

INTERTEK TESTING SERVICES

RF Exposure

The equipment under test (EUT) is a Toy RC Orbit Tumbler Glow in the Dark operating at 2.4G Band. The EUT can be powered by DC 6.0V (4 x 1.5V AA batteries). For more detail information pls. refer to the user manual.

Antenna Type: Integral antenna

Modulation Type: GFSK

Antenna Gain: 2dBi

The nominal conducted output power specified: -2.0 dBm (± 3 dB)

The nominal radiated output power (e.i.r.p) specified: 0 dBm (± 3 dB)

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 95.3 dB μ V/m at 3m in the frequency 2462MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = 0.07dBm

which is within the production variation.

The Minimum peak radiated emission for the EUT is 92.6 dB μ V/m at 3m in the frequency 2440MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = -2.63dBm

which is within the production variation.

The maximum conducted output power specified is 1dBm = 1.259mW

The source- based time-averaging conducted output power = $1.259 \cdot \text{Duty cycle}$ mW < 1.259 mW (Duty cycle < 100%)

The SAR Exclusion Threshold Level:

$$\begin{aligned} P_{th}(\text{mW}) &= ERP_{20\text{cm}} \cdot (d/20\text{cm})^x \quad \left(X = -\log_{10} \left(\frac{60}{ERP_{20\text{cm}} \sqrt{f}} \right) \right) \\ &= 3060 \cdot (0.5/20)^{1.9} \text{ mW} \\ &= 2.72 \text{ mW} \end{aligned}$$

Since max. power of the source-based time-averaging conducted output power and effective radiated power (ERP) is well below the SAR low threshold level, so the EUT is considered to comply with SAR requirement without testing.

The duty cycle is simply the on-time divided by the period:

The duration of one cycle = 8.0290ms

Effective period of the cycle = 1.0725ms

DC = $1.0725\text{ms} / 8.0290\text{ms} = 0.1336$ or 13.36%