

**SAMCOM**  
**TWO-WAY RADIO**

# CP-428

**Cost Effective  
Portable Radio**



► *Instruction Manual*

# INTRODUCTION

Thank you for purchasing our products. Combined the latest technology along with a sturdy mechanical frame, our radios provide cost-effective communications for the people who need to stay in touch with the working team such as retail stores, restaurants, campuses and schools, construction sites, manufacturing, shows and trade fairs, property and hotel management and more, they are the perfect communication solutions for all of today's fast-paced industries.

We sincerely appreciate your interest on our products, and strongly suggest you to read the instruction carefully. Your comment will be highly valued. Please read through the manual in order to get familiar with the device and learn the features of this model.

# MAIN FEATURES

- IP54 rating water resistance & dust protection
- Multi-icons & tri-color LCD display
- Front programmable panel for setting
- 200 programmable channels
- 50 CTCSS tones & 214 DCS codes
- High/low output power selectable
- Inbuilt VOX for hands-free communication
- CALL key with 10 tones selectable
- Channels scan
- Battery save
- Emergency alarm
- Time-out timer
- Busy channel lock-out
- FM radio receiver 76 - 108MHz
- PC programmable
- Firmware upgradable

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# SAFETY INFORMATION

Please read this information before using your radio. Failure to do so could result in personal injury, death, and/or damage to your radio, accessories and/or other property.

## Radio Care

### Caution

- Do not disassemble or modify the radio for any reason.
- Do not transmit while touching the antenna terminal or any exposed metallic parts of the aerial as this may result in burn.
- Please check and observe regulation in your country with regards to use whilst driving.

## End of Life Disposal

When your radio reaches the end of its useful life, please ensure that the unit is disposed of in an environmentally friendly way.

## Battery Care

### Precautions

- Turn the radio OFF before charging.
- Charge the battery pack before use.
- Do not recharge the battery pack if it is already fully charged as this will use one of its charge cycles and may shorten its life. Charge the battery in accordance with the instructions enclosed with your charger.
- Do not charge the radio and battery pack if they are wet.

The battery pack includes potentially hazardous components. Please:

- Do not disassemble or reconstruct battery.

- Do not short-circuit the battery.
- Do not incinerate or apply heat to the battery.
- Do not immerse the battery in water or get it wet by other means.
- Do not charge the battery near fires or under direct sunlight.
- Use only the specified charger and observe charging requirements.
- Do not pierce the battery with any object or strike it with an instrument.
- Do not use the battery pack if it is damaged in any way.
- Do not reverse-charge or reverse-connect the battery.
- Do not touch a ruptured or leaking battery.

If liquids from the battery get on your skin or into your eyes, immediately:

- Wash your eyes out with fresh water avoiding rubbing them.
- Seek medical treatment.

**Notes:**

- If a battery is not to be used for an extended period of time (several months) remove the battery pack from the equipment and store in a cool and dry location part charged. Do not fully discharge the battery before storage.
- Each charge cycle reduces the battery's life. Minimize the number of times you charge your battery especially in hotter environments which further shorten a battery's life.

# RADIO OVERVIEW

## Package Includes

1pcs radio

1pcs rubber antenna

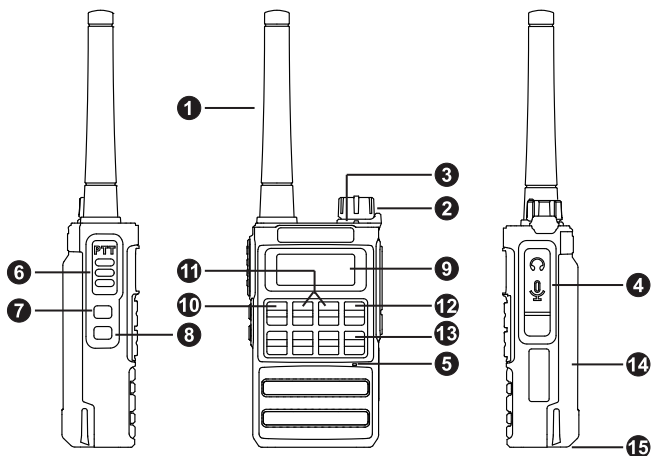
1pcs rechargeable Lithium-ion battery pack

1pcs AC adapter & rapid desktop charger kit

1pcs belt clip

1pcs user's manual

## At a Glance



### 1 – Antenna

Provide attached SMA rubber flexible antenna or another 50Ω impedance antenna.

