



# JAPAN RADIO TEST REPORT

Applicant: Zensbuds Limited

Address: Room 715, Fabrico Industrial Building, 78-84 Kwai Cheong Road, Kwai Chung, Hong Kong

Manufacturer: Dongguan Ouge Electronic Technology Co.Ltd

Address: Building 2, No.1 Dongshan Yongchang Road, Qishi Town, Dongguan City, Guangdong Province, China

Product Name: Earbuds

Trade Mark: ZENS

Model Number: ZB01, ZB01-XX, ZENSBUDS AI, EB-01

Date of Receipt: Apr. 15, 2026

Test Date: Apr. 15, 2026 - Apr. 29, 2026

Date of Report: Apr. 29, 2026

Prepared By: Shenzhen DL Testing Technology Co., Ltd.

Address: 101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1 Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China

Applicable Standards: Item 19 of Article 2 Paragraph 1  
ARIB STD T-66 Ver.3.7(2014)  
Article 2-1, Item 19-MIC Notice No. 88 Appendix No. 43

Test Result: Pass

Report Number: DLE-260415048R

Prepared (Test Engineer): Alisa Song

Reviewer (Supervisor): Jack Bu

Approved (Manager): Jade Yang



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.

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## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| <b>ARIB STD T-66 Ver.3.7</b>                                  |                                                                                   |                   |        |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|--------|
| <b>Article 2-1, Item 19-MIC Notice No. 88 Appendix No. 43</b> |                                                                                   |                   |        |
| Standard Section                                              | Test Item                                                                         | Judgment          | Remark |
| <b>General provisions</b>                                     |                                                                                   |                   |        |
| 5                                                             | Frequency Error                                                                   | PASS              |        |
| 6                                                             | Occupied Bandwidth                                                                | PASS              |        |
| 7                                                             | Spurious Emissions Intensity                                                      | PASS              |        |
| 8                                                             | Interference Prevention Capability                                                | PASS              |        |
| <b>Transmitting equipment</b>                                 |                                                                                   |                   |        |
| 14                                                            | Antenna Power                                                                     | PASS              |        |
| 14.2                                                          | SAR                                                                               | N/A               |        |
| <b>Transmitting antenna</b>                                   |                                                                                   |                   |        |
| 20                                                            | Type, Configuration, etc., of Transmitting Antenna                                | PASS              |        |
| 22                                                            | Direction Pattern of Transmitting Antenna (Provided at Individual Antenna Report) | PASS              |        |
| <b>Receiving antenna</b>                                      |                                                                                   |                   |        |
| 24                                                            | Limitation of Collateral Emission of Receiver                                     | PASS              |        |
| 26                                                            | Refer to All Articles for Transmitting Antenna                                    | PASS              |        |
| <b>Operating frequency 2400~2483MHz</b>                       |                                                                                   |                   |        |
| 49.20(1); a                                                   | RF Shielding Method                                                               | PASS              |        |
| 49.20(1); a                                                   | Communication Method                                                              | PASS              |        |
| 49.20(1); b                                                   | Spread-spectrum Method                                                            | PASS              |        |
| 49.20(1); c                                                   | Antenna Power                                                                     | PASS              |        |
| 49.20(1); d                                                   | EIRP power                                                                        | PASS              |        |
| 4.7                                                           | Transmission Radiation Angle Width (3dB Bandwidth)                                | N/A               |        |
| 49.20(1); e                                                   | Spread-Spectrum Bandwidth                                                         | Only for reported |        |
| 49.20(1); f                                                   | Spreading Factor                                                                  | Only for reported |        |
| 49.20(1); g                                                   | Hopping Frequency Dwell Time (FH employed)                                        | PASS              |        |

NOTE:

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



### 1.1. TEST FACILITY

Shenzhen DL Testing Technology Co., Ltd.

Add.: 101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1 Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China

FCC Test Firm Registration Number: 854456

Designation Number: CN1307

IC Registered No.: 27485

CAB ID.: CN0118

CNAS: L11567

### 1.2. MEASUREMENT UNCERTAINTY

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

| No. | Item                          | Uncertainty         |
|-----|-------------------------------|---------------------|
| 1   | Conducted Emission Test       | $\pm 3.2\text{dB}$  |
| 2   | Radiated Emission Test        | $\pm 4.7\text{dB}$  |
| 3   | RF power, conducted           | $\pm 0.16\text{dB}$ |
| 4   | Spurious emissions, conducted | $\pm 0.21\text{dB}$ |
| 5   | All emissions, radiated (<1G) | $\pm 4.68\text{dB}$ |
| 6   | All emissions, radiated(>1G)  | $\pm 5.0\text{dB}$  |
| 7   | frequency error ppm           | $\pm 0.5\text{ppm}$ |
| 8   | Occupied Bandwidth            | $\pm 0.2\text{MHz}$ |



## 2. GENERAL INFORMATION

### 2.1. GENERAL DESCRIPTION OF EUT

|                      |                                                                                                                                                                                                                    |                         |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Product Name:        | Earbuds                                                                                                                                                                                                            |                         |
| Trade Mark:          | ZENS                                                                                                                                                                                                               |                         |
| Model Number:        | ZB01, ZB01-XX, ZENSBUDS AI, EB-01                                                                                                                                                                                  |                         |
| Test Model:          | ZB01                                                                                                                                                                                                               |                         |
| Model Difference     | All models are same as the samples except model name and appearance color, they have the same structure and circuit.                                                                                               |                         |
| Product Description: | Operation Frequency:                                                                                                                                                                                               | 2402~2480 MHz           |
|                      | BT Version:                                                                                                                                                                                                        | 4.2(BR/EDR)             |
|                      | Bit Rate of Transmitter:                                                                                                                                                                                           | GFSK, PI/4-DQPSK, 8DPSK |
|                      | Number of Channel:                                                                                                                                                                                                 | 79CH                    |
|                      | Antenna Designation:                                                                                                                                                                                               | Please see Note 3.      |
|                      | Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual. |                         |
| Channel List:        | Please refer to the Note 2.                                                                                                                                                                                        |                         |
| Power supply:        | DC 3.7V from battery<br>DC 5V from charge                                                                                                                                                                          |                         |
| Hardware Version:    | HV01                                                                                                                                                                                                               |                         |
| Software Version:    | SV01                                                                                                                                                                                                               |                         |



Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- 2.

| Channel List |                 |         |                 |         |                 |
|--------------|-----------------|---------|-----------------|---------|-----------------|
| Channel      | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 00           | 2402            | 27      | 2429            | 54      | 2456            |
| 01           | 2403            | 28      | 2430            | 55      | 2457            |
| 02           | 2404            | 29      | 2431            | 56      | 2458            |
| 03           | 2405            | 30      | 2432            | 57      | 2459            |
| 04           | 2406            | 31      | 2433            | 58      | 2460            |
| 05           | 2407            | 32      | 2434            | 59      | 2461            |
| 06           | 2408            | 33      | 2435            | 60      | 2462            |
| 07           | 2409            | 34      | 2436            | 61      | 2463            |
| 08           | 2410            | 35      | 2437            | 62      | 2464            |
| 09           | 2411            | 36      | 2438            | 63      | 2465            |
| 10           | 2412            | 37      | 2439            | 64      | 2466            |
| 11           | 2413            | 38      | 2440            | 65      | 2467            |
| 12           | 2414            | 39      | 2441            | 66      | 2468            |
| 13           | 2415            | 40      | 2442            | 67      | 2469            |
| 14           | 2416            | 41      | 2443            | 68      | 2470            |
| 15           | 2417            | 42      | 2444            | 69      | 2471            |
| 16           | 2418            | 43      | 2445            | 70      | 2472            |
| 17           | 2419            | 44      | 2446            | 71      | 2473            |
| 18           | 2420            | 45      | 2447            | 72      | 2474            |
| 19           | 2421            | 46      | 2448            | 73      | 2475            |
| 20           | 2422            | 47      | 2449            | 74      | 2476            |
| 21           | 2423            | 48      | 2450            | 75      | 2477            |
| 22           | 2424            | 49      | 2451            | 76      | 2478            |
| 23           | 2425            | 50      | 2452            | 77      | 2479            |
| 24           | 2426            | 51      | 2453            | 78      | 2480            |
| 25           | 2427            | 52      | 2454            |         |                 |
| 26           | 2428            | 53      | 2455            |         |                 |

- 3.

Table for Filed Antenna

| Ant. | Brand | Model Name | Antenna Type     | Connector | Gain (dBi) | NOTE |
|------|-------|------------|------------------|-----------|------------|------|
| 1    | N/A   | 2.4G       | Internal Antenna | N/A       | 2.78       |      |



## 2.2. DESCRIPTION OF TEST MODES

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

| Pretest Mode | Description                 |
|--------------|-----------------------------|
| Mode 1       | GFSK (CH00 CH39 CH78)       |
| Mode 2       | PI/4-DQPSK (CH00 CH39 CH78) |
| Mode 3       | 8DPSK (CH00 CH39 CH78)      |

| Final Test Mode | Description                 |
|-----------------|-----------------------------|
| Mode 1          | GFSK (CH00 CH39 CH78)       |
| Mode 2          | PI/4-DQPSK (CH00 CH39 CH78) |
| Mode 3          | 8DPSK (CH00 CH39 CH78)      |

## 2.3. TEST CONDITIONS

The BT module was tested while in a continuous transmitter/receiver mode.

The EUT was tuned to a low, middle, and high channel for all tests. For all test case pre/scans were completed in all Modes to determine worst case levels.

**Power Supply Voltage Fluctuation Test**

| Voltage Fluctuation Test | Normal Voltage | High Voltage +10% of Normal Voltage | Low Voltage -10% of Normal Voltage |
|--------------------------|----------------|-------------------------------------|------------------------------------|
| Input DC Power           | 3.7V           | 4.07V                               | 3.33V                              |
| RF Chip                  | 3.3V           | 3.3V                                | 3.3V                               |
| Voltage Variation (%)    | 0              | 0                                   | 0                                  |

NOTE:

Voltage Variation (%)

= (Output high or Low Voltage - Output Normal Voltage)/ Output Normal Voltage\* 100

During the input supply voltage to the EUT from the external power source is varied by +/- 10%, if output voltage had been confirmed that the fluctuation of power supply to the RF circuit of EUT (excluding power source) is equal to or less than +/-1%. Exempt extremely high and low supply voltage condition test, EUT only operated in normal voltage to test all regulations.

The RF Chip voltage on the motherboard inside the product does not change more than 1%.

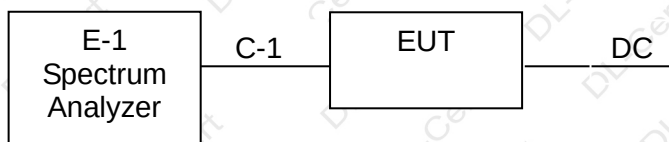


## 2.4. TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

|                                                 |                               |          |          |
|-------------------------------------------------|-------------------------------|----------|----------|
| Test software Version                           | Software name: bt_tool_v1.1.4 |          |          |
| Frequency                                       | 2402MHz                       | 2441 MHz | 2480 MHz |
| Max output power parameters setting of software | 10                            | 10       | 10       |

## 2.5. BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



## 2.6. DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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

| Item | Equipment         | Mfr/Brand | Model/Type No. | Series No. | Note |
|------|-------------------|-----------|----------------|------------|------|
| E-1  | Spectrum Analyzer | Agilent   | N9020A         | 108040     |      |
|      |                   |           |                |            |      |

| Item | Shielded Type | Ferrite Core | Length | Note     |
|------|---------------|--------------|--------|----------|
| C-1  | NO            | NO           | 15cm   | RF Cable |
|      |               |              |        |          |

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

**2.7. EQUIPMENTS LIST FOR ALL TEST ITEMS**

| Item | Kind Of Equipment                   | Manufacturer | Type No.    | Serial No. | Last Calibration | Calibrated Until |
|------|-------------------------------------|--------------|-------------|------------|------------------|------------------|
| 1    | SPECTRUM ANALYZER                   | AGILENT      | E4407B      | 160400005  | Oct. 25, 2025    | Oct. 24, 2026    |
| 2    | TEST RECEIVER                       | R&S          | ESPI        | 101318     | Oct. 25, 2025    | Oct. 24, 2026    |
| 3    | BILOG ANTENNA                       | TESEQ        | CBL6111D    | 31216      | Oct. 25, 2025    | Oct. 24, 2026    |
| 4    | 50Ω COAXIAL SWITCH                  | ANRITSU      | MP59B       | 6200264416 | Oct. 25, 2025    | Oct. 24, 2026    |
| 5    | SPECTRUM ANALYZER                   | ADVANTEST    | R3132       | 150900201  | Oct. 25, 2025    | Oct. 24, 2026    |
| 6    | HORN ANTENNA                        | EM           | EM-AH-10180 | 2011071402 | Oct. 25, 2025    | Oct. 24, 2026    |
| 7    | HORN ANT                            | SCHWARZBECK  | BBHA 9170   | 9170-181   | Oct. 25, 2025    | Oct. 24, 2026    |
| 8    | AMPLIFIER                           | EM           | EM-30180    | 060538     | Oct. 25, 2025    | Oct. 24, 2026    |
| 9    | LOOP ANTENNA                        | ARA          | PLA-1030/B  | 1029       | Oct. 25, 2025    | Oct. 24, 2026    |
| 10   | POWER METER                         | R&S          | NRVS        | 100696     | Oct. 25, 2025    | Oct. 24, 2026    |
| 11   | TEST RECEIVER                       | R&S          | ESCI        | 101160     | Oct. 25, 2025    | Oct. 24, 2026    |
| 12   | SPECTRUM ANALYZER                   | AGILENT      | N9020A      | MY55370280 | Oct. 25, 2025    | Oct. 24, 2026    |
| 13   | WIDEBAND RADIO COMMUNICATION TESTER | R&S          | CMW500      | 106504     | Oct. 25, 2025    | Oct. 24, 2026    |
| 14   | 50Ω COAXIAL SWITCH                  | ANRITSU      | MP59B       | 6200264417 | Oct. 25, 2025    | Oct. 24, 2026    |
| 15   | DC Power                            | N/A          | PS-305D     | 010952961  | Oct. 25, 2025    | Oct. 24, 2026    |

**REMARK:**

(A) CALIBRATION CONDUCTED BY THE NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (NICT) IN JAPAN (HEREINAFTER REFERRED TO AS "NICT") OR A DESIGNATED CALIBRATION AGENCY UNDER ARTICLE102-18 PARAGRAPH (1) IN JRL.

(B) CORRECTION CONDUCTED PURSUANT TO THE PROVISIONS OF ARTICLE 135 OR ARTICLE 144 OF THE MEASUREMENT ACT (ACT NO.51 OF 1992).

(C) CALIBRATION CONDUCTED IN COUNTRIES EXCEPT JAPAN, WHICH SHALL BE EQUIVALENT TO THE CALIBRATION CONDUCTED BY THE NICT OR A DESIGNATED CALIBRATION AGENCY UNDER ARTICLE102-18 PARAGRAPH (1).

(D) CALIBRATION,ETC. CONDUCTED BY USING MEASURING INSTRUMENTS AND OTHER EQUIPMENT LISTED IN THE RIGHT COLUMN OF APPENDED TABLE NO.3, WHICH SHALL HAVE BEEN GIVEN ANY TYPE OF CALIBRATION, ETC. LISTED ABOVE FROM (A) TO (C)

ALL EQUIPMENT HAS CALIBRATED IN GUANGZHOU GRE METROLOGY & TEST CO., LTD, THAT COMPLY WITH REMARK(C) REQUIREMENT.



## 2.8 ENVIRONMENTAL CONDITIONS

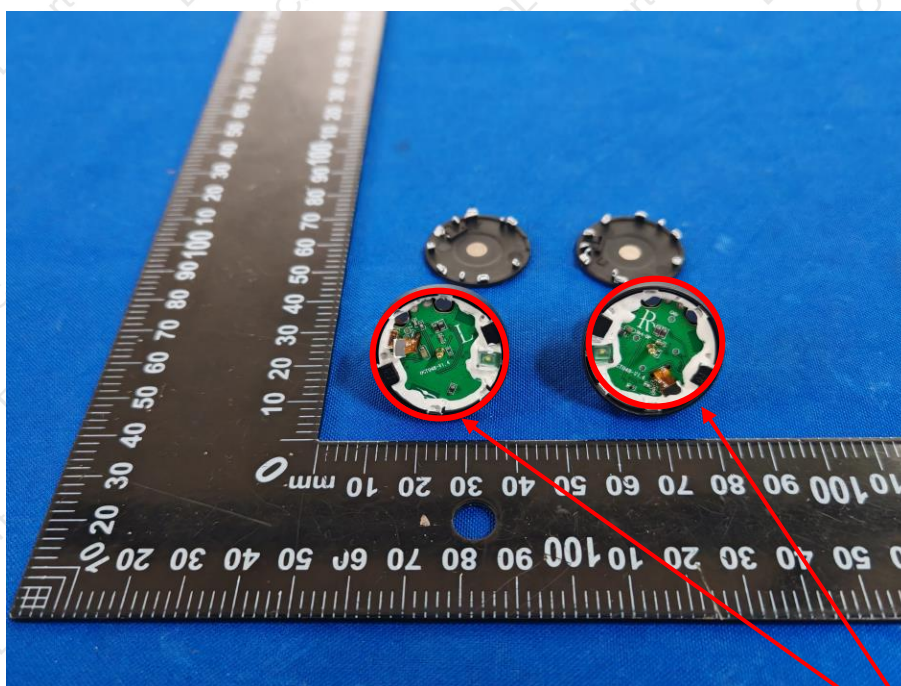
During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35°C
- Humidity: 45-85%
- Atmospheric pressure: 86-106 kPa

## 3. RF SHIELDING METHOD

Enclosure:

the product structure is stuck by special glue, If you do not use a special tool, you will not be able to open it. See below the structure:



Special glue is used on red line for cannot be open easily structure.



Glue name: SA0097

Glue type: Acrylic tree structure

Manufacturer: supreme resources Inc



## 4. TEST RESULT

### 4.1. FREQUENCY ERROR

### 4.2. LIMIT

| Item            | Limits             |
|-----------------|--------------------|
| Frequency Error | $\pm 50\text{ppm}$ |

### 4.3. MEASURING INSTRUMENTS AND SETTING

The following table is the setting of Spectrum Analyzer.

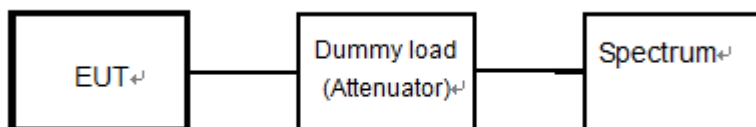
| Spectrum Parameter | Setting  |
|--------------------|----------|
| Attenuation        | Auto     |
| RB / VB            | 10KHz    |
| Detector           | Peak     |
| Trace              | Max Hold |
| Sweep Time         | Auto     |

### 4.4. TEST PROCEDURES

- (1) In the case of unmodulated signal (continuous or continuous burst), measure the frequency directly by a frequency meter.
- (2) In the case of burst waves, the measurement shall be done for enough time in order to obtain the enough measuring accuracy, and the average of the measured values becomes the final value.
- (3) In the case of a test mode with a specific frequency spectrum, measure the frequency of the specific spectrum by a spectrum analyzer.
- (4) In the cases above, if the frequency equivalent to the test frequency is not directly measured in principle, it shall be obtained by necessary calculation.

In the case of modulated signal, if there is no specific spectrum measurable by a spectrum analyzer but a specific dip is observed, it is allowed to measure the frequency with the signal generator (synthesized). That is, observe a signal of the signal generator concurrently (or alternately) with the tested signal using the spectrum analyzer while setting the frequency of the signal generator to the position of the dip on the screen of the spectrum analyzer, and determine the frequency of the signal generator at the time as a measured value.

### 4.5. TEST SETUP LAYOUT



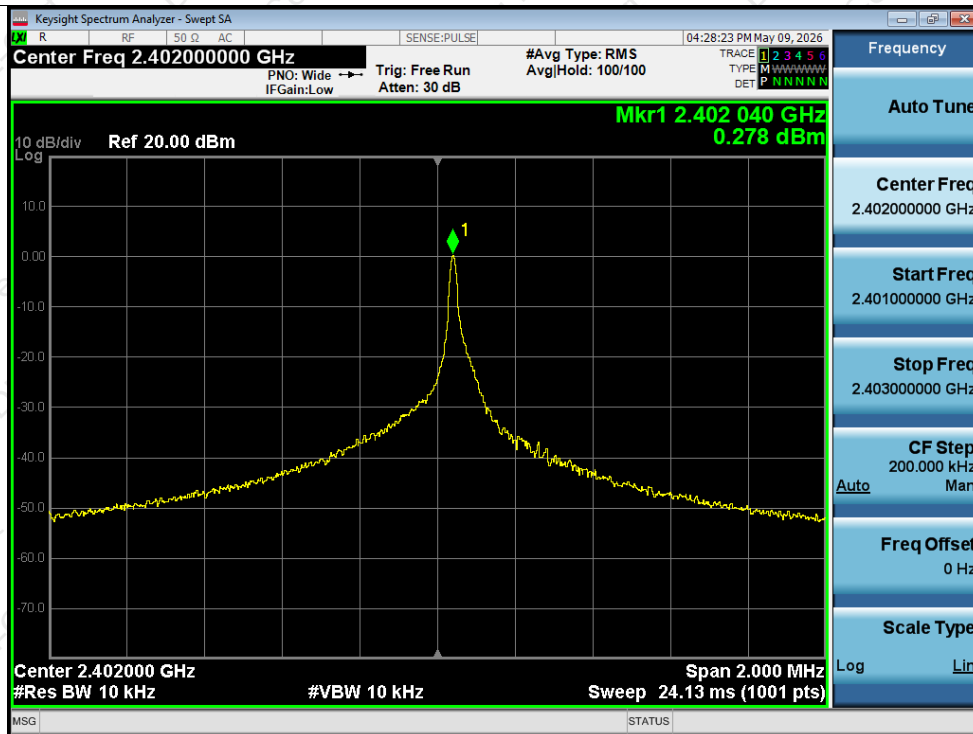


#### 4.5.1. TEST RESULT

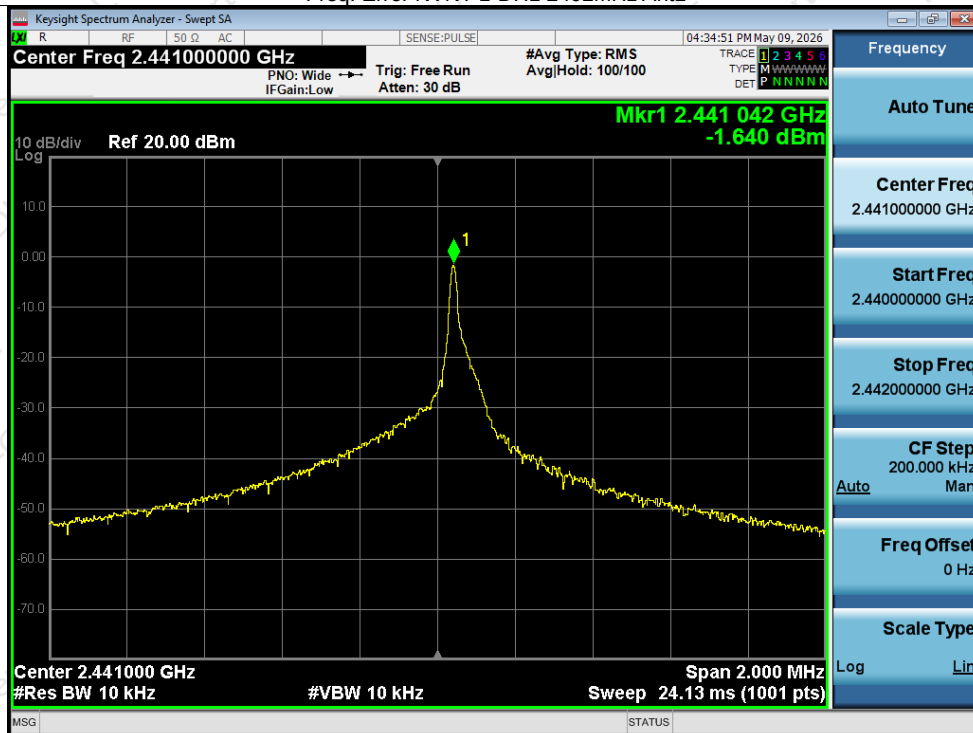
Operation Mode: Transmitting

|              |         |                    |       |           |          |
|--------------|---------|--------------------|-------|-----------|----------|
| Temperature: | 25.3 °C | Relative Humidity: | 55.4% | Pressure: | 1010mbar |
|--------------|---------|--------------------|-------|-----------|----------|

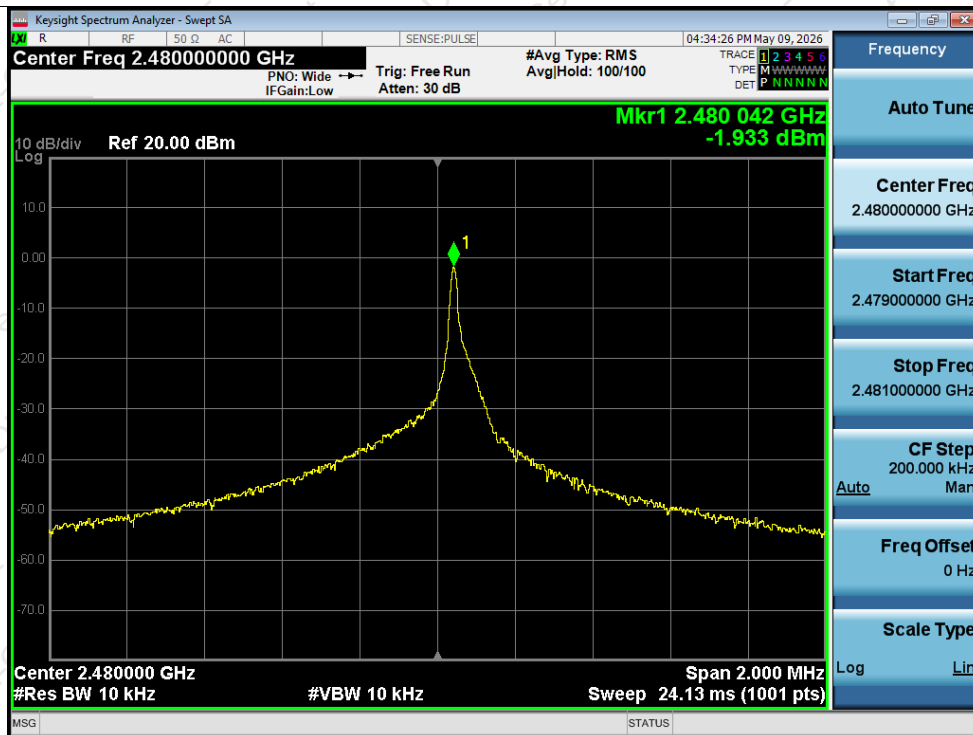
| Ant1 |           |         |                 |             |                          |                 |           |         |
|------|-----------|---------|-----------------|-------------|--------------------------|-----------------|-----------|---------|
| ENV  | Mode      | TX Type | Frequency (MHz) | Packet Type | Measured Frequency (MHz) | Tolerance (ppm) |           | Verdict |
|      |           |         |                 |             |                          | Result          | Limit     |         |
| NTNV | GFSK      | SISO    | 2402            | DH5         | 2402.04                  | 16.65           | -50 to 50 | Pass    |
|      |           |         | 2441            | DH5         | 2441.042                 | 17.21           | -50 to 50 | Pass    |
|      |           |         | 2480            | DH5         | 2480.042                 | 16.94           | -50 to 50 | Pass    |
|      | Pi/4DQPSK | SISO    | 2402            | 2DH5        | 2402.04                  | 16.65           | -50 to 50 | Pass    |
|      |           |         | 2441            | 2DH5        | 2441.04                  | 16.39           | -50 to 50 | Pass    |
|      |           |         | 2480            | 2DH5        | 2480.04                  | 16.13           | -50 to 50 | Pass    |
|      | 8DPSK     | SISO    | 2402            | 3DH5        | 2402.038                 | 15.82           | -50 to 50 | Pass    |
|      |           |         | 2441            | 3DH5        | 2441.04                  | 16.39           | -50 to 50 | Pass    |
|      |           |         | 2480            | 3DH5        | 2480.04                  | 16.13           | -50 to 50 | Pass    |



