

# RF Test Data for Bluetooth (Conducted Measurements)

| General Description of EUT                                                                                                                   |                           |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Product Name:                                                                                                                                | wireless headphone        |
| Test Model:                                                                                                                                  | XL-GSW4-AC7003-V1.0       |
| Sample ID:                                                                                                                                   | HC-C-202408-0119-02-01-2# |
| Environmental Conditions                                                                                                                     |                           |
| Temperature:                                                                                                                                 | 23.8℃                     |
| Relative Humidity:                                                                                                                           | 48%                       |
| Test Voltage:                                                                                                                                | DC 3.7V                   |
| Test Engineer:                                                                                                                               | Jolin Lee                 |
| Note: For a more detailed features description, please refer to the report TBR-C-202408-0119-14<br>The report only show the worst case data. |                           |

## Contents

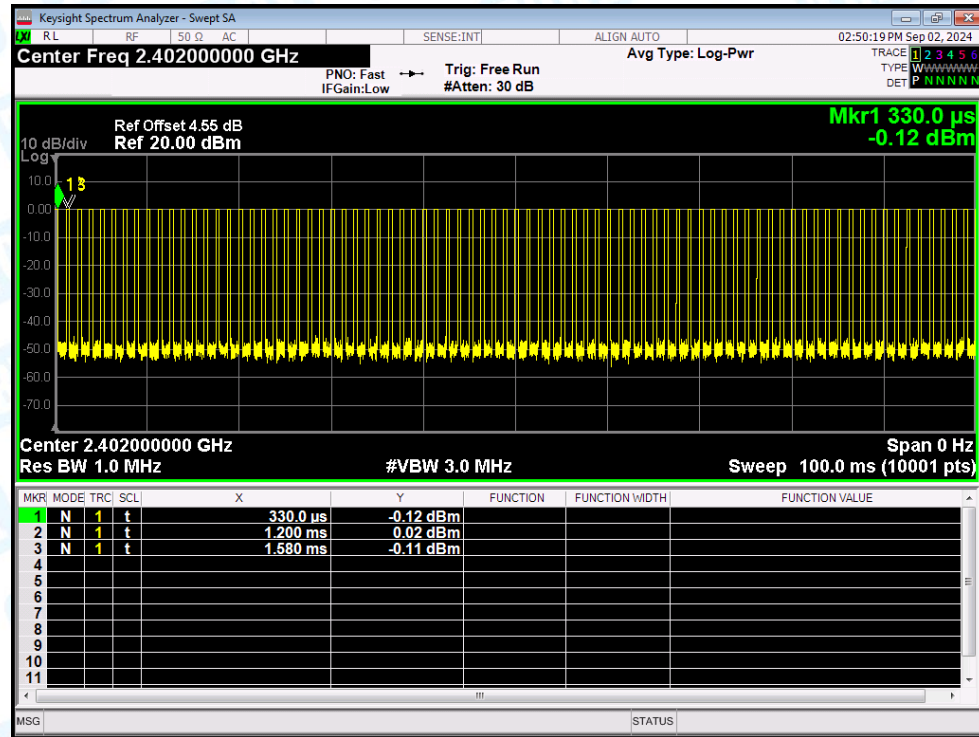
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1. Duty Cycle

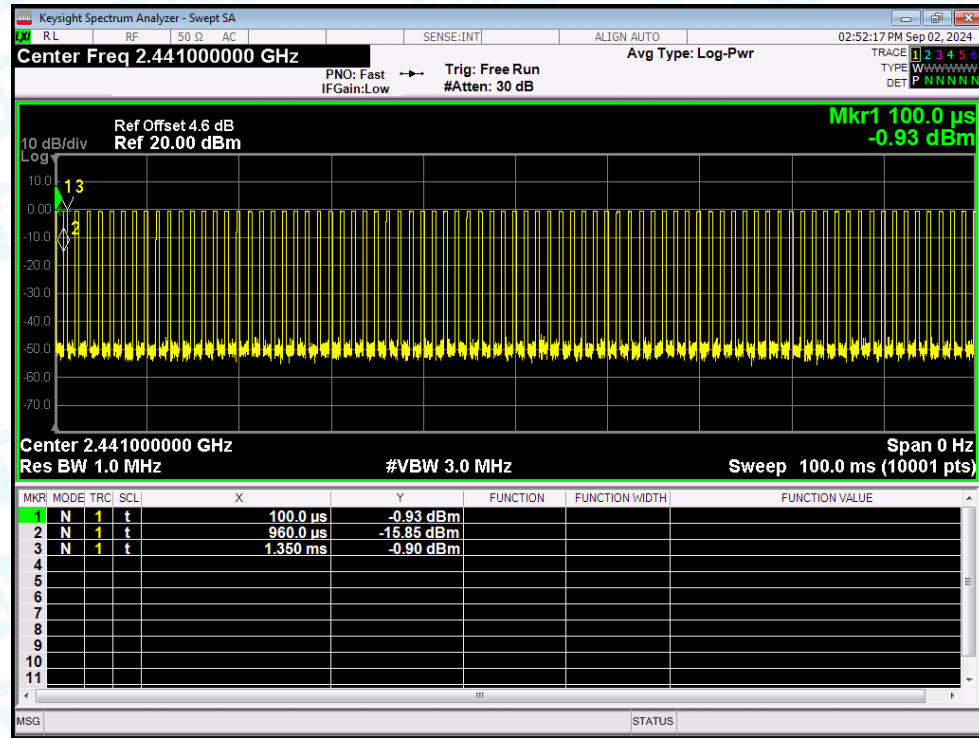
| Condition | Mode  | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|-----------|-------|-----------------|---------|----------------|------------------------|-----------|
| NVNT      | 1-DH1 | 2402            | Ant1    | 30.4           | 5.17                   | 2.63      |
| NVNT      | 1-DH1 | 2441            | Ant1    | 31.2           | 5.06                   | 2.56      |
| NVNT      | 1-DH1 | 2480            | Ant1    | 31.2           | 5.06                   | 2.56      |
| NVNT      | 2-DH1 | 2402            | Ant1    | 31.2           | 5.06                   | 2.56      |
| NVNT      | 2-DH1 | 2441            | Ant1    | 31.2           | 5.06                   | 2.56      |
| NVNT      | 2-DH1 | 2480            | Ant1    | 31.2           | 5.06                   | 2.56      |

