

User manual for
WisGate Edge Pro (RAK7289 series)



1 Product description

WisGate Edge is RAKwireless flagship line of commercial-grade gateways. Customizable in terms of the backhaul connectivity options, antenna type, and power provisioning.

WisGate Edge Pro is an ideal product for IoT commercial deployment. With its industrial-grade components, it achieves a high standard of reliability.

Supports up to 16 LoRa channels, multi-backhaul with Ethernet, Wi-Fi, and Cellular connectivity. Optionally there is a dedicated port for different power options, solar panels, and batteries. With its new enclosure design, it allows the LTE, Wi-Fi, and GPS antennas to be inside the enclosure.

The gateway provides a solid out-of-the-box experience for quick deployment. Additionally, since its software and UI sits on top of OpenWRT it is perfect for the development of custom applications (via the open SDK).

Manufacturers Address

Shenzhen RAKwireless Technology Co.,Ltd.

Room 506, Bldg B, New Compark, Pingshan First Road, Taoyuan Street, XiLi Town Nanshan District, Shenzhen, China

Instructions for use and safety information:



For safe commissioning, please read this manual and the documentation of your product. The complete documentation and further information about your product can be found in the RAKwireless Documentation Center: <https://docs.rakwireless.com/Product-Categories/WisGate/#wisgate-edge> To do this, enter the product name or item number in the search box and click Search.

2 Product specifications

2.1 Models

- Main model: **RAK7289XXX**
- Sub-models:

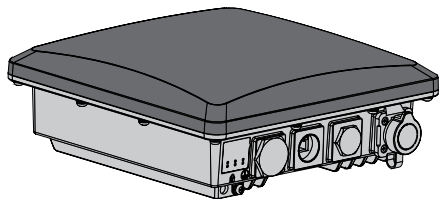
Indicator	Meaning
C	With Cellular connectivity
V2	With WisGateOS 2
H	With a Bluetooth

2.2 Product Features

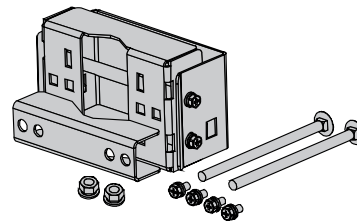
- Full LoRaWAN Stack support in Built-In Server mode

- Supports 2.4 G Wi-Fi AP for configuration
 - 100M Base-T Ethernet with PoE
 - Power supply
 - PoE (IEEE 802.3 af), 37~57 VDC
 - 12V/1A
 - Support RAK Battery Plus
 - Ingress protection IP67
 - Enclosure material – Aluminum and plastic
 - Operating temperatures -30 °C to +55 °C
 - Installation method Pole or wall mounting
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- Multi back-haul with Ethernet and Wi-Fi
 - Cellular LTE Cat 4 network (optional, available with C versions)
 - BLE connectivity (optional, available with H versions)
 - OpenWRT software supports Web UI for easy configuration and monitoring
 - Can integrate with both private (e.g. Chirp Stack) and public (e.g. TTN) network servers
 - SD card for system logs backup
 - Built-in Network Server for easy deployment of applications and integration of gateways

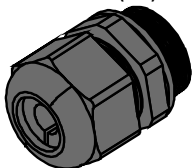
3 Packing List



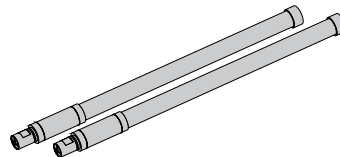
Device (1x)



Installation Bracket(1x)



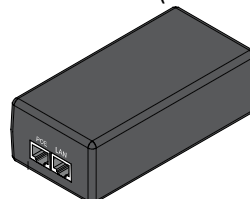
Cable Gland(1x)



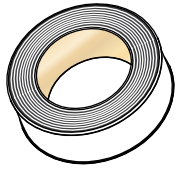
LoRa antenna(1x or 2x)



Power Cord(1x)



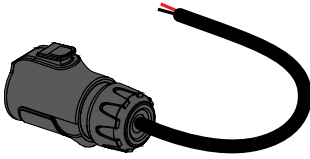
Power Adapter (1x)



Waterproof Tape (1x)



