THANK YOU FOR YOUR PURCHASE OF THE GMRS-V1. THIS GMRS RADIO (WITH UHF/VHF SCANNER CHANNELS) WILL DELIVER YOU SECURE INSTANT RELIABLE COMMUNICATION.

PLEASE READ THIS MANUAL CAREFULLY BEFORE USE

Table of Contents

Part I. Getting started

Part one covers the basic setup and use of your hand-held two-way transceiver.

Chapter 1. - Initial setup

Safety Information

The following safety precautions should always be observed during operation, service and repair of this equipment.

- Qualified technicians shall service this equipment only.
- Do not modify the radio for any reason.
- Use only BTECH supplied or approved batteries and chargers.
- Do not use any portable radio that has a damaged antenna. If a damaged antenna comes into contact with your skin, a minor burn can result.
- Turn off your radio prior to entering any area with explosive and flammable materials.
- Do not charge your battery in a location with explosive and flammable materials.
- To avoid electromagnetic interference and/or compatibility conflicts, turn off your radio in any area where posted notices instruct you to do so.
- Turn off your radio before boarding an aircraft; any use of a radio must be in accordance with airline regulations or crew instructions.
- Turn off your radio before entering a blasting area.
- For vehicles with an air bag, do not place a radio in the area over an air bag or in the air bag deployment area.

- Do not expose the radio to direct sunlight over a long time, nor place it close to heating source.
- When transmitting with a portable radio, hold the radio in a vertical position with the microphone 3 to 4 centimeters away from your lips. Keep antenna at least 2.5 centimeters away from your body when transmitting.

If you wear a radio on your body, ensure the radio and its antenna are at least 2.5 centimeters away from your body when transmitting.

Exposure To Radio Frequency Energy

Your BTECH radio is designed to comply with the following national and international standards and guidelines regarding exposure of human being to radio frequency electromagnetic energy:

- United States Federal Communications Commission, Code of Federal Regulations: 47 CFR part 2 sub-part J
- American National Standards Institute (ANSI)/Institute of Electrical & Electronic Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronic Engineer (IEEE) C95. 1-1999 Edition
- National Council on Radiation Protection and Measurements (NCRP) of the United States, Report 86, 1986
- International Commission on Non-lonizing Radiation Protection (ICNIRP) 1998

To control your exposure and ensure compliance with the occupied or controlled environment exposure limits, transmit no more than 50% of the time. The radio generates measurable RF energy exposure only when transmitting.

Features and Functions

- GMRS Transceiver & UHF/VHF Scanner
- High Capacity Lithium-Ion battery
- 50 CTCSS tones and 346 (Normal and Inverted) DCS codes.
- Alarm function.
- High low power, selectable.
- Function beep on the keyboard.
- Frequency step (for scanner): selectable from: 2.5K | 5.0K | 6.25K | 10.0K | 12.5K | 20.0K | 25.0K | 50.0K
- Battery saving function
- Scan mode
- Built in CTCSS/DCS tones
- PC programmable.
- Cross-band reception.
- DTMF encoder.
- Broadcast FM receiver 65-108 MHz
- VOX (voice activated transmit).
- Up to 128 named memory channels.
- Tri Color Display
- Dual watch / Dual reception.
- Transmission time-out timer.
- Busy channel lock out
- LED flashlight.
- Ten (10) levels of Squelch adjustment.
- “Roger Beep”.
- Keypad lock

What's in the box

This transceiver comes shipped with the following items in the box:

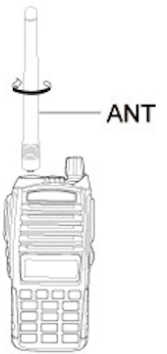
- GMRS-V1 Radio Body
- 1800mAh Lithium-Ion battery pack
- Antenna
- Desk charger (With wall-wart)
- Optional belt clip
- Optional wrist-strap
- Dual PTT Earpiece

Assembly

Before the radio is ready for use we need to attach the antenna and battery pack, as well as charge the battery.

Antenna

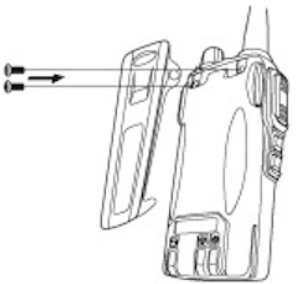
This transceiver is fitted with a Male SMA connector. To mount your antenna (Female SMA connector), align the two connectors and turn clockwise until it stops.



- Do not over-tighten your antenna to avoid damage to the connectors.
- When installing the antenna, don't grip it by the top. Grip by the base and turn.
- If you use an external antenna, make sure the *SWR* is about 1.5:1 or lower to avoid damage to the transceiver.
- Do not hold the antenna with your hand while transmitting.
- Never transmit without an antenna.

Belt clip

At the back of the radio there are two parallel screws mounted above the battery, remove these and thread them through the holes on the belt clip as you screw them back into the radio body.



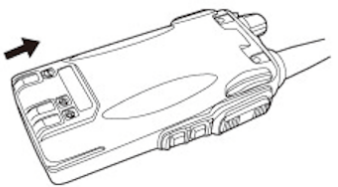
Do not use any form of glue to fix the screws on the battery clip. The solvents in the glue may cause damage to the battery casing.

Battery

Before attaching or removing the battery make sure your radio is turned off by turning the power/volume knob all the way counter-clockwise.

Installation

Make sure the battery is aligned in parallel with the radio body with the lower edge of the battery about 1-2cm below the edge of the radio.

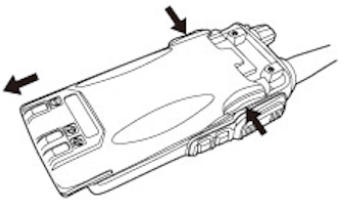


Once aligned with the guide-rails, slide the battery upward

until you hear a click as the battery locks in place.

Removal

To remove the battery: press the battery releases on the sides of the battery pack as you slide the battery downward.



Charging and battery maintenance

Charging

Battery should be fully charged before initial use. Optimum battery efficiency will be achieved after the three full battery charge and discharge cycles.

Follow these steps to hook up and use the charger:

1. Plug the DC connector of the power adaptor into the charger base.
2. Plug the AC connector of the power adaptor into a main AC wall outlet.
3. Place the radio in the charging slot on the charger.
4. Make sure the radio is making contact with the charger. When the red LED comes on steady, your radio is charging.
5. The radio is fully charged once the charger's green status LED goes steady. Please remove the radio at that time to avoid over-charging your battery.

Table 1.1. Charger LED codes

Red LED	Green LED	Status
Flashing	Flashing	**Standby** (charger empty) or charge complete
Steady	Off	Charging
Off	Steady	Charge complete.

The charger and battery are fitted with matching notches so that you can charge your battery on its own! Practical if you have two batteries. That way you can charge one battery while still using your radio.

Radio should be turned OFF during charge cycle

Battery Maintenance

The battery for your radio comes uncharged from the factory; please let it charge for at least four to five hours before you start using your radio.

- *Use only batteries approved by the original manufacturer.*
- *Never attempt to disassemble your battery pack.*
- *Do not expose your batteries to fire or intense heat*
- *Dispose of batteries in accordance with local recycling regulations. Batteries do not belong in your trashcan!*

Prolonging the life of your battery

- Only charge batteries in normal room temperatures.
- When charging a battery attached to the radio, turn the radio off for a faster charge.
- Do not unplug the power to the charger or remove the battery and/or radio before it's finished charging.

