TM9456
Dual-Radio
User's Guide

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Contents

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Tait Limited is an environmentally responsible company which supports waste minimization, material recovery and restrictions in the use of hazardous materials.

The European Union's Waste Electrical and Electronic Equipment (WEEE) Directive requires that this product be disposed of separately from the general waste stream when its service life is over. For more information about how to dispose of your unwanted Tait product, visit the Tait WEEE website at www.taitradio.com/weee. Please be environmentally responsible and dispose through the original supplier, or contact Tait Limited.

Tait Limited also complies with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive in the European Union.

In China, we comply with the Measures for Administration of the Pollution Control of Electronic Information Products. We will comply with environmental requirements in other markets as they are introduced.

For your safety

Before using your radio, please read the following important safety and compliance information.

Radio frequency exposure information

For your own safety and to ensure you comply with the Federal Communication Commission's (FCC) radio frequency (RF) exposure guidelines, please read the following information before using this radio.

Using this radio

You should use this radio only for work-related purposes (it is not authorized for any other use) and if you are fully aware of, and can exercise control over, your exposure to RF energy. To prevent exceeding FCC RF exposure limits, you must control the amount and duration of RF that you and other people are exposed to.

It is also important that you:

- Do not remove the RF Exposure label from the radio.
- Ensure this RF exposure information accompanies the radio when it is transferred to other users.
- Do not use the radio if you do not adhere to the guidelines on controlling your exposure to RF.

Controlling your exposure to RF energy

This radio emits radio frequency (RF) energy or radio waves primarily when calls are made. RF is a form of electromagnetic energy (as is sunlight), and there are recommended levels of maximum RF exposure.

To control your exposure to RF and comply with the maximum exposure limits for occupational/controlled environments, follow these guidelines:

- Do not talk (transmit) on the radio more than the rated transmit duty cycle. This is important

because the radio radiates more energy when it is transmitting than when it is receiving.

- While you are transmitting (talking or sending data) on the radio, you must ensure that there is always a distance of 35 inches (0.9m) between people and the antenna. This is the minimum safe distance. For 110W mobiles, the minimum safe distance is 44 inches (1.1m).
- Use the radio only with Tait-approved antennas and attachments, and make only authorized modifications to the antenna otherwise you could damage the radio and violate FCC regulations.

For more information on what RF energy is and how to control your exposure to it, visit the FCC website at www.fcc.gov/oet/rfsafety/rf-faqs.html.

Compliance with RF energy exposure standards

This two-way radio complies with these RF energy exposure standards and guidelines:

- United States Federal Communications Commission, Code of Federal Regulations; 47 CFR §§ 1.1307, 1.1310, and 2.1091.
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95.1-1992.
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition.

This radio complies with the IEEE and ICNIRP exposure limits for occupational/controlled RF exposure environments at operating duty factors of up to 50% talk to 50% listen.

Radio frequency emissions limits in the USA

Part 15 of the FCC Rules imposes RF emission limits on receivers.

This radio complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

USA public safety bands (764–776 MHz and 794–806 MHz)

The Code of Federal Regulations (CFR) Title 47 Subpart R deals with the use of frequencies in the 764 to 776 MHz and 794 to 806 MHz bands.

Low-power channels

This radio complies with §90.531 (b) (3) and §90.531 (b) (4) of 47 CFR. These sections state that only low-power transmission is permitted on the following channels:

- Regional Planning channels, as defined in §90.531 (b) (3).
- Itinerant channels, as defined in §90.531 (b) (4).

Use of encryption

This radio complies with §90.553 (a) of 47 CFR. This states that:

- Encryption is not permitted on the nationwide Interoperability calling channels. These channels are defined in §90.531 (b) (1) (ii).
- Radios using encryption must have a readily accessible switch or control to allow the radio user to disable encryption.

EMC regulatory compliance in Australia

This product meets all ACMA regulatory requirements for electromagnetic compatibility (EMC). For more information about EMC compliance, visit the ACMA website at www.acma.gov.au.

Frequency band reserved for distress beacons

Frequency band 406 to 406.1 MHz is reserved for use by distress beacons. Transmissions should not be made within this frequency band.

Health, safety and electromagnetic compatibility in Europe

In the European Community, radio and telecommunications equipment is regulated by Directive 1999/5/EC, also known as the Radio and Telecommunications Terminal Equipment (R&TTE) directive. The requirements of this directive include protection of health and safety of users, as well as electromagnetic compatibility.

Intended purpose of product

This product is an FM radio transceiver. It is intended for radio communication in the Private Mobile Radio (PMR) or Public Access Mobile Radio (PAMR) services, to be used in all member states of the European Union (EU) and states within the European Economic Area (EEA).

Restrictions

This product can be programmed to transmit on frequencies that are not harmonized throughout the EU/EEA, and will require a licence to operate in each member state.

This product can be programmed for frequencies or emissions that may make its use illegal. Where applicable, a license must be obtained before this product is used. All license requirements must be observed. Limitations may apply to transmitter power, operating frequency, channel spacing, and emission.

Declaration of conformity

Brief Declarations of Conformity appear on page 2 of this booklet. To download the formal declaration of conformity, go to http://eudocs.taitradio.com/.

A signed and dated paper copy of the declaration of conformity can be obtained from Tait Electronics Limited.

Interference with electronic devices

Warning Some electronic devices may be prone to malfunction due to the lack of protection from RF energy that is present when your radio is transmitting.

Examples of electronic devices that may be affected by RF energy are:

- aircraft electronic systems
- vehicular electronic systems such as fuel injection, anti-skid brakes, and cruise control
- medical devices such as hearing aids and pacemakers
- medical equipment in hospitals or health care facilities.

Switch off the radio before boarding an aircraft. Using your radio while in the air is not permitted.

Consult the manufacturer (or its representative) of any such electronic devices to determine whether electronic circuits in those devices will perform normally when the radio is transmitting.

Warning If you have a pacemaker, immediately turn off the radio if you suspect it is interfering with the pacemaker.

If there is interference between your hearing aid and the radio, please discuss an alternative solution with the hearing aid manufacturer.

Potentially explosive atmospheres and blasting areas

Warning Turn off the radio before approaching blasting caps, a blasting area, or any area where you are instructed to turn off a two-way radio. Obey all signs and instructions. Interference with blasting operations could cause serious injury or death.

Radio installation and operation in vehicles

Warning Keep radio equipment away from airbags and airbag deployment areas. Do not install, charge, or place a radio near such areas. An activated airbag can propel radio equipment with sufficient force to cause serious injury to vehicle occupants. An airbag may not perform to specification if obstructed by radio equipment.

Warning To avoid damage to existing wiring, airbags, petrol tanks, fuel and brake lines, or battery cables, refer to the installation guide for the radio, and to the vehicle manufacturer's manual, before installing electronic equipment in the vehicle.

Using a handheld microphone or a radio while driving a vehicle may violate the laws and legislation that apply in your country or state. Please check the vehicle regulations in your area.

Radio protection when charging the vehicle battery

Notice Always remove the fuses from the radio power cable before charging the vehicle battery, connecting a second battery, or using power from another vehicle (e.g. when jump-starting the vehicle).

Electromagnetic compatibility in European vehicles

In the European Community, radio equipment fitted to automotive vehicles is regulated by Directive 72/245/EEC and its amendments. The requirements of this directive cover the electromagnetic compatibility of electrical or electronic equipment fitted to automotive vehicles.

To meet the requirements of Directive 72/245/EEC and its amendments, installation of this product in a vehicle must be performed according to the instructions provided by the vehicle manufacturer

Notice Failure to install the product correctly may void the vehicle's type-approval. The owner could be held responsible for any damage resulting from vehicle failure that can be attributed to RF energy interfering with the vehicle systems.

Unapproved modifications or changes to radio

Notice The radio is designed to satisfy the applicable compliance regulations. Do not make modifications or changes to the radio that are not expressly approved by Tait Electronics Limited. Failure to do so could invalidate compliance requirements and void the user's authority to operate the radio.

High radio surface temperatures

Warning The bottom surface of the radio and the heatsink fins can become hot during prolonged operation. Do not touch these parts of the radio.

EN 60950 requirements (25 watt mobiles)

This radio complies with the European Union standard EN 60950 when operated up to the rated 33% duty cycle of two minutes transmit and four minutes receive, and with ambient temperatures of 30 °C or lower.

Warning Operation outside these limits may cause the external temperature of the radio to rise higher than this standard permits.

110 watt mobiles

Notice Do not place objects on the radio. The heatsink needs a clearance of at least one inch (2.5cm) and a free flow of air.

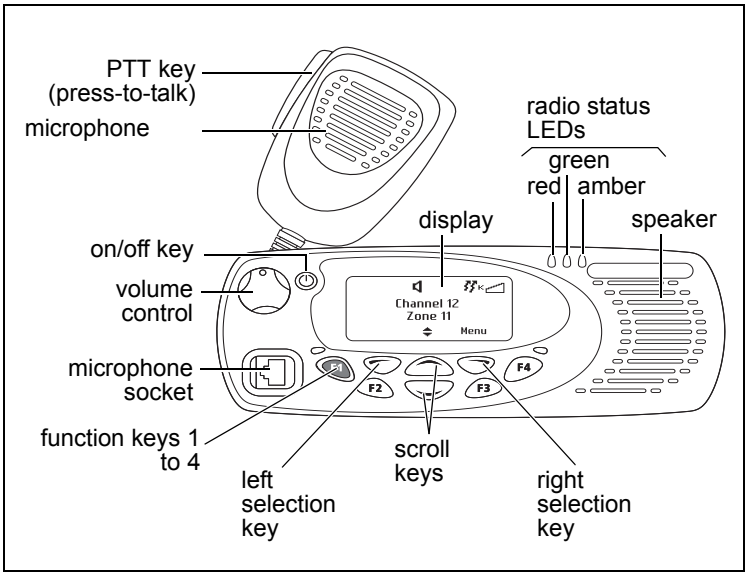
Menu map

The menus available depend on the way your radio is programmed.

- **Main menu**
- **Channels**
- **Zones**
- **Individual call**
- **Phone call**
- **Dial radio call**
- **Services**
  - *Messages*
  - *Status update*
  - *Status request**
  - *Call alert*
  - *Radio check**
  - *Radio monitor**
  - *Radio inhibit**
  - *Radio uninhibit**
  - * *Restricted to radios programmed for administration services*
- **Talkgroups**
- **Priority call**
- **Recent calls**
- **Security**
  - *Encryption*
  - *Change all*
  - *Preset keys*
  - *Change keyset*
  - *OTAR*
    - *Rekey request*
  - *Advanced*
    - *Zeroize all*
    - *Zeroize key*
    - *Demo key*
- **Trunking**
  - *Site lock*
  - *Dynamic regrouping*
  - *Band scan*
  - *Crossband*
    - *Hunt force*
    - *Hunt toggle*
- **Repeater**
  - *Activate*
- **Emergency**
  - *Acknowledge*
  - *Last stored*
- **Radio settings**
  - **Functions**
    - *Low power tx*
    - *Monitor*
    - *Lock radio*
    - *Set scan key*
    - *Squelch override*
    - *X-band repeater*
    - *Scanning*
    - *PA speaker*
  - **Ignore 2-tone**
  - **Alert settings**
    - *Indicator level*
    - *Keypress tones*
    - *Quiet operation*
    - *Silent operation*
    - *External alert*
  - **Display settings**
    - *Backlighting*
    - *Backlight level*
    - *Contrast adjust*
    - *Talk party ID*
    - *RSSI*
  - **Radio info**
    - *Key settings*
    - *Version info*
    - *Radio ID*
    - *Serial number*
    - *Alias*
  - **Edit groups**
- **Location services**
  - *GPS info*
  - *GPS logs*
  - *Send logs*
  - *Send on PTT*
- **Diagnostics**

Radio controls

For more information about the radio controls, see “About the radio controls” on page 21.



1 About this guide

This user's guide provides information about the TM9456 mobile radio.

The radio behavior described in this guide applies to radios with firmware version 33.01.xx (where xx is the current firmware version). To check the radio's firmware version, see "Checking the version of a radio" on page 116. If your radio does not operate as you expect, contact your radio provider for assistance.

Safety warnings used in this guide

Within this user's guide, the following warnings are used to alert you to important safety information:

Warning This alert is used when there is a hazardous situation which, if not avoided, could result in death or serious injury.

Caution This alert is used when there is a hazardous situation which, if not avoided, could result in minor or moderate injury.

Notice This alert is used to highlight information that is required to ensure procedures are performed correctly. Incorrectly performed procedures could result in equipment damage or malfunction.

Related documentation

The following documentation is also available for your Tait radio, which you can access from the Tait Technical Support website (http://support.taitradio.com):

- *Safety and Compliance Information*—supplied with each radio. (The same information is included in this user's guide.)

- *Installation and Programming Guide*—covers installing the TM9456 mobile radios, microphones, antennas, emergency switches, and external alert devices.
- *Accessory installation instructions*—may be supplied with an accessory.

2 Getting started

This section describes your radio's controls and indicators.

This section covers:

About your digital radio

Your digital radio may have some channels programmed as either analog or dual mode. Dual mode channels are able to receive both digital and analog calls.

You may notice differences between your radio's analog and digital channels in terms of:

- static noise in low signal areas, and
- radio coverage in marginal reception areas.

Lack of static noise

On digital channels there is no static noise, even in low signal areas. This lack of static is because your digital radio removes the 'noise' from the call, so that you hear only clear voice.

