



## FCC TEST REPORT

**FCC ID: 2AJ30-U45**

On Behalf of

SHENZHEN FZONE TECHNOLOGY CO.,LTD  
IN-EAR MONITOR WIRELESS SYSTEM  
Model No.: U45

Prepared for : SHENZHEN FZONE TECHNOLOGY CO.,LTD  
Address : 2nd floor, Building12, Xicheng Industrial Area, Xixiang Town, Baoan District, Shenzhen, Guangdong, China.

Prepared By : Shenzhen PSI Testing Co., Ltd.  
1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West  
Address : Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Report Number : psi2412104-C01-R04  
Date of Receipt : December 25, 2024  
Date of Test : December 25, 2024-January 21, 2025  
Date of Report : January 21, 2025  
Version Number : V0

## TABLE OF CONTENTS

| Description                                               | Page      |
|-----------------------------------------------------------|-----------|
| <b>1. General Information</b>                             | <b>5</b>  |
| 1.1. Description of Device (EUT)                          | 5         |
| 1.2. Test Facility                                        | 6         |
| 1.3. Equipment List                                       | 7         |
| <b>2. Summary Of Measurement</b>                          | <b>8</b>  |
| 2.1. Summary of Test Result                               | 8         |
| 2.2. Test Connection                                      | 8         |
| 2.3. Assistant Equipment Used For Test                    | 8         |
| 2.4. Test Mode                                            | 9         |
| 2.5. Software test version and power setting information  | 9         |
| 2.6. Test Conditions                                      | 10        |
| 2.7. Measurement Uncertainty (95% confidence levels, k=2) | 10        |
| <b>3. Radiated Emission and Band Edge</b>                 | <b>11</b> |
| 3.1. Radiated Emission Limits                             | 11        |
| 3.2. Test Procedure                                       | 12        |
| 3.3. Deviation From Test Standard                         | 13        |
| 3.4. Test Setup                                           | 13        |
| 3.5. Eut Operating Conditions                             | 14        |
| 3.6. Test Results                                         | 14        |
| <b>4. Power Line Conducted Emission</b>                   | <b>22</b> |
| 4.1. Test Limits                                          | 22        |
| 4.2. Test Procedure                                       | 22        |
| 4.3. Test Setup                                           | 22        |
| 4.4. Test Results                                         | 23        |
| <b>5. Bandwidth Test</b>                                  | <b>26</b> |
| 5.1. Test Standard and Limit                              | 26        |
| 5.2. Test Setup                                           | 26        |
| 5.3. Test Procedure                                       | 26        |
| 5.4. Test Results                                         | 26        |
| <b>6. Antenna Requirement</b>                             | <b>29</b> |
| 6.1. Standard Requirement                                 | 29        |
| 6.2. EUT Antenna                                          | 29        |
| <b>7. Photos of test setup</b>                            | <b>30</b> |
| <b>8. Photos of EUT</b>                                   | <b>30</b> |

## TEST REPORT DECLARATION

Applicant : SHENZHEN FZONE TECHNOLOGY CO.,LTD  
Address : 2nd floor, Building12, Xicheng Industrial Area, Xixiang Town, Baoan District,  
Shenzhen, Guangdong, China.  
Manufacturer : SHENZHEN FZONE TECHNOLOGY CO.,LTD  
Address : 2nd floor, Building12, Xicheng Industrial Area, Xixiang Town, Baoan District,  
Shenzhen, Guangdong, China.  
EUT Description : IN-EAR MONITOR WIRELESS SYSTEM  
(A) Model No. : U45

(B) Trademark :



Measurement Standard Used:

**FCC Rules and Regulations Part 15 Subpart C Section 15.249**

**ANSI C63.10:2013**

The device described above is tested by Shenzhen PSI Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen PSI Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen PSI Testing Co., Ltd.

Tested by (name + signature).....:

Felix Pang  
Test Engineer

A handwritten signature in black ink, appearing to read 'Felix Pang', written over a dotted line.

Approved by (name + signature).....:

Simple Guan  
Project Manager

A handwritten signature in black ink, appearing to read 'Simple Guan', written over a dotted line.

Date of issue.....:

January 21, 2025

**Revision History**

| Revision | Issue Date       | Revisions              | Revised By |
|----------|------------------|------------------------|------------|
| V0       | January 21, 2025 | Initial released Issue | Felix Pang |



## 1. General Information

### 1.1. Description of Device (EUT)

EUT Name : IN-EAR MONITOR WIRELESS SYSTEM  
Model No./HVIN : U45  
DIFF. : N/A  
Power supply : DC 5V from USB, DC 3.7V from battery.

Radio technology : 5.8G SRD

Operation frequency : 5730~5844MHz

Modulation : FSK

Channel No. : 18CH

Antenna Type : Internal antenna, max gain 2.15dBi

Software version : V0.20

Hardware version : V0.20

Intend use environment : Residential, commercial and light industrial environment

Note : Antenna information is provided by applicant.

Note : Testing lab is not responsible for the accuracy of the information.

## 1.2. Test Facility

Shenzhen PSI Testing Co., Ltd.

1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China

September 21, 2023 File on Federal Communication Commission  
Registration Number: 916281

September 21, 2023 Certificated by IC  
Registration Number: 31123  
CAB identifier: CN0158



## 1.3. Equipment List

| Item                          | Equipment                 | Manufacturer  | Model No.         | Serial No.                | Firmware Version | Last Cal.  | Cal. Interval |
|-------------------------------|---------------------------|---------------|-------------------|---------------------------|------------------|------------|---------------|
| 1.                            | 9*6*6 anechoic chamber    | SKET          | 9*6*6             | N/A                       | /                | 2022.12.20 | 3 Year        |
| 2.                            | Test Receiver             | Rohde&Schwarz | ESCI 7            | 101032/003                | 4.42 SP3         | 2024.12.18 | 1 Year        |
| 3.                            | L.I.S.N.#1                | Rohde&Schwarz | ENV216            | 102282                    | /                | 2024.12.18 | 1 Year        |
| 4.                            | L.I.S.N.#2                | RFT           | NNB111            | 13835240                  | /                | 2024.12.18 | 1 Year        |
| 5.                            | Loop Antenna              | Schwarz beck  | FMZB 1519B        | 00128                     | /                | 2025.01.02 | 2 Year        |
| 6.                            | Bilog Antenna             | Schwarz beck  | VULB 9168         | 01448                     | /                | 2025.01.02 | 2 Year        |
| 7.                            | Spectrum Analyzer         | Rohde&Schwarz | FSV-40N           | 101648                    | 3.70             | 2024.12.18 | 1 Year        |
| 8.                            | Horn Antenna              | Schwarz beck  | BBHA 9120 D       | 02706                     | /                | 2025.01.02 | 2 Year        |
| 9.                            | Amplifier                 | SKET          | LAPA_01G1 8G-45dB | SK20220329 01             | /                | 2024.12.18 | 1 Year        |
| 10.                           | Horn Antenna              | Schwarz beck  | BBHA 9170         | 00946                     | /                | 2024.12.31 | 2 Year        |
| 11.                           | Amplifier                 | SKET          | LNPA_0118 G-45    | SK20200108 01             | /                | 2024.12.18 | 1 Year        |
| 12.                           | RF Power Probe            | Rohde&Schwarz | NRP-Z11           | 1138.3004.0 2-1111533-F Z | /                | 2024.12.18 | 1 Year        |
| 13.                           | RF Sensor Unit            | Tachoy        | TR1029-2          | 20220428P0 08             | /                | 2024.12.18 | 1 Year        |
| 14.                           | Spectrum Analyzer         | Agilent       | N9020A            | MY51281067                | A.14.03          | 2024.12.18 | 1 Year        |
| 15.                           | Temp. & Humid Chamber     | Auchno        | 9606              | /                         | /                | 2024.12.18 | 1 Year        |
| 16.                           | Regulated DC Power Supply | Xinouhua      | ADC120V10 A       | 2022112516 38             |                  | 2024.12.18 | 1 Year        |
| For Test Software Information |                           |               |                   |                           |                  |            |               |
| Item                          | Software Name             | Manufacturer  |                   |                           | Version          |            |               |
| RE                            | EZ EMC                    | Farad         |                   |                           | PSI-3A1          |            |               |
| CE                            | EZ EMC                    | Farad         |                   |                           | PSI-3A1          |            |               |
| RF                            | RTS                       | TACHOY        |                   |                           | V1.0.0           |            |               |