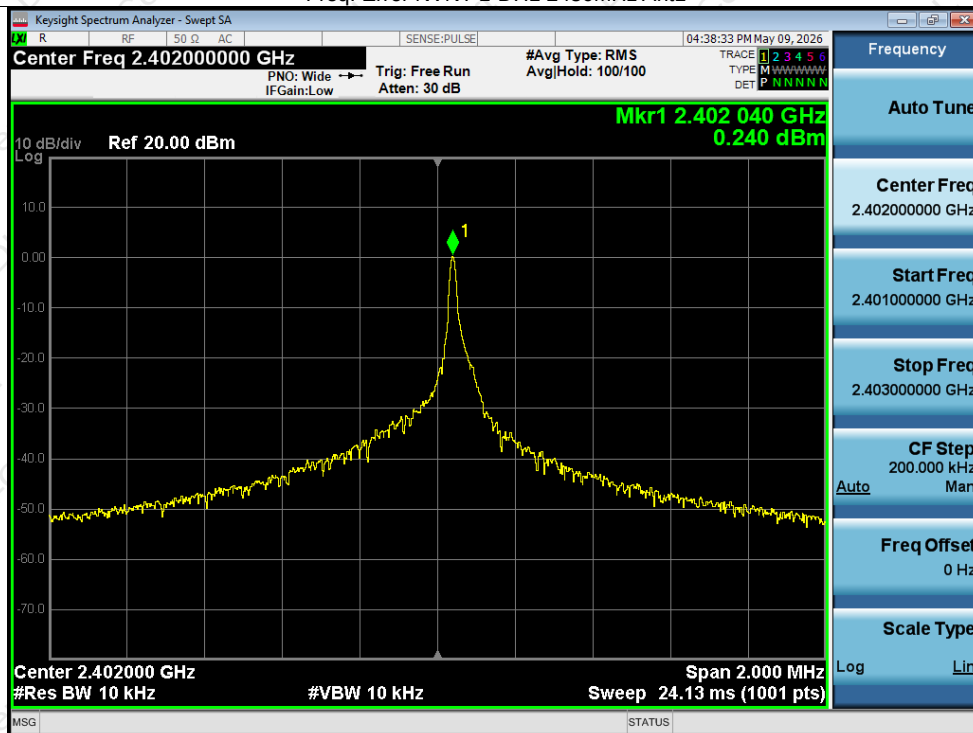
Freq. Error NVNT 1-DH1 2402MHz Ant1



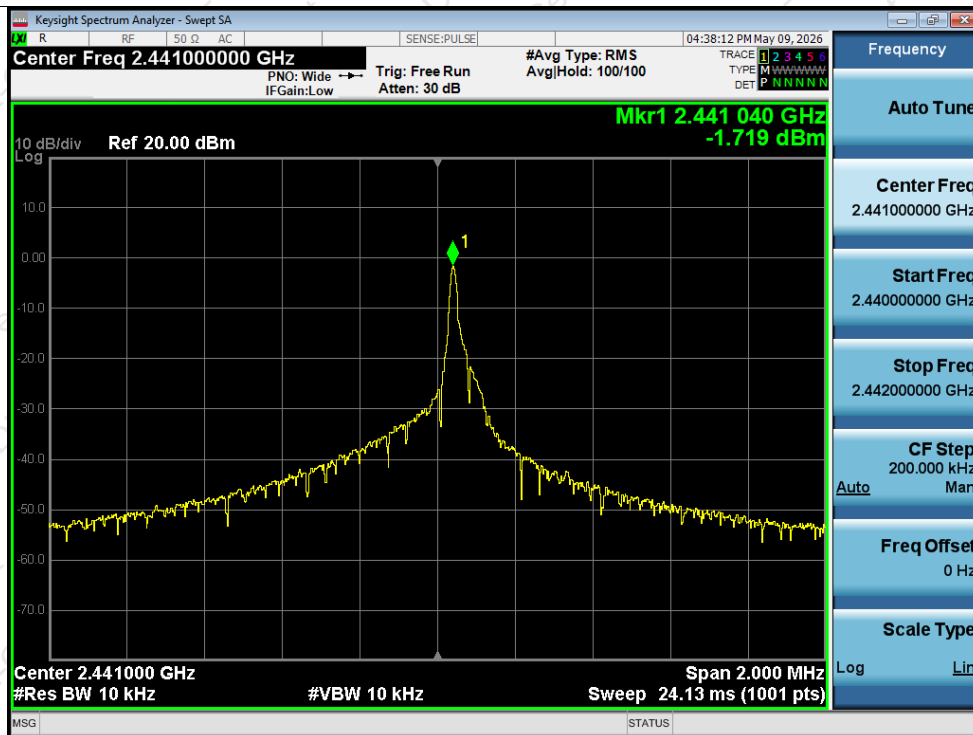
Freq. Error NVNT 1-DH1 2441MHz Ant1



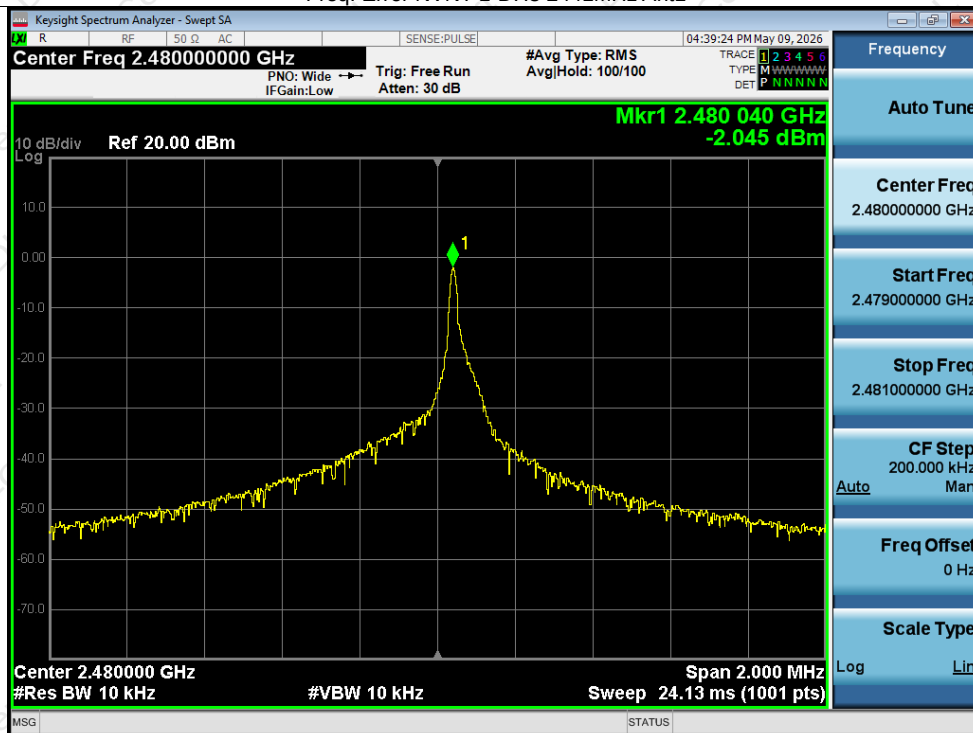
Freq. Error NVNT 1-DH1 2480MHz Ant1



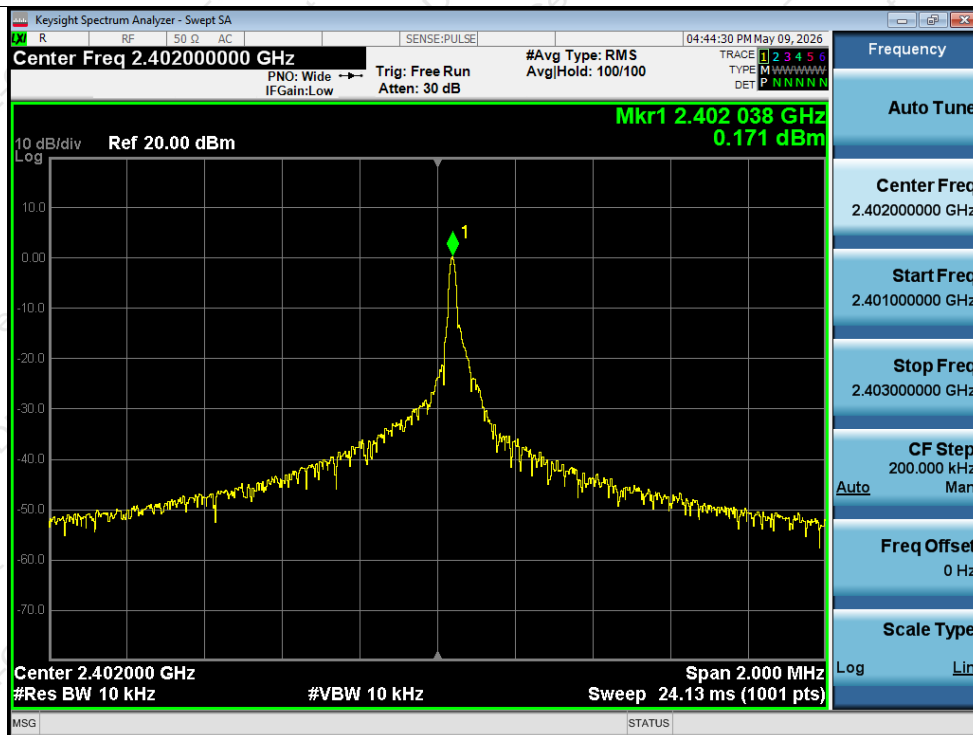
Freq. Error NVNT 1-DH3 2402MHz Ant1



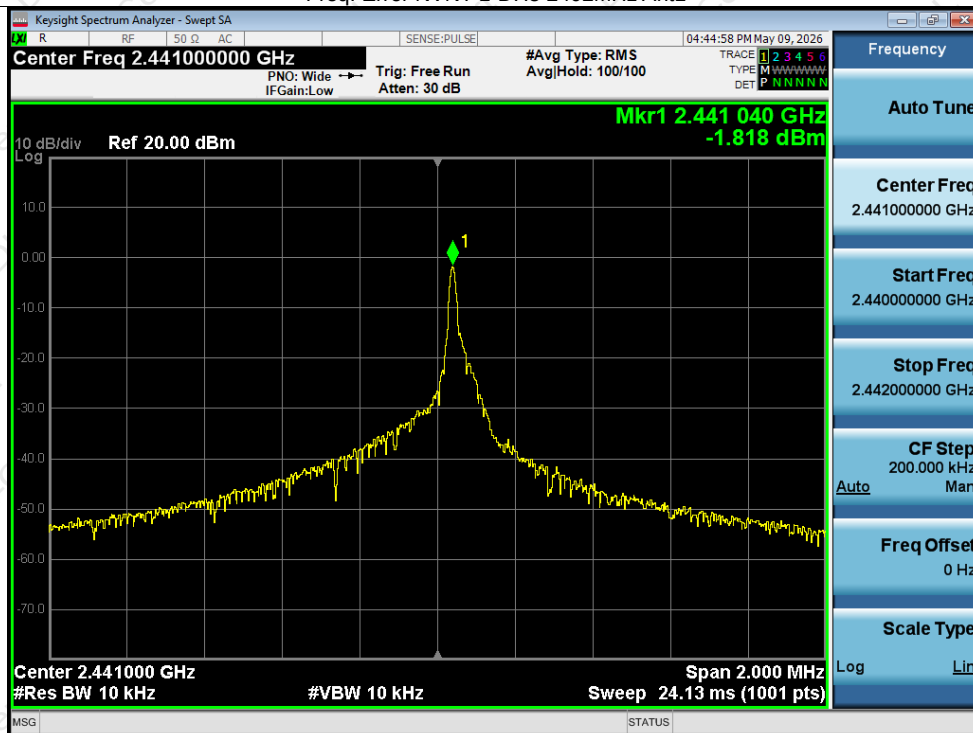
Freq. Error NVNT 1-DH3 2441MHz Ant1



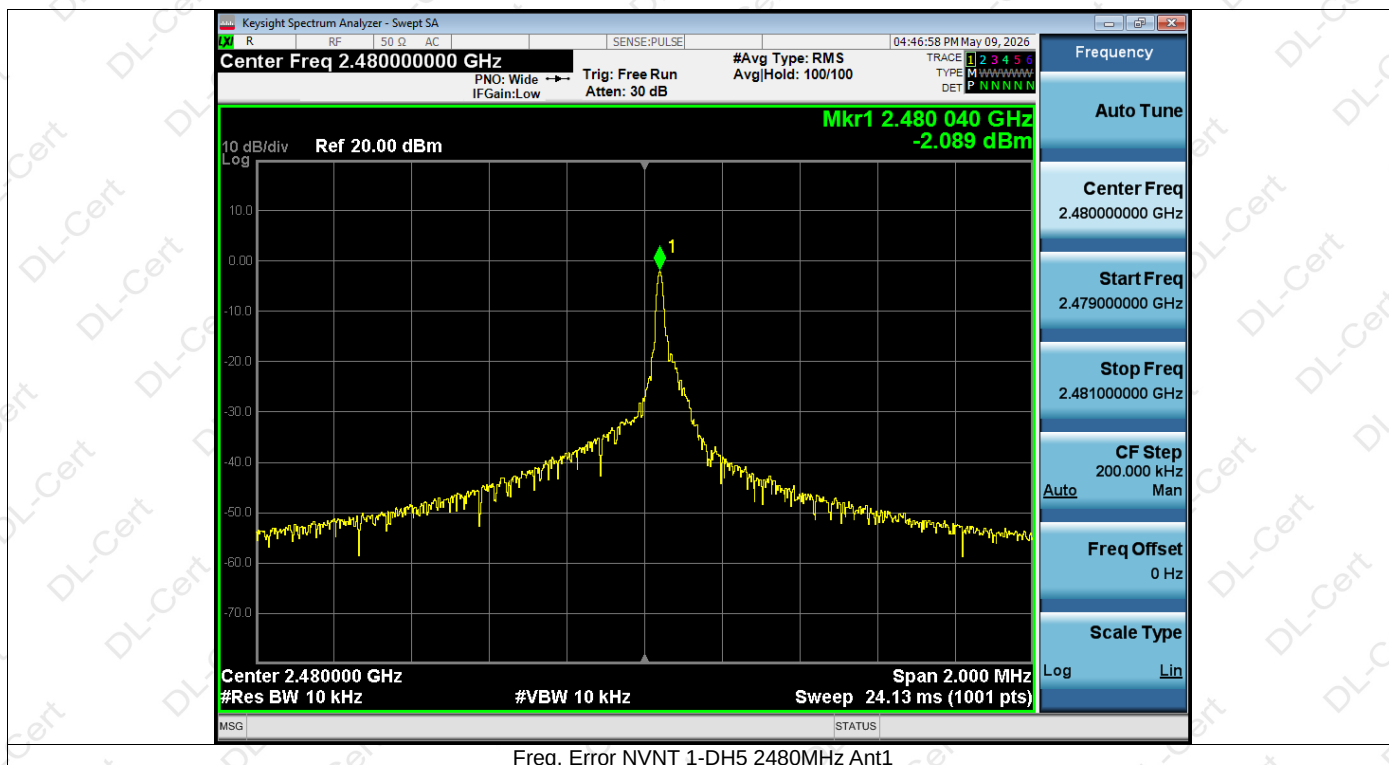
Freq. Error NVNT 1-DH3 2480MHz Ant1



Freq. Error NVNT 1-DH5 2402MHz Ant1



Freq. Error NVNT 1-DH5 2441MHz Ant1





## 5.. ANTENNA POWER

### 5.1. LIMIT

| Item                  | Limits                                                                                                                                                       |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Antenna Power Density | $\leq 3\text{mW/MHz}$ (FH form 2427 - 2470.75 MHz)<br>$\leq 10\text{mW/MHz}$ (OFDM,DS from 2400~2483.5MHz)<br>$\leq 10\text{mW}$ (Other from 2400~2483.5MHz) |
| Antenna Power Error   | +20%(Base on manufacturer declare antenna power density)                                                                                                     |

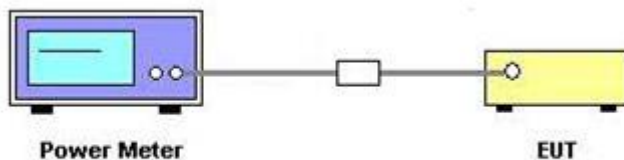
### 5.2. MEASURING INSTRUMENTS AND SETTING

The power meter is directly connected to the EUT through an attenuator.

### 5.3. TEST PROCEDURES

1. A power meter is connected on the EUT.
2. Antenna Power Error is definition that actual measure antenna power tolerance between + 20% power range that base on manufacturer declare the conducted power density.

### 5.4. TEST SETUP LAYOUT



### 5.5. TEST DEVIATION

There is no deviation with the original standard.

### 5.6. TEST RESULT



|              |         |                    |       |           |          |
|--------------|---------|--------------------|-------|-----------|----------|
| Temperature: | 25.2 °C | Relative Humidity: | 55.1% | Pressure: | 1010mbar |
|--------------|---------|--------------------|-------|-----------|----------|

| Mode                                                              | Voltage        | Conduction Power (dBm) | Conduction Power (mW) | Spread Bandwidth (MHz) | Conducted RF output power density (mW/MHz) | Rated power density (mW/MHz) | Limits (mW/MHz) | Antenna Power Error (%) |
|-------------------------------------------------------------------|----------------|------------------------|-----------------------|------------------------|--------------------------------------------|------------------------------|-----------------|-------------------------|
| GFSK/ Hopping                                                     | Normal voltage | 2.75                   | 1.88                  | 71.612                 | 0.026                                      | 0.3                          | 3               | -91.25                  |
| PI/4 DQPSK/ Hopping                                               | Normal voltage | 2.23                   | 1.67                  | 71.607                 | 0.023                                      |                              |                 | -92.23                  |
| 8DPSK/ Hopping                                                    | Normal voltage | 2.17                   | 1.65                  | 71.642                 | 0.023                                      |                              |                 | -92.32                  |
| Limit : +20% (Base on manufacturer declare antenna power density) |                |                        |                       |                        |                                            |                              |                 |                         |

Reamrk : Conducted RF output power density = Conduction Power/ Spread Bandwidth.



## 6.. EIRP POWER

### 6.1. LIMIT

| Item                 | Limits                                                                                                                                                                                                                                                                         |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Radiation power EIRP | FH form 2427-2470,75 MHz, $EIRP \leq 6.91\text{dBm}$<br>CCK/OFDM/DBPSK(2400-2483.5MHz)<br>OFDM or DS other than(802.11b/g/n HT20) $EIRP \leq 12.14\text{dBm}$<br>OFDM or DS other than(802.11n HT40) $EIRP \leq 9.13\text{dBm}$<br>other than 2400-2483.5MHz: 12.14dBm or less |

The EIRP power= Conducted RF output power density(dBm/MHz) + Antenna Gain

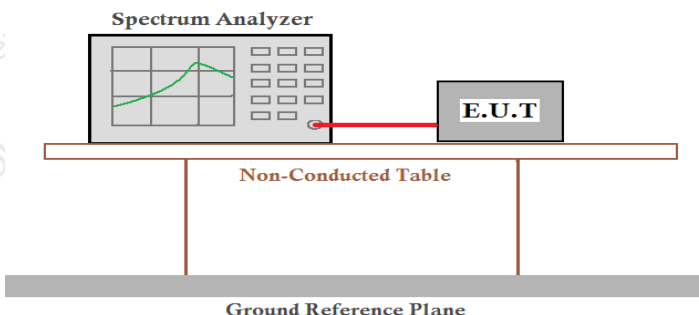
### 6.2. TEST RESULT

|              |         |                    |       |           |          |
|--------------|---------|--------------------|-------|-----------|----------|
| Temperature: | 25.5 °C | Relative Humidity: | 55.8% | Pressure: | 1010mbar |
|--------------|---------|--------------------|-------|-----------|----------|

| Mode                      | Voltage        | Conducted RF output power density |           | Antenna Gain | EIRP      | Limits      |
|---------------------------|----------------|-----------------------------------|-----------|--------------|-----------|-------------|
|                           |                | (mW/MHz)                          | (dBm/MHz) | dBi          | (dBm/MHz) | (dBm/MHz)   |
| GFSK/<br>Hopping          | Normal voltage | 0.026                             | -15.850   | 2.78         | -13.07    | $\leq 6.91$ |
| PI/4<br>DQPSK/<br>Hopping | Normal voltage | 0.023                             | -16.383   | 2.78         | -13.60    |             |
| 8DPSK/<br>Hopping         | Normal voltage | 0.023                             | -16.383   | 2.78         | -13.60    |             |



## 7.. OCCUPIED BANDWITH

|                   |                                                                                                                                                                                               |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test condition:   | Test diffusion code and modulate with standard coding test signal                                                                                                                             |
| Spectrum set:     | Test Frequency: test channel,<br>99% Occupied bandwidth: RBW=1MHz VBW=1MHz,<br>90% Occupied bandwidth: RBW=300kHz VBW=300kHz,<br>Span=120MHz, Sweep time=Auto,<br>Detector mode=Positive peak |
| Limit:            | Occupied Band Width: FH 83.5MHz; OFDM,DS $\leq$ 26MHz;Others $\leq$ 26MHz                                                                                                                     |
| Test setup:       |                                                                                                            |
| Test Instruments: | Refer to section 2.7 for details                                                                                                                                                              |

### 7.1. TEST RESULT

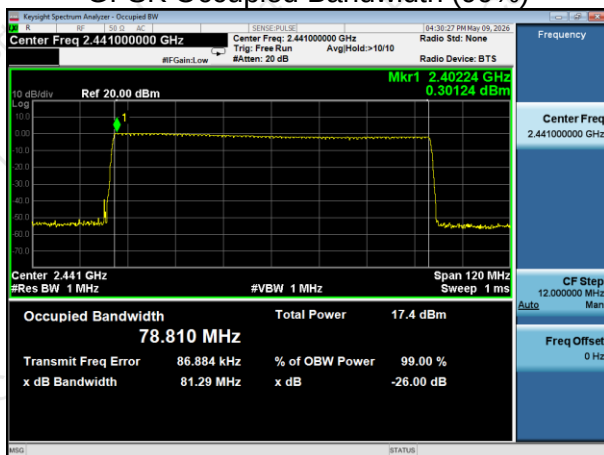
|              |         |                    |       |           |          |
|--------------|---------|--------------------|-------|-----------|----------|
| Temperature: | 25.3 °C | Relative Humidity: | 55.4% | Pressure: | 1010mbar |
|--------------|---------|--------------------|-------|-----------|----------|

| Test Voltage   | Test Condition | Test Channel | 99% (Occupied bandwidth)MHz | Limit MHz   | 90% (Occupied bandwidth) MHz |
|----------------|----------------|--------------|-----------------------------|-------------|------------------------------|
| Normal Voltage | GFSK           | Hopping      | 78.813                      | $\leq$ 83.5 | 71.612                       |
|                | PI/4-DQPSK     | Hopping      | 78.75                       | $\leq$ 83.5 | 71.607                       |
|                | 8DPSK          | Hopping      | 78.861                      | $\leq$ 83.5 | 71.642                       |

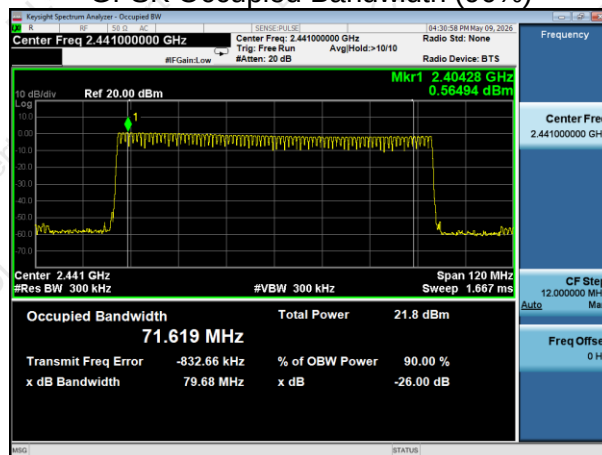


## Normal Voltage

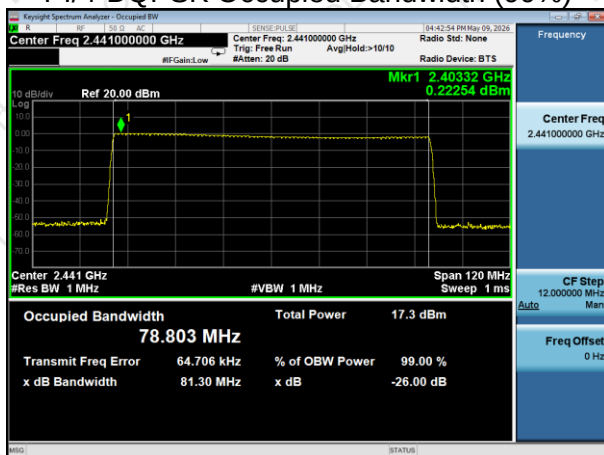
## GFSK Occupied Bandwidth (99%)



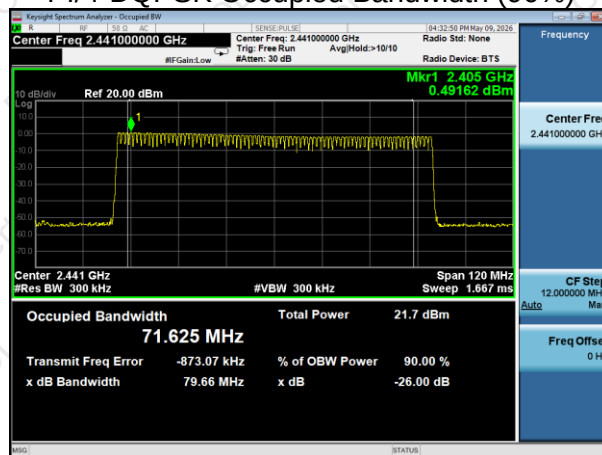
## GFSK Occupied Bandwidth (90%)



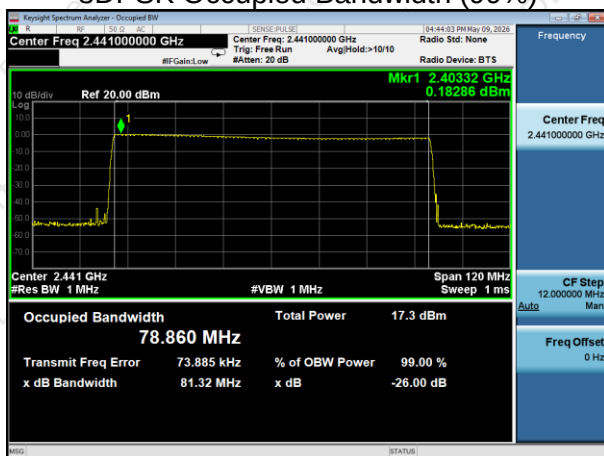
## PI/4-DQPSK Occupied Bandwidth (99%)



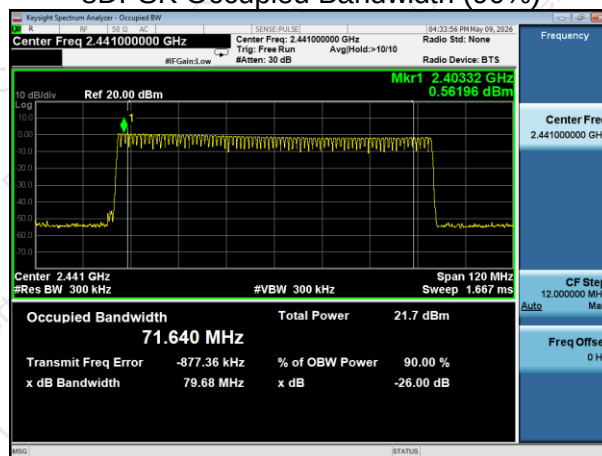
## PI/4-DQPSK Occupied Bandwidth (90%)



## 8DPSK Occupied Bandwidth (99%)



## 8DPSK Occupied Bandwidth (90%)





## 8. DWELL TIME

### 8.1. LIMIT

| Item                     | Limits                                                                    |
|--------------------------|---------------------------------------------------------------------------|
| Hopping Freq. Dwell Time | $\leq 0.4 \text{ sec (In } 0.4 \text{ sec} \times \text{spreading rate)}$ |

### 8.2. MEASURING INSTRUMENTS AND SETTING

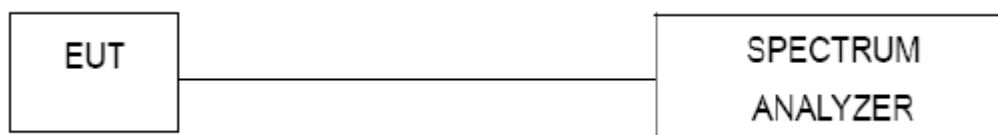
Please refer to section 5 in this report. The following table is the setting of the spectrum analyzer.

| Spectrum Parameter | Setting    |
|--------------------|------------|
| Attenuation        | Auto       |
| Span Frequency     | 0 Hz       |
| RB                 | 1 MHz      |
| VB                 | 1 MHz      |
| Detector           | Peak       |
| Trace              | Max Hold   |
| Sweep              | Continuous |

### 8.3. TEST PROCEDURES

- The transmitter output (antenna port) was connected to the spectrum analyzer
- Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- Use a video trigger with the trigger level set to enable triggering only on full pulses.
- Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- Measure the maximum time duration of one single pulse.
- Set the EUT for DH5, DH3 and DH1 packet transmitting.
- Measure the maximum time duration of one single pulse.
- Dwell time = [Pulse Time ] x Burst Count. (to be determined for each mode, DH1, DH3, DH5)

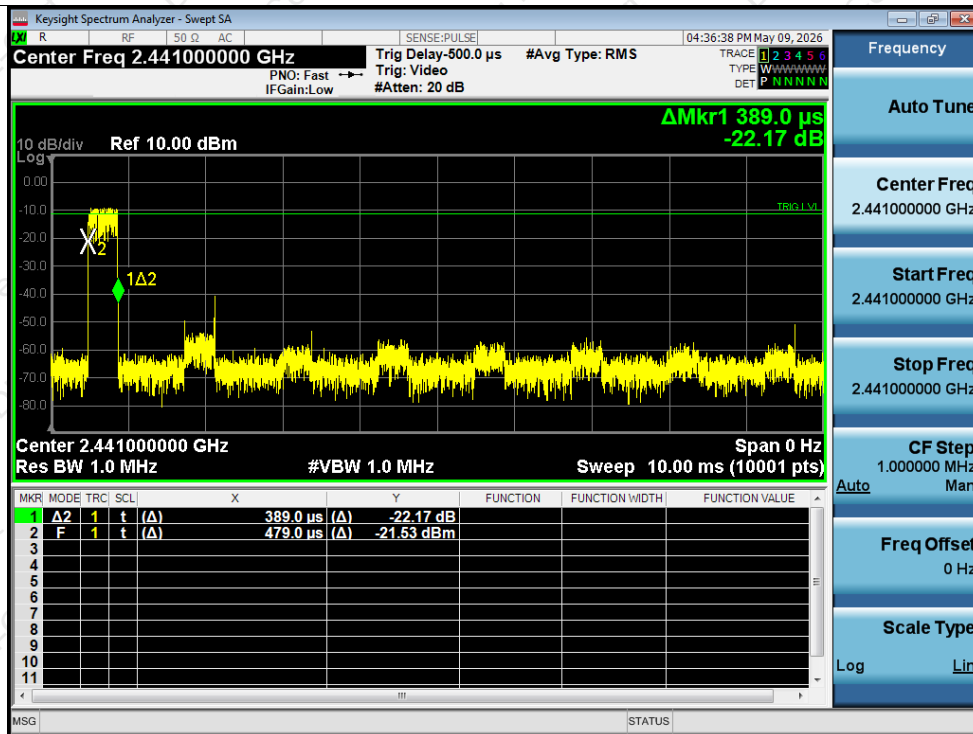
### 8.4. TEST SETUP LAYOUT



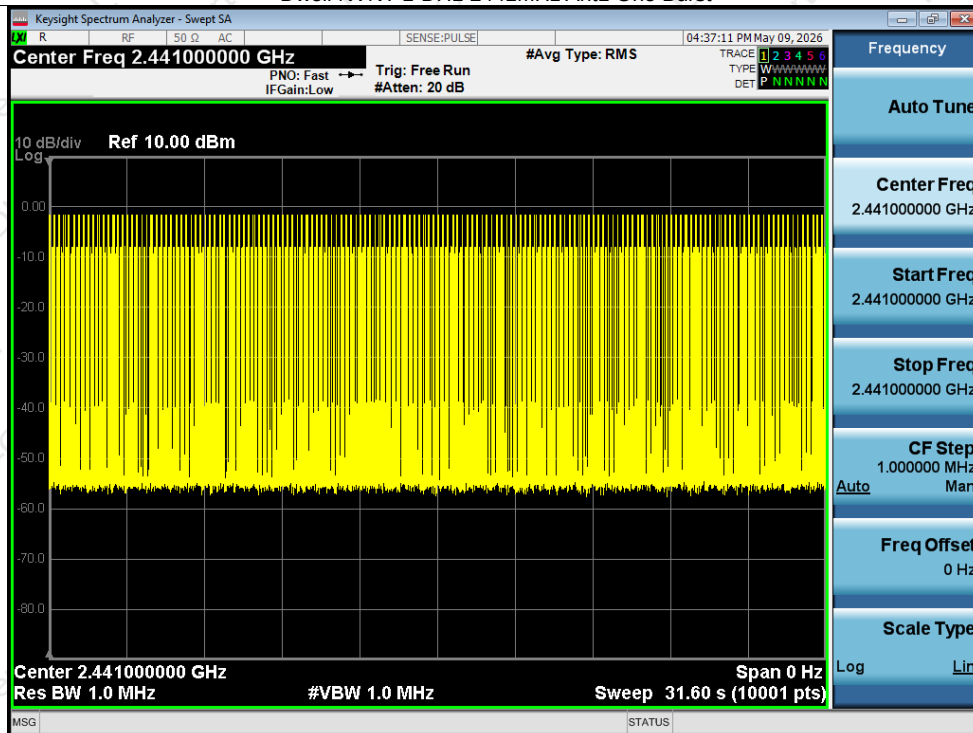
**8.5. TEST RESULT**

|              |         |                    |       |           |          |
|--------------|---------|--------------------|-------|-----------|----------|
| Temperature: | 25.3 °C | Relative Humidity: | 55.5% | Pressure: | 1010mbar |
|--------------|---------|--------------------|-------|-----------|----------|

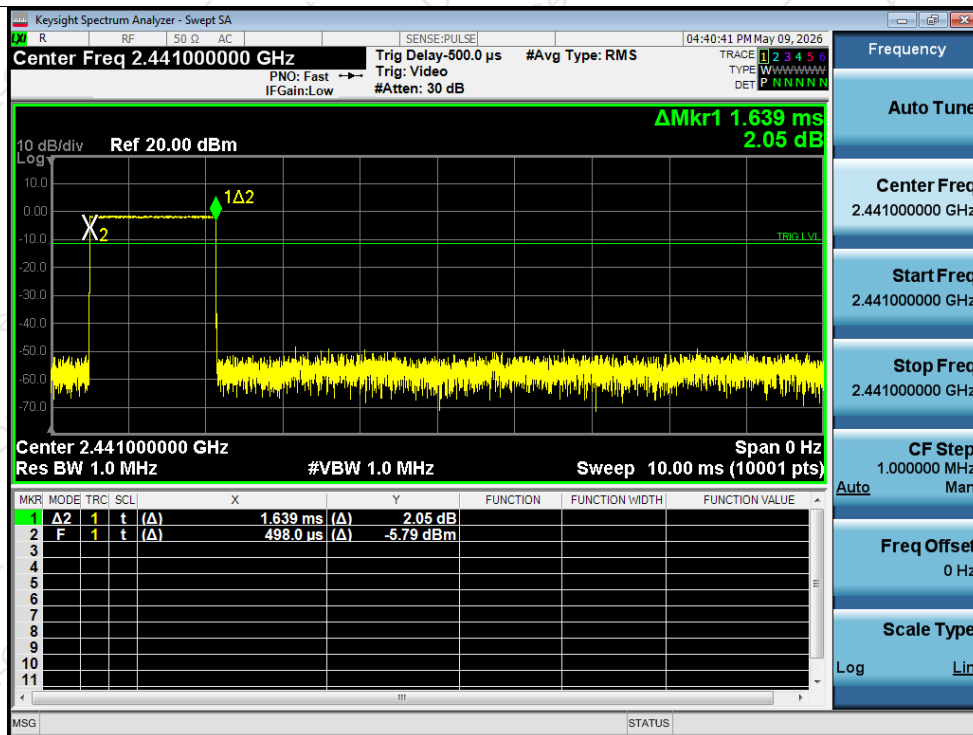
| Condition | Mode  | Pulse Time (ms) | Total Dwell Time (ms) | Burst Count | Period Time (ms) | Limit (ms) | Verdict |
|-----------|-------|-----------------|-----------------------|-------------|------------------|------------|---------|
| NVNT      | 1-DH1 | 0.389           | 194.889               | 501         | 31600            | 400        | Pass    |
| NVNT      | 1-DH3 | 1.639           | 257.323               | 157         | 31600            | 400        | Pass    |
| NVNT      | 1-DH5 | 2.875           | 304.75                | 106         | 31600            | 400        | Pass    |
| NVNT      | 2-DH1 | 0.373           | 118.241               | 317         | 31600            | 400        | Pass    |
| NVNT      | 2-DH3 | 1.643           | 254.665               | 155         | 31600            | 400        | Pass    |
| NVNT      | 2-DH5 | 2.873           | 307.411               | 107         | 31600            | 400        | Pass    |
| NVNT      | 3-DH1 | 0.391           | 123.947               | 317         | 31600            | 400        | Pass    |
| NVNT      | 3-DH3 | 1.624           | 261.464               | 161         | 31600            | 400        | Pass    |
| NVNT      | 3-DH5 | 2.873           | 298.792               | 104         | 31600            | 400        | Pass    |



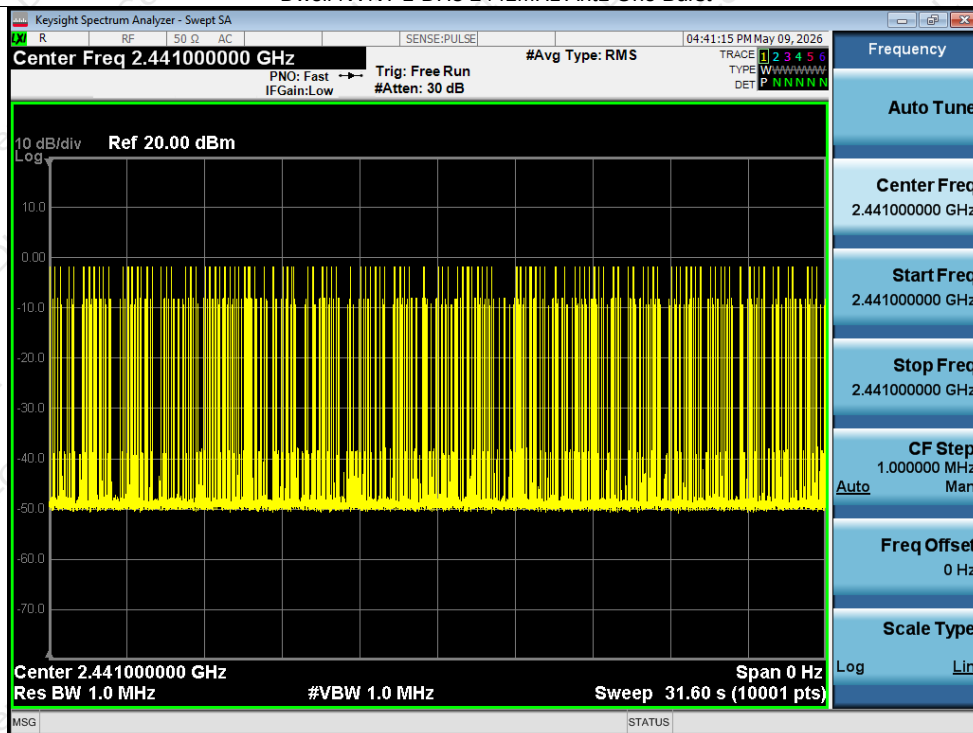
Dwell NVNT 1-DH1 2441MHz Ant1 One Burst



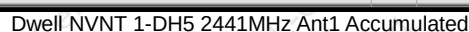
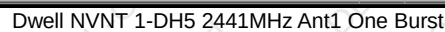
Dwell NVNT 1-DH1 2441MHz Ant1 Accumulated