PVC Insulating tape (1x)



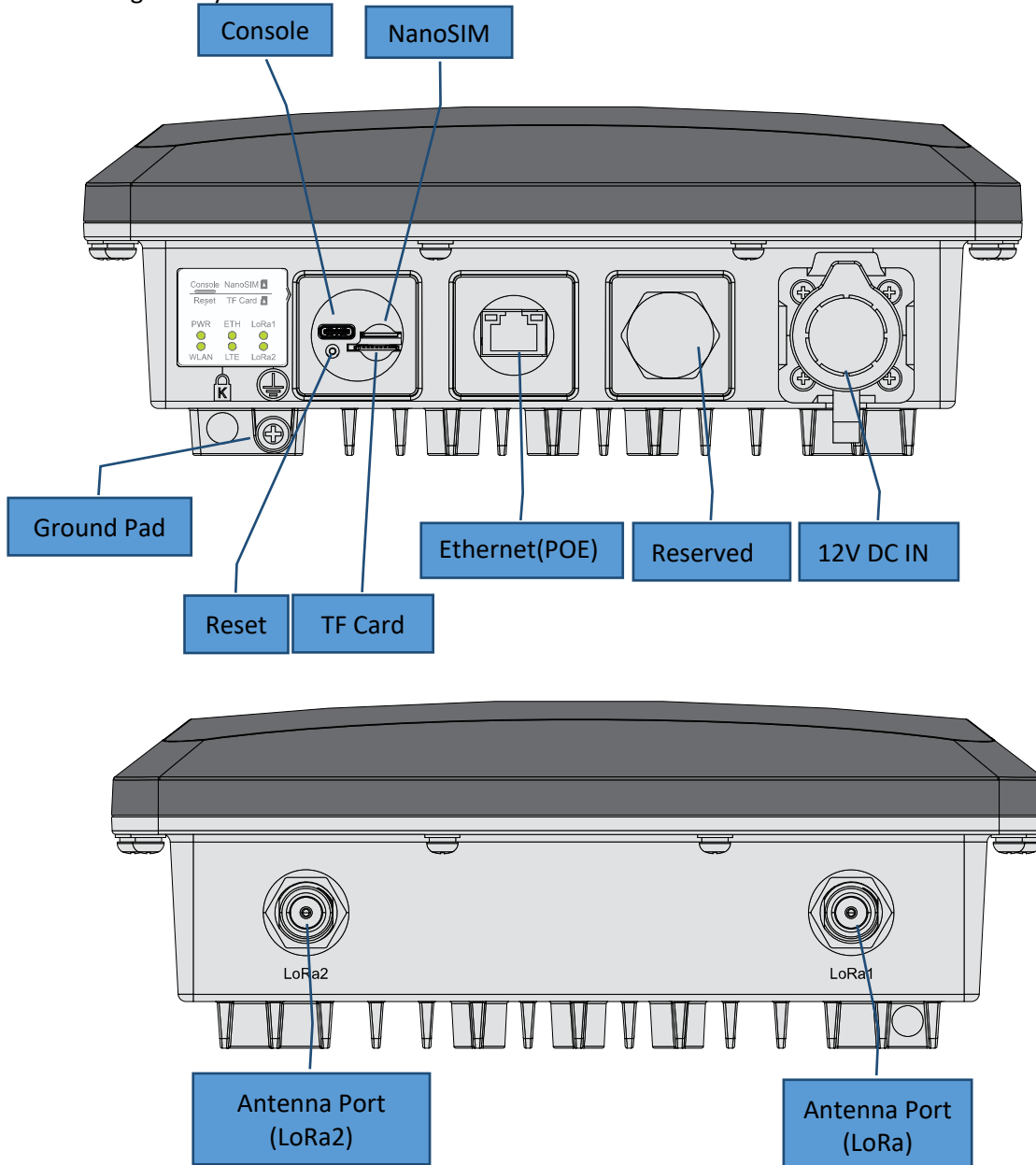
12V Cable(1x)



Installation Guide(1x)

