

# Antenna Type

Before making a call, an antenna type needs to be selected from the Antenna icon in the swipe menu.

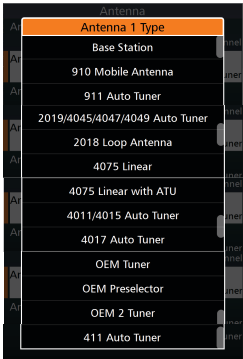
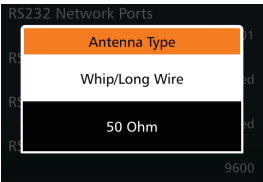
If the transceiver is being used with a PRC-4090 battery pack, the menu will show only 50 Ohm and Whip/Longwire.

Tap **Antenna 1 Type** from the IO screen to display the Antenna 1 Type screen.

To reveal more items, either swipe down on the touch screen or press



Select an antenna type from the following:

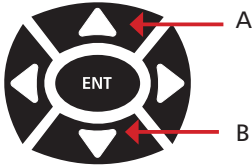


| Antenna Type                   | Select when...                                                                                                  |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Base Station                   | Base station antennas such as the Barrett 912 series are used. No tuning signals are emitted on channel change. |
| 910 Mobile Ant                 | Using a Barrett 910 automatic tuning mobile antenna                                                             |
| 911 Auto Tuner                 | Using a Barrett 911 automatic tuner                                                                             |
| 2019/4045/4047/4049 Auto Tuner | Using a Barrett 2019/4045/4047/4049 automatic tuning mobile HF antenna                                          |
| 2018 Loop Ant                  | Using the 2018 Mobile magnetic loop HF antenna                                                                  |
| 4075 Linear                    | Using the transceiver with a Barrett 4075 series linear amplifier.                                              |
| 4075 Linear with ATU           | Using the transceiver with a Barrett 4075 series linear amplifier with ATU.                                     |
| 4011/4015 Auto Tuner           | Using a Barrett 4011/4015 automatic tuner                                                                       |
| 4017 Auto Tuner                | Using a Barrett 4017 automatic tuner                                                                            |
| OEM Tuner                      | 3040 tuner compatible (non-Barrett product)                                                                     |
| OEM 2 Tuner                    | F2265 tuner compatible (non-Barrett product)                                                                    |
| OEM Preselector                | Using a non-Barrett Preselector                                                                                 |
| 411 Auto Tuner                 | Using a 411 Automatic HF Tuning Unit                                                                            |

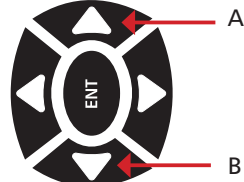
## Selecting a Channel

There are two ways to select a channel on the Barrett PRC-4090 HF SDR Transceiver.

1. From the home screen, press the up (A) or down (B) keys on the keypad. This will allow a user to cycle through the programmed channels.



Portrait mode



Landscape mode

2. From the transceiver home screen, press the channels button. This brings up the Channel Selection menu and shows all of the channels programmed into the transceiver in one place. Tap a channel to select it.



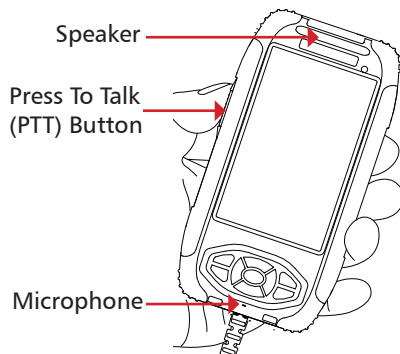
Channels

Holding down this channel button opens the Channel information screen which displays all of the settings for the channel currently selected.

**If there are no channels programmed into the transceiver, turn to page 66 for instructions on channel programming.**

Alternately, to search for a specific channel, tap  and type in the number of the channel as programmed in the transceiver eg. typing 4 will select channel 4.

## Making a Voice Call



When Using the Microphone:

1. Press and hold the PTT (transmit) button only while talking
2. Position the microphone close to your mouth
3. Speak clearly
4. Use the word "over" to indicate that you have finished speaking, and then release the PTT (transmit) button.

*Notes:*

- *The Barrett PRC-4090 has a transmit time-out facility. This facility (when programmed) allows the transmitter to be keyed in transmit mode with the PTT (transmit) switch for a set time period, after which the transceiver switches to receive until the PTT (transmit button) is released and re-keyed. This facility prevents the transmitter transmitting for long periods of time if, for example, the microphone becomes jammed between seats in a vehicle causing the PTT (transmit) switch to be held down. Enabling, disabling and changing the time of the transmit timeout facility can be set either when programming the transceiver or in the RF Section of the Settings menu. See page 94.*
- *The microphone up / down buttons can be configured for channel change or volume control functions either when programming the transceiver or in the General Section of the Settings menu. See page 62.*

## Making an Emergency Call

**Note: Emergency Channels must be programmed using the Barrett PRC-4090 HF SDR Programming Software (P/N BCA40001).**

All Selcall emergency calls are transmitted by simultaneously pulling and twisting the on/off switch to the Emerg. Setting and releasing the switch. Emergency transmission will begin immediately. The LED indicator will flash slowly before transmission starts and become solid green upon transmit.

An emergency call can also be initiated by pressing and holding the **CALL** and **BACK** keys simultaneously.

If the Emergency call is not enabled on the transceiver, an error message will appear and the emergency call will not be sent.

The action of the emergency call depends on how the transceiver has been programmed. For example:

- Selective Call that transmits and automatically changes to a selection of channels. Transmits the emergency Selcall sequence on each of the maximum of 20 channels programmed as emergency channels. There is a pause between calls allowing the operator to listen for an acknowledgment coming back. After the Emergency call is attempted on all the preprogrammed emergency channels the transceiver will go back into scan mode (if scanning is available) or stay on the last channel selected before the Emergency call was initiated.

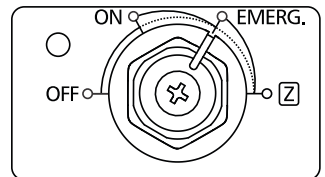
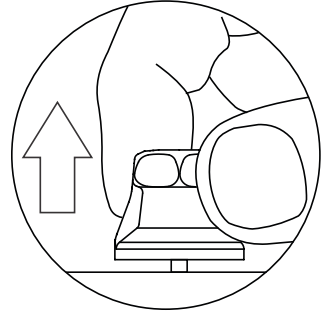
If a GPS receiver is fitted and enabled, the GPS position is also sent with the call.

*Note: After the emergency call has been sent, there is no indication that a call has been sent for security purposes.*

- Royal Flying Doctor Service (RFDS) alarm

Two-tone alarm 880 Hz + 1320 Hz continuous (Australian use only) – alerts the Royal Flying Doctor Service on RFDS channels.

1. Select a channel with RFDS as the Selcall format.



2. Simultaneously pull and twist the on/off switch to Emerg. and release the switch.

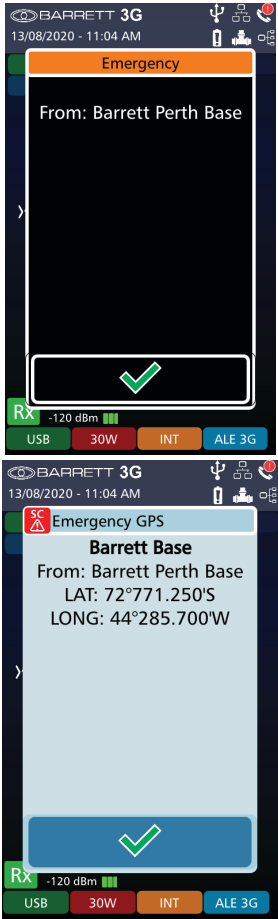
The RFDS alarm will continue transmitting for ten seconds.

To cancel the RFDS alarm, press the **PTT** button or the  button.

# Receiving an Emergency Call

On receipt of an emergency Selcall, a distinctive audio alarm is emitted and the following message displayed.

If the transceiver sending the emergency Selcall is fitted with a GPS receiver, the position will also be displayed.



# SELCALL 3

This chapter contains the following sections:

- Overview
- Important Selective Calling Information
- Summary of Calling Systems
- Setting up a Self ID
- Setting up Contacts
- Making a Selcall
- Advanced Selcall

## Overview

This chapter covers all types of Selcall available on the Barrett PRC-4090 transceiver. All of these options are not available in all countries and may need to be purchased separately.

Selcall or Selective calling is a type of digital signal for HF networks. It utilises a type of squelch protocol where the transmission begins with a brief sequence of audio tones.

