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
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Part I. Getting started

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

CHAPTER 1 INITIAL SETUP
CHAPTER 2 GETTING TO KNOW YOUR RADIO
CHAPTER 3 BASIC USE
CHAPTER 4 GMRS INFORMATION AND FCC DECLARATION
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:
- 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
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998

To control your exposure and ensure compliance with the general population or uncontrolled 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 power adapter)
- Belt clip
- Wrist-strap
- Dual PTT Earpiece

FIND TUTORIALS, SUPPORT AND MORE

https://plus.google.com/+Baofengtechradio
https://www.youtube.com/c/Baofengtechradio
Available Accessories: [www.baofengtech.com/store](http://www.baofengtech.com/store)

<table>
<thead>
<tr>
<th>accessory</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BL-8 12V Battery Eliminator</td>
<td></td>
</tr>
<tr>
<td>BL-8 AAA Battery Pack</td>
<td></td>
</tr>
<tr>
<td>PC-03 FTDI USB Cable</td>
<td></td>
</tr>
<tr>
<td>QHM-22 IP54 Speaker Mic</td>
<td></td>
</tr>
<tr>
<td>Nagoya NA-701C</td>
<td>GMRS Dual-Band Antenna</td>
</tr>
<tr>
<td>BTECH USB Charger Transformer</td>
<td></td>
</tr>
<tr>
<td>BL-8L</td>
<td>3600mAh Battery</td>
</tr>
</tbody>
</table>

GMRS-V1
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 glows steady. Please remove the radio at that time to avoid over-charging your battery.
Table 1.1. Charger LED codes

<table>
<thead>
<tr>
<th>Red LED</th>
<th>Green LED</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing</td>
<td>Flashing</td>
<td><strong>Standby</strong> (charger empty) or charge complete</td>
</tr>
<tr>
<td>Steady</td>
<td>Off</td>
<td>Charging</td>
</tr>
<tr>
<td>Off</td>
<td>Steady</td>
<td>Charge complete.</td>
</tr>
</tbody>
</table>

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.

**NOAA Weather Channels**

![NOAA Weather Channels](image)

To add your local NOAA Weather channel as 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. Select your desired NOAA frequency (above) using the numerical keypad.
Add a NOAA Channel

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

1. Press the [MENU] key to enter the menu.
2. Enter [2TXP] [TDR] on the numerical keypad to get to MEM-CH.
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.
   a. NOTE: If the station is actively receiving it will not store. To save an active receiving channel – remove the antenna to prevent the channel from receiving and store to memory.
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 NOAA 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”
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

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

GMRS-V1
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 button (for about 2 seconds), the display will show the current voltage level 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 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 33 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 \(\text{SCAN}\), \(\#\), and \(\text{SQL}\) 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 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.

**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 0 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".
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 [STEP] [VOX] [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 won't 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 \[ \text{key} \] once to move it up to 145.6875.

Enter \[ B \text{ABR} \, B \text{8EEP} \, B \text{8EEP} \] on the numeric keypad, if all went well the display should look something like this:

**Figure 3.3. Successful frequency input**

![Figure 3.3. Successful frequency input](image)

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 temporarily switch over to high power if you're having trouble getting through.*
Chapter 4. - GMRS Information and FCC Declaration

THE BTECH GMRS-V1 IS FCC PART 95A CERTIFIED FOR GMRS USAGE
THE GMRS-V1 REQUIRES A GMRS LICENSE TO TRANSMIT

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 your 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.

