To customers

Thank you very much for using TYT two-way radios. This product has a newly developed function menu and humanism operation design, making it easy to use. It will meet your requirement by the compact size and reasonable price.

Thank you for choosing TYT TH-9000D mobile transceiver, TYT always provides high quality products, and this transceiver is no exception. As you learn how to use this transceiver, you will find that TYT is pursuing "user friendliness". For example, each time you change the menu no. in Menu mode, you will see a text message on the display lets you know what you are configuring.

Though friendly design for user, this transceiver is technically complicated and some features may be new to you. Consider this manual to be a personal tutorial from the designers,allow the manual to guide you through the learning process now, then act as a reference in the coming years.

Please contact the local authorized dealer if you have any questions.We are not responsible for any typographical errors that may be in this manual. Standard accessories may change without notice, getting your understanding for any inconveniences.

Precautions

Please observe the following precautions to prevent fire, personal injury, or transceiver damage:

- Do not attempt to configure your transceiver while driving,it is dangerous.
- This transceiver is designed for a 13.8V DC power supply. Don't use a 24V battery to power on the transceiver.
- Do not place the transceiver in excessively dusty, humid or wet areas, nor unstable surfaces.
- Please keep it away from interferential devices (such as TV, generator etc.)
- Do not expose the transceiver to long periods of direct sunlight nor place it close to heating appliances.
- If an abnormal odor or smoke is detected coming from the transceiver, turn OFF the power immediately. Contact local service station or your dealer.
- Do not transmit with high output power for extended periods; the transceiver may overheat.

CONTENTS

New and Innovative Features **01**

Supplied Accessories/Optional Accessories **02-03**

Supplied Accessories 02

Optional Accessories 03

Initial Installation **04-12**

Mobile Installation 04-05

DC Power Cable Connection 05-09

Power Supply Voltage Display 09-10

Antenna Connection 10-11

Accessories Connections 11-12

Getting Acquainted **13-17**

Front panel 13-14

Rear panel 15

Display 15-16

Microphone 17

Basic Operations **18-20**

Switching the Power On/Off 18

Adjusting The Volume 18

Receiving 18

Transmitting 19

Transmitting Tone-Pulse 19

Transmitting Optional Signaling 19

Channel Edit 19

Channel Delete 20

Shortcut Operations **20-25**

Squelch Off 20

Squelch Level Setup 20

Channel Scan 21

High/Low Power Switch 22

Voice Compander 23

Offset Direction and Offset Frequency Setup 23-24

Keypad Lockout 24

Current Voltage Enquiry 24

Auto-Dialer Setup 25

Transmitting Edited DTMF Tones in the Auto-dialer Memory 25

General Setting **26-39**

DTMF, DTMF ANI, 2Tone or 5Tone Signaling 26-27
Sending 2-Tone Call 27
Sending 5-Tone Call 28
Sending DTMF call 28
Signaling Combination Setup 29
HIGH/LOW Power Selection 30
TX OFF Setup 30
Busy Channel Lockout 31
Editing Channel Name 31
Reverse TX/RX 32
Talk Around 32
Voice Compander 33
Scrambler Setup (Encryption) 33
Radio's DTMF SELF ID ENQUIRY 34
Radio's 5TONE SELF ID ENQUIRY 34
Voice Prompt 34
TOT (Time-out timer) 35
APO (Auto power off) 35-36
DTMF Transmitting Time 36
Squelch Level Setup 36-37
Scan Stop Time Setup 37
LCD Backlight 37
Background Light Color 38
Pilot Frequency 38
Power on password Setup 38
Address List 39
Factory Default 39
Maintenance 40
Trouble Shooting 41
Specifications 42-43
Attached Chart 44
50 groups CTCSS Tone Frequency (Hz) 44
1024 groups DCS Code 44-47
GMRS Frequency Chart 48
GMRS Repeater Channels 48
FCC Warnings and Statements 49

New and Innovative Features

TH-9000D mobile radio has nice housing, stoutness & stability, advanced and reliable functions, perfect & valuable. More functions as follows:

- Distribute buttons reasonably, convenient for operation. Adopt superior quality material, better technology and high quality radiator to ensure stable and durable operation.
- Programming different CTCSS, DCS, 2Tone, 5Tone in per channel, rejecting extra calling from other radios.
- Various scan functions including CTCSS/DCS Scan function.
- Using 5Tone to send Message, Emergency alarm, Call all, ANI, Remotely kill, Remotely Waken, etc.
- Automatic calling Identification function by DTMF–ANI or 5Tone–ANI.
- Scramble function (Optional).
- Compander function for decrease the background noise and enhance audio clarity, it can set compander ON/OFF per channel.
- Theft alarm provides extra safety.
- Five programmable multi-functional keys,can set various shortcut operation according to different requirement.
- 1024 groups of DCS code improves the abiliting of rejecting extra calling.

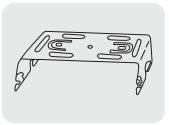
Supplied Accessories/Optional Accessories

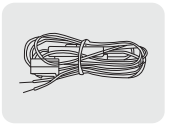
Supplied Accessories

After carefully unpacking the transceiver, identify the items listed in the table below. We suggest you keep the box and packaging.

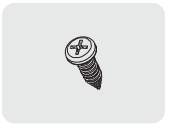
TH–9000D radio body

Microphone

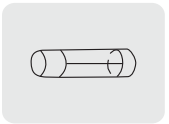

Mobile Mounting Bracket [TMB–01]

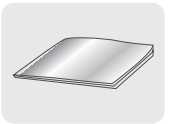

DC Power Cable with Fuse Holder [TRL–01]

Black screws (M4X8mm) [TSS–01A]


Tapping screws (M5X8mm) [TSS–01B]

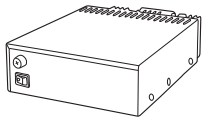
S–Washer [TSS–01D]

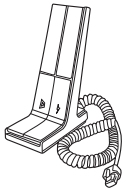

Spare Fuses


User Manual

Optional Accessories

Cloning Cable [CP–50]


Regulated Power Supply [TRP–01]


Desktop Microphone [DHM–02]

Alarm Cable A [TMD–01]

Alarm Cable B (Extension line) [TL–01(A)]

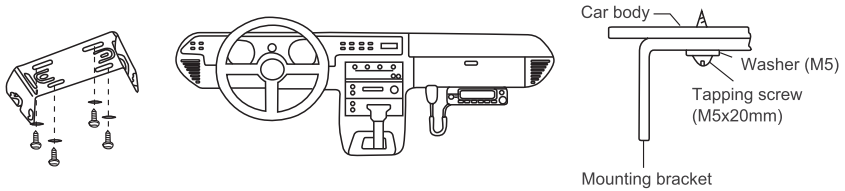
External Speaker [SP–01]

Initial Installation

Mobile installation

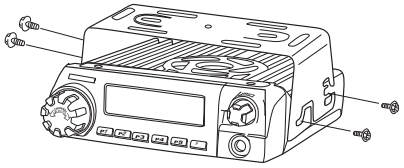
To install the transceiver, select a safe, convenient location inside your vehicle that minimizes danger to your passengers and yourself while the vehicle is in motion. Consider installing the unit at an appropriate position so that knees or legs will not strike it during sudden braking of your vehicle. Try to pick a well ventilated location that is shielded from direct sunlight.

