



# EMC Test Report

Report No.: STS2507195E01

Issued for

Mid Ocean Brands B.V.

Unit 711-

716, 7/F., Tower A, 83 King Lam Street Cheung Sha Wan,  
Kowloon, Hong Kong

Product Name: Thermometer bottle

Brand Name: N/A

Model Name: MO6872

Series Model(s): N/A

Test Standards: EN 55032:2015/A11:2020  
EN 55035:2017/A11:2020

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.

**TEST REPORT****Applicant's Name** .....: Mid Ocean Brands B.V.Address .....: Unit 711-716, 7/F., Tower A, 83 King Lam Street Cheung Sha Wan,  
Kowloon, Hong Kong**Manufacturer's Name** .....: Mid Ocean Brands B.V.Address .....: Unit 711-716, 7/F., Tower A, 83 King Lam Street Cheung Sha Wan,  
Kowloon, Hong Kong**Product description**

Product Name .....: Thermometer bottle

Brand Name .....: N/A

Model Name .....: MO6872

Series Model(s) .....: N/A

**Test Standards** .....: EN 55032:2015/A11:2020  
EN 55035:2017/A11:2020

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.

**Date of Test** .....

Date of Receipt of Test Item .....: 30 July 2025

Date (s) of performance of Tests .....: 30 July 2025 ~ 04 Aug. 2025

Date of Issue .....: 04 Aug. 2025

Test Result .....: **Pass**

Testing Engineer :

*Star Deng*

( Star Deng)

Technical Manager :

*Brave Wu*

(Brave Wu)

Authorized Signatory :

*Bovey Yang*

( Bovey Yang)



**TABLE OF CONTENTS**

|                                                                         |           |
|-------------------------------------------------------------------------|-----------|
| <b>1. TEST SUMMARY</b>                                                  | <b>5</b>  |
| 1.1 TEST FACTORY                                                        | 6         |
| 1.2 MEASUREMENT UNCERTAINTY                                             | 6         |
| <b>2. GENERAL INFORMATION</b>                                           | <b>7</b>  |
| 2.1 GENERAL DESCRIPTION OF EUT                                          | 7         |
| 2.2 DESCRIPTION OF TEST MODES                                           | 8         |
| 2.3 DESCRIPTION OF TEST SETUP                                           | 9         |
| 2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL                      | 9         |
| 2.5 MEASUREMENT INSTRUMENTS LIST                                        | 10        |
| <b>3. EMC EMISSION TEST</b>                                             | <b>12</b> |
| 3.1 CONDUCTED EMISSION MEASUREMENT                                      | 12        |
| 3.2 RADIATED EMISSION MEASUREMENT                                       | 14        |
| <b>4. EMC IMMUNITY TEST</b>                                             | <b>18</b> |
| 4.1 STANDARD COMPLIANCE/SERVRITY LEVEL/CRITERIA                         | 18        |
| 4.2 GENERAL PERFORMANCE CRITERIA                                        | 19        |
| 4.3 ELECTROSTATIC DISCHARGE IMMUNITY TEST (ESD)                         | 20        |
| 4.4 RADIATED, RADIO-FREQUENCY, ELECTROMAGNETIC FIELD IMMUNITY TEST (RS) | 24        |
| <b>APPENDIX 1-PHOTO TEST OF EUT</b>                                     | <b>27</b> |



**Revision History**

| Rev. | Issue Date   | Report No.    | Effect Page | Contents      |
|------|--------------|---------------|-------------|---------------|
| 00   | 04 Aug. 2025 | STS2507195E01 | ALL         | Initial Issue |
|      |              |               |             |               |



## 1. TEST SUMMARY

Test procedures according to the technical standards:

| EMC Emission                      |                                                           |                         |          |          |
|-----------------------------------|-----------------------------------------------------------|-------------------------|----------|----------|
| Standard                          | Test Item                                                 | Limit                   | Judgment | Remark   |
| EN 55032:2015/A11:2020            | Conducted Emission on AC And Telecom Port 150kHz to 30MHz | Class B                 | N/A      |          |
|                                   | Radiated Emissions                                        | Class B                 | PASS     | NOTE (1) |
| EMC Immunity                      |                                                           |                         |          |          |
| Section<br>EN 55035:2017/A11:2020 | Test Item                                                 | Performance<br>Criteria | Judgment | Remark   |
| EN IEC 61000-4-2:2025             | Electrostatic Discharge                                   | B                       | PASS     |          |
| EN IEC 61000-4-3:2020             | Continuous RF electromagnetic field disturbances          | A                       | PASS     |          |
| EN 61000-4-4:2012                 | Electrical fast transients/burst                          | B                       | N/A      |          |
| EN 61000-4-5:2014/A1:2017         | Surges                                                    | B                       | N/A      |          |
| EN IEC 61000-4-6:2023             | Continuous induced RF disturbances                        | A                       | N/A      |          |
| EN 61000-4-8:2010                 | Power Frequency Magnetic Field                            | A                       | N/A      |          |
| EN IEC 61000-4-11:2020            | Voltage dips and interruptions                            | B / C / C               | N/A      |          |

**Note:** (1) 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 1GHz, 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 6 GHz, whichever is less.

(2) "N/A" denotes test is not applicable in this Test Report.



## 1.1 TEST FACTORY

|                   |                                                                                                                                               |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Company Name:     | Shenzhen STS Test Services Co. Ltd.                                                                                                           |
| Address:          | 101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai Sub-District, Bao'an District, Shenzhen, Guang Dong, China |
| Telephone:        | +86-755 3688 6288                                                                                                                             |
| Fax:              | +86-755 3688 6277                                                                                                                             |
| Registration No.: | FCC test Firm Registration Number: 625569                                                                                                     |
|                   | IC test Firm Registration Number: 12108A                                                                                                      |
|                   | A2LA Certificate No.: 4338.01                                                                                                                 |

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95 %**.

