

# SAR TEST EXCLUSION EVALUATION REPORT

**Product Name:** Sports headphones

**Trade Mark:**  or PHILIPS

**Model No./HVIN:** TAA5508

**Add. Model No.:** TAA5508xx/yy, TAA5508 II, TAA5508 II  
xx/yy (xx=AA-ZZ or blank denoted different color; yy=00-99 denoted different country destination)

**Report Number:** 2212163226RFC-3

**Test Standards:** FCC 47 CFR Part 2.1093  
RSS-102 Issue 5

**FCC ID:** 2AR2STAA5508

**IC:** 24589-TAA5508

**Test Result:** PASS

**Date of Issue:** March 21, 2023

Prepared for:

**MMD Hong Kong Holding Limited**  
Units 1208-11, 12th Floor, C-Bons International Center, 108 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong


Prepared by:

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**  
Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

**TEL: +86-755-2823 0888**

**FAX: +86-755-2823 0886**

Prepared by:   
Kieron Luo  
Project Engineer

Reviewed by:   
Henry Lu  
Team Leader

Approved by:   
Kevin Liang  
Assistant Manager

Date: March 21, 2023

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS102-V1.1

**Version**

| Version No. | Date           | Description |
|-------------|----------------|-------------|
| V1.0        | March 21, 2023 | Original    |

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: [info@uttlab.com](mailto:info@uttlab.com)<http://www.uttlab.com>UTTR-RF-RSS102-V1.1

## CONTENTS


|  |           |
|--|-----------|
| <b>1. GENERAL INFORMATION</b>                                | <b>4</b>  |
| 1.1 CLIENT INFORMATION                                       | 4         |
| 1.2 EUT INFORMATION  | 4         |
| 1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD        | 4         |
| 1.4 OTHER INFORMATION  | 5         |
| 1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS                 | 5         |
| 1.6 DEVIATION FROM STANDARDS                                 | 5         |
| 1.7 ABNORMALITIES FROM STANDARD CONDITIONS                   | 5         |
| 1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER              | 6         |
| <b>2. EQUIPMENT LIST</b>                                     | <b>6</b>  |
| <b>3. SAR TEST EXCLUSION EVALUATION</b>                      | <b>6</b>  |
| 3.1 REFERENCE DOCUMENTS FOR EVALUATION                       | 6         |
| 3.2 EXEMPTION LIMITS FOR ROUTINE EVALUATION – SAR EVALUATION | 6         |
| 3.2.1 SAR TEST EXCLUSION THRESHOLD                           | 6         |
| 3.2.2 TEST PROCEDURE   | 8         |
| 3.3 MPE CALCULATION RESULTS                                  | 8         |
| 3.3.1 FOR BT   | 8         |
| <b>APPENDIX 1 PHOTOS OF TEST SETUP</b>                       | <b>10</b> |
| <b>APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS</b>       | <b>10</b> |

# 1. GENERAL INFORMATION

## 1.1 CLIENT INFORMATION

|                                 |  |
|---------------------------------|--|
| <b>Applicant:</b>               | MMD Hong Kong Holding Limited  |
| <b>Address of Applicant:</b>    | Units 1208-11,12th Floor,C-Bons International Center, 108 Wai Yip Street, Kwun Tong, Kowloon,Hong Kong |
| <b>Manufacturer:</b>            | MMD Hong Kong Holding Limited  |
| <b>Address of Manufacturer:</b> | Units 1208-11,12th Floor,C-Bons International Center, 108 Wai Yip Street, Kwun Tong, Kowloon,Hong Kong |

## 1.2 EUT INFORMATION

|   |   |               |
|---|---|---------------|
| <b>Product Name:</b>  | Sports headphones   |               |
| <b>Model No. /HVIN:</b>   | TAA5508   |               |
| <b>Add. Model No.:</b>  | TAA5508xx/yy,TAA5508 II ,TAA5508 II xx/yy (xx=AA-ZZ or blank denoted different color; yy=00-99 denoted different country destination) |               |
| <b>Trade Mark:</b>  |  or PHILIPS  |               |
| <b>DUT Stage:</b>   | Production Unit   |               |
| <b>EUT Supports Function:</b><br>(Provided by the customer)   | 2.4 GHz ISM Band:   | Bluetooth 5.3 |
| <b>Software Version:</b>  | V1.1.0.19(Provided by the customer)   |               |
| <b>Hardware Version:</b>  | V04 (Provided by the customer)  |               |
| <b>Note:</b> The additional model TAA5508xx/yy,TAA5508 II ,TAA5508 II xx/yy (xx=AA-ZZ or blank denoted different color; yy=00-99 denoted different country destination) is identical with the test model TAA5508 except the model number for marketing purpose. |   |               |

