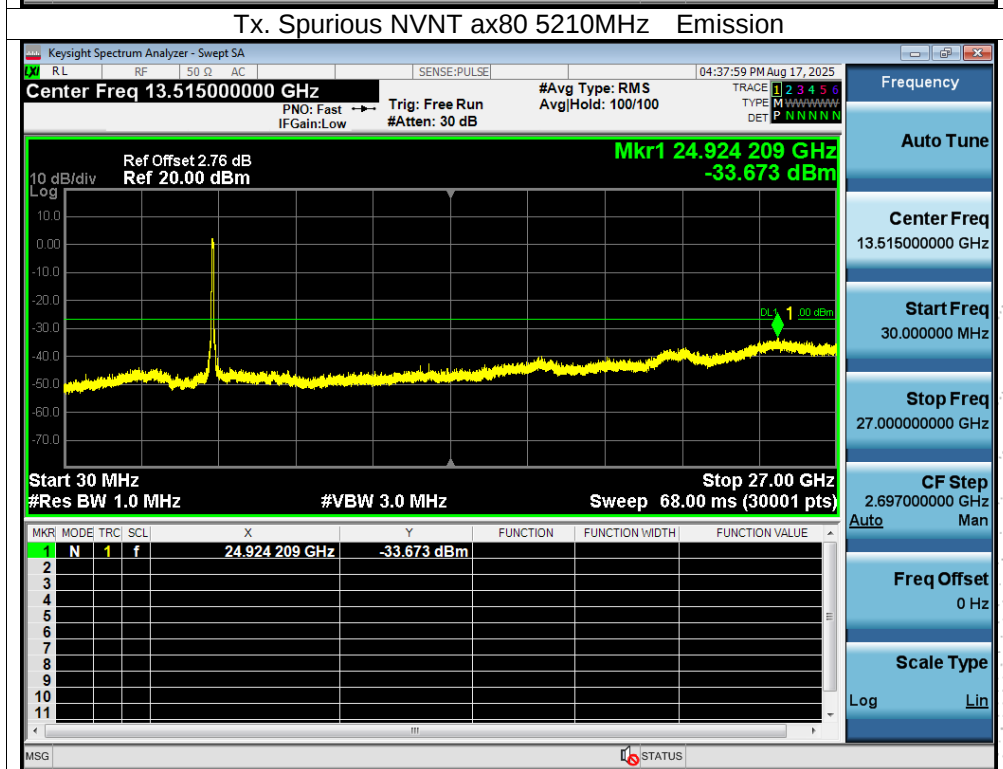
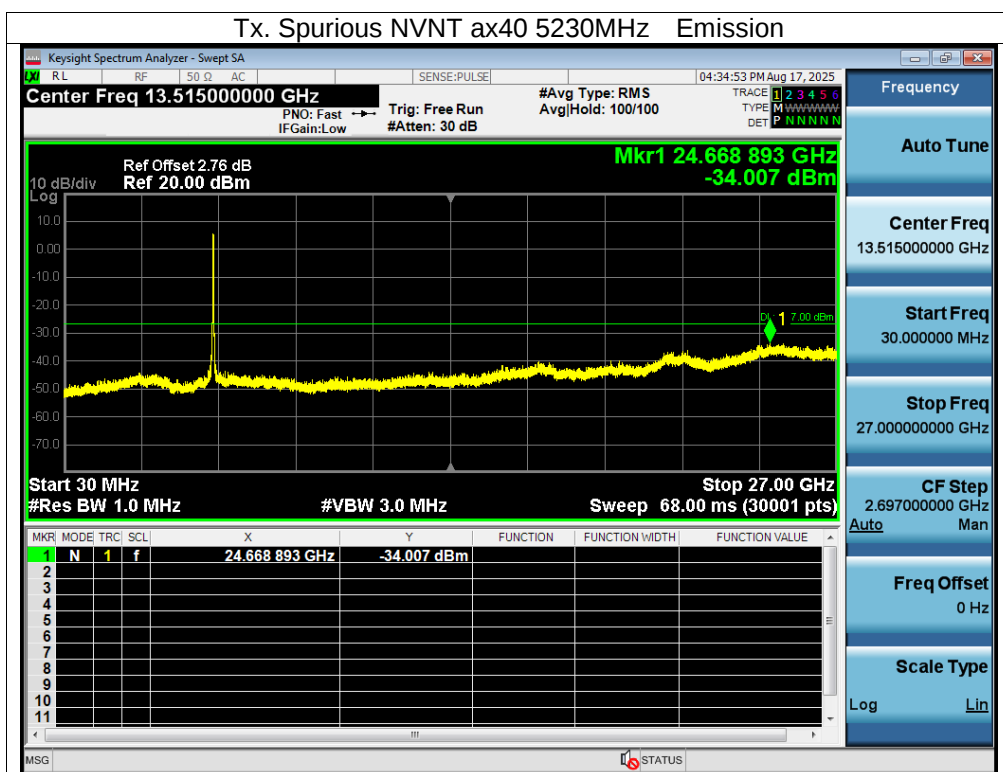
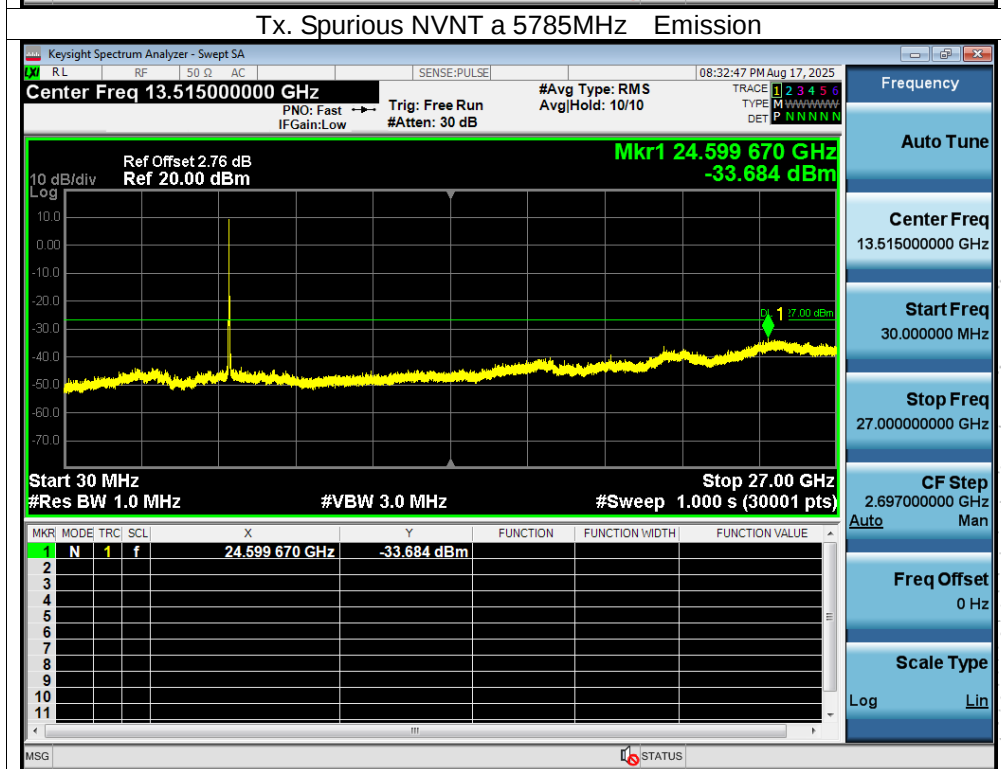
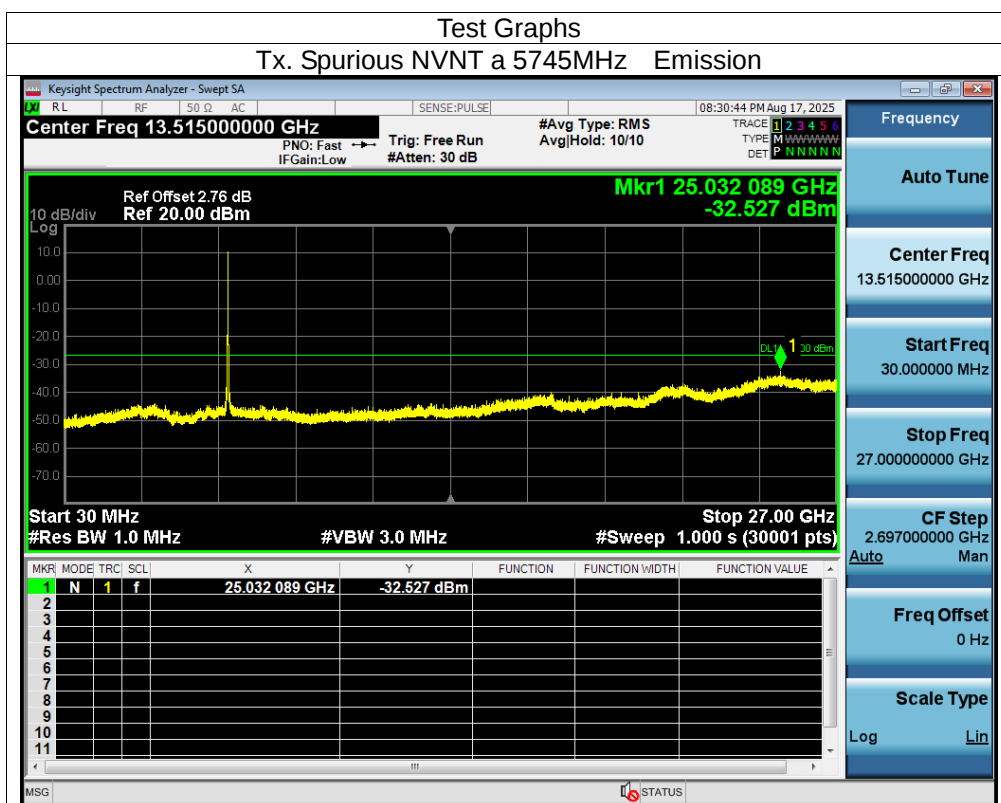
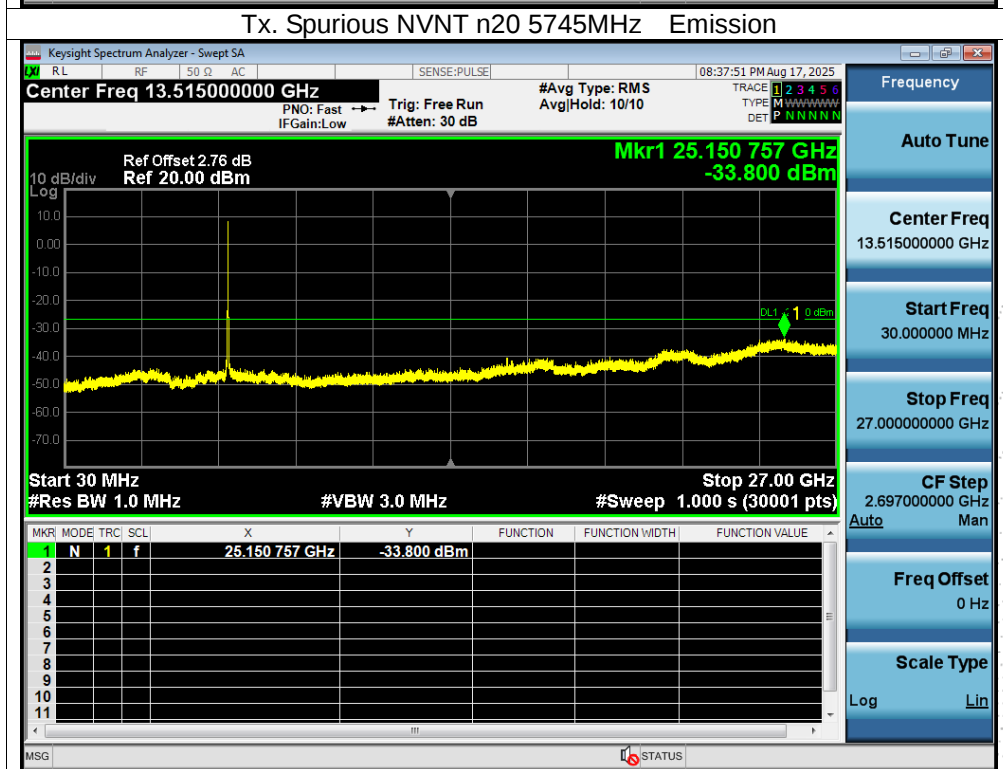
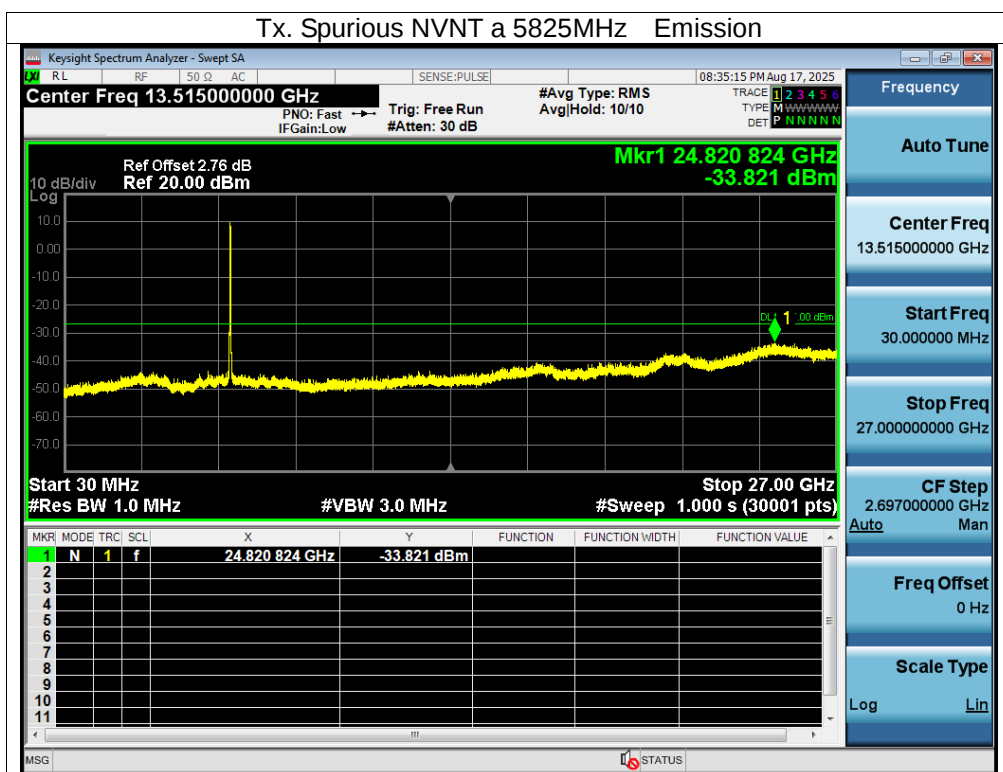
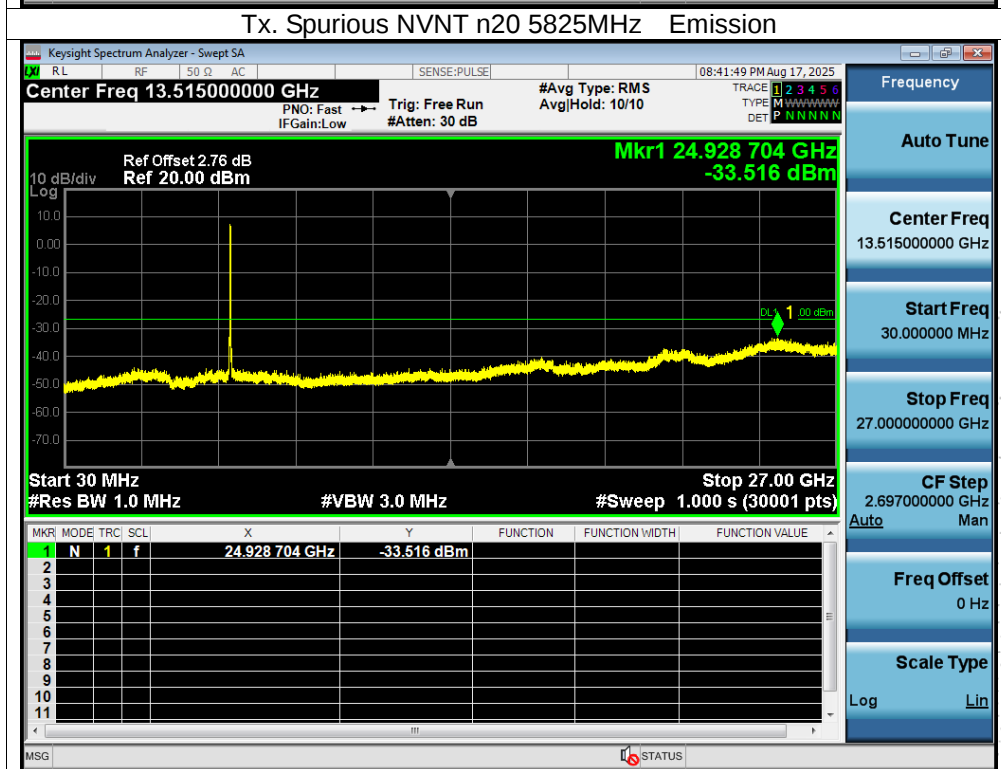
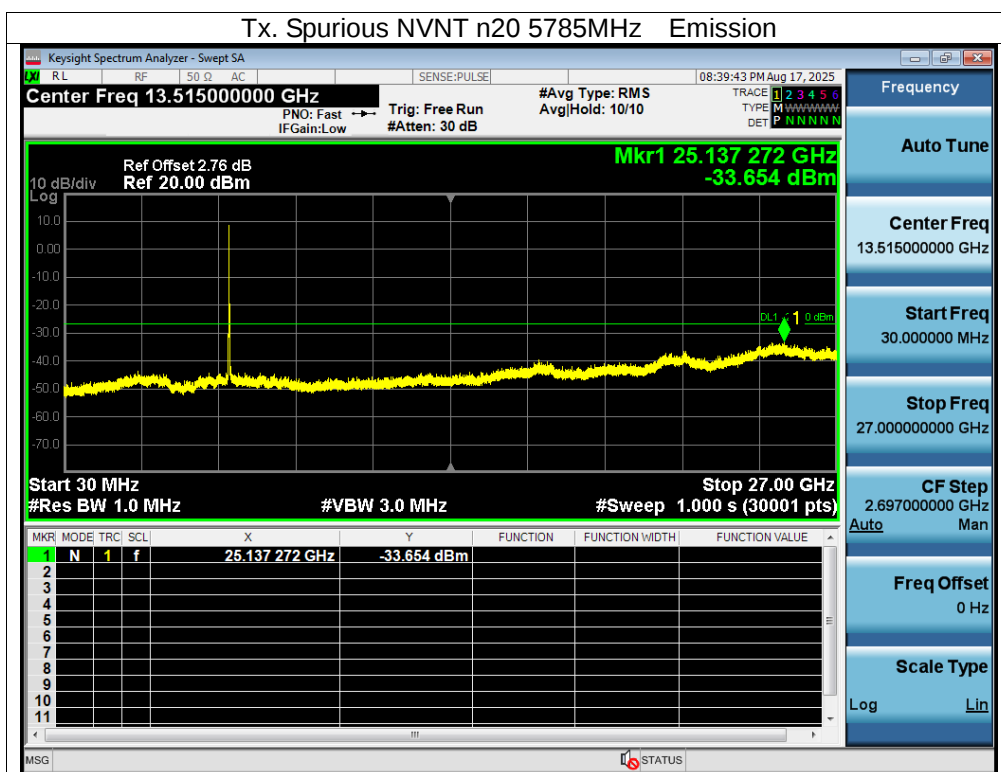
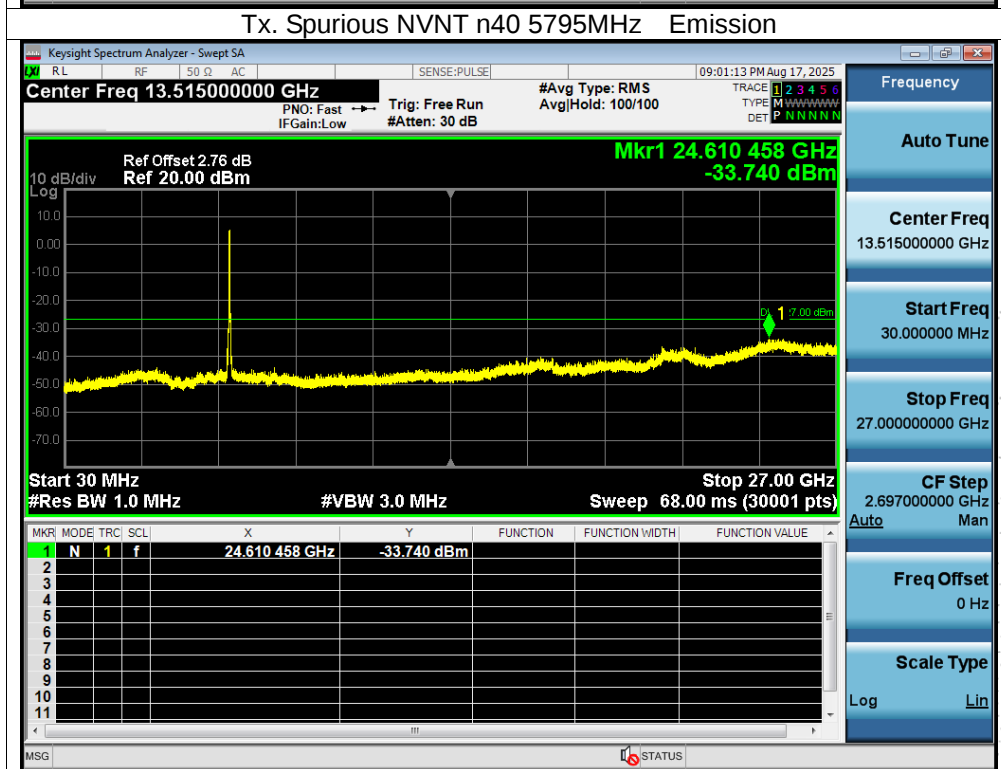
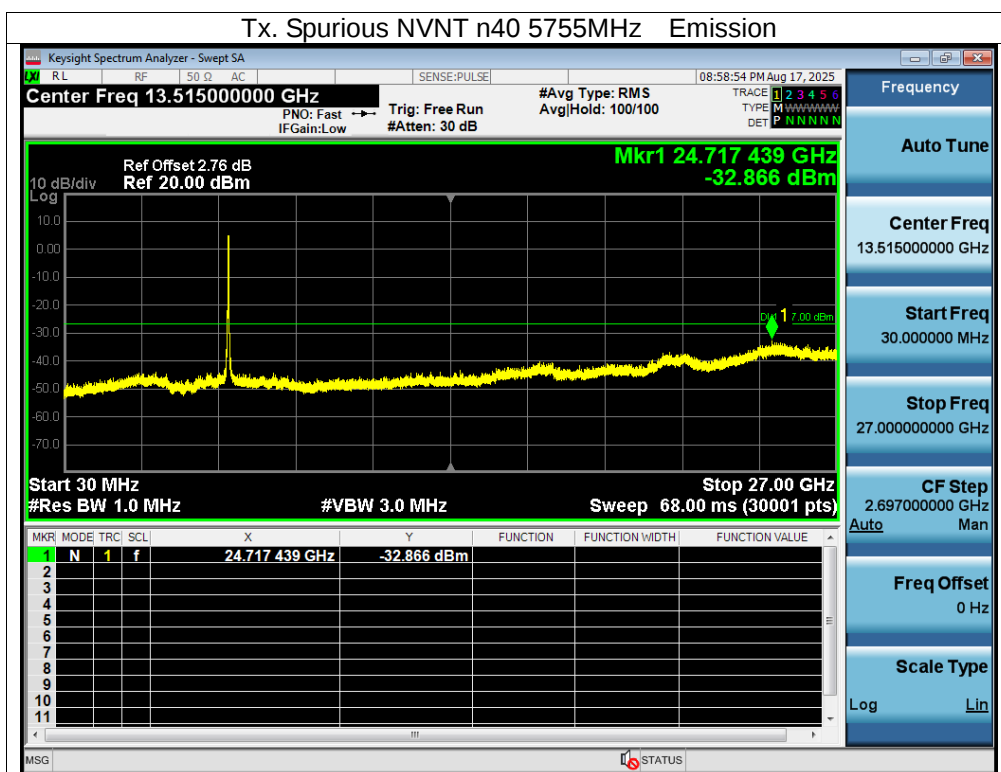


