MOTOROLA *SOLUTIONS*

APX™ TWO-WAY RADIOS

APX 3000 User Guide

68012007043-EY

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Software Version

All the features described in the following sections are supported by the software version **R35.00.00** or later. Contact your system administrator for more details of all the supported features.

Chapter 1

Read Me First

This User Guide covers the basic operation of the radio. However, your dealer or system administrator may have customized your radio for your specific needs. Check with your dealer or system administrator for more information.

1.1
Notations Used in This Manual

Notations such as **Warning**, **Caution**, and **Notice** are used throughout the text in this publication. These notations are used to emphasize that safety hazards exist, and the care that must be taken or observed.

⚠️ **WARNING:** An operational procedure, practice, or condition and so on, which may result in injury or death if not carefully observed.

⚠️ **CAUTION:** An operational procedure, practice, or condition and so on, which may result in damage to the equipment if not carefully observed.

📝 **NOTE:** An operational procedure, practice, or condition and so on, which is essential to emphasize.

1.2
Radio Care

Proper radio usage and care ensure efficient operation and long-life of the product.

⚠️ **CAUTION:** Use the radio according to the following recommendations and warnings.

- Your radio casing has a vent port for pressure equalization in the radio. Never poke this vent Ⓐ with objects such as needles, tweezers, or screwdrivers.
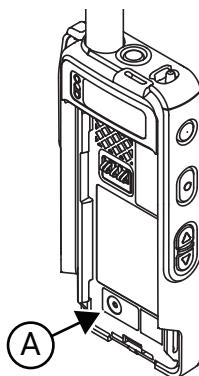
- Never obstruct or cover the vent port, even with a label.
- Ensure that no oily substances come in contact with the vent port.
- Your radio is designed to be submerged to a maximum depth of six feet and maximum time of two hours. Exceeding either maximum limit can result in damage to the radio.
- The radio with antenna attached properly is submersible to a maximum depth of 1 meter (3.28 feet) and a maximum submersion time of 30 minutes. Exceeding either maximum limit or use without antenna may result in damage to the radio.

- If the radio battery contacts are exposed to water without the battery attached, dry and clean the radio battery contacts before attaching a battery to the radio. Turn the radio over with the battery contact facing down and shake the radio so any trapped water can escape. A short circuit of the contacts could occur if they are not dried properly.

- If the radio has been submerged in water, shake the radio to remove any water that is trapped inside the speaker grille and microphone port. Otherwise, the water decreases the audio quality of the radio.

- If an accessory is not attached to the radio, ensure that the accessory connector cover is attached to the radio side accessory connector.

- If the radio is submerged or exposed to a high force water spray, such as from a hose, remove the accessory or accessory connector cover immediately and ensure that no water is forced into the accessory connector or radio interface. Rinse and dry the area and reattach the accessory or accessory connector cover if leakage occurs.

- If the radio is exposed to a corrosive environment, such as salt water or corrosive gases or liquids, rinse, and clean the radio immediately to prevent damage to radio materials, especially plated surfaces. Remove the battery and the antenna before cleaning.

- Do **not** disassemble the radio as you could damage radio seals and result in leak paths into the radio. Any radio maintenance should be performed only by a qualified radio technician.

- Only Underwriter Laboratory (UL) approved service centers can open and service UL certified radios. Opening or repairing at unauthorized locations invalidates hazardous location rating of the radio.

- Do **not** pound, drop, or throw the radio unnecessarily.

- Turn off the radio when charging the radio using a wall-mounted charger. Otherwise, the Fall Alert and Emergency may be accidentally triggered.

- When cleaning the radio, do not use a high-pressure jet spray as this can exceed the depth pressure and cause water to leak into the radio.

1.2.1
Cleaning Your Radio

To clean the external surfaces of your radio, perform the following:

Procedure:

1. Combine one teaspoon of mild dishwashing detergent to one gallon of water (0.5% solution).
2. Apply the solution sparingly with a stiff, non-metallic, shortbristled brush, making sure that excess detergent does not get entrapped near the connectors, controls, or crevices.
3. Rinse and then dry the radio thoroughly with a soft, lint-free cloth.
4. Clean battery contacts with a lint-free cloth to remove dirt or grease.

1.2.2
Cleaning the External Surface of the Radio

Prerequisites:

⚠ **CAUTION:** Do **not** use solvents to clean your radio. Spirits may permanently damage the radio housing. Do **not** submerge the radio in detergent solution.

Procedure:

1. Combine 1 teaspoon of mild dishwashing detergent to 1 gallon of water (0.5% solution).

2. Apply the solution sparingly with a stiff, non-metallic, short-bristled brush, ensuring that excess detergent does not get entrapped near the connectors, controls, or crevices.

3. Dry the radio thoroughly with a soft, absorbent, lint-free cloth.

4. Ensure that no water remains entrapped near the connectors, cracks, or crevices.

1.2.3
Radio Service and Repair

Proper repair and maintenance procedures ensure efficient operation and long-life of this radio. A Motorola Solutions maintenance agreement provides expert service to keep the radio and all other communication equipment in perfect operating condition.

A nationwide service organization is provided by Motorola Solutions to support maintenance services. Through its maintenance and installation program, Motorola Solutions makes the finest service available to those desiring reliable continuous communications on a contract basis.

For a contract service agreement, contact your nearest Motorola Solutions service or sales representative, or an authorized Motorola Solutions dealer.

1.3
Battery Recycling and Disposal

In the U.S. and Canada, Motorola Solutions participates in the nationwide Call2Recycle program for battery collection and recycling. Many retailers and dealers participate in this program.

For the location of the drop-off facility closest to you, go to http://www.call2recycle.org/ or call 1-800-8-BATTERY. This website and telephone number also provide other useful information concerning recycling options for consumers, businesses, and governmental agencies.

1.4
What Your Dealer or System Administrator Can Tell You

If the radio is to be operated in extreme temperatures (less than -30 °C or more than +60 °C), check with your system administrator for the correct radio settings.

You can consult your dealer or system administrator about the following:

- Is your radio programmed with any preset conventional channels?

- Which buttons have been programmed to access other features?

- What optional accessories may suit your needs?

NOTE: Specifications may vary for different radio models. For more information, contact your system administrator.

Chapter 2

Getting Started

APX 3000 is a small body radio meant to work together with other light-weight accessories such as Mission Critical Wireless Remote Control Unit (RCU), headset and pod to interact with you efficiently.

IMPORTANT:

- Your radio has a Voice Announcement feature (programmable) which provides audible status updates of your radio function through the speaker microphone, earpiece, or headset. This feature helps to confirm the changes that you have made when interacting with your radio in covert. See Voice Announcement † on page 65 to learn how this feature works.

- Connect a GCAI Display Remote Speaker Microphone (DRSM) to see the radio status displayed in words or icons. Most of these radio statuses are mentioned in the content across this manual.

Throughout the text in this publication, notice the use of the symbols shown in the following list. They are to remind you that an external accessory is required to see or hear the indications of your radio during an operation procedure, practice, or condition, and so on, which:

†
    Requires to connect a speaker microphone, earpiece, or headset to your radio to hear the audio tones or announcements.

‡
    Requires to connect a DRSM to your radio to read the strings or indications displayed on your radio.

The applications of these accessories are optional. Consult your agent for the most suitable features and accessories required for you to work with this radio.

2.1
Charging the Battery

Prerequisites:

WARNING: To avoid a possible explosion:

- Do **not** replace the battery in any area labeled **hazardous atmosphere**.

- Do **not** discard batteries in a fire.

When and where to use: Motorola Solutions-approved battery shipped with your radio is uncharged. Prior to using a new battery, charge it for a minimum of 16 hours to ensure optimum capacity and performance. For a list of Motorola Solutions-authorized batteries and chargers available for use with your radio, see Accessories on page 69.

NOTE: When charging a battery attached to a radio, the radio must be turned off.

Procedure:

To charge the battery, place the battery (with or without the radio) in a Motorola Solutions-approved charger.

The LED on the charger indicates the charging progress. For more information, see the *Charger User Guide*.

2.2
Attaching the Battery‡

If your radio is preprogrammed with volatile-key retention, the encryption keys are retained for approximately 30 seconds after battery removal. Check with your dealer or system administrator for more information.

> **NOTE:**
> User is notified if radio detects non-Motorola Solutions battery upon powering up, charging, or removing from the charger. This feature is applicable for IMPRES and Non-IMPRES battery.
>
> A tone sounds when the radio is attached with the non-Motorola Solutions battery.

Procedure:

1. Slide the battery into the radio frame until the latch at the bottom of the radio clicks into place.
2. To remove the battery, turn the radio off. Lift the latch at the bottom of the radio, then slide the battery out from the radio.

2.3
Attaching the Antenna

Prerequisites: Ensure the radio is turned off before attaching the antenna.

Procedure:

1. Set the antenna in the receptacle.
2. Turn the antenna clockwise to attach to the radio.
3. To remove the antenna, turn the antenna counterclockwise.

   > **NOTE:** When removing the antenna, ensure that the radio is turned off.

   For proper steps to strap the Flexible Antenna to your body, see Method to Tie the Radio and Flexible Antenna to the Body on page 18.

2.4
Removing and Attaching the Accessory Connector Cover

The accessory connector is on the antenna side of the radio. It is used to connect accessories to the radio.

> **NOTE:** To prevent damage to the connector, shield it with the connector cover when not in use.

Procedure:

1. To remove the accessory connector cover, rotate the thumbscrew counterclockwise until it disengages from the radio.

   > **NOTE:** If the thumbscrew is too tight, use an allen wrench to loosen it.

2. Rotate and lift the connector cover to disengage it from the radio.
3. To attach the accessory connector cover, insert the hooked end of the cover into the slot above the connector.

4. Press the top of the cover downward to seat it in the slot.

5. Tighten by rotating the thumbscrew clockwise by hand.

2.5
Best Practice for Attaching an Accessory to the Radio

NOTE: To ensure proper operation, turn off the radio before connecting an accessory to the radio.

Procedure:

1. Attach an accessory connector to the side connector of the radio.

2. Secure the connection screw in a clockwise direction until tightened.

2.6
Installing Accessories with GCAI Connector

Procedure:

Perform one of the following actions:

- Connect a Global Common Accessory Interface (GCAI) DRSM to see the icons and strings as well as hear audio alerts and transmission of your radio

- Connect a GCAI Surveillance Earpieces to hear the audio alerts.

2.7
Turning On the Radio‡

Procedure:

1. Push the On/Off Switch to turn the power on or off.

- If the power-up test is successful, the display shows `SELFTEST` momentarily, followed by the Home screen and the Codeplug Alias.

You see a green spot when the switch is in the ON position. If the power-up test is successful, you see momentary `MOTOROLA` on the DRSM.

NOTE:
If the power-up test is unsuccessful, you see `ER XX/YY` (`XX/YY` is an alphanumeric code) on your DRSM screen. Turn off your radio, check the battery, and turn on your radio.

If your radio fails the power-up test again, record the `ER XX/YY` code and contact your dealer.

2. To turn off your radio, push the **On/Off Switch** until you do not see the green spot.

2.8
Adjusting the Volume†

Procedure:

Press the **Up** and **Down Arrow Button** to adjust the volume you hear on your headset.

Refer to your agent or qualified radio technician if you must enable the Up and Down Arrow Button with other function.

> **NOTE:**
> Ensure the Up and Down Arrow Button is in Volume mode by pressing the Multi-Function Button (MFB) to toggle to Volume mode.
>
> MFB must be preprogrammed to be a programmable button.

2.9
Pairing Radio with Pod and Earpiece†‡

Procedure:

1. Plug the earpiece to the wireless Pod.

2. Verify that both your radio and pod are powered ON and in pairing mode.

3. Place the Bluetooth pairing spot on your Pod within one inch of the Bluetooth pairing spot on your radio.

   Your radio Blue LED lights up solid once connected and followed by blinking blue to indicate there is Bluetooth device connected to your radio.

   > **NOTE:** Your Pod can function as a standalone PTT device without the earpiece.

2.10
Pairing Radio with Mission Critical Remote Control Unit (RCU)

Procedure:

1. On your RCU, press and hold the Trunk button while powering up your RCU to enter pairing mode.

2. Place the Bluetooth pairing spot of your RCU within one inch of the Bluetooth pairing spot of your radio.

Result: Your radio Blue LED lights up solid once connected and followed by blinking blue to indicate there the Bluetooth device is connected to your radio.

2.11
Inserting to the Carry Holster

Procedure:

1. Position your radio within the carry holster with the LEDs facing inward then slide your radio down into the carry holster.
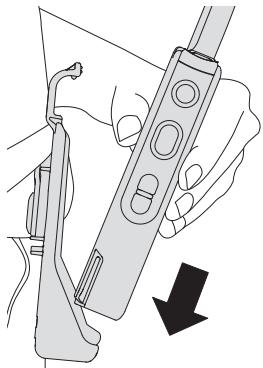
2. Push your radio to the carry holster until it clicks in place.
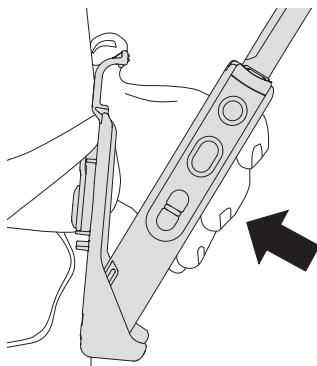
Result: Your radio is successfully secured to the carry holster.
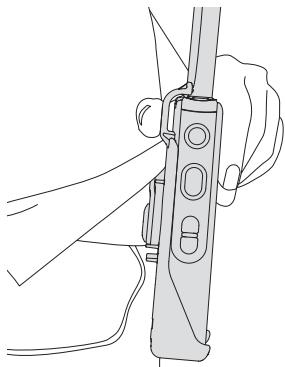
2.12
Removing Your Radio from the Carry Holster

Procedure:

1. Push the hook of the carry holster to release your radio top.
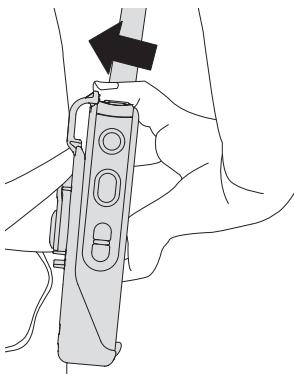
2. Pull your radio out from the carry holster.
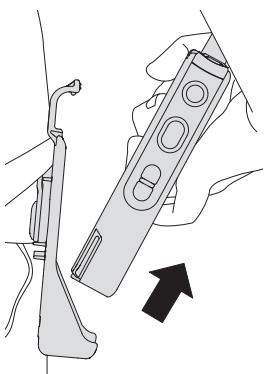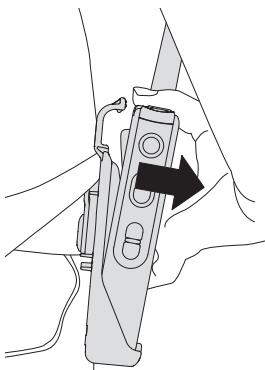
2.13
Method to Tie the Radio and Flexible Antenna to the Body

Follow the procedures in this section to install and strap the flexible antenna of your radio.

