

GMRS Radios

GM21 SERIES

USER'S MANUAL

PREFACE

Thank you for purchasing GM21 GMRS Radio, It is a multitask GMRS transceiver. Combining the latest technology in radio communication along with a sturdy mechanical frame, GM21 is the ideal and effective solution for the professionals who need to stay in touch with the working team (in construction sites, buildings, shows, trade fairs or hotels) or for leisure users that just want to keep up with friends and family.

IMPORTANT NOTICE

To help you ward off bodily injury or property loss that may arise from improper operation, please read all the information carefully before using our products. This contains instructions for safe usage and RF energy awareness and control for compliance with applicable standards and regulation.

Safety Information for GMRS Radios

Your wireless handheld portable transceiver contains a low power transmitter. When the talk button is pushed, it sends out radio frequency (RF) signals. The device is authorized to operate at a duty factor not to exceed 50%. In August 1996, the Federal Communications Commissions (FCC) adopted RF exposure guidelines with safety levels for handheld wireless devices.

FCC Part 15.21 Warning Statement

THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.

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Chapter1. Getting Started

1.1 Regulations and Safety Warnings

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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. Verification of harmful interference by this equipment to radio or television reception can be determined by turning it off and then 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.

To be safe and sure:

- Never open your radio's case.
- Never change or replace anything in your radio except the battery.

Your radio might cause TV or radio interference even when it is operating properly. To determine whether your radio is causing the interference, turn it off. If the interference goes away, your radio is causing it. Try to eliminate the interference by

moving your radio away from the receiver. If you cannot eliminate the interference, the FCC requires that you stop using the radio.

Hazardous Environments: Do not operate the radio in hazardous environments. Explosion or fire may result.

Do not operate the radio near unshielded electrical blasting caps.

Under certain conditions, radios can interfere with blasting operations and may cause an explosion. Turn your radio OFF to prevent accidental transmission when in a blasting area or in areas posted: "Turn off two-way radio." Construction crews often use remote control RF devices to set off explosives.

Care and Safety: To clean the radio, use a soft cloth dampened with water. Do not use cleaners or solvents because they can harm the body of the unit and leak inside, causing permanent damage. Use a dry, lint-free cloth to clean the battery contacts.

RF Exposure Information

WARNING! Read this information before using the radio. In August 1996 the Federal Communications Commission (FCC) of the United States with its action in Report and Order FCC 96-326 adopted an updated safety standard for human exposure to radio frequency electromagnetic energy emitted by FCC regulated transmitters.

Those guidelines are consistent with the safety standard previously set by both U.S. and international standards bodies. The design of the radio complies with the FCC guidelines and these international standards.

Never allow children to operate the radio without adult supervision and the knowledge of the following guidelines.

WARNING! It is up to the user to properly operate this radio transmitter to insure safe operation. Please adhere to the following:

Use only the supplied or an approved antenna. Unauthorized antennas, modifications, or attachments could impair call quality, damage the radio, or result in violation of FCC regulations.

Do not use the radio with a damaged antenna.

If a damaged antenna comes into contact with the skin, a minor burn may result. Please contact your local dealer for a replacement antenna.

SAR tests are conducted using standard operating positions accepted by FCC/ISED with the device transmitting at its highest certified power level in all tested frequency bands, although the SAR is determined at the highest certified power level, the

actual SAR level of the device while operating can be well below the maximum value. Before a new model is available for sale to the public, it must be tested and certified to the FCC/ISED that it does not exceed the exposure limit established by the FCC/ISED. Tests for each product are performed in positions and locations as required by the FCC/ISED.

For body worn operation, this device has been tested and meets the FCC/ISED RF exposure guidelines when used with and accessory designated for this product or when used with and accessory that contains no metal.

To maintain compliance with FCC/ISED RF exposure guidelines hold the transmitter and antenna at least 1 inch (2.5 centimeters) from your face and speak in a normal voice, with the antenna pointed up and away from the face.

Users must be fully aware of the hazards of the exposure and able to exercise control over their RF exposure to qualify for the higher exposure limits.

Your wireless hand-held portable transceiver contains a low power transmitter. This product sends out radio frequency (RF) signals when the Push-to-Talk(PTT) button is pressed.

The device is authorized to operate at a duty factor not to exceed 50%.

For more information about RF exposure, please visit the FCC web site at www.fcc.gov.

GMRS Communication

This GMRS (General Mobile Radio Service) feature is a land-mobile service available for short-distance, two-way communications in the USA. You must have a valid FCC license to communicate on these channels. The GMRS/FRS frequencies that this radio uses are set aside for communicating with others while hiking, biking, and working; keeping track of family and friends at a crowded public event; checking with travel companions in another car; talking with neighbors; arranging meeting spots with others while shopping at the mall. Licensed users will be issued a call sign by the FCC, which should be used for station identification when operating this radio. GMRS users 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.

FCC License Required

This two-way radio operates on GMRS (General Mobile Radio Service) frequencies which require an FCC (Federal Communications Commission) license. A user must be licensed prior to transmitting on the GMRS band with this radio. Serious penalties could result for unlicensed use of GMRS channels, in violation of FCC rules. Operation of this radio is subject to additional rules specified in 47 C.F.R. Part 95. For licensing information and application forms, please call the FCC Hotline at 800418-FORM. Request form #159 and form #605. Questions regarding the license application should be directed to the FCC at 888-CALL-FCC. Additional information is available on the FCC's website at www.fcc.gov.

NOTE: Even if you operate this radio on FRS (Family Radio Service) channels at low power (0.5 watt), you are required to have an FCC license. Because this radio operates in the 0.5 to 5 watt GMRS power range all GMRS rules apply and will require you have a GMRS license even for FRS (Family Radio Service) communication. Normal FRS only radios operate at a maximum power of 0.5 watt (500 mill watt) power and have an integral (non-detachable) antenna.

FCC Warnings

Replacement or substitution of transistors, regular diodes or other parts of a unique nature, with parts other than those recommended by Pofung may cause a violation of the technical regulations of part 95 of the FCC rules, or violation of type acceptance requirements of part 2 of the rules.

