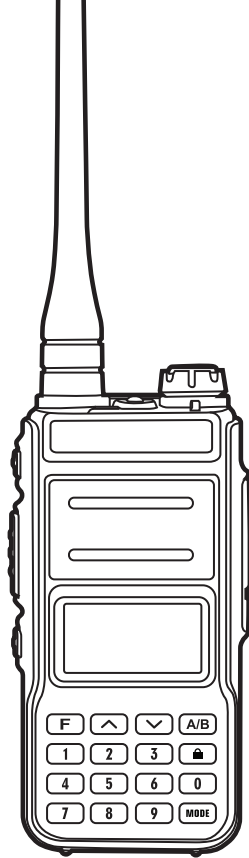




# GMR2

USER MANUAL



## FCC NOTICE

The GMR2 operates on GMRS (General Mobile Radio Service) frequencies, which require a Federal Communications Commission (FCC) license. You must be licensed prior to operating on channels 1-7, 15-22 or RP15-22 which comprise the GMRS channels of the GMR2. Serious penalties may result from 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 that should be used for station identification when operating your 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.



# CONTENTS

<b>User Safety Information</b>	<b>04</b>	<b>Advanced Functions</b>	<b>27</b>
<b>Package Includes</b>	<b>05</b>	<b>Specifications</b>	<b>28</b>
<b>Charging Your Battery Pack</b>	<b>06</b>	General	28
Charging Preparation	06	Transmitter	28
Charging Operation	07	Receiver	29
<b>Accessories Connections</b>	<b>08</b>	<b>Notes</b>	<b>30</b>
Battery Pack	08		
Belt Clip	09		
Ext. Mic/Speaker	10		
<b>Getting Acquainted</b>	<b>11</b>		
Front Panel Operation	11		
Side Panel Operation	12		
LCD Display	13		
Keypad Functions	15		
Channel Shortcuts	15		
<b>Working Mode</b>	<b>16</b>		
<b>Menu</b>	<b>17</b>		
Menu Operation	18		
<b>Detailed Function Description</b>	<b>19</b>		
<b>Standard GMRS Channels</b>	<b>23</b>		
<b>GMRS Repeater Channels</b>	<b>24</b>		
<b>CTCSS Tone Codes</b>	<b>25</b>		
<b>DCS Tone Codes</b>	<b>26</b>		

## USER SAFETY INFORMATION

- Please read the following brief instructions, non-compliance with these rules may cause danger or violate the law.
- Obey the local government regulation before using this radio, improper use may violate the law and be punished.
- Turn off the radio before entering flammable or explosive areas.
- Do not charge or change the battery in flammable or explosive areas.
- Turn off the radio before getting close to the blasting zone or detonator areas.
- Do not use radio whose antenna is damaged, touching of damaged antenna will cause heat injury.
- Do not attempt to open the radio; the maintenance work should be done by technical expert only.
- To avoid troubles caused by electromagnetic interference or electromagnetic compatibility, please turn off the radio in places where the banner displays "Do not use wireless equipment", such as hospitals and other healthcare locations.
- In vehicles, do not put the radio within the area of airbag deployment.
- Do not store the radio under the direct sunshine or in hot areas.
- When you transmit with the radio, do keep away from its antenna for 5cm at least.
- If the radio appears defective or starts to smoke, please shut off its power immediately and contact your local dealer.
- Do not transmit too long, for the radio may heat and cause injury.

## **PACKAGE INCLUDES**

Please check if any damage to the package when you receive it. Carefully unpack the transceiver. We recommend that you check the items listed in the following table. If any items are missing or damaged during shipment, please contact with your local dealer immediately.

- Radio Unit x 1
- Antenna
- Li-ion Battery (1400mAh)
- Charging Kit
- Belt Clip
- User Manual

# CHARGING YOUR BATTERY PACK

## CHARGING PREPARATION


**Precaution:** The supplied battery pack of this radio is a high –performance Li-ion with 7.4V standard voltage 1400mAh high capacity in a very compact package. Under normal use, the battery pack may be used for approximately 500 charge cycles and more, after which operating time maybe expected to decrease. If you have an old battery pack which is displaying capacity which has become diminished, you should replace the pack with a new one.

- Please do not short-circuit the battery terminals or expose to fire. Do not disassemble the battery.
- Charge the battery between 32°F and 113°F. The battery cannot normally be charged beyond this temperature range.
- Please turn off the transceiver when you charge it. Transmitting with the transceiver in charge will affect its normal charge.
- Do not unplug the Power Adapter or battery when it is charging.
- If the battery does not last its normal charge, it shows that the battery is depleted, please change the battery pack.
- Please do not charge when the battery or the radio is wet. Please dry it with a cloth and wait for it to be fully dry before charging to avoid any danger.

