TM9315 DMR Mobile Radio
User's Guide

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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 radio frequency (RF) exposure guidelines of the United States Federal Communication Commission's (FCC), Industry Canada, and those from other administrations, 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

Warning RF exposure hazard!
To comply with FCC and Industry Canada RF exposure limits, mount the antenna at a location such that no person or persons can come closer than 35 inches (0.9m) to the antenna:
For radios with a transmit power >25W:

VHF radios must be installed using an antenna mounted centrally on the vehicle roof, with a gain of 2.15 dBi or 5.15 dBi.

UHF and 800 MHz radios must be installed using an antenna mounted either centrally on the vehicle roof with a gain of 2.15 dBi or 5.65 dBi, or centrally mounted on the trunk with a gain of 5.65 dBi.

900 MHz radios must be installed using an antenna mounted either centrally on the vehicle roof or centrally mounted on the trunk with a gain of 2.15 dBi or 8 dBi.

For radios with a transmit power of 25 W:

The radio must be installed using an externally mounted antenna with a gain of either 2.15 dBi or 5.15 dBi.

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 (0.9 m) 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 modi-fications to the antenna otherwise you could dam-age 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.

Health Canada warning statement

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit an RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from the Health Canada's website http://www.hc-sc.gc.ca.

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.

■ European Directive 2004/40/EC on minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields).

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.

Conformité aux normes d'exposition à l'énergie RF

Cette radio émetteur-récepteur se conforme aux normes et aux règlements d'exposition à l'énergie RF :

■ La Commission fédérale de la communication des Etats-Unis, Code de règlements fédéraux (CFR) Titre 47 Sections 1.1307, 1.1310 et 2.1091 (radios mobiles) ou 2.1093 (radios portatives).

- 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.
- La directive européenne 2004/40/EC concernant les prescriptions minimales de sécurité et de santé relatives à l'exposition des travailleurs aux risques dus aux agents physiques (champs électromagnétiques).

Cette radio se conforme aux limites d'exposition de l'IEEE (FCC) et ICNIRP pour les environnements d'exposition au rayonnement RF professionnel et contrôlé aux cycles de marche de 50% en mode transmission et 50% en mode réception.

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.

Radio frequency emissions limits in Canada

This device complies with Industry Canada licence exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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

N46 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 radiocommunication 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 of this booklet. To download the formal declaration of conformity, go to www.taitradio.com/eudoc.

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 pacemakers and hearing aids

■ 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** Unless the radio is specifically certified for use in a potentially explosive atmosphere, turn off the radio before entering such an atmosphere. An explosion could cause serious injury or death. Examples of potentially explosive atmospheres include filling stations, and any environment where there are flammable liquids, gases, or dusts.

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

⚠️ **Warning** To avoid damage to existing wiring, airbags, fuel 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

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

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

High radio surface temperatures

Caution 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.

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

1 About this guide

This user's guide provides information about the TM9315 DMR quad mode mobile radio.

The radio behavior described in this guide applies to radios with firmware version 2.15. If your radio does not operate as you expect, contact your radio provider for assistance.

Safety warnings used in this guide

Please follow exactly any instruction that appears in the text as an 'alert'. An alert provides necessary safety information as well as instruction in the proper use of the product. This user's guide uses the following types of alert:

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.

This icon is used to draw your attention to information that may improve your understanding of the equipment or procedure.

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 Guide*—covers installing TM9300 mobile radios, microphones, antennas, emergency switches, and external alert devices.

■ *Accessory installation instructions*—may be supplied with an accessory.

2   Getting started

This section gives an overview of your DMR radio and describes the radio's controls and indicators.

This section covers:

■ About your DMR digital radio

■ About the radio controls

■ Understanding the radio display

■ Understanding the radio indicators

■ Using function keys to access frequently used features

About your DMR digital radio

Your DMR digital radio can be programmed for DMR conventional or DMR trunked operation. Analog conventional and MPT operations are also available.

You may notice differences between digital and analog calls in terms of:

■ static noise in low signal areas, and

■ radio coverage in marginal reception areas.

Lack of static noise

On digital networks 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 digital networks, 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. With analog networks, the background noise in a call gets progressively worse when you are in fringe areas or even slightly outside normal coverage areas.

