RETEVIS RT21 Two Way Radio User Manual

TO CUSTOMERS

Thank you very much for using our Two-way radio. This radio of modern design is a reasonable structure with stable functions. It is designed to meet different customers' needs for high quality with easy operation and perfect capability. We believe you are pleased with its nice shape and excellent performance. This manual is suitable for using the model of RT21.

Contents

Using tips

Please read the following brief instructions, non-compliance with these rules may cause danger or violate the law.

- Obey the local government regulation before using this radio, improper use may violate the law and be punished.
- Turn off the radio before entering flammable or explosive areas.
- Do not charge or change the battery's inflammable or explosive areas.
- Turn off the radio before getting close to the blasting zone or detonator areas.
- Do not use a radio whose antenna is damaged, touching the damaged antenna will cause heat injury.
- Do not attempt to open the radio; the maintenance work should be done by a technical expert only.
- To avoid troubles caused by electromagnetic interference or electromagnetic compatibility, please turn off the radio in places that have the banner "Do not use wireless equipment", such as hospitals and other healthcare places.
- In the car with an airbag, do not put the radio within the scope of the airbag deployment.
- Do not store the radio under the direct sunshine or in hot areas.
- When you transmit with the radio, do keep away from its antenna for 5cm at least.
- If the radio appears smelly or smoking, please shut off its power immediately and contact your local dealer.
- Do not transmit too long, for the radio may heat and hurt the user.

Unpacking and checking equipment

Welcome to using a two-way radio. Carefully unpack the radio. We recommend you check the items listed in the following table before discarding the package. If any item is missing, please contact the local dealer immediately.
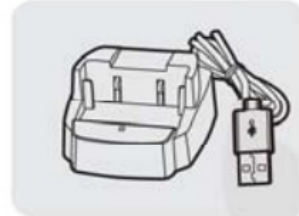
Supplied accessories:
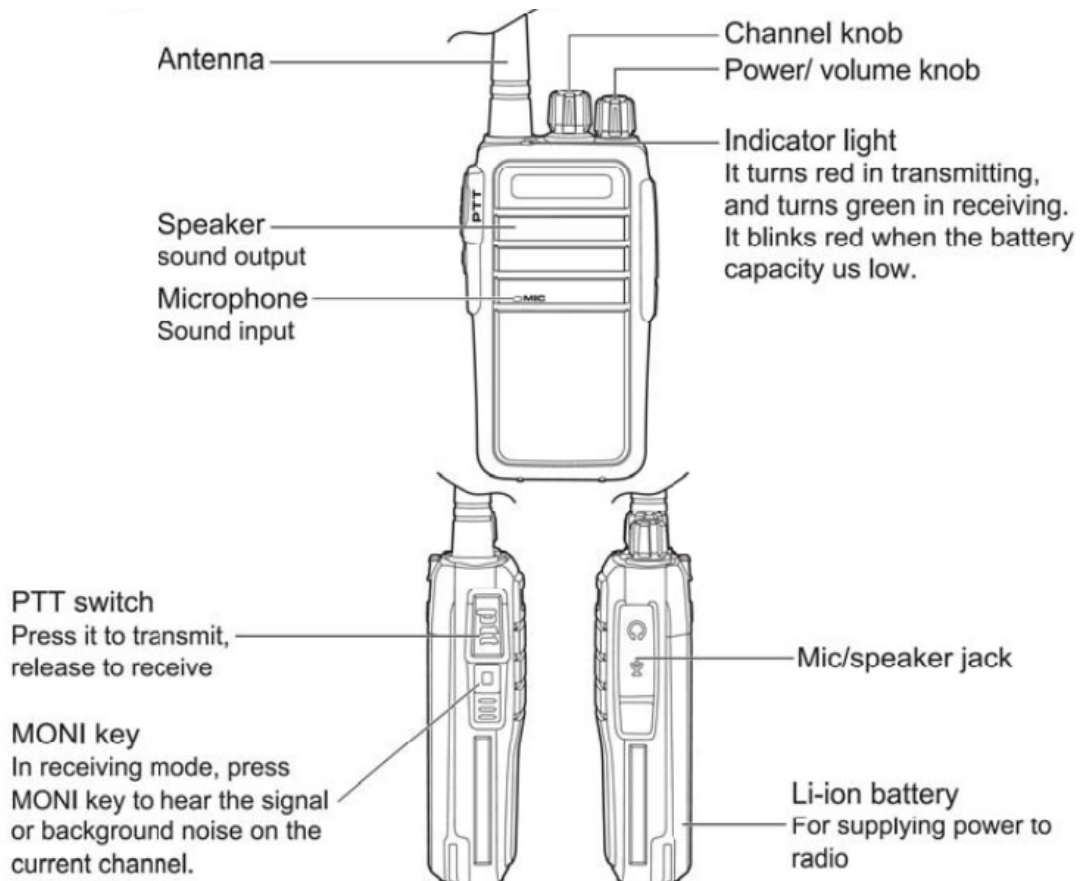

