4.2.11 RSSI (Received Signal Strength Indication)

This screen displays the received signal strength in dBm. The reading is typically accurate within +/- 2 dBm between -120 and -80dBm, if the radio has been correctly calibrated.   For example, -90dBm is a strong signal and –120dBm is no signal.

The screen also shows the Bit Error Rate (BER) on digital channels. RSSI and BER are typically used to indicate signal quality.

From the Settings Sub Menu, step through the menu options with the ▼ and ▲ keys until the "**RSSI**" menu is displayed.
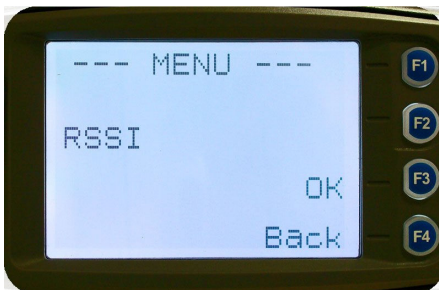
Press the "**OK"** key for the "**RSSI**" screen

If a Digital channel is selected BER will be displayed.

The RSSI/BER will be displayed until either the "**Menu**" key is pressed to return to the next highest menu level or the "**OK**" key is pressed which will return to the main channel menu.

A lower RSSI value indicates a stronger signal, ie. –80dBm is a stronger signal than –100dBm.

4.2.12 Crypto

This menu allows the digital channel's default transmit encryption key to be modified. The current selected digital channel has encryption enabled if the padlock symbol is displayed.

Press the "**OK**" key for the "**Crypto Key**" menu.

Digital   **Analogue**

If an Analogue channel is selected, a warning message will display "None-Analog

When the Crypto menu is selected, the digital channel's Encryption Key ID can be changed with the ▼ and ▲ keys.

The key name and the key identifier (1-32) for the selected channel is displayed.

If the selected channel is changed or the radio is switched off, the channel's default encryption key will be restored.

Pressing the "**OK**" key returns to the main channel screen.

Pressing the "**Back**" or "**Menu**" key returns to the next highest menu level.

4.2.13 Setup Menu

The screens in the Setup sub-menus allow the radio operator to edit/modify the operation of some of the general functions of the radio.

Once the **Menu** key is pressed from the "Channel" screen, the ▼ and ▲ keys cycle through the available "Main" menus. Once the "Setup" menu appears, press the "**OK"** key to select it.

The ▼ and ▲ keys are then used to scroll through the setup menus.

The Setup menu structure may include, for example:

- **Alert Volume,**
- **Contrast,**
- **RSSI (Received Signal Strength Indication),**
- **Info (Radio software and hardware information),**
- **Crypto (Select Transmit Encryption Key),**
- **Squelch,**
- **Mute Adjust or**
- **User Options**

4.2.14 Stored Calls

This screen displays the received individual call records one by one, starting with the most recently received call record.
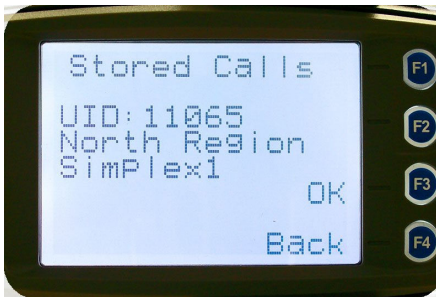

Either the name of the caller from the phone book or the user ID is displayed if the ID is not known to the phone book. If stored calls are empty, NO RECORD is displayed.

The ▼ and ▲ keys can be used to step through the stored calls.   An error beep will sound if there are no more call records.

A "**Reset**" function key press (if configured), takes the radio back to the default screen display.

The "**Menu**" or "**Back**" key returns to Menu screen.   When "**OK**" key is pressed, a pop up menu is displayed so that the message can be deleted or party called back.
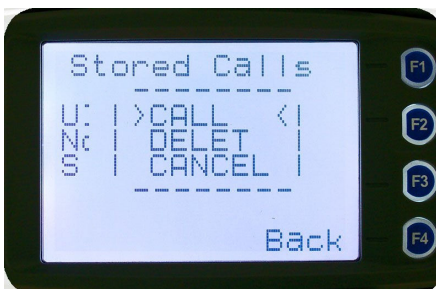
The selections are:

- **DELETE** – to delete the call record.

- **CALL** – to call back the caller (set individual call to the caller)

- **CANCEL** – to cancel the action selection.

The selection is made with the ▼ and ▲ keys.

The "**Menu**" or "**Back**" key returns to Stored Calls screen".

A "Reset" function key press (if configured) takes the radio back to the default screen display.

If "**DELETE**" is selected, pressing "**OK**" removes the selected call record (being viewed) from the list. The radio returns to the Stored Calls Screen with the next record being displayed.

If "**CANCEL**" is selected, the **Stored Calls** screen is displayed.

If "**CALL**" is selected, pressing "**OK**" sets the radio to individual calling mode with the ID of the stored call. A subsequent PTT within the configured time interval will send an individual call to the ID of the stored call.

4.2.15 Messages

A radio unit can receive and transmit predefined short messages and text messages with another radio unit on a digital channel (P25 conventional only).

Messages received are stored in radio memory. They can be viewed and deleted as required.

If there are unread messages stored in the radio, the envelope icon on the default screen will flash.

If there are messages in the radio that have all been read, a steady envelope icon is shown on the default screen.

If there are no messages in the radio, the envelope icon will not appear on the default screen.

To view/delete/send messages, go to the Menu selection and choose the "**Messages**" menu.

When "**Messages**" is selected from the menu screen with "**OK**", a pop-up screen will appear.

4.2.15.1 Messages Selection Pop-Up Menu
The pop-up selections are:

- **VIEW**: View received messages.

- **SMSG:** Short Message. The radio can be programmed with a list of predefined messages. Choosing **SMSG** shows a list of predefined messages, which can be sent as a short message to another radio unit. Only applicable when a digital channel is selected.

- **TXTMSG:** Text message. Enters the text message edit and send sub-menus. Only applicable when a digital channel is selected.

Options are selected with the ▼ and ▲ keys.

Pressing "**Menu**" or "**Back**" keys takes the radio back to the Menu screen.