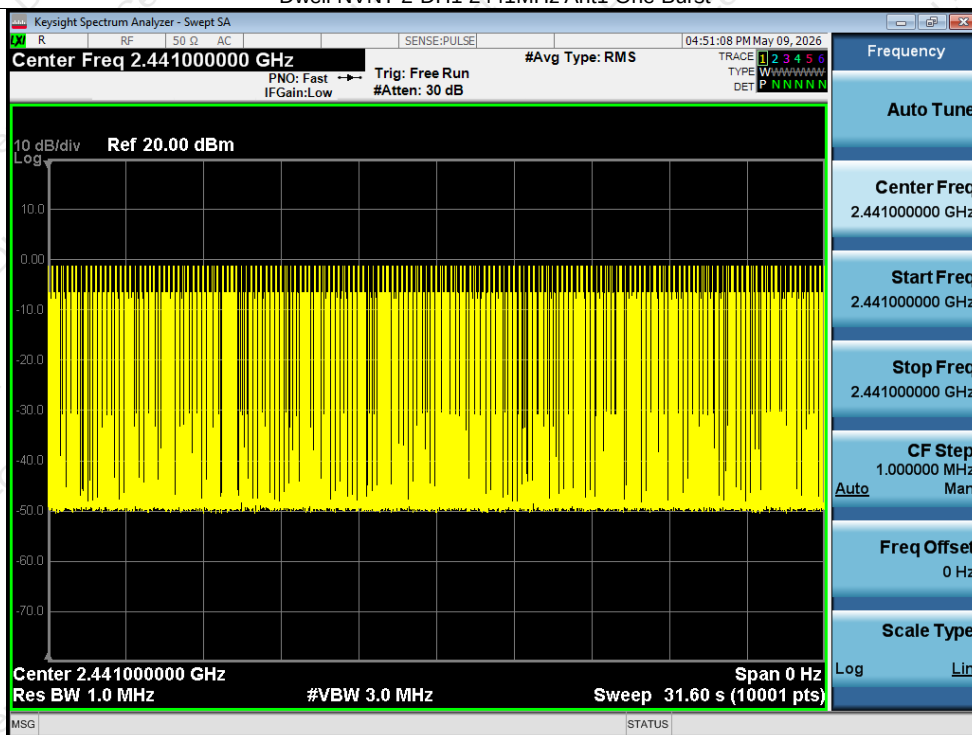
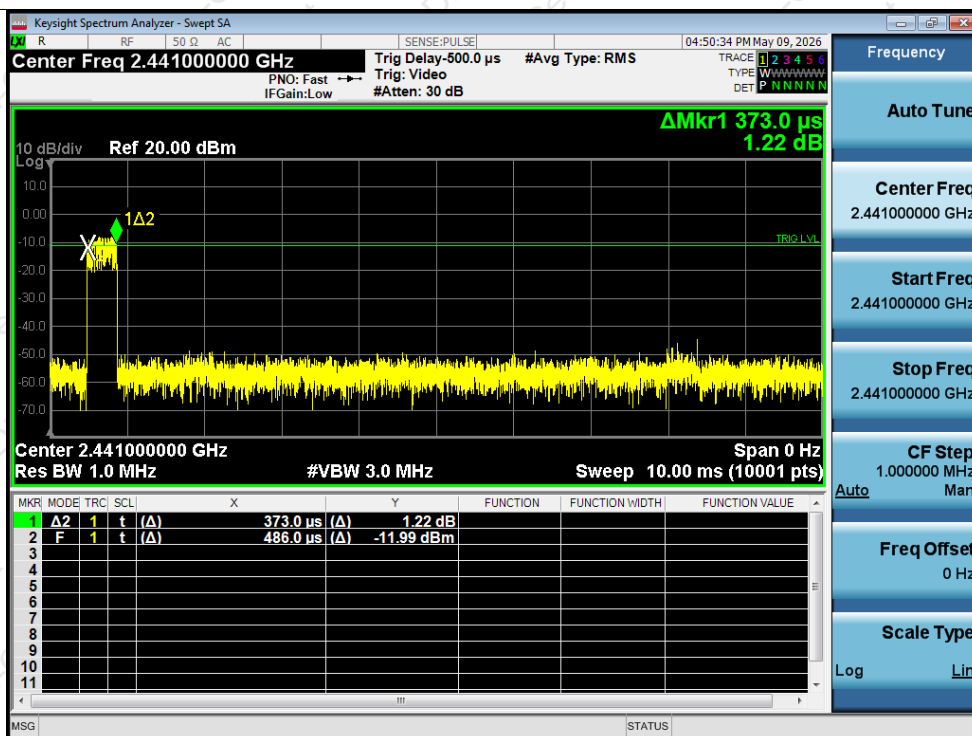


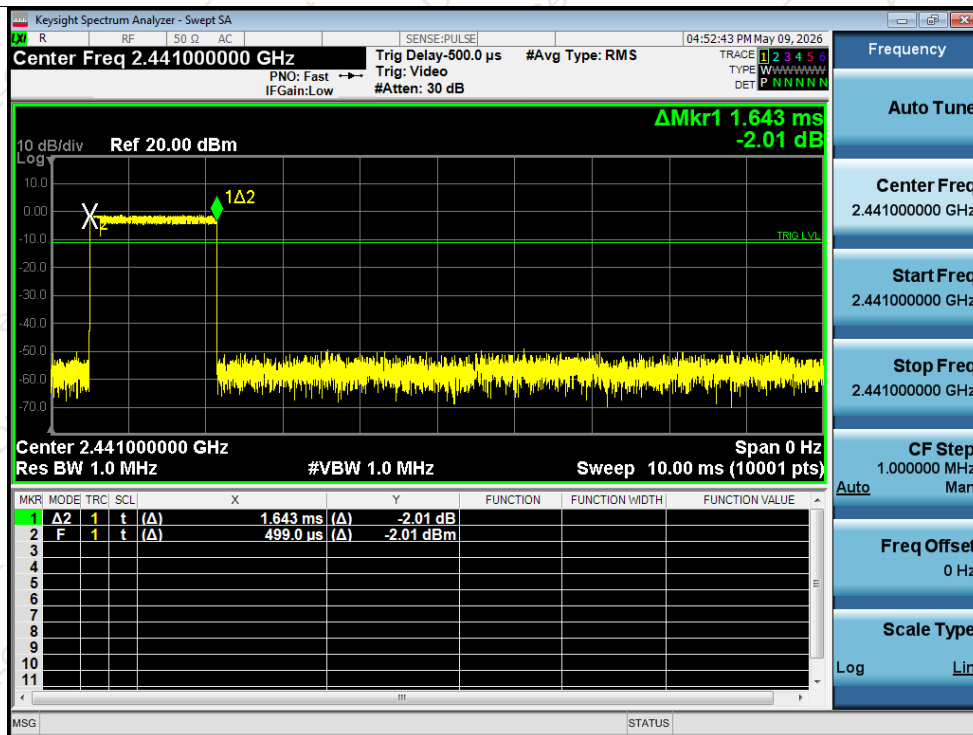
Dwell NVNT 1-DH3 2441MHz Ant1 One Burst



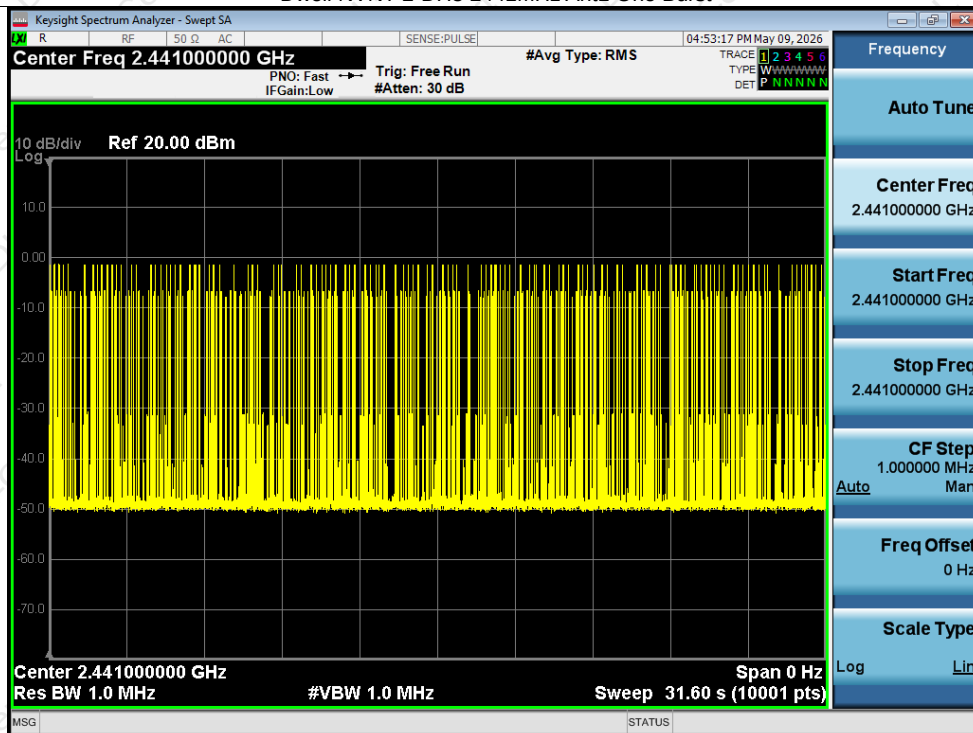
Dwell NVNT 1-DH3 2441MHz Ant1 Accumulated



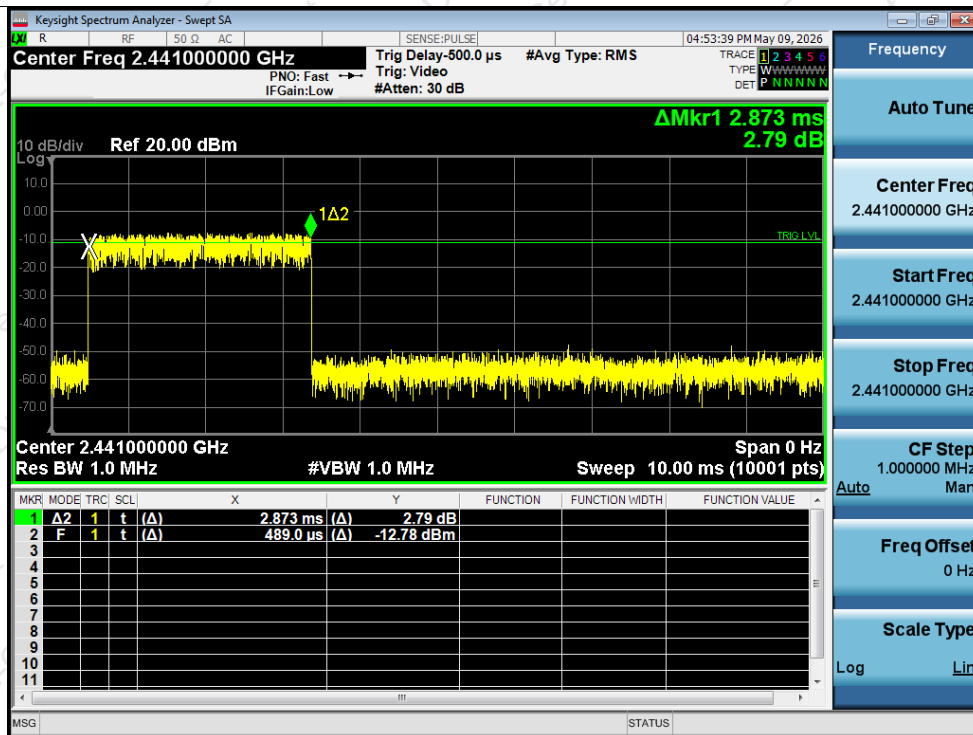




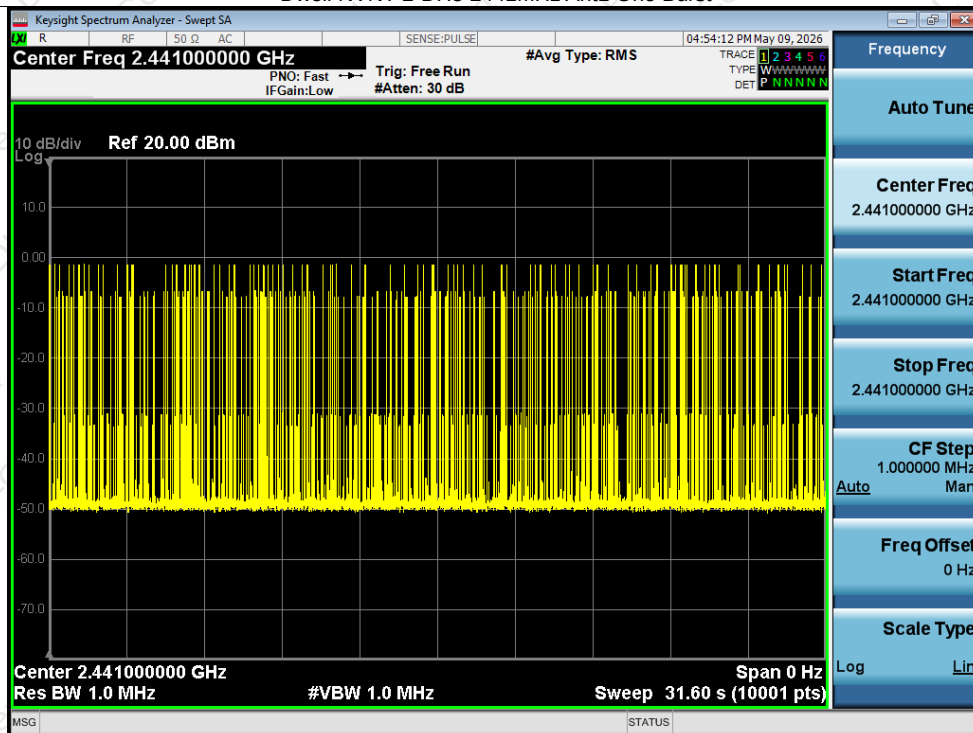
Dwell NVNT 2-DH3 2441MHz Ant1 One Burst



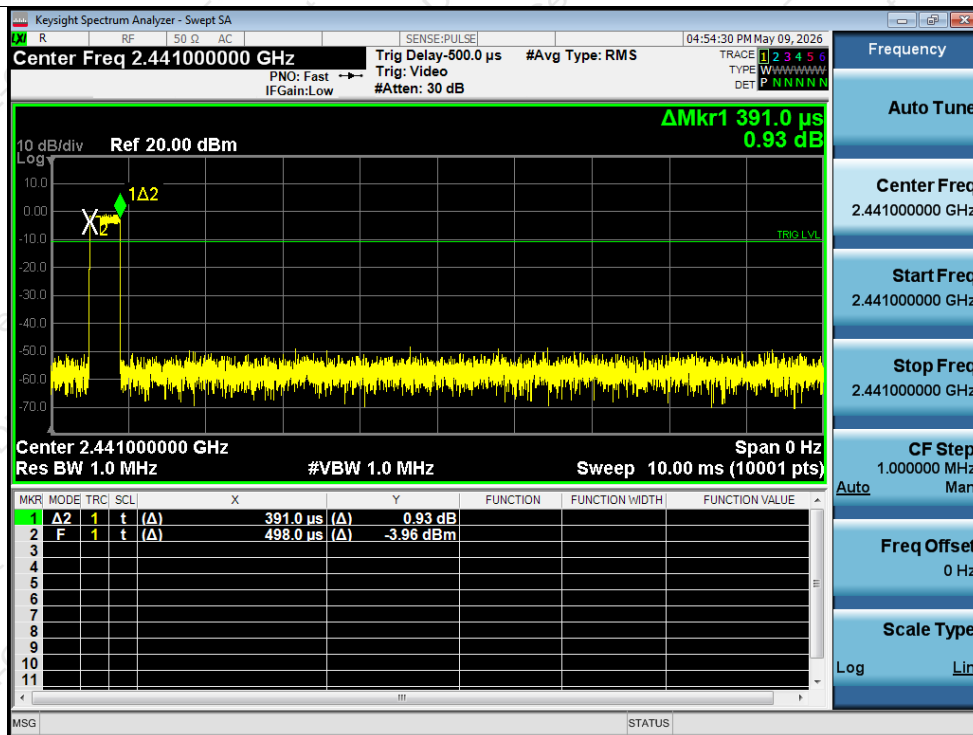
Dwell NVNT 2-DH3 2441MHz Ant1 Accumulated



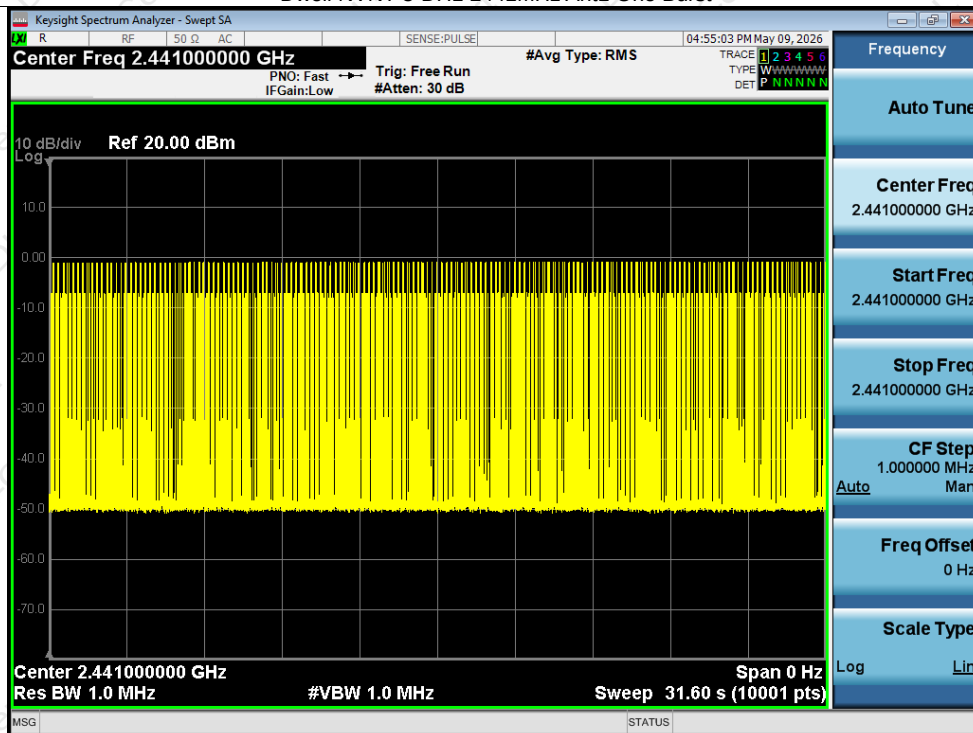
Dwell NVNT 2-DH5 2441MHz Ant1 One Burst



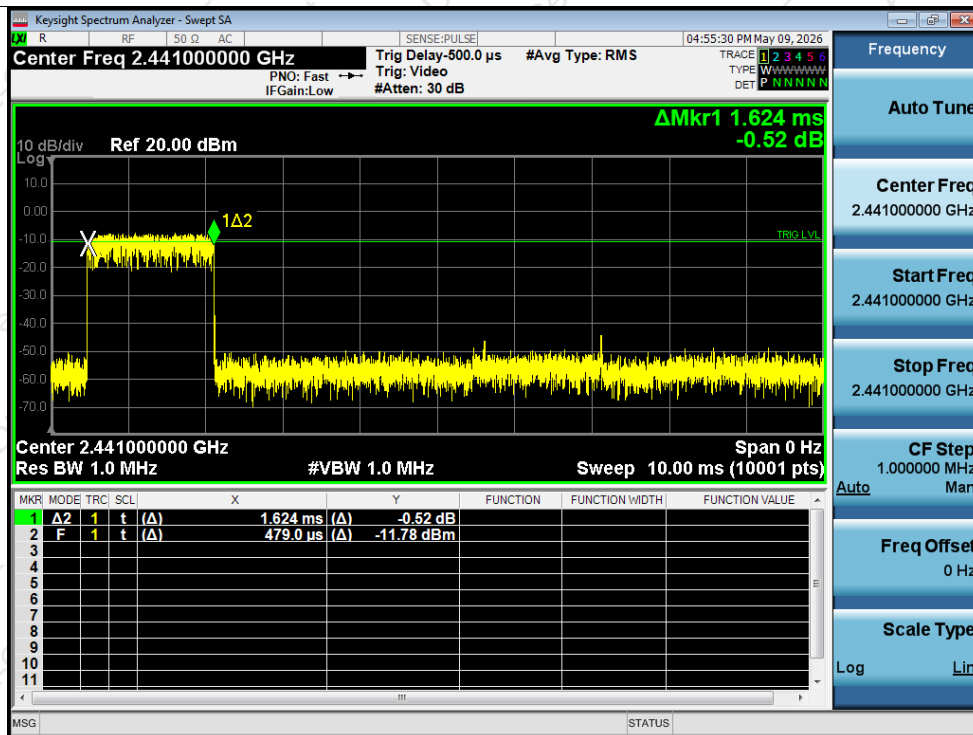
Dwell NVNT 2-DH5 2441MHz Ant1 Accumulated



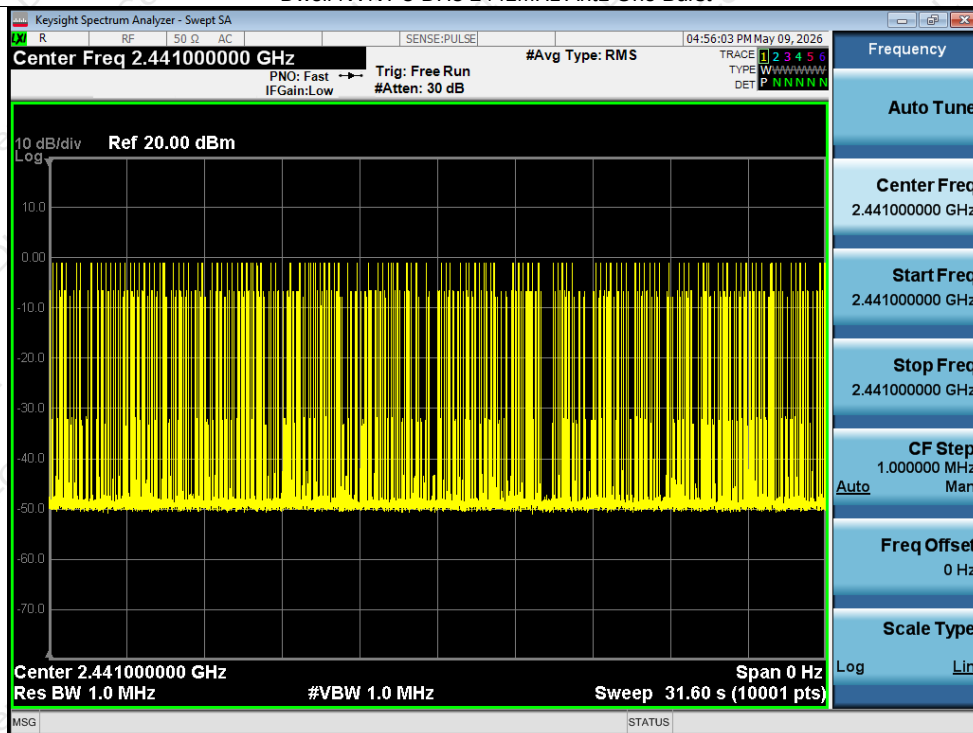
Dwell NVNT 3-DH1 2441MHz Ant1 One Burst



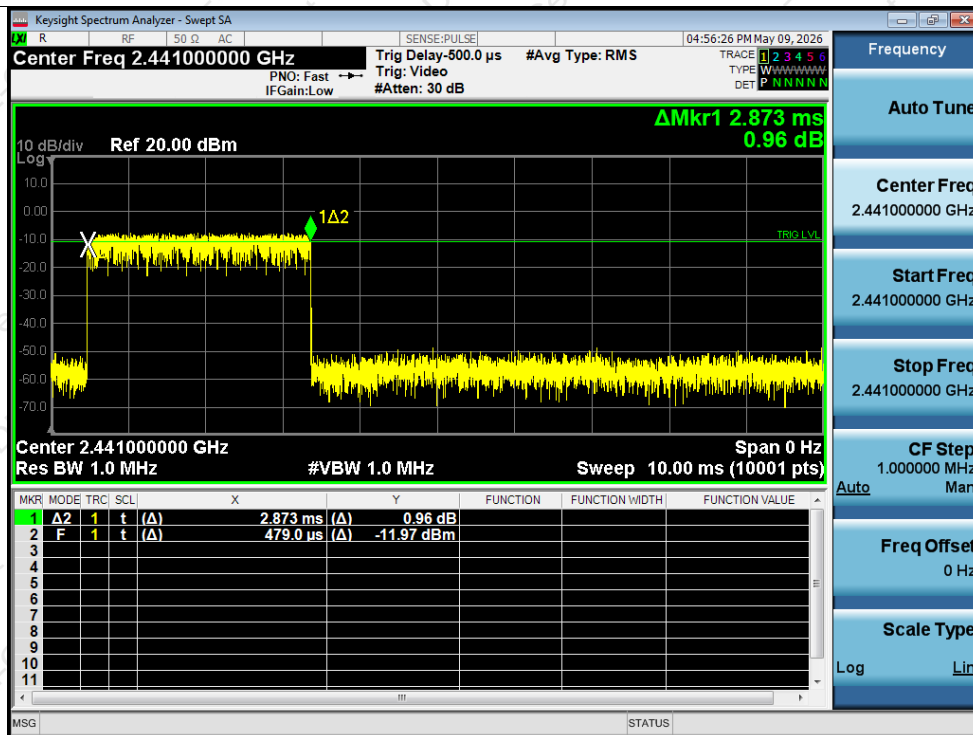
Dwell NVNT 3-DH1 2441MHz Ant1 Accumulated



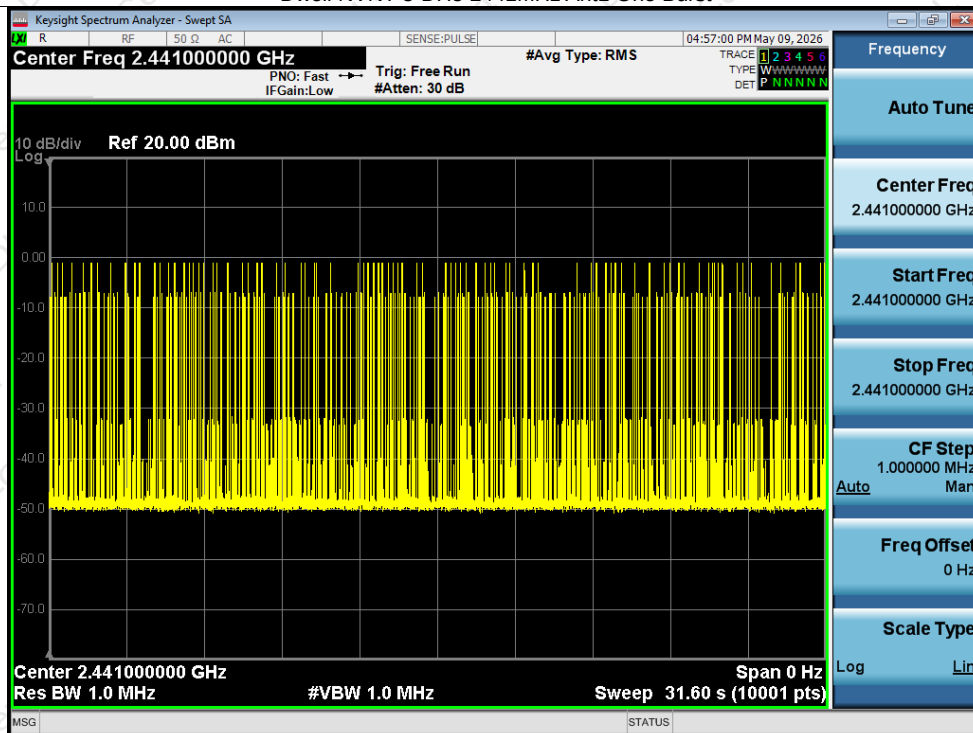
Dwell NVNT 3-DH3 2441MHz Ant1 One Burst



Dwell NVNT 3-DH3 2441MHz Ant1 Accumulated



Dwell NVNT 3-DH5 2441MHz Ant1 One Burst



Dwell NVNT 3-DH5 2441MHz Ant1 Accumulated



## 9.. UNWANTED EMISSION INTENSITY MEASUREMENT

### 9.1. LIMIT

| Item                 | Limits                                                                  |
|----------------------|-------------------------------------------------------------------------|
| TX Spurious Emission | $\leq 2.5 \mu\text{W}$ ( $30\text{MHz} \leq f \leq 1000\text{MHz}$ )    |
|                      | $\leq -26 \text{ dBm}$ ( $30\text{MHz} \leq f \leq 1000\text{MHz}$ )    |
|                      | $\leq 2.5 \mu\text{W}$ ( $1000\text{MHz} < f \leq 2387\text{MHz}$ )     |
|                      | $\leq -26 \text{ dBm}$ ( $1000\text{MHz} < f \leq 2387\text{MHz}$ )     |
|                      | $\leq 25 \mu\text{W}$ ( $2387\text{MHz} < f \leq 2400\text{MHz}$ )      |
|                      | $\leq -16 \text{ dBm}$ ( $2387\text{MHz} < f \leq 2400\text{MHz}$ )     |
|                      | $\leq 25 \mu\text{W}$ ( $2483.5\text{MHz} \leq f < 2496.5\text{MHz}$ )  |
|                      | $\leq -16 \text{ dBm}$ ( $2483.5\text{MHz} \leq f < 2496.5\text{MHz}$ ) |
|                      | $\leq 2.5 \mu\text{W}$ ( $2496.5\text{MHz} \leq f < 12500\text{MHz}$ )  |
|                      | $\leq -26 \text{ dBm}$ ( $2496.5\text{MHz} \leq f < 12500\text{MHz}$ )  |

### 9.2.. MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

| Spectrum Parameter | Setting                                                    |
|--------------------|------------------------------------------------------------|
| Attenuation        | Auto                                                       |
| RB / VB            | 1MHz (below 1GHz emissions)<br>1MHz (above 1GHz emissions) |
| Detector           | Peak                                                       |
| Trace              | Max Hold                                                   |
| Sweep Time         | Auto                                                       |

### 9.3.. TEST PROCEDURES

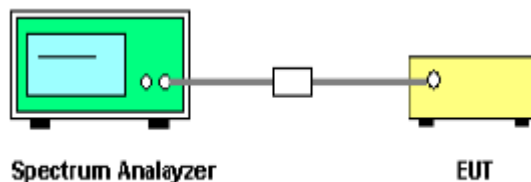
1. EUT have transmitted the maximum modulation signal and fixed channelize.
2. Setting of SA is following as: Below 1GHz RB:1MHz / VB:1MHz  
Above 1GHz RB:1MHz / VB:1MHz / AT: 10dB Ref: 0dBm / Sweep time: Auto  
Sweep Mode: Continuous sweep / Detect mode: Positive peak  
Trace mode: Max hold
3. Setting of SA is following as 30MHz and stop frequency 1000MHz Then to mark peak reading value + cable loss shall be less than 2.5 $\mu$ W.
4. Setting of SA is following as 1000MHz and stop frequency 2387MHz Then to mark peak reading value + cable loss shall be less than 2.5 $\mu$ W.
5. SA adjusted to start frequency 2387MHz and stop frequency 2400MHz. Then to mark peak reading value + cable loss shall be less than 25 $\mu$ W.
6. SA adjusted to start frequency 2483.5MHz and stop frequency 2496.5MHz Then to mark peak reading value + cable loss shall be less than 25 $\mu$ W
7. SA adjusted to start frequency 2496.5MHz and stop frequency 12500MHz Then to mark peak reading value + cable loss shall be less than 2.5 $\mu$ W



8. Measure side band spurious as follows: For 2.4GHz band: 2374MHz~2400MHz and 2483.5MHz~2509.5MHz RBW = VBW = 30kHz, Result\_Value = Measured\_Value + 15.2 [dBm]

9. If the Result\_Value is over the requirement, take total sum of 1MHz band centered at the spur frequency like ACLP measurement as Result\_Value.

#### 9.4.. TEST SETUP LAYOUT



#### 9.5.. TEST DEVIATION

There is no deviation with the original standard.

