

To customers

Thank you very much for using our two-way radio. This radio of modern design is a reasonable structure with stable functions. It is designed to meet different customers' need for high quality with easy operation and perfect capacity. We believe you are pleased with its shape and multi-function.

This manual is suitable for using the model of TH-446.

Welcome to use **TYT** two-way radio

<http://www.tyt888.com>

Main functions

Frequency range: UHF: 400-470MHz PMR446

VHF: 136-174MHz

Digit FM radio (optional)

CTCSS/DCS

Reverse frequency

128 memory channels

Wide/narrow bandwidth selectable

High/low power adjustable

VOX

Scrambler (optional)

Tri-keypads menu operation

PC software programming

CTCSS/DCS scanning

Wire clone

Priority scanning

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User's Manual

Using tips

Unpacking and checking equipment

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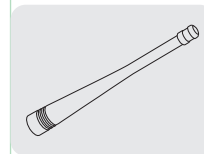
Using tips

- Obey the local government regulation before using this radio, improper use may violate the law and be punished.
- 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.
- Turn off the radio before entering flammable or explosive areas.
- Do not transmit too long, for the radio may heat and hurt the user.
- Do not use radio whose antenna is damaged, touching of damaged antenna will cause heat injury.
- 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.

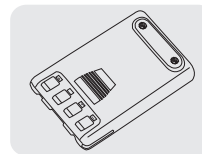
Unpacking and checking equipment

Carefully unpack the radio. We recommend you check the items listed in the following table before discarding the package. If any item is missing or has been damaged during shipment, please contact us immediately.

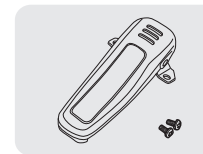
Supplied accessories:



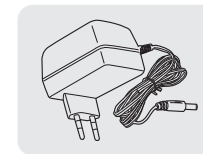
Antenna (1)



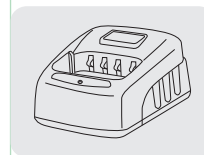
Li-ion battery (1)



Belt Clip (1)



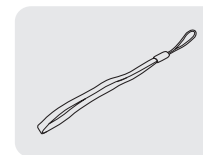
Charger Adapter (1)



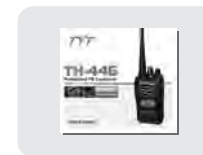
Charger (1)



Verification(1)



Hand Strap (1)



User's Manual (1)

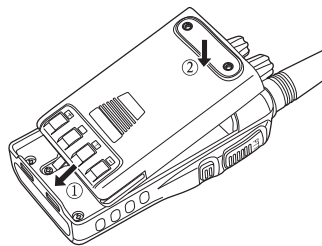
Installing and Uninstalling of supplied accessories

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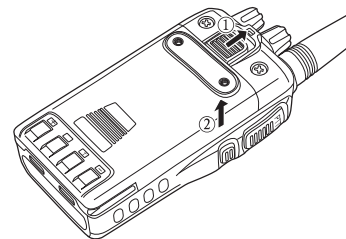
Installation of supplied accessories

Installing/Removing battery

- 1) To install the battery pack, fit the extensions at the bottom of the battery into the slots at the bottom of radio. Press the top part of the battery towards the radio until a "click" sound is heard. (picture 1)
- 2) To remove the battery pack, slide the battery latches in the middle of the battery downwards.
Pull the top of the battery away from the transceiver's body and lift the battery from the transceiver's body. (picture 2)



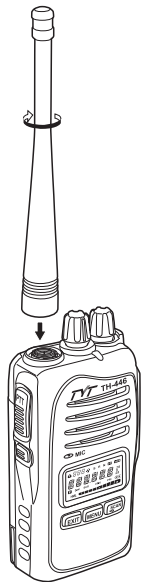
(picture 1)



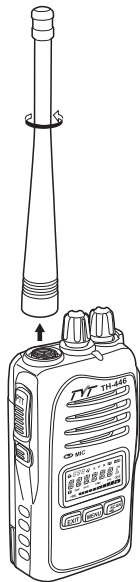
(picture 2)

Installing/Removing Antenna

- 1) Screw the antenna into the connector on the top of radio by holding the antenna at its base and turning it clockwise until secure. (picture 3)
- 2) Turn the antenna counter-clockwise until you can remove it. (picture 4)



