RETEVIS

RA87

GMRS Mobile Radio

USER'S MANUAL

CONTENT

To customers

Thank you for using Retevis mobile radio. This product has a newly upgraded menu and adopts humanized design, making it easy to use. It will meet your requirement with the compact size and reasonable price.

Main Features

Control and select various functions conveniently through the menu.
200 memory and Call channels; memory channel group management
Multiple easy and high-quality scan modes can be selected.
Compose simple repeater station
LCD display and adjustable backlight colors
Dual standby, dual frequency display
Programmable hand microphone function keys
Voice companding
260 CTCSS/DCS
AIN Identify code
DTMF encode and decode function
MSK signaling encode and decode
Same, different, reverse frequency setting
Wideband/Narrowband adjustment
APO protection when battery voltage is out of allowance range

Radio Function

Front Panel
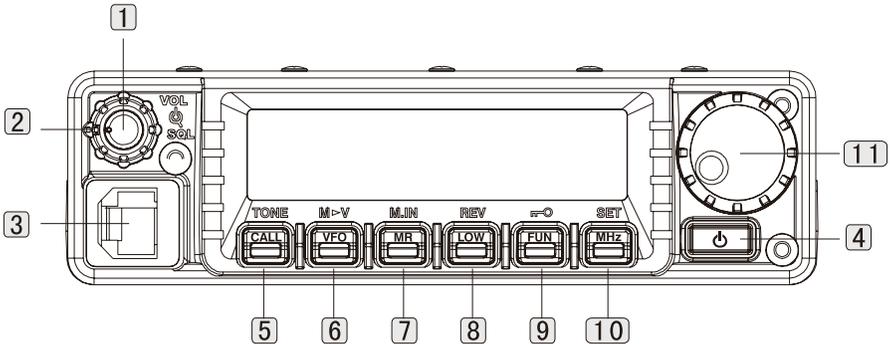
List	Name	Function
1	Volume Knob	Adjust output volume. Clockwise rotate the knob to increase volume.
2	Squelch Knob	Before working, anticlockwise rotate the knob until the background noise (the ⊽ on the screen) disappears to improve the weak signal sensitivity.
3	Microphone (Hand Mic) Jack	Connect to the accessory RA87 hand mic.
4	Power on/off	Press for 1s to turn on/off the mobile radio.
5	CALL/TONE Key	Press the key to call out call channel.
6	VFO/M-V Key	Press the key to enter VFO mode.
7	MR/M、IN Key	Press the key to enter memory call out mode.
8	LOW/REV Key	Continuously press the key to switch power.
9	FUN/ -o Key	Shortly press the key to look through the second function of keys. Press
10	MHZ/SET Key	the key for 1s to lock/unlock mobile radio keys.
		Press the key to enter the MHz mode.
11	Coding Knob	In VFO mode, choose operating frequency.
		In memory call out mode, choose memory channel.
		In menu mode, choose menu numbers.
		When scanning, choose scan direction.

Display

Left side   Right side   Public indicator areas
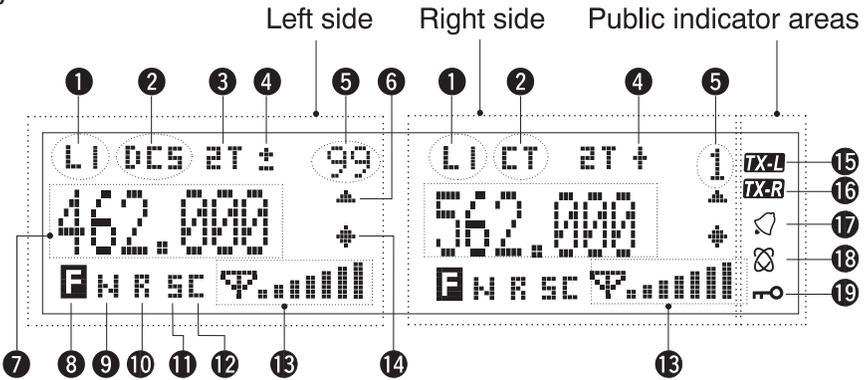
Lists	
1	Choose RF power levels
2	Appear when DCS/CTCSS function is activated.
3	Appear when 2TONE function is activated.
4	Appear when repeater station offset function is activated.
5	Display menu numbers, memory channel numbers and status.
6	Appear when data appearing in displayed memory channel.
7	Display frequency, menu setting, memory name and other information.
8	Appear when pressing the menu key.
9	Appear when narrowband frequency mode is chosen.
10	Appear when Reverse frequency function is activated.
11	Appear when scramble function is activated.
12	Appear when the voice companding function is activated.
13	Display the strength of transmission and reception signal.
14	Appear when Memory Channel Lock is activated.
15	The left of display is main frequency and the right is sub-frequency.
16	The right of display right is main frequency and the left is sub-frequency.
17	Appear when AIN identity code is correct
18	Appear when the transfer function is activated.
19	Appear when the key lock function is activated.

Back Panel
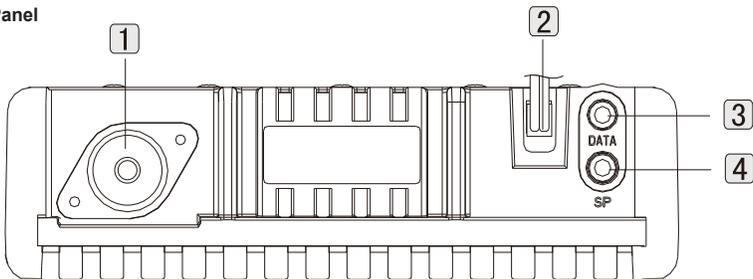
List	Name	Function
1	Antenna Jack	Connect to an external antenna
2	13.8V DC cable	Connect to 13.8V DC, please use the power cable in package to connect
3	DATA socket	Use the programming cable to plug in the socket and connect to the PC to program the mobile radio. Use the programming cable or clone/transfer cable to copy information or communication transfer through connecting to the computer by the socket.
4	SP (Speaker) socket	Connect to 3.5mm mono (dual cables) socket external speaker

Microphone

List	Name	Function
1	PTT Key	Press the key to transmit signals and release to receive signals.
2	DWN/*Key	Press the key to decrease operating frequency, memory channel numbers, menu numbers, etc. Continuously press to repeat operations. For multi-choice functions, the key can switch different values. Press microphone PTT key, then press DWN/* key to transmit.
3	UP/# Key	Press the key to increase operating frequency, memory channel numbers, menu numbers, etc. Continuously press the key to repeat operations. For multi-choice functions, the key can switch different values. Press microphone PTT key, then press UP/# key to transmit.
4	CALL/A Key	The same as the Call key in front panel. If needs, program the key again. Press the microphone PTT key, then press CALL/A key to transmit A. The key is PF4 and can be reprogrammed.
5	VFO/B Key	The same as the VFO key in front panel. If needs, program the key again. Press the microphone PTT key, then press VFO/B key to transmit B. The key is PF3 and can be reprogrammed.
6	MR/C Key	The same as the MR key in front panel. If needs, program the key again. Press the microphone PTT key, then press MR/C key to transmit C. The key is PF2 and can be reprogrammed.
7	PF/D Key	The default function is 1MHZ step. Use coding knob or microphone UP/DWN key to change operating frequency with 1MHz. The mobile radio is dual standby, long press the key to switch main frequency and sub-frequency. If needs, program the key again. Press the microphone PTT key, then press PF/D key to transmit D. The key is PF1 and can be reprogrammed.
8	DTMF Keyboard	The keyboard has 16 keys, which are used in DTMF or directly input operating frequency or memory channel numbers. DTMF also can be used to program memory channel name, power message or other words.

Preparations

Mobile Radio Installation

Fuse Box

DC13V
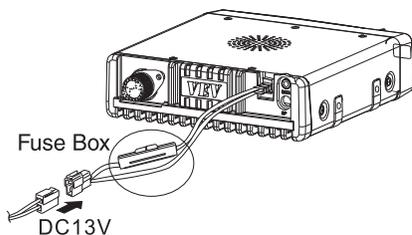
1.Install mobile radio as following figure

Self-tapping screw (5 mm x 16 mm)
Spring washer
Flat washer

SEMS Screw
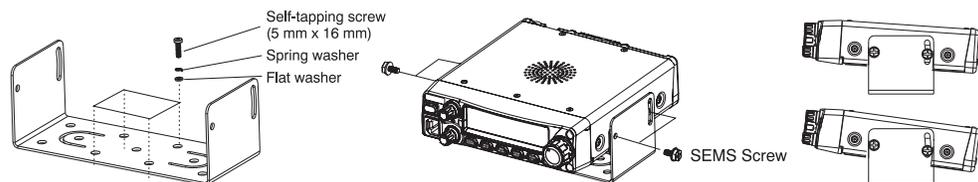
1.Connect to the power and ensure the correctness. Connect the power cable to the lead accumulator (not take off the fuse wire from the power cable.

Red

Black

Fuse Box
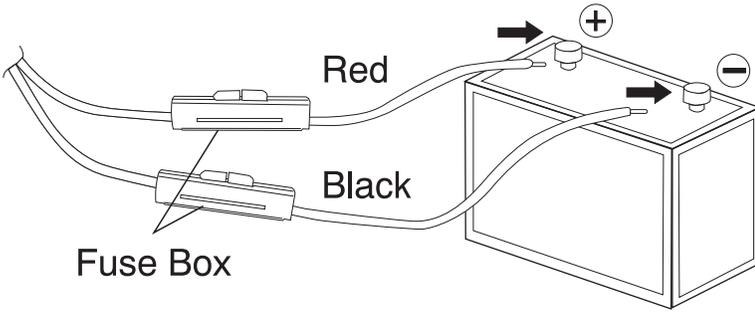
2.Connect the DC power cable to the power connector of mobile radio
3.Replace Fuse Wire: If the fuse wire is fusing, confirm the reason and problems, then replace fuse wire.
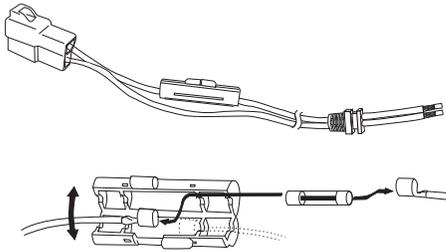
4.Antenna Connection: As the figure shown: connect the antenna connector and the mobile radio (Note: ensure the connection between mobile radio and antenna is completed before transmitting).

