

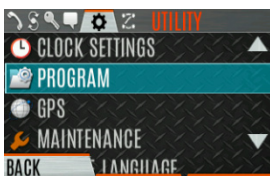
6. ADVANCED OPERATIONS

6.1 VIEW/CHANGE PERSONALITIES

Personalities contain radio programming information such as frequencies, channels, stations, and talk groups. Up to 10 different personalities can be stored in the radio, but only one can be activated at a time.

6.1.1 View Personalities

1. At main display, press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **UTILITY** menu.
3. Press the up or down navigation buttons to highlight **PROGRAM** and press the Menu/Select button. An arrow indicates the currently active personality.



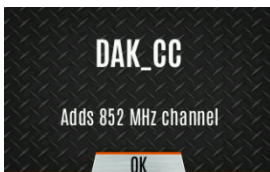
4. Press the **OPTIONS** soft key.



5. Select **VIEW PLAN INFO** to view.



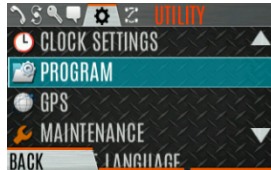
6. The radio displays the plan's filename. Personality information appears if the field was filled out using RPM2.



6.1.2 Change Active Personality

To change the active personality:

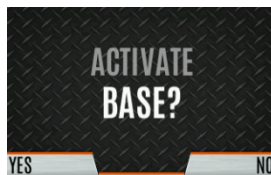
1. At main display, press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **UTILITY** menu.
3. Press the up or down navigation buttons to highlight **PROGRAM** and press the Menu/Select button.



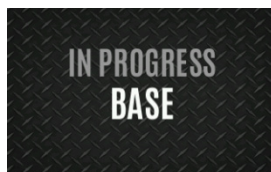
4. Press the up or down navigation buttons to highlight the desired personality and press the Menu/Select button. ➡ indicates the currently active personality.



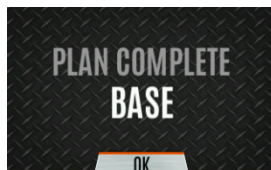
5. Press the **YES** soft key to confirm personality activation. If the personality has a power-up PIN, you are prompted to enter the PIN before activation continues.



6. The **IN PROGRESS** screen is displayed while plan activation is in progress.



7. If personality is activated, the radio displays **PLAN COMPLETE** followed by the name of the personality. Press the **OK** soft key.



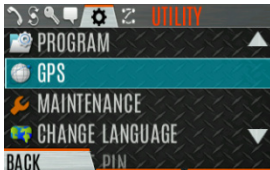
- You cannot activate a personality when the radio is transmitting an emergency.
- A **FAILED** message may be displayed for errors such as invalid syntax in the fill or some other invalid parameter.

6.2 SITUATIONAL AWARENESS (SA) – P25 CONVENTIONAL ONLY

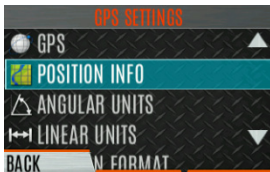
Situational Awareness is a feature in which the radio receives SA position from other units configured to send the SA packets. The SA display shows the positions of the other radios (units) relative to the radio. To make use of SA, all radios need to have a uniquely programmed Unit ID.

To display Situational Awareness Info:

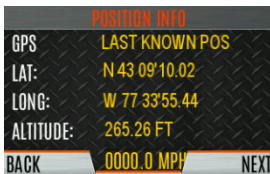
1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **UTILITY** menu.
3. Press the up or down navigation buttons to select **GPS** and press the Menu/Select button.



4. Press the up or down navigation buttons to select **POSITION INFO** and press the Menu/Select button.



5. Press the **NEXT** soft key.



6. Press the left or right navigation buttons to view the location of each unit. The color of each unit indicates its status as follows. Only one status can be shown at a time and are listed in priority order:
 - Grey – Unselected, no status
 - Red – Unselected, In Emergency
 - Orange – Unselected, Low Battery
 - Blue – Unselected, Scanning
 - Green – Selected, no status
 - Green/Red – Selected, In Emergency
 - Green/Orange – Selected, Low Battery
 - Green/Blue – Selected, Scanning
7. GPS of this radio is shown by the center dot as follows:
 - Green – Tracking
 - Orange – Last known position
 - Red – Searching
8. Press the up or down navigation buttons to zoom the display distance of current unit.



9. Press the **OPTIONS** soft key. From here, select **UNIT INFO** to display details about the selected unit, select **REFRESH** to update information, or select **EXIT**.

6.3 USER-DEFINED ZONES/SYSTEMS

6.3.1 Command Tactical Zone

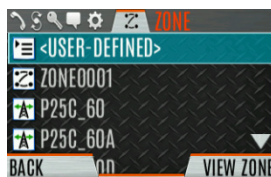
A Command Tactical Zone is defined at the radio.



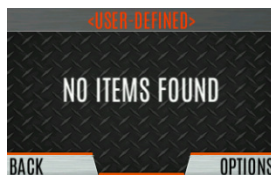
A Command Tactical Zone is reset when a Personality is activated.

To create a Command Tactical Zone:

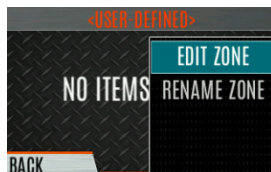
1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **ZONE** menu.
3. Press the up or down navigation buttons to highlight **<USER-DEFINED>** and press the **VIEW ZONE** soft key.



4. Press the **OPTIONS** soft key.



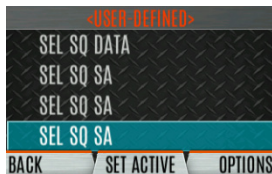
5. Press the up or down navigation buttons to select **EDIT ZONE** to create a zone, or **RENAME ZONE** to rename the Command Tactical Zone (up to 16 characters are allowed).



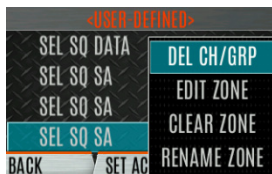
6. Press the left or right navigation buttons to scroll through existing systems. Press the up or down navigation buttons to highlight desired channel/group.
7. Press the Menu/Select button to add or remove channel/group.
8. After adding all desired channels/groups, press the **BACK** soft key.



9. Activate the Command Tactical Zone by selecting the **SET ACTIVE** soft key on the **USER DEFINED** screen, or by pressing the Menu/Select button when **<USER DEFINED>** is highlighted on the Zone menu.



10. After creating a Command Tactical Zone, select **OPTIONS** to edit the Command Tactical Zone, delete channels/groups, clear the zone, and rename the zone.

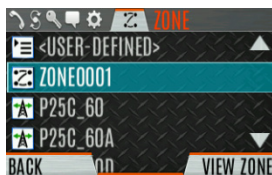


6.3.2 Mixed System Zone

Mixed System Zones are defined using RPM2 and cannot be edited on the radio. If a Mixed System Zone is not configured using RPM2, it will not appear on the radio. Up to 50 Mixed System Zones can be defined. You can view details about each channel/group. A user programmable button can be defined to scroll through just the mixed system zones.

To view Mixed System Zones:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **ZONE** menu.
3. Press the up or down navigation buttons to highlight **the desired zone (Note: Zones are indicated by the  icon)** and select **VIEW ZONE** to view the groups/channels in the zone list.

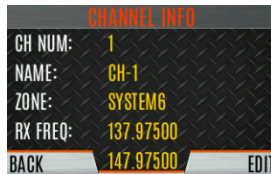


6.4 CH INFO MENU

The Channel Information (CH INFO) menu displays information about the currently selected channel. The information displayed varies between conventional and trunked systems.

To display channel information:

1. Press while on the idle display.
2. Press the up or down navigation buttons to scroll through the programmed channel settings.



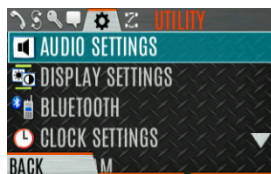
CONVENTIONAL OR P25 CHANNELS ONLY:

3. Press the **EDIT** soft key.
4. Enter the password. You may now select and change the values of the displayed channel parameters. The password remains active until power cycle. Refer to Section 7.2 for more information.

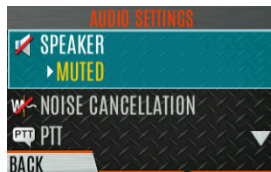
6.5 AUDIO SETTINGS

From this menu, you can set audio settings such as speaker mute, noise cancellation, PTT, and tones.

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **UTILITY** menu.
3. Press the up or down navigation buttons highlight **AUDIO SETTINGS** and press the Menu/Select button.



4. Press the up or down navigation buttons to scroll through available audio settings. Press the Select/Menu button to change settings as desired:



- **SPEAKER** - Mute or Unmute the speaker audio.
- **NOISE CANCELLATION** - Enable or disable noise cancellation. Noise cancellation reduces background noise during transmit.
- **PTT** - Enable or disable Push-To-Talk (PTT). Disable PTT to prevent accidental keying, such as when the radio is in a holster or you are getting into a car.
- **TONES** - Enable or disable alert tones (see Table 5-6).

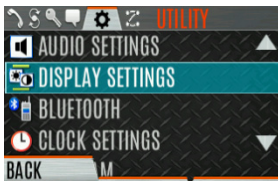
- **KEYPAD TONES** - Enable or disable keypad tones. When enabled, the radio plays a tone when a button on the keypad is pressed.

5. Press the **BACK** soft key to exit menu.

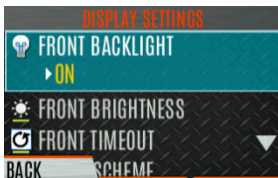
6.6 DISPLAY SETTINGS

To change display settings:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the UTILITY Menu.
3. Press the up or down navigation buttons to highlight **DISPLAY SETTINGS** and press the Menu/Select button.



4. Press the up or down navigation buttons and the Select/Menu button to change settings as desired:



- **COLOR SCHEME** - Change the color scheme of the top and front displays for optimum viewing in day/night conditions.
- **FRONT BACKLIGHT** - Turn front display backlight on, off, momentary, or momentary (off). Momentary (off) is similar to momentary, but the backlight turns off completely and only comes on when the center navigation button is pressed.
- **FRONT BRIGHTNESS** - Set brightness level of front display. A level of 0 has same effect as turning off backlight.
- **FRONT TIMEOUT** - Specify how long the radio needs to be inactive before the front display's backlight turns off.
- **TOP BACKLIGHT** - Specify how long the top display's backlight will remain lit: MOMENTARY, ON, or OFF.
- **TOP BRIGHTNESS** - Set the brightness level of the top display. A level of 0 turns off top display and indicator (TX/RX) LED.
- **TOP TIMEOUT** - Specify how long the radio needs to be inactive before the top display's backlight turns off.
- **TOP ORIENTATION** - Set orientation of top display to be viewed from radio: FRONT, BACK, or AUTO.

When AUTO is selected, the radio changes the top display to be viewed from back if an external microphone or speaker is attached. Otherwise, the display can be viewed from the front.

- **INDICATOR LED** - Toggle the indicator LED ON/OFF.