What you hear on an analog channel

On analog channels, your radio may be programmed so that you hear all conversations on a channel, or your user group may be segregated from other user groups by using special signaling. The special signaling is used to control the muting and unmuting of your radio, so that your radio is muted when other user groups are talking and unmuted for members of your user group.

There are two muting controls that operate in your radio:

■ signaling mute

■ squelch

Signaling mute

The radio's signaling mute only allows the radio to unmute if the incoming call carries the tones specific to your user group. Your user group may use tones that are either audible, subaudible or both.

Squelch

The radio's squelch allows the radio to unmute only when the strength of the incoming signal is above a predetermined threshold. This means that only signals of reasonable intelligibility are made audible.

About the radio controls

The radio controls are the PTT key, volume control, on/off key, channel/preset 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.
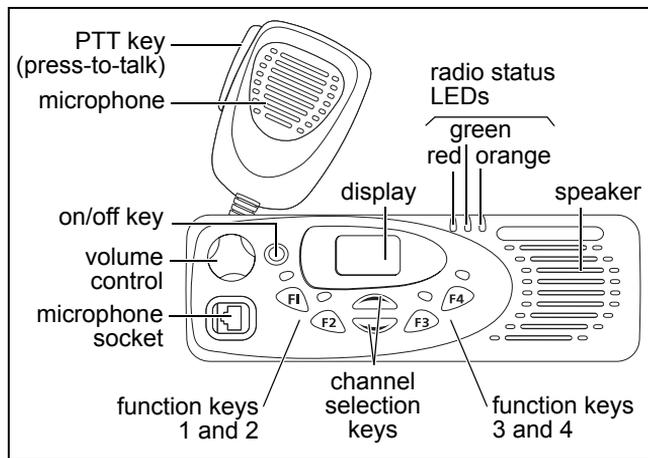
Name	Function
PTT key	Press and hold to transmit and release to listen
Volume control	Rotate to change the speaker volume
On/off key	Turn the radio on or off with a long press
Channel selection keys	Move up and down through the list of channels and groups
Function keys	Programmed for frequently used options

Understanding the radio display

The following table explains the messages you may see on your radio display.

Message	Meaning
– –	Stunned: your radio has been made inoperable by your service provider
-U	The number of the calling party cannot be displayed
1	Conventional mode: you are currently operating on a conventional channel (in this example, channel ID 1), or group
P1	Preset call: the current item in the scrolling list is a preset call (in this example, preset call 1)
An	Antenna: there is a fault with your antenna. Check your antenna, antenna type and cable connections.
b5	Called party busy: the called party is engaged on another call or does not accept your call
Cb	Callback: your call has reached the other party and they did not answer, but their radio has stored a message to call you back
Cn	Call cancelled: the call has been cleared down before a traffic channel is assigned
dF	Decryption failure: the incoming transmission cannot be decrypted due to an invalid or missing key

d9	Diagnostics: trunked diagnostics are enabled
di	Call diversion: the call diversion feature is currently activated, or your call has been diverted by the calling party
dn	Do not disturb: the "do not disturb" feature is currently activated
dt	Data call: a data call is currently in progress
EF	Encryption failure: the outgoing transmission could not be encrypted due to an invalid or missing key
n1	Network: your radio is currently operating on the trunking network indicated (in this example, network 1)
nA	Not available: the requested function is not currently available
nr	No repeater detected: there was no response from the repeater
OF	Out-of-fleet: you have received a call from another party that is not part of your fleet
OL	Out-of-lock: the radio's synthesizer is out-of-lock on the current channel and you cannot operate on that channel

Or	Overridden: your original call has been overridden by a higher priority call
Pb	PABX call: you have received a call from another party via a Private Automatic Branch Exchange
Pn	Phone call: you have received a call from another party via the Public Switched Telephone Network (PSTN)
Pr	Programming: the radio is currently being programmed
rC	Return call: a call has been missed. Press the PTT key to return the call
SC	Talkgroup list: the current item in the scrolling list is a scan group (in this example, scan group1).
SL	Site select: a new control channel has been selected using the site select feature
SY	Call queued by system: your call has been queued by the trunking system
Un	Called party unavailable: the other party's radio is turned off or is out of range of the network
Uo	Out of service: your radio cannot set up the call because it is out of service, or Number unobtainable: the number you called is not recognized by the network. Check you have dialled the correct number.