There are several different types of Selective Calling Systems available in addition to simple point-to-point HF communications.

The calling systems available for the transceiver are listed below:

- International (INT) - A four and six digit Selective Call system, fully interoperable with the UN format published in September 2004 and fully backwards compatible with all previous Barrett four and six digit Selcall protocols.
- OEM - A four and six digit Selective Call system compatible with other major HF manufacturers including those using encryption. Includes Selcall, Telcall, Beacon Call, Emergency call, Pagecall and GPS call.
- CCIR - A four digit Selective Call system as specified by CCIR-493.
- RFDS - Royal Flying Doctor Service (Australia Only)
- ARINC - Aeronautical Radio INC.

## Important Selective Calling Information

### Selcall Self IDs

The PRC-4090 transceiver can hold up to 14 different Selcall Self IDs assigned to it. These Selcall IDs can be any combination of four or six digit OEM or INT type ID.

### Selcall Decode

The transceiver has the ability to decode both OEM and International Selcalls on any channel programmed as a Selcall channel. However, the call must be addressed to the relevant ID (OEM or INT).

Calls for each format type will only be decoded if there is at least one Self ID of that format programmed into the transceiver Self ID group.

### Selcall Transmit

Selcall formats in transmit are channel specific. For example, only call types programmed for the channel are permitted. This means International format calls can only be sent on channels that are programmed as International Selcall channels. OEM calls can only be sent on channels that are programmed as OEM Selcall channels

### Special Notes for the OEM Selective Call Protocol

- Six digit OEM calls will only be decoded by other Barrett transceivers fitted with the OEM Selcall protocol or other manufacturer's transceivers that use DES56 encryption. This does not require an export permit.
- Four digit OEM calls will be decoded by Barrett 950 and 2050 transceivers using the International Selcall (four and six digit) and other manufacturer's transceivers with similar CCIR-493 based Selective Call systems.
- Four and six digit GPS and Status data calls use the OEM privacy key to encrypt the data. If this eight digit key has not been programmed by the programming software, a default privacy key of 99999999 is automatically used for transmission.
- Four and Six digit Page calls also use the privacy key but unlike the other calls, the user has the option to manually enable or disable the privacy key. When disabled, the data is sent as plain text.
- Emergency GPS calls are automatically sent as plain text (four and six digit).

# Summary of Calling Systems

| Call Type                 | International | OEM |
|---------------------------|---------------|-----|
| Emergency Call            | Yes           | Yes |
| Beacon Call               | Yes           | Yes |
| Selcall                   | Yes           | Yes |
| Telcall                   | Yes           | Yes |
| ARINC Call                | Yes           | Yes |
| Page Call (SMS)           | Yes           | Yes |
| GPS Call (Data & Request) | Yes           | Yes |
| Secure Call               | Yes           | No  |
| Status Request Call       | Yes           | Yes |

The three most commonly used calls are Beacon Call, Selcall and Telcall. The other calls are more advanced and can be found in the Advanced Selcall Functions section of this chapter on page 47.

## Selective Call - Beacon Call

Beacon Call allows the Operator to determine the signal quality between their station and the station they want to call on a particular channel, but without actually alerting the station they are doing so.

## Selective Call - Selcall

Selcall is a signalling system based on standard CCIR-493 for use on HF networks. Each station in a HF network can be assigned up to 14 Self IDs of which there can be a mixture of four and six digit IDs. The station can be called using any of these self IDs.

It functions as a hailing or alert system i.e. a HF transceiver (Station A) can send a Selcall to another transceiver (Station B). This will alert the operator at Station B that Station A is contacting them.

## Selective Call - Telcall

Telcall uses this Selective Call system to transport a telephone number from a station on a HF network to a base station equipped with a telephone interconnect unit to initiate phone calls onto the international telephone network.

**Note: For Selcall and Telcall functions to operate, the channels being used must be enabled for Selcall operation.**

## Setting up a Self ID

1. From the Settings menu, tap the Selcall icon.

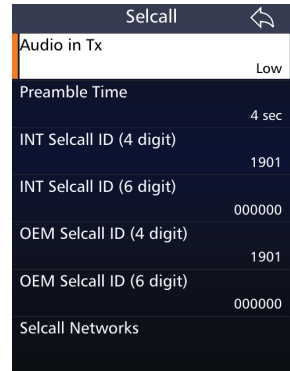


Settings



Selcall

2. Tap Default Int Selcall ID (4 digits). This will set up a 4 digit ID.



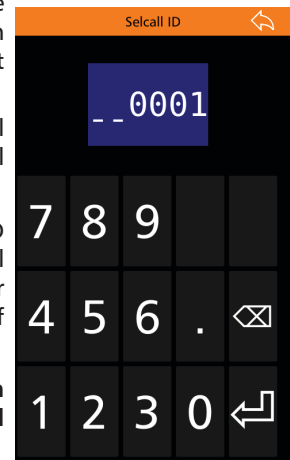
3. Type in a four digit number. This will either be provided to you by your network provider or an original ID may be able to be used if it does not conflict with another ID on the network.

The procedure is the same for the Default Int Selcall ID (6 digits), OEM Selcall ID (4 digits) and OEM Selcall ID (6 digits).

Note: Having both a four digit and the six digit ID is not required, either would still allow successful operation. It is recommended that the four digit or six digit INT and OEM IDs be the same for easy self identification.

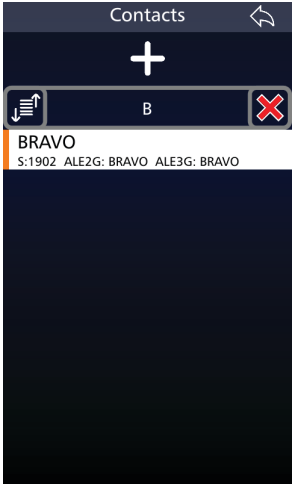
**A list of all of a transceiver's current IDs can be found under Selcall Networks in the Selcall menu.**

This shows all the current Selcall IDs for a transceiver and the networks that they are attached to, see page 56.

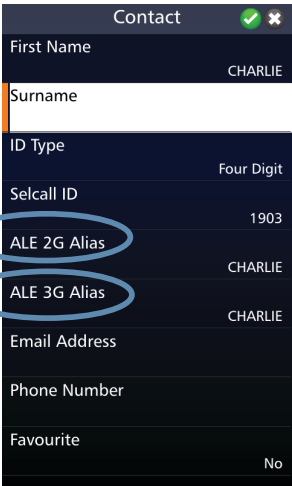


# Setting up Contacts

- 1. From the Settings menu, tap the Contacts icon.
- 2. To add a new contact tap the + button on the left of screen.



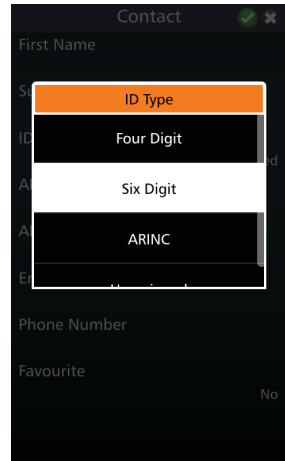
The following menu will open:



Will not be described in this manual. See ALE 2G and ALE 3G User Guide (P/N BCM40524)

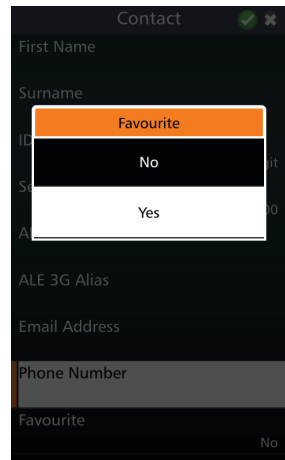
From this menu, enter a name for this contact. Both first name and last name do not have to be completed.

ID type, refers to the type of ID the transceiver you are inputting has, whether it be 4 digit, 6 digit or ARINC. Select which is appropriate and enter the Selcall ID.



An email address and phone number can also be entered. Once again these do not have to be entered for basic functionality of the transceiver.

To favourite this contact, select yes under Favourite.



3. To save the contact, tap  the in the top right hand corner of the screen and select yes.

## Additional Contact Information

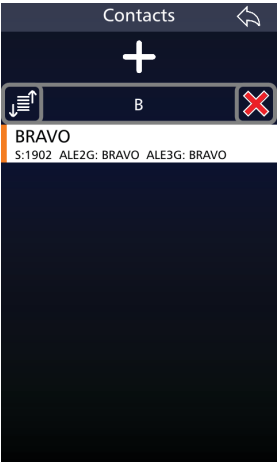
### Searching Contacts

The contacts list can be sorted alphabetically by first name using the icon shown on the right, located on the left hand side of the Contacts screen.