### A. Conducted Measurement :

| Test Site | Method       | Measurement Frequency Range | U · (dB) | NOTE |
|-----------|--------------|-----------------------------|----------|------|
| STSC01    | CISPR 16-4-2 | 9KHz-150KHz                 | 2.32     |      |
|           |              | 150 KHz ~ 30MHz             | 3.06     |      |

### B. Radiated Measurement :

| Test Site | Method       | Measurement Frequency Range | U · (dB) | NOTE |
|-----------|--------------|-----------------------------|----------|------|
| STSC02    | CISPR 16-4-2 | 30MHz ~ 1000MHz             | 4.23     |      |
|           |              | 1GHz ~ 6GHz                 | 5.13     |      |



## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

|                     |                                                                                                                                                                                                                                                                                                                                           |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name        | Thermometer bottle                                                                                                                                                                                                                                                                                                                        |
| Brand Name          | N/A                                                                                                                                                                                                                                                                                                                                       |
| Model Name          | MO6872                                                                                                                                                                                                                                                                                                                                    |
| Series Model(s)     | N/A                                                                                                                                                                                                                                                                                                                                       |
| Model Difference    | N/A                                                                                                                                                                                                                                                                                                                                       |
| Product Description | <p>The EUT is a Thermometer bottle.</p> <p>ITE equipment having a primary function of either (or a combination of) entry, storage, display, retrieval, transmission, processing, switching, or control of data and/or telecommunication messages and which may be equipped with one or more ports typically for information transfer.</p> |
| Rating              | Input: DC 3V                                                                                                                                                                                                                                                                                                                              |
| Battery             | N/A                                                                                                                                                                                                                                                                                                                                       |
| Adapter             | N/A                                                                                                                                                                                                                                                                                                                                       |
| Hardware Version    | N/A                                                                                                                                                                                                                                                                                                                                       |
| Software Version    | N/A                                                                                                                                                                                                                                                                                                                                       |



## 2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

| Pretest Mode | Description |
|--------------|-------------|
| Mode 1       | Working     |

| For Radiated Test |             |
|-------------------|-------------|
| Final Test Mode   | Description |
| Mode 1            | Working     |

| For EMS Test    |             |
|-----------------|-------------|
| Final Test Mode | Description |
| Mode 1          | Working     |



## 2.3 DESCRIPTION OF TEST SETUP

EUT

## 2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Mfr/Brand | Model/Type No. | Note |
|------|-----------|-----------|----------------|------|
| N/A  | N/A       | N/A       | N/A            | N/A  |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|------|
| N/A  | N/A           | N/A          | N/A    | N/A  |

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



## 2.5 MEASUREMENT INSTRUMENTS LIST

### 2.5.1 RADIATED TEST SITE

| Kind of Equipment        | Manufacturer               | Type No.   | Serial No. | Last Calibration | Calibrated Until |
|--------------------------|----------------------------|------------|------------|------------------|------------------|
| EMI Test Receiver        | R&S                        | ESCI       | 101427     | 2024.9.23        | 2025.9.22        |
| Bi-log Antenna           | TESEQ                      | CBL6111D   | 45873      | 2024.9.28        | 2025.9.27        |
| Horn Antenna             | SCHWARZBECK                | BBHA 9120D | 9120D-1343 | 2024.9.28        | 2025.9.27        |
| Pre-amplifier(1G-26.5G)  | Agilent                    | HP8449B    | 3008A02383 | 2025.2.22        | 2026.2.21        |
| Pre-amplifier(0.1M-3GHz) | EM                         | EM330      | 060665     | 2025.2.22        | 2026.2.21        |
| Spectrum Analyzer        | Agilent                    | N9020A     | MY49100060 | 2024.9.23        | 2025.9.22        |
| RE Cable (9K-1G)         | N/A                        | R01        | N/A        | 2024.9.23        | 2025.9.22        |
| RE Cable (1G-26G)        | N/A                        | R02        | N/A        | 2024.9.23        | 2025.9.22        |
| Temperature & Humidity   | Mieo                       | HH660      | N/A        | 2024.9.26        | 2025.9.25        |
| SAC                      | ChengYu                    | 9*6*6      | N/A        | 2023.9.05        | 2026.9.06        |
| Testing Software         | EZ-EMC(Ver.STSLAB-03A1 RE) |            |            |                  |                  |

### 2.5.2 ESD

| Kind of Equipment      | Manufacturer | Type No. | Serial No. | Last Calibration | Calibrated Until |
|------------------------|--------------|----------|------------|------------------|------------------|
| ESD TEST GENERATOR     | TESEQ        | NSG438   | 1175       | 2024.10.14       | 2025.10.13       |
| Temperature & Humidity | N/A          | WS1066   | N/A        | 2025.2.25        | 2026.2.24        |



## 2.5.3 RS

| Kind of Equipment                    | Manufacturer    | Type No.          | Serial No. | Last Calibration | Calibrated Until |
|--------------------------------------|-----------------|-------------------|------------|------------------|------------------|
| Power Meter                          | Agilent         | E4419B            | QB43312265 | 2024.9.23        | 2025.9.22        |
| Power Sensor                         | hp              | E9300A            | US39210170 | 2024.9.23        | 2025.9.22        |
| Power Sensor                         | hp              | E9300A            | US39210476 | 2024.9.23        | 2025.9.22        |
| Signal Generator                     | Agilent         | N5181A            | MY56144718 | 2024.9.23        | 2025.9.22        |
| Power Amplifier                      | MICOTOP         | MPA-80-1000-250   | MPA1711489 | 2024.9.23        | 2025.9.22        |
| Power Amplifier                      | MICOTOP         | MPA-1000-6000-100 | MPA1904132 | 2024.9.23        | 2025.9.22        |
| RS Test Antenna (80-1GHz)            | SCHWARZBECK     | VULP 9118E        | 000999     | N/A              | N/A              |
| RS Test Antenna (1G-10GHz)           | SCHWARZBECK     | STLP 9149         | 000648     | N/A              | N/A              |
| Universal Radio Communication Tester | R&S             | CMU200            | 116337     | 2025.2.22        | 2026.2.21        |
| Audio Analyzer                       | R&S             | UPL               | 100689     | 2025.2.22        | 2026.2.21        |
| Audio Breakthrough Shielding Box     | SKET            | SB_ABT/C35        | N/A        | N/A              | N/A              |
| Ear Simulator                        | SKET            | AE_ABT/C35        | N/A        | N/A              | N/A              |
| Mouth Simulator                      | SKET            | AM_ABT/C35        | N/A        | N/A              | N/A              |
| 1KHz Standard Source                 | SKET            | MSC_ABT/C35       | N/A        | 2024.9.24        | 2025.9.23        |
| Field Probe                          | Narda           | EP601             | 611WX80261 | 2025.2.26        | 2026.2.25        |
| Temperature & Humidity               | Anymetre        | JR900             | 240686     | 2024.10.15       | 2025.10.14       |
| Testing Software                     | EMC-S V1.4.0.53 |                   |            |                  |                  |