**Warning:** When the conductive metals such as jewelry, keys, or decorative chains touch the battery terminals, all the batteries are likely to cause damage to the items or personal injury. These conductive metals may form a short circuit and generate heat. Handle the battery carefully, especially when placed in a pocket or metallic container.

# CHARGING YOUR BATTERY PACK

## CHARGING OPERATION

After installing the battery pack, if the battery icon shows  , it means that the battery pack is out of power. Please charge it.

### Charging indicator light conditions:

Indicator Display	Status
Red	Charging
Green	Completed

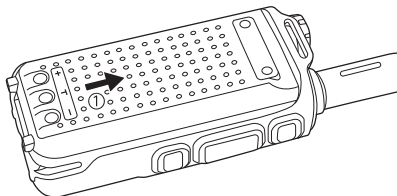
### Battery Tips

- The battery is not fully charged at the factory, please charge it before using it.
- Charge and discharge the battery two or three times, the battery capacity will reach the best condition. When the battery capacity is low, please charge or change the battery.
- If the battery lasts a short time, even if it is fully charged, the battery is depleted, please contact your local dealer to buy a new battery.

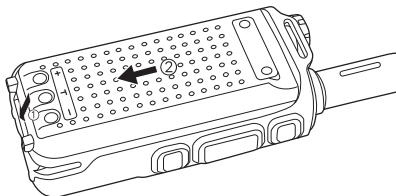
# ACCESSORIES CONNECTIONS

## BATTERY PACK

1. Align the two grooves of battery and the guide rail on the back of the aluminum shell, ensure full contact and in parallel, then push the battery up to the radio base along the rail on the back of the aluminum shell, until the battery latch locks up. (Picture 1)
2. To remove the battery, please make sure the radio is closed, push the battery latch down, and make sure the radio and battery is on the releasing state, and then push the battery out from the radio. (Picture 2)



PICTURE 1



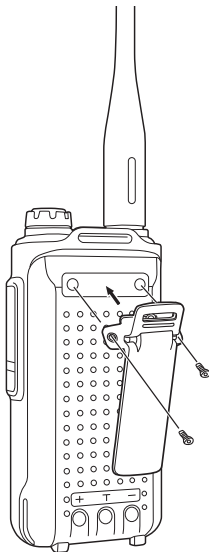
PICTURE 2



# ACCESSORIES CONNECTIONS

## BELT CLIP

Align the two holes of belt clip and the two holes of the radios, fix them with the supplied M2.5x5 screws. Loosen the screw set to remove belt clip. (Picture 5)



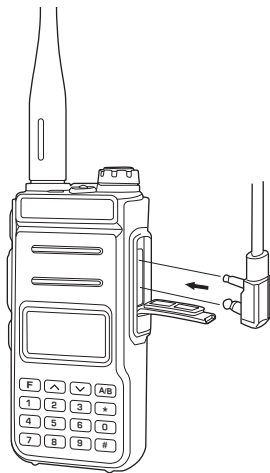
**PICTURE 5**

# ACCESSORIES CONNECTIONS

## EXTERNAL MICROPHONE/SPEAKER

Open the cover of the microphone/speaker jack and insert the microphone/speaker plugs into the jack. (Picture 6)

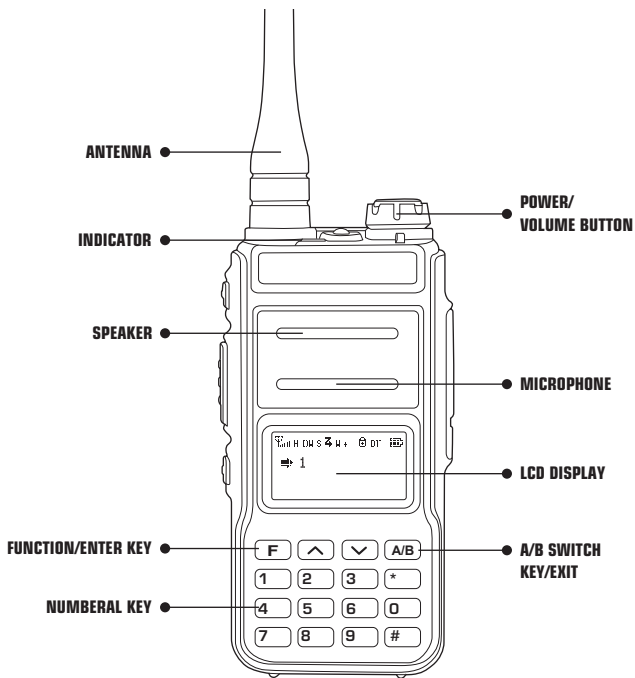
- Using the external headset or mic/speaker will affect the water-tightness performance of radio.



