

OpenSky™

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## User's Manual P-801T Portable Radio

**tyco** / *Electronics* / **M/A-COM**



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#### **Revision History**

<b>Date</b>	<b>Update by</b>	<b>Description of change</b>
05/01/2000	Matt Wachowiak	New
06/05/00	Matt Wachowiak	Global revision
11/22/00	Joe Xavier	Added Occupational Safety Information

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**Software Version:**  
OTP 4.06

## Notices to the user

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<b>Warning</b>	<ul style="list-style-type: none"><li>• Government law prohibits the operation of unlicensed transmitters within the territories under government control.</li><li>• Illegal operation is punishable by fine or imprisonment or both.</li><li>• Refer service to qualified technicians only.</li><li>• Do not operate your transceiver in explosive atmospheres (gases, dust, fumes, etc.).</li></ul>
<b>FCC Warning</b>	This equipment generates or uses radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.
<b>FCC limits</b>	<ul style="list-style-type: none"><li>• 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.</li><li>• These limits are designed to provide reasonable protection against harmful interference in a residential installation.</li></ul>
<b>RF Interference</b>	<p>This equipment generates and uses radio frequency energy and may cause harmful interference to radio communications if not installed and used in accordance with the instructions. However, there is no guarantee that the interference will not occur in a particular installation.</p> <p>If this equipment does cause harmful interference to radio or television reception, the user is encouraged to try to correct the interference by one or more of the following measures.</p> <ul style="list-style-type: none"><li>• Re-orient or relocate the receiving antenna.</li><li>• Increase the separation between the equipment and the receiver.</li><li>• Consult a service center for technical assistance.</li></ul>
<b>Occupational Safety</b>	This equipment generates electromagnetic radiation in compliance with FCC regulations for Specific Absorption Rate (SAR) for Occupational/Controlled Exposure (47 CFR 2.1093) when operated in accordance with the guidelines of this User's Manual (listed on page 14)

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# OpenSky Overview

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<b>Overview</b>	<p>The P-801T Portable Radio is a key component of the OpenSky network. This section gives an overview of:</p> <ul style="list-style-type: none"><li>• The OpenSky network, and</li><li>• OpenSky features and benefits.</li></ul>
<b>The OpenSky network</b>	<p>The P-801T Portable Radio is a part of the OpenSky network. The OpenSky network is an integrated voice and data communications system. The system provides a communication backbone that enables voice to be converted to digital information and then transmitted over a wireless network. Data applications can be used simultaneously with voice over the same network.</p>
<b>OpenSky features and benefits</b>	<p>OpenSky connects seamlessly with existing applications and provides significant user benefits.</p> <p><b>OpenSky:</b></p> <ul style="list-style-type: none"><li>• Eliminates the need to carry more than one radio to communicate mission critical information by providing one communication system to many users and agencies.</li><li>• Relieves radio users of the task of switching channels when moving to a new coverage area by automatically roaming between base stations.</li><li>• Provides improved peak traffic performance for all voice and data information.</li><li>• Eliminates waiting for a radio channel to be available by automatically switching your radio to the best available channel.</li><li>• Provides simultaneous voice and data without having to change radio modes.</li><li>• Locates users quickly and accurately with Global Positioning System (GPS) equipped radios.</li><li>• Prioritizes communications, eliminating non-essential information and preventing information overload.</li></ul>

# P-801: An Introduction

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**Introduction** The P-801T is a "soft" radio; its function is determined by software applications in much the same way that computer programs are used for different functions on a personal computer. Voice communication is handled digitally; this provides noise-free audio reception and allows for added features such as voice grouping to be supported.

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**Operating modes** The P-801T is a digital multi-mode radio that can operate in one of many modes. The principle operating modes are:

- OpenSky Trunked Protocol (OTP), or
- OpenSky Conventional FM with Continuous Tone Coded Squelch System (CTCSS).

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**Terms and concepts you need to know** Before using the P-801T radio, you may want to become familiar with some terms and concepts relating to OpenSky voice features.

Term/Concept	See Page
User group	3
Profile	4
Talk and Listen Group	5
Radio Personality	6
Voice Feature Summary	7

## Terms and Concepts

### User Groups Explained

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**User group**

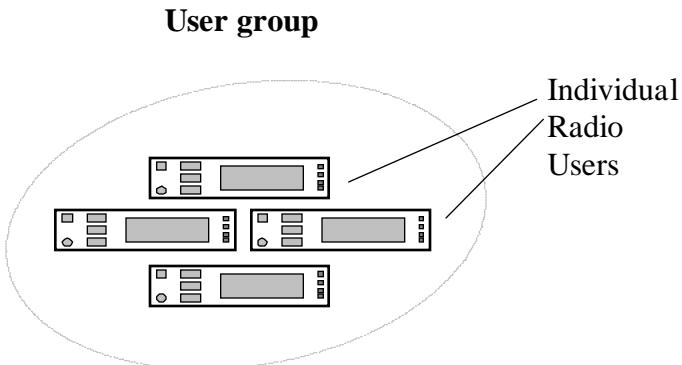
A user group is a set of users who regularly need to communicate. There can be any number of users in a user group. Your OpenSky network administration personnel establish and organize user groups.

An OpenSky user group is similar to a channel in a conventional FM radio system.

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**Diagram**

The figure below illustrates the user group concept.

**Example**

For a state police agency, the officers assigned to the same barracks might be in the same user group.

