

INTERTEK TESTING SERVICES

RF Exposure

The equipment under test (EUT) is a EXP Brain with Bluetooth 5.0 BLE function operating in 2402-2480MHz. The EUT is powered by DC 7.2V by rechargeable battery. For more detail information pls. refer to the user manual.

Antenna Type: Integral antenna

Modulation Type: GFSK

Antenna Gain: 0dBi

Bluetooth Version: 5.0 BLE (Single Mode)

The nominal conducted output power specified: 1.0 dBm (± 3 dB)

The nominal radiated output power (e.i.r.p) specified: 1.0 dBm (± 3 dB)

According to the KDB 447498:

The Maximum peak radiated emission for the EUT is 98.4 dB μ V/m at 3m in the frequency 2402MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = 3.17dBm

which is within the production variation.

The Minimum peak radiated emission for the EUT is 98.1 dB μ V/m at 3m in the frequency 2440MHz

The EIRP = $[(FS \cdot D)^2 / 30]$ mW = 2.87dBm

which is within the production variation.

The maximum conducted output power specified is 4dBm= 2.512mW

The source- based time-averaging conducted output power = $2.512 \cdot \text{Duty cycle}$ mW < 2.512 mW (Duty cycle < 100%)

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. power of the source-based time-averaging 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.