

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 9.0V (6 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: -5.0 dBm (± 3 dB)

The nominal radiated output power (e.i.r.p) specified: -3.0 dBm (± 3 dB)

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 93.1 dB μ V/m at 3m in the frequency 2462MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = -2.13dBm
which is within the production variation.

The Minimum peak radiated emission for the EUT is 91.3 dB μ V/m at 3m in the frequency 2418MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = -3.93dBm
which is within the production variation.

The maximum conducted output power specified is -2dBm = 0.631mW

The source- based time-averaging conducted output power
= $0.631 \cdot \text{Duty cycle}$ mW < 0.631 mW (Duty cycle < 100%)

The SAR Exclusion Threshold Level:

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

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 = 7.9420ms

Effective period of the cycle = 1.0725ms

DC = $1.0725\text{ms} / 7.9420\text{ms}$ = 0.1350 or 13.50%