



# RF EXPOSURE EVALUATION

Product Name	:	portable bluetooth speaker
Model Name	:	BT138B, BT138, iBall Musi Jam (Note: The samples are the same except different model include model name. So BT138B was selected for full tested.)
FCC ID	:	2AAP8-GGEBT138
Specification	:	Version 4.2
Operation Frequency	:	2402-2480MHz
Number of Channel	:	79
Antenna Type	:	Internal PCB Antenna
Antenna Gain	:	-2.0dBi
Power supply	:	DC 5.0V
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  $\leq 50\text{mm}$  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.

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50\text{mm}$  and for transmission frequencies between 100MHz and 6GHz. When the minimum test separation distance is  $< 5\text{mm}$ , 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.



Channel Frequency (MHz)	Measurement Peak Output Power(dBm)		
	GFSK	$\pi/4$ -DQPSK	8DPSK
2402	2.79	2.12	2.31
2441	2.84	2.15	2.37
2480	2.79	1.98	2.21

Type of Modulation	Channel Frequency (MHz)	Tune up tolerance (dBm)	Max tune up conducted power(dBm)	Output Peak power (mW)	Calculation Result	Limits
GFSK	2402	2 $\pm$ 1	3	2.00	0.6185	3
	2441	2 $\pm$ 1	3	2.00	0.6235	3
	2480	2 $\pm$ 1	3	2.00	0.6284	3
$\pi/4$ -DQPSK	2402	2 $\pm$ 1	3	2.00	0.6185	3
	2441	2 $\pm$ 1	3	2.00	0.6235	3
	2480	1 $\pm$ 1	2	1.58	0.4992	3
8DPSK	2402	2 $\pm$ 1	3	2.00	0.6185	3
	2441	2 $\pm$ 1	3	2.00	0.6235	3
	2480	2 $\pm$ 1	3	2.00	0.6284	3

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

Signature

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