14x12.5cm

TO CUSTOMERS

Thank you very much for using our Two Way Radio.
This product has a newly developed,structure reasonable
beautiful design and feature stable.
Small appreance design for user convenience operate.
Please reading carefully before you using.

RETEVIS

Welcome to use Two Way Radio

Professional FM Transceiver

Main Functions

Dual band, dual display, dual standby

2 x 128 channels to store

FM Radio receiver and 25 channels

Channel spacing selectable (25/12.5 kHz)

Handsfree VOX function

QT & DQT encoding and decoding

QT & DQT scanning

Low battery alarm

Emergency Alarm

Shift repeater function

ANI function

DTMF & Remote kill/stun function

Talkaround function

Reverse frequency function

COMP & 8 groups of scrambler

Tri-color background light selectable

MSK/DTMF/2T/5T

Programming protection

Professional FM Transceiver

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USING TIPS

UNPACKING AND CHECKING EQUIPMENT
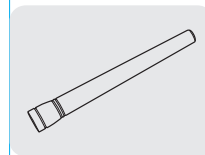
Professional FM Transceiver

Using tips

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 demaged 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 have the banner "Do not use wireless equipment", such as hospital and other healthcare places.
- In the car with an airbag, do not put the radio within the scope of the 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 smelly or smoke, please shut off its power immediately and contact with your local dealer.
- Do not transmit too long, for the radio may heat and hurt the user.

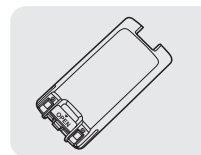## Unpacking and checking equipment

Carefully unpack the radio. We recommend you check the items listed in the followingtable before discarding the package. If any items is missing or has been damaged during shipment. Please contact us immediately.
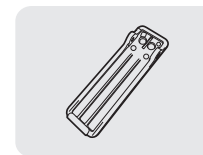
Supplied Accessories

Antenna(1)	Li-ion battery(1)	Belt clip(1)	Charger(1)

Adapter(1)	Users manual(1)

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User's Manual

CHARGING BATTERY PACK

INSTALLATION OF ACCESSORIES

GETTING FAMILIAR

Professional FM Transceiver

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CHARGING BATTERY PACK

Charging Precaution

The supplied battery pack of RT87 is a high-performance Li-ion battery with 7.4V standard voltage, 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 use RETEVIS designated battery; other batteries can cause explosion and hurt people.

Notice: ◗ Please do not short-circuit the battery terminals or expose of in fire. Do not disassemble the battery unauthorized.

◗ Charge the battery between temperature 0℃ and 45℃. The battery can not be normally 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 charged.

◗ If the battery pack lasts shortly even it is full of power, 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 before charging to avoid any danger.

Warning: When the conductive metals such as jewelery, key or decorative chains touch the

RETEVIS

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 generates much heat. Do deal with any battery carefully, especially when put it into pocket, wallet or other metallic containers.

Charging Operation

Indicator light of charger will show charging condition

Indicator Display	Status
Red	Charging
Green	Completed

Battery Tips:
- The battery is not fully charged in factory, please charge before using it.
- Charge and discharge the battery for two or three times, the battery capacity will reach the best condition. When the battery capacity is low, please charge or change the battery.
- The battery lasts shortly even if it is fully charged, the battery is depleted, please contact your local dealer to buy a new authentic Retevis battery.

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INSTALLATION OF ACCESSORIES

Installation of Battery Pack

1) Fit the supplied battery pack into the batter pack trough, then slide it toward the head to insert it completely-—in direction of arrowhead ①.
2) Push the battery pack lock to release the battery pack and slide it toward the bottom to remove it out---in direction of arrowhead ②.
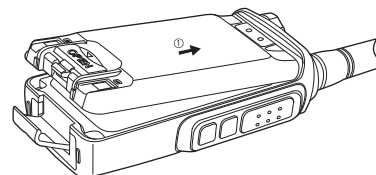
Picture 1   Picture 2

Antenna Installation

The supplied antenna provides good results over VHF and UHF range of the transceiver you need.

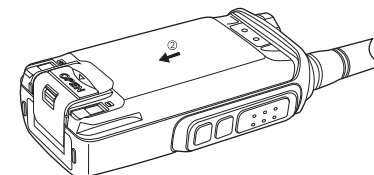To install the supplied antenna, hold the bottom end of the antenna, then screw it onto the connector on the transceiver until it is snug.
Do not over-tighten by use of extreme force.
Picture 3
To uninstall the antenna, hold the bottom end of it and turn it counterclockwise to remove it.
Picture 4

Notes: ◗ Never transmit without having an antenna connected.
   ◗ When installing the supplied antenna, never hold the upper part of the antenna while screwing it onto the connector on the transceiver. Or you may snap the antenna.
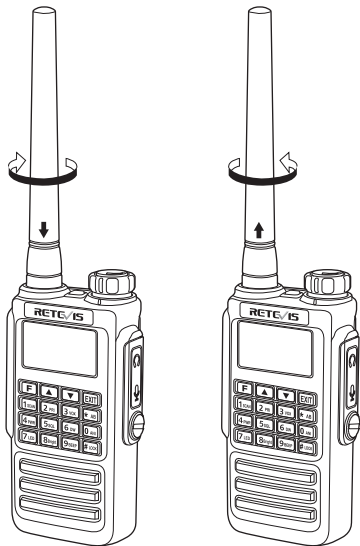
Installing Belt Clip

Align the two holds 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 6

Picture 5   Picture 6

RETEVIS
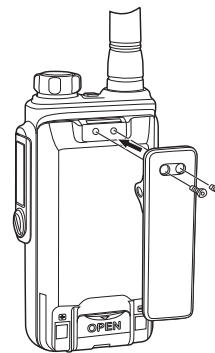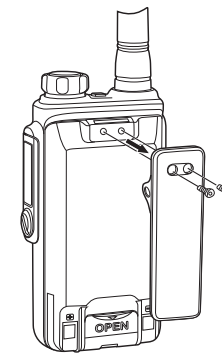
Installing External Micro/Speaker

Open the cover of the Mic/speaker jack and insert

the microphone/speaker plugs into the jack. Picture 7

Note: ◗ Using the external headset or Mic/speaker

will affect the water-tightness performance

of radio.

