

INTERTEK TESTING SERVICES

RF Exposure

The equipment under test (EUT) is a EV AC charger with NFC function operating in 13.56MHz, The EUT is powered by 208V/240V~, 60Hz. For more detail information pls. refer to the user manual.

NFC function:

Antenna Type: Integral antenna

Modulation Type: OOK

Antenna Gain: 0dBi

The maximum conducted output power specified: -30.83dBm.

The maximum radiated output power (e.i.r.p) specified: -30.83dBm.

According to the KDB 447498 D04 V01:

The maximum peak radiated emission for the EUT is 64.4dBμV/m at 3m in the frequency 13.56MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = -30.83dBm
which is within the production variation.

The maximum conducted output power specified is -30.83dBm = 0.000826mW

The source- based time-averaging conducted output power
= 0.000826mW

1-mW Test Exemption:

Since the source-based time-averaging conducted output power is well below 1-mW Test Exemption, per KDB 447498 D04 V01 and §1.1307 (b) (3) (i) (A), the EUT is considered to comply with SAR requirement without testing and no evaluation is required.

Bluetooth(BLE) function

Antenna Type: Integral Antenna

Antenna Gain: Max 4.9dBi

Modulation Type: GFSK

The maximum radiated output power (e.i.r.p) is: 11.9dBm (tolerance: +/-1dB).

The maximum conducted output power (e.i.r.p) is: 7.0dBm (tolerance: +/-1dB).

The maximum conducted output power for the EUT is 7.03 dBm in the frequency 2480MHz 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 = 11.9dBm+1dB= 12.9dBm = 19.5mW

The maximum ERP= 12.9dBm -2.15dB= 10.75 dBm = 11.9 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 ERP Threshold is 3060mW for general population and uncontrolled exposure in the 2.4GHz frequency range according to FCC Part 1.1307. As the maximum ERP at 20cm from the transmitter is lower than the ERP Threshold, the compliance to the ERP Threshold can be ensured by indicating the minimum 20cm separation between the transmitter's radiating structure and body of the user or nearby persons.

Note: EIRP is higher than ERP, thus EIRP is compared with the Exclusion Threshold.

FCC ID: 2BSKV-EVAC666

2.4G Wi-Fi function:

Antenna Type: Integral Antenna

Antenna Gain: Max 4.9dBi

Modulation Type: DSSS, OFDM

The maximum radiated output power (e.i.r.p) is: 22.9dBm (tolerance: +/-1dB).

The maximum conducted output power is 18.0 dBm (tolerance: +/-1dB).

The maximum conducted output power for the EUT is 18.01 dBm in the frequency 2427MHz 802.11g 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:

The source-based time averaged maximum radiated power = 22.9dBm+1dB= 23.9 dBm = 245.5mW

The maximum ERP= 23.9dBm-2.15dB= 21.75 dBm = 149.6 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 ERP Threshold is 3060mW for general population and uncontrolled exposure in the 2.4GHz frequency range according to FCC Part 1.1307. As the maximum ERP at 20cm from the transmitter is lower than the ERP Threshold, the compliance to the ERP Threshold can be ensured by indicating the minimum 20cm separation between the transmitter's radiating structure and body of the user or nearby persons.

Note: EIRP is higher than ERP, thus EIRP is compared with the Exclusion Threshold.

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Simultaneous Transmission

For Simultaneous transmitting of NFC, Bluetooth and WIFI transmitter. According to KDB 447498 D04 v01 2.2.2:

The sum of the ratios of the spatially averaged results to the applicable frequency dependent ERP Thresholds

$$= 0.000826\text{mW}/1\text{mW} + 19.5\text{mW}/3060\text{ mW} + 245.5\text{mW}/3060\text{mW} = 0.09 < 1$$

Since the sum of the ratios for all simultaneously transmitting antennas incorporated in the device is ≤ 1.0 , the EUT is considered to satisfy RF exposure compliance for simultaneous transmission operations.

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.”

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