMPORTANT:

Only Trunking Systems having a System Type matching the current Personalities' Protocol Type should be selected.

Only Trunking Systems with Software System Key Files or Advanced (Hardware) Keys that have no field or feature protection (unlimited access) can be selected; otherwise this field is marked invalid.

When this field's value is marked invalid, all System Key protected fields in the current Trunking Personality are displayed as read-only.

Accessed Only: When the radio is model/option capable.

4.39.1.2

Rx Failsoft Frequency by Personality

This field selects the Receive (Rx) frequency to be used during SmartNet Failsoft operation for the current Trunking Personality.

This is only true for SmartNet operation (see Coverage Type).



IMPORTANT: For Coverage Type equals **SmartZone** the Personality Failsoft Frequencies are not used. Failsoft is attempted on Control Channels defined in the referenced Trunking System's List of Control Channels.

Accessed Only:

When the referenced Trunking System has a Software System Key File or an Advanced System Key with access selected in the System ID field, and

when the referenced Trunking System's Coverage Type field is set to **Disabled**, and when the Protocol Type field is set to **Type II**, and when the Failsoft Type field is set to **Personality**, and the radio is model/option capable.

4.39.1.3

Protocol Type

This field selects the addressing scheme type for the current Trunking Personality.



IMPORTANT: If this Protocol Type is modified, any previously referenced Trunking Systems (selected in the [System on page 1236](#) field) may have to be re-selected. Trunking System selections require a Protocol Type and a Trunking System, [System Type on page 1190](#) match otherwise an error will occur when saving the codeplug.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Type II

Available when the radio is model/option capable.

ASTRO 25

Available when the radio is model/option capable.

4.39.1.4

Tx Failsoft Frequency by Personality

This field selects the Transmit (Tx) frequency to be used during SmartNet Failsoft operation for the current Trunking Personality.

This is only true for SmartNet operation (see Coverage Type).



IMPORTANT: For Coverage Type equals **SmartZone** the Personality Failsoft Frequencies are not used. Failsoft is attempted on Control Channels defined in the referenced Trunking System's List of Control Channels.

Accessed Only:

When the referenced Trunking System has a Software System Key File or an Advanced System Key with access selected in the System ID field, and

when the referenced Trunking System's Coverage Type field is set to **Disabled**, and when the Protocol Type field is set to **Type II**, and when the Failsoft Type field is set to **Personality**, and the radio is model/option capable.

4.39.1.5

Unit ID

The application retrieves and allows you to view (in decimal or hex format) the ID that uniquely identifies your radio when operating in ASTRO 25 mode or when operating in Type II mode for the current Trunking Personality.



NOTE: The Protocol Type field allows you to select either **ASTRO 25** or **Type II** for the current Trunking Personality.

This Unit ID is defined in the Trunking System, Unit ID field.

Accessed Only: When the radio is model/option capable.

4.39.1.6

Secondary Failsoft by Personality

This field enables the selection of the Secondary Receive (Rx) and Transmit (Tx) frequencies to be used during SmartNet Failsoft operation for the current Trunking Personality.

This is only true for SmartNet operation (see [Coverage Type on page 1190](#)).



IMPORTANT: For [Coverage Type on page 1190](#) equals SmartZone, the Personality Failsft Frequencies are not used. Failsft is attempted on Control Channels defined in the referenced [Trunking System's List of Control Channels on page 1198](#).

Accessed Only: When the referenced Trunking System's [Coverage Type on page 1190](#) field set is to **Disabled**, and when [Protocol Type on page 1237](#) field is set to **Type II**, and when the Failsft Type field is set to **Personality**, and when the radio is model/option capable.

4.39.1.7

System ID

The application retrieves and allows you to view (in decimal or hex format) the Software System Key File or Advanced (Hardware) Key that allows the radio to communicate to a specific in-the-field Trunking System.

This value is selected in the referenced Trunking System's [System ID on page 1274](#) field and therefore applies for the current Trunking Personality.

Accessed Only: When the radio is model/option capable.

4.39.1.8

Secondary Rx Failsft Frequency by Personality

This field selects the Secondary Receive (Rx) frequency to be used during SmartNet Failsft operation for the current Trunking Personality.

This is only true for SmartNet operation (see Coverage Type).



IMPORTANT: For Coverage Type equals SmartZone the Personality Failsft Frequencies are not used. Failsft is attempted on Control Channels defined in the referenced Trunking System's List of Control Channels.

Accessed Only: When the referenced Trunking System's Coverage Type field set is to **Disabled**, and when the Protocol Type field is set to **Type II**, and when the Failsft Type field is set to **Personality**, and the Secondary Failsft field is enabled, and the radio is model/option capable.

4.39.1.9

Trunking Personality Name

This field allows you to define a recognizable name for the current Trunking Personality.



NOTE: Once the features of the Trunking Personalities have been uniquely defined, each Personality may then be assigned to the desired position of the radio's channel selector with the Zone Channel Assignment feature. This name is used to select the current Personality on the Channels Page of that feature.

Accessed Only: When the radio is model/option capable.



NOTE:
Examples: Personality-01, #500, Electric1, # A5

Characters, numbers, spaces, and special characters can be used.

Leading blanks are substituted with underscores in the radio's display.

Leading periods do not appear in the radio's display.

4.39.1.10

Secondary Tx Failsoft Frequency by Personality

This field selects the Secondary Transmit (Tx) frequency to be used during SmartNet Failsoft operation for the current Trunking Personality.

This is only true for SmartNet operation (see [Coverage Type on page 1190](#)).



IMPORTANT: For Coverage Type equals SmartZone, the Personality Failsoft Frequencies are not used. Failsoft is attempted on Control Channels defined in the referenced Trunking System's List of Control Channels.

Accessed Only: When the referenced Trunking System's Coverage Type field set is to **Disabled**, and when the Protocol Type field is set to **Type II**, and when the Failsoft Type field is set to **Personality**, and the Secondary Failsoft field is enabled, and the radio is model/option capable.

4.39.1.11

Time Out Timer

This field selects the amount of time that the radio can continuously transmit for the current Trunking Personality.

When this time is about to expire, the radio sounds an alert tone and automatically stops transmitting. Time is in seconds.

Accessed Only: When the radio is model/option capable.



NOTE: When set to **Infinite**:
No timer used for non-APX4000XH Radios; therefore an infinite talk time.
Invalid for APX4000XH Radios.

4.39.1.12

Advanced RF AGC

This field selects the type of Receive Frequency (RF) Automatic Gain Control (AGC) for the current Trunking Personality.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Disabled

When **Disabled**, the radio uses a basic form of AGC built in to radio's receiver. This built-in protection helps to avoid signal clipping and receiver saturation that may damage radio components.

Standard

Enables an Advanced form of RF AGC, which attempts to protect against intermodulation (IM) interference by detecting and removing any received interference due to external sources.

Enhanced

Enables the radio to use additional schemes to reduce IM interference, which cleans up the signal.

Smart

Enables the radio to use a unique scheme to improve interference immunity when close to Linear Simulcast and APCO phase 2 Base stations. Smart option is mutually exclusive to the Broadband Protection checkbox.



IMPORTANT: **Standard** and **Enhanced** Advanced RF AGC may degrade performance on channels that do not experience any IM interference. Therefore, only enable these selections on channels known to experience IM interference.

4.39.1.13

Emergency Talkback Revert Talkgroup ID

This field selects (in decimal or hex format) the ID for the Revert Talkgroup to be used while operating in emergency mode. Emergency Alarms and Emergency Calls revert and transmit on this Talkgroup.



IMPORTANT: This only applies when the referenced [Trunking Emergency Profile](#) has its [Emergency Talkback](#) field set to **Revert**.



NOTE: "Revert" Emergency Talkback is also known as "Non-Tactical Emergency".

This selection applies to the current [Trunking Personality on page 1235](#).



IMPORTANT: This Revert Talkgroup ID is also used when emergency mode is entered from an Announcement Group or from a Dynamic Regrouping. This is true no matter if the referenced Trunking Emergency Profile has its Emergency Talkback field set to **Tactical** Emergency or **Revert** Non Tactical Emergency.

Accessed Only: When the referenced Trunking System has a Software System Key File or an Advanced System Key with access selected in the [System ID on page 1274](#) field, or an Advanced WACN Key with access selected in the [Home WACN ID on page 1192](#) field, and when the radio is model/option capable.

Table 405: Range

Minimum	Maximum for Protocol Type "Type II"	Maximum for Protocol Type "ASTRO 25"
1 (Hex)	FFE (Hex)	FFFE (Hex)



IMPORTANT: The selection range may be modified on a per Advanced Key basis by the Advanced Keys Administrator program.

4.39.1.14

Emergency Talkback Revert Voice/Signal Type

This field selects the signaling transmit mode while operating in emergency mode for the Emergency Talkback Revert Talkgroup.

This selection applies for the current Trunking Personality.

Accessed Only: Digital is only accessed when the Protocol Type field is set to **Type II**, and the Type II frequency band is not **900 MHz**

The following selections are supported:

Analog

Not possible for ASTRO 25 Trunking

Digital

4.39.1.15

Conversation Type

This field selects the communication mode for the current Trunking Personality.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Message

The system assigns a traffic channel for the duration of a single transmission by one radio. When the radio de-keys, all radio remain on the traffic channel until the traffic channel hang time expires. Once the hang time expires the radios return to the control channel. Any radio involved in the call may key up while it is on the traffic channel without returning to the control channel. Message trunking is available on 3600 baud control channel systems.



WARNING: Message trunking is not compatible with ASTRO 25 Systems.

Transmission

The system assigns a traffic channel for the duration of a single transmission by one radio. When the radio de-keys, the traffic channel is deallocated and all subscribers involved in the call return to the control channel. Any subsequent traffic channel requests are sent in on the control channel by the requesting radio.

PTT ID

The system assigns a traffic channel for the duration of the entire conversation as follows. After a radio de-keys, the voice channel stays active (hang time) during which time the radios stay idle on the voice channel. Any radio responding during this hang time will first key up on the control channel to send a message with the unit's PTT-ID (Unit ID) indicating the radio wants to send audio now for this call; the system then sends a grant message directing the radio back to the same voice channel acting as the new source.

4.39.1.16

Emergency Talkback Revert Secure/Clear Strapping

This field selects the transmit mode while operating in emergency mode for the Emergency Talkback Revert Talkgroup.

This selection applies for the current Trunking Personality.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the Protocol Type field is set to **ASTRO 25**.

The following selections are supported:

Clear

Straps or commits the talkgroup/channel to normal (non-secure) Trunking operation.

Select

Allows you to toggle on or off secure encrypted operation for the current the talkgroup. The Secure Tx Select button-press or the [Secure Tx Select on page 511](#) switch-toggle or the Secure menu-selection allows you to toggle on or off Secure encrypted communications.

Secure

Straps or commits the talkgroup to Secure encrypted operation.

4.39.1.17

Failsoft Type

This field selects the type of Failsoft for the current Trunking Personality.



NOTE: Failsoft offers two-way Conventional Mode operation during Trunking system failure. The Radio automatically returns to the Trunked mode once the Trunking System is restored.

Accessed Only: When the referenced Trunking System has a Software System Key File or an Advanced System Key with access selected in the System ID field, or an Advanced WACN Key with access selected in the Home WACN ID field, and when the radio is model/option capable.

The following selections are supported:

Selections	Definitions	Available to you when	
		Protocol Type Equals	Coverage Type Equals
Disabled	No Failsoft is used.	Any	Any
Personality	<p>When the Coverage Type on page 1190 is Disabled, which is SmartNet, Failsoft uses the Personality Failsoft Frequencies for all Talkgroups within this Trunking personality.</p> <p>When the Coverage Type equals SmartZone the Personality Failsoft Frequencies are not used; instead:</p> <ul style="list-style-type: none"> • When the radio is Site Locked, Failsoft uses the last active control channel. • When the radio is Site Unlocked, Failsoft uses the last active control channel. If Failsoft is still not found, the radio scans the List of Control Channels for Failsoft. 	Type II	Any
Talkgroup	<p>When the Coverage Type is Disabled, which is SmartNet:</p> <ul style="list-style-type: none"> • Failsoft uses the Failsoft Talkgroup Frequencies, or  WARNING: The Talkgroup Failsoft field must be Enabled. • Failsoft may use the Announcement Group Failsoft Frequencies when Failsoft is called from an Announcement Group.  WARNING: The Announcement Group Failsoft on page 1249 field must be Enabled. • If neither of above fields are Enabled, the radio uses the last active control channel. <p>When the Coverage Type equals SmartZone:</p> <ul style="list-style-type: none"> • When the radio is Site Locked and when the Talkgroup Failsoft field is Enabled, Failsoft uses the Failsoft Talkgroup Frequencies; if Failsoft is still not found, Failsoft uses the last active control channel. If the Talkgroup Failsoft field is not Enabled, Failsoft uses the last active control channel. • When the radio is Site Unlocked and when the Talkgroup Failsoft field is Enabled, Failsoft uses the Failsoft Talkgroup Frequencies; if Failsoft is still not found, Failsoft uses the last active control channel. If Failsoft is still not found, the radio scans the List of Control Channels from the referenced Trunking System for Failsoft. If the Talkgroup Failsoft field is not Enabled, Failsoft uses the last active control channel and then may still need to scan the list of Control Channels. 	Any	Any

4.39.1.18

Emergency Talkback Revert Key Select

This field selects the secure encryption key used while operating in emergency mode for the Emergency Talkback Revert Talkgroup.

This selection applies for the current Trunking Personality.



IMPORTANT:

When the [ASTRO OTAR Profile Index on page 1229](#) field is **Enabled** for the referenced Trunking System, this Key Select value is chosen from the Secure Encryption Key References List of the ASTRO OTAR Profile selected in the ASTRO OTAR Profile Index field of the referenced Trunking System.



WARNING: Be aware that the it is actually pointing to the Keys of the Encryption Key List for this selection; individual Keys from the Secure Encryption Key References List reference the Encryption Key List's Keys from the Encryption Key Reference field. Therefore any key selected when ASTRO OTAR Profile Index field is enabled, must first be defined in the Secure Encryption Key References List. Keys taken from OTAR Profile with Independent Key List field enabled are available.

When the ASTRO OTAR Profile Index field is **Disabled** for the referenced Trunking System, this Key Select value is directly chosen from the Secure Wide Window's Encryption Key List.



WARNING:

When there is a match between the normal Talkgroup ID being used by other radios and this radio's Emergency Talkback Revert Talkgroup ID, and...

when there is not a match between the normal Talkgroup Key being used by other radios and this Emergency Revert Talkgroup Key...

The following is true:

- When this radio switches to its Emergency Talkback Revert Talkgroup ID using this key, this radio's emergency transmission is not heard by these other radios.
- However, the emergency transmission may be picked up by scan, even when there is not a key match.

Accessed Only: When the Emergency Talkback [Emergency Talkback Revert Secure/Clear Strapping on page 1241](#) field is set to **Secure** or **Select**, and

When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the Protocol Type field is set to **ASTRO 25**, and when the radio is model/option capable.

4.39.1.19

Transmit Mode

This field selects whether the personality or channel will have full transmit functionality, or will be restricted from transmitting Talkgroup (TG) and Announcement Group (AG) voice communications.

This selection applies for the current Trunking Personality.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Unrestricted

No limits are placed on the transmit functionality.

TG/AG Disabled (Listen-only)

The radio is not able to transmit on the selected TG or AG. See the Trunking Talkgroup field. The radio is able to receive voice transmissions on the channel's selected mode.



WARNING:

Dynamic Regrouping is not compatible with this selection.

This Personality's [Emergency Profile Selection on page 1244](#) must either be set to **Emergency Tx Disabled**, or the selected Profile must have its [Emergency Talkback on page 943](#) field set to **Revert**; otherwise the Emergency Profile field selection is considered invalid.

This Personality's referenced Scan List must not have its [Designated Voice Tx Member Type on page 1311](#) field set to **Selected Channel**, meaning this channel; otherwise the [Scan List Selection on page 1260](#) becomes invalid.

The [Hot Keypad \(DTMF\) on page 1262](#) is not possible with this selection.

4.39.1.20

Emergency System Revert Zone

This field selects a zone to be used for the duration of an emergency mode transmission.

This selection applies for the current Trunking Personality.



NOTE:

Once this zone is selected, the [Emergency System Revert Channel on page 1245](#) may then be selected.

Zones and their channels must be previously defined in the Zone Channel Assignment Window.



WARNING: Only non-Dynamic Zones, zones that have Dynamic Zone Enable **Disabled** can be selected; otherwise, this field becomes invalid.

Accessed Only: When the **Multiple Emergency Revert** Extended Feature appears in the Extended Feature Name field, and when a valid referenced Trunking Emergency Profile is selected for the current Trunking Personality, and when that Trunking Emergency Profile has its [Emergency Talkback on page 943](#) field set to **Revert**, and when the [Emergency Revert Type on page 1245](#) field is set to **System Revert**, and when the radio is model/option capable.

4.39.1.21

Emergency Profile Selection

This field selects the Trunking Emergency Profile to be used with the current Trunking Personality.

You can initiate Emergency mode functionality or launch it with a programmed radio



WARNING: When the [Transmit Mode on page 1243](#) field is set to **TG/AG Disabled** (Listen-only mode) for the current Trunking Personality, this Profile selection must either be **Emergency Tx Disabled**, or the selected Profile must have its [Emergency Talkback on page 943](#) field set to **Revert**; otherwise it considers this selection invalid.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

- Emergency Tx Disabled
- Available Trunking Emergency Profiles

4.39.1.22

Emergency System Revert Channel

This field selects a Trunking or Conventional channel that is used for the duration of an emergency mode transmission.

This selection applies for the current Trunking Personality.



NOTE:

The [Emergency System Revert Zone on page 1244](#) must be selected prior to selecting this channel.

Zones and their channels must be previously defined in the Zone Channel Assignment Window.



WARNING:

This Emergency System Revert Channel selection is only considered valid: when the [Trunking Talkgroup on page 1297](#) field for the selected Trunking Personality/channel is not set to **DYN** or **ATG**, and when the [Receive Only Personality on page 1162](#) field for the selected Conventional Personality/channel is **Disabled**, and when the ASTRO Talkgroup ID field for the selected Conventional Personality/channel is not set to **DYN** or **ATG**, and when the [Transmit Mode on page 1243](#) field for the selected Trunking Personality/channel is not set to **TG/AG Disabled (Listen-only)**, and when the [Emergency Profile Selection on page 1244](#) for the selected channel is not **Emergency TX Disabled**.

Accessed Only: When the **Multiple Emergency Revert** Extended Feature appears in the Extended Feature Name field, and when a referenced Trunking Emergency Profile is selected for the current Trunking Personality, and when that Trunking Emergency Profile has its [Emergency Talkback on page 943](#) field set to **Revert**, and when the [Emergency Revert Type on page 1245](#) field is set to **System Revert**, and when the [Emergency System Revert Zone on page 1244](#) field is not set to a Dynamic Zone, and when the radio is model/option capable.

4.39.1.23

Emergency Revert Type

This field selects the **Non-Tactical** emergency revert type to be used while operating in emergency mode on the current Trunking Personality.

See also [Emergency Talkback on page 943](#).



WARNING: You can initiate Emergency mode functionality or launch it with a programmed radio.

Accessed Only: When the **Multiple Emergency Revert** Extended Feature appears in the Extended Feature Name field, and when a referenced Trunking Emergency Profile is selected for the current Trunking Personality, and when that Trunking Emergency Profile has its Emergency Talkback field set to **Revert**, and when the radio is model/option capable.

The following selections are supported:

Talkgroup Revert

The radio uses the Emergency Talkback Revert Talkgroup ID defined for the current Trunking Personality to transmit Emergency Alarms and/or Emergency Calls.

System Revert

The radio uses the [Emergency System Revert Zone on page 1244](#) and the [Emergency System Revert Channel on page 1245](#) to transmit Emergency Alarms and/or Emergency Calls. Emergency transmissions are also sent to the dispatcher console.



WARNING: Dynamic Regrouping is not compatible with this selection.

4.39.1.24

DVRS Profile

This field selects the DVRS Profile to be used with the current Trunking Personality.

Accessed Only: When the [DVRS Hardware Enable on page 1019](#) field is **Enabled**, and when the radio is model/option capable.

The following selections are supported:

- DVRS Disabled
- Available [DVRS Profiles on page 1021](#)

4.39.1.25

Strict Failsoft by Talkgroup

This field enables strict failsoft by talkgroup (try failsoft TG 1 and TG 2 only during failsoft hunt) if failsoft type is talkgroup.

4.39.2

Announcement Group

This section allows you to view and define Announcement Group parameters of individual Trunking Personalities.

Announcement Groups allows you to initiate and communicate on one large communication channel comprised of all Talkgroups defined for the current Trunking Personality.



NOTE:

An Announcement Group (ATG) must be selected for this Trunking Personality from the [Zones Channel Assignment on page 1283](#) and Channel List Set Trunking Talkgroup field. The ATG selection allows a channel to be specifically designated for Announcement Group purposes.

Once the features of the Trunking Personalities have been uniquely defined, each Personality can then be assigned to the desired position of the radio's channel selector using the Zone Channel Assignment feature.

4.39.2.1

Announcement Group

This field allows you to enter in decimal or hex format, the ID that uniquely defines the Announcement Group for the current Trunking Personality.



NOTE: Announcement Groups allow the radio to initiate and communicate on one large communication channel comprised of all talkgroups defined for the current Trunking Personality.



WARNING:

Announcement Group (ATG) must be selected for this Trunking Personality from the Zone Channel Assignment Channels Page's, [Trunking Talkgroup on page 1297](#) field. The ATG selection allows a channel to be specifically designated for Announcement Group purposes.

The Personality is selected from the Zone Channel Assignment Channels Page's, [Personality on page 1296](#) field.

Accessed Only: When the referenced Trunking System has a Software System Key File or an Advanced System Key with access selected in the [System ID on page 1274](#) field, or an Advanced WACN Key with access selected in the [Home WACN ID on page 1192](#) field, and when the radio is model/option capable.