> **NOTE:** When using this antenna, use only Motorola Solutions-approved batteries, wired surveillance, and wireless audio accessories. Using approved wired surveillance and wireless audio accessories is important because the use of non-Motorola Solutions approved accessories may result in exposure levels, which exceed the occupational/ controlled environment RF exposure limits.

2.13.1
Positions to Place the Radio and Devices

This radio is designed to be operated while concealed under your outer garments. See the following pictures for the recommended position to place your radio.
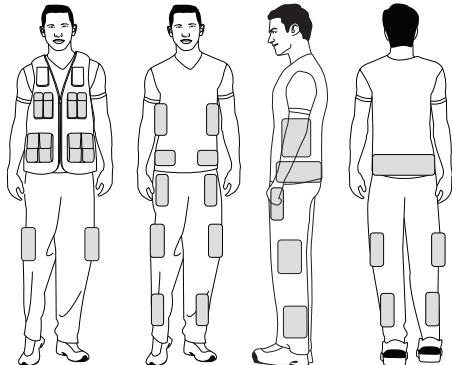
NOTE: Securely tape or strap only the battery side of the radio to your body.

2.13.2
Installing and Strapping the Flexible Antenna

Prerequisites: Ensure the radio is turned off before you install or detach the antenna.

When and where to use:

⚠ CAUTION:

- Do not twist or coil the antenna because this results in antenna performance degradation.

- To satisfy compliance with RF Exposure standards and improve radio performance, use the spacers provided to maintain a distance of 0.50 inch Ⓑ from your body. See the following picture where Ⓐ is the antenna and Ⓒ is the spacer.
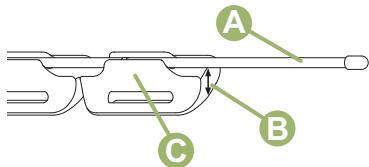
- Secure the antenna Ⓐ as shown in the following picture. Ensure the spacer Ⓒ is upright when strapping it to the body to improve radio Ⓓ performance.
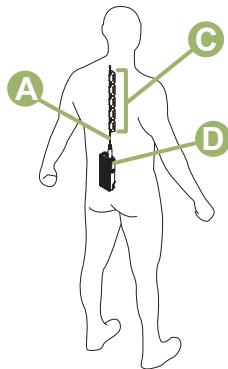
Procedure:

1. Set the antenna in its receptacle and turn clockwise to attach it to your radio.

   📝 NOTE: The tightening torque allowable is 15 lb-ft (maximum) to avoid damage to the antenna and radio.
   To remove the antenna, turn the antenna counterclockwise.

2. Position the spacers along the antenna to maintain 0.5 inch from your body.
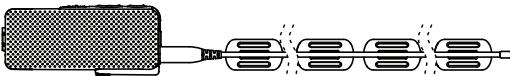
   📝 NOTE: The spacer can be cut into individual segment per method shown in the following picture.
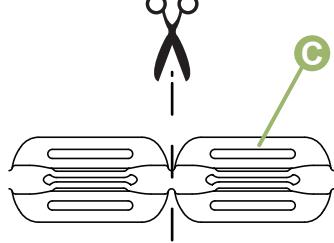
   The following table shows number of spacer segments for different antenna bands.

Antenna Frequency Band	Number of spacers provided [1]	Number of spacer segments
700/800 MHz	1	5
UHF	3	12
VHF	2	7

3. Use surgical tape Ⓕ or straps Ⓖ to fasten the spacer to the body with the flat surface of the spacer Ⓔ on the human body.

- Secure with surgical tape Ⓕ:

- Secure with strap Ⓖ:

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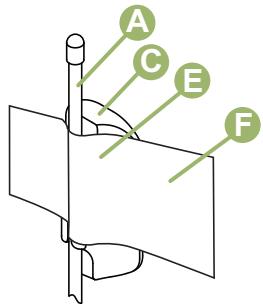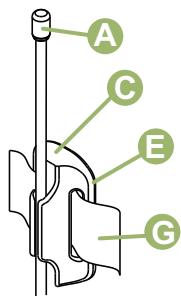
[1] One spacer comes with five segments.

Chapter 3

Radio Controls

This chapter explains the buttons and functions to control the radio.

3.1
Radio Parts and Controls
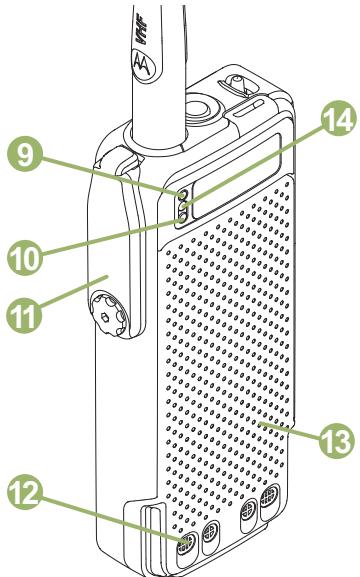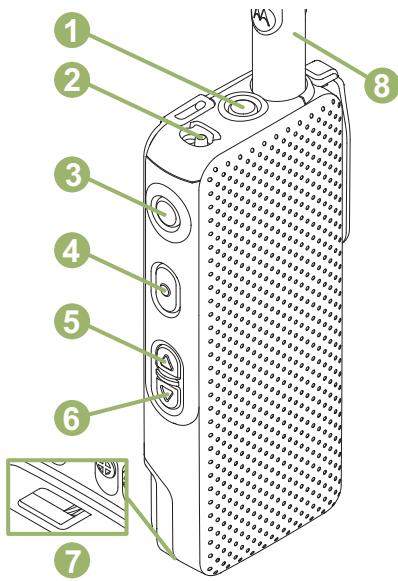
1*	**Top Button**
	Use this programmable button to access a programmed function or enable or disable a feature.
2	**On/Off Switch**
	Toggle this switch to turn the radio between on and off.
3*	**Top Side (Select) Button**
	Use this programmable button to access a programmed function or enable or disable a feature.
4*	**Middle Side Button**
	Use this programmable button to access a programmed function or enable or disable a feature.
5*	**Up and Down Arrow Button**
6*	These buttons are usually programmed for volume or mode change.
7	Battery Latch
8	Antenna
9	Transmit/Receive LED
10	Bluetooth LED
11	Connector Cover
12	Battery Connector
13	Battery
14	Bluetooth Pairing Location Indicator

3.2
Programmable Features

Your system administrator can program the programmable buttons as shortcuts to radio functions or preset channels/groups depending on the duration of a button press. Some functions can also be programmed to the radio switches.

3.2.1
Assignable Radio Functions

Bluetooth On/Off
Toggles Bluetooth between on and off.

Bluetooth Audio Reroute
Toggles the audio route between the radio speaker or the Remote Speaker Microphone and the Bluetooth headset.

Bluetooth Headset PTT
Keys up the Bluetooth Headset microphone.

Bluetooth Clear All Pairing
Clears all Bluetooth pairing information on your radio.

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* These radio controls/buttons are programmable.

Bluetooth Inquiry On/Off
  Enables the Bluetooth Search feature.

Bluetooth Discoverable On/Off
  Enables the visibility of your radio to other Bluetooth devices.

Call Response
  Allows you to answer a private call.

Channel Up/Down
  Allows you to scroll up or down to other channels within the current Zone.

Emergency
  Depending on the programming, initiates or cancels an emergency alarm or call.

In-Call User Alert
  Allows the radio to remain muted to affiliated talkgroup calls while operating on the current Trunking Personality or conventional channel.

Internet Protocol Address
  Displays the Internet Protocol (IP) address, device name, and status of the radio.

Fall Alert Clear
  Allows you to clear the Fall Alert mode alarm and exit Fall Alert feature.

Mode Change
  Toggles to selected channel or zone preprogrammed to your radio.

Mode Select (MS01– MS13)
  Long press – Saves the current zone and channel to one of the Mode Select menus when the **Preconfigurable Preset Zone and Channel** field is enabled.

  Short press – Changes to the preset Mode Select zone and channel.

Monitor (Conventional Only)
  Monitors a selected channel for all radio traffic until the function is disabled.

Nuisance Delete
  Temporarily removes an unwanted channel, except for priority channels and the designated transmit channel from the scan list.

Priority Dispatch
  Allows you to call the dispatcher on a different talkgroup.

Rekey Request
  Notifies the dispatcher that a new encryption key is needed.

Remote Monitor
  Enables the system administrator to remotely command a targeted radio.

Remote Emergency
  Activates the Remote Emergency feature for an authorized user to initiate the Emergency feature on a target radio without target user intervention.

Reprogram Request (Trunking Only)
  Notifies the dispatcher that a new dynamic regrouping assignment is needed.

Scan
  Short press – Toggles the scan function between on and off.

  Long press – Enables Scan List Programming and selects the scan list for editing.

Secure Transmission Select
  Toggles secure transmission between on and off.

Talkaround/Direct (Conventional Only)
  Toggles between using a repeater or communicating directly with another radio.

Transmission Inhibit
Inhibits transmission.

User
Allows you to log on to the server with a personally identifiable user name.

Volume Up and Down
Toggles volume level up and down.

Zone Up and Down
Toggles zone up and down.

3.2.2
Assignable Settings or Utility Functions

Controls Lock
Locks or unlocks the programmable buttons, switches, or rotary knobs.

Light/Flip
Toggles the display backlight on and off

Voice Announcement
Audibly indicates the current feature mode, zone, or channel that you have been assigned to.

Chapter 4

Status Indicators

This section explains the status indicators of the radio.

4.1
Battery Charge Status

Your radio indicates the battery charge status through LED, sounds, and the fuel gauge icon on the display.

Battery Protection is activated when the battery is low or operating in extremely low temperatures to extend radio communication. Features such as Wi-Fi and LTE are temporarily suspended.

When the Battery Protection Mode is active, you receive a notification. You can dismiss the Battery Protect Mode notification by tapping **Close** on the dialog box. The top display will switch between zones or channel information and Battery Protect Mode string.

Battery Protection Mode will end when the battery level or the temperature has returned to normal. A notification will appear on the front display indicating that LTE and Wi-Fi services have been restored. You can press **Close** to dismiss the notification or the dialog box will close itself after three minutes. The top display notification will also disappear.

4.1.1
Fuel Gauge Icons

The fuel gauge icon indicates the battery level of your radio.

Gauge	Battery Charge
	76% to 100% full
	51% to 75%
	26% to 50%
	11% to 25%
	10% or less (The gauge begins blinking at 10%)

4.1.2
HAZLOC Battery Type Detection

This feature alerts you when there is a HAZLOC certification mismatch between the radio and the battery. This feature supports IMPRES batteries only.

During power-up, the following scenarios occur if there is a mismatch:

- The radio continuously displays `Wrong Battery` with red intelligent backlight.

- The radio Voice Announcement announces the programmed Wrong Battery.

- The battery icon blinks continuously.

- A repetitive tone sounds.

- The red LED blinks continuously.

  NOTE:
  The radio does not display any indication when the radio is connected to the charger, the radio and battery match, or when the radio certification type is configured as **None** in Customer Programming Software (CPS).

This feature is enabled through CPS configuration. Check with your dealer or system administrator for more information.

4.2
LED Indications

The LED indications represent the operational status of your radio.

For covert operation, the LED can be preprogrammed to turn off in a specific zone or channel. During operation in these zones or channels, Voice Announcement is used to hear and confirm the operation status.

Table 1: LED Indications

Indication	Status
Solid red	Radio is transmitting.
Slow blinking red	Radio is transmitting at low battery condition.
Rapid blinking red	Radio has failed the self-test upon powering up or encountered a fatal error.
Solid yellow	Radio is receiving in both trunking and conventional clear mode. **NOTE:** The yellow LED illuminates only when the busy LED feature is enabled through Customer Programming Software (CPS).
Blinking yellow	Radio is receiving a secured transmission.
Solid green	Radio is powering up or radio is locked.
Solid blue	Radio is powering up with Option Board error.
Solid blue for 2 seconds	Bluetooth device is connected or disconnected.
Blinking blue 3 times	Bluetooth is powering on or off.
Blinking blue	Radio is clearing Bluetooth pairing information and waiting to be paired.
Blinking blue at heartbeat pace	Radio is connected with a device in the Bluetooth link.
Rapid blinking blue for 2 seconds	Radio fails to connect or disconnect from a device.
Solid red and solid green	Radio is upgrading the firmware.
Solid green blinking blue	The Customer Programming Software is reading or upgrading the radio.

Indication	Status
Blinking red and blinking blue	Radio is powering up with an update in progress.

4.2.1
Troubleshooting

Scenarios	Solutions
LED indicator on the radio is not functioning during transmit and receive or any other operation	The radio might be preprogrammed in lights off mode in the current channel. For covert operation, the LEDs can be preprogrammed to turn off with specific zones or channels. Add key words such as "Lights off" or "Lights on" to the zone or channel Voice Announcements. **NOTE:** No LED indication occurs when your radio receives a clear (non-secured) transmission in Trunking Mode.
No LED feedback after turning on your radio using on/off switch	Check your battery by docking it into the charger. If the battery is good, it might be the reason that the radio was turned off at a preprogrammed zone/channel which the LED lights are not shown for covert operation. Change to a zone/channel that LED lights are enabled. Connect an audio accessory to hear the audio alerts or transmission.
Cannot connect with the Bluetooth accessory	Check the accessory battery and ensure that the battery is still good. Also check the accessory device is in the pairing mode.