Coverage

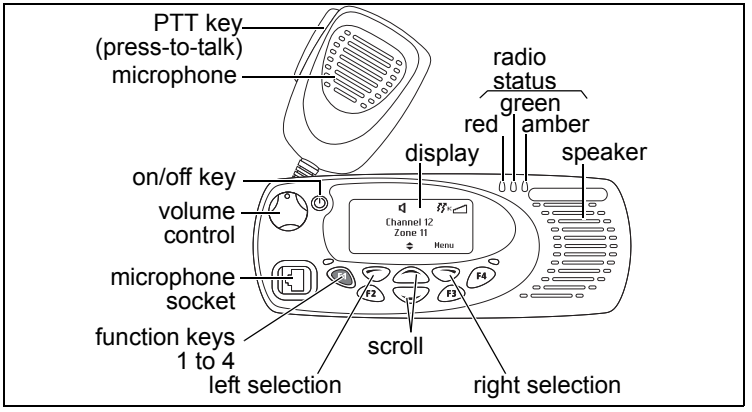
With analog channels, the background noise in a call gets progressively worse when you are in fringe areas or even slightly outside normal coverage areas. With digital channels, a call remains clear and then drops off quickly at the border of a coverage area. The reason for this is that a digital call is either received or it isn't.

About the radio controls

The radio controls are the PTT key, volume control, on/off key, scroll keys, selection keys and function keys. Some keys have functions assigned to both short and long key presses:

- a short key press is less than one second, and
- a long key press is more than one second.

The radio controls and their functions are described in the following sections.



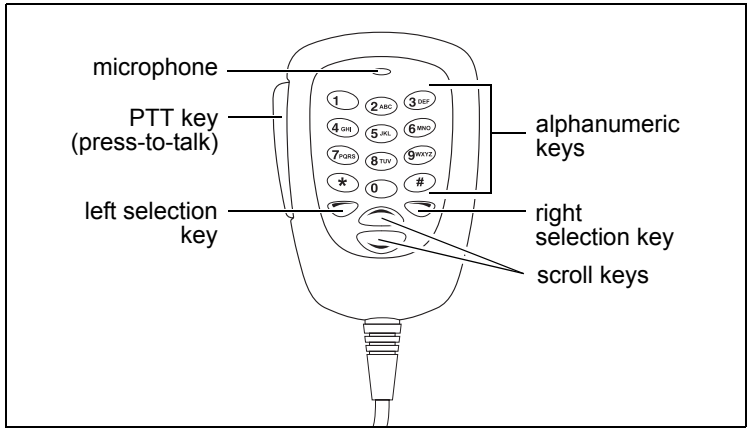
Symbol	Name	Function
	PTT key	Press and hold to transmit and release to listen
	Volume control	Rotate to change the speaker volume
	On/off key	Turn the radio on or off with a long press

Symbol	Name	Function
	Left and right selection keys	Action determined by the text above the selection key
	Scroll keys	Scroll up and down through a list of menu options, scroll left and right in messages, or select the Quick Access menu
	Emergency key	Activates emergency mode (depending on the way the radio is programmed)
	Function keys	Programmed for frequently used options. For dual radios this may include switching the active radio, changing between single receive, dual receive and dual transmit modes

About the keypad microphone

Your radio may have a keypad microphone installed. The keypad microphone has a PTT key as well as alphanumeric keys, two scroll keys, and left and right selection keys.

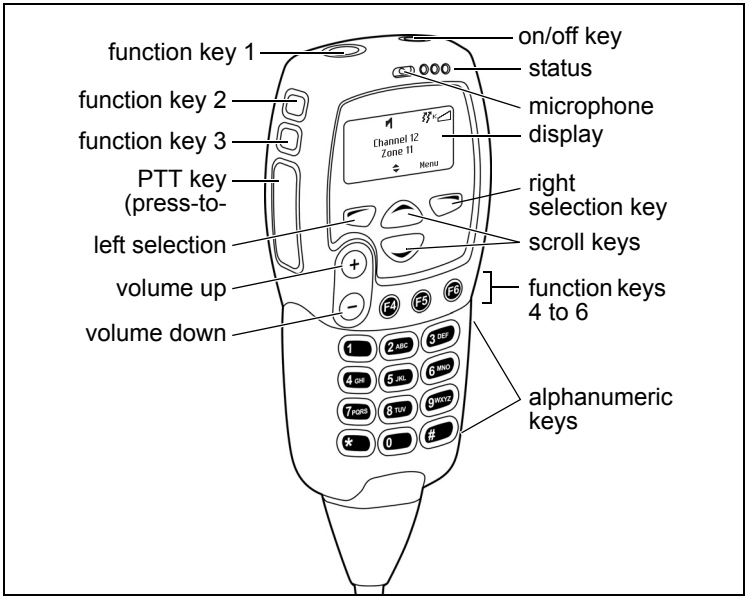
The PTT key, the scroll keys and the selection keys all work in the same way as those on the radio control head (see “About the radio controls” on page 21).



About the hand-held control head

Your radio may have a hand-held control head installed, to enable you to operate the radio at a distance from the radio body.

The keys and controls work in the same way as those on the standard control head, with the exception of the PTT and volume up and down keys. The hand-held control head also has two additional function keys.



Understanding the radio display

The messages and symbols you see on your radio display depend on the mode in which your radio is operating and the way it is programmed.

Radio display symbols

These are some of the symbols you may see on your radio display:

Symbol	Meaning
	Signal strength indicator: the more bars, the stronger the signal being received by your radio
	Trunking system available: your radio is operating on a P25 trunking system
	Transmit: your radio is transmitting
	Low-power transmit: your radio is transmitting on low power
	Repeater talkaround: your radio is operating in repeater talkaround mode
	Zone: this letter represents the zone in which your radio is operating, where A is zone 1, Z is zone 26 and AD is zone 30 (in the example shown, K represents zone 11)
	Scanning: your radio is monitoring a group of channels or talkgroups for activity
	Scanning: your radio is monitoring a group of channels or talkgroups for activity, and the currently selected channel or talkgroup is a member of the scan group.
	Monitor or squelch override: monitor or squelch override is active
	Silent operation: your radio's audible tones have been turned off
	Encryption: your radio's transmissions are encrypted
	Scrolling: you can use  or  to move through a list
	Dual transmit mode: your radio will transmit on both channels shown in the display

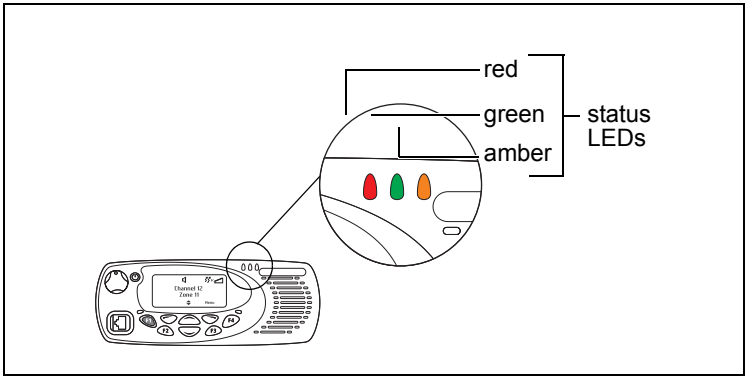
Understanding the radio indicators

The status LED indicators and the radio's audible tones—together with the radio display—all combine to give you information about the state of your radio.

The most common way the indicators work is described in the following sections.

The way these indicators behave may be affected by the way your radio is programmed.

Status indicators



Color		Meaning
Red (transmit)		Glowing: your radio is transmitting
		Flashing: your transmit timer is about to expire
Green (receive)		Glowing: the current channel is busy
		Flashing: you have received a call or monitor is active
amber (scanning)		Glowing: your radio is scanning a group of channels for activity
		Flashing: your radio has detected activity on a channel, and has halted on this channel

Audible tones

The radio uses audible tones to alert you to its status:

- Radio controls and keypress tones—the tones and beeps you hear when you press your radio's keys or use the controls. (You can turn these

tones off—see “Turning off radio controls and key-press tones” on page 113.)

- Incoming call tone—when the radio is receiving a call.
- Warning tones—when there is an error.

Warning If quiet or silent mode is turned on, you will not hear any alert tones. See “Customizing the audible alert settings” on page 111.

Some of the more common audible tones are described below:

Tone	Meaning
One short beep	■ Valid keypress: the action you have attempted is permitted ■ Function activated: a function has been turned on (using either the Main menu or a function key)
One long, low-pitched beep	■ Invalid keypress: the action you have attempted is not permitted ■ Transmission inhibited: you have attempted to transmit, but for some reason you cannot make a call at this time
One short, low-pitched beep	Function deactivated: a function has been turned off (using either the Main menu or a function key)
Two short beeps	Radio turned on: the radio is powered on and ready to use

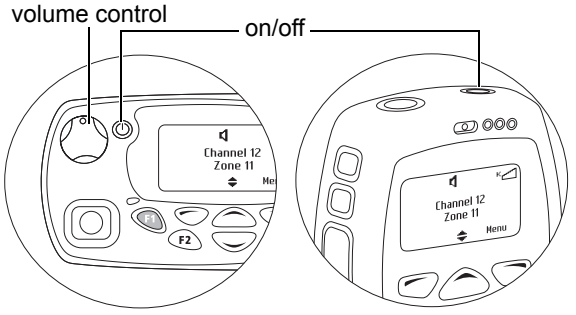
3 Basic operation

This section describes the basic operation of your radio.

This section covers:

Turning the radio on and off

- Long press the on/off key to turn the radio either on or off.



Standard control head Hand-held control head

When the radio is first turned on, the red, green, and orange LEDs flash, and the radio gives two short beeps. A message briefly appears in the display.

Adjusting the speaker volume

The volume control also changes the volume level of the radio's audible indicators.

Standard control head

- Rotate the volume control clockwise to increase the speaker volume and counterclockwise to decrease the volume.

  The raised dot indicates the current volume setting.

Hand-held control head

- Press ⊕ to increase the speaker volume, and ⊖ to decrease the volume.

Activating the external speaker

An external speaker is used to increase the volume of the audio from the radio's standard speaker.

To check the current state of the external speaker:

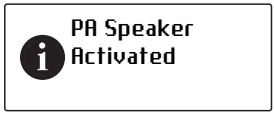
- Short press the function key programmed for external speaker.

  The message **PA Speaker is active** (or **PA Speaker is not active**) briefly appears in the display.

To turn on the external speaker:

- Long press the function key programmed for external speaker.

The message **PA Speaker Activated** briefly appears in the display.

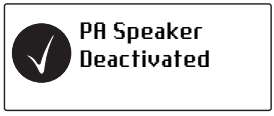


Adjust the volume using either the volume control (standard control head), or the ⊕ and ⊖ keys (hand-held control head).

To turn off the external speaker:

- Long press the function key programmed for external speaker.

  The message **PA Speaker Deactivated** briefly appears in the display.



About locking the radio

You can lock your radio to prevent unauthorized use, if this feature is programmed for your radio. When your radio is locked, you can only make emergency calls. Your radio can still receive calls and status requests, but you must unlock the radio to respond to them.

Your radio will remain locked even if it is turned off and then on again.

Locking the radio

You may be able to lock your radio by either turning it off and then on again, using the menu or by pressing a function key.

Security lock on power-up feature

Your radio may be automatically locked each time it is powered-up. The message **Enter PIN** appears in the display.

Using the menu to lock the radio

1. Press **Menu** and select **Radio settings** > **Functions** > **Lock radio**. (Depending on how your radio is programmed, you may be able to press a function key to turn radio lock on and off.)
2. Scroll to either **On** or **Off** and press **Select**. (The current setting is highlighted.)

   The radio is now locked and the message **Enter PIN** appears in the display.

Unlocking the radio

- To unlock your radio, use the unlock sequence you have been given. (This is a pre-programmed sequence of four keys.)

  The radio remains locked until the correct sequence of keys is pressed. If you forget the unlock sequence or you do not know it, contact your radio provider for assistance.

Locking and unlocking the keypad

The keypad lock feature prevents you from pressing a key accidentally. The number of keys that are locked depends on the way your radio is programmed.

If you receive a call while the keypad is locked, press any key to answer.

To lock the keypad:

- Press and hold  for about one second.

The message **Keypad locked** briefly appears in the display, and **Unlock** appears above , in place of **Menu**.

When any of the locked keys are pressed, the message **Keypad lock active** appears.

To unlock the keypad:

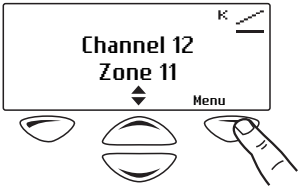
- Press and hold for about one second.

Navigating the radio's menus

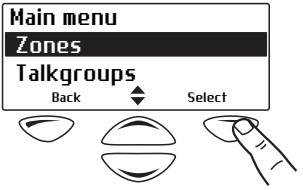
Your radio has a number of menus available, each containing lists or submenus. The menus available depend on the way your radio is programmed.

Using the Main menu

To access the Main menu, press the right selection key whenever **Menu** appears above it.



Use the scroll keys and to move through the menu list.



When the menu you want is highlighted, press **Select** to open the menu you have chosen.

Tip To quickly exit the menu system, press and hold when the word **Cancel** or **Back** appears above it.

Accessing frequently used menus

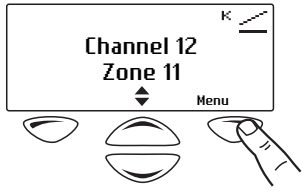
Depending on how your radio is programmed, you may have two different Quick Access menus. One Quick Access menu is displayed when you press a scroll key, and the other when you press the left selection key. These give you easy access to the menus you use most often.

Using the scroll key Quick Access menu

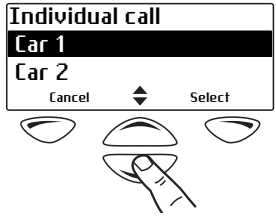
There are two ways to use this Quick Access menu:

- Press or to begin scrolling through a list of zones or channels.
- Press or and the Quick Access menu appears.

  In this example, the Individual Call menu is the Quick Access menu.
  Press or to go directly to the Individual Call menu.



The Individual Call menu, with a list of your available individual calls, is now displayed.