Table 406: Range

For Protocol Type on page 1237	Disabled	Minimum	Maximum
ASTRO 25	None	0001 (Hex)	FFFE (Hex)
Type II	None	001 (Hex)	FFE (Hex)

 **IMPORTANT:** The selection range may be modified on a per Advanced Key basis by the Advanced Keys Administrator program.

4.39.2.2

AG Failsoft Tx Frequency

This field allows you to enter the Transmit (Tx) frequency to be used during Failsoft operation for the Announcement Group of the current Trunking Personality.

 **WARNING:** The Trunking Frequency Constraints applies to this selection are determined by this Personality's Protocol Type setting and the frequency band of the referenced Trunking System.

Accessed Only: When the referenced Trunking System has a Software System Key File or an Advanced System Key with access selected in the System ID field, or an Advanced WACN Key with access selected in the Home WACN ID field, and when the [Failsoft Type on page 1241](#) field is set to **Talkgroup**, and when the [Announcement Group on page 1246](#) field is not set to **None**, and when the [Announcement Group Failsoft on page 1249](#) field is **Enabled**, and when the radio is model/option capable.

4.39.2.3

AG Voice/Signal Type

This field selects the transmit and receive mode of the Announcement Group for the current Trunking Personality.

Announcement Groups allow the radio to initiate and communicate on one large communication channel comprised of all talkgroups defined for the current Trunking Personality.

Accessed Only: Digital is only accessed when the Protocol Type field is set to **Type II**, and when the Type II Frequency Band is not **900 MHz**, and the Announcement Group field is not set to **None**.

The following selections are supported:

- Analog
- Digital

4.39.2.4

AG Secondary Failsoft

This field enables secondary Failsoft for the Announcement Group of the current Trunking Personality.

Accessed Only: When the [Failsoft Type on page 1241](#) field is set to **Talkgroup**, and when the [Announcement Group on page 1246](#) field is not set to **None**, and when the [Announcement Group Failsoft on page 1249](#) field is **Enabled**, and when the radio is model/option capable.

4.39.2.5

AG Secure/Clear Strapping

This field selects the transmit and the receive mode for the Announcement Group of the current Trunking Personality.

Accessed Only: When the [Announcement Group on page 1246](#) field is not set to **None**, and when the radio is model/option capable,

And

When the [Secure Operation on page 880](#) field must be set to **Hardware**, and when the [AG Voice/Signal Type on page 1247](#) field is set to **Digital**, and when the referenced Trunking System's Channel Bandwidth is not set to **12.5 kHz**,

Or

When the Protocol Type field is set to **ASTRO 25**, and when the [Secure Operation on page 880](#) field must be set to **Hardware** or **Software**.

The following selections are supported:

Clear

Straps or commits the channel to normal (non-secure) Trunking Communications.

Select

Allows you to toggle on or off secure encryption mode.

The Secure Tx Select button-press or the [Secure Tx Select on page 511](#) switch-toggle or the Secure menu-selection must be selected in order for you to toggle on or off Secure encrypted communications.

Secure

Straps or commits the channel to secure encryption mode.

4.39.2.6

AG Secondary F/S Rx Frequency

This field allows you to enter the secondary Receive (Rx) frequency to be used during Failsoft operation for the Announcement Group of the current Trunking Personality.



WARNING: The Trunking Frequency Constraints applies to this selection are determined by this Personality's Protocol Type setting and the frequency band of the referenced Trunking System.

Accessed Only: When the [Failsoft Type on page 1241](#) field is set to **Talkgroup**, and when the [Announcement Group on page 1246](#) field is not set to **None**, and when the [Announcement Group Failsoft on page 1249](#) field is **Enabled**, and when the [AG Secondary Failsoft on page 1247](#) field is **Enabled**, and when the radio is model/option capable.

4.39.2.7

AG Key Select

This field selects the secure encryption key to be used for the Announcement Group of the current Trunking Personality.

This selection applies while operating in secure encrypted mode.



IMPORTANT:

When the [ASTRO OTAR](#) field is **Enabled** for the referenced Trunking System, this Key Select value is chosen from the Secure Encryption Key References List of the ASTRO OTAR Profile selected in the [ASTRO OTAR Profile Index on page 1229](#) field of the referenced Trunking System.



WARNING: Be aware that it is actually pointing to the Keys of the Encryption Key List for this selection; individual Keys from the Secure Encryption Key References List reference the Encryption Key List's Keys from the [Encryption Key Reference on page 915](#) field. Therefore any key selected when ASTRO OTAR Profile is enabled must first be defined in the Secure Encryption Key References List. Keys taken from ASTRO OTAR Profile with Independent Key List field enabled are available.

When the ASTRO OTAR field is **Disabled** for the referenced Trunking System, this Key Select value is directly chosen from the Secure Wide Window's Encryption Key List.

Accessed Only: When the [AG Secure/Clear Strapping on page 1247](#) field is not set to **Clear**, and when the [Announcement Group on page 1246](#) field is not set to **None**, and when the radio is model/option capable,

And

When the [Secure Operation on page 880](#) field is set to **Hardware**, and when the [AG Voice/Signal Type on page 1247](#) field is set to **Digital**,

Or

When the Secure Operation field is set to **Hardware**, and when the AG Voice/Signal Type field is set to **Analog**, and when the referenced Trunking System's Channel Bandwidth is not set to **12.5 kHz**,

Or

when the Protocol Type field is set to **ASTRO 25**, and when the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.

4.39.2.8

AG Secondary F/S Tx Frequency

This field allows you to enter the secondary Transmit (Tx) frequency to be used during Failsoft operation for the Announcement Group of the current Trunking Personality.



WARNING: The Trunking Frequency Constraints applies to this selection are determined by this Personality's Protocol Type setting and the frequency band of the referenced Trunking System.

Accessed Only: When the [Failsoft Type on page 1241](#) field is set to **Talkgroup**, and when the [Announcement Group on page 1246](#) field is not set to **None**, and when the [Announcement Group Failsoft on page 1249](#) field is **Enabled**, and when the [AG Secondary Failsoft on page 1247](#) field is **Enabled**, and when the radio is model/option capable.

4.39.2.9

Announcement Group Failsoft

This field enables Failsoft for the Announcement Group of the current Trunking Personality.

Accessed Only: When the referenced Trunking System has a Software System Key File or an Advanced System Key with access selected in the System ID field, or an Advanced WACN Key with access selected in the Home WACN ID field, and when the [Failsoft Type on page 1241](#) field is set to **Talkgroup**, and when the [Announcement Group on page 1246](#) field is not set to **None**, and when the radio is model/option capable.

4.39.2.10

AG System ID

This field allows you to enter in decimal or hex format, the three-digit Announcement Group System (Trunking System) ID that is needed when Inter-WACN Roaming is the referenced Trunking System's selected Coverage Type.

This selection applies to the current Trunking Personality.

Accessed Only: When the referenced Trunking System's System Type field is set to **ASTRO 25**, and when the [Coverage Type on page 1190](#) field is set to **Inter-WACN Roaming** and when the radio is model/option capable.

Table 407: Range

Minimum	Maximum
000 hex	FFE hex

4.39.2.11

AG Failsoft Rx Frequency

This field allows you to enter the Receive (Rx) frequency to be used during Failsoft operation for the Announcement Group of the current Trunking Personality.

 **WARNING:** The Trunking Frequency Constraints applies to this selection are determined by this Personality's Protocol Type setting and the frequency band of the referenced Trunking System.

Accessed Only: When the referenced Trunking System has a Software System Key File or an Advanced System Key with access selected in the System ID field, or an Advanced WACN Key with access selected in the Home WACN ID field, and when the [Failsoft Type on page 1241](#) field is set to **Talkgroup**, and when the [Announcement Group on page 1246](#) field is not set to **None**, and when the [Announcement Group Failsoft on page 1249](#) field is **Enabled**, and when the radio is model/option capable.

4.39.2.12

AG WACN ID

This field allows you to enter (in decimal or hex format) the five-digit Announcement Group Wide Area Communications Network (WACN) ID that is needed when Inter-WACN Roaming is the referenced Trunking System's selected Coverage Type.

AG WACN ID applies to the current Trunking Personality.

Accessed Only: When the referenced Trunking System's System Type field is set to **ASTRO 25**, and when its [Coverage Type on page 1190](#) field is set to **Inter-WACN Roaming** and when the radio is model/option capable.

Table 408: Range

Minimum	Maximum
00000 (Hex)	FFFFE (Hex)

4.39.2.13

ASTRO OTAR Profile Index

This field allows you to select ASTRO OTAR Profile for "foreign" Talkgroup Calls.

When AG System ID & WACN ID do not match the selected System, then it is considered foreign to that Talkgroup.

Keys in the Key Database associated with the ASTRO OTAR Profile selected will be used for "foreign" Talkgroup calls.

The following selections are supported:

- Home
- ASTRO OTAR Profile

4.39.3

Talkgroup

This section allows you to view or define individual Talkgroup functionality for individual Trunking Personalities.

A Talkgroup is a defined grouping of radios created for the purpose of frequent and convenient communication with each other.

 **NOTE:** Talkgroup frequencies are determined by the in-the-field Trunking System and are not setup.

 **NOTE:** Trunking Personality Failsft Frequencies must be setup.

Once defined, a Talkgroup can be assigned to one or more channels of the radio's Channel Selector from the [Zones Channel Assignment on page 1283](#) and Channel List Set Trunking Talkgroup field.

4.39.3.1

Talkgroup Name

This field allows you to define recognizable names for the current Talkgroup (record/row).

This selection applies to the current Trunking Personality.

Accessed Only: When the radio is model/option capable.

 **NOTE:** **Examples:** PerTG-001, #500, Electric1, # A5.

Characters, numbers, spaces, and special characters can be used.

Leading blanks are substituted with underscores in the radio's display.

Leading periods do not appear in the radio's display.

4.39.3.2

Failsoft Tx Frequency

This field allows you to enter the failsoft Transmit (Tx) frequency for the current talkgroup (record/row).

This selection applies for the current [Trunking Personality on page 1235](#).

 **WARNING:** The Trunking Frequency Constraints applied to this selection are determined by this Personality's setting and the frequency band of the referenced Trunking System.

Accessed Only: When the referenced Trunking System has a Software System Key File or an Advanced System Key with access selected in the [System ID on page 1274](#) field or an Advanced WACN Key with access selected in the Home WACN ID field, and when the [Failsoft Type on page 1241](#) field is set to **Talkgroup**, and when the [Talkgroup Failsoft on page 1254](#) field is **Enabled**, and when the radio is model/option capable.

4.39.3.3

Talkgroup ID

This field allows you to enter (in decimal or hex format) the Talkgroup number that uniquely identifies the current talkgroup (record/row).

This selection applies to the current Trunking Personality.

Accessed Only: When the referenced Trunking System has ((a Software System Key File or an Advanced System Key with access selected in the System ID field) Or, (an Advanced WACN Key with access selected in the Home WACN ID field)),

And, when the radio is model/option capable.

Table 409: Range

For Protocol Type	Disabled	Minimum	Maximum
ASTRO 25	None	0001 hex	FFFE hex
Type II	None	001 hex	FFE hex



IMPORTANT: The selection range may be modified on a per Advanced Key basis by the Advanced Keys Administrator program.

4.39.3.4

TG Secondary Failsoft

This field enables secondary failsoft operation for the current talkgroup (record/row).

This selection applies for the current trunking personality.

Accessed Only: When the [Failsoft Type on page 1241](#) field is set to **Talkgroup**, and when the [Talkgroup Failsoft on page 1254](#) field is enabled, and when the radio is model/option capable.

4.39.3.5

Tx Voice/Signal Type

This field selects the transmit signaling mode for the current talkgroup (record/row).

This selection applies for the current trunking personality.

Accessed Only: Digital is only accessed when the [Protocol Type on page 1237](#) field is set to **Type II**, and when the [Type II Frequency Band on page 1189](#) is not **900 MHz**.

The following selections are supported:

- Analog
- Digital

4.39.3.6

Secondary Failsoft Rx Frequency

This field allows you to enter the secondary failsoft Receive (Rx) frequency for the current talkgroup (record/row).

This selection applies for the current trunking personality.



WARNING: The Trunking Frequency Constraints applied to this selection are determined by this personality's [Protocol Type on page 1237](#) setting and the frequency band of the referenced [Trunking System on page 1188](#).

Accessed Only: When the [Failsoft Type on page 1241](#) field is set to **Talkgroup**, and when the [Talkgroup Failsoft on page 1254](#) field is **Enabled**, and when the [TG Secondary Failsoft on page 1252](#) field is **Enabled**, and when the radio is model/option capable.

4.39.3.7

Secure/Clear Strapping

This field selects the secure encryption transmit and receive mode for the current talkgroup (record/row).

This selection applies for the current Trunking Personality.

Accessed Only: When the referenced Trunking System has ((a Software System Key File or an Advanced System Key with access selected in the [System ID on page 1274](#) field) or (an Advanced WACN Key with access selected in the [Home WACN ID on page 1192](#) field)), and when the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the [Protocol Type on page 1237](#) field is set to **ASTRO 25**, and when the radio is model/option capable.

The following selections are supported:

Clear

Straps or commits the channel to normal (non-secure) communications.

Select

Allows you to toggle on or off secure encryption mode. Either the Secure Tx Select button-press, the [Secure Tx Select on page 511](#) switch-toggle, or the Secure menu-selection must be selected in order for you to toggle on or off Secure-encrypted communications.

Secure

Straps or commits the channel to secure encrypted communications.

4.39.3.8

Secondary Failsoft Tx Frequency

This field allows you to enter the secondary failsoft transmit (Tx) frequency for the current talkgroup (record/row).

This selection applies for the current trunking personality.



IMPORTANT: The Trunking Frequency Constraints applied to this selection are determined by this personality's Protocol Type setting and the frequency band of the referenced [Trunking System on page 1188](#).

Accessed Only: When the [Failsoft Type on page 1241](#) field is set to **Talkgroup**, and when the [Talkgroup Failsoft on page 1254](#) field is **Enabled**, and when the [TG Secondary Failsoft on page 1252](#) field is **Enabled**, and when the radio is model/option capable.

4.39.3.9

Key Select

This field selects the secure encryption key to be used for the current talkgroup (record/row).

This selection applies for the current Trunking Personality.



IMPORTANT:

When the [ASTRO OTAR](#) field is **Enabled** for the referenced [Trunking System on page 1188](#), this Key Select value is chosen from the Secure Encryption Key References List of the ASTRO OTAR Profile selected in the [ASTRO OTAR Profile Index on page 1229](#) field of the referenced Trunking System.



WARNING: Be aware that it is actually pointing to the Keys of the [Encryption Key List on page 896](#) for this selection; individual Keys from the Secure Encryption Key References List reference the Encryption Key List's Keys from the [Encryption Key Reference on page 915](#) field. Therefore any key selected when ASTRO OTAR Profile Index is enabled, must first be defined in the Secure Encryption Key References List. Keys taken from OTAR Profile with Independent Key List field enabled are available.

Accessed Only: When the referenced Trunking System has (a Software System Key File or an Advanced System Key with access selected in the System ID field) or (an Advanced WACN Key with access selected in the Home WACN ID field), and

when the [Secure/Clear Strapping on page 1253](#) for the current row/Talkgroup (of this table) is not set to **Clear**.

And

when the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and when the Protocol Type field is set to **ASTRO 25**, and when the radio is model/option capable.

4.39.3.10

TG System ID

This field allows you to enter (in decimal or hex format) the three-digit Talkgroup System (Trunking System) ID that is needed when Intra-WACN Roaming or Inter-WACN Roaming is the referenced Trunking System's selected [Coverage Type on page 1190](#)

This selection applies to the current talkgroup (record/row) which applies to the current [Trunking Personality on page 1235](#).

Accessed Only: When the [Protocol Type on page 1237](#) is set to **ASTRO 25**, and when the referenced Trunking System has its [Coverage Type on page 1190](#) field set to **Intra-WACN Roaming** or **Inter-WACN Roaming**, and when the radio is model/option capable.

Table 410: Range

Minimum	Maximum
000 (Hex)	FFE (Hex)



IMPORTANT: Factory Default = 1. A value of "0" causes the radio to copy the value of the [System ID on page 1274](#) field for the currently referenced [Trunking System on page 1188](#) to this field.

4.39.3.11

Talkgroup Failsoft

This field enables failsoft operation for the current talkgroup (record/row).

This selection applies for the current [Trunking Personality on page 1235](#).

Accessed Only: When the referenced Trunking System has a Software System Key File or an Advanced System Key with access selected in the [System ID on page 1274](#) field or an Advanced WACN Key with access selected in the [Home WACN ID on page 1192](#) field, and when the [Failsoft Type on page 1241](#) field is set to **Talkgroup**, and when the radio is model/option capable.

4.39.3.12

TG WACN ID

This field allows you to enter (in decimal or hex format) the five-digit [Talkgroup on page 1251](#) WACN (Wide Area Communications Network) ID that is needed when Inter-WACN Roaming is the referenced trunking system's selected [Coverage Type on page 1190](#).

This selection applies to the current [Talkgroup on page 1251](#) (record/row) which applies to the current [Trunking Personality on page 1235](#).

Accessed Only: When the [Protocol Type on page 1237](#) is set to **ASTRO 25**, and when the referenced Trunking System has its [Coverage Type on page 1190](#) field set to **Inter-WACN Roaming**, and when the radio is model/option capable.

Table 411: Range

Minimum	Maximum
00000 (Hex)	FFFFE (Hex)



IMPORTANT: Factory Default = 1. A value of "0" causes the radio to copy the value of the [Home WACN ID on page 1192](#) field for the currently referenced [Trunking System on page 1188](#) to this field.

4.39.3.13

Failsoft Rx Frequency

This field allows you to enter the failsoft Receive (Rx) frequency for the current talkgroup (record/row).

This selection applies for the current Trunking Personality.



WARNING: The Trunking Frequency Constraints applied to this selection are determined by this Personality's setting and the frequency band of the referenced Trunking System.

Accessed Only: When the referenced Trunking System has a Software System Key File or an Advanced System Key with access selected in the [System ID on page 1274](#) field or an Advanced WACN Key with access selected in the [Home WACN ID on page 1192](#) field, and when the [Failsoft Type on page 1241](#) field is set to **Talkgroup**, and when the [Talkgroup Failsoft on page 1254](#) field is **Enabled**, and when the radio is model/option capable.

4.39.3.14

Priority Talkgroup

This field allows you to call the dispatcher when Priority Dispatch button is pressed and followed by the PTT button.

Accessed Only: When the System Type field is set to **ASTRO 25** and when the DVRS Profile field is set to **Disabled**.

The following selection is supported:

None

Default value. Applies to all the created talkgroups from the current Personality set.

4.39.3.15

ASTRO OTAR Profile Index

This field allows you to select ASTRO OTAR Profile for "foreign" Talkgroup Calls.

When TG System ID & WACN ID do not match the selected System, then it is considered foreign to that Talkgroup.

Keys in the Key Database associated with the ASTRO OTAR Profile selected will be used for "foreign" Talkgroup calls.

The following selections are supported:

- Home
- ASTRO OTAR Profile

4.39.4

Call/Page

This section allows you to view or define Private Call and Page functionality for individual Trunking Personalities.

This functionality can apply to Trunking Call Hot List functionality.



NOTE: Once the features of the Trunking Personalities have been uniquely defined, each Personality can then be assigned to the desired position of the radio's channel selector using the Zone Channel Assignment feature.

4.39.4.1

Private Call Type

This field selects the type of Private Call for the current Trunking Personality.

You can initiate a Private Call with a Select/Private Call button-press or a [Select/Private Call on page 526](#) Call menu-selection. User in turn responds to a Private Call with a [Call Response on page 484](#) button-press.

The following selections are supported:

Disabled

The Private Call feature is disabled.

Available When the Protocol Type is Type II, or ASTRO 25

PC II

Private Call II permits call between two individual radios, regardless of talkgroups, without requiring the receiving radio to acknowledge the incoming call.

Available When the Protocol Type is Type II, or ASTRO 25

Enhanced Unit-to-Unit

Enhanced Private Call or Unit-to-Unit Private Call permits calls between two individual radios, regardless of talkgroup. The receiving radio will ring and is required to acknowledge the incoming call.

Available When the Protocol Type is Type II, or ASTRO 25

PC with CA

Enhanced Private Call or Unit-to-Unit Private Call, followed by an optional private Call Alert. See [Automatic Call Alert on page 1258](#).

Available When the Protocol Type is Type II, or ASTRO 25



NOTE: PC II is supported in "Analog" Trunking operation. See [AG Voice/Signal Type on page 1247](#) and [Talkgroup](#) fields in the [Type II Trunking Personality](#).

There is a two minute delay for a PC II and Enhanced Private Call when operating in a 3600 trunking system, and six second delay when operating in a 9600 trunking system. No indication is displayed during the delay.

Accessed Only: When the radio is model/option capable.

4.39.4.2

In-Call User Alert Enable

This field allows the radio to remain muted to affiliated talkgroup calls while operating on the current Trunking Personality.

Group and individual pages do unmute the radio for the alert tone to sound. The radio also unmutes to individual radio-to-radio calls such as Private Calls, Tone Signaling calls and Interconnect phone mode calls. This feature is useful when you prefer not to hear affiliated talkgroup traffic but need to be in radio contact. The [Voice Mute on page 496](#) button-press or the [Voice Mute on page 305](#) menu-selection allows you to toggle-on and off Voice Mute functionality for an In-Call User Alert enabled channel.



WARNING: When disabled, you are not able to toggle-on this feature for the current Trunking Personality.



IMPORTANT:

When Voice Mute is active, an individual or group page received by the radio unmutes the radio. When the page unmutes the radio, a voice call that follows can then be a group call that is heard over the radio speaker.

If the channel of the radio is changed, the radio deactivates Voice Mute. Voice Mute must be reactivated if desired, when returning to the channel.

If you press the **PTT** button, launch Emergency Mode, or turn the radio off and back on, the radio deactivates Voice Mute.