### Test Graphs

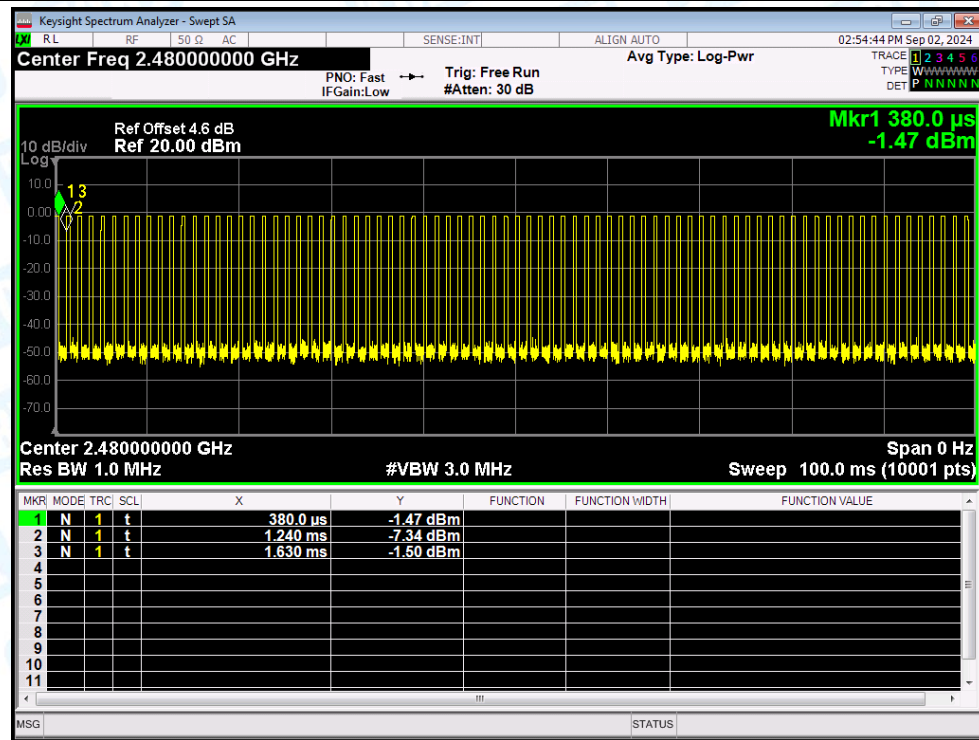
#### Duty Cycle NVNT 1-DH1 2402MHz Ant1



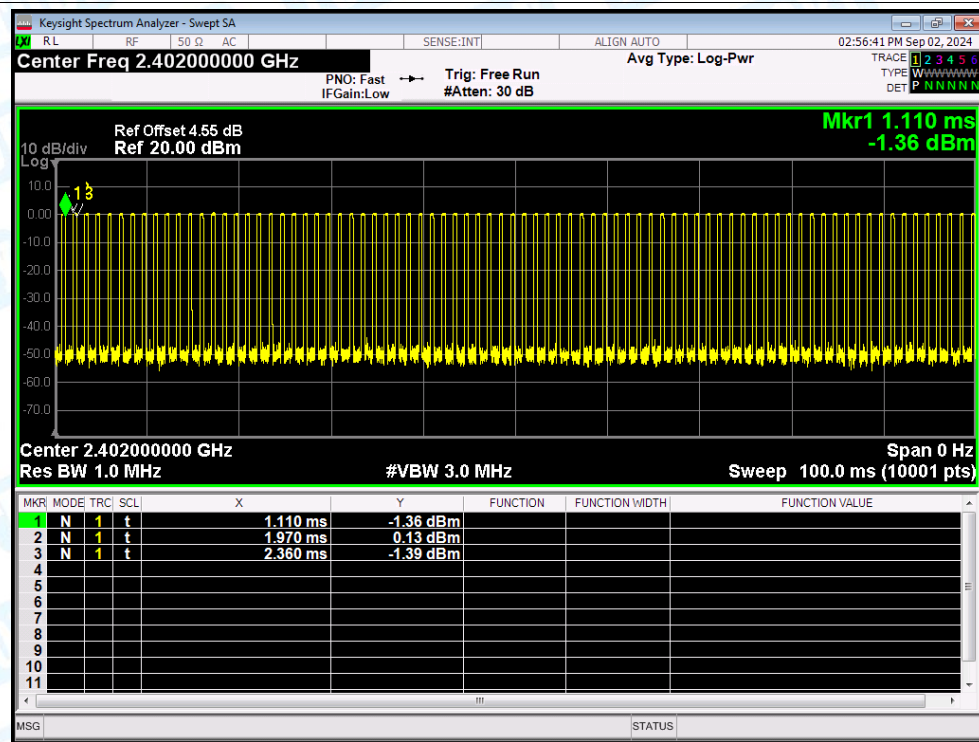
#### Duty Cycle NVNT 1-DH1 2441MHz Ant1



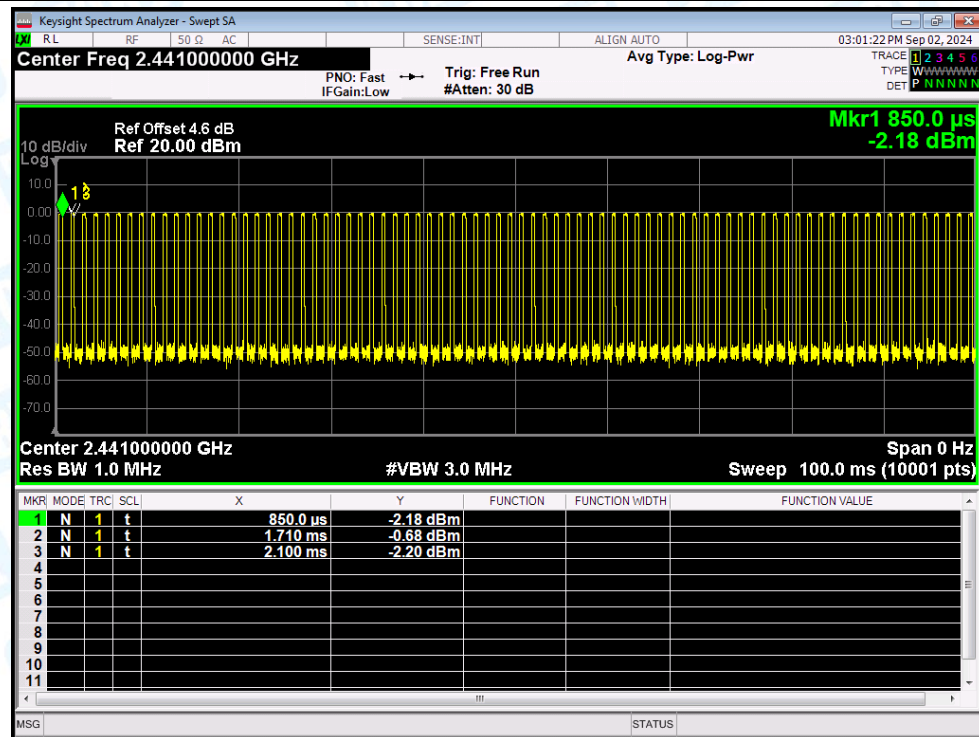
### Duty Cycle NVNT 1-DH1 2480MHz Ant1



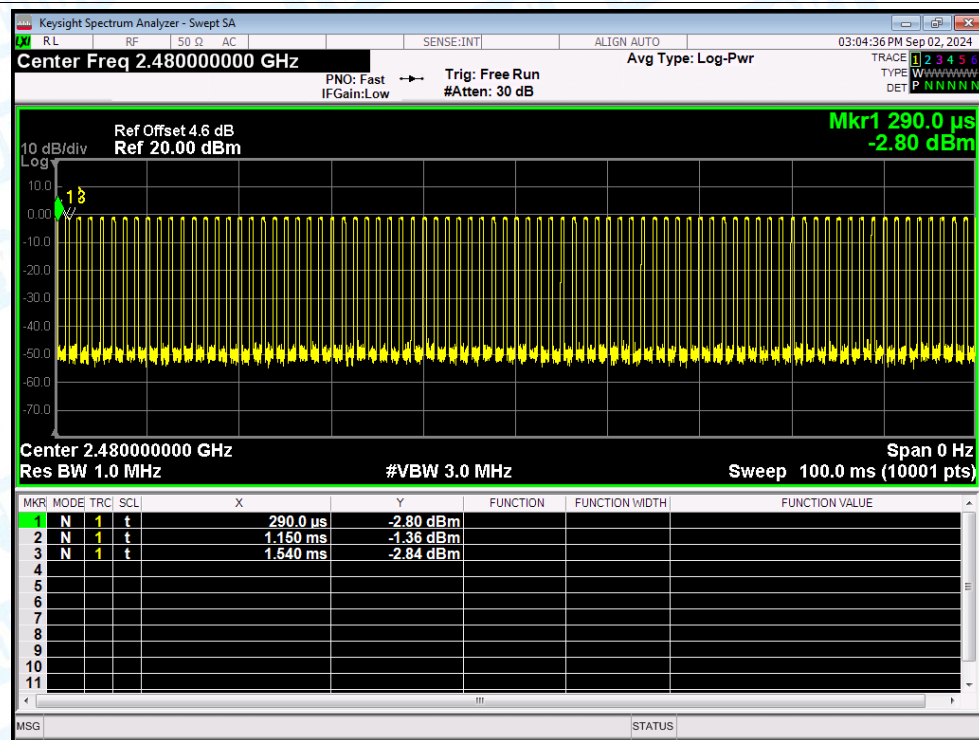
### Duty Cycle NVNT 2-DH1 2402MHz Ant1



### Duty Cycle NVNT 2-DH1 2441MHz Ant1



### Duty Cycle NVNT 2-DH1 2480MHz Ant1

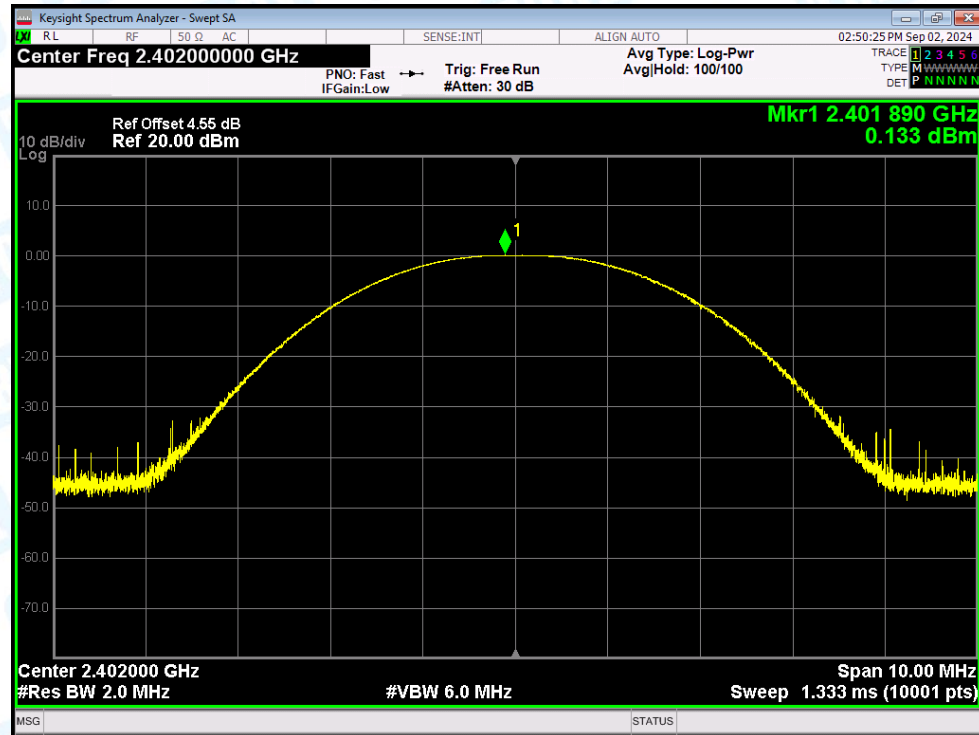


2. Maximum Conducted Output Power

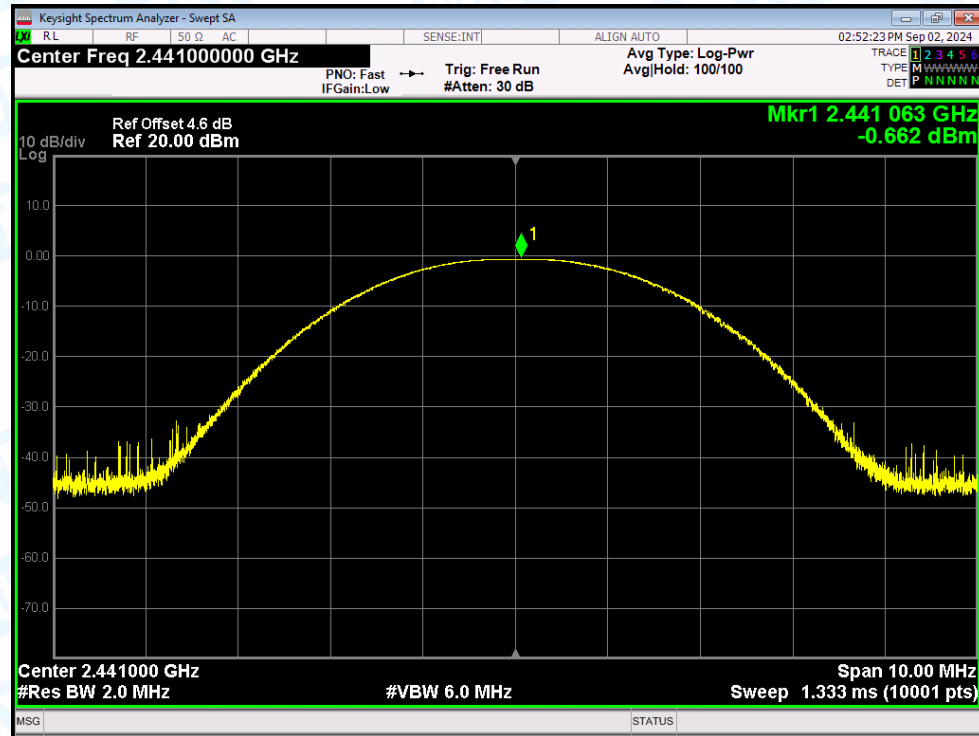
| Condition | Mode  | Frequency<br>(MHz) | Antenna | Conducted Power<br>(dBm) | Limit<br>(dBm) | Verdict |
|-----------|-------|--------------------|---------|--------------------------|----------------|---------|
| NVNT      | 1-DH1 | 2402               | Ant1    | 0.133                    | 21             | Pass    |
| NVNT      | 1-DH1 | 2441               | Ant1    | -0.662                   | 21             | Pass    |
| NVNT      | 1-DH1 | 2480               | Ant1    | -1.25                    | 21             | Pass    |
| NVNT      | 2-DH1 | 2402               | Ant1    | 1.001                    | 21             | Pass    |
| NVNT      | 2-DH1 | 2441               | Ant1    | 0.152                    | 21             | Pass    |
| NVNT      | 2-DH1 | 2480               | Ant1    | -0.464                   | 21             | Pass    |