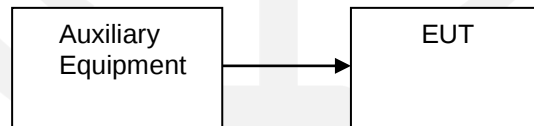
## 2. Summary Of Measurement

### 2.1. Summary of Test Result

| EMISSION                                                                                                                                                                                                                                          |                        |                                                      |         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------------------|---------|
| Description of Test Item                                                                                                                                                                                                                          | Test Requirement       | Standard Paragraph                                   | Results |
| Power Line Conducted Emission Test                                                                                                                                                                                                                | FCC Part 15<br>RSS 210 | Section 15.207<br>RSS-GEN(8.8)                       | P       |
| Spurious Emission Test                                                                                                                                                                                                                            | FCC Part 15<br>RSS 210 | Section 15.249&15.209<br>RSS-210 Annex B.10(a) & (b) | P       |
| Occupied bandwidth                                                                                                                                                                                                                                | FCC Part 15<br>RSS 210 | Section 15. 249<br>RSS-Gen §6.7                      | P       |
| Band edge Requirement                                                                                                                                                                                                                             | FCC Part 15<br>RSS 210 | Section 15.249&15.209<br>RSS-210 Annex B.10(a) & (b) | P       |
| Antenna Requirement                                                                                                                                                                                                                               | FCC Part 15<br>RSS 210 | Section 15.203<br>RSS-Gen §6.8                       | P       |
| Note: 1. P is an abbreviation for Pass.<br>2. F is an abbreviation for Fail.<br>3. N/A is an abbreviation for Not Applicable.<br>4. The conclusion of this test report is judged by actual test data without considering measurement uncertainty. |                        |                                                      |         |

Note: The EUT has been tested as an independent unit. And continual transmitting in maximum power.

### 2.2. Test Connection



### 2.3. Assistant Equipment Used For Test

| No. | Description | Manufacturer | Model     | Serial Number | Certification |
|-----|-------------|--------------|-----------|---------------|---------------|
| 1   | Adapter     | Baseus       | CCXFK65CC | N/A           | N/A           |
| 2   | USB cable   | N/A          | N/A       | N/A           | N/A           |

## 2.4. Test Mode

| Mode                                                                                                                                | Channel | Frequency(MHz) |
|-------------------------------------------------------------------------------------------------------------------------------------|---------|----------------|
| FSK                                                                                                                                 | CH1     | 5730           |
|                                                                                                                                     | CH5     | 5780           |
|                                                                                                                                     | CH18    | 5844           |
| Charging                                                                                                                            |         |                |
| Note: According exploratory test, EUT will have maximum output power in those data rate. So those data rate were used for all test. |         |                |

Channel List

| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
|---------|----------------|---------|----------------|
| 1       | 5730MHz        | 10      | 5805MHz        |
| 2       | 5736MHz        | 11      | 5811MHz        |
| 3       | 5742MHz        | 12      | 5813MHz        |
| 4       | 5756MHz        | 13      | 5827MHz        |
| 5       | 5780MHz        | 14      | 5829MHz        |
| 6       | 5785MHz        | 15      | 5833MHz        |
| 7       | 5791MHz        | 16      | 5835MHz        |
| 8       | 5797MHz        | 17      | 5842MHz        |
| 9       | 5803MHz        | 18      | 5844MHz        |

## 2.5. Software test version and power setting information

|                             |                                                                                                                                                              |                 |                            |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------|
| Mode                        | The client 's preset testing software is used to control the operation of EUT in continuous transmission mode and select the testing channel, wireless mode: |                 |                            |
| Power level setup by client |                                                                                                                                                              |                 |                            |
| Mode                        | Channel                                                                                                                                                      | Frequency (MHz) | Soft Set                   |
| FSK                         | CH1                                                                                                                                                          | 5730            | TX level is set as default |
|                             | CH5                                                                                                                                                          | 5780            | TX level is set as default |
|                             | CH18                                                                                                                                                         | 5844            | TX level is set as default |

## 2.6. Test Conditions

|                   |           |
|-------------------|-----------|
| Temperature range | 21-25℃    |
| Humidity range    | 40-75%    |
| Pressure range    | 86-106kPa |

## 2.7. Measurement Uncertainty (95% confidence levels, k=2)

| Item                                                                   | Uncertainty         |
|------------------------------------------------------------------------|---------------------|
| Uncertainty for Power point Conducted Emissions Test                   | 2.17dB              |
| Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)    | 3.5dB               |
| Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)  | 2.74dB(Polarize: V) |
|                                                                        | 2.76dB(Polarize: H) |
| Uncertainty for Radiation Emission test in 3m chamber (1GHz to 18GHz)  | 4.29dB(Polarize: V) |
|                                                                        | 4.82dB(Polarize: H) |
| Uncertainty for Radiation Emission test in 3m chamber (18GHz to 40GHz) | 4.31dB(Polarize: V) |
|                                                                        | 4.30dB(Polarize: H) |
| Uncertainty for radio frequency                                        | 48.24KHz            |
| Uncertainty for conducted RF Power                                     | 0.41dB              |
| Uncertainty for Power Spectral Density                                 | 0.39 dB             |
| Uncertainty for OBW                                                    | 928Hz               |

### 3. Radiated Emission and Band Edge

#### 3.1. Radiated Emission Limits

FCC Part 15.209

| Frequency<br>MHz  | Distance<br>(Meters) | Field Strengths Limits |                            |
|-------------------|----------------------|------------------------|----------------------------|
|                   |                      | uV/m                   | dB uV/m                    |
| 0.009 ~ 0.490     | 300                  | 2400/F(kHz)            | ---                        |
| 0.490 ~ 1.705     | 30                   | 24000/F(kHz)           | ----                       |
| 1.705 ~ 30        | 30                   | 30                     | 29.5                       |
| 30 ~ 88           | 3                    | 100(3nW)               | 40                         |
| 88 ~ 216          | 3                    | 150(6.8nW)             | 43.5                       |
| 216 ~ 960         | 3                    | 200(12nW)              | 46                         |
| Above 960         | 3                    | 500(75nW)              | 54                         |
| Carrier frequency | 3                    | 50000(avg)             | 113.97(peak)<br>93.97(avg) |

Notes:

1. Emission level = Read level + Antenna Factor - Preamp Factor + Cable Loss
2. The smaller limit shall apply at the cross point between two frequency bands.
3. Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
4. For frequencies above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

| Radiated Spurious Emission |                    |                                     |                   |            |                             |
|----------------------------|--------------------|-------------------------------------|-------------------|------------|-----------------------------|
| Test Standard              | RSS-Gen 8.9        |                                     |                   |            |                             |
| Test Limit                 | Frequency<br>(MHz) | Field strength<br>(microvolt/meter) | Limit<br>(dBuV/m) | Remark     | Measurement<br>distance (m) |
|                            | 0.009MHz~0.490MHz  | 6.37/F (F in kHz)                   | -                 | -          | 300                         |
|                            | 0.490MHz~1.705MHz  | 63.7/F (F in kHz)                   | -                 | -          | 30                          |
|                            | 1.705MHz~30MHz     | 0.08                                | -                 | -          | 30                          |
|                            | 30MHz~88MHz        | 100                                 | 40.0              | Quasi-peak | 3                           |
|                            | 88MHz~216MHz       | 150                                 | 43.5              | Quasi-peak | 3                           |
|                            | 216MHz~960MHz      | 200                                 | 46.0              | Quasi-peak | 3                           |
|                            | Above 960MHz       | 500                                 | 54.0              | Average    | 3                           |
|                            |                    | -                                   | 74.0              | Peak       | 3                           |

**Remark:**

- (1) The lower limit shall apply at the transition frequency.
- (2) Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

| Transmitters with wanted and unwanted emissions that are within the general field strength limits                                                                                                                                                                          |                              |                       |                     |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------|---------------------|--------------------------|
| Test Standard                                                                                                                                                                                                                                                              | RSS-210 Annex B.10, Table B2 |                       |                     |                          |
| Test Limit                                                                                                                                                                                                                                                                 | Frequency bands (MHz)        | Field Strength (mV/m) |                     | Measurement distance (m) |
|                                                                                                                                                                                                                                                                            |                              | Fundamental emissions | Harmonics emissions |                          |
|                                                                                                                                                                                                                                                                            | 902-928                      | 50                    | 0.5                 | 3                        |
|                                                                                                                                                                                                                                                                            | 2400-2483.5                  | 50                    | 0.5                 | 3                        |
|                                                                                                                                                                                                                                                                            | 5725-5875                    | 50                    | 0.5                 | 3                        |
|                                                                                                                                                                                                                                                                            | 24000-24250                  | 250                   | 2.5                 | 3                        |
| <b>Remark:</b>                                                                                                                                                                                                                                                             |                              |                       |                     |                          |
| (1) The field strength shall be measured using an average detector, except for the fundamental emission in the frequency band 902-928 MHz, which is based on measurements using an International Special Committee on Radio Interference (CISPR) quasi-peak detector.      |                              |                       |                     |                          |
| (2) Emissions radiated outside of the specified frequency bands, except for harmonic emissions, shall be attenuated by at least 50 dB below the level of the fundamental emissions or to the general field strength limits listed in RSS-Gen, whichever is less stringent. |                              |                       |                     |                          |

| Spectrum Parameter                    | Setting               |
|---------------------------------------|-----------------------|
| Detector                              | Peak                  |
| Attenuation                           | Auto                  |
| Start Frequency                       | 1000 MHz              |
| Stop Frequency                        | 10th carrier harmonic |
| RB / VB (emission in restricted band) | 1MHz/3MHz             |

| Receiver Parameter     | Setting                              |
|------------------------|--------------------------------------|
| Attenuation            | Auto                                 |
| Start ~ Stop Frequency | 9kHz~90kHz / RB 200Hz for PK & AV    |
| Start ~ Stop Frequency | 90kHz~110kHz / RB 200Hz for QP       |
| Start ~ Stop Frequency | 110kHz~490kHz / RB 200Hz for PK & AV |
| Start ~ Stop Frequency | 490kHz~30MHz / RB 9kHz for QP        |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP     |

