

**FCC 47 CFR Part 15 Subpart B, ICES-003 Issue 7**

**TEST REPORT**

*For*

**BLUETOOTH HEADSET**

**MODEL NUMBER: TUNE 680NC**

**REPORT NUMBER: 4791825534-2-EMC-1**

**ISSUE DATE: July 25, 2025**

*Prepared for*

**HARMAN INTERNATIONAL INDUSTRIES INC  
8500 Balboa Blvd Nothridge CA 91329, UNITED STATES**

*Prepared by*

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The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products.

## Revision History

| Rev. | Issue Date    | Revisions     | Revised By |
|------|---------------|---------------|------------|
| V0   | July 25, 2025 | Initial Issue |            |

### Summary of Test Results

| Emission                                       |                               |  |                  |
|--|-------------------------------|--|------------------|
| Standard                                       | Test Item                     | Limit  | Result           |
| FCC 47 CFR Part 15 Subpart B, ICES-003 Issue 7 | Conducted emissions           | FCC Part 15.107<br>ICES-003 Issue 7, Section 3.2.1 | Pass<br>(NOTE 1) |
|  | Radiated emissions below 1GHz | FCC Part 15.109<br>ICES-003 Issue 7, Section 3.2.2 | Pass             |
|  | Radiated emissions above 1GHz | FCC Part 15.109<br>ICES-003 Issue 7, Section 3.2.2 | Pass<br>(NOTE 2) |

**Note:**

1. This test is only applicable for devices which can be charged or powered by AC main power cable.
2. If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz; If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz; If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, measurement shall only be made up to 5 GHz; If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40 GHz, whichever is less.

\*This test report is only published to and used by the applicant, and it is not for evidence purpose in China.

\*The measurement result for the sample received is <Pass> according to <FCC 47 CFR Part 15 Subpart B, ICES-003 Issue 7> when <Simple Acceptance> decision rule is applied.

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## 1. ATTESTATION OF TEST RESULTS

### Applicant Information

Company Name: HARMAN INTERNATIONAL INDUSTRIES INC  
Address: 8500 Balboa Blvd Nothridge CA 91329, UNITED STATES

### Manufacturer Information

Company Name: HARMAN INTERNATIONAL INDUSTRIES INC  
Address: 8500 Balboa Blvd Nothridge CA 91329, UNITED STATES

### EUT Information

EUT Name: BLUETOOTH HEADSET  
Model: TUNE 680NC  
Brand: JBL  
Sample Received Date: July 8, 2025  
Sample Status: Normal  
Sample ID: 8683388  
Date of Tested: July 8, 2025 to July 22, 2025

| APPLICABLE STANDARDS                           |              |
|--|--------------|
| STANDARD                                       | TEST RESULTS |
| FCC 47 CFR Part 15 Subpart B, ICES-003 Issue 7 | Pass         |

Prepared By:



Wite Chen  
Engineer Project Associate

Checked By:



Kebo zhang  
Operations Leader

Approved By:



Stephen Guo  
Operations Manager

## 2. TEST METHODOLOGY

All tests were performed in accordance with the standard FCC 47 CFR Part 15 Subpart B, ICES-003 Issue 7

## 3. FACILITIES AND ACCREDITATION

|                           |   |
|---------------------------|---|
| Accreditation Certificate | <p><b>A2LA (Certificate No.: 4102.01)</b><br/>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p><b>FCC (FCC Designation No.: CN1187)</b><br/>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.</p> <p><b>ISED (Company No.: 21320)</b><br/>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p><b>VCCI (Registration No.: C-20202, G-20240, R-20248 and T-20202)</b><br/>UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793.<br/>Facility Name:<br/>Chamber E, the VCCI registration No. is G-20240 and R-20248<br/>Shielding Room F, the VCCI registration No. is C-20202 and T-20202</p> |
| Test Site 2               | <p>Guangdong Global Testing Technology Co., Ltd.<br/>Room 101-105, 203-210, Building 1, No.2, Keji 8 Road,<br/>Songshan Lake Park, Dongguan city, Guangdong Pr., China.</p>   |
| Accreditation Certificate | <p><b>A2LA (Certificate No.: 6947.01)</b><br/>Guangdong Global Testing Technology Co., Ltd.. has been assessed and proved to be in compliance with A2LA.</p> <p><b>FCC (FCC Designation No.:CN1343)</b><br/>Guangdong Global Testing Technology Co., Ltd. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.</p>   |

### Note:

In addition to the RADIATED EMISSIONS BELOW 1GHZ test at Test Site 2, All tests measurement facilities use to collect the measurement data are located at Room 101, Building 2, No.4, Information Road, Songshan Lake, Dongguan, Guangdong, China.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

### 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| Test Item   | Measurement Frequency Range | K | U(dB) |
|---|-----------------------------|---|-------|
| Conducted emissions   | 0.15MHz - 30MHz             | 2 | 3.63  |
| Radiated emissions below 1GHz   | 30MHz -1GHz                 | 2 | 4.13  |
| Radiated emissions above 1GHz   | 1GHz - 18GHz                | 2 | 5.64  |
| Note1: This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.   |                             |   |       |
| Note 2: According to the standard CISPR 16-4-2, the MU for the Conducted emissions from the AC mains power ports using AMN should not exceed 3.8 in range of 9kHz to 150kHz and 3.4 in range of 150kHz to 30MHz. We have considered the test results containing the value of U <sub>lab</sub> (in dB) for the measurement instrumentation actually used for the measurements. |                             |   |       |

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

|                            |         |                   |
|----------------------------|---------|-------------------|
| EUT Name                   |         | BLUETOOTH HEADSET |
| Model                      |         | TUNE 680NC        |
| EUT Classification         |         | Class B           |
| Highest Internal Frequency |         | 2.4GHz            |
| Power Supply               | DC      | 5V                |
|                            | Battery | 3.7Vdc, 690mAh    |

### 5.2. TEST MODE

|           |             |
|-----------|-------------|
| Test Mode | Description |
| M01       | Charging    |
| M02       | AUX Playing |
| M03       | BT Playing  |

### 5.3. SUPPORT UNITS FOR SYSTEM TEST

The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment  | Mfr./Brand | Model/Type No. | Series No. | Note       |
|------|------------|------------|----------------|------------|------------|
| E-1  | Adapter    | HUAWEI     | N/A            | N/A        | UL Support |
| E-2  | Laptop     | Lenovo     | N/A            | N/A        | UL Support |
| E-3  | cell phone | Apple      | Iphone 11      | N/A        | UL Support |

The following cables were used to form a representative test configuration during the tests.

| Item | Type of cable       | Shielded Type | Ferrite Core | Specification |
|------|---------------------|---------------|--------------|---------------|
| C-1  | TYPE-C TO AUX cable | NO            | NO           | 1.0 m         |



## 6. MEASURING EQUIPMENT AND SOFTWARE USED

| Test Equipment of Conducted emissions |                 |           |            |               |               |
|---------------------------------------|-----------------|-----------|------------|---------------|---------------|
| Equipment                             | Manufacturer    | Model No. | Serial No. | Last Cal.     | Due Date      |
| EMI Test Receiver                     | ROHDE & SCHWARZ | ESR3      | 101961     | Sep. 28, 2024 | Sep. 27, 2025 |
| Two-Line V-Network                    | ROHDE & SCHWARZ | ENV216    | 101983     | Sep. 28, 2024 | Sep. 27, 2025 |
| Artificial Mains Networks             | Schwarzbeck     | NSLK 8126 | 8126465    | Sep. 28, 2024 | Sep. 27, 2025 |
| Test Software for Conducted Emission  | Farad           | EZ-EMC    | Ver.UL-3A1 | N/A           | N/A           |

| Test Equipment of Radiated emissions below 1GHz(Test Site 2) |               |           |                |            |            |
|--|---------------|-----------|----------------|------------|------------|
| Equipment  | Manufacturer  | Model No. | Type No.       | Serial No. | Due Date   |
| 04-E-RE3-Chamber   | Chamber 3     | ETS       | 20.8*12.1*8.9  | Q2150      | 2026.5.29  |
| 04-E-RE3-3142E-1   | Bilog Antenna | ETS       | 3142E          | 00243646   | 2025.8.16  |
| 04-E-RE3-3142E-2   | Bilog Antenna | ETS       | 3142E          | 00243651   | 2028.02.21 |
| 04-E-RE3-HPA-9K0130-1  | Pre-Amplifier | HzEMC     | HPA-9K0130     | HYP A23022 | 2025.10.11 |
| 04-E-RE3-HPA-9K0130-2  | Pre-Amplifier | HzEMC     | HPA-9K0130     | HYP A23021 | 2025.10.12 |
| 04-E-RE3-ESCI3-1   | Receiver      | R&S       | ESCI3          | 101308     | 2025.10.11 |
| 04-E-RE3-ESCI3-2   | Receiver      | R&S       | ESCI3          | 101221     | 2025.10.11 |
| 04-E-RE-EZ-EMC   | Test Software | Farad     | EZ-EMC 1.1.4.2 | N/A        | N/A        |

| Test Equipment of Radiated emissions above 1GHz |                 |            |               |               |               |
|---|-----------------|------------|---------------|---------------|---------------|
| Equipment                                       | Manufacturer    | Model No.  | Serial No.    | Last Cal.     | Due Date      |
| EMI Measurement Receiver                        | ROHDE & SCHWARZ | ESR26      | 101377        | Sep. 28, 2024 | Sep. 27, 2025 |
| Preamplifier                                    | TDK             | PA-02-0118 | TRS-305-00066 | Dec. 27, 2024 | Dec. 26, 2025 |
| Preamplifier                                    | TDK             | PA-02-2    | TRS-307-00003 | Sep. 28, 2024 | Sep. 27, 2025 |
| Horn Antenna                                    | TDK             | HRN-0118   | 130940        | Dec. 12, 2024 | Dec. 11, 2027 |
| High Gain Horn Antenna                          | Schwarzbeck     | BBHA-9170  | 697           | Jun. 30, 2024 | Jun. 29, 2027 |
| Test Software for Radiated Emission             | Farad           | EZ-EMC     | Ver.UL-3A1    | N/A           | N/A           |

| Other Instrument           |              |           |            |              |              |
|----------------------------|--------------|-----------|------------|--------------|--------------|
| Equipment                  | Manufacturer | Model No. | Serial No. | Last Cal.    | Due Date     |
| Temperature humidity probe | OMEGA        | ITHX-SD-5 | 18470007   | Oct.8, 2024  | Oct.7, 2025  |
| Barometer                  | Yiyi         | Baro      | N/A        | Oct.10, 2024 | Oct.9, 2025  |
| Attenuator                 | Agilent      | 8495B     | 2814a12853 | Sep.28, 2024 | Sep.27, 2025 |

## 7. EMISSION TEST

### 7.1. CONDUCTED EMISSIONS

#### LIMITS

| Frequency<br>(MHz) | Class A (dB $\mu$ V) |         | Class B (dB $\mu$ V) |          |
|--------------------|----------------------|---------|----------------------|----------|
|                    | Quasi-peak           | Average | Quasi-peak           | Average  |
| 0.15 -0.5          | 79                   | 66      | 66 - 56 *            | 56 - 46* |
| 0.50 -5.0          | 73                   | 60      | 56                   | 46       |
| 5.0 -30.0          | 73                   | 60      | 60                   | 50       |

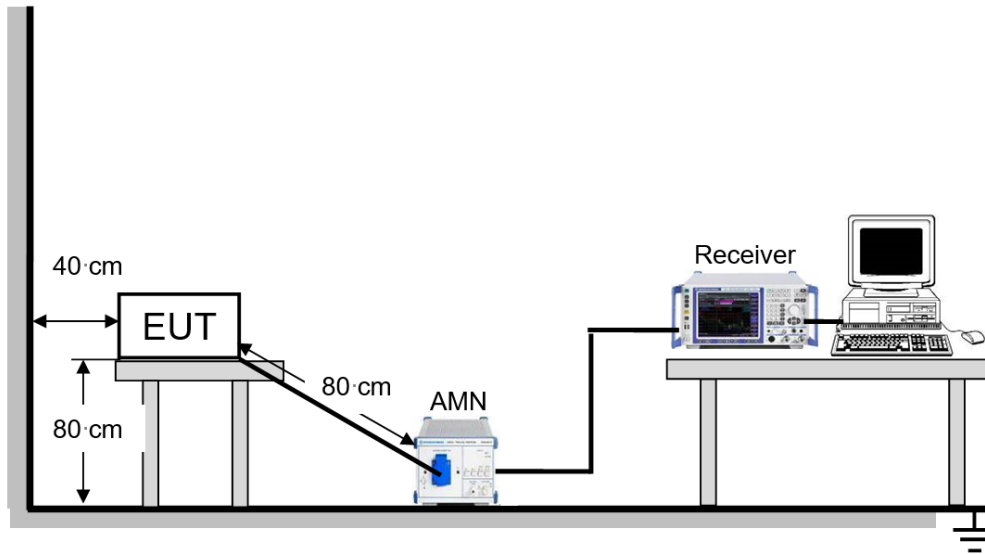
Note:

- (1). The tighter limit applies at the band edges.
- (2). The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

#### TEST PROCEDURE

- 1) The testing follows the guideline in ANSI C63.4-2014.
- 2) The EUT was placed on the top of a rotating table 0.8 meters above the horizontal ground plane and being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- 3) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- 4) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- 5) Cables of hand-operated devices, such as keyboards and mice, shall be placed as for normal used.
- 6) LISN at least 80 cm from nearest part of EUT chassis.
- 7) Conducted emissions from the EUT measured in the frequency range between 0.15MHz and 30MHz using CISPR Quasi-Peak and average detector mode, resolution bandwidth set 9kHz.

