Radio Frequency Exposure Report

On Behalf of

GL Technologies (Hong Kong) Limited

210D Enterprise Place, Hong Kong Science Park, Sha Tin, NT, Hong Kong

Product Name:	**GL-MT300N mini router**
Model/Type No.:	**GL-MT300N-POE, GL-MT300N**
FCC ID:	**2AFIW-MT300N**
Prepared By:	**Shenzhen Hongcai Testing Technology Co., Ltd.** 1st-3rd Floor, Building C, Shuanghuan Xin Yi Dai Hi-Tech Industrial Park, No.8 Baoqing Road, Baolong Industrial Zone, Longgang District, Shenzhen, Guangdong, China Tel: +86-755-86337020 Fax:+86-755-86337028
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1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Applicant:	GL Technologies (Hong Kong) Limited.
Address of Applicant:	210D Enterprise Place, Hong Kong Science Park, Sha Tin, NT, Hong Kong
Manufacturer 1:	GL Technologies (Hong Kong) Limited.
Address of manufacturer:	210D Enterprise Place, Hong Kong Science Park, Sha Tin, NT, Hong Kong

General Description of E.U.T

Items	Description
EUT Description:	GL-MT300N mini router
Model No.:	GL-MT300N-POE
Supplementary Model:	GL-MT300N
Frequency Band:	IEEE 802.11b : 2412MHz～2462MHz; IEEE 802.11g : 2412MHz～2462MHz; IEEE 802 11n(HT20) : 2412MHz～2462MHz; IEEE 802 11n(HT40) : 2422MHz～2452MHz;
Number of Channels:	IEEE 802.11b :11 Channels; IEEE 802.11g :11 Channels; IEEE 802 11n(HT20) : 11 Channels; IEEE 802 11n(HT40) : 7 Channels;
Channels Spacing:	IEEE 802.11b : 5MHz IEEE 802.11g : 5MHz IEEE 802 11n(HT20) : 5MHz IEEE 802 11n(HT40) : 5MHz
Type of Modulation:	IEEE 802.11b：CCK IEEE 802.11g：OFDM IEEE 802 11n(HT20)：OFDM IEEE 802 11n(HT40)：OFDM
Antenna Gain:	3.7dBi
Antenna Type:	Ant 1:3.7dBi, Ant2:3.7dBi
Rated Voltage:	DC 5V/1A from micro USB

Remark: ** The test data gathered are from the production sample provided by the manufacturer.*
** Supplementary models have the same base board circuit, the appearance is different.*

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1.2 Objective

The objective of the following report is used to demonstrate that EUT operated in a manner that ensures the public is not exposed to radio frequency energy levels in excess of the relative provisions of FCC 47CFR Part 1.1307

1.3 General Description of Test

Items	Description
EUT Frequency band	☐ FHSS: 2.400GHz ~ 2.483GHz ☒ WLAN: 2.400GHz ~ 2.483GHz ☐ WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐ WLAN: 5.745GHz ~ 5825GHz ☐ Others: _____
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others _____
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm2) ☒ General Population/Uncontrolled exposure (S=1mW/cm^2) ☐ Others: _____
Antenna diversity	☒ Single antenna ☐ Multiple antennas: ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Max. output power	Ant 1:24.17dBm (0.261W) Ant 2:24.87dBm (0.306W)
Antenna gain (Max)	Ant 1:3.7dBi (Numeric gain:2.34) Ant 2: 3.7dBi (Numeric gain:2.34)
Evaluation applied	☒ MPE Evaluation ☐ SAR Evaluation
Note: *Ant 1:1. The maximum output power is* 24.17dBm at 802.11n(HT20) mode 2462MHz *(with 2.34 numeric antenna gain.)* *Ant 2: 2. The maximum output power is* 24.87dBm at 802.11g mode 2462MHz *(with 2.34 numeric antenna gain.)* *3. For mobile or fixed location transmitters, no SAR consideration applied. The minimum separation generally be used is at least s20 cm, even if the calculations indicate that the MPE distance would be lesser.*	

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1.4 Human Exposure Assessment Results

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

Where E = *Field Strength in Volts / meter*
P = *Power in Watts*
G = *Numeric antenna gain*
d = *Distance in meters*
S = *Power Density in milliwatts / square centimeter*

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and
*d (cm) =100 * d (m)*

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$ ***Equation 1***

Where d = *distance in cm*
P = *Power in mW*
G = *Numeric antenna gain*
S = *Power Density in* mW/cm^2

EUT parameter (data from the separate report)	
Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$	Where G: numerical gain of transmitting antenna; TP: Transmitted power in watt; d: distance from the transmitting antenna in meter
Max average output power in Watt (TP)	Ant 1:24.17dBm (0.261W) Ant 2:24.87dBm (0.306W)
Antenna gain (G)	Ant 1:3.7dBi (Numeric gain:2.34) Ant 2: 3.7dBi (Numeric gain:2.34)
Exposure classification	S=1mW/cm^2
Minimum distance in meter (d) (from transmitting structure to the human body)	20cm (0.2m)

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Yields

$$S = \frac{30xPxG}{3770d^2},$$

Ant 1:P1=0.261W, G1=2.34, d1=0.2, S1=0.1215mW/cm2
Ant 2: P2=0.306W, G2=2.34, d2=0.2, S2=0.1424mW/cm2

Or

$$d = \sqrt{\frac{30xPxG}{3770S}},$$

Ant 1:S1=1, P1=0.261W, G1=2.34, d1=0.0697m
Ant 2:S2=1, P2=0.306W, G2=2.34, d2=0.0754m

Conclusion:

S1=0.1215mW/cm^2 and S2=0.1424mW/cm2 is significant lower than the General Population Exposure Power Density Limit 1mW/cm^2 or except the distance when human body proximity to the antenna is less than 2.67cm then will reach the General Population Exposure Power Density Limit (For mobile or fixed location transmitters, the maximum power density is 1.0 mW / cm^2 even if the calculation indicates that the power density would be larger.)

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