

# RF Test Data for Bluetooth LE (Conducted Measurements)

| General Description of EUT                                                                                                                  |                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Product Name:                                                                                                                               | Solar-Powered Wireless Security Camera |
| Test Model:                                                                                                                                 | VT75                                   |
| Sample ID:                                                                                                                                  | HC-C-202603-0552-01-01                 |
| Environmental Conditions                                                                                                                    |                                        |
| Temperature:                                                                                                                                | 24.6℃                                  |
| Relative Humidity:                                                                                                                          | 48.6%                                  |
| Test Voltage:                                                                                                                               | DC 3.7V                                |
| Test Engineer:                                                                                                                              | Kael Li                                |
| Note: For a more detailed features description, please refer to the report TBR-C-202603-0552-3<br>The report only show the worst case data. |                                        |

## Contents

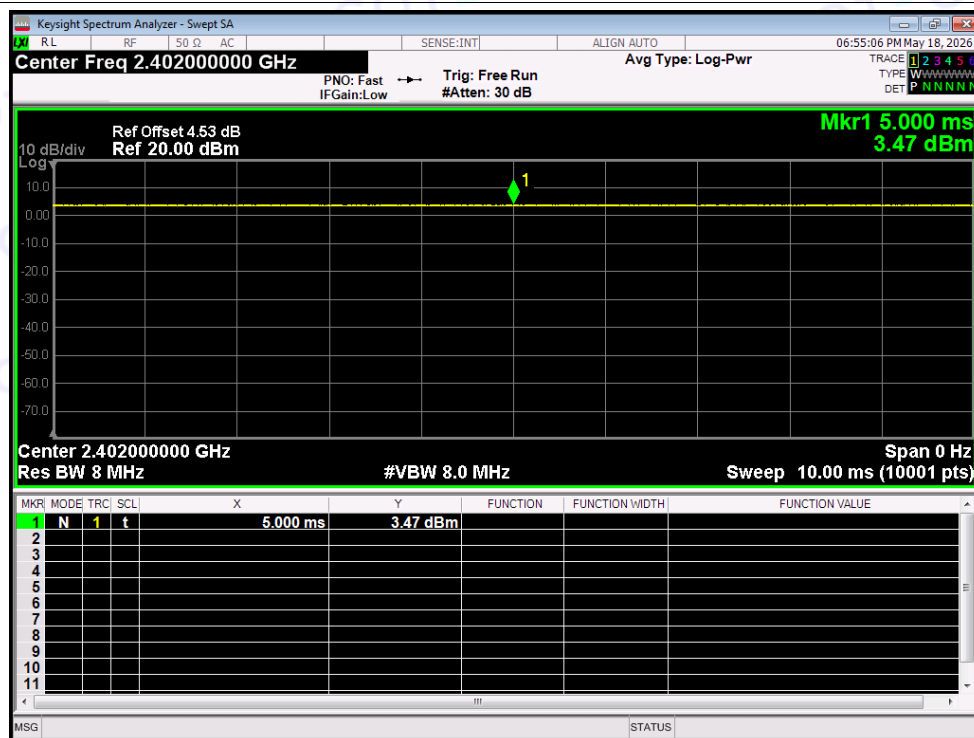
|    |                                            |    |
|----|--------------------------------------------|----|
| 1. | Duty Cycle .....                           | 3  |
| 2. | Maximum Conducted Output Power .....       | 7  |
| 3. | -6dB Bandwidth .....                       | 11 |
| 4. | Occupied Channel Bandwidth .....           | 15 |
| 5. | Maximum Power Spectral Density Level ..... | 19 |
| 6. | Band Edge .....                            | 23 |
| 7. | Conducted RF Spurious Emission .....       | 28 |
| 8. | Restrict Band .....                        | 35 |

## 1. Duty Cycle

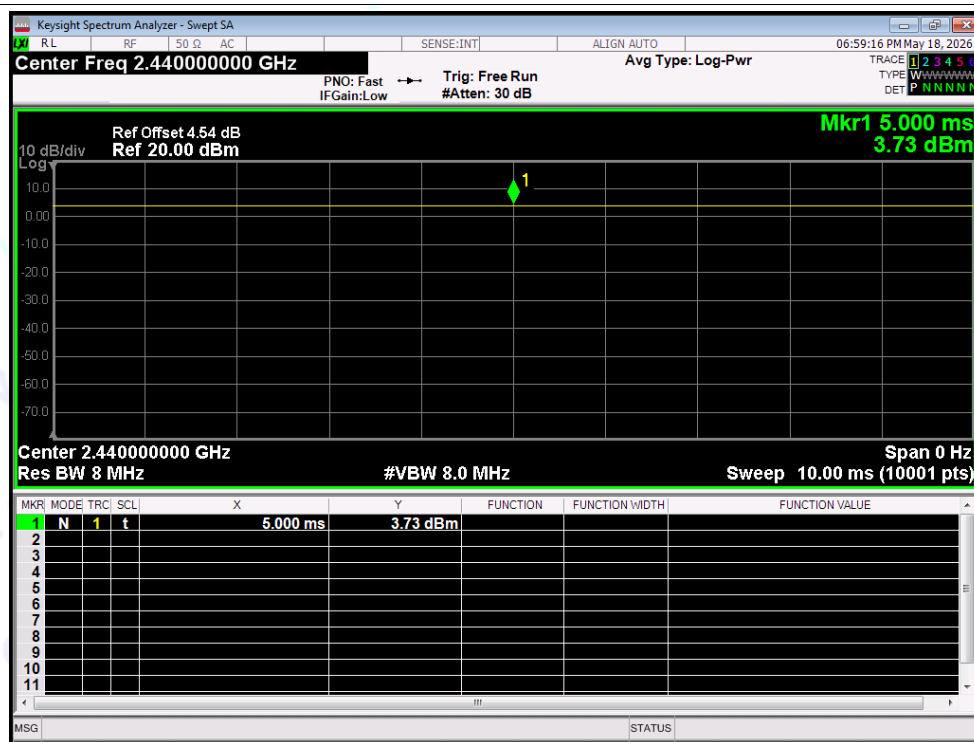
| Condition | Mode      | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|-----------|-----------|-----------------|---------|----------------|------------------------|-----------|
| NVNT      | BLE 1Mbps | 2402            | Ant1    | 100            | 0                      | 0         |
| NVNT      | BLE 1Mbps | 2440            | Ant1    | 100            | 0                      | 0         |
| NVNT      | BLE 1Mbps | 2480            | Ant1    | 100            | 0                      | 0         |
| NVNT      | BLE 2Mbps | 2402            | Ant1    | 100            | 0                      | 0         |
| NVNT      | BLE 2Mbps | 2440            | Ant1    | 100            | 0                      | 0         |
| NVNT      | BLE 2Mbps | 2480            | Ant1    | 100            | 0                      | 0         |

## Test Graphs

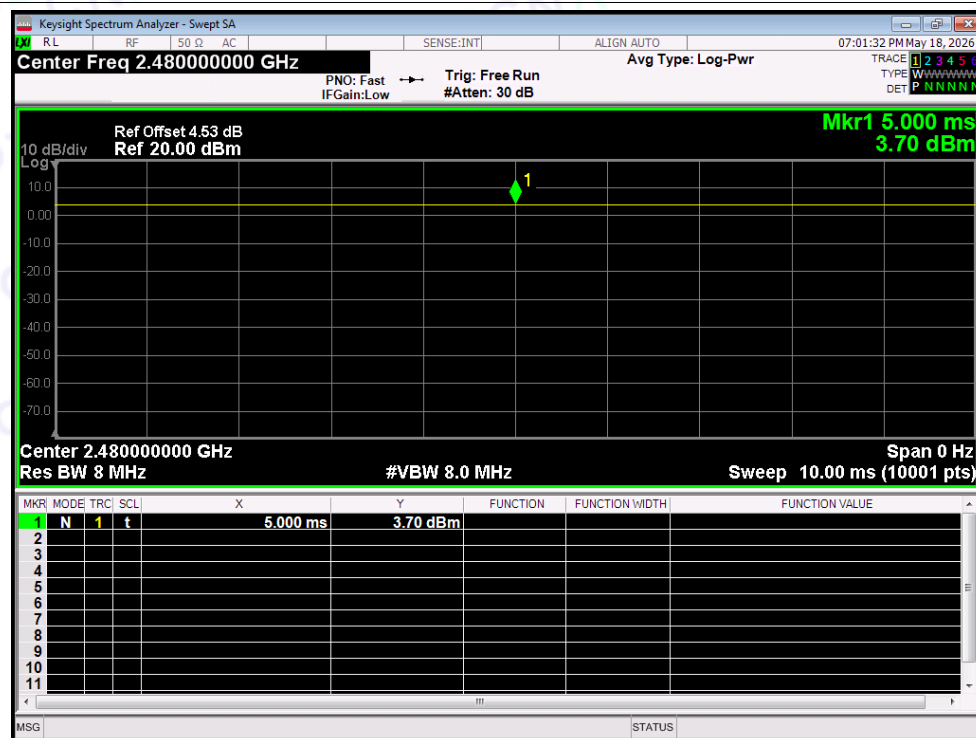
## Duty Cycle NVNT BLE 1Mbps 2402MHz Ant1



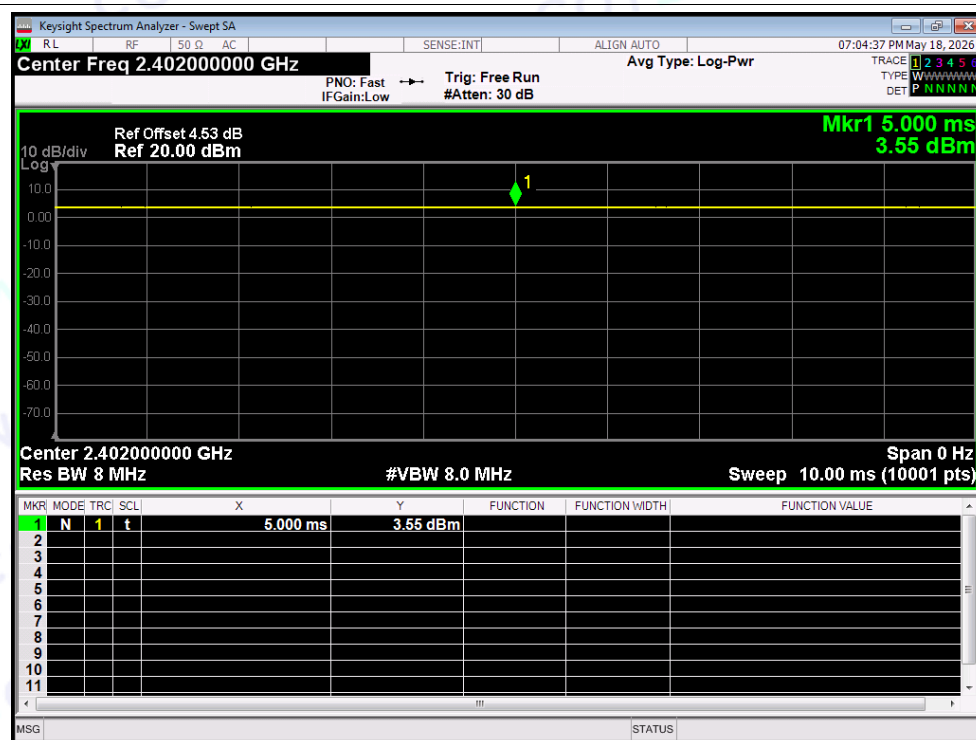
## Duty Cycle NVNT BLE 1Mbps 2440MHz Ant1



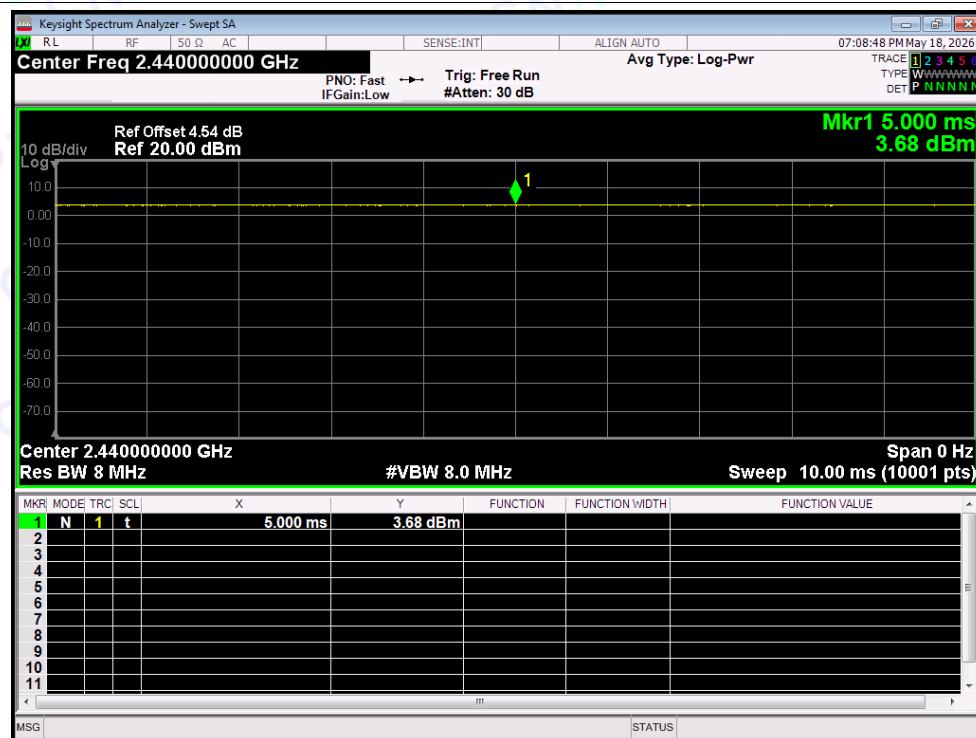
## Duty Cycle NVNT BLE 1Mbps 2480MHz Ant1



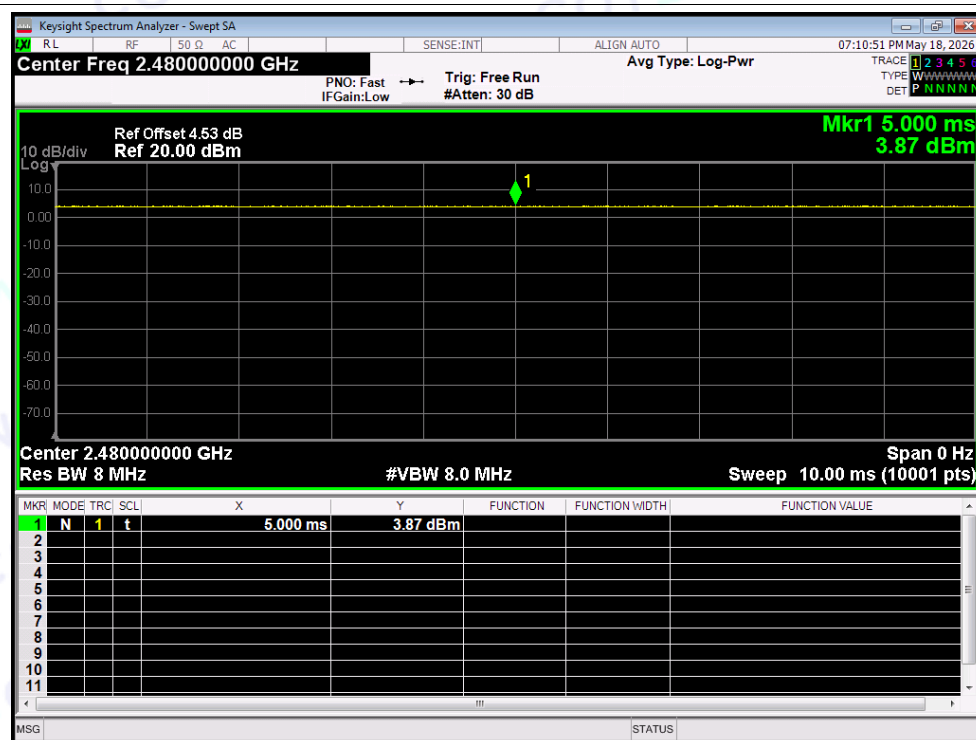
## Duty Cycle NVNT BLE 2Mbps 2402MHz Ant1