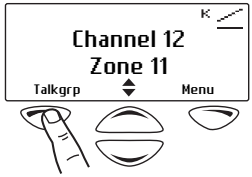


Using the left selection key Quick Access menu

The text above the left selection key corresponds to the Quick Access menu, for example, Talkgroups.

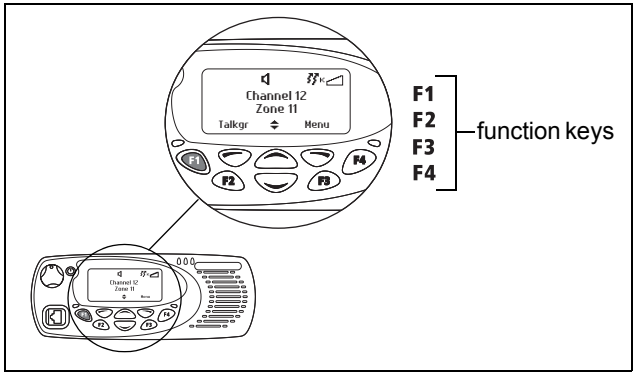
To use this Quick Access menu:

- Press and the associated menu appears.



Using function keys to access frequently used features

The function keys provide access to some of the features you use most often. These features are assigned to the function keys when the radio is programmed. Some keys may have a feature associated with both a short key press and a long key press.



Viewing the function key settings

Use the Main menu to check the features assigned to your radio's function keys:

1 Press **Menu** and select **Radio settings** > **Radio info** > **Key settings**.

2 In the Key Settings menu, scroll through the list of function keys.

3 Press **Select** to view details of the function associated with a particular function key.

The example shown is for a function key programmed to turn backlighting on and off.

4 Press ⌓ or ⌓ to return to the menu.

Selecting a zone

A zone is a collection of channels. Zones are a way of grouping channels, for example, by public safety agency type (fire, police, ambulance, etc.) or by geographical region (Dallas, Houston, etc.).

To select a zone:

1 Press **Menu** and select **Zones**.

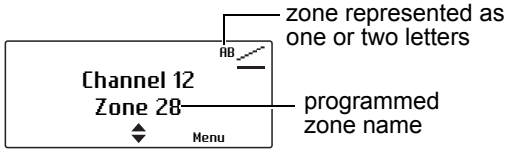
2 Scroll to the zone you want.

3 Press **Select**.

Your radio may indicate the zone in which it is currently operating in the following ways:

- the name of the zone appears below the channel name in the default radio display, or

- the zone symbol appears as a letter in the top right corner of the display.



Other ways of selecting a zone

You may also be able to use the following controls to select a zone:

- left selection key (see "Using the left selection key Quick Access menu" on page 33), or
- scroll keys (see "Using the scroll key Quick Access menu" on page 32).

Selecting a channel

Using the Main menu

1. Press **Menu** and select **Channels**.
2. Scroll to the channel you want and press **Select**.

Using the keypad

1. Dial the number associated with the channel using the alphanumeric keypad.

   To delete a digit that you have dialed incorrectly, press **Clear**.

2. Press **Select** or (#) to confirm the channel change.

   The channel name associated with the new channel now appears in the default display.

Other ways of selecting a channel

You may also be able to use the following controls to select a channel:

- function key (see “Accessing frequently used menus” on page 32)
- left selection key (see “Using the left selection key Quick Access menu” on page 33)
- scroll keys (see “Using the scroll key Quick Access menu” on page 32).

Limiting call time

Your radio may limit the amount of time you can talk (transmit) continuously. This is known as the ‘transmit timer’ or ‘time-out timer’ and allows other radio users to make calls on that channel.

The radio warns you before the transmit timer expires by beeping three times. The red status LED flashes and the message **Transmit timeout imminent** appears in the display.

Checking recent calls

This feature is available for digital channels only and applies to individual calls and call alert pages only.

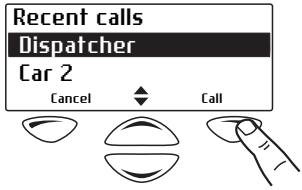
Your radio may be able to store a list of the last 20 calls. These calls may be calls that you have received, calls that you have made, or calls that you have missed.

To use your recent calls list to make a call:

1 Press **Menu** and select **Recent calls**. (Depending on how your radio is programmed, you may be able to press a function key or use your Quick Access menu to select recent calls.)

The most recent call is displayed at the top of the list. If you have not participated in any calls since your radio was switched on, the message **No items in list** appears in the display.

2 Scroll through the list of recent calls until the call you want appears, and then press **Call**.



The message **Call...?** briefly appears in the screen.

Press the PTT key to make the call.

3 Alternatively, scroll through the list of recent calls until the call you want appears.

Press the PTT key to make the call immediately.

4 Operating in conventional mode

This section explains how to operate your radio in conventional mode. This includes how to make and receive calls, use your radio in different repeater areas and scan a group of channels for activity.

This section covers:

Making calls

To make a call:

1. Select the required zone (see "Selecting a zone" on page 34).
2. Select the required channel (see "Selecting a channel" on page 35).
3. Lift the microphone off the microphone clip.
4. Hold the microphone about 2 inches (5 cm) from your mouth and press the PTT key to transmit.

   If the channel is busy, you may not be able to transmit. Wait until the green status LED has stopped glowing, and then try again.
5. Speak clearly into the microphone and release the PTT key when you have finished talking.

While you are transmitting the red LED glows and or appears in the display.

6 Finish your conversation as soon as possible and release the PTT key. For a short time, your radio may prevent you from making a call.

Making an individual call

This feature is available for digital channels only.

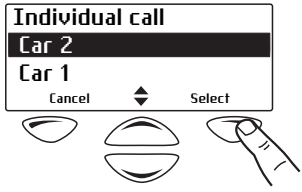
To make a call to one person rather than a group of people:

1 Press **Menu** and select **Individual call**. (The person to whom you last made an individual call is highlighted.)

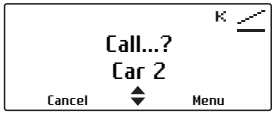
(Depending on how your radio is programmed, you may be able to press a function key or use your Quick Access menu to select individual calls.)

2 Scroll to the person you want to call and press the PTT key to make the call immediately.

3 Alternatively, scroll to the person you want to call and press **Select**.



The message **Call...?** briefly appears in the display.



4 Press the PTT key to make the call.

Understanding talkgroups

This feature is available for digital channels only.

A talkgroup is a collection of radio users with whom you want to have private conversations. For example, a state's public safety agencies could have the following talkgroups:

- Local talkgroups—used by a specific agency to communicate within their own local agency. It may even be made up of a county of public safety officers.
- Regional talkgroups—used by large state agencies that have regional divisions.
- Statewide talkgroups—used by an agency to communicate with a public safety member in another region. Statewide talkgroups, as their name suggests, enable public safety agencies to communicate with each other from one end of the state to the other.
- Special event talkgroups—may be used to manage emergencies encompassing a large area, or even events such as visits by heads of state.

Making a talkgroup call

To make a call to the currently selected talkgroup

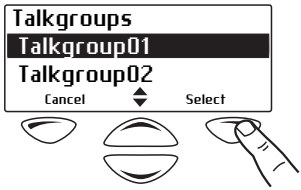
- Press the PTT key.

Changing a talkgroup

1 Press **Menu** and select **Talkgroups**.

(Depending on how your radio is programmed, you may be able to use a Quick Access menu to go to the Talkgroup menu.)

2 Scroll through the list of talkgroups to the one you want and press **Select**.



3 Press the PTT key to make a call to the currently selected talkgroup.

Making an emergency call

For information about making and ending emergency calls together with a explanation of how your radio behaves in emergency mode, see “About emergency calls” on page 91 and “Standard emergency mode” on page 92.

Receiving calls

When a call is received with valid signaling, the radio unmutes and you can hear the call.

If monitoring both radios (dual receive), activity received on the background radio is quieter than activity received on the foreground radio.

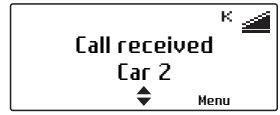
Identifying a caller (talking party ID)

This feature is available for digital channels only.

You can use talking party ID to identify the radio user calling you. (This feature is usually turned on when the radio is programmed.)

- talkgroup call: the name of the talkgroup is displayed.

- individual call: the name of the radio name from your call list is displayed (if there is no associated name, only the radio unit ID is shown).



Turning talking party ID off and on

1 Press **Menu** and select **Radio settings** > **Display settings** > **Talk party ID**.

2 Scroll to either **On** (or **Off**) and press **Select**. (The current setting is highlighted).

The message **Talking party ID activated** (or **deactivated**) appears in the display.

Receiving a two-tone call

This feature is available for analog channels only.

Two-tone signaling is used to call either individual or groups of radios. When your radio receives a two-tone call that it can decode, it beeps, indicating which type of two-tone call has been received.

- One long beep: a two-tone individual call has been received.
- Two medium beeps: a two-tone group call has been received.
- Three short beeps: a two-tone super group call has been received. A super-group call is addressed to all radios in the fleet.

To accept the call, press the PTT key and begin speaking.

Overriding two-tone signaling

You can override two-tone signaling using a function key, if your radio is programmed in this way.

- Press the function key to override two-tone signaling on a channel, and hear all two-tone calls.

  The message **Ignore two-tone activated** (or **deactivated**) appears in the display.

Communicating directly with other radios

You can bypass the radio repeater and communicate directly with another radio using the radio talkaround feature. You can do this when you are out of range of the repeater, or if the repeater is busy.

While repeater talkaround is active, all calls are made on your current channel's receive frequency.

Turning repeater talkaround on and off

You can turn repeater talkaround on and off using a function key, if your radio is programmed in this way.

- Press the function key to turn repeater talkaround on.

  The message **Talkaround activated** (or **deactivated**) appears and  appears in the display.

  Repeater talkaround remains on until you press the function key again.

Checking that the channel is clear

Monitor allows you to override some or all of the radio's mutes, allowing you to hear if there is any traffic (including talkgroup and individual calls) on a channel.

For analog channels, this is so that you can check that the channel is clear before you make a call.

Turning monitor on and off

Using the microphone hookswitch

Your radio may be programmed to turn monitor on whenever the microphone is removed from the microphone clip. Monitor is turned off when the microphone is replaced.

Using the Main menu

1 Press **Menu** and select **Radio settings** > **Functions** > **Monitor**.

(Depending on how your radio is programmed, you may be able to press a function key to toggle monitor on and off.)

2 Scroll to **On** (or **Off**) and press **Select**.

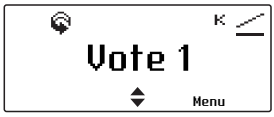
While monitor is active,  appears in the display.

Using the radio in different repeater areas

Your radio may have a group of channels programmed as a voting group. The channels in the voting group all carry the same traffic, but from different repeaters. As your radio moves in and out of different repeater coverage areas, the best communication channel is automatically selected for you to use.

This channel is known as the ‘home’ channel, and may be the channel you make and receive calls on.

While voting is active, the amber LED glows and appears in the display.



Selecting a voting group

Using a function key

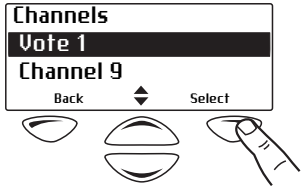
To use a function key to select a voting group:

- Press the function key to select and activate a preset voting or scan group.

Using the Main menu

To select a voting group using the Main menu:

1. Press **Menu** and select **Channels**.
2. Scroll to the group you want and press **Select**.



Suspending a channel from a voting group

You may be able to use the function key programmed for ‘nuisance delete’ to temporarily remove one of the channels from the voting group.

To remove a channel from a voting group:

1. Wait until the radio has stopped on the channel that you want to remove from the voting group.

2 Press the function key programmed for nuisance delete.

If the channel has been removed successfully, the message **Channel nuisance deleted** briefly appears in the display.

The channel remains removed from the voting group until you either select another voting group or the radio is turned off and then on again.

The function key programmed to activate a voting group may be programmed so that a short key press activates voting and a long key press activates nuisance delete.

Scanning a group of channels

The scan feature is used to monitor a group of channels for activity. When there is activity on a channel in the group, the radio stops on that channel. The radio then unmutes and you can hear the call. Scanning resumes when the channel is no longer busy. Some channels, known as ‘priority’ channels, are scanned more often that other channels in the group.

While the radio is scanning for activity, the amber LED glows and appears in the display. When the radio stops on a channel where there is activity, the amber LED and symbol flash.

The three types of scanning that may be available on your radio are:

- standard scanning

- background scanning, and
- in-zone scanning.

Activating standard scanning

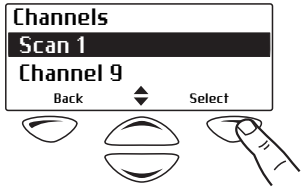
Standard scanning is activated when you select a standard scan group.

To select a standard scan group:

1 Press **Menu** and select **Channels**.

(Depending on how your radio is programmed, you may be able to press a function key or use your Quick Access menu to select channels.)

2 Scroll to the group you want and press **Select**.



Activating background scanning

Background scan is turned on using a programmed function key. When the function key activates background scan, the currently selected channel automatically becomes a member of the background scan group.

To turn background scan on:

- Press the function key.

Background scan remains on until either you press the function key again, or select a standard or in-zone scan group.

Changing the background scan group assigned to the function key

1 Press **Menu** and select **Radio settings** > **Functions** > **Set scan key**.

2 Scroll through the list of background scan groups available and press **Select**. When you next turn on background scan, this is the scan group that is activated.

Activating in-zone scanning

In-zone scan is turned on using a programmed function key. While in-zone scan is active, the radio scans all the channels programmed for the zone in which the radio is operating. When you change to another zone, in-zone scan starts with channels in the new zone.

To turn in-zone scan on:

- Press the function key.

  In-zone scan remains on until either you press the function key again, or select a standard or background scan group.