Or you can apply online direct for a GMRS license (http://wireless.fcc.gov/uls/) – a guide for this can be found at: http://alcornema.com/gmrslisenceinfo.htm
## GMRS Frequency Chart, Channel Guide

### GMRS FREQUENCY CHART

<table>
<thead>
<tr>
<th>CH: Name</th>
<th>Ch. Freq</th>
<th>CH: Name</th>
<th>Ch. Freq</th>
<th>CH: Name</th>
<th>Ch. Freq</th>
<th>CH: Name</th>
<th>Ch. Freq</th>
<th>CH: Name</th>
<th>Ch. Freq</th>
<th>Offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>01: GMRS01</td>
<td>462.56250</td>
<td>08: GMRS08</td>
<td>467.5625</td>
<td>15: GMRS15</td>
<td>462.5500</td>
<td>23: REPT15</td>
<td>462.5500</td>
<td>+5MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>02: GMRS02</td>
<td>462.58750</td>
<td>09: GMRS09</td>
<td>467.5875</td>
<td>16: GMRS16</td>
<td>462.5750</td>
<td>24: REPT16</td>
<td>462.5750</td>
<td>+5MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03: GMRS03</td>
<td>462.61250</td>
<td>10: GMRS10</td>
<td>467.6125</td>
<td>17: GMRS17</td>
<td>462.6000</td>
<td>25: REPT17</td>
<td>462.6000</td>
<td>+5MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>04: GMRS04</td>
<td>462.63750</td>
<td>11: GMRS11</td>
<td>467.6375</td>
<td>18: GMRS18</td>
<td>462.6250</td>
<td>26: REPT18</td>
<td>462.6250</td>
<td>+5MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05: GMRS05</td>
<td>462.66250</td>
<td>12: GMRS12</td>
<td>467.6625</td>
<td>19: GMRS19</td>
<td>462.6500</td>
<td>27: REPT19</td>
<td>462.6500</td>
<td>+5MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06: GMRS06</td>
<td>462.68750</td>
<td>13: GMRS13</td>
<td>467.6875</td>
<td>20: GMRS20</td>
<td>462.6750</td>
<td>28: REPT20</td>
<td>462.6750</td>
<td>+5MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07: GMRS07</td>
<td>462.71250</td>
<td>14: GMRS14</td>
<td>467.7125</td>
<td>21: GMRS21</td>
<td>462.7000</td>
<td>29: REPT21</td>
<td>462.7000</td>
<td>+5MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22: GMRS22</td>
<td>462.7250</td>
<td>23: REPT22</td>
<td>462.7250</td>
<td>+5MHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

CHAPTER 5 SCANNING

CHAPTER 7 DUAL WATCH

CHAPTER 8 DTMF

CHAPTER 9 SELECTIVE CALLING

CHAPTER 10 CUSTOMIZATION

CHAPTER 11 PROGRAMMING SCANNING CHANNELS
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 preset 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.*

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 [1] [STEP] [1] [STEP] 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] key 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 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 [1] [STEP] [0] [SQL] 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` key 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 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 (↑STEP) 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

<table>
<thead>
<tr>
<th>Frequency</th>
<th>1209 Hz</th>
<th>1336 Hz</th>
<th>1477 Hz</th>
<th>1633 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>697 Hz</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>A -</td>
</tr>
<tr>
<td>770 Hz</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>B -</td>
</tr>
<tr>
<td>852 Hz</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>C -</td>
</tr>
<tr>
<td>941 Hz</td>
<td>*</td>
<td>0</td>
<td>#</td>
<td>D -</td>
</tr>
</tbody>
</table>

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 * and # keys, correspond to the matching DTMF codes as

GMRS-V1
you would expect. The A, B, C and D codes are located in the \texttt{MENU}, \texttt{▲}, \texttt{▼} and \texttt{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.

\textit{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 **1STP 1STP** 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 **1STP 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-DCS and 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.
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. [TXP] [TOT] to change the standby color.
   b. [SAVE] [SQL] to change the receive color.
   c. [SAVE] [STEP] to change the transmit color.
4. Use the [▲] and [▼] keys to pick the desired color.
5. Press \texttt{MENU} to confirm and save.
6. Press \texttt{EXIT} to exit the menu.

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

\textbf{Procedure 10.2. Setting backlight time-out}

1. Press the \texttt{MENU} key to enter the menu.
2. Enter \texttt{2TXP} on your numeric keypad to come to backlight time out.
3. Press \texttt{MENU} key to select.
4. Use the \texttt{\textup{\textasciicircum}} and \texttt{\textdown{\textasciicircum}} keys to pick the desired time-out for the display.
5. Press \texttt{MENU} to confirm and save.
6. Press \texttt{EXIT} to exit the menu.