4.3
Status Icons‡

The 112 x 32 pixel monochrome display screen of your DRSM shows your radio status and operating conditions.

Icon	Description
(battery icon)	For IMPRES battery operation only – the icon shown indicates the charge remaining in the battery. For all battery operation – the icon blinks when the battery is low.
(roam icon)	The radio has roamed to and is registered to a foreign system.
(direct icon)	Direct **On** The radio is configured for direct radio-to-radio communication in conventional operation. **Off** The radio is connected with other radios through a repeater.
(monitor icon)	The selected channel is being monitored in conventional operation.
H or	The radio is set at High power. The radio is set at Low power.

Icon	Description
⌊	
▲ M or M ▼	The radio is set at Medium High power. The radio is set at Medium Low power.
Ƶ	The radio is scanning a scan list.
Ƶ.	**Blinking dot** The radio detects activity on the designated Priority-One channel. **Steady dot** The radio detects activity on the designated Priority-Two channel.
⋎	The vote scan feature is enabled.
⃠	**On** Secure operation. **Off** Clear operation. **Blinking** Receiving an encrypted voice call.
✴	The Bluetooth wireless technology is turned on and ready for connection.
✴	**Steady** Bluetooth is connected to the external Bluetooth device. **Blinking** Bluetooth device is disconnected.

4.4
Intelligent Lighting Indicators ‡

Backlight and Bar Color	Notification	When
Orange	Emergency Alerts	The radio initiates an emergency alarm or call.
		The radio receives an emergency alarm or call.
		The radio initiates the Fall Alert Post-Alert timer.
Red	Critical Alerts	The radio battery is low.
		The radio is out of range.
		The radio enters Failsoft mode.
		The radio is unable to establish a full connection with the system.

Backlight and Bar Color	Notification	When
		The radio is unable to authenticate or register with the system.
Red	Critical Alerts	The radio is out of range.
		The radio enters Failsoft mode.
		The radio is unable to establish a full connection with the system.
		The radio is unable to authenticate or register with the system.
Green	Call Alerts	The radio receives a private call.
		The radio receives a phone call.
		The radio receives a call alert.
		The radio receives a selective call.
		The radio enters Geofence.

4.5
Alert Tones†

Your radio uses alert tones to inform you of the condition of your radio. The following table lists these tones and when they occur.

You Hear	Tone Name	Heard
Short, Low-Pitched Tone	Radio Self Test Fail	When radio fails its power-up self test.
	Reject	When an unauthorized request is made.
	Time-Out Timer Warning	Four seconds before time out.
	No ACK Received	When radio fails to receive an acknowledgment.
	Fall Alert Entry	When radio initiates Man Down mode.
	Individual Call Warning Tone	When radio is in an individual call for greater than six seconds without any activity.
Long, Low-Pitched Tone	Time-Out Timer Timed Out	After time out.
	Talk Prohibit/PTT Inhibit	(When **PTT** button is pressed) transmissions are not allowed.
	Lack of Voice PTT Time out	When the radio ends your call after it detected there are lack of voice for five seconds after the PTT is pressed and hold. Your radio ends the call to enable your radio to receive calls from other radio users.
	Out of Range	(When **PTT** button is pressed) the radio is out of range of the system.
	Invalid Mode	When radio is on an unpreprogrammed channel.

You Hear	Tone Name	Heard
A Group of Low-Pitched Tones	Busy	When system is busy.
Short, Medium-Pitched Tone	Valid Key-Press	When a correct key is pressed.
	Radio Self Test Pass	When radio passes its power-up self test.
	Clear Voice	At beginning of a non-coded communication.
	Priority Channel Received	When activity on a priority channel is received.
	Emergency Alarm/Call Entry	When entering the emergency state.
	Central Echo	When central controller has received a request from a radio.
Long, Medium-Pitched Tone	Volume Set	When volume is changed on a quiet channel.
	Emergency Exit	When exiting the emergency state.
A Group of Medium-Pitched Tones	Failsoft	When the trunking system fails.
	Automatic Call Back	When voice channel is available from previous request.
	Keyfail	When encryption key has been lost.
	Console Acknowledge	When status, emergency alarm, or reprogram request ACK is received.
	Received Individual Call	When Call Alert or Private Call is received.
	Site Trunking	When a SmartZone trunking system fails.
Short, High-Pitched Tone (Chirp)	Low-Battery Chirp	When battery is below preset threshold value.
Ringing	Phone Call Received	When a land-to-mobile phone call is received.
Two High-Pitched Tones	GPS Fails	When the GPS fails or loses signal.
Gurgle	Dynamic Regrouping	(When **PTT** button is pressed) a dynamic ID has been received.
	Talk Permit	(When **PTT** button is pressed) is verifying with the system for accepting its transmissions.
Incremental-Pitched Tone	Bluetooth Paired	When Bluetooth accessory is paired with the radio.
	Bluetooth Connected	When Bluetooth accessory is connected to the radio.
Decremental-Pitched Tone	Bluetooth Unpaired	When Bluetooth accessory is unpaired from the radio.
	Bluetooth Disconnected	When Bluetooth accessory is disconnected from the radio.
A Group of Very High-Pitched Tones	Fall Alert Continuous Tone	When radio is in Fall Alert mode and prepares to transmit Emergency Alarm when the timer of this alarm ends.
	Critical Fall Alert Continuous Tone	When radio is in Fall Alert Enhanced mode and prepares to transmit Emergency Alarm when the timer of this alarm ends.

You Hear	Tone Name	Heard
Unique Low-High Tone	**MFB Enters Secondary Feature**	When **MFB** is toggled to secondary feature.
Unique High-Low Tone	**MFB Exits Secondary Feature**	When **MFB** is toggled to exit secondary feature and return to primary feature or when secondary function timer expires.

4.6
Display Color Change On Channel

This feature provides visual channel identification for users to have a quick visual recognition on a particular channel.

Your radio must be programmed to allow you to use this feature.

When changing channels, the accessories backlight (DRSM) changes to the programmed color.

The backlight on top display changes to white and if connected to DRSM, the DRSM backlight changes to white for the following scenarios:

The accessories backlight change to white for the following scenarios:

- When changing to or powering up on invalid channels such as unprogrammed channels, receiver frequency error channel and blank channels.

For hard key zeroize, key loading, and scan list programming, the backlight follows the home channel backlight color.

<div style="background:#1f6fc4;color:#fff;padding:6px 12px">**Chapter 5**</div>

General Radio Operation

This chapter explains the general operations of your radio.

5.1
Selecting a Zone†

When and where to use: A zone is a group of channels. Perform the following actions to select a zone.

Procedure:

Selecting a zone using the **Up** and **Down Arrow Buttons**:

a. Press the **MFB** to toggle to the **Up** and **Down Arrow Buttons** to **Selecting a Zone** mode if the function **Selecting a Zone** is the secondary function. Otherwise skip to the next step.

You hear the `Secondary Mode` tone and associated `Voice Announcement`.

b. Press the **Up** and **Down Arrow Buttons**, or the preprogrammed **Zone Up** or **Zone Down Buttons** to toggle the zone list backward or forward.

You hear `Voice Announcement` of the selected zone.

See to understand the operation of Voice Announcement.

5.2
Selecting a Radio Channel†

When and where to use: A channel is a group of radio characteristics, such as transmit/receive frequency pairs. Use the following procedure to select a zone.

Procedure:

Selecting a channel using the **MFB**.

a. Press the **MFB** to toggle to the **Up** and **Down Arrow Buttons** to **Selecting a Channel** mode if the function **Selecting a Channel** is the secondary function. Otherwise skip to the next step.

You hear the `Secondary Mode` tone and associated `Voice Announcement`.

b. Press the **Up** and **Down Arrow Buttons**, or the preprogrammed **Channel Up** or **Channel Down Buttons** to toggle the channel list backward or forward.

You hear `Voice Announcement` of the selected zone.

See to understand the operation of Voice Announcement.

5.3
Mode Select Feature

The Mode Select feature allows you to save the current zone and channel on your radio to one of the Mode Select feature menus (MS01–MS05) on a programmable side button (MS01–MS13).

When programmed, pressing the button changes the transmission to the saved zone and channel. When the **Preconfigurable Preset Zone and Channel** field is enabled, pressing and holding the preferred Mode Select

menu saves the current zone and channel to one of the Mode Select menus. The radio displays `MS0x is programmed`.

> NOTE: Your radio must be programmed for you to use this feature.

5.3.1
Saving a Zone and a Channel to a Softkey

Five softkeys are available for you to save the frequently used zone and channel.

Prerequisites: Enable the **Preconfigurable Preset Zone and Channel** field.

Procedure:

1. Toggle from your current zone and channel to the required zone and channel.

2. Press and hold the **Menu Select** button directly below one of the softkeys (`MS1—MS5`).

Result:

You hear a short, medium-pitched tone when the zone and channel is saved.

If the **Preconfigurable Preset Zone and Channel** field is disabled, a negative tone sounds.

> NOTE: Short press of the programmed softkey changes your current transmission to the zone and channel programmed in this softkey.

5.3.2
Saving a Zone and a Channel to a Button†

This feature allows to save two different zones or channels to a preprogrammed button.

Prerequisites: Enable the **Preconfigurable Preset Zone and Channel** field.

Procedure:

1. Toggle from your current zone and channel to the required zone and channel.

2. Press and hold the button you desire to program.

Result:

You hear a short, medium-pitched tone when the zone and channel is saved.

If the **Preconfigurable Preset Zone and Channel** field is disabled, a negative tone sounds.

> NOTE:

5.3.3
Accessing Multi-Codeplug

Prerequisites: H-option must be set to enable Multi-Codeplug functionality.

> NOTE:
> Radios with older software versions require firmware update before this feature can be used.
>
> Only the administrator have the ability to program Multi-Codeplug menu when the Option is present.
>
> Multi-Codeplug Feature is not supported on Model 1.5 Portable Subscribers.

Procedure:

Switch and delete codeplug by performing the following actions:

Option	Actions
Switching a codeplug	a. Press **CPLG** menu item. b. Select the required agency, and press **Sel**. c. Press **Yes** to confirm. 　📝 **NOTE:** 　The radio resets once the agency selection is confirmed. 　The menu displays the current agency after the radio resets.
Deleting a codeplug	a. Press **CPLG** menu item. b. Select the required agency, and press **Del**. c. Press **Yes** to confirm. 　📝 **NOTE:** The menu displays the current agency after the deletion.

5.4
Receiving and Responding to a Radio Call

Once you have selected the required channel and/or zone, you can proceed to receive and respond to calls.

The radio shows different indicators based on the system the radio is configured.

- The LED Ⓐ lights up solid red while the radio is transmitting.

- In conventional mode, the LED lights up solid yellow when the radio is receiving a transmission.

- In trunking mode, there is no LED indication when the radio receives a transmission.

- If the radio is receiving a secure transmission, the LED blinks yellow.

5.4.1
Receiving and Responding to a Talkgroup Call

When and where to use: When you receive a talkgroup call (while on the Home screen) the radio displays the following depending on the system your radio is configured to:

- For ASTRO Conventional system, the LED lights up solid yellow. The display shows the talkgroup alias or ID, and the caller alias or ID.

- For Trunking system, the display shows the caller alias or ID.

Procedure:

1. Hold the radio vertically 1 to 2 inches (2.5 to 5.0 cm) from your mouth.

2. Wait for the Talk Permit Tone. Then, press the **PTT** button to respond to the call.

   The LED lights up solid red.

3. Release the **PTT** button to listen.

5.4.2

Receiving and Responding to a Private Call (Trunking Only) †‡

A Private Call is a call from one individual radio to another. Other users in the current talkgroup cannot hear the one-to-one call between the two radios. The calling radio automatically verifies that the receiving radio is active on the system and can display the caller ID.

When and where to use:

When you receive a Private Call, you hear two alert tones and the LED blinks green. The display shows `CALL RCV`, alternating with the caller alias (name) or ID (number).

Procedure:

1. Press the **Call Response** button within 20 seconds after the call indicators begin.

2. Press and hold the **PTT** button to talk. Release the **PTT** button to listen.

3. Press the **Call Response** button to hang up and return to the Home screen.

Result:

5.4.3

Receiving and Responding to a Telephone Call (Trunking Only)†‡

This feature allows you to receive calls similar to standard phone calls from a landline phone.

When and where to use:

When you receive a Telephone Call, you hear a telephone-type ringing and the LED blinks green. The backlight of the screen turns green and the display shows `PHN CALL` and the call received icon blinks.

Procedure:

1. Press the **Call Response** button within 20 seconds after the call indicators begin.

2. Press and hold the **PTT** button to talk. Release the **PTT** button to listen.

3. Press the **Call Response** button to hang up and return to the Home screen.

5.5

Methods to Make a Radio Call

You can select a zone, channel, subscriber ID, or talkgroup by using:

- A preprogrammed button.
- **MFB** and zone channel **Up** and **Down Arrow Buttons**.

5.5.1

Making a Radio Call

Procedure:

1. Perform one of the following actions.
   - Press the preprogrammed zone or channel **Up** or **Down Buttons**.

- Press the **Up** or **Down Arrow Buttons** by toggling the **MFB**.

   You hear Voice Announcement of the selected zone or channel if it is enabled.

2. Press the **PTT** button to make the call.

   The radio shows different indicators based on the system the radio is configured.

   - For ASTRO Conventional system, the LED lights up solid red. The display shows the talkgroup alias or ID.
   - For Trunking system, the LED lights up solid red.

3. Wait for the Talk Permit Tone.
4. Speak clearly into the microphone.
5. Release the **PTT** button to listen.

5.5.2
Making a Private Call (Trunking Only)

Procedure:
1. Press the preprogrammed **Private Call** button to dial the preprogrammed ID.

   The display shows the preprogrammed ID.

2. Press the **PTT** button to initiate the Private Call.
3. Hold the radio vertically 1 to 2 inches (2.5 to 5.0 cm) from your mouth.