Li-ion battery (1) Belt Clip (1) Charger (1) User's Manual (1)

Getting familiar

Antenna

Channel knob
Power/ volume knob

Indicator light
It turns red in transmitting,
and turns green in receiving.
It blinks red when the battery
capacity us low.

Speaker
sound output
Microphone
Sound input

PTT switch
Press it to transmit,
release to receive

MONI key
In receiving mode, press
MONI key to hear the signal
or background noise on the
current channel.

Mic/speaker jack

Li-ion battery
For supplying power to
radio

Battery

Please use thedesignated battery; other batteries can cause explosions and hurt people. Notice:

1. Please do not short-circuit the battery terminals or expose of to fire. Do not disassemble the battery by yourself.
2. Charge the battery between temperature Or and 4512. The battery can not be fully charged beyond this temperature range.
3. Please turn off the power when you charge the radio with the battery. Transmit with the radio in charge will affect its correct charge.
4. Do not unplug the power or battery when it is charged.
5. The operating time becomes short even if the battery is fully charged, the battery is exhausted, please replace the battery.
6. Please do not charge when the battery or the radio is wet. Please dry it with a cloth before charging to avoid any danger.

Warning: When the conductive metals such as jewelry, key, or decorative chains touch the battery terminals, all the batteries are likely to cause damage to the items or personal injury. These conductive metals may form a short circuit and generate much heat. Do deal with any battery carefully, especially when putting it into a pocket, wallet or other metallic containers.

Charging operations:

Charge the battery as follows:

1. Power off
2. Insert the AC adaptor plug in the AC power output socket
3. Insert the battery or radio with the battery vertically in a charger, to check whether the battery and charger terminal is in normal contact.
4. Make sure the battery and charger terminal is in good contact, when the charging indicator light turns red, it starts charging.

Note:

1. Before inserting the battery, it is abnormal if the charging indicator blinks
2. To change the battery for charging, please wait until the indicator is stable.
3. When the battery is well inserted, the indicator turns red and the charging is in the process, if the indicator blinks, then the battery is damaged or the temperature is too high or too low.

Self-testing

When the charger powers up, if the orange indicator lights for one second and then goes out, entering the standby mode, the charger passes the self-testing and can charge the battery. If the orange indicator blinks constantly, the charger fails to pass the self-testing, and can not charge the battery.

Normal charging indicator

When charging the battery, if the indicator light turns red, the battery is on the normal charge; if the red indicator light blinks constantly, the battery capacity is too low and is on the trickling charge, and after the battery capacity reaches a certain level, it will switch to the normal charge.
Note: Trickling charge does not exceed 30 minutes, if the red indicator light blinks after 30 minutes, it means the charger can not charge the battery, please check whether the battery or the charger has been damaged.

Charging precautions:

1. The battery is not fully charged in a factory, please charge before using it.
2. Charge and discharge the battery two or three times, the battery capacity will reach the best condition. When the battery capacity is low, please charge or charge the battery.
3. The battery lasts shortly even if it is fully charged, the battery is exhausted, please contact your local dealer to buy a new authentic the battery.
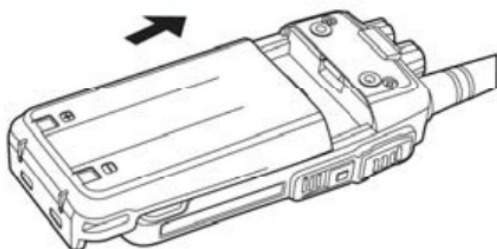
Antenna

- Short thick antenna

- The communication prepared in advance
  is suitable for short-distance communication. the range will be shortened in bad weather or among the trees, please to avoid any inconvenience to your communication and security.
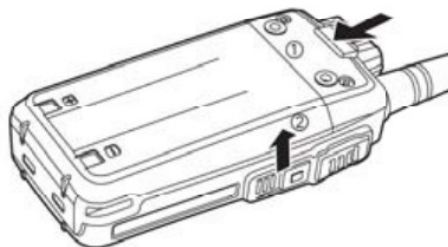
Installing and uninstalling the accessories