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

\textbf{Single or Dual PTT}

\textbf{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 [SAVE] on your numeric keypad to come to the PTT configuration option.
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 [TXP] on your numeric keypad to come to the Sync configuration option.
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 98 additional (128 total) memory channels that each can hold: Receive frequencies, group signaling information, bandwidth, and a seven character alphanumeric identifier or channel name \(^1\).

GMRS Channels (001-030) are hard loaded and cannot be removed. Settings such as the calling tone can be edited on GMRS channels.

Channels 000, 031-127 can be added or deleted via computer or manual programming as additional listen (receive) only channels.

**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 \(^\text{MENU}\) 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 7DTR** 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
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

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The radio doesn’t start.</td>
<td>The battery is too low.</td>
<td>Change or recharge the battery.</td>
</tr>
<tr>
<td></td>
<td>The battery isn’t correctly installed.</td>
<td>Remove the battery and reinstall it.</td>
</tr>
<tr>
<td>The battery dies quickly</td>
<td>The battery is dead.</td>
<td>Purchase a new battery.</td>
</tr>
<tr>
<td></td>
<td>The battery isn’t fully charged.</td>
<td>Recharge the battery.</td>
</tr>
<tr>
<td>The LED indicates reception, but the speaker is silent.</td>
<td>Volume is too low.</td>
<td>Turn up the volume.</td>
</tr>
<tr>
<td></td>
<td>CTCSS or DCS enabled</td>
<td>Change your CTCSS or DCS to match those you’re trying to communicate with.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn CTCSS or DCS off.</td>
</tr>
<tr>
<td>Others can’t hear my transmission.</td>
<td>Their CTCSS or DCS settings don’t match yours.</td>
<td>Change your CTCSS or DCS settings to match your peers.</td>
</tr>
<tr>
<td></td>
<td>You’re too far apart.</td>
<td>Move in closer.</td>
</tr>
<tr>
<td>The radio transmits without touching the PTT.</td>
<td>The VOX is enabled.</td>
<td>Turn VOX off.</td>
</tr>
<tr>
<td></td>
<td>VOX sensitivity is too high.</td>
<td>Turn down VOX sensitivity.</td>
</tr>
<tr>
<td>I can’t hear others on the same channel</td>
<td>Your CTCSS or DCS don’t match theirs</td>
<td>Change your CTCSS or DCS settings to match theirs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verify by pressing [M] while they are transmitting</td>
</tr>
</tbody>
</table>