- Never charge a wet battery.
- Batteries wear out over time. If you notice a considerably shorter operating time with your radio, please consider purchasing a new battery.
- Battery performance will be reduced in temperatures below freezing. When working in cold environments, keep a spare battery on you. Preferably inside your jacket or in a similar location in order to keep the battery warm.
- Dust can interfere with the contacts on the battery. If necessary wipe the contacts with a clean cloth to ensure proper contact with radio and charger.

If your battery has become wet, remove it from the radio, wipe it dry with a towel and put it in a plastic bag with a handful of dry rice. Tie the bag up and let it sit over night. The rice will absorb any remaining moisture in the battery.
This method is only effective against minor splashes (light rain for instance). A soaked radio may very well be beyond repair.

Storage

Partially charge your battery before long-term storage in order to prevent damage from over-discharge. While lead acid must always be kept at full charge during storage, this radio uses a lithium-based battery and should be stored at around a 40 percent charge. This level minimizes age-related capacity loss while keeping the battery in operating condition and allowing self-

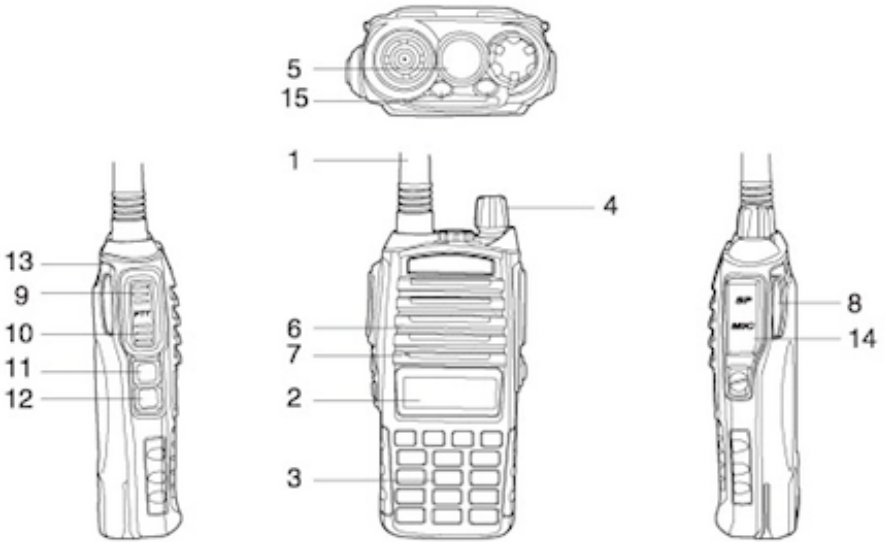
discharge.

To avoid severe capacity degradation of your battery while in long-term storage, please cycle the battery at least every six (6) months.

Store your batteries in a cool and dry place, never above normal room temperatures.

Chapter 2. - Getting to know your radio

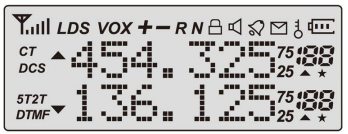
Figure 2.1. BTECH GMRS-V1, overview



1. Antenna, see the section called “Assembly” for details.
2. Two-line LCD
3. Keypad
4. Power / Volume knob, usage discussed in the section called “Power and volume”.
5. LED flashlight - See the section called “Side key 2 - MONI (Monitor and Flashlight)” for more information.
6. Speaker
7. Microphone
8. Battery release latch
9. PTT A key, usage discussed in the section called “Dual Push-to-Talk”.
10. PTT B key, usage discussed in the section called “Dual Push-to-Talk”.
11. Side Key 1 / [F]
12. Side Key 2 / [M]
13. Strap Buckle
14. Accessory jack
15. Status LEDs

The main display

Figure 2.2. BTECH GMRS-V1, display



The transceiver is fitted with a seven character by two line dot matrix alphanumeric LCD, with auxiliary icons for miscellaneous features.

Table 2.1. LCD icon summary

Icon	Description	Icon	Description
188	Memory channel	R	Repeater Reverse enabled
25, 75	Least significant modifiers.	N	Narrowband enabled
CT	CTCSS enabled		Battery level indicator
DCS	DCS enabled		Keypad lock enabled
+, -	Repeater Offset Enabled	L	Low Power Enabled When not displayed, high power is active
S	Dual watch enabled		
VOX	VOX enabled	▲ ▼	Indicates active band or channel
			Squelch Open/ Close Indicator

Even though it is a seven character by two-line display, channel memories are only configurable to six character names.

Battery Level Indicator

When the battery level indicator reads the battery is depleted. At this point the radio will start beeping periodically as well as flash the backlight of the display and when voice prompts are enabled, a "Low Voltage" announcement will be heard, indicating that you need to change your battery or put your radio in the charger.

To get an Accurate Voltage reading you Press and Hold 0SQL button (for about 2 seconds), the display will show the current voltage capacity of the battery

Status LED

The status LED has a very simple and traditional design. When you receive a signal it turns green, when you transmit it turns red, and it's off in standby.

Side key 1 / [F]

Press [F] momentarily to start the broadcast FM receiver. Another momentary press turns the broadcast FM receiver off. If a signal is received on the active frequency or channel while you are listening to the broadcast FM, the receiver will open squelch to that frequency (as if

scanning) and remain there until the signal goes away; it will then switch back to broadcast FM.

Press and hold [F] to activate the alarm function. Press [F] (a short press) again to turn it off. To send out a tone (more details in the section called “Tone-burst”.) Press the [F] key while holding down the PTT.

Side key 2 / [M]

Press [M] momentarily to turn on the LED flashlight. Another momentary press will flash the LED. Another momentary press turns the flashlight off.

Press and hold [M] to monitor the signal. This will open up the squelch so you can listen to the unfiltered signal.

VFO / MR – How to Switch

To switch your radio to Frequency (VFO) mode; you turn the radio OFF, then Press and Hold MENU button while powering ON.

To save frequencies to channel memory you must be in Frequency (VFO) mode.

Dual Push-To-Talk

The GMRS-V1 includes a Dual PTT Key/ Rocker Switch. You can communicate with other parties effortlessly by pressing the PTT rocker key upwards to transmit on Channel A (the upper display), or by pressing the PTT rocker key downwards to transmit on Channel B (the lower display).

The GMRS-V1 allows syncing the rocker switch as a single push-to-talk button (refer to Menu Option ？ for more details).

Numeric keypad

The BTECH GMRS-V1 hand-held transceiver comes standard with a full numeric keypad.

Figure 2.3. BTECH GMRS-V1, keypad

The numeric keys have their secondary function printed on them (in reality it's rather menu short-cuts, more on that in Chapter 4, *Working the menu system*).

The *SCAN, #, and 0SQL keys also serve as scan, keypad lock, and Voltage display respectively.

Pound # Key

In channel mode, # also acts as a transmit power shift key. While in channel mode, momentarily press # to change between High and Low transmit power. Do note that this is does not alter the transmit power stored to memory for that channel; it only affects the current session. Switching to another channel or another operating mode (including broadcast FM) will reset transmit power to what's stored in channel memory.

Keypad Lock

The BTECH GMRS-V1 features a keypad lock that locks out all keys except for the three side keys.

To enable or disable the keypad lock, press and hold the # key for about two seconds.

You can also enable so that the radio automatically locks the keypad after ten seconds from the menu, see Chapter 5, *Working the menu system*

Star * Key

A short momentary press of the key enables the reverse function.