PICTURE 6

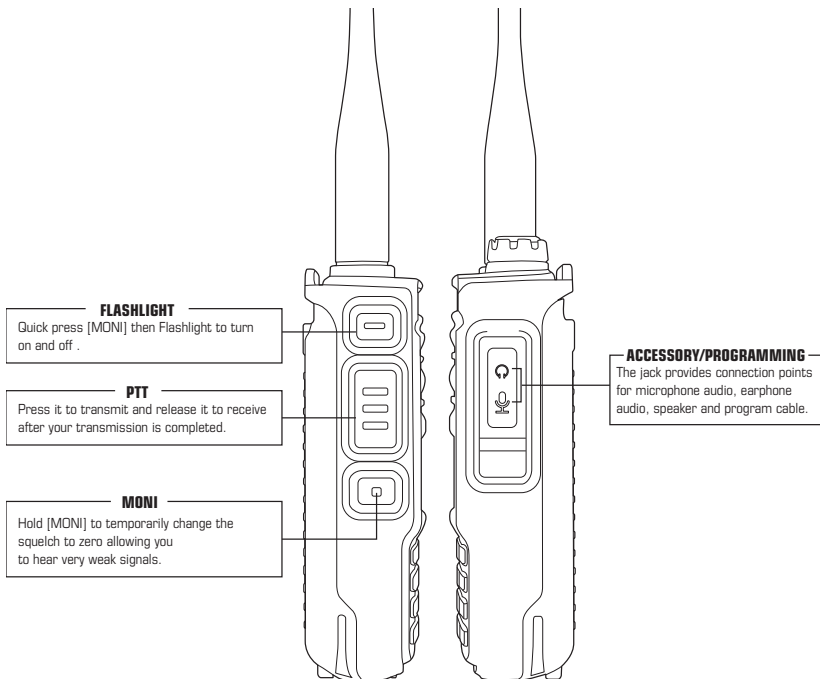
# GETTING ACQUAINTED

## FRONT PANEL OPERATION



# GETTING ACQUAINTED

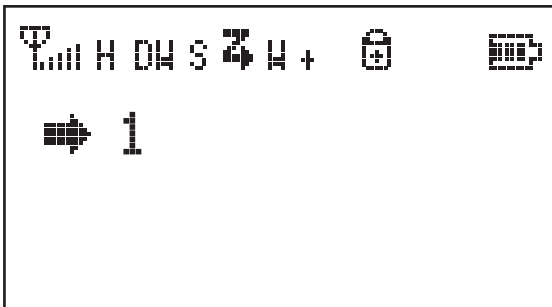
## SIDE PANEL OPERATION



# GETTING ACQUAINTED










## LCD DISPLAY

You will see various icons shown on the screen when power is on. The following table can help you identify icons' meaning which display on LCD.









# GETTING ACQUAINTED

## LCD DISPLAY

Icons	Function
	Operating band signal & power meter
	High TX power active
	Dual watch/standby active
	RX power save active
	Scanning active
	Narrow/wide band mode active
	Repeater shift direction
	Keypad lock
	Battery power indicator

# GETTING ACQUAINTED

## KEYPAD FUNCTIONS

Key	Function
	Enter menu mode/confirm the setting
	{1} Switch the A or B frequency to be the "Operating" Band {2} EXIT function
	Upper menu item, channel or frequency
	Lower menu item, channel or frequency.
	Long press to lock keypad.
	Short press to toggle between GMRS and LSC Short press in FM mode to toggle between SCROLL and MEMORY Long press to enter/exit FM mode.

## CHANNEL SHORTCUTS

To shortcut to any channel in the preset channel list, enter the three digits of the channel's position in the preset channel list.

**EX)** CH. 15 is 43rd in the preset channel list. To shortcut to CH. 22 press: [**0**] + [**4**] + [**3**]

# WORKING MODE

## FREQUENCY MODE (LSO)

Under this mode, you can use [▲]/[▼] key to change the frequency or input the frequency by keypad directly and store channels.

