



## FCC TEST REPORT

**FCC ID: 2BDUR-4001789**

On Behalf of

**RADIOSHACK WORLDWIDE CORP.**

**Bluetooth Speaker**

**Model No.: 4001789**

Prepared for : RADIOSHACK WORLDWIDE CORP.  
Address : Millennium Tower, 18th floor Paseo General Escalon Number 3675  
Col. Escalon, San Salvador, El Salvador

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

Report Number : psi2604256-C01-R01  
Date of Receipt : April 29, 2026  
Date of Test : April 29, 2026–May 18, 2026  
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Version Number : V0

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## TEST REPORT DECLARATION

Applicant : RADIOSHACK WORLDWIDE CORP.  
Address : Millennium Tower, 18th floor Paseo General Escalon Number 3675 Col. Escalon,  
San Salvador, El Salvador  
Manufacturer : RADIOSHACK WORLDWIDE CORP.  
Address : Millennium Tower, 18th floor Paseo General Escalon Number 3675 Col. Escalon,  
San Salvador, El Salvador  
Factory : RADIOSHACK WORLDWIDE CORP.  
Address : Millennium Tower, 18th floor Paseo General Escalon Number 3675 Col. Escalon,  
San Salvador, El Salvador  
EUT Description : Bluetooth Speaker  
(A) Model No. : 4001789  
(B) Trademark : N/A

Measurement Standard Used:

**FCC Rules and Regulations Part 15 Subpart C Section 15.247**

**ANSI C63.10:2020+Cor.1-2023**

**Test Result: PASS**

The device described above is tested by Shenzhen PSI Testing Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test results are contained in this test report and Shenzhen PSI Testing Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the FCC Part 15C requirements.

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 

Approved by (name + signature).....: Simple Guan  
Project Manager 

Date of issue.....: May 18, 2026

Revision History

| Revision | Issue Date   | Revisions              | Revised By |
|----------|--------------|------------------------|------------|
| V0       | May 18, 2026 | Initial released Issue | Felix Pang |



## 1. Summary Of Standards And Results

### 1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

| Test Item                      | Standards Paragraph                                                      | Result |
|--------------------------------|--------------------------------------------------------------------------|--------|
| Maximum Peak Output Power      | FCC Part 15: 15.247(b)(1), ANSI C63.10-2020+Cor.1-2023                   | P      |
| Bandwidth                      | FCC Part 15: 15.215(c), ANSI C63.10-2020+Cor.1-2023                      | P      |
| Carrier Frequency Separation   | FCC Part 15: 15.247(a)(1), ANSI C63.10-2020+Cor.1-2023                   | P      |
| Number Of Hopping Channel      | FCC Part 15: 15.247(a)(1)(iii), ANSI C63.10-2020+Cor.1-2023              | P      |
| Dwell Time                     | FCC Part 15: 15.247(a)(1)(iii), ANSI C63.10-2020+Cor.1-2023              | P      |
| Radiated Spurious Emission     | FCC Part 15: 15.209, FCC Part 15: 15.247(d), ANSI C63.10-2020+Cor.1-2023 | P      |
| Out-of-band Emissions          | FCC Part 15: 15.247(d), ANSI C63.10-2020+Cor.1-2023                      | P      |
| Radiated Band Edge Emission    | FCC Part 15: 15.247(d), ANSI C63.10-2020+Cor.1-2023                      | P      |
| Power Line Conducted Emissions | FCC Part 15: 15.207(a), ANSI C63.10-2020+Cor.1-2023                      | P      |
| Antenna requirement            | FCC Part 15: 15.203                                                      | P      |

Note:

1. P is an abbreviation for Pass.
2. F is an abbreviation for Fail.
3. N/A is an abbreviation for Not Applicable.
4. Conclusion determination rules of this report: Unless there are clear provisions on measurement uncertainty in the standard or customer requirements, decision by actual test data without considering measurement uncertainty.
5. Measurement method usage KDB 558074 D01 15.247 Meas Guidance v05r02.

## 2. General Information

### 2.1. Description of Device (EUT)

Product Name : Bluetooth Speaker  
Model No. : 4001789  
Diff : N/A  
Power supply : DC 5V from adapter, DC 7.4V from battery.

Radio Technology : Bluetooth V5.0 EDR  
Operation frequency : 2402-2480MHz  
Channel No. : 79 channels  
Channel Separation : 1MHz  
Modulation : GFSK,  $\pi/4$ -DQPSK, 8DPSK  
Antenna Type : Internal antenna, Maximum Gain is -0.58dBi.

PMN : N/A  
HVIN : N/A

Software version : N/A  
Hardware version/FVIN : N/A

Note : Antenna information is provided by applicant.  
Testing lab is not responsible for the accuracy of the information.

## 2.2. Accessories of Device (EUT)

Accessories 1 : USB Cable  
 Manufacturer : N/A  
 Model : N/A

## 2.3. Tested Supporting System Details

| No. | Description | Manufacturer | Model     | Serial Number |
|-----|-------------|--------------|-----------|---------------|
| 1   | Adapter     | Baseus       | CCXFK65CC | AJ250501      |
| 2   | TF Card     | SAMSUNG      | 16G       | N/A           |

## 2.4. Block Diagram of Connection Between EUT and Simulators

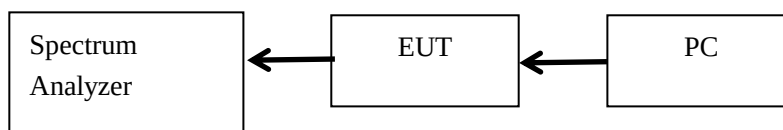
Spurious Emission



Power Line Conducted Emission



RF



## 2.5. Test Mode Description

The test software used to control EUT work in Continuous TX mode, and select test channel, wireless mode

| Tested mode, channel, and data rate information  |         |                 |
|--------------------------------------------------|---------|-----------------|
| Mode                                             | Channel | Frequency (MHz) |
| GFSK / Pi/4-DQPSK / 8DPSK<br>Carrier Tx Mode     | CH0     | 2402            |
|                                                  | CH39    | 2441            |
|                                                  | CH78    | 2480            |
| GFSK / Pi/4-DQPSK / 8DPSK<br>hopping on Tx Mode  | CH0     | 2402            |
|                                                  | CH39    | 2441            |
|                                                  | CH78    | 2480            |
| GFSK / Pi/4-DQPSK / 8DPSK<br>hopping off Tx Mode | CH0     | 2402            |
|                                                  | CH39    | 2441            |
|                                                  | CH78    | 2480            |

## 2.6. Software test version and power setting information

|                             |                                                                                                                                                              |                 |                                    |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------|
| Software testing version    | FCC_Test_Tools_V2.23.exe                                                                                                                                     |                 |                                    |
| 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                           |
| GFSK, Pi/4-DQPSK, 8DPSK     | CH0                                                                                                                                                          | 2402            | TX level is set as defaults value. |
|                             | CH39                                                                                                                                                         | 2441            | TX level is set as defaults value. |
|                             | CH78                                                                                                                                                         | 2480            | TX level is set as defaults value. |

## 2.7. Test Conditions

| Items              | Required  | Actual |
|--------------------|-----------|--------|
| Temperature range: | 15-35℃    | 26℃    |
| Humidity range:    | 25-75%    | 54%    |
| Pressure range:    | 86-106kPa | 101kPa |

## 2.8. 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 13, 2023 File on Federal Communication Commission

Registration Number: 916281

Designation Number: CN1362

September 21, 2023 Certificated by IC

Registration Number: 31123

CAB identifier: CN0158

## 2.9. Measurement Uncertainty

(95% confidence levels, k=2)

| Item                                                  | Uncertainty |
|-------------------------------------------------------|-------------|
| Power Line Conducted Emissions Test                   | 2.13dB      |
| Radiation Emission test in 3m chamber(below 30MHz)    | 4.07dB      |
| Radiation Emission test in 3m chamber(30MHz to 1GHz)  | 4.51dB      |
| Radiation Emission test in 3m chamber(1GHz to 18GHz)  | 5.07dB      |
| Radiation Emission test in 3m chamber(18GHz to 40GHz) | 5.21dB      |
| Radio Frequency                                       | 48.24KHz    |
| Conducted RF Power                                    | 0.41dB      |
| Power Spectral Density                                | 0.39 dB     |
| Occupied-Bandwidth                                    | 968Hz       |
| Duty Cycle                                            | 1%          |
| Conducted-Spurious Emission                           | 1.26dB      |

## 2.10.Test 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                         | /                | 2025.12.18 | 3 Year        |
| 2.                            | Test Receiver                 | Rohde&Schwarz | ESCI 7           | 101032/003                  | 4.42 SP3         | 2025.12.18 | 1 Year        |
| 3.                            | L.I.S.N.#1                    | Rohde&Schwarz | ENV 216          | 102282                      | /                | 2025.12.18 | 1 Year        |
| 4.                            | L.I.S.N.#2                    | EMCO          | 3810-2           | 00094944                    | /                | 2025.12.18 | 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 | FSV40-N          | 101648                      | 3.70             | 2025.12.18 | 1 Year        |
| 8.                            | Horn Antenna                  | Schwarz beck  | BBHA 9120 D      | 02706                       | /                | 2025.01.02 | 2 Year        |
| 9.                            | Amplifier                     | SKET          | LNPA_0118G-50    | SK2022032901                | /                | 2025.12.18 | 1 Year        |
| 10.                           | Horn Antenna                  | Schwarz beck  | BBHA 9170        | 00946                       | /                | 2024.12.31 | 2 Year        |
| 11.                           | Amplifier                     | SKET          | LNPA_1840G-50    | SK2019040302                | /                | 2025.12.18 | 1 Year        |
| 12.                           | RF Power Probe                | Rohde&Schwarz | NRP-Z11          | 1138.3004.02-11<br>11533-Fz | /                | 2025.12.18 | 1 Year        |
| 13.                           | RF Sensor Unit                | Tachoy        | TR1029-2         | 20220428P008                | /                | 2025.12.18 | 1 Year        |
| 14.                           | Spectrum Analyzer             | Agilent       | N9020A           | MY51281067                  | A.14.03          | 2025.12.18 | 1 Year        |
| 15.                           | Temp. & Humid Chamber         | Auchno        | 9606             | /                           | /                | 2025.12.18 | 1 Year        |
| 16.                           | Regulated DC Power Supply     | Xinouhua      | ADC120V10A       | 202211251638                | /                | 2025.12.18 | 1 Year        |
| 17.                           | Cable                         | SKET          | Cable-RE-1       | #02/#03                     | /                | 2025.12.18 | 1 Year        |
| 18.                           | Cable                         | SKET          | Cable-RE-2       | #01                         | /                | 2025.12.18 | 1 Year        |
| 19.                           | Cable                         | SKET          | Cable-RE-3       | #04                         | /                | 2025.12.18 | 1 Year        |
| 20.                           | Cable                         | SKET          | Cable-CE-1       | A-E-24                      | /                | 2025.12.18 | 1 Year        |
| 21.                           | 6dB Attenuator                | Schwarzbeck   | DGA 9552N<br>6dB | CK4186                      | /                | 2025.12.18 | 1 Year        |
| 22.                           | Power meter                   | Agilent       | E4419B           | GB40202121                  | /                | 2025.12.18 | 1 Year        |
| 23.                           | Comprehensive Test Instrument | Rohde&Schwarz | CMW 500          | 145266                      | /                | 2025.12.18 | 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                      |                  |            |               |

### 3. Maximum Peak Output Power

#### 3.1. Limit

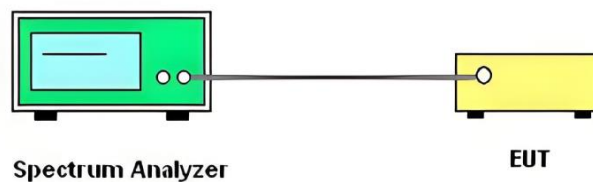
For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

#### 3.2. Test Procedure

This is an RF-conducted test to evaluate maximum peak output power. Use a direct connection between the antenna port of the unlicensed wireless device and the spectrum analyzer, through suitable attenuation. The hopping shall be disabled for this test:

- a) Use the following spectrum analyzer settings:
  - 1) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
  - 2) RBW > 20 dB bandwidth of the emission being measured.
  - 3) VBW  $\geq$  RBW.
  - 4) Sweep: Auto.
  - 5) Detector function: Peak.
  - 6) Trace: Max hold.
- b) Allow trace to stabilize.
- c) Use the marker-to-peak function to set the marker to the peak of the emission.
- d) The indicated level is the peak output power, after any corrections for external attenuators and cables.
- e) A plot of the test results and setup description shall be included in the test report.

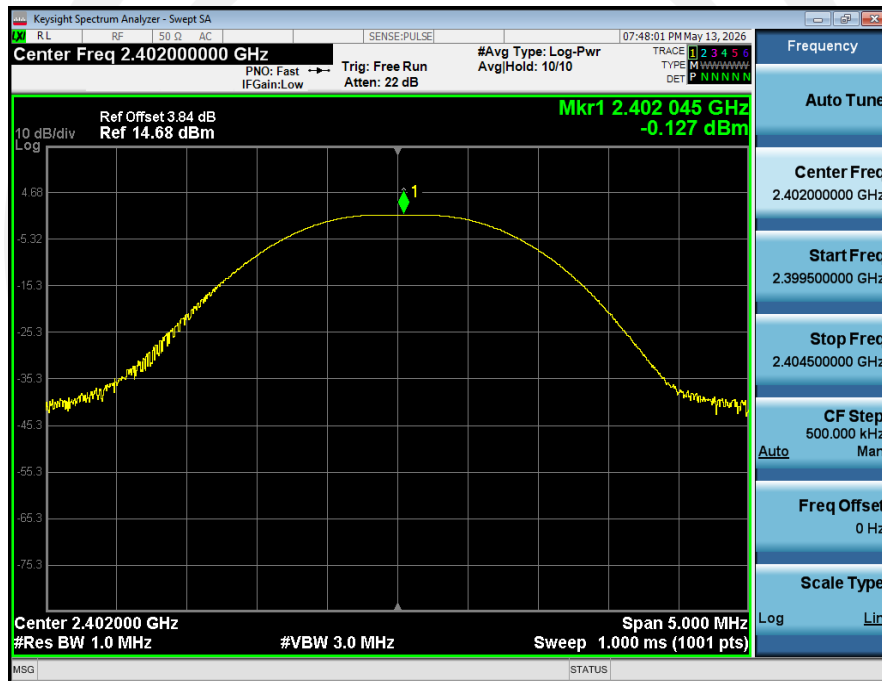
#### 3.3. Test Setup



### 3.4. Test Result

| Condition | Antenna | Modulation | Frequency (MHz) | Max. Conducted Power(dBm) | Max. Conducted Power(mW) | Limit(mW) | Result |
|-----------|---------|------------|-----------------|---------------------------|--------------------------|-----------|--------|
| NVNT      | ANT1    | 1-DH1      | 2402.00         | -0.13                     | 0.97                     | 1000      | Pass   |
| NVNT      | ANT1    | 1-DH1      | 2441.00         | 0.47                      | 1.12                     | 1000      | Pass   |
| NVNT      | ANT1    | 1-DH1      | 2480.00         | 0.65                      | 1.16                     | 1000      | Pass   |
| NVNT      | ANT1    | 2-DH1      | 2402.00         | 0.74                      | 1.19                     | 125       | Pass   |
| NVNT      | ANT1    | 2-DH1      | 2441.00         | 1.32                      | 1.36                     | 125       | Pass   |
| NVNT      | ANT1    | 2-DH1      | 2480.00         | 1.46                      | 1.40                     | 125       | Pass   |
| NVNT      | ANT1    | 3-DH1      | 2402.00         | 1.34                      | 1.36                     | 125       | Pass   |
| NVNT      | ANT1    | 3-DH1      | 2441.00         | 1.88                      | 1.54                     | 125       | Pass   |
| NVNT      | ANT1    | 3-DH1      | 2480.00         | <b>2.00</b>               | <b>1.59</b>              | 125       | Pass   |

Peak Output Power NVNT\_ANT1\_1-DH1\_2402\_00



## Peak\_Output\_Power\_NVNT\_ANT1\_1-DH1\_2441\_00



## Peak\_Output\_Power\_NVNT\_ANT1\_1-DH1\_2480\_00



## Peak\_Output\_Power\_NVNT\_ANT1\_2-DH1\_2402\_00



## Peak\_Output\_Power\_NVNT\_ANT1\_2-DH1\_2441\_00



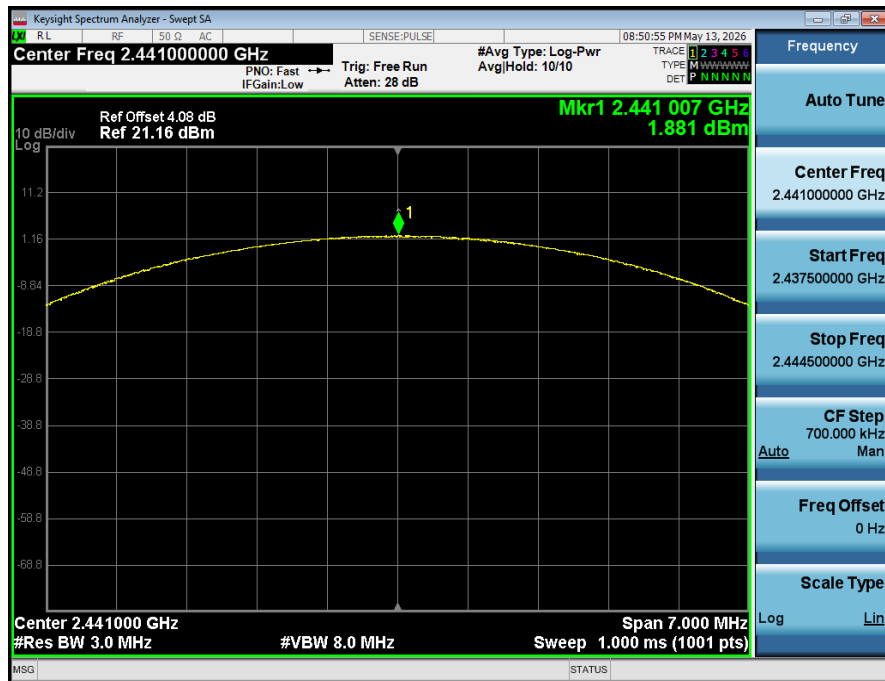
## Peak\_Output\_Power\_NVNT\_ANT1\_2-DH1\_2480\_00



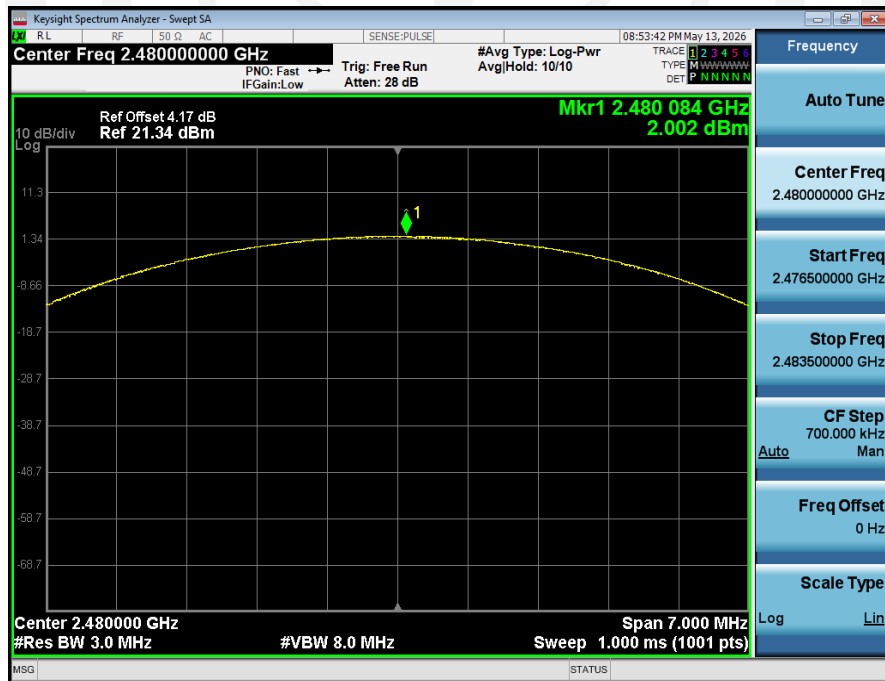
## Peak\_Output\_Power\_NVNT\_ANT1\_3-DH1\_2402\_00



## Peak\_Output\_Power\_NVNT\_ANT1\_3-DH1\_2441\_00

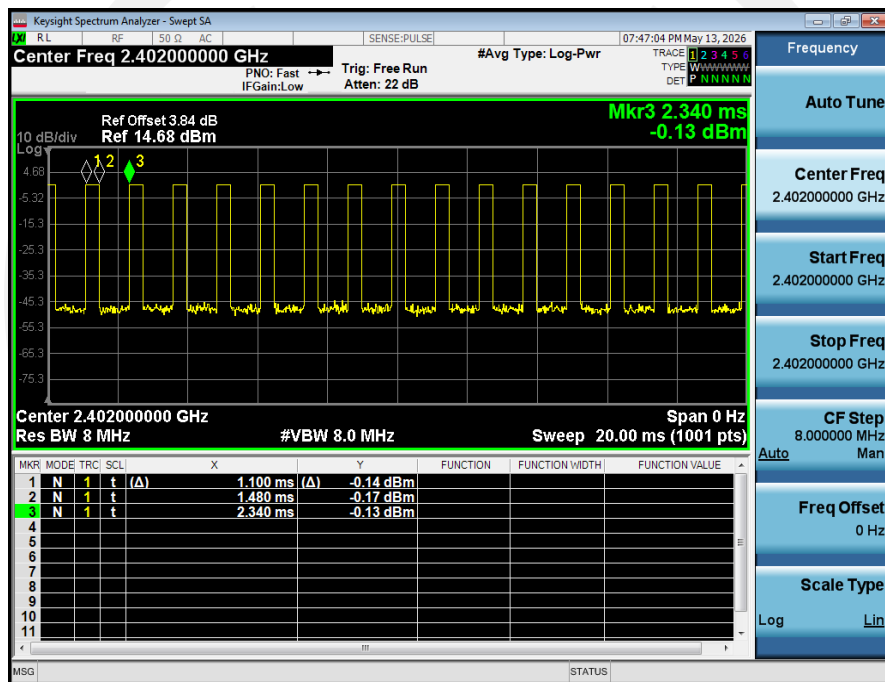


## Peak\_Output\_Power\_NVNT\_ANT1\_3-DH1\_2480\_00

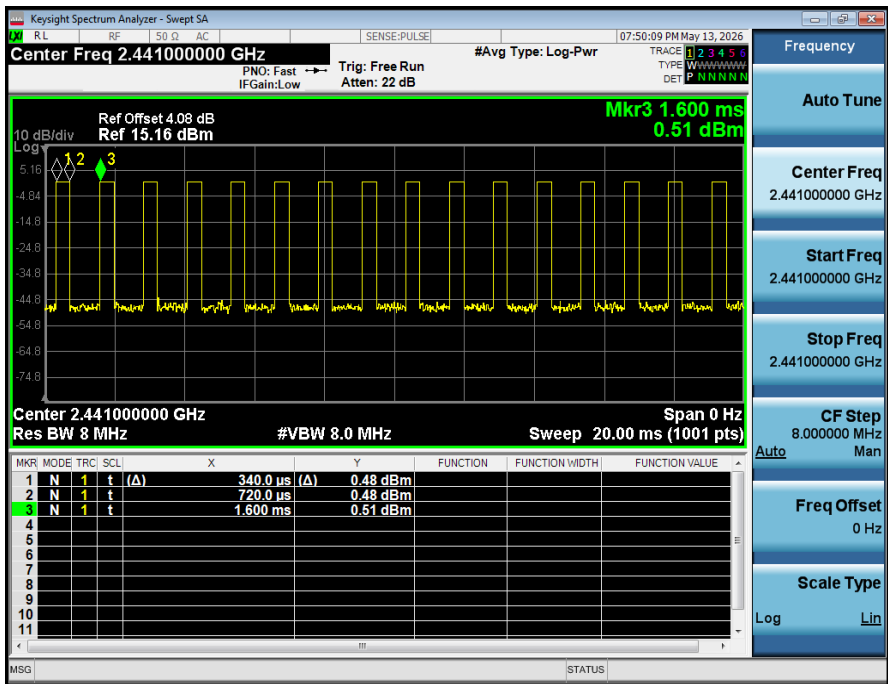


| Condition | Antenna | Rate  | Frequency (MHz) | Dutycycle(%) | Duty_factor |
|-----------|---------|-------|-----------------|--------------|-------------|
| NVNT      | ANT1    | 1-DH1 | 2402.00         | 32.26        | 4.91        |
| NVNT      | ANT1    | 1-DH1 | 2441.00         | 30.16        | 5.21        |
| NVNT      | ANT1    | 1-DH1 | 2480.00         | 29.03        | 5.37        |
| NVNT      | ANT1    | 2-DH1 | 2402.00         | 32.26        | 4.91        |
| NVNT      | ANT1    | 2-DH1 | 2441.00         | 33.33        | 4.77        |
| NVNT      | ANT1    | 2-DH1 | 2480.00         | 31.75        | 4.98        |
| NVNT      | ANT1    | 3-DH1 | 2402.00         | 32.26        | 4.91        |
| NVNT      | ANT1    | 3-DH1 | 2441.00         | 31.75        | 4.98        |
| NVNT      | ANT1    | 3-DH1 | 2480.00         | 33.33        | 4.77        |