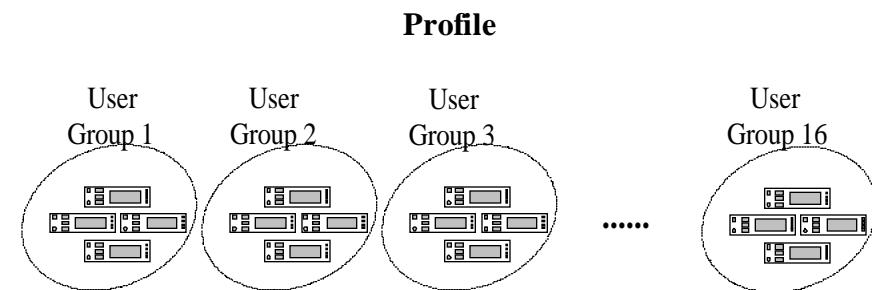
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# Profiles Explained

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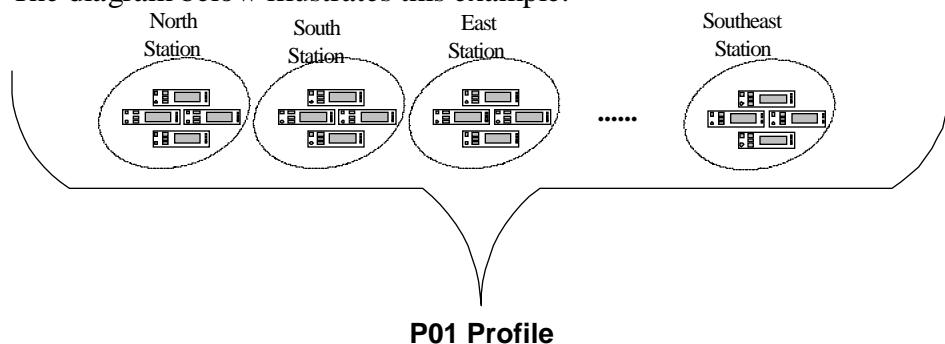
<b>Profile</b>	A profile is a set of up to 16 user groups.  An OpenSky profile is similar a bank of channels in a conventional FM radio system.
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<b>Diagram</b>	The figure below illustrates the profile concept.
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<b>Example</b>	Police officers on the same shift could be in the same profile – P01. The user groups that make up this profile might be organized by the physical location of the police stations.
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The diagram below illustrates this example.



# Talk and Listen Groups Explained

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**Overview** The concept of talk and listen groups is key to understanding how the radio scans active voice calls. You can change the way your radio scans for active voice calls.

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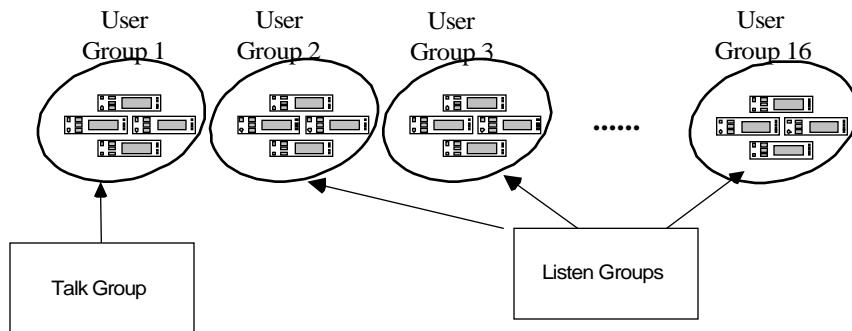
**Talk group** A talk group is the primary user group in a profile. This is the group of users you will talk with and listen to the most. The first user group in each profile is your talk group.

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**Listen group** The rest of the 15 possible user groups in a profile are listen groups. You normally hear the voice calls from the users in this group, but your voice does not transmit to them.

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**Diagram** The figure below illustrates the talk and listen group concepts.



**Example** Police officers assigned to the North station could be in the same talk group. Officers from the North Station can listen to communications from groups of radio users from the South, East and Southeast Stations.

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# Radio Personality Explained

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## Radio personality

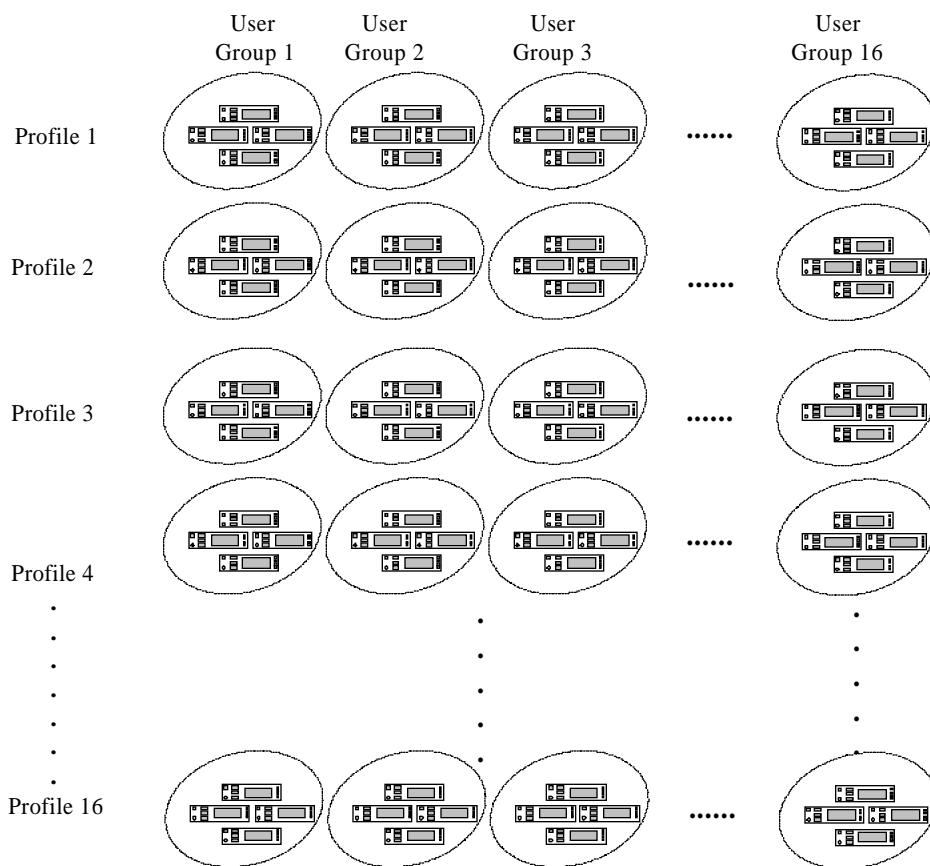
The radio personality is a collection of up to 16 profiles. When you turn on your radio, the personality is downloaded into the radio so that you have access to the profiles you need.

