

Maximum Permissible Exposure Evaluation

FCC ID: 2AEP6XM-JPLB1

1. Client Information

Applicant : HangZhou XiongMai Technology CO., LTD
Address : 9th Floor, Building 9, Yinhu Innovation Center, No.9 FuXian Road, YinHu Street, Hangzhou, China
Manufacturer : HangZhou XiongMai Technology CO., LTD
Address : No.2 Dong Qiao Road, Dongzhou Industrial, Fuyang District, Hangzhou, China

2. General Description of EUT

EUT Name	:	Smart LED Colorful Bulb
Models No.	:	XM-JPLB1, XM-JPLB, XM-JPLB2, JPLB, JPLB1, JPLB2
Model Difference	:	All models are identical in the same PCB layout, interior structure and electrical circuits, The only difference is model name for commercial purpose.
Product Description	:	Operation Frequency: 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
	Number of Channel:	802.11b/g/n(HT20):11 channels see note(3) 802.11n(HT40): 7 channels see note(3)
	RF Output Power:	802.11b: 8.53 dBm 802.11g: 8.20 dBm 802.11n (HT20): 7.99 dBm 802.11n (HT40): 7.42 dBm
	Antenna Gain:	2 dBi PCB Antenna
	Modulation Type:	802.11b:CCK,DQPSK,DBPSK; 802.11g:64-QAM,QPSK,BPSK 802.11n:64-QAM,16-QAM,QPSK,BPSK
	Bit Rate of Transmitter:	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n:up to 150Mbps
	Power Supply	:

TB-RF-075-1.0

Power Rating	:	Input: AC 100~240V,50/60Hz, 3W
Connecting I/O Port(S)	:	Please refer to the User's Manual

MPE Calculations for WIFI

1. Antenna Gain:

PCB Antenna: 2 dBi.

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}	Frequency (MHz)	Power (dBm) [P]	ANT Gain (dBi) [G]	Turn-up Power Tolerance (dB)	Distance (cm) [R]	Power Density (mW/ cm ²) [S]
2.4G							
802.11b	1	2437	8.53	2	±1	20	0.0028
802.11g	1	2437	8.20	2	±1	20	0.0026
802.11n (HT20)	1	2437	7.99	2	±1	20	0.0025
802.11n (HT40)	1	2422	7.42	2	±1	20	0.0022
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 802.11b/g/n (2412~2462 MHz)

MPE limit S: 1 mW/ cm²

The MPE is calculated as 0.0028mW / cm² < limit 1 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.

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