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.

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

Status indicators

Color		Meaning
Red	🔴	On: your radio is transmitting
	🔴	Flashing: your transmit timer is about to expire
Green	🟢	On: Network channel: the network is active Radio-to-radio channel: the current channel is busy (conventional). Radio is on an active call (trunked).
	🟢	Flashing: you have received a call or monitor is active (conventional)
Orange	🟠	On: your radio is scanning a group of channels for activity or greatest signal strength (conventional). Network service available (trunked).
	🟠	Flashing: your radio has detected activity on a channel, and has halted on this channel (conventional). No network service available (trunked).

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.

- 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.

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 a function key).
One short, low-pitched beep	Function deactivated: A function has been turned off (using 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.
Two short beeps	■ Radio turned on: The radio is powered on and ready to use. ■ Radio is revived: The radio has been made operable by your service provider. ■ Go-ahead beeps (DMR calls)
Three short beeps	Channel now free: You were prevented from transmitting on a busy channel and that channel is now free.

Tone	Meaning
Three long beeps	Transmit timeout imminent: Your transmit timer will expire and your current transmission will be terminated.
One short, high-pitched beep	Radio is stunned: The radio has been made inoperable by your service provider.
Two low-pitched beeps	Radio's temperature is high: The radio's temperature is in the high-temperature range, but the radio will continue to operate.
Two long high-low pitched tone pairs	Synthesizer is out-of-lock: The radio's synthesizer is out-of-lock on the current channel and you cannot operate on that channel (**L** or **OL** flashes on the display).

Using function keys to access frequently used features

The function keys provide access to some of the features you will 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.

Use the following table to record the function keys programmed for your radio:

	Short key press	Long key press
F1		
F2		
F3		
F4		

For more information about the function keys that can be programmed on your radio, contact your radio provider.

3   Operation

This section describes the operation of the radio.

This section covers:

■ Turning the radio on and off

■ Adjusting the speaker volume

Turning the radio on and off

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

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

Adjusting the speaker volume

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

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

4 Operating in conventional mode

This section explains how to operate your radio on a conventional network (digital and analog).

Notice The radio may be switched between conventional and trunked modes using a 'change mode' programmable function key. This function key should be programmed under both conventional, and trunked key settings, to allow the modes to be switched in both directions. In conventional mode, the function key LED is off.

This section covers:

- Selecting a channel or group
- Making a call
- Making an emergency call
- Making an individual call
- Making a preset call
- Resending calls automatically
- Sending a status message
- Transmitting at low power
- Using monitor and squelch override (on analog channels)
- Bypassing the repeater (on analog channels)
- Receiving a call
- Using the radio in different repeater areas
- Scanning a group of channels
- Encryption
- Location information

Selecting a channel or group

Use the channel selection keys ⌒ or ⌄ to scroll through the channel list until the channel or group you want is displayed.

Your radio may also be programmed to use a function key to select a particular channel or group.

(i) A group is a collection of channels that are grouped together for either scanning or voting.

(i) If you select a scan group or voting group, the display will show the transmit channel or captured channel rather than the number of the scan or voting group.

The sections and explain how your radio operates once a scan group or voting group has been selected.

Making a call

The radio's behavior when making a call changes depending on the type of channel selected.

Channels can be programmed for:

■ DMR calls over the DMR network

■ DMR calls between radios

■ analog calls between radios

If you are on a channel programmed for calls over the DMR network, the green LED indicates whether the network is active. By default, the network is inactive (green LED is off).
Initiating a call will activate the network which will remain active for a programmed time. While the network is active (green LED glows), you can complete the call and start a new call.

If you are on a channel programmed for DMR or analog calls between radios (without a radio network), the green LED indicates activity on the channel, i.e. whether someone is talking.

For all DMR calls (over the network or radio to radio), you will hear a go-ahead double-beep after pressing the PTT key (if programmed).

