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RF Exposure Evaluation Report

Report No.: CQASZ20250701748E-03

Applicant: Avantronics Limited

Address of Applicant: The 4th Floor, Yuepeng Building, No.1019 Jiabin Rd, Luohu District, Shenzhen, 518002, China

Equipment Under Test (EUT):

EUT Name: Audikast 4

Model No.: BTTC-480

Test Model No.: BTTC-480

Brand Name: Avantree

FCC ID: WJ5-BTTC-480

Standards: 47 CFR Part 1.1307

47 CFR Part 1.1310

447498 D04 Interim General RF Exposure Guidance v01

Date of Receipt: 2025-07-29

Date of Test: 2025-07-29 to 2025-08-06

Date of Issue: 2025-08-11

Test Result: PASS*

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

Tested By: lewis zhou

(Lewis Zhou)

Reviewed By: Timo Lei

(Timo Lei)

Approved By: Jack Ai

(Jack Ai)



1 Version

Revision History Of Report

| Report No. | Version | Description | Issue Date |
|----------------------|---------|----------------|------------|
| CQASZ20250701748E-03 | Rev.01 | Initial report | 2025-08-11 |

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3 General Information

3.1 Client Information

| | |
|--------------------------|--|
| Applicant: | Avantronics Limited |
| Address of Applicant: | The 4th Floor, Yuepeng Building, No.1019 Jiabin Rd, Luohu District, Shenzhen, 518002, China |
| Manufacturer: | Avantronics Limited |
| Address of Manufacturer: | The 4th Floor, Yuepeng Building, No.1019 Jiabin Rd, Luohu District, Shenzhen, 518002, China |
| Factory: | Suntec Electronics Technologr Limited |
| Address of Factory: | Shenzhen Feng Jing Sheng Electronics Technology Co., Ltd. 501, Building 5, No, 36, Dafu Road, Zhangge Community, Fucheng Street.Longhua District, Shenzhen, Guangdong, China |

3.2 General Description of EUT

| | |
|-------------------|-------------------------------|
| Product Name: | Audikast 4 |
| Model No.: | BTTC-480 |
| Test Model No.: | BTTC-480 |
| Trade Mark: | Avantree |
| Software Version: | V0.2.0 |
| Hardware Version: | V0.3 |
| EUT Power Supply: | Adapter power supply by DC 5V |

3.3 General Description of BT Classic

| | |
|-----------------------|--|
| Operation Frequency: | 2402MHz~2480MHz |
| Bluetooth Version: | Bluetooth Spec 5.3 |
| Modulation Technique: | Frequency Hopping Spread Spectrum(FHSS) |
| Modulation Type: | GFSK, $\pi/4$ DQPSK, 8DPSK |
| Number of Channel: | 79 |
| Transfer Rate: | 1Mbps/2Mbps/3Mbps |
| Hopping Channel Type: | Adaptive Frequency Hopping systems |
| Sample Type: | <input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable <input type="checkbox"/> Fix Location |
| Antenna Type: | Rubber rod antenna |
| Antenna Gain: | 2.32dBi |
| Cable loss: | 1.0 dB |

3.4 General Description of BLE

| | |
|----------------------|--|
| Operation Frequency: | 2402MHz~2480MHz |
| Bluetooth Version: | Bluetooth Spec 5.3 |
| Modulation Type: | GFSK |
| Number of Channel: | 40 |
| Transfer Rate: | 1Mbps/2Mbps |
| Sample Type: | <input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable <input type="checkbox"/> Fix Location |
| Antenna Type: | Rubber rod antenna |



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| | |
|---------------|---------|
| Antenna Gain: | 2.32dBi |
| Cable loss: | 1.0 dB |

Note:

The above parameters will directly affect the test results. The information is provided by the applicant.

4 MPE Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

The table applies to any RF source (i.e., single fixed, mobile, and portable transmitters) and specifies power and distance criteria for each of the five frequency ranges used for the MPE limits. These criteria apply at separation distances from any part of the radiating structure of at least $\lambda/2\pi$. The thresholds are based on the general population MPE limits with a single perfect reflection, outside of the reactive near-field, and in the main beam of the radiator. For mobile devices that are not exempt per Table B.1 [Table 1 of § 1.1307(b)(1)(i)(C)] at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP_{20cm} in Formula (B.1) [repeated from § 2.1091(c)(1) and § 1.1307(b)(1)(i)(B)].

