NOTICES TO THE USER

When condensation occurs inside the transceiver:

Condensation may occur inside the transceiver when the room is warmed using a heater on a cold day or when the transceiver is quickly moved from a cold location to a warm location. When condensation occurs, the microcomputer and/or the transmit/receive circuits may become unstable, resulting in transceiver malfunction. If this happens, turn OFF the transceiver and wait for a while. When the condensed droplets disappear, the transceiver will function normally.

Nice Housing, Stoutness & Stability, Advanced and Reliable functions, Perfect & Valuable. FCC C E √ RoHS COMPLIANT Approval. This Transceiver especially designs for drivers and it pursues company philosophy of innovation and practicality.

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

THANK YOU!

Thank you for choosing this transceiver.We always provides Amateur Radio products which surprise and excite serious hobbyists. This transceiver is no exception.The transceiver is a ruggedly-built, high quality Dual Band FM transceiver providing 50 Watts of power output on the VHF band and 40W Watts on the UHF band. It owns many advanced characters like cross-band repeater function,built with a direct-flow heat sink and thermostatically-controlled cooling fan maintaining a safe temperature for the transceiver's circuit. The transceiver has four independent receiving bands, consist of **UU**, **UV**,**VU**,**VV** for dual receive and dual output, plus receiving for **FM** signal of air band, marine band, etc. It owns 512 memory channels, full duplex operation with independent volume and squelch controls, builtin **CTCSS/DCS**, **DTMF**, **2-TONE**,**5-TONE** signaling, detachable front panel for flexible installation.

Though user friendly, 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.

CONTENTS

1
2
3
4
5
6
7
8
9
10
11
12
13
14

CONTENTS

1
2
3
4
5
6
7
8
9
10
11
12
13
14

CONTENTS

1
2
3
4
5
6
7
8
9
10
11
12
13
14

FUNCTION AND FEATURES

This Transceiver is perfect, valuable and has nice housing, stoutness & stability, advanced and reliable functions, perfect & valuable. This amateur transceiver is especially designed for drivers and it pursues company philosophy of innovation and practicality. More functions as follows:

- 512 memory channels, full duplex operation with independent volume and squelch controls.
- Power supply can be arbitrarily connected to 12V or 13.8V.
- Main Unit equipped with a large speaker, so that users can listen to the signal in the large noise environment.
- Main Unit has a unique physical structure design, good heat dissipation effect, fast heat radiation in the high temperature environment.
- With " **U** to **V** "and " **V** to **U** " cross-band repeater function.
- With " **V** to **V** "and " **U** to **U** " same-band repeater function.
- Dual microphone connectors that users can choose right side or left side to use the microphone.Main drive's seat and Auxiliary's driver seat can be convenient to use the microphone.
- **V/V, U/U** simultaneous receive capability.
- Independent controls for both left and right receivers.
- Large dot matrix **LCD** display for singel band mode. Separate controller and Main Unit for flexible installation.
- Has 3 output power levels to suit your operating requirements. (High: 40W(**UHF**),50W(**VHF**) Middle: 25W Low: 5W)
- Bandwidth selection function for Wide(25K),Wide(20K) and narrow(12.5K).
- FM TX features of the controller vehicle stereo function, can be preset frequency (65-125MHz).
- Reverse and talk around function.

- The 240*64 large dot matrix **LCD** for dual row **LCD** character display.
- Separate the stereo speakers on the remote controller.
- Group call, all call and select call function.
- **CTCSS/DCS** encode and decode can be arbitrarily set.
- Various scan including **MHz** scan,**VFO** scan,group channel scan,full channel scan and **CTCSS/DCS** scan.
- Backlight can be set for any color.
- Select-call display (ANI identity) function.
- Several speakers for your selection.
- Personalized microphone and indicator light are convenient and intuitive to use.
- Automatic temperature and power protection.
- Multiple start fan cooling mode.
- Dead beat disable with stun and kill functions.
- Frequency band can be set with " **VHF-TX,UHF-RX** " or " **UHF-TX,VHF-RX** "
- Auto power off.
- Priority channel scan function, independent channel priority dual watch function.
- Burst tone function (2100Hz,1750Hz,1450Hz and 1000Hz).
- Weather alert function.
- Wideband receiver for AIR band(113-137MHz).

SUPPLIED AND OPTIONAL ACCESSORIES

■ SUPPLIED ACCESSORIES

After carefully unpacking the transceiver,indentify the items listed as below. Wish you keep the box and packing.
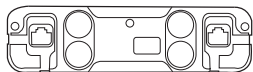
- Controller
- Main Unit
- Microphone[HM-68] (with DTMF keyboard)
- DC power cable with fuse holder[HPL-01]
- Hardware kit for bracket
  - Black screw(M4X8mm) 4pcs[HSS-01A]
  - Tapping screws(M5X8mm) 5pcs[HSS-01B]
  - S-Washer 4pcs [HSS-01D]

- Microphone hook [TG-1]
- emote hook [TG-2]
- Spare Fuses [HF-01]
- Instruction Manual
- Controller cable(Short)
- Mobile Mounting Bracket [HMB-01]
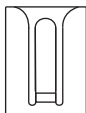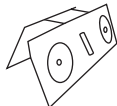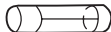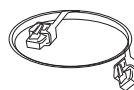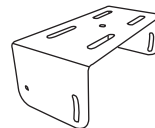
■ OPTIONAL ACCESSORIES

- USB Cloning Cable [HPC-01]
- External Speaker (SP-02)
- Cigar-Plug Connection Line [ACC-01]
- Controller cable(Long)
- Car Antenna [HCA-01]
- Car Antenna [HCA-02]
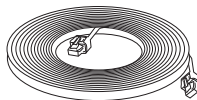
1
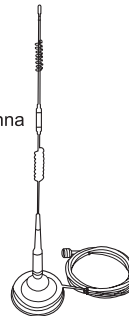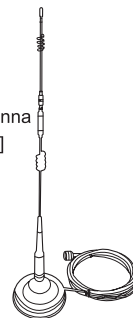
■ MOBILE INSTALLATION

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.

◇ SINGLE BODY INSTALLATION

Controller
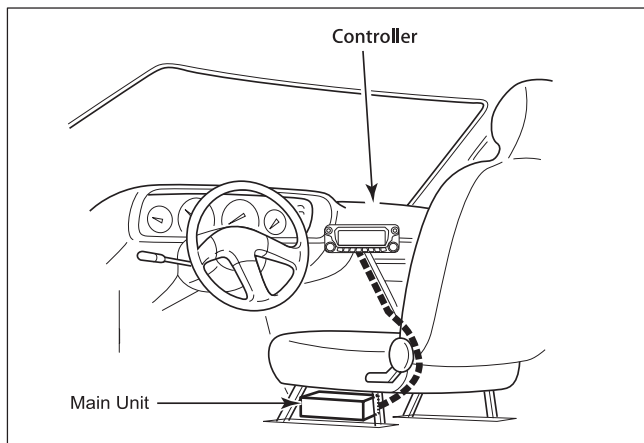
Main Unit

• The supplied mounting bracket can be used for the main unit installation.

◇ LOCATION

Select a location which can support the weight of the transceiver and does not interfere with driving. We recommend thelocations shown in the diagram below.

Main unit
Controller
Main unit
Main unit
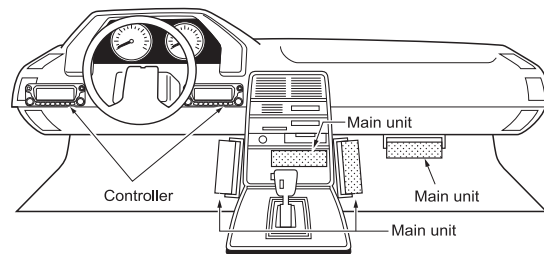
CAUTION:
● **NEVER** place the transceiver or remote controller where normal operation of the vehicle may be hindered or where it could cause bodily injury.
● **NEVER** place the transceiver or remote controller where air bag deployment may be obstructed.
● **DO NOT** place the transceiver or remote controller where hot or cold air blows directly onto it.
● **AVOID** placing the transceiver or remote controller in direct sunlight.

◇ REMOTE INSTALLATION

The supplied remote controller bracket and separated cable can be used for installation.

These screws are not supplied.

Remote controller bracket

Remote controller

Remote controller bracket
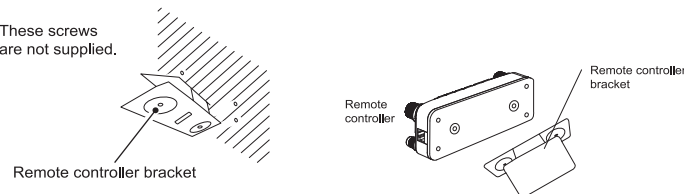
WHEN INSTALLING INTO YOUR VEHICLE:
① Remove two screws and magnets from the remote controller.
② Attach the supplied remote controller bracket as below.

02

◇ USING THE MOUNTING BRACKET

① Drill 4 holes where the mounting bracket is to be installed.
   • Approx. 5.5–6 mm (1⁄4″) when using nuts; approx. 2–3 mm (1⁄8″) when using self-tapping screws.
② Insert the supplied screws, nuts and washers through the mounting bracket and tighten HSS-01D.
③ Adjust the angle for your suitable position.

Car body
Washer[M5]
Tapping screw
(M5X20mm)
Mounting bracket
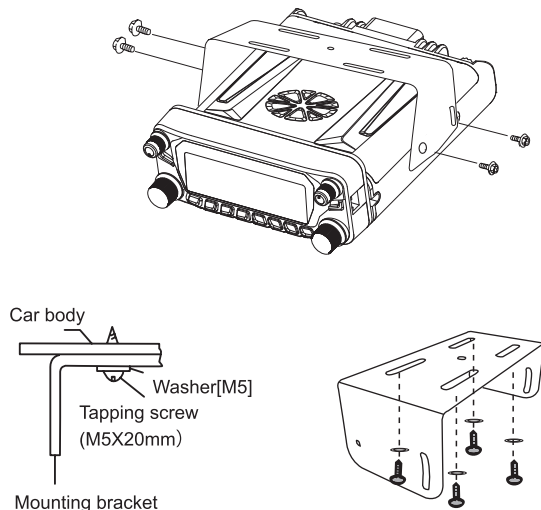
◇ CONTROLLER/SEPARATION CABLE CONNECTION

Connect controller with main unit by using connection cable as follows.

• **Example 1**

Controller   Main unit

8-pin connector   8-pin connector

• **Example 2**

Controller   Main unit

8- pin connector   8- pin connector
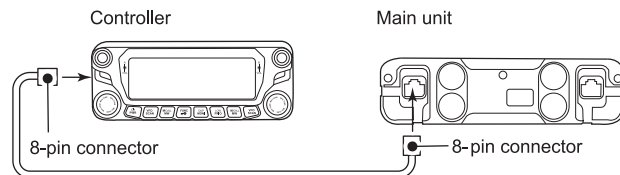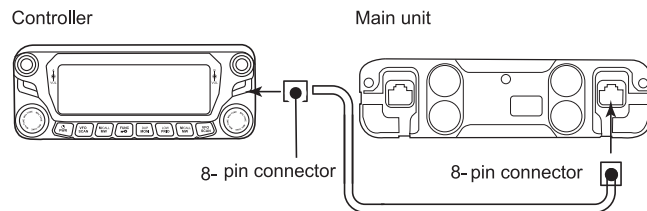
◇ CONTROLLER'S ATTACHMENT

You can attach the controller of transceiver in the ways below.
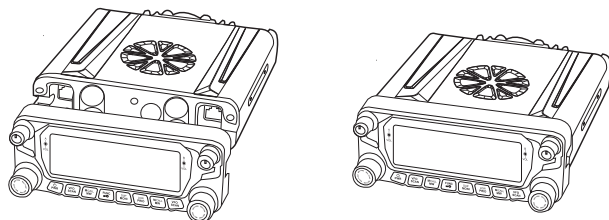
• **Example 1**

• **Example 2**
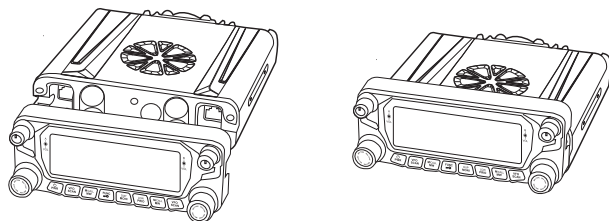
◇ MICROPHONE CONNECTION

The microphone can be used for this transceiver interface of the controller and main unit at the same time.
Connect the supplied microphone connector as illustrated below:

Controller

Microphone

Main unit
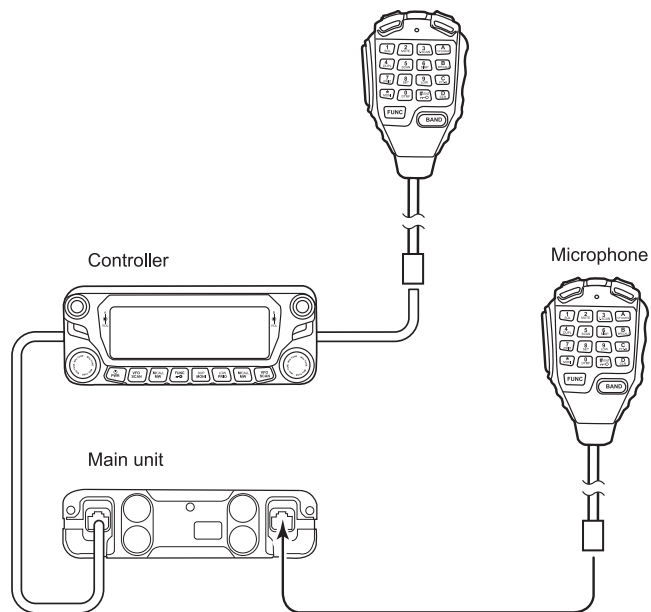
■ DC POWER CABLE CONNECTION

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

◇ Mobile Operation

This transceiver can connect to a 12V or 13.8V battery. Be sure to use a 12 V or 13.8V vehicle battery that has sufficient current capacity. If the current to the transceiver is insufficient, the display may darken during transmission, or transmit 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.
   • If using a noise filter, it should be installed with aninsulator to prevent it from touching metal on the vehicle.
   • 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 the cable is in place, wrap heat-resistant tape around the fuse holder to protect it from moisture and tie down the full run of cable.
③ To prevent the risk of short circuits, disconnect other wiring from the negative (–) battery terminal before connecting the transceiver.
④ Confirm the correct polarity of the connections, then attach the power cable to the battery terminals; red connects to the positive (+) terminal and blackconnects 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.
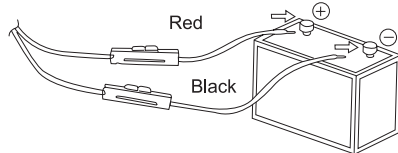
⑤ Reconnect any wiring removed from the negative terminal.
⑥ Connect the DC power cable to the transceiver's power supply connector.
   • Press the connectors firmly together until the locking tab clicks.
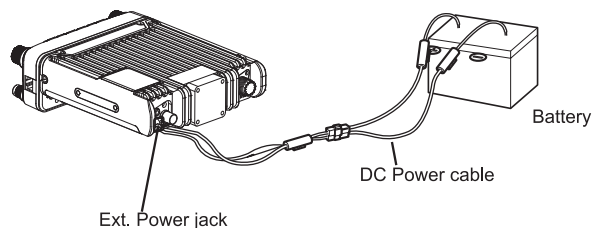
optional HCC-01(For Cigar-Plug connection) cable. Connect one of the cables between the ACC terminal or a Cigar-Plug that operates with the vehicle ignition or ACC switch on the vehicle and EXT POWER jack on the rear side of the unit.

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.

① 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)

② 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.
  • Using extra cable,power consumption: 5MAH.
  • Without this function,user can turn on/off radio by Power knob.