5. Press the **BACK** soft key to exit the menu.

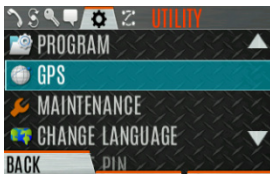
6.7 GPS SETTINGS



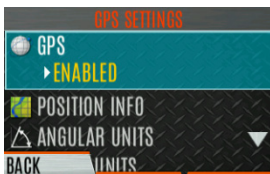
The **GPS SETTINGS** menu item only appears if enabled using RPM2 and the feature is installed.

To access GPS settings:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **UTILITY** menu.
3. Press the up or down navigation buttons to highlight **GPS** and press the Menu/Select button.



4. Use the up or down navigation buttons and the Select/Menu button to change settings as desired:



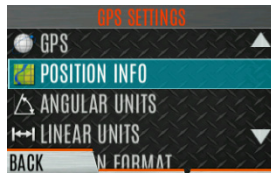
- **GPS** - Enable or disable internal GPS.
 - **POSITION INFO** - See Section 6.8.
 - **LINEAR UNITS** - Set unit of measurement of displayed linear units: **STATUTE**, **METRIC**, or **NAUTICAL**.
 - **ANGULAR UNITS** - Set unit of measurement of displayed angular units: **CARDINAL**, **DEGREES**, or **MILS**.
 - **POSITION FORMAT**- Set format of displayed position information: Latitude/Longitude Decimal Degrees (LAT LONG DD), Latitude/Longitude Degrees Minutes Seconds (**LAT/LONG DMS**), **LAT/LONG DM**, Military Grid Reference System (**MGRS**), or Universal Transverse Mercator (**UTM**).
5. Press the **BACK** soft key to exit the menu.

6.8 POSITION INFO

The Position Info screen displays the radio user's location information. GPS must be enabled in the GPS Settings (see Section 6.7).

To display position info:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **UTILITY** menu.
3. Press the up or down navigation buttons to highlight **POSITION INFO** and press the Menu/Select button.



4. Press the up or down navigation buttons to scroll through available location information.



6.9 WI-FI

The XL-Portable supports programming via Wi-Fi. Refer to Appendix A for information on configuring Wi-Fi.

To enable Wi-Fi programming mode on the radio:

1. Ensure the radio is powered off.
2. Press and hold the bottom side button and PTT button (see Figure 4-1).



Figure 6-1: Enabling Wi-Fi

3. Power on the radio.
4. The WIFI INSTALL ACTIVE screen is displayed (Figure 6-2). The radio displays DISCONNECTED if not connected to a wireless network, or CONNECTED if connected to a wireless network.

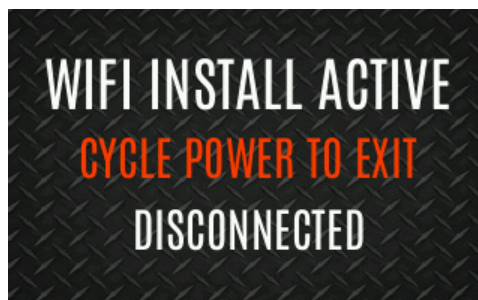


Figure 6-2: Wi-Fi Install Active

6.10 BLUETOOTH



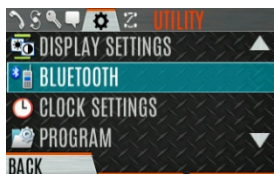
NOTE

The **BLUETOOTH** menu item only appears if enabled using RPM2 and if the feature is installed.

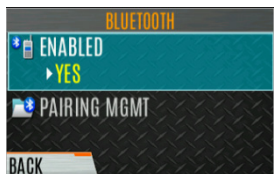
6.10.1 Enable Bluetooth

To enable Bluetooth:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **UTILITY** menu.
3. Press the up or down navigation buttons to highlight **BLUETOOTH** and press the Menu/Select button.



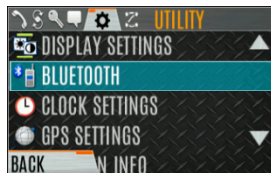
4. Press the up or down navigation buttons to highlight **ENABLED** and press the Menu/Select button to toggle **YES/NO**.



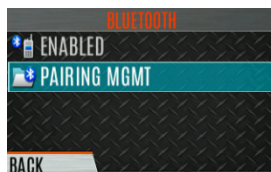
6.10.2 Pair Devices

To pair devices:

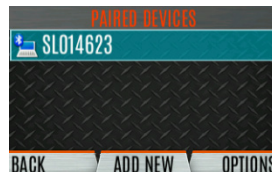
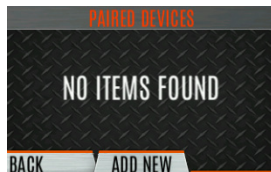
1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **UTILITY** menu.
3. Press the up or down navigation buttons to highlight **BLUETOOTH** and press the Menu/Select button.



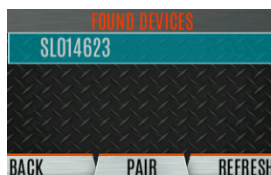
4. Press the up or down navigation buttons to highlight **PAIRING MGMT** and press the Menu/Select button.



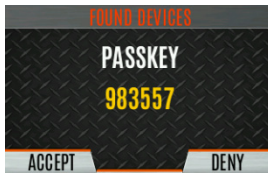
5. Make sure device being paired is powered on and has discovery mode enabled to pair with the radio.
If no devices are found and Bluetooth is enabled, only the **ADD NEW** soft key is available. If devices are paired, the **OPTIONS** soft key appears.



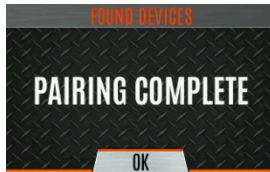
6. Press the **ADD NEW** soft key to select a device to pair.
7. A list of available Bluetooth devices appears.



8. Press the **REFRESH** soft key to refresh the device list if the desired device does not appear.
9. Press the up or down navigation buttons highlight the desired device and press the **PAIR** softkey.
10. Pairing progress is displayed.
 - For Bluetooth 2.0 devices, a pin code screen appears.
Enter the pin code and select **OK**.
 - For Bluetooth 2.1 devices, a **PASSKEY** accept/deny screen appears. Select **ACCEPT**.
Accept the passkey on the Bluetooth 2.1 device as well.



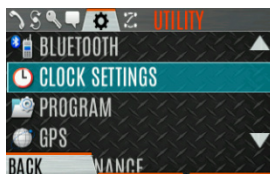
11. A **PAIRING COMPLETE** message appears when pairing is complete. Select **OK**. The paired device is then displayed in the **PAIRED DEVICES** list.



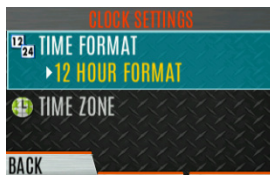
6.11 CLOCK SETTINGS

To view/change clock settings:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **UTILITY** menu.
3. Press the up or down navigation buttons to highlight **CLOCK SETTINGS** and press the Menu/Select button.



4. Use the up or down navigation buttons and Menu/Select button to change settings as desired:

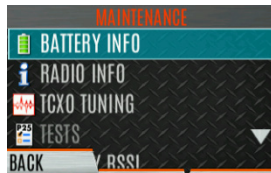


- **TIME FORMAT**- Set 12 or 24-hour time display format.
 - **TIME ZONE** - Set time zone relative to Universal Time Coordinated (UTC).
5. Press the **BACK** soft key to exit.

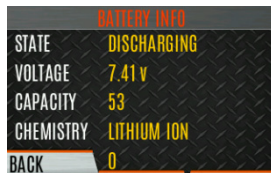
6.12 BATTERY INFO

To display battery information:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **UTILITY** menu.
3. Press the up or down navigation buttons to highlight **MAINTENANCE** and press the Menu/Select button.
4. Press the up or down navigation buttons to highlight **BATTERY INFO** and press the Menu/Select button.



5. Battery information is displayed (state, voltage, capacity, and chemistry).



Use only Harris approved batteries. Injury could occur from using incorrect battery.

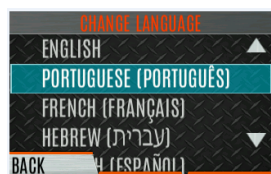
6.13 SELECT LANGUAGE

To change the language displayed by the radio:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **UTILITY** menu.
3. Press the up or down navigation buttons to highlight **CHANGE LANGUAGE** and press the Menu/Select button.



4. Press the up or down navigation buttons to highlight the desired language and press the Menu/Select button.

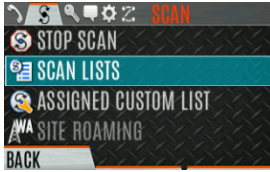


6.14 SET UP SCAN

These procedures are used to set up the scan list, home channels, and priority channels.

To access the scan lists:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **SCAN** menu.
3. Press the up or down navigation buttons to highlight **SCAN LISTS** and press the Menu/Select button. Refer to the following sections.



When using Preemptive Priority Scan, the frequencies in the list need to be unique.

6.14.1 Default, Priority 1, and Priority 2 Channels

6.14.1.1 Default Channel

This is the currently selected channel and is the channel you transmit on by default when you press PTT while the radio is actively scanning and is not responding to a just received call. Responding to a call the radio just received while scanning is called hang time. If hang time is set to 0 using RPM2, the radio always transmits on the default channel in scan.

6.14.1.2 Priority 1 Channel

This channel will be scanned more often than other channels in the list and will be scanned in between every other channel in the scan list. An example scan sequence would be P1 (priority 1), C2, P1, C3, P1, C4, etc. In addition, the priority channel will be scanned even while actively receiving on a non-priority channel. For example, if the radio is actively receiving on C3 and activity is detected on P1, the radio will drop C3 and switch to P1.

6.14.1.3 Priority 2 Channel

This channel will also be scanned more often than others. An example scan sequence would be P1, C2, P1, C3, P1, C4, P2, C5, P1, C6, P1, C7, P1, C8, P2, C9 etc. In addition, this channel will be scanned even while actively receiving on a non-priority channel. For example, if the radio is actively receiving on C3 and activity is detected on P2, the radio will drop C3 and switch to P2. Additionally, activity on P1 can also preempt P2, but P2 cannot preempt P1.

6.14.2 Trunked/Conventional Scanning

Trunked/conventional scanning adds the ability to scan multiple conventional and P25 conventional channels while still maintaining trunked radio operation. The radio can scan a conventional scan list while still receiving a trunked control channel and receiving trunked calls. Selection of which conventional scan list is associated with a given trunked system is done using RPM2 and cannot be changed on the radio. However, a user with access to the necessary menu layout (see Section 5.8) can edit the scan list members (both trunked groups and conventional channels on the selected Conventional Priority System). As the number of conventional channels being scanned increases, the time between scanning each channel increases (roughly 250 milliseconds per channel), with the consequent increase in the number of calls that will late-enter. To avoid missing calls, it is recommended to keep the number of conventional channels being scanned to eight (8) or fewer.



The trunking site must have roaming set to Enhanced CC.

6.14.3 Vote Scan (Analog and P25 Conventional Only)

If vote scan is enabled via RPM2, the radio automatically selects the strongest signal ensuring that the best audio quality is delivered to the user. If vote scan is enabled, the radio is always scanning. You cannot stop scanning, start normal scanning, or monitor the channel. The scanning icon on the idle screen indicates that the radio is vote scanning versus, regular scanning.



