

# RADIO PERFORMANCE TEST REPORT

**Test Report No.** : OT-24O-RWD-034  
**Reception No.** : 2407002258  
**Applicant** : omnic&s.Inc.  
**Address** : #302, 288 Digital-ro, Guro-gu, Daerung Post Tower 1cha, Seoul, 08390, South Korea  
**Manufacturer** : omnic&s.Inc.  
**Address** : #302, 288 Digital-ro, Guro-gu, Daerung Post Tower 1cha, Seoul, 08390, South Korea  
**Type of Equipment** : EEG measurement & brain training wireless headset  
**FCC ID.** : 2APFA-OCW-H30  
**Model Name** : OCW-H30  
**Multiple Model Name** : N/A  
**Serial number** : N/A  
**Total page of Report** : 24 pages (including this page)  
**Date of Incoming** : October 15, 2024  
**Date of issue** : October 23, 2024

## SUMMARY

The equipment complies with the regulation; **FCC PART 15 SUBPART C Section 15.247**

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

This report is not correlated with the "KS Q ISO/IEC 17025 and KOLAS accreditation" of Korean Laboratory Accreditation Scheme.





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**CONTENTS****PAGE**

|                                                                          |           |
|--------------------------------------------------------------------------|-----------|
| <b>1. VERIFICATION OF COMPLIANCE .....</b>                               | <b>5</b>  |
| <b>2. TEST SUMMARY .....</b>                                             | <b>6</b>  |
| 2.1 TEST ITEMS AND RESULTS .....                                         | 6         |
| 2.2 ADDITIONS, DEVIATIONS, EXCLUSIONS FROM STANDARDS .....               | 6         |
| 2.3 RELATED SUBMITTAL(S) / GRANT(S) .....                                | 6         |
| 2.4 PURPOSE OF THE TEST .....                                            | 6         |
| 2.5 TEST METHODOLOGY .....                                               | 6         |
| 2.6 TEST FACILITY .....                                                  | 6         |
| <b>3. GENERAL INFORMATION .....</b>                                      | <b>7</b>  |
| 3.1 PRODUCT DESCRIPTION .....                                            | 7         |
| 3.2 ALTERNATIVE TYPE(S)/MODEL(S); ALSO COVERED BY THIS TEST REPORT ..... | 7         |
| <b>4. EUT MODIFICATIONS .....</b>                                        | <b>7</b>  |
| <b>5. SYSTEM TEST CONFIGURATION .....</b>                                | <b>8</b>  |
| 5.1 JUSTIFICATION .....                                                  | 8         |
| 5.2 PERIPHERAL EQUIPMENT .....                                           | 8         |
| 5.3 MODE OF OPERATION DURING THE TEST .....                              | 9         |
| 5.4 CONFIGURATION OF TEST SYSTEM .....                                   | 10        |
| 5.5 ANTENNA REQUIREMENT .....                                            | 10        |
| <b>6. PRELIMINARY TEST .....</b>                                         | <b>10</b> |
| 6.1 AC POWER LINE CONDUCTED EMISSIONS TESTS .....                        | 10        |
| 6.2 GENERAL RADIATED EMISSIONS TESTS .....                               | 10        |
| <b>7. MIMIMUM 6 DB BANDWIDTH .....</b>                                   | <b>11</b> |
| 7.1 OPERATING ENVIRONMENT .....                                          | 11        |
| 7.2 TEST SET-UP .....                                                    | 11        |
| 7.3 MEASUREMENT UNCERTAINTY .....                                        | 11        |
| 7.4 TEST DATE .....                                                      | 11        |
| 7.5 TEST DATA .....                                                      | 11        |
| <b>8. MAXIMUM CONDUCTED(PEAK) OUTPUT POWER .....</b>                     | <b>12</b> |
| 8.1 OPERATING ENVIRONMENT .....                                          | 12        |
| 8.2 TEST SET-UP .....                                                    | 12        |
| 8.3 MEASUREMENT UNCERTAINTY .....                                        | 12        |
| 8.4 TEST DATE .....                                                      | 12        |

|                                                                |           |
|----------------------------------------------------------------|-----------|
| 8.5 TEST DATA.....                                             | 12        |
| <b>9. 100 KHZ BANDWIDTH OUTSIDE THE FREQUENCY BAND.....</b>    | <b>13</b> |
| 9.1 OPERATING ENVIRONMENT .....                                | 13        |
| 9.2 TEST SET-UP FOR CONDUCTED MEASUREMENT .....                | 13        |
| 9.3 TEST SET-UP FOR RADIATED MEASUREMENT.....                  | 13        |
| 9.4 MEASUREMENT UNCERTAINTY .....                              | 13        |
| 9.5 TEST DATE .....                                            | 13        |
| 9.6 TEST DATA FOR CONDUCTED EMISSION .....                     | 13        |
| 9.7 TEST DATA FOR RADIATED EMISSION.....                       | 14        |
| 9.7.1 Radiated Emission which fall in the Restricted Band..... | 14        |
| 9.7.2 Spurious & Harmonic Radiated Emission.....               | 15        |
| <b>10. POWER SPECTRAL DENSITY .....</b>                        | <b>16</b> |
| 10.1 OPERATING ENVIRONMENT .....                               | 16        |
| 10.2 TEST SET-UP .....                                         | 16        |
| 10.3 MEASUREMENT UNCERTAINTY .....                             | 16        |
| 10.4 TEST DATE .....                                           | 16        |
| 10.5 TEST DATA.....                                            | 16        |
| <b>11. RADIATED EMISSION TEST .....</b>                        | <b>17</b> |
| 11.1 OPERATING ENVIRONMENT .....                               | 17        |
| 11.2 TEST SET-UP .....                                         | 17        |
| 11.3 MEASUREMENT UNCERTAINTY .....                             | 18        |
| 11.4 TEST DATE .....                                           | 18        |
| 11.5 TEST DATA FOR 30 MHz ~ 1 000 MHz .....                    | 19        |
| 11.6 TEST DATA FOR BELOW 30 MHz .....                          | 20        |
| 11.7 TEST DATA FOR ABOVE 1 GHz .....                           | 20        |
| <b>12. CONDUCTED EMISSION TEST .....</b>                       | <b>21</b> |
| 12.1 OPERATING ENVIRONMENT .....                               | 21        |
| 12.2 TEST SET-UP .....                                         | 21        |
| 12.3 MEASUREMENT UNCERTAINTY .....                             | 21        |
| 12.4 TEST DATE .....                                           | 21        |
| 12.5 TEST DATA.....                                            | 22        |
| <b>13. LIST OF TEST EQUIPMENT .....</b>                        | <b>24</b> |

