

INTERTEK TESTING SERVICES

RF Exposure

The Equipment under Test (EUT) is a Controller unit for the EXCAVATOR model: 0703 operating at 2.4GHz band. It is powered by DC 9.0V (6 x 1.5V AA 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 94.0dB μ V/m at 3m in the frequency 2411MHz

The EIRP = $[(FS^*D)^2 / 30] \text{ mW} = -1.23 \text{ dBm}$
which is within the production variation.

The Minimum peak radiated emission for the EUT is 92.6dB μ V/m at 3m in the frequency 2463MHz

The EIRP = $[(FS^*D)^2 / 30] \text{ mW} = -2.63 \text{ dBm}$
which is within the production variation.

The maximum conducted output power specified is 1dBm = 1.26mW

The source- based time-averaging conducted output power
= 1.26 * Duty cycle mW < 1.26 mW (Duty cycle < 100%)

The SAR Exclusion Threshold Level:

= 3.0 * (min. test separation distance, mm) / sqrt(freq. in GHz)
= 3.0 * 5 / sqrt (2.463) mW
= 9.56 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 = 10.2609ms

Effective period of the cycle = 2.0435ms

DC = 2.0435ms / 10.2609ms = 0.1991 or 19.91%

Therefore, the averaging factor is found by $20 \log_{10} 0.1991 = -14.0 \text{ dB}$