

### 6.8.3 Procedure

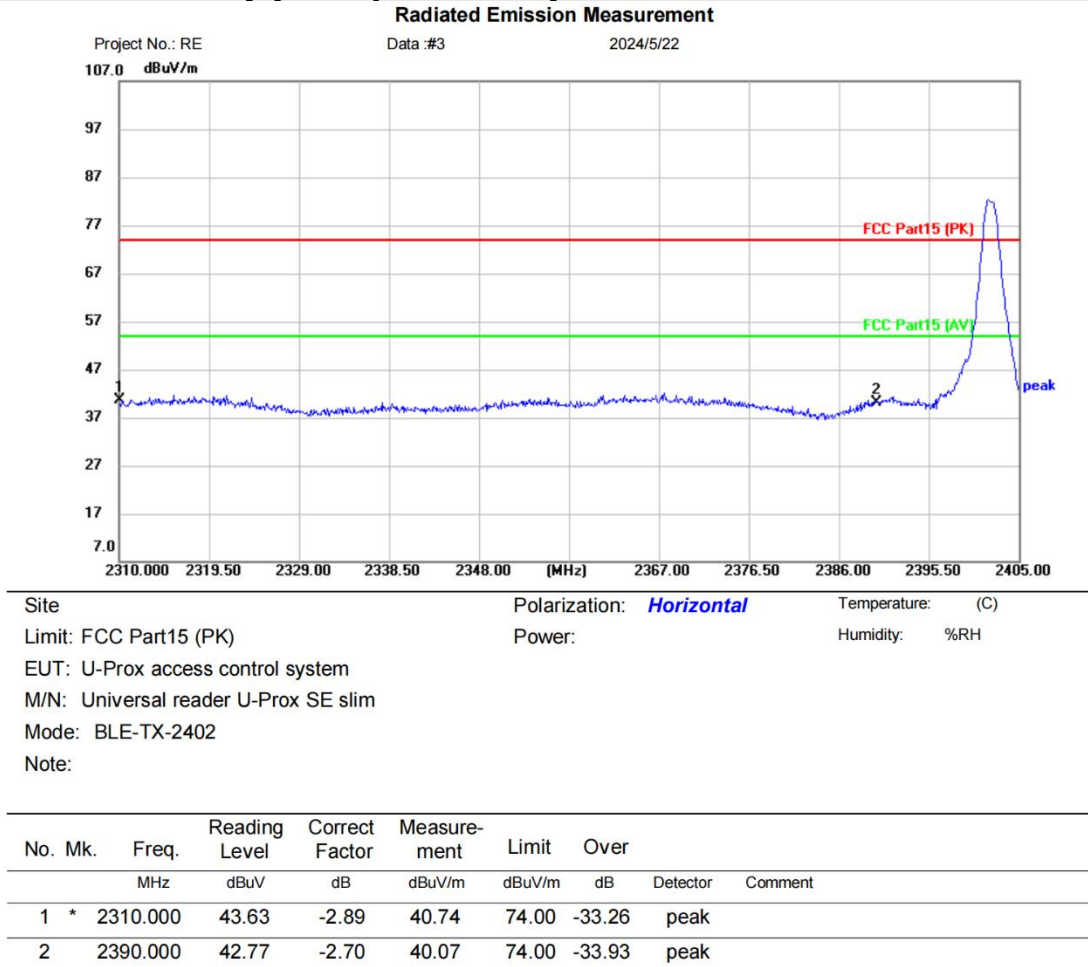
- a) For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b) For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c) The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h) Test the EUT in the lowest channel, the middle channel, the highest channel.
- i) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j) Repeat above procedures until all frequencies measured was complete.

*Note 1: Level (dBuV) = Reading (dBuV) + Factor (dB/m)*

*Note 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.*

## 6.8.4 Test data

[Test mode: TX low channel]; [Polarity: Horizontal]



\*:Maximum data    x:Over limit    !:over margin

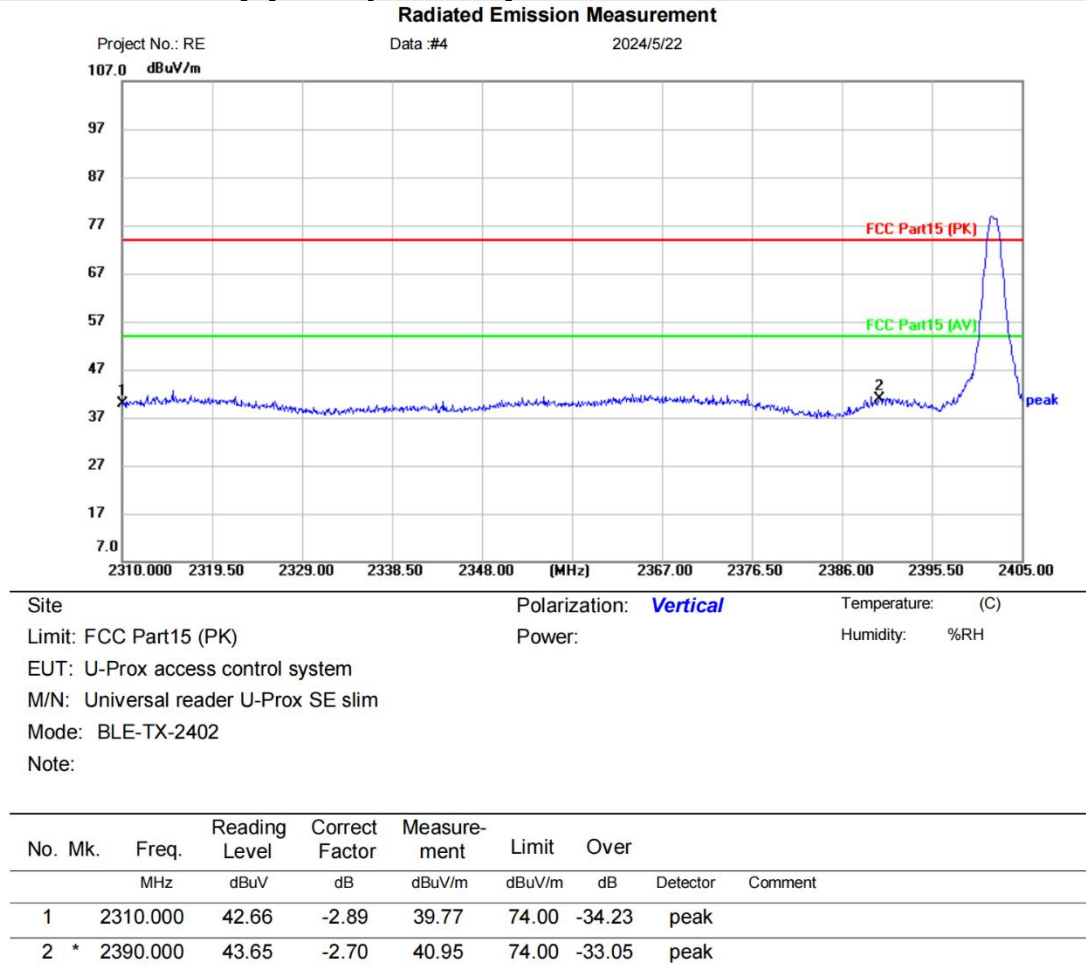
⟨Reference Only⟩

Receiver: ESR\_1

Spectrum Analyzer: FSP40

**Test Result: Pass**

[Test mode:TX low channel]; [Polarity: Vertical]