Note: It may cause the damage to your radio if the antenna is connected inappropriately.



## 2 – On/Off/Volume Knob

Turn the radio ON or OFF and to adjust the radio's volume.

## 3 – LED Indicator

Give radio battery status, TX & RX, scan information.

## 4 – Audio Accessory Jack (Kenwood 2 Pin Connector)

Connect compatible audio accessories.

## 5 – Microphone

Speak clearly into the microphone when transmitting.

## 6 – PTT (Push-To-Talk) Button

Press and hold down this button to transmit and talk, release it to receive and listen.

## 7 – Side Button P1

Short press the button **P1** is 'Monitor' feature. Long press the button **P1** is 'Emergency Calling' feature.

## 8 – Side Button P2

Short press the button **P2** is 'Scan' feature. Long press the button **P2** is 'CALL' feature.

## 9 – LCD display screen

You will see the working channel frequency, name, number and various icons which stand for the selected functions.

## 10 – Key

Short press this key to enter the radio's menu mode and confirm the current sub menu item selection.

## 11 – / Navigation Keys

Press the two keys to select the desired channels under **Channel** mode or menu items when operating in menu mode.

## **12 – Key**

Short press this key is to cancel the current operation and back to standby mode. Long press it for about 2 seconds to activate the keypad lock.

## **13 – Alphanumerical Keypad**

## **14 – Lithium-Ion Battery Pack**

Radio comes equipped with a rechargeable Lithium-ion battery pack. This battery should be fully charged before initial use to ensure optimum capacity and performance. Batteries are designed specifically to be used with a supplied charger and vice versa.

## **15 – Battery Latch**

Push down battery latch to release battery pack.

# GETTING STARTED

## 1 - Install and Remove Battery Pack

### Installing Battery

1. Turn the radio OFF.
2. With the top side up on the battery pack, fit the tabs at the bottom of the battery into the slots at the bottom of the radio's body.
3. Press the top part of the battery towards the radio until a click is heard.

### Removing Battery

1. Turn the radio OFF.
2. Push down the battery latch and hold it while removing the battery.
3. Pull the battery away from the radio.

## 2 - Install and Remove Antenna

Screw the antenna into the connector at the top of the radio by holding the bottom of the antenna, and turning it clockwise until secure.

Rotate the antenna counter clockwise by holding the bottom of antenna.

## 3 - Install and Remove Belt Clip

### Installing Belt Clip

Align the screw eyelets of the belt clip with those on rear of radio and fasten the belt clip with enclosed screws.

### Removing Belt Clip

Loosen the screws to remove the belt clip.

## 4 - Charging the Battery Pack

To charge the battery pack, place it in the supplied desktop charger.

1. Place the desktop charger on a flat surface.
2. Insert the connector of the AC adapter into the charger port on the back of the desktop charger.
3. Plug the AC adaptor into a power outlet.
4. The charger is ready for charging if the indicator LED lights red for one second and turns off. If the indicator LED is flashing, the charger is not ready.
5. Place the battery into the charger aligning the battery slots with the charger guide rails.
6. The indicator LED lights red when charging. If the battery capacity is too low, the indicator LED flashes red. The battery first trickle charges and turns to normal charging automatically.
7. The battery is fully charged when the battery LED light is green. The charger stops charging automatically.

### Notes:

- When you charge a battery attached to the radio, turn the radio OFF to ensure a full charge.
- The estimated charging time of the battery with charger is about 4 hours.

# BASIC OPERATION

## Turn the Radio ON/OFF

To turn on the radio, rotate on the **On/Off/Volume** knob clockwise. The radio plays power up audio, displays current channel number or frequency on the screen.

To turn off the radio, rotate the **On/Off/Volume** knob counter-clockwise until you hear a 'Click' sound.

## Adjusting Volume

Turn the **On/Off/Volume** knob clockwise to increase the volume, or counterclockwise to decrease the volume.

**Note:** Do not hold the radio too close to the ear when the volume is high or when adjusting the volume.

## Working Mode

The radio has two working modes: **VFO** and **Channel**. Short press the **#** button to switch between **VFO** and **Channel** mode.

## Selecting a Channel

When the radio is under **Channel** mode, to select a channel, short press **▲ / ▼** key until you reach the desired channel. Each channel has its own frequency, privacy code and other settings.

## Frequency Adjust

Under **VFO** mode, short press **▲ / ▼** key until you reach the desired frequencies.

## Frequency Input by Keypad

Under **VFO** mode, you can input frequency directly via the alphanumerical keypad.