### 3.2. Test Procedure

- The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Below 1GHz)
- The measuring distance of 3m shall used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Above 1GHz)
- The height of the test antenna shall vary between 1m to 4m.Both horizontal and vertical polarization of the antenna are set to make the measurement.
- The initial step in collecting radiated emission data is a receive peak detector mode. Pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- All readings are peak unless otherwise stated QP in column of Note. Peak denoted that the Peak reading compliance with the QP limits and then QP Mode measurement didn't perform

(Below 1GHz)

- f. All readings are Peak mode value unless otherwise stated AVG in column of Note. If the Peak mode measured value compliance with the Peak limits and lower than AVG Limits, the EUT shall be deemed to meet Peak & AVG limits and then only Peak mode was measured, but AVG mode didn't perform.(Above 1GHz)
- g. For the actual test configuration, please refer to the related Item –EUT Test Photos.

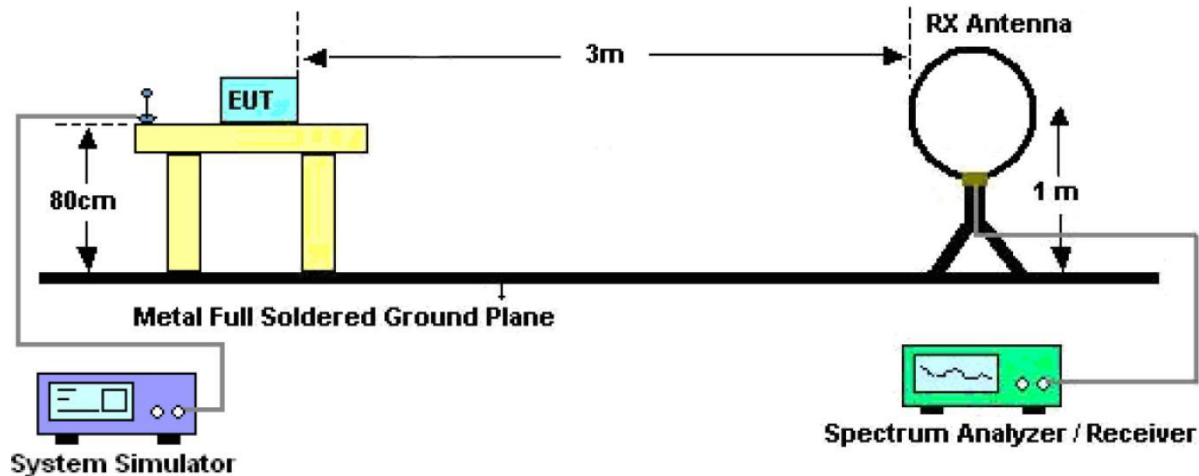
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

### 3.3. Deviation From Test Standard

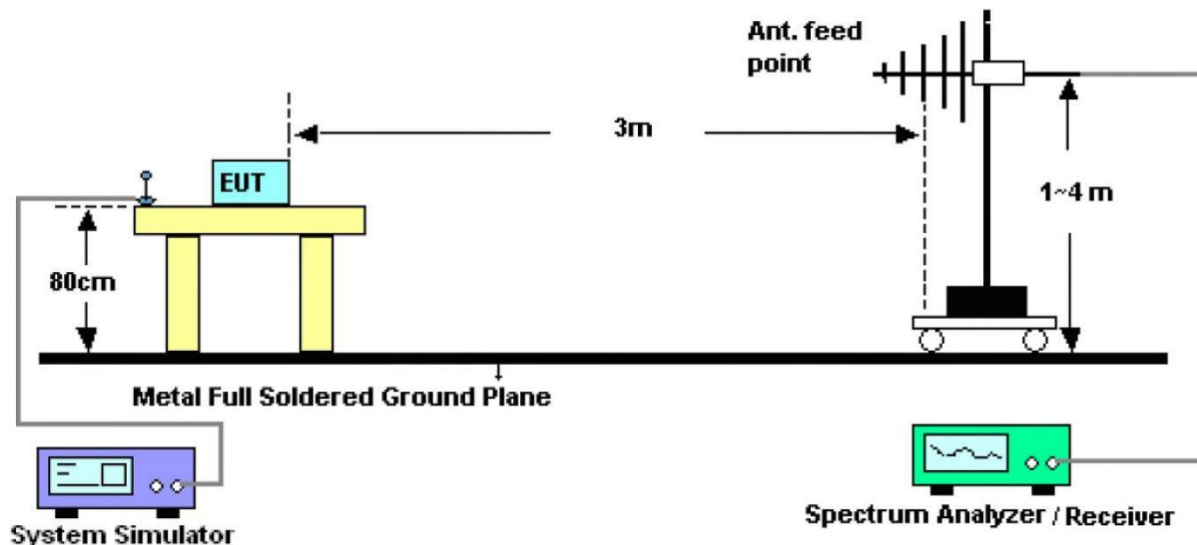
No deviation

### 3.4. Test Setup

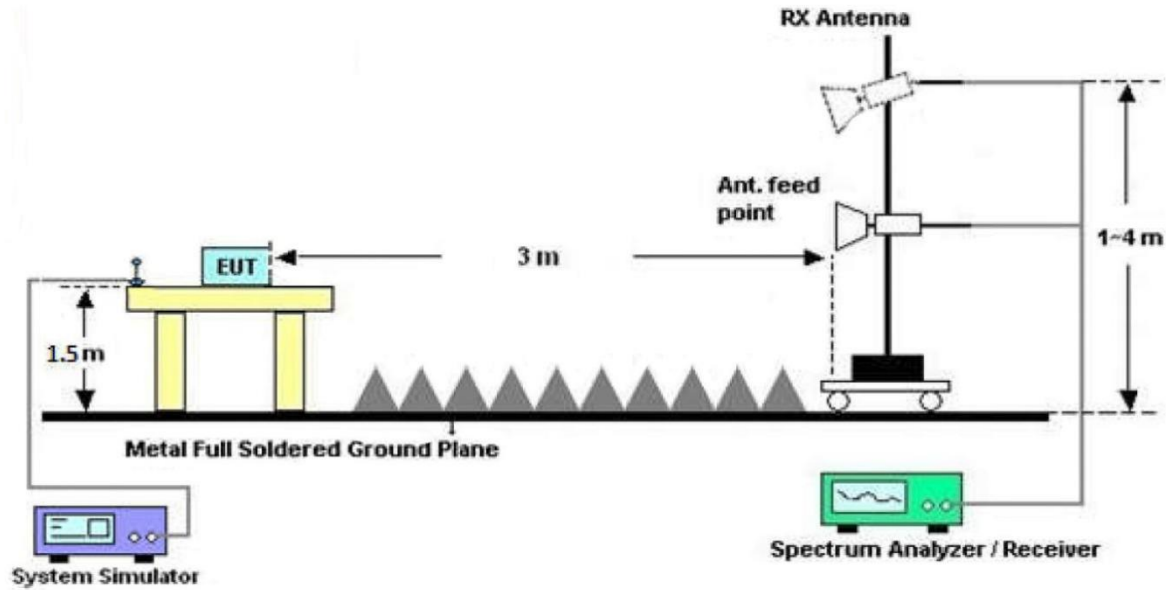
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