A "**Reset**" function key press (if configured) takes the radio back to the default screen display.

If "**VIEW**" is selected, pressing "**OK**" shows the Message View screen.

If "**SMSG**" is selected, pressing "**OK**" shows the Short Message screen only for a digital channel, otherwise an error beep will sound.

If "**TXTMSG**" is selected, pressing "**OK**" shows the Edit Text Message screen only for a digital channel, otherwise an error beep will sound.

4.2.15.2 View Received Messages Screen

Received messages (both short messages and text messages) can be viewed from this screen.

This screen displays the received messages one by one, starting with the most recent received message.
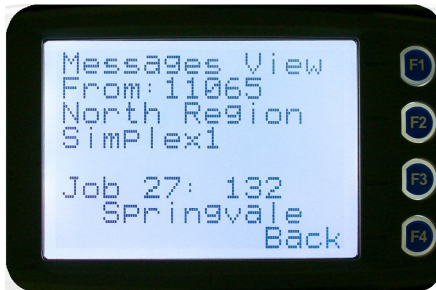
The information displayed for each message includes the sender ID (S Unit) and the first 2 lines of the received message in text string.

If no messages are stored, "**NO RECORD**" is displayed.

To step through other stored messages, use the ▼ and ▲ keys. If there is no further message stored, an error beep will sound.

A "**Reset**" function key press (if configured) takes the radio back to the default screen display.

If the "**Back**" or "**Menu**" key is pressed, the radio will return to the Messages Selection pop-up Menu.

Pressing the "**OK**" key displays the Message View pop-up menu with further options.

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4.2.15.3   Message View Pop-Up Menu

The Message View pop-up allows the following options:

- **Delete** –deletes the current received message.

- **More** – to view the full (entire) message.

- **Reply** – to select the method of replying to the selected message.

Selection is performed using the ▼ and ▲ keys.

Pressing the "**Menu**" or "**Back**" key takes the radio back to the "**Messages View**" Screen.

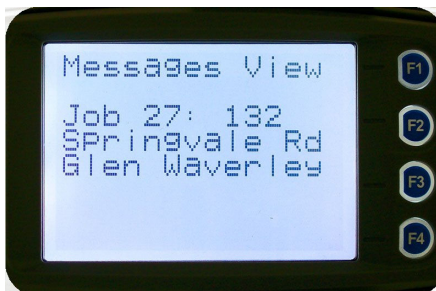A "Reset" function key press (if configured) takes the radio back to the default screen display.

If "**Delete**" is selected, pressing "**OK**" will remove the current selected message from the radio. The radio will return to the "**Messages View**" screen with the next message being selected and displayed.

If "**More**" is selected, pressing "**OK**" will display the full message.

If "**Reply**" is selected, pressing "**OK**" will display the "**Message Reply"** pop-up screen.

4.2.15.4   More Message View Screen

This Screen displays the selected message in full scale – 6 lines of message text per page of the selected message.

If a message exceeds a screen, the ▼ and ▲ keys can select the other pages.

Pressing "**Menu**" or "**OK**" returns to the "**Messages View**" pop-up screen.

The "Reset" function key press (if configured) takes the radio back to the default screen display.

4.2.15.5   Reply Message Selection Pop-Up Menu

Selecting Reply brings up another pop-up menu.

The selections are:

- **Call** – Calls the selected sender.

- **SMsg** – Sends a short message to the sender

- **TxtMsg** – To edit and send a text message to the sender.

Selection is made using the ▼ and ▲ keys.

The "**Menu**" or "**Back**" key press returns to the "**Messages View**" pop-up screen.

A "Reset" function key press (if configured) takes the radio back to the default screen display.

If "**Call**" and "**OK**" is selected, the radio returns to the default screen and is set to individual calling mode for a time out period determined by radio configuration.
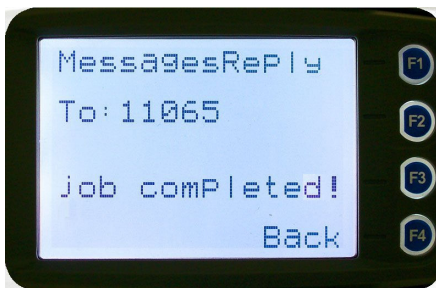
When the radio is PTT'd, an individual voice call is sent to the message sender.

If "**SMsg**" is selected, pressing "**OK**" displays the Message Reply - Short Messages screen.

If "**TxtMsg**" is selected, pressing "**OK**" displays the Message Reply –Text Edit screen.

4.2.15.6 Short Message Reply
This menu is used to reply with a pre-defined short message.

This screen shows:
- The destination unit identifier,
- The selected short message.

The short message can be selected from the short message list by using the ▼ and ▲ keys.

A "Reset" function key press (if configured) takes the radio back to the default screen display.

A "**Back**" or "**Menu**" keypress returns to the Message Reply Pop-up screen.

When "**OK**" key is pressed, the selected short message is sent in reply to the received message, and the radio returns to the default screen.

4.2.15.7 Text Message Reply Screen
This menu is used to reply with a free form text message.

The maximum length of text message is 210 characters.

The characters are entered via the keypad by pressing the relevant key one or more times to choose each character.

The ▼ key is used to move the curser to the left.

The ▲ key is used to move the curser to the right.

A "Reset/clear" button press and hold for less than one second deletes the character to the left of the cursor, and moves the curser position to the left by one.

Holding the "Reset/Clear" button down for more than one second deletes all characters from the curser position to the right. A new character entered is put on the current cursor location.

The '**#**' key is used to toggle upper and lower case.

The "**0**" key is the space key.

When "**Back"** key or "**Menu**" key is pressed, the radio returns to the Message Reply pop-up screen.

Pressing "**OK**" sends the edited text message in reply to the sender of the message. The radio returns to the default screen.

