

Welcome to use two-way radio

## Main Functions

|                                  |                                 |
|----------------------------------|---------------------------------|
| Monitor                          | Wide band/narrow band selection |
| Battery save/low battery alarm   | Encryption                      |
| Lone worker                      | Single call,group call          |
| End-tone elimination             |                                 |
| Battery Indicator                |                                 |
| Side key programmable            |                                 |
| Talk around                      |                                 |
| 16 channels                      |                                 |
| Digital/analog double modes      |                                 |
| Read and write by computer       |                                 |
| TX High/low power selection      |                                 |
| Time out timer                   |                                 |
| Chinese and English audio prompt |                                 |
| Busy channel lockout             |                                 |
| Online update                    |                                 |
| QT(analog mode)                  |                                 |
| DQT (digital mode)               |                                 |



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## Using tips

### Unpacking and checking equipments.

#### Using tips

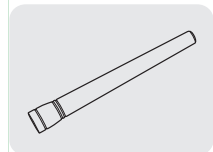
Please read the following brief instructions, non-compliance with these rules may cause danger or violate the law.

- Obey the local government regulation before using this radio, improper use may violate the law and be published.
- Turn off the radio before entering flammable or explosive areas
- Do not use radio whose antenna is damaged, touching of damaged antenna will cause heat injury
- Do not attempt to disassemble this radio; the maintenance work should be done by technical expert only
- To avoid troubles caused by electromagnetic interference of 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 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.

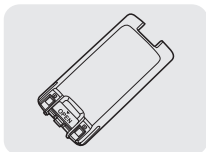
## Unpacking and checking equipments

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)



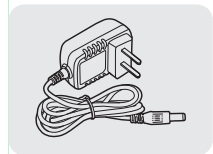
Li-ion battery (1)



Belt Clip (1)



Charger (1)



Charger Adapter (1)



User's Manual (1)

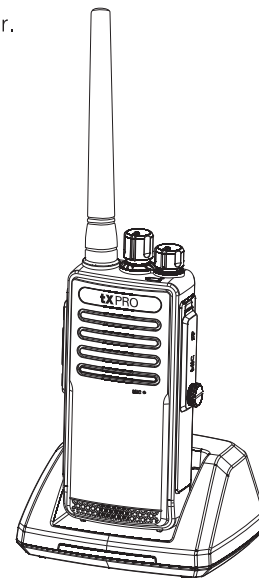
**Note:** The antenna frequency range please refers to the annular label at the bottom of antenna.

## Charging the battery

- Insert the AC adaptor plug in the AC power output socket
- Insert the battery or radio with battery vertically in a charger.
- Make sure the battery and charger terminal is in good contact, when the charging indicator light turns red, it starts charging.

### Note:

- Before inserting the battery, it is abnormal if the charging indicator blinks
- To change the battery for charging, please wait until the indicator is stable
- When the battery is well inserted, the indicator turns red and the charging is on the process, if the indicator blinks, then the battery is damaged or the temperature is too high or too low.



### **Charging precautions:**

The battery is not fully charged in factory, please charge before using it. Charge and discharge the battery for 2–3 times, the battery capacity will reach the best condition.

When the battery capacity is low, please charge or change the battery.

### **Applicable battery types**

Please use the battery supplied by factory, it might cause the explosion or harm to human body.

### **Notice:**

Do not short–circuit the battery terminal or drop the battery in the fire. Do not disassemble the battery by yourself.

Charge the battery between temperature 0°C and 45°C. The battery can not be fully charged beyond this temperature range.

Do not unplug the power or battery when it is charged. The operating time becomes short even the battery is fully charged, the battery is exhausted, please replace the battery.

Please do not charge when the battery of the radio is wet. Please dry it with a cloth before charging to avoid any danger.

### **Warning**

When the conductive metals such as jewellery, key or decorative chains touch the battery terminals, all the batteries are likely to cause damage to the items or personal injury.

These conductive metals may form a short circuit and generate much heat. Do deal with any battery carefully, especially when put it into pocket, wallet or other metallic containers.