The following call types may also be received:

- [Dynamic Regrouping Enable on page 1212](#)
- [Radio Inhibit on page 1208](#)
- [Out of Range Indicator on page 773](#)
- Failsoft
- [Site Trunking Indicator on page 776](#)
 - The Scan feature is not available.
 - Other display indications from group call such as receiving LED and PTT-ID (if enabled) function normally.

Accessed Only: When the radio is model/option capable, and when the [Call Alert/Page Operation on page 1258](#) field is not set to **Disabled**,

Or when the Protocol Type field is set to **ASTRO 25**, and when the current Trunking Personality's [Tone Signaling List on page 1259](#) field is referencing a Tone Signaling List that has at least one record/row where Unmute Enable is **Enabled**.

4.39.4.3

Private Call Operation

This field selects the operation mode of the Private Call feature for the current Trunking Personality.

You can initiate a Private Call with a Select/Private Call button-press or a [Select/Private Call on page 526](#) menu-selection. User in turn responds to a Private Call with a [Call Response on page 484](#) button-press.

Accessed Only: When [Private Call Type on page 1256](#) field is not set to **Disabled**, and when the radio is model/option capable.

The following selections are supported:

Response Only (Resp Only)

Allows the radio to accept Pages only.

List Only

Allows you to send Pages from the Call Hot List. For non-keypad models this option can be used only with the One Touch Button Feature. This feature is model/option dependent.

Unlimited

Allows you to send Pages from the Call Hot List and from the radio's keypad. This feature is model/option dependent.



WARNING: This selection is not available for Portable radios having only a top display.

4.39.4.4

Automatic Call Alert

This field enables the radio to automatically transmit a private Call Alert in the event that the recipient of an enhanced or unit-to-unit Private Call did not respond to that call within a certain time period.

This feature applies for the current Trunking Personality and is applicable for both the ASTRO 25 and Type II Protocol Types.

Accessed Only: When the [Private Call Type on page 1256](#) field is set to **PC with CA**, and when the radio is model/option capable.

4.39.4.5

Call Alert/Page Operation

This field selects Call Alert/Page functionality for the current Trunking Personality.

You can activate Call Alert Page Operation with a [Call Alert on page 484](#) button-press or [Page on page 534](#) menu-selection.

Accessed Only: When the radio is model/option capable, and when the DVRS Hardware Enable field is **Disabled**, or when the DVRS Hardware Enable field is **Enabled**, and when the current Trunking Personality's referenced DVRS Profile has its DVRS Remote Activation field set to **Disabled**.

The following selections are supported:

Disabled

Call Alert/Page functionality is unavailable.

Response Only (Resp Only)

Allows the radio to accept Pages only.

List Only

Allows you to send Pages from the Call Hot List. For non-keypad models this option can be used only with the One Touch Button Feature. This feature is model/option dependent.

Unlimited

Allows you to send Pages from the Call Hot List and from the radio's keypad. This feature is model/option dependent.



WARNING: This selection is not available for Portable radios having only a top display.

4.39.4.6

Tone Signaling List

This field selects the Tone Signaling List to be used while operating in ASTRO 25 mode and on the current Trunking Personality.



NOTE: Tone Signaling List functionality is defined in the Tone Signaling List Page.

Accessed Only: When the Protocol Type field is set to **ASTRO 25**, and when the radio is model/option capable.



WARNING: The Tone List Type in the Tone Signaling List must be **Quik Call II**.

The following selections are supported:

- Tone Signaling Disabled
- Available Tone Signaling List

4.39.4.7

Trunking Call Hot List

This field selects the Call Hot List to be used for the current Trunking Personality.

The Call Hot List that is used is dependent on the Protocol Type field selection **Type II** or **ASTRO 25** for the current Trunking Personality. User uses the Call Hot List to transmit Private Calls and Pages.

Accessed Only: When [Private Call Operation on page 1257](#) field is set to **List Only** or **Unlimited**, or when [Call Alert/Page Operation on page 1258](#) field is set to **List Only** or **Unlimited**, and when the radio is model/option capable.

4.39.5

Features

This section allows you to view or modify miscellaneous Trunking Personalities features for the current Trunking Personality.



NOTE: Once the features of the Trunking Personalities have been uniquely defined, each Personality can then be assigned to the desired position of the radio's channel selector using the Zone Channel Assignment feature.

4.39.5.1

Phone Operation

This field selects phone functionality when operating in phone mode for the current Trunking Personality.

You can initiate the Phone Mode feature with a Phone or Call Response button-press or a Phone menu-selection.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Disabled

Phone mode is unavailable.

Answer Only

Allows the radio to accept Calls only.

List Only

Allows you to make Calls only from the radio's Phone Hot List.



WARNING: If the Call List Wide, [Phone Number Editable on page 1269](#) field is **Enabled**, you can modify the Phone Numbers within the radio's Unified Call List.

Unlimited

Allows you to make Calls from the phone list, or from a keypad.

4.39.5.2

Secure Proper Code Detect

This field enables the radio to unmute to SecureNet™ encrypted communications.

This feature applies for the current Trunking Personality.

Accessed Only: When the Protocol Type field is set to **Type II**, and when the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**, and the radio is model/option capable.

4.39.5.3

Scan List Selection

This field selects which Scan List is used by the radio while operating in the Scan Mode for the current Trunking Personality.

This Scan List then determines which calls the radio scans for, actively looks or listens for, and then considers unmuting for the current Trunking channel.



NOTE:

Scan List and Scan List Member functionality are defined in the Scan List Window.

Only Scan Lists and IP Scan Lists having the **Priority Monitor** or the **Multi-System Talkgroup** selection in the [Scan Type on page 1306](#) field are valid Scan List Selections for the current Trunking Personality.

Scan Lists having the **Intelligent Priority** selection in the Scan Type field are valid Scan List Selections for the current Conventional Personality without DVRS system.

You can initiate Scan List editing with a Scan List Programming switch-toggle, a Scan List menu-selection, or a long keypress duration of a Scan button-press.



WARNING:

When the [Transmit Mode on page 1243](#) field is set to **TG/AG Disabled (Listen-only)** mode for the current Trunking Personality, this Personality's referenced Scan List must not have its [Designated Voice Tx Member Type on page 1311](#) field set to **Selected Channel** (meaning this channel); otherwise it considers this selection invalid.

When the [Site Selectable Alert List Selection on page 1211](#) for the referenced Trunking System is not **Disabled**, then this Personality's referenced Scan List and IP Scan List must not be a **Multi-System Talkgroup** Scan Type; otherwise it considers this selection invalid.

The application considers this selection invalid when this personality is LTE Broadband-enabled, and this selected Scan List has any Scan List Member Channels having the following dependencies:

- Their Conventional Personality's [LTE Interference Frequency Present on page 1125](#) field set to **Enabled**, or
- Their Trunking System's [LTE Interference Frequency Present on page 1199](#) field is **True**, or
- Their Trunking System's [Coverage Type on page 1190](#) field set to **Inter-WACN Roaming**.

A Trunking channel is LTE enabled when the Personality's referenced Trunking System has a referenced Data Profile having a [Data Profile Type on page 982](#) selection equal to **Trunking & Broadband** or **Broadband-Only**, and when that Data Profile's Broadband Source is **Internal LTE Modem**.

When the Personnel Accountability List Selection referenced Trunking System is not **Disabled**, then this Personality's referenced Scan List and IP Scan List must not be **Multi-System Talkgroup** Scan Type; otherwise the it considers this selection invalid.

Accessed Only: When the radio is model/option capable.

4.39.5.4

Ignore Rx Clear Voice

This field causes the radio to ignore all **Clear** (non-secure encrypted) voice communication while operating on the current Trunking Personality.

Accessed Only: When the [Secure Operation on page 880](#) field is set to **Hardware** or **Software**.

4.39.5.5

Automatic Scan

This field causes the radio to automatically enter the Scan Mode, when you select (with the Channel Selector) the current Trunking Personality.

Automatic Scan is also invoked when the radio powers-up to the current channel.

When disabled, you are able to invoke the Scan Mode operation through a Scan button-press, a Scan switch-toggle or a Scan menu-selection, while operating on the current Trunking personality.

Accessed Only: When [Scan List Selection on page 1260](#) field is not set to **None**, and when the radio is model/option capable.

4.39.5.6

DTMF Mic Enable

This field allows you to transmit DTMF tones using the radio's keypad, even when the radio is not in Phone Mode.

You can initiate DTMF Mic by pressing and holding the Top or Side or Control Head button while the required DTMF keypad number is sent out.

DTMF Mic Enable applies for the current Trunking Personality.

 **WARNING:** This feature does not work when the [Transmit Mode on page 1243](#) field is set to **TG/AG Disabled (Listen-only)** mode.

4.39.5.7

Status Enable

This field enables you to select and transmit a programmed Status for the current Trunking Personality.

The statuses available to you are dependent the Personality's referenced Trunking System.

You can initiate the Status feature with a Status button-press, a Direct Status button-press, or Status menu-selection.

Accessed Only: When the radio is model/option capable.

4.39.5.8

Hot Keypad (DTMF)

This field allows you to transmit DTMF tones using the radio's keypad, even when the radio is not in Phone Mode.

You can initiate Hot Keypad mode by pressing and holding the PTT button while dialing the required DTMF keypad numbers. This feature applies for the current Trunking Personality.

Accessed Only: When the radio is model/option capable.

 **WARNING:** This feature does not work when the [Transmit Mode on page 1243](#) field is set to **TG/AG Disabled (Listen-only)** mode.

4.39.5.9

Message Enable

This field enables you to select and transmit a programmed message for the current Trunking Personality.

The messages available to you are dependent on the personality's referenced Trunking System. You can activate the Message feature with a [Message on page 488](#) button-press, a [Direct Message on page 593](#) button-press, or [Message on page 532](#) menu selection.

Accessed Only: When the Protocol Type field is set to **Type II**, and when the radio is model/option capable.

4.39.5.10

End Tx on Voice Absence

This field enables the radio, during a Trunking voice transmission, to automatically de-key when its on-board Digital Signal Processor (DSP) detects a lack of voice from the microphone for a period that exceeds the Voice Absence Timer.

This selection applies while operating on the current Trunking Personality.



WARNING: The feature does not operate when:

- An in-the-field radio is operating in Emergency Mode and either **Hot Mic Emergency** or **Emergency via Silent Audio** is currently active (see also Emergency Auto Transmit Mode), or
- The in-the-field radio is currently being remotely-monitored (see also Remote Monitor/Radio Trace Enable).

Accessed Only: When the radio is model/option capable.

4.39.5.11

Talk Permit Tone

This field enables the radio to sound an alert tone when a Control Channel access grant has been received from a repeater.

The feature applies for the current Trunking Personality.

Accessed Only: When the radio is model/option capable.

4.39.5.12

Tactical Public Safety UI Enable

This field enables several Tactical Public Safety (TPS) features that are related to Emergency Mode operation for the current ASTRO 25 Trunking Personality.

These features include the Radio Wide, Tactical Public Safety: Audible Emergency Beacon, Audible Emergency Beacon Routing, and Emergency Call De-key Sidetone.

Accessed Only: When the radio is model/option capable.

4.39.5.13

Priority Dispatch Time Out Timer

This field selects the amount of time needed for you to press the Priority Dispatch button until Priority Dispatch exits. Time is in seconds.

Table 412: Range

Minimum	Maximum	Increments
1	255	1

Accessed Only: When the System Type field is set to **ASTRO 25**, and when DVRS Profile Selection field set to **Disabled**.

4.39.5.14

SmartConnect Operation

Enables the SmartConnect feature for the current Trunking personality.

The Protocol Type for the personality must be set to "ASTRO 25".

The following selections are supported:

LMR

The talkgroups contained in the current personality operate as LMR only.

LMR Preferred

The talkgroups in the current personality will automatically switch from LMR to broadband based on the [Leave LMR RSSI Threshold on page 1185](#) configuration. The talkgroups in the current personality will automatically switch from broadband back to LMR based on the [Return To LMR RSSI Threshold](#) configuration. LMR Preferred and Broadband Only are valid selections when the current Trunking Personality is referencing an ASTRO 25 Trunking System. The Data Profile Selection must reference to a valid data profile in which the SmartConnect Gateway Hostname and SmartConnect Gateway TLS Port Number are configured.

Broadband Only

The talkgroups in the current personality will operate on broadband only.

Accessed Only: When the Protocol Type is set to "ASTRO 25" and when the radio is model/option capable.

4.39.5.15

Hazard Zone Mode Personality

This field allows you to turn on the Hazard Zone Mode (HZM) using the concentric switch while operating on the current Trunking Personality.



NOTE: This field is only applicable for APX NEXT XN radio.



IMPORTANT: When HZM is **Enabled**, the following conditions must be fulfilled:

The system selected for the current trunking personality is set to an ASTRO25 system and the Emergency Alarm Rx Indicator field is enabled in the selected system.

Trunking Emergency Profile Selection field is connected to a trunking emergency profile, and is not set to **Emergency Tx Disabled**.

If Emergency Revert Type field is set to **System Revert**, the Revert Channel must set to match the HZM personality when HZM Personality field is checked.

Accessed Only: When the radio is the latest Fire Service Standards model and the [Fire Service Standards Compliant](#) field is **Enabled**.

4.39.6

Preferred Sites

This section allows you to view or define multi-site Trunking Site preferences for individual Trunking Personalities.

When a radio roams into an overlapped coverage area of multiple Sites within a Trunking System or Wide Area Communications Network (WACN), it searches for a Site that is operationally preferred by evaluating all other available sites on a priority basis, according to their corresponding Preferred Status selection. This

capability provides more intelligent management and conservation of repeater resources in coverage overlap areas.



IMPORTANT:

The referenced Trunking System's Coverage Type field determines the single site (SmartNet) or multi-site configuration. In a multi-site configuration, SmartZone operation allows the radio to determine, through RSSI polling samples, the best site to be used for Trunking communications.

Also see the Trunking System's Trunking Wide Advanced fields and the Filter Constant fields.

Once the features of the Trunking Personalities have been uniquely defined, each Personality may then be assigned to the desired position of the radio's channel selector with the Zone Channel Assignment feature.

4.39.6.1

Ignore Site Resource Preference

This field enables the radio to ignore site resources information received in adjacent Control Channel Outbound Signal Words (OSWs), i.e. if the site has ASTRO, 12 Kbit Secure, or Analog Clear repeaters.

The feature applies for the current Trunking Personality and only when operating in SmartZone operation.

If **Disabled**, the radio selects sites based on this site resources information. For example, if a radio has selected an ASTRO Talkgroup.

Accessed Only: When the referenced Trunking System has its [Coverage Type on page 1190](#) field not set to **Disabled**, and when the radio is model/option capable.

4.39.6.2

Site ID

This field allows you to enter in decimal or hex format, the ID number identifying the current SmartZone site (record/row), which applies to the current Trunking Personality.



WARNING: To support roaming between different sites, each Site ID must be unique within a Radio Frequency Sub-System (RFSS).

Accessed Only: When the referenced Trunking System has its [Coverage Type on page 1190](#) field not set to **Disabled**, and when the radio is model/option capable.

Table 413: Range

Coverage Type	Minimum	Maximum
ASTRO 25	1	FE hex
Type II	1	40 hex

4.39.6.3

Preferred Status

This field selects the preferred status for the SmartZone site when determining through RSSI polling samples, the best site to be used for Trunking communications.

This selection applies for the current site (record/row) which applies for the current Trunking Personality.

Accessed Only: When the referenced Trunking System has its [Coverage Type on page 1190](#) field not set to **Disabled**, and when the radio is model/option capable.

The following selections are supported:

None

The site is given no preference.



IMPORTANT: If a site is not listed here, the radio automatically assigns it no preference.

Least-Preferred

The site will be avoided unless it is the only usable site for operation.

Preferred

The site will be used over all non-preferred sites. Radio will leave this site if it goes into Site Trunking.

Always-Preferred

The site will be used over all non-preferred sites, even if the site goes into Site Trunking.

4.39.6.4

RFSS ID

This field allows you to enter in decimal or hex format, the ASTRO 25 Radio Frequency Sub-System (RFSS) ID that corresponds to the current Site ID in the current site (record/row), which applies for the current Trunking Personality.



WARNING: To support roaming between different RFSS's within a Trunking System, each RFSS must have a unique number.



NOTE: An RFSS is made up of one or more Sites.

Accessed Only: When the referenced Trunking System has its [Coverage Type on page 1190](#) field set to **SmartZone & OmniLink** or **Intra-WACN Roaming** or **Inter-WACN Roaming**, and when the Protocol Type field is set to **Type II**, and when the radio is model/option capable.

Table 414: Range

Minimum	Maximum
1	FE hex

4.39.6.5

System ID

This field allows you to enter in decimal or hex format, the Type II or ASTRO 25 System ID that corresponds to the Site ID in the current site (record/row), which applies for the current Trunking Personality.



WARNING: To support roaming between different Trunking Systems composing Wide Area Communications Networks (WACNs), each Trunking Systems must have a unique System ID.



NOTE: A Trunking System is made up of one or more Radio Frequency Sub-Systems (RFSS).

Accessed Only: When the Protocol Type field is set to **Type II**, and when the referenced Trunking System has its [Coverage Type on page 1190](#) field set to **SmartZone & OmniLink**, and when the radio is model/option capable,

Or when the Protocol Type field is set to **ASTRO 25**, and when the referenced Trunking System has its Coverage Type field set to **Intra-WACN Roaming** or **Inter-WACN Roaming**, and when the radio is model/option capable.

Table 415: Range

Coverage Type	Minimum	Maximum
ASTRO 25	0	0FFE hex
Type II	0	FFFE hex

4.39.6.6

RAS WACN ID

This field allows you to enter in decimal or hex format, the Remote Access Server (RAS) Wide Area Communications Network (WACN) ID for the current Site ID (record/row).



WARNING: To support roaming between different WACNs, each WACN must have a unique number.



NOTE: A WACN is made up of one or more Trunking Systems. This selection also applies for the current Trunking Personality.

Accessed Only: When the Protocol Type field is set to **ASTRO 25**, and when the referenced Trunking System has its [Coverage Type on page 1190](#) field set to **Inter-WACN Roaming**, and when the radio is model/option capable.

Table 416: Range

Minimum	Maximum
0	FFFFE hex

4.39.6.7

Site List Type

This field allows you to select the type of Site List for the Trunking Personality.

The Site List Type defines the way that the radio will use the sites identified in the following Site List. Site Preference and Mobility (Roaming) access is defined by the Site List Type.

Accessed Only: When the referenced Trunking System has its [Coverage Type on page 1190](#) field not set to **Disabled**, and when the radio is model/option capable.

The following selections are supported:

Preferred List

This is the legacy and default selection. There is no access restrictions or preference implied for the sites that are not listed.

Allowed List

Radio is allowed to roam to listed sites only and defined preferences will be applied. The system may still deny access to a site in the allowed list after 'attachment' to the system is attempted on the site. If the radio is not in range of at least one of the sites listed, the radio will remain out of range.

Blocked List

Radio is not allowed to roam to any sites listed. All other sites are treated as allowed sites with no defined preference.

4.39.6.8

Allow Emergency at Blocked Site

If this field is enabled, the radio attempts to register the selected talkgroup on a site that is set as blocked in the Customer Programming Software (CPS) when the radio is in the emergency mode. When the emergency is cleared, the radio continues to block the selected talkgroup.

Accessed Only: This field can be accessed only when the following conditions are met:

- The **Site List Type** field is set to **Blocked**.
- The **Coverage Type** field of the referenced Trunking System is **not** set to **Disabled**.

4.39.6.9

Wildcard

This field defines the type of entry in the Site List. The selection is a wildcard type that will determine which site or group of sites will be **Preferred**, **Allowed** or **Blocked**.

Accessed Only: When the referenced Trunking System has its [Coverage Type on page 1190](#) field not set to **Disabled**, and when the radio is model/option capable.

The following selections are supported:

No Wildcard

This is the default selection.

Any Site

All sites in a RFSS, System, WACN applicable based on Coverage Type field selection

Any RFSS

All sites, RFSS in a System, WACN applicable based on Coverage Type field selection

Any System

All sites, RFSS, Systems in a WACN applicable based on Coverage Type field selection

4.39.7

Advanced

This section allows you to view or define diverse and sometimes complex functionality for individual Trunking Personalities.

4.39.7.1

Broadband Protection

This field allows you to enable Broadband Protection of the current Trunking Personality.

Broadband Protection enhances Advanced Radio Frequency Automatic Gain Control (RF AGC) by adding a high selectivity broadband filter when receiving at selected frequencies within the 700 MHz and 800 MHz bands.



NOTE: This feature is only available for radio models that have the required hardware.

4.40

Call List Wide

The **Call List Wide** section allows you to selectively enable in-the-field changes to the Contact information.

4.40.1

UCL Editable

This field allows you to create Contacts within the radio's UCL (Unified Call List).



NOTE:

The entire UCL is saved to the radio along with all the codeplug's programmed features.

You can create Contacts with the Contacts button-press or Contacts menu-selection.



IMPORTANT: Enabling this field also enables the [Hot List Editable on page 1269](#) field; however, disabling this field does not disable the Hot List Editable field.

Accessed Only: When the radio is model/option capable.

4.40.2

Hot List Editable

This field allows you to create, delete, or modify the list members of the radio's Individual Call Hot Lists.



NOTE: Individual Hot List are programmed into on a per channel basis, except for the [Phone Hot List on page 1282](#) which applies on a radio-wide basis.

User access to the Hot List edit mode is initiated with Contacts button-press or Contacts menu-selection.

Accessed Only: When the radio is model/option capable.

4.40.3

Phone Number Editable

This field enables you to edit Phone Numbers within the radio's UCL (Unified Call List).



NOTE: The entire UCL is saved to the radio along with all the codeplug's programmed features.

User access to the Phone Numbers is initiated with Contacts button-press or Contacts menu-selection.

Accessed Only: When the radio is model/option capable and when the [UCL Editable on page 1269](#) field is **Enabled**.

4.40.4

Radio ID Editable

This field enables you to edit Call IDs within the Call Hot Lists that are programmed into the radio.

User Call ID access to the Call Hot list is initiated with Contacts button-press or Contacts menu-selection.