\*:Maximum data    x:Over limit    !:over margin

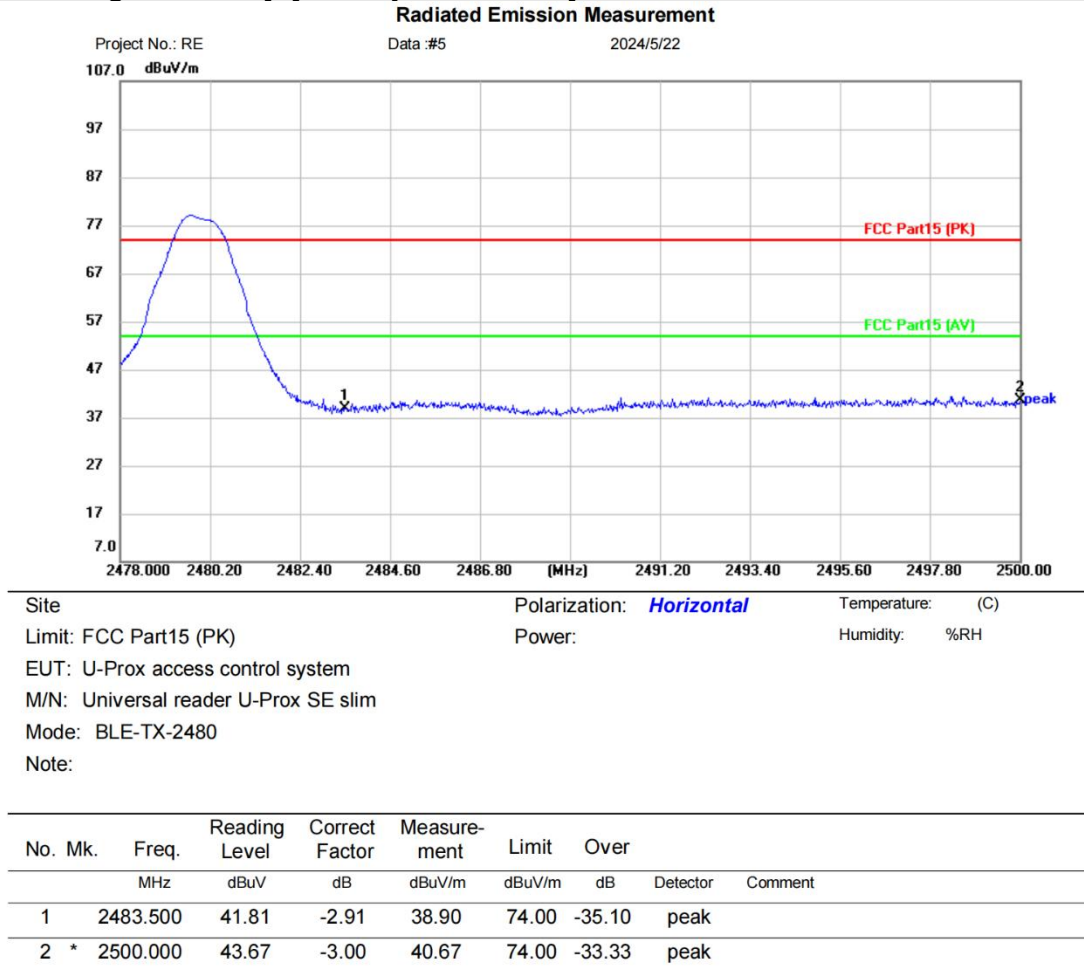
⟨Reference Only

Receiver: ESR\_1

Spectrum Analyzer: FSP40

**Test Result: Pass**

[Test mode: TX High channel]; [Polarity: Horizontal]



\*:Maximum data    x:Over limit    !:over margin

◁Reference Only

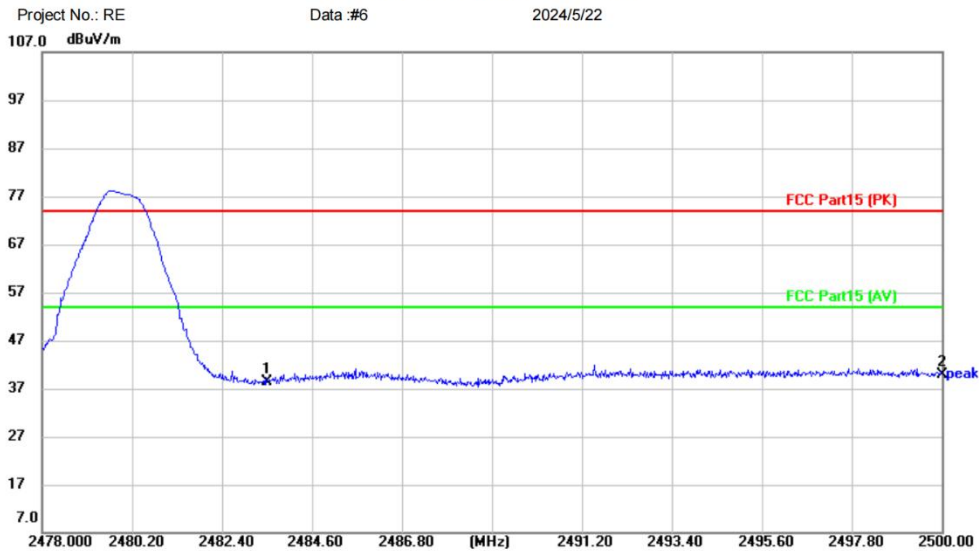
Receiver: ESR\_1

Spectrum Analyzer: FSP40

**Test Result: Pass**

[Test mode:TX High channel]; [Polarity: Vertical]

### Radiated Emission Measurement



Site Polarization: **Vertical** Temperature: (C)  
Limit: FCC Part15 (PK) Power: Humidity: %RH  
EUT: U-Prox access control system  
M/N: Universal reader U-Prox SE slim  
Mode: BLE-TX-2480  
Note:

| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|---------|
| 1   |     | 2483.500     | 41.28                    | -2.91                   | 38.37                      | 74.00           | -35.63     | peak     |         |
| 2   | *   | 2500.000     | 42.98                    | -3.00                   | 39.98                      | 74.00           | -34.02     | peak     |         |