When listening to broadcast FM a momentary press will start the scanning. Scanning in broadcast FM will stop as soon as an active station is found, regardless of scanner resume method.

To enable the scanner, press and hold the *SCAN key for about two seconds. See Chapter 6, *Scanning* for details.

Zero 0 Key

The BTECH GMRS-V1 features a battery voltage meter that the current voltage of the battery on the display

To see the voltage displayed, press and hold the 0SQL key for about two seconds.

Menu and function keys

The MENU key, used to enter the menu and confirm menu options.

The ▲ and ▼ keys are used to navigate through the menu as well as select channels and step up or down in frequency (depending on operating mode).

The EXIT key is used to exit menus and cancel menu options.
The EXIT key also switches between A (upper) and B (lower) displays. The frequency or channel on the selected display becomes the active listening and transmit frequency or channel.

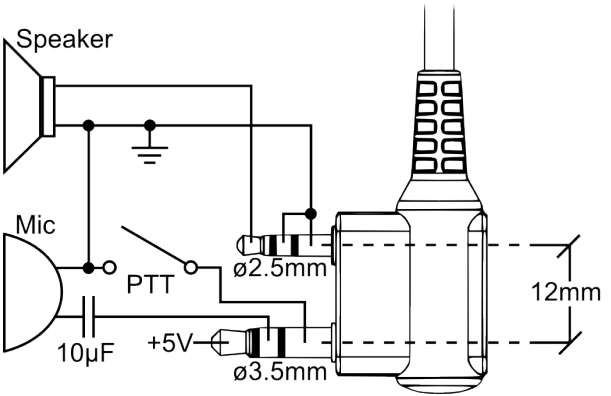
When listening to broadcast FM, the EXIT key switches between 65-75 MHz and 76-108 MHz bands.

For a more in-depth explanation on how to work the menu see Chapter 5, *Working the menu system*.

Accessory jack

The accessory jack on the BTECH GMRS-V1 is a Kenwood compatible two (2)-pin design.

Figure 2.4. Typical 2 pin Kenwood headset configuration.



- *To attach accessories such as headsets, speaker-mics or programming cables, align the connectors and push in fully.*
- *The fit isn't always perfect on cheap or clone cables and connectors and may require a bit of force to wiggle them in completely.*
- *Make sure the radio is off before attaching any accessories.*

Chapter 3. - Basic Use

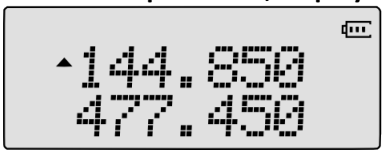
Power and volume

Before we turn the power on, make sure you have attached the battery and antenna as described in Chapter 1, *Initial setup*.

Turning the unit on

To turn the unit on, simply rotate the volume/power knob clockwise until you hear a "click". If your radio powers on correctly there should be an audible double beep after about one second and the display will show a message or flash the LCD depending on settings for about one second (see “38 PONMSG - Power On Message” in Appendix B, Menu definitions). Then it will display a frequency or channel. If the Voice prompt is enabled, the voice will announce "frequency mode" or "channel mode".

Figure 3.1. First power-on, display



You can get additional information about your radio by holding down miscellaneous keys as you turn it on.

Turning the unit off

Turn the volume/power knob counter-clockwise until you hear a "click". The unit is now off.

Adjusting the volume

To turn up the volume, turn the volume/power knob clockwise.
To turn the volume down, turn the volume/power knob counter-clockwise. Be careful not to turn it too far, as you may inadvertently turn your radio off.

By using the monitor function, enabled from the Side key [M]; you can more easily adjust your volume by adjusting it to the un-squelched static.

Making a call

Press and hold the PTT button on the side of the radio body to transmit (upwards for CHANNEL A; downwards for CHANNEL B). While transmitting, speak approximately 3-5cm from the microphone. When you release the PTT your transceiver will go back to receive mode.

Channel selection

There are two modes of operation: Frequency Scan Only (VFO) mode, and Channel / Memory (MR) mode.

For normal use, Channel (MR) mode is going to be a whole lot more practical than Frequency (VFO) mode. However, Frequency (VFO) mode is very handy for experimentation on scanning or receive-only channels. Frequency (VFO) mode is also used for programming scanner channels into memory. For details on how to program your transceiver see Chapter 11, *Programming*.

Ultimately which mode you end up using will depend entirely on your needs.

Frequency Scan Only (VFO) mode

You can only listen and receive while in VFO mode.

In Frequency (VFO) mode you can navigate up and down the band by using the ▲ and ▼ keys. Each press will increment or decrement your frequency according to the frequency step you've set your transceiver to. For details on how to set the frequency step on your transceiver see Chapter 5, *Working the menu system* and the section called "1 STEP - Frequency Step" in Appendix B, *Menu definitions*.

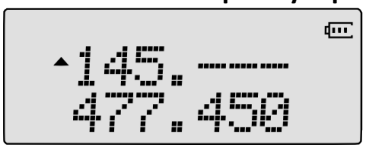
You can also input frequencies directly on your numeric keypad with kilohertz accuracy. However, the radio will floor to the nearest frequency that corresponds to your frequency step, in other words, when you input frequencies with greater than 1kHz resolution (such as 145.6875 MHz in the example below), always round your input up.

The following example assumes the use of a 12.5kHz frequency step.

Example 3.1. Entering the frequency 145.6875 MHz

1. Turn the radio OFF, then Press and Hold the MENU button while powering ON to switch to Frequency (VFO) mode
2. Enter 1STEP 4VOX 5WN on the numeric keypad, it should look something like this:

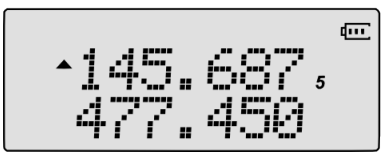
Figure 3.2. Half-entered frequency input.



3. Now, for the final four digits. Note that you can only enter three decimals on the keypad, if you type 687 it wont work. So how do you get the fourth and final digit 5 in there? By rounding 145.6875 up to 145.6880 MHz, an alternative is entering 145.675, and then pressing the ▲ key once to move it up to 145.6875.

   Enter 6ABR 8BEEP 8BEEP on the numeric keypad, if all went well the display should look something like this:

Figure 3.3. Successful frequency input



However, it is legal in most jurisdictions to listen. Contact your local regulatory body for further information on what laws, rules and regulations apply to your area.

Channel (MR) mode

The use of Channel (MR) mode is the main mode of the GMRS-V1. Here you will have access to

the preprogrammed GMRS channels, as well as modifying the privacy tones (CTCSS and DCS) and power levels of the channels. To find out more on how to program additional scanner channels see Chapter 11, *Programming*.

If you have channels programmed with Transmit power set to Low, you can use the #↵● key to switch over to high power if you're having trouble getting through.

Chapter 4. - GMRS Information and FCC Declaration

GMRS Repeaters

The channels that are labeled "REPT" run through repeaters that are set up for GMRS usage. Use these channels if you have permission from those that run your local repeater for GMRS channels.