1.2 Main features

- 30 GMRS Channels (RX &TX)
- Scanning receiver frequency range: VHF 136-174MHz, 220-260MHz, UHF 400-520MHz
- One touch search frequency, easy pairing and grouping (copying channel configuration parameters)
- Frequency step, selectable between 12.5K | 25.0K
- Frequency hopping and scramble functions to keep your call privacy confidential

- 1.77" TFT large screen, full keyboard, fully open menu operation
- Channel scan, frequency scan, and three scan and recovery methods: TO, CO, and SE
- Up to 999 memory channels.
- Power-on password management function
- DTMF encoder and DTMF manual dial
- VOX (voice activated transmit).
- Alarm function.
- Programmable repeater offset.
- Transmission time-out timer.
- LED flashlight.
- End of transmission tone, aka "Roger Beep"
- Support NOAA weather reception function in the United States and Canada
- Broadcast FM radio receiver 87.5-108 MHz
- Dual watch / Dual reception/ Dual-band handheld transceiver
- High Capacity Lithium-Ion battery.
- Stopwatch function
- Display illumination programmable via keypad.
- Battery save function.
- Busy channel lock out.
- Ten (10) levels of Squelch adjustment.
- Two (2) pins for Kenwood accessory port

1.3 Content of the packaging

- 1 Radio
- 1 Earphone
- 1 Antenna
- 1 Li-Ion battery pack
- 1 Belt clip

If any item is missing, please verify with your dealer.

Chapter2. Charging the Battery

2.1 Charging the Battery Pack

The Li-ion battery pack is not charged at the factory; please charge it before use. Charging the battery pack for the first time after purchase or extended storage (more than 2 months) may not bring the battery pack to its normal maximum operating capacity. Best operation will require fully charging/ discharging the battery two or three times before the operating capacity will reach its best performance. The battery pack life may be depleted when it's operating time decreases even though it has

been fully and correctly charged. If this is the case, replace the battery pack.

2.2 Use Caution with the Li-ion Battery

- a. Do not short the battery terminals or throw the battery into a fire. Never attempt to remove the casing from the battery pack, as our company cannot be held responsible for any accident caused by modifying the battery.
- b. The ambient temperature should be between 5°C-40°C (40°F - 105°F) while charging the battery. Charging outside this range may not fully charge the battery.
- c. Please turn off the radio before charging.
- d. To avoid interfering with the charging cycle, please do not cut off the power or remove the battery during charging until the green light is on.
- e. Do not recharge the battery pack if it is fully charged. This may shorten the life of the battery pack or damage the battery pack.
- f. Do not charge the battery or the radio if it is damp. Dry it before charging to avoid damage.
- g. It takes approximately 2-5 hours to fully charge the battery. When the lamp lights green, the charging is completed.



WARNING !

When keys, ornamental chain or other electric metals contact the battery terminal, the battery may become damage or injure a human. If the battery terminals are short circuited it will generate a lot of heat. Take care when carrying and using the battery. Remember to put the battery or radio into an insulated container. Do not put it into a metal container. When charging a radio (with battery) the indicating lamp will not turn into green to show the fully charged status if the radio is powered on. Only when the radio is switched off will the lamp indicate normal operation.

2.3 LED Indicator

| STATUS | LED |
|------------|------------------------------------|
| No Battery | Green and red alternately flashing |

| | |
|-----------------|---------------------------------|
| Charge Normally | Red |
| Fully Charged | Green |
| Trouble | Red blinks fast for a long time |

2.4 How to Store the Battery

- a. If the battery needs to be stored, keep it in status of 80% discharged.
- b. It should be kept in low temperature and dry environment.
- c. Keep it away from hot places and direct sunlight.
 - » Do not short circuit the battery terminals.
 - » Never attempt to remove the casing from the battery pack.
 - » Never store the battery in unsafe surroundings, as a short may cause an explosion.
 - » Do not put the battery in a hot environment or throw it into a fire, as it may cause an explosion.

2.5 Using the Type-C USB Cable

1. Make sure your radio is turned OFF.
2. Plug the Type-C USB cable into the Type-C USB charging port on your battery.
3. An empty battery will be fully charged in 4 hours.
4. The battery meter on LCD will move to indicate the battery is charging.

Note:

• *It is recommended to power OFF your radio while charging. However, if power is turned on while charging, you may not be able to transmit a message if the battery is completely empty. Allow time for the battery to charge to 1 bar before attempting to transmit a message.*

Chapter3. Installation of Accessories

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

3.1 Installing/ Removing the Antenna

- a. Installing the Antenna: Screw the antenna into the connector on the top of the transceiver by holding the antenna at its base and turning it clockwise until secure.
- b. Removing the Antenna: Turn the antenna counter-clockwise to remove it.

3.2 Installing the belt clip

- a. 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.
- b. Removing the Belt Clip: Unscrew counter-clockwise to remove the belt clip.

3.3 Installing the battery pack

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

- a. 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.
- b. Once aligned with the guide-rails, slide the battery upward until you hear a click as the battery locks in place.

Remove the battery pack

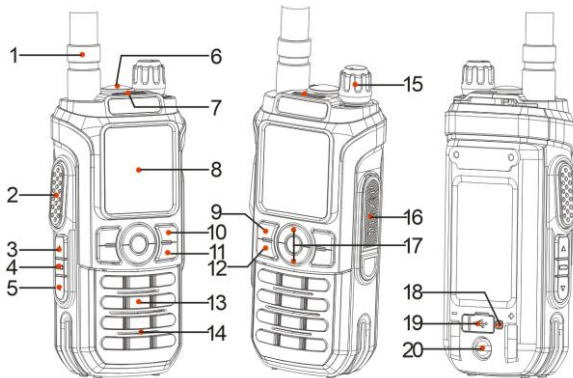
To remove the battery, press the battery release above the battery pack, as you slide the battery downward.

3.4 Installing the Additional Speaker/Microphone (Optional)

Pry open the rubber MIC-Headset jack cover and then insert the Speaker / Microphone plug into the double jack.

Chapter4. Radio Overview

4.1 Buttons and controls of the radio



1. Antenna

4. SK2-Flashlight/ One touch search

7. LED Tx/Rx indicator

10. -EXIT Key

13. Numeric keypad

16. Speaker/Mic Jacks

19. Type-C charging indicator

2. PTT key

5. SK3- power selectable /Emergency key

8. Color LCD

11. A/B key

14. Speaker

17. ▲/▼ Navigation keys

20. Battery tightening screw

3. SK1-FM broadcast/Monitor key

6. LED flashlight









9. -MENU key

12. VFO/MR key


15. Power / Volume knob

18. Type-C charging port

4.2 LCD Display

| Icon | Description |
|---|---|
| RSSI | Squelch Open/ Close Indicator |
| H/L | Transmit power level indicator, According to Power (High/Low) |
|  | Make sure you can hear the DTMF side tone from the radio speaker, set to DT-ST, ANI-ST, DT+ANI. |
|  | DCS enabled |
|  | CTCSS enabled |
| + | Enables access of repeaters in VFO/Frequency Mode. TX will be shifted higher in frequency than RX |
| - | Enables access of repeaters in VFO/Frequency Mode. TX will be shifted lower in frequency than RX |
| D | Dual watch enabled |
|  | Keypad lock enabled |
|  | VOX enabled |
|  | The confidential calling feature is activated |
| N | Narrowband enabled |
|  | Battery level indicator |
| R | Reverse function enabled |
|  | Indicates active band or channel |

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 charge it.