\*:Maximum data x:Over limit !:over margin

⟨Reference Only

Receiver: ESR\_1

Spectrum Analyzer: FSP40

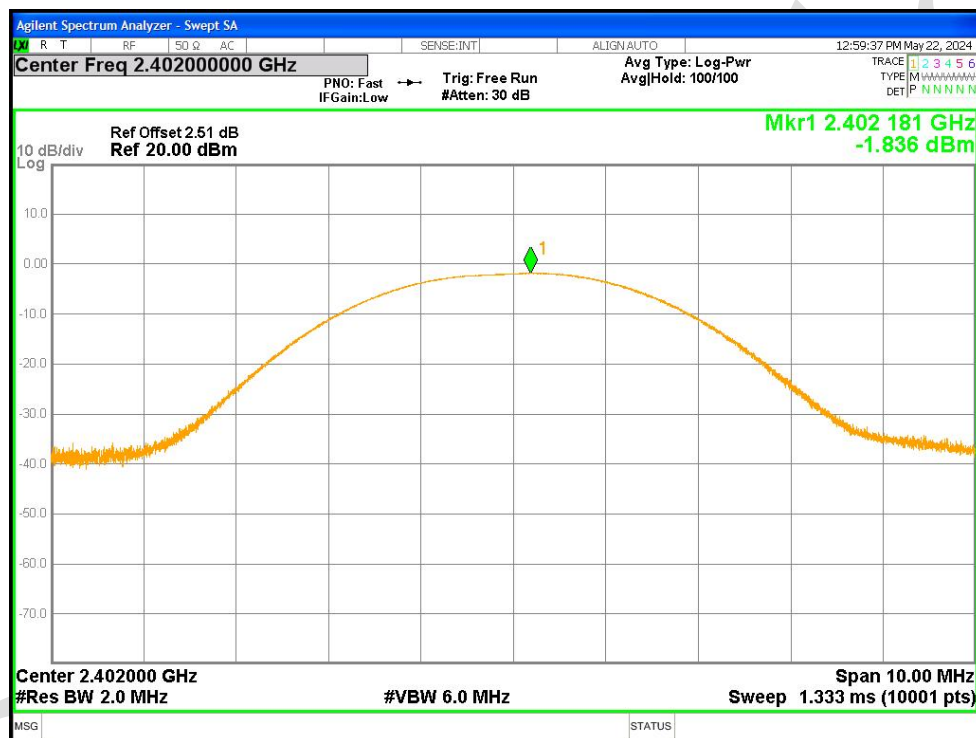
**Test Result: Pass**

## 7 Appendix A

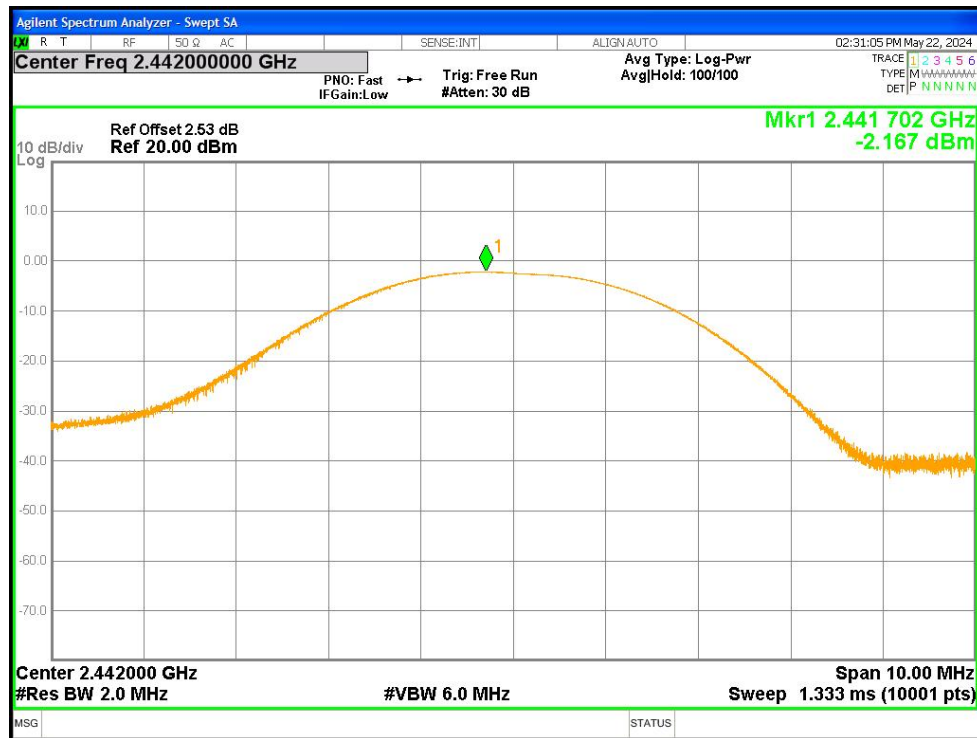
### 7.1 Maximum Conducted Output Power

| Condition | Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Limit (dBm) | Verdict |
|-----------|------|-----------------|---------|-----------------------|-------------|---------|
| NVNT      | BLE  | 2402            | Ant1    | -1.836                | 30          | Pass    |
| NVNT      | BLE  | 2442            | Ant1    | -2.167                | 30          | Pass    |
| NVNT      | BLE  | 2480            | Ant1    | -2.986                | 30          | Pass    |