## 1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

|  |                        |           |
|--|------------------------|-----------|
| <b>For BLE</b>                                     |                        |           |
| <b>Frequency Band:</b>                             | 2400 MHz to 2483.5 MHz |           |
| <b>Frequency Range:</b>                            | 2402 MHz to 2480 MHz   |           |
| <b>Bluetooth Version:</b>                          | Bluetooth LE/2LE       |           |
| <b>Type of Modulation:</b>                         | GFSK                   |           |
| <b>Number of Channels:</b>                         | 40                     |           |
| <b>Channel Separation:</b>                         | 2 MHz                  |           |
| <b>Antenna Type:</b>                               | FPCB Antenna           |           |
| <b>Antenna Gain:</b><br>(Provided by the customer) | -0.5 dBi               |           |
| <b>Maximum Conducted Peak Power:</b>               | LE                     | 10.01 dBm |
|  | 2LE                    | 10.02 dBm |

| For BT_EDR                                  |   |
|---|---|
| Frequency Band:                             | 2400 MHz to 2483.5 MHz                  |
| Frequency Range:                            | 2402 MHz to 2480 MHz                    |
| Bluetooth Version:                          | Bluetooth BR + EDR                      |
| Modulation Technique:                       | Frequency Hopping Spread Spectrum(FHSS) |
| Type of Modulation:                         | GFSK, $\pi/4$ DQPSK, 8DPSK              |
| Number of Channels:                         | 79                                      |
| Channel Separation:                         | 1 MHz                                   |
| Antenna Type:                               | FPCB Antenna                            |
| Antenna Gain:<br>(Provided by the customer) | -0.5 dBi                                |
| Maximum Conducted Peak Power:               | 11.17 dBm                               |

### 1.4 OTHER INFORMATION

| Test channels for BT_LE |                      |                       |            |            |
|-------------------------|----------------------|-----------------------|------------|------------|
| Type of Modulation      | Tx/Rx Frequency      | Test RF Channel Lists |            |            |
| GFSK                    | 2402 MHz to 2480 MHz | Lowest(L)             | Middle(M)  | Highest(H) |
|                         |                      | Channel 0             | Channel 19 | Channel 39 |
|                         |                      | 2402 MHz              | 2440 MHz   | 2480 MHz   |

| Test channels for BT_EDR         |                      |                       |            |            |
|----------------------------------|----------------------|-----------------------|------------|------------|
| Mode                             | Tx/Rx Frequency      | Test RF Channel Lists |            |            |
| GFSK<br>(DH1, DH3, DH5)          | 2402 MHz to 2480 MHz | Lowest(L)             | Middle(M)  | Highest(H) |
|                                  |                      | Channel 0             | Channel 39 | Channel 78 |
| $\pi/4$ DQPSK<br>(DH1, DH3, DH5) | 2402 MHz to 2480 MHz | 2402 MHz              | 2441 MHz   | 2480 MHz   |
|                                  |                      | Channel 0             | Channel 39 | Channel 78 |
| 8DPSK<br>(DH1, DH3, DH5)         | 2402 MHz to 2480 MHz | 2402 MHz              | 2441 MHz   | 2480 MHz   |
|                                  |                      | Channel 0             | Channel 39 | Channel 78 |
|                                  |                      | 2402 MHz              | 2441 MHz   | 2480 MHz   |

### 1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

**FCC 47 CFR Part 2.1093**  
**RSS-102 Issue 5**

All test items have been performed and recorded as per the above standards

### 1.6 DEVIATION FROM STANDARDS

None.

### 1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

### 1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

## 2. EQUIPMENT LIST

Please refer to the RF test report.