### TEST SETUP



### TEST ENVIRONMENT

|                     |         |                   |       |
|---------------------|---------|-------------------|-------|
| Temperature         | 23.4 °C | Relative Humidity | 55.9% |
| Atmosphere Pressure | 101kPa  |                   |       |

### TEST DATE / ENGINEER

|           |               |         |            |
|-----------|---------------|---------|------------|
| Test Date | July 15, 2025 | Test By | Deacon Tan |
|-----------|---------------|---------|------------|

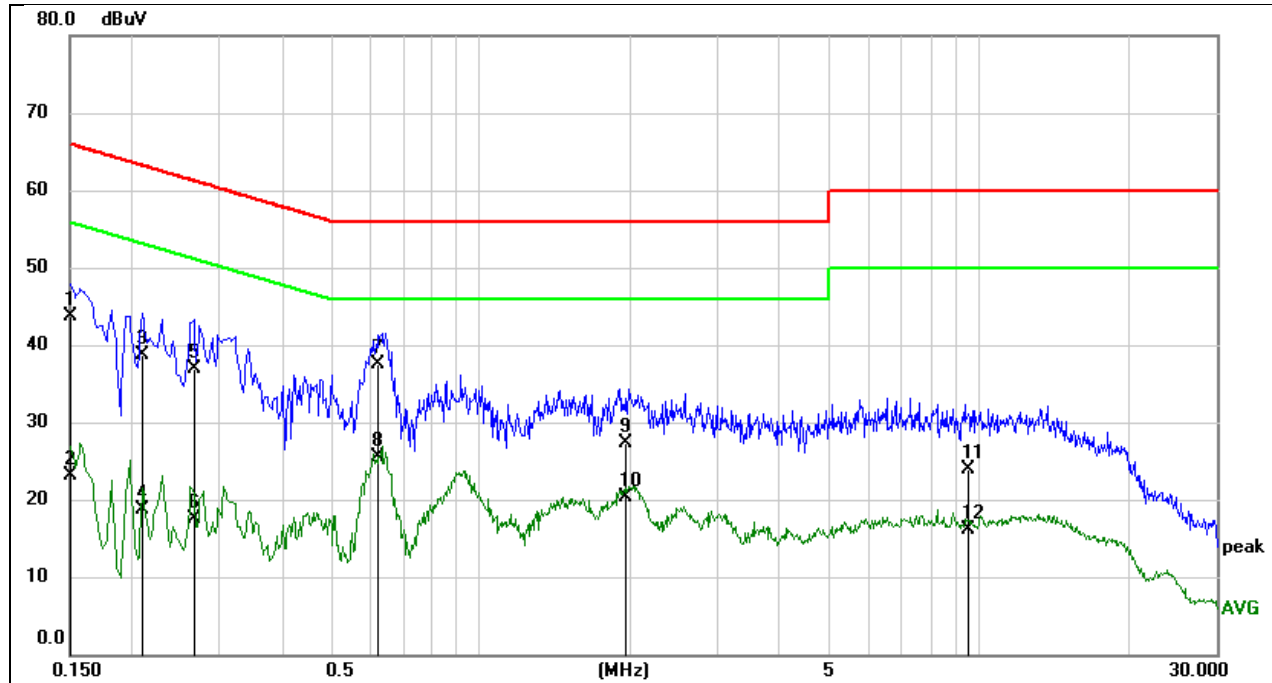
### TEST MODE

|                  |           |
|------------------|-----------|
| Pre-test Mode:   | M01 ~ M03 |
| Final Test Mode: | M01       |

Note: All test modes had been tested, but only the worst data recorded in the report.

## TEST RESULTS

|               |              |       |      |
|---------------|--------------|-------|------|
| Test Mode:    | M01          | Line: | Line |
| Test Voltage: | AC 120V_60Hz |       |      |

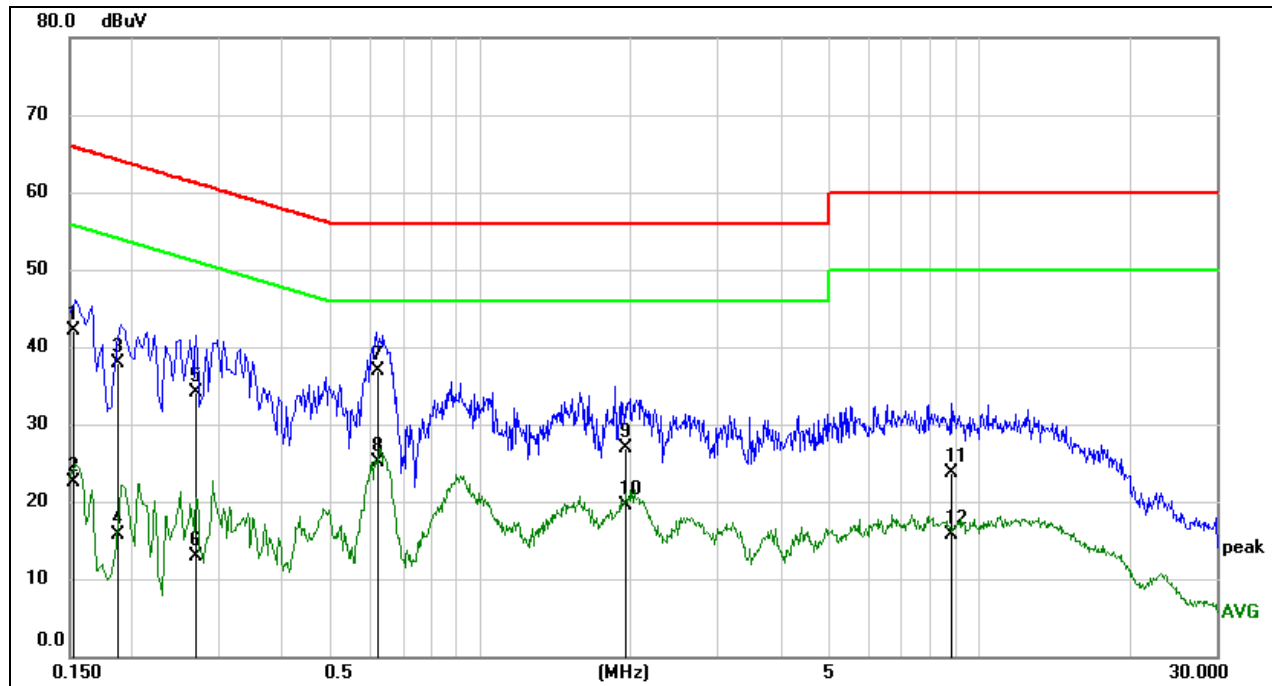


| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>(dB) | Result<br>(dBuV) | Limit<br>(dBuV) | Margin<br>(dB) | Remark |
|-----|--------------------|-------------------|-----------------|------------------|-----------------|----------------|--------|
| 1   | 0.1500             | 33.88             | 9.74            | 43.62            | 66.00           | -22.38         | QP     |
| 2   | 0.1500             | 13.38             | 9.74            | 23.12            | 56.00           | -32.88         | AVG    |
| 3   | 0.2085             | 29.13             | 9.64            | 38.77            | 63.26           | -24.49         | QP     |
| 4   | 0.2085             | 9.02              | 9.64            | 18.66            | 53.26           | -34.60         | AVG    |
| 5   | 0.2654             | 27.34             | 9.64            | 36.98            | 61.26           | -24.28         | QP     |
| 6   | 0.2654             | 7.83              | 9.64            | 17.47            | 51.26           | -33.79         | AVG    |
| 7   | 0.6293             | 27.79             | 9.63            | 37.42            | 56.00           | -18.58         | QP     |
| 8   | 0.6293             | 15.85             | 9.63            | 25.48            | 46.00           | -20.52         | AVG    |
| 9   | 1.9579             | 17.56             | 9.74            | 27.30            | 56.00           | -28.70         | QP     |
| 10  | 1.9579             | 10.51             | 9.74            | 20.25            | 46.00           | -25.75         | AVG    |
| 11  | 9.4690             | 14.13             | 9.73            | 23.86            | 60.00           | -36.14         | QP     |
| 12  | 9.4690             | 6.37              | 9.73            | 16.10            | 50.00           | -33.90         | AVG    |

Remark:

1. Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
2. Margin = Result - Limit

|               |              |       |         |
|---------------|--------------|-------|---------|
| Test Mode:    | M01          | Line: | Neutral |
| Test Voltage: | AC 120V_60Hz |       |         |



| No. | Frequency<br>(MHz) | Reading<br>(dBuV) | Correct<br>(dB) | Result<br>(dBuV) | Limit<br>(dBuV) | Margin<br>(dB) | Remark |
|-----|--------------------|-------------------|-----------------|------------------|-----------------|----------------|--------|
| 1   | 0.1517             | 32.49             | 9.64            | 42.13            | 65.91           | -23.78         | QP     |
| 2   | 0.1517             | 12.96             | 9.64            | 22.60            | 55.91           | -33.31         | AVG    |
| 3   | 0.1866             | 28.27             | 9.64            | 37.91            | 64.19           | -26.28         | QP     |
| 4   | 0.1866             | 6.06              | 9.64            | 15.70            | 54.19           | -38.49         | AVG    |
| 5   | 0.2698             | 24.49             | 9.64            | 34.13            | 61.12           | -26.99         | QP     |
| 6   | 0.2698             | 3.34              | 9.64            | 12.98            | 51.12           | -38.14         | AVG    |
| 7   | 0.6237             | 27.27             | 9.64            | 36.91            | 56.00           | -19.09         | QP     |
| 8   | 0.6237             | 15.53             | 9.64            | 25.17            | 46.00           | -20.83         | AVG    |
| 9   | 1.9619             | 17.30             | 9.64            | 26.94            | 56.00           | -29.06         | QP     |
| 10  | 1.9619             | 9.90              | 9.64            | 19.54            | 46.00           | -26.46         | AVG    |
| 11  | 8.8239             | 13.89             | 9.73            | 23.62            | 60.00           | -36.38         | QP     |
| 12  | 8.8239             | 6.00              | 9.73            | 15.73            | 50.00           | -34.27         | AVG    |

Remark:

1. Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
2. Margin = Result - Limit

## 7.2. RADIATED EMISSIONS BELOW 1GHZ

### LIMITS

| CFR 47 FCC Part 15 Subpart B |                              |         |
|------------------------------|------------------------------|---------|
| Frequency (MHz)              | Field strength (dBuV/m@ 3 m) |         |
|                              | Class A                      | Class B |
| 30 - 88                      | 49.5                         | 40      |
| 88 - 216                     | 53.9                         | 43.5    |
| 216 - 960                    | 56.9                         | 46      |
| Above 960                    | 60                           | 54      |

| ICES-003 Issue 7 |                              |         |
|------------------|------------------------------|---------|
| Frequency (MHz)  | Field strength (dBuV/m@ 3 m) |         |
|                  | Class A                      | Class B |
| 30 - 88          | 50                           | 40      |
| 88 - 216         | 54                           | 43.5    |
| 216 - 230        | 56.9                         | 46      |
| 230 - 960        | 57                           | 47      |
| Above 960        | 60                           | 54      |

Note:

- (1). The tighter limit applies at the band edges
- (2). The different between FCC Part 15 Subpart B limit and ICES-003 Issue 7 limit is only in frequency band 230 MHz to 960 MHz, the limit of FCC Part 15 Subpart B is 1 dB smaller than the limit of ICES-003 Issue 7, if the test result complies with FCC Part 15 Subpart B limit, it deemed to comply with ICES-003 Issue 7 limit.

### TEST PROCEDURE

- 1) The testing follows the guidelines in ANSI C63.4-2014.
- 2) The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 3) The EUT was placed on a turntable with 80cm above ground.
- 4) The EUT was set 3 meters from the interference receiving antenna, test antenna mast is remotely controlled and can be varied in height from 1m to 4m.
- 5) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- 6) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

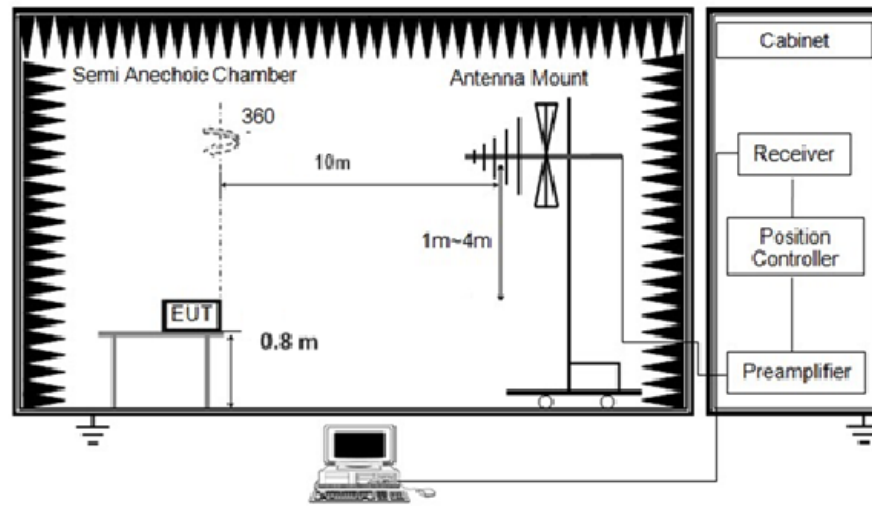
- 7) Cables of hand-operated devices, such as keyboards and mice, shall be placed as for normal used.
- 8) For measurement below 1 GHz, the initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

The setting of the spectrum analyser

|          |                                |
|----------|--------------------------------|
| RBW      | 100kHz                         |
| VBW      | 300kHz                         |
| Detector | Peak / Quasi Peak <sup>#</sup> |
| Trace    | Max hold                       |

<sup>#</sup>: Peak for pre-scan, Quasi Peak for the final result.