   When you are connected, the display shows the ID of the target radio.
   If no acknowledgment is received, the display shows NO ACK.

4. Press and hold the **PTT** button to talk. Release the **PTT** button to listen.
5. Press the preprogrammed **Private Call** button to return to the home screen.

5.5.3
Making an Enhanced Private Call (Trunking Only)

Prerequisites: Your radio must be preprogrammed to allow you to use this feature.

Procedure:
1. Press the preprogrammed **Quick Access (One-Touch) Private Call** button to dial the preprogrammed ID and initiate the Enhanced Private Call.

   The display shows the preprogrammed ID and a ringing tone sounds.

2. Hold the radio vertically 1 to 2 inches (2.5 to 5.0 cm) from your mouth.

   When you are connected, the display shows the ID of the target radio and the ringing tone stops.
   If no acknowledgment is received, the display shows NO ACK.
   If the target radio does not respond before the time out, the display shows NO ANSR.

3. Press and hold the **PTT** button to talk. Release the **PTT** button to listen.
4. Press the preprogrammed **Private Call** button to return to the home screen.

5.6
Switching Between Repeater or Direct Operation Button

The Repeater Operation increases the radio coverage area by connecting with other radios through a repeater. The transmit and receive frequencies are different. The Direct or "talkaround operation" allows you to bypass the repeater and connect directly to another radio. The transmit and receive frequencies are the same.

Procedure:

> Press the preprogrammed **Repeater/Direct** switch to toggle between talkaround and repeater modes.

5.7
Monitor Feature†‡

The monitor feature ensures that a channel is clear before transmitting.

The lack of static on a digital channel when you switch from analog to digital radios is not an indication that the radio is malfunctioning. Digital technology quiets the transmission by removing the noise from the signal and allows only the clear voice or data information to be heard.

5.7.1
Monitoring a Channel

Procedure:

> Monitoring a Channel using the **Monitor** button.
>
> a. Press the preprogrammed **Monitor** button.
>
>   The Carrier Squelch indicator appears on the display when you monitor a channel using the preprogrammed Monitor button.
>
> b. Press and hold the **PTT** button to transmit.
>
>   The LED lights up solid red.
>
> c. Release the **PTT** button to receive (listen).

5.7.2
Monitoring Conventional Mode

This feature allows you to monitor channel traffic on conventional channels by defeating the coded squelch. Thus, you can listen to another active user on the channel. This way, you may be prevented from taking over the conversation of another user.

When and where to use: Your radio may be preprogrammed to receive Private-Line® (PL) calls.

Procedure:

> 1. Momentarily press the **Monitor** button to listen for activity.
>
>   The Carrier Squelch indicator appears on the display.
>
> 2. Press and hold the **Monitor** button to set continuous monitor operation.
>
>   The duration of the button press is programmable.

3. Press the **Monitor** button again, or the **PTT** button, to return to the original squelch setting.

   If you try to transmit on a receive-only channel, you hear an invalid tone until you release the **PTT** button.

Chapter 6

Additional Performance Enhancement

The following performance enhancements are some of the latest creations designed to enhance the security, quality, and efficiency of the radios.

6.1
ASTRO 25 Enhanced Data

ASTRO 25 Enhanced Data is optimized to handle different message sizes and variable update rates from different applications of the radio. To improve data channel efficiency and enable denser network traffic, add Enhanced Data to the Integrated Data system with a software installation.

6.2
Dynamic System Resilience

Dynamic System Resilience (DSR) ensures that the radio system is seamlessly switched to a backup master site dynamically during a system failure. DSR also provides indications such as failure detection, fault recovery, and redundancy within the system. DSR also supports mechanisms related to the Integrated Voice and Data (IV&D), or data centric.

6.3
CrossTalk Prevention

CrossTalk Prevention feature prevents crosstalk scenarios and allows the adjustment of the internal SSI clock rate of the radio. This reduces the possibility of radio frequency interfering spurs.

6.4
Encrypted Integrated Data

Encrypted Integrated Data (EID) provides security encryption and authentication of Integrated Voice and Data (IV&D) bearer service. This bridges the communication between the radio and the Customer Enterprise Network.

6.5
SecureNet

SecureNet allows you to perform secured communications on an Analog or Motorola Data Communication (MDC) channel. The MDC Over-the-Air Rekeying (OTAR) feature allows you to perform OTAR activities on an MDC channel.

6.6
Over-the-Air Rekeying

The Over-the-Air Rekeying (OTAR) feature allows the dispatcher to remotely reprogram encryption keys in the radio after a rekey request.

Single-system OTAR

This feature allows a radio to be rekeyed by only one Key Management Facility (KMF) or Key Management Controller (KMC).

Multisystem OTAR

This feature allows a radio to be rekeyed by multiple KMFs. After an initial programming, the radio is able to seamlessly move to different secure systems associated to a newly selected channel.

> **NOTE:** This feature must be programmed by a qualified radio technician. For more information, contact your system administrator.

6.7
P25 Digital Vehicular Repeater System

Motorola Solutions offers an MSI Certified APX compatible, third party, P25 Digital Vehicular Repeater System (DVRS). This provides low-cost portable radio coverage in areas where only mobile radio coverage is available.

> **NOTE:** Portable subscriber units enabled in the system for Radio Authentication shall be able to authenticate regardless of whether they are communicating directly on the system or by using a DVRS.

DVRS can also work with SmartConnect to use broadband coverage for the in-vehicle mobile. Portable radios communicate through the in-vehicle mobile to the system through the LTE, Satellite, or Wi-Fi connection. This extends the system coverage when you are away from the vehicle.

6.8
Conventional Talkgroup and Radio Scan Enhancements

Enhancements have been made to the Conventional Talkgroup at the system to improve the Scan feature operation significantly when multiple agencies are using a single conventional radio frequency channel.

These enhancements allow you to use Selective Squelch to operate on only the subset of talkgroups that are relevant to the users rather than all talkgroups on the channel.

The enhancements support the following Scan mode:

- Mixed Vote Scan.
- Standard Conventional Scan.
- Priority Operation.

Up to 30 different talkgroups can be supported using conventional channels. A maximum of four talkgroups can be supported when Vote Scan channels are being used.

Smart PTT is supported with this enhancement as Smart PTT prevents you from transmitting while other users are on the channel.

> **NOTE:** User Selectable Talkgroups are not compatible with this Conventional Talkgroup Enhancement.

Chapter 7

Advanced Features

This chapter explains the operations of the features available in your radio.

7.1
Advanced Call Features

This chapter explains the operations of the call features available in your radio.

7.1.1
Selective Call (ASTRO Conventional Only)†‡

This feature allows you to receive a call from a specific individual with privacy.

7.1.1.1
Receiving a Selective Call

When and where to use:

Procedure:

1. Hold the radio vertically 1 to 2 inches (2.5 to 5.0 cm) from your mouth.
2. Press and hold the **PTT** button to talk. Release the **PTT** button to listen.

7.1.1.2
Making a Selective Call

Prerequisites: Your radio must be preprogrammed for you to use this feature.

Procedure:

1. Press the preprogrammed **Selective Call** button to dial the preprogrammed ID.
2. Hold the radio vertically 1 to 2 inches (2.5 to 5.0 cm) from your mouth.
3. Press and hold the **PTT** button to start the Selective Call.

   The display shows the current zone and channel name.

4. Release the **PTT** button to listen.

   The radio returns to home screen. Repeat step 1 to step 3 to start the Selective Call.

7.1.2
Making Priority Dispatch Calls

If a talkgroup is congested, the Priority Dispatch feature allows you to call the dispatcher on a different talkgroup. This talkgroup is called the Priority Talkgroup. Each trunking talkgroup can have its own assigned

Priority Talkgroup.Priority Dispatch is not available during Emergency operations. Scan feature is suspended when Priority Dispatch is initiated.

Prerequisites: Dispatch console that supports this feature must be preprogrammed to use this feature. Check with your dealer or system administrator for more information on dispatch console supporting this feature.

Procedure:

1. Press the preprogrammed **Priority Dispatch** button.

   A tone sounds and the radio enters Priority Dispatch mode. The radio exits this mode when the Priority Dispatch Time Out Timer expires.

2. Before the Priority Dispatch Time Out Timer expires, press and hold the **PTT** button to transmit.

   The display shows the Priority Talkgroup alias.

3. Release the **PTT** button to listen.

   The radio exits Priority Dispatch mode, returns to its original talkgroup, and displays the home channel alias.

7.1.3
Dynamic Regrouping (Trunking Only) †‡

This feature allows the dispatcher to temporarily reassign selected radios to a particular channel to communicate with each other.

When your radio is dynamically regrouped, it receives a dynamic regrouping command and automatically switches to the dynamically regrouped channel. You hear a tone and the display shows the name of the dynamically regrouped channel.

When the dispatcher cancels dynamic regrouping, the radio automatically returns to the previous zone and channel.

If you access a zone or channel that has been reserved as a dynamically regrouped mode for other users, you hear an invalid tone.

7.1.3.1
Classification of Regrouped Radios

The dispatcher can classify regrouped radios into Select Enabled or Select Disabled categories.

Select Enabled
Select-enabled radios are free to change to any available channel, including the dynamic-regrouping channel, once you have selected the dynamic-regrouping position.

Select Disabled
Select-disabled radios cannot change channels while dynamically regrouped. The radio is forced to remain on the dynamic-regrouping channel.

The Scan and Private Call features are unavailable when your radio is Select Disabled.

7.1.3.2
Requesting a Reprogram (Trunking Only)

This feature allows you to notify the dispatcher when you want a new dynamic regrouping assignment.

Procedure:

> Press the preprogrammed **Reprogram Request** button to send reprogram request to the dispatcher.
>
> The display shows `RPGM` and `PLS WAIT`.

Result:

If you hear five beeps, the dispatcher has acknowledged the reprogram request. The display shows `ACK RCVD` and the radio returns to the **Home** screen.

If the dispatcher does not acknowledge the reprogram request within six seconds, you hear a low-pitched alert tone and the display shows `NO ACK`.

7.1.4
Multiple Private Line

Multiple Private Line (MPL) is a feature that allows user to modify the PL/DPL codes of the current mode by selecting from a predefined list of codes. For the purpose of accessing different communication sub-groups, repeaters and others, user no longer need to program multiple channels of the same frequency with different PL/DPL codes.

The feature supports the following MPL selection Mode:

Table 2: MPL Selection Mode

Selection Mode	Description
Dynamic	The MPL List selection/functionality is automatically updated (and active on the radio current channel) as users scroll through the available MPL List selections.
Static	While users are scrolling through the radio available MPL List selections, MPL functionality does not change until a new MPL List is manually selected.

7.1.4.1
Selecting Multiple Private Line

Prerequisites: Ensure that this feature is enabled in the codeplug and the radio is in Conventional Mode.

Procedure:

1. Perform one of the following actions:
   - Press the programmable Multiple Private Line (MPL) Side button.
   - From the **Home** screen, tap ••• **More**.
2. Tap the required MPL.

   The Radio Control Widget displays the selected MPL.

7.2
Remote Monitor

This feature allows the Dispatch Operator to turn on the microphone of a targeted radio with a subscriber alias or ID.

When the remote monitor feature is activated, the audio transmission can be configured in Customer Programming Software (CPS) to route the audio to the radio internal microphone, wired Remote Speaker Microphone (RSM), or Bluetooth wireless microphone.

In life-threatening or critical situations, the Dispatch Operator can remotely monitor any audible activity surrounding the targeted radio.

7.3
Scan Lists

Scan lists are created and assigned to individual channels or groups. Your radio scans for voice activity by cycling through the channel or group. The sequence of scan is as specified in the scan list for the current channel or group.

Your radio supports different types of Scan Lists:

- Conventional Scan List

Refer to a qualified radio technician for the maximum number of Scan Lists to be programmed in your radio.

7.3.1
Intelligent Priority Scan

This feature allows you to add or delete conventional channels and trunking talkgroups from multiple systems into the priority scan lists.

When the radio locks onto a channel in the Intelligent Priority Scan list, the radio scans for higher priority member within the same Trunking or Conventional system.

7.3.2
Viewing a Scan List

Procedure:

7.3.3
Viewing and Changing the Priority Status

Procedure:

Press the **Top Side (Select)** button to change the priority status of the currently displayed channel or the scan list status icon of the currently displayed channel.

The radio shows one of following priority status icons and scenarios:

- A **Scan** icon indicates that the current channel is in the scan list as a non-priority channel. The LED lights up solid green.

- A **Priority-One Channel Scan** icon indicates that the current channel is in the scan list as the Priority-One channel. The LED rapidly blinks green. You hear all traffic on the Priority-One channel, regardless of traffic on non-priority channels.

- A **Priority-Two Channel Scan** icon indicates that the current channel is in the scan list as the Priority-Two channel. The LED blinks green.

- No icon indicates that the current channel is deleted from the scan list.

7.4
Scan

This feature allows you to monitor traffic on different channels by scanning a programmed list of channels. Scanning is halted if you initiate a call and resumes when the call has ended.

7.4.1
Turning Scan On or Off

Procedure:

> Press the preprogrammed **Scan** button to toggle SCAN ON or SCAN OFF to initiate or stop scan.
>
> If the scan is enabled, the display shows SCAN ON and the scan status icon.
>
> If the scan is disabled, the display shows SCAN OFF.

7.4.2
Deleting a Nuisance Channel†

When and where to use:

If a channel continually generates unwanted calls or noise (termed "nuisance" channel), you can temporarily remove the unwanted channel from the scan list.

This capability does not apply to priority channels or the designated transmit channel.

> **NOTE:** Deleting a nuisance channel is **only** possible through the preprogrammed **Nuisance Channel Delete** button.

Procedure:

> When the radio is locked onto the channel to be deleted, perform one of the following actions:
>
> - Press and hold the preprogrammed **Scan** button to delete the nuisance channel.
> - Press the preprogrammed **Nuisance Delete** button.

Result: The radio continues scanning the remaining channels in the list.

7.4.3
Restoring a Nuisance Channel

Procedure:

> To restore the deleted nuisance channel, perform one of the following actions:
>
> - Stop and restart a scan using the preprogrammed **Scan** button.
> - Mode change to another channel and back to the original channel.
> - Turn off the radio and then turn it on again.

