

AnyTone



AT-588

FC CE RoHS

USER'S MANUAL

MOBILE RADIO

Nice Housing, Stoutness & Stability, Advanced and Reliable functions, Perfect & Valuable. **FC CE**  Approval. AT-588 amateur mobile radio especially designs for drivers and it pursues company philosophy of innovation and practicality.

We only do best radio!



When programming the transceiver, read the factory initial data firstly, then rewrite the frequency and signaling etc., otherwise errors may occur because of different frequency band etc..

AT-588 Mobile Radio Applicable Software: QPS588

Models Apply To This Manual: AT-588 Mobile radio

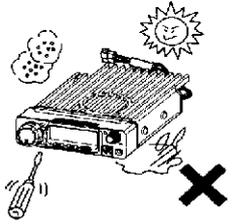
MOBILE RADIO

Thank you for choosing this *AnyTone*® vehicle transceiver. *AnyTone*® always provides high quality products. And this transceiver is no exception. As you learn how to use this transceiver, you will find that *AnyTone*® 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 that lets you know what you are configuring.

Though friendly design for user, this transceiver is technically sophisticated 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 observe the following precautions to prevent fire, personal injury, and/or transceiver damage:

- ⚠ Do not attempt to configure your transceiver while driving; it is simply too dangerous.
- ⚠ This transceiver is designed for a 13.8V DC power supply. Don't use a 24V battery to power the transceiver.
- ⚠ Do not place the transceiver in excessively dusty, humid or wet areas, nor on unstable surfaces.
- ⚠ Please keep it away from interferential devices (such as TV, generator etc.) when interfered by external.
- ⚠ 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 an Anytone service station or your dealer.
- ⚠ Do not transmit with high output power for extended periods; the transceiver may overheat.



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We only do best radio!

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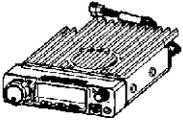
AT-588 Mobile Radio has nice housing, stoutness & Stability, advanced and reliable functions, Perfect & Valuable. This amateur mobile radio especially designs for drivers and it pursues company philosophy of innovation and practicality. More functions as follows:

- ▼ Display on a large LCD with adjustable brightness, convenient for nighttime use. Three different displaying modes are available, including Frequency mode, Frequency+Channel Mode, Channel Mode
- ▼ Distribute buttons reasonably, convenient for operation. Adopt superior quality material, better technology and high quality radiator to ensure stable and durable operation
- ▼ 100 programmable memorized channels +1 called channel, identified by letters and numbers
- ▼ Programming different CTCSS, DCS, 2Tone, 5Tone in per channel, rejecting extra calling from other radios
- ▼ Various scan functions including CTCSS/DCS Scan function
- ▼ Use 5Tone to send Message, Emergency alarm, Call all, ANI, Remotely kill, Remotely Waken, etc.
- ▼ Automatic Numbering Identification function by DTMF/ANI or 5Tone/ANI
- ▼ Scramble function (Optional)
- ▼ Compander function for decrease the background noise and improve the communication quality, it can set compander ON/OFF per channel
- ▼ Can set different band width, 25K for wide band, 12.5K for narrow band in per channel
- ▼ Theft alarm provides extra safety

■ SUPPLIED ACCESSORIES

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

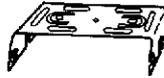
- Transceiver



- Microphone (QHM-03)
(with DTMF keyboard)



- Mobile Mounting
Bracket (QMB-01)



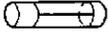
- DC Power Cable with
Fuse Holder(QPL-01)



- Hardware Kit for Bracket



- Spare Fuses



- User Manual



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■ OPTIONAL ACCESSORIES

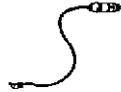
- Cloning Cable (CP50)



- USB Programming
(PC50)



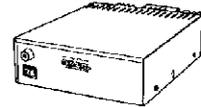
- Cigar-Plug Connection
Line (QCC-01)



- Programming Software
(QPS-588)



- Regulated Power
Supply (QRP-01)



- External Speaker
(SP01)



- Desktop
Microphone
(QDM-01)



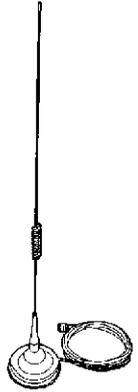
- Alarm Cable A
[QL-01(A)]



- Alarm Cable B (Extension line)
[QL-01(B)]



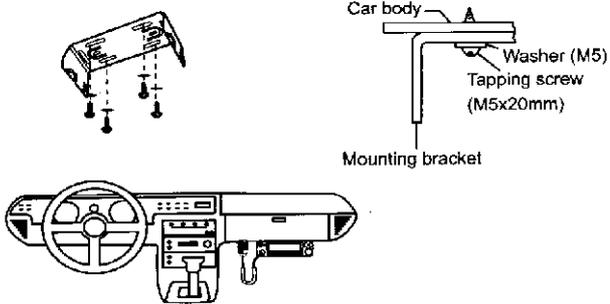
- Car Antenna
(QCA-01)



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).

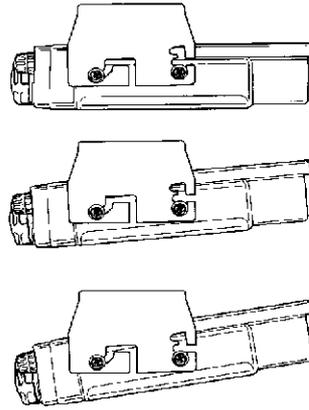


2. Position the transceiver, then insert and tighten the supplied hexagon SEMS screws.

▼ 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.



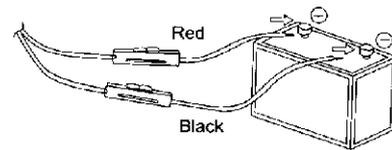
DC POWER CABLE CONNECTION

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

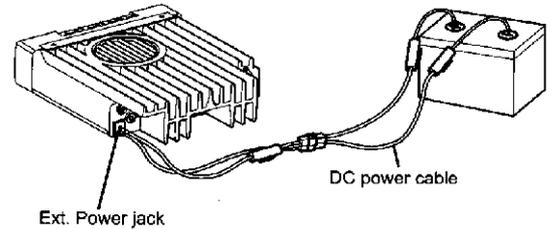
MOBILE OPERATION

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.



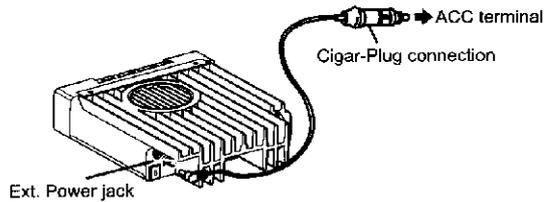
If the ignition-key on/off feature is desired (optional feature), use the optional QCC-01 (For Cigar-Plug connection) cable. Connect one of the cables between the ACC terminal or a Cigar-Plug that operates with the vehicle ignition or ACC switch on the vehicle and EXT POWER jack on the rear side of the 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.

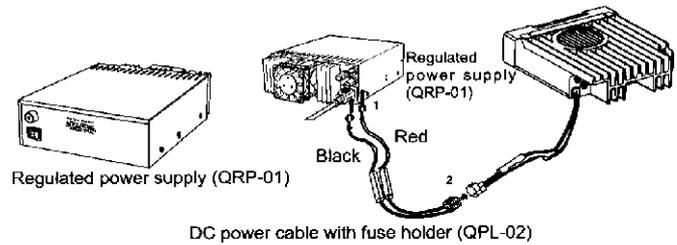


✕ FIXED STATION OPERATION

In order to use this transceiver for fixed station operation, you will need a separate 13.8V DC power supply (not included).

