

APX™ TWO-WAY RADIOS

APX 4500 O2 CONTROL HEAD

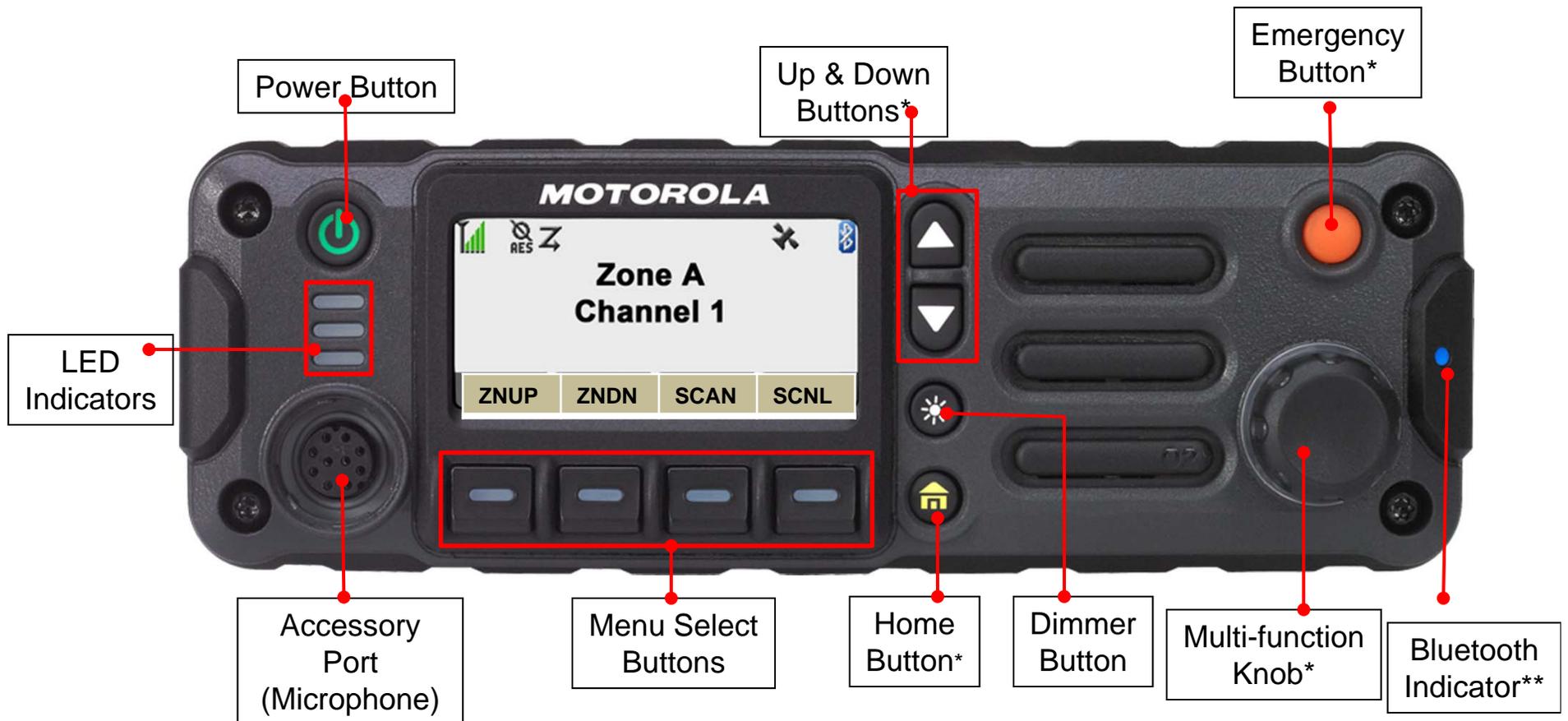
INTERACTIVE END USER TOOLKIT (IEUTK)



Caroline County Fire - Rescue



❑ O2 Control Head



* **These radio controls/buttons are programmable.**

** **Your radio's hardware is Bluetooth ready.** (Check with your dealer or system administrator for more details of all the features supported)

❑ Turning on/off the Radio

Press the **Power Button** briefly to power on the radio.