◗ If the external headset is not workable, please

use the headset case.

Picture 7

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RADIO ILLUSTRATION

VOLUME DIAL
This control toggle the transceiver's power on/off and adjust the audio volume level.

ANTENNA
Connect the supplied antenna here.

BUSY/TX
The indicator turns green during receive and turns red during transmit/ emergency alarm.

KEYBOARD
These 18 keys select the operating features on the Retevis. The function of the keys are described in details on pages 16&17.

SPEAKER
The internal speaker is located here.

MIC
The internal microphone is located here.

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PTT
Press it to transmit and release it to receive after your transmission is completed.

MONI
Press and hold this key disables the noise squelching action, allowing you to hear very weak signals near the back-ground noise level.

MIC/SP
The jack provides connection points for microphone audio, earphone audio, speaker and program cable.

Li-ion battery
For charging the radio

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RT87 Special operation

RT87 reset function

1. If the screen display: "NO AVAILABLE CH" Please rest the radio.
   The step of reset are as following：
   1> Press 🄵 and open the radio，screen display"RESET??"
   2> Press 🄵 to confirm，screen display"VFO ? ?"
   3> Press 🔼 or 🔽 to choose the Reset type, press 🄵 to confirm;
   During the reset, the screen will show "WAIT", if it is finished, the radio will restart it self.
2. Reset Type are as following:
   "VFO": reset all , including the VFO channel and menu setting
   "FULL/" reset the channel and menu setting (please note, if the screen show: " NO AVAILABLE CH", please use this reset)
   "VERSION" reset the version Number and Factory Aging mode.

Ageing , &Version checking

1> Under reset menu, choose "VERSION/", press 🄵 to confirm
2> Screen shows: "PASSWORD/"
3> Input password
   A: Aging password "5168"
   B: Checking the version No , password:"9295"
   Hardware Ver: PCB version
   RT87v1.1 1706
   Software Ver: MCU version
   v1.00   17/10/18

RT87 Clone function

For Clone function, please prepare the 2 radio (should be same), one clone line/

Main radio (the radio which is end the data)

Sub radio (the radio which is received and store the data)

Step of Clone：

1> Turn on the sub radio, off the main radio, connect the two radio together via the clone line.

2> Press【PTT】 & ▲ to open the radio, enter the clone mode, screen shows: "CLONE".

3> Main radio press【MONI】to start the clone.

4> During the clone, the main radio and sub radio both show the "PROGRAM/ XX%", main radio will flash with red light, while Sub radio is green light.

5> If the clone is succeed, main radio shows "PROGRAM/ 100%", then back to the statue which is ready to clone, Sub radio will restart itself/.

6> If the clone failed, man radio will show "ERROR" or "PROGRAM/ XX%", the red light do not flashed. Sub radio restart.

RT87 working mode

1> Channel mode: Press ⌧ to open the radio.

2> Frequency mode: Press ⌧.

3> Band switch: Press ✱AB to switch the main band to sub band.

Monitor

Press【PF2】1 second to open the Monitor function.

Menu operation:

1. F + 1SCAN : scan
2. F + 2PF : Priority Transmit
3. F + 3VOX : VOX level
4. F + 4PRE : Power
5. F + 5SQL : Squelch
6. F + 6DW : Dual watch/ standby activate
7. F + 7LED : LED
8. F + 8Bright : Bright of backlight
9. F + 9BEEP : Keypad Beeper setting
0. F + 0ANI : ANI ID
*. F + ✱AB : QT/DQT Setting

 Under standby mode, to change the main band and sub band.

#. F + #LOCK : Shift

 Under standby mode, to lock and unlock the keypad.

PF1: Short press function can be set via software.

 Long press to start the alarm F+PF1 to start the remote kill/stun/activate.

PF2: Short press function can be set via software.

 Long press to start Monitor.

 F+PF2 to on/OFF the FM radio.
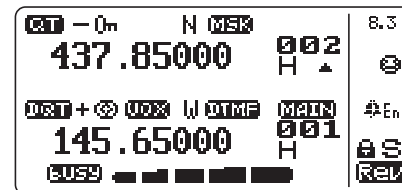
Emergency Alarm

Long press【PF1】2second to start the emergency alarm function.

During the emergency alarm function, the radio will transmit the alarm ring for 20 second, and receiving 10 second, continuously.

Press【PTT】 to exit the Alarm.

Lock and unlock

During the standby mode, long press # LOCK 2 second to lock and unlock the keypad; If the keypad is lock, press any key (except # LOCK) , the radio will show: keypad is locked . And screen shows "PRESS # LOCK , Pls ".

RT87 Basic operation and Function

Function

■ dual band dual standby, dual display
■ Wide and narrow bandwidth selective(25KHz/12.5KHz)
■ ANI function
■ Remote kill/stun/activate
■ 128channel, 25 FM Channels

■ VOX
■ QT/DQT, MSK/DTMF/2T/5T
■ Fm radio
■ Compander & Scrambler

Menu operation

PTT

PF1

PF2
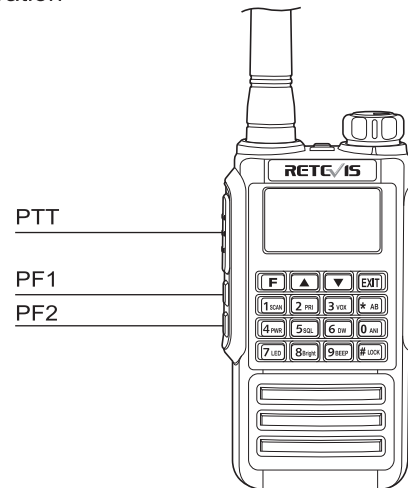
LCD Display

LCD Display	Description of function
QT	QT
DQT	DQT
+ −	Shift Direction
On	scrambler
⊗	compand
VOX	VOX
N	Narrow band
W	Wide band
MSK	MSK
DTMF	DTMF
2T	2-TONE
5T	5-TONE
MAIN	Main band
001 128	Channel No
H	High power
L	Low power

