



APX™ Two-Way Radios



BERKS COUNTY



APX™ 6500  
05 Control Head





This declaration is applicable to your radio only if your radio is labeled with the FCC logo shown below.

## DECLARATION OF CONFORMITY

Per FCC CFR 47 Part 2 Section 2.1077(a)



### Responsible Party

Name: Motorola Solutions, Inc.

Address: Motorola Solutions, Inc., 1303 East Algonquin Road Schaumburg, IL60196, U.S.A.

Phone Number: 1-800-927-2744

Hereby declares that the product:

Model Name: **APX 4500**

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/TV technician for help.

**Additional FCC Notes to Users**

The following FCC information applies to Bluetooth radio options

**IC Model Name:** PMHN4193A

**Description:** O2 Bluetooth Option Board

**FCC ID:** AZ492FT6002

**IC:** 109U-92FT6002

**Conforms to the following regulations:** FCC Part 15, Section 15.19, 15.12, and 15.105

**Note:** Changes or modifications not expressly approved by Motorola may void the users authority, as authorized by the FCC, to operate this device and should not be made. See 47 CFR Part 15.21. Information to user. The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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. See 47 CFR Part. 15.19(3).

This device has been tested and found to comply with the limits of Part 15.15 of the FCC rules. Parties responsible for equipment compliance should note that the limits specified in this part will not prevent harmful interference under all circumstances.

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. See Part 15.105b 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/TV technician for help.

**Industry Canada (IC) Statements:**

This Class B digital apparatus complies with ICES-003 and Radio Standards Specification (RSS) 210.



Before using this product, read the operating instructions for safe usage contained in the Product Safety and RF Exposure booklet enclosed with your radio.

## ATTENTION **Caution**

**This radio is restricted to occupational use only to satisfy FCC RF energy exposure requirements.**

Before using this product, read the RF energy awareness information and operating instructions in the Product Safety and RF Exposure booklet enclosed with your radio (Motorola Publication part number 6881095C99) to ensure compliance with RF energy exposure limits.

For a list of Motorola-approved antennas and other accessories, visit the following website: <http://www.motorola.com/APX>



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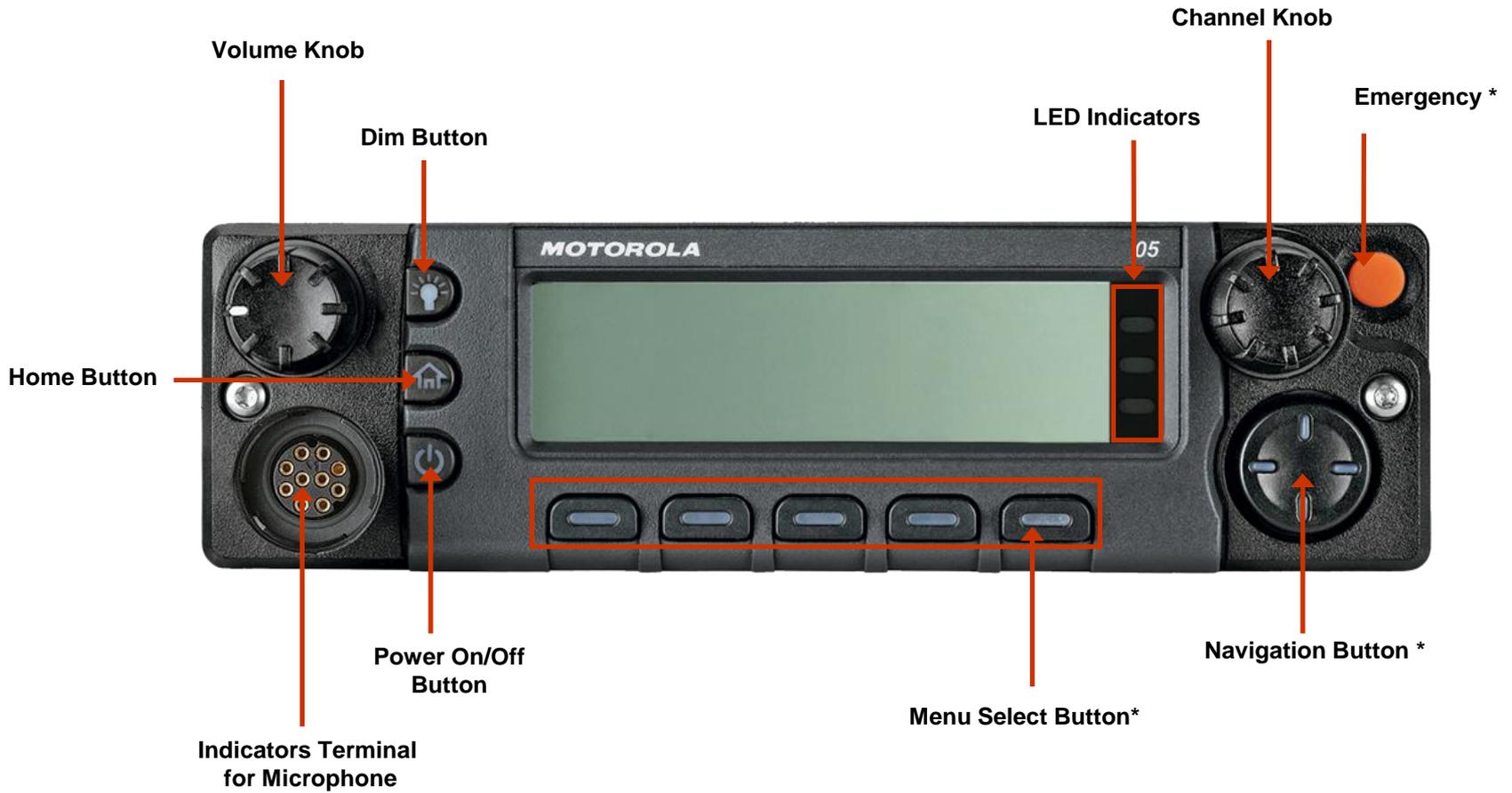
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The following special notations identify certain items:

Example	Description
<b>Home</b> button or 	Buttons and keys are shown in bold print or as an icon.
<b>ZONE</b>	Menu entries are shown similar to the way they appear on the radio's display.
	This means "Press the right side of the 4-way Navigation button."



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



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



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



## □ Turning on the Radio

Press the **Power On/Off 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 On/Off 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 **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 On/Off Button** after the LEDs light up.*





❑ Validating Compatibility During Power Up

The radio validates and updates the software and hardware of your control head(s) during power up. Follow the procedure below when your radio runs this task.

1 The display shows **MAINTENANCE MODE REMOTE DEVICE**; promptly followed by other maintenance statuses.

2 The display shows **UPDATE DONE PLEASE RESET** upon completion.

**OR**

The display shows **UPDATE FAILED PLEASE RESET** when it fails to update.

3 Press the **Power On/Off Button** to reset. The radio runs the usual power up operation if the software update are complete.

**OR**

The radio runs the Maintenance Mode if the update is not complete and repeat step 1.

**Note:** If **SW INCOMPLETE** appears, use Flashport Recovery Tool to update the control heads before you power on the radio again.





## □ Adjusting the Volume

To increase the volume, rotate the **Volume Knob** clockwise to increase the volume.

To decrease the volume, rotate the **Volume Knob** counterclockwise.





## □ Programmable Features

Any reference in this manual to a control that is “preprogrammed” means that the control must be programmed by a dealer or qualified radio technician using the radio's programming software, in order to assign a feature to that control.

The programmable buttons can be programmed as shortcuts to radio functions or preset channels/groups depending on the duration of a button press:

- Press – Pressing and releasing rapidly.
- Long press – Pressing and holding for the preprogrammed duration (between 0.25 seconds and 3.75 seconds).
- Hold down – Keeping the button pressed.



## ❑ Accessing the Preprogrammed Functions

You can access various radio functions through one of the following ways:

- A short or long press of the relevant programmable buttons.

**OR**

- Use the **Menu Select Button** (  ).

### 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 channel may appear as shown below:

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

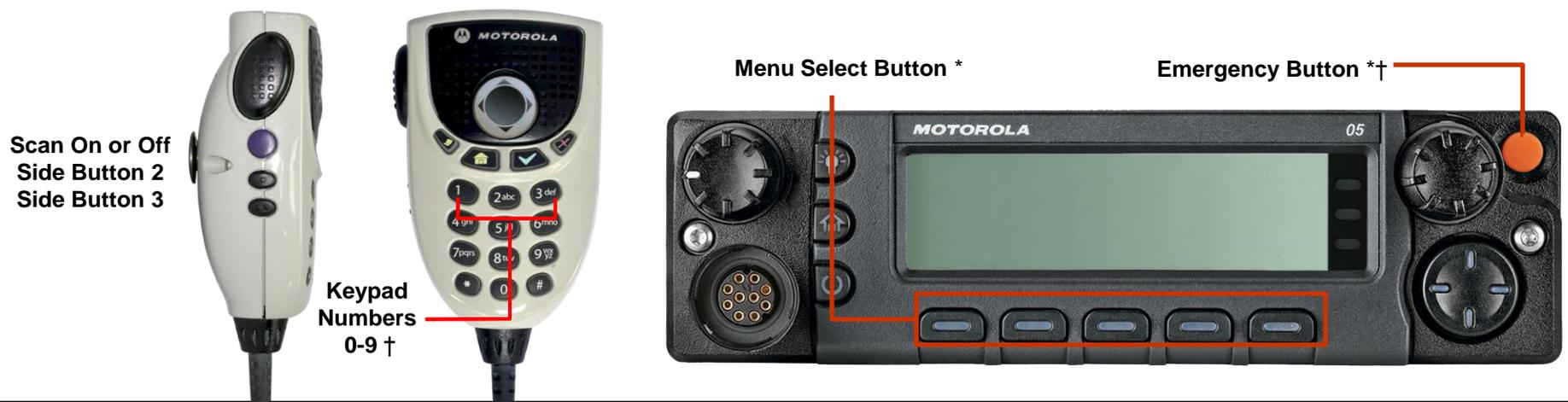




## ❑ Accessing the Preprogrammed Functions (2/3)

### ❑ Using the Advance Programmable Buttons

**Mode Select Button** – Programs the current zone and channel to a Mode Select button with a long press on the Mode Select button. After the buttons are programmed, you can return to the preprogrammed zone and channel with a short press on the programmed Mode Select button.





## □ Accessing the Preprogrammed Functions (3/3)

### □ Using the Navigation Buttons

#### **Home Button**

The  button returns you to the home (default) display. 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.

The  button also can revert to home channel. Check with your dealer or system administrator for more information.

#### **Data Feature Button (Not Programmed)**

Use this button to access data-related features, such as the Text Messaging Service (TMS) feature screen.

#### **4-Way Navigation Button**

Use this button to scroll through the radio's lists or items in the display, or both.

#### **Volume Knob**

Use this Volume Knob to adjust the volume of the speakers by turning it clockwise or counterclockwise.

#### **Channel Knob**

Use this Channel Knob to scroll the channels by turning it clockwise or counterclockwise.



Extra page intentionally inserted.