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.



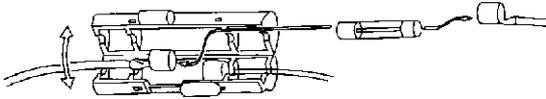
2. Connect the transceiver's DC power connector to the connector on the DC power cable.
 - ▼ Press the connectors firmly together until the locking tab clicks.

NOTE ▼ Before connecting the DC power to the transceiver, be sure to switch the transceiver and the DC power supply OFF.

NOTE ▼ 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 authorized **AnyTone**® dealer or an authorized **AnyTone**® service center for assistance.



Transceiver	15A
Supplied Accessory DC power cable	20A

6 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.

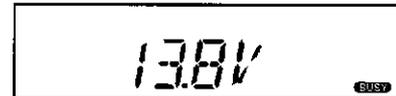
■ POWER SUPPLY VOLTAGE DISPLAY

After connecting the transceiver to the power supply, the supply voltage can be confirmed by pressing the **GO1** key together with the **GO2** key. The supply voltage to the transceiver is then seen on the display.

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.

AnyTone



Important The range of displayed voltage is only from 7V to 16V DC, because the displayed value is estimated, please use a voltmeter when a more precise reading is desired.

■ ANTENNA CONNECTION

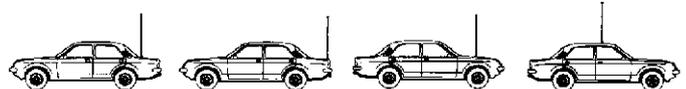
Before operating, install an efficient, well-tuned antenna. The success of your installation will depend largely on the type of antenna and its correct installation. The transceiver can give excellent results if the antenna system and its installation are given careful attention.

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 50Ω 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.

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

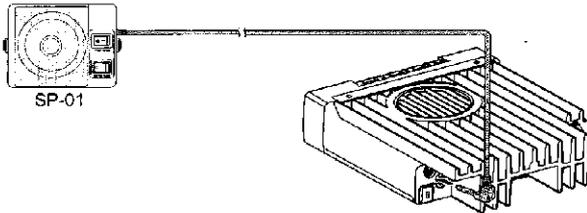
The possible locations of antenna on a car are shown as following:



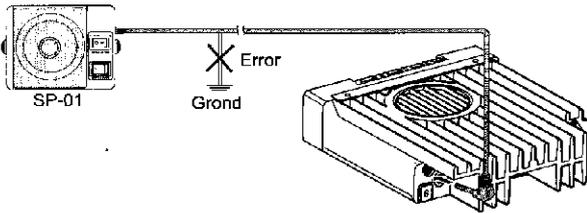
ACCESSORIES CONNECTIONS

EXTERNAL SPEAKER

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

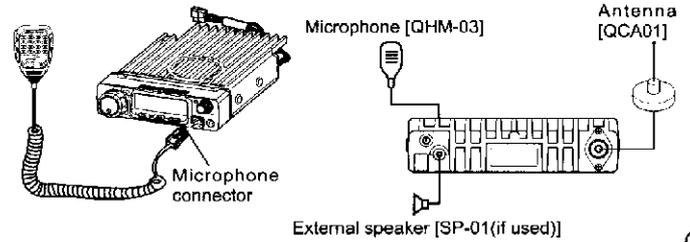


NOTE External speaker adopt double port BTL, please care about the connecting way. The speaker can not connect with the ground, otherwise the speaker will be fault. The wrong connecting way as the following picture.



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.



PC CONNECTING

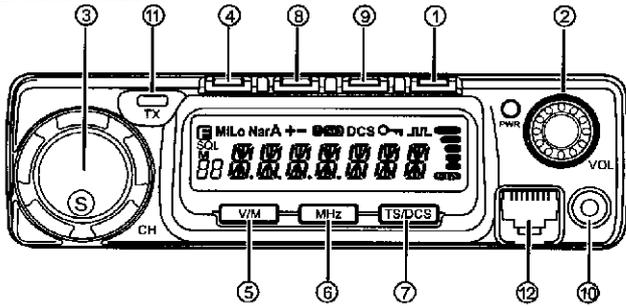
To utilize the optional QPS-588 software, you must first connect the transceiver to your PC then using an optional programming cable PC50 (via the microphone jack).

Please use QPS-588 software for programming.

<http://www.qxdz.cn>

NOTE Ask your dealer about purchasing a Programming Cable PC50.

FRONT PANEL



Primary Functions

NO.	KEY	FUNCTION
1	Pow(Power)	Power on/Off
2	VOL	Adjust Volume Key
3	Main Dial	Change frequency, memory channel and scan direction etc.
4	FUN/SET	Function Key
5	V/M/MW	Switches between VFO mode and Memory mode
6	MHz/SHIFT	Step size Key (step:1MHz)
7	TS/DCS/LOCK	Sets CTCSS and DCS value
8	CAL/H/L	Call key
9	SQL/D	Sets the squelch level
10	Data Terminal	Data reading/writing, clone and theft alarm functions
11	TX	lights during Transmitting
12	Mic.connector	Microphone Connection port

• Functions which can be activated while appears. Press key firstly, then press the following key.

NO.	KEY	FUNCTION
4	FUN/SET	Confirms the selective functions and exit the function mode
5	V/M/MW	Stores data into memory channels
6	MHz/SHIFT	Sets offset direction and offset frequency
7	TS/DCS/LOCK	Sets key lock function
8	CAL/ H/L	Switches between HI, MID and LOW power transmission
9	SQL/D	Compander communication mode on/off

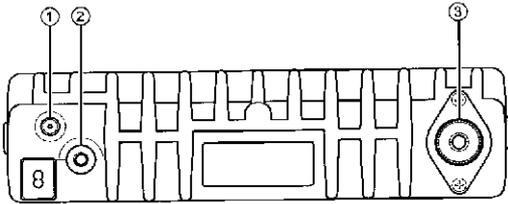
• Functions that can be activated while pressing the key.

NO.	KEY	FUNCTION
1	PWR	Reset to factory default settings
5	V/M/MW	Erase the memory
6	MHz/SHIFT	Switches between Wide/ Narrow band
7	TS/DCS/LOCK	Sets the auto dialer
8	CAL/H/L	Enters clone data function mode
9	SQL/D	Enters power supply voltage indication mode

• Functions that require continuous pressing to be activated

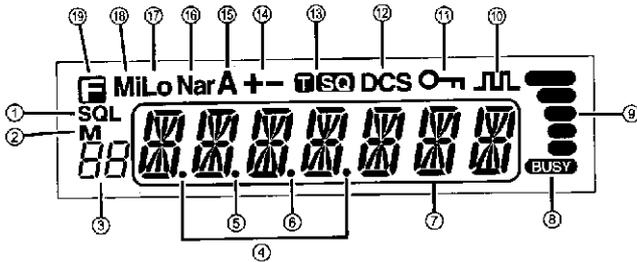
NO.	KEY	FUNCTION
4	FUN/SET	Press and hold for 2s to enter the Setting mode
9	SQL/D	Press and hold for more than 1s to monitor mode

REAR PANEL



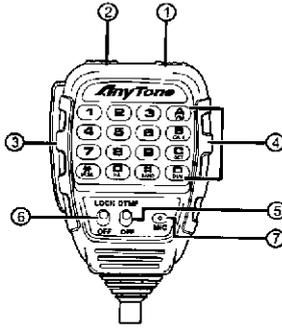
NO.	KEY	FUNCTION
1	Ext. Power Jack	Terminal for connecting optional cable QCC01 for use with ignition key On/Off function. The radio will auto power on when car is driving. The radio will auto power off when car stops.
2	Ext. Speaker Terminal	Terminal for optional external speaker SP01
3	Antenna Connector	Connection for 50Ω coaxial cable and antenna.