### Test Graphs

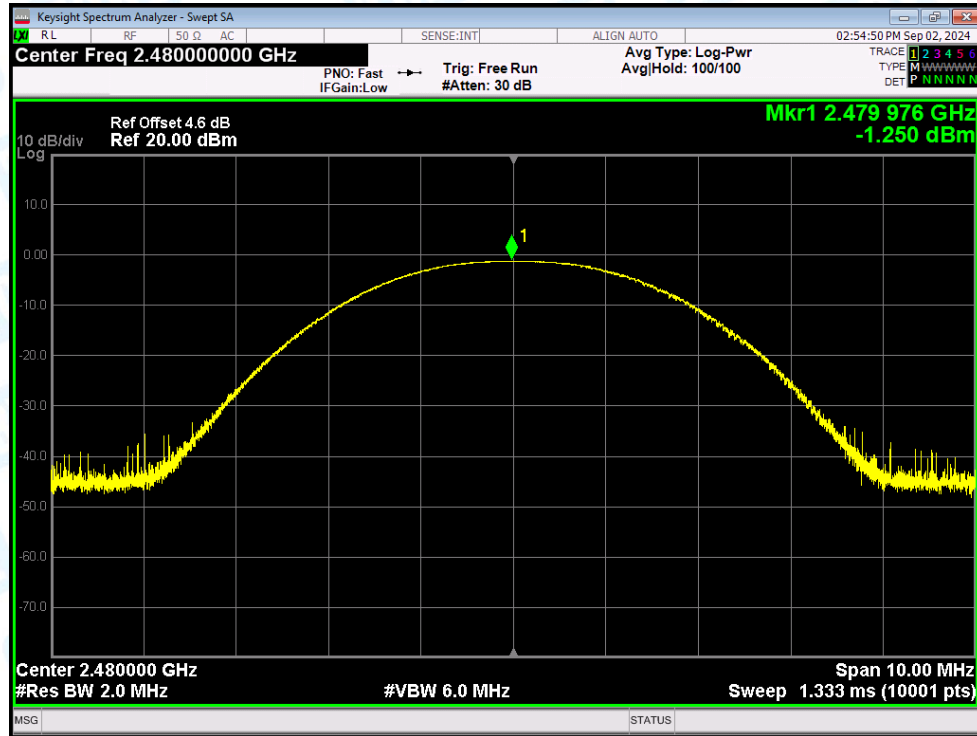
Power NVNT 1-DH1 2402MHz Ant1



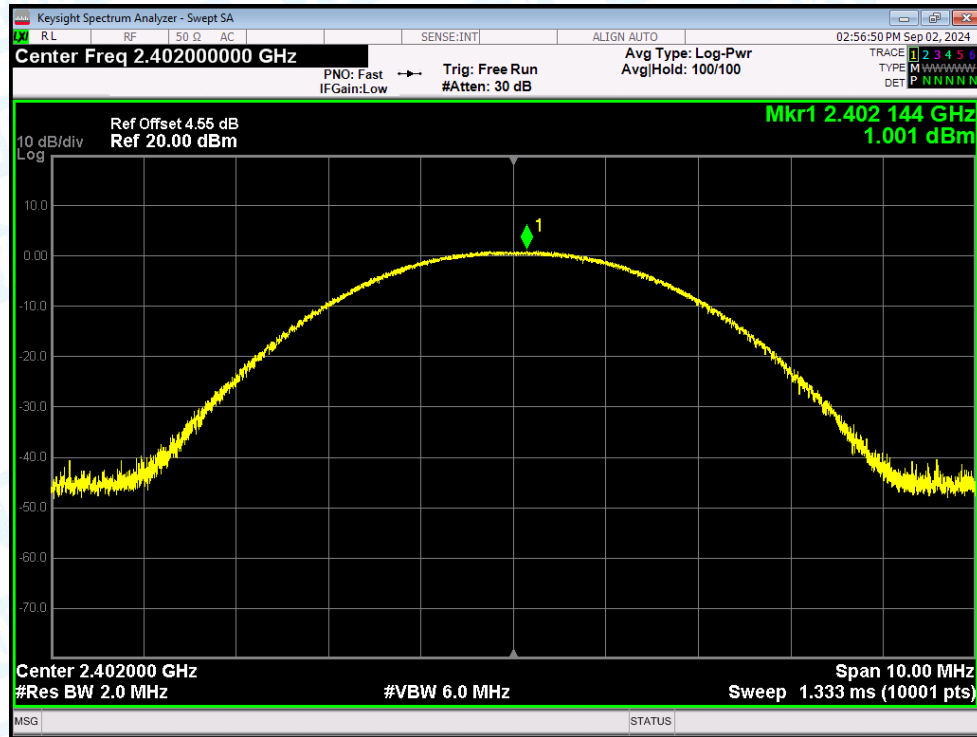
Power NVNT 1-DH1 2441MHz Ant1



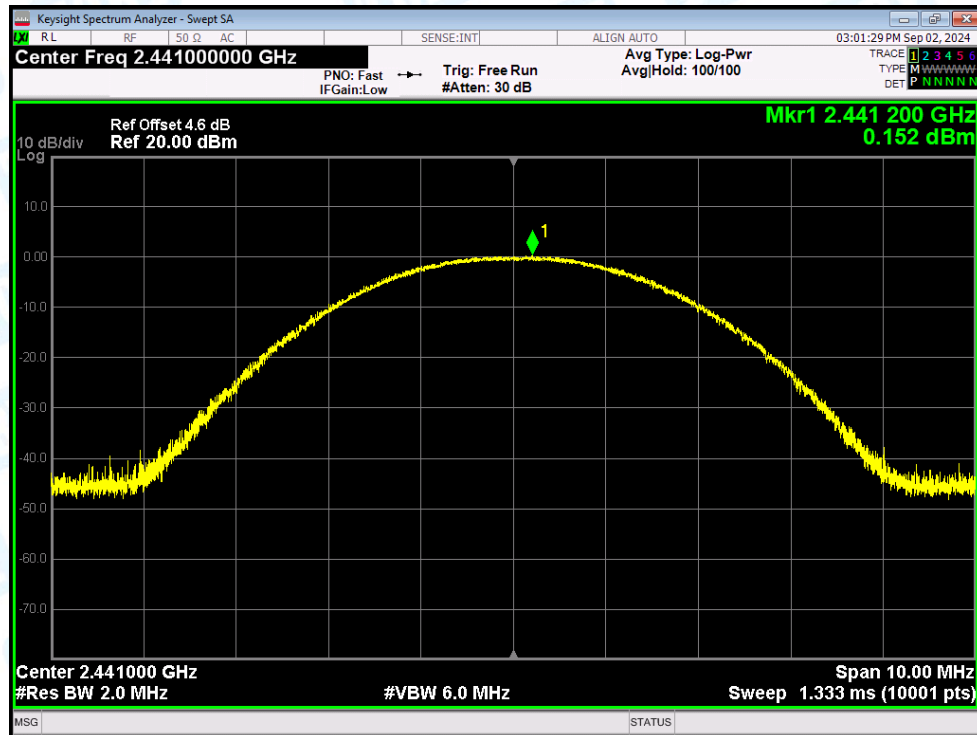
Power NVNT 1-DH1 2480MHz Ant1



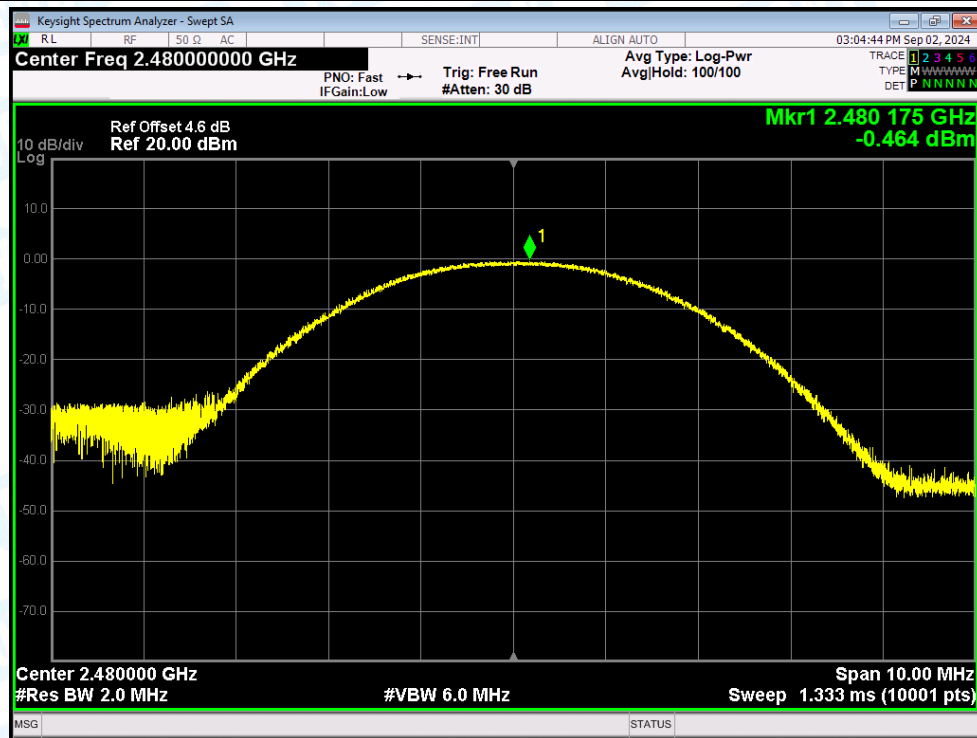
Power NVNT 2-DH1 2402MHz Ant1



Power NVNT 2-DH1 2441MHz Ant1



Power NVNT 2-DH1 2480MHz Ant1

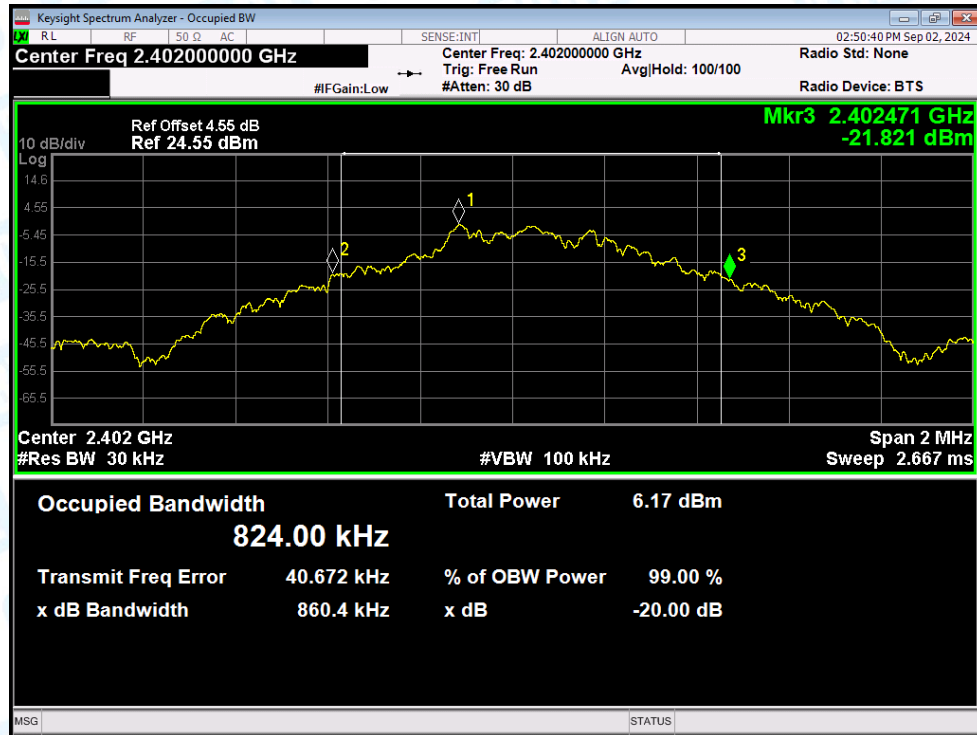


3. -20dB Bandwidth

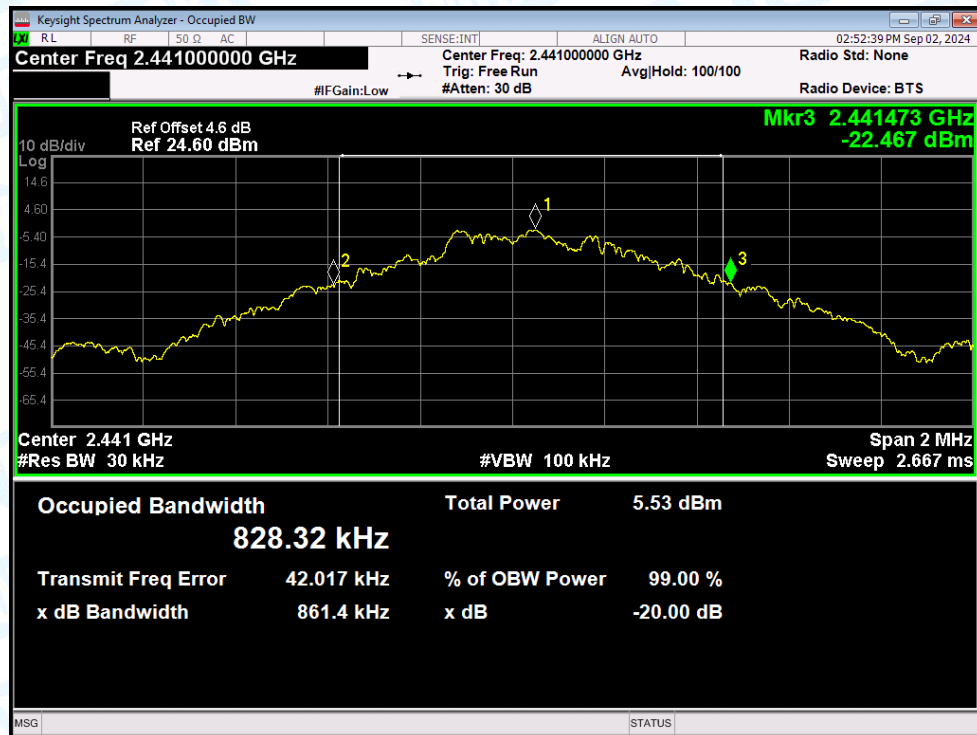
| Condition | Mode  | Frequency (MHz) | Antenna | -20 dB Bandwidth (MHz) | Limit -20 dB Bandwidth (MHz) | Verdict |
|-----------|-------|-----------------|---------|------------------------|------------------------------|---------|
| NVNT      | 1-DH1 | 2402            | Ant1    | 0.86                   | ----                         | Pass    |
| NVNT      | 1-DH1 | 2441            | Ant1    | 0.86                   | ----                         | Pass    |
| NVNT      | 1-DH1 | 2480            | Ant1    | 0.93                   | ----                         | Pass    |
| NVNT      | 2-DH1 | 2402            | Ant1    | 1.23                   | ----                         | Pass    |
| NVNT      | 2-DH1 | 2441            | Ant1    | 1.25                   | ----                         | Pass    |
| NVNT      | 2-DH1 | 2480            | Ant1    | 1.26                   | ----                         | Pass    |

### Test Graphs

#### -20dB Bandwidth NVNT 1-DH1 2402MHz Ant1



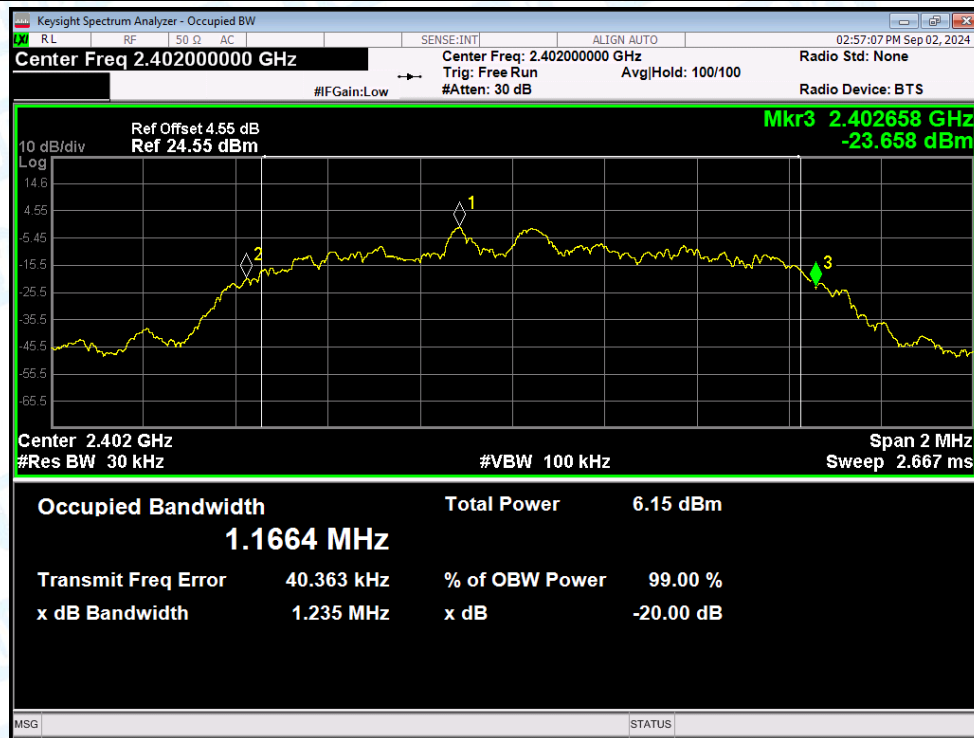
#### -20dB Bandwidth NVNT 1-DH1 2441MHz Ant1



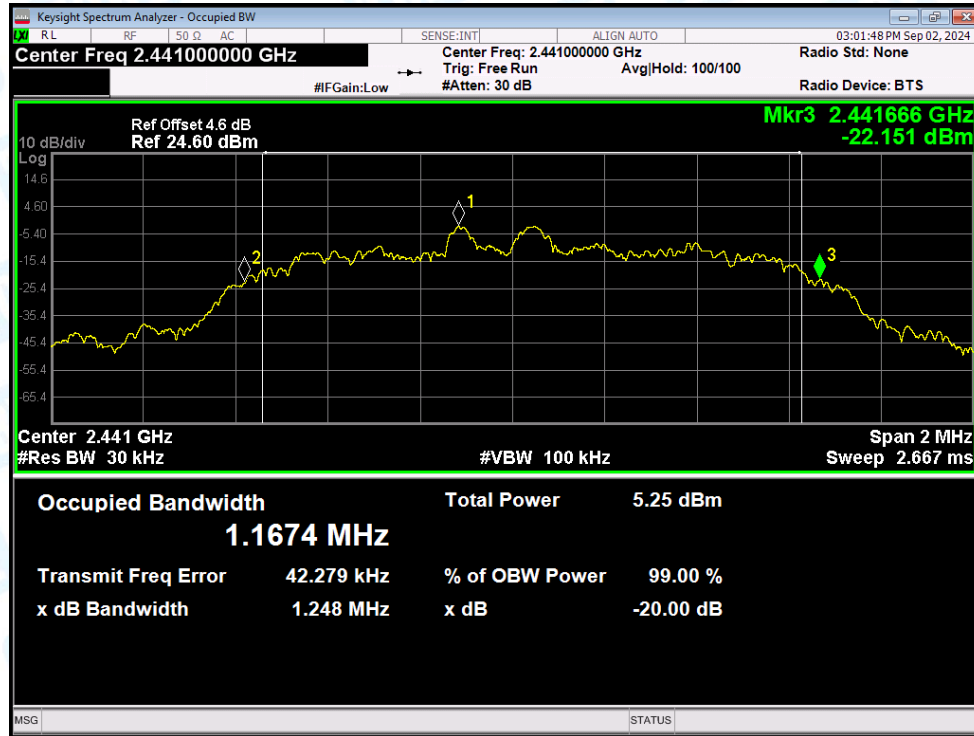
-20dB Bandwidth NVNT 1-DH1 2480MHz Ant1



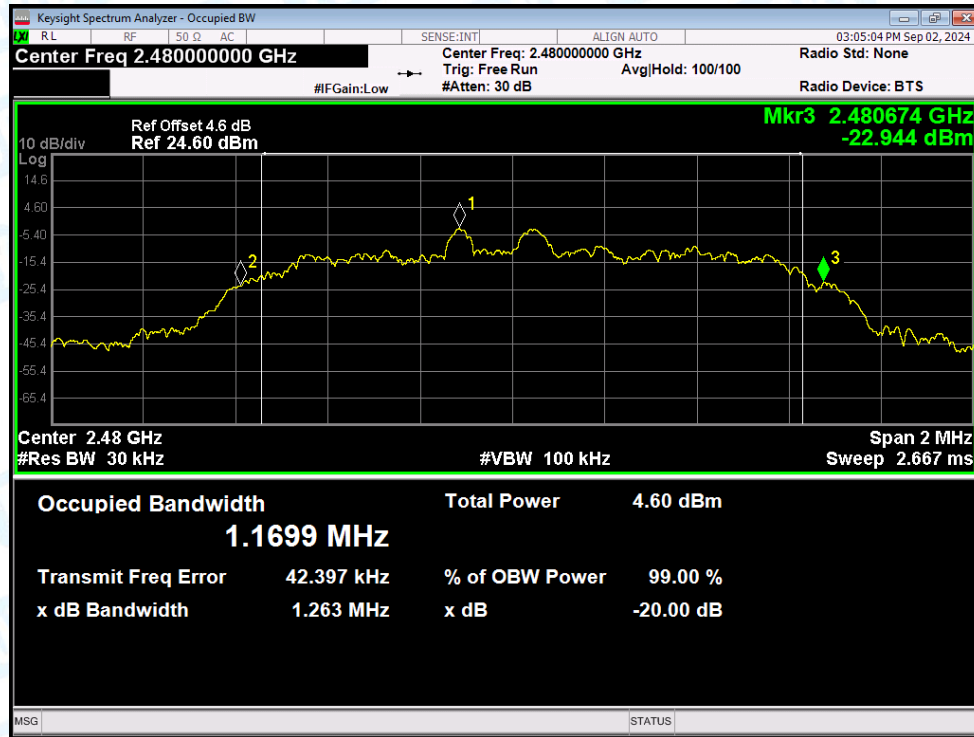
-20dB Bandwidth NVNT 2-DH1 2402MHz Ant1



-20dB Bandwidth NVNT 2-DH1 2441MHz Ant1



-20dB Bandwidth NVNT 2-DH1 2480MHz Ant1

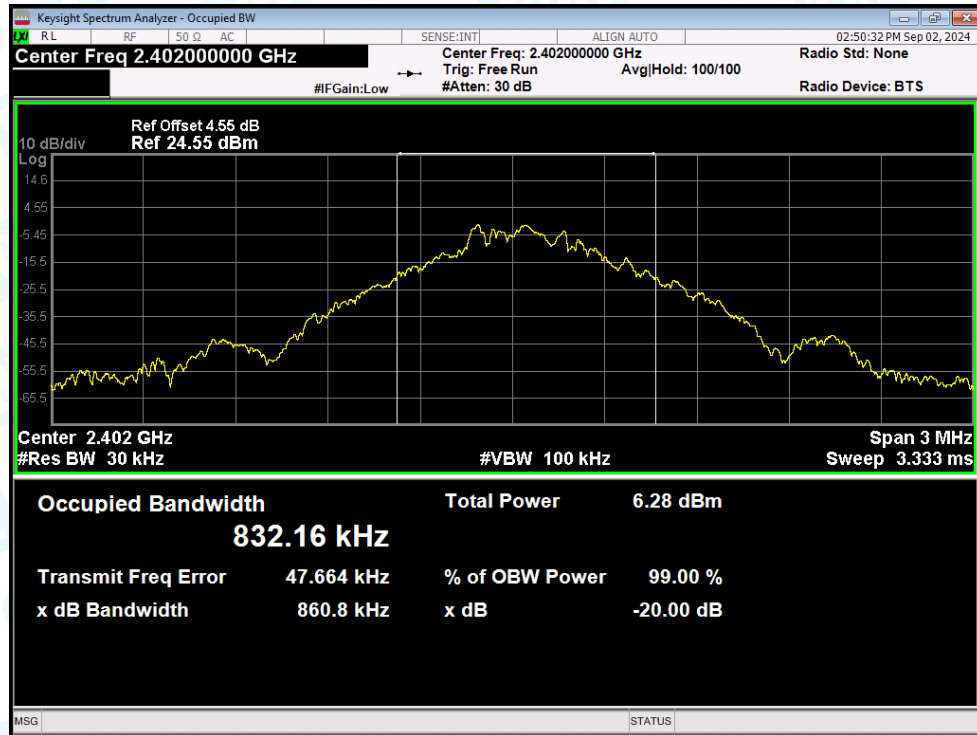


## 4. Occupied Channel Bandwidth

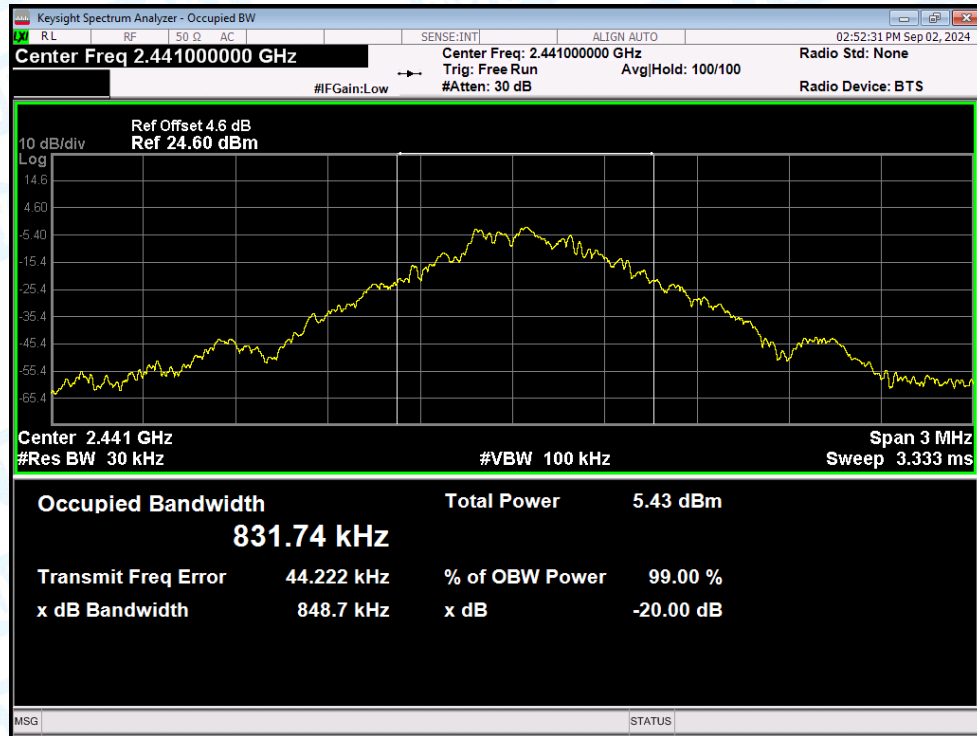
| Condition | Mode  | Frequency (MHz) | Antenna | 99% OBW (MHz) |
|-----------|-------|-----------------|---------|---------------|
| NVNT      | 1-DH1 | 2402            | Ant1    | 0.832         |
| NVNT      | 1-DH1 | 2441            | Ant1    | 0.832         |
| NVNT      | 1-DH1 | 2480            | Ant1    | 0.851         |
| NVNT      | 2-DH1 | 2402            | Ant1    | 1.138         |
| NVNT      | 2-DH1 | 2441            | Ant1    | 1.16          |
| NVNT      | 2-DH1 | 2480            | Ant1    | 1.172         |