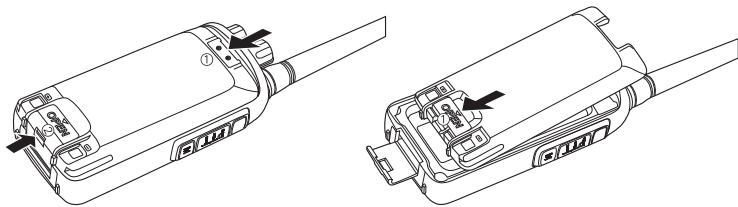
## **Assembling/disassembling the accessories**

### **Get familiar with this two way radio**

## Assemble/disassemble accessories

### Assemble/disassemble battery

To install the battery into the battery positioning hole of radio bottom, the press the battery, make the button completely to lock battery. To remove the battery, please turn off the radio, and then push up the battery button of radio top, finally take off the battery.



### Assemble/disassemble antenna

Assemble: Hold the end of antenna and rotate the antenna clockwise to the antenna hole until it's tight

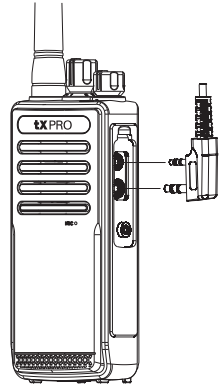
Disassemble: Rotate the antenna anticlockwise from the antenna hole.



### Earpiece jack/Programming cable jack

Open the earpiece cover, insert the earpiece into the earpiece jack.

User can use the software to program the radio by this jack, too.



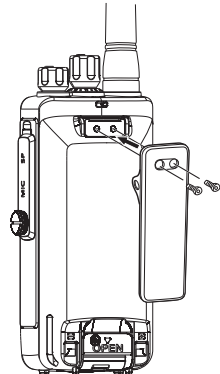
### Assemble/disassemble the belt clip

Assemble the belt clip

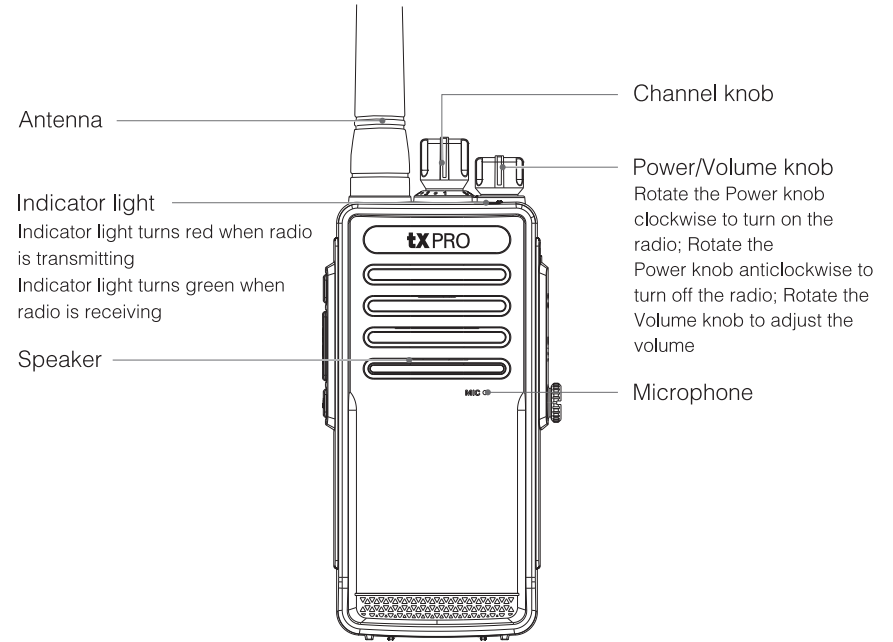
1. Remove the battery from the radio
2. Align the clamping slot of the belt clip to the mounting slot on the back of the battery, press the belt clip until it's tight.

