



RF Exposure Evaluation

FCC ID: 2A7QY-S300

1. Client Information

Applicant	:	Shenzhen Arington Technology Co., Ltd
Address	:	501, Bldg D, Huawan Industrial Park, No.4159 Baoan Avenue, Baoan District, Shenzhen, China
Manufacturer	:	Shenzhen Arington Technology Co., Ltd
Address	:	501, Bldg D, Huawan Industrial Park, No.4159 Baoan Avenue, Baoan District, Shenzhen, China

2. General Description of EUT

EUT Name	:	Open Ear Headphones
Model(s) No.	:	S300, S350, S100, GD16, GD19
Model Different	:	All PCB boards and circuit diagrams are the same, the only difference is that names and appearance
Sample ID	:	RW-C-202204-0412-4-1#&RW-C-202204-0412-4-2#
Product Description	Operation Frequency:	Bluetooth LE 5.2: 2402MHz~2480MHz Bluetooth(BDR+EDR) 5.2: 2402MHz~2480MHz
	Number of Channel:	Bluetooth LE 5.2: 40 channels Bluetooth(BDR+EDR) 5.2: 79 channels
	RF Output Power:	0.64dBm
	Antenna Gain:	-3.6dBi Ceramic Antenna
Power Supply	:	USB Input: DC 5V1A DC 3.7V by 120mAh Li-ion battery
Software Version	:	FW5000.upd
Hardware Version	:	V1.5
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.

The RF Exposure Evaluation for FCC:

SAR Test Exclusion Calculations

FCC: According to 447498 D04 Interim General RF Exposure Guidance v01.

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)									
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

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)	Limit P _{th} (mW)
2.402	-1.41	-1±1	0	1	3
2.441	-0.55	0±1	1	1.259	3
2.480	0.26	0±1	1	1.259	3
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)	Limit P _{th} (mW)
2.402	0.64	0±1	1	1.259	3
2.441	-1.41	-1±1	0	1	3
2.480	-0.58	0±1	1	1.259	3
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 D04, No SAR is required.					

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)	Limit P _{th} (mW)
2.402	-1.73	-1±1	0	1	3
2.440	-1.03	-1±1	0	1	3
2.480	-0.18	0±1	1	1.259	3
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 D04, No SAR is required.					

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