### 3. EMC EMISSION TEST

#### 3.1 CONDUCTED EMISSION MEASUREMENT

##### 3.1.1 REQUIREMENTS FOR CONDUCTED EMISSIONS FROM THE AC MAINS POWER

###### PORTS OF CLASS A EQUIPMENT

| FREQUENCY (MHz) | Coupling device | Detector type / bandwidth | Class A limits dB( $\mu$ V) |
|-----------------|-----------------|---------------------------|-----------------------------|
| 0.15 - 0.5      | AMN             | Quasi Peak / 9 kHz        | 79                          |
| 0.50 - 30       |                 |                           | 63                          |
| 0.15 - 0.5      | AMN             | Average / 9 kHz           | 66                          |
| 0.50 - 30       |                 |                           | 60                          |

##### 3.1.2 REQUIREMENTS FOR CONDUCTED EMISSIONS FROM THE AC MAINS POWER

###### PORTS OF CLASS B EQUIPMENT

| FREQUENCY (MHz) | Coupling device | Detector type / bandwidth | Class B limits dB( $\mu$ V) |
|-----------------|-----------------|---------------------------|-----------------------------|
| 0.15 - 0.5      | AMN             | Quasi Peak / 9 kHz        | 66 - 56*                    |
| 0.50 - 5        |                 |                           | 56                          |
| 5 - 30          |                 |                           | 60                          |
| 0.15 - 0.5      | AMN             | Average / 9 kHz           | 56 - 46*                    |
| 0.50 - 5        |                 |                           | 46                          |
| 5 - 30          |                 |                           | 50                          |

Note:

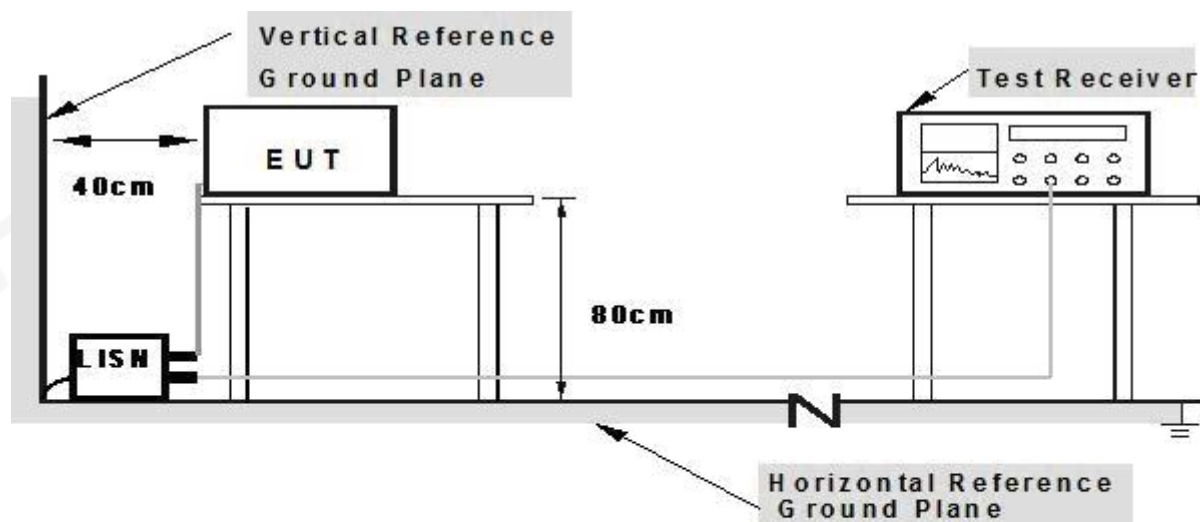
- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

#### 3.1.3 TEST PROCEDURE

- a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT 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.
- b. 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.

- c. 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.
- d. For the actual test configuration, please refer to the related Item –EUT Test Photos.

### 3.1.4 TEST SETUP



**Note: 1.Support units were connected to second LISN.**

**2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

### 3.1.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

### 3.1.6 TEST RESULTS

|               |      |                    |     |
|---------------|------|--------------------|-----|
| Temperature:  | --°C | Relative Humidity: | --% |
| Phase:        | N/A  | Test Mode:         | N/A |
| Test Voltage: | N/A  | Test Date:         | N/A |

Note: test is not applicable.



## 3.2 RADIATED EMISSION MEASUREMENT

### 3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

| FREQUENCY<br>(MHz) | Distance<br>(m) | Detector type/<br>bandwidth | Class A | Class B |
|--------------------|-----------------|-----------------------------|---------|---------|
|                    |                 |                             | dBuV/m  | dBuV/m  |
| 30 - 230           | 3               | Quasi peak/<br>120 kHz      | 50      | 40      |
| 230 - 1000         | 3               | Quasi peak/<br>120 kHz      | 57      | 47      |
| 1000 - 3000        | 3               | Peak /1 MHz                 | 76      | 70      |
| 3000 - 6000        | 3               | Peak /1 MHz                 | 80      | 74      |
| 1000 - 3000        | 3               | AV/1 MHz                    | 56      | 50      |
| 3000 - 6000        | 3               | AV/1 MHz                    | 60      | 54      |

Notes:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m)=20log Emission level (uV/m).

### 3.2.2 TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. EUT as the center to the edge of the auxiliary device, the distance from the maximum edge to the center of the antenna is 3 meter.
- c. The height of antenna is varied from 1 meter to 4 meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meter and the rotatable table was turned from 0 degrees to 360 degree to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