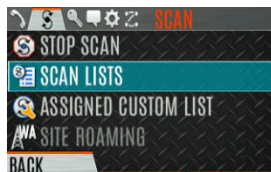
If Talkaround is enabled, Vote Scan is disabled until Talkaround is disabled again.

6.14.4 Edit Scan List

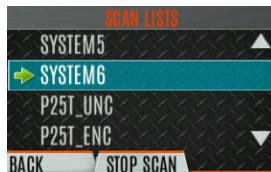
Depending on the scan list options selected via RPM2, you may be able to add or remove channels/groups from the scan list.

To edit the scan list:

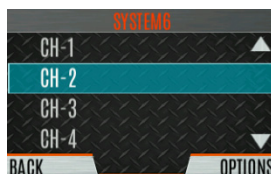
1. Press the Menu/Select button.
2. Press the left or right navigation buttons to display the **SCAN** menu.
3. Press the up or down navigation buttons to select **SCAN LISTS**.



4. Press the up or down navigation buttons to highlight the scan list and press the Menu/Select button.

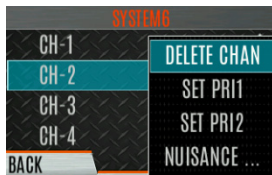


5. Press the up or down navigation buttons to highlight channel/group.
6. Select **OPTIONS**.



7. Press the up or down navigation buttons to select ADD CHAN/DELETE CHAN, SET PRI1, SET PRI2, REMOVE PRI, or NUISANCE/ADD BACK.

When a channel is not grayed out in the list, **DELETE CHAN** appears. When a channel/group is grayed out (not in list), **ADD CHAN** appears.



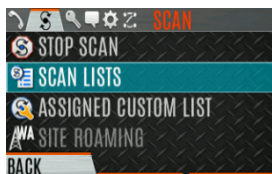
8. Press the Menu/Select button to toggle selection.

6.14.5 Set or Remove Priority 1 and Priority 2 Channels

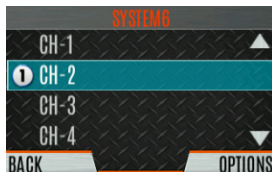
Priority channels are scanned more often than non-priority channels. Note that P1 and P2 can only be set if configured as “Keypad” and the scan list is not set to “Fixed” using RPM2.

To set or remove priority 1 and priority 2 channels:

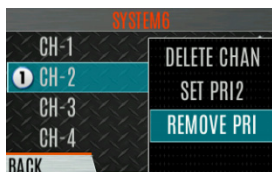
1. Press the Menu/Select button.
2. Press the left or right navigation buttons to display the SCAN menu.
3. Press the up or down navigation buttons to highlight SCAN LISTS and press the Menu/Select button.



4. Press the up or down navigation buttons to highlight the desired scan list and press the Menu/Select button.
5. Press the up or down navigation buttons to highlight the desired channel/group.



6. Select **OPTIONS**.
7. Press the up or down navigation buttons to highlight SET PRI1 or SET PRI2 and press the Menu/Select button. A Priority 1 channel appears with a P1 and a Priority 2 channel appears with a P2.
8. Select **REMOVE PRI** to remove priority.



6.14.6 Custom Scan Lists

The Mixed Zone Scan (MZS) feature gives the user the capability to scan based on a custom scan list that is assigned at the system level. The Custom Scan (CS) list can contain System and Channel/Group configurations across P25 Trunked, P25 Conventional, and Analog Systems. When a Custom Scan List is assigned to a P25T system, the radio can scan P25T, P25C and Analog systems. When assigned to a P25C or Analog system, the radio only scans conventional channels. MZS also gives the user the capability to scan beyond the selected system group set.

- **P25T Scan**

When a custom scan list is assigned to a P25T system, the user can scan P25T, P25C, and Analog groups/channels. All P25T systems must have the same WACN, System ID, and Unit ID to be added to the custom scan list. If P25C and/or analog channels are added to the custom scan list, the radio will scan them using the Trunked/Conventional scan feature described in section 6.14.2, and will override any other conventional scan list that may have been programmed using RPM2.

- **P25C and Analog Scan**

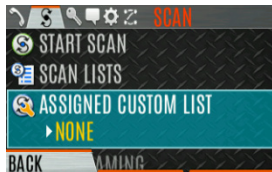
When a custom scan lists is assigned to a P25C or Analog System, the user can scan P25C and Analog channels. P25T systems are ignored.

Custom scan list can be created using RPM or at the radio. The radio supports up to 10 Custom Scan lists, with up to 100 channels/groups in each.

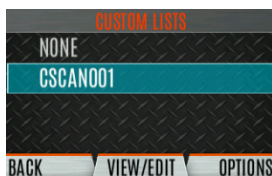
6.14.6.1 Create Custom Scan List

To create a custom scan list at the radio:

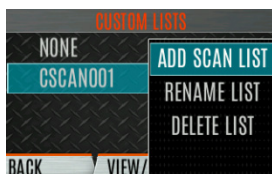
1. Press the Menu/Select button.
2. Press the left or right navigation buttons to display the **SCAN** menu.
3. Press the up or down navigation buttons to highlight **ASSIGNED CUSTOM LIST** and press the Menu/Select button.



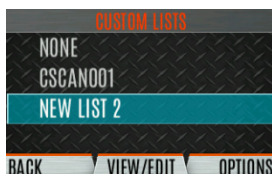
4. Press the **OPTIONS** softkey.



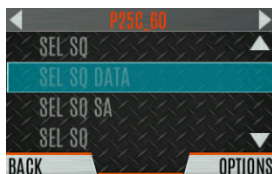
5. Select **ADD SCAN LIST**.



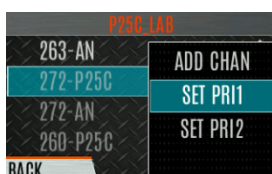
6. Press the up or down navigation buttons to highlight the newly added scan list and press the **VIEW/EDIT** soft key.



7. Press the left or right navigation buttons to display the desired system.



8. Press the up or down navigation buttons to highlight the desired group/channel and press the **OPTIONS** softkey. From here, you can add/delete channels from the scan list, and set/remove Priority 1 and Priority 2 channels.





NOTE

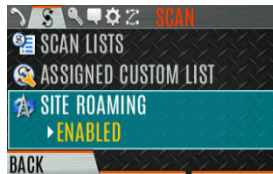
When a custom scan list is selected, that list is scanned any time scanning is enabled for any Trunked, conventional, or P25 Conventional system. To scan only the channels assigned to a system, custom scanning must be turned off.

6.14.7 Wide Area System Scan (P25 Trunked and EDACS)

Wide Area System Scan (WASCAN) causes the radio to roam across mobile systems when the currently selected system's control channel is lost. The radio will scan the control channels of other systems.

To enable/disable Wide Area System Scan:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **SCAN** menu.
3. Press the up or down navigation buttons to highlight **SITE ROAMING** and press the Menu/Select button to toggle Wide Area System Scan **ENABLED/DISABLED**.



4. Select **BACK** to exit the scan menu.

6.14.8 Site Lock

The Site Lock feature allows the user to select a site from a Site Alias list to lock to; i.e., prevent the radio from roaming. Up to 512 sites can be programmed to the radio.

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **SCAN** menu.
3. Press the up or down navigation buttons to highlight **SITE ALIAS** and press the Menu/Select button to display the list of available sites.
4. Press the up or down navigation buttons to highlight the desired site alias and press the Menu/Select button to lock to this site.

6.15 RADIO STATUS

The status feature allows the radio user to send a status condition to the site without making a voice call. There can be up to 10 status conditions programmed into the radio. For each status defined, there is an ID and an alphanumeric name. The ID is sent to the site and the alphanumeric name appears on the radio display when the ID corresponds with the information programmed at the site.



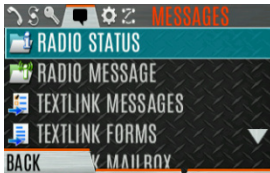
NOTE

A button on the radio can be programmed to send a radio status (see Section 7.4).

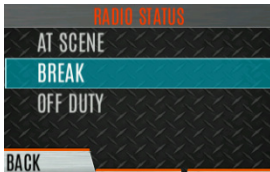
To send a radio status:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **MESSAGES** menu.

- Press the up or down navigation buttons to highlight **RADIO STATUS** and press the Menu/Select button.



- Use the up or down navigation buttons and the Menu/Select button to highlight and select desired status.



6.16 RADIO MESSAGE

The message feature is used to send a message to the site without making a voice call. There can be up to 10 messages programmed into the radio. For each message defined, there is an ID and an alphanumeric name. The ID is sent to the site and the alphanumeric name appears on the radio display when the ID corresponds with the information programmed at the site.

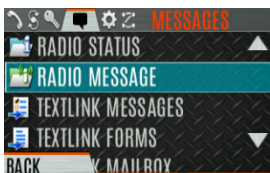


NOTE

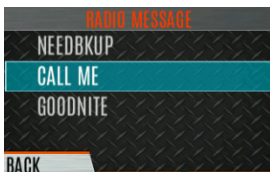
A button on the radio can be programmed to send a radio message (see Section 7.4).

To send a radio message:

- Press the Menu/Select button to access the main menu.
- Press the left or right navigation buttons to display the **MESSAGES** menu.
- Press the up or down navigation buttons to highlight **RADIO MESSAGE** and press the Menu/Select button.



- Use the up or down navigation buttons and the Menu/Select button to highlight and select the desired message.



6.17 RADIO TEXTLINK

Radio TextLink provides short text messaging functionality for radios. Due to the difficulty of entering text messages on a radio, predefined "canned" messages and predefined replies can be stored in the radio. To facilitate sending messages where information must be provided at send time, text message forms can also be stored in the radio. A form can contain up to four (4) text prompts, for which the operator enters alphanumeric values before sending the message.

6.17.1 Radio TextLink Messages

To send a canned Radio TextLink message:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **MESSAGES** menu.
3. Press the up or down navigation buttons to highlight **TEXTLINK MESSAGES** and press the Menu/Select button.



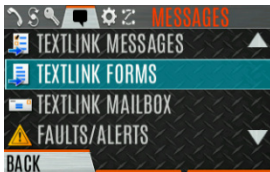
4. Press the left or right navigation buttons to display the desired message.
 - Press the Menu/Select button to send the message.
 - Select **CHG CALLEE** to change the destination for the message.
 - Select **TOD QUERY** to get the time of day.

6.17.2 Radio TextLink Forms

Form messages are displayed and stored in the radio as a message in which each field to be filled is indicated by a question mark (?) followed by one or more asterisks (*). The number of asterisks indicates the maximum number of alphanumeric characters allowed for that field.

To send a Radio TextLink form:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **MESSAGES** menu.
3. Press the up or down navigation buttons to highlight **TEXTLINK FORMS** and press the Menu/Select button.



4. Press the left or right navigation buttons to display the desired message and press the Menu/Select button.



5. Enter text into blank field(s) (up to eight alphanumeric characters) and press the **NEXT** soft key.



6. Select **SEND** to send the message. Select **CHG CALLEE** to change the destination for the message. Select **TOD QUERY** to get the time of day.



6.17.3 View Received Messages

When the  icon appears on the idle display, there are Radio TextLink messages waiting to be read.

To view received Radio TextLink messages:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the MESSAGES menu.
3. Press the up or down navigation buttons to highlight TEXTLINK MAILBOX and press the Menu/Select button. From the mailbox, select OPTIONS to delete messages, view details of messages, and reply to messages.