DISPLAY

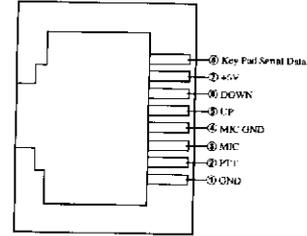


NO.	KEY	FUNCTION
1	SQL	Appears when setting squelch level.
2	M	Appears when in memory mode.
3	88	Indicates the memory channel number in memory mode.
4	Decimal point	Appears when setting the theft alarm function.
5	Decimal point	Appears when setting the channel skip.
6	Decimal point	Indicates the decimal point of frequency and the scanning function.
7	#####	Indicates the frequency or memory name.
8	BUSY	Appears when a signal is being received or monitor function is on.
9		Indicates the relative signal strength of Receiving and Transmitting.
10	JLL	Appears when in compander on mode.
11	Key	Appears when setting key lock function.
12	DCS	Appears when setting the DCS function.
13	CTCSS	Appears when setting CTCSS function.
14	+ -	Appears when setting Offset frequency direction.
15	A	Appears when scramble on.
16	Nar	Appears when in narrow band reception mode.
17	LO	Appears when transmission power is set to LOW.
18	Mi	Appears when transmission power is set to MID.
19	Key	Appears when pressing MEMO key.

MICROPHONE



MIC Connector Diagram(While looking in the front view of the connector)



NO.	KEY	FUNCTION
1	UP	Increase frequency ,memory channel number or setting value.
2	DOWN	Decrease frequency, memory channel number or setting value.
3	PTT	Press the PTT (Push-TO-Talk) key to transmit.
4	Number Key	Input VFO frequency or DTMF dial out etc..
5	DTMF ON / OFF	Switches between DTMF dialing or function operating.
6	LOCK Switch	Locks out the UP and Down keys.
7	MIC	Speak here during transmission.

 This product has 3 working modes and 2 levels of operating menu.

NOTE

1. **Frequency + channel mode:** Under this mode, User can temporarily change and use the setting of CTCSS/DCS encode and decode, Busy channel Lock, Scramble (optional), Compander, Wide & Narrow Band setup, Offset Frequency Direction and Offset Frequency. If power off or change the channel, the temporary change will be deleted automatically. Under this mode, if current channel has channel name, channel name will automatically replace the channel frequency.
2. **Channel number mode:** Under this mode, scan function, HI/LOW power switch, key lock, squelch off, CTCSS/DCS encode & decode and Tone-pulse Transmission can be activated or deactivated in keyboard only operated by programming software. Other functions are deactivated in keyboard, only can be operated by programming software.

 Changing into channel number mode can only be operated by programming software.

NOTE

3. **Frequency mode(VFO):** All shortcut operations and functions setup will be set as newest value until next change.

 This radio's Frequency+Channel and Channel name are the same mode. So it mentions as Channel mode as following.

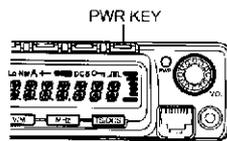
NOTE

4. Two levels of operating menu:
 - ▼ Shortcut operations menu.
 - ▼ Function setup menu.

5 Operating Basics

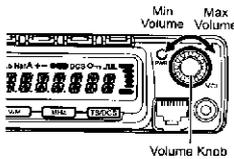
SWITCHING THE POWER ON/OFF

Press the **POW** switch or turn the ignition key to ACC (speed up) or ON (startup) position according to the option selected during installation. Press the **POW** switch again or turn the ignition key to OFF position to turn off.



ADJUSTING THE VOLUME

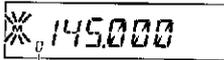
Turn the VOL knob clockwise to increase the audio level, counterclockwise to decrease. Set it at your desired level.



NOTE During communication, volume can be adjusted more accurate.

12 SWITCHING THE WORKING MODE

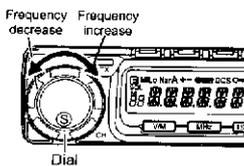
In standby, press **V/M** key or Microphone **MIC** key until appear **M** and channel number, this indicates current channel in channel mode. Repeat above operation to switch between Frequency mode (VFO) and channel mode.



NOTE In channel mode and M mark flashes, the current channel is empty.

SELECTOR KNOB ADJUSTING FREQUENCY/CHANNEL

- Under frequency (VFO) mode, you can change the current frequency to the desired one through selector knob; Turn clockwise to increase frequency; turn counterclockwise to decrease. Every gear will increase or decrease one step.



Press **MHz** key, the decimal point of frequency in screen will be auto-hidden. In this status, adjust selector knob or Microphone **[UP/DOWN]** key will increase or decrease 1MHz frequency.

- Under channel mode, you can change the current channel to the desired one through selector knob, clockwise turn to the forward channel, anticlockwise turn to the backward channel. Press **UP** key until **F** and **M** showed in screen, turn selector knob to change channel in 10 bit. In relative working mode, Microphone's **[UP/DOWN]** key has same function for adjusting frequency and channel.

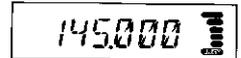
NOTE 5k, 6.25k, 8.33k, 10k, 12.5k, 15k, 20k, 25k, 30k and 50k total ten step size available for this radio.

SQUELCH OFF

While standby press and hold **SOL** key for 1s or press MIC's **(MON)** key to squelch off, background noise appears. This function enable you to monitor weak signal. Press **SOL** key again to squelch.

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.



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

NOTE If the screen shows **BUSY** and Field intensity, it means the transceiver is receiving a matching carrier and un-matching signaling. The calling is not audible. (Please refer to CTCSS/DCS decode and optional signaling setup in programming software).

TRANSMITTING

Press and hold [SQL] key for 1s or press MIC's [*/MENU] key to monitor for a while to confirm the channel desired is not busy. 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.

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

TRANSMITTING TONE-PULSE

Press and hold [PTT] key, then press Microphone [DOWN] key to transmit current selected tone-pulse signal.

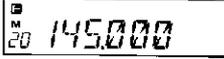
TRANSMITTING 2TONE/5TONE

Press and hold [PTT] key, then press Microphone [UP] key to transmit pre-stored and selected DTMF, 2Tone, 5Tone signaling.

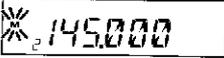
6 Shortcut Operations

CHANNEL EDIT

1. Under frequency mode (VFO), turn selector knob to select the desired frequency.
2. Press **[FS/DCS]** key to enter CTCSS/DCS signaling setup, turn selector knob to select the desired signaling
3. Press **[F/M]** key, LCD appears **[M]** icon and current channel number, **[M]** icon flashing means current channel is empty
4. Turn selector knob to select the desired channel number to store.
5. Press **[V/M]** key, **[M]** icon and channel number disappear and emit a prompt voice, thus the channel storage succeed.



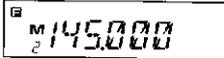
M 145.000



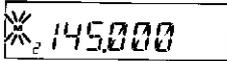
* 145.000

CHANNEL DELETE

1. Under channel mode, turn selector knob to select channel which you want to delete.
2. Press **[F/M]** key, LCD appears **[M]** icon, then press **[V/M]** key, current channel will be deleted and emitted a prompt voice. **[M]** icon flashing means current channel is empty.



M 145.000



* 145.000

CHANNEL CALL

While Standby, press **[CAL]** key to switch into appointed calling channel. Default calling frequency: 145MHz

1. Press **[CAL]** key, LCD appears **[C]** icon,



C 145.000

the transceiver enter into channel calling status. At this status, Turn selector knob or press MIC [UP/DOWN] key will not change channel and frequency.