**Note:** The radio frequency input is limited by the step value

and scope of the frequency range. If the input frequency is beyond the frequency range or does not match the frequency step, it is invalid.

## Channel Selection Input by keypad

Under **Channel** mode, type number of 3 digits (001-199) to switch to the desired channel. If the input channel is not edited, the radio would emit error prompt and back to current channel. For example, if you input 001, then it gets channel 1st. You can input 030 to reach channel 30th, and 125 to get to reach channel 125th.

## Receiving a Call and Talking

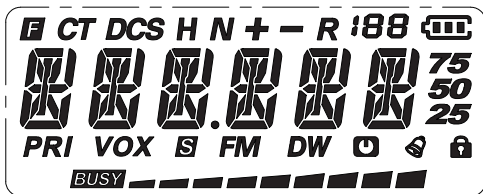
1. Select a channel by short pressing the [**▲**] / [**▼**] key until you reach the desired channel.
2. Make sure the **PTT** button is released and listen for voice activity.
3. The LED indicator stays solid green when the radio is receiving a call. And the screen will show signal strength.
4. To respond, hold the radio vertically 1 to 2 inches (2.5 to 5 cm) from mouth. Press the **PTT** button to talk; release it to listen.
5. When transmitting, the LED indicator stays solid red or yellow. (Red means high TX power level setting; Yellow means low TX power level setting)

## LED Indicators

Radio Status	LED Indicator
Low Battery	Red Heartbeat
Transmit (TX) in High Power	Solid Red
Transmit (TX) in Low Power	Solid Yellow
Receive (RX)	Solid Green
Scanning	Green Heartbeat
PC Programming/Reading Data	Red Heartbeat
PC Programming/Writing Data	Green Heartbeat









## LCD Display Screen

On the display screen, you will see various icons which stand for the selected functions. Here you will find the icons indicator as below.



ICON	Description
<b>CT</b>	Means current channel sets CTCSS tone.
<b>DCS</b>	Means current channel sets DCS code.
<b>H</b>	Means current channel sets high power.
<b>N</b>	Means current channel sets narrow band.
<b>+</b>	Means positive offset frequency.
<b>-</b>	Means negative offset frequency.
<b>R</b>	Means frequency reverse is activated.
<b>188</b>	Means channel number or menu number.
	Means battery power indicator.
	Means channel frequency or menu item.
<b>PRI</b>	Means the priority scanning is activated.
<b>VOX</b>	Means the VOX is activated.
<b>S</b>	Means battery save is activated.
<b>FM</b>	Means FM radio receiver is activated.
<b>DW</b>	Means dual watch is activated.
	Means auto power off is activated.
	Means the keypad tone is activated.
	Means keypad lockout.
	Means real time display receiving signal strength or power indicator.

## Save/Delete a Channel

1. Select the desired frequency, while operating in the **VFO** mode. Be sure to set up any desired CTCSS tone or DCS code, as well as any desired repeater offset. The power level may also be set at this time, if you wish to store it.
2. Press and hold  key for 2 seconds, and then the left top of the LCD displays 'F' icon.
3. Press  /  key to select the channel number you desire to store (from 1 to 199) on the right top.
4. Press  key to confirm and store the frequency into memory, and you will operate in the Channel mode.
5. Under **Channel** mode, turn off the radio, press and hold  key and turn on the radio, 'DEL?' will be displayed. Press  /  key to select the channel number you wish to delete, press  key twice to confirm. If you want to cancel, press **PTT** button to exit.



# ADVANCED OPERATON

## Monitor

This feature enables you to set squelch off and hear the calls with weak signal. Short press the side button **P1** to activate.

## Emergency Calling


This feature allows you to send an emergency alert to other users on the same channel. Other radios on the same channel will sound an emergency alert after received emergency signal. Long press the side button **P1** to activate, press **PTT** button to disable it.

## Scanning Channels

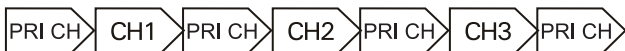
Scan allows you to hear conversations on all channels. When the radio detects a transmission, it stops scanning and goes to the active channel. This allows you to listen and talk to people in that channel without having to channel manually. If there are transmissions on another channel, you will not hear that activity once the radio has stopped scanning.

There are two scanning modes: normal and priority.

**Normal:** while in normal mode, short press **P2** side button to activate the channel/frequency scanning function. The radio will automatically scan from current channel through all the channels until an active channel is detected, the radio will stop scanning for 5 seconds.