After a short time, the red, yellow and green LEDs light up. The display then shows Zone and channel text, and menu items display on the screen.

The backlight will turn on to the last selected dim level.

Note:

Pressing the Power Button before the LED lights up will be ignored.

If **FAIL ####** appears in the display, the radio will not function until the condition has been corrected.

If **ERROR ####** appears, some non-critical data has been changed.

If the power-up test is unsuccessful, you see **Error XX/YY** (**XX/YY** is an alphanumeric code).

Turn off the radio, check the battery, and turn the radio back on. If the radio fails the power-up test again, record the **Error XX/YY** code and contact your dealer.

If **CH MISMATCH** appears, means that either the Control Head has been connected to an incompatible transceiver, or vice versa.

If your radio does not power up, contact your dealer.

To turn off the radio, press the **Power Button** after the LEDs light up.



❑ Adjusting the Volume

To increase the volume, rotate the **Multi-function Knob (MFK)** clockwise.

The display shows volume bars and volume level when you change the volume.

To **decrease** the volume, rotate the **Multi-function Knob** counterclockwise.



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

If a CCFR Radio User depresses the **Orange Emergency Button** while operating on a Caroline County Talk Group – the radio will switch to and send its alarm on the FR Dispatch primary talk group **UNLESS**:

The radio is selected on these talk groups:

- Tac 2
- Tac 3
- Tac 4
- Tac 5
- Tac 6
- Tac 7
- Tac 8



Scan – Toggles scan on or off.

Scan List Programming – Selects the scan list for editing.

Select – Selects the assigned list for editing.

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

Zone Down – Toggles downward through the zones in the radio.

Zone Select – Allows selection from a list of zones.

Zone Up – Toggles upward through the zones in the radio.

Assignable Settings or Utility Functions

Channel Announcement – Allows you to hear the Voice Announcement audio file that is assigned to the radio's current channel/mode.

Dimmer – Changes the display brightness.

Backlight – Toggles display backlight on or off.

❑ Accessing the Preprogrammed Functions

Using the Menu Select Buttons

The **Menu Select Buttons** allow to access the menu entries of features.

Note: Check with your dealer or system administrator for the list of features activated in your radio.

Your radio may be preprogrammed differently from the following example, but the steps for selecting a zone may appear as shown below:

- Press the **Menu Select** button () directly below **Zone**.

Using the Navigation Buttons

Home Button

The  button returns you to the Home (default) screen. In most cases, this is the current mode. For selected radio features, the  button is also used to save user-edited radio settings or information before returning you to the Home screen.

Note: Some features do not require you to press  to go to the Home screen. Refer to the individual feature sections in this manual for further details on saving user-edited radio settings or information.

Dimmer Button

Use this button to adjust the brightness of the display.
Long press to toggle between day and night mode.

Up and Down Buttons

By default, the  and  buttons are used as up and down arrow input. These buttons are programmable. They can be programmed to navigate through zones, channels and to increase and decrease the volume of the radio.

Multi-function Knob (MFK)

The **MFK** button on your radio is programmable to the following features :

Mode Change  – Press the **MFK** once and turn clockwise to scroll the channel list.

Volume Change  – Turn the **MFK** clockwise or counterclockwise to adjust the volume level of the speaker.

The volume level can be adjusted in 16 steps or 32 steps. A fast turn of the **MFK** adjusts the volume level in 16 steps with large increments in volume level. A slow turn of the **MFK** adjusts the volume level in 32 steps with small increments in volume level.

The display shows the volume level and bars to indicate the current level. The level of last selected volume when your radio powers down remains the same when the radio powers up.

The main display shows the icon of the secondary feature. The main display does not show the icon of primary feature.

Your radio by default is set to use the primary feature. Short press the **MFK** to toggle it to work on either the secondary or primary feature.

The concentric ring LED on the multi-function knob will blink in green when the knob is set to secondary feature.

The secondary feature has an inactivity timer. This timer starts when the secondary feature is idle. The radio returns to primary feature when the timer expires.

If the **MFK** is set to operate only one feature, it is recommended that it be set to Volume Change.