Antenna Connector

Antenna   Antenna Feeder Connector
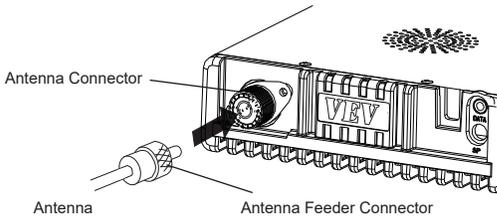
5.Microphone Connection
Before voice communication, plug the microphone connector into the mobile radio base jack of front panel and press tightly. As shown in the figure:
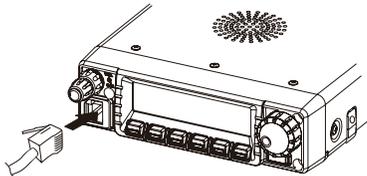
6.PC Programming Cable Connection
Connect the programming cable in the package to the PC through DATA socket and install the specific programming software to read and write the mobile radio.
7.Use the CL-900 clone or transfer cable to connect two mobile radios (through DATA socket).

Basic Operations

Power On/Off
1.Press (power key) to turn on the mobile radio.
The mobile radio makes loud dual beeps. The screen displays power message for a moment, then displays frequency and other indicators. To turn off the mobile radio, press (power key) for about 1s. When turning off the mobile radio, the mobile radio makes low-volume dual sound, saves the current frequency and specifications, and calls out specifications next power on.

Main Frequency and Sub-frequency Switch

Main frequency refers to the current operating and working channel. Sub-frequency refers to the receiving and monitor channel.
3 methods to switch main frequency and sub-frequency
1.When menu 14(ECHO) is set to "AUTO", the secondary frequency of the monitored signal automatically switches to the main frequency.
2. When menu 14(ECHO) is set as "MANU", when the secondary frequency monitors the signal, it has the same functions as the main frequency within about 3 seconds, such as: it can carry out transmission scanning priority, etc.
3.Long press the MHZ/SET key to switch main frequency and sub-frequency.
For example, screen public area originally displays TX-L and displays TX-R after switching.

Volume Adjustment

Clockwise rotate the volume knob to increase the output volume and anticlockwise rotate the volume knob to decrease the output volume.
Squelch Adjustment
Clockwise rotate the squelch knob until the background noise (on the screen) disappears to improve weak signals sensitivity.
Transmitting
When transmitting, press the PTT key and away about 5cm from the microphone to normally speak. If main frequency at the left of screen, it will display TX-L, at the right display TX-R. After speaking, release the PTT key.

Output Power Selection

1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 6 (TXP).
2.Press MHZ/SET key and rotate the coding knob to choose H (high power; default) or M, L3, L2 and L1.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit the menu mode, except MHZ/SET key.
5.Continuously press LOW/REV key to switch power.
Note:
·Don't transmit with high power for a long time, or it may cause that the mobile radio is over-heated and doesn't normally work.
  ·Continuously transmit may cause that the radiator is over-heated. In this occasion, don't touch the radiator. When the mobile radio is over-heated due to the high-temperature environment or continuous transmission, for protection circuit, the mobile radio may automatically switch high output power to low output power.
  ·Power switch can be proceeded in the power switch allowance channel.
Frequency Selection

VFO Mode

VFO mode is a basic mode to change operating frequency. To enter VFO mode, press VFO key. Clockwise the coding knob to increase frequency and anticlockwise the coding knob to decrease frequency. Microphone UP/DWN key can be used to adjust frequency.
·Press microphone UP/ DWN key to continuously up-regulate or down-regulate frequency.UP/ DWN
·MHz Mode
If the needed operating frequency is far away from the current frequency, use MHz tuning mode to adjust quickly.
1. When in VFO mode or call mode, press [MHZ/SET]·MHz digital blinking
2. Turn the encoding knob to select the desired MHz value
3. press any key to set the selected frequency and return to VFO mode
4. Use the coding knob or microphone (UP][DWN] key to continue adjusting the frequency as needed

Directly Input Frequency

1.Press VFO/B key. Directly input frequency must be in VFO mode.
2.Press the microphone PF/D key with Enter function, that is the microphone Enter key.
3.Press the number key 0 to 9 to input the needed frequency.
If only changes MHz numbers and keeps KHz numbers same, press the VFO/B key instead of the microphone Enter key.
The input assigned frequency will be confirmed when the microphone Enter key is pressed.

Menu Settings

Menu Visit
1.Press FUN, MHZ/SET key in turn to enter menu interface.

Menu Name   Setting   Menu Number
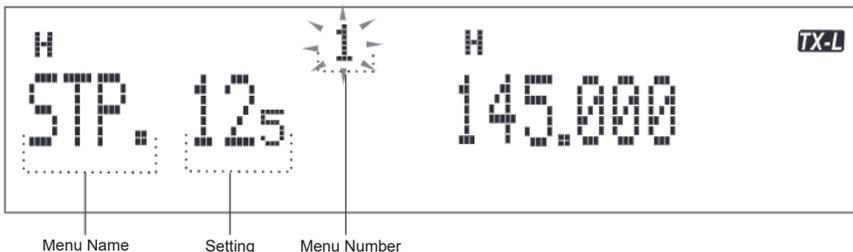
2. Rotate the coding knob to choose the needed menu. When changing menu numbers, the screen will display short introduction of each menu and current specifications.
3. Press MHZ/SET key to equip with current selected menu numbers specifications.
4. Rotate the coding knob to choose the needed specification.
5. Press MHZ/SET key to save new settings, or press other keys to cancel.
6. Press any other key to exit the menu key, except MHZ/SET key.

Note:
In the following table, the items with * after the menu number are public menu items. As long as the main frequency setting changes, the secondary frequency also changes.
To change the primary or secondary frequency, hold down the [MHZ/SET] key

Menu Function List

Screen Display	Menu Number	Function	Selection	Default	Reference Page Number
STP	1	Frequency step size	5/6.25/12.5/15/20/25/30/50/100KHz	VHF:12.5KHz UHF:25KHz	38
C-CD	2	Receive/Transmit CTCSS /DCS signaling code	OFF/67.0~254.1Hz/023(N/1)~754(N/1)/OFF	OFF	28
R-CD	3	CTCSS/DCS	OFF/67.0~254.1Hz/023(N/1)-754(N/)/OFF	OFF	28-29
T-CD	4	Transmit CTCSS/DCS signaling code	OFF/67.0~254.1Hz/023(N/1)~754(N/I)/OFF	OFF	29
SFT	5	Offset direction	OFF/+/-	OFF	16
TXP	6	RF Power	High/Low	HIGH	9
P.VFO	7	Programmable VFO	UHF:400~480MHz	UHF:400~480MHz	42
SQL	8	Squelch	OFF/S0/S1/S21 S3/S4/S5/S6/S7	OFF	37
SQH	9	Squelch delay time	OFF/125/250/500msec	OFF	37
OFFSET	10	Repeater frequency difference	0~69.95MHz	0~99.9875MHz	16
RELAY	11	Easy repeater station function	ON/OFF	OFF	23
SCAN	12	Scan restore method	TO/CO/SE	TO	27
L.OUT	13	Memory channel lock	ON/OFF	OFF	26-27
ECHO	14	Response mode	D-RX/S-RX	MANU	36
M.NAME	15	Memory name	6 characters	--	20
MDF	16	Memory name/frequency display	MNFRQ	MN	20
APO	17	Auto power off	OFF/30/60/901120/180minutes	OFF	36
CK	18	CALL key	CALL/1750	CALL	17
HDL	19	1750Hz tone tansmission maintenance	ON/OFF	OFF	17
TOT	20	TOT	3/5/10 minutes	10	43
BCL	21	Busy channel lockout	ON/OFF	OFF	38
P. ON. MSG	22	Power message	6 characters	-	41-42
BP	23	Beep	ON/OFF	ON	37
BS	24	Beat frequency offset	ON/OFF	OFF	36-37
FMN	25	Narrowband frequency adjustment	ON/OFF	OFF	41
ENC	26	Tuning control knob lock	ON/OFF	OFF	40
DTMF. MR	27	Auto dial-up	Up to 16 numbers	-	32
SPD	28	DTMF transmission speed	FA/SL	FA	33
DT. H	29	DTMF transmit maintenance	ON/OFF	OFF	31
PA	30	DTMF pause time	100/250/500/750/1000/1500/2000msec	500	33
DT. L	31	DTMA key lock	ON/OFF	OFF	33
DT. M	32	DTMF monitor	ON/OFF	OFF	31
2TENC	33	2-TONE encode	OFF/1-32	OFF	35
2TDEC	34	2-TONE decode	OFF/1-8	OFF	35
2TRST	35	2-TONE auto-reset time	OFF/1-250s	60	-
2TM	36	2-TONE monitor	ON/OFF	OFF	-
2TBP	37	2-TONE beep	ON/OFF	ON	-
MC. L	38	Microphone keys lock	ON/OFF	OFF	43
PF1	39	Programmable Microphone key	MONI/ENTER/1750/VFOMRM-HZ/REV/SQLM-V/MIN/CIN/MENU/-SHIFT/LOW/CONTR/LOCK/STEP	MHZ	10-41
PF2	40	Programmable Microphone key	MONI/ENTER/1750/VFOMRM-HZ/REV/SQLM-V/MIN/CIN/MENU/-SHIFT/LOW/CONTR/LOCK/STEP	MR	40-41
PF3	41	Programmable Microphone key	MONI/ENTER/1750/VFOMRM-HZ/REV/SQLM-V/MIN/CIN/MENU/-SHIFT/LOW/CONTR/LOCK/STEP	VFO	40-41
PF4	42	Programmable Microphone key	MONI/ENTER/1750/VFOMRM-HZ/REV/SQLM-V/MIN/CIN/MENU/-SHIFT/LOW/CONTR/LOCK/STEP	CALL	40-41