**Priority:** when priority channel is pre-set through Menu 07 or programming software, you can activate priority scanning by pressing  key then **6** key. Right now the icon '**PRI**' will display on the screen. And the radio will start scanning from the priority channel first and then scans the other channels.

The scanning sequence is:






## FM Radio Receiver

This radio comes with the FM radio function.

Short press  key then **0** key to enter FM radio mode. To get your favorite radio frequency to listen, you can input frequency directly via the alphanumerical keypad as well. To exit the FM radio mode, short press  key then **0** key again.









**Note:** This feature may be invalid in some countries for local radio laws.

## Keypad Lock

Keep press the  key for about 2 seconds to activate keypad lock function and  will be displayed as confirmation. Only **PTT** button remain active. To disable this function, keep pressed again the  key for 2 seconds approx.

# MENU OPERATION

The general steps of menu operation are as follows:

- 1 - Press  key to enter the menu mode;
- 2 - Press  /  key to select the desired item;
- 3 - Press  key to enter the sub item;
- 4 - Press  /  key to select the desired setting;
- 5 - Press  key to confirm;
- 6 - Press  key to return back to the standby screen.

## Menu List

No.	Display	Instruction	Setting Contents
1	C-CDC	RX & TX CTCSS/DCS	OFF-254.1/D023-D754 N/I
2	R-CDC	RX CTCSS/DCS	OFF-254.1/D023-D754 N/I
3	T-CDC	TX CTCSS/DCS	OFF-254.1/D023-D754 N/I
4	POWER	TX power level	HIGH/LOW
5	TOT	Time-out timer	OFF/60S/120S/180S
6	SQL	Squelch level	0~9
7	PRI CH	Priority channel	CH-001~CH199
8	APO	Automatic power off	OFF/10M/20M/30M/1H/ 2H/3H
9	LIGHT	LCD backlighting mode	OFF/AUTO/ON
10	COLOR	LCD display color	ORANGE/BLUE/PURP LE
11	VOX	VOX sensitivity	OFF/LOW/MID/HIGH
12	PTT ID	PTT unit identification	OFF/ON
13	CALL T	CALL tone	TONE 1~10
14	BEEP	Keypad tone	OFF/ON
15	ROGER	Roger beep tone	OFF/ON
16	SAVE	Battery save	OFF/ON
17	BCLO	Busy channel lock-out	OFF/ON
18	STE	Squelch tail elimination	OFF/ON
19	SHIFTF	Offset frequency	0.000~80.000
20	SHIFT	Offset frequency direction	OFF/+/-

21	CHNAME	Edit channel name	----
22	DSPMOD	Channel display mode	FREQ/CH/NAME
23	STEP	Frequency step	2.5/5/6.25/10/12.5/25/50/100
24	BAND	Channel bandwidth	WIDE/NARROW
25	DW	Dual watch	OFF/ON

## Detail Function Introduction

### 01/02/03 – CTCSS/DCS (C-CDC, R-CDC, T-CDC)

CTCSS and DCS are functions that reject undesired signals on your channel. You will hear a call only when you receive a signal that contains a matching CTCSS tone or DCS code. If a call containing a different tone or code is received, squelch will not open and you will not hear the call. Likewise, when transmitting using CTCSS or DCS, the receiving station must have a matching tone or code to hear your call. Be aware that other parties can still hear your calls if they set up their radio with the same tone or code. It selects a CTCSS/DCS privacy code to be used when transmitting or receiving carrier for the current channel. No privacy code will be checked when carrier is received if “No CTCSS/DCS code” is chosen.

Procedure:

1) Press **■□** key to enter menu mode, then select No.1 ‘C-CDC’, No.2 ‘R-CDC’ or No.3 ‘T-CDC’ item.

2) Press side button **P1** to select among OFF, CTCSS and DCS.

**OFF:** No CTCSS/DCS code

**CTCSS:** 67.0 – 254.1Hz.

**DCS:** D023 – D754 N/I

3) Press side button **P2** to select DCS code phase between normal and inverted.

### 04 - TX Power Level (POWER)

Allows the user to select TX power level in which the radio

will operate on the current channel. Selecting '**LOW**' can extend the radio's battery life.

**LOW:** the value is 1 Watt. Used when communication in close proximity, and to keep the radio from transmitting into other geographical groups operating on the same frequency.