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

If the ERP is not easily obtained, then the available maximum time-averaged power may be used (i.e., without consideration of ERP only if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave Dipole).

SAR-based exemptions are constant at separation distances between 20 cm and 40 cm to avoid discontinuities in the threshold when transitioning between SAR-based and MPE-based exemption criteria at 40 cm, considering the importance of reflections.

4.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.1.3 EUT RF Exposure

1) For BT Classic

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

| GFSK mode | | | | | |
|------------------|---------------|--------------|----------------------------|-----------------------|------|
| Test channel | EIRP (dBm) | ERP (dBm) | Tune up tolerance (dBm) | Maximum tune-up Power | |
| | | | | (dBm) | (mW) |
| Lowest(2402MHz) | 0.14 | -2.01 | -2.0±1 | -1 | 0.79 |
| Middle(2441MHz) | -0.71 | -2.86 | -2.5±1 | -1.5 | 0.71 |
| Highest(2480MHz) | -0.50 | -2.65 | -2.5±1 | -1.5 | 0.71 |
| π/4DQPSK mode | | | | | |
| Test channel | EIRP (dBm) | ERP (dBm) | Tune up tolerance (dBm) | Maximum tune-up Power | |
| | | | | (dBm) | (mW) |
| Lowest(2402MHz) | 0.35 | -1.80 | -1.5±1 | -0.5 | 0.89 |
| Middle(2441MHz) | -0.25 | -2.40 | -2.0±1 | -1 | 0.79 |
| Highest(2480MHz) | -0.56 | -2.71 | -2.5±1 | -1.5 | 0.71 |
| 8DPSK mode | | | | | |
| Test channel | EIRP (dBm) | ERP (dBm) | Tune up tolerance (dBm) | Maximum tune-up Power | |
| | | | | (dBm) | (mW) |
| Lowest(2402MHz) | 1.03 | -1.12 | -1.0±1 | 0 | 1.00 |
| Middle(2441MHz) | -0.11 | -2.26 | -2.0±1 | -1 | 0.79 |
| Highest(2480MHz) | -0.22 | -2.37 | -2.0±1 | -1 | 0.79 |

The ERP of this product is less than 3060mW

Note: 1) Refer to report No. CQASZ20250701748E-01 for EUT test Max Conducted Peak Output Power value.

2) EUT's module is more than 20cm away from the human body.

2) For BLE

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

| GFSK mode(1Mbps) | | | | | |
|------------------|---------------|--------------|----------------------------|-----------------------|------|
| Test channel | EIRP (dBm) | ERP (dBm) | Tune up tolerance (dBm) | Maximum tune-up Power | |
| | | | | (dBm) | (mW) |
| Lowest(2402MHz) | 3.22 | 1.07 | 1.5±1 | 2.5 | 1.78 |
| Middle(2440MHz) | 2.71 | 0.56 | 0.5±1 | 1.5 | 1.41 |
| Highest(2480MHz) | 2.25 | 0.10 | 0.5±1 | 1.5 | 1.41 |
| GFSK mode(2Mbps) | | | | | |
| Test channel | EIRP (dBm) | ERP (dBm) | Tune up tolerance (dBm) | Maximum tune-up Power | |
| | | | | (dBm) | (mW) |
| Lowest(2402MHz) | 3.33 | 1.18 | 1.5±1 | 2.5 | 1.78 |
| Middle(2440MHz) | 2.73 | 0.58 | 1.0±1 | 2 | 1.58 |
| Highest(2480MHz) | 2.46 | 0.31 | 0.5±1 | 1.5 | 1.41 |

The ERP of this product is less than 3060mW

Note: 1) Refer to report No. CQASZ20250701748E-02 for EUT test Max Conducted Peak Output Power value.
2) EUT's module is more than 20cm away from the human body.

***** END OF REPORT *****