▁▃▅	Scanned deleted
💬	Message received
busy ▭▬▬▬▬	Channel busy& Power meter
TX ▬▬▬▬▬	Transmit& power level
8.3	Battery power indicator
⊜	ANI
🔔	Beep
En	English
🔒	Lock the keypad
S	RX power save activate
Rev	Reverse the transmit and receive frequency active
FUN	Short cut mode activate

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Set Menu operation

No	LCD DISPLAY	Available Values	Description of function
01	SCAN	/	SCAN
02	TX.SEL	EDIT/BUSY	Priority Transmit
03	VOX	1-8	VOX Level setting
04	TX POW	LOW/HIGH	High/Low power
05	SQL	0-9	SQL level setting
06	D.WAIT	ON/OFF	Dual wait/Standby
07	LED	ON/AUTO/OFF	LED display mode
08	BRIGHT	OFF/1/2/…/7	Background Light
09	BEEP	ON/OFF	Beep setting
10	ANI	ON/OFF	Automatic Number Identity
11	TOT	OFF/30/60/…/270	Transmitter Time-out Timer
12	BUSY LOCK	OFF/CARRIER/QT DCS	Busy channel Lock-out
13	VOX SW	ON/OFF	VOX Switch on/off
14	ROGER	ON/OFF	Transmit over beeper
15	DW	ON/OFF	Dual watch/Monitor
16	RX SAV	ON/OFF	Receiver Saver
17	SCN-REV	TO/CO/SE	Scan mode
18	AUTOLK	ON/OFF	Auto keypad Lock

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No	LCD DISPLAY	Available Values	Description of function
19	VOICE	ON/OFF	Voice prompt
20	BATT SHOW	ICON/VOLT	Battery display method
21	PF1	OFF/REVERT/OPT CALL/1750Hz	Side-key
22	PF2	OFF/REVERT/OPT CALL/1750Hz	Side-key
23	OPN.SET	OFF/VOLT/MSG/PICTURE	Power-on display
24	PON.MSG	-1 A, @	Power-on display
25	CHNAME SHOW	ON/OFF	Channel name SHOW
26	CH.NAME	-1 A , @	Channel name editing
27	OFFSET	0.000-99.995	Repeater Shift
28	C-CDC	OFF/67.0/D023N	Tx/Rx Tone coder
29	R-CDC	OFF/67.0/D023N	RX Tone coder
30	T-CDC	OFF/67.0/D023N	TX Tone coder
31	SFT-D	+/-/OFF	Shift direction
32	STEP	0.5K/2.5K/…/25K/37.5K/50K/100K	step
33	N/W	WIDE/NARR	Channel spacing select
34	CTCSS SCAN	/	CTCSS SCAN
35	DCS SCAN	/	DCS SCAN
36	SCR.NO	1-8	Scrambler
37	APRO	OFF/COMP/SCR	Voice compander/Scrambler

Menu Operation

1> Under standby mode, press ▣ to enter menu setting, LCD display as below".

Menu No ----- **O2 TX.SEL**------------ Menu

 EDIT --------- Available Vales

 O3 VOX

 O4 TX POW --------- Following
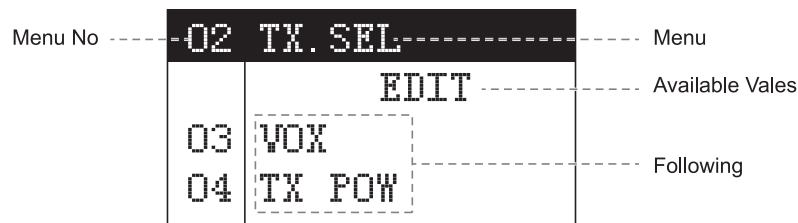
2> Press ▲ or ▼ to choose the desired menu, or press the keypad directly to menu.
3> Press ▣ to enter, press ▲ or ▼ to choose the desired setting.
4> Press ▣ to confirm.
5> Press ▣ twice to exit.

Priority Transmit (Menu 02)

" EDIT " : It will transmit on the operating band.
" BUSY " : It will transmit on the band last talking used.

Dual wait/standby (Menu 06)

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

Battery Display (Menu 20)

" ICON " : Under standby mode, the battery capacity will showed as an Icon.
" VOLT " : Under standby mode, the battery capacity will showed as Voltage.

Side-key (Menu 21、Menu 22)

" OFF " : Side-key is no function, when press it, it will have "Du" sound.
" REVERT " : Short press the side key, can on/off the reverse the transmit and receive frequency.
" OPT CALL " : Short press the side key, can enter or exit the Call Tone menu.
" 1750Hz " : Short press the side key, it will activate and transmit around 4 second 1750Tone.

Power-on Display Menu (Menu 23)

" OFF " : nothing shows when radio on
" VOLT " : Shows the Voltage when radio on
" MSG " : Can show four line when radio on(can be set via the software);
" PICTURE " : When radio on, it will shows the Picture with Logo, which you can set via the software.

Power- on Message editing (Menu 24)

1> Under the standby mode, press ▣ to enter the menu, choose menu 25th.
2> Press ▣ to enter, The first character will flash.
3> Press ▲ or ▼ to choose the desired character.
 Note: It can only input the Number, letter, punctuation, can not be Chinese character.
4> Press ▣ can be switch to next character; press ▣ can switch to the previous character.
5> Press ▣ to confirm.

