COMRADE

R8
USER'S MANUAL

PREFACE

Thank you for purchasing our Commercial Portable Two Way Radio. This easy to use radio will always offer you reliable, clear and high efficiency communication services.

Please read this manual carefully before using this radio, the information presented herein will help you to find the maximum performance, operating method and maintenance of your radio.

CONTENT

1.-SAFETY INFORMATION:

Please read the following safety information in order to offer you security and high efficiency during operation.

* Please turn off the radio before entering an inflammable and explosive area.
* Do not replace the battery or charging when you are in an inflammable and explosive area.
* Please turn off the radio when you are close to the blast area or detonator zone.
* Do not use any radio which has a damaged antenna. It may cause a minor burn when the damaged antenna touches your skins.
* Do not attempt to dismantle the radio unless professional technical person.
* To avoid the problems which caused by EMI and EMC, turn off your radios in any places where posted notices *Please turn off your - radios*. For example, the hospital or other health care places.
* Turn off your radio before boarding an aircraft. Any use of the radio must be in accordance with airline regulations or flight crew*s instructions.
* If the vehicles have carried with an air bag, do not put your radios within the air bag expand coverage.
* Do not expose the radio to direct sunlight over a long time, nor place it close to the heating equipment.
* Do not place the radio in any excessively dusty, humid or wet place, nor an unstable surface.
* When the portable radio is transmitting, please hold the radio in a vertical position and speak to the Microphone.

⚠ WARNING: If you wear a radio on your body, ensure the radio and its antenna is at least 2.5 centimeters away from your body when transmitting.

2.-FEATURES AND FUNCTIONS:

* Commercial FM radio receiver (65 MHz ~ 108 MHz)
* Incorporates 105 codes "DQT" and 50 privacy codes "QT" programmable
* Function "VOX" (voice operated transmission)
* Alarm function
* Up to 16 memory channels
* Broadband (Wide) / Narrowband (Narrow) selectable
* High power / low selectable
* Battery saving function "SAVE"
* Timer transmission "TOT" programmable
* Selecting the Scan Mode
* Inspection, stun, kill and decoding
* Distant urgency alarm, SOS function
* Function Busy Channel Lock "BCL"
* Programmable by PC
* Level Threshold "Squelch" adjustable from 0 to 9
* Cross band reception/transmission
* Transmit 1750 Tone
* Channel frequency-report

3.-UNPACKING AND CHECKING EQUIPMENTS:

We suggest you to check the packing box first before using it. Please carefully unpack the box and check if all the items which listed in following table are received. If you find any loss or damage, please contact your dealer immediately.

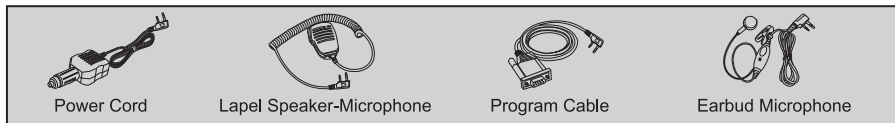|				
	Battery Pack	Antenna	Adapter	Drop-in Charging Tray
	Belt Clip	Handstrap		
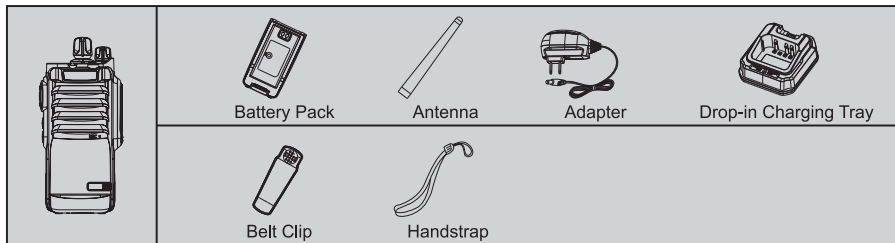
Note:
* Items included in the package, may differ from those listed in the table above depending on the country of purchase. For more information, consult your dealer or vendor.

4.- OPTIONAL ACCESSORIES:

Power Cord	Lapel Speaker-Microphone	Program Cable	Earbud Microphone

Note:
* Consult the dealer or retailer for information about options available.