※ Please refer to the Annex section for All test plots

**Revision History**

| Rev. No. | Issue Report No. | Issued Date      | Revisions       | Section Affected |
|----------|------------------|------------------|-----------------|------------------|
| 0        | OT-24O-RWD-034   | October 23, 2024 | Initial Release | All              |
|          |                  |                  |                 |                  |
|          |                  |                  |                 |                  |

## 1. VERIFICATION OF COMPLIANCE

Applicant : omnic&s.Inc.  
 Address : #302, 288 Digital-ro, Guro-gu, Daerung Post Tower 1cha, Seoul, 08390, South Korea  
 Contact Person : BYUNGCHAN, KIM / Dept Manager  
 Telephone No. : +82-70-4991-9718  
 FCC ID : 2APFA-OCW-H30  
 Model Name : OCW-H30  
 Brand Name : omniFIT  
 Serial Number : N/A  
 Date : October 23, 2024

|                                                      |                                                                                    |
|------------------------------------------------------|------------------------------------------------------------------------------------|
| EQUIPMENT CLASS                                      | DTS – DIGITAL TRNSMISSION SYSTEM                                                   |
| E.U.T. DESCRIPTION                                   | EEG measurement & brain training wireless headset                                  |
| THIS REPORT CONCERNS                                 | Original Grant                                                                     |
| MEASUREMENT PROCEDURES                               | ANSI C63.10: 2013                                                                  |
| TYPE OF EQUIPMENT TESTED                             | Pre-Production                                                                     |
| KIND OF EQUIPMENT AUTHORIZATION REQUESTED            | Certification                                                                      |
| EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)   | FCC PART 15 SUBPART C Section 15.247<br>KDB 558074 D01 15.247 Meas Guidance v05r02 |
| Modifications on the Equipment to Achieve Compliance | None                                                                               |
| Final Test was Conducted On                          | 3 m, Semi Anechoic Chamber                                                         |

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

## 2. TEST SUMMARY

### 2.1 Test items and results

| SECTION        | TEST ITEMS                                          | RESULTS                |
|----------------|-----------------------------------------------------|------------------------|
| 15.247 (a) (2) | Minimum 6 dB Bandwidth                              | Met the Limit / PASS   |
| 15.247 (b) (3) | Maximum Conducted Output Power                      | Met the Limit / PASS   |
| 15.247 (d)     | 100 kHz Bandwidth Outside the Frequency Band        | Met the Limit / PASS   |
| 15.247 (d)     | Radiated Emission which fall in the Restricted Band | Met the Limit / PASS   |
| 15.247 (e)     | Power Spectral Density                              | Met the Limit / PASS   |
| 15.209         | Radiated Emission Limits                            | Met the Limit / PASS   |
| 15.207         | Conducted Limits                                    | Met the Limit / PASS   |
| 15.203         | Antenna Requirement                                 | Met requirement / PASS |

### 2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

### 2.3 Related Submittal(s) / Grant(s)

Original submittal only

### 2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in FCC PART 15 SUBPART C Section 15.247.

### 2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10: 2013. Radiated testing was performed at a distance of 3 m from EUT to the antenna.

### 2.6 Test Facility

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea.

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-20122/ C-14617/ G-10666/ T-11842

ISED (Innovation, Science and Economic Development Canada) – Registration No. Site# 3736A-3

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation NO. KT085

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

### 3. GENERAL INFORMATION

#### 3.1 Product Description

The omnic&s.Inc., Model OCW-H30 (referred to as the EUT in this report) is a EEG measurement & brain training wireless headset. The product specification described herein was obtained from product data sheet or user's manual.

|                                                       |                                                   |
|-------------------------------------------------------|---------------------------------------------------|
| DEVICE TYPE                                           | EEG measurement & brain training wireless headset |
| OPERATING FREQUENCY                                   | 2 402 MHz ~ 2 480 MHz                             |
| MODULATION TYPE                                       | GFSK                                              |
| RF OUTPUT POWER                                       | -1.09 dBm                                         |
| ANTENNA TYPE                                          | Ceramic Chip Antenna                              |
| ANTENNA GAIN                                          | 1 dBi                                             |
| List of each Osc. or crystal<br>Freq.(Freq. >= 1 MHz) | 32.768 kHz, 38.4 MHz                              |
| RATED SUPPLY VOLTAGE                                  | DC 3.70 V                                         |

#### 3.2 Alternative type(s)/model(s); also covered by this test report.

-. None

### 4. EUT MODIFICATIONS

-. None

## 5. SYSTEM TEST CONFIGURATION

### 5.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

| DEVICE TYPE | MANUFACTURER | MODEL/PART NUMBER | FCC ID |
|-------------|--------------|-------------------|--------|
| Main Board  | omnic&s.Inc. | D3P455R1          | N/A    |
| Battery     | N/A          | N/A               | N/A    |

### 5.2 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

| Model         | Manufacturer | Description                                             | Connected to |
|---------------|--------------|---------------------------------------------------------|--------------|
| OCW-H30       | omnic&s.Inc. | EEG measurement & brain training wireless headset (EUT) | -            |
| NT300V5A-S55S | SAMSUNG      | Notebook PC                                             | EUT          |

### 5.3 Mode of operation during the test

#### -. Channel List (Bluetooth LE)

| Channel | Frequency[MHz] | Channel | Frequency[MHz] | Channel | Frequency[MHz] |
|---------|----------------|---------|----------------|---------|----------------|
| 0       | 2 402.00       | 14      | 2 430.00       | 28      | 2 458.00       |
| 1       | 2 404.00       | 15      | 2 432.00       | 29      | 2 460.00       |
| 2       | 2 406.00       | 16      | 2 434.00       | 30      | 2 462.00       |
| 3       | 2 408.00       | 17      | 2 436.00       | 31      | 2 464.00       |
| 4       | 2 410.00       | 18      | 2 438.00       | 32      | 2 466.00       |
| 5       | 2 412.00       | 19      | 2 440.00       | 33      | 2 468.00       |
| 6       | 2 414.00       | 20      | 2 442.00       | 34      | 2 470.00       |
| 7       | 2 416.00       | 21      | 2 444.00       | 35      | 2 472.00       |
| 8       | 2 418.00       | 22      | 2 446.00       | 36      | 2 474.00       |
| 9       | 2 420.00       | 23      | 2 448.00       | 37      | 2 476.00       |
| 10      | 2 422.00       | 24      | 2 450.00       | 38      | 2 478.00       |
| 11      | 2 424.00       | 25      | 2 452.00       | 39      | 2 480.00       |
| 12      | 2 426.00       | 26      | 2 454.00       |         |                |
| 13      | 2 428.00       | 27      | 2 456.00       |         |                |