## TEST SETUP



Below 1 GHz and above 30 MHz

## TEST ENVIRONMENT

|                     |        |                   |     |
|---------------------|--------|-------------------|-----|
| Temperature         | 22.6°C | Relative Humidity | 61% |
| Atmosphere Pressure | 101kPa |                   |     |

## TEST DATE / ENGINEER

|           |               |         |             |
|-----------|---------------|---------|-------------|
| Test Date | July 12, 2025 | Test By | Stipe Zheng |
|-----------|---------------|---------|-------------|

## TEST MODE

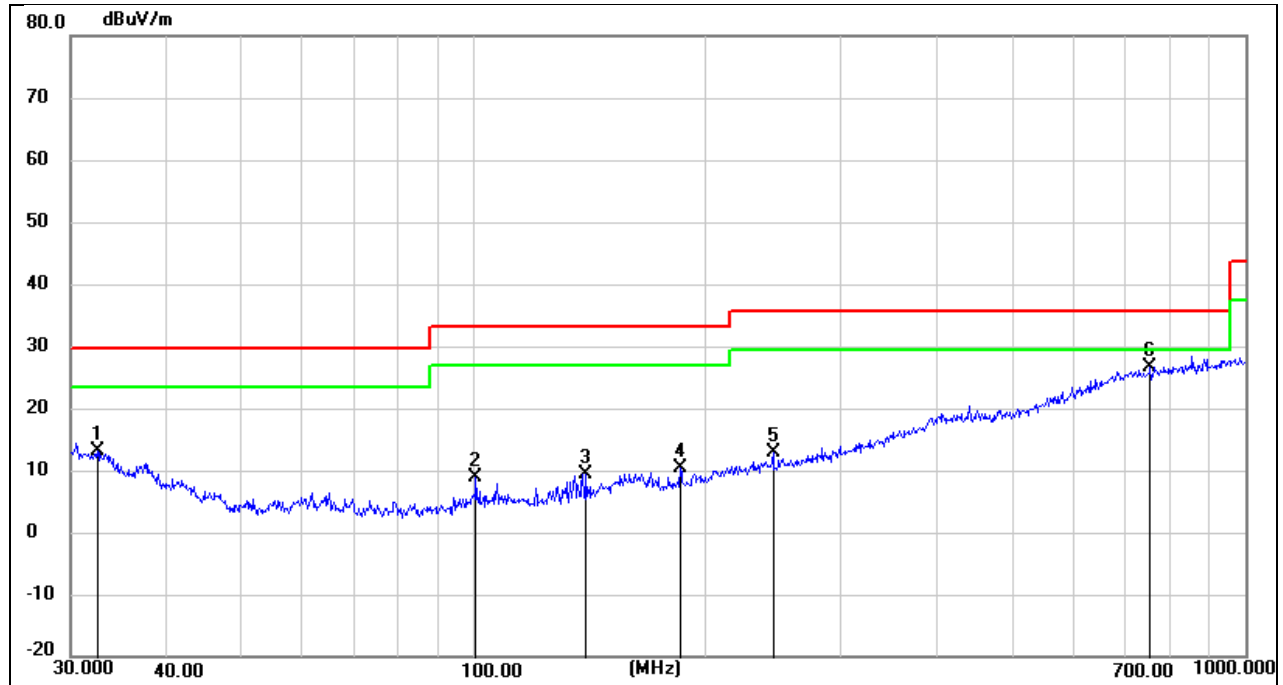
|                  |           |
|------------------|-----------|
| Pre-test Mode:   | M01 ~ M03 |
| Final Test Mode: | M02       |

Note: All test modes had been tested, but only the worst data recorded in the report.



## TEST RESULTS

|               |         |           |            |
|---------------|---------|-----------|------------|
| Test Mode:    | M02     | Polarity: | Horizontal |
| Test Voltage: | DC 3.7V |           |            |

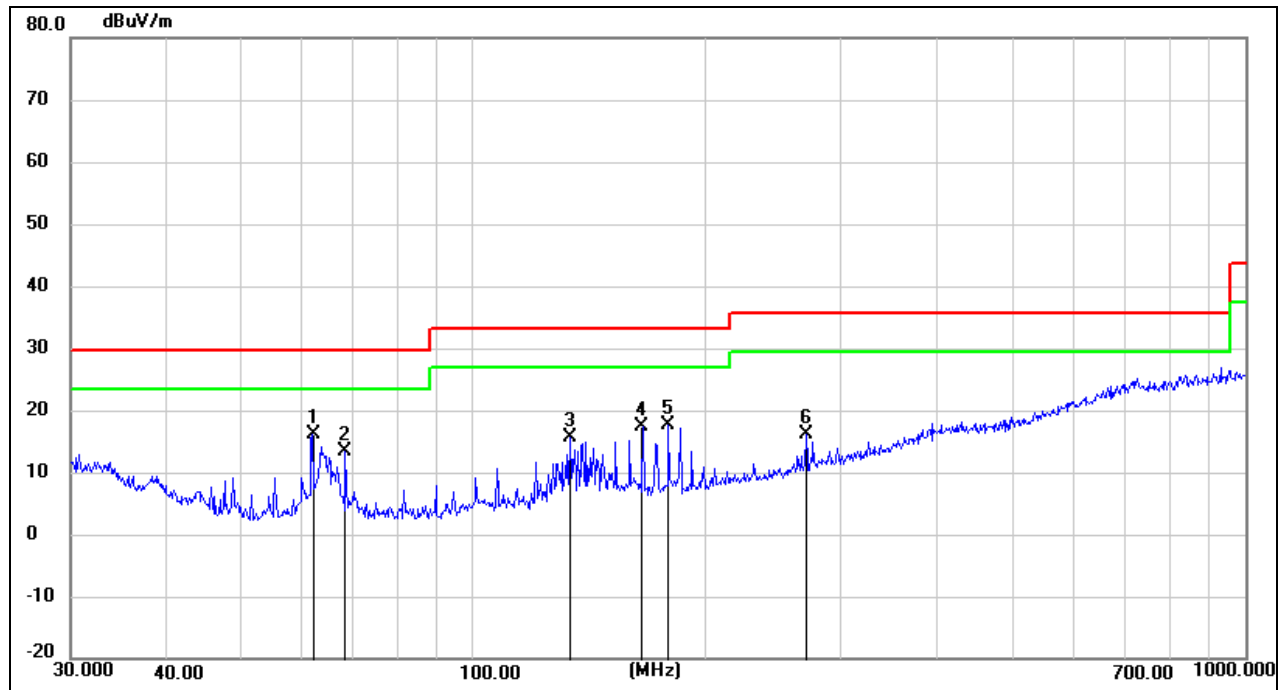


| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|----------------|----------------|-----------------|----------------|-------------|--------|
| 1   | 32.5198         | 28.56          | -15.55         | 13.01           | 29.50          | -16.49      | QP     |
| 2   | 100.5806        | 32.43          | -23.65         | 8.78            | 33.00          | -24.22      | QP     |
| 3   | 139.8508        | 32.75          | -23.29         | 9.46            | 33.00          | -23.54      | QP     |
| 4   | 185.1380        | 31.85          | -21.53         | 10.32           | 33.00          | -22.68      | QP     |
| 5   | 244.2321        | 31.82          | -19.03         | 12.79           | 35.50          | -22.71      | QP     |
| 6 * | 752.7432        | 31.23          | -4.68          | 26.55           | 35.50          | -8.95       | QP     |

Remark:

1. Result = Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor)
2. Margin = Result - Limit

|               |         |           |          |
|---------------|---------|-----------|----------|
| Test Mode:    | M02     | Polarity: | Vertical |
| Test Voltage: | DC 3.7V |           |          |



| No. | Frequency (MHz) | Reading (dBuV) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|----------------|----------------|-----------------|----------------|-------------|--------|
| 1 * | 61.9951         | 41.28          | -25.16         | 16.12           | 29.50          | -13.38      | QP     |
| 2   | 68.1514         | 38.38          | -25.11         | 13.27           | 29.50          | -16.23      | QP     |
| 3   | 133.1511        | 39.63          | -23.90         | 15.73           | 33.00          | -17.27      | QP     |
| 4   | 165.4866        | 39.16          | -21.71         | 17.45           | 33.00          | -15.55      | QP     |
| 5   | 178.7584        | 39.22          | -21.55         | 17.67           | 33.00          | -15.33      | QP     |
| 6   | 269.4284        | 35.04          | -18.81         | 16.23           | 35.50          | -19.27      | QP     |

Remark:

1. Result = Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor)
2. Margin = Result - Limit

### 7.3. RADIATED EMISSIONS ABOVE 1GHZ

#### LIMITS

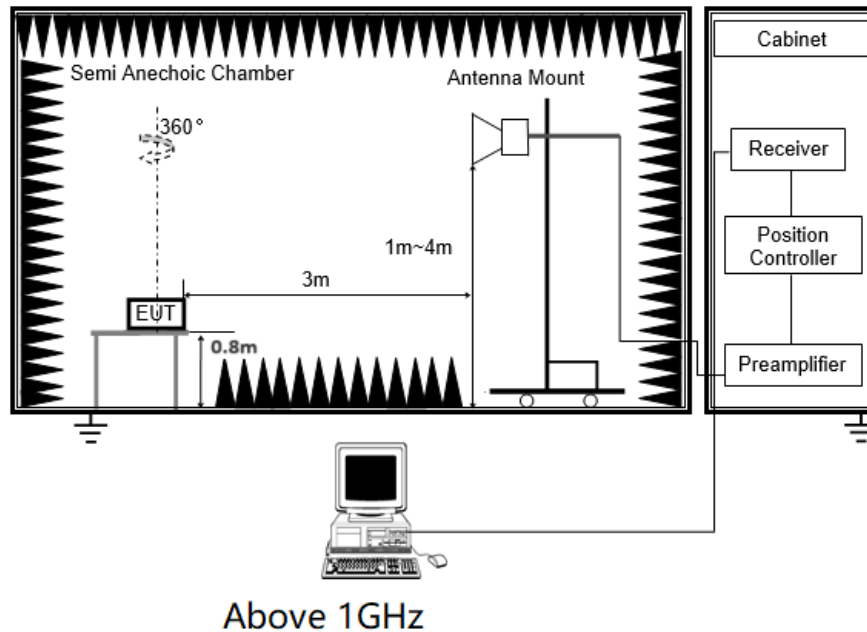
| Frequency<br>(MHz) | Field strength (dBuV/m@ 3 m) |         |         |         |
|--------------------|------------------------------|---------|---------|---------|
|                    | Class A                      |         | Class B |         |
|                    | Peak                         | Average | Peak    | Average |
| Above 1000         | 80                           | 60      | 74      | 54      |

#### TEST PROCEDURE

- 1) The testing follows the guidelines in ANSI C63.4-2014.
- 2) The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 3) The EUT was placed on a turntable with 80cm above ground.
- 4) The EUT was set 3 meters from the interference receiving antenna, test antenna mast is remotely controlled and can be varied in height from 1m to 4m.
- 5) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- 6) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- 7) Cables of hand-operated devices, such as keyboards and mice, shall be placed as for normal used.
- 8) For measurement above 1 GHz, the peak emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the peak limit specified in Section 15.109.  
If peak result complies with average limit, average result is deemed to comply with average limit.
- 9) The average emission measurement will be measured by the RMS detector and must comply with the average limit specified in Section 15.109.
- 10) The setting of the spectrum analyser

|          |                                      |
|----------|--------------------------------------|
| RBW      | 1MHz                                 |
| VBW      | 3MHz                                 |
| Detector | Peak value: Peak; Average value: RMS |
| Trace    | Max hold                             |

## TEST SETUP



## TEST ENVIRONMENT

|                     |        |                   |       |
|---------------------|--------|-------------------|-------|
| Temperature         | 23.5°C | Relative Humidity | 51.4% |
| Atmosphere Pressure | 101kPa |                   |       |

## TEST DATE / ENGINEER

|           |              |         |           |
|-----------|--------------|---------|-----------|
| Test Date | July 16,2025 | Test By | Wite Chen |
|-----------|--------------|---------|-----------|