Consult your dealer or system administrator for the best option available for **MFK**.



❑ Push-To-Talk (PTT) Button

The **PTT** button on the side of the radio serves two basic purposes:

- While a call is in progress, the **PTT** button allows the radio to transmit to other radios in the call.
Press and hold down **PTT** button to talk. Release the **PTT** button to listen.
The microphone is activated when the **PTT** button is pressed.
- While a call is not in progress, the **PTT** button is used to make a new call.

□ Status Icons

The liquid crystal display (LCD) of your radio shows the radio status, text entries, and menu entries.

The following are the icons that appear on the radio's display.



Receiving

Radio is receiving a call or data.



Transmitting

Radio is transmitting a call or data.



Call Received

Radio has received an Individual Call.



Received Signal Strength Indicator (RSSI)

The number of bars displayed represents the received signal strength for the current site, for trunking only. The more stripes in the icon, the stronger the signal.



Direct

- **On** = Radio is currently configured for direct radio to radio communication (during conventional operation only).
- **Off** = Radio is connected with other radios through a repeater.



Monitor (Carrier Squelch)

Selected channel is being monitored (during conventional operation only).



Power Level

- L = Radio is set at Low power.
- H = Radio is set at High power.



Scan

Radio is scanning a scan list.



Priority-One Channel Scan

- **Blinking dot** = Radio detects activity on channel designated as Priority-One.
- **Steady dot** = Radio detects activity on channel designated as Priority-Two.

**User Login Indicator (IP Packet Data)**

- **On** = User is currently associated with the radio.
- **Off** = User is currently not associated with the radio.
- **Blinking** = Device registration or user registration with the server failed due to an invalid username or pin.

**Data Activity**

Data activity is present.