1. Install the mounting bracket in the vehicle using the supplied self-tapping screws (4pcs) and flat washers (4pcs),

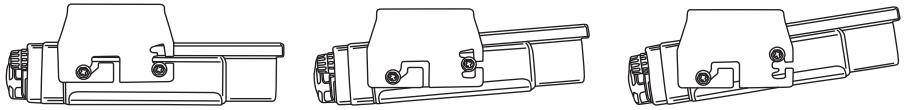


2. Position the transceiver, then insert and tighten the supplied hexagon SEMS screws.

- Double check that all screws are tightened to prevent vehicle vibration from loosening the bracket or transceiver.



- Determine the appropriate angle of the transceiver, using the 3 screw hole positions on the side of the mounting bracket.



DC Power Cable Connection

NOTE: Locate the power input connector as close to the transceiver as possible.

Mobile Operation

The vehicle battery must have a nominal rating of 12V. Never connect the transceiver to a 24V battery. Be sure to use a 12V vehicle battery that has sufficient current capacity. If the current to the transceiver is insufficient, the display may darken during transmission, or transmitting output power may drop excessively.

1. Route the DC power cable supplied with the transceiver directly to the vehicle's battery terminals using the shortest path from the transceiver.

- We recommend you do not use the cigarette lighter socket as some cigarette lighter sockets introduce an unacceptable voltage drop.
- The entire length of the cable must be dressed so it is isolated from heat, moisture, and the engine secondary (high voltage) ignition system/ cables.

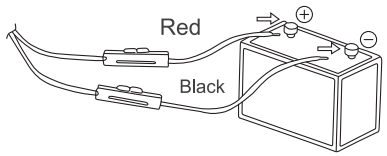
2. After installing cable, in order to avoid the risk of damp, please use heat-resistant tap to tie together with fuse box. Don't forget to reinforce whole cable.

3. In order to avoid the risk of short circuit, please cut down connection with negative (-) of battery, then connect with radio.

4. Confirm the correct polarity of the connections, then attach the power cable to the battery terminals; red connects to the positive (+) terminal and black connects to the negative (-) terminal.

- Use the full length of the cable without cutting off excess even if the cable is longer than required. In particular, never remove the fuse holders from the cable.

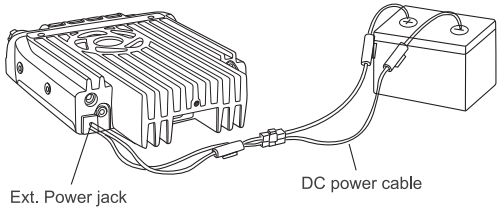
5. Reconnect any wiring removed from the negative terminal.



6. Connect the DC power cable to the transceiver's power supply connector.

- Press the connectors firmly together until the locking tab clicks.

If the ignition-key on/off feature is desired(optional feature),use the



optional (For Cigar-Plug connection) cable. Connect one of the cables between the ACC terminal or a Cigar-Plug that operates with the vehicle ignition or ACC switch on the vehicle and EXT POWER jack on the rear side of the unit.

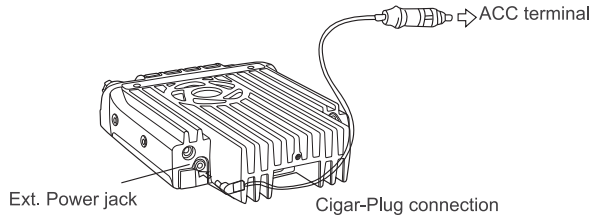
NOTE: In many cars,the cigar-lighter plug is always powered. If this is the case, you cannot use it for the ignition key on/off function.

7. When the ignition key is turned to ACC or ON(Start) position with the radio turned off, the power switch illuminates. The illumination will be turned off when the ignition key is turned to the off position.

To turn on the unit, press the power switch manually while it is illuminated. (While ignition key is at ACC or ON position)

8. When the ignition key is turned to ACC or ON position with the radio's power switch on, the unit turns on automatically and the power switch will be lit. Turn the ignition key to OFF position or manually turn the power switch off to shut down the radio.

9. Using extra cable,power consumption:5MAH. 10.Without this function,user can turn on/off radio by Power knob.



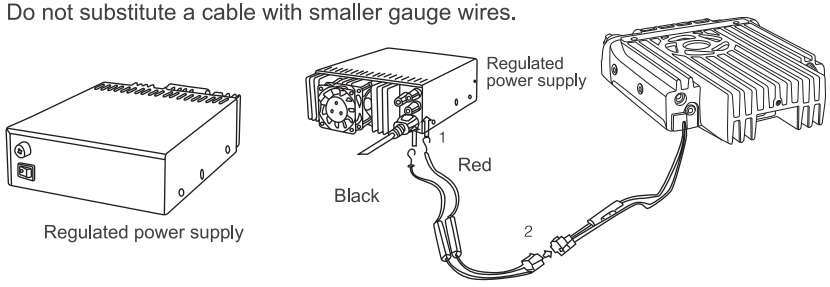
Fixed Station Operation

Ineed a separate 13.8V DC power supply (not included) , power supply as optional accessories. Please contact local dealer to require.

The recommended current capacity of your power supply is 12A.

1. Connect the DC power cable to the regulated DC power supply and ensure that the polarities are correct. (Red: positive, Black: negative).

- Do not directly connect the transceiver to an AC outlet.
- Use the supplied DC power cable to connect the transceiver to a regulated power supply.
- Do not substitute a cable with smaller gauge wires.



DC power cable with fuse holder

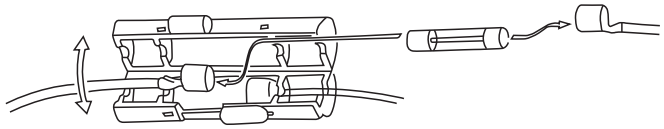
2. Connect the transceiver's DC power connector to the connector on the DC power cable.

- Press the connectors firmly together until the locking tab clicks.