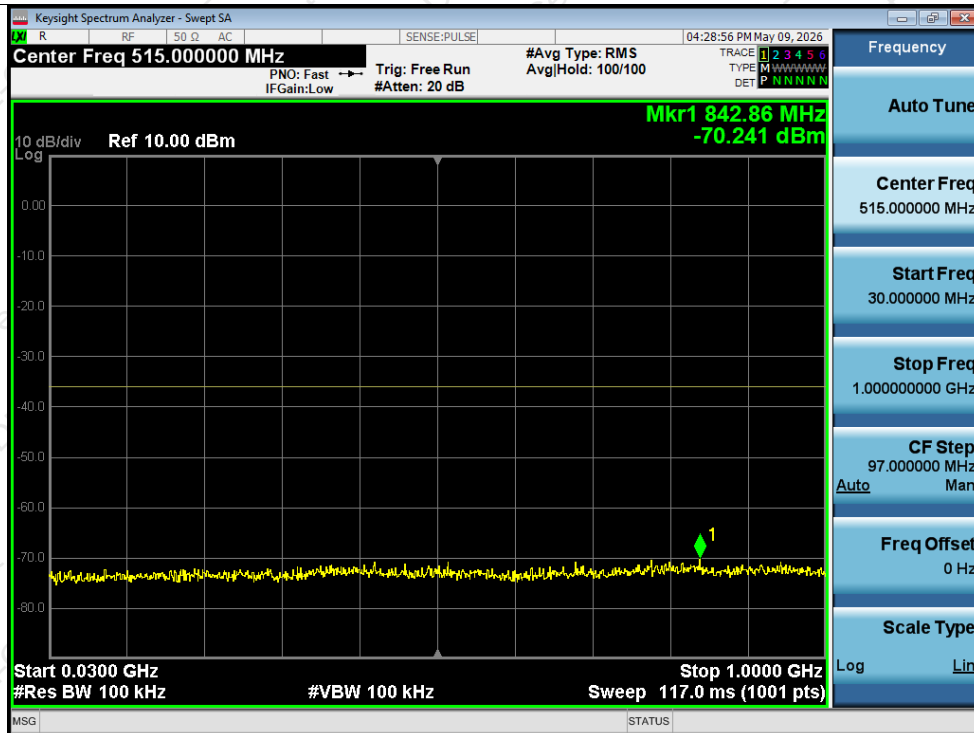
#### 9.6.. TEST RESULT

|              |         |                    |       |           |          |
|--------------|---------|--------------------|-------|-----------|----------|
| Temperature: | 25.4 °C | Relative Humidity: | 55.7% | Pressure: | 1010mbar |
|--------------|---------|--------------------|-------|-----------|----------|

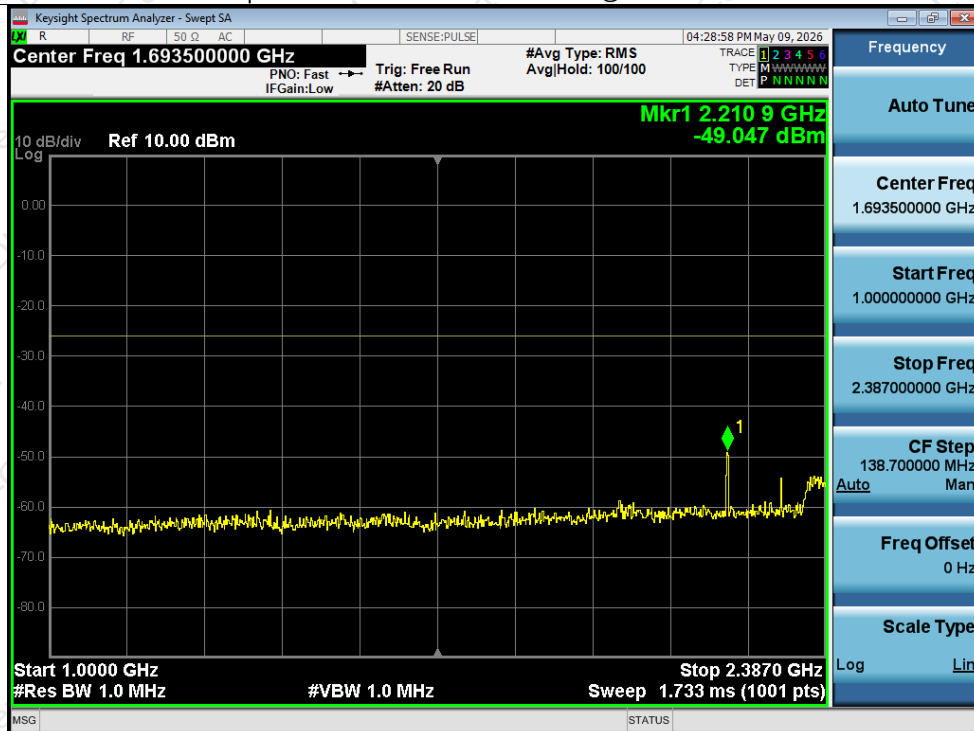
| Condition | Mode  | Frequency (MHz) | Range (MHz)   | Emission Frequency (MHz) | Max Peak Value (dBm) | Max Peak Value (uW) | Limit Start(uW) | Limit Stop (uW) | Verdict |
|-----------|-------|-----------------|---------------|--------------------------|----------------------|---------------------|-----------------|-----------------|---------|
| NVNT      | 1-DH1 | 2402            | 30-1000       | 842.86                   | -70.24               | 0.0001              | 0.25            | 0.25            | Pass    |
| NVNT      | 1-DH1 | 2402            | 1000-2387     | 2210.85                  | -49.05               | 0.0124              | 2.5             | 2.5             | Pass    |
| NVNT      | 1-DH1 | 2402            | 2387-2400     | 2399.96                  | -39.59               | 0.1099              | 25              | 25              | Pass    |
| NVNT      | 1-DH1 | 2402            | 2483.5-2496.5 | 2496.34                  | -58.57               | 0.0014              | 25              | 25              | Pass    |
| NVNT      | 1-DH1 | 2402            | 2496.5-13000  | 4807.27                  | -44.85               | 0.0327              | 2.5             | 2.5             | Pass    |
| NVNT      | 1-DH1 | 2441            | 30-1000       | 907.85                   | -54.96               | 0.0032              | 0.25            | 0.25            | Pass    |
| NVNT      | 1-DH1 | 2441            | 1000-2387     | 2249.69                  | -46.85               | 0.0207              | 2.5             | 2.5             | Pass    |
| NVNT      | 1-DH1 | 2441            | 2387-2400     | 2396.78                  | -51.33               | 0.0074              | 25              | 25              | Pass    |
| NVNT      | 1-DH1 | 2441            | 2483.5-2496.5 | 2485.16                  | -54.02               | 0.004               | 25              | 25              | Pass    |
| NVNT      | 1-DH1 | 2441            | 2496.5-13000  | 4880.79                  | -45.58               | 0.0277              | 2.5             | 2.5             | Pass    |
| NVNT      | 1-DH1 | 2480            | 30-1000       | 895.24                   | -70.37               | 0.0001              | 0.25            | 0.25            | Pass    |
| NVNT      | 1-DH1 | 2480            | 1000-2387     | 2364.81                  | -57.57               | 0.0017              | 2.5             | 2.5             | Pass    |
| NVNT      | 1-DH1 | 2480            | 2387-2400     | 2396.53                  | -58.34               | 0.0015              | 25              | 25              | Pass    |
| NVNT      | 1-DH1 | 2480            | 2483.5-2496.5 | 2484.31                  | -53.90               | 0.0041              | 25              | 25              | Pass    |
| NVNT      | 1-DH1 | 2480            | 2496.5-13000  | 2496.50                  | -57.38               | 0.0018              | 2.5             | 2.5             | Pass    |
| NVNT      | 2-DH1 | 2402            | 30-1000       | 914.64                   | -64.50               | 0.0004              | 0.25            | 0.25            | Pass    |
| NVNT      | 2-DH1 | 2402            | 1000-2387     | 2210.85                  | -48.78               | 0.0132              | 2.5             | 2.5             | Pass    |
| NVNT      | 2-DH1 | 2402            | 2387-2400     | 2399.99                  | -32.30               | 0.5888              | 25              | 25              | Pass    |
| NVNT      | 2-DH1 | 2402            | 2483.5-2496.5 | 2490.82                  | -58.66               | 0.0014              | 25              | 25              | Pass    |
| NVNT      | 2-DH1 | 2402            | 2496.5-13000  | 4807.27                  | -44.73               | 0.0337              | 2.5             | 2.5             | Pass    |
| NVNT      | 2-DH1 | 2441            | 30-1000       | 898.93                   | -70.60               | 0.0001              | 0.25            | 0.25            | Pass    |
| NVNT      | 2-DH1 | 2441            | 1000-2387     | 2250.10                  | -46.73               | 0.0212              | 2.5             | 2.5             | Pass    |
| NVNT      | 2-DH1 | 2441            | 2387-2400     | 2396.02                  | -51.48               | 0.0071              | 25              | 25              | Pass    |
| NVNT      | 2-DH1 | 2441            | 2483.5-2496.5 | 2486.36                  | -53.43               | 0.0045              | 25              | 25              | Pass    |
| NVNT      | 2-DH1 | 2441            | 2496.5-13000  | 4882.90                  | -45.56               | 0.0278              | 2.5             | 2.5             | Pass    |
| NVNT      | 2-DH1 | 2480            | 30-1000       | 906.88                   | -56.57               | 0.0022              | 0.25            | 0.25            | Pass    |
| NVNT      | 2-DH1 | 2480            | 1000-2387     | 2288.94                  | -44.58               | 0.0348              | 2.5             | 2.5             | Pass    |
| NVNT      | 2-DH1 | 2480            | 2387-2400     | 2398.95                  | -58.51               | 0.0014              | 25              | 25              | Pass    |
| NVNT      | 2-DH1 | 2480            | 2483.5-2496.5 | 2483.62                  | -42.40               | 0.0575              | 25              | 25              | Pass    |
| NVNT      | 2-DH1 | 2480            | 2496.5-13000  | 4960.62                  | -45.50               | 0.0282              | 2.5             | 2.5             | Pass    |
| NVNT      | 3-DH1 | 2402            | 30-1000       | 971.58                   | -70.13               | 0.0001              | 0.25            | 0.25            | Pass    |
| NVNT      | 3-DH1 | 2402            | 1000-2387     | 2210.99                  | -49.11               | 0.0123              | 2.5             | 2.5             | Pass    |
| NVNT      | 3-DH1 | 2402            | 2387-2400     | 2399.99                  | -31.81               | 0.6592              | 25              | 25              | Pass    |
| NVNT      | 3-DH1 | 2402            | 2483.5-2496.5 | 2491.82                  | -57.82               | 0.0017              | 25              | 25              | Pass    |
| NVNT      | 3-DH1 | 2402            | 2496.5-13000  | 4804.12                  | -44.29               | 0.0372              | 2.5             | 2.5             | Pass    |
| NVNT      | 3-DH1 | 2441            | 30-1000       | 834.91                   | -70.34               | 0.0001              | 0.25            | 0.25            | Pass    |
| NVNT      | 3-DH1 | 2441            | 1000-2387     | 2249.83                  | -46.93               | 0.0203              | 2.5             | 2.5             | Pass    |
| NVNT      | 3-DH1 | 2441            | 2387-2400     | 2398.30                  | -51.57               | 0.007               | 25              | 25              | Pass    |
| NVNT      | 3-DH1 | 2441            | 2483.5-2496.5 | 2487.67                  | -53.68               | 0.0043              | 25              | 25              | Pass    |
| NVNT      | 3-DH1 | 2441            | 2496.5-13000  | 4882.90                  | -45.49               | 0.0282              | 2.5             | 2.5             | Pass    |
| NVNT      | 3-DH1 | 2480            | 30-1000       | 935.01                   | -70.01               | 0.0001              | 0.25            | 0.25            | Pass    |
| NVNT      | 3-DH1 | 2480            | 1000-2387     | 2288.66                  | -44.52               | 0.0353              | 2.5             | 2.5             | Pass    |



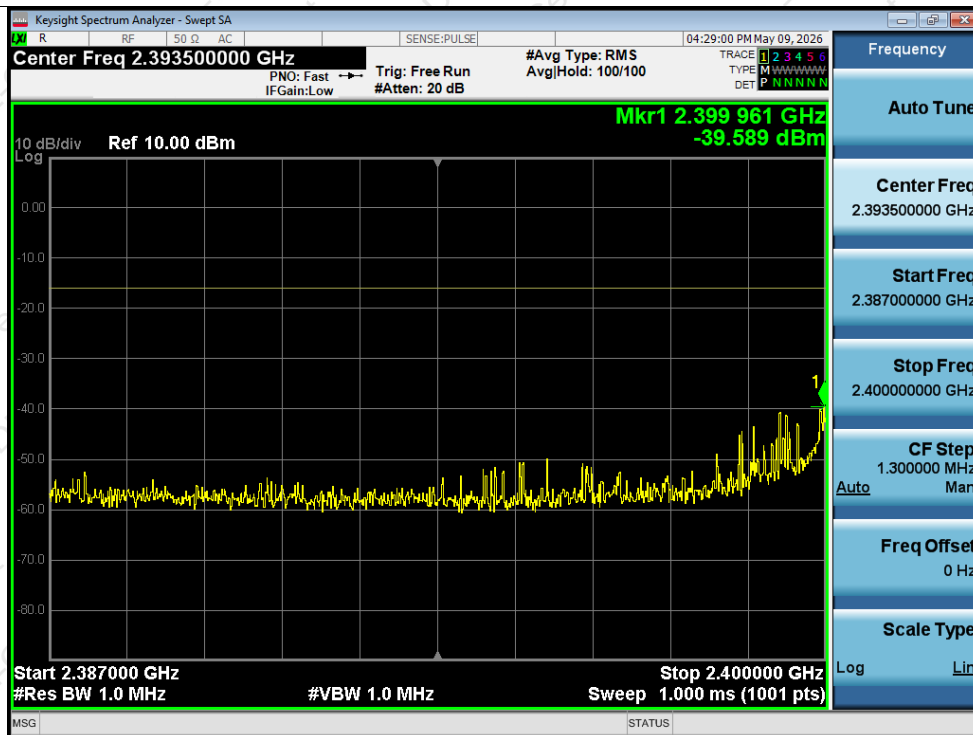
|      |       |      |               |         |        |        |     |     |      |
|------|-------|------|---------------|---------|--------|--------|-----|-----|------|
| NVNT | 3-DH1 | 2480 | 2387-2400     | 2398.74 | -58.01 | 0.0016 | 25  | 25  | Pass |
| NVNT | 3-DH1 | 2480 | 2483.5-2496.5 | 2484.16 | -48.88 | 0.0129 | 25  | 25  | Pass |
| NVNT | 3-DH1 | 2480 | 2496.5-13000  | 4960.62 | -45.70 | 0.0269 | 2.5 | 2.5 | Pass |



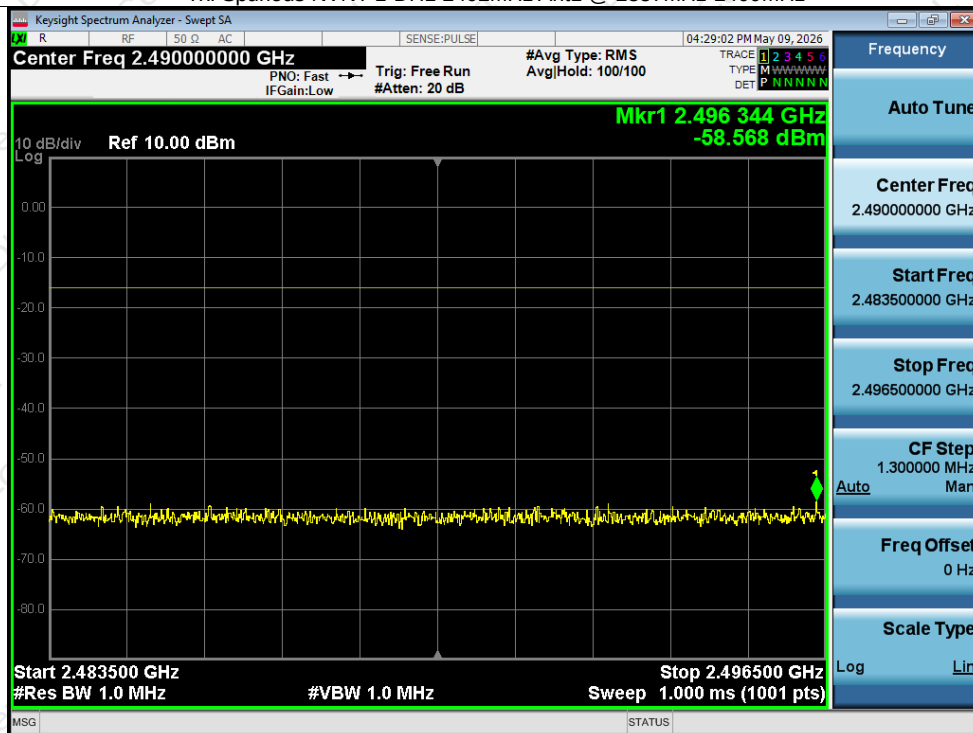
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 @ 30MHz-1000MHz



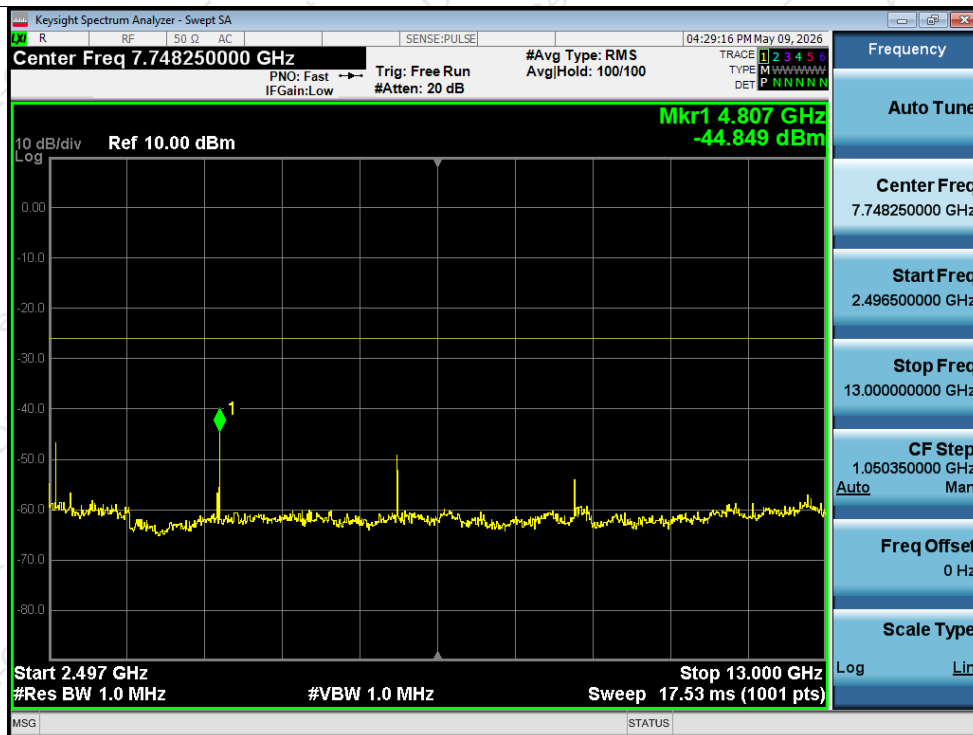
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 @ 1000MHz-2387MHz



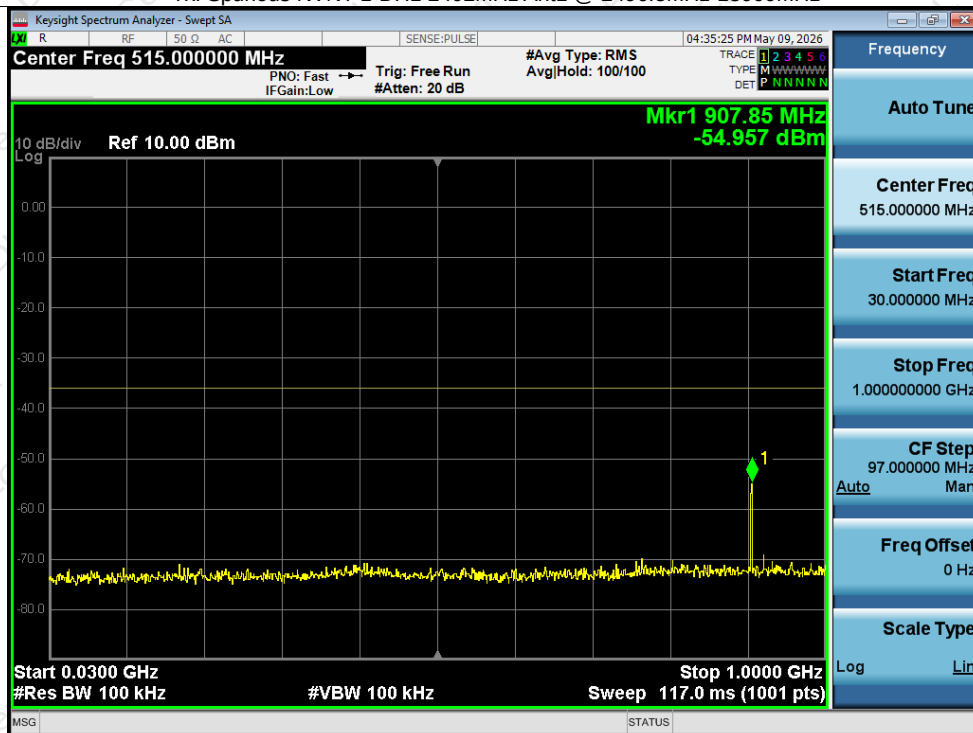
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 @ 2387MHz-2400MHz



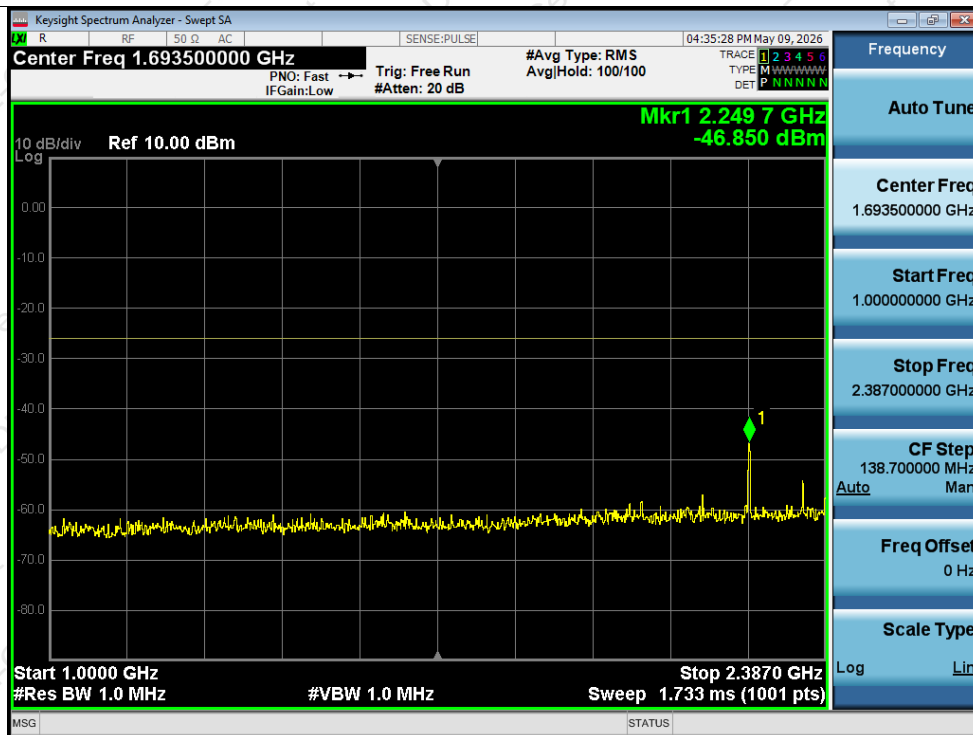
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 @ 2483.5MHz-2496.5MHz



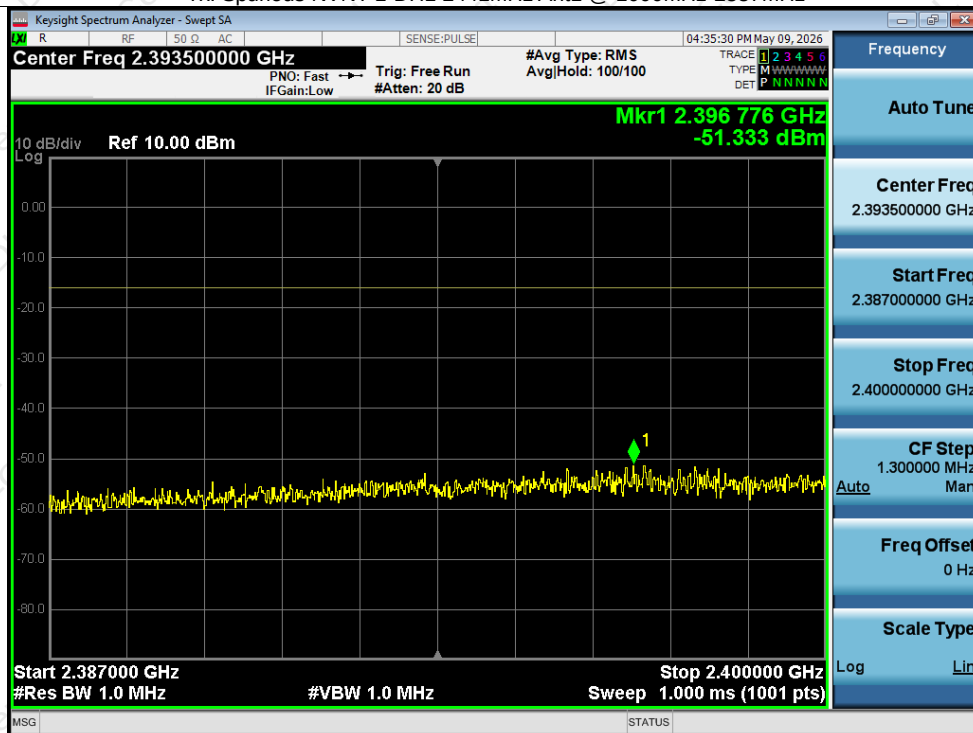
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 @ 2496.5MHz-13000MHz



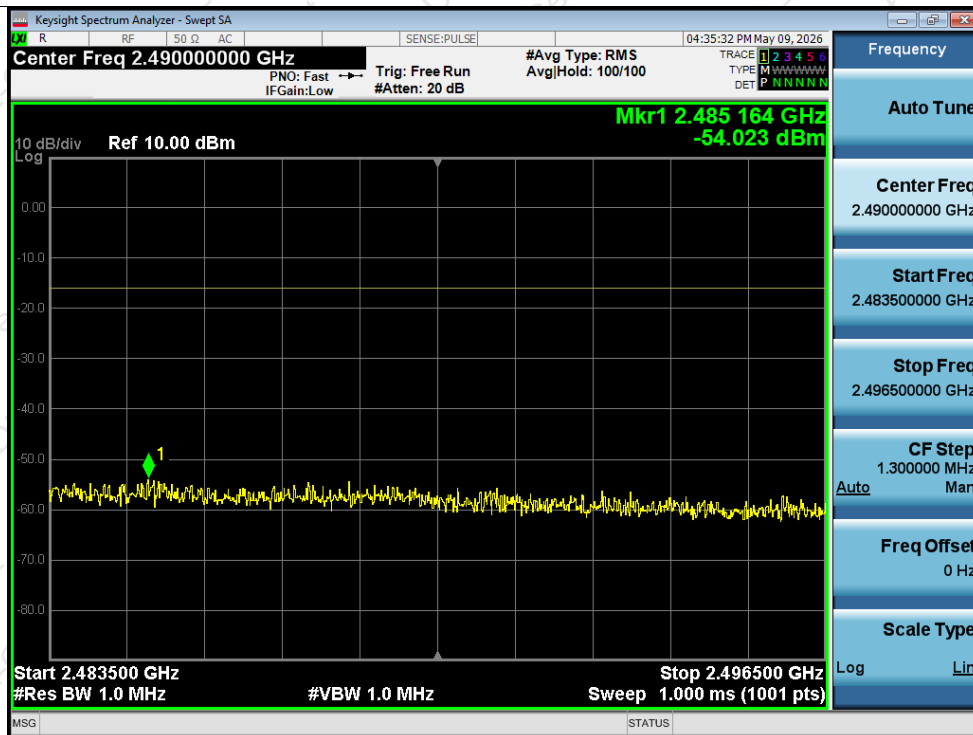
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 @ 30MHz-1000MHz



Tx. Spurious NVNT 1-DH1 2441MHz Ant1 @ 1000MHz-2387MHz



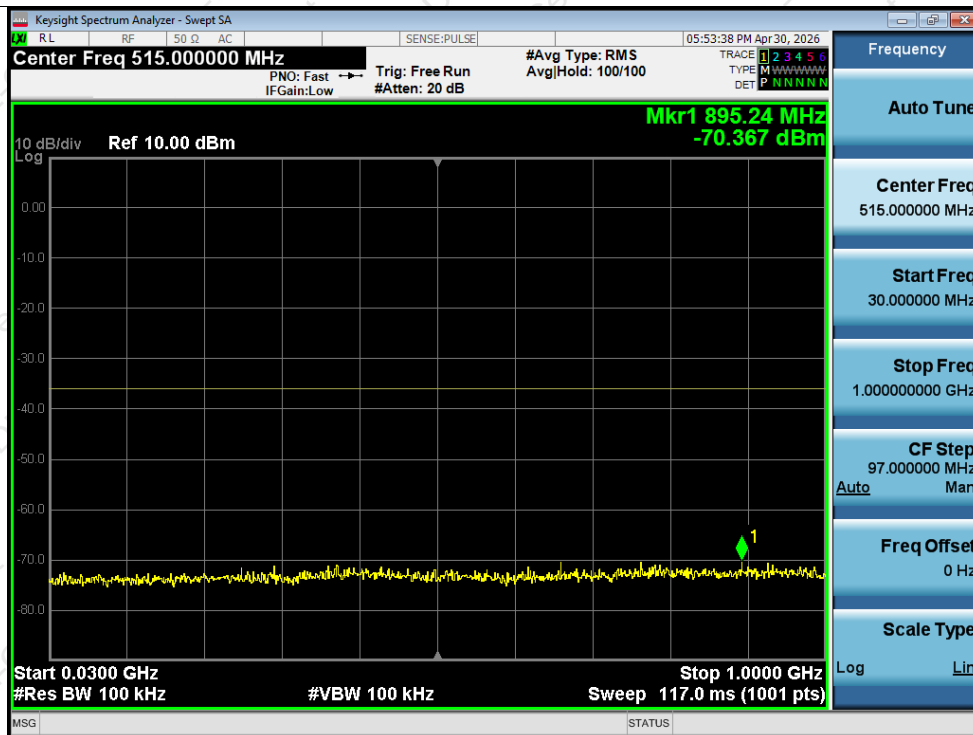
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 @ 2387MHz-2400MHz



Tx. Spurious NVNT 1-DH1 2441MHz Ant1 @ 2483.5MHz-2496.5MHz



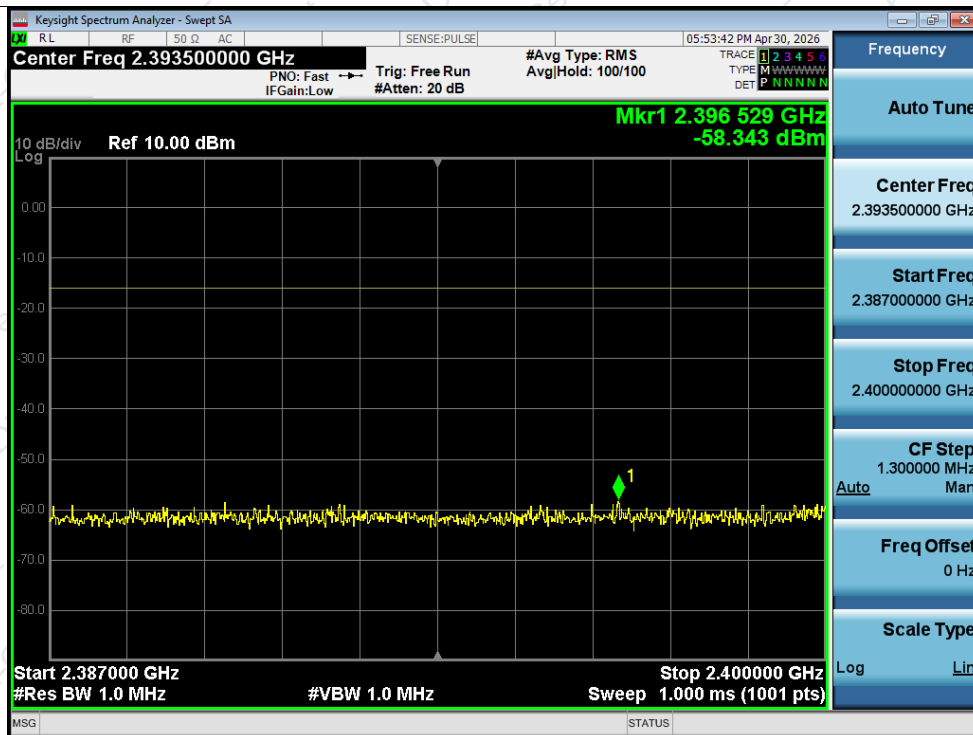
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 @ 2496.5MHz-13000MHz



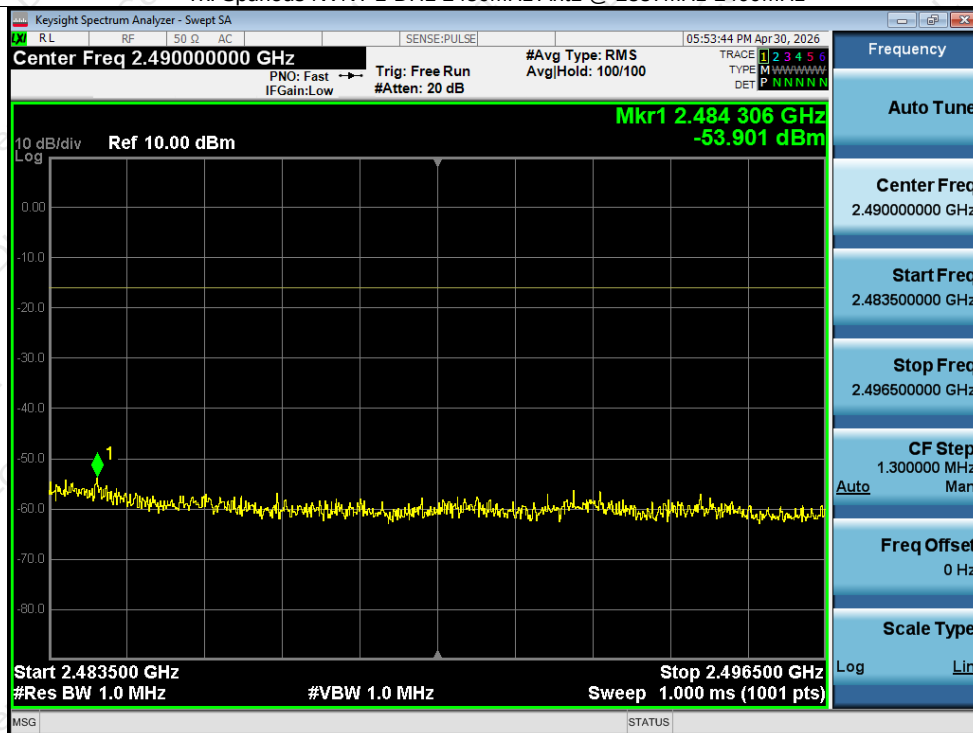
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 @ 30MHz-1000MHz



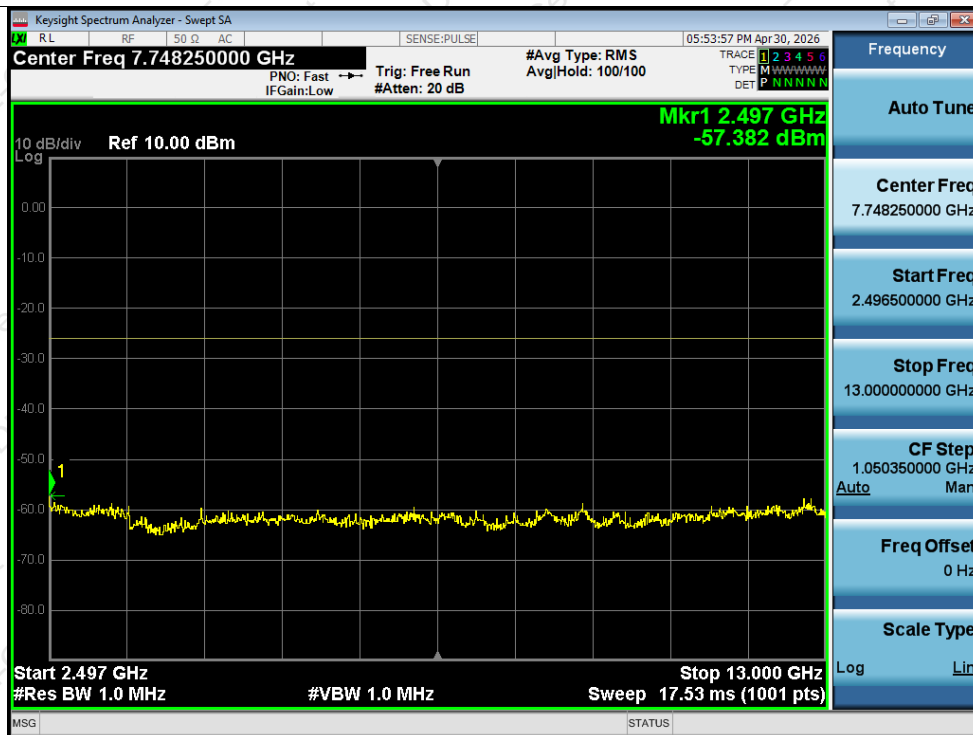
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 @ 1000MHz-2387MHz