### Test Graphs

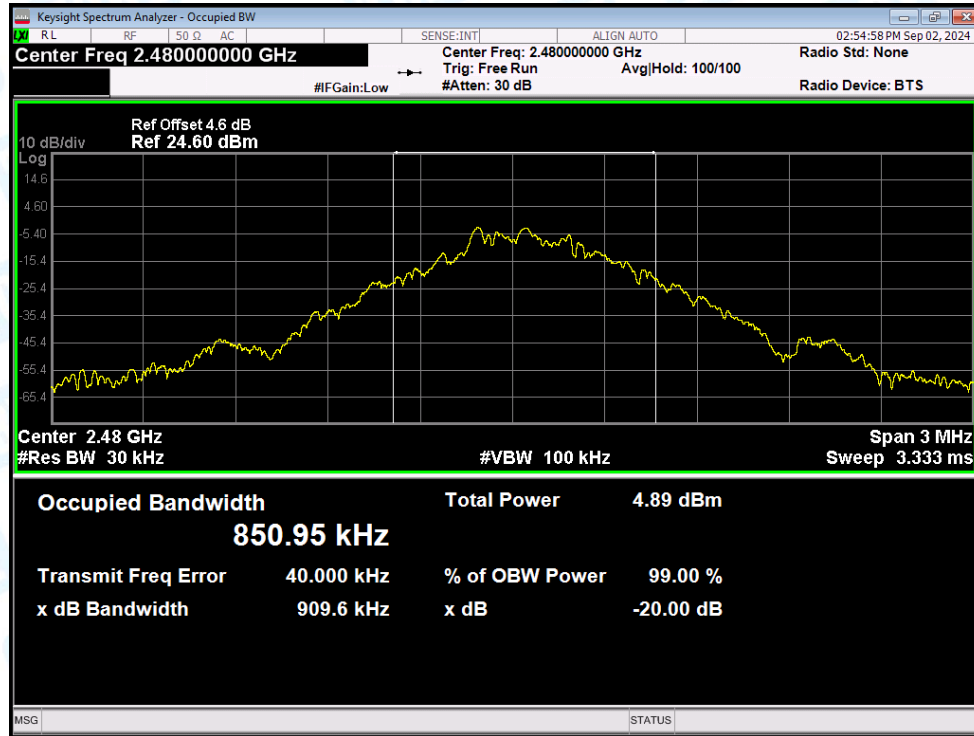
#### OBW NVNT 1-DH1 2402MHz Ant1



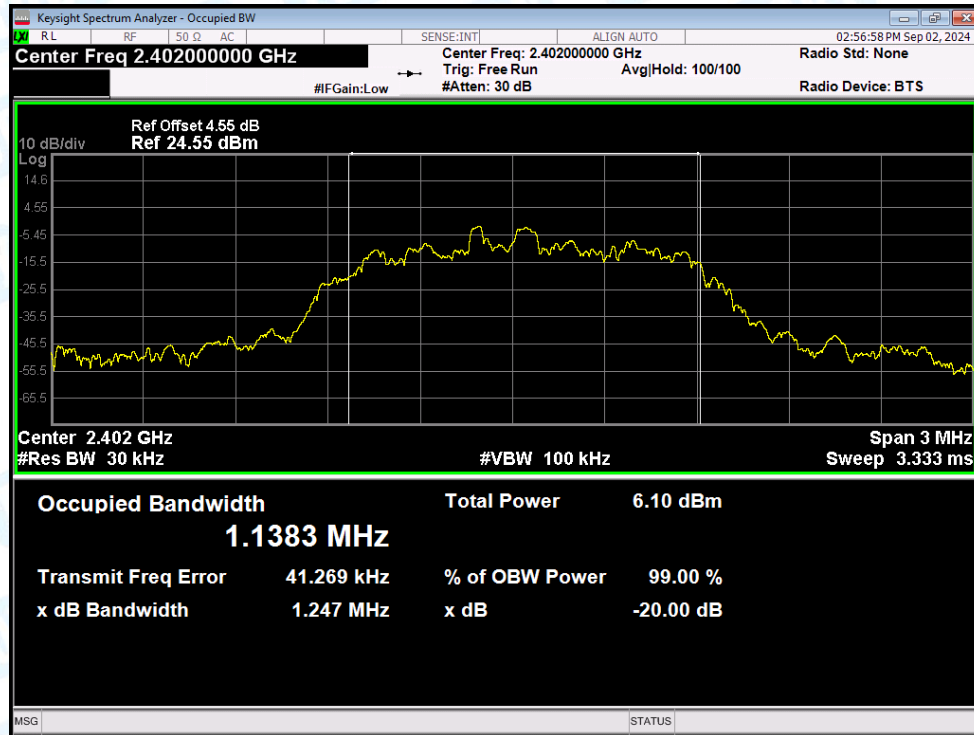
#### OBW NVNT 1-DH1 2441MHz Ant1



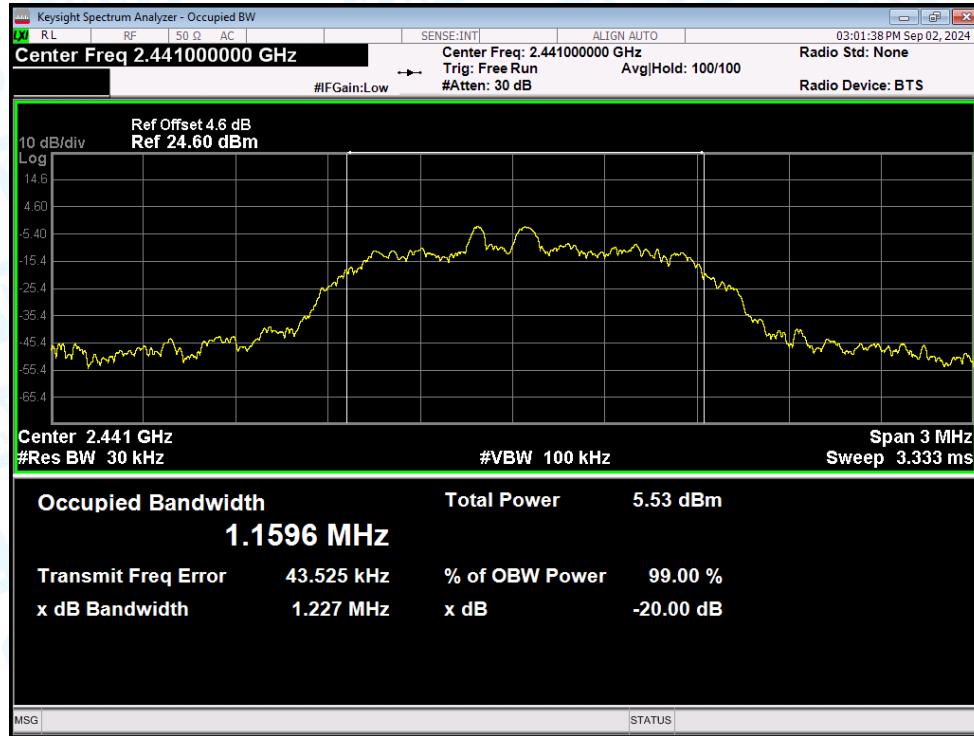
OBW NVNT 1-DH1 2480MHz Ant1



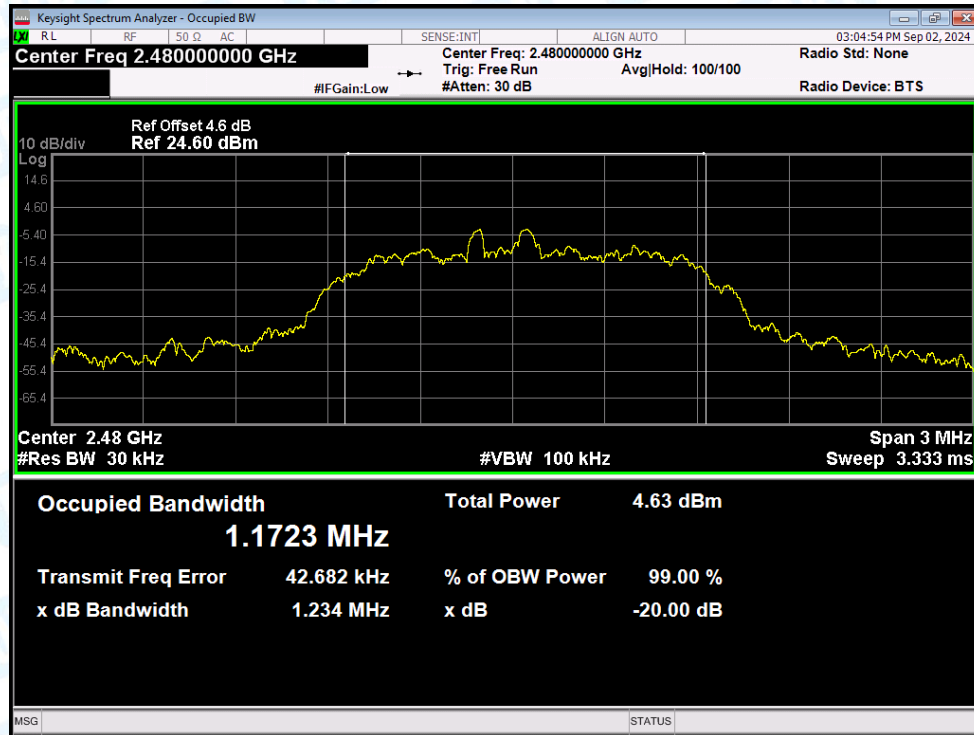
OBW NVNT 2-DH1 2402MHz Ant1



OBW NVNT 2-DH1 2441MHz Ant1



OBW NVNT 2-DH1 2480MHz Ant1

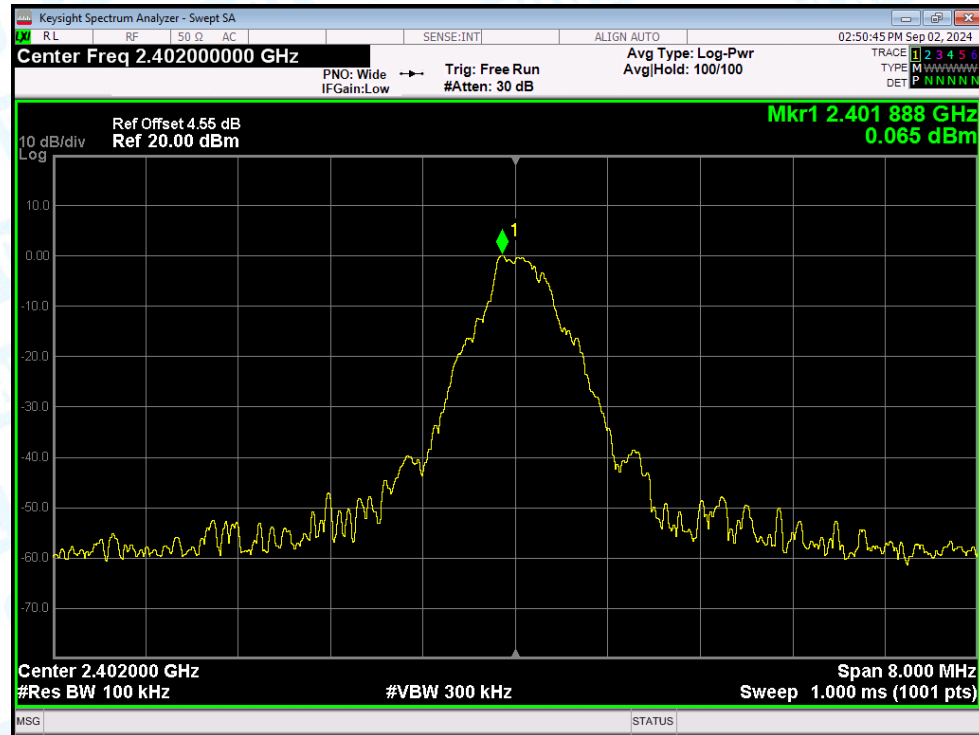


5. Band Edge

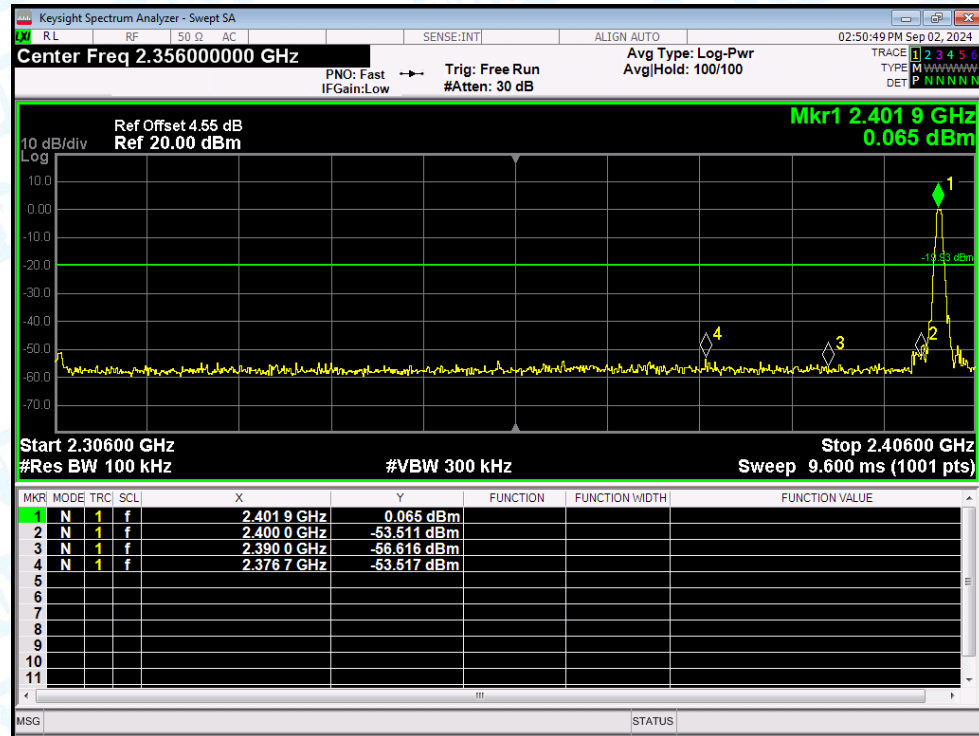
| Condition | Mode  | Frequency (MHz) | Antenna | Hopping Mode | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|-------|-----------------|---------|--------------|-----------------|-------------|---------|
| NVNT      | 1-DH1 | 2402            | Ant1    | No-Hopping   | -53.59          | -20         | Pass    |
| NVNT      | 1-DH1 | 2480            | Ant1    | No-Hopping   | -52.27          | -20         | Pass    |
| NVNT      | 2-DH1 | 2402            | Ant1    | No-Hopping   | -54.08          | -20         | Pass    |
| NVNT      | 2-DH1 | 2480            | Ant1    | No-Hopping   | -53.22          | -20         | Pass    |