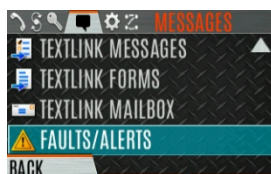


6.18 FAULTS/ALERTS

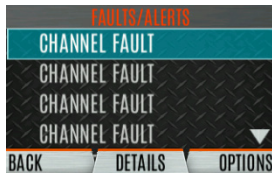
 is displayed on the idle display when there is a fault.

To view and clear faults/alerts:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **MESSAGES** menu.
3. Press the up or down navigation buttons to highlight **FAULTS/ALERTS** and press the Menu/Select button.



4. Fault messages are displayed. Press the up or down navigation buttons to highlight the desired fault. Press the **OPTIONS** soft key delete faults. Press the **DETAILS** soft key to view details for the highlighted fault.



Possible faults include:

- **BATTERY FAULT**- Replace battery.
- **EEPROM FAULT** - Contact Harris.
- **RF FAULT** - Contact Harris.
- **OVERCURRENT** - Check antenna and antenna connection. Try replacing antenna.
- **INVALID SYSTEM** - Feature not installed.
- **CHANNEL FAULT** - Channel frequency programmed is not valid for this radio.

5. If you view but do not delete the fault, the alert icon goes away on the idle display.

Contact Harris for assistance with diagnosing a fault.

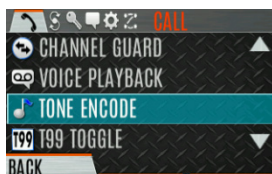
6.19 TONE ENCODE

Tone Encode is a generic tone encoding scheme for call identification when transmitting on a conventional system. It supports generic user-definable tone encode (up to 15 tones), Type 99 (up to 2 tones) and 5/1 Tone (up to 5 tones) encoding formats.

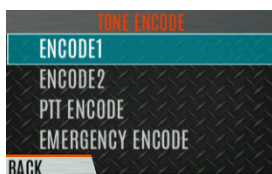
Tone encoding schemes are used to transmit calls to one or more target radios that have been programmed with the correct tone decode sequence. When the receiving radio detects its tone decode sequence, it unmutes on the call.

To select a Tone Encode option:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **CALL** menu.
3. Press the up or down navigation buttons to highlight **TONE ENCODE** and press the Menu/Select button.



4. Select the desired Tone Encode option from the list.



6.20 ENCRYPTION

6.20.1 Create and Load Keys

Refer to the following documentation for advanced programming and setup instructions:

- Harris OTAR Overview Manual - MM-008069-001
- Network Key Manager Installation and Configuration Manual - MM-008070-001
- Harris UAS Key Management Application Manual - MM-008068-001
- Harris Key Manager Key Admin Overview and Operation Manual - MM1000019423
- Harris Key Manager Key Loader Overview and Operation Manual - MM1000019424
- Motorola® KVL 3000 Plus Key Variable Loader (KVL) User's Guide
- Motorola KVL 4000 Key Variable Loader (KVL) User's Guide

6.20.2 Zeroize Keys from Radio

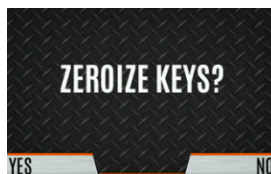
It may be necessary to remove keys because of compromise or expiration.

To zeroize keys from the radio:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **SECURITY** menu.
3. Press the up or down navigation buttons highlight **ZEROIZE KEYS** and press the Menu/Select button.



4. Press the **YES** softkey to remove the keys. This will also remove the keysets.



6.20.3 Protected Keys

The Protected Keys feature transfers P25 Voice Keys, from Harris Key Loader to the radio, that have been wrapped (AES) or encrypted (DES) with Key Protection Keys (KPKs). KPKs are nothing more than unprotected Key Encryption Keys (KEKs). The KPKs need to be loaded into the radio before the Protected Keys are loaded. Once loaded into the radio, the KPKs are used to unwrap (AES) or decrypt (DES) the Protected Keys.

6.20.4 Global Encryption

Global Encryption can be enabled when encryption keys are loaded on the radio and the selected Zone/System is encrypted. When Global Encryption is enabled on the radio, a Global Key is used for all encrypted transmissions until:

- Global Encryption is disabled.
- A new personality is activated.
- The active keyset is changed.
- The system is changed.

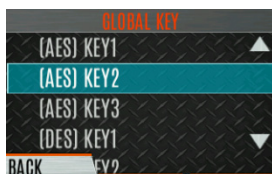
Global Encryption behavior is available on all channels that support encrypted communications.

To enable Global Encryption and/or change Global Encryption Key:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **SECURITY** menu.
3. Press the up or down navigation buttons to highlight **GLOBAL ENCRYPTION**. Press the Menu/Select button.



4. Press the up or down navigation buttons to highlight the desired Global Key and press the Menu/Select button to enable Global Encryption.



5. To change the selected global key, press the up or down navigation buttons to highlight **GLOBAL KEY** on the **SECURITY** menu. Press the Menu/Select key.



6. Press the up or down navigation buttons to highlight the global key and press the Menu/Select button.



7. RPM2 allows Key Numbers to be given Key Names.
8. The optional global key icon  is displayed on the main display.

6.20.5 Select Keyset

To select a keyset:

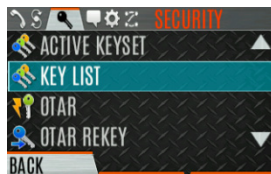
1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **SECURITY** menu.
3. Press the up or down navigation buttons to select **ACTIVE KEYSET**. Press the Menu/Select button to toggle to the inactive keyset.



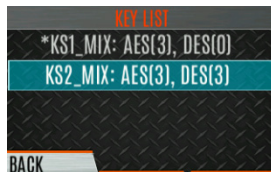
6.20.6 View Key List

To view the key list:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **SECURITY** menu.
3. Press the up or down navigation buttons to select **KEY LIST** and press the Menu/Select button.



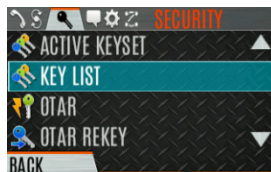
4. The available key lists are displayed.



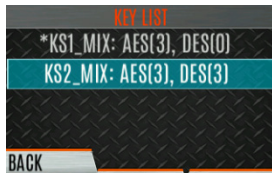
6.20.7 Delete Individual Keys

To delete individual keys from a keyset:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the **SECURITY** menu.
3. Press the up or down navigation buttons to select **KEY LIST** and press the Menu/Select button.



4. The available key lists are displayed.



5. Select the desired keyset and press the Menu/Select button to display the individual keys. Highlight the desired key and press the **Delete** softkey.



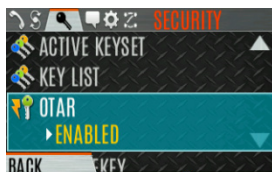
6.20.8 OTAR Configuration

OTAR is the over-the-air-rekeying from a KMF and must be enabled for the digital only channel using RPM2. For OTAR operation, the appropriate KEKs must be loaded into the radio using the Harris Key Loader or a KVL device.

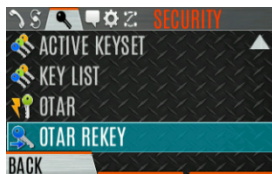
The KMF Configuration must include the RSI of the KMF and the appropriate Message Number Period.

To enable OTAR and request rekey:

1. Press the Menu/Select button to access the main menu.
2. Press the left or right navigation buttons to display the SECURITY menu.
3. Press the up or down navigation buttons to highlight OTAR and press the Menu/Select button to toggle ENABLED/DISABLED.



4. Press the up or down navigation buttons to select OTAR REKEY and press the Menu/Select button to request that the KMF updates the keys in the radio. OTAR REKEY is only enabled if the radio has successfully registered for data operations. If enabled via programming, the radio plays an audible confirmation tone to indicate successful OTAR rekey.



6.21 SITE ALIAS AND SITE LOCK (P25 TRUNKED ONLY)

The Site Alias feature allows the user to view the site name of the current site that the radio is on. The Site Lock feature provides a list of available, adjacent sites that the user can lock the radio to. The Site Lock feature restricts the radio from roaming between sites.

7. PROGRAMMING

This section provides information on front panel programming. Programming can also be accomplished by creating a plan using a computer with RPM2 installed.

7.1 PROGRAMMING VIA RPM2

Radio Personality Manager (RPM2) is used for the bulk of programming the radio. With RPM2, you can fully program the XL-Portable using cable 12082-0410-A1.



Removing power during radio programming, or programming the radio with low battery power could corrupt installation of firmware.



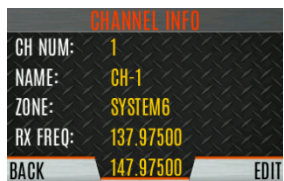
Ensure that the radio is turned off before connecting the programming cable. After the cable is connected, then power on the radio.

7.2 EDIT CHANNEL (ANALOG AND P25 CONVENTIONAL ONLY)

Channels can be edited from the Channel Information (CH INFO) menu display. Most of the displayed channel parameters can be modified here. Channel edits persist across a power cycle. Loading a personality clears any channel edits. Available parameters vary depending on whether the channel is a P25 or analog channel.

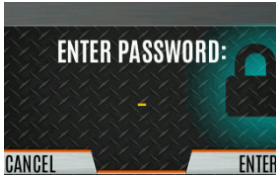
To edit a channel:

1. From the main display, press **◀** to access the **CH INFO** screen.
2. Press the up or down navigation buttons to scroll through the programmed channel settings.
3. Press the **EDIT** soft key.



Only authorized users should attempt channel editing.

4. Enter the password programmed via RPM2. You do not have to re-enter the password until you power cycle the radio.
5. Press the **ENTER** soft key.



6. Highlight and select the parameter to edit. For P25 channels, modify remaining channel settings:
 - **CHANNEL NAME** - The Channel Name cannot be changed from this screen; RPM2 is required to change the Channel Name.
 - **RX FREQUENCY** - Receive frequency. Note that if the new frequency is invalid, the display reverts to the old frequency (Table 7-1).
 - **TX FREQUENCY** - Transmit frequency.
 - **TX POWER** - Transmit power. Toggle between LOW and HIGH.
 - **TALKGROUP** - Select a talkgroup for the channel. Talkgroup name cannot be set here.
 - **RX NAC** - Network Access Code (NAC) radio uses for Normal squelch in receive.
 - **TX NAC** - NAC radio transmits to break Normal squelch on receiving radio.
 - **P25 SQUELCH** - Select type the radio uses in receive. Select NORMAL, SELECTIVE, or MONITOR.
 - **RX CHAN GUARD** - Squelch type radio uses in receive. Select Noise, CTCSS, or CDCSS. For a digital channel, the RX CHAN GUARD is used to receive from a Conventional analog channel that is on the same frequency and uses the selected Channel Guard.
 - **RX CODE** - Code radio looks to unmute the speaker on the receiving radio when CDCSS squelch is used in conventional mode.
 - **RX TONE** - Tone radio looks to unmute the speaker on the receiving radio when CTCSS squelch is used in conventional mode.
7. For analog channel, modify remaining channel settings:
 - **CHANNEL NAME** - The Channel Name cannot be changed from this screen; RPM2 is required to change the Channel Name.
 - **TX FREQUENCY** - Transmit frequency.
 - **TX POWER** - Transmit power. Toggle between HIGH and LOW.
 - **RX CHAN GUARD** - Squelch type radio uses in receive. Select Noise, CTCSS, or CDCSS.
 - **RX TONE** - Tone radio uses to break selective squelch on receiving radio. This is available when RX squelch is set to CTCSS.
 - **RX CODE** - Code radio uses to break selective squelch on receiving radio. This is available when RX squelch is set to CDCSS.