4.2.15.8 Send Message (Short or Text)
This menu is used to send either a short message or a text message to another party.
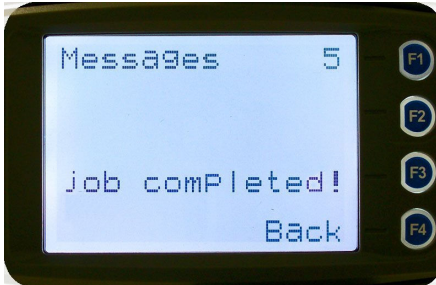Select Messages from the main menu and then choose either "**SMsg**" (Short Message) or "**TXTMsg**" (Text Message).

4.2.15.8.1 Short Message Screen

This screen allows the user to view and select a short message. It displays the selected short message text.

The short message can be selected by using the ▼ and ▲ keys.

A "Reset" function key press (if configured) takes the radio back to the default screen display.

A "**Back**" or "**Menu**" keypress returns to the Message Pop-up screen.

When the "**OK**" key is pressed, the Destination Pop-up screen is shown.

4.2.15.9 Text Message Screen

This screen allows editing and sending a free form text message. A text message can have a maximum length of 210 characters.   The number of characters entered is displayed in the top right hand side.

The characters are entered via the keypad by pressing the relevant key one or more times to choose each character.

The ▼ key is used to move the curser to the left.

The ▲ key is used to move the curser to the right.

A "**Reset**" button press and hold for less than one second deletes the character to the left of the cursor, and moves the cursor position to the left by one.

Holding the "**Reset**" button down for more than one second deletes all characters from the cursor position to the right. A new character entered is put on the current cursor location.

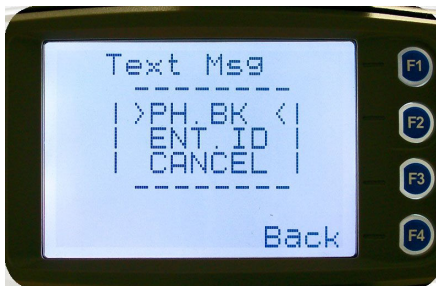The '**#**' key is used to toggle upper and lower case.

When the "**Back**" or "**Menu**" key is pressed, the radio returns to the Message Reply pop-up screen.

When "**OK**" key is pressed, the Destination Selection Pop-up Menu screen appears.

4.2.15.10 Destination Select Pop-Up Menu
This menu allows selection of the message destination.

The selections are:

- **PH. BK:** Selects the destination from the phone book

- **ENT.ID:** Enters the destination unit ID

- **CANCEL:** Cancels the destination selection.

Use the ▼ and ▲ keys to make the selection.

The "**Menu**" or "**Back**" key returns to previous screen, i.e., Short Message Screen, or Edit Text Message Screen.

A "**Reset**" function key press (if configured) takes the radio back to the default screen display.

If "**CANCEL**" is selected, pressing "**OK**" returns to the previous screen, i.e., Short Message Screen, or Edit Text Message Screen.

If "**PH.BK**" is selected, pressing "**OK**" key displays the "Phone Entry Screen".

If "**ENT.ID**" is selected, pressing "**OK**" key displays the "Enter Unit Id Screen".

4.2.15.11 Phone Book Selection Screen

This screen allows selection of the destination ID from the Phone Book.

The ▼ and ▲ keys are used to select the phone book entry.

A "Reset" function key press (if configured) takes the radio back to the default screen display.

The "**Menu**" or "**Back**" key returns to the Destination Selection Pop-up screen.

Pressing "**OK**" key sends the message to the chosen destination ID and the radio returns to the default screen.

4.2.15.12   Enter Unit ID Screen

This screen allows manual entry of the destination unit ID decimal digits.   The valid range of unit ID: (0 – 16,777,215).

The entered digits can be deleted by using the ▼ key.

The "**Menu**" or "**Back**" key returns to Destination Selection pop-up Menu screen.

A "Reset" function key press (if configured) takes the radio back to the default screen display.

Pressing "**OK**" sends the message to the entered unit ID (providing it is valid). The screen will return to the default screen.

If the entered unit ID is not valid, or the IP address is not defined, an error beep will sound.
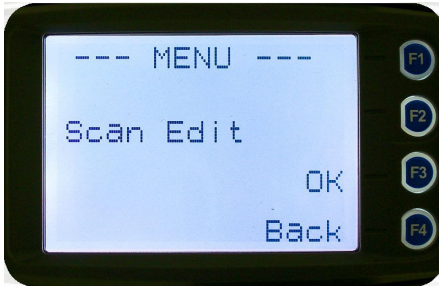
Sending a short message or text message can fail if the destination radio is not available.

4.2.16 Scan Edit Menu

This menu allows channels in Scan Groups to be added or deleted by the user.

Add and Delete changes to a Scan Group are stored permanently in the radio.

4.2.16.1   Scan Group Edit Screen

When selected, the "**Scan Group Edit**" screen is displayed, which shows the channels within the Scan Group.

The second line from the top shows the name of the selected channel in the scan group.

The next line shows the channel type, i.e., "Member" if it is a normal member of the scan group; "Priority" if it is the priority channel; or "Skipped", if the channel is currently skipped from the scan group.

The ▼ and ▲ keys select the channel from the scan group list..

When "**Reset**" function key is pressed (if configured), the radio returns to the default screen display.

When the "**Back**" key or "**Menu**" is pressed, the radio returns to the "**Scan Group Edit**" screen.

When "**OK**" key is pressed, a pop-up action selection menu is displayed.

The pop-up selections are:

- **Add:** adds a channel to the scan group

- **Delete:** deletes the currently selected channel from the scan group

- **Back:** returns to previous menu screen

The ▼ and ▲ keys make the selection.

The "**Menu**" or "**Back**" key takes the radio back to the "**Scan Edit**" main screen.

A "**Reset**" function key press (if configured) takes the radio back to the default screen display.

If "**Delete**" is selected, pressing "**OK**" key removes the selected channel from the scan group and takes the radio back to the default screen display. If scanning is enabled on the current channel, this action shall result in rescanning. The deletion is permanent.

If "**Add**" is selected, pressing "**OK**" key takes the radio to the Scan Group Add Type screen.

The priority level of the channel to add to the scan group is selected from this screen. The choices are:

- **Member:** A member channel is a normal channel with lowest priority in the scan group.

