

FCC ID: Z4T-WM1303-A

Grantee Code: Z4T

Product Code: -WM1303-A

114992688 WM1303 LoRaWAN Gateway Module(SPI) - US915

## Features

- **Powered by Semtech® SX1303 baseband LoRa® chip**, extremely low power consumption and high performance.
- **Mini-PCIe form factor with the standard 52-pin golden finger**, easy to integrate with various gateway devices.
- **Ultra-low operating temperature**, no additional heat dissipation needed, reducing the size of LoRaWAN gateway.
- **High sensitivity** down to -139 dBm @SF12 with SX1250 TX/RX front-end; TX power up to 26 dBm @3.3V.

WM1303 module is a new generation of LoRaWAN gateway module with mini-PCIe form-factor. Based on the Semtech® SX1303 baseband LoRaWAN® chip, WM1303 unlocks the greater potential capacity of long-range wireless transmission for gateway products. It features higher sensitivity, less power consumption, and lower operating temperature compared with the previous SX1301 and SX1308 LoRa® chip.

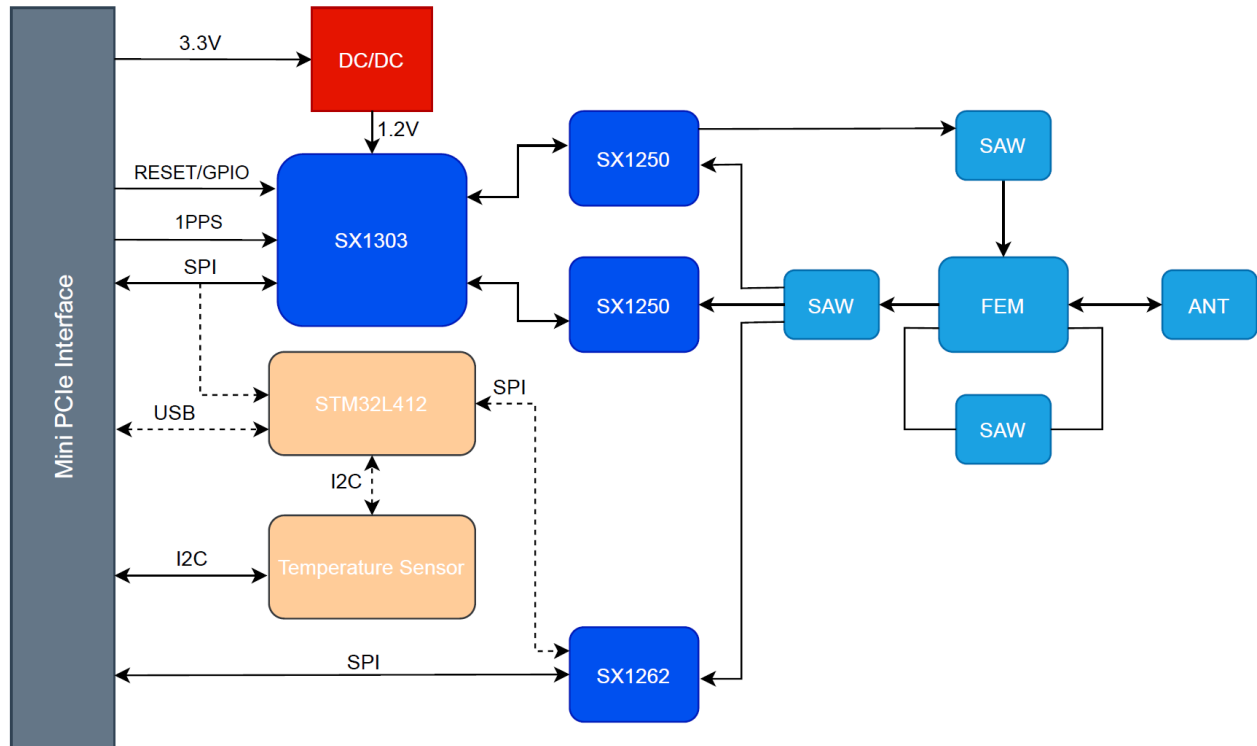
WM1303 LoRaWAN gateway module has SPI and USB versions on both US915 and EU868 frequency bands, enable you to have a wide-range of LoRaWAN frequency plans options to choose including EU868, US915, AS923, AS920, AU915, KR920, and IN865.

WM1303 module is CE, FCC and Telec certified, which helps simplify the development and certification process of the LoRaWAN gateway devices.

