

RF EXPOSURE EVALUATION

1. PRODUCT INFORMATION

Product Description	Bluetooth FM Transmitter
Model Name	BH438A, BH438B, BH438C
FCC ID	2AIL4-BH438A

2. EVALUATION METHOD

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

3. CALCULATION

$$P_t = 4.597 \text{ dBm} = 2.88 \text{ mW}$$

The value of the Maximum output power P_t is referred to the test report of the CFR47 §15.247.

The result for RF exposure evaluation $\text{SAR} = (2.88 \text{ mW} / 5 \text{ mm}) \cdot [\sqrt{2.480(\text{GHz})}] = 0.90 < 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR.

§15.239

$$\text{FM } P_t = -61.94 \text{ dBm} = 0.0000064 \text{ mW}$$

The value of the Maximum output power P_t is referred to the test report of the CFR47

For frequencies below 100 MHz and test separation distances ≤ 50 mm, the power threshold determined by the following:

$$P_{\text{max}} = 0.5 \cdot 474 \cdot [1 + \log(100/f)] \text{ mW}, \text{ where } f \text{ is MHz}$$

For 88.1 MHz, $P_{\text{max}} = 250 \text{ mW}$. $P_t < P_{\text{max}}$.

For 107.9 MHz, $P = 3 \times 5 / 0.1079^{0.5} = 45.7 \text{ mW}$

$P_{\text{max}} = 45.7 \text{ mW}$. $P_t < P_{\text{max}}$.

Simultaneous transmission between Bluetooth and FM transmitter:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})/x}] \text{ W/kg}$, for test separation distances ≤ 50 mm;

where $x = 7.5$ for 1-g SAR and $x = 18.75$ for 10-g SAR.

$$\text{SAR} = (0.90 + 0.0000064) / 7.5 = 0.120 \text{ W/kg} < 1.6 \text{ W/kg}$$

4. CONCLUSION

The SAR evaluation is not required.