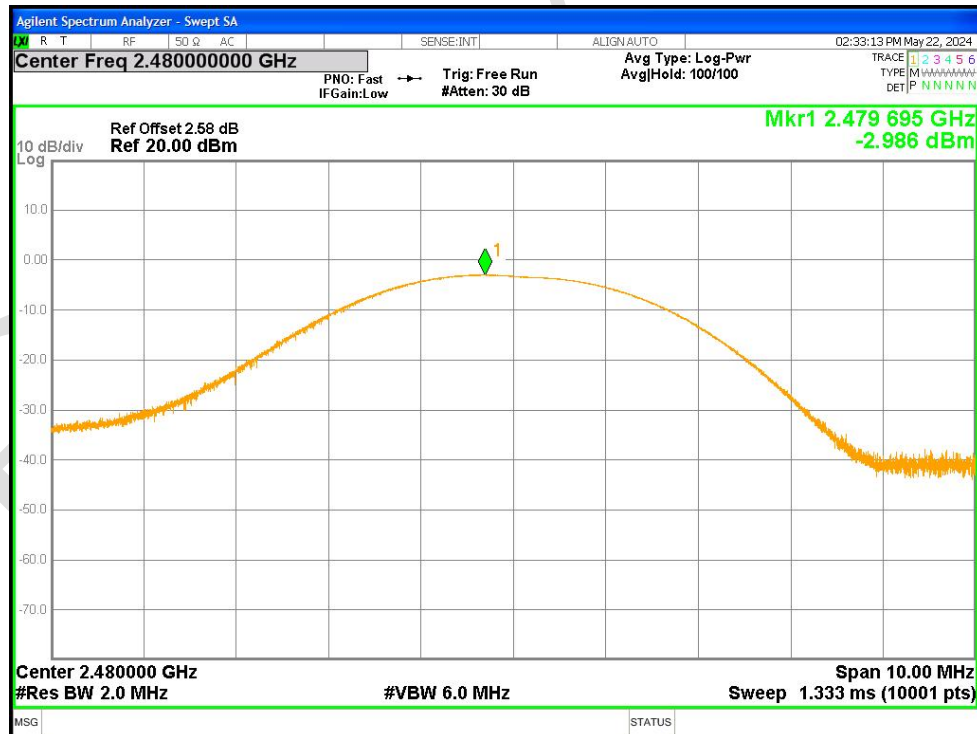
Power NVNT BLE 2402MHz Ant1



Power NVNT BLE 2442MHz Ant1



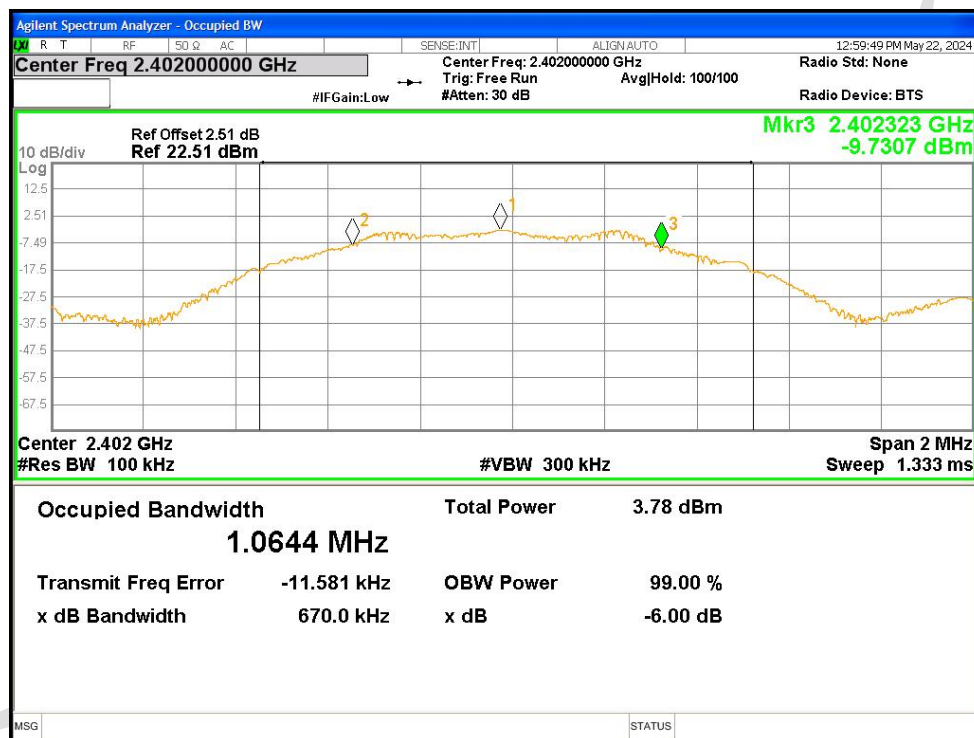
Power NVNT BLE 2480MHz Ant1



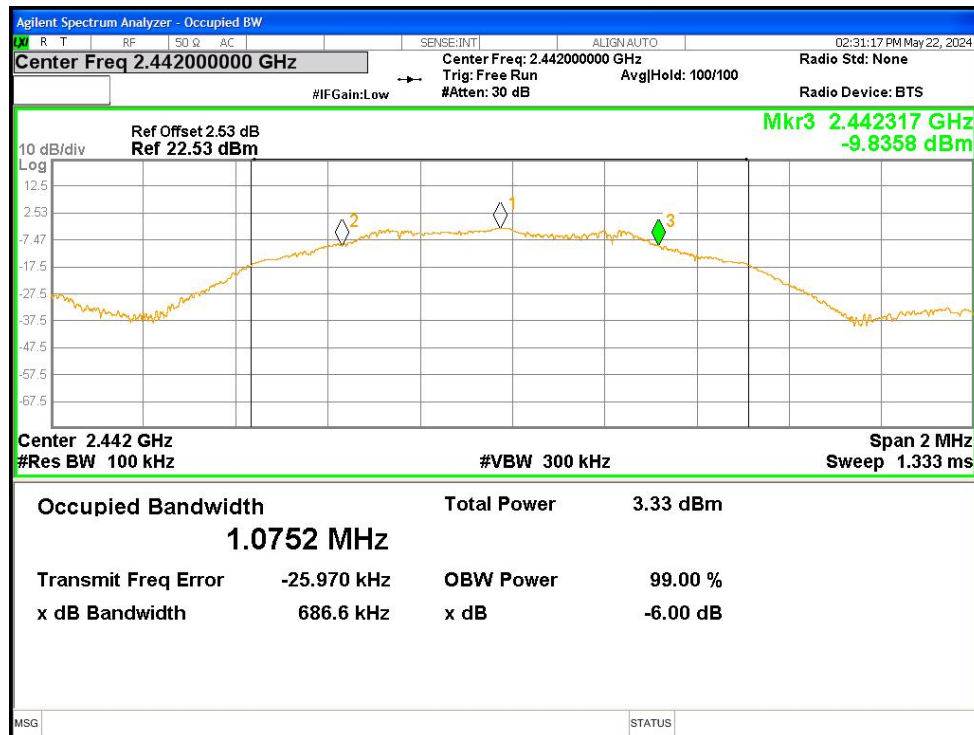
## 7.2 -6dB Bandwidth

| Condition | Mode | Frequency (MHz) | Antenna | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|-----------|------|-----------------|---------|-----------------------|-----------------------------|---------|
| NVNT      | BLE  | 2402            | Ant1    | 0.67                  | 0.5                         | Pass    |
| NVNT      | BLE  | 2442            | Ant1    | 0.687                 | 0.5                         | Pass    |
| NVNT      | BLE  | 2480            | Ant1    | 0.683                 | 0.5                         | Pass    |

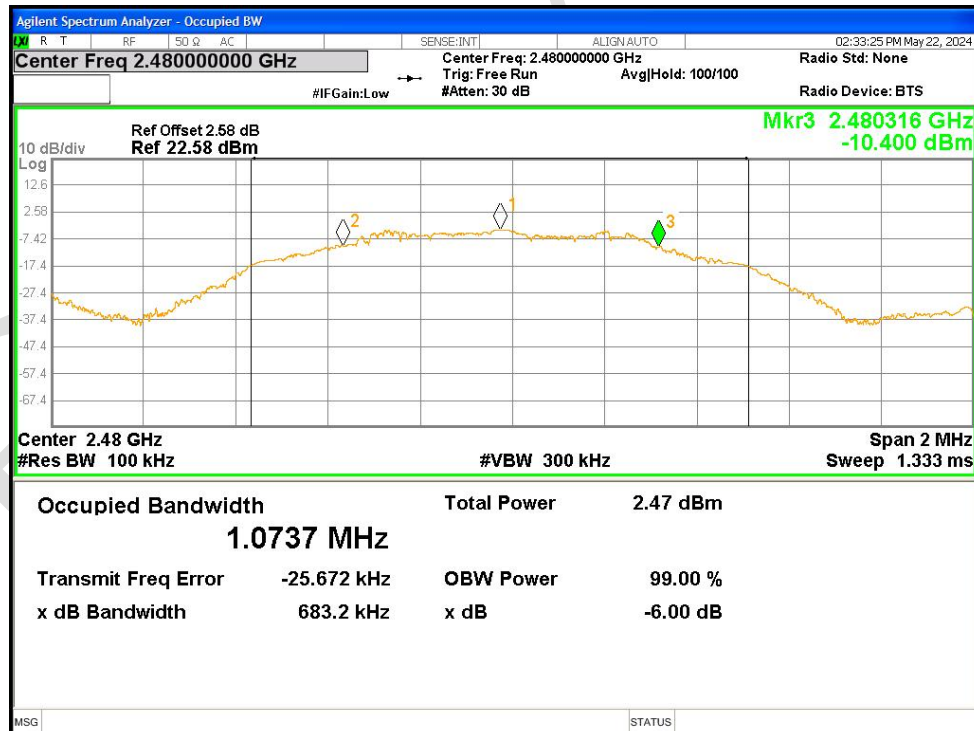
-6dB Bandwidth NVNT BLE 2402MHz Ant1



-6dB Bandwidth NVNT BLE 2442MHz Ant1



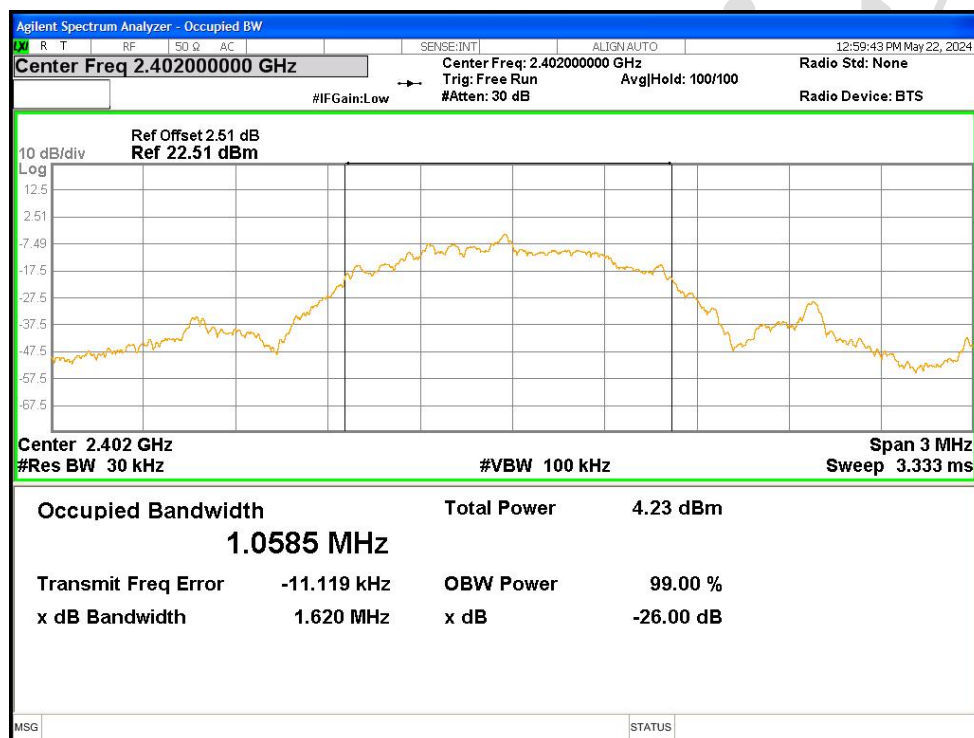
-6dB Bandwidth NVNT BLE 2480MHz Ant1



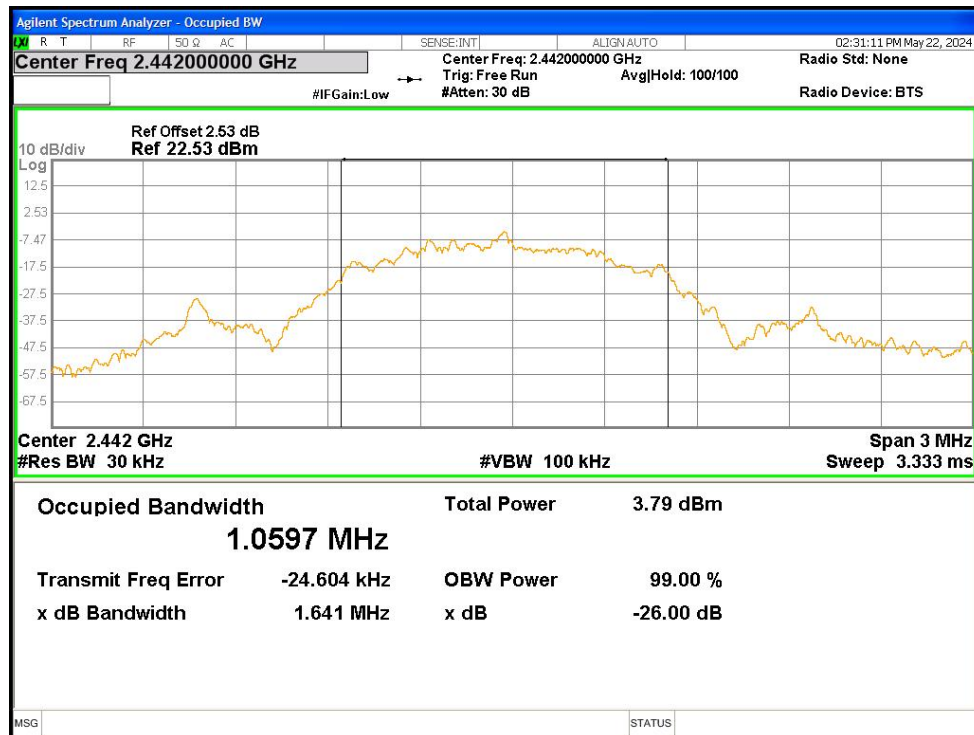
### 7.3 Occupied Channel Bandwidth

| Condition | Mode | Frequency (MHz) | Antenna | 99% OBW (MHz) |
|-----------|------|-----------------|---------|---------------|
| NVNT      | BLE  | 2402            | Ant1    | 1.0585        |
| NVNT      | BLE  | 2442            | Ant1    | 1.0597        |
| NVNT      | BLE  | 2480            | Ant1    | 1.0566        |