Either tap  or press  or  to display the results of the search.

The icon on the left of the search bar clears the search and the icon on the right performs the search again.



### Editing Contacts

To edit contact details, select the desired contact by using the  and  keys and either tap the contact or press  from the keypad

The Edit Contact screen displays. Select and change the desired settings.

### Deleting Contacts

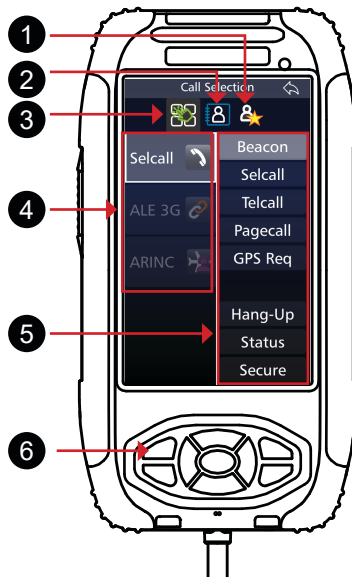
From either the Settings<Contacts screen or the Call<Contacts screen, tap and hold a contact to trigger the Delete Contact screen. To delete the contact, select Yes, or select No to cancel the operation.

## Making a Selcall

Before making a Selcall, ensure the transceiver is not scanning channels and select a Selcall channel. For more information regarding channel selection and basic voice calls, see on page 17.

Use the  key to access the Manual Call screen.

From this menu, Selcalls, Contacts, Favourites and Call History can be accessed.



- 1 Contacts - Favourites
- 2 Contacts
- 3 Call Type Selection Menu
- 4 Call Type
- 5 Call Sub-types
- 6 Call Key

## Beacon Call

Beacon Call allows the operator to determine the signal quality between their station and the station they want to call on a particular channel, but without actually alerting the station they are doing so.

When a Beacon Call is sent to another station, and if the channel being used is open, the remote station sends back a distinctive four-tone revertive signal. The operator can judge the quality of the channel for communications purposes by the strength and clarity of this distinctive tone. Using Beacon Calls on several available channels will determine which channel is best to use for subsequent Selcalls or Telcalls.

*Note: both stations must be programmed for Selcall or Telcall operation.*

### Sending a Beacon Call

1. Listen for traffic on your selected channel. If traffic is heard, select another channel and try again.
2. Press  and, if necessary, press the  icon to show the Call Selection screen.
3. Either:
  - Select Beacon Call, enter a Selcall Id manually and press Enter, or
  - Choose a contact from the Contacts  icon and then select Beacon Call.
4. Wait for the Beacon Call to be sent and listen for the distinctive four-tone revertive signal from the station you have called.
  - If a revertive tone is not heard, or is difficult to hear, try another channel and repeat the process until the revertive tone is clear.



## Receiving a Beacon Call

When a transceiver receives a beacon request call, it responds by transmitting the Beacon Call reveritive tones. No indications occur on the transceiver. Beacon Calls are not saved in the Selcall History.

## Selcall

### Sending a Selcall

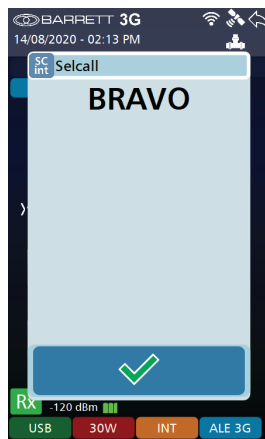
1. Select the channel to send the Selcall on (Beacon Call can be used to determine the best channel)
2. Listen for traffic on that channel. If traffic is not heard, continue.
3. Press  and, if necessary, press the  icon to show the Call Selection screen.
4. Either:
  - Select Selcall, enter a Selcall Id manually and press Enter, or
  - Choose a contact from the Contacts  icon and then select Selcall.
5. Wait for the Selcall to be sent and listen for the reveritive signal that indicates the call was successful.
  - If a reveritive tone is not heard or was difficult to hear, try another channel and repeat the process until a good channel is found.
  - If a reveritive tone is heard but you receive no verbal response from the station, it may be because the Operator is unavailable at the time.



## Receiving a Selcall

*Note: To receive a Selcall your transceiver must be programmed for Selective Call (Selcall) and where multiple channels are in use the scan function should be activated.*

When you receive a Selcall, your station sends a reverive tone (to alert the calling station that its call was received), an audible alarm sounds, the mute (squelch) (if selected) opens and the display shows who the call is from.



The audible alarm will sound for 60 seconds unless acknowledged and then time out. To cancel the alarm and acknowledge the call, press the PTT button or

tap . If the audible alarm times out, the missed call icon displays  and a periodic audio reminder is emitted.

For details of previously received Selcalls, press and hold  to display the Advanced Call History screen. Refer to the Advanced Call History section on page 43.

## Telcall

Telcall uses the digital Selective Call system to send a telephone number on an HF network. Telcalls are primarily used to send to stations equipped with a telephone interconnect unit to initiate phone calls onto the PSTN.

*Note: For Selcall and Telcall functions to operate the channel must be enabled for Selcall operation.*

### Sending a Telcall

1. Select the channel to send the Telcall on. This will be the channel provided by your network administrator to contact the interconnect.
2. Press  and, if necessary, press the  icon to show the Call Selection screen.
3. Either:
  - Select Telcall, enter the selcall ID of the interconnect, select Enter phone number, enter the phone number manually and press Enter, or
  - Choose a contact from the Contacts icon  and then select Telcall. Enter the Selcall ID of the Interchange, choose Select from Contact and select contact.
4. Wait for the call to be sent and listen for the reverive signal that indicates the call was successful.
  - If a reverive tone is not heard try another channel and repeat the process.
  - If the destination station is connected to a telephone interconnect, when the call is successful, wait for the telephone connection to be made and then proceed with the call.
5. Perform a Hangup Call to disconnect from the interconnect (refer to page 55 for more information on Hangup Calls).



## Receiving a Telcall

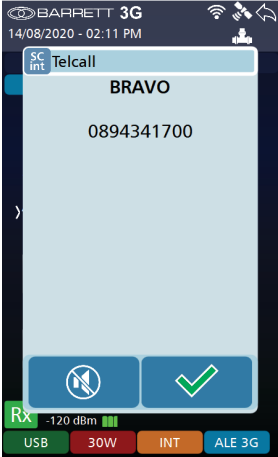
*Note: To receive a Telcall your transceiver must be programmed with a Self ID and where multiple channels are in use the scan function should be activated.*

When you receive a Telcall, your station sends a reveritive call (to alert the calling station that its call was received), an audible alarm sounds, the mute (squellch) (if selected) opens and the Telcall screen displays.

The Telcall screen shows the Selcall ID and telephone number of the caller.

Tap  to stop the audible alarm but maintain the Telcall screen.

Tap  To close the Telcall screen.



The audible alarm will sound for 60 seconds, unless acknowledged and then time out. To cancel the alarm and acknowledge the call, press the PTT button or

tap either  or  (described above). When the audible alarm times out, the call received  icon displays and a periodic audio reminder is emitted.

For details of previously received Telcalls, press and hold  to display the Advanced Call History screen.

## Advanced Call History

Advanced Call History is a log of all Selcall, ALE 2G and ALE 3G call types stored in the transceiver handset. The log has the time of transmission, frequency and IDs of the transmitting and receiving transceivers recorded with every entry. Advanced Call History also has a 'return call' feature that directly links the call history with the transceivers call functionality whilst pre-entering the information from the selected call entry.

The Call History is also directly connected to the transceiver's contact settings, allowing calls from the same contact to be collated together - regardless of call type. This can be toggled on or off in the Call History menu.

