

RF Exposure Evaluation

FCC ID: 2AT7G-GTCOM-LB-02

1. Client Information

Applicant	:	Global Tone Communication Technology Co., Ltd.
Address	:	1601, 16th Floor, No. 20 Shijingshan Road, Shijingshan District, Beijing, China
Manufacturer	:	Global Tone Communication Technology Co., Ltd.
Address	:	1601, 16th Floor, No. 20 Shijingshan Road, Shijingshan District, Beijing, China

2. General Description of EUT

EUT Name	:	Language Box
Models No.	:	GTCOM-LB-02
Model Difference	:	N/A
Product Description		2.4G: 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz Bluetooth 4.1: 2402MHz~2480MHz
	:	Modulation Type: 802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n: OFDM(BPSK, QPSK, 16QAM, 64QAM) BLE: GFSK BT: GFSK (1 Mbps) Pi/4-DQPSK (2 Mbps) 8-DPSK (3 Mbps)
Power Supply	:	Adapter(M120300W330): Input: AC 180-240V, 50/60Hz, 0.8A Output: DC 12V, 3A
Connecting I/O Port(S)	:	Please refer to the User's Manual

Note: More test information about the EUT please refer the RF Test Report.

MPE Calculations for WIFI

1. Antenna Gain:

FPC Ant:	Model	Frequency Range
	N/A	2400~2483.5MHz
		2dBi

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

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

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:

2.4G WIFI&BLE

Mode	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)
BLE	-1.146	-1±1	0	2.0	20	0.0003	1
802.11B	15.48	15±1	16	2.0	20	0.0126	1
802.11G	14.71	14±1	15	2.0	20	0.0100	1
802.11N(HT20)	16.123	16±1	17	2.0	20	0.0158	1
802.11N(HT40)	15.758	15±1	16	2.0	20	0.0126	1

BT BER+EDR

Mode	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) Numeric [G]	Distance (cm) [R]	Power Density (mW/ cm ²) [S]
GFSK	4.946	5±1	6	2.0	20	0.0013
PI/4-DQPSK	4.564	5±1	6	2.0	20	0.0013
8-DPSK	4.880	5±1	6	2.0	20	0.0013

The worst RF Exposure Evaluation			
Worst Calculation Value		Total Calculation Value	Threshold Value
2.4WiFi Mode	Bluetooth Mode		
0.0158	0.0013	0.0171	1.0

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 BT:2402~2480 MHz

For WIFI:2412~2462 MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as $0.0171\text{mW} / \text{cm}^2 < \text{limit } 1\text{mW} / \text{cm}^2$. 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.

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