Repeater shift setting (OFFSET) (MENU 27)

1> Under VFO mode, press ⬛F to enter the offset function, press ⬛▲ or ⬛▼ choose menu 28

2> Press ⬛F to enter.

3> Input the number to set the desired magnitude of the repeater shift.

4> Press ⬛F to confirm.

QT & DQT setting (Menu 28、Menu 29、Menu 30)

1> Under standby mode, press ⬛F to enter the menu, press ⬛▲ or ⬛▼ to choose the menu.

2> Press ⬛F to set.

3> Press ⬛*AB to switch the Tone type(OFF->QT->DQT->OFF).

4> Press ⬛▲ or ⬛▼ to choose the desired group tone.

5> If you choose the DQT setting, press ⬛# to choose the direction of DQT.

6> Press ⬛F to confirm.

Note: This radio support the Non- standard QT & DQT and standard QT/DQT;

The range of Non- standard QT is 60.0Hz-259.9Hz, the range of Non- standard DQT is D000N/
I-D777N/I; The range of standard QT : 00-49, the range of standard DQT is 000-104; which is
the group No; No matter it is Non standard QT or Standard QT, press ⬛▲ or ⬛▼ it is to choose
the Standard QT;

Enter the QT menu, short press【PF2】can switch the Non standard QT and
Standard QT；If it is Non-standard QT, the screen will show：

Input Non standard QT   Input standard QT
C-CDC   C-CDC   C-CDC   C-CDC
254.1   D023N   * 254.1   * D023N

Tone search scanning (Menu 34、Menu 35)

1> Under standby mode, press ⬛F to enter the menu, press ⬛▲ or ⬛▼ to choose the desired one.

2> Press ⬛F confirm and start scan; during the scanning, press ⬛▲ or ⬛▼ can change the
direction of searching, press ⬛# to search the DQT.

3> When search the desired QT/DQT, the radio will halt the scan, and screen display the QT/DQT.

4> During the scan, press ⬛EXIT to exit the scan and back to the menu. If the match QT/DQT have
not detected, press ⬛F to exit the scan and back the standby mode. If the matched QT/DQT is
detected, press ⬛F , the radio will transmit the current QT/ DQT, until the channel changed or
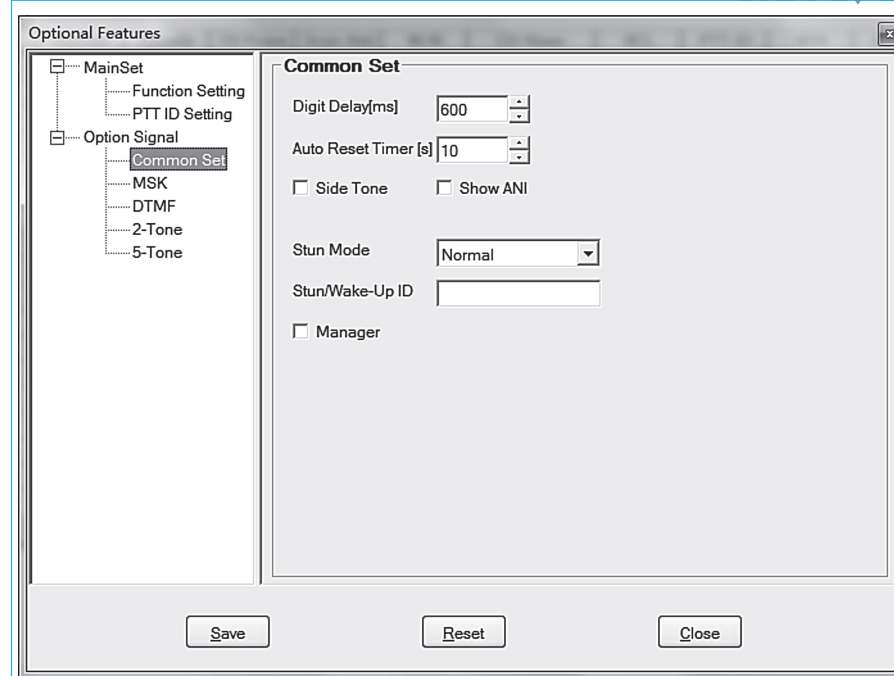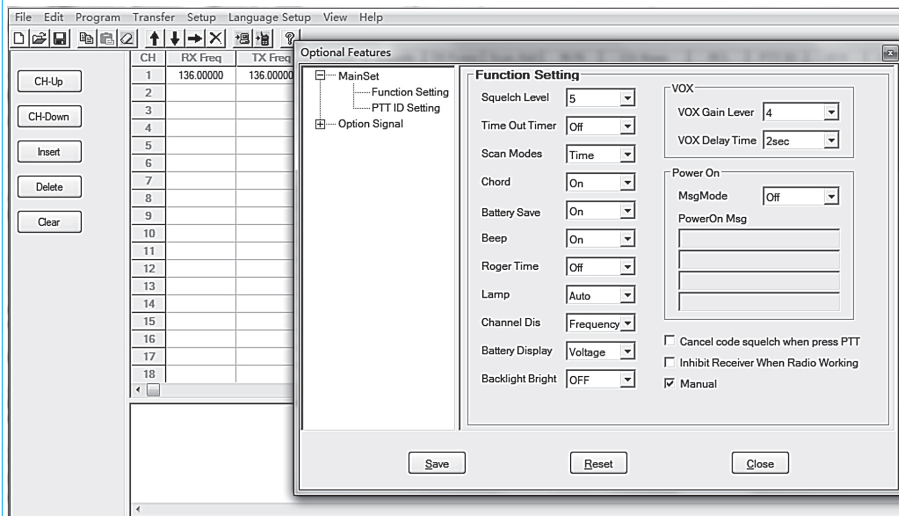restart the radio.

Voice mode (Menu 37)

The radio

" COMP " : Voice compand, which will make the voice more clearly in the noise environment.

