

INTERTEK TESTING SERVICES

RF Exposure

The Equipment Under Test (EUT) is a USB Radio Dongle with ZigBee function operating at 2405-2480MHz for ZigBee, 16 channels with 2MHz channel spacing. The EUT is powered by DC 5V for USB port. For more detailed features description, please refer to the user's manual.

For Bluetooth:

Antenna Type: Integral Antenna

Antenna Gain: -0.5dBi

Modulation Type: QPSK

The normal radiated output power (e.i.r.p) is: 3.5dBm (tolerance: +/-2dB).

The normal conducted output power is 4.0dBm (tolerance: +/-2dB).

The maximum Radiated output power for the EUT is 5.07dBm in the frequency 2.405GHz ZigBee mode which is within the production variation.

The minimum Radiated output power for the EUT is 2.27dBm in the frequency 2.480GHz ZigBee mode 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:

$$\text{Max. ERP} = \text{Max. EIRP} - 2.15 = 3.35\text{dBm} = 2.16\text{mW}$$

At the distance (R) of 20cm to 40cm and in 0.3 GHz to 6 GHz, MPE Exclusion Threshold Level:

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

The MPE limit is 3060mW for general population and uncontrolled exposure in the 2.4GHz frequency range according to FCC Part 1.1307. As the measured power 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.

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