# Test Graphs

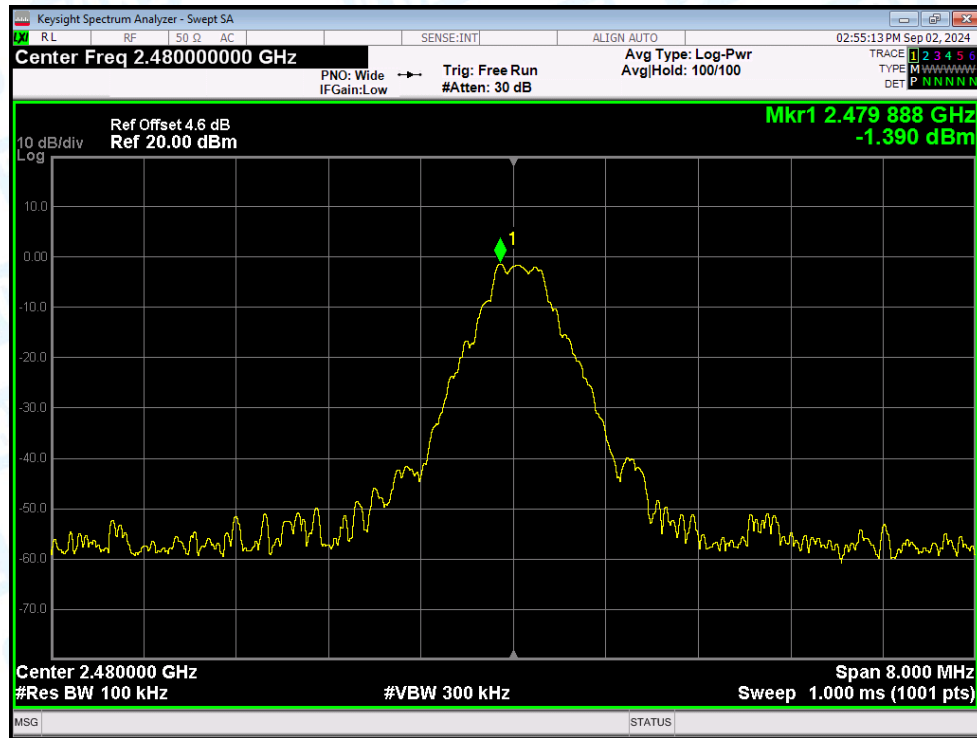
## Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Ref



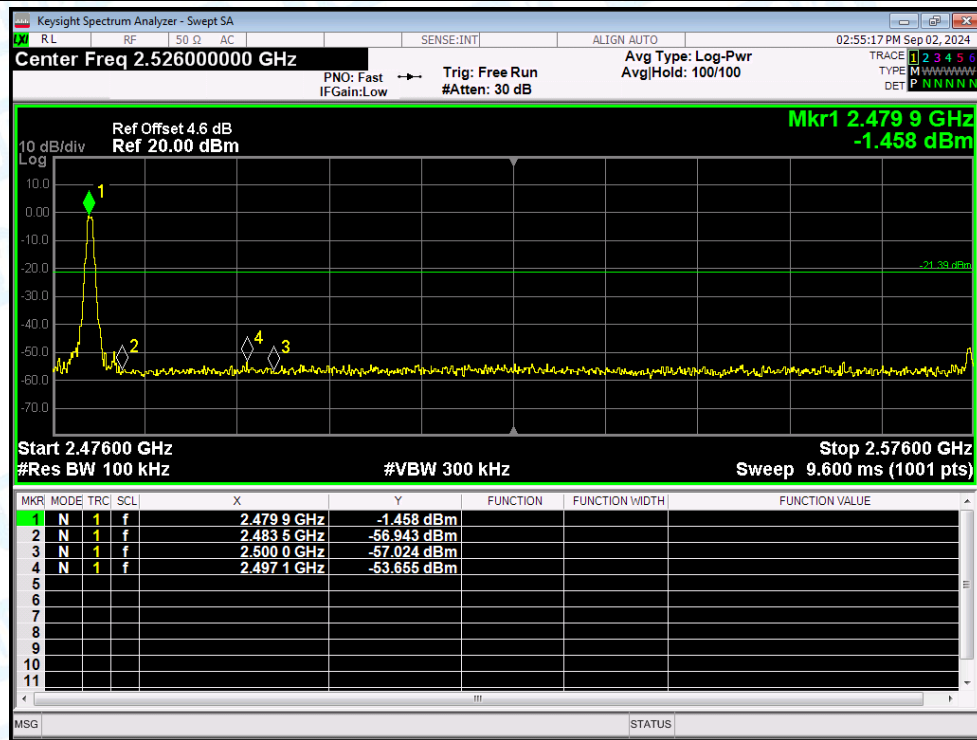
## Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Emission

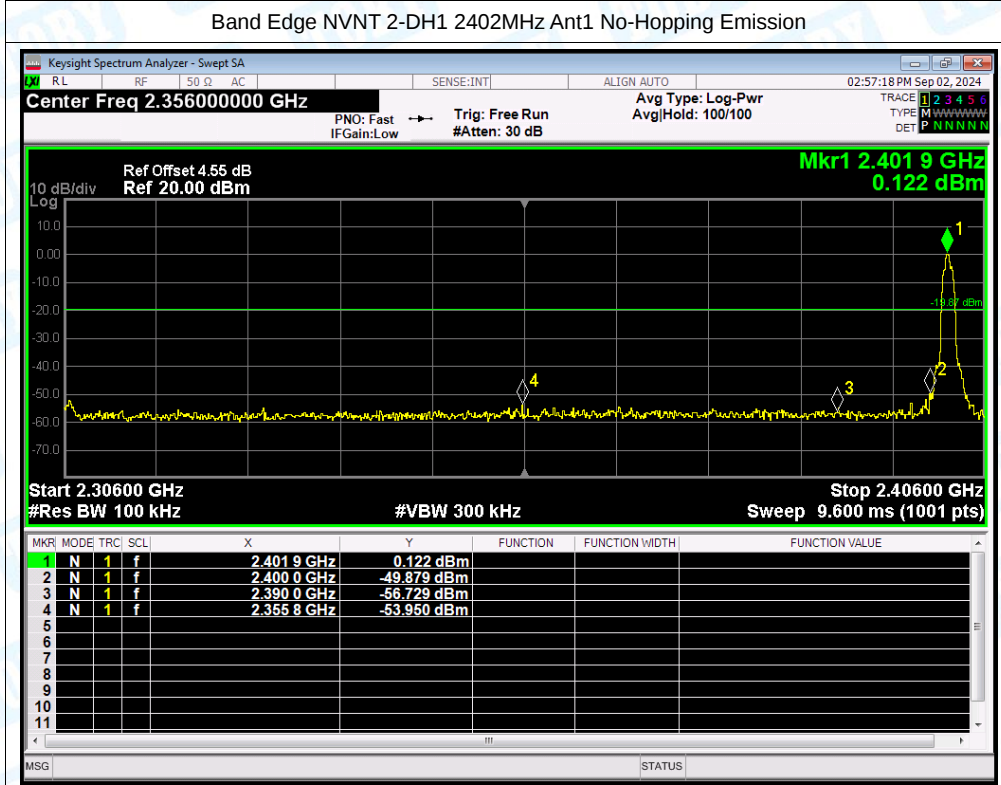
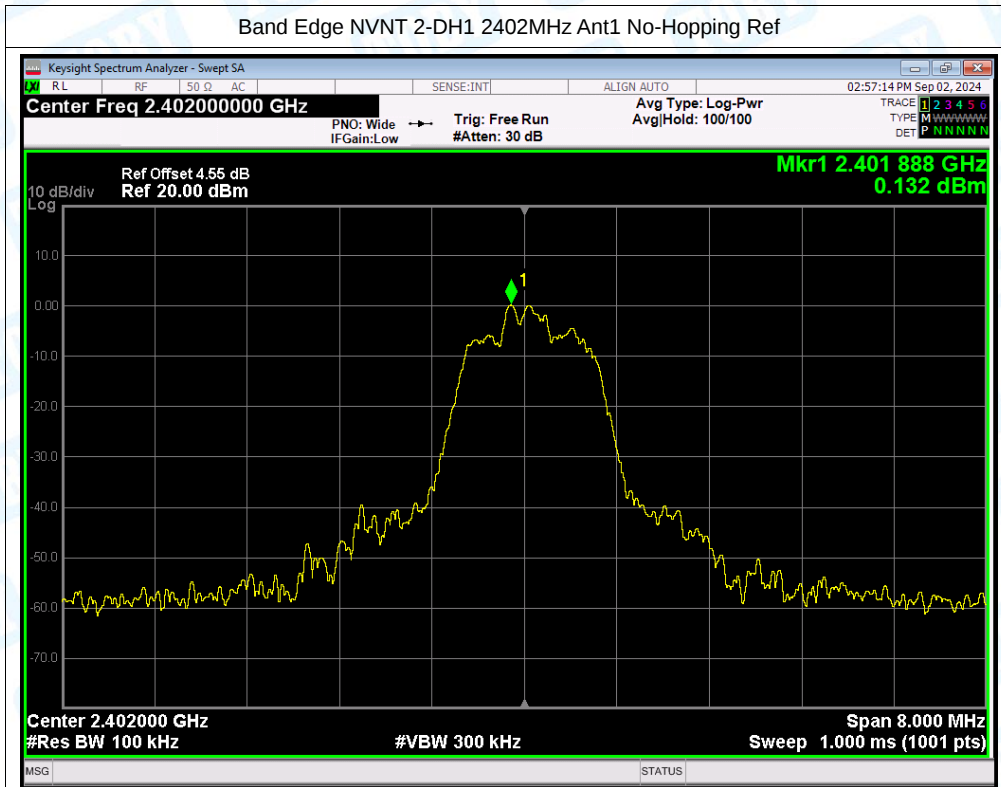


Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Ref



Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Emission

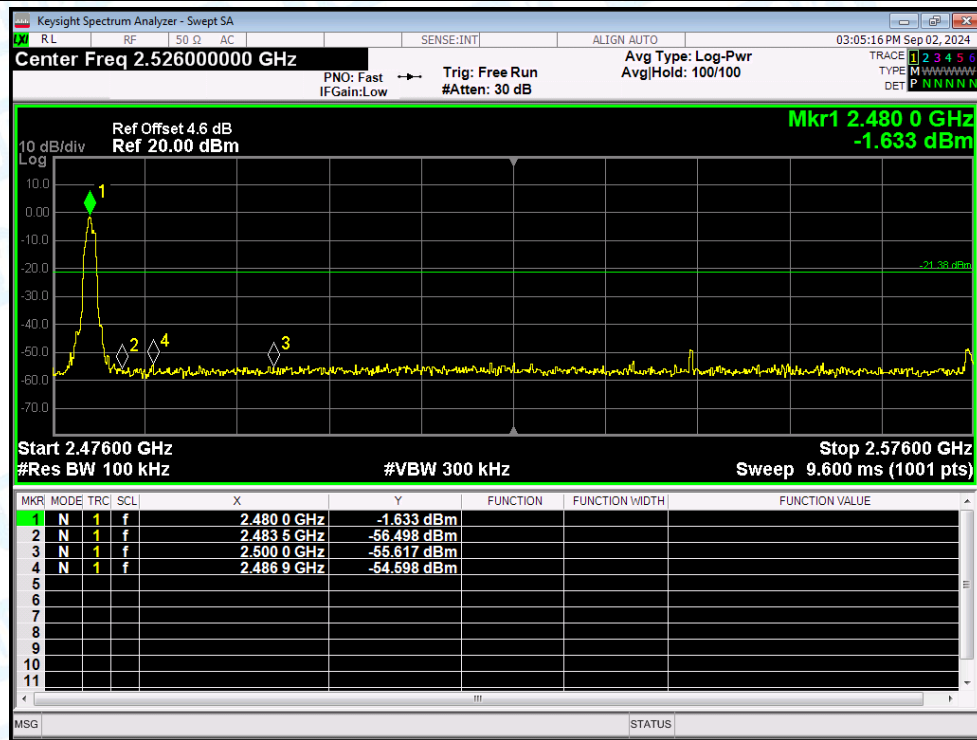




Band Edge NVNT 2-DH1 2480MHz Ant1 No-Hopping Ref



Band Edge NVNT 2-DH1 2480MHz Ant1 No-Hopping Emission

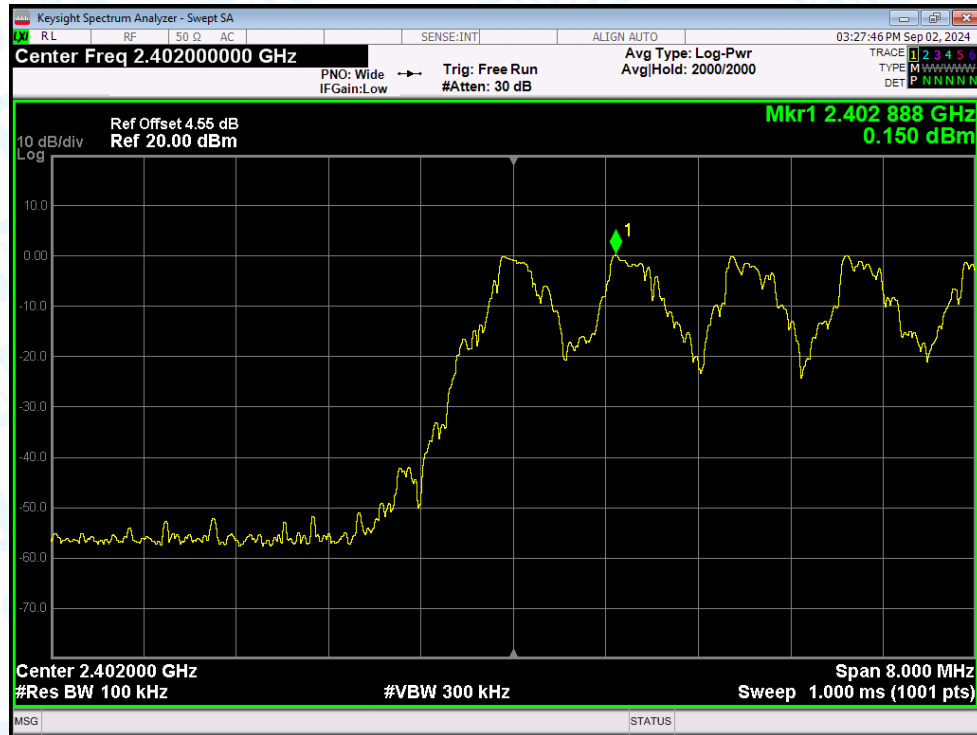


6. Band Edge(Hopping)

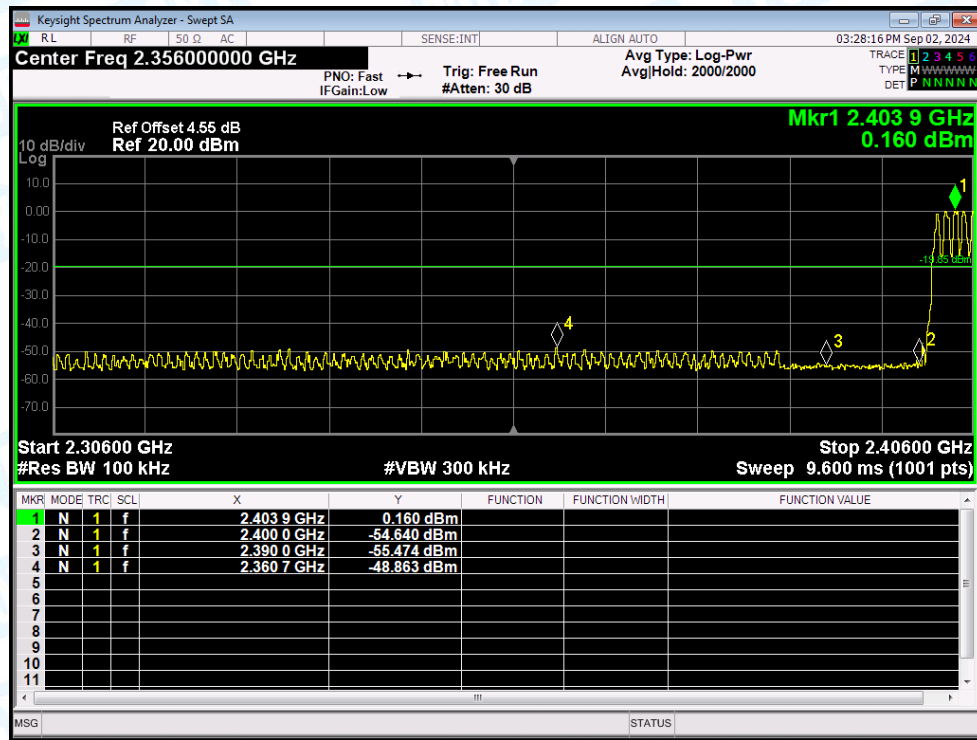
| Condition | Mode  | Frequency (MHz) | Antenna | Hopping Mode | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|-------|-----------------|---------|--------------|-----------------|-------------|---------|
| NVNT      | 1-DH1 | 2402            | Ant1    | Hopping      | -49.01          | -20         | Pass    |
| NVNT      | 1-DH1 | 2480            | Ant1    | Hopping      | -47             | -20         | Pass    |
| NVNT      | 2-DH1 | 2402            | Ant1    | Hopping      | -49.11          | -20         | Pass    |
| NVNT      | 2-DH1 | 2480            | Ant1    | Hopping      | -48.22          | -20         | Pass    |