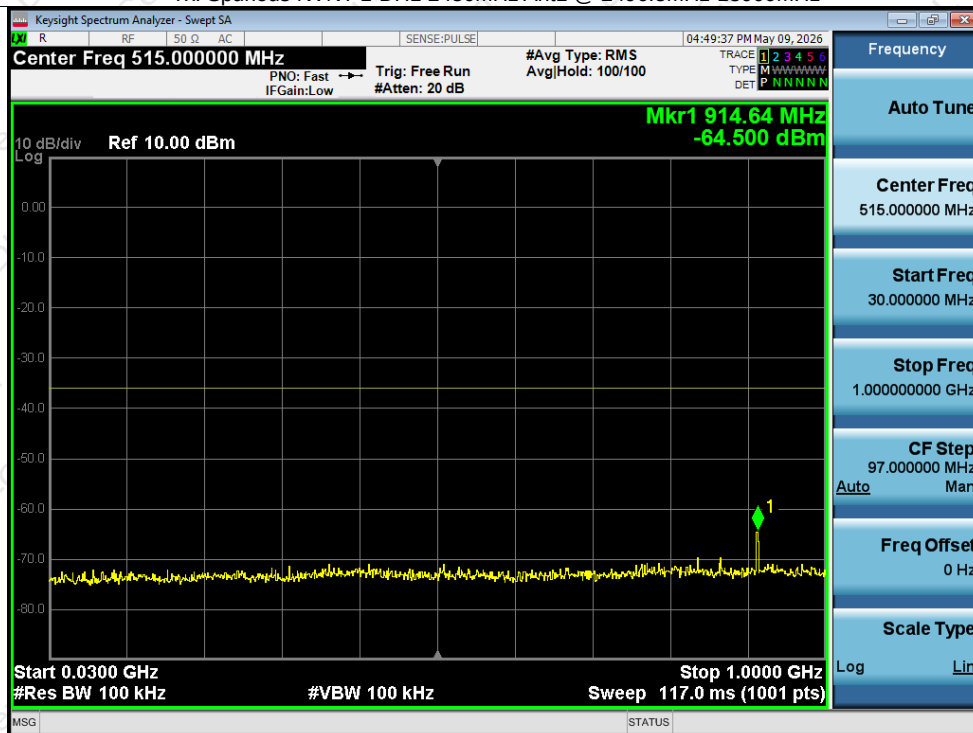
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 @ 2387MHz-2400MHz



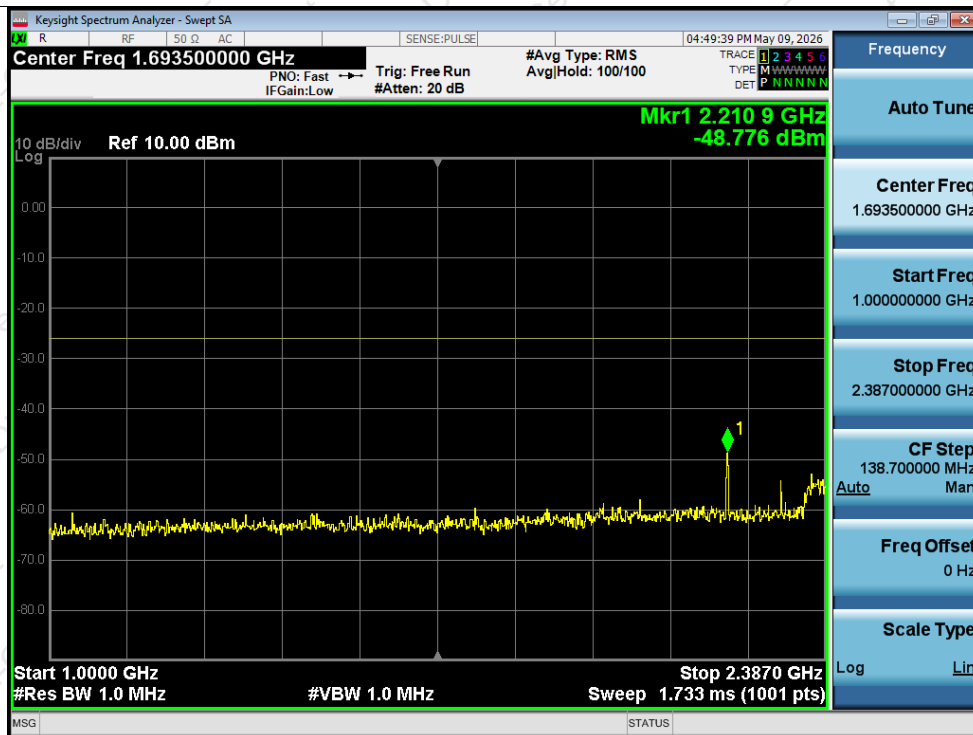
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 @ 2483.5MHz-2496.5MHz



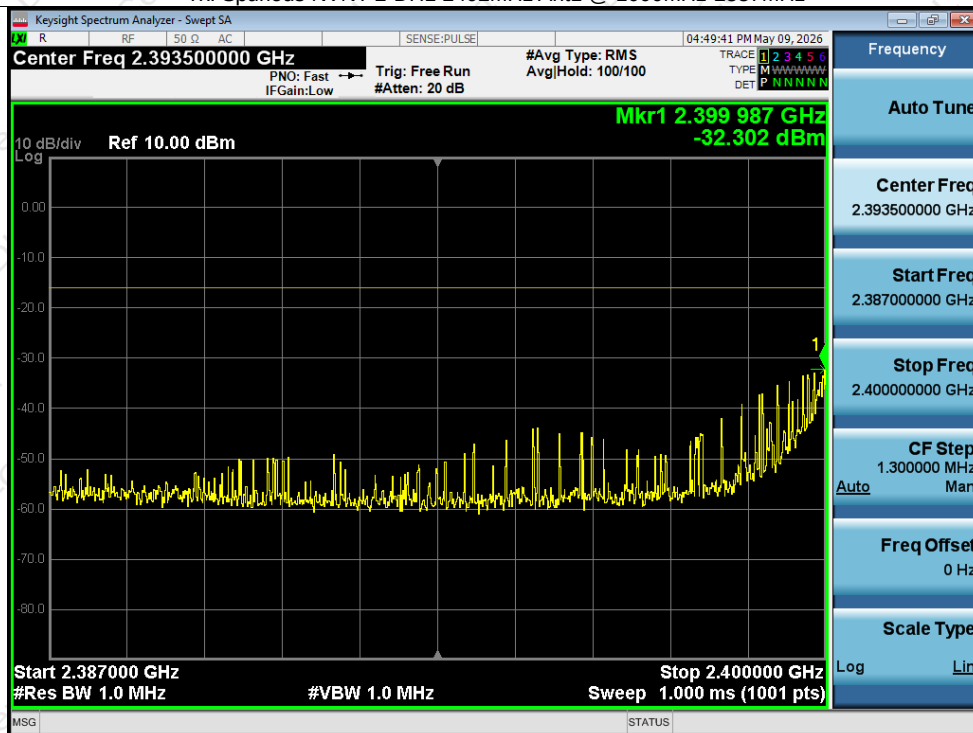
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 @ 2496.5MHz-13000MHz



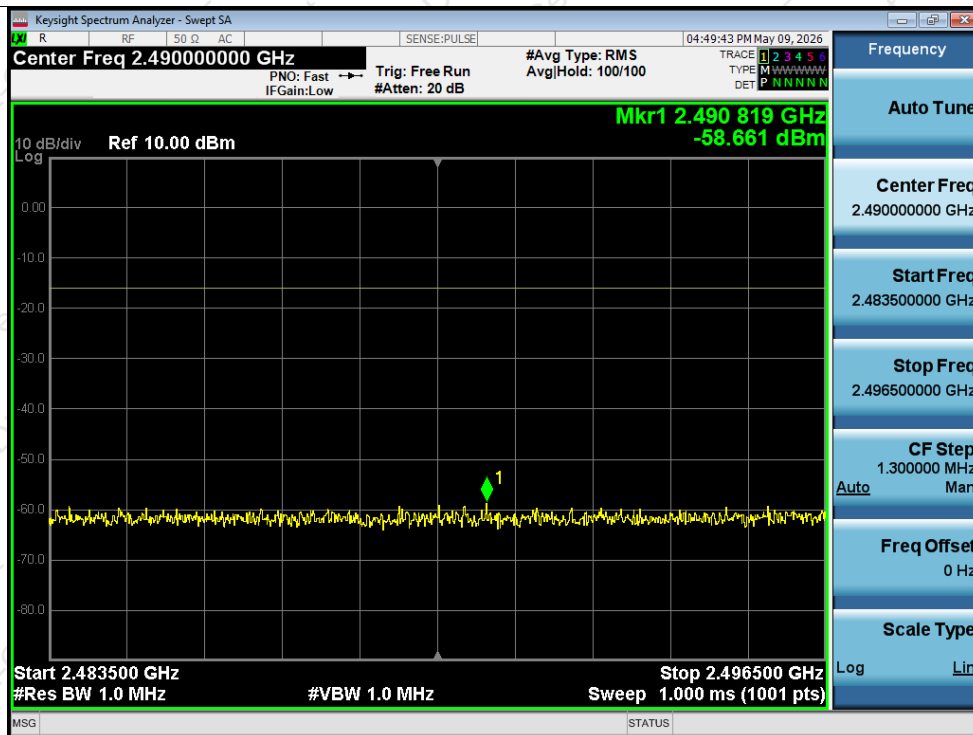
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 @ 30MHz-1000MHz



Tx. Spurious NVNT 2-DH1 2402MHz Ant1 @ 1000MHz-2387MHz



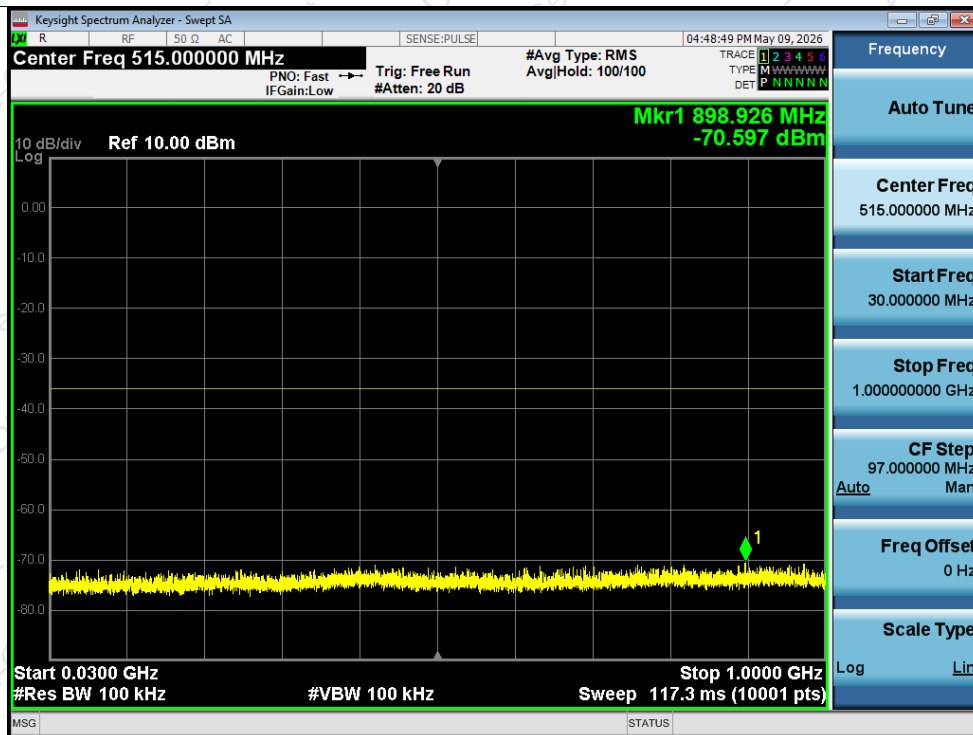
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 @ 2387MHz-2400MHz



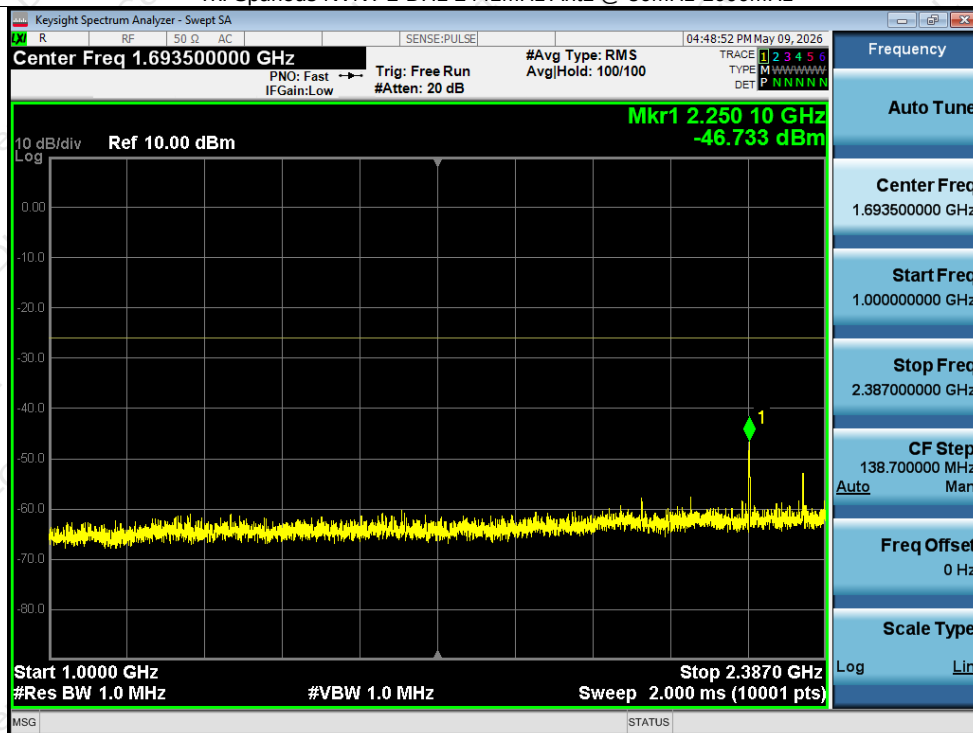
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 @ 2483.5MHz-2496.5MHz



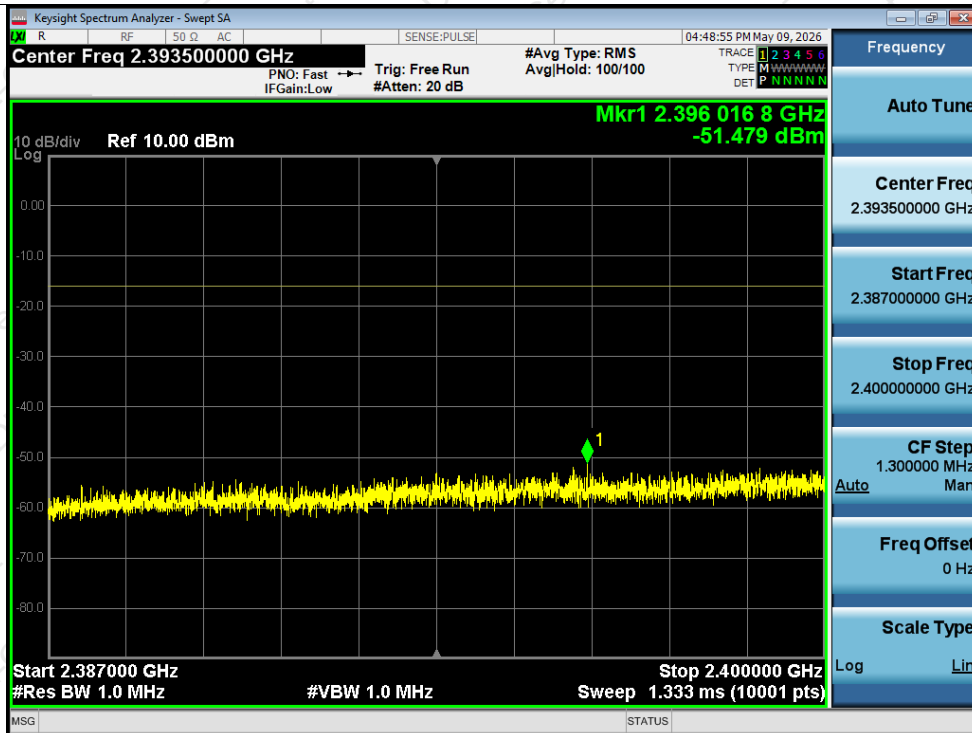
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 @ 2496.5MHz-13000MHz



Tx. Spurious NVNT 2-DH1 2441MHz Ant1 @ 30MHz-1000MHz



Tx. Spurious NVNT 2-DH1 2441MHz Ant1 @ 1000MHz-2387MHz



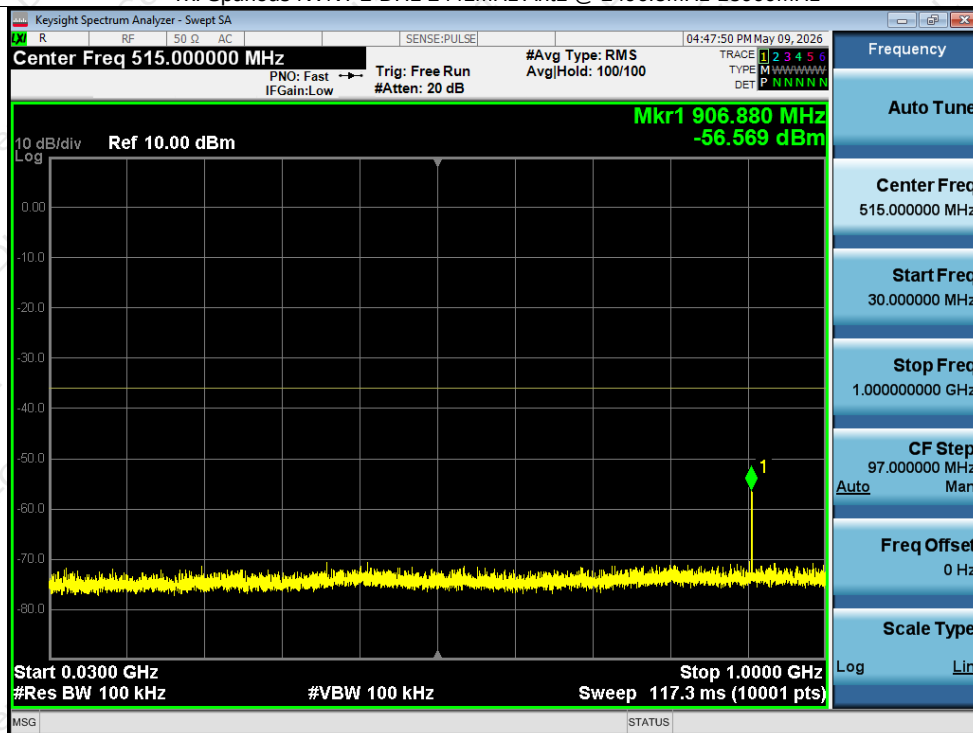
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 @ 2387MHz-2400MHz



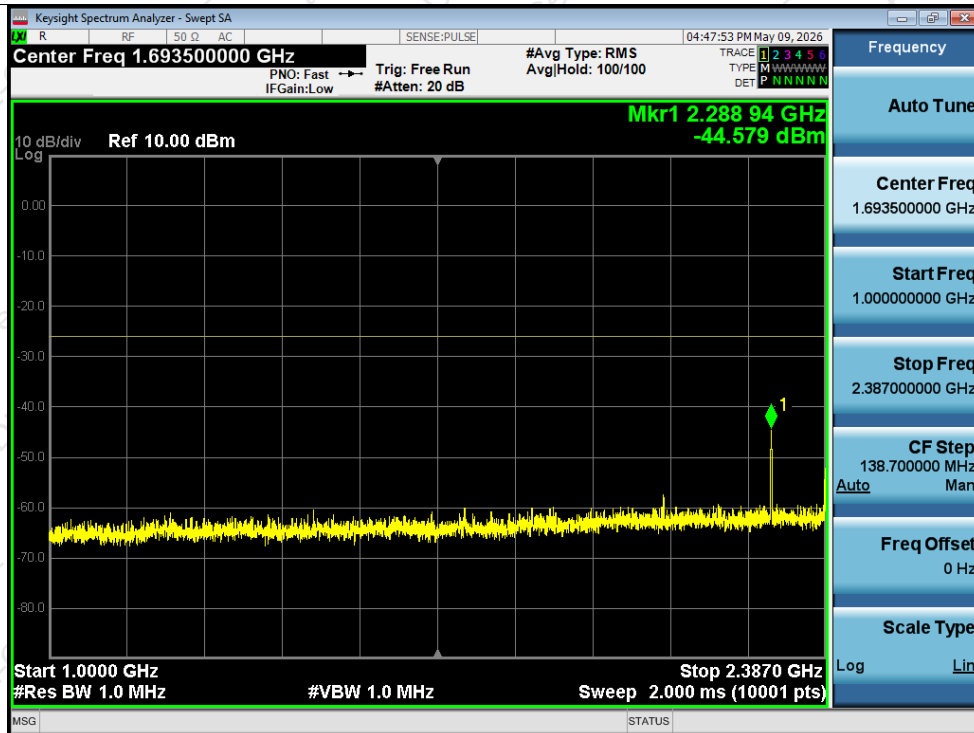
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 @ 2483.5MHz-2496.5MHz



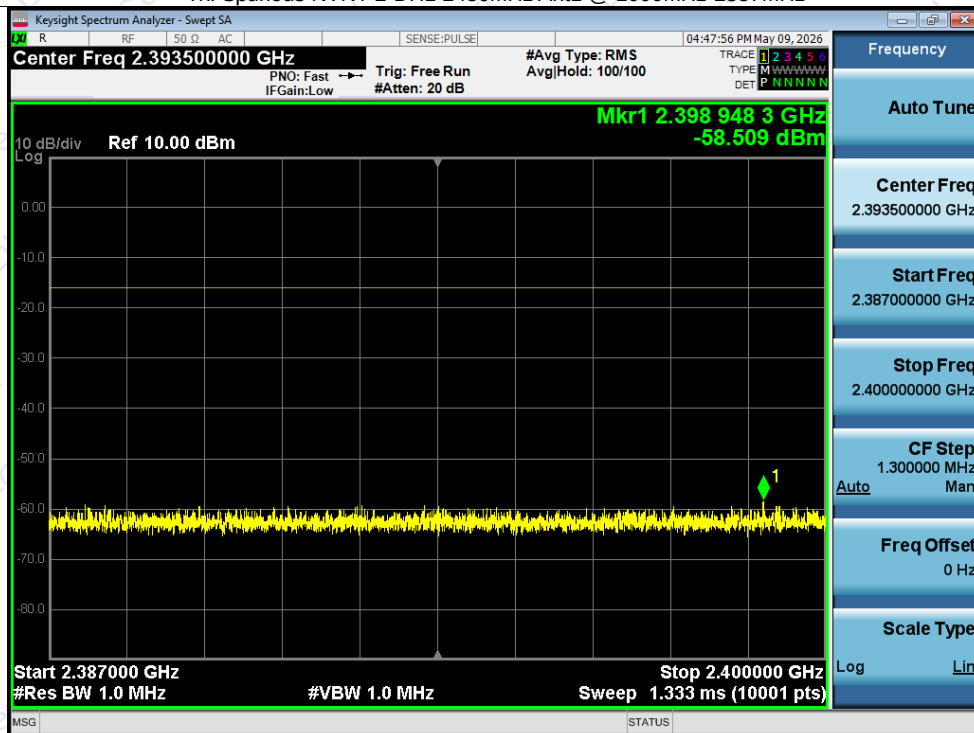
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 @ 2496.5MHz-13000MHz



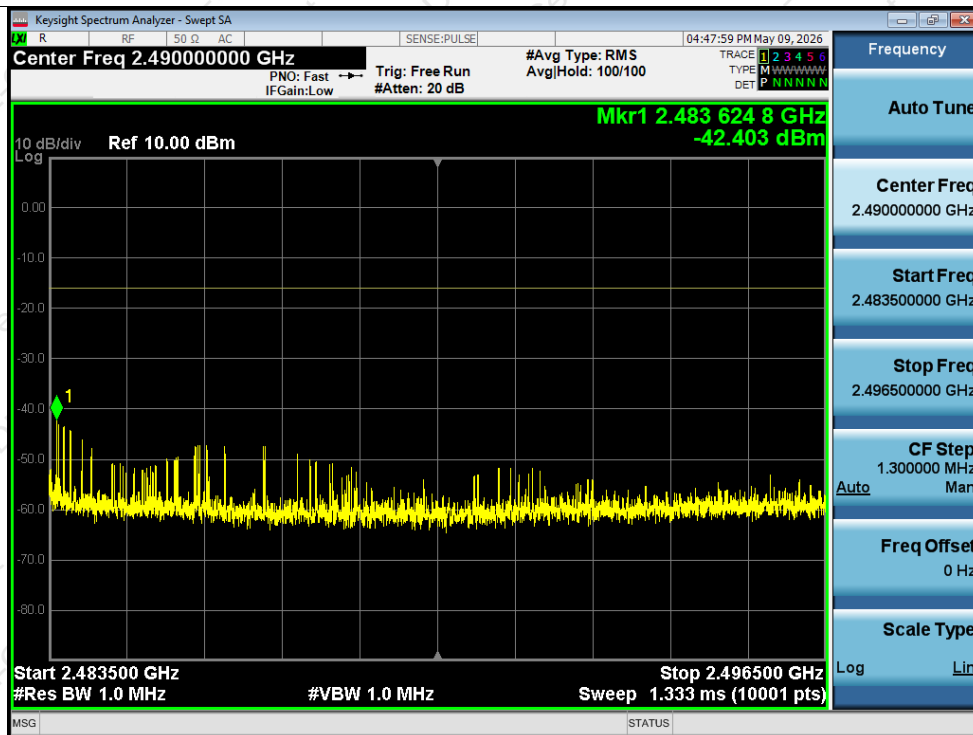
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 @ 30MHz-1000MHz



Tx. Spurious NVNT 2-DH1 2480MHz Ant1 @ 1000MHz-2387MHz



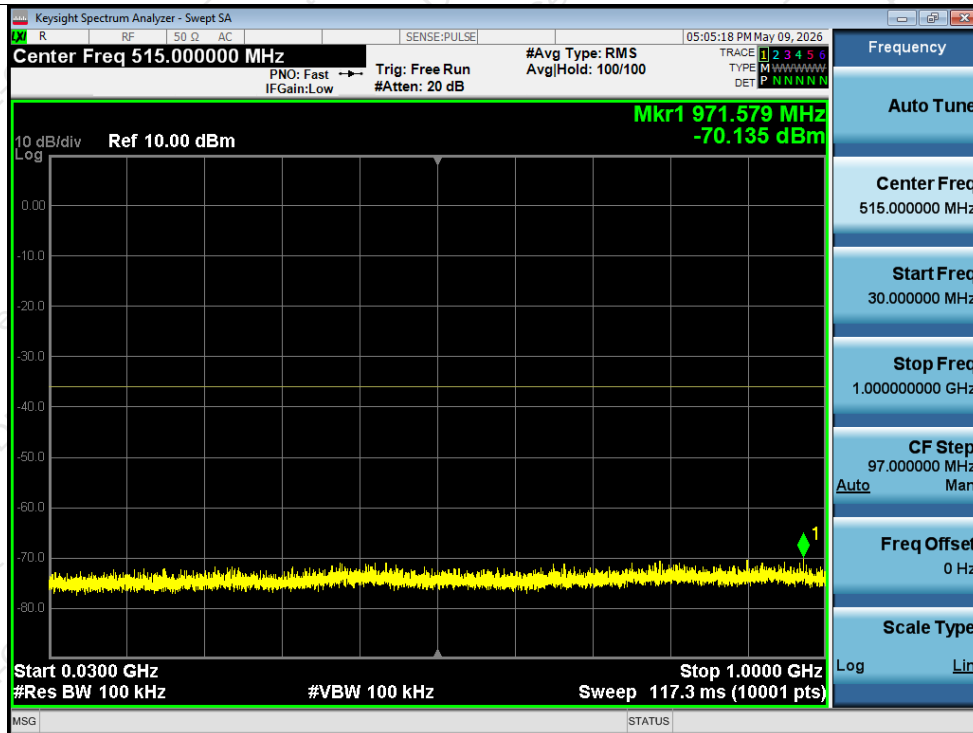
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 @ 2387MHz-2400MHz



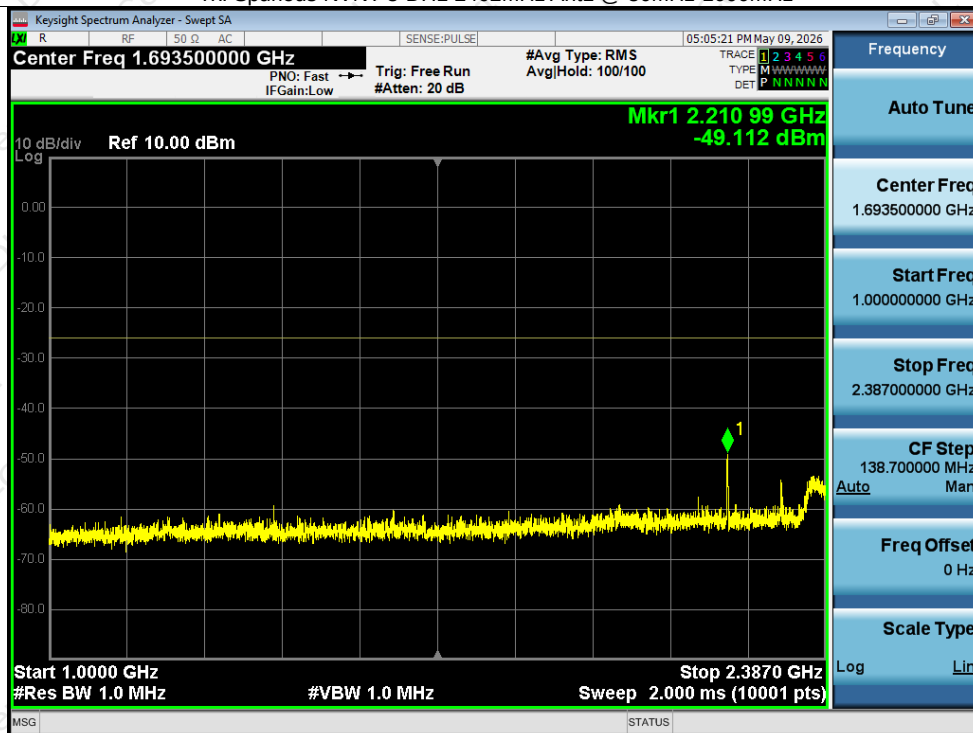
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 @ 2483.5MHz-2496.5MHz



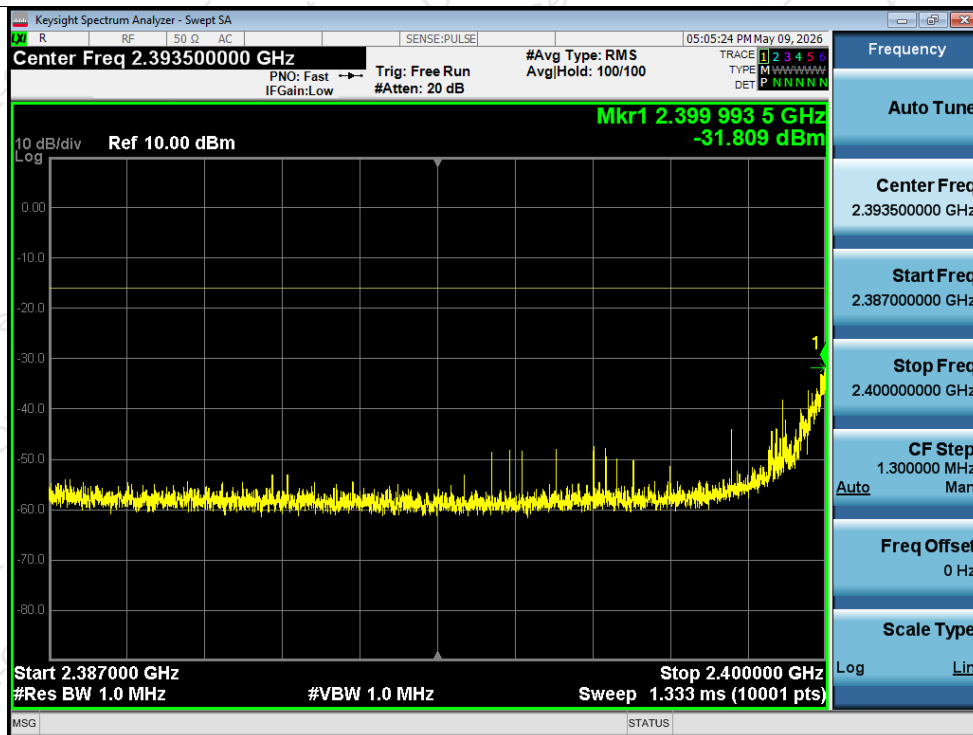
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 @ 2496.5MHz-13000MHz



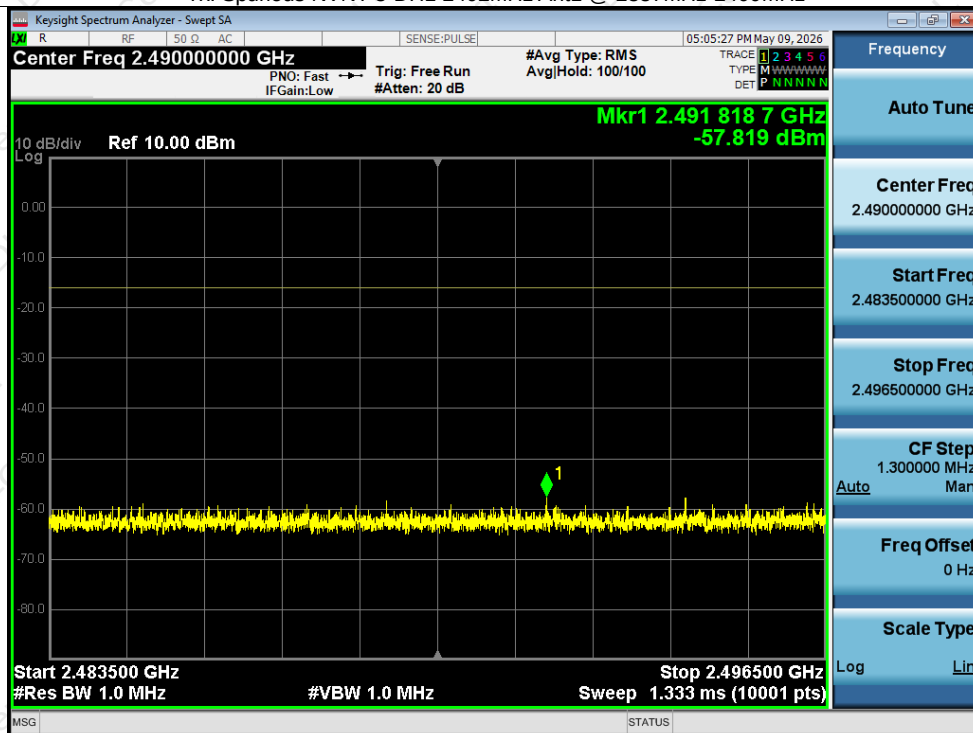
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 @ 30MHz-1000MHz