## FM RADIO MODE

The transceiver provides frequency 88.00-108.00MHz FM radio. Under this mode, you can choose the FM frequency that you need directly. Scan frequency range and store your favorite channels. Long press [MODE] to enter and exit FM radio mode.

## MENU MODE

Press [F] key to enter MENU mode. There are 15 items in total. Please see SET MENU MODE.



# MENU

No.	LCD Display	Available Values	Description of Function	Shortcut
1	SCAN	/	Channel Scan	[ F ] + [ 1 ]
2	SQUELCH	0-9	SQL Level Setting	[ F ] + [ 2 ]
3	MONITOR	1 Channel 2 Channel	Dual Monitor	[ F ] + [ 3 ]
4	BACKLIGHT	On/Auto/Off	Backlight Mode	[ F ] + [ 4 ]
5	DIMMER	1-7	Backlight Dimmer	[ F ] + [ 5 ]
6	BEEP	On/Off	Keypad Beep	[ F ] + [ 6 ]
7	ROGER BP	On/Off	Roger Beep	[ F ] + [ 7 ]
8	AUTOLOCK	On/Off	Auto Keypad Lock	[ F ] + [ 8 ]
9	VOICE	On/Off	Voice Prompt	[ F ] + [ 9 ]
10	BATTERY	DC	Battery Power Voltage	[ F ] + [ 4 ] + [ 0 ]
11	C-CDC	OFF/CTCSS/DCS	TX/RX Tone Coder	[ F ] + [ 1 ] + [ 1 ] or [ F ] + [ 0 ]
12	R-CDC	OFF/CTCSS/DCS	RX Tone Coder	[ F ] + [ 1 ] + [ 2 ]
13	T-CDC	OFF/CTCSS/DCS	TX Tone Coder	[ F ] + [ 1 ] + [ 3 ]
14	SCRAMBLER	1-8/OFF	Voice Scrambler	[ F ] [ 1 ] [ 4 ] [ F ] [ 1 ] [ 5 ]
15	FIRMWARE	-	Radio Version	[ m ] + [ m ] + [ m ]

# MENU

## MENU OPERATION

1. Under Standby Mode, press [ **F** ] to enter menu setting, LCD displays "MENU".
2. Press [ **▲** ] or [ **▼** ] to select the desired menu item. LCD displays current setting of selected item.
3. Press [ **F** ] to enter and then press [ **▲** ] or [ **▼** ] to select the desired setting.
4. Press [ **F** ] to confirm.
5. Press [ **A/B** ] once or twice to exit and then return the standby mode.

# DETAILED FUNCTION DESCRIPTION

## 1. Scan (SCAN--MENU 1)

**Functions:** under LSO/CH mode, the transceiver allows you to scan the entire current operating band and memory channels.

**Enter MENU 1 and press [ F ] key to start scanning.**

When you start scanning, press [ < ]/[ > ] key to change direction. And it will halt on a signal it encounters, press [ F ] key to stop scanning.

Scanning operation is basically the same in each of the above modes. Before you begin, take a moment to select the way in which you would like the scanner to halt on a signal.

## 2. Squelch Adjustment (SQUELCH--MENU 2)

**Functions:** Squelch system allows you to mute the background noise when no signal is being received. Not only is the Squelch system "standby" operation more pleasant, it also significantly reduce battery current consumption.

**Enter MENU 2 to set SQL level. Default: 3**

## 3. Dual Watch/Standby (MONITOR--MENU 3)

**Functions:** This transceiver allows you to receive the sub band signal even if you are working on the operating band. It could monitor the signal under both master and sub band at the same time.

**Enter MENU 3 to set MONITOR. Default: ON**

## DETAILED FUNCTION DESCRIPTION

### 4. LED Display Mode (BACKLIGHT--MENU 4)

**Functions:** Select the LED/Keypad Lamp mode.

***Enter MENU 4 to select LED display mode. Default: AUTO***

### 5. Background Light Level (DIMMER--MENU 5)

**Functions:** Choose LED background light level.

***Enter MENU 5 to select background light color. Default: 7***

### 6. Keypad Beeper Setting (BEEP--MENU 6)

**Functions:** Enable/disable the keypad beeper.

***Enter MENU 6 to set keypad beeper. Default: ON***

### 7. Transmit Over Beeper (ROGER BP--MENU 7)

**Functions:** Send a beeper to inform the receiver TX is over.

***Enter MENU 7 to set SQL level. Default: OFF***

### 8. Auto Lock (AUTOLK--MENU 8)

**Functions:** In order to prevent accidental frequency change or inadvertent transmission, various aspects of the radio's keys and switches may be locked out.