Screen Display	Menu Number	Function	Selection	Default	Reference Page Number
L.LIG	43	Display backlight lights up method	AUTO/OFF/ON	ON	38-39
WF.CLR	44	Standby backlight color	1/2/3/4/5/6/7/8	4	39
RX.CLR	45	Receive backlight color	1/2/3/4/5/6/7/8	4	39
TX.CLR	46	Transmit backlight color	1/2/3/4/5/6/7/8	4	39
CONTR	47	LCD contrast adjustment	0/1/2/3	2	39
K.LIG	48	Key light lights up method	OFF/ON/AUTO	ON	-
CPD	49	Compandor setting	ON/OFF	OFF	43
SR	50	Scramble frequency setting	OFF/USER/3450/3400/3300/ 3200/3100/3000Hz	OFF	44
ANI	51	ANI function	ON/OFF	OFF	34
PTTID	52	ID code	OFF/BOT/EOT/BOTH	VFO	-
RESET	53	Reset selection	VFO/FULL	VFO	45-46
MSKM	54	MSK monitor	OFF#/#ON	ON	36
MSKBP	55	MSK beep	OFF#/#ON	ON	36
MSKGP	56	MSK call group	oFF#/#1#/#2#/ ... /#10	OFF	36
MSKRT	57	MSK reset time	oFF#/#1M#/#2M#/ ... /#10M	10M	36
1DSOR	58	PTT ID type	DTMF#/#MsK	DTMF	36
UN MUTE	59	Speaker turn on	Q#D#/#Q＋o#/#Q.o	QD	44
TEND	60	Roger beep	oFF#/#oN	OFF	45
TV OL	61	Roger beep volume	1#/#2#/ ... /#25	10	45
TA1L	62	End tone elimination code	oFF#/#oN	OFF	-

Memory Channel
●**Save simplex frequency or standard repeater station frequency.**
1. Hold down [MHZ/SET] to set the main frequency
When TX-L is displayed, information about the main frequency is displayed on the left screen. When TX-R is displayed, information about the main frequency is displayed on the right screen.
2.Press VFO key.
3.Rotate the coding knob to choose the needed frequency.
· Use the keyboard to directly input the needed frequency.
4.If saves standard repeater station frequency, please choose the following data:
· Frequency difference direction
· CTCSS/DCS/2TONE function
If saves simplex frequencies, choose other the related data (CTCSS or DCS set etc).
5.Press FUN key.
· If channel included the data, ▂▂ the symbol appears, and memory channel numbers appear and flash.
6.Rotate the coding knob or microphone UP/DWN key to choose the memory channel with the saved data.
7.Press MR key to save data in channel.

Save Non-standard Frequency Difference Repeater Station Frequency
1. Follow steps 1 to 6 of the storage simplex or standard relay station frequency. Store the required reception frequency and related data
2.Rotate the coding knob or press microphone UP/DWN key to choose the needed transmitting frequency.
3.Press FUN key.
4. Turn code short or press microphone [UP][DWN] key to select the pre-programmed receiving memory channel in which to store data.
5.Press MR key for (1s), and transmitting frequency is saved into the memory channel.
Note:
· Call out non-standard deviation frequency memory channel. "Ten" and "one" appear on the screen.
·Check transmitting frequency, first press FUN key, then press REV key.
·Non-standard frequency difference memory channel doesn't save transmitting frequency difference status and reverse frequency status.

Call Out Memory Channel
Use tuning control knob
1.Press MR key to enter memory call-out mode (final used memory channel is called out).
2.Rotate the coding knob to choose the needed memory channel (empty memory channel can't be called out, press VFO key to restore VFO mode).
Use microphone keyboard
1.Press MR to enter memory call-out mode.
2.Press microphone key with Enter function.
3.Use microphone keyboard to input channel numbers.
·For the channel number as one-digital number, first input 0 or press Enter key after inputting channel number.
·For the channel number as two-digital number, directly input channel numbers.
Note:
· Unable to call out the empty memory channel, the intercom will beep incorrectly.
·After calling out the memory channel, data can be altered, such as narrowband, CTCSS or DCS, etc. However, once the other channel or VFO mode is selected, settings will be deleted. To save these data forever, rewrite the channel content.

Delete Memory Channel

1.When TX-L displays, the left of screen displays the related information of main frequency; When TX-R displays, the right of screen displays the related information of main frequency.
2.Call out memory channels that want to delete.
3.Press power key for (1s) to turn off the mobile radio.
4.Press MR and Power key. Screen will display requiring the deleted information.
5.Press MR key to delete channel data
Content of memory channel is deleted.
If wants to exit memory channel delete operation, press any other key, except MR key.
(Note: delete all memory channel contents, proceed fully reset function; in channel display mode, the channel can't be deleted).

Name Memory Channel
1. Hold down [MHZ/SET] to set the main frequency. When TX-L is displayed, information about the main frequency is displayed on the left screen. When TX-R is displayed, information about the main frequency is displayed on the right screen.
2.Press FUN and MHZ/SET key, then rotate the coding knob to choose menu number 15 (MNAME).
3.Press MHZ/SET key and screen appears flashing cursor.
4.Rotate the coding knob to choose the needed letters and digital characters.
 Following letters and digital characters can be input: 0-9, A-Z,--, / and blank. In addition to the coding knob, microphone keyboard can be used to input letters and digital characters.
5.Press MR key.
·Cursor moves to the next one.
·Press VFO key to move cursor to the former one. Press Fun key to delete characters of current cursor position.
6.Repeat step 4 and 5, up to input 6 characters.
7.Press MHZ/SET key to finish inputting.
·Press any key to cancel, except MR, VFO, FUN and MHZ/SET key.
·Finish inputting with the lack of 6 characters, press MHZ/SET key twice.
8.Press any other key to exit the menu mode, except MHZ/SET key.
After memory channel name is saved, it will replace the operating frequency to appear on the screen. If needed, the operating frequency still can appear. Displaying the operating frequency but memory name, visit the menu number 16 (MDF) and choose FRQ (Frequency). The menu switch two display modes: memory name (MN) and frequency display (FRQ).
Note:
Call channel can't be named.
The name for non-data memory channels can't be distributed.
The saved name can be rewritten by repeating step 1 to 8.
Memory channel data and the saved names will be deleted at the same time.

Memory Channel Transmission
Memory--- VFO Transmission
After searching frequency and the related data from memory call-out mode, these information can be copied to VFO. For example, when the monitored frequency is close to the saved frequency in memory channel, the function can be activated.
1.Press MR key, then rotate the coding knob or press microphone UP/DWN key to call out the needed memory channel. You also can press CALL key to choose call channel.
2.Press FUN, VFO key in turn to copy memory channel data to VFO.
Note:
In non-standard frequency difference channel, operations only copy receiving frequency to VFO (but transmitting frequency). To copy transmitting frequency of non-standard frequency difference channel, press FUN and REV key before proceeding.

Channel----- Channel Transmission
Copy a memory channel information to the other channel. The function can be used to save immediately the changed frequency and the related data in memory call out mode.
1.Press MR key, then rotate the coding knob or press microphone UP/DWN key to call out the needed memory channel.
2.Press FUN key.
3.Rotate the coding knob or press microphone UP/DWN key to choose memory channel that want to copy information.
4.Press MR key.

Call Channel
Whatever frequency the mobile radio is operating, the call channel can be called out immediately, such as setting the call channel as emergency channel of the group. In this occasion, call channel can work with call scan function.
Note: differ from memory channel, call channel can't be deleted.

Call Out Call Channel
Press CALL key to call out call channel.
Screen displays call channel frequency and C.
Press CALL key again to return former frequency.

Reprogramming Call Channel
1.Choose the needed frequency and the related data (CTCSS, DCS or frequency difference direction, etc)
· When programming call channel as non-standard frequency difference channel, choose receiving frequency firstly.
2.Press FUN key.
·Memory channel number appears and flashes.
3.Rotate the coding knob or press microphone UP/DWN key to choose call channel (C).
4.Press MR key.
·The selected frequency and the related data are saved to call channel.
·Save transmitting frequency differing from receiving frequency, proceed following steps:
5.Choose the needed transmitting frequency
6.Press FUN key.
7.Rotate the coding knob or press microphone UP/DWN key to choose call channel (C).
8.Press MR key for (1s).
·Different transmitting frequencies are saved to call channel.

Channel Display
In this mode, the mobile radio only displays memory channel numbers but frequencies (If the memory name is saved, the memory name is displayed).
1.When the mobile radio is off, press REV and Power key to turn on the mobile radio.
·The mobile radio displays memory channel numbers not frequencies.
2.Rotate the coding knob or press microphone UP/DWN key to choose the needed memory channel number.
In memory display mode, following functions can't be activated.
·VFO mode
·VFO scan
·Call/VFO scan
·Scan direction
·Memory save
·Memory to VFO Transmission
·Memory to Memory Transmission
·Delete memory channel
·VFO reset
·Fully reset
·1MHz Step
·Selective call
·Auto-simplex check
·Menu mode
To restore normal operations, turn off the mobile radio and press REV key and Power key again.
Note: to enter channel display mode, data must be included in at least one memory channel.

Scan
Normal Scan
When operating the mobile radio in VFO mode, the mobile radio has two scan modes: band scan and programming scan.

Band Scan
The mobile radio scans the whole band of selected frequency. If the current VFO receiving frequency is out of programming scan frequency range (following contents), the mobile radio will scan the whole frequency range of current VFO.
1.Press VFO key, then rotate the coding knob or press microphone UP/DWN key to choose a frequency that is out of programming scan frequency range.
2.Press VFO key for (1s) to start band scan.
·Scan is started from the current frequency
3.Press any other key except FUN and Power key to stop band scan.
Note:
· Intercom scans the frequency range stored in menu Angstrom No.7 (P.V).
·If frequency is selected between L0/U0~L1/U1 in step 1, the mobile radio starts programming scan.

Programming Scan
Frequency scan range can be limited manually. The mobile radio has two pairs of memory channels---- L0/U0~L1/U1. You can set starting frequency and finishing frequency. Programming scan monitors the range between the starting and finishing frequencies which are saved in memory channel. Before proceeding programming scan, save the programming scan frequency range to a pair of memory channel (L0/U0~L1/U1).