## Duty Cycle NVNT BLE 2Mbps 2440MHz Ant1



## Duty Cycle NVNT BLE 2Mbps 2480MHz Ant1

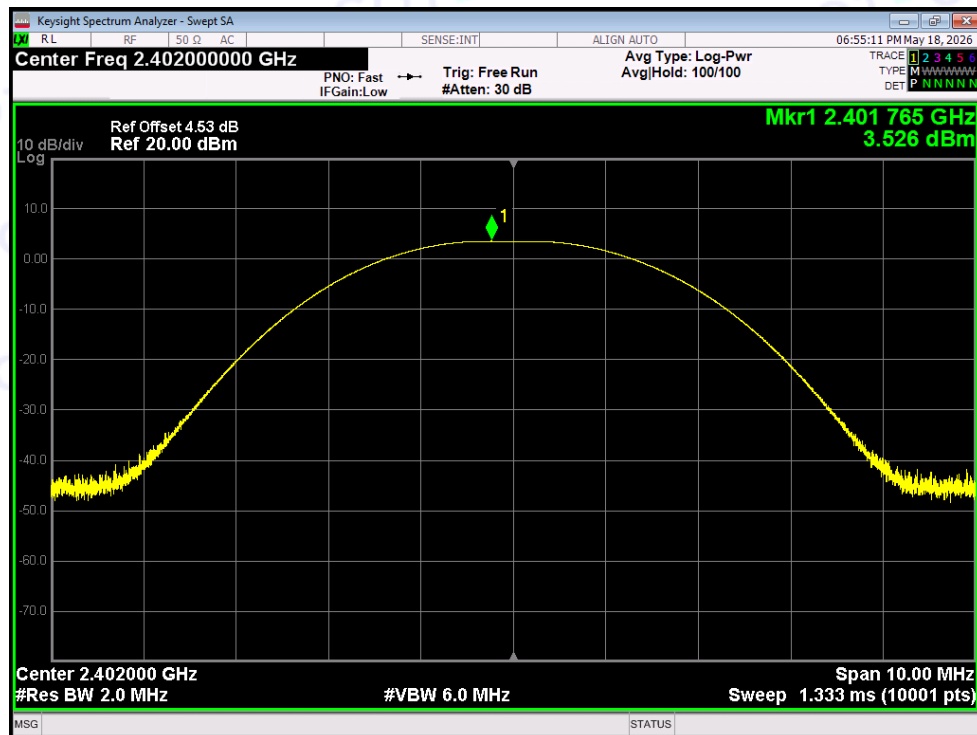


## 2. Maximum Conducted Output Power

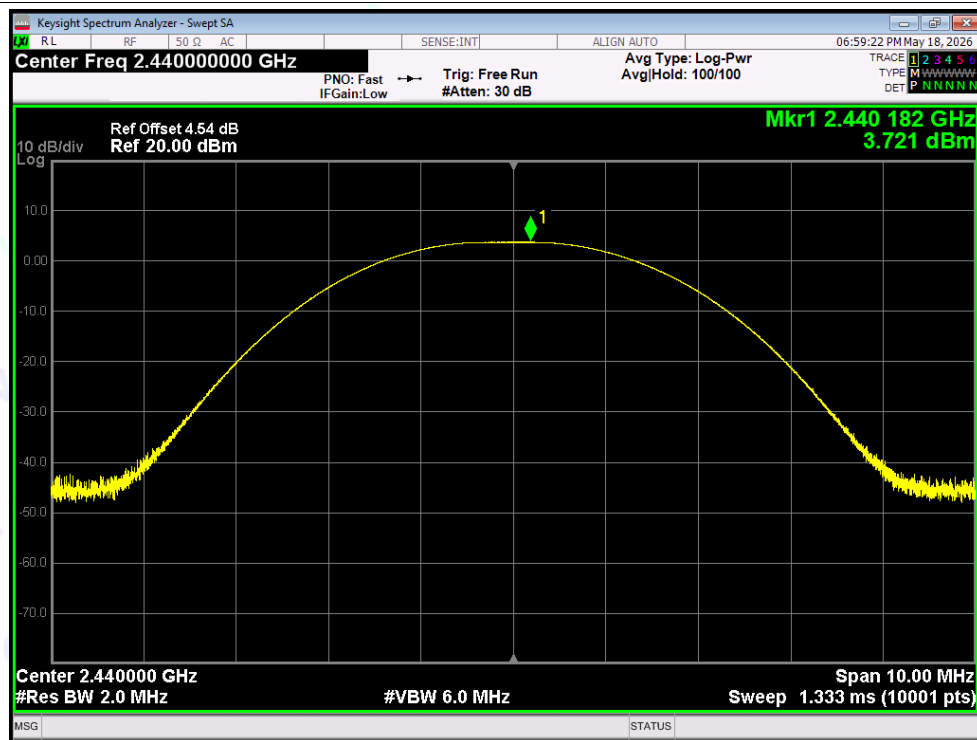
| Condition | Mode      | Frequency<br>(MHz) | Antenna | Total Power<br>(dBm) | Limit<br>(dBm) | Verdict |
|-----------|-----------|--------------------|---------|----------------------|----------------|---------|
| NVNT      | BLE 1Mbps | 2402               | Ant1    | 3.526                | 30             | Pass    |
| NVNT      | BLE 1Mbps | 2440               | Ant1    | 3.721                | 30             | Pass    |
| NVNT      | BLE 1Mbps | 2480               | Ant1    | 3.762                | 30             | Pass    |
| NVNT      | BLE 2Mbps | 2402               | Ant1    | 3.501                | 30             | Pass    |
| NVNT      | BLE 2Mbps | 2440               | Ant1    | 3.709                | 30             | Pass    |
| NVNT      | BLE 2Mbps | 2480               | Ant1    | 3.793                | 30             | Pass    |

## Test Graphs

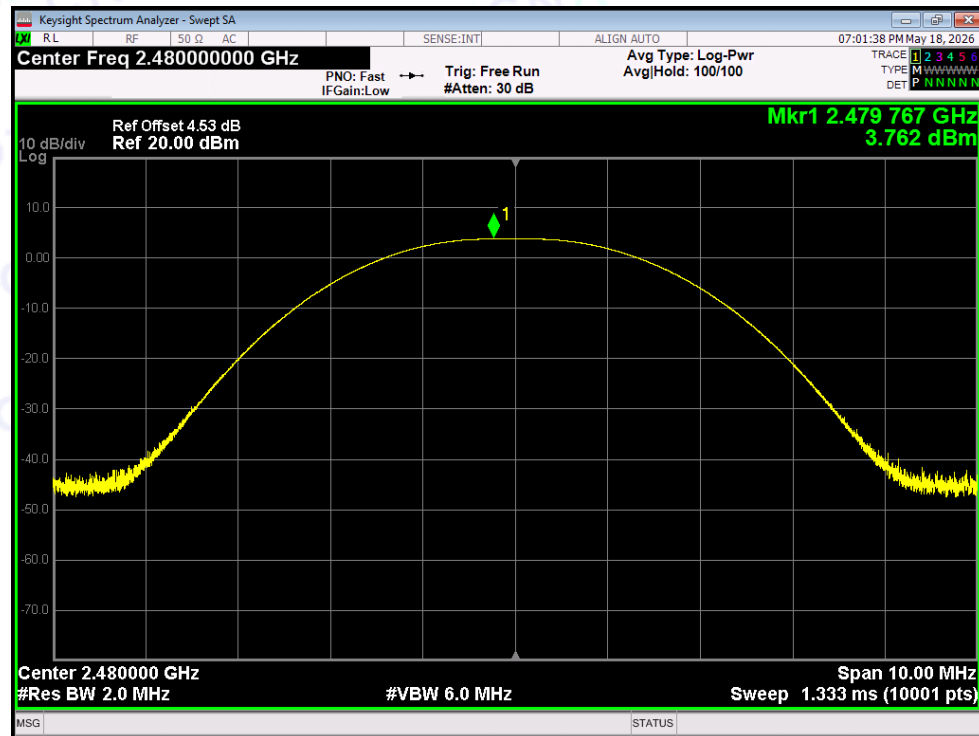
## Power NVNT BLE 1Mbps 2402MHz Ant1



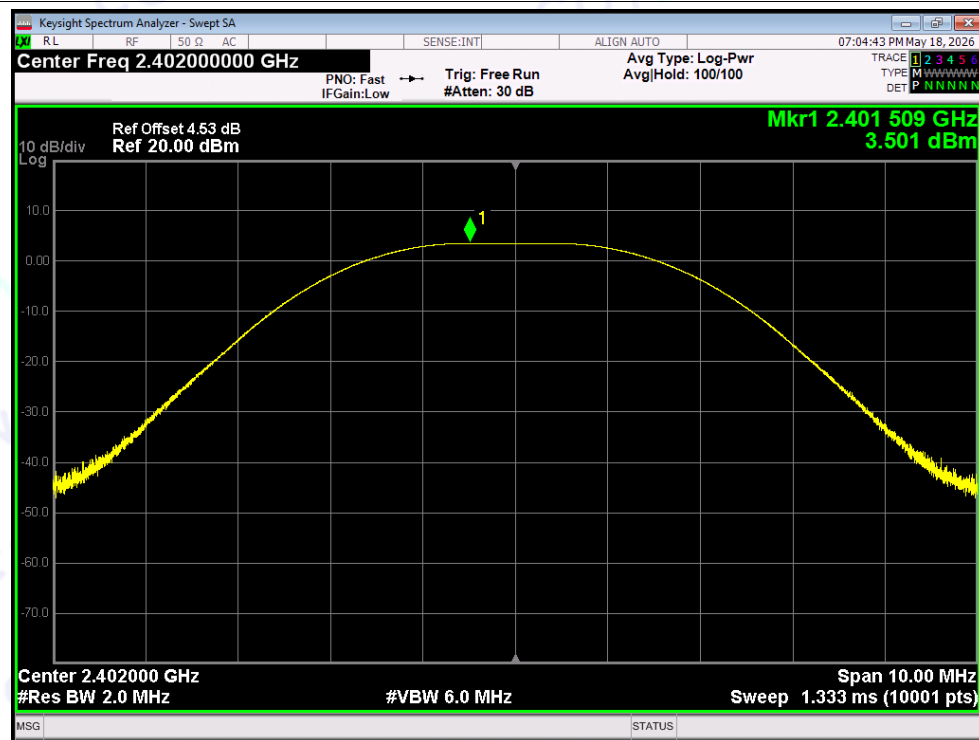
## Power NVNT BLE 1Mbps 2440MHz Ant1



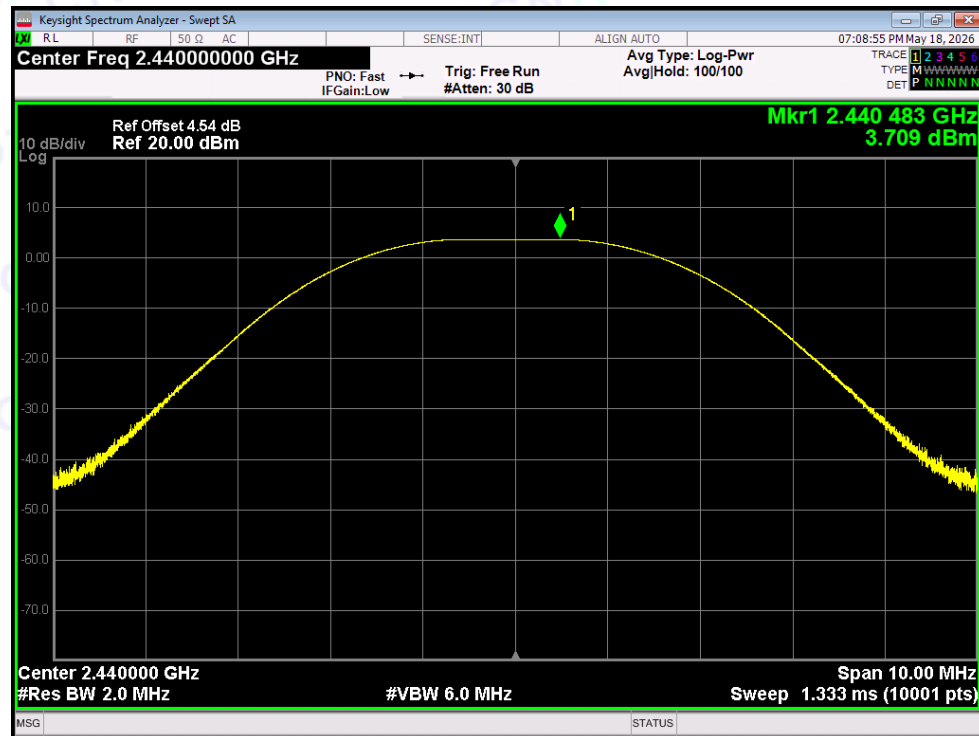
Power NVNT BLE 1Mbps 2480MHz Ant1



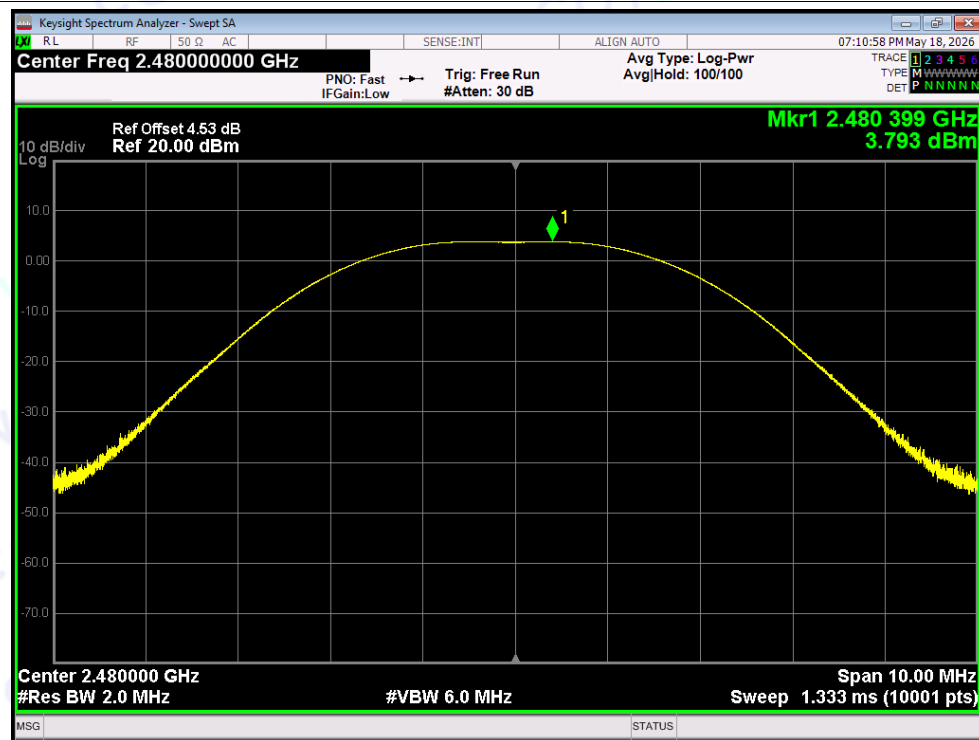
Power NVNT BLE 2Mbps 2402MHz Ant1



Power NVNT BLE 2Mbps 2440MHz Ant1



Power NVNT BLE 2Mbps 2480MHz Ant1

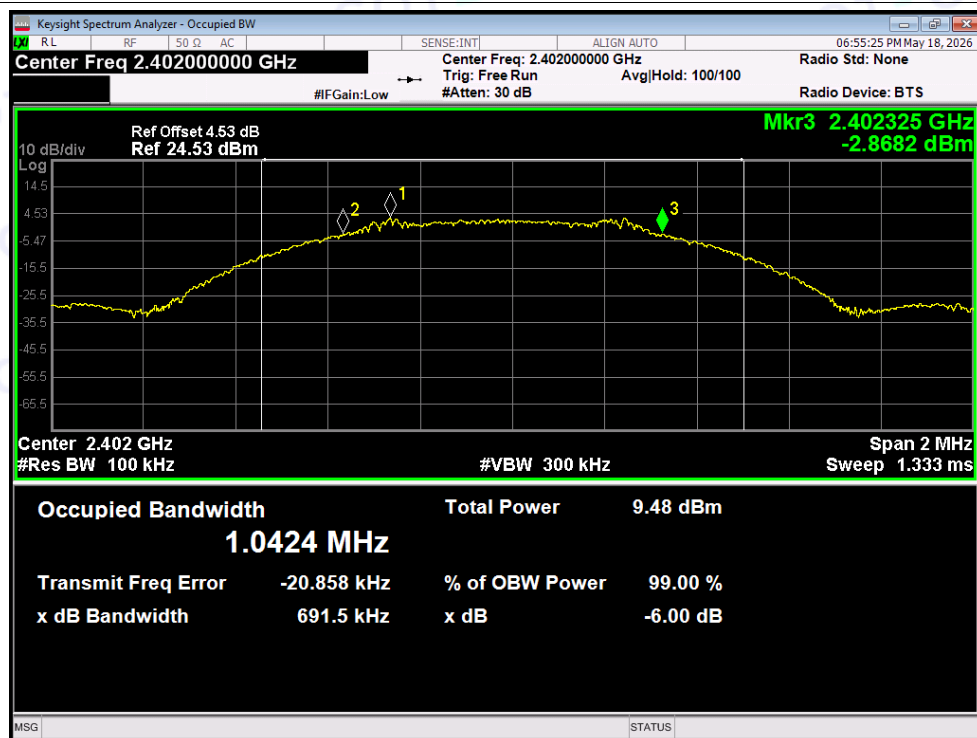


### 3. -6dB Bandwidth

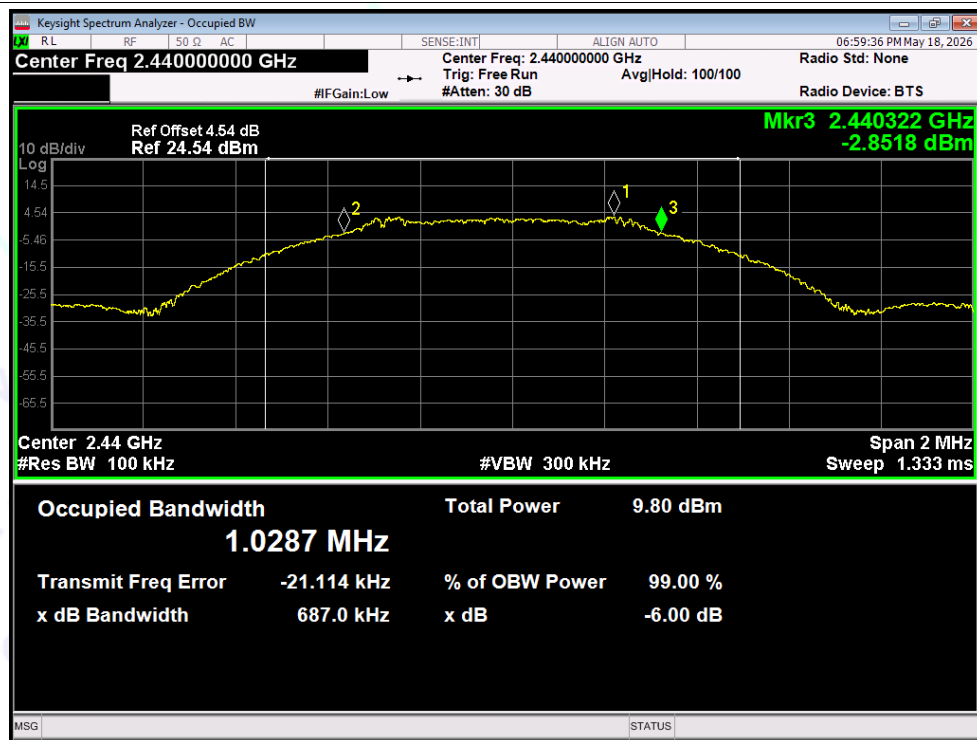
| Condition | Mode      | Frequency (MHz) | Antenna | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|-----------|-----------|-----------------|---------|-----------------------|-----------------------------|---------|
| NVNT      | BLE 1Mbps | 2402            | Ant1    | 0.69                  | 0.5                         | Pass    |
| NVNT      | BLE 1Mbps | 2440            | Ant1    | 0.69                  | 0.5                         | Pass    |
| NVNT      | BLE 1Mbps | 2480            | Ant1    | 0.66                  | 0.5                         | Pass    |
| NVNT      | BLE 2Mbps | 2402            | Ant1    | 1.31                  | 0.5                         | Pass    |
| NVNT      | BLE 2Mbps | 2440            | Ant1    | 1.28                  | 0.5                         | Pass    |
| NVNT      | BLE 2Mbps | 2480            | Ant1    | 1.32                  | 0.5                         | Pass    |

