

ED-GW1302S REV1.0

LORAWAN GATEWAY MODULE

SX1302 + SX1250, MINI PCIE, SPI, US915 / EU868

2021-12-17

EDA TECHNOLOGY CO.,LTD

Copyright Statement:

ED-GW1302S and its related intellectual property are owned by EDA Technology Co.,LTD.

EDA Technology Co.,LTD has the copyright of this document and reserves all rights. Any part of the document should not be modified, distributed or duplicated in any approach and form with the written permission issued by EDA Technology Co.,LTD.

Disclaimer:

EDA Technology Co.,LTD does not guarantee that the information in this Hardware Manual is up-to-date, correct, complete or of good quality. Nor does EDA Technology Co.,LTD assume guarantee for further usage of the information. Liability claims against EDA Technology Co.,LTD, referring to material or non-material related damages caused, due to usage or non-usage of the information given in the Hardware Manual, or due to usage of erroneous or incomplete information, are exempted, as long as there is no proven intentional or negligent fault of EDA Technology Co.,LTD. EDA Technology Co.,LTD explicitly reserves the rights to change or add to the contents of this Hardware Manual or parts of it without special notification.

Revision History

Date	Version	Description	Note
2021-12-17	Draft	Initial release.	

Contents

Copyright Statement:.....	ii
Disclaimer:	ii
Revision History	iii
Chapter 1 Overview	5
1.1 Features	5
1.2 Ordering Code.....	5
1.3 Interface Diagram	6
1.4 Block Diagram	7
Chapter 2 Interfaces	8
2.1 Pinout.....	8
2.2 Power	9
2.3 SPI Interface	9
2.4 Control Signals	9
2.4.1 PPS	9
2.4.2 NRESET	9
2.4.3 RX_ON	10
2.4.4 TX_ON	10
2.4.5 CFG_ON.....	10
2.5 Antenna Connector	10
Chapter 3 Electrical Characteristics	11
3.1 Power	11
3.2 IO.....	11
3.3 Current.....	11
Chapter 4 Dimension	12
Chapter 5 Contact.....	13
5.1 About EDATEC	13

Chapter 1 Overview

ED-GW1302S module is a new generation of LoRaWAN gateway module in mini-PCIe form-factor with SPI interfaces based on Semtech® SX1302 and SX1250. It features extremely low power consumption, outstanding performance with CE, FCC certified.

ED-GW1302S LoRaWAN gateway module support 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.

ED-GW1302S 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.