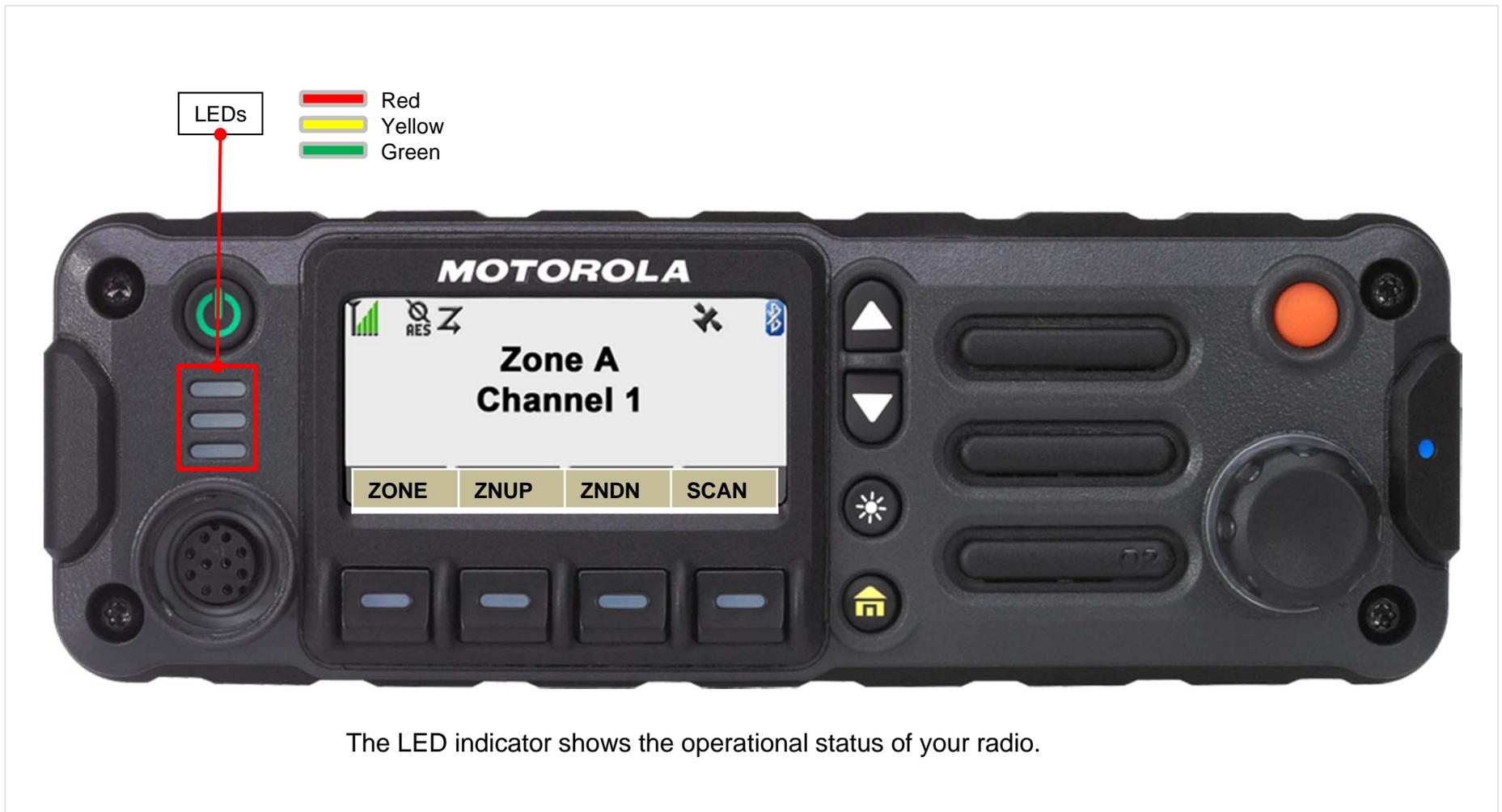
**MFK is in Mode Change feature**

Turn the MFK to change the channel.

**MFK is in Volume Change feature**

Turn the MFK to adjust the volume.

❑ LED Indicator



Solid red – Radio is transmitting.

Blinking red – Radio is transmitting at low battery condition.

Rapidly blinking red – Radio has failed the self test upon powering up or encountered a fatal error.

Solid yellow (Conventional Only) – Channel is busy.

Blinking yellow – Radio is receiving a secured transmission.

Solid green – Radio is powering up, or is on a non-priority channel while in the Scan List Programming mode.

Blinking green – Radio is receiving an individual or telephone call, or is on a Priority-Two channel while in the Scan List Programming mode.

Rapidly blinking green – Radio is on a Priority-One channel while in the Scan List Programming mode.

❑ Intelligent Lighting Indicators

This feature temporarily changes the radio's display backlight color and the alert text background color to help signal that a radio event has occurred.

Note: This feature must be preprogrammed by a qualified radio technician.

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 Man Down Post-Alert timer.
Red	Critical Alerts	The radio battery is low.
		The radio is out of range.
		The radio enters fail-soft 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.

IDENTIFYING STATUS INDICATORS

<p>Orange</p>	<p>Emergency Alerts</p>	 <p>The image shows a Motorola APX 4500 O2 CH radio with a black faceplate. The screen displays 'MOTOROLA' at the top, followed by signal strength, RES, Z, and a Bluetooth icon. Below this, it shows 'Zone A Channel 1' and a prominent orange bar with the text 'Emergency'. At the bottom of the screen, there are four tabs: 'Zone', 'Resp', 'H/L', and 'Call'. The radio's physical buttons and a large rotary knob are visible on the right side.</p>
<p>Red</p>	<p>Critical Alerts</p>	 <p>The image shows a Motorola APX 4500 O2 CH radio with a black faceplate. The screen displays 'MOTOROLA' at the top, followed by signal strength, RES, Z, and a Bluetooth icon. Below this, it shows 'Zone A Channel 1' and a prominent red bar with the text 'Out of Range'. At the bottom of the screen, there are four tabs: 'Zone', 'Resp', 'H/L', and 'Call'. The radio's physical buttons and a large rotary knob are visible on the right side.</p>
<p>Green</p>	<p>Call Alerts</p>	 <p>The image shows a Motorola APX 4500 O2 CH radio with a black faceplate. The screen displays 'MOTOROLA' at the top, followed by signal strength, RES, Z, and a Bluetooth icon. Below this, it shows 'Zone A Channel 1' and a prominent green bar with the text 'Call Received'. At the bottom of the screen, there are four tabs: 'Zone', 'Resp', 'H/L', and 'Call'. The radio's physical buttons and a large rotary knob are visible on the right side.</p>

❑ Multi-function Knob - Concentric Ring LED

The concentric ring LED blinks green when the **MFK** is using the secondary feature. See [Multi-function Knob \(MFK\)](#) to understand the functionality of **MFK**.