Of the 16 possible profiles, only one is active at any given time.

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## Diagram

The figure below illustrates the radio personality concept.



## Example

The radio personality for a police officer could include the profiles: Profile 1, Profile 2, and Profile 3. These profiles could represent each of the shifts for a particular police agency.

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## Voice Feature Summary

**Voice feature summary** *User groups* contain radio users who have a common need to communicate using the radio network. User groups are characterized as either *talk groups* or *listen groups*.

- Your talk group is the primary group of radio users that you will listen and talk to.
- Listen groups contain users that you normally only listen to. You do not normally transmit voice to users in your listen groups.

*Profiles* are comprised of up to 16 user groups and are used to organize your *radio personality* into categories defined by your network administrators.

Each time you turn on your radio, you access the OpenSky network and user features are loaded into your radio. These user features are known as your radio personality. Your radio personality establishes:

- Who you will communicate with over the network, and
- What calls have priority over others.

A radio personality is made up of up to 16 profiles.

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## Before You Start

### Controls and Indicators

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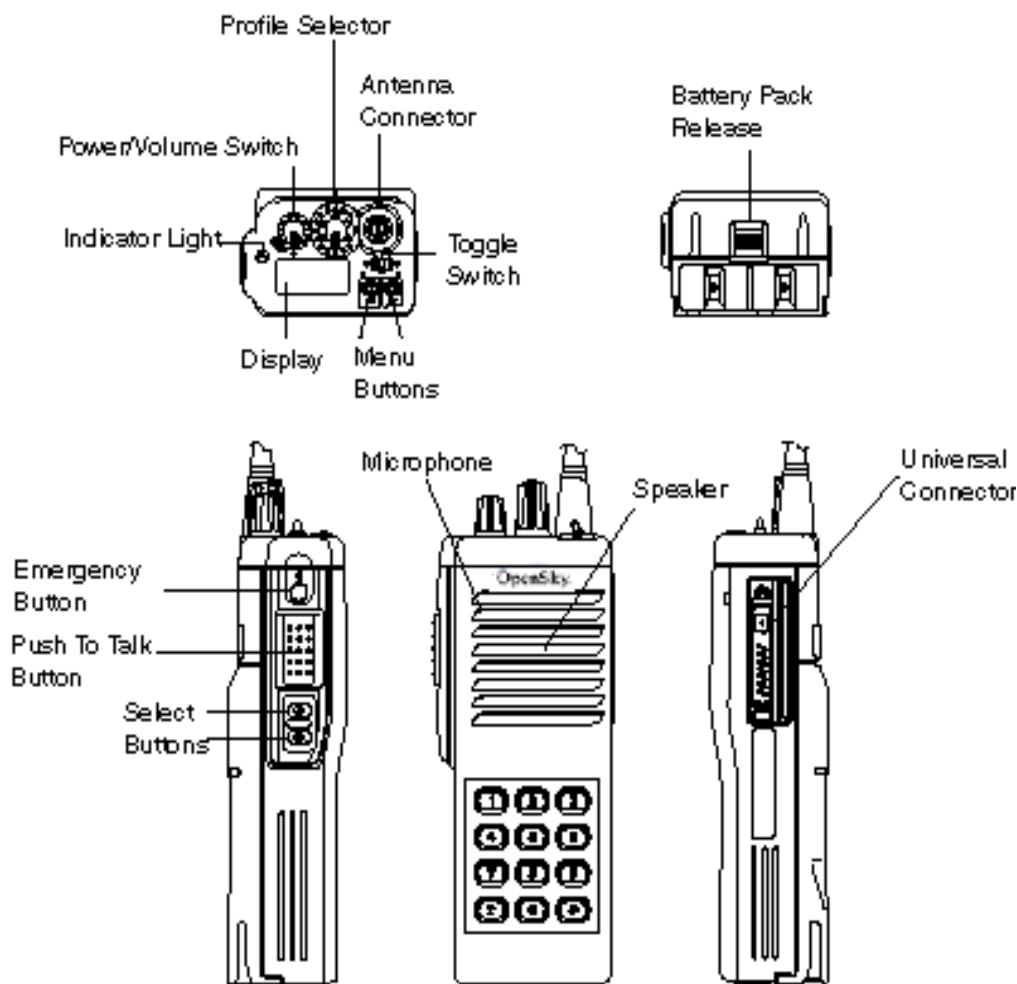
#### General

Four top panel switches and four side panel switches provide user control of major radio functions. The display and status indicators show key operating information.

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#### Diagram

The following diagram shows the controls and indicators for the P-801T radio.



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**Parts and Functions**

The following table shows the parts of the P-801T radio and their related functions.

Part	Function
<b>Power/Volume Switch</b>	Turns the radio on and off and sets the volume level of the speaker.
<b>Profile Selector</b>	Sets the active profile.
<b>Antenna Connector</b>	Provides a mounting location for antenna.
<b>Toggle Switch</b>	Turns display, indicator light, and side tones on or off.
<b>Menu Buttons</b>	Cycles through the menu of radio functions. When either the left or right menu buttons are pressed, the selected function appears on the radio display.
<b>Display</b>	Provides profile and user group information. When the menu or select buttons are pressed, the menu display temporarily changes to show the selected menu screen. If no buttons are pressed, the display returns to the primary menu.
<b>Indicator Light</b>	<ul style="list-style-type: none"><li>• Turns red and blinks when transmitting.</li><li>• Turns green and blinks when receiving a call.</li></ul>
<b>Emergency Button</b>	Sends and emergency alert over the network and initiates an emergency call. Also used to cancel an emergency alert.
<b>Push-to-talk Button</b>	Turns the radio microphone on to transmit a voice call.
<b>Select Buttons</b>	Selects options within a radio menu when either the up or down button are pressed.
<b>Microphone</b>	Picks up your voice for calls to other users.
<b>Speaker</b>	Allows you to hear other users.
<b>Universal Connector</b>	Provides a connection for use of an external microphone and speaker.