Making a call while scanning

If you want to make a call while your radio is scanning:

1 Lift the microphone off the microphone clip.

2 Press the PTT key to transmit.

  If the amber LED is flashing, your radio calls the currently selected channel.

  If there has been no recent activity on the channel (the amber LED is glowing rather than flashing), then the channel that is called depends on the way your radio has been programmed.

  The possible options are:

  - your radio calls a predetermined channel e.g. your dispatcher
  - your radio calls the channel where activity was last detected
  - your radio calls the last free channel.

3 When the called party responds, proceed with your conversation.

Suspending a channel from a scan group

If a member channel of a scan group is busy for a long time and you do not want to hear the conversation, you may be able to use the function key programmed for nuisance delete to temporarily delete it from the scan group. When the scan group is next selected, or after the radio has been turned off and then on, the deleted channel is again part of the scan group.

To remove a channel from a scan group:

1 Wait until the radio has stopped on the channel that you want to remove from the scan group.

2 Press the function key programmed for nuisance delete.

If the channel has been removed successfully, the message **Channel nuisance deleted** appears in the display.

The channel remains removed from the scan group until you either select another scan group or the radio is turned off and then on again.

The function key programmed to activate scanning may be programmed so that a short key press activates scanning and a long key press activates nuisance delete.

Editing a scan group

You can use the Edit Group menu to view group membership details and make permanent changes to your radio's scan groups, if your radio is programmed in this way.

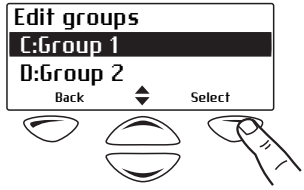
Selecting a group to edit

1 Press **Menu** and select **Radio settings** > **Functions** > **Advanced** > **Edit groups**.

(Depending on how your radio is programmed, you may be able to press a function key or use your Quick Access menu to select the Edit Groups menu.)

The Edit Groups menu lists all the scan groups programmed for your radio, regardless of whether the groups are standard, background or in-zone scan groups.

2 Scroll to the group that you want to view or edit, press **Select**, and the Edit Group menu opens.



3 In the Edit Group menu, select from the following options:

- **Group members**: shows the current members of a group, and may also show the designated transmit channel and priority channels.
- **Add** or **Delete channel**: adds or deletes member channels of a group.
- **Change tx channel**: changes the group's transmit channel.
- **Change P1** or **P2**: changes the group's first or second priority channel.

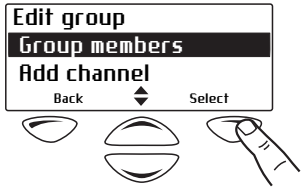
Symbols and messages

The following symbols may appear when viewing group membership details, adding or deleting channels from a group, or changing a group's transmit or priority channels.

Symbol	Meaning
T_X	This channel is used to transmit on when there has been no recent activity. You cannot delete this channel (it will not appear under **Delete channel**).
P_1	This channel is the group's first priority channel. You cannot delete this channel (it will not appear under **Delete channel**).
P_2	This channel is the group's second priority channel. You cannot delete this channel (it will not appear under **Delete channel**).
+	There is more than one instance of this channel in the group (the channel will be scanned more often). If you delete this channel, the radio will attempt to delete all instances of the channel.

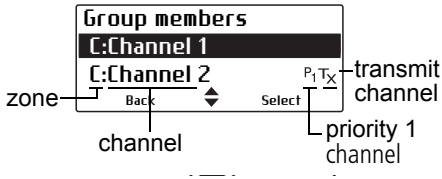
Viewing group membership

1 In the Edit Group menu, select **Group members** and press **Select**.



2 Scroll through the list of group members. The names of the group members may be shortened.

3 The information that may appear is explained in the example below.

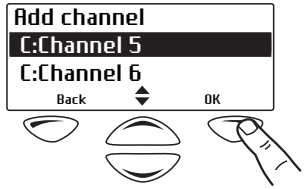


Adding a channel to a group

1 In the Edit Group menu, select **Add channel** and press **Select**.

A list of channels that are not group members appears.

2 Select the channel you want to add and press **OK**.



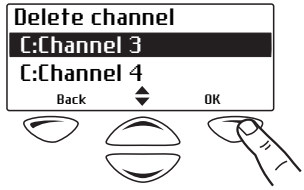
Deleting a channel from a group

You cannot delete the priority 1 channel using the Delete Channel menu.

1 In the Edit Group menu, select **Delete channel** and press **Select**.

A list of group members that are able to be deleted appears.

2 Select the channel you want to delete and press **OK**.

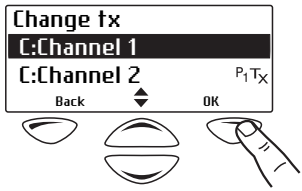


Changing a group's transmit channel

1 In the Edit Group menu, select **Change tx** and press **Select**.

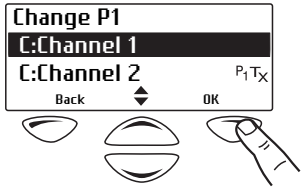
The current transmit channel is identified by the Tx symbol beside the channel name.

2 Select the new transmit channel and press **OK**.



Changing a group's first or second priority channel

1 In the Edit Group menu, select **Change P1** or **Change P2** and press **Select**.



2 Select the new priority or priority 2 channel and press **OK**.

4 Hearing faint and noisy signals

This feature is only applicable to analog channels.

Usually the radio's squelch mute (known as 'squelch') prevents you from hearing faint or noisy calls on a channel. Without squelch, the radio's speaker would 'chatter' in low signal strength areas.

On occasions when you want to hear everything that is being said on a channel, even if it is hard to understand, you can use the squelch override feature to force the mute open.

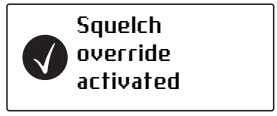
Turning squelch override on and off

1. Press **Menu** and select **Radio settings** > **Functions** > **Squelch override**.

   (Depending on how your radio is programmed, you may be able to press a function key to turn squelch override on and off.)

2. Scroll to **On** (or **Off**) and press **Select**.

   The message **Squelch override activated** (or **deactivated**) appears in the display.



5 Dual radio operation

The TM9456 can be installed and programmed as two radios, with one user-interface. This enables you to switch between the radios, and access different features and channels on those radios (for example, channels that operate on different frequency bands). You can also toggle modes that enable you to receive and transmit on both radios at the same time.

Each radio in a system may be identified by a unique name, which appears before all channel and group labels.

This section covers:

- about the foreground and background radio
- dual radio display states and descriptions
- radio controls in a dual radio system
- switching between radios (changing the foreground radio)
- making a call on more than one radio (dual transmit)
- monitoring more than one radio (dual receive)

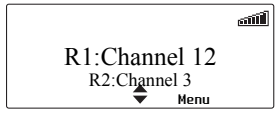
About the foreground and background radio

The TM9456 can be installed and programmed as two radios, that can be accessed via the user-interface. In such a dual-radio system, one radio is always at the foreground, and one at the background. If monitoring both radios (dual receive), the speaker volume of the background radio is quieter than the speaker volume of the foreground radio.

To access features on the background radio (such as change the channel), you must first change that radio to the foreground.

The foreground radio is either:

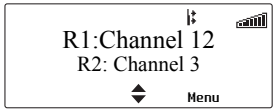
- the radio currently showing in the display, or
- the radio showing in larger text.



The background radio is the radio not showing in the display, or the radio showing in smaller text.

Dual radio display states and descriptions

The following table lists various states of the radio display, and the implications for transmitting and receiving.

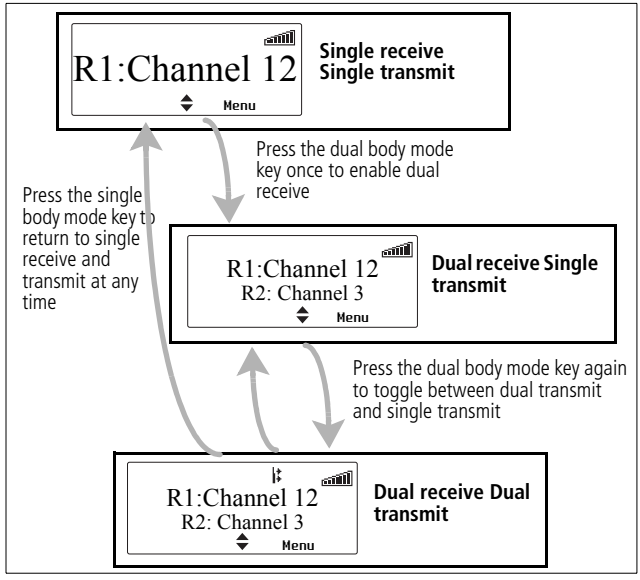
Display	Description
	The radio system will receive and transmit on the foreground radio only.
	The radio system will receive on both radios, and transmit on the foreground radio only.
	The radio system will receive and transmit on both radios.

Radio controls in a dual radio system

Certain radio controls and functions are global and apply to the radio system as a whole. The on-off key turns the entire radio system on or off. The volume control adjusts the volume of all received audio and indicators. Functions and menu options relating to the radio display and audible indicators are also global.

Many other functions and menu options apply to the foreground radio only. Examples include changing channels and zones, and toggling monitor. See “Switching between radios” on page 59.

You can switch between the various dual receive and transmit states using one or two function keys programmed for dual body mode and single body mode. If programmed for a single key, dual body mode is assigned to a short press and single body mode is assigned to a long press. The following diagram summarizes how to enable dual receive and dual transmit and how to return to single body mode.



Switching between radios (changing the foreground radio)

In a dual-radio system, one radio is always at the foreground and one at the background.

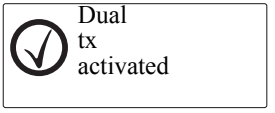
To change the foreground radio, press the function key programmed for switching the active radio.

The display will change to show the new radio name, and the currently selected channel or group on that radio.

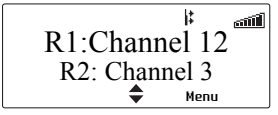
The radio may automatically switch the background radio to the foreground in certain circumstances, for example, when you receive a Status update from another radio.

Making a call on more than one radio (dual transmit)

1 Press the function key programmed for dual body mode once, or twice, until the message **Dual tx activated** appears.



While dual transmit is activated, the ⁞↕ symbol and the two channels to transmit on will appear on the default display. The **large text** shows the foreground radio. The **smaller text** shows the background radio.



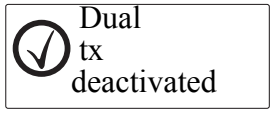
2 Select the required channel or scan group on the first radio.

3 Press the function key programmed for switching the active radio.

4 Select the required channel or scan group on the second radio.

5 Press and hold the PTT key to transmit.

6 Press the function key programmed for dual body mode or the key programmed for single body mode to disable dual transmission.



- Press the dual body mode key to receive on both radios.
- Press the single body mode key to receive on the foreground radio only.

Monitoring more than one radio (dual receive)

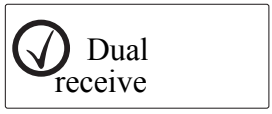
1 Press the function key programmed for dual body mode.

While dual receive is activated, two channels will appear on the default display. The **large text** shows the foreground radio. The **smaller text** shows the background radio.

2 If necessary, press the function key programmed for switching the active radio to change the foreground radio.

Activity on the foreground radio will be louder than activity on the background radio.

3 Press the function key programmed for single body mode to return to receiving on the foreground radio only.



6 Operating in P25 trunking mode

This section explains how your radio operates on a P25 trunking system. This includes how to make group calls, individual calls and phone calls.

The features described in this chapter are only available for radios configured for P25 trunking operation.

This section covers:

About P25 trunking

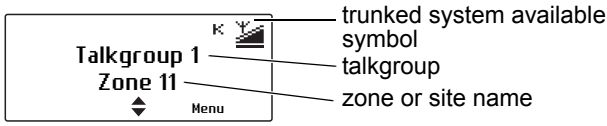
Your radio may be able to operate on a P25 trunking system as well as a conventional repeater-based system. On a conventional system, radio users compete for access to individual channels, and one channel can be overloaded with traffic while others are often unused.

The trunking system allows several channels to be automatically shared by a number of radio users. These traffic channels are pooled and allocated, as required, for the duration of a call. As calls are completed, the traffic channels are returned to the pool, to be used for other calls. This system means reduced waiting times to make calls.

Checking that the system is available

When you first switch to a talkgroup configured for P25 trunking, the radio attempts to access the network and register on a control channel.

If registration is successful, the trunking system available symbol appears in the display.



Registration is unsuccessful

If registration is not successful, does not appear, and the display shows **No service**.

The radio sounds five beeps, followed by a repeating double beep. The double beep continues until registration is successful.

Service is lost

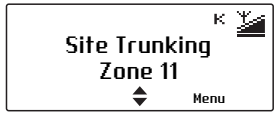
If access to the trunking system is lost, no longer appears, the bars in the RSSI symbol disappear , and the display shows **No service**.

The radio sounds five beeps to indicate the loss of service, followed by a repeating double beep. The double beep continues until service is restored.

Site trunking operation

During normal trunking operation, your radio may roam between a number of sites, each with its own zone controller. This behavior is transparent to you, unless there is a problem with a zone controller. When this happens, the radio enters ‘site trunking’ mode, and you will only be able to communicate with users within a single site.

While in site trunking mode, the display shows **Site Trunking**, and the radio sounds a repeating double beep. The double beep continues until normal service is restored.



When access to the zone controller is available again, your radio automatically returns to normal multi-site operation.

Failsoft operation

Your radio may be programmed to enter ‘failsoft’ mode when service is lost due to failure of a trunking site controller. For information about failsoft mode, see “Failsoft mode operation” on page 73.

Making a talkgroup call

A talkgroup is a collection of radios on a trunking system. Trunked talkgroups are found in the Channels menu, along with conventional channels that may also be available for the currently selected zone.