ACC terminal
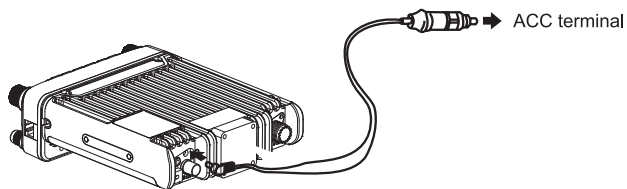
◇ FIXED STATION OPERATION

In order to use this transceiver for fixed station operation, you will need a separate 13.8 V DC power supply (not included). We supply high-quality communicational DC as optional accessories power, please contact local dealer to require.

• The recommended current capacity of your power supply is 12A.
• 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 supply[DC-13.8V]

DC power supply[DC-13.8V]

Red(+)

Black(-)

DC power cable with fuse holder [HPL-01]
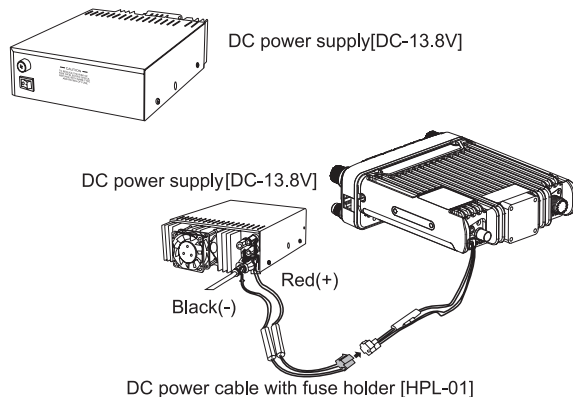
• Connect the transceiver's DC power connector to theconnector on the DC power cable.
• Press the connectors firmly together until the locking tab clicks.

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 authorized dealer or an authorized service center for assistance.
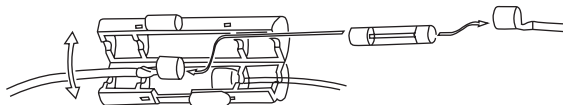
Fuse Location	Fuse Current Rating
Transceiver	15A
Supplied Accessory DC Power Cable	20A

• 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 under these condi-tions.

■ 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 50 Ω 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 Ω 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:
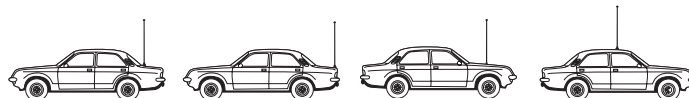
◇ ANTENNA LOCATION

To obtain maximum performance from the transceiver, select a high-quality antenna and mount it in a good location. It is not necessary to use radials on a magnetic mount ("mag mount") antenna.

Roof-mount antenna
(Drill a hole or use a magnetic mount.)

Trunk-mount antenna

Gutter-mount antenna
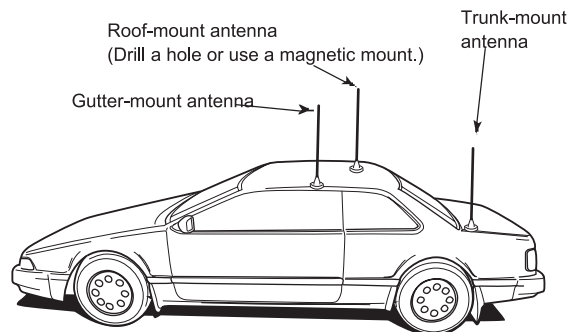
Tx/Rx: VHF/UHF
RX: weather/SW/FM/AIR Band
cross-band repeater
Antenna 1

Diversity of installing antenna

Antenna 2
only use for same-band repeater

Microphone

ANT-1

ANT-2

Ext. speaker
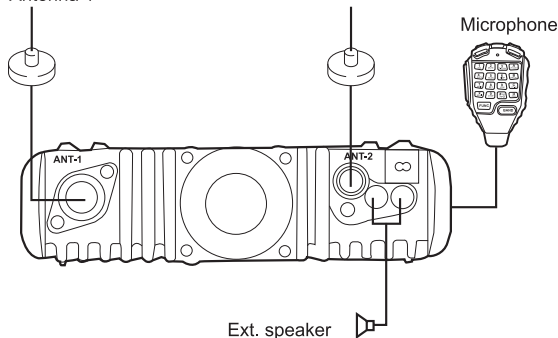
◇ ANTENNA CONNECTOR

The antenna uses a L16 or Q9 connector.

• L16 CONNECTOR

30 mm

Coupling ring   10 mm (soft solder)

10 mm   Soft solder

1–2 mm
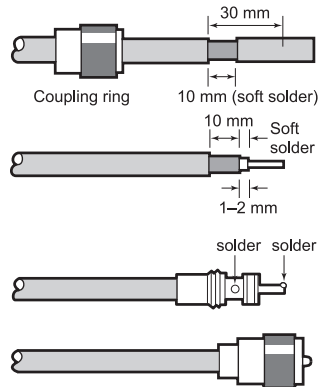
solder   solder

① Slide the coupling ring down. Strip the cable jacket and tin.

② Strip the cable as shown at left. Soft solder the center conductor.

③ Slide the connector body on and solder it.

④ Screw the coupling ring onto the connector body.

(10 mm ≈ ³∕₈ in)

NOTE: There are many publications covering proper antennas and their installation. Check with your local dealer for more information and recommendations.

■ EXTERNAL SPEAKER

If you plan to use an external speaker, choose a speaker with an impedance of 8 Ω. The external speaker jack accepts a 3.5 mm (1/8") mono (2-conductor) plug. We recommend using the SP-50B speaker.

SP-02
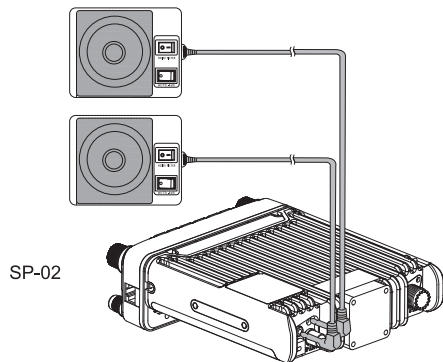
■ PC CONNECTING

To utilize programming software,connect the transceiver to your PC using with the optional programming cable(HPC-01) as illustrated below.(through the microphone jack)

NOTE: Ask your dealer about purchasing a Programming Cable HPC-01.

◇ CONNECTION

Connect an optional HPC-01 transceiver to your computer as shown below.

HPC-01 （Option）

To USB
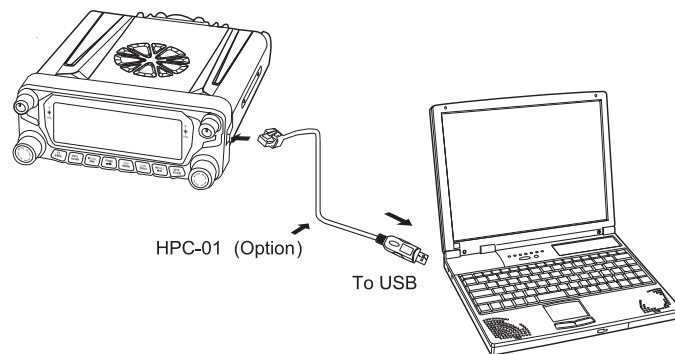
YOUR FIRST QSO

Are you ready to give your transceiver a quick try? Reading this section should get your voice on the air right away. The instructions below are intended only as a quick guide. If you encounter problems or there is something you would like to know more, read the detailed explanations given later in this manual.
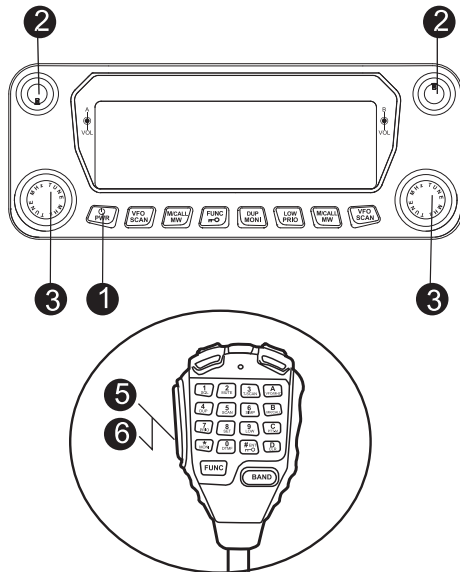
1 Press [⏻] (Power) briefly to switch the transceiver power ON.
- A high pitched double beep sounds and a Power-on message appears momentarily. The various indicators and the current operating frequency appear on the LCD.
- The transceiver stores the current parameters when it is turned OFF and automatically recalls those parameters the next time you turn the transceiver ON.

2 Turn the Volume control clockwise, to the 12 o'clock position.

3 Turn the Tuning control to select a reception frequency. You may further turn the Volume control to adjust the volume level of the signal.

4 To transmit, hold the microphone approximately 5 cm (2 inches) from your mouth.

5 Press and hold Mic [PTT], then speak in your normal tone of voice.

6 Release Mic [PTT] to receive.

7 Repeat steps **4**, **5**, and **6** to continue communication.

GETTING ACQUAINTED

■ FRONT PANEL – CONTROLLER
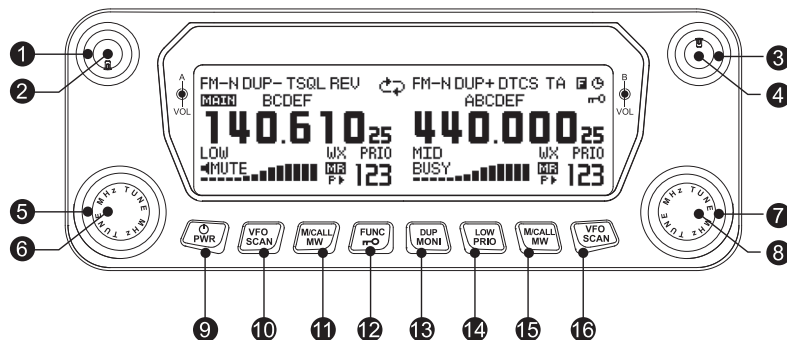
NO.	KEY	FUNCTION
1	Left **[MAIN•BAND]** Key	Push to select the left band as main band.
2	Left **[VOL]** Knob	Adjust left band volume level.
3	Right **[MAIN•BAND]** Key	Push to select the right band as main band.
4	Right **[VOL]** Knob	Adjust right band volume level.
5	Left **[DAIL]**	Rotate to Selects the left band's frequency memory channel.
6	Left **[MHz•TUNE]** Key	In VFO mode,Push to enter MHz tuning Mode.
7	Right **[DAIL]** Knob	Rotate to Selects the right band's frequency memory channel.
8	Right **[MHz•TUNE]** Key	In VFO mode,Push to enter MHz tuning Mode.
9	POWER (PWR)	Push and hold for 1 sec. to turn power ON and OFF.
10	Left (VFO SCAN)	In standby,push to select VFO mode.Push and hold for 1 sec. to enter scan type selection mode.

NO.	KEY	FUNCTION
11	Left (M/CALL MW)	In standby, Push to select and toggle memory, and call modes. Push and hold for 1 sec. to enter select memory write mode for memory channel programming.
12	(FUNC)	In standby, Push to display the function guide. Push and hold for 1 sec. to turn the lock function ON and OFF.
13	(DUP MONI)	In standby, Push to select DUP–, DUP+ and simplex operation.Push and hold for 1 sec. to turn the monitor function ON and OFF.
14	(LOW PRIO)	In standby, each push changes the output power selection.Push and hold for 1 sec. to start a priority watch.
15	Right (M/CALL MW)	In standby,Push to select and toggle memory, and call modes.Push and hold for 1 sec. to enter select memory write mode for memory channel programming.
16	Right (VFO SCAN)	In standby, push to select VFO mode. Push and hold for 1 sec. to enter scan type selection mode.

NO.	INDICATOR	FUNCTION
1	FM FM-N AM	Operating mode indicator
2	DUP- DUP+	Duplex indicators
3	ABCDEF	Channel name indicator
4	TONE TSQL DTCS	TONE、CTCSS and DCS indicator
5	REV	Reverse function indicator
6	↻	Same-band or Cross-band repeatet indicator
7	TA	Talk around indicator
8	▣	Second function indicator
9	⊙	Auto power off indicator
10	⛐	Pannel key lock indicator
11	140.610₂₅	Frequency indicator

NO.	INDICATOR	FUNCTION
12	PRIO	Priotry watch indicator
13	123	Memory channel number indicator
14	▶	Program SKIP channel indicator
15	P	Priotry channel indicator
16	WX	Weather alert indicator
17	▁▁▁▁▁▁▃▅▆▇█	Relative signal strength/output power level indicator
18	BUSY	Busy indicator
19	HI MID LOW	High,Middle and Low output power indicator
20	◀MUTE	Audio mute indicator
21	MAIN	Main band indicator

■ FUNCTION GUIDE INDICATIONS
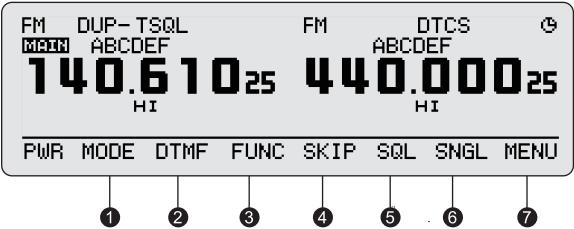
NO.	KEY	FUNCTION
1	**[MODE]** (Left [VFO SCAN] Key)	Push to select an operating mode from FM, WX alert,AIR band, or AM(include SW, MW and LW) in main band.
2	**[DTMF]** (Left [M/CALL MW] Key)	Push to enter DTMF set mode.
3	**[FUNC]** ([FUNC] Key)	Push to display the function guide.Push and hold for 1 sec. to turn the lock function ON and OFF.
4	**[SKIP]** ([DUP MONI] Key)	In memory mode, push to select the scan skip condition for the selected memory channel.
5	**[SQL]** ([LOW PRIO] Key)	In main band mode, push to enter SQL level set mode.
6	**[SNGL]** (Right [M/CALL MW] Key)	Push to select the single band operation mode.
7	**[MENU]** (Right [VFO SCAN] Key)	Push to select the MENU screen indication.

■ MAIN UNIT
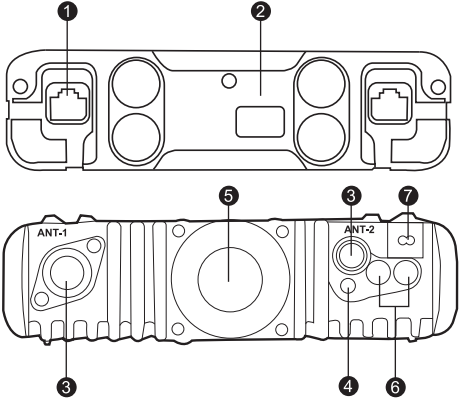
NO.	FUNCTON	DESCRIPTION
1	Connect Jack	Controller or Microphone connector
2	DATA Jack	TNC data connector.
3	Antenna connector	Connects a 50 Ω antenna with a Q9 connector.
4	External ACC plug	Terminal for connecting optional cable HCC-01 for use with ignition key On/Off function.The radio will auto power on when car is driving. The radio will auto power off when car stops.
5	Cooling FAN	Runs Automatically when radio temperature rise up.
6	External speaker jcak	Connects an 8 Ω speaker.
7	Power receptacle	Accepts 12V or 12V DC ±15% with the supplied DC power cable.