# Display Overview

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<b>Overview</b>	The radio display shows the active user group and profile, menu selections, and status information. The display is divided into two major elements: <ul style="list-style-type: none"><li>• Menu display &amp; control area, and</li><li>• Status area.</li></ul>
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<b>Diagram</b>	The picture below shows the components of the display area.
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<b>Parts and Functions</b>	The table below describes the parts of the radio display and their functions.
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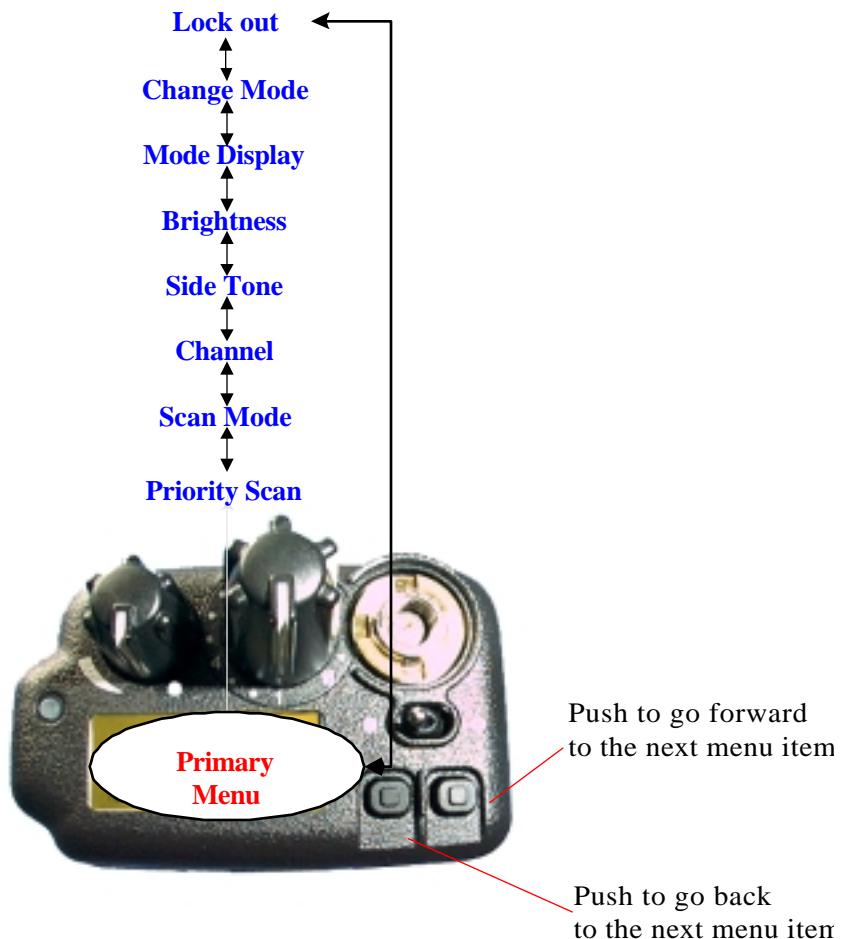
Part	Function
Menu Display and Control Area	<ul style="list-style-type: none"><li>• The display panel normally provides profile and user group information to the user.</li><li>• When <b>Menu</b> or <b>Select</b> buttons are pressed, the menu display and control area temporarily changes to show information relevant to the selected menu screen.</li></ul>
Status Area	<ul style="list-style-type: none"><li>• The bottom of the display shows mode related information and radio protocol status.<ul style="list-style-type: none"><li>– The : appears when you are connected to the OpenSky network.</li><li>– The two-digit profile number is displayed.</li><li>– <b>SCN</b> is displayed in the scanning menu.</li><li>– <b>MON</b> is displayed in the mode menu.</li><li>– <b>LO</b> is displayed in the lock out menu.</li></ul></li></ul>

## Menu Display and Control Area

**Description** After you turn on the radio and the startup sequence finishes, the radio display shows the active profile, user group and menu selections. Pressing either **Menu** button changes the display to the next available menu item.

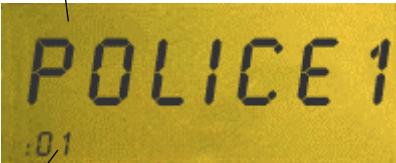
**Background** The primary menu is displayed if you are not pressing the menu keys. If you move to another menu, the radio will return to the primary menu if no key is pressed for 10 seconds.

**Diagram** The diagram below shows the menu items.



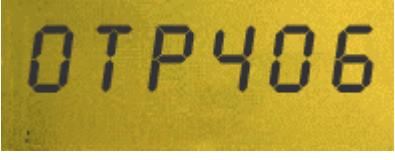
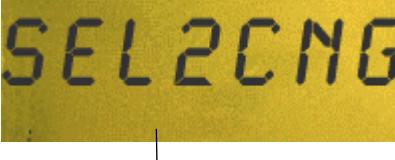
## Menu Display and Control Area, Continued

**Menu structure** The table below describes the menu items and display formats for the radio.

Menu Name	Display Format (Menu Display & Control Area)	Menu Description
Primary Menu (Default Screen)	<p>Profile</p>  <p>Profile number</p>	Displays and changes the active profile. A profile is identified by its number and the name of the talk group.
Priority Scan	<p>User group</p>  <p>Priority scan</p>	Displays the available user groups in the currently selected profile and chooses one of those user groups as the priority scan user group.
Scan Mode	<p>Identifies the chosen scan mode</p>  <p>Scan menu indicator</p>	Changes the scan modes to either: <ul style="list-style-type: none"> <li>• None</li> <li>• Normal, or</li> <li>• Talkback</li> </ul>
Channel Change	<p>Site name</p>  <p>Channel display indicator</p>	Changes the active radio channel.