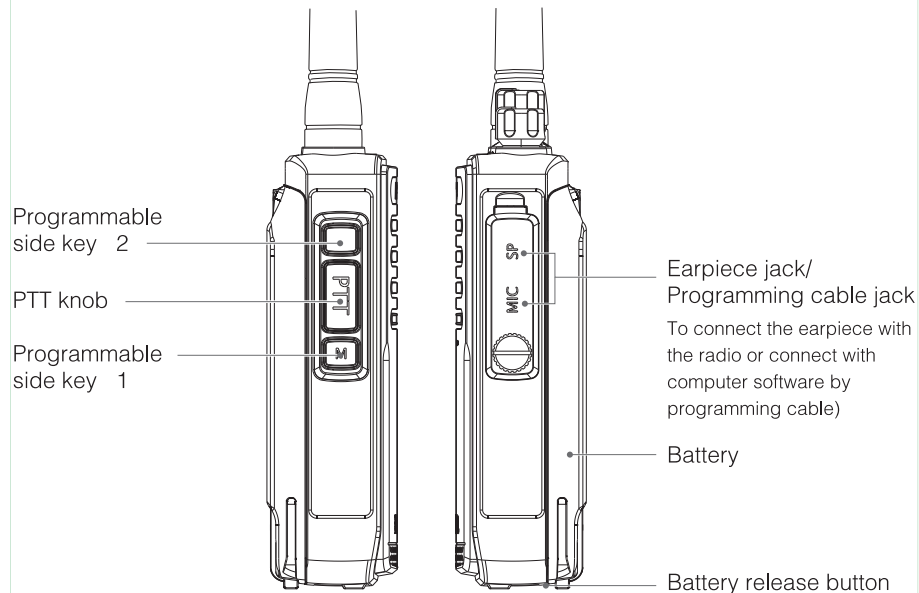
Disassemble the belt clip

1. Remove the battery from the radio
2. Pull out the belt clip



## Get familiar with this two way radio





**Notice:** In an emergency, users can press Programming side key 1 or 2 to activate the emergency call. Before using this radio, user should program the radio by matched software supplied by dealer.

## Programmable side key function Setting



## Programmable side key function

User can set side key P1 and P2 as the programmable function key as following functions:  
Monitor (Analog ) Permanent Monitor (Analog) Encryption On/Off(Digital) Zone Selection  
BER Test (Digital) High/low Power Repeater/Talk around.

### Monitor

Once user activates programmable side key as "Monitor", radio will make a squelch. This function is used to check if the current channel is occupied before communication. Monitor can release CTCSS/DCS temporarily. Also this function is used to receive the weak signal. Release side key to exit function

### Permanent Monitor (Analog only)

Once user activates programmable function key as "Permanent Monitor", radio will monitor the chosen channel whether there someone is talking at the same channel. If not radio will make rustle.

### Encryption

#### Digital only.

Only set the same encryption type of TX and RX can user communication with each other.

### Zone Selection

Once user activates programmable function key as "Zone Selection" ,user can press this side key to select different zones programmed by software. Enter Zone2 when radio make the sound "Di" exit Zone2 when radio make the sound "DiDi".

## BER Test(Digital)

User can activate programmable function key as "BER Test "to transmit the inspection code, inspection code is used to test radios which can decode by inspection code.

### High/low Power

User can activate programmable function key as "High/low Power" to switch to high or low power.

### Repeater/Talk around

User can activate programmable function key as "Repeater/Talk around" to switch to Repeater or Talk around .

Talk around: Two way radio's TX frequency and RX frequency become the same, TX signaling and RX signaling become the same.

## Setting

### QT/DQT

- 1) If user set the QT/DQT on one channel, user is able to ignore other calls on the same channel.
- 2) When users set QT/DQT on one channel, only receive the same QT/DQT can radio open the squelch. In the same way, only other people set QT/DQT the same as yours can they receive your call.
- 3) This radio has 50 groups of analog QT/DQT, 105 groups of digital QT/DQT available.

### Battery save

In a period of time if user do not have any operation and not receiving data or measured effective carrier wave, radio will enter battery save mode, receiving circuit and DSP enter a low power state in cycle , which prolongs the use time of radio. Every time the radio is transmitting, according to the battery save mode settings, will send some pre carrier wave or voice head, in order to ensure that the sleep mode of the radio can be normally received. We call this time "Battery save mode delay time" ,which can be programmed by the programming software, ranging from 1S to 600S, the default value is 50S. Users can choose whether to open the battery save mode.

### Low battery alarm

When the voltage is lower than 5.8V, the radio is always in a low battery state, the red light flashes every 2 seconds, and the radio makes the "low power" alarm, remind the end user to charge or replace the battery in time

## Communication setting

### Analog communication

Right click Zone1 to add the analog channel (Open software–Zone setting–Zone1)

Enter the channel setting

Select channel bandwidth:12.5K or 25K

Set TX Frequency and TX Frequency

Set TX Enc QT/DQT and RX Dec QT/DQT

Set RX squelch mode

### Set the TX power

Set the TX authority

Right click Zone1 to add the digital channel (Open software–Zone setting–Zone1)

Enter the channel setting, to set the Colour Code, only the same Colour Code can call on digital channel

Set TX Frequency and TX Frequency

Set the RX Group Lists (Correspond to TX Contacts)

Set the TX Contacts (Use can set the Call Type : Individual Call/Group Call /All Call)