13

■ MICROPHONE
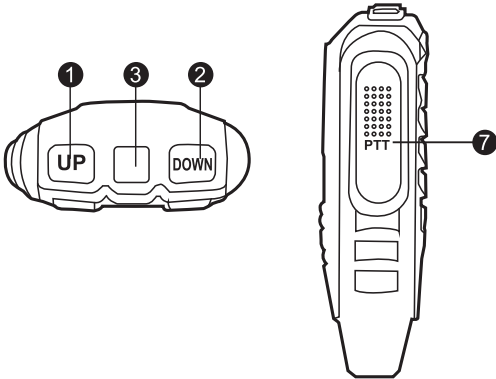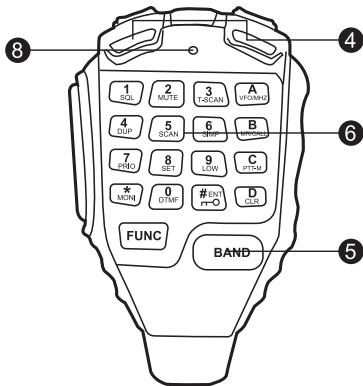
NO.	FUNCTION	DESCRIPTION
1	UP	Increase frequency, channel number or setting value.
2	DOWN	Decrease frequency, channel number or setting value.
3	Emergency key	Push and hold for 1 sec. to start Emergency function. Push to exit Emergency function.
4	RX/TX indicator	Light green while receiving, Light red while transmitting.
5	Main band key	Select left band or right band as Main band
6	Number keypad	Input VFO frequency or DTMF dial out etc.
7	PTT	Pushing the PTT key to transmit.
8	MIC	Speak here during transmission.

MIC CONNECTOR DIAGRAM(IN THE FRONT VIEW OF CONNECTOR)

⑧ NC
⑦ + 9V
⑥ GND
⑤ Serial Data
④ MIC -
③ MIC +
② Serial Data
① NC
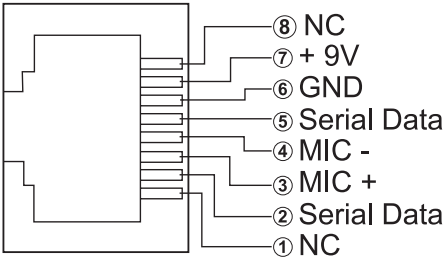
■ MICROPHONE KEYBOARD FUNCTION DESCRIPTION

NO.	KEY AND FUNCTON	DESCRIPTION
1	Squelch Level FUNC + 1 SQL	In standby, push FUNC, " F " indicator appears, then push 1 SQL to enter squelch level tune mode.
2	Audio mute FUNC + 2 MUTE	In standby, push FUNC, " F " indicator appears, then push 2 MUTE to turn the audio on and off.
3	CTCSS/DCS scan FUNC + 3 T.SCAN	In standby, push FUNC, " F " indicator appears, then push 3 T.SCAN to start the tone scanning.
4	select offset direction FUNC + 4 DUP	In standby, push FUNC, " F " indicator appears, then push 4 DUP to select a duplex function(–duplex, +duplex, simplex).
5	Actiate scan FUNC + 5 SCAN	In standby, push FUNC, " F " indicator appears, then push 5 SCAN to start scanning.
6	Select signel or dual mode FUNC + 6 S/MP	In standby, push FUNC, " F " indicator appears, then push 6 S/MP to select the single band operation mode. or double band operation mode
7	Priority watch FUNC + 7 PRIO	In standby, push FUNC, " F " indicator appears, then push 7 PRIO to start the priority watch.

NO.	KEY AND FUNCTION	DESCRIPTION
8	Enters MENU screen. FUNC + 8 SET	In standby, push FUNC, " F " indicator appears, then push 8 SET to select the MENU screen indication.
9	Selecting output power FUNC + 9 LOW	In standby, push FUNC, " F " indicator appears, then push 9 LOW to changes the output power selection.
10	enter DTMF set mode FUNC + 0 DTMF	In standby, push FUNC, " F " indicator appears, then push 0 DTMF to enter DTMF set mode.
11	Controller key lock and unlock FUNC + # ENT r→O	In standby, push FUNC, " F " indicator appears, then push # ENT r→O and hold for 1 sec. to turn the lock function ON and OFF.
12	monitor ON and OFF * MONI	In standby, push * MONI to turn the monitor function ONand OFF.
13	Select VFO mode or enter MHz tuning mode A VFO/MHz	In standby, push A VFO/MHz to select VFO. In VFO mode, push A VFO/MHz to enter MHz tune mode.
14	Select Memory or Call Channel B MR/CALL	In standby, push B MR/CALL to select and toggle memory, and call channel modes.
15	PTT Key Lock C PTT-M	In standby, push C PTT-M to turn the PTT Key lock function ON and OFF.
16	Main band Key BAND	In standby, push BAND to select main band between left and right bands.

3

15

OPTIONAL: WIRELESS MICROPHONE KIT FOR USE

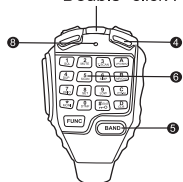**Transceiver's transmitter**

■ Preparation and Pairing

《1》Before pairing, please try to turn off other wireless Bluetooth around you (including car Bluetooth and mobile phone Bluetooth) to avoid linking to other irrelevant devices. Note: The communication distance of the wireless hand microphone is 3-10 meters. If there is an obstacle shielding, please avoid it to ensure communication distance.

《2》Install AP-8 panel on the transceiver. Press PWR of AP-8 panel to start up. Press PWR to turn on the wireless hand microphone. Keep the two devices as close as possible.
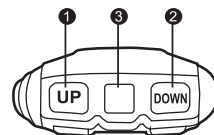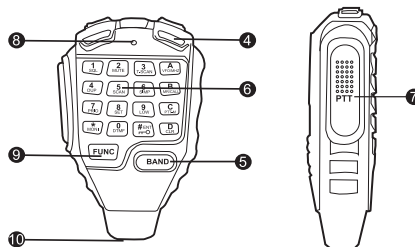
《3》Pairing operation: double-click PWR of AP-8 panel, entering into pairing mode. Then, the indicator light of AP-8 panel will flash in red and green. Double-click PWR of wireless microphone，entering into pairing mode. Then, BAMD will flash in red and green, and wait for pairing. If the pairing is successful, BAMD will flash in green which means your wireless microphone is paired with the transceiver.

Double-click to pair

Double-click PWR

2: If you have successfully paired before, your device will be automatically connected when you turn it on next time.
3: Extension interface: if you have purchased the ordinary version of car radio station before, and you need to expand the wireless hand microphone, here are the expanding steps. First, removing 5 plastic screws in front of the transceiver.Second, inserting the short 8-core link cable into the RJ45 interface on the left. Third, put the plastic, which is used to fix the wireless receiving board, back on the transceiver and lock the screws.

■ Wireless Microphone

NO.	Button	Function Description
1	UP	Increase the frequency, memory channel or set value.
2	DOWN	Decrease the frequency, memory channel or set value.
3	Orange Button	Press it to turn on and off the wireless microphone; and double-click it to pair the wireless microphone
4	Receive/Transmit Indicator Light	The Indicator Light is green when receiving the signal, and red when transmitting the signal.
5	BAND	Click it to change the main and secondary channels; and double-click it to mute the Bluetooth hand microphone's speaker.
6	Number Buttons	The keyboard is used to input the frequency and coordinate with FUNC for shortcut operation.
7	PTT	Press the PTT to transmit, and release it to wait for reception.
8	Microphone	Speak into the microphone when transmitting.
9	FUNC	Shortcut menu selection. Double-click it to lock and unlock the hand microphone's keypad.
10	TYPC Charging	Please use 5V, 1A or more DC current output.

▣ Instruction of BAND Indicator Light:

LED		
State	Red	Blue
	Slow Flash	
Low Voltage Alarm	Quick Flash	
Double-click to enter the pairing state	Flash Alternately	Flash Alternately
After successfully pairing with the intercom device	Double Flash	
Not connected to device	Double Flash	
Playing Music		Gradients
Mute	Slow Flash	

Precautions:

1. The effective communication distance of the wireless hand microphone is less than 3-10 meters. Using it beyond the range will cause the hand microphone to work abnormally.

2. After the wireless hand microphone is turned on, it will automatically search for the last paired walkie-talkie. When the paired walkie-talkie fails to connect, the wireless hand microphone will automatically turn off after 30 seconds to save power. If the connection is normal, and the device indicates that it is connected, then it can be used.When you use it, if the paired walkie-talkie is offline, the hand microphone will prompt "beep"to indicate that the connection has been disconnected.

3. When the mobile microphone prompts that the battery is low, please charge the microphone in time. If you continue to use the microphone, its voltage will drop below the protection value and lead to shutdown.

4. Charging: For TYPC charging, please use a power adapter with a DC current output of over 5V, 1A.

5. Fixing method: stick the round hook and the hole-free pendant in desired position. You can choose to use hooks to fix according to your needs.

▣ The Pairing of Wireless Microphone with Phone and the Application

1. Press the PWR to turn on the wireless microphone that will be paired and double-click the PWR. The indicator light will flash red and blue alternately, and the indicator sound means the device entering into the pairing state.

2. Open the mobile phone and enter the Settings, click on the Bluetooth connection management, and start to search for microphone.

3. Find the BE-6 device in the scanned list, and click BE-6 to pair.

4. If you fail in pairing, then repeating the above three steps. Or the wireless microphone has been mistakenly paired with the surrounding walkie-talkie, you should turn off other walkie-talkies and pair with this machine again.

PTT	
Press	Send
Release	Receive

Phone Status:

BANE		
Short Press	Cal	lAnswer the phone
	On the line	Hang up the phone

Play Music

UP/DOWN	
Click	Volume adjustment
Down-click	Play next song

Connect with the Phone:

BANE		
Short Press	When the other speak	Switch to speaking channel
	Idle state	Broadcast current channel
Long Press	When calling	Hang up the phone
	Idle state	Listen to the other's last words again
Double-click	Calling	Mute switch
	Idle state	

| UP/DOWN	
Short Press	Adjust the volume; Unmute
Long Press	Switch channel
Double-click	Play previous song, next song

3

■ SWITCHING THE POWER ON/OFF
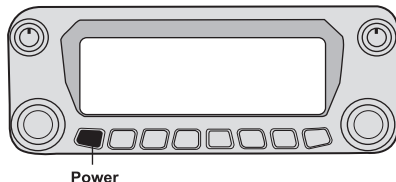
Power

◇ TO SWITCH THE TRANSCEIVER ON

In power off mode, push [PWR] (Power) and hold for 3sec. to switch the transceiver ON, the LCD displays " **Welcome** " briefly, a high pitched beep sounds and followed by the frequency and other indicators.

◇ TO SWITCH THE TRANSCEIVER OFF

In power off mode, push [PWR] (Power) and hold for 3sec. to switch the transceiver OFF. The transceiver stores the current frequency and parameters when it is turned OFF and recalls these param-eters the next time you turn the transceiver ON.

■ ADJUSTING THE VOLUME

Min Volume   Max Volume   Min Volume   Max Volume
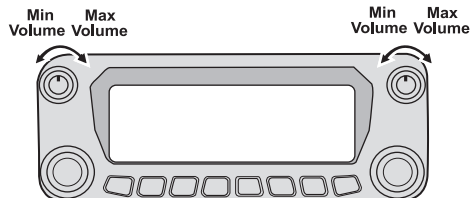
Turn the Volume control clockwise of selected band to increase the audio output level and counterclockwise to decrease the output level.

Note: Push [DUP/MONI] and hold for 1 sec. to Monitor the background noise after the transceiver emits a beep sound, meanwhile adjust Turn the Volume control clockwise. During communication, volume can be adjusted more accurate.

■ SELECT AN OPERATING MODE

❷ ❶

FM DUP-TSQL   FM   DTCS
MAIN ABCDEF   ABCDEF
140.610 25   440.000 25
   HI   HI
PWR MODE DTMF FUNC SKIP SQL SNGL MENU
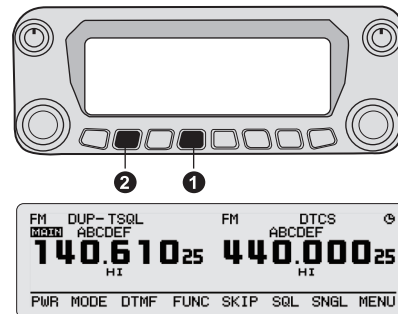
• Select left band as main band, push [FUNC], then push **[MODE]** (left [VFO SCAN]) to select transceiver and receiver mode, weather alert channel.
• Select right band as main band, push [FUNC], then push **[MODE]** (left [VFO SCAN]) to select transceiver and receiver mode, weather alert channel, FM Radio and AM Radio.
• Select single mode, push [FUNC], then push **[MODE]** (left [VFO SCAN]) to select AIR band.

■ SELECT MAIN BAND
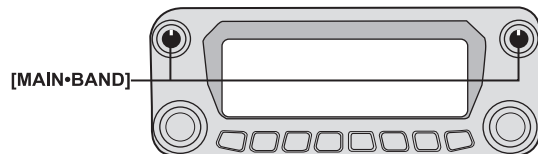
[MAIN•BAND]

This Transceiver displays 2 frequencies on the left and right band's simultaneously. However, transmission, some keys and microphone operation apply only to the main band.

Push the desired band's (left or right) **[MAIN•BAND]** to select the main band. " MAIN " appears for the main band.

■ OPERATING FREQUENCY BAND SELECTION

① Push [VFO SCAN] the desired band's **[VFO•SCAN]** to select VFO mode.

② Push and hold the desired band's **[MAIN•BAND]** for 1 sec. to select the desired frequency band.

③ Repeat steps to select the frequency band between 136~174MHz, 220~260MHz(only USA version), 400~480MHz and 470~520MHz.

Note： This transceiver can be set to work on 2 UHF band or 2 VHF band.

■ RECEIVING

In standby, both left band and right band able To receive. When they receive any signal, the BUSY indicator and signal strength indicator will appear in the correspondent area of the LCD. And you can hear the calling.

Note： If the transceiver has set at higher squelch level, it may fail to hear the calling. If the Busy and signal strength icon display inleft band or rightband, but can not hear the calling, means the signal is with matching.carrier but dis-matching signaling.

■ V/V, U/U SIMULTANEOUS RECEIVE (PARA-WATCH)

The Transceiver can simultaneously receive two signals on the same band, such as 144 MHz band, using the para-watch function.

Can be switched between VHF and UHF
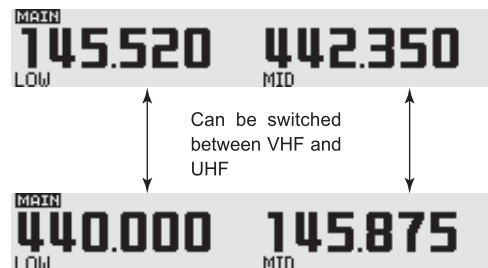
[Example]

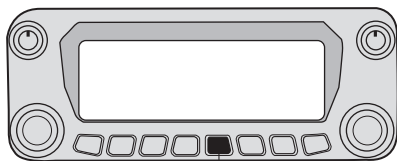## ■ SETTING A FREQUENCY THROUGH CONTROLLER

① Push and hold the desired band's **[MAIN•BAND]** for 1 sec.to select desired frequency band.

② Push the desired band's **[MHz•TUNE]** to enter MHz tune mode.

③ Rotate **[DIAL]** to select the desired frequency.

④ Push any key to exit the operating mode.

⑤ Repeat steps ④, ①, ② and ③ to set another band frequency (left or right band).

■ MONITOR FUNCTION

[DUP•MONI]

This function is used to listen to weak signals without disturbing the squelch setting.

• After pushing **[MAIN•BAND]**, push and hold ⌷DUP MONI⌷ for 2-3 sec to open the squelch.

• Push and hold ⌷DUP MONI⌷ for 2-3 sec. again to cancel the function.

■ TRANSMITTING

Push and hold PTT key, the transceiver change to transmitting. Please hold the microphone approximately 2.5-5.0 cm from your mouth, and then speak into the microphone in your normal voice to get best timbre.