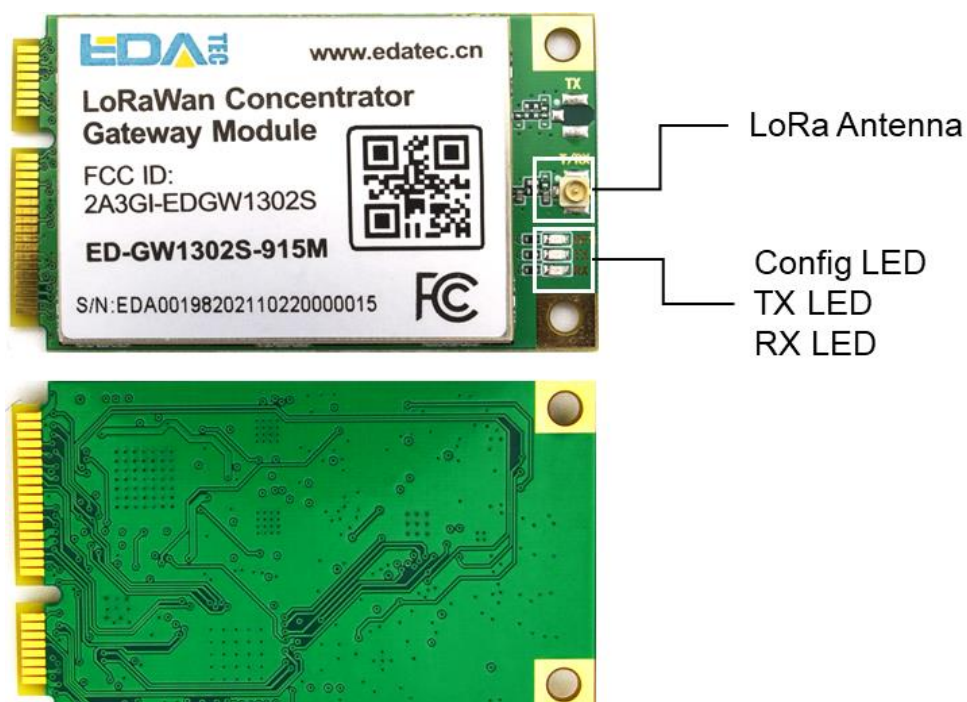
1.1 Features

- Mini PCIe form factor with SPI interfaces
- Powered by Semtech® SX1302 baseband processor
- Ultra-low operating temperature without additional heat dissipation needed
- High sensitivity with Semtech® SX1250 TX/RX front-end; TX power up to 25 dBm @3.3V
- Supports global license-free frequency band including EU868, US915, AS923, AU915, KR920 and IN865
- Certified with CE, FCC