FCC NOTICE AND DECLARATION

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation

The scanning receiver in this equipment is incapable of tuning, or readily altered, by the user to operate within the frequency bands allocated to the Domestic public Cellular Telecommunications Service in Part 22

FCC LICENSE REQUIRED FOR GMRS OPERATION

The GMRS-V1 operates on GMRS (General Mobile Radio Service) frequencies, which require an FCC (Federal Communications Commission) license. You must be licensed prior to transmitting on all channels, which comprise of GMRS channels. Serious penalties could result for unlicensed use of GMRS channels, in violation of FCC rules, as stipulated in the Communications Act's Sections 501 and 502 (amended).

You will be issued a call sign by the FCC, which should be used for station identification when operating the radio on GMRS channels. You should also cooperate by engaging in permissible transmissions only, avoiding channel interference with other GMRS users, and being prudent with the length of their transmission time.

To obtain a license or ask questions about the license application, contact the FCC at 1-888-CALL FCC or go to the FCC's website: http://www.fcc.gov and request form 605.

GMRS Frequency Chart, Channel Guide

Channel	Frequency (MHz)	Channel	Frequency (MHz)
GMRS01	462.5500	GMRS13	462.7000
GMRS02	462.5625	GMRS14	462.7125
GMRS03	462.5750	GMRS15	462.7250
GMRS04	462.5875	GMRS16	467.5500
GMRS05	462.6000	GMRS17	467.5750
GMRS06	462.6125	GMRS18	467.6000
GMRS07	462.6250	**GMRS19**	467.6250
GMRS08	462.6375	GMRS20	467.6500
GMRS09	462.6500	GMRS21	467.6750
GMRS10	462.6625	GMRS22	467.7000
GMRS11	462.6750	GMRS23	467.7250
GMRS12	462.6875	/	/

Part II. Advanced topics

Part two covers the more advanced topics, such as customization and programming via computer link.

Chapter 5. - Working the menu system

For a complete reference on available menu items and parameters, see Appendix B, Menu definitions.

You can modify the follow information on the GMRS channels on the fly to suit your current needs: TXP (Power), CTCSS, DCS, Scan Add

Basic use

Procedure 5.1. Using the menu with arrow keys

1. Press the MENU key to enter the menu.
2. Use the ▲ and ▼ keys to navigate between menu items.
3. Once you find the desired menu item, press MENU again to select that menu item.
4. Use the ▲ and ▼ keys to select the desired parameter.
5. When you've selected the parameter you want to set for a given menu item;
    a. To confirm your selection, press MENU and it will save your setting and bring you back to the main menu.

Using Short-cuts

As shown in Appendix B, Menu Definitions, each menu item has an associated numerical value. These can be used for direct access to a menu item.

The menu is also organized in such a way that the ten most common functions are on top, and as can be seen in Figure 2.3, “BTECH GMRS-V1, keypad”, these are also printed on the keypad so you don't have to remember them all.

The parameters also have a number associated with them, see Appendix B, *Menu definitions* for details.

Procedure 5.2. Using the menu with short-cuts

1. Press the MENU key to enter the menu.
2. Use the numerical keypad to enter the number of the menu item.
3. To enter the menu item, press the MENU key.
4. For entering the desired parameter you have two options:
    a. Use the arrow keys as we did in the previous section; or
    b. Use the numerical keypad to enter the numerical short-cut code.
5. And just as in the previous section;
    a. To confirm your selection, press MENU and it will save your setting and bring you back to the main menu.
6. All further examples and procedures in this manual will use the numerical menu short-cuts.

Chapter 6. - Scanning

The BTECH GMRS-V1 features a built in scanner for the VHF and UHF bands. When in Frequency Scanning (VFO) mode it will scan in steps according to your set frequency step. In Channel (MR) mode it will scan your channels, at approximately three frequencies per second.

Dual Watch is inhibited while scanning

To enable the scanner, press and hold the *SCAN key for about two seconds. Press any key to exit scanning mode.

Scanning modes

The scanner is configurable to one of three ways of operation: Time, carrier or search, each of which is explained in further details in their respective section below.

Procedure 6.1. Setting scanner mode

1. Press the MENU key to enter the menu.
2. Enter 1STEP 8BEEP on your numeric keypad to come to scanner mode.
3. Press the MENU key to select.
4. Use the ▲ and ▼ keys to select scanning mode.

5. Press the MENU key to confirm and save.
6. Press the EXIT key to exit the menu.

Time operation

In Time Operation (TO) mode, the scanner stops when it detects a signal, and after a factory pre-set time out, it resumes scanning.

Carrier operation

In Carrier Operation (CO) mode, the scanner stops when it detects a signal, and after a factory preset time with no signal it resumes scanning.

Search operation

In Search Operation (SE) mode, the scanner stops when it detects a signal.
To resume scanning you must press and hold the *SCAN key again.

SKIP Scanning Channels

You can configure channels to be added or removed from the scanning list on the fly.

Procedure 6.2. Setting scanner channels

1. Press the MENU key to enter the menu.
2. Enter 4VOX 1STEP on your numeric keypad to come to scanning add mode.

3. Press the MENU key to select.
4. Use the ▲ and ▼ keys to select if the channel will be added or removed from the scanning list. The change will apply to the current channel selected
5. Press the MENU key to confirm and save.
6. Press the EXIT key to exit the menu.

Channels that are in the scanning be indicated on the LCD display. Under the Memory Channel number a small icon box will appear if it is in the scanning list. No icon under the memory channel will be present if the channel is skipped during scanning.

Tone Scanning

Scanning for CTCSS and DCS Tones/Codes

Scanning for a CTCSS tone or DCS code can be done while Frequency Mode (VFO) or Channel Mode (MR) is selected. Only when VFO mode is selected, can the detected tone/code be saved to menu 11/10.

CTCSS tone and DCS code scanning mode can be accessed with or without a signal being present. The scanning process itself only occurs while a signal is being received.

Not all repeaters requiring a CTCSS tone or DCS code for access will transmit one back. In

that case, the transmitter of a station that can access the repeater would need to be scanned. In other words: this would be done by listening to stations on the repeater's input frequency.

Scanning for CTCSS Tone

1. Press the MENU key to enter the menu.
2. Enter 1STEP 1STEP on your numeric keypad to come to Menu 11: R-CTCS
3. Press the MENU key to select. **Insure you have a tone activated (and it is not off)**
4. Press the *SCAN to begin CTCSS scanning

A flashing "CT" will be in the left status display to indicate the radio is in CTCSS scanning mode. In this mode, whenever the radio is receiving an RF signal on the selected MR channel or VFO frequency, the lower display will cycle through the CTCSS tones as they are being tested. Once the frequency of the received CTCSS tone is determined, the "CT" indicator will stop flashing.

Press the MENU key to save the scanned tone into memory (VFO Mode Only) then press the EXIT key to exit the menu.

Don't forget to set VFO menu 11 back to OFF when the CTCSS tone is no longer required.

Scanning for a DCS tone

1. Press the MENU key to enter the menu.

2. Enter 1STEP 0SQL on your numeric keypad to come to Menu 10: R-DCS
3. Press the MENU key to select. **Insure you have a tone activated (and it is not off)**
4. Press the *SCAN to begin DCS scanning

A flashing "DCS" will be in the left status display to indicate the radio is in DCS scanning mode. In this mode, whenever the radio is receiving an RF signal on the selected MR channel or VFO frequency, the lower display will cycle through the DCS codes as they are being tested. Once the bits of the received DCS code are determined, the "DCS" indicator will stop flashing.

Press the MENU key to save the scanned tone into memory (VFO Mode Only) then press the EXIT key to exit the menu.

Don't forget to set VFO menu 10 back to OFF when the DCS tone is no longer required.