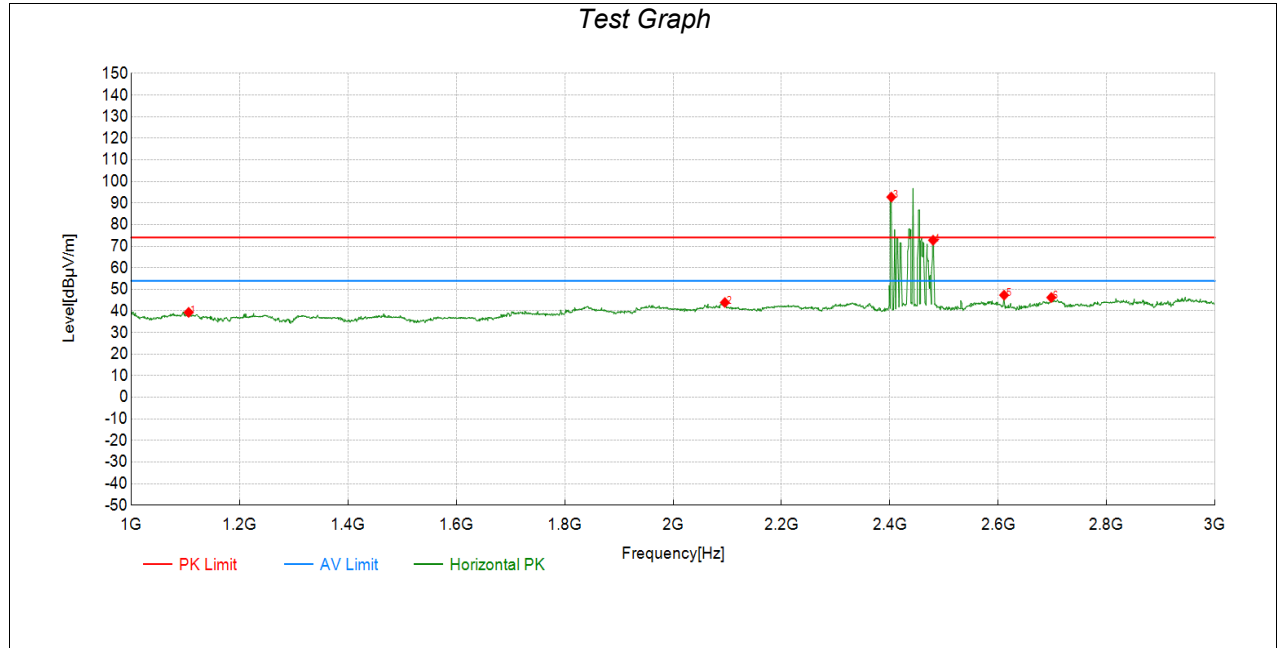
## TEST MODE

|                  |           |
|------------------|-----------|
| Pre-test Mode:   | M01 ~ M03 |
| Final Test Mode: | M03       |

Note: All test modes had been tested, but only the worst data recorded in the report.

## TEST RESULTS

|               |         |           |            |
|---------------|---------|-----------|------------|
| Test Mode:    | M01     | Polarity: | Horizontal |
| Test Voltage: | DC 3.7V |           |            |



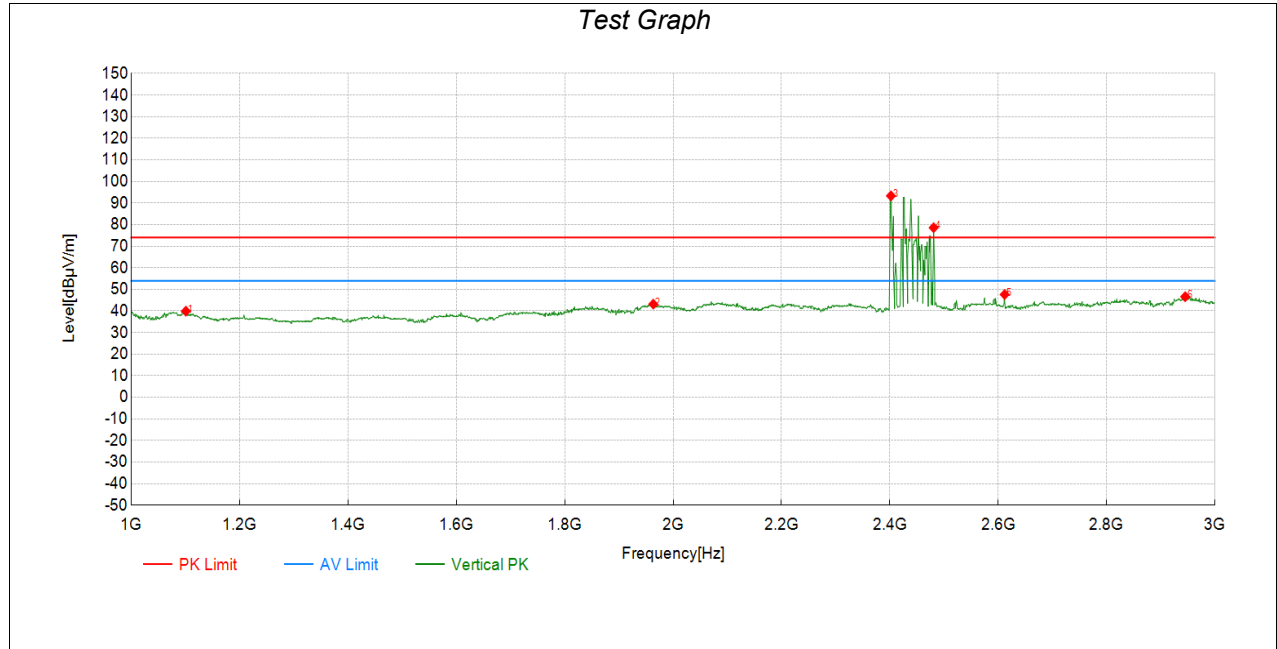
| Suspected Data List |                 |                  |                |               |                |             |     |            |            |
|---------------------|-----------------|------------------|----------------|---------------|----------------|-------------|-----|------------|------------|
| NO.                 | Frequency [MHz] | Reading [dBμV/m] | Level [dBμV/m] | Factor [dB/m] | Limit [dBμV/m] | Margin [dB] | Det | Pol        | Verdict    |
| 1                   | 1106.05         | 51.53            | 39.35          | -12.18        | 74.00          | 34.65       | PK  | Horizontal | PASS       |
| 2                   | 2095.55         | 51.29            | 43.93          | -7.36         | 74.00          | 30.07       | PK  | Horizontal | PASS       |
| 3                   | 2402.00         | 100.23           | 92.77          | -7.46         | /              | /           | /   | /          | fundamenta |
| 4                   | 2480.00         | 80.05            | 72.77          | -7.28         | /              | /           | /   | /          | fundamenta |
| 5                   | 2610.81         | 54.14            | 47.33          | -6.81         | 74.00          | 26.67       | PK  | Horizontal | PASS       |
| 6                   | 2697.85         | 52.65            | 46.24          | -6.41         | 74.00          | 27.76       | PK  | Horizontal | PASS       |

Note:(1)Level=Reading+Factor

(2)Margin=Limit-Level

(3) All the frequencies between mark 3 and mark 4 are the fundamental frequency which were transmitted by wireless module from EUT.

|               |         |           |          |
|---------------|---------|-----------|----------|
| Test Mode:    | M01     | Polarity: | Vertical |
| Test Voltage: | DC 3.7V |           |          |



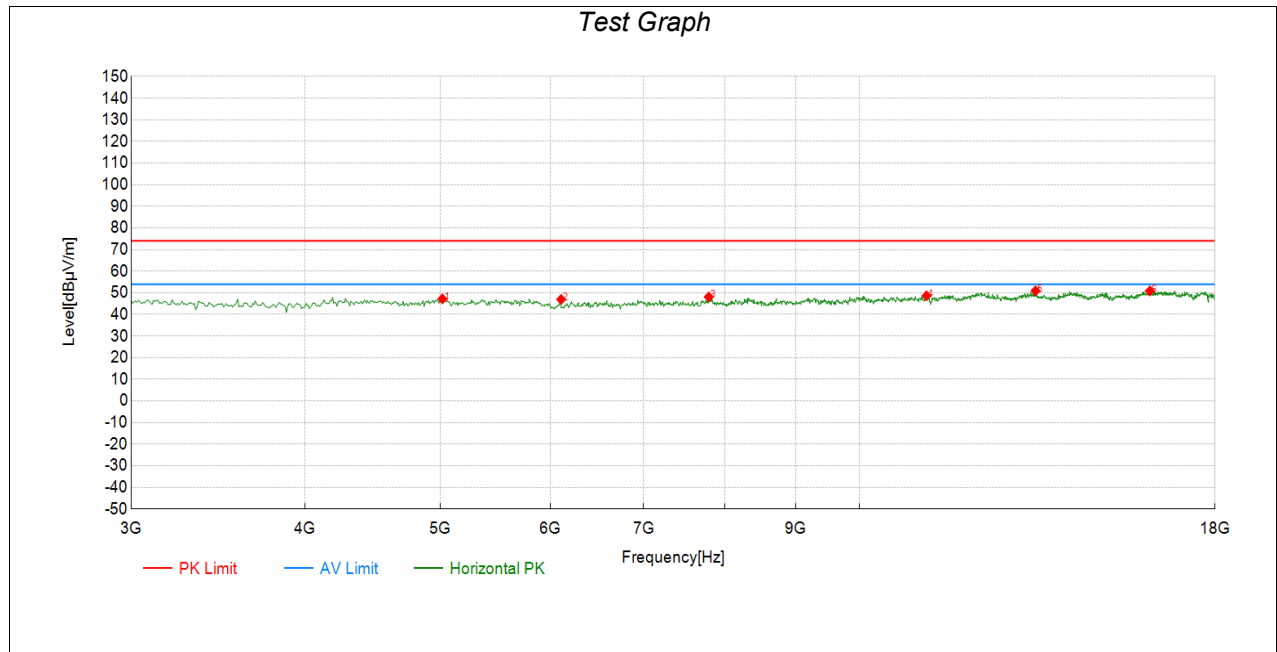
| Suspected Data List |                 |                  |                |               |                |             |     |          |            |
|---------------------|-----------------|------------------|----------------|---------------|----------------|-------------|-----|----------|------------|
| NO.                 | Frequency [MHz] | Reading [dBμV/m] | Level [dBμV/m] | Factor [dB/m] | Limit [dBμV/m] | Margin [dB] | Det | Pol      | Verdict    |
| 1                   | 1101.05         | 52.08            | 39.91          | -12.17        | 74.00          | 34.09       | PK  | Vertical | PASS       |
| 2                   | 1963.48         | 51.21            | 43.17          | -8.04         | 74.00          | 30.83       | PK  | Vertical | PASS       |
| 3                   | 2402.00         | 100.79           | 93.33          | -7.46         | /              | /           | /   | /        | fundamenta |
| 4                   | 2480.00         | 85.87            | 78.59          | -7.28         | /              | /           | /   | /        | fundamenta |
| 5                   | 2611.81         | 54.43            | 47.63          | -6.80         | 74.00          | 26.37       | PK  | Vertical | PASS       |
| 6                   | 2944.97         | 52.11            | 46.61          | -5.50         | 74.00          | 27.39       | PK  | Vertical | PASS       |

Note: (1) Level = Reading + Factor

(2) Margin = Limit - Level

(3) All the frequencies between mark 3 and mark 4 are the fundamental frequency which were transmitted by wireless module from EUT.