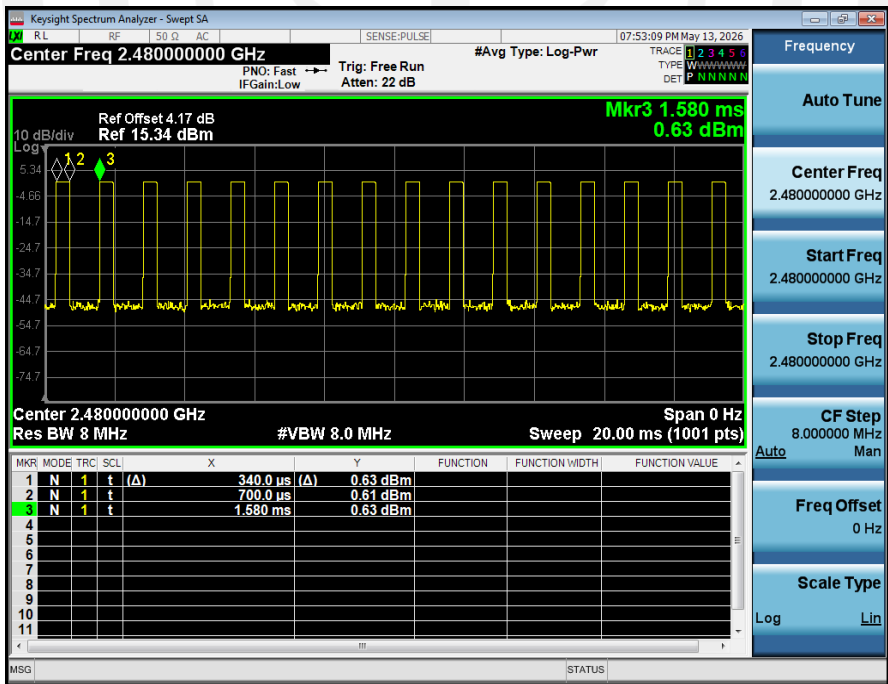
Duty\_Cycle\_NVNT\_ANT1\_1-DH1\_2402



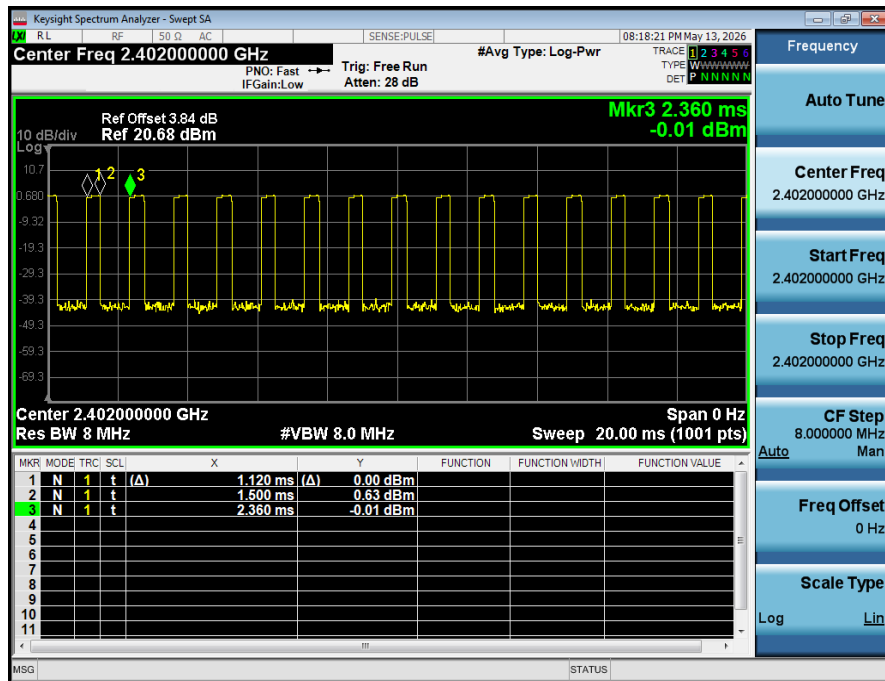
Duty\_Cycle\_NVNT\_ANT1\_1-DH1\_2441



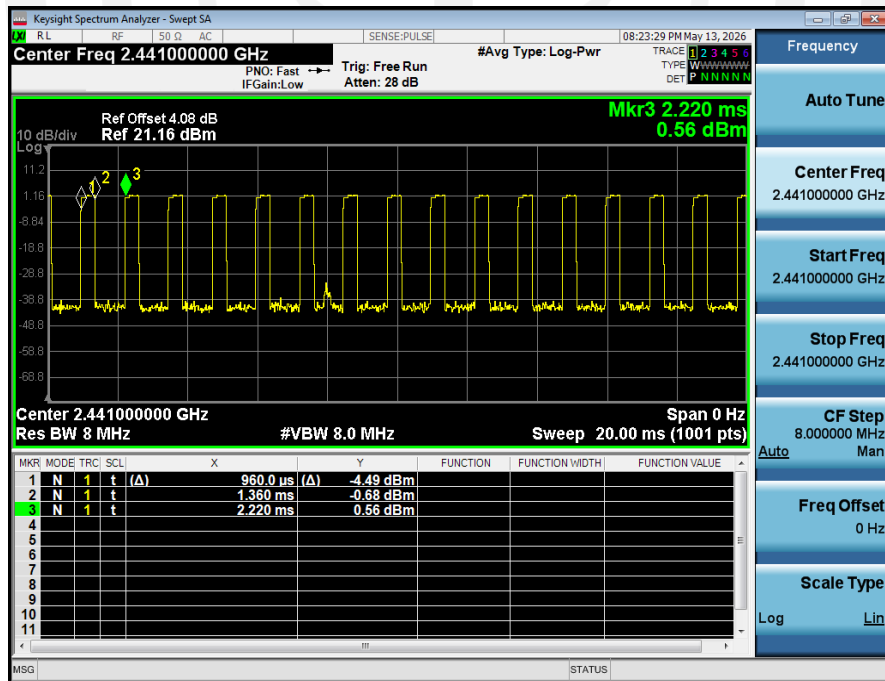
Duty\_Cycle\_NVNT\_ANT1\_1-DH1\_2480



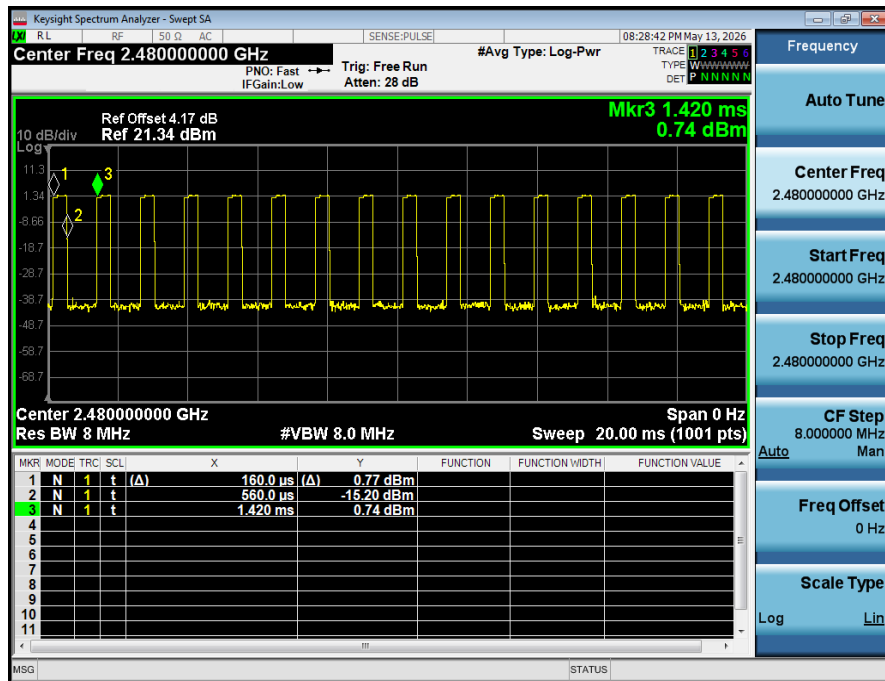
## Duty\_Cycle\_NVNT\_ANT1\_2-DH1\_2402



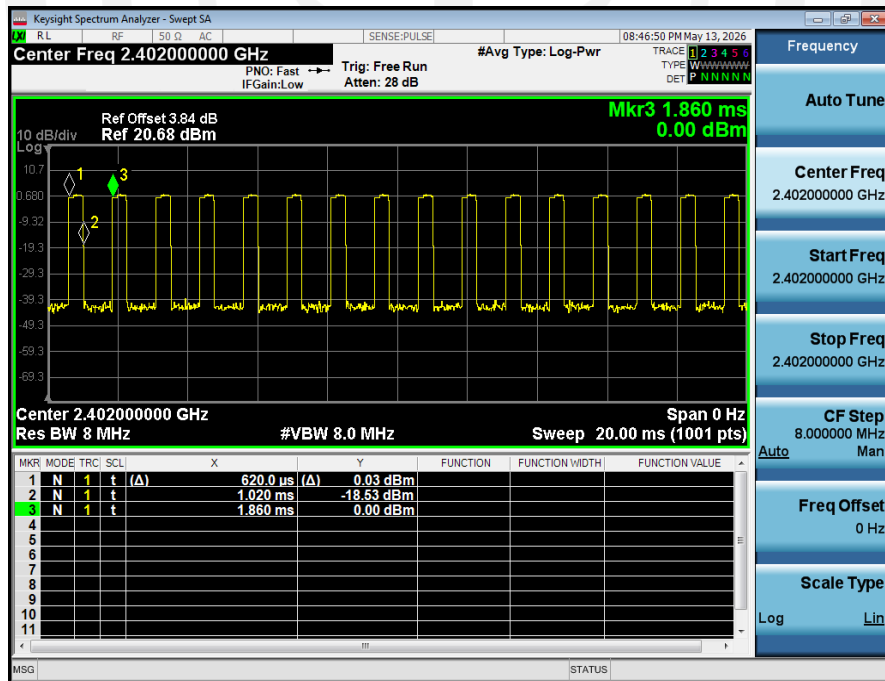
## Duty\_Cycle\_NVNT\_ANT1\_2-DH1\_2441



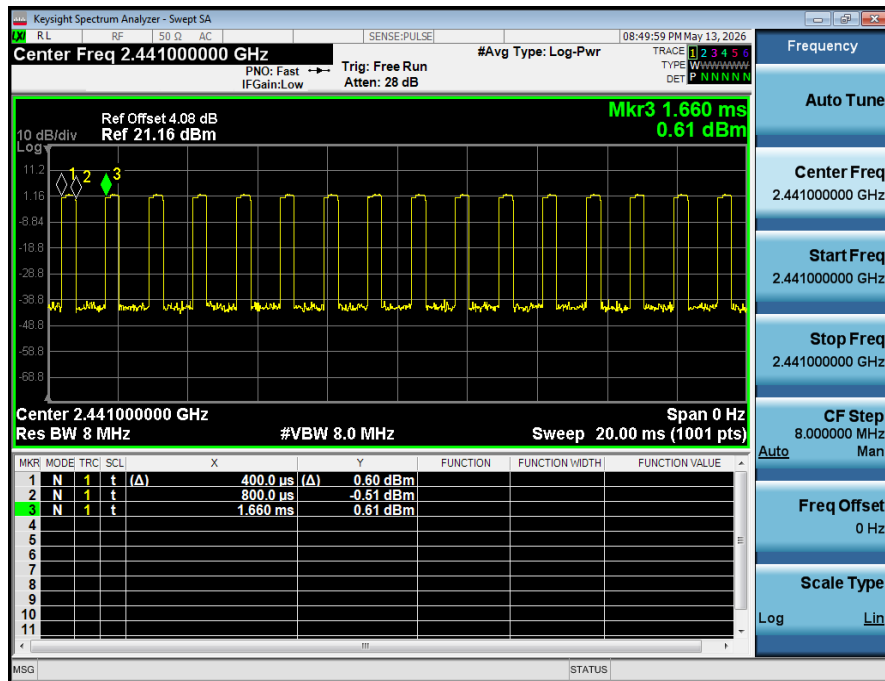
## Duty\_Cycle\_NVNT\_ANT1\_2-DH1\_2480



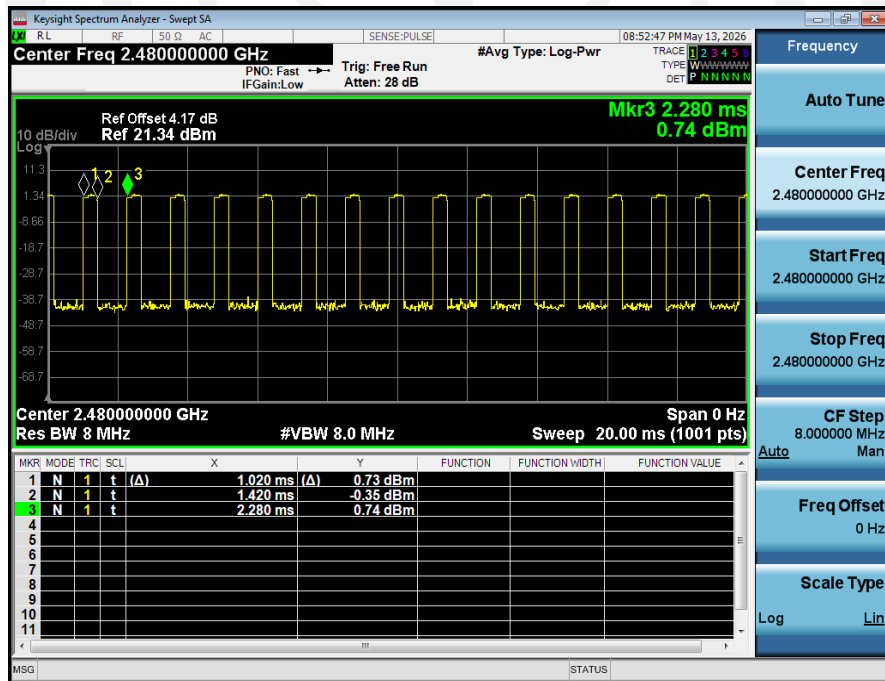
## Duty\_Cycle\_NVNT\_ANT1\_3-DH1\_2402



## Duty\_Cycle\_NVNT\_ANT1\_3-DH1\_2441



## Duty\_Cycle\_NVNT\_ANT1\_3-DH1\_2480



## 4. Bandwidth

### 4.1. Limit

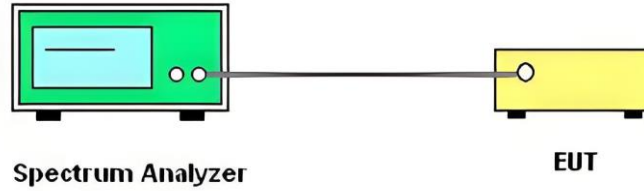
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

### 4.2. Test Procedure

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than  $[10 \log (OBW/RBW)]$  below the reference level. Specific guidance is given in 4.1.5.2.
- d) Steps a) through c) might require iteration to adjust within the specified tolerances.
- e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “-xx dB down” requirement; that is, if the requirement calls for measuring the -20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.
- f) Set detection mode to peak and trace mode to max hold.
- g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).
- h) Determine the “-xx dB down amplitude” using  $[(\text{reference value}) - xx]$ . Alternatively, this calculation may be made by using the marker-delta function of the instrument.
- i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).
- j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-xx dB down amplitude” determined in step h). If a marker is below this “-xx dB down amplitude” value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the “-xx dB down amplitude” determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.
- k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument

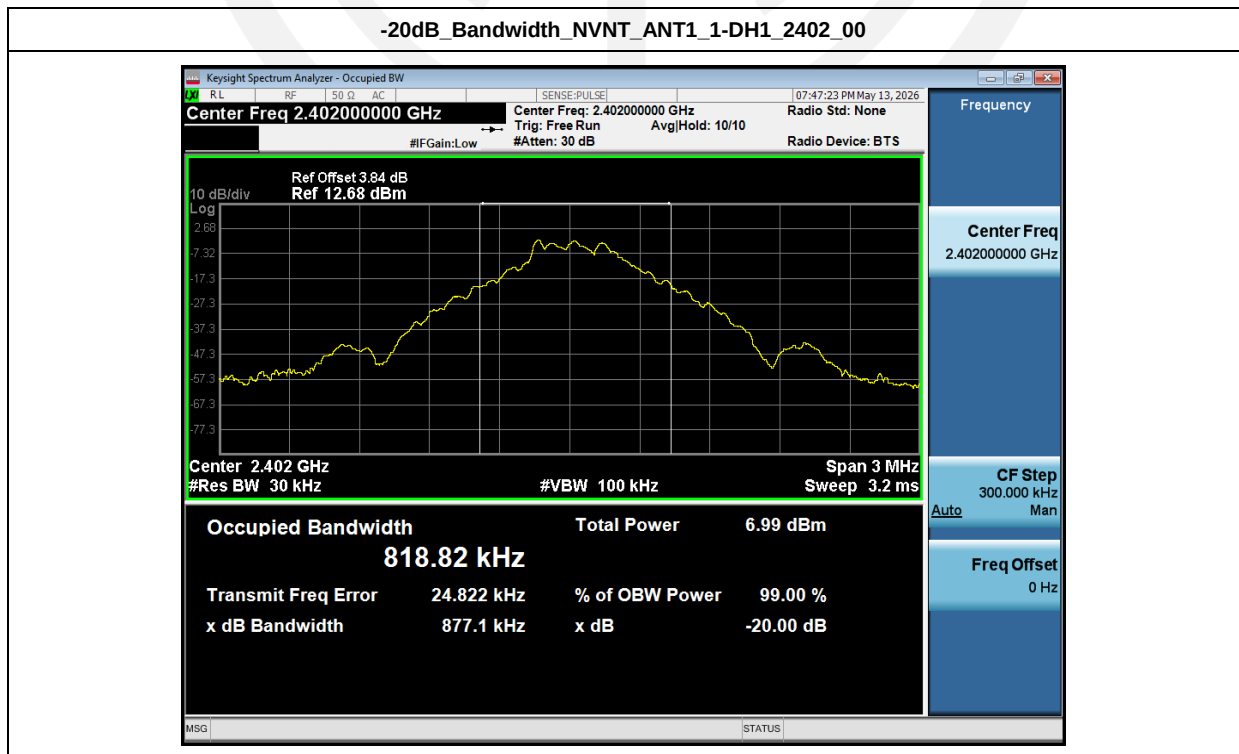
display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

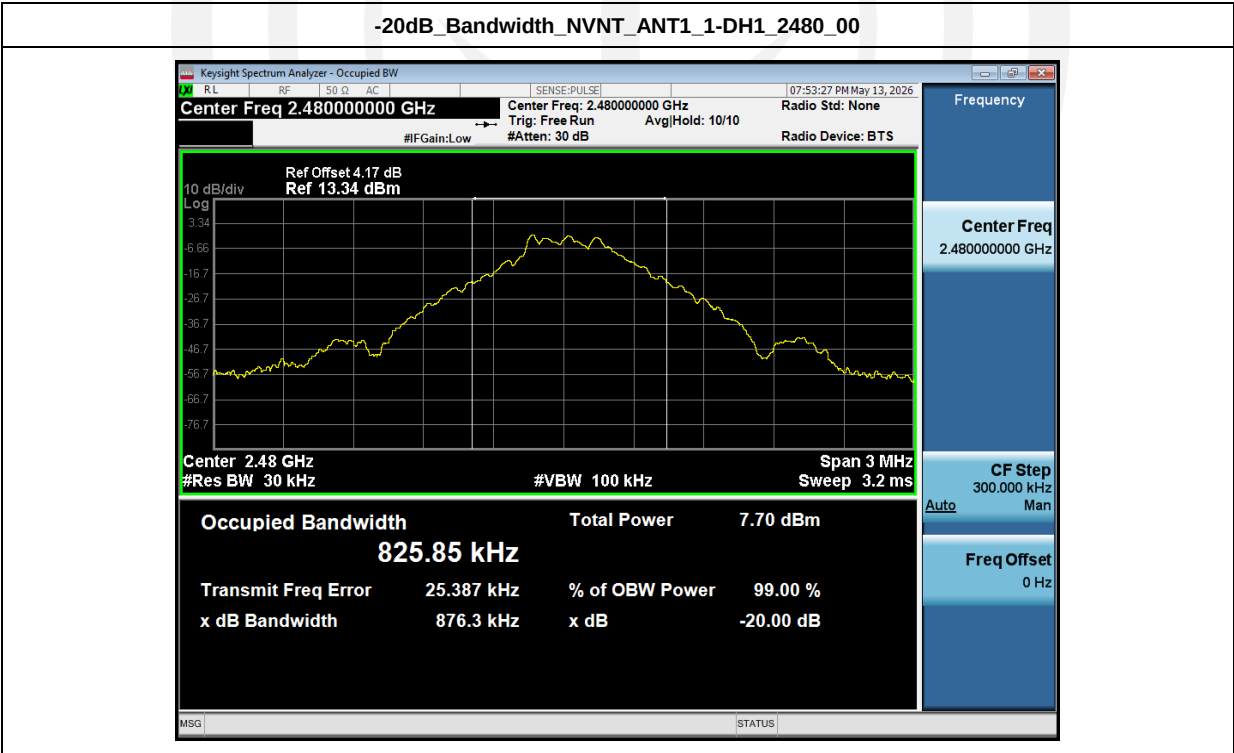
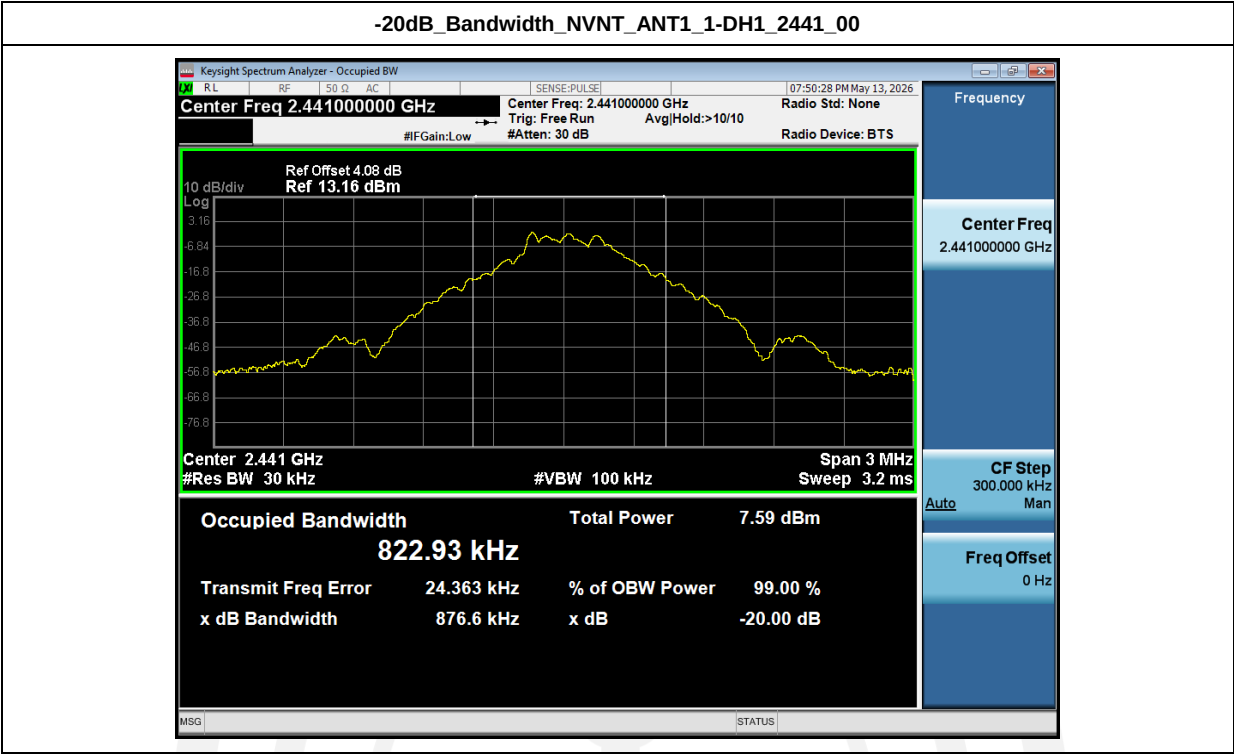
#### 4.3. Test Setup

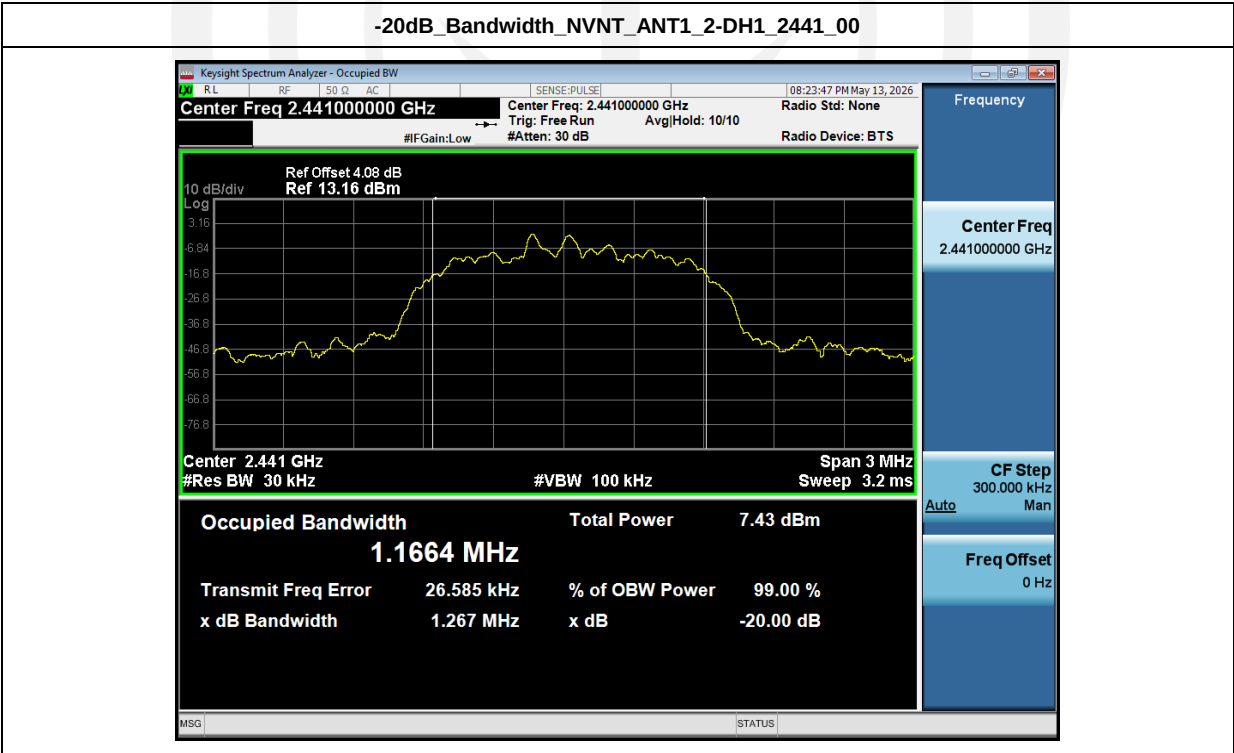
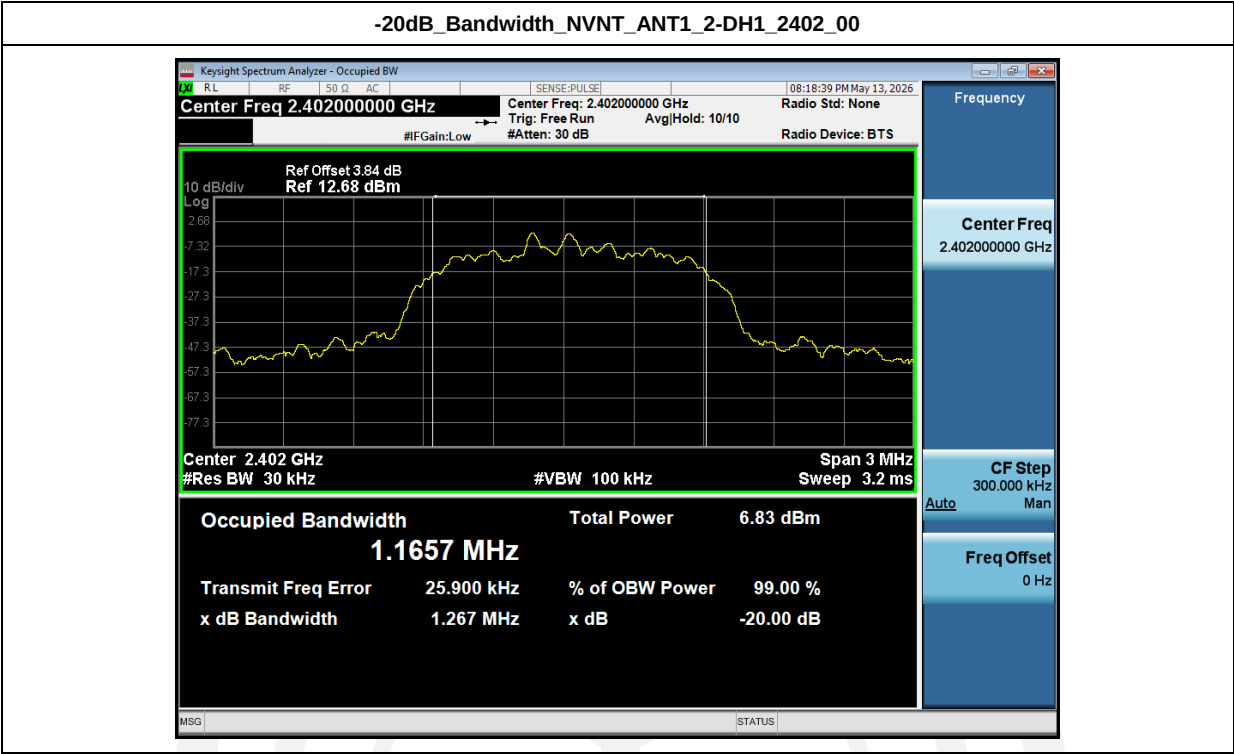


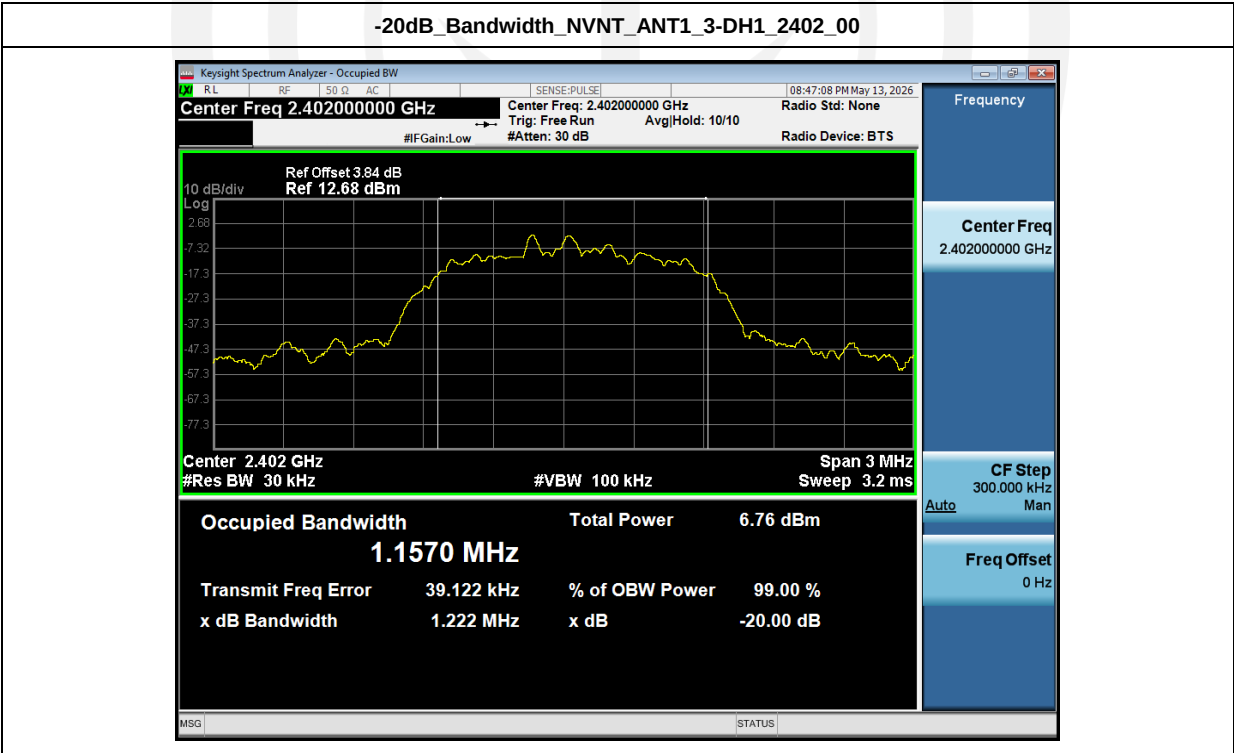
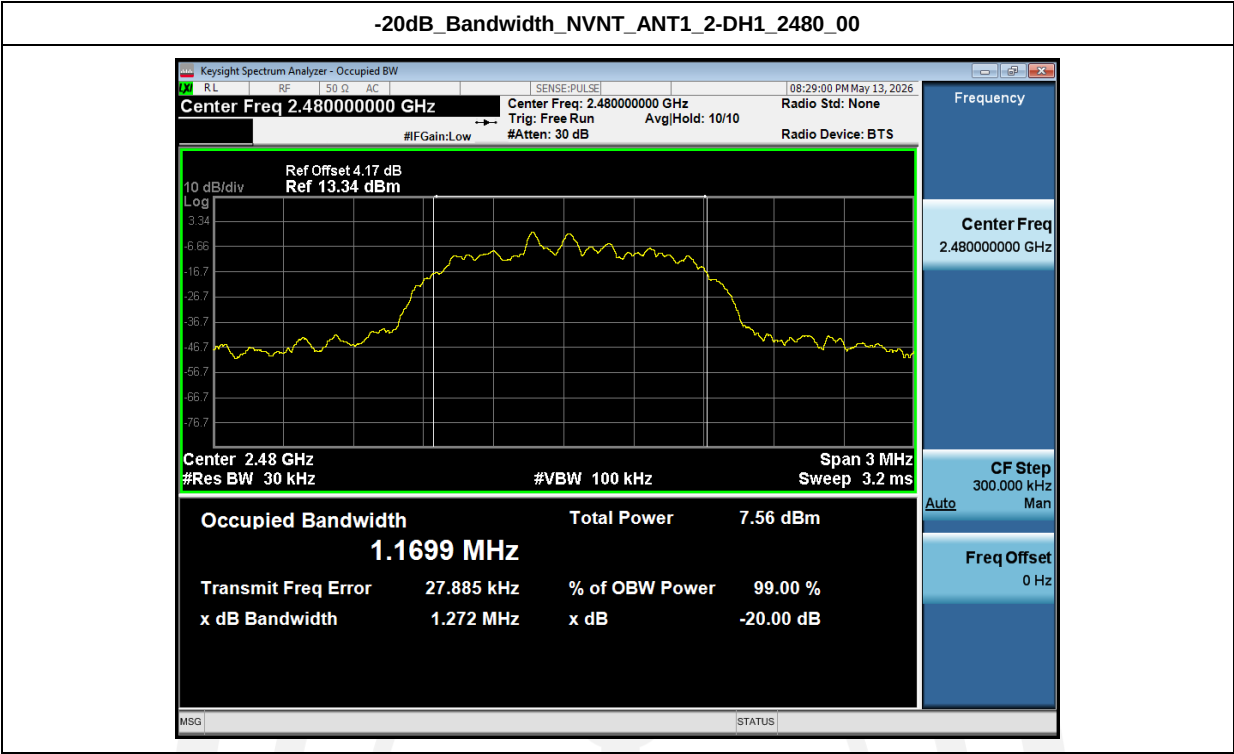
#### 4.4. Test Result

