SAFETY TRAINING INFORMATION

Our TYT ELECTRONICS CO., LTD   radio generators RF electromagnetic 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".Inaddition, our   TYT ELECTRONICS CO., LTD   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 asÿsure that this radio operates with the FCC RF exposure limits of this radio.

Electromagnetic Interference/Compatibility

During transmissions, TYT ELECTRONICS CO., LTD 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 consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

Attention:

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

This product is compliance to FCC RF Exposure requirements and refers to FCC website https://apps.fcc.gov/oetcf/eas/reports/GenericSearch.cfm search for FCC ID:POD-DMR to gain further information include SAR Values.

SAFETY INFORMATION FOR USER

The transceiver is excellently designed with advanced technology. Please observe the following precautions to perform your obligation, prevent personal injury and ensure the safety of transceiver usage.

1. Keep the transceiver and accessories away from children.
2. Please do not try to open or modify the transceiver without permission, non-professionals process may also cause damage.
3. Please use assorted battery and charger to avoid damage.
4. Please use assorted antenna to ensure the communication distance.
5. Please do not expose the transceiver to long period of direct sunlight, nor place it close to heat appliances.
6. Please do not put the transceiver in excessively dusty or humid areas.
7. Do not use harsh chemicals, cleaning solvents to clean the transceiver.
8. Do not transmit without antenna.
9. When using this transceiver, we recommend transmitting for 1 minute then receiving for 4 minutes. Continuous transmitting for long time or working in high power will heat the back of the transceiver. Do not place the transceiver's hot back close to any surface of plastic.
10. If any abnormal odor or smoke detected coming from the transceiver, turn off the power and take off the battery pack and its case. Then contact local dealers.

ATTENTION:
All tips above apply to accessories of your transceiver. If any device can not work normally, please contact local dealers.
If you use any accessories made by other companies, our Company does not guarantee the operability and safety of the transceiver.

Brief Introduction

Thank you for buying handheld two way radio. The goal of MD-280V is to rovidpe cost-effective communication equipment for a variety of business sites and the amateur and supply all fast-paced walks of life with perfect communication solutions.
This product uses professional and commercial or amateur frequency, you need to apply for use to radio management institution of the provinces, cities or autonomous regions.
please read this manual carefully in order to know how to properly operate the radio before use.

Welcome to use *TYT*® two-way radio

http://www.tyt888.com

Main Features

High/low power selective	Programmable multifunction key
Voice prompt	TOT
Monitor	Voice Encryption
32 Channels	Talk Around
Low Power Alarm	Digital and Analog Combined
SQL	
VOX	
Lone Work	
Channel Scanning/Priority Scanning	
end-tone elimination	
Emergency Alarm	

Contents

Unpacking and Checking Equipment

Charging the Battery

Using the battery

http://www.tyt888.com

## Unpacking and Checking Equipment

Welcome to use *TYT®* MD-280V radios, before using we suggest you:

Please check the packing box of this product and see if there are signs of damage.

Please open the packing box carefully. We recommend that you identify the items listed in the following packing list. if you find that our product and its accessories in handling are lost or damaged during the shipment. Please immediately contact *TYT®* dealers.
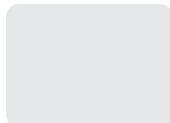
Parts List
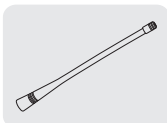
| Antenna (1) | Li-ion battery (1) | Belt Clip (1) | Charger (1) |
| Charger Adapter (1) | User's Manual (1) | | |

Charging the Battery

Please use the battery charger designated by *TYT®* to charge battery, and follow the steps:

- Insert DC jack of power adapter into DC jack behind the charging kit.
- Insert power adapter into AC power supply socket, now the charging red and green indicator lights, successfully connect the power supply.
- Insert the battery to radio equipped with battery into the charging kit. Red indicator keeps lighting means radio is under charging. Red indicator flashes means battery not be used for long time and over-discharged. And will Turn to normal charge when red indicator keeps lighting.
- Confirm the battery is fully charged, when red indicator goes out.
- Please take off the adaptor and battery.
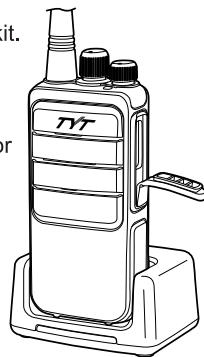
Using the battery

The battery is not completely charged at the factory, please charge it before using.
After purchase or extended storage (more than two months), the first time to charge battery cannot make battery reach its normal operating capacity. After repeating charge /discharge it two or three times, the operating capacity will increase to its normal capacity.

