
INTERTEK TESTING SERVICES

RF Exposure

The Equipment Under Test (EUT) is a Robot Vacuum and Mop Cleaner with Wi-Fi function operating in 2412-2462MHz. The EUT is powered by DC 14.4V rechargeable battery. For more detailed features description, please refer to the user's manual.

2.4GHz Wi-Fi:

Antenna Type: Integral Antenna.

Antenna Gain: 4.3 dBi.

Modulation Type: BPSK, QPSK, 16QAM, 64QAM, CCK, DQPSK, DBPSK.

The nominal conducted output power specified: 18dBm (Tolerance: +/-5dB).

The maximum conducted output power for the EUT is 21.3 dBm in the frequency 2462MHz(IEEE 802.11n HT20) which is within the production variation.

The minimum conducted output power for the EUT is 17.2 dBm in the frequency 2462MHz(IEEE 802.11b) which is within the production variation.

According to FCC Part 2.1091, this unlicensed transmitting device 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 is as follows:

The source-based time averaged maximum radiated power = 18dBm+5dB+4.3dBi
=27.3dBm = 537.03 mW

From above data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna for 2.4GHz WIFI band can be calculated according to OET 65 as follows:

$$= 537.03 \text{ mW} / 4\pi R^2$$

$$= 0.107 \text{ mW/cm}^2$$

$$< 1 \text{ mW/cm}^2$$

The MPE limit is 1.0 mW/cm² for general population and uncontrolled exposure in the 2.4GHz Wi-Fi 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 or similar sentence 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.”