

RF Exposure Evaluation

FCC ID: 2A4UM-SE02

1. Client Information

Applicant	:	Shenzhen Apwill Electronic CO.,Ltd
Address	:	Room 13A, A Zuo, Zhenye Apartment, No.2014, Bao An Nan Road, Luo Hu District, Shen Zhen, Guang Dong, China 518000
Manufacturer	:	Shenzhen Apwill Electronic CO.,Ltd
Address	:	Room 13A, A Zuo, Zhenye Apartment, No.2014, Bao An Nan Road, Luo Hu District, Shen Zhen, Guang Dong, China 518000

2. General Description of EUT

EUT Name	:	wireless headphone
Model(s) No.	:	SE02, SE01, SE03, SE04, SE05, SE06, SE07, SE08
Model Difference	:	All PCB boards and circuit diagrams are the same, the only difference is that names.
Product Description	Operation Frequency:	Bluetooth V5.0: 2402MHz~2480MHz
	Number of Channel:	Bluetooth 5.0(BDR+EDR): 79 channels
	RF Output Power:	2dBm (Max)
	Antenna Gain:	1.24 dBi ceramic Antenna
	Modulation Type:	GFSK, π /4-DQPSK, 8-DPSK
	Bit Rate of Transmitter:	1/2/3Mbps
Power Supply	:	Input: DC 5V DC 3.7V by 180mAh Li-ion battery
Software Version	:	V1.0
Hardware Version	:	V1.0
Remark: The antenna gain provided by the applicant, the adapter and verified for the RF conduction test and adapter provided by TOBY test lab.		

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:

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

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

2. Calculation:

Test separation: 5mm						
Bluetooth 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	-0.55	0±1	1	1.259	0.391	3.0
2.441	-1.33	-1±1	0	1.000	0.312	3.0
2.480	-1.61	-1±1	0	1.000	0.315	3.0
Bluetooth Mode (π/4-DQPSK)						
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	1.46	1±1	2	1.585	0.492	3.0
2.441	0.73	0±1	1	1.259	0.393	3.0
2.480	0.47	-1±1	0	1.000	0.315	3.0
Bluetooth Mode (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	2	2±1	3	1.995	0.620	3.0
2.441	1.2	1±1	2	1.585	0.495	3.0
2.480	0.99	1±1	2	1.585	0.499	3.0

Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v06.

-----END OF REPORT-----