*Continued on next page*

## Menu Display and Control Area, Continued

Side Tone	 <b>ON</b> or <b>OFF</b> based on selection	Switches side tones ON and OFF. Side tones are audible beeps that occur when you press a <b>Menu</b> or <b>Select</b> button.
Brightness	 Level ranges from 1 to 3	Increases or decreases the display brightness.
Mode		Displays active software and version number.
Change Mode	 "Select to Execute Mode Change"	Changes the mode of the radio. Once selected, the menu advances to the mode change menu sequence.
Lock out	User group  Indicates locked out (Blank for not locked out)	Prevents you from hearing voice calls from the selected user group. Does not lock out emergency or supervisory calls.

## Occupational Safety

### IMPORTANT INFORMATION ON SAFE AND OPTIMAL OPERATION. READ THIS BEFORE USING YOUR P-801T PORTABLE RADIO

Your P-801T portable radio may transmit using either an integral antenna or remote speaker microphone/antenna. When it is ON, it receives and also sends out radio frequency (RF) signals.

In 1996, the Federal Communications commission (FCC) adopted RF exposure guidelines with safety limits for portable devices, based on the recommended limits of the National Council on Radiation Protection and Measurements (NCRP) and the American National Safety Institute (ANSI).

The design of the P-801T Portable Radio complies with the FCC guidelines for Occupational / Controlled exposure to RF electromagnetic fields, as measured by the specific absorption rate (SAR). To assure optimal performance and make sure human exposure to RF electromagnetic energy is within the FCC guidelines, always adhere to the following:

1. Do not hold the radio less than 1 inch from your body, especially your face, ears, or eyes, while transmitting.
2. When using the radio, angle the antenna away from your body and do not allow the antenna to touch your body during transmission.
3. When using the remote speaker microphone/antenna, a separate accessory available to P-801T users, do not allow the antenna portion to be less than 1 inch from your body, especially the face, ears, or eyes, while transmitting. Do not let this antenna touch your body while transmitting.
4. The push-to-talk button should only be depressed when intending to send a voice message.
5. The radio should only be used for necessary work related communications.
6. The radio should only be used by authorized and trained personnel and should not be operated by children.
7. Do not operate your radio or replace/charge batteries in explosive atmospheres (gases, dust, fumes, etc.) or near explosive basking caps. Your radio should be turned off when installing and removing batteries.
8. Do not attempt any unauthorized modification to the radio. Changes or modifications to the radio may cause harmful interference. Any servicing of the radio should only be performed by qualified personnel.

## Basic Operation

### Turning the Radio On and Adjusting the Volume

#### Procedure

Follow the steps below to turn your radio on and adjust the volume.

Step	Action
1	<p>Rotate the power/volume switch clockwise until it clicks.</p> <p><i>The startup sequence lasts approximately 10 seconds. The radio is ready to use after this sequence.</i></p> <p>Use the figure below to see how the radio may appear as it is ready for use.</p> <p>:</p> <p>Indicates you are connected to the OpenSky</p> 
2	<p>Turn the Power/Volume switch to adjust the volume.</p> <p><i>Turning the switch clockwise increases the volume and counterclockwise decreases the volume.</i></p>

## Turning the Radio Off

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**Procedure** Follow the step below to shut off the radio.

Step	Action
1	Turn the power/volume switch counter-clockwise until it clicks.  <b>Result:</b> The display changes to show SHUTDWN and the radio shuts down. The operating mode of the radio is saved and recalled on the next start-up of the radio.

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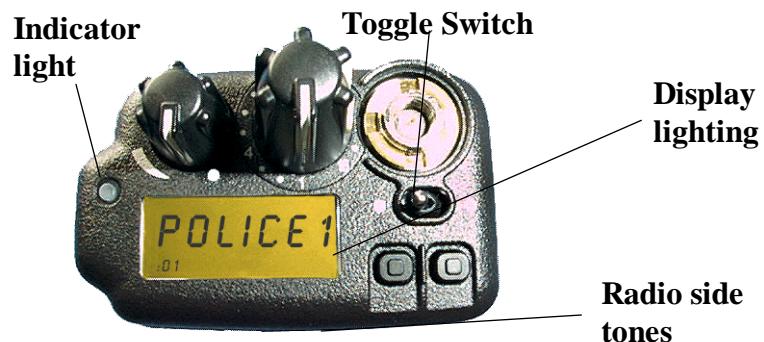
# Turning off the Display Lighting and Side Tones

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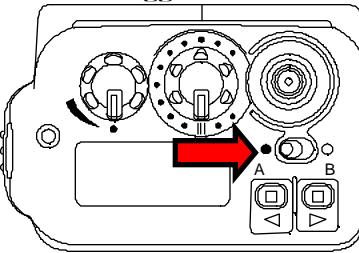
**Background** For some users, it is important to be able to turn off the radio's display lights and side tones. For example, in covert operations, lights and sounds could inadvertently expose an otherwise unobservable radio user. For this purpose the radio has a toggle switch which disables the radio display light, indicator light and audible side tones.

---

**Figure** The following figure shows the location of the toggle switch and the features it controls.



**Procedure** Follow the step below to turn off the display lighting and side tones.

Step	Action
1	<p>Push the toggle switch in the direction of the arrow to position B.</p>  <p><b>Result:</b> The display light, indicator light and side tones are disabled.</p>

## Listening to Voice Calls

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**Background** Once the radio is turned on and active on your OpenSky network, you can begin to hear voice calls.

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**Process** The table below describes what happens when you receive a voice call.

Stage	Description
1	Your radio display changes briefly to show the name of the user group that the call is coming from.
2	The indicator light will turn green and blink while the call is being received.
3	At the end of the call, you will hear a single end tone. This lets you know that the person speaking is through with that portion of their transmission.

