User Manual

Welcome to use our Amateur radio

1. Precautions

Please observe the following precautions when using this product to avoid fire, personal injury, damage to equipment or other accidents:

① Do not use the equipment in inflammable and explosive environment (such as gas, dust, smoke, etc.), please turn off the equipment when refueling or parking at the gas station.

② Do not place the equipment in dusty, wet or splashed places or on uneven surfaces.

③ Please use this equipment away from interference sources (such as TV, computer, distribution cabinet, etc.).

④ Do not transmit while charging.

⑤ Don’t use radio while driving.

⑥ Do not expose the device to direct sunlight for a long time or place it near the heating device.

⑦ If the equipment emits abnormal odor, it must be turned off immediately. After ensuring safety, it should be sent to the nearest maintenance site for inspection.

⑧ Do not modify or adjust this equipment for any reason.

⑨ Please obey the local laws and regulations.

Disclaimer: The customer shall bear all the responsibility for the equipment failure or accident caused by the customer's violation of the above precautions, and the company shall not be responsible for it.

2. Product Checking

Thanks for choosing our Amateur radio. Please unbox and check whether the following accessories are included and well-packed. If there's anything missing or damaging after unboxed, please contact your local distributor.

Note: Public can` not use this Amateur device.

NO	Item	Quantity
1	Amateur radio	1
2	Antenna	1
3	Li-ion Battery	1
4	Charger	1
5	Belt Clip	1
6	User Manual	1
7	Guarantee Card	1
8	adapter	1

3. Familiar with Radio

3.1 Radio Diagram

① Antenna ② PTT ③ Side-key 1 ④ Side-key 2 ⑤ Battery

⑥ Short/Medium/Long Wave FM Antenna(Optional) ⑦ ON/OFF/Volume Knob ⑧ Indicator

⑨ Alarm Button ⑩ Display Screen ⑪Keypad ⑫MIC ⑬Speaker ⑭Earpiece Jack

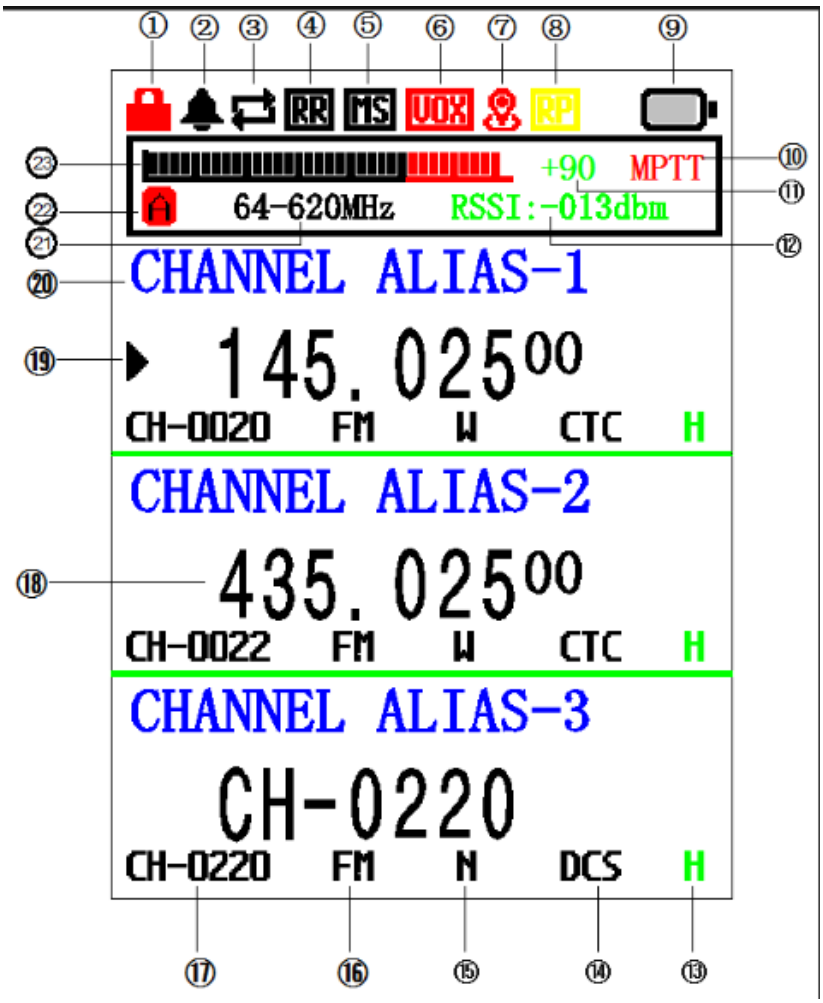
⑮ Type-C Charging Port and Programmable Jack