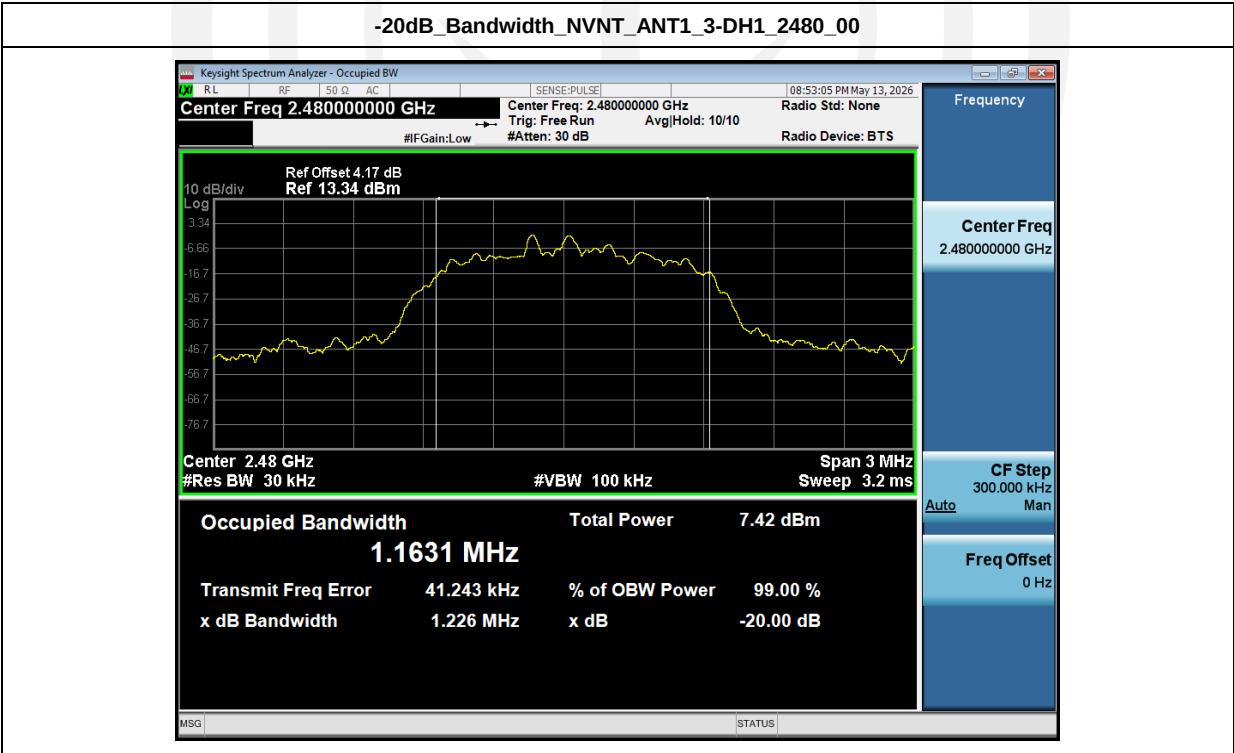
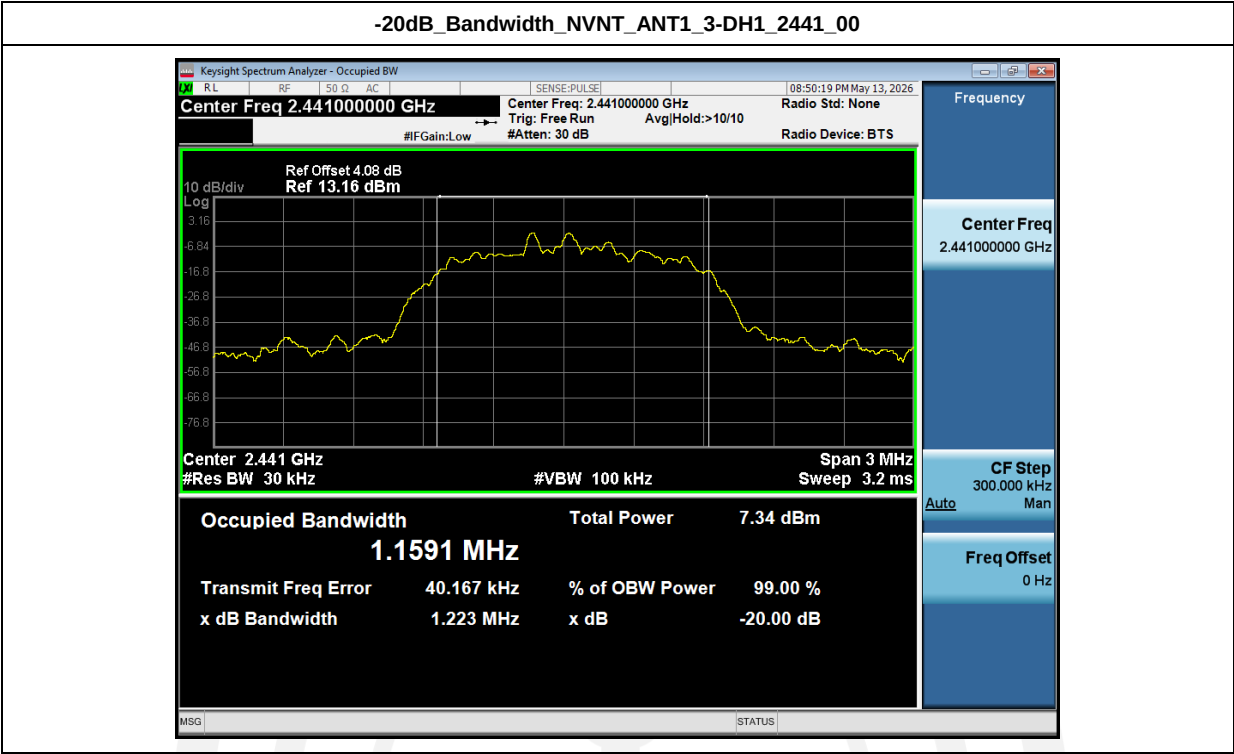
| Condition | Antenna | Modulation | Frequency (MHz) | -20dB BW(MHz) | if larger than CFS |
|-----------|---------|------------|-----------------|---------------|--------------------|
| NVNT      | ANT1    | 1-DH1      | 2402.00         | 0.877         | No                 |
| NVNT      | ANT1    | 1-DH1      | 2441.00         | 0.877         | No                 |
| NVNT      | ANT1    | 1-DH1      | 2480.00         | 0.876         | No                 |
| NVNT      | ANT1    | 2-DH1      | 2402.00         | 1.267         | Yes                |
| NVNT      | ANT1    | 2-DH1      | 2441.00         | 1.267         | Yes                |
| NVNT      | ANT1    | 2-DH1      | 2480.00         | 1.272         | Yes                |
| NVNT      | ANT1    | 3-DH1      | 2402.00         | 1.222         | Yes                |
| NVNT      | ANT1    | 3-DH1      | 2441.00         | 1.223         | Yes                |
| NVNT      | ANT1    | 3-DH1      | 2480.00         | 1.226         | Yes                |





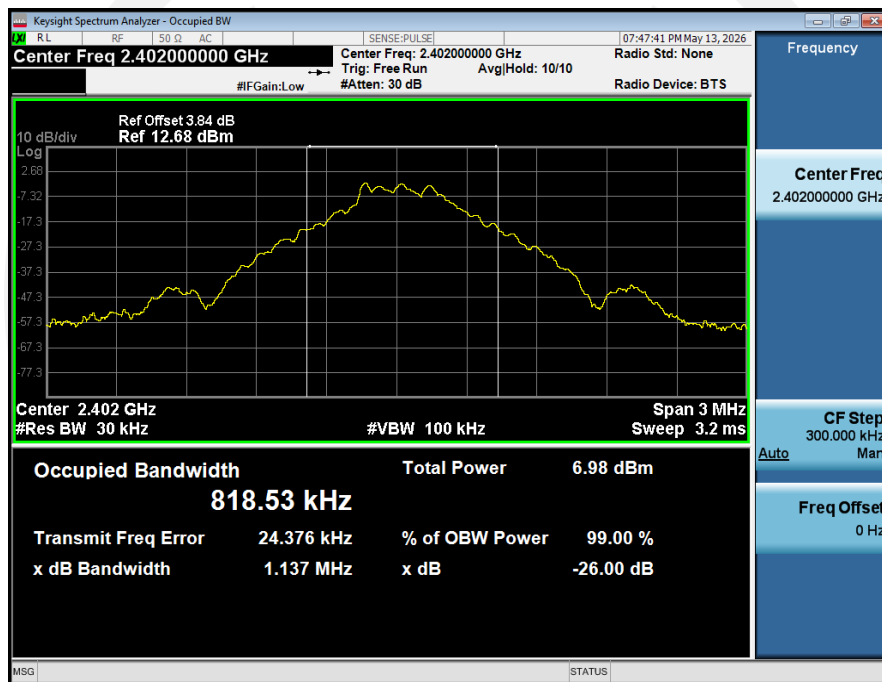




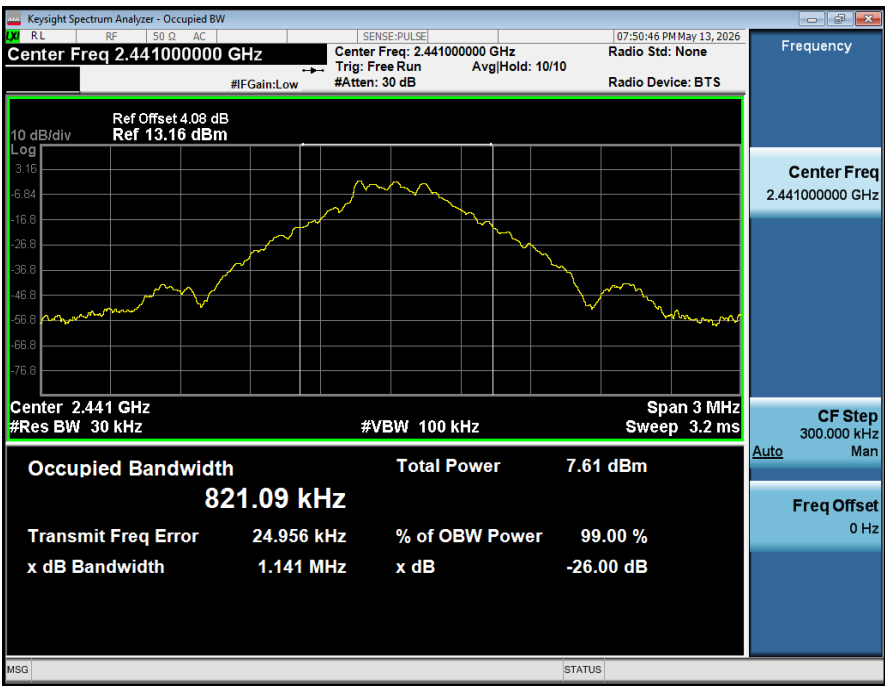


| Condition | Antenna | Modulation | Frequency (MHz) | 99%BW(MHz) |
|-----------|---------|------------|-----------------|------------|
| NVNT      | ANT1    | 1-DH1      | 2402.00         | 0.819      |
| NVNT      | ANT1    | 1-DH1      | 2441.00         | 0.821      |
| NVNT      | ANT1    | 1-DH1      | 2480.00         | 0.825      |
| NVNT      | ANT1    | 2-DH1      | 2402.00         | 1.165      |
| NVNT      | ANT1    | 2-DH1      | 2441.00         | 1.167      |
| NVNT      | ANT1    | 2-DH1      | 2480.00         | 1.170      |
| NVNT      | ANT1    | 3-DH1      | 2402.00         | 1.157      |
| NVNT      | ANT1    | 3-DH1      | 2441.00         | 1.160      |
| NVNT      | ANT1    | 3-DH1      | 2480.00         | 1.163      |

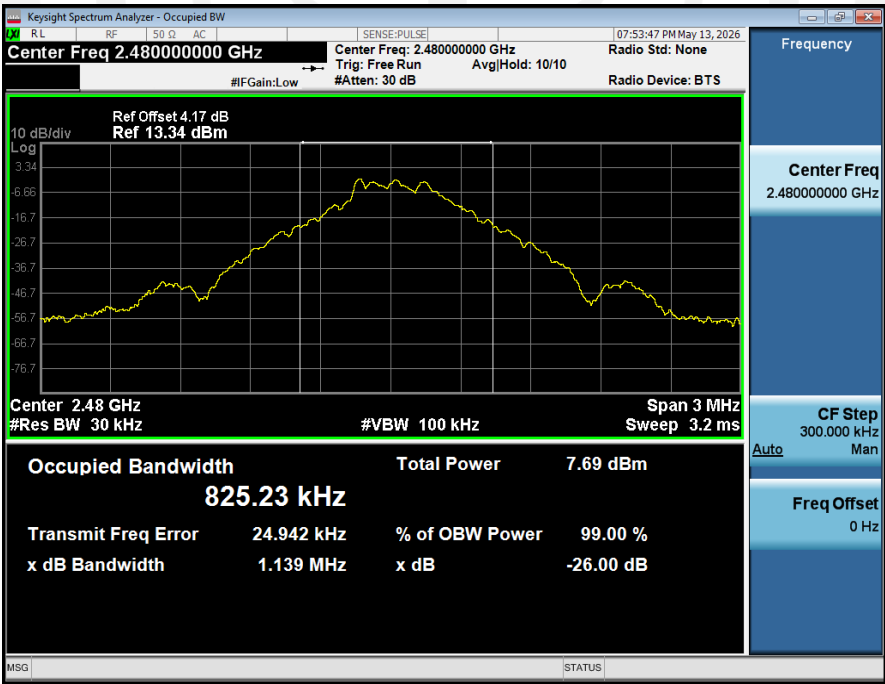
99%\_Occupied\_Bandwidth\_NVNT\_ANT1\_1-DH1\_2402\_00



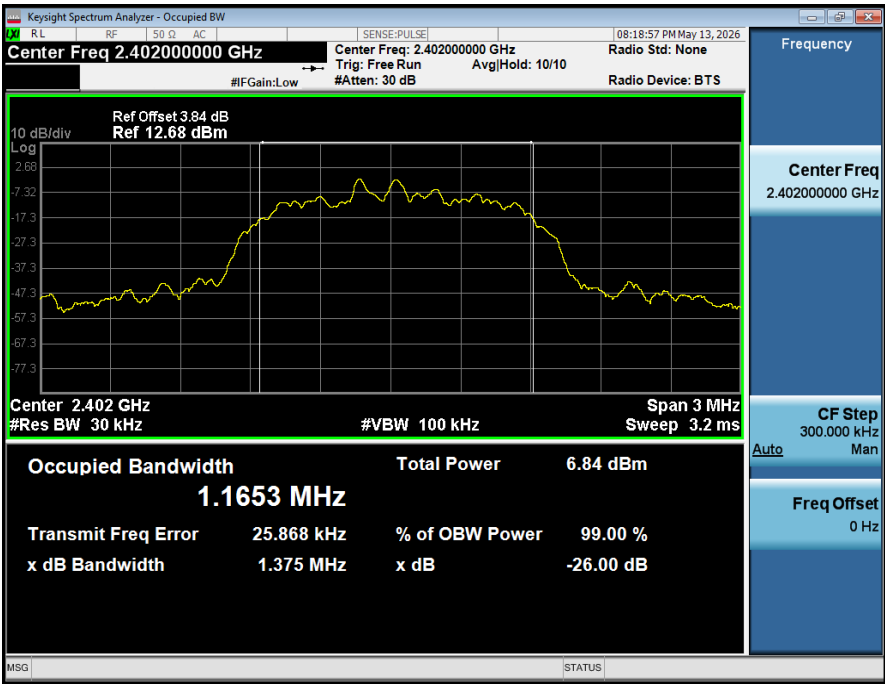
99%\_Occupied\_Bandwidth\_NVNT\_ANT1\_1-DH1\_2441\_00



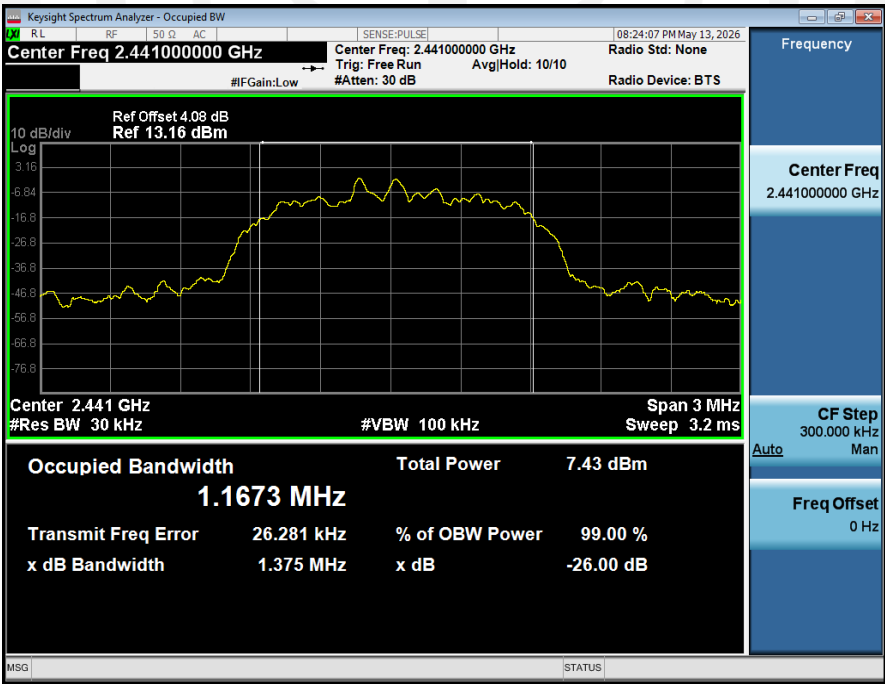
99%\_Occupied\_Bandwidth\_NVNT\_ANT1\_1-DH1\_2480\_00

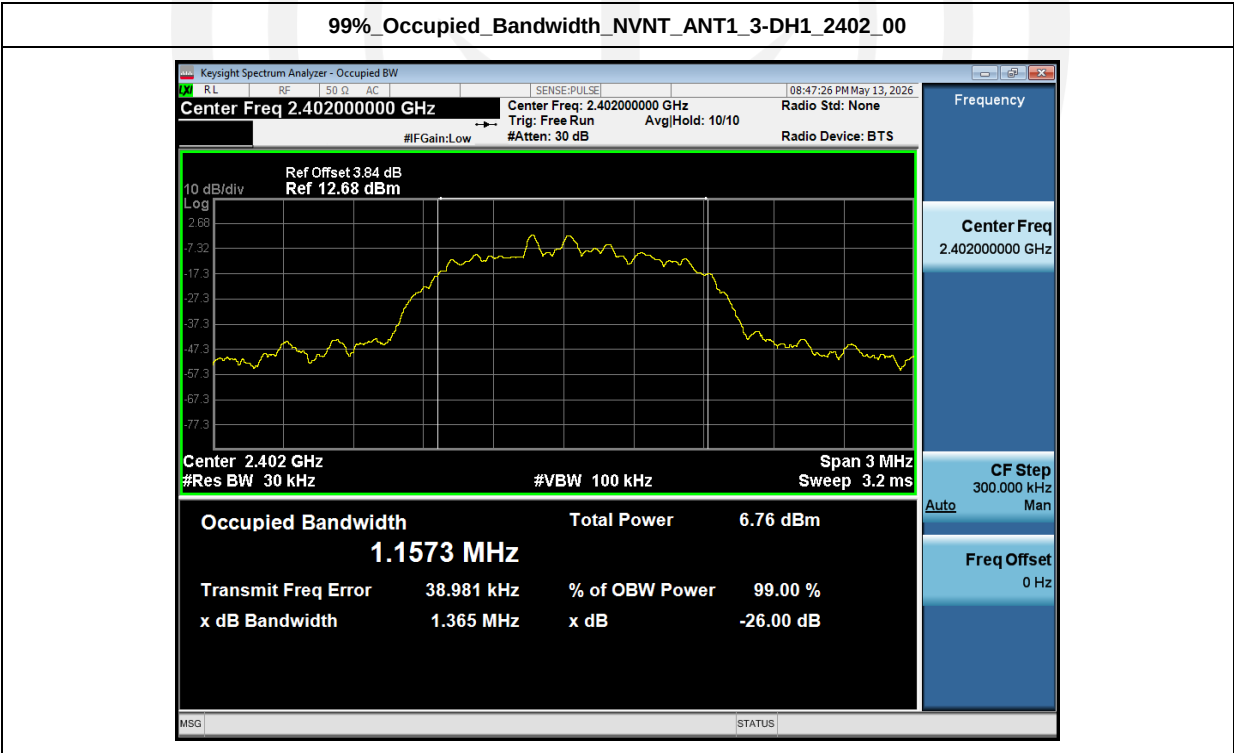
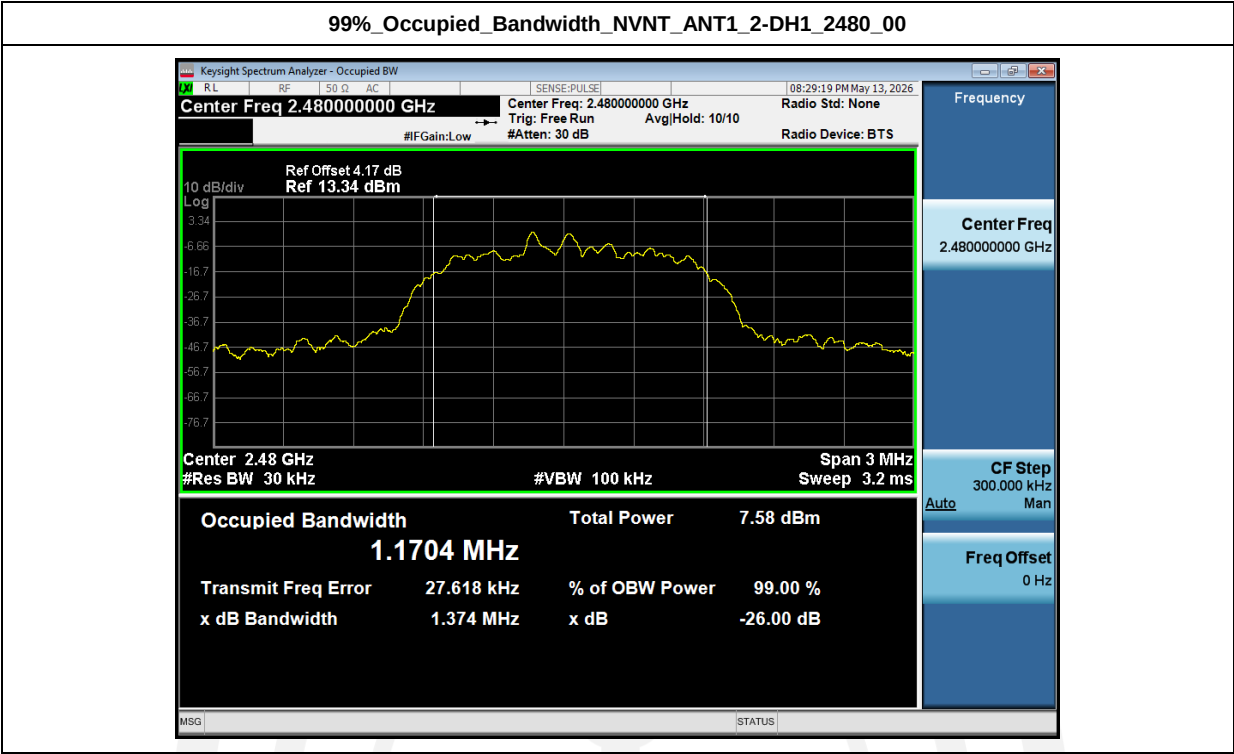


99%\_Occupied\_Bandwidth\_NVNT\_ANT1\_2-DH1\_2402\_00

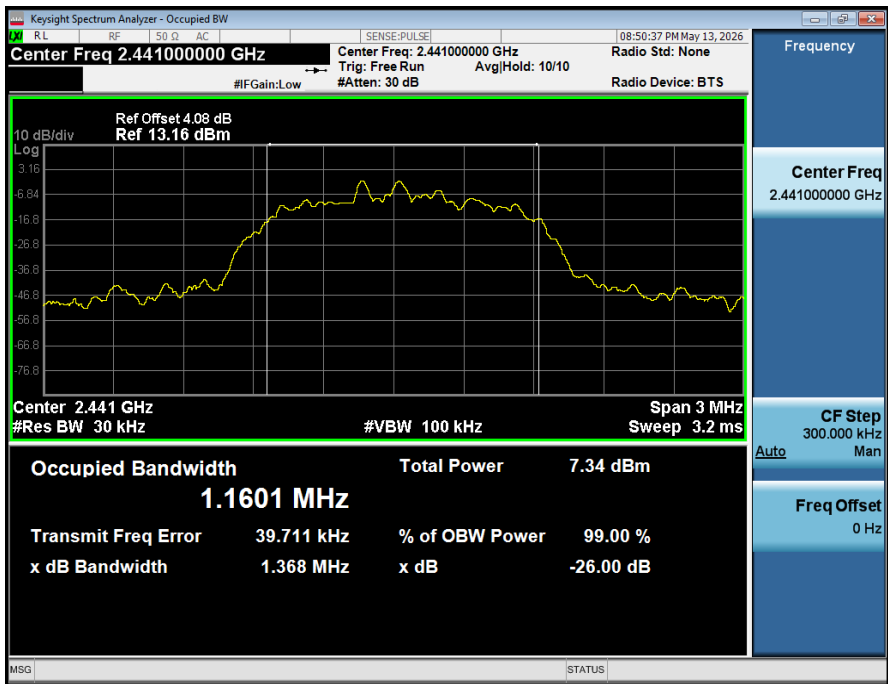


99%\_Occupied\_Bandwidth\_NVNT\_ANT1\_2-DH1\_2441\_00

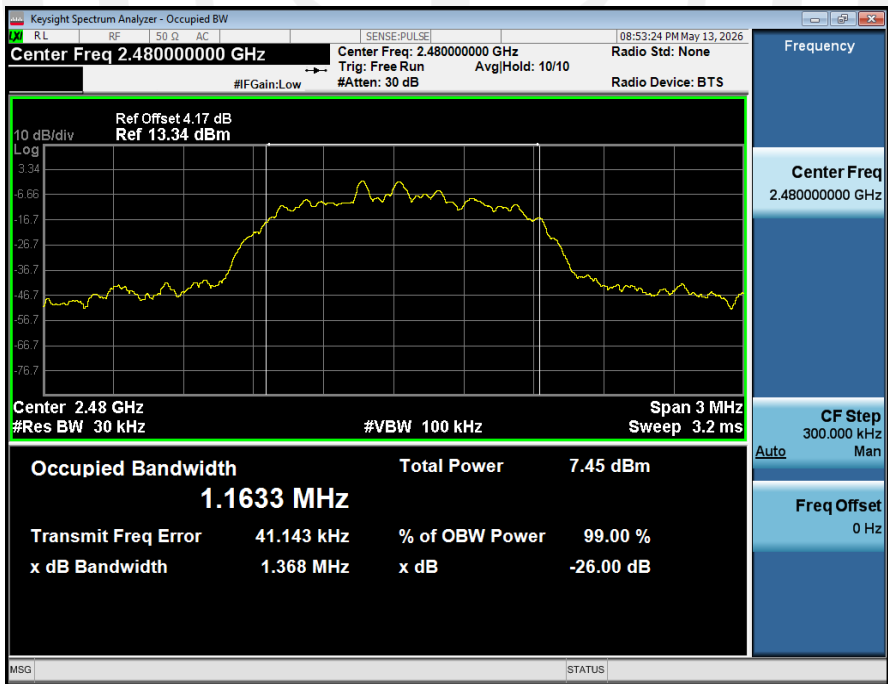




99%\_Occupied\_Bandwidth\_NVNT\_ANT1\_3-DH1\_2441\_00



99%\_Occupied\_Bandwidth\_NVNT\_ANT1\_3-DH1\_2480\_00



## 5. Carrier Frequency Separation

### 5.1. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

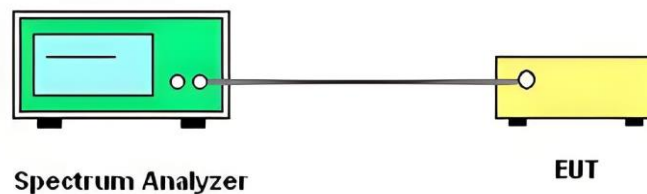
### 5.2. Test Procedure

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- a) Span: Wide enough to capture the peaks of two adjacent channels.
- b) RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
- c) Video (or average) bandwidth (VBW)  $\geq$  RBW.
- d) Sweep: Auto.
- e) Detector function: Peak.
- f) Trace: Max hold.
- g) Allow the trace to stabilize.

