RAK7268V2/RAK7268CV2 WisGate Edge Lite 2 Datasheet

Overview

Description

The RAK7268V2 WisGate Edge Lite 2 is the latest edition of the RAK Edge Series. It is an ideal product for indoor deployment with its built-in Ethernet connectivity for a straightforward setup. Additionally, there is an onboard Wi-Fi setup (supporting 2.4 GHz Wi-Fi) that allows it to be easily configured via the default Wi-Fi AP mode. The new RAK7268V2 supports power-over-Ethernet (PoE) in cases of a wall or ceiling mounting, where installing additional power lines is not an option. Moreover, the gateway supports LTE uplink communication connections (optional, only in RAK7268CV2).

The RAK7268V2 supports WisGateOS 2, which is based on the latest OpenWRT kernel and accommodates the latest security updates like IPv6, OpenSSL 1.1 support, multiple accounts access, and more. The web UI has a fresh new look, with more user-friendly information tooltips.

RAK7268V2 is especially suitable for small and medium-sized deployment scenarios in industry applications, saving the additional cost for server and R&D investment, and has the advantages of high execution efficiency.

Features

- Full LoRaWAN Stack support (V 1.0.3) with Semtech SX1302
- Supports 2.4 GHz Wi-Fi AP for configuration
- 100M Base-T Ethernet with PoE
- Multi back-haul with Ethernet, Wi-Fi, Cellular
- OpenWRT software supports Web UI for easy configuration and monitoring
- Can integrate with both private (ChirpStack) and public (TTN) network servers
- TF card for log backup and LoRa frame buffering (in case of backhaul failover)
- Built-in Network Server for easy deployment of applications and integration of gateways
- LTE Cat 4 network (optional)

Specifications

Overview

The overview presents the block diagram for the RAK7268V2 that shows the internal architecture of the board.