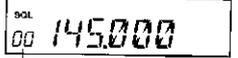
2. In channel call mode, scanning is invalid.
3. Press again **[CAL]** key or **[V/M]** key to exit channel call.

NOTE: Calling channel's information can only be modified. It can not be deleted or hidden. If you want to modify call channel, you can edit it like channel edit method and store the desired value into call channel.

SQUELCH LEVEL SETUP

The function keeps speaker quiet when no receiving signal.

1. While standby, press **[SQL]** key until LCD appears **SQL** and current squelch level
2. Turn selector knob or press MIC [UP/DOWN] key to set desired squelch level.
3. Press any key except **[POWER]** to exit .



SQL 145.000

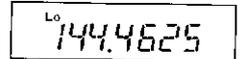
Squelch level

FREQUENCY/CHANNEL SCAN

× FREQUENCY SCAN

In frequency (VFO) mode, this function is designed to monitor signal of every communicative frequency point of transceiver "step size" you have set.

1. Press **[MHZ]** key for 1s or press Microphone [UP/DOWN] key for 1s to scan.
2. Turn selector knob or press Microphone [UP/DOWN] key to change scan direction.
3. Press any key except **[POWER]** to exit.



Lo 144.4625

AnyTone

✕ FREQUENCY SCAN SCOPE SETUP

This radio has PH frequency and PL frequency, it limits Frequency scanning scope

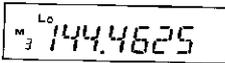
1. When current frequency lower than PL frequency, scanning each frequency lower than PL frequency. Current frequency between PL frequency and PH frequency, scanning each frequency between PL frequency and PH frequency. When current frequency higher than PH frequency, scanning each frequency higher than PH frequency.
2. Press **[MHz]** key for 1S to scan, turn selector knob or press Microphone **[UP/DOWN]** key to change scan direction.

NOTE PH frequency > PL frequency

■ CHANNEL SCAN

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

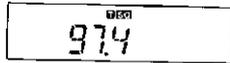
1. Press **[MHz]** key or press Microphone **[UP/DOWN]** key for 1s to scan
2. Turn selector knob or press Microphone **[UP/DOWN]** key to change scan direction.
3. Press any key except **[POWER]** to exit.



■ CTCSS/DCS ENCODE AND DECODE SETUP

Repeatedly press **[TS/DCS]** key to check whether set CTCSS/DCS encode and decode in channel or not.

1. When LCD appears **I** icon, it means current channel with CTCSS encode,

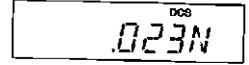


turn selector knob or press Microphone **[UP/DOWN]** key to select desired CTCSS encode.

2. When LCD appears **I** and **SC** icon, it means current channel with CTCSS encode and decode, turn selector knob or press Microphone **[UP/DOWN]** to select desired CTCSS code.

NOTE CTCSS encode and decode can be set into different group in same channel.

3. When LCD appears **DCS** icon, it means current channel with DCS encode and decode, turn selector knob or press Microphone **[UP/DOWN]** to select desired DCS encode and decode.



NOTE DCS encode and decode can be set synchronously.

4. CTCSS:67-254.1, Total 50groups; DCS:017N-765I total 232 groups. N is positive code, I is inverse code
5. Press any key except **[CAL]**, **[POWER]** and **[TS/DCS]** keys to return into normal status.

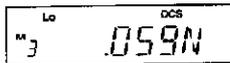
NOTE under channel number mode, Frequency+channel mode, this operation is temporarily change, let user temporarily use. If change channel or restart, the temporarily setup will be auto-deleted.

■ CTCSS/DCS SCAN

If current channel with CTCSS/DCS encode and decode, press **[TS/DCS]** key, LCD display current CTCSS/DCS encode and decode. Press and hold Microphone **[UP/DOWN]** key for more than 1s to enter into CTCSS/DCS scan, when finding a matching signaling, the scan will pause for 5 seconds (Refer to resume scan setup) then scan again. Press any key except Microphone **[UP/DOWN]** key to stop scanning and return standby.

When the current channel signaling is set to CTCSS, the transceiver will scan CTCSS. When the current channel signaling is set to DCS, the transceiver will scan DCS.

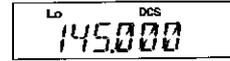
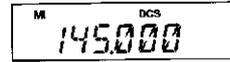
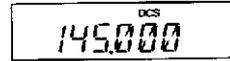
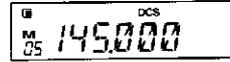
Press Microphone [UP/DOWN] key or turn selector knob to change CTCSS/DCS scan direction.



HIGH/MID/LOW POWER SWITCH

Press [FUN] key until LCD display [] icon, then press [SQL] key to switch between high/Mid/low power. The LCD appears:

None: Transmission in high power



Lo: Transmission in low power

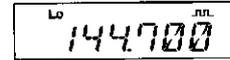
16

Mi: Transmission in middle power

COMPANDER FUNCTION (DECREASE THE BACKGROUND NOISE AND IMPROVE THE COMMUNICATION QUALITY)

Compander function will decrease the background noise and improve the communication quality, especially in long range communication.

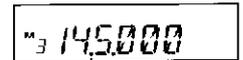
1. Press [FUN] key, then press [SQL] key to turn on compander function, repeat above operation again to turn off compander function.
2. When LCD appears [] icon, enable compander in current channel.
3. When LCD doesn't display [] icon, disable compander in current channel.



SCAN CHANNEL SKIP

Under Frequency +Channel mode, press [FUN] key then press [V/M] key, repeat above operation to set current channel be scanned or not.

1. When display decimal point of 10MHz, indicate the current channel scan be skipped.
2. When no display decimal point of 10MHz, indicate the current channel scan be scanned.



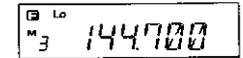
Lights up

NOTE In Frequency(VFO) mode and channel number mode, this operation is invalid.

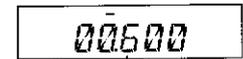
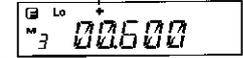
OFFSET DIRECTION AND OFFSET FREQUENCY SETUP

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 [FUN] key, while the [] icon stays on the display, then press [MHz], LCD displays offset direction and offset frequency.
2. Repeat above operation, choose positive offset and negative offset, or turn off.
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



差频方向



00.600 差频频率

frequency lower than receiving frequency.

- When LCD displays offset direction and offset frequency, turn selector knob or press Microphone [UP/DOWN] key to change offset frequency according to frequency step size.
- In this status, press [FUN] key again, offset frequency changed per 1MHz stepping to make rapid setup.
- Press any key except [FUN] and [MHz] key to exit into standby.

KEY-LOCKED FUNCTION

Avoiding unintentional operation, this function will lock main key, all keys except [SQL] and [POW] key are invalid.

- Press [FUN] key and then press [TS/DCS] key, LCD displays  icon, it indicates key-locked function is valid.



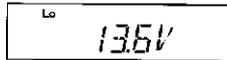
- Repeat above operation,  icon disappears, it indicates key-locked function is invalid.

In Key-locked mode, press [SQL] then turn selector knob or press Microphone [UP/DOWN] key can adjust current channel squelch level.

CURRENT VOLTAGE DISPLAY

This function will display Current Battery Voltage.

- Press and hold [FUN] key, then press [SQL] key, LCD display current Battery Voltage.



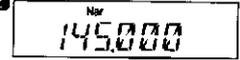
- Restart power or repeat above operation to return into normal operation

In voltage display mode, all functions and channel or frequency selection are invalid.

WIDE/NARROW BAND SETUP

Select suitable bandwidth in accordance with different local conditions.