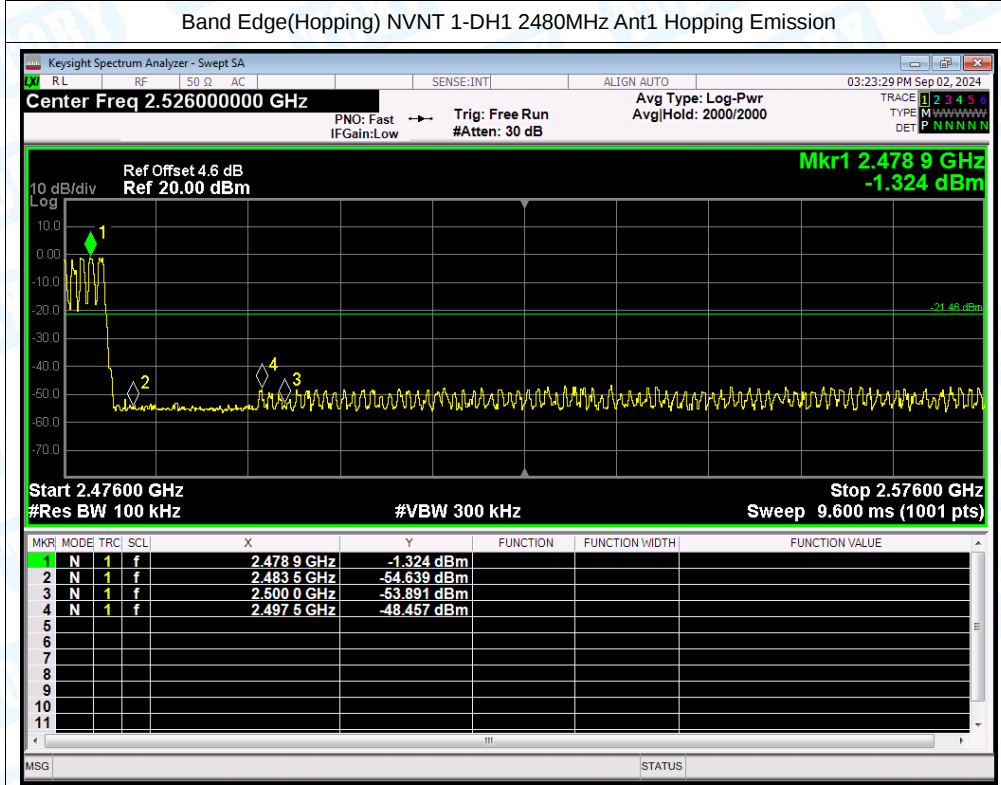
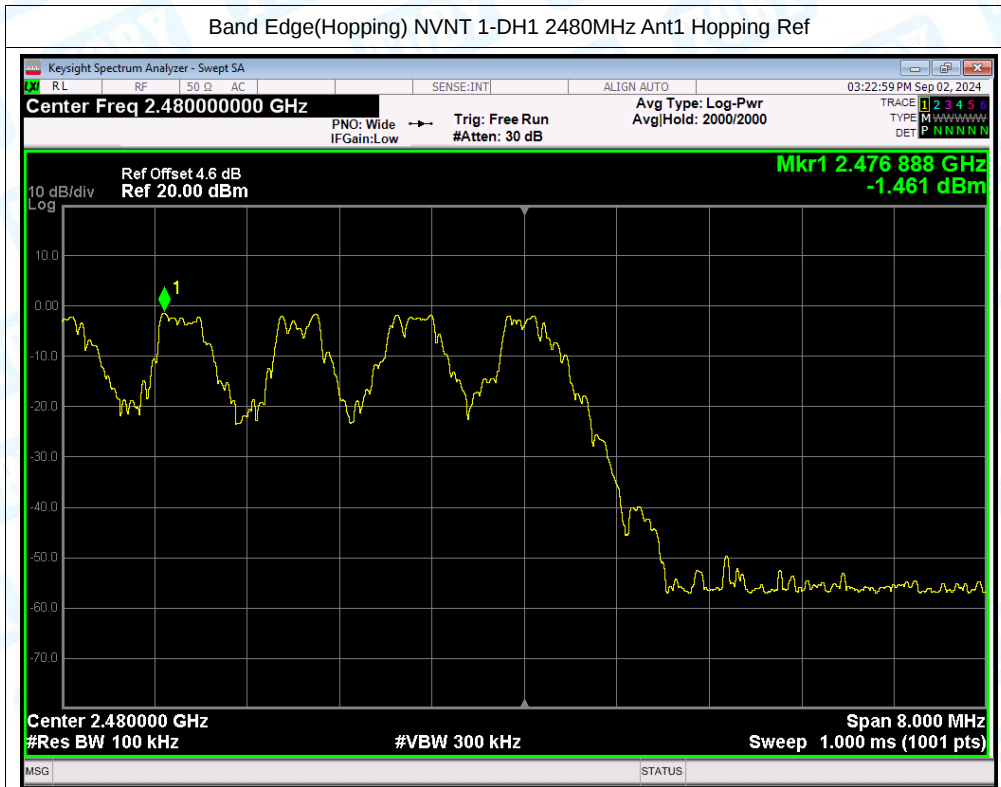
# Test Graphs

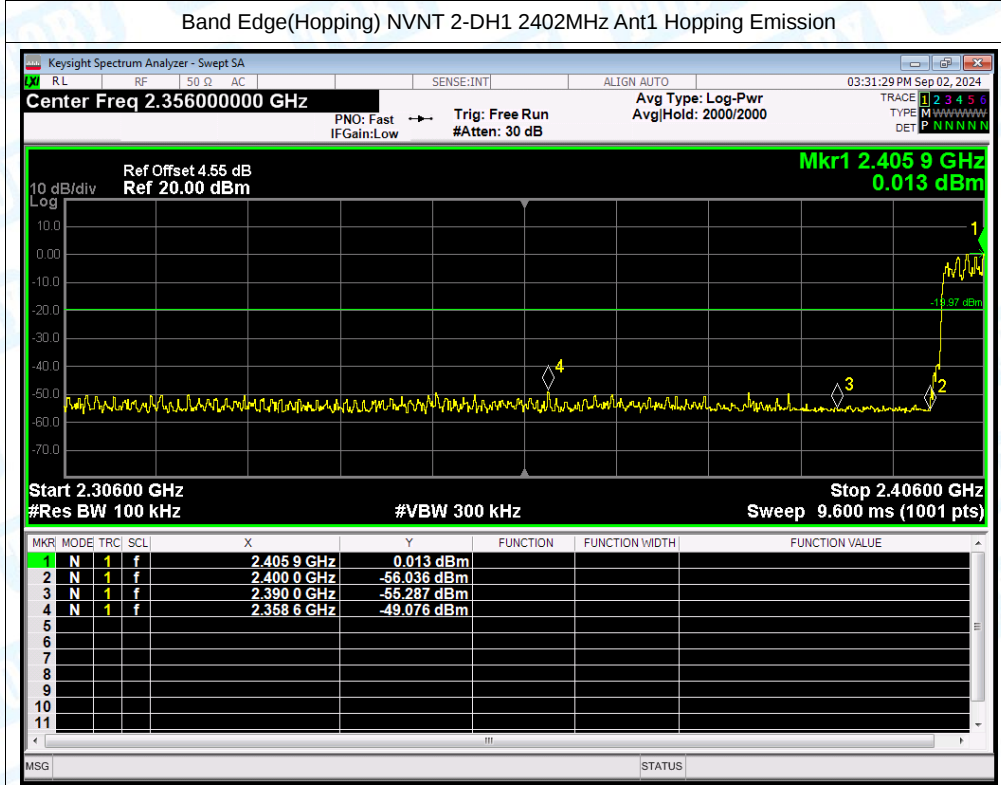
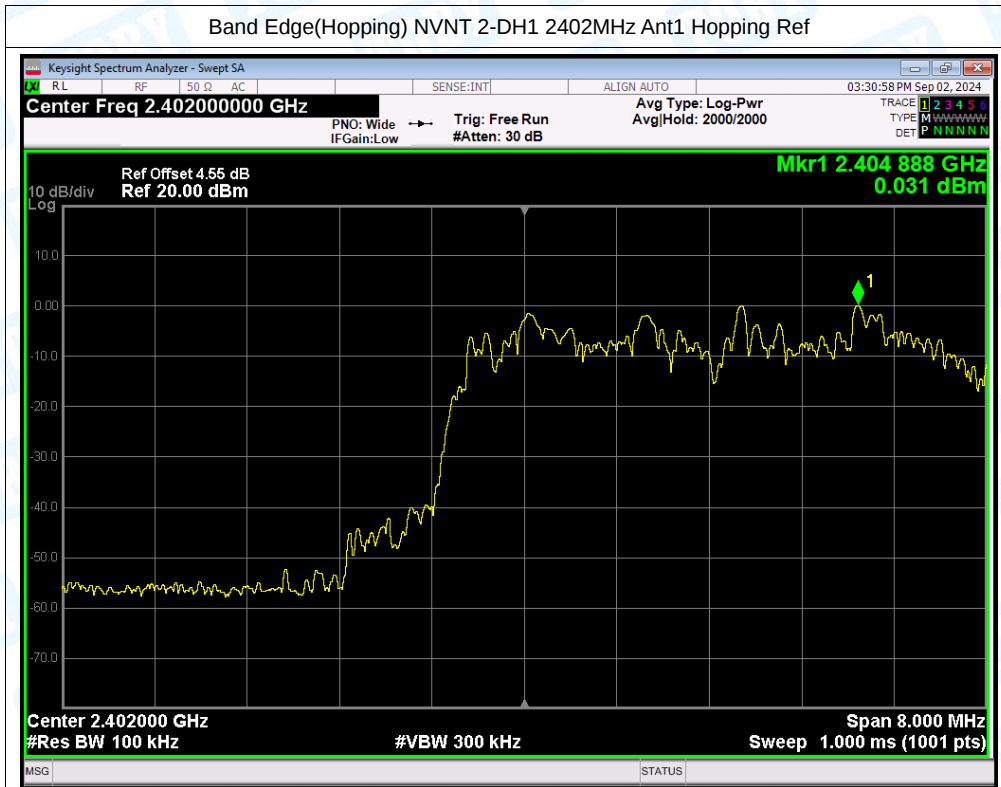
## Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Ref

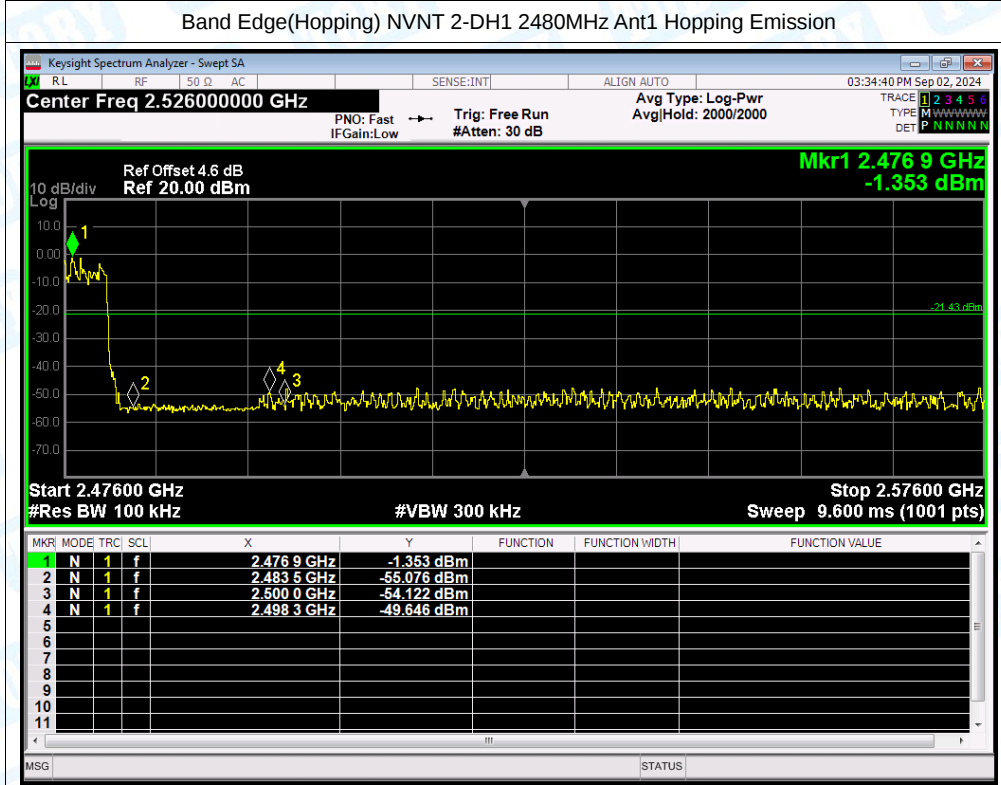


## Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Emission







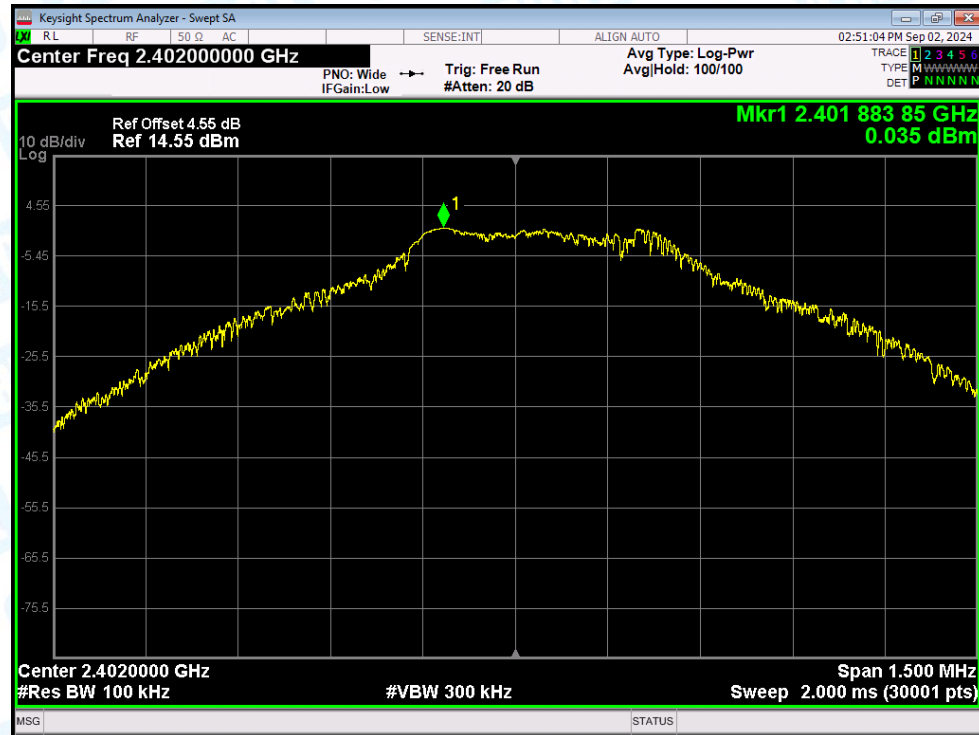


7. Conducted RF Spurious Emission

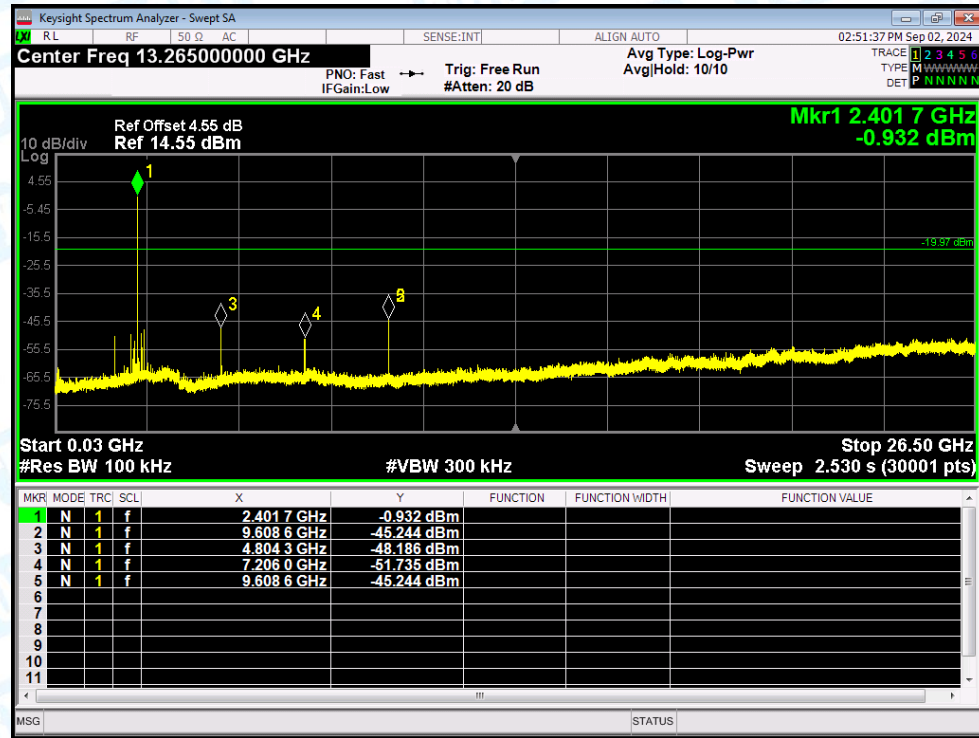
| Condition | Mode  | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|-------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | 1-DH1 | 2402            | Ant1    | -45.28          | -20         | Pass    |
| NVNT      | 1-DH1 | 2441            | Ant1    | -44.41          | -20         | Pass    |
| NVNT      | 1-DH1 | 2480            | Ant1    | -44.17          | -20         | Pass    |
| NVNT      | 2-DH1 | 2402            | Ant1    | -45.28          | -20         | Pass    |
| NVNT      | 2-DH1 | 2441            | Ant1    | -42.7           | -20         | Pass    |
| NVNT      | 2-DH1 | 2480            | Ant1    | -44.55          | -20         | Pass    |