Receiving a new DMR call is indicated by a number of beeps (if programmed):

■ one beep: individual call

■ two beeps: group call

■ three beeps: broadcast call to all radios

DMR calls have an inactivity timeout. If a pause in the conversation exceeds the timeout, the next press of the PTT key will establish a new call.

To make a call:

1 Select the required channel or group.

2 On channels programmed for DMR or analog calls between radios (without a radio network): Check that the channel is clear. If the green LED is glowing, the channel is busy and you may not be able to transmit.

3 Lift the microphone off the microphone clip.

4 Hold the microphone about 2 inches (5cm) from your mouth.

5 Press and hold the PTT key to transmit.

6 On a DMR channel: Wait for the go-ahead double-beep (if programmed).

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

While you are transmitting, the red LED glows .

(i) You cannot change channels while transmitting.

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.

If the transmit timer has timed out, you must release the PTT before you can transmit again.

(i) Your radio may be unable to transmit for a short time after the transmit timer has expired.

Making an emergency call

You may be able to activate emergency mode by using a programmed function key.

1 Press the function key programmed for Emergency Mode and an emergency call is sent to your dispatcher, or some other predetermined location. The radio will sound a high-pitched tone sequence.

While emergency mode is active, your radio may cycle between receive and transmit, so that your dispatcher can hear any activity near the radio. Alternatively, if operating in 'stealth mode' your radio may appear to be idle but will actually be in emergency mode.

2 Reset the radio to normal operation at any time by turning the radio off and then on.

(i) Emergency mode may be programmed to end after a fixed period of time. In this case, there is no need to turn the radio off and then on in order to return the radio to normal operation.

Making an individual call

This feature is available for DMR digital channels only.

To make a call to one person:

1 Press the programmed function key.

This will send a call alert to the called radio.

2 After the called person has answered, press PTT when it is your turn to talk.

Making a preset call

You may be able to use your radio to make preset calls to an individual or a specific group using special signaling known as 'Selcall'.

Preset individual or group calls can be assigned to each channel and/or function key.

To make a preset call:

1 Select the required channel or group.

2 Press the programmed function key or PTT (depending on your configuration).

Resending calls automatically

Your radio may have been programmed to resend individual and group calls when they are not answered.

There are two automatic callback features:

■ deferred calling

■ no acknowledgement retries

Deferred calling

When you attempt to make a call on a channel that is busy, the radio can store and send the call once the channel is free. The radio gives a low-pitched beep if the channel is busy, and then waits until the channel is free to retry the call.

(i) A deferred calling time limit may have be configured. Once the time limit has expired the radio will no longer attempt to retry the call.

To cancel a deferred call:

■ Press the PTT key.

No acknowledgement retries

When you send a call and there is no reply, the call is resent.

To cancel a call that is being resent:

■ Press the PTT key.

Sending a status message

Your radio may be programmed to use one or more function keys to send a status message to another party to indicate your current activity.

■ Press the programmed function key.

(i) Status messages can also be used to control external devices.

Transmitting at low power

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.

Some channels may always transmit at low power.

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

1 Press the function key programmed for low-power transmit to transmit at low power on your current channel.

2 Press the low-power transmit function key again to turn low-power transmit off.

Using monitor and squelch override (on analog channels)

The monitor function allows you to override some or all of the radio's mutes, and hear if there is any traffic on a channel before you make a call.

The squelch override function lets the radio user override the squelch (carrier) mute and hear all noise on a channel, including weak signals that are below the programmed squelch threshold.

(i) Your radio may be programmed to activate monitor whenever the microphone is off the microphone clip.

To turn monitor on and off:

■ Press the function key programmed to turn monitor on and off.

While monitor is on, the green LED flashes slowly.

(i) Your radio may be programmed so that monitor turns off automatically after a short time.

To turn squelch on and off:

(i) Squelch is often programmed as a long keypress of the same function key that turns monitor on and off.

1 Long press the monitor function key to override both squelch and the signalling mutes.

This allows you to hear even faint and noisy signals. While squelch override is on, the green LED flashes slowly.

2 Press the monitor function key again to return the radio to a quiet state.

(i) Squelch cannot be overridden when the radio is scanning.