7.5
Call Alert Paging†‡

This feature allows your radio to work like a pager.

If other users are away from their radios or if they are unable to hear their radios, you can send them an individual call alert page. You can also verify if a radio is active on the system.

> **NOTE:** This feature must be programmed by a qualified radio technician.

7.5.1
Receiving a Call Alert Page

When and where to use: When you receive a Call Alert page, you hear four repeating alert tones and the LED blinks green. The backlight of the screen turns green, and the display briefly shows `PAGE RCV`.

Procedure:

Press any button to clear the Call Alert page.

Result:

7.5.2
Sending a Call Alert Page

When and where to use:
Your radio must be preprogrammed for you to use this feature.

Procedure:

Press the preprogrammed **Call Alert Paging** button to send a page to the preprogrammed ID.

If the call alert page is sent successfully, a tone sounds and the display shows the current zone and channel name.

If the call alert page is not acknowledged, a tone sounds and the display shows the current zone and channel name.

7.6
Recent Calls

7.6.1
Deleting Calls

This feature only supports Model 3.5 and Model 2.5.

This feature allows you to delete calls from the Recent Calls list.

Procedure:

Delete calls by using the following options:

Option	Actions
Deleting all calls	a. Press **Optn**. b. Select **Delete Calls**. c. Select **All Calls**. d. Press **Yes**.
Deleting non-emergency calls	a. Press **Optn**. b. Select **Delete Calls**. c. Select **Non-Emer Calls**. d. Press **Yes**.

Result:

When you have successfully deleted all calls, your display shows `All calls deleted` and the Recent Calls list is empty.

When you have successfully deleted non-emergency calls, your display shows `Non-emer calls deleted` and the Recent Calls list only contains emergency calls.

7.6.2
Instant Recall

This feature allows you to save and play back the recent received calls. All saved calls are removed upon radio power cycle.

7.6.2.1
Saving and Playback Calls

When and where to use:
Use the programmed button to save and playback the recorded calls.

Procedure:

- Saving the recorded calls using the preprogrammed **Record Playback** button:

  a. Long press the preprogrammed **Record Playback** button to save the recorded calls.

    Radio displays `Audio Saved` momentarily.
    Radio plays the saved call automatically if call saving is successful.
    A tone sounds if call saving is not successful.

- Playback the saved calls using the preprogrammed **Record Playback** button:

  a. Short press the preprogrammed **Record Playback** button to playback the saved calls.

  b. Short press the preprogrammed **Record Playback** button again to skip to the next saved call. If there is only a single saved call, the playback skips to the end of the call.

  Radio auto playback the most recent incoming call followed by saved calls in chronological order.

Radio displays the playback status.

> **NOTE:**
> Received call overwrites the ongoing record playback. User can short press the programmable button within three seconds to continue the playback and ignore the receiving call.
>
> User can short press the programmable button to trigger playback when the radio is receiving call to overwrite the receiving call.
>
> Playback can be halted by any tone and button press except for specific buttons. Check with your dealer or system administrator for more information.

7.7
In-Call User Alert

This feature allows the radio to remain muted to affiliated talkgroup calls or dispatch calls while operating on the current Trunking Personality or conventional channel respectively.

Group and individual Pages unmute the radio for the alert tone to sound. The radio also unmutes to individual radio-to-radio calls. This feature is very useful when a radio-user prefers not to hear affiliated talkgroup or dispatch calls traffic, but needs-to remain in radio contact. For an In-Call User Alert enabled channel, the Voice Mute button-press or the Voice Mute menu-selection allows the radio-user to toggle on and off Voice Mute functionality.

7.8
Emergency Operation†‡

The Emergency feature is used to indicate a critical situation. An emergency signal overrides any other communication over the selected channel.

Your radio supports the following Emergency modes:

● Emergency Alarm

● Emergency Call

● Emergency Alarm with Emergency Call

● Silent Emergency Alarm[2]

Only one Emergency mode can be assigned to the **Emergency** button.

Your radio is also programmed to operate in one of the following conditions:

Tactical/Non-Revert
The radio sends an emergency alarm and/or makes an emergency call on the current channel.

Non-Tactical/Revert for Conventional System
The radio reverts to the programmed emergency channel to send an alarm and/or make an emergency call.

Non-Tactical/Revert for Trunking System
The radio reverts to the programmed emergency talkgroup (trunking system) or channel (conventional system) to send an alarm and/or make an emergency call.

Fall Alert is an alternate way to activate the Emergency feature. For more information, see .

For more information, contact your system administrator.

---

[2] This feature allows you to send an Emergency Alarm to the system without triggering any audio or visual indicators.

7.8.1

Special Considerations for Emergency Operation

The following scenarios apply during Emergency operation:

Table 3: Emergency Operation Scenarios

Scenario	Outcome
If you press the **Emergency** button while in a channel that has no Emergency capability,	a tone sounds.
If you change to a channel or mode with no Emergency capability while in Emergency operation,	your radio shows the following indications: • A tone sounds until you select a valid Emergency channel or mode, or until you disable the Emergency operation. • The display for Model 1.5 shows `NO EMERG`.
If you change to a channel or mode with Emergency capability while in Emergency operation,	the Emergency Alarm and/or Emergency Call continues on the new channel or mode.
If the radio is out-of-range of the system or the emergency alarm is not acknowledged,	your radio shows the following indications: • A tone sounds. • The display shows `No acknowledge`.

7.8.2

Emergency Keep-Alive

This feature prevents your radio from turning off when in Emergency mode. If this feature is enabled, you are required to exit Emergency mode before turning off your radio.

7.8.3

Exiting Emergency Operation

If an Emergency operation is triggered on your radio, the dispatch console or radios configured as Supervisor can exit the Emergency operation.

Procedure:

> Press and hold the programmed **Emergency** button.

7.8.4

Exiting Emergency as Supervisor (Trunking Only)

Radios configured as Supervisor are able to cancel emergency mode of other radios. The dispatch console must be preprogrammed to use this feature. For more information, contact your system administrator.

Procedure:

Perform one of the following actions:

If…	Then…
If the emergency mode is initiated by other radios,	press and hold the **Top Side** button and press the **Emergency** button.
If the emergency mode is initiated by the Supervisor,	Perform one of the following actions: ● Press and hold the **Emergency** button. ● Press and hold the **Top Side** button, and press the **Emergency** button. ● Wait for console to clear emergency.

NOTE: The combinations of the following buttons are supported in your radio:

● Radio **Top Side** button and **Top** button.

● Radio **Top Side** button and accessory **Orange** button.

● Accessory **1-Dot Button** and radio **Top** button.

● Accessory **1-Dot Button** and accessory **Orange** button.

7.8.5
Remote Emergency

The Remote Emergency feature allows you to remotely launch the emergency feature on a target radio.

You can send the Remote Emergency request to radios from recently transmitted or received calls that are stored. The latest Recent Call List refreshes automatically on your radio.

7.8.5.1
Receiving Remote Emergency

The remote emergency is launched only if emergency is enabled on your radio. The receiving radio displays `Emergency`.

Procedure:

7.8.5.2
Filtering Remote Emergency Contacts

This feature allows you to filter contacts.

Procedure:

1. Press the programmed **Remote Emergency** button.

2. Press the **Fltr** menu item button.

Result:

Your radio displays the filtered call list.

7.8.6

Sending an Emergency Alarm

When and where to use: This feature allows you to send a data transmission, which identifies the radio sending the emergency, to the dispatcher.

> **NOTE:** The default timer of **Emergency** button press to activate Emergency is 50 milliseconds. This timer is programmable from 50–6200 milliseconds by a qualified technician.

Procedure:

Press the preprogrammed **Emergency** button.

One of the following scenarios occurs:

- The display shows `EMERGENCY` and the current zone or channel. You hear a short medium-pitched tone and the LED blinks red momentarily.

- The radio sounds a short low-pitched tone to indicate that the selected channel does not support emergency and rejects to launch emergency mode.

Result:

When you receive the dispatcher's acknowledgment, the display shows `ACK RCVD`. Four tones sound, the alarm ends, and the radio exits the Emergency Alarm mode.

7.8.7

Sending an Emergency Call (Trunking Only)

When and where to use: This feature gives your radio priority access to a talkgroup.

Procedure:

1. Press the preprogrammed **Emergency** button.

   One of the following scenarios occurs:

   - The display shows `EMERGNCY` and the current zone or channel. You hear a short medium-pitched tone and the LED blinks red momentarily.

   - You hear a short low-pitched tone to indicate that the selected channel does not support emergency and rejects to launch emergency mode.

2. Press and hold the **PTT** button. Speak clearly with your microphone near your mouth.

3. Release the **PTT** button to end the transmission and wait for a response from the dispatcher.

4. To exit Emergency Call, press and hold the preprogrammed **Emergency** button for about a second.

   > **NOTE:** The timer of this long press is preprogrammed. Consult the qualified technician to program the duration required.

7.8.8

Sending An Emergency Call With Hot Mic (Trunking Only)

This feature allows you to send an Emergency Call with hot mic to a group of radios.

When and where to use:

Your radio must be programmed for this type of operation.

Your radio microphone is automatically activated, allowing you to communicate with the group of radios without pressing the **PTT** button. This activated microphone state is also known as hot mic. The hot

mic applies to the first voice transmission from your radio during the Emergency call. For subsequent transmissions in the same Emergency call, you must press the **PTT** button.

When indirect PTT such as Hot Mic is activated, the audio transmission can be configured in CPS to route the audio to the radio internal microphone, wired RSM microphone, or Bluetooth wireless microphone.

Follow the procedure to send Emergency Call with hot mic on your radio.

Procedure:

1. Press the preprogrammed **Emergency** button.

    One of the following scenarios occurs:

    - The display shows `EMERGNCY` and the current zone or channel. A tone sounds and the LED blinks red momentarily.

    - A tone sounds to indicate that the selected channel does not support emergency and rejects to launch emergency mode.

2. To exit Emergency Call, press and hold the preprogrammed **Emergency** button.

7.8.9
Sending an Emergency Alarm with Emergency Call

When and where to use:
This feature gives your radio priority access on a channel for conventional system, and to a talkgroup for trunking system.

Procedure:

1. Press the preprogrammed **Emergency** button.

    If successful, the display shows `EMERGNCY` on the current zone and channel. You hear a short, medium-pitched tone and the LED blinks red momentarily.

    The radio exits Emergency Alarm and enters the Emergency Call state when one of the following scenarios occur:

    - You receive the dispatcher acknowledgment. The display shows `ACK RCVD`.

    - You receive no acknowledgment. The display shows `NO ACK`.

    - You press the **PTT** button while in the Emergency Alarm mode.

    If unsuccessful, you hear the radio sounds a short low-pitched tone to indicate the selected channel does not support emergency and rejects to launch emergency mode.

2. Press and hold the **PTT** button. Speak clearly with the microphone near your mouth.

3. Release the **PTT** button to end the transmission and wait for a response from the dispatcher.

4. To exit Emergency Call, press and hold the preprogrammed **Emergency** button for about a second.

    Turning off the radio also cancels the emergency state.

    > **NOTE:** The timer of this long press is preprogrammed. Consult the qualified technician to program the duration required.

7.8.10
Sending An Emergency Alarm and Call with Hot Mic

This feature allows you to send an Emergency Alarm and Call with hot mic to a group of radios.

When and where to use: Your radio must be programmed for this type of operation.

When indirect PTT such as Hot Mic is activated, the audio transmission can be configured in CPS to route the audio to the radio internal microphone, wired RSM microphone, or Bluetooth wireless microphone.

Follow the procedure to send Emergency Alarms and Call with hot mic on your radio.

Procedure:

1. Press the preprogrammed **Emergency** button.

    If successful, the display shows `EMERGNCY` on the current zone and channel. A tone sounds and the LED blinks red momentarily.

    The radio exits Emergency Alarm and enters the Emergency Call state when one of the following scenarios occur:

    - You receive the dispatcher acknowledgment. The display shows `ACK  RCVD`.

    - You receive no acknowledgment. The display shows `NO  ACK`.

    If unsuccessful, a tone sounds to indicate that the selected channel does not support emergency and rejects to launch emergency mode.

2. To exit Emergency Call, press and hold the preprogrammed **Emergency** button.

    Turning off the radio also cancels the emergency state.

7.8.11
Sending a Silent Emergency Alarm

When and where to use: This feature allows you to send an Emergency Alarm to the system without triggering any audio or visual indicators.

Procedure:

1. Press the preprogrammed **Emergency** button.

    The display shows no changes, the LED does not light up, and you hear no tones. The silent emergency state continues until you perform the next step.

2. Perform one of the following actions:

    - Press and hold the preprogrammed **Emergency** button for about a second to exit the Silent Emergency Alarm mode.

    - Press and release the **PTT** button to exit the Silent Emergency Alarm mode and enter regular dispatch or Emergency Call mode.

7.9
Sending Evacuation Tone

This feature enables the evacuation tone to be heard on the transmitting radio and on any radio that is able to receive the tone instruction.

Procedure:

Result: Once the tone begins to sound, if the orange button is released the tone continues to alarm on all radios within the talkgroup, until the **PTT** button is released.

> 📝 **NOTE:** Radio does not transmit evacuation tone if the radio is in secure mode.

7.10
Fall Alert †‡

Fall Alert is a supporting feature of the Emergency operation. The Emergency feature must be programmed for Fall Alert to operate.

Your radio activates the Fall Alert feature when it achieves or exceeds a tilt angle threshold or a combination of the angle threshold and radio motion below the motion sensitivity level. The radio must stay in this condition for a programmed period before the Emergency Alarm or Call is activated.

NOTE: Because Fall Alert may be triggered accidentally, consider the following scenarios when using your radio:

- If the radio is programmed to a horizontal position only, it must be worn in a vertical position.
- If the radio is programmed with the Fall Alert feature, turn off the radio when charging it with a wall-mounted charger.
- When you dismiss Fall Alert and keep the radio horizontal, no emergency will be sent and no further Fall Alert notification will occur until the device is rotated back to normal (portrait) mode.

7.10.1
Radio Alerts When Fall Alert is Triggered

When Fall Alert is triggered, your radio plays an alert tone, and the display shows `Fall Alert`.

