
INTERTEK TESTING SERVICES

For Maximum Permissible Exposure (MPE) evaluation of the Multi-color Smart LED Light Bulb, the maximum power density at 20 cm from this mobile transmitter shall be less than the General Population / Uncontrolled MPE limit in OET Bulletin 65 and meet the requirement listed in KDB447498.

For the 1.9GHz Multi-color Smart LED Light Bulb of tested model: VC7004, the measured powers among all the measured channels were within its production tolerance: +16 dBm (Minimum) and +21 dBm (Maximum). The antenna gain of VC7004 is 0 dBi = 1.00 (num gain) and its maximum source-based time-averaging duty factor is 4.2% (1/24 x100%). From these data and its operating configuration – Mobile device, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna can be calculated according to OET Bulletin 65 as follow:

$$\begin{aligned} \text{The Conducted Power} &= 21 \text{ dBm} \\ &= 125.9 \text{ mW} \end{aligned}$$

$$\begin{aligned} \text{The Conducted Power source-based time-averaging output power} \\ &= (125.9 * 0.042) \text{ mW} \\ &= 5.29 \text{ mW} \end{aligned}$$

$$\begin{aligned} \text{The power density at 20cm} &= 5.29 * 1.00 / 4\pi R^2 \\ &= 0.0010 \text{ mW cm}^{-2} \end{aligned}$$

In the frequency range of 1,500 - 100,000MHz, the MPE limit is 1.0 mWcm⁻² for general population and uncontrolled exposure. As the measured power density at 20cm from the transmitter is lower than the MPE limit, the compliance to the MPE limit can be ensured by indicating the minimum 20cm separation between the transmitter's radiating structures and body of the user or nearby persons.

The following RF exposure statement is proposed to be included in the user manual:

“ FCC RF Radiation Exposure Statement

Caution: To maintain compliance with the FCC’s RF exposure guidelines, place the open/closed sensor at least 20cm from nearby persons.”