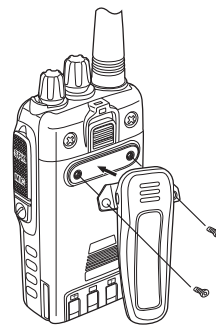
(picture 3)



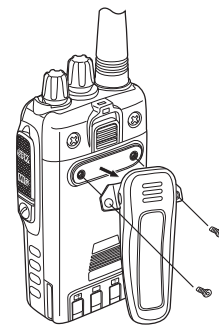
(picture 4)

Installing/removing the belt clips

- 1) Align the two holes of belt clip and the two holes of the radio, fix them with the supplied screw. (picture 5)
- 2) Loosen the screw set to remove the belt clip. (picture 6)



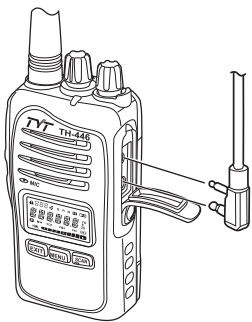
(picture 5)



(picture 6)

Installing external headset

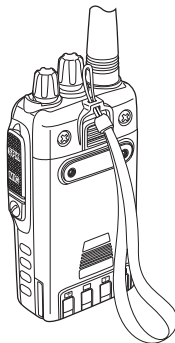
Reveal the mic/speaker jack cover, insert the headset into the mic/speaker jack (picture 7).



(picture 7)

Installing the strap

Wear the strap through the hole on the top right of the radio (picture 8)

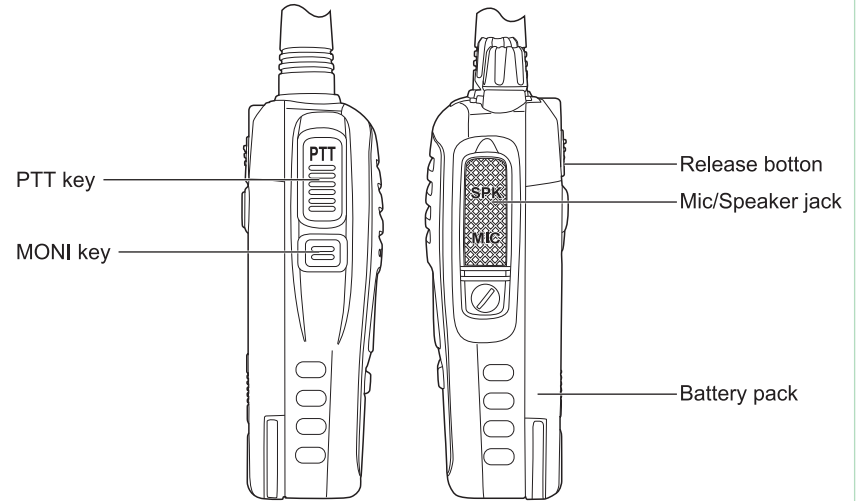
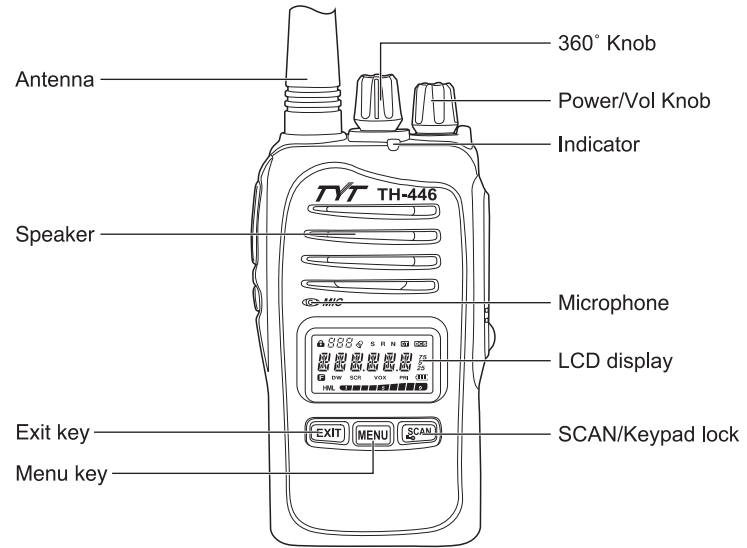


(picture 8)

Radio illustration
LCD display

<http://www.tyt888.com>




Radio Illustration





LCD display

You can see various icons are shown on the screen when radio powers on. The following table can help you to identify icons' meaning which display on LCD.