NOTE: If the radio is programmed for Surveillance Mode, the radio inhibits all tones and lights including the Fall Alert tones.

Fall Alert Enhanced

Your radio also supports Fall Alert Enhanced where an alert tone is played for a programmed period. This tone is louder than the programmed minimum level or the current level of the speaker. This tone acts as a beacon to help find the radio.

NOTE: The radio plays this alert tone even in Surveillance Mode.

When the alert tone is active, changing to another channel with a different setup triggers a different response from the radio:

- The alert tone is inhibited when you change to a channel without Emergency feature.
- The alert tone is inhibited when you change to a channel with Emergency but no Fall Alert feature.
- The current alert tone is inhibited and is replaced with a different alert tone when you change to a channel with Emergency feature and a different Fall Alert configuration.
- The alert tone continues when you change to a channel with Emergency and similar Fall Alert configuration.

7.10.2
Testing Fall Alert

Prerequisites: Ensure that Fall Alert feature is configured in your radio.

Procedure:

1. Turn on the radio, and place it in a vertical position for at least 5 seconds.
2. Lay the radio down in a horizontal position.

Result:

The radio plays an alert tone and the display shows `FALL ALERT`.

Postrequisites: If Fall Alert is configured but the condition does not trigger the activation of the feature, send the radio to a qualified technician.

7.10.3
Exiting Fall Alert

Procedure:

> To exit Fall Alert mode, press the preprogrammed **Fall Alert Clear** button.

7.10.4
Reinitiating Fall Alert

Procedure:

> To reinitiate Fall Alert after exiting Emergency Operation, perform one of the following actions:
>
> - Return the radio to a vertical position.
> - If motion sensitivity is enabled, shake the radio.

7.11
Secure Operations

Secure radio operation provides the highest commercially available level of voice security on both trunked and conventional channels.

By default, the radio automatically enters the encrypted environment without having to manually select or clear the secure transmission.

7.11.1
Selecting Secure Transmissions†‡

Procedure:

> Press the preprogrammed **Secure/Clear** button to toggle to clear mode.
>
> - If the selected channel is preprogrammed for clear-only operation, when you press the **PTT** button, you hear an invalid mode tone and the display shows `CLR TX`.
> - The radio does not transmit until you toggle the **Secure/Clear** button to the clear mode.
> - If the "Ignore **Secure/Clear** Switch when Strapped" programming option is enabled, the radio transmits without displaying any messages in the strapped mode of operation, regardless of the **Secure/Clear** switch setting. This option must be preprogrammed by a qualified radio technician.
> - The **Secure/Clear** switch only applies when the radio is transmitting.

7.11.2
Selecting Clear Transmissions†‡

Procedure:

> Press the preprogrammed **Secure/Clear** button to the clear secure mode.

- If the selected channel is preprogrammed for secure-only operation, when you press the **PTT** button, you hear an invalid mode tone and the display shows `SEC TX`.
- The radio does not transmit until you toggle the **Secure/ Clear** button to the secure mode.
- You can request to configure the radio to ignore the clear voice or insecured transmission when the radio is in secured transmission. Check with your agent for details.
- If the "Ignore **Secure/Clear** Switch when Strapped" programming option is enabled, the radio transmits without displaying any messages in the strapped mode of operation, regardless of the **Secure/Clear** switch setting. This option must be preprogrammed by a qualified radio technician.
- The **Secure/Clear** switch only applies when the radio is transmitting.

7.11.3
Managing Encryption

This chapter explains the encryption feature on your radio.

7.11.3.1
Loading Encryption Keys†

Prerequisites:

- Refer to the *Key Variable Loader (KVL) manual* for equipment connections and setup.

Procedure:

1. Attach the KVL to your radio.

   All other radio functions, except for power down, backlight, and volume, are locked out.

2. Select the required keys and press **Load** on the KVL.

Result: The KVL indicates that keyload is successful.

7.11.3.2
Multikey Feature

This feature allows your radio to be equipped with different encryption keys and supports the DES-OFB algorithm.

There are two types of encryption keys:
Conventional Multikey
   The encryption keys are strapped on a one-per-channel basis, through Customer Programming Software (CPS). If talkgroups are enabled in conventional, then the encryption keys are strapped to the talkgroups.

Trunked Multikey
   If both conventional and trunked applications are applied, strap the encryption keys for trunking on a per-talkgroup, or announcement-group basis. Also, a different key can be strapped to other features such as dynamic regrouping, failsoft, or emergency talkgroup.

7.11.3.3
Erasing Encryption Keys‡

If the Multi-system Over-the-Air Rekeying feature is in use, the keys erased are only for the current secure profile of the selected channel. The erase all option operates as configured by the dealer or system

administrator. Erasing all keys using the Top (Orange) button and the Top Side (Select) button erases all keys in all keylists in the radio.

Procedure:

> Erasing the single key in radios with the single-key option and erasing all keys in radios with the multikey option by using the preprogrammed **Top Side** button and **Top (Emergency)** button:
>
> **a.** Press and hold the **Top Side** button.
>
> **b.** While holding **Top Side** button down, press the **Top (Emergency)** button.
>
> The display shows `PLS WAIT`. When all the encryption keys have been erased, the display shows `ALL ERASED`.
>
> > **NOTE:** Do **not** press the **Top(Emergency)** button before pressing the **Top Side** button, unless you are in an emergency situation as this sends an emergency alarm.

7.11.3.4
Requesting an Over-the-Air Rekey†‡

If the Multi-system Over-the-Air Rekeying feature is in use, the rekey request is only for the current selected secure profile.

Prerequisites: Ensure that the Unique Key Encryption Key (UKEK) or Unique Shadow Key (USK) is loaded into the radio with the Key Variable Loader (KVL) before the rekey request can be sent. Refer to your local key management supervisor for more information.

Procedure:

> Press and hold the preprogrammed **Rekey Request** button to send the rekey request.
>
> If the rekey operation fails, a bad-key tone sounds and the display shows `RKY FAIL`.
>
> > **NOTE:** The rekey operation failure indicates that your radio does not contain the UKEK or USK.

7.11.3.5
MDC OTAR (Conventional Only)

This feature allows you to view or define the Motorola Data Communications (MDC) Over-the-Air Rekeying (OTAR) features. This feature is applied only when operating in secure encrypted mode. In addition to Rekey Requests, OTAR transmissions include Delayed Acknowledgments, and Power-up Acknowledgments.

Some of the selected options require configuration at the Key Management Controller (KMC) site to work properly.

> **NOTE:** This feature must be programmed by a qualified radio technician. For more information, contact your system administrator.

7.11.3.6
Infinite UKEK Retention

This feature enables Unique Key Encryption Key (UKEK) to be permanently stored in the radio even when all the encryption keys are erased. Without this UKEK key, the radio cannot be rekeyed over the air. The Infinite UKEK Retention settings can be different for each secure profile.

> **NOTE:** This feature must be programmed by a qualified radio technician. For more information, contact your system administrator.

7.11.3.7
Hear Clear†

Hear-Clear is a noise reduction system that consists of Companding and Random FM Noise Canceller.

Companding
Reduces the channel noise, such as OTA transmission that is predominantly present in UHF2 and 900 MHz channel with the following features:

Compressor
Reduces the background noise flow and the speech signal at transmitting radio.

Expander
Expands the speech while the noise flow remains the same at receiving radio.

Random FM Noise Canceller (Flutter Fighter)
Reduces the unwanted effects of random FM noise pulses caused by channel fading under high Signal-to-Noise (S/N) conditions such as in a moving transportation. The fading effects, heard as audio pops and clicks, are canceled without affecting the desired audio signal.

The Random FM Noise Canceller operates only in receive mode.

NOTE: This feature must be programmed by a qualified radio technician. For more information, contact your system administrator.

7.12
Radio Inhibit

This feature allows the system administrator to put a radio into a nonfunctional state when the radio is missing or in an unknown hand. The radio stays in this state regardless of its power changes.

NOTE:
If the radio has Intersystem roaming capability, the system administrator is able to put the radio into a nonfunctional state when the missing radio roams to another system.

The radio can only be uninhibited by receiving an uninhibited command from the system administrator.

7.13
Location ‡

The Global Navigation Satellite System (GNSS) in the radio integrates information from the Global Positioning System (GPS) to determine the approximate geographical location of your radio.

NOTE: The Location feature is addressed as Global Positioning System (GPS) across the manual as the naming convention of the buttons and strings remain the same as the legacy feature of GPS.

The availability and accuracy of this location information and the calculation duration can vary depending on the environment in which you are using the GPS feature. For example, GPS location fixes are difficult to obtain indoors, in covered locations, between high buildings, or in situations where you have not established a clear broad view of the sky.

If adequate signals from multiple satellites are available, your GPS feature only provides an approximate location, usually within 10 meters from your actual location, but sometimes farther away.

Sometimes, the GPS feature cannot complete a location calculation successfully. You will then see a message indicating that your radio cannot connect to enough visible satellites.

To maximize the ability of your radio to determine a fix, take note of the following guidelines:

● For your initial fix, hold the radio in the face position.

● Stay in the open as the GPS feature works best when there is nothing between your radio and the open sky.

7.13.1
Location Format

This feature allows you to select different display formats of GPS location.

The following GPS location formats are available:

- Lat/Long (DD)
- Lat/Long (DDM)
- Lat/Long (DMS)
- UTM/UCS
- SLD99

NOTE: When you send your location to another radio, the receiving radio displays the location in its selected format.

7.13.2
Location Feature in Emergency Mode

When the Emergency feature is activated, the radio exits the Location menu and returns to the Home screen.

You can view the channel that triggers the emergency signal.

You can reenter the Location menu while still in Emergency mode as long as Silent Emergency is not activated.

If you have disabled the Location feature on your radio, it automatically turns back on when Emergency mode is activated.

If there is a solid location signal during Emergency operation, the current location and the location information received is saved as Emergency and Last Known Location respectively.

7.14
Trunking System Controls †‡

This chapter explains the trunking system control features in your radio.

7.14.1
Operating in Failsoft System

When and where to use:

The failsoft system ensures continuous radio communication during a trunked system failure. If a trunking system fails completely, the radio goes into failsoft operation and automatically switches to its failsoft channel.

During failsoft operation, your radio transmits and receives in conventional operation on a predetermined frequency. You hear a medium-pitched tone and the display shows `FAILSOFT`.

When the trunking system returns to normal operation, your radio automatically leaves failsoft operation and returns to trunked operation.

To continue in Failsoft and to communicate with other talkgroups, refer to the following procedure.

Procedure:

Press the **PTT** button to talk, and release the button to listen.

7.14.2
Imbalanced Coverage

Imbalanced coverage occurs when the radio is able to receive the control channel but is unable to transmit back to the system. When the radio enters into a no-communication situation, the radio generates a periodic tone.

7.14.3
Out-of-Range Radio

Your radio can no longer lock onto a control channel when out-of-range from the system.

When out-of-range, your radio shows the following indications:

● A tone sounds.

● The display shows the currently selected zone or channel combination, and out-of-range notification.

Your radio remains in this out-of-range condition until it locks onto a control channel or failsoft channel, or if it is turned off.

7.14.4
Site Trunking Feature

If the Zone Controller loses communication with any site, that site reverts to site trunking. When this occurs, you can communicate only with the radios within your trunking site.

The display shows the currently selected zone or channel, and the site trunking message.

7.14.5
Site Search

When searching for a site, your radio is inoperable. In the site search mode, your radio scans for trunked control channels but has yet to connect to the trunking system or reach other trunking states. Other trunking states are such as Out of Range and Imbalanced Coverage.

The `Searching site` indicator alerts you that your radio is attempting to search for a valid trunked control channel.

7.14.6
Viewing the Current Site

Procedure:

Press the programmed **Site Displ/Srch** button.

Result: The display shows momentarily the name of the current site and its corresponding received RSSI.

7.14.7
Changing the Current Site

Procedure:

> Press and hold down the preprogrammed **Site Displ/Srch** button.
>
> You hear a tone and the display shows momentary `SCANNING`.

Result: When the radio finds a new site, it returns to the Home screen.

7.15
Mission Critical Wireless Bluetooth® Wireless Technology †‡

This feature allows you to extend your radio functionality by connecting to external Bluetooth accessories. Use Motorola Solutions proprietary Operations Critical Wireless (OCW) devices with radios during critical operations. Other Bluetooth devices may or may not perform to the required standard.

Your radio supports the following Bluetooth enabled devices or profiles:

- Headset (HSP)
- Dial Up Networking (DUN)
- Personal Area Networking (PAN)
- Serial Port (SPP)
- General Attribute Profile (GATT)

7.15.1
Pairing with Low Frequency-Motorola Proximity Pairing (LF-MPP) Feature

Prerequisites:

Ensure that Bluetooth feature of your radio is on and the Bluetooth tones are enabled.

Bluetooth tones, Bluetooth menu and preprogrammed buttons must be preprogrammed by a qualified radio technician. Check with your dealer or system administrator for more information.

When and where to use: The range of Bluetooth operation when using a MCW accessory is 10 meters line-of-sight communication. This is an unobstructed path between the location of the signal transmitter (your radio) and the location of the receiver (your device or accessory).

Obstacles that can cause an obstruction in the line-of-sight include trees, buildings, mountains, cars, and others.

For high degree of reliability, Motorola Solutions recommends to **NOT** separate the radio and the accessory.

At the fringe areas of reception, both voice and tone quality will start to sound "garbled" or "broken". To correct this problem, simply position the accessory and radio closer to each other (within the 10 meter defined range) to re-establish clear audio reception.

> **NOTE:** Once a COTS headset is paired to your radio, it is always connected. Therefore the battery life of the accessory is aligned with the Talk Time power consumption, not the Standby Time consumption.

Procedure:

1. Turn on the accessory.

2. Place the accessory close to the radio aligning the Bluetooth Pairing Location (a blue dot) on the radio to the Bluetooth Pairing Location (a blue dot) on the accessory.

   If the pairing process is successful, you hear an incremental-pitched tone. The radio begins to connect to the device.

   If the pairing process fails, you hear a short, low-pitched tone. The display shows `PAIRFAIL`. Repeat this step.