### 3.2.3 TEST SETUP

#### (A) Radiated Emission Test Set-Up Frequency Below 1 GHz

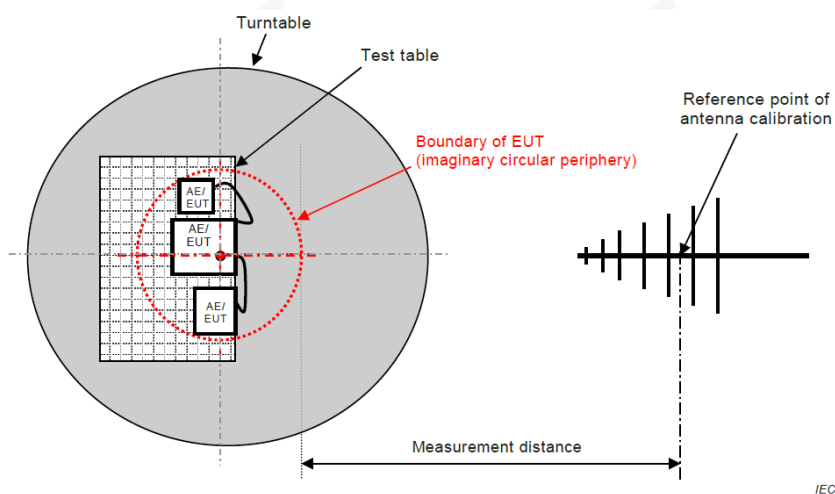


Figure C.1 – Measurement distance

#### (B) Radiated Emission Test Set-Up Frequency Above 1GHz

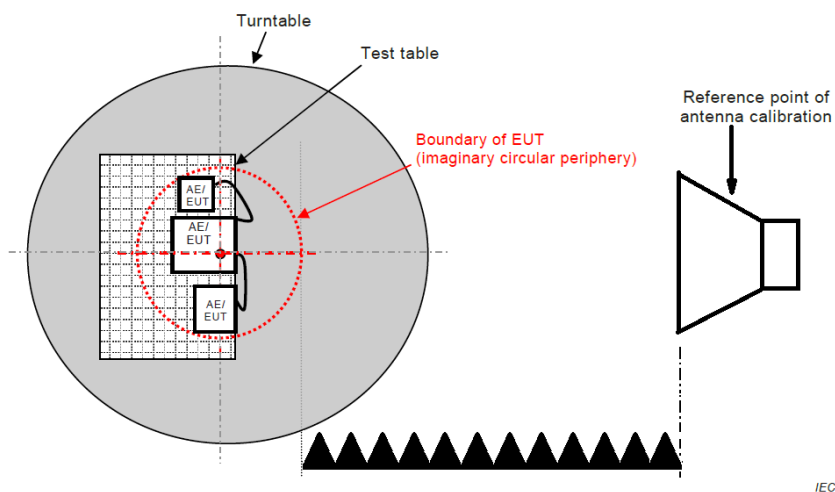


Figure C.1 – Measurement distance

### 3.2.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

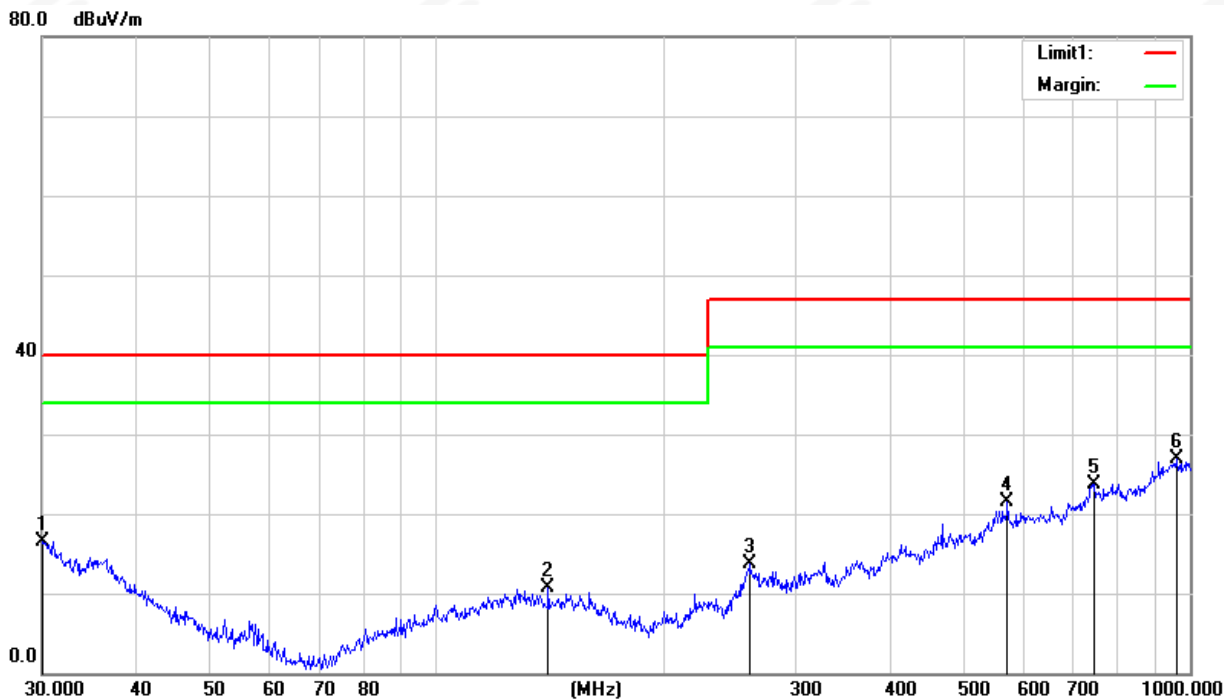
**3.2.5 TEST RESULTS (30MHz-1000MHz)**

|               |                    |                    |            |
|---------------|--------------------|--------------------|------------|
| Temperature:  | 26.1℃              | Relative Humidity: | 53%        |
| Phase:        | Horizontal         | Test Mode:         | Mode 1     |
| Test Voltage: | DC 3V from battery | Test Date:         | 2025.07.30 |

| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Results (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|-------------|------------------|----------------|-------------|----------|
| 1   | 30.1054         | 27.66          | -11.09      | 16.57            | 40.00          | -23.43      | QP       |
| 2   | 140.8351        | 29.32          | -18.69      | 10.63            | 40.00          | -29.37      | QP       |
| 3   | 261.0583        | 28.51          | -14.83      | 13.68            | 47.00          | -33.32      | QP       |
| 4   | 572.6144        | 30.08          | -8.52       | 21.56            | 47.00          | -25.44      | QP       |
| 5   | 747.4825        | 28.56          | -4.79       | 23.77            | 47.00          | -23.23      | QP       |
| 6   | 958.7943        | 28.84          | -1.92       | 26.92            | 47.00          | -20.08      | QP       |

Remark:

1. All readings are Quasi-Peak.
2. Margin = Result (Result = Reading + Factor) – Limit.
3. Factor = Cable Loss + Antenna Factor – Amplifier Gain.