Block Diagram

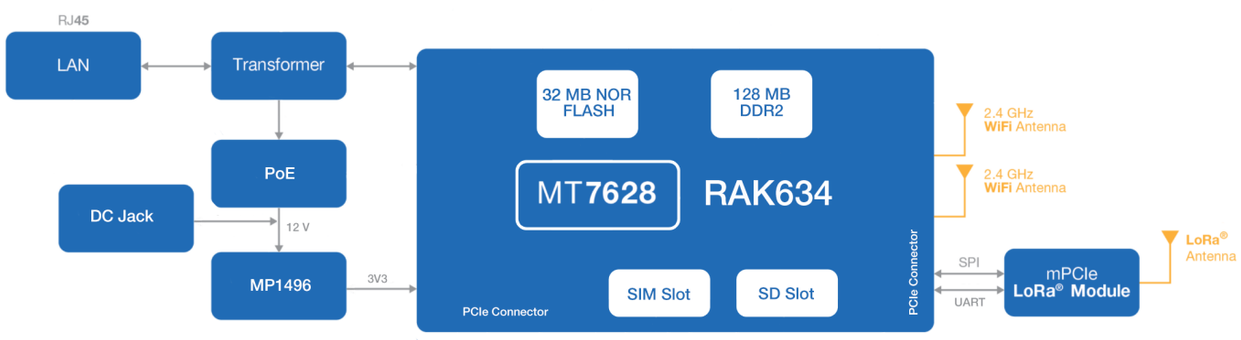

Figure 1: RAK7268V2 WisGate Edge Lite 2 without LTE Block Diagram

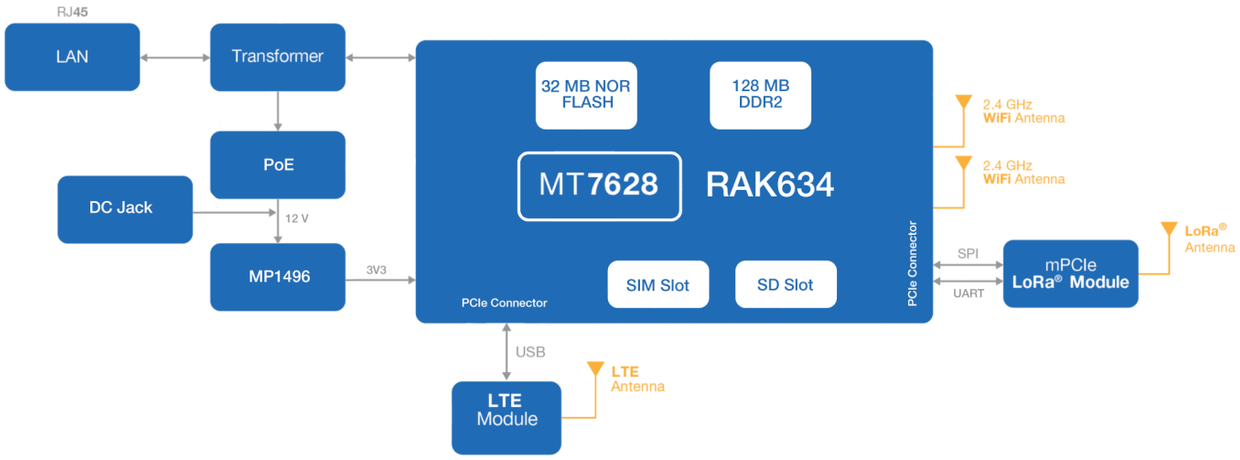

Figure 2: RAK7268CV2 WisGate Edge Lite 2 with LTE Block Diagram

Hardware

The hardware specification covers the interfacing of the RAK7268V2 and its corresponding functionalities. It also presents the parameters and the standard values of the board.

Interfaces

The hardware interfaces of RAK7268V2 gateway include DC 12 V, ETH interface, Console interface, Reset key, SD Card slot, Status indicator LEDs, LoRa Antenna connector, etc.

Figure 3: RAK7268V2 interfaces

Reset Key Functions

The function of the Reset key is as follows:

- **Short press**: Restart the gateway.
- **Long press** (5 sec and above): Restore factory settings.

LED Indicators

LEDs	Status Indication Description
PWR LED	Power indicator - The LED is on when device power is on
Breathing LED	Indicates the current status of the gateway. The breathing light can be programmed
ETH LED	ON - Linkup
	OFF - Linkdown
	Flicker - Data transmitting and receiving
LoRa LED	ON - LoRa is working
	OFF - LoRa is not working
	Flicker - Indicate LoRa Packet receiving and sending
WLAN LED	AP Mode:
	-ON - the AP is up
	-OFF - The AP is down
	-Flicker - Data receiving and sending
	STA Mode:
	-Slow flicker (1 Hz) - Disconnected
	-ON - Connected
	-Flicker - Data receiving and sending
LTE LED (functional only in RAK7268CV2)	Slow Flicker (1800 ms High / 200 ms Low) - Network searching
	Slow flicker (200 ms High / 1800 ms Low) - Idle
	Fast flicker (125 ms High / 125 ms Low) - Ongoing data transfer

Main Specifications

Feature	Specifications
Computing	MT7628, DDR2 RAM 128 MB
Wi-Fi feature	Frequency: 2.4 GHz (802.11b/g/n)
	RX Sensitivity: -95 dBm (Min)
	TX Power: 20 dBm (Max)
	Operation channels: 2.4 GHz: 1-13
LoRa feature	SX1302 Mini PCIe card
	8 Channels
	RX Sensitivity: -139 dBm (Min)
	TX Power: 27 dBm (Max)
	Frequency: EU433/CN470/EU868/US915/AS923/AU915/IN865/KR920
Cellular (optional, available with RAK7268CV2)	Supports Quectel EG95-E/EG95-NA (IoT/M2M -optimized LTE Cat 4 Module)
	EG95-E for EMEA Region
	- LTE FDD: B1/B3/B7/B8/B20/B28A
	- WCDMA: B1/B8
	- GSM/EDGE: B3/B8
	EG95-NA for North America Region
	- LTE FDD: B2/B4/B5/B12/B13
	- WCDMA: B2/B4/B5
	Optional supports other PCIe LTE module for Global Region
Power supply	DC 12 V - 1 A
	PoE (IEEE 802.3 af), 36~57 VDC
Power consumption	12 W (typical)
ETH	RJ45 (10/100 M)

Feature	Specifications
Console	Type-C USB
Antenna	LoRa: RP-SMA female connector
	LTE: Internal antenna
	Wi-Fi: Internal antenna
LEDs	POWER LED
	Breathing LED (Top side)
	ETH LED (On ETH connector)
	LoRa LED
	WLAN LED
	LTE LED (functional only in RAK7268CV2)
Ingress protection	IP30
Enclosure material	Plastic
Weight	0.3 kg
Dimensions	166 x 127.5 x 36 mm
Operating temperature	-10 to 55 ˚C
Installation method	Wall mounting

> 📝 **NOTE**
>
> Both RAK7268V2 and RAK7268CV2 have SIM slots, but only RAK7268CV2 has an integrated cellular module.