- **Prty1:** A Priority 1 channel will have the highest priority in the scan group

- **Prty2:** A Priority 2 channel will have the second highest priority in the scan group.

The priority of the channel is selected using the ▼ and ▲ keys and pressing OK. The Scan Group Add screen will appear next.

4.2.16.2   Scan Group Add Screen

The "**Scan Group Add**" screen shows channels that are not members of the Scan Group.

The second line from the top shows the name of a channel that is not a member of the Scan Group.

Other channels that are not members of the scan group can be selected using the ▼ and ▲ keys.

A "**Reset**" function key press (if configured) takes the radio back to the default screen display.

When the "**Back**" key or "**Menu**" is pressed, the radio returns to the main Scan Edit screen.

When "**OK**" key is pressed,

- If the scan group has less than 15 member channels, the selected non-member channel is added to the scan group. If scan is enabled on the current channel, the radio will resume scanning. The radio returns to the default screen. The added channel is permanent.

Otherwise, an error beep will sound, and the radio will return to the default screen.

4.2.17 No Menu
The No Menu option exists in the FPP for when a menu entry is not required. If all entries are No Menu, there will be no menu system available. This may be desirable for simple configurations.

5. COMMON FUNCTIONS AND FACILITIES

5.1 SWITCH-ON/SWITCH-OFF

The On/Off power switch on the SRM9030 is on the rotary volume control, located on the top left hand side of the radio control head.

To turn the mobile on, press and hold the volume knob until a beep is heard. The radio will turn on after about one second.

The display will illuminate and show a 'Welcome Message' text as programmed by the Field Programmer.

After about two seconds, the display will revert to the Channel Screen, at which time the radio is ready for use.

Pressing and holding the volume knob while the radio is on will turn the radio off, when a low beep is heard, release the knob.

If the radio Power Down Timer is enabled, the mobile will automatically turn off after several hours of inactivity (i.e. no keys pressed).

The radio will emit warning beeps for 10 seconds prior to automatically switching off. Pressing any key will reset this timer.

5.2 DEFAULT SCREEN –TRUNKED MODE

After power up, the radio will show the currently selected Zone and Channel. If the selected channel is a trunking channel, the radio will scan until it finds the trunked system. This will typically take a few seconds if the trunked network is available.

Trunked mode is indicated by the icon. The rotating arrow indicates that the radio is scanning for a trunked network. When the arrow is not shown, the radio is registered with the trunked network and ready to make or receive a call.

5.3 VOLUME ADJUSTMENT
The Volume Control adjusts the speech level at the radio speaker. The rotary Volume Control on the SRM9030 is located on the top of the unit.

Note: The radio may be programmed so that the volume cannot be turned off completely.

### 5.4 RECEIVING (SINGLE CHANNEL SCREEN)

The Speaker Icon ◀ will show when a valid signal is being received and audio will be heard at the Loudspeaker.

The icon will be shown as an outline when a signal is being received that is not addressing this radio and hence, is not audible. For instance, another user group may be having a conversation on another talkgroup when receiving in Selective Mute.

The analogue channel's receive mute setting can be altered from the Mute Adjust menu.

While on an Analogue channel, both P25 and Analogue FM transmissions will be received.

While on a P25 channel, only P25 transmissions will be received.

To change channels, press the ▼ and ▲ keys while in the channel screen.

Zones can be changed from the **Zone** menu, see Section 4.2.2

5.5   RECEIVED INDIVIDUAL CALLS

Unanswered received Individual calls addressed to the radio are stored in radio memory.

The caller Unit ID may be viewed, answered and deleted by the user as desired.

A newly received individual call addressed to the radio sounds an alert tone periodically until the user presses any key.

If the caller unit ID of a newly received unanswered call is already in the Stored Calls list, the old Stored Call record of that unit ID will be replaced by the new record and added to the top of the list.

To view/answer/delete received call records, the **Stored Calls** screen is selected

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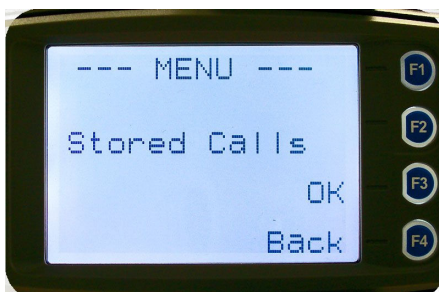
5.5.1 Stored Calls Screen

This screen displays the received individual call records one by one, starting with the most recently received call record.

On the first line under the menu label, either the name of the caller from the phone book or the user ID is shown. The user ID is displayed if the ID is not known to the phone book.   The next line has the zone that the call was received on and the line below shows the channel. If stored calls are empty, NO RECORD is displayed.

The ▼ and ▲ keys can be used to step through the stored calls.   An error beep will sound if there are no more call records.

A "**Reset**" function key press (if configured) takes the radio back to the default screen display.
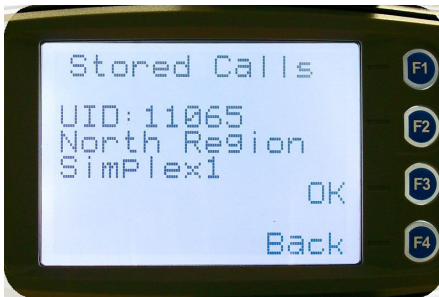
The "**Menu**" or "**Back**" key returns to Menu screen.   When "**OK**" key is pressed, a pop up menu is displayed so that the message can be deleted or party called back.

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5.5.2 Received Call Pop-Up Menu

The selections are:

- **DELETE:** deletes the call record.
- **CALL:** calls back the caller (set individual call to the caller)
- **CANCEL:** cancels the action selection.

The selection is made with the ▼ and ▲ keys.

The "**Menu**" or "**Back**" key returns to Stored Calls screen.

A "**Reset**" function key press (if configured) takes the radio back to the default screen display.

If "**DELETE**" is selected, pressing "**OK**" removes the selected call record (being viewed) from the list. The radio returns to the Stored Calls Screen with the next record being displayed.

If "**CANCEL**" is selected, the **Stored Calls** screen is displayed.