Tx. Spurious NVNT 3-DH1 2402MHz Ant1 @ 1000MHz-2387MHz



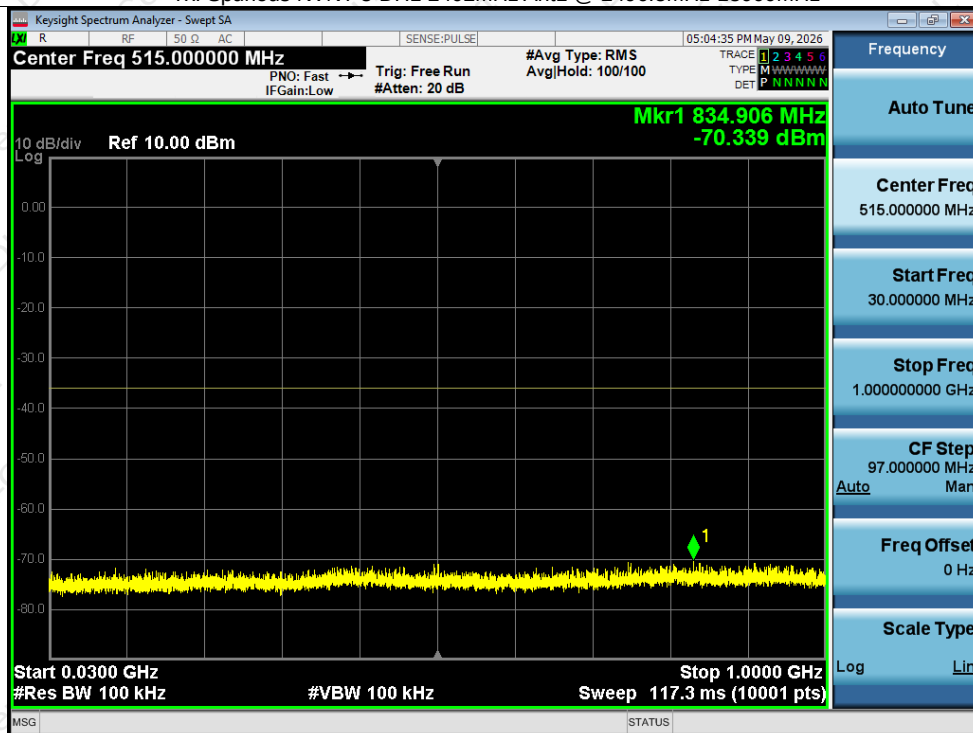
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 @ 2387MHz-2400MHz



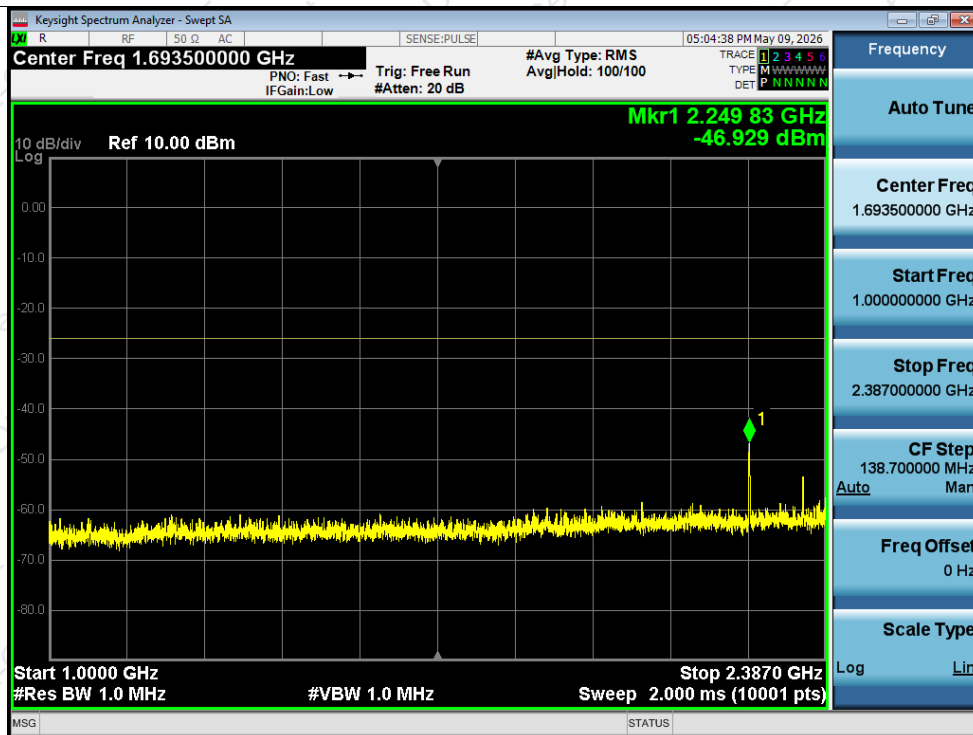
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 @ 2483.5MHz-2496.5MHz



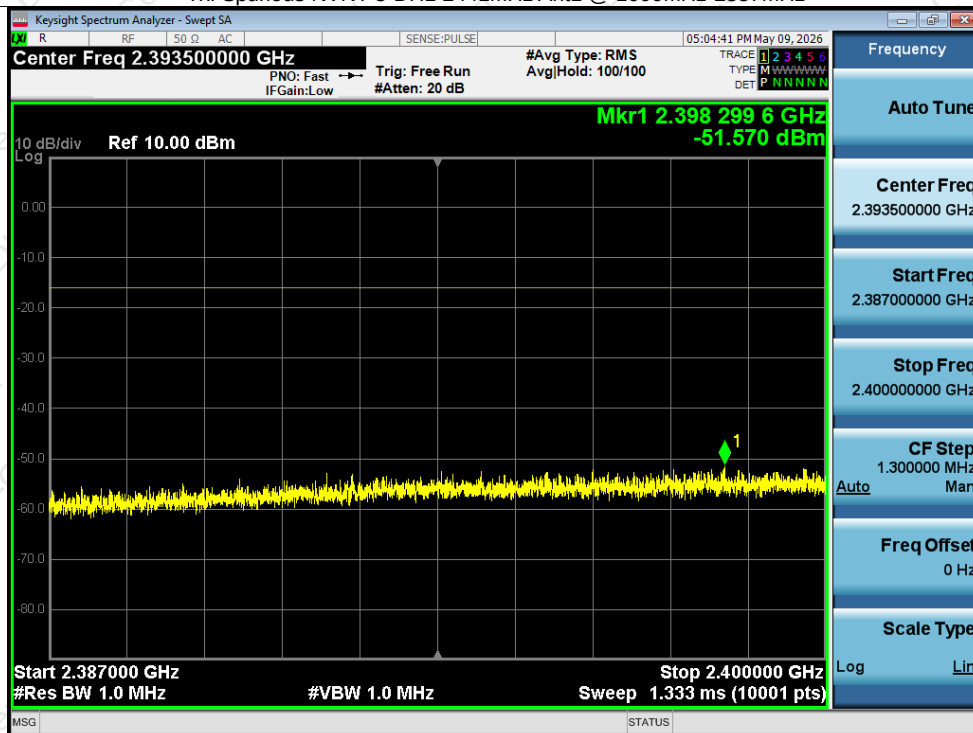
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 @ 2496.5MHz-13000MHz



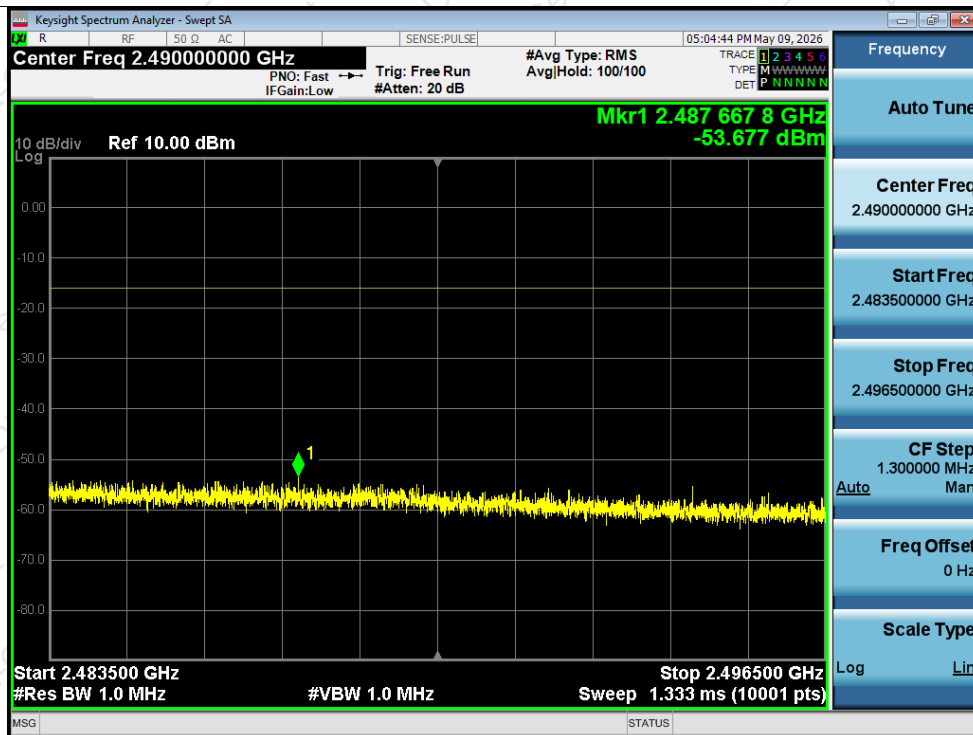
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 @ 30MHz-1000MHz



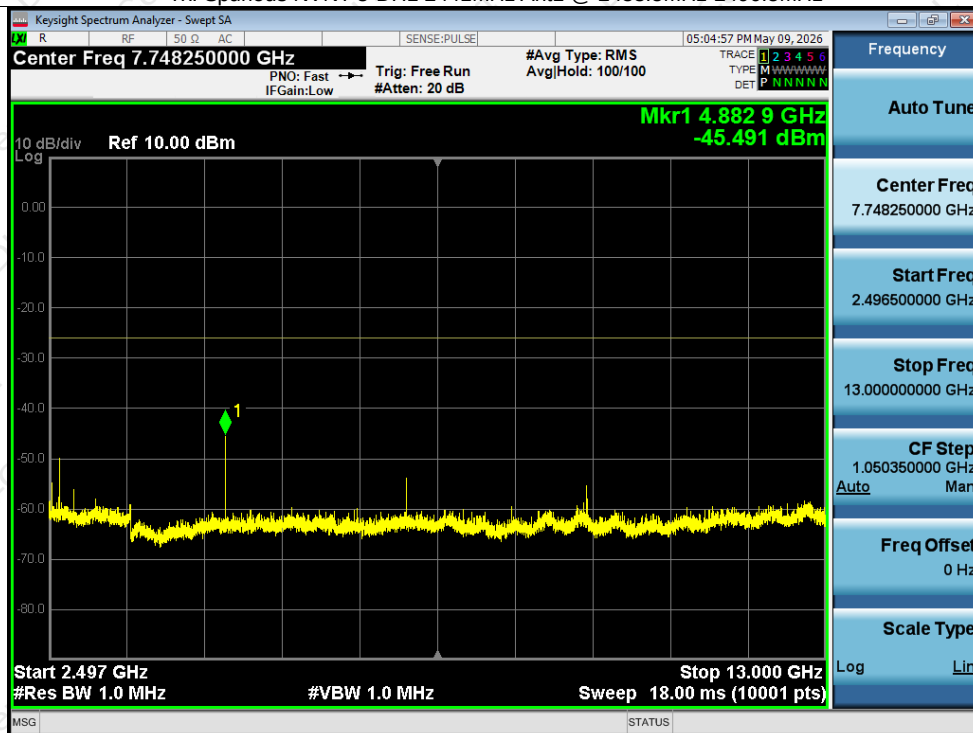
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 @ 1000MHz-2387MHz



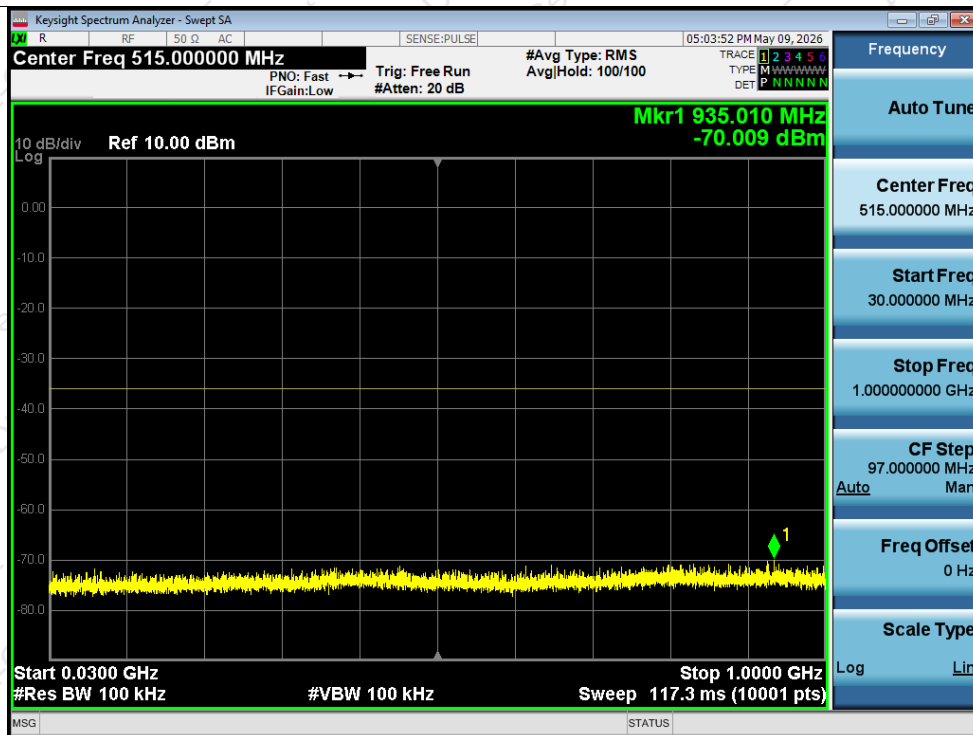
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 @ 2387MHz-2400MHz



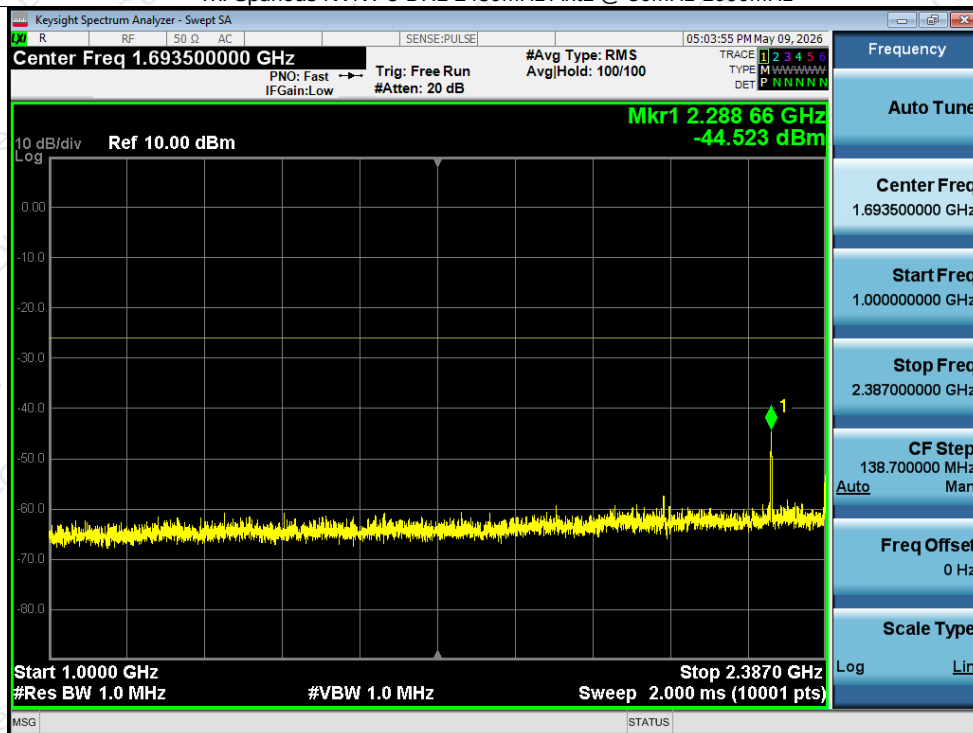
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 @ 2483.5MHz-2496.5MHz



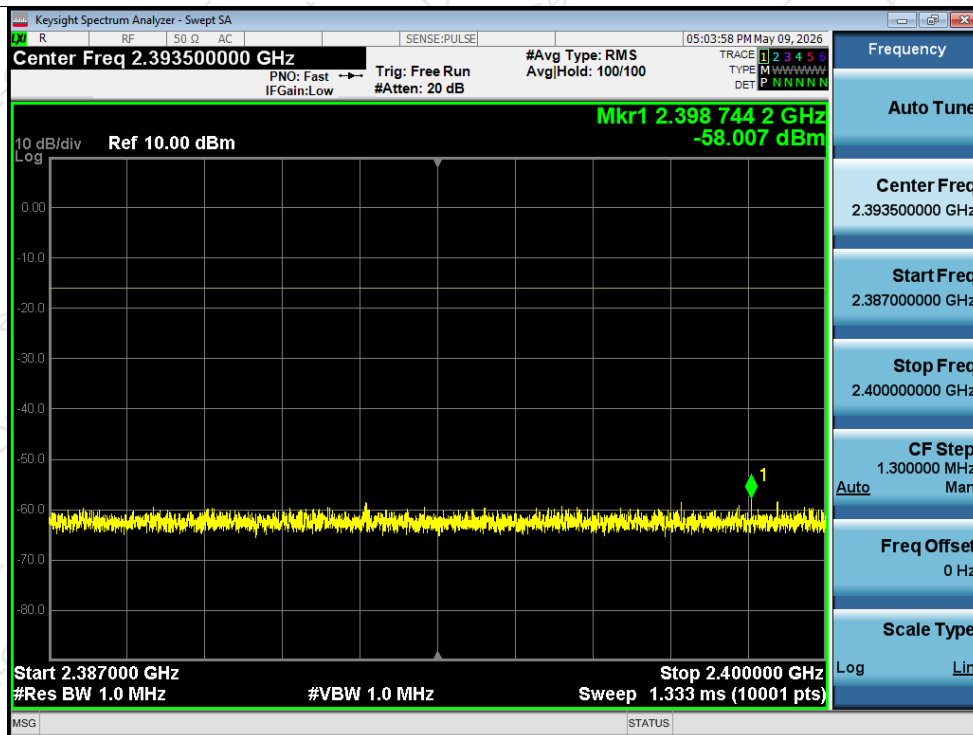
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 @ 2496.5MHz-13000MHz



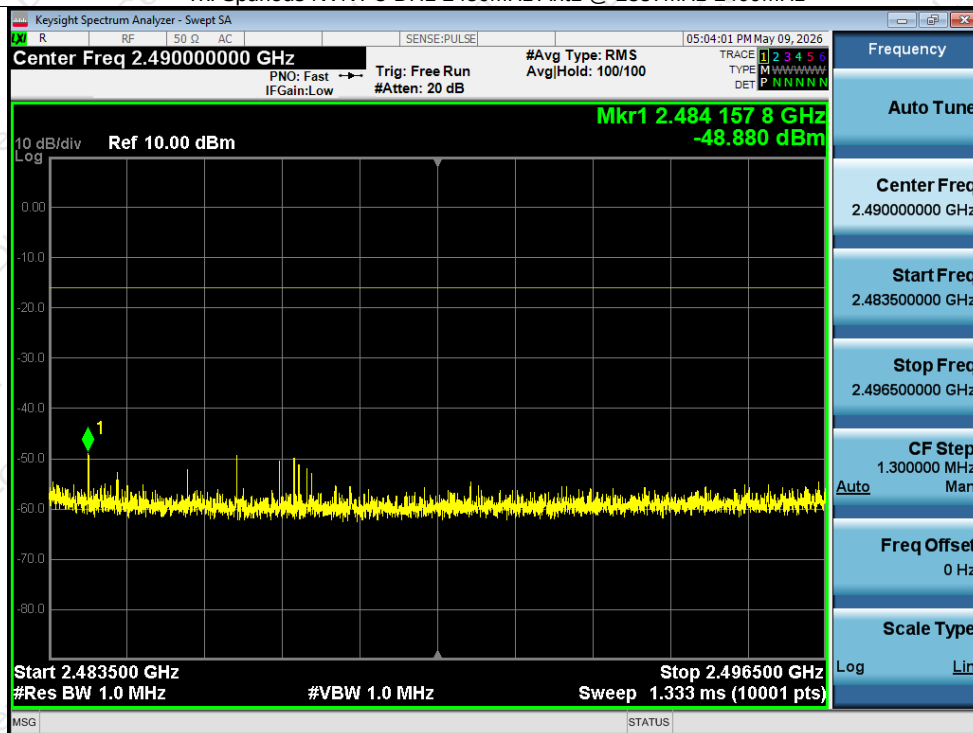
Tx. Spurious NVNT 3-DH1 2480MHz Ant1 @ 30MHz-1000MHz



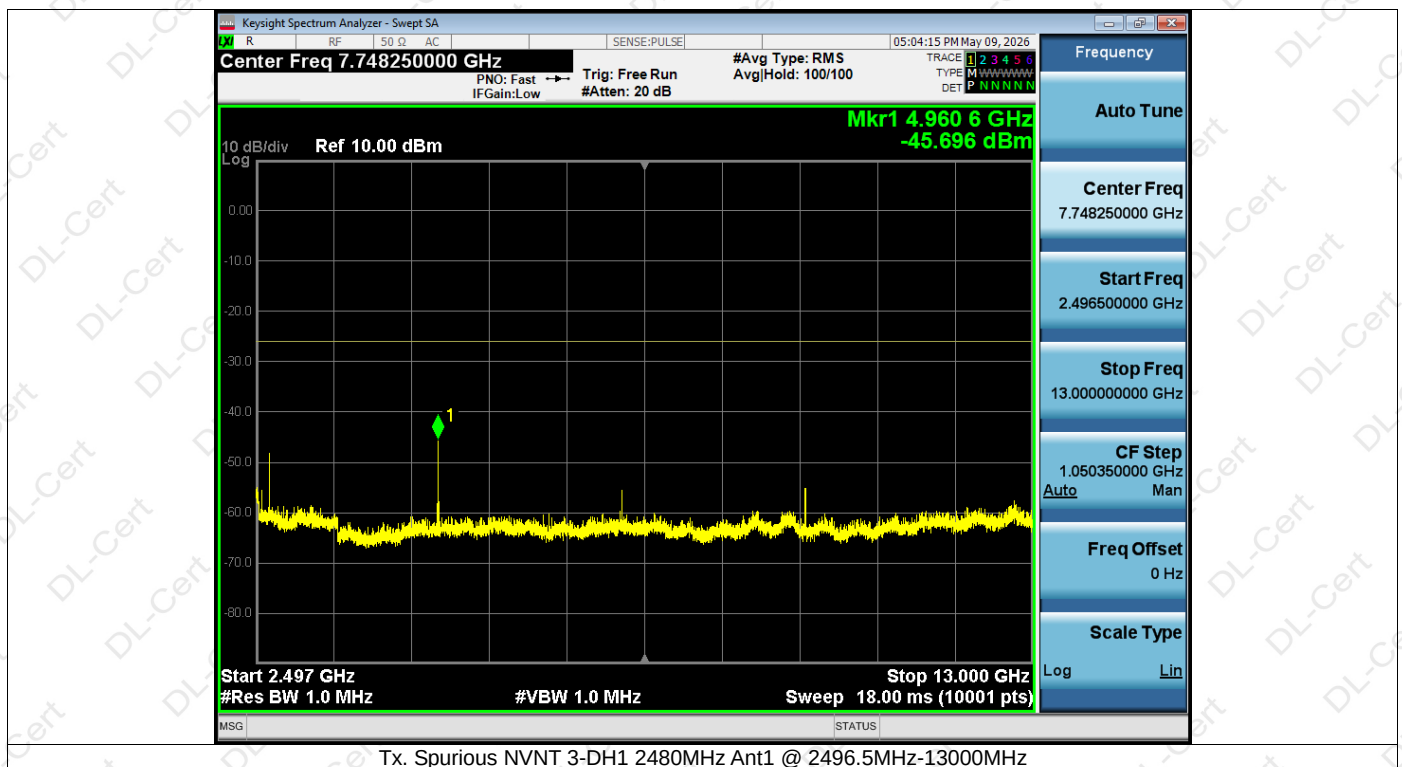
Tx. Spurious NVNT 3-DH1 2480MHz Ant1 @ 1000MHz-2387MHz



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 @ 2387MHz-2400MHz



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 @ 2483.5MHz-2496.5MHz



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 @ 2496.5MHz-13000MHz



## 10.. RADIO INTERFERENCE PREVENTION CAPABILITY MEASUREMENT

### 10.1. LIMIT

| Item                | Limits         |
|---------------------|----------------|
| Identification code | $\geq 48$ bits |

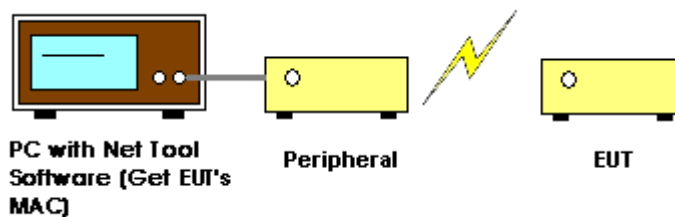
### 10.2. MEASURING ID CODE SOFTWARE

| Item        | Limits   |
|-------------|----------|
| MAC IP List | MAC Scan |

### 10.3. TEST PROCEDURES

- In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes from EUT. b. Check the transmitted identification codes with the demodulator.
- In the case of receiving the identification code: a. Transmit the predetermined identification codes from the counterpart. b. Check if communication is normal. c. Transmit the signals other than predetermined ID codes from the counterpart. d. Check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

### 10.4. TEST SETUP LAYOUT



### 10.5. TEST DEVIATION

There is no deviation with the original standard.

### 10.6. EUT OPERATION DURING TEST

The EUT was programmed to be in normal transmitting mode.

### 10.7. TEST RESULT OF RADIO INTERFERENCE PREVENTION CAPABILITY

|              |         |                    |       |           |          |
|--------------|---------|--------------------|-------|-----------|----------|
| Temperature: | 25.5 °C | Relative Humidity: | 55.6% | Pressure: | 1010mbar |
|--------------|---------|--------------------|-------|-----------|----------|

|              |                                          |
|--------------|------------------------------------------|
| Test result: | CONFORM<br>MAC Address:90:2B:D2:6C:5B:7A |
|--------------|------------------------------------------|



## 11. TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH) MEASUREMENT

### 11.1. LIMIT

| Item                   | Limits                                                                                                                                                          |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3dB antenna beam width | $360/A$ (If $A < 1$ ; then $A=1$ )<br>$A = \{\text{EIRP Power [mW]} / 12.14 \text{ for DS, OFDM}\}$ or<br>$A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$ |

### 11.2. MEASURING INSTRUMENTS AND SETTING

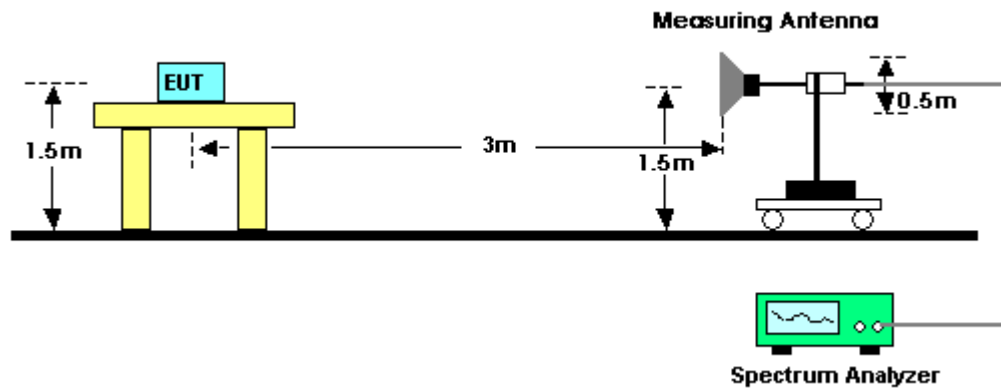
| Spectrum Parameter | Setting  |
|--------------------|----------|
| Attenuation        | Auto     |
| Span Frequency     | 0 MHz    |
| RB                 | 1 MHz    |
| VB                 | 1 kHz    |
| Detector           | Peak     |
| Trace              | Max Hold |
| Sweep Time         | Auto     |

### 11.3. TEST PROCEDURES

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Set spectrum analyzer with condition in section 4.7.2 and tune reference level to observe receiving signal position.
3. Rotate directions of the EUT horizontally and vertically to find the maximum receiving power.
4. Move the measuring antenna height up and down within  $\pm 50\text{cm}$  of EUT height and swing it to find the maximum output of measuring antenna. The output level at the spectrum analyzer is read as "E".
5. Calculate permitted radiation angle in horizontal and vertical using EIRP measured in another test method.
6. Calculate 3dB antenna beam width by the formula below  $360/A$  (If  $A < 1$ ; then  $A=1$ ).  
 $A = \{\text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM}\}$  or  
 $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$



#### 11.4. TEST SETUP LAYOUT



#### 11.5. TEST DEVIATION

There is no deviation with the original standard.

#### 11.6. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

#### 11.7. TEST RESULT

|              |         |                    |       |           |          |
|--------------|---------|--------------------|-------|-----------|----------|
| Temperature: | 25.4 °C | Relative Humidity: | 55.7% | Pressure: | 1010mbar |
|--------------|---------|--------------------|-------|-----------|----------|

Not applicable since the EIRP Power is less than 6.91dBm/MHz.



## 12. IMITATION OF COLLATERAL EMISSION OF RECEIVER MEASUREMENT

### 12.1 LIMIT

| Item                  | Limits                                         |
|-----------------------|------------------------------------------------|
| RX Spurious Emission: | $\leq 4\text{nW}$ ( $f < 1\text{GHz}$ )        |
|                       | $\leq -54\text{ dBm}$ ( $f < 1\text{GHz}$ )    |
|                       | $\leq 20\text{nW}$ ( $1\text{GHz} \leq f$ )    |
|                       | $\leq -47\text{ dBm}$ ( $1\text{GHz} \leq f$ ) |

### 12.2 MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

| Spectrum Parameter | Setting                                                        |
|--------------------|----------------------------------------------------------------|
| Attenuation        | Auto                                                           |
| RB                 | 100 kHz (below 1GHz emissions)<br>1 MHz (above 1GHz emissions) |
| VB                 | 100 kHz (below 1GHz emissions)<br>1 MHz (above 1GHz emissions) |
| Detector           | Peak                                                           |
| Trace              | Max Hold                                                       |
| Sweep Time         | Auto                                                           |

### 12.3 TEST PROCEDURES

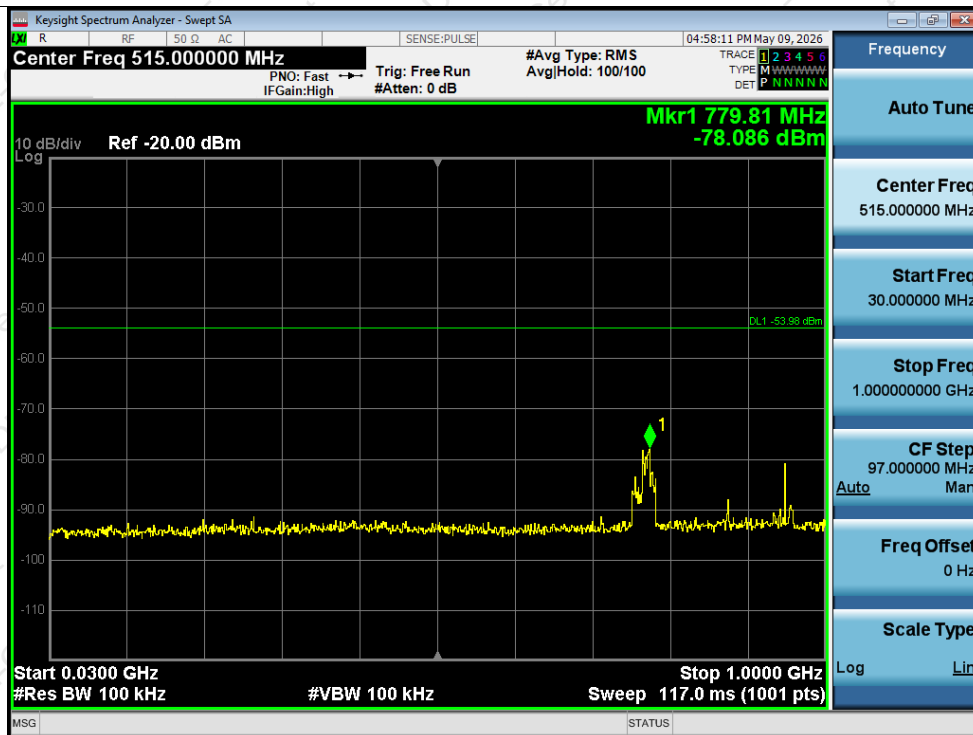
1. EUT have the continuous reception mode and fixed only one channelize.
2. Setting of SA is following as RB / VB: 100 kHz (below 1GHz emissions) / 1 MHz (above 1GHz emissions) /  
AT: 10dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
3. SA set RB: 100kHz and VB: 100kHz. Then adjust to start frequency 30MHz and stop frequency 1000MHz. Search to mark peak reading value + cable loss shall be less than 4nW
4. SA set RB: 1MHz and VB: 1MHz. Then adjust to start frequency 1000MHz and stop frequency 12500MHz. Search to mark peak reading value + cable loss shall be less than 20nW
5. If power level of lower emissions are more than 1/10 of limit (.0.4nW for  $f < 1\text{GHz}$ , 2nW for  $f \geq 1\text{GHz}$ ), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit, no necessary to be indicated.