Save Programming Scan Frequency Range
1.Press VFO key and rotate the coding knob or press microphone UP/DWN key to choose the needed starting frequency.
2.Press FUN key.
·Memory channel number appears and flashes.
3.Rotate the coding knob or press microphone UP/DWN key to choose memory channel (L0~L1).
4.Press MR key to save starting frequency to memory channel.
5.Rotate the coding knob to choose the needed finishing frequency.
6.Press FUN key.
7.Rotate the coding knob or press microphone or press microphone UP/DWN key to choose corresponding memory channel (U0~U1).
8.Press MR key to save finishing frequency to memory channel.

Proceed Programming Scan
1.Press VFO key and rotate the coding knob to choose a frequency between the L0/U0~L1/U1 of the memory channel.
2.Press VFO key for (1s) to start programming scan from current frequency.
3.Press any key to stop programming scan, except FUN and Power key.
Note:
·When detecting the signal, the mobile radio stops scanning.
·If over 2 pairs of programming scan channels are saved and frequency range overlaps, scan will start from the smaller memory channel number.
·To proceed programming scan, L channel must be lower than U channel. Otherwise, the mobile radio will start band scan.

Memory Scan
Memory scan monitors the memory channel that saved frequency.

All Channel Scan
The mobile radio scans all memory channels that saved frequencies.
1.Press MR key for (1s).
·Scan starts from the last memory channel number to each channel number (default).
·To skip the needed channel during scanning, rotate the coding knob quickly.
·To reverse scan direction, rotate the coding knob or press microphone UP/DWN key.

2.Press any key to stop all channel scan, except FUN and Power key.
Note:
· In addition to memory channel with special functions, there must be two or more mobile radio memory channels included data.

Call Scan
You can monitor the call channel and the current operating frequency in turn.
1.Choose the monitored frequency (In VFO or memory call-out mode)
·In VFO mode, rotate the coding knob or press microphone UP/DWN key to choose the needed frequency.
·In memory call-out mode, rotate the coding knob or press microphone UP/DWN key to choose the monitored memory channel.
2.Press CALL key for (1s) to start call scan.
·The mobile radio monitors the call channel and the selected VFO frequency or memory channel.
3.Press any key except FUN and Power key to stop call scan.
Note:
CALL key function must be equipped with CALL (menu number 18) before using call scan. Otherwise, the mobile radio will transmit 1750Hz tone. Call scan still can be proceeded even the called out memory channel is locked.

Memory Channel Lock
Channel numbers that not want to be monitored can be locked during scanning memory channel or group.
1.Press MR key, then rotate the coding knob or press microphone UP/DWN key to choose the locked memory channel.
2.Press FUN and MHZ/SET key, then rotate the coding knob to choose menu number 13 (L.OUT).
3.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
4.Press MHZ/SET key to save settings, or press any other key to cancel.
5.Press any other key to exit menu mode, except MHZ/SET key.
·When ⊞ symbol appears under the memory channel number, the channel is locked.
6.To unlock memory channel, repeat the step 1~5 and choose OFF in step 3.
 ·⊞ symbol disappears.
Note:
·Programming scan channel (L0/U0~L1/U1) and the call channels ⊞ be locked.
·Call scan can be proceeded between the call channel and the memory channel, even the memory channel is locked.

Scan Restoration Method
The mobile radio will stop scanning when detecting the frequency or the memory channel signal. The mobile radio will continue or stop to scan according to restoration methods you choose.
·Time Operating Mode (Default)
The mobile radio stays for about 5s on the busy frequency (or memory channel). The mobile radio will continue to scan, even the signal still exists.
·Carrier Operating Mode
The mobile radio stays on the busy frequency (or memory channel) until the signal disappears. There has for 2s delay between the signal disappears and the scan restores.
·Search Mode
The mobile radio moves to the frequency or the memory channel that signal exists, and stops.

Change Scan Restoration Method
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 12 (SCAN).
2.Press MHZ/SET key and rotate the coding knob to choose TO (time operating: default), CO (carrier operating), or SE (search) mode.
3.Press MHZ/SET key to save new settings, or press any other key to cancel.
4.Press any other key to exist menu mode, except MHZ/SET key.
Note: to pause scan and monitor weak signals, press the microphone PF key with MONI function. Press MONI key again to restore scan.

CTCSS/DCS
CTCSS/DCS Set Receiving and Transmitting CTCSS/DCS
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob or press microphone UP/DWN key to choose menu number 2 (C-CD).
2.Press MHZ/SET key and rotate the coding knob to choose the needed CTCSS/DCS signaling code.
•Press CALL/TONE key to switch signaling code.
3.Press MHZ/SET key to save new settings, or press any other key to cancel.
4.Press any other key to exist menu mode, except MHZ/SET key.

Set Receiving CTCSS/DCS Signaling Code
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob or press microphone UP/DWN key to choose menu number 3 (R-CD).
2.Press MHZ/SET key and rotate the coding knob to choose the needed CTCSS/DCS signaling code.
•Press CALL/TONE key to switch signaling code.
3.Press MHZ/SET key to save new settings, or press any other key to cancel.
4.Press any other key to exist menu mode, except MHZ/SET key.

Set Transmitting Signal Code
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob or press microphone UP/DWN key to choose menu number 4 (T-CD).
2.Press MHZ/SET key and rotate the coding knob to choose the needed CTCSS/DCS signaling code.
 •Press CALL/TONE key to switch signaling code.
3.Press MHZ/SET key to save new settings, or press any other key to cancel.
4.Press any other key to exist menu mode, except MHZ/SET key.
Note: when setting CTCSS/DCS signaling code in step 2, press CALL/TONE key to switch signaling code types, as following shown:
OFF ➡ CTCSS ➡DCSN ➡ DCS I➡ OFF
When setting DCS signaling code, the screen displays DCS; When setting CTCSS signaling code, the screen displays CT.

Menu Function List

CH NO.	TX Frequency(MHz)	RX Frequency(MHz)	Code(Hz)	Power
1	462.5625	462.5625	67.0	Low
2	462.5875	462.5875	118.8	Low
3	462.6125	462.6125	127.3	Low
4	462.6375	462.6375	131.8	Low
5	462.6625	462.6625	136.5	Low
6	462.6875	462.6875	141.3	Low
7	462.7125	462.7125	146.2	Low
8	/	467.5625	D243N	Low
9	/	467.5875	D032N	Low
10	/	467.6125	D047N	Low
11	/	467.6375	D051N	Low
12	/	467.6625	D053N	Low
13	/	467.6875	D065N	Low
14	/	467.7125	D116N	Low
15	462.5500	462.5500	123.0	High
16	462.5750	462.5750	D743I	High
17	462.6000	462.6000	D332I	High
18	462.6250	462.6250	127.3	High
19	462.6500	462.6500	D243I	High
20	462.6750	462.6750	D606N	High
21	462.7000	462.7000	D731I	High
22	462.7250	462.7250	136.5	High
23	467.5500	462.5500	-	High
24	467.5750	462.5750	-	High
25	467.6000	462.6000	-	High
26	467.6250	462.6250	-	High
27	467.6500	462.6500	-	High
28	467.6750	462.6750	-	High
29	467.7000	462.7000	-	High
30	467.7250	462.7250	-	High

CTCSS/DCS
CTCSS

1	67.0	15	107.2	29	165.5	43	210.7
2	69.3	16	110.9	30	167.9	44	218.1
3	71.9	17	114.8	31	171.3	45	225.7
4	74.4	18	118.8	32	173.8	46	229.1
5	77.0	19	123.0	33	177.3	47	233.6
6	79.7	20	127.3	34	179.9	48	241.8
7	82.5	21	131.8	35	183.5	49	250.3
8	85.4	22	136.5	36	186.2	50	254.1
9	88.5	23	141.3	37	189.9	51	
10	91.5	24	146.2	38	192.8	52	
11	94.8	25	151.4	39	196.6	53	
12	97.4	26	156.7	40	199.5	54	
13	100.0	27	159.8	41	203.5	55	
14	103.5	28	162.2	42	206.5	56	

DCS-N

1	D023N	22	D131N	43	D251N	64	D445N	85	D532N
2	D025N	23	D132N	44	D252N	65	D446N	86	D546N
3	D026N	24	D134N	45	D255N	66	D452N	87	D565N
4	D031N	25	D143N	46	D261N	67	D454N	88	D606N
5	D032N	26	D145N	47	D263N	68	D455N	89	D612N
6	D036N	27	D152N	48	D265N	69	D462N	90	D624N
7	D043N	28	D155N	49	D266N	70	D464N	91	D627N
8	D047N	29	D156N	50	D271N	71	D465N	92	D631N
9	D051N	30	D162N	51	D274N	72	D466N	93	D632N
10	D053N	31	D165N	52	D306N	73	D503N	94	D645N
11	D054N	32	D172N	53	D311N	74	D506N	95	D654N
12	D065N	33	D174N	54	D315N	75	D516N	96	D662N

13	D071N	34	D205N	55	D325N	76	D523N	97	D664N
14	D072N	35	D212N	56	D331N	77	D526N	98	D703N
15	D073N	36	D223N	57	D332N	78	D465N	99	D712N
16	D074N	37	D225N	58	D343N	79	D466N	100	D723N
17	D114N	38	D226N	59	D346N	80	D503N	101	D731N
18	D115N	39	D243N	60	D351N	81	D506N	102	D732N
19	D116N	40	D244N	61	D356N	82	D516N	103	D734N
20	D122N	41	D245N	62	D364N	83	D523N	104	D743N
21	D125N	42	D246N	63	D365N	84	D526N	105	D754N