### 3.5. Eut Operating Conditions

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

### 3.6. Test Results

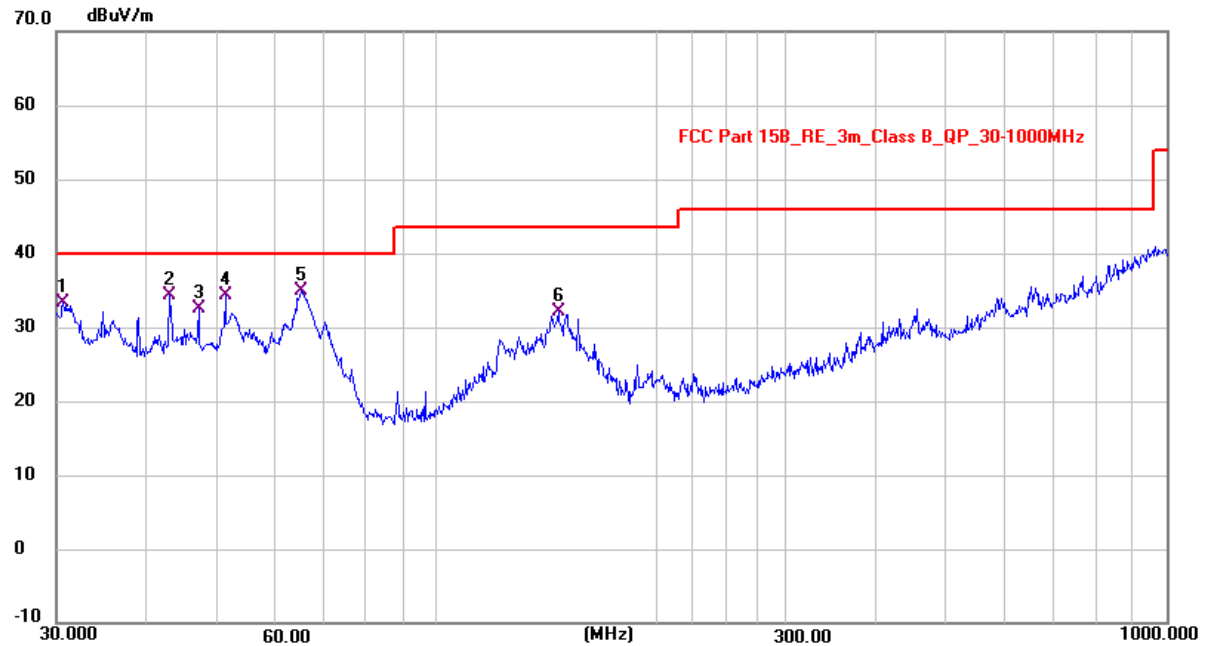
For the actual test, please refer to the ANSI C63.10, refer to section 7 for more detail

We have scanned from 9kHz to the 10th harmonic of the EUT's highest frequency.  
Detailed information please see the following page.

|                            |                                                                                                                                    |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| From 9KHz to 30MHz:        |                                                                                                                                    |
| Test Date : 2024.12.27     | Temperature : 26°C                                                                                                                 |
| Test Engineer : Felix Pang | Humidity : 54%                                                                                                                     |
| Test Mode : FSK mode       |                                                                                                                                    |
| Test Results : <b>PASS</b> |                                                                                                                                    |
| Note:                      | The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. |

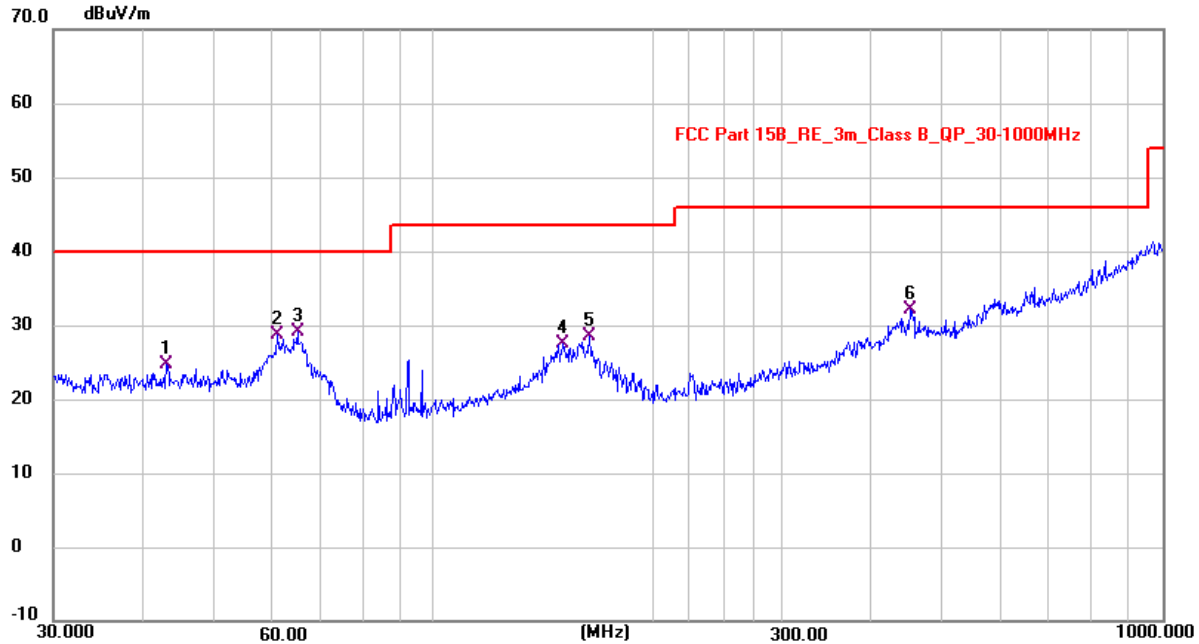
|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| From 30MHz to 1000MHz:     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test Date : 2024.12.27     | Temperature : 26°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Test Engineer : Felix Pang | Humidity : 54%                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Test Mode : FSK mode       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test Results : <b>PASS</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Note:                      | <ol style="list-style-type: none"><li>1. The test results are listed in next pages.</li><li>2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out.</li><li>3. All modes have been tested, and only worst data of FSK 5730MHz mode was listed in this report.</li></ol> |

## Polarization: Vertical



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 30.6782         | 20.14          | 13.11         | 33.25          | 40.00          | -6.75       | QP       |
| 2   | 43.0127         | 19.79          | 14.44         | 34.23          | 40.00          | -5.77       | QP       |
| 3   | 47.1185         | 18.31          | 14.26         | 32.57          | 40.00          | -7.43       | QP       |
| 4   | 51.1882         | 20.38          | 14.02         | 34.40          | 40.00          | -5.60       | QP       |
| 5 * | 65.0004         | 22.32          | 12.60         | 34.92          | 40.00          | -5.08       | QP       |
| 6   | 146.5661        | 17.99          | 14.05         | 32.04          | 43.50          | -11.46      | QP       |