5.- INSTALLATION OF ACCESSORIES:

5.1.- INSTALLING THE ANTENNA:
Install the antenna as shown in the figure below and turn it clockwise until it stops.
Note:
* When installing the antenna, don*t rotate it by its top, holding it by its base and turn.
* If you use an external antenna, make sure the *SWR* is about 1.5:1 or less, to avoid damage to the transceiver's final transistors.
* Do not hold the antenna with your hand or wrap the outside of it to avoid bad operation of the transceiver.
* Never transmit without an antenna.
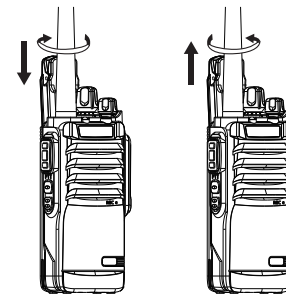
5.2. - INSTALLING THE BELT CLIP:
If necessary, install the belt clip at the rear of the battery compartment cover as shown in the figure below.
Note:
* Do not use any kind of glue to fix the screw on the belt clip.
* The solvents Glue may damage the battery casing.

5.3. - MICRO-HEADSET INSTALLATION OF EXTERNAL:

Plug the external micro-headset connector into the jack of "SP. & MIC" of the transceiver as shown in the figure below.

5.4. - BATTERY INSTALLATION:

-When attaching the battery, make sure the battery is in parallel and in good contact with the aluminum chassis. The battery bottom is about 1 to 2 centimeters below the bottom of the radio's body.
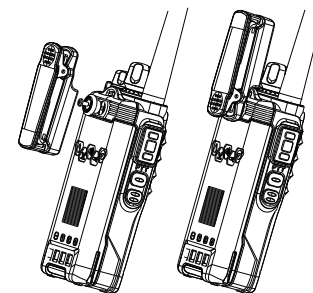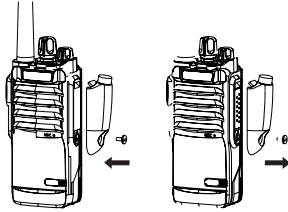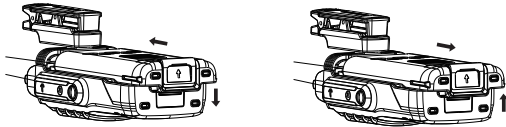
-Align the battery with the guide rails on the aluminum chassis and slide it upwards until a "click" is heard.

-The battery latch at the bottom locks the battery.

-Turn off the radio before removing the battery.

-Slide the battery latch, at the bottom of the radio's body, in the direction indicated by the arrow.

-Slide down the battery for about 1 to 2 centimeters, and then remove the battery from the radio's body.

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6.-BATTERY CHARGING:

Use only the charger specified by the manufacturer. The charger's LED indicates the charging progress.

CHARGING STATUS	LED INDICATION
Standby (no-load)	Red LED flashes, while Green LED glows
Charging	Red LED solidly glows
Fully Charged	Green LED solidly glows
Error	Red LED flashes, while Green LED glows
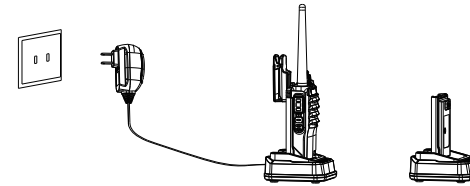
Please use the supplied charger to charge up the battery pack. And refer to the operation way as below:

1) Put the adapter*s DC plug into charger*s DC jack which located at rear of charger.

2) Put the adapter into AC power*s socket. The charger*s LED will illuminate green light. It means that the power has been connected.

3) Put the battery pack or transceiver with battery pack in charger cup. The LED will illumination red light. It means that the battery pack is been charging.

4) When the red light goes out, and the green light illumination. It means that battery pack is charged fully.

5) Pull out the adapter from AC power*s socket and take out battery pack.

Note:

1) Make sure the radio is switched off during charging.

2) Overcharging may affect the battery performance.

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7.-BATTERY INFORMATION:

7.1.-INITIAL USE

New batteries are not charged fully in the factory. Please charge it before using. In general, the battery should charge 12 hours at initial use. The maximum battery capacity and performance is achieved after three times fully battery charge-discharge cycle. When the battery power runs out, please recharge the battery or replace one.

7.2. -APPLICABLE BATTERY PACK

Please only use the battery which specified by the manufacturer. Unauthorized batteries may cause the failure of Ex-protection or bodily injury and property damages.