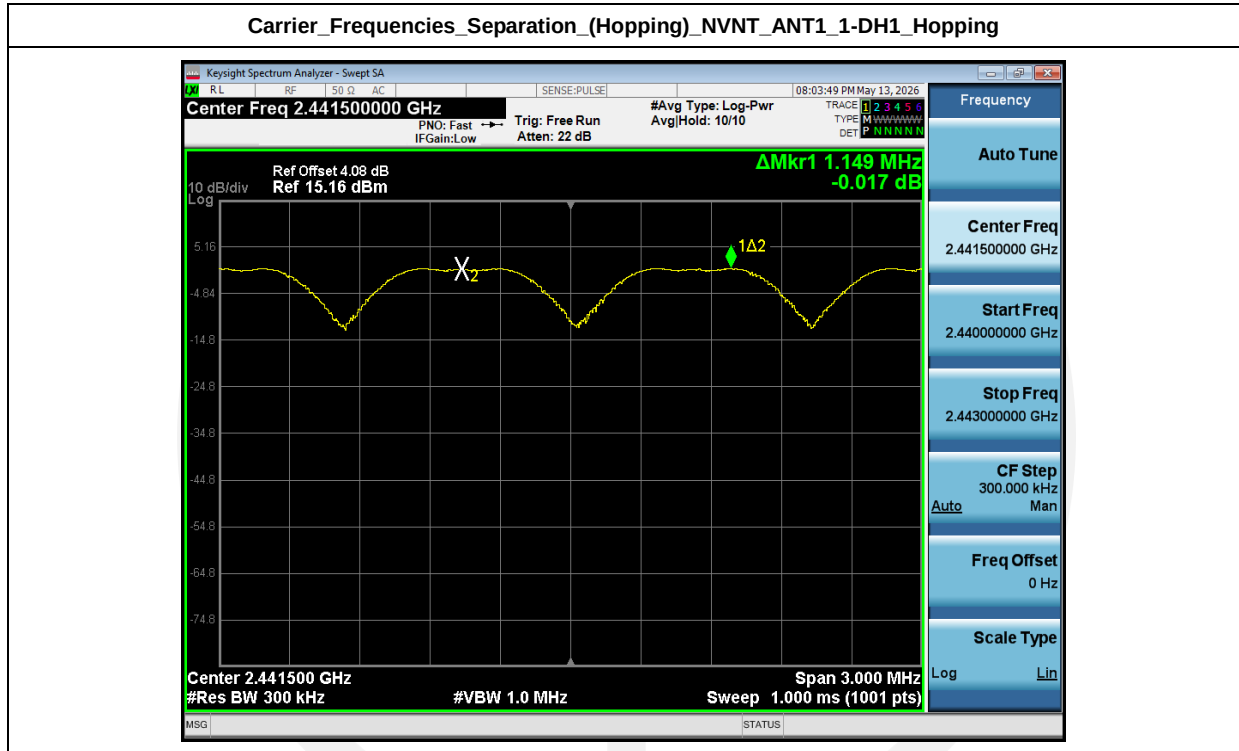
Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Compliance of an EUT with the appropriate regulatory limit shall be determined. A plot of the data shall be included in the test report.

### 5.3. Test Setup



## 5.4. Test Result

| Condition | Antenna | Modulation | Frequency(MHz) | Hopping NO.0 (MHz) | Hopping NO.1 (MHz) | Carrier Frequencies Separation(MHz) | Limit(MHz) | Result |
|-----------|---------|------------|----------------|--------------------|--------------------|-------------------------------------|------------|--------|
| NVNT      | ANT1    | 1-DH1      | 2441.00        | 2441.035           | 2442.184           | 1.15                                | 0.877      | Pass   |
| NVNT      | ANT1    | 2-DH1      | 2441.00        | 2441.023           | 2442.034           | 1.01                                | 0.845      | Pass   |
| NVNT      | ANT1    | 3-DH1      | 2441.00        | 2441.038           | 2442.019           | 0.98                                | 0.815      | Pass   |



## Carrier\_Frequencies\_Separation\_(Hopping)\_NVNT\_ANT1\_2-DH1\_Hopping



## Carrier\_Frequencies\_Separation\_(Hopping)\_NVNT\_ANT1\_3-DH1\_Hopping



## 6. Number Of Hopping Channel

### 6.1. Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

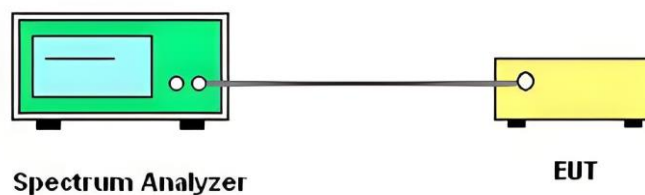
### 6.2. Test Procedure

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- a) Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
- b) RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
- c) VBW  $\geq$  RBW.
- d) Sweep: Auto.
- e) Detector function: Peak.
- f) Trace: Max hold.
- g) Allow the trace to stabilize.

It might prove necessary to break the span up into sub ranges to show clearly all of the hopping frequencies. Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels. A plot of the data shall be included in the test report.

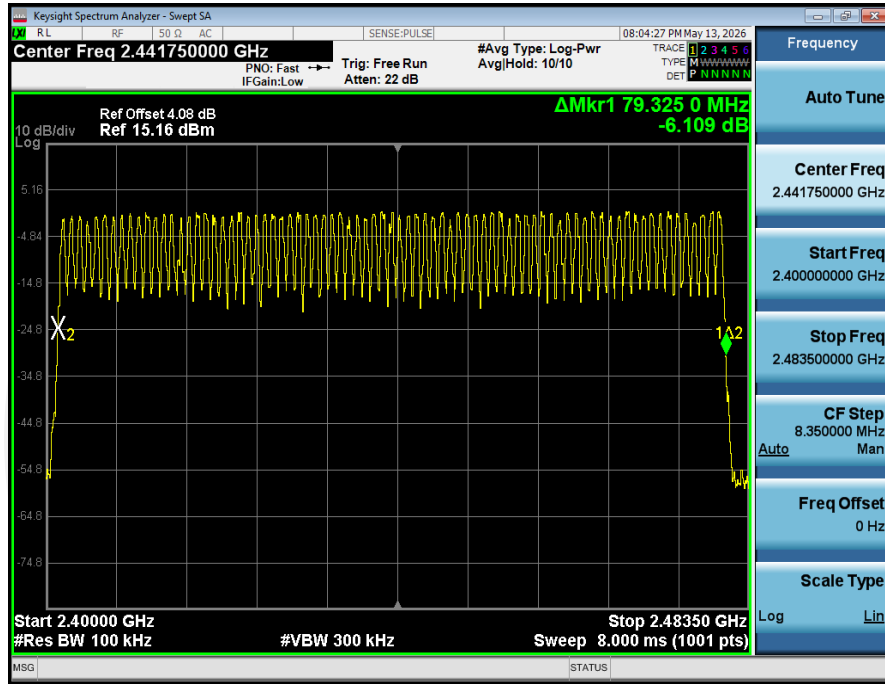
### 6.3. Test Setup



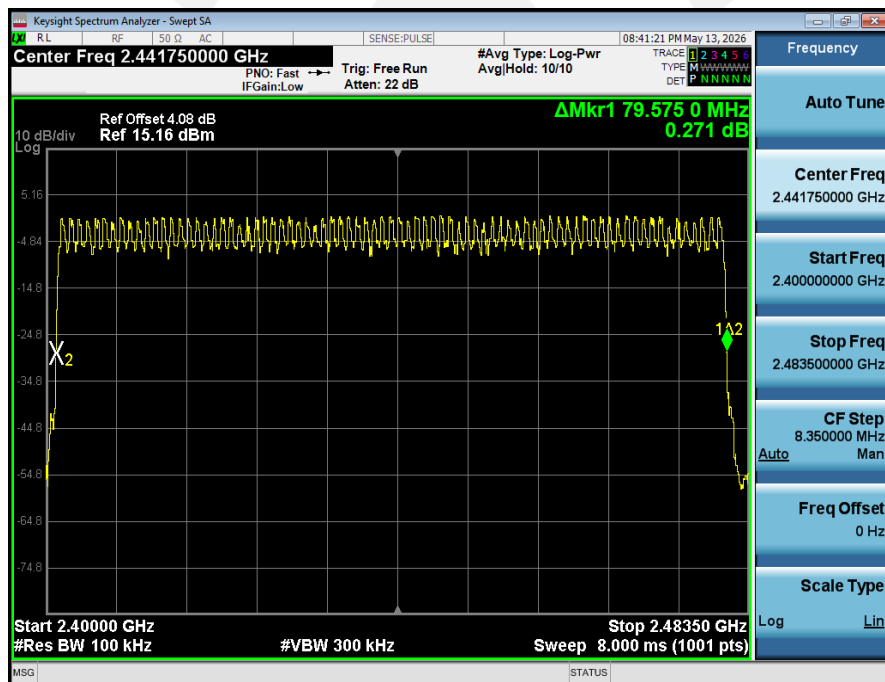
## 6.4. Test Result

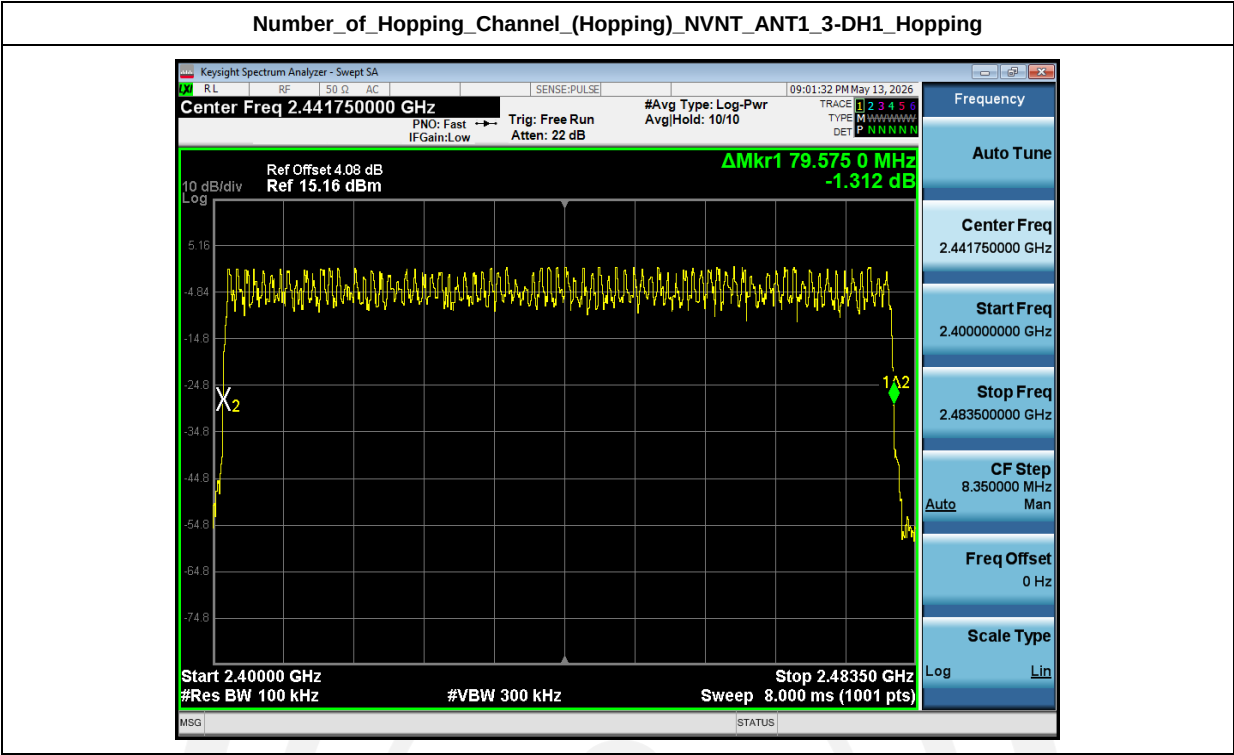
| Condition | Antenna | Modulation | Hopping Num | Limit | Result |
|-----------|---------|------------|-------------|-------|--------|
| NVNT      | ANT1    | 1-DH1      | 79          | 15    | Pass   |
| NVNT      | ANT1    | 2-DH1      | 79          | 15    | Pass   |
| NVNT      | ANT1    | 3-DH1      | 79          | 15    | Pass   |

Number\_of\_Hopping\_Channel\_(Hopping)\_NVNT\_ANT1\_1-DH1\_Hopping



Number\_of\_Hopping\_Channel\_(Hopping)\_NVNT\_ANT1\_2-DH1\_Hopping





## 7. Dwell Time

### 7.1. Test limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

### 7.2. Test Procedure

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- a) Span: Zero span, centered on a hopping channel.
- b) RBW shall be  $\leq$  channel spacing and where possible RBW should be set  $\gg 1 / T$ , where T is the expected dwell time per channel.
- c) Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.
- d) Detector function: Peak.
- e) Trace: Max hold.

Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test

for each variation in transmit time.

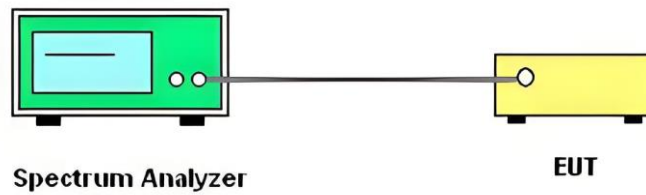
Repeat the measurement using a longer sweep time to determine the number of hops over the period specified in the requirements. The sweep time shall be equal to, or less than, the period specified in the requirements. Determine the number of hops over the sweep time and calculate the total number of hops in the period specified in the requirements, using the following equation:

$$\begin{aligned} & \text{(Number of hops in the period specified in the requirements)} = \\ & \text{(number of hops on spectrum analyzer)} \times (\text{period specified in the requirements} / \text{analyzer sweep time}) \end{aligned}$$

The average time of occupancy is calculated from the transmit time per hop multiplied by the number of hops in the period specified in the requirements. If the number of hops in a specific time varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation.

The measured transmit time and time between hops shall be consistent with the values described in the operational description for the EUT.

### 7.3. Test Setup



### 7.4. Test Result

| Condition | Antenna | Packet Type | Pulse Time(ms) | Hops   | Dwell Time(ms) | Limit(s) | Result |
|-----------|---------|-------------|----------------|--------|----------------|----------|--------|
| NVNT      | ANT1    | 1-DH1       | 0.390          | 320.00 | 124.800        | 0.40     | Pass   |
| NVNT      | ANT1    | 2-DH1       | 0.400          | 318.00 | 127.200        | 0.40     | Pass   |
| NVNT      | ANT1    | 3-DH1       | 0.390          | 320.00 | 124.800        | 0.40     | Pass   |
| NVNT      | ANT1    | 1-DH3       | 1.640          | 150.00 | 246.000        | 0.40     | Pass   |
| NVNT      | ANT1    | 1-DH5       | 2.890          | 112.00 | 323.680        | 0.40     | Pass   |
| NVNT      | ANT1    | 2-DH3       | 1.640          | 164.00 | 268.960        | 0.40     | Pass   |
| NVNT      | ANT1    | 2-DH5       | 2.900          | 103.00 | 298.700        | 0.40     | Pass   |
| NVNT      | ANT1    | 3-DH3       | 1.650          | 168.00 | 277.200        | 0.40     | Pass   |
| NVNT      | ANT1    | 3-DH5       | 2.900          | 98.00  | 284.200        | 0.40     | Pass   |

[illegible]

**Dwell Time (Hopping) NVNT\_ANT1\_1-DH1\_2441\_00\_Accumulated**

The screenshot displays a Keysight Spectrum Analyzer interface. The main plot shows a signal with a peak at 5.877 s and 0.56 dBm. The center frequency is 2.441000000 GHz. The plot is titled "Center Freq 2.441000000 GHz". The y-axis is labeled "10 dB/div Log" and ranges from -65.9 to 14.1. The x-axis is labeled "Center 2.441000000 GHz" and ranges from 2.441000000 to 2.441000000 GHz. The plot shows a signal with a peak at 5.877 s and 0.56 dBm. The plot is titled "Center Freq 2.441000000 GHz".

Keysight Spectrum Analyzer - Swept SA

Center Freq 2.441000000 GHz

PNO: Fast Trig: Free Run #Avg Type: Log-Pwr

Ref Offset 4.08 dB Ref 24.08 dBm

Mkr1 5.877 s 0.56 dBm

Center 2.441000000 GHz Span 0 Hz

Res BW 1.0 MHz #VBW 1.0 MHz Sweep 31.60 s (30001 pts)

Frequency

Auto Tune

Center Freq 2.441000000 GHz

Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

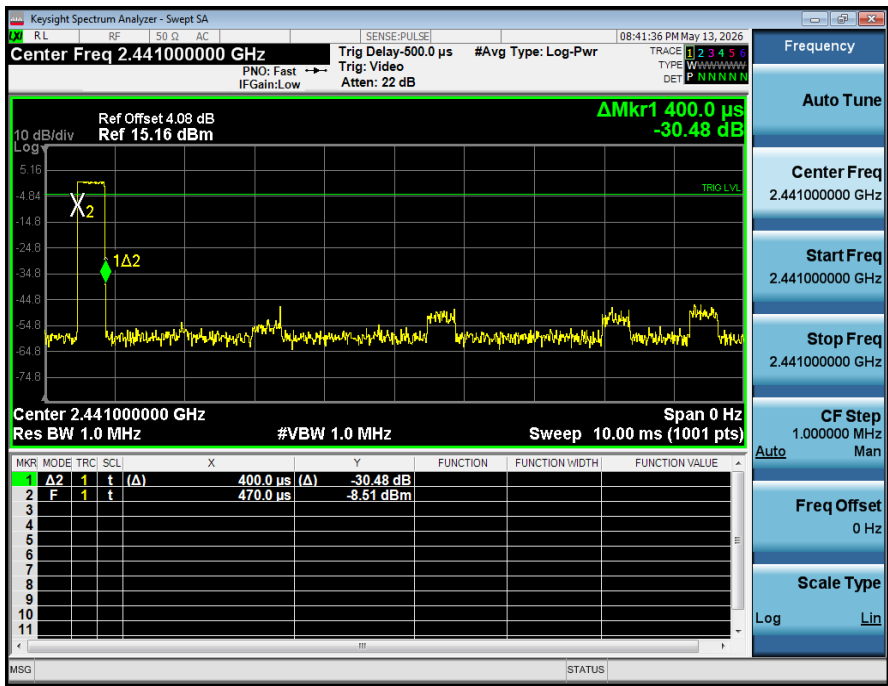
CF Step 1.000000 MHz

Auto

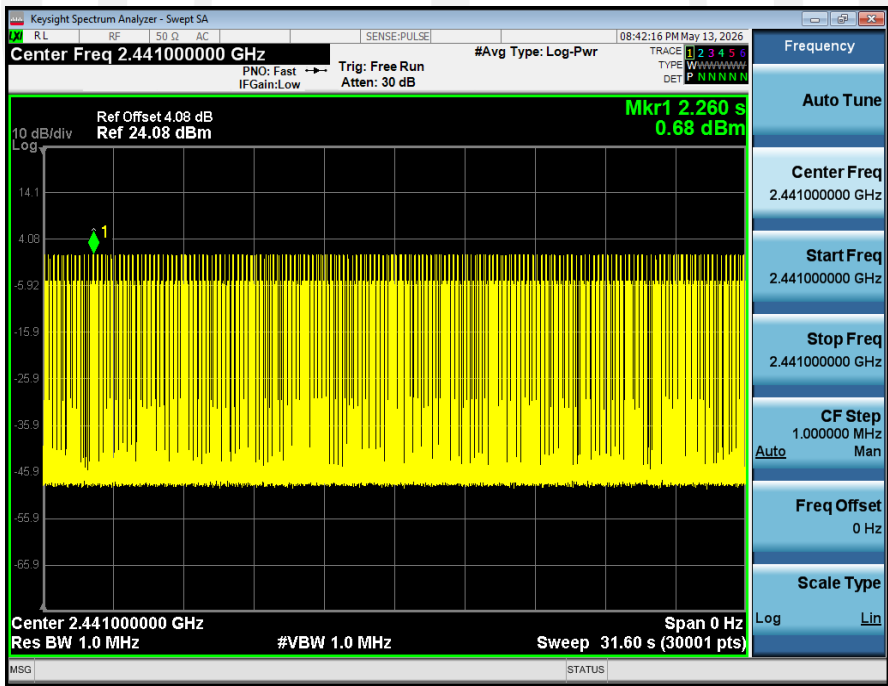
Freq Offset 0 Hz

Scale Type Log Lin

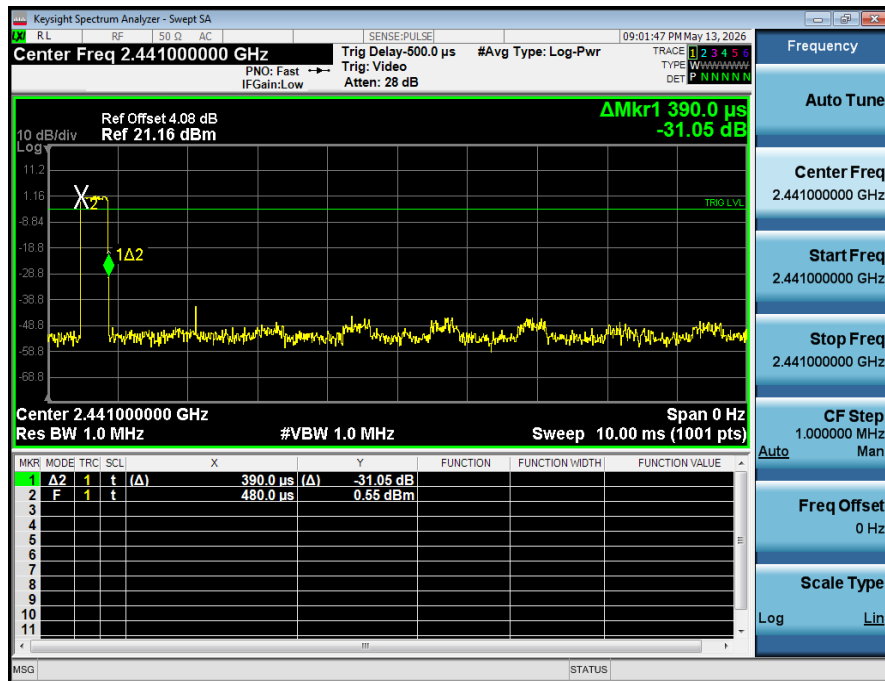
Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_2-DH1\_2441\_00\_One\_Burst\_Time



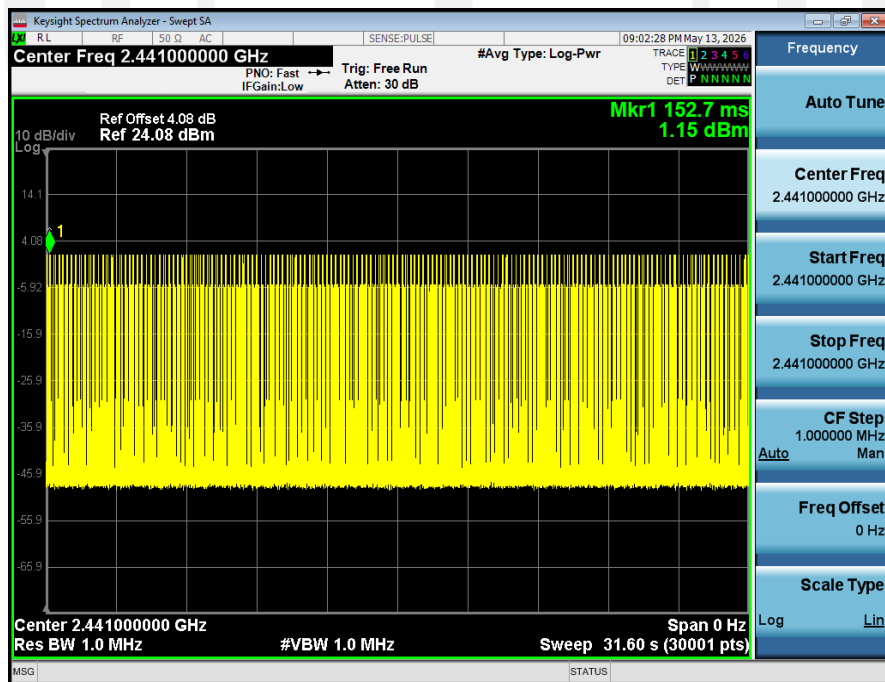
Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_2-DH1\_2441\_00\_Accumulated



## Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_3-DH1\_2441\_00\_One\_Burst\_Time



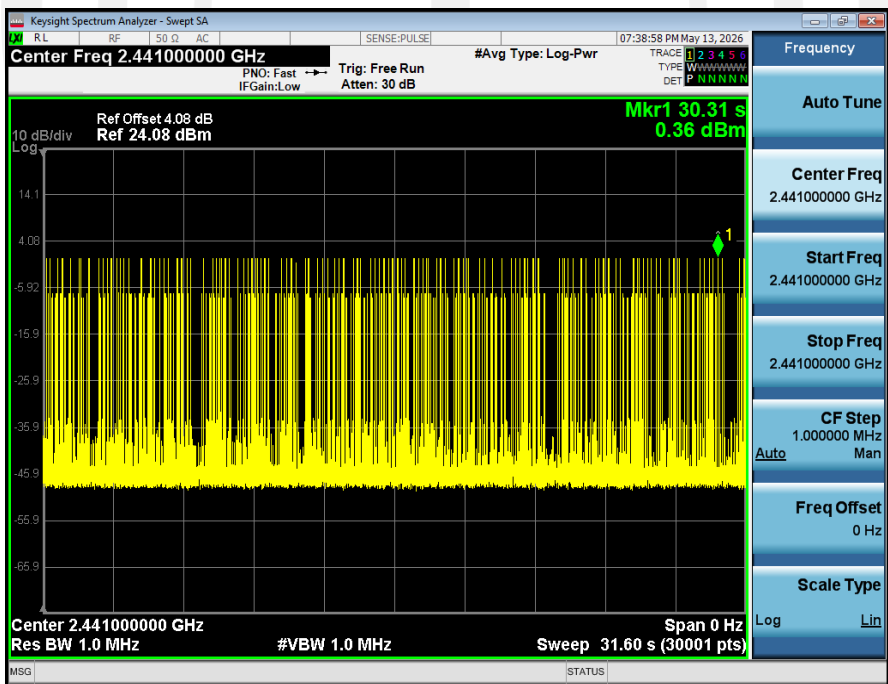
## Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_3-DH1\_2441\_00\_Accumulated



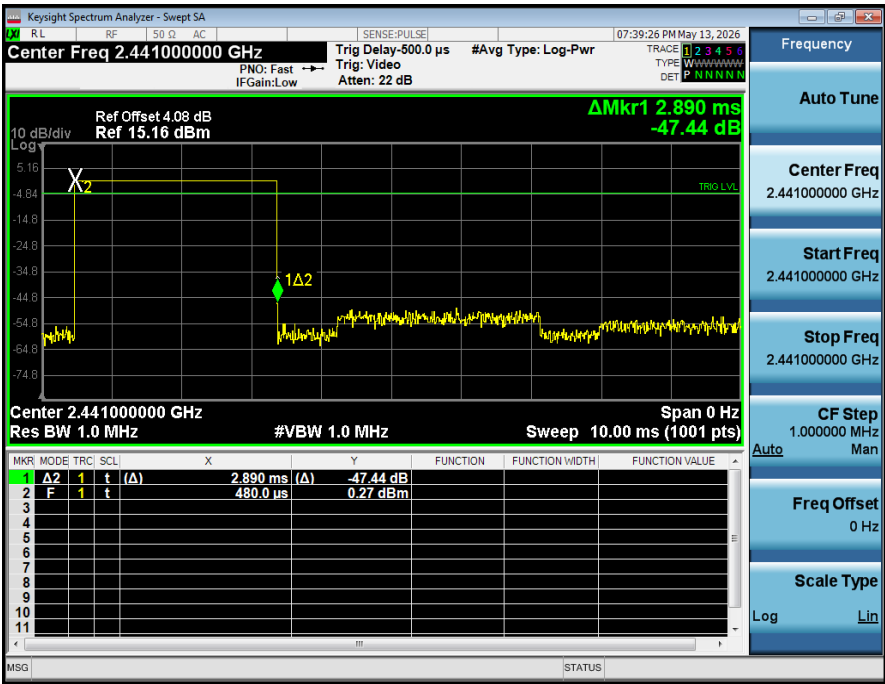
Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_1-DH3\_2441\_00\_One\_Burst\_Time