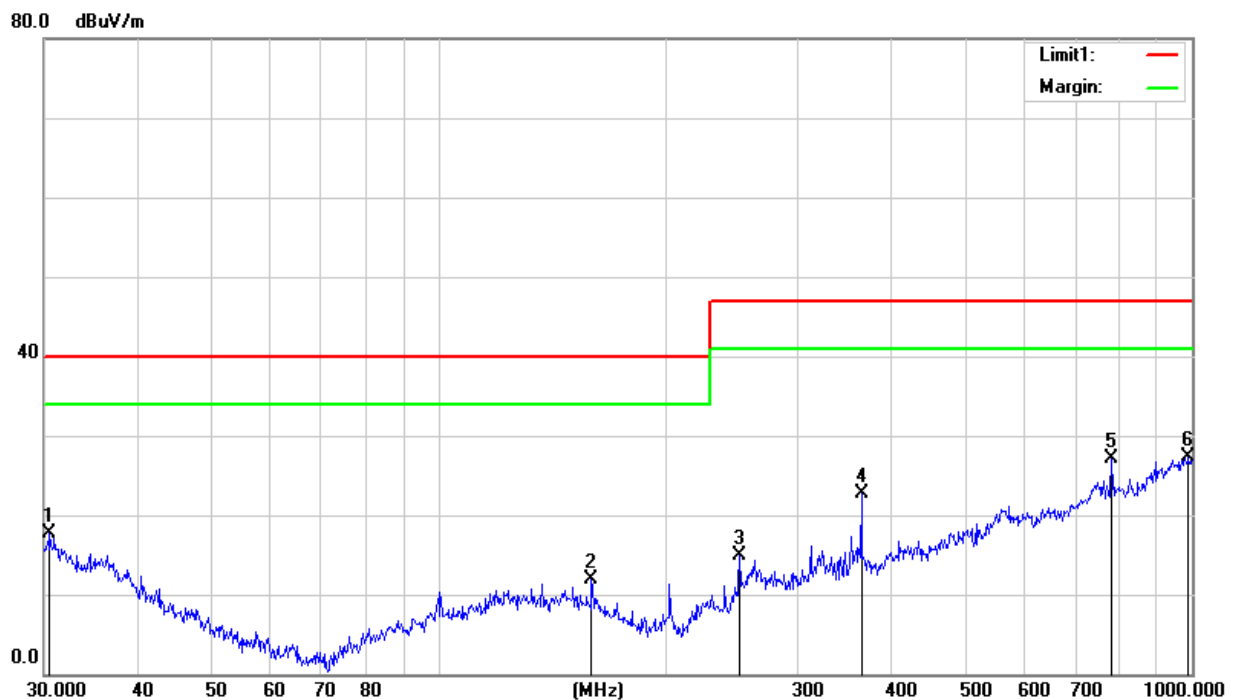


|               |                    |                    |            |
|---------------|--------------------|--------------------|------------|
| Temperature:  | 26.1 °C            | Relative Humidity: | 53%        |
| Phase:        | Vertical           | Test Mode:         | Mode 1     |
| Test Voltage: | DC 3V from battery | Test Date:         | 2025.07.30 |

| No. | Frequency (MHz) | Reading (dBUV) | Factor (dB) | Results (dBUV/m) | Limit (dBUV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|-------------|------------------|----------------|-------------|----------|
| 1   | 30.5306         | 29.01          | -11.32      | 17.69            | 40.00          | -22.31      | QP       |
| 2   | 159.7844        | 30.49          | -18.66      | 11.83            | 40.00          | -28.17      | QP       |
| 3   | 251.1804        | 31.93          | -17.10      | 14.83            | 47.00          | -32.17      | QP       |
| 4   | 364.2595        | 37.07          | -14.29      | 22.78            | 47.00          | -24.22      | QP       |
| 5   | 782.3453        | 32.38          | -5.36       | 27.02            | 47.00          | -19.98      | QP       |
| 6   | 989.5355        | 29.54          | -2.14       | 27.40            | 47.00          | -19.60      | QP       |

## Remark:

1. All readings are Quasi-Peak.
2. Margin = Result (Result = Reading + Factor) – Limit.
3. Factor = Cable Loss + Antenna Factor – Amplifier Gain.





## 4. EMC IMMUNITY TEST

### 4.1 STANDARD COMPLIANCE/SERVIRITY LEVEL/CRITERIA

| Tests<br>Standard No.      | TEST SPECIFICATION                                                                         | Test Mode<br>Test Ports | Perform.<br>Criteria |
|----------------------------|--------------------------------------------------------------------------------------------|-------------------------|----------------------|
| 1. ESD<br>IEC/EN 61000-4-2 | 8KV air discharge<br>4KV contact discharge                                                 | Direct Mode             | B                    |
|                            | 4KV HCP discharge<br>4KV VCP discharge                                                     | Indirect Mode           | B                    |
| 2. RS<br>IEC/EN 61000-4-3  | 80 MHz - 1000<br>MHz, 1800MHz, 2600MHz, 3500MHz, 50<br>00MHz, 1000Hz, 80%,<br>AM modulated | Enclosure               | A                    |



## 4.2 GENERAL PERFORMANCE CRITERIA

According to **EN 55035** standard, the general performance criteria are as follows:

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Criterion A</b> | The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.                                                                                                                                                                                                                                 |
| <b>Criterion B</b> | <p>During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.</p> <p>After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.</p> <p>If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p> |
| <b>Criterion C</b> | <p>Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed.</p> <p>Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

### 4.2.1 GENERAL PERFORMANCE CRITERIA TEST SETUP

The EUT tested system was configured as the statements of **2.3** unless otherwise a special operating condition is specified in the following during the testing.



### 4.3 ELECTROSTATIC DISCHARGE IMMUNITY TEST (ESD)

#### 4.3.1 TEST SPECIFICATION

|                       |                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Basic Standard:       | EN IEC 61000-4-2                                                                                                                    |
| Discharge Impedance:  | 330 ohm / 150 pF                                                                                                                    |
| Required Performance: | B                                                                                                                                   |
| Discharge Voltage:    | Air Discharge : 2KV/4KV/8KV (Direct)<br>Contact Discharge : 4KV (Direct/Indirect)                                                   |
| Polarity:             | Positive & Negative                                                                                                                 |
| Number of Discharge:  | Air Discharge: at least 10 times on each point<br>Contact Discharge: at least 10 times on each point<br>20 times at each test point |
| Discharge Mode:       | Single Discharge                                                                                                                    |
| Discharge Period:     | 1 second minimum                                                                                                                    |

#### 4.3.2 TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

- a. Electrostatic discharges were applied only to those points and surfaces of the EUT that are accessible to users during normal operation  
The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.

The time interval between two successive single discharges was at least 1 second.

The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meter from the EUT.

Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.

Air discharges were applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator was removed from the EUT and re-triggered for a new single discharge. The test was repeated until all discharges were complete.

Vertical Coupling Plane (VCP):

The coupling plane of dimensions 0.5m x 0.5m, is placed parallel to and positioned at a distance 0.1m from the EUT, with the Discharge Electrode touching the coupling plane. The four faces of the EUT will be performed with electrostatic discharge.