---

# Making a Voice Call

---

**Background** The steps for making a voice call are similar to those of a conventional portable radio.

---

**Procedure** Follow the steps below to make a voice call.

Step	Action						
1	<p>If needed, turn on the radio by turning the power/volume switch clockwise until it clicks.</p> <p><i>The radio will be ready to use following the startup sequence. When you see the primary profile displayed, you are ready to talk.</i></p>						
2	<p>Choose your next step from the table below.</p> <table border="1"><thead><tr><th>If</th><th>Then</th></tr></thead><tbody><tr><td>No one is talking</td><td>Continue to Step 3.</td></tr><tr><td>Someone is talking</td><td>Wait to hear a single end tone indicating they are done talking and continue to step 3.</td></tr></tbody></table> <p><i>A blinking green indicator light tells you that a call is being received.</i></p>	If	Then	No one is talking	Continue to Step 3.	Someone is talking	Wait to hear a single end tone indicating they are done talking and continue to step 3.
If	Then						
No one is talking	Continue to Step 3.						
Someone is talking	Wait to hear a single end tone indicating they are done talking and continue to step 3.						
3	<p>Push the push-to-talk button and speak normally.</p> <ul style="list-style-type: none"><li>• <i>For best results, hold the transceiver approximately 1-½ inches from your mouth.</i></li><li>• <i>If you hear 3 rapid beeps, the network is busy. Wait a few seconds and try your call again.</i></li><li>• <i>If you hear a 3-beep (medium-medium-high) sequence your call is in the queue. When the network is available, the radio automatically transmits for 10 seconds and the mode status indicator blinks red when you can make your call.</i></li></ul>						
4	Release the push-to-talk button when you are done talking.						

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# Changing the Side Tone Setting

---

**Background** Your radio will beep when you press the **VOL**, **MENU**, or **SEL** switch. These beeps are known as side tones. You can turn the beeps on or off to suit your needs.

---

**Procedure** Follow the steps below to change the side tone setting.

Step	Action							
1	Press a <b>Menu</b> button until the side tone menu shows. 							
2	Use the table below to determine your next step.  <table border="1"><thead><tr><th>If you want to...</th><th>Then...Press a <b>Select</b> button until the display shows:</th></tr></thead><tbody><tr><td>Hear side tones</td><td>Press a <b>Select</b> button until the display shows <b>SIDE ON</b>.</td></tr><tr><td>Disable side tones</td><td>Press a <b>Select</b> button until the display shows <b>SIDEOFF</b>.</td></tr></tbody></table> <b>Result:</b> You will have changed the side tone setting.		If you want to...	Then...Press a <b>Select</b> button until the display shows:	Hear side tones	Press a <b>Select</b> button until the display shows <b>SIDE ON</b> .	Disable side tones	Press a <b>Select</b> button until the display shows <b>SIDEOFF</b> .
If you want to...	Then...Press a <b>Select</b> button until the display shows:							
Hear side tones	Press a <b>Select</b> button until the display shows <b>SIDE ON</b> .							
Disable side tones	Press a <b>Select</b> button until the display shows <b>SIDEOFF</b> .							
3	To return to the menu display, choose from the following table.  <table border="1"><thead><tr><th>To return...</th><th>Then</th></tr></thead><tbody><tr><td>Immediately</td><td>Press a <b>Menu</b> button.</td></tr><tr><td>After a brief wait</td><td>Wait approximately 10 seconds.</td></tr></tbody></table> <b>Result:</b> The radio will return to the menu display.		To return...	Then	Immediately	Press a <b>Menu</b> button.	After a brief wait	Wait approximately 10 seconds.
To return...	Then							
Immediately	Press a <b>Menu</b> button.							
After a brief wait	Wait approximately 10 seconds.							

*Note:* When the radio is turned off, the side tone setting will be saved for your next use of the radio.

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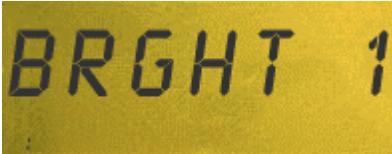
# Adjusting the Display Brightness

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**Background** You can adjust the display brightness to suit your needs.

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**Procedure** Follow the steps below to change the display brightness.

Step	Action						
1	Press a <b>Menu</b> button until the brightness menu shows. 						
2	Use the table below to determine your next step. <table border="1"><thead><tr><th>If you want to...</th><th>Then press...</th></tr></thead><tbody><tr><td>Increase brightness</td><td>The upper Select button.</td></tr><tr><td>Decrease brightness</td><td>The lower Select button.</td></tr></tbody></table>	If you want to...	Then press...	Increase brightness	The upper Select button.	Decrease brightness	The lower Select button.
If you want to...	Then press...						
Increase brightness	The upper Select button.						
Decrease brightness	The lower Select button.						
3	To return to the menu display, choose from the following table. <table border="1"><thead><tr><th>To return...</th><th>Then</th></tr></thead><tbody><tr><td>Immediately</td><td>Press a <b>Menu</b> button.</td></tr><tr><td>After a brief wait</td><td>Wait approximately 10 seconds.</td></tr></tbody></table> <b>Result:</b> The radio will return to the menu display.	To return...	Then	Immediately	Press a <b>Menu</b> button.	After a brief wait	Wait approximately 10 seconds.
To return...	Then						
Immediately	Press a <b>Menu</b> button.						
After a brief wait	Wait approximately 10 seconds.						

*Note:* When the radio is turned off, the brightness setting will be saved for your next use of the radio.

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# Changing the Active Profile

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**Background** You can change the *active* profile of your radio from the default profile to any of the other profiles in your radio personality.

*A change of the active profile enables you to change the list of talk groups and listen groups that you communicate with.*

---

**Procedure** Follow the step below to change the active profile.

Step	Action
1	Turn the <b>Profile</b> selector to move to the desired profile.  <b>Result:</b> The displayed profile is now active. The radio display will change to show the name for the talk group in the selected profile and the new profile number.

*Note:* When turned on, the radio activates the profile corresponding to the position of the profile selector.

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# Using Your Radio in Emergency Situations

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**Background** Your radio is capable of sending an emergency alert and making emergency calls on the network. OpenSky handles emergency calls with the highest priority, allowing you or the people you serve to get needed help.

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**Procedure** The following table describes the procedure for using your P-801T radio in an emergency.