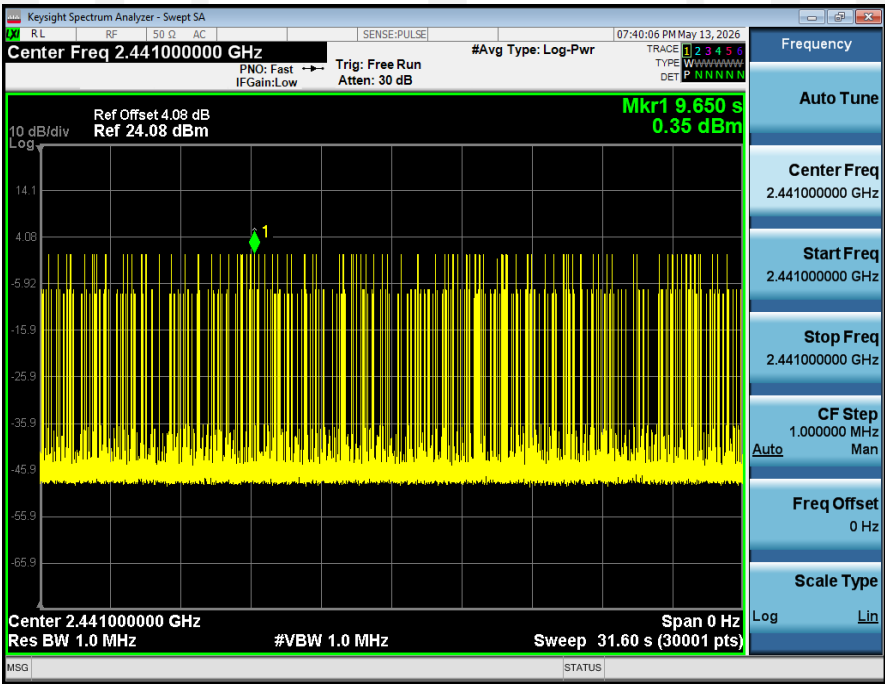
Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_1-DH3\_2441\_00\_Accumulated



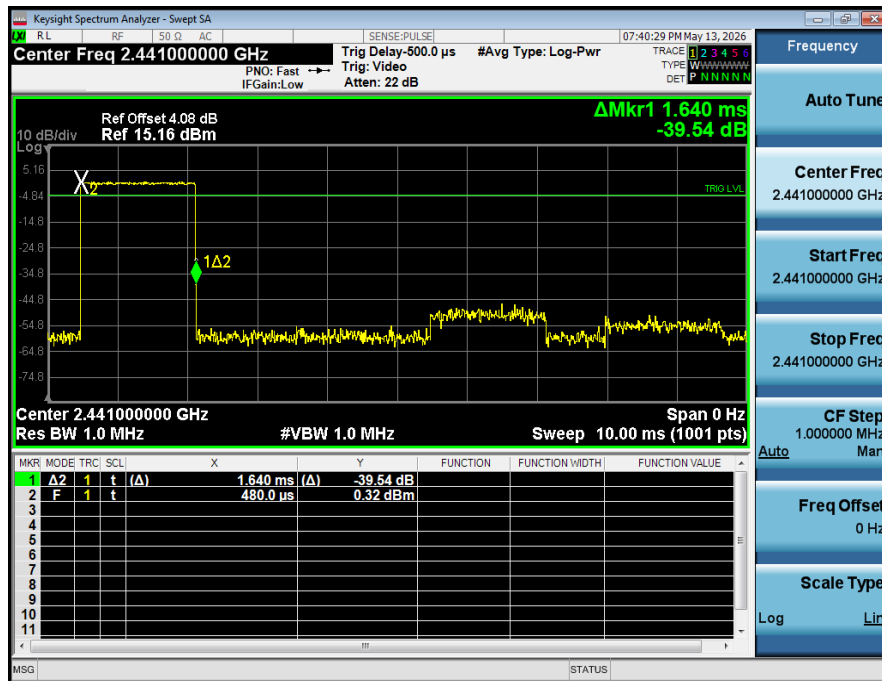
Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_1-DH5\_2441\_00\_One\_Burst\_Time



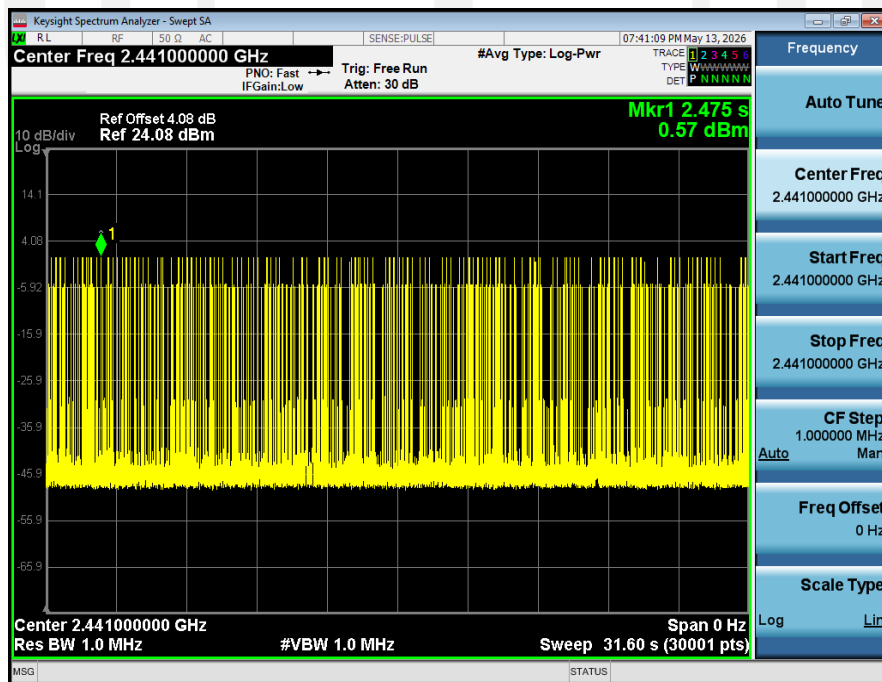
Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_1-DH5\_2441\_00\_Accumulated



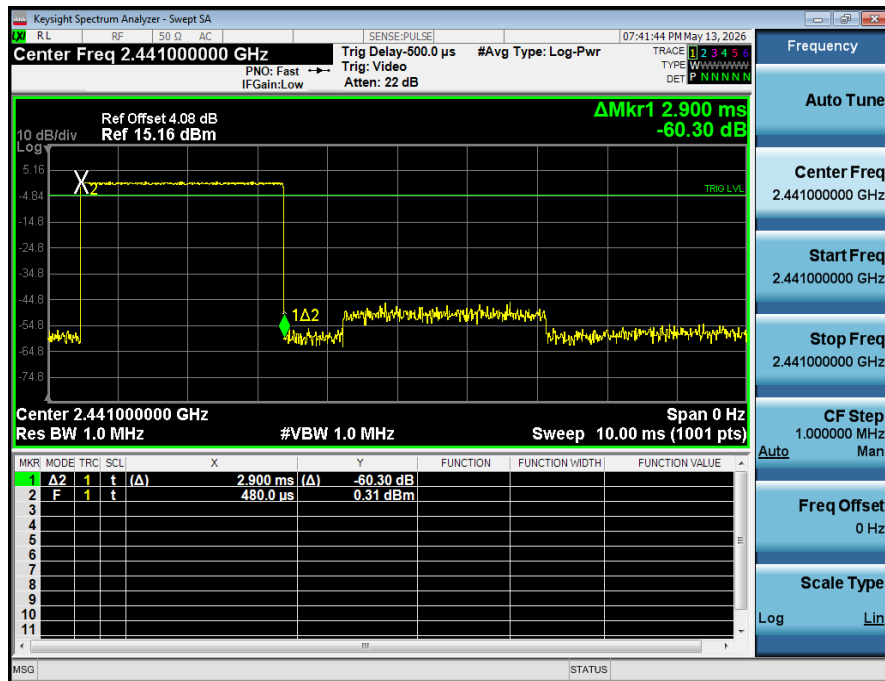
## Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_2-DH3\_2441\_00\_One\_Burst\_Time



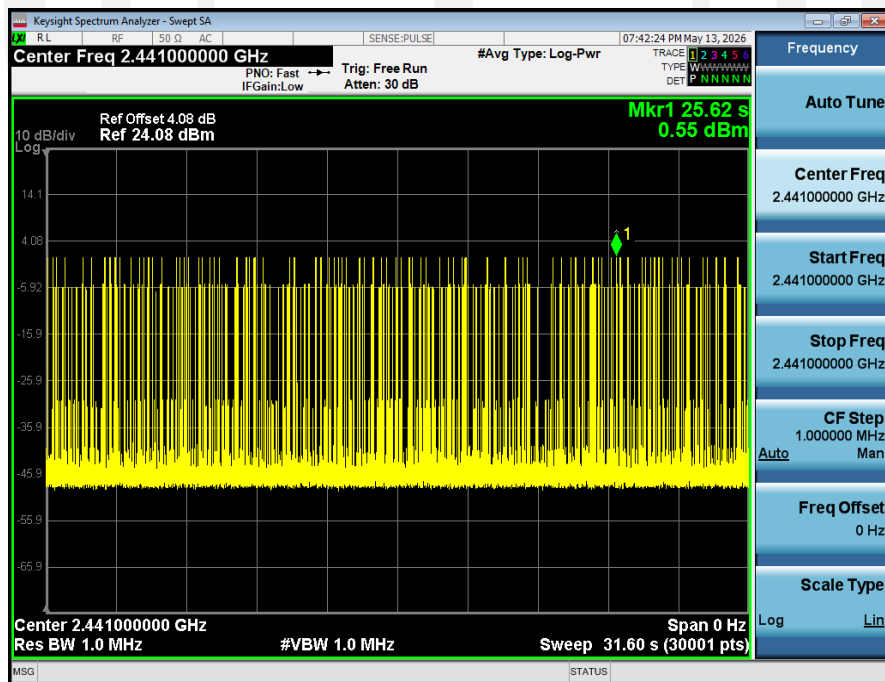
## Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_2-DH3\_2441\_00\_Accumulated



## Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_2-DH5\_2441\_00\_One\_Burst\_Time

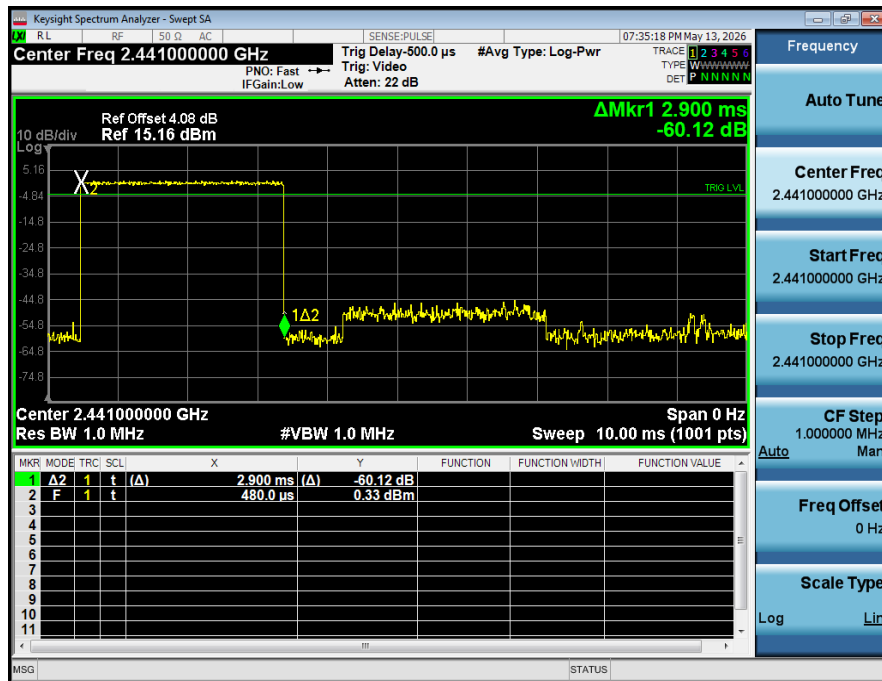


## Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_2-DH5\_2441\_00\_Accumulated

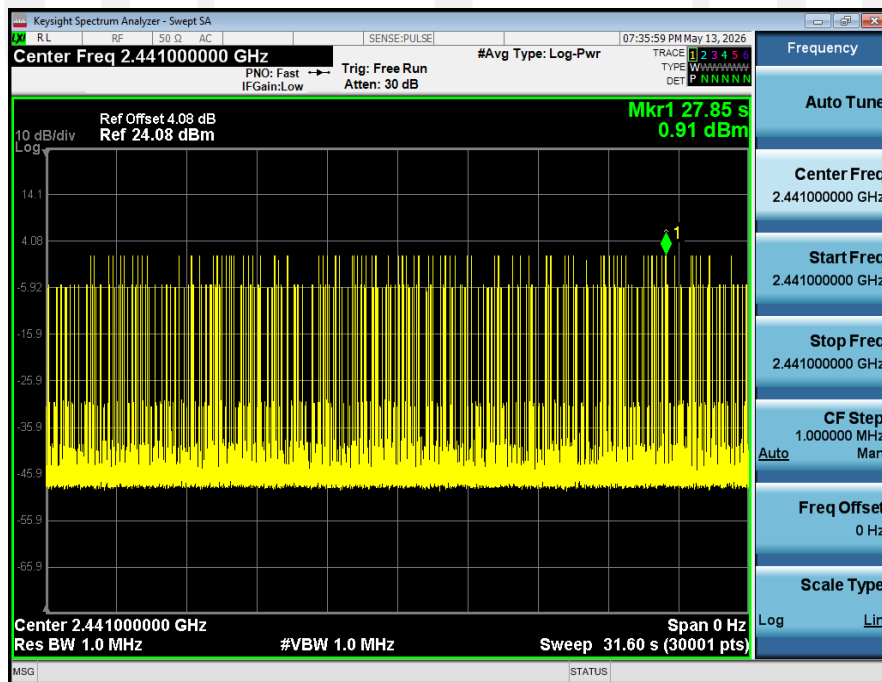




## Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_3-DH5\_2441\_00\_One\_Burst\_Time



## Dwell\_Time\_(Hopping)\_NVNT\_ANT1\_3-DH5\_2441\_00\_Accumulated



## 8. Out-of-band Emissions

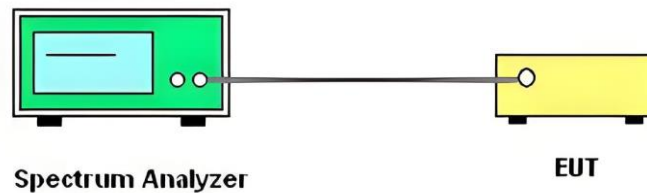
### 8.1. Test Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in FCC Part 15.209(a) is not required.

### 8.2. Test Procedure

Conducted spurious emissions shall be measured for the transmit frequency, per 5.5 and 5.6, and at the maximum transmit powers. Connect the primary antenna port through an attenuator to the spectrum analyzer input; in the results, account for all losses between the unlicensed wireless device output and the spectrum analyzer. The instrument shall span 30 MHz to 10 times the operating frequency in GHz, with a resolution bandwidth of 100 kHz, video bandwidth of 300 kHz, and a coupled sweep time with a peak detector. The band 30 MHz to the highest frequency may be split into smaller spans, as long as the entire spectrum is covered.

### 8.3. Test Setup



### 8.4. Test Results

PASS.

The test results are listed in next pages.

**Band Edge: Pass**

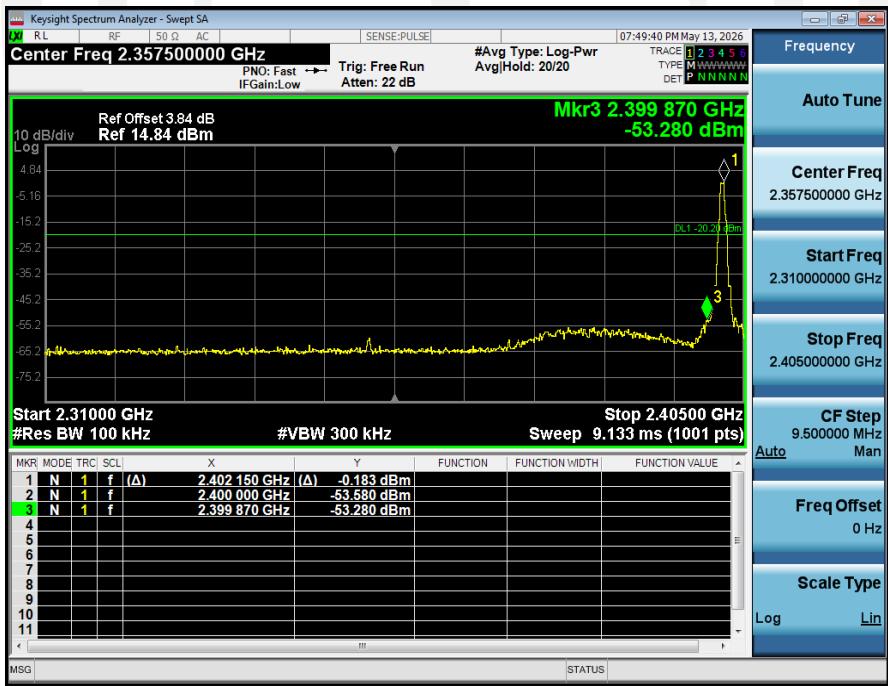
| Condition | Antenna | Modulation | TX Mode     | Ref_level(dBm) | Bandedge MAX.Value (dBm) | Limit(dBm) | Result |
|-----------|---------|------------|-------------|----------------|--------------------------|------------|--------|
| NVNT      | ANT1    | 1-DH1      | 2402.00     | -0.205         | -53.280                  | -20.205    | Pass   |
| NVNT      | ANT1    | 1-DH1      | Hopping_LCH | 0.296          | -53.012                  | -19.704    | Pass   |
| NVNT      | ANT1    | 1-DH1      | 2480.00     | 0.532          | -55.397                  | -19.468    | Pass   |
| NVNT      | ANT1    | 1-DH1      | Hopping_HCH | 0.643          | -50.437                  | -19.357    | Pass   |
| NVNT      | ANT1    | 2-DH1      | 2402.00     | -0.149         | -52.352                  | -20.149    | Pass   |
| NVNT      | ANT1    | 2-DH1      | Hopping_LCH | 0.357          | -55.713                  | -19.643    | Pass   |
| NVNT      | ANT1    | 2-DH1      | 2480.00     | 0.598          | -53.491                  | -19.402    | Pass   |
| NVNT      | ANT1    | 2-DH1      | Hopping_HCH | 0.683          | -53.759                  | -19.317    | Pass   |
| NVNT      | ANT1    | 3-DH1      | 2402.00     | -0.100         | -51.886                  | -20.100    | Pass   |
| NVNT      | ANT1    | 3-DH1      | Hopping_LCH | 0.338          | -54.795                  | -19.662    | Pass   |
| NVNT      | ANT1    | 3-DH1      | 2480.00     | 0.633          | -55.010                  | -19.367    | Pass   |
| NVNT      | ANT1    | 3-DH1      | Hopping_HCH | 0.710          | -55.254                  | -19.290    | Pass   |



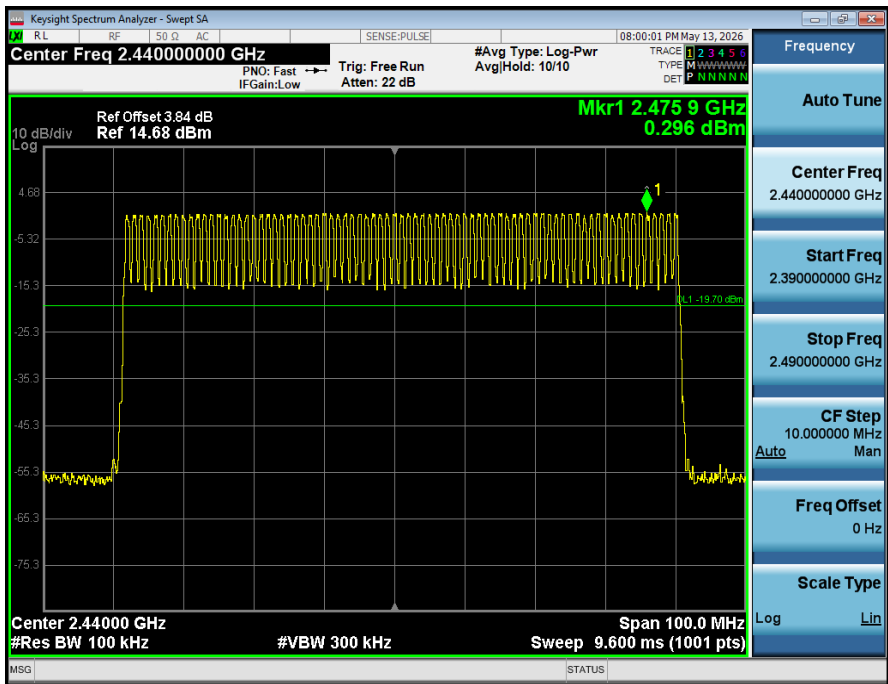
1\_Reference\_Level\_NVNT\_ANT1\_1-DH1\_2402\_00



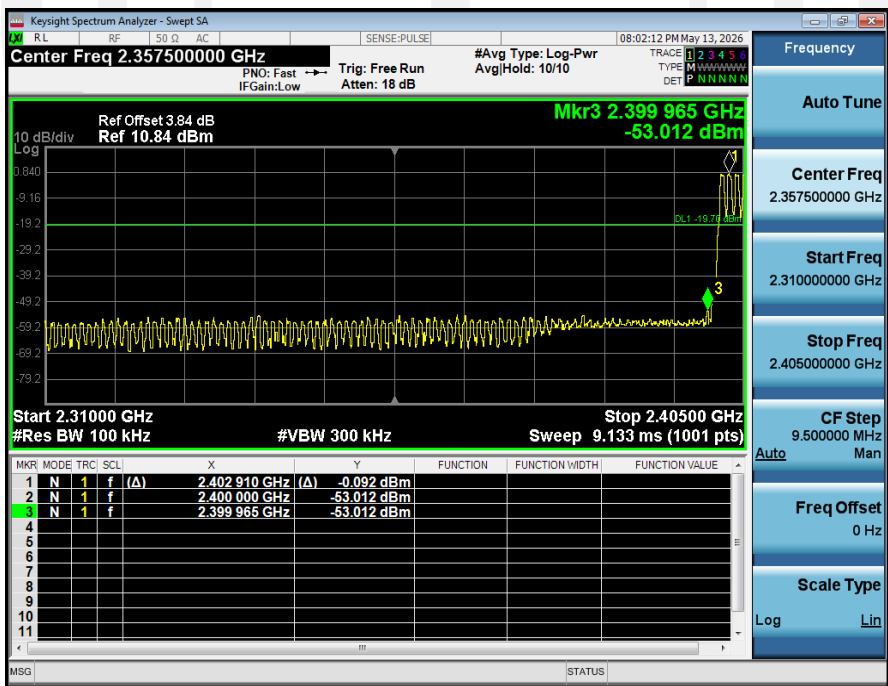
2\_Bandedge\_NVNT\_ANT1\_1-DH1\_2402\_00



1\_Reference\_Level\_Hopping\_NVNT\_ANT1\_1-DH1\_Hopping



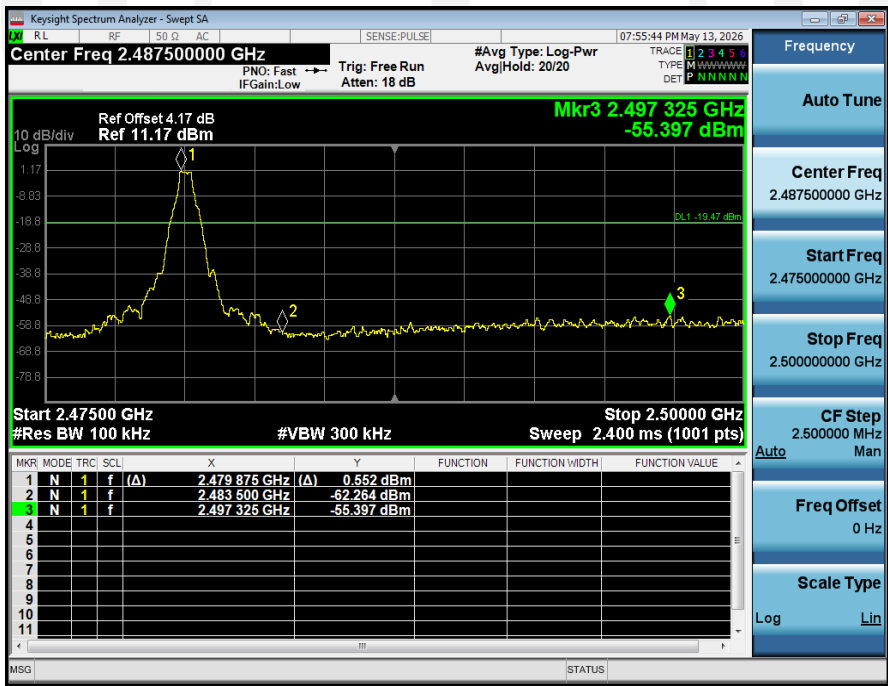
2\_Band\_Edge\_(Hopping)\_NVNT\_ANT1\_1-DH1\_Hopping



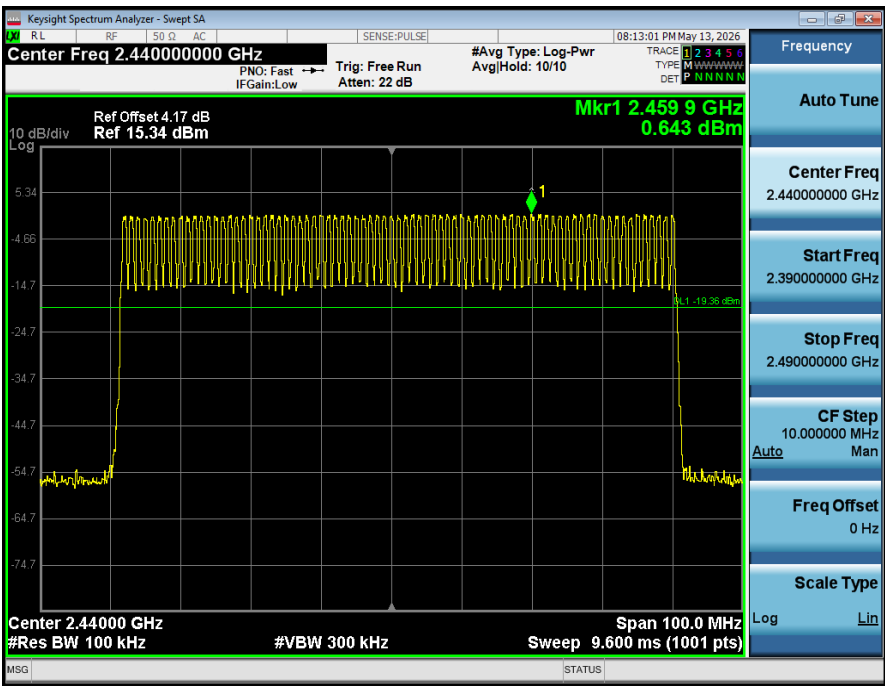
1\_Reference\_Level\_NVNT\_ANT1\_1-DH1\_2480\_00



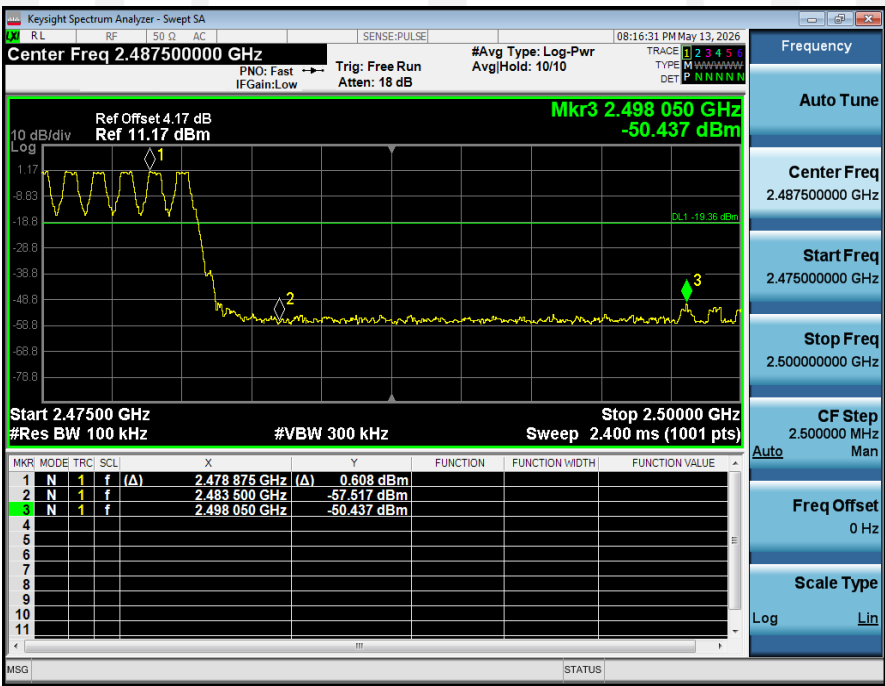
2\_Bandedge\_NVNT\_ANT1\_1-DH1\_2480\_00



