



Shenzhen Huaxia Testing Technology Co., Ltd

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

Telephone: +86-755-26648640

Fax: +86-755-26648637

Website: www.cqa-cert.com

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RF Exposure Evaluation Report

Report No. : CQASZ20190800700E-02
Applicant: Avantree Technology Co., Ltd.
Address of Applicant: The 4th Floor, Yuepeng Building, No.1019 Jiabin Rd, Luohu District, Shenzhen, China
Equipment Under Test (EUT):
EUT Name: Avantree Audikast Plus
Model No.: BTTC-418-P
Brand Name: Avantree
FCC ID: 2A1TF-BTTC-418-P
Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2019-10-24
Date of Test: 2019-10-24 to 2019-10-29
Date of Issue: 2019-10-29
Test Result : **PASS***

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

Tested By:

Tom Chen.

(Tom chen)

Reviewed By:

Sheek, Luo

(Sheek Luo)

Approved By:

Jack Ai

(Jack Ai)



1 Version

Revision History Of Report

| Report No. | Version | Description | Issue Date |
|----------------------|---------|----------------|------------|
| CQASZ20190800700E-02 | Rev.01 | Initial report | 2019-10-29 |

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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

| | |
|-----------------------|--|
| Product Name: | Avantree Audikast Plus |
| Model No.: | BTTC-418-P |
| Trade Mark: | Avantree |
| Hardware Version: | ADK4.4 |
| Software Version: | CSR8670 |
| Operation Frequency: | 2402MHz~2480MHz |
| Bluetooth Version: | V5.0 |
| Modulation Technique: | Frequency Hopping Spread Spectrum(FHSS) |
| Modulation Type: | GFSK, $\pi/4$ DQPSK, 8DPSK |
| Transfer Rate: | 1Mbps/2Mbps/3Mbps |
| Number of Channel: | 79 |
| Hopping Channel Type: | Adaptive Frequency Hopping systems |
| Product Type: | <input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location |
| Test Software of EUT: | Blue test3 (manufacturer declare) |
| Antenna Type: | PCB antenna |
| Antenna Gain: | 0dBi |
| Power Supply: | DC 5V |

4 SAR 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

4.1.3 EUT RF Exposure

Measurement Data

| GFSK mode | | | | |
|------------------|----------------------------|----------------------------|-----------------------|-------|
| Test channel | Peak Output Power (dBm) | Tune up tolerance (dBm) | Maximum tune-up Power | |
| | | | (dBm) | (mW) |
| Lowest(2402MHz) | 5.310 | 4.5.0±1 | 5.5 | 3.548 |
| Middle(2441MHz) | 6.350 | 5.5±1 | 6.5 | 4.467 |
| Highest(2480MHz) | 6.920 | 6.0±1 | 7.0 | 5.012 |
| π/4DQPSK mode | | | | |
| Test channel | Peak Output Power (dBm) | Tune up tolerance (dBm) | Maximum tune-up Power | |
| | | | (dBm) | (mW) |
| Lowest(2402MHz) | 4.640 | 4.0±1 | 5.0 | 3.162 |
| Middle(2441MHz) | 5.860 | 5.0±1 | 6.0 | 3.981 |
| Highest(2480MHz) | 6.420 | 5.5±1 | 6.5 | 4.467 |
| 8DPSK mode | | | | |
| Test channel | Peak Output Power (dBm) | Tune up tolerance (dBm) | Maximum tune-up Power | |
| | | | (dBm) | (mW) |
| Lowest(2402MHz) | 4.760 | 4.0±1 | 5.0 | 3.162 |
| Middle(2441MHz) | 6.000 | 5.5±1 | 6.5 | 4.467 |
| Highest(2480MHz) | 6.570 | 6.0±1 | 7.0 | 5.012 |

| Worst case: 8DPSK | | | | | | |
|---|--|-------------------------------|---------------------------|-------|---------------------|------------------------|
| Channel | Maximum Peak Conducted Output Power (dBm) | Tune up tolerance (dBm) | Maximum tune- up Power | | Calculated value | Exclusion threshold |
| | | | (dBm) | (mW) | | |
| Lowest (2402MHz) | 5.310 | 4.5.0±1 | 5.5 | 3.548 | 1.100 | 3.0 |
| Middle (2441MHz) | 6.350 | 5.5±1 | 6.5 | 4.467 | 1.396 | |
| Highest (2480MHz) | 6.920 | 6.0±1 | 7.0 | 5.012 | 1.579 | |
| Conclusion: the calculated value ≤3.0, SAR is exempted. | | | | | | |

Remark: The Max Conducted Peak Output Power data refer to report Report No.: CQASZ20190800700E-01