

INTERTEK TESTING SERVICES

RF Exposure

The equipment under test (EUT) is a Toy RC Robotic Maximilian The Butler Bot operating at 2.4G Band. The EUT can be powered by DC6.0V (4 x 1.5V AA batteries). For more detail information pls. refer to the user manual.

Antenna Type: Integral antenna.

Antenna Gain: 0dBi.

Modulation Type: GFSK.

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

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

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 92.9dB μ V/m at 3m in the frequency 2405MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = -2.33dBm

which is within the production variation.

The Minimum peak radiated emission for the EUT is 91.2dB μ V/m at 3m in the frequency 2440MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = -4.03dBm

which is within the production variation.

The maximum conducted output power specified is 0dBm =1 mW

The source- based time-averaging conducted output power

= 1* Duty cycle mW <1 mW(Duty cycle <100%)

The SAR Exclusion Threshold Level:

= $3.0 * (\text{min. test separation distance, mm}) / \text{sqrt}(\text{freq. in GHz})$

= $3.0 * 5 / \text{sqrt}(2.475)$ mW

= 9.53 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 = 2.9348ms

Effective period of the cycle = $1.014\mu\text{s} + 173.9\mu\text{s} \times 5 = 870.514\mu\text{s} = 0.870514\text{ms}$

DC = $0.870514\text{ms} / 2.9348\text{ms} = 0.2966$ or 29.66%