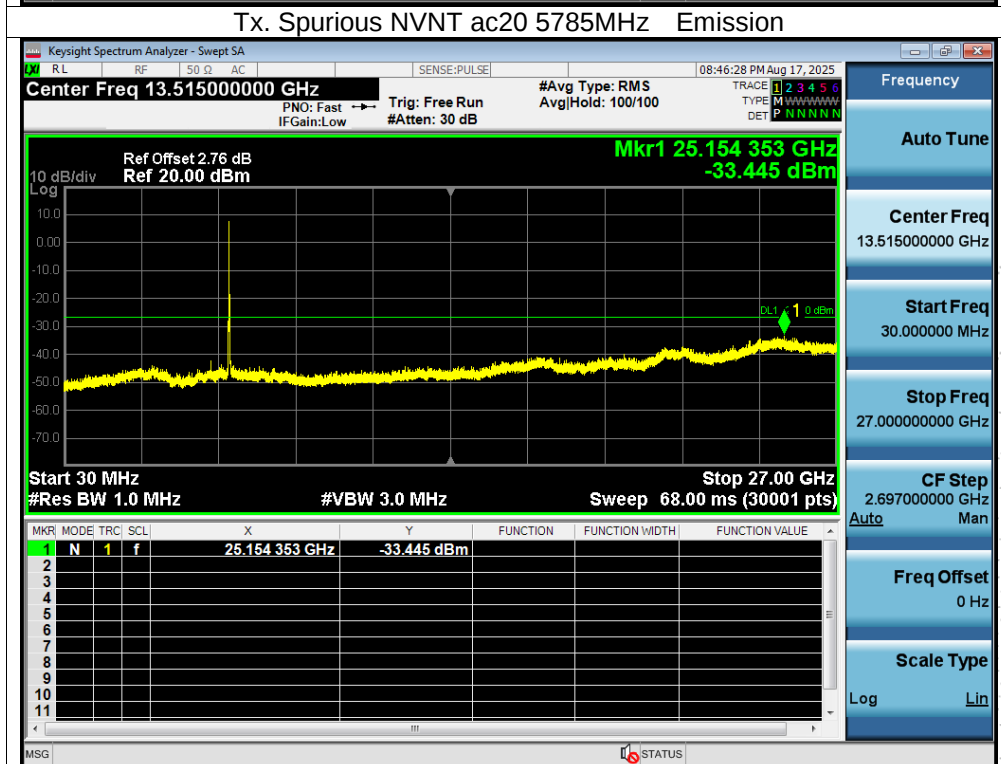
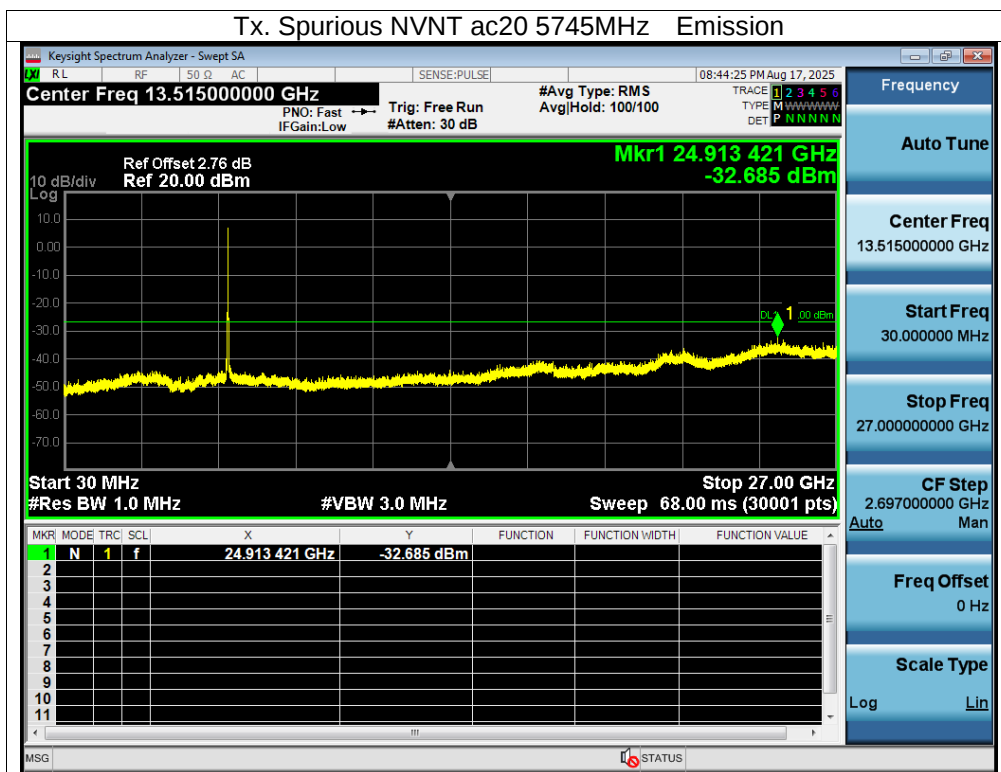