RF Specifications

Wi-Fi Radio Specifications

Feature	Specifications
Wireless Standard	IEEE 802.11b/g/n
Operating Frequency	ISM band: 2.412~2.472 GHz
Operation Channels	2.4 GHz: 1-13
Transmit Power (The max power maybe different depending on local regulations) - per chain	802.11b
	19 dBm @1 Mbps
	19 dBm @11 Mbps
	802.11g
	18 dBm @6 Mbps
	16 dBm @ Mbps
	802.11n (2.4 G)
	18 dBm @MCS0 (HT20)
	16 dBm @MCS7 (HT20)
	17 dBm @MCS0 (HT40)
	15 dBm @MCS7 (HT40)
Receiver Sensitivity (Typical)	802.11b
	-95 dBm @1 Mbps
	-88 dBm @11 Mbps
	802.11g
	-90 dBm @6 Mbps
	-75 dBm @54 Mbps
	802.11n (2.4 G)
	-89 dBm @MCS0 (HT20)

Feature	Specifications
	-72 dBm @MCS7 (HT20)
	-86 dBm @MCS0 (HT40)
	-68 dBm @MCS7 (HT40)

LoRa Radio Specifications

Feature	Specifications
Operating Frequency	EU433/CN470/EU868/US915/AS923/AU915/IN865/KR920
Transmit Power	27 dBm (Max)
Receiver Sensitivity	-139 dBm (Min)

LTE Radio Specifications (optional, available with RAK7268CV2)

Feature	Specifications
EG95-E for EMEA Region	LTE FDD: B1/B3/B7/B8/B20/B28A
	WCDMA: B1/B8s
	GSM/EDGE: B3/B8
EG95-NA for North America Region	LTE FDD: B2/B4/B5/B12/B13
	WCDMA: B2/B4/B5
	Optional supports other PCIE LTE module for Global Region

Antennas

Depending on the frequency range, the included LoRa antenna will be as follows:

- Frequency Range 863~870 MHz - RAKARJ15 868 MHz White Blade Antenna
- Frequency Range 902~928 MHz - RAKARJ14 915 MHz White Blade Antenna

Electrical Characteristics

The Gateway comes with a 12 V - 1 A power adaptor. It is also fully compatible with PoE (IEEE 802.3af), 36~57 VDC. The typical power consumption is 12 W.

Environmental Requirements

The casing is IP30 rated and is made of plastic. There are holes for a mounting bracket on the back, to simplify wall mounting. The enclosure, while robust, is not meant for outdoor deployment and should be kept away from moisture.

Parameter	Value
Dimensions	166 x 127.5 x 36 mm
Weight	0.3 kg
Operating temperature	-10 °C to 55 °C

Firmware

The firmware sits on OpenWRT. There is a Web UI for easy configuration and management of the device, as well as the possibility for SSH2 management. The WisGateOS V2 supports the feature to install extensions (WireGuard, Custom Logo, Breathing Light, and more to come). The extensions are available in RAK download center .

Model	Firmware Version	Source
RAK7268V2 WisGate Edge Lite 2	v2.2.1	Download

Software

Software Features

LoRaWAN	Network	Management
Gateway OTA management		WisDM
LoRa package forward (packet forwarder, Basics Station)	Uplink backup	SSH2
Country code setup	802.1q	Firmware update
TX Power setup	DHCP Server/Client	NTP
Data logger	Router module NAT	Configuring the LoRa Packet Forwarder
Statistics	Firewall	Build-in Server
Location setup	LTE APN setup	OpenVPN, Ping Watch Dog
Server address and Port setup		MQTT Bridge
Supports class A, C	Wi-Fi AP mode	WEB management

Certification

FCC Caution

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

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

> 📝 **NOTE**
>
> This equipment has been tested and found to comply with the limits for a Class B digital device, according 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 following 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:
>
> 1. Reorient or relocate the receiving antenna.
> 2. Increase the separation between the equipment and the receiver.
> 3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
> 4. Consult the dealer or an experienced radio/TV technician for help.

FCC 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 20 cm between the radiator and your body.

ISEDC Warning

This device complies with the Innovation, Science, and Economic Development Canada licence-exempt RSS standard(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.

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 nedoit pas produire de brouillage, et
2. l'utilisateur de 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 20 cm.

Le présent appareil est conforme Après examen de ce matériel aux conformité 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 à utiliser le dispositif est de 20 cm.

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