 " SCR " : Scrambler, which is accomplished by the addition of components to the original signal
in order to make extraction of the original signal difficult.

1: Press【PF2】to on/Off FM radio.

 Press【F】to start the short cut mode, then press【PF2】to on/off FM radio.

2:【PF1】: Remote kill, Stun, revive.

 A. Manager

 If you want to remote kill/stun/revive other radio, you have to have your radio be Manager via

software – Opetional Features – Optional Signal – Manager.

To open the Manager function via the software; if not, the radio only can be remote operated by another radio.

B. Set the remote code (8 digitals required) via the software, and write to the radio.

Step 1: The radio which has the Manager , press ⬛F to start the short cut function, press 【PF2】 to send the code.

Step 2: Press ▲ or ▼ to choose the desired Code.

Function: Remote kill remote Stun remote revive.

LCD display: "KILL WORD/--------"   "STUN WORD/--------"   "REVIVE WORD/--------"

Step 3: Input the desired code(8 digital required).

Step 4: Press【PTT】to send the set code, receiver will have a ring when received the code

If it is been killed, radio can not do any operation, LCD showed: " RADIO/KILLED";

If it is been stun, radio can not transmit, LCD Showed: " RADIO/STUNNED "

Note: Can also use the software to set the radio.

Switch the standby channel

Under the channel mode, can use the knob to change the channel. Also the radio support to input the keypad to change the desired channel.

Switch the standby frequency

Under VFO mode, can use the knob to change the frequency, Also the radio support to input the keypad to change the desired frequency.

Shortcut operation

Under standby mode, press F , the bottom right of screen will show the Icon :" FUN ", which indicated the shortcut is activated.

Press EXIT to store the channel or FM channel.

Deleted the stored channel or FM channel

1> Under channel mode, press EXIT to open the radio, LCD displayed:"DEL?/CH-001"

2> Press ▲ or ▼ input the channel No.

3> Confirmed, repeat the Step 2 to deleted or EXIT to exit the channel operation.

Under the VFO mode, set the frequency and all setting (like QT、DQT、shift、offset direction);

Press F to start the short cut mode, press EXIT again to enter the channel store;

Press ▲ or ▼ key or input the desired channel No.

Note: If the screen shoed: CH-, which mean the channel already has frequency, if not it is empty channel.

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OPTIONAL SIGNALINGS

Specification

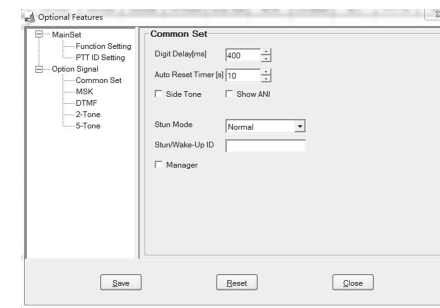## Trouble shooting guide

Warranty card

Professional FM Transceiver

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PTT ID SETTING

This transceiver supports four optional signalings(MSK, DTMF, 2 Tone and 5 Tone). Click in sequence "program – Optional Features – Optional Signal – Common Set".
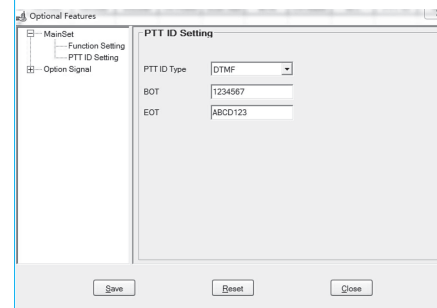
Picture 1   Picture 2

In transmitting, maybe radio cannot receive the complete signaling, because radio needs time to switch when in power-saving state. We have to set the "Digit delay", that's, to send a carrier first, let radio receive signal, then send Signaling to make sure it will be received. The suggested time for delay time is more than 400S

DTMF Part

Click in sequence "program→Optional Features→Optional Signal→DTMF"

Step 1: Edit the Fast Call list via programming software, radio can store up to 10 groups
(0-9) last calling list in total

Step 2: Input the desired code into the corresponding list, 16 characters in maximum.
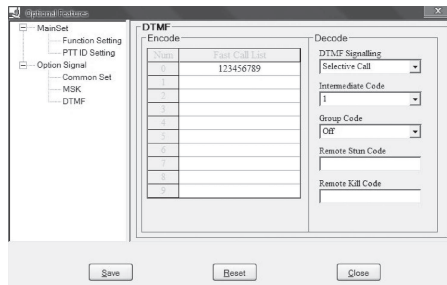
Step 3: Choose the desired DTMF decoder from available values: "Code Squelch (Picture 3) and Selective Call (Picture 4)"

Step 4: Choose the Intermediate Code if you select "Selective Call" (The first three are ID code and the fourth are Intermediate Code)

Step 5: Choose the group code, then click [save] after finishing it, and then exit.
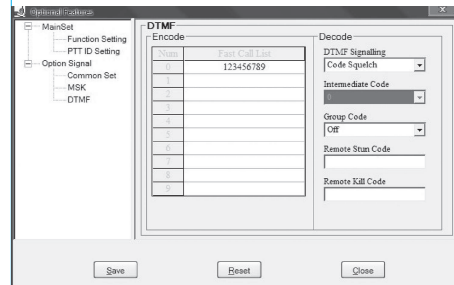
Picture 3   Picture 4

Click "More" after frequency you edit, programming in the popup

Step 6: Set the optional signal of the desired channel to be DTMF. Input the ID code and then save it after finishing it.

Make DTMF call with the transceiver

1) Power on, then select the channel with DTMF signal

2) Press [DIAL] key, LCD displays "**CALL/DTMF?**",
then press [0 ANI] – [9 BEEP] keys to make call with the
desired call list message. If the corresponding call list
has not been edited, it will sound "DU".

MSK Part

Edit the MSK message of the transceiver (ID code is for receiving while calling list message is for transmitting.)