NOTE:
- Before connecting the DC power to the transceiver, be sure to switch the transceiver and the DC power supply OFF.
- Do not plug the DC power supply into an AC outlet until you make all connections.

Replacing Fuses

If the fuse blows, determine the cause, then correct the problem. After the problem is resolved, replace the fuse. If newly installed fuses continue to blow, disconnect the power cable and contact your autho- rized TYT dealer or an authorized TYT servi-cecenter for assistance.



Fuse Location	Fuse Current Rating
Transceiver	15A
Supplied Accessory DC power cable	20A

Only use fuses of the specified type and rating, otherwise the transceiver could be damaged.

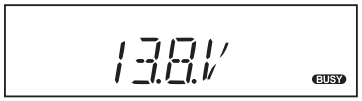
NOTE: If you use the transceiver for a long period when the vehicle battery is not fully charged, or when the engine is OFF, the battery may become discharged, and will not have sufficient reserves to start the vehicle. Avoid using the transceiver in these conditions.

Power supply voltage Display

After connecting the transceiver to the power supply, the supply voltage can be displayed on LCD by long pressing the [P2] key.

The display immediately changes as the voltage supply changes, It also displays voltage during transmission.

The transceiver will return to its normal operation when the power is switched ON or repeat above operation.



Important: The range of displayed voltage is only from 7V to16V DC, because the displayed value is estimated, please use a voltmeter when a more precise reading is desired.

Antenna Connection

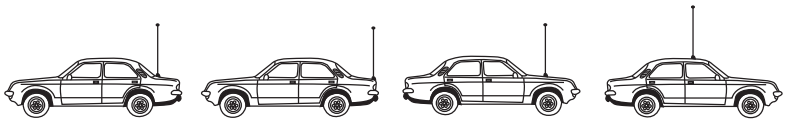
Before operating, install an efficient, well-tuned antenna. The success of your installation will depend largely on the type of antenna and its correct installation. The transceiver can give excellent results if the antenna system and its installation are given careful attention.

Use a 50Ω impedance antenna and low-loss coaxial feed-line that has a characteristic impedance of 50 Ω, to match the transceiver input impedance. Coupling the antenna to the transceiver via feed-lines having an impedance other than 50*reduces the efficiency of the antenna system and can cause interference to nearby broadcast television receivers, radio receivers, and other electronic equipment.

NOTE: Transmitting without first connecting an antenna or other matched load may damage the transceiver. Always connect the antenna to the transceiver before transmitting.

All fixed stations should be equipped with a lightning arrester to reduce the risk of fire, electric shock, and transceiver damage.

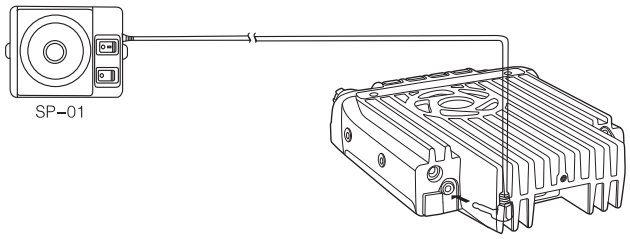
The possible locations of antenna on a car are shown as following:



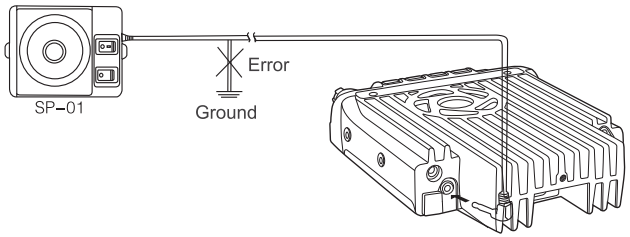
Accessories Connections

External Speaker

If you plan to use an external speaker, choose a speaker with an impedance of 8Ω. The external speaker jack accepts a 3.5 mm(1/8") mono (2-conductor) plug.



NOTE: External speaker adopt double port BTL, please care about the connecting way. The speaker can not connect with the ground, otherwise the speaker will be fault. The wrong connecting way as the following picture.



Microphone

For voice communications, connect a microphone equipped with an 8-pin modular plug into the modular socket on the front of the main unit. Press firmly on the plug until the locking tab clicks. Attach the supplied microphone hanger in an appropriate location using the screws included in the screw set.

Getting Acquainted

Front panel

Basic Functions

NO.	KEY	FUNCTION
1	Pow(Power) / VOL	Power on/Off / Adjust Volume Key
2	Main Dial	Change frequency, memory channel and scan direction etc.
3	F	Function Key
4	P1	Call key
5	P2	Squelch off
6	P3	Switch VFO/MR mode
7	P4	Step key (step: 1MHZ)
8	P5	Set CTCSS/DCS
9	Mic.connector	Microphone connection port

Press [F] key until icon appears then press the following key.

NO.	KEY	FUNCTION
4	F	Confirms the selective functions and exit
5	P1	TX power set
6	P2	Voice compander
7	P3	Store memory channel
8	P4	Delete memory channal
9	P5	Keypad lock

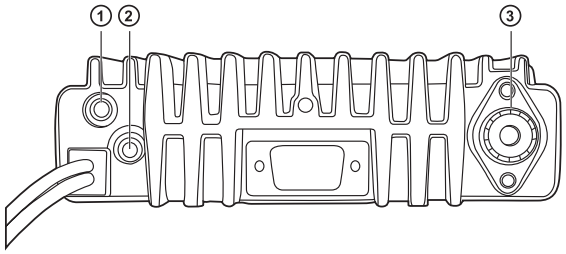
Press [F] key and following key together to activate following function:

NO.	KEY	FUNCTION
5	P1	Data clone
6	P2	Power voltage display
7	P3	Scan mode
8	P4	Repeater offset set
9	P5	Auto dialer setting

Functions that require continuous pressing following key to be activated

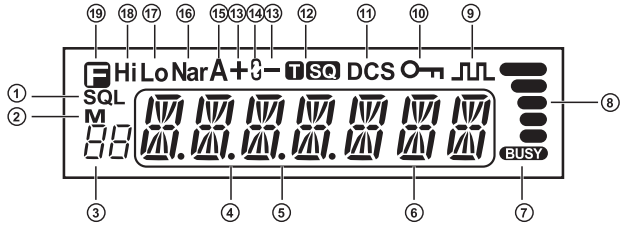
NO.	KEY	FUNCTION
4	FUN/SET	Press and hold for 2s to enter the Setting mode

Rear panel



NO.	KEY	FUNCTION
1	Ext. Power Jack	Terminal for connecting optional cable for use with ignition key On/Off function. The radio will auto power on when car is driving. The radio will auto power off when car stops.
2	Ext.Speaker Terminal	Terminal for optional external speaker SP–01.
3	Antenna Connector	Connection for 50Ω antenna.