DCS-I

106	D023I	127	D131I	148	D251I	169	D445N	190	D532I
107	D025I	128	D132I	149	D252I	170	D446N	191	D546I
108	D026I	129	D134I	150	D255I	171	D452N	192	D565I
109	D031I	130	D143I	151	D261I	172	D454N	193	D606I
110	D032I	131	D145I	152	D263I	173	D455N	194	D612I
111	D036I	132	D152I	153	D265I	174	D462N	195	D624I
112	D043I	133	D155I	154	D266I	175	D464N	196	D627I
113	D047I	134	D156I	155	D271I	176	D465N	197	D631I
114	D051I	135	D162I	156	D274I	177	D466N	198	D632I
115	D053I	136	D165I	157	D306I	178	D503N	199	D645I
116	D054I	137	D172I	158	D311I	179	D506N	200	D654I
117	D065I	138	D174I	159	D315I	180	D516N	201	D662I
118	D071I	139	D205I	160	D325I	181	D462I	202	D664I
119	D072I	140	D212I	161	D331I	182	D464I	203	D703I
120	D073I	141	D223I	162	D332I	183	D465I	204	D712I
121	D074I	142	D225I	163	D343I	184	D466I	205	D723I
122	D114I	143	D226I	164	D346I	185	D503I	206	D731I
123	D115I	144	D243I	165	D351I	186	D506I	207	D732I
124	D116I	145	D244I	166	D356I	187	D516I	208	D734I
125	D122I	146	D245I	167	D364I	188	D523I	209	D743I
126	D125I	147	D246I	168	D365I	189	D526I	210	D754I

CTCSS and DCS Signaling Code Scan
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 3 (R-CD).
2. Press [MHZ/SET] and then [CALL/TONE] to switch the signaling code type. Press [MHZ/SET] to determine the type.
3.Press MHZ/SET key for (1s) to start CTCSS/DCS signaling code scan.
•When scanning, the point after R-CD flashes.
•To reverse scan direction, rotate the coding knob or press microphone UP/DWN key.
•Press any key to exit function.
•When recognizing CTCSS/DCS signaling code, the signaling code appears and flashes.
4.Press MHZ/SET key to program the recognized signaling code to replace current CTCSS/DCS signaling code. Press any other key to exit

CTCSS/DCS signaling code scan.
•Rotate the coding knob or press microphone UP/DWN key to restore scan when the recognized signaling code flashes.
5.Press any other key to exit menu mode, except MHZ/SET key.
Note:
・When proceeding CTCSS/DCS signaling code scan, CTCSS/DCS function is automatically activated, (even current signaling code doesn't set CTCSS/DCS).
・In the process of scanning, the received signal can be monitored with the speaker.
・If the signal is not detected, CTCSS/DCS signaling code scan doesn't scan.

Repeater Function and Form
1. Hold down [MHZ/SET] to set the main frequency.
• When the TX-L is displayed, the main frequency information is displayed on the left screen
• When the TX-R is displayed, information about the main frequency is displayed on the right screen
2.Choose receiving frequency
3.Choose frequency difference direction
4.Choose frequency difference
5.Choose CTCSS/DCS signaling code (If needs)

Program Frequency Difference
Firstly, choose downward frequency of amateur radio repeater station. The methods as described in choose frequency difference.
Choose frequency difference direction
Choose transmitting frequency higher or lower receiving frequency.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 5 (SFT).
2.Press MHZ/SET key and rotate the coding knob to choose + or -.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

• When + or - appears over the frequency, it is indicates that frequency difference direction is selected.
If frequency difference transmitting frequency is out of allowance range, the transmitting can't be proceeded. In this occasion, adjust receiving frequency to make the transmitting frequency within the band frequency range, or change frequency difference direction.

Choose Frequency Difference
To access a repeater station with non-standard frequency difference between receiving and transmitting frequencies, change default frequency difference (most repeater stations use). The default frequency difference in the UHF frequency band is 5.0 MHz.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 10 (OFFSET).
2.Press [MHZ/SET], and then turn the encoding knob to select the appropriate difference frequency.
• Optional difference frequency ranges from 0.00MHz to 99.9875MHz with step size of 50KHz.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Choose CTCSS/DCS Signaling Code
Transmitting 1750HZ
Change CALL key settings
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 18 (CK).
2.Press MHZ/SET key and rotate the coding knob to choose CALL or 1750.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Some repeater station needs the mobile radio to receive a section of continuous signal after transmitting 1750Hz tone. The mobile radio can remain transmitting mode for 2s after transmitting 1750Hz tone.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 19 (HLD).
2.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Reverse Frequency Function
Exchange Transmitting and Receiving Frequency
Press FUN, REV key in turn to turn on (off) reverse frequency function.
 •The screen displays R when the function is activated.

Repeater Station Installation
1.Connect two mobile radios with clone/ transfer cable (through DATA socket).
2.Two mobile radios are connected to the 50Ω antenna compile with transmitting impedance.
3.Connect DC power.
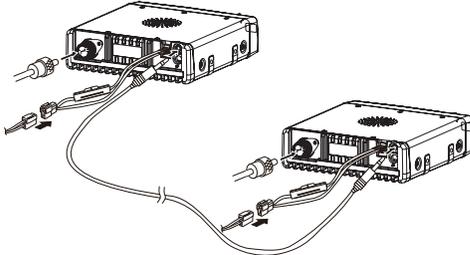
Repeater Menu Setting
To achieve repeater function, transfer functions of two mobile radios need to be turned on.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 11 (RELAY).
2.Press MHZ/SET key and rotate the coding knob to switch the function to ON.
 • The clone cable must be plugged and the function is activated. The function is automatically deactivated and there is a beep when unplugging the cable.
 • Connect the antenna completely before the function is activated.
3.Press MHZ/SET key to save settings, or press other key to exit.

Frequency Difference Program Procedure
1.Choose receiving frequency (The frequency aims at transmitting frequency through the mobile radio in the repeater station).
2.Choose frequency difference direction (The direction aims at opposite frequency difference direction through the mobile radio in the repeater station).
3.Choose frequency frequency (If it is needed to be as non-standard repeater station).
4.Choose CTCSS/DCS signaling code (If needs).
Note:
• Transmitting and receiving channels transfer function will be achieved after programming the frequency difference of the mobile radio. If the other transmitting and receiving channels need to be scanned, program the frequency difference of the mobile radio of the other mobile radio.
• The channel is the same frequency of transmit-receive must set frequency difference to transfer; Different frequencies can directly transfer.

DTMF Function
Manual Dial-up
Keys on the microphone keyboard can be used as DTMF key, included complement keys (A, B, C, D). Operate as following steps to proceed manual dial-up.
1.Press the microphone PTT key to transmit.
2.Press keys on the keyboard in order to transmit DTMF tone when transmitting. That is to transmit corresponding DTMF tone.

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

• When DTMF transmission maintenance function is activated, transmission mode can remain without pressing microphone PTT key continuously. However, transmission mode only remains for 2s after pressing the key. If no any operations, the mobile radio will stop transmitting.

DTMF Monitor
DTMF tone from the speaker can't be heard when pressing microphone DTMF key. But if needed, the DTMF tone can be monitored.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 32 (DT.M).
2.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

DTMF Transmission Maintenance
When the function is activated, the mobile radio will remain transmission mode for 2s. You can release microphone PTT key when transmitting DTMF tone.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 29 (DT.H).
2.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Auto Dial-up
Use 10 specific DTMF memory channels to save DTMF numbers instead of remembering a long string of numbers.
Save DTMF Numbers in Memory Channel
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 27 (DTMF.MR).
2.Press MHZ/SET key and rotate the coding knob to choose the needed DTMF memory channel number (0 to 9). Also, microphone UP/DWN key can be used to choose DTMF memory channel.
3.Press MHZ/SET key.
• DTMF code is input and the first number appears on the screen and flashes.
4.Rotate the coding knob to choose DTMF codes.
• Use microphone keyboard to input DTMF codes is also available, and it only needs to press the corresponding DTMF codes on the keyboard.
• * is replaced with E and # is replaced with F on the screen.
5.Press MR key to choose DTMF codes and move the cursor to the next one.
• Press VFO key to move the cursor the former one. Press FUN key to delete bits of the current cursor position.
6.Repeat step 4 and 5, up to input 16 bits.
7.Press MHZ/SET key to finish inputting.
• Press any key to cancel input, except MR, VFO, FUN and MHZ/SET key.
• Finish inputting with the lack of 16 characters, press MHZ/SET key twice.
8.Press any other key to exit menu mode, except MHZ/SET key.

Check the Saved DTMF Numbers
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 27 (DTMF.MR).
2.Press MHZ/SET key and rotate the coding knob to choose the needed DTMF memory channel number (0 to 9) . Also, microphone UP/DWN key can be used to choose DTMF memory channel.
3.Press REV key.
• Numbers that saved in the channel is rolling display on the screen and the speaker comes out DTMF tone (not transmitting DTMF tone).
4.Press any other key to exit menu mode, except REV and MHZ/SET key.

Transmitting the Saved DTMF Numbers
1.Press microphone PTT and microphone PF/D key.
2.Release microphone PF/D key (continue to press microphone PTT key), then press keys (from 0 to 9) to transmit DTMF numbers saved in the channel.
• To transmit D tone, press microphone PF/D key again.
• Numbers that saved in the channel is rolling display on the screen and the speaker comes out DTMF tone. (If the menu number 32 (DT.M) is set as OFF, DTMF tone is not come out).
• Frequency is displayed on the screen again after transmitting.
3.Release microphone PTT key.
Note:
• If empty DTMF memory channel is selected and MHZ/SET key is pressed, frequency will be restored to display on the screen.
• In step 2, if the coding knob is rotated or microphone UP/DWN key is pressed, DTMF memory channel can be previewed.

Adjust DTMF Tone Transmission Speed
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 28 (SPD).
2.Press MHZ/SET key and rotate the coding knob to choose FA (Fast Speed) or SL (Slow Speed).
• FA tone continuous time is 50msec and SL is 100msec.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Adjust Pause Duration Time
Change pause duration time saved in memory channel (void). Default setting is 50msec.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 30 (PA).
2.Press MHZ/SET key and rotate the coding knob to choose 100, 250, 500 (default), 750, 1000, 1500 or 2000msec.

3.Press MHZ/SET key to save settings, or press any other key to cancel.

DTMF Lock
When you want to forbid using keyboard to avoid DTMF transmission, DTMF lock function can be activated.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number31 (DT.L).
2.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.
When the function is activated, DTMF tone can't be sent through the keyboard. DTMF memory transmission also is banned.