If Intelligent Lighting is activated, the concentric ring LED will not blink green when the **MFK** is in the secondary mode. The LED turns into solid color of orange, red or green depending on the status of Intelligent Lighting.



❑ Selecting a Zone

A zone is a group of channels.

Procedure:

Up and Down Buttons

Press the Up or Down button to change Zones

[Menu]

DEMO

- 1 Press the **Menu Select** button directly below **ZNUP** or **ZNDN**.
- 2 ▲ or ▼ to the required zone.
OR
Rotate the **MFK** to the desired zone.
- 3 Press the **Menu Select** button directly below **Sel** to confirm the displayed zone.
- 4 Press the **PTT** button to transmit on the displayed zone.

❑ Selecting a Radio Channel

A channel is a group of radio characteristics, such as transmit/receive frequency pairs.

Procedure:

[MFK]

Quick press the MFK to go to channel mode

- 1 Turn the **MFK** until the display shows the desired channel.
- 2 Press the **PTT** button to transmit on the displayed channel.

If channel is not set as the primary mode, press the **MFK** once and repeat step 1.

❑ 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 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.



❑ Scan Lists

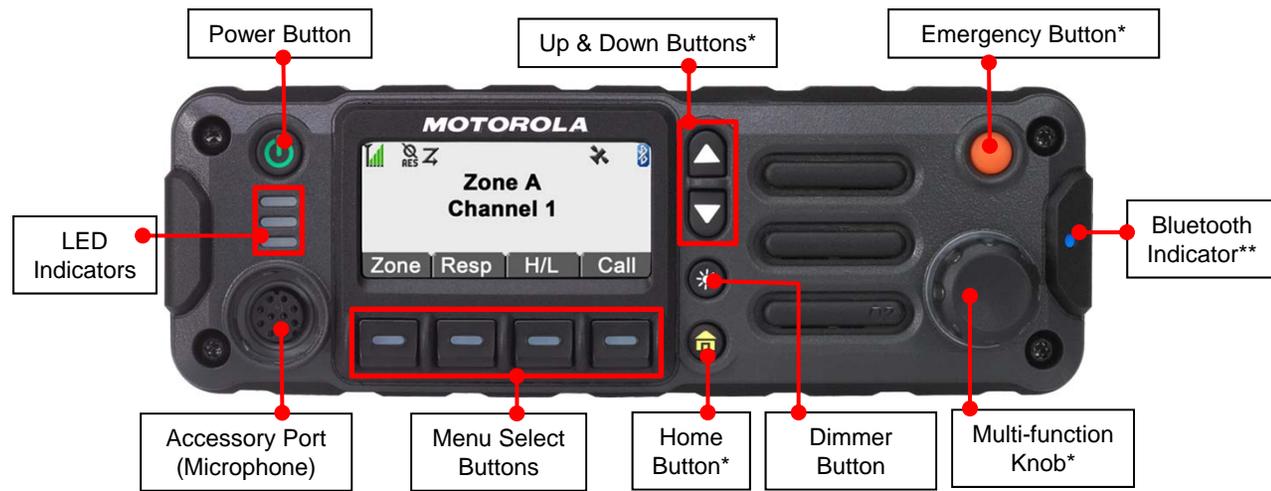
Scan lists are created and assigned to individual channels/groups.

Your radio scans for voice activity by cycling through the channel/group sequence specified in the scan list for the current channel/group.

Your radio supports different types of Scan Lists:

- Trunking Priority Monitor Scan List
- Conventional Scan List
- Talkgroup Scan List

A maximum of 200 Scan Lists can be programmed in your radio.
These lists must be preprogrammed by a qualified radio technician.



