

RF Exposure

The equipment under test (EUT) is a 3.1CH Soundbar with Wireless Subwoofer with Bluetooth 5.3 (Dual Mode) function operating in 2402-2480MHz. The EUT is powered by AC100-240V~ 50/60Hz. For more detail information pls. refer to the user manual.

MPE for Bluetooth function:

Bluetooth Version: 5.3 EDR

Antenna Type: Integral antenna

Antenna Gain: 4.14 dBi max

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

The nominal conducted output power specified: -3.14dBm (+/-2dB).

The nominal radiated output power (e.i.r.p) specified: 1dBm (+/- 2dB).

According to the KDB 447498 V06:

The maximum peak radiated emission for the EUT is 97.8dB μ V/m at 3m in the frequency 2440MHz

The EIRP = $[(FS * D)^2 / 30]$ mW = 2.57dBm
which is within the production variation.

The minimum peak radiated emission for the EUT is 96.9dB μ V/m at 3m in the frequency 2402MHz

The EIRP = $[(FS * D)^2 / 30]$ mW = 1.67dBm
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 V06 and OET 65, the simple calculation as below:

The source-based time averaged maximum radiated power = 3 dBm = 2.0 mW

From above data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna for 5.3 EDR mode can be calculated according to OET 65 as follow:

$$= 2.0 \text{ mW} / 4\pi R^2$$

$$= 0.00040 \text{ mW/cm}^2$$

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

The MPE limit is 1.0 mW/cm² for general population and uncontrolled exposure in the 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.

MPE for Bluetooth function:

Bluetooth Version: 5.3 BLE

Antenna Type: Integral antenna

Antenna Gain: 4.14 dBi max

Modulation Type: GFSK

The nominal conducted output power specified: -2.14dBm (+/-3dB).

The nominal radiated output power (e.i.r.p) specified: 2dBm (+/- 3dB).

According to the KDB 447498 V06:

The maximum peak radiated emission for the EUT is 99.6dB μ V/m at 3m in the frequency 2480MHz

The EIRP = $[(FS * D)^2 / 30]$ mW = 4.37dBm
which is within the production variation.

The minimum peak radiated emission for the EUT is 95.3dB μ V/m at 3m in the frequency 2440MHz

The EIRP = $[(FS * D)^2 / 30]$ mW = 0.07dBm
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 = 5 dBm = 3.16 mW

From above data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna for 5.3 BLE mode can be calculated according to OET 65 as follow:

$$= 3.16 \text{ mW} / 4\pi R^2$$

$$= 0.00063 \text{ mW/cm}^2$$

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

The MPE limit is 1.0 mW/cm² for general population and uncontrolled exposure in the 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.