4 Interfaces and connectors

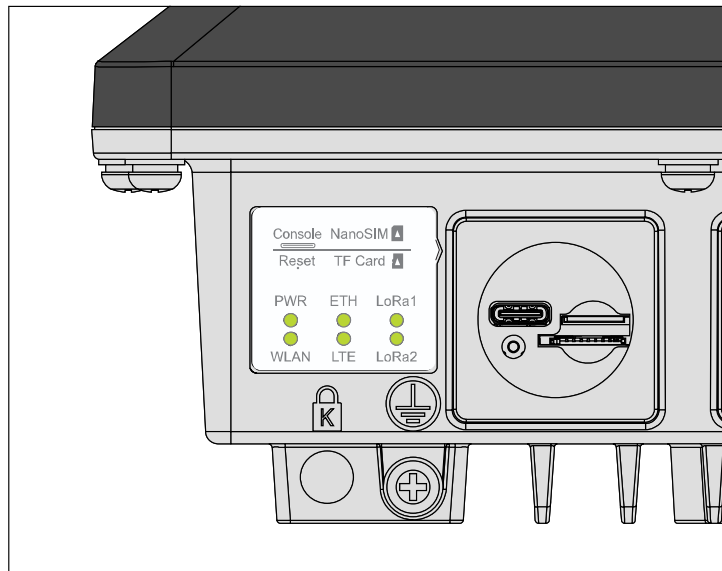
The gateway's interfaces and connectors are illustrated below:



Note: the SD card and the SIM card do not support hot-swap. Please always turn off the gateway before you insert or take off SIM or SD card.

Note: Do not power the Gateway without a connected antenna/s. This may damage the radios.

5 Status LEDs

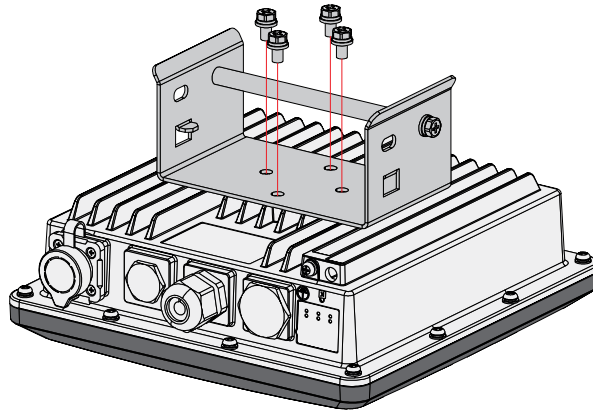


Name	Status	Description
PWR	ON/OFF	<ul style="list-style-type: none"> • ON – device power on • OFF –device power off
ETH	ON/OFF/FLASH	<ul style="list-style-type: none"> • ON – link up • OFF – link down • Flash - Data Transmitting and Receiving
LoRa1	ON/OFF/FLASH	<ul style="list-style-type: none"> • ON - LoRa1 is working • OFF - LoRa1 is not working • Flash - Indicate that LoRa1 Packet Transmitting and Receiving
LoRa2	ON/OFF/FLASH	<ul style="list-style-type: none"> • ON - LoRa2 is working • OFF - LoRa2 is not working • Flash - Indicate that LoRa2 Packet Transmitting and Receiving
WLAN	ON/OFF/Slow FLASH/FLASH	<ul style="list-style-type: none"> • OFF-Wi-Fi disable <p style="text-align: center;">AP Mode</p> <ul style="list-style-type: none"> • ON - WLAN is working • Flash - Data Transmitting and Receiving <p style="text-align: center;">STA Mode</p> <ul style="list-style-type: none"> • Flash slowly (1Hz) - Connection Disconnected

		<ul style="list-style-type: none"> • ON - Connection Successful • Flash - Data Receiving and Sending
LTE	Flash slowly/ Flash quickly (Available for C model)	<ul style="list-style-type: none"> • Flash slowly 1 (200ms Bright/1800ms Dark)- Unregistered network (Network searching) • Flash slowly 2 (200ms Dark/1800ms Bright)- Idle status (online) • Flash quickly - Data Transmitting and Receiving