	MENU indicator
	Keypad locked
	BEEP on
S	Power saving
888	Channel NO./MENU indicator
R	Reverse frequency
N	Positive indicator of DCS
CT	CTCSS turned on
DCS	DCS turned on
DW	Monitor indicator under FM radio mode

SCR	Scrambler on
VOX	VOX on
PRI	Priority scanning on
HML	H/M/L power indicator
	Battery power display
	Received signal strength, power indicator

Working modes
Basic operations
Scanning

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Working modes

- 1) CH mode (Channel displaying mode)
- 2) FR mode (Frequency + Channel displaying mode)

Press [**MENU**] and hold on to turn on the radio, repeat this operation, Radio will switch between CH mode and FR mode. The mode will be saved after the operation.

Under CH mode, to select desired channel by rotating the middle knob

Basic operations

Three keypad menu operation:

[**EXIT**]: Exit/Back

- 1) Short press to back to previous menu
- 2) Long press to back to the standby mode

[**MENU**]: Menu key

Short press to enter menu setting, more details please check the seventh operation: Menu settings.

[**SCAN**]: Scan/Keypad lock

- 1) Short press to enter scanning, press [**SCAN**] again or press [MONI] to exit the scanning.
- 2) Long press for 2S to lock the keypad and press [**SCAN**] again for 2S to unlock the keypad.

Power on/off

If you want to turn on the power, rotate PWR/VOL knob by clockwise until beep sound is heard. To turn PWR/VOL knob in counter clock-wise rotation to turn off the radio.

Adjusting volume

Turn PWR/VOL knob to increase the volume in clockwise rotation and decrease the volume in counter clockwise rotation.

Channel selecting

To choose the desired channel by rotating the middle knob by clockwise or counter clockwise, total 128 channels.

PTT Transmitting

To transmit, please press the [PTT] switch and speak to the microphone in a normal voice. Keep the mouth about 5cm away from microphone.

- Notice:
- 1) Press [PTT] switch, the indicator lights red, it transmits
 - 2) Loosen the [PTT] after speaking

VOX transmitting


- 1) Press [**MENU**] continuously to enter menu 09 and select VOX grade by rotating the knob. The received signal strength is weakest when you choose grade 1, so you have to speak in a loud voice to make yourself heard by others. If you choose 9, the received signal is strongest so you can just speak in a normal tone.
- 2) Speak to the microphone in a normal voice, it transmits
- 3) You can set VOX time-out timer in the software. Such as you set it as 2S. After your speaking it will stop transmitting after 2S.

Note: Please use the earpiece in VOX transmitting.



Monitoring


Press [MONI] to enter monitoring mode, you can check the current channel has signal or not.

Keypad lock


Under standby mode, long press [] for 2S, repeat this operation can switch between keypad lock and unlock.

Scanning

Under standby mode, press [] to enter scanning. You can change the scanning direction by rotating the middle knob by clockwise or counter clock-wise, then press [] or [PTT] or [MONI] to exit.

Press [] continuously to enter menu 05 to choose menu "SCN", you can choose from "OFF", "CH", "CT", and "DCS". You can choose the desired one by rotating the knob, and then press [PTT] to confirm.

Channel scanning

1) Under channel mode, press [] continuously to enter menu 05, and then select "SCN CH" by rotating the knob. Then back to the standby mode.

2) Press [], the radio enter into channel scanning mode


Note: channel scanning only works when there are more than 2 channels with data and unlock.


3) To change the scanning direction by rotating the middle knob in the process of the scanning.

4) If receiving the signal in scanning, it will stay for 5S and then scan the next channel no matter the signal exist or not.

5) Press [] to exit.





Priority scanning

Under channel scanning, if you set the priority scan, it will enter the priority scanning when you press [].





Press [] continuously to enter menu 06, to choose the priority scanned channel by rotating the middle knob and then press [PTT] to confirm. If choose "OFF" it won't enter the priority scanning when the scan begins.

The operation of the priority scan is the same to the channel scanning.

CTCSS Scanning

- 1) Press [] continuously to enter menu 05, to choose "SCN CT" and then long press [] to back to the standby mode.
- 2) Under standby mode, press [] to enter the CTCSS scanning.
- 3) To change the scanning direction by rotating the middle knob.
- 4) In the CTCSS scanning, if receiving CTCSS signaling, the radio will stay in the current signaling until you set the new scanning direction by rotating the middle knob, at this time the radio will exit the current signaling and start the scanning again.
- 5) Press [] to exit.