WM1303 is designed for M2M and IoT applications and can be widely applied in LPWAN gateway supported scenarios. It would be a perfect choice for you to significantly reduce the technical difficulties and time-consumption when developing the LoRa gateway devices, including LoRaWAN gateway, miner hotspots, etc.

# Hardware Overview

## Diagram



## Pinout

### WM1303 LoRaWAN Gateway Module

(SPI / USB)



- DI - Digital Input    
 ■ DO - Digital Output    
 ■ DIO - Bidirectional    
 ■ NC - No Connection
- PO - Power    
 ■ GND - Ground    
 ■ SPI    
 ■ IIC
- 🍷 GPIO connected to Raspberry Pi    
 🌡️ Temperature Sensor

## Applications

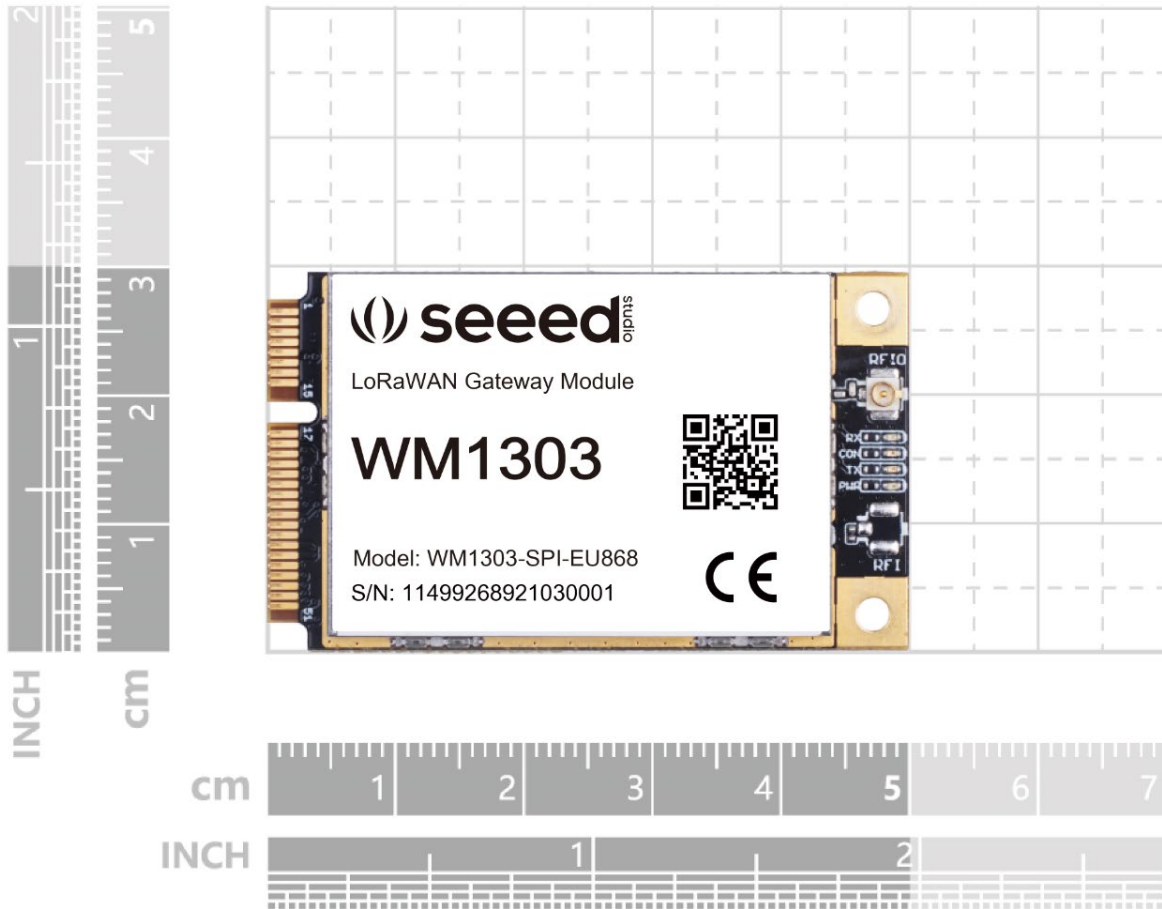
- LPWAN Gateway devices development
- Any long-distance wireless communication application development
- LoRa and LoRaWAN application learn and research