Bypassing the repeater (on analog channels)

For analog channels, you can bypass the radio repeater and communicate directly with another radio. This feature is known as repeater talkaround. You can do this, for example, when you are out of range of the repeater, or if the repeater is busy or stops working. While repeater talkaround is active, all transmissions are made on the receive frequency of the channel you are on.

To activate repeater talkaround:

1 Select the required channel.

2 Press the programmed function key to turn repeater talkaround on.

3 Proceed with your call.

4 To turn repeater talkaround off, either change the channel, or press the function key again.

Receiving a call

When there is valid activity on your radio's currently selected channel or group, the radio unmutes and you can hear the call.

If an incoming analog call contains special signaling that matches the signaling programmed for your radio, the green LED flashes and your radio may give a ringing tone.

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, until a better communications channel is selected.

This channel is known as the 'home' channel, and will be the channel you make and receive calls on. While voting is active, the orange LED glows and the display shows either:

■ the voting group number

■ the transmit channel

The section "Selecting a channel or group" on page 32 explains how to select a group. A group can be either a voting or a scanning group.

Suspending a channel from a voting group

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

When that voting group is next selected, or after the radio has been turned off and then on, the deleted channel is again part of the voting group.

Scanning a group of channels

The scan function is used to monitor a programmed group of channels, looking for activity. While the radio is scanning for activity, the orange LED glows. When activity is detected on a channel in the scan group, the radio stops on that channel. The orange LED begins flashing, the radio unmutes and you can hear the call. Scanning resumes once the channel is no longer busy.

While scanning is active, depending on how the radio has been programmed, the display will show either:

■ the scan group number

■ the captured channel

■ the transmit channel

The section "Selecting a channel or group" on page 32 explains how to select a group. A group can be either a voting or a scanning group.

Making a call while scanning

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

1 Lift the microphone off the microphone clip.

2 If there has been no recent activity on the channel (the orange 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, or

- your radio calls the last free channel.

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

Suspending a channel from a scanning group

If a member channel of a scan group is busy for a long time and you do not wish 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.

Alternatively, the function key programmed for scanning may be programmed so that a short key press turns on scanning, and a long key press activates nuisance delete.

- Press and hold the function key programmed for scanning to remove the current channel from the scanning group.

Encryption

Your radio's DMR channels may be programmed to encrypt 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.

Location information

Your radio may be configured to send location information.

5 Operating in trunked mode

This section explains how your radio operates on a DMR (digital), MPT (analog) or dual-mode trunked network.

Notice The radio may be switched between conventional and trunked modes using a 'change mode' programmable function key. This function key should be programmed under both conventional, and trunked key settings, to allow the modes to be switched in both directions. In trunked mode, the function key LED is on.

(i) These features are controlled by software licenses (SFE) and may not be available with your radio.

(i) Your radio must have trunking functionality programmed before it can operate in DMR or MPT trunked mode.

When the radio starts up in trunked mode, both the Radio Unit ID and the Active Network ID are briefly displayed. In cases where the radio has a 3-digit Radio Unit ID, the first digit is displayed, followed by the last two digits. The Network ID is then displayed with a a prefix 'n' (i.e. "n1" for trunked Network ID 1).

This section covers:

■ Making a preset call

■ About emergency operation

■ Receiving a call

■ Placing the radio in do-not-disturb mode

Making a preset call

The preset calls programmed for your radio may be to other radios, to PABX extensions or to PSTN numbers, or to perform a special function using a trunked call string (such as changing the current trunked network).

Depending on how your radio is programmed, you may be able to use a function key to set up a preset call. Alternatively, calls may be initiated by using the scroll keys to select a preset call ID and then pressing the PTT.

The active trunked network may be changed using a trunking call string that is programmed into a preset call entry. This preset must be selected using the scroll keys, before pressing the PTT to change the active network.

About emergency operation

In an emergency you may be able to summon help by sending an emergency call. After making the call, your radio may be programmed to enter emergency mode. While emergency mode is active, your radio may cycle between receive and transmit, so that your dispatcher or the called party can hear any activity near your radio.

On most networks, an emergency call takes precedence over other call types, and existing calls are cleared down so that the emergency call can proceed.