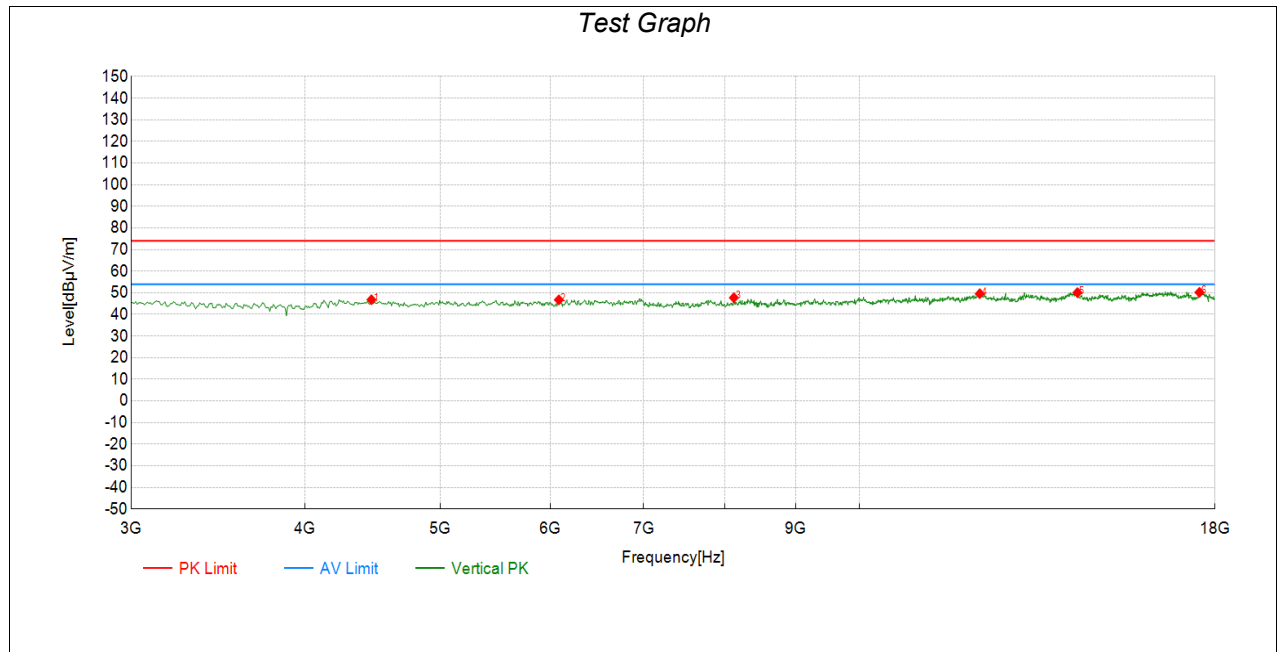
|               |         |           |            |
|---------------|---------|-----------|------------|
| Test Mode:    | M01     | Polarity: | Horizontal |
| Test Voltage: | DC 3.7V |           |            |



| Suspected Data List |                 |                  |                |               |                |             |     |            |         |
|---------------------|-----------------|------------------|----------------|---------------|----------------|-------------|-----|------------|---------|
| NO.                 | Frequency [MHz] | Reading [dBμV/m] | Level [dBμV/m] | Factor [dB/m] | Limit [dBμV/m] | Margin [dB] | Det | Pol        | Verdict |
| 1                   | 5018.51         | 49.56            | 47.19          | -2.37         | 74.00          | 26.81       | PK  | Horizontal | PASS    |
| 2                   | 6106.55         | 47.77            | 46.96          | -0.81         | 74.00          | 27.04       | PK  | Horizontal | PASS    |
| 3                   | 7794.90         | 46.06            | 48.11          | 2.05          | 74.00          | 25.89       | PK  | Horizontal | PASS    |
| 4                   | 11171.59        | 43.98            | 48.62          | 4.64          | 74.00          | 25.38       | PK  | Horizontal | PASS    |
| 5                   | 13377.69        | 42.82            | 50.89          | 8.07          | 74.00          | 23.11       | PK  | Horizontal | PASS    |
| 6                   | 16161.58        | 41.50            | 50.87          | 9.37          | 74.00          | 23.13       | PK  | Horizontal | PASS    |

Note: (1) Level = Reading + Factor  
(2) Margin = Limit - Level

|               |         |           |          |
|---------------|---------|-----------|----------|
| Test Mode:    | M01     | Polarity: | Vertical |
| Test Voltage: | DC 3.7V |           |          |

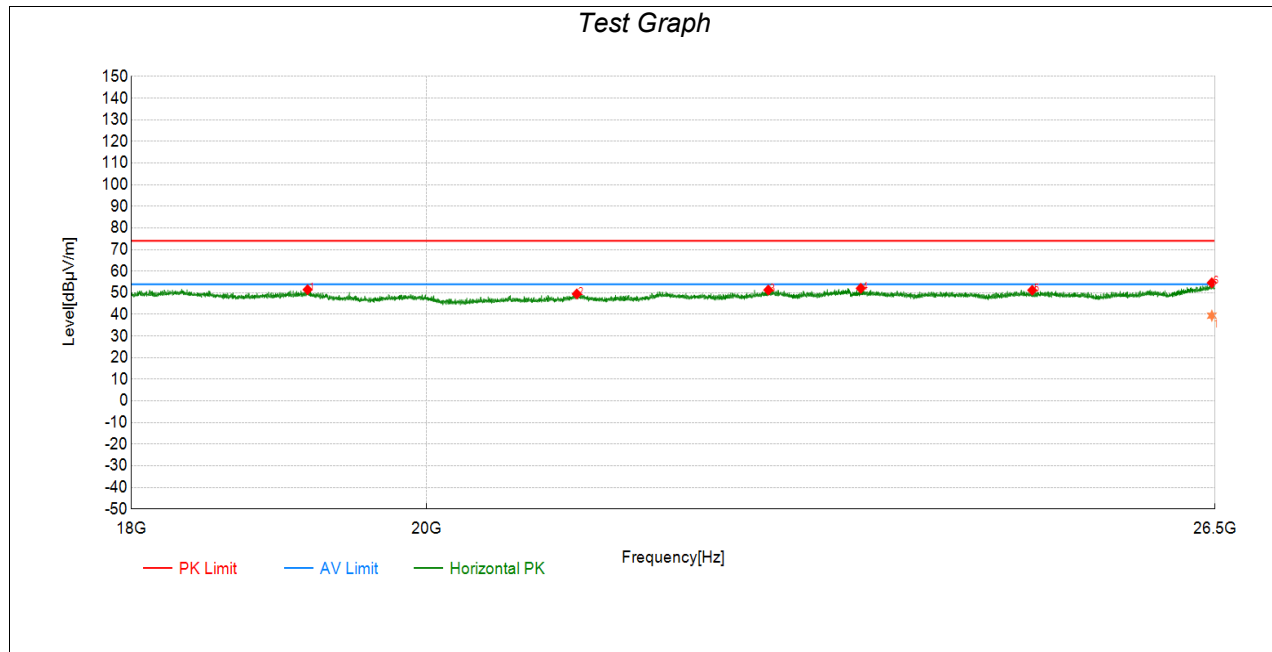


| Suspected Data List |                 |                  |                |               |                |             |     |          |         |
|---------------------|-----------------|------------------|----------------|---------------|----------------|-------------|-----|----------|---------|
| NO.                 | Frequency [MHz] | Reading [dBμV/m] | Level [dBμV/m] | Factor [dB/m] | Limit [dBμV/m] | Margin [dB] | Det | Pol      | Verdict |
| 1                   | 4463.23         | 49.56            | 46.79          | -2.77         | 74.00          | 27.21       | PK  | Vertical | PASS    |
| 2                   | 6084.04         | 47.66            | 46.74          | -0.92         | 74.00          | 27.26       | PK  | Vertical | PASS    |
| 3                   | 8125.06         | 45.44            | 47.74          | 2.30          | 74.00          | 26.26       | PK  | Vertical | PASS    |
| 4                   | 12199.60        | 42.92            | 49.58          | 6.66          | 74.00          | 24.42       | PK  | Vertical | PASS    |
| 5                   | 14338.17        | 41.73            | 50.09          | 8.36          | 74.00          | 23.91       | PK  | Vertical | PASS    |
| 6                   | 17542.27        | 38.25            | 50.22          | 11.97         | 74.00          | 23.78       | PK  | Vertical | PASS    |

Note: (1) Level = Reading + Factor  
(2) Margin = Limit - Level



|               |         |           |            |
|---------------|---------|-----------|------------|
| Test Mode:    | M01     | Polarity: | Horizontal |
| Test Voltage: | DC 3.7V |           |            |



#### Suspected Data List

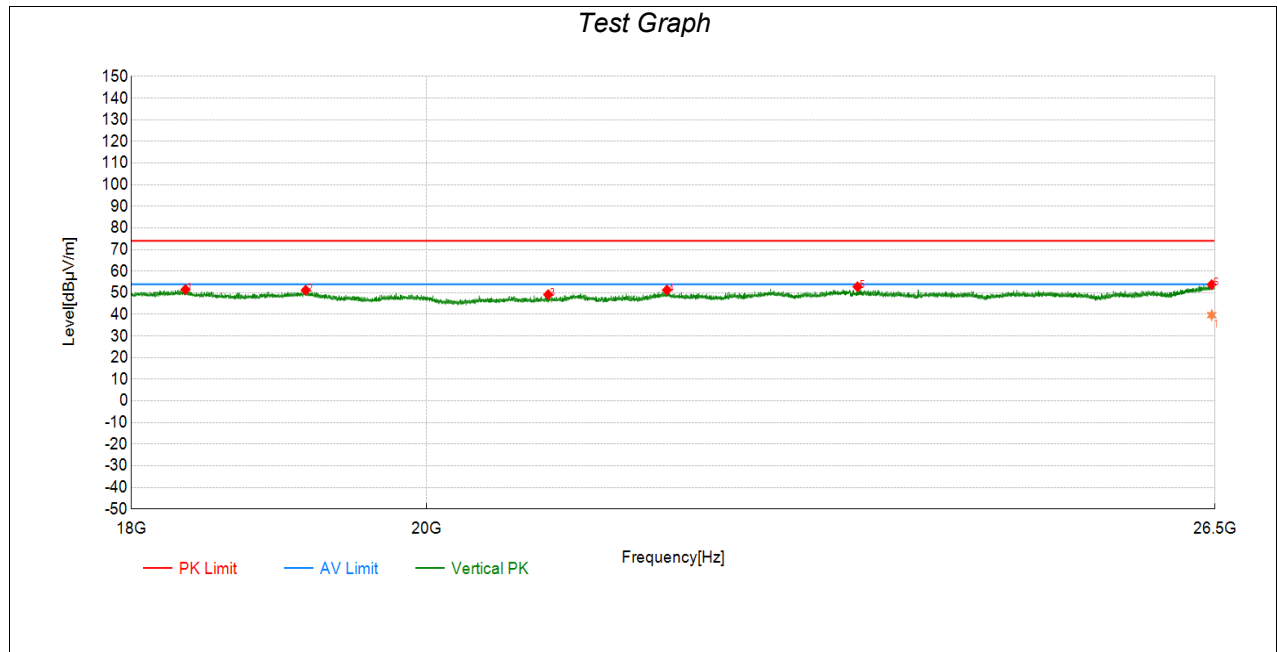
| NO. | Frequency [MHz] | Reading [dBμV/m] | Level [dBμV/m] | Factor [dB/m] | Limit [dBμV/m] | Margin [dB] | Det | Pol        | Verdict |
|-----|-----------------|------------------|----------------|---------------|----------------|-------------|-----|------------|---------|
| 1   | 19169.60        | 56.11            | 51.44          | -4.67         | 74.00          | 22.56       | PK  | Horizontal | PASS    |
| 2   | 21102.50        | 55.25            | 49.47          | -5.78         | 74.00          | 24.53       | PK  | Horizontal | PASS    |
| 3   | 22595.10        | 56.76            | 51.29          | -5.47         | 74.00          | 22.71       | PK  | Horizontal | PASS    |
| 4   | 23353.30        | 56.99            | 52.08          | -4.91         | 74.00          | 21.92       | PK  | Horizontal | PASS    |
| 5   | 24826.35        | 54.77            | 51.20          | -3.57         | 74.00          | 22.80       | PK  | Horizontal | PASS    |
| 6   | 26469.40        | 56.64            | 54.62          | -2.02         | 74.00          | 19.38       | PK  | Horizontal | PASS    |

#### Final Data List

| NO. | Frequency [MHz] | Factor [dB/m] | PK Reading [dBμV] | PK Value [dBμV/m] | PK Limit [dBμV/m] | PK Margin [dB] | Pol        | Verdict |
|-----|-----------------|---------------|-------------------|-------------------|-------------------|----------------|------------|---------|
| 1   | 26469.86        | -2.02         | 41.45             | 39.43             | 74.00             | 34.57          | Horizontal | PASS    |

Note: (1) Level = Reading + Factor  
(2) Margin = Limit - Level

|               |         |           |          |
|---------------|---------|-----------|----------|
| Test Mode:    | M01     | Polarity: | Vertical |
| Test Voltage: | DC 3.7V |           |          |