#### -. Duty Cycle

| Mode         | Tx On Time<br>[ ms ] | Tx Off Time<br>[ ms ] | Duty Cycle<br>[ % ] | Correction Factor<br>[ dB ] |
|--------------|----------------------|-----------------------|---------------------|-----------------------------|
| Bluetooth LE | 0.385                | 0.241                 | 61.51               | 2.11                        |

Note – Duty Cycle : (Tx On Time / (Tx On Time + Tx Off Time)) \* 100

Correction Factor :  $10 * \log(1 / (\text{Duty Cycle} / 100))$

## 5.4 Configuration of Test System

**Line Conducted Test:** The EUT was connected to adaptor and the power of adaptor was connected to LISN. All supporting equipment were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions.

**Radiated Emission Test:** Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2013 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meter Semi Anechoic Chamber.

The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.

## 5.5 Antenna Requirement

For intentional device, according to section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

### Antenna Construction:

The antenna of the EUT is a Ceramic Chip Antenna on the main board in the EUT, so no consideration of replacement by the user.

## 6. PRELIMINARY TEST

### 6.1 AC Power line Conducted Emissions Tests

During Preliminary Test, the following operating mode was investigated.

| Operation Mode | The Worse operating condition (Please check one only) |
|----------------|-------------------------------------------------------|
| Charging Mode  | X                                                     |

### 6.2 General Radiated Emissions Tests

During Preliminary Test, the following operating mode was investigated.

| Operation Mode    | The Worse operating condition (Please check one only) |
|-------------------|-------------------------------------------------------|
| Transmitting Mode | X                                                     |

## 7. MINIMUM 6 dB BANDWIDTH

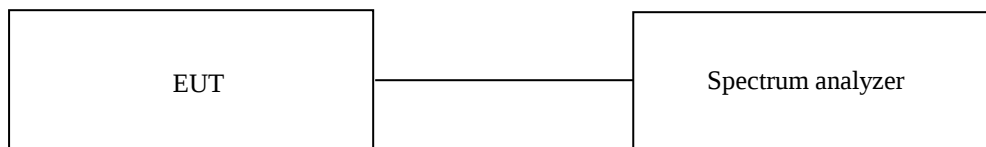
### 7.1 Operating environment

Temperature : 24 °C

Relative humidity : 52 % R.H.

### 7.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz, and peak detection was used. The 6 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 6 dB.



### 7.3 Measurement uncertainty

The uncertainty for Minimum 6 dB bandwidth is  $\pm 5\,555.70$  Hz

### 7.4 Test date

October 15, 2024 ~ October 16, 2024

### 7.5 Test data

-. Test Result : Pass

| CHANNEL | FREQUENCY<br>(MHz) | 6 dB Bandwidth<br>(kHz) | LIMIT<br>(kHz) | Margin<br>(kHz) |
|---------|--------------------|-------------------------|----------------|-----------------|
| Low     | 2 402.00           | 759.30                  | 500.00         | 259.30          |
| Middle  | 2 440.00           | 764.16                  | 500.00         | 264.16          |
| High    | 2 480.00           | 759.30                  | 500.00         | 259.30          |

Remark. Margin = Measured Value – Limit

## 8. MAXIMUM CONDUCTED(PEAK) OUTPUT POWER

### 8.1 Operating environment

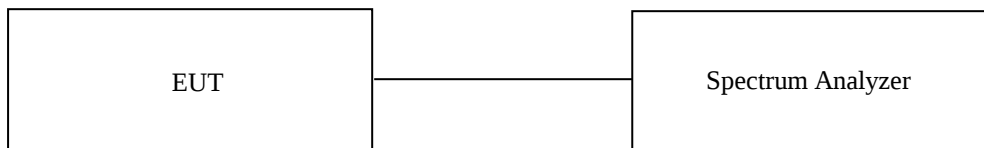
Temperature : 24 °C

Relative humidity : 52 % R.H.

### 8.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer.

The resolution bandwidth is set to 1 MHz, the video bandwidth is set to 3 times the resolution bandwidth.



### 8.3 Measurement uncertainty

The uncertainty for Maximum conducted(Peak) output power is  $\pm 1.20$  dBm

### 8.4 Test date

October 15, 2024 ~ October 16, 2024

### 8.5 Test data

-. Test Result : Pass

-. Duty Cycle : 61.51 %

| CHANNEL | FREQUENCY<br>(MHz) | MEASURED<br>VALUE (dBm) | LIMIT<br>(dBm) | MARGIN<br>(dB) |
|---------|--------------------|-------------------------|----------------|----------------|
| LOW     | 2 402.00           | -3.11                   | 30.00          | 33.11          |
| MIDDLE  | 2 440.00           | -1.43                   | 30.00          | 31.43          |
| HIGH    | 2 480.00           | -1.09                   | 30.00          | 31.09          |

Remark. Margin = Limit – Measured Value

## 9. 100 kHz BANDWIDTH OUTSIDE THE FREQUENCY BAND

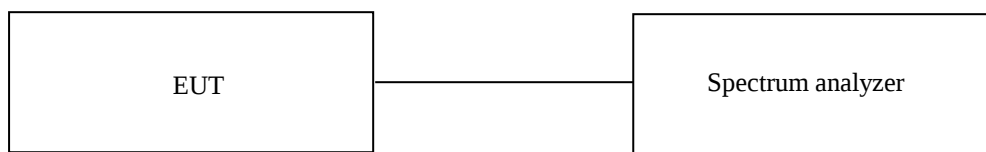
### 9.1 Operating environment

Temperature : 24 °C

Relative humidity : 52 % R.H.

### 9.2 Test set-up for conducted measurement

The antenna output of the EUT was connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz and video bandwidth is set to 300 kHz, and peak detection was used.



### 9.3 Test set-up for radiated measurement

The radiated emissions measurements were performed on the 3 m semi anechoic chamber. The EUT was placed on turntable approximately 1.5 m above the ground plane.