> **Note**：The transmitting only available on Main band, the ⌷ icon will display in the top right corner of the Main band frequen

SETTING A FREQUENCY

■ USING THE TUNING DIAL

[DIAL]   [DIAL]

[VFO•SCAN]   [VFO•SCAN]
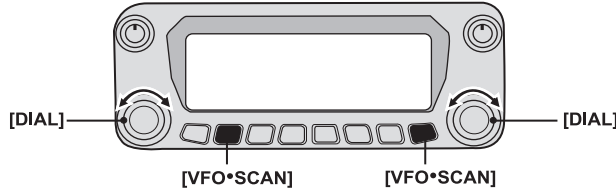
In VFO mode, turn the desired band's **[DIAL]** clockwise to increase frequency, counterclock-wise to decrease frequency. Every gear will increase or decrease frequency by one step.
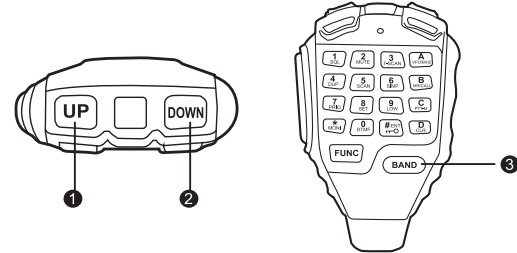

While 1 MHz tuning step is selected, the digit below 100kHz disappear.

Push the desired band's **[MHz•TUNE]** to enter the MHz tune mode, then rotate **[DIAL]** to change the frequency in 1 MHz steps.

■ USING THE [▲]/[▼] KEYS

• Push (BAND) to select the desired band (left or right) as the main band in advance.

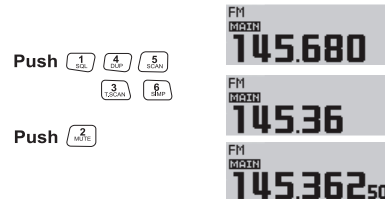• Push[▲]or[▼] to select desired frequency.

UP   DOWN

FUNC   BAND

Note: The microphone [▲]/[▼] key also able to adjust frequency. Press [▲]/[▼]key will increase(decrease) the frequency by one step size. Hold [▲]/[▼] key will adjust the frequency continuously.

■ USING THE KEYPAD

In VFO mode, you can input the frequency by the microphone numeric key. It is invalid to input frequency out of the frequency band.

[EXAMPLE]: Setting frequency to 145.3625 MHz

Push [1 SQL] [4 DUP] [5 SCAN] [3 T.SCAN] [6 SHIP]

FM MAIN
145.680

FM MAIN
145.36

Push [2 MUTE]

FM MAIN
145.362 50

Note: When the Band lockout function is on, the input or adjusting of frequency band. The right band only limited in 136-174MHz and 400-470MHz band.

■ SELECTING OUTPUT POWER

The transceiver has 3 output power levels to suit your operating requirements. Low output powers during short-distance communications may reduce the possibility of interference to other stations and will reduce current consumption.

• Push **[LOW•PRIO]** several times to select the output power.

S/RF INDICATOR	POWER OUTPUT	
	VHF/UHF	Taiwan
High:	50 W/40 W	50 W
Mid:	25 W*/25 W*	25 W*
Low:	5 W*/5 W*	5 W*

The output power can be changed while transmitting.
The microphone can also be used to select output power.

• After Push [FUNC], then push [9 LOW] to select the output power.

■ ADJUSTING THE SQUELCH
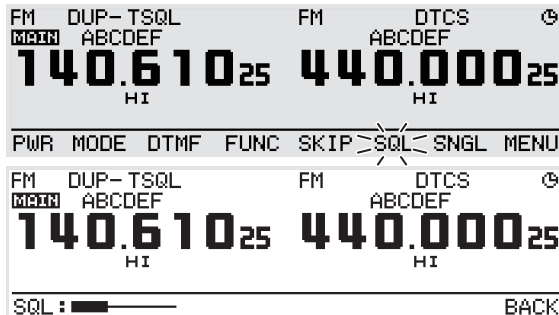
This function is used to setup the strength of receiving signal, when the strength reach a certain level, the calling can be heard, otherwise, the transceiver will keep mute.
In standby, push [FUNC] to display the function guide, then push SQL to enter squelch level adjusting mode.

Note: The squelch level shall setup separately for right band and left band.

■ SINGLE BAND/DUALWATCH OPERATION

Dualwatch operation monitors two frequencies simultaneously.
The Transceiver has two independent receiver circuits:left band, and right band (available frequencies, operating mode and functions are different depending on bands).
Single band operation is useful when only one frequency is being watched.

① Push [FUNC] to display the function guide.

② Push **[SNGL]**(**M/CALL•MW**) (Right band's) to select the single band operation mode.

• Both left and right band's **[DIAL]**, **[MAIN•BAND]**, **[VOL]**, **[VFO•SCAN]** and **[M/CALL•MW]** can be used for operation.

③ Push [FUNC] to display the function guide, then push **[DUAL]**

(M/CALL•MW)(Right band's) to return to dualwatch operation mode.

"◀MUTE"indicators appear

■ AUDIO MUTE FUNCTION

This function temporarily mutes the audio without disturbing the volume setting. (microphone only)

Push [FUNC] then [2 MUTE] to mute audio signals.
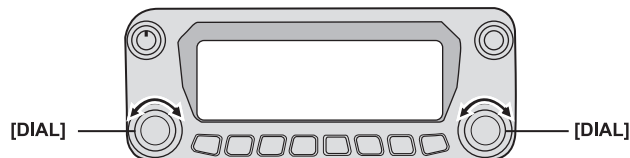
Repeat step to unmute audio signals.

■ ADJUSTING CHANNEL

◇ Adjusting channel through selector knob

In the channel mode, you can adjust the channel directly by **[DIAL]**.Turn clockwise to increase one channel, turn counterclockwise to decrease one channel.

Push microphone **[▲]/[▼]** key also able to adjust the channel.

[DIAL]   [DIAL]

Note: If there is any empty channel, the adjustment will ignore it and jump tonext channel.

### ◇ Input channel through Microphone number key

In channel mode, you can switch to desired channel by press 3 of the microphone numeric key (000-511).

For example input 001 get channel 1, input 030 is channel 30, input 256 is channel 256. If the input channel is not programmed with frequency, the transceiver will emit a warning beep and return to last channel.

■ CONTROLLER LOCK FUNCTIONS

To prevent accidental frequency changes and unnecessary function access, use the lock function.
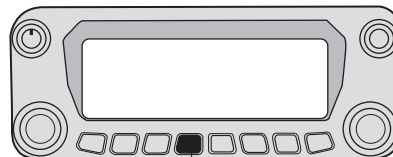

Push and hold for 1 sec. to lock and unlock

This function locks dials and keys electronically and can be used together with the microphone lock function.

Push and hold [FUNC] for 1 sec. to turn the lock function ON and OFF. **[PTT]**, **[DUP•MONI]** (monitor function only), **[VOL]**, **[SQL]** and **[MAIN•BAND]** (main band selection only) can be used while the channel lock function is in use.

■ DTMF MANUAL DIALING

The keys on the Mic keypad function as **DTMF** keys, the 12 keys found on a push-button telephone plus 4 additional keys (A, B, C, D).
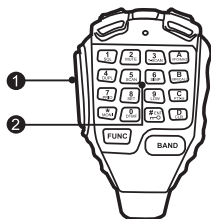

- To perform Manual Dialing,follow the steps below.
① Push and hold Mic [PTT] to transmit.
② While transmitting, push the keys in sequence on the keypad, to send the DTMF tones.
   - The corresponding DTMF tones are transmitted.

| Freq.(Hz)	1209	1336	1477	1633
697	1	2	3	A
770	4	5	6	B
852	7	8	9	C
941	✳	0	#	D

- You do not need to continuously push Mic [PTT] to remain in transmission mode. However, transmission mode is retained for only 2 seconds after pushing a key, so if the next key is not pushed within this time limit, the transceiver stops transmitting.

■ TRANSMITTING A BURST TONE
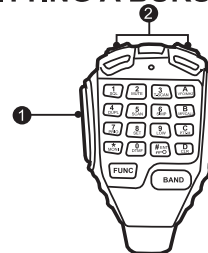
① Push and hold Mic **[PTT]** to transmit.
② While transmitting, push **[▲]** or **[▼]** key in sequence on the keypad, to send the burst tones.

■ SELECTTING VFO,MEMORY AND CALL MODE
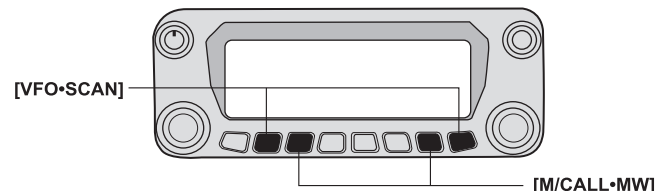
- In standby, when the transceiver is in **VFO** mode, Push the desired band's **[M/CALL•MW]** several times to select Memory mode or **CALL** channel.
- In standby, when the transceiver is in Memory or **CALL** mode, push the desired band's **[VFO•SCAN]** to select **VFO** mode.

■ SELECTING AN OFFSET DIRECTION

Select whether the transmit frequency will be higher (+) or lower (–) than the receive frequency.
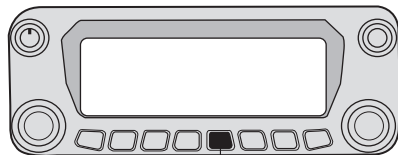
[DUP• MONI]

① In standby, push the desired band's **[MAIN•BAND]** to select the main band.

② Push [FUNC] to select DUP–, DUP+ and simplex.

■ PRIORITY WATCH

You may sometimes want to check your favorite frequency activities while monitoring other frequencies. In this case, use the Priority watch function.
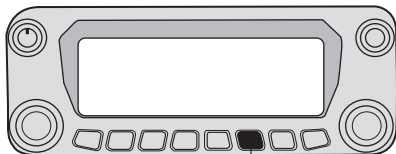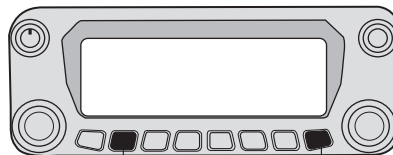
[LOW• PRIO]

① In standby, push the desired band's **[MAIN•BAND]** to select the main band.

② Push and hold [LOW PRIO] for 1 sec. to start the watch.

③ Push any key other than [FUNC] or [FUNC] (Power) to stop the watch.

■ VFO SCAN

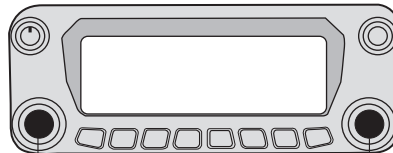VFO Scan monitors all frequencies tunable on the band, using the current frequency step size.

[VFO•SCAN]

① In standby, push the desired band's **[MAIN•BAND]** to select the main band.

② Push the desired band's **[VFO•SCAN]** to select VFO mode.

③ Push **[VFO•SCAN]** and hold for 1 sec. to start scan.

④ Push any key other than [FUNC] or [FUNC] (Power) to stop VFO scan.

■ MHZ SCAN

MHz Scan monitors a 1 MHz segment of the band, using the current frequency step size. The current 1 MHz digit determines the limits of the scan. For example, if the current frequency is 145.400 MHz, then the scan range would be from 145.000 MHz to 145.995 MHz (the exact upper limit depends on the current frequency step size).
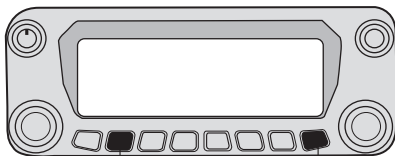
[MAIN• BAND]

6

① In standby, push the desired band's **[MAIN•BAND]** to select the main band.

② Push the desired band's **[VFO•SCAN]** to select VFO mode, and rotate **[DIAL]** or push Mic **[▲]** or **[▼]** to select a frequency in which to perform MHz Scan.

③ Push and hold the desired band's **[MHz•TUNE]** to start MHz Scan.

④ Push any key other than ⌨ or ⌨ to stop MHz scan.

■ ALL CHANNEL SCAN

The transceiver scans all of the Memory Channels in which you have stored frequencies.

[VFO•SCAN]
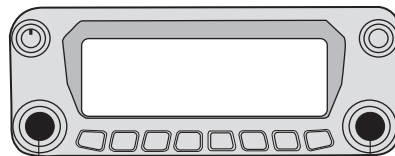
① In standby, push the desired band's **[MAIN•BAND]** to select the main band.

② Push the desired band's **[M/CALL•MW]** to select Memory mode.

③ Push and hold the desired band's **[VFO•SCAN]** for 1 sec. to start All channel Scan.

④ Push any key other than ⌨ or ⌨ to stop All channel scan.

Note: The transceiver must have 2 or more Memory Channels that contain data.

■ GROUP CHANNEL SCAN

For the purpose of Group Scan, the 512 Memory channels are divided into 8 groups, with each group containing 64 channels. Group Scan monitors only the 64 channels which belong to the specific group you are scanning. The channels are grouped as follows:

| Memory Group	Channel Range	Memory Group	Channel Range
0	0~63	4	256~319
1	64~127	5	320~383
2	128~191	6	384~447
3	192~255	7	448~511

[MHz•TUNE]

① In standby, push the desired band's **[MAIN•BAND]** to select the main band.

② Push the desired band's **[M/CALL•MW]** to select Memory mode.

③ Push and hold the desired band's **[MHz•TUNE]** for 1 sec. to start group scan.

④ Push any key other than ⌨ or ⌨ to stop group scan.

Note: The transceiver must have 2 or more Memory Channels in the selected group that contain data.

■ CTCSS/DCS SCAN

This function scans through all CTCSS frequencies/DCS code to identify the incoming CTCSS frequency/DCS code on the received signal. You may find this useful when you cannot recall the CTCSS frequency/DCS code that the other persons in your group are using.
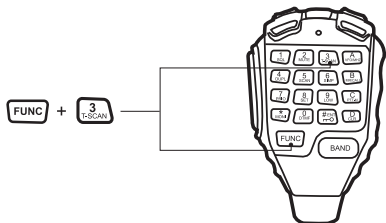
① In standby, push the desired band's **[MAIN•BAND]** to select the main band.
② Push Mic [FUNC],then push [3 T-SCAN] to start CTCSS/DCS scan.
③ Push any key other than [FUNC] or [FUNC] to stop CTCSS/DCS scan.

■ PROGRAMMING A MEMORY CHANNEL

In Memory Channels, you can store frequencies and related data that you frequently use so that you do not need to reprogram that data every time. You can quickly recall a programmed channel through simple operation.

① Set the desired frequency in the desired band (left or right).
  • Push the desired band's **[VFO•SCAN]** to select VFO mode.
  • Set the frequency using the same band's **[DIAL]**.
  • Set other data (e.g. tone frequency, duplex information, etc.) if required.
② Push and hold the same band's **[M/CALL•MW]** for 1 sec.

  • 2 beeps sound.
  • " **MR** " indicator and the memory channel number blink.
③ Rotate the **[DIAL]** to select the memory channel to be programmed.
  • Memory channels not yet programmed are blank.
④ Push and hold **[S.MW]**(**M/CALL•MW**) (Left band's) for 1 sec. to program.
  • 3 beeps sound.
Memory channel number automatically increases when continuing to push [**M/CALL•MW**] after programming.

■ COPYING MEMORY CONTENTS

You can copy channel information from one Memory Channel to another. This function is useful when storing frequencies and associated data that you temporarily change in Memory Recall Mode.

◇ **MEMORY/CALL** ⇨ **VFO**
① Select the desired band's (left or right) memory or call channel.
  • Push the desired band's **[M/CALL•MW]** several times to select memory mode or call channel, then rotate the same band's **[DIAL]** to select the desired memory or call channel.
② Push and hold **[M/CALL•MW]** for 2 sec. to copy the selected memory/call channel contents to the VFO.
  • VFO mode is selected automatically.