# DETAILED FUNCTION DESCRIPTION

## 9. Voice Prompt (VOICE--MENU 9)

**Functions:** Enable/disable voice prompt.

***Enter MENU 9 to set VOICE. Default: ON***

## 10. Battery Power Voltage (VLT--MENU 10)

**Functions:** Check battery voltage.

***Enter MENU 10 to check battery voltage.***

## 11. TX/RX Tone Coder, Tone Search Scanning, Tone Calling (C-CDC--MENU 11)

**Function 1:** CTCSS/DCS Operation. Many repeater systems require that a very-low-frequency audio tone be superimposed on your FM carrier in order to activate the repeater. This helps prevent false activation of the repeater by radar or spurious signals from other transmitters. Use the lock button to switch between CTCSS-DCS-OFF. Use the arrow buttons to scroll through tone codes. To toggle between numbered tone codes [EX: 22] and actual tone codes [EX:141.3], press [5] when in tone code menu.\*

***Enter MENU 11 to set C-CDC Tone Coder.***

## 12. RX Tone Coder, Tone Search Scanning, Tone Calling (R-CDC--MENU 12)

**Function 1:** CTCSS/DCS Operation. Many repeater systems require that a very-low-frequency audio tone be superimposed on your FM carrier in order to activate the repeater. This helps prevent false activation of the repeater by radar or spurious signals from other

## DETAILED FUNCTION DESCRIPTION

transmitters.

***Enter MENU 12 to set R-CDC Tone Coder.***

### **13. TX Tone Coder, Tone Search Scanning, Tone Calling (T-CDC--MENU 13)**

**Function 1:** CTCSS/DCS Operation. Many repeater systems require that a very-low-frequency audio tone be superimposed on your FM carrier in order to activate the repeater. This helps prevent false activation of the repeater by radar or spurious signals from other transmitters.

***Enter MENU 13 to set T-CDC Tone Coder.***

### **14. Scrambler (SCRAMBLER--MENU 14)**

**Functions:** Only 2/5 tone version has this function. This transceiver has 8 groups of scrambler. It is accomplished by the addition of components to the original signal in order to make an extraction of the original signal difficult. And its voice command technology will make the voice more clearly in the noise environment.

***Enter MENU 14 to set scrambler group.***

\*Only radios with firmware GM1.51 and later are equipped with this feature.

For info on updating firmware, call us at: (888) 541-7223

## STANDARD GMRS CHANNELS

Channel	Frequency (MHz)
1	462.5625
2	462.5875
3	462.6125
4	462.6375
5	462.6625
6	462.6875
7	462.7125
8	467.5625
9	467.5875
10	467.6125
11	467.6375
12	467.6625
13	467.6625
14	467.7125
15	462.5500
16	462.5750
17	462.6000
18	462.6250
19	462.6500
20	462.6750
21	462.7000
22	462.7250

## GMRS REPEATER CHANNELS

<b>Channel</b>	<b>Transmit Frequency (MHz)</b>	<b>Receive Frequency (MHz)</b>
15RP	467.5500	462.5500
16RP	467.5750	462.5750
17RP	467.6000	462.6000
18RP	467.6250	462.6250
19RP	467.6500	462.6500
20RP	467.6750	462.6750
21RP	467.7000	462.7000
22RP	467.7250	462.7250





# GMRS TONE CODES

CTCSS Analog Tone Codes

*This is the number you toggle to on your radio!*

No.	Freq. (Hz)
1	67.0
2	71.9
3	74.4
4	77.0
5	79.7
6	82.5
7	85.4
8	88.5
9	91.5
10	94.8
11	97.4
12	100.0
13	103.5
14	107.2
15	110.9
16	114.8
17	118.8
18	123.0
19	127.3
20	131.8
21	136.5
22	141.3
23	146.2
24	151.4
25	156.7
26	162.2

No.	Freq. (Hz)
27	167.9
28	173.8
29	179.9
30	186.2
31	192.8
32	203.5
33	210.7
34	218.1
35	225.7
36	233.6
37	241.8
38	250.3
39	62.5
40	69.3
41	159.8
42	165.5
43	171.3
44	177.3
45	183.5
46	189.9
47	196.6
48	199.5
49	206.5
50	229.1
51	254.1

*Codes 38-51 may not be supported by other brand GMRS radios*

To toggle between numbered tone codes [EX: 22] and actual tone codes [EX:141.3], press [5] when in tone code menu.