The frequency spectrum from 30 MHz to 26.5 GHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.

### 9.4 Measurement uncertainty

The uncertainty for 100 kHz bandwidth outside the frequency band is  $\pm 1.26$  dBm

### 9.5 Test date

October 15, 2024 ~ October 16, 2024

### 9.6 Test data for conducted emission

Please refer to the Annex

## 9.7 Test data for radiated emission

### 9.7.1 Radiated Emission which fall in the Restricted Band

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode  
1 MHz and RMS Detector for Average Mode
- Video bandwidth : 3 MHz for Peak and Average Mode
- Measurement distance : 3 m
- Duty Cycle : 61.51 %
- Result : PASSED

| Frequency (MHz)                   | Reading (dBμV) | Detector Mode | Ant. Pol. (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | AMP Factor (dB) | ATT (dB) | Duty Factor (dB) | Total (dBμV/m) | Limits (dBμV/m) | Margin (dB) |
|-----------------------------------|----------------|---------------|-----------------|--------------------|-----------------|-----------------|----------|------------------|----------------|-----------------|-------------|
| <b>Test Data for Low Channel</b>  |                |               |                 |                    |                 |                 |          |                  |                |                 |             |
| 2 365.65                          | 53.87          | Peak          | H               | 27.64              | 4.63            | 41.74           | 6.11     | -                | 50.51          | 74.00           | 23.49       |
| 2 330.54                          | 42.07          | Average       | H               | 27.78              | 4.67            | 41.74           | 6.11     | 2.11             | 41.00          | 54.00           | 13.00       |
| 2 327.14                          | 57.01          | Peak          | V               | 27.79              | 4.67            | 41.74           | 6.11     | -                | 53.84          | 74.00           | 20.16       |
| 2 335.23                          | 41.80          | Average       | V               | 27.76              | 4.63            | 41.74           | 6.09     | 2.11             | 40.65          | 54.00           | 13.35       |
| <b>Test Data for High Channel</b> |                |               |                 |                    |                 |                 |          |                  |                |                 |             |
| 2 483.53                          | 61.11          | Peak          | H               | 27.40              | 4.83            | 41.73           | 6.13     | -                | 57.74          | 74.00           | 16.26       |
| 2 483.53                          | 49.60          | Average       | H               | 27.40              | 4.83            | 41.73           | 6.13     | 2.11             | 48.34          | 54.00           | 5.66        |
| 2 483.55                          | 58.66          | Peak          | V               | 27.40              | 4.83            | 41.73           | 6.13     | -                | 55.29          | 74.00           | 18.71       |
| 2 483.55                          | 46.60          | Average       | V               | 27.40              | 4.83            | 41.73           | 6.13     | 2.11             | 45.34          | 54.00           | 8.66        |

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss + ATT + Duty Factor – AMP Gain

### 9.7.2 Spurious & Harmonic Radiated Emission

- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode for the emissions fall in restricted band,  
1 MHz and RMS Detector for Average Mode for the emissions fall in restricted band  
100 kHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 61.51 %
- Result : PASSED

| Frequency (MHz)                     | Reading (dBμV) | Detector Mode | Ant. Pol. (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | AMP Factor (dB) | Duty Factor (dB) | Total (dBμV/m) | Limits (dBμV/m) | Margin (dB) |
|-------------------------------------|----------------|---------------|-----------------|--------------------|-----------------|-----------------|------------------|----------------|-----------------|-------------|
| <b>Test Data for Low Channel</b>    |                |               |                 |                    |                 |                 |                  |                |                 |             |
| 4 804.00                            | 50.93          | Peak          | H               | 31.20              | 6.60            | 41.29           | -                | 47.44          | 74.00           | 26.56       |
| 4 804.00                            | 38.72          | Average       | H               | 31.20              | 6.60            | 41.29           | 2.11             | 37.34          | 54.00           | 16.66       |
| 4 804.00                            | 53.77          | Peak          | V               | 31.20              | 6.60            | 41.29           | -                | 50.28          | 74.00           | 23.72       |
| 4 804.00                            | 42.11          | Average       | V               | 31.20              | 6.60            | 41.29           | 2.11             | 40.73          | 54.00           | 13.27       |
| <b>Test Data for Middle Channel</b> |                |               |                 |                    |                 |                 |                  |                |                 |             |
| 4 880.00                            | 50.80          | Peak          | H               | 31.26              | 6.70            | 41.27           | -                | 47.49          | 74.00           | 26.51       |
| 4 880.00                            | 40.10          | Average       | H               | 31.26              | 6.70            | 41.27           | 2.11             | 38.90          | 54.00           | 15.10       |
| 4 880.00                            | 55.61          | Peak          | V               | 31.26              | 6.70            | 41.27           | -                | 52.30          | 74.00           | 21.70       |
| 4 880.00                            | 47.33          | Average       | V               | 31.26              | 6.70            | 41.27           | 2.11             | 46.13          | 54.00           | 7.87        |
| <b>Test Data for High Channel</b>   |                |               |                 |                    |                 |                 |                  |                |                 |             |
| 4 960.00                            | 53.30          | Peak          | H               | 31.54              | 6.71            | 41.25           | -                | 50.30          | 74.00           | 23.70       |
| 4 960.00                            | 44.71          | Average       | H               | 31.54              | 6.71            | 41.25           | 2.11             | 43.82          | 54.00           | 10.18       |
| 4 960.00                            | 57.95          | Peak          | V               | 31.54              | 6.71            | 41.25           | -                | 54.95          | 74.00           | 19.05       |
| 4 960.00                            | 50.48          | Average       | V               | 31.54              | 6.71            | 41.25           | 2.11             | 49.59          | 54.00           | 4.41        |

Remark: "H": Horizontal, "V": Vertical

$$\text{Margin (dB)} = \text{Limits (dB}\mu\text{V/m)} - \text{Total Level (dB}\mu\text{V/m)}$$

$$\text{Total Level} = \text{Reading} + \text{Antenna Factor} + \text{Cable Loss} + \text{Duty Factor} - \text{AMP Factor}$$

## 10. POWER SPECTRAL DENSITY

### 10.1 Operating environment

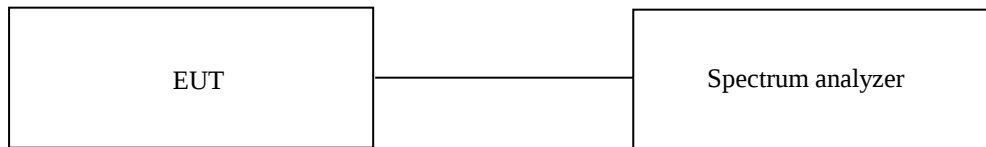
Temperature : 24 °C

Relative humidity : 52 % R.H.