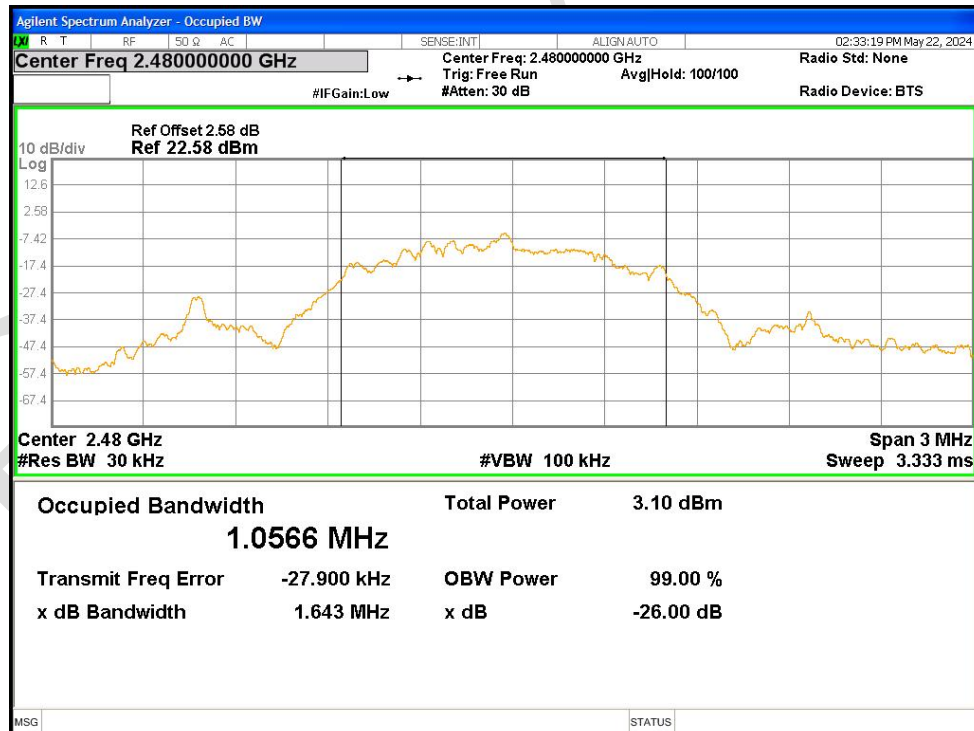
OBW NVNT BLE 2402MHz Ant1



OBW NVNT BLE 2442MHz Ant1



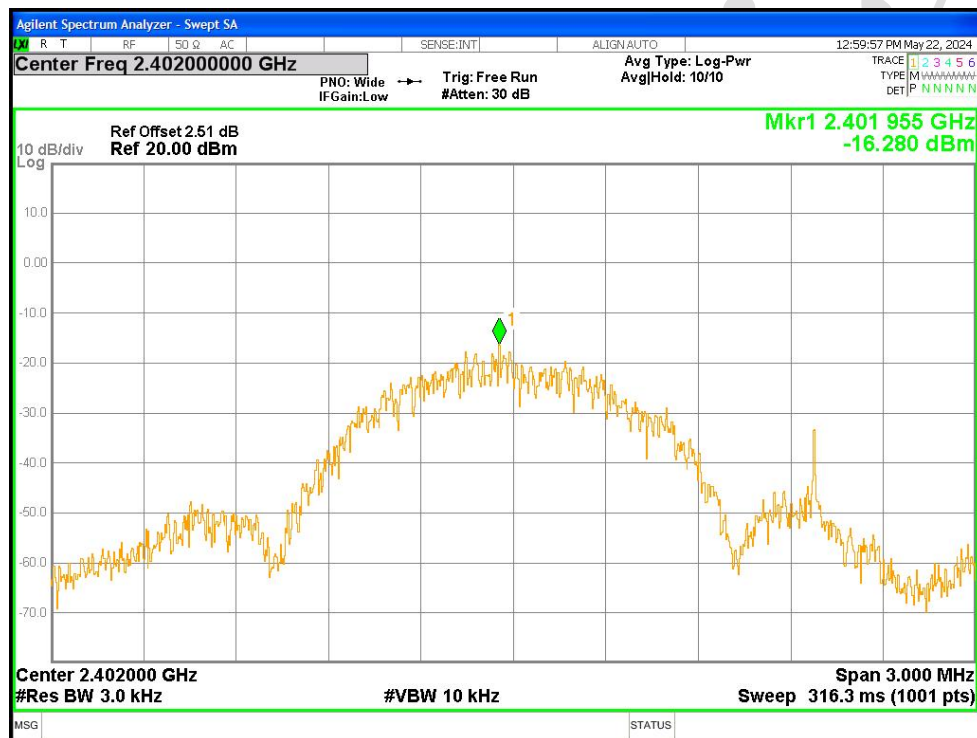
OBW NVNT BLE 2480MHz Ant1



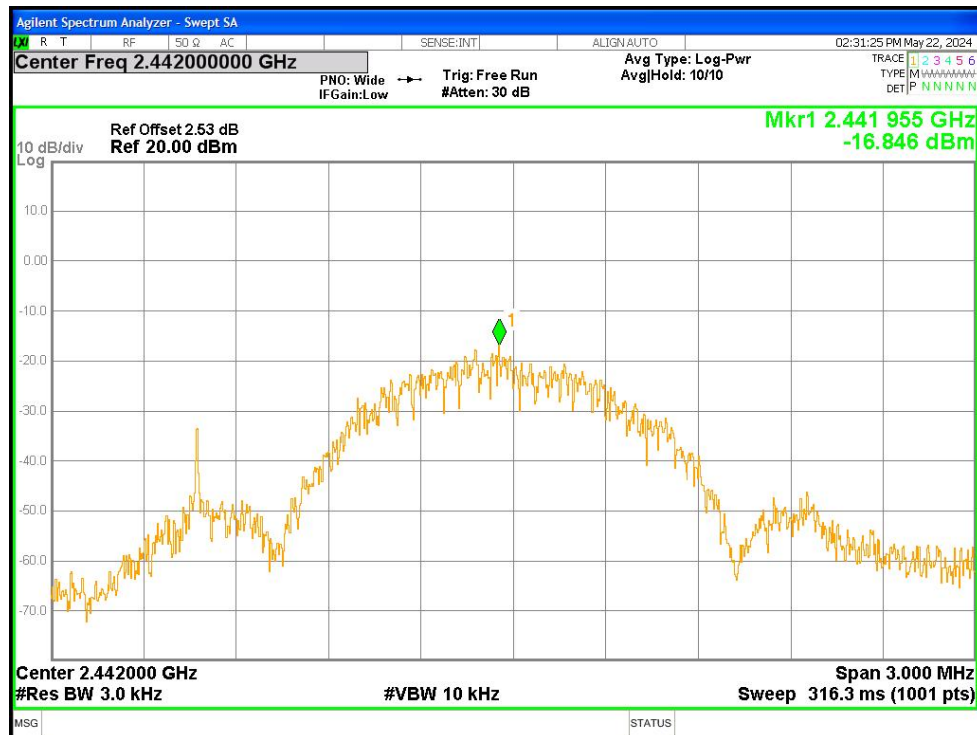
## 7.4 Maximum Power Spectral Density Level

| Condition | Mode | Frequency (MHz) | Antenna | Max PSD (dBm) | Limit (dBm) | Verdict |
|-----------|------|-----------------|---------|---------------|-------------|---------|
| NVNT      | BLE  | 2402            | Ant1    | -16.28        | 8           | Pass    |
| NVNT      | BLE  | 2442            | Ant1    | -16.846       | 8           | Pass    |
| NVNT      | BLE  | 2480            | Ant1    | -17.911       | 8           | Pass    |