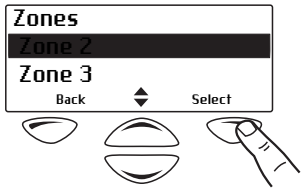
Depending on how your radio is programmed, you may be able to press a function key or use your Quick Access menu to select a trunked talkgroup.

Caution In some situations, your call will not proceed. For an explanation of the radio behavior, see "Unconnected calls" on page 72.

To make a talkgroup call on a trunking system:

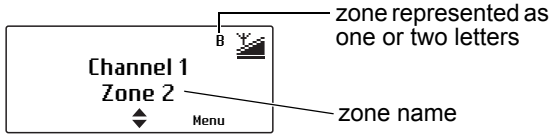
1 Select the required zone:

- Press **Menu** and select **Zones**.
- Scroll to the zone you want, and press **Select**.



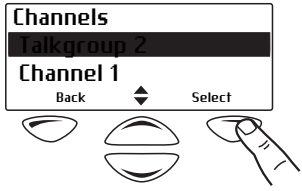
(Depending on how your radio is programmed, you may be able to press a function key or use your Quick Access menu to select a zone.)

Your radio now indicates the zone in which it is operating, either as a letter in the top right corner of the display, or as a zone name in the second line of the display.



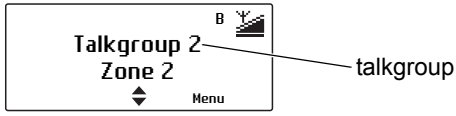
2 Select the required talkgroup:

- Press **Menu** and select **Channels**.
- Scroll to the talkgroup you want, and press **Select**.



(Depending on how your radio is programmed, you may be able to press a function key or use your Quick Access menu to select a talkgroup.)

Your radio now indicates the currently selected talkgroup.

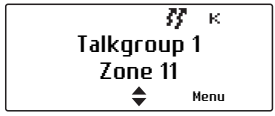


3 To call this talkgroup, hold the microphone about 2 inches (5 cm) from your mouth.

4 Press and hold the PTT key to transmit.

5 When you hear three short beeps, speak clearly into the microphone and release the PTT key when you have finished talking.

While you are transmitting, the red LED glows and appears in the display.

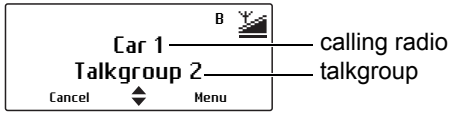


Receiving a talkgroup call

To hear calls from other members of a talkgroup, your radio must have that talkgroup selected, or the talkgroup must be part of an active scan group.

For information about selecting a talkgroup, see "Making a talkgroup call" on page 64, and for information about scanning talkgroups, see "Scanning a group of talkgroups" on page 67.

When you receive a call from a talkgroup, the radio displays the name or the identity of the talkgroup, and that of the calling radio.



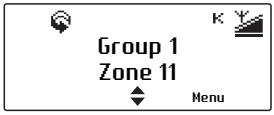
Press the PTT key to accept the call, or **Cancel** to reject the call.

Scanning a group of talkgroups

The scan feature is used to monitor a group of trunked talkgroups for activity. Each group of talkgroups is programmed as a single scan group.

When there is a call from a member of the talkgroup scan group, the radio unmutes and you can hear the call. Calls from talkgroups programmed as ‘priority’ talkgroups, take precedence over those from a non-priority talkgroup.

While the radio is scanning for activity, the amber LED glows and appears in the display. When the radio stops on a talkgroup where there is activity, the amber LED and symbol flash.



Activating talkgroup scanning

Talkgroup scan is turned on using a programmed function key. When the function key activates talkgroup scan, the currently selected talkgroup automatically becomes a member of the talkgroup scan group.

To turn talkgroup scan on:

- Press the function key.

Suspending a channel from a talkgroup scan group

If a member channel of a talkgroup scan group is busy for a long time and you do not want to hear the conversation, you may be able to use the function key programmed for nuisance delete to temporarily delete the talkgroup from the scan group. When the talkgroup scan group is next selected, or after the radio has been turned off and then on, the deleted talkgroup is again part of the talkgroup scan group.

To remove a channel from a talkgroup scan group:

1. Wait until the radio has stopped on the talkgroup that you want to remove from the talkgroup scan group.
2. Press the function key programmed for nuisance delete.

   If the talkgroup has been removed successfully, the message **Channel nuisance deleted** appears in the display.

   The talkgroup remains removed from the talkgroup scan group until you either select another talkgroup scan group or the radio is turned off and then on again.

The function key programmed to activate talkgroup scanning may be programmed so that a short key press activates scanning and a long key press activates nuisance delete.

Editing a talkgroup scan group

You can use the Edit Group menu to view group membership details and make permanent changes to your radio's talkgroup scan groups, if your radio is programmed in this way.

Select and edit a talkgroup scan group in the same way as a conventional scan group. See “Editing a scan group” on page 49.

When operating on a P25 trunked system, each channel on a conventional system represents a talkgroup.

Making an individual call

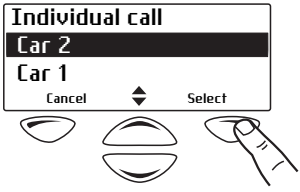
Caution In some situations, your call will not proceed. For an explanation of the radio behavior, see “Unconnected calls” on page 72.

To make a call to one radio on a trunking system:

1 Press **Menu** and select **Individual call**. (The person to whom you last made an individual call is highlighted.)

Depending on your radio model and how it is programmed, you may be able to dial the identity of the radio you want to call, press a function key or use your Quick Access menu to select an individual call.

2 Scroll to the person you want to call and press **Select** or press the PTT key.



The message **Calling...** briefly appears.

3 Press and hold the PTT key to transmit.

4 When you hear three short beeps, speak clearly into the microphone and release the PTT key when you have finished talking.

Receiving an individual call

When you receive a call from an individual radio, your radio displays the caller's name or identity.

The radio rings and the green LED flashes until the call is answered.

Press the PTT key to accept the call, or **Cancel** to reject the call.

Emergency calls

In an emergency, you can summon help by sending an emergency call. When an emergency call is initiated, the radio enters 'emergency mode'. For more information on emergency mode, see "Standard emergency mode" on page 92.

Making an emergency call

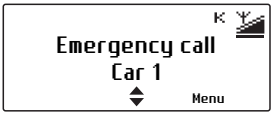
You can make and emergency call using the emergency function key or a hidden switch.

- Press the function key or hidden switch to activate emergency mode.

  The message **Emergency mode** appears and the radio sounds three short beeps, rising in pitch (non-stealth emergency only).

Receiving an emergency call

When you receive an emergency call, your radio displays the caller's name or identity and sounds a long beep.



Making a phone call

This feature is only available for radios with alphanumeric keys.

You may be able to use your radio to connect to a telephone network and make a phone call.

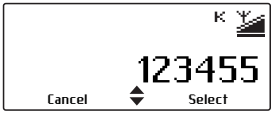
Caution In some situations, your call will not proceed. For an explanation of the radio behavior, see "Unconnected calls" on page 72.

To make a phone call on a trunking system:

1 Press **Menu** and select **Phone call**. (The phone call you last dialed appears in the display.)

(Depending on how your radio is programmed, you may be able to press a function key or use your Quick Access menu to open the Phone Call menu.)

2 Scroll to the number or person you want to call, or dial the required number using the alphanumeric keys.



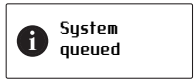
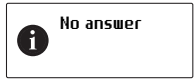
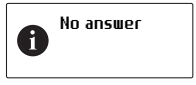
3 Press **Select** or the PTT key.

4 Press and hold the PTT key to transmit.

5 When you hear three short beeps, speak clearly into the microphone and release the PTT key when you have finished talking.

Unconnected calls

If your call is not connected, the way your radio behaves is explained in the following table.

Radio behavior	Explanation
	The system is too busy to process your talkgroup or individual call.
 The radio sounds three short beeps.	The system is now available to process your talkgroup or individual call.
 The radio sounds five beeps, followed by a repeating double beep.	You have selected a talkgroup that does not currently exist on the system. Your display shows that you have lost service and ⚚ no longer appears. See “Service is lost” on page 63.
 The radio sounds two short beeps.	You have attempted to make an individual call to a radio that does not currently exist on the system. You have attempted to make an individual or phone call, but you are not authorized to do this.
 The radio sounds two short beeps.	Your individual or phone call has been rejected or is unanswered.

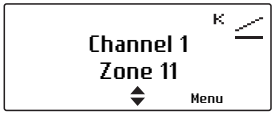
Failsoft mode operation

If your radio is unable to access the trunking system, it may be programmed to enter failsoft mode. Failsoft mode operates in one of two ways: ‘radio-based’ failsoft and ‘infrastructure’ failsoft.

Radio-based failsoft

When you lose access to the trunking system, no longer appears, the bars in the RSSI symbol disappear, and the display shows **No service**.

After a short time, your radio switches to a programmed conventional communications channel.

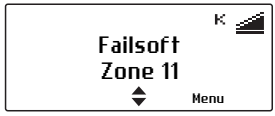


The radio remains on that channel until you select a trunked talkgroup with access to the trunking system.

Infrastructure failsoft

Your radio receives a message from the trunking infrastructure to say that the trunking system is now operating in failsoft mode.

While in failsoft mode, the display shows **Failsoft**, and the radio sounds a repeating double beep. The double beep continues until normal service is restored.



You may still be able to communicate with your dispatcher and other talkgroup members, depending on the type of system failure that has occurred, and how your radio is programmed.

When the trunking system returns to normal operation, your radio is notified, and will attempt to register on the control channel it was previously using.

Dynamic regrouping

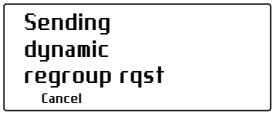
The dynamic regrouping feature allows you to send a dynamic regrouping request to your dispatcher. Your dispatcher can then reassign your radio to a special communications group.

Caution While you are operating on this group, normal channel selection may be disabled.

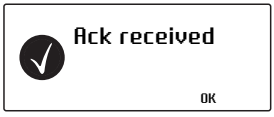
To send a dynamic regrouping request:

- Press **Menu** and select **Trunking** > **Dyn Regrouping**.

  When you press **Select**, a message appears in the display.



  If the request is successful, an acknowledgement message is displayed.



7 P25 services

This section describes the P25 services that may be available on your radio. P25 services are only available for digital channels and some are restricted to conventional mode, and for radios configured for dispatcher operation.

This section covers:

Messages

You may be able to send short messages to another radio user. These messages are defined at programming time and are also known as ‘pre-programmed messages’.

The person to whom you are sending the message must have the same message programmed into their radio in order to read and display your message.

Sending a message

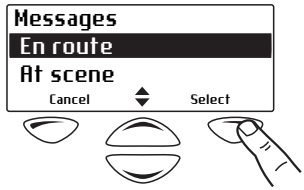
You may be able to send your message to a predetermined person or talkgroup, or to a person of your choice.

Sending a message to a predetermined person or talkgroup

1 Press **Menu** and select **Services** > **Messages**. (Depending on how your radio is programmed, you may be able to press a function key or use your Quick Access menu to select messages.)

2 Select the message you want from the message list.

3 Press **Select**.



A message showing the destination appears in the display.

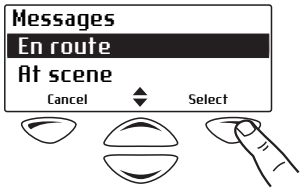
The red LED glows and a message may be displayed to advise you whether the message has been sent successfully or not.

Sending a message to a person of your choice

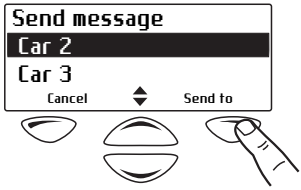
1 Press **Menu** and select **Services** > **Messages**. (Depending on how your radio is programmed, you may be able to press a function key or use your Quick Access menu to select messages.)

2 Select the message you want from the message list.

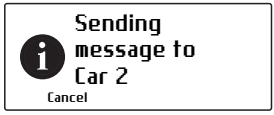
3 Press **Select**.



4 Select the message recipient from the list and press **Send to**.



A message showing the destination briefly appears in the display.



The red LED glows and a message may be displayed to advise you whether the message has been sent successfully or not.

Status update

You can inform other radio users of your current status by sending them a status update, for example, ‘At scene’. You may be able to send the status update to a predetermined person or talkgroup, or to a person of your choice.

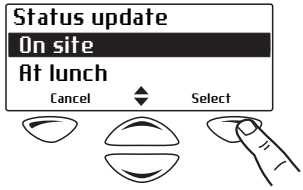
When you send a status message, you are also *setting* your status, which the dispatcher may be able to check by ‘interrogating’ your radio. You can change your status at any time by selecting another status message and sending it. See “Status request” on page 78.

To send a status update:

1 Press **Menu** and select **Services** > **Status update**. (Depending on how your radio is programmed, you may be able to press a function key or use your Quick Access menu to select status update.)

2 Select the status message you want from the message list.

3 Press **Send to** or **Select**.



A message showing the destination appears in the display.

The red LED glows and a message may be displayed to advise you whether the status update has been sent successfully or not.

Status request

This feature is only available for digital channels operating in conventional mode, and for radios configured for dispatcher operation.

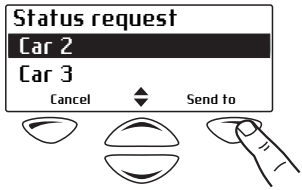
You can find out what another radio user is currently doing by asking them to send you a status update.

To send a status request:

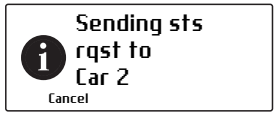
1 Press **Menu** and select **Services** > **Status request**.

2 Select the status request recipient from the list.

3 Press **Send to**.



A message showing the destination appears in the display.