1\_Reference\_Level\_Hopping\_NVNT\_ANT1\_1-DH1\_Hopping



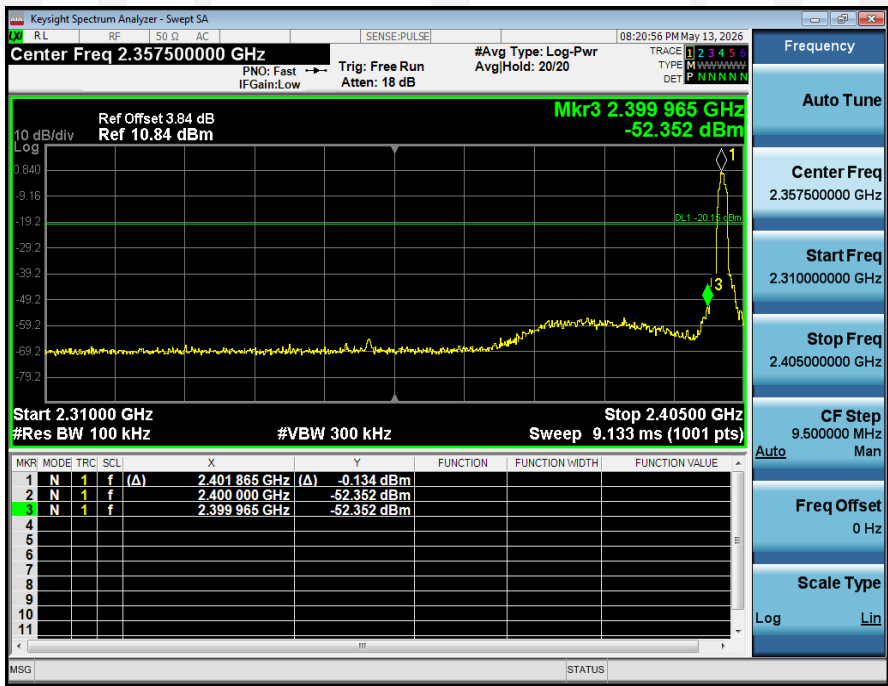
2\_Band\_Edge\_(Hopping)\_NVNT\_ANT1\_1-DH1\_Hopping



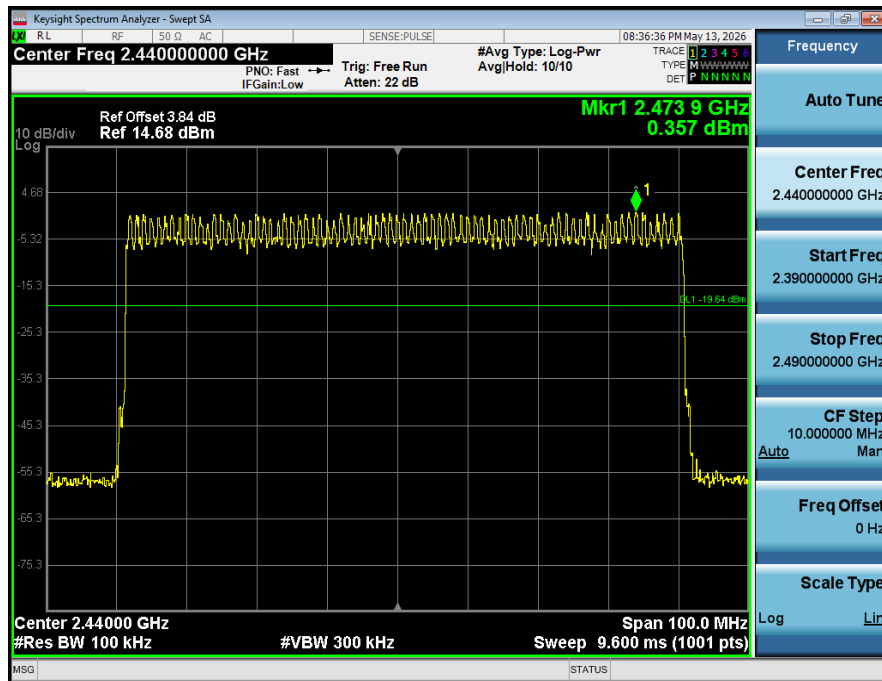
1\_Reference\_Level\_NVNT\_ANT1\_2-DH1\_2402\_00



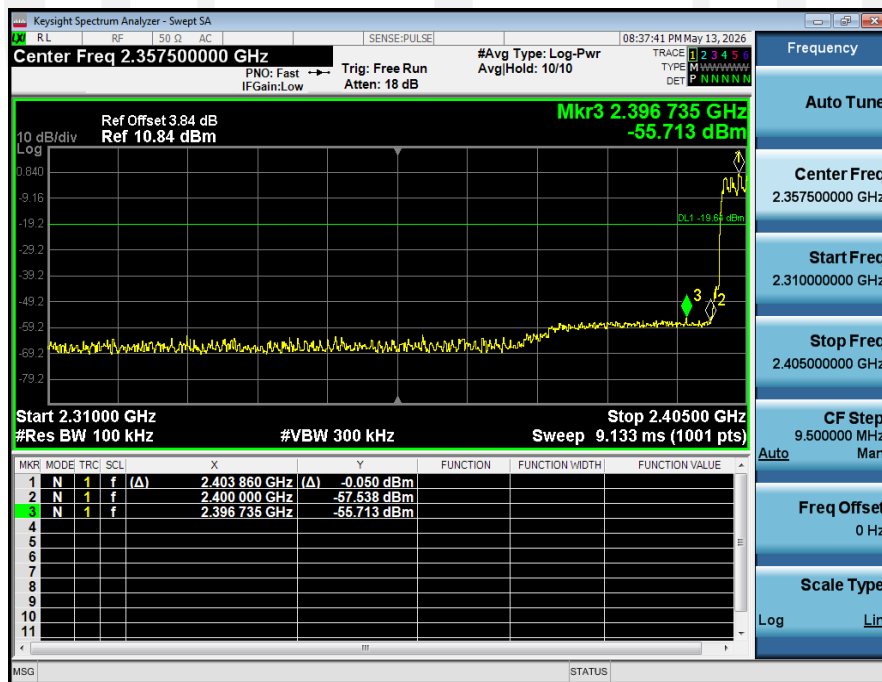
2\_Bandedge\_NVNT\_ANT1\_2-DH1\_2402\_00



## 1\_Reference\_Level\_Hopping\_NVNT\_ANT1\_2-DH1\_Hopping

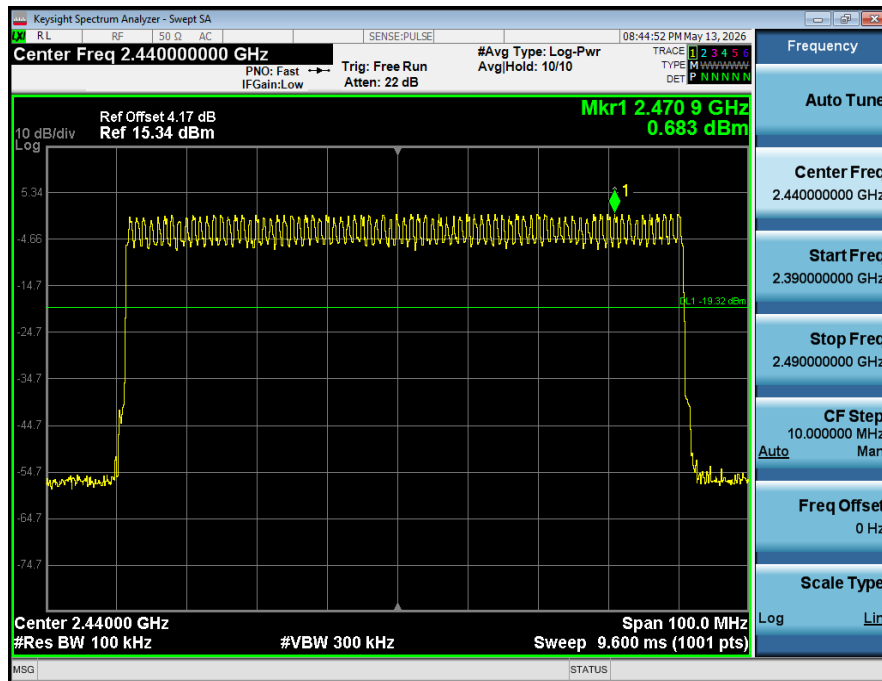


## 2\_Band\_Edge\_(Hopping)\_NVNT\_ANT1\_2-DH1\_Hopping

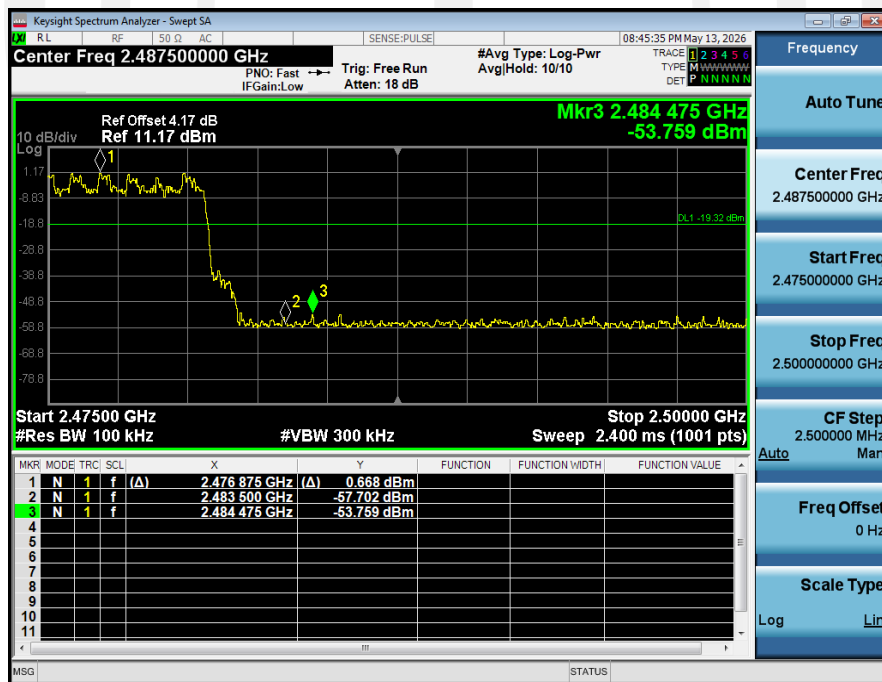




## 1\_Reference\_Level\_Hopping\_NVNT\_ANT1\_2-DH1\_Hopping



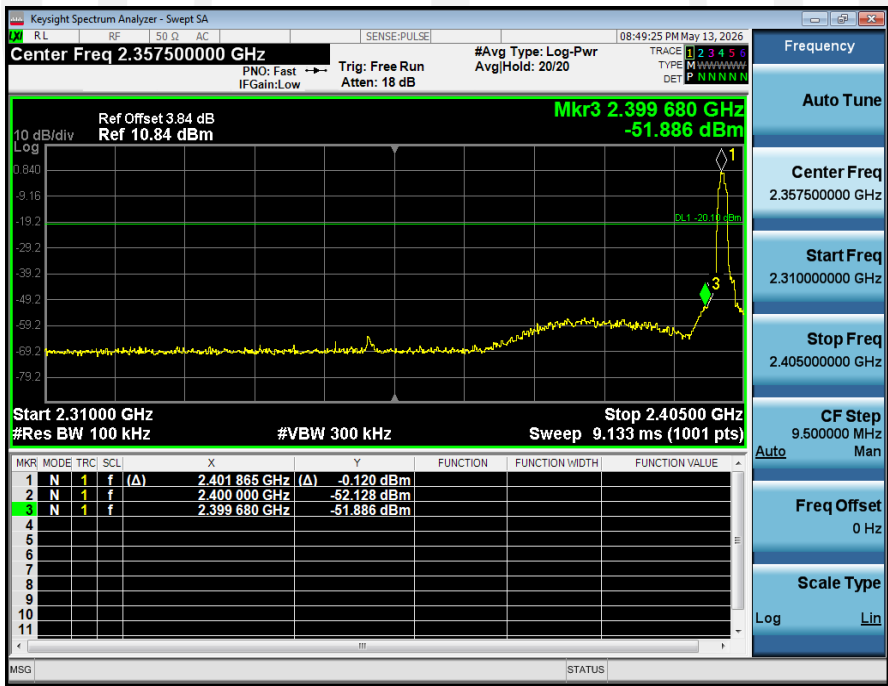
## 2\_Band\_Edge\_(Hopping)\_NVNT\_ANT1\_2-DH1\_Hopping



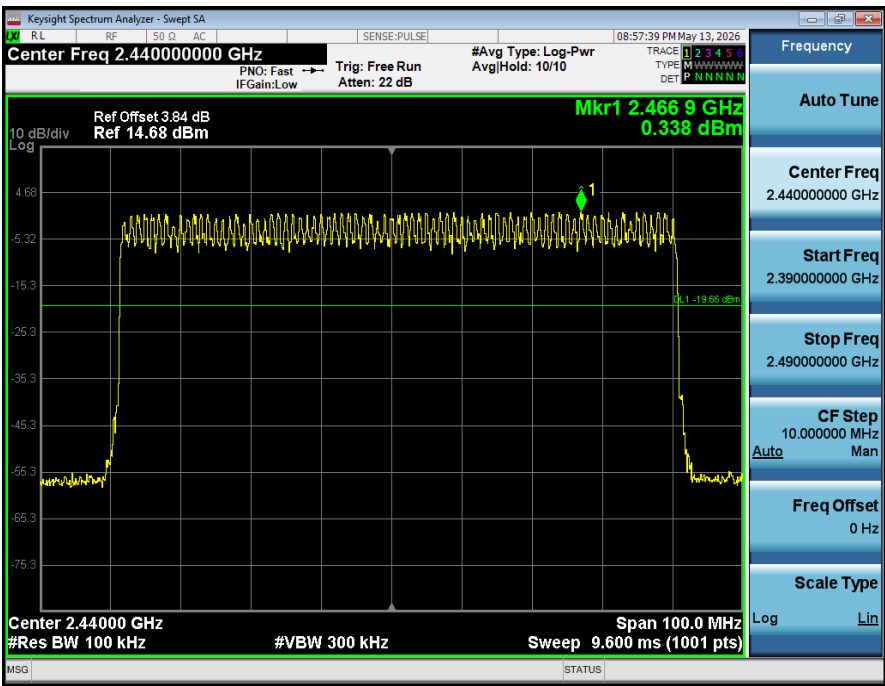
1\_Reference\_Level\_NVNT\_ANT1\_3-DH1\_2402\_00



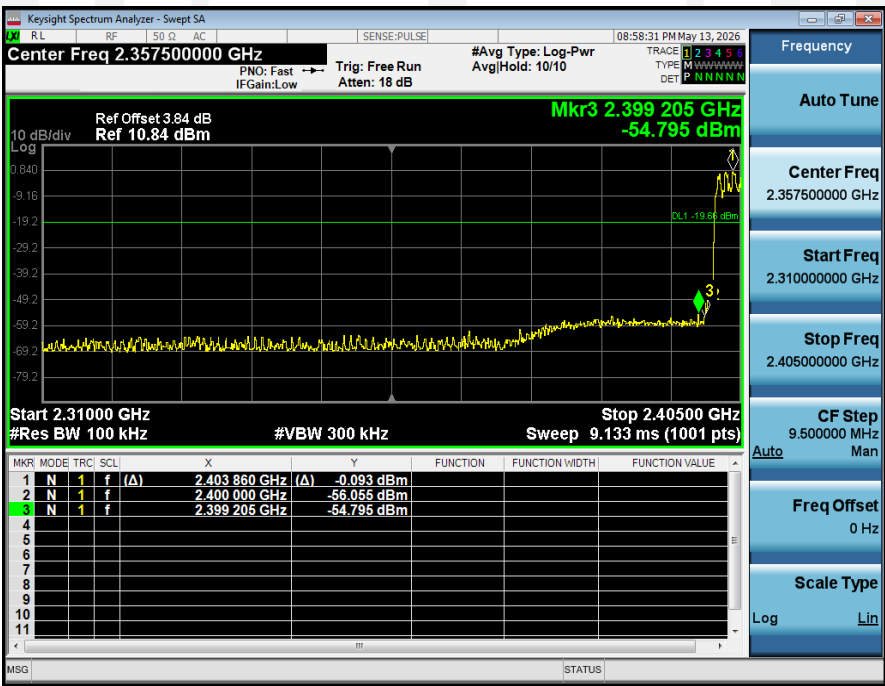
2\_Bandedge\_NVNT\_ANT1\_3-DH1\_2402\_00



1\_Reference\_Level\_Hopping\_NVNT\_ANT1\_3-DH1\_Hopping



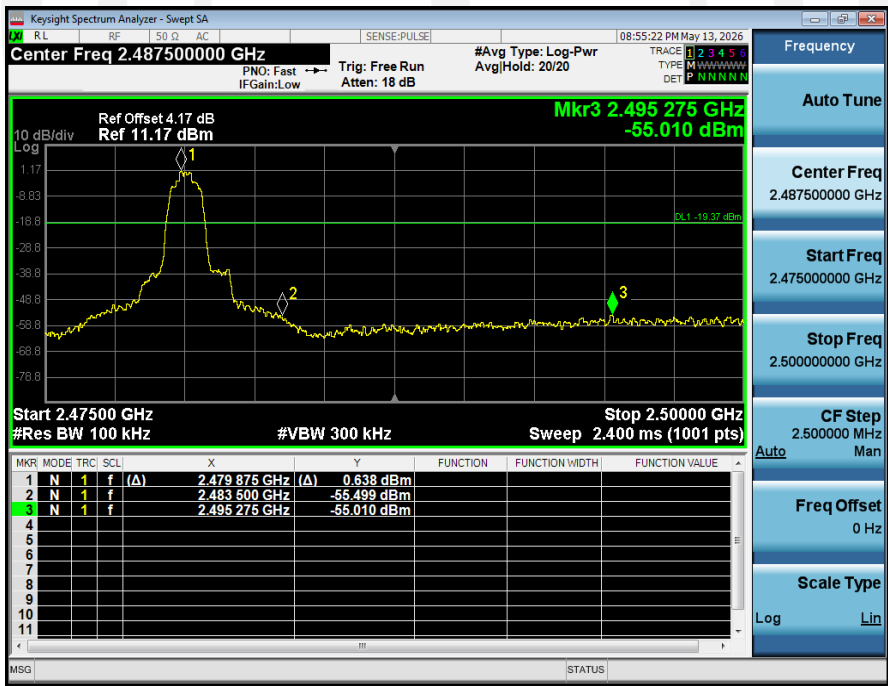
2\_Band\_Edge\_(Hopping)\_NVNT\_ANT1\_3-DH1\_Hopping



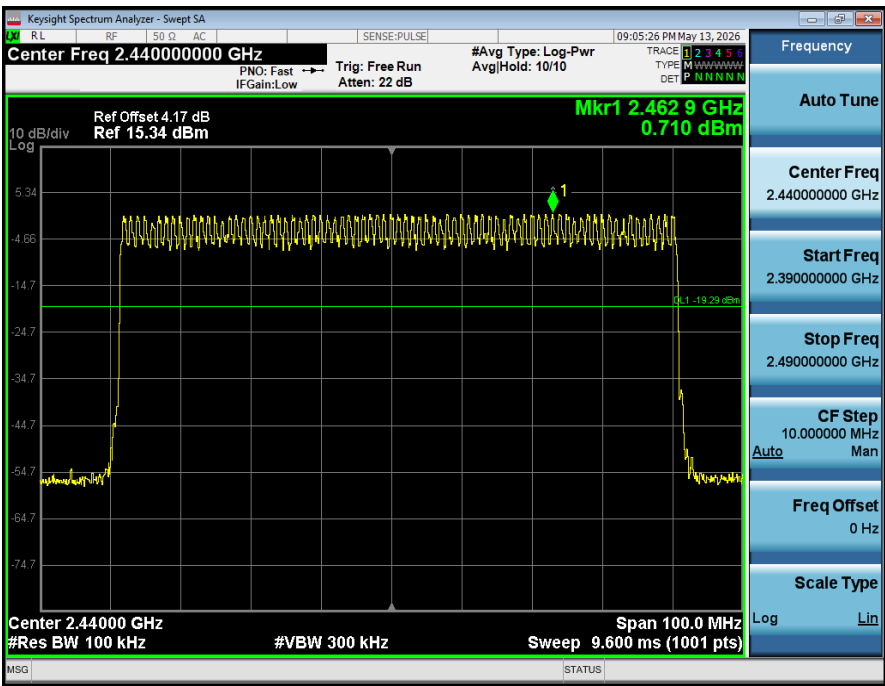
1\_Reference\_Level\_NVNT\_ANT1\_3-DH1\_2480\_00



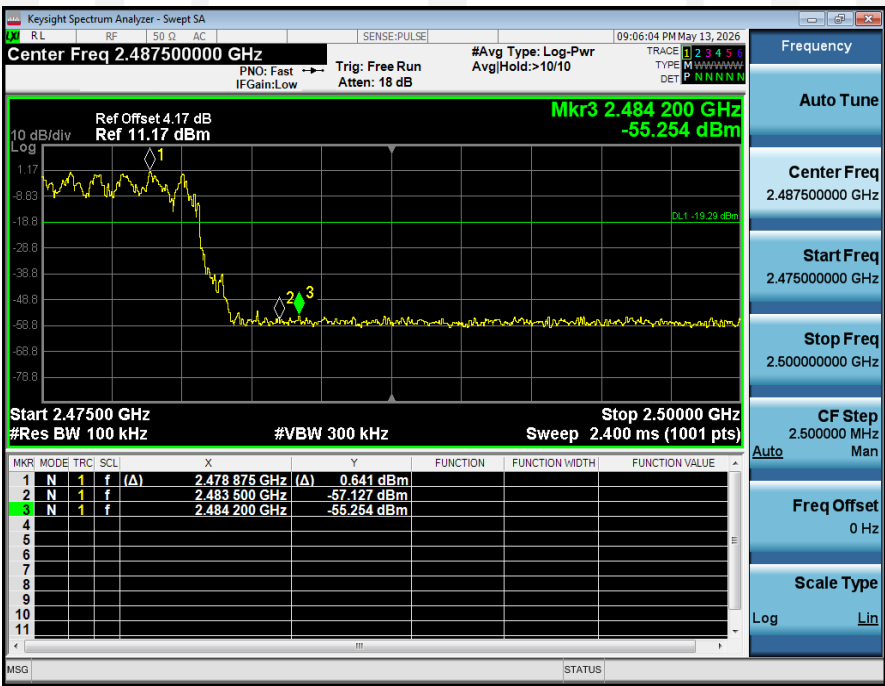
2\_Bandedge\_NVNT\_ANT1\_3-DH1\_2480\_00



1\_Reference\_Level\_Hopping\_NVNT\_ANT1\_3-DH1\_Hopping



2\_Band\_Edge\_(Hopping)\_NVNT\_ANT1\_3-DH1\_Hopping



**Conducted spurious emission: Pass**

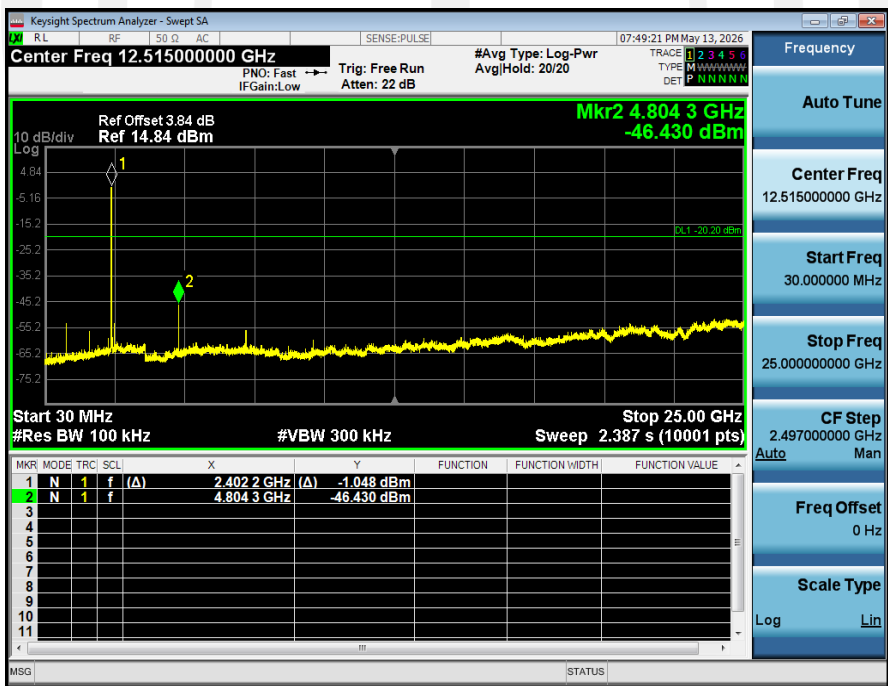
| Condition | Antenna | Modulation | TX Mode | Ref_level(dBm) | Spurious<br>MAX.Value(dBm) | Limit(dBm) | Result |
|-----------|---------|------------|---------|----------------|----------------------------|------------|--------|
| NVNT      | ANT1    | 1-DH1      | 2402.00 | -0.205         | -46.430                    | -20.205    | Pass   |
| NVNT      | ANT1    | 1-DH1      | 2441.00 | 0.375          | -46.275                    | -19.625    | Pass   |
| NVNT      | ANT1    | 1-DH1      | 2480.00 | 0.532          | -46.354                    | -19.468    | Pass   |
| NVNT      | ANT1    | 2-DH1      | 2402.00 | -0.149         | -32.102                    | -20.149    | Pass   |
| NVNT      | ANT1    | 2-DH1      | 2441.00 | 0.457          | -44.354                    | -19.543    | Pass   |
| NVNT      | ANT1    | 2-DH1      | 2480.00 | 0.598          | -46.761                    | -19.402    | Pass   |
| NVNT      | ANT1    | 3-DH1      | 2402.00 | -0.100         | -40.227                    | -20.100    | Pass   |
| NVNT      | ANT1    | 3-DH1      | 2441.00 | 0.498          | -46.006                    | -19.502    | Pass   |
| NVNT      | ANT1    | 3-DH1      | 2480.00 | 0.633          | -44.478                    | -19.367    | Pass   |



1\_Reference\_Level\_NVNT\_ANT1\_1-DH1\_2402\_00



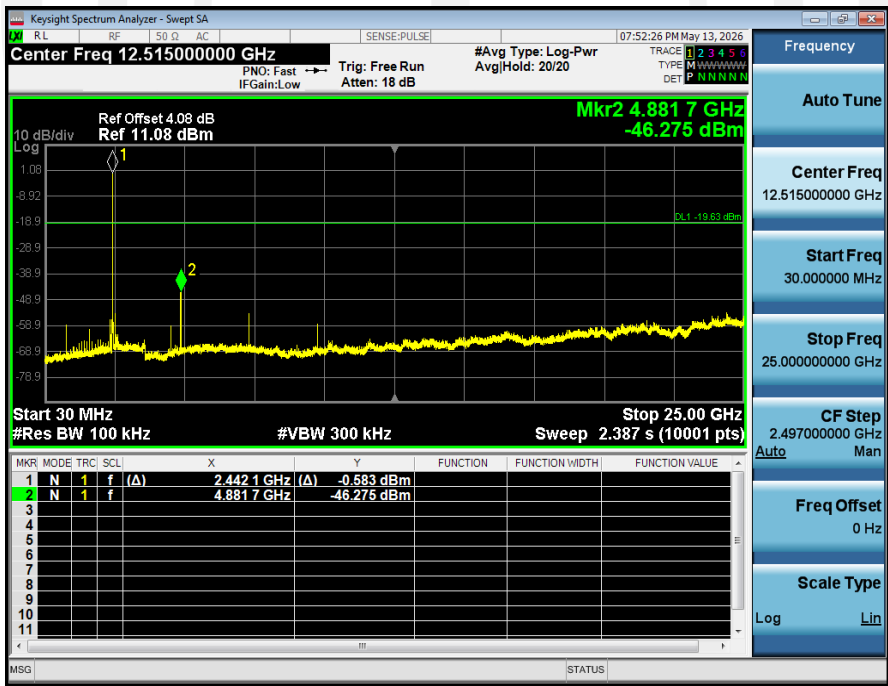
2\_Spurious\_Emissions\_NVNT\_ANT1\_1-DH1\_2402\_00



1\_Reference\_Level\_NVNT\_ANT1\_1-DH1\_2441\_00



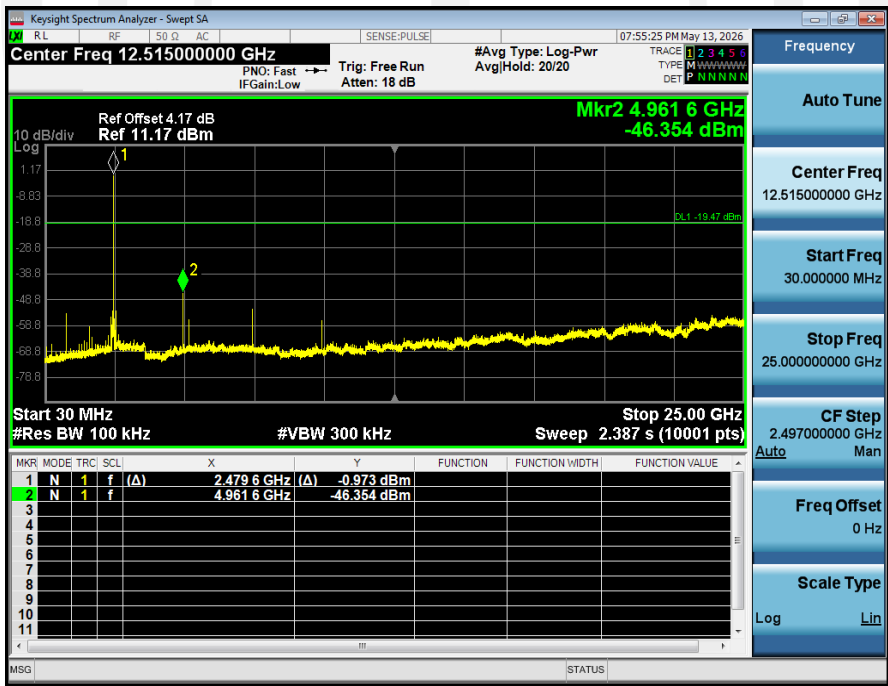
2\_Spurious\_Emissions\_NVNT\_ANT1\_1-DH1\_2441\_00