Chapter 7. - Dual Watch

In certain situations, the ability to monitor two channels at once can be a valuable asset. The BTECH GMRS-V1 features Dual Watch functionality (single receiver) with the ability to lock the transmit frequency to one of the two channels it monitors.

Procedure 7.1. With Dual Push-to-Talk Enabled (Default)

1. The Dual Push-to-Talk Switch is a Rocker Switch with upper and lower buttons. You can use Menu “42” (See Appendix B) to adjust audible alerts for Received Transmissions.
2. To Transmit on the Upper Frequency (VFO A) – Press upwards on the Dual PTT Button
3. To Transmit on the Lower Frequency (VFO B) – Press downwards on the Dual PTT Button

Procedure 7.2. With Single Push-to-Talk Enabled

1. Select the option to synchronize the push-to-talk button, than upload the new settings to the radio via software (or see Menu 33 - See Chapter 9 “Single or Dual PTT”)
2. Press the EXIT key to select between the upper (VFO A) or lower (VFO B) frequency.
3. An arrow will display (▲ ▼) next to the frequency that you have selected as your default transmitting channel.

4. Press the Push-to-Talk (either direction) to transmit on the selected frequency

Chapter 8. - DTMF

DTMF is an in-band signaling method using dual sinusoidal signals for any given code. Originally developed for telephony systems, it has proved a very versatile tool in many other areas.

In two-way radio systems, DTMF is most commonly used for automation systems and remote control. A common example would be in amateur radio repeaters where some repeaters are activated by sending out a DTMF sequence (usually a simple single-digit sequence).

Table 8.1. DTMF frequencies and corresponding codes

	1209 Hz	1336 Hz	1477 Hz	1633 Hz
697 Hz	1	2	3	A - MENU
770 Hz	4	5	6	B - ▲
852 Hz	7	8	9	C - ▼
941 Hz	*	0	#	D - EXIT

The BTECH GMRS-V1 has a full implementation of DTMF, including the A, B, C and D codes.

The numerical keys, as well as the *SCAN, and #, keys correspond to the matching DTMF codes as

you would expect. The A, B, C and D codes are located in the MENU, ▲, ▼ and EXIT keys respectively (†).

To send DTMF codes, press the key(s) corresponding to the message you want to send while holding down the PTT key.

If you have the keypad lock enabled on your radio, you can still send DTMF tones the regular way without having to unlock your radio.

Chapter 9. - Selective calling

Some times when you're working with larger groups of people using the same channel, things can get very crowded, very fast. To minimize this problem, several methods of blocking out unwanted transmissions on your frequency have developed. In general, there are two forms of selective calling in two-way radio systems: Group calling, and individual calling.

Group calling, as the name suggest, is a one-to-many form of communication. Every radio in your working group is configured the same way and any radio will make contact with every other radio in the group.

Individual calling, some times also known as paging, is a one-to-one form of communication. Every radio is programmed with a unique ID code. And only by sending out a matching code can you get that radio to open up to your transmissions.

The BTECH GMRS-V1 features three different ways of group calling:

- *CTCSS*
- *DCS*
- Tone-burst

The BTECH GMRS-V1 does not feature any form of individual calling.

Using these features does NOT mean that others won't be able to listen in on your transmissions.

They only provide a method to filter out unwanted incoming transmissions. Any communications made while using these features will still be heard by anyone not employing filtering options of their own.

You can change the CTCSS or DCS settings while in memory (MR) mode.

CTCSS and Tone-burst are also popular to open up repeaters.

CTCSS

CTCSS is set with menus 11 R-CTCS and 13 T-CTCS.

For a complete list of available CTCSS codes and corresponding sub-tone frequencies, see Table C.2, “CTCSS Frequencies” in Appendix C, *Technical specifications*.

Procedure 9.1. CTCSS setup how-to

1. Press the MENU key to enter the menu.
2. Enter 1STEP 1STEP on the numeric keypad to get to receiver CTCSS.
3. Press MENU to select.
4. Enter desired CTCSS sub-tone frequency in hertz on the numeric keypad.
5. Press MENU to confirm and save.
6. Enter 1STEP 3SAVE on the numeric keypad to go to transmitter CTCSS.
7. Press MENU to select.
8. Enter desired CTCSS sub-tone frequency in hertz on the numeric keypad. Make sure it's the same frequency as that you entered for receiver CTCSS.
9. Press MENU to confirm and save.
10. Press EXIT to exit the menu system.

To turn CTCSS off, follow the same procedure but set it to off with the 0SQL key instead of selecting a CTCSS sub-tone frequency.

For more information see the section called “11 R-CTCS - Receiver CTCSS” and the section called “13 T-CTCS - Transmitter CTCSS” in Appendix B, Menu definitions.

DCS

DCS is set with menus 10 R-DCSand 12 T-DCS.

For a complete list of available DCS codes, see Table C.1, “DCS Codes” in Appendix C, *Technical specifications*.

Procedure 9.2. DCS setup how-to

1. Press the MENU key to enter the menu.
2. Enter 1STEP 0SQL on the numeric keypad to get to receiver DCS.
3. Press MENU to select.
4. Enter desired DCS code on the numeric keypad.
5. Press MENU to confirm and save.
6. Enter 1STEP 2TXP on the numeric keypad to go to transmitter DCS.
7. Press MENU to select.
8. Enter desired DCS code on the numeric keypad. Make sure it's the same code as that you entered for receiver DCS.
9. Press MENU to confirm and save.
10. Press EXIT to exit the menu system.

To turn DCS off, follow the same procedure but set it to off with the 0SQL key instead of

selecting a DCS code.

For more information see the section called “10 R-DCS - Receiver DCS” and the section called “12 T-DCS - Transmitter DCS” in Appendix B, *Menu definitions*.

Tone-burst

To send out a tone-burst (selectable by MENU 40); press the [F] key while holding down the PTT. No further configuration required using this feature.

You can select from 1000, 1450, 1750, or 2100Hz Tone Burst Options. These options are found on the Menu 40.

Procedure 9.3. Tone Burst setup how-to

1. Press the MENU key to enter the menu.
2. Enter 4 VOX 0 SQL on the numeric keypad to get to receiver DCS.
3. Press MENU to select.
4. Enter desired Tone Burst Option on the numeric keypad.
    a. 1000 HZ[0] | 1450 HZ[1] | 1750 HZ[2] | 2100 HZ[3]
5. Press MENU to confirm and save.
6. Press EXIT to exit the menu system.

If you have the keypad lock enabled on your radio, you can still send a tone burst the regular way without having to unlock your radio.

Chapter 10. - Customization

The BTECH GMRS-V1 allows for customization of both the power-on message (via computer link only), and the backlight color during the three states of the transceiver (Transmit, Receive and Standby).

Display

The LCD on the BTECH GMRS-V1 is backlit by multi-color LEDs, the color of which can be pre-set from the menu system into a variety of colors.

To change the colors, follow these steps:

Procedure 10.1. Changing backlight color

1. Press the MENU key to enter the menu.
2. Enter one of the following on your numeric keypad:
    a. 2TXP 9TOT to change the standby color.
    b. 3SAVE 0SQL to change the receive color.
    c. 3SAVE 1STEP to change the transmit color.