- Press and hold [FUN] key, then press [MHz] key, LCD display **Nar** icon, the radio enter into narrow band mode.
- Repeat this operation to switch between Wide band and Narrow band mode, when **Nar** icon disappears, the radio enter into wide band mode.



In frequency+channel mode, this operation is temporarily change, let user temporarily use. If change channel or restart, the temporarily setup will be auto-deleted.

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.

- Press and Hold [FUN] key, then press [TS/DCS] key to enter the auto-dialer setting mode, default display is "0" and current group.
- Press Microphone [UP/DOWN] key to select the desired group, 01-09 total 9 groups.
- Turn selector knob to select the desired digit, press [TS/DCS] key to confirm and enter into next digit editing. Repeat this operation to complete.
- Use "-" for pause. The display scrolls when the 7th digit is entered. The numbers 0-9, --, A-D, * and # can be stored up to a total of 16 digits.
- To check the entered digits, press [SQL] key until LCD displays 



6

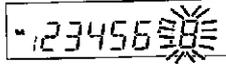
Shortcut Operations

icon, turn selector knob to check edited digits.

6. Press  to delete all digits in current group, after editing, press PTT, ,  or  key to exit.

■ TRANSMITTING EDITED DTMF TONES IN THE AUTO-DIALER MEMORY

1. Press  key, then press  key enter into auto-dialer setting
2. Press MIC [UP/DOWN] key to select desired transmitting group
3. Press and hold [PTT] key then press [UP] key to transmit current selected DTMF tones.

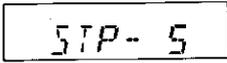


Background operations can be changed in any modes, and can be stored as the latest value for a long time, the operations as following:

1. Press and hold **[FUN]** key for over 2s or press Microphone **[SET]** key to enter background operations menu.
2. Repeatedly press **[SQL]** key or Microphone [UP/DOWN] key to select the desired function option.
3. Turn selector knob or repeatedly press Microphone **[MON]** or **[BAND]** key to select the desired setup.
4. Press any key except **[LOW]** and **[SQL]** key to confirm the selection and exit. In editing channel name, only press [PTT], **[FUN]**, **[MHz]** or **[SDCS]** key can exit.

■ FREQUENCY STEP SIZE SETUP

Only in frequency (VFO) mode, this function is valid. Turn selector knob to select frequency or frequency scanning is restricted by frequency step size.

1. Press and hold **[FUN]** key for over 2s or press Microphone **[SET]** key to enter background operations menu. 
2. Repeatedly press **[SQL]** key or Microphone [UP/DOWN] key until LCD displays **STP**.
3. Turn selector knob or repeatedly press Microphone **[MON]** and **[BAND]** key to select the desired frequency stepping.
4. Press any key except **[LOW]** key **[SQL]** to confirm the selection and exit.
5. Frequency step size: 5K, 6. 25K, 8.33K, 10K, 12.5K, 15K, 20K, 25 K, 30K and 50K.

NOTE This function is auto-hidden in frequency channel mode.

■ RESUMING SCAN SETUP

This function will be activated when the transceiver receive a matching signal.

1. Press and hold **[FUN]** key for over 2s or press Microphone **[SET]** key to enter background operations menu.
2. Repeatedly press **[SQL]** key or Microphone [UP/DOWN] key until LCD displays "TIMER" or "BUSY". 

3. Turn selector knob or repeatedly press Microphone **[MON]** and **[BAND]** key to select the desired setup.

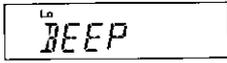
TIMER: when the transceiver receive a matching signal, it pauses for 5s then resume to scan.

BUSY: when the transceiver receive a matching signal, it stop scan and resume scan until signal disappeared.

4. Press any key except **[LOW]** and **[SQL]** key to confirm the selection 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 **[FUN]** key for over 2s or press Microphone **[SET]** key to enter background operations menu.
2. Repeatedly press **[SQL]** key or Microphone [UP/DOWN] key until LCD displays "BEEP". 
3. Turn selector knob or repeatedly press Microphone **[MON]** and **[BAND]** key to select the desired setup.

We only do best radio!

ON: enable voice Prompt

Lo
BEEP-ON

OFF: disable voice Prompt

Lo
BEEP-OFF

4. Press any key except **[FON]** and **[SQL]** key to confirm the selection and exit.

TOT (TIME-OUT TIMER)

This function is set to prevent the transceiver from long time transmitting. If the continuous transmitting exceeds the programmed time, it will be pause and an alert tone will sound. The transceiver will automatically return to receiving mode.

1. Press and hold **[FUN]** key for over 2s or press Microphone **[SET]** key to enter background operations menu.
2. Repeatedly press **[SQL]** key or Microphone [UP/DOWN] key until LCD displays "TOT".
3. Turn selector knob or repeatedly press Microphone **[MON]** and **[BAND]** key to select the desired setup. 30s for 1 step.
4. Max Timer: 450s (7.5min)
5. OFF: disable Time-out Timer, not limit for transmitting time.
6. Press any key except **[FON]** and **[SQL]** key to confirm the selection and exit.

Lo
TOT-OFF

Lo
TOT-450

Default: 180s(3min)

TOT RESUMING TIME SETUP

When the transmission is shut down in the TOT mode, this function prohibits another transmission for a selected time period.

1. Press and hold **[FUN]** key for over 2s or press Microphone **[SET]** key to enter background operations menu.
2. Repeatedly press **[SQL]** key or Microphone [UP/DOWN] key until LCD displays "TP".
3. Turn selector knob or repeatedly press Microphone **[MON]** and **[BAND]** key to select the desired setup. 1s for 1 step.
4. Max Timer: 15s
5. OFF: disable TOT resuming time.
6. Press any key except **[FON]** and **[SQL]** key to confirm the selection and exit.

Lo
TP-OFF

Lo
TP-15

APO (AUTO POWER OFF)

The feature will automatically shut off the transceiver. It is useful for mobile operation to avoid draining the car battery. If there is no activity or use of the radio, it will turn off automatically after 30 minutes. In one minute before turning off, radio will sound beep for seconds

1. Press and hold **[FUN]** key for over 2 s or press Microphone **[SET]** key to enter background operations menu.
2. Repeatedly press **[SQL]** key or Microphone [UP/DOWN] key until LCD displays "APO".
3. Turn selector knob or repeatedly press Microphone **[MON]** and **[BAND]** key to select the desired setup.

Lo
APO-ON

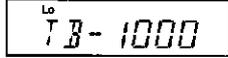
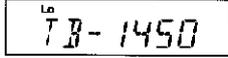
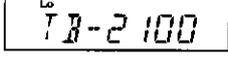
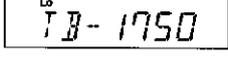
Lo
APO-OFF

ON: enable APO OFF: disable APO

4. Press any keys except **[POW]** and **[SQL]** key to confirm the selection and exit.

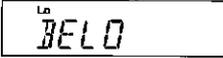
■ TONE-PULSE FREQUENCY

This is to access Tone-Pulse repeaters which require a certain pitch of audible tone to activate "sleeping" repeaters. Usually, a repeater system does not require the tone once the repeater is activated.

1. Press and hold **[FUN]** key for over 2 seconds or press Microphone **[SET]** key to enter background operations menu.
2. Repeatedly press **[SQL]** key or Microphone **[UP/DOWN]** key until LCD displays "TB". 
3. Turn selector knob or repeatedly press Microphone **[MONI]** and **[BAND]** key to select the desired frequency. 
4. 1000Hz, 1450Hz, 1750Hz or 2100Hz for choice. 
5. Press any key except **[POW]** and **[SQL]** key to confirm the selection and exit. 