3.2 Keypads Instruction

Keys	Function Descriptions
PTT	Transmit or Exit
Alarm Key	Definable long press and short press functions
Side-key 1	Can be selected as PTT-2 by choosing the option 【Multi PTT Switch】 in the menu, and definable function is not available
	Definable long press and short press functions
Side-key 2	Definable long press and short press functions
	Can be selected as PTT-3 by choosing the option 【Multi PTT Switch】 in the menu, and definable function is not available
—	Short press to confirm or enter into menu
	Long press to enter DTMF inputting while under standby status, or to exit while under menu interface
	DTMF ： A
▲	Switch upwards
	DTMF ： B
▼	Switch downwards
	DTMF ： C
——	Short Press: Switch ABC channel, exit menu, cancel operation
	DTMF ： C
0	Short press:input number 0
	Long press:definable functions
	DTMF：0
	To input Number 0 or Space Bar
1	Short press:input number 1

	Long press:definable functions
	DTMF：1
	to input Number 1/English Letters/Chinese Characters
2-9	Short press:input number 2-9
	Long press:definable functions
	DTMF：2-9
	to input Number2-9/English Letters/Chinese Pinyin Codes
*	Short press: In channel mode, switch the display channel number or display frequency
	long press to lock the keypad
	DTMF：*
	Text input: Delete text
#	Short press：switch working mode from VFO frequency mode/channel mode/zone mode
	Press and hold to jump to the transmit frequency input menu
	DTMF：#
	Text input: Enable or disable text input, and switch the text input method

3.3 LCD Icon Display



1. Keypad Lock 2. Beep 3.Scanning 4. R-Talk around /T-Freq Inverse
5. multi standby 6. VOX 7.GPS 8. Cross-segment relay
9. Battery icon 10.multiple PTT functions 11. Received Signal Strength
12. Received signal field strength 13.Power
14. CTC analog channel with sub-tones/DCS digital sub-tones/MUT decoded non-standard subphonetic code/ENCENC digital channel with encrypted sub-tone
15. W/N Wide/Narrow Band 16. FM RX/AM RX
17. CH-XXXX channel number in channel mode/ZONE-XXX Area ID in area mode
18. Operating frequency/operating channel 19. Main frequency icon 20. Channel name
21. Operating frequency range 22. A/B/C main frequency area 23. Received signal table

4. Function Description

4.1 Operating Band Selection

This machine divides the call frequency band into three frequency bands, different from the short-wave radio (short-wave radio uses the middle antenna port), the three frequency bands of the call use the left-most main antenna port for transceiver. Please go to the menu [Intercom Settings] -> [Working band] to select a different working band. After confirming the selection, restart the machine. Please replace the antenna of the corresponding frequency band for talking operation to avoid component damage caused by mismatch between the antenna and the transmitting frequency band.

4.2 Frequency Input

① switch working mode to VFO frequency mode by pressing # key

② Enter the frequency value through the numeric keyboard, and enter 6 or 8 digits to complete the input operation. Select "Set mantissima to 0" from the menu "Intercom Settings" -> "Frequency Input Mode" to enter 6 digits to complete the input operation, and select "Complete input" to enter 8 digits to complete the input operation.

4.3 Input Repeater Frequency

Method 1

① Enter into Menu 【Channel Set】->【Offset Freq】 to input frequency difference via number keypads.

② Enter into Menu 【Channel Set】->【Offset DIR】to set frequency upwards and downwards.

Method 2

Long press # button to enter into 【TX Frequency】and imput TX frequency, press— to confirm then go back to previous menu. Press ▲ to set CTCSS/DCS.

4.4 Transmitting

① Press the PTT key, and the device will initiate a call at the current frequency, while the indicator light will turn red.

② If the menu item 【Key Definition】 -> 【Multiple PTT Switches】 is enabled, the shortcut functions of side key one and side key two will be disabled. When side key one is pressed, transmission will occur on the B frequency band; when side key two is pressed, transmission will occur on the C frequency band.