### 10.2 Test set-up

The antenna output of the EUT was connected to the spectrum analyzer.

The resolution bandwidth is set to  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$  , the video bandwidth is set to 3 times the resolution bandwidth.



### 10.3 Measurement uncertainty

The uncertainty for Power spectral density is  $\pm 1.20 \text{ dB}$

### 10.4 Test date

October 15, 2024 ~ October 16, 2024

### 10.5 Test data

-. Test Result : Pass

-. Duty Cycle : 61.51 %

| CHANNEL | FREQUENCY<br>(MHz) | MEASURED<br>VALUE (dBm) | LIMIT<br>(dBm / 3 kHz) | MARGIN<br>(dB) |
|---------|--------------------|-------------------------|------------------------|----------------|
| LOW     | 2 402.00           | -18.97                  | 8.00                   | 26.97          |
| MIDDLE  | 2 440.00           | -17.33                  | 8.00                   | 25.33          |
| HIGH    | 2 480.00           | -16.95                  | 8.00                   | 24.95          |

Remark. Margin = Limit – Measured Value

## 11. RADIATED EMISSION TEST

### 11.1 Operating environment

Temperature : 24 °C

Relative humidity : 52 % R.H.

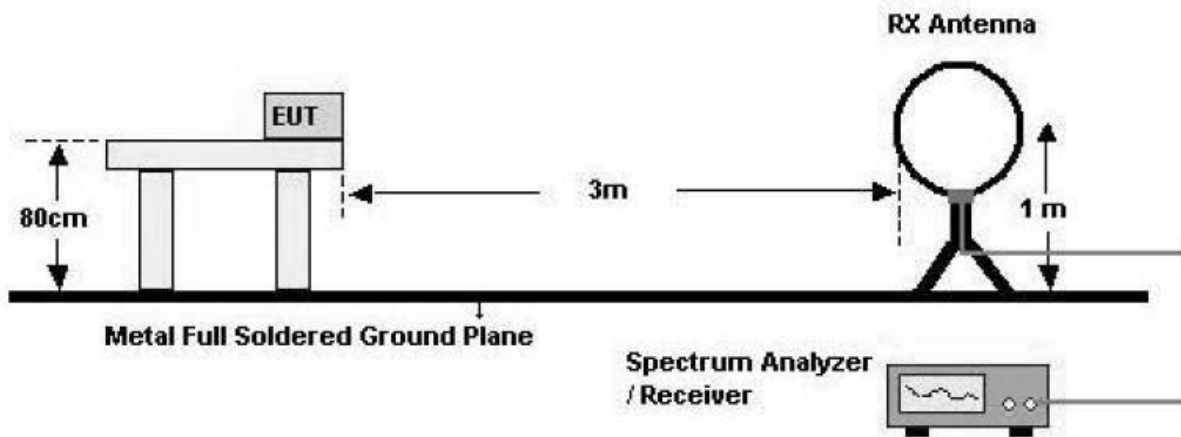
### 11.2 Test set-up

The radiated emissions measurements were on the 3 m semi anechoic chamber. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

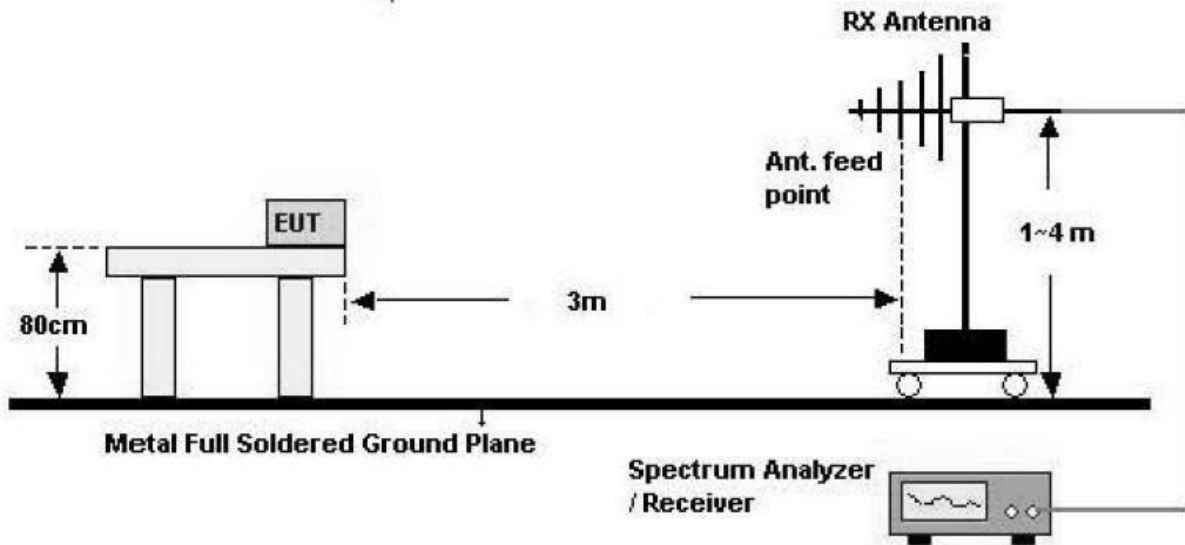
The frequency spectrum from 30 MHz to 26.5 GHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