## Test Graphs

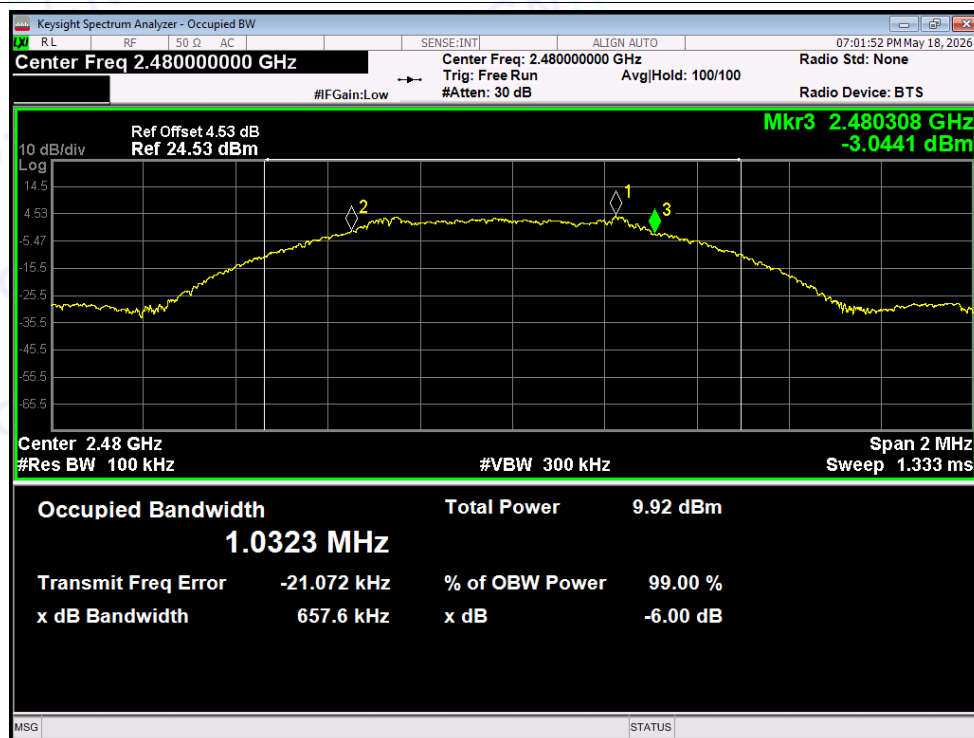
## -6dB Bandwidth NVNT BLE 1Mbps 2402MHz Ant1



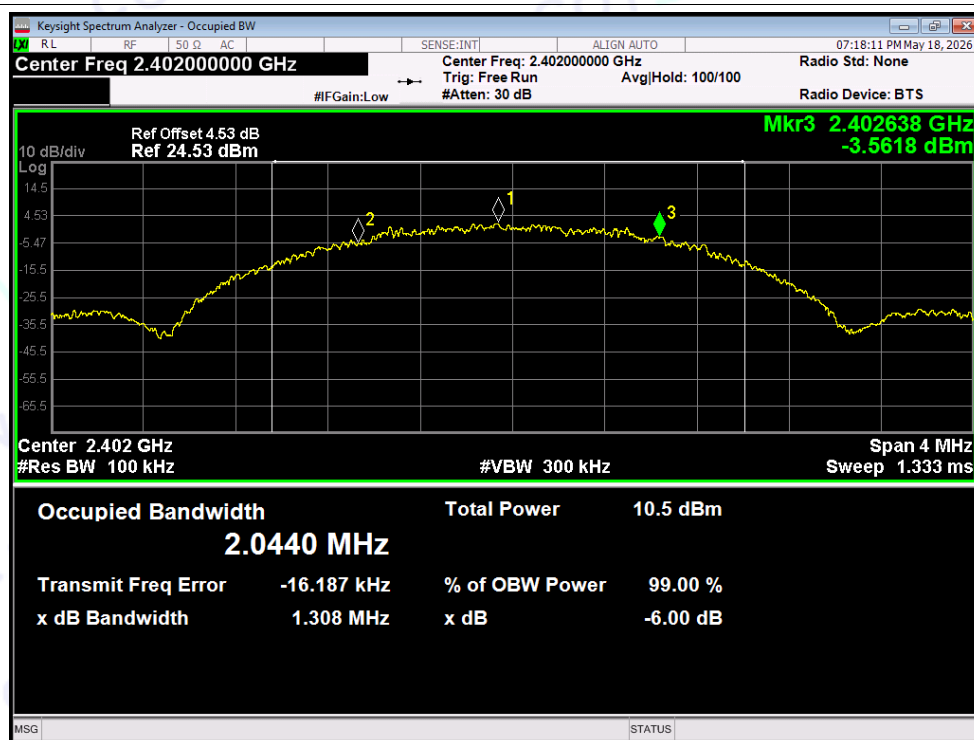
## -6dB Bandwidth NVNT BLE 1Mbps 2440MHz Ant1



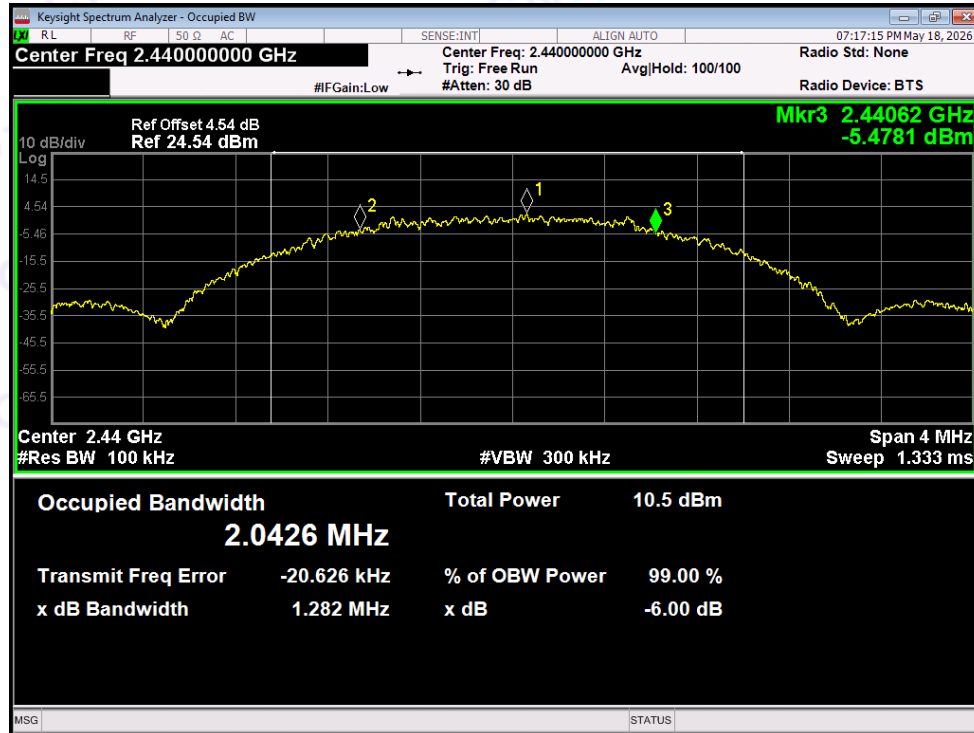
## -6dB Bandwidth NVNT BLE 1Mbps 2480MHz Ant1



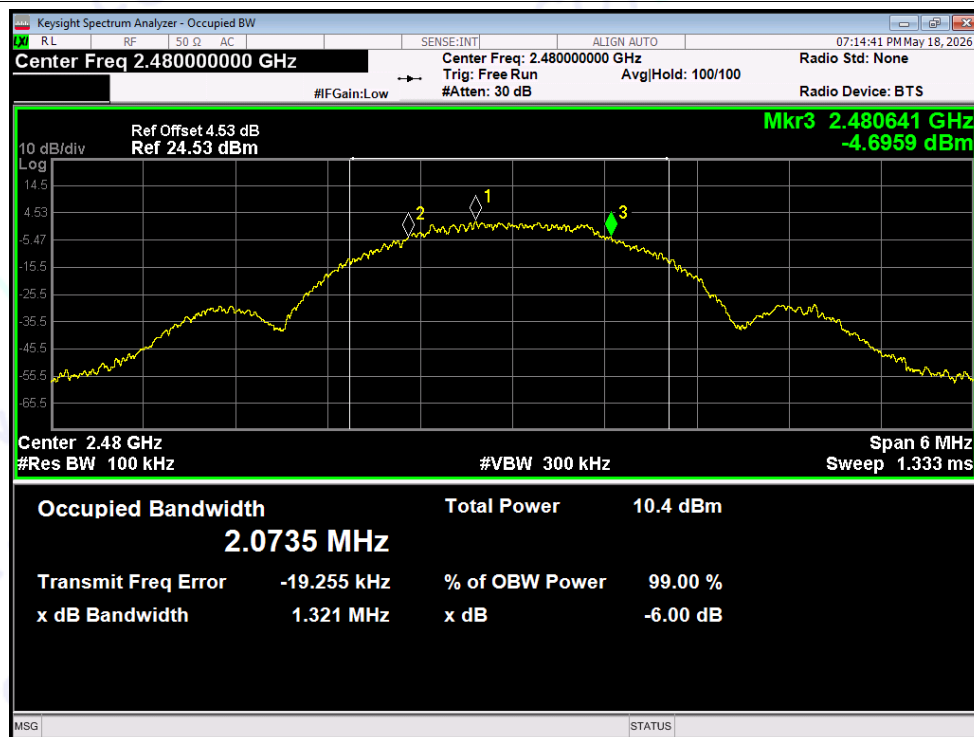
## -6dB Bandwidth NVNT BLE 2Mbps 2402MHz Ant1



## -6dB Bandwidth NVNT BLE 2Mbps 2440MHz Ant1



## -6dB Bandwidth NVNT BLE 2Mbps 2480MHz Ant1

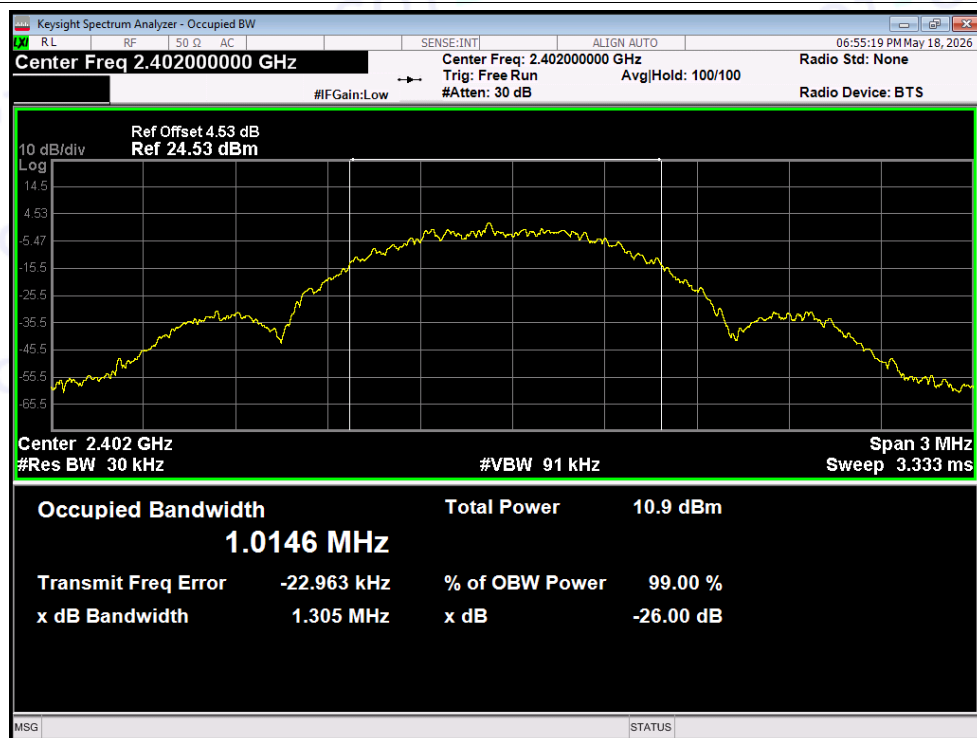


## 4. Occupied Channel Bandwidth

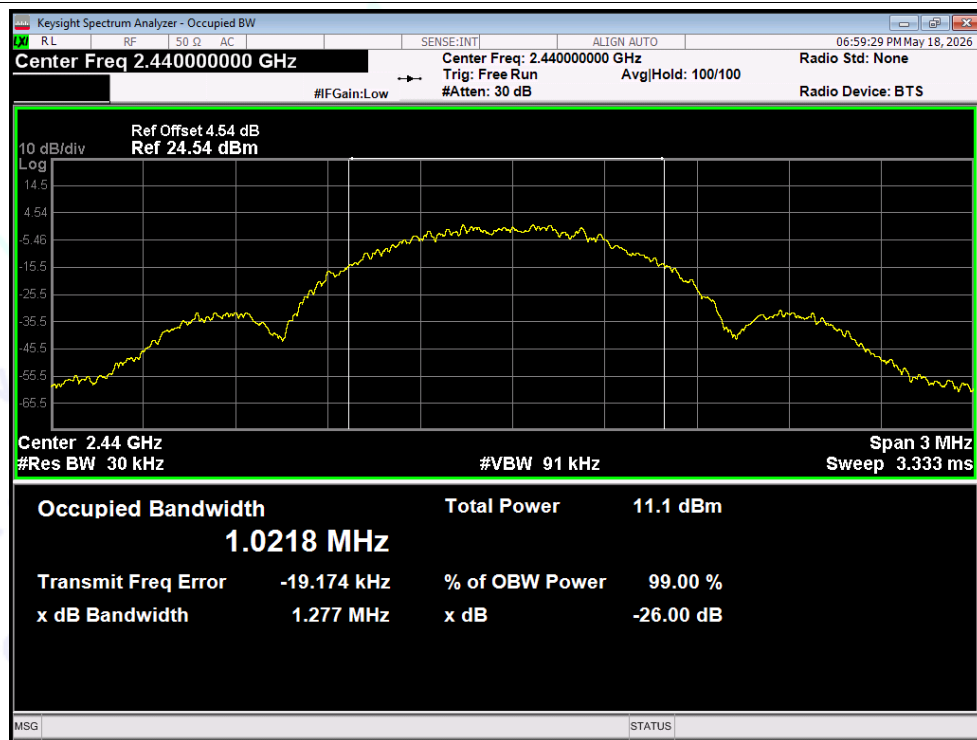
| Condition | Mode      | Frequency (MHz) | Antenna | 99% OBW (MHz) |
|-----------|-----------|-----------------|---------|---------------|
| NVNT      | BLE 1Mbps | 2402            | Ant1    | 1.015         |
| NVNT      | BLE 1Mbps | 2440            | Ant1    | 1.022         |
| NVNT      | BLE 1Mbps | 2480            | Ant1    | 1.028         |
| NVNT      | BLE 2Mbps | 2402            | Ant1    | 2.092         |
| NVNT      | BLE 2Mbps | 2440            | Ant1    | 2.05          |
| NVNT      | BLE 2Mbps | 2480            | Ant1    | 2.046         |