## Using the Keypad (1/4)

You can use the 3 x 4 alphanumeric keypad to access your radio's features. The keypad functions in a manner similar to a standard telephone keypad when entering numeric digits. When the keypad is used to edit a list, each key can generate different characters of the alphabet. The tables below show the number of times a key needs to be pressed to generate the required character.

### Keypad Characters – Uppercase Mode

Key	Number of Times Key is Pressed																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	.	,	?	!	;	@	_	-	*	#	&	\$	/	+	=	\	"	(	)
2 abc	A	B	C																	
3 def	D	E	F																	
4 ghi	G	H	I																	
5 jkl	J	K	L																	
6 mno	M	N	O																	
7 pqrs	P	Q	R	S																
8 tuv	T	U	V																	
9 wx yz	W	X	Y	Z																
0	Toggle between mixed case mode, uppercase mode, and lowercase mode.																			
*	Space																			
#	Toggle between numeric and letter mode.																			



Using the Keypad (2/4)

Keypad Characters – Lowercase Mode

Key	Number of Times Key is Pressed																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	.	,	?	!	;	@	_	-	*	#	&	\$	/	+	=	\	"	(	)
2 abc	a	b	c																	
3 def	d	e	f																	
4 ghi	g	h	i																	
5 jkl	j	k	l																	
6 mno	m	n	o																	
7 pqrs	p	q	r	s																
8 tuv	t	u	v																	
9 wx yz	w	x	y	z																
0	Toggle between mixed case mode, uppercase mode, and lowercase mode.																			
*	Space																			
#	Toggle between numeric and letter mode.																			



Using the Keypad (3/4)

Keypad Characters – Numeric Mode

Key	Number of Times Key is Pressed																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	1	.	,	?	!	;	@	_	-	*	#	&	\$	/	+	=	\	"	(	)
2 abc	2																			
3 def	3																			
4 ghi	4																			
5 jkl	5																			
6 mno	6																			
7 pqrs	7																			
8 tuv	8																			
9 wx yz	9																			
0	0																			
*	Space																			
#	Toggle between numeric and letter mode.																			



❑ Using the Keypad (4/4)

**Keypad Characters – Hexadecimal Mode**

Key	Number of Times Key is Pressed																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1	1																				
2 abc	2	A	B	C																	
3 def	3	D	E	F																	
4 ghi	4																				
5 jkl	5																				
6 mno	6																				
7 pqrs	7																				
8 tuv	8																				
9 wx yz	9																				
0	0																				
*	Not applicable																				
#	Not applicable																				



### ❑ Push-To-Talk (PTT) Button

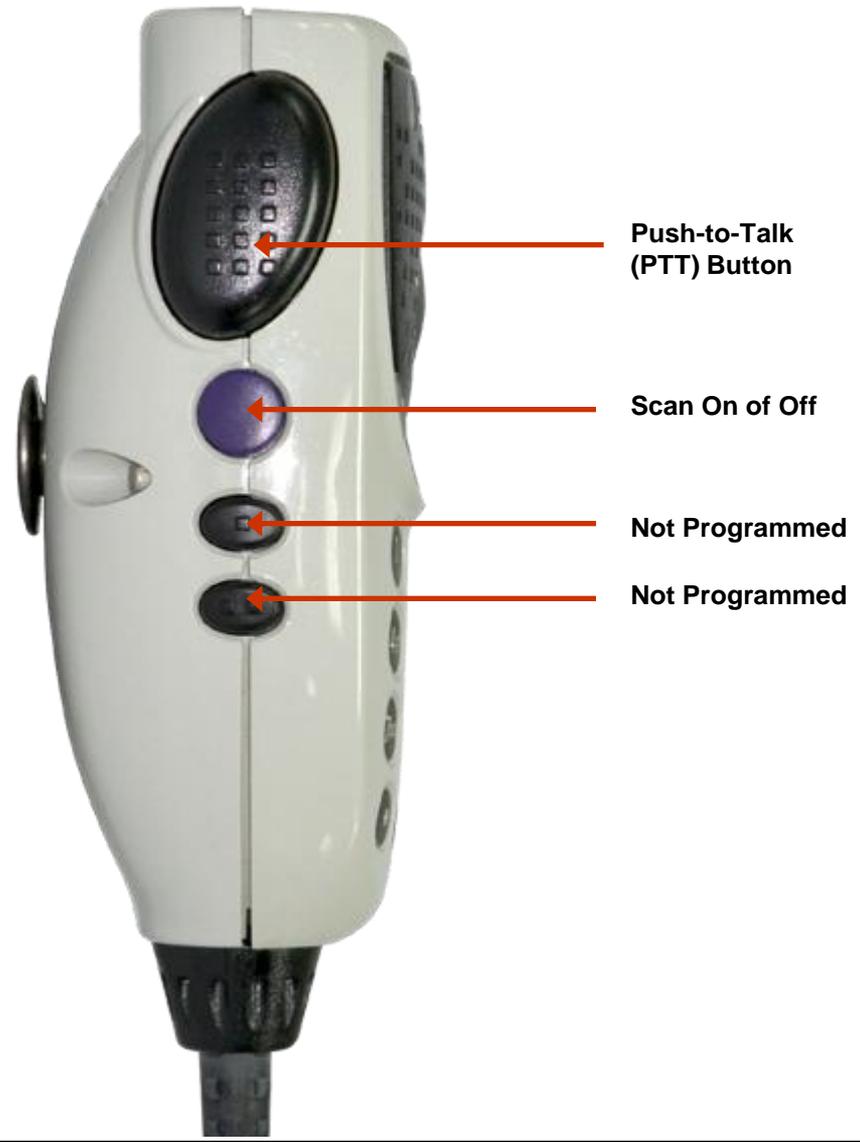
The **PTT** button on the side of the microphone serves two basic purposes:

- 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

	<b>Receiving</b> Radio is receiving a call or data.
	<b>Transmitting</b> Radio is transmitting a call or data.
	<b>Call Received</b> Radio has received an Individual Call.
	<b>Received Signal Strength Indicator (RSSI)</b> 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.
	<b>Direct</b> <ul style="list-style-type: none"> <li>• <b>On</b> = Radio is currently configured for direct radio to radio communication (during conventional operation only).</li> <li>• <b>Off</b> = Radio is connected with other radios through a repeater.</li> </ul>
	<b>Power Level</b> <ul style="list-style-type: none"> <li>• <b>L</b> = Radio is set at Low power.</li> <li>• <b>H</b> = Radio is set at High power.</li> </ul>
	<b>Priority-One Channel Scan</b> <ul style="list-style-type: none"> <li>• <b>Blinking dot</b> = Radio detects activity on channel designated as Priority-One.</li> <li>• <b>Steady dot</b> = Radio detects activity on channel designated as Priority-Two.</li> </ul>

	<b>Scan</b> Radio is scanning a scan list.
	<b>User Login Indicator (IP Packet Data)</b> <ul style="list-style-type: none"> <li>• <b>On</b> = User is currently associated with the radio.</li> <li>• <b>Off</b> = User is currently not associated with the radio.</li> <li>• <b>Blinking</b> = Device registration or user registration with the server failed due to an invalid username or pin.</li> </ul>
	<b>Secure Operation</b> <ul style="list-style-type: none"> <li>• <b>On</b> = Secure operation.</li> <li>• <b>Off</b> = Clear operation.</li> <li>• <b>Blinking</b> = Receiving an encrypted voice call.</li> </ul>
	<b>Data Activity</b> Data activity is present.
	<b>View/Program Mode</b> Radio is in the view or program mode. <ul style="list-style-type: none"> <li>• <b>On steady</b> = View mode</li> <li>• <b>Blinking</b> = Program mode</li> </ul>



## LED Indicators

The LED indicator shows the operational status of your radio.

<b>Solid red</b>	Radio is transmitting.
<b>Rapidly blinking red</b>	Radio has failed the self test upon powering up or encountered a fatal error.
<b>Solid yellow</b>	Channel is busy.
<b>Blinking yellow</b>	Radio is receiving a secured transmission.
<b>Solid green</b>	Radio is powering up, or is on a non-priority channel while in the Scan List Programming mode.
<b>Blinking green</b>	Radio is receiving an individual or telephone call, or is on a Priority-Two channel while in the Scan List Programming mode.
<b>Rapidly blinking green</b>	Radio is on a Priority-One channel while in the Scan List Programming mode.





## □ Intelligent Lighting Indicators

This feature temporary changes the backlight of the top display screen and the keypad, and adds a color bar to the main display screen to help signal that a radio event has occurred.

Backlight and Bar Color	Notification	When
<b>Orange</b>	<b>Emergency Alerts</b>	The radio initiates an emergency alarm or call.
		The radio receives an emergency alarm or call.
<b>Red</b>	<b>Critical Alerts</b>	The radio is out of range.
		The radio enters failsoft mode.
		The radio is unable to establish a full connection with the system.
<b>Green</b>	<b>Call Alerts</b>	The radio receives a private call.
		The radio receives a call alert.



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☐ Alert Tones

An alert tone is a sound or group of sounds. Your radio uses alert tones to inform you of your radio's conditions. The following table lists these tones and when they occur.

You Hear	Tone Name	Heard
<p><b>Short, Low-Pitched Tone</b></p>  <p><b>Play</b></p>	Radio Self Test Fail	When radio fails its power-up self test.
	Reject	When unauthorized request is made.
	Time-Out Timer Warning	Four seconds before time out.
	No ACK Received	When radio fails to receive an acknowledgment.
	Individual Call Warning Tone	When radio is in an individual call for greater than 6 seconds without any activity.
	Talk Prohibit/ <b>PTT</b> Inhibit	(When <b>PTT</b> button is pressed) transmissions are not allowed.
<p><b>Long, Low-Pitched Tone</b></p>  <p><b>Play</b></p>	Time-Out Timer Timed Out	After time out.
	Out of Range	(When <b>PTT</b> button is pressed) the radio is out of range of the system.
	Invalid Mode	When radio is on an unprogrammed channel.
<p><b>A Group of Low-Pitched Tones</b></p>  <p><b>Play</b></p>	Busy	When system is busy.



You Hear	Tone Name	Heard
<p><b>Short, Medium-Pitched Tone</b></p>  <p><b>Play</b></p>	Valid Key-Press	When 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 Entry	When entering the emergency state.
	Central Echo	When central controller has received a request from a radio.
<p><b>Long, Medium-Pitched Tone</b></p>  <p><b>Play</b></p>	Volume Set	When volume is changed on a quiet channel.
	Emergency Exit	When exiting the emergency state.
<p><b>A Group of Medium-Pitched Tones</b></p>  <p><b>Play</b></p>	Fail-soft	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.
	Call Alert Sent	When Call Alert is received by the target radio.



You Hear	Tone Name	Heard
<p><b>Ringing</b></p>  <p><b>Play</b></p>	Fast Ringing	When system is searching for target of Private Call.
	Enhanced Call Sent	When waiting for target of Private Call to answer the call.
	Phone Call Received	When a land-to-mobile phone call is received.
<p><b>Gurgle</b></p>  <p><b>Play</b></p>	Dynamic Regrouping	(When the <b>PTT</b> button is pressed) a dynamic ID has been received.
	Talk Permit	(When <b>PTT</b> button is pressed) verifying system accepting transmissions.
<p><b>Unique, Low-Pitched Chirp</b></p>	New Message	When a new message is received.
<p><b>Unique, High-Pitched Chirp</b></p>	Priority Status	When a priority message is received.