Click in sequence "program→Optional Features→Optional Signal→MSK"

Step 1: Edit the Fast Call list via programming software, radio can store up to 10 groups
(0-9) last calling list in total

Step 2: Input the desired code into the corresponding list, 4 characters are required, Click [save] after finishing it then exit.

Step 3: Input corresponding ID code in the calling list. ID code should be corresponding to the one in the CallList, e.g.: if ID code is 1234, the corresponding callList is Group1 (Picture 5)
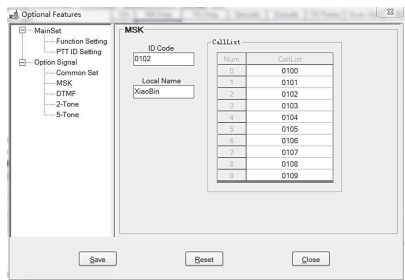
Picture 5

If local name is XiaoBin, and we choose to show ANI in the common set, when we call other, which will display "XiaoBin" on the LCD to show who is calling him. (Picture 7)

Step 4: Set the optional signal of the desired channel to be MSK. Click "More" after every frequency you edit, program it in the popup (Picture 6)

Picture 6

Picture 7

Make MSK call with the transceiver

1) Power on, then select the channel with MSK signal

2) Press [DIAL] key, LCD displays "**CALL/DTMF?**",

then press [0 ANI] – [9 BEEP] keys to make call with the desired

call list message. If the corresponding call list has not been
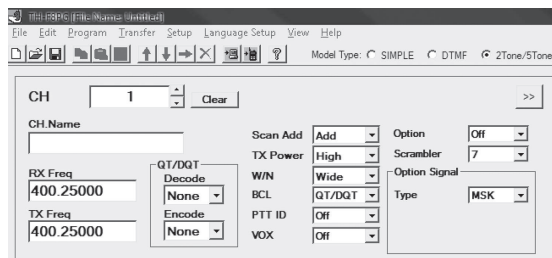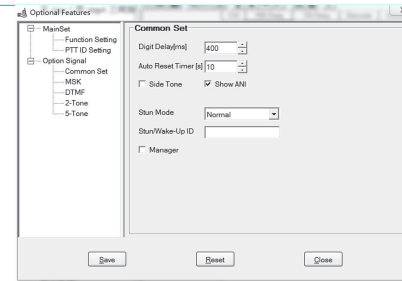
edited, it will sound "DU".

e.g.: program the above frequency and MSK signal into two radio.

input ID code 1234 into radio A, and input 2345 into radio

B. Press [DIAL], LCD displays "**CALL/MSK?**",

then press [0 ANI], you can call B with A. if you want to call

A with B, press [DIAL], LCD displays "**CALL/MSK?**",

then press [1SCAN], that is to say, if you want to call one radio,
just input the ID code of that radio.

2-Tone Part

Edit 2Tone message:

Step 1: Edit the Fast Call list via programming software, radio can store up to 10 groups
(0-9) last calling list in total

Step 2: Input the encoding-requested A-Tone (the first tone), B-Tone (the second tone)
and the gap time between A-tone and B-tone, the default setting is 100S
In encoding, A tone will sound 1S while B Tone will sound 3S. But when there is
only A tone in the call list as group call tone, A tone will sound 5S. Please refer to
Picture 8 and Picture 9,
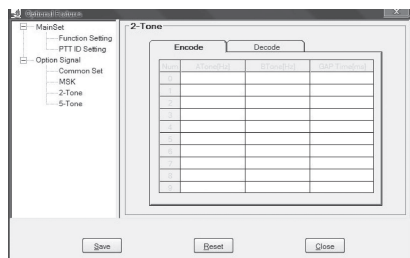
Picture 8: 2tone as transmitting encoder
Group 0:2 tone
Group 1: single tone
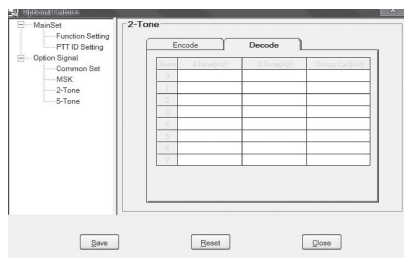
Picture 9: 2tone as receiving decoder
Group 0:.2 tone decoder
Group 1: single tone decoder

As single tone calling, only input A Tone (e.g. A Tone is 1750 Hz), no need to input
in another Tone. The Tone in "Group Call" should be the same to the Tone of
encoder (900.3MHz).

Step 3: Set the optional signal of the desired channel to be 2-Tone. Click "More" after every
frequency you edit, program it in the popup. (Picture 10/11)
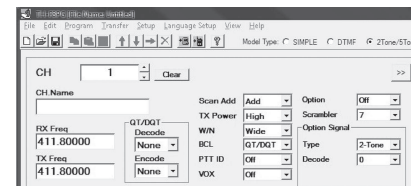
Picture 10: Select group 0 as 2-Tone   Picture 11: Select group 1 as single-tone
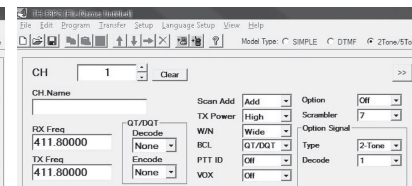
Make 2-tone call with the transceiver

1) Power on, then select the channel with 2-Tone signal
2) Press [DIAL] key, LCD displays "**CALL/2T?**",
   then press [0 AN] key to transmit 2-Tone while press [1SCAN] to
   transmit a single tone/Group call. If the corresponding call list
   has not been edited, it will sound "DU".
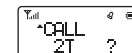
5-Tone Part

Edit 5tone message
Click in sequence "program→Optional Features→Optional Signal→5-Tone" to program
5-Tone ID and 5-Tone international standard group.
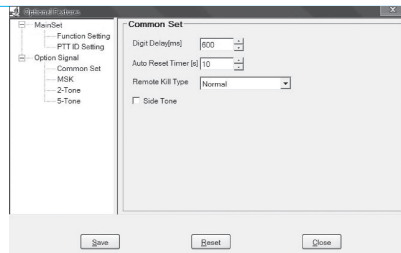
The group numbers 0-9 in the call list is used to edit the 5tone ID of the radio you want to call. You can put 0-9, A, B, C, D and number (including repeated ID)

The group in the international standard are: CCIR1, CCIR2, CCITT, EEA, EIA, NATEL, ZVEL1, ZVEL2, 9 groups in total.