3. Press MENU key to select.
4. Use the ▲ and ▼ keys to pick the desired color.

5. Press MENU to confirm and save.
6. Press EXIT to exit the menu.

To change the time the backlight stays on for your LCD, follow these steps:

Procedure 10.2. Setting backlight time-out

1. Press the MENU key to enter the menu.
2. Enter 6ABR on your numeric keypad to come to backlight time out.
3. Press MENU key to select.
4. Use the ▲ and ▼ keys to pick the desired time-out for the display.
5. Press MENU to confirm and save.
6. Press EXIT to exit the menu.

For details see the section called “29 WT-LED - Display backlight color, Standby” and onward in Appendix B, *Menu definitions*.

Single or Dual PTT

Dual PTT Synchronization

The GMRS-V1 comes with the Dual PTT key enabled, but the GMRS-V1 Menu has a Menu option that allows locking the Dual PTT Button to simulate a Single PTT and override the Dual PTT feature. By Pressing the EXIT/AB button, you can still switch the selected upper/lower display.

Procedure 10.3. Setting the Push-to-Talk Button Preference

1. Press the MENU key to enter the menu.
2. Enter 3SAVE 3SAVE on your numeric keypad to come to the PTT configuration option.
3. Press MENU key to select.
4. Use the ▲ and ▼ keys to pick the PTT configuration
5. Press MENU to confirm and save.
6. Press EXIT to exit the menu.

Display Sync

Display Synchronization

The GMRS-V1 allows the upper and lower display to be synched so that you can see two simultaneous items on one channel (Frequency Value and Name) by scrolling through the channels the displays will remain synched together when this is activated.

Procedure 10.4. Setting the Display Synchronization Preference

1. Press the MENU key to enter the menu.
2. Enter 2TXP 4VOX on your numeric keypad to come to the Sync configuration option.
3. Press MENU key to select.
4. Use the ▲ and ▼ keys to enable or disable the display sync
5. Press MENU to confirm and save.
6. Press EXIT to exit the menu.

7. Use Menu 2TXP 1STEP and 2TXP 2TXP to configure Display A and Display B *(See Appendix B)*

Power-on message

The power-on message can only be set via computer link, see the section called “Computer programming” for details on how to set up a link with your computer.

The following instructions assume that you've already established a link using the BTECH software from a computer running Windows, and that the BTECH software is already installed and running.

Procedure 10.5. Setting the power-on-message

1. Click **other** in the menu bar; a dialogue box titled "Other" should have popped up.
2. In the box titled "Power On Message", there are two text fields representing the two lines on your LCD. Enter the desired text in the fields.
3. Click **Write** to write your changes to the radio.

Make sure that menu item 38 is set to MSG, otherwise your message won’t be displayed. See Chapter 5 Working the menu system for details on how to navigate the menu. Some times it takes the BTECH software more than one try to connect to your radio. If you see a dialogue box popping up stating that you have a connection failure, close the dialogue box and click read or write again.

Chapter 11. – Programming Scanning Channels

The BTECH GMRS-V1 features 105 additional (128 total) memory channels that each can hold: Receive frequencies, group signaling information, bandwidth, and a six character alphanumeric identifier or channel name [1] .

Manual programming

To create a new scanning channel, start by switching your radio to Frequency (VFO) mode by turning the radio OFF, then Press and Hold (MENU) button while powering ON.

When in Frequency (VFO) mode, select your desired receive frequency using the numerical keypad. After that, use the menu system to configure the finer details of the channel you're wanting to program to memory, such as bandwidth, CTCSS or DCS and more.

For more information on how to use the menu system see Chapter 5, *Working the menu system* and Appendix B, *Menu definitions*. Information regarding how to set up CTCSS and DCS can be found in Chapter 8, *Selective calling*.

Adding Scanning Channels

The following steps assume that you're in Frequency (VFO) mode and that you've entered the desired frequency to store to memory.

1. Press the MENU key to enter the menu.
2. Enter 2TXP 7TDR on the numerical keypad to get to MEM-CH.
3. Press MENU to select.
4. Use the ▲ and ▼ keys to select an empty memory channel, or enter it directly on the numerical keypad.
5. Press the MENU key to confirm.
6. Press the EXIT key to exit the menu.

Switch your radio to Memory (MR) mode by turning the radio OFF, and then Press and Hold MENU button while powering on to test your new channel. If you would like to name your channel you will need to do that from a computer. More on that in the section called “Computer programming”.

Computer programming

The Radio kit does not include a programming cable. To attain a PC cable please visit

https://BAOFENGTECH.com/pccable

Download programming software at https://BAOFENGTECH.com and find helpful guides at http://miklor.com for more information on using the software

Appendix A. - Troubleshooting

Symptom	Possible Cause	Solution
The radio doesn't start.	The battery is too low. The battery isn't correctly installed.	Change or recharge the battery. Remove the battery and reinstall it.
The battery dies quickly	The battery is dead. The battery isn't fully charged.	Purchase a new battery. Recharge the battery.
The LED indicates reception, but the speaker is silent.	Volume is too low. CTCSS or DCS enabled	Turn up the volume. Change your CTCSS or DCS to match those you're trying to communicate with. Turn CTCSS or DCS off.
Others can't hear my transmission.	Their CTCSS or DCS settings don’t match yours. You're too far apart.	Change your CTCSS or DCS settings to match your peers. Move in closer.
The radio transmits without touching the PTT.	The VOX is enabled. VOX sensitivity is too high.	Turn VOX off. Turn down VOX sensitivity.

Appendix B. - Menu definitions

See Chapter 5, *Working the menu system* for more info about using the menu-system.

Menu	Name - Full Name	Settings [Keypad Shortcut]	Description
0	SQL - Squelch Level	[0 - 9] Setting the squelch to 0 will open up the squelch entirely.	Mutes the speaker of the transceiver in the absence of a strong signal. Squelch is either OFF or one of 9 levels. The higher the level, the stronger the signal must be to un-mute the speaker.
1	STEP - Frequency Step	2.5K[0] | 5.0K[1] | 6.25K[2] | 10.0K[3] | 12.5K[4] | 20.0K[5] | 25.0K[6] | 50.0K[7]	Selects the amount of frequency change in VFO/Frequency mode when scanning or pressing the ▲ or ▼ keys.
2	TXP - Transmit Power	HIGH [0] | | LOW [1]	Selects between HIGH and LOW transmitter power when in VFO/Frequency mode. Use the minimum transmitter power necessary to carry out the desired communications.

3	SAVE - Battery Save	OFF [0] | 1 | 2 | 3 | 4	Selects the ratio of sleep cycles to awake cycles (1:1, 2:1, 3:1, 4:1). The higher the number the longer the battery lasts. When enabled, a word or two might be missed when the frequency being monitored becomes active.
4	VOX - Voice Operated TX	OFF [0] | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10	When enabled it is not necessary to push the [PTT] button on the transceiver. Adjust the gain level to an appropriate sensitivity to allow smooth transmission.
5	WN - Wideband / Narrowband	WIDE [0] | NARR [1]	Wideband (25 kHz bandwidth) or narrowband (12.5 kHz bandwidth).
6	ABR - Display Illumination Time	OFF [0] | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10	Time-out for the LCD backlight. (In seconds)
7	TDR - Dual Watch, Dual Reception	OFF [0] | ON [1]	Monitor [A] and [B] at the same time. The display with the most recent activity ([A] or [B]) becomes the selected display. When TDR is set to ON, an 'S' is indicated in the status display --- The selected display can be forced back to [A] or [B] using menu 34 --- TDR should be set to OFF when manually programming --- TDR is inhibited while scanning is in operation

8	BEEP - Keypad Beep	OFF [0] | ON [1]	Allows audible confirmation of a key press
9	TOT - Transmission Time-out-Timer	in 15 second steps 15, 30, 45, … 600 The red TX LED begins to flash 10 seconds before the timeout limit is reached	This feature provides a safety switch, which limits transmission time to a programmed value. This will promote battery conservation by not allowing you to make excessively long transmissions, and in the event of a stuck PTT switch (perhaps if the radio or a Speaker/Mic is wedged between car seats) it can prevent interference to other users as well as battery depletion.
10	R-DCS - Receiver DCS	OFF [0] | see DCS Table in Appendix C	Mutes the speaker of the transceiver in the absence of a specific low level digital signal. If the station you are listening to does not transmit this specific signal, you will not hear anything.