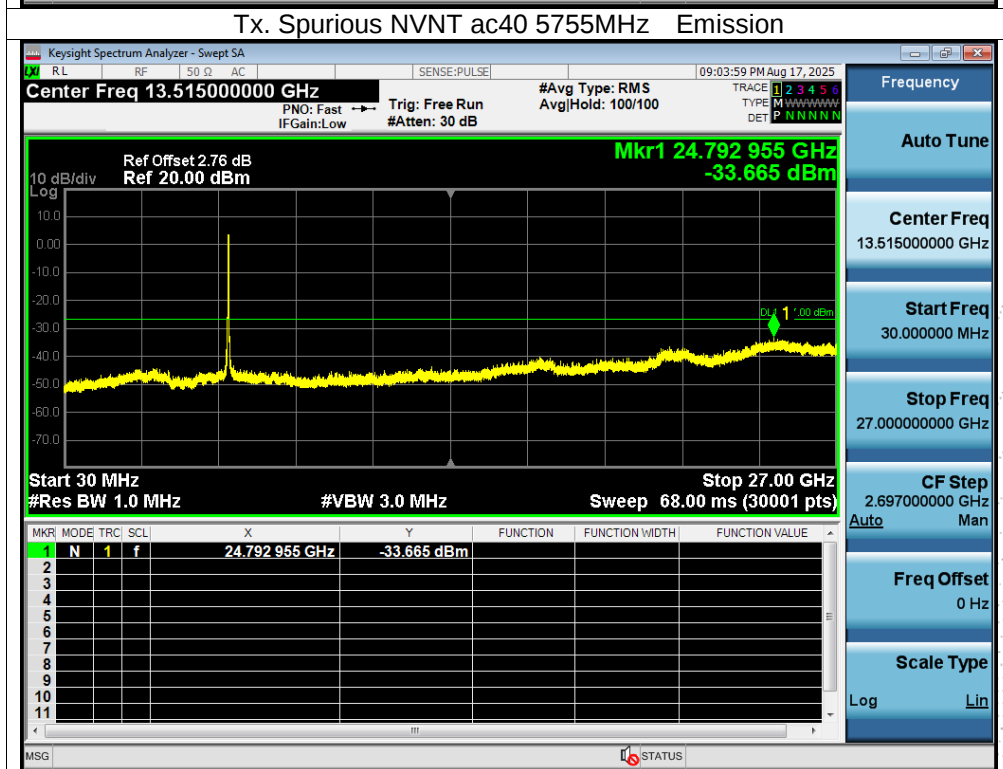
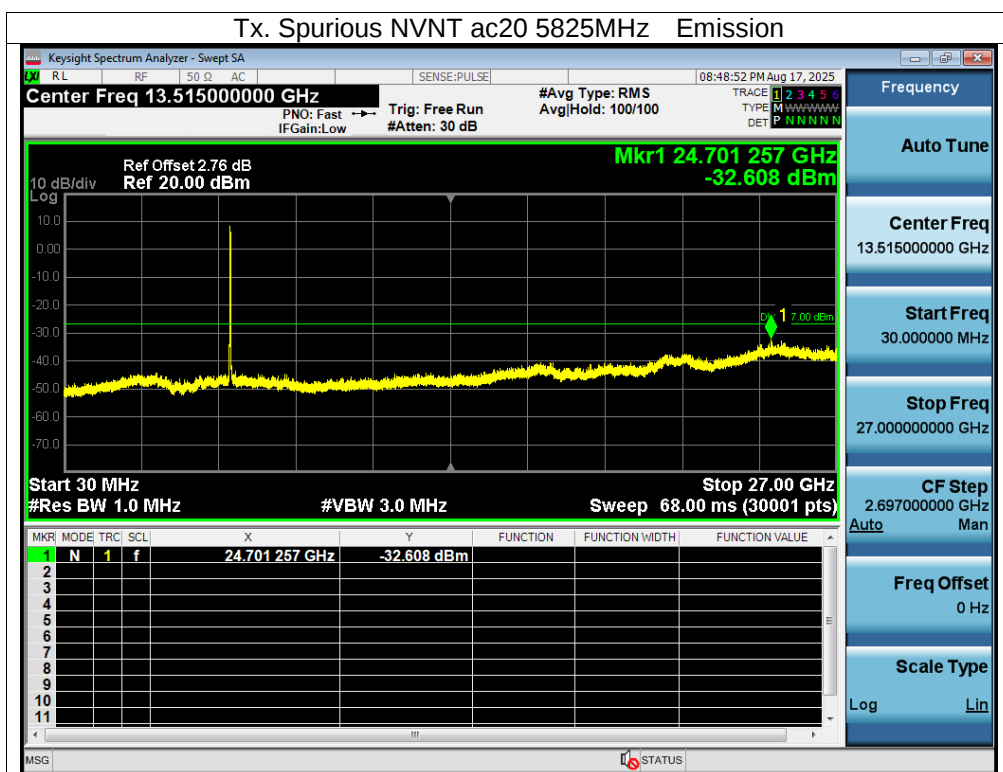


