

Portable device

According to §15.247(e)(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to KDB447498 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:

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] * [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$
$$f(\text{GHz}) \text{ is the RF channel transmit frequency in GHz;}$$

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

The result is rounded to one decimal place for comparison;

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

We use 5mm as separation distance to calculate.

Maximum measured transmitter power:

Bluetooth:

Transmit Frequency (GHz)	Mode	Measured Power (dBm)	Tune-up power (dBm)	Max tune-up power(dBm)	Result calculation	1g SAR
2.402	GFSK	0.91	0 \pm 1	1	0.3902	3
2.441		0.50	0 \pm 1	1	0.3934	3
2.48		-0.49	0 \pm 1	1	0.3965	3
2.402	$\pi/4$ -DQPSK	-0.42	-1 \pm 1	0	0.3100	3
2.441		-1.17	-1 \pm 1	0	0.3125	3
2.48		-0.52	-1 \pm 1	0	0.3150	3
2.402	8DPSK	0.09	-0.5 \pm 1	0.5	0.3478	3
2.441		-0.39	-0.5 \pm 1	0.5	0.3506	3
2.48		-1.37	-0.5 \pm 1	0.5	0.3534	3

Conclusion:

For the max result : 0.3965 \leq 3.0 for 1g SAR, No SAR is required.

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