

RF EXPOSURE EVALUATION

EUT Specification

EUT	UMBRELLA LIGHT WITH SPEAKER
Model Number	PBB-2003S PBB-20210518 PBG-2117S PBG-3628S PBG-4838S PBG-5014S PBG-2422S PBG-2320S PBG-20210623001 PBG-3127 PBG-3229 PBG-200S PBG-250S PBG-4538S PBG-3311S PBG-300S PBG-2712S PBG-21090601 All models are the same except in appearance and shape (here we prepare PBB-2003S for all the test)
FCC ID	2AC37PBSPEAKER
Antenna gain (Max)	0dBi
Operation Frequency	2402-2480MHz
Input Rating	DC 5V from USB, DC 3.7V from battery
Classification Per Stipulated Test Standard	§15.247(i), §2.1093
Kind of Device: Bluetooth Ver.5.0	
Modulation	DSS:GFSK, $\pi/4$ -DQPSK
Max. output power	DSS: 4.49 dBm(0.002812 W)

Test Requirement:

According to §15.247(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.

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:

$$\left[\frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \right] \cdot \sqrt{f_{\text{(GHz)}}} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR,}^{24} \text{ where}$$

- $f_{\text{(GHz)}}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation²⁵
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

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 according to 5) in section 4.1 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. The minimum separation distance is 5mm.

DSS:

Transmit Frequency (MHz)	Mode	Measured Power (dBm)	Tune up Power (dBm)	Max tune up power (dBm)	Calculation Result	1-g SAR
2.402	GFSK	2.69	2±1	3	0.6184670	3
2.441	GFSK	3.51	3±1	4	0.7848992	3
2.480	GFSK	4.01	4±1	5	0.9959920	3
2.402	Π/4-DQ PSK	3.22	3±1	4	0.7786038	3
2.441	Π/4-DQ PSK	3.99	3±1	4	0.7848992	3
2.480	Π/4-DQ PSK	4.49	4±1	5	0.9959920	3
2.402	8DPSK	2.69	2±1	3	0.6184670	3
2.441	8DPSK	3.51	3±1	4	0.7848992	3
2.480	8DPSK	4.01	4±1	5	0.9959920	3

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

Signature:



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