4.3 Status Indications

The status LED has a very simple and traditional design.

| | |
|----------------|---------------|
| LED Indicator | Radio Status |
| Constant Red | Transmitting. |
| Constant Green | Receiving. |

4.4 Main keypad controls

• Side key 1 (Broadcast FM and Monitor)

Press **[SK1]** key 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 **[SK1]** to monitor the signal. This will open up the squelch so you can listen to the unfiltered signal.

• Side key 2 (Flashlight and One touch search)

Press **[SK2]** key momentarily to turn on the LED flashlight. Another momentary press will flash the LED. Another momentary press turns the flashlight off.

Press and hold **[SK2]** key to activate the one-touch search function. Press **[SK3]** (a short press) again to turn it off


• Side key 3 (power selectable and Alarm)


Press **[SK3]** key to select high or low transmission power.

Press and hold **[SK3]** key to activate the alarm function. Press **[SK3]** (a short press) again to turn it off

• key

It is used for activating the MENU, choose each MENU selection and confirm the parameter.

-  key: Press it for more than 2 seconds, the channel and frequency will move upwards rapidly; in SCAN mode, press this control to move the scanning upwards.

-  key: Keep it pressed it for more than 2 seconds, the channel and frequency will move downwards rapidly; in SCAN mode, press this control to move the scanning downwards.

• key

Press to exit the Menu and functions.

• VFO/MR Key

In standby mode, press the key to switch between frequency (VFO) mode and channel (MR) mode.

To save frequencies to channel memory you must be in Frequency (VFO) mode. Memory mode is sometimes also referred to as Channel mode.

- **A/B Key**

A/B (appears on the display): press to select the desired frequency (VHF or UHF) in the main or secondary display.

- **Numeric keypad**

With these keys you can input the information or your selections on the radio. In tx mode, press the number keys to send a corresponding DTMF code.

- **Star * Key**

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

If you press this key for more than 2 seconds you will lock/unlock the keypad.

- **Pound # Key**

Press the **#Z** key to activate the DTMF dial function.

Press and hold the **#Z** key to activate the channel scan or frequency scan function.

In FM radio mode, press the **#Z** key to automatically search for broadcast programs.

- **0 key**

Press and hold the **[0sQL]** key to activate the NOAA weather forecast reception function

Chapter5. Basic Operations

5.1 Power on the radio

- **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. Then it will display a frequency or channel. If the Voice prompt is enabled, the voice will announce "frequency mode" or "channel mode".

- **Turning the unit off**

Turn the Volume/Power knob counter-clock wise all the way until you hear a "click". The unit is now off.

5.2 Adjusting the volume

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

By using the monitor function, enabled from the [SK1] key below the PTT, you can more easily adjust your volume by adjusting it to the un-squelched static.

5.3 Main Band/Sub Band Select

In standby mode, press the [A/B] key to 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.

To save frequencies to channel memory you must be on the A display.

5.4 VFO/Channel Switch

Press the [VFO/MR] key to switch between VFO and channel display.

- In channel mode (MR), the channel number will be displayed on the right.
- In frequency mode (VFO), the 'VFO' will be displayed on the right.

5.5 Frequency (VFO) mode

In Frequency (VFO) mode you can navigate up and down the band by using the ▲ or ▼ keys. Each press will increment or decrement your frequency according to the frequency step you've set your transceiver to.

You can also input frequencies directly on your numeric keypad with kilohertz accuracy.

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

Example. Entering the frequency 436.61250 MHz on display A

(1) In standby mode, press [VFO/MR] key to the frequency (VFO) mode.

(2) Enter [4][3][6][6][1][2][5] [0] on the numeric keypad.

WARNING!

Just because you can program in a channel does not mean you're automatically authorized to use that frequency.

Transmitting on frequencies you're not authorized to operate on is illegal, and in most jurisdictions a serious offence.

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.

5.6 Channel (MR) mode and Channel selection

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

For everyday 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 out in the field. Frequency (VFO) mode is also used for programming channels into memory.

In Channel (MR) mode you can navigate up and down the channel by using the ▲ or ▼ keys or the encoder.

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

Press the [VFO/MR] key to switch the radio between VFO and Channel mode, select Channel mode.

- **Operation 1:** Press the ▲ or ▼ navigation key to select the channel.
- **Operation 2:** Input the channel numbers by the keyboard. For example, if you want switch to channel 12, input [0][1][2] a total of 3 digits, and it will switch to channel 12.

When the voice prompt function is enabled, the corresponding channel will be broadcast by voice.

5.7 Making a call

NOTE: Press the [A/B] key to switch the main channel to the other channel if there are 2 channels shown on the display. In standby mode, press the [VFO/MR] key to switch between frequency (VFO) mode and channel (MR) mode.

- **Channel mode call:** After selecting a channel, hold down the [PTT] key to initiate a call to the current channel. Speak into the microphone with normal tone. Making a call, the red LED is on.
- **Frequency mode call:** Press the [VFO/MR] key to switch to the frequency mode, input the working frequency within the allowable frequency range, and press and hold the [PTT] key to transmit on the current frequency. Speak into the microphone with normal tone. Making a call, the red LED is on.
- **Receive a call:** When you release the [PTT] key, you can answer it without any action.
When receiving a call, the green LED is on.

NOTE: To ensure the best reception volume, keep the distance between the microphone and the mouth at the time of transmission from 2.5 cm to 5 cm.

Before make a call, you can temporarily switch the power of the radio by pressing the [SK2] button. The display above

shows H or L, indicating high or low power transmission.

5.8 Using the Flashlight

You can use this radio in an emergency. If you press **[SK2]** key, the radio turns on the high-intensity LED flashlight on your radio.

- Your radio operates normally when the emergency strobe is activated.

(1) Press **[SK2]** key once, it will turn on continuously (Always On mode).

(2) And then, press **[SK2]** key once, the Strobe Light emits the emergency signal (Strobe emergency mode).

(3) And then, press **[SK2]** key once, the light will be turned off.

5.9 Emergency Alert

The Emergency Alert feature can be used to signal members in your group for help.

To activate the emergency alert function, press and hold the **[SK3]** key for 3 seconds. The radio will send out a loud siren sound and the flashlight will flash.

Press the **[SK3]** key to exit the emergency alert function.

***WARNING:** The Emergency Alert feature should only be used in the event of an actual emergency.*

5.10 FM Radio (FM)

The frequency ranges to listen to the radio is 87.5-108MHz.

(1) In frequency or channel mode, Press **[SK1]** key to turn on the radio.