### Test Graphs

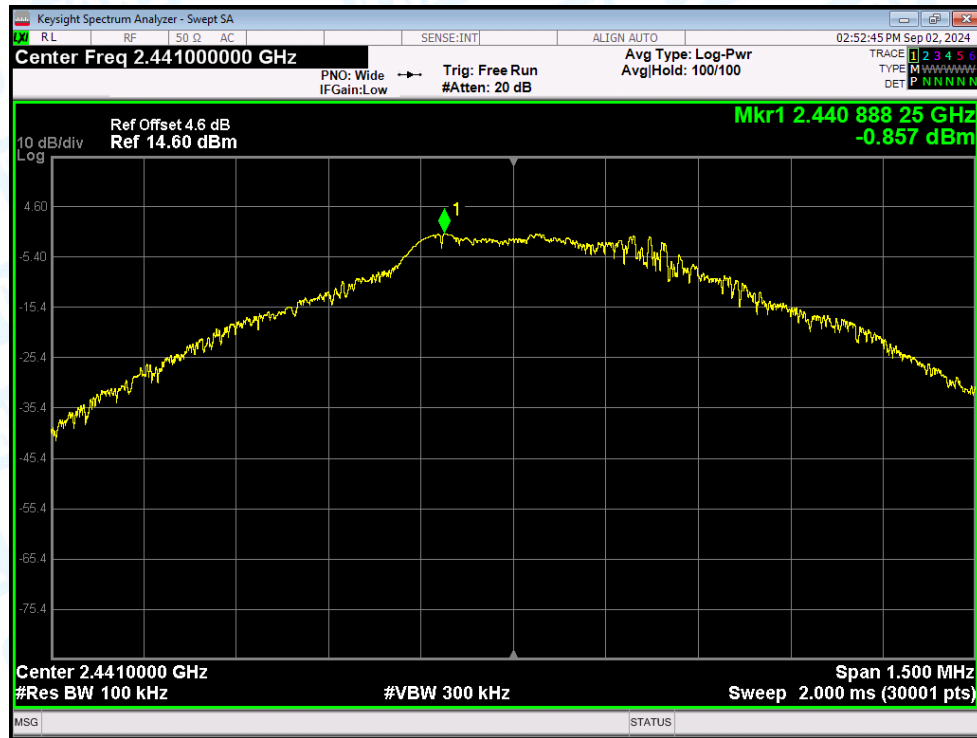
#### Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Ref



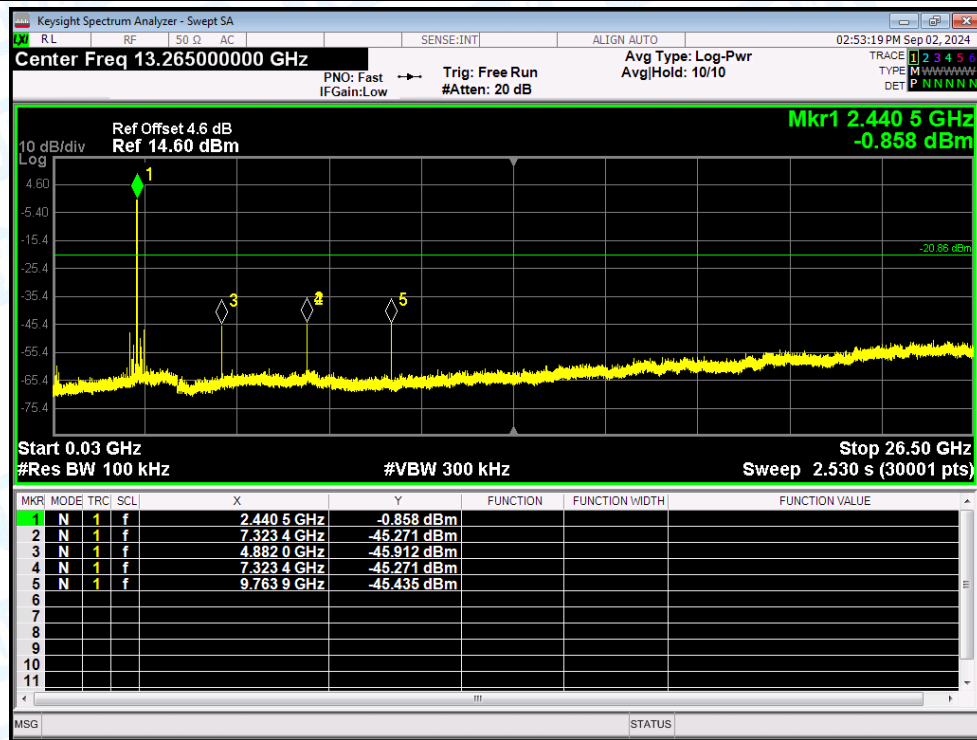
#### Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Emission



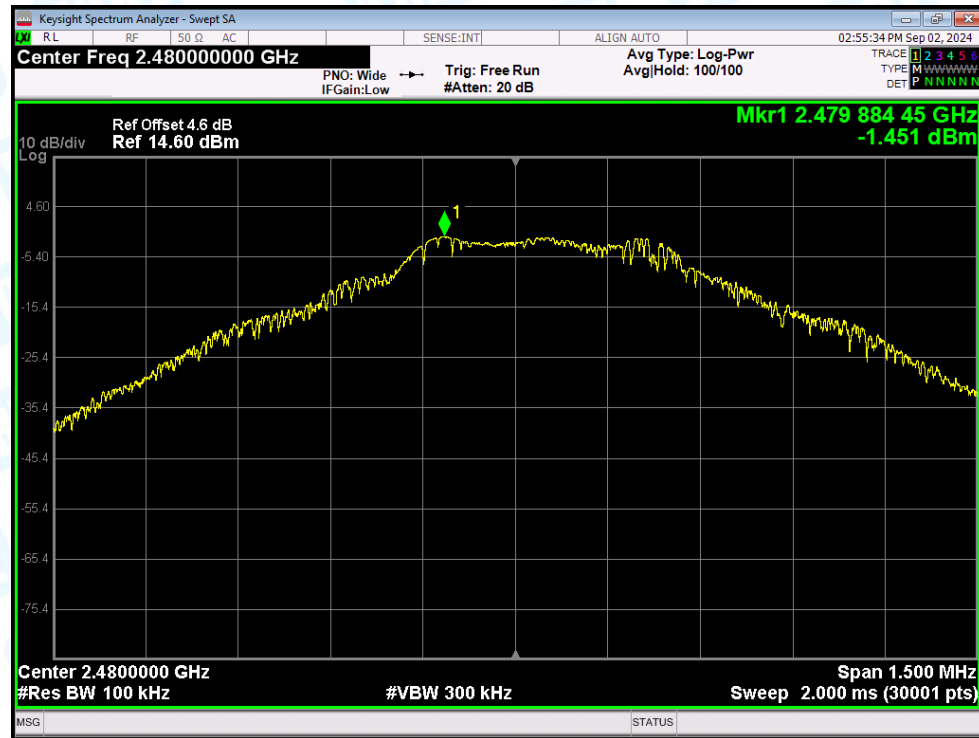
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Ref



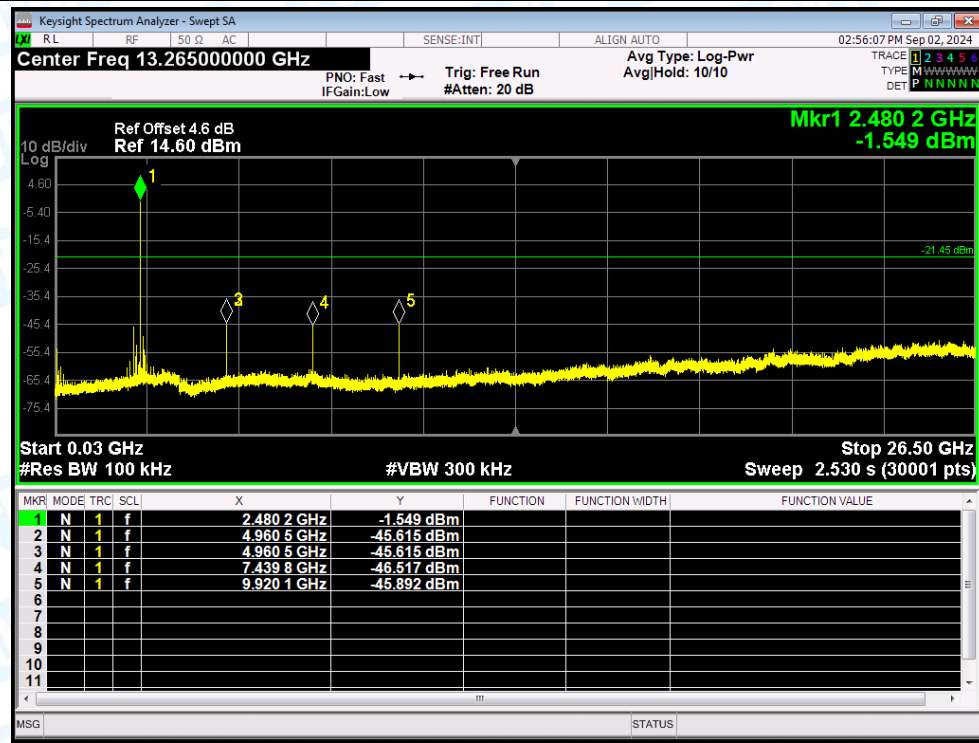
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Emission



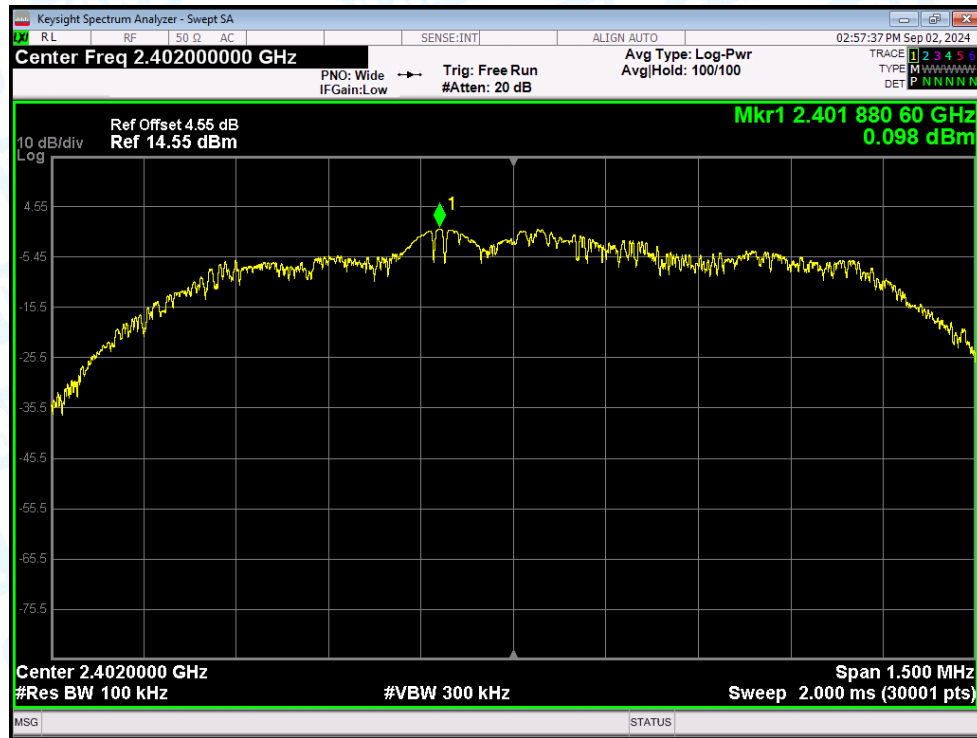
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Ref



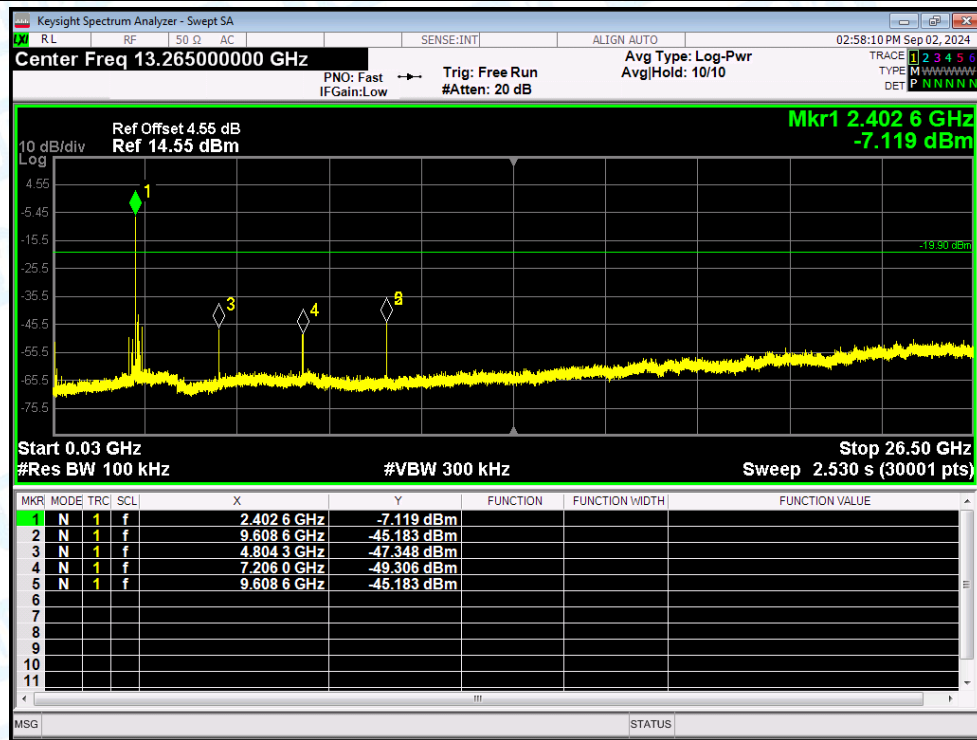
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Emission