Result:

The radio tries to establish connection with the device once paired.

> **NOTE:** If the connection fails within 6 seconds, you hear a decremental-pitched tone to indicate that the device is unpaired. The display shows `<Device Type> UNPAIRED`. Repeat this step to re-initiate the pairing process.

If the connection is successful, you hear an incremental-pitched tone. The display shows `<Device Type>`

`CONNCTED` and the Bluetooth icon turns from 🚫 to 🔵 .

If the radio has the pairing record of the device and the connection fails, you hear a short, low-pitched tone. The display shows `<Device Type> CON FAIL`.

7.15.2
Responder Alert Sensors

Responder alert sensors allow the radio to send an over-the-air (OTA) notification when the radio receives the holster sensor event.

To enable the feature, ensure that the Global Positioning System (GPS), Enhanced Data, and Bluetooth feature of your radio is turned on and the radio supports Bluetooth Low Energy (BTLE).

You can disable the feature temporarily or permanently. This feature allows you to prevent one or all events from being reported OTA.

This feature is enabled through Customer Programming Software (CPS) configuration. For more information, contact your system administrator.

7.15.2.1
Holster Sensor

Holster sensor monitors the state of the holster and allows the radio to send an Over-The-Air (OTA) notification whenever a gun or a taser is pulled out of the holster or put in the holster.

7.15.2.2
Disabling the Sensor

This feature disables the sensors temporarily or permanently from sending the sensor events to the system.

> **NOTE:** The feature is only applicable to holster sensor and weapon fired sensor. Vest pierced sensor cannot be disabled.

7.15.2.2.1
Disabling the Sensor Temporarily

Procedure:

> Short-press the preprogrammed **Sensor** button to activate the sensor timer.
>
> The following scenarios affect the sensor state:
>
> - If a gun or taser is removed from the holster within the timer duration, the timer stops and switches the sensor to disabled state. A tone sounds and the radio displays `Sensor Disable`.
>
>   > **NOTE:** The radio enables the sensor only when all the guns or tasers are placed into the holster. A tone sounds and the radio displays `Sensor On` temporarily.
>
> - If the timer expires without an event, a tone sounds, the radio switches the sensor to enabled state, and clears the sensor status from the display.
>
> - If the preprogrammed **Sensor** button is long-pressed, the OTA sensor notification is enabled.

7.15.2.2.2
Disabling the Sensor Permanently

Procedure:

1. Long-press the preprogrammed **Sensor** button to permanently disable the sensors.

   A tone sounds and the radio displays `Sensor Off`. While in this state, no events is reported over-the-air (OTA), regardless of how many times the gun is drawn, re-inserted or weapon is fired.

   The radio generates a bad key tone if the sensor is not allowed to be disabled or there is no sensor connected to the radio when the preprogrammed button or menu select button is pressed.

2. Long-press the preprogrammed **Sensor** button again to enable the OTA Sensor notification.

   A tone sounds, and the radio displays `SNSR OFF`.

7.16
ASTRO 25 (P25) Programming Over Project 25 (POP25)

Also called Over-the-Air Programming, this feature allows configuration data and firmware to be upgraded to your radio over-the-air. Full use of the radio is retained during the data transfer without interrupting communication.

If the upgrade happens on the ASTRO 25 and ASTRO Conventional systems, the upgrade pauses to give priorities to voice call, and continues after the voice call ended. If the upgrade happens on a Wi-Fi network, the upgrade process runs concurrently with voice calls.

Once a configuration upgrade is downloaded to your radio, you can install new changes immediately, or delay changes to be installed on the radio when it is being powered up.

7.17
Voice Announcement †

This feature enables the radio to audibly indicate the current feature mode, zone, or channel assigned to the user.

The available voice announcement (VA) priority options are:

High
Voice announcement is enabled even when the radio is receiving calls.

Low
Voice announcement is disabled when the radio is receiving calls.

> **NOTE:** If the **Voice Announcement** field is set to **Enabled**, after an interruption by a momentary tone one of the following scenarios occurs:
>
> - If **Suppress Replay** field is **Enabled**, voice announcement replays.
> - If **Suppress Replay** field is **Disabled**, voice announcement turns off.

7.18
Site Selectable Alerts (ASTRO 25 Trunking) †‡

A Site Selectable Alert (SSA) is an Intelligent Lighting indicator with audio alert. The alert is sent to radios at sites to notify the users when special situations occur.

Your radio supports up to 250 site aliases. Only authorized radios are enabled to send SSA.

> **NOTE:**
> The alert alias, alert tone, and alert period are configured in the Customer Programming Software (CPS). For more information, contact your system administrator.
>
> The SSA alert volume is reduced when voice audio is received at the same time. It is important that the SSA audio file is created with clear loud audio to ensure audio clarity at reduced levels.

7.19
Utilities

This chapter explains the operations of the utility functions available in your radio.

7.19.1
Using the Flip Display

When and where to use: This feature allows you to reverse the content of your DRSM display upside down.

Procedure:

To flip the display, press and hold the programmed **Light/Flip** button.

7.19.2

Controlling the Display Backlight

You can enable or disable your DRSM display backlight as needed, if poor light conditions make the display difficult to read.

> **NOTE:**
> The backlight remains on for a programmed time before it automatically turns off completely or returns to the minimum backlight level.

Procedure:

> Perform one of the following actions:
>
> - To turn the backlight on, press any programmable radio controls or buttons.

7.19.3

Locking and Unlocking the Keypad and Controls†‡

You can lock the keypad, programmable buttons, rotary knobs, and switches of your radio to avoid inadvertent entry.

This function can be preprogrammed as a short press or long press per your request.

Check with your dealer or qualified technician for best selection to suit your usage.

Procedure:

1. Long press the preprogrammed Control Lock button to lock the controls.

   If programmed, the radio plays the associated Voice Announcement.

2. Press and hold again to unlock the controls.

   If programmed, the radio plays the associated Voice Announcement.

7.19.4

Turning Voice Mute On or Off†‡

This feature allows you to mute the voice transmission of the current zone and channel.

When and where to use:

Procedure:

> Turning Voice Mute off or on using the preprogrammed **Voice Mute** button:
>
> a. To turn the feature off or on, press the preprogrammed **Voice Mute** button.

Result: The display shows momentary `VMUT OFF`, and you hear a short tone, indicating that the feature is disabled or the display shows momentary `VMUT ON`, and you hear a short tone, indicating that the feature is enabled.If preprogrammed, the radio plays the associated Voice Announcement.

7.19.5

Using the Time-Out Timer

When and where to use: This feature turns off the transmitter of your radio. You cannot transmit longer than the preset timer setting.

If you attempt to do so, the radio automatically stops your transmission, and you hear a talk-prohibit tone.

The timer is defaulted at 60 seconds, but it can be preprogrammed from 15 to 465 seconds, in 15-second intervals, or it can be disabled entirely for each radio mode, by a qualified radio technician.

> **NOTE:** You hear a brief, low-pitched, warning tone four seconds before the transmission times out.

Procedure:

1. Hold down the **PTT** button longer than the preprogrammed time.

   You hear a continuous talk prohibit tone. The transmission is cut off and the LED goes out.

2. Release the **PTT** button.

   The timer resets.

3. To re-transmit, press the **PTT** button.

   The time-out timer restarts and the LED lights up solid red.

7.19.6
Conventional Squelch Operation

This feature filters out unwanted calls with low signal strength or channels that have a higher than normal background noise.

Analog Options

Tone Private Line, Digital Private-Line, and carrier squelch is available and programmed per channel.

Option	Result
Carrier squelch	You hear all traffic on a channel.
Tone Private Line or Digital Private-Line	The radio responds only to your messages.

Digital Options

One or more of the following options can be programmed in your radio. For more information, contact your system administrator.

Option	Result
Digital Carrier-Operated Squelch	You hear all digital traffic.
Normal Squelch	You hear any digital traffic having the correct network access code.
Selective Switch	You hear any digital traffic having the correct network access code and correct talkgroup.

7.19.7
Digital PTT ID Support ‡

This feature allows you to see the radio ID (number) of the radio from whom you are currently receiving a transmission. The receiving radio and the dispatcher can view the ID, which consists of up to a maximum of eight characters.

The ID number of your radio is also automatically sent every time you press the **PTT** button. This feature is programmed per channel. For digital voice transmissions, the ID of your radio is sent continuously during the voice message.

7.19.8
Smart PTT (Conventional Only)

Smart PTT is a per-personality, programmable feature used to keep radio users from talking over other radio conversations. When Smart PTT is enabled in your radio, you cannot transmit on an active channel.

The following table shows the variations of Smart PTT.

Mode	Description
Transmit Inhibit on Busy Channel with Carrier	You cannot transmit if traffic is detected on the channel.
Transmit Inhibit on Busy Channel with Wrong Squelch Code	You cannot transmit on an active channel with a squelch code or (if secure-equipped) encryption key other than your own. If the PL code is the same as yours, the transmission is not prevented.
Quick-Key Override	Your radio must be programmed to allow you to use Quick-Key Override. This feature works with either one of the two above variations. You can override the transmit-inhibit state by quick-keying the radio (press **PTT** button twice within the programmed time limit).

Chapter 8

Accessories

Not all accessories are FCC certified to operate with all radio models, band splits, or both. See the radio price pages for a list of FCC certified accessories or contact your sales representative for accessory compatibility.

See https://www.motorolasolutions.com to know more about the accessories supported by this radio.

The following are the FCC ID for the wireless accessories:
ABZ99FT7007
NTN2574 Wireless Pod

ABZ99FT7014
PMLN6233 Discrete Mission Critical Wireless RCU Key FOB

Legal and Compliance Statements

Disclaimer

The information in this document is carefully examined, and is believed to be entirely reliable. However, no responsibility is assumed for inaccuracies.

Furthermore, Motorola Solutions reserves the right to change any products to improve readability, function, or design. Motorola Solutions does not assume any liability arising out of the applications or use of any product or circuit described herein; nor does it cover any license under its patent rights, nor the rights of others.

Supplier's Declaration of Conformity

Per FCC CFR 47 Part 2 Section 2.1077(a)

Responsible Party

Name: Motorola Solutions, Inc.

Address: 2000 Progress Pkwy, Schaumburg, IL 60196-1078, U.S.A.

Phone Number: 1-800-927-2744

Hereby declares that the product:

Model Name: **APX 3000**

conforms to the following regulations:

FCC Part 15, subpart B, section 15.107(a), 15.107(d), and section 15.109(a)

Class B Digital Device

As a personal computer peripheral, this device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation.

NOTE:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio or TV technician for help.

Important Safety Information

RF Energy Exposure and Product Safety Guide for Portable Two-Way Radios

IMPORTANT:
This radio is restricted to Occupational use only.
Before using the radio, read the RF Energy Exposure and Product Safety Guide for Portable Two-Way Radios which contains important operating instructions for safe usage and RF energy awareness and control for Compliance with applicable standards and Regulations.

For a list of Motorola Solutions-approved antennas, batteries, and other accessories, visit the following website:

https://www.motorolasolutions.com

Under Innovation, Science, and Economic Development Canada (ISED) regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by ISED. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter is approved by ISED to operate with a Motorola Solutions-approved antenna with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Notice to Users (FCC and ISED)

This device complies with Part 15 of the FCC rules and Innovation, Science, and Economic Development Canada's (ISED) license-exempt RSS's per the following conditions:

- This device may not cause harmful interference.

- The device must accept any interference received, including interference that may cause undesired operation.

- Changes or modifications made to this device, not expressly approved by Motorola Solutions, could void the authority of the user to operate this equipment.

FCC Licensing Information

This device complies with Parts 90 and 15 of the Federal Communications Commission (FCC) Rules.

Operation is subject to the condition that this device does not cause harmful interference. The radio operates on radio frequencies that are regulated by the Federal Communications Commission (FCC). To transmit on these frequencies, you are required to have a license issued by the FCC. Application is made available on FCC Form 601 and Schedules D, H, and Remittance Form 159.

To obtain these FCC forms, request document 000601 which includes all forms and instructions. If you wish to have the document faxed, mailed, or have questions, use the following contact information.

Fax
Contact the Fax-On-Demand system at 1-202-418-0177

Mail
Call the FCC forms hotline at 1-800-418-FORM or 1-800-418-3676

Contact
For questions regarding FCC license, contact 1-888-CALL-FCC, 1-888-225-5322, or http://www.fcc.gov.

Before filling out your application, you must decide which frequency you can operate on. For questions on determining the radio frequency, call Motorola Solutions Product Services at: 1-800-448- 6686. Changes or modifications not expressly approved by Motorola Solutions may void the user authority granted by the FCC to operate this radio and should not be made. To comply with FCC requirements, transmitter adjustments should be made only by or under the supervision of a person certified as technically qualified to perform transmitter maintenance and repairs in the private land mobile and fixed services as certified by an organization representative of the user of those services.

Replacement of any transmitter component such as crystal, semiconductor, and others not authorized by the FCC equipment authorization for this radio could violate FCC rules.

NOTE: Use of this radio outside the country where it was intended to be distributed is subject to government regulations and may be prohibited.

Applying for Canadian License

The operation of your Motorola Solutions radio is subject to the Radio communications Act and must comply with rules and regulations of the Federal Government's department of Innovation, Science, and Economic Development Canada (ISED). ISED requires that all operators using Private Land Mobile frequencies obtain a radio license before operating their equipment.

Prerequisites: Obtain the latest Canadian License Application form at http://www.ic.gc.ca/ic_wp-pa.htm.

Procedure:

1. Fill in the items as per the instructions. Be sure to print legibly.

   If you need additional space for any item, use the reverse side of the application.

2. Make a copy of your files.

3. Prepare a cheque or money order payable to the "Receiver General for Canada", for an amount for each radio purchased.

   The license is renewed on April 1st each year, and issued for a period of 12 months.

4. Mail your completed application along with your cheque or money order to the closest ISED office.

ISED WLAN Statement

⚠️ **CAUTION:**

1. The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

2. For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250–5350 MHz and 5470–5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;

3. For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725–5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits as appropriate; and

4. Where applicable, antenna type(s), antenna model(s), and worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in section 6.2.2.3 shall be clearly indicated.

