

RF EXPOSURE EVALUATION

Product Name	:	Bluetooth speaker
Model Name	:	BS-201, BS-200
FCC ID	:	2AF85-BS-201
Bluetooth Version	:	Bluetooth LE Bluetooth Classical
Operating frequency	:	2402-2480MHz
Numbers of Channel	:	40 For BLE 79 For BT
Antenna Type	:	PCB Print Antenna
Antenna Gain	:	2dBi
Type of Modulation	:	GFSK For BLE GFSK, $\pi/4$ -DQPSK, 8DPSK For BT
Power supply	:	DC 3.7V, 4000mAh Battery
Hardware Version	:	V1.1
Software Version	:	V4.2
Device category	:	Portable (<20cm separation)

Standard Requirement

According to § 15.247(i) and § 1.1307b(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 levels in excess of the Commission's guidelines. See KDB 447498 D01 General RF Exposure Guidance v05, section 4. 3. 1.

The 1-g and 10-g SAR test exclusion thresholds for 100MHz to 6GHz at test separation distances ≤ 50 mm are determined by:

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

- $f(\text{GHz})$ 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.



PRECISE TESTING

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

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

One antenna is available for the EUT (BT product). The minimum separation distance is 5mm.

For Bluetooth Classical:

Channel Frequency (MHz)	Measurement Peak Output Power(dBm)		
	GFSK	$\pi/4$ -DQPSK	8DPSK
2402	0.79	-0.57	-3.33
2441	-0.34	-2.89	-3.16
2480	-1.5	-2.33	-3.44

Channel Frequency (MHz)	Tune up tolerance (dBm)	Max tune up conducted power(dBm)	Output Peak power (mW)	Calculation Result	Limits
2402	1 $\pm$ 1	2	1.58	0.49127	3
2441	0 $\pm$ 1	1	1.26	0.39338	3
2480	-2 $\pm$ 1	-1	0.79	0.25018	3
2402	-1 $\pm$ 1	0	1.00	0.30997	3
2441	-3 $\pm$ 1	-2	0.63	0.19716	3
2480	-2 $\pm$ 1	-1	0.79	0.25018	3
2402	-3 $\pm$ 1	-2	0.63	0.19558	3
2441	-3 $\pm$ 1	-2	0.63	0.19716	3
2480	-3 $\pm$ 1	-2	0.63	0.19873	3

For Bluetooth LE:

Channel Frequency (MHz)	Measurement Peak Output Power(dBm)
	GFSK
2402	-0.13
2440	0.42
2480	0.49

Channel Frequency (MHz)	Tune up tolerance (dBm)	Max tune up conducted power(dBm)	Output Peak power (mW)	Calculation Result	Limits
2402	0±1	1	1.26	0.39023	3
2440	0±1	1	1.26	0.39338	3
2480	0±1	1	1.26	0.39651	3

According to KDB 447498, no stand-alone required for BT antenna, and no simultaneous SAR measurement is required.



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