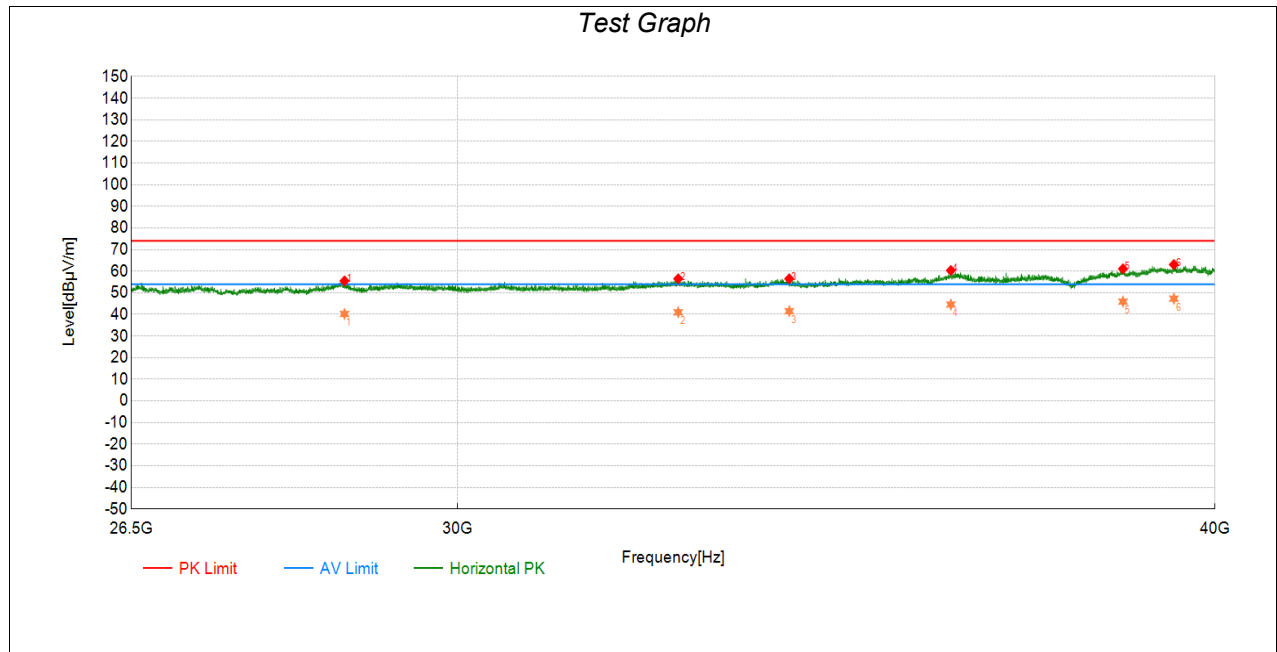


| Suspected Data List |                 |                  |                |               |                |             |     |          |         |
|---------------------|-----------------|------------------|----------------|---------------|----------------|-------------|-----|----------|---------|
| NO.                 | Frequency [MHz] | Reading [dBμV/m] | Level [dBμV/m] | Factor [dB/m] | Limit [dBμV/m] | Margin [dB] | Det | Pol      | Verdict |
| 1                   | 18351.90        | 56.31            | 51.50          | -4.81         | 74.00          | 22.50       | PK  | Vertical | PASS    |
| 2                   | 19156.85        | 55.82            | 51.20          | -4.62         | 74.00          | 22.80       | PK  | Vertical | PASS    |
| 3                   | 20888.30        | 55.32            | 49.17          | -6.15         | 74.00          | 24.83       | PK  | Vertical | PASS    |
| 4                   | 21791.85        | 56.95            | 51.26          | -5.69         | 74.00          | 22.74       | PK  | Vertical | PASS    |
| 5                   | 23326.10        | 57.57            | 52.80          | -4.77         | 74.00          | 21.20       | PK  | Vertical | PASS    |
| 6                   | 26468.55        | 55.79            | 53.77          | -2.02         | 74.00          | 20.23       | PK  | Vertical | PASS    |

| Final Data List |                 |               |                   |                   |                   |                |          |         |  |
|-----------------|-----------------|---------------|-------------------|-------------------|-------------------|----------------|----------|---------|--|
| NO.             | Frequency [MHz] | Factor [dB/m] | PK Reading [dBμV] | PK Value [dBμV/m] | PK Limit [dBμV/m] | PK Margin [dB] | Pol      | Verdict |  |
| 1               | 26468.86        | -2.02         | 41.71             | 39.69             | 74.00             | 34.31          | Vertical | PASS    |  |

Note: (1) Level = Reading + Factor  
(2) Margin = Limit - Level

|               |         |           |            |
|---------------|---------|-----------|------------|
| Test Mode:    | M01     | Polarity: | Horizontal |
| Test Voltage: | DC 3.7V |           |            |

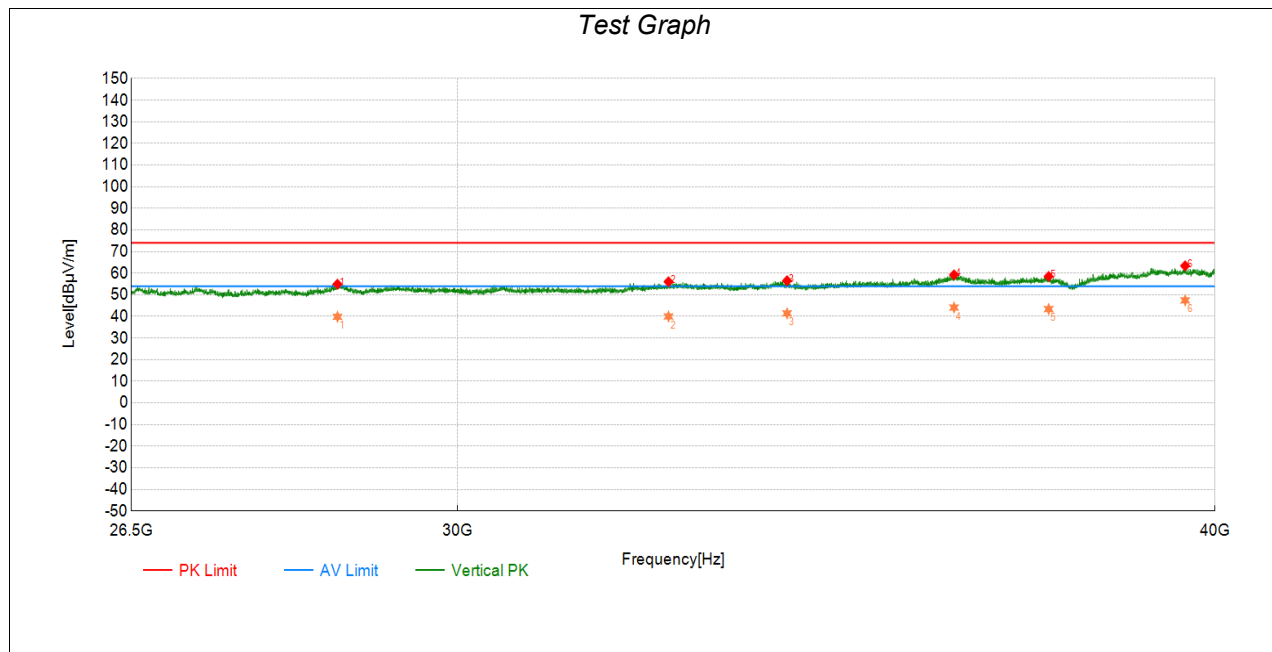


| Suspected Data List |                 |                  |                |               |                |             |     |            |         |
|---------------------|-----------------|------------------|----------------|---------------|----------------|-------------|-----|------------|---------|
| NO.                 | Frequency [MHz] | Reading [dBμV/m] | Level [dBμV/m] | Factor [dB/m] | Limit [dBμV/m] | Margin [dB] | Det | Pol        | Verdict |
| 1                   | 28736.95        | 55.45            | 55.52          | 0.07          | 74.00          | 18.48       | PK  | Horizontal | PASS    |
| 2                   | 32620.90        | 56.73            | 56.50          | -0.23         | 74.00          | 17.50       | PK  | Horizontal | PASS    |
| 3                   | 34026.25        | 55.05            | 56.49          | 1.44          | 74.00          | 17.51       | PK  | Horizontal | PASS    |
| 4                   | 36180.85        | 55.42            | 60.33          | 4.91          | 74.00          | 13.67       | PK  | Horizontal | PASS    |
| 5                   | 38625.70        | 54.63            | 61.09          | 6.46          | 74.00          | 12.91       | PK  | Horizontal | PASS    |
| 6                   | 39379.00        | 55.68            | 63.07          | 7.39          | 74.00          | 10.93       | PK  | Horizontal | PASS    |

| Final Data List |                 |               |            |         |
|-----------------|-----------------|---------------|------------|---------|
| NO.             | Frequency [MHz] | Factor [dB/m] | Pol        | Verdict |
| 1               | 28736.73        | 0.07          | Horizontal | PASS    |
| 2               | 32620.50        | -0.23         | Horizontal | PASS    |
| 3               | 34026.35        | 1.44          | Horizontal | PASS    |
| 4               | 36181.09        | 4.91          | Horizontal | PASS    |
| 5               | 38625.68        | 6.46          | Horizontal | PASS    |
| 6               | 39379.42        | 7.39          | Horizontal | PASS    |

Note: (1) Level = Reading + Factor  
(2) Margin = Limit - Level

|               |         |           |          |
|---------------|---------|-----------|----------|
| Test Mode:    | M01     | Polarity: | Vertical |
| Test Voltage: | DC 3.7V |           |          |



#### Suspected Data List

| NO. | Frequency [MHz] | Reading [dBμV/m] | Level [dBμV/m] | Factor [dB/m] | Limit [dBμV/m] | Margin [dB] | Det | Pol      | Verdict |
|-----|-----------------|------------------|----------------|---------------|----------------|-------------|-----|----------|---------|
| 1   | 28660.00        | 55.08            | 54.92          | -0.16         | 74.00          | 19.08       | PK  | Vertical | PASS    |
| 2   | 32500.75        | 56.75            | 56.06          | -0.69         | 74.00          | 17.94       | PK  | Vertical | PASS    |
| 3   | 33997.90        | 54.90            | 56.52          | 1.62          | 74.00          | 17.48       | PK  | Vertical | PASS    |
| 4   | 36224.05        | 54.07            | 59.22          | 5.15          | 74.00          | 14.78       | PK  | Vertical | PASS    |
| 5   | 37549.75        | 53.77            | 58.51          | 4.74          | 74.00          | 15.49       | PK  | Vertical | PASS    |
| 6   | 39547.75        | 54.93            | 63.40          | 8.47          | 74.00          | 10.60       | PK  | Vertical | PASS    |

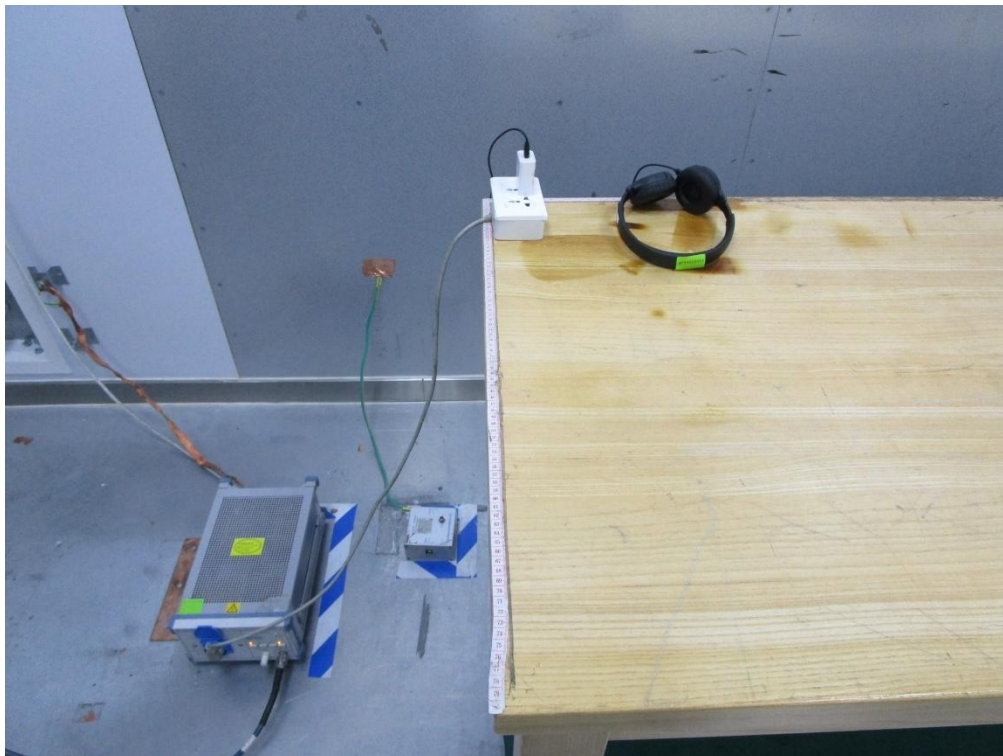
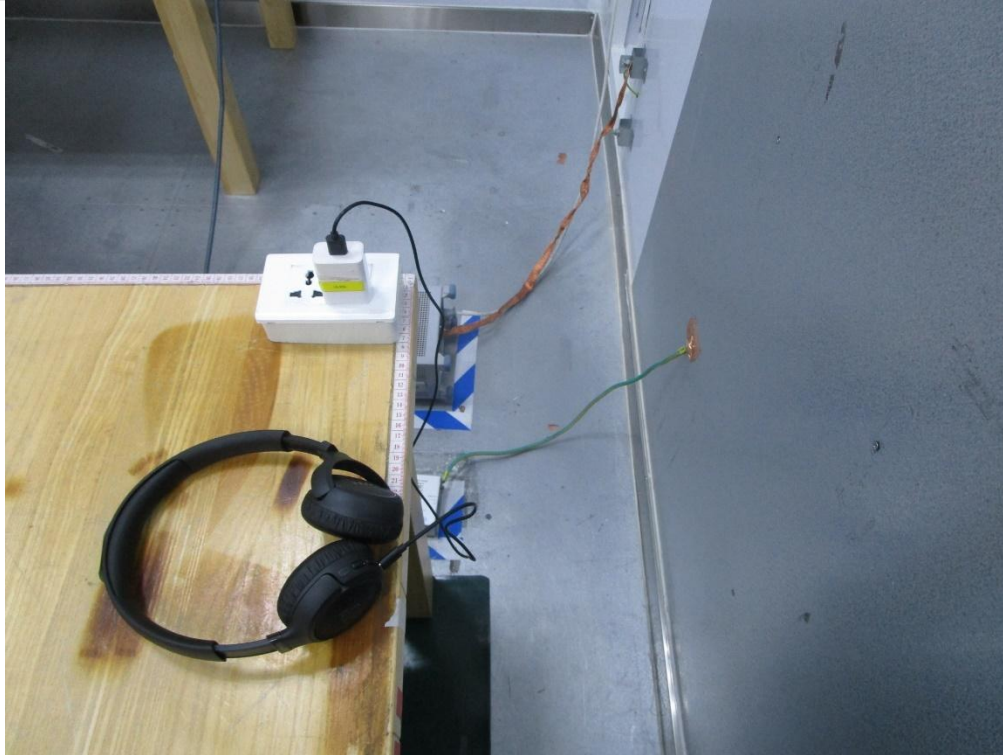
#### Final Data List

| NO. | Frequency [MHz] | Factor [dB/m] | Pol      | Verdict |
|-----|-----------------|---------------|----------|---------|
| 1   | 28660.31        | -0.16         | Vertical | PASS    |
| 2   | 32501.19        | -0.69         | Vertical | PASS    |
| 3   | 33997.93        | 1.62          | Vertical | PASS    |
| 4   | 36224.10        | 5.15          | Vertical | PASS    |
| 5   | 37550.11        | 4.74          | Vertical | PASS    |
| 6   | 39548.01        | 8.47          | Vertical | PASS    |

