

Maximum Permissible Exposure Evaluation

FCC ID: 2A4J7-B07B69SYKD

1. Client Information

Applicant	:	POLAR LED light
Address	:	Guang dong, Guang zhou, Li wan qu, Dong feng xi lu 103 hao, Li quan da sha 708 shi
Manufacturer	:	Guangzhou Baiyun Wei Long Lamp factory
Address	:	Guang dong, Guang zhou, bai yun qu, Song zhou jie, Luo yong bei lu, 5 jie, 4 hao, 301 fang

2. General Description of EUT

EUT Name	:	LED SIGN
Models No.	:	ASIN:B07B69SYKD, ASIN:B07VN1W1H4, ASIN:B07V5JTZH6, ASIN:B07RTN4SHF, ASIN:B07R68DJ76, ASIN:B07R7C7871, ASIN:B07Q3NB1D5, ASIN:B01MU35M2S
Model Different	:	All PCB boards and circuit diagrams are the same, the only difference are on the outlook, size and the pizels of the products
Product Description	Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz
	Number of Channel:	802.11b/g/n(HT20):11 channels
	Antenna Gain:	3dBi PCB Antenna
Power Rating	:	Input: 100-220V~
Software Version	:	IOS software HC-LED V2.08
Hardware Version	:	HC3
Connecting I/O Port(S)	:	Please refer to the User's Manual

MPE Calculations for WIFI

1. Antenna Gain:

PCB Antenna:3.0dBi.

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:

Worst Maximum MPE Result								
Mode	N _{TX}	Freq. (MHz)	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]
IEEE 802.11b	1	2412	16.87	16±1	17	3.0	20	0.0199
		2437	17.07	17±1	18	3.0	20	0.0250
		2462	17.39	17±1	18	3.0	20	0.0250
IEEE 802.11g	1	2412	16.88	16±1	17	3.0	20	0.0020
		2437	16.67	16±1	17	3.0	20	0.0199
		2462	16.94	16±1	17	3.0	20	0.0199
IEEE 802.11n HT20	1	2412	16.93	16±1	17	3.0	20	0.0199
		2437	16.93	16±1	17	3.0	20	0.0199
		2462	17.20	17±1	18	3.0	20	0.0250

Note:
 (1) N_{TX}= Number of Transmit Antennas
 (2) RF Output power specifies that Maximum Conducted Peak Output Power.

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 2.4GWIFI:2412~2462 MHz

MPE limit S: 1mW/ cm²

The MPE is calculated as $0.0250 \text{ mW} / \text{cm}^2 < \text{limit } 1 \text{mW} / \text{cm}^2$. 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.

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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