DCS scanning

- 1) Press [] continuously to enter menu 05, to choose "SCN DCS" and then long press [] to back to the standby mode.
- 2) Under standby mode, press [] to enter the DCS scanning.
- 3) To change the scanning direction by rotating the middle knob.
- 4) In the DCS scanning, if receiving DCS signaling, the radio will stay in the current signaling until you set the new scanning direction by rotating the middle knob, at this time the radio will exit the current signaling and start the scanning again.
- 5) Press [] to exit.

Menu settings FM radio function

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Menu settings

Under standby mode, press [**MENU**] to enter menu settings, total 15 menus. Every time you press [**MENU**], it will skip into the next menu. Press the [**EXIT**], it will back to previous menu. Select the desired menu, to change the settings of the current menu by rotating the knob. Press [PTT] to save the settings and then skip to the next menu. Press [**EXIT**] and hold it for 2S, it will return to the standby mode.

Menu Illustration

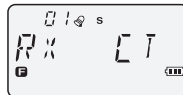
No.	LCD Icons	Menu illustration
01	RX CT	CT/DCS Receiving CTCSS/DCS
02	TX CT	CT/DCS Transmitting CTCSS/DCS
03	PWR H	H/M/L power selective
04	SCR OFF	Scrambler on/off
05	SCN OFF	CH/CT/DCS Scanning mode
06	PRI OFF	Priority scanning on/off
07	REV OFF	Reverse frequency on/off
08	SQL 5	Squelch grade setting
09	SAV ON	Power saving on/off

10	TOT 60	TOT setting
11	BCL OFF	Busy lock setting
12	BP OFF	Beep on/off
13	LAMP OFF	Backlight on/off
14	VOX OFF	VOX on/off and grade setting
15	DW OFF	Monitor on/off under FM radio mode

RX CTCSS/DCS setting

Under standby mode, press [**MENU**] to enter menu 01, LCD display "**RX CT/ RX DCS**".

To select CT(67.0-254.1) or DCS (023N--754I) by rotating the knob, then press [PTT] to confirm the setting, then it will skip to the next menu. LCD displays current signaling, rotate the knob again to select 1-50 group CTCSS or (1-104)*2 groups DCS and reverse DCS, and then press [PTT] to confirm. When setting DCS, press [MONI] to switch the direction of DCS.



TX CTCSS/DCS setting

Under standby mode, press [**MENU**] twice to enter menu 02, LCD display "**TX CT/ TX DCS**".

The setting method is the same to the RX CT/RX DCS setting.

H/M/L power setting

Under standby mode, press [**MENU**] three times to enter menu 03, LCD displays "**PWR H/M/L**".

select desired power by rotating the knob and the press [PTT] to confirm.

H: High power

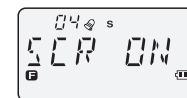
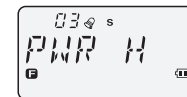
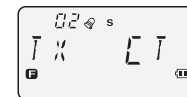
M: Medium power

L: Low power

Scrambler on/off

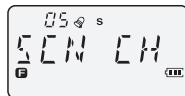
Under standby mode, press [**MENU**] continuously to enter menu 04, LCD displays "**SCR ON/OFF**",

then select [ON] by rotating the knob, then press [PTT] to confirm, the scrambler is on. Likewise, select [OFF] by rotating the knob, then press [PTT] to confirm, the scrambler is off.



Scan mode

Under standby mode, press [**MENU**] continuously to enter menu 05, LCD displays "**SCN OFF/CH/CT/DCS**", then select the desired one by rotating the knob, then press [PTT] to confirm.



OFF: Scan off

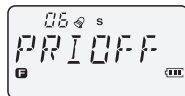
CH: Channel scanning

CT: CTCSS scanning

DCS: DCS scanning

Priority scan

Under standby mode, press [**MENU**] continuously to enter menu 06, LCD displays "**PRI OFF/01~128**", then select the desired one by rotating the knob, then press [PTT] to confirm.

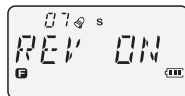


OFF: priority scanning off

1~128: priority scanned channel

Reverse frequency setting

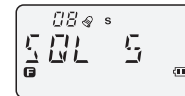
Under standby mode, press [**MENU**] continuously to enter menu 07, LCD displays "**REV ON/OFF**", select the desired one by rotating the knob and then press [PTT] to



confirm. If choose "ON", the reverse is on; at this time, radio's transmitting frequency is its receiving frequency. Its receiving frequency is its transmitting frequency. If choose "OFF", the reverse function is off.