## Test Graphs

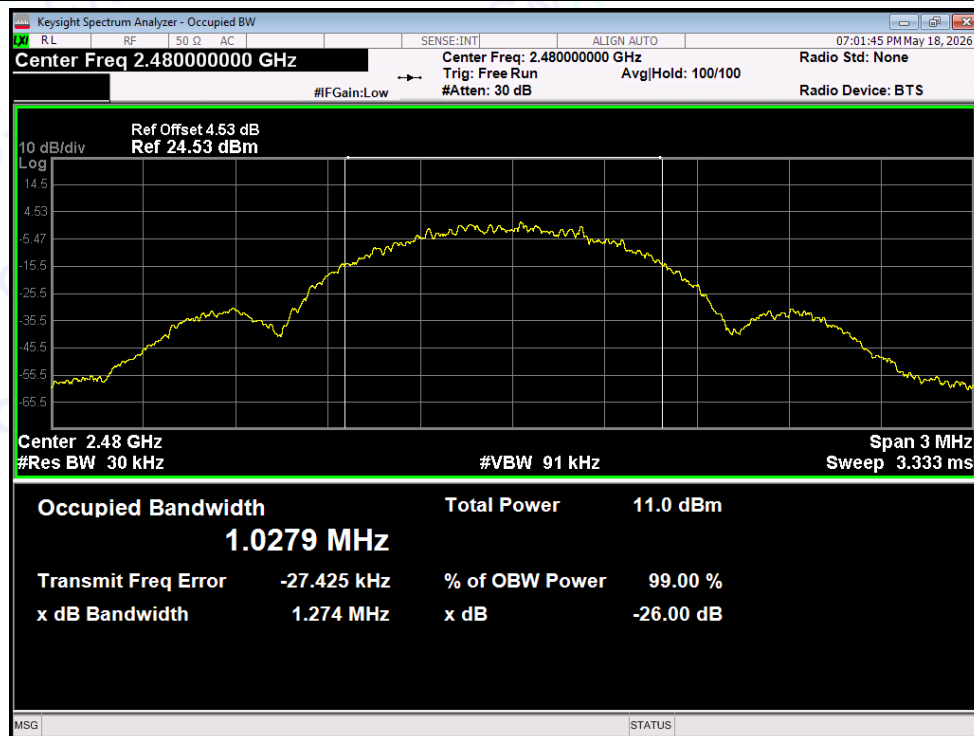
## OBW NVNT BLE 1Mbps 2402MHz Ant1



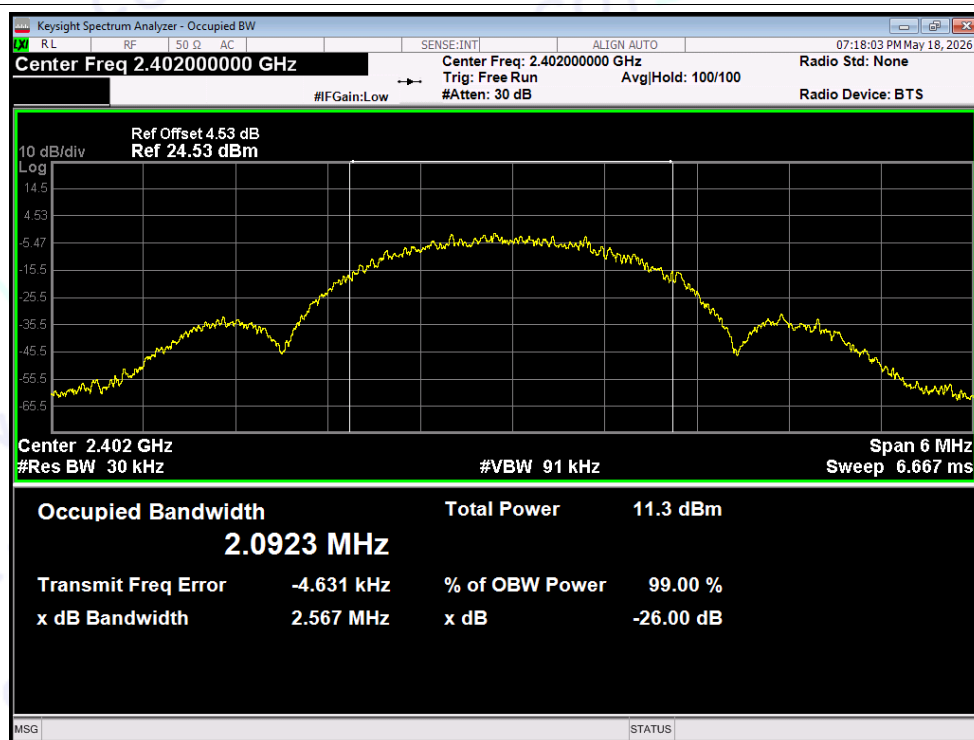
## OBW NVNT BLE 1Mbps 2440MHz Ant1



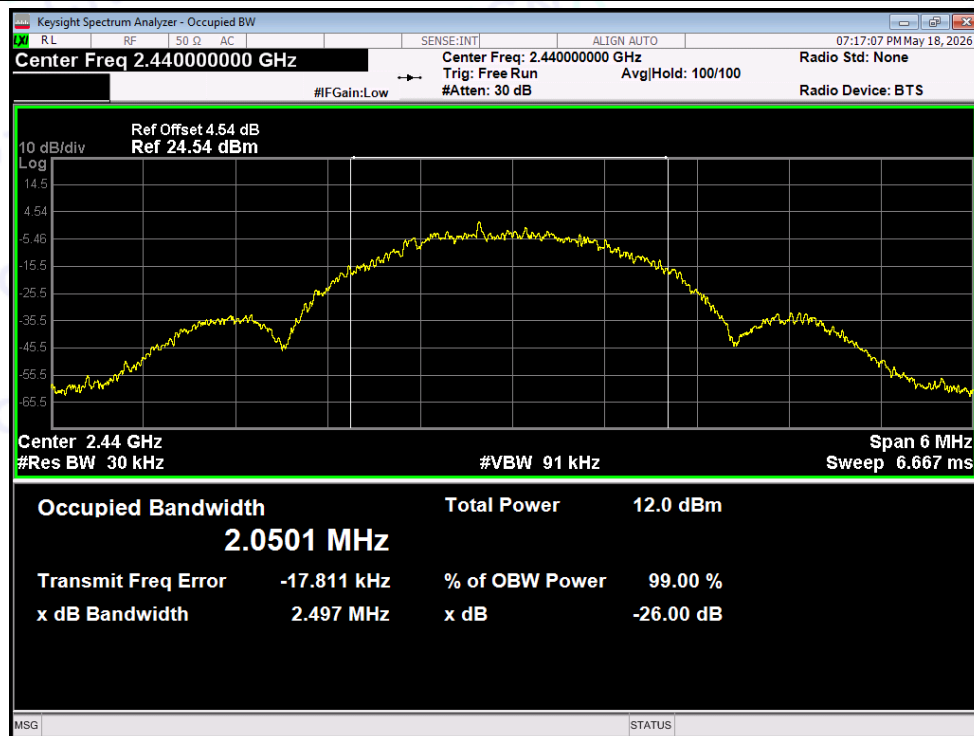
## OBW NVNT BLE 1Mbps 2480MHz Ant1



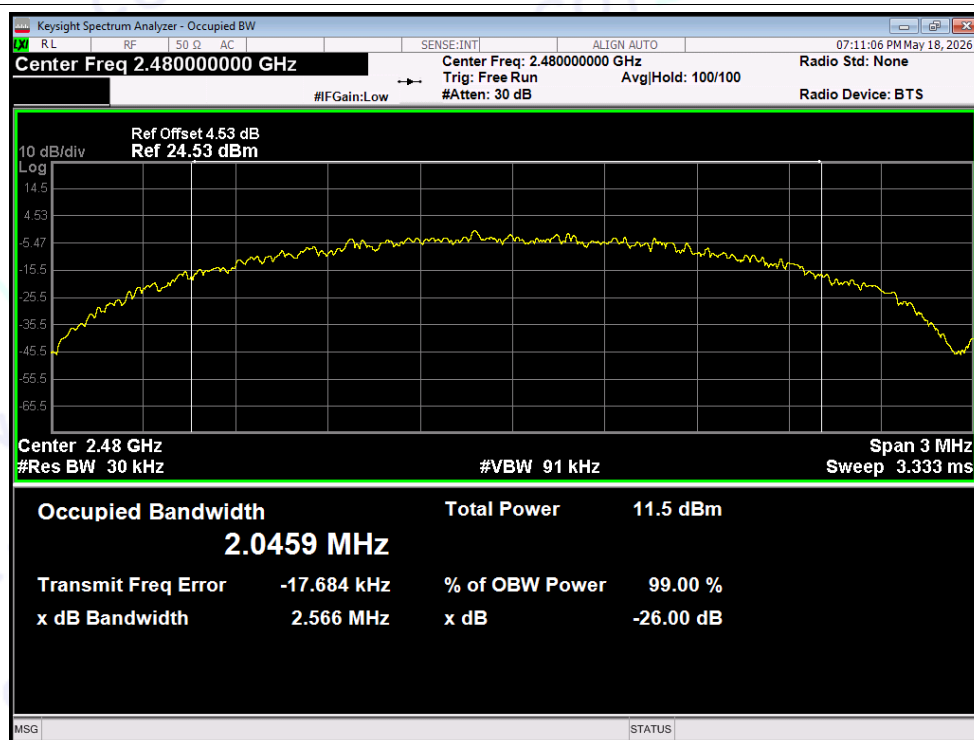
## OBW NVNT BLE 2Mbps 2402MHz Ant1



## OBW NVNT BLE 2Mbps 2440MHz Ant1



## OBW NVNT BLE 2Mbps 2480MHz Ant1

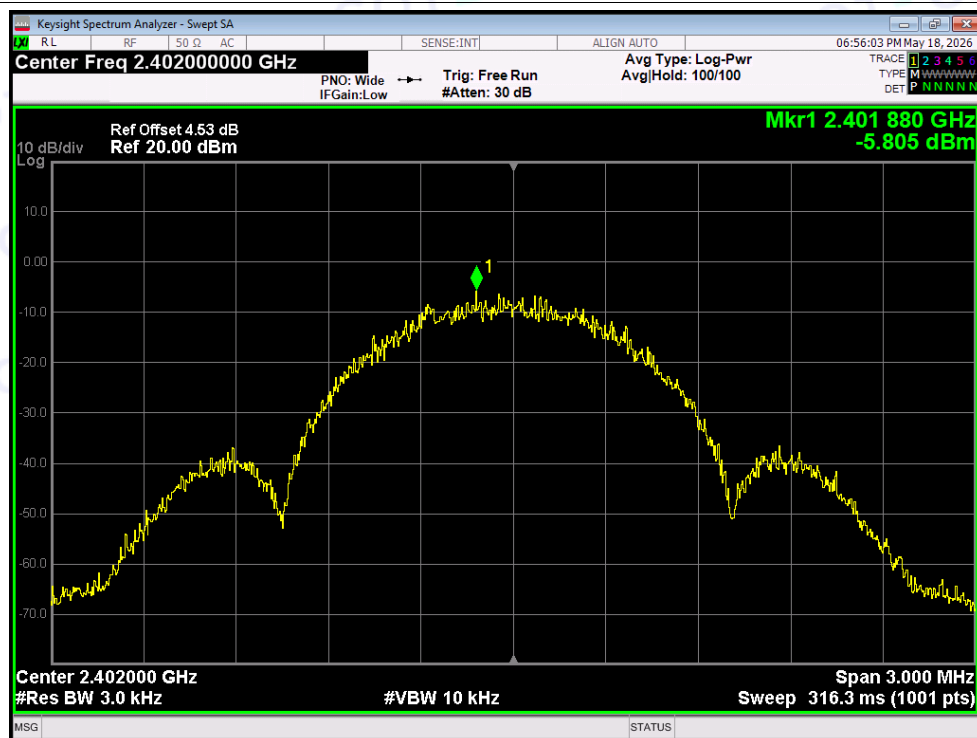


## 5. Maximum Power Spectral Density Level

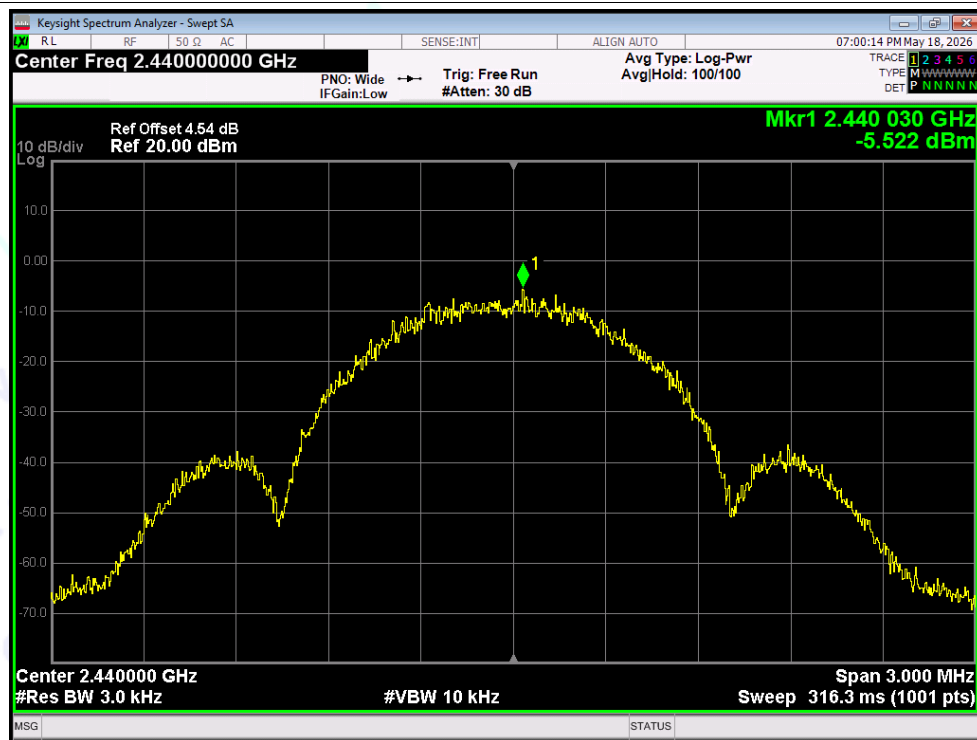
| Condition | Mode      | Frequency (MHz) | Antenna | Max PSD (dBm/3KHz) | Limit (dBm/3KHz) | Verdict |
|-----------|-----------|-----------------|---------|--------------------|------------------|---------|
| NVNT      | BLE 1Mbps | 2402            | Ant1    | -5.805             | 8                | Pass    |
| NVNT      | BLE 1Mbps | 2440            | Ant1    | -5.522             | 8                | Pass    |
| NVNT      | BLE 1Mbps | 2480            | Ant1    | -5.992             | 8                | Pass    |
| NVNT      | BLE 2Mbps | 2402            | Ant1    | -7.784             | 8                | Pass    |
| NVNT      | BLE 2Mbps | 2440            | Ant1    | -8.266             | 8                | Pass    |
| NVNT      | BLE 2Mbps | 2480            | Ant1    | -8.598             | 8                | Pass    |