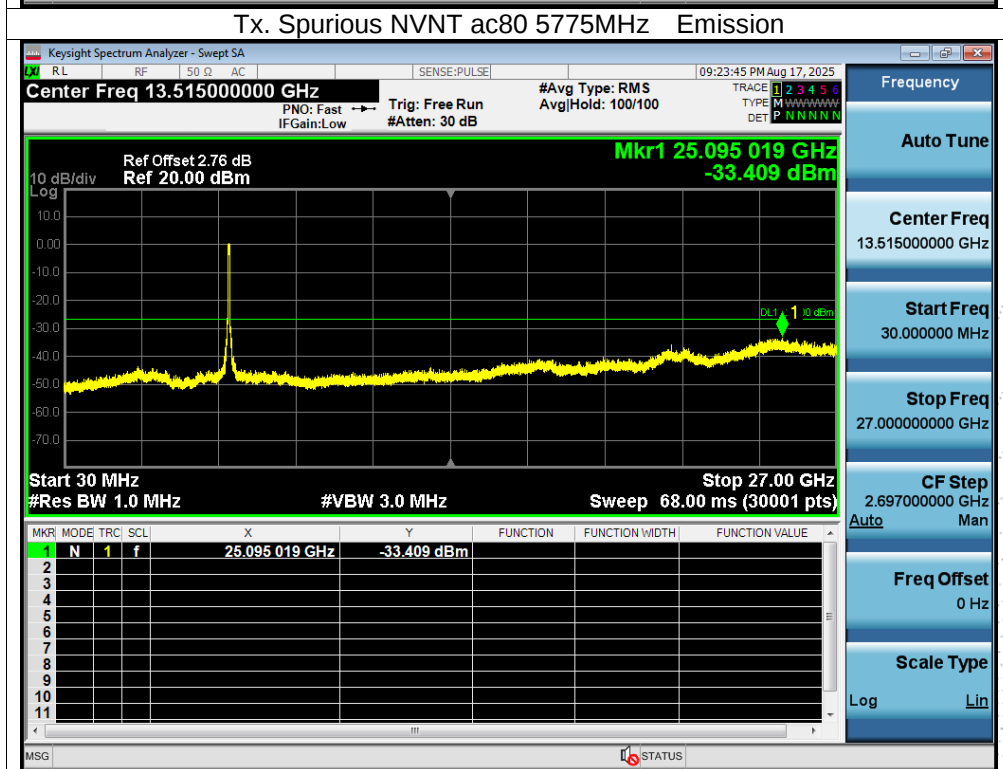
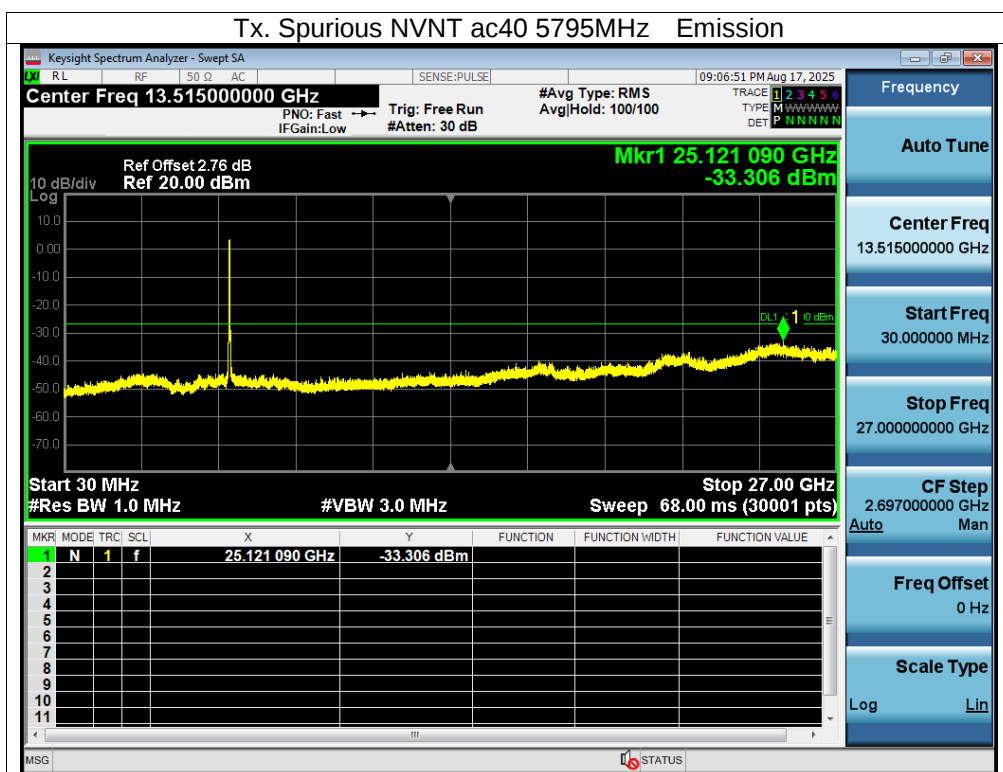