Installing/Removing the battery

1. Align the two grooves of the battery and the guide rail on the back of the aluminum shell, ensuring full contact and in parallel, then push the battery up to the radio base along the rail on the back of the aluminum shell, until the battery latch locks up. (picture 1)
2. To remove the battery, please make sure the radio is closed, push the battery latch down, and make sure the radio and battery are in the releasing state, and then push the battery out from the radio. (picture 2)

(picture 1)   (picture 2)

Installing/removing the belt clip

1. Align the two holes of the belt clip and the two holes of the radio, and fix them with the supplied M2.5×5 screw. (picture 5)
2. Loosen the screw set to remove the belt clip (picture 6)

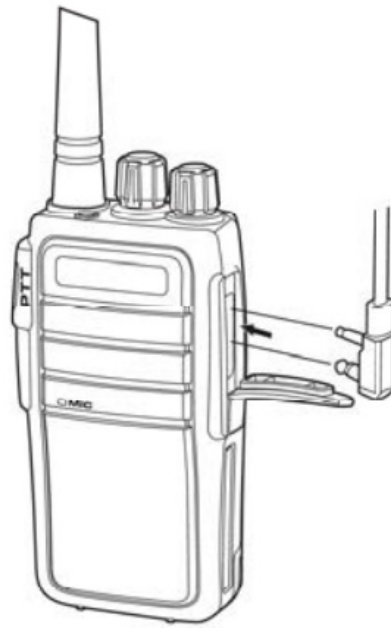(picture 5)   (picture 6)

Installing external headset

Reveal (do not remove) the mic/speaker jack cover (picture 7), and insert the headset into the mic/speaker jack (picture 8).

Note: Using the external headset will affect the water-tightness performance of the radio.

(picture 7)   (picture 8)

Basic operation

1. **Scan Function**

   The radio is allowed to be scanned and you can press the PTT key to turn on or turn off the scan. When the scan begins, indicators light green, the radio will scan automatically from channel 1 to 16 which is defined as scan added. When there is a signal in the scanning channel, it will stop in the channel for talk.

   Note: When there is a signal in the scanning channel, it will stop in the channel for a talk and after several seconds. Please note that scan is only available when there are two or more two memory channels and two or more scan added channels.

2. **Battery Save Function**

   This function is enabled by default. Turning on this function can make the standby time longer.

3. **Busy Channel Lock**

   This function is enabled by default.

   A: if the current channel does not have CTCSS/DCS, When there is a signal, TX is prohibited when you press PTT.

   B: If the current channel does not have CTCSS/DCS, when there is a signal which does not have CTCSS/DCS, TX is prohibited when you press PTT.

   C: If the current channels do not have CTCSS/DCS, when there is a signal which has CTCSS/DCS, the radio will transmit when you press PTT.

English/Chinese Voice Prompt

Voice prompt

The default setting is the English voice prompt, and you will know the working condition of the radio with the voice

prompt.

1. Channel annunciation: You will get to know the working conditions of the current channel which is being operated.
2. Low battery alert: The radio will alert you when the battery capacity reaches the minimum operating voltage.

Low battery prompt

The default setting is the English voice prompt. When transmitting or on standby, if the battery capacity reaches the predetermined low level, the indicator light blinks red, and a low battery alert tone will be heard. The indicating tone can be "Please change the battery". When the low battery alert occurs, it can not transmit, please change or charge the battery.

Squelch function

The squelch level will determine the signal strength to open the speaker of the radio. If the squelch level is lower, the background noise of opening the radio's speaker will be higher, and the corresponding communication range will be further, but the anti-interference capacity will be weaker and the default setting of the squelch level is 5

Time out timer (TOT)
The purpose of TOT is to prevent any radio from talking in one channel for a long time and to prevent the transceiver from being damaged because of continuous transmission. If the transmitting time exceeds the TOT pre-set time, the radio will sound "Du".
CTCSS/DCS
CTCSS and DCS is the sub-audio signaling, to prevent the radio from receiving the unwanted signal in the same channel. When the CTCSS/DCS is set, then within the communication range, you can only receive signals from the same channel with the same CTCSS/DCS setting. When the CTCSS/DCS is not set, you will get all the signal from the same channel within the communication range.
Power protection function
When the radio is in normal use or maintenance, the transmission will be prohibited if the working voltage is beyond the normal supplying voltage. Lower than 3V or higher than 4. 2V, the transmission will be prohibited. The radio cannot power on when it is higher than 4. 2V.

