

INTERTEK TESTING SERVICES

RF Exposure

The equipment under test (EUT) is a Battery Operated Children Car operating at 2.4G Band. The EUT can be powered by DC 3.0V (2 x 1.5V AAA batteries). For more detail information pls. refer to the user manual.

Antenna Type: Integral antenna

Modulation Type: GFSK

Antenna Gain: 0dBi

The nominal conducted output power specified: -5.0 dBm (± 3 dB)

The nominal radiated output power (e.i.r.p) specified: -5.0 dBm (± 3 dB)

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 90.5 dB μ V/m at 3m in the frequency 2473MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = -4.73dBm

which is within the production variation.

The Minimum peak radiated emission for the EUT is 89.2 dB μ V/m at 3m in the frequency 2407MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = -6.03dBm

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 = 4.0435ms

Effective period of the cycle = 0.3768ms

DC = $0.3768\text{ms} / 4.0435\text{ms}$ = 0.0932 or 9.32%