## Specifications

Region	EU868	US915
Frequency	863-870MHz	902-928MHz
Sensitivity	-125dBm @125K/SF7 -139dBm @125K/SF12	-125dBm @125K/SF7 -139dBm @125K/SF12
TX Power	26 dBm (with 3.3V power supply)	25 dBm (with 3.3V power supply)
LEDs	Power: Green Config: Red TX: Green RX: Blue	
Form Factor	Mini PCIe, 52pin Golden Finger	
Power Consumption (SPI version)	Standby: 7.5 mA TX maximum power: 415 mA RX: 40 mA	
Power Consumption (USB version)	Standby: 20 mA TX maximum power: 425 mA RX: 53 mA	
LBT(Listen Before Talk)	Support	
Antenna Connector	U.FL	
Operating Temperature	-40°C to 85°C	
Dimensions	30 mm (width) × 50.95 mm (length)	

Region	EU868	US915
Certification	CE	FCC

## Dimension



## **FCC regulatory information**

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.

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

## **End Device Labelling**

Please notice that if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains FCC ID: Z4T-WM1303-A" any similar wording that expresses the same meaning may be used.

## **RF Exposure Compliance**

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 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

## **Installation Notice**

The module is limited to OEM installation ONLY. The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.

The module is limited to installation in mobile application; A separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and difference antenna configurations.

## **FCC Part 15B Compliance of End Device**

The OEM integrator is responsible for ensuring that the host product which is installed and operating with the module is in compliant with Part 15B unintentional Radiator requirements, please note that For a Class B digital device or peripheral, the instructions furnished the user manual of the end-user product shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: 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.

## OEM Installation Guidance Document

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Conditions on using Seeed regulatory approvals:

A. Customer must ensure that its product (the “CUSTOMER Product” ) is electrically identical to Seeed reference designs. Customer acknowledges that any modifications to Seeed reference designs may invalidate regulatory approvals in relation to the CUSTOMER Product, or may necessitate notifications to the relevant regulatory authorities.

B. Customer is responsible for ensuring that antennas used with the product are of the same type, with same or lower gains as approved and providing antenna reports to Seeed.

C. Customer is responsible for regression testing to accommodate changes to Seeed reference designs, new antennas, and portable RF exposure safety testing/approvals.

D. Appropriate labels must be affixed to the CUSTOMER Product that comply with applicable regulations in all respects.

E. A user’ s manual or instruction manual must be included with the customer product that contains the text as required by applicable law. Without limitation of the foregoing, an example (for illustration purposes only) of possible text to include is set forth below:

1. USA—Federal Communications Commission (FCC)

FCC COMPLIANCE STATEMENT:

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.

INFORMATION TO USER:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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. If not installed and used in accordance with the instructions, it 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 tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna

-Increase the distance between the equipment and the receiver.

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

System integrators must include the FCC ID on the end product.

FCC Radio-Frequency Exposure & Approval Conditions:

1. Transmitting antenna(s) can only be installed at the display section of computer. When this device is installed other than notebook computers, at least 20 cm separation distance shall be maintained between the transmitting antenna(s) to the body of user or nearby person.

2. The antenna(s) used for this transmitter must not be collocated or operating in conjunction with any other antenna or transmitter within a host device, except in accordance with FCC multi-transmitter product procedures.

3. The regulatory label on the final system must include the statement: “Contains FCC ID: Z4T-WM1303-A” using electronic labeling method as documented in KDB 784748.

4. The final system integrator must ensure there is no instruction provided in the user manual or customer

documentation indicating how to install or remove the transmitter module except such device has implemented two-way authentication between module and the host system.

5. The final host manual shall include the following regulatory statement: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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. If not installed and used in accordance with the instructions, it 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 tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna

-Increase the distance between the equipment and the receiver.

-Connect the equipment to outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

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 INFORMATION (additional)

This device is intended only for OEM integrators under the following conditions: The module must be installed in the host equipment such that 20 cm is maintained between the antenna and users, and the transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the internal antenna(s) that has been originally tested and certified with this module. As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

Module label:

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The final end product must be labeled in a visible area with the following: "Contains FCC ID: Z4T-WM1303-A".

Information that must be placed in the end user manual:

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.

The module not applicable Limited module procedures. The module is a Single module and complies with the requirement of FCC Part 15.2

The module has its own antenna, and doesn't need a host's printed board microstrip trace antenna etc, Not applicable Trace antenna designs