RX CHAN GUARD is not available on this screen if it was enabled from the CALL menu as per Section 5.22.

- **TX CHAN GUARD** - Squelch type radio uses in transmit. Select None, CTCSS, or CDCSS.

- TX TONE - Tone sent by transmitting radio to allow receiving radio to unmute when CTCSS squelch is used in conventional mode.
- TX CODE - Code sent by transmitting radio to allow receiving radio to unmute when CDCSS squelch is used in conventional mode.



NOTE

TX CHAN GUARD is not available on this screen if it was enabled from the CALL menu as per Section 5.22.

8. An asterisk is displayed in front of the CHANNEL label on the main display when a channel has been edited. The asterisk is NOT shown for TX Power or Talkgroup changes.



NOTE

When the only item edited is the TX or RX CHAN GUARD values, and then CHAN GUARD edit is Disabled, the asterisk goes away and the channel is no longer considered edited. This is the only editable item for which this is true.

Table 7-1: Valid Frequency Ranges

INTERNATIONAL (NON-REBANDED)	US (REBANDED)	FREQUENCY RESOLUTION
136 - 174 MHz	136 - 174 MHz	2500, 5000, or 6250 Hz
378 - 522 MHz	378-522 MHz	2500, 5000, or 6250 Hz
763 - 776 MHz	768 - 776 MHz	6250 kHz
793 - 806 MHz	798 - 806 MHz	6250 kHz
806 - 825 MHz	806 -8 16 MHz	6250 kHz
851 - 870 MHz	851 - 861 MHz	6250 kHz

7.3 OTAP

The radio supports Over-the-Air-Programming (OTAP) via ProFile Manager. RPM2 creates, modifies and stores personality information while ProFile Manager delivers the personality over the network to the desired radios. ProFile Manager also contains the ability to read personality information over-the-air and save the files, so that RPM2 can modify the information if necessary.

You can interrupt the programming process, if necessary, by depressing the Push-to-Talk (PTT) button or declaring an emergency. Once a radio personality update is successfully completed, the radio automatically resets itself, switches to the new personality, and returns to normal operation. For more information on using ProFile Manager, refer to software release notes AE/LZT 123 3263/1.

7.4 PROGRAMMABLE BUTTONS AND SWITCHES

7.4.1 Programmable Buttons

Press ▼ while on the main display to view the functions assigned to the programmable buttons. The programmable buttons are programmed using RPM2. A delay of 0 to 10 seconds can be defined using RPM2 for the programmable buttons. Table 7-2 lists and describes the functions that can be programmed to the buttons:

Table 7-2: Programmable Button Options

FUNCTION	DESCRIPTION
No Operation	
Monitor Toggle	Toggles Monitor On/Off.
Monitor/Clear	Temporarily turn off selected squelch to monitor for traffic that may not normally break squelch. Also, press this button followed by the emergency button to clear an emergency.
Audio Playback	Accesses the AUDIO PLAYBACK menu. See Section 5.27.
Lock Keypad	Locks the DTMF keypad, programmable function keys and navigation keys.
Nuisance Delete	Performs a Nuisance Delete. See Section 5.31 for more information.
System Up	Scrolls up through the list of available systems, stopping at the top of the list.
System Down	Scrolls down through the list of available systems, stopping when the end of the list is reached.
System Up Wrap	Scrolls up through the list of available systems, wrapping to the end when the beginning of the list is reached.
System Down Wrap	Scrolls down through the list of available systems, wrapping to the top when the bottom of the list is reached.
Zone Up	Scrolls up through the list of available mixed system zones, stopping at the top of the list. If no mixed system zones are defined, or there is only one, the user will hear a deny tone when the button is pressed.
Zone Down	Scrolls down through the list of available mixed system zones, stopping when the end of the list is reached. If no mixed system zones are defined, or there is only one, the user will hear a deny tone when the button is pressed.
Zone Up Wrap	Scrolls up through the list of available mixed system zones, wrapping to the end when the beginning of the list is reached. If no mixed system zones are defined, or there is only one, the user will hear a deny tone when the button is pressed.
Zone Down Wrap	Scrolls down through the list of available mixed system zones, wrapping to the top when the bottom of the list is reached. If no mixed system zones are defined, or there is only one, the user will hear a deny tone when the button is pressed.
Channel/Group Bank Select	Select the channel/group bank. If your system has more than 64 channels, this allows you to select a channel group with channels 65 to 127, 128 to 191, etc.
Drop Call	Drop or terminate any group call that the radio receives.
Send Status	Sends a preconfigured status. See Section 6.14.8 for more information.
Send Message	Sends a preconfigured message. See Section 6.16 for more information.
TX Power High/Low	Toggle TX Power between LOW and HIGH.
Scan Enable	Enable/disable scan.
Secure Enable Toggle	Toggles Encryption Mode On/Off. See Sections 5.20 and 6.20 for information on Encryption.
Home	Goes to home channel.
Adjust Squelch	Allows the user to adjust the analog squelch level.
Front Backlight	Toggles front display's backlight On/Off/Momentary.
Top Orient	Toggles Top Display Front/Back.
Top Backlight	Toggles the top display's backlight On/Off/Momentary.
Flashlight Mode	Press and hold to turn on the front and top display backlights. Release the button to turn off both displays.
Speaker Mute Toggle	Toggles Speaker Muted/Unmuted.
Talkaround	Toggles Talkaround On/Off. See Section 5.23.
Voice Announce	Enable/disable Voice Annunciation. See Section 5.19

FUNCTION	DESCRIPTION
Channel Guard Override	Allow user to pick a different Channel Guard setting for the current channel.
Individual Call	Initiate an Individual Call.
OTAR Rekey	Initiate an OTAR rekey. See Section 6.20.7.
GPS SA Info	Display GPS Situational Awareness (SA) screen.
Site Roaming	Enable/disable Site roaming. Site Roaming allows the radio to roam to another site.
Profile Toggle	Toggles between the currently active profile (if one has been selected) and no profile.
Numeric Channel Entry	Allows number channel entry.

7.4.2 Programmable A/B (Ø/O) Switch

The programmable A/B switch can be programmed for multiple functions, including:

Table 7-3: Programmable Ø/O Switch Options

FUNCTION	DESCRIPTION
Clear/Secure	Enable/disable encryption.
Scan	Turn scan operation on/off.
Talkaround	Enable/disable talkaround.
Keypad Lock/Unlock	Locks/unlocks the keypad.
TX Enable/Disable	Enables/Disables transmit.

7.4.3 Programmable A/B/C/D Switch

Sections 7.4.3.1 and 7.4.3.2 describe the various functions that can be programmed to the A/B/C/D switch.

7.4.3.1 Single-Instance Features

Single-instance features can only be assigned to one switch position at a time. If one of these features is programmed to the A/B/C/D switch, other means of accessing that feature are disabled (i.e., two-position switch, programmable buttons, call menu, etc.).

Table 7-4: Single-Instance Features

FUNCTION	DESCRIPTION
No Function	No function programmed to switch.
Talkaround	See Section 5.23.
Scan	Enables scanning.
TX Power High	Sets transmission power level to High. - Changing to a Tx Power High position overrides the current personality or user setting for TX Power. - Changing from a Tx Power High position restores the personality-configured Tx Power Level.
TX Power Low	Sets transmission power level to Low. - Changing to a Tx Power Low position overrides the current personality or user setting for TX Power. - Changing from a Tx Power Low position restores the personality-configured Tx Power Level.

FUNCTION	DESCRIPTION
Keypad Lock	Locks DTMF, programmable, and navigation soft keys.
Radio Lock	When set, prevents the radio software from responding to the following physical inputs on the radio: • Volume Knob Change (power off is not prevented) • 2-Position Switch • Channel Knob • Side User-Programmable Buttons and Keypad (DTMF, programmable, and navigation/soft keys) NOTE: Exception is the emergency button and if any key is programmed for Monitor/Clear, it can be used with the emergency button to clear emergency, if so programmed.
Channel Bank	Selects channels 1-16 in position A; 17-32 in position B; 33-48 in position C; and 49-64 in position D. If Channel Bank is selected for any single position, all 4 positions (A, B, C, and D) will be set to Channel Bank.

7.4.3.2 Indexed Features

These features can be assigned to any number of positions if each index value selected for it is unique across multiple assignments of the same feature; for example, you cannot assign a Zone with a particular index (e.g., “ZONE A”) to both positions A and B.

Table 7-5: Indexed Features

FUNCTION	DESCRIPTION
Zone Selection	Sets to the Zone index value. • When setting the A/B/C/D switch to an indexed zone assigned position, the radio sets, but does not “hold,” that zone. This has the resulting effects: ➢ This sets the channel knob to be zone-based system/channel selection just like selecting a zone from the main “Zone” menu or ramping up/down using the side user-programmable buttons. ➢ If a user then changes to a different system or zone via another method (menu, button, etc.), it will override the Zone selection switch setting accordingly and not require it to remain in the zone where the switch assignment is set. • When changing away from a Zone assigned position, no actions/changes will be taken by the radio.
System Selection	Sets to the System index value. • When setting the A/B/C/D switch to an indexed System assigned position, the radio sets, but does not “hold,” that System. This has the resulting effects: ➢ This sets the channel knob to be system-based channel selection, just like selecting a system from the main “Zone” menu or ramping up/down using the side user-programmable buttons. ➢ If a user then changes to a different system or zone via another method (menu, button, etc.), it will override the System selection switch setting accordingly and not require it to remain in the system where the switch assignment is set. • When changing away from a System assigned position, no actions/changes will be taken by the radio.

7.5 PROGRAMMABLE ICONS

7.5.1 Top display

The top display has space for up to seven configurable icons, which can be programmed to display any of the following:

- Blank
- Signal Strength
- Battery Status
- Bluetooth enabled
- Encryption enabled
- Scan/Vote Scan enabled
- Talkaround enabled
- Emergency mode active

The radio can be programmed to change the color of the top display backlight relative to the currently selected channel/group. The backlight remains the color programmed for the currently selected channel/group except during an emergency, in which case the color changes to orange.