#### - Test Configuration

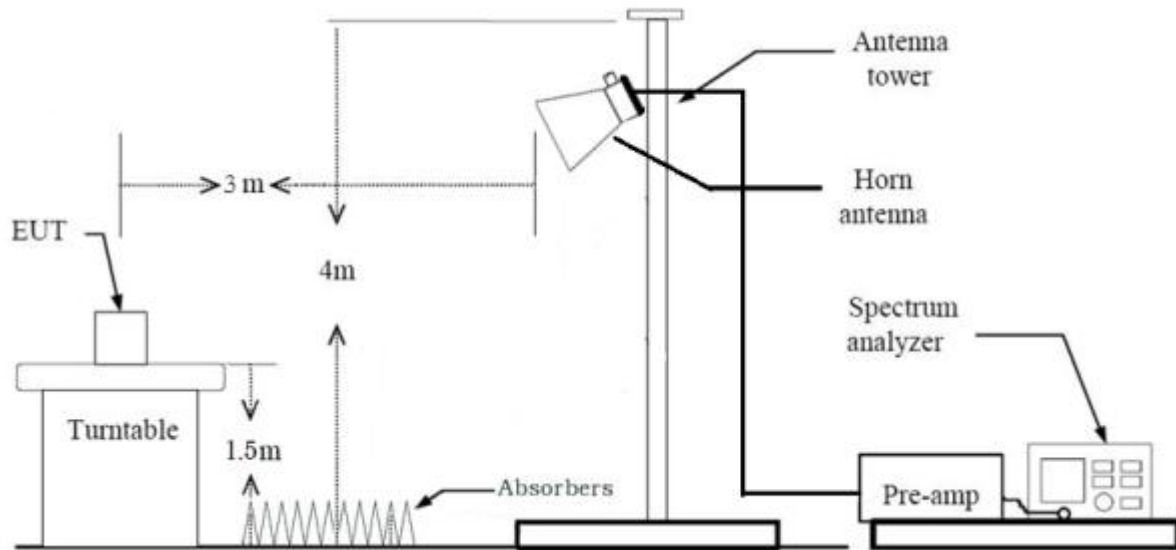
##### 1. Below 30 MHz



## 2. 30 MHz - 1 GHz



## 3. Above 1 GHz



### 11.3 Measurement uncertainty

The uncertainty for Radiated emission test is  $\pm 3.30$  dB below 30 MHz

The uncertainty for Radiated emission test is  $\pm 4.42$  dB in 30 MHz ~ 1GHz

The uncertainty for Radiated emission test is  $\pm 5.10$  dB above 1 GHz

### 11.4 Test date

October 15, 2024 ~ October 16, 2024

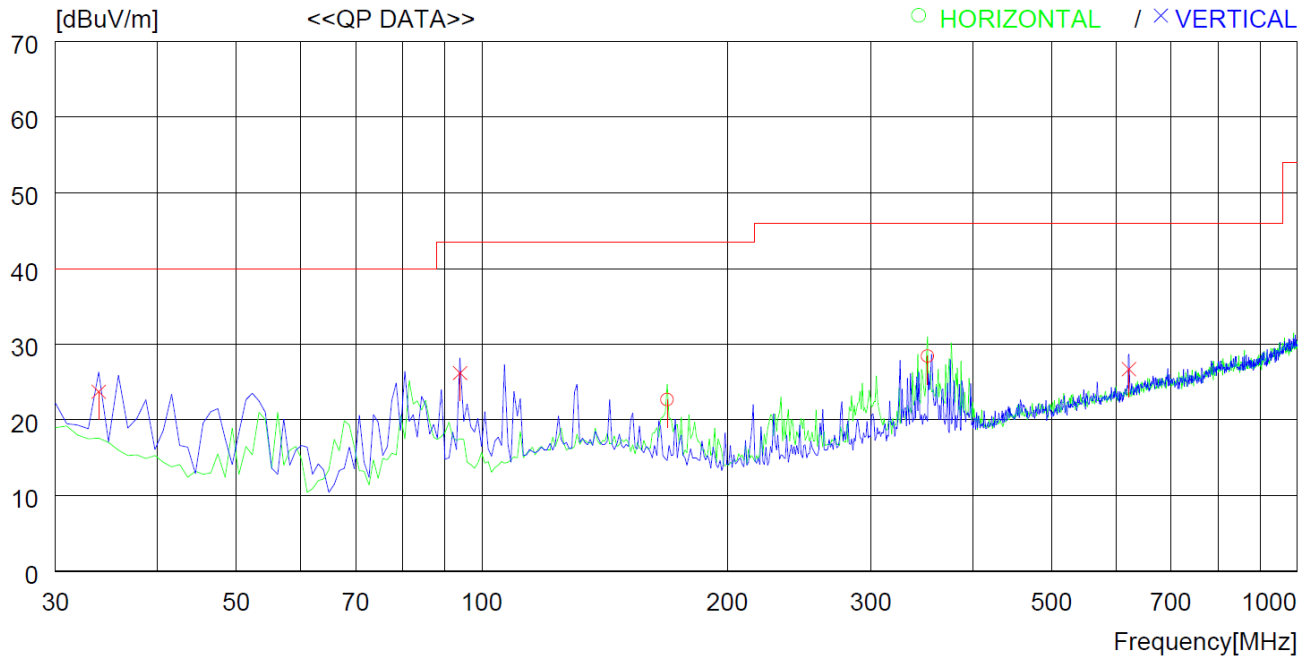
### 11.5 Test data for 30 MHz ~ 1 000 MHz

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.247

Result : PASSED

EUT : EEG measurement &amp; brain training wireless headset

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)



| No.                    | FREQ    | READING | ANT    | LOSS | GAIN | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|---------|---------|--------|------|------|----------|----------|--------|---------|-------|
|                        | [MHz]   | [dBuV]  | FACTOR | [dB] | [dB] | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |         |         |        |      |      |          |          |        |         |       |
| 1                      | 168.710 | 36.8    | 17.2   | 1.7  | 33.0 | 22.7     | 43.5     | 20.8   | 300     | 146   |
| 2                      | 352.040 | 39.2    | 19.8   | 2.4  | 33.0 | 28.4     | 46.0     | 17.6   | 200     | 0     |
| ----- Vertical -----   |         |         |        |      |      |          |          |        |         |       |
| 3                      | 33.880  | 36.2    | 19.7   | 0.8  | 33.0 | 23.7     | 40.0     | 16.3   | 200     | 359   |
| 4                      | 94.020  | 43.6    | 14.4   | 1.2  | 33.0 | 26.2     | 43.5     | 17.3   | 200     | 28    |
| 5                      | 621.697 | 32.2    | 24.6   | 3.2  | 33.3 | 26.7     | 46.0     | 19.3   | 100     | 0     |

### 11.6 Test data for Below 30 MHz

- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m
- . Operating mode : Transmitting mode

| Frequency (MHz)                                                                | Reading (dBμV) | Ant. Pol. (H/V) | Ant. Height (m) | Angle (°) | Ant. Factor (dB/m) | Cable Loss | Emission Level(dBμV/m) | Limits (dBμV/m) | Margin (dB) |
|--------------------------------------------------------------------------------|----------------|-----------------|-----------------|-----------|--------------------|------------|------------------------|-----------------|-------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                |                 |                 |           |                    |            |                        |                 |             |