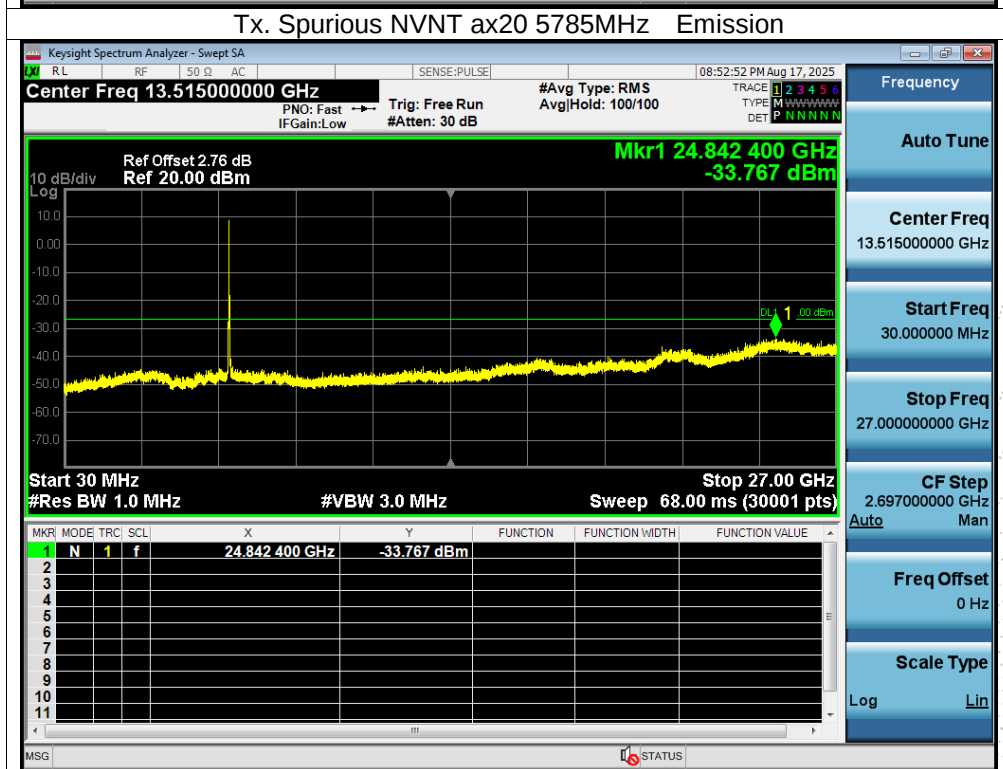
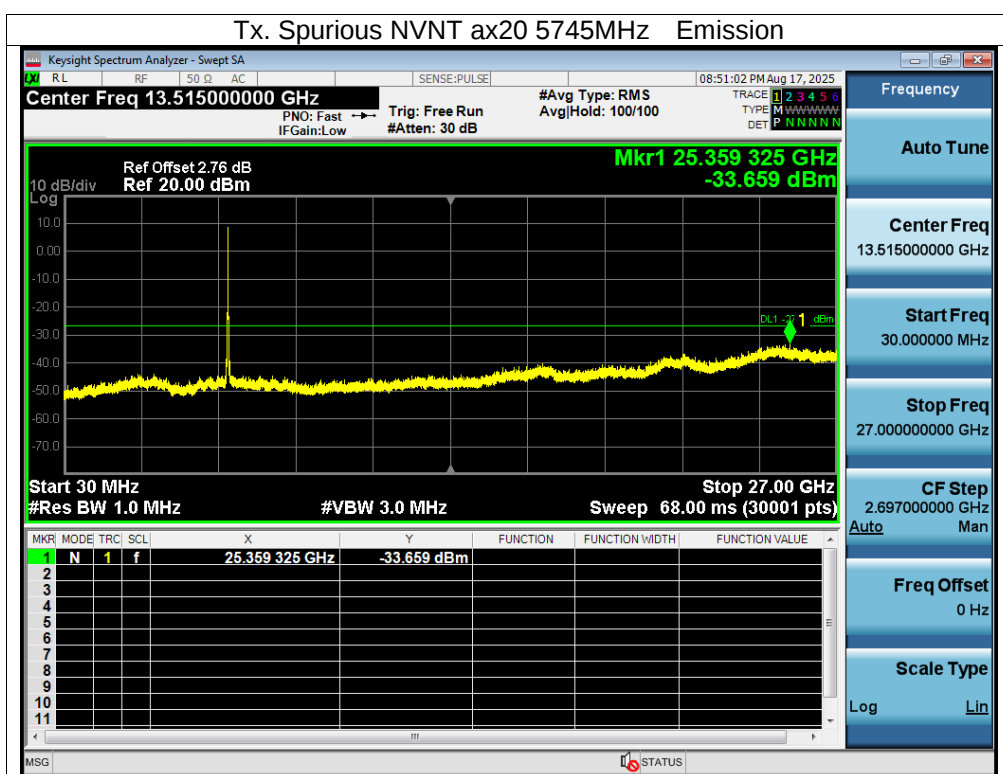


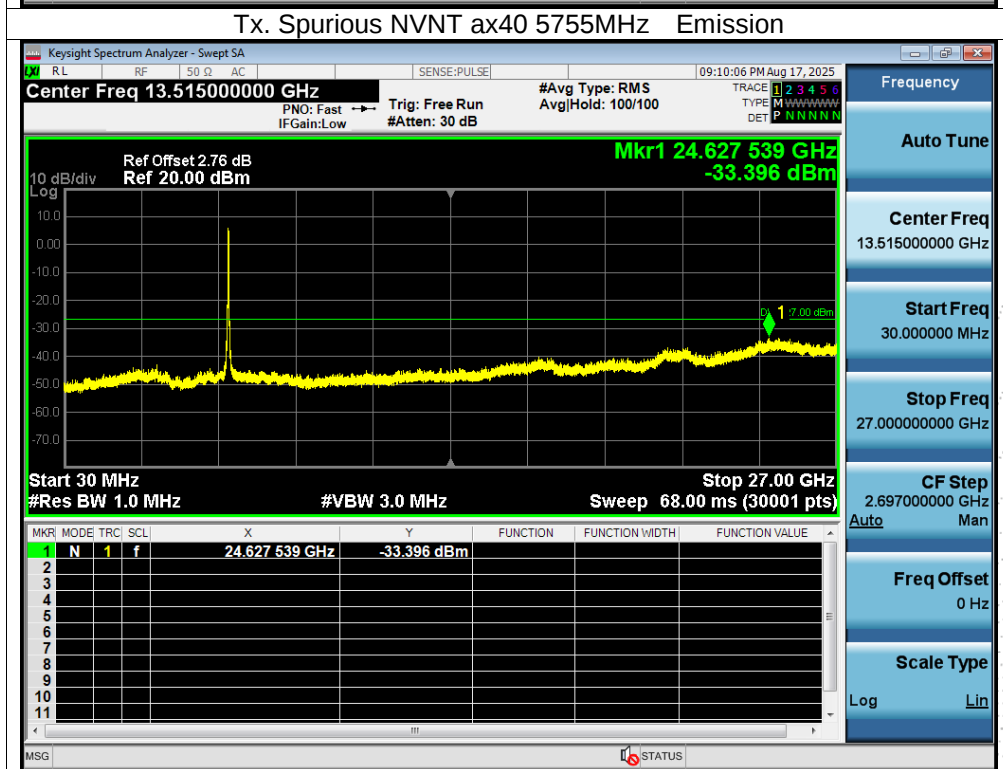
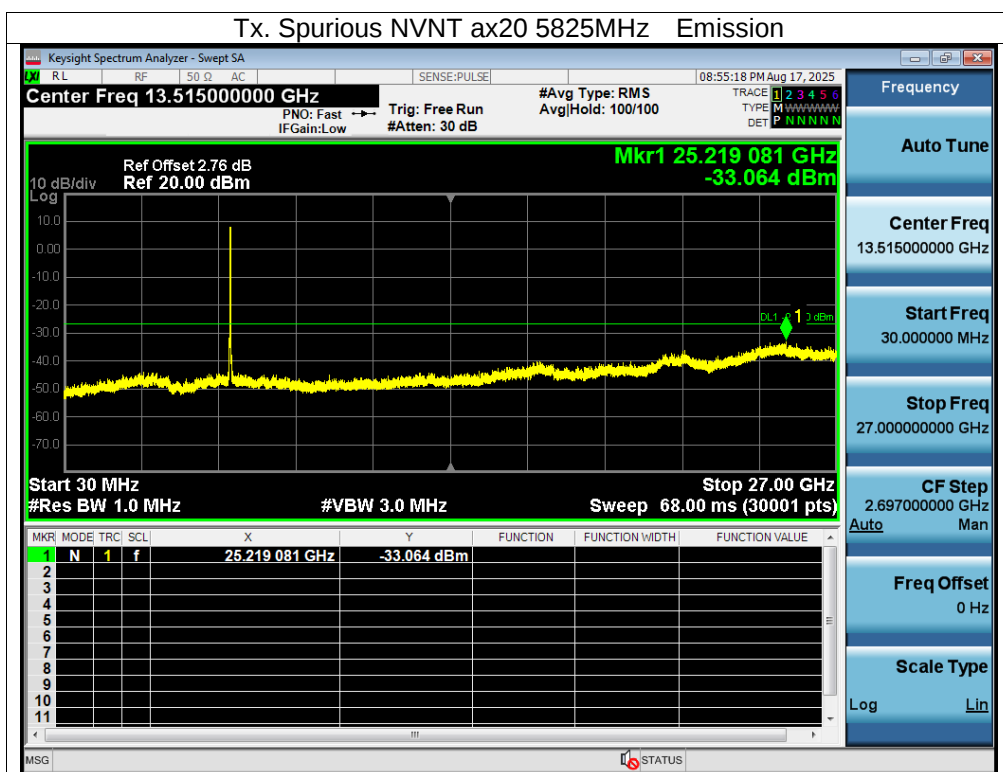