1\_Reference\_Level\_NVNT\_ANT1\_1-DH1\_2480\_00



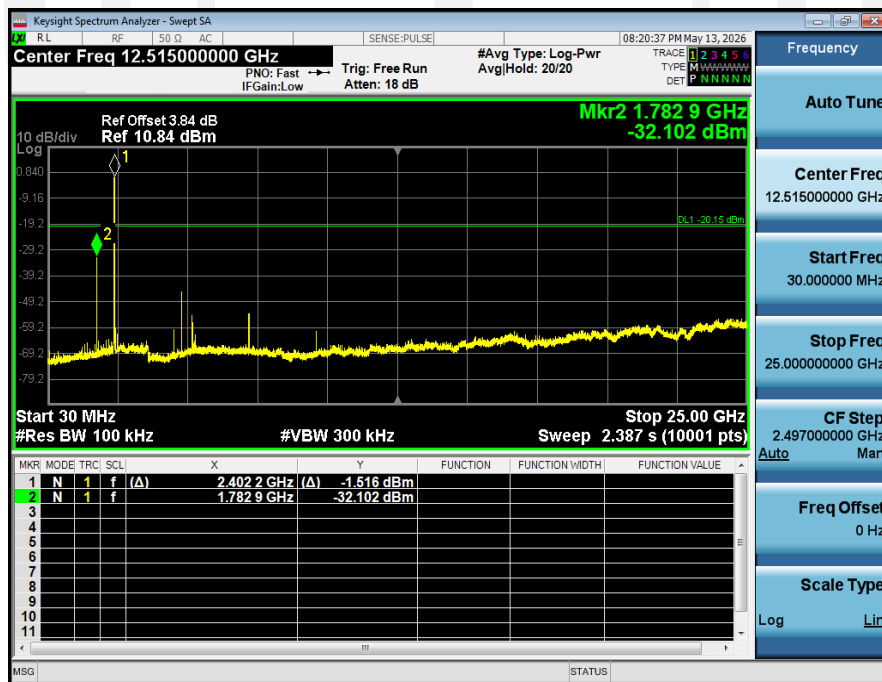
2\_Spurious\_Emissions\_NVNT\_ANT1\_1-DH1\_2480\_00



## 1\_Reference\_Level\_NVNT\_ANT1\_2-DH1\_2402\_00



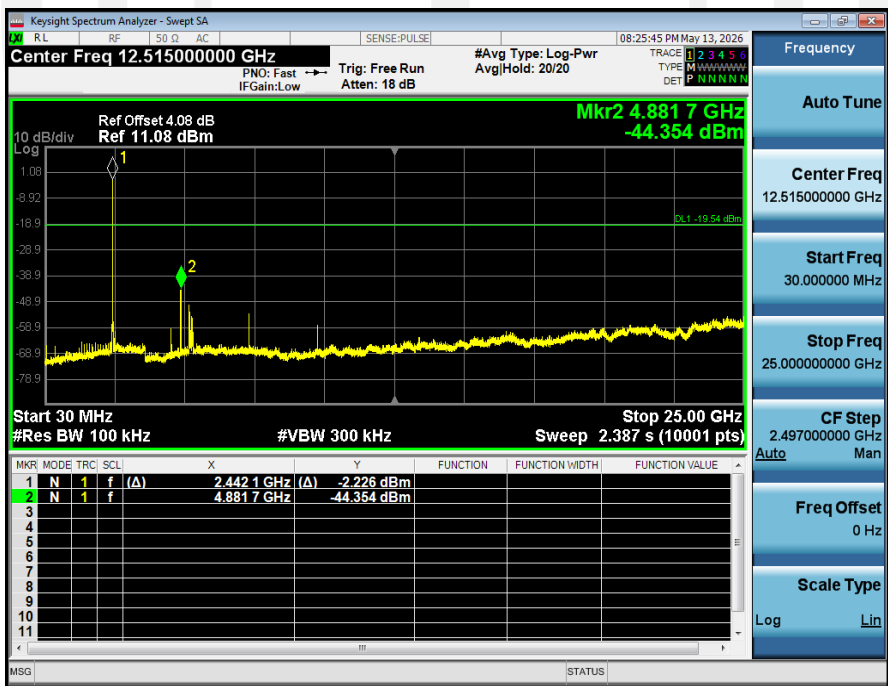
## 2\_Spurious\_Emissions\_NVNT\_ANT1\_2-DH1\_2402\_00



1\_Reference\_Level\_NVNT\_ANT1\_2-DH1\_2441\_00



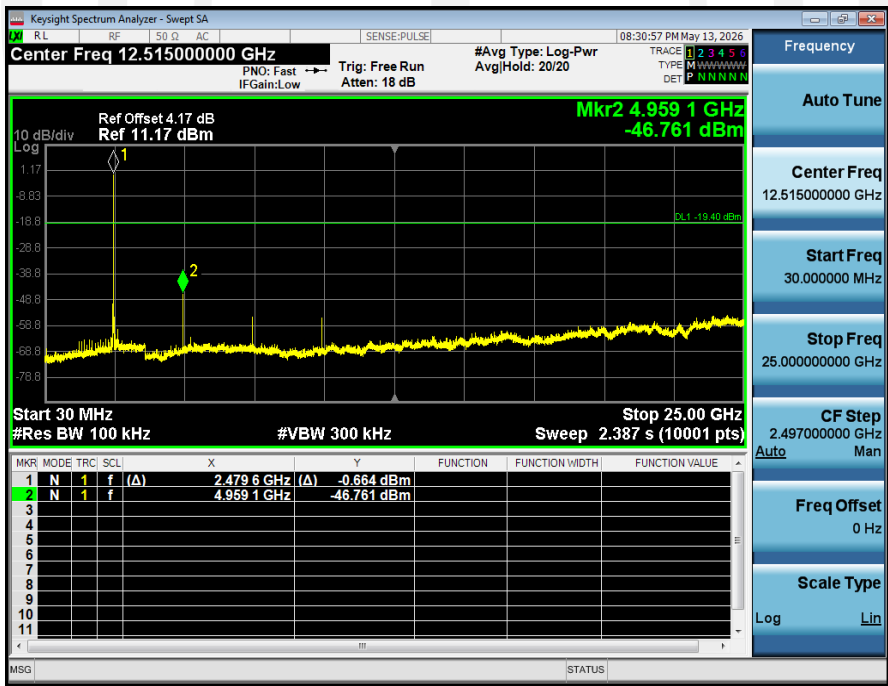
2\_Spurious\_Emissions\_NVNT\_ANT1\_2-DH1\_2441\_00



1\_Reference\_Level\_NVNT\_ANT1\_2-DH1\_2480\_00



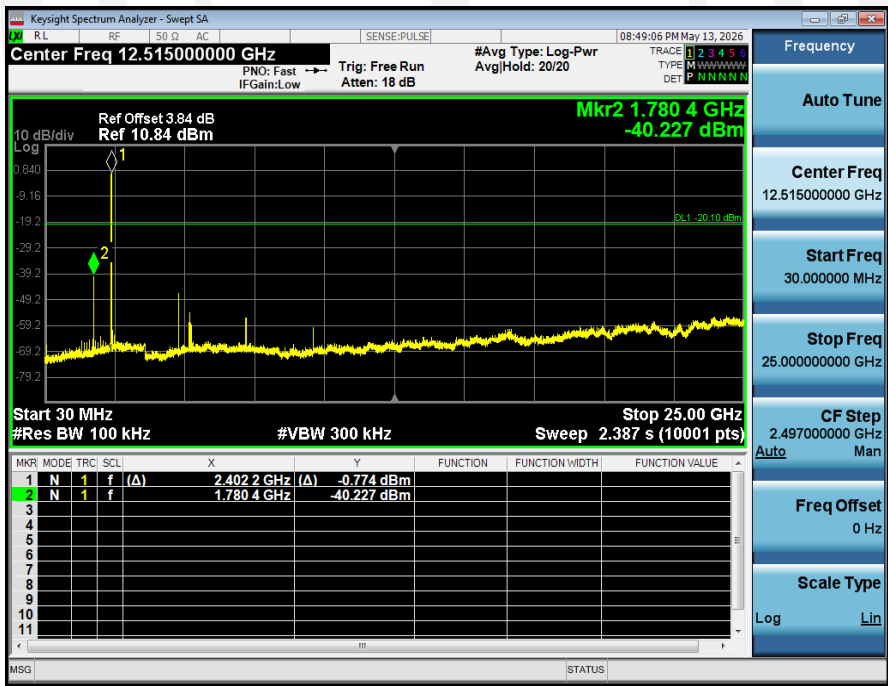
2\_Spurious\_Emissions\_NVNT\_ANT1\_2-DH1\_2480\_00



1\_Reference\_Level\_NVNT\_ANT1\_3-DH1\_2402\_00



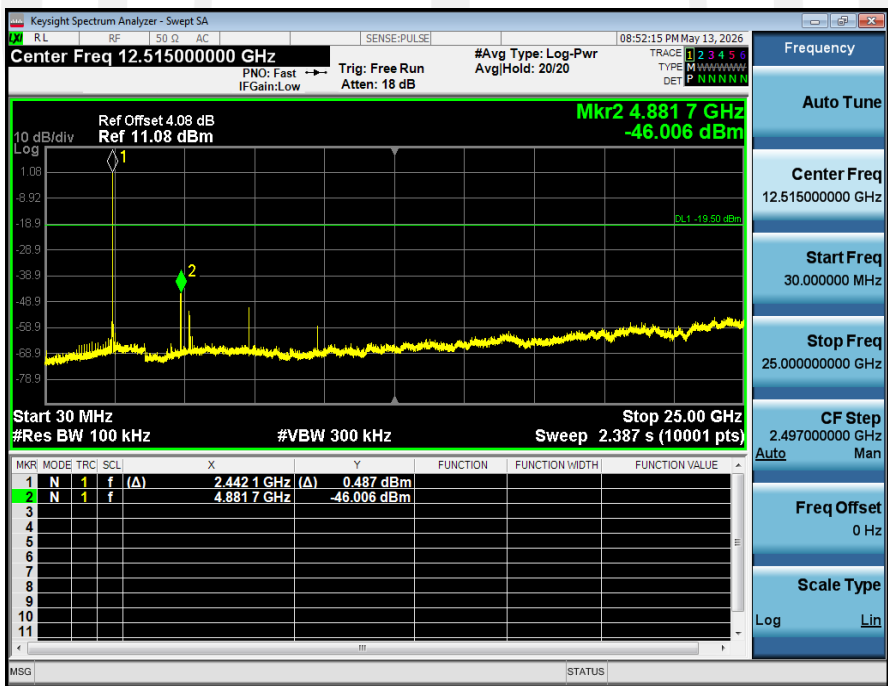
2\_Spurious\_Emissions\_NVNT\_ANT1\_3-DH1\_2402\_00



1\_Reference\_Level\_NVNT\_ANT1\_3-DH1\_2441\_00



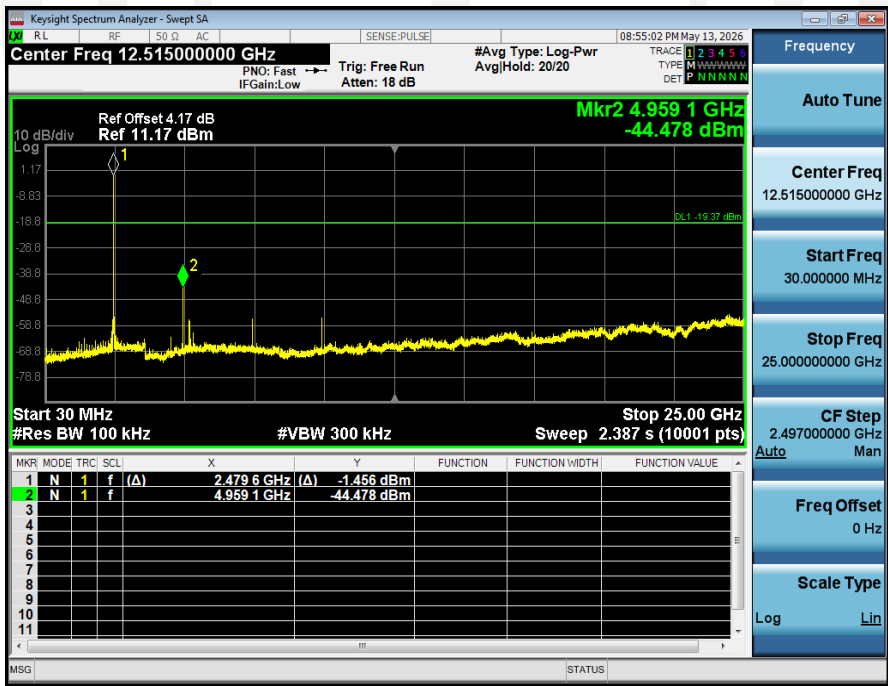
2\_Spurious\_Emissions\_NVNT\_ANT1\_3-DH1\_2441\_00



1\_Reference\_Level\_NVNT\_ANT1\_3-DH1\_2480\_00



2\_Spurious\_Emissions\_NVNT\_ANT1\_3-DH1\_2480\_00



## 9. Spurious Emission

### 9.1. Test Limits

| Frequency (MHz) | Field strength<br>(microvolts/meter) | Measurement<br>distance (meters) |
|-----------------|--------------------------------------|----------------------------------|
| 0.009-0.490     | 2400/F(kHz)                          | 300                              |
| 0.490-1.705     | 24000/F(kHz)                         | 30                               |
| 1.705-30.0      | 30                                   | 30                               |
| 30-88           | 100 **                               | 3                                |
| 88-216          | 150 **                               | 3                                |
| 216-960         | 200 **                               | 3                                |
| Above 960       | 500                                  | 3                                |

Note: The peak limit is 20 dB higher than the average limit

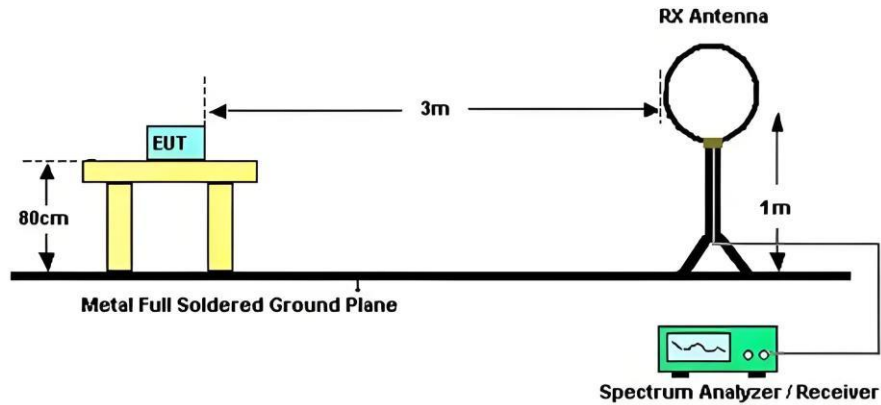
All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

#### 15.205 Restricted frequency band

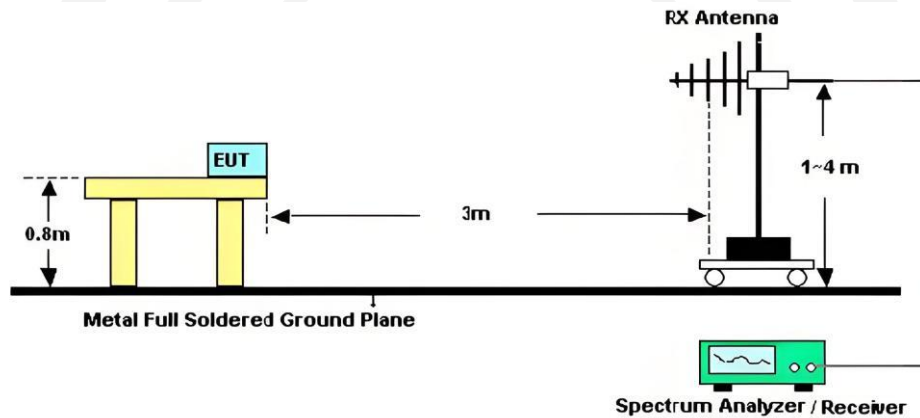
| MHz                        | MHz                   | MHz             | GHz              |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423        | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 0.495 - 0.505 | 16.69475 - 16.69525   | 608 - 614       | 5.35 - 5.46      |
| 2.1735 - 2.1905            | 16.80425 - 16.80475   | 960 - 1240      | 7.25 - 7.75      |
| 4.125 - 4.128              | 25.5 - 25.67          | 1300 - 1427     | 8.025 - 8.5      |
| 4.17725 - 4.17775          | 37.5 - 38.25          | 1435 - 1626.5   | 9.0 - 9.2        |
| 4.20725 - 4.20775          | 73 - 74.6             | 1645.5 - 1646.5 | 9.3 - 9.5        |
| 6.215 - 6.218              | 74.8 - 75.2           | 1660 - 1710     | 10.6 - 12.7      |
| 6.26775 - 6.26825          | 108 - 121.94          | 1718.8 - 1722.2 | 13.25 - 13.4     |
| 6.31175 - 6.31225          | 123 - 138             | 2200 - 2300     | 14.47 - 14.5     |
| 8.291 - 8.294              | 149.9 - 150.05        | 2310 - 2390     | 15.35 - 16.2     |
| 8.362 - 8.366              | 156.52475 - 156.52525 | 2483.5 - 2500   | 17.7 - 21.4      |
| 8.37625 - 8.38675          | 156.7 - 156.9         | 2690 - 2900     | 22.01 - 23.12    |
| 8.41425 - 8.41475          | 162.0125 - 167.17     | 3260 - 3267     | 23.6 - 24.0      |
| 12.29 - 12.293             | 167.72 - 173.2        | 3332 - 3339     | 31.2 - 31.8      |
| 12.51975 - 12.52025        | 240 - 285             | 3345.8 - 3358   | 36.43 - 36.5     |
| 12.57675 - 12.57725        | 322 - 335.4           | 3600 - 4400     | ( <sup>2</sup> ) |

## 9.2. Block Diagram of Test setup

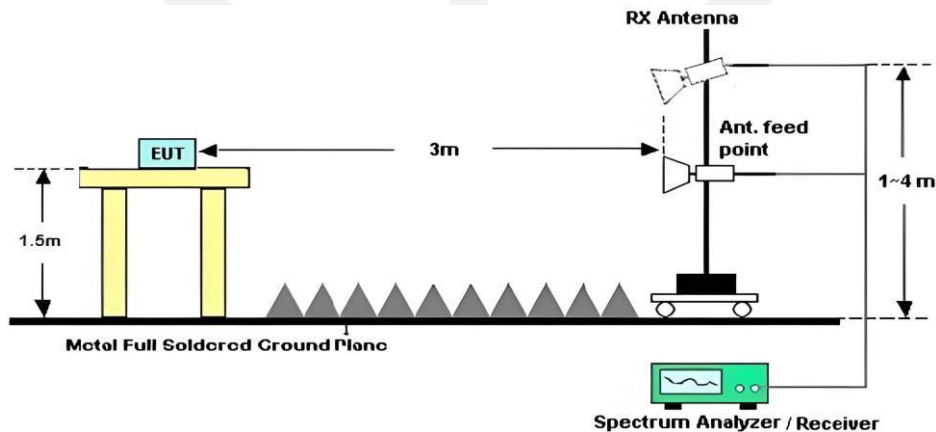
### a. In 3m Anechoic Chamber Test Setup Diagram for below 30MHz



### b. In 3m Anechoic Chamber Test Setup Diagram for below 1GHz



### c. In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



### 9.3. Test Procedure

- (1) The test equipment is placed on a non-metallic tabletop. For false radiation emission tests below 1G, the distance between the equipment and the ground surface is 80 cm; for false radiation emission tests above 1G, the distance is 1.5 meters. The equipment is situated within a semi-anechoic chamber.
- (2) Setup EUT and simulator
- (3) Test antenna was located 3m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.
  - (a) Change work frequency or channel of device if practicable.
  - (b) Change modulation type of device if practicable.
  - (c) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions
- (4) Spectrum frequency from 9KHz to 25GHz (tenth harmonic of fundamental frequency) was investigated
- (5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10-2020+Cor.1-2023 on Radiated Emission test.
- (6) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure.

Test setup information:

|              |            |            |
|--------------|------------|------------|
| 9KHz~150KHz  | RBW 200Hz  | VBW 1KHz   |
| 150KHz~30MHz | RBW 9KHz   | VBW 30KHz  |
| 30MHz~1GHz   | RBW 120KHz | VBW 300KHz |
| Above1GHz    | RBW 1MHz   | VBW 3MHz   |

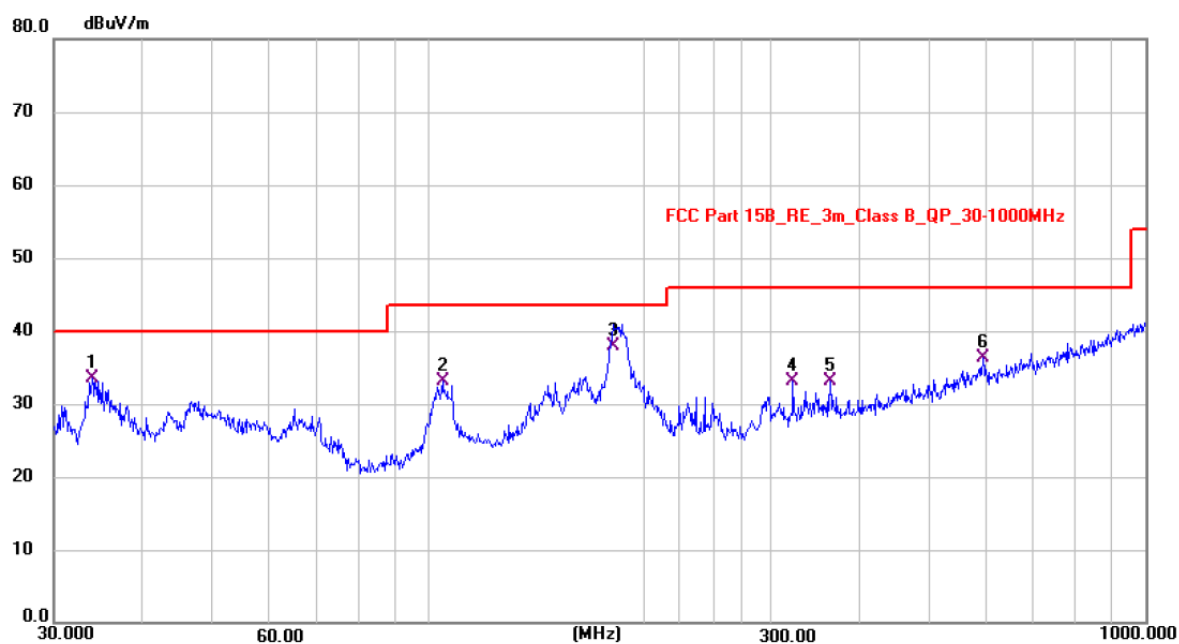
#### 9.4. Test Results

We have scanned from 9kHz to the 10th harmonic of the EUT's highest frequency.

Detailed information please see the following page.

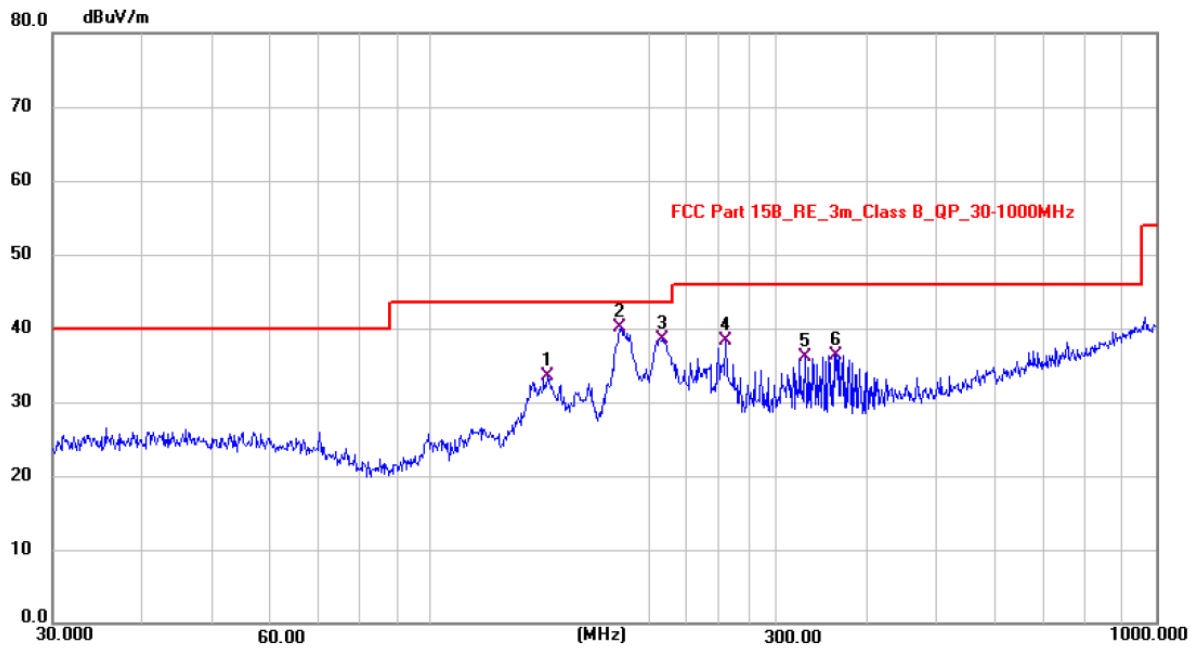
|                            |                                                                                                                                    |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| From 9KHz to 30MHz:        |                                                                                                                                    |
| Test Date : 2026.05.14     | Temperature : 26°C                                                                                                                 |
| Test Engineer : Felix Pang | Humidity : 54%                                                                                                                     |
| Test Mode : GFSK mode      |                                                                                                                                    |
| Test Voltage : DC 7.4V     |                                                                                                                                    |
| 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 : 2026.05.14     | Temperature : 26°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Test Engineer : Felix Pang | Humidity : 54%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Test Mode : GFSK mode      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Test Voltage : DC 7.4V     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 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 GFSK mode, Channel 2402MHz 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   | 34.0066         | 19.90          | 13.52         | 33.42          | 40.00          | -6.58       | QP       |
| 2   | 104.8113        | 21.62          | 11.46         | 33.08          | 43.50          | -10.42      | QP       |
| 3 * | 181.2040        | 25.15          | 12.75         | 37.90          | 43.50          | -5.60       | QP       |
| 4   | 322.6125        | 17.36          | 15.80         | 33.16          | 46.00          | -12.84      | QP       |
| 5   | 364.1000        | 16.28          | 16.85         | 33.13          | 46.00          | -12.87      | QP       |
| 6   | 593.3096        | 14.47          | 21.93         | 36.40          | 46.00          | -9.60       | 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   | 145.2230        | 18.63          | 14.86         | 33.49          | 43.50          | -10.01      | QP       |
| 2 * | 182.7991        | 27.50          | 12.58         | 40.08          | 43.50          | -3.42       | QP       |
| 3   | 208.1236        | 26.64          | 11.81         | 38.45          | 43.50          | -5.05       | QP       |
| 4   | 255.0635        | 24.59          | 13.62         | 38.21          | 46.00          | -7.79       | QP       |
| 5   | 328.7506        | 20.11          | 15.98         | 36.09          | 46.00          | -9.91       | QP       |
| 6   | 362.5074        | 19.58          | 16.82         | 36.40          | 46.00          | -9.60       | QP       |