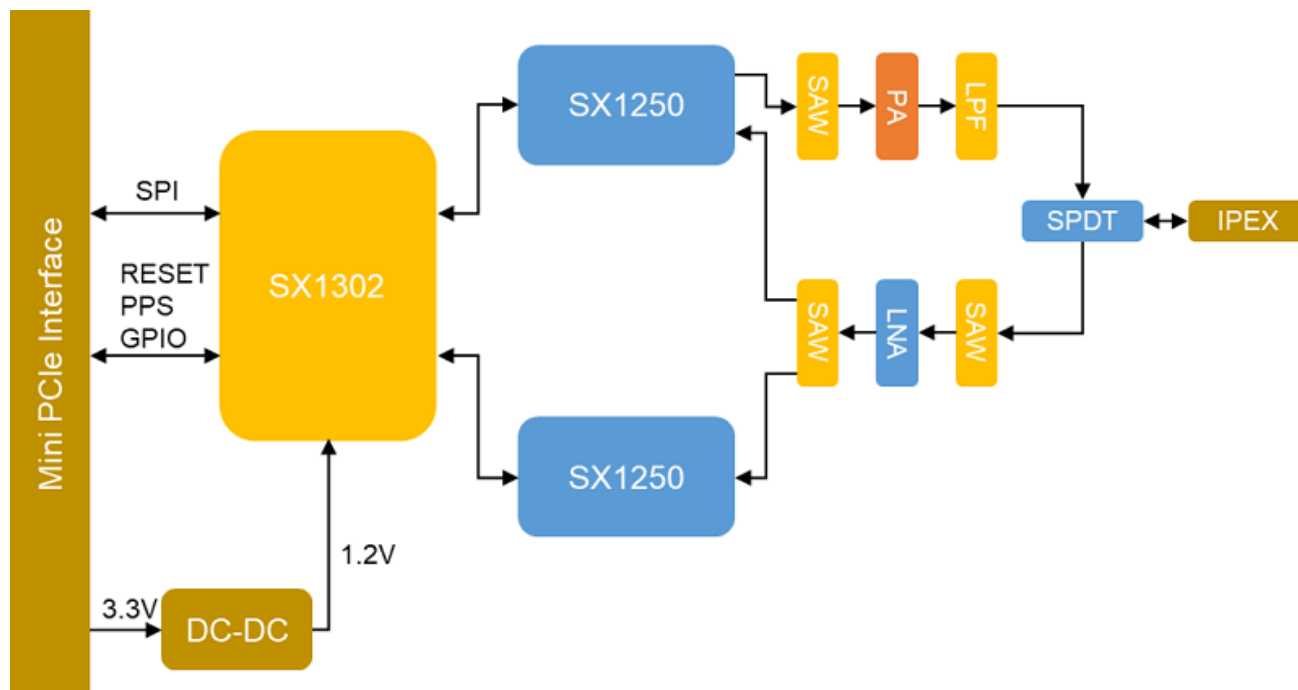
1.2 Ordering Code

Code	Description
ED-GW1302S-915M	US915
ED-GW1302S-868M	EU868

1.3 Interface Diagram



1.4 Block Diagram



Chapter 2 Interfaces

2.1 Pinout

RESERVED	1			2	VCC_3V3
NC	3			4	GND
NC	5			6	NC
NC	7			8	NC
GND	9			10	RESERVED
RESERVED	11			12	RESERVED
RESERVED	13			14	NC
GND	15			16	NC
NC	17			18	GND
PPS	19			20	NC
GND	21			22	NRESET
RESERVED	23			24	VCC_3V3
NC	25			26	GND
GND	27			28	NC
GND	29			30	NC
RESERVED	31			32	NC
NC	33			34	GND
GND	35			36	RESERVED
GND	37			38	RESERVED
VCC_3V3	39			40	GND
VCC_3V3	41			42	RX_ON
GND	43			44	TX_ON
SX_SCK	45			46	CFG_ON
SX_MISO	47			48	NC
SX_MOSI	49			50	GND
SX_CSN	51			52	VCC_3V3

2.2 Power

Pin Name	Pin ID	Pin Type	Description
GND	4,9,15,18,21,26,27,29,34,35,37,40,43,50		
3.3V	2,24,39,41,52	PI	Power In

The power in voltage of ED-GW1302S is 3.3V. Under TX mode, the max current can be 400mA.

2.3 SPI Interface

Pin Name	Pin ID	Pin Type	Description
SX_CLK	45	DI	SPI Clock
SX_MISO	47	DO	SPI MISO
SX_MOSI	49	DI	SPI MOSI
SX_CSN	51	DI	SPI CS

2.4 Control Signals

Pin Name	Pin ID	Pin Type	Description
PPS	11	DI	GPS PPS
NRESET	13	DI	RESET Pin
RX_ON	42	DO	RX Indicate
TX_ON	44	DO	TX Indicate
CFG_ON	46	DO	CONFIG Indicate

2.4.1 PPS

Support GPS-PPS, this can be used to receive data packets with timestamps.

2.4.2 NRESET

This signal can be used to reset the module, active HIGH.

2.4.3 RX_ON

When receive is enabled, the RX_ON signal will output HIGH, and the RX LED will on.

2.4.4 TX_ON

When transmit is enabled, the TX_ON signal will output HIGH, and the TX LED will on.

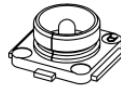
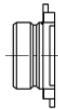
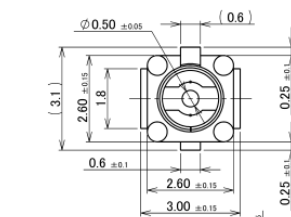
2.4.5 CFG_ON

When the module is configured successful, the CFG_ON signal will output HIGH, and the CFG LED will on.

2.5 Antenna Connector

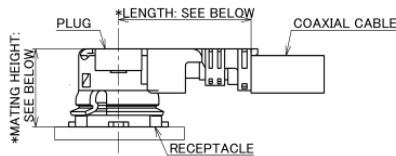
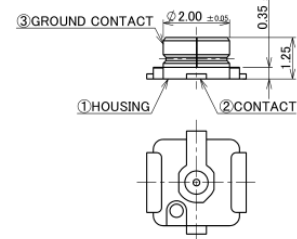
The Antenna connector is compatible with I-PEX 1 standard.

Recommended P/N		20279-001E-03
PART NO.	PACKING REEL	QUANTITY IN 1 REEL
20279-001E-01	PLASTIC REEL	2,500
	CORRUGATED PAPER REEL	2,500
20279-001E-03	PLASTIC REEL	5,000
20279-001E-05	PLASTIC REEL	10,000



NOTES

1. APPLICABLE CONNECTOR PART NO.
MHF I PLUG
20278-11R-**
20351-***R-37
20631-***R-**
20670-001R-**
20767-001R-20
MHF II PLUG
20311-011R-**
20686-001R-08
2. COPLANARITY: 0.1mm MAX.
3. THIS IS "Pb-FREE" CONNECTOR.