◇ **MEMORY/CALL** ⇨ **CALL/MEMORY**
  ① Select the memory/call channel to be copied.
    • Push the desired band's **[M/CALL•MW]** several times to

6

select memory mode or call channel, then rotate the same band's **[DIAL]** to select the desired memory or call channel.

② Push and hold the same band's **[M/CALL•MW]** for 1 sec.
  • " **MR** " indicator and the memory channel number blink.

③ Rotate the same band's **[DIAL]** to select the target memory channel.
  • " **C** " blinks when the call channel is selected.

④ Push and hold the **[S.MW]** (**M/CALL•MW**) (Left band's) for 1 sec. to copy the selected memory/call channel contents to the target memory.
  • The targeted memory and copied contents are indicated.

■ MEMORY CLEARING

Contents of programmed memories can be cleared (blanked),if desired.

① Push **[VFO•SCAN]** to select VFO mode in the desired band (left or right).

② Push and hold the same band's **[M/CALL•MW]** for 1 sec.
  • " **MR** " indicator and the memory channel number blink.

③ Rotate **[DIAL]** to select the memory channel to be cleared.

④ Push and hold **[CLR]**(**DUP•MONI**) for 1 sec. to clear.
  • 3 beeps sound, then the frequency is cleared.
  • " **MR** " indicator and the channel number blink continuously.
  • When clearing the call channel, the current VFO conditions are re-programmed into the call channel automatically.

⑤ Push **[BACK]** (Right band's ⬚) to return to VFO mode.

[EXAMPLE]: Clearing memory channel 20.
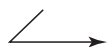
Push ⬚ (Main band's) to select VFO.   Push ⬚ and hold (Main band's) for 1 sec.   Rotate ⬚ (Main band's) for selecting memory channel to be cleared.
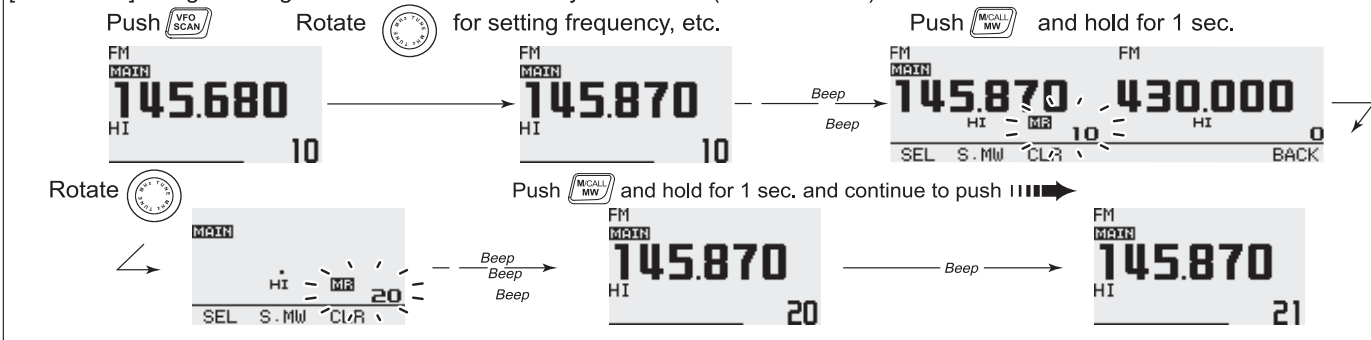

Push ⬚ and hold for 1 sec. memory clearing.   Push ⬚

Beep
Beep
Beep

[EXAMPLE]: Programming 145.870 MHz into memory channel 20 (blank channel) via the controller.

Push [VFO SCAN]   Rotate (DIAL)   for setting frequency, etc.

Push [M/CALL MW]   and hold for 1 sec.

FM
MAIN
145.680
HI
10

→

FM
MAIN
145.870
HI
10

— Beep / Beep →

FM   FM
MAIN
145.870 **430.000**
HI   MR   HI
10   0
SEL S.MW CLR   BACK

Rotate (DIAL)

Push [M/CALL MW] and hold for 1 sec. and continue to push ▮▮▮▶

MAIN
HI   MR
20
SEL S.MW CLR

— Beep / Beep / Beep →

FM
MAIN
145.870
HI
20

— Beep →

FM
MAIN
145.870
HI
21

[EXAMPLE]: Copying memory channel 30 contents to VFO.

Front panel operation:

Push [M/CALL MW] to select memory mode.   Rotate (DIAL) for selecting memory channel.   Push and hold [M/CALL MW] (same band's) for 1 sec.

FM
MAIN
145.670
LOW
MR 10

→

FM DUP-TONE
MAIN
145.700
LOW
MR 30

→

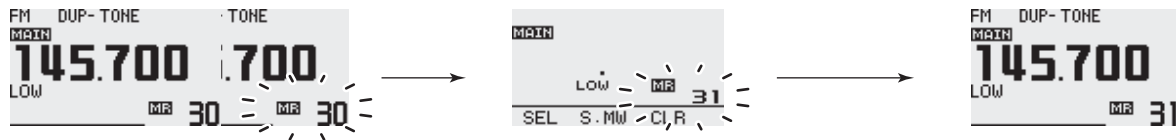FM DUP-TONE
MAIN
145.700
LOW
30

[EXAMPLE]: Copying memory channel 30 contents to channel 31.

Select the memory channel, then push and hold [M/CALL MW] for 1 sec.

Select the target channel.

Push and hold [M/CALL MW] for 1 sec.

FM DUP-TONE   TONE
MAIN
145.700 **.700.**
LOW
MR 30   MR 30

→

MAIN
LOW MR
31
SEL S.MW CLR

→

FM DUP-TONE
MAIN
145.700
LOW
MR 31

SET MODE ITEMS

You can customize the various timings, settings, and programming functions on this transceiver to meet your needs without using many controls and switches.The parameter settings of set mode items are valid in any operation.

■ TIME-OUT TIMER

The time-out timer limits the amount of continuous transmitting time.When the transmitting reaches the time limit which has been programmed, the transmission will be cut off and emit warning beep.

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **TIME-OUT TIMER** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired value of Time-out Timer.

```
     MENU      TIME-OUT TIMER      5MIN
               AUTO POWER OFF      30MIN
    SET MODE   SPEAK SELECT        MODE-1
               FAN CONTROL            OFF
    01/21      SQL DELAY            SHORT
                                    BACK
```

OFF : The time-out timer is turned OFF.
1-30 : The transmission is cut OFF after the set period
  elapses.(default : 3 min)
⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ AUTO POWER OFF

The transceiver switches OFF automatically if no keys or controls are pressed or adjusted for the selected duration.One minute before the transceiver switches OFF, warning beeps sound for a few seconds.

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **AUTO POWER OFF** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired value of Auto power off.

```
     MENU      TIME-OUT TIME       5MIN
               AUTO POWER OFF      30MIN
    SET MODE   SPEAK SELECT        MODE-1
               FAN CONTROL            OFF
    02/21      SQL DELAY            SHORT
                                    BACK
```

OFF : The Auto power off is turned off.(default)
30-720Min : 30-720 min can be specified.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ SPEAKER SELECT

This Transceiver has three speaker systems, users can select it for desired configure according to different occasions.
① Push [FUNC] to display the function guide.

② Push **[MENU]** (Right band's VFO/SCAN) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** ", then push **[MHz•TUNE]**.
④ Rotate [DIAL] to select " **SPEAKER SELECT** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of speaker select.

```
       MENU    TIME-OUT TIME      5MIN ^
               AUTO POWER OFF     30MIN ▪
   SET MODE    SPEAKER SELECT    MODE-1
               FAN CONTROL         OFF
   03/21       SQL DELAY         SHORT ˅
                                  BACK
```

MODE-1 : The main unit's speaker is selectted.(default)
MODE-2 : The controller's speaker is selectted.
  BOTH : Both main unit and controller speaker are selectted.

⑥ Push FUNC to return to frequency indication or push **[BACK]** (Right band's VFO/SCAN) to return the previous screen.

■ FAN CONTROL

This function can can quickly reduce the temperature and to protect the life of Transceiver when the temperature is too high caused by transmission.
① Push FUNC to display the function guide.
② Push **[MENU]** (Right band's VFO/SCAN) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** ", then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **FAN CONTROL** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of Fan control.

```
       MENU    TIME-OUT TIME      5MIN ^
               AUTO POWER OFF     30MIN ▪
   SET MODE    SPEAK SELECT      MODE-1
               FAN CONTROL         OFF
   04/21       SQL DELAY         SHORT ˅
                                  BACK
```

OFF : The fan control function is turned off.
 ON : The fan control function is turned on.
AUTO : The fan rotates during transmit and for 2 min.
         after transmission. (default)

⑥ Push FUNC to return to frequency indication or push **[BACK]** (Right band's VFO/SCAN) to return the previous screen.

■ SQUELCH DELAY

Selects squelch delay from short and long to prevent repeated opening and closing of the squelch during reception of the same signal.
① Push FUNC to display the function guide.
② Push **[MENU]** (Right band's VFO/SCAN) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** ", then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **SQL DELAY** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of squelch delay.

```
       MENU    AUTO POWER OFF    30MIN ^
               SPEAK SELECT      MODE-1 ▪
   SET MODE    FAN CONTROL         OFF
               SQL DELAY         SHORT
   05/21       AUTO REPEATER       OFF ˅
                                  BACK
```

7

SHORT : Short squelch delay. (default)
LONG : Long squelch delay
⑥ Push [FUNC] to return to frequency indication or push **[BACK]**
(Right band's [VFO SCAN]) to return the previous screen.

■ AUTO REPEATER
The auto repeater function automatically turns ON or OFF duplex operation and the tone encoder. The offset and repeater tone is not changed by the auto repeater function.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **AUTO REPEATER** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of repeater type.

```
    MENU     SPEAK SELECT      MODE-1
             FAN CONTROL          OFF
  SET MODE   SQL DELAY          SHORT
             AUTO REPEATER        OFF
  06/21      REPEATER TYPE        OFF
                               BACK
```

OFF : Deplex is not activated.(default)
RPT1 : Activates for duplex only.
RPT2 : Activates for duplex and tone.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]**
(Right band's [VFO SCAN]) to return the previous screen.

■ REPEATER TYPE
Set the left band and right band as VHF (136~174MHz) or UHF (400~470MHz)then turn off this function will enable the repeater function.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **REPEATER TYPE** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of repeater type.

```
    MENU     FAN CONTROL          OFF
             SQL DELAY          SHORT
  SET MODE   AUTO REPEATER        OFF
             REPEATER TYPE        OFF
  07/21      BEAT SHIFT           OFF
                               BACK
```

OFF : The repeater function is turned off.(default)
S-RPT : The repeater function is selected for same-band repeater.(only 446MHz)
X-RPT : The repeater function is selected for CROSS-band repeater.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]**
(Right band's [VFO SCAN]) to return the previous screen.

■ BEAT SHIFT
Since the transceiver uses a microprocessor to control various functions of the transceiver, the CPU clock oscillator's harmonics or image may appear on some spots of the reception frequencies. In this case, turn the Beat Shift function ON.

7

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** ", then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **BEAT SHIFT** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of beat shift.

```
 MENU    SQL DELAY        SHORT
         AUTO REPEATER      OFF
SET MODE REPEATER TYPE      OFF
         BEAT SHIFT         OFF
08/21    BURST TONE      1750Hz
                           BACK
```

OFF : Turns the beat shift function off.(default)
ON : Turns the beat shift function on.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ BURST TONE

This function uses to start repeater .It needs certain intensity Pilot Frequency to start a dormant repeater. As usual, no need to send pilot frequency again once repeater started.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** ", then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **BURST TONE** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired value of Burst tone.

```
 MENU    AUTO REPEATER      OFF
         REPEATER TYPE      OFF
SET MODE BEAT SHIFT         OFF
         BURST TONE      1750Hz
09/21    VHF BAND AIP       OFF
                           BACK
```

Burst Tone Frequency :
• 1750Hz(default), 2100Hz, 1000Hz and 1450Hz.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ VHF BAND AIP

The VHF band is often crowded in urban areas. AIP helps eliminate interference and reduce audio distortion caused by intermodulation. You can use this function only while operating on the VHF band.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** ", then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **VHF BAND AIP** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of VHF band AIP.

```
 MENU    REPEATER TYPE      OFF
         BEAT SHIFT         OFF
SET MODE BURST TONE      1750Hz
         VHF BAND AIP       OFF
10/21    UHF BAND AIP       OFF
                           BACK
```

OFF : The VHF band AIP function is turned OFF.(default)
ON : The VHF band AIP function is turned ON.

⑥ Push ⌨ to return to frequency indication or push **[BACK]**
(Right band's ⌨) to return the previous screen.

■ UHF BAND AIP

The UHF band is often crowded in urban areas. AIP helps eliminate interference and reduce audio distortion caused by intermodulation. You can use this function only while operating on the UHF band.

① Push ⌨ to display the function guide.
② Push **[MENU]** (Right band's ⌨) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **UHF BAND AIP** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of UHF band AIP.

OFF : The UHF band AIP function is turned OFF.(default)
ON : The UHF band AIP function is turned ON.
⑥ Push ⌨ to return to frequency indication or push **[BACK]**
(Right band's ⌨) to return the previous screen.

■ VFO TRACKING

Enable this function, the adjustment for any band of VFO frequency,will bring same frequency change to both bands. Adjust one gear, the frequency for both bands will increase or decrease one step size value.

① Push ⌨ to display the function guide.
② Push **[MENU]** (Right band's ⌨) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **VFO TRACKING** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of VFO tracking.

OFF : The VFO tracking function is turned OFF.(default)
ON : The VFO tracking function is turned ON.
⑥ Push ⌨ to return to frequency indication or push **[BACK]**
(Right band's ⌨) to return the previous screen.

■ MIC KEY LOCK

The Mic Lock function disables the Mic keys other than **[PTT]** to prevent you from accidentally changing the transceiver operation.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** ", then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **MIC KEY LOCK** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of Mic key lock.

```
      MENU     UHF  BAND  AIP          OFF
               VFO  TRACKING           OFF
  SET MODE     MIC  NOISE  REDUCTION   MOD-2
               MIC  KEY  LOCK          OFF
  14/21        TUNE  ENABLE            OFF
                                       BACK
```

  OFF : The Mic key lock function is turned OFF.(default)
  ON : The Mic key lock function is turned ON.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ TUNE ENABLE

While the Lock function is ON, you sometimes may want to turn the **[DIAL]** control to change the frequency. In this case, turn the Tune Enable function ON.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** ", then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **TUNE ENABLE** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of Tune enable.

```
      MENU     VFO  TRACKING           OFF
               MIC  NOISE  REDUCTION   MOD-2
  SET MODE     MIC  KEY  LOCK          OFF
               TUNE  ENABLE            OFF
  15/21        AIR-BAND  STEP          25K
                                       BACK
```

  OFF : The Tune enable function is turned OFF.(default)
  ON : The Tune enable function is turned ON.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ AIR BAND FREQUENCY STEP SIZE

selecting the AIR band's frequency step size is essential in selecting your AIR band's exact receive frequency using the **[DIAL]** control or **[▲]** and **[▼]** key.