Note: Level = Reading + Factor Margin = Level - Limit

**Polarization: Horizontal**

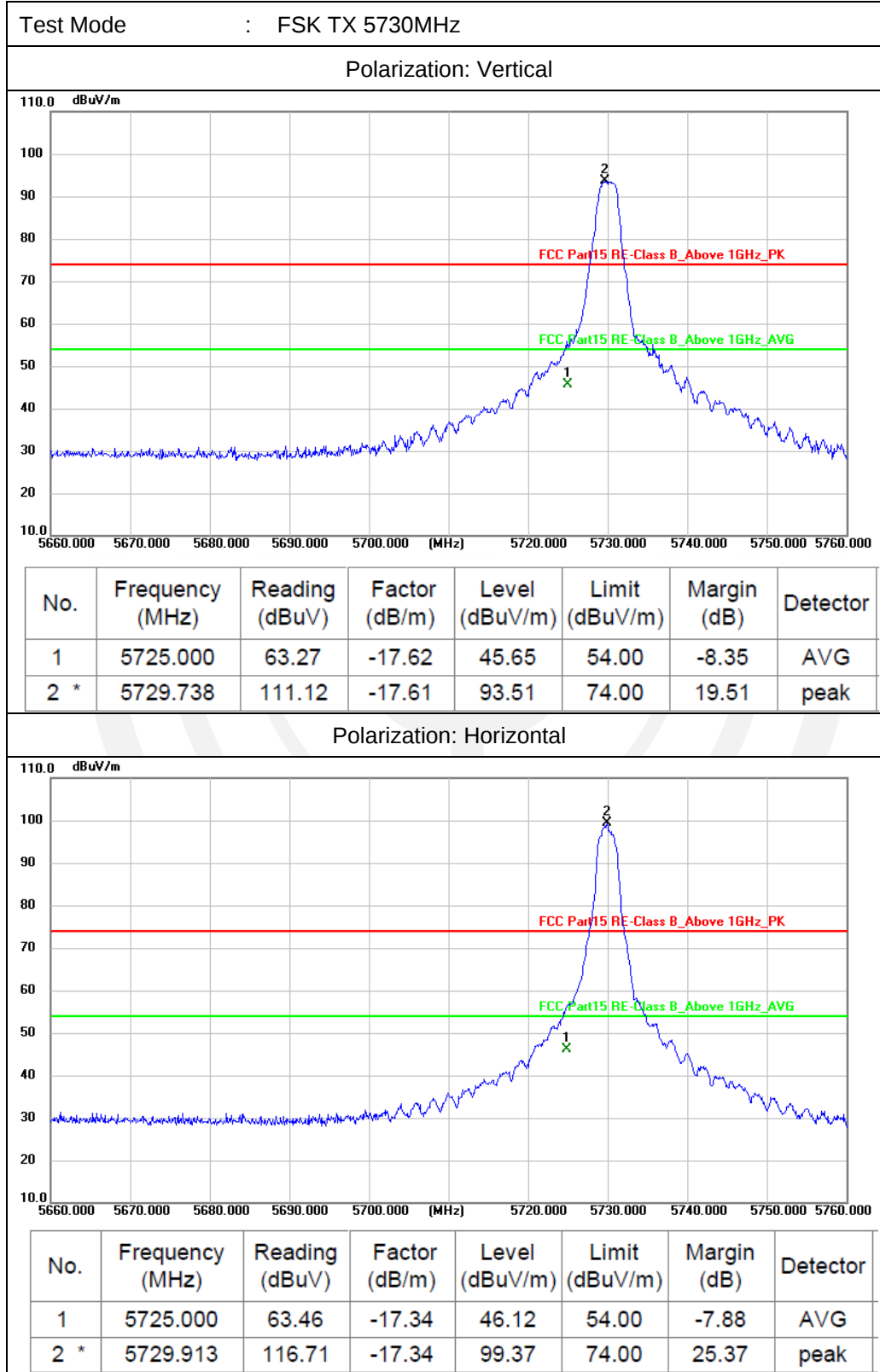
| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 43.0316         | 10.26          | 14.44         | 24.70          | 40.00          | -15.30      | QP       |
| 2   | 61.0513         | 15.76          | 13.00         | 28.76          | 40.00          | -11.24      | QP       |
| 3 * | 64.9150         | 16.54          | 12.61         | 29.15          | 40.00          | -10.85      | QP       |
| 4   | 150.2082        | 13.29          | 14.13         | 27.42          | 43.50          | -16.08      | QP       |
| 5   | 163.3965        | 14.46          | 14.02         | 28.48          | 43.50          | -15.02      | QP       |
| 6   | 450.1474        | 13.23          | 18.94         | 32.17          | 46.00          | -13.83      | QP       |

Note: Level = Reading + Factor Margin = Level - Limit

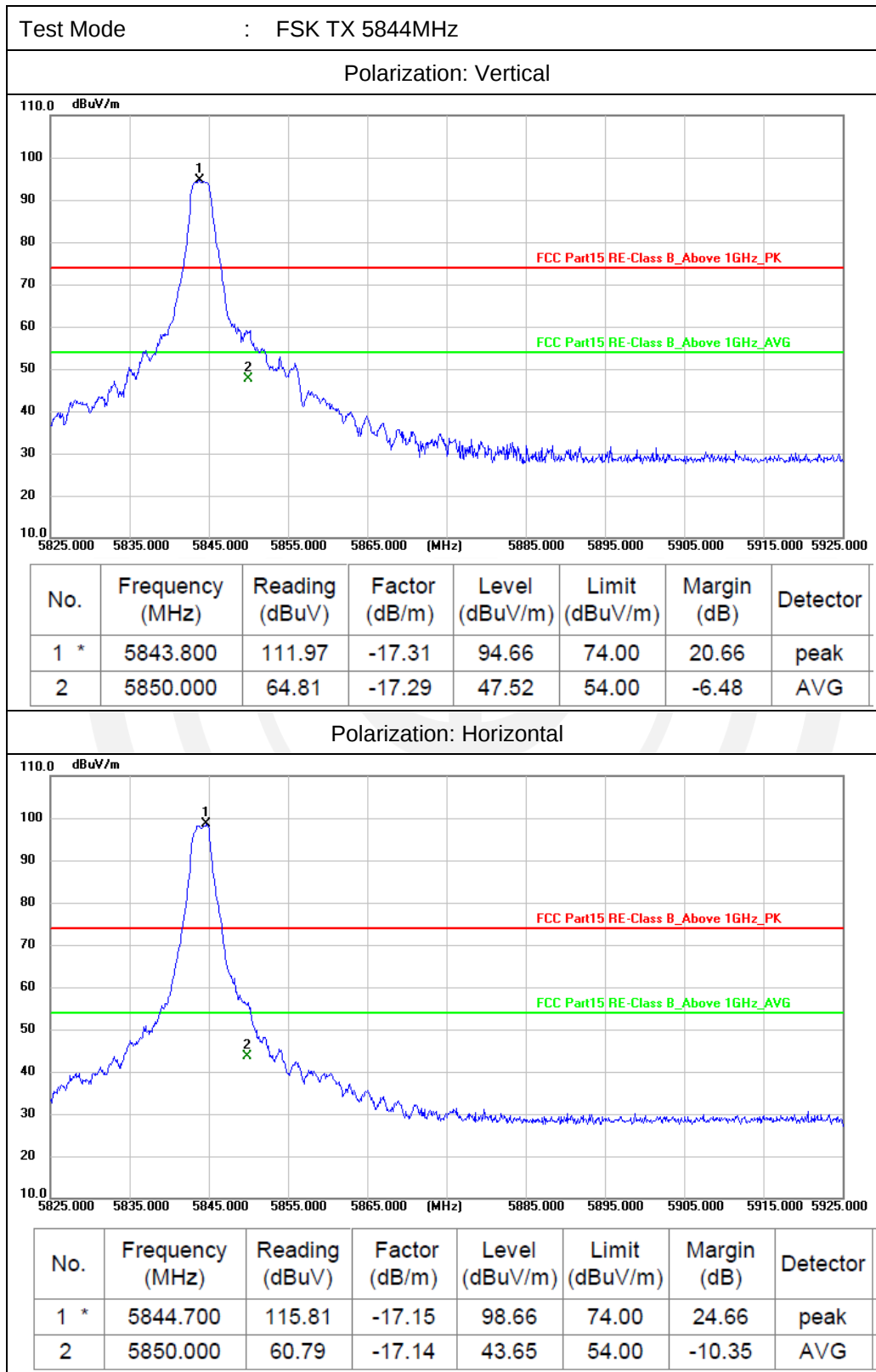
|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| From 1GHz to 40GHz:        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test Date : 2024.12.27     | Temperature : 26°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Test Engineer : Felix Pang | Humidity : 54%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Test Mode : FSK mode       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test Results : <b>PASS</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Note:                      | <ol style="list-style-type: none"><li>1. The test results are listed in next pages.</li><li>2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out.</li><li>3. If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.</li></ol> |