Horizontal Coupling Plane (HCP):

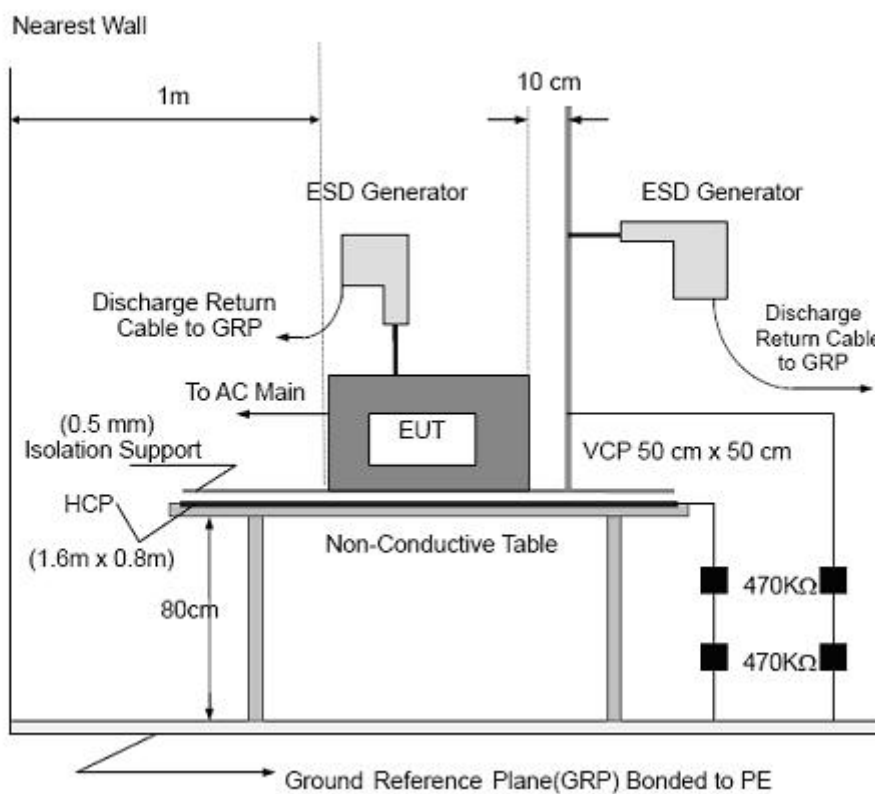
The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge.

- b. Air discharges at insulation surfaces of the EUT.

It was at least ten single discharges with positive and negative at the same selected point.

### 4.3.3 TEST SETUP



Note:

#### TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meter high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940kΩ total impedance. The equipment under test was installed in a representative system as described in section 7 of EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of 0.8-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

#### FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1 meter thickness. The GRP was consisted of a sheet of aluminum that is at least 0.25mm thick, and extended at least 0.5 meter from the EUT on all sides.

**4.3.4 TEST RESULTS**

|               |                    |                    |        |
|---------------|--------------------|--------------------|--------|
| Temperature:  | 24.7°C             | Relative Humidity: | 54%    |
| Test Date:    | 2025.07.31         | Test Mode:         | Mode 1 |
| Test Voltage: | DC 3V from battery |                    |        |

| Discharge Level | Polarity | Test Points | Contact Discharge | Air Discharge | Criterion | Test Result |
|-----------------|----------|-------------|-------------------|---------------|-----------|-------------|
| 4               | +/-      | VCP/HCP     | Note              | N/A           | B         | A           |
| 2,4,8           | +/-      | Red Dot     | N/A               | Note          | B         | A           |

Note: The EUT function was correct during the test  
Red Dot —Air Discharged  
Green Dot —Contact Discharged

The Photo for Discharge Points of EUT





#### 4.4 RADIATED, RADIO-FREQUENCY, ELECTROMAGNETIC FIELD IMMUNITY TEST (RS)

##### 4.4.1 TEST SPECIFICATION

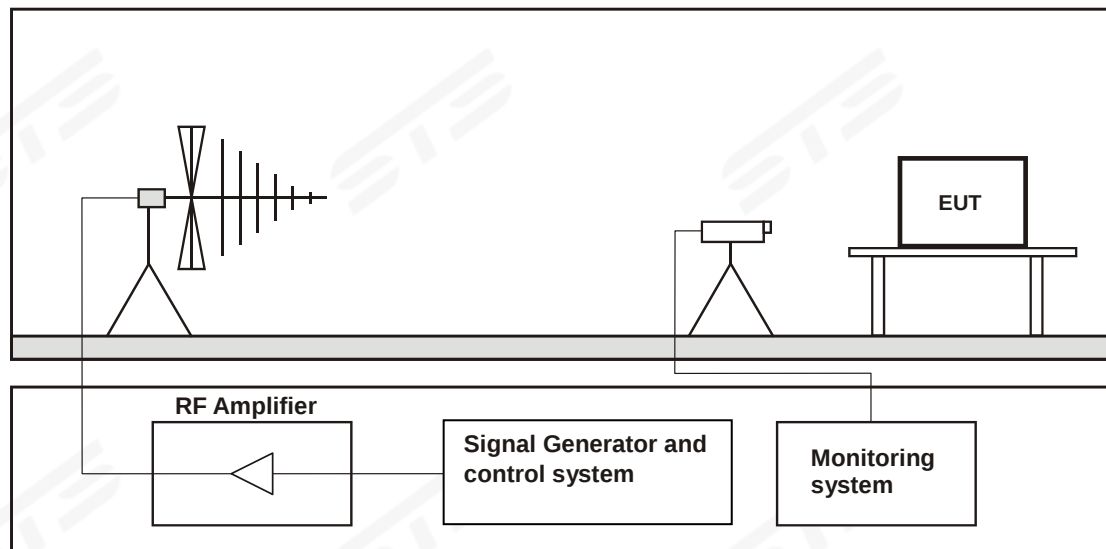
|                                                 |                                                                                   |
|-------------------------------------------------|-----------------------------------------------------------------------------------|
| Basic Standard:                                 | EN IEC 61000-4-3                                                                  |
| Required Performance:                           | A                                                                                 |
| Test Frequency Range:                           | 80 MHz-1000 MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz                               |
| Primary Function Of Telephony Test Frequencies: | 80 MHz; 120 MHz; 160 MHz; 230 MHz; 434 MHz; 460 MHz; 600 MHz; 863 MHz and 900 MHz |
| Field Strength:                                 | 3 V/m                                                                             |
| Modulation:                                     | 1kHz Sine Wave, 80%, AM Modulation                                                |
| Frequency Step:                                 | 1 % of fundamental                                                                |
| Polarity of Antenna:                            | Horizontal and Vertical                                                           |
| Test Distance:                                  | 3 m                                                                               |
| Antenna Height:                                 | 1.5 m                                                                             |
| Dwell Time:                                     | at least 3 seconds                                                                |