### 11.7 Test data for above 1 GHz

- . Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode  
1 MHz and RMS Detector for Average Mode
- . Video bandwidth : 3 MHz for Peak and Average Mode
- . Frequency range : 1 GHz ~ 26.5 GHz
- . Measurement distance : 3 m
- . Operating mode : Transmitting mode

| Frequency (MHz)                                                                | Reading (dBμV) | Ant. Pol. (H/V) | Ant. Height (m) | Angle (°) | Ant. Factor (dB/m) | Cable Loss | Emission Level(dBμV/m) | Limits (dBμV/m) | Margin (dB) |
|--------------------------------------------------------------------------------|----------------|-----------------|-----------------|-----------|--------------------|------------|------------------------|-----------------|-------------|
| Emission from the EUT more than 20 dB below the limit in each frequency range. |                |                 |                 |           |                    |            |                        |                 |             |

## 12. CONDUCTED EMISSION TEST

### 12.1 Operating environment

Temperature : 24 °C

Relative humidity : 52 % R.H.

### 12.2 Test set-up

The EUT was placed on a wooden table, 0.8 m height above the floor. Power was fed to the EUT through a  $50\ \Omega$  /  $50\ \mu\text{H}$  +  $5\ \Omega$  Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

### 12.3 Measurement uncertainty

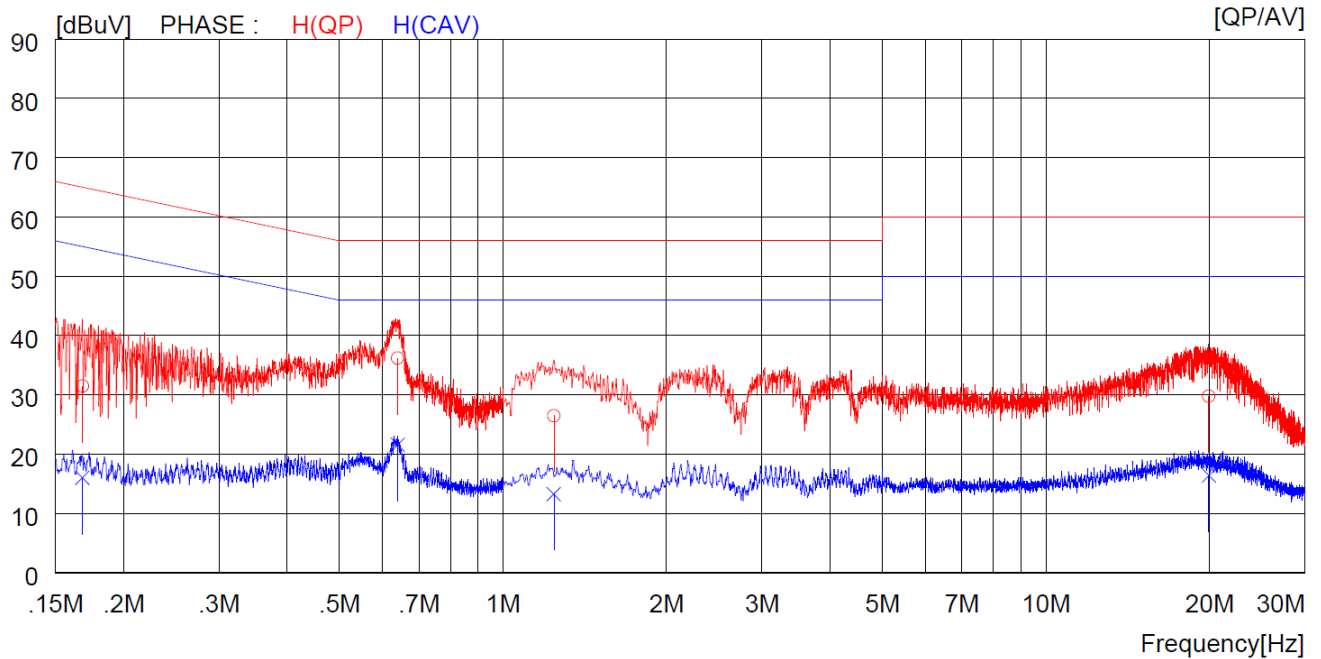
The uncertainty for Conducted emission test is  $\pm 1.26\ \text{dB}$

### 12.4 Test date

October 15, 2024 ~ October 16, 2024

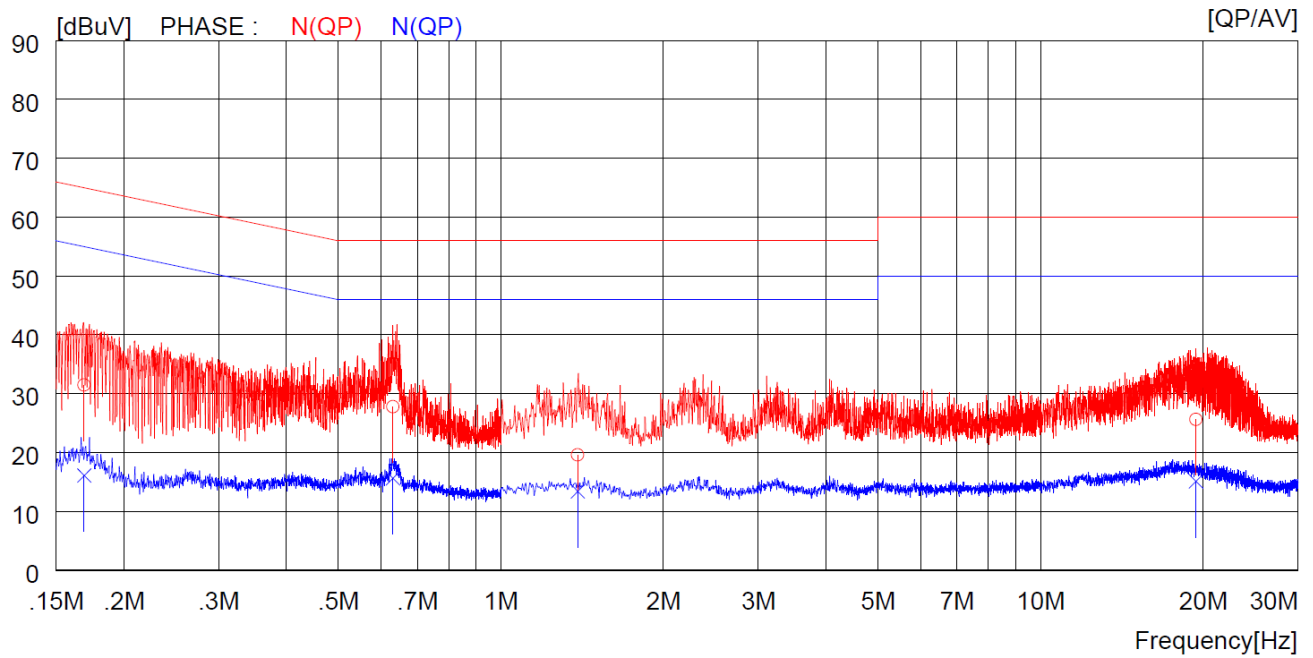
## 12.5 Test data

- Resolution bandwidth : 9 kHz
- Frequency range : 0.15 MHz ~ 30 MHz
- Tested Line : HOT LINE