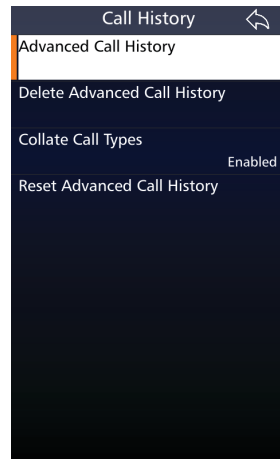
### Call History Menu

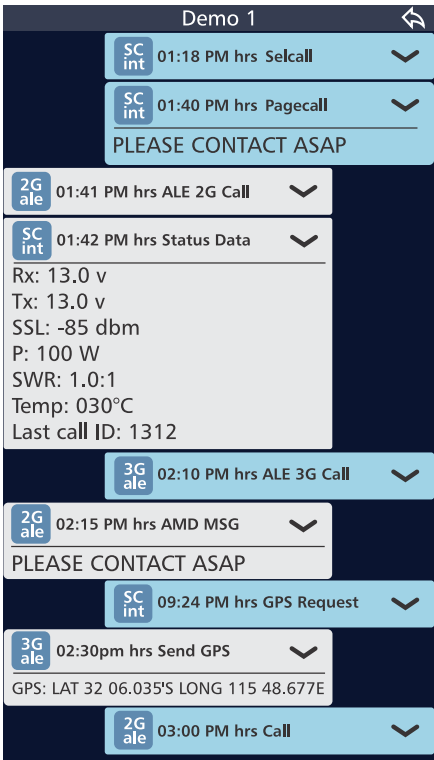
The Call History menu can be accessed via **Settings < Call History**.

From this menu, the Advanced Call History can be accessed, deleted, updated and the collation of the call history by contact can be toggled on or off. Update advanced call history will only appear when using a remote control application (see IP Connectivity Guide P/N BCMPRC-40907).

Enabling the Collate call types function will group calls from the same contact together - regardless of call type (Selcall, ALE 2G or ALE 3G) - based on the contacts entered into the transceiver via either the programming software or the transceiver handset (see page 34 for further details on creating contacts).

Disabling the Collate call types function will collect calls in threads based on the call type (Selcall, ALE 2G or ALE 3G) and sender regardless of whether they are entered as a contact.

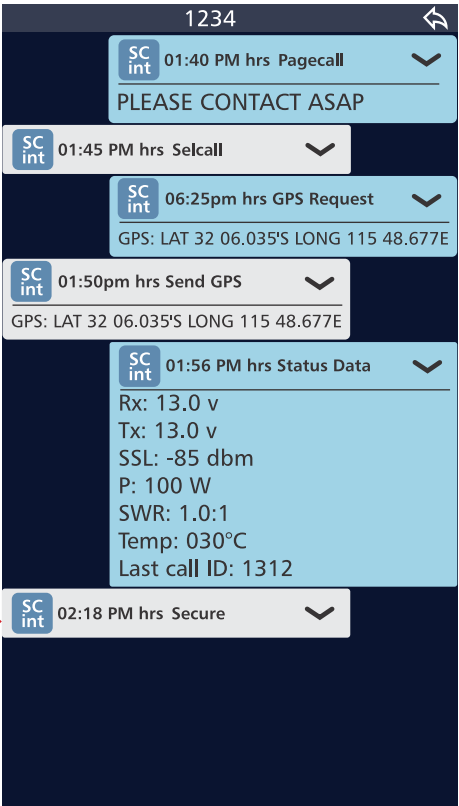




*Collated Calls*

Pressing an arrow reveals further information about a call including frequency, channel number, as well as to and from addresses.

*Uncollated Calls*

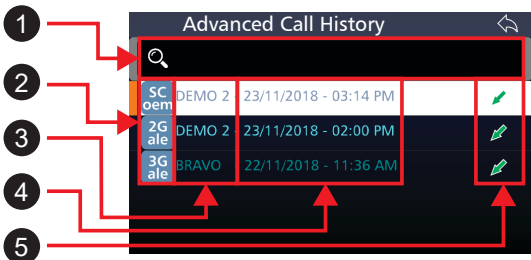


Pressing a call bubble within a thread will initiate the return call process to the sender.

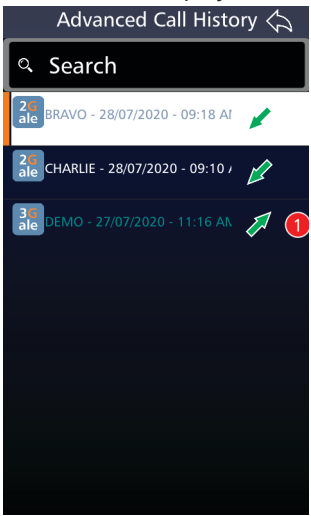
Please note that this function is unavailable for ALE 2G and 3G NetCalls.

### Advanced Call History Menu

This menu can be accessed by either pressing and holding the **Call button for 2 seconds** or via the **Settings < Call History Menu**. Both display the same features and have the same functionality.



*Uncollated Calls*



|   |                           |                                                                                                                                                                                                                                             |
|---|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Search                    | The Search function allows an operator to search the following fields: first name, surname, phone number or email address of a contact; Selcall ID, ALE 2G or ALE 3G alias; date or time of call or data type call (GPS, status, pagecall). |
| 2 | Call Type                 | The call types are outlined in the table below.                                                                                                                                                                                             |
| 3 | ID or Alias               | This is the ID, address or Alias of the remote transceiver that the local transceiver is/was communicating with.                                                                                                                            |
| 4 | Date and time             | The date and time of the most recent call in a thread are displayed here.                                                                                                                                                                   |
| 5 | Incoming or Outgoing call | The arrows display whether the last call in the message thread was a transmitted, received or missed call.                                                                                                                                  |

| Icon                                                                              | Description                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Call transmitted                                                                                                                                                            |
|  | Call Received                                                                                                                                                               |
|  | Missed Call                                                                                                                                                                 |
|  | Missed Call count                                                                                                                                                           |
|  | Call sent and delivered at other station * For 2G and 3G only                                                                                                               |
|  | Call sent but not delivered at receiving station *for 2G and 3G only. The red cross indicates non-delivery as a default state until a call sent acknowledgment is received. |

| Icon                                                                                | Description              |
|-------------------------------------------------------------------------------------|--------------------------|
|    | Selcall INT format       |
|    | Selcall OEM format       |
|    | Selcall CCIR format      |
|    | Selcall RFDS format      |
|   | Emergency Selcall format |
|  | ALE 2G format            |
|  | ALE 3G format            |

## Advanced Selcall Functions

The Selcalls and settings in this section are less commonly used than those previous but are useful in all manner of situations.

### Selcall Settings

From the Settings menu, select Selcall to view the Selcall Settings for the transceiver.



Settings



Selcall

The following menu displays:

| Selcall                  |        |
|--------------------------|--------|
| Audio in Tx              | Low    |
| Preamble Time            | 6 sec  |
| INT Selcall ID (4 digit) | 1901   |
| INT Selcall ID (6 digit) | 000000 |
| OEM Selcall ID (4 digit) | 1901   |
| OEM Selcall ID (6 digit) | 000000 |
| Selcall Networks         |        |

- The volume of the Selcall audio during Transmit. It can be Selected as Low, High or Off.
- The length of the Selcall preamble. 500ms are recommended per channel in the scan group + 1 second.
- Default 4-digit INT Selcall ID. Identifies the transceiver to other users when using an INT channel.
- Default 6-digit INT Selcall ID. Identifies the transceiver to other users when using an INT channel.
- 4-digit OEM Selcall ID. Identifies the transceiver to other users when using an OEM channel.
- 6-digit OEM Selcall ID. Identifies the transceiver to other users when using an OEM channel.
- A list of the transceiver's Selcall IDs on saved Selcall Networks. Can be modified.

## Pagecall

Pagecall (SMS) allows messages of up to 32 characters in INT format, or 64 characters in OEM format to be sent to or received from other transceivers with Pagecall facilities.

### Sending a Pagecall

1. Select the channel on which to send the Pagecall (Beacon Call can be used to determine the best channel)
2. Listen for traffic on that channel. If traffic is not heard, continue.
3. Press  and, if necessary, press the  icon to show the Call Selection screen.
4. Either:
  - Select Pagecall, enter the selcall ID of the transceiver you wish to contact, type in the message and press Enter, or
  - Choose a contact from the Contacts icon  and then select Pagecall. Type in the message and press Enter.
5. Wait for the call to be sent and listen for the revertive signal that indicates the call was successful.
  - If a revertive tone is not heard try another channel and repeat the process.



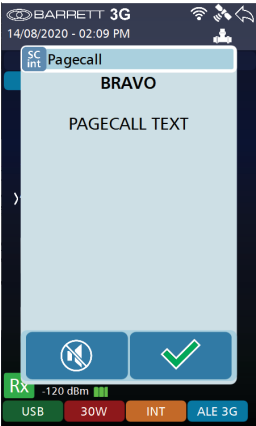
### Receive a Pagecall

When a Pagecall is received, an audible alarm sounds, any mute is disabled and the Pagecall screen displays

The Pagecall screen shows the Selcall ID and message.