If "**CALL**" is selected, pressing "**OK**" sets the radio to individual calling mode with the ID of the stored call. A subsequent PTT within the configured time interval will send an individual call to the ID of the stored call.

5.6   TRANSMITTING

To avoid interfering with other users of the channel, listen first, or check that the "speaker" icon is not present, to ensure no transmissions are occurring.

If the speaker icon is shown, there are transmissions present on the channel and the user should not transmit. The radio may be programmed to prevent transmission on a busy channel if required.

Hold the microphone a few centimetres from the mouth, press the "Press to talk" (PTT) switch and note that the TX-LED is RED. Wait for the grant tone, and then speak clearly across the face of the microphone in a normal conversational manner.

In most systems it is important to wait a short time between pressing PTT and commencing to speak. This ensures that the path is properly established and avoids lost or distorted speech.

Use the correct operating procedure and keep transmissions short.

Release the PTT switch as soon as the message is finished.

The talkgroup for a transmission is usually associated with a channel selection. A talkgroup will address all others that have the same TGID selected.

While on a P25 Channel, the transmission will be P25 digital. For an Analogue channel, the transmission will be Analogue FM

Note: A Transmit Limit Timer may be setup that limits a continuous transmission on a channel. The last 10 seconds before the timer expires may be accompanied by warning beeps.

5.7   SCAN/VOTE FUNCTIONS
The Scan/Vote Function allows the sequential searching of up to 16 channels if the selected zone channel is programmed as a Scan channel, and 15 channels if the selected zone channel is programmed as a Vote channel, for a valid signal (Carrier + CTCSS / DCS tone for Analogue FM or Network Access Code for P25). When found, the radio will stop on that channel until the signal disappears again.

To activate Scanning, select a channel that has been programmed as a Scan channel. Once selected, the scanning will either start automatically, if programmed, or you will need to press the programmed scan function button. (Field Programmer configurable).

If a selected zone channel is programmed as a Vote channel, the voting will start automatically without any other user intervention.

While listening on the channel, the user is able to PTT on that channel. After the signal disappears, the radio will remain listening on the channel for a short time (Field programmer configurable, typically 3 seconds) before resuming scanning or voting

If a Priority Channel is assigned to Scan mode, the radio will interleave a check of this channel between each normal Scan channel.

5.7.1 Scan/Vote Screen
Scan can be started by

(1) Pressing the function key that has been assigned the scan function by the Field Programmer or

(2) Selecting a zone channel that has been assigned to automatically scan by the Field Programmer, or

(3) Under User Options menu, selecting the SCAN ON option.

Selecting a channel that is associated to a VOTING group, with Scan/Vote enabled in the FPP, starts voting.

The top line of the display still shows the name of the current selected channel. The second line of the display shows the name of the current selected zone while scanning/voting.

The Channel can be changed by using the ▼ and ▲ keys. Other channels may be either Scan or Normal channels, depending on the radio's configuration.

Scanning/Voting is indicated by a rotating arrow symbol.
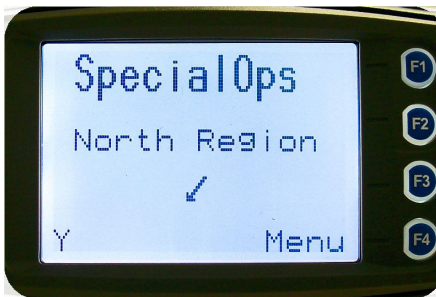
When stopped on a channel, the second line from the top shows the name of the channel from the scan group that the radio stopped on.   If stopped on a channel, that channel can be "skipped" by pressing the skip programmed function key. Once a channel is "skipped" it will not be scanned for the duration that Zone/Channel selection.

When transmitting on a channel, the second line of display shows the name of the current channel that the radio is transmitting on.

5.8   KEYPAD LOCK

The Keypad Lock function prevents accidental key presses.

The Control Head has a keypad lock function that may be enabled by the Field Programmer during configuration. If this function is activated, a key icon will be displayed in the bottom right-hand side of the display when locked.

The PTT, Alarm Key (if assigned), Reset Key (if assigned) are not locked.

To unlock the keypad, it is necessary to press and hold down the "**OK**" key for 2 seconds. After 2 seconds, the key icon will disappear and the keys will be enabled.

The keypad will automatically re-lock after a period of 10 seconds following no key activity.

5.9   ENCRYPTION

In P25 Digital mode, radio channels may be programmed for Encryption.

The encryption state of the selected channel is determined by the radio configuration. An encrypted channel will display the   encryption icon.

A radio channel that has been programmed for encryption will receive either clear or encrypted traffic. A transmission on this channel will be encrypted.

The encryption icon will not be shown if a received signal is not encrypted when on an encrypted channel.

The current channel's transmit encryption key can be temporarily changed from the Crypto menu.

When in Analogue FM mode, there is a simple voice inversion scrambler for low security applications.

A double beep will sound at the start of each PTT.

The scrambler function key is assigned using the Field Programmer.

5.10   EMERGENCY ALARM

5.10.1 Receiving Emergency Calls

When an emergency call is being received, a message will be displayed on the default screen "RxEm" indicating the radio unit sending the emergency call.

5.10.2 Making an Emergency Call

When the emergency key is pressed and held for a time determined by the Field Programmer, the radio will change to emergency mode. Under emergency mode, the radio can operate in three FPP configurable modes:

- **Normal:** The radio will continue to respond to PTT, channel change etc. while displaying the E icon.

- **Frozen:** The default screen will freeze, with the E icon displayed indicating emergency mode.

- **Blank:** The screen will blank giving no indication to others that the radio is in emergency mode.

When emergency mode is triggered, the radio can be configured by the FPP to transmit and receive on a cyclic basis with FPP programmed time periods.   The display will show "TxEm":Channel No.

During TX, the radio will generate an emergency broadcast call on either the currently selected channel or an FPP nominated channel.

Others may listen to the automatic transmissions to hear conversations near the radio.

Turning the radio off and on will disable emergency mode.

6. SPECIAL FUNCTION KEYS

Several function keys are simply short cuts to a menu screen. For further information on the operation of these function keys, refer to the menu descriptions in section 4.