Note: (1) Level = Reading + Factor  
(2) Margin = Limit - Level

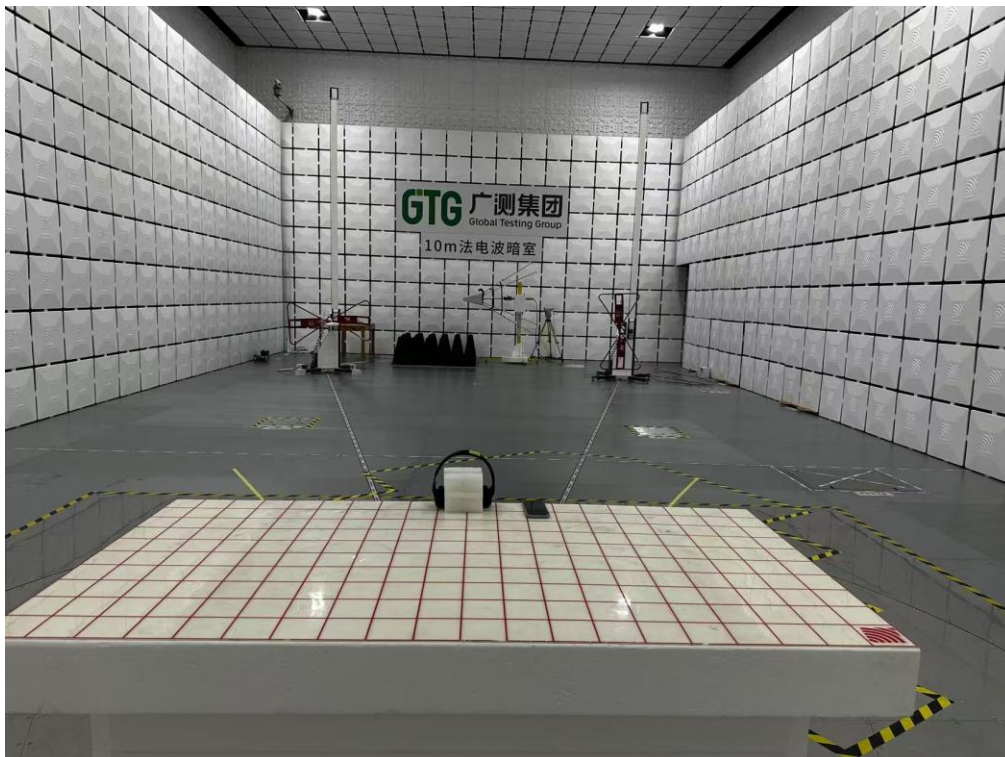
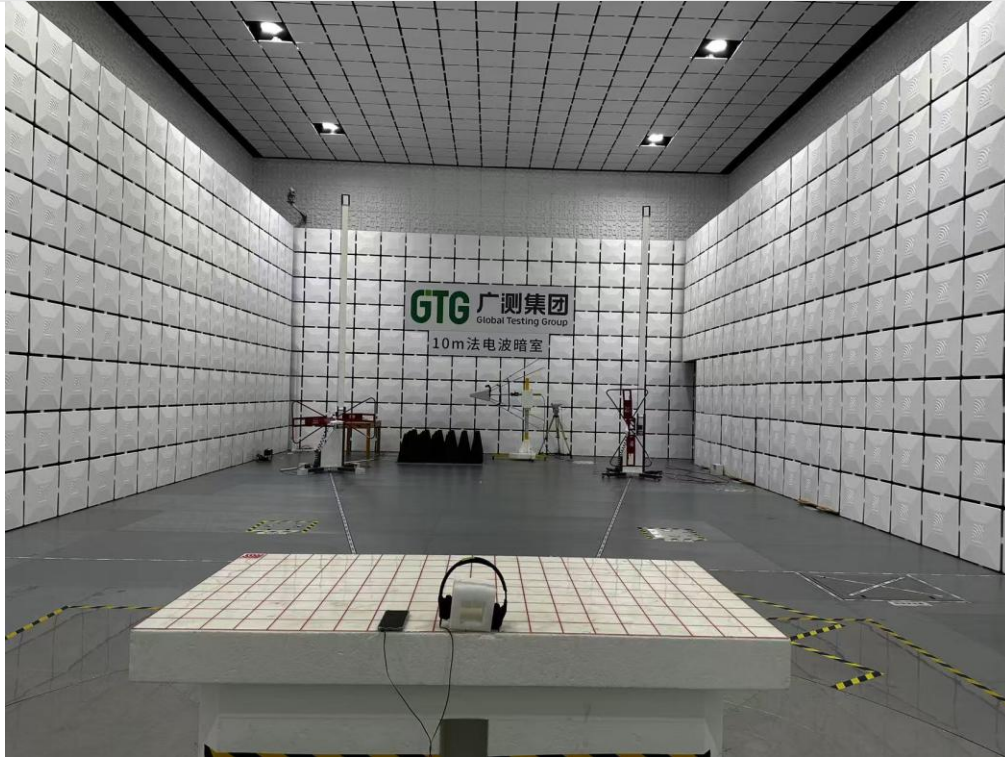
## APPENDIX: PHOTOGRAPHS OF TEST CONFIGURATION

### Conducted emissions

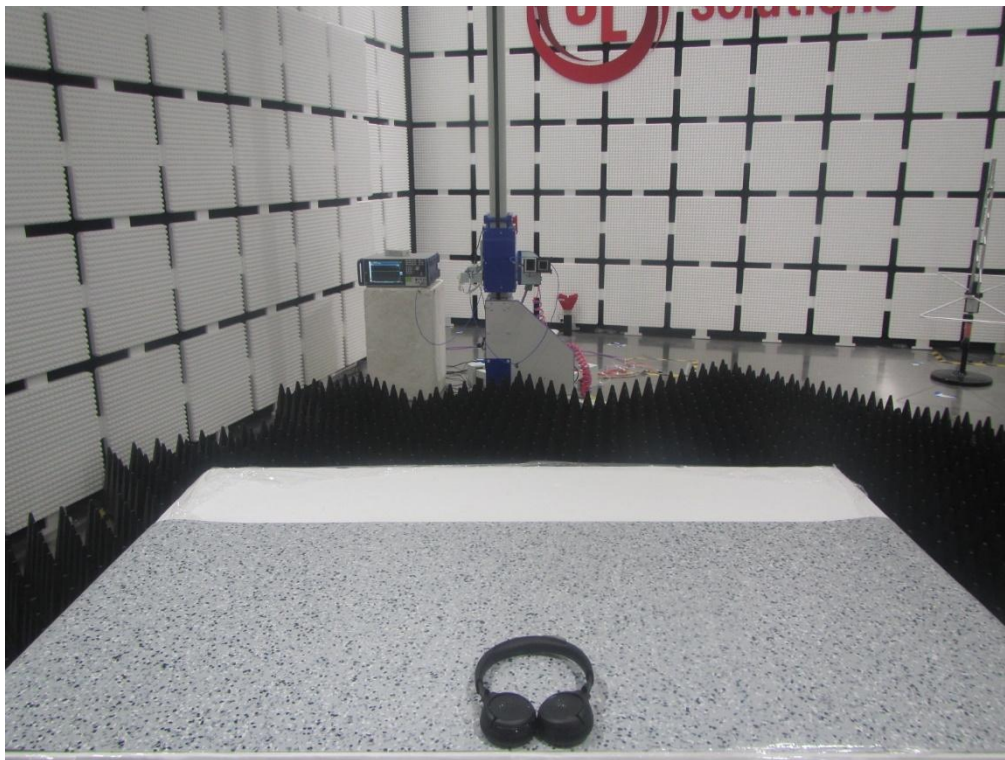
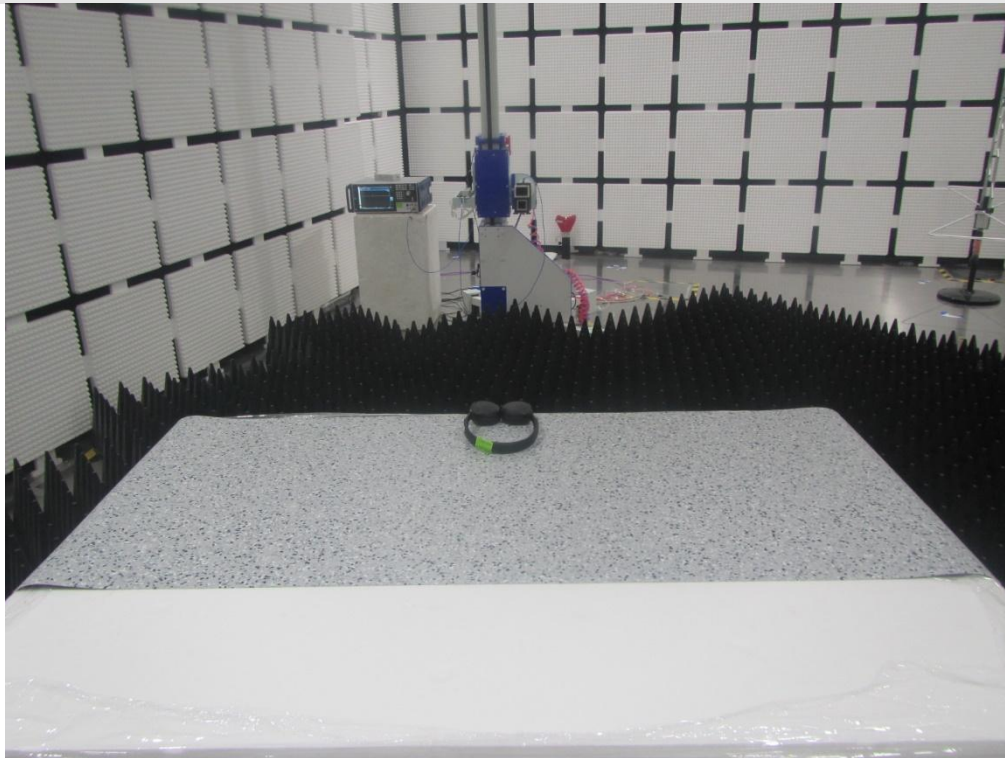