## Test Graphs

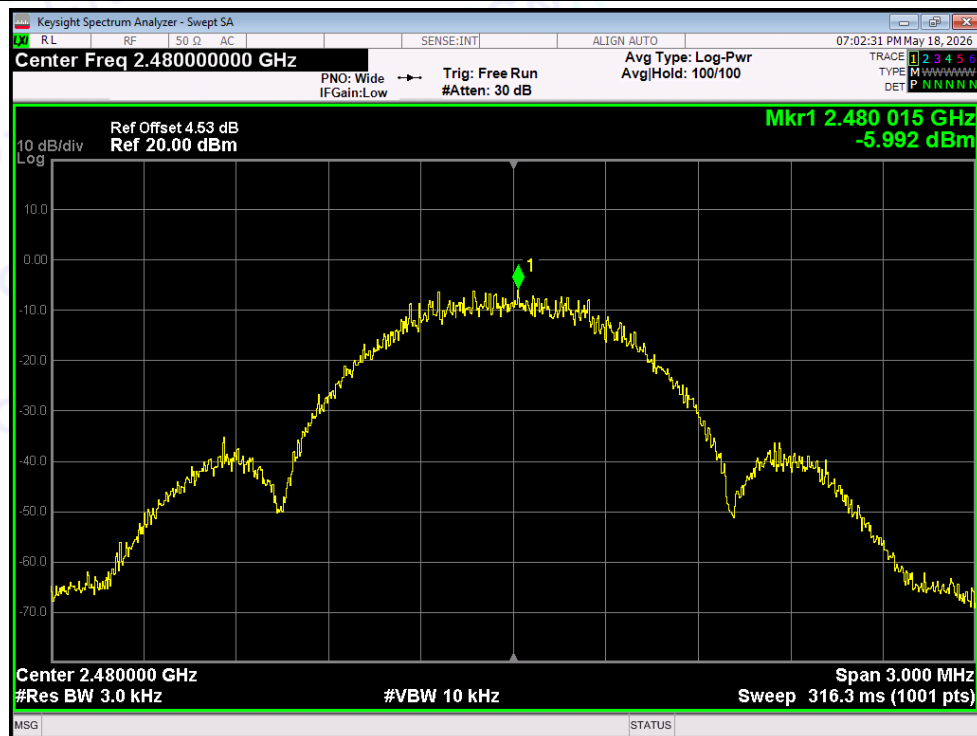
## PSD NVNT BLE 1Mbps 2402MHz Ant1



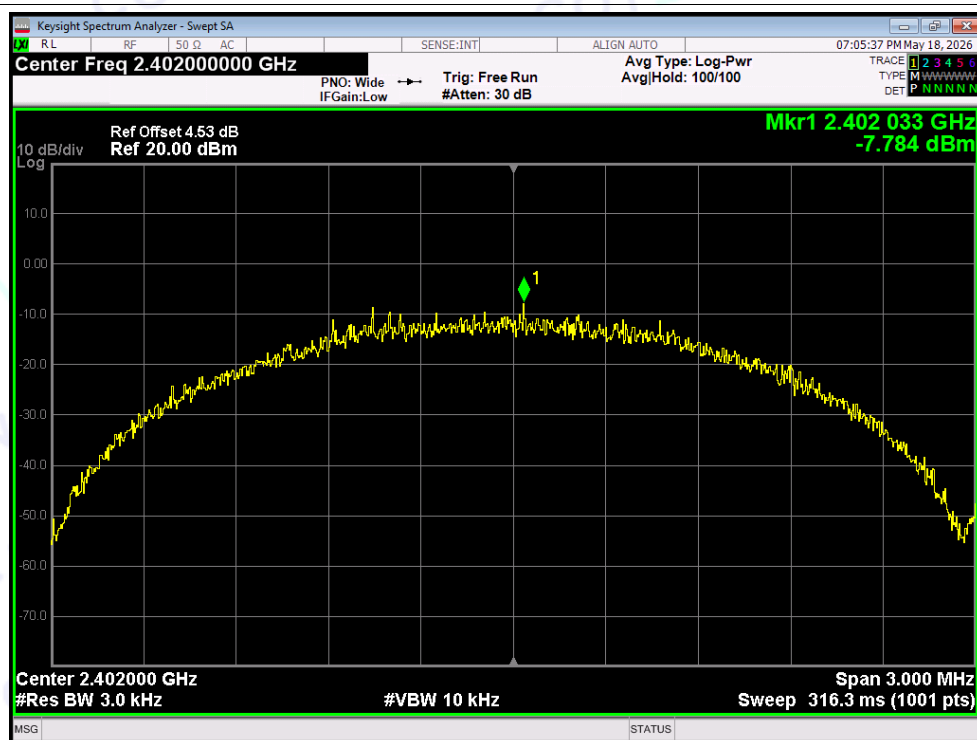
## PSD NVNT BLE 1Mbps 2440MHz Ant1



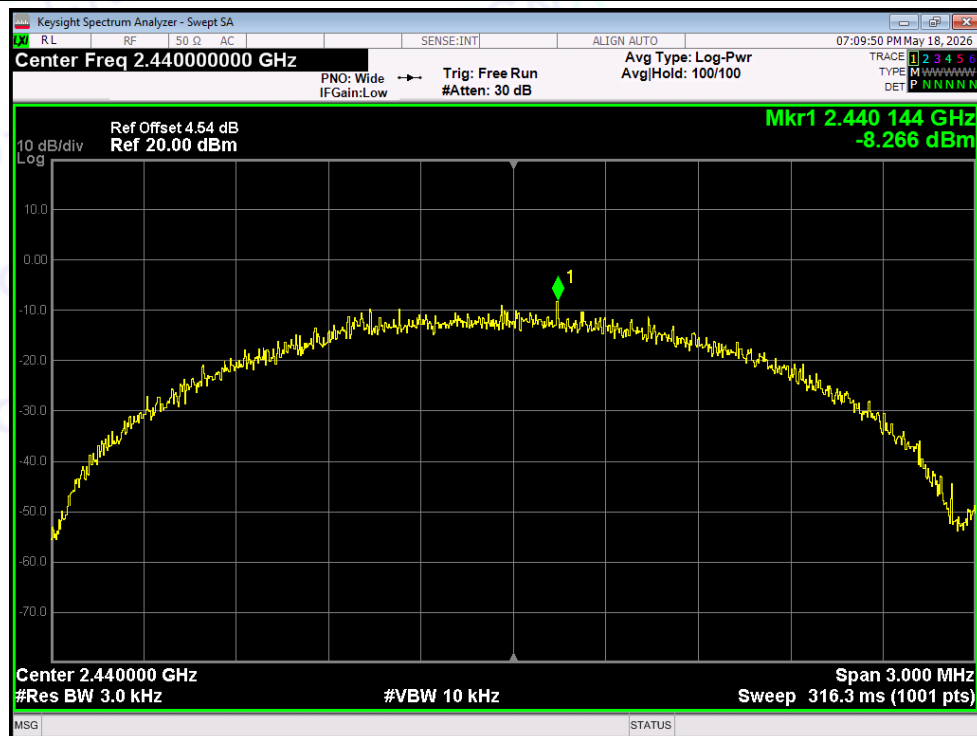
PSD NVNT BLE 1Mbps 2480MHz Ant1



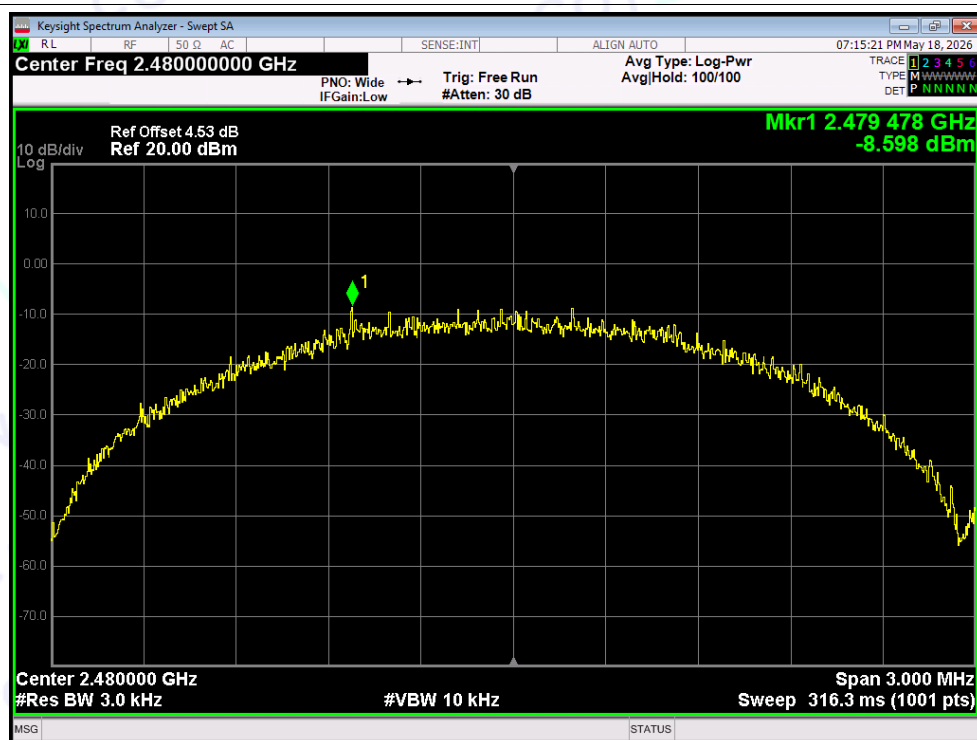
PSD NVNT BLE 2Mbps 2402MHz Ant1



PSD NVNT BLE 2Mbps 2440MHz Ant1



PSD NVNT BLE 2Mbps 2480MHz Ant1

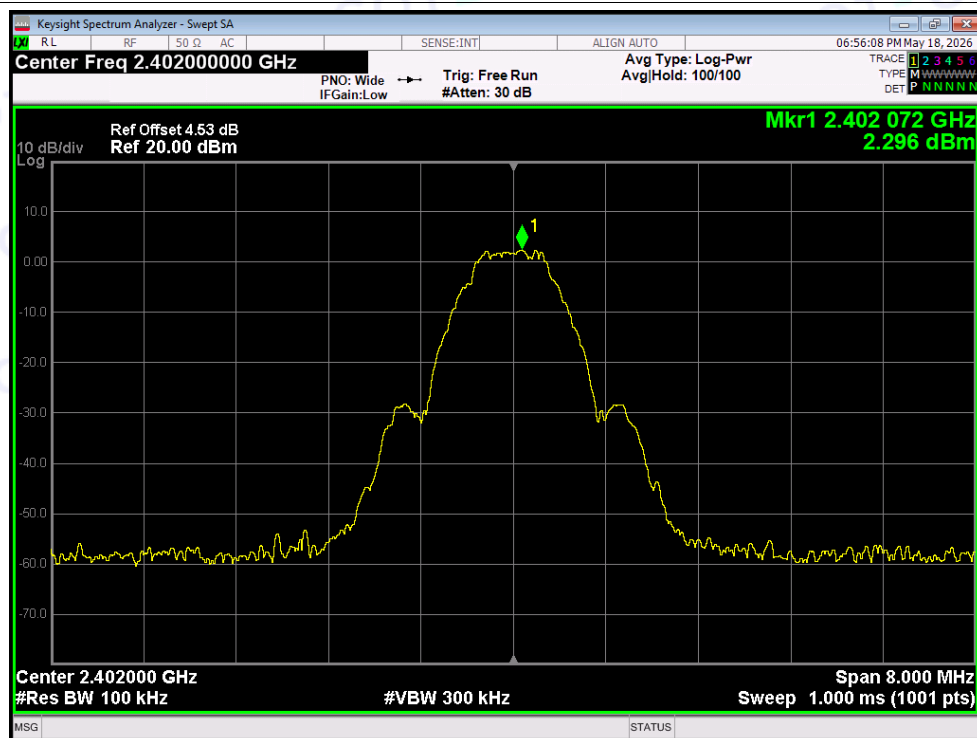


## 6. Band Edge

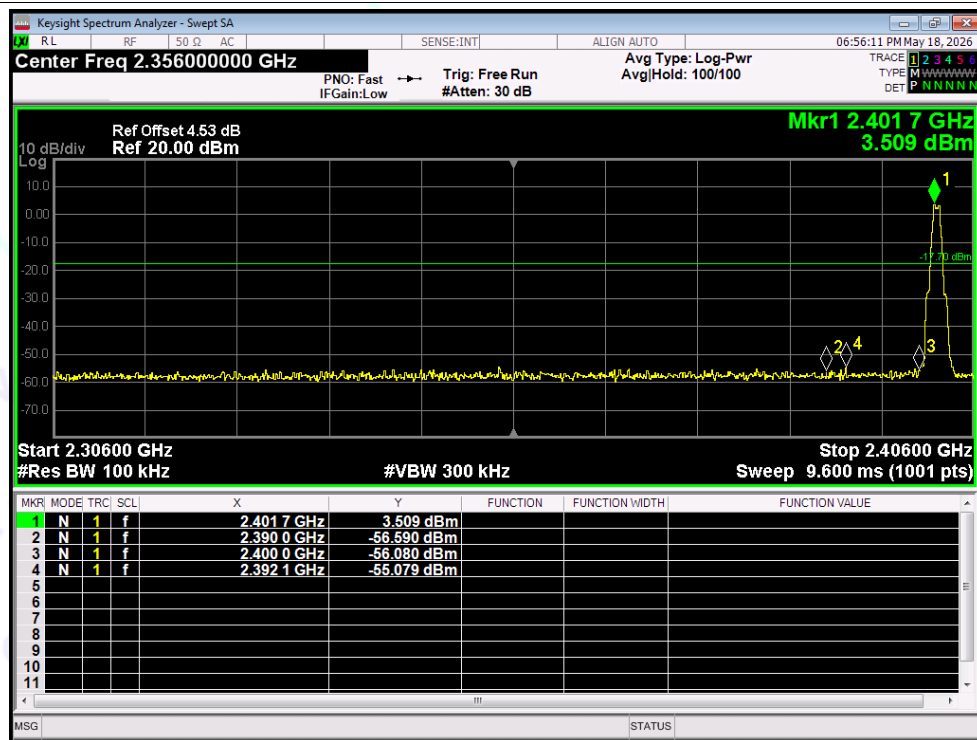
| Condition | Mode      | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|-----------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | BLE 1Mbps | 2402            | Ant1    | -57.38          | -20         | Pass    |
| NVNT      | BLE 1Mbps | 2480            | Ant1    | -58.5           | -20         | Pass    |
| NVNT      | BLE 2Mbps | 2402            | Ant1    | -31.31          | -20         | Pass    |
| NVNT      | BLE 2Mbps | 2480            | Ant1    | -56.75          | -20         | Pass    |

## Test Graphs

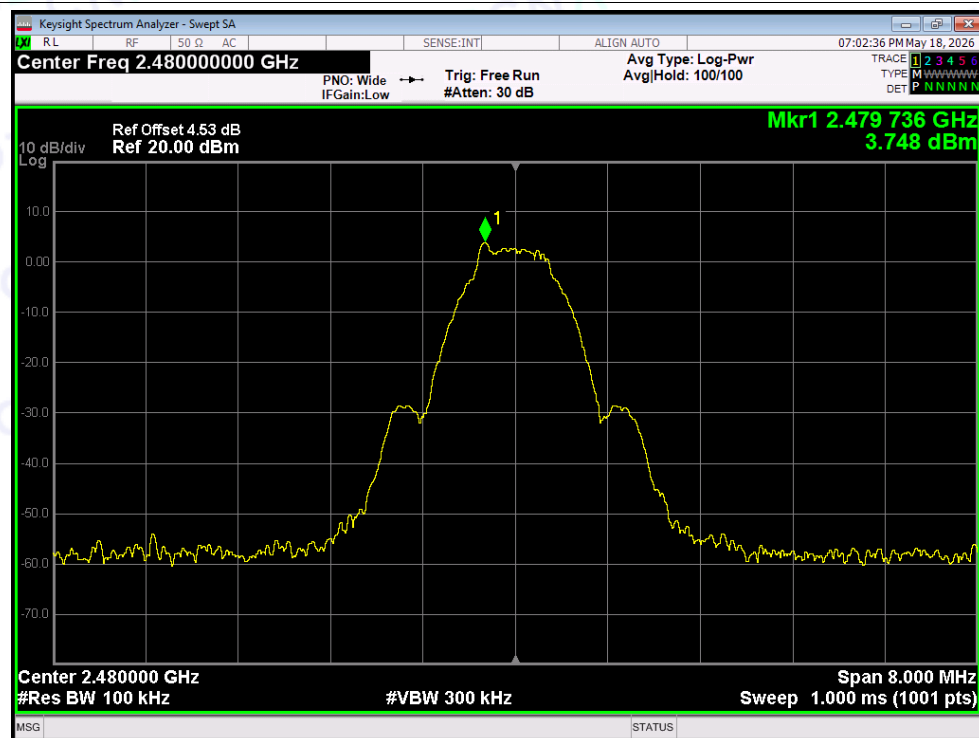
## Band Edge NVNT BLE 1Mbps 2402MHz Ant1 Ref



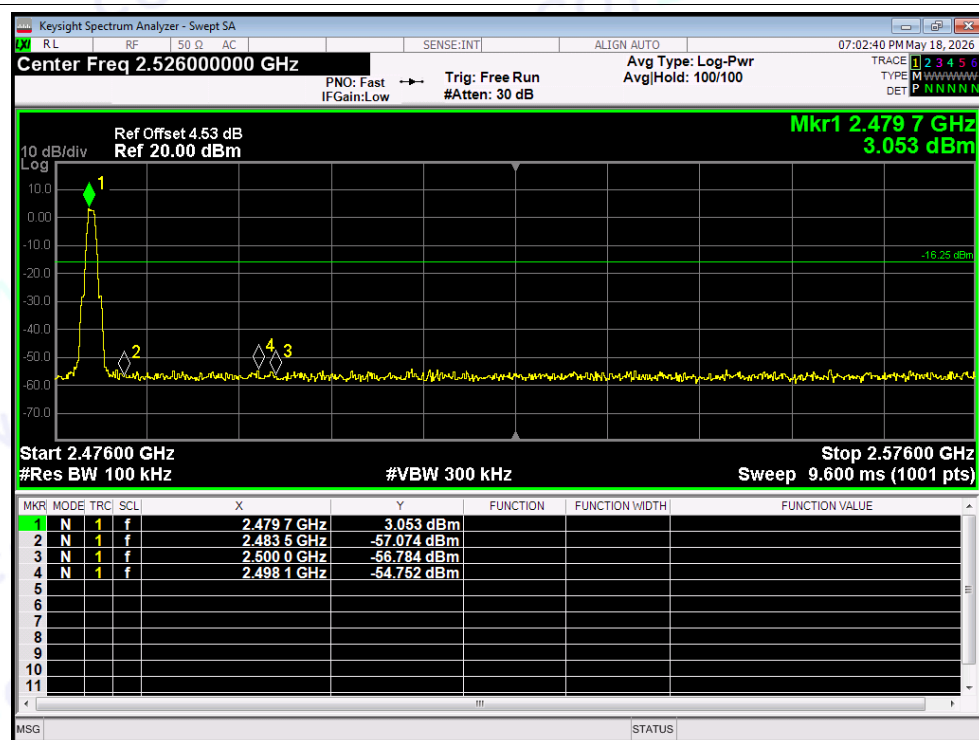
## Band Edge NVNT BLE 1Mbps 2402MHz Ant1 Emission



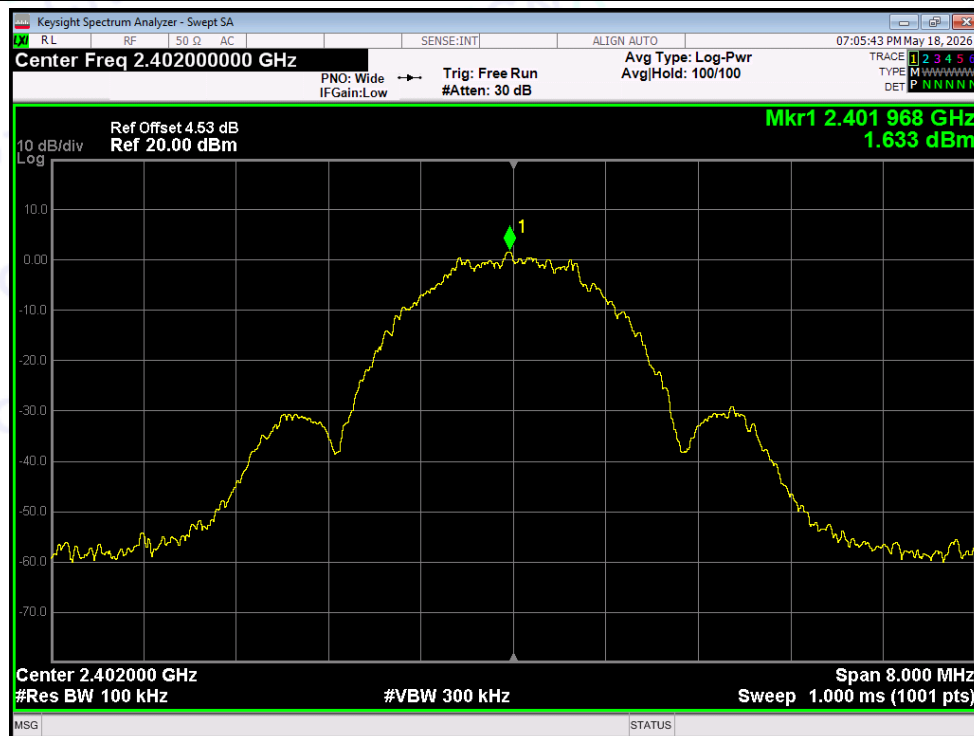
## Band Edge NVNT BLE 1Mbps 2480MHz Ant1 Ref



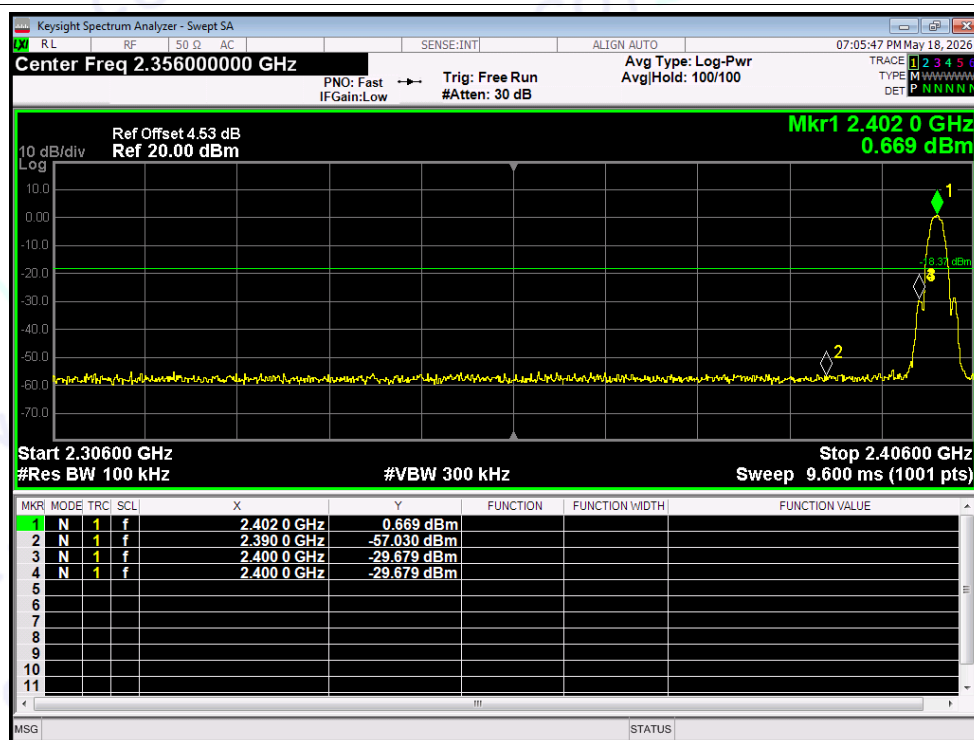
## Band Edge NVNT BLE 1Mbps 2480MHz Ant1 Emission



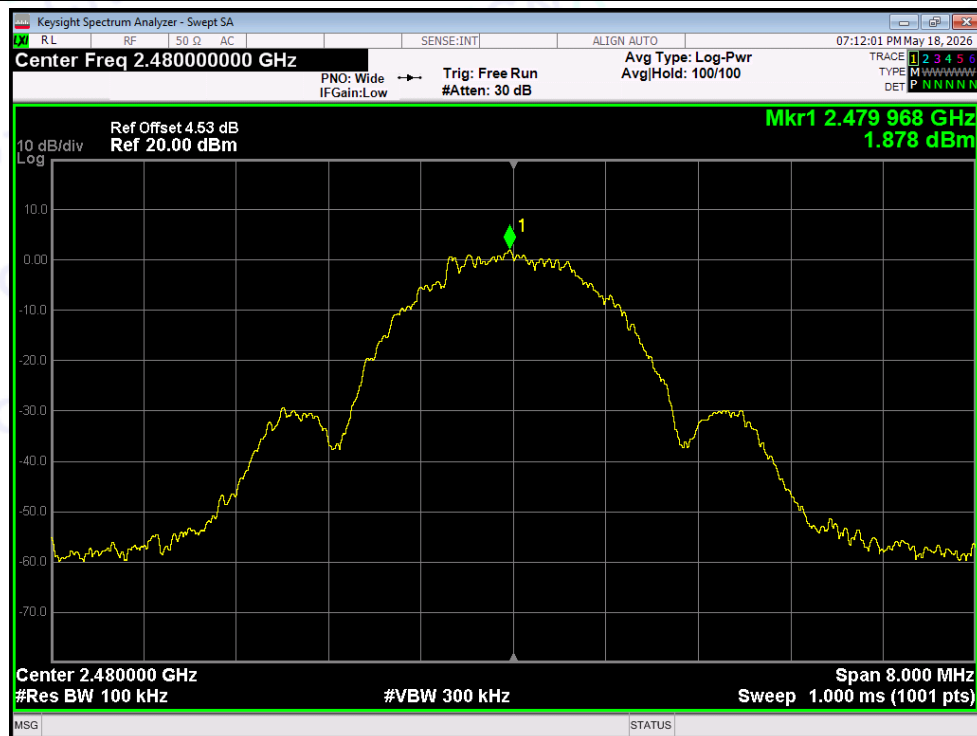
## Band Edge NVNT BLE 2Mbps 2402MHz Ant1 Ref