ANI Identity Code
The ID code is composed of 3 to 10 numbers. The mobile radio will make a prompt when receiving matched codes.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 51 (ANI).
2.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Remote Kill/Activate
The function can remote turn on/off the receiving and transmitting function by transmitting remote kill codes.
Remote kill code is composed of 1-10 DTMF codes and can be set through programming. When the mobile radio with remote kill codes receive the code, the mobile radio enters remote kill mode. After receiving activate codes (kill code + #), the mobile radio restores normal working mode. Turn on/off the function can be set by programming (OFF: default).
Two remote kill ways can be set by PC software:
• Ban transmitting
• Ban transmitting and receiving

2 TONE Signaling
Tone A frequency: the frequency of the first tone in 2 TONE.
Tone B frequency: the frequency of the second tone in 2 TONE.

Tone A duration time: Transmission duration time of the first tone in 2 TONE.
Tone B duration time: Transmission duration time of the second tone in 2 TONE.
2 TONE interval time：The interval time between the end of the first tone and the beginning of the second tone.
Long tone A duration time: The first tone duration time of a tone (Only set the first tone, the second one is void), referring to the transmission duration time of the first tone in 2 TONE.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 33 (2 TENC).
2.Press MHZ/SET key and rotate the coding knob to choose 2 TONE code group numbers, OFF (default), 1~32.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

2 TONE Decoding
Compound method: choose compound methods to use 2 tone decoding, can be divided A-B, A-C, A-D, B-A, B-C, B-D, C-A, C-B, C-D, D-A, D-B, D-C, long A, long B, long C and OFF.
·Respond method: the respond method of the mobile radio after receiving matched 2 TONE calling·
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 34 (2 TDEC).
2.Press MHZ/SET key and rotate the coding knob to choose 2 TONE decoding group numbers, OFF (default), 1~8.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

MSK Signaling
Use MSK signaling to proceed the call between mobile radios. The mobile radio ID code and objective mobile radio MSK ID code need to be set in advance. MSK ID code is 16 decimal data and up to 4 bits, the range is 0~FFFF.
MSK encoding

● **PTT ID Type**
To use MSK signaling to call other mobile radios, PTT ID type should choose MSK.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 58 (IDSOR).
2.Press MHZ/SET key and rotate the coding knob to choose PTT ID type, DTMF (default), MSK.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

● **MSK Prompt Sound Monitor**
When sending signaling code, the mobile radio speaker will have a prompt when the function is activated.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 54 (MSKM).
2.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

● **MSK Roger Beep**
When the function is activated, the mobile radio will make a beep to prompt MSK signaling has sent after sending.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 55 (MSKBP).
2.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

MSK Call List
You can choose MSK call numbers you want through MSK call list. Each call number corresponds to a targeted mobile radio MSK ID number. You can input the MSK ID number you want to set through the MSK call list of the PC programming software.

1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 56 (MSKGP).
2.Press MHZ/SET key and rotate the coding knob to choose wanted call number, OFF (default) or 1~10.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.
Note: MSK pre-carrier time: interval time is from pressing PTT key to MSK starts to send carrier, and can be set through PC programming software.

● **MSK Decoding**

● **MSK ID Number Setting**
Input the mobile radio MSK ID number through ID setting of the MSK setting in the PC programming software.

● **MSK Reset Time**
MSK reset time refers to remain time length after MSK encoding is right, such as setting 10M refers to remaining the correct status in 10 minutes after MSK encoding is right. Proper MSK reset time can be selected as needed.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 57 (MSKRT).
2.Press MHZ/SET key and rotate the coding knob to choose wanted call number, OFF (default) or 1M~10M (Minute).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Additional Function
Respond Method
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 14 (ECHO).
2. Press [MHZ/SET], then turn the encoding knob to select "D-RX" or "S-RX".
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

APO (Auto Power Off)
If don't press keys or adjust control knobs in the selected time, the mobile radio will auto power off. The mobile radio will make several-second warning beep before power off 1 minute and APO symbol flashes. Selective APO time: OFF, 30, 60, 90, 120, or 180 minutes.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 17 (APO).
2.Press MHZ/SET key and rotate the coding knob to choose APO time, OFF (default), 30, 60, 90, 120, or 180 minutes.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.
Note:
• APO still timing even the mobile radio is scanning.
• APO timer starts timing when keys are not pressed, control knob is not adjusted and PC control orders are not detected.

S-meter Squelch
If S-meter squelch function is activated, squelch of the mobile radio will be activated only when received signal intensity higher or equal to S-meter setting. It avoids constantly resetting squelch when receiving weak stations.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 8 (SQL).
2.Press MHZ/SET key and rotate the coding knob to choose S-meter level, OFF (default), S0, S1, S2, S3, S4, S5, S6, S7.
• If S0-S7 any level is selected, squelch knob is no longer working.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Squelch Delay Time
When S-meter squelch function is used, time span from the received signal disappearing to the squelch being turned off needs to be adjusted.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 9 (SQH).
2.Press MHZ/SET key and rotate the coding knob to choose OFF (default), 125, 250 or 500msec.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.
Beep Function
Beep function checks the input, wrong prompting and fault. Suggest turning on the function to check wrong operations and fault. But if wants to turn off the function
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 23 (BP).
2.Press MHZ/SET key and rotate the coding knob to choose OFF.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.
The mobile radio will make following warning beep sound even the beep function is turned off.
• APO warning beep
• TOT warning beep

Busy Channel Lockout
With this function, it can avoid transmitting on the used channel or frequency by others. When the function is turned on, if the channel or frequency is used by others, press PTT key and the mobile radio will make a wrong beep sound and doesn't transmit.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 21 (BCL).
2.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Frequency Step Size
When using coding knob or microphone UP/DWN key to choose receiving frequency, frequency step size must be chosen correctly.

Change Frequency Step Size
1.In VFO mode, press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 1 (STP).

2.Press MHZ/SET key and rotate the coding knob to choose the needed frequency step size.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any key to exit menu mode, except MHZ/SET key.
Note: if an unmatched frequency step size with current operating frequency is changed, the mobile radio will automatically adjust operating frequency to match with the new frequency step size.

Display Backlight Light Up Method
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 43 (LLIG).
2.Press MHZ/SET key and rotate the coding knob to choose AUTO, ON (default) or OFF.
Note: when using auto backlight, as soon as pressing front panel or microphone keys, display backlight lights up and remains for 5s.
• Coding control knob also can be locked. To continuously use coding control knob when the lock function is turned on, choose menu number 26 (ENC) and choose ON.
• When the lock function is turned on, the mobile radio can't be reset.
• The mobile radio's operating mode can't be switched through pressing (Power) + any key.
• Microphone PF key can be normally operated even the lock function is turned on.
Activate Coding Control Knob
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 26 (ENC).
2.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Microphone PF Key
Many mobile radio settings can be set without using mobile radio keys or control knob. Microphone PF/D, MR/C, VFO/B and CALL/A can be set as different mobile radio functions.
Default function of the microphone keys:
Microphone PF1 (PF/D) key: 1MHz step
Microphone PF2 (MR/C) key: memory call out
Microphone PF3 (VFO/B) key: VFO choice
Microphone PF4 (CALL/A) key: Call channel choice
Note: Menu number 38 (MC.L) must be set to "OFF" to program microphone keys
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose one of the menu numbers 26 -42 (PF1-PF4).
2.Press MHZ/SET key and rotate the coding knob to choose programmable functions.
3.Press MHZ/SET key to save settings, or press other key to cancel.
4.Press any key to exit menu mode, except MHZ/SET key.

Backlight Color Setting
Backlight color indicates mobile radio working status. Three kinds of backlight color working status can be set in advance: standby, transmitting and receiving.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 44 (WF.CLR), 45 (RX.CLR) and 46 (TX.CLR), and set each status.
2.Press MHZ/SET key and rotate the coding knob to choose color kinds: 1, 2, 3, 4 (default), 5, 6, 7 and 8.
3.Press MHZ/SET key to save settings, or press other key to cancel.
4.Press any key to exit menu mode, except MHZ/SET key.

LCD Contrast Adjustment
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 47 (CONTR).
2.Press MHZ/SET key and rotate the coding knob to choose LCD contrast level: 0, 1, 2 (default) and 3.
3.Press MHZ/SET key to save settings, or press other key to cancel.
4.Press any key to exit menu mode, except MHZ/SET key.

Lock Function
Lock function can ban most keys to avoid activating one function accidentally.
1.Press FUN key for (1s).
♦ When the function is turned on, the screen displays .
• Following keys can't be locked
(Power), FUN for (1s), Volume knob, PTT and microphone keyboard
2.Press FUN key for (1s) again to unlock keys.

Programmable Function
MONI: Monitor function on/off
ENTER: Input frequency or memory channel number through keyboard
1750: Transmit 1750Hz
VFO: Enter VFO mode
MR: Enter MR (memory call out) mode
CALL: Choose call channel
MHz: Enter 1MHz step mode
REV (Reverse frequency): Reverse frequency function on/off
SQL (Squelch): Enter squelch mode
M-V: Memory channel to VFO transmission
M.IN: Memory channel
C.IN: Memory call channel
MENU: Enter menu mode
SHIFT (Offset) : Offset function on/off
LOW: Choose transmitting power
LOCK: Lock function on/off (must press for 1s)
STEP (Step) : Choose frequency step size
Note: in addition to entering menu mode and choosing PF1-PF4, functions can be set by pressing the programmed PF key and turning on the mobile radio. When programming PF key with the later method, rotate the coding control knob or press microphone UP/DWN key to choose functions. Press any other key to exit menu mode, except MHZ/SET key.

Power Message
When turning on the mobile radio, power message is displayed and can be changed (up to 6 characters).
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 22 (P.ON.MSG).
2.Press MHZ/SET key and the screen displays power message and input cursor.
3.Rotate the coding control knob to choose bits.
• Following alphabet and number bits can be input: 0~9, A~Z, -- (dash), / (slash) and blank.
• In addition to coding control knob, bits can be input with microphone keyboard.
4.Press MR key to move cursor to the next one.
• Press VFO key to move cursor to the former one. Press FUN key to delete characters of current cursor position.
5.Repeat step 3 and 4, up to input 6 characters.
6.Press MHZ/SET key to finish setting and save power message.
7.Press any other key to exit menu mode, except MHZ/SET and FUN key.
Note: if power message is not set, screen will display mobile radio battery voltage when the mobile radio is turned on.