4.5 Receiving

The indicator lights up green while receiving. If there is no RX sub-tone, or the sub-tone matches ,the speaker works.

4.6 UV Inter-segment Transfer

Define a key as a "transfer switch". Pressing this key or selecting "Bridge Mode" in the menu [Walkie-talkie Settings] will enable the cross-segment bridging mode. In this mode, Channel C is disabled and only Channels AB are used for UV differential transmission. The signal received by Channel A will be forwarded out using the frequency of Channel B, and the signal received by Channel B will be forwarded out from Channel A.

In the menu [Walkie-talkie Settings] -> [Bridge Monitoring], you can choose whether to receive the voice calls being relayed by this device.

4.7 DTMF Function

1) DTMF Inputting and Sending

① Long press ━ to enter into DTMF inputting interface while under standby status.

② Press numeric keys to input DTMF codes,short press the secondary side key briefly to delete the last code.

③ Press PTT to call, the device will send DTMF code to receiver after appointed delay time

2) While the device enter into receiving status, the display will show up the sender's DTMF code if turn on DTMF decoding.

3) Press keypads to send relative DTMF code while under analog transmitting status.

4) DTMF Remote Monitor

① Set up a DTMF Monitor code and turn on 【DTMF Control】

② other radios send DTMF code with same monitor code to this radio.

③ After decoding successfully, the radio will transmit for 60 seconds automatically to make remote monitor happen.

5) DTMF Stun/Kill/Activate

① set up a DTMF code for Stun/Kill/Activate, and turn on 【DTMF Control】

② Other radios will do Stun/Kill/Activate to this radio when they send relative DTMF code.

The radio cannot be use until receive activate code once it is in Kill status. The radio can receiving, but cannot input anything via keypad or transmitting once it is in Stun status.

Note: should set up Activate code once Stun/Kill code is set up, or the device cannot be activated.

4.8 Text Input

1) Press # to switch inputting methods, press * to delete inputting when under text input status.

2) Press number keys 【123】 to input numbers

3)English Letters Inputting 【AB】【abc】

① Number 2-9 can input relative English letters, press Number 0 to input space, Number 1 to input English symbols.

② Press same button to switch to different letters.

4) Pinyin input method (Pinyin 1/ Pinyin 2)

① 【pin 1】 is a common Chinese character， 【pin 2】 is a large character library, containing various rare characters and traditional Chinese characters；

② Press the numeric keypad to input pinyin, and by using the up and down keys, you can switch between pinyin selections. Press the— key to confirm the selection and enter the character selection.

③ By using the up and down keys, you can switch the selected characters, and press the— key to confirm the selection.

4.9 Function of Definable keys

【Monitor】 Enter into receiving and playing status once trigger this key.

【Power】To switch power of current channel.

【Scanning】Press this button to enter into scanning status, and press arbitrary keys to exit.

【VOX】After pressing the trigger button, the voice control transmission function can be enabled or disabled.

【Squelch】press this button to shift to 【Squelch Level】to choose the squelch value.

【Freq Step】press this button to enter into 【Freq Step】to choose the value.

【Multi Standby】 To turn on/off dual standby. The power saving mode is invalid once the dual

standby turns on.

【TX Priority】 To switch priority RX to 【Edit】or【Busy】. Once set up to Busy status, the main frequency will shift to the calling frequency automatically when the calling ends.

【Roger Beep】 To switch the RX end tone types.

【FM Radio】

① Press button to enter into FM status, press PTT to exit.

②Press # button to switch FM modulations, there are four types to switch from : USW(Ultra Short Wave:64-108MHz)/SW(Short Wave: 2.3-26.1MHz)/MW(Medium Wave: 520-1710KHz) /LW（Long Wave: 153-279KHz）.

③ Press # button to switch from FM modulation types. USW is fixed to FM modulation and cannot change. Other wave bands can switch to AM/USB/LSB/CW.

④ Short press * to switch inputting methods, when ◂ shows to FM frequency, can input frequency value manually. Press * button to switch to relative data, press ▲/▼ to switch data value(input channel value to switch channel number directly)

⑤ Long press*to enter the search station mode. Press any key to exit the search station mode. When the radio is not in search station mode, long press the key 0 to switch the search direction.