☐ Scan Lists

Viewing a Scan List

Procedure:

- 1 Press the button under SCNL.
- 2 ▲ or ▼ to view the members on the list.
- 4 Press 🏠 to exit the current display and return to the Home screen.

NOTE – for Caroline Fire and Rescue radios

The Fire Rescue Dispatch Talk Group is set as the #1 priority in scanning. The selected talk group is #2

CCFR radios will NOT scan non-trunked channels, including the Fire Rescue Talk Around (FR T/A) channel



☐ Scan Lists

Editing the Scan List

This feature lets you change scan list members.

Procedure:



- 1 Press the button under **SCNL** .
- 2 ▲ Or ▼ to the entry you want to edit.
- 3 Press the **Menu Select** button directly below **Sel** to add and/ or change the priority of the currently displayed channel in the scan list.
OR
Press the **Menu Select** button directly below **Del** to delete the currently displayed channel from the scan list.
OR
Press the **Menu Select** button directly below **Rcl** to view the next member of the scan list.

- 4 ▲ Or ▼ to select more channels to be added or deleted.
OR
Use the **MFK** to select additional channels to be added or deleted.
OR
Use the keypad to go directly to additional channels to be added or deleted.
- 5 Press  to exit scan list programming and return to the Home screen.

☐ Scan

Turning Scan On or Off

This feature allows you to monitor traffic on different channels by scanning a preprogrammed list of channels.

Procedure:

[Menu]

1 Press the button under **Scan**

*The display shows **Scan off** if scan is disabled.*

Press the **Menu Select** button directly below **Scan** to enable scan.

OR

*The display shows **Scan on** and the scan status icon if scan is enabled.*

Press the **Menu Select** button directly below **Scan** to disable scan.

The radio returns to the Home screen.



❑ Emergency Operation

The Emergency feature is used to indicate a critical situation.

If the **Orange** button is preprogrammed to send an emergency signal, this signal overrides any other communication over the selected channel.

Your radio supports the following Emergency modes:

- Emergency Call (Trunking Only)
- Emergency Alarm with Emergency Call
- Special Considerations for Emergencies

Check with your dealer or system administrator for more information on the programming of this feature.

Only **one** of the Emergency modes above can be assigned to the preprogrammed **Emergency** button or the **Emergency** footswitch.

Note: To exit emergency at any time, press and hold the preprogrammed **Emergency** button for about a second.



❑ Emergency Operation

Sending an Emergency Alarm

This feature allows you to send a data transmission, which identifies the radio sending the emergency, to the dispatcher.

Procedure:

DEMO

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

*You hear a short medium-pitched tone and the display shows **Emergency** and the current zone or channel.*

OR

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

*When you receive the dispatcher's acknowledgment, the display shows **Ack received**.*

You hear four tones, and the radio exits the Emergency Alarm mode.

OR

If no acknowledgement is received until the timer expires, the radio exits the Emergency Alarm mode.

Note: The alarm which shown on the radios of initiator and receivers turns off after the timer expires.

NOTE: Sheriff- You must press and hold the Emergency button for .5 seconds to activate. Your radios microphone will auto transmit for 10 seconds.

Fire- You must press and hold the Emergency button for 1.5 seconds to activate. **NO AUTO Transmit**



□ Emergency Operation

Sending an Emergency Alarm with Emergency Call

This feature allows you to send an Emergency Alarm to another radio. Upon acknowledgement, both radios can communicate over a preprogrammed Emergency channel.

If the radio has both emergency call and alarm features enabled, it automatically proceeds to the call mode after the alarm is acknowledged.

Procedure:

A green rectangular button with the word "DEMO" in white capital letters.

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

*You hear a short medium-pitched tone and the display shows **Emergency** and the current zone or channel.*

OR

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

*When you receive the dispatcher's acknowledgment, the display shows **Ack received**.*

You hear four tones, and the radio exits the Emergency Alarm mode then enters the Emergency Call mode.

- 2 Press and hold the **PTT** button.
Speak clearly into the microphone.
- 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 the radio off also cancels the emergency state.

