

1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant: KATERRA Lighting (Shanghai) Co.,Ltd.
Address of applicant: 5F, Building 7, No.333 Guiping Rd., Xuhui, Shanghai, China
200233

Manufacturer: KATERRA Lighting (Shanghai) Co.,Ltd.
Address of manufacturer: 5F, Building 7, No.333 Guiping Rd., Xuhui, Shanghai, China
200233

General Description of EUT:

Product Name: LED LAMP
Trade Name: KATERRA
Model No.: A19 120V 7.5W 60WE yyy E26 TW G1 Fil connected T20 aaa bbb ccc
B11 120V 4W 40WE yyy E12 TW G1 Fil connected T20 aaa bbb ccc,
G25 120V 4W 40WE yyy E26 TW G1 Fil connected T20 aaa bbb ccc,
ST19 120V 7.5W 60WE yyy E26 TW G1 Fil connected T20 aaa bbb ccc
Adding Model(s):
Rated Voltage: AC 120V /60Hz
Software Version: V1.0.7
Hardware Version: V1.0.2
FCC ID: 2AR2NWBL5C5-1
Equipment Type: Fixed

Technical Characteristics of EUT:

Support Standards: 802.11b, 802.11g, 802.11n
Frequency Range: 2412-2462MHz for 802.11b/g/n(HT20)
2422-2452MHz for 802.11n(HT40)
RF Output Power: 14.92dBm (Conducted)
Type of Modulation: DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM
Data Rate: 1-11Mbps, 6-54Mbps, up to 150Mbps
Quantity of Channels: 11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40)
Channel Separation: 5MHz
Type of Antenna: Integral Antenna
Antenna Gain: 4.6dBi

1.2 Standard Applicable

According to § 1.1307(b)(1) and KDB 447498 D01 General RF Exposure Guidance v06, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

(a) Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density

1.3 MPE Calculation Method

$$S = (30*P*G) / (377*R^2)$$

S = power density (in appropriate units, e.g., mw/cm²)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator,
the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

1.4 MPE Calculation Result

Maximum Tune-Up output power: 15(dBm)

Maximum peak output power at antenna input terminal: 31.62 (mW)

Prediction distance: >20(cm)

Prediction frequency: 2462 (MHz)

Antenna gain: 4.6 (dBi)

Directional gain (numeric gain): 2.88

The worst case is power density at prediction frequency at 20cm: 0.0181 (mw/cm²)

MPE limit for general population exposure at prediction frequency: 1 (mw/cm²)

Result: Pass