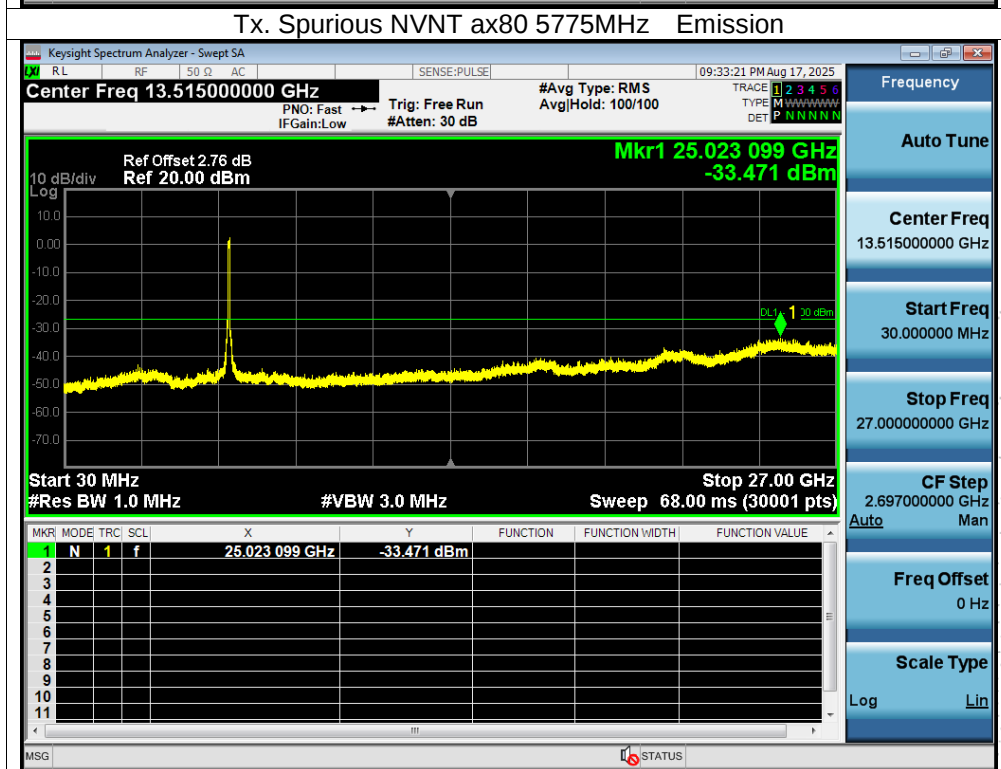
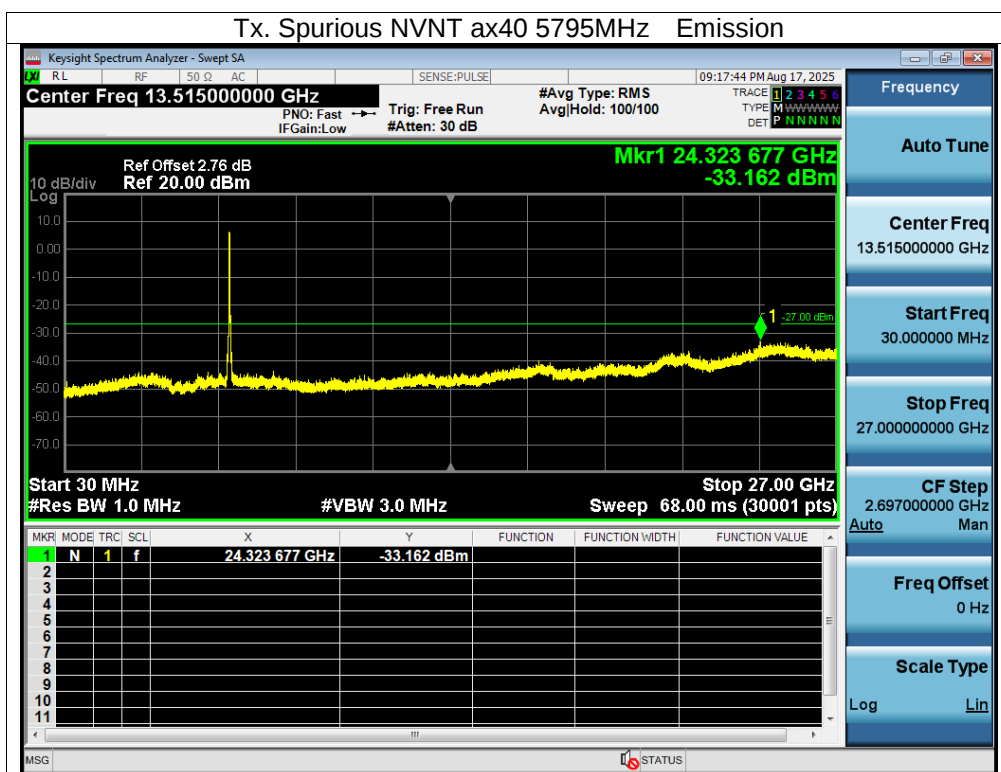












### 13. Frequency Stability Measurement

#### 13.1 Block Diagram Of Test Setup



#### 13.2 Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be  $\pm 20$  ppm maximum for the 5 GHz band (IEEE 802.11n specification).

#### 13.3 Test procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5.  $f_c$  is declaring of channel frequency. Then the frequency error formula is  $(f_c - f)/f_c \times 10^6$  ppm and he limit is less than  $\pm 20$  ppm (IEEE 802.11n specification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is  $-20^\circ\text{C}$ ~ $70^\circ\text{C}$ .

### 13.4 Test Result

|              |                                                 |                    |        |
|--------------|-------------------------------------------------|--------------------|--------|
| Temperature: | 26 °C                                           | Relative Humidity: | 54%RH  |
| Pressure:    | 101KPa                                          | Test Voltage:      | DC 12V |
| Test Mode:   | TX (5.1G) Mode Frequency U-NII-1 (5180-5240MHz) |                    |        |

#### Voltage vs. Frequency Stability

| TEST CONDITIONS |    |           |       | Reference Frequency: 5180MHz |      |                      |                      |
|-----------------|----|-----------|-------|------------------------------|------|----------------------|----------------------|
|                 |    |           |       | f                            | fc   | Max. Deviation (MHz) | Max. Deviation (ppm) |
| T nom (°C)      | 20 | V nom (V) | 12.00 | 5180.0090                    | 5180 | 0.0090               | 1.7393               |
|                 |    | V max (V) | 13.80 | 5180.0192                    | 5180 | 0.0192               | 3.7039               |
|                 |    | V min (V) | 10.20 | 5180.0036                    | 5180 | 0.0036               | 0.6864               |
| Limits          |    |           |       | 5150-5250 MHz                |      |                      |                      |
| Result          |    |           |       | Complies                     |      |                      |                      |

#### Temperature vs. Frequency Stability

| TEST CONDITIONS |    |        |     | Reference Frequency: 5180MHz |      |                      |                      |
|-----------------|----|--------|-----|------------------------------|------|----------------------|----------------------|
|                 |    |        |     | f                            | fc   | Max. Deviation (MHz) | Max. Deviation (ppm) |
| V nom (V)       | 12 | T (°C) | -20 | 5180.0015                    | 5180 | 0.0015               | 0.2816               |
|                 |    | T (°C) | -10 | 5180.0095                    | 5180 | 0.0095               | 1.8327               |
|                 |    | T (°C) | 0   | 5180.0067                    | 5180 | 0.0067               | 1.2857               |
|                 |    | T (°C) | 10  | 5180.0019                    | 5180 | 0.0019               | 0.3688               |
|                 |    | T (°C) | 20  | 5180.0010                    | 5180 | 0.0010               | 0.2018               |
|                 |    | T (°C) | 30  | 5180.0121                    | 5180 | 0.0121               | 2.3437               |
|                 |    | T (°C) | 40  | 5180.0037                    | 5180 | 0.0037               | 0.7125               |
|                 |    | T (°C) | 50  | 5180.0061                    | 5180 | 0.0061               | 1.1810               |
|                 |    | T (°C) | 60  | 5180.0011                    | 5180 | 0.0011               | 0.2122               |
|                 |    | T (°C) | 70  | 5180.0056                    | 5180 | 0.0056               | 1.0800               |
| Limits          |    |        |     | 5150-5250 MHz                |      |                      |                      |
| Result          |    |        |     | Complies                     |      |                      |                      |