Tap  to stop the audible alarm but maintain the Pagecall screen.

Tap  To close the Pagecall screen.



The audible alarm will sound for 60 seconds and then time out. To cancel the alarm before the time out period, and to acknowledge the call press the PTT

button or tap either  or  (described above). When the audible alarm times out, the call received icon displays and a periodic audio reminder is emitted.

When the audible alarm times out, the call received icon displays.

This message can be retrieved from the Advanced call history menu (see page 45).

## GPS Request

Use this option to request a remote station's GPS position. Information from the remote station will be either the latest GPS position of the station or 1 of 2 error messages:

- "GPS Unresponsive" - where data is not being received or invalid data is received from the GPS unit connected to the remote station.
- "GPS Not fitted at Remote Station" - where the remote station does not have a GPS unit connected to it.

## Sending a GPS Req

1. Select the channel on which to send the GPS Req (Beacon Call can be used to determine the best channel)
2. Listen for traffic on that channel. If traffic is not heard, continue.
3. Press 
4. Either:
  - Select GPS Req, enter the selcall ID of transceiver you wish to contact and press Enter, or
  - Choose a contact from the Contacts icon  and then select GPS Req.

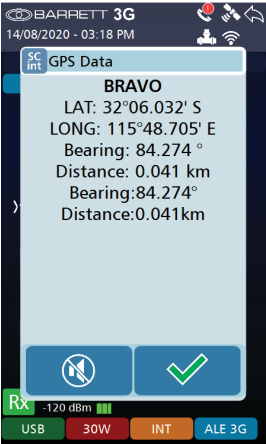


5. Wait for the call to be sent and listen for the revertive signal that indicates the call was successful.
  - If a revertive tone is not heard try another channel and repeat the process.
6. The receiving station will transmit it's position if fitted with a GPS receiver.

The GPS Data screen displays the caller's Selcall Alias (or alternately, their Selcall ID)

To stop the alarm sounding but keep the display,

press . To close the screen, press .



## GPS Position

Use this option to send your GPS position to another station.

*A GPS receiver must be connected and receiving position information when using the GPS call option.*

### Sending a GPS Pos

1. Select the channel on which to send the GPS Pos (Beacon Call can be used to determine the best channel)
2. Listen for traffic on that channel. If traffic is not heard, continue.
3. Press 
4. Either:
  - Select GPS Pos, enter the selcall ID of transceiver you wish to contact and press Enter, or
  - Choose a contact from the Contacts icon  and then select GPS Pos.
5. Wait for the call to be sent and listen for the reverteive signal that indicates the call was successful.
  - If a reverteive tone is not heard try another channel and repeat the process.



*Note: If the display indicates that the GPS is unavailable, you cannot select the Selective Call function GPS Pos.*

# Status Call

A Status call allows the operational status parameters of any Barrett transceiver fitted with Selcall to be accessed. This status is sent from the remote transceiver as a Selcall with the status information embedded within the Selcall structure. Information retrieved for remote diagnosis of transceiver performance includes:

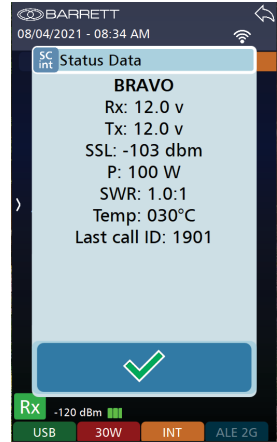
- Selcall ID
- Receive state battery voltage
- Last transmit state battery voltage
- Signal strength indication of received status request Selcall
- Forward power output level
- VSWR of the antenna
- Temperature
- Selcall ID of the last radio called.

## Sending a Status Call

1. Select the channel to send the Status Call on (Beacon Call can be used to determine the best channel)
2. Listen for traffic on that channel. If traffic is not heard, continue.
3. Press 
4. Either:
  - Select Status, enter the selcall ID of transceiver you wish to contact and press Enter, or
  - Choose a contact from the Contacts icon  and then select Status.
5. Wait for the call to be sent and for the remote station to return its status data.



If a reply is not received, either repeat the process or change the channel and repeat.



## Secure Call

The Secure Call option provides the transceiver operator with a secure speech path using an in-band hopping technique. Secure Call is simple to use requiring each radio to be setup with the same four digit "Selcall Secure Call Code".

Features:

- The Secure Call is limited to point to point and point to multi point (group call) communications between radios within a network.
- If any radio drops out of the secure call, it is not possible to re-enter the secure call. Operators can re-establish the link following the Secure Call method.

### Secure Call Codes

A Secure call code is necessary to make a successful secure call. Create a Secure Call Code via Settings, Security, Secure Call Code. Type a 4 digit number.

*Note: The 4 digit secure call code must be the same for both the transmitting and receiving stations.*



Settings



Security

### Sending a Secure Call

1. Select the channel to send the Secure call on (Beacon Call can be used to determine the best channel)
2. Listen for traffic on that channel. If traffic is not heard, continue.
3. Press 
4. Either:
  - Select Secure, enter the selcall ID of transceiver you wish to contact and press Enter, or
  - Choose a contact from the Contacts icon  and then select Secure.



5. Listen for the secure call revertive tone from the called station which indicates the call was successful.

*Note: The secure call revertive tone has a different sound to the revertive tones of the other call types.*

If the revertive tone was not heard or was difficult to hear, try another channel and repeat the process.

Now the transceivers can communicate securely using a voice call. Other users on the frequency will only hear garbled speech.

To exit secure mode, a Hangup call will need to be sent, or the  key pressed (disconnects local station only).

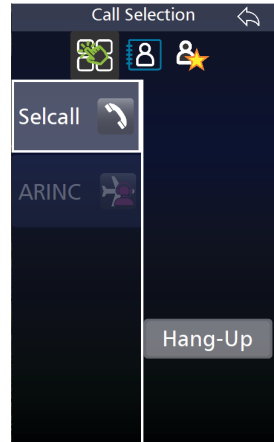


## Hangup Call

When a call to a telephone interconnect base station has completed or a secure call link is complete, the operator should 'hang-up' by sending a hang-up call.

### Sending a Hangup Call

1. Press 
2. Select Hangup and the Hangup call will be sent out. The transceiver will use the destination ID when sending the call from the initiating transceiver or the source ID when sending from the receiving transceivers. Listen for hang-up revertive tone which confirms the disconnect was successful.



## Selcall Networks

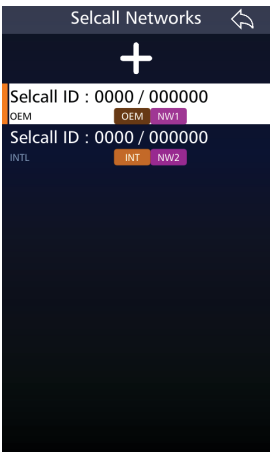
The Selcall Network screen is a list of the transceiver’s 4 and 6 digit IDs on various HF networks. These are programmable and up to 5 networks can be stored on the transceiver.

### Creating a New Selcall Network

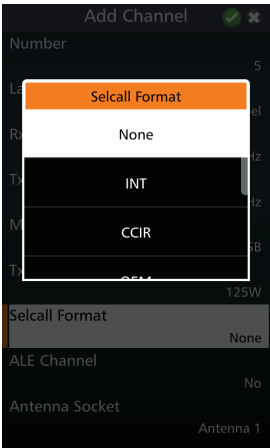
- 1. Access the menu via **Settings** and **Selcall**. Select **Selcall Networks**.



- 2. Tap the + symbol to create a new Selcall Network.
- 3. Selcall Network Alias refers to the name of the network on your transceiver. This is not read or transmitted by any external transceivers or displayed when you transmit.



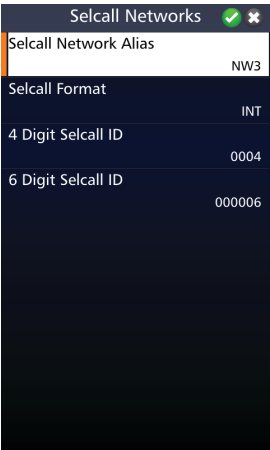
- 4. Selcall Format chooses whether the network transmits over INT, CCIR, OEM or RFDS frequencies. All transceivers in the network will need to be the same in order to transmit between each other.
- 5. The Selcall IDs on each network may be specific to each network. These will generally be provided by the network administrator.
- 6. Select the green tick and then Yes to save the Network.



### Editing an Existing Selcall Network

To edit a Selcall Network, select the desired network and either tap the network or press **ENT** from the keypad.