CTCSS

67.0	69.3	71.9	74.4	77.0	79.7	82.5	85.4	88.5	91.5
94.8	97.4	100.0	103.5	107.2	110.9	114.8	118.8	123.0	127.3
131.8	136.5	141.3	146.2	151.4	156.7	162.2	167.9	173.8	179.9
186.2	192.8	203.5	210.7	218.1	225.7	233.6	241.8	250.3	

DCS

D023N	D025N	D026N	D031N	D032N	D043N	D047N	D051N	D054N	D065N
D071N	D072N	D073N	D074N	D114N	D115N	D116N	D125N	D131N	D132N
D134N	D143N	D152N	D155N	D156N	D162N	D165N	D172N	D174N	D205N
D223N	D226N	D243N	D244N	D245N	D251N	D261N	D263N	D265N	D271N
D306N	D311N	D315N	D331N	D343N	D346N	D351N	D364N	D365N	D371N
D411N	D412N	D413N	D423N	D431N	D432N	D445N	D464N	D465N	D466N
D503N	D506N	D516N	D532N	D546N	D565N	D606N	D612N	D624N	D627N
D631N	D632N	D654N	D662N	D664N	D703N	D712N	D723N	D731N	D732N
D734N	D743N	D754N							

D023I	D025I	D026I	D031I	D032I	D043I	D047I	D051I	D054I	D065I
D071I	D072I	D073I	D074I	D114I	D115I	D116I	D125I	D131I	D132I
D134I	D143I	D152I	D155I	D156I	D162I	D165I	D172I	D174I	D205I
D223I	D226I	D243I	D244I	D245I	D251I	D261I	D263I	D265I	D271I
D306I	D311I	D315I	D331I	D343I	D346I	D351I	D364I	D365I	D371I
D411I	D412I	D413I	D423I	D431I	D432I	D445I	D464I	D465I	D466I
D503I	D506I	D516I	D532I	D546I	D565I	D606I	D612I	D624I	D627I
D631I	D632I	D654I	D662I	D664I	D703I	D712I	D723I	D731I	D732I
D734I	D743I	D754I							

Trouble shooting guide

Troubles	Solution
No Electrical Source	•The battery has been exhausted. Replace or recharge the battery. •The battery is installed incorrectly. Remove it and install it again.
The operating time becomes short, even if the battery is fully charged.	•Replace the battery.
Not able to communicate with the transceivers of the same group.	•Confirm the QT/DQT is the same. •The distance is outside of range.
The voice of another group can be heard.	•Change all QT/DQT of the group.
Other radios can not receive the TX signals or receive signals in a low volume.	•Switch the volume knob to the highest level •The microphone may be damaged, send it to the local dealer for the check.
Noise is always heard.	•The distance is outside of range. Turn on the radio in nearer range and try again.

Specifications (US)

Model number	Operating Frequency Range (MHz)	Output Power	Channel Spacing (KHz)	Channel Protocol
RT21	462 5500-462 7250	1W	12 5KHz	CTCSS/DCS

FCC (FRS)

CH.No	CH.Freq.(MHz)	ERP	CTCSS/DCS	CH.No	CH.Freq.(MHz)	ERP	CTCSS/DCS
1	4625625	1W	67.0	9	4627125	1W	146.
2	4625875	1W	119.	10	4625500	1W	123.0
3	4626125	1W	127.	11	4625750	1W	D7431
4	4626375	1W	132.	12	4626000	1W	D3321
5	4626625	1W	137.	13	4626500	1W	D2431
6	462.6250	1W	127.	14	4626750	1W	D606N
7	4627250	1W	136.58,04621	15	4627000	1W	D7311
8	463.	1W	141.				

Note: Above channels are FRS license-free channels.

Warranty cary

Note:

1. This warranty card is only applicable to two-way radio of the above-listed model and serial number.
2. The warranty card is an important document for the end-user to enjoy warranty service, please keep it well.
3. The warranty card shall be filled and chopped by the dealer, or it is invalid.