Notice: After fully charge the battery, please do not charge it again and should take it off from the charger. If not, it will short or damage the battery life for over charge.

Note:
- The temperature for charging should be from 5℃to 40℃. Battery can not be over fully charged out of this temperature range. Please prepare a spare battery for the cooler weather and do not discard the defect battery. Because it may be used under the normal temperature.
- Please clean the battery terminal when it covers with some dust or dirty.
- To make sure the battery can be normal use and charge.
- Please turn off the radio power before charging.
- Do not charge the battery before radio or the battery being wet.
- Please change another new battery if battery can not be recover normal capacity after fully charged.

Battery Type

Please use the *TYT* assigned battery to charge. It maybe explode and harm to human body if use other batteries.

Safety Tips
- Do not discard the battery into fire.
- Do not unfold the battery case by yourself.

Battery Storage
1) Please fully charged battery first to store before long time no use it. To avoid the battery self over discharge and being damage.
2) To avoid short the battery capacity, please fully charged the battery after long time no use. Recommend charge the battery again after six months.
3) Please take care the temperature and humidity for storing battery. Make sure the battery store under the normal temperature, cool and dry to reduce battery discharge.

Installing and uninstalling of the accessories

Getting Acquainted

http://www.tyt888.com

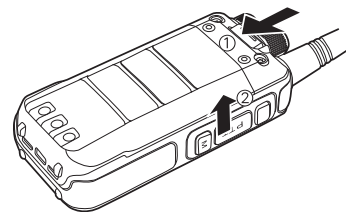## Installing and uninstalling of the accessories

Installing / Removing the Battery

To install the battery into the battery positioning hole of radio bottom, then 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.
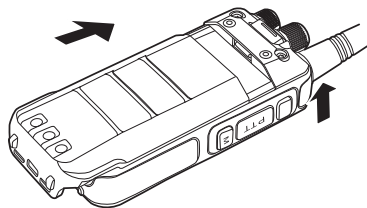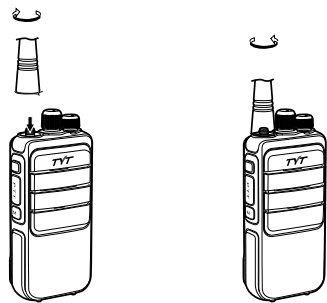
(Install the battery)   (Remove the battery)

Installing/Removing the Antenna

Screw the antenna into the connector on the top of the radio by holding the antenna at its base and turning it clockwise until secure. To turn the antenna counter-clockwise until you can remove it.
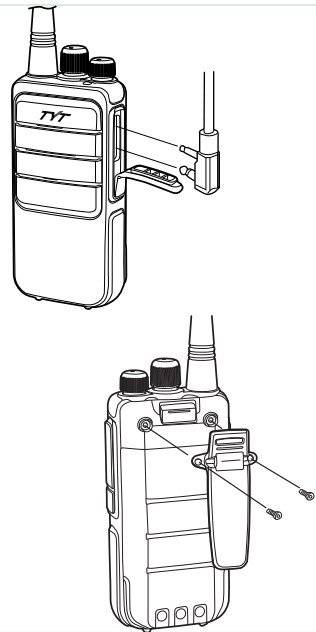
Installing Earphone

Uncover earphone lid, directly insert earphones into earphone holes (earphones need to be additionally purchased)

Note: If your radio developed with VOX function, you should re-turn on radio power once to active VOX function.
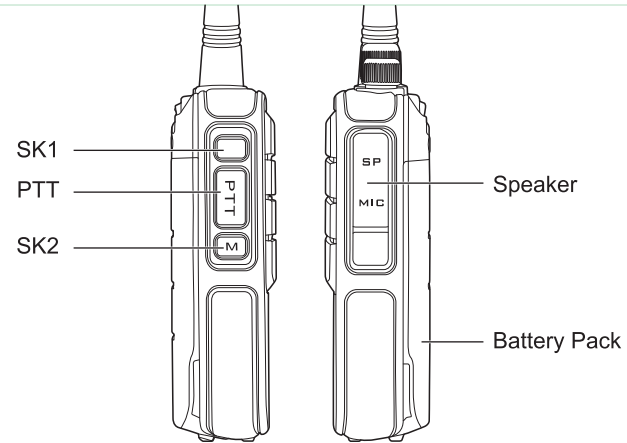
Installing the belt clip

If necessary, attach the belt clip to the back of battery with the screws supplied carry conveniently.