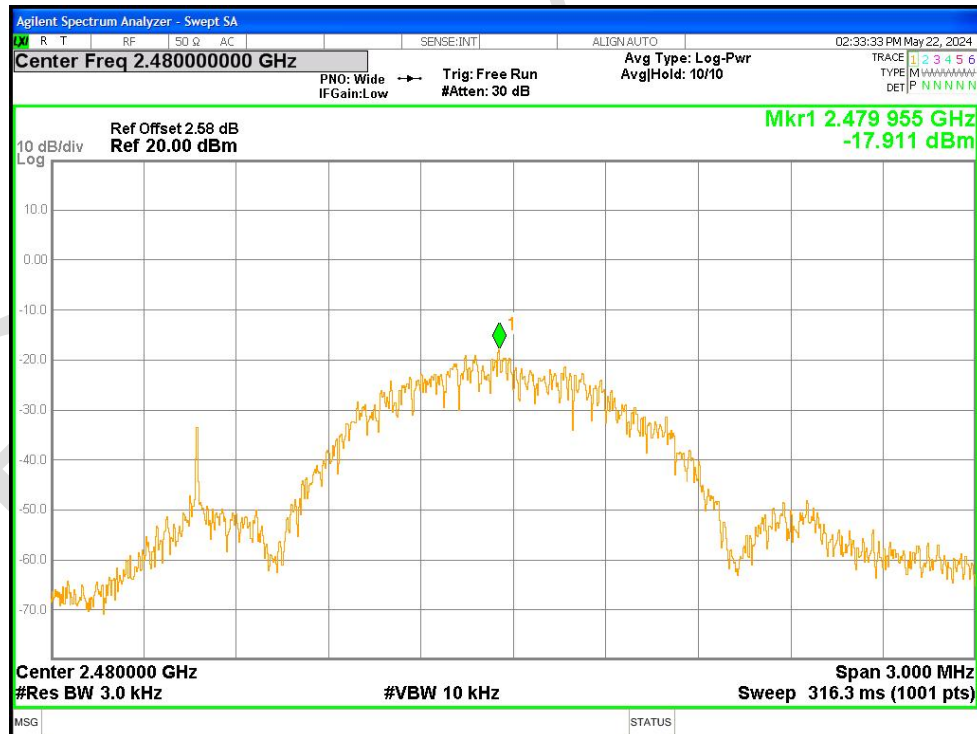
PSD NVNT BLE 2402MHz Ant1



PSD NVNT BLE 2442MHz Ant1



PSD NVNT BLE 2480MHz Ant1



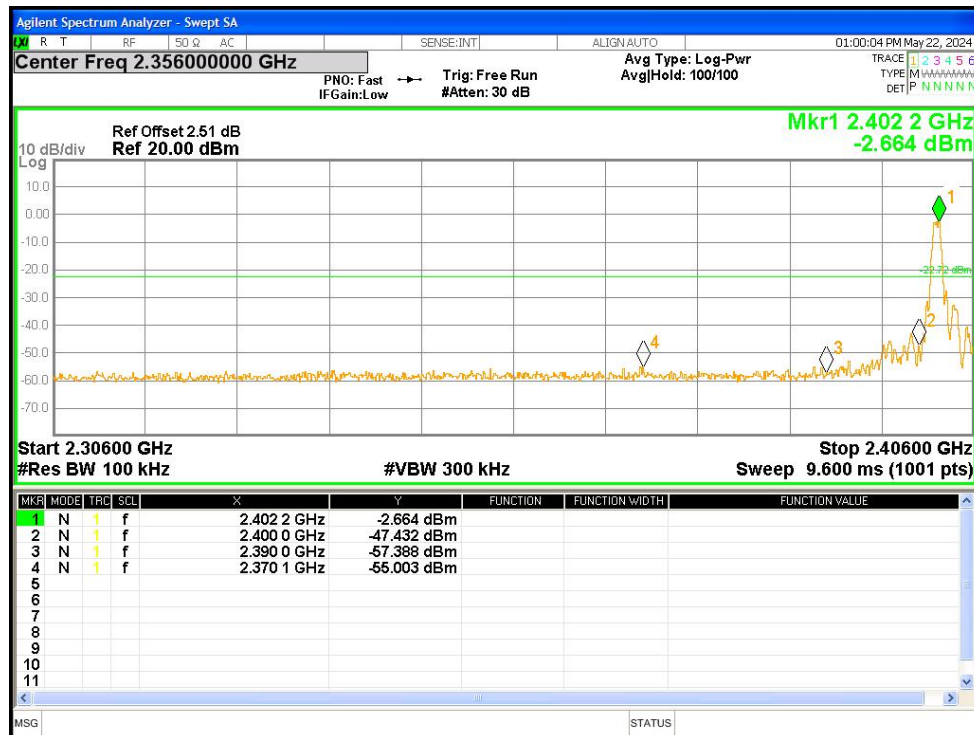
## 7.5 Band Edge

| Condition | Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | BLE  | 2402            | Ant1    | -52.29          | -20         | Pass    |
| NVNT      | BLE  | 2480            | Ant1    | -45.49          | -20         | Pass    |

Band Edge NVNT BLE 2402MHz Ant1 Ref



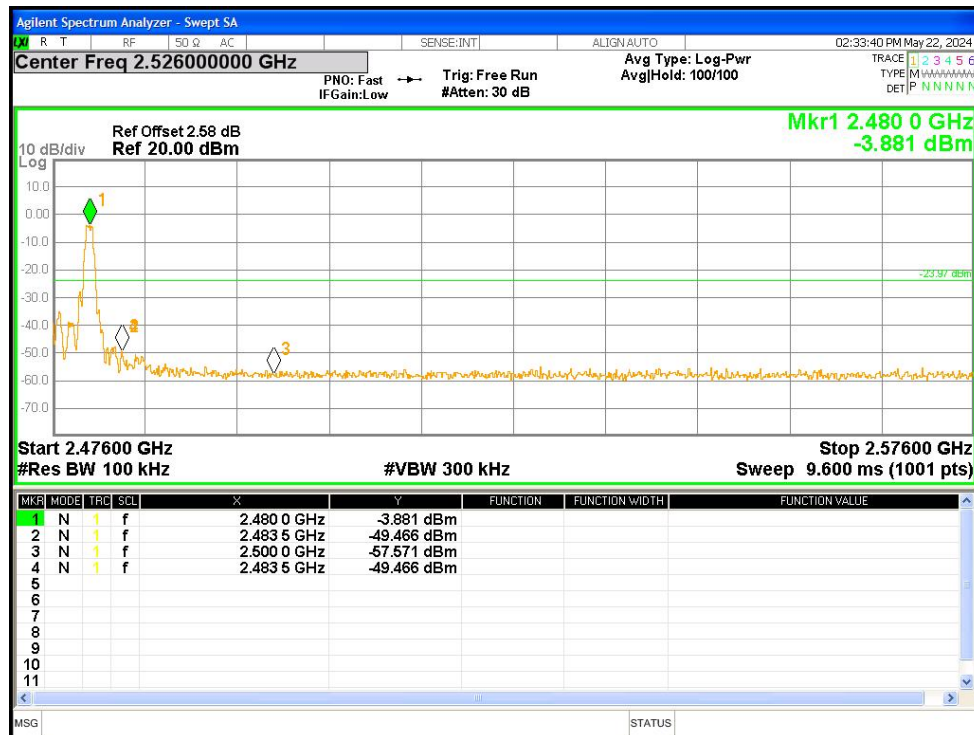
Band Edge NVNT BLE 2402MHz Ant1 Emission