(2) Select the desired radio frequency with the ▲ or ▼ keys or input the frequency. Or

- Press **[#Z]** to automatically search a radio station.

(3) Press **[SK1]** key to exit FM radio.

Note: while you are listening to the radio, the frequency or channel of A / B receiving signal will automatically switch to the frequency or channel mode for normal transmitting and receiving.

When the signal disappears the radio will automatically switch again to FM radio mode.

5.11 Monitor


In standby, press and hold the [SK1] key to enter Monitor. When receiving matched carrier but the signaling or the signal is too weak, this function allows monitor the weak signal.

Stop pressing the [SK1] key to turn off the speakers and return to standby mode.

» *If no signal, it will emit noise when press the [SK1] Key.*

5.12 Keypad lock


The radio 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.

5.13 Frequency reversal

A short momentary press of the key enables the reverse function

If you for some reason want to listen to the repeater's input frequency instead, press  key momentarily and you'll reverse your transmit and receive frequencies.

» *After activating the frequency reversal function, the first line of the screen displays "R"*

5.14 TX Repeaters tone

Press [PTT] + [SK2] key to send 1750Hz repeaters tone. This function is useful for communications through repeaters.

If you have the keypad lock enabled on your radio, you can still send a 1750Hz tone the regular way without having to unlock your radio.

5.15 One touch frequency Search and copy


(1) The radio will act as a receiver. Press and hold the [SK2] key, and the screen will display "SEARCH SEARCH..."

(2) If the transmitter continues to transmit and the unit receives an effective frequency (the strongest and stable signal), the received frequency will be displayed.

If there is a CTCSS or DCS, the CTCSS or DCS value is displayed, and if there is no CTCSS or DCS, NONE is displayed









(3) You can press the  key to save the Search frequency and CTCSS or DCS to the channel.

Note: During frequency Search, press the  key on the radio to switch between UHF or VHF bands.

5.16 Weather Radio/Scan Weather Channel

Your radio has a NOAA Weather Radio function, to enable the user to receive weather reports from designated NOAA stations. Your radio also has a NOAA Weather Scan function, to enable the user to scan all 10 channels of the NOAA Weather Radio.

- (1) To turn the NOAA Weather Scan on, press and hold the **[0sqL]** key for 3 seconds ,  icon appears. The radio will go to Weather band mode.
- (2) Press and hold the  key for 3 seconds to start automatic scanning of all 10 channels and stop on active channels. Pressing and holding the  key for 3 seconds during a NOAA weather scan will stop the scan.
- (3) After stopping NOAA weather scan, it is allowed to manually select the weather channel by press the  or  key.
- (4) To exit the Weather Radio broadcast mode, press the  key or **[PTT]** key.

Weather channel frequencies and names

| Channel Number | RX Frequency MHz | Channel Number | RX Frequency MHz |
|----------------|------------------|----------------|------------------|
| Wx -01 | 162.550 | Wx -06 | 162.500 |
| Wx -02 | 162.400 | Wx -07 | 162.525 |
| Wx -03 | 162.475 | Wx -08 | 161.650 |
| Wx -04 | 162.425 | Wx -09 | 161.775 |
| Wx -05 | 162.450 | Wx -10 | 163.275 |

NOTE: Weather Channels Wx 1 Thru 10, Receive-only channels for NOAA and Canadian weather broadcasts. You cannot transmit on these channels.

Chapter 6. Advanced Features










6.1 Working the menu system

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

If your radio is set to Memory (MR) mode, the following menu items will not take any effect: STEP, TXP, W/N, CTCSS, DCS, S-CODE, PTT-ID, BCL, SFT-D, OFFSET, MEM-CH.

6.1.1 Basic use

Using the menu with arrow keys

1. Press the  key to enter the menu.
2. Use the  /  keys to navigate between menu items.
3. Once you find the desired menu item, press  again to select that menu item.
4. Use the  /  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  and it will save your setting and bring you back to the main menu.
 - b. To cancel your changes, press  and it will reset that menu item and bring you out of the menu entirely.
6. To exit out of the menu at any time, press  the key.



6.1.2 Using short-cuts

As you may have noticed if you looked at Appendix B, *Menu definitions*, every menu item has a numerical value associated with it. These numbers can be used for direct access of any given menu item.

The menu is also organized in such a way that the ten most common functions are on top.

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

Using the menu with short-cuts

1. Press the  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  key.

4. For entering the desired parameter you have two options:
 - a). Use the ▲/▼ 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 **MEMO** and it will save your setting and bring you back to the main menu.
 - b). To cancel your changes, press **EXIT** and it will reset that menu item and bring you out of the menu entirely.
6. To exit out of the menu at any time, press the **EXIT** key.
7. All further examples and procedures in this manual will use the numerical menu shortcuts.

6.2 Scanning

The Radios features a built in scanner for the VHF and UHF bands. When in Frequency (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, it's not the fastest scanner in the world, but it is nonetheless a useful feature to have at times.

Dual Watch is inhibited while scanning

To enable the scanner, press and hold the **[#Z]** key for about two seconds. Press and hold the **[#Z]** key to exit scanning mode.

6.2.1 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.

Setting scanner mode

1. Press the **MEMO** key to enter the menu.
2. Enter **[2] [1]** on your numeric keypad to come to scanner mode.
3. Press the **MEMO** key to select.
4. Use the ▲/▼ keys to select scanning mode.
5. Press the **MEMO** 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  key again.

6.2.2 Frequency scanning

This function can scan the frequency.

a. In frequency mode, press  key for more than 2 seconds. The radio will start scanning the frequency according to the set frequency step.


b. You can change the scanning direction with the  /  keys.



c. Press  key to stop the scanning.


Note: for Scan mode, see Menu No.21.

6.2.3 Channel scanning

This function can scan the channels.

a. In channels mode, press  key for more than 2 seconds. The radio will start scanning according to the channel you set.


b. You can change the scanning direction with the  /  keys.

c. Press  key to stop scanning.

Note: for Scan mode, see Menu No.21.

6.2.4 Scan CTCSS

The function allows scanning the frequencies with CTCSS tone enabled.



a. In standby mode, press  [1][4], "Scan CTCSS" will appear on the display.

b. Press  key and the scan of CTCSS tones will start.

NOTES: The function cannot be activated when the radio is set in Channel mode. The Scan will start only when the receiving band will detect a signal.

6.2.5 Scan DCS

This function allows scanning the frequencies with DCS code enabled.

- In standby mode, press  [1][5]; the display will show "Scan DCS".
- Press  key and the scan of DCS codes will start.

NOTES: The function cannot be activated when the radio is set in Channel mode. The Scan will start only when the receiving band will detect a signal.