To make an emergency call from your radio, you may be able to either:

■ make a preset emergency call,

■ use a function key programmed for emergency mode.

Making a preset emergency call

Depending on how your radio is programmed, you may be able to use a programmed function key to make a preset emergency call from your radio.

1   Press the programmed function key (depending on your configuration), or use the scroll keys to select the emergency preset and press the PTT.

An emergency call is now sent to the emergency location that has been programmed for your radio.

Activating emergency mode

You can activate emergency mode using a function key programmed for emergency mode. Alternatively, you may be able to activate emergency mode using a hidden switch or panic button. Once emergency mode is activated, your radio makes an emergency call to your dispatcher or some other predetermined location. The radio then enters emergency mode.

While emergency mode is active, your radio may cycle between receive and transmit, so that your dispatcher can hear any activity near the radio.

Cancelling emergency mode

Reset the radio to normal operation at any time by turning the radio off and then on.

(i) Emergency mode may be programmed to end after a fixed period of time. In this case, there is no need to turn the radio off and then on in order to return the radio to normal operation.

Receiving a call

When you receive a call, your radio responds in one of two ways, depending on the way it was programmed and the way your network operates.

■ On-air call setup: The radio gives a ring and auto-matically accepts the call.

■ Full off-air call setup (FOACSU): When a call is received, the radio rings like a telephone.

To accept the call, briefly press the PTT key or lift the microphone off the microphone clip.

Upon receiving a call, the display will indicate the caller ID until you respond. If the ID of the caller appears in your programmed preset call list, the display will alternately flash 'p' followed by the preset ID, to identify the caller.
Otherwise, the Group ID or Radio Unit ID of the caller will be displayed. Where this ID is a 3-digit number, the first digit and last two digits will alternately flash on the display.

Once the green LED glows, the network is active and you can proceed with the call, as follows:

1 Hold the microphone about 2 inches (5 cm) from your mouth.

2 Press and hold the PTT key to transmit.

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

While you are transmitting, the LED glows red.

4 End the call by placing your microphone back onto its hook or by pressing a function key programmed for Call Cleardown. The network may also end the call if neither you nor the other party transmits for a predetermined time or if your call time limit is exceeded.

Transmit timer

Your radio may have a transmit timer that limits the amount of time you can transmit continuously.

When the transmit timer is about to expire, the LED flashes red, and the radio gives three beeps.

If the transmit timer times out, the call clears down.

Call time limit

In trunked mode, the length of your call may be limited by the network or by your radio.

Placing the radio in do-not-disturb mode

If you do not want calls for a while, you can place the radio in do-not-disturb mode, so that incoming calls can be ignored. You can make outgoing calls in the usual way.

This mode can be controlled using a function key; or by assigning a 'do-not-disturb' trunking call string to a preset call entry, selecting it using the scroll keys and activating it by pressing the PTT.

Using a function key

1 Press the function key programmed for do not disturb, to activate the do-not-disturb function.

Your radio will now ignore all incoming calls.

2 To deactivate the do-not-disturb function, press the do-not-disturb function key again.

ⓘ Activating do-not-disturb mode will result in a single short beep. Deactivating do-not-disturb mode will result in a single, short, low-pitched beep.

6 Loneworker monitoring

Loneworker monitoring is a safety feature for people who work alone. Loneworker monitoring may be programmed to be on or off at all times, or can be switched on and off by the user using a programmed function key.

A loneworker alarm is activated, if there has been no user activity for a predetermined time.

When the predetermined time has expired, an audible warning is given and you have a predetermined time to respond to the loneworker situation.

If you are unable to respond, the radio enters emergency mode.

Turning loneworker monitoring on and off

■ Press the function programmed for turning lone-worker monitoring on and off.

Responding to a loneworker alarm

If you hear a beep to indicate that the radio is expecting a response from you to acknowledge that you are safe:

■ Press any key.

Otherwise the radio will activate emergency mode.

Delaying the emergency action

An additional emergency entry delay may be programmed which allows you to press the up or down key within a programmed time (usually 10 seconds) after the response time expires to delay the emergency action.