The red LED glows and a message may be displayed to advise you whether the message has been sent successfully or not.

Call alert

This feature only applies to individual calls.

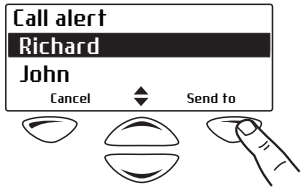
You can let another radio user know that you want to talk to them by sending them a call alert page. When the other radio user receives the call alert page, they can call you back when it is convenient.

To send a call alert page:

1 Press **Menu** and select **Services** > **Call alert**.

2 Select the radio you want to page.

3 Press **Send to**.



A message appears in the display.

The red LED glows and a message may be displayed to advise you whether the call alert has been sent successfully or not.

If an acknowledgement is not received from the recipient's radio, you may have the option of either cancelling or resending the call alert page.

Answering a call alert page

If you receive a call alert page from another radio user, the message **Page rx'd from...** briefly appears in the display.

Select **Call** to return the page or **OK** to delete it. If you miss the call alert page, the identity of the caller may be saved in your recent calls list.

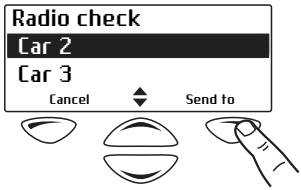
Radio check

This feature is only available for digital channels operating in conventional mode, and for radios configured for dispatcher operation.

If you want to find out whether a particular radio is available on the system, you can use the radio check feature. This sends a radio check message to the radio unit you have specified.

1. Press **Menu** and select **Services** > **Radio check**.
2. Scroll to the radio you want to check.

3 Press **Send to**.



The red LED glows and a message showing the destination appears in the display.

If the radio is available on the system, an acknowledgement message is displayed.

Radio unit monitor

This feature is only available for digital channels operating in conventional mode, and for radios configured for dispatcher operation.

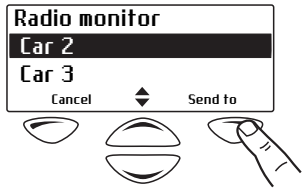
The radio unit monitor feature can be used when you are concerned about the safety of a radio user on your system. When you send a radio-unit monitor request to a radio, it calls you back without giving any indication that it is making a call. You can hear any activity near the radio for up to 20 seconds.

Sending a radio monitor request

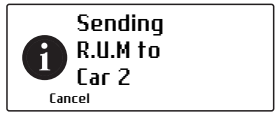
1 Press **Menu** and select **Services** > **Radio monitor**.

2 Scroll to the radio you want to monitor.

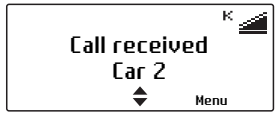
3 Press **Send to**.



The red LED glows and a message appears in the display.



If the other radio has received your request, it will now call you, so that you can monitor activity near the radio.



Radio inhibit and uninhibit

This feature is only available for digital channels operating in conventional mode, and for radios configured for dispatcher operation.

If you want to make another radio on the system inoperable, you can use the radio inhibit feature. This feature is also known as ‘stun’.

To the user of the inhibited radio, it appears as though the radio has turned off. The radio remains inoperable even if it is turned off and then on again.

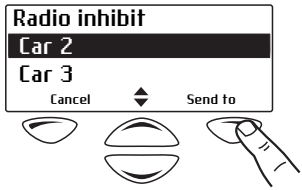
The radio cannot return to operation until it receives an uninhibit request. This is also known as ‘revive’.

Sending a radio inhibit request

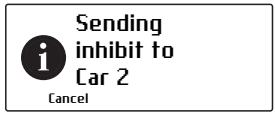
1 Press **Menu** and select **Services** > **Radio inhibit**.

2 Scroll to the radio you wish to make inoperable.

3 Press **Send to**.



The red LED glows and a message appears in the display.



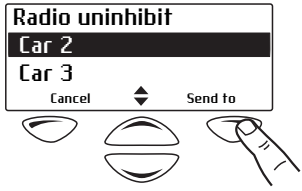
If the radio has been successfully immobilized, an acknowledgement message is displayed.

Sending a radio uninhibit request

1 Press **Menu** and select **Services** > **Radio uninhibit**.

2 Scroll to the radio you wish to make operable.

3 Press **Send to**.



The red LED glows and a message appears in the display.

If the radio has been successfully returned to operation, an acknowledgement message is displayed.

8 GPS location services

This section explains how to use the GPS location services that may be available on your radio.

This section covers:

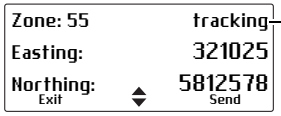
About GPS location information

While you may be able to view your GPS location information on analogue channels, sending GPS information is only available for digital channels.

If your radio is connected to a global positioning system (GPS) receiver, you can view GPS location information such as latitude and longitude, true course, speed, and coordinated universal time. Your radio can also display universal transverse mercator (UTM) information such as the UTM zone, and northing and easting coordinates.

About GPS status information

In the GPS Info menu, GPS status information appears at the top right of the display.



The following GPS status information appears at the top right of the display. Status information shown on a hand-held control head is shown in brackets [ ].

- **tracking** [**trk**]: the GPS receiver is displaying up-to-date satellite information.
- **lost cnx** [**no cnx**]: the radio has lost serial communications with the GPS receiver.
- **stored** [**no fix**]: the GPS receiver is having trouble connecting to satellites and the radio is displaying stored information that may not be current.

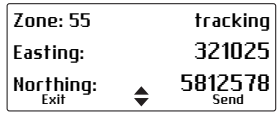
The **Send** option is a digital feature, and is only available on digital channels.

Viewing GPS information

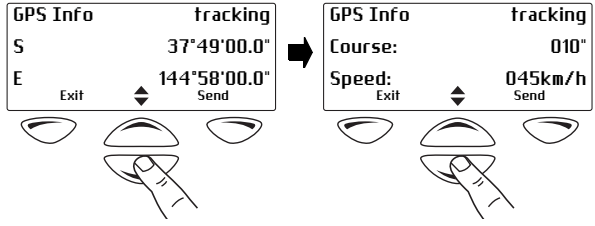
1 Press **Menu** and select **Location Svs** > **GPS Info**.

(Depending on how your radio is programmed, you may be able to press a function key to access the GPS Info menu.)

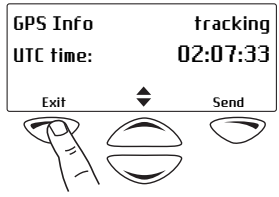
GPS information is now shown in the display, if it is available.



2 Use and to view more GPS information.



3 Press **Exit** to exit the GPS display.



In certain situations, your radio may automatically exit the GPS display.

Sending GPS information

To send GPS location information, you can:

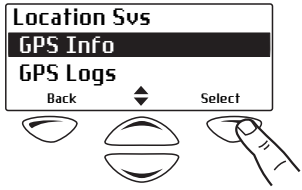
- press the PTT key, or
- use a function key.

Using the PTT key

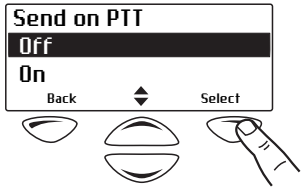
When your radio is first turned on, GPS information is automatically sent each time you press the PTT key. This feature can be turned off using the Send On PTT menu.

To turn 'Send on PTT' off or on:

1 Press **Menu** and select **Location Svs** > **Send on PTT**.



2 Scroll to **Off** (or **On**) and press **Select**. (The current setting is highlighted.)



Using a function key

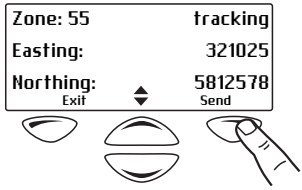
You may be able to use a function key to manually send your GPS location to either all radios on the channel, or to your dispatcher (depending on how your radio is programmed).

1 Press the function key programmed for GPS.

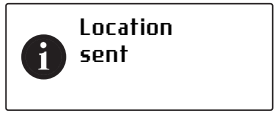
(Alternatively, press **Menu** and select **Location Svs** > **GPS Info**.)

The current GPS location of the radio appears in the display.

2 Press **Send**.

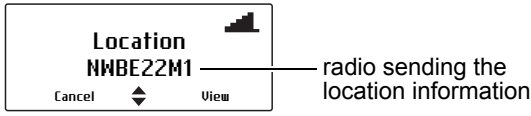


The message **Location sent** briefly appears in the display.



Receiving and logging GPS information

When your radio receives GPS location information, the display shows **Location**, along with the digital 'alias' of the sending radio. If the radio alias is not available, the radio ID appears.

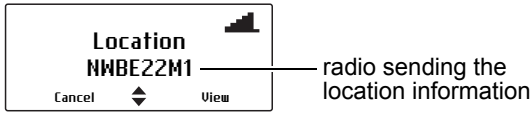


The location information can then be viewed and logged. The most recent location details of up to 10 radios will be available, until the radio is turned off.

You only receive a **Location** message from a radio that you have not previously logged. Updated information from a previously logged radio is automatically stored by your radio, without first being viewed.

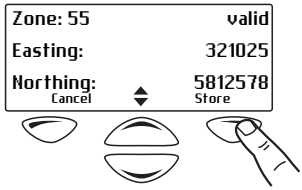
To display and log the received GPS location of a radio:

1 Press **View**.



The location information appears in the display.

2 Press **Store** to log the location information for that radio.



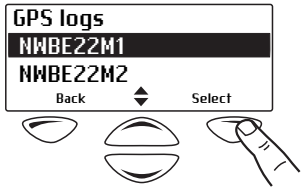
The message **Logging...** briefly appears in the display.

Accessing logged GPS information

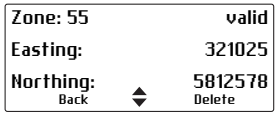
You can use the GPS Logs menu to display the latest GPS location information for a radio. To view a radio's logged location information:

1 Press **Menu** and select **Location Svs** > **GPS logs**.

2 Scroll to the radio you want and press **Select**.



The latest GPS location information available for that radio appears.



3 Press **Delete** to remove the location information for the radio, and stop logging it.

9 Emergency operation

This section describes how to make different types of emergency calls.

This section covers:

About emergency calls

In an emergency you can summon help by sending an emergency call. There are three types of emergency calls:

Call type	Explanation
Priority call	(Digital channels only.) An emergency alert is automatically sent to the current talkgroup. Calls made when the priority call feature is turned on are flagged as 'emergency' calls. For further information see "Making a priority call" on page 92.
Standard emergency call	When an emergency call is initiated, the radio enters 'emergency mode'. For further information see "Standard emergency mode" on page 92.
Manual emergency call	(Digital channels only.) Emergency is activated and your radio sends an alert to your dispatcher and other members of your group, along with your radio digital alias and GPS location. For further information see "About manual emergency operation" on page 95.

Making a priority call

This feature is available for digital channels only.

When you turn the priority call feature on, the radio automatically sends an emergency alert (message) to the current talkgroup.

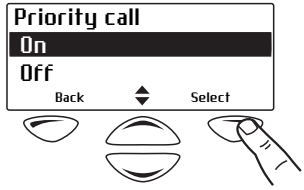
Any calls you make while the priority call feature is turned on are flagged as emergency calls.

To turn the priority call feature on and off:

1 Press **Menu** and select **Priority call**.

(Depending on how your radio is programmed, you may be able to press a function key to turn priority call on and off.)

2 Scroll to **On** (or **Off**) and press **Select**.



Standard emergency mode

When you press the emergency key your radio enters 'emergency mode', if your radio is programmed in this way.

When the radio enters emergency mode, it will automatically send alerts together with your radio unit ID to the dispatcher. These alerts are usually sent on a designated emergency channel.

Warning The way your radio behaves in emergency mode depends on how your radio is programmed.

For further information on what your radio may do in emergency mode, see "What happens during an emergency call?" on page 93.

Stealth and non-stealth emergency modes

Your radio is programmed to operate in one of these ways:

- **Stealth:** you often work in situations where you do not want an assailant to know that you have activated emergency mode. For this reason, the radio is silent and the display remains unchanged—there is no indication that the radio has entered emergency mode.

  An optional feature of stealth emergencies is false powerdown ('keep alive'). When an unauthorized person attempts to prevent you from using your radio by turning it off, the radio *appears* to turn off. However, the radio is still in emergency mode.

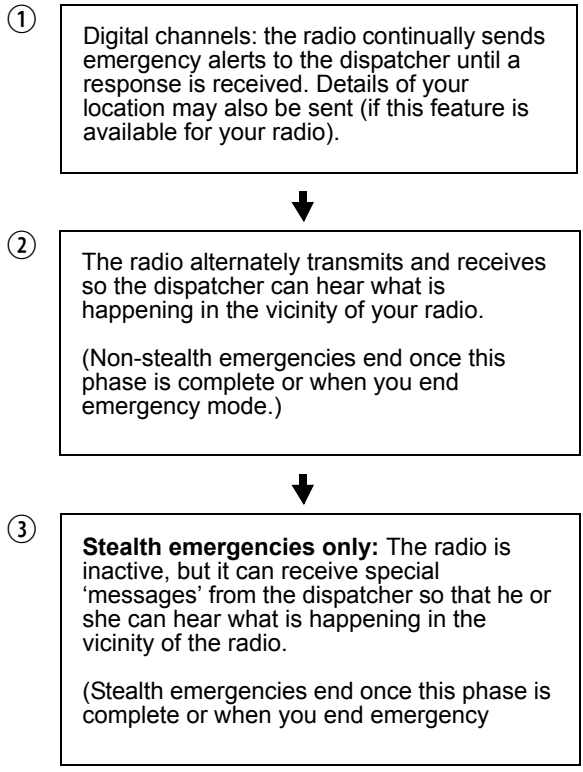
- **Non-stealth:** you often work in situations where you want audible and visual confirmation that you have activated emergency mode (for example, at an accident scene).

What happens during an emergency call?

