

INTERTEK TESTING SERVICES

RF Exposure

The equipment under test (EUT) is a Really Rad Robots Turbo Bot operating at 2.4G Band. The EUT can be powered by DC 4.5V (3 x 1.5V AAA batteries). For more detail information pls. refer to the user manual.

Antenna Type: Integral antenna.

Antenna Gain: 0dBi.

The normal radiated output power (e.i.r.p) is: 3.0dBm (tolerance: +/- 3dB).

The normal conducted output power is 3.0dBm (tolerance: +/- 3dB).

Modulation Type: GFSK.

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 100.5dB μ V/m at 3m in the frequency 2440MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = 5.27dBm
which is within the production variation.

The Minimum peak radiated emission for the EUT is 98.7 dB μ V/m at 3m in the frequency 2413MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = 3.47dBm
which is within the production variation.

The maximum conducted output power specified is 6.0dBm = 3.981mW

The source- based time-averaging conducted output power
= $3.981 \cdot \text{Duty cycle}$ mW < 3.981mW (Duty cycle < 100%)

The SAR Exclusion Threshold Level:

= $3.0 \cdot (\text{min. test separation distance, mm}) / \sqrt{\text{freq. in GHz}}$
= $3.0 \cdot 5 / \sqrt{2.471}$ mW
= 9.54 mW

Since the source-based time-averaging conducted output power 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 = 19.8551ms

Effective period of the cycle = 115.9 μ s = 0.1159ms

DC = 0.1159ms / 19.8551ms = 0.0058 or 0.58%