

# INTERTEK TESTING SERVICES

---

## RF Exposure

The Equipment Under Test (EUT) is a Mobile device disinfection station which has Bluetooth and Wi-Fi function. The EUT was powered DC 12V/12.5A through an adapter. Bluetooth and Wi-Fi transmitters share one antenna while they cannot transmit simultaneously. For more detailed features description, please refer to the user's manual.

### Standalone evaluation for BT function

Bluetooth Version: 4.2 BR/EDR

Antenna Type: Integral antenna.

Antenna Gain: 3.7dBi.

Modulation Type: GFSK,  $\pi/4$ DQPSK, 8DPSK.

The nominal conducted output power specified: 6.3dBm (+/-2dB)

The nominal radiated output power (e.i.r.p) specified: 10dBm (+/-2dB)

The maximum peak radiated emission for the EUT is 107.1dB $\mu$ V/m at 3m in the frequency 2441MHz

The EIRP =  $[(FS \cdot D)^2 / 30]$  mW = 11.87dBm

which is within the production variation.

The minimum peak radiated emission for the EUT is 105.4dB $\mu$ V/m at 3m in the frequency 2480MHz

The EIRP =  $[(FS \cdot D)^2 / 30]$  mW = 10.17dBm

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:

The source-based time averaged maximum radiated power = 12dBm = 15.8mW

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

$$= 15.8\text{mW} / 4\pi R^2$$

$$= 0.003 \text{ mW/cm}^2$$

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

## INTERTEK TESTING SERVICES

---

Bluetooth Version: 4.2 BLE

Antenna Type: Integral antenna.

Antenna Gain: 3.7dBi.

Modulation Type: GFSK

The nominal conducted output power specified: -5.7dBm (+/-4dB).

The nominal radiated output power (e.i.r.p) specified: -2dBm (+/-4dB)

The maximum peak radiated emission for the EUT is 96.9dB $\mu$ V/m at 3m in the frequency 2480MHz

The EIRP =  $[(FS \cdot D)^2 / 30]$  mW = 1.67dBm

which is within the production variation.

The minimum peak radiated emission for the EUT is 89.7dB $\mu$ V/m at 3m in the frequency 2402MHz

The EIRP =  $[(FS \cdot D)^2 / 30]$  mW = -5.53dBm

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 as below:

The source-based time averaged maximum radiated power = 2dBm = 1.6mW

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

$$= 1.6\text{mW} / 4\pi R^2$$

$$= 0.0003 \text{ mW/cm}^2$$

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

The MPE limit is 1.0 mW/cm<sup>2</sup> for general population and uncontrolled exposure in the Bluetooth 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.

# INTERTEK TESTING SERVICES

---

## Standalone evaluation for WIFI function

2.4GHz Wi-Fi:

Antenna Type: Integral Antenna.

Antenna Gain: 3.7dBi.

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

The nominal conducted output power specified: 24dBm (Tolerance: +/-2dB).

The maximum conducted output power for the EUT is 24.17dBm in the frequency 2422MHz(IEEE 802.11n-HT40) which is within the production variation.

The minimum conducted output power for the EUT is 22.39dBm in the frequency 2437MHz(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 = 24dBm+2dB+3.7dBi  
=29.7dBm = 933.3mW

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:

$$= 933.3\text{mW} / 4\pi R^2$$

$$= 0.186 \text{ mW/cm}^2$$

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

The MPE limit is 1.0 mW/cm<sup>2</sup> for general population and uncontrolled exposure in the 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.”**