Accessed Only: When the radio is model/option capable and when the [UCL Editable on page 1269](#) field is **Enabled**.

4.40.5

Contact Data Order Indicator

This field allows you to specify the order in which the Unified Call List's (UCL) Call IDs for individual Contact entries appears in the radio's display.

To change the current order, select an item using the mouse cursor and drag it to a new position in the list.

You can initiate viewing or editing of contact entries with Contacts button-press or Contacts menu-selection. This selection applies on a radio-wide basis.

 **NOTE:** The entire UCL is saved to the radio along with all the codeplug programmed features.

Accessed Only: When the radio is model/option capable.

4.41

Unified Call List

The **Unified Call List** section allows you to view or modify individual Call List Contacts.

Each contact may contain information pertaining to the different Conventional signaling types, Trunking coverage types, or Phone connectivity parameters.

 **NOTE:** Once defined, Contacts and Call IDs can be selected from the individual Hot Lists. These Contact and Call ID selections allow you to build the individual Hot Lists.

If the radio receives duplicated IDs, it cannot display an alias until the duplication is removed.

Writing the codeplug to a radio causes the call list to return to its original state and all OTA alias updates are lost.

The following selections are supported:

Radio Models	Old Limit	New Limite
APX8000/APX8500	2500	12500
APX6000BN/APX6500	1500	8000
APX9000	1000	5000
APX7000	2500	5000
APX6000AN	1500	5000
APX/4000/2000/1000/4500/1500	1000	5000

4.41.1

General

This section allows you to create or modify recognizable names for each Contact.

Multiple Conventional and Trunking Call IDs or Phone Numbers can then be defined for this Contact

 **NOTE:** Once defined, Contacts and Call IDs can then be selected from the individual Hot Lists.

4.41.1.1

Contact Name

This field allows you to define recognizable names for the current Unified Call List Contact.

Multiple Conventional and Trunking communications Call IDs or Phone Numbers can then be defined for this Contact. Once defined, Contacts and Call IDs can be selected from the individual Hot Lists.



NOTE:

Examples: EMT 001, 500, Electric1.

Characters, numbers, and spaces can be used.

A total of 14 characters are possible.

4.41.2

ASTRO 25 Trunking ID

This section allows you to view or modify sets of ASTRO 25 - Trunking Call IDs for individual Contacts.



NOTE: These Call ID sets (records/rows) can then be selected from the Trunking communications [ASTRO 25 Trunking Hot List's - Call ID on page 1279](#) field.

4.41.2.1

System Name

This field selects the desired Trunking System, or allows you to create a customized ID set.

Selecting a Trunking System automatically selects the [RAS/Home WACN ID](#) and [System ID on page 1274](#) values. This selection applies for the Call ID set (record/row) of the current Contact within the Unified Call List. This Call ID set can then be selected from the [Call ID on page 1279](#) field.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Unassigned

No selection.

Customized

Allows you to enter a Custom WACN ID, Custom System ID and Individual ID for the current record/row. These IDs apply for a Trunking System not defined in the current codeplug. This Call ID set can then be selected from the field.

Possible Trunking Systems

Selects a programmed Trunking System from within the current codeplug.

4.41.2.2

RAS WACN ID

This field allows you to view the ASTRO 25 - Home (RAS) WACN ID for the currently selected Trunking System.

The [System Name on page 1271](#) field selects the desired [Trunking System on page 1188](#) for the current record/row.

This value applies to the current Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#).

The Call ID set can then be selected from the Trunking - [ASTRO 25 Trunking Hot List's - Call ID on page 1279](#) field.

Accessed Only: When the [System Name on page 1271](#) field is not set to **Customized**, and when the radio is model/option capable.

4.41.2.3

Custom WACN ID

This field allows you to define an ASTRO 25 - WACN ID (in decimal or hex format) for a Trunking System not defined in the current codeplug.

This selection only applies when the Trunking [System Name on page 1271](#) field is set to **Customized** for the current record/row. Therefore, this selection corresponds to an in-the-field Trunking System. This selection applies to the current Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID on page 1279](#) field.

Accessed Only: When the [System Name on page 1271](#) field is set to **Customized**, and when the radio is model/option capable.

Table 417: Range

Minimum	Maximum
00001 (Hex)	FFFFE (Hex)

4.41.2.4

System ID

This field allows you to view the in-the-field ASTRO 25 - System ID and Type II - System ID for the currently selected Trunking System.

The System Name field selects the desired Trunking System for the current record/row. This value applies to the current Call ID set (record/row) of the current [Contact](#) within the [Unified Call List](#). This Call ID set can then be selected from the [Call ID on page 1279](#) (ASTRO 25) [Call ID](#) (Type II) field.

Accessed Only: When the System Name field is not set to **Customized**, and when the radio is model/option capable.

4.41.2.5

Custom System ID

This field allows you to define an ASTRO 25 - System ID (in decimal or hex format) for a Trunking System not defined in the current codeplug.

This selection only applies when the Trunking [System Name on page 1271](#) field is set to **Customized** for the current record/row, and corresponds to an in-the-field [Trunking System on page 1188](#). This selection applies to the current Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID on page 1279](#) field.

Accessed Only: When the [System Name on page 1271](#) field is set to **Customized**, and when the radio is model/option capable.



NOTE: Selections are based-on Software System Key Files or Advanced (Hardware) Keys available to the application. The System Key Report allows you to view the currently available System Keys.

4.41.2.6

Unit ID

This field selects the ASTRO 25 Unit ID of the targeted radio operating in ASTRO 25 Trunking communications mode.

This ID is a match for the Unit ID of the targeted radio. The Unit ID must also be a match for the Trunking System ([System ID on page 1274](#) and [Home WACN ID on page 1192](#)) selected in the [System Name on page 1271](#) field for the same record/row. This selection applies for the Call ID set (record/row) of the current

Contact within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID on page 1279](#) field.

Accessed Only: When the radio is model/option capable.



WARNING: The selection range may be modified on a per Advanced (Hardware) Key basis by the Advanced Keys Administrator program.

Table 418: Range

Minimum	Maximum
000001	16777215

4.41.2.7

Call ID (Hidden Field)

This hidden field stores the ASTRO 25 Call ID sets of values for ASTRO 25 (UCL) Contacts.

Call ID sets are determined by the values of the RAS WACN ID, Home System ID, and Individual ID fields for the same record/row.

It can also be determined by the values of the Custom WACN ID, Custom System ID and/or Individual ID fields for the same record/row.

An ASTRO 25 Call ID set of values can then be selected from the ASTRO 25 Trunking Hot List **Call ID** field.

4.41.3

Type II Trunking ID

This section allows you to view or modify sets of Type II - Trunking Call IDs for individual Contacts.



NOTE: These Call ID sets (records/rows) can then be selected from the Trunking [Type II Trunking Hot List's - Call ID](#) field.

4.41.3.1

System Name

This field selects the desired Type II Trunking System, or allows you to create a customized ID set.

Selecting a Trunking System automatically selects the [System ID on page 1274](#) value. This selection applies for the Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID](#) field.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Unassigned

No selection.

Customized

Allows you to enter a [Custom System ID on page 1274](#) for the current record/row. These IDs apply for a Type II Trunking System not defined in the current codeplug. This Call ID set can then be selected from the [Call ID](#) field.

Possible Trunking Systems

Selects a programmed Trunking System from within the current codeplug.

4.41.3.2

System ID

This field allows you to view the in-the-field ASTRO 25 - System ID and Type II - System ID for the currently selected Trunking System.

The System Name field selects the desired Trunking System for the current record/row. This value applies to the current Call ID set (record/row) of the current Contact within the Unified Call List. This Call ID set can then be selected from the [Call ID on page 1279](#) (ASTRO 25) [Call ID](#) (Type II) field.

Accessed Only: When the System Name field is not set to **Customized**, and when the radio is model/option capable.

4.41.3.3

Custom System ID

This field allows you to define a Type II - System ID for a Trunking System not defined in the current codeplug.

This selection only applies when the Trunking [System Name on page 1273](#) field is set to **Customized** for the current record/row. Therefore, this selection corresponds to an in-the-field [Trunking System on page 1188](#). This selection applies to the current Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID](#) field.

Accessed Only: When the [System Name on page 1273](#) field is set to **Customized**, and when the radio is model/option capable.



NOTE: Selections are based on Software System Key Files or Advanced System Keys available to the application. The System Key Report allows you to view the currently available keys.

4.41.3.4

Unit ID

This field selects the Type II Unit ID of the targeted radio operating in Type II Trunking communications mode.

This ID is a match for the [Unit ID on page 1189](#) of the same [Trunking System on page 1188](#) which has been defined in the targeted radio. This selection applies for the Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID](#) field.

Accessed Only: When the radio is model/option capable.



WARNING: The selection range may be modified on a per Advanced (Hardware) Key basis by the Advanced Keys Administrator program.

Table 419: Range

Minimum	Maximum
000001	16777211

4.41.4

ASTRO Conventional ID

This section allows you to view or modify sets of ASTRO 25 - Trunking Call IDs for individual Contacts.



NOTE: These Call ID sets (records/rows) can then be selected from the Conventional [ASTRO Conventional Hot List's - Call ID](#) field.

4.41.4.1

System Name

This field selects the desired ASTRO Conventional System, or allows you to create a customized ID set.

Selecting a Conventional System automatically selects the [System Group Number on page 1275](#) value. This selection applies for the Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID](#) field.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Unassigned

No selection.

Customized

Allows you to enter a [Custom Group Number on page 1275](#) for the current record/row. These IDs apply for an ASTRO [Conventional System on page 1056](#) not defined in the current codeplug. This Call ID set can then be selected from the [Call ID](#) field.

Possible Conventional Systems

Selects a programmed Conventional System from within the current codeplug.

4.41.4.2

System Group Number

This field allows you to view the ASTRO - System Group Number for the currently selected Conventional System.

The [System Name on page 1275](#) field selects the desired ASTRO System for the current record / row. This value applies to the current Call ID set (record / row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID](#) field.

Accessed Only: When the [System Name on page 1275](#) field is not set to **Customized**, and when radio is model/option capable.

4.41.4.3

Custom Group Number

This field allows you to define a System Group Number for an ASTRO Conventional System not defined in the RM's current codeplug.

This selection only applies when the [System Name on page 1275](#) field is set to **Customized** for the current record/row. Therefore, this selection corresponds to an in-the-field ASTRO Conventional System. This selection applies to the current Call ID set (record/row) of the [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID](#) field.

Accessed Only: When the [System Name on page 1275](#) field is set to **Customized**, and when the radio is model/option capable.

4.41.4.4

Individual ID

This field selects the Individual ID of the targeted radio operating in ASTRO - Conventional mode.

This ID is a match for the Individual ID of the targeted radio. The Individual ID must also be a match for the Conventional System ([System Group Number on page 1275](#)) selected in the [System Name on page 1275](#) field for the same record/row. This selection applies for the Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID](#) field.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Table 420: Range

Minimum	Maximum	
1	16777215	

4.41.4.5

Call Type

This field selects the Call Type of the targeted radio operating in ASTRO - Conventional mode.

This selection applies for the Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID](#) field.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Individual

When the current Call ID set is targeted for an individual call.

Group

When the current Call ID set is targeted for a group call.

4.41.5

MDC Conventional ID

This section allows you to view or modify sets of MDC - Conventional IDs for individual Contacts.



NOTE: These Call ID sets (records/rows) can then be selected from the Conventional [MDC Conventional Hot List's - Call ID](#) field.

4.41.5.1

System Name

This field selects the desired MDC Conventional System, or allows you to create a customized ID set.

Selecting an MDC Conventional System automatically selects the [System Group Number on page 1277](#) value. This selection applies for the Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID](#) field.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Unassigned

No selection.

Customized

Allows you to enter a [Custom Group Number on page 1277](#) for the current record/row. These IDs apply for an MDC [Conventional System on page 1056](#) not defined in the current codeplug. This Call ID set can then be selected from the [Call ID](#) field.

Possible Conventional Systems

Selects a programmed Conventional System from within the current codeplug.

4.41.5.2

System Group Number

This field allows you to view the System Group Number for the currently selected MDC Conventional System.

The [System Name on page 1276](#) field selects the desired [Conventional System on page 1056](#) for the current record/row. This value applies to the current Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID](#) field.

Accessed Only: When the [System Name on page 1276](#) field is not set **Customized**, and when radio is model/option capable.

4.41.5.3

Custom Group Number

This field allows you to define a System Group Number for an MDC Conventional System not defined in the current codeplug.

This selection only applies when the [System Name on page 1276](#) field is set to **Customized** for the current record/row. Therefore, this selection corresponds to an in-the-field MDC Conventional System. This selection applies to the current Call ID set of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID](#) field.

Accessed Only: When the [System Name on page 1275](#) field is set to **Customized**, and when the radio is model/option capable.

4.41.5.4

Primary ID

This field selects the Primary ID of the targeted radio operating in MDC Conventional mode.

This ID is a match for the [MDC Primary ID on page 1062](#) of the same Conventional System which has been defined in the targeted radio. This selection applies for the Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID](#) field.

Accessed Only: When the radio is model/option capable.

The following selections are supported:

Table 421: Range

Minimum	Maximum	
1 (Hex)	EEEEFFFF (Hex)	

4.41.6

Phone Number

This section allows you to view or modify Phone Numbers for individual Contacts while operating in Conventional and Trunking communications modes.



NOTE: These Phone Number Call ID sets (records/rows) can then be selected from the [Phone Hot List's - Call ID on page 1283](#) field.

4.41.6.1

Number

This field allows you to define the phone number of the targeted radio while operating in Conventional or Trunking communications mode.

This selection applies for the Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID on page 1283](#) field.



NOTE:

Examples: Any valid phone number, including area code as required.

Only numbers are valid; Letters, spaces, and special characters cannot be used.

Up to 34 numbers are possible.

4.41.6.2

Category

This field allows you to define the category of the phone number of the targeted radio while operating in Conventional or Trunking communications mode.

This selection applies for the Call ID set (record/row) of the current [Contact](#) within the [Unified Call List on page 1270](#). This Call ID set can then be selected from the [Call ID on page 1283](#) field.

The following selections are supported:

Mobile

Select this category for Mobile (cellular) phone numbers.

Work

Select this category for Work (landline) phone numbers.

4.41.6.3

Call ID (Hidden Field)

This hidden field stores the Phone Call ID sets of values for Phone (UCL) Contacts.

Call ID sets are determined by the values of the Number and Category fields for the same record/row.

A Call ID set of values can then be selected from the Phone Hot List **Call ID** field.

4.42

ASTRO 25 Trunking Hot List

This allows you to view or define individual Call Hot Lists for ASTRO 25 Trunking communications.

You are able to select individual Call List members while operating in Trunking mode. Call List members allow for Call Types such as Private Calls and Pages to individual radios or to groups of radios.

The Trunking Call Hot List also allows for "Caller ID".



NOTE:

[Contacts](#) must first be defined in the [Unified Call List \(UCL\)](#) before they may be selected for an ASTRO 25 Trunking Call Hot List.

Sets of Call IDs must also be defined in the UCL's [ASTRO 25 Call Trunking IDs Page](#) before they may be selected for an ASTRO 25 Trunking Call Hot List.

Individual Hot lists are then selectable on a per [Trunking Personality on page 1235](#) basis from the [Trunking Call Hot List on page 1259](#) field.

You can initiate the Hot List edit mode with a [Contacts on page 485](#) button-press or [Contacts on page 528](#) menu-selection.

4.42.1

Hot List Alias

This field allows you to define a recognizable names for the current ASTRO 25 Trunking Hot List.

Once defined, individual ASTRO 25 Hot lists are then selectable on a per [Trunking Personality on page 1235](#) basis from the [Trunking Call Hot List on page 1259](#) field.

Accessed Only: When the radio is model/option capable.



NOTE:

Examples: EMT-001, #500, Electric1, # A5.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.42.2

Contact

This field selects the Contact for the current record/row of the current ASTRO 25 Trunking Hot List.

The [Contacts](#) must first be defined in the [Unified Call List \(UCL\)](#). Once this contact has been selected, the Call ID set (defined in the UCL's [ASTRO 25 Trunking ID Page](#)), may be selected from the [Call ID on page 1279](#) field of this same record/row.

Accessed Only: When the radio is model/option capable.

4.42.3

Call ID

This field selects the Call ID set for the current record/row of the current ASTRO 25 Trunking Hot List.

This Call ID set is defined in the [Unified Call List's - ASTRO 25 Trunking ID Page](#). The [Contact on page 1279](#) for the current record/row must be selected before this selection can be made.

Accessed Only: When the [Contact on page 1279](#) field for the current record/row is not set to **Unassigned**, and when the radio is model/option capable.

4.43

Type II Trunking Hot List

This section allows you to view or define individual Call Hot Lists for Type II Trunking communications.

You are able to select individual Call List members while operating in Trunking mode. Call List members allow for Call Types such as Private Calls and Pages to individual radios or to groups of radios.

The Trunking Call Hot List also allows for "Caller ID".



NOTE:

[Contacts](#) must first be defined in the [Unified Call List \(UCL\)](#) before selecting them for a Type II Trunking Call Hot List.

Sets of Call IDs must also be defined in the UCL's [Type II Trunking IDs Page](#) before selecting them for a Type II Trunking Call Hot List.

Individual Hot lists are then selectable on a per [Trunking Personality on page 1235](#) basis from the [Trunking Call Hot List on page 1259](#) field.

You can initiate the Hot List edit mode with a [Contacts on page 485](#) button-press or [Contacts on page 528](#) menu-selection.

4.43.1

Hot List Alias

This field allows you to define recognizable names for the current Type II Trunking Hot List.

Once defined, individual Type II Call Hot lists are then selectable on a per [Trunking Personality on page 1235](#) basis from the [Trunking Call Hot List on page 1259](#) field.

Accessed Only: When the radio is model/option capable.



NOTE:

Examples: EMT-001, #500, Electric1, # A5.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.43.2

Contact

This field selects the Contact for the current record/row of the current Type II Trunking Hot List.

The contact must first be defined in the [Contact](#) field of the [Unified Call List on page 1270](#). Once this contact has been selected, the ID set (defined in the UCL's [Type II Trunking ID Page](#)) may be selected from the [Call ID](#) field of this same record/row.

Accessed Only: When the radio is model/option capable.

4.43.3

Call ID

This field selects the Call ID set for the current record/row of the current Type II Trunking Hot List.

The Contact for the current record/row must be selected before this selection can be made.

Accessed Only: When the [Contact on page 1280](#) field for the current record/row is not set to **Unassigned**, and when the radio is model/option capable.

4.44

ASTRO Conventional Hot List

This section allows you to view or define individual Call Hot Lists for Conventional communications.

You are able to select individual Call List members while operating in Conventional communications mode. Call List members allow for Call Types such as Selective Calls and Call Alerts to individual radios or to groups of radios.

The ASTRO Call Hot List also allows for "Caller ID".



NOTE:

[Contacts](#) must first be defined in the [Unified Call List \(UCL\)](#) before they may be selected for an ASTRO Call Hot List.

Sets of Call IDs must also be defined in the UCL's [ASTRO Conventional ID on page 1274](#) before they may be selected for an ASTRO Call Hot List.

Individual Hot lists are then selectable on a per [Conventional Personality on page 1091](#) basis from the [ASTRO Call Hot List on page 1097](#) field.

You can initiate the Hot List edit mode with a [Contacts on page 485](#) button-press or [Contacts on page 528](#) menu-selection.

4.44.1

Hot List Alias

This field allows you to define a recognizable name for the current ASTRO Conventional Hot List.

Once defined, individual ASTRO Call Hot lists are then selectable on a per [Conventional Personality on page 1091](#) basis from the [ASTRO Call Hot List on page 1097](#) field.

Accessed Only: When the radio is model/option capable.



NOTE:

Examples: EMT-001, #500, Electric1, #A5.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.44.2

Contact

This field selects the Contact for the current record/row of the current ASTRO Conventional Hot List.

The contact must first be defined in the [Contacts](#) field of the [Unified Call List \(UCL\)](#). Once this contact has been selected, the Call ID set (defined in the UCL's [ASTRO Conventional ID Page](#)) may be selected from the [Call ID](#) field of this same record/row.

Accessed Only: When the radio is model/option capable.

4.44.3

Call ID

This field selects the Call ID set for the current record/row of the current ASTRO Conventional Hot List.

This Call ID set is defined in the Unified Call List's - [ASTRO Conventional ID page](#). The Contact for the current record/row must be selected before this selection can be made.

Accessed Only: When the [Contact on page 1281](#) field for the current record/row is not set to **Unassigned**, and when the radio is model/option capable.

4.45

MDC Conventional Hot List

This section allows you to view or define individual Call Hot Lists for MDC Conventional communications.

You are able to select individual Call List members while operating in Conventional mode. Call List members allow for Call Types such as Selective Calls and Call Alerts to individual radios or to groups of radios.

The MDC Call Hot List also allows for "Caller ID".



NOTE:

[Contacts](#) must first be defined in the [Unified Call List \(UCL\)](#) before selecting them for an MDC Call Hot List.

Sets of Call IDs must also be defined in the UCL's [MDC Conventional ID Page](#) before selecting them for an MDC Call Hot List.

Individual Hot lists are then selectable on a per [Conventional Personality on page 1091](#) basis from the [Non-ASTRO Call Hot List on page 1122](#) field.

You can initiate the Hot List edit mode with a [Contacts on page 485](#) button-press or [Contacts on page 528](#) menu-selection.

4.45.1

Hot List Alias

This field allows you to define recognizable names for the current MDC Conventional Hot List.

Once defined, individual MDC Call Hot lists are then selectable on a per [Conventional Personality on page 1091](#) basis from the [Non-ASTRO Call Hot List on page 1122](#) field.



NOTE:

Examples: EMT-001, #500, Electric1, #A5.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.45.2

Contact

This field selects the desired Contact for the current record/row of the current MDC Conventional Hot List.

The contact must first be defined in the [Contact](#) field of the [Unified Call List on page 1270](#). Once this contact has been selected, the Call ID set (defined in the UCL's MDC Conventional ID (Contact) section) may be selected from the [Call ID](#) field of this same record/row.