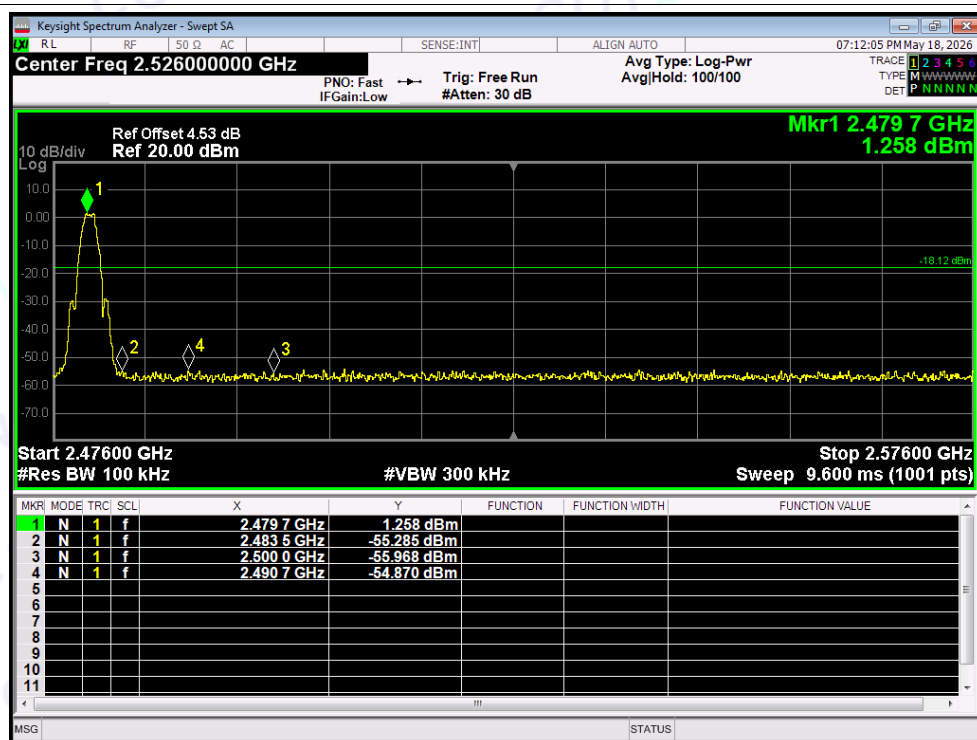
## Band Edge NVNT BLE 2Mbps 2402MHz Ant1 Emission



## Band Edge NVNT BLE 2Mbps 2480MHz Ant1 Ref



## Band Edge NVNT BLE 2Mbps 2480MHz Ant1 Emission

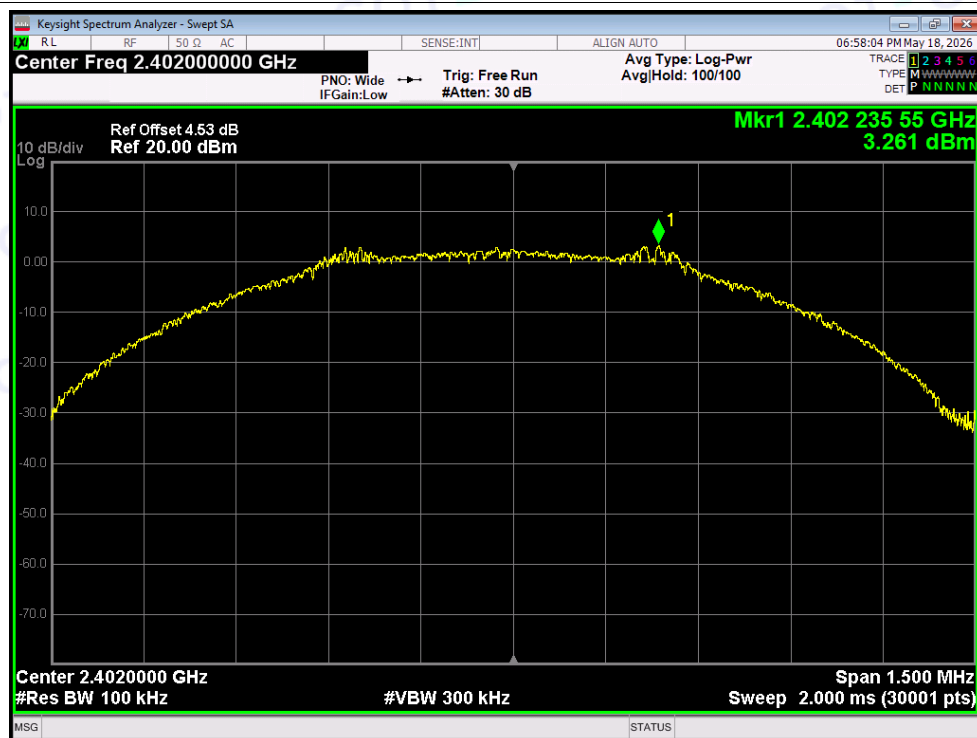


## 7. Conducted RF Spurious Emission

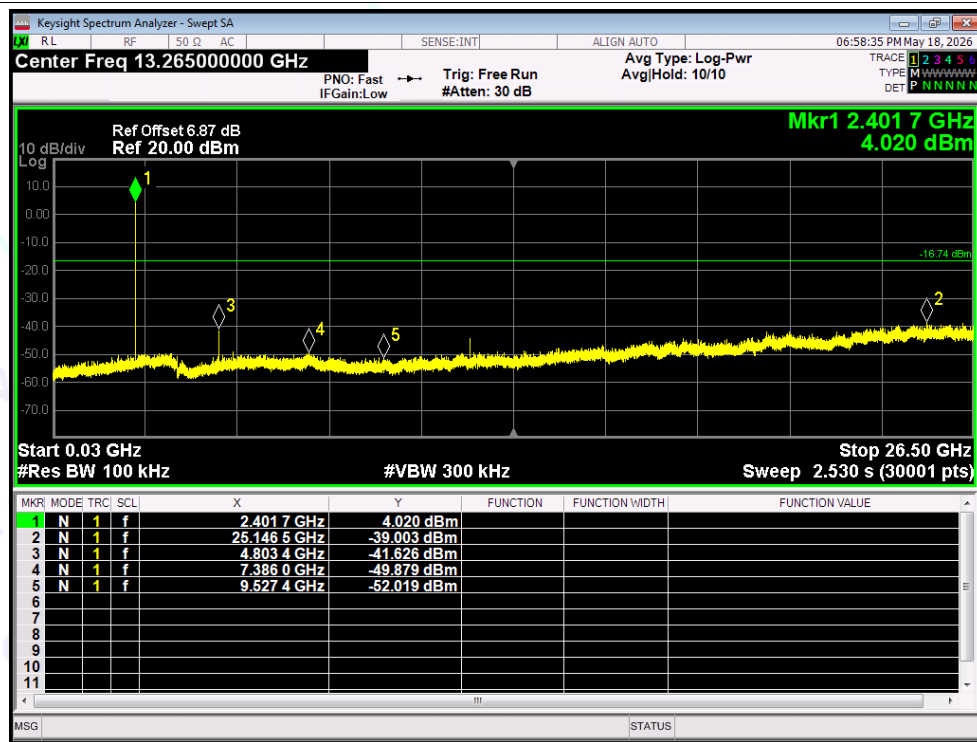
| Condition | Mode      | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|-----------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | BLE 1Mbps | 2402            | Ant1    | -42.26          | -20         | Pass    |
| NVNT      | BLE 1Mbps | 2440            | Ant1    | -41.8           | -20         | Pass    |
| NVNT      | BLE 1Mbps | 2480            | Ant1    | -41.75          | -20         | Pass    |
| NVNT      | BLE 2Mbps | 2402            | Ant1    | -40.51          | -20         | Pass    |
| NVNT      | BLE 2Mbps | 2440            | Ant1    | -40.44          | -20         | Pass    |
| NVNT      | BLE 2Mbps | 2480            | Ant1    | -40.31          | -20         | Pass    |

## Test Graphs

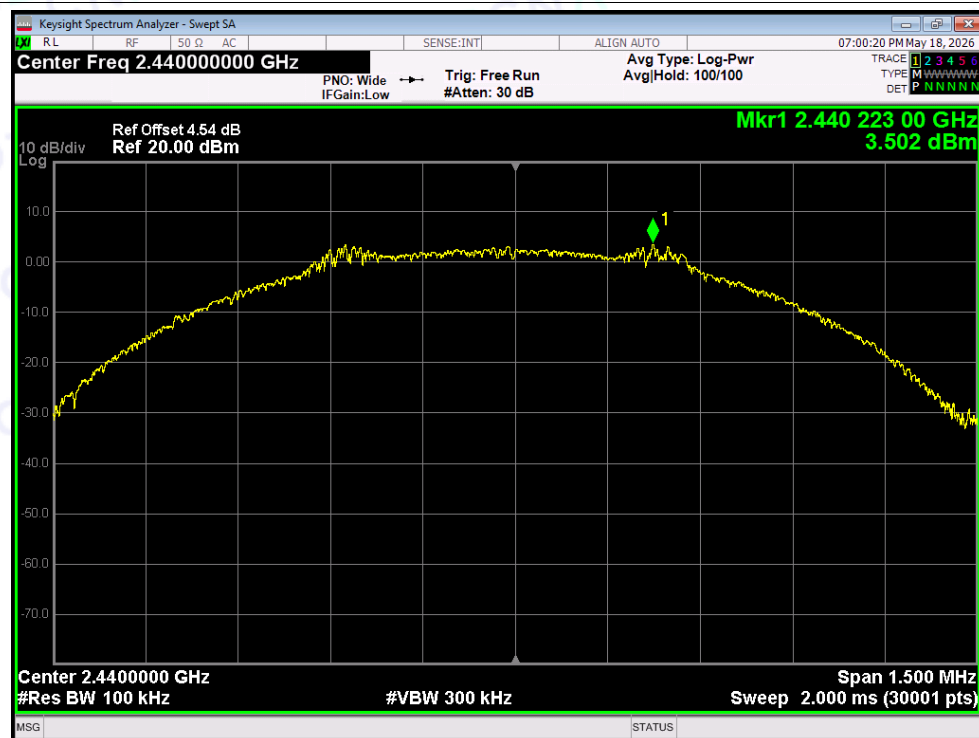
## Tx. Spurious NVNT BLE 1Mbps 2402MHz Ant1 Ref



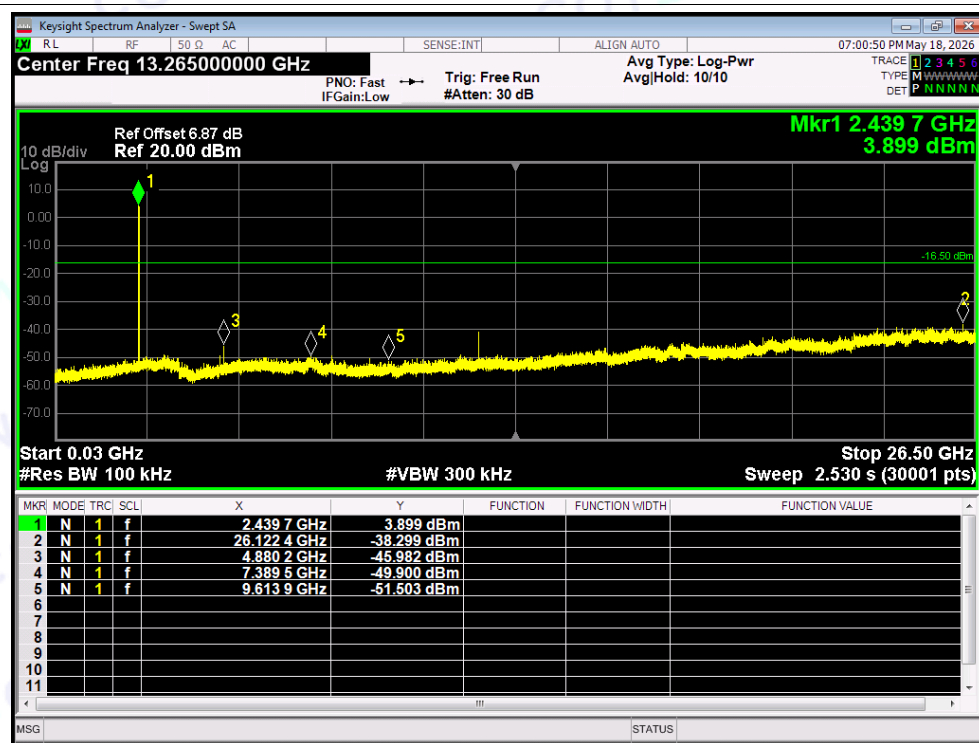
## Tx. Spurious NVNT BLE 1Mbps 2402MHz Ant1 Emission



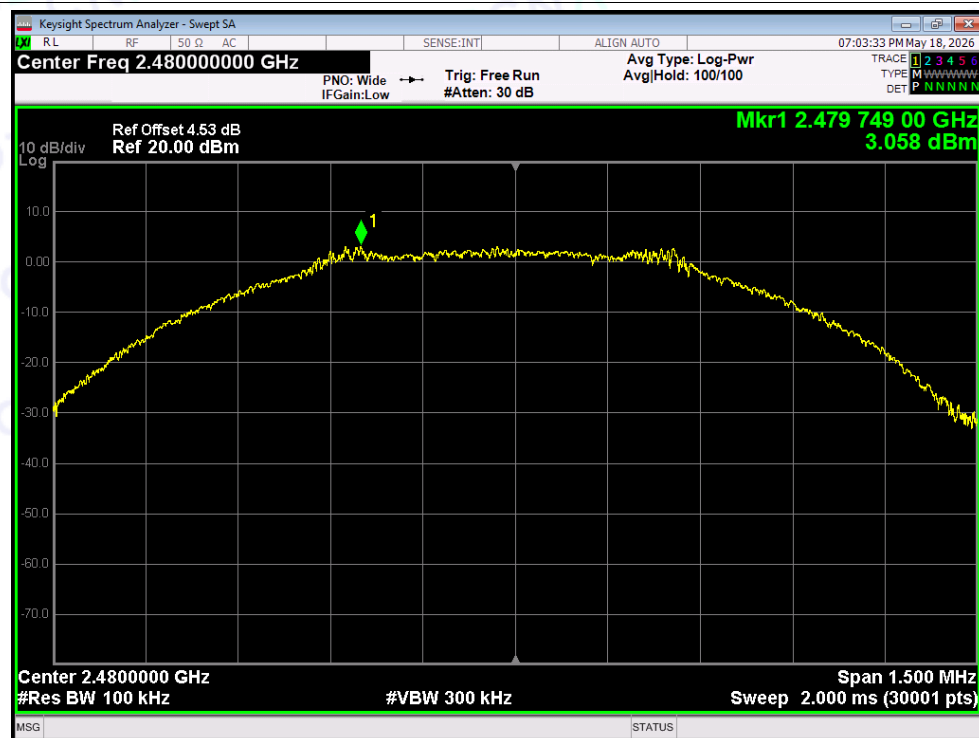
## Tx. Spurious NVNT BLE 1Mbps 2440MHz Ant1 Ref



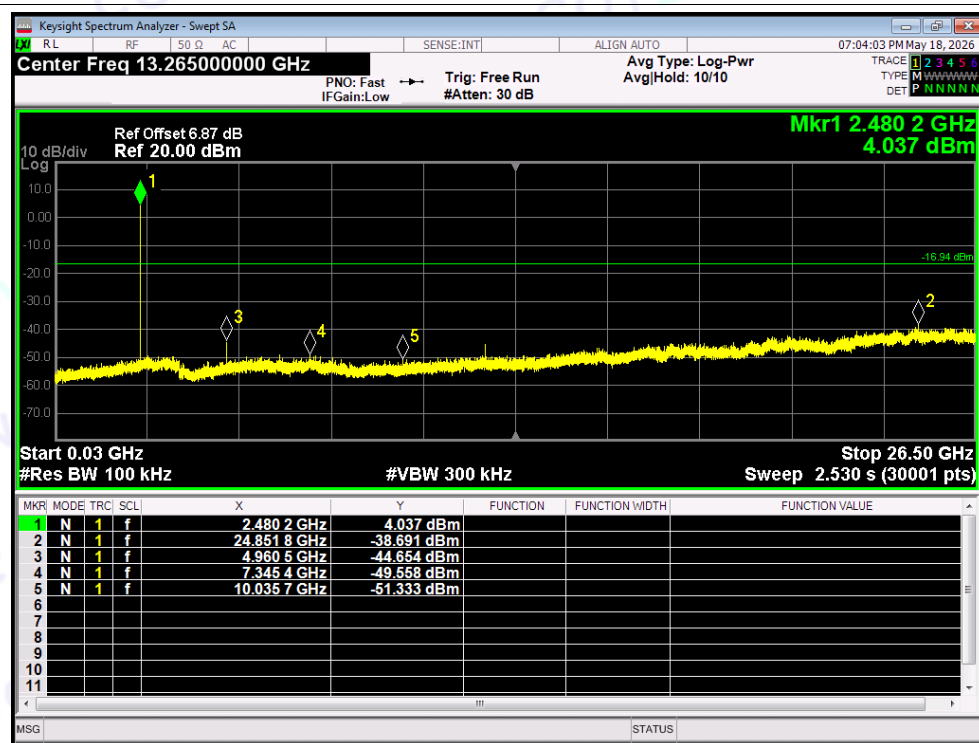
## Tx. Spurious NVNT BLE 1Mbps 2440MHz Ant1 Emission