Maritime Radio Use in the VHF Frequency Range

Special Channel Assignments

Emergency Channel

If you are in imminent and grave danger at sea and require emergency assistance, use VHF Channel 16 to send a distress call to nearby vessels and the United States Coast Guard. Transmit the following information, in this order:

1. "MAYDAY, MAYDAY, MAYDAY."

2. "THIS IS _____, CALL SIGN _____." State the name of the vessel in distress 3 times, followed by the call sign or other identification of the vessel, stated 3 times.

3. Repeat "MAYDAY" and the name of the vessel.

4. "WE ARE LOCATED AT _____." State the position of the vessel in distress, using any information that will help responders to locate you, e.g.:

    - latitude and longitude

    - bearing (state whether you are using true or magnetic north)

    - distance to a well-known landmark

    - vessel course, speed, or destination

5. State the nature of the distress.

6. Specify what kind of assistance that you need.

7. State the number of persons on board and the number needing medical attention, if any.

8. Mention any other information that would be helpful to responders, such as type of vessel, vessel length and/or tonnage, hull color, etc.

9. "OVER."

10. Wait for a response.

11. If you do not receive an immediate response, remain by the radio, and repeat the transmission at intervals until you receive a response. Be prepared to follow any instructions given to you.

Non-Commercial Call Channel

For non-commercial transmissions, such as fishing reports, rendezvous arrangements, repair scheduling, or berthing information, use **VHF Channel 9**.

Operating Frequency Requirements

A radio designated for shipboard use must comply with Federal Communications Commission Rule Part 80 as follows:

- on ships subject to Part II of Title III of the Communications Act, the radio must be capable of operating on the 156.800 MHz frequency.

- on ships subject to the Safety Convention, the radio must be capable of operating:

    o   in the simplex mode on the ship station transmitting frequencies specified in the 156.025–157.425 MHz frequency band, and

    o   in the semiduplex mode on the two frequency channels specified in the table below.

NOTE:
Simplex channels 3, 21, 23, 61, 64, 81, 82, and 83 cannot be lawfully used by the general public in US waters.

Additional information about operating requirements in the Maritime Services can be obtained from the full text of FCC Rule Part 80 and from the US Coast Guard.

Table 4: VHF Marine Channel List

Channel Number	Frequency (MHz)	
	Transmit	Receive
1	156.050	160.650
2	156.100	160.700
*	156.150	160.750
4	156.200	160.800
5	156.250	160.850
6	156.300	–
7	156.350	160.950
8	156.400	–
9	156.450	156.450
10	156.500	156.500
11	156.550	156.550
12	156.600	156.600
13**	156.650	156.650
14	156.700	156.700
15**	156.750	156.750
16	156.800	156.800
17**	156.850	156.850
18	156.900	161.500
19	156.950	161.550
20	157.000	161.600
*	157.050	161.650
22	157.100	161.700
*	157.150	161.750
24	157.200	161.800
25	157.250	161.850
26	157.300	161.900
27	157.350	161.950

28	157.400	162.000
60	156.025	160.625
*	156.075	160.675
62	156.125	160.725
63	156.175	160.775
*	156.225	160.825
65	156.275	160.875
66	156.325	160.925
67**	156.375	156.375
68	156.425	156.425
69	156.475	156.475
71	156.575	156.575
72	156.625	–
73	156.675	156.675
74	156.725	156.725
75	***	***
76	***	***
77**	156.875	–
78	156.925	161.525
79	156.975	161.575
80	157.025	161.625
*	157.075	161.675
*	157.125	161.725
*	157.175	161.775
84	157.225	161.825
85	157.275	161.875
86	157.325	161.925
87	157.375	161.975
88	157.425	162.025

NOTE:

* *Simplex channels 3, 21, 23, 61, 64, 81, 82, and 83 cannot be **lawfully used** by the general public in US waters.*

** *Low power (1 W) only.*

*** *Guard band.*

NOTE: A – in the Receive column indicates that the channel is transmitted only.

Declaration of Compliance for the Use of Distress and Safety Frequencies

The radio equipment does not employ a modulation other than the internationally adopted modulation for maritime use when it operates on the distress and safety frequencies specified in RSS-182 Section 5.4.

Technical Parameters for Interfacing External Data Sources

	RS232	USB	SB9600
Input Voltage (Volts Peak-to-peak)	18 V	3.6 V	5 V
Max Data Rate	115 Kbps	12 Mbps	9.6 Kbps
Impedance	5000 Ω	90 Ω	120 Ω

Limited Warranty

MOTOROLA SOLUTIONS COMMUNICATION PRODUCTS

I. WHAT THIS WARRANTY COVERS AND FOR HOW LONG:

MOTOROLA SOLUTIONS, INC. ("MOTOROLA") warrants the MOTOROLA SOLUTIONS manufactured Communication Products listed below ("Product") against defects in material and workmanship under normal use and service for a period of time from the date of purchase as scheduled below:

ASTRO APX 3000 Portable Units	One (1) Year
Product Accessories	One (1) Year

For LACR region:

ASTRO APX 3000 Portable Units	Three (3) Years
Product Accessories	One (1) Year

MOTOROLA SOLUTIONS, at its option, will at no charge either repair the Product (with new or reconditioned parts), replace it (with a new or reconditioned Product), or refund the purchase price of the Product during the warranty period provided it is returned in accordance with the terms of this warranty. Replaced parts or boards are warranted for the balance of the original applicable warranty period. All replaced parts of Product shall become the property of MOTOROLA SOLUTIONS.

This express limited warranty is extended by MOTOROLA SOLUTIONS to the original end user purchaser only and is not assignable or transferable to any other party. This is the complete warranty for the Product manufactured by MOTOROLA SOLUTIONS. MOTOROLA SOLUTIONS assumes no obligations or liability for additions or modifications to this warranty unless made in writing and signed by an officer of MOTOROLA SOLUTIONS.

Unless made in a separate agreement between MOTOROLA SOLUTIONS and the original end user purchaser, MOTOROLA SOLUTIONS does not warrant the installation, maintenance or service of the Product.

MOTOROLA SOLUTIONS cannot be responsible in any way for any ancillary equipment not furnished by MOTOROLA SOLUTIONS which is attached to or used in connection with the Product, or for operation of the Product with any ancillary equipment, and all such equipment is expressly excluded from this warranty. Because each system which may use the Product is unique, MOTOROLA SOLUTIONS disclaims liability for range, coverage, or operation of the system as a whole under this warranty.

MOTOROLA SOLUTIONS offers the following optional extended service contracts.

DEVICE MANAGED SERVICES (DMS) ACCIDENTAL DAMAGE

Provides for extended hardware repair coverage INCLUDING CHEMICAL, LIQUID, FIRE, AND OTHER PHYSICAL DAMAGE. Accidental damage coverage is available in conjunction with MOTOROLA SOLUTIONS'S standard Commercial Warranty and starts from the FIRST DAY the radio is put into use. Service performed under this plan consists of repair or replacement of the covered equipment as set forth in the terms and conditions. Repairs will be made only at the designated MOTOROLA SOLUTIONS repair depot. Local services are not included. MOTOROLA SOLUTIONS will pay the inbound shipping charges only with use of the

MOTOROLA SOLUTIONS designated delivery service. MOTOROLA SOLUTIONS will pay for outbound shipping via MOTOROLA SOLUTIONS'S normal shipping methods.

DEVICE MANAGED SERVICES (DMS) STANDARD HARDWARE

Provides extended hardware normal wear and tear repair coverage beginning AFTER MOTOROLA SOLUTIONS'S standard Commercial Warranty period expires. Service performed under this plan consists of repair of the covered equipment as set forth in the terms and conditions. Repairs will be made only at the designated MOTOROLA SOLUTIONS repair depot. Local services are not included. MOTOROLA SOLUTIONS will pay for outbound shipping via MOTOROLA SOLUTIONS'S normal shipping methods.

II. GENERAL PROVISIONS:

This warranty sets forth the full extent of MOTOROLA SOLUTIONS' responsibilities regarding the Product. Repair, replacement, or refund of the purchase price, at MOTOROLA SOLUTIONS's option, is the exclusive remedy. THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER EXPRESS WARRANTIES. IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY. IN NO EVENT SHALL MOTOROLA SOLUTIONS BE LIABLE FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, FOR ANY LOSS OF USE, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, LOST PROFITS OR SAVINGS OR OTHER INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE SUCH PRODUCT, TO THE FULL EXTENT SUCH MAY BE DISCLAIMED BY LAW.

III. STATE LAW RIGHTS:

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATION ON DURATION OF IMPLIED WARRANTY, THEREFORE THE ABOVE LIMITATION OR EXCLUSIONS MAY NOT APPLY.

This warranty gives specific legal rights, and there may be other rights, which may vary from state to state.

IV. HOW TO GET WARRANTY SERVICE:

You must provide proof of purchase (bearing the date of purchase and Product item serial number) in order to receive warranty service and, also, deliver or send the Product item, transportation and insurance prepaid, to an authorized warranty service location. Warranty service will be provided by MOTOROLA SOLUTIONS through one of its authorized warranty service locations. If you first contact the company which sold you the Product (e.g., dealer or communication service provider), it can facilitate your obtaining warranty service. You can also call MOTOROLA SOLUTIONS at 1-800-927-2744 US/Canada.

V. WHAT THIS WARRANTY DOES NOT COVER:

1. Defects or damage resulting from use of the Product in other than its normal and customary manner.

2. Defects or damage from misuse, accident, water, or neglect.

3. Defects or damage from improper testing, operation, maintenance, installation, alteration, modification, or adjustment.

4. Breakage or damage to antennas unless caused directly by defects in material workmanship.

5. A Product subjected to unauthorized Product modifications, disassembles, or repairs (including, without limitation, the addition to the Product of non-MOTOROLA SOLUTIONS supplied equipment) which adversely affect performance of the Product or interfere with MOTOROLA SOLUTIONS' normal warranty inspection and testing of the Product to verify any warranty claim.

6. Product which has had the serial number removed or made illegible.

7. Rechargeable batteries if:

    ● any of the seals on the battery enclosure of cells are broken or show evidence of tampering.

    ● the damage or defect is caused by charging or using the battery in equipment or service other than the Product for which it is specified.

8. Freight costs to the repair depot.

9. A Product which, due to illegal or unauthorized alteration of the software/firmware in the Product, does not function in accordance with MOTOROLA SOLUTIONS's published specifications or the FCC certification labeling in effect for the Product at the time the Product was initially distributed from MOTOROLA SOLUTIONS.

10. Scratches or other cosmetic damage to Product surfaces that does not affect the operation of the Product.

11. Normal and customary wear and tear.

VI. PATENT AND SOFTWARE PROVISIONS:

MOTOROLA SOLUTIONS will defend, at its own expense, any suit brought against the end user purchaser to the extent that it is based on a claim that the Product or parts infringe a United States patent, and MOTOROLA SOLUTIONS will pay those costs and damages finally awarded against the end user purchaser in any such suit, which are attributable to any such claim, but such defense and payments are conditioned on the following:

1. that MOTOROLA SOLUTIONS will be notified promptly in writing by such purchaser of any notice of such claim,

2. that MOTOROLA SOLUTIONS will have sole control of the defense of such suit and all negotiations for its settlement or compromise, and

3. should the Product or parts become, or in MOTOROLA SOLUTIONS' opinion be likely to become, the subject of a claim of infringement of a United States patent, that such purchaser will permit MOTOROLA SOLUTIONS, at its option and expense, either to procure for such purchaser the right to continue using the Product or parts or to replace or modify the same so that it becomes non-infringing or to grant such purchaser a credit for the Product or parts as depreciated and accept its return. The depreciation will be an equal amount per year over the lifetime of the Product or parts as established by MOTOROLA SOLUTIONS.

MOTOROLA SOLUTIONS will have no liability with respect to any claim of patent infringement, which is based upon the combination of the Product or parts furnished hereunder with software, apparatus or devices not furnished by MOTOROLA SOLUTIONS, nor will MOTOROLA SOLUTIONS have any liability for the use of ancillary equipment or software not furnished by MOTOROLA SOLUTIONS, which is attached to or used in connection with the Product. The foregoing states the entire liability of MOTOROLA SOLUTIONS with respect to infringement of patents by the Product or any parts thereof.

Laws in the United States and other countries preserve for MOTOROLA SOLUTIONS certain exclusive rights for copyrighted MOTOROLA SOLUTIONS software such as the exclusive rights to reproduce in copies and distribute copies of such MOTOROLA SOLUTIONS software. MOTOROLA SOLUTIONS software may be used in only the Product in which the software was originally embodied and such software in such Product may not be replaced, copied, distributed, modified in any way, or used to produce any derivative thereof. No other use including, without limitation, alteration, modification, reproduction, distribution, or reverse engineering of such MOTOROLA SOLUTIONS software or exercise of rights in such MOTOROLA SOLUTIONS software is permitted. No license is granted by implication, estoppel or otherwise under MOTOROLA SOLUTIONS patent rights or copyrights.

VII. GOVERNING LAW:

This Warranty is governed by the laws of the State of Illinois, U.S.A.

VIII. For Australia Only

This provision applies to products and services supplied by Motorola Solutions to consumers within the meaning of the Australian Consumer Law. This warranty is given by Motorola Solutions Australia Pty Limited (ABN16 004 742 312) of Tally Ho Business Park, 10 Wesley Court. Burwood East, Victoria. Our goods come with guarantees that cannot be excluded under the Australia Consumer Law. For major failures with the service, you are entitled:

● To cancel your service contract with us: and

● To a refund for the unused portion, or to compensation for its reduced value.

You are entitled to choose a replacement or refund for a major failure with goods. If a failure with the goods or service does not amount to a major failure, you are entitled to have the failure rectified in a reasonable time. If this is not done, you are entitled to a refund for the goods, and to cancel the contract for the service and obtain a refund of any unused portion. You are also entitled to be compensated for any other reasonably foreseeable loss or damage from a failure in the goods or service. If you have any queries, please call Motorola Solutions Australia at 1800 457 439. You may also visit our website: https://www.motorolasolutions.com/en_xa/support.html for current warranty terms.