| NO | FREQ<br>[MHz] | READING      |              | C.FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE   |
|----|---------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                  | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |         |
| 1  | 0.16800       | 21.4         | ----         | 10.1             | 31.5         | ----         | 65.1         | ----         | 33.6         | ----         | H (QP)  |
| 2  | 0.64000       | 26.1         | ----         | 10.1             | 36.2         | ----         | 56.0         | ----         | 19.8         | ----         | H (QP)  |
| 3  | 1.24000       | 16.4         | ----         | 10.1             | 26.5         | ----         | 56.0         | ----         | 29.5         | ----         | H (QP)  |
| 4  | 19.95000      | 19.2         | ----         | 10.6             | 29.8         | ----         | 60.0         | ----         | 30.2         | ----         | H (QP)  |
| 5  | 0.16800       | ----         | 5.9          | 10.1             | ----         | 16.0         | ----         | 55.1         | ----         | 39.1         | H (CAV) |
| 6  | 0.64000       | ----         | 11.5         | 10.1             | ----         | 21.6         | ----         | 46.0         | ----         | 24.4         | H (CAV) |
| 7  | 1.24000       | ----         | 3.2          | 10.1             | ----         | 13.3         | ----         | 46.0         | ----         | 32.7         | H (CAV) |
| 8  | 19.95000      | ----         | 5.8          | 10.6             | ----         | 16.4         | ----         | 50.0         | ----         | 33.6         | H (CAV) |

-. Tested Line : NEUTRAL LINE



| NO | FREQ<br>[MHz] | READING      |              | C.FACTOR<br>[dB] | RESULT       |              | LIMIT        |              | MARGIN       |              | PHASE   |
|----|---------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------|
|    |               | QP<br>[dBuV] | AV<br>[dBuV] |                  | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] | QP<br>[dBuV] | AV<br>[dBuV] |         |
| 1  | 0.16900       | 21.4         | ----         | 10.1             | 31.5         | ----         | 65.0         | ----         | 33.5         | ----         | N (QP)  |
| 2  | 0.63100       | 17.7         | ----         | 10.1             | 27.8         | ----         | 56.0         | ----         | 28.2         | ----         | N (QP)  |
| 3  | 1.38800       | 9.5          | ----         | 10.1             | 19.6         | ----         | 56.0         | ----         | 36.4         | ----         | N (QP)  |
| 4  | 19.40000      | 15.0         | ----         | 10.6             | 25.6         | ----         | 60.0         | ----         | 34.4         | ----         | N (QP)  |
| 5  | 0.16900       | ----         | 6.0          | 10.1             | ----         | 16.1         | ----         | 55.0         | ----         | 38.9         | N (CAV) |
| 6  | 0.63100       | ----         | 5.5          | 10.1             | ----         | 15.6         | ----         | 46.0         | ----         | 30.4         | N (CAV) |
| 7  | 1.38800       | ----         | 3.3          | 10.1             | ----         | 13.4         | ----         | 46.0         | ----         | 32.6         | N (CAV) |
| 8  | 19.40000      | ----         | 4.5          | 10.6             | ----         | 15.1         | ----         | 50.0         | ----         | 34.9         | N (CAV) |

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.

### 13. LIST OF TEST EQUIPMENT

| Model Number | Manufacturer      | Description                  | Serial Number | Last Cal.(Interval) |
|--------------|-------------------|------------------------------|---------------|---------------------|
| FSV40-N      | Rohde & Schwarz   | Signal Analyzer              | 101651        | Jan. 15, 2024 (1Y)  |
| ESCI         | Rohde & Schwarz   | Test Receiver                | 101013        | Mar. 12, 2024 (1Y)  |
| 310N         | Sonoma Instrument | Pre-Amplifier                | 312544        | Mar. 11, 2024 (1Y)  |
| SCU18        | Rohde & Schwarz   | Signal Conditioning unit     | 102266        | Jul. 04, 2024 (1Y)  |
| SCU40A       | Rohde & Schwarz   | Signal Conditioning unit     | 100436        | Jan. 23, 2024 (1Y)  |
| HPF 3GHz     | Rohde & Schwarz   | High Pass Filter (1-3 GHz)   | N/A           | Jan. 15, 2024 (1Y)  |
| WT-A3882-R10 | Microwave         | Cavity Band Rejection Filter | WT22040502-1  | Jan. 16, 2024 (1Y)  |
| FMZB 1513    | Schwarzbeck       | Loop Antenna                 | 1513-235      | Mar. 20, 2024 (2Y)  |
| HLP-2008     | TDK               | Hybrid Antenna               | 131313        | Apr. 05, 2023 (2Y)  |
| BBHA9120D    | Schwarzbeck       | Horn Antenna                 | 9120D-1349    | Jul. 02, 2024 (1Y)  |
| BBHA9170     | Schwarzbeck       | Horn Antenna                 | BBHA9170178   | Jan. 04, 2024 (1Y)  |
| ESCI         | Rohde & Schwarz   | Test Receiver                | 101012        | Mar. 11, 2024 (1Y)  |
| ESH3-Z2      | Rohde & Schwarz   | Pulse Limiter                | 100655        | Mar. 12, 2024 (1Y)  |
| NSLK8128     | Schwarzbeck       | LISN                         | 8128216       | Mar. 12, 2024 (1Y)  |
| DT3000       | Innco System      | Turn Table                   | DT3000/093    | N/A                 |
| MA-4000XPET  | Innco System      | Antenna Master               | MA4000/509    | N/A                 |
| CO3000       | Innco System      | Controller                   | CO3000/904    | N/A                 |