Step	Action
1	<p>Press the orange emergency button on your radio to send the emergency alert.</p> <p><i>Other users hear a distinctive 3 tone burst of sound. At the same time, an emergency talk group is enabled.</i></p>
2	<p>Press the push-to-talk button to send your voice out on the emergency talk group.</p> <p><i>All of the radios in the emergency talk group will hear your call and see the emergency talk group displayed on their radio.</i></p>
3	<p>When the emergency ends, press and hold the orange emergency button for 3 seconds to clear the emergency alert and call.</p> <p><i>Note: The user who made the initial emergency alert, must clear it.</i></p>

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## Advanced Operation

### Increasing the Scanning Priority of a User group

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**Background** Increasing the scanning priority lets you prioritize transmissions from one specific listen group over other listen groups in an active profile. The talk group is set as the default for scanning priority

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**Process** The table below describes the process for increasing a user group's scanning priority.

Stage	Description
1	The profile containing the user group you wish to prioritize is activated.
2	The priority menu is accessed.
3	The desired user group is prioritized.

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**Procedure** Follow the steps below to increase the scanning priority of a user group.

Step	Action
1	Turn the <b>Profile</b> selector to the profile containing the user group you wish to prioritize.  

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## Increasing the Scanning Priority of a User group, Continued

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### Procedure (continued)

2	Press the <b>Menu B</b> button to access the priority menu. 						
3	Press the upper <b>Select</b> button until the user group you want to prioritize is displayed.  <b>Result:</b> The selected user group's transmission priority is increased.						
4	To return to the menu display, choose from the following table.  <table border="1"><thead><tr><th>To return...</th><th>Then</th></tr></thead><tbody><tr><td>Immediately</td><td>Press a <b>Menu</b> button.</td></tr><tr><td>After a brief wait</td><td>Wait approximately 10 seconds.</td></tr></tbody></table> <b>Result:</b> The radio will return to the menu display.	To return...	Then	Immediately	Press a <b>Menu</b> button.	After a brief wait	Wait approximately 10 seconds.
To return...	Then						
Immediately	Press a <b>Menu</b> button.						
After a brief wait	Wait approximately 10 seconds.						

#### Notes:

- Changing the priority of a listen group does not change your talk group.
- You can prioritize one user group in each of the profiles in your radio personality.
- The scanning priority settings are reset to the default talk group when the radio is turned off.

# Changing the Scanning Mode

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## Background

Changing the scanning mode can broaden or narrow the span of your communications. Changing the scanning mode changes the way you interact with listen groups. Talk groups are not affected by changes to the scanning mode.

There are three available scanning modes:

- No scanning
- Normal scanning, or
- Talkback Scanning.

Choosing one of the three available scanning modes changes the way your radio scans all of the profiles for your radio personality.

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## Definitions

The following table defines each of the three scanning modes.

Mode	Definition
No Scanning	You do not hear calls from the listen groups.
Normal Scanning	You hear calls from the listen groups. This is the default setting.
Talkback Scanning	<p>You hear calls from the listen groups. If you press the push-to-talk switch before a timer expires, you will be able to call the last listen group that you heard.</p> <p>If the talkback timer expires, your transmission will be placed on the talk group for your active profile.</p> <p><i>Note:</i> Your network administrator sets the length of the talkback timer for each user group.</p>

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## Changing the Scanning Mode, Continued

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**Procedure** The following table details the procedure for changing the scanning mode of the radio.

Step	Action									
1	Press a <b>Menu</b> button until the scanning menu appears. 									
2	Choose the scanning mode: <table border="1"><thead><tr><th>To ...</th><th>Press SEL until...</th></tr></thead><tbody><tr><td><i>Narrow</i> your scanning list to only the active talkgroup</td><td><b>SC NONE</b> is displayed.</td></tr><tr><td><i>Use</i> normal scanning</td><td><b>SC NORM</b> is displayed.</td></tr><tr><td><i>Broaden</i> your voice transmissions to users beyond the active talkgroup</td><td><b>SC TLKB</b> is displayed.</td></tr></tbody></table>		To ...	Press SEL until...	<i>Narrow</i> your scanning list to only the active talkgroup	<b>SC NONE</b> is displayed.	<i>Use</i> normal scanning	<b>SC NORM</b> is displayed.	<i>Broaden</i> your voice transmissions to users beyond the active talkgroup	<b>SC TLKB</b> is displayed.
To ...	Press SEL until...									
<i>Narrow</i> your scanning list to only the active talkgroup	<b>SC NONE</b> is displayed.									
<i>Use</i> normal scanning	<b>SC NORM</b> is displayed.									
<i>Broaden</i> your voice transmissions to users beyond the active talkgroup	<b>SC TLKB</b> is displayed.									
	<b>Result:</b> The scanning mode you chose is now active for all profiles in your radio personality.									
3	To return to the menu display, choose from the following table: <table border="1"><thead><tr><th>To return...</th><th>Then</th></tr></thead><tbody><tr><td>Immediately</td><td>Press a <b>Menu</b> button.</td></tr><tr><td>After a brief wait</td><td>Wait approximately 10 seconds.</td></tr></tbody></table>		To return...	Then	Immediately	Press a <b>Menu</b> button.	After a brief wait	Wait approximately 10 seconds.		
To return...	Then									
Immediately	Press a <b>Menu</b> button.									
After a brief wait	Wait approximately 10 seconds.									
	<b>Result:</b> The radio will return to the menu display.									

*Note:* When the radio is turned off, the scanning mode selection will be saved for your next use of the radio.

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# Changing the Active Radio Channel

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**Background** You can change the active radio channel of your radio. If your radio reception is poor or you are repeatedly denied channel access, you can manually change the radio to a different channel.

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**Procedure** The table below describes the procedure for displaying and changing the active radio channel.

Step	Action
1	Press a <b>Menu</b> button until the channel display shows. 
2	Press a <b>Select</b> button to display a different radio channel.
3	Wait until the radio synchronizes on the new channel.  <b>Result:</b> You will see the : in the bottom right corner of the display. This shows that the radio is synchronized on the new channel.