Set the Tx Authority: Impolite

Set the In Call Criteria: Allow TX

## Contacts

Contacts only support digital mode

Write click **【 Digital Contacts 】** , and set the Call Type

Edit the corresponding ID

TX radio is able to select call the corresponding contacts

## RX Group Lists

RX Group Lists only support digital mode

Select the contacts from RX Group Lists for group call(For the communication with TX radio)

## Encryption

Select encryption type : Enhanced Mode0 /Enhanced Mode1

Set the Key No. and corresponding Key Value

Enter **【 Zone1 】** ,select digital channel, enter **【 RX Setting 】** ,tick the Encryption

Select one encryption key

Only the same encryption key can communicate

**Frequency table**  
**Technical specifications**  
**Troubleshooting guide**  
**Warranty card**

## CTCSS standard frequency table

| CTCSS    |          |          |          |
|----------|----------|----------|----------|
| 1-67.0   | 14-103.5 | 27-159.8 | 40-199.5 |
| 2-69.3   | 15-107.2 | 28-162.2 | 41-203.5 |
| 3-71.9   | 16-110.9 | 29-165.5 | 42-206.5 |
| 4-74.4   | 17-114.8 | 30-167.9 | 43-210.7 |
| 6-79.7   | 19-123.0 | 32-173.8 | 45-225.7 |
| 7-82.5   | 20-127.3 | 33-177.3 | 46-229.1 |
| 8-85.4   | 21-131.8 | 34-179.9 | 47-233.6 |
| 9-88.5   | 22-136.5 | 35-183.5 | 48-241.8 |
| 10-91.5  | 23-141.5 | 36-186.2 | 49-250.3 |
| 11-94.8  | 24-146.5 | 37-189.9 | 50-245.1 |
| 12-97.4  | 25-151.4 | 38-192.8 |          |
| 13-100.0 | 26-156.7 | 39-196.6 |          |

## DCS standard group number

| DCS |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 023 | 071 | 143 | 266 | 355 | 452 | 532 | 664 |
| 025 | 072 | 145 | 271 | 364 | 454 | 546 | 703 |
| 026 | 073 | 152 | 274 | 365 | 455 | 565 | 712 |
| 031 | 074 | 155 | 306 | 374 | 462 | 606 | 723 |
| 032 | 114 | 156 | 311 | 411 | 464 | 612 | 731 |
| 036 | 115 | 162 | 315 | 412 | 465 | 624 | 732 |
| 043 | 116 | 165 | 325 | 413 | 466 | 627 | 734 |
| 047 | 122 | 172 | 331 | 423 | 503 | 631 | 743 |
| 051 | 125 | 174 | 332 | 431 | 506 | 632 | 754 |
| 053 | 131 | 205 | 343 | 432 | 516 | 645 |     |
| 054 | 132 | 212 | 346 | 445 | 523 | 654 |     |
| 065 | 134 | 223 | 351 | 446 | 526 | 662 |     |

# Specifications

## General

|                          |   |
|--------------------------|---|
| Frequency range          | 400–512MHz  |
| More frequency avallable | 450–520MHz<br>136–174MHz<br>220–260MHz<br>245–245.9875MHz |
| More frequency avallable | 256   |
| Working voltage          | 7.2V  |
| Working temperature      | –30°C–+60°C   |
| Storage temperature      | –40°C–+80°C   |
| Continuous working time  | Analog:15 hours;<br>Digital:25 hours                      |
| Battery capacity         | 2200Mah   |

## Reveiver

|                               |   |
|-------------------------------|---|
| Frequency range               | 400–512MHz  |
| Channel packing               | 12.5KHz   |
| Frequency stability           | +/-1.0ppm   |
| Analog sensibility            | 0.35uV/-116dB m(20dB SINAD)<br>0.22uV/-120dB m(Typical) |
| Digital sensibility           | 0.3uV/-117.4dB m(BER5%)<br>0.7uV/-110dB m(BER1%)        |
| Spurious response             | TIA03C:65dB<br>ETSI:65dB                                |
| Adjacent channel selectivity  | TIA603C:60dB@12.5KHz<br>ETSI:60dB@12.5KHz               |
| Spurious response suppression | TIA603C:70dB ETSI:70dB                                  |
| Receiving spurious emissions  | < -57dBm@1GHZ, > -47dBm@                                |
| Blocking                      | 84dB  |
| Rated audio power             | 1W  |
| Audio response                | +1dB~-3dB   |
| Rated audio distortion        | ≤3%   |