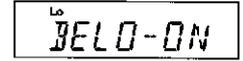
■ BUSY CHANNEL LOCKOUT

This function prohibits transmission as long as there is a signal on the receiving frequency. Otherwise a beep sounds but the unit does not transmit even when the [PTT] is pressed.

1. Press and hold **[FUN]** for over 2 seconds or press Microphone **[SET]** key to enter background operations menu.
2. Repeatedly press **[SQL]** key or Microphone **[UP/DOWN]** key until LCD displays "BCLO". 

3. Turn selector knob or repeatedly press Microphone **[MONI]** and **[BAND]** key to select the desired setup.

ON: Enable BCL, Transmitting is inhibited when current channel receives a matching carrier with different CTCSS /DCS, press [PTT] to emit error voice prompt.



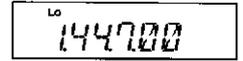
OFF: Disable BCL. any receiving status can transmit.



4. Press any key except **[POW]** and **[SQL]** keys to confirm selection and exit.

■ THEFT ALARM

Default is OFF, ON or DLY(delay) to activate this function. Press any key except **[POW]** and **[SQL]** key to confirm the selection and exit.



When activate this function, 100MHz and 100KHz order decimal points will appear on the screen. Detailed instruction refers to theft Alarm operation.

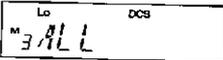
■ CHANNEL NAME EDIT

When current channel is edited with corresponding name, In Frequency + Channel mode, it appears name in current channel, or else appears frequency.

1. In frequency + channel mode, press and hold **[FUN]** key for over 2s or press Microphone **[SET]** key to enter background operations menu.
2. Repeatedly press **[SQL]** key or Microphone **[UP/DOWN]** key until LCD displays "A" and flashes. 

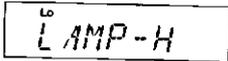
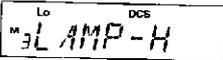
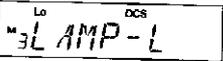
7

Background Operations

- Turn selector knob or repeatedly press Microphone (MON) and (BAND) key to select the desired character or figure. 
- Press (V/M) key to confirm current character and move to the next one. Press (CLR) key to clear all selected character or figure.
- Repeatedly step 3 and 4 to edit desired name
- Press (FUN), (MHz) or (SDCS) key to confirm the selection and exit.

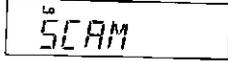
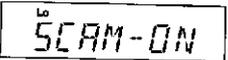
In Frequency (VFO) mode or current channel is empty, this function will be NOTE auto-hidden.

BACKLIGHT BRIGHTNESS SETUP

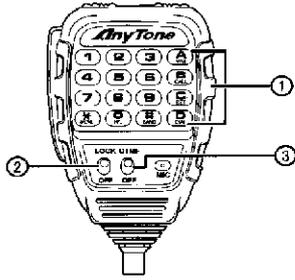
- Press and hold (FUN) key for over 2s or press Microphone (SET) key to enter background operations menu.
- Repeatedly press (SOI) or Microphone [UP/DOWN] until LCD displays "LAMP" 
 - H: High brightness 
 - L: Low brightness 
- Press any key except (POW) and (SOI) key to confirm the selection and exit.

SCRAMBLER SETUP (ENCRYPTION) (OPTIONAL)

This special voice processing can offer confidential communication, another transceiver without scrambler in the same frequency can receive only disorder noises. If you want to use this function, the relevant transceiver must have same scrambler function and enable it otherwise both sides can't communicate normally.

- Press and hold (FUN) key for over 2s or press Microphone (SET) key to enter background operations menu.
- Repeatedly press (SOI) key or Microphone [UP/DOWN] key until LCD displays "SCRM" 
- Turn selector knob or repeatedly press Microphone (MON) and (BAND) keys to select the desired setup
 - OFF: disable scramble 
 - ON: enable scramble. 
- Press any key except (POW) and (SOI) key to confirm the selection and exit.

You can operate the transceiver by keyboard or input desired frequency through the QHM-03 Microphone.



- ① **Keyboard** Setting functions, inputting VFO frequency or dialing DTMF, etc.
- ② **LOCK/OFF** Key-lock (lightening turns off when lock)
- ③ **DTMF/OFF** Switch between DTMF dialing and function operations

KEY-LOCK

Avoiding unintentional operation, switch it to LOCK position, the microphone lamp off and all keys invalid except [PTT].

TRANSMITTING DTMF TONE BY MICROPHONE KEYBOARD

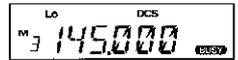
Switch DTMF/OFF key to DTMF position, press and hold the [PTT] key, transmitting the desired DTMF signaling by the digital key directly.

NOTE Switch DTMF/OFF to DTMF position, the digit keys is invalid when standby.

FUNCTION SETUP BY MICROPHONE KEYBOARD.

× SQUELCH OFF

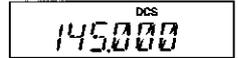
While standby, press **[MONI]** key, the squelch is disabled when the LCD displays **[BUSY]** icon, background noise appears.



Press **[MONI]** again to enable squelch and the **[BUSY]** icon disappears

× HIGH/MID/LOW POWER SWITCH

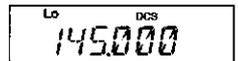
While standby, repeatedly press **[HIL]** key to switch TX power. The LCD displays:



MI : Medium TX Power



LO: Lower TX Power



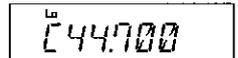
None: High TX Power

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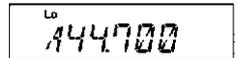
× ADD OPTIONAL DTMF, DTMF ANI, 2TONE OR STONE SIGNALING

While standby, repeatedly press BAND key to add DTMF, DTMF ANI, 2Tone or 5Tone signaling

1. When first bit of Exa byte in frequency or channel name first character display "C", it indicates DTMF signaling squelch is activated in current channel, When receive a matching carrier to transceiver and a matching DTMF signaling same to transceiver self-ID, you can hear the calling from caller. Press [PTT] to transmit the pre-stored and selected DTMF signaling.



2. When first bit of Exa byte in frequency or channel name first character display "A", it indicates DTMF ANI



We only do best radio!

is activated in current channel, when receive a matching carrier to transceiver and a matching DTMF ANI calling, LCD displays "CP XXX", transceiver emit a voice for prompting and reply. "XXX" is the opposite party ID. Press and hold [PTT] key, then press [CALL] key to transmit pre-stored and selected DTMF ANI signaling.

Lo
CP 000

3. When first bit of Exa byte in frequency or channel name first character display "T", it indicates 2TONE signaling squelch is activated in current channel, when receive a matching carrier to transceiver and a matching 2Tone signaling, you can hear the calling from caller. Press and hold [PTT] key, then press [UP] key to transmit pre-stored and selected 2TONE signaling.

Lo
T44700

4. When first bit of Exa byte in frequency or channel name first character display "F", it indicates 5TONE signaling squelch is activated in current channel, when receive a matching carrier to transceiver and a matching 5Tone signaling, you can hear the calling from caller. Press and hold [PTT] key, then press [UP] key to transmit pre-stored and selected 5TONE signaling.

Lo
F44700

24

 In channel number mode, when current channel with optional signaling, LCD NOTE will display the icon of optional signaling at the front of channel number.

EDIT DTMF SIGNALING

When first bit of Exa byte in frequency or channel name first character display "C" or "A", press [SET] key to enter DTMF encode group selection mode, repeatedly press [UP/DOWN] key to select desired editing group (C0-C6, C0 is self-ID), use digit key (0-9) and A (A is group call ID) to enter the desired encode. Press any key except 0-9 and A key to exit.

