

MAXIMUM PERMISSIBLE EXPOSURE EVALUATION REPORT

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Product Name: LoRaWAN Gateway

FCC ID: 2BQTF-SG50

Standard(s): 47 CFR §1.1310, 47 CFR §2.1091,
47 CFR §15.247(i)

Report Number: 2502T29389E-RF-00E

Report Date: 2025/10/13

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2502T29389E-RF-00E	Original Report	2025/10/13

1. GENERAL INFORMATION

1.1 General Description Of Equipment under Test

EUT Name:	LoRaWAN Gateway
EUT Model:	SG50-L08GL-915M
Rated Input Voltage:	DC 3.6V from battery or DC 12-24V from Solar Panel or DC 5V from USB
EUT Received Date:	2025/5/14
EUT Received Status:	Good

2.RF EXPOSURE EVALUATION (MPE)

2.1. RF Exposure Evaluation

2.1.1 Applicable Standard

According to subpart 15.247(i), subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

2.1.2 Calculation formula

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

2.1.3 Calculated Data:

Operation Modes	Frequency (MHz)	Antenna Gain [▲]		Conducted output power including Tune-up Tolerance [▲]		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
Lora-FHSS	915.2-927.8	5	3.16	16.5	44.67	20.00	0.028	0.6
Lora-DTS	915.9-927.5	5	3.16	15.5	35.48	20.00	0.022	0.6
WiFi	2412-2462	2.21	1.66	20.0	100.00	20.00	0.033	1.0
GSM850	824-849	2.35	1.72	35*	3162.28	20.00	0.130	0.5
PCS1900	1850-1910	1.96	1.57	31*	1258.93	20.00	0.047	1.0
LTE B2	1850-1910	1.96	1.57	25	316.23	20.00	0.099	1.0
LTE B4	1710-1755	3.32	2.15	25	316.23	20.00	0.135	1.0
LTE B5	824-849	2.35	1.72	25	316.23	20.00	0.108	0.5
LTE B7	2500-2570	1.98	1.58	25	316.23	20.00	0.099	1.0
LTE B12	699-716	2.97	1.98	25	316.23	20.00	0.125	0.5
LTE B13	777-787	3.53	2.25	25	316.23	20.00	0.142	0.5
LTE B17	704-716	2.97	1.98	25	316.23	20.00	0.125	0.5
LTE B25	1850-1915	1.96	1.57	25	316.23	20.00	0.099	1.0
LTE B26	814-849	3.53	2.25	25	316.23	20.00	0.142	0.5
LTE B38	2570-2620	1.98	1.58	25	316.23	20.00	0.099	1.0
LTE B41	2496-2690	3.12	2.05	25	316.23	20.00	0.129	1.0
LTE B66	1710-1780	3.32	2.15	25	316.23	20.00	0.135	1.0

Note: The device built in a certified WWAN module, FCC ID: XMR2023EG912UGL2.

Note:

The Antenna Gain and Conducted output power including Tune-up Tolerance provided by manufacturer.

*:Frame-average power=Burst power+ Division Factors(-9.19)

For Simultaneous transmission:

Lora-FHSS and Lora-DTS can't transmit simultaneously, but Lora-FHSS or Lora-DTS can transmit simultaneously with WiFi and WWAN:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

$$= S_{2.4G\ WiFi} / S_{limit-2.4G\ WiFi} + S_{Lora-FHSS} / S_{limit-Lora-FHSS} + S_{WWAN} / S_{limit-WWAN}$$

$$= 0.033/1.0 + 0.028/0.6 + 0.142/0.5$$

$$= 0.36$$

$$< 1.0$$

Result: The device meet FCC MPE at 20 cm distance

EXHIBIT A - EUT PHOTOGRAPHS

Please refer to the attachment 2502T29389E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2502T29389E-RF-INP EUT INTERNAL PHOTOGRAPHS.

******* END OF REPORT *******