Programmable VFO
To limit operating frequency within one frequency range, program higher and lower frequencies for VFO specifications. For example, lower frequency chooses 462MHz and higher frequency chooses 468MHz. Adjustment range is from 462.000MHz to 462.000MHz.
1.In VFO mode, press FUN, MHZ/SET key in turn, then rotate the coding control knob to choose menu number 7 (PVFO).
• Screen displays the current programmable frequency range of the frequency band.
2.Press MHZ/SET key and rotate the coding knob to choose lower frequency (MHz).
3.Press MHZ/SET key and rotate the coding knob to choose higher frequency (MHz).
4.Press MHZ/SET key to save settings, or press any other key to cancel.
5.Press any other key to exit menu mode, except MHZ/SET key.
Note:
• ≤100KHz frequencies can't be programmed.
• Higher frequency can't lower than chosen lower frequency.

TOT
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 20 (TOT).
2.Press MHZ/SET key and rotate the coding knob to choose 3, 5 or 10 minutes (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.
Note: the mobile radio will make a warning beep sound even the menu number is set as OFF.

Microphone Keyboard Lock
Microphone Keyboard Lock bans microphone PF key and avoids changing mobile radio operations for accidentally pressing keys.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 38 (MC.L).
2.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Voice Companding
Voice companding function can be turned on to reduce noise and improve voice quality.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 49 (CPD).
2.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
• One mobile radio's voice companding is turned on, the other needs to be turned on to ensure sound quality.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Scramble Voice Encryption
Five encryption items can be selected, you can define them to ensure private communication.
1.Press FUN, MHZ/SET key in turn, then rotate the coding control knob to choose menu number 50 (SR).
2.Press MHZ/SET key and rotate the coding knob to choose OFF (default), USER (define), 3450, 3400, 3300, 3200, 3100, or 3000Hz.
• Private communication between two mobile radios, specifications need to be set the same to ensure normal communication.
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Speaker Turn On (SP unmute)
Speaker will be turned on when the mobile radio receives communication signaling. Opening conditions can be chosen.
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 59 (UNMUTE).
2.Press MHZ/SET key and rotate the coding knob to choose PTT ID types: QD (default), Q+0 or Q-0.
QD: Speaker will be turned on as soon as CTCSS/DCS signaling is right.
Q+0: Both the CTCSS\DCS signaling and the optional signaling (DTMF or MSK signaling) must be correct to turn on the horn.
Q-0: Turn on the horn whenever one of the CTCSS\DCS signaling, optional signaling (DTMF or MSK signaling) is correct
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Roger Beep
The mobile radio will make a finishing prompt after transmitting when the function is turned on. Prompt will send to receiver to inform receiver the communication ends.

Roger Beep ON/OFF
1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 60 (TEND).
2.Press MHZ/SET key and rotate the coding knob to choose ON or OFF (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Roger Beep Volume Setting
Roger beep volume can be selected according to your need.

1.Press FUN, MHZ/SET key in turn, then rotate the coding knob to choose menu number 61 (TVOL).
2.Press MHZ/SET key and rotate the coding knob to choose volume levels: 1~25, 10 (default).
3.Press MHZ/SET key to save settings, or press any other key to cancel.
4.Press any other key to exit menu mode, except MHZ/SET key.

Reset Operation
Fully Reset
Fully Reset Method 1:
1.When mobile radio is turned off, press FUN and (power) key.
 • All indicates light up for a moment and appear fully reset confirm message.
2.Press FUN key.
 • Screen displays SURE?
 • Press any key to cancel, except FUN key.
3.Press FUN key to reset mobile radio.
 • Screen displays WAIT for a moment.

Fully Reset Method 2:
1.Press FUN, MHZ/SET key in turn, then rotate the coding control knob to choose menu number 53 (RESET).
2.Press MHZ/SET key and rotate the coding knob to choose FULL.
3.Press MHZ/SET key.
 • Screen displays SURE?
• Press any key to cancel, except MHZ/SET key.
4.Press MHZ/SET key again to reset mobile radio.
 • Screen displays WAIT for a moment.

VFO Reset
Method 1
1.When mobile radio is turned off, press VFO and (power) key.
 • VFO reset confirm message appear.
2.Press VFO key.
• Screen displays SURE?
• Press any key to cancel, except VFO key.
3.Press VFO key again to reset mobile radio.
• Screen displays WAIT for a moment.
Method 2
1.Press FUN, MHZ/SET key in turn, then rotate the coding control knob to choose menu number 53 (RESET).
2.Press MHZ/SET key and rotate the coding control knob to choose VFO.
3.Press MHZ/SET key.
 • Screen displays SURE?
 • Press any key to cancel, except MHZ/SET key.
4.Press MHZ/SET key again to reset mobile radio.
 • Screen displays WAIT for a moment.

Wired Clone
The function is allowed to send the saved materials and set data of one mobile radio to the other mobile radio. We suppose that transmitting data' mobile radio is transmitter and receiving data is receiver, as following steps to operate:
1.Use the clone cable to connect two mobile radios though DATA socket.
2.Turn off the transmitter and turn on the receiver.
3.Press CALL/TONE, MHZ/SET and (power) key simultaneously to turn on the transmitter and the screen displays CLONE, wired copy function is activated.
4.Press MHZ/SET key of the transmitter. Transmitter displays CLONING and receiver displays CLONE RX. Mobile radios enter copy mode and copy progress is displayed.
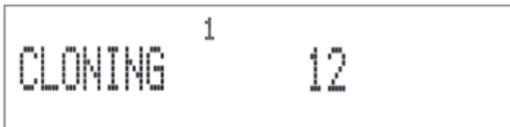
• Right corner number of CLONING stands for successful clone times.
5.When the transmitter clone number is to 100, copy finishes and screen displays CLONE OK, CLONE is displayed again after for 1s to enter copy preparation status.
6.When the receiver clone number is to 100, copy finishes and the receiver is automatically turned on again.
7.If fault appears in the process of copying, screen will display CLONE FALL. Check whether connection cable and the mobile radio model is right, etc. Try it again.
8.If wants to continue to copy next mobile radio, turn off the receiver and unplug transmission cable. Change the other mobile radio and turn on. Repeat step 4, 5 and 6. Exit copying in the process of copying, turn off mobile radios.

Specification

Frequency Range	GMRS
Frequency Step	5/6.25/10/12.5/15/20/25/30/50/100KHZ
Transmitting Method	F3E(FM)
Antenna Impedance	50Ω, Unbalanced
Frequency Stability	≥±2.5ppm （-20°C~60°C）
Working Temperature	-20°C~60°C

Power Voltage	13.8V±15%, Negative pole grounding
Current Consumption	Receiving: (RF 2W), ≤1A
Current Consumption	Transmitting(Max): ≤14A
RF Power	Low:5W, High: 40W

Fault Elimination

Problems	Reasons	Measures
Connect 13.8V DC power and press (power) key, the mobile radio can't be turned on and screen doesn't display.	1. Power cable is connected backwards. 2. One or more fuses of power cable cut down.	1.Connect randomly supplied power cable correct: Red (+) and Black (-). 2.Check the reason of blown fuse and recorrect. Install new fuse wire with the same rating.
Screen is still dark even the higher brightness is chosen.	Supply voltage is low.	Supply voltage needs to be 13.8V DC ±15% (11.7 V to 15.8 V DC). If input voltage is out of the range, adjust stable power supply and check all power cables connection.
Frequency can't be chosen through rotating coding control knob or pressing microphone **UP/DWN** key.	Memory call out mode is chosen.	Press VFO key.
Most keys and coding control knob don't work.	1. Lock function is activated. 2. The mobile radio is in channel display mode.	1. Unlock all lock functions. 2. When the mobile radio is turned off, press (power) key + REV key to exit channel display mode.
Memory channel can't be chosen through rotating coding knob or pressing microphone UP/DWN key.	Memory channel doesn't save data.	Save data in some memory channels.
Mobile radio can't transmit even pressing PTT key.	1. Microphone plug doesn't fully plug into the connector of front panel. 2. Selected transmitting frequency difference makes transmitting frequency is out of allowance range	1.Turn off the mobile radio and plug microphone plug until it is fixed. 2.Press FUN and MHZ/SET key, then rotate the coding control knob to choose menu number 5 (SFT). Press MHZ/SET key and rotate the coding knob to choose OFF. Press MHZ/SET key to save settings and press any key to exit menu mode, except MHZ/SET key.

RF ENERGY EXPOSURE AND PRODUCT SAFETY GUIDE FOR PORTABLE TWO-WAY RADIOS

⚠ **ATTENTION!**	Before using this radio, read this guide which contains important operating instructions for safe usage and rf energy awareness and control for compliance with applicable standards and regulations.

•User instructions should accompany the device when transferred to other users.
•Do not use this device if the operational requirements described herein are not met.

This two-way radio uses electromagnetic energy in the radio frequency (RF) spectrum to provide communications between two or more users over a distance. RF energy, which when used improperly, can cause biological damage.
All Retevis two-way radios are designed, manufactured, and tested to ensure they meet government-established RF exposure levels. In addition, manufacturers also recommend specific operating instructions to users of two-way radios. These instructions are important because they inform users of RF energy exposure and provide simple procedures on how to control it.
Please refer to the following websites for more information on what RF energy exposure is and how to control your exposure to assure compliance with established RF exposure limits: http://www.who.int/en/

When two-way radios are used as a consequence of employment, the Local Government Regulations requires users to be fully aware of and able to control their exposure to meet occupational requirements. Exposure awareness can be facilitated by the use of a product label directing users to specific user awareness information. Your Retevis two-way radio has a RF Exposure Product Label. Also, your Retevis user manual, or separate safety booklet includes information and operating instructions required to control your RF exposure and to satisfy compliance requirements.