Squelch grades settings

Under standby mode, press [**MENU**] continuously to enter menu 08, LCD displays "**SQL 0~9**", select desired squelch grade by rotating the knob, then press [PTT] to confirm.



RX power saving

Under standby mode, press [**MENU**] continuously to enter menu 09, LCD displays "**SAV ON/OFF**", select the desired one by rotating the knob and then press [PTT] to confirm.



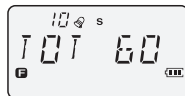
ON: power saving is on

OFF: power saving is off.

TOT setting

Under standby mode, press [**MENU**] continuously to enter menu 010, LCD displays "**TOT OFF/15/30--/300**".

select the desired time by rotating the knob and then press [PTT] to confirm. If choose "OFF" there is no limitation on transmitting. When you choose 30S, if transmitting time more than 30S, it will automatically turn off.



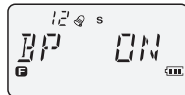
Busy channel lock

Under standby mode, press [**MENU**] continuously to enter menu 11, LCD displays "**BCL OFF/WAV/COD**", select the desired one by rotating the knob and then press [PTT] to confirm. When choose "OFF" BCL is off. When choose "WAV" radio will stay in the channel which has the same frequency till signal disappears. When choose COD, radio stays on the channel which receiving carrier and QT/DQTT should be the same. It will exit until the signal disappears.



Beep setting

Under standby mode, press [**MENU**] continuously to enter menu 12, LCD displays "**BP ON/OFF**", select the desired time by rotating the knob and then press [PTT] to confirm.

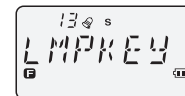


ON: Beep on

OFF: Beep off

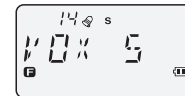
LCD display setting

Under standby mode, press [**MENU**] continuously to enter menu 13, LCD displays "**LMP ON/KEY/OFF**", select desired VOX grade by rotating the knob, then press [PTT] to confirm. When choose "ON" LCD lights all the time; when choose "OFF" LCD is off. When choose "KEY" LCD will be off automatically after 10S without any operation.



VOX grades settings

Under standby mode, press [**MENU**] continuously to enter menu 14, LCD displays "**VOX OFF/1-9**", select desired VOX grade by rotating the knob, then press [PTT] to confirm.



OFF: VOX OFF

1-9: VOX grades

DW on/off setting

Under standby mode, press [**MENU**] continuously to enter menu 15, LCD displays "**DW ON/OFF**",

when select DW OFF, it means that radio won't monitor the signal, you cannot receive any signal when you open the FM radio.

When select DW OFF, radio can monitor the signal, you can receive the signal even open the FM radio.



FM radio function --- (Optional)

On/of radio receiver

Under standby mode, press [**MENU**], and then press [MONI] key to turn on FM radio; press [**MENU**], and then press [MONI] key to turn it off.

FM radio scanning

Under FM radio receiver mode, press [**SCAN**] to enter FM radio searching; under FM radio searching mode, to change searching direction by rotating the knob. When any signal is found, the FM radio stays in this point and exit searching automatically

FM radio frequency editing

Under FM radio mode, to select the desired one by rotating the knob; press [**MENU**] and hold it for 2S, then enter frequency editing, the first digit of frequency blinks. Select the desired frequency by rotating the knob and then press [PTT] to confirm. The second digit blinks, edit and confirm, edit the frequency by sequence and then press [PTT] to exit.

Channel frequency editing

Wire clone

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Channel frequency editing

- 1) Under standby mode, select channel needs editing, press [**MENU**] and hold on for 2S to enter channel frequency editing. The first digit of the receiving frequency blinks.
- 2) To select 0-9 by rotating the knob and then press [PTT] to move to the next digit.
- 3) Edit the 2nd, 3rd, 4th, 5th, 6th digits in sequence.
- 4) After editing the last digit of the receiving frequency, press [PTT] to enter the transmitting frequency editing. The method is the same to the receiving one.
- 5) After editing the last digit of the transmitting frequency, press [PTT] to exit and back to the standby mode.
- 6) When editing the frequency, decimal point doesn't blink



Wire clone

Prepare 2sets of TH-446, 1pcs specific wired cloning cable.