**Frequency range: 1GHz~40GHz**

| Test Mode : FSK TX 5730MHz |                                                                                                                                                                                                                              |          |                  |                |                 |                |        |        |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------|----------------|-----------------|----------------|--------|--------|
| No.                        | Freq MHz                                                                                                                                                                                                                     | Polarity | Reading (dBuV/m) | Correct Factor | Result (dBuV/m) | Limit (dBuV/m) | Margin | Remark |
| 1                          | 5730                                                                                                                                                                                                                         | V        | 111.12           | -17.61         | 93.51           | 113.97         | -20.46 | Peak   |
| 2                          | 5730                                                                                                                                                                                                                         | V        | 99.91            | -17.61         | 82.30           | 93.97          | -11.67 | Avg    |
| 3                          | 11460                                                                                                                                                                                                                        | V        | 62.97            | -16.54         | 46.43           | 74.00          | -27.57 | Peak   |
| 4                          | 11460                                                                                                                                                                                                                        | V        | --               | --             | --              | 54.00          | --     | Avg    |
| 5                          | 5730                                                                                                                                                                                                                         | H        | 116.71           | -17.61         | 99.10           | 113.97         | -14.87 | Peak   |
| 6                          | 5730                                                                                                                                                                                                                         | H        | 97.79            | -17.61         | 80.18           | 93.97          | -13.79 | Avg    |
| 7                          | 11460                                                                                                                                                                                                                        | H        | 63.86            | -16.54         | 47.32           | 74.00          | -26.68 | Peak   |
| 8                          | 11460                                                                                                                                                                                                                        | H        | --               | --             | --              | 54.00          | --     | Avg    |
| Test Mode : FSK TX 5780MHz |                                                                                                                                                                                                                              |          |                  |                |                 |                |        |        |
| 1                          | 5780                                                                                                                                                                                                                         | V        | 110.24           | -17.46         | 92.78           | 113.97         | -21.19 | Peak   |
| 2                          | 5780                                                                                                                                                                                                                         | V        | 97.40            | -17.46         | 79.94           | 93.97          | -14.03 | Avg    |
| 3                          | 11560                                                                                                                                                                                                                        | V        | 65.78            | -16.4          | 49.38           | 74.00          | -24.62 | Peak   |
| 4                          | 11560                                                                                                                                                                                                                        | V        | --               | --             | --              | 54.00          | --     | Avg    |
| 5                          | 5780                                                                                                                                                                                                                         | H        | 115.84           | -17.46         | 98.38           | 113.97         | -15.59 | Peak   |
| 6                          | 5780                                                                                                                                                                                                                         | H        | 97.48            | -17.46         | 80.02           | 93.97          | -13.95 | Avg    |
| 7                          | 11560                                                                                                                                                                                                                        | H        | 62.56            | -16.4          | 46.16           | 74.00          | -27.84 | Peak   |
| 8                          | 11560                                                                                                                                                                                                                        | H        | --               | --             | --              | 54.00          | --     | Avg    |
| Test Mode : FSK TX 5844MHz |                                                                                                                                                                                                                              |          |                  |                |                 |                |        |        |
| 1                          | 5844                                                                                                                                                                                                                         | V        | 111.97           | -17.15         | 94.82           | 113.97         | -19.15 | Peak   |
| 2                          | 5844                                                                                                                                                                                                                         | V        | 96.73            | -17.15         | 79.58           | 93.97          | -14.39 | Avg    |
| 3                          | 11688                                                                                                                                                                                                                        | V        | 62.66            | -16.32         | 46.34           | 74.00          | -27.66 | Peak   |
| 4                          | 11688                                                                                                                                                                                                                        | V        | --               | --             | --              | 54.00          | --     | Avg    |
| 5                          | 5844                                                                                                                                                                                                                         | H        | 115.81           | -17.15         | 98.66           | 113.97         | -15.31 | Peak   |
| 6                          | 5844                                                                                                                                                                                                                         | H        | 97.02            | -17.15         | 79.87           | 93.97          | -14.10 | Avg    |
| 7                          | 11688                                                                                                                                                                                                                        | H        | 64.36            | -16.32         | 48.04           | 74.00          | -25.96 | Peak   |
| 8                          | 11688                                                                                                                                                                                                                        | H        | --               | --             | --              | 54.00          | --     | Avg    |
| Note:                      | 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin.<br>2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain.<br>Result=Reading + Correct Factor. Margin= Result-Limit. |          |                  |                |                 |                |        |        |

**Band Edge Test Results:**

Level = Reading + Factor Margin = Level - Limit



Level = Reading + Factor Margin = Level – Limit

## 4. Power Line Conducted Emission

### 4.1. Test Limits

| Frequency<br>MHz | Limits dB( $\mu$ V) |               |
|------------------|---------------------|---------------|
|                  | Quasi-peak Level    | Average Level |
| 0.15 -0.50       | 66 -56*             | 56 - 46*      |
| 0.50 -5.00       | 56                  | 46            |
| 5.00 -30.00      | 60                  | 50            |

Notes: 1. \*Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

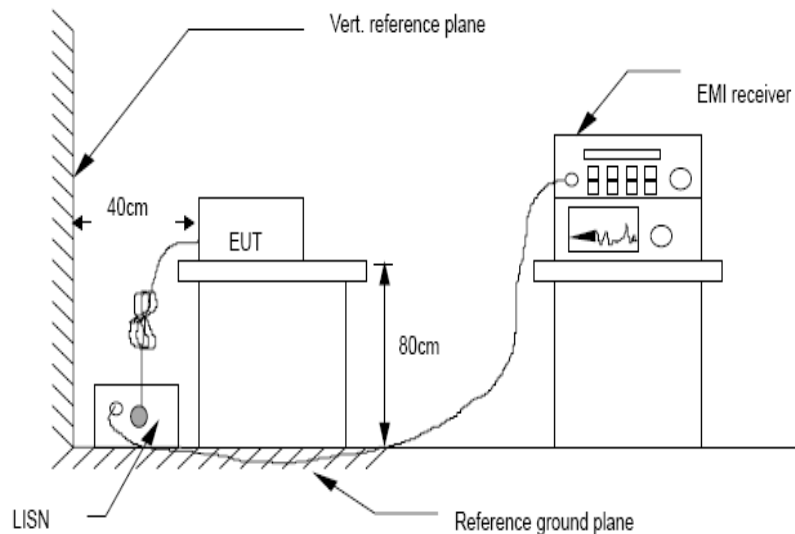
3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 4.2. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10:2013 on Conducted Emission Measurement.

The bandwidth of test receiver is set at 9 kHz.

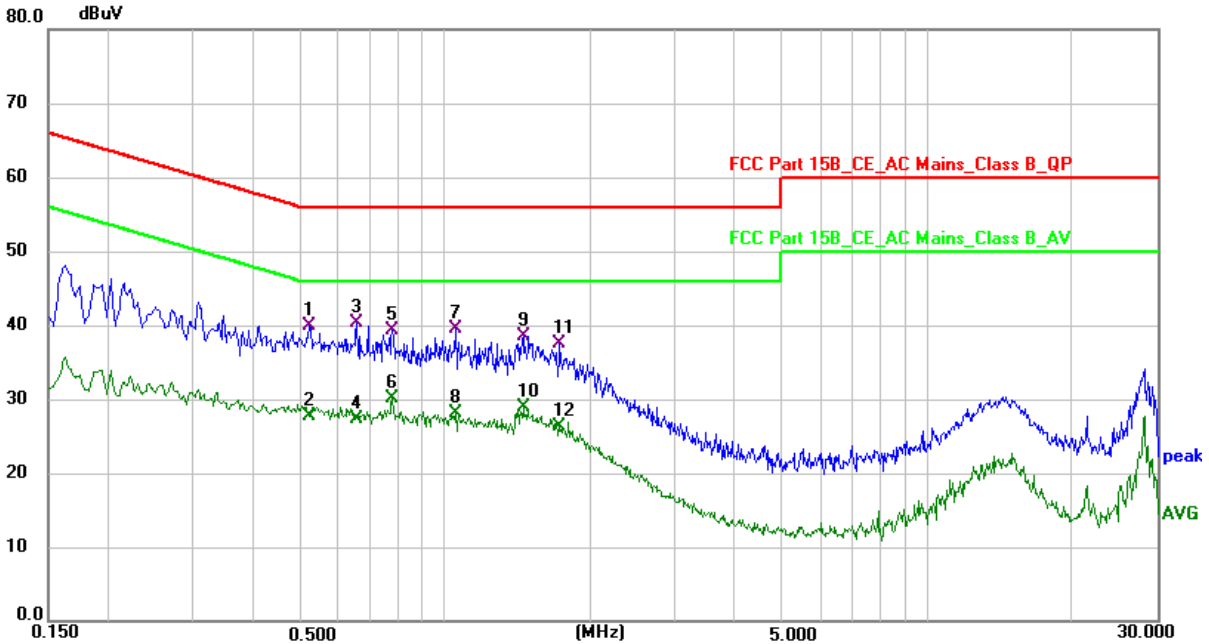
### 4.3. Test Setup



#### 4.4. Test Results

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |             |       |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------|
| Test Date     | : 2024.12.27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Temperature | : 26℃ |
| Test Engineer | : Felix Pang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Humidity    | : 54% |
| Test Mode     | : Charging                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |       |
| Test Results  | : <b>PASS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |       |
| Note:         | <ol style="list-style-type: none"><li>1. The test results are listed in next pages.</li><li>2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out.</li><li>3. If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.</li></ol> |             |       |