6.3 Manual Programming (Channels Memory)

Memory channels are an easy way to store commonly used frequencies so that they can easily be retrieved at a later date. The radios features 999 memory channels that each can hold: Receive and transmit frequencies, transmit power, group signaling information, bandwidth, ANI/ PTT-ID settings and a six character alphanumeric identifier or channel name ¹.

Frequency Mode vs. Channel Mode

In standby mode, press the [VFO/MR] key to switch between frequency (VFO) mode and channel (MR) mode.

These two modes have different functions and are often confused.

Frequency Mode (VFO): Used for a temporary frequency assignment, such as a test frequency or quick field programming if permitted.

Channel Mode (MR): Used for selecting preprogrammed channels.


Ex 1. Programming a Channel Repeater Offset with CTCSS Tone

EXAMPLE New memory in Channel 31:

RX = **467.55000** MHz

TX = **462.55000** MHz (This is a (+ 5) Offset)

TX CTCSS tone 123.0

- Press the  key to switch between menus.
- Press the **[VFO/MR]** key to set the radio to VFO mode, and the VFO icon is displayed on the right.

- c. [3][1] [3] [1]
- d. [1][2] 123.0
- e. Enter RX frequency (Ex. 46755000)
- f. [3][0] [3][1]
-->>
- g. Enter TX frequency (Ex. 46255000)
- h. [3][0] [3][1]
-->>
- i. Press **[VFO/MR]** key to return to the MR mode and the channel number will reappear.

Deletes Prior Data in channel (Ex. 31)

Selects desired TX encode tone

Enter the desired channel (Ex 31)

RX has been added

Enter the same channel (Ex 31)

TX has been added

Ex 2. Programming a Simplex Channel with CTCSS tone

EXAMPLE New memory in Channel 31:

RX = 467.6625 MHz

TX CTCSS tone 123.0

- a. Press the key to switch between menus.
- b. Press **[VFO/MR]** key to set the radio to VFO mode, and the VFO icon is displayed on the right.
- c. [3][1] [3] [1]
- d. [1][2] 123.0
-->>Use to select Upper display
- e. Enter RX frequency (Ex. 46766250)
- f. [3][0] [3][1]
-->>
- g. Press **[VFO/MR]** key to return to the MR mode and the channel number will reappear.

Deletes Prior Data in channel (Ex. 31)

Select desired TX encode tone (Ex 123 CTCSS)

Enter the desired channel (Ex 31)

Channel has been added

6.4 VOX

This function allows hands-free conversations: just speak in the direction of the microphone and the communication will be automatically activated.

In standby mode, press + 7. The screen will display "VOX".

Press **[M]** key to enter the function. Press the **[▲/▼]** keys to turn off the VOX function or to select the VOX level (1-10), then press **[M]** key to confirm.

To return to the standby mode press **[M]** key.

NOTE: level 1 is the least sensitive while level 9 is the most sensitive. When the radio is in Scan or FM Radio mode, the VOX is not enabled.

6.5 Dual Watch

In certain situations, the ability to monitor two channels at once can be a valuable asset. This can be achieved in one of two ways. You can either have one receiver in your radio and flip-flop between two frequencies at a fixed interval (known as Dual Watch), or you can equip a radio with two receivers (known as Dual Receive or Dual VFO). The former method is cheaper to implement and far more common than the latter.

The Radios features Dual Watch functionality (single receiver) with the ability to lock the transmit frequency to one of the two channels it monitors.

Enabling or disabling Dual Watch mode

1. Press the **[M]** key to enter the menu.
2. Enter 7 on the numeric keypad to get to **Dual Watch**.
3. Press **[M]** key to select.
4. Use the **[▲/▼]** keys to enable or disable.
5. Press the **[M]** key to confirm.
6. Press the **[M]** key to exit the menu.

6.6 Stopwatch timer

In standby mode, press **[M]** + 44. The screen displays “STOP WATCH”.

Press **[M]** to enter the function. Press the **[▲/▼]** keys to enable (ON) the function, then press **[M]** key for confirmation.

To return to the standby mode press **[M]** key.

Using the stopwatch timer:

When this function is ON, press **[M]** key to start counting; Press **[M]** key again to re-start counting.



To exit the function, stop the counting first, and then press the  key.

6.7 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).

DTMF frequencies and corresponding codes

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

The radios 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 you would expect. The A, B, C and D codes are located in the , ,  and  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.

6.8 Customization

The radio allows you to define visual and audible features such as Display Illumination Time, MR/Channel Mode Display Format, Power On Message, Power On password, Keypad Beep, Roger Beep, Voice Prompt, etc. to suit your usage habits.

6.8.1 Display backlight (ABR) - MENU 7

In standby mode, press  + 7. The screen will display "ABR".

Press **F** key to enter the function. Press the **▲/▼** keys to select the always on/required delay time (ON/5sec/5sec/10sec/15sec/20sec) the backlight of the display, then press **F** key to confirm.

To return to the standby mode press **ESC** key.

6.8.2 Beep PROMPT (BEEP) - MENU 8

If you enable this function, every time a key is pressed, you will hear a Beep tone.

In standby mode, press **F** + 8. The screen will display “**BEEP PROMPT**”.

Press **F** key to enter the function. Press the **▲/▼** keys to turn ON/OFF the beep function.

Press **F** key to confirm and exit to return to stand-by mode.

6.8.3 Voice function (VOICE) - MENU 17

In standby mode, press **F** + 17; the screen will display “**VOICE**”.

Press **F** key to enter the function. Press the **▲/▼** keys to select OFF/ON. Confirm your selection by press **F**.

To return to the standby mode press **ESC** key.

6.8.4 Language of the MENU (LANGUAGE) - MENU 18

This section shows the language of the MENU (English).

In standby mode press **F** + 18. The display will show “**LANGUAGE**”.

6.8.5 Working Mode (MDF-A) - MENU 24

The radio has four working modes available:

- Frequency mode (FREQ)
- Channel mode (CH)
- Channel name (NAME)

To shift from one mode to another one:

In Standby mode press **F** + 24; select the desired working mode with the **▲/▼** keys.

Press **F** key again to confirm your selection.

6.8.6 Roger Beep, end Transmission Tone (ROGER) - MENU 36

Roger Beep can be enabled/disabled:

- OFF: Roger Beep disabled
- ON: Roger Beep tone at the end of transmission

In standby mode, press **⏏** + 36; the screen will display **“ROGER”**.

Press **⏏** to enter the function. Press the **▲/▼** keys to select OFF/ON. Confirm your selection by press **⏏** key.

To return to the standby mode press **⏏** key.

6.8.7 Power On Message (POWER ON MSG) - MENU 40

With this Menu you can customize the welcome message that appears on the display when the radio is switched on.