Note: when use single side band (USD/LSB) modulation, if there is sharp sound, turn down BFO value. If there is deep sound, turn up BFO value.

【Talk around】To switch repeater frequency to Talk-Around or Frequency Reverse. To transmit at RX frequency under Talk-Around status. To interchange frequency of RX and TX under frequency reverse mode.

【Emergency Alarm】Press the button to enter into emergency alarm status and make an alarm sound, press arbitrary keys to exit.

【Send Single Tone】 Press this button to transmit a single frequency signal at current frequency.

【Freq Detect】【CTC/DCS Scan】

① press this button to enter into frequency detecting or remote sub-tone decoding mode, and the device will scan the RX signal nearby.

② press * button to switch from frequency detecting to remote sub-tone decoding.

③ press ═ or PTT to exit during frequency detecting, press # to switch detecting bands.

④ Press ═ to re-detect after detecting done. Press ━ to save detecting results to VFO channels, and return to VFO standby mode. Press PTT to transmit signals.

【Spectrum Mode】

① press this button to enter into spectrum scanning mode, press * button to exit;

② Press * button to enter into inputting status, there are 3 inputting items, central frequency is at upper-left, SPACE means step space which is frequency spacing of adjacent waves, the unit is KHZ. DECAY means amplitude attenuation, and the whole spectrum height drops so that to investigate the difference between main signal and adjacent signal.

③ Press ▲/▼ to switch the cursor position. The cursor is at the bottom of the display. Below, the frequency value corresponding to the cursor's position will be displayed synchronously, along with the RSSI- signal strength，NOISE-signal noise strength，GLITCH-signal strength of adjacent channels.

【Deep Sleep】Press this button to enter into low energy consumption status, press this button again to activate or the shutdown timer exceeds the APO, the radio will turn on again. The system time doesn’t have maintenance function, if want to keep the system time under shutdown status, please set up as Deep Sleep function to make the radio into dormancy status.

【Status Inquiry】 Press the trigger button to query the current battery voltage and other status information.

【Storage Channel】 Press the trigger button to jump to the "Save Channel" menu to save the channel data.

【Demodulation Mode Switching】 Switch the current channel to AM or FM demodulation mode. The AM mode is generally used for receiving information in the aviation frequency band.

【NOAA Mode】press this button to enter into NOAA scanning mode, and switch NOAA channels via channel knob. The radio will start to scan NOAA automatically when not any operation for 6S. The followings are NOAA frequencies.

1	162.550	7	162.5250
2	162.400	8	161.650
3	162.475	9	161.775
4	162.425	10	161.750
5	162.450	11	162.000
6	162.500		

【Backlight On-off】Press to turn on/off backlight.

【Backlight Brightness】Adjust the brightness of the display's backlight.

【Keyboard Light Switch】Turn on or off the backlight of the keyboard.

【Transfer Switch】Controls the activation or deactivation of UV differential transfer function.

5. Menu Specifications

5.1 Radio Setting

【Name/Call Sign】To change the alias of this radio,can set up as the owner's alias or calling number. When set up as 【Send Radio Name】 in menu list 【Analog Set】->【TX End Tone】,the alias of this radio will be sent out to receiver's after analog calling ends.

【Lock Timer】The keypad will lock automatically when there is not any operation of the radio within the appointed time while under standby status. Long press * button to unlock the keypad.

【Light Timer】To set up the shutdown time of backlight. Set up as 【Off】then the radio will turn off the timer, the backlight no longer turn off automatically.

【Menu Exit】The radio will exit menu interface automatically once there is no any operation within appointed time.

【Save Mode】To save power consumption while set up the Power Saving function. But there is delay for RX ,omitting or missing messages under power saving status.

【Scan Mode】 Set up as 【CO】,the radio will resume scanning once the received signal ends. Set up as【TO】, the radio will resume scanning after it receives signal and stay for a while. Set up as 【SE】,the radio stops scanning once it receives signals.

【Scan Direction】Scanning upwards and downwards.

【Scan Dwell】To set up the signal stay time while under 【TO】status.

【Scan Return】Set up as 【Original CH】 to return to original status after scanning done. Set up as 【Current CH】to stay at current channel after scanning done.

【Alarm Type】Set up as 【Local Alarm】to make an alarm sound once trigger alarm. Set up as 【Remote Alarm】to send alarm signals to remote radio and this radio doesn't make any sound itself. Set up as 【Local + Remote】this radio makes an alarms sound and send alarm signals to

remote radios while trigger this function.