## 3. SAR TEST EXCLUSION EVALUATION

### 3.1 REFERENCE DOCUMENTS FOR EVALUATION

| No. | Identity  | Document Title  |
|-----|---|---|
| 1   | FCC 47 CFR Part 2.1093                          | Radiofrequency radiation exposure evaluation: portable devices.                                 |
| 2   | RSS-102 Issue 5                                 | Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands) |
| 3   | KDB 447498 D01 General RF Exposure Guidance v06 | RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES     |

### 3.2 EXEMPTION LIMITS FOR ROUTINE EVALUATION – SAR EVALUATION

#### 3.2.1 SAR Test Exclusion Threshold

##### 3.2.1.1 KDB 447498 D01 v06

#### Appendix A

#### SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

| MHz  | 5  | 10 | 15  | 20  | 25  | mm                                       |
|------|----|----|-----|-----|-----|--|
| 150  | 39 | 77 | 116 | 155 | 194 | <i>SAR Test Exclusion Threshold (mW)</i> |
| 300  | 27 | 55 | 82  | 110 | 137 |  |
| 450  | 22 | 45 | 67  | 89  | 112 |  |
| 835  | 16 | 33 | 49  | 66  | 82  |  |
| 900  | 16 | 32 | 47  | 63  | 79  |  |
| 1500 | 12 | 24 | 37  | 49  | 61  |  |
| 1900 | 11 | 22 | 33  | 44  | 54  |  |
| 2450 | 10 | 19 | 29  | 38  | 48  |  |
| 3600 | 8  | 16 | 24  | 32  | 40  |  |
| 5200 | 7  | 13 | 20  | 26  | 33  |  |
| 5400 | 6  | 13 | 19  | 26  | 32  |  |
| 5800 | 6  | 12 | 19  | 25  | 31  |  |

| MHz  | 30  | 35  | 40  | 45  | 50  | mm                                       |
|------|-----|-----|-----|-----|-----|--|
| 150  | 232 | 271 | 310 | 349 | 387 | <i>SAR Test Exclusion Threshold (mW)</i> |
| 300  | 164 | 192 | 219 | 246 | 274 |  |
| 450  | 134 | 157 | 179 | 201 | 224 |  |
| 835  | 98  | 115 | 131 | 148 | 164 |  |
| 900  | 95  | 111 | 126 | 142 | 158 |  |
| 1500 | 73  | 86  | 98  | 110 | 122 |  |
| 1900 | 65  | 76  | 87  | 98  | 109 |  |
| 2450 | 57  | 67  | 77  | 86  | 96  |  |
| 3600 | 47  | 55  | 63  | 71  | 79  |  |
| 5200 | 39  | 46  | 53  | 59  | 66  |  |
| 5400 | 39  | 45  | 52  | 58  | 65  |  |
| 5800 | 37  | 44  | 50  | 56  | 62  |  |

**Note:** 10-g Extremity SAR Test Exclusion Power Thresholds are 2.5 times higher than the 1-g SAR Test Exclusion Thresholds indicated above. These thresholds do not apply, by extrapolation or other means, to occupational exposure limits.

3.2.1.2 RSS-102 Issue 5

**Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance<sup>4,5</sup>**

| Frequency (MHz) | Exemption Limits (mW)           |                                 |                                 |                                 |                                 |
|-----------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|                 | At separation distance of ≤5 mm | At separation distance of 10 mm | At separation distance of 15 mm | At separation distance of 20 mm | At separation distance of 25 mm |
| ≤300            | 71 mW                           | 101 mW                          | 132 mW                          | 162 mW                          | 193 mW                          |
| 450             | 52 mW                           | 70 mW                           | 88 mW                           | 106 mW                          | 123 mW                          |
| 835             | 17 mW                           | 30 mW                           | 42 mW                           | 55 mW                           | 67 mW                           |
| 1900            | 7 mW                            | 10 mW                           | 18 mW                           | 34 mW                           | 60 mW                           |
| 2450            | 4 mW                            | 7 mW                            | 15 mW                           | 30 mW                           | 52 mW                           |
| 3500            | 2 mW                            | 6 mW                            | 16 mW                           | 32 mW                           | 55 mW                           |
| 5800            | 1 mW                            | 6 mW                            | 15 mW                           | 27 mW                           | 41 mW                           |

