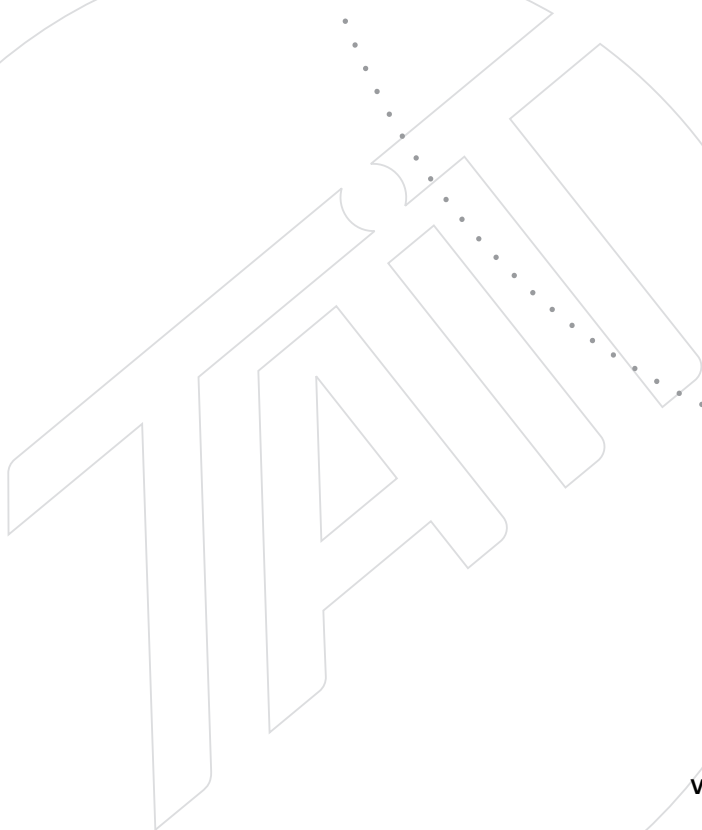


**TM9100** mobiles

# User's Guide



**Version 0.1**  
July 2004



# For your safety

Please read the following safety and compliance information before using your radio.

## 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 0.9m (35 inches) between people and the antenna. This is the minimum safe distance.
- 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 <http://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 (FCC) 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 electronic equipment to prevent interference to reception of broadcast services.

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

## **Unapproved modifications or changes to radio**

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 Ltd. Failure to do so could invalidate compliance requirements and void the user's authority to operate the radio.

## **Interference to radio communications**

This radio complies with Part 15 of the FCC Rules which specifies the limits for a Class B digital device.

This radio generates, uses, and can radiate RF energy. This energy may cause harmful interference to radio communications if the radio is not installed and used according to the instructions in the user guide. If this radio does cause harmful interference, you should contact your radio provider for assistance.

## **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.

## **Safe radio operation**

Switch off the radio:

- at petrol filling stations or near flammable liquids or gases
- in the vicinity of explosive devices and blasting zones

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.

## Interference with electronic devices

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:

- 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.

Consult the manufacturer (or its representative) of the equipment to determine whether these electronic circuits will perform normally when the radio is transmitting.

## High temperatures

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

## Radio protection

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).

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# 1 About this guide

This user's guide provides information about the TM9155 mobile radio.

## Document conventions

The following conventions are used in this guide:

Convention	Explanation
<b>Bold</b> text	Indicates text that appears on the radio display.
 <b>Note:</b>	Indicates additional information that you may find useful to know.
 <b>Tip:</b>	Provides a helpful hint.

## Safety symbols used in this guide

Within this guide, the following symbols are used to alert you to important safety information:



**Warning:** There is a potential risk of death or serious injury.



**Caution:** There is the risk of minor or moderate injury to people.



**Important:** There is a risk of equipment damage or malfunction.

## Feedback about this manual

Any enquiries regarding this manual as well as any comments, suggestions and notifications of errors, should be addressed to [support@taitworld.com](mailto:support@taitworld.com) or to the Support Group Manager, Tait Electronics Limited, PO Box 1645, Christchurch, New Zealand.

## Copyright information

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## Disclaimer

In the interests of improving the performance, reliability or servicing of the equipment, Tait Electronics Ltd reserves the right to update both the equipment or this user's guide, without prior notice.

## 2 About your radio

This section describes all the various buttons and keys on your radio.

### **This section covers:**

- About your digital radio
- Basic operation
- Using keys to access commonly used features
- Understanding the radio display
- Using the menus to access settings
- Understanding the radio indicators

# About your digital radio

You may notice some differences in the way digital and analog radios perform: the lack of static in low signal areas and consequently where you notice that coverage is poor.

## Lack of static noise

You may notice the lack of static noise on digital channels. This lack of static is because your digital radio removes the “noise” from the transmission so that you hear only clear voice.

## Coverage

With analog radios, a transmission gets progressively worse when you are in fringe areas or even slightly outside normal coverage areas. In these circumstances, you are probably able to still understand the transmission despite the amount of static because the human brain can interpret speech even when it is not perfectly clear.

With digital radios, the signal remains clear and then drops off quite quickly at the border of a transmission area. The reason for this is that a digital transmission is either received or it isn't.

