

INTERTEK TESTING SERVICES

RF Exposure

The Equipment Under Test (EUT) is a Borderlands CE: RC Claptrap with internal WiFi function operating at 2412MHz for 802.11b/g, 1 channel only. The EUT can be powered by DC 6.4V (1 x 6.4V rechargeable battery). For more detailed features description, please refer to the user's manual.

Antenna Type: Integral Antenna (Gain: 2dBi).

The nominal conducted output power specified: 17dBm +/-3dB.

Modulation Type: CCK, QPSK, BPSK, 16QAM

According to the KDB 447498:

The maximum peak conducted output power for the EUT is 19.87dBm in the frequency 2412MHz (802.11g) which is within the product variation.

The minimum peak conducted output power for the EUT is 18.97dBm in the frequency 2412MHz (802.11b) which is within the production variation.

According to FCC Part 2.1091, this unlicensed transmitting devices is categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization or use, according to the KDB 447498 and OET 65, the simple calculation as below:

$$S = EIRP / 4\pi R^2$$

For Maximum Permissible Exposure (MPE) evaluation of the product, the maximum power density(S) at 20 cm from this transmitter shall be less than the General Population / Uncontrolled MPE limit in FCC Part 1.1310.

The maximum EIRP specified is 22dBm = 158.49mW

From above data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna can be calculated as follow:

$$S = 158.49 \text{ mW} / 4\pi R^2 = 0.0315 \text{ mW/cm}^2$$

The MPE limit is 1.0 mW/cm⁻² for general population and uncontrolled exposure in the WiFi frequency range according to FCC Part 1.1310. As the measured power density at 20cm from the transmitter is lower than the MPE limit, the compliance to the MPE limit can be ensured by indicating the minimum 20cm separation between the transmitter's radiating structure and body of the user or nearby persons.

The following RF exposure statement is proposed to be included in the user manual:

“FCC RF Radiation Exposure Statement Caution: This Transmitter must be installed to provide a separation distance of at least 20 cm from all persons.”