7.3.-SAFETY INFORMATION

1) Do not throw the battery into fire!

2) Do not abandon the battery as the household garbage, it should be recycled and disposed correctly.

3) Never attempt to disassemble the battery pack.

Notices:

1)When charging your battery, please keep the ambient temperature among 5*- 40*.

2)Please turn off the radio when the battery is charging. Using the radio during charging will affect the battery pack to be charged normally.

3)During charging, do not plug in/pull out the power supply or the battery frequently, it would affect battery charging.

4)Do not charge when the battery or radio is wet. Please dry it with a soft cloth before charging.

5)The battery life is over when the operating time is obviously shorter than normal even if it's fully and correctly charged. Please replace a new battery.

7.4.-PROLONG BATTERY LIFE

1)Battery performance will degrade when the current temperature is below 0*. A spare battery is necessary in cold weather. Please keep the cold batteries, these batteries may work under room temperature.

2)If the battery contact is dusty, it may influence its normal use or normal charge.

7.5.-BATTERY STORAGE:

1)Fully charge a battery before you store it for a long time, to avoid battery damage caused by over-discharge.

2)Recharge the battery after several months'storage (Li-Ion/Li-polymer battery: 6months, NiMH battery: 3 months), to avoid battery capacity reducing caused by over-discharge.

3)When storing your battery, keep it in a cool and dry place under room temperature.

8.-RADIO OVERVIEW:
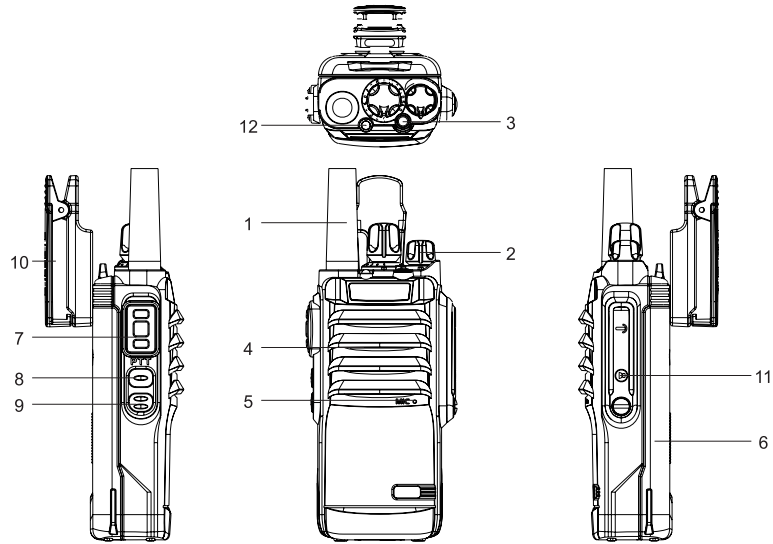
1.Antenna	6.Battery latch	11. Accessory jack
2 Knob (ON/OFF, volume)	7.PTT	12. LED indicator
3.Flashlight	8. SK-side key1/F	
4.Speaker	9. SK-side key2/M	
5. Microphone	10. Strap buckle	

8.2. - COMMAND/KEY DEFINITION:

Power On:

Rotate PWR/VOL Switch clockwise, you will hear a sound *Beep*, report the present channel, the transceiver is ready for working; meanwhile rotate PWR/VOL Switch to adjust the volume

[SOS]Emergency Alarm:

Long press to open the alarm function, at this moment, the green light, red light, and hand lamp flashes shin at the same time. Press this button again to release the alarm.

[PTT]:

-Press and hold [PTT] button, then talk to the microphone. Release [PTT] to receive.

SK-SIDE KEY1/ [F]:

 -Press the [F] button, to activate the FM Radio on; Press it again to deactivate the FM Radio.

SK-SIDE KEY2/ [MONI]:

-Press the [MONI] button, to turn on the flashlight; Press it again to turn off. Press and hold on the [MONI] button, to monitor the signal.

9.-BASIC OPERATION

9.1.- RADIO ON-OFF

-Make sure the antenna and battery are installed correctly and the battery charged.

-Rotate the knob clockwise to turn the radio on, and rotate the knob fully counter-clockwise until a "click" is heard to turn the radio off.

