FCC RF Exposure Evaluation

1. Product Information

FCC ID:	2AJYS-A1A
Product name	Ture wireless earbuds ANC
Model number	Air 1 ANC
Power supply	Earphone: Input: DC 5V, 0.5A Battery:DC 3.7V,45mAh Charging Box: Input: DC 5V, 1A Battery:DC 3.7V,600mAh
Operation frequency	Bluetooth: 2402MHz-2480MHz
Modulation Type	GFSK, π/4-DQPSK, 8-DPSK for Bluetooth V5.0 (DSS) GFSK for Bluetooth V5.0 (DTS)
Channel Number	79 Channels for Bluetooth V5.0(DSS) 40 channels for Bluetooth V5.0(DTS)
Antenna Type	Internal Antenna
Antenna Gain	0.25dBi(Max.)
Hardware version	V2.0
Software version	V19
Exposure category	General population/uncontrolled environment
EUT Type	Production Unit
Device Type	Protable Device

2. Evaluation method and Limit

According to KDB447498 D01 General RF Exposure Guidance v06 Section 4.3.1 Standalone SAR test exclusion considerations: “Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition, listed below, is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.22 The minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander (see 5) of section 4.1). To qualify for SAR test exclusion, the test separation distances applied must be fully explained and justified by the operating configurations and exposure conditions of the transmitter and applicable host platform requirements, typically in the SAR measurement or SAR analysis report, according to the required published RF exposure KDB procedures. When no other RF exposure testing or reporting is required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for the SAR test exclusion. When required, the device specific conditions described in the other published RF exposure KDB procedures must be satisfied before applying these SAR test exclusion provisions; for example, handheld PTT two-way radios, handsets, laptops & tablets etc.23 “

[(max. power of channel, including tune-up tolerance, mW)/ (min. test separation distance, mm)] · [√f (GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

- f (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
- 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 f) in section 4.1 is applied to determine SAR test exclusion.

3. Refer evaluation method

ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

FCC KDB publication 447498 D01 General RF Exposure Guidance v06: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

FCC CFR 47 part1 1.1310: Radiofrequency radiation exposure limits.

FCC CFR 47 part2 2.1093: Radiofrequency radiation exposure evaluation: portable devices

4. Conducted Power Results

[BT Max Conducted Power]

Mode	Channel	Frequency(MHz)	Average Conducted Output Power (dBm)
GFSK	0	2402	-3.901
	39	2441	-3.414
	78	2480	-3.745
π/4DQPSK	0	2402	-1.406
	39	2441	-0.896
	78	2480	-1.310
8DPSK	0	2402	-0.739
	39	2441	-0.272
	78	2480	-0.709

[BLE Max Conducted Power]

Mode	Channel	Frequency(MHz)	Average Conducted Output Power (dBm)
GFSK	0	2402	-3.963
	19	2440	-3.376
	39	2480	-3.689

5. Manufacturing tolerance

GFSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	-3.0	-3.0	-3.0
Tolerance ±(dB)	1.0	1.0	1.0
π/4DQPSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	-1.0	-1.0	-1.0
Tolerance ±(dB)	1.0	1.0	1.0
8DPSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	-1.0	0.0	-1.0
Tolerance ±(dB)	1.0	1.0	1.0

BLE

BT LE (Peak)			
Channel	Channel 0	Channel 19	Channel 39
Target (dBm)	-3.0	-3.0	-3.0
Tolerance ±(dB)	1.0	1.0	1.0

6. Evaluation Results

BT

Band/Mode	f (GHz)	Antenna Distance (mm)	RF output power		SAR Test Exclusion Threshold	SAR Test Exclusion
			dBm	mW		
GFSK	2.441	5	-2.0	0.6310	0.20 < 3.0	Yes
π/4DQPSK	2.441	5	0.0	1.0000	0.31 < 3.0	Yes
8DPSK	2.441	5	1.0	1.2589	0.39 < 3.0	Yes

BLE

Band/Mode	f (GHz)	Antenna Distance (mm)	RF output power		SAR Test Exclusion Threshold	SAR Test Exclusion
			dBm	mW		
GFSK	2.440	5	-2.0	0.6310	0.20 < 3.0	Yes

Remark:

1. Output power including tune up tolerance;

2. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to f) in section 4.1 is applied to determine SAR test exclusion.

7. 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.

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