Only radios with firmware GM1.51 and later are equipped with this feature.

For info on updating firmware, call us at: (888) 541-7223

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ABOUT OUR INDUSTRY LEADING GMRS RADIOS**

*This is the number  
you toggle to on  
your radio!*

No.	DCS (Digital) Code
1	23
2	25
3	26
4	31
5	32
6	43
7	47
8	51
9	54
10	65
11	71
12	72
13	73
14	74
15	114
16	115
17	116
18	125
19	131
20	132
21	134
22	143
23	152
24	155
25	156
26	162

No.	DCS (Digital) Code
27	165
28	172
29	174
30	205
31	223
32	226
33	243
34	244
35	245
36	251
37	261
38	263
39	265
40	271
41	306
42	311
43	315
44	331
45	343
46	346
47	351
48	364
49	365
50	371
51	411
52	412

No.	DCS (Digital) Code
53	413
54	423
55	431
56	432
57	445
58	464
59	465
60	466
61	503
62	506
63	516
64	532
65	546
66	565
67	606
68	612
69	624
70	627
71	631
72	632
73	654
74	662
75	664
76	703
77	712
78	723

No.	DCS (Digital) Code
79	731
80	732
81	734
82	743
83	754
84	36
85	53
86	122
87	145
88	212
89	225
90	246
91	252
92	255
93	266
94	274
95	325
96	332
97	356
98	446
99	452
100	454
101	455
102	462
103	523
104	526

*Codes 84-104  
may not be  
supported by  
other brand  
GMRS radios*

To toggle between numbered tone codes [EX: 22] and actual tone codes [EX:141.3], press [5] when in tone code menu.


Only radios with firmware GM1.51 and later are equipped with this feature.

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# ADVANCED FUNCTIONS

## 1. Keypad Lock Setting

Under standby mode, press [ **LA** ] for 2 seconds to lock and unlock the keypad. [  ] will be displayed at the top of LCD when keypad is locked.

## 2. FM Radio Function

On/Off Radio Receiver: Under standby mode, hold [ **MODE** ] to open FM radio functions. LCD will display "90.400", then tap [ **MODE** ] again. The radio's receiver is off.

Mode Selection: Under FM radio mode, hold [ **MODE** ] to switch between FM memory mode and FM frequency mode (this function is unavailable when there is not an FM memory channel)

Frequency Selection: Under FM frequency mode, input the digits directly by keypad or [ **▲** ] or [ **▼** ] to choose the desired frequency. Under FM memory mode, press [ **▲** ] or [ **▼** ] to choose the desired channel.

## 3. FM Radio Storage

Under FM frequency mode, long press [ **F** ], the channel number for storage blinks at the right of the screen. Press [ **▲** ] or [ **▼** ] to select the desired channel number, press [ **MODE** ] to confirm and then back to the receiving mode.

## 4. FM Radio Channel Delete

Under FM frequency mode, long press [ **F** ], the channel number blinks, press [ **▲** ] or [ **▼** ] to choose the channel number you want to delete. Press [ **LA** ] to confirm. Repeat this operation, you can delete all memory channel 24 in maximum.

# SPECIFICATIONS

## GENERAL

Channels	30
Operating voltage	7.4VDC
Operating temperature	-10°C ~ +50°C
Weight	106g/3.74oz (including battery and antenna)
Dimension	116x53x36mm

## TRANSMITTER

Frequency	RX: 136-174 & 400-480MHz TX: GMRS
Modulation type	FM
Spurious power	≤ -15dB
Modulation noise	< -40dB
Modulation distortion	< 5%
Frequency stability	5ppm
Max Fr. Deviation	≤ ±5KHz
Current	≤ 1600mA
Audio response (300-3400Hz)	+6.5 ~ - 14dB
Adjacent Ch Power	≥65dB

# SPECIFICATIONS

## RECEIVER

Frequency	RX: 136-174 & 400-480MHz TX: GMRS
Sensitivity	$\leq 0.2 \mu V$
Occupied bandwidth	$\leq 16KHz$
Selectivity	$\geq 65dB$
Intermediation	$\geq 55dB$
Audio power	$> 500m W$
Audio distortion	$\leq 10\%$
Frequency stability	5ppm
Current	Standby: 60mA working: 250Ma
Audio response (300-3400Hz)	+7 ~ - 12.5dB





[WWW.RUGGEDRADIOS.COM](http://WWW.RUGGEDRADIOS.COM)