DISPLAY



NO.	KEY	FUNCTION
1	SQL	Squelch level.
2	M	In channel mode.
3	88	Indicates the channel number in channel mode.
4	Decimal point	Channel skip.
5	Decimal point	Indicates the decimal point of frequency and the scanning function.
6	888.888	Indicates the frequency or memory name.
7	BUSY	Signal is being received or monitor.
8		Signal strength of receiving and transmitting.
9		Compander.
10		Keypad lock .
11	DCS	Set DCS function.
12	TSQ	Set CTCSS function.
13	+ −	Offset frequency direction.
14		Scrambler.
15	A	Auto power off.
16	Nar	Narrow band.
17	LO	Low power.
18	Hi	High Power
19	F	Pressing [F] key.

Microphone

NO.	KEY	FUNCTION
1	PTT	Press the PTT (Push–TO–Talk) key to transmit.

Basic Operations

Switching The Power On/Off

Turn the VOL knob to ACC (speed up) or ON (startup) position to power on radio .

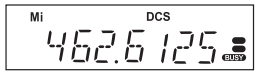
Adjusting The Volume

Turn the VOL knob clockwise to increase the audio level, counterclockwise to decrease.

NOTE: During communication, volume can be adjusted more accuratiy.

Receiving

When the channel you are operating is called, the screen shows BUSY and field intensity, in this way, you can hear the calling from transmitting party.



NOTE: If the transceiver has set at higher squelch level, it may fail to hear the calling.

When the channel you are operating is called,the screen shows BUSY and field intensity, you can't hear the calling from transmitting party,it means current channel receives a matching carrier but unmatching signaling(Refer to CTCSS/DCS encode and decode or Optional Signaling setup).

Transmitting

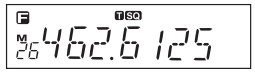
Press P2 key to monitor for a while to confirm the channel desired is not busy. Release P2 to return standby status,Then press and hold [PTT] key to speak into microphone.

Please hold the microphone approximately 2.5-5.0cm from your lips, and then speak into the microphone in your normal speaking voice to get best timbre.

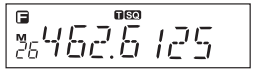
NOTE:Press and hold [PTT] key, LED lights RED and power intensity showed in screen indicates it is transmitting, release to receive.

Channel Edit

1. Press P5 key to enter CTCSS/DCS signaling setup, turn selector knob to select the desired signaling.



2. Press F key, LCD appears F , **M**icon and current channel number, **M**icon flashing means current channel is empty.



3. Turn selector knob to select the desired channel number to store.

4. Press P3 key, F , **M**icon and channel number disappears and emit a prompt voice, thus the channel storage succeed.

Channel Delete

1. Under channel mode, turn selector knob to select channel which you want to delete.
2. Press F key and P4 key together, current channel will be deleted and emitted and emitted a prompt voice. **M**icon flashing means current channel is deleted.

Shortcut Operations

Squelch Off

P2 key programmed as Squelch Off to monitor the weak signal.

1. Squelch Off: Press P2 key to disable squelch ,press P2 key again to resume squelch.

Squelch level Setup

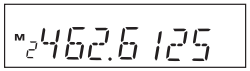
Setting the radio to a tight squelch level,you can avoid unwanted signals or noise,but you may not receive a weak signal. Therefore,it will be better for you to select the normal squelch level.

1. While standby, press P2 key and turn selector knob at the same time until LCD appears and current squelch level

Channel Scan

In channel mode, this function is designed to monitor signal in every channel.

1. **I**n channel mode,Press P3 key for 1s to enter into channel scan
2. Turn selector knob key to change scan direction.
3. Press any key except F key to exit.

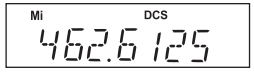


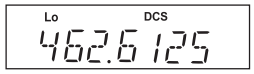
High/Low Power Switch

Press [F] key until LCD display F iron, then press [P1] key to switch between high/low power. The LCD appears:

None: Transmit in high power

Lo: Transmit in low power

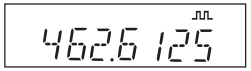




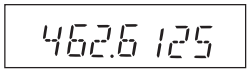
Voice Compander

Compander function will decrease the background noise and enhance 15 audio clarity, especially in long range communication.

1. Press [F] key, then press [P2] key to turn on compander function, repeat above operation again to turn off compander function.



2. When LCD appears ⎍ iron, enable compander in current channel.

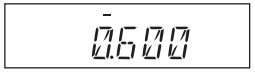


3. When LCD doesn't display ⎍ iron, disable compander in current channel.

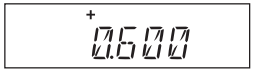
Offset Direction and offset frequency setup

Repeater receives a signal(UP-LINK) on one frequency and re- transmits on another frequency(DOWN-LINK). The difference between these two frequencies is called the offset frequency. If the UP-LINK frequency higher than DOWN-LINK frequency, the direction is positive, If it is lower, the shift direction is negative.

1. Press [F] key until the F icon displays on the LCD, then press [P4] key, LCD displays offset direction and offset frequency.
2. Repeatedly press [P4] key to select positive offset and negative offset.
3. When LCD displays " + " icon, it indicates positive offset, which means transmitting frequency higher than receiving frequency.



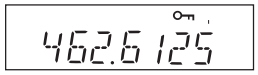
4. When LCD displays " − " icon, it indicates negative offset, which means transmitting frequency lower than receiving frequency.



Keypad Lockout

Avoiding unintentional operation, this function will lock main keys, all keys except [P2] [F] key are invalid.

1. Press [F] key until the F icon displays on the LCD, then press [P5] key until LCD displays 🔑 icon, it indicates keypad lockout function is valid.

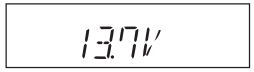


2. Repeat above operation, 🔑 icon disappears, it indicates keypad lockout function is invalid.

Current Voltage Enquiry

This function will display Current Battery Voltage.

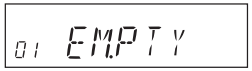
Press and hold [F] key, then press [P2] key, LCD displays current battery voltage.



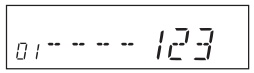
Auto-Dialer Setup

This will automatically transmit pre-programmed and stored DTMF tones. And they are often used to remote control electronic devices or AUTOPATCH phone systems available on some repeater.

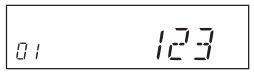
1. Press and hold [P5] key to enter the auto-dialer enquiry mode, LCD displays current default data and current group displayed on left. If no data in current group,it shows"EMPTY".
2. Turn selector knob to choose group you desired. Total:16 group,01-16.