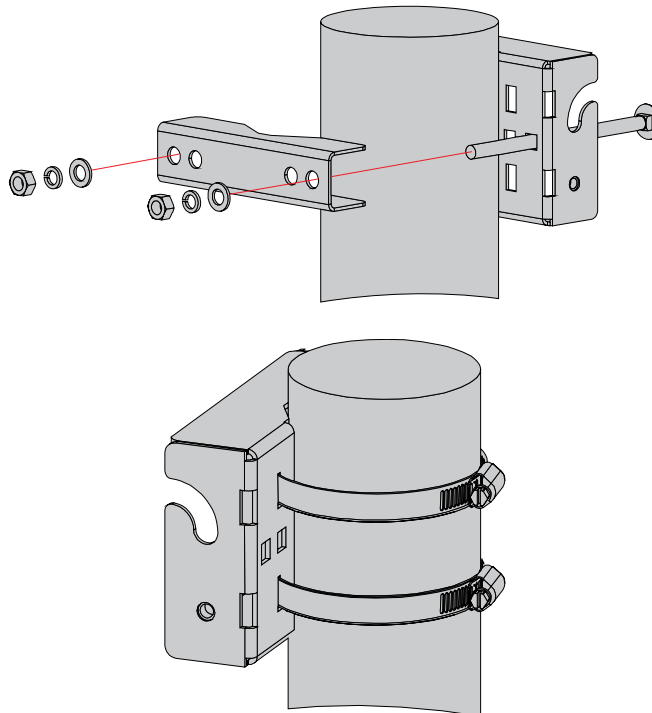
6 Installation

Step 1: Fix the device bracket on the bottom of the enclosure with four M6*12 screws following the direction shown in the figure below.

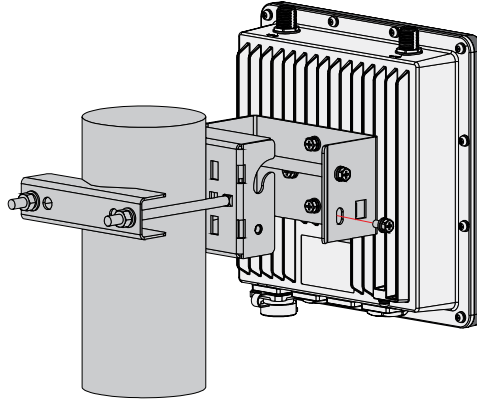


Step 2: Tighten the pole clamp bar with bolts, washer, and nuts.

Notes: The diameter of a pole that brackets support is 50-100mm. If the pole diameter is more than this value, the steel strips can be used. Standard delivery without steel strip and the user should purchase separately.



Step 3: Hang up the device and fasten it with two M6*12 Screws.

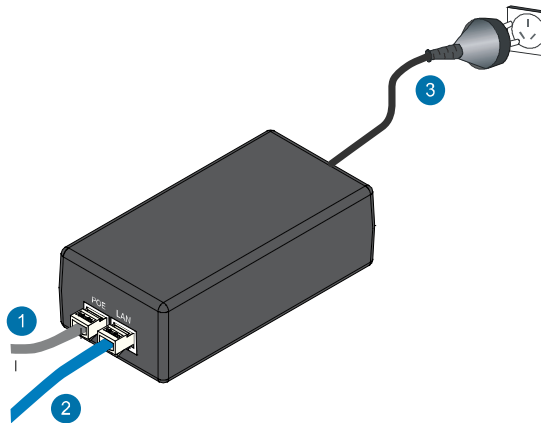


7 Connecting Power over Ethernet

Step 1: Connect the other end of the Ethernet cable from the enclosure to the Ethernet port labeled POE on the adapter.

Step 2: Connect an Ethernet cable from your LAN to the Ethernet port labeled LAN on the adapter.

Step 3: Connect the Power Cord to the power port on the adapter. Connect the other end of the Power Cord to a power outlet.