## Voltage vs. Frequency Stability

| TEST CONDITIONS |    |           |       | Reference Frequency: 5200MHz |      |                      |                      |
|-----------------|----|-----------|-------|------------------------------|------|----------------------|----------------------|
|                 |    |           |       | f                            | fc   | Max. Deviation (MHz) | Max. Deviation (ppm) |
| T nom (°C)      | 20 | V nom (V) | 12.00 | 5200.0019                    | 5200 | 0.0019               | 0.3582               |
|                 |    | V max (V) | 13.80 | 5200.0059                    | 5200 | 0.0059               | 1.1370               |
|                 |    | V min (V) | 10.20 | 5200.0034                    | 5200 | 0.0034               | 0.6532               |
| Limits          |    |           |       | 5725-5850 MHz                |      |                      |                      |
| Result          |    |           |       | Complies                     |      |                      |                      |

## Temperature vs. Frequency Stability

| TEST CONDITIONS |     |        |     | Reference Frequency: 5200MHz |      |                      |                      |
|-----------------|-----|--------|-----|------------------------------|------|----------------------|----------------------|
|                 |     |        |     | f                            | fc   | Max. Deviation (MHz) | Max. Deviation (ppm) |
| V nom (V)       | 120 | T (°C) | -20 | 5200.00431                   | 5200 | 0.00431              | 0.8286               |
|                 |     | T (°C) | -10 | 5200.01078                   | 5200 | 0.01078              | 2.0738               |
|                 |     | T (°C) | 0   | 5200.00888                   | 5200 | 0.00888              | 1.7075               |
|                 |     | T (°C) | 10  | 5200.00158                   | 5200 | 0.00158              | 0.3042               |
|                 |     | T (°C) | 20  | 5200.00142                   | 5200 | 0.00142              | 0.2722               |
|                 |     | T (°C) | 30  | 5200.00539                   | 5200 | 0.00539              | 1.0372               |
|                 |     | T (°C) | 40  | 5200.01008                   | 5200 | 0.01008              | 1.9379               |
|                 |     | T (°C) | 50  | 5200.00374                   | 5200 | 0.00374              | 0.7192               |
|                 |     | T (°C) | 60  | 5200.00414                   | 5200 | 0.00414              | 0.7956               |
|                 |     | T (°C) | 70  | 5200.00579                   | 5200 | 0.00579              | 1.1132               |
| Limits          |     |        |     | 5150-5250 MHz                |      |                      |                      |
| Result          |     |        |     | Complies                     |      |                      |                      |

## Voltage vs. Frequency Stability

| TEST CONDITIONS |    |           |       | Reference Frequency: 5240MHz |      |                      |                      |
|-----------------|----|-----------|-------|------------------------------|------|----------------------|----------------------|
|                 |    |           |       | f                            | fc   | Max. Deviation (MHz) | Max. Deviation (ppm) |
| T nom (°C)      | 20 | V nom (V) | 12.00 | 5240.0099                    | 5240 | 0.0099               | 1.8852               |
|                 |    | V max (V) | 13.80 | 5240.0056                    | 5240 | 0.0056               | 1.0733               |
|                 |    | V min (V) | 10.20 | 5240.0056                    | 5240 | 0.0056               | 1.0763               |
| Limits          |    |           |       | 5150-5250 MHz                |      |                      |                      |
| Result          |    |           |       | Complies                     |      |                      |                      |

## Temperature vs. Frequency Stability

| TEST CONDITIONS |     |        |     | Reference Frequency: 5240MHz |      |                      |                      |
|-----------------|-----|--------|-----|------------------------------|------|----------------------|----------------------|
|                 |     |        |     | f                            | fc   | Max. Deviation (MHz) | Max. Deviation (ppm) |
| V nom (V)       | 120 | T (°C) | -20 | 5240.0100                    | 5240 | 0.0100               | 1.9092               |
|                 |     | T (°C) | -10 | 5240.0044                    | 5240 | 0.0044               | 0.8447               |
|                 |     | T (°C) | 0   | 5240.0073                    | 5240 | 0.0073               | 1.3961               |
|                 |     | T (°C) | 10  | 5240.0031                    | 5240 | 0.0031               | 0.5882               |
|                 |     | T (°C) | 20  | 5240.0070                    | 5240 | 0.0070               | 1.3431               |
|                 |     | T (°C) | 30  | 5240.0018                    | 5240 | 0.0018               | 0.3530               |
|                 |     | T (°C) | 40  | 5240.0024                    | 5240 | 0.0024               | 0.4602               |
|                 |     | T (°C) | 50  | 5240.0020                    | 5240 | 0.0020               | 0.3823               |
|                 |     | T (°C) | 60  | 5240.0060                    | 5240 | 0.0060               | 1.1427               |
|                 |     | T (°C) | 70  | 5240.0057                    | 5240 | 0.0057               | 1.0797               |
| Limits          |     |        |     | 5150-5250 MHz                |      |                      |                      |
| Result          |     |        |     | Complies                     |      |                      |                      |

|              |                                                 |                    |        |
|--------------|-------------------------------------------------|--------------------|--------|
| Temperature: | 26 °C                                           | Relative Humidity: | 54%RH  |
| Pressure:    | 101KPa                                          | Test Voltage:      | DC 12V |
| Test Mode:   | TX (5.8G) Mode Frequency U-NII-3 (5745-5825MHz) |                    |        |

#### Voltage vs. Frequency Stabilit

| TEST CONDITIONS |    |           |       | Reference Frequency: 5745MHz |      |                      |                      |
|-----------------|----|-----------|-------|------------------------------|------|----------------------|----------------------|
|                 |    |           |       | f                            | fc   | Max. Deviation (MHz) | Max. Deviation (ppm) |
| T nom (°C)      | 20 | V nom (V) | 12.00 | 5745.01082                   | 5745 | 0.01082              | 1.8834               |
|                 |    | V max (V) | 13.80 | 5745.00179                   | 5745 | 0.00179              | 0.3122               |
|                 |    | V min (V) | 10.20 | 5745.00353                   | 5745 | 0.00353              | 0.6138               |
| Limits          |    |           |       | 5725-5850 MHz                |      |                      |                      |
| Result          |    |           |       | Complies                     |      |                      |                      |

#### Temperature vs. Frequency Stability

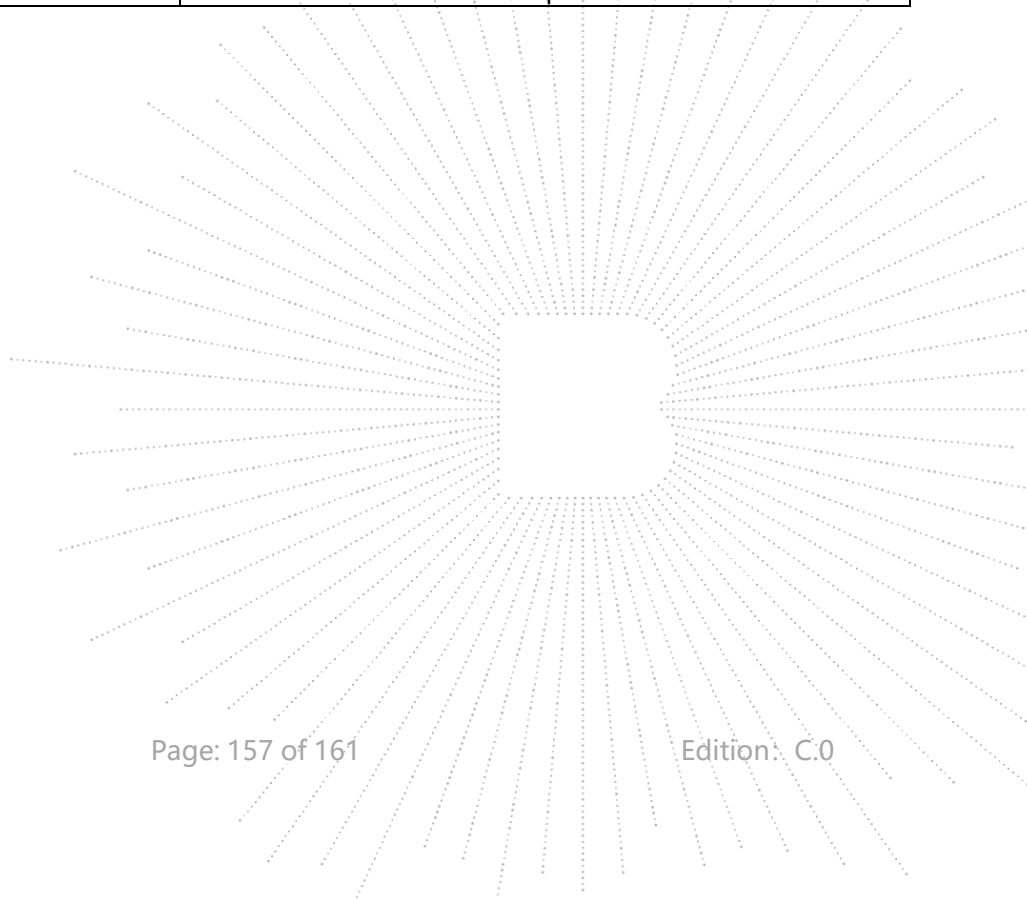
| TEST CONDITIONS |     |        |     | Reference Frequency: 5745MHz |      |                      |                      |
|-----------------|-----|--------|-----|------------------------------|------|----------------------|----------------------|
|                 |     |        |     | f                            | fc   | Max. Deviation (MHz) | Max. Deviation (ppm) |
| V nom (V)       | 120 | T (°C) | -20 | 5745.01294                   | 5745 | 0.01294              | 2.2527               |
|                 |     | T (°C) | -10 | 5745.00484                   | 5745 | 0.00484              | 0.8418               |
|                 |     | T (°C) | 0   | 5745.01061                   | 5745 | 0.01061              | 1.8475               |
|                 |     | T (°C) | 10  | 5745.01311                   | 5745 | 0.01311              | 2.2815               |
|                 |     | T (°C) | 20  | 5745.00769                   | 5745 | 0.00769              | 1.3390               |
|                 |     | T (°C) | 30  | 5745.00638                   | 5745 | 0.00638              | 1.1100               |
|                 |     | T (°C) | 40  | 5745.00249                   | 5745 | 0.00249              | 0.4340               |
|                 |     | T (°C) | 50  | 5745.00626                   | 5745 | 0.00626              | 1.0905               |
|                 |     | T (°C) | 60  | 5745.00630                   | 5745 | 0.00630              | 1.0965               |
|                 |     | T (°C) | 70  | 5745.01010                   | 5745 | 0.01010              | 1.7583               |
| Limits          |     |        |     | 5725-5850 MHz                |      |                      |                      |
| Result          |     |        |     | Complies                     |      |                      |                      |