6.1   ALARM
Sets alarm mode on the radio. All transmissions in alarm mode will have the emergency flag set.

6.2   ANNOUNCE
After pressing this button, the next PTT call only will be made to the pre-programmed Announce group.

6.3   CHANNEL UP AND DOWN
These functions change channel in the upward (F3) or downward (F2) directions.

6.4   CRYPTO
A short cut to the Crypto menu. Allows selection of the encryption key.

6.5   LOW POWER
Forces the radio to low power. Pressing the function button again puts the radio back to the power level defined for the current channel. The "forced low power state" is not affected by channel/zone changes.

The RF power level is indicated by the letter L of H replacing the antenna icon when transmitting. The bar graph above this icon shows 1 bar for low power and 6 bars for high power.

6.6   MENU
Menu function key used for accessing the menu system. This is normally assigned to the Menu key (F1).

6.7   MODE
A short cut to the Mode menu.   Allows the user to change radio modes, for example from PMR/LMR to P25, or MPT1327 trunking to P25.

6.8   MUTE
Provides direct access to the "Mute Adjust" menu screen and allows the user to change the mute level from that screen. The selected mute level will affect all analogue channels.

6.9   REPEATER DEFEAT (P25 CONVENTIONAL)
Bypasses the repeater for local chat.

6.10   RESET
The reset function is usually assigned to F6, and is used as a cancel function when in a menu or as a backspace when entering keypad dial-strings.

6.11   SCAN
The scan function activities the Scanning mode, refer to Section 5.5 for details.

6.12   SCAN EDIT
Enters the Scan Edit sub menu. From here it is possible to Add, Delete or Edit scan channels.

6.13 SCRAMBLER (ANALOGUE)

If an analogue channel is selected, then the scrambler function button can activate a simple voice inversion scrambler for low security applications. Scramble mode is indicated by the 'SC" indicator icon.

6.14 SEND DTMF 1 / 2 (ANALOGUE)

Sends a pre-defined DTMF dialling string.

6.15 SKIP

Removes a scan channel from the scan list if the Skip button is pressed while stopped on that channel. The channel is only restored to the list when the channel is re-selected.

6.16 SQUELCH (P25 CONVENTIONAL)

Allows selection of both Digital and Analogue Squelch settings. The squelch is like a filter in P25 mode where it can be changed to listen to all traffic (monitor), or only your system traffic (normal), or only your talkgroup or calls to your identity.

6.17 TALKAROUND

On a repeater channel only, this function button allows the radio to transmit on the base station's output channel, so the user can talk directly to other mobiles on the channel, while the repeater is out of service or out of range.

When the key is pressed again (or the Channel is changed) the mobile's transmitter channel reverts to its normal setting.

Talkaround mode is indicating to the user by a double beep at the start of each PTT.

6.18 ZONE

This function provides a shortcut to the detailed zone menu.

6.19 UNDEFINED

No function assigned to this key.

7. APPENDICES

7.1 ALERT TONES AND MESSAGES

Key Beep — 0.05

Grant Tone — 0.05

Error Tone — 0.05

Beep Alert — 0.10

Bip Alert — 0.10

2 x Bip Alert — 0.10

Ring Alert — //////// Telephone Ring Tone ////////

Urgent Alert — 0.19

Continuous Alert — Continuous

440 Hz
880 Hz
1480 Hz
Off

Duration Indicated in seconds

9000_52b
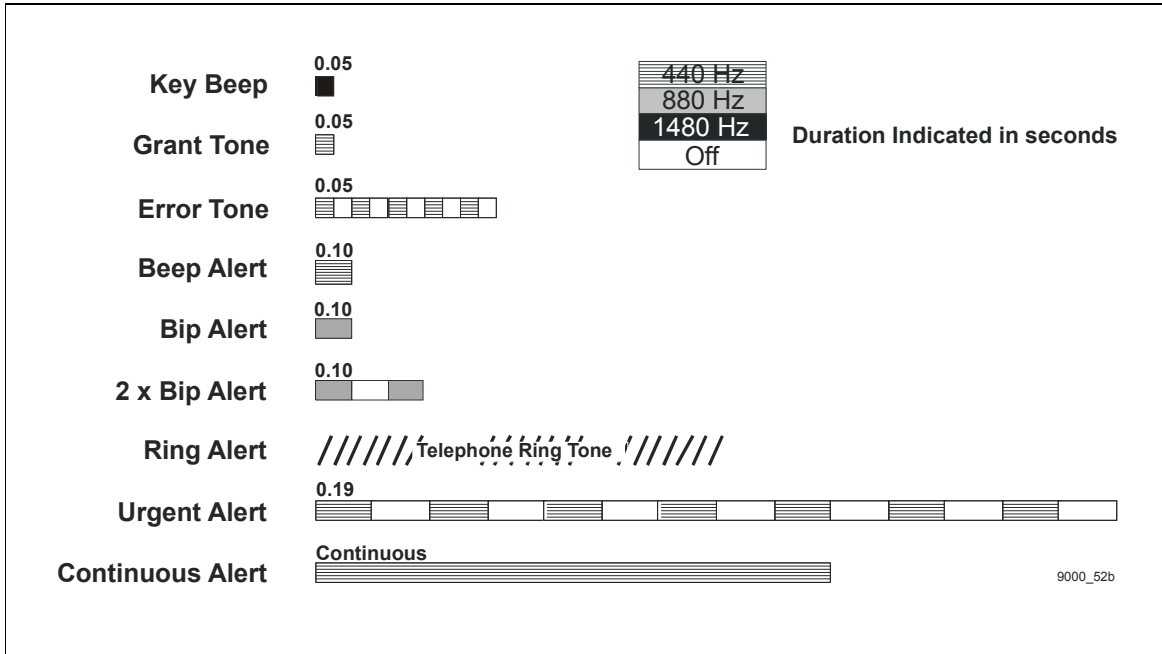
Figure 3 – Alert Tones

7.2 GLOSSARY

A summary of common radio terms and some other terms used in this document, and their meanings, are given below.

