

INTERTEK TESTING SERVICES

RF Exposure

The Equipment under Test (EUT) is a VEX IQ 2.4GHz radio unit, model: 228-3015 operating at 2401.8 – 2481.6MHz with channel spacing 200KHz. The EUT is powered by joystick controller and the joystick controller is powered by a 3.7V rechargeable battery which can be charged by USB port. Also the EUT is powered by Robot Brain and the Robot Brain is powered by a 7.2V rechargeable battery (This 7.2V rechargeable battery should be charged all alone by external charger). 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: -4dBm (tolerance: +/- 3dB).

The normal conducted output power is -4dBm (tolerance: +/- 3dB).

Modulation Type: GFSK

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 93.2dB μ V/m at 3m in the frequency 2441.800MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = -2.03dBm

which is within the production variation.

The Minimum peak radiated emission for the EUT is 89.2dB μ V/m at 3m in the frequency 2401.800MHz

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

which is within the production variation.

The maximum conducted output power specified is -1dBm = 0.79 mW

The source- based time-averaging conducted output power

= 0.79 * Duty Cycle mW = 0.18 mW < 0.2mW

The SAR Exclusion Threshold Level:

= 3.0 * (min. test separation distance, mm) / sqrt(freq. in GHz)

= 3.0 * 5 / sqrt (2.4816) mW

= 9.5 mW

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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.

Transmitter Duty Cycle Calculation

The duty cycle is simply the on-time divided by the period:

The duration of one cycle = 25.4ms

Effective period of the cycle = 5.8ms

DC = 5.8ms / 25.4ms = 0.2283 or 22.83%