## Voltage vs. Frequency Stability

| TEST CONDITIONS |    |           |       | Reference Frequency: 5785MHz |      |                      |                      |
|-----------------|----|-----------|-------|------------------------------|------|----------------------|----------------------|
|                 |    |           |       | f                            | fc   | Max. Deviation (MHz) | Max. Deviation (ppm) |
| T nom (°C)      | 20 | V nom (V) | 12.00 | 5785.00705                   | 5785 | 0.00705              | 1.2194               |
|                 |    | V max (V) | 13.80 | 5785.00880                   | 5785 | 0.00880              | 1.5211               |
|                 |    | V min (V) | 10.20 | 5785.00320                   | 5785 | 0.00320              | 0.5532               |
| Limits          |    |           |       | 5725-5850 MHz                |      |                      |                      |
| Result          |    |           |       | Complies                     |      |                      |                      |

## Temperature vs. Frequency Stability

| TEST CONDITIONS |     |        |     | Reference Frequency: 5785MHz |      |                      |                      |
|-----------------|-----|--------|-----|------------------------------|------|----------------------|----------------------|
|                 |     |        |     | f                            | fc   | Max. Deviation (MHz) | Max. Deviation (ppm) |
| V nom (V)       | 120 | T (°C) | -20 | 5785.00203                   | 5785 | 0.00203              | 0.3511               |
|                 |     | T (°C) | -10 | 5785.00597                   | 5785 | 0.00597              | 1.0316               |
|                 |     | T (°C) | 0   | 5785.01195                   | 5785 | 0.01195              | 2.0651               |
|                 |     | T (°C) | 10  | 5785.00996                   | 5785 | 0.00996              | 1.7215               |
|                 |     | T (°C) | 20  | 5785.00395                   | 5785 | 0.00395              | 0.6828               |
|                 |     | T (°C) | 30  | 5785.00216                   | 5785 | 0.00216              | 0.3741               |
|                 |     | T (°C) | 40  | 5785.00766                   | 5785 | 0.00766              | 1.3247               |
|                 |     | T (°C) | 50  | 5785.00349                   | 5785 | 0.00349              | 0.6037               |
|                 |     | T (°C) | 60  | 5785.00420                   | 5785 | 0.00420              | 0.7252               |
|                 |     | T (°C) | 70  | 5785.00321                   | 5785 | 0.00321              | 0.5550               |
| Limits          |     |        |     | 5725-5850 MHz                |      |                      |                      |
| Result          |     |        |     | Complies                     |      |                      |                      |



## Voltage vs. Frequency Stability

| TEST CONDITIONS |    |           |       | Reference Frequency: 5825MHz |      |                      |                      |
|-----------------|----|-----------|-------|------------------------------|------|----------------------|----------------------|
|                 |    |           |       | f                            | fc   | Max. Deviation (MHz) | Max. Deviation (ppm) |
| T nom (°C)      | 20 | V nom (V) | 12.00 | 5825.00800                   | 5825 | 0.00800              | 1.3741               |
|                 |    | V max (V) | 13.80 | 5825.00109                   | 5825 | 0.00109              | 0.1866               |
|                 |    | V min (V) | 10.20 | 5825.00641                   | 5825 | 0.00641              | 1.1007               |
| Limits          |    |           |       | 5725-5850 MHz                |      |                      |                      |
| Result          |    |           |       | Complies                     |      |                      |                      |

## Temperature vs. Frequency Stability

| TEST CONDITIONS |     |        |     | Reference Frequency: 5825MHz |      |                      |                      |
|-----------------|-----|--------|-----|------------------------------|------|----------------------|----------------------|
|                 |     |        |     | f                            | fc   | Max. Deviation (MHz) | Max. Deviation (ppm) |
| V nom (V)       | 120 | T (°C) | -20 | 5825.01054                   | 5825 | 0.01054              | 1.8090               |
|                 |     | T (°C) | -10 | 5825.00268                   | 5825 | 0.00268              | 0.4603               |
|                 |     | T (°C) | 0   | 5825.00810                   | 5825 | 0.00810              | 1.3907               |
|                 |     | T (°C) | 10  | 5825.00553                   | 5825 | 0.00553              | 0.9496               |
|                 |     | T (°C) | 20  | 5825.00777                   | 5825 | 0.00777              | 1.3347               |
|                 |     | T (°C) | 30  | 5825.00144                   | 5825 | 0.00144              | 0.2471               |
|                 |     | T (°C) | 40  | 5825.01145                   | 5825 | 0.01145              | 1.9648               |
|                 |     | T (°C) | 50  | 5825.00186                   | 5825 | 0.00186              | 0.3186               |
|                 |     | T (°C) | 60  | 5825.00501                   | 5825 | 0.00501              | 0.8604               |
|                 |     | T (°C) | 70  | 5825.00697                   | 5825 | 0.00697              | 1.1965               |
| Limits          |     |        |     | 5725-5850 MHz                |      |                      |                      |
| Result          |     |        |     | Complies                     |      |                      |                      |

## 14. Antenna Requirement

### 14.1 Limit

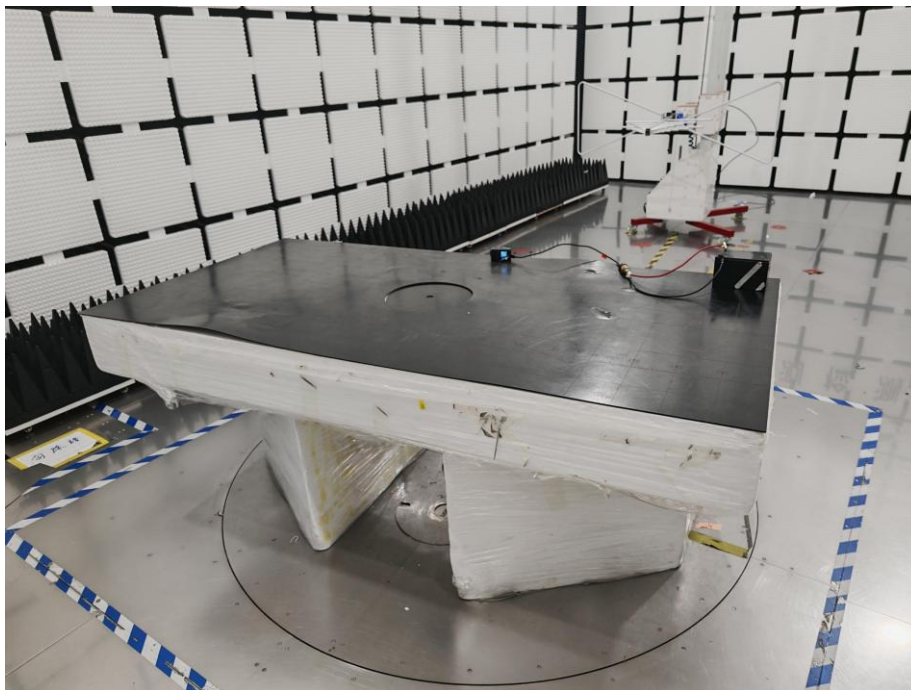
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

### 14.2 Test Antenna

The EUT antenna is Internal antenna, It comply with the standard requirement.

## 15. EUT Test Setup Photographs

### Radiated Measurement Photos



**STATEMENT**

1. The equipment lists are traceable to the national reference standards.
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The quality system of our laboratory is in accordance with ISO/IEC17025.
8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

**Address:**

1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL: 400-788-9558

P.C.: 518103

FAX: 0755-33229357

Website: <http://www.chnbctc.com>

Consultation E-mail: [bctc@bctc-lab.com.cn](mailto:bctc@bctc-lab.com.cn)

Complaint/Advice E-mail: [advice@bctc-lab.com.cn](mailto:advice@bctc-lab.com.cn)

\*\*\*\*\* END \*\*\*\*\*