Customer's name:	Gender:
Add and postal code:	
Customer's Tel:	
Model:	
Serial number:	
Purchasing date:	
Invoice No.:	
Dealer:	Stamp:
Add and postal code of the dealer:	
Contact Tel:	
Handling people:	

Warnings

Product safety and RF Exposure for two way radio:

⚠	Before using this two-way radio, please read the manual which contains important operating instructions for safe usage, RF Energy Awareness, control information, and operational instructions for compliance with RF Energy Exposure limits in applicable national and international standards, and also read the operational instructions for safe use.

⚠

CAUTION

Test position and configuration Head SAR was performed with the device configured in the positions according to IEEE1528, and face up SAR was performed with the device 25mm from the phantom, Body SAR was performed with the belt clip on the device 0 mm from the phantom.

⚠

WARNING
Antennas

1. For safe operation, the antenna for the product shall be at least 25mm away from your face, when speaking.

2. Switching to other antennas is prohibited and will affect the radio performance.

3. DO NOT use any portable radio that has a damaged antenna. If a damaged antenna comes into contact with your skin, a minor burn can result.

⚠

WARNING
Batteries

All batteries can cause property damage and/or bodily injury such as burns if a conductive material touches exposed terminals. The conductive material may complete an electrical circuit (short circuit) and become hot.

- Exercise care when removing NiMH or AA batteries. Do not use sharp or conductive tools to remove these batteries.
- Exercise care in handling any charged battery, particularly when placing it inside a pocket, purse, or another container with metal objects.
- Do not discard your battery in a fire.
- Do not replace the battery in any area labeled "Hazardous Atmosphere". Any sparks created in a potentially explosive atmosphere can cause an explosion or fire.
- Do not disassemble, crush, puncture, shred or otherwise attempt to change the form of your battery.
- Do not dry a wet battery or damp battery with an appliance or heat source, such as a hairdryer or microwave oven.
- If the radio battery contact area has been submerged in water, dry and clean the battery contacts before attaching the battery to the radio.

CAUTION
WARNING
Battery Charger Safety Instructions

1. Turn the radio off when charging the battery.
2. Do not expose the charger to the outside environment. Chargers should only be used indoors.
3. Do not operate or disassemble the charger. Do not use a charger that has been dropped or damaged in any way.
4. Never alter the AC cord or plug provided with the unit. If the plug will not fit the outlet, have the proper outlet installed by a qualified electrician. An improper condition can result in a risk of electric shock.
5. To reduce the risk of damage to the cord or plug, pull the plug rather than the cord when disconnecting the charger from the AC receptacle.
6. To reduce the risk of electric shock, unplug the charger from the outlet before attempting any maintenance or cleaning.
7. Use of an attachment not recommended or sold by specified Solutions may result in a risk of fire, electric shock or personal injury.
8. Make sure the cord is located so it will not be stepped on, tripped over, or subjected to damage or stress.
9. An extension cord should not be used unless absolutely necessary.
   The use of an improper extension cord could result in a risk of a fire and/or electric shock. If an extension cord must be used, make sure that:
   • The pins on the plug of the extension cord are the same number, size, and shape as those on the plug of the charger.
   • The extension cord is properly wired and in good condition.
10. The supply cord of the AC adaptor cannot be replaced. If the cord is damaged, call customer service.

WARNING
The information listed below provides the user with the information needed to make him or her aware of RF exposure, and what to do to as-sure that this radio operates with the FCC RF exposure limits of this radio.

Electromagnetic Interference/Compatibility

Note: Nearly every electronic device is susceptible to electromagnetic interference (EMI) if inadequately shielded, designed, or otherwise configured for electromagnetic compatibility.
During transmissions, your radio generates RF energy that can possibly cause interference with other devices or systems.

Facilities
To avoid electromagnetic interference and/or compatibility conflicts, turn off your radio in any facility where posted notices instruct you to do so. Hospitals or health care facilities may be using equipment that is sensitive to external RF energy.

Aircraft
When instructed to do so, turn off your radio when on board an aircraft. Any use of a radio must be in accordance with applicable regulations per airline crew instructions.
Medical Devices – Pacemakers, Defibrillators, or other Implanted Medical Devices

Persons with pacemakers, Implantable cardioverters defibrillators (ICDs) or other active implantable medical devices (AIMD) should

- Consult with their physicians regarding the potential risk of interference from radio frequency transmitters, such as portable radios (poorly shielded medical devices may be more susceptible to interference).
- Turn the radio OFF immediately if there is any reason to suspect that interference is taking place.
- Do not carry the radio in a chest pocket or near the implantation site, and carry or use the radio on the opposite side of their body from the implantable device to minimize the potential for interference.