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **AIR-BAND STEP** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired value of AIR band frequency step size.

```
  MENU     MIC NOISE REDUCTION  MOD-2
           MIC KEY LOCK           OFF
 SET MODE  TUNE ENABLE            OFF
           AIR-BAND STEP          25K
 16/21     AMR-BAND STEP           1K
                             BACK
```

You can select your desired frequency step size of AIR band from: 5K,6.25K,10K,12.5K,15K,20K,25K(default),30K,50K and 100K etc.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ AM RADIO FREQUENCY STEP SIZE

selecting the AM band's frequency step size is essential in select-ing your AM band's exact receive frequency using the [DIAL] control or Mic **[▲]** and **[▼]** key.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **AMR-BAND STEP** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired value of AM Radio

frequency step size.

```
  MENU     MIC KEY LOCK           OFF
           TUNE ENABLE            OFF
 SET MODE  AIR-BAND STEP          25K
           AMR-BAND STEP           1K
 17/21     FM TRANSMITTER OFF     OFF
                             BACK
```

You can select your desired frequency step size of AIR band from: 1K, 5K and 10K etc.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ FM TX ENABLE

When the Transceiver connects to car inner audio system, turning on FM TX function, and make it the same with the car FM receiving frequency.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **FM TRANSMITTER OFF** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of FM TX Enable.

```
  MENU     TUNE ENABLE            OFF
           AIR-BAND STEP          25K
 SET MODE  AMR-BAND STEP           1K
           FM TRANSMITTER OFF     OFF
 18/21     FM TRANSMITTER FREQ  64.5M
                             BACK
```

OFF : The FM TX Enable function is turned OFF.(default)
ON : The FM TX Enable function is turned ON.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]**

(Right band's⟨VFO SCAN⟩) to return the previous screen.

■ FM TX FREQUENCY

FM TX frequency setting is the premise of the FM TX function is effective.
① Push ⟨FUNC⟩ to display the function guide.
② Push **[MENU]** (Right band's⟨VFO SCAN⟩) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **FM TRANSMITTER FREQ** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired value of FM Transmitter frequency.

```
      MENU      AIR-BAND STEP          25K
              AMR-BAND STEP           1K
   SET MODE   FM TRANSMITTER OFF     OFF
              FM TRANSMITTER FREQ  64.5M
   19/21      WX ALERT               OFF
                            BACK
```

FM Transmitter frequency : 64~108MHz(default: 64.5MHz)

⑥ Push ⟨FUNC⟩ to return to frequency indication or push **[BACK]** (Right band's⟨VFO SCAN⟩) to return the previous screen.

■ WEATHER ALERT(ONLY VERIONS)

You can monitor the Weather Radio frequency continuously or in the background while receiving on another frequency.
① Push ⟨FUNC⟩ to display the function guide.
② Push **[MENU]** (Right band's⟨VFO SCAN⟩) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.

④ Rotate **[DIAL]** to select " **WX ALERT** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of WX Alert.

```
      MENU      AMR-BAND STEP          1K
              FM TRANSMITTER OFF     OFF
   SET MODE   FM TRANSMITTER FREQ  64.5M
              WX ALERT              OFF
   20/21      RESET                 VFO
                            BACK
```

OFF : Turns WX Alert function OFF.(default)
ON : Turns WX Alert function ON.
⑥ Push ⟨FUNC⟩ to return to frequency indication or push **[BACK]** (Right band's⟨VFO SCAN⟩) to return the previous screen.

■ RESETTING THE TRANSCEIVER

If your transceiver 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 Push ⟨FUNC⟩ to display the function guide.
② Push **[MENU]** (Right band's⟨VFO SCAN⟩) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **RESET** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired value of RESET.

7

```
MENU          AMR-BAND STEP        1K ^
              FM TRANSMITTER OFF    OFF
SET MODE      FM TRANSMITTER FREQ  64.5M
              WX ALERT             OFF
21/21         RESET                VFO v
                                     BACK
```

  VFO : Reset VFO of left band,right band,FM Radio,AIR
          band and AM radio.(default)
  PART : Resets the parameters to the factory default values.
  FULL : Resets all transceiver parameters to the factory
        default values.

⑥ Push **[MHz•TUNE]** and hold for 3 sec. after select VFO, PART
  or FULL to reset the transceiver.

Scan is a useful function for hands-off monitoring of your favorite frequencies. By becoming comfortable with all types of scan, you will increase your operating efficiency.

■ PRIORITY CHANNEL TYPE

The Transceiver can configure the priority channel with fixed channel or Selected channel before entering the scan.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SCAN** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **PRIORITY TYPE** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of priority type.

```
MENU     PRIORITY TYPE      NONE
SCAN     PROGRAM SKIP SCAN   OFF
         NORMAL SCAN TIMER   T-5
01/04    PRIORITY CHANNEL  CH-001
                              BACK
```

NONE : No Priority channel.(default)
FIXED : The Priority channel is a fixed channel.
SELECTED : The Selected channel becomes the Priority channel.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ PROGRAM SKIP SCAN

Sets programmed skip scan setting for full scan or programmed scan operation.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SCAN** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **PROGRAM SKIP SCAN** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of program skip scan.

```
MENU     PRIORITY TYPE      NONE
SCAN     PROGRAM SKIP SCAN   OFF
         NORMAL SCAN TIMER   T-5
02/04    PRIORITY CHANNEL  CH-001
                              BACK
```

ON : Turns the Program skip scan ON.
OFF : Turns the Program skip scan OFF.(default)
⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ SCAN RESUME TIMER

The transceiver stops scanning at the frequency (or Memory Channel) where a signal is detected. It then continues or stops scanning according to which Resume Mode you have selected.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **SCAN** " , then push **[MHz•TUNE]**.

8

④ Rotate **[DIAL]** to select " **NORMAL SCAN TIMER** ", then push **[MHz•TUNE]**.

⑤ Rotate **[DIAL]** to select the desired value of scan resume timer.

```
MENU        PRIORITY TYPE      NONE
            PROGRAM SKIP SCAN   OFF
SCAN        NORMAL SCAN TIMER   T-5
            PRIORITY CHANNEL  CH-001
03/04
                              BACK
```

T-5/10/15 : Scan pauses for 15/10/5 sec., then resumes.
(default: T-5)

P-2 : Pause on a signal until signal disappears,then resumes 2 sec. after the signal disappears.

> **Note:** This function is effective for VFO scan or normal channel scan.

⑥ Push ⌐FUNC⌐ to return to frequency indication or push **[BACK]** (Right band's ⌐VFO SCAN⌐) to return the previous screen.

■ **SELECTTING A PRIORITY CHANNEL**

This Transceiver can set any effective channel in the 512 memory channel as a priority channel.

① Push ⌐FUNC⌐ to display the function guide.

② Push **[MENU]** (Right band's ⌐VFO SCAN⌐) to display the MENU screen.

③ Rotate **[DIAL]** to select " **SCAN** " , then push **[MHz•TUNE]**.

④ Rotate **[DIAL]** to select " PRIORITY CHANNEL ", then push **[MHz•TUNE]**.

⑤ Rotate **[DIAL]** to select the desired settings of selectting a priority channel.

```
MENU        PRIORITY TYPE      NONE
            PROGRAM SKIP SCAN   OFF
SCAN        NORMAL SCAN TIMER   T-5
            PRIORITY CHANNEL  CH-001
04/04
                              BACK
```

0~511 channels can be set as a priority channel.

> **Note:** Only effective channel can be set as a priority channel.

⑥ Push ⌐FUNC⌐ to return to frequency indication or push **[BACK]** (Right band's ⌐VFO SCAN⌐) to return the previous screen.

DUP/TONE... ITEMS

The " **DUP/TONE...** " functions are valid only for the Transceiver channel,the weather alert channel, the air receiver, FM and am radio are invalid.

■ SELECTTING A RX/TX SUBAUDIBLE TONE

You may sometimes want to hear calls from only specific persons or groups. In this case, use Selective Call. This transceiver is equipped with CTCSS (Continuous Tone Coded Squelch System) and DCS (Digital Coded Squelch).These Selective Calls allow you to ignore (not hear) unwanted calls from other persons who are using the same frequency. The transceiver unmutes only when it receives a signal having the same CTCSS tone or DCS code.

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP/TONE...**" , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **SQUELCH TONE** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select " **RX-SQUELCH TONE** " or " **TX-SQUELCH TONE** " ,then push **[MHz•TUNE]**.

⑥ Push **[TONE]** to select " **OFF**, **TONE**, **TSQL** and **DTCS** " etc.,if you select " **DTCS** " type,then push **[POL]** to select DTCS polarity.

⑦ Rotate **[DIAL]** to select the desired frequency of tone or DTCS code.
⑧ Push [FUNC] to return to frequency indication or push [BACK] (Right band's [VFO SCAN]) to return the previous screen.

■ SQUELCH TAIL

when using the channel with CTCSS or DCS, the feature may cancel tail when speaking at the end.

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **SQUELCH TAIL** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to turn the squelch tail function OFF and ON(default).

⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ FREQUENCY STEP SIZE

Choosing the correct frequency step size is essential in selecting your exact receive frequency using the Tuning control or Mic **[▲]** and **[▼]** key.

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **FREQ STEP** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired value of frequency step size.

You can select your desired frequency step size from : 2.5kHz, 5kHz, 6.25 kHz, 10kHz, 12.5kHz, 15kHz, 20kHz, 25kHz (default), 30 kHz, 50 kHz, 100 kHz.

⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ SELECTING AN OFFSET FREQUENCY

To access a repeater which requires an odd-split frequency pair, change the offset frequency from the default which is used by most repeaters.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **OFFSET FREQ** ", then push **[MHz•TUNE]**.

⑤ Rotate **[DIAL]** to select the desired value of offset frequency.

default: 5MHz(UHF)   600KHz(VHF)

⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ SELECTTING WIDE AND NARROW BANDWIDTH

This Transceiver has three bandwidth of Wide(25K),Wide(20K) and Narrow(12.5K).User can select suitable bandwidth in accordance with different local conditions.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **WIDE / NARROW** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired bandwidth with Wide(25K)(default),Wide(20K) and Narrow(12.5K).

⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ BUSY CHANNEL LOCKOUT

This function is used to prevent transmitting on a channel or frequency that somebody else is currently using. When turned ON, an error beep sounds and you cannot transmit even if you press Mic **[PTT]** while another party is using the channel or frequency.

① Push [FUNC] to display the function guide.

② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.

③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.

④ Rotate **[DIAL]** to select " **BUSY CHANNEL LOCKOUT** ", then **[MHz•TUNE]**.

⑤ Rotate **[DIAL]** to select the desired settings of busy channel lockout.

```
MENU          FREQ STEP            25K
              OFFSET FREQ      5.00000
DUP/TONE      WIDE/NARROW          W25K
              BUSY CHANNEL LOCKOUT  OFF
06/14         TX-INHIBIT           OFF
                                  BACK
```

OFF : The Transceiver can transmit at any time.(default)

BCL : The Transceiver cannot transmit when the selected channel is busy.

BTL : The Transceiver will not transmit while detecting a carrier with wrong CTCSS/CDCSS code.

OPT : The Transceiver cannot transmit when the selected channel is busy before valid Optional Signalling.

⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ TX-INHIBIT

When the TX-Inhibit function is turned on, the [PTT] key is invalid button, and the current channel of the Transceiver is in the receiving mode.

① Push [FUNC] to display the function guide.

② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.

③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.

④ Rotate **[DIAL]** to select " **TX-INHIBIT** ", then push **[MHz•TUNE]**.

⑤ Rotate **[DIAL]** to turn the TX-INHIBIT function ON and OFF. (default)

```
MENU          OFFSET FREQ      5.00000
              WIDE/NARROW          W25K
DUP/TONE      BUSY CHANNEL LOCKOUT  OFF
              TX-INHIBIT           OFF
07/14         TALK AROUND/REVERSE  OFF
                                  BACK
```

⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ REVERSE/TALK AROUND

The reverse function exchanges a separate reception and transmission frequency.After The talk around function is turned ON,the Rx frequency is used in place of the Tx frequency when transmitting.So, while using a repeater,you can manually check the strength of a signal that youreceive directly from the other station. If the station'ssignal is strong, both stations should move to a simplex frequency and free up the repeater.

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **TALK AROUND / REVERSE** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of the reverse/talk around.

OFF : The reverse or talk around function is turned OFF. (default)
TA : The talk around function is selected.
REV : The reverse function is selected.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ SELECTTING OPTION SIGNALING

The option signalling function is similar to 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, activate D.B.D(dead beat disable) and canel D.B.D. etc.
This Transceiver has three option signalings of DTMF,2-Tone and 5-Tone etc.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.

③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **OPTION SIGNALING** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of option signaling.

OFF : No signalling.(default)
DTMF : Enable the DTMF function.
2-TONE : Enable the 2-Tone function.
5-TONE : Enable the 5-Tone function.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ SIGNALING LOGIC

" Signaling Logic " is used for receiving call of the Transceiver.
Option Signalling match conditions can be selected with AND/OR logic.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **SIGNALING TYPE** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of signaling logic.

OFF : Channel with this option will not check Option
Signalling in order to open its speaker.(default)

AND : Carrier,CTCSS/DCS " + Opt.Sig,Channel that is set
with this option will have to check for Option Signalling
in order to open its speaker.

OR : " Carrier,CTCSS/DCS " or Opt.Sig,An Option Signalling
alert is only initiated if the proper Option Signalling is
decoded.After receiving the proper Option Signalling,
audio is unmuted by receiving the carrier.

⑥ Push [FUNC] to return to frequency indication or push **[BACK]**
(Right band's [VFO SCAN]) to return the previous screen.

■ DTMF PTT ID FUNCTION

Your dealer may configure whether to transmit Connect ID (BOT
ID) or Disconnect ID (EOT ID), when connecting or disconnecting a
repeater or telephone system.

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push
[MHz•TUNE].
④ Rotate **[DIAL]** to select " **DTMF PTT-ID** ", then push
[MHz•TUNE].
⑤ Rotate **[DIAL]** to select the desired settings of the DTMF
PTT-ID function.

OFF : The PTT-ID function is turned OFF.(default)
BOT : Begin of TX ID is sent at the beginning of transmission.
EOT : End of TX ID is sent at the end of transmission.
BOTH : Begin of TX ID is sent at the beginning of
transmission and End of TX ID is sent at the end of
transmission.

⑥ Push [FUNC] to return to frequency indication or push [BACK]
(Right band's [VFO SCAN]) to return the previous screen.

■ PTT-ID PAUSE

PTT ID Pause allows you to configure whether the transceiver
sends a PTT ID when the transceiver alternates between transmit
and receive in a certain period of time.

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push
[MHz•TUNE].
④ Rotate **[DIAL]** to select " **PTT-ID PAUSE** ", then push
[MHz•TUNE].
⑤ Rotate **[DIAL]** to turn the PTT-ID mute function ON and OFF.
(default)

9

⑥ Push (FUNC) to return to frequency indication or push **[BACK]** (Right band's (VFO SCAN)) to return the previous screen.

■ PTT-ID MUTE

PTT ID Mute allows you to configure whether the transceiver remains muting the speaker upon receipt of a signal until the time configured for Mute Hold Time elapses.

① Push (FUNC) to display the function guide.
② Push **[MENU]** (Right band's (VFO SCAN)) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **PTT-ID MUTE** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to turn the PTT-ID mute function ON and OFF. (default)

⑥ Push (FUNC) to return to frequency indication or push **[BACK]** (Right band's (VFO SCAN)) to return the previous screen.

■ CALL LIST

" Call list " is used for to transmit the stored DTMF code, 2-Tone or 5-Tone signalling with can be realized "single call,group call ,all call, dead beat disable,etc. function.

① Push (FUNC) to display the function guide.
② Push **[MENU]** (Right band's (VFO SCAN)) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **CALL LIST** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of call list.

⑥ Push (FUNC) to return to frequency indication or push **[BACK]** (Right band's (VFO SCAN)) to return the previous screen.

DISPLAY ITEMS

The backlight of the Transceiver is composed of three colors of red, green and blue, respectively, which can adjust the brightness of a single backlight to realize a variety of color backlight.

■ RED BACKLIGHT
① Push FUNC to display the function guide.
② Push **[MENU]** (Right band's VFO SCAN) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DISPLAY** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **RED BACKLIGHT** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired steps of red backlight.