| Frequency (MHz) | Exemption Limits (mW)           |                                 |                                 |                                 |                                  |
|-----------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|----------------------------------|
|                 | At separation distance of 30 mm | At separation distance of 35 mm | At separation distance of 40 mm | At separation distance of 45 mm | At separation distance of ≥50 mm |
| ≤300            | 223 mW                          | 254 mW                          | 284 mW                          | 315 mW                          | 345 mW                           |
| 450             | 141 mW                          | 159 mW                          | 177 mW                          | 195 mW                          | 213 mW                           |
| 835             | 80 mW                           | 92 mW                           | 105 mW                          | 117 mW                          | 130 mW                           |
| 1900            | 99 mW                           | 153 mW                          | 225 mW                          | 316 mW                          | 431 mW                           |
| 2450            | 83 mW                           | 123 mW                          | 173 mW                          | 235 mW                          | 309 mW                           |
| 3500            | 86 mW                           | 124 mW                          | 170 mW                          | 225 mW                          | 290 mW                           |
| 5800            | 56 mW                           | 71 mW                           | 85 mW                           | 97 mW                           | 106 mW                           |

4 The exemption limits in Table 1 are based on measurements and simulations of half-wave dipole antennas at separation distances of 5 mm to 25 mm from a flat phantom, providing a SAR value of approximately 0.4 W/kg for 1 g of tissue. For low frequencies (300 MHz to 835 MHz), the exemption limits are derived from a linear fit. For high frequencies (1900 MHz and above), the exemption limits are derived from a third order polynomial fit.

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

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5 Transmitters operating between 0.003-10 MHz, meeting the exemption from routine SAR evaluation, shall demonstrate compliance to the instantaneous limits in Section 4.

### 3.2.2 Test Procedure

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

## 3.3 MPE CALCULATION RESULTS

*Note: For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.*

### 3.3.1 For BT and BLE

For BR+EDR & BLE function, operating at 2402MHz to 2480 MHz for GFSK,  $\pi/4$  DQPSK, 8DPSK

#### 3.3.1.1 Antenna Type:

Chain 0: FPCB Antenna

#### 3.3.1.2 Antenna Gain:

Chain 0: 2402MHz to 2480 MHz: -0.5 dBi

#### 3.3.1.3 Minimum contact distance:

The following is the product antenna location.



The minimum contact distance is 15.04 mm. So, the 15 mm separation distance applies.



**3.3.1.4 Results for FCC 47 CFR Part 2.1093**

| Operating Mode | Frequency | Tune-up Power (conducted average) | Tolerance | Maximum Tune-up Power |       | Separation Distance | SAR Test Exclusion Threshold |
|----------------|-----------|-----------------------------------|-----------|-----------------------|-------|---------------------|------------------------------|
|                | (MHz)     | (dBm)                             | (dBm)     | (dBm)                 | (mW)  | (mm)                | (mW)                         |
| BR+EDR         | 2402-2480 | 7                                 | 1.5       | 8.5                   | 7.079 | 15                  | 29                           |
| BT LE          | 2402-2480 | 7                                 | 1.5       | 8.5                   | 7.079 | 15                  | 29                           |
| BT 2LE         | 2402-2480 | 7                                 | 1.5       | 8.5                   | 7.079 | 15                  | 29                           |

So the transmitter complies with the RF exposure requirements and the SAR is not required.

**3.3.1.5 Results for RSS-102 Issue 5**

| Operating Mode | Frequency | Tune-up Power (conducted average) | Tolerance | Maximum Tune-up Power |       | Separation Distance | SAR Test Exclusion Threshold |
|----------------|-----------|-----------------------------------|-----------|-----------------------|-------|---------------------|------------------------------|
|                | (MHz)     | (dBm)                             | (dBm)     | (dBm)                 | (mW)  | (mm)                | (mW)                         |
| BR+EDR         | 2402-2480 | 7                                 | 1.5       | 8.5                   | 7.079 | 15                  | 15                           |
| BT LE          | 2402-2480 | 7                                 | 1.5       | 8.5                   | 7.079 | 15                  | 15                           |
| BT 2LE         | 2402-2480 | 7                                 | 7.5       | 8.5                   | 7.079 | 15                  | 15                           |

So the transmitter complies with the RF exposure requirements and the SAR is not required.

**APPENDIX 1 PHOTOS OF TEST SETUP**

N/A

**APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS**

Refer to Appendix 2 for EUT external and internal Photos.

\*\*\* End of Report \*\*\*

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