Accessed Only: When the this field for the current record/row is not set to **Unassigned**, and when the radio is model/option capable.

4.45.3

Call ID

This field selects the Call ID set for the current record/row of the current MDC Conventional Hot List.

This Call ID set is defined in the [Unified Call List's - MDC Conventional ID Page](#). The [Contact on page 1282](#) for the current record/row be selected before this selection can be made.

Accessed Only: When the [Contact on page 1281](#) this field for the current record/row is not set to **Unassigned**, and when the radio is model/option capable.

4.46

Phone Hot List

This section allows you to view or define the Call Hot List for Phone mode operation.

In Phone mode, you are then able to select individual phone number entries from this Call Hot List while operating in Conventional and Trunking communications modes.

The Phone Call Hot List also allows for "Caller ID".



NOTE:

[Contacts](#) must first be defined in the [Unified Call List \(UCL\)](#) before selecting them for a Phone Call Hot List.

Phone Numbers must be defined in the UCL's [Phone Number Page](#) before selecting them for a Phone Call Hot List.

You can initiate the Hot List edit mode with a [Contacts on page 485](#) button-press or [Contacts on page 528](#) menu-selection.

4.46.1

Contact

This field selects the Contact for the current record/row of the Phone Hot List.



IMPORTANT:

The contact must first be defined in the [Contacts](#) field of the [Unified Call List \(UCL\)](#).

Once this contact has been selected, the ID set (defined in the UCL's [Phone Numbers Page](#)) may be selected from the [Call ID on page 1283](#) field of this same record/row.

Accessed Only: When the radio is model/option capable.

4.46.2

Call ID

This field selects the Call ID set for the current record/row of the Phone Hot List.

This Call ID set is defined in the [Unified Call List's - Phone Number page](#). The [Contact on page 1283](#) for the current record/row must be selected before this selection can be made.

Accessed Only: When the [Contact on page 1283](#) field for the current record/row is not set to **Unassigned**, and when the radio is model/option capable.

4.47

Zones Channel Assignment

The **Zone Channel Assignment** allows you to design and create zone and channel configurations.

Selecting Conventional Personalities for Conventional channels and Trunking Groups for Trunking channels ultimately creates the desired positions of the radio's channel selector for each zone.



NOTE:

You can select Zones with a Zone Select switch-toggle or with a Zone Select menu-selection.

You can select Channels with a Channel Select button-press, Channel Select switch-toggle or Channel Select menu-selection.

4.47.1

Zone

This section allows you to view or modify recognizable names for each zone.



NOTE: Zone positions in the radio are determined by the order that they are defined in the application.



NOTE: Selecting Conventional Personalities for Conventional channels and Trunking Groups for Trunking channels ultimately creates the desired positions of the radio's channel selector for each zone. You can select Zones with a Zone Select switch-toggle or with a Zone Select menu-selection.

4.47.1.1

Position

This field allows you to define the position of zones (record/row) within the current Zone Channel Assignment list.



NOTE: Zone positions in the radio are determined by the order that they are defined in the application.

This selection applies for the current zone.



IMPORTANT:

The Position field is only visible in Table View.

Once created, zone records can be re-ordered by the following procedure: select the Position field of the zone record to be re-ordered and enter the number that represents the desired new position within the list of zones. (See also: Continuous Zone). All other zone records are automatically re-ordered as needed.

4.47.1.2

Zone Names

This field allows you to define recognizable names for the current zone.



IMPORTANT: For portable radios, this name appears in the radio main display, not in the radio top display.

Accessed Only: When the [Zone Text Size on page 773](#) field is greater than 0.



NOTE:

Examples: EMT-001, #500, Electric1, #A5.

Characters, numbers, spaces, and special characters can be used.

The actual number of Zone Name characters that appear in the radio main display is determined by the **Zone Text Size** field. Entries larger than this value are considered invalid.

The Zone Name appears above the Channel Name in the radio main display.

4.47.1.3

Top Display Zone Name

This field allows you to define recognizable top display names for the current zone.



This name appears only in the Top Display of the radio or also appears in the display of the optional Display Remote Speaker Microphone (DRSM). This selection applies for the current zone.

Accessed Only: When the radio is model/option capable.



NOTE:

Examples: EMT-001, #500, Electric1, #A5.

Characters, numbers, spaces, and special characters can be used.

The actual number of Zone Name characters that appear in the display of the radio is determined by the [Top Zone Text Size on page 774](#) field. Entries larger than this value are considered invalid.

When the total number of characters of the [Top Zone Text Size on page 774](#) field and the [Top Channel Text Size on page 775](#) field is less than 8, then this [Top Display Zone Name on page 1284](#) Name and the [Top Display Channel Name on page 1296](#) Name can appear at the same time in the top display of the radio. The Zone Name appears to the left of the Channel Name.

When the total number of characters of the [Top Zone Text Size on page 774](#) field and the [Top Channel Text Size on page 775](#) field is greater than 8, then this [Top Display Zone Name on page 1284](#) Name and the [Top Display Channel Name on page 1296](#) Name alternate in the top display of the radio.

4.47.1.4

Dynamic Zone Enable

This field enables the Dynamic Zone Programming feature for the current zone.

You can select Dynamic Zone Programming with the [Dynamic Zone Programming on page 528](#) menu item selection.



WARNING: The codeplug may be configured for multiple dynamic zones; however, at least one zone must have this field disabled; otherwise, this field becomes invalid.



IMPORTANT:

When a zone is [Clone Enable on page 1285](#), 16 new Channels and Conventional Personalities are automatically added to the codeplug. The 16 new channels are added to this Clone Enabled zone. The 16 new Conventional Personalities are added and automatically assigned in a consecutive order to the 16 new channels. None of the 16 channels can be deleted. None of the personalities assigned to these channels can be modified (from the Personality Number field) and therefore none of these personalities can be deleted.

Disabling this feature for this zone causes the 16 Zone Channel Assignment channels and their 16-associated Conventional Personalities to be deleted.

The maximum number of Cloning Enabled zones per codeplug is 15. 15 zones x 16 channels = 240 channels.

Accessed Only: When the [Protected Zone on page 1287](#) field is disabled, and when the [FPP Enable on page 1287](#) field is disabled, and when the [DVRS Hardware Enable on page 1019](#) field is disabled, and when the radio is model/option capable.

4.47.1.5

Clone Enable

This field allows for Zone Cloning of the current zone. Zone Cloning is a Conventional dispatch only feature.

You must enable [Zone Cloning \(CLON\)](#) on page 541.



IMPORTANT:

When a zone is Clone Enabled and non-dynamic, 16 new Channels and Conventional Personalities are automatically added to the codeplug. The 16 new channels are added to this Clone Enabled zone. The 16 new Conventional Personalities are added and automatically assigned in a consecutive order to the 16 new channels. None of the 16 channels can be deleted. None of the personalities assigned to these channels can be modified (from the Personality Number field) and therefore none of these personalities can be deleted.

Disabling this feature for this zone causes the 16 Zone Channel Assignment channels and their 16-associated Conventional Personalities to be deleted.

The maximum number of Cloning Enabled zones per codeplug is 15. 15 zones x 16 channels = 240 channels.

When a zone is Clone Enabled and non-dynamic, drag and drop operations are disabled on that zone and drag operation is disabled on Zone Channel assignment containing that zone.



NOTE:

User needs to disable the Zone Clone Enable field before deleting the zone.

Personalities are associated/selected for channels from the channel's Personality Number field. In this case, each channel is automatically assigned a personality in numerical order.

EXAMPLE for Cloning Enabled Zones:

Zone 10 - Chan 1 points to Personality 1

Zone 10 - Chan 2 points to Personality 2, ...,

Zone 2 - Chan 1 points to Personality 17, etc...

Accessed Only: If 15 Cloning Enabled zones are set, any other not Cloning Enabled zone will have a view-only status. A zone that is not cloning enabled that has more than one channel will have channels deleted automatically when Clone Enable field is enabled.

4.47.1.6

Zone Announcement

This field selects the Motorola Voice Announcement (.MVA) file to be used for Voice Announcement on the current zone.

When you change the radio to this zone, a voice prompt plays. The [channel announcement](#) voice prompt may also play if applicable. If Text-to-Speech (TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio. See [Voice Announcement Priority on page 853](#) field.



NOTE: The [Voice Announcement List on page 879](#) page allows you to load Motorola Voice Announcement (.MVA) files into the current codeplug.

The following selections are supported:

None

No Voice prompt is needed for the current zone.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Zone Announcement is played as audio.

Motorola Voice Announcement (.MVA) file

Lists all possible voice files defined in the [Voice Announcement List on page 879](#) page.

4.47.1.7

Zone Voice Control Name or TTS Announcement

A common spoken word to reference this zone for Voice Control and Text-to-Speech (TTS) announcements.

 **NOTE:** This field is only applicable for APX NEXT radios.

When the **Play** button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

 **IMPORTANT:** This must be set in order to change the zone using voice control. Ensure that the words are unique and there are no two phonetically similar Zone Voice Controls chosen as they are flagged as invalid.

Accessed Only: When the radio is model or option capable.

NOTE

 **NOTE:**
Configured per zone.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.47.2

FPP/Protection

This section allows you to protect or unprotect individual zones.

Zone protection applies only to FPP (Front Panel Programming).

Accessed Only: When the [Dynamic Zone Enable on page 1285](#) field is **Disabled**.

4.47.2.1

Protected Zone

This field causes the current zone (and all its channels) to be protected against unauthorized FPP (Front Panel Programming).

This Protected Zone feature causes you to be prompted (by the radio) for the [Protected Zone Password](#) when attempting to Front Panel Program.

 **IMPORTANT:** For codeplugs/radios that must be FCC-compliant, the field is automatically enabled and has a read-only status.

Accessed Only: When the radio is model/option capable, and when the Dynamic Zone Enable field is disabled.

4.47.2.2

FPP Enable

This field allows you to perform Front Panel Programming (FPP) for all the channels within the current zone.

You can select FPP with the [Front Panel Programming on page 529](#) menu-selection. FPP is a Conventional communications feature only.

 **WARNING:** When the 12.5 kHz FCC Narrowbanding Mandate applies for the codeplug, programming of exception frequencies must be carried out using the application, and not the FPP feature.

 **IMPORTANT:**
The same [Conventional Personality on page 1091](#) can be assigned to multiple channels (from the [Channels Page](#)), and those channels may be in FPP-enabled zones or non-FPP zones. Therefore, be aware that if a Personality is changed with FPP, those changes affect all channels that reference that Personality, in both FPP-enabled zones and non-FPP zones.

You are able to configure the Tx Power Level with an FPP channel. Note that the [Tx Low Power on page 605](#) button-press, the [Tx Low Power on page 512](#) switch-toggle, and the [Power on page 534](#) menu-selection, do not take precedence over this FPP-enabled channel setting.

Accessed Only: When the radio is model/option capable, and when the [Dynamic Zone Enable on page 1285](#) field is disabled.

4.47.3

Remote Site Interface

This section allows you to enable or disable Remote Site Interface (RSI) for a zone, and view or modify RSI settings for an RSI-enabled zone.



RSI operation pertains to TXM 2000 Transportable Mobile functionality.

 **NOTE:** Zone positions in the radio are determined by the order that they are defined in the application.

Set Up RSI and Radio Feature Warning:

 **WARNING:**
The Zone Channel Assignment's RSI Mode field allows you to designate a zone and all of its channels for RSI usage.

- RSI channels are not capable of Scan Mode and therefore the Scan List Selection is not available.
- Scan List Members cannot select RSI capable Zones or their Channels.
- RSI channels are not capable of Phone Mode (see Phone Operation).
- RSI channels are not capable of Voice Announcement (see Channel Announcement).
- RSI zones cannot be FPP modified.

All channels within an RSI enabled zone can only have referenced Conventional Personalities (selected in the Personality field) that have their Rx Voice/Signal Type set to **ASTRO**.

All channels within an RSI enabled zone can only have a referenced Conventional System that have System Type = **ASTRO** and Remote Site Interface System enabled.

 **WARNING:**
RSI channels are not capable of Emergency Mode transmissions and therefore their referenced Conventional System cannot select an Emergency Profile.

RSI channels are not capable of CAI Data functionality and therefore their referenced Conventional System cannot select a Data Profile.

Accessed Only: When the radio is model/option capable, when the [Dynamic Zone Enable on page 1285](#) is disabled, and when the [FPP Enable on page 1287](#) field is disabled.

4.47.3.1

RSI Mode

This field enables RSI (Remote Site Interface) operation on the current zone.



WARNING:

The Zone Channel Assignment's RSI Mode field allows you to designate a zone and all its channels for RSI usage.

- RSI channels are not capable of Scan Mode and therefore the Scan List Selection is not available.
- Scan List Members cannot select RSI capable Zones or their Channels.
- RSI channels are not capable of Phone Mode (see Phone Operation).
- RSI channels are not capable of Voice Announcement (see Channel Announcement).
- RSI zones cannot be FPP modified.

All channels within an RSI enabled zone can only have referenced Conventional Personalities (selected in the Personality field) that have their Rx Voice/Signal Type set to **ASTRO**.

All channels within an RSI enabled zone can only have a referenced Conventional System that are System Type = **ASTRO** and Remote Site Interface System enabled.

- RSI channels are not capable of Emergency Mode transmissions and therefore their referenced Conventional System cannot select an Emergency Profile.
- RSI channels are not capable of CAI Data functionality and therefore their referenced Conventional System cannot select a Data Profile.

Accessed Only: When the radio is model/option capable, and when the [Dynamic Zone Enable on page 1285](#) field is disabled, and when the [FPP Enable on page 1287](#) field is disabled.

The following selections are supported:

Disabled

RSI operation is disabled on the current zone.

V.24

RSI operation is enabled on the current zone, through a V.24 serial communications link to the Fixed Network Equipment (FNE).

IP

Allows the selection of IP based operation with a GRV type comparator.

4.47.3.2

Transmit Indication

This field enables the TXM 2000 Transportable Mobile to loop back the audio and/or data that originated at the Fixed Network Equipment (FNE) end of a V.24 link.



This selection provides indication to the dispatcher on the FNE that the TXM 2000 made a best-case effort to (re-send) "transmit" what was received from the FNE. However, this does not guarantee that the audio and/or data was transmitted.

This selection applies while operating on the current Remote Site Interface (RSI) enabled zone.

Accessed Only: When the radio is model/option capable, and when the [RSI Mode on page 1289](#) field is not set to **Disabled**.

4.47.3.3

Site Number

This field selects the TXM 2000 Transportable Mobile's Terminal Endpoint Identifier (TEI) which uniquely identifies the radio on the Integrated Services Digital Network (ISDN) link.



This selection applies while operating on the current Remote Site Interface (RSI) enabled zone.

Accessed Only: When the radio is model/option capable, and when the [RSI Mode on page 1289](#) field is not set to **Disabled**.

Table 422: Range

Minimum	Maximum	Increments
1	62	1



NOTE: This selection applies when the [RSI Mode](#) field is set to **V.24**.

Table 423: Range

Minimum	Maximum	Increments
1	64	1



NOTE: This selection applies when the [RSI Mode](#) field is set to **IP**.

4.47.3.4

Autodial Enabled

This field enables auto-dialling of the modem TXM 2000 Transportable Mobile.



Figure 2: TXM 2000 Transportable Mobile



By enabling the autodial, the modem forms part of the V.24 link to the Fixed Network Equipment (FNE) for the current Remote Site Interface (RSI) enabled zone.

Accessed Only: When the radio is model/option capable, and when the [RSI Mode on page 1289](#) field is set to **V.24**.

4.47.3.5

Time Between Dial Attempts

This field selects the time between modem (TXM 2000 Transportable Mobile) dial attempts while the V.24 link with the FNE (Fixed Network Equipment) is down.



This selection applies while operating on the current Remote Site Interface (RSI) enabled zone. Time is in seconds.

Accessed Only: When the radio is model/option capable, and when the [RSI Mode on page 1289](#) field is set to **V.24**, and when the [Autodial Enabled on page 1290](#) field is enabled.

Table 424: Range

Minimum	Maximum	Increments
30 (seconds)	3600 (seconds)	5 (second)

4.47.3.6

Alternate Comparator DTLs Port Number

This field selects the DTLs port number for the alternate GRV comparator.



Minimum	Maximum	Default
1	65535	49688

Accessed Only:

- When the radio is model/option capable.
- When the RSI Mode field is set to **IP**.

4.47.3.7

Main Comparator Hostname

This field defines the location of the main or standalone GRV comparator in the form of a fully qualified domain name (FQDN).



Example: Main.comparator.host, 10.101.1.123.



NOTE:

- The maximum number of ASCII characters is 63.
- Hostname must not be blank.

Accessed Only:

- When the radio is model/option capable
- when the **RSI Mode** field is set to **IP**.

4.47.3.8

Main Comparator DTLS Port Number

This field selects the DTLS port number for the main or standalone GRV comparator.



Table 425: Selections

Minimum	Maximum	Default
1	65535	49688

Accessed Only:

- When the radio is model/option capable
- when the **RSI Mode** field is set to **IP**.

4.47.3.9

Alternate Comparator Hostname

This field defines the location of the alternate GRV comparator in the form of a fully qualified domain name (FQDN). This field should be blank for standalone operation.



NOTE: All ASCII characters are allowed. The maximum number of ASCII characters is 63.

Accessed Only:

- When the radio is model/option capable.
- When the [RSI Mode on page 1289](#) field is set to "IP".

4.47.3.10

Comparator Channel Number

This field selects the RSI comparator channel number. This field must match the BR/CM Pairing number programmed into the GRV comparators.



Table 426: Selections

Minimum	Maximum	Default
1	200	1

Accessed Only:

- When the radio is model/option capable
- when the [RSI Mode](#) field is set to **IP**.

4.47.3.11

DTR Toggle Time

This field defines the time on how long the Data Terminal Ready (DTR) line is pulled low on the modem (TXM 2000 Transportable Mobile) before pulling it high.



The DTR line is pulled low to terminate (hang-up) a modem connection, and the DTR line is pulled high to indicate that the radio (terminal) is ready for communications and that the modem may dial to initiate a communications channel with the FNE modem.

This selection applies while operating on the current Remote Site Interface (RSI) enabled zone. Time is in seconds.

Accessed Only: When the radio is model/option capable, and when the [RSI Mode on page 1289](#) field is set to **V.24**, and when the [Autodial Enabled on page 1290](#) field is enabled.

Table 427: Range

Minimum	Maximum	Increments
1 (second)	30 (seconds)	1 (second)

4.47.4

Channels

This section allows you to view or modify specific channel configurations within the desired zone.



NOTE:

Selecting [Conventional Personalities](#) for Conventional channels and Trunking Groups for Trunking channels ultimately creates the desired positions of the radio's channel selector for each zone.

You can select Channels with a [Channel Select on page 591](#) button-press, [Channel Select on page 509](#) switch-toggle, or [Channel Select on page 527](#) menu selection.

Accessed Only: When the [Dynamic Zone Enable on page 1285](#) field is **Disabled**.

4.47.4.1

Position

This field allows you to define the position of channels (record/row) within the channel configuration of the current zone.



IMPORTANT:

The Position field is only visible in Table View.

Once created, channel records can be re-ordered by the following procedure: select the Position field of the channel record to be re-ordered and enter the number that represents the desired new position within the list of channels for the current zone. All other channel records are automatically re-ordered as needed.

Accessed Only: When the [Dynamic Zone Enable on page 1285](#) field is disabled.

4.47.4.2

Conventional Frequency Option

This field selects the Conventional Frequency Options profile for the current channel (record/row).

This selection applies for the current zone.



NOTE:

The Conventional Personality must first be selected in the [Personality on page 1296](#) field.

Frequency option profiles must be created and defined before they can be selected from this field.

Accessed Only: When the [Dynamic Zone Enable on page 1285](#) field is disabled, and when the [Channel Type on page 1295](#) field is set to **Cnv** (Conventional).

4.47.4.3

Channel Name

This field allows you to define recognizable names for the current channel (record/row).



IMPORTANT: For portable radios, this name appears in the radio main display, not in the radio [top display](#).

This selection applies for the current zone.

Accessed Only: When the [Dynamic Zone Enable on page 1285](#) field is disabled.



NOTE:

Examples: EMT-001, #500, Electric1, #A5.

Characters, numbers, spaces, and special characters can be used.

The actual number of Channel Name characters that appear in the radio main display is determined by the **Channel Text Size** field. Entries larger than this value are considered invalid.

The Zone Name appears above the Channel Name in the radio main display.

4.47.4.4

Radio Profile Selection

This field selects the radio profile for the current channel (record/row).

Radio profiles allow for designed groupings of audio settings to be designed for specific radio channels and or specific in-the-field usage scenarios.

You may select Radio profiles (on a per channel basis) with the [Radio Profiles on page 491](#) button-press or the [Radio Profiles on page 535](#) menu-selection.

This selection applies for the current zone.

Accessed Only: When the [Dynamic Zone Enable on page 1285](#) field is disabled.

The following selections are supported:

Last Selected

The first record/row in [Radio Profiles on page 811](#) (regardless of the profile name) is used until you change to a different profile. After that, it locks your current profile selection to the channel until the profile selection is changed again.

Other Profile Names

Three pre-named profile records have been supplied for your convenience: **Default**, **Surveillance**, and **Loud Audio**. These profiles can be renamed, and should be defined according to your needs if more profiles may be created.

4.47.4.5

Channel Type

This field selects the radio communications type, Conventional or Trunking, for the current channel (record/row).

This selection applies for the current zone.



NOTE: Once this selection has been made, the [Personality on page 1296](#) field selection may then be made.

Accessed Only: When the radio is model/option capable, and when the [Dynamic Zone Enable on page 1285](#) field is disabled, and when the [Clone Enable on page 1285](#) field is disabled.

The following selections are supported:

Trk

Trunking

Cnv

Conventional

4.47.4.6

Top Display Channel Name

This field allows you to define recognizable top display name for the current channel (record/row).



This name appears only in the Top Display of the radio, and/or also appears in the display of the optional Display Remote Speaker Microphone (DRSM). This selection applies for the current zone.