3. Press [P5] key to enter into editing of current group,press MIC's numeric keys to set your desired data.



4. The display scrolls when the 7th digit is entered. The numbers 0-9, --, A-D, * and # can be stored up to a total of 23 digits.
5. After editing,press PTT or [P1] key to send current group and store edited DTMF signaling.



Transmitting Edited DTMF tones in the Auto-dialer memory

1. Press and hold [P5] key to enter into auto-dialer enquiry
2. Turn selector knob to select desired transmitting group
3. Press PTT then [P1] key to transmit current selected DTMF tones.

General Setting

1. Press and hold [F] key for over 2s to enter general setting menu.
2. Press [P1] or [P2] to select the desired function option.
3. Turn selector knob to select the desired setup.
4. Press [P5] to confirm and exit.

NOTE: In Profession transceiver mode,the functions from No.1 to No.17 will be auto-hidden.

DTMF, DTMF ANI, 2Tone or 5Tone Signaling

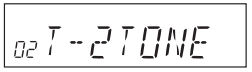
DTMF/5Tone/2Tone signalling function as similarily as CTCSS/DCS. Without receiving correspondent tone signalling, the speaker will remain mute. DTMF and 5Tone signalling can be applied for other advanced features such as ANI, PTT ID, group call, remotely stun, remotely kill, waken,...etc. The signalling edition must be done through programming software. Please refer to it in the programming software to know how to operate these features.

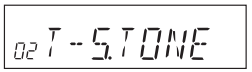
1. Press and hold [F] key for over 2s to enter into general setting menu.

2.Press [P1] / [P2] to choose No 2 menu,LCD displays"T-OFF" .
3. Turn selector knob to select the desired setup.

"DTMF": the channel will be mute by a DTMF signal. The speaker won't be open until receiving a correspondent DTMF signal. Hold "**PTT**" then press [P1] directly to transmit the pre-stored DTMF signaling.

"2TONE": the channel will be mute by a 2-Tone signal. The speaker won't be open until receiving a correspondent 2-Tone signal.Hold "**PTT**" then press [P1] directly to transmit the pre- stored 2-Tone signaling.

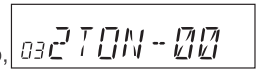




"5Tone": the channel will be mute by a 5-Tone signal. The Speaker won't be open until receiving a correspondent 5-Tone signal.

Sending 2-Tone Call

1. Press and hold [F] key for over 2s to enter general setting menu.
2.Press [P1] / [P2] key to choose No.03 menu, LCD displays "2TON XX","XX"indicates the group in the list.



3. Turn selector knob to select the desired sending 2TONE group, Press PTT to transmit selected group.
4. Total:32groups,00-31,Default:00.
5. Press [P5] kdy to confirm and exit.

NOTE: Content and name of 2TONE will be edited by programming software. This radio only query edited group or name.If there is corresponding name for 2TONE,this operation will display 2TONE corresponding name.

Sending 5-Tone Call

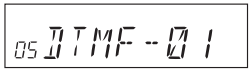
1. Press and hold [F] key for over 2s to enter general setting menu
2.Press [P1] / [P2] key to chooseNo.04 menu, LCD displays "5TON XX","XX"indicates the group in the list.
3. Turn selector knob to select the desired sending 5TONE group,Press PTT to transmit selected group.

4. Total:100groups,00-99,Default:00.
5. Press [P5] key to confirm and exit.

NOTE: Content and name of 5TONE will be software.This radio only query edited group or name.If there is corresponding name for 5TONE,this operation will display 5TONEcorresponding name.

Sending DTMF call

1. Press and hold [F] key for over 2s to enter general setting menu.
2.Press [P1] / [P2] key to choose No.05 menu, LCD displays "DTMF XX","XX"indicates the group in the list.
3. Turn selector knob to select the desired sending DTMF group, Press PTT to transmit selected group.

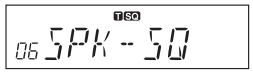


4. Total:16groups,00-16,Default:00.
5. Press [P5] key to confirm and exit.

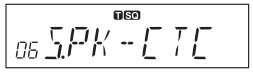
Signaling Combination setup

This function is to improve the level of protecting the radio against receiving irrelative signal.

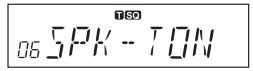
1. Press and hold [F] key for over 2s to enter general setting menu.
2. Press [P1] / [P2] key to choose No.06 menu, LCD displays "SPK--SQ".



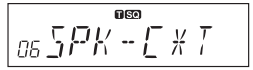
3. Turn selector knob to select the desired combination



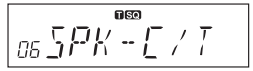
If select "SQ",it indicates you can hear the calling from caller when receive a matching carrier.
If LCD displays "CTC",it indicates you can hear the calling from caller when receive a matching carrier and CTCSS/DCS signaling .



If LCD displays "TON",it indicates you can hear the calling from caller when receive a matching carrier and DTMF/2TONE/5TONE signaling .



If LCD displays "C*T",it indicates you can hear the calling from caller when receive a matching carrier and CTCSS/DCS and DTMF/2TONE/5TONE signaling .



If LCD displays "C/T",it indicates you can hear the calling from caller when receive a matching carrier and either CTCSS/DCS DTMF/2TONE/5TONE signaling.
4. Press [P5] key to confirm and exit.

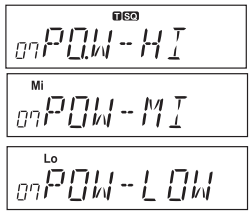
NOTE: This setting will be set together with adding optional signaling and CTCSS/DCS.

HIGH/MID/LOW Power Selection

1. Press and hold [F] key for over 2s to enter general setting menu.
2. Press [P1] / [P2] key to choose No.07 menu, LCD displays "POW–HI".
3. Turn selector knob to select the desired setting.

HI: High TX Power TX Power LOW: Low TX Power

4. Press [P5] key to confirm and exit.



TX OFF SETUP

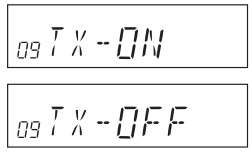
Disable this function,it is invalid to press PTT,current channel only works in RX mode.

1. Press and hold [F] key for over 2s to enter general setting menu.
2. Press [P1] / [P2] key to choose No.09 menu, LCD displays "TX-ON".
3. Turn selector knob to select the desired setting .

On:In current channel,Press PTT to transmit

OFF:In current channel,Press PTT is invalid.