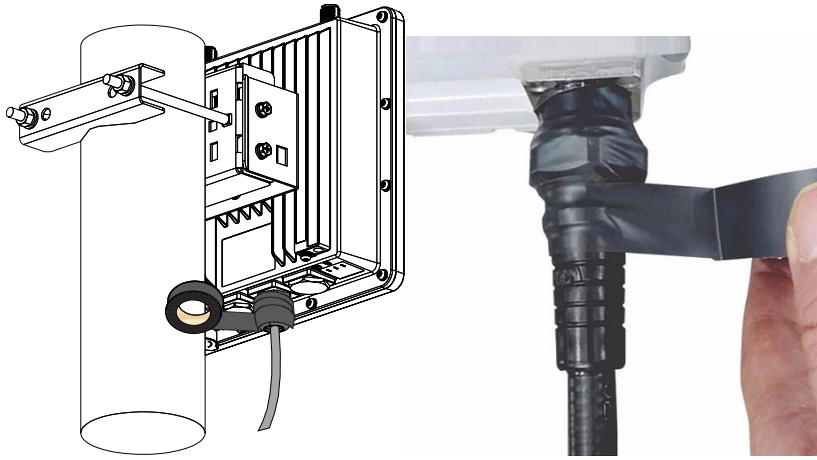


8 Weather protection

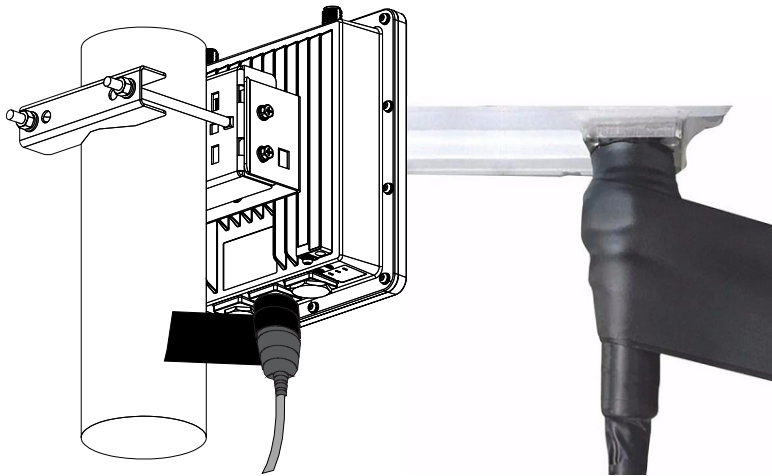
Tape sealed antenna and cable connections:

Step 1: to better protect the Ethernet cable gland and the antenna connector from the weather, you need to cover them with PVC tape.

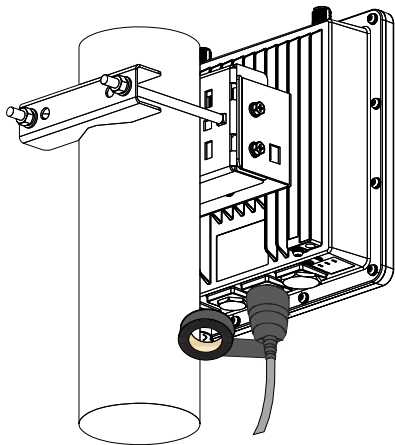
Clean the surface area of the connector that will be wrapped. Wrap a layer of PVC tape with a 50% overlap according to the rotation direction of the connector. Continue wrapping the PVC tape to about 10 mm below the end of the connector.



Step 2 Cut off about 50 cm waterproof tape. Stretch it to double the length. Wrap three layers around the connector with a 50% overlap. Hold the tape in place with your hand for a few seconds.



3. **Step 3:** Wrap three additional layers with PVC tape with natural uncoiling force and a 50% overlap. Make sure to cover the head and the tail of the connector.



9 Accessing the gateway

WI-FI AP MODE

By default, the Gateway will work in Wi-Fi AP Mode which means that you can find an SSID named "**RAK7289_XXXX**" on your PC's Wi-Fi Network List. "XXXX" is the last two bytes of the Gateway MAC address. To access the Web Management Platform, input the IP Address: 192.168.230.1 in your Web browser.

NOTE

No password is required to connect via Wi-Fi

Using your preferred Web browser, input the aforementioned IP Address and you should see the same Log-in Page shown in the following image. Login with the credentials provided below:

- **Username:** root
- **Password:** root

For WisGate Edge Pro models V2 and H you need to set the login password at the first login.