Select one of them and input self ID (input in ID), and then write into the radio.

e.g. please make the standard for two radios the same, such as CC1R1, radio ID as 2A358, radio B as 44044, Group number is 3). As following 12:
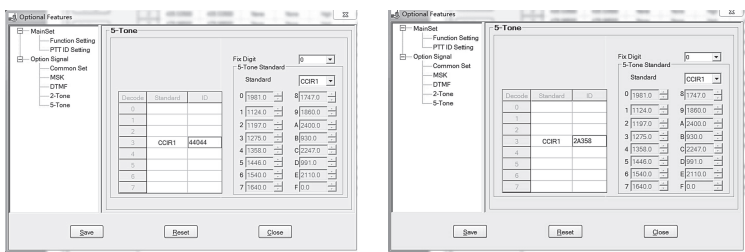
Picture 12

Click "Save" after editing desired 5tone, and then write into the radio

Click "More" after the channel needed editing to enter setting. Select 5tone in the Optional signal, and then select the List Num want to call, and click "ON" in the Auto Response.

You also can set the frequency and channel then press "OK" to save the information to the radio (Picture 13)
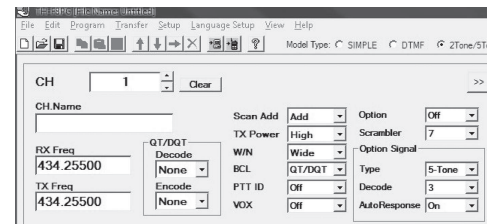
Picture 13

This transceiver has 8 groups' 5-Tone encoder and decoder to support the different channels, the operation of calling/transmitting 5-Tone are as follows:

1) Select the channel with 5-tone signal.

(LCD displays "5T" at the right bottom of radio)

2) Press [DIAL], LCD displays "–––"

3) Input the 5-Tone ID of radio you want to call

e.g. we set radio A as 2A358 and radio B as 44044, if we use A to call B, we can press

[DIAL]->4,4,0,4,4, in sequence by keypad.

4) Press PTT to transmit

Specification

General

Frequency	VHF/UHF:136−−174MHz/400−−480MHz
Frequency Stability	±2.5PPm
Operating Voltage	DC7.2V(rechargeable Li− ion battery)
Channel No	128
Antenna	High gain antenna
Antenna impedance	50Ω
Mode of Operation	Simplex or semi−duplex

Transmitter

Output power	Hi≥4W Lo≥1W
Modulation mode	16KF¢3E/11K¢F3E
Maximum deviation	≤5KHz/≤2.5KHz
Adjacent Ch Power	≤−65dB/≤−60dB
Spurious radiation	≤7uW
Pre−emphasis characteristics	6dB
Current	≤1.6A
CTCSS−DCS Deviation	0.5KHz±0.2KHz,0.4KHz±0.2KHz
Intermediation Sensitivity	5−−−12mV
Intermediation distortion	<5%

Receiver

RF Sensitivity	−122dBm (12dB SINAD)
Audio power	1W
Audio distortion	<5%
Blocking	≥85
Intermediation	≥60dB ≥55dB
Selectivity)	≥65dB ≥60dB
Spurious Rejection	≥60dB

Trouble shooting guide

Troubles	Solution
No Electrical Source	● The battery has been exhausted. Replace or recharge the battery. ● The battery is installed incorrectly. Remove it and install again.
The operating time becomes short, even the battery is fully charged.	● Replace the battery.
Not able to communicate with the transceivers of the same group.	● Confirm the QT/DQT is the same. The distance is outside of range.
The voice of another group can be heard.	● Change all QT/DQT of the group.
Other radios can not receive the TX signals or receive signals in a low volume.	● Switch the volume knob to the highest level ● The microphone may be damaged, send it to the local dealer for check.
Noise is always heard.	● The distance is outside of range. Turn on the radio in nearer range and try again.

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.

This two-way radio uses electromagnetic energy in the radio frequency (RF) spectrum to provide communications between two or more users over a distance. It uses radio frequency (RF) energy or radio waves to send and receive calls. RF energy is one form of electromagnetic energy. Other forms include, but are not limited to, sunlight and x-rays. RF energy, however, should not be confused with these other forms of electromagnetic energy, which when used improperly, can cause biological damage. Very high levels of x-rays, for example, can damage tissues and genetic material.

Experts in science, engineering, medicine, health, and industry work with organizations to develop standards for safe exposure to RF energy. These standards provide recommended levels of RF exposure for both workers and the general public. These recommended RF exposure levels include substantial margins of protection.

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 about 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/

Local Government Regulations

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

Governments keep the radios in classification, most of the classified walkie-talkie need to get local government License, and operation is allowed. The detailed classification and the use of your two-way radios, please contact the local government radio management departments.
For the following specified classification: the USA FRS, Australian CB, the individual license is not required.