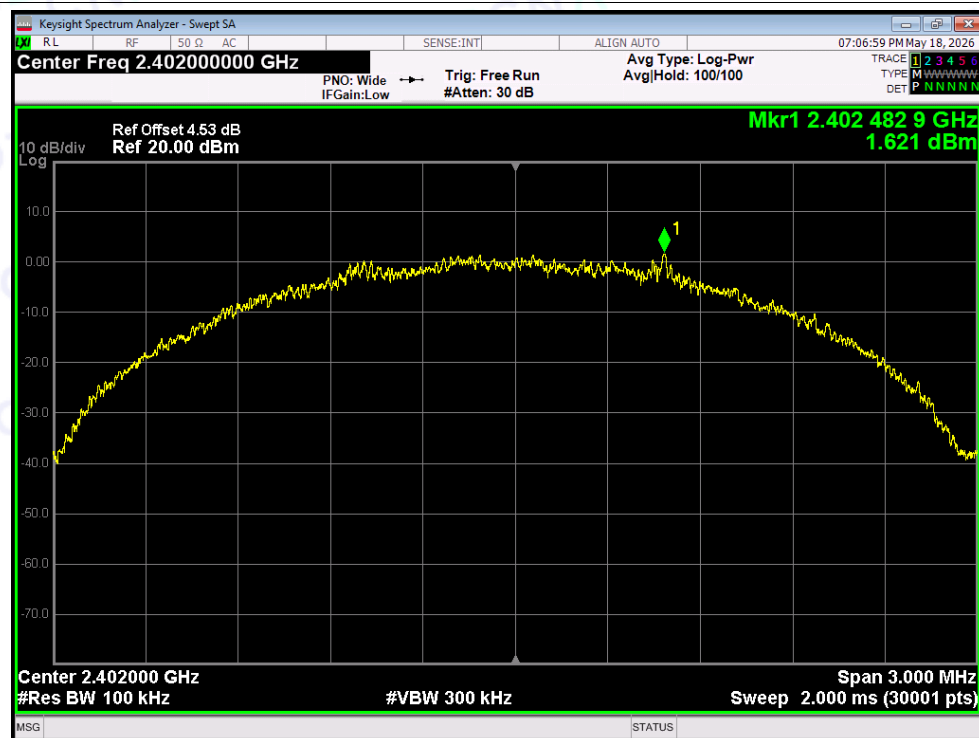
## Tx. Spurious NVNT BLE 1Mbps 2480MHz Ant1 Ref



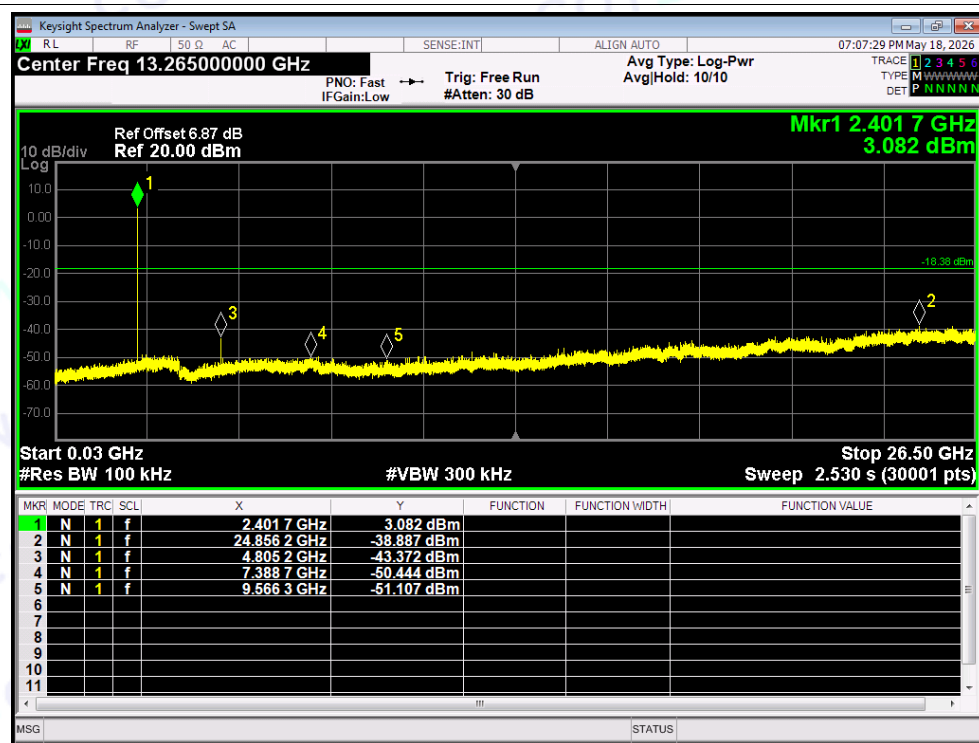
## Tx. Spurious NVNT BLE 1Mbps 2480MHz Ant1 Emission



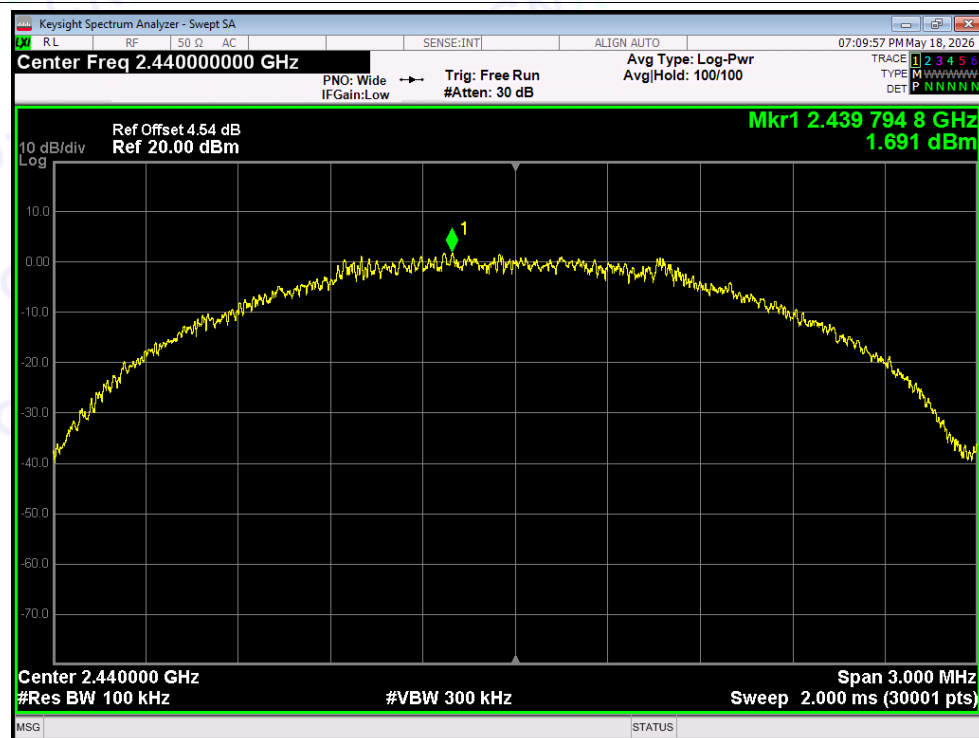
## Tx. Spurious NVNT BLE 2Mbps 2402MHz Ant1 Ref



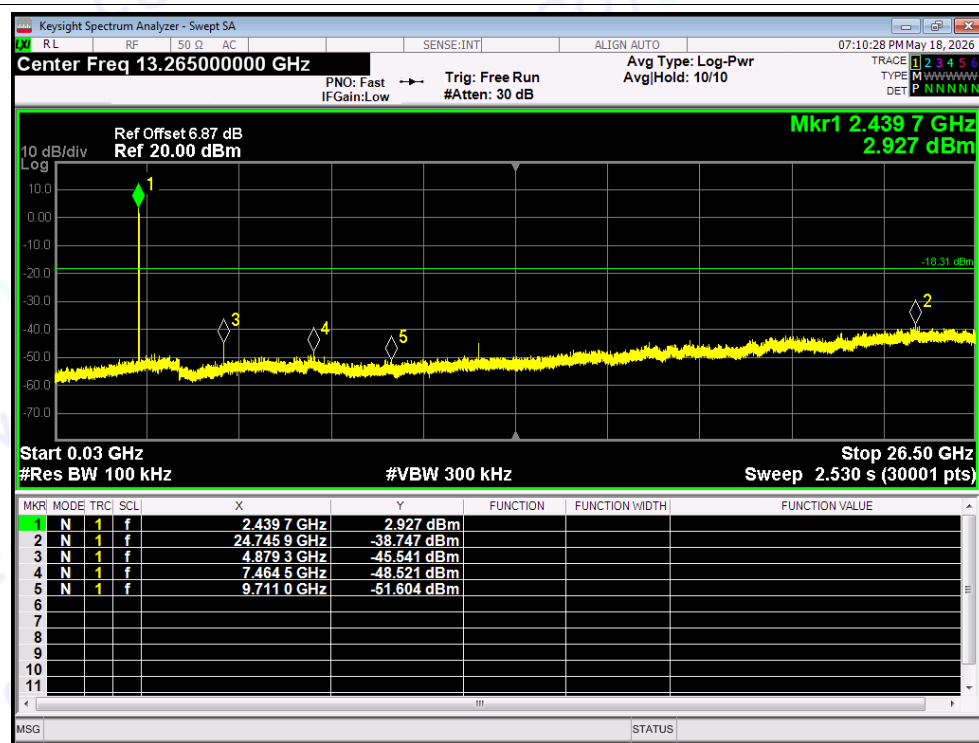
## Tx. Spurious NVNT BLE 2Mbps 2402MHz Ant1 Emission



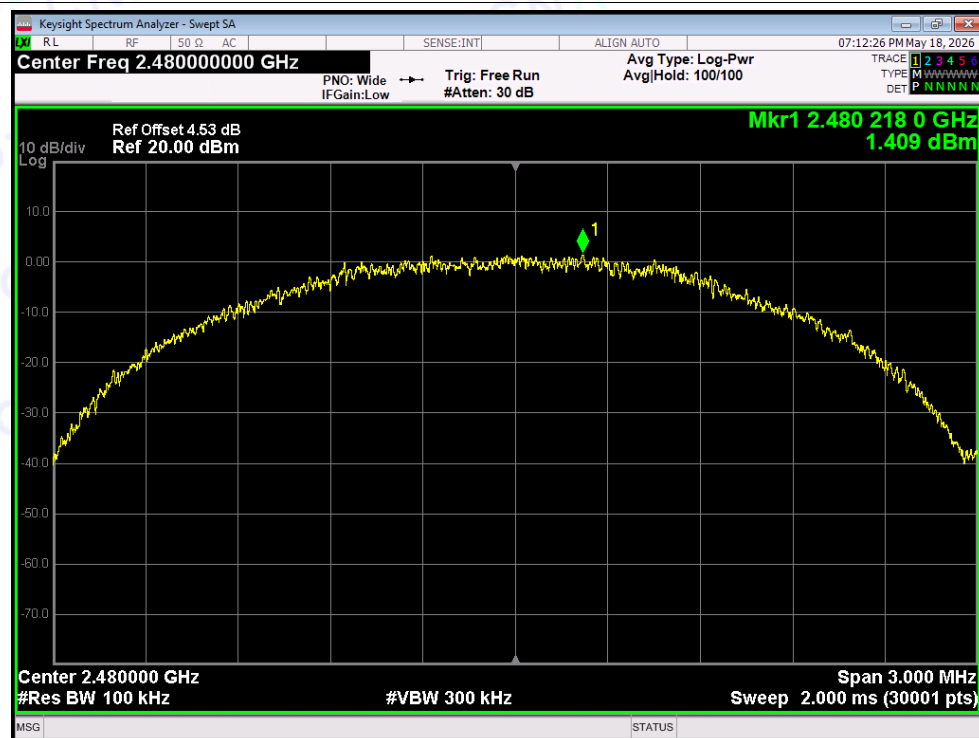
## Tx. Spurious NVNT BLE 2Mbps 2440MHz Ant1 Ref



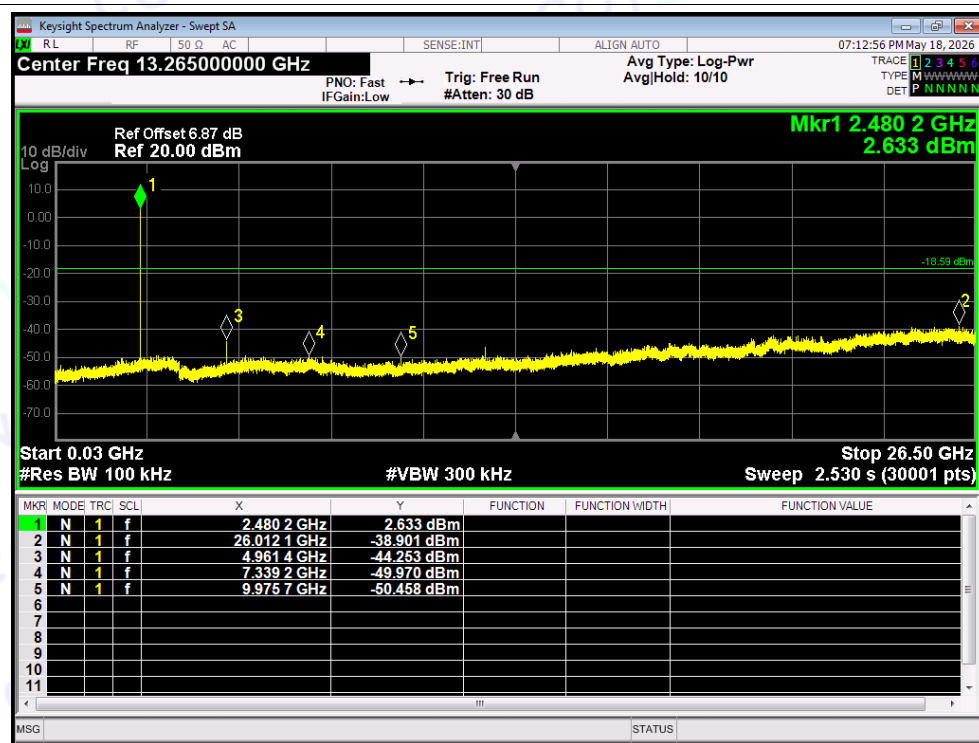
## Tx. Spurious NVNT BLE 2Mbps 2440MHz Ant1 Emission