7.5.2 Front display

The front display has space for up to 10 configurable icons, which can be programmed to display any of the following:

- Blank
- Signal Strength
- Battery Status
- Bluetooth enabled
- Encryption enabled
- Global Encryption
- Talkaround enabled
- TX Disabled
- Tones Disabled
- PTT Disabled
- Speaker Muted
- Monitor
- OTAR Status (Disabled, Registering, Registered, Rekeying)
- TX Power level (Low/High/RX Only)
- GPS Status
- VDOC
- Failsoft
- Data Status (TX/RX)
- Alert(s)
- RX Mail
- Noise Cancellation Enabled

- Type 99 Enabled
- Conventional Site Status (Unregistered/Registered)

8. REFERENCE

8.1 MARINE FREQUENCIES

Refer to Table 8-1: Marine Frequencies for a list of maritime frequencies per United States Coast Guard (USCG), National Oceanic and Atmospheric Administration (NOAA), and Canadian Department Fisheries and Oceans, August 2009:

- United States (US)
- International (Intl)
- Canada (CA)

Table 8-1: Marine Frequencies

US CH.	INTL CH.	CA CH.	SHIP (MHZ)	SHORE (MHZ)	CHANNEL USAGE
	1	1	T: 156.05 R: 160.65	T: 160.65 R: 156.05	International: Public Correspondence, Port Operations
1a			T/R: 156.05	T/R: 156.05	US: Port Operations and Commercial, Vessel Traffic Service (VTS). New Orleans/Lower Mississippi area.
	2	2	T: 156.10 R: 160.70	T: 160.70 R: 156.10	International: Public Correspondence, Port Operations
	3	3	T: 156.15 R: 160.75	T: 160.75 R: 156.15	International: Public Correspondence, Port Operations
	4		T: 156.20 R: 160.80	T: 160.80 R: 156.20	International: Public Correspondence, Port Operations
		4a	T/R: 156.20	T/R: 156.20	Canada: Department Fisheries Ocean (DFO)/Canadian Coast Guard only in British Columbia coast area. Commercial fishing in east coast area
	5		T: 156.25 R: 160.85	T: 160.85 R: 156.25	International: Public Correspondence, Port Operations
5a		5a	T/R: 156.25	T/R: 156.25	US: Port Operations or VTS in Houston, New Orleans and Seattle areas.
6	6	6	T/R: 156.30	T/R: 156.30	US: Intership Safety International: Intership Canada: May be used for search and rescue communications between ships and aircraft.
	7		T: 156.35 R: 160.95	T: 160.95 R: 156.35	International: Public Correspondence, Port Operations
7a		7a	T/R: 156.35	T/R: 156.35	US: Commercial
8	8	8	T/R: 156.40	T/R: 156.40	US: Commercial (Intership only) International: Intership Canada: Also assigned for intership in the Lake Winnipeg area.
9	9	9	T/R: 156.45	T/R: 156.45	US: Boater Calling. Commercial and Non-Commercial. International: Intership, Port Operations Canada: Commercial - British Columbia coast area. May be used to communicate with aircraft and helicopters in predominantly maritime support operations.

US CH.	INTL CH.	CA CH.	SHIP (MHZ)	SHORE (MHZ)	CHANNEL USAGE
10	10	10	T/R: 156.50	T/R: 156.50	US: Commercial International: Intership, Port Operations Canada: Commercial - British Columbia coast area. May also be used for communications with aircraft engaged in coordinated search and rescue and antipollution operations.
11	11	11	T/R: 156.55	T/R: 156.55	US: Commercial. VTS in selected areas. International: Port Operations Canada: VTS - British Columbia coast area. Also used for pilotage purposes.
12	12	12	T/R: 156.60	T/R: 156.60	US: Port Operations. VTS in selected areas. International: Port Operations Canada: VTS - British Columbia coast area. Also used for pilotage purposes.
13	13	13	T/R: 156.65	T/R: 156.65	US: Intership Navigation Safety (Bridge-to-bridge). Ships >20m length maintain a listening watch on this channel in US waters. International: Intership, Port Operations Canada: VTS - British Columbia coast area. Also used for pilotage purposes.
14	14	14	T/R: 156.70	T/R: 156.70	US: Port Operations. VTS in selected areas. International: Port Operations Canada: VTS - British Columbia coast area. Also used for pilotage purposes.
15	15	15	T/R: 156.75	T/R: 156.75	US: Environmental (Receive only). Used by Class C Emergency Position-Indicating Radio Beacons (EPIRBs). International: Intership, Port Operations Canada: Port operations and Ship Movement - British Columbia coast area. All operations limited to 1-watt maximum power. May also be used for on-board communications.
16	16	16	T/R: 156.80	T/R: 156.80	US: International Distress, Safety and Calling. Ships required to carry radio, US Coast Guard (USCG), and most coast stations maintain a listening watch on this channel. International: International Distress, Safety and Calling Canada: International Distress, Safety and Calling
17	17	17	T/R: 156.85	T/R: 156.85	US: State Control International: Intership, Port Operations Canada: Port operations and Ship Movement - British Columbia coast area. All operations limited to 1 watt maximum power. May also be used for on-board communications.
	18		T: 156.90 R: 161.50	T: 161.50 R: 156.90	International: Public Correspondence, Port Operations
18a		18a	T/R: 156.90	T/R: 156.90	US: Commercial Canada: Towing - British Columbia coast area.
	19		T: 156.95 R: 161.55*	T: 161.55* R: 156.95	International: Public Correspondence, Port Operations
19a		19a	T/R: 156.95	T/R: 156.95	US: Commercial Canada: DFO/Canadian Coast Guard. Pacific Pilots - British Columbia coast area.
20	20	20	T: 157.00 R: 161.60	T: 161.60 R: 157.00	US: Port Operations (Duplex) International: Public Correspondence, Port Operations Canada: Port operations only with 1 watt maximum power.

US CH.	INTL CH.	CA CH.	SHIP (MHZ)	SHORE (MHZ)	CHANNEL USAGE
20a			T/R: 157.00	T/R: 157.00	US: Port Operations
	21		T: 157.05 R: 161.65*	T: 161.65* R: 157.05	International: Public Correspondence, Port Operations
21a		21a	T/R: 157.05	T/R: 157.05	US: US Coast Guard only Canada: DFO/Canadian Coast Guard only.
		21b	--	T/R: 161.65	
	22		T: 157.10 R: 161.70	T: 161.70 R: 157.10	International: Public Correspondence, Port Operations
22a		22a	T/R: 157.10	T/R: 157.10	US: Coast Guard Liaison and Maritime Safety Information Broadcasts. Broadcasts announced on channel 16. Canada: For communications between Canadian Coast Guard and non-Canadian Coast Guard stations only.
	23	23	T: 157.15 R: 161.75	T: 161.75 R: 157.15	International: Public Correspondence, Port Operations
23a			T/R: 157.15	T/R: 157.15	US: US Coast Guard only
		23b	--	T/R: 161.75	Canada: Continuous Marine Broadcast (CMB) service.
24	24	24	T: 157.20 R: 161.80	T: 161.80 R: 157.20	US: Public Correspondence (Marine Operator) International: Public Correspondence, Port Operations
25	25	25	T: 157.25 R: 161.85	T: 161.85 R: 157.25	US: Public Correspondence (Marine Operator) International: Public Correspondence, Port Operations Canada: Also assigned for operations in the Lake Winnipeg area.
		25b		T/R: 161.85	
26	26	26	T: 157.30 R: 161.90	T: 161.90 R: 157.30	US: Public Correspondence (Marine Operator) International: Public Correspondence, Port Operations
27	27	27	T: 157.35 R: 161.95	T: 161.95 R: 157.35	US: Public Correspondence (Marine Operator) International: Public Correspondence, Port Operations
28	28	28	T: 157.40 R: 162.00	T: 162.00 R: 157.40	US: Public Correspondence (Marine Operator) International: Public Correspondence, Port Operations
		28b	--	T/R: 162.00	Canada: Continuous Marine Broadcast (CMB) service.
	60	60	T: 156.025 R: 160.625	T: 160.625 R: 156.025	International: Public Correspondence, Port Operations
	61		T: 156.075 R: 160.675	T: 160.675 R: 156.075	International: Public Correspondence, Port Operations
61a		61a	T/R: 156.075	T/R: 156.075	Canada: DFO/Canadian Coast Guard only in British Columbia coast area.
	62		T: 156.125 R: 160.725	T: 160.725 R: 156.125	International: Public Correspondence, Port Operations
		62a	T/R: 156.125	T/R: 156.125	Canada: DFO/Canadian Coast Guard only in British Columbia coast area.

US CH.	INTL CH.	CA CH.	SHIP (MHZ)	SHORE (MHZ)	CHANNEL USAGE
	63		T: 156.175 R: 160.775	T: 160.775 R: 156.175	International: Public Correspondence, Port Operations
63a		63a	T/R: 156.175	T/R: 156.175	US: Port Operations and Commercial, VTS. New Orleans/Lower Mississippi area. Canada: Tow Boats - British Columbia coast area.
	64	64	T: 156.225 R: 160.825	T: 160.825 R: 156.225	International: Public Correspondence, Port Operations
64a		64a	T/R: 156.225	T/R: 156.225	Canada: Commercial fishing only.
	65		T: 156.275 R: 160.875	T: 160.875 R: 156.225	International: Public Correspondence, Port Operations
65a		65a	T/R: 156.275	T/R: 156.275	US: Port Operations Canada: Search and rescue and antipollution operations on the Great Lakes. Towing on the Pacific Coast. Port operations only in the St. Lawrence River areas with 1 watt maximum power. Intership in inland Manitoba, Saskatchewan, and Alberta areas.
	66		T: 156.325 R: 160.925	T: 160.925 R: 156.325	International: Public Correspondence, Port Operations
66a		66a	T/R: 156.325	T/R: 156.325	US: Port Operations Canada: Port operations only in the St. Lawrence River/Great Lakes areas with 1 watt maximum power. 1 watt marina channel - British Columbia coast area.
67	67	67	T/R: 156.375	T/R: 156.375	US: Commercial. Used for Bridge-to-bridge communications in lower Miss. River. Intership only. International: Intership, Port Operations Canada: May also be used for communications with aircraft engaged in coordinated search and rescue and antipollution operations. Commercial fishing only in east coast and inland Manitoba, Saskatchewan, and Alberta areas. Pleasure craft - British Columbia coast area.
68	68	68	T/R: 156.425	T/R: 156.425	US: Non-Commercial International: Port Operations Canada: For marinas, yacht clubs and pleasure craft.
69	69	69	T/R: 156.475	T/R: 156.475	US: Non-Commercial International: Intership, Port Operations Canada: Commercial fishing only - east coast area. Pleasure craft - British Columbia coast area.
70	70	70	T/R: 156.525	T/R: 156.525	US: Digital Selective Calling (voice communications not allowed) International: Digital selective calling for distress, safety and calling Canada: Digital selective calling for distress, safety and calling
71	71	71	T/R: 156.575	T/R: 156.575	US: Non-Commercial International: Port Operations Canada: Ship Movement - British Columbia coast area. Marinas and yacht clubs - east coast and on Lake Winnipeg.
72	72	72	T/R: 156.625	T/R: 156.625	US: Non-Commercial (Intership only) International: Intership Canada: May be used to communicate with aircraft and helicopters in predominantly maritime support operations. Pleasure craft - British Columbia coast area