Choose amongst the following options:

- VOLTAGE (the power voltage is momentarily displayed)
- MESSAGE (welcome message)
- LOGO (Custom Pictures)
- MODEL NAME (the model name of the radio will be displayed)

In Standby mode press **⏏** + 40. The display will show **“POWER ON MSG”**.

Press **⏏** key to enter the function. Press the **▲/▼** keys to select the desired option and confirm with MENU.

To return to the standby mode, press **⏏**key.

6.8.8 Power On Password (Power On Password) - Menu 43

With this Menu you can request the correct password when the radio is turned on.

In standby mode, press **⏏** + 43. The display will show **“POWER ON PWD”**

Press **⏏** key to enter the function. Press the **▲/▼** keys to enable/disable (ON/OFF) the power on password and confirm with MENU.

To return to standby mode, press **⏏**key.

Enable the power on password function. Each time the radio is turned on, it will display "Input Password" to prompt for the correct password.

The default startup password is 000000

6.9 Reset - MENU 42

This transceiver has two Reset modes available: VFO and ALL.

- Reset VFO: all the settings except channels will return to the default settings.
- Reset ALL: all settings will return to the default settings.

Reset VFO

In standby mode, press **⏏** + 42; the screen will display “RESET”.

Press **⏏** to enter the function. Press the **▲/▼** keys to select VFO, then press **⏏** to confirm.

The display will show “Sure to reset? ”. Press **⏏** again to confirm and the screen will display “Wait...”. Then, the transceiver will turn off and reboot again.

Reset ALL

In standby mode, press **⏏** + 42. The screen displays “RESET”.

Press **⏏** to enter the function. Press the **▲/▼** keys to select ALL, then press **⏏** to confirm.

The display will show “Sure to reset? ”. Press **⏏** again to confirm; the screen will display “Wait...”. Then, the transceiver will turn off and reboot again.

The Radio is pre-configured with 8 GMRS repeater channels: 467.5500, 467.5750, 467.6000, 467.6250, 467.6500, 467.6750, 467.7000 and 467.7250MHz. In basic terms, a repeater is a device that is used to increase the range of two way radios. Repeaters will receive a transmission on one frequency and simultaneously rebroadcast that transmission on different frequency. Repeaters are often set up in a fixed location and connected to an antenna that is mounted at a higher elevation to provide better range than is normally available with radio-to-radio (simplex) communications. Using GMRS repeaters can significantly increase the range of your radio, but just tuning to one of the repeater channels isn't necessarily going to work. You first have to be sure there is a repeater listening on that channel's frequency, and you have to be within range of that repeater. It is important to keep in mind that a GMRS repeater is not necessarily intended for public use. They are owned by individuals and are sometimes intended for private use or require permission to use. Before connecting to a GMRS repeater, be sure that you have permission or that the owner is fine with public use. The description on the my GMRS website usually indicates if permission is required and provides a way to get in touch with the owner.

Appendix A. – Trouble shooting guide

| Phenomena | Analysis | Solution |
|---|--|--|
| You cannot turn on the radio. | The battery may be installed improperly. | Remove and reattach the battery. |
| | The battery power may run out. | Recharge or replace the battery. |
| | The battery may suffer from poor contact caused by dirty or damaged battery contacts. | Clean the battery contacts or replace the battery. |
| During receiving, the voice is weak or intermittent. | The battery voltage maybe low. | Recharge or replace the battery. |
| | The volume level may be low. | Increase the volume. |
| | The antenna maybe loose or maybe installed incorrectly. | Turnoff the radio, and then remove and reattach the antenna. |
| | The speaker maybe blocked. | Clean the surface of the speaker. |
| You cannot communicate with other group members. | The frequency or signaling type maybe inconsistent with that of other members. | Verify that your TX/RX frequency and signaling type are correct. |
| | You may be too far away from other members. | Move towards other members. |
| You hear unknown voices or noise. | You may be interrupted by radios using the same frequency. | Change the frequency, or adjust the squelch level. |
| | The radio in analog mode maybe set with no signaling. | Request your dealer to set signaling for the current channel to avoid interference |
| You are unable to hear anyone because of too much noise and hiss. | You may be too far away from other members. | Move towards other members. |
| | You may be in an unfavorable position. For example, your communication may be blocked by high buildings or blocked in an underground area. | Move to an open and flat area, restart the radio, and try again. |
| | It may be the result of external disturbance (such as electromagnetic interference). | Stay away from equipment that may cause interference. |
| The radio keeps transmitting. | VOX may be turned on or the headset is not installed in place | Turn off the VOX function. Check that the headphones are in place. |


NOTE: If the above solutions cannot fix your problems, or you may have some other queries, please contact your dealer for more technical support.

Appendix B. - Shortcut Menu operations

| MENU | Name (Full Name) | Settings | Description |
|------|-------------------------------------|--|---|
| 0 | SQL - Squelch Level | [0 - 9] Setting the squelch to 0 will open up the squelch entirely. | Squelch silences the receiver when there is no signal. - Sensitivity can be varied from .1 to .3 mV on UHF Sensitivity can be varied from .1 to .2 mV on VHF |
| 1 | STEP - Step Frequency | 12.5K 25.0K | Selects the amount of frequency change in VFO/Frequency mode when scanning or pressing the ▲/▼ 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. The higher number increases the RX sleep cycle, but you may miss the first few syllables before the RX opens. |
| 4 | VOX - Voice Operated TX | OFF [0] 1 2 3 4 5 6 7 8 9 10 | When enabled it is not necessary to press the [PTT] key 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 | ON [0] 1 2 3 4 5 6 7 8 9 10 | Time-out for the LCD backlight. (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 |

| | | | |
|----|----------------------------------|--|---|
| 8 | BEEP - Keypad Beep | OFF [0] ON [1] | Allows audible confirmation of a key press |
| 9 | TOT- Transmission Time-out-Timer | OFF [0] 15[1] - 180[12] in 15 second steps (TIMEOUT-15)/15=[n] | *This feature provides a safety switch that 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 it can prevent interference to other users as well as battery depletion |
| 10 | 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. |
| 11 | 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. |
| 12 | 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). |
| 13 | 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). |
| 14 | Scan CTCSS | OFF | Allows scanning of CTCSS in VFO frequency mode. This operation is not allowed in channel mode. |
| 15 | Scan DCS | OFF | Allows scanning of DCS in VFO frequency mode. This operation is not allowed in channel mode. |
| 16 | CDCSS SAVE MODE | ALL[0] RX[1] TX[2] | Save the scanned CTCSS/DCS in VFO mode. <ul style="list-style-type: none"> •ALL: Save to R-CDCSS and T-CDCSS •TX: Save to T-CDCSS only •RX: Save to R-CDCSS only |