9.2.-VOLUME CONTROL

Rotate the knob clockwise or counter-clockwise, to adjust the volume.

9.3.-TRANSMIT AND RECEIVE

Choose the correct channel No. or enter the frequency which you need, then press and hold [PTT] button, the radio is transmitting now, and then talk to the microphone, your sound will be transmitted. Release [PTT] to receive.

9.4.-High/ Low Power Switchover

With the state of FM radio inactivated, press [MONI]to make noise, then press [PTT] can temporarily switch High/Low power of selected channel(selected by selector). Meanwhile report the state of Dual Band Dual Watch Mode (TDR mode). If it is on, report "TDR ON", it is off, report "TDR OFF" .Voice prompt "Transmitting Power 1" is low power transmitting , "Transmitting Power 5" is high power transmitting.

9.5.-MONI CHANNEL

With dual band state, keep holding [MONI] button to take turns to monitor the signal of designed channel and selected channel. If the green LED keeps lighting, the signal is from designated channel, if the green LED twinkles, the signal is from selected channel.

9.6. -SELECT A CHANNEL

Turn the Channel Selector Knob to select your desired channel. If the Voice announcement function is enable, your radio will automatically report the channel No. where the knob locates.

10.-ADVANCED OPERATION

10.1. -Voice Prompt

* To turn on or turn off the voice prompt, please switch the channel knob to Channel 10, then press [PTT] and [F] to turn on the radio.
* To change the Chinese and English setting, please switch the channel knob to channel 15, then press [PTT] and [F] to turn on the radio.

10.2. -STUN, KILL FUNCTION

You can program the working status to control the radios in the group.

* Remote Stun

Remote Stun function allows the control center to temporarily turn off the radios which are illegal occupying the channels.

When the radio receive a DTMF signal with the matched Stun code, the radio will enter Stun mode after it decoding succeed, which means the radio can't transmit but can still receive from other radios.

Under Stun mode, the radio will exit Stun mode when it receiving a revive code from the control center with decoding succeed or re-programmed via software.

* Remote Kill

Remote Kill function allows the control center to disable the radios which are lost or stolen. It prevents from information leakage.

When the radio receive a DTMF signal with the matched Remote Kill code, the radio will enter Kill mode after it decoding succeed, then the radio cannot transmit or receive.

Under Kill mode, the radio will exit Kill mode when it receiving a revive code from the control center with decoding succeed or re-programmed via software.

10.3. -1750Hz TONE

This function is used to awake the sleeping repeater station. Press the programmed "1750Hz Tone" key to activate the 1750Hz Tone, press this key again to exit it.

When 1750Hz Tone is activated, press [PTT] key to transmit 1750Hz Tone first then transmit normal signals. The receiver whom receives the 1750Hz Tone will sound Beep alert until the 1750Hz signal disappears.

10.4. -DIGITAL FM RADIO FUNCTION

In the single reception state, press [F] switch on FM radio. After FM Radio starts, press [F] to search FM radio. Press [MONI] for FM band switch. If press [MONI], a sound "Beep" is heard, then FM works in 65-75.9 FM band range, at this time press [F] radio frequency search in the range of 65-75.9MHz. If press [MONI] ,a sound "Beep, Beep" is heard, FM works in 76-108 FM band range, at this time press [F] radio frequency search in the range of 76-108 MHz Shutdown and restart or rotate the selector can permanently turn off the radio.

10.5. -VOX Function

VOX means voice-operated-transmission. When VOX function is activated, the radio can transmit without pressing [PTT] key.

On channel 1-5, press and hold the MONI and [PTT], then switch on the transceiver, thus to activate the VOX functions ON/OFF.

* When you turn on the VOX function on Channel 1, the VOX level will be 1 (most sensitive)
* When you turn on the VOX function on Channel 5, the VOX level will be 5 (lest sensitive)
* When you operate the VOX function, you must use an optional headset with microphone.

The transceiver automatically switches to Transmission Mode when the VOX circuitry senses that you have begun speaking into the microphone.

1. When operating the VOX function, be sure to set the VOX Gain level which allows the transceiver to recognize the sound levels.