【Working Frequency switch】After the switch, the walkie-talkie will restart. Please promptly replace the corresponding frequency band's RF antenna.

【Multi-frequency Standby】 After enabling, it will simultaneously monitor the signal reception of the ABC three frequency bands. However, at the same time, only one can enter the receiving state.

【Relay Mode】 Enable or disable UV differential conversion for relay. When enabled, the C frequency band is prohibited for use.

【Relay Monitoring】 Whether this device is monitoring the call signal being relayed

【Frequency Input Mode】When setting to "Tail Number Zero", the input frequency only requires entering 6 digits to complete the input; when setting to "Full Input", the input frequency must be entered as an 8-digit number.

【Save CH】 Copy current channel to appointed channel and save it .

【Delete CH】Delete the data of selected channel.

【Initialization】The frequency data will return to the last programming status.

5.2 Definable Key

【Multiple PTT Switching】 After selecting "ON", side key one will be used as PTT-2. Pressing side key one will transmit signals in the B frequency band. The custom function set for side key one will be invalid. Side key two will be used as PTT-3. Pressing side key two will transmit signals in the C frequency band. The custom function set for side key two will be invalid.

5.3 Analog Communication Setting

【SQ Level】The higher the value, the more difficult to turn on receiving.

【Tone Freq】 To set up single tone frequency of definable function 【Send Tone】.

【MIC Gain】To adjust the MIC receiving sensibility. The higher the value , the more sensibility the MIC.

【SPK Gain】To adjust the speaker's volume. The higher the value, the louder the speaker. To avoid audio distortion, please don't turn up the speaker highly.

【Adjacent Channel Limiting】When listening to the signals from some machines with excessive frequency offset, the communication may be intermittent. In such cases, you can increase the adjacent channel suppression threshold level.

【DTMF Delay】 If DTMF tone is needed, it will be sent out at appointed time.

【DTMF Interval】 To set up the interval of two DTMF codes.

【DTMF Duration】To set up the lasting time of individual DTMF code.

【DTMF Mode】To set up sending time of DTMF code. The radio will not send DTMF code while transmitting, when the radio set up as 【Off】.

【DTMF Select】To send one of 16 preset DTMF codes while transmitting.

【DTMF Display】The received DTMF code will show up on the display once the radio set up as 【On】.

【DTMF TX Gain】【DTMF RX TH】There are difficulties while decoding DTMF codes of different brands radios. By adjusting the value of these two options,the DTMF codes of different brand radios can be compatible. Encode gain 64 and decode threshold 24 are recommended.

【DTMF Control】Other radios can take charge of this radio by sending same DTMF code of monitor/Stun/Kill/Activate, when the radio set up as 【On】.

【Refresh Time for Transmitting Sound Pressure】 Changes the refresh time interval of the sound pressure bar when transmitting.

【Refresh Time for Receiving Field Strength】 Changes the refresh time interval of the field strength table. When receiving weak signals, if the refresh speed of the field strength table is too fast, it may introduce interference sounds. In such cases, you can appropriately increase the refresh time interval of the field strength.

【Temporary Debugging】If you want to adjust the receiving sensitivity, enable "Temporary Receiving Threshold Activation" and then set the "Temporary RSSI Threshold" and "Temporary Noise Threshold". A higher RSSI value makes receiving and activation harder, while a higher Noise value makes it easier.

If you need to adjust the transmission power, please enable the [Temporary Power Unlock], and then adjust the power tuning values for different frequency bands. When the tuning value exceeds a certain threshold (which varies for each device), further increasing it may only raise the current without boosting the power, and it can easily damage components such as the power transistor. Therefore, it is not advisable to adjust it too much.

Note: Users who are not familiar with the technical specifications of the walkie-talkie should not use the temporary adjustment function, as it may cause damage to the components.

5.4 Channel Setting

【CTC/DCS】【RX CTC/DCS】【TX CTC/DCS】 To set up sub-tone of current channel. To switch the types via * key.

【Set TX Freq 】 to set TX frequency value while need to set repeater frequency and no need to set【Freq Step】 and【Freq Direction】

【DCS Encrypt】 choose【Encrypt 1/2/3】to encrypt standard DCS and only available for DCS. Choose【Mute Code】then the preset DCS is invalid and use this【Mute Code】to be current DCS.

