

INTERTEK TESTING SERVICES

RF Exposure

The equipment under test (EUT) is a Hexbug HeXMods 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: 2.0dBm (tolerance: +/- 3dB).

The normal conducted output power is 2.0dBm (tolerance: +/- 3dB).

Modulation Type: GFSK.

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 96.9dB μ V/m at 3m in the frequency 2466MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = 1.67dBm
which is within the production variation.

The Minimum peak radiated emission for the EUT is 96.1 dB μ V/m at 3m in the frequency 2416MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = 0.87dBm
which is within the production variation.

The maximum conducted output power specified is 5dBm = 3.162mW

The source- based time-averaging conducted output power
= $3.162 \cdot \text{Duty cycle}$ mW < 3.162 mW (Duty cycle < 100%)

The SAR Exclusion Threshold Level:

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

= $3.0 \cdot 5 / \text{sqrt}(2.466)$ mW

= 9.55 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 = 10.1449ms

Effective period of the cycle = 1.0870ms

DC = $1.0870\text{ms} / 10.1449\text{ms} = 0.1071$ or 10.71%