Accessed Only: When the [Dynamic Zone Enable on page 1285](#) field is disabled, and when the radio is model/option capable.



NOTE:

Examples: EMT-001, #500, Electric1, #A5.

Characters, numbers, spaces, and special characters can be used.

The actual number of Channel Name characters that appear in the display of the radio is determined by the [Top Channel Text Size on page 775](#) field. Entries larger than this value are considered invalid.

When the total number of characters of the [Top Zone Text Size on page 774](#) field and the [Top Channel Text Size on page 775](#) field is less than 8, then the [Top Display Zone Name on page 1284](#) Name and this Top Display Channel Name can appear at the same time in the top display of the radio. The Zone Name appears to the left of the Channel Name.

When the total number of characters of the [Top Zone Text Size on page 774](#) field and the [Top Channel Text Size on page 775](#) field is greater than 8, then the [Top Display Zone Name on page 1284](#) and this Top Display Channel Name alternate in the top display of the radio.

4.47.4.7

Personality

This field selects the desired Conventional Personality or Trunking Personality for the current channel (record/row).

This selection applies for the current zone.



IMPORTANT:

The [Channel Type on page 1295](#) field determines the Personality's communications type that is available for selection from this field.

Personalities must be created and defined before they can be selected from this field.

Accessed Only: When the [Dynamic Zone Enable on page 1285](#) field and [Clone Enable on page 1285](#) field are disabled.

4.47.4.8

Channel Announcement

This field selects the Motorola Voice Announcement (.MVA) file to be used for Voice Announcement on the current channel/mode.

When you change the radio to this channel, a voice prompt plays. A [Channel Announcement on page 484](#) button-press allows you to hear the current channel voice recording of the radio whenever needed. See also the Voice Announcement Priority field. If Text-to-Speech(TTS) is selected, the text in the corresponding Voice Command field is converted to speech and played as audio.

This selection applies for the current zone.

 **NOTE:** The [Voice Announcement List on page 879](#) page allows you to load Motorola Voice Announcement (.MVA) files into the current codeplug.

Accessed Only:

- [Dynamic Zone Enable on page 1285](#) field is disabled.
- [RSI Mode on page 1289](#) field is disabled for the current zone.

The following selections are supported:

None

No Voice prompt is needed for the current channel.

TTS

When Voice Control feature is enabled, the text in the Voice Command field for Channel Announcement is played as audio.

Motorola Voice Announcement (*.MVA) file

Lists all possible voice files defined in the [Voice Announcement List on page 879](#) Page.

4.47.4.9

Channel Voice Control Name or TTS Announcement

A common spoken word to reference this channel for Voice Control. This can also be used to set the channel announcement to this text, if channel announcement is set to Text-to-Speech (TTS).

 **NOTE:** This field is only applicable for APX NEXT radios.

When the **Play** button is clicked, the application converts the text in the voice command field to speech and plays it through the speaker.

 **IMPORTANT:** This must be set in order to change the channel using voice control. Ensure that the words are unique and that there are no two phonetically similar Channel Voice Controls chosen within a zone as they will be flagged as invalid.

Accessed Only: When the radio is model or option capable.

 **NOTE:**
Configured per channel.

The default value is blank.

Unicode characters.

Alphanumeric characters only with a maximum of 35 characters.

4.47.4.10

Trunking Talkgroup

This field selects the Talkgroup or the Talkgroup type to be used for the current channel (record/row).

This selection applies for the current zone.

Accessed Only: When the [Dynamic Zone Enable on page 1285](#) field is **Disabled**, when the [Channel Type on page 1295](#) field is set to **Trk** (Trunking), and when the radio is model/option capable.

The following selections are supported:

Talkgroup Selections

Talkgroups appearing for selection are based on the [Trunking Personality on page 1235](#) selected in this channel's [Personality on page 1296](#) field.

A Talkgroup is a programmed grouping of radios created for the purpose of frequent and convenient communication with each other.

 **NOTE:** Talkgroups are defined in the Personality's [Talkgroup on page 1251](#) Page.

DYN (Dynamic Regrouping)



WARNING:

This selection is only valid when the [Transmit Mode on page 1243](#) field for the Trunking Personality selected in this channel's [Personality on page 1296](#) field is not set to **TG/AG Disabled** (Listen-only).

A Dynamic Regrouping configuration is only valid when a Trunking Personality referenced to a channel has this field set to **DYN**, and that Personality's selected Zone and Channel match the selections for [Dynamic Regrouping Zone on page 1213](#) and [Dynamic Regrouping Channel on page 1214](#) in the Personality's referenced Trunking System.



IMPORTANT: Only one Dynamic Regrouping channel may be defined per referenced Trunking System.

You may request a new Dynamic Regrouping assignment from the dispatcher with a [Reprogram Request on page 492](#) button-press or a [Reprogram Request on page 536](#) menu-selection. The available features and settings of the Dynamic Regrouping talkgroup are defined and transmitted back by the dispatcher.

For the Dynamic Regrouping talkgroup to be capable of transmitting in Secure mode, either the [Secure Tx Select on page 602](#) button-press or the [Secure Tx Select on page 511](#) switch-toggle or the [Secure on page 537](#) menu-selection is needed; otherwise Dynamic Regrouping talkgroup transmissions are strapped to transmitting in **Clear** mode.

ATG (Announcement Group)

This selection is only valid when the [Announcement Group on page 1246](#) field for the Trunking Personality selected in this channel's [Personality on page 1296](#) field is not set to **None**.

Announcement Groups allows you to initiate and communicate on one large communication channel comprised of all [Talkgroups](#) defined for the current Trunking Personality.

4.47.4.11

Personnel Accountability Sector ID

This field selects the ID number that identifies the current Personnel Accountability Sector location for the current channel.

This selection applies for the current zone.



IMPORTANT:

When you or a radio moves into a new sector, you can change the channel of the radio to the appropriate channel that is designated for the new sector location.

When operating in talkaround/direct mode and in close proximity of other radios, it is recommended to configure additional preamble of 160 to the ASTRO system configured with Personnel Accountability enabled channels.

Accessed Only: When the radio is model/option capable, and when the [Channel Type on page 1295](#) field is set to **Cnv** (Conventional), and when the [Conventional Personality on page 1091](#) referenced to the current Conventional channel has its [Incident Signaling Type on page 1157](#) field set to **Personnel Accountability** or **Personnel Accountability with MDC**.

Table 428: Range

Minimum	Maximum	Increments
0 (hex)	FF (hex)	1



NOTE:

Each value must be unique for each channel. In other words, each value can only be used once per radio.

0 (the Factory-Default value) is used to designate non-Personnel Accountability channels, and therefore may be re-used as necessary.

4.47.4.12

Fallback Zone

This field describes the zone the radio must be switched to when Channel Fallback occurs.

If the Fallback Channel field is disabled, then Channel Fallback will be unable to arm on the selected channel.

Accessed only: When the Channel Fallback field is enabled.

4.47.4.13

Fallback Channel

This field selects the channel in the selected Fallback Zone that the radio must switch to when Channel Fallback occurs. If this field is disabled, then Channel Fallback cannot activate on the selected channel.

Accessed Only: When the **Channel Fallback Enable** field is enabled.

4.47.4.14

Channel Color Backlight Selection

This field allows you to select the backlight color for the current channel (record/row).



NOTE: This selection only applies to the current zone.

Accessed Only: When [Channel Color Backlight on page 784](#) is **Enabled**, and the Radio Profile Selection is not set to a profile with [Night Vision Goggles Enable on page 812](#) or [Disable Lights on page 812](#) enabled.

The following selections are supported:

- White
- Red
- Green
- Orange

4.47.4.15

Channel Color Backlight Selection (E5)

This field selects the backlight color for the current channel (record/row).



This selection only applies to the current zone.



IMPORTANT: This feature is only applicable to the E5 Control Head.

Accessed Only: When the [Channel Color Backlight Selection](#) is **Enabled**.

The following selections are supported:

- Default
- Red
- Orange
- Green
- Dark Blue
- Blue
- Violet

4.47.4.16

Wi-Fi

This field shows if Wi-Fi is enabled or disabled on a channel.

The following selections are supported:

- Allow
- Block

Accessed Only: When the **Wi-Fi Enable** is enabled and the radio is model/option capable.



NOTE: The default value is **Allow**.

4.48

Scan Wide

The **Scan Wide** section allows you to view or define scan functionality related to both Conventional and Trunking communications modes.

Scan Wide features may apply on a radio-wide basis to all [Scan List on page 1305](#).

A Scan List allows for many possible receive channels while operating in Scan Mode.



NOTE: Individual Scan Lists can be assigned to [Conventional](#) and [Trunking](#) Personalities with their respective Scan List Selection field.

4.48.1

General

This section allows you to view or define functionality that can apply to all Scan Lists of all Scan Type.



NOTE: Individual Scan Lists can be assigned to [Conventional](#) and [Trunking](#) Personalities with their respective Scan List Selection field.

4.48.1.1

Priority Scan Alert

This field enables the radio to audibly alert you.

This feature is enabled when a [Priority Member 1 on page 1310](#) or a [Priority Member 2 on page 1311 - Scan List Member](#) channel is landed while scanning.

One beep is generated for both Priority #1 and Priority #2 channels. This feature applies to all [Scan Types](#).

Accessed Only: When the Alert Tones field is **Enabled**, and when the radio is model/option capable.

4.48.1.2

HUB Suspends Scan

This field enables Scan Mode operation to be temporarily suspended once the radio's microphone is removed from the Hang Up Box (HUB).

However, Priority Member scanning is not suspended. This feature is typically used to allow you to control how long the radio remains on a landed [Scan List Member](#) channel once all conversation has ceased. Scan Mode is resumed once the radio's microphone is placed back on the HUB.



NOTE: Normally, scan automatically resumes after all conversation has ceased and once the [Voice Rx Tx Hold Time on page 1301](#) period has expired. This feature applies to all Scan Lists, [Scan Types](#).



IMPORTANT: Priority Scan List members are continuously scanned only when the [Designated Voice Tx Member Type on page 1311](#) field is set to **Talkback**. Otherwise, all scan mode operation is suspended.

Accessed Only: When radio is model/option capable.

4.48.1.3

Suspend All Scan

This field enables Scan Mode operation to be temporarily suspended once the radio microphone is removed from the Hang Up Box (HUB).

Priority Member scanning is also suspended. This feature is typically used to you to control how long the radio remains on a landed [Scan List Member](#) channel once all conversation has ceased. Scan Mode is resumed once the radio's microphone is placed back on the HUB.



NOTE: Normally, scan automatically resumes after all conversation has ceased and once the [Voice Rx Tx Hold Time on page 1301](#) period has expired. This feature applies to all Scan Lists, [Scan Types](#).

Accessed Only: When the [HUB Suspends Scan on page 1301](#) field is **Enabled**.

4.48.1.4

Voice Rx Tx Hold Time

This field selects the amount of time that the radio remains on a Landed Scan Mode - Scan List Member channel before resuming in Active Scan Mode.

This timer begins once all receive and transmit voice communication has ceased. This feature applies to all [Scan Types](#) while operating in Scan Mode. Time is in seconds.

Table 429: Range

Minimum	Maximum
0 (second)	255 (seconds)

4.48.1.5

Data Rx Tx Hold Time

This field selects the amount of time that the radio remains on a Landed Scan Mode - Scan List Member channel before resuming in Active Scan Mode.

This timer begins once all receive and transmit data communication has ceased. This feature applies only for a [Scan List on page 1305](#) that has its [Scan Type on page 1306](#) field set to **Conventional**, and while operating in Scan Mode. Time is in seconds.

Accessed Only: When radio is model/option capable.

Table 430: Range

Minimum	Maximum
0 sec	255 sec

4.48.2

Conventional

This section allows you to view or define functionality for all that have a selected of **Conventional** or **Multi-System Talkgroup**.



NOTE: Individual Scan Lists can be assigned to [Conventional](#) and [Trunking](#) Personalities with their respective Scan List Selection field.

4.48.2.1

Carrier Detect Required

This field enables the radio to land on carrier squelch but to only unmute on Priority - Scan List Members or on a proper Private Line (PL) code detect.

This applies while making an active scan of a Conventional scan list member channel, while in scan mode.

4.48.2.2

Priority Channel Marking

This field enhances Priority Channel Scan performance by causing unqualified Priority Scan List Member transmissions to be "Marked" and temporarily removed from the scan list.

This is particularly effective when in Landed Scan Mode on a non-priority scan list member, and when the radio briefly mutes at specific [time intervals](#) to check for [Priority Member 1 on page 1310](#) or [Priority Member 2 on page 1311](#) Member activity.

This temporary Scan List Member removal allows this muting period to be a shorter amount of time, and a shorter interruption for the current call. This feature applies only to Conventional scan list member channels.



IMPORTANT:

An analog Priority Channel is "marked" when it is unsuccessfully scanned due to no TPL/DPL (PL) code where a PL code was expected, or where the PL code was incorrect.

A digital (ASTRO System) Priority Channel is "marked" when it is unsuccessfully scanned due to no Network Access Code (NAC) where a NAC code was expected, or where the NAC code was incorrect.

Once the PTT button is pressed, or when scan finds that carrier has dropped on a "marked" Priority channel, or the proper PL/NAC is detected on the "marked" channel, then the "marked" status is removed for that Priority channel and normal priority scanning is resumed.

A DVRS system will not support Priority Channel Marking.



NOTE: Analog and digital are determined by the [Rx Voice/Signal Type on page 1162](#) field setting on a per channel basis.

4.48.2.3

Monitor Hold Time

This field selects the amount of time that the radio remains on the current Scan List Member channel waiting for channel activity.

This timer begins once you release the [Monitor on page 488](#) button-press. This selection applies only to Conventional scan list member channels. Time is in seconds.



NOTE: Pressing the Monitor button is sometimes used as a method to suspend scanning. Once the timer expires, the radio continues normal Scan Mode operation.

Table 431: Range

Minimum	Maximum
0 (second)	255 (seconds)

4.48.2.4

Time Between Priority Samples

This field selects the amount of time that the radio waits between taking samples.

Samples are taken to check for incoming [Priority Member 1 on page 1310](#) or [Priority Member 2 on page 1311](#) channel activity.

This sampling is needed when the radio is in Landed Scan Mode on a non-priority scan list member, or when landed on a Priority #2 Scan List member channel and checking for a Priority #1 transmission. When the sampling occurs, the radio briefly mutes potentially causing brief interruptions in the radio's receive audio. This selection applies only to Conventional scan list member channels. Time is in milliseconds.

The value specified in Time between Priority Samples is not applicable to the DVRS system. APX radios on the DVRS system will set this time to a fixed value of 550 ms, therefore, the value in this field will not take effect.



NOTE: See also [Priority Channel Marking on page 1302](#).

Table 432: Range

Minimum	Maximum	Increments
250 ms	6375 ms	25 ms

4.48.2.5

RSSI Voting Threshold

This field selects a Received Signal Strength Indication (RSSI) strong signal level that is then required from a Scan List Member channel in order for the radio to unmute.

This feature applies only when the radio is capable of Conventional Voting Scan. When in a Voting Scan Conventional communications system, several repeaters re-broadcast the same transmission simultaneously on different frequencies; the radio then selects the strongest/clearest signal. Therefore, this threshold setting defines when the best signal is strong enough for the radio to unmute. If no Voting Scan - Scan List Member exceeds the threshold, then the channel with the highest RSSI value is selected for unmuting. This selection applies only to Conventional scan list member channels.

 **WARNING:** This feature only functions: When a [Scan List on page 1305](#) has its [Scan Type on page 1306](#) field set to **Voting Scan**, and when none of the [Scan List Member](#) channels within that list has [Automatic Scan on page 1155](#) **Enabled**, and when all Scan List Member channels use repeaters within a Conventional Voting Scan wide-area network.

Accessed Only: When the radio is model/option capable.

Table 433: Range

Minimum	Maximum
00 (Hex)	FF (Hex)

4.48.3

Trunking

This section allows you to view or define functionality for all Lists that have **Multi-System Talkgroup** selected for the Scan Type.

 **NOTE:** Individual Scan Lists can be assigned to [Conventional](#) and [Trunking](#) Personalities with their respective Scan List Selection field.

4.48.3.1

Failsoft Hold Time

This field selects how long the radio remains unmuted on a (Trunking only) Landed Scan - Scan List Member channel once Failsoft has occurred.

During this time period, the radio is unmuted to the Failsoft channel listening to a silent Failsoft carrier or voice transmission. Once this timer has expired Active Scan Mode operation resumes. This selection applies only to Scan Lists where **Multi-System Talkgroup** is the selected [Scan Type on page 1306](#).

 **NOTE:** Only a **Multi-System Talkgroup** type Scan List allows for Trunking channels with multiple [Trunking Systems](#). Therefore when Failsoft has occurred on a channel, and once this Hold Timer has expired, other working channels can then be scanned.

Accessed Only: When radio is model/option capable.

Table 434: Range

Minimum	Maximum
0 (second)	255 (seconds)

4.48.3.2

System Search Time

This field selects the amount of time that the radio remains muted on a Landed Scan control channel when scanning for Scan List Members.

During this time period the radio is decoding Trunking System channel grants looking for grants to its Trunking scan list members. Once this timer has expired without the radio receiving a channel grant, the radio begins actively scanning the next Conventional scan list member or returns to the radio's currently selected channel.



WARNING: This feature functions only for [Scan Lists](#) where **Multi-System Talkgroup** is the selected [Scan Type on page 1306](#).



IMPORTANT:

While scanning a Trunked system from a conventional channel, the radio is not listening to the radio's currently selected Conventional channel. Consequently the longer this timer runs, the more time is spent off of the currently selected channel. Therefore this selection should only be set to a longer time value when scanning a control channel on a busy system and may be set to shorter time value when scanning a less busy system.

Only a [Scan List on page 1305](#) with a **Multi-System Talkgroup**, and [Scan Type on page 1306](#) allows for Trunking channels with multiple [Trunking Systems](#). Therefore this search timer allows for other Systems to be alternatively scanned.

Accessed Only: When radio is model/option capable.

Table 435: Range

Minimum	Maximum
1 (second)	255 (seconds)

4.49

Scan List

This section allows you to create and delete Scan Lists, as well as define individual Scan List functionality.

A Scan List contains desired groupings of Conventional and/or Trunking channels, which are selected for each list in the Scan List Member section.

The selected channels can then be checked for transmission activity one at a time when the radio is in Scan Mode. Therefore, allowing for many possible receive channels. The radio only scans its currently operating channel assigned Scan List.



NOTE:

Individual Scan Lists can be assigned to Conventional and Trunking Personalities with their respective Scan List Selection field.

You can initiate scan mode automatically through Automatic Scan or with a Scan button-press, Scan switch-toggle or Scan menu selection.

4.49.1

General

This section allows you to view or define functionality that applies to individual Scan Lists.



NOTE:

Scans Lists Types that allow Trunking Scan List Member channels are dependent on one or more [Trunking Systems](#). Therefore, the Trunking System must be defined prior to configuring Scan List features.

Individual Scan Lists can be assigned to [Conventional](#) and [Trunking](#) Personalities with their respective Scan List Selection field.

4.49.1.1

Scan List Alias

This field allows you to define recognizable names for the current Scan List.



NOTE:

Examples: Scan List 05, Electric1, #510.

Characters, numbers, spaces, and special characters can be used.

Up to 14 characters are possible.

4.49.1.2

Scan Type

This field selects the type of Scan List Member channels that can be selected for the current Scan List.

These Conventional or Trunking (or both) [Scan List Member](#) channels are then scanned for qualified transmission activity when the radio is operating in Scan Mode.



IMPORTANT: Scan Types that allow Trunking Scan List Member Personalities/channels may require certain selected [Trunking Systems](#). Therefore, Trunking System must be defined for these selected Trunking Personalities prior to configuring certain Trunking-related Scan List features. Trunking Systems are referenced to a Trunking Personality with the Trunking Personality [System on page 1236](#) field.

Accessed Only: When radio is model/option capable.

The following selections are supported:

Conventional

Only Conventional channels may be selected for this Scan List type; including Conventional Personalities configured for Conventional Mixed Vote Scan designated by having their [Mixed Vote Scan Enable on page 1155](#) field **Enabled**.

Up to 30 [Channel on page 1316](#) per scan list is possible with the below conditions:

- When a Conventional Personalities has its Mixed Vote Scan Enable field **Enabled**, each Frequency Options (record/row) of that personality counts towards the 30 Scan List member maximum.
- Per Scan List, a maximum of three Mixed Vote Scan enabled Conventional Personalities are possible as Scan List Member channels.

Validity for Mixed Vote Scan Personalities:



WARNING: When the [Mixed Vote Scan Tx Steering on page 1155](#) field is **Disabled** for this Scan List, any Scan List Member channel (selected for the current Scan List) must have its Frequency Options Transmit (Tx) parameters set according to following rules:
The [Tx Frequency on page 1130](#) Tx Frequency must be a match for all channels in the Scan List.
The [Tx Deviation/Channel Spacing on page 1134](#) must be a match for all channels in the Scan List.
The [Tx Network ID on page 1137](#) must be a match for all channels in the Scan List.
or
The Tx Frequency must be a match for all channels in the Scan List.
The Tx Deviation/Channel Spacing must be a match for all channels in the Scan List.
The User Selectable PL (MPL) field must be **Disabled** for all channels in the Scan List.
The [Tx Squelch Type on page 1129](#) must be a match for all channels in the Scan List. If the Tx Squelch Type is set to **PL**, then the [Tx PL Code on page 1133](#) must be a match for all channels in the Scan List, or if the Tx Squelch Type is set to **DPL**, then the [Tx DPL Code on page 1135](#) and the [Tx DPL Invert on page 1137](#) must be a match for all channels in the Scan List.

Priority Monitor

Available on a model/option capable basis.

Only Trunking channels may be selected for this Scan List type.

Per Scan List, Priority Monitor Scan allows up to 50 Scan List Member channels.

The Trunking Talkgroup field for any of the Trunking Scan List Member channels selected for the current Scan List may not be set to **DYN** or **ATG**.