Term	Description	Notes
Bank	See Zone	
Channel	A logical combination of Network Access Code (NAC) RF Frequency Default TalkGroup Indentity (TGID) Encryption Key Index (KID) Other channel associated parameters (CTCSS, scan etc)	
DTMF	Dual Tone Multi Frequency	
FPP	Field Personality Programmer or Field Programmer	Used for configuring the radio options and parameters
FM	Frequency Modulation	
LED	Light Emitting Diode	
Monitor	Mode of Radio Receive	Any P25 signal regardless of NAC or TGID will be heard
MPT Trunked	MPT1327 Trunked Mode	
NAC	Network Access Code	Used as a filter where multiple networks may share a common RF frequency
Normal Mute	Mode of Radio Receive	Only signals with matching NAC will be heard.
P25	PMR mode using analogue FM used in as a "fallback" mode with P25	Interoperability requirement
P25 Channel	Definition consisting of TX and RX RF frequencies, NAC and TGID	
P25 Conventional	Non-Trunked digital, like digital PMR	
PMR	Private Mobile Radio Mode	
PTT	Push to Talk	
Radio Unit ID	Unique identifier allocated to each radio (0-16,000,000)	
RSSI	Received Signal Strength Indication	
RX	Receive	
Selective	Mode of radio receive	Only signals with matching NAC and TGID or Unit ID will be heard
TX	Transmit	
Zone	A collection of channels (usually organised by functional group of users)	

7.3 ACRONYMS

AES	Advanced Encryption Standard
APCO	Association of Public Communications Officials
ARP	Address Resolution Protocol
AVL	Automatic Vehicle Location
BER	Bit Error Rate
BSS	Base Station System
C4FM	Four level FM modulation used on the physical air interface
CAI	Common Air Interface
CRC	Cyclic Redundancy Check
CTCSS	Continuous Tone Controlled Selective Squelch
DCS	Digital Controlled Squelch
DES-OFB	DES Encryption Standard
DSP	Digital Signalling Processor
DTMF	Dual Tone Multi Frequency
FEP	Field Encryption Programmer
FM	Frequency Modulation
FNE	Fixed Network Equipment
FPP	Field Personality Programmer
IP	Internet Protocol
LCD	Liquid Crystal Display
LET	Link Establishment Time
MAB-1	Mobile Option Board (basic)
MAB-2	Mobile Option Board (enhanced I/O)
MPT1327	Trunked Radio Standard
MDP	Mobile Data Peripheral
MRC	Mobile Routing and Control
NAC	Network Access Code, see also NID
NID	Network ID
P25	APCO Project 25
PPP	Point to Point Protocol
PLA	Programmable Logic Array
PMR	Private Mobile Radio
PTT	Push To Talk
RCP	Radio Control Protocol
RF	Radio Frequency
SLIP	Serial Line Internet Protocol
SS	Supplementary Service
TCP/IP	Transmission Control Protocol / Internet Protocol
TGID	Talk Group ID
TIA	Telecommunications Industry Association
UDP	User Datagram Protocol

7.4   COMPLIANCE WITH RF ENERGY EXPOSURE GUIDELINES (UNITED STATES AND CANADA)

RF ENERGY EXPOSURE AWARENESS AND CONTROL INFORMATION AND OPERATIONAL INSTRUCTIONS FOR FCC OCCUPATIONAL USE REQUIREMENTS.

Before using your ComGroup Australia mobile two-way radio, read this important RF energy awareness and control information and operational instructions to ensure compliance with the FCC's RF exposure guidelines.

<u>NOTICE:</u> **This radio is intended for use in Occupational/ controlled conditions in a mobile application where users have full knowledge of their exposure and can exercise control over their exposure to meet FCC limits. This radio device is NOT authorised for general population, consumer, or any other use.**

This two-way radio uses electromagnetic energy in the radio frequency (RF) spectrum to provide communications between two or more users over a distance. It uses radio frequency (RF) energy or radio waves to send and receive calls. RF energy is one form of electromagnetic energy. Other forms include, but are not limited to, electric power, sunlight and x-rays. RF energy, however, should not be confused with these other forms of electromagnetic energy, which when used improperly can cause biological damage. Very high levels of x-rays, for example, can damage tissues and genetic material.

Experts in science, engineering, medicine, health and industry work with organizations to develop standards for exposure to RF energy. These standards provide recommended levels of RF exposure for both workers and the general public. These recommended RF exposure levels include substantial margins of protection. All two-way radios marketed is North America are designed, manufactured and tested to ensure they meet government established RF exposure levels. In addition, manufacturers also recommend specific operating instructions to users of two-way radios. These instructions are important because they inform users about RF energy exposure and provide simple procedures on how to control it. Please refer to the following websites for more information on what RF energy exposure is and how to control your exposure to assure compliance with established RF exposure limits.

http:l/www.fcc. gov/oet/rfsafety/rf-fags. htm 1
http://www.osha.gov/SLTC/radiofrequencvradiation/index.htmi

Federal Communications Commission Regulations:

The FCC rules require manufacturers to comply with the FCC RF energy exposure limits for mobile two-way radios before they can be marketed in the U.S. When two-way radios are used as a consequence of employment, the FCC requires users to be fully aware of and able to control their exposure to meet occupational requirements. An exposure awareness label is attached to the equipment directing users to specific awareness information.

Compliance with RF Exposure Standards

Your TMC two-way radio is designed to comply with a number of national and international standards and guidelines (listed below) regarding human exposure to radio frequency electromagnetic energy. This radio complies with the IEEE (FCC) and ICNIRP exposure limits for Occupational/ Controlled RF exposure environment at duty factors of up to 50% talk 50% listen and is authorised by the FCC for occupational use. In terms of measuring RF energy for compliance with the FCC exposure guidelines, your radio radiates measurable RF energy only while it is transmitting (during talking), not when it is receiving (listening) or in standby mode.

Your ComGroup Australia two-way radio complies with the following RF energy exposure standards and guidelines:

- United States Federal Communications Commission, Code of Federal Regulations; 47CFR part 2 sub-part J
- 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
- Industry Canada RSS-102

RF Exposure Compliance and Control Guidelines and Operating Instructions

To control exposure to yourself and others and ensure compliance with the Occupational/ Controlled environment exposure limits always adhere to the following procedures.

