

RF Exposure evaluation

Product Description: Bling Helmet

Model Number: MT1

FCC ID: 2AEKFMTX

According to 447498 D01 General RF Exposure Guidance v05 The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by: $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation

According to the follow transmitter output power (P_t) formula:

$$P_t = (E \times d)^2 / (30 \times g_t)$$

P_t =transmitter output power in watts

g_t =numeric gain of the transmitting antenna (unitless)

E =electric field strength in V/m

d =measurement distance in meters (m)

According to the formula described above:

For AB1512

$$E_{\text{max}} = \underline{\underline{90.10}} \text{dBuV/m} = \underline{\underline{0.032}} \text{V/m}, d=3\text{m}, g_t=1$$

$$P_t = (E \times d)^2 / (30 \times g_t) = (0.032 \times 3)^2 / (30 \times 1) = 0.0003072 \text{W} = \underline{\underline{0.31}} \text{mW}$$

For NRF51822

$$E_{\text{max}} = \underline{\underline{88.37}} \text{dBuV/m} = \underline{\underline{0.026}} \text{V/m}, d=3\text{m}, g_t=1$$

$$P_t = (E \times d)^2 / (30 \times g_t) = (0.026 \times 3)^2 / (30 \times 1) = 0.0002028 \text{W} = \underline{\underline{0.20}} \text{mW}$$

Two Bluetooth modules(AB1512+NRF51822) transmit simultaneously

Test separation distance=5mm

Module 1

$$(\text{power}/5) \times (\sqrt{2.402/7.5}) = (0.31/5) \times (\sqrt{2.402/7.5}) = 0.013 \text{W/Kg}$$

Module 2

$$(\text{power}/5) \times (\sqrt{2.402/7.5}) = (0.20/5) \times (\sqrt{2.402/7.5}) = 0.008 \text{W/Kg}$$

$$\text{Module 1} + \text{Module 2} = 0.013 + 0.008 = 0.021 < 1.6 \text{W/Kg}$$

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NOTE: For the maximum power you can refer FCC test report.