Band Edge NVNT BLE 2480MHz Ant1 Ref



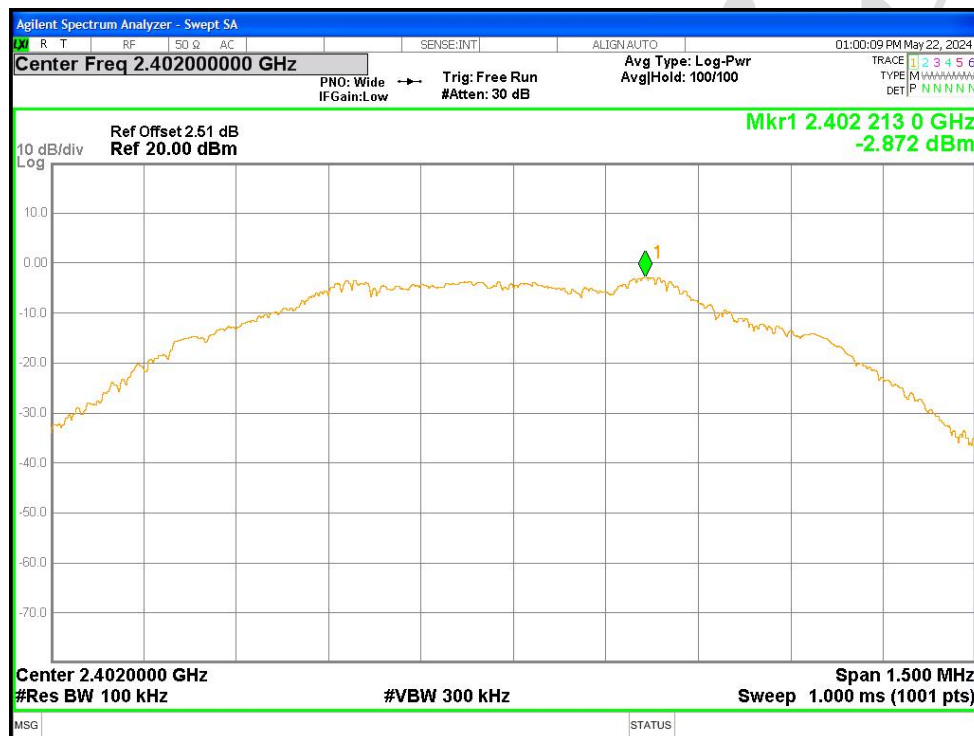
Band Edge NVNT BLE 2480MHz Ant1 Emission



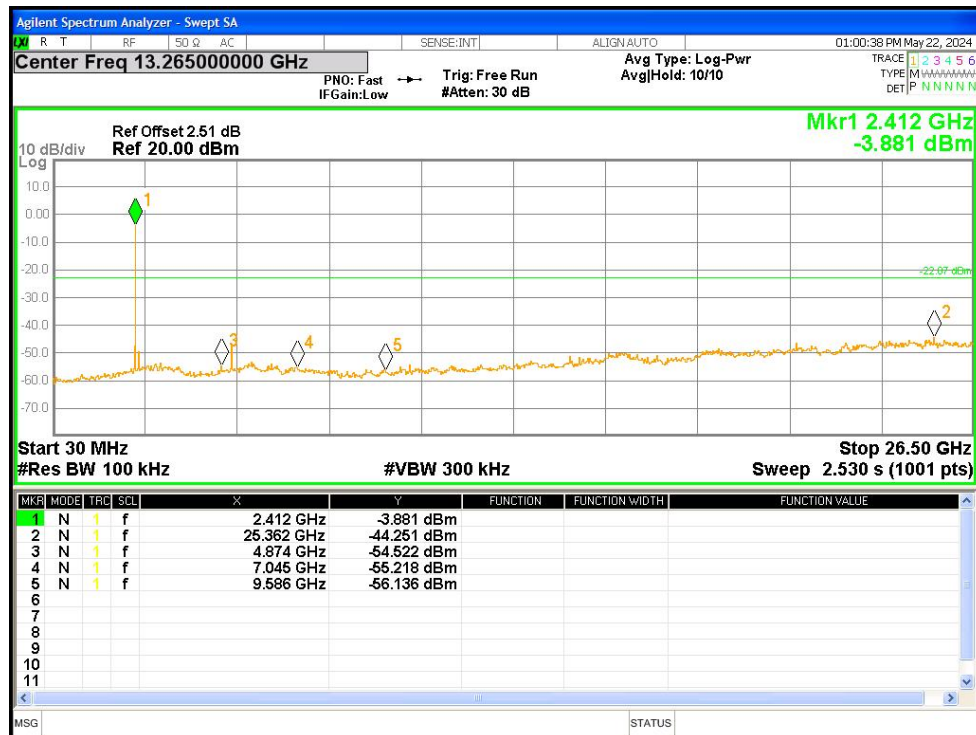
## 7.6 Conducted RF Spurious Emission

| Condition | Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | BLE  | 2402            | Ant1    | -41.38          | -20         | Pass    |
| NVNT      | BLE  | 2442            | Ant1    | -41.84          | -20         | Pass    |
| NVNT      | BLE  | 2480            | Ant1    | -40.83          | -20         | Pass    |

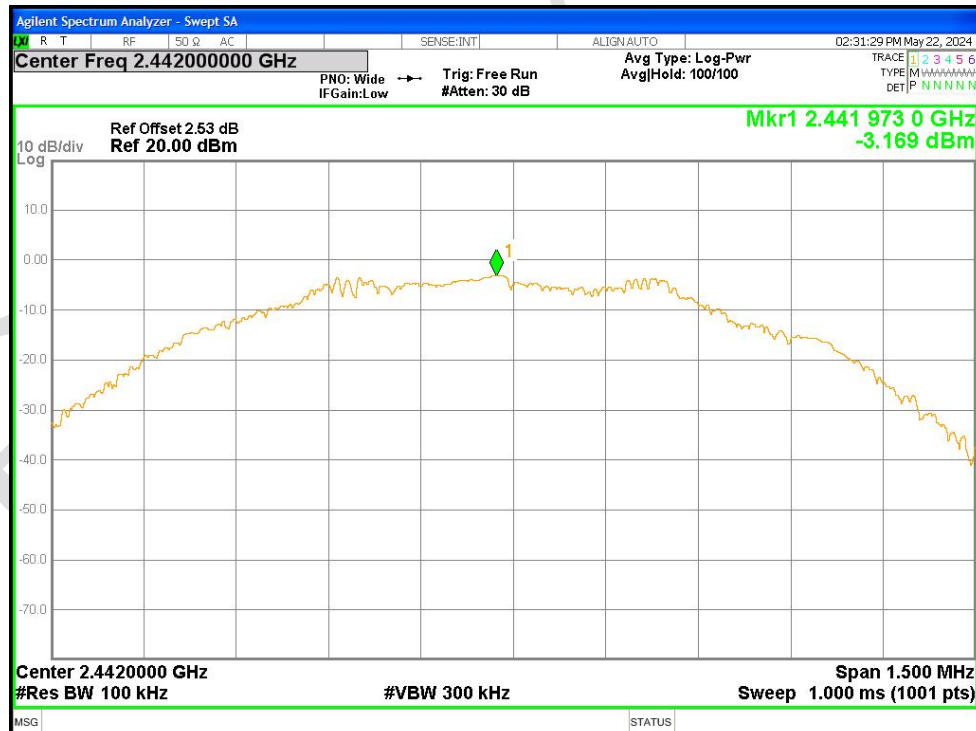
Tx. Spurious NVNT BLE 2402MHz Ant1 Ref



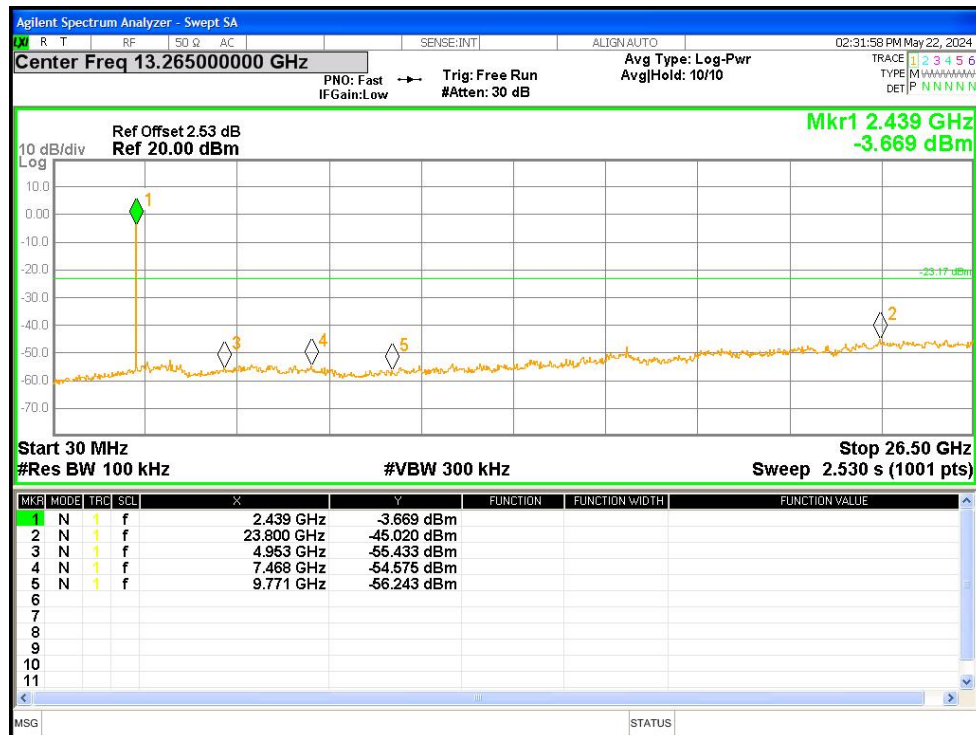
Tx. Spurious NVNT BLE 2402MHz Ant1 Emission