Guidelines:

- User awareness instructions should accompany the device when transferred to other users.

- Do not use this device if the operational requirements described herein are not met.

Instructions:

- Transmit no more than the rated duty factor of 50% of the time. To transmit (talk), push the Push-To-Talk button. To receive calls, release the PTT button. Transmitting 50% of the time, or less, is important because this radio generates measurable RF energy exposure only when transmitting (in terms of measuring for standards compliance).

- Transmit only when people outside the vehicle are at least the recommended minimum lateral distance away, as shown in Tables 1, 2 and 3, from a properly installed according to installation instructions, externally-mounted antenna.

NOTES:

Table 1a) lists the recommended minimum lateral distance for bystanders in an uncontrolled environment from the transmitting antenna for the SRM9000AC (150MHz-174MHz) mobile rated power (25 watts) installed in a vehicle. Table 1b) lists the recommended minimum lateral distance for occupational/ controlled use.

Table 2a) lists the recommended minimum lateral distance for bystanders in an uncontrolled environment from the transmitting antenna for the SRM9000TU and SRM9000UW (406.1MHz-512MHz) mobile rated power (25 watts) installed in a vehicle. Table 2b) lists the recommended minimum lateral distance for occupational/ controlled use.

Table 3a) lists the recommended minimum lateral distance for bystanders in an uncontrolled environment from the transmitting antenna for the SRM9000X8 (806MHz-870MHz) mobile rated power (25 watts) installed in a vehicle. Table 3b) lists the recommended minimum lateral distance for occupational/ controlled use.

Table 1a).   Rated Power and Recommended Lateral Distance for General Population uncontrolled exposure for SRM9000AC (150MHz to 174MHz).

Rated Power of Vehicle-installed Mobile Two-way Radio	Recommended Minimum Lateral Distance from Transmitting Antenna
25 watts with λ/4 dipole (2.14dBi gain)	90cm (35.5 inches)

Table 1b).   Rated Power and Recommended Lateral Distance for Occupational/ Controlled exposure for SRM9000AC (150MHz to 174MHz).

Rated Power of Vehicle-installed Mobile Two-way Radio	Recommended Minimum Lateral Distance from Transmitting Antenna
25 watts with λ/4 dipole (2.14dBi gain)	40cm (15.75 inches)

Table 2a).   Rated Power and Recommended Lateral Distance for General Population uncontrolled exposure for SRM9000TU and SRM9000UW (406.1MHz to 512MHz).

Rated Power of Vehicle-installed Mobile Two-way Radio	Recommended Minimum Lateral Distance from Transmitting Antenna
25 watts with λ/4 dipole (2.14dBi gain)	75cm (29.5 inches)

Table 2b).   Rated Power and Recommended Lateral Distance for Occupational/ Controlled exposure for SRM9000TU and SRM9000UW (406.1MHz to 512MHz).

Rated Power of Vehicle-installed Mobile Two-way Radio	Recommended Minimum Lateral Distance from Transmitting Antenna
25 watts with λ/4 dipole (2.14dBi gain)	34cm (13.5 inches)

Table 3a).   Rated Power and Recommended Lateral Distance for General Population uncontrolled exposure for SRM9000X8 (806MHz to 870MHz).

Rated Power of Vehicle-installed Mobile Two-way Radio	Recommended Minimum Lateral Distance from Transmitting Antenna
25 watts with λ/4 dipole (2.14dBi gain)	55cm (21.7 inches)

Table 3b).   Rated Power and Recommended Lateral Distance for Occupational/ Controlled exposure for SRM9000X8 (806MHz to 870MHz).

Rated Power of Vehicle-installed Mobile Two-way Radio	Recommended Minimum Lateral Distance from Transmitting Antenna
25 watts with λ/4 dipole (2.14dBi gain)	24.6cm (9.7 inches)

Vehicle Installation Instructions:

The antenna(s) used for the SRM9000 series of mobile two-way radios must be installed to provide a separation distance of at least 90cm (35.5 inches) from all persons for SRM9000AC (150-174MHz), 75cm (29.5 inches) for SRM9000TU and SRM9000UW (406.1-512MHz) and 55cm (21.7 inches) for SRM9000X8 (806-870MHz). The gain of the antenna(s) may not be greater than 0dBd (2.14dBi).

If the required separation distance extends beyond the physical boundary of the vehicle, the antenna must be installed on the center of the roof ONLY and must be installed in a vehicle having the following characteristics in order to prevent bystanders from being exposed to levels exceeding the limits set for General Population/ Uncontrolled exposure environment:

- All passengers must be sitting under a solid metal roof
- The rooftop width must be at least 130cm (51 inches)

Mobile Antenna:

- Install the antenna at the center of the roof or the center of the trunk deck, taking into account the bystander exposure conditions of backseat passengers and recommended minimum lateral distances in Tables 1a), 2a) and 3a). These mobile antenna installation guidelines are limited to metal body motor vehicles or vehicles with appropriate ground planes.
- The antenna installation must additionally be in accordance with:

  a) The requirements of the antenna manufacturer/supplier

  b) Instructions in the Radio Installation Manual, including minimum antenna cable lengths.

  c) The installation information of how to install the antenna to facilitate recommended operating distances to all potentially exposed persons.
- Use only ComGroup Australia approved supplied antenna or ComGroup Australia approved replacement antenna. Unauthorized antennas, modifications, or attachments could damage the radio and may violate FCC regulations.

Approved Accessories

- This radio meets the FCC RF exposure guidelines when used with the ComGroup Australia accessories supplied or designated for the product. Use of other accessories may not ensure compliance with the FCC's RF exposure guidelines and may violate FCC regulations.
- To obtain a list of ComGroup Australia approved accessories see contact details below or visit the following website which lists approved accessories: http://www.comgroup.net.au

Contact Information

For additional information on exposure or other information, please contact

ComGroup Australia Pty. Ltd.
1270 Ferntree Gully Road
Scoresby
Victoria, 3179
Australia

Telephone +61 3 9730 3800
Facsimile   +61 3 9730 3968
Email   orderdesk@comgroup.net.au
Website www.comgroup.net.au