## Appendix B. - Menu definitions

See Chapter 5, *Working the menu system* for more info about using the menu-system.
<table>
<thead>
<tr>
<th>Menu</th>
<th>Name - Full Name</th>
<th>Settings [Keypad Shortcut]</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SQL - Squelch Level</td>
<td>[0 - 9]</td>
<td>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.</td>
</tr>
<tr>
<td>2</td>
<td>TXP - Transmit Power</td>
<td>HIGH [0]</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>SAVE - Battery Save</td>
<td>OFF [0]</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>VOX - Voice Operated TX</td>
<td>OFF [0]</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>WN - Wideband / Narrowband</td>
<td>WIDE [0]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td>ABR - Display Illumination Time</td>
<td>OFF [0]</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>TDR - Dual Watch, Dual Reception</td>
<td>OFF [0]</td>
<td>ON [1]</td>
</tr>
<tr>
<td>7</td>
<td>BEEP - Keypad Beep</td>
<td>OFF [0]</td>
<td>ON [1]</td>
</tr>
<tr>
<td>8</td>
<td>TOT - Transmission Time-out Timer</td>
<td>in 15 second steps</td>
<td>15, 30, 45, ... 600</td>
</tr>
<tr>
<td>9</td>
<td>R-DCS - Receiver DCS</td>
<td>OFF [0]</td>
<td>see DCS Table in Appendix C</td>
</tr>
<tr>
<td></td>
<td>Feature</td>
<td>Setting</td>
<td>Description</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------</td>
<td>-----------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>11</td>
<td>R-CTCS - Receiver CTCSS</td>
<td>OFF [0]</td>
<td>see CTCSS Table in Appendix C</td>
</tr>
<tr>
<td>12</td>
<td>T-DCS - Transmitter DCS</td>
<td>OFF [0]</td>
<td>see DCS Table in Appendix C</td>
</tr>
<tr>
<td>13</td>
<td>T-CTCS - Transmitter CTCSS</td>
<td>OFF [0]</td>
<td>see CTCSS Table in Appendix C</td>
</tr>
<tr>
<td>15</td>
<td>ANI-ID - Automatic Number ID</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page</td>
<td>Feature</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>DTMFST – DTMF-Side Tone of transmit code</td>
<td>Determines when DTMF Side Tones can be heard from the transceiver speaker.</td>
<td></td>
</tr>
<tr>
<td>Off [0]:</td>
<td>No DTMF Side Tones are heard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DT-ST [1]:</td>
<td>Side Tones are heard only from manually keyed DTMF codes</td>
<td></td>
<td></td>
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<tr>
<td>ANI-ST [2]:</td>
<td>Side Tones are heard only from automatically keyed DTMF codes</td>
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<tr>
<td>DT+ANI [3]:</td>
<td>All DTMF Side Tones are heard</td>
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<table>
<thead>
<tr>
<th>17</th>
<th>S-CODE - Signal Code</th>
<th>Selects 1 of 15 DTMF codes. The DTMF codes are programmed with software and are up to 5 digits each.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>18</th>
<th>SC-REV - Scanner Resume Method</th>
<th>Scanning Resume Method</th>
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<tbody>
<tr>
<td>TO [0]:</td>
<td>Time Operation - scanning will resume after a fixed time has passed</td>
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<tr>
<td>CO [1]:</td>
<td>Carrier Operation - scanning will resume after the signal disappears</td>
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<tr>
<td>SE [2]:</td>
<td>Search Operation - scanning will not resume</td>
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</table>
When to Send PTT-ID

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>OFF [0]</td>
<td>No ID is sent</td>
</tr>
<tr>
<td>BOT [1]</td>
<td>The selected S-CODE is sent at the beginning</td>
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<tr>
<td>EOT [2]</td>
<td>The selected S-CODE is sent at the ending</td>
</tr>
<tr>
<td>BOTH [3]</td>
<td>The selected S-CODE is sent at the beginning and ending</td>
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</table>

Codes are sent during either the beginning or ending of a transmission.

PTT-ID Delay (milliseconds)

<table>
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<th>Delay</th>
<th>Description</th>
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<td>0 - 50ms</td>
<td>PTT-ID Delay</td>
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MR/Channel Mode Display Format

<table>
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<th>Mode</th>
<th>Description</th>
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<tr>
<td>A</td>
<td>Display the channel number</td>
</tr>
<tr>
<td>NAME [1]</td>
<td>Displays the channel name.</td>
</tr>
<tr>
<td>FREQ [2]</td>
<td>Displays programmed Frequency</td>
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</table>