The Trunking System Record field's "System" selection (for the current Scan List) must match the referenced Trunking System field of all of the Trunking Scan List Member channels selected for the current Scan List.

If the [Coverage Type on page 1190](#) field of the Trunking System Record field's Trunking System selection (for the current Scan List) is set to **Inter-WACN Roaming**, then that Trunking System's Home WACN ID and System ID must match the TG WACN ID and TG System ID of the Trunking Talkgroup for any of the Trunking Scan List Member channels selected for the current Scan List.

Multi-System Talkgroup

Available on a model/option capable basis.

Both Conventional and Trunking channels may be selected for this Scan List type.

Per Scan List, Multi-System Talkgroup Scan is limited to five Trunking Systems, with up to 50 Scan List Member channels per Trunking System, and may include up to 10 Conventional Scan List Member channels. However, the maximum per Scan List is 250 Scan List Member channels.

Not more than 50 of the selected Scan List Member channels may reference the same Trunking System.

The Trunking Talkgroup field for any of the Trunking Scan List Member channels selected for the current Scan List may not be set to **DYN** or **ATG**.

The Conventional Personality Mixed Vote Scan Enable field must be **Disabled** for all Scan List Member channels selected for this Scan List type.



WARNING: Common Air Interface (CAI) data operations are not supported in this Scan Type. This is true because of the conflicting nature of CAI data operation (which requires the radio to receive short bursty transmissions) and Multi-System Scan (which requires the radio to spend long periods of time monitoring secondary scan members).

Voting Scan

Available on a model/option capable basis.

Only Conventional channels may be selected for this Scan List type.

Voting Scan allows only up to 10 Scan List Member channels per Scan List.



WARNING: A Voting Scan system functions only when all Scan List Member channels (selected for the current Scan List) use repeaters within a Conventional Voting Scan wide-area network.



NOTE: When operating in a Voting Scan system, several repeaters re-broadcast the same transmission simultaneously on different frequencies; the radio is then able to select the strongest/clearest signal. The RSSI Voting Threshold setting defines when the best signal is strong enough for the radio to unmute. If no channel exceeds the threshold, then the channel with the highest RSSI value is selected for unmuting.

Validity for Scan List Channel:

The Conventional Personality Mixed Vote Scan Enable field must be **Disabled** for all Scan List Member channels selected for the current Scan List.

The [Automatic Scan on page 1155](#) field must be **Disabled** for all Scan List Member channels selected for the current Scan List.

When the Tx Steering field is **Enabled** or **Disabled** for this Scan List, it is not a concern for any Scan List Member channel (selected for the current Scan List) that has its [Receive Only Personality on page 1162](#) field **Enabled**.



WARNING:

However, when the Tx Steering field is **Disabled** for this Scan List, any Scan List Member channel (selected for the current Scan List) that has its Receive Only Personality field **Disabled** must also have its Transmit (Tx) parameters set according to following rules.

When all Scan List Member channels of the current Scan List have their [Tx Voice/Signal Type on page 1100](#) set to **ASTRO** the following must be true:

The Tx Frequency must be a match for all channels in the Scan List.

The Tx Deviation/Channel Spacing must be a match for all channels in the Scan List.

The Tx Network ID must be a match for all channels in the Scan List.

or

The Tx Frequency must be a match for all channels in the Scan List.

The Tx Deviation/Channel Spacing must be a match for all channels in the Scan List.

The User Selectable PL (MPL) field must be **Disabled** for all channels in the Scan List.

Tx Squelch Type must be a match for all channels in the Scan List. If the Tx Squelch Type is set to **PL**, then the Tx PL Code must be a match for all channels in the Scan List, or if the Tx Squelch Type is set to **DPL**, then the Tx DPL Code and the Tx DPL Invert must be a match for all channels in the Scan List.



WARNING: Also be Aware: A Voting Scan type Scan List cannot combine Scan List Member Channels where some are of the **Non-ASTRO** Tx Voice/Signal Type and where some are of the **ASTRO** Tx Voice/Signal Type. Therefore, all **Voting Scan** Scan List Member channels must be of the same Tx Voice/Signal Type.

Intelligent Priority

Both Conventional and Trunking channels may be selected for this Scan List type.

This scan type is based upon Multi-system Talkgroup Scan, supporting the limits of that scan type. This scan type provides the ability to configure a Priority 1 and Priority 2 scan member.



NOTE: Priority scan activity will be received when the radio is scanning the same system as the Priority scan member. Priority scan activity will not be received while the radio is unmuted to a non-priority scan member, including the selected channel from a different system, conventional or trunking.

4.49.1.3

Trunking System Record

This field selects a Trunking System by its programmed name.

This Trunking System is then used for communications during Scan Mode for the current [Scan List on page 1305](#).



IMPORTANT:

When the [Scan Type on page 1306](#) field is set to **Priority Monitor**, this selected Trunking System must be the same (a match) for all selected Scan List Member channels for the current Scan List.

When [Trunking Personalities/channels](#) are selected for a Scan List, these "matching" Trunking Systems are referenced to a Trunking Personality with the Trunking Personality [System on page 1236](#) field.

Accessed Only: When the [Scan Type on page 1306](#) field is set to **Priority Monitor**, and when the radio is model/option capable.

4.49.1.4

Trunking System Type

The application retrieves the System Type that is defined in the Trunking System Type field.

Selecting a Trunking System in the [Trunking System Record on page 1309](#) field for this Scan List automatically retrieves this value. This is a view-only field.

Accessed Only: When the [Scan Type on page 1306](#) field is set to **Priority Monitor**, and when the radio is model/option capable.

4.49.1.5

Dynamic Priority

This field enables you to define the last channel that the radio's Scan Mode has landed and transmitted on to become the new Priority Member 2 channel.

This channel remains the Priority 2 channel until a new channel is transmitted on, or until Scan Mode is disabled. This feature applies for the current Scan List.



IMPORTANT:

Activate Dynamic Priority with a [Dynamic Priority on page 486](#) button-press or [Dynamic Priority on page 528](#) menu selection.

The [Priority Member 1 on page 1310](#) channel is not affected.

Accessed Only: When the [Scan Type on page 1306](#) field is set to **Conventional**.

4.49.1.6

Priority 1 - Type

This field selects the type of Priority Member 1 scan used for the current Scan List.

See also [Priority Channel PTT on page 490](#).

Accessed Only: When the [Scan Type on page 1306](#) field is set to **Conventional**, **Priority Monitor**, or **Intelligent Priority**.

The following selections are supported:

Disabled

The [Priority Member 1 on page 1310](#) channel is disabled.

Fixed

The Priority 1 channel is selected from the [Priority Member 1 on page 1310](#) field and cannot be changed.

Selected Channel

The radio uses the current Channel Selector selected channel as the Priority Member 1.

Operator Select

Uses the selected [Priority Member 1 on page 1310](#). However, you are able to modify this choice, through the [Scan List on page 537](#) menu-selection.



NOTE: Both Priority 1 - Type and [Priority 2 - Type on page 1310](#) cannot be set to **Selected Channel**; either one must be different.

4.49.1.7

Priority Member 1

This field selects a Priority 1 Scan List Member channel/mode for the current Scan List.

This Scan List Member channel is selected by its programmed record number from the current Scan List. When the radio is actively scanning a Scan List, 50% of the scans are targeted at the Priority Member 1 channel. See also [Priority Channel PTT on page 490](#).

Example: If the Priority Member 1 is P1, and the non-priority Scan List Members are Nn, then the scanning sequence is: P1 N1, P1 N2, P1 N3, P1 N4, P1 N5, etc.



IMPORTANT:

When the radio's speaker is unmuted to a non-priority call (Landed Scan Mode), or is unmuted on the [Priority Member 2 on page 1311](#) (if one exists), the radio continues to scan for transmission activity on the Priority Member 1 channel. If the radio discovers a valid Priority 1 transmission, it drops the current transmission, and unmutes to the Priority 1 call. See also [Priority Channel Marking on page 1302](#) and [Time Between Priority Samples on page 1303](#).

When the radio is in Landed Scan Mode for a Priority Member 1 call, priority member checking is not necessary.

Accessed Only: When the [Scan Type on page 1306](#) field is set to **Conventional**, **Priority Monitor**, or **Intelligent Priority**, and when [Priority 1 - Type on page 1309](#) is not set to **Selected Channel** or **Disabled**.

4.49.1.8

Priority 2 - Type

This field selects the type of Priority Member 2 scan used for the current Scan List.

Accessed Only: When the [Scan Type on page 1306](#) field is set to **Priority Monitor** or **Intelligent Priority**, or (when the [Scan Type on page 1306](#) field is set to **Conventional**, and when the [Dynamic Priority on page 1309](#) field is **Disabled**).

The following selections are supported:

Disabled

The [Priority Member 1 on page 1310](#) channel is disabled.

Fixed

The Priority 2 channel is selected from the [Priority Member 2 on page 1311](#) field and cannot be changed.

Selected Channel

The radio uses the current Channel Selector selected channel as the Priority Member 2.

Operator Select

Uses the selected [Priority Member 2 on page 1311](#). However, you are able to modify this choice, through the [Scan List on page 537](#) menu-selection.



NOTE: Both [Priority 1 - Type on page 1309](#) and Priority 2 - Type cannot be set to **Selected Channel**; either one must be different.

4.49.1.9

Priority Member 2

This field selects a Priority 2 Scan List Member channel/mode for the current Scan List.

This Scan List Member channel is selected by its programmed record number. When the radio is actively scanning a Scan List, 33.33% of the scans are targeted at the Priority Member 2 channel. When a Priority Member 2 exists, scan checks for the [Priority Member 1 on page 1310](#) are reduced from 50% to 33.33%.

Example: If the Priority Member 1 is P1, the Priority Member 2 is P2, and the non-priority Scan List Members are Nn, then the scanning sequence is: N1 P1 P2, N2 P1 P2, N3 P1 P2, etc.



IMPORTANT:

When the radio's speaker is unmuted to a non-priority call (Landed Scan Mode), the radio continues to scan for transmission activity on the Priority Member 2 channel. If the radio discovers a valid Priority 2 transmission, it drops the current transmission, and unmutes to the Priority 2 call. See also [Priority Channel Marking on page 1302](#) and [Time Between Priority Samples on page 1303](#).

If the radio is in Landed Scan Mode on a Priority 2 call, and it discovers a valid Priority 1 transmission, it drops the Priority 2 call and unmutes to the Priority 1 call.

When [Priority 2 - Type on page 1310](#) field is set to **Operator Select** or **Fixed**, and (when the [Scan Type on page 1306](#) field is set to **Priority Monitor** or **Intelligent Priority**, or when the [Scan Type on page 1306](#) field is set to **Conventional**, and when the [Dynamic Priority on page 1309](#) field is **Disabled**).

4.49.1.10

Non-Priority Members

This field selects whether the status of a Priority Scan List Member channel can be changed to a Non-Priority status.

This feature applies for the current Scan List.

Accessed Only: When the [Scan Type on page 1306](#) field is not set to **Voting Scan**.

The following selections are supported:

Fixed

Scan List members that are programmed as having a [Priority Member 1 on page 1310](#) or [Priority Member 2 on page 1311](#) Scan List Member status cannot be changed.

Operator Selectable

Scan List members that are programmed as having a Priority Member 1 or Priority Member 2 Scan List Member status can be changed to a Non-Priority status, through the [Scan List on page 537](#) menu-selection.

4.49.1.11

Designated Voice Tx Member Type

This field selects the desired landed scan voice transmit channel type (fixed or variable) for the current Scan List.

This selection applies while operating in Scan Mode and once a Scan List Member channel has been landed.



IMPORTANT: This field is not available when the [Scan Type on page 1306](#) field is set to **Voting Scan** and the [Tx Steering on page 1315](#) field is **Enabled**, since the radio must use Talkback for Tx Steering.

Accessed Only: When the [Scan Type on page 1306](#) field is not set to **Voting Scan**, or when the [Tx Steering on page 1315](#) field is **Disabled**.

The following selections are supported:

Fixed

Allows you to select the designated/fixed transmit voice channel from the current Scan List.

The channel selection must then be made from the [Designated Voice Tx Member on page 1312](#) field.



WARNING:

Fixed Voice Tx Members only work when the [Scan Type on page 1306](#) field is set to **Conventional** or **Voting Scan**; and do not work when set to **Priority Monitor** or **Multi-System Talkgroup** scan.

Fixed Voice Tx Members do not work if the selected Conventional channel has its [Receive Only Personality on page 1162](#) field **Enabled**.

Selected Channel

Causes the radio to transmit voice on the radio's currently-selected channel/mode (Conventional or Trunking communications).



WARNING:

Does not work if the radio's current Conventional channel has its [Receive Only Personality on page 1162](#) field **Enabled**.

Does not work if the radio's current Trunking channel has its [Transmit Mode on page 1243](#) field set to **TG/AG Disabled (Listen-only)**.

Talkback

Causes the radio to transmit voice on the radio's currently landed - [Scan List Member](#) channel/mode (Conventional or Trunking communications).

4.49.1.12

Designated Voice Tx Member

This field selects the landed scan voice transmit channel.



NOTE: Scan List Members are selected from the current Scan List. This selection applies while operating in Scan Mode for the current Scan List, and once a [Scan List Member](#) channel has been landed.

Accessed Only: When the [Designated Voice Tx Member Type on page 1311](#) field is set to **Fixed**, and (when the [Scan Type on page 1306](#) field is not set to **Voting Scan**, or when the [Tx Steering on page 1315](#) field is **Disabled**).



WARNING: This field is not available when the [Scan Type on page 1306](#) field is set to **Voting Scan** and the [Tx Steering on page 1315](#) field is **Enabled**, since the radio must use Talkback for Tx Steering.



WARNING:

Fixed Voice Tx Members only work when the [Scan Type on page 1306](#) field is set to **Conventional** or **Voting Scan**; and do not work when set to **Priority Monitor** or **Multi-System Talkgroup** scan.

Fixed Voice Tx Members do not work if the selected Conventional channel has its [Receive Only Personality on page 1162](#) field **Enabled**.

Fixed Voice Tx Members do not work if the selected Zone and Channel is Dynamic Channel.

4.49.1.13

Designated Data Rx/Tx Type

This field selects the landed scan Common Air Interface (CAI) transmit data channel type (fixed or variable).



NOTE: [Scan List Members](#) are selected from the current Scan List. This selection applies while operating in Scan Mode and once a Scan List Member channel has been landed.

Accessed Only: When the [Scan Type on page 1306](#) field is set to **Conventional**.

The following selections are supported:

None

Data scan is disabled.

Fixed

Allows you to select the designated/fixed transmit data channel from the current Scan List.

The data channel selection must then be made from the [Designated Data Member on page 1313](#) field.



WARNING:

Fixed Data Tx Members only work when the [Scan Type on page 1306](#) field is set to **Conventional**.

Fixed Data Tx Members do not work if a Conventional Personality that references a **Fixed** Scan List has its [Receive Only Personality on page 1162](#) field **Enabled**.

Selected Channel

Causes the radio to transmit data on the radio's currently selected channel/mode (Conventional or Trunking communications).



WARNING: If [data](#) features are not available on the channel, data scan is inoperable.

4.49.1.14

Designated Data Member

This field determines the landed scan Common Air Interface (CAI) transmit data channel.



NOTE: This Scan List Member is selected from the current Scan List. This selection applies while operating in Scan Mode and when the Scan List Member channel is landed.



WARNING: Applies only when this Scan List is referenced to a Conventional Personality that has the following conditions: [Rx Voice/Signal Type on page 1162](#) field set to **Mixed Mode** or **ASTRO**, and has a referenced Conventional System with a referenced Data Profile which has its Terminal Data field **Enabled**, and when the ASTRO OTAR Profile Index field is **Enabled** and not grayed-out.

Accessed Only: When the [Scan Type on page 1306](#) field is set to **Conventional**, and when the [Designated Data Rx/Tx Type on page 1313](#) field is set to **Fixed**, and when it is not a Dynamic Zone and Channel, and when the radio is model or option capable.

4.49.2

Advanced

This section allows you to view or define a variety of features or parameters that apply on a per Scan List basis.



NOTE: Individual Scan Lists can be assigned to [Conventional](#) and [Trunking](#) Personalities with their respective Scan List Selection field.

4.49.2.1

Data Tx Limited Patience Timer

This field defines the waiting duration of the radio to transmit data while in Scan Mode.

When the timer expires, the data is discarded. This selection applies to the current Scan List. The value of this field is in seconds.



NOTE:

Accessed Only: When the [Scan Type on page 1306](#) field is set to **Conventional**, and when the [Designated Data Rx/Tx Type on page 1313](#) field is not set to **None**, and when the radio is model or option dependent.

When set to **Infinite**, data transfer wait time of the radio is unlimited.

Table 436: Range

Minimum	Maximum	Increments
1 s	255 s	1 s

4.49.2.2

Voting Scan Delay Timer

This field defines the waiting duration of the radio before voting or selecting while actively scanning in either **Voting Scan** or **Conventional Mixed Vote Scan**.

See the [Mixed Vote Scan Enable on page 1155](#) field.

See also the **Conventional** and **Voting Scan** selections from the [Scan Type on page 1306](#) field.

For Voting Scan or Conventional Mixed Vote Scan, several repeaters rebroadcast the same transmission simultaneously on different frequencies. The radio is then able to select the strongest or clearest signal. This selection applies for the current Scan List.



NOTE: Accessed Only: When the [Scan Type on page 1306](#) field is set to **Conventional** or **Voting Scan**, and when the radio is model or option dependent.

Table 437: Range

Minimum	Maximum	Increments
0 ms	255 ms	5 ms

4.49.2.3

Display Strongest Voted Channel

This field enables the landed scan Voting Scan channel to appear in the display of the radio.

When in a Voting Scan system, several repeaters rebroadcast the same transmission simultaneously on different frequencies. The radio is then able to select the strongest or clearest signal when in scan mode. The Voting Scan landed channel is based on the Received Signal Strength Indication (RSSI). See also the **Conventional** and **Voting Scan** selections from the [RSSI Voting Threshold on page 1304](#) and the [Scan Type on page 1306](#) fields. This feature applies for the current Scan List.



NOTE: Accessed Only: When the [Scan Type on page 1306](#) field is set to **Conventional** or **Voting Scan**, and when the radio is model or option dependent.

4.49.2.4

Tx Steering

This field enables the transmit (Tx) frequencies of each Scan List Member to vary in a Voting Scan System. See the [Scan Type on page 1306](#) field, **Voting Scan** selection.

When disabled, all repeaters on the Voting Scan System are assumed to receive on the same frequency, thus all Tx frequencies must be equal.

 **NOTE: Accessed Only:** When the [Scan Type on page 1306](#) field is set to **Voting Scan**, and when the radio is model/option capable.

4.49.2.5

Mixed Conventional Vote Scan Inactivity Timer

This field defines the waiting duration of the radio, when actively scanning in Conventional Mixed Vote Scan, before starting to scan additional frequencies or channels when no qualified activity has been found on the two currently strongest frequencies in the current Scan List.

The value of this field is in minutes.

 **NOTE: Accessed Only:** When the [Scan Type on page 1306](#) field is set to **Conventional**.

Table 438: Range

Minimum	Maximum	Increments
1 m	255 m	1 m

4.49.3

Scan List Members

This section allows you to select required Conventional and/or Trunking communications channels from specific zones for the current Scan List.

While the radio is operating in Scan Mode, these selected channels can then be scanned (one at a time) for transmission activity, thus allowing for many possible receive channels. Scan List Priority Member scanning must be programmed.

 **NOTE:** The radio only scans its currently-operating channel's assigned Scan List.

Scan List Member Trunking and/or Conventional Communication channels must be defined in the [Zones Channel Assignment on page 1283](#) before building the Scan List.

Individual Scan Lists can be assigned to **Conventional** and **Trunking** Personalities with their respective Scan List Selection field.

You can initiate scan mode automatically through Automatic Scan or with a [Scan on page 493](#) button-press, [Scan on page 511](#) switch-toggle or [Scan on page 537](#) menu selection.

 **WARNING:** When a Scan List contains 250 or more Scan List Members (record/rows) and 5 or more **Trunking Systems** (within these channels), the radio's performance in Scan Mode may be greatly reduced.

For conditions that determine valid Scan List Member channel selections for the available Scan List Types, refer to the [Scan Type on page 1306](#) selections.

4.49.3.1

Zone

This field selects a zone for the current Scan List Member (record or row) within the current Scan List.

When you select this zone, a channel from the zone must then be selected for the same record or row. See also the [Zones Channel Assignment on page 1283](#) window.



WARNING:

If the extended feature **Dynamic Zone Scan Capability** is not available, Dynamic Zones are invalid, and cannot be selected (zones that have [Dynamic Zone Enable on page 1285](#) enabled). Otherwise, Dynamic Zones can be selected.

Remote Site Interface (RSI) zones are invalid and cannot be selected (zones that have [RSI Mode on page 1289](#) enabled).

4.49.3.2

Channel

This field selects a channel for the current Scan List Member (record/row) within the current Scan List.

The Scan List Member Zone field must be selected for the same record/row before this channel selection is possible.



WARNING:

For conditions that determine a valid channel selection for the different Scan List Types, refer to the [Scan Type on page 1306](#) selections.

For APX™ 3000 Portable codeplugs, only the first 48 channels in the selected [Zone on page 1316](#) are considered valid selections.

For a DVRS-capable Conventional channel to be a valid scan list member selection, the referenced Frequency Option record of the channel (referenced in the Zone Channel Assignment's [Channels on page 1294](#) Page) must not have ASTRO Talkgroup ID field set to **DYN** or **ATG**.

When the [Coverage Type on page 1190](#) field for the referenced Trunking System is set to **Inter-WACN Roaming** and the Scan Type is **Multi-System Talkgroup**, then the [TG WACN ID on page 1255](#) and [TG System ID on page 1254](#) of the [Trunking Talkgroup on page 1297](#) assigned to this channel selection must match the Home WACN ID and System ID of the Trunking System. Otherwise the application considers this channel selection invalid.