11	R-CTCS - Receiver CTCSS	OFF [0] | see CTCSS Table in Appendix C	Mutes the speaker of the transceiver in the absence of a specific and continuous sub- audible signal. If the station you are listening to does not transmit this specific and continuous signal, you will not hear anything.
12	T-DCS - Transmitter DCS	OFF [0] | see DCS Table in Appendix C	Transmits a specific low-level digital signal to unlock the squelch of a distant receiver (usually a repeater).
13	T-CTCS - Transmitter CTCSS	OFF [0] | see CTCSS Table in Appendix C	Transmits a specific and continuous sub-audible signal to unlock the squelch of a distant receiver (usually a repeater).
14	VOICE - Voice Prompt	OFF [0] | ENG [1] | CHI [2]	Allows audible voice confirmation of a key press
15	ANI-ID - Automatic Number ID		Displays the ANI code that has been set by software. This menu cannot be used to change it. The ANI-ID is sent when the alarm is activated and menu 32 = CODE

16	DTMFST – DTMF-Side Tone of transmit code	OFF [0]: No DTMF Side Tones are heard DT-ST [1]: Side Tones are heard only from manually keyed DTMF codes ANI-ST [2]: Side Tones are heard only from automatically keyed DTMF codes DT+ANI [3]: All DTMF Side Tones are heard	Determines when DTMF Side Tones can be heard from the transceiver speaker.
17	S-CODE - Signal Code	1[0] | 2[1] | 3[2] | 4[3] | 5[4] | 6[5] | 7[6] | 8[9] | 9[8] | 10[9] | 11[10] | 12[11] | 13[12] | 14[13] | 15[14]	Selects 1 of 15 DTMF codes. The DTMF codes are programmed with software and are up to 5 digits each.
18	SC-REV - Scanner Resume Method	TO [0]: Time Operation - scanning will resume after a fixed time has passed CO [1]: Carrier Operation - scanning will resume after the signal disappears SE [2]: Search Operation - scanning will not resume	Scanning Resume Method

19	PTT-ID - When to send the PTT-ID	OFF [0]: No ID is sent BOT [1]: The selected S-CODE is sent at the beginning EOT [2]: The selected S-CODE is sent at the ending BOTH [3]: The selected S-CODE is sent at the beginning and ending	When to Send PTT-ID Codes are sent during either the beginning or ending of a transmission.
20	PTT-LT - Signal code sending delay	0 - 50ms	PTT-ID Delay (milliseconds)
21	MDF-A - Channel Mode A Display	CH [0]: Displays the channel number NAME [1]: Displays the channel name. FREQ [2]: Displays programmed Frequency	[A] MR/Channel Mode Display Format Note: Names must be entered using software.

22	MDF-B - Channel Mode B Display	CH [0]: Displays the channel number NAME [1]: Displays the channel name. FREQ [2]: Displays programmed Frequency	[B] MR/Channel Mode Display Format Note: Names must be entered using software.
23	BCL - Busy Channel Lock-out	OFF [0] | ON [1]	Disables the [PTT] button on a channel that is already in use. The transceiver will sound a beep tone and will not transmit if the [PTT] button is pressed when a channel is already in use.
24	SYNC – Display Sync	OFF [0] | ON [1]	Display A and B are synced. This allows the upper display to show channel Name while the lower shows the Frequency. (Use with MENU 21 and 22)
25	SFT-D - Frequency Shift Direction	OFF [0]: TX = RX (simplex) + [1]: TX will be shifted higher in frequency than RX - [2]: TX will be shifted lower in frequency than RX	UNUSED SETTING in GMRS-V1 Enables access of repeaters in VFO/Frequency Mode

26	OFFSET - Frequency shift amount	00.000 - 69.990 in 10 kHz steps	UNUSED SETTING in GMRS-V1 Specifies the difference between the TX and RX frequencies
27	MEM-CH - Store a Memory Channel	023 - 127	This menu is used to either create new or modify existing channels (0 through 127) so that they can be accessed from MR/Channel Mode.
28	DEL-CH - Delete a memory channel	023 - 127	This menu is used to delete the programmed information from the specified channel (0 through 127) so that it can either be programmed again or be left empty.
29	WT-LED - Display backlight color, Standby	OFF [0] | BLUE [1] | ORANGE [2] | PURPLE [3]	Default: PURPLE
30	RX-LED - Display backlight color-Receive	OFF [0] | BLUE [1] | ORANGE [2] | PURPLE [3]	Default: BLUE
31	TX-LED - Display backlight color-Transmit	OFF [0] | BLUE [1] | ORANGE [2] | PURPLE [3]	Default: ORANGE

32	AL-MOD - Alarm Mode	SITE: Sounds alarm through your radio speaker only TONE: Transmits a cycling tone over-the-air CODE: Transmits 119 followed by the ANI code over-the-air OFF: Alarm is Disabled	SITE: Sounds alarm through your radio speaker only TONE: Transmits a cycling tone over-the-air CODE: Transmits '119' (911 in reverse?) followed by the ANI code over-the-air OFF: Disabled
33	BAND - Band Selection	VHF [0] | UHF [1]	UNUSED SETTING in GMRS-V1 In VFO/Frequency mode, sets [A] or [B] to the VHF or UHF band.
34	TDR-AB - Transmit selection while in Dual Watch mode	OFF [0] | A [1] | B [2]	UNUSED SETTING in GMRS-V1 When enabled, priority is returned to selected display once the signal in the other display disappears.
35	STE - Squelch Tail Elimination	OFF [0] | ON [1]	This function is used eliminate squelch tail noise between BTECH handhelds that are communicating directly (no repeater). Reception of a 55 Hz or 134.4 Hz mutes the audio long enough to prevent hearing any squelch tail noise.