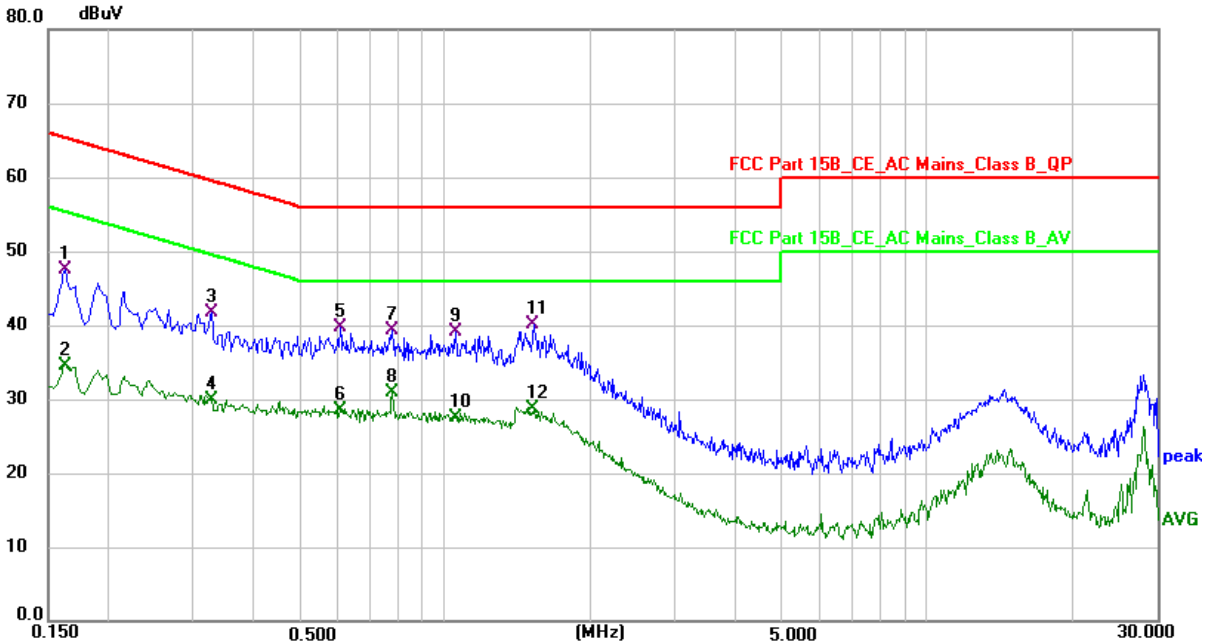
## Polarization: L



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|
| 1   | 0.5220          | 30.08          | 9.86        | 39.94        | 56.00        | -16.06      | QP       | P   |
| 2   | 0.5220          | 17.87          | 9.86        | 27.73        | 46.00        | -18.27      | AVG      | P   |
| 3 * | 0.6540          | 30.83          | 9.54        | 40.37        | 56.00        | -15.63      | QP       | P   |
| 4   | 0.6540          | 17.85          | 9.54        | 27.39        | 46.00        | -18.61      | AVG      | P   |
| 5   | 0.7780          | 29.98          | 9.42        | 39.40        | 56.00        | -16.60      | QP       | P   |
| 6   | 0.7780          | 20.67          | 9.42        | 30.09        | 46.00        | -15.91      | AVG      | P   |
| 7   | 1.0500          | 30.11          | 9.41        | 39.52        | 56.00        | -16.48      | QP       | P   |
| 8   | 1.0500          | 18.74          | 9.41        | 28.15        | 46.00        | -17.85      | AVG      | P   |
| 9   | 1.4500          | 29.14          | 9.40        | 38.54        | 56.00        | -17.46      | QP       | P   |
| 10  | 1.4500          | 19.48          | 9.40        | 28.88        | 46.00        | -17.12      | AVG      | P   |
| 11  | 1.7260          | 28.18          | 9.40        | 37.58        | 56.00        | -18.42      | QP       | P   |
| 12  | 1.7260          | 16.99          | 9.40        | 26.39        | 46.00        | -19.61      | AVG      | P   |

Result=Reading + Correct Factor. Margin= Result-Limit.

## Polarization: N



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|
| 1   | 0.1620          | 37.75          | 9.84        | 47.59        | 65.36        | -17.77      | QP       | P   |
| 2   | 0.1620          | 24.67          | 9.84        | 34.51        | 55.36        | -20.85      | AVG      | P   |
| 3   | 0.3260          | 32.02          | 9.72        | 41.74        | 59.55        | -17.81      | QP       | P   |
| 4   | 0.3260          | 20.27          | 9.72        | 29.99        | 49.55        | -19.56      | AVG      | P   |
| 5   | 0.6060          | 30.01          | 9.78        | 39.79        | 56.00        | -16.21      | QP       | P   |
| 6   | 0.6060          | 18.65          | 9.78        | 28.43        | 46.00        | -17.57      | AVG      | P   |
| 7   | 0.7780          | 29.65          | 9.71        | 39.36        | 56.00        | -16.64      | QP       | P   |
| 8 * | 0.7780          | 21.10          | 9.71        | 30.81        | 46.00        | -15.19      | AVG      | P   |
| 9   | 1.0500          | 29.63          | 9.50        | 39.13        | 56.00        | -16.87      | QP       | P   |
| 10  | 1.0500          | 18.03          | 9.50        | 27.53        | 46.00        | -18.47      | AVG      | P   |
| 11  | 1.5339          | 30.71          | 9.38        | 40.09        | 56.00        | -15.91      | QP       | P   |
| 12  | 1.5339          | 19.31          | 9.38        | 28.69        | 46.00        | -17.31      | AVG      | P   |

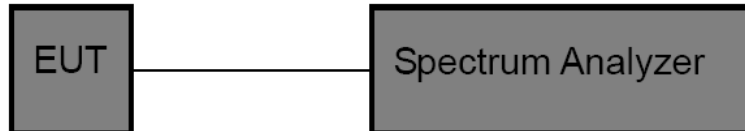
Result=Reading + Correct Factor. Margin= Result-Limit.

## 5. Bandwidth Test

### 5.1. Test Standard and Limit

|               |                          |
|---------------|--------------------------|
| Test Standard | RSS-Gen §6.7, FCC 15.249 |
| Test Limit    | N/A                      |

### 5.2. Test Setup



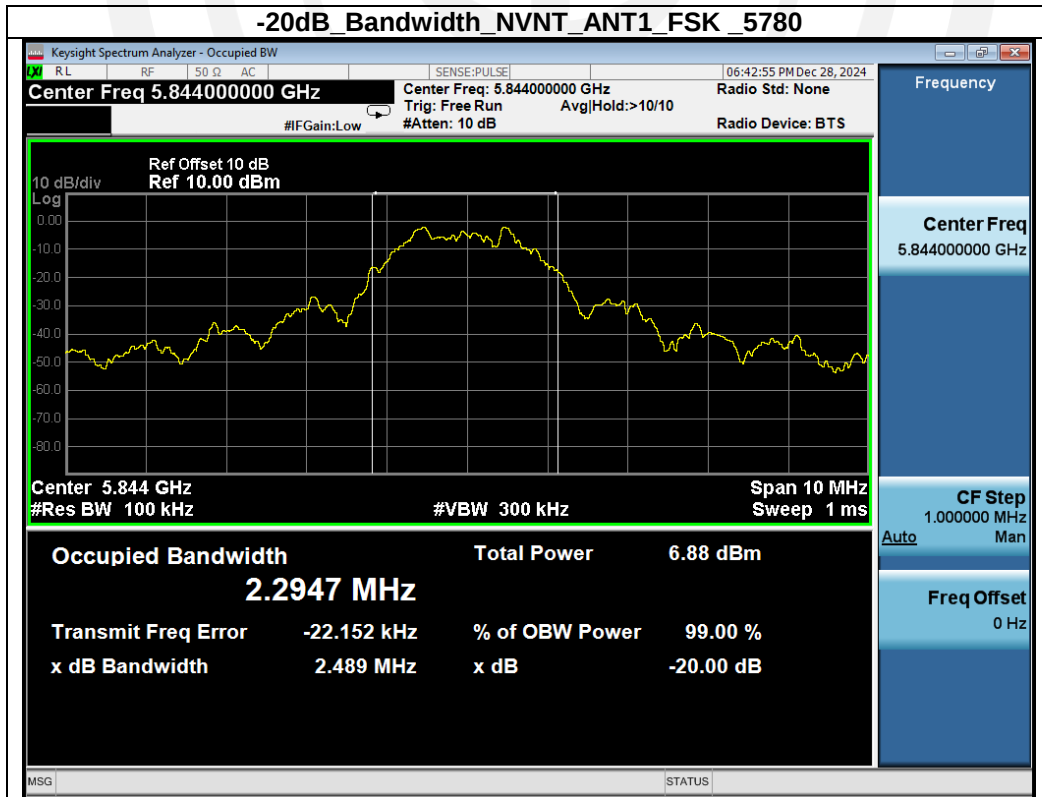
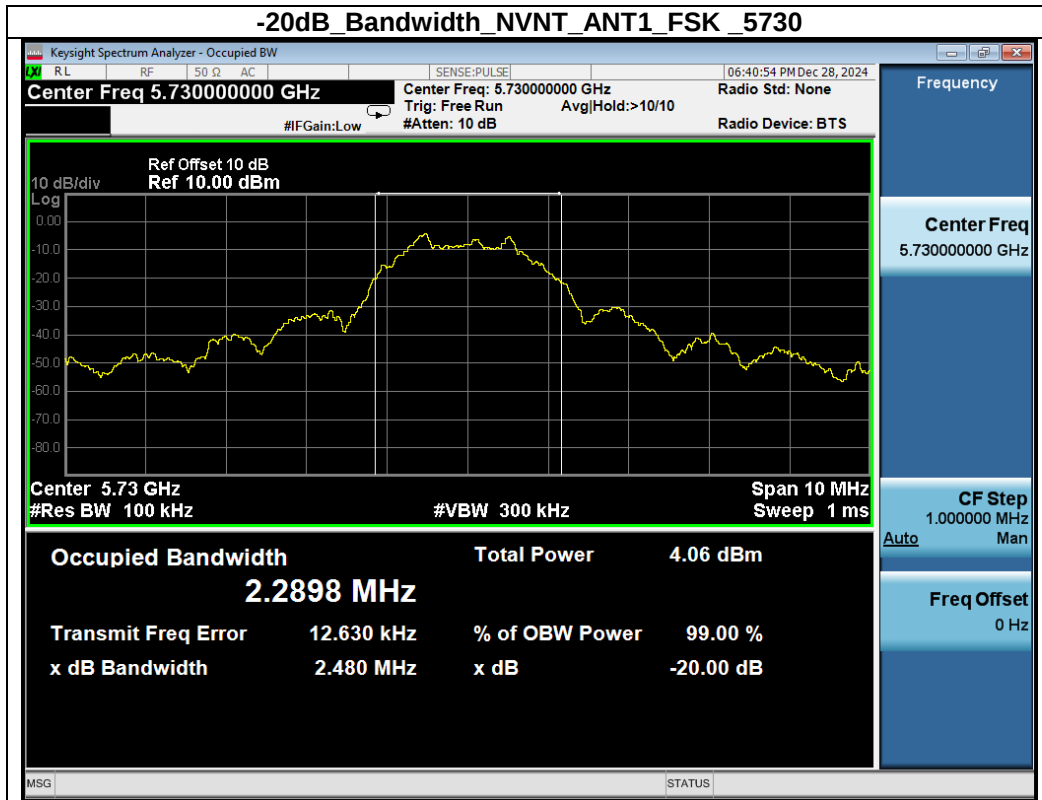
### 5.3. Test Procedure

