

RF Exposure evaluation

Product Description: Bluetooth Speaker
Model Number: U171
FCC ID: SXS-BT171

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 above test data,

$E_{\text{max}}=97.32\text{dB}\mu\text{V}/\text{m}=0.073\text{V}/\text{m}$, $d=3\text{m}$, $g_t=2.38$

$$P_t = (E \times d)^2 / (30 \times g_t) = (0.073 \times 3)^2 / (30 \times 2.38) = 0.000672\text{W} = 0.67\text{mW}$$

The result is rounded to one decimal place for comparison

Worse case is as below: [2480MHz -0.67mW output power]

$(0.67\text{mW}/5\text{mm}) \cdot [\sqrt{2.480(\text{GHz})}] = 0.211 < 3.0$ for 1-g SAR

Then SAR evaluation is not required

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