US CH.	INTL CH.	CA CH.	SHIP (MHZ)	SHORE (MHZ)	CHANNEL USAGE
73	73	73	T/R: 156.675	T/R: 156.675	US: Port Operations International: Intership, Port Operations Canada: May also be used for communications with aircraft engaged in coordinated search and rescue and antipollution operations. Commercial fishing only in east coast and inland Manitoba, Saskatchewan, and Alberta areas.
74	74	74	T/R: 156.725	T/R: 156.725	US: Port Operations International: Port Operations Canada: VTS and Ship Movement British Columbia coast area.
75	75	75	T/R: 156.775	T/R: 156.775	International: Port Operations Canada: Simplex port operation, ship movement and navigation related communication only. 1 watt maximum.
76	76	76	T/R: 156.825	T/R: 156.825	International: Port Operations Canada: Simplex port operation, ship movement and navigation related communication only. 1 watt maximum.
77	77	77	T/R: 156.875	T/R: 156.875	US: Port Operations (Intership only) International: Intership Canada: Pilotage - British Columbia coast area; 25 watts. Port operations only in the St. Lawrence River/Great Lakes areas with 1 watt maximum power.
	78		T: 156.925 R: 161.525	T: 161.525 R: 156.925	International: Public Correspondence, Port Operations
78a		78a	T/R: 156.925	T/R: 156.925	US: Non-Commercial Canada: Fishing Industry - British Columbia coast area.
	79		T: 156.975 R: 161.575	T: 161.575 R: 156.975	International: Public Correspondence, Port Operations
79a		79a	T/R: 156.975	T/R: 156.975	US: Commercial. Non-Commercial in Great Lakes only Canada: Fishing Industry - British Columbia coast area.
	80		T: 157.025 R: 161.625	T: 161.625 R: 157.025	International: Public Correspondence, Port Operations
80a		80a	T/R: 157.025	T/R: 157.025	US: Commercial. Non-Commercial in Great Lakes only Canada: Fishing Industry - British Columbia coast area.
	81		T: 157.075 R: 161.675	T: 161.675 R: 157.075	International: Public Correspondence, Port Operations
81a		81a	T/R: 157.075	T/R: 157.075	US: US Government only - Environmental protection operations Canada: DFO/Canadian Coast Guard use only.
	82		T: 157.125 R: 161.725	T: 161.725 R: 157.125	International: Public Correspondence, Port Operations
82a		82a	T/R: 157.125	T/R: 157.125	US: US. Government only Canada: DFO/Canadian Coast Guard use only.
	83		T: 157.175 R: 161.775	T: 161.775 R: 157.175	International: Public Correspondence, Port Operations
83a		83a	T/R: 157.175	T/R: 157.175	US: US Coast Guard only Canada: DFO/Canadian Coast Guard and other Government agencies.
		83b	- -	T/R: 161.775	

US CH.	INTL CH.	CA CH.	SHIP (MHZ)	SHORE (MHZ)	CHANNEL USAGE
84	84	84	T: 157.225 R: 161.825	T: 161.825 R: 157.225	US: Public Correspondence (Marine Operator) International: Public Correspondence, Port Operations
85	85	85	T: 157.275 R: 161.875	T: 161.875 R: 157.275	US: Public Correspondence (Marine Operator) International: Public Correspondence, Port Operations
86	86	86	T: 157.325 R: 161.925	T: 161.925 R: 157.325	US: Public Correspondence (Marine Operator) International: Public Correspondence, Port Operations
87	87	87	T: 157.375 R: 161.975	T: 161.975 R: 157.375	US: Automatic Identification System duplex repeater International: Port Operations Canada: Port operation and ship movement - east coast area. Pleasure craft - British Columbia coast area.
87a			T/R: 157.375	T/R: 157.375	US: Public Correspondence (Marine Operator)
		87b	T/R: 161.975	T/R: 161.975	Canada: Automatic Ship Identification and Surveillance System.
	88	88	T: 157.425 R: 162.025	T: 162.025 R: 157.425	US: Commercial, Intership only. International: Port Operations Canada: Port operation and ship movement - British Columbia coast area.
88a			T/R: 157.425	T/R: 157.425	US: Commercial, Intership only. Canada: Automatic Ship Identification and Surveillance System.
		88b	T/R: 162.025	T/R: 162.025	
WX1		WX1		R: 162.55	
WX2		WX2		R: 162.4	
WX3		WX3		R: 162.475	
WX4				R: 162.425	
WX5				R: 162.45	
WX6				R: 162.5	
WX7				R: 162.525	

8.2 NARROWBANDING

The FCC has mandated that all public safety radios manufactured after January 1, 2013 comply with narrowbanding restrictions. Radios manufactured after the above date will comply with these restrictions. Existing radio personalities that contain frequencies that violate these FCC rules will cause an invalid channel error indication on the radio display. The user will need to change the radio personality to comply with the new rules. Note that there are multiple exceptions to the narrowbanding mandate, including the Marine Frequencies listed in Section 8.1.

9. GLOSSARY

-A-

AES	Advanced Encryption Standard
AES-256	Advanced Encryption Standard, 256-bit
AMBE+2	Advanced Multi-Band Excitation implementation 2
ANSI	American National Standards Institute
ASCII	American Standard Code for Information Interchange

-B-

-C-

C	Celsius
CA	Canada
CDCSS	Continuous Digital Coded Squelch System
CH INFO	Channel Information
CKR	Common Key References
CMB	Continuous Marine Broadcast
CTCSS	Continuous Tone Coded Squelch System

-D-

DES	Digital Encryption Standard
DES-OFB	Digital Encryption Standard Output Feedback
DFO	Department Fisheries Ocean
DMS	Degrees Minutes Seconds

-E-

EPIRB	Emergency Position-Indicating Radio Beacons
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-F-

F	Fahrenheit
FCC	Federal Communications Commission
FM	Frequency Modulation

-G-

GHz	Giga (10 ⁹) Hertz
GEOTRANS	Geographic Translator
GPS	Global Positioning System

-H-

Hz	Hertz
HKL	Harris Key Loader

-I-

ID	Identification
IEEE	Institute of Electrical & Electronics Engineers
INTL	International

-J-

-K-

KEK	Key Encryption Key
kHz	kilo (10 ³) Hertz
KID	Key Identification
KMF	Key Management Facility
KMS	Key Management System
KS	Key Set
KVL	Key Variable Loader (Motorola KVL Device)

-L-

LAT/LONG DMS	Latitude/Longitude Degrees Minutes Seconds
LAT LONG DD	Latitude/Longitude Decimal Degrees
LED	Light Emitting Diode
Li-ION	Lithium-ION

-M-

MHz	Megahertz
mm	Millimeter
MR	Mobile Radio
ms	milli (10 ⁻³) seconds

-N-

NAC	Network Access Code
Ni-MH	Nickel Metal Hydride
NOAA	National Oceanic and Atmospheric Administration

-O-

OET	Office of Engineering and Technology
OTAR	Over-The-Air Rekey

-P-

P25	Project 25
POS	Position
PRI	Priority (Channel)
PTT	Push-to-Talk

-Q-**-R-**

RF	Radio Frequency
RPM2	Radio Personality Manager 2
RSI	Radio Set Identifier
RSM	Remote Speaker Microphone
RX	Receive

-S-

SA	Situational Awareness
SMA	Subminiature Version A

-T-

TIA	Telecommunications Industry Association
------------	---

TX	Transmit	
		-U-
UHF	Ultra High Frequency	
UKEK	Unique Key Encryption Key	
US	United States	
USCG	United States Coast Guard	
UTC	Universal Time Coordinated	
UTM	Universal Transverse Mercator	
		-V-
VDC	Volts, Direct Current	
VHF	Very High Frequency	
VIDA	Voice Interoperability Data Access	
VTs	Vessel Traffic Service	
		-W-
WEEE	Waste from Electric and Electronic Equipment	
		-X-
		-Y-
		-Z-

10. BASIC TROUBLESHOOTING

When upgrading from XLP R1A/C to R1D/E, the radio displays . XLP R1D installs an image that can install future software releases and is required prior to upgrading to R2. **Do not power cycle when this screen is displayed on the radio or R1D must be reinstalled prior to upgrading to R2.**

When installing XLP R2A and later, if the upgrade is interrupted by a power cycle, the radio displays . This indicates a partial install occurred and a reinstall is required. The radio should be connected via USB and the software should be installed again.

For radios with XLP R3A and later, if  is displayed, the radio has lost its factory information and needs to be returned for updating.

10.1 ERROR MESSAGES

This section provides a list of error messages, as well as possible causes and solutions.

Table 10-1: Displayed Error Messages, Reasons, and Resolutions

SCREEN/ MENU	DISPLAYED ERROR MESSAGE	REASON	RESOLUTION
Top-Level Screen	INVALID KEYSTORE ZEROIZE NEEDED	Corrupt key database or incorrect database configuration.	Zeroize database.
Bluetooth Pairing Screen	PAIRING FAILED	Bluetooth pairing failed.	Ensure device is discoverable and attempt to re-pair the device.
Channel Edit Screen	EDIT FAILED	Unable to modify P25 Channel.	Power cycle and try again--contact Harris if problem persists.
Channel Edit Screen	INVALID RX FREQUENCY	Entered Rx frequency is invalid.	Ensure frequency follows band spacing rules.
Channel Edit Screen	INVALID TX FREQUENCY	Entered Tx frequency is invalid.	Ensure frequency follows band spacing rules.
Install Operations	INSTALL FAILED	Error during install process.	Transfer file again and reattempt install. Contact Harris if problem persists.
Install Operations	INSTALL FAILED	Extraction of compressed file failed.	Transfer file again and reattempt install. Contact Harris if problem persists.
Install Operations	INSTALL FAILED	Removal of existing SW failed.	Attempt install again and contact Harris if problem persists.
Mission Plan In Progress Screen		Mission plan activation failed.	Use RPM2 to ensure plan validity. Contact Harris if failures persist.
Security Menu	ZEROIZE FAILED	Radio could not zeroize.	Radio problem—power cycle and contact Harris if problem persists.
Security Menu	NO KEYS TO ZEROIZE	Key database empty.	Nothing to zeroize.
Utilities Menu	INCORRECT PASSWORD	Maintenance password invalid.	Enter valid maintenance password.
Channel Info Screen	INCORRECT PASSWORD	Channel edit password invalid.	Enter valid channel edit password.

10.2 OTAR ERRORS/INFORMATION

WORKAROUNDS:

1. Zeroize.
2. Load proper KEK from the Harris Key Loader or Motorola KVL.

IF RADIO INDICATES:

1. INVALID KEYSTORE ZEROIZE NEEDED - This occurs if the radio's keys were loaded by the Harris Key Loader followed by an attempt to load UKEKs with the Key Loader or keys with the Motorola KVL.
 - Fix by performing workaround 1, followed by 2.
2. NO UKEK – Displayed during a zeroize performed from the radio or a zeroize initiated from the KMF.
 - Fix by performing workaround 2.
3. Zeroize Complete – KMF has zeroized the radio.
 - Fix by performing workaround 2.
4. Disabled OTAR Icon (red slash) – OTAR is disabled while in scan, talkaround, emergency, and monitor.
 - Fix by disabling these features. Icon will be corrected (no red slash).
5. Gray OTAR Icon (no red slash) – OTAR has not registered with tower (Conventional or Trunked system).
 - Fix by verifying proper frequencies.
 - If the radio is turned to the OTAR channel out of range of a conventional tower, and then comes in range after 3 minutes, fix by issuing an OTAR. Rekey, leaving and re-enter the OTAR channel.
6. Green OTAR Icon – OTAR is registered, all is well.
 - If update fails, verify you are in range of the tower and the KEK is correct.
7. Blue OTAR Icon – OTAR is attempting to rekey.
 - If rekey fails, verify you are in range of the tower and the KEK is correct.

11. TECHNICAL ASSISTANCE

The Technical Assistance Center's (TAC) resources are available to help with overall system operation, maintenance, upgrades and product support. TAC is the point of contact when answers are needed to technical questions.