The *exact* way your radio behaves when it enters emergency mode depends on how your radio is programmed.

The main phases for both stealth and non-stealth emergency modes are summarized below. The length of each phase is determined when the radio is programmed.

When the emergency key is pressed:



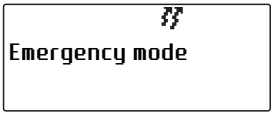
See also "Stealth and non-stealth emergency modes" on page 93.

Activating emergency mode

You can activate emergency mode using the emergency function key or a hidden switch, if your radio is set up in this way.

1 Press the function key or hidden switch to activate emergency mode.

In non-stealth emergencies, ‘Emergency mode’ appears in the display.



One or more emergency calls are sent to your dispatcher or another predetermined radio user. During emergency mode, the radio will behave as described in “What happens during an emergency call?” on page 93.

Warning If your microphone is removed or damaged by an assailant, you still may be able to communicate with the dispatcher using the concealed microphone. This microphone is hidden behind the speaker and can only be used during emergency mode, if your radio is programmed in this way.

2 Turn the radio off and on again to end emergency mode (including ‘false powerdown’). The radio returns to normal operation.

About manual emergency operation

This feature is available for digital channels only.

When you press the emergency key, your radio sends an alert to your dispatcher and other members of your group, along with your radio digital alias and GPS location.

While the emergency call is active, the emergency information is sent out periodically, until either you or another member of your group end the emergency call.

You are still able to make and receive voice calls while emergency information is being sent, but your radio does not display caller details.

Making a manual emergency call

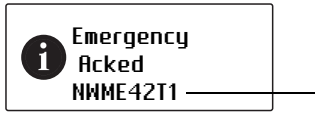
Warning You will not be able to make a voice call on the channel until the 3-second emergency alarm has finished.

1 Press and hold the emergency key for longer than three seconds.

The radio gives three short beeps, rising in pitch.

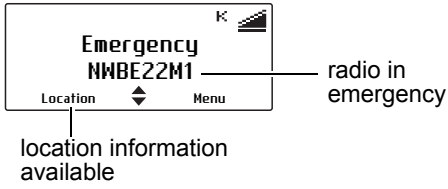
Emergency appears in the display, and remains until the manual emergency call is cancelled.

If you receive an acknowledgement from another radio in your group, the manual emergency call is cancelled, and the message **Emergency Acked** briefly appears in the display.



Receiving a manual emergency call

When your radio receives a manual emergency call, **Emergency** appears in the display, along with the identity of the radio that initiated the emergency call.



A loud repeating emergency alarm sounds for three seconds. If location information has been sent, **Location** appears in the display.

Cancelling a manual emergency call

If the emergency situation has been resolved, the manual emergency call can be cancelled either by you or another member of your group.

Cancelling an emergency call you have made

- Press and hold the emergency key for longer than three seconds.

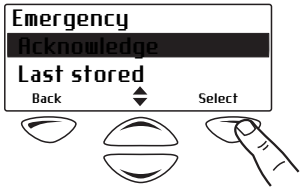
  The message **Emergency cancelled** appears in the display.

  Your radio now returns to the channel that it was operating on prior to the emergency call.

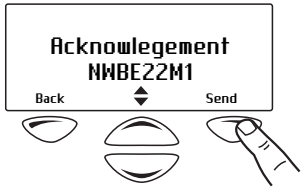
Cancelling a manual emergency call you have received

When you have received a duress emergency call, the Emergency menu always moves to the top of the menu list. In the Emergency Menu, you can manually acknowledge the duress emergency call. This acknowledgement cancels the call.

1 Press **Menu** and select **Emergency** > **Acknowledge**.



The name of the radio that initiated the emergency call appears in the display.



2 Press **Send** to cancel the manual emergency call from that number.

The message **Emergency Ack Sent** briefly appears in the display.

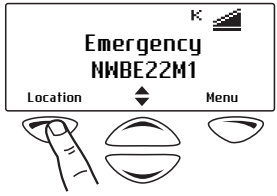
Accessing emergency GPS location information

If **Location** appears in the display, above the left selection key, you can display the current GPS location of the radio that has sent a manual emergency call. The last location of the radio will still be available even if the radio is turned off and then on again.

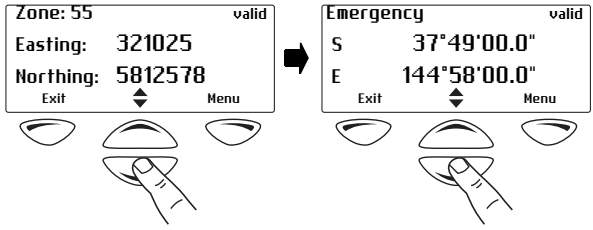
To access the location information, either press **Location** or use the Last Stored menu.

Using the Location menu

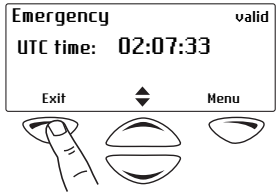
1 Press **Location** to display the current GPS location of the radio.



2 Use the scroll keys and to view more GPS information.

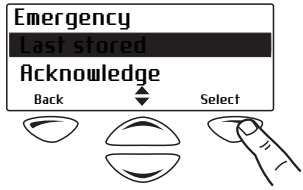


3 Press **Exit** to return to the previous display.

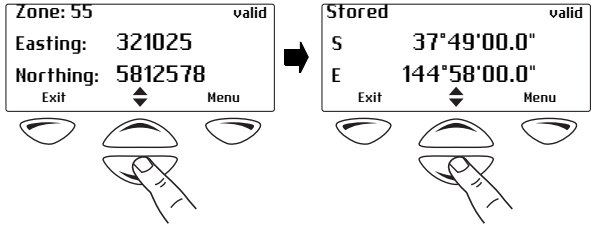


Using the Last stored menu

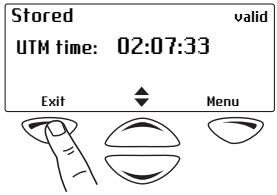
1 Press **Menu** and select **Emergency** > **Last stored** to display the current GPS location of the radio.



2 Use the scroll keys and to view more GPS information.



3 Press **Exit** to return to the previous display.



10 Encryption

This section describes how to use encryption to make your communications completely private.

This section covers:

About encryption

The encryption feature is available for digital and dual-mode channels only.

To make communications with other users on your system completely private, your radio may be able to encrypt outgoing calls, using a confidential encryption key. The radio receiving your call must have the same encryption key installed before it can hear your encrypted call.

Encrypting calls

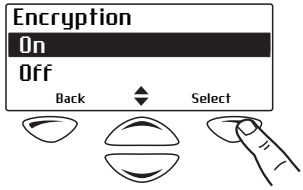
Your radio may be able to turn encryption on and off. While encryption is on, your outgoing calls are encrypted on channels programmed for encryption, and the encryption symbol remains in the display.

This setting only affects outgoing calls. Incoming calls will still be decoded by your radio so long as the key required to decode the call is stored in your radio.

To turn encryption on or off:

1 Press **Menu** and select **Security** > **Encryption**. (Depending on how your radio is programmed, you may be able to press a function key to turn encryption on and off.)

2 Scroll to **On** (or **Off**) and press **Select**.



The message **Encryption activated** (or **deactivated**) appears in the display.

Making an encrypted call

1 Select the channel or group you wish to call.

2 Check that encryption is on (is showing in the display).

3 Press and hold the PTT key to transmit.

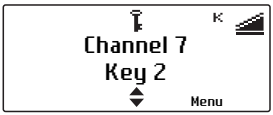
The name of the encryption key that your radio is using for the transmission may briefly appear in the display.

While you are transmitting, the red LED glows and appears in the display.

Receiving an encrypted call

When you receive an encrypted call, your radio unmutes and you can hear clear speech, so long as the key required to decode the call is stored in your radio.

The name of the encryption key used to encrypt the incoming call may briefly appear in the display, below the name of the caller.



If the key required to decode the call is not stored in your radio, then your radio remains muted.

Your radio may also remain muted if the currently selected channel has ‘proper key detect’ programmed.

About the proper key detect feature

Your radio may be programmed with ‘proper key detect’. This means that you can only hear an encrypted call if the key used to encrypt the incoming call matches the key used to encrypt your outgoing calls on that channel.

Note that encryption does not need to be turned ‘on’ for the radio to unmute.

For example, you are encrypting your outgoing calls using encryption **key 7**. Although **key 1** and **key 2** are also stored in your radio, your radio has been programmed so that it will only unmute for incoming calls encrypted using **key 7**.

Changing the radio’s encryption key

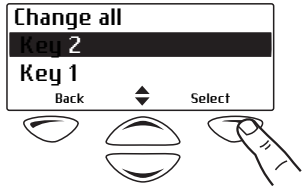
You may be able to use the **Change All** menu to change the encryption key that encrypts your outgoing calls. You can then use the **Preset Keys** menu to change the encryption keys back to the default encryption key for each channel.

Warning Once you change the encryption key, it may also automatically update the encryption keys used to encrypt calls on other channels.

Changing the transmit encryption key

1 Press **Menu** and select **Security** > **Change all**.

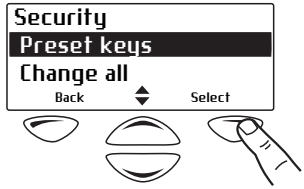
2 Scroll to the key you want and press S**elect**.



The message **Global key selected** briefly appears in the display.

Changing the transmit encryption key back to the default setting

1 Press **Menu** and select **Security** > **Preset keys**.



The message **Select preset keys?** appears in the display.

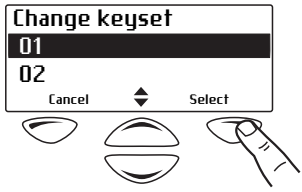
2 Press **OK** and the message **Preset keys selected** briefly appears in the display.

Changing the encryption keyset

It may be possible for you to change the encryption data associated with the encryption keys loaded in your radio.

1 Press **Menu** and select **Security** > **Change keyset**.

2 Scroll to **01** or **02** and press **Select**.



The message **Keyset selected** briefly appears in the display.

Removing encryption keys from the radio

It may be possible for you to delete encryption keys from your radio.

Warning When emergency mode is activated, or when your radio is immobilized ('inhibited'), your encryption keys may be automatically deleted from your radio.

Deleting an encryption key

1 Press **Menu** and select **Security** > **Advanced** > **Zeroize key**.

2 Scroll to the key you want and press **Select**.

The message **Single key zeroized** briefly appears in the display.

Deleting all encryption keys

1 Press **Menu** and select **Security** > **Advanced** > **Zeroize all**.

The message **Zeroize all keys?** appears in the display.

2 Press **OK** and the message **All keys zeroized** briefly appears in the display and no longer appears.

Updating encryption keys over-the-air

You may be able to update your encryption keys using over-the-air-rekeying (OTAR).

This feature is only available for digital channels operating in conventional mode.

- Press **Menu** and select **Security** > **Rekey request**.

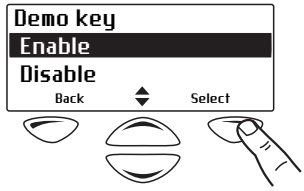
  The message **Rekey request ack** appears in the display. If there is no response to the rekey request, the message **Rekey request timeout** appears.

Using an encryption demonstration key

Your radio may be programmed with an encryption ‘demo’ key. The demo key is used to demonstrate the way encryption operates, without the need to load secure encryption keys into the radio.

Activating the demo key

1. Press **Menu** and select **Security** > **Advanced** > **Demo key**.
2. Scroll to **Enable** and press **Select**.



The message **Demo key activated** appears in the display.

Making an encrypted call using the demo key

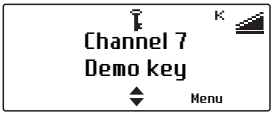
To encrypt your transmissions using the demo key:

1. Activate the demo key on your radio.
2. Turn on encryption. See “Encrypting calls” on page 101.
3. Make the call. See “Making an encrypted call” on page 102.

Receiving an encrypted call using the demo key

Once the demo key is activated on your radio, the radio unmutes when you receive a call encrypted using the demo key, and you can hear clear speech.

The identity of the caller appears in the display, along with the encryption key name.



Note that you do not need to have encryption turned on to be able to hear an encrypted call.

11 Customizing your radio

This section describes the ways in which you can customize your radio.

This section covers:

About display and keypad backlighting

Whenever a key is pressed or a call is received, the keypad and display light up automatically to make it easy to read in poor light conditions.

Backlighting usually remains on for a few seconds, unless further radio activity is detected. The period of time that the backlighting remains on once no further radio activity is detected is determined by the backlighting timer. The duration of this timer is set when the radio is programmed.

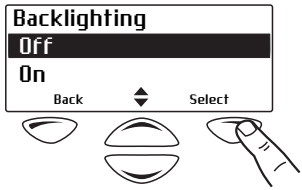
The radio's display can also be made darker or lighter to suit your working conditions. See "Adjusting the display contrast" on page 110.

Turning backlighting on or off

1 Press **Menu** and select **Radio settings** > **Display settings** > **Backlighting**.

(Depending on how your radio is programmed, you may be able to press a function key to turn backlighting on or off.)

2 Scroll to either **On** or **Off** and press **Select**. (The current setting is highlighted.)



The message **Backlighting activated** (or **deactivated**) appears in the display.

Turning backlighting on momentarily

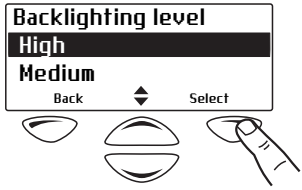
You can turn backlighting on momentarily using a function key, if your radio is programmed in this way. Backlighting remains on for a few seconds and then turns off.