Note: Names must be entered using software.
<table>
<thead>
<tr>
<th>No.</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
</table>
| 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 - 999.990 in 1 kHz steps  
UNUSED SETTING in GMRS-V1  
Specifies the difference between the TX and RX frequencies |
<table>
<thead>
<tr>
<th>Page</th>
<th>Menu</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>MEM-CH - Store a Memory Channel</td>
<td>023 - 127 This menu is used to either create new or modify existing channels (000, &amp; 31 through 127) so that they can be accessed from MR/Channel Mode.</td>
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<tr>
<td>28</td>
<td>DEL-CH - Delete a memory channel</td>
<td>023 - 127 This menu is used to delete the programmed information from the specified channel (000, &amp; 31 through 127) so that it can either be programmed again or be left empty.</td>
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<tr>
<td>#</td>
<td>Option</td>
<td>Setting</td>
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<tr>
<td>----</td>
<td>-------------------------------</td>
<td>-----------</td>
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<tr>
<td>32</td>
<td>AL-MOD - Alarm Mode</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>DB-PTT – Double Push-to-Talk</td>
<td>OFF [0]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1]</td>
</tr>
<tr>
<td></td>
<td>while in Dual Watch mode</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td>35</td>
<td>STE - Squelch Tail Elimination</td>
<td>OFF [0]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1]</td>
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<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>RP-STE - Squelch Tail Elimination</td>
<td>OFF [0]</td>
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<tr>
<td><strong>37</strong></td>
<td>RPT-RL - Delay the squelch tail of repeater</td>
<td>OFF [0]</td>
</tr>
<tr>
<td><strong>38</strong></td>
<td>PONMSG - Power On Message</td>
<td>FULL [0]: Performs an LCD screen test at power-on</td>
</tr>
<tr>
<td><strong>39</strong></td>
<td>ROGER - Roger Beep</td>
<td>OFF [0]</td>
</tr>
<tr>
<td><strong>40</strong></td>
<td>R-TONE – Repeater Tone</td>
<td>1000 HZ [0]</td>
</tr>
<tr>
<td><strong>41</strong></td>
<td>SC-ADD – Scan Add</td>
<td>OFF [0]</td>
</tr>
<tr>
<td><strong>42</strong></td>
<td>A/B-BP</td>
<td>OFF [0] / A / B</td>
</tr>
</tbody>
</table>
| 43 | **RESET**  
|    | Restores defaults | **VFO [0] | ALL [1]** | Resets the radio to factory defaults |
## Appendix C. - Technical specifications

### General

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tr>
<td>Frequency Range (MHz)</td>
<td>65-108 (Rx)</td>
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<tr>
<td>FCC Part 15B</td>
<td>136-174 (Rx)</td>
</tr>
<tr>
<td>FCC Part 15B</td>
<td>400-520 (Rx)</td>
</tr>
<tr>
<td>FCC Part 95A</td>
<td>GMRS Channels (Rx/Tx)</td>
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<td></td>
<td>(Channels 001-030)</td>
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<tr>
<td>Memory channels</td>
<td>128</td>
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<tr>
<td>Frequency stability</td>
<td>2.5ppm</td>
</tr>
<tr>
<td>Frequency step (kHz)</td>
<td>2.5K/5.0K/6.25K/10.0K/12.5K/20.0K/25.0K/50.0K</td>
</tr>
<tr>
<td>Antenna impedance</td>
<td>50 Ohm</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20°C to +60°C</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>7.4</td>
</tr>
<tr>
<td>Consumption</td>
<td>≤ 75mA (standby)</td>
</tr>
<tr>
<td></td>
<td>380mA (reception)</td>
</tr>
<tr>
<td></td>
<td>≤ 1.4A (transmission)</td>
</tr>
<tr>
<td>Mode of operation</td>
<td>Simplex or semi-duplex</td>
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</tbody>
</table>
Duty cycle
Dimensions (mm)
Weight (g)

Transmitter

Transmitter specifications

**Specification**
- **RF power L/H**
- **Type of modulation**
- **Emission class**
- **Maximum deviation (kHz)**
- **Spurious emissions (dB)**

**Value**
- .5/2
- FM
- 16K#F3E (wideband)
- 11K#F3E (narrowband)
- ≤± 5.0 (wideband)
- ≤ ± 2.5 (narrowband)
- <-60dB

03 / 03 / 54 min. (Rx / Tx / Standby)
58 x 110 x 32
214
# Receiver

## Receiver specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tr>
<td>Receiver sensitivity</td>
<td>0.2µV (at 12dB SINAD)</td>
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<tr>
<td>Intermodulation</td>
<td>60dB</td>
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<tr>
<td>Audio Output</td>
<td>1000mW</td>
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<tr>
<td>Adjacent channel selectivity</td>
<td>65/60dB</td>
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## DCS table

**Table C.1. DCS Codes**

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GMRS-V1
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