❑ Emergency Operation

Special Considerations for Emergencies

- If you press the emergency button while in a channel that has no emergency capability, a low-pitched tone sounds.
- If the unit is out of the range of the system and/or the emergency alarm is not acknowledged, a tone sounds and the display shows **No acknowledge**.
- If you press the emergency button, then change to a mode that has no emergency capability, the display shows **No emergency** and a continuous low-pitched tone sounds until a valid emergency mode is selected or until the emergency is cancelled.
- When an emergency is active, changing to another mode where emergency is enabled (trunked or conventional) causes an emergency alarm and/or emergency call to be active on the new mode.



❑ Trunking System Controls

Going Out of Range

Out of range when your radio goes out of the range of the system, it can no longer lock onto a control channel.

Procedure:

DEMO

1 You hear a low-pitched tone.

AND/OR

The display shows the currently selected zone/channel combination and **Out of range**.

Your radio remains in this out-of-range condition until:

It locks onto a control channel.

OR

It locks onto a fail-soft channel.

OR

It is turned off.



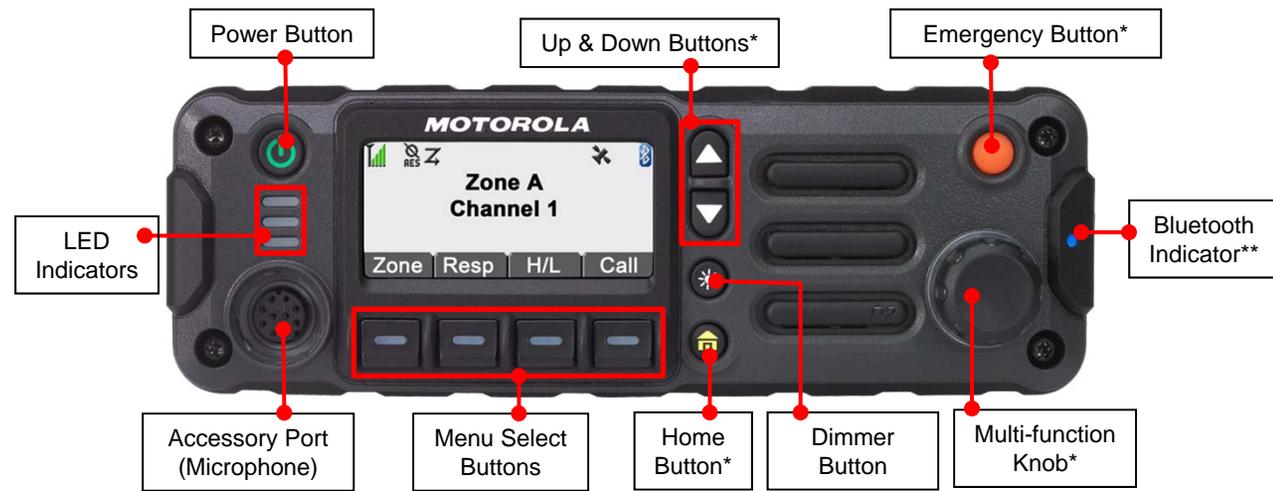
❑ Trunking System Controls

Using the Site Trunking Feature

If the zone controller loses communication with any site, that site reverts to site trunking.

The display shows the currently selected zone/channel combination and **SITE TRUNKING**.

Note: When this occurs, you can communicate only with other radios within your trunking site.



❑ Controlling the Display Backlight

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

Depending on how your radio is preprogrammed, you can also maintain a minimum backlight level on the radio's display.

Procedure:

- 1 Press the **Dimmer** button to adjust the brightness of the display.
Long press to toggle between day and night mode.



❑ Using the Time-Out Timer

This feature turns off your radio's transmitter. 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 3 to 120 seconds, in 15-second intervals, or it can be disabled entirely for each radio mode, by a qualified radio technician.

Note: You will 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 short, low-pitched warning tone, the transmission is cut-off, and the LED goes out until you release the **PTT** button.*
- 2 Release the **PTT** button.
The LEDs relight and the timer resets.
- 3 Press the **PTT** button to re-transmit.
The time-out timer restarts and the LED lights up solid red.