The Selcall Network screen displays. Edit the details as described above (for Add a Selcall Network).



### Deleting an Existing Selcall Network

Select the Selcall Network to be deleted, then tap and hold for three seconds.

A confirmation message displays.

Tap **Yes**.





# BASIC SETTINGS 4

This chapter contains the following sections:

- System Information
- General Settings
- Audio Settings
- Display Settings

# System Information

Select **System Info** from the Settings menu to display the System Information screen.



## Head Device ID

This displays the name of the control head. This name is used to differentiate between primary and secondary heads.

## Serial Number

This displays the transceiver’s serial number.

## Version Information

This menu provides software and firmware version numbers. Contact your Barrett provider for more information

System Information

Control Device ID

Primary Control Device

Serial Number

405010598

Version Information

Transceiver Options

Configuration Pack Information

SDV/4026 Serial Number

RM-0993-02B 1702108

Version Information

Control Head Firmware Version

chbob-fw-dev-1.8.1

Control Head Firmware Build Date

20210322\_162126

Control Head Hardware Version

4050 A9...A11

Transceiver Firmware Version

1.8.1.25826

SDV/4026 Firmware Version

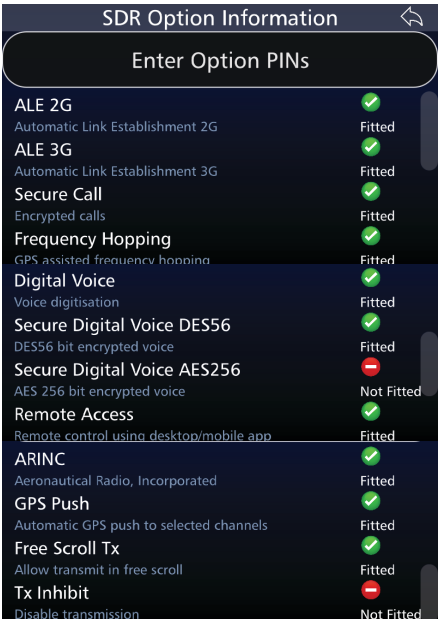
Barrett-3G-DIG\_AUD V5.6.31 (TC2-Rev2)(C)

Transceiver Options

This menu displays the active and inactive options on your transceiver.

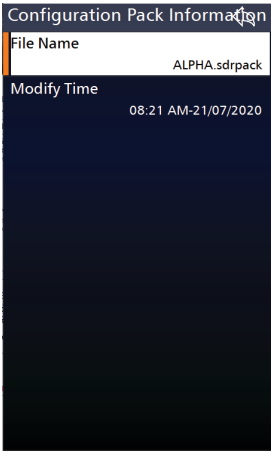
To activate an inactive option, please contact Support at Barrett Communications at:

support@barrettcommunications.com.au.



Configuration Pack Information

This menu offers easy identification of the transceiver's current pack and when it was last updated.



SDV/4026 Serial Number

This provides the serial number of the SDV/4026 hardware module fitted in the transceiver.

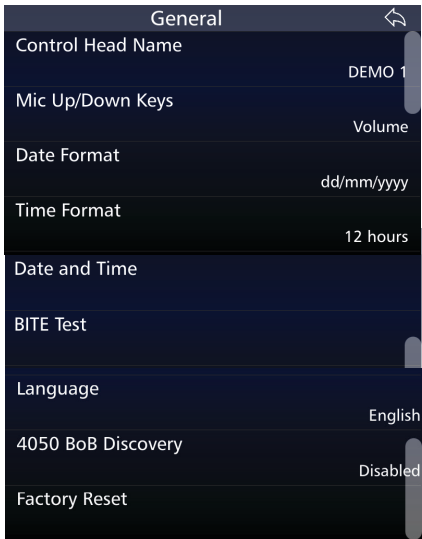
# General Settings

Select **General** from the Settings menu to display the General Configurations screen.

A list of items that may be configured is displayed. To reveal more items, either swipe down on the touch screen or press .

A brief description of each of the items which may be configured is described beneath the items.

The current status of each of the items is displayed on the right.



Modifiable name for the transceiver. This name will be used to refer to this transceiver on external networks.

Controls the function of the arrow keys on the side of the hand held microphone. Can control either channel or volume.

Sets the format in which the date is displayed on the transceiver to one of five options.

Toggles the time format between 12 and 24 hour displays. This displays on the transceiver front panel.

Sets up the date, time and timezone displayed on the transceiver. Swipe up or down on the touchscreen to modify.

Built in Testing Equipment. Provides a basic indication of faults in the system. See Appendix 4, page 214.

Language of the transceiver's display.

For use with a Barrett Break-out-Box. If BoB is connected, select Enable.

Will revert transceiver back to factory settings. All channel info, ALE2G/3G info, all security PINs and encryption keys will be cleared.

# Audio Settings

Tap **Audio** from the Settings screen to display the Audio screen.

A list of items that may be configured is displayed.

A brief description of each of the items is described beneath the items.

The current status of each of the items is displayed on the right.

To reveal more items, either swipe down on the touch screen or press



Settings



Audio

| Audio                   |                         |  |
|-------------------------|-------------------------|--|
| Beep Level              | Off                     |  |
| Alarm Level             | Mute                    |  |
| Ring Tone               | Ringtone 1              |  |
| Rx Configuration        | Internal Audio          |  |
| Tx Configuration        | Local                   |  |
| Audio Bandwidth         | 300Hz - 2700Hz          |  |
| Line Audio              | Follows Mute            |  |
| Line Encoding           | Disabled                |  |
| Line Out Level          | 0 dBm                   |  |
| Line In Level           | 0 dBm                   |  |
| Audio Recording         | Enabled                 |  |
| Custom Filter Bandwidth | 3000Hz (300Hz - 3300Hz) |  |

Volume level for the Key tones. Can be configured as Low, High or Off

Volume control for the incoming Audio Alarm. Can be configured as Low, Med, High or Mute.

Choose 1 of 7 ring tones for the incoming alarm tone.

Advanced Operations. For more information, see page 75.

# Display Settings

Tap **Display** from the Settings screen to display the Display screen.

A list of items that may be configured is displayed.

A brief description of each of the items is described beneath the items.

The current status of each of the items is displayed on the right.



Settings



Display

Display

Backlight Level

Low

Backlight Timeout

Short Timeout (60s)

Timeout Mode

Dim Display

Transmit Meter Mode

Chevrons

Receive Meter Mode

dBm

Units of Temperature

Celcius

GPS Display Format

Degrees Decimal Minutes

Units of Distance

Kilometers

Screen Orientation

Landscape

Visual Theme

Default

Theme Schedule

Adjusts the brightness of the screen backlight. Can be configured as Low, Med, High and Very High.

Length of time before the Display timeout behaviour activates. Can be configured as Short Timeout (1 min), Long Timeout (3 min) or Always On.

Behaviour of the screen activated when the backlight times out. Shows screensaver, dims or switches off display.

The preferred unit to display the Transmit Wattage. Either Watts or Chevrons.

The preferred unit for displaying the received signal strength. dBm, uV or S Meter.

Preferred unit of temperature for the transceiver. Celcius or Farenheit.

Changes the display format for the GPS coordinates in the swipe menu

Changes the displayed units of distance for the GPS between Kilometres, miles and nautical miles.

Changes the display orientation between portrait, landscape or flipped modes.

Changes the display theme between default, red, green or dark green.

See advanced settings page 75.

# PROGRAMMING 5

This chapter contains the following sections:

- Channel Programming
- Free Scroll Rx/Tx
- Programming via USB

# Channel Programming

**The programming of channels is restricted in some countries.** In this situation, transceivers will be pre-loaded with a channel pack and this function will be locked in the transceiver menu.

If the transceiver is unlocked, there are three ways to program channels into the transceiver.

- 1. Manually through the transceiver’s handset,
- 2. By inserting a USB storage device containing the appropriate files into the transceiver’s USB socket (see page 73)
- 3. By using the Barrett Programming Software (P/N BCA40001). This option is not available in all countries. Please check with your Barrett dealer for your location. For more information on using the Barrett Programming Software, please refer to the PRC-4090 SDR Programming Manual (P/N BCM-PRC-40903).