Getting Acquainted

Antenna

Indicator
Red light flashes when transmitting
Green light flashes when receiving

Speaker

channel selector knob
Rotate to choose desird 1-16
(Two Zones Available)

Radio on-off/volume control knob
Power on by rotating clockwise.
Power off by rotating counter clockwise till hear the "kata" sound.
VOL control by rotating.

Microphone

SK1
PTT
SK2

Speaker

Battery Pack

Note: Program Key 1/2 can be defined the following functions by short/long press.

SK: 1. None   2. Beeper On/Off   3. High/Low Power   4. Monitor   5. One-Key   6. One-Key

7. One-Key   8. One-Key   9. One-Key   10. One-Key   11. Scanning ON/OFF   12. SQL

13. Voice Encryption on/off   14. VOX ON/OFF   15. Zone Switch   16. Battery Indicator

17. Lone Work ON/OFF   18. Emergency Alarm   19. Talk around function

Basic operations

Functions Instructions

http://www.tyt888.com

Basic operations

Power On/Off

Turn the power switch knob clockwise to turn on radio power; to turn it off, turn the power switch knob counter-clockwise.

Note: No beeper indication when power on if unable the radio tone/beeper indication.

If you cannot turn on the radio, please check the battery pack, make sure charging the battery and correctly install battery.

If you can not turn on the radio, please contact the dealer .

Volume Control

Turn the volume switch knob clockwise to increase volume; to decrease the volume, rotate the volume switch knob counter-clockwise. You can check the volume level by pressing the programmed key of monitor.

Channel Selection

Turn the channel switch to desired channel number (32 Channels).

Note: There are two zones, 16 channels for each zone for this radio.

Zone 1 and Zone 2 are switchable (Details refer to Zone Selection) .

TX

Press PTT and face to microphone talking.

Please make the distance between your lip and microphone at 3-4 cm, and talk as usual to get the best voice quality.

RX

Release PTT to receive information and adjust desired volume level to get good voice quality.

Functions Instructions

LED Indicator

The LED indicator is to show the radio working status.

Red light: radio is transmitting signal.

Green light: radio is powering on or receiving non-encrypted calling or message, or detecting airing activity.

Beeper

Beeper function is for checking radio working status or signal receiving.

Continuous tone: simple, radio sounds until user over it.

Period tone: programmed desired setting time as a period. Automatically turn on/Stop/Repeat.

Repeat tone: simple and repeat by itself, until user over it.

PTT

You can set each channel to be digital channel .

1. When calling, PTT button can enable radio to transmit information to the another calling

radios. Press PTT to communicate, release to receive. It will active the microphone when pressing PTT.

2. When no calling on the radio, PTT button is used to new calling (refer to make a radio communication).

3. When calling and radio enable the "Free Channel Indication" function, then you release the PTT, will get a short beeper tone. That means this is a free channel and wait for your answer.

4. When calling stop (eg, receiving the emergency alarm), you will hear the free channel beeper. You can disable all using radios beeper tone and indication to turn off the free channel indication. (Tone/Beeper ON/OFF)

5. Switch rotator to change digital channel.

Receiving and Making A Call

Zone Selection

The Zone is a channel group. This radio only support 2 Zones and 16 channels for each Zone.

1. Press programmed Zone key .

2. You will hear "Yes" tone to switch radio from Zone 1 to 2.

Or "No" tone to switch radio from Zone 2 to 1.

After choosing the channel, user ID or Desired calling contact ID ,rotating the channel switch to corresponding channel, user ID or contact ID.

Receiving And Answering a Calling

After setting the channel number, user ID or contact ID, directly to receive information or answer the calling.

Red light: Transmitting.

Green light: Receiving.

Receiving And Answering Group Calling

Program the radio as a group member to receive any information from this group calling.

1. LED green lights.

2. Keep the radio 1-2 feet (2.5-5.0cm) away from mouth.

If the radio program the "Free Channel Indication", release PTT to get a short tone, that means it is free channel and wait for your answer.

3. Press PTT to answer, LED light red.

4. Talk to microphone after active the tone of allowing calling tone.

5. Release PTT to receive information.

6. Automatically over the calling if there is no operation with permitted period.

Receiving and Answering a Private Calling

A private calling is from single radio to another single radio. There are two types.

First, detecting radio before calling; Second, ready to make a call.

The LED light green for the chosen radio. You only can program the using radio with one type

Private Call

Receiving a private calling:

1. LED light green.

2. Keep the radio 1-2 feet (2.5-5.0cm) away from mouth.

　If the radio program the "Free Channel Indication", release PTT to get a short tone, that

　means it is free channel and wait for your answer .