⑥ Push FUNC to return to frequency indication or push **[BACK]** (Right band's VFO SCAN) to return the previous screen.

■ GREEN BACKLIGHT
① Push FUNC to display the function guide.
② Push **[MENU]** (Right band's VFO SCAN) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DISPLAY** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **GREEN BACKLIGHT** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired steps of green backlight.

⑥ Push FUNC to return to frequency indication or push **[BACK]** (Right band's VFO SCAN) to return the previous screen.

■ BLUE BACKLIGHT
① Push FUNC to display the function guide.
② Push **[MENU]** (Right band's VFO SCAN) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DISPLAY** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **BULE BACKLIGHT** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired steps of bule backlight.

⑥ Push FUNC to return to frequency indication or push **[BACK]** (Right band's VFO SCAN) to return the previous screen.

10

■ DISPLAY DIMMER

You can manually change the display brightness to match the lighting conditions where you are operating the transceiver. This setting can be permanent or the display can light up only when keys are pressed.

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DISPLAY** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **DIMMER** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired value of dimmer.

```
       MENU      RED BACKLIGHT         ─■─
                 GREEN BACKLIGHT       ─■─
      DISPLAY    BLUE BACKLIGHT        ─■─
                 DIMMER                   8
      04/07      AUTO DIMMER           OFF
                                      BACK
```

The levels 1 (dark) to 8 (bright: default) are available.

⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ AUTO DIMMER

When using automatic backlight, the display backlight will illuminate every time a front panel or microphone key is pressed. The backlight remains on for 5 seconds before it turns off again.

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DISPLAY** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **AUTO DIMMER** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired settings of Auto dimmer.

```
       MENU      GREEN BACKLIGHT       ─■─
                 BLUE BACKLIGHT        ─■─
      DISPLAY    DIMMER                   8
                 AUTO DIMMER           OFF
      05/07      LCD CONTRAST          08
                                      BACK
```

OFF : The backlight brightness will not be changed. (default)
AUTO-OFF : The backlight will be turned OFF when no operation is performed for approx. 5 sec.
AUTO-D1 to D7 : Brightness level 1 to 7 is selected when no operation is performed for approx. 5 sec.

⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ LCD CONTRAST

The contrast of the LCD can be selected from 16 levels.

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DISPLAY** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **LCD CONTRAST** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select the desired value of LCD contrast.

```
       MENU      BLUE BACKLIGHT        ─■─
                 DIMMER                   8
      DISPLAY    AUTO DIMMER           OFF
                 LCD CONTRAST          08
      06/07      OPENING LOGO          ON
                                      BACK
```

1 (Low contrast) to 16 (High contrast) (default: 6)

⑥ Push [FUNC] to return to frequency indication or push **[BACK]**
(Right band's [VFO SCAN]) to return the previous screen.

■ OPENING LOGO

The opening logo indication(default)that is displayed at power ON
can be skipped, if desired.
① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DISPLAY** " , then push
  [MHz•TUNE].
④ Rotate **[DIAL]** to select " **OPENING LOGO** ", then push
  [MHz•TUNE].
⑤ Rotate **[DIAL]** to select the desired settings of opening logo.

```
    MENU     BLUE BACKLIGHT    ─■─
             DIMMER                8
  DISPLAY    AUTO DIMMER         OFF
             LCD CONTRAST         08
 07/07       OPENING LOGO         ON
                               BACK
```

  ON : Opening logo is displayed at power ON. (default)
  OFF : Opening logo indication is skipped.
⑥ Push [FUNC] to return to frequency indication or push **[BACK]**
(Right band's [VFO SCAN]) to return the previous screen.

10

SOUND ITEMS

According to the different noise environment of the operation, different sound control parameters can be set up to provide users with clear and definite operation information.

■ BEEP FUNCTION

The Beep function provides confirmation of entry, error status, and malfunctions of the transceiver. We recommend you leave this function ON in order to detect erroneous operations and malfunctions.

① Push [FUNC] to display the function guide.

② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.

③ Rotate **[DIAL]** to select " SOUND " , then push **[MHz•TUNE]**.

④ Rotate **[DIAL]** to select " **KEY TOUCH BEEP** ", then push **[MHz•TUNE]**.

⑤ Rotate **[DIAL]** to select the desired settings of priority type.

```
MENU      KEY TOUCH BEEP      ON
SOUNDS    BEEP LEVEL          3
          SUB BAND MUTE       OFF
          SUB BAND BEEP       OFF
01/04
                              BACK
```

ON : Turns the beep function ON.(default)

OFF : Turns the beep function OFF.

⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ BEEP LEVEL

① Push [FUNC] to display the function guide.

② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.

③ Rotate **[DIAL]** to select " **SOUND** " , then push **[MHz•TUNE]**.

④ Rotate **[DIAL]** to select " **BEEP LEVEL** ", then push **[MHz•TUNE]**.

⑤ Rotate **[DIAL]** to adjusts the key-touch beep tone level to the desired level from 8 levels.

```
MENU      KEY TOUCH BEEP      ON
SOUNDS    BEEP LEVEL          3
          SUB BAND MUTE       OFF
          SUB BAND BEEP       OFF
02/04
                              BACK
```

• 1 (Minimum level) to 8 (Maximum level) (default: 5)

Note: The key-touch beep function must be set to ON to have a beep tone.

⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ SUB BAND MUTE

① Push [FUNC] to display the function guide.

② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.

③ Rotate **[DIAL]** to select " **SOUND** " , then push

[MHz•TUNE].

④ Rotate **[DIAL]** to select " SUB BAND MUTE ", then push **[MHz•TUNE]**.

⑤ Rotate **[DIAL]** to Turns the sub band mute function capability ON and OFF (default).

```
 MENU      KEY TOUCH BEEP        ON
           BEEP LEVEL             3
 SOUNDS    SUB BAND MUTE        OFF
           SUB BAND BEEP        OFF
 03/04
                               BACK
```

⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

■ SUB BAND BEEP

① Push [FUNC] to display the function guide.

② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.

③ Rotate **[DIAL]** to select " **SOUND** " , then push **[MHz•TUNE]**.

④ Rotate **[DIAL]** to select " **SUB BAND BEEP** ", then push **[MHz•TUNE]**.

⑤ Rotate **[DIAL]** to select the Turns the sub band busy beep function capability ON and OFF (default).

```
 MENU      KEY TOUCH BEEP        ON
           BEEP LEVEL             3
 SOUNDS    SUB BAND MUTE        OFF
           SUB BAND BEEP        OFF
 04/04
                               BACK
```

⑥ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

DUAL TONE MULTI-FREQUENCY (DTMF) FUNCTIONS

This transceiver provides you with 16 dedicated DTMF Memory Channels. You can store a DTMF number (24 digits max.) in each of these channels to recall later for speed dialing.

Many repeaters in the U.S.A. and Canada offer a service called Autopatch. You can access the public telephone network via such a repeater by sending DTMF tones. For further information, consult your local repeater reference.

■ DTMF AUTO TX

DTMF AUTO TX allows you to transmit a DTMF Tone(DTMF Memory) after pushing the **[PTT]** key to remain in transmission mode.

① Push (FUNC) to display the function guide.
② Push **[DTMF]** (Left band's (VFO SCAN)) to display the DTMF screen.
③ Rotate **[DIAL]** to select **" AUTO TX "**, then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select the desired settings of DTMF AUTO TX.

```
               AUTO TX              OFF
               DTMF  MEMORY           d1
    DTMF       DTMF  SPEED         100ms
               FIRST DIGIT DELAY   100ms
   01/06       SIDE  TONE             ON

                                    BACK
```

OFF : Turns the DTMF AUTO TX function OFF.(default)
  ON : Turns the DTMF AUTO TX function ON.

⑤ Push (FUNC) to return to frequency indication or push **[BACK]** (Right band's (VFO SCAN)) to return the previous screen.

■ DTMF MEMORY

① Push (FUNC) to display the function guide.
② Push **[DTMF]** (Left band's (VFO SCAN)) to display the DTMFscreen.
③ Rotate **[DIAL]** to select " **DTMF MEMORY** ", then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select the desired memory channel, then push **[MHz•TUNE]**.

```
    DTMF        d3:
               d4:|
    DTMF       d5:
   MEMORY      d6:
   04/16       d7:

           < >                  BACK
```

• A total of 16 channels, "d0" to "d#" are available.

⑤ Rotate the **[DIAL]** to select the desired code.
⑥ Push **[>]** (Left band's (M/CALL MW)) to select the next digit.
  • Push **[<]** (Left band's (M/CALL MW)) moves the cursor backward.
⑦ Repeat the steps ⑤ and ⑥ to set the desired DTMF tone sequence, then push **[MHz•TUNE]**.
⑧ Push (FUNC) to return to frequency indication or push **[BACK]** (Right band's (VFO SCAN)) to return the previous screen.

[EXAMPLE]: PROGRAMMING "5428AB453" INTO DTMF MEMORY CHANNEL "D4."

Push [FUNC], then push [DTMF]
(Left band's [M/CALL MW])

Rotate

Push

Rotate

Push

BACK

Rotate then push (Left band's [M/CALL MW])

Push

Push (Right band's [VFO SCAN]) twice to back.

Repeat the previous step until the desired tone sequence is entered.
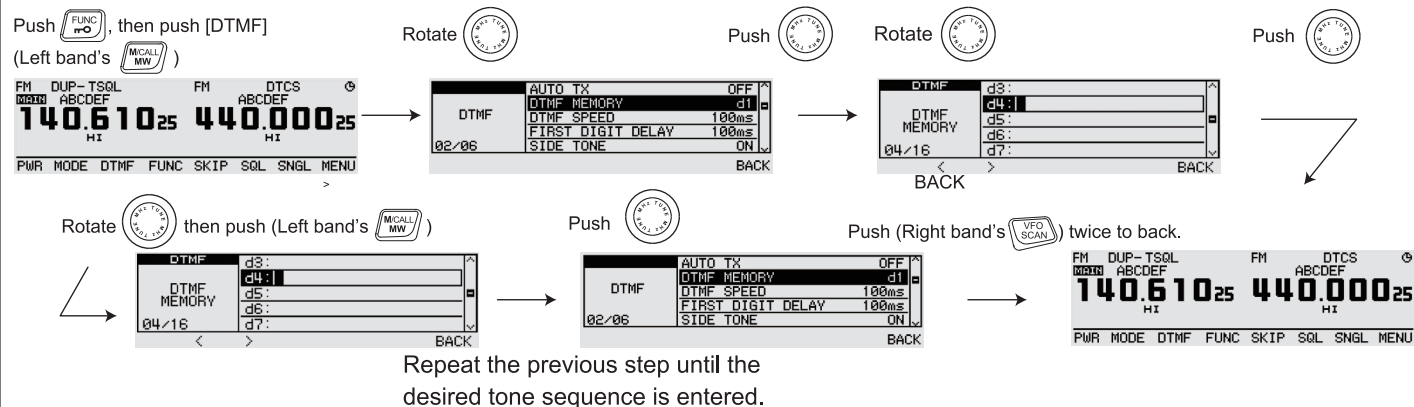
■ DTMF SPEED

DTMF Speed is designed to reduce false decoder operation by providing a fixed time period between digits.

① Push [FUNC] to display the function guide.

② Push **[DTMF]** (Left band's [VFO SCAN]) to display the DTMF screen.

③ Rotate **[DIAL]** to select " **DTMF SPEED** ", then push **[MHz•TUNE]**.

④ Rotate **[DIAL]** to select the desired value of DTMF speed.

⑤ Push [FUNC] to return to frequency indication or push **[BACK]** (Right band's [VFO SCAN]) to return the previous screen.

12

53

■ DTMF FIRST DIGIT DELAY

DTMF First Digit Delay allows you to set the time delay between the start of transmission and the sending of the first DTMF digit (for system/decoder startup considerations).

① Push FUNC to display the function guide.
② Push **[DTMF]** (Left band's VFO SCAN) to display the DTMF screen.
③ Rotate **[DIAL]** to to select " **FIRST DIGIT DELAY** ", then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select the desired value of DTMF first digit delay.

```
AUTO  TX                OFF
DTMF  MEMORY             d1
DTMF                DTMF  SPEED          100ms
                    FIRST DIGIT DELAY    100ms
04/06               SIDE  TONE            ON
                                        BACK
```

⑤ Push FUNC to return to frequency indication or push [BACK] (Right band's VFO SCAN) to return the previous screen.

■ DTMF SIDE TONE

This parameter specifies whether the speaker emits the DTMF tone while transmitting PTT ID (DTMF) or DTMF code.

① Push FUNC to display the function guide.
② Push **[DTMF]** (Left band's VFO SCAN) to display the DTMF screen.
③ Rotate **[DIAL]** to select " **SIDE TONE** ", then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select the desired settings of DTMF side tone.

```
DTMF  MEMORY             d1
DTMF  SPEED          100ms
DTMF                FIRST DIGIT DELAY    100ms
                    SIDE  TONE            ON
05/06               DTMF  KEY LOCK       OFF
                                        BACK
```

OFF : Turns the DTMF Side tone function OFF.(default)
ON : Turns the DTMF Side tone function ON.
⑤ Push FUNC to return to frequency indication or push **[BACK]** (Right band's VFO SCAN) to return the previous screen.

■ DTMF KEY LOCK

You sometimes may want to disable the keypad to avoid accidental DTMF transmission. In this case, turn the DTMF Lock function ON.

① Push FUNC to display the function guide.
② Push **[DTMF]** (Left band's VFO SCAN) to display the DTMF screen.
③ Rotate **[DIAL]** to select " **DTMF KEY LOCK** ", then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select the desired settings of DTMF key lock.

```
DTMF  MEMORY             d1
DTMF  SPEED          100ms
DTMF                FIRST DIGIT DELAY    100ms
                    SIDE  TONE            ON
06/06               DTMF  KEY LOCK       OFF
                                        BACK
```

OFF : Turns the DTMF Lock function OFF.(default)
ON : Turn the DTMF Lock function ON.
⑤ Push FUNC to return to frequency indication or push **[BACK]** (Right band's VFO SCAN) to return the previous screen.

REPEATER OPERATION

■ **OPERATING THROUGH REPEATERS**

Repeaters, which are often installed and maintained by radio clubs, are usually located on mountain tops or other elevated locations.They generally operate at higher ERP (Effective Radiated Power) than a typical station. This combination of elevation and high ERP allows communications over much greater distances than communicating without using repeaters.

Most repeaters use a receive and transmit frequency pair with a standard or non-standard offset (odd-split). In addition, some repeaters must receive a tone from the transceiver to be accessed. For details, consult your local repeater reference.

Repeaters: TX:456.725MHZ
PX   tone: 88.5HZ
RX:446.725MHZ
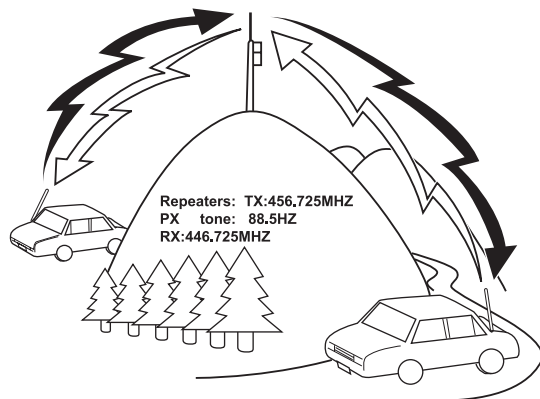
TX：446.725 MHz   TX：446.725 MHz
TX Tone：88.5 Hz   TX Tone：88.5 Hz
RX：456.725 MHz   RX：456.725 MHz

■ **OFFSET PROGRAMMING FLOW**

❶ Select a receive frequency.

❷ Select an offset direction.

❸ Select an offset frequency (only when programming odd-split repeater frequencies).

