

Maximum Permissible Exposure Evaluation

FCC ID: 2A3GI-EDGW1302S

1. Client Information

Applicant	:	EDA Technology Shanghai Co.,Ltd
Address	:	Room 301, Building 24, Shengchuang Enterprise Park, No.1661 Jialuo Road, Jiading District, Shanghai, PRC
Manufacturer	:	EDA Technology Shanghai Co.,Ltd
Address	:	Room 301, Building 24, Shengchuang Enterprise Park, No.1661 Jialuo Road, Jiading District, Shanghai, PRC

2. General Description of EUT

EUT Name	:	LoRaWan Concentrator Gateway Module	
Models No.	:	ED-GW1302S-915M, ED-GW1302	
Model Different	:	All these models are identical in the same PCB, layout and electrical circuit, The only difference is model name.	
Product Description	Operation Frequency:	DTS: LoRa(500KHz): 923.3MHz-927.5MHz DSS: LoRa(125KHz): 902.3MHz-914.9MHz	
	Number of Channel:	DTS: 8 channels DSS: 64 channels	
	RF Output Power:	DTS: 10.733dBm (MAX) DSS: 7.040dBm (MAX)	
	Antenna Gain:	Antenna1: 2.5dBi External Antenna Antenna2: 5.8dBi External Antenna	
Power Rating	:	Input: DC 3.3V/500mA	
Software Version	:	N/A	
Hardware Version	:	V1.0	
Connecting I/O Port(S)	:	Please refer to the User's Manual	
Remark	:	the evaluation report used the EUT (20211022-21-2#).	

MPE Calculations for LoRa

1. Antenna Gain:

Antenna1: 2.5dBi External Antenna
Antenna2: 5.8dBi External Antenna

2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = (P/G)/4\pi R^2$$

Where

S: power density

P: power input to the antenna

G: power gain of the antenna in the direction of interest relative to an isotropic radiator.

R: distance to the center of radiation of the antenna

4. Test Result:

LoRa FHSS

Channel	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm ²) [S]	Limit of Power Density (mW/ cm ²) (S)
Channel 01	6.888	6±1	7.0	5.8	20	0.0038	0.6013
Channel 32	7.04	7±1	8.0	5.8	20	0.0048	0.6013
Channel 64	5.657	6±1	7.0	5.8	20	0.0038	0.6013
Channel 01	6.888	6±1	7.0	2.5	20	0.0018	0.6013
Channel 32	7.04	7±1	8.0	2.5	20	0.0022	0.6013
Channel 64	5.657	6±1	7.0	2.5	20	0.0018	0.6013

LoRa DTS

Channel	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm ²) [S]	Limit of Power Density (mW/ cm ²) (S)
Channel 01	10.174	10±1	11.0	5.8	20	0.0095	0.6153
Channel 04	10.728	8±1	9.0	5.8	20	0.0060	0.6153
Channel 08	10.733	8±1	9.0	5.8	20	0.0060	0.6153
Channel 01	10.174	10±1	11.0	2.5	20	0.0045	0.6153
Channel 04	10.728	8±1	9.0	2.5	20	0.0028	0.6153
Channel 08	10.733	8±1	9.0	2.5	20	0.0028	0.6153

5. Conclusion:

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Power density (mW/ cm ²)
300-1,500	F/1500
1,500-100,000	1.0

For 2.4WIFI:2412~2462 MHz
MPE limit S: 1mW/ cm²

The MPE is calculated as (0.0048 for DSS and 0.0095 for DTS) mW / cm² < limit (0.6013 for DSS and 0.6153 for DTS)mW / cm². So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b).

The RF Exposure Information page from the manual is included here for reference.

Note

For a more detailed features description, please refer to the RF Test Report.

6. Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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