| | | | |
|----|---------------------------------------|--|---|
| 17 | VOICE - Voice Prompt | OFF [0] ON [1] | Allows audible voice confirmation of a key press |
| 18 | LANGUAGE - Language selection | ENGLISH [0] 中文 [1] | Set the language type of menu and prompt voice. •ENGLISH: Display as an English menu with English prompts for operation. •Chinese: Display as a Chinese menu and prompt for operation in Chinese. |
| 19 | DTMFST - DTMFST | <ul style="list-style-type: none"> •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. |
| 20 | 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. |
| 21 | SC-REV - Scanner Resume Method | <ul style="list-style-type: none"> •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 |
| 22 | PTT-ID - When to send the PTT-ID | <ul style="list-style-type: none"> •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. |
| 23 | PTT-LT - Signal code sending delay | 0[0] 100[1] 200[2] 400[3] 600[4] 800[5] 1000[6] | PTT-ID Delay (milliseconds) |
| 24 | MDF-A - Channel Mode A Display | <ul style="list-style-type: none"> •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. |
| 25 | MDF-B | •CH [0]: Displays the channel number | [B] MR/Channel Mode Display Format |

| | | | |
|----|--------------------------------------|---|--|
| | - Channel Mode B Display | <ul style="list-style-type: none"> •NAME [1]: Displays the channel name. •FREQ [2]: Displays programmed Frequency | Note: Names must be entered using software. |
| 26 | BCL - Busy Channel Lock-out | OFF [0] ON [1] | Disables the [PTT] key on a channel that is already in use. The transceiver will sound a beep tone and will not transmit if the [PTT] key is pressed when a channel is already in use. |
| 27 | AUTOLK – Automatic Keypad Lock | OFF [0] 5 [1] 10 [2] 15 [3] | Set the automatic keyboard lock delay time. To prevent the keyboard from being accidentally triggered. When turned on, if the keyboard is not used within a predetermined delay time, the keyboard will be locked. Pressing the  key for 2 seconds will unlock the keypad. |
| 28 | SFT-D - Frequency Shift Direction | <ul style="list-style-type: none"> •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 | Enables access of repeaters in VFO/Frequency Mode |
| 29 | OFFSET - Frequency shift amount | 00.000 - 69.990 in 10 kHz steps | Specifies the difference between the TX and RX frequencies |
| 30 | MEMCH - Store a Memory Channel | 001 - 999 | This menu is used to either create new or modify existing channels (001 through 999) so that they can be accessed from MR/Channel Mode. |
| 31 | DELCH - Delete a memory channel | 001 - 999 | This menu is used to delete the programmed information from the specified channel (001 through 999) so that it can either be programmed again or be left empty. |
| 32 | AL-MOD - Alarm Mode | <ul style="list-style-type: none"> •SITE [0]: Sounds alarm through your radio speaker only •TONE[1]: Transmits a cycling tone over-the-air •CODE [2]: Transmits '119' (911 in reverse) followed by the ANI code over-the-air | <ul style="list-style-type: none"> •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 |
| 33 | STE - Squelch Tail Elimination | OFF [0] ON [1] | This function is used eliminate squelch tail noise between BaoFeng handhelds that are communicating directly (no repeater). Reception of a 55 Hz or 134.4 Hz tone burst |

| | | | |
|----|--|---|---|
| | | | mutes the audio long enough to prevent hearing any squelch tail noise. |
| 34 | RP-STE - Squelch Tail Elimination | OFF [0] 1 - 10 | This function is used eliminate squelch tail noise when communicating through a repeater. |
| 35 | RPT-RL - Delay the squelch tail of repeater | OFF [0] 1 - 10 | Delay the Tail Tone of Repeater (X100 milliseconds) |
| 36 | ROGER - Roger Beep | OFF [0] ON [1] | Sends an end-of-transmission tone to indicate to other stations that the transmission has ended. |
| 37 | TONE-Tone-burst | 1000[0] 1450[1] 1750[2] 2100[3] | To send out a tone-burst; you simultaneously will press a key while holding down the PTT. No further configuration required using this feature. |
| 38 | MENU EXIT TIME | 5 [0] 10[1] - 60[10] in 5 second steps (TIMEOUT-5)/5=[n] | The time setting for menu exit without menu operation. |
| 39 | VOX DELAY | 0.5 [0] 0.6[1] -2.0[15] in 0.1 second steps (TIMEOUT-0.1)/0.1=[n] | There's a brief delay between when you finish talking and the radio returns to tx mode; this delay can be adjusted. |
| 40 | POWER ON MSG - Power On Message | LOGO[0] VOLTAGE[1] | Welcome message displayed immediately after startup. The LOGO is programmed by the manager. |
| 41 | VOICEPRI - Frequency hopping system | OFF [0] ON [1] | Activate the frequency hopping function to prevent interference from outside the group |
| 42 | RESET - Restore defaults | VFO [0] ALL [1] | Resets the radio to factory defaults, with some exceptions. |
| 43 | POWER ON PWD -Power on password | OFF [0] ON [1] | Activate the radio power-on password. You must enter the correct password to turn on the radio. The default startup password is 000000 |
| 44 | STOP WATCH | ON | Activate the stopwatch function. Press the MENU key to start timing. |
| 45 | VERSION - Version information | | Access hardware and firmware information for the radio |

Appendix C. - Technical Specifications

General

| | |
|-----------------------|---|
| Frequency Range | GMRS(RX & TX) 136-174, 220-260& 400-520MHz(Scanning RX) FM87.5-108MHz |
| Operation Voltage | DC 7.4 V \pm 10% |
| Battery Capacity | 1800mAh (Li-Ion) |
| Frequency Stability | \pm 2.5ppm |
| Operating Temperature | -20°C to +50°C |
| Mode of Operation | Simplex |
| Antenna Impedance | 50ohm |

Transmitter Part

| | |
|------------------------|--------------------------------|
| FM Modulation | 11K0F3E@12.5KHz, 16K0F3E@25kHz |
| Adjacent Channel Power | 60dB @ 12.5KHz |
| Transmission current | \leq 1500mA |

Receiver Part

| | |
|--------------------------------|---------------------------|
| Receive Sensitivity | 0.25 μ V (12dB SINAD) |
| Adjacent Channel Selectivity | \geq 55dB@12.5KHz |
| Inter Modulation and Rejection | \geq 55dB@12.5KHz |
| Conducted Spurious Emission | \leq -57dB@12.5KHz |
| Rated Audio Power Output | 1W @16 ohms |
| Receive current | \leq 380mA |
| Rated Audio Distortion | \leq 5% |

NOTE: All specifications may be modified without prior notice or liability. Thank you.

