

RF exposure evaluation

According to 447498 D01 General RF Exposure Guidance v05r02 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

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
- The result is rounded to one decimal place for comparison

Worse case for Bluetooth as below:

[2402MHz: 1.58dBm (1.44 mW) output power]

$$(1.44 \text{ mW} / 5\text{mm}) \cdot [\sqrt{2.402(\text{GHz})}] = 0.45 < 3.0 \text{ for 1-g SAR}$$

Worse case for Bluetooth 4.0 as below:

[2442MHz: -3.77dBm (0.42 mW) output power]

$$(0.42 \text{ mW} / 5\text{mm}) \cdot [\sqrt{2.442(\text{GHz})}] = 0.14 < 3.0 \text{ for 1-g SAR}$$

Worse case for WiFi as below:

[2462MHz: 4.59dBm (2.877mW) output power]

$$(2.877 \text{ mW} / 5\text{mm}) \cdot [\sqrt{2.462(\text{GHz})}] = 0.91 < 3.0 \text{ for 1-g SAR}$$

$$0.45 + 0.91 = 1.36 < 3.0 \text{ for 1-g SAR}$$

So SAR test is not required