- Selecting a Zone**
- Selecting a Radio Channel**
- Receiving and Responding to a Radio Call**
  - Receiving and Responding to a Talkgroup Call
  - Receiving and Responding to a Private Call (Trunking Only, Digital Mode Only)
- Making a Radio Call**
- Repeater or Direct Operation**



**Zones and Channels**

Channels	Zone1	Zone2	Zone3	Zone4	Zone5	Zone6
1	BrksEMS	BrksALSHail	Fire Pol CW	BrksFTCTrg1	BrksFTCTrg1	BrksPW R 1
2	BrksEMSOps 1	BrksALSPtch1	FP Ops N1	BrksFTCTrg2	BrksFTCTrg2	BrksPW R 2
3	BrksEMSOps 2	BrksALSPtch2	FP Ops N2	BrksFTCAdmin	BrksFirTrgN1	BrksPW R 3
4	BrksEMSAadm1	BrksALSPtch3	FP Ops S1	BrksFirTrgN1	BrksFirTrgN2	BrksPW R 4
5	BrksEMSAadm2	RHTCBLSPtch1	FP Ops S2	BrksFirTrgN2	BrksFirTrgS1	BrksPW R 5
6	Rdg EMSDisp	RHTCBLSPtch2	BrksFireA	BrksFirTrgS1	BrksFirTrgS2	BrksPW R 6
7	Rdg EMSOps1	SJMCBLSPtch1	BrksFireB	BrksFirTrgS2	BrksExerCW	BrksPW R 7
8	Rdg EMSOps2	SJMCBLSPtch2	BrksFirOps 1	BrksExerCW	BLANK	BrksPW R 8
9	BrksFireA	PotsBLSPtch1	BrksFirOps 2	BLANK	BLANK	BrksPW R 9
10	BrksFireB	FlightOps 1	BrksFirOps 3	BLANK	BLANK	BrksPW R 10
11	BrksFirOps 1	FlightOps 2	BrksFirOps 4	BLANK	BLANK	BrksPW R 11
12	BrksFirOps 2	BLANK	BrksFirOps 5	Rdg EMSDisp	Rdg EMSDisp	BrksPW R 12
13	BrksFirOps 3	BLANK	BrksFirOps 6	Rdg FireDisp	Rdg FireDisp	BksPWInrtaOp
14	Fire/EMSDisp	Fire/EMSDisp	Fire/EMSDisp	Fire/EMSDisp	Fire/EMSDisp	Fire/EMSDisp
15	CWIntraOp	CWIntraOp	CWIntraOp	CWIntraOp	CWIntraOp	CWIntraOp
16	County EMERG					



## ❑ Selecting a Zone

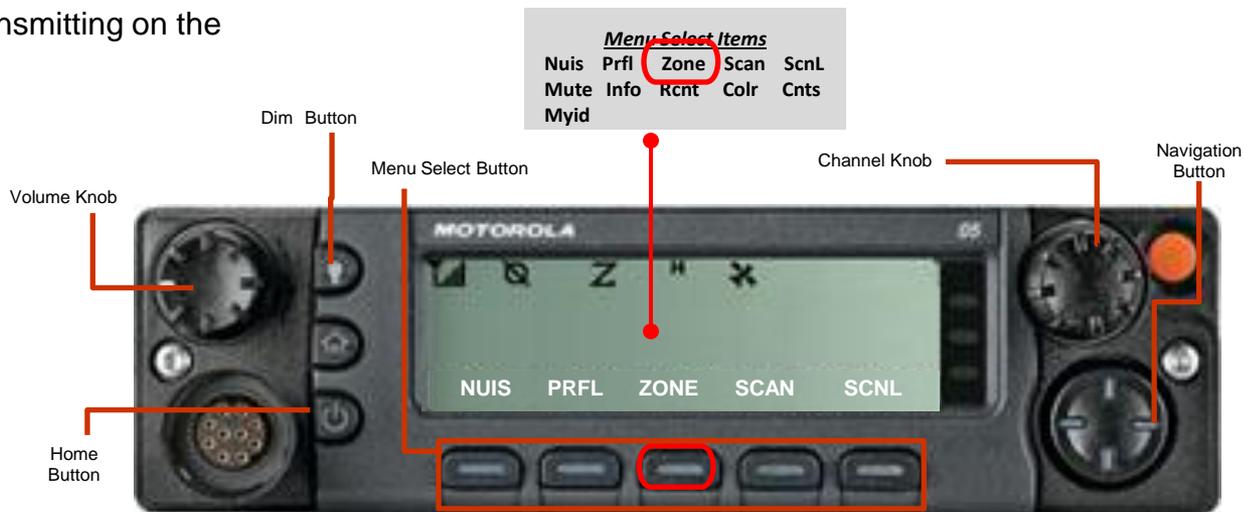
A zone is a group of channels.

**Note:** Your radio must be preprogrammed to allow you to use these features.

- 1 ◀ or ▶ to **ZONE**.
- 2 Press the **Menu Select** button directly below **ZONE**.  
The display shows the current zone and channel.
- 3 ◀ or ▶ button until the desired zone is displayed.
- 4 Press or the **PTT** button to confirm the selected zone number.
- 5 Press the **PTT** button to begin transmitting on the displayed zone channel.

OR

Use the **Zone Up** and **Zone Down** on the Navigation Button (on either the control head or the keypad microphone) to change Zones.





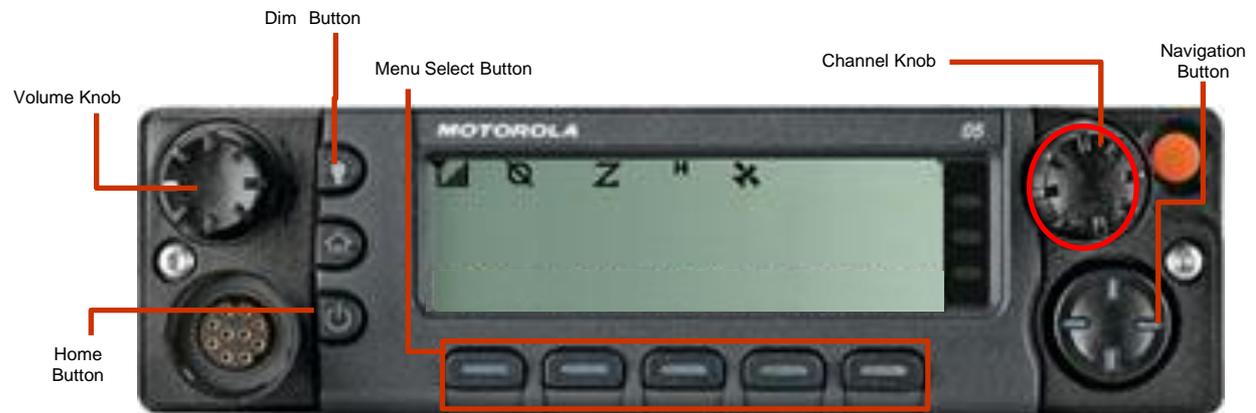
## ❑ Selecting a Radio Channel

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

**Note:** Your radio must be preprogrammed to allow you to use this feature. If you select a channel that is not within the preprogrammed band, the radio indicates that it is on an unsupported frequency with both audio and visual warnings.

Consult a qualified radio technician for the right choice between the following methods.

Rotate the **Channel knob** until the display shows the desired channel.





## Using Mode Select Feature

Mode Select allows a long press to save your radio's current zone and channel to a keypad button; then once programmed, the short-press of that button or soft key jumps the transmission to the saved zone and channel.

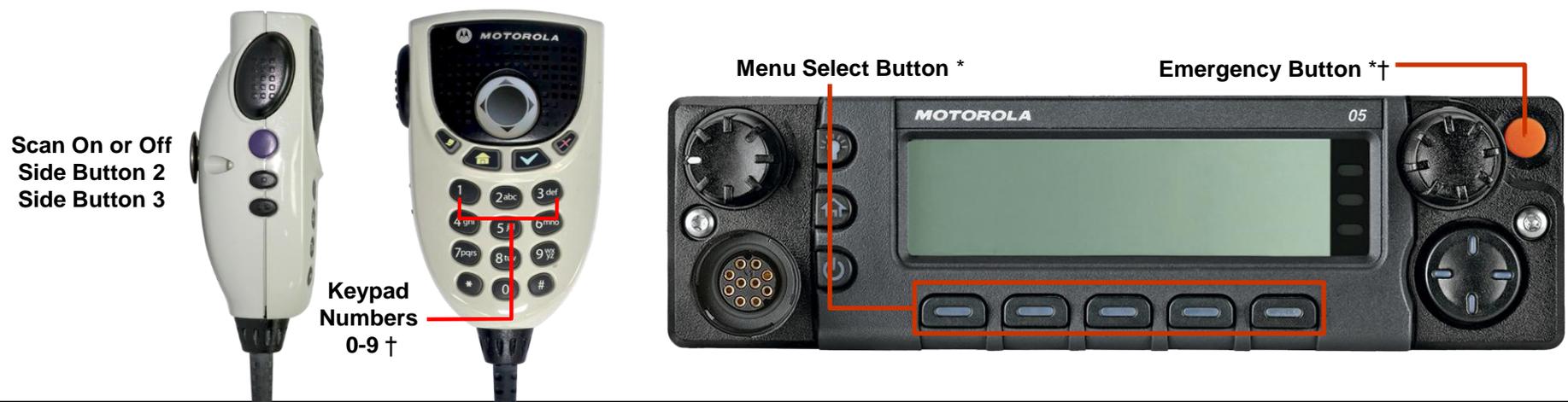
All the programmable buttons and keypad digit 0 to 9 buttons allow you to save the frequent used zone and channel.

Procedure:

- 1 Toggle your zone and channel to the required zone and channel.
- 2 Press and hold the digit button you desire to program. You hear a short, medium-pitched tone when the zone and channel is saved.

Note: Repeat this procedure to change the zone and channel of the programmed button.

Short press of the programmed button changes your current transmission to the zone and channel programmed in this button.





## ❑ 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.

*You see solid red while the radio is transmitting, and solid yellow when the radio is receiving a transmission (conventional mode only). There is no LED indication when the radio receives a transmission in trunking mode.*

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



## ❑ Receiving and Responding to a Talkgroup Call

To receive a call from a group of users, your radio must be configured as part of that talkgroup.

When you receive a talkgroup call (while on the Home screen), depending on how your radio is preprogrammed:

### 1 **ASTRO Conventional Only:**

The LED lights up solid yellow. The display shows the talkgroup alias or ID, and the caller alias or ID.

**OR**

### **Trunking Only:**

The display shows the caller alias or ID.

- 2 Hold the microphone vertically 1 to 2 inches (2.5 to 5.0 cm) from your mouth.
- 3 Press the **PTT** button to respond to the call. The LED lights up solid red.
- 4 Release the **PTT** button to listen.