**HIGH:** The value is 4/5 Watts. Used when a stronger signal is needed to extend transmission distance.

**Note:** this item will be invalid in PMR version.

## **05 - Transmit Time-out Timer (TOT)**

The Time-out Timer prevents callers from using a channel for an extended duration. If you continuously transmit for the duration programmed (default is 60s), transmission will automatically stop and an alert tone will sound. To stop the tone, release the **PTT** button.

## **06 - Squelch Level (SQL)**

A squelch eliminates background noise. Higher level settings will keep the squelch 'closed' more tightly for quieter monitoring, but weak signals will not be heard. Lower settings allow weaker signals to 'open' the squelch but noise may also cause it to open. The radio has 10 (0~9) squelch levels:

0 – Squelch turns off (monitor on condition)

1 – Maximum sensitivity (minimum squelch)

9 – Minimum sensitivity (maximum/tight squelch)

## **07 – Priority Channel (PRI CH)**

Set the priority channel from all the memory channels. This channel will be detected always when priority scanning is activated.

## **08 – Automatic Power OFF (APO)**

There are **OFF/10MIN/20MIN/30MIN/1H/2H/3H** for selection.

While one of them is selected, the radio will automatically turn the power off when times out if none of the button is operated. The LCD screen shows '**APO**' icon when this feature is activated.

## **09/10 – LCD Backlighting Display Mode/Color (LIGHT, COLOR)**

There are **OFF/AUTO/ON** 3 options for backlighting mode selection.

**OFF:** the backlight is always turned off.

**AUTO:** after enabling the backlight, it lights for a while before quench automatically.

**ON:** the backlight is always turned on.

There are **ORANGE/BLUE/PURPLE** 3 options for display color selection.

## **11 – VOX Sensitivity (VOX)**

VOX is a speech control giving the possibility to transmit without using the radio PTT. The VOX sensitivity can be set in OFF and **LOW/MID/HIGH** 3 levels.

**LOW** stands for the lowest sensitivity; **HIGH** stands for the highest.

## **12 – PTT Unit Identification (PTT ID)**

A programmed tone sequence is used to control e.g. relays, repeater...

## **13 – Call Tone (CALL T)**

There are 10 groups of call tone selection.

## **14 – Keypad Tone (BEEP)**

If you enable this function, every time a button is pressed, you will hear a beep tone.

## **15 – Roger Beep Tone (ROGER)**

When the **PTT** button is released, the radio will beep to confirm to other users that you've finished your transmission and that they can start talking.

## **16 - Battery Save (SAVE)**

When it is activated, the radio decreases the amount of power used after no signal is present and no operations are being performed for 5 seconds. When a signal is received or an operation is performed, this feature turns off temporarily.

## **17 - Busy Channel Lock-out (BCLO)**

It prevents the radio's transmitter from being activated if a signal strong enough to break through the 'noise' squelch is present. It prevents users from disrupting others' talking who are transmitting on the same channel frequency.

## **18 – Squelch Tail Elimination (STE)**

A burst of noise (squelch tail) heard after a transmission ends. When **STE** is activated, the radio will send a sub-audible tone to be transmitted at the end of a transmission which cause the receiving radio to mute its speaker before loss of a carrier is detected. Muting the speaker eliminates unwanted noise during loss of carrier detection.

## **19/20 – Offset Frequency and Direction (SHIFTF, SHIFT)**

These two items are used to determine the difference between TX and RX frequency.

The offset frequency range is 00.000-80.000MHz.

**Note:** this function can only be enabled in **VFO** mode.

## **21 – Channel Name Editing (CHNAME)**

When you operate in Channel mode, you can edit the current channel name here.

Procedure:

- 1) Press **■□** key to enter menu mode, then select No.21 'CHNAME' item.
- 2) Press **▲ / ▼** key to edit 1st position content.
- 3) Press **▼** key to move forward to next position. Then repeat last step.
- 4) Press **▲** key to move backward to previous position and modify content if necessary.
- 5) When finish 6 positions editing, press **■□** key to confirm and exit.

**Note:** this function can only be enabled in **Channel** mode.

## 22 – Channel Display Mode (DSPMOD)

There are 3 display modes as channel frequency + number, channel number and channel name in total for option.

**FREQ:** Frequency + Channel number display. Short press the **0** key to switch into **VFO** mode.

**CH:** Channel number display.

**NAME:** Channel name display. When a channel is not named LCD displays its channel number instead.

**Note:** this function can only be enabled in **Channel** mode.

## 23 – Frequency Step (STEP)

There are **2.5/5/6.25/10/12.5/25/50/100KHz** 8 step options.