*LENGTH: 4.0±0.4 AT PLUG PART NO. 20670-001R-08, 20670-001R-13, 20670-001R-32
4.7±0.4 AT PLUG PART NO. 20670-001R-18, 20670-001R-37
5.6 AT PLUG PART NO. 20767-001R-20 (REFERENCE DIMENSION)
3.8±0.3 AT PLUG PART NO. 20686-001R-08, 20311-011R-**

*MATING HEIGHT: 2.5 MAX. AT PLUG PART NO. 20670-001R-**
3.0 MAX. AT PLUG PART NO. 20767-001R-20
2.0±0.1 AT PLUG PART NO. 20686-001R-08, 20311-011R-**

MATING CONDITION

3	GROUND CONTACT	PHOSPHOR BRONZE	ALL OVER Ni 1.00 μ m MIN. CONTACT PART Au 0.05 μ m MIN. SOLDERING PART Au 0.05 μ m MIN.	
2	CONTACT	BRASS	ALL OVER Ni 1.00 μ m MIN. CONTACT PART Au 0.10 μ m MIN. SOLDERING PART Au 0.03 μ m MIN.	
1	HOUSING	LCP	UL94V-0, WHITE	
NO.	DISCRIPTION	MATERIAL	FINISH, REMARKS	
27	Z210232	S.T 2021/03/08	M.T	ANGLE $\pm 2^\circ$ 6 OVER 30 MAX ± 0.3
26	Z200434	TOI 2020/04/20	Y.H	6 MAX. ± 0.2 30 OVER 120 MAX. ± 0.5
25	Z200262	TOI 2020/03/05	Y.H	GENERAL TOLERANCE.
24	Z191405	Y.F 2019/10/23	Y.S	DWG. DATE
23	Z181523	M.N 2018/11/20	Ken	K. Oobayashi 2001/06/07
22	Z180765	M.N 2018/10/30	Ken	E. Kawabe 2001/06/07
REV.	ECN	BY	DATE	APP.
PROJECTION  SERIES NO. R9 CUSTOMER COPY				
TITLE MHF® I/II RECEPTACLE SCALE 10:1 UNIT mm				I-P-EX
REVISION RECORD NO. DATE BY DESCRIPTION 1 2021/06/07 K. Katabuchi				
DWG. No. 20279				A3 SHEET 1/8
DATE 2021/06/07				REV. 2