4. Press [P5] key to confirm and exit. Default: ON.



Busy Channel Lockout

BCLO is to disable transmitting while RX signal is received. Once the channel is busy and you press PTT, the radio will beep as warning and get back to receiving.

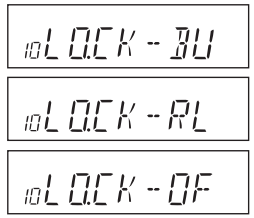
1. Press and hold [F] key for over 2s to enter general setting menu
2. Press [P1] / [P2] key to choose No.10 menu, LCD displays "LOCK--OFF".
3. Turn selector knob to select the desired setting.

BU: Enable BCLO, Carrier lockout, transmitting is inhibited when current channel receives a matching carrier;press [PTT] to emit error voice prompt and back to receiving status.

RL: Enable BTLO, transmitting is inhibited when current channel receives a matching carrier but dis-matching CTCSS/DCS. press [PTT] to emit error voice prompt and back to receiving status.

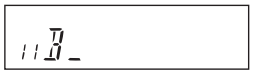
OFF: Busy channel lockout is disabled.It can transmit in any receiving status.

4. Press [P5] kdy to confirm and exit.



Editing Channel NAME

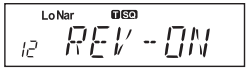
1. Press and hold [F] key for over 2s to enter general setting menu.
2. Press [P1] / [P2] key to choose No.11 menu, LCD displays cursor and flashing.
3. Turn selector knob to select the desired letter,press [P5] key to confirm selected letter and enter into next edition,Press [P3] to return forward edition.
4. After edition,press [P4] key to exit.



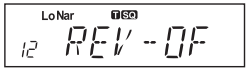
Reverse TX/RX

TX frequency turns to RX frequency & RX frequency changes to TX frequency. The signaling will also be reversed if CTCSS/DCS signaling exited in this channel.

1. Press and hold [F] key for over 2s to enter general setting menu
2. Press [P1] / [P2] key to choose No.12 menu, LCD displays "REV–OF".
3. Turn selector knob to select the desired setting.



ON:Enable Frequency Reverse



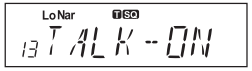
OFF:Disable Frequency Reverse.

4. After edition,press [P5] key to exit.

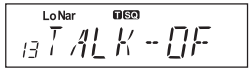
Talk Around

By Talk Around function,you can directly communicate with other radios in your group in case the repeater is not activated or when you are out of the repeater range. The transceiver will transmit by RX frequency with its CTCSS/DCS signaling.

1. Press and hold [F] key for over 2s to enter general setting menu.



2. Press [P1] / [P2] key to choose No.13 menu, LCD displays "TALK–OF".



3. Turn selector knob to select the desired setting.

ON:Enable Talk Around

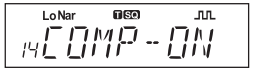
OFF:Disable Talk Around

4. After edition, press [P5] key to exit.

Voice Compander

Enable this function to reduce background noise and enhance audio clarity, especially in long range communication.

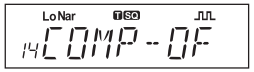
1. Press and hold [F] key for over 2s to enter general setting menu
11. Press [P1] / [P2] key to choose No.14 menu, LCD displays "COMP--OFF".
3. Turn selector knob to select the desired setting.



ON:Enable compander

OFF:Disable compander

4. Press [P5] key to confirm and exit. Default: OFF



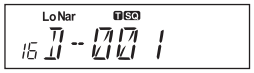
8 Groups of Scrambler (Encryption)

An analog voice inversion scrambler can be equipped as optionals.This special audio process can offer a more confidential communication.Other radios at same frequency will receive only disordered noises.

1. Press and hold [F] key for over 2s to enter general setting menu.
2. Press [P1] / [P2] key to choose No.15 menu, LCD displays "SCR--OF".
3. Turn selector knob to select the desired group,
   8 groups in total and you can set your desired
   value as well.
4. Press [P5] key to confirm and exit. Default: OFF

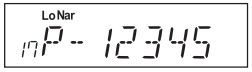
Radio's DTMF SELF ID ENQUIRY

1. Press and hold F key for over 2s to enter general setting menu.
2. Press P1 / P2 key to choose No.16 menu, LCD displays "D--XXX" XXX is radio's DTMF SELF ID.
3. Press P5 key to confirm and exit.



Radio's 5TONE SELF ID ENQUIRY

1. Press and hold F key for over 2s to enter general setting menu.
2. Press P1 / P2 key to choose No.17 menu, LCD displays "F--XXXXX","XXXXX" is radio's 5TONE SELF ID.
3. Press P5 key to confirm and exit.



Voice Prompt

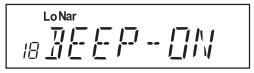
The prompting tone provides confirmation of entry, error status or malfunctions of the transceiver. You can enable or disable this function.

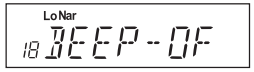
1. Press and hold F key for over 2s to enter general setting menu.
2. Press P1 / P2 key to choose No.18 menu, LCD displays "BEEP--ON".
3. Turn selector knob to select the desired setting.

ON:Enable voice prompt OFF:Disable voice prompt

4. Press P5 key to confirm and exit.Default:ON.

NOTE: Suggestion:Enable this function to check incorrect operation and malfunctions.





TOT (Time-out timer)

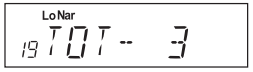
The time-out timer limits the amount of transmitting time. When you reach the time limit which has been programmed by your dealer, your transmission will be cut off. In order to transmit again, you must release PTT button to reset the timer.

1. Press and hold F key for over 2s to enter general setting menu.
2. Press P1 / P2 key to choose No.19 menu, LCD displays"TOT--3"
3. Turn selector knob to select the desired setting.

Timer:1-30min,each level 1min

OFF:Disable TOT

4. Press P5 key to confirm and exit. Default:3.



APO (Auto power off)

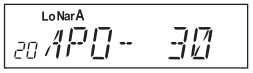
Once APO is activated, the radio will be automatically switched off when the pre-set timer is running to end.

1. Press and hold F key for over 2s to enter general setting menu.
2. Press P1 / P2 key to choose No.20 menu, LCD displays"APO--OFF".
3. Turn selector knob to select the desired setting.

30MIN:Auto power off after 30m

1HOUR:Auto power off after 1h

2HOUR:Auto power off after 2h



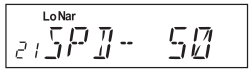
OFF:Disable Auto power off

4. Press P5 key to confirm and exit.Default:OFF

DTMF Transmitting Time

1. Press and hold F key for over 2s to enter general setting.

2. Press P1 / P2 key to choose No.21 menu, LCD displays "SPD--50".



3. Turn selector knob to select the desired setting.

30/50/100/200/300/500, which indicates the time for sending each DTMF signal & the interval between each DTMF being sent.

