

INTERTEK TESTING SERVICES

RF Exposure

The equipment under test (EUT) is a 45 inch HD Sound Bar with Satellite Speakers and Wireless Subwoofer with Bluetooth 5.0 (Dual Mode EDR & BLE) function operating in 2402-2480MHz and Sub-GHz function operating at 904-907MHz, 914-917MHz and 924-927MHz. The EUT is powered by DC 18V, 1A by External Switching Power Supply. (External Switching Power Supply: Model JDA0301800100WUS, Input 100-240V~50/60Hz 0.8A, Output 18V=1.0A)

For more detail information pls. refer to the user manual.

2.4GHz transceiver (2402MHz to 2480MHz):

Bluetooth Version: BT5.0(Dual Mode EDR)

Antenna Type: PCB Printed Antenna

Antenna gain: 1.35dBi Max

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

The nominal conducted output power specified: -1.35 dBm (± 4 dB)

The nominal radiated output power (e.i.r.p) specified: 0.0 dBm (± 4 dB)

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 97.7 dB μ V/m at 3m in the frequency 2402MHz

The EIRP = $[(FS * D)^2 / 30]$ mW = 2.47dBm

which is within the production variation.

The Minimum peak radiated emission for the EUT is 91.6 dB μ V/m at 3m in the frequency 2480MHz

The EIRP = $[(FS * D)^2 / 30]$ mW = -3.63dBm

which is within the production variation.

The maximum conducted output power specified is 2.65dBm= 1.841mW

The MPE-based Exemption Threshold Level:

$$P_{th}(mW) = ERP_{20cm} \\ = 3060 mW$$

Since max. conducted output power and effective radiated power (ERP) is well below the MPE low threshold level, so the EUT is considered to comply with MPE requirement without testing.

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

2.4GHz transceiver (2402MHz to 2480MHz):

Bluetooth Version: BT5.0(Dual Mode BLE)

Antenna Type: PCB Printed Antenna

Antenna gain: 1.35dBi Max

Modulation Type: GFSK

The nominal conducted output power specified: -3.35 dBm (± 6 dB)

The nominal radiated output power (e.i.r.p) specified: -2.0 dBm (± 6 dB)

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 98.7 dB μ V/m at 3m in the frequency 2402MHz

The EIRP = $[(FS * D)^2 / 30]$ mW = 3.47dBm

which is within the production variation.

The Minimum peak radiated emission for the EUT is 88.7 dB μ V/m at 3m in the frequency 2480MHz

The EIRP = $[(FS * D)^2 / 30]$ mW = -6.53dBm

which is within the production variation.

The maximum conducted output power specified is 2.65dBm= 1.841mW

The MPE-based Exemption Threshold Level:

$$\begin{aligned} P_{th}(\text{mW}) &= \text{ERP}_{20\text{cm}} \\ &= 3060 \text{ mW} \end{aligned}$$

Since max. conducted output power and effective radiated power (ERP) is well below the MPE low threshold level, so the EUT is considered to comply with MPE requirement without testing.

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

Sub-GHz transmitter (904MHz to 907MHz, 914MHz to 917MHz, 924MHz to 927MHz):

Antenna Type: Integral Antenna

Antenna gain: 0dBi Max

Modulation Type: QPSK

The nominal conducted output power specified: -23.0 dBm (± 10 dB)

The nominal radiated output power (e.i.r.p) specified: -23.0 dBm (± 10 dB)

According to the KDB 447498:

The Maximum Quasi peak radiated emission for the EUT is 82.2 dB μ V/m at 3m in

the frequency 924MHz

The EIRP = $[(FS * D)^2 / 30]$ mW = -13.03dBm

which is within the production variation.

The Minimum Quasi peak radiated emission for the EUT is 63.1 dB μ V/m at 3m in

the frequency 904MHz

The EIRP = $[(FS * D)^2 / 30]$ mW = -32.13dBm

which is within the production variation.

The maximum conducted output power specified is -13.0dBm= 0.050mW

The MPE-based Exemption Threshold Level:

$$P_{th}(mW) = ERP_{20cm}$$

$$= 2040f \text{ mW (f minimum 904MHz, 0.904GHz)}$$

$$= 1844.16 \text{ mW}$$

Since max. conducted output power and effective radiated power (ERP) is well below the MPE low threshold level, so the EUT is considered to comply with MPE requirement without testing.

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

For Bluetooth EDR and Sub-GHz simultaneous transmission:

$$1.841/3060 + (0.050/1844.16) * 3 < 1$$

For Bluetooth LE and Sub-GHz simultaneous transmission:

$$1.841/3060 + (0.050/1844.16) * 3 < 1$$