### 12.4 TEST RESULT

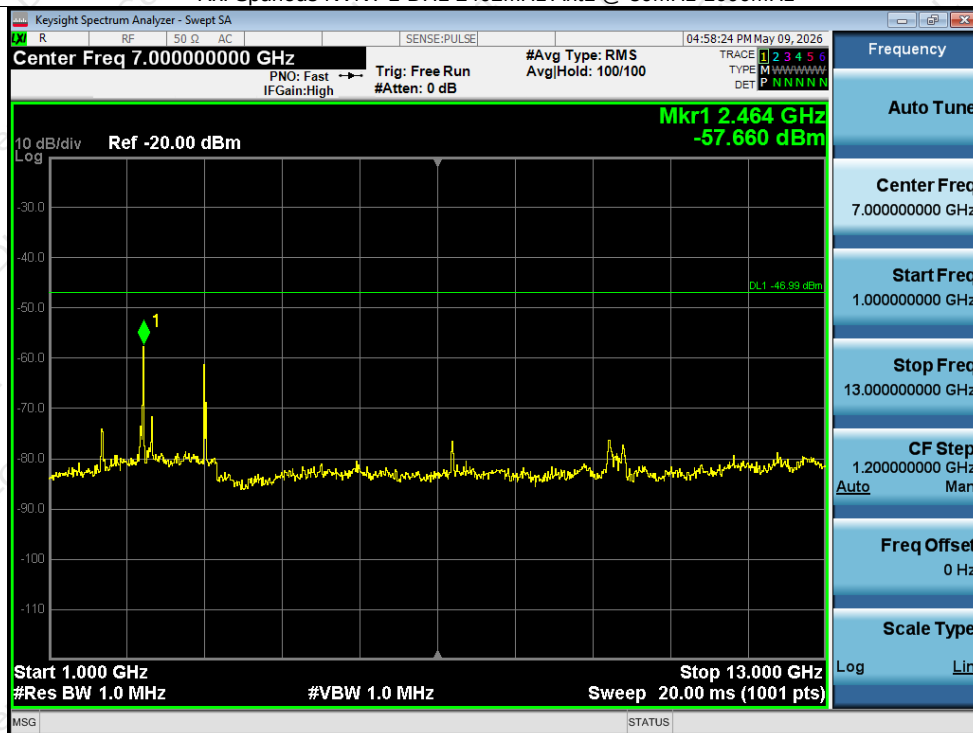
All modulation modes of high, medium and low channels have been tested, and only the worst channel results are shown in the report.



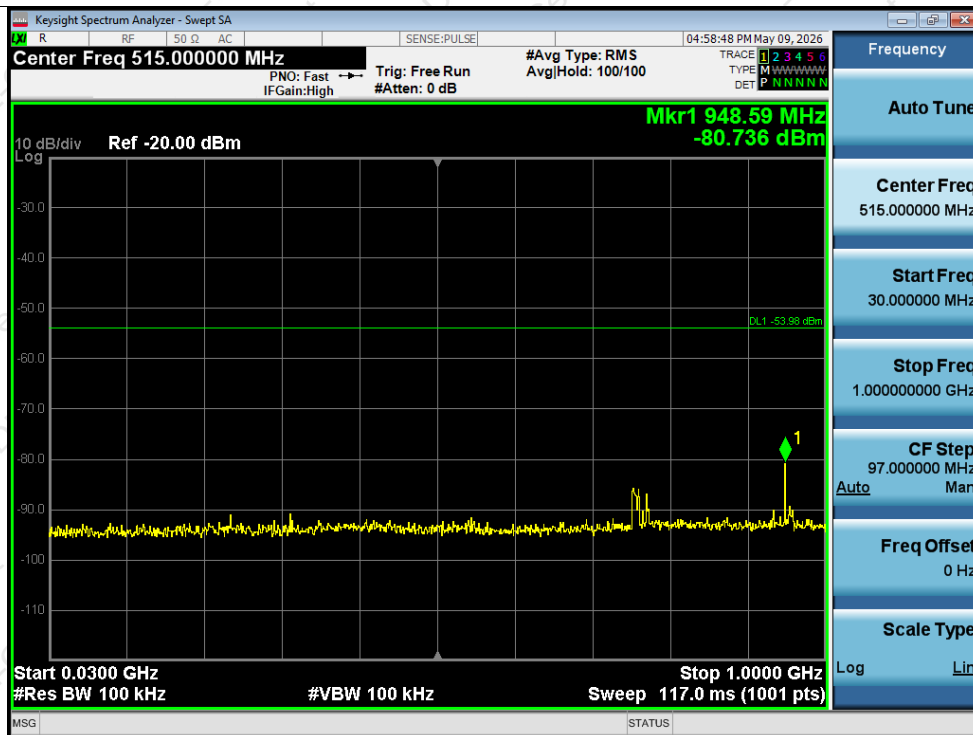
| Condition | Mode  | Frequency (MHz) | Range (MHz) | Emission Frequency (MHz) | Max Peak Value (dBm) | Max RMS Value (dBm) | Max Peak Value (nW) | Max RMS Value (nW) | Limit (nW) | Verdict |
|-----------|-------|-----------------|-------------|--------------------------|----------------------|---------------------|---------------------|--------------------|------------|---------|
| NVNT      | 1-DH1 | 2402            | 30-1000     | 779.81                   | -78.09               | NA                  | 0.0155              | NA                 | 4          | Pass    |
| NVNT      | 1-DH1 | 2402            | 1000-13000  | 2464.00                  | -57.66               | NA                  | 1.714               | NA                 | 20         | Pass    |
| NVNT      | 1-DH1 | 2441            | 30-1000     | 948.59                   | -80.74               | NA                  | 0.0084              | NA                 | 4          | Pass    |
| NVNT      | 1-DH1 | 2441            | 1000-13000  | 3424.00                  | -53.51               | -82.51              | 4.4566              | 0.0056             | 20         | Pass    |
| NVNT      | 1-DH1 | 2480            | 30-1000     | 948.59                   | -81.29               | NA                  | 0.0074              | NA                 | 4          | Pass    |
| NVNT      | 1-DH1 | 2480            | 1000-13000  | 3424.00                  | -58.11               | NA                  | 1.5453              | NA                 | 20         | Pass    |
| NVNT      | 2-DH1 | 2402            | 30-1000     | 906.88                   | -59.70               | -94.53              | 1.0715              | 0.0004             | 4          | Pass    |
| NVNT      | 2-DH1 | 2402            | 1000-13000  | 2464.00                  | -57.05               | NA                  | 1.9724              | NA                 | 20         | Pass    |
| NVNT      | 2-DH1 | 2441            | 30-1000     | 779.81                   | -82.21               | NA                  | 0.006               | NA                 | 4          | Pass    |
| NVNT      | 2-DH1 | 2441            | 1000-13000  | 2464.00                  | -64.73               | NA                  | 0.3365              | NA                 | 20         | Pass    |
| NVNT      | 2-DH1 | 2480            | 30-1000     | 922.40                   | -68.84               | NA                  | 0.1306              | NA                 | 4          | Pass    |
| NVNT      | 2-DH1 | 2480            | 1000-13000  | 2464.00                  | -57.80               | NA                  | 1.6596              | NA                 | 20         | Pass    |
| NVNT      | 3-DH1 | 2402            | 30-1000     | 915.61                   | -62.89               | -62.14              | 0.514               | 0.6109             | 4          | Pass    |
| NVNT      | 3-DH1 | 2402            | 1000-13000  | 2464.00                  | -59.08               | NA                  | 1.2359              | NA                 | 20         | Pass    |
| NVNT      | 3-DH1 | 2441            | 30-1000     | 764.29                   | -81.56               | NA                  | 0.007               | NA                 | 4          | Pass    |
| NVNT      | 3-DH1 | 2441            | 1000-13000  | 2464.00                  | -57.73               | NA                  | 1.6866              | NA                 | 20         | Pass    |
| NVNT      | 3-DH1 | 2480            | 30-1000     | 772.05                   | -82.07               | NA                  | 0.0062              | NA                 | 4          | Pass    |
| NVNT      | 3-DH1 | 2480            | 1000-13000  | 2452.00                  | -57.25               | NA                  | 1.8836              | NA                 | 20         | Pass    |



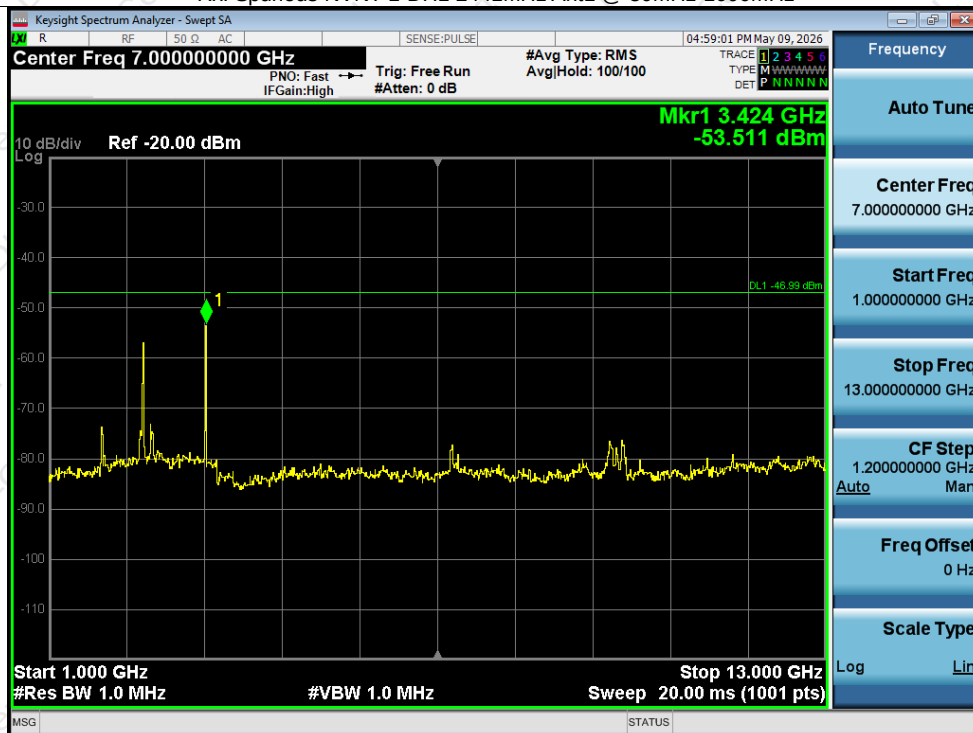
Rx. Spurious NVNT 1-DH1 2402MHz Ant1 @ 30MHz-1000MHz



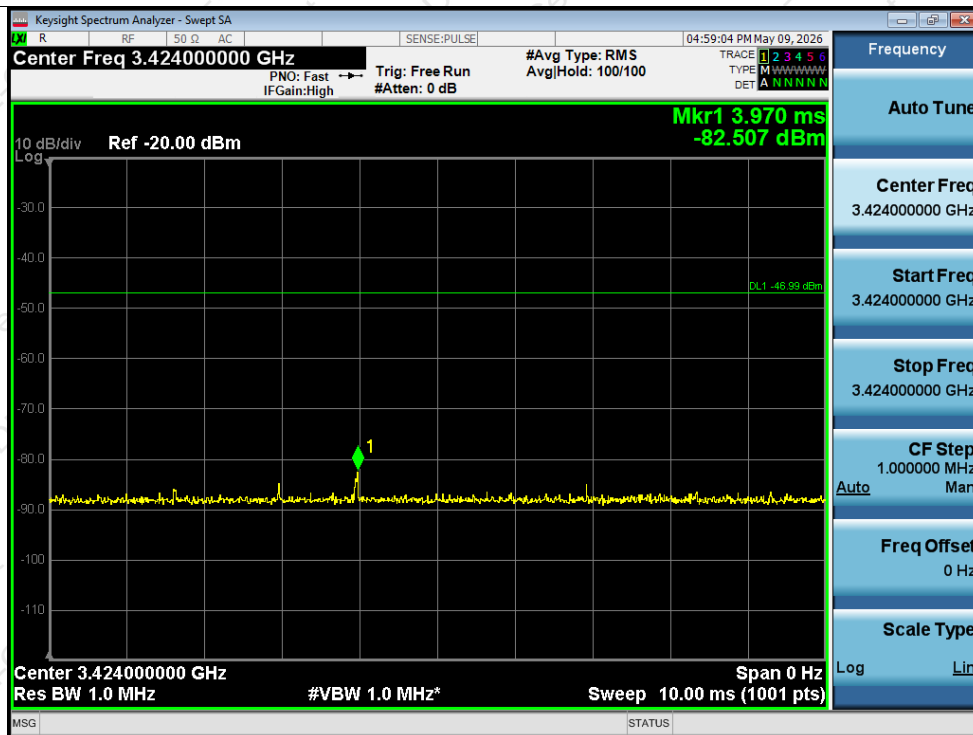
Rx. Spurious NVNT 1-DH1 2402MHz Ant1 @ 1000MHz-13000MHz



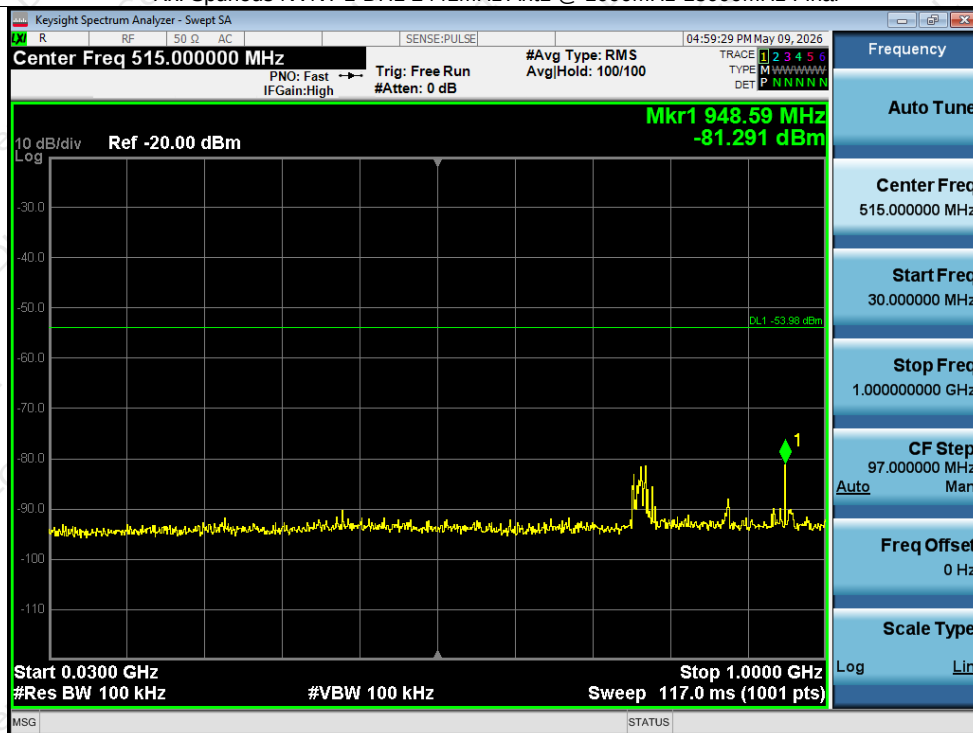
Rx. Spurious NVNT 1-DH1 2441MHz Ant1 @ 30MHz-1000MHz



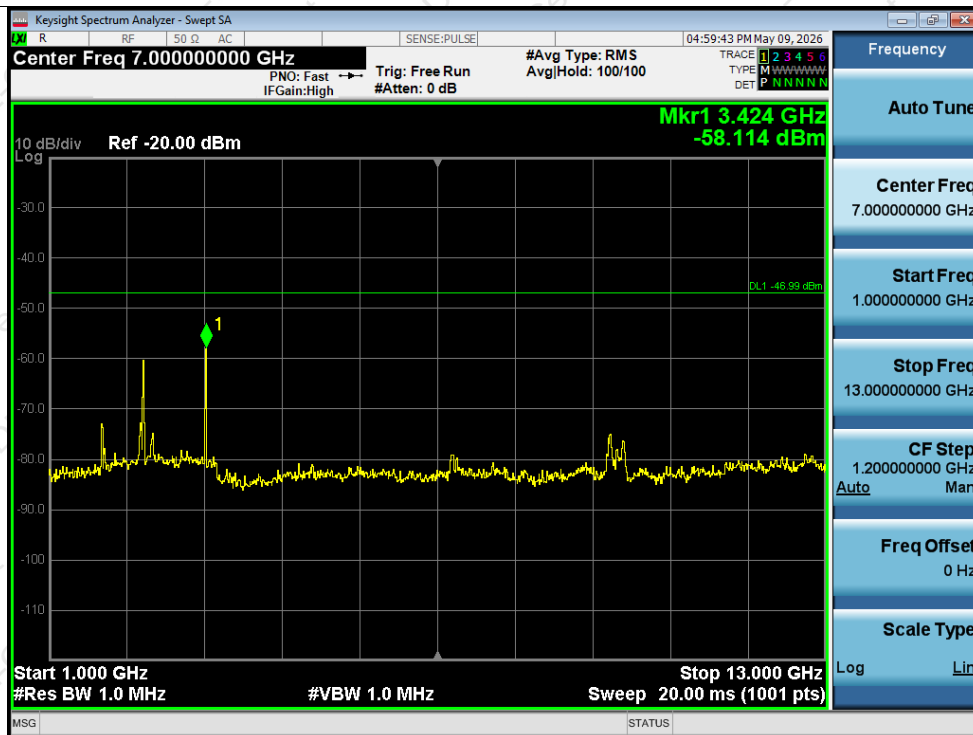
Rx. Spurious NVNT 1-DH1 2441MHz Ant1 @ 1000MHz-13000MHz



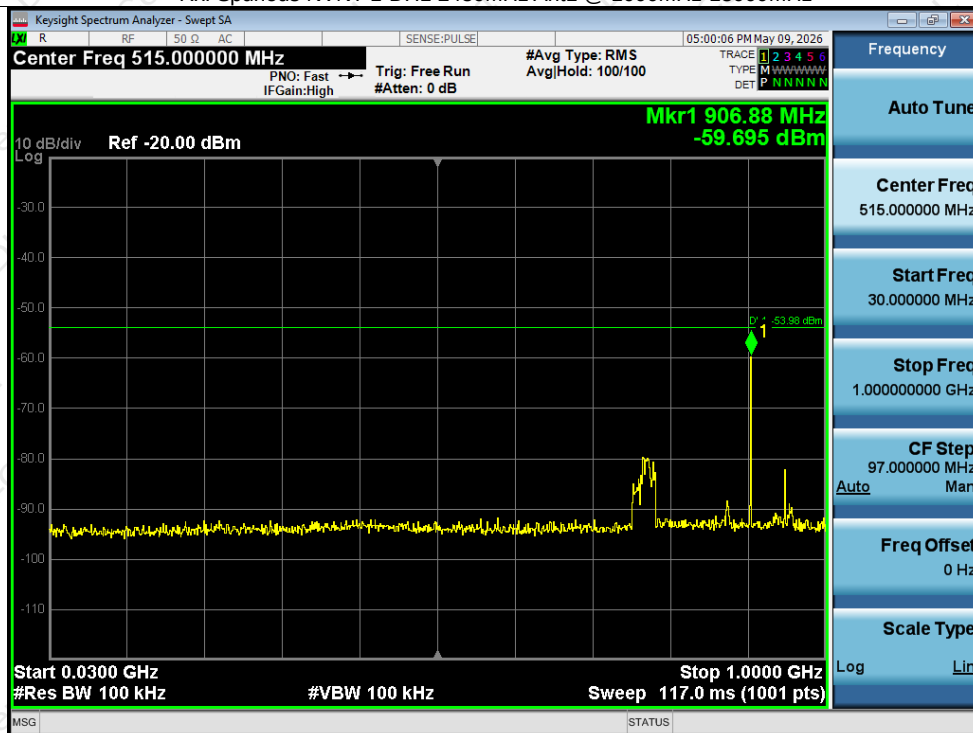
Rx. Spurious NVNT 1-DH1 2441MHz Ant1 @ 1000MHz-13000MHz Final



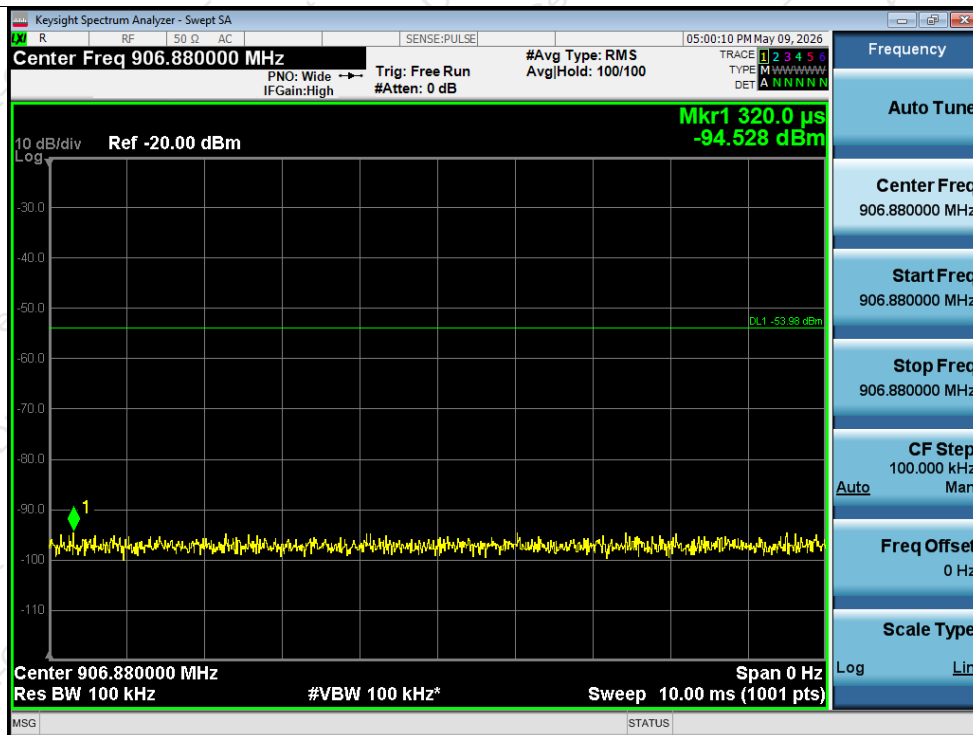
Rx. Spurious NVNT 1-DH1 2480MHz Ant1 @ 30MHz-1000MHz



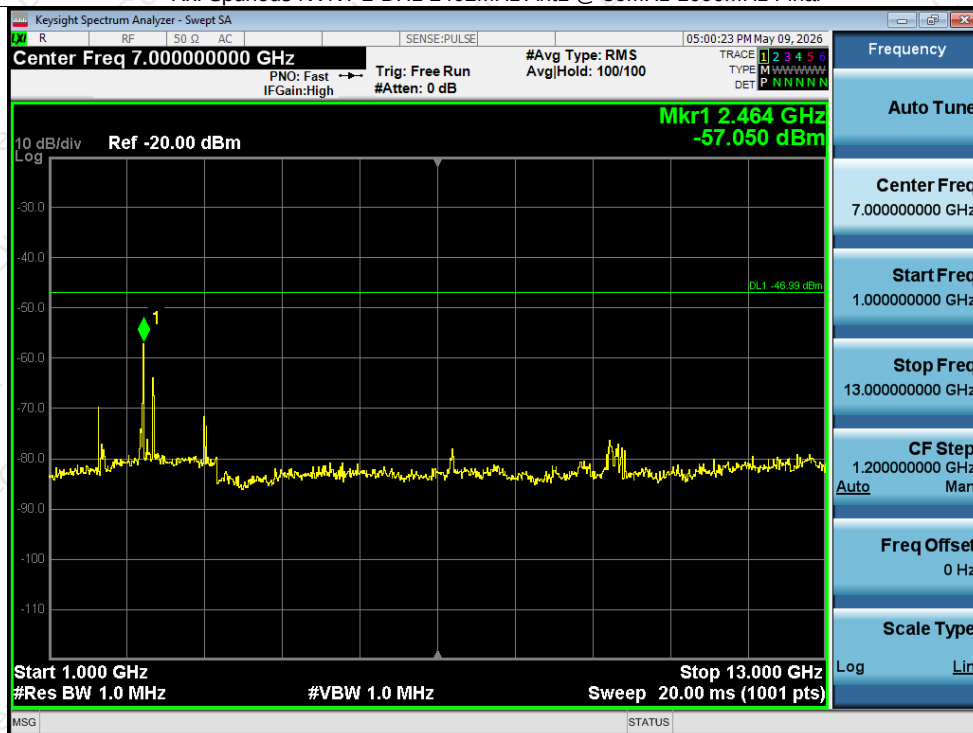
Rx. Spurious NVNT 1-DH1 2480MHz Ant1 @ 1000MHz-13000MHz



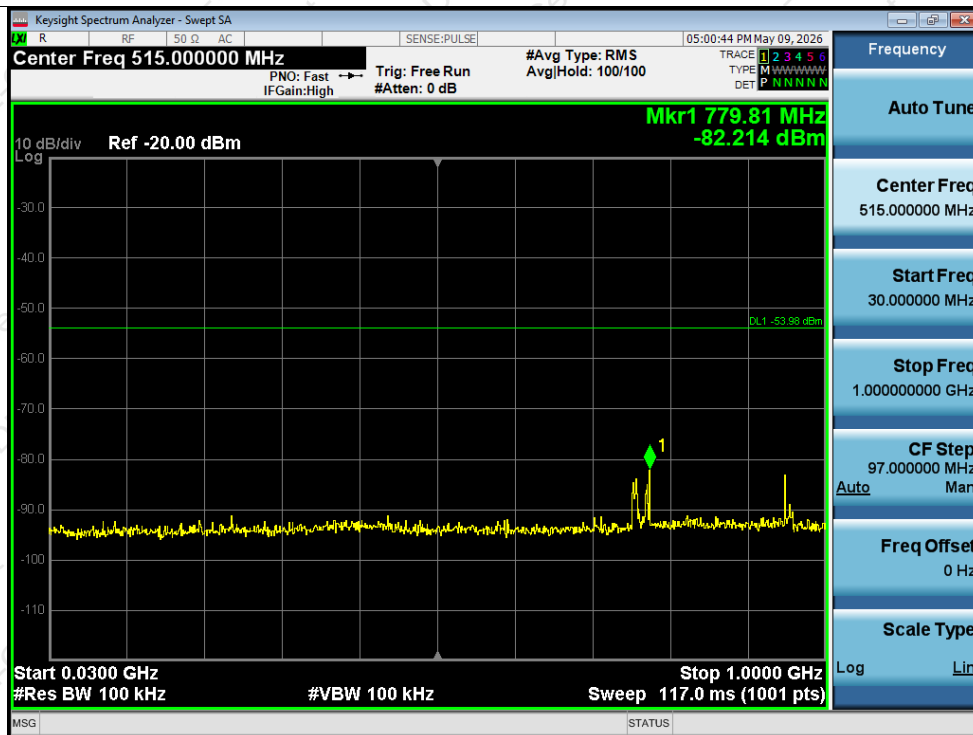
Rx. Spurious NVNT 2-DH1 2402MHz Ant1 @ 30MHz-1000MHz



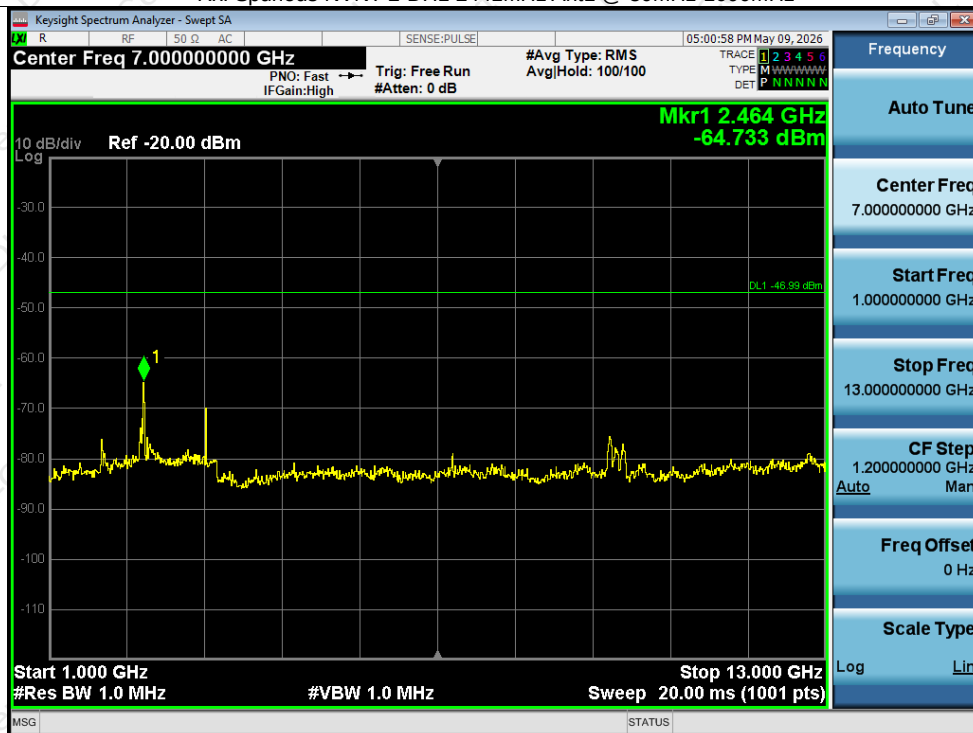
Rx. Spurious NVNT 2-DH1 2402MHz Ant1 @ 30MHz-1000MHz Final



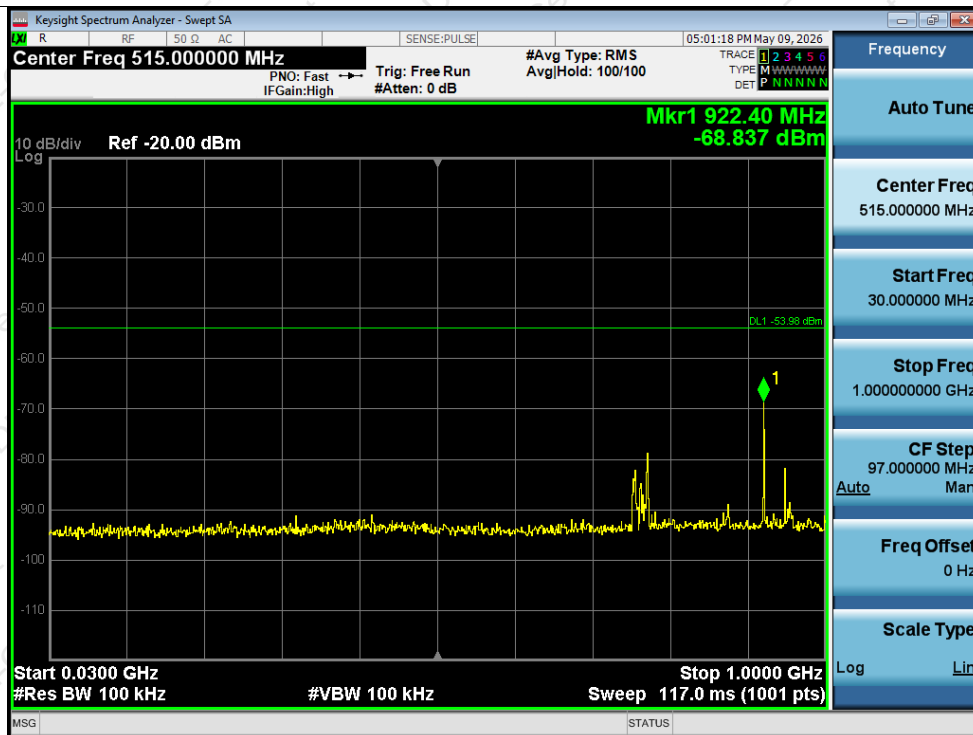
Rx. Spurious NVNT 2-DH1 2402MHz Ant1 @ 1000MHz-13000MHz



Rx. Spurious NVNT 2-DH1 2441MHz Ant1 @ 30MHz-1000MHz



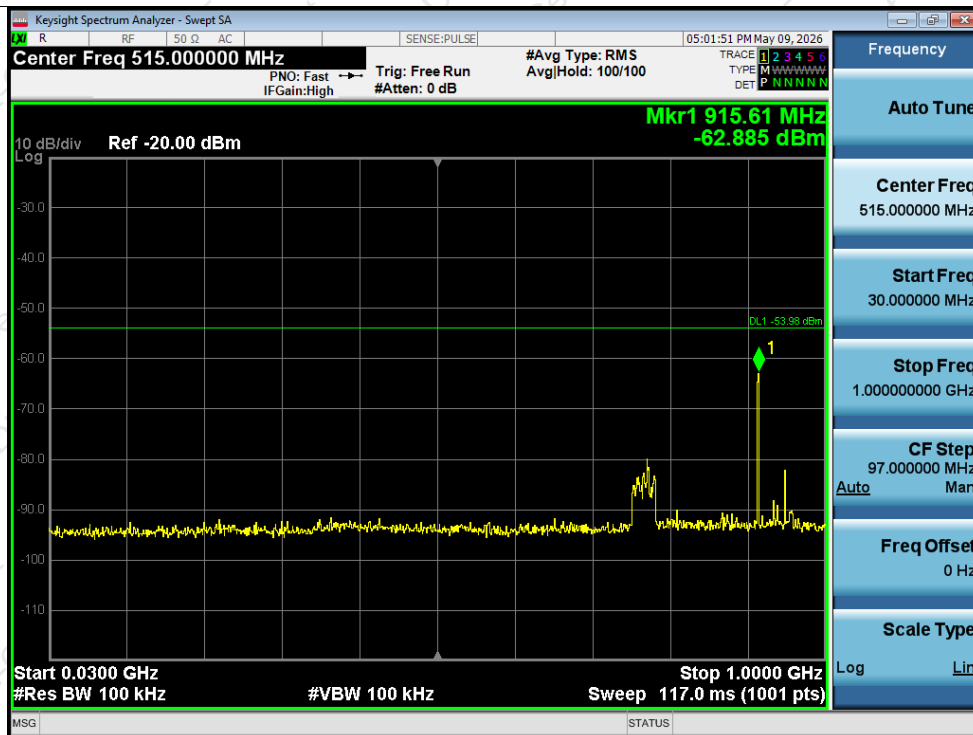
Rx. Spurious NVNT 2-DH1 2441MHz Ant1 @ 1000MHz-13000MHz