3. Press PTT to answer, LED light red.

4. Talk to microphone after active the tone of allowing calling tone.

5. Release PTT to receive information.

6. Automatically over the calling if there is no operation with permitted period.

7. Radio sound a short tone.

Receiving All Call

All call is transmitting information to all the radios. Especially for releasing special notice.

When receiving:

1. Radio sound a tone and LED light green.

2. Radio automatically over the calling if there is no operation with permitted period.

　If the radio program the "Free Channel Indication", release PTT to get a short tone, that

　means it is free channel and wait for your answer.

Note: When receiving all call, you change to another channel, then will stop receiving the all

　　　calling. And during receiving, you can not use any programmed keys until calling is over.

Make Radio Call

Choose desired channel number, user ID or contact ID by the following: channel rotator, pre-

programmed key to make a calling.

Making Group Call

Program the radio as a group member to transmit any information to this group.

1. Rotate channel switch to desired contact ID or channel.

2. Keep the radio 1-2 feet (2.5-5.0cm) away from mouth.

3. Press PTT to call and LED light red.

4. Talk to microphone after active the tone of allowing calling tone.

5. Release PTT to receive information and reply, LED light green.

6. Radio automatically over the calling if there is no operation with permitted period.

    If the radio program the "Free Channel Indication", release PTT to get a short tone, that

    means it is free channel and wait for your answer.

    Automatically over the calling if there is no operation with permitted period.

Making Private Call

1. Rotate channel switch to desired channel from user ID.

2. Keep the radio 1-2 feet (2.5-5.0cm) away from mouth.

    If the radio program the "Free Channel Indication", release PTT to get a short tone, that

    means it is free channel and wait for your answer.

3. Press PTT to answer, LED light red.

4. Talk to microphone after active the tone of allowing calling tone.

5. Release PTT to receive information.

6. Radio automatically over the calling if there is no operation with permitted period.

    If the radio program the "Free Channel Indication", release PTT to get a short tone, that

    means it is free channel and wait for your answer. Automatically over the calling if there is

  no operation with permitted period.

7. Radio sound a short tone.

Making All Call

Program the radio with this function and transmit information to all users.

1. Rotate channel switch to desired channel from contact ID.

2. Keep the radio 1-2 feet (2.5-5.0cm) away from mouth.

    If the radio program the "Free Channel Indication", release PTT to get a short tone, that

    means it is free channel and wait for your answer.

3. Press PTT to answer, LED light red.

4. Talk to microphone after active the tone of allowing calling tone. All the users on this chan-

    nel can not answer the calling.

Programmed Key to Make Group /Private Call

This function enable users easily to make a private or group call to defined ID or contact by

short or long pressing to active. You can allocate one ID or contact to one programmed key

to call. There are several keys to be programmed.

1. Press the programmed key to private/group call from defined ID or contact list.

2. Keep the radio 1-2 feet (2.5-5.0cm) away from mouth .
   If the radio program the "Free Channel Indication", release PTT to get a short tone, that
   means it is free channel and wait for your answer.
3. Press PTT to call, LED light red.
4. Talk to microphone after active the tone of allowing calling tone.
5. Release PTT to receive information.
6. Radio automatically over the calling if there is no operation with permitted period.
   If the radio program the "Free Channel Indication", release PTT to get a short tone, that
   means it is free channel and wait for your answer. Automatically over the calling if there is
   no operation with permitted period.
7. Radio sound a short tone.

Message

Send Pre-set Message

You can at most pre-set 50 pieces message.
1. Choose desired contact to send a pre-set message.
2. LED light red.

3. Two tones of "DiDi" means sending message successfully. A lower tone means no message
   send.

Encryption

This function is only available for digital channel.
You can at most preset 16 list encryption, encrypted code (4 byte) enable/disable this function.

Emergency Alarm

Press this programmed key to active emergency alarm.

Lone Work

Programming radio this function is to protect radio users safety with lonely work.
When enable this function and set the period, radio will alarm the user before run of time.
User should press this key to answer in "safety" state, if not, radio will goes into emergency
alarm.

Scan

Scan List

Creat the scan list and allocate to single channel/ contact list.

Through cycle scanning the listed channel/contact list to search the any communication channel.
It support at most 250 list and 16 members for each list.

Scan

LED light red when scanning.

Two methods of scanning:

1) Main Channels (by manual):

   Scan all channels/contact group from all scanning lists.

   When scanning, your radio automatically start from the last scanned channel/contact list or

   starting scanning channel.

2) Automatically manual:

   Scanning start from the channel which be active automatically scanning.

Start And Stop Scan

1) Choose automatically scanning channel by press programmed key or rotate channel switch.