Product specialists, with detailed knowledge of product operation, maintenance and repair provide technical support via a toll-free (in North America) telephone number. Support is also available through mail, fax and e-mail.

For more information about technical assistance services, contact your sales representative, or contact the Technical Assistance Center directly:

North America:	1-800-528-7711
International:	1-434-385-2400
Fax:	1-434-455-6712
E-mail:	PSPC_tac@harris.com

12. WARRANTY

Please register this product within 10 days of purchase. Registration validates the warranty coverage, and enables Harris to contact you in case of any safety notifications issued for this product.

Registration can be made on-line at the Customer Care center webpage:

<https://www.harris.com/solution/pspc-customer-service>

While on the webpage, please review the applicable battery and/or product warranty literature.

APPENDIX A WI-FI PROGRAMMING



Due to numerous issues with discovering and programming radios connected to Enterprise Wireless networks, it is **strongly** suggested that a single Access Point Wireless network be used for programming radios with RPM2. See Section A.7 for more information.



These instructions assume the user has a basic familiarity with Wireless (Wi-Fi) networks, their configuration, and how to connect devices. If you are unfamiliar with the terms and/or procedures mentioned in these instructions, please contact your IT department for help before attempting to configure Wi-Fi programming.



For radios to be discoverable on the Wi-Fi network, your wireless router must be configured to allow Multicast (mDNS). This varies by router manufacturer; refer to your router's documentation for specific settings needed to enable Multicast (mDNS).

A.1 OVERVIEW

Perform the following to program a radio over Wi-Fi. For first time setup, see Section A.8.1.

1. Configure the Access Point (Section A.2).
2. Configure the personality (Section A.3).
3. Configure the RPM2 application (Section A.4).
4. Put the radio in Wi-Fi Programming Mode (Section A.5).
5. Discovery and programming in the RPM2 application (Section A.6).
6. Support for Enterprise Wireless Networks (Section A.7).
7. Helpful Hints (Section A.8).

A.2 CONFIGURE THE ACCESS POINT

- Setup an Access Point (wireless router) as follows. The **bold** values provided below are the default values in the personality.
 - Wireless Networking Name (SSID): **harrisradios**
 - Shared Key (Network Password): **password**
 - Wireless Authentication/Security Mode (Encryption Type): **WPA**

WPA and **WPA2-PSK** are the available Encryption Types in the RPM2 application
- Ensure that the Access Point has Multicast (mDNS) enabled. See the second note at the top of Appendix A for more information. The following are examples of how to allow Multicast (mDNS) message to be relayed and not filtered out on two different routers.
 - In the Buffalo Router (AC 1750), it is in **Advanced settings → Wireless → Multicast Control**. Check the Enable checkbox beside “Snooping.”
 - In the Linksys router (WRT54GS), it is located under the Security Tab. Uncheck “Filter Multicast” to prevent the Multicast (mDNS) messages from being filtered out.

A.3 CONFIGURE THE PERSONALITY

For a radio to be programmed over Wi-Fi, the active personality on the radio must be configured for connecting with the values that were set in Section A.2. The following steps detail how to configure an existing radio personality.

1. In the personality, navigate to Options → Network Configuration.

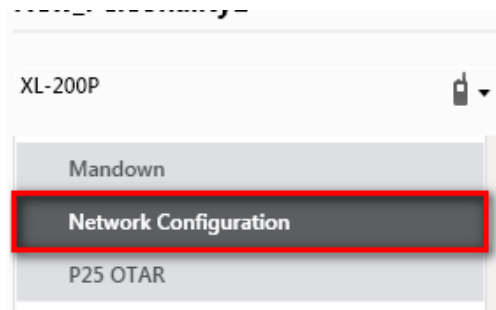


Figure A-1: Options → Network Configuration

2. Under the Wi-Fi Configuration section, set the Encryption Type, Network (SSID), and Network Password.

Wi-Fi Configuration Collapse —				
Wi-Fi Enabled ☒				
#	Encryption Type	Network (SSID)	Network Password	
1	WPA	harrisradios	password	

Figure A-2: Wi-Fi Configuration

3. Under Network Service Configuration, the default values can remain the same. If the wireless network is managed by another department, please coordinate with them to get it setup correctly.

The **Network Discovery Configuration** → **Service Name** is a Unique name used by RPM2 and radios to communicate with each other. There is more information about this in Section A.8.2.

Network Service Configuration

Network Discovery Configuration

Service Name harrisradio

Figure A-3: Service Name

4. After the personality is configured and saved, write it to the radio over USB and then activate it.

A.4 CONFIGURE THE RPM2 APPLICATION

To ensure that RPM2 can discover radios over Wi-Fi, ensure that the **Enable Wi-Fi** checkbox is checked on the RPM2 Preferences screen as shown in Figure A-4. This checkbox is unchecked by default.

RPM2 Preferences

Default Values

Radio Types

Default Directories

Miscellaneous

General

☐ Show Delete Confirmation Dialog

☒ Use NPSPAC

806-809 and 851-854 MHz

☐ Enable SC5 Files

☒ Save Binary Files

☒ Track Directories For Session

☒ Enable Wi-Fi

Service Name harrisradio

☐ Calculate Personality Size

Exit Program Mode After Read and Write

Default Connection Type USB

Reset to Defaults

Apply

Cancel

Figure A-4: Enable Wi-Fi in RPM2

Also, as shown in Figure A-4, the **Service Name** must be updated to reference the value in the active personalities for the radios you need to discover. See #3 in Section A.3 and Section A.8.2 for more information.

For default operation using the network as described in Section A.2, no other configuration of the radio or RPM2 is required.

A.5 PUT THE RADIO IN WI-FI PROGRAMMING MODE

To put the radio in Wi-Fi programming mode:

1. Turn the radio off and remove the USB cable (optional).
2. Press and hold the bottom side and PTT buttons.
3. Power on the radio while continuing to hold the buttons.
4. Release the buttons when the WIFI INSTALL ACTIVE screen appears on the radio.
5. Initially, the radio displays DISCONNECTED. When the IP address is displayed, the radio is available to be programmed.



Figure A-5: Enable Wi-Fi Programming Mode on Radio

A.6 DISCOVERY AND PROGRAMMING IN THE RPM2 APPLICATION

1. Start RPM2.
2. Disconnect the radio from the programming cable.
3. Select the Radio tab (Figure A-6) and click the Wi-Fi connection button as shown in Figure A-6.

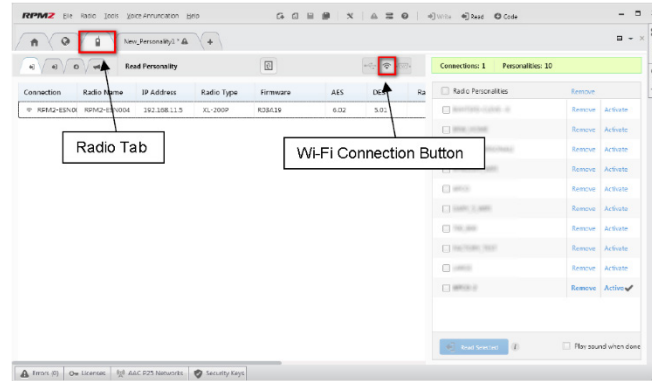


Figure A-6: RPM2 Radio Tab: Wi-Fi

- When the Wi-Fi connection button is pressed, a “Discovering Wi-Fi Radios” message is displayed for several seconds and the radios connected to that access point with that Service Name populate the connection list.



To connect over Wi-Fi, the currently active personality **MUST** have the correct Wi-Fi parameters. Therefore, care must be taken that all personalities on a given radio have the correct Wi-Fi parameters for the desired network. Otherwise, activation of another personality on the radio will result in the inability to establish a Wi-Fi connection.

- Select a radio or radios and perform the desired action. Only Read Personality, Write Personality, and Load Code are supported over Wi-Fi. See the table below for the supported combinations.

Table 12-1: Wi-Fi Feature Support

	SINGLE RADIO	MULTIPLE RADIOS (UP TO 16)
Read Single Personality	Yes	No
Read Multiple Personalities	Yes	No
Write Single Personality	Yes	Yes
Write Multiple Personalities	No	No
Load Single Code File	Yes	Yes
Load Multiple Code Files	Yes	Yes
Voice Annunciation	No	No
Feature Data	No	No
Radio Name	Yes	No
Install Splash Screen	Yes	Yes

- In the Status Panel, all Wi-Fi related actions will have the prefix of “WIFI.”
To help in displaying the radios, the “Connection” and “IP Address” columns are sortable.



If the Access Point is not configured to the default values from Section A.2 and the active personality in the radio is removed, the radio loses connection to the Access Point and must be connected over USB to write/activate a personality to reconnect to the Access Point.

A.7 RPM2 WI-FI SUPPORT FOR ENTERPRISE NETWORKS.

Enterprise Networks have certain limitations when it comes to Discovering/Programming Radios in RPM2. There is a 4500 second (75 minute) caching affect inherent to implementation with the Cisco®

Wi-Fi solution that utilizes the Access Point (AP)/Wireless LAN Controller (WLC) components. Radios remain ‘seen’ in RPM2 even after the radio leaves Wi-Fi or is turned off. It is cached in RPM2 for 4500 seconds. This issue has only been observed with the Cisco AP and WLC solution; however, other enterprise wireless solutions may observe this caching affect. Operation with a lower tiered Wi-Fi router that does not operate with a WLC will likely not observe this behavior.

Please see Release Notes for Media Kit SK-019007-001 version R7A06 for more information.

A.8 HELPFUL HINTS

A.8.1 Initial Setup and Configuration

Since radio discovery is dependent on if Multicast (mDNS) messages are being received by RPM2, it is best to keep things as simple as possible. Here are the suggested steps if this is being setup and configured for the first time.

1. Configure the Access Point with the default personality values provided in Section A.2.
2. Create a basic personality with a single system, set and channel, write it to the radio and activate it over USB.
3. Complete Sections A.4 through A.6.

If the radio was not discovered in RPM2 but an IP address is displayed on the radio screen as seen in Figure A-5, this may mean that the Multicast (mDNS) messages are not making it through the Access Point. Consult the Access Point’s manual and make sure that those messages are not being filtered out.

A.8.2 Grouping Radios by Service Name

One benefit of using a unique **Service Name** is that it allows the user to create logical groupings of radios to reduce the number of radios discovered in RPM2 and help reduce the overhead of keeping track of which radios have been configured.

For example, if there are 100 radios in Wi-Fi programming mode (see Section A.5) with the same **Service Name**, all 100 radios are displayed in the Radio tab after discovery has been completed. This makes it difficult to select and program multiple radios simultaneously. However, if the **Service Name** in the active personality on 16 of the radios are set to something unique like “fire1” and the RPM2 application **Service Name** (see Section A.4) is also updated to “fire1,” only those radios with a **Service Name** of “fire1” are discovered and displayed in the Radio tab.

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About Harris Corporation

Harris Corporation is a leading technology innovator, solving customers' toughest mission-critical challenges by providing solutions that connect, inform and protect. Harris supports government and commercial customers in more than 100 countries and has approximately \$6 billion in annual revenue. The company is organized into three business segments: Communication Systems, Space and Intelligence Systems and Electronic Systems. Learn more at harris.com.

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