2. If the microphone is too sensitive, the transceiver will begin transmitting when there is noise in the background.

3. If it is not sensitive enough, it will not pick up your voice when you begin speaking. Be sure to adjust the VOX Gain level to an appropriate sensitivity to allow smooth transmission

10.6. -SCAN/FAST SWITCHING CHANNEL

* Channel scan

Press [MONI] key to start scanning from the current channel and the radio will scan the channel numbers one by one on the list which we programmed before. Once a valid signal is detected, it will switch to this channel directly. You can press [PTT] key to transmit. Press Scan key again to exit radio scanning.

Note: The Scan status will not be memorized once the radio is powered off.

* Resume scanning Mode

To configure the scanning mode as following:

Carrier: Scanning stops on an active channel until there is no activity, it resumes scanning after 5 seconds without activity on this channel.

Timer: Scanning stops on an active channel only for 5 seconds before it resumes scanning.

Seek: Scanning stops on an active channel and exit scanning mode at the same time.

* Priority Channel Scan

Sometimes you may need to keep an eye on a prefer channel while you are scanning other channels. You can set up any channels as the priority channel, which means the radio will scan this priority channel and other normal channels alternately. Press the programmed

* Priority Channel Scan key to activate this function and press this key again to exit. For example, there are 3 channels CH1, CH2, CH3 and 1 priority channel on the scan list. Then the priority scan will become:

CH1*Pri*CH2*Pri*CH3*Pri*CH1*Pri**

10.7. -CHANNEL FREQUENCY-REPORT

If you want to know the frequencies of selected transmit and receive, also the QT we setter on transmitting and receiving, press [MONI] key and until has noise, then press the [F] key. Broadcast order: "transmit Storage ", transmit frequency, and transmit QT. "Receiving Storage", receiving frequency, receiving QT. After reported frequency, If it did not report the DQT and QT that indicating that the channel is not set QT, or continue to broadcast DQT and QT , when broadcast frequency and QT, I "beep" sound that appears to indicate "point. "After reporting the DQT "beep" sound occurs, expressed as a positive DQT, a "beep, beep" twice, indicating that the reverse digital tone.

10.8. -EMERGENCY ALARM

The radio can be loud, penetrating strong alarm sound; it can make somebody draw attention to the roll call.

* Alarm function: Press the [SOS] button to start alarm function, when the green lights, red lights, hand lamps blink at the same time.

* Cancel alarm: In the alarm status, press [F] or [PTT] button or turn off the power to cancel the alarm.

11.-ADDITIONAL FUNCTION

11.1. -LOW BATTERY ALERT
When the battery capacity is very low, the radio will flash red light and sound "Please charge the battery" every 5 seconds to alert the user to recharge the battery. If you press the [PTT] key, the radio will not transmit and always sound "Please charge the battery". So please release the [PTT] key and charge the battery.
Note: if the battery voltage is too low, the radio may power off automatically.

11.2. -BATTERY SAVING FUNCTION (Set by PC Programming Software)
If battery save function is on, it will be automatically activated once there is no activity on the channel and no operation to the radio (no key press and no knob select) which last for 5 seconds. Pressing any key or receiving a signal will cause the radio to exit Battery Save mode.

11.3. -BUSY CHANNEL LOCKOUT (BCL)
When BCL function is on, it prevents the radio from transmitting on a channel which is in use.
Carrier: Press [PTT] key to transmit on a channel which is in use, the radio will sound alert tone and stop transmitting. Please release [PTT] key to stop the alert tone and turn back to receiving mode.
QT/DQT: If QT/DQT and BCL are set on the current channel, press the [PTT] key to transmit on a channel which is in use, once the radio decodes failed, it will sound alert tone and stop transmitting. Please release [PTT] key to stop the alert tone and turn back to receiving mode.

OFF: You still can transmit on a channel which is in use.

11.4. -SELECT WIDE/NARROW BANDWIDTH
Bandwidth refers to the channel transmission capacity at a fixed time. Wide Bandwidth (25 KHz) can simultaneously transmit more signals at a channel, so it's easier to receive some weak signals, but meanwhile it's easier to be affected by noise signals. Narrow Bandwidth (12.5 KHz) makes the voice clearer and occupies less channel resource, but it's easier to miss some weak signals which may be useful to you. You can choose the channel space according to your communication requirements via the software.

11.5. -QT/DQT
QT/DQT signal can be pre-programmed by programming software in the transceiver's channels. If a channel is set up with QT/DQT signal, squelch can only be opened when receiving the same QT or DQT signals from the other transceiver. If you make a call with different QT/DQT signals in the same channel, the squelch is bare, the light is green.