Lo
C0 000

Lo
C6 000

SELECTING AND TRANSMITTING DTMF SQUELCH CODE

When first bit of Exa byte in frequency or channel name first character display "C", press [SET] key to enter DTMF encode group selection mode, repeatedly press [UP/DOWN] key to select the desired transmitting group, press [PTT] key to exit and transmit the current selected DTMF encode.

Lo
C44700

Lo
C5 123

SELECTING AND TRANSMITTING DTMF ANI CODE

When first bit of Exa byte in frequency or channel name first character display "A", press [SET] key to enter DTMF encode group selection mode, repeatedly press [UP/DOWN] key to select the desired transmitting group, press any keys except 0-9 and A key to exit. Press and hold [PTT] key, then press [CALL] key to transmit the selected DTMF ANI encode.

Lo
A44700

Lo
C5 123

SELECTING AND TRANSMITTING 2TONE CODE

When first bit of Exa byte in frequency or channel name first character display "T", press [SET] key to enter 2TONE encode group selection mode, repeatedly press [UP/DOWN] key to select the desired transmitting group, press any key except 0-9 key to exit. Press and hold [PTT] key, then press [UP] key to transmit the selected 2TONE signaling (0-99 groups)

Lo
T44700

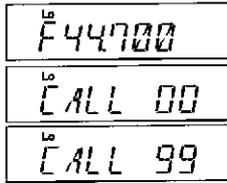
Lo
CALL 00

Lo
CALL 99

 2TONE encode must edit by programming software. Invalid transmit when NOTE selected channel without pressing 2TONE signaling.

SELECTING AND TRANSMITTING STONE CODE

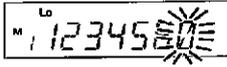
When first bit of Exa byte in frequency or channel name first character display "F", press **[SET]** key to enter 5TONE encode group selection mode, repeatedly press **[UP/DOWN]** key to select the desired transmitting group. Press any key except 0-9 key to exit. Press and hold **[PTT]** key, then press **[UP]** key to transmit the selected 5TONE signaling (0-99 groups)



NOTE 5TONE encode must edit by programming software. Invalid transmit when selected channel without presetting 5TONE signaling.

AUTO-DIALER SETUP

While standby, press **[DIAL]** key to enter Auto-dialer setup, press **[UP/DOWN]** key to select the desired editing group, then input desired code by numerical keys, press **[SET]** key to delete current group code. Press **[CALL]**, **[DIAL]** and **[PTT]** key to confirm the selection and exit.



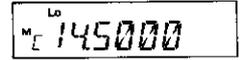
NOTE In this mode, press **[MONI]** and **[MENU]** key to select *, #, A, B, C, D and empty code. **[V/M]** key for confirm but not exit.

FUNCTIONS SETUP

While standby, press **[SET]** key to enter background operations menu, press **[UP/DOWN]** key to select the desired function option, press **[MONI]** and **[RANG]** key to select the desired setup, press any key except **[MONI]** and **[BAND]** key to exit

CHANNEL CALL

While standby, press **[CALL]** key to switch into appointed calling channel, this operation is same as the front panel **[CALL]** key.



WORKING MODE SWITCH

While standby, press **[V/M]** key, LCD displays **M** icon and channel number which indicates current working mode is channel mode. Repeatedly above operation to switch between channel mode and Frequency (VFO) mode.



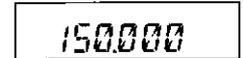
NOTE In Channel mode, the **M** icon flashing indicates current channel is empty.

INPUTTING FREQUENCY VIA MICROPHONE KEYBOARD

you can input the desired frequency directly via the numerical keys while in frequency mode.

1. Let DTMF/OFF switch to OFF position
2. You can enter desired frequency by the numerical keys from 100MHz. e.g.

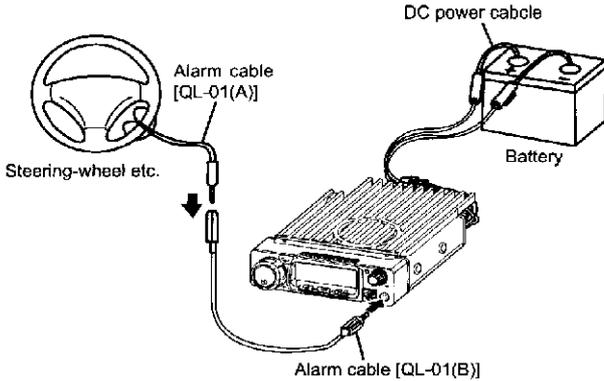
When 150MHz desired, the step size is 5KHz just press



six numbers from keyboard, after entering the sixth digit a slightly longer beep is heard and the entry is complete. If the entering digit exceed frequency scope, it emits a wrong voice prompt.

3. Press any key except **[PTT]** key or numerical keys to cancel the entry.

This alert uses a beep sound when the unit is about to be removed in an improper manner. This function is useful when the unit is installed in a vehicle.



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Connect DC power cable with car battery.

1. Connect the optional alarm cable QL-01(A) to the data jack on the front panel as shown. Secure the other end of the cable to an object that stays fixed in vehicle. (Note: if alarm cable QL-01 (A) is not enough long, you can choose optional alarm cable QL-01 (B) to extend)
2. Press **[CAL]** key for over 2s or Press Microphone **[MIC]** key to enter function setup. Repeatedly press **[SCN]** key or MIC [UP/DOWN] key until LCD displays "SCR".
3. Turn selector knob or repeatedly press Microphone **[MOW]** and **[BAND]** keys to select the desired setup, press any key except **[SCN]** key or

La
SCR-OFF

[UP/DOWN] key to confirm and exit. When alarm is activated, the decimal points on 100MHz and 100KHz order will display on screen.

La
1500.00

4. In **SCR-ON**, turn off the radio with **[POW]** switch, the TX LED will be lit and the theft Alarm function will be activated.
5. In **SCR-DLY**, turn off the radio with **[POW]** switch, display will disappear but the LCD illumination stays on, after 20s TX LED lights up, illumination dims and the alarm function will be activated.

La
SCR-ON

La
SCR-DLY

NOTE The alarm function activates only when the radio is turned off by **[POW]** switch. When the alarm function is activated (SCR-ON or SCR-DLY), the ignition key function does not work. To turn off the alarm function, turn on the radio by **[POW]** switch, enter the function setting mode again, and select SCR to SCR-OFF to turn off theft alarm.

THEFT ALARM STATUS

1. When the alarm cable QL-01(A) or QL-01(B) is removed from the DATA jack or cut without using the proper sequence, the alarm sounds for 10minutes. During the alarm, the radio goes to receive on memory channel 99, according to its pre-programmed setting (CTCSS/DCS accepted).

NOTE In SCR-DLY, there is 20s delay until the alarm sounds. During the 20s period, the display illumination is lit, press **[POW]** switch to turn on power then enter into background operation to turn off theft Alarm.

2. It stops alarming when a matching signal is received on CH.99.
3. During Alarm, press and hold **[SCN]** key, then press **[POW]** key to turn

on the radio also cancels the alarm.

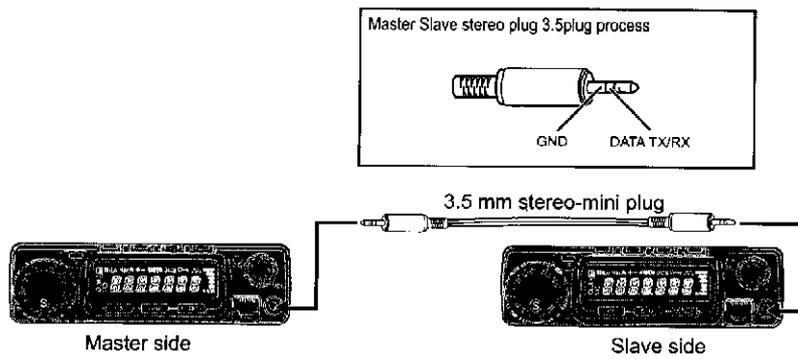
4. When alarm cable properly connected and turn radio off again, the system will return to alarm mode.