## Transmitter

|                              |   |
|------------------------------|---|
| Frequency range              | 400–512MHz  |
| Channel spacing              | 12.5KHz   |
| Frequency stability          | +/- 1.5ppm  |
| TX power                     | Low: 1W High: 5W                                      |
| FM noise                     | -40dB@12.5KHz   |
| Spurious emission            | < -36dBm@1GHZ, > -30dBm@                              |
| Adjacent channel selectivity | -60dB@12.5KHz   |
| FM modulation mode           | 12.5KHz:11F0F3E                                       |
| 4FSK digital modulation mode | 12.5KHz(data only)7K60FX<br>12.5KHz(data+voice)7K60FX |
| Modulation limit             | 2.5KHz@12.5KHz  |
| Audio response               | +1dB~-3dB   |
| Reted audio distortion       | ≤3%   |
| Digital protocol             | ETSITSI02361-1,-1,-3                                  |
| Vocoder type                 | AMBE+2TM  |

**Note:** Specifications 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"> <li>● The battery has been exhausted. Replace or recharge the battery.</li> <li>● The battery is installed incorrectly. Remove it and install again.</li> </ul> |
| The operating time becomes short, even the battery is fully charged.            | <ul style="list-style-type: none"> <li>● Replace the battery.</li> </ul>   |
| Not able to communicate with the transceivers of the same group.                | <ul style="list-style-type: none"> <li>● Confirm the QT/DQT is the same.</li> <li>● The distance is outside of range.</li> </ul>   |
| The voice of another group can be heard.  | <ul style="list-style-type: none"> <li>● Change all QT/DQT of the group.</li> </ul>  |
| Other radios can not receive the TX signals or receive signals in a low volume. | <ul style="list-style-type: none"> <li>● Switch the volume knob to the highest level</li> <li>● The microphone may be damaged, send it to the local dealer for check.</li> </ul>                   |
| Noise is always heard.  | <ul style="list-style-type: none"> <li>● The distance is outside of range. Turn on the radio in nearer range and try again.</li> </ul>   |



## Warranty card

### 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: \_\_\_\_\_

## FCC STATEMENTS WARNINGAND COMPLIANCE STATEMENT:

### Attention:

This radio complieswith IEEE and ICNIRP exposure limits for General Population/controlled Environments RF exposure emvironment at operating duty factors of up to 50% and is authorized by the FCC for General Population use only. An appropriate warning lable is affixed to all units. In order to comply with RF exposure requirements, a minimum distance of 2.5 cm must be maintained when held-to-face, and body-worn operations are restricted to the approved original acessories (belt clip), a minimum distance of 0 cm. Do not use this device when antenna shows obvious damages.

**WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBIITED UNDER FCC RULES AND FEDERAL LAW.**

## **FCC STATEMENTS WARNING AND COMPLIANCE STATEMENT:**

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

Our radio generates RF electromagnetic energy during transmit mode. This radio is designed for and classified as “Occupational 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.

This radio is NOT intended for use by the “General Population” in an uncontrolled environment. This radio has been tested and complies with the FCC RF exposure limits for “Occupational Use Only”.

In addition, our radio complies with the following Standards and Guidelines with regard to RF energy and electromagnetic energy levels and evaluation of such levels for exposure to humans:

---IEEE Std. 1528:2013 and KDB447498, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.

---American National Standards Institute (C95.1-1992), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

---American National Standards Institute (C95.3-1992), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields-RF and Microwave.

The information listed above provides the user with the information needed to make him or her aware of RF exposure, and what to do to assure that this radio operates within the FCC RF exposure limits of this radio.

### **Electromagnetic Interference/Compatibility**

During transmissions, the 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.

### **Occupational/Controlled Use**

The radio transmitter is used in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.



## **FCC PART 15.21 WARNING STATEMENT**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. Verification of harmful interference by this equipment to radio or television reception can be determined by turning it off and then on. The user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device complies with Part 15 of the FCC Rules.

## **Licensing Information**

Use of the radio in USA is subject to the rules & regulations of FCC. Changes or modifications not expressly approved by our may void the user authority granted by the FCC to operate this radio and should not be made. To comply with FCC 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 FCC equipment authorization for this radio could violate FCC rules.

### **Note:**

Use of this radio outside the country where it was intended to be distributed is subject to government regulations and may be prohibited.

### **Important:**

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this device. Your radio is set up to transmit a regulated signal on an assigned frequency. It is against the law to alter or adjust the settings inside the radio to exceed those limitations. Any adjustments to your radio must be made by qualified technicians.