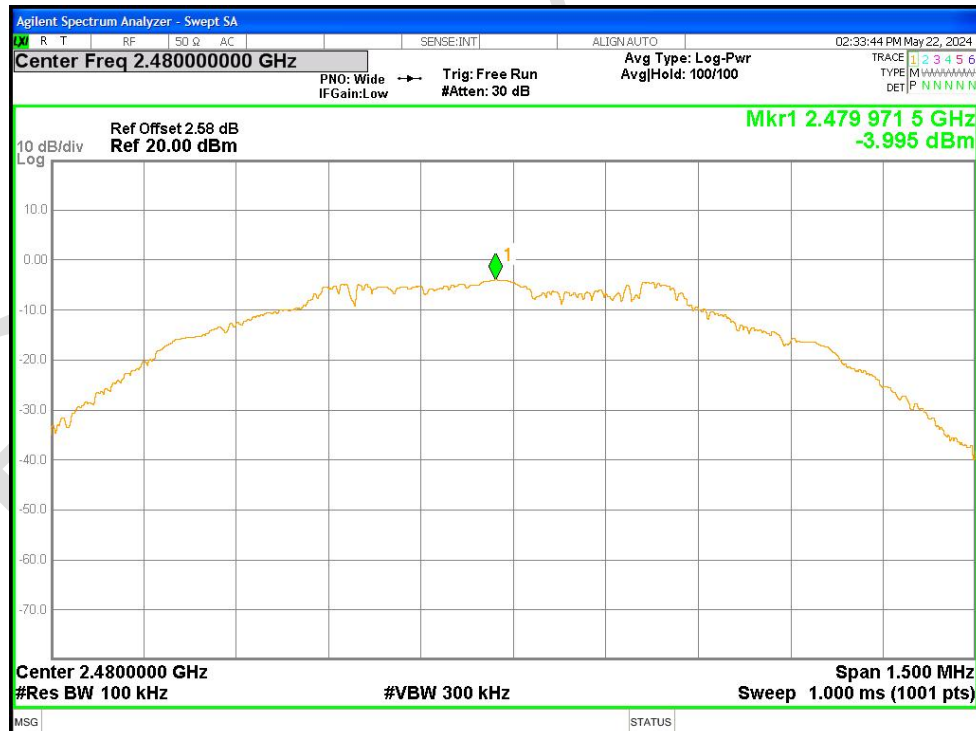
Tx. Spurious NVNT BLE 2442MHz Ant1 Ref



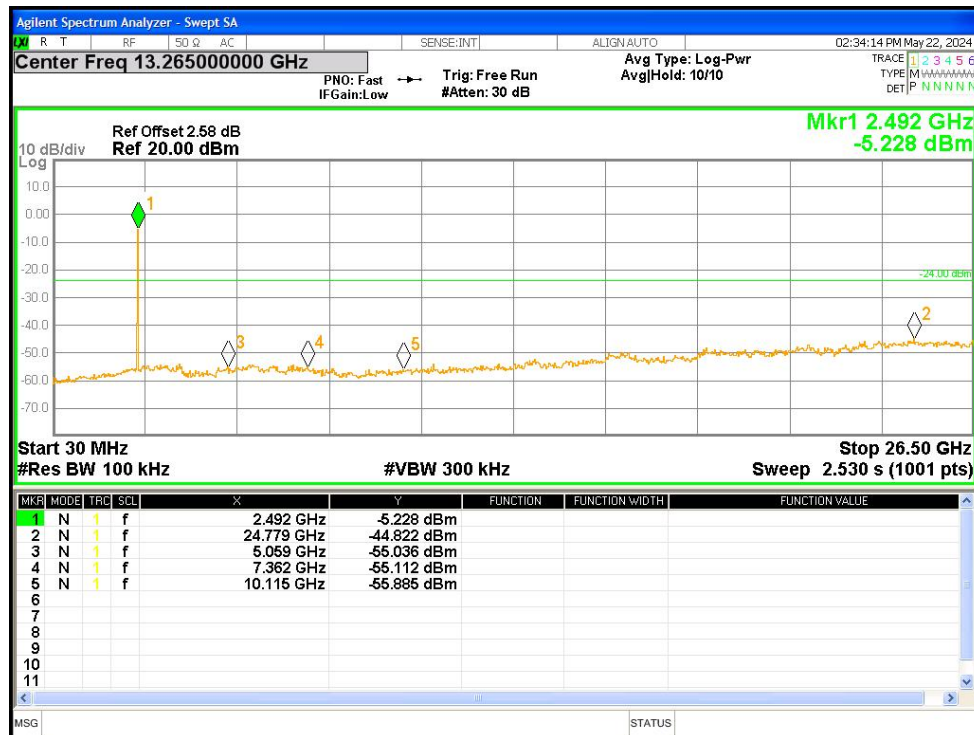
Tx. Spurious NVNT BLE 2442MHz Ant1 Emission



Tx. Spurious NVNT BLE 2480MHz Ant1 Ref

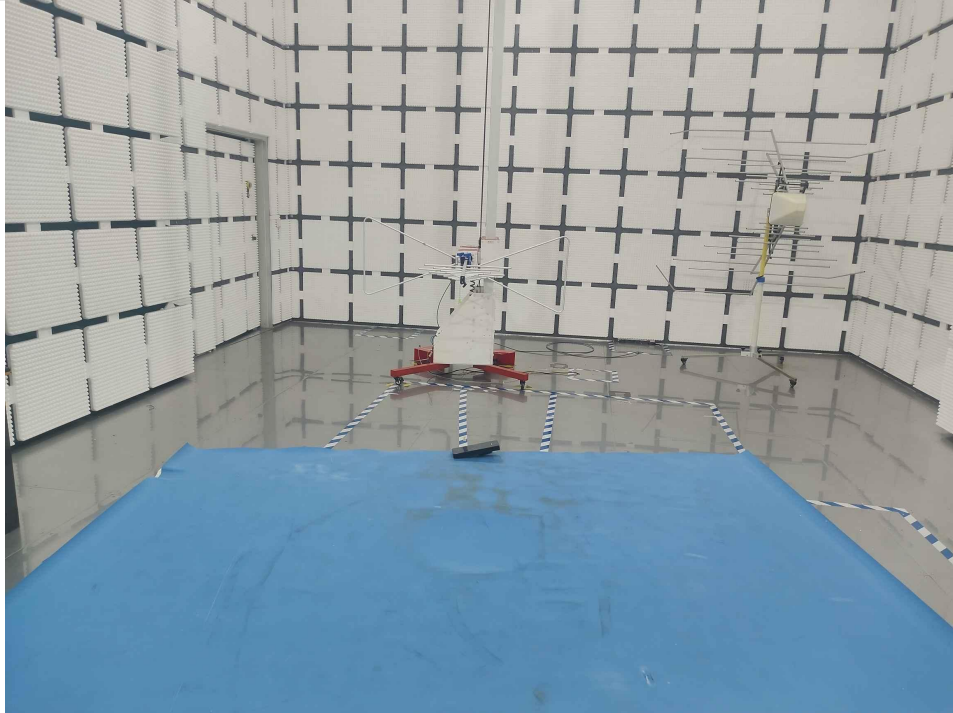


Tx. Spurious NVNT BLE 2480MHz Ant1 Emission



## Appendix B: photographs of test setup

Radiated Emissions (30MHz-1GHz)



Radiated Emissions (above 1GHz)



## Appendix C: photographs of EUT

Reference to the test report no. BLA-EMC-202405-A0401

----END OF REPORT----

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