**Radiated emissions below 1GHz**



**Radiated emissions above 1GHz**





## APPENDIX: PHOTOGRAPHS OF THE EUT

External







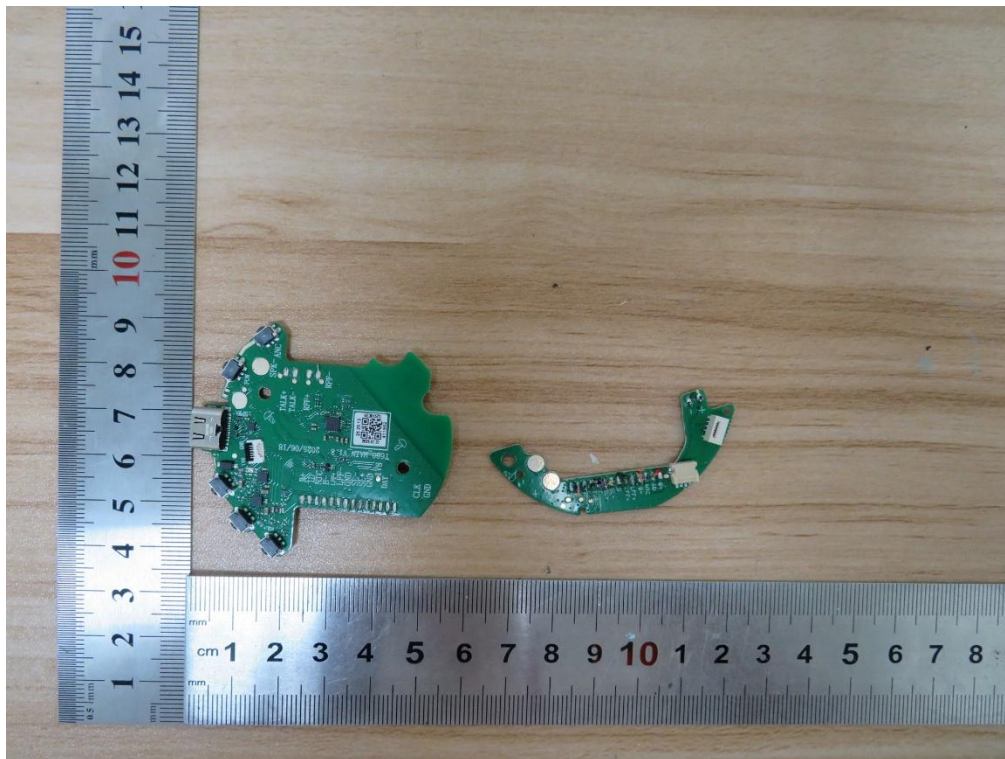




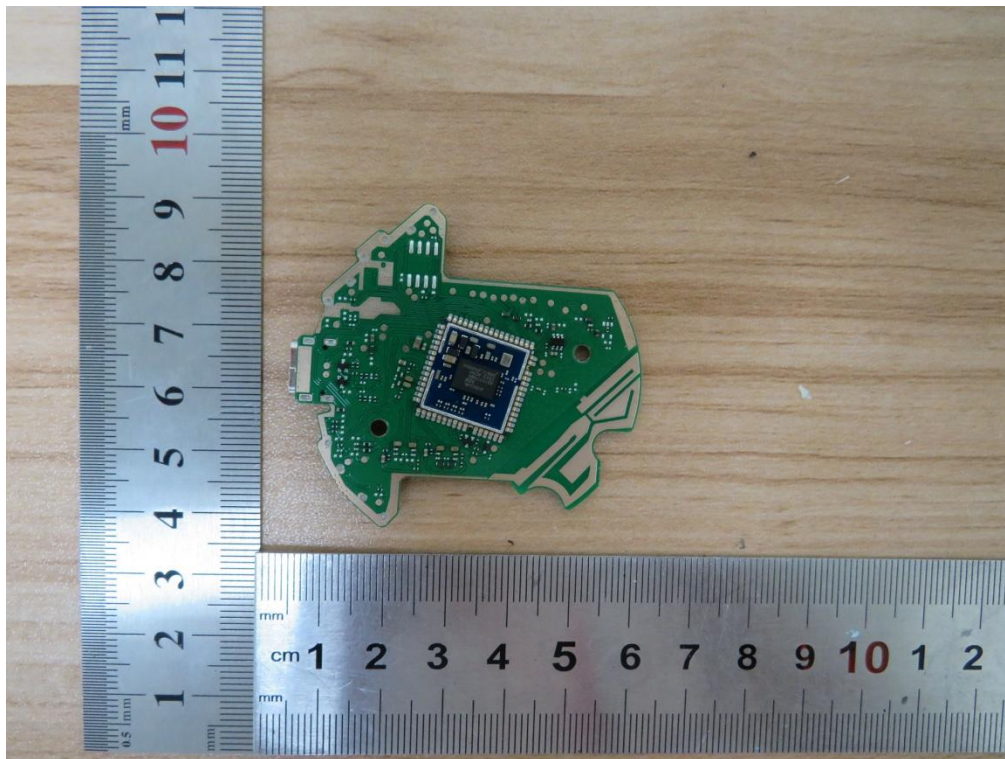
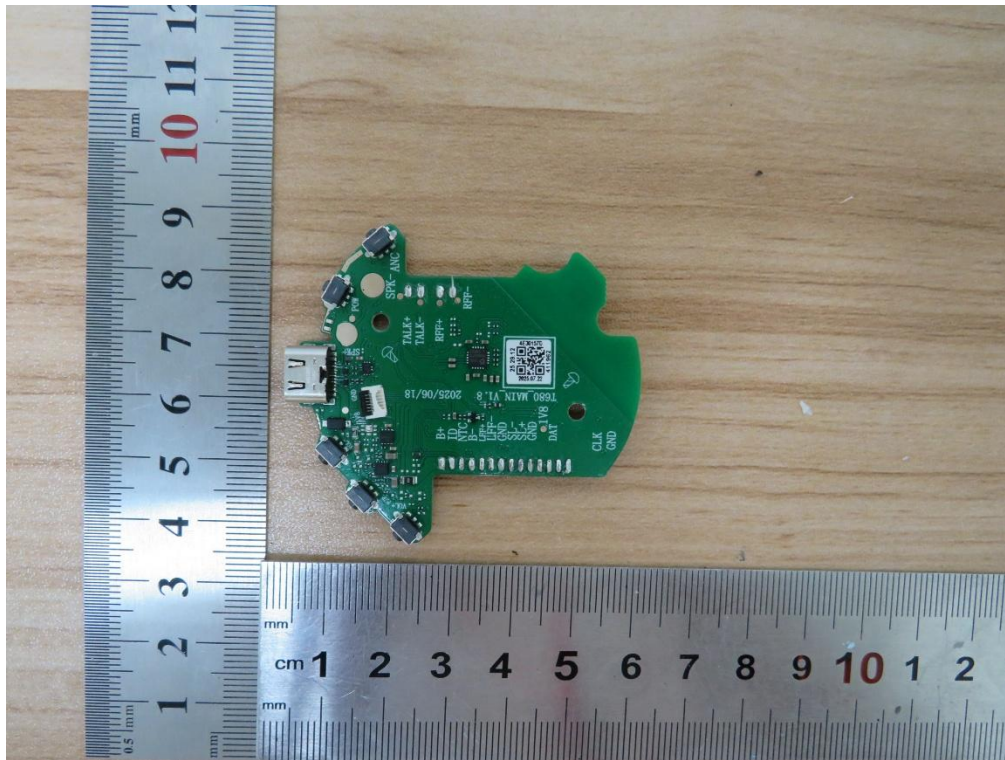


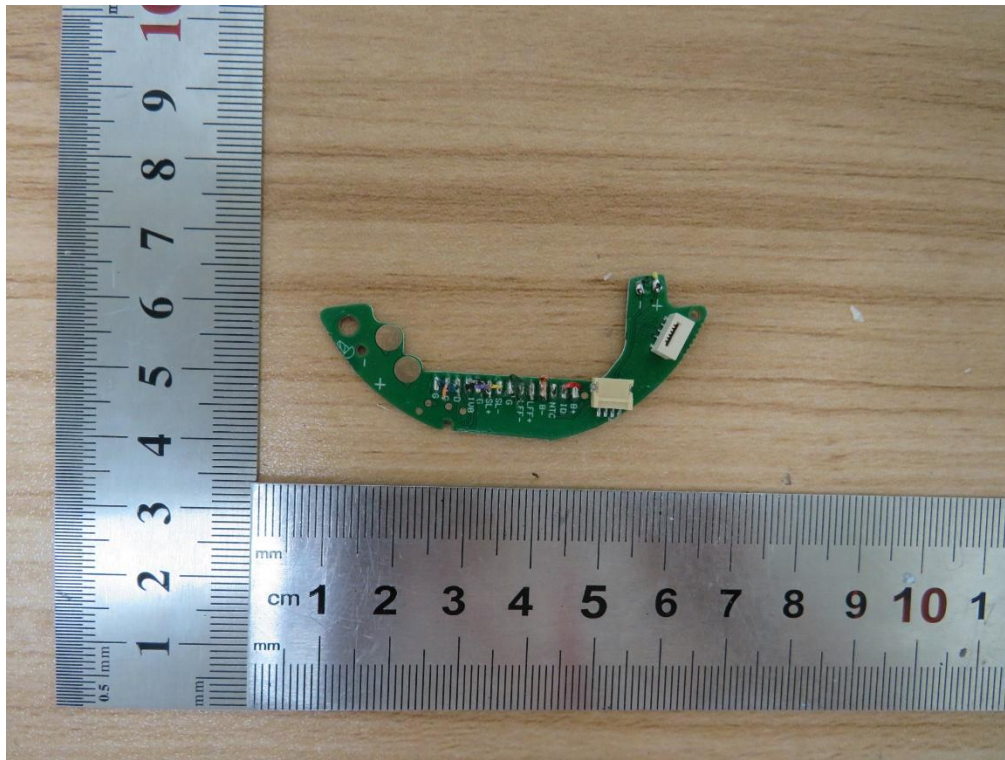
**Internal**



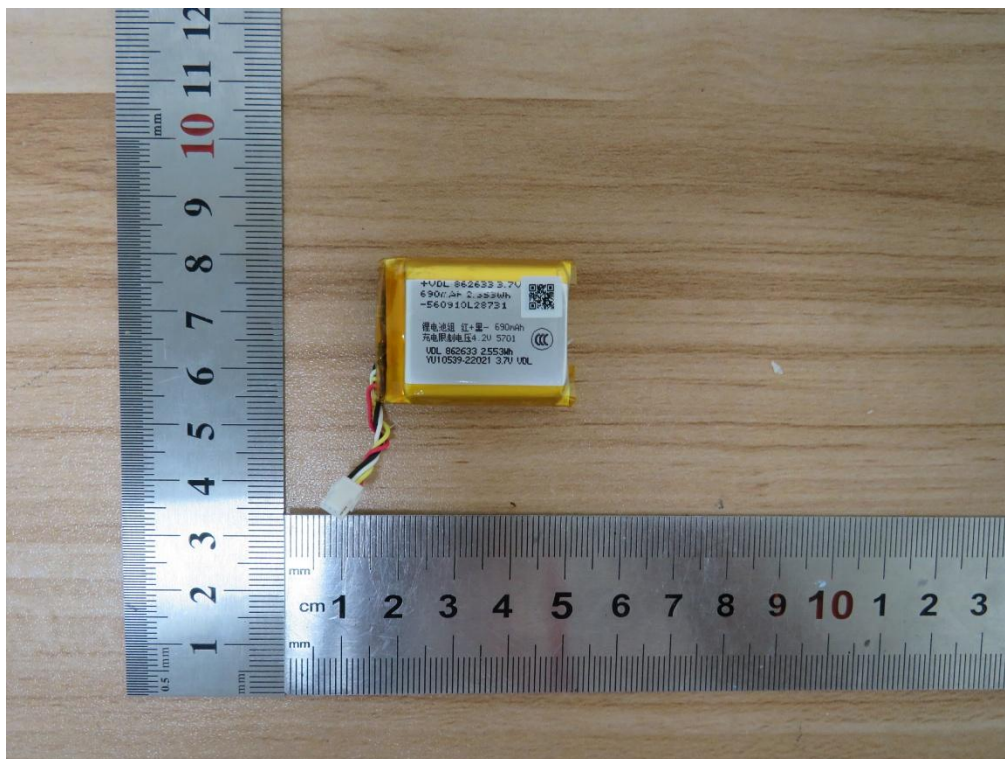
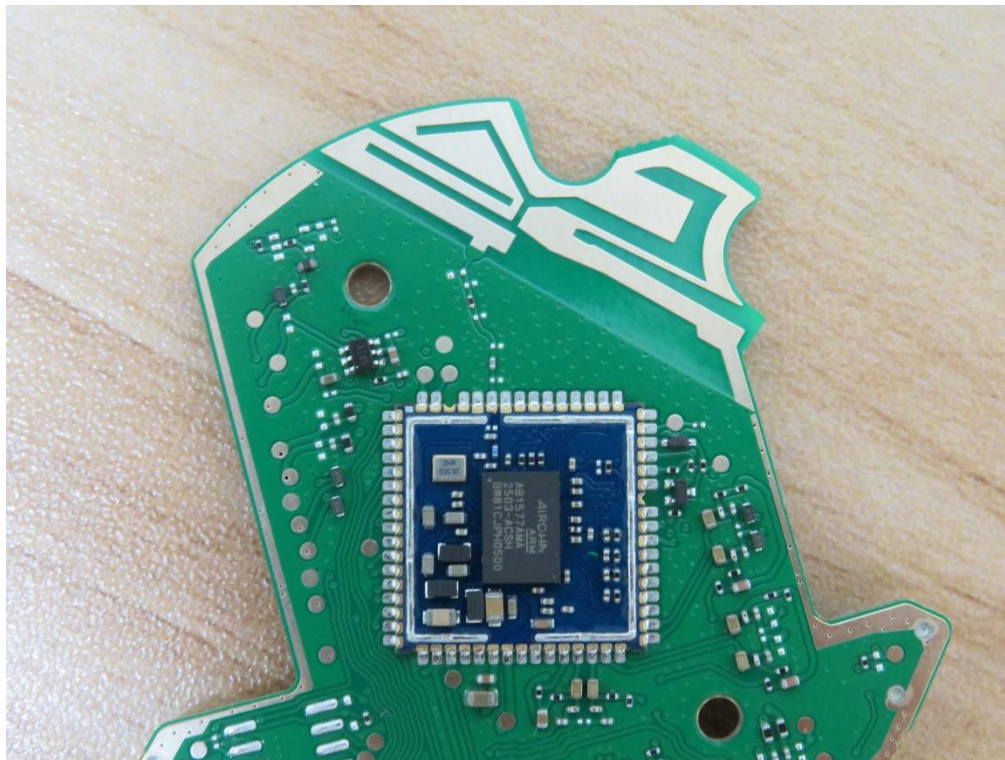














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**END OF REPORT**