## ❑ Receiving and Responding to a Private Call (Trunking, Digital Mode Only)

A Private Call is a call from an individual radio to another individual radio.

These one-to-one calls between two radios are not heard by others in the current talkgroup. The calling radio automatically verifies that the receiving radio is active on the system and can display the caller ID.

When you receive a Private Call:

- 1 You hear two alert tones and the LED blinks green. The display shows **CALL RECEIVED** and the caller alias or ID.
- 2 Press the **Menu Select** button directly below **RESP** within 20 seconds after the call indicators begin.
- 3 During the call, the display shows the caller alias (name), if it is in the call list.  
**OR**  
During the call, the display shows the caller ID (number), if the caller's name is not in the call list.





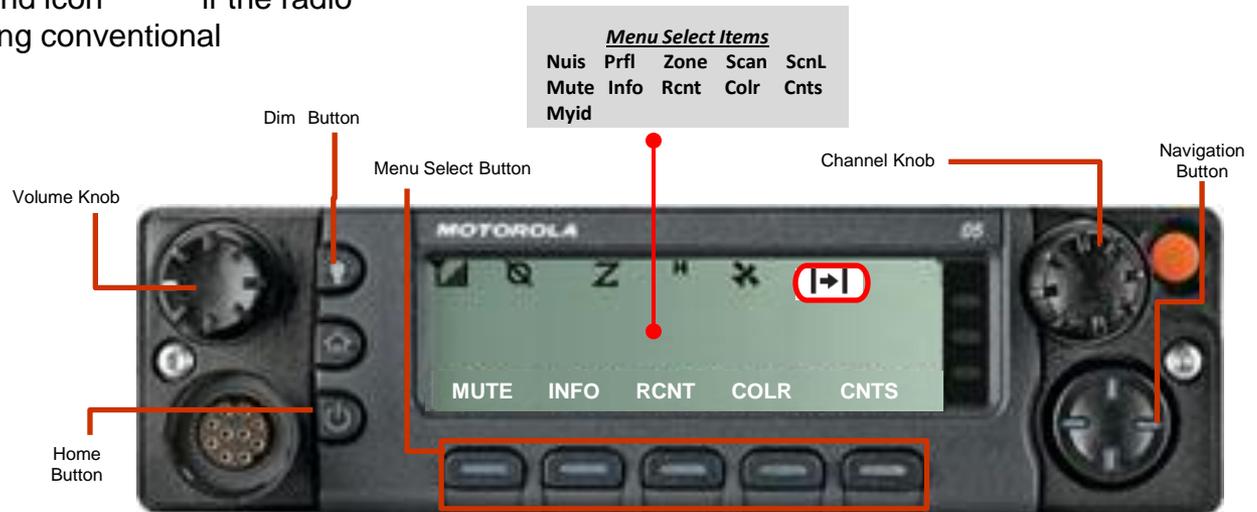
## ❑ Repeater or Direct Operation

The **REPEATER** operation increases the radio's range 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.

Move the 16-Position Channel/Talkgroup Select to a preprogrammed **Direct** channel in the radio to talk in a direct/talkaround mode.

The display shows the Talkaround icon  if the radio is currently in Direct mode (during conventional operation only).





- ❑ **Advanced Call Features**
- ❑ **Contacts**
  - Adding a New Contact Entry
  - Deleting a Contact Entry
  - Adding a Contact to a Call List or Phone List
  - Editing a Contact in a Call List
    - Editing an Entry Alias
    - Editing as Entry ID
    - Editing a Call Type
- ❑ **Scan Lists**
  - Viewing a Scan List
  - Editing the Scan List
  - Changing the Scan List Status
  - Viewing and Changing the Priority Status
- ❑ **Scan**
  - Turning Scan On or Off
  - Transmitting While the Scan is On
    - Radio Programmed for Talkback Scan
    - Radio Programmed for Non-Talkback Scan
  - Deleting a Nuisance Channel
  - Restoring a Nuisance Channel
- ❑ **Call Alert Paging**
  - Answering a Call Alert
- ❑ **Emergency Operation**
  - Sending an Emergency Alarm with Emergency Call
  - Special Considerations for Emergencies
- ❑ **Secure Operations**
  - Selecting Secure Transmissions
- ❑ **Trunking System Controls**
  - Using the Failsoft System
  - Going Out of Range
  - Trunked Announcement
    - Initiating an Announcement



## □ Utilities

- Viewing the Recent Calls List
- Selecting a Radio Profile
- Enabling and Disabling the Radio Alias
- Controlling the Display Backlight
- Changing the Display Color
- Turning Keypad Tones On or Off
- Using the Time-Out Timer
- Using the Digital PTT ID Feature
- Accessing the General Radio Information
  - Accessing the Radio Information
  - Viewing the IP Information
  - Viewing the Control Assignments
  - Editing the Soft ID
- Voice Announcement



## ☐ Contacts

This feature provides “address-book” capabilities on your radio.

Each entry corresponds to an alias (name) or ID (number) that you use to initiate a call.

Contact entries are alphabetically sorted according to entry alias. Each alias can have up to 5 IDs of different call types associated with it.

Additionally, each entry, depending on context (conventional, trunking, or phone), associates with Private Call, or Call Alert.

Each entry within Contacts displays the following information:

- Call Alias (Name)
- Call ID (Number)
- Call Type (Icon)
- WACN ID (Astro 25 Trunking IDs only)
- System ID

**Note.** For Berks County, the contact list is set up only to help display the calling radio Alias. A total of 500 default records are added to the “Unified Call List” for this purpose. No Hot Lists are set up in the radios.

The systems include the Trunking system, ASTRO conventional and MDC conventional.

The radio automatically exits the feature, if the feature inactivity timer is enabled, when the radio is left idle and the timer expires. You will hear the Menu Inactive Exit Tone upon feature exit.



□ Adding a New Contact Entry (1/2)

- 1 ◀ Or ▶ to **CNTS**.
- 2 Press the **Menu Select** button directly below CNTS.  
The entries are alphabetically sorted.
- 3 ◀ or ▶ to **[NEW CONTACT]** and press the **Menu Select** button directly below **SEL**.
- 4 The display shows **NAME**. Press the **Menu Select** button directly below **EDIT**.  
Use the keypad to enter the name.  
Press ◀ to move one space to the left.  
Press ▶ to move one space to the right.  
Press the **Menu Select** button below **DEL** to delete any unwanted characters.

Press (\*) to add a space.

Press (0) to toggle between mixed case mode, uppercase mode, and lowercase mode.

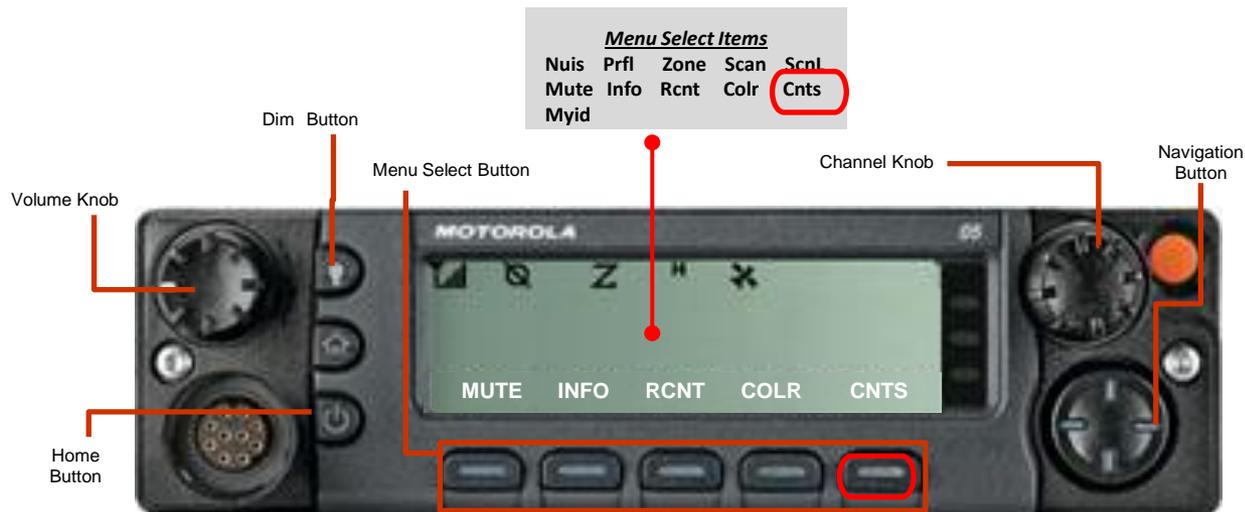
Press (#) to toggle between numeric and letter mode.

- 5 Press the **Menu Select** button directly below **OK** once you have entered the name.

**OR**

Press the **Menu Select** button directly below **CNCL** to return to the previous screen.

- 6 ◀ Or ▶ to **[ADD NUMBER]** and press the **Menu Select** button directly below **SEL**. The display shows **TYPE 1 <DEFAULT TYPE>**.

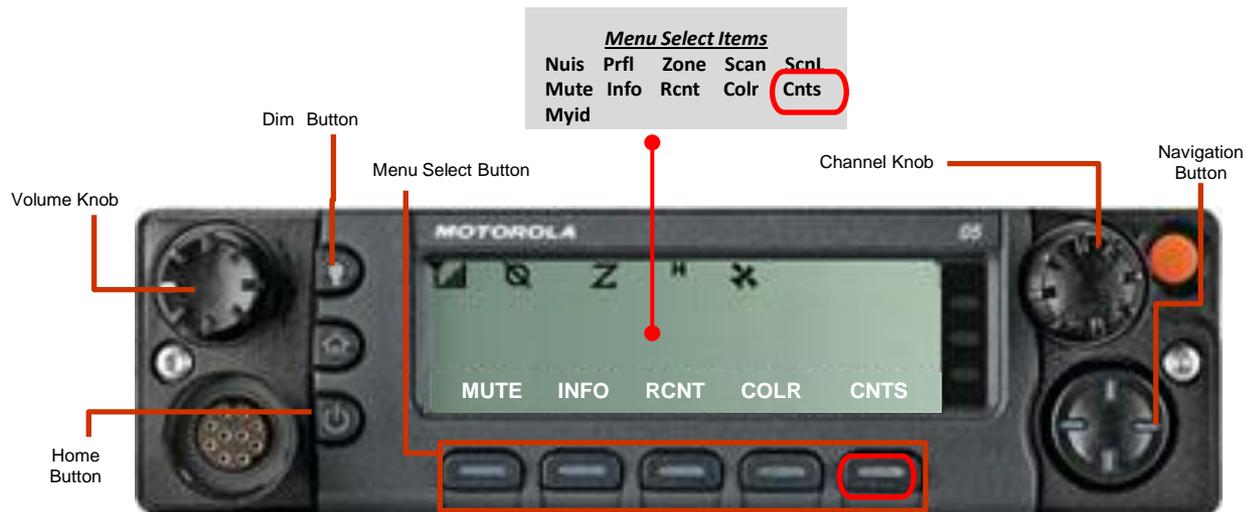




❑ Adding a New Contact Entry (2/2)

- 7 Press **Menu Select** button directly below **EDIT**.
- 8 ◀ or ▶ to the required channel and press the **Menu Select** button directly below **OK**.
- 9 ◀ or ▶ to **NUMBER 1** and press the **Menu Select** button directly below **EDIT**.  
The display shows **NUMBER 1** and a cursor appears.  
Use the keypad to enter the number.  
Press ◀ to move one space to the left.  
Press ▶ to move one space to the right.  
Press the **Menu Select** button directly below **DEL** to delete any unwanted characters.