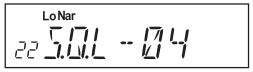
4. Press P5 key to confirm and exit.Default:50MS.

Squelch level Setup

Setting the radio to a tight squelch level, you can avoid unwanted signals or noise, but you may not receive a weak signal. Therefore, it will be better for you to select the normal squelch level

1. Press and hold F key for over 2s to enter general setting menu.

2. Press P1 / P2 key to choose No.22 menu, LCD displays "SQL--04".



3. Turn selector knob to select the desired squelch level.

OF-20 total 21,OF is min setting value(ON)

4. Press P5 key to confirm and exit.Default:04

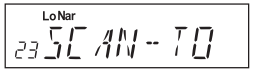
NOTE: Press P2 ,then turn selector knob also can select the desired squelch level. If the transceiver has set at higher squelch level, it may fail to hear the calling.If set at lower squelch level,the radio will be interfered.

Scan Stop Time Setup

There are 3 kinds of Scan Dwell Time for option.

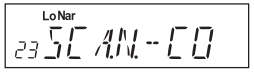
1. Press and hold F key for over 2s to enter general setting menu.

2. Press P1 / P2 key to choose No.23 menu, LCD displays "SCAN--TO".

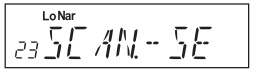


3. Turn selector knob to select the desired Scan Dwell Time.

TO:it pauses 15s once scanning a matching signal, then resume scan.



CO:it pauses once scanning a matching signal,signal disappeared then resume scan.



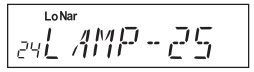
SE:It stops once scanning a matching signal.

4. Press P5 key to confirm the selection and exit.Default:TO.

LCD Backlight

1. Press and hold F key for over 2s to enter general setting menu.

2. Press P1 / P2 key to choose No.24 menu, LCD displays "LAMP--25"

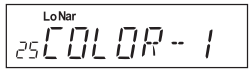


3. Turn selector knob to select the desired LCD backlight brightness1-32 total 32 level backlight brightness.

4. Press P5 key to confirm and exit.Default:25.

Background Light Color

1. 1. Press and hold [F] key for over 2s to enter general setting menu.
2. Press [P1] / [P2] key to choose No.25 menu, LCD displays "COLOR--1"



3. Turn selector knob to select the desired light color, total 3 color for choice.
4. Press [P5] key to confirm and exit.Default:1.

Pilot Frequency

This function uses to start repeater .It needs a certain intensity Pilot Frequency to start dormant repeater.As usual,no need to send pilot frequency again once repeater started.

1. Press and hold [F] key for over 2s to enter general setting.

Power On Password Setup

Enable this function,you have to insert a matching PIN to enter into normal status when radio is turned on.

1. Press and hold [F] key for over 2s to enter general setting menu.
2. Press [P1] / [P2] key to choose No.28 menu, LCD displays "CODE-OF".

3. Turn selector knob to enable/disable password setup.

ON: Turn on Pin setup

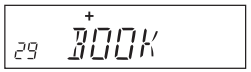
OFF:Turn off Pin setup

4. Press [P5] key to confirm and exit.Default:OFF

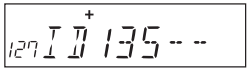
Address list

You store desired ID and corresponding ID name in address list.The LCD displays ID corresponding name if radio received ANI calling and find matching ID in address list.

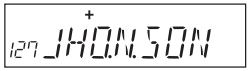
1. Press and hold [F] key for over 2s to enter general setting menu.
2. Press [P1] / [P2] key to choose No.29 menu, LCD displays "BOOK".



3. Turn selector knob to select the desired group [00-127], total is 128 group ID.



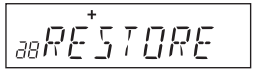
4. Press [F] key to confirm and exit.



Factory Default

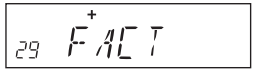
If your radio seems to be malfunctioning, resetting the microprocessor may solve the problem. When performing the reset, you may lose memory data and stored information. Back up or write down important data before performing the reset.

1. Press and hold [F] key for over 2s to enter general setting menu.
2. Press [P1] / [P2] key to choose No.30 menu, LCD displays"RESTORE".



3. Turn selector knob to select the desired operation.

FACT:Resume factory default for channel,signaling and general setting.



SETUP:Return initial setup for No.18- No 28 general setting menu.

4. Press [P4] key to confirm.

Maintenance

Default Setting after Resetting

	TH–9000D	DCS encode and decode	–
Memory channel 0–199	–	DCS code	023N
Offset direction	–	Output power	HI
Offset frequency	600KHz	Key–lock setting	OFF
Channel step	12.5KHz	TOT	OFF
CTCSS encode and decode	–	APO	OFF
CTCSS tone frequency	88.5Hz	Squelch Level	4

Trouble Shooting

Problem	Possible Causes and Potential Solutions
(a) Power is on, nothing appears on Display.	+ and – polarities of power connection are reversed. Connect red lead to plus terminal and black lead to minus terminal of DC power supply.
(b) Fuse is blown.	Check and solve problem resulting in blown fuse and replace fuse with new fuse.
(c) Display is too dim.	Dimmer setting is "LAMP–L". Please make the dimmer setting "LAMP–H".
(d) No sound comes from speaker.	Squelch is muted. Decrease squelch level. Tone or CTCSS/DCS squelch is active. Turn CTCSS or DCS squelch off.
(e) Key and Dial do not function.	Key–lock function is activated. Cancel Key–lock function.
(i) Rotating Dial will not change memory channel.	Transceiver is in CALL mode. Press the VFO or memory mode.
(g) PTT key is pressed but transmission does not occur.	Microphone connection is poor. Connect microphone properly. Antenna connection is poor. Coonect antenna properly.

Specifications

General

Frequency Range	Tx/Rx:462.5625~462.7125 Tx/Rx:462.5500~462.7250 Tx:467.5500~467.7250 Rx:462.5500~462.7250
Number of Channels	23 channels
Channel Spacing	25K (Wide Band) 12.5K (Narrow band)
Operating Voltage	13.8V DC ± 15%
Squelch	Carrier/CTCSS/DCS/5Tone/2Tone/DTMF
Frequency Stability	± 2.5ppm
Operating Temperature	–20 ~ +60℃
Dimensions(WxHxD)	145(W)x47(H)x190(D)mm
Weight	about 1.2kg

NOTE: Specifications are subject to change without notice due to advancements in technology.