Chapter 3 Electrical Characteristics

3.1 Power

Parameter	Description	Min	Type	Max	Unit
VCC	Power In	3.0	3.3	3.6	V

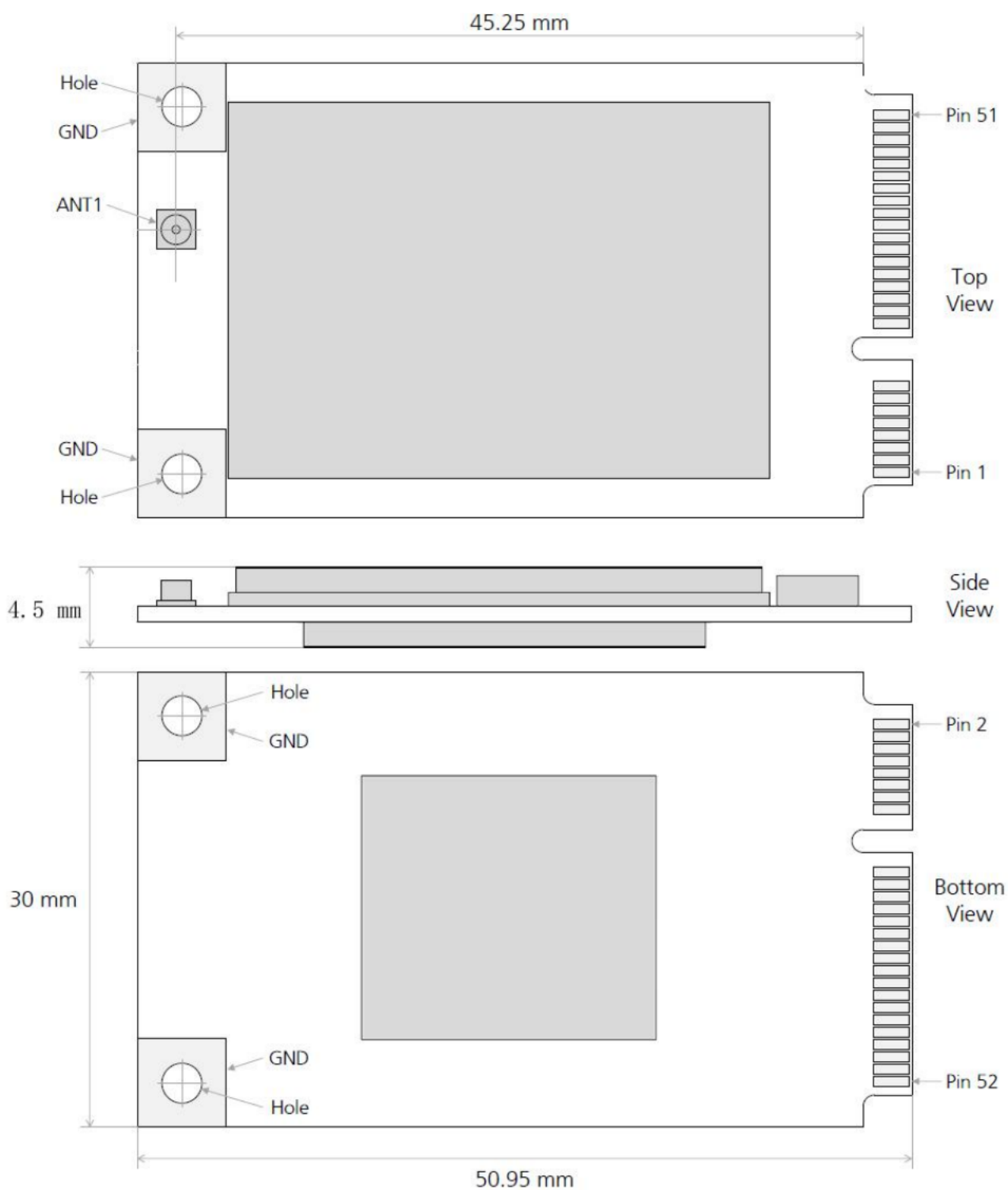
3.2 IO

Parameter	Description	Min	Max	Unit
VIH	Input High Voltage	$0.7 * VCC$	$VCC + 0.3$	V
VIL	Input Low Voltage	-0.3	$0.3 * VCC$	V
VOH	Output High Voltage	$VCC - 0.5$	VCC	V
VOL	Output Low Voltage	0	0.4	V

3.3 Current

Parameter	Operation Mode	Type	Unit
RX	RX Enable, TX Disable	54	mA
TX / RX	RX Enable, TX@25dBm	360	mA
IDLE	RX Disable, TX Disable	27	mA

Chapter 4 Dimension



Chapter 5 Contact

- Email – sales@edatec.cn / support@edatec.cn
- Mobile – +86-18621560183
- Website – <https://www.edatec.cn>
- Address – Room 301, Building 24, No. 1661, Jialuo Road, Jiading District, Shanghai

5.1 About EDATEC

EDA Technology Co.,Ltd is located in Shanghai, it is one of Raspberry Pi's Global Design Partners. Our vision is to offer the hardware solutions for IoT, Industrial Control, Automation, Green Energy & Artificial Intelligence solutions based on Raspberry Pi Technology platform.

We provide the standard hardware solution, custom design & manufacturing services that accelerate the electronic product development and time to market.

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

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 important announcement

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 and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. Country Code selection feature to be disabled for products marketed to the US/Canada.

This device is intended only for OEM integrators under the following conditions:

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and
 2. The transmitter module may not be co-located with any other transmitter or antenna,
- As long as the three conditions above are met, further transmitter testing 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.

Important Note:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization

End Product Labeling

The final end product must be labeled in a visible area with the following" Contains FCC ID: 2A3GI-EDGW1302S1".

Manual Information to the End User

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.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules

CFR 47 FCC PART 15 SUBPART C has been investigated. It is applicable to the modular transmitter

2.3 Specific operational use conditions

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

Not applicable

2.6 RF exposure considerations

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.

2.7 Antennas

This radio transmitter FCC ID:2A3GI-EDGW1302S1 has been approved by Federal Communications Commission to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Model	Frequency	Type	Connector	Peak gain (dBi)
Lora	902-928MHz	External Antenna	/	2.5dBi

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following" Contains FCC ID:2A3GI-EDGW1302S1".

2.9 Information on test modes and additional testing requirements

Host manufacturer is strongly recommended to confirm compliance with FCC requirements for the transmitter when the module is installed in the host.

2.10 Additional testing, Part 15 Subpart B disclaimer

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15 B.