## Programming Channels Through the Handset

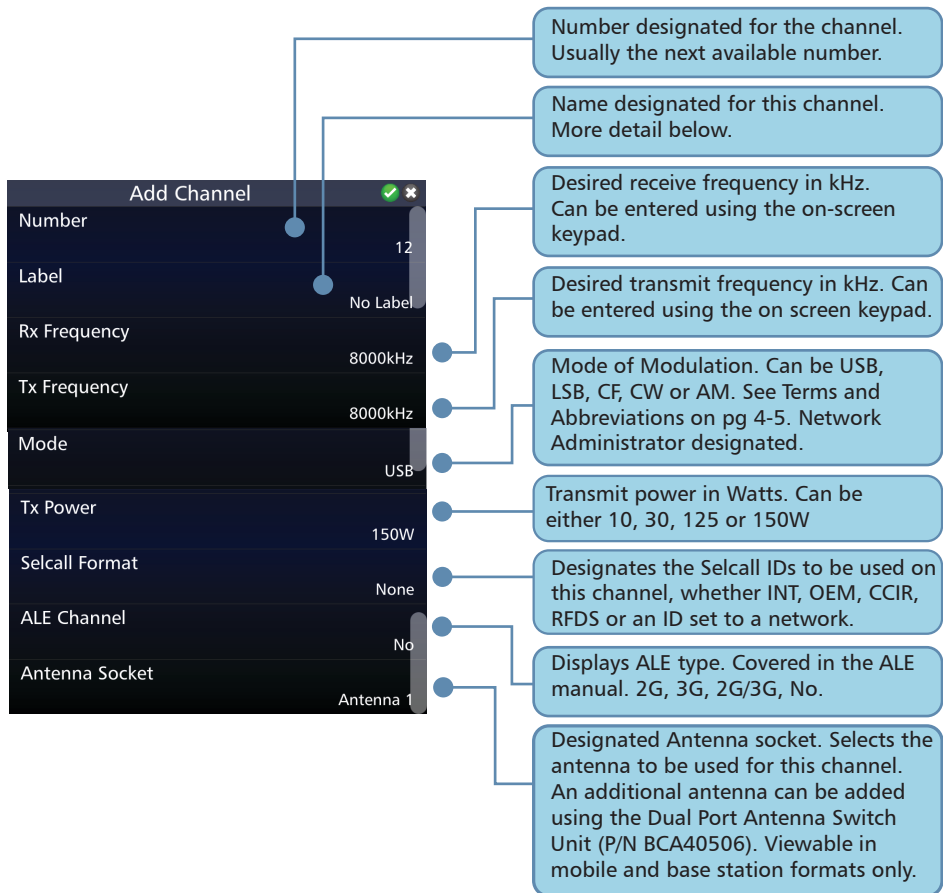
Tap **Channels** from the **Settings** screen to display the Channels screen.

A list of currently used channels displays. Each channel shows its channel number, frequency, and channel label.



## Adding a new channel

To add a channel, tap  to display the Add Channel screen.



The 'Add Channel' screen displays the following fields and their descriptions:

- Number:** Number designated for the channel. Usually the next available number.
- Label:** Name designated for this channel. More detail below.
- Rx Frequency:** Desired receive frequency in kHz. Can be entered using the on-screen keypad.
- Tx Frequency:** Desired transmit frequency in kHz. Can be entered using the on screen keypad.
- Mode:** Mode of Modulation. Can be USB, LSB, CF, CW or AM. See Terms and Abbreviations on pg 4-5. Network Administrator designated.
- Tx Power:** Transmit power in Watts. Can be either 10, 30, 125 or 150W
- Selcall Format:** Designates the Selcall IDs to be used on this channel, whether INT, OEM, CCIR, RFDS or an ID set to a network.
- ALE Channel:** Displays ALE type. Covered in the ALE manual. 2G, 3G, 2G/3G, No.
- Antenna Socket:** Designated Antenna socket. Selects the antenna to be used for this channel. An additional antenna can be added using the Dual Port Antenna Switch Unit (P/N BCA40506). Viewable in mobile and base station formats only.

After configuring the above attributes, tap  to add the channel. A confirmation message displays. Tap **Yes**.

### Editing a Channel

To edit a channel, select the desired channel by using the  and  keys from the Channel screen and either tap the channel or press  from the keypad.

The Channel Information screen displays. Edit the fields as desired.

### Deleting a Channel

To delete a channel, tap and hold for three seconds the channel you wish to delete. A confirmation message displays.

Tap **Yes**.

### Label

Channel labels are used to name a channel and remind a user what the channel is used for eg. UNHCR Geneva.

Channel Labels must be created under the labels menu before they can be applied to a channel.

### Adding a New Label

To create a new label, tap the  icon from the Settings<Labels menu.

Type the New Label using the on screen keyboard.

This label can now be added to a channel.



Settings



Labels

## Editing an Existing Label

To edit a channel label from the Channel Labels' screen, select the label by using the  and  keys and either tap the label or press  from the keypad.

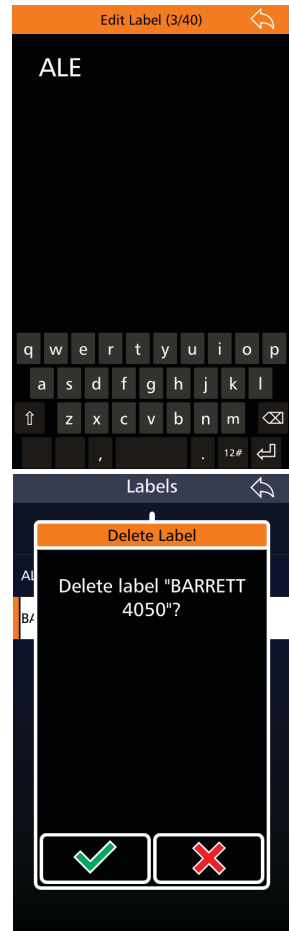
Use the keyboard to edit the name of the label, then tap  to save.

## Deleting an Existing Label

To delete a channel label from the Channel Labels' screen, select the channel label you wish to delete, then tap and hold for three seconds.

A confirmation message displays.

Tap **Yes**.



## Mode

Network administrators designate usable channels and modes as one of the following:

USB - Upper Side Band.

LSB - Lower Side Band.

CF - Custom Filter.

CW - Continuous Wave (Morse code).

AM - Amplitude Modulation.

## Free Scroll Rx/Tx

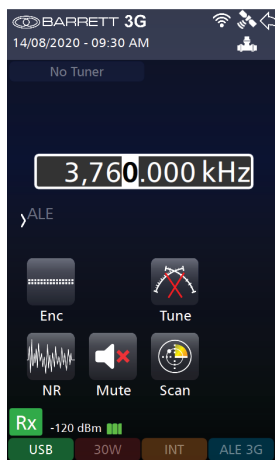
### Frequency Selection

Free Scroll Rx is a feature that allows a user to scroll through frequencies in a receive-only capacity. If the “Free Scroll Tx” option is enabled, pressing PTT will allow transmit on the selected frequency.

From the home screen tapping the channel frequency will open the Free Scroll function.

This can be navigated in two ways:

- The directional buttons
  - The left and right arrow keys change which digit is highlighted.
  - The up and down keys change the value of the highlighted digit.
- Tapping the digits



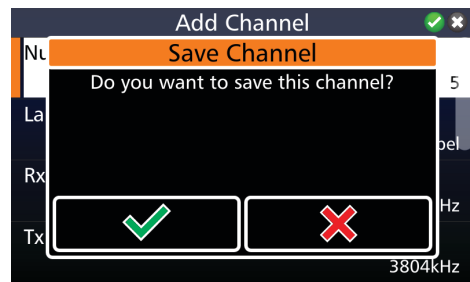
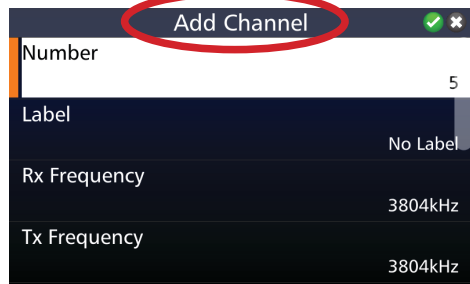
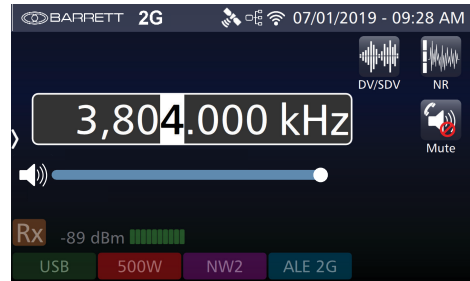
*Note: The Free Scroll menu can be locked in the PRC-4090 Programming Software and, if locked, will not appear when the frequency is pressed.*

## Adding a Channel from the Free Scroll screen

A channel can be added directly from the Free Scroll screen. When a desirable frequency is found, pressing enter on the front panel will allow the frequency to be added at the next available channel number.

