

# INTERTEK TESTING SERVICES

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## RF Exposure

The equipment under test (EUT) is a Electronic drumsticks with ESB function operating in 2428-2472MHz and BT BLE function operating in 2402-2480MHz. The EUT is powered by DC 3.7V by rechargeable battery or charged by DC 5V through adapter. For more detail information pls. refer to the user manual.

BT BLE function:

Antenna Type: Integral antenna

Modulation Type: GFSK

Antenna Gain: 0dBi

Bluetooth Version: 5.0 BLE (Single Mode)

The nominal conducted output power specified: -6.0 dBm ( $\pm 3$ dB)

The nominal radiated output power (e.i.r.p) specified: -6.0 dBm ( $\pm 3$ dB)

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 90.3 dB $\mu$ V/m at 3m in the frequency 2402MHz

The EIRP = [(FS\*D) ^2 / 30] mW = -4.93dBm

which is within the production variation.

The Minimum peak radiated emission for the EUT is 86.3 dB $\mu$ V/m at 3m in the frequency 2480MHz

The EIRP = [(FS\*D) ^2 / 30] mW = -8.93dBm

which is within the production variation.

The maximum conducted output power specified is -3dBm= 0.501mW

The SAR Exclusion Threshold Level:

$$\begin{aligned} P_{th}(mW) &= ERP_{20cm} * (d/20cm)^x \quad (X = -\log_{10} \left( \frac{60}{ERP_{20cm} \sqrt{f}} \right)) \\ &= 3060 * (0.5/20)^{1.9} mW \\ &= 2.72 mW \end{aligned}$$

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

**Note:**

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

ESB function:

Antenna Type: Integral antenna

Modulation Type: GFSK

Antenna Gain: 0dBi

The nominal conducted output power specified: -4.0 dBm ( $\pm 5$ dB)

The nominal radiated output power (e.i.r.p) specified: -4.0 dBm ( $\pm 5$ dB)

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 94.3 dB $\mu$ V/m at 3m in the frequency 2428MHz

The EIRP =  $[(FS \cdot D)^2 / 30]$  mW = -0.93dBm

which is within the production variation.

The Minimum peak radiated emission for the EUT is 86.4 dB $\mu$ V/m at 3m in the frequency 2472MHz

The EIRP =  $[(FS \cdot D)^2 / 30]$  mW = -8.83dBm

which is within the production variation.

The maximum conducted output power specified is 1dBm= 1.259mW

The SAR Exclusion Threshold Level:

$$\begin{aligned} P_{th}(\text{mW}) &= ERP_{20\text{cm}} * (d/20\text{cm})^x \quad (X = -\log_{10} \left( \frac{60}{ERP_{20\text{cm}} \sqrt{f}} \right)) \\ &= 3060 * (0.5/20)^{1.9} \text{ mW} \\ &= 2.72 \text{ mW} \end{aligned}$$

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

**Note:**

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

For Simultaneous transmitting of ESB transmitter and Bluetooth, According to  
KDB 447498:

$$1.259/2.72 + 0.501/2.72 = 0.647 < 1$$

EUT is considered to meet compliance for simultaneous transmission exposures.