Radio License（only applicable to licensed radio）
Governments keep the radios in classification, business two-way radios operate on radio frequencies that are regulated by the local radio management departments (FCC, ISED, OFCOM, ANFR, BFTK, Bundesnetzagentur...).To transmit on these frequencies, you are required to have a license issued by them. The detailed classification and the use of your two radios, please contact the local government radio management departments.
Use of this radio outside the country where it was intended to be distributed is subject to government regulations and may be prohibited.

Unauthorized modification and adjustment
Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority granted by the local government radio management departments to operate this radio and should not be made. To comply with the corresponding requirements, transmitter adjustments should be made only by or under the supervision of a person certified as technically qualified to perform transmitter maintenance and repairs in the private land mobile and fixed services as certified by an organization representative of the user of those services.
Replacement of any transmitter component (crystal, semiconductor, etc.) not authorized by the local government radio management departments equipment authorization for this radio could violate the rules.

FCC Requirements:
This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference. (Licensed radios are applicable);
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (Other devices are applicable)
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.
(Only Applicable to GMRS radio station):
A valid individual license is required to operate a GMRS station. To obtain an individual license, an applicant must be eligible and follow the applicable rules and procedures established by FCC. The applicant must pay the required application and regulatory fees. Each individual license in the GMRS will normally have a term of ten years from the date of grant or renewal, and may be renewed pursuant to the procedures of FCC. To obtain a GMRS operator license, you need FCC Form 605 & 159, we suggest visiting the FCC website at https://www.fcc.gov/wireless/support/fcc-form-605, which includes necessary instructions. More questions about the license application, please contact the FCC at 1-888-225-5322 or go to the FCC's website: http://www.fcc.gov.
According to FCC rules, any individual who holds an individual license may allow his or her immediate family members to operate his or her GMRS station or stations. Immediate family members are the licensee's spouse, children, grandchildren, stepchildren, parents, grandparents, stepparents, brothers, sisters, aunts, uncles, nieces, nephews, and in-laws.

•(Only applicable to industrial environment)This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

•(Only applicable to home)This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

CE Requirements:
•(Simple EU declaration of conformity) Shenzhen Retevis Technology Co., Ltd. declares that the radio equipment type is in compliance with the essential requirements and other relevant provisions of RED Directive 2014/53/EU and the ROHS Directive 2011/65/EU and the WEEE Directive 2012/19/EU; the full text of the EU declaration of conformity is available at the following internet address: www.retevis.com.

•Restriction Information
This product can be used in EU countries and regions, including: Belgium (BE), Bulgaria (BG), Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE) and United Kingdom (UK).
For the warning information of the frequency restriction, please refer to the package.
•Disposal
The crossed-out wheeled-bin symbol on your product, literature, or packaging reminds you that in the European Union, all electrical and electronic products, batteries, and accumulators (rechargeable batteries) must be taken to designated collection locations at the end of their working life. Do not dispose of these products as unsorted municipal waste. Dispose of them according to the laws in your area.

IC Requirements:
Licence-exempt radio apparatus
This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
(1) This device may not cause interference.
(2) This device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.
L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage;
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RF Exposure Compliance and Control Guidelines and Operating Instructions
•Occupational/Controlled Radio, this radio is designed for and classified as "Occupational/Controlled Use Only", meaning it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards; NOT intended for use in a General population/uncontrolled environment.
•General population/uncontrolled Radio, this radio is designed for and classified as "General population/uncontrolled Use".

To control your exposure and ensure compliance with the occupational/controlled environment exposure limits, always adhere to the following procedures. When operating in front of the face, worn on the body, always place the radio in a Retevis approved clip, holder, holster, case, or body harness for this product. Using approved body-worn accessories is important because the use of Non-Retevis approved accessories may result in exposure levels, which exceed the IEEE/ICNIRP RF exposure limits.
Transmit no more than the rated duty factor of 50% of the time. To Transmit (Talk), push the Push to Talk (PTT) button. To receive calls (listen), release the PTT button. Transmitting necessary information or less, is important because the radio generates measurable RF energy exposure only when transmitting in terms of measuring for standards compliance.
•DO NOT operate the radio without a proper antenna attached, as this may damage the radio and may also cause you to exceed RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or an antenna specifically authorized by the manufacturer for use with this radio, and the antenna gain shall not exceed the specified gain by the manufacturer declared.
•DO NOT transmit for more than 50% of total radio use time, more than 50% of the time can cause RF exposure compliance requirements to be exceeded.
•During transmissions, your radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so.
•DO NOT operate the transmitter in areas that are sensitive to electromagnetic radiation such as hospitals, aircraft, and blasting sites.

•Portable Device, this transmitter may operate with the antenna(s) documented in this filing in Push-to-Talk and body-worn configurations. RF exposure compliance is limited to the specific belt-clip and accessory configurations as documented in this filing and the separation distance between head and the device or its antenna shall be at least 2.5 cm.
•Mobile Device, during operation, the separation distance between user and the antenna subjects to actual regulations, this separation distance will ensure that there is sufficient distance from a properly installed externally-mounted antenna to satisfy the RF exposure requirements. Transmit only when people outside the vehicle are at least the recommended minimum lateral distance away from a properly installed according to installation instructions, externally mounted antenna.

Hand-held Mode(if applicable)

• Hold the radio in a vertical position with the microphone (and other parts of the radio including the antenna) at least 2.5 cm (one inch) away from the nose or lips. The antenna should be kept away from the eyes. Keeping the radio at a proper distance is important as RF exposure decreases with increasing distance from the antenna.

Phone Mode(if applicable)

•When placing or receiving a phone call, hold your radio product as you would a wireless telephone. Speak directly into the microphone. Do not use the equipment when you are driving

Electromagnetic Interference/Compatibility

NOTE: Nearly every electronic device is susceptible to electromagnetic interference (EMI) if inadequately shielded, designed, or otherwise configured for electromagnetic compatibility.

Avoid Choking Hazard

Small Parts. Not for children under 3 years.

Turn off your radio power in the following conditions:

WARNING

•Turn off your radio before removing (installing) a battery or accessory or when charging battery.
•Turn off your radio when you are in a potentially hazardous environments: Near electrical blasting caps, in a blasting area, in explosive atmospheres (inflammable gas, dust particles, metallic powders, grain powders, etc.).
•Turn off your radio while taking on fuel or while parked at gasoline service stations.
To avoid electromagnetic interference and/or compatibility conflicts
•Turn off your radio in any facility where posted notices instruct you to do so, hospitals or health care facilities (Pacemakers, Hearing Aids and Other Medical Devices) may be using equipment that is sensitive to external RF energy.
•Turn off your radio when on board an aircraft. Any use of a radio must be in accordance with applicable regulations per airline crew instructions.

Protect your hearing:

WARNING

• Use the lowest volume necessary to do your job.
• Turn up the volume only if you are in noisy surroundings.
• Turn down the volume before adding headset or earpiece.
• Limit the amount of time you use headsets or earpieces at high volume.
• When using the radio without a headset or earpiece, do not place the radio's speaker directly against your ear
• Use careful with the earphone maybe possible excessive sound pressure from earphones and headphones can cause hearing loss
Note: Exposure to loud noises from any source for extended periods of time may temporarily or permanently affect your hearing. The louder the radio's volume, the less time is required before your hearing could be affected. Hearing damage from loud noise is sometimes undetectable at first and can have a cumulative effect.

Avoid Burns

WARNING

Antennas
•Do not use any portable radio that has a damaged antenna. If a damaged antenna comes into contact with the skin when the radio is in use, a minor burn can result.
Batteries (If appropriate)
•When the conductive material such as jewelry, keys or chains touch exposed terminals of the batteries, may complete an electrical circuit (short circuit the battery) and become hot to cause bodily injury such as burns. Exercise care in handling any battery, particularly when placing it inside a pocket, purse or other container with metal objects
•BATTERY WARNING: KEEP OUT OF REACH OF CHILDREN
•Store spare batteries securely
•If the battery compartment (if applicable) does not close securely, stop using the product and keep it away from children
•If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention
•Dispose of used batteries immediately and safely=

Long transmission
•When the transceiver is used for long transmissions, the radiator and chassis will become hot.

Safety Operation

⚠️ **WARNING**

Forbid
•Do not use charger outdoors or in moist environments, use only in dry locations/conditions.
•Do not disassemble the charger, that may result in risk of electrical shock or fire.
•Do not operate the charger if it has been broken or damaged in any way.
•Do not place a portable radio in the area over an air bag or in the air bag deployment area. The radio may be propelled with great force and cause serious injury to occupants of the vehicle when the air bag inflates.

To reduce risk
•Pull by the plug rather than the cord when disconnecting the charger.
•Unplug the charger from the AC outlet before attempting any maintenance or cleaning.
•Contact Retevis for assistance regarding repairs and service.
•The adapter shall be installed near the equipment and shall be easily accessible

Approved Accessories

⚠️ **WARNING**

•This radio meets the RF exposure guidelines when used with the Retevis accessories supplied or designated for the product. Use of other accessories may not ensure compliance with the RF exposure guidelines and may violate regulations.
•For a list of Retevis-approved accessories for your radio model, visit the following website: http://www-.Retevis.com

For downloading further resources:
Brochures, Software/Firmware, Manual etc, Pls contact
your direct reseller first OR go to website retevis.com and
check "support" in the each product link to download it.

RETEVIS

Guarantee

Model Number: —————— Serial Number: ——————

Purchasing Date: ——————————————

Dealer: —————— Telephone: ——————

User's: —————— Telephone: ——————

Country:—————— Address: ——————

Post Code:—————— Email: ——————

Remarks:
1.This guarantee card should be kept by the user, no replacement if lost.
2.Most new products carry a two-year manufacturer's warranty from the date of purchase. Further details, pls read
http://www.retevis.com/after-sale/
3.The user can get warranty and after-sales service as below:
● Contact the seller where you buy.
● Products Repaired by Our Local Repair Center
4.For warranty service, you will need to provide a receipt proof of purchase from the actual seller for verification

Exclusions from Warranty Coverage:
1.To any product damaged by accident.
2.In the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs.
3.If the serial number has been altered, defaced, or removed.
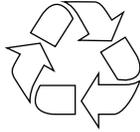
CE FC **RoHS**

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