All of the fields can be set, as when programming a channel from the channel menu (see page 66).

Press  to save the channel.



Free Scroll Scanning

By holding the Scan icon, the scan settings for Free Scroll can be set.

Scan Rate indicates the time spent on each frequency.

Scan Step Indicates the interval between frequencies scanned.

Tapping the scan icon will initiate scanning.



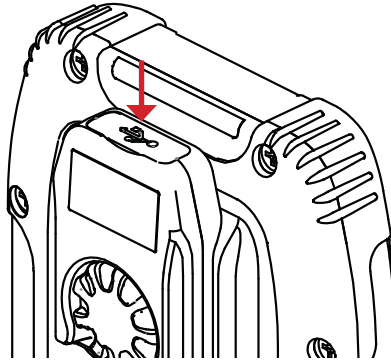
Scan

| Rx Scroll       |          |
|-----------------|----------|
| Lower Frequency | 1600kHz  |
| Upper Frequency | 30000kHz |
| Scan Rate       | 100ms    |
| Scan Step       | 100Hz    |

## Programming Via USB

The transceiver configuration can be imported or exported as a “pack”. This contains the channel configurations, ALE 2G/3G settings, scan tables, contacts and settings amongst other information.

*Note: a valid USB storage device must be inserted to activate.*



### Exporting Settings to a USB

To export the device's configuration settings, insert a USB storage device into either a PRC-4090 Handset USB Interface (4090-01-27) or the Handset Docking Station (4090-05-03).

1. Tap **Settings**, then **Export**.



Settings



Export

2. From the Export screen, tap **Export Configuration** to display the Configuration File Name screen.

The default name displays. Use the keyboard to type an alternative name of the configuration file to export to the USB storage device.

Tap  to save.

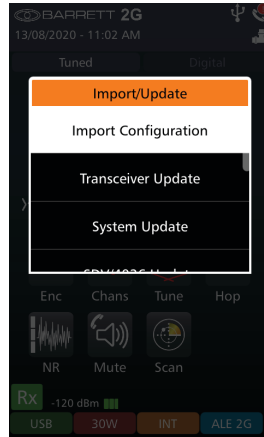
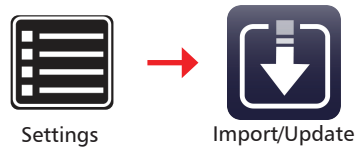
3. Enter an optional password to encrypt the exported pack.
4. The Export Configuration screen displays showing a progress bar confirming the progress of the export.

When prompted, tap **OK** and remove the USB storage device.

### Importing Settings from a USB

1. With a USB storage device inserted into the USB port, tap **Settings**, then **Import**.

If the correct files are on the USB, the transceiver will recognise them and initiate the Choose Action screen.



2. To update the configuration settings (pack), tap **Import Configuration** from the Choose Action screen described above.

The Choose a File screen displays.

Select the required file to import.

If a password was set up for the pack, this will be required for the import to complete.

Confirm that the call history will be replaced when the new pack is loaded.

3. The import process will then begin automatically showing a progress bar. Remove the USB storage device when prompted.
4. The importing of a pack via USB is complete.

*Note: For transceivers that are installed with the ALE 2G Option only and no other Digital Voice Options, a shutdown and restart of the transceiver will be required once a pack has been installed.*

# ADVANCED OPERATION 6

This chapter contains the following sections in alphabetical order:

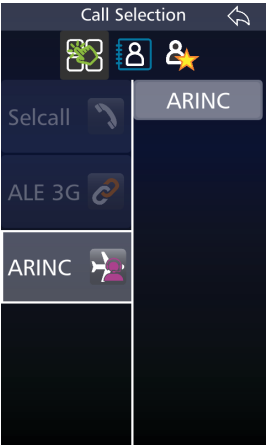
- ARINC Call
- Audio - Advanced
- Collective Call
- Digital Voice
- Frequency Hopping
- I/O Settings
- Modes
- Mute (Squelch)
- Network
- Noise Reduction (NR)
- RF Settings
- Scanning
- Screen Capture and Re-sync
- Security Settings
- Tuning
- Zeroise

# ARINC Call

An ARINC call functions in much the same way as a Selcall. It is a hailing or alert system used exclusively to alert aircraft.

An ARINC ID is a sequence of two sets of 2 letters. Each pair must be entered alphabetically eg. AB-CD or CD-AB.

The interface does not allow invalid ARINC IDs to be entered and blanks out invalid characters.



## Audio - Advanced

From the **Settings** menu, select **Audio**.

For information on Beep Level, Alarm Audio Level and Ring tones, see Basic Settings page 59.



Settings



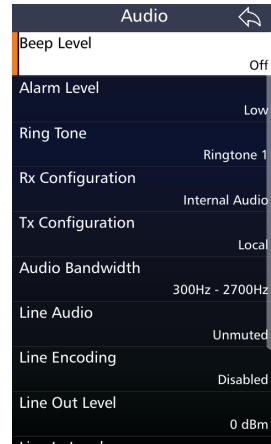
Audio

### Rx Configuration

This option sets whether the transceiver receives audio via the antenna or from the Line.

Selecting “Internal Audio” ensures the transceiver receives audio through the antenna.

For “External Audio”, the transceiver receives through the auxiliary socket’s 600 ohm balanced audio port. This can be used in many situations eg for a remote receiver in split site operations and audio is received from the remote site.



### Tx Configuration

This option sets whether the PRC-4090 transmits to the antenna or down the line.

When set as “local” the transceiver transmits through the antenna.

When set as “remote”, the transmit audio is sent through the auxiliary socket’s 600 ohm balanced audio port.

### Audio Bandwidth

This section allows the audio bandwidth to be tailored to an operator’s requirements.

Select either:

300 Hz - 2700 Hz: used for reduced bandwidth voice operation

300 Hz - 3000 Hz: standard voice and data operation

300 Hz - 3200 Hz: recommended for use with clover waveforms

300 Hz - 3400 Hz: recommended for use with digital voice and Stanag waveforms

### Line Audio

This option sets the muting condition of the 600 ohm balanced audio line output on the rear auxiliary connector.

The line output can be set to Unmuted or Follows Mute. When set to Follows Mute, the line output is muted in the same manner as the speaker output and follows the mute condition currently in use. The line output is usually set to Unmuted when using data modems. Follows Mute should be selected when the transceiver is being used with 2062 crossgate.

### Line Follows Digital Voice

When this is selected, the Line audio will also be processed through the Digital Voice hardware.

### Line Out Level

This setting adjusts the output level of the auxiliary 600 ohm balanced audio output port.

### Line In Level

This setting adjusts the input level sensitivity of the auxiliary 600 ohm balanced audio input.

### Audio Record

This option is used to monitor conversations. It utilises the line audio to listen to the received and transmitted audio. Connect an appropriate device to record the conversation using a cable (up 1.2 m in length) with connection specification below.

| 21 Pin Auxiliary Connector | Description         | 3.5mm Jack Connector Pin |
|----------------------------|---------------------|--------------------------|
| 7                          | Summed Record Audio | Tip & Ring               |
| 8                          | Ground              | Sleeve                   |

### Custom Filter Bandwidth

This section allows the audio bandwidth to be tailored to an operator's requirements when using a custom filter.

## Collective Call

Collective calls comprise of all-calls, group calls and sub-group calls which involve calling a number of Selcall IDs simultaneously. This is not an individual button in the Selcall menu as a transceiver can group call as a number of call types. For information on other call types please refer to Chapter 3 - Selcall, page 29.

*All call, Group call and Sub-group call must be enabled in the Barrett PRC-4090 HF SDR Programming Software (P/N BCA40001).*

### Sending a Group Call

It is recommended that transceivers should be programmed with a selcall ID ending in "0" as this is used for making group calls. When prompted to enter a Selcall ID for a chosen call type, the first digits represent the groups of IDs you wish to contact.

#### Four Digit format

##### All call

eg. Entering 2000 will contact every transceiver on the channel with an ID that begins with "2"

##### Group call

eg. Entering 2300 will contact every ID on the channel that begins with "23".

##### Sub-group Call

eg. Entering in 2310 will contact every ID that begins with "231"

#### Six Digit format

Same as above. No more than the last 3 digits can hold the 0 value.

eg. Entering 123000 will contact every transceiver beginning with "123"