Adjusting the backlighting level

To change the level of your radio's backlight to make the display or keypad easier to read in low lighting conditions:

1 Press **Menu** and select **Radio settings** > **Display settings** > **Backlight level**.

2 Scroll to the setting you want (high, medium, or low) and press **Select**. (The current setting is highlighted.)



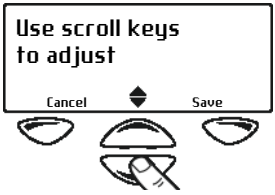
The backlighting level of the your radio's display now changes.

Adjusting the display contrast

To change the contrast of your radio display to suit the lighting conditions that you are working in:

1 Press **Menu**, and select **Radio settings** > **Display settings** > **Contrast adjust**.

2 Use or to adjust the display contrast to the level you want.



3 Press **Save** to save this setting.

Reducing power consumption

You can reduce the power consumption of your radio (and thereby reduce the drain on your vehicle battery) in the following ways:

- Transmit at low power (if your radio is not already configured to do this).
- Turn off backlighting when it is not required (see "About display and keypad backlighting" on page 108).

Turning low power transmit on or off

If you are using your radio in conditions where signal strength is high, you can reduce the drain on your vehicle battery by transmitting at low power.

When low power transmit is turned on, appears in the display and calls are made at low power rather than at the programmed power setting.

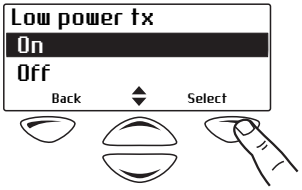
Some channels may always transmit at low power.

To turn low power transmit on or off for all channels:

1 Press **Menu** and select **Radio settings** > **Functions** > **Low power tx**.

(Depending on how your radio is programmed, you may be able to press a function key to turn low power transmit on or off.)

2 Scroll to **On** (or **Off**) and press **Select**. (The current setting is highlighted.)



The message **Low power tx activated** (or **deactivated**) appears in the display.

Customizing the audible alert settings

The radio uses audible tones to alert you to its status:

- Radio controls and keypress tones—the beeps you hear when you press your radio's keys or use the controls. (You can turn these tones off—see "Turning off radio controls and keypress tones" on page 113.)
- Incoming call tone—when the radio is receiving a call.
- Warning tones—when there is an error.

Changing the volume of all audible tones

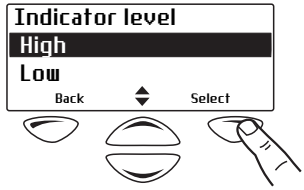
You can set the volume of all the audible sounds that the radio makes to indicate what is happening.

To change the volume of the audible tones between high or low:

1 Press **Menu** and select **Radio settings** > **Alert settings** > **Indicator level**.

(Depending on how your radio is programmed, you may be able to press a function key to change the volume of the audible tones between high or low.)

2 Scroll to **High** or **Low** and press **Select**. (The current setting is highlighted.)



Changing the keypress volume

Whenever you press a key, you will hear a beep to indicate whether or not what you are trying to do is allowed:

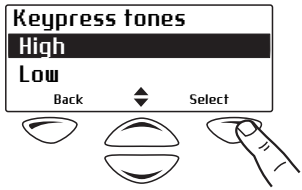
- Allowed: a short, medium-pitched beep.
- Not allowed: a long, low-pitched beep.

To change the volume of the keypress beeps between high, low, and off:

1 Press **Menu** and select **Radio settings** > **Alert settings** > **Keypress tones**.

(Depending on how your radio is programmed, you may be able to use a function key to switch the volume of the keypress beeps between high, low, and off.)

2 Scroll to **High**, **Low**, or **Off** and press **Select**. (The current setting is highlighted.)



Turning off radio controls and keypress tones

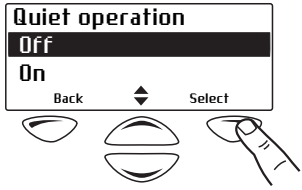
You can turn off all the tones and beeps you hear when you press the keys or use the radio controls. This is known as ‘quiet operation’. You will still hear incoming call and warning tones.

To turn quiet operation on or off:

1 Press **Menu** and select **Radio settings** > **Alert settings** > **Quiet operation**.

(Depending on how your radio is programmed, you may be able to press a function key to turn backlighting on or off.)

2 Scroll to **On** or **Off** and press **Select**. (The current setting is highlighted.)



The message **Quiet operation activated** (or **deactivated**) appears in the display.

Hearing only channel traffic

You can turn off all the audible tones that the radio makes so that the only sound you will hear from the speaker is channel traffic. This is known as ‘silent operation’.

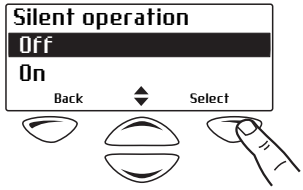
When silent operation is turned on appears in the display.

To turn silent operation on or off:

1 Press **Menu**, and select **Radio settings** > **Alert settings** > **Silent operation**.

(Depending on how your radio is programmed, you may be able to press a function key to turn silent operation on or off.)

2 Scroll to **On** or **Off** and press **Select**. (The current setting is highlighted.)



The message **Silent operation activated** (or **deactivated**) appears in the display.

12 Troubleshooting

This section describes troubleshooting procedures and basic maintenance.

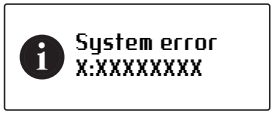
This section covers:

Troubleshooting assistance

If you are experiencing difficulty operating your radio, you may find the following sections helpful. Consult your radio provider for assistance, if necessary.

System error message

If your radio displays a system error message, take a note of the number (**X:XXXXXXXX**), and consult your radio provider.



When your radio won't turn on

If the red, green and amber LEDs on the control head do not light up when the radio is turned on, it is probable that power is not reaching the radio. Check the following:

- Is the power connector firmly plugged into the rear of the radio?
- Are the in-line fuses in good condition?
- Is the power cable securely connected to the vehicle battery or power supply?

If all appears to be in order, but your radio still fails to operate properly, contact your radio provider for further assistance.

Checking the version of a radio

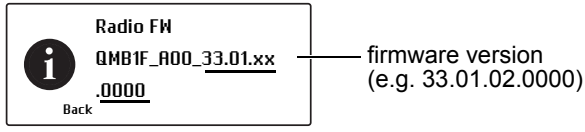
You may be asked for the hardware or firmware version of your radio, for troubleshooting purposes.

Using the Main menu

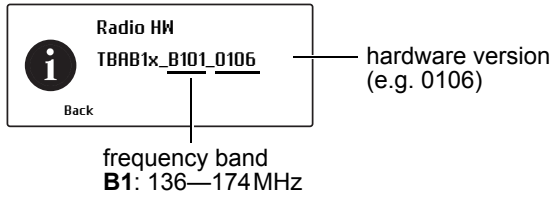
1 Press **Menu** and select **Radio settings** > **Radio info** > **Version info**.

2 In the Version Info menu, select from the following options:

- **Radio FW**: briefly displays the radio firmware version.



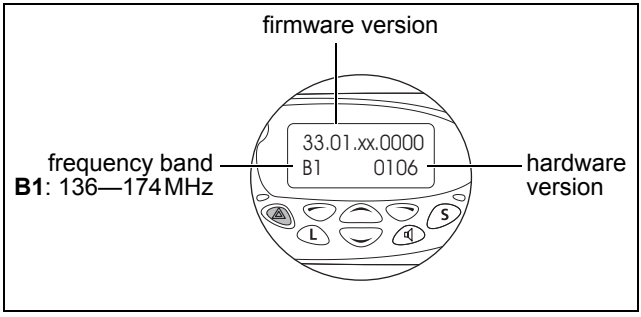
- **Radio HW**: briefly displays the radio hardware version, and also the frequency band.



Using the PTT key

- With the radio turned off, hold down the PTT key and turn on the radio.

The firmware and hardware versions, and your radio's frequency band are briefly displayed.



Identifying the radio's audible tones

The radio's audible tones can help you identify a potential problem:

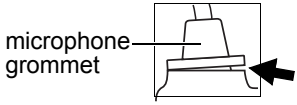
Audible tone	Meaning
One short, high-pitched beep	The radio has been made inoperable ('stunned' or 'inhibited') by your service provider.
Two short beeps	The radio has been made operable ('revived' or 'uninhibited') by your service provider.
Two low-pitched beeps	The radio's temperature is high. (The radio will continue to operate.)
Two high-pitched beeps	The radio's temperature is in the very high range and all calls will now be at low power. If the radio's temperature rises above this range, calls will be inhibited. Turn off the radio and allow it to cool down.

Removing the microphone

For information on installing or removing your radio from a vehicle, refer to the *TM9456 Installation and Programming Guide*.

Notice Remove the grommet carefully as it serves two important functions. Firstly, it prevents damage to the microphone socket due to movement of the microphone cord, and secondly, it ensures that the control head is sealed against water, dust, and other environmental hazards.

1. Using your thumb or forefinger, lift up one of the corners of the microphone grommet and firmly (but gently) pull that corner until the seal comes away from the cavity.



2. Repeat to expose another corner.
3. Pull the exposed corners back and slide the grommet up the cable to reveal the microphone plug.
4. Remove the plug from the microphone socket.

General care

Your radio requires no regular maintenance other than ensuring that all the cables and connections are secure, and that no damage has occurred to the antenna or wiring.

To prevent permanent damage to the radio cover, do not allow the radio to come into contact with detergents, alcohol, aerosol sprays or petroleum-based products.

Cleaning the radio

If you need to clean the radio cover, use a cloth dampened with clean water. Do not immerse the radio in fluids.

13 Glossary

A

APCO

The Association of Public Safety Communications Officials.
The APCO Project 25 standards committee (http://www.apcointl.org/) defined a digital radio standard. The standard is often referred to as 'APCO' or 'P25'.

C

channel

In a conventional system, a channel is a pair of frequencies used to transmit and receive radio signals.

In a P25 trunking system, a channel is a group of radio users.

control channel

In a P25 trunking system, the control channel is used by the trunking site to let the radio units in the site's coverage area know when they can transmit their call information.

conventional operation

In conventional operation, the radio is tuned to a programmed channel, and communicates with other radios either on that channel, or through a repeater system.

F

failsoft

Failsoft operation offers P25 conventional operation if the radio cannot acquire a control channel on a trunking system for an extended period of time. The conventional channel may be a repeater channel or a direct channel.

FCC Federal Communications Commission, an independent United States government agency that regulates interstate and international radio communications.

L

LED Light Emitting Diode, a device that is able to emit light.

M

mute A mute controls the circumstances under which a received signal is passed to the radio's speaker. For example, when a signal is received by the radio, the mute may remain 'closed' if the signal is not strong enough, does not have valid signaling or is encrypted.

P

P25 Project 25. The Association of Public Safety Communications Officials (APCO) established Project 25 (P25). This project was led by United States Federal, state, and local government representatives to develop standards for interoperable digital radios and systems to meet the needs of public safety users. See http://www.project25.org for further information.

R

repeater A repeater is a relaying site, usually situated above a city or town. The repeater extends the range of radio communications by receiving and re-transmitting signals received from radios.

RF Radio Frequency, the part of the electromagnetic spectrum that is suitable for radio transmissions. The frequency of the RF signal is described in terms of the number of cycles per second or Hertz (Hz).

RSSI Received Signal Strength Indicator, a symbol or number that shows the strength of a received signal.

T

traffic channel The traffic channel is the channel on a trunking system to which the parties participating in a call are directed to for the duration of the call. When the call ends, the traffic channel is returned to the pool of channels for use in a new call.

trunking operation In trunking operation, the trunking system manages the communications channels used by the radio, and shares a number of channels among a large number of radio users.

V

valid signal A valid signal is a signal that the radio responds to by unmuting the receiver. A signal may be valid, for example, when it is stronger than a minimum level or has special signaling that matches the signaling programmed for the receiving radio.

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CE Directive 1999/5/CE Declaration of Conformity

da Dansk
Undertegnede Tait Electronics Limited erklærer herved, at følgende udstyr TMAB1E & TMAH5E overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Se endvidere: http://eudocs.taitradio.com/

de Deutsch
Hiermit erklärt Tait Electronics Limited die Übereinstimmung der Geräte TMAB1E & TMAH5E mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG.
Siehe auch: http://eudocs.taitradio.com/

el Ελληνικός
Με την παρουσα Tait Electronics Limited δηλωνει οτι TMAB1E & TMAH5E συμμορφωνεται προσ τισ ουσιωδεισ απαιτησεισ και τισ λοιπεσ σχετικεσ διαταξεισ τησ οδηγιασ 1999/5/ΕΚ.
βλέπε και: http://eudocs.taitradio.com/

en English
Tait Electronics Limited declares that this TMAB1E & TMAH5E complies with the essential requirements and other relevant provisions of Directive 1999/5/EC.
See also: http://eudocs.taitradio.com/

es Español
Por medio de la presente Tait Electronics Limited declara que las radios TMAB1E & TMAH5E cumplen con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE. Véase también: http://eudocs.taitradio.com/

fi Suomi
Tait Electronics Limited vakuuttaa täten että TMAB1E & TMAH5E tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Katso: http://eudocs.taitradio.com/

fr Français
Par la présente, Tait Electronics Limited déclare que les appareils TMAB1E & TMAH5E sont conformes aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Voir aussi: http://eudocs.taitradio.com/

it Italiano
Con la presente Tait Electronics Limited dichiara che questo TMAB1E & TMAH5E è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Vedi anche: http://eudocs.taitradio.com/

nl Nederlands
Hierbij verklaart Tait Electronics Limited dat het toestel TMAB1E & TMAH5E in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/ EG.
Zie ook: http://eudocs.taitradio.com/

pt Português
Tait Electronics Limited declara que este TMAB1E & TMAH5E está conforme com os requisitos essenciais e outras provisões da Directiva 1999/5/CE.
Veja também: http://eudocs.taitradio.com/

sv Svensk
Härmed intygar Tait Electronics Limited att denna TMAB1E & TMAH5E står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Se även: http://eudocs.taitradio.com/