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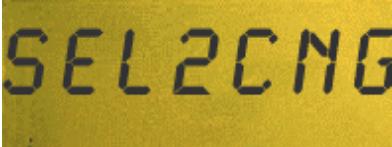
# Changing the Operating Mode

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**Background** The radio normally uses OTP (OpenSky Trunked Protocol) to provide the full features of your digital voice and data network. To work with radios using other protocols such as conventional FM, you can manually change the mode of operation.

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**Procedure** The table below describes the steps to follow for changing the operating mode of the radio.

Step	Action						
1	Press a <b>Menu</b> button until the mode change menu appears. 						
2	Press the upper <b>Select</b> button to access the Change Mode 2 menu. 						
3	Choose the next step from the table below. <table border="1"><thead><tr><th>To ...</th><th>Press...</th></tr></thead><tbody><tr><td>Abort the mode change</td><td><b>Menu</b>  <b>Result:</b> The radio will display <b>ABORTED</b> and the change will be aborted.</td></tr><tr><td>Continue</td><td><b>Select</b></td></tr></tbody></table>	To ...	Press...	Abort the mode change	<b>Menu</b>  <b>Result:</b> The radio will display <b>ABORTED</b> and the change will be aborted.	Continue	<b>Select</b>
To ...	Press...						
Abort the mode change	<b>Menu</b>  <b>Result:</b> The radio will display <b>ABORTED</b> and the change will be aborted.						
Continue	<b>Select</b>						

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## Changing the Operating Mode, Continued

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### Procedure (continued)

Step	Action							
4	Press the upper <b>Select</b> button until the desired mode is displayed. <ul style="list-style-type: none"><li>• <b>OTP</b> is OpenSky Trunking Protocol.</li><li>• <b>OCF</b> is OpenSky Conventional FM.</li><li>• <b>OAT</b> is Over the Air Trunked-Download.</li></ul>							
5	Press the <b>Menu B</b> button to change the mode.							
6	Choose the next step from the table below. <table border="1"><thead><tr><th>To ...</th><th>Press...</th></tr></thead><tbody><tr><td>Abort the mode change</td><td><b>Menu A</b>  <b>Result:</b> The radio will display <b>ABORTED</b> and the change will be aborted.</td></tr><tr><td>Continue</td><td><b>Select</b>  <b>Result:</b> The radio displays <b>BOOTING</b> and automatically shuts off and turns on in the selected operating mode.</td></tr></tbody></table>		To ...	Press...	Abort the mode change	<b>Menu A</b>  <b>Result:</b> The radio will display <b>ABORTED</b> and the change will be aborted.	Continue	<b>Select</b>  <b>Result:</b> The radio displays <b>BOOTING</b> and automatically shuts off and turns on in the selected operating mode.
To ...	Press...							
Abort the mode change	<b>Menu A</b>  <b>Result:</b> The radio will display <b>ABORTED</b> and the change will be aborted.							
Continue	<b>Select</b>  <b>Result:</b> The radio displays <b>BOOTING</b> and automatically shuts off and turns on in the selected operating mode.							

*Note:* When the radio is turned off, the operating mode is saved for your next use of the radio.

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# Locking Out User groups

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**Background** To focus your voice communications, you can lock out user groups that you do not want to hear. Locking out a user group does not prevent you from getting emergency calls or calls that come from your priority scan group.

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**Process** The lock out menu pertains to the active profile. As you receive voice calls, the lockout menu is loaded with the names of the calling user groups. You then select the name of the user group to be locked out from the menu.

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**Procedure** Follow the steps below to lock out a user group.

Step	Action						
1	Press a <b>Menu</b> button until the lockout menu appears. 						
2	Choose the next step from the table below. <table border="1"><thead><tr><th>If ...</th><th>Then...</th></tr></thead><tbody><tr><td><b>NONE</b> is displayed</td><td>There are no user groups to lock out because you have not received any voice calls from other users in the active profile.</td></tr><tr><td>A profile name and LO are displayed</td><td>Press upper <b>Select</b> button until the user group you want to lock out is displayed.</td></tr></tbody></table>	If ...	Then...	<b>NONE</b> is displayed	There are no user groups to lock out because you have not received any voice calls from other users in the active profile.	A profile name and LO are displayed	Press upper <b>Select</b> button until the user group you want to lock out is displayed.
If ...	Then...						
<b>NONE</b> is displayed	There are no user groups to lock out because you have not received any voice calls from other users in the active profile.						
A profile name and LO are displayed	Press upper <b>Select</b> button until the user group you want to lock out is displayed.						

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## Locking Out User groups, Continued

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### Procedure (continued)

Step	Action						
3	<p>Press the lower <b>Select</b> button to lock out the displayed user group.</p> <p><b>Result:</b> You will not hear voice calls from the user groups you have locked out.</p>						
4	<p>To return to the menu display, choose from the following table.</p> <table border="1"><thead><tr><th>To return...</th><th>Then</th></tr></thead><tbody><tr><td>Immediately</td><td>Press a <b>Menu</b> button.</td></tr><tr><td>After a brief wait</td><td>Wait approximately 10 seconds.</td></tr></tbody></table> <p><b>Result:</b> The radio will return to the menu display.</p>	To return...	Then	Immediately	Press a <b>Menu</b> button.	After a brief wait	Wait approximately 10 seconds.
To return...	Then						
Immediately	Press a <b>Menu</b> button.						
After a brief wait	Wait approximately 10 seconds.						

*Note:*

- Changing the active profile removes any lockouts you have made.
- Turning off the radio removes any lockouts you have made.

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## Troubleshooting

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**Troubleshooting table** Use the table below as a troubleshooting guide if your radio does not operate properly. If additional assistance is required, contact a qualified service technician for help.

<b>Symptom</b>	<b>Likely Cause</b>	<b>Suggested solutions</b>
Radio will not turn on.	Low battery.	Change your battery pack to a fully charged pack.
No audio.	Speaker volume is muted.	Increase the volume level.
Poor audio.	You are in a poor coverage area or you are not on the network. Antenna connection is loose.	Move to a better coverage area. Ensure that the antenna is fully connected to the radio.

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