Hearing Aids
Some digital wireless radios may interfere with some hearing aids.
In the event of such interference, you may want to consult your hearing aid manufacturer to discuss alternatives.
Other Medical Devices
If you use any other personal medical device, consult the manufacturer of your device to determine if it is adequately shielded from RF energy. Your physician may be able to assist you in obtaining this information.

Use of Communication Devices While Driving
Always check the laws and regulations on the use of radios in the areas where you drive.

- Give full attention to driving and to the road.
- Use hands-free operation, if available.
- Pull off the road and park before making or answering a call, if driving conditions or regulations so require.

For Vehicle with Air Bags
Refer to the vehicle manufacturer's manual prior to installation of electronic equipment to avoid interference with airbag wiring. Do not place a portable radio in the area over an airbag or in the airbag deployment area. Airbags inflate with great force. If a portable radio is placed in the airbag deployment area and the airbag inflates, the radio may be propelled with great force and cause serious injury to the occupants of the vehicle.

Potentially Explosive Atmosphere
Turn off your radio prior to entering any area with a potentially explosive atmosphere. Only radio types that are especially qualified should be used in such areas as "Intrinsically Safe". Do not remove, install or charge batteries in such areas. Sparks in a potentially explosive atmosphere can cause an explosion or fire resulting in bodily injury or even death.
Note: The areas with potentially explosive atmospheres referred to above include fueling areas such as below

decks on boats, fuel or chemical transfer or storage facilities, areas where the air contains chemicals or particles (such as grain, dust, or metal powders), and any other area where you would normally be advised to turn off your vehicle engine. Areas with potentially explosive atmospheres are often – but not always posted.

Blasting Caps and Areas
To avoid possible interference with blasting operations, turn off your radio when you are near electrical blasting caps, in a blasting area, or in areas posted "Turn off two-way radios". Obey all signs and instructions.

⚠ **Warning:** CHOKING HAZARD-Small Parts. Not for children under 3 years.

Warnings (US)

⚠
WARNING
Your radio is designed to comply with the following national and international standards and guidelines regarding the exposure of human beings to radiofrequency electromagnetic energy:

- the United States Federal Communications Commission, Code of Federal Regulations: 47 CFR part 2.1093
- IEEE Std. 1528:2013 and KDB447498, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency

  Electromagnetic Fields.
- American National Standards Institute (ANSI)/Institute of Electrical & Electronic Engineers (IEEE) C95. 1-2005
- Institute of Electrical and Electronic Engineers (IEEE) C95.3-2002
- International Electrotechnical Commission IEC62209-2:2010

⚠
CAUTION
This product is in compliance with FCC RF exposure requirements and refers to the FCC website **https://apps.fcc.gov/oetcf/eas/reports/GenericSearch.cfm** Search for FCC ID: 2AAR8RETEVISRT21 to gain further information including SAR Values.

⚠
WARNING

SAFETY INFORMATION

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%. In August 1996, the Federal Communications Commission (FCC) adopted RF exposure guidelines with safety levels for hand-held wireless devices.
To control your exposure and ensure compliance with the general population or uncontrolled environment exposure limits, transmit no more than 50% of the time. The radio generates measurable RF energy exposure only when transmitting.

⚠
WARNING

Before using this two-way radio, please read the manual which contains important operating instructions for safe usage, RF Energy Awareness, control information and operational instructions for compliance with RF Energy Exposure limits in applicable national and international standards, and also read the operational instructions for safe use. radio could violate FCC rules.

Note: The use of this radio outside the country where it was intended to be distributed is subject to government regulations and may be prohibited.

⚠️

WARNING
Body-Worn Operation
To maintain compliance with FCC's RF exposure guidelines, for body-worn operation, this radio has been tested and meets the FCC RF exposure guidelines when used with the specified accessories supplied or designated for this product. The use of other accessories may not ensure compliance with FCC RF exposure guidelines.
If you wear the radio on your body when transmitting always use a specified supplied or approved belt clip, holster, case, or body harness for this product.

Documents / Resources

TO CUSTOMERS	**RETEVIS RT21 Two Way Radio** [pdf] User Manual RT21, 2AAR8RT21, RT21 Two Way Radio, Two Way Radio
TO CUSTOMERS	**RETEVIS RT21 Two Way Radio** [pdf] User Manual RT21, 2AAR8RT21, RT21 Two Way Radio, Two Way Radio

References

- ◈ **System Maintenance | Federal Communications Commission**