Because of this difference you may notice that digital radios have different coverage patterns to analog radios. However, the actual coverage area between an analog and a digital voice system is very similar.

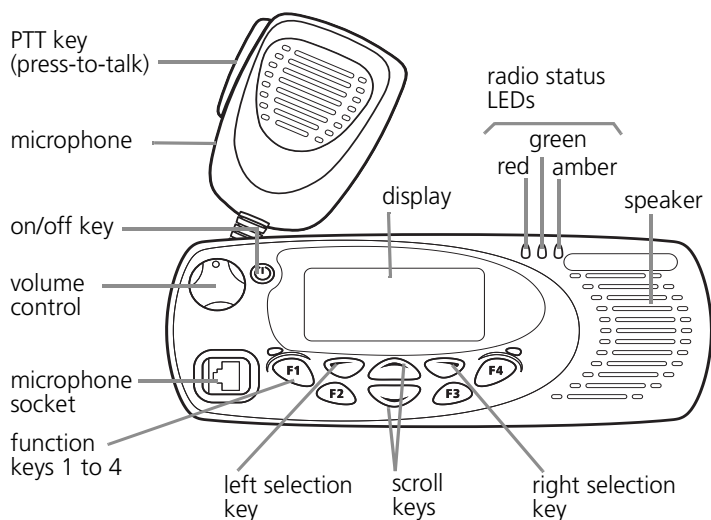
# Basic operation

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:

The radio controls are the PTT key, power/volume control, channel selector, three-way selector control, scroll keys, selection keys, and function keys. Some keys have functions assigned to both short and long key presses:

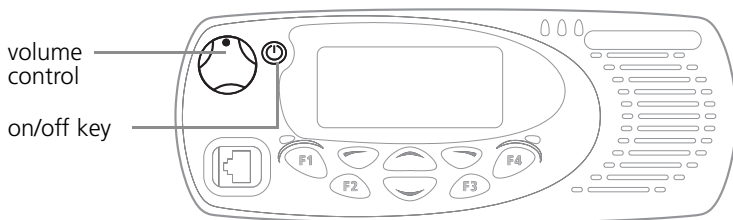
- a short key press is less than one second, and
- a long key press is more than one second

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



## Turning your radio on/off

A long press of the on/off key turns the radio either on or off. When the radio is first turned on, the red, green and amber LEDs flash briefly and the radio gives two short beeps.



## Adjusting the volume

Rotate the volume control clockwise to increase the speaker volume, and counter-clockwise to decrease the volume. The raised dot indicates the current volume setting.

## Making calls

- 1 Select the required channel, scan group, zone or preset call.
- 2 Lift the microphone off the microphone clip.
- 3 Hold the microphone about 5 cm (2 inches) from your mouth and press the PTT key to transmit.

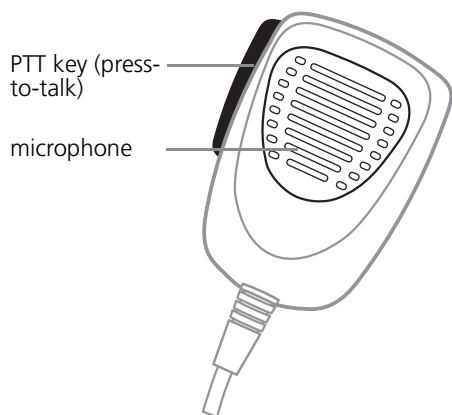


**Note:** If the channel is busy, you will not be able to transmit. Wait until the red status LED has stopped flashing, and then try again.

- 4 Speak clearly into the microphone and release the PTT key when you have finished talking.

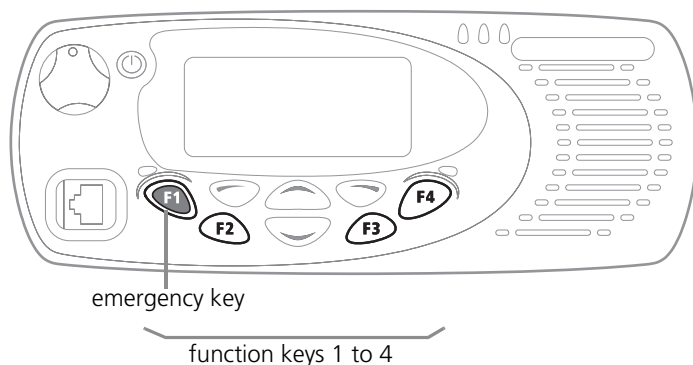
## About the press-to-talk (PTT) key

Press and hold the PTT key to talk. Release it to listen.




# Using keys to access commonly used features

The function keys provide quick access to the features you will use most often. The action that the keys perform will depend on how your radio has been programmed.



## Emergency key

You may be able to activate emergency mode by pressing the F1 key  (if your radio has been programmed in this way).

## Viewing your function key settings

You can easily check which functions are assigned to the function keys, if you have forgotten.

- 1 Press **Menu**, scroll to **Radio Information** and press **Select**.
- 2 Scroll to **Key Settings** and press **Select**.
- 3 In the menu list, scroll to a function key and press **Select** to view the function assigned to it.