Master radio (sending messages when in wired cloning)

Deputy radio (receiving and storing messages when in wired cloning)

Steps of wired clone

- 1) Hold on [MONI] and [] to turn on the master radio, enter the wired clone state. The “**Clone**” will be displayed, and then loose [MONI] and [].
- 2) The deputy radio normally powers on. Connect master and deputy one with the wired cloning cable.
- 3) Press [MONI] key of the master radio to start wired clone. During cloning, the master radio displays "**CLOU**"; deputy radio displays "**CLIN**". And the master radio lights red and deputy one lights green. When cloning succeeds, the master radio displays "**End**" and returns to the clone preparation state; If not, the master radio displays "**Err**" and then back clone preparation state.
- 4) If want to clone another one, please connect the clone cable and then press [MONI] in the master radio to operate.

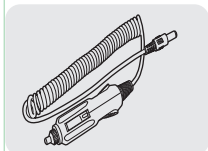


CLONE

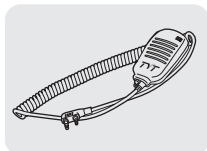
Optional accessories
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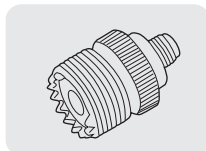
Optional accessories



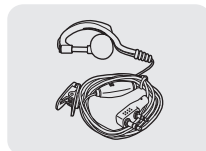
Vehicle Charger



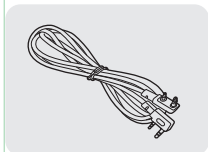
Speaker



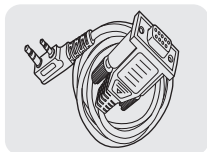
Antenna Adapter



Earphone



Clone Cable



Program Cable



Eliminator



Software CD

Technical parameter

General	
Frequency range	VHF: 136-174MHz UHF: 400-470MHz PMR446
Frequency stability	± 2.5PPm
Operating voltage	DC7.2V (Rechargeable Li-ion battery)
Channel No.	128
Antenna	High gain antenna
Antenna impedance	50 Ω
Mode of operation	Simplex or semi-duplex
Dimensions(WxHxD)	100mm x 54mm x 32mm

Transmitter	
Output power	H ≥ 5W / M=3W / L ≥ 0.5W
Modulation mode (Wideband/Narrow band)	16KF c 3E/11K c F3E
Maximum deviation (Wideband/Narrow band)	<5KHZ/ <2.5KHZ
Adjacent channel power (Wideband/Narrow band)	≥ 65dB/ ≥ 60dB
Spurious radiation	<7μW
Pre-emphasis characteristics	6dB
Current	≤ 1.5A (4W)
CTCSS/DCS deviation (Wideband/Narrow band)	0.5KHZ ± 0.1KHZ, 0.3KHZ ± 0.1KHZ
Intermediation sensitivity	8-12mV
Intermediation distortion	<10%
Receiver	
RF sensitivity	-122dBm (12dB SINAD)
Audio power	>0.5W
Audio distortion	<10%
Blocking	≥ 85
Intermediation (Wideband/Narrow band)	≥ 60dB ≥ 55dB
Selectivity (Wideband/Narrow band)	≥ 65dB ≥ 60dB
Spurious rejection	≥ 65dB

Note: Specification will be revised without notice due to technical improvement. Thank you.

Trouble shooting guide

<i>Troubles</i>	<i>Solution</i>
No Electrical Source	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Replace the battery.
Not able to communicate with the transceivers of the same group.	<ul style="list-style-type: none"> • Confirm the QT/DQT is the same. • The distance is outside of range.
The voice of another group can be heard.	<ul style="list-style-type: none"> • Change all QT/DQT of the group.

Guarantee

Model Number: _____

Serial Number: _____

Purchasing Date: _____

Dealer: _____ Telephone: _____

User's Name: _____ Telephone: _____

Address: _____ Post Code: _____

Remarks:

- 1 This guarantee card to be kept by the user, no replenishment if lost.
- 2 This guarantee card to be filled & chopped by the dealer, or it is invalid.
- 3 Don't alter the guarantee card, please confirm the serial number on the guarantee card is same as that on the machine.
- 4 One-year guarantee, charger, battery, ear-phone, antenna and cable are not under guarantee.
- 5 The user can get repairing service from the following ways:
 - Go to the shop where you buy the machine.
 - Our local repairing agents.
 - Send back to our company.

Please cut along with this line