36	RP-STE - Squelch Tail Elimination	OFF [0] | 1 - 10	This function is used eliminate squelch tail noise when communicating through a repeater.
37	RPT-RL - Delay the squelch tail of repeater	OFF [0] | 1 - 10	Delay the Tail Tone of Repeater (X100 milliseconds)
38	PONMSG - Power On Message	FULL [0]: Performs an LCD screen test at power-on MSG [1]: Displays a 2-line power-on message	Controls the behavior of the display when the transceiver is turned on.
39	ROGER - Roger Beep	OFF [0] | ON [1]	Sends an end-of-transmission tone to indicate to other stations that the transmission has ended.
40	R-TONE – Repeater Tone	1000 HZ [0] | 1450 HZ [1] | 1750 HZ [2] |2100 HZ [3]	The R-TONE frequency is transmitted by pressing the [F] side key while the [PTT] button is also pressed. A common tone burst frequency used by many amateur radio systems in Europe is 1,750 Hz

41	SC-ADD – Scan Add	OFF [0] | ON [1]	- ON Adds the current channel to the scan list - OFF Removes the current channel from the scan list
42	A/B-BP	OFF [0] / A / B	Tone at End of Reception - Receiver tone prior to squelch closing. - An audible indication of which display was in use.
43	RESET - Restore defaults	VFO [0] | ALL [1]	Resets the radio to factory defaults

Appendix C. - Technical specifications

General

General specifications

Specification	Value
Frequency Range (MHz)	65-108 (Rx only for FM radio) 136-174 (Rx) 400-520 (Rx) GMRS Channels (Rx/Tx) (Channels 000-022)
Memory channels	128
Frequency stability	2.5ppm
Frequency step (kHz)	2.5K/5.0K/6.25K/10.0K/12.5K/20.0K/25.0K/50.0K
Antenna impedance	50 Ohm
Operating temperature	-20°C to +60°C
Supply voltage	7.4
Consumption	≤ 75mA (standby) 380mA (reception) ≤ 1.4A (transmission)
Mode of operation	Simplex or semi-duplex
Duty cycle	03 / 03 / 54 min. (Rx / Tx / Standby)

Dimensions (mm)	58 x 110 x 32
Weight (g)	214

Transmitter

Transmitter specifications

Specification	Value
RF power (W)	5 (UHF high) 1 (UHF low)
Type of modulation	FM
Emission class	11K#F3E (narrowband)
Maximum deviation (kHz)	≤ ± 2.5 (narrowband)
Spurious emissions (dB)	<-60dB

Receiver

Receiver specifications

Specification	Value
Receiver sensitivity	0.2μV (at 12dB *SINAD*)
Intermodulation	60dB
Audio Output	1000mW
Adjacent channel selectivity	65/60dB

DCS table

Table C.1. DCS Codes

Number	Code	Number	Code	Number	Code	Number	Code
001	D023N	**002**	D025N	**003**	D026N	**004**	D031N
005	D032N	**006**	D036N	**007**	D043N	**008**	D047N
009	D051N	**010**	D053N	**011**	D054N	**012**	D065N
013	D071N	**014**	D072N	**015**	D073N	**016**	D074N
017	D114N	**018**	D115N	**019**	D116N	**020**	D122N
021	D125N	**022**	D131N	**023**	D132N	**024**	D134N
025	D143N	**026**	D145N	**027**	D152N	**028**	D155N
029	D156N	**030**	D162N	**031**	D165N	**032**	D172N

Number	Code	Number	Code	Number	Code	Number	Code
033	D174N	034	D205N	035	D212N	036	D223N
037	D225N	038	D226N	039	D243N	040	D244N
041	D245N	042	D246N	043	D251N	044	D252N
045	D255N	046	D261N	047	D263N	048	D265N
049	D266N	050	D271N	051	D274N	052	D306N
053	D311N	054	D315N	055	D325N	056	D331N
057	D332N	058	D343N	059	D346N	060	D351N
061	D356N	062	D364N	063	D365N	064	D371N
065	D411N	066	D412N	067	D413N	068	D423N
069	D431N	070	D432N	071	D445N	072	D446N
073	D452N	074	D454N	075	D455N	076	D462N
077	D464N	078	D465N	079	D466N	080	D503N
081	D506N	082	D516N	083	D523N	084	D526N
085	D532N	086	D546N	087	D565N	088	D606N
089	D612N	090	D624N	091	D627N	092	D631N
091	D627N	092	D631N	093	D632N	094	D645N
094	D645N	095	D654N	096	D662N	094	D645N
097	D664N	098	D703N	099	D718N	100	D723N
101	D731N	102	D732N	103	D734N	104	D743N
105	D754N	106	D023I	107	D025I	108	D026I

109	D031I	**110**	D032I	**111**	D036I	**112**	D043I
113	D047I	**114**	D051I	**115**	D053I	**116**	D054I
117	D065I	**118**	D071I	**119**	D072I	**120**	D073I
121	D074I	**122**	D114I	**123**	D115I	**124**	D116I
125	D122I	**126**	D125I	**127**	D131I	**128**	D132I
129	D134I	**130**	D143I	**131**	D145I	**132**	D152I
133	D155I	**134**	D156I	**135**	D162I	**136**	D165I
***137**	D172I	D174I	D205I	D212I	D223I	D225I	D226I
D243I	D244I	D245I	D246I	D251I	D252I	D255I	D261I
D263I	D266I	D271I	D274I	D306I	D311I	D315I	D325I
D331I	D332I	D343I	D346I	D351I	D356I	D364I	D365I
D371I	D411I	D412I	D413I	D423I	D431I	D432I	D445I
D446I	D452I	D454I	D455I	D462I	D464I	D465I	D466I
D503I	D506I	D516I	D523I	D526I	D532I	D546I	D565I
D606I	D612I	D624I	D627I	D631I	D632I	D645I	D654I
D662I	D664I	D703I	D712I	D723I	D731I	D732I	D734I
D743I	D754I						

**After DCS Number Shortcut 137, in order to navigate through the subsequent codes manually key in shortcut 137 and then use the arrow keys to navigate to the DCS tone required*

CTCSS table

Table C.2. CTCSS Frequencies

Number	Frequency	Number	Frequency	Number	Frequency	Number	Frequency
01	67.0	02	69.3	03	71.9	04	74.4
05	77.0	06	79.7	07	82.5	08	85.4
09	88.5	10	91.5	11	94.8	12	97.4
13	100.0	14	103.5	15	107.2	16	110.9
17	114.8	18	118.8	19	123	20	127.3
21	131.8	22	136.5	23	141.3	24	146.2
25	151.4	26	156.7	27	159.8	28	162.2
29	165.5	30	167.9	31	171.3	32	173.8
33	177.8	34	179.9	35	183.5	36	186.2
37	189.9	38	192.8	39	196.6	40	199.5
41	203.5	42	206.5	43	210.7	44	218.1
45	225.7	46	229.1	47	233.6	48	241.8
49	250.3	50	254.1				

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

RF Exposure Compliance and Control Guidelines and Operating Instructions

To control your exposure and ensure compliance with the occupational/controlled environment exposure limits always adhere to the following procedures.

Guidelines:

Do not remove the RF Exposure Label from the device.

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

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

Operating Instructions:

Transmit no more than the rated duty factor of 50% of the time. To transmit (talk), push the Push-To-Talk (PTT) button. To receive calls, release the PTT button. Transmitting 50% of the time, orless, is important because this radio generates measurable RF energy exposure only when transmitting (in terms of measuring for standards compliance). Hold the radio in a vertical position in front of face with the microphone (and the other parts of the radio, including the antenna) at least one inch (2.5 cm) away from the nose. Keeping the radio at the proper distance is important because RF exposures decrease with distance from the antenna. Antenna should be kept away from eyes.

Modification of a scanning receiver to receive transmissions from Cellular Radiotelephone Service frequency bands will be considered to constitute manufacture of such equipment. This includes any individual, individuals, entity or organization that modifies one or more scanners. Any modification to a scanning receiver to receive transmissions from the Cellular Radiotelephone Service frequency bands voids the certification of the scanning receiver, regardless of the date of manufacture of the original unit. In addition, the provisions of FCC §15.23 shall not be interpreted as permitting modification of a scanning receiver to receiver Cellular Radiotelephone Service transmissions.