- 10 Press the **Menu Select** button directly below **OK** once you have entered the number.  
**OR**  
Press the **Menu Select** button directly below **CNCL** to return to the previous screen.
- 11 Press the **Menu Select** button directly below **DONE** once you have finished.
- 12 The display shows **<ENTRY> STORED**, confirming that the contact entry has been added.
- 13 The radio returns to the main Contacts screen.





## Editing a Contact in a Call List

### Editing an Entry Alias

- 1 ◀ Or ▶ to **CNTS**.
- 2 Press the **Menu Select** button directly below **CNTS**.  
The entries are alphabetically sorted.
- 3 ◀ Or ▶ to the entry you want to edit and press the **Menu Select** button directly below **OPTN**.
- 4 ◀ Or ▶ to **EDIT** and press the **Menu Select** button directly below **SEL**.
- 5 ◀ Or ▶ to the entry alias you wish to change and press the **Menu Select** button directly below **EDIT**.
- 6 A cursor appears.  
Use the keypad to edit the name.  
Press ◀ to move one space to the left.  
Press ▶ to move one space to the right.

Press the **Menu Select** button below **DEL** to delete any unwanted characters.

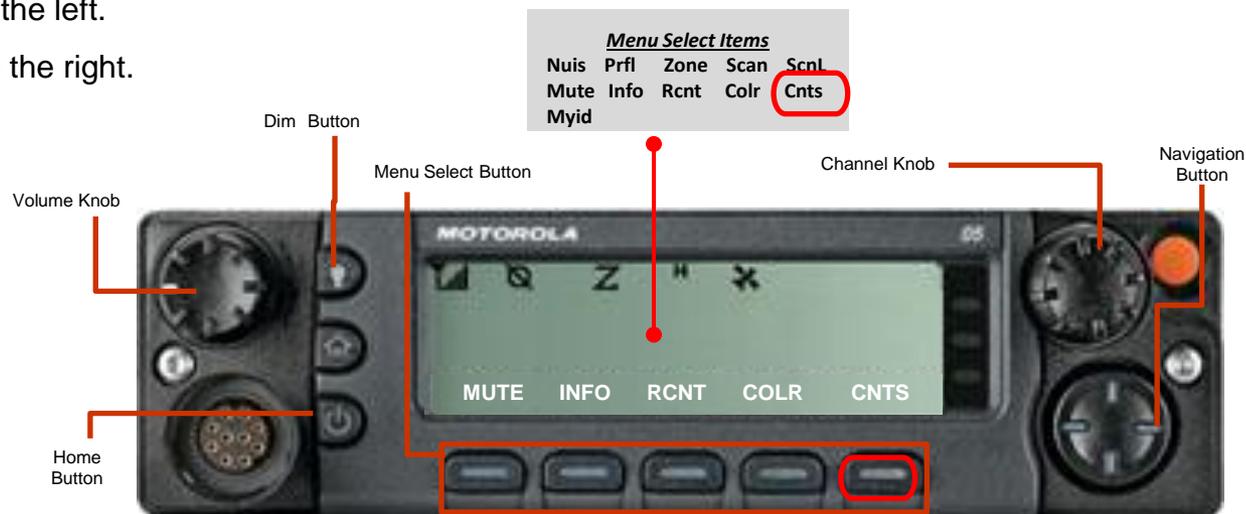
Press **\*** to add a space.

Press **0** to toggle between mixed case mode, uppercase mode, and lowercase mode.

Press **#** to toggle between numeric and letter mode.

7 Press the **Menu Select** button directly below **OK** once you have finished. The display returns to the Edit Contact screen.

8 Press the **Menu Select** button directly below **DONE** to save your changes and return to the main screen for Contacts.



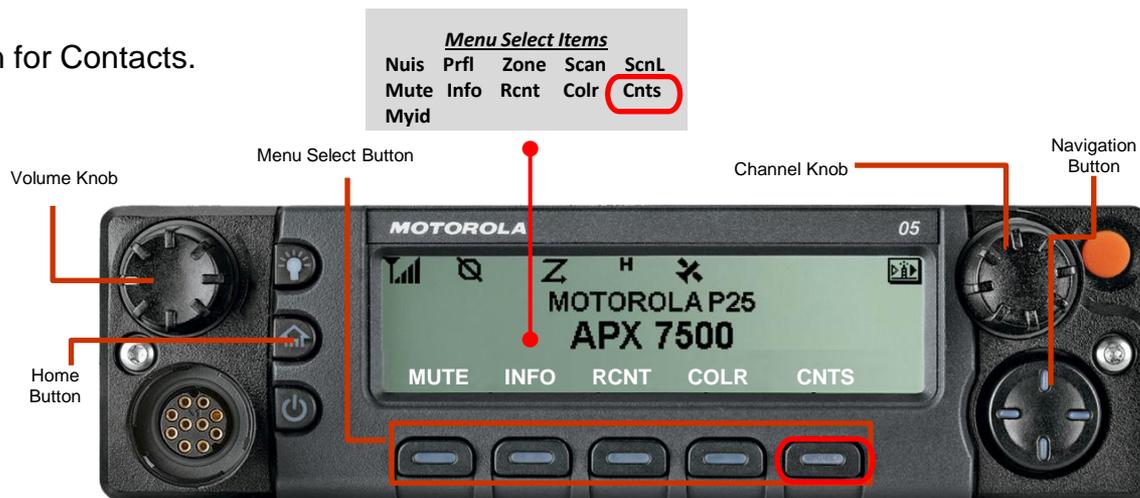


❑ Deleting a Contact Entry

- 1 ◀ Or ▶ to **CNTS**.
- 2 Press the **Menu Select** button directly below **CNTS**.  
The entries are alphabetically sorted.
- 3 ◀ or ▶ to the entry you want to delete and press the **Menu Select** button directly below **OPTN**.
- 4 ◀ Or ▶ to **DELETE** and press the **Menu Select** button directly below **SEL**. The display shows **<ENTRY> CONFIRM DEL?**.
- 5 Select YES to delete the entry.  
The display shows **<ENTRY> DELETED** and the radio returns to the main screen for Contacts.

**OR**

Select **NO** to return to the main screen for Contacts.





## ☐ 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:

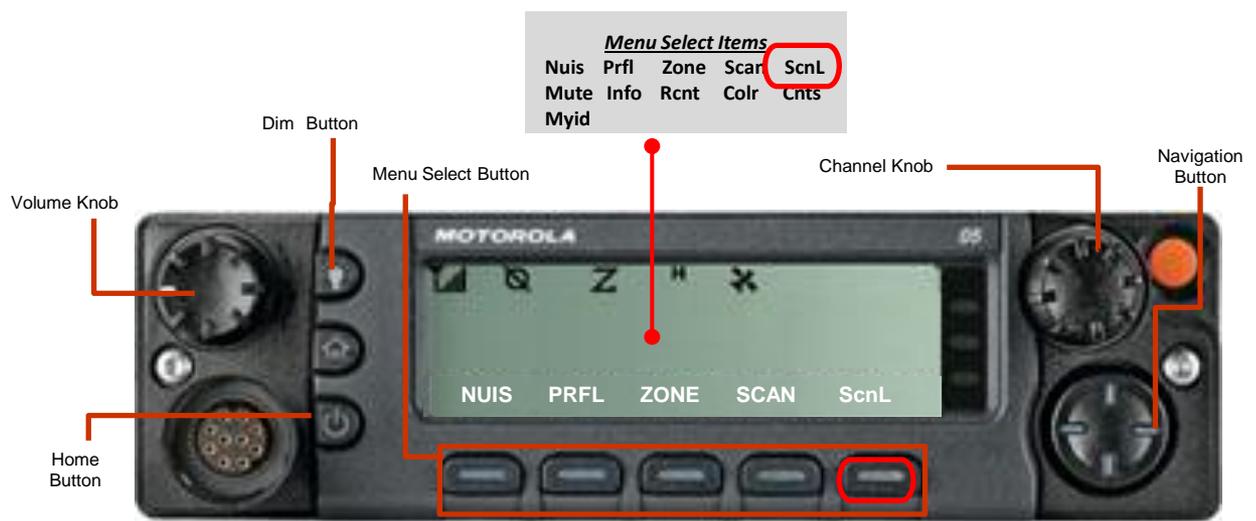
- Trunking Priority Monitor Scan List
- Conventional Scan List
- Talkgroup Scan List

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



### □ Viewing a Scan List

- 1 ◀ OR ▶ to **SCNL**.
- 2 Press the **Menu Select** button directly below **SCNL**.
- 3 ◀ OR ▶ to view the members on the list.
- 4 Press the to exit the current display and return to the Home screen.





❑ **Editing the Scan List**

This feature lets you change scan list members and priorities.

**Note:** The maximum number of members for a trunking priority monitor scan list is 50; for a conventional scan list, 30; and for a talkgroup scan list, 250.

Long press the preprogrammed **Scan List Programming** button and proceed to Step 3.

**OR**

- 1 ◀ Or ▶ to **SCNL**.
- 2 Press the **Menu Select** button directly below **SCNL**.  
The display shows the lists that can be changed.
- 3 ◀ Or ▶ to the entry you want to edit.
- 4 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.

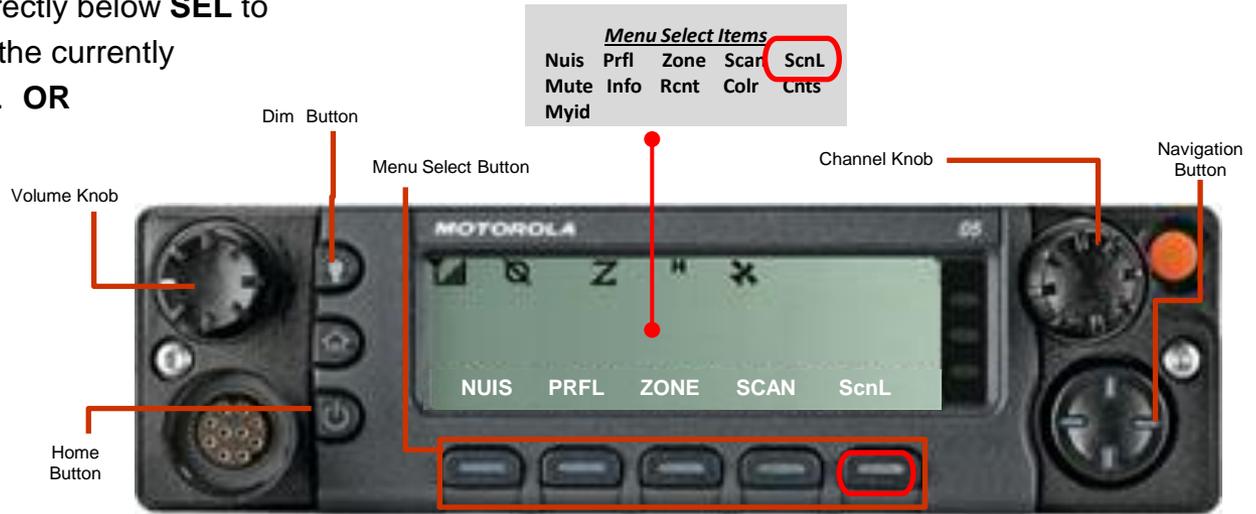
**OR** Press the **Menu Select** button directly below **RCL** to view the next member of the scan list.