## Tx. Spurious NVNT BLE 2Mbps 2480MHz Ant1 Ref



## Tx. Spurious NVNT BLE 2Mbps 2480MHz Ant1 Emission

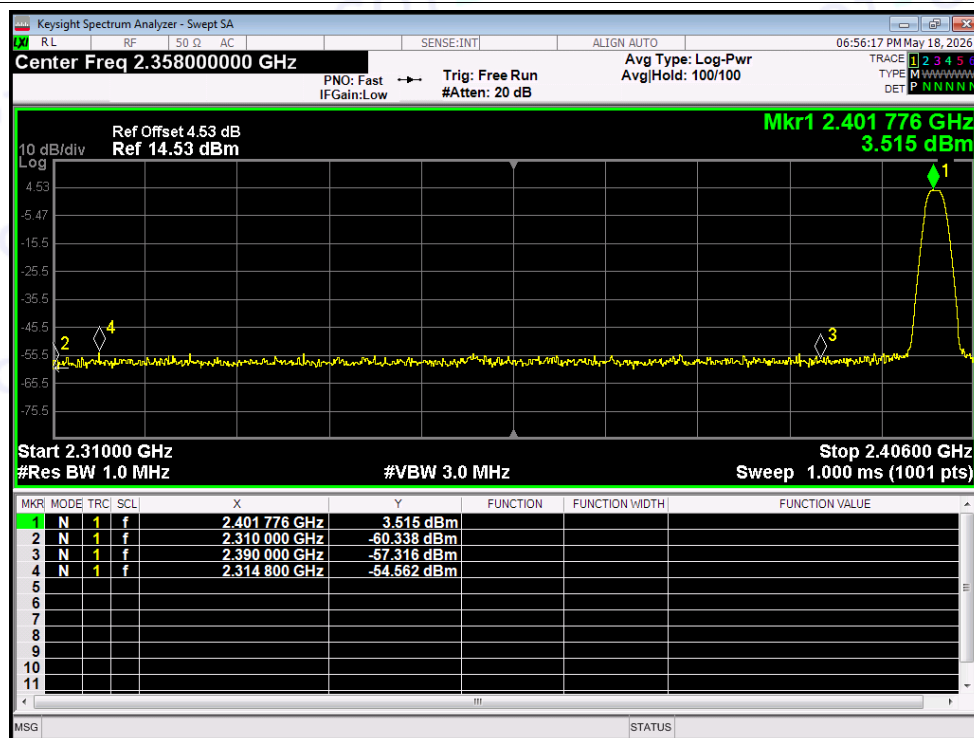


## 8. Restrict Band

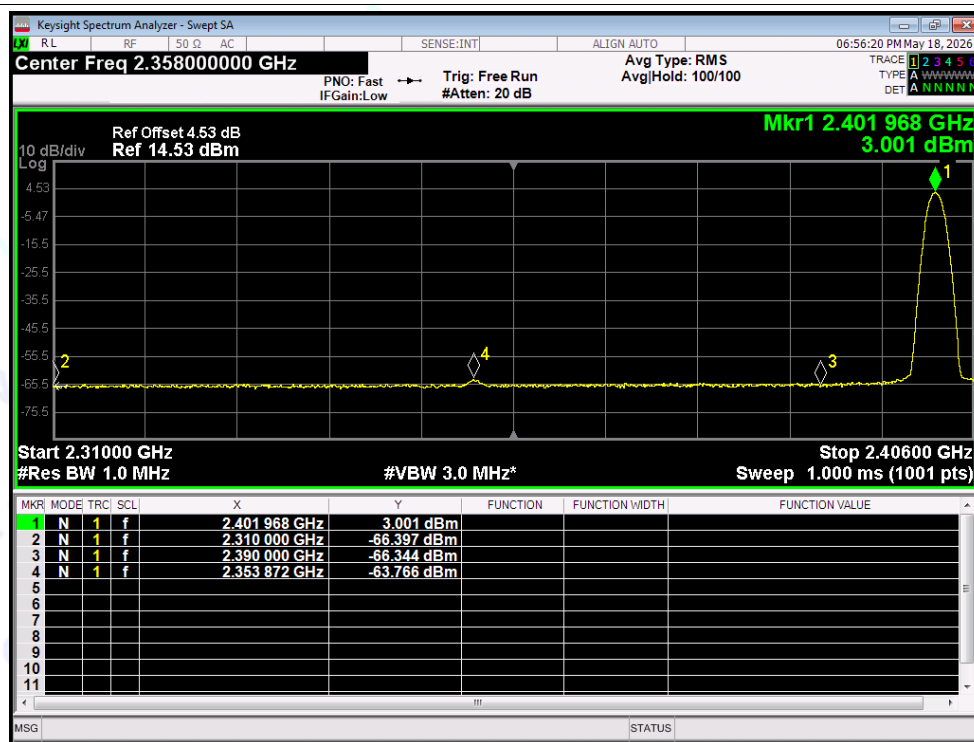
| Condition | Mode      | Frequency<br>(MHz) | Antenna | Spur<br>Freq<br>(MHz) | Power<br>(dBm) | Gain<br>(dBi) | Duty<br>Factor<br>(dB) | E<br>(dBuV/m) | Detector | Limit<br>(dBuV/m) | Verdict |
|-----------|-----------|--------------------|---------|-----------------------|----------------|---------------|------------------------|---------------|----------|-------------------|---------|
| NVNT      | BLE 1Mbps | 2402               | Ant1    | 2310                  | -60.34         | 2.29          | -                      | 37.21         | Peak     | 74                | Pass    |
| NVNT      | BLE 1Mbps | 2402               | Ant1    | 2310                  | -66.4          | 2.29          | 0                      | 31.15         | Average  | 54                | Pass    |
| NVNT      | BLE 1Mbps | 2402               | Ant1    | 2314.8                | -54.56         | 2.29          | -                      | 42.99         | Peak     | 74                | Pass    |
| NVNT      | BLE 1Mbps | 2402               | Ant1    | 2353.872              | -63.77         | 2.29          | 0                      | 33.78         | Average  | 54                | Pass    |
| NVNT      | BLE 1Mbps | 2402               | Ant1    | 2390                  | -57.32         | 2.29          | -                      | 40.23         | Peak     | 74                | Pass    |
| NVNT      | BLE 1Mbps | 2402               | Ant1    | 2390                  | -66.34         | 2.29          | 0                      | 31.21         | Average  | 54                | Pass    |
| NVNT      | BLE 1Mbps | 2480               | Ant1    | 2483.5                | -55.9          | 2.29          | -                      | 41.65         | Peak     | 74                | Pass    |
| NVNT      | BLE 1Mbps | 2480               | Ant1    | 2483.5                | -63.45         | 2.29          | 0                      | 34.1          | Average  | 54                | Pass    |
| NVNT      | BLE 1Mbps | 2480               | Ant1    | 2483.848              | -53.27         | 2.29          | -                      | 44.28         | Peak     | 74                | Pass    |
| NVNT      | BLE 1Mbps | 2480               | Ant1    | 2483.584              | -63.22         | 2.29          | 0                      | 34.33         | Average  | 54                | Pass    |
| NVNT      | BLE 1Mbps | 2480               | Ant1    | 2500                  | -57.4          | 2.29          | -                      | 40.15         | Peak     | 74                | Pass    |
| NVNT      | BLE 1Mbps | 2480               | Ant1    | 2500                  | -65.85         | 2.29          | 0                      | 31.7          | Average  | 54                | Pass    |
| NVNT      | BLE 2Mbps | 2402               | Ant1    | 2310                  | -56.16         | 2.29          | -                      | 41.39         | Peak     | 74                | Pass    |
| NVNT      | BLE 2Mbps | 2402               | Ant1    | 2310                  | -66.18         | 2.29          | 0                      | 31.37         | Average  | 54                | Pass    |
| NVNT      | BLE 2Mbps | 2402               | Ant1    | 2388.72               | -55.09         | 2.29          | -                      | 42.46         | Peak     | 74                | Pass    |
| NVNT      | BLE 2Mbps | 2402               | Ant1    | 2354.256              | -64.09         | 2.29          | 0                      | 33.46         | Average  | 54                | Pass    |
| NVNT      | BLE 2Mbps | 2402               | Ant1    | 2390                  | -56.76         | 2.29          | -                      | 40.79         | Peak     | 74                | Pass    |
| NVNT      | BLE 2Mbps | 2402               | Ant1    | 2390                  | -65.7          | 2.29          | 0                      | 31.85         | Average  | 54                | Pass    |
| NVNT      | BLE 2Mbps | 2480               | Ant1    | 2483.5                | -49.33         | 2.29          | -                      | 48.22         | Peak     | 74                | Pass    |
| NVNT      | BLE 2Mbps | 2480               | Ant1    | 2483.5                | -56.9          | 2.29          | 0                      | 40.65         | Average  | 54                | Pass    |
| NVNT      | BLE 2Mbps | 2480               | Ant1    | 2483.512              | -49.33         | 2.29          | -                      | 48.22         | Peak     | 74                | Pass    |
| NVNT      | BLE 2Mbps | 2480               | Ant1    | 2483.512              | -56.9          | 2.29          | 0                      | 40.65         | Average  | 54                | Pass    |
| NVNT      | BLE 2Mbps | 2480               | Ant1    | 2500                  | -57.71         | 2.29          | -                      | 39.84         | Peak     | 74                | Pass    |
| NVNT      | BLE 2Mbps | 2480               | Ant1    | 2500                  | -65.43         | 2.29          | 0                      | 32.12         | Average  | 54                | Pass    |

## Test Graphs

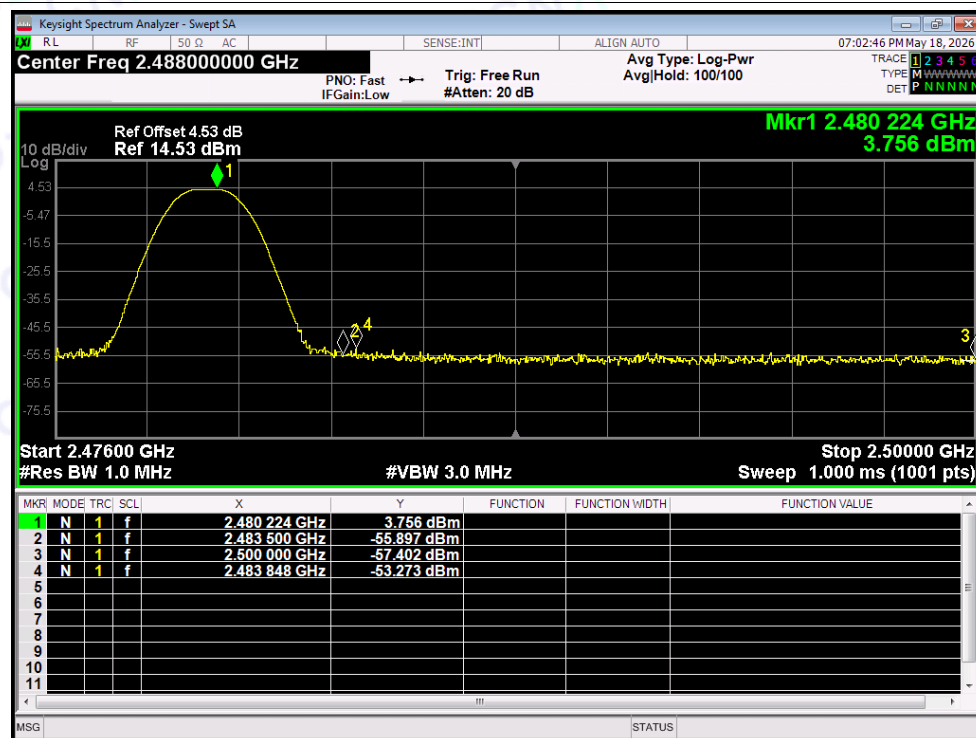
## Restrict Band NVNT BLE 1Mbps 2402MHz Ant1 Peak



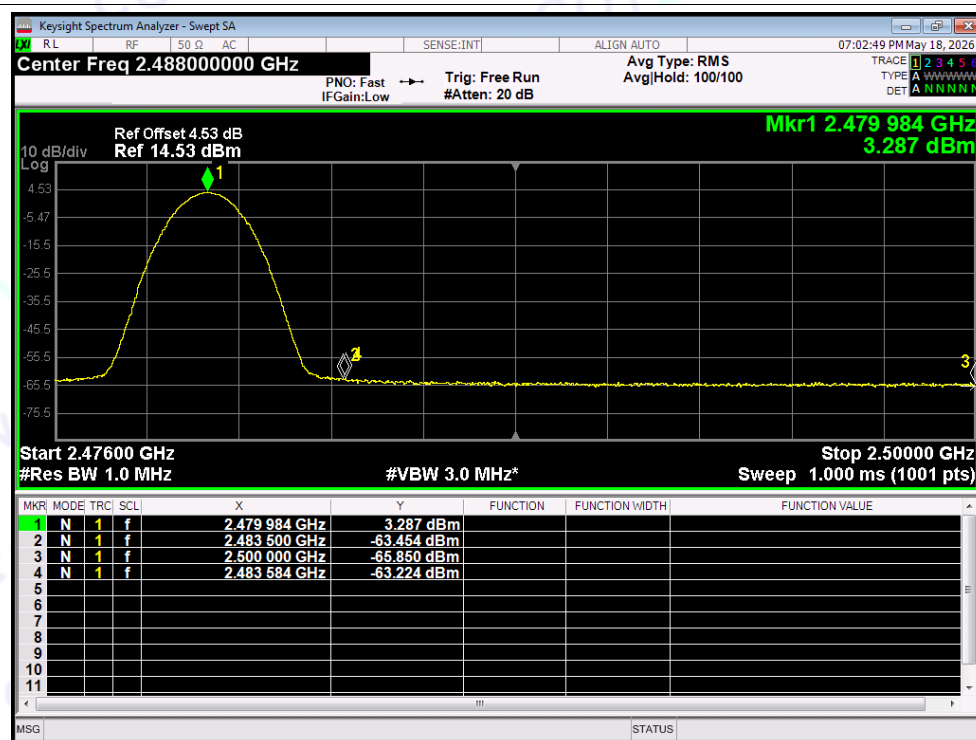
## Restrict Band NVNT BLE 1Mbps 2402MHz Ant1 Average



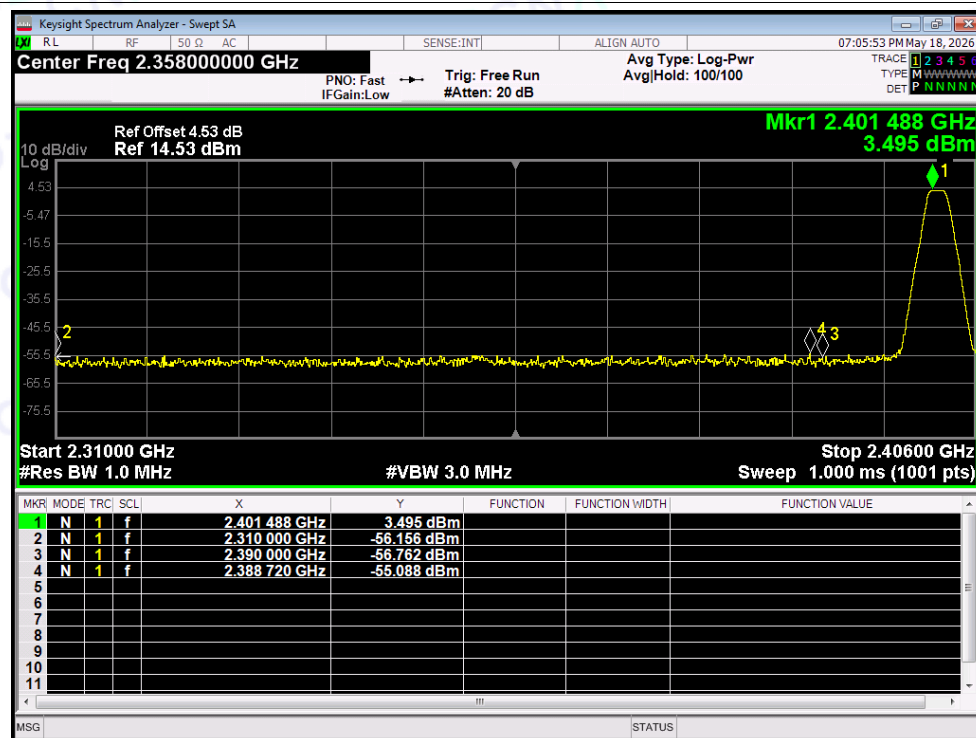
## Restrict Band NVNT BLE 1Mbps 2480MHz Ant1 Peak



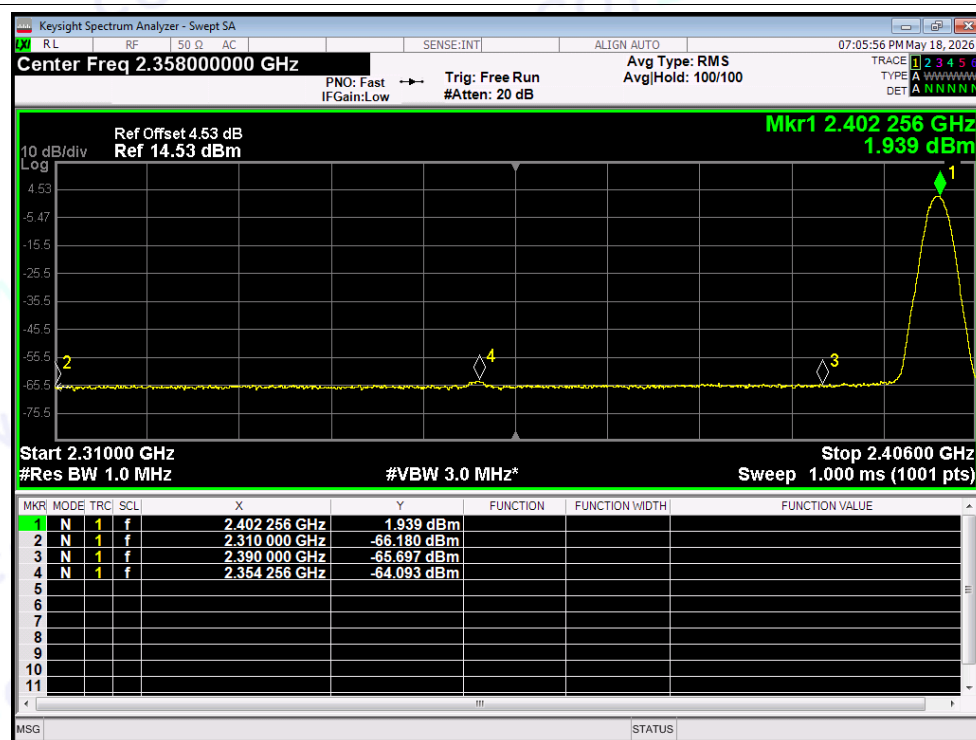
## Restrict Band NVNT BLE 1Mbps 2480MHz Ant1 Average



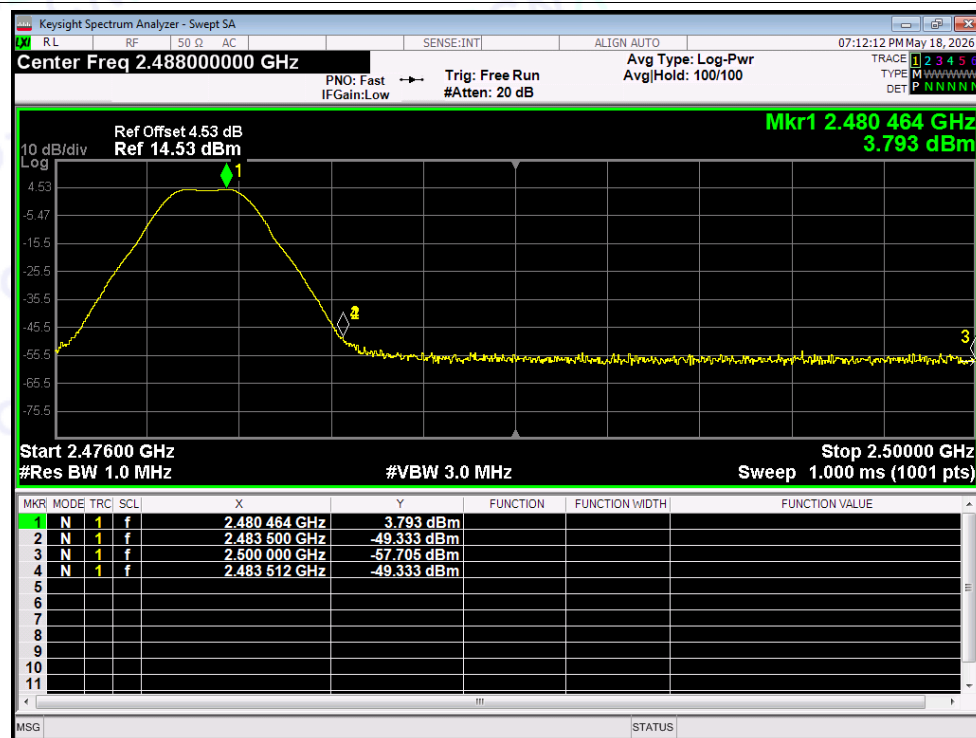
## Restrict Band NVNT BLE 2Mbps 2402MHz Ant1 Peak



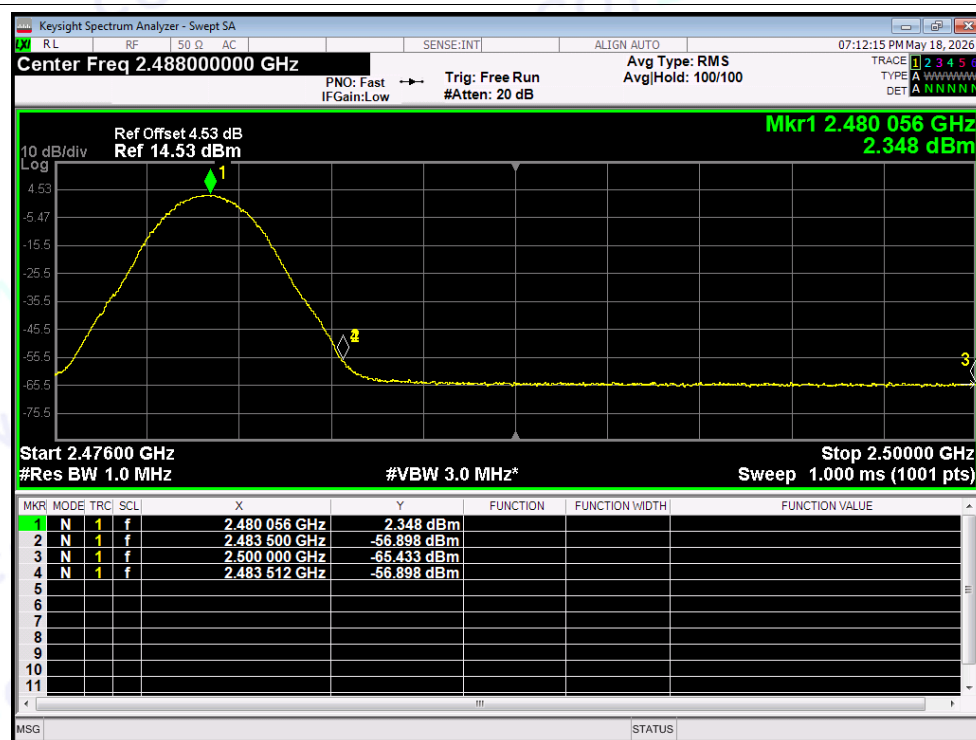
## Restrict Band NVNT BLE 2Mbps 2402MHz Ant1 Average



## Restrict Band NVNT BLE 2Mbps 2480MHz Ant1 Peak



## Restrict Band NVNT BLE 2Mbps 2480MHz Ant1 Average



--- END OF REPORT ---