



OEM/Integrators Installation Manual

Sigfox Module

WSG300S

Compact-sized
With Ultra-low Power
Consumption

RF on Pad



IPEX



Sigfox Support



ISM RC2 (902MHz)
ISM RC4 (920MHz)



AT Commands



Extended Temperature
Range: -40°C to +85°C



Ultra-Low Power Consumption
(2.2uA @ sleep mode)

WSG300S RC24 is a Sigfox modem module for the low power wide area network (LPWAN) market. It is designed with STM's system S2-LP + STM MCU + Sky66421 for the US or other FCC-like market (FCC Part 15.247).

The module was designed for high performance, high quality, low cost, small form factor and most importantly, high RF power of up to 22dBm. The design is fully compliant to FCC regulations. The Sigfox application is running on STM32 MCU at high efficiency using its internal 32bit core Cortex-M0 processor.

Every module is preloaded with Sigfox application software, module specific ID/KEY/PAC as referring to Sigfox network system. The preloaded software also includes a bootloader which allows software update or future user application development.

◆ General Feature

- General Sigfox module for Smart City, Smart Agriculture , Smart Industry, IOT Application
- Compact Form Factor: 22.5 x 16.5 x 3.0 mm
- 51 Pin LGA Pad for PCB SMT mounting
- Interface : I2C*1/UART*1/GPIO*3/ADC*2/SWD*1
- Temperature range: -40°C to +85°C
- Supply voltage: 2.1 ~ 3.6V
- Frequency range: ISM RC2 (902MHz) and RC4 (920MHz)
- FCC Part 15.247
- Preloaded Sigfox application with ID/KEY/PAC and bootloader for firmware update

◆ Product Specifications

	RF Function
Standard	Sigfox Network System
Interface	I2C/UART/GPIO/ADC/SWD
Transmit Output Power	22dBm
Data Rate	RC2/4: Uplink 600bps / Downlink 600bps
Modulation Techniques	Uplink DBPSK Modulation Downlink GFSK Modulation
Frequency bands	RC2 uplink Central Frequency 902.200 MHz RC2 downlink Central Frequency 905.200 MHz RC4 uplink Central Frequency 920.800 MHz RC4 downlink Central Frequency 922.300 MHz
Operating Voltage	2.1 ~ 3.6V
Operating Temperature	-40 ~ 85 degree C
Current consumption	Tx mode(TX period): 80mA Uplink(TX 1 frame): 166mA Downlink:14mA Normal mode: 5mA Sleep mode: 2.2 uA

WARNINGS

FCC Statement:

Federal Communication Commission Interference Statement

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

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

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 minimum distance 20cm between the radiator & your body.

The module is limited to OEM installation ONLY.

This module is intended for OEM integrators under the following conditions:

1. This module is restricted to installation in products for use only in mobile and fixed applications.
2. RF exposure: : The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons.
3. The antenna(s) used for this transmitter must not transmit simultaneously with any other antenna or transmitter.

The OEM integrator is still responsible for

1. ensuring that the end-user has no manual instructions to remove or install module
2. the FCC compliance requirement of the end product, which integrates this module.
3. Appropriate measurements (e.g. 15 B compliance) and if applicable additional equipment authorizations (e.g. Verification, Doc) of the host device to be addressed by the integrator/manufacture.

4. The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations

Guidance to the Host Manufacturer:

1. Module grantee (the party responsible for the module grant) shall provide guidance to the host manufacturer for ensuring compliance with the Part 15 Subpart B requirements.

The user manual of the end product should include

1. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
2. the restriction of operating this device in indoor could void the user's authority to operate the equipment.
3. RF exposure: This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.
4. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
5. The FCC part 15.19 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.

Label of the end product:

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: **PPQ-WSG300S** ".
The end product shall bear the following 15.19 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.