5 ◀ Or ▶ to select more channels to be added or deleted. **OR**

Use the keypad to go directly to additional channels to be added or deleted. **OR**

Use the **Channel Knob** to select additional channels to be added or deleted.

6 Press to exit scan list programming and return to the Home screen.





## □ Changing the Scan List Status

- 1 Long press the preprogrammed **Scan** side button.
- 2 The display shows the programming mode icon and the first list member.
- 3 ◀ or ▶ to the number you want to edit.
- 4 Press the ✓ button or press the **Menu Select** button directly below **SEL** once to add the currently displayed channel to the scan list.  
**OR**  
Press the ✓ button or press the **Menu Select** button directly below **SEL**, one or more times to change the scan list status icon of the currently displayed channel.

- 5 ◀ OR ▶ to select more list members whose scan status you want to change.  
**OR**  
Use the keypad to go directly to that scan list member.  
**OR**  
Use the **Channel Knob** to select another scan list member.
- 6 Press 🏠 to exit scan list programming and return to the Home screen.



### Turning Scan On or Off

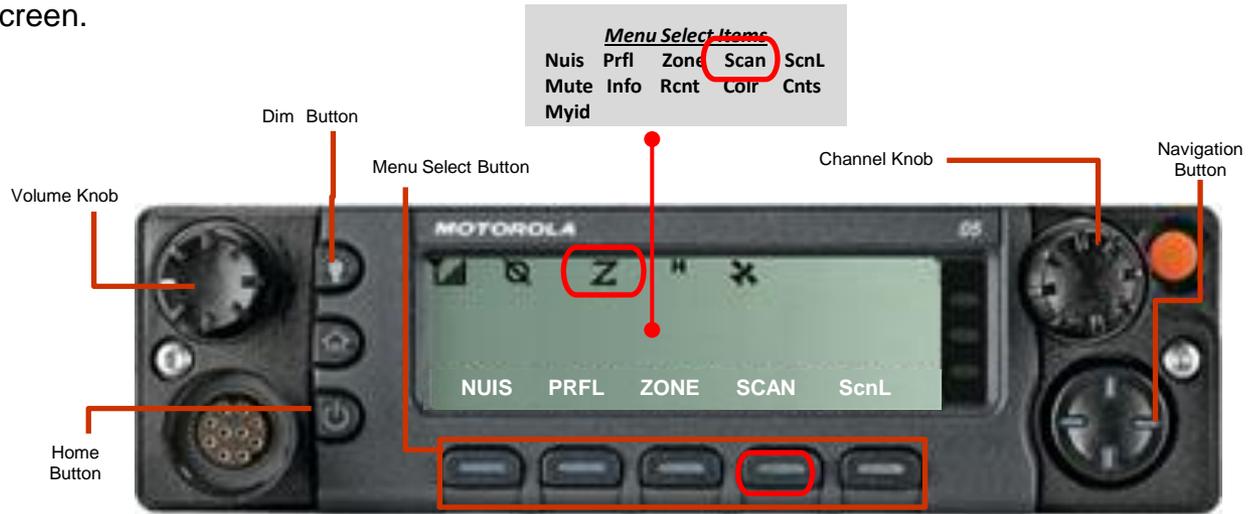
Press and release the preprogrammed **Scan** button on the mic **OR**

- 1 ◀ Or ▶ to **SCAN**.
- 2 Press the **Menu Select** button directly below **SCAN**.
- 3 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.

- 4 The radio returns to the Home screen.





## ❑ Transmitting While the Scan is On

### *Radio Programmed for Non-Talkback Scan*

- 1 Press the **PTT** button at any time to transmit on the selected channel or fixed channel.

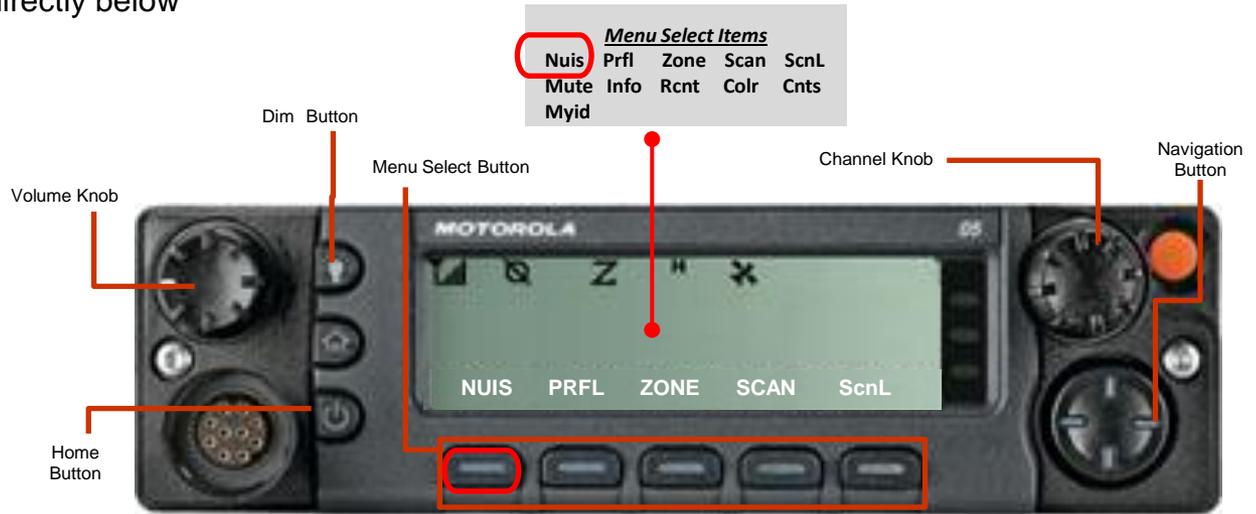


### ❑ Deleting a Nuisance Channel

If a channel continually generates unwanted calls or noise (termed a “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.

- 1 When the radio is locked onto the channel to be deleted,  
◀ or ▶ to **NUIS**.
- 2 Press the **Menu Select** button directly below **NUIS**.
- 3 Press the **Menu Select** button directly below **DELETE**.





## ❑ Restoring a Nuisance Channel

To restore the deleted nuisance channel, do **one** of the following:

- Turn scan off, then on.

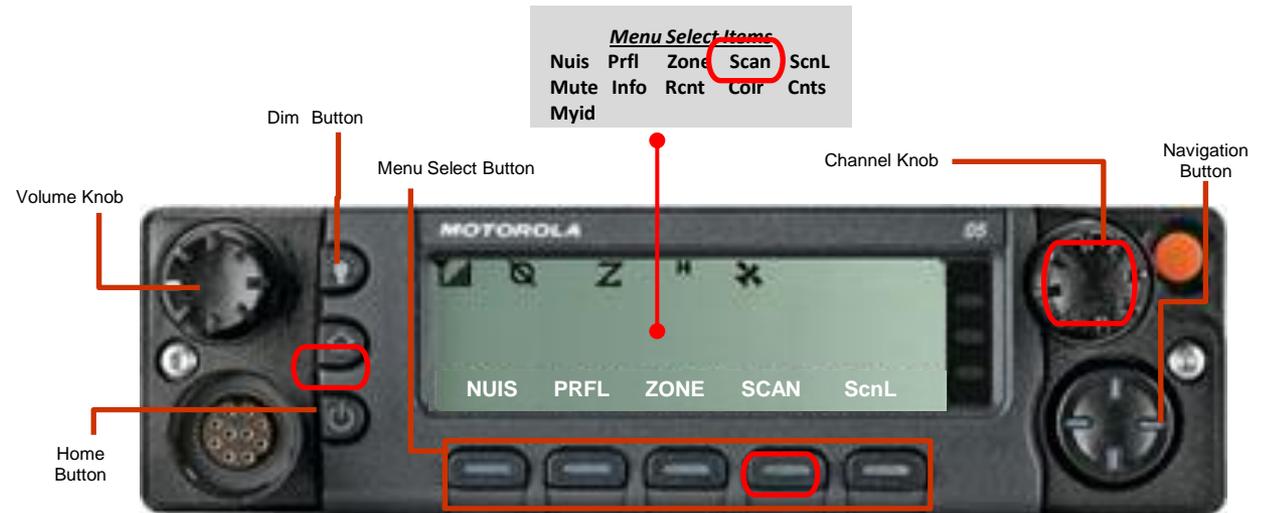
**OR**

- Change modes.

**OR**

- Turn off the radio, and then turn it back on.

*Nuisance mode delete can be disabled by the system administrator.*





## □ Answering a Call Alert

- 1 When you receive a Call Alert page, you hear four repeating alert tone and the green LED blinks.
- 2 The call received icons blinks and the display shows **PAGE RECEIVED**.
- 3 Press the **PTT** button to answer.  
**OR**  
Press any button to clear the Call Alert page.





□ Sending an Emergency Alarm with Emergency Call

This feature allows you 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, it automatically proceeds to the call mode after the alarm is acknowledged.

- 1 Press the preprogrammed **Emergency** button to activate the emergency call/alarm feature.
- 2 The display alternates **EMERGENCY** and the home display.
- 3 A high-pitched tone sounds, indicating that the alarm has been received by the trunked system's central controller.

A dispatcher acknowledgment (four high-pitched tones) follows, accompanied by an **ACK RECEIVED** display.

- 4 Hold the microphone vertically 1 to 2 inches (2.0 to 2.5 cm) from your mouth.
- 5 Press and hold the **PTT** button. Speak clearly into the microphone.
- 6 Release the **PTT** to end the transmission.
- 7 Press and hold the preprogrammed Emergency button until a tone sounds to exit Emergency mode.





❑ 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.