##### 4.4.2 TEST PROCEDURE

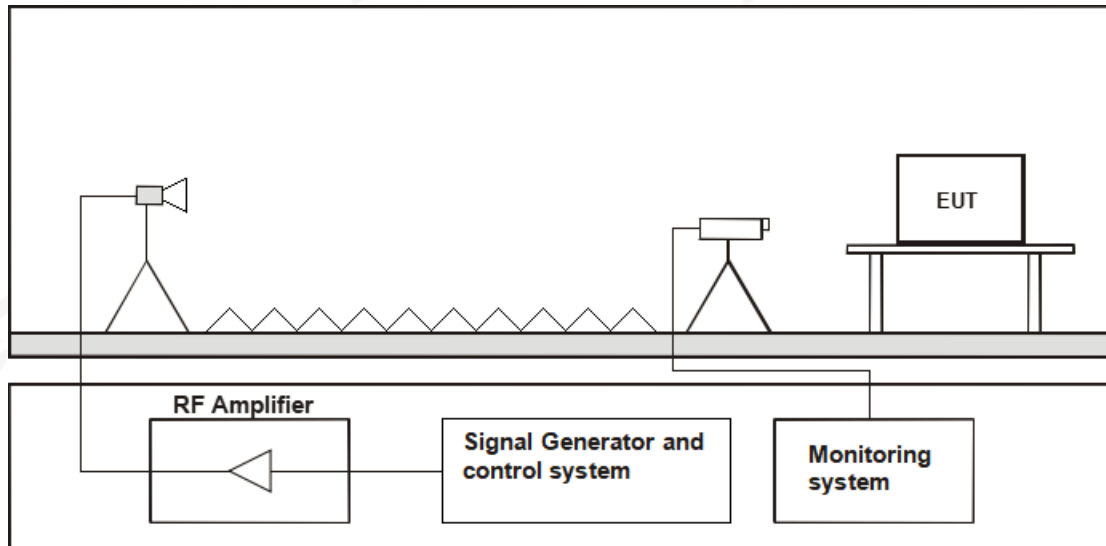
- The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
- The frequency range is swept from 80 MHz to 1000 MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz, with the signal 80% amplitude modulated with a 1kHz sine-wave. The rate of sweep did not exceed 3s, where the frequency range is swept incrementally, the step size was 1% of preceding frequency value.
- The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

#### 4.4.3 TEST SETUP

##### (A) RS Test Set-Up Frequency Below 1GHz



##### (B) RS Test Set-Up Frequency Above 1GHz



Note:

##### TABLE-TOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

##### FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.



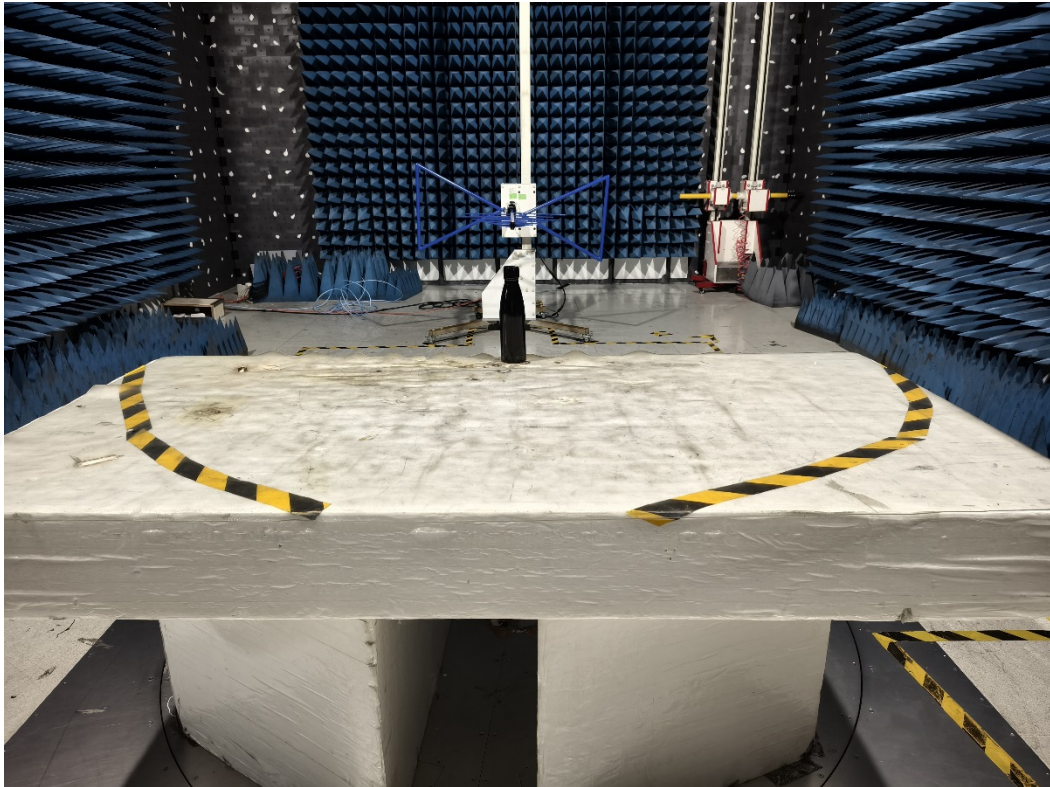
## 4.4.4 TEST RESULTS

|               |                    |                    |        |
|---------------|--------------------|--------------------|--------|
| Temperature:  | 24.7°C             | Relative Humidity: | 54%    |
| Test Date:    | 2025.07.31         | Test Mode:         | Mode 1 |
| Test Voltage: | DC 3V from battery |                    |        |

| Frequency Range (MHz) | RF Field Position | R.F. Field Strength                        | Azimuth | Perform. Criteria | Results | Judgement |
|-----------------------|-------------------|--------------------------------------------|---------|-------------------|---------|-----------|
| 80MHz - 1000MHz       | H / V             | 3 V/m (rms)<br>AM Modulated<br>1000Hz, 80% | Front   | A                 | A       | PASS      |
|                       |                   |                                            | Rear    |                   |         |           |
|                       |                   |                                            | Left    |                   |         |           |
|                       |                   |                                            | Right   |                   |         |           |
| 1800MHz               | H / V             | 3 V/m (rms)<br>AM Modulated<br>1000Hz, 80% | Front   | A                 | A       | PASS      |
|                       |                   |                                            | Rear    |                   |         |           |
|                       |                   |                                            | Left    |                   |         |           |
|                       |                   |                                            | Right   |                   |         |           |
| 2600MHz               | H / V             | 3 V/m (rms)<br>AM Modulated<br>1000Hz, 80% | Front   | A                 | A       | PASS      |
|                       |                   |                                            | Rear    |                   |         |           |
|                       |                   |                                            | Left    |                   |         |           |
|                       |                   |                                            | Right   |                   |         |           |
| 3500MHz               | H / V             | 3 V/m (rms)<br>AM Modulated<br>1000Hz, 80% | Front   | A                 | A       | PASS      |
|                       |                   |                                            | Rear    |                   |         |           |
|                       |                   |                                            | Left    |                   |         |           |
|                       |                   |                                            | Right   |                   |         |           |
| 5000MHz               | H / V             | 3 V/m (rms)<br>AM Modulated<br>1000Hz, 80% | Front   | A                 | A       | PASS      |
|                       |                   |                                            | Rear    |                   |         |           |
|                       |                   |                                            | Left    |                   |         |           |
|                       |                   |                                            | Right   |                   |         |           |