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

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| From 1GHz to 25GHz:                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test Date : 2026.05.14                      | Temperature : 26℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Test Engineer : Felix Pang                  | Humidity : 54%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Test Mode : GFSK, $\pi/4$ DQPSK, 8DPSK mode |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test Voltage : DC 7.4V                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 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> |

| Test Mode : GFSK TX Low  |                                                                                                                                                                                                                              |          |                  |                |                 |                |        |        |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------|----------------|-----------------|----------------|--------|--------|
| No.                      | Freq MHz                                                                                                                                                                                                                     | Polarity | Reading (dBuV/m) | Correct Factor | Result (dBuV/m) | Limit (dBuV/m) | Margin | Remark |
| 1                        | 4804                                                                                                                                                                                                                         | V        | 59.46            | -13.25         | 46.21           | 74.00          | -27.79 | Peak   |
| 2                        | 4804                                                                                                                                                                                                                         | V        | 47.80            | -13.25         | 34.55           | 54.00          | -19.45 | Avg    |
| 3                        | 7206                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 4                        | 9608                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 5                        | 4804                                                                                                                                                                                                                         | H        | 57.63            | -13.25         | 44.38           | 74.00          | -29.62 | Peak   |
| 6                        | 4804                                                                                                                                                                                                                         | H        | 46.55            | -13.25         | 33.30           | 54.00          | -20.70 | Avg    |
| 7                        | 7206                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 8                        | 9608                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| Test Mode : GFSK TX Mid  |                                                                                                                                                                                                                              |          |                  |                |                 |                |        |        |
| 1                        | 4882                                                                                                                                                                                                                         | V        | 59.26            | -12.98         | 46.28           | 74.00          | -27.72 | Peak   |
| 2                        | 4882                                                                                                                                                                                                                         | V        | 47.83            | -12.98         | 34.85           | 54.00          | -19.15 | Avg    |
| 3                        | 7323                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 4                        | 9764                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 5                        | 4882                                                                                                                                                                                                                         | H        | 57.06            | -12.98         | 44.08           | 74.00          | -29.92 | Peak   |
| 6                        | 4882                                                                                                                                                                                                                         | H        | 46.42            | -12.98         | 33.44           | 54.00          | -20.56 | Avg    |
| 7                        | 7323                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 8                        | 9764                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| Test Mode : GFSK TX High |                                                                                                                                                                                                                              |          |                  |                |                 |                |        |        |
| 1                        | 4960                                                                                                                                                                                                                         | V        | 59.63            | -12.70         | 46.93           | 74.00          | -27.07 | Peak   |
| 2                        | 4960                                                                                                                                                                                                                         | V        | 50.52            | -12.70         | 37.82           | 54.00          | -16.18 | Avg    |
| 3                        | 7440                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 4                        | 9920                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 5                        | 4960                                                                                                                                                                                                                         | H        | 57.72            | -12.70         | 45.02           | 74.00          | -28.98 | Peak   |
| 6                        | 4960                                                                                                                                                                                                                         | H        | 44.73            | -12.70         | 32.03           | 54.00          | -21.97 | Avg    |
| 7                        | 7440                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 8                        | 9920                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 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. |          |                  |                |                 |                |        |        |

| Test Mode : $\pi/4$ DQPSK TX Low  |                                                                                                                                                                                                                              |          |                  |                |                 |                |        |        |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------|----------------|-----------------|----------------|--------|--------|
| No.                               | Freq MHz                                                                                                                                                                                                                     | Polarity | Reading (dBuV/m) | Correct Factor | Result (dBuV/m) | Limit (dBuV/m) | Margin | Remark |
| 1                                 | 4804                                                                                                                                                                                                                         | V        | 57.15            | -13.25         | 43.90           | 74.00          | -30.10 | Peak   |
| 2                                 | 4804                                                                                                                                                                                                                         | V        | 47.86            | -13.25         | 34.61           | 54.00          | -19.39 | Avg    |
| 3                                 | 7206                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 4                                 | 9608                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 5                                 | 4804                                                                                                                                                                                                                         | H        | 55.15            | -13.25         | 41.90           | 74.00          | -32.10 | Peak   |
| 6                                 | 4804                                                                                                                                                                                                                         | H        | 47.71            | -13.25         | 34.46           | 54.00          | -19.54 | Avg    |
| 7                                 | 7206                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 8                                 | 9608                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| Test Mode : $\pi/4$ DQPSK TX Mid  |                                                                                                                                                                                                                              |          |                  |                |                 |                |        |        |
| 1                                 | 4882                                                                                                                                                                                                                         | V        | 58.76            | -12.98         | 45.78           | 74.00          | -28.22 | Peak   |
| 2                                 | 4882                                                                                                                                                                                                                         | V        | 49.74            | -12.98         | 36.76           | 54.00          | -17.24 | Avg    |
| 3                                 | 7323                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 4                                 | 9764                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 5                                 | 4882                                                                                                                                                                                                                         | H        | 58.24            | -12.98         | 45.26           | 74.00          | -28.74 | Peak   |
| 6                                 | 4882                                                                                                                                                                                                                         | H        | 48.02            | -12.98         | 35.04           | 54.00          | -18.96 | Avg    |
| 7                                 | 7323                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 8                                 | 9764                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| Test Mode : $\pi/4$ DQPSK TX High |                                                                                                                                                                                                                              |          |                  |                |                 |                |        |        |
| 1                                 | 4960                                                                                                                                                                                                                         | V        | 60.22            | -12.70         | 47.52           | 74.00          | -26.48 | Peak   |
| 2                                 | 4960                                                                                                                                                                                                                         | V        | 49.65            | -12.70         | 36.95           | 54.00          | -17.05 | Avg    |
| 3                                 | 7440                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 4                                 | 9920                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 5                                 | 4960                                                                                                                                                                                                                         | H        | 56.84            | -12.70         | 44.14           | 74.00          | -29.86 | Peak   |
| 6                                 | 4960                                                                                                                                                                                                                         | H        | 45.42            | -12.70         | 32.72           | 54.00          | -21.28 | Avg    |
| 7                                 | 7440                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 8                                 | 9920                                                                                                                                                                                                                         | --       | --               | --             | --              | --             | --     | --     |
| 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. |          |                  |                |                 |                |        |        |

| Test Mode : 8DPSK TX Low                                                                                                                                                                                                           |          |          |                  |                |                 |                |        |        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|------------------|----------------|-----------------|----------------|--------|--------|
| No.                                                                                                                                                                                                                                | Freq MHz | Polarity | Reading (dBuV/m) | Correct Factor | Result (dBuV/m) | Limit (dBuV/m) | Margin | Remark |
| 1                                                                                                                                                                                                                                  | 4804     | V        | 58.11            | -13.25         | 44.86           | 74.00          | -29.14 | Peak   |
| 2                                                                                                                                                                                                                                  | 4804     | V        | 47.65            | -13.25         | 34.40           | 54.00          | -19.60 | Avg    |
| 3                                                                                                                                                                                                                                  | 7206     | --       | --               | --             | --              | --             | --     | --     |
| 4                                                                                                                                                                                                                                  | 9608     | --       | --               | --             | --              | --             | --     | --     |
| 5                                                                                                                                                                                                                                  | 4804     | H        | 54.42            | -13.25         | 41.17           | 74.00          | -32.83 | Peak   |
| 6                                                                                                                                                                                                                                  | 4804     | H        | 47.86            | -13.25         | 34.61           | 54.00          | -19.39 | Avg    |
| 7                                                                                                                                                                                                                                  | 7206     | --       | --               | --             | --              | --             | --     | --     |
| 8                                                                                                                                                                                                                                  | 9608     | --       | --               | --             | --              | --             | --     | --     |
| Test Mode : 8DPSK TX Mid                                                                                                                                                                                                           |          |          |                  |                |                 |                |        |        |
| 1                                                                                                                                                                                                                                  | 4882     | V        | 56.48            | -12.98         | 43.50           | 74.00          | -30.50 | Peak   |
| 2                                                                                                                                                                                                                                  | 4882     | V        | 46.88            | -12.98         | 33.90           | 54.00          | -20.10 | Avg    |
| 3                                                                                                                                                                                                                                  | 7323     | --       | --               | --             | --              | --             | --     | --     |
| 4                                                                                                                                                                                                                                  | 9764     | --       | --               | --             | --              | --             | --     | --     |
| 5                                                                                                                                                                                                                                  | 4882     | H        | 55.74            | -12.98         | 42.76           | 74.00          | -31.24 | Peak   |
| 6                                                                                                                                                                                                                                  | 4882     | H        | 46.14            | -12.98         | 33.16           | 54.00          | -20.84 | Avg    |
| 7                                                                                                                                                                                                                                  | 7323     | --       | --               | --             | --              | --             | --     | --     |
| 8                                                                                                                                                                                                                                  | 9764     | --       | --               | --             | --              | --             | --     | --     |
| Test Mode : 8D PSK TX High                                                                                                                                                                                                         |          |          |                  |                |                 |                |        |        |
| 1                                                                                                                                                                                                                                  | 4960     | V        | 56.75            | -12.70         | 44.05           | 74.00          | -29.95 | Peak   |
| 2                                                                                                                                                                                                                                  | 4960     | V        | 47.85            | -12.70         | 35.15           | 54.00          | -18.85 | Avg    |
| 3                                                                                                                                                                                                                                  | 7440     | --       | --               | --             | --              | --             | --     | --     |
| 4                                                                                                                                                                                                                                  | 9920     | --       | --               | --             | --              | --             | --     | --     |
| 5                                                                                                                                                                                                                                  | 4960     | H        | 55.36            | -12.70         | 42.66           | 74.00          | -31.34 | Peak   |
| 6                                                                                                                                                                                                                                  | 4960     | H        | 47.69            | -12.70         | 34.99           | 54.00          | -19.01 | Avg    |
| 7                                                                                                                                                                                                                                  | 7440     | --       | --               | --             | --              | --             | --     | --     |
| 8                                                                                                                                                                                                                                  | 9920     | --       | --               | --             | --              | --             | --     | --     |
| 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. |          |          |                  |                |                 |                |        |        |

## 10. Band Edge Test

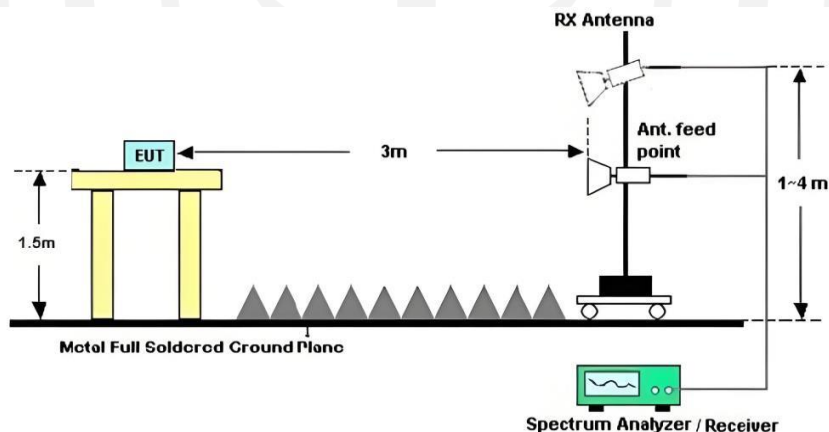
### 10.1. Test Limit

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).

| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009-0.490     | 2400/F(kHz)                       | 300                           |
| 0.490-1.705     | 24000/F(kHz)                      | 30                            |
| 1.705-30.0      | 30                                | 30                            |
| 30-88           | 100 **                            | 3                             |
| 88-216          | 150 **                            | 3                             |
| 216-960         | 200 **                            | 3                             |
| Above 960       | 500                               | 3                             |

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241

### 10.2. Block Diagram of Test Setup



### 10.3. Test Procedure

ANSI C63.10-2020+Cor.1-2023 section 6.10.5.2

All restriction band and non- restriction band have been tested, only worse case is reported.

Details see the KDB558074 D01 Meas Guidance v05r02

1. Put the EUT on a 1.5m high table, power on the EUT. Emissions were scanned and measured rotating the EUT to 360 degrees, Find the maximum Emission
2. Check the spurious emissions out of band.
3. RBW 1MHz, VBW 3MHz, peak detector for peak value, RBW 1MHz, VBW 10Hz, RMS detector for AV value.

## 10.4. Test Results

|               |               |             |        |
|---------------|---------------|-------------|--------|
| Test Date     | : 2026.05.14  | Temperature | : 26°C |
| Test Engineer | : Felix Pang  | Humidity    | : 54%  |
| Test Results  | : <b>PASS</b> |             |        |

| Frequency Range : <b>2310MHz~2410MHz</b>                                                                                                                                                                                                    |          |          |                  |                |                 |                |        |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|------------------|----------------|-----------------|----------------|--------|--------|
| Test Mode : GFSK TX 2402MHz                                                                                                                                                                                                                 |          |          |                  |                |                 |                |        |        |
| No.                                                                                                                                                                                                                                         | Freq MHz | Polarity | Reading (dBuV/m) | Correct Factor | Result (dBuV/m) | Limit (dBuV/m) | Margin | Remark |
| 1                                                                                                                                                                                                                                           | 2390     | H        | 60.92            | -20.45         | 40.47           | 74.00          | -33.53 | Peak   |
| 2                                                                                                                                                                                                                                           | 2390     | H        | --               | -20.45         | --              | 54.00          | --     | Avg    |
| 3                                                                                                                                                                                                                                           | 2400     | H        | 63.48            | -20.41         | 43.07           | 74.00          | -30.93 | Peak   |
| 4                                                                                                                                                                                                                                           | 2400     | H        | --               | -20.41         | --              | 54.00          | --     | Avg    |
|                                                                                                                                                                                                                                             |          |          |                  |                |                 |                |        |        |
| 1                                                                                                                                                                                                                                           | 2390     | V        | 60.91            | -20.45         | 40.46           | 74.00          | -33.54 | Peak   |
| 2                                                                                                                                                                                                                                           | 2390     | V        | --               | -20.45         | --              | 54.00          | --     | Avg    |
| 3                                                                                                                                                                                                                                           | 2400     | V        | 62.94            | -20.41         | 42.53           | 74.00          | -31.47 | Peak   |
| 4                                                                                                                                                                                                                                           | 2400     | V        | --               | -20.41         | --              | 54.00          | --     | Avg    |
|                                                                                                                                                                                                                                             |          |          |                  |                |                 |                |        |        |
| Frequency Range : <b>2450MHz~2550MHz</b>                                                                                                                                                                                                    |          |          |                  |                |                 |                |        |        |
| Test Mode : GFSK TX 2480MHz                                                                                                                                                                                                                 |          |          |                  |                |                 |                |        |        |
| 1                                                                                                                                                                                                                                           | 2483.5   | H        | 59.45            | -20.15         | 39.30           | 74.00          | -34.70 | Peak   |
| 2                                                                                                                                                                                                                                           | 2483.5   | H        | --               | -20.15         | --              | 54.00          | --     | Avg    |
|                                                                                                                                                                                                                                             |          |          |                  |                |                 |                |        |        |
| 1                                                                                                                                                                                                                                           | 2483.5   | V        | 63.25            | -20.15         | 43.10           | 74.00          | -30.90 | Peak   |
| 2                                                                                                                                                                                                                                           | 2483.5   | V        | --               | -20.15         | --              | 54.00          | --     | Avg    |
|                                                                                                                                                                                                                                             |          |          |                  |                |                 |                |        |        |
| Note:                                                                                                                                                                                                                                       |          |          |                  |                |                 |                |        |        |
| 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin.                                                                                                                                          |          |          |                  |                |                 |                |        |        |
| 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain.                                                                                                                                                                                |          |          |                  |                |                 |                |        |        |
| Result=Reading + Correct Factor. Margin= Result-Limit.                                                                                                                                                                                      |          |          |                  |                |                 |                |        |        |
| 3. 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 need not be carried out. |          |          |                  |                |                 |                |        |        |

| Frequency Range : <b>2310MHz~2410MHz</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------|----------------|-----------------|----------------|--------|--------|
| Test Mode : $\pi/4$ DQPSK TX 2402MHz     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| No.                                      | Freq MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Polarity | Reading (dBuV/m) | Correct Factor | Result (dBuV/m) | Limit (dBuV/m) | Margin | Remark |
| 1                                        | 2390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | H        | 61.30            | -20.45         | 40.85           | 74.00          | -33.15 | Peak   |
| 2                                        | 2390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | H        | --               | -20.45         | --              | 54.00          | --     | Avg    |
| 3                                        | 2400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | H        | 62.35            | -20.41         | 41.94           | 74.00          | -32.06 | Peak   |
| 4                                        | 2400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | H        | --               | -20.41         | --              | 54.00          | --     | Avg    |
|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| 1                                        | 2390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | V        | 61.44            | -20.45         | 40.99           | 74.00          | -33.01 | Peak   |
| 2                                        | 2390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | V        | --               | -20.45         | --              | 54.00          | --     | Avg    |
| 3                                        | 2400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | V        | 63.23            | -20.41         | 42.82           | 74.00          | -31.18 | Peak   |
| 4                                        | 2400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | V        | --               | -20.41         | --              | 54.00          | --     | Avg    |
|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| Frequency Range : <b>2450MHz~2550MHz</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| Test Mode : $\pi/4$ DQPSK TX 2480MHz     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| 1                                        | 2483.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | H        | 61.52            | -20.15         | 41.37           | 74.00          | -32.63 | Peak   |
| 2                                        | 2483.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | H        | --               | -20.15         | --              | 54.00          | --     | Avg    |
|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| 1                                        | 2483.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | V        | 63.66            | -20.15         | 43.51           | 74.00          | -30.49 | Peak   |
| 2                                        | 2483.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | V        | --               | -20.15         | --              | 54.00          | --     | Avg    |
|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| Note:                                    | <p>1. Means other frequency and mode comply with standard requirements and at least have 20dB margin.</p> <p>2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain.<br/>Result=Reading + Correct Factor. Margin= Result-Limit.</p> <p>3. 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 need not be carried out.</p> |          |                  |                |                 |                |        |        |

| Frequency Range : <b>2310MHz~2410MHz</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------|----------------|-----------------|----------------|--------|--------|
| Test Mode : 8DPSK TX 2402MHz             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| No.                                      | Freq MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Polarity | Reading (dBuV/m) | Correct Factor | Result (dBuV/m) | Limit (dBuV/m) | Margin | Remark |
| 1                                        | 2390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | H        | 59.08            | -20.45         | 38.63           | 74.00          | -35.37 | Peak   |
| 2                                        | 2390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | H        | --               | -20.45         | --              | 54.00          | --     | Avg    |
| 3                                        | 2400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | H        | 62.82            | -20.41         | 42.41           | 74.00          | -31.59 | Peak   |
| 4                                        | 2400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | H        | --               | -20.41         | --              | 54.00          | --     | Avg    |
|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| 1                                        | 2390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | V        | 62.29            | -20.45         | 41.84           | 74.00          | -32.16 | Peak   |
| 2                                        | 2390                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | V        | --               | -20.45         | --              | 54.00          | --     | Avg    |
| 3                                        | 2400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | V        | 61.23            | -20.41         | 40.82           | 74.00          | -33.18 | Peak   |
| 4                                        | 2400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | V        | --               | -20.41         | --              | 54.00          | --     | Avg    |
|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| Frequency Range : <b>2450MHz~2550MHz</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| Test Mode : 8DPSK TX 2480MHz             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| 1                                        | 2483.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | H        | 62.05            | -20.15         | 41.90           | 74.00          | -32.10 | Peak   |
| 2                                        | 2483.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | H        | --               | -20.15         | --              | 54.00          | --     | Avg    |
|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| 1                                        | 2483.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | V        | 63.66            | -20.15         | 43.51           | 74.00          | -30.49 | Peak   |
| 2                                        | 2483.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | V        | --               | -20.15         | --              | 54.00          | --     | Avg    |
|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                  |                |                 |                |        |        |
| Note:                                    | <p>1. Means other frequency and mode comply with standard requirements and at least have 20dB margin.</p> <p>2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain.<br/>Result=Reading + Correct Factor. Margin= Result-Limit.</p> <p>3. 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 need not be carried out.</p> |          |                  |                |                 |                |        |        |

## 11. Power Line Conducted Emissions

### 11.1. 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.

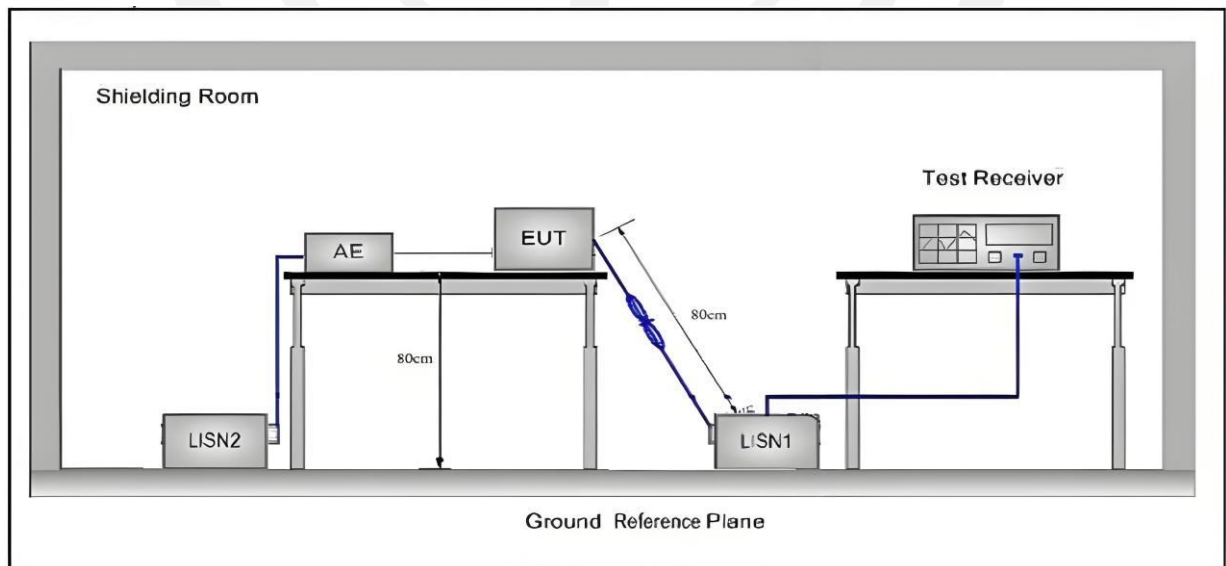
3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 11.2. 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 C63.10-2020+Cor.1-2023 on Conducted Emission Measurement.

The bandwidth of test receiver is set at 9 kHz.

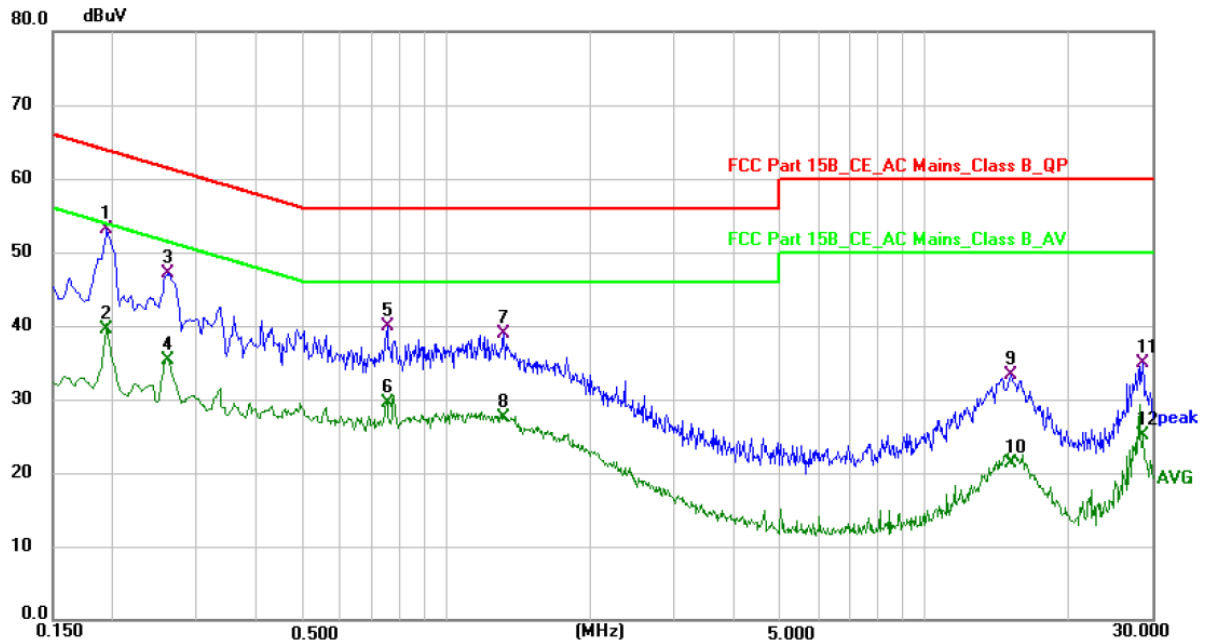
### 11.3. Test Setup



#### 11.4. Test Results

|               |                                                                                                                                                                                                                                                                     |             |       |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------|
| Test Date     | : 2026.05.14                                                                                                                                                                                                                                                        | Temperature | : 24℃ |
| Test Engineer | : Felix Pang                                                                                                                                                                                                                                                        | Humidity    | : 56% |
| Test Mode     | : GFSK mode                                                                                                                                                                                                                                                         |             |       |
| Test voltage  | : AC 120V/60Hz                                                                                                                                                                                                                                                      |             |       |
| Test Results  | : <b>PASS</b>                                                                                                                                                                                                                                                       |             |       |
| Note:         | 1. The test results are listed in next pages.                                                                                                                                                                                                                       |             |       |
|               | 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. |             |       |
|               | 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.                   |             |       |
|               | 4. All modes have been tested, and only worst data of GFSK mode, Channel 2402MHz was listed in this report.                                                                                                                                                         |             |       |

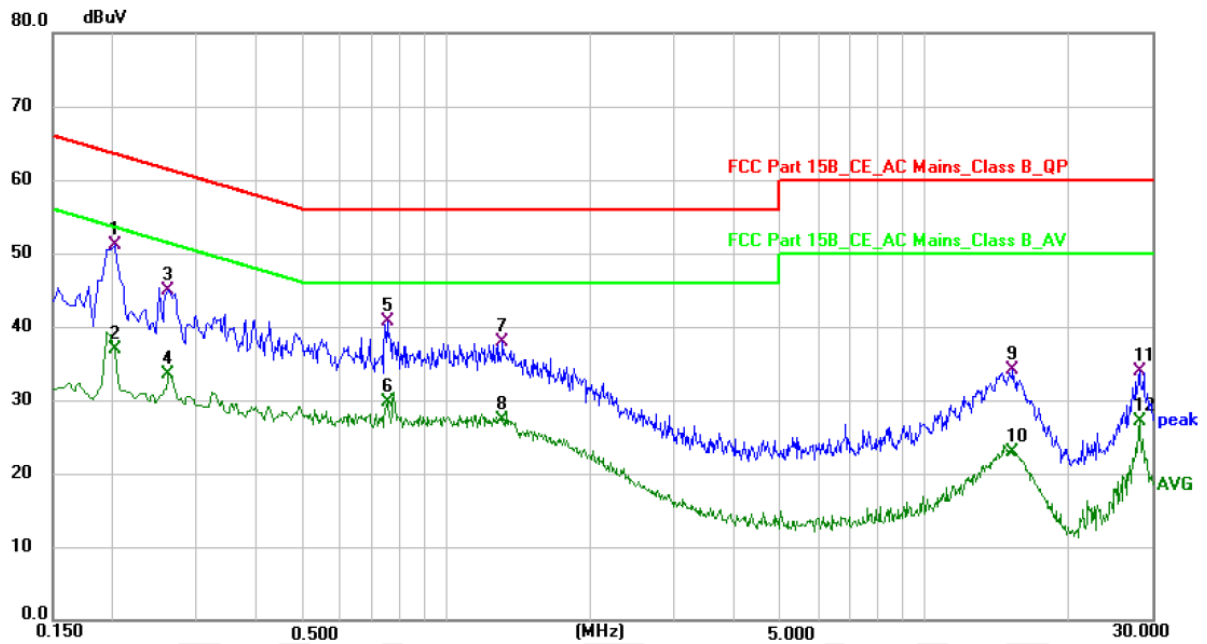
## Polarization: L



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|
| 1 * | 0.1940          | 43.63          | 9.44        | 53.07        | 63.86        | -10.79      | QP       |
| 2   | 0.1940          | 30.07          | 9.44        | 39.51        | 53.86        | -14.35      | AVG      |
| 3   | 0.2620          | 37.64          | 9.40        | 47.04        | 61.37        | -14.33      | QP       |
| 4   | 0.2620          | 25.86          | 9.40        | 35.26        | 51.37        | -16.11      | AVG      |
| 5   | 0.7539          | 30.39          | 9.47        | 39.86        | 56.00        | -16.14      | QP       |
| 6   | 0.7539          | 19.98          | 9.47        | 29.45        | 46.00        | -16.55      | AVG      |
| 7   | 1.3180          | 29.05          | 9.83        | 38.88        | 56.00        | -17.12      | QP       |
| 8   | 1.3180          | 17.66          | 9.83        | 27.49        | 46.00        | -18.51      | AVG      |
| 9   | 15.2020         | 23.52          | 9.79        | 33.31        | 60.00        | -26.69      | QP       |
| 10  | 15.2020         | 11.47          | 9.79        | 21.26        | 50.00        | -28.74      | AVG      |
| 11  | 28.6860         | 25.34          | 9.53        | 34.87        | 60.00        | -25.13      | QP       |
| 12  | 28.6860         | 15.67          | 9.53        | 25.20        | 50.00        | -24.80      | AVG      |

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

## Polarization: N



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|
| 1 * | 0.2020          | 41.63          | 9.40        | 51.03        | 63.53        | -12.50      | QP       |
| 2   | 0.2020          | 27.57          | 9.40        | 36.97        | 53.53        | -16.56      | AVG      |
| 3   | 0.2620          | 35.56          | 9.40        | 44.96        | 61.37        | -16.41      | QP       |
| 4   | 0.2620          | 24.13          | 9.40        | 33.53        | 51.37        | -17.84      | AVG      |
| 5   | 0.7539          | 30.81          | 9.85        | 40.66        | 56.00        | -15.34      | QP       |
| 6   | 0.7539          | 19.93          | 9.85        | 29.78        | 46.00        | -16.22      | AVG      |
| 7   | 1.3140          | 28.35          | 9.54        | 37.89        | 56.00        | -18.11      | QP       |
| 8   | 1.3140          | 17.69          | 9.54        | 27.23        | 46.00        | -18.77      | AVG      |
| 9   | 15.3460         | 24.58          | 9.49        | 34.07        | 60.00        | -25.93      | QP       |
| 10  | 15.3460         | 13.42          | 9.49        | 22.91        | 50.00        | -27.09      | AVG      |
| 11  | 28.2140         | 24.07          | 9.80        | 33.87        | 60.00        | -26.13      | QP       |
| 12  | 28.2140         | 17.39          | 9.80        | 27.19        | 50.00        | -22.81      | AVG      |

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

## 12. Antenna Requirements

### 12.1.Limit

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 or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

### 12.2.Result

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



### 13. Photos of test setup

Reference to the **psi2604256-C01-R01 appendix I Test Setup Photo** for details.

### 14. Photos of EUT

Reference to the **psi2604256-C01-R01 appendix II external photos** and **appendix III internal photos** for details.

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