# Understanding the radio display

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

## Display symbols

These are the various symbols you may see on your radio display.

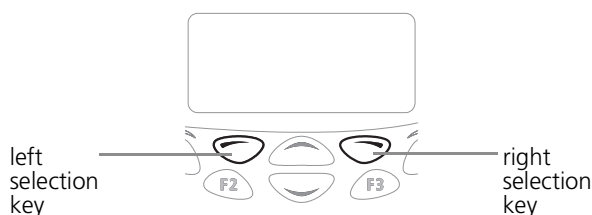
Symbol	Meaning
	RSSI (received signal strength indicator): the more bars, the stronger the signal being received by your radio
	Network available: your radio has access to a digital network
	Transmit: your radio is transmitting
	Low-power transmit: your radio is transmitting on low power
	Zone symbol: your radio is operating in this zone (the example shown is zone 3)
	Scanning: your radio is monitoring a group of channels for activity
	Monitor or squelch override: monitor or squelch override is active
	Scrolling: you can use the scroll keys  or  to move through a list

# Using the menus to access settings

You can access settings and features for your radio using the menu. The menus available will depend on the way your radio has been programmed.

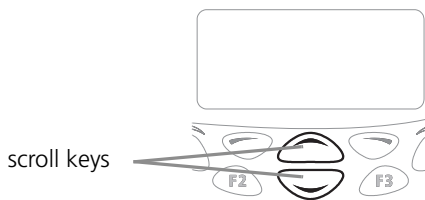
The selection and scroll keys enable you to select and move around the menus.

## Selection keys



There are two selection keys beneath the display screen. How these keys work depends on the word that appears above them on the screen.

## Scroll keys



The up and down scroll keys allow you to:

- access the quick access menu
- scroll up and down through a list, and select items.

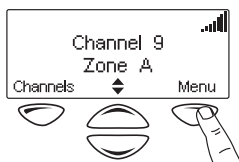


**Tip:** If you press and hold the scroll keys, the scroll speed increases.

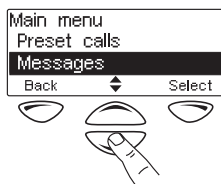
- display the previous or next part of a message that is too long to be displayed on the screen.

## Accessing menus

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



- 2 Use the scroll keys to move through the list of menus.





- 3 When the menu you want is highlighted, press **Select** to enter the menu you have chosen.



## Accessing frequently used menus

Depending on how your radio has been 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

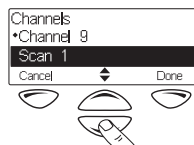
To use this Quick Access menu:

- Press a scroll key  or , and the Quick Access menu appears.

In this example, the Channels menu is the Quick Access menu. You can press a scroll key  or  to go directly to the Channels menu.




The Channels menu, with a list of your available channels and scan groups, is now displayed.

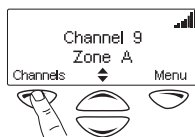


## Using the left selection key Quick Access menu

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

To use this Quick Access menu:

- Press your left selection key , and the associated menu appears.



# 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 status LED indicator 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 operation of the indicators are described in the following sections.

## Alert tones



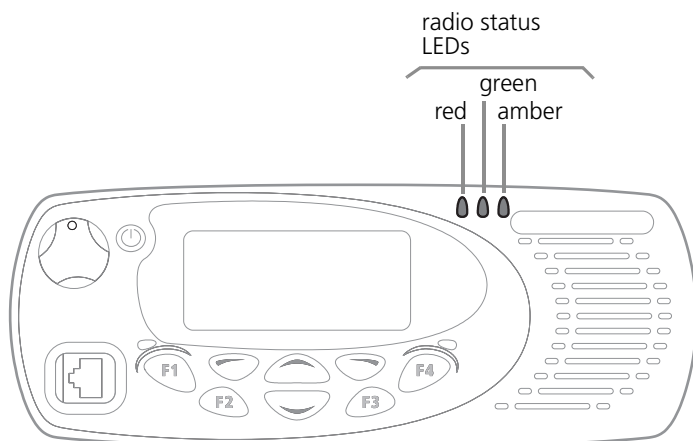
**Note:** If quiet or silent mode has been turned on, you will not hear any alert tones.

Tone	Meaning
Two short beeps	Radio turned on: the radio is powered on and ready to use
One short beep	Radio turned off: the radio is powered off, or Valid keypress: the action you have attempted is permitted
One long, low-pitched beep	Invalid keypress: the action you have attempted is not permitted, or Transmission inhibited: you have attempted to transmit but for some reason transmission is not permitted at this time

# Status indicators



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



LED	Meaning
Red (transmit)	<p>Glowing: your radio is transmitting</p> <p>Flashing: your transmit timer is about to expire, or your radio is stunned.</p>
Green (receive)	<p>Glowing: you are receiving</p> <p>Flashing: you have received a call</p>
Amber (scanning)	<p>Glowing: your radio is scanning a group of channels for activity</p> <p>Flashing: your radio has detected activity on a channel, and has halted on this channel</p>