1. QT TABLE

Nº	Tone (Hz)	Nº	Tone (Hz)	Nº	Tone (Hz)	Nº	Tone (Hz)	Nº	Tone (Hz)
1	67.0	11	94.8	21	131.8	31	171.3	41	203.5
2	69.3	12	97.4	22	136.5	32	173.8	42	206.5
3	71.9	13	100.0	23	141.3	33	177.3	43	210.7
4	74.4	14	103.5	24	146.2	34	179.9	44	218.1
5	77.0	15	107.2	25	151.4	35	183.5	45	225.7
6	79.7	16	110.9	26	156.7	36	186.2	46	229.1
7	82.5	17	114.8	27	159.8	37	189.9	47	233.6
8	85.4	18	118.8	28	162.2	38	192.8	48	241.8
9	88.5	19	123.0	29	165.5	39	196.6	49	250.3
10	91.5	20	127.3	30	167.9	40	199.5	40	254.1

2. DQT TABLE

Nº	Code	Nº	Code	Nº	Code	Nº	Code	Nº	Code
1	D023N	22	D131N	43	D251N	64	D371N	85	D532N
2	D025N	23	D132N	44	D252N	65	D411N	86	D546N
3	D026N	24	D134N	45	D255N	66	D412N	87	D565N
4	D031N	25	D143N	46	D261N	67	D413N	88	D606N
5	D032N	26	D145N	47	D263N	68	D423N	89	D612N
6	D036N	27	D152N	48	D265N	69	D431N	90	D624N
7	D043N	28	D155N	49	D266N	70	D432N	91	D627N
8	D047N	29	D156N	50	D271N	71	D445N	92	D631N
9	D051N	30	D162N	51	D274N	72	D446N	93	D632N
10	D053N	31	D165N	52	D306N	73	D452N	94	D645N
11	D054N	32	D172N	53	D311N	74	D454N	95	D654N
12	D065N	33	D174N	54	D315N	75	D455N	96	D662N
13	D071N	34	D205N	55	D325N	76	D462N	97	D664N
14	D072N	35	D212N	56	D331N	77	D464N	98	D703N
15	D073N	36	D223N	57	D332N	78	D465N	99	D712N
16	D074N	37	D225N	58	D343N	79	D466N	100	D723N
17	D114N	38	D226N	59	D346N	80	D503N	101	D731N
18	D115N	39	D243N	60	D351N	81	D506N	102	D732N
19	D116N	40	D244N	61	D356N	82	D516N	103	D734N
20	D122N	41	D245N	62	D364N	83	D523N	104	D743N
21	D125N	42	D246N	63	D365N	84	D526N	105	D754N

12.-TECHNICAL SPECIFICATION:

12.1-RECEIVER

Receiver sensitivity	≤0.25uV(12dB SINAD)
Audio output	1W@10%
Audio distortion	＜10%
Signal to noise ratio	≥45dB
Adjacent channel	≥65 dB /≥60 dB (W/N)
Intermediation	≥65 dB /≥60 dB (W/N)
Clutter boycott	≥65dB
Consumption in reception	≤380mA

12.2-GENERAL

Frequency range	65MHz-108MHz (Only commercial FM radio reception)
	UHF:400-520MHz
Memory channels	Up to 16 channels
Frequency step	12.5kHz/25kHz.
Supply voltage	7.4V/1800mAh (Rechargeable Lithium-Ion)
Frequency stability	±2.5ppm
Operating temperature	−20~+60℃
Antenna impedance	50Ω
Consumption in transmission	≤1.5A
Emission class	16KΦF3E / 11KΦF3E (W/N)
Maximum deviation	≤±5 kHz/≤±2.5 kHz (W/N)
spurious power	≤7.5uW
Spurious emissions	≤-65 dB/≤-60 dB
Signal to noise ratio	≥-45dB /≥-40dB (W/N)
QT/DQT Frequency offset	0.7±0.1KHz /0.4±0.1KHz (W/N)
Modulation sensitivity	8-12mV
Dimensions*(with standard battery, without antenna)	62.5(W)x123(H)x36(D)mm
Weight(with antenna & standard battery)	252g (approximate)
Note: All specifications shown are subject to change without notice.	