【Mute Code】 via one-click privacy can detect non-standard DCS of other radios.

【Scan Add】 Set up as 【Remove】,the radio will not scan this channel while scanning.

【Offset Dir】 Set up 【Offset Freq】before setting up frequency direction. When selects

【Upward】， the TX frequency = RX frequency + frequency difference. When selects

【Downward】， the TX frequency = RX frequency - frequency difference【Offset Freq】Set up frequency difference as 0, if need to turn off the frequency difference of current channel.

5.5 Zone Setting

It has 256 zones and can be editable. Press # key to select or cancel channels.

5.6 FM Radio

【RX Standby】 set up as【ON】, the radio can standby the calling signal of main channel while under FM radio status.

【Channel List】there are 128 preset FM radio channels, choose the needed channel and press — to confirm. Can enter into Edit Name , or set the needed channels to current FM channel. （this operation will turn on the FM radio automatically, and enter into FM radio interface, and channel information is editable under FM status）

5.7 Time Management

【APO】To 【On】or【Off】the auto shutdown function.

【APO Timer】If this function is activated and not do any actions on the radio , the radio will shutdown automatically when activate this function.

【AWU】 choose 【ON】/【OFF】to activation function automatically.

【AWU Timer】When the APO timer reaches the preset AWU timer, the radio stops dormancy and

back to working status.

6. Specifications

General Part	
Frequency Range	FM radio FM: 64-108MHz SW: 2.0-30.0MHz MW: 520-1710KHz LW: 153-279KHz RX/ Scanning: 108-136MHz,136-174MHz, 220-260MHz, 350-390MHz, 400-520MHz TX:144-148MHz, 420-450MHz(Amateur Band)
Channel Capacity	1024 Channels +3*VFO channels
Channel Spacing（W/N）	25kHz/12.5kHz
Voltage	7.4V DC
Working Mode	Same frequency simplex,different frequency simplex
Antenna	Removable Antenna
Frequency Stability	±2.5ppm
Working Temperature	－20～ ＋60℃
Dimension	149 X 64 X 37　　approx 307g
Transmitting	
Modulation Mode	F3E
Maximum deviation（W/N）	≤5KHz /≤2.5KHz
SNR（W/N）	-45dB/ -40dB
TX Current	≤2500mA
Receiving	
Sensitivity（W/N）	0.22μV/ 0.25μV　　12dB SINAD
Inter modulation（W/N)	65dB/ 60dB
Audio Distortion	＜5％
Audio Output Power	≤1W（16Ω）
RX Current	≤350mA
Standby Current	≤100mA

Note: The above parameters are subject to change without prior notice!

Company Name: Iradio Electronics Co., Ltd.
Address: No.16 Daxiamei Industrial Area, Nan'an, Quanzhou City, China

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
---Reorient or relocate the receiving antenna.
---Increase the separation between the equipment and receiver.
---Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
---Consult the dealer or an experienced radio/TV technician for help.
SAR tests are conducted using standard operating positions accepted by FCC with the device transmitting at its highest certified power level in all tested frequency bands, although the SAR is determined at the highest certified power level, the actual SAR level of the device while operating can be well below the maximum value. Before a new model is a available for sale to the Occupational/Controlled environment it must be tested and certified to the FCC that is does not exceed the exposure limit established by the FCC. Tests for each product are performed in positions and locations as required by the FCC.
For body worn operation, this device has been tested and meets the FCC RF exposure guidelines when used with and accessory designated for this product or when used with and accessory that contains no metal.
To maintain compliance with FCC RF exposure guidelines hold the transmitter and antenna at least 1 inch (2.5 centimeters) from your face and speak in a normal voice, with the antenna pointed up and away from the face.
The equipment complies with FCC radiation exposure limits set forth for and uncontrolled environment. In order to comply with the FCC RF exposure requirement, the antenna installation must comply with following:
Users must be fully aware of the hazards of the exposure and able to exercise control over their RF exposure to qualify for the higher exposure limits.
Your wireless hand-held portable transceiver contains a low power transmitter. This product sends out radio frequency (RF) signals when the Push-to-Talk(PTT) button is pressed.

The device is authorized to operate at a duty factor not to exceed 50%.