Receiver (ETSI EN 300 086 standard testing)

	Wide band	Narrow band
Sensitivity (12dB Sinad)	≤0.25μV	≤0.35μV
Adjacent Channel Selectivity	≥70dB	≥60dB
Intermodulation	≥65dB	≥60dB
Spurious Rejection	≥70dB	≥70dB
Audio Response	+1 ~ –3dB(0.3 ~ 3KHz)	+1 ~ –3dB(0.3 ~ 2.55KHz)
Hum & Noise	≥45dB	≥40dB
Audio distortion	≤5%	
Audio power output	> 2W@10%	

Transmitter (ETSI EN 300 086 standard testing)

	Wide band	Narrow band
Power Output	45W/5W	45W/5W
Modulation	16KΦF3E	11KΦF3E
Adjacent Channel Power	≥70dB	≥60dB
Hum & Noise	≥40dB	≥36dB
Spurious Emission	≥60dB	≥60dB
Audio Response	+1 ~ –3dB(0.3 ~ 3KHz)	+1 ~ –3dB(0.3 ~ 2.55KHz)
Audio Distortion	≤5%	

Attached Chart

- 50 groups CTCSS Tone Frequency(Hz)

67.0	79.7	94.8	110.9	131.8	156.7	171.3	186.2	203.5	229.1
69.3	82.5	97.4	114.8	136.5	159.8	173.8	189.9	206.5	233.6
71.9	85.4	100.0	118.8	141.3	162.2	177.3	192.8	210.7	241.8
74.4	88.5	103.5	123.0	146.2	165.5	179.9	196.6	218.1	250.3
77.0	91.5	107.2	127.3	151.4	164.9	183.5	199.5	225.7	254.1

- 1024 groups DCS Code.

000	001	002	003	004	005	006	007
010	011	012	013	014	015	016	017
020	021	022	023	024	025	026	027
030	031	032	033	034	035	036	037
040	041	042	043	044	044	046	047
050	051	052	053	054	055	056	057
060	061	062	063	064	065	066	067
070	071	072	073	074	075	076	077
100	101	102	103	104	105	106	107
110	111	112	113	114	115	116	117
120	121	122	123	124	125	126	127

130	131	132	133	134	135	136	137
140	141	142	143	144	145	146	147
150	151	152	153	154	155	156	157
160	161	162	163	164	165	166	167
170	171	172	173	174	175	176	177
180	181	182	183	184	185	186	187
190	191	192	193	194	195	196	197
200	201	202	203	204	205	206	207
210	211	212	213	214	215	216	217
230	231	232	233	234	235	236	237
240	241	242	243	244	245	246	247
250	251	252	253	254	255	256	257
260	261	262	263	264	265	266	267
270	271	272	273	274	275	276	277
300	301	302	303	304	305	306	307
310	311	312	313	314	315	316	317
320	321	322	323	324	325	326	327
330	331	332	333	334	335	336	337
340	341	342	343	344	345	346	347
350	351	352	353	354	355	356	357
360	361	362	363	364	365	366	367

370	371	372	373	374	375	376	377
400	401	402	403	404	405	406	407
410	411	412	413	414	415	416	417
420	421	422	423	424	425	426	427
430	431	432	433	434	435	436	437
440	441	442	443	444	445	446	447
450	451	452	453	454	455	456	457
460	461	462	463	464	465	466	467
470	471	472	473	474	475	476	477
500	501	502	503	504	505	506	507
510	511	512	513	514	515	516	517
520	521	522	523	524	525	526	527
530	531	532	533	534	535	536	537
540	541	542	543	544	545	546	547
550	551	552	553	554	555	556	557
560	561	562	563	564	565	566	567
570	571	572	573	574	575	576	577
600	601	602	603	604	605	606	607
610	611	612	613	614	615	616	617
620	621	622	623	624	625	626	627
630	631	632	633	634	635	636	637

750	751	752	753	754	755	756	757
760	761	762	763	764	765	766	767
770	771	772	773	774	775	776	777
640	641	642	643	644	645	646	647
650	651	652	653	654	655	656	657
660	661	662	663	664	665	666	667
670	671	672	673	674	675	676	677
700	701	702	703	704	705	706	707
710	711	712	713	714	715	716	717
720	721	722	723	724	725	726	727
730	731	732	733	734	735	736	737
740	741	742	743	744	745	746	747

NOTE: N is positive code, is negative code, total: 232groups.

RF exposure warning :

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment shall be installed and operated with minimum distance 99.4cm between the radiator & body

For a transmitter that can only be operated with an FCC license, warnings concerning compliance with applicable licensing requirements and information concerning license application procedures.

GMRS Frequency Chart

Ch. No.	Ch. Freq. (MHz)	Ch. No.	Ch. Freq. (MHz)
1	462.5625	15	462.550
2	462.5875	16	462.575
3	462.6125	17	462.600
4	462.6375	18	462.625
5	462.6625	19	462.650
6	462.6875	20	462.675
7	462.7125	21	462.700
Ch 8~14 Reserved for FRS		22	462.725

GMRS Repeater Channels

Ch. Number	TX Freq. (MHz)	RX Freq. (MHz)
15RP	467.5500	462.5500
16RP	467.5750	462.5750
17RP	467.6000	462.6000
18RP	467.6250	462.6250
19RP	467.6500	462.6500
20RP	467.6750	462.6750
21RP	467.7000	462.7000
22RP	467.7250	462.7250

FCC Warnings and Statements

IMPORTANT

Changes or modifications to this unit not expressly approved by TYT Electronics Co., Ltd. could void your right to operate this unit. 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 COMMUNICATOR to exceed those limitations. Any adjustment to your radio must be made by qualified technicians.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions; (1) this device does not cause any harmful interference, and (2) this radio must accept any interference thay may cause undesired operations

IMPORTANT NOTICE, FCC LICENSE REQUIRED FOR GMRS OPERATION
(Only Applicable for GMRS Radio Use in the United States)

The radios operate on GMRS (General Mobile Radio service) frequencies which require an FCC (Federal Communications Commission) license. You must be licensed prior to operating on channels 1-23, which comprise the GMRS channels of the radio.

Serious penalties could result from unlicensed use of GMRS channels, in viola-tion of FCC rules, as stipulated in the Communications Acts Sections 501 and 502 (amended).

You will be issued a call sign by the FCC which should be used for station identification when operating the radio on GMRS channels. You should also cooperate by engaging in permissible transmissions only, avoiding channel interference with other GMRS users, and being prudent with the length of your transmission time.

To obtain a license or ask questions about the license application, contact the FCC at 1-888-CALL FCc or go to the fccs website:
http://www.fcc.gov andrequestform **605.**