**Note:** This function can only be enabled in **VFO** mode.

## 24 – Bandwidth (BAND)

Select the transmitter deviation while operating on the current channel. There are **12.5/20/25KHz** 3 options for selection.

## 25 – Dual Watch (DW)

When dual watch feature is set as on, the radio will enable to monitor current frequency or channel signal even the FM radio mode is activated.



# TROUBLESHOOTING

Problem	Possible Reasons and Potential Solutions
No Power	Recharge or replace the battery pack; Extreme operating temperatures may affect battery life.
Hearing other noises or conversation on a channel	Confirm CTCSS/DCS is set; Frequency or CTCSS/DCS may be in use; Change settings: either change frequencies or CTCSS/DCS on all radios; Make sure the radio is at the right frequency and privacy code when transmitting.
Audio quality not good enough	Radio settings might not be matching up correctly. Double check frequencies, CTCSS/DCS and bandwidths to make sure they are identical in all radios.
Limited talk range	Steel and/or concrete structures, heavy foliage, buildings or vehicles decrease range. Check for clear line of sight to improve transmission; Wearing radio close to body such as in a pocket or on a belt decreases range; Change location of radio. UHF radios provide great coverage in industrial and commercial buildings. Increasing power provides greater signal range and increases penetration through obstructions.
Can not transmitted or received	Make sure the <b>PTT</b> button is completely pressed when transmitting; Confirm that the radios have the same channel, frequency, private code and bandwidth settings; Recharge, replace and/or reposition batteries; Obstructions and operating indoors, or in vehicles, may interfere, change location; Verify that the radio is not in Scan.
Heavy static or interference	Radios are too close, they must be at least seven feet apart; Radios are too far apart or obstacles are interfering with transmission.
Low battery	Recharge or replace the battery pack; Extreme operating temperatures affect battery life.
Desktop Charger LED light does not blink	Check that the radio/battery is properly inserted and check the battery/charger contacts to ensure that they are clean and charging pin is inserted correctly.
Cannot activate VOX	VOX feature might be set to OFF; Use the programming software to ensure that the VOX sensitivity level is not set to '0'; Accessory not working or not compatible.
Battery does not charge	Check desktop charger is properly connected and correspond to a compatible AC adapter; Check the charger's LED indicators to see if the battery has a problem.

# SPECIFICATIONS

## General

Frequency Range	VHF Version:136-174MHz UHF Version: 400-480MHz WFM: 87.5-108MHz
Channel Capacity	200 Channels
Channel Bandwidth	12.5 / 20 / 25KHz
Operating Voltage	7.4V DC
Dimensions (H x W x D)	98 x 55 x 30mm
Weight with battery	220g

## Transmitter

RF Power	≤5W(High) / 1W(Low)
Frequency Stability	<1.5ppm
Spurious & Harmonics	-36dBm<1GHz, -30dBm>1GHz
FM Hum & Noise	65dB(Wide) / 55dB(Narrow)
Modulation Deviation	≤5kHz(Wide) / ≤2.5kHz(Narrow)
Adjacent Channel Power	70dBC(Wide) / 60dBC(Narrow)
Audio Frequency Response	+1 ~ -3dB
Audio Distortion	<3%

## Receiver

Sensitivity (12 dB SINAD)	0.25μV(Wide) / 0.35μV(Narrow)
Adjacent Channel Selectivity	70dBC(Wide) / 60dBC(Narrow)
Audio Distortion	< 5%
Radiated Spurious Emissions	< -54dBm
Intermodulation Rejection	60dB
Audio Output	1W @ 16 ohms

Hereby, we declare that our radio is in compliance with the essential requirements and other relevant provisions of RE Directive 2014/53/EU.

# WARRANTY INFORMATION

## Warranty Period

Radio Body: 12 months from date of purchase.

Battery Pack: 6 months from date of purchase.

**Note:** Please retain your receipt as your proof of purchase will be required to valid warranty claim.




## Warranty Exclusions

This warranty will not apply in relation to:

- Failure to provide a proof of purchase
- Product has been modified, changed or serial number has been removed
- If any damage is caused by the use of non approved accessories
- Product that has been replaced by an unauthorized person
- Product failure due to customer misuse, abuse or abnormal use
- Failure by the customer to take reasonable care
- Failure due to not using the product in accordance with instructions stated in the manufacture's user guide.
- Product failure due to recommended installation procedures not being followed as stated in the manufacture's user guide.

More warranty relative information please read our Warranty Policy on the website.

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