The application considers this channel selection invalid when the [Designated Data Member on page 1313](#) field is referencing an LTE Broadband enabled Conventional channel, and another Scan List Member channel (of the same Scan List) references a Conventional channel having its [LTE Interference Frequency Present on page 1125](#) field set to **Enabled**, or a Trunking channel whose [LTE Interference Frequency Present on page 1199](#) field is set to **True**. A conventional channel is LTE enabled when the Personality's referenced ASTRO Conventional System has a referenced Data Profile with a [Data Profile Type on page 982](#) equal to **Conventional & Broadband** or **Broadband-Only**, and when that Data Profile's [Broadband Source on page 1002](#) is **Internal LTE Modem**.

When the extended feature "Dynamic Zone Scan Capability" is available, and the channel is a Dynamic Channel:

- If the [Scan Type on page 1306](#) is set to **Voting Scan**, Dynamic Channel is not valid.
- If the [Scan Type on page 1306](#) is set to **Conventional**, **Priority Mon**, or **Multi-System Talkgroup**, Dynamic Channel without any assignment is valid.
- If the [Scan Type on page 1306](#) is **Conventional**, **Priority Mon**, **Multi-System Talkgroup**, or **Intelligent Priority**, Dynamic Channel with assignment are regarded as other normal channels.



NOTE: Accessed Only:

- The [Zone on page 1316](#) field is not set to **Unassigned** and the zone is not a Dynamic Zone.
- The [Zone on page 1316](#) field is not set to **Unassigned**.
- The zone is a Dynamic Zone with the availability of **Dynamic Zone Scan Capability**.

Glossary

This glossary contains an alphabetical listing of terms and their definitions that are applicable to the radios and the applications. All terms do not necessarily apply to all radios or applications, and some terms are merely generic in nature.

Active Scan Mode Active Scan Mode is when the radio is rapidly moving through the current radio channel's Scan List Members looking for qualified transmission activity to receive or unmute to. Once a qualified transmission is received and the radio unmutes to the call, the radio is then in Landed Scan mode.

Advanced Key Protected Fields Advanced Key Protected Fields are unmodifiable unless a Software System Key File or an Advanced System Key has been selected in the Trunking System or System ID field. User can also modify fields with an Advanced WACN Key that has been selected in the Home WACN ID field.

Advanced Multi-band Excitation Voice Encoder (AMBE®) Advanced Multi-band Excitation is a digital ASTRO or ASTRO 25 voice encoder (vocoder) that allows for enhanced speech processing, as well as compatibility with Phase 2 of the Project 25 (P25 or [Association of Public-Safety Communications Officials-25](#)) Common Air Interface.

Association of Public-Safety Communications Officials (APCO) A public-safety telecommunications organization. It has developed several digital radio standards for both Conventional and Trunking communications, including "APCO 16" and "APCO 25" (often referred to as "Project 25" or "P25").

ASTRO 25 Trunking ASTRO 25 is a digital signaling protocol that is compliant with the [Association of Public-Safety Communications Officials](#) (APCO) Project 25 (P25) Common Air Interface and is used for certain Trunking Systems and Trunking Personalities. For Type II Trunking, it allows user to set up Talkgroups, Announcement Groups, and Dynamic Regroupings as Trunking channels and the full integration with Project 25 standards-based networks significantly improves on features such as capacity, interoperability, narrow-banding and IP connectivity.

ASTRO Systems ASTRO is an Association of Public-Safety Communications Officials (APCO) compliant digital signaling protocol that is used by certain Conventional Systems, and therefore for certain Conventional - channels.

Bandwidth In radio communications, the width of the channels within a frequency band that is available for radio transmissions, typically measured in Hertz.

Bluetooth Bluetooth is wireless technology that enables various electronic devices (both fixed and mobile) to exchange data over short-range wireless connections. To accomplish this, Bluetooth-enabled technology uses a small radio circuit, combined with an open wireless protocol, to create wireless personal area networks (WPANs).

Call Alert/Page An alert or page that allows a dispatcher or radio-caller to notify a targeted radio-user (or group of radio-users) of a missed call. Receiving radios are targeted based on Radio IDs and it can be defined for use in the Radio Call Hot Lists or entered directly by the user. Receiving radio responds with an alert-tone and shows missed call notifications.

Call Light A visual indicator (LED) that flashes when a [Call Alert](#) or voice Selective Call is received.

Caller ID Caller ID allows the receiving radio-user to identify the source-radio of a transmission. When an incoming call's Call ID exists in the receiving radio's Unified Call List (UCL), the UCL's [Contact Name on page 1270](#) and Call ID appear in the receiving radio's display. If the contact information does not exist in the UCL on a receiving radio, then the Radio ID of the caller's current channel appears in the receiving radio's display.

Carrier An electromagnetic signal or waveform that is transmitted on a selected frequency and modulated for the purpose of carrying voice or data transmissions. Carrier can then be received by all radios listening on that frequency.

Carrier Squelch (CSQ) Carrier squelch is when the carrier signal strength exceeds the selected or radio-designated signal strength threshold, known as the [Squelch \(Fine Tune\) on page 1163](#). When the carrier signal threshold is exceeded, the radio is able to unmute to a call. The radio may have other requirements before unmuting may occur.

Central Controller Assigns base station repeaters as voice repeaters or data-only control channel repeaters when operating in Trunking communications mode. The base station repeater assigned as the control channel continually sends a background data word that provides synchronization for the system. Through the control channel, it also continually sends out an Outbound Signal Word (OSW) containing System ID and is transmitted once every three seconds.

Channel/Mode Channels or mode use unique frequencies for transmitting and/or receiving voice and or data. Conventional channels are created as Conventional Personalities. Trunking channels are created as Trunking Personality - Talkgroups. Channels are then grouped as zones allowing for unique sets of channels on the radio's channel selector (see the Zone Channel Assignment's [Channels Page](#)).

Continuous Zone Applies for Trunking communications portable model radios. Zones are dynamically assigned to the positions of a portable radio's Rotary Switch and it can completely rotate 360 degrees. Once the rotary has moved through all rotary zone positions (see also [Zones Channel Assignment on page 1283](#)), the first zone is automatically inserted in the next rotary position. This allows the rotary to have no unassigned positions.

Control Channel A dedicated data-only channel that is responsible for directing all traffic over its Trunking System. Radios are always listening to the control channel of the current radio Trunking System for channel assignment instructions. A control channel exists on only one site or repeater at a time for each Trunking System. Control channels are assigned by the Central Controller.

Conventional Communications In Conventional communications a programmed frequency is used for each channel. To hear or receive specific transmissions, user must have the specific frequency for that channel programmed into the radio. Conventional channels can only communicate with radios operating on Conventional channels.

CVN Firmware Upgrade File This firmware upgrade file is downloaded from the Motorola Online Resource Center web site. This file is needed during a [Radio Software Refresh](#) and during a [FLASHport Upgrade](#) process. For managed radios see Radio Management's [Firmware Management on page 197](#) feature.

Digital Private Line (DPL) A form of digital-coded squelch (DCS) that superimposes inaudible digital data or codes onto the transmitted carrier. The receiving radio will only receive calls from radios with specific DPL codes. This allows more usage and privacy on a frequency in creating communications groups through Conventional communications mode. Also known as Channel Guard, Quiet Call, and Continuous Tone-Coded Squelch System.

Direct Entry The radio-user can manually input the ID of a targeted radio for an MDC Radio Call. Once the Radio Call type is selected and the Call List appears in the radio's display entry of an MDC Primary ID (with a keypad) is possible. Pressing the PTT button then transmits the call to the target radio of the entered ID.

Electrically Erasable Programmable Read-Only Memory (EEPROM) Used by the radio microcomputer system to store the radio's codeplug data. EEPROM sometimes written as E²PROM.

Emergency Mode A mode that alerts dispatchers and other radio users of an emergency situation. An Emergency transmission is initiated with an [Emergency on page 486](#) button-press, or a footswitch (See [Emergency Power Up on page 919](#)), or with the emergency alarm [Fall Alert on page 920](#) feature. Emergency mode is possible for both Conventional or Trunking communications.

External Radio Mode A mode that amplifies and broadcasts incoming radio messages over the optional Siren or Public Address speaker. This allows received radio communications to be heard outside the vehicle.

Failsoft Mode A mode that offers two-way Conventional Mode operation during Trunking systems failures. Radios automatically return to the Trunked mode once the Trunking system is restored. The Failsoft mode is determined by the Trunking Personality - [Failsoft Type on page 1241](#) field. Possible Failsoft frequencies include Failsoft by Personality (Type II only), Announcement Group Failsoft and Talkgroup Failsoft.

Firmware Software that controls basic low-level operations for the internal hardware components of the radio. The radio's firmware is updated in CPS with a [Radio Software Refresh](#) and during a [FLASHport Upgrade](#) process. For Managed Radios see the Radio Management's [Firmware Management on page 197](#) feature; template **Upgrade Firmware** and template **FLASHport Upgrade** are then initiated from the [Right-Click Menu Upgrade](#) selections.

FLASHkey Upgrade Module The FLASHkey stores new System Options on a Key Device that are used to upgrade a radio's feature set. New features can be added to the radio with a [FLASHport Upgrade](#), or for managed radios with the Radio Management Right-Click Menu's **Upgrade** → **FLASHPort Upgrade** selection. See also [CVN Firmware Upgrade File](#).

Frequency For Land Mobile Radios (LMRs) frequency pertains to the location of the center of a channel of operation in the radio spectrum, measured in Megahertz (MHz). A receive (one-way) or receive and transmit (two-way) path (see also [Frequency Band](#)). LMR related frequencies audible to the human ear include Conventional Signaling tones in the 15 Hz to 20,000 Hertz (Hz) range. Computer microprocessor frequency speeds are measured in Gigahertz (GHz).

Frequency Band Land Mobile Radios (LMRs) operate in the following frequency bands: VHF, UHF1, UHF2, 700 MHz, 800 MHz, 900 MHz. These bands permit two-way radio communications by civil, government, and military users. The frequency bands supported by a particular radio's codeplug are identified in the [Primary Frequency Band on page 313](#) and [Secondary Frequency Band on page 313](#) (for dual-band radios) fields. The frequency spectrum is divided according to International Telecommunication Union (ITU) regulations.

Front Panel Access (FPA) Allows the ability to test radio functionality relating to: transmit and receive frequencies, buttons and keys, and the display.

Key Devices & Key Device Readers Key Devices contain Advanced (Hardware) Keys that can be inserted into a USB Key Device Reader that is attached to a computer's USB port. A connected Key Device with Advanced System Keys (ASKs) and Advanced WACN Keys (AWKs) are automatically loaded every time the CPS is opened.

Improved Multi-Band Excitation Voice Encoder (IMBE™) A digital ASTRO or ASTRO 25 voice encoder (vocoder) that allows for enhanced speech processing. This is compatible with Phase 1 of the Project 25 (P25 or [Association of Public-Safety Communications Officials-25](#)) Common Air Interface. See also [Advanced Multi-band Excitation Voice Encoder](#).

Impolite Transmission A Conventional communications transmission even when the current selected channel is busy with other radio traffic. In effect these transmissions proceed by stepping on other channel traffic. See also Conventional Emergency Profiles, [Impolite Retries on page 931](#).

Key-Up (Key the radio) Initiating the action of transmitting a radio signal, typically by pressing the Push To Talk (PTT) button.

Key Management Controller (KMC) A dispatcher driven computer (with specific software) that controls over-the-air-rekeying (OTAR) for a Conventional - MDC communications system. It manages encryption keys that encrypt and decrypt voice or data communications. The KMC can remotely remove all encryption keys from the unit, making transmission or receiving encrypted messages to be unavailable.

Key Management Facility (KMF) A KMF is a dispatcher-driven computer (with specific software) that controls over-the-air-rekeying (OTAR) for a Conventional - ASTRO system and/or a Trunking - ASTRO 25 system. It manages encryption keys that encrypt and decrypt voice or data digital communications. The KMF can remotely remove all encryption keys from the unit, making transmission or receiving encrypted messages to be unavailable.

Landed Scan Mode A mode when Active Scan finds a qualified Scan List Member channel/call to receive or unmute to in Scan Mode. Once both Transmit and Receive activity has ceased, the radio remains in Landed Scan Mode for the duration of the [Voice Rx Tx Hold Time on page 1301](#).

Latched Monitor Mode Latched (continuous) Monitor Mode occurs when holding the [Monitor on page 488](#) button for the [Latch Enable Time on page 1028](#) duration. Once this latch time occurs, the radio remains in Monitor Mode until the Monitor button is pressed. Initiating Emergency Mode, Phone Mode, Scan Mode, or a Call Alert or Selective Call cancels this mode. See also the [Latch Enable Tone on page 1027](#) field. This feature only applies for channels capable of Conventional communications.

Master Squelch Value An internal radio setting that is hard coded (not modifiable). The CPS-user can adjust this setting for Conventional Personalities with the Squelch (Fine Tune) field.

Monitor Mode (Silent Squelch) The radio's speaker automatically unmutes to any carrier squelch activity.

Motorola Data Communications (MDC) A "Non-ASTRO" signaling protocol that is used by certain Conventional Systems, and therefore for certain Conventional - channels. MDC is a binary data packet format using 1200 baud audio frequency shift keying (AFSK) modulation. MDC is a Motorola proprietary protocol.

Normal Dispatch Occurs when only the PTT button is pressed to initiate a call, while operating on a Conventional or Trunking Personality. Any call type that requires the radio-user to enter into the radio's Menu Mode (prior to transmitting) would not be considered normal dispatch.

OmniLink OmniLink is a networking software suite that connects up to four multi-site SmartZone "Zones" into a single wide area Trunking System. Each Zone in an OmniLink system is controlled by its own Zone Controller, with its own unique System ID, which is in turn controlled by a Master Controller.

One Touch Feature Both Conventional One Touch and Trunking One Touch allow you to create menu-navigation and/or button shortcuts for the radio user. These shortcuts can greatly reduce the radio-user effort involved in launching a radio feature. A One Touch button-press or One Touch menu-selection can reduce down to a single button press, the launching of a radio feature; this same process might otherwise take many menu navigation steps to achieve.

Open Squelch When the radio's speaker is constantly unmuted to all channel activity. Also see Monitor Mode.

Other Band Trunking Other Band Trunking (OBT) encompasses Trunking Systems that operate in the VHF and UHF (specifically UHF1 / UHF R1 or UHF2 / UHF R2) radio frequency bands, as follows:

- VHF (136 to 174 MHz)
- UHF1 (380 to 470 MHz)
- UHF2 (450 to 520 MHz)

Owner ID Owner IDs are used when Write Protecting radios. This only applies to Trunking dispatch capable radios. All Write Protect capable radio's have an Owner ID, and an Advanced Key can be created to contain the same Owner ID, which can then be considered the Owner ID Key for that radio. Depending on the radio's in-the-field usage, the radio uses one of two possible types of Home System Owner ID. An Owner System ID, or an Owner WACN ID (see also Owner ID). The Owner ID Key will typically match a CPS Trunking System's System ID or Home WACN ID, which in turn will match the radio's in-the-field Trunking System's System ID or Home WACN ID.

Owner ID (RM) Owner IDs is needed when Write Protecting radios. Write Protection and Owner IDs apply only to Trunking dispatch capable radios. All Write Protect capable radio's have an Owner ID, and an Advanced Key can be created to contain the same Owner ID, which can then be considered the Owner ID Key for that radio. Depending on the radio's in-the-field usage, the radio uses one of two possible types of Home System Owner ID: an Owner System ID, or an Owner WACN ID.

Parallel Port A hardware interface connection on a computer used to communicate with other hardware devices such as printers, scanners and some external hard disk drives. The USB port has effectively replaced the parallel port in most personal computers. Parallel ports are designated by slot positions such as LPT1, and LPT2.

Phone Mode Phone Mode allows the radio to access a phone system in order to make phone calls. Once a radio has gained phone system access, the radio's Phone List then appears in the radio's display; phone numbers may then be selected by the radio-user. Phone Mode is available from both Conventional and Trunking channels.

Polite Transmission When the radio or radio-user waits for the currently-selected Conventional communications channel to be free of radio traffic before attempting to transmit. See also Conventional Emergency Profiles, Impolite Retries.

Private Line A sub-audible tone or code used to create unique or private communication groups while operating in Conventional communications mode. PL is a generic term sometimes used to mean Tone Private Line (TPL), or sometimes used to mean both TPL and Digital Private Line (DPL).

Program Transferring the application information from the computer's temporary memory (RAM) to the radio with the Programming Cable and the computer USB Port.

Programming Session A programming session is initiated when codeplug information is read into the application from a radio, or opened from a codeplug file. A programming session is ended either when the CPS is closed, or when a new radio is read or a new codeplug file is opened.

Project 25 (P25) Project 25 is a set of standards for digital radio communications (both voice and data) developed through the joint efforts of various organizations. These standards specify a digital two-way communications between separate P25-compatible Trunking Systems and Conventional Systems.

Public Address System The Public Address System allows for an Accessory Connector external speaker system. The radio handheld microphone is the source of audio for the external speaker. The PA System is enabled and disabled with a Public Address button-press.

Read The transfer of the codeplug information from the radio to the program. This data transfer occurs through the radio Programming Cable connected to the computer USB port, or POP25 communications.

Release Squelch State There are possible exceptions to the Signaling Squelch Unmute Rules. The exception time is known as the Release Squelch State.

Scan Mode Scan Mode is for Conventional or Trunking communications. When Scan Mode is engaged for the current channel, the radio checks the channels assigned to each Scan List for qualified transmissions. While operating in Scan Mode, a channel Scan List allows many receive channels on a single radio channel. The Scan Type determines the specific mode of operation for each Scan List.

Selective Call or Private Call Selectively call a radio or group of radios based on the Radio ID. The Radio ID is selected from the Call Hot Lists or entered manually. Selective Calls allow for dispatch or announcement type of messages. Selective Calls eliminate other users operating on the same channel receiving unwanted traffic.

Singleton A Non-Astro signaling protocol that is used by Conventional Systems and Conventional channels. Singleton Systems are used for Conventional Repeater Access.

SmartNet A second-generation analog Trunking System solution that is compliant to the Association of Public-Safety Communications Officials International standards. In a SmartNet Trunking System, there is a single master Site and Trunking System Controller. SmartNet trunking features include Dynamic Regrouping, Private Call, and Push-to-Talk (PTT) ID.

SmartZone A family of Trunking System equipment and Coverage Type. SmartZone connects multiple single sites together into a single Radio Frequency Sub System (RFSS), or Zone. It provides multiside wide area communications over large geographic area such as region, country, state, or small geographic area.

Squelch Tail An intrusive noise that is emitted while the transmission of carrier is fading.

System Options A nonstandard radio enhancement features or options, which can be added or remove from radio functional feature set.

Tone Private Line (TPL) Tone Private Line transmits sub-audible (not able to be heard) tones along with the carrier when the receiving radio is to only receive calls from radios with specific TPL codes. This allows for more use and privacy on a frequency by creating communications groups while operating in Conventional communications mode. TPL and Digital Private Line (DPL) are often referred to generically as PL.

Trunking Communications In a Trunking radio system, radios are always listening to the control channel of the radio current Trunking System for channel assignment instructions. Trunking channels can

only communicate with radios operating on Trunking channels. Trunking and Conventional channels are assigned to the channels of the radio from the Zone Channel Assignment Window.

Trunking Talkgroups Trunking Talkgroups are the CPS-assigned groupings of radios created for the purpose of frequent and convenient communications within those groups. Unlike a Conventional communications system where radio-users are assigned certain frequencies, the Trunking System uses a control channel to coordinate and allocate the available frequencies so that the talkgroups can seamlessly share these frequencies.

Type I Trunking The original Motorola Trunking communications protocol type, based on Fleets and Subfleets and often found in older public safety systems. Trunking types are selected within the CPS in the Trunking Personality - Protocol Type field, and the Trunking System - System Type field.

Type II Trunking A signaling protocol that is used by certain Trunking Personalities. Type II is an enhanced version of the original Motorola Trunking Type I protocol type, replacing fleets and subfleets with Talkgroups and individual Radio IDs. Type II provides additional management flexibility (Announcement Groups) for a given System using an expanded signaling format.

Type III Trunking A hybrid of Type I and Type II that permits a Type II or III radio to communicate with a Type I radio. Trunking types are selected in the Trunking Personality - Protocol Type field, and the Trunking System - System Type field.

Very High Frequency Bands (VHF) Very High Frequency, equipment operates in the frequency range from 30 to 300 MHz within the radio spectrum. However, in the context of land mobile radio (LMR) usage the VHF Band falls within 136 – 174 MHz. In addition to LMR usage, common VHF uses include FM radio broadcasts, analog TV, civil aircraft communications, and Marine VHF radio.

Vehicle Repeater System-Expanded Protocol (VRS-EP) A self-contained transceiver unit that is attached by cable to a mobile radio unit. It allows mobile radio traffic to be repeated (in vehicle) to portable radio units that are operating within the vehicle's proximity. This is needed when portable radios are outside the signal range of the base station/dispatcher unit, or the system's normal repeater.

Wide Area Communications Network (WACN) A network that encompasses single or multiple Project 25-compatible Trunking Systems (usually governed by different agencies, that interoperate together and often cover a wide geographical area). It consists of communications equipment from several manufacturers.

Working Group ID In Inter-WACN Roaming-enabled Trunking Systems, once a roaming radio has registered on a foreign control channel, the radio will attempt to affiliate its selected Talkgroup using its full TG WACN ID, TG System ID and Talkgroup ID. If the affiliation is successful, the system assigns the radio a unique abbreviated (16-bit) address known as the Working Group ID (WGID).

Working Unit ID In Inter-WACN Roaming-enabled Trunking Systems, when a roaming radio lands on a foreign control channel, the radio will attempt to register and authenticate using its full Subscriber Unit ID (SUID), the combination of its Home WACN ID, System ID and Unit ID. In a successful registration response, the system assigns the radio a unique abbreviated (24-bit) address known as the Working Unit ID (WUID).

Write The transfer of the CPS codeplug information to the radio. This data transfer can occur with the radio Programming Cable connected to the computer USB port, or with POP25 communications.