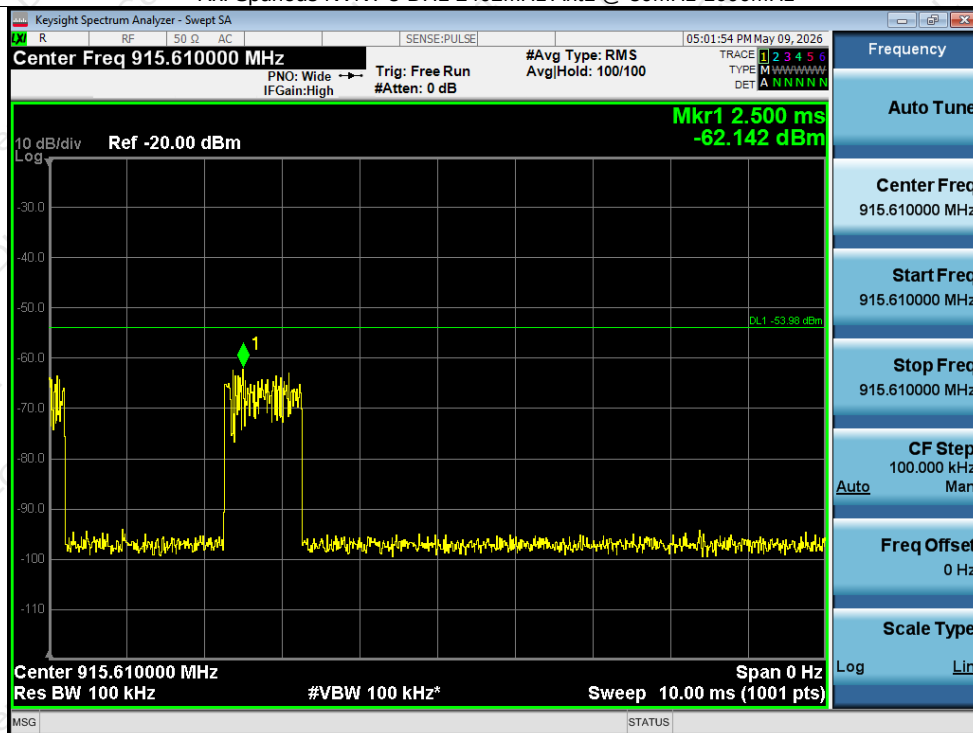
Rx. Spurious NVNT 2-DH1 2480MHz Ant1 @ 30MHz-1000MHz



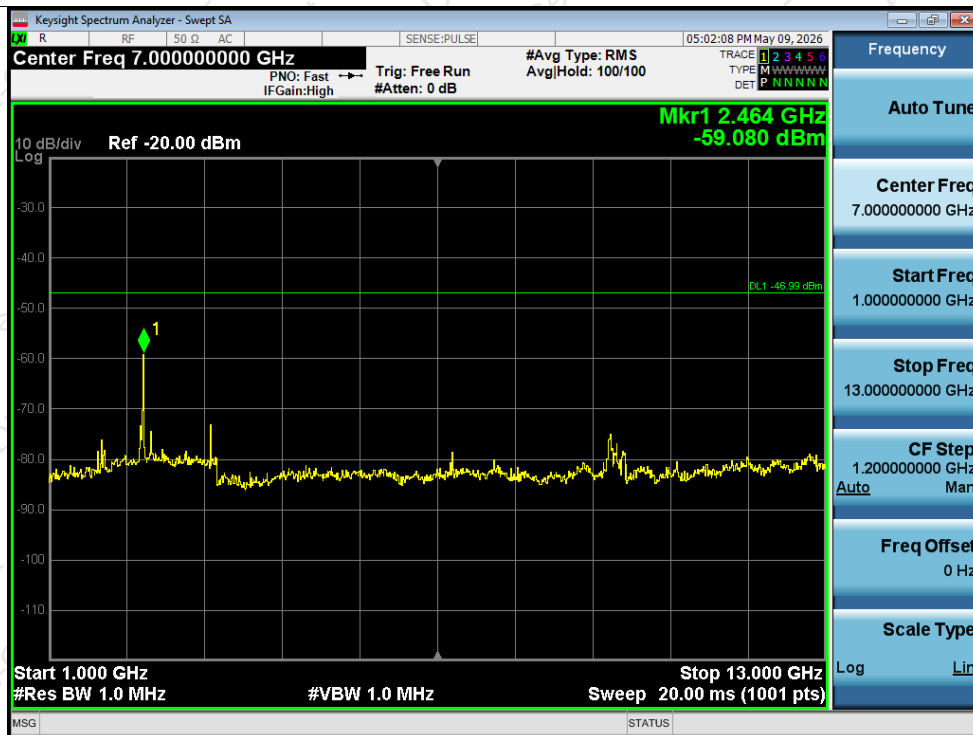
Rx. Spurious NVNT 2-DH1 2480MHz Ant1 @ 1000MHz-13000MHz



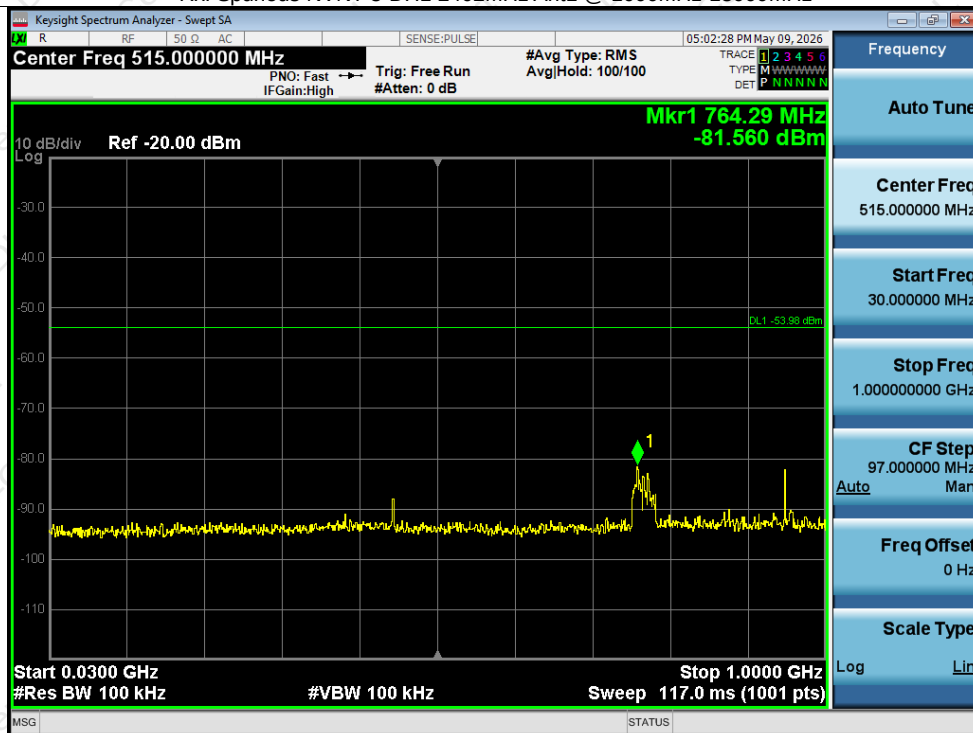
Rx. Spurious NVNT 3-DH1 2402MHz Ant1 @ 30MHz-1000MHz



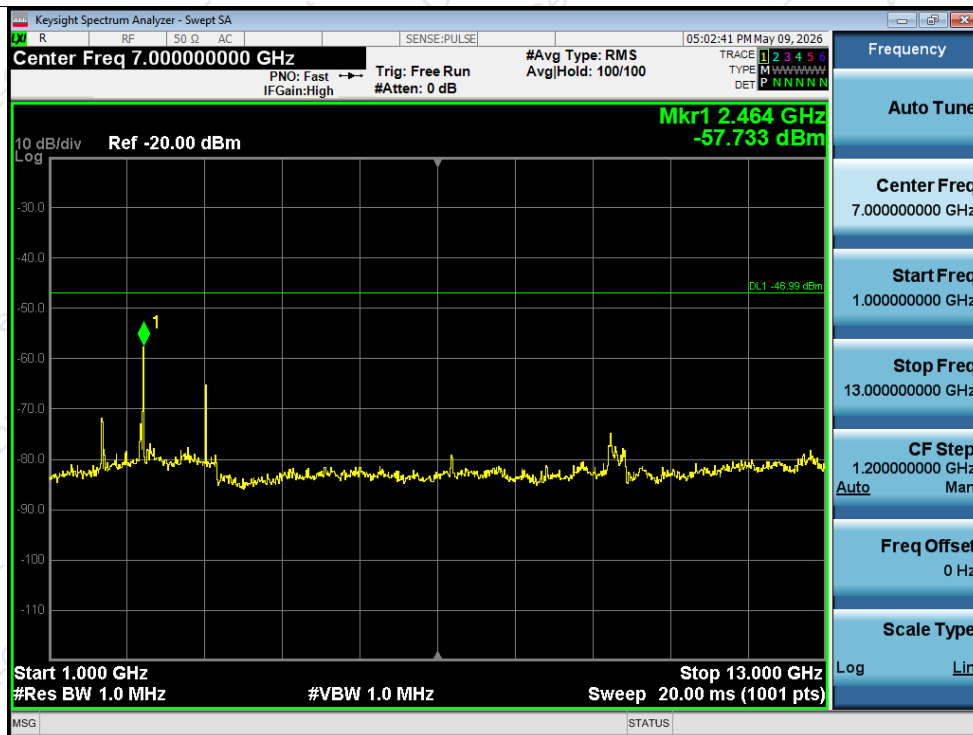
Rx. Spurious NVNT 3-DH1 2402MHz Ant1 @ 30MHz-1000MHz Final



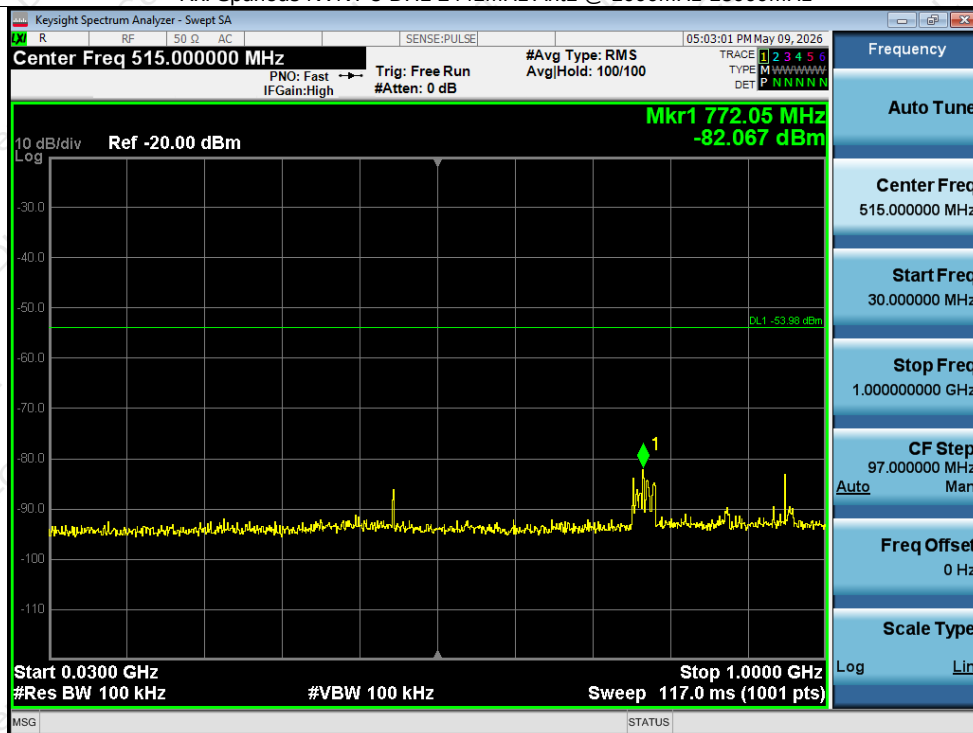
Rx. Spurious NVNT 3-DH1 2402MHz Ant1 @ 1000MHz-13000MHz



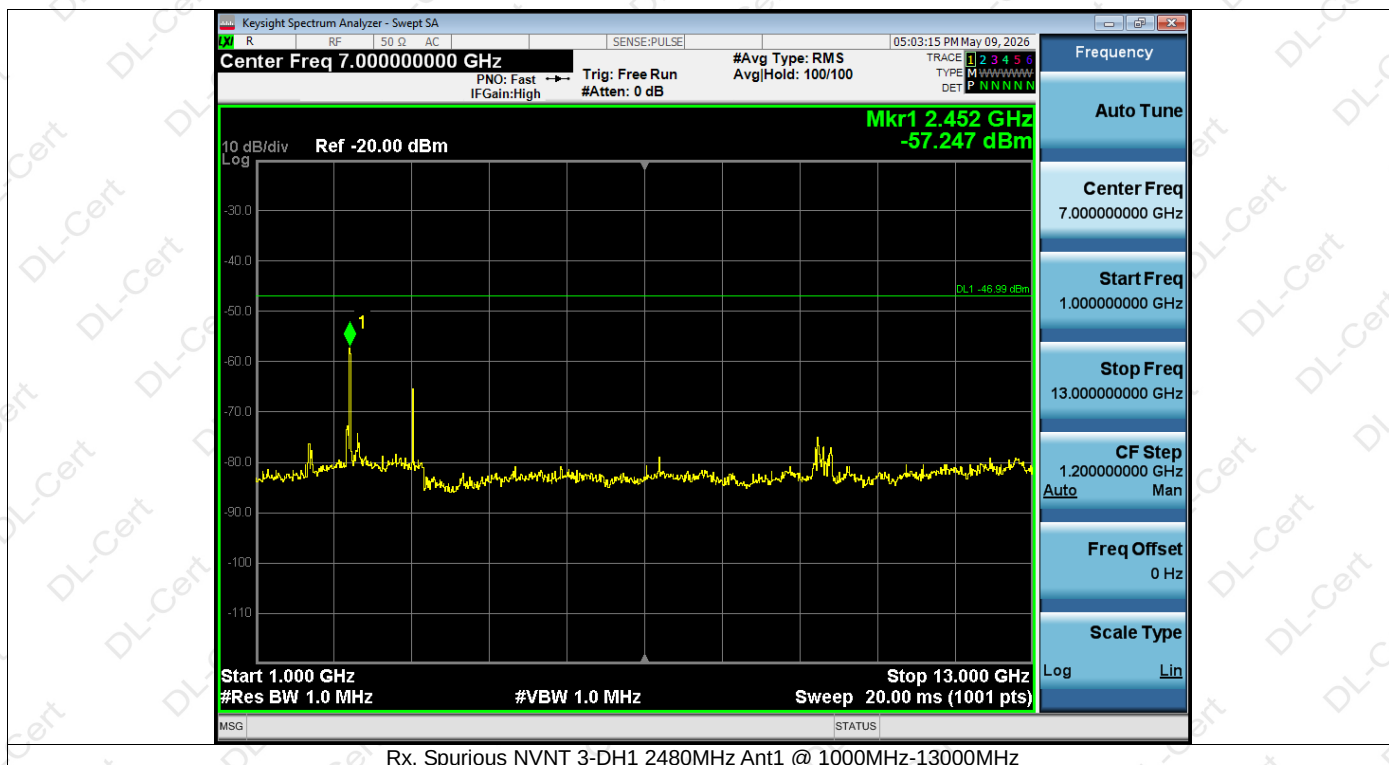
Rx. Spurious NVNT 3-DH1 2441MHz Ant1 @ 30MHz-1000MHz



Rx. Spurious NVNT 3-DH1 2441MHz Ant1 @ 1000MHz-13000MHz



Rx. Spurious NVNT 3-DH1 2480MHz Ant1 @ 30MHz-1000MHz

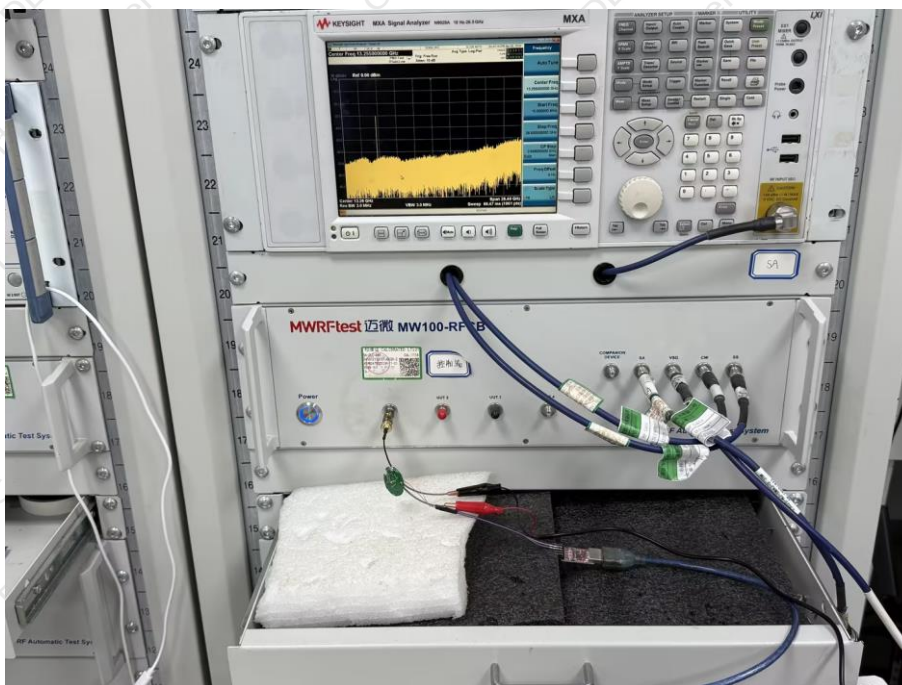


Rx. Spurious NVNT 3-DH1 2480MHz Ant1 @ 1000MHz-13000MHz



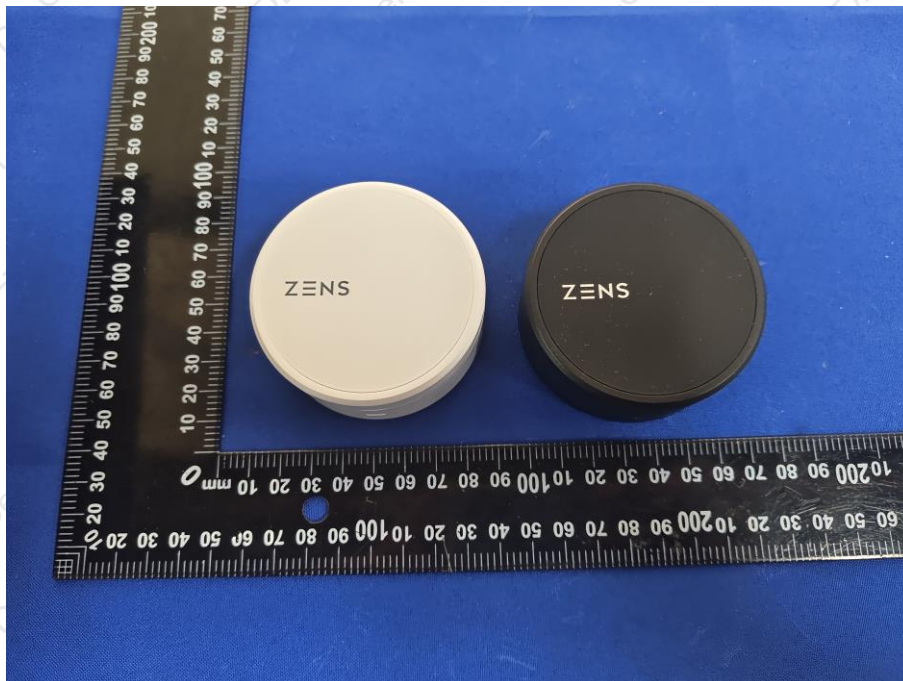
### 13. EUT TEST PHOTO

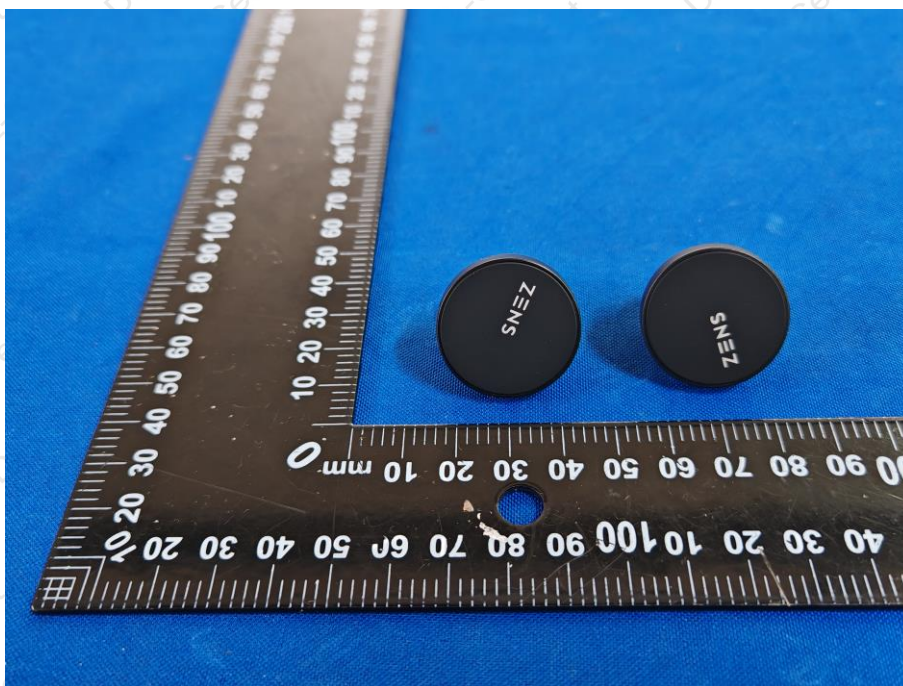
#### Measurement Photos

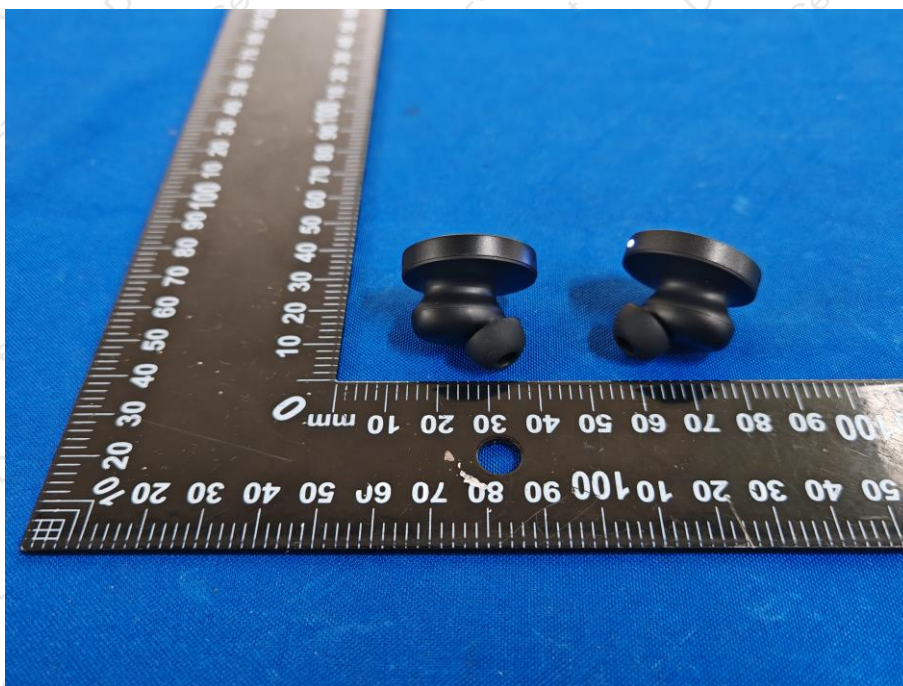




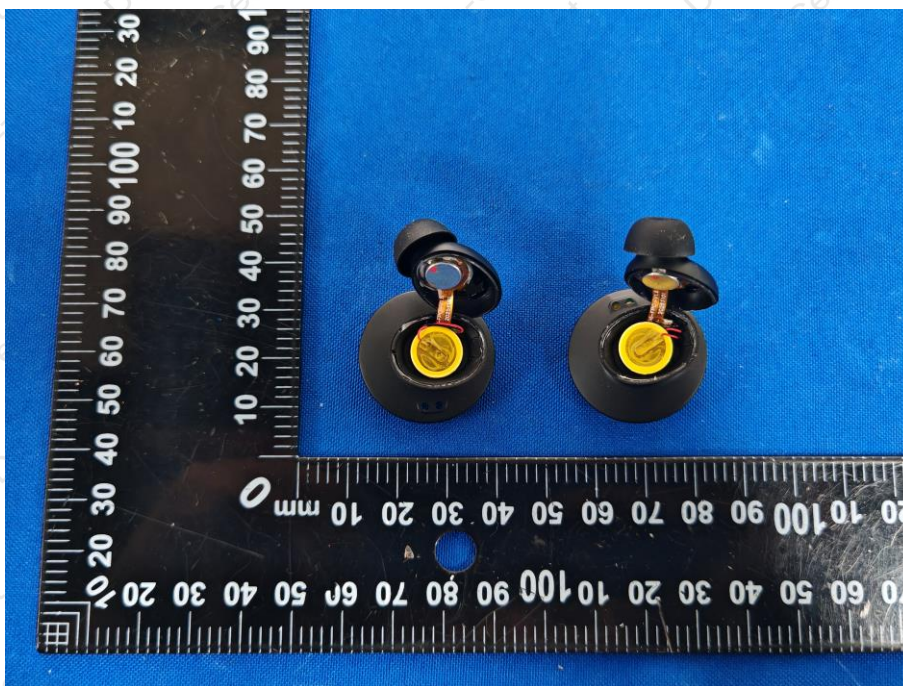
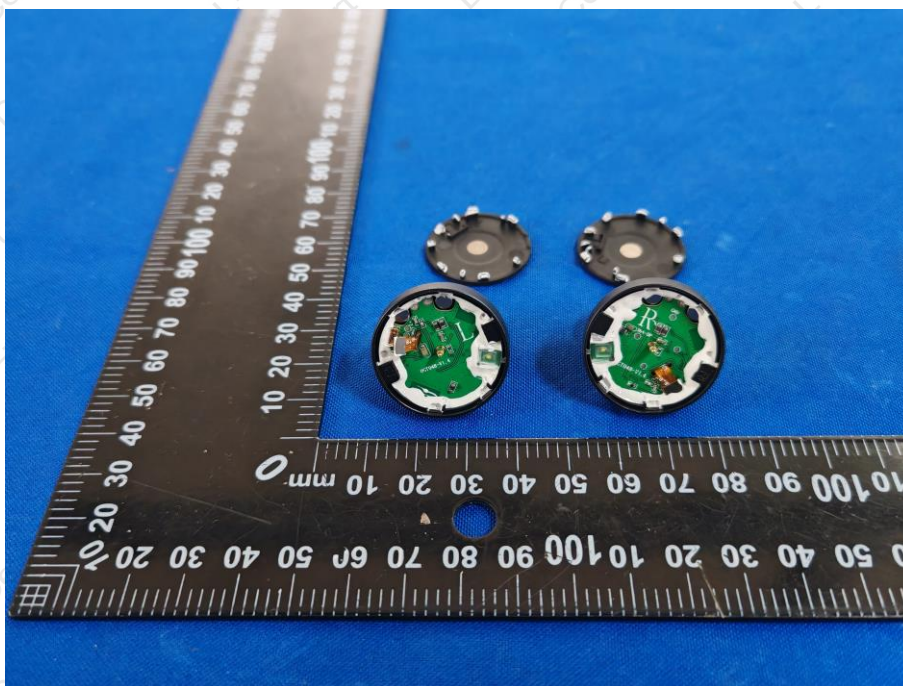
## 14. EUT PHOTOS

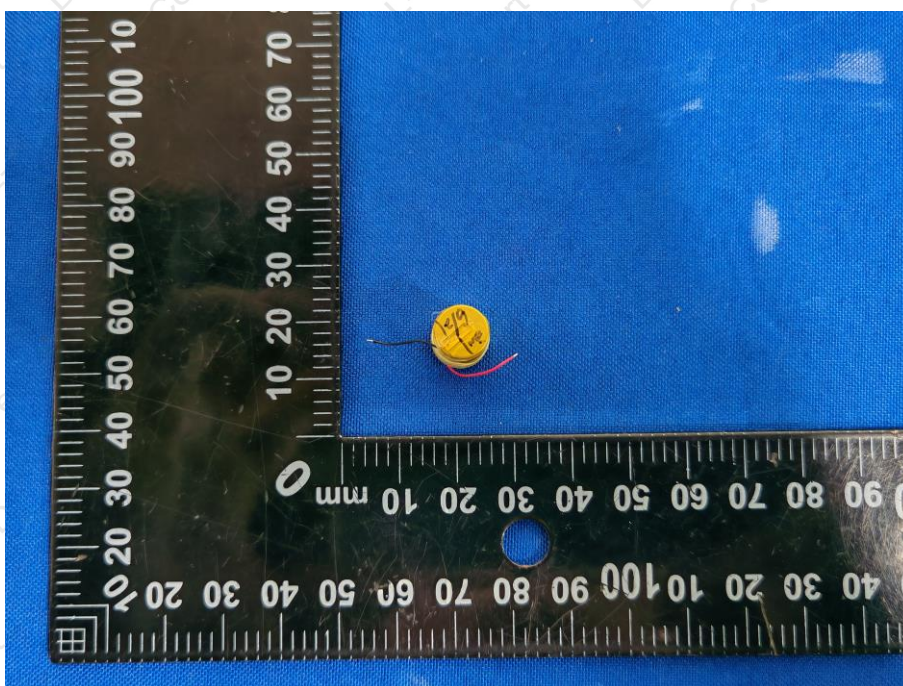
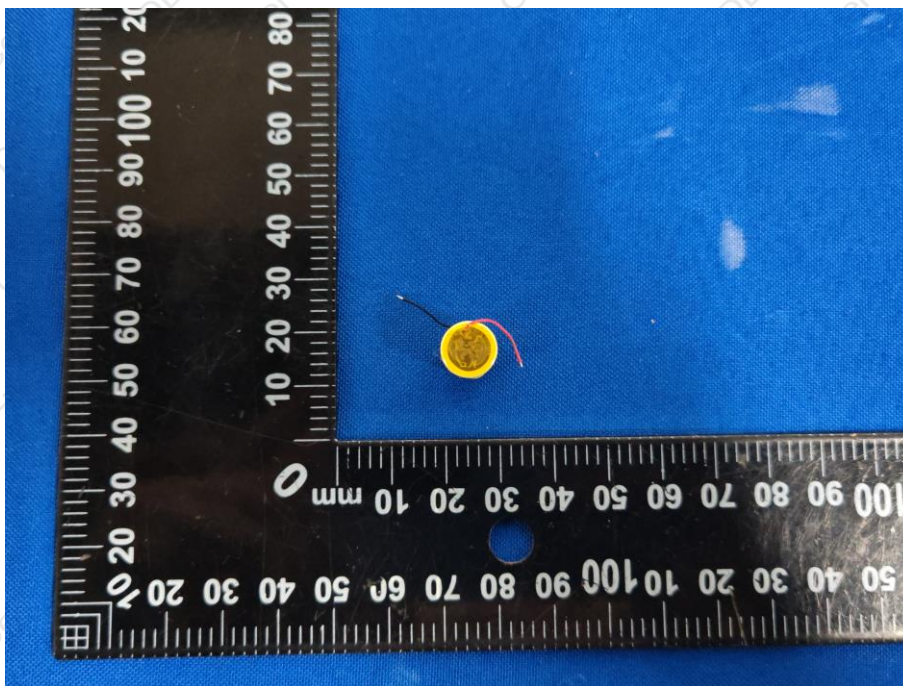


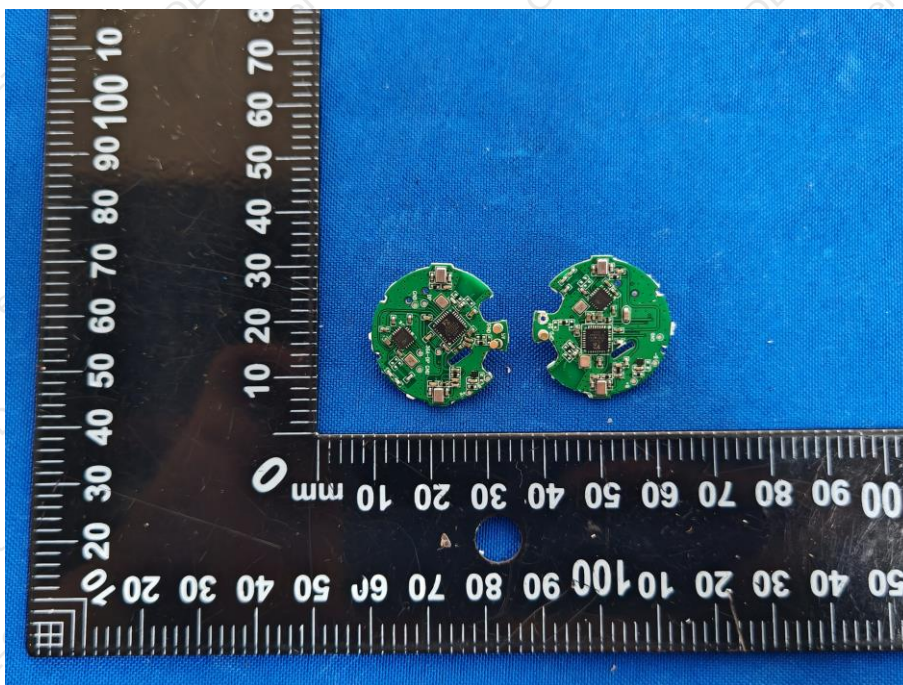
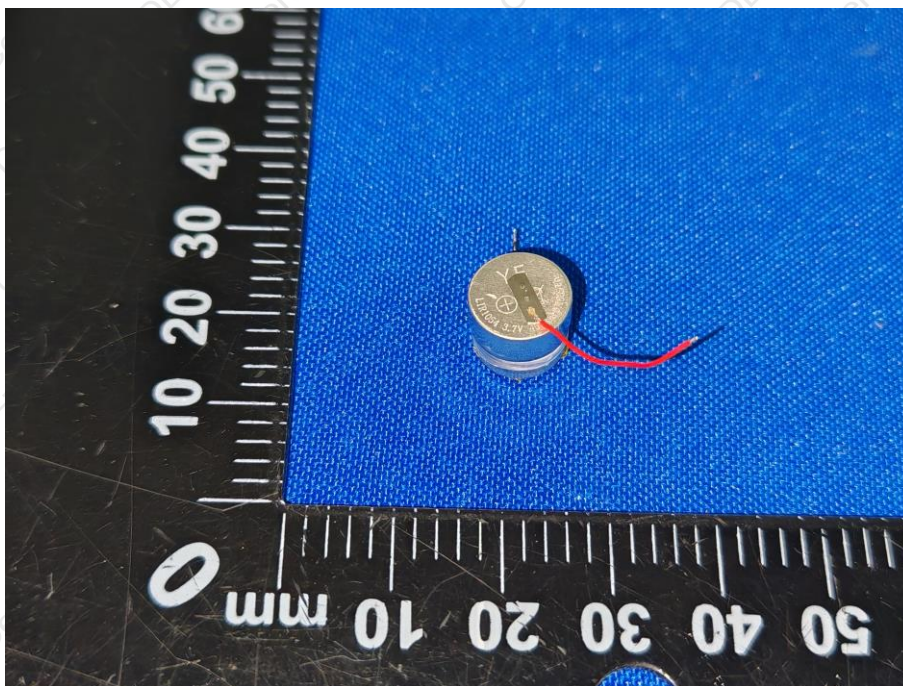














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