You now have the opportunity to turn the radio off and on to cancel the loneworker alarm.

(i) The emergency action can be delayed only once.

7   Troubleshooting

This section describes troubleshooting procedures, and basic maintenance.

This section covers:

■ About troubleshooting

■ When your radio won't turn on

■ Identifying the radio's audible tones

■ Removing the microphone

■ General care

About troubleshooting

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

When your radio won't turn on

If the red, green and orange 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.

Identifying the radio's audible tones

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

Removing the microphone

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

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.

microphone grommet

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.

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.

Notice 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.

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

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11.10. SEVERABILITY. In the event that any part or parts of this Agreement shall be held illegal or null and void by any court or administrative body of competent jurisdiction, such determination shall not affect the remaining terms which shall remain in full force and effect as if such part or parts held to be illegal or void had not been included in this Agreement. Tait may replace the invalid or unenforceable provision with a valid and enforceable provision that achieves the original intent and economic effect of this Agreement.

11.11. CONSUMER GUARANTEES. Licensee acknowledges that the licenses supplied in terms of this agreement are supplied to Licensee in business, and that the guarantees and other provisions of prevailing consumer protection legislation shall not apply.

11.12. WHOLE AGREEMENT. Licensee acknowledges that it has read this Agreement, understands it and agrees to be bound by its terms and conditions. Licensee also agrees that, subject only to the express terms of any other agreement between Tait and Licensee to the contrary, this is the complete and exclusive statement of the Agreement between it and Tait in relation to the Software. This Agreement supersedes any proposal or prior agreement, oral or written, and any other communications between Licensee and Tait relating to the Software and the Designated Products.

CE ⓘ Directive 1999/5/CE Declaration of Conformity

da   Dansk
Undertegnede Tait Limited erklærer herved, at følgende udstyr TMBB1A, TMBC0A, TMBH5A & TMBH7A overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Se endvidere: www.taitradio.com/eudoc/

de   Deutsch
Hiermit erklärt Tait Limited die Überein-stimmung der Geräte TMBB1A, TMBC0A, TMBH5A & TMBH7A mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG.
Siehe auch: www.taitradio.com/eudoc/

el   Ελληνικά
Η Tait Limited δηλώνει ότι το TMBB1A, TMBC0A, TMBH5A & TMBH7A συμμορφώνεται προς τις ουσιώδεις απαιτήσεις και τις λοιπές σχετικές διατάξεις της Οδηγίας 1999/5/ΕΚ.
Βλέπε επίσης: www.taitradio.com/eudoc/

en   English
Tait Limited declares that this TMBB1A, TMBC0A, TMBH5A & TMBH7A complies with the essential requirements and other relevant provisions of Directive 1999/5/EC.
See also: www.taitradio.com/eudoc/

es   Español
Por medio de la presente Tait Limited declara que las radios TMBB1A, TMBC0A, TMBH5A & TMBH7A cumplen con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE. Véase también:
www.taitradio.com/eudoc/

fi   Suomi
Tait Limited vakuuttaa täten että TMBB1A, TMBC0A, TMBH5A & TMBH7A tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Katso: www.taitradio.com/eudoc/

fr   Français
Par la présente, Tait Limited déclare que les appareils TMBB1A, TMBC0A, TMBH5A & TMBH7A sont conformes aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Voir aussi: www.taitradio.com/eudoc/

it   Italiano
Con la presente Tait Limited dichiara che questo TMBB1A, TMBC0A, TMBH5A & TMBH7A è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Vedi anche: www.taitradio.com/eudoc/

nl   Nederlands
Hierbij verklaart Tait Limited dat het toestel TMBB1A, TMBC0A, TMBH5A & TMBH7A in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/ EG.
Zie ook: www.taitradio.com/eudoc/

pt   Português
Tait Limited declara que este TMBB1A, TMBC0A, TMBH5A & TMBH7A está conforme com os requisitos essenciais e outras provisões da Directiva 1999/5/CE.
Veja também: www.taitradio.com/eudoc/

sv   Svensk
Härmed intygar Tait Limited att denna TMBB1A, TMBC0A, TMBH5A & TMBH7A står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Se även: www.taitradio.com/eudoc/