❹ Activate the Tone function (if necessary).

❺ Select a tone frequency (if necessary).

If you store all the above data in a Memory Channel, you will not need to reprogram the parameters every time.
Refer to "MEMORY CHANNELS".

■ PROGRAMMING AN OFFSET

You must first select an amateur radio repeater downlink frequency as described in "Selecting an offset frequency".

■ SELECTING AN OFFSET DIRECTION

Select whether the transmit frequency will be higher **(+)**
or lower **(–)** than the receive frequency.

In standby, push **[DUP•MONI]** to select " **DUP+** " or " **DUP-** ".

• " **DUP+** " or " **DUP–** " appears above the frequency, indicating which offset direction is selected.

```
FM   DUP-TSQL        FM   DUP+DTCS TA    ⏰
MAIN  ABCDEF              ABCDEF
140.610 25  440.000 25
LOW                  MID
BUSY  ▄▄▄▄▪▪■■■■■
```
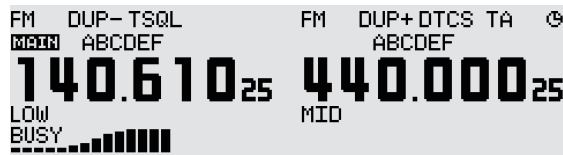
If the offset transmit frequency falls outside the allowable range, transmission is inhibited. In this case, adjust the reception frequency so that the transmit frequency is within the band limits or change the offset direction.

> **Note:** While using an odd-split memory channel or transmitting, you cannot change the offset direction.

■ SELECTING AN OFFSET FREQUENCY

To access a repeater which requires an odd-split frequency pair, change the offset frequency from the default which is used by most repeaters.The default offset frequency is 600 kHz or 5MHz in VHF or UHF band.

■ ACTIVATING THE TONE FUNCTION AND SELECTING THE TONE FREQUENCY

① Push [FUNC] to display the function guide.

② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.

③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.

④ Rotate **[DIAL]** to select " **SQUELCH TONE** ", then push **[MHz•TUNE]**.

⑤ Rotate **[DIAL]** to select " **TX-SQUELCH TONE** ", then push **[MHz•TUNE]**.

```
MENU         RX-SQUELCH TONE      OFF
             TX-SQUELCH TONE      TONE
SUBTONE
DUP/TONE
01/02
                  TONE   POL    BACK
```
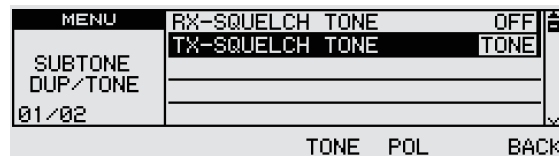
⑥ Push **[TONE]** to activate the repeater tone function.

⑦ Rotate **[DIAL]** to select the desired repeater tone Frequency.

⑧ Push [FUNC] to return to frequency indication.

■ OPERATING AS A REPEATER

This transceiver has both same-band repeater function and cross-band repeater function. Users can select the repeater function according to different occasions.

NOTE: When the same-band repeater function is activated, the left band of transceiver is regarded as receiver of repeater, the right band of transceiver is regarded as transmitter of repeater.

■ OPERATING AS A REPEATER SETUP FLOW

① Select a receive frequency of repeater.

▼

② Activate the RX Tone function of repeater.(if necessary).

▼

③ Select a transmit frequency of repeater.

▼

④ Activate the TX Tone function of repeater.(if necessary).

▼

⑤ Activate the same-band repeater or cross-band repeater function. （according to user's need）

■ SELECT A RECEIVE FREQUENCY OF REPEATER

① In standby,push right band's **[MAIN•BAND]** to select main band.
② Push right band's **[MAIN•BAND]** and hold for 1Sec. to select the frequency band of 136-174MHz and 400-480MHz etc.
③ Rotate **[DIAL]** to select a receive frequency of repeater according to the frequency step size.
④ Store received frequency of repeater to the memory channel.

Activate the RX Tone function of repeater

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **SQUELCH TONE** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select " **RX-SQUELCH TONE** ", then push **[MHz•TUNE]**.

```
 MENU      RX-SQUELCH TONE      TSQL
           TX-SQUELCH TONE       OFF
 SUBTONE
 DUP/TONE
 01/02
                      TONE  POL     BACK
```

⑥ Push **[TONE]** to activate the **CTCSS** tone function.
⑦ Rotate **[DIAL]** to select the desired **CTCSS** tone frequency.
⑧ Push [FUNC] to return to frequency indication.

■ SELECT A TRANSMIT FREQUENCY OF REPEATER

① In standby,push left band's **[MAIN•BAND]** to select main band.
② Push left band's **[MAIN•BAND]** and hold for 1Sec. to select the frequency band of 136-174MHz and 400-480MHz etc.
③ Rotate **[DIAL]** to select a receive frequency of repeater according to the frequency step size.
④ Store the transmit frequency of repeater to the memory channel.

■ ACTIVATE THE TX TONE FUNCTION OF REPEATER

① Push [FUNC] to display the function guide.
② Push **[MENU]** (Right band's [VFO SCAN]) to display the MENU screen.
③ Rotate **[DIAL]** to select " **DUP / TONE...** " , then push **[MHz•TUNE]**.
④ Rotate **[DIAL]** to select " **SQUELCH TONE** ", then push **[MHz•TUNE]**.
⑤ Rotate **[DIAL]** to select " **TX-SQUELCH TONE** ", then push **[MHz•TUNE]**.

```
 MENU      RX-SQUELCH TONE       OFF
           TX-SQUELCH TONE      TONE
 SUBTONE
 DUP/TONE
 01/02
                      TONE  POL     BACK
```
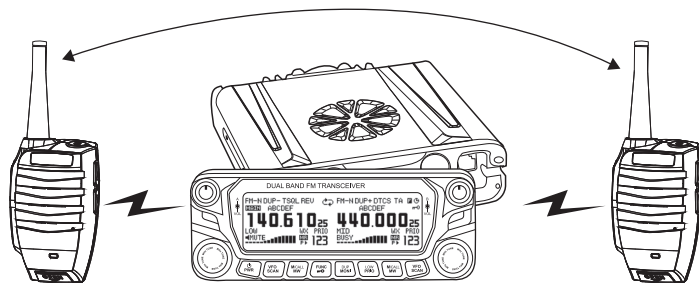
⑥ Push **[TONE]** to activate the tone function.
⑦ Rotate **[DIAL]** to select the desired repeater tone frequency.
⑧ Push [FUNC] to return to frequency indication.

■ ACTIVATE THE SAME-BAND REPEATER OR CROSS-BAND REPEATER FUNCTION

① Push ⎡FUNC⎤ to display the function guide.

② Push **[MENU]** (Right band's ⎡VFO SCAN⎤) to display the MENU screen.

③ Rotate **[DIAL]** to select " **SET MODE** " , then push **[MHz•TUNE]**.

④ Rotate **[DIAL]** to select " **REPEATER TYPE** ", then push **[MHz•TUNE]**.

```
     MENU        FAN CONTROL         OFF
                 SQL DELAY         SHORT
    SET MODE     AUTO REPEATER       OFF
                 REPEATER TYPE       OFF
    07/21        BEAT SHIFT          OFF

                                    BACK
```

⑤ Rotate **[DIAL]** to select same-band repeater or cross-band repeater.

⑥ Push ⎡FUNC⎤ to return to frequency indication.

OFF : The repeater function is turned off.(default)

S-RPT : The repeater function is selected for same-band repeater.(only 446MHz)

X-RPT : The repeater function is selected for CROSS-band repeater.

NOTE:
- Auto repeater function is turned on, all the keys will not be in operation, at this time, push ⎡FUNC⎤ hold for 1 sec. to turn off the repeater function.
- In the same-band repeater mode, the user must set the right band for the repeater reception frequency, the left band for the repeater transmitting frequency, the transmitting frequency and the receiving frequency must be more than 10MHz.
- The receiving frequency setting of the same-band repeater must be positive and negative 3MHz at the factory frequency 446MHz Range.
- The same-band repeater according to user needs, in the factory or by the dealer configuration. Default:446MHz

⑬

TROUBLESHOOTING

■ MAINTENANCE

◇ GENERAL INFORMATION

This product has been factory aligned and tested to specification before shipment. Under normal circumstances,the transceiver will operate in accordance with these instructions. All adjustable trimmers, coils, and resistors in the transceiver were preset at the factory. They should only be readjusted by a qualified technician who is familiar with this transceiver and has the necessary test equipment. Attempting service or alignment without factory authorization can void the transceiver warranty.

When operated properly, the transceiver will provide years of service and enjoyment without requiring further realignment. The information in this section gives some general service procedures requiring little or no test equipment.

◇ SERVICE

If it is ever necessary to return this equipment to your dealer or service center for repair, pack it in its original box and packing material. Include a full description of the problems experienced. Include your telephone number, fax number, and e-mail address (if available) along with your name and address in case the service technician needs to call you for further information while investigating your problem. Do not return accessory items unless you feel they are directly related to the service problem.

You may return this product for service to the authorized dealer from whom you purchased it, or any authorized service center. A copy of the service report will be returned with the transceiver.Please do not send subassemblies or printed circuit boards; send the complete transceiver.

Tag all returned items with your name and call sign for identification. Please mention the model and serial number of the transceiver in any communication regarding the problem.

◇ SERVICE NOTE
If you desire to correspond on a technical or operational problem, please make your note short, complete, and to the point. Help us help you by providing the following:

• Model and serial number of equipment
• Question or problem you are having
• Other equipment in your station pertaining to the problem
• Meter readings
• Other related information (menu setup, mode, frequency, key
   sequence to induce malfunction, etc.)

> ⚠️ **CAUTION**
>
> Do not pack the equipment in crushed newspapers for shipment! Extensive damage may result during rough handling or shipping.

Note:

◆ Record the date of purchase, serial number and dealer from whom this product was purchased.

◆ For your own information, retain a written record of any maintenance performed on this product.

◆ When claiming warranty service, please include a photocopy of the bill of sale, or other proof-of-purchase showing the date of sale.

◇ CLEANING

The keys, controls, and case of the transceiver are likely to become soiled after extended use. Remove the controls from the transceiver and clean them with a neutral detergent and warm water. Use a neutral detergent (no strong chemicals) and a damp cloth to clean the case.

14

■ TROUBLESHOOTING

The problems described in the following tables are commonly encountered operational malfunctions. These types of difficulties are usually caused by improper hook-up, accidental incorrect control settings, or operator error due to incomplete programming. These problems are usually not caused by circuit failure. Please review these tables and the appropriate section(s) of this instruction manual before assuming your transceiver is defective.

Problem	Problem Cause 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.	The supply voltage is too low.
(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.
(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.	Microphone connection is poor. Connect microphone properly. Antenna connection is poor. Connect antenna properly.

⑭

SPECIFICATIONS

General

Frequency Ranges Radio

A/B Band RX: 136-174MHz
200-260MHz
400-470MHz
470-520MHz

B Band RX: 64-108MHz (FM Radio)
113-137MHz(Air Band)
TX: 144-148MHz(136-174MHz*)

430-450MHz(400-470MHz*,470-520MHz*)

Channel Steps	2.5,5,6.25,10,12.5,15,20,25,50,100KHz
Frequency Stability	±2.5ppm(140F to +1400F [-10°Cto +60°C)
Repeater Shift	±600KHz(144MHz)
	±1.6/5.0/7.6MHz (430MHz)
Emission Type	F1D, F2D, F3E,
Antenna Impedance	50Ω
Supply Voltage	Nominal 13.8V DC, Negative Ground
	Operating 12-13.8V Negative Ground
Current Consumption	0.5 A (Receive)
	10 A (TX, 144 MHz 50W)
	10 A (TX, 430 MHz 40W)
Operating Temperature	-40F to +1400F (-20°C to +60°C)
Case Size (WxHxD)	6" x 2.3" x 1.3" (150x57x33mm)
	(Panel W/O knob & connectors)
	6"x6"x1.8"(153x150x45mm)
	(Rear chassis W/O connectors)
Weight	3.71bs (1.6kg)

Transmitter

RF Power Output	UHF: 40W/25W/5W VHF: 50W/25W/5W
Modulation Type	Variable Reactance F1 D, F2D, F3E
Maximum Deviation	±5KHz
Spurious Emission	At least 60 dB below
Microphone Impedance	2kΩ

Receiver

Sensitivity Radio Band

R Band: 2uV TYP for 12dB SINAD(64-108MHz,WFM)
0.8uV TYP for 10dB SN (113-134MHz, AM)

L&R Band:
0.2uV for 12dB SINAD (136-174MHz,FM)
0.2uV TYP for 12dB SINAD(200-260MHz,FM)
0.2uV for 12dB SINAD (400-470MHz, FM)
0.2uV TYP for 12dB SINAD(470-520MHz,FM)

Squelch Sensitivity	0.16uV (144/430MHz Band)
Selectivity	NFM, AM 12KHz/30KHz(-6dB/-60dB)
AF Output	6W@4Ω for 10% THD(@13.8V) EXP SP
	3W@8Ω for 10% THD(@13.8V) Normal EXP SP/CH
AF Output Impedance	4-16Ω

Note：All stated specifications are subject to change without notice or obligation.

ATTACHED LIST

Table 1 :

CTCSS TONE FREQUENCY(HZ)

1	67.0	21	131.8	41	203.5		
2	69.3	22	136.5	42	206.5		
3	71.9	23	141.3	43	210.7		
4	74.4	24	146.2	44	218.1		
5	77.0	25	151.4	45	225.7		
6	79.7	26	156.7	46	229.1		
7	82.5	27	159.8	47	233.6		
8	85.4	28	162.2	48	241.8		
9	88.5	29	165.5	49	250.3		
10	91.5	30	167.9	50	254.1		
11	94.8	31	171.3				
12	97.4	32	173.8				
13	100.0	33	177.3				
14	103.5	34	179.9				
15	17.2	35	183.5				
16	110.9	36	186.2				
17	114.8	37	189.9				
18	118.8	38	192.8				
19	123.0	39	196.6				
20	127.3	40	199.5				

Table 2 :

DCS CODE

1	017	23	122	45	244	67	346	89	503	111	731
2	023	24	125	46	245	68	351	90	506	112	732
3	025	25	131	47	246	69	356	91	516	113	734
4	026	26	132	48	251	70	364	92	523	114	743
5	031	27	134	49	252	71	365	93	526	115	754
6	032	28	135	50	254	72	371	94	532	116	765
7	036	29	143	51	255	73	411	95	534		
8	043	30	145	52	261	74	412	96	546		
9	047	31	152	53	263	75	413	97	565		
10	050	32	155	54	265	76	423	98	606		
11	051	33	156	55	266	77	425	99	612		
12	053	34	162	56	271	78	431	100	624		
13	054	35	165	57	274	79	432	101	627		
14	055	36	172	58	305	80	445	102	631		
15	065	37	174	59	306	81	446	103	632		
16	071	38	205	60	311	82	452	104	645		
17	072	39	212	61	315	83	454	105	654		
18	073	40	217	62	325	84	455	106	662		
19	074	41	223	63	331	85	462	107	664		
20	114	42	225	64	332	86	464	108	703		
21	115	43	226	65	343	87	465	109	712		
22	116	44	243	66	345	88	466	110	723		

144/440 MHz 50W FM Transceiver

INSTRUCTION MANUAL

DUAL BAND FM TRANSCEIVER

FM-N DUP- TSQL REV   FM-N DUP+ DTCS TA
MAIN   BCDEF   ABCDEF
140.610₂₅ 440.000₂₅
LOW   WX PRIO   MID   WX PRIO
MUTE   123   BUSY   123

PWR VFO SCAN M/CALL MW FUNC DUP MONI LOW PRIO M/CALL MW VFO SCAN

CE FC (!) ✓ RoHs CQC