Appendix D - GMRS Frequency Chart (MHz)

| CH.No | CH.Freq. | Type of Radio | CH.No | CH.Freq. | Type of Radio |
|--------------|-----------------|----------------------|--------------|------------------------------|----------------------|
| 1 | 462.5625 | GMRS | 16 | 462.5750 | GMRS |
| 2 | 462.5875 | GMRS | 17 | 462.6000 | GMRS |
| 3 | 462.6125 | GMRS | 18 | 462.6250 | GMRS |
| 4 | 462.6375 | GMRS | 19 | 462.6500 | GMRS |
| 5 | 462.6625 | GMRS | 20 | 462.6750 | GMRS |
| 6 | 462.6875 | GMRS | 21 | 462.7000 | GMRS |
| 7 | 462.7125 | GMRS | 22 | 462.7250 | GMRS |
| 8 | 467.5625 | GMRS | 23 | 467.5500 462.5500 | RPT |
| 9 | 467.5875 | GMRS | 24 | 467.5750 462.5750 | RPT |
| 10 | 467.6125 | GMRS | 25 | 467.6000 462.6000 | RPT |
| 11 | 467.6375 | GMRS | 26 | 467.6250 462.6250 | RPT |
| 12 | 467.6625 | GMRS | 27 | 467.6500 462.6500 | RPT |
| 13 | 467.6875 | GMRS | 28 | 467.6750 462.6750 | RPT |
| 14 | 467.7125 | GMRS | 29 | 467.7000 462.7000 | RPT |
| 15 | 462.5500 | GMRS | 30 | 467.7250 462.7250 | RPT |

Appendix E. - DCS Table

DCS CODE LIST

| Number | Code | Number | Code | Number | Code | Number | Code | Number | Code |
|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|
| 1 | D023N | 2 | D025N | 3 | D026N | 4 | D031N | 5 | D032N |
| 6 | D036N | 7 | D043N | 8 | D047N | 9 | D051N | 10 | D053N |
| 11 | D054N | 12 | D065N | 13 | D071N | 14 | D072N | 15 | D073N |
| 16 | D074N | 17 | D114N | 18 | D115N | 19 | D116N | 20 | D122N |
| 21 | D125N | 22 | D131N | 23 | D132N | 24 | D134N | 25 | D143N |
| 26 | D145N | 27 | D152N | 28 | D155N | 29 | D156N | 30 | D162N |
| 31 | D165N | 32 | D172N | 33 | D174N | 34 | D205N | 35 | D212N |
| 36 | D223N | 37 | D225N | 38 | D226N | 39 | D243N | 40 | D244N |
| 41 | D245N | 42 | D246N | 43 | D251N | 44 | D252N | 45 | D255N |
| 46 | D261N | 47 | D263N | 48 | D265N | 49 | D266N | 50 | D271N |
| 51 | D274N | 52 | D306N | 53 | D311N | 54 | D315N | 55 | D325N |
| 56 | D331N | 57 | D332N | 58 | D343N | 59 | D346N | 60 | D351N |
| 61 | D356N | 62 | D364N | 63 | D365N | 64 | D371N | 65 | D411N |
| 66 | D412N | 67 | D413N | 68 | D423N | 69 | D431N | 70 | D432N |
| 71 | D445N | 72 | D446N | 73 | D452N | 74 | D454N | 75 | D455N |
| 76 | D462N | 77 | D464N | 78 | D465N | 79 | D466N | 80 | D503N |
| 81 | D506N | 82 | D516N | 83 | D523N | 84 | D526N | 85 | D532N |
| 86 | D546N | 87 | D565N | 88 | D606N | 89 | D612N | 90 | D624N |
| 91 | D627N | 92 | D631N | 93 | D632N | 94 | D645N | 95 | D654N |
| 96 | D662N | 97 | D664N | 98 | D703N | 99 | D712N | 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 | 138 | D174I | 139 | D205I | 140 | D212I |
| 141 | D223I | 142 | D225I | 143 | D226I | 144 | D243I | 145 | D244I |
| 146 | D245I | 147 | D246I | 148 | D251I | 149 | D252I | 150 | D255I |
| 151 | D261I | 152 | D263I | 153 | D265I | 154 | D266I | 155 | D271I |
| 156 | D274I | 157 | D306I | 158 | D311I | 159 | D315I | 160 | D325I |
| 161 | D331I | 162 | D332I | 163 | D343I | 164 | D346I | 165 | D351I |
| 166 | D356I | 167 | D364I | 168 | D365I | 169 | D371I | 170 | D411I |
| 171 | D412I | 172 | D413I | 173 | D423I | 174 | D431I | 175 | D432I |
| 176 | D445I | 177 | D446I | 178 | D452I | 179 | D454I | 180 | D455I |
| 181 | D462I | 182 | D464I | 183 | D465I | 184 | D466I | 185 | D503I |
| 186 | D506I | 187 | D516I | 188 | D523I | 189 | D526I | 190 | D532I |
| 191 | D546I | 192 | D565I | 193 | D606I | 194 | D612I | 195 | D624I |
| 196 | D627I | 197 | D631I | 198 | D632I | 199 | D645I | 200 | D654I |
| 201 | D662I | 202 | D664I | 203 | D703I | 204 | D712I | 205 | D723I |
| 206 | D731I | 207 | D732I | 208 | D734I | 209 | D743I | 210 | D754I |

Appendix F. - CTCSS Table

CTCSS CHART (Hz)

| Number | Frequency | Number | Frequency | Number | Frequency | Number | Frequency | Number | Frequency |
|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|
| 1 | 67.0 | 2 | 69.3 | 3 | 71.9 | 4 | 74.4 | 5 | 77.0 |
| 6 | 79.7 | 7 | 82.5 | 8 | 85.4 | 9 | 88.5 | 10 | 91.5 |
| 11 | 94.8 | 12 | 97.4 | 13 | 100 | 14 | 103.5 | 15 | 107.2 |
| 16 | 110.9 | 17 | 114.8 | 18 | 118.8 | 19 | 123.0 | 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 | 177.3 | 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 |

Appendix G.- NOAA Weather Radio Frequency List (US, CAN)

| Channel No. | RX Freq.(MHz) | Chan. | RX Freq.(MHz) |
|-------------|---------------|------------|---------------|
| WEATHER 01 | 162.5500 | WEATHER 06 | 162.5000 |
| WEATHER 02 | 162.4000 | WEATHER 07 | 162.5250 |
| WEATHER 03 | 162.4750 | WEATHER 08 | 161.6500 |
| WEATHER 04 | 162.4250 | WEATHER 09 | 161.7750 |
| WEATHER 05 | 162.4500 | WEATHER10 | 161.7500 |

* Channel 8, 9 are designated Canadian Marine Frequencies

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