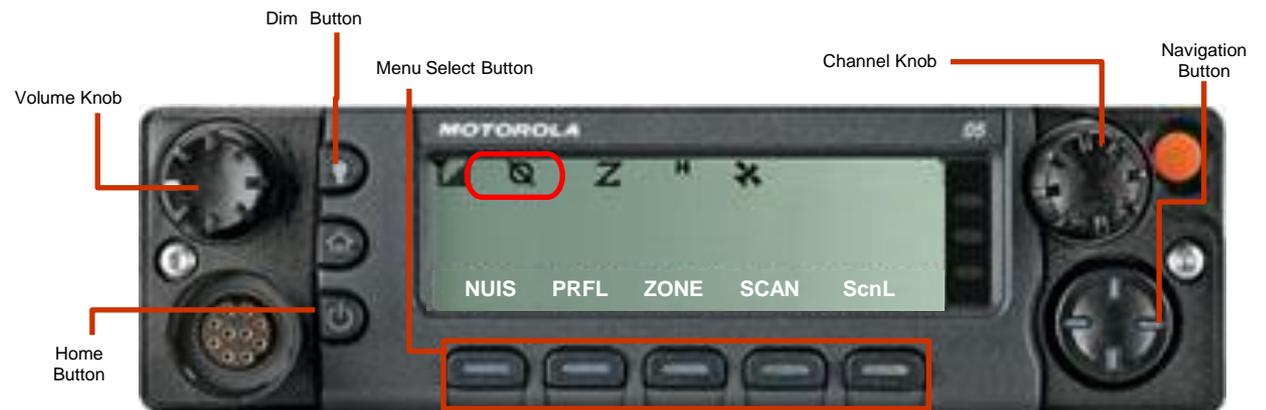




❑ Selecting Secure Transmissions

Secure radio operation provides the highest commercially available level of voice security on both trunked and conventional channels. Unlike other forms of security, Motorola digital encryption provides signaling that makes it virtually impossible for others to decode any part of an encrypted message.

Berks County's talkgroup are strapped to clear, or Encrypted. The Secure/Clear switch is not programmed. In the case of Encrypted, the talkgroups can be either strapped to an AES or ADP key. If needed a list of these Talkgroups can be found in the master fleetmap document provided earlier.





## ❑ Using the Failsoft System

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

The failsoft condition is indicated by a faint beeping tone every nine seconds (radio unquenched) until the trunking system returns to normal operation.

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

- 1 Rotate the **Channel Knob** to change to a different repeater frequency.
- 2 Press the **PTT** button to talk, and release the button to listen.

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





❑ 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.

1 A low-pitched tone sounds.

**AND/OR**

The display shows the currently selected zone/channel combination and **OUT OF RANGE**.

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

It locks onto a control channel.

**OR**

It locks onto a failsoft channel.

**OR**

It is turned off.





- Viewing the Recent Calls .....**
- Selecting a Radio Profile .....**
- Controlling the Display Backlight .....**
- Turning Keypad Tones On or Off .....**
- Using the Time-Out Timer .....**
- Using the Digital PTT ID Feature .....**
- Accessing the General Radio Information .....**
- Voice Announcement .....**



## ❑ Viewing Recent Calls List

This feature allows you to view the recent incoming and outgoing call information of the following call types:

- Call Alert
- Selective Call
- Private Call
- Phone Call (Outgoing only)

**Note:** The radio can also be preprogrammed to log only the radio IDs associated with incoming Dispatch Calls. Check with your dealer or system administrator for more information.

1 ◀ Or ▶ to RCNT.

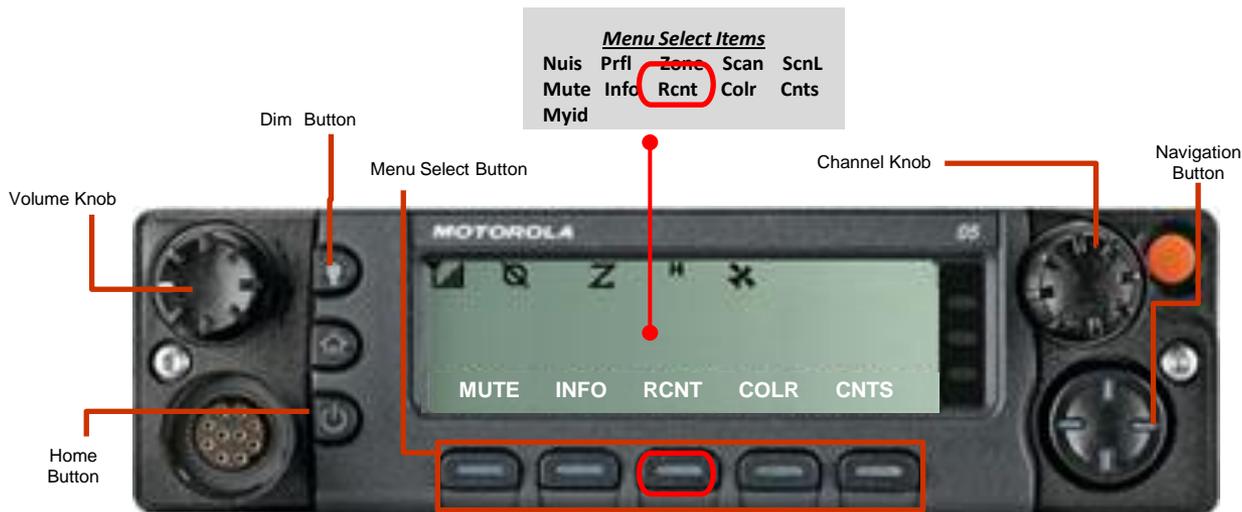
2 Press the **Menu Select** button directly below **RCNT** to access the **Recent Calls** feature screen.

3 ◀ Or ▶ to scroll through the list.

4 Press the **Menu Select** button directly below **BACK** to return to Home screen.

**OR**

Press or the **PTT** button to return to the Home screen.





## ❑ Selecting a Radio Profile

This feature allows you to manually switch the visual and audio settings of the radio. The display, backlight, alert tones, and audio settings are defined according to the preprogrammed radio settings of each radio profile. You can have up to a maximum of twelve (12) radio profiles programmed into your radio by a qualified radio technician.

**Note:** The radio automatically exits the feature, if the time-out timer is enabled, when the radio is left idle and timer expires. You will hear the Menu Inactive Exit Tone upon feature exit.

Use the preprogrammed **Profile** button and proceed to Step 3.

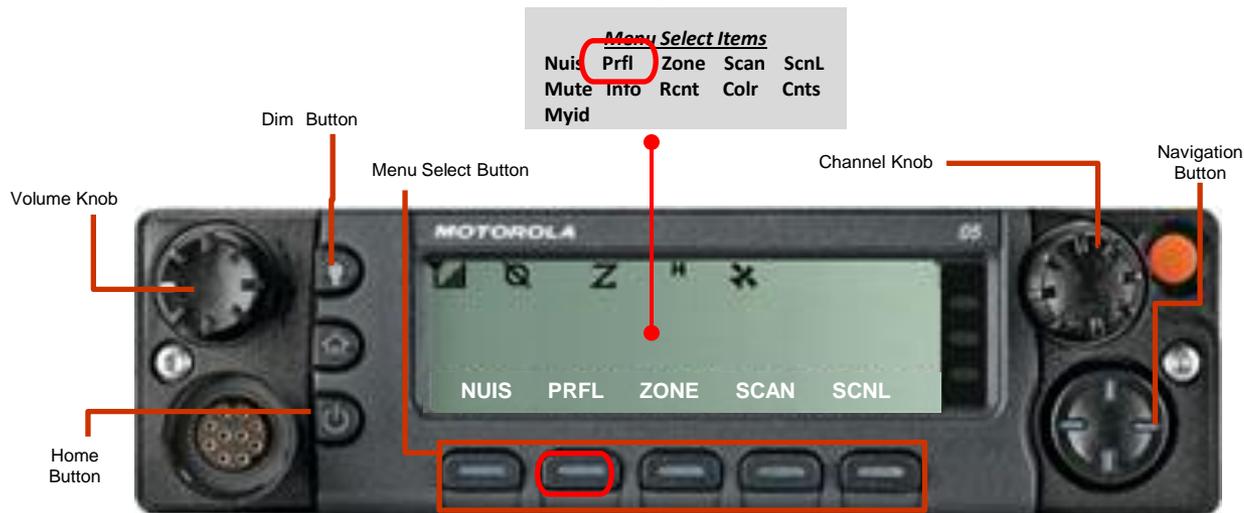
OR

- 1 ◀ OR ▶ to **PRFL**.
- 2 Press the **Menu Select** button directly below **PRFL** to access the **Profiles** feature screen.
- 3 ◀ OR ▶ to scroll through the menu selections.
- 4 Press the **Menu Select** button directly below **SEL** to select the required radio profile.

**OR**

Press the **Menu Select** button directly below **EXIT** to exit the screen without making any changes.

- 5 The radio returns to the Home screen. The profile name on the Home screen indicates the current selected radio profile.





## ❑ 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.

**Note:** The backlight setting also affects the Menu Select buttons, the Menu Navigation buttons and the keypad backlighting accordingly.

Press the  button to toggle the backlight off or on.

**OR**

Press any key of the keypad, the **Menu Select** or **Menu Navigation** buttons, or any programmable radio controls or buttons to turn the backlight on.





## Turning Keypad Tones On or Off

You can enable and disable keypad tones if needed. Press the preprogrammed **Keypad Mute** button to turn the tones off or on.

**OR**

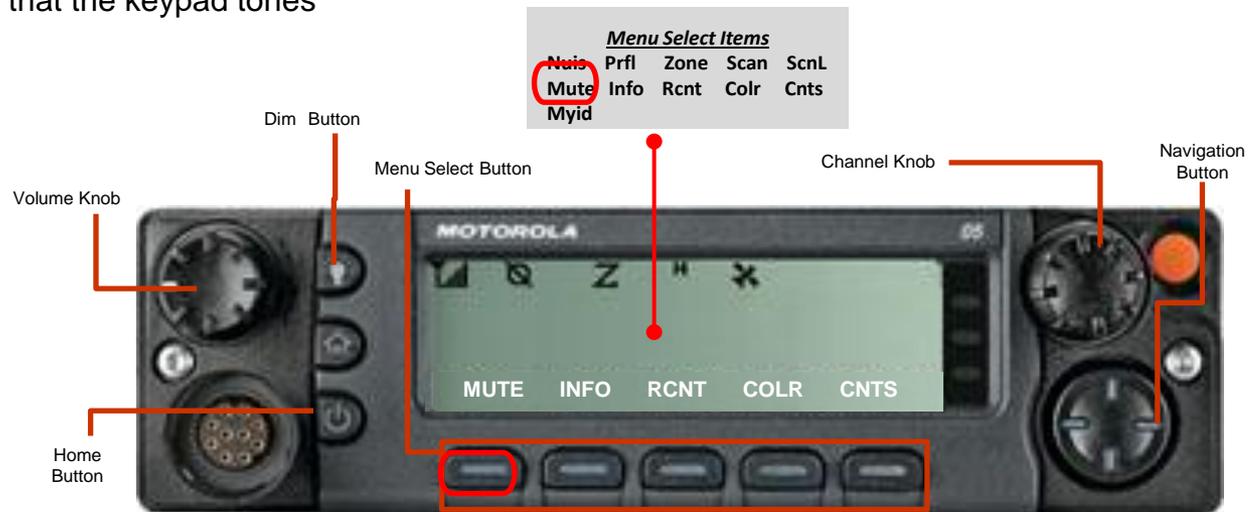
1 ◀ Or ▶ to **MUTE**.

2 Press the **Menu Select** button directly below **MUTE**.

3 The display momentarily shows **TONES OFF**, indicating that the keypad tones are disabled.

**OR**

The display momentarily shows **TONES ON**, and a short tone sounds, indicating that the keypad tones are enabled.