WAN PORT (ETHERNET)

Connect the Ethernet cable to the port marked "ETH" on the Gateway and the other end to the PoE port of the PoE injector. Connect the LAN port of the PoE injector to your PC.

The default IP is **169.254.X.X**. The last two segments(X.X) are mapped from the last four bits of the MAC address of your gateway. For example, the last four bits of the MAC address are 0F:01, and the IP address is 169.254.15.1. Make sure to manually set the address of your PC to one in the same network (for example 169.254.15.100). Use the same credentials for the Web UI as for AP mode.

Detailed Quick Start Guides for the devices are available in the RAKwireless Documentation Center: <https://docs.rakwireless.com/Product-Categories/WisGate/RAK7289/Overview>

10. Certification

CE

Operating frequency range:

Technology	Frequency band [MHz]	Maximum RF output power (dBm)
LoRa	863-865, 865-868, 868-868.6, 868.7-869.2, 869.7-870	14
	869.4-869.65	27
BLE	2402-2480	10

WLAN 802.11 b/g/n		2400-2483.5	20
GSM 900		880-915(TX), 925-960(RX)	33
GSM 1800		1710-1785(TX), 1805-1880(RX)	30
WCDMA Band I		1920-1980(TX), 2110-2170(RX)	24
WCDMA Band VIII		880-915(TX), 925-960(RX)	24
LTE	Band 1	1920-1980(TX), 2110-2170(RX)	23
	Band 3	1710-1785(TX), 1805-1880(RX)	23
	Band 7	2500-2570(TX), 2620-2690(RX)	23
	Band 8	880-915(TX), 925-960(RX)	23
	Band 20	832-862(TX), 791-821(RX)	23
	Band 28A	703-733(TX), 758-788(RX)	23

SIMPLIFIED EU DECLARATION OF CONFORMITY

Hereby, Shenzhen RAKwireless Technology Co.,Ltd. declares that the radio equipment type RAK7289/RAK7289V2/ RAK7289V2H is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address:

<https://downloads.rakwireless.com/LoRa/RAK7289/Certification/RAK7289%20%20CE%20DOC.pdf>

The radio equipment type RAK7289C/RAK7289CV2/ RAK7289CV2H is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address:

<https://downloads.rakwireless.com/LoRa/RAK7289/Certification/RAK7289C%20%20CE%20DOC.pdf>

Economic operators for EU:

Company	Address
Allnet	Maistr. 2, Munich 82110 Germering, Germany
Marcom SRL (marcomweb)	Via della Metallurgia 11, 37139 Verona, Italy
Arduino SRL	Via Andrea Appiani 25, 20900 Monza MB Italy

Economic operators for UK:

Company	Address
Metavurt Ltd	1st Floor Tuspark Newcastle 27 Grainger Street NE1 5JE Newcastle upon Tyne UK



Correct Disposal of this product. This marking indicates that this product should not be disposed of with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmentally safe recycling.

FCC:

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.

FCC Caution:

Changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

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.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 30cm between the radiator and any part of your body for RAK7289/ RAK7289V2/ RAK7289V2H, and 40cm for RAK7289C/ RAK7289CV2/ RAK7289CV2H.

ISED:

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.

2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The device complies with RF exposure guidelines, users can obtain Canadian information on RF exposure and compliance. The minimum distance from the body to use the device is 30 cm for RAK7289/ RAK7289V2/ RAK7289V2H, and 40 cm for RAK7289C/ RAK7289CV2/ RAK7289CV2H.

Le présent appareil est conforme. Après examen de ce matériel aux conformités ou aux limites d'intensité de champ RF, les utilisateurs peuvent sur l'exposition aux radiofréquences et la conformité and compliance d'acquérir les informations correspondantes. La distance minimale du corps pour utiliser l'appareil est de 30 cm pour RAK7289/ RAK7289V2/ RAK7289V2H, et de 40 cm pour RAK7289C/ RAK7289CV2/ RAK7289CV2H.

The device must be installed by a trained professional (training in RF Exposure) to ensure that the device is installed correctly with all safeguards in place.

L'appareil doit être installé par un professionnel qualifié (formation en exposition RF) pour s'assurer que l'appareil est installé correctement avec toutes les protections en place.