# 1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

## 1.1 General Information

**Client Information**

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|---|---|
| Applicant: | Feit Electric Company |
| Address of applicant: | 4901 Gregg Road Pico Rivera, California 90660, United States |
| Manufacturer: | Zhejiang Future Lighting Co., Ltd |
| Address of manufacturer: | No.99, Jingfeng Road, Haining Warp Knitting Industrial Zone, Zhejiang |

**General Description of EUT:**

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|---|---|
| Product Name: | Self-Ballasted LED Lamps |
| Trade Name: | / |
| Model No.: | 112R800100M0-70 |
| Adding Model(s): | 112R800100M0-XX; 112R800090M0-XX; 112R800070M0-XX; 112R800060M0-XX; 112R800050M0-XX; 112R800040M0-XX; 112R800088M0-XX; 112R800072M0-XX; 112Z800100M0-XX-YYYY; 112Z800090M0-XX-YYYY; 112Z800070M0-XX-YYYY; 112Z800060M0-XX-YYYY; 112Z800050M0-XX-YYYY; 112Z800040M0-XX-YYYY; 112Z800088M0-XX-YYYY; 112Z800072M0-XX-YYYY; BPA800/RGBW/2 (P); OM60/RGBW/CA/AG (P1); OM60/RGBW/CA/AG/3 (P) ("XX" represents Ra, can be 70-100; "YYYY" represents the color temperature, can be 2000-6500) |
| Rated Voltage: | A120V/60Hz |
| Power Adapter | / |
| FCC ID: | SYW-A19RGBWAGT2R1 |
| Equipment Type: | Fixed device |

**Technical Characteristics of EUT:**

**Wi-Fi**

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|---|---|
| Support Standards: | 802.11b, 802.11g, 802.11n |
| Frequency Range: | 2412-2462MHz for 802.11b/g/n(HT20)<br>2422-2452MHz for 802.11n(HT40) |
| RF Output Power: | 16.49dBm (Conducted) |
| Type of Modulation: | DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM |
| Quantity of Channels: | 11 for 802.11b/g/n(HT20); 7 for 802.11n(HT40) |
| Channel Separation: | 5MHz |
| Type of Antenna: | PCB Antenna |
| Antenna Gain: | 1dBi |

## 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., $mw/cm^2$)

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

For Wi-Fi
Maximum Tune-Up output power: 17(dBm)
Maximum peak output power at antenna input terminal: 50.12(mW)
Prediction distance: >20(cm)
Prediction frequency: 2412 (MHz)
Antenna gain: 1.0 (dBi)
Directional gain (numeric gain): 1.26
The worst case is power density at prediction frequency at 20cm: 0.0126(mw/$cm^2$)
MPE limit for general population exposure at prediction frequency: 1 (mw/$cm^2$)

Result: Pass