## Using the Time-Out Timer

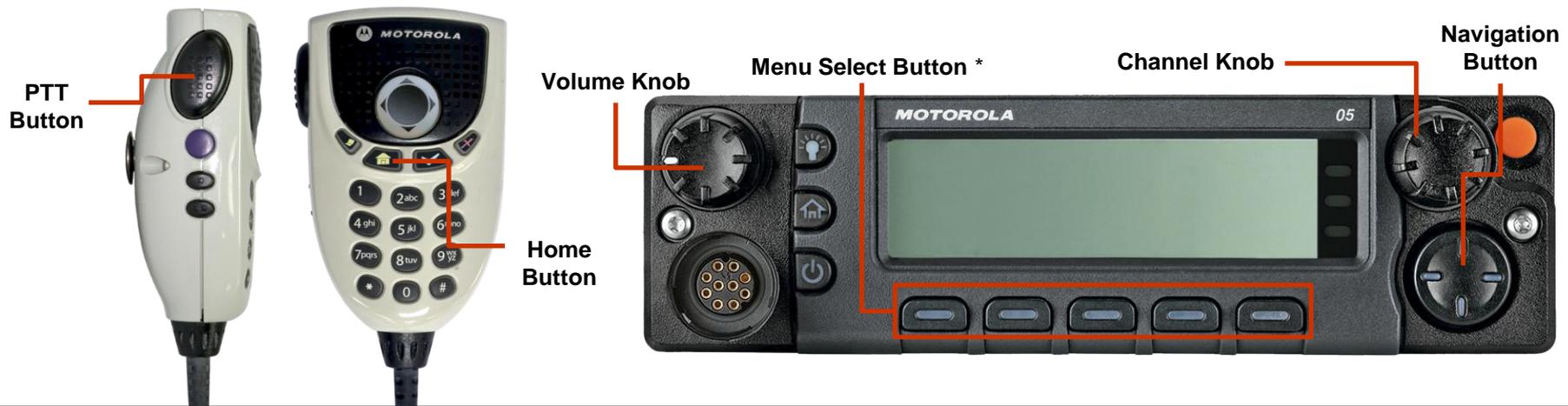
This feature turns off your radio's transmitter. You cannot transmit longer than the preset timer setting.

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.

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

- 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 LEDs 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 red LED lights up.





## ❑ Using the Digital PTT ID Feature

This feature allows you to see the radio ID (number) of the radio from whom you are currently receiving a transmission. This ID, consisting up to a maximum of eight characters, can be viewed by both the receiving radio and the dispatcher.

Your radio's ID number is also automatically sent every time the **PTT** button is pressed. This is a per-channel feature. For digital voice transmissions, your radio's ID is sent continuously during the voice message.





❑ Accessing General Radio Information

**Viewing IP Information**

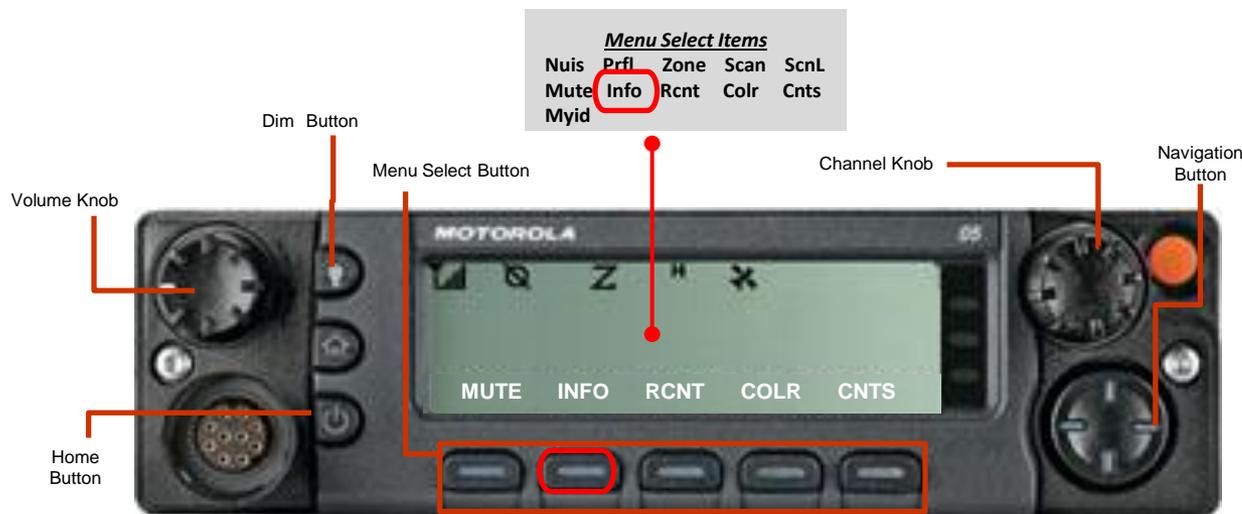
This feature displays the device name, IP address, and status of your radio.

**Note:** The device name of your radio is preprogrammed. Check with your dealer or system administrator for more information.

Press the preprogrammed Info button and proceed to Step 3.

**OR**

- 1 ◀ OR ▶ to **INFO**.
  - 2 Press the **Menu Select** button directly below **INFO**.
  - 3 ◀ OR ▶ to **IP INFO** and press the **Menu Select** button directly below **SEL**.
  - 4 ◀ OR ▶ to scroll through the various information.
- OR**
- Press the **Menu Select** button directly below **BACK** to return to previous screen.
- OR**
- Press  to exit and return to the Home display.

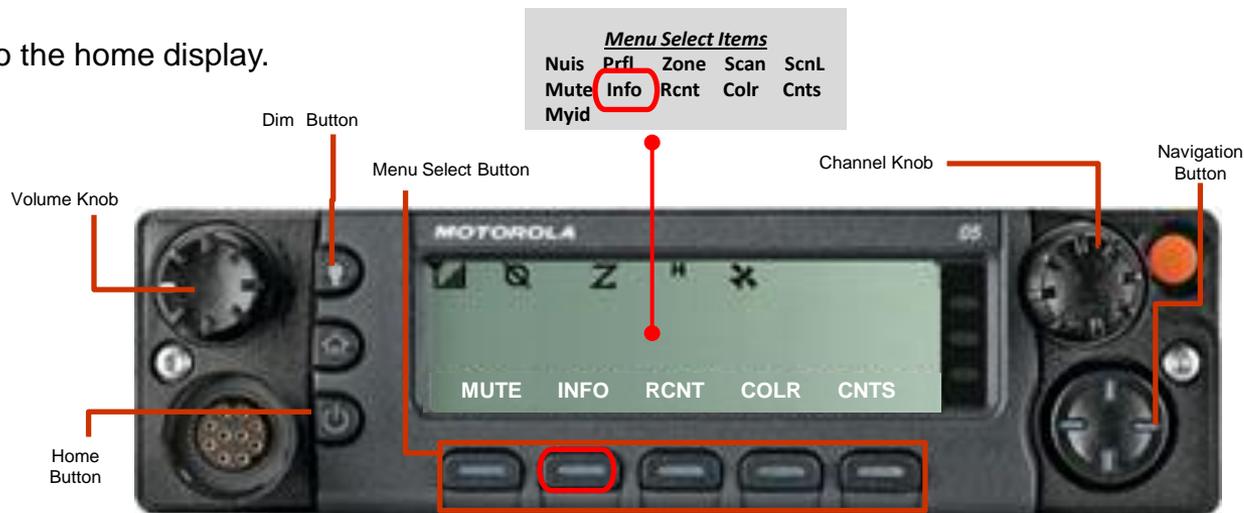




❑ Accessing General Radio Information

**Accessing Radio Information**

- 1 ◀ or ▶ to **INFO**.
  - 2 Press the **Menu Select** button directly below **INFO**.
  - 3 ◀ or ▶ to **RADIO INFO** and press the **Menu Select** button directly below **SEL**.
  - 4 The display shows the Information screen.
  - 5 ◀ or ▶ to scroll through the various information.
- OR**
- Press the **Menu Select** button directly below **BACK** to return to previous screen.
- OR**
- Press to exit and return to the home display.





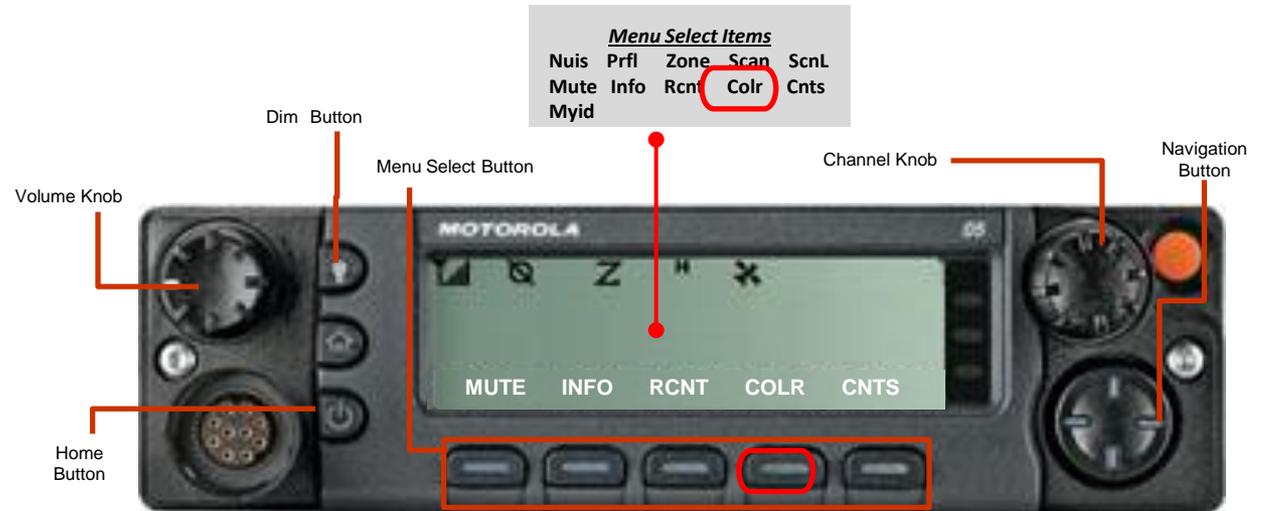
## ❑ Changing the Display Color

You can change or the radio's display color as needed.

- 1 Press ◀ or ▶ to **COLR**.
- 2 Press the **Menu Select** button directly below **COLR**.
- 3 Press ◀ or ▶ to scroll through the list of available choices.
- 4 Press the button below **SEL** to select the color or **CNCL** to exit without making changes.

**\*\*\*NOTE: If you change the display to "RED" when the radio is "out of range" the display will not change colors.**

**If you change the display to "ORANGE" and activate the "emergency button" the display will not change colors.**





## ❑ Voice Announcement

This feature enables the radio to audibly indicate the current feature mode, Zone or Channel the user has just assigned. This is typically useful when the user is in a difficult condition to read the content shown on the display. A maximum of 2000 unique voice announcements are allowed in a radio. The sum total duration for all voice announcements in a radio shall be no more than 1000 seconds.

The features which Voice Announcement supports are:

- Zone
- Channel
- Scan