**APPENDIX 1-PHOTO TEST OF EUT**

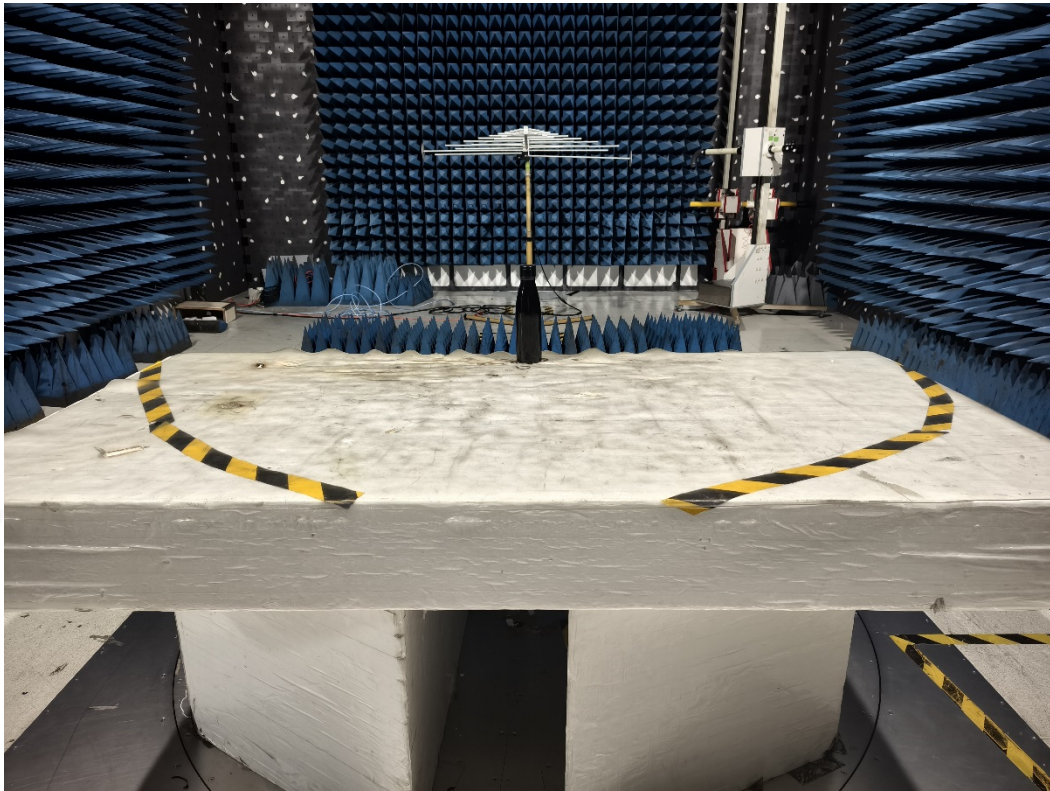
RE (30 - 1000 MHz )



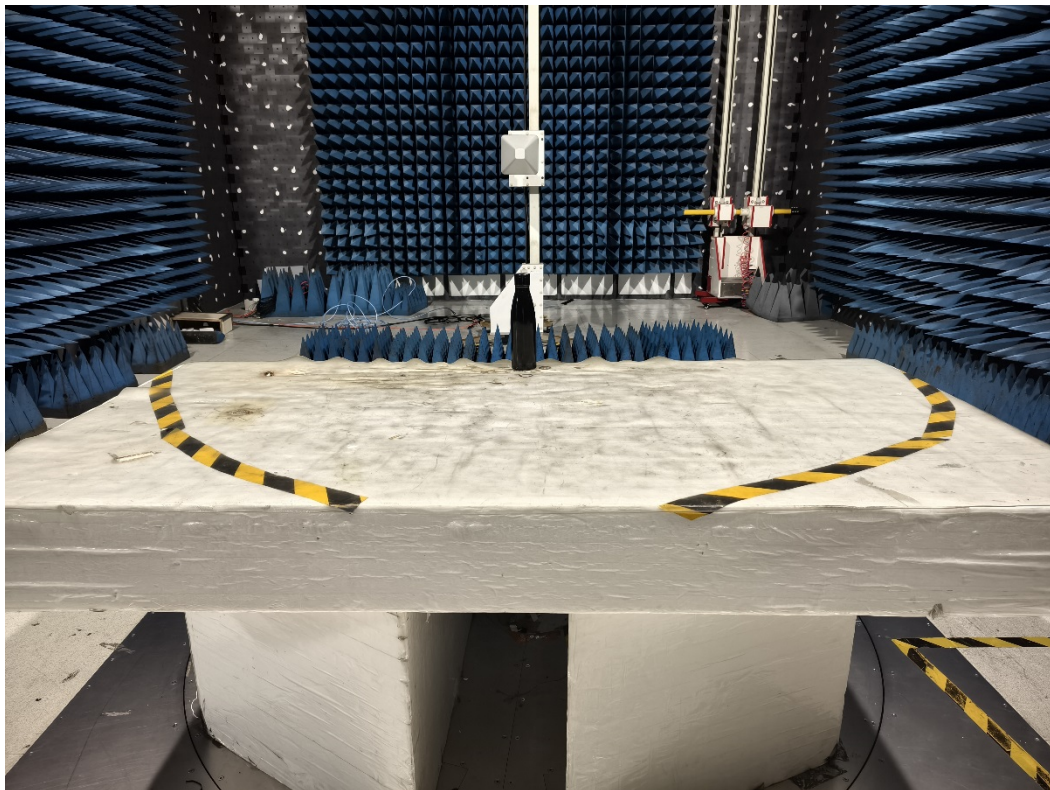
ESD



RS (80 - 1000 MHz)



RS (1000 - 5000 MHz)



※※※※※END OF THE REPORT※※※※※