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RF Exposure Evaluation Report

Report No. : CQASZ20190400216E-02

Applicant: Avantree Technology Co., Ltd.

Address of Applicant: The 4th Floor, Yuepeng Building, No.1019 Jiabin Rd, Luohu District, Shenzhen, China

Manufacturer: Avantree Technology Co., Ltd.

Address of Manufacturer: The 4th Floor, Yuepeng Building, No.1019 Jiabin Rd, Luohu District, Shenzhen, China

Equipment Under Test (EUT):

Product: Wireless Headphone System

Model No.: WSHT-280

Brand Name: Avantree

FCC ID: 2AITF-WSHT-280

Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01 General RF Exposure Guidance v06

Date of Test: 2019-04-03 to 2019-04-10

Date of Issue: 2019-04-10

Test Result : **PASS***

Tested By:

Tiny You

(Tiny You)

Reviewed By:

Aaron Ma

(Aaron Ma)

Approved By:

Jack Ai

(Jack Ai)



* In the configuration tested, the EUT complied with the standards specified above.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20190400216E-02	Rev.01	Initial report	2019-04-10

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3 General Information

3.1 Client Information

Applicant:	Avantree Technology Co., Ltd.
Address of Applicant:	The 4th Floor, Yuepeng Building, No.1019 Jiabin Rd, Luohu District, Shenzhen, China
Manufacturer:	Avantree Technology Co., Ltd.
Address of Manufacturer:	The 4th Floor, Yuepeng Building, No.1019 Jiabin Rd, Luohu District, Shenzhen, China

3.2 General Description of EUT

Name:	Wireless Headphone System
Model No.:	WSHT-280
Trade Mark :	Avantree
Hardware Version:	V3.1
Software Version:	V2.0
Frequency Range:	2406 MHz ~ 2472MHz
Modulation Type:	GFSK
Number of Channels:	31(declared by the client)
Sample Type:	☐ Mobile ☐ Portable ☒ Fix Location
Test Software of EUT:	RF test (manufacturer declare)
Antenna Type:	Internal antenna
Antenna Gain:	0dBi
Power Supply:	Adaptor: Model: YLS0041A-T050055 Input: 100-240V ~ 50/60Hz 0.3A Output: 5V 550mA

4 RF Exposure Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

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 Exclusion Threshold condition, listed below, is satisfied.

4.1.2 Limits

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:

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

☐ $f(\text{GHz})$ is the RF channel transmit frequency in GHz

☐ Power and distance are rounded to the nearest mW and mm before calculation¹⁷

☐ The result is rounded to one decimal place for comparison

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 is applied to determine SAR test exclusion

4.2 EUT RF Exposure Evaluation

1) For 2.4G

$$e_{irp} = p_t \times g_t = (E \times d)^2 / 30$$

where:

p_t = transmitter output power in watts,

g_t = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, $10^{((dB\mu V/m)/20)/10^6}$,

d = measurement distance in meters (m)---3m,

$$\text{So } p_t = (E \times d)^2 / 30 / g_t$$

The worst case (refer to report CQASZ20190400216E-01) is below:

Antenna polarization: Horizontal		
Frequency (MHz)	Level (dBuV/m)	Polarization
2472	96.69	Peak
2472	89.49	Average

Antenna polarization: Vertical		
Frequency (MHz)	Level (dBuV/m)	Polarization
2472	99.18	Peak
2472	89.58	Average

For 2472MHz wireless:

Field strength = 99.18dB μ V/m @3m

Ant. gain 0dBi; so Ant numeric gain=1.0

$$\text{So } p_t = \{ [10^{(99.18/20)} / 10^6 \times 3]^2 / 30 / 1.0 \} \times 1000 \text{mW} = 2.484 \text{mW}$$

$$\text{So } (2.484 \text{mW} / 5 \text{mm}) \times \sqrt{2.472 \text{GHz}} = 0.781,$$

$$0.781 < 3.0 \text{ for 1-g SAR}$$

So the SAR report is not required.