Compliance with RF Exposure Standards (If appropriate, Reference to the actual product's Safety Marking)

Your Retevis two-way radio is designed and tested to comply with a number of national and International standards and guidelines (listed below) for human exposure to radio frequency electro-magnetic energy.
FCC ID The FCCID means: This radio complies with the IEEE (FCC) and ICNIRP exposure limits RF exposure environments at operating duty factors of up to 50% talk-50% listen.
CE The CE marking means: Hereby, Shenzhen Retevis Technology Co., Ltd. declares that the radio equipment type RT87 is in compliance with the RED Directive 2014/53/EC and the ROHS

Directive 2012/19/EU and the WEEE Directive 2011-65-EU. The full text of the EU declaration of conformity is available at the following internet address: www.retevis.com.
IC ID This device complies with Industry Canada RSS standard(s). Operation is subject to the following two conditions:
(1) This device may not cause interference, and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

In terms of measuring RF energy for compliance with these exposure guidelines, your radio generates measurable RF energy only while it is transmitting (during talking), not when it is receiving (listening) or in standby mode.
NOTE: The approved batteries, supplied with this radio, are rated for a 5-5-90 duty factor(5% talk-5% listen-90% standby) even though this radio complies with FCC occupational exposure limits and may operate at duty factors of up to 50% talk.

RF energy exposure standards and guidelines (if appropriate)

Your Retevis two-way radio complies with the following RF energy exposure standards and guidelines:
• United States Federal Communications Commission (FCC), Code of Federal Regulations;
  47 CFR part 2 sub-part J.
• American National Standards Institute (ANSI)/Institute of Electrical & Electronic Engineers (IEEE)
  C95. 1-2005
• IEEE Std. 1528:2013 and KDB447498, Evaluating Compliance with FCC Guidelines for Human
  Exposure to Radio Frequency Electromagnetic Fields.
• Institute of Electrical and Electronic Engineers (IEEE) C95.3-2002
• International Commission on Non-Ionizing Radiation Protection (ICNIRP)

• Ministry of Health (Canada) Safety Code 6 & Industry Canada RSS-102.
• International Electrotechnical Com-mission IEC62209-2:2010

RF Exposure Compliance and Control Guidelines and Operating Instructions

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

Guidelines

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

Operating Instructions

• Transmit no more than the rated duty factor of 50% of the time. To Transmit (Talk), push the Push To Talk (PTT) button. To receive calls (listen), release the PTT button. Transmitting 50% of the time, or less, is important because the radio generates measurable RF energy exposure only when transmitting in terms of measuring for standards compliance.
• 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.
• 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 occupational/controlled environment RF exposure limits.
• If you are not using a body worn accessory and are not using the radio in the intended use

position, in front of the face or at the body in the PTT mode or alongside of the head in the phone mode, then ensure the antenna and the radio are kept 2.5 cm (one inch) from the body when transmitting. Keeping the radio at a proper distance is important because RF exposures decrease with increasing distance from the antenna.

Hand-held Mode

• 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

• When placing or receiving a phone call, hold your radio product as you would a wireless telephone. Speak directly into the microphone.

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

0–3	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.

Note:
Pacemakers
Defibrillators or other Implanted Medical Devices Persons with pacemakers, Implantable
Cardioverter-Defibrillators (ICDs) or other active implantable medical devices (AIMD) should:
• ALWAYS keep the radio more than 15 cm from their pacemaker when the radio is turned on.
• Consult with their physicians regarding the potential risk of interference from radio frequency
  transmitters, such as portable radios (poorly shielded medical devices may be more susceptible
  to interference).
• Turn the radio OFF immediately if they have any reason to suspect that interference is taking place.

• Do not carry the radio in a chest pocket or near the implantation site, and carry or use the radio
  on the opposite side of their body from the implantable device to minimize the potential for interference.

Hearing Aids
Some digital wireless radios may interfere with some hearing aids. In the event of such interference,
you may want to consult your hearing aid manufacturer to discuss alternatives.

Other Medical Devices
If you use any other personal medical device, consult the manufacturer of your device to determine
if it is adequately shielded from RF energy. Your physician may be able to assist you in obtaining
this information.

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. 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.

RETEVIS

Avoid Burns

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

Safety Operation

	Forbid
⚠️ **WARNING**	• 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. Use of Communication Devices While Driving • Always check the laws and regulations on the use of radios in the countries and areas where you drive. • Give your full attention to driving and to the road. • If available, use the hands-free facility. • If driving conditions or regulations require it, pull off the road and park before making or answering a call.

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: www.Retevis.com

Warranty card

RETEVIS

Note:

1. This warranty card is only applicable to two-way radio of the above-listed model and serial number.

2. The warranty card is an important document for the end-user to enjoy warranty service, please keep it well.

3. The warranty card shall be filled and chopped by the dealer, or it is invalid.

Customer's name: _____ Gender: _____

Add and postal code: _____

Customer's Tel: _____

Model: _____

Serial number: _____

Purchasing date: _____

Invoice No.: _____

Dealer: _____ Stamp: _____

Add and postal code of the dealer: _____

Contact Tel: _____

Handling people: _____

Thank you for buying two-way radios, we will do our best to provide you with a stable, clear and efficient wireless communication services. In order for you to enjoy a better quality warranty service, please focus on the following information:

The products warranty period begins from the purchasing date, if product failure under normal use within warranty period occurs, according to the contents of this warranty, (the radio is guaranteed for 12 months, accessories 6 months), please carry the warranty card originals and purchase invoice to designated authorized warranty repair station for warranty service.

The following situations occur during warranty period will be implemented in paid service:

(1) Failure to produce the warranty card

(2) The card has altered traces or inconsistent with the product

(3) Defect or damage caused by abnormal or non-normal use

(4) Defect or damage caused by misuse, accident, water or negligence

(5) Defect or damage caused by improper testing, operation, maintenance, installation, disassembly or adjustment

(6) Defect or damage caused by unauthorized repair or disassembly

(7) Defect or damage caused by force majeure

(8) Wear and tear under normal use

When you are in need of repair, please send the radio, warranty card and purchase invoice together by post or take directly to designated authorized service stations, shipping costs should be borne by the user.

Maintenance record

Carry-in date			
Completion date			
Fault description			
Maintenance staff numbers			
Maintenance personnel No.			
Signature			

This warranty card to be kept by the user, no replenishment if lost