

RF Exposure Evaluation

FCC ID: PIBB8

1. Client Information

Applicant : Audioengine LLC
Address : 6500 River Place Blvd, Bldg 7, Ste 250 Austin , TX 78730
Manufacturer : Shen zhen Hi-FiD Electronics Tech Co., Ltd
Address : 4F, B7 Building, Hengfeng industrial City, Hezhou Village, Xixiang Town,
Bao'an District, Shenzhen City, China

2. General Description of EUT

EUT Name	:	Audioengine 512 Portable Wireless Speaker	
Models No.	:	Audioengine 512	
Product Description	:	Operation Frequency:	Bluetooth V5.0(BLE): 2402~2480 MHz
		RF Output Power:	BLE: -1.140dBm 1M (GFSK):-0.996dBm 2M ($\pi/4$ -DQPSK):-1.112dBm 3M (8-DPSK):-1.103dBm
		Antenna Gain:	0dBi PCB Antenna
Power Supply	:	DC Voltage supplied by USB cabel DC Voltage supplied by Li-ion battery	
Power Rating	:	DC 5.0V by USB cable DC 7.4V by 2200mAh Li-ion battery	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

Note: More test information about the EUT please refer the RF Test Report.

SAR Test Exclusion Calculations

1. FCC: According to KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.

- (1) Clause 4.3: General SAR test reduction and exclusion guidance

- Sub clause 4.31: Standalone SAR test exclusion considerations

- 1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6GHz at test separation distance ≤ 5 mm are determined by:

- $$\frac{[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation, mm})] * [\sqrt{f_{\text{(GHz)}}}] \leq 3.0 \text{ for 1-g SAR}$$

- $$\frac{[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation, mm})] * [\sqrt{f_{\text{(GHz)}}}] \leq 7.5.0 \text{ for 10-g SAR}$$

2. Calculation:

Test separation: 5mm						
BLE Mode (GFSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-1.140	-1±1	0	1	0.310	3.0
2.442	-1.463	-1±1	0	1	0.312	3.0
2.480	-1.958	-1±1	0	1	0.315	3.0
1M (GFSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-0.996	-1±1	0	1	0.310	3.0
2.442	-1.408	-1±1	0	1	0.312	3.0
2.480	-1.862	-1±1	0	1	0.315	3.0
2M (π/4-QPSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-1.112	-1±1	0	1	0.310	3.0
2.442	-1.315	-1±1	0	1	0.312	3.0
2.480	-1.784	-1±1	0	1	0.315	3.0
3M (8-DPSK)						
Frequency (GHz)	Conducted Power (dBm)	Turn-up Power Tolerance (dB)	Max power of tune up tolerance (dbm)	Max power of tune up tolerance (mw)	Calculation Value	Threshold Value
2.402	-1.103	-1±1	0	1	0.310	3.0
2.442	-1.403	-1±1	0	1	0.312	3.0
2.480	-1.846	-1±1	0	1	0.315	3.0

So standalone SAR measurements are not required.

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