When alarm starting, the radio will switch between transmitting and receiving signals per 5 min on CH.99, this state lasts 1 minute, if no receiving a matching signal in 1 minute, the audio-alarm will sound for 10 minutes. This function allows you to remotely monitor and control alarm function on CH.99.

10 Cable Clone

This feature will copy the programmed data and parameters in the master unit to slave units. It copies the parameters and memory program settings.

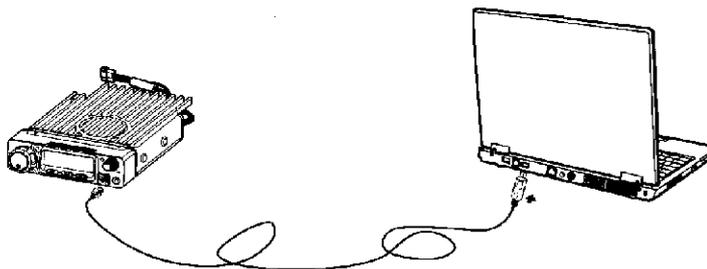
1. Use optional CP50 cloning cable, connect the cable between the data jacks on both master and slave.
2. Press and hold **[FUN]** key, then press **[CAL]** key to enter into cloning mode, LCD displays "CLONE".



3. Press master unit's [PTT] key, LCD displays "SD XXX", "XXX" indicates data volume in transmitting. Slave unit displays "LD XXX", "XXX" indicates received data volume. When the transmission is successfully finished, the master and slave unit both display "PASS". Turn off the power, disconnect the cable and repeat step 2 to step 3 operations to clone the next slave unit.

NOTE If the data is not successfully transmitted, turn off both units, make sure the cable connection is correct and repeat the entire operation from the beginning.

1. Double click "QPS588 setup.exe", then follow the installing instruction.
2. Click start menu in computer, under "ALL PROGRAMS" menu, choose and click "USB To Com port" in QPS588 program, install "USB To Com port" drives by indication.
3. Connect the optional PC50 USB Programming cable to USB port in PC with transceiver.
4. Double click QPS588 shortcut or click QPS588 in procedure index of start menu, choose serial com port as indicated then click OK to start programming software. (You shall install software before connecting the USB cable line. Switch on transceiver before writing frequency. You had better not switch on or off the power supply of transceiver when it is connected with computer, otherwise, it will make transceiver unable to read or write frequency. In this case, you have to turn off programming software, pull out USB cable, next reinsert USB cable and open software, then rechoose COM Port, it will turn into normal operation. Therefore, please connect transceiver with computer after switching on the transceiver. Don't restart transceiver power when it is connected with computer.)



NOTE This software has product identify system, so when firstly installing the software, you have to connect the products, otherwise you can not start the software.

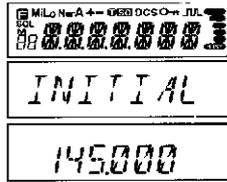
12 Maintenance

■ RESET

Resetting the transceiver to return all programmed contents to their factory default setting. If any problems persist, resetting may overcome them and return the transceiver to normal operation.

■ RESET PROCEDURE

In power off status, press and hold **[MUTE]** key, then press **[POWER]** key to turn on radio, LCD displays all ICONS, Press **[MUTE]** key for over 3s then release, LCD displays "INITIAL", then displays default setting:145.000MHz.



NOTE All the settings would be initialized, therefore pay more attention on using resetting operation.

■ DEFAULT SETTING AFTER RESETTING(VHF)

	AT-588		
VFO frequency	145.00MHz	CTCSS tone frequency	88.5Hz
CALL frequency	145.00MHz	DCS setting	-
Memory channel	-	DCS code	017N
Offset direction	-	Output power	HI
Offset frequency	600KHz	Key-lock setting	OFF
Channel step	12.5KHz	TOT	OFF
CTCSS setting	-	APO	OFF
		Squelch Level	3

■ DEFAULT SETTING AFTER RESETTING(UHF)

	AT-588		
VFO frequency	445.00MHz	CTCSS tone frequency	88.5Hz
CALL frequency	445.00MHz	DCS setting	-
Memory channel	-	DCS code	017N
Offset direction	-	Output power	HI
Offset frequency	5MHz	Key-lock setting	OFF
Channel step	5KHz	TOT	OFF
CTCSS setting	-	APO	OFF
		Squelch Level	3

■ 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.	<ul style="list-style-type: none"> Squelch is muted. Decrease squelch level. Tone or 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.
(f) 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.	<ul style="list-style-type: none"> Microphone connection is poor. Connect microphone properly. Antenna connection is poor. Connect antenna properly.

General

Frequency Range	VHF: 136-174MHz 245-245.9875MHz (220-260MHz) UHF: 400-490MHz
Number of Channels	100 channels + 1 call channel
Channel Spacing	25K (Wide Band) 12.5K (Narrow band)
Phase-locked Step	5KHz, 6.25KHz, 8.33KHz, 10KHz, 12.5KHz, 15KHz, 20KHz, 25KHz, 30KHz, 50KHz
Operating Voltage	13.8V DC \pm 15%
Squelch	Carrier/CTCSS/DCS/5Tone/2Tone/DTMF
Frequency Stability	\pm 2.5ppm
Operating Temperature	-20°C ~ +60°C
Dimensions(WxHxD)	145 (W) x 47 (H) x 190 (D)mm
Weight	about 1.2Kg

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

Receiver (ETSI EN 300 086 standard testing)

	Wide band	Narrow band
Sensitivity (12dB Sinad)	\leq 0.2 μ V	\leq 0.25 μ V
Adjacent Channel Selectivity	\geq 70dB	\geq 60dB
Intermodulation	\geq 65dB	\geq 60dB
Spurious Rejection	\geq 70dB	\geq 70dB
Audio Response	+1~-3dB(0.3~3KHz)	+1~-3dB(0.3~2.55KHz)
Hum & Noise	\geq 45dB	\geq 40dB
Audio distortion	\leq 5%	
Audio power output	\geq 2W@10%	

Transmitter (ETSI EN 300 086 standard testing)

	Wide band	Narrow band
Power Output	60W /25W/10W(VHF)	45W /25W/10W(UHF)
Modulation	16K Φ F3E	11K Φ F3E
Adjacent Channel Power	\geq 70dB	\geq 60dB
Hum & Noise	\geq 40dB	\geq 36dB
Spurious Emission	\geq 60dB	\geq 60dB
Audio Response	+1~-3dB(0.3~3KHz)	+1~-3dB(0.3~2.55KHz)
Audio Distortion	\leq 5%	

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■ 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	167.9	183.5	199.5	225.7	254.1

■ 232 GROUPS DCS CODE.

017	054	131	174	252	315	411	462	565	712
023	055	132	205	254	325	412	464	606	723
025	065	134	212	255	331	413	465	612	731
026	071	135	217	261	332	423	466	624	732
031	072	143	223	263	343	425	503	627	734
032	073	145	225	265	345	431	506	631	743
036	074	152	226	266	346	432	516	632	754
043	114	155	243	271	351	445	523	645	765
047	115	156	244	274	356	446	526	654	
050	116	162	245	305	364	452	532	662	
051	122	165	246	306	365	454	534	664	
053	125	172	251	311	371	455	546	703	

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

AnyTone

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