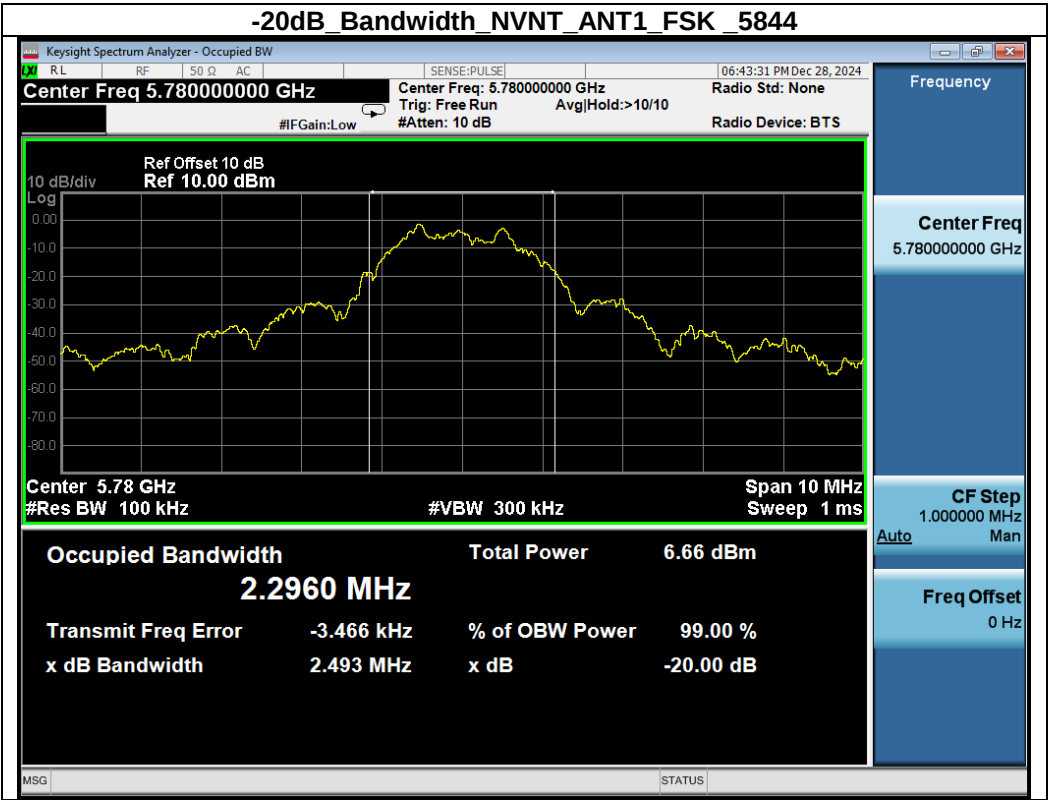
Using the following spectrum analyzer settings:

1. Span= approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel.
2. Set the RBW  $\geq 1\%$  of the 20 dB bandwidth.
3. Set the VBW  $\geq$  RBW
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
9. Measure the 99% Bandwidth use the function button of "Occupied Bandwidth".

### 5.4. Test Results

| Mode | Antenna | Frequency (MHz) | -20dB BW(MHz) | 99% BW(MHz) | limit(kHz) |
|------|---------|-----------------|---------------|-------------|------------|
| FSK  | ANT1    | 5730            | 2.480         | 2.2898      | /          |
| FSK  | ANT1    | 5780            | 2.489         | 2.2947      | /          |
| FSK  | ANT1    | 5844            | 2.493         | 2.2960      | /          |





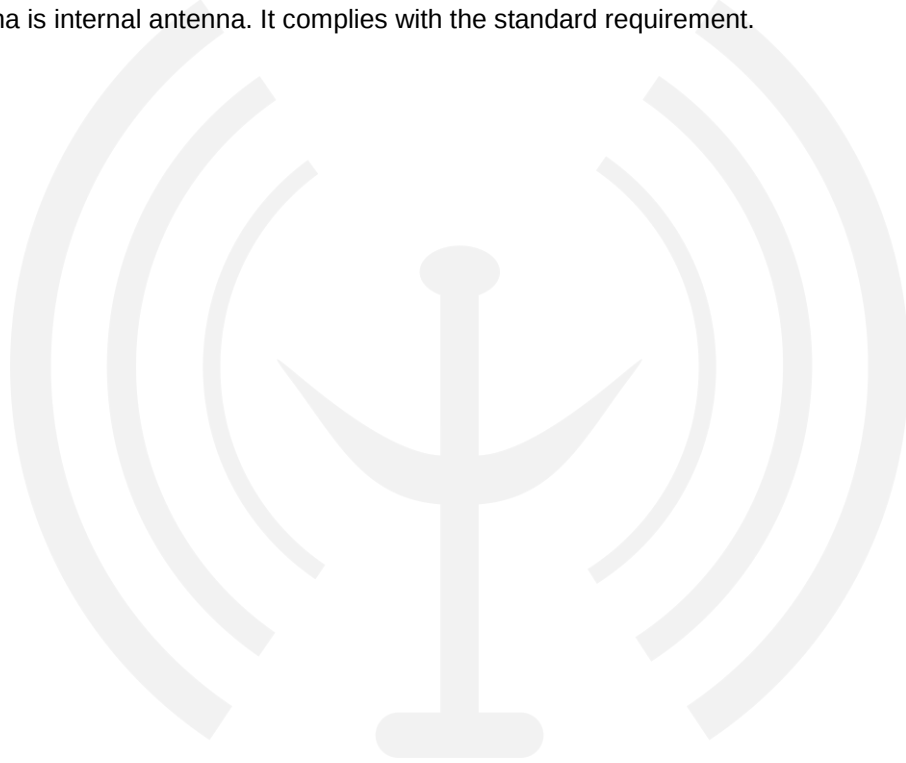
## 6. Antenna Requirement

### 6.1. Standard Requirement

According to the FCC Part 15 Paragraph 15.203& RSS-GEN(6.8), 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. The use of a permanently attached antenna to the intentional radiator shall be considered sufficient to comply with the provisions of this section. This product use a permanent ceramic printed antenna, fulfill the requirement of this section

### 6.2. EUT Antenna

The EUT antenna is internal antenna. It complies with the standard requirement.



## 7. Photos of test setup

Reference to the **appendix I Test Setup Photo** for details.

## 8. Photos of EUT

Reference to the **appendix II external photos** and **appendix III internal photos** for details.

----- END OF REPORT-----