2) When scanning active, LED light red and sound a confirm tone. or stop scanning, LED
   goes off and sound a negative tone.

Double Priority Channel

When radio enable this function, scan the priority channel and normal channel at the every
scanning with recycle scanning.

During Scanning, Answer Calling:

Stop at the detected active channel/contact list.

Radio keeps at this stop channel, that is so called "Free Time" programmed period.

2. Keep the radio 1-2 feet (2.5-5.0cm) away from mouth .

   If the radio program the "Free Channel Indication", release PTT to get a short tone, that

   means it is free channel and wait for your answer.

3. Within the permitted period, Press PTT to call, LED light red.

4. Talk to microphone after active the tone of allowing calling tone.

5. Release PTT to receive information.

6. Radio automatically over the calling if there is no operation with permitted period.

Settings

SQL

You can adjust the SQL to filter lower signal calling or channels with background noise is higher than normal value.

Normal: default value.

High: filter no use calling or background noise, but may also filter the calling from long distance.

1) Program the SQL key.

2) A positive tone means high SQL; A negative tone means normal SQL.

High/Low Power

High power enable communication with long distance radio. Low power enable communication with short distance radio.

1) Program High/Low Power key.

2) A positive tone means radio transmit at the low power; A negative tone means radio transmit at the high power .

VOX

This function enable your radio to make a call with a programmed channel. No matter when the accessories with VOX function detect the signal, radio will transmit the information within programmed period.

Press PTT to disable VOX function.

Operate follow step to re-start the VOX:

Turn off the radio and power on again. Or rotate channel switch to another one. Or operate the below.

Note: Enable or disable this function to those active radios.

1) Program the key with VOX function and can turn on/off.

2) Talk to microphone after active the tone of allowing tone.

Tone/Beeper ON/OFF

Enable/disable the radio with tone/beeper if necessary.

1) Program the key with Tone ON/OFF function.

2) A positive tone means turn on beeper/tone function; A negative tone means turn off beeper /tone function.

Check Battery

LED light yellow: charging

LED light green: fully charged.

Press programmed key to check the battery capacity by the beeper.

1) Very low power: "Diling, Diling" Tone.

2) High: Three tones of "Diling Diling"

3) Middle: Two tones of "Diling Diling"

4) Low: One tone of "Diling Diling".

Specifications

Trouble shooting guide

Warranty card

http://www.tyt888.com

Specifications

General Specifications

Frequency range	VHF: 136-174MHz
Channel	32 Channels
Channel Spacing	12.5KHz
Operating Voltage	7.4V
Battery Type	Li-ion
Operating Temperature	-30℃ +60℃
Store Temperature	-40℃ +85℃
Antenna Impedence	50Ω
Audio Output Power	≤1000mW@16Ω
Battery capacity	2000mAh standard Li-ion battery
Dimension (H*W*D)	128*61*38mm
Weight	258g
Digital Data rate	9600bps

Transmitter

Output power	High: ≤5W (HI)　Low: ≤1W (Low)
Frequency Stability	+-1.0PPM
Adjacent Channel Power	≤-60dB
Free Time Slot Power	TDMA: ≤57dBm
Hum and Noise	-40dB@12.5KHz
Spurious Radiation	Antenna: 9KHz-1GHz　≤-36dBm 1GHz-12.75GHz ≤-30dBm
FM Modulation Mode	12.5KHz: 11K0F3E
4FSK Digital Mode	12.5KHz(data only): 11K0FXD 12.5KHz(data +voice): 11K0FXW
Modulation Maximum Deviation	2.5KHz@12.5KHz
Nonactive Slot Power	-57dBm
Digital Protocol	ETSI TS 102 361-1 -2 -3
Vocoder Type	AMBE+2TM
Audio Response	+1dB~-3dB
Modulation BER(Bit Error Rate)	≤5%

Receiver

Analog sensibility	0.35uV/-116dBm(20dB SINDA)
	0.22uv/-120dBm(Type)
Digital sensibility	0.3uV/-117.4dBm (BER 5%)
	0.22uv/-110dBm (BER 1%)
Co-channel Rejection	≥-12dB
Adjacent Channel Selectivity	TIA603C:65dB ETSI:60dB
Spurious Response	TIA603C:75dB ETSI:70dB
Rated audio power	1W
Audio response	=1dB~-3dB
Rated audio distortion	3%(Type)
Spurious Radiation	Antenna: 9KHz-1GHz ≤-57dBm
	1GHz-12.75GHz ≤-47dBm

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

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.

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:

Thank you for buying TYT 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 Tytera 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 Tytera 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