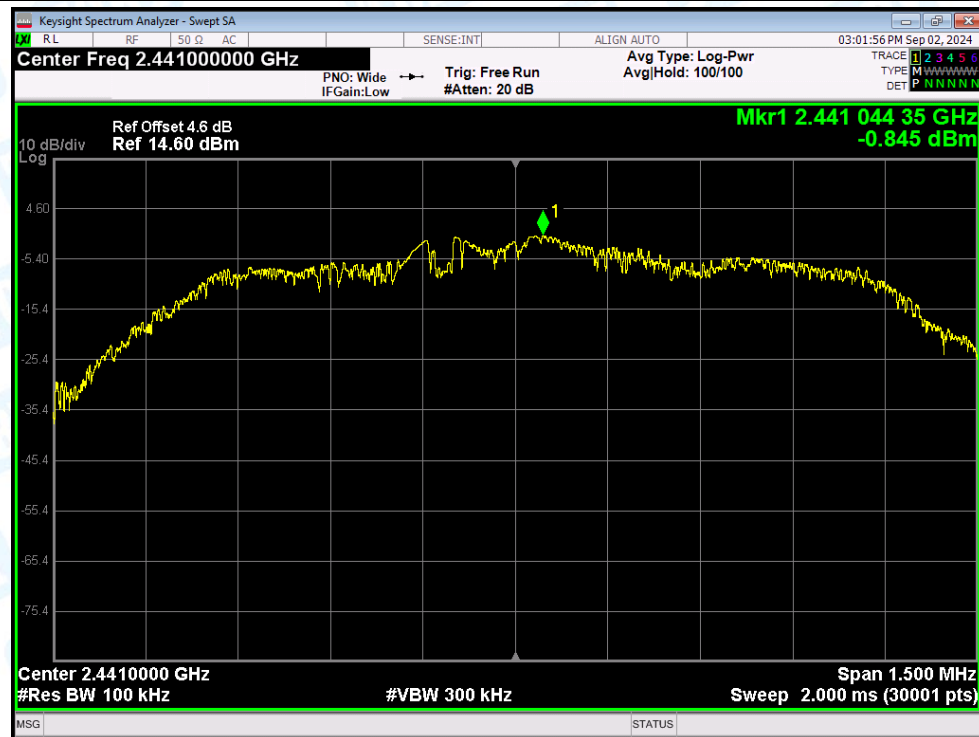
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Ref



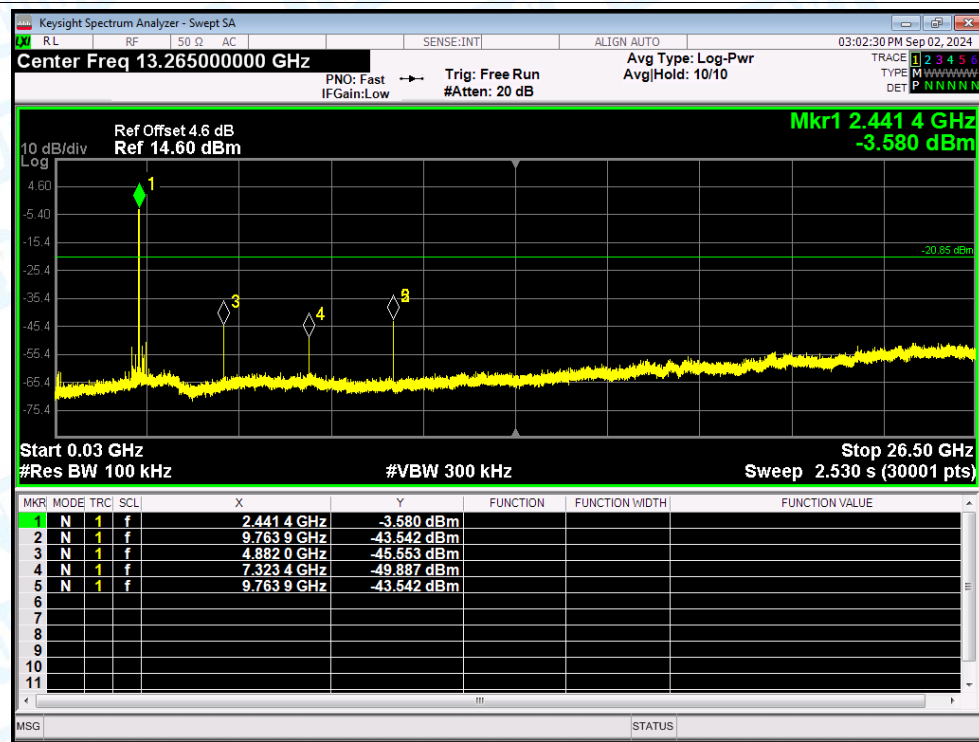
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Emission



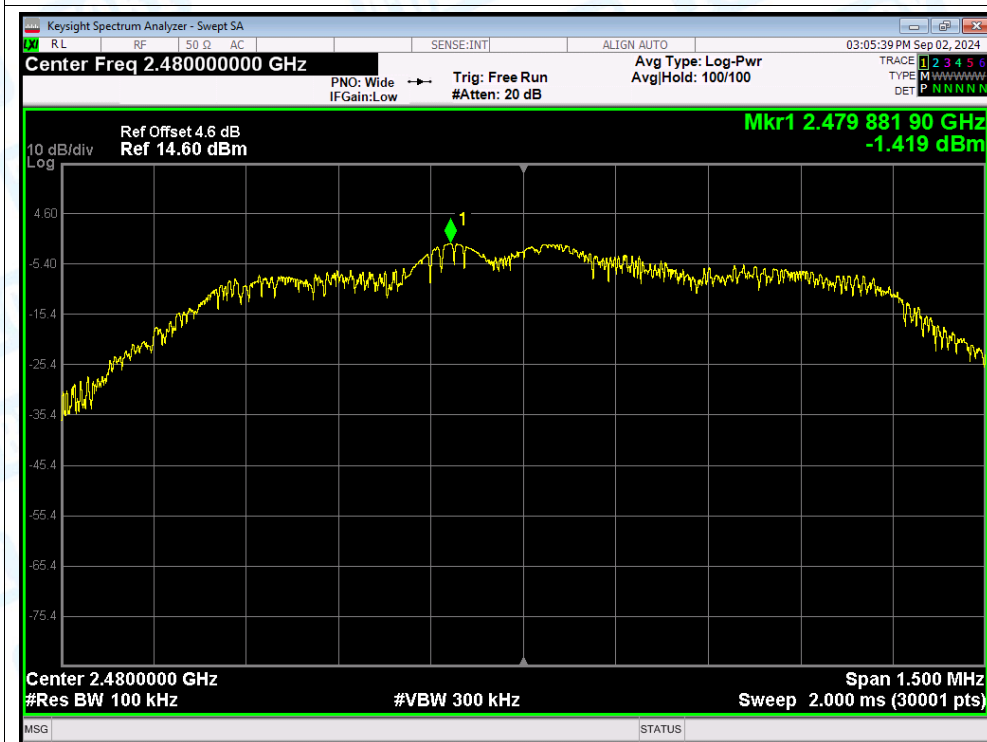
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Ref



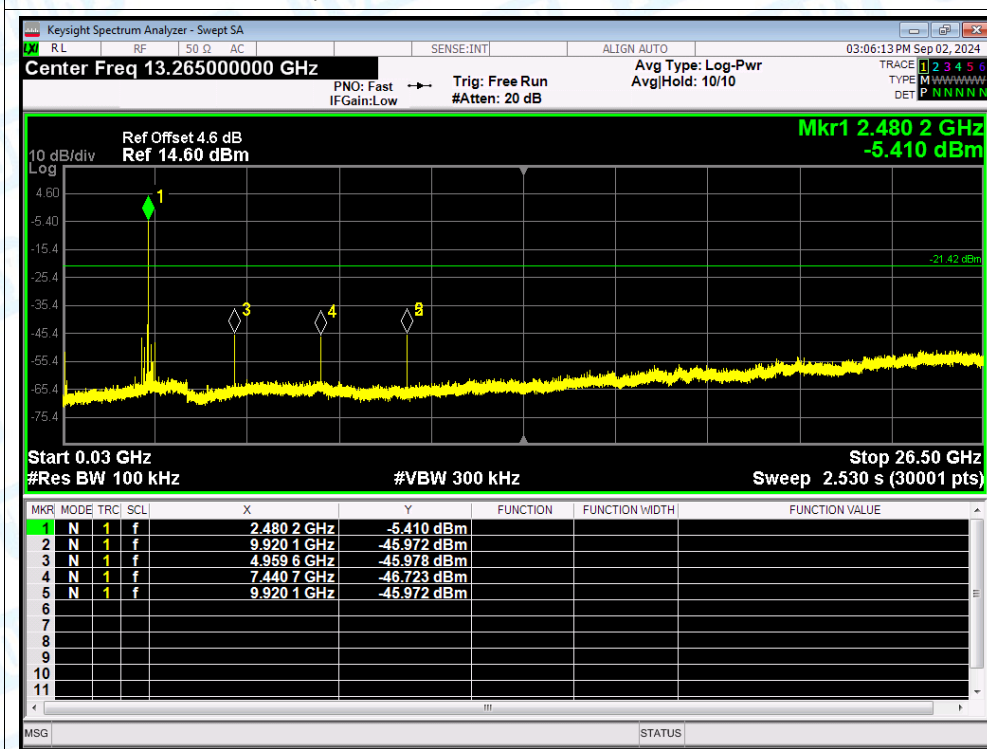
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Emission



Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Ref



Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Emission

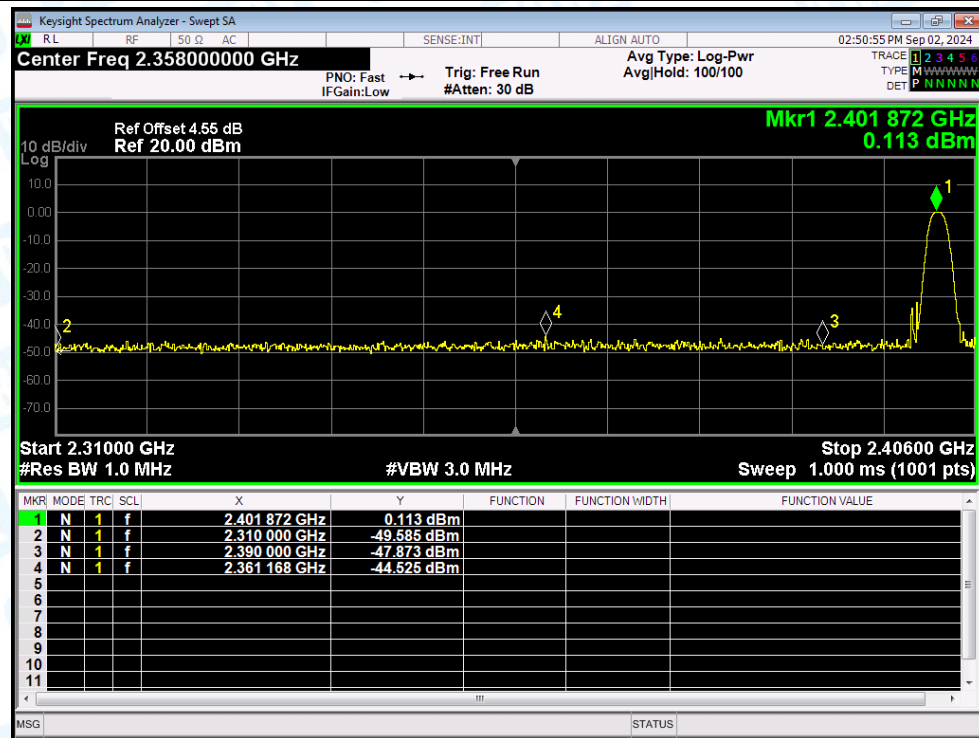


## 8. Restrict Band

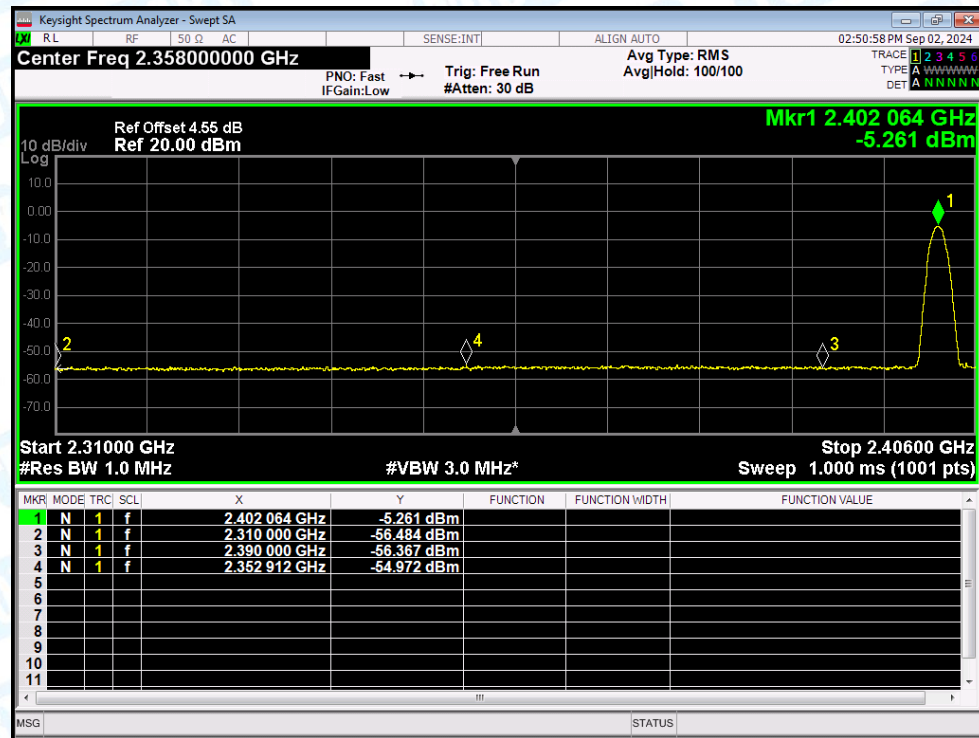
| Condition | Mode  | Frequency (MHz) | Antenna | Hopping Mode | Spur Freq (MHz) | Power (dBm) | Gain (dBi) | Duty Factor (dB) | E (dBuV/m) | Detector | Limit (dBuV/m) | Verdict |
|-----------|-------|-----------------|---------|--------------|-----------------|-------------|------------|------------------|------------|----------|----------------|---------|
| NVNT      | 1-DH1 | 2402            | Ant1    | No-Hopping   | 2310            | -49.59      | 2          | -                | 47.67      | Peak     | 74             | Pass    |
| NVNT      | 1-DH1 | 2402            | Ant1    | No-Hopping   | 2310            | -56.48      | 2          | 5.17             | 45.95      | Average  | 54             | Pass    |
| NVNT      | 1-DH1 | 2402            | Ant1    | No-Hopping   | 2361.168        | -44.53      | 2          | -                | 52.73      | Peak     | 74             | Pass    |
| NVNT      | 1-DH1 | 2402            | Ant1    | No-Hopping   | 2352.912        | -54.97      | 2          | 5.17             | 47.46      | Average  | 54             | Pass    |
| NVNT      | 1-DH1 | 2402            | Ant1    | No-Hopping   | 2390            | -47.87      | 2          | -                | 49.39      | Peak     | 74             | Pass    |
| NVNT      | 1-DH1 | 2402            | Ant1    | No-Hopping   | 2390            | -56.37      | 2          | 5.17             | 46.06      | Average  | 54             | Pass    |
| NVNT      | 1-DH1 | 2480            | Ant1    | No-Hopping   | 2483.5          | -45.94      | 2          | -                | 51.32      | Peak     | 74             | Pass    |
| NVNT      | 1-DH1 | 2480            | Ant1    | No-Hopping   | 2483.5          | -55.37      | 2          | 5.06             | 46.95      | Average  | 54             | Pass    |
| NVNT      | 1-DH1 | 2480            | Ant1    | No-Hopping   | 2483.632        | -39.41      | 2          | -                | 57.85      | Peak     | 74             | Pass    |
| NVNT      | 1-DH1 | 2480            | Ant1    | No-Hopping   | 2495.008        | -54.66      | 2          | 5.06             | 47.66      | Average  | 54             | Pass    |
| NVNT      | 1-DH1 | 2480            | Ant1    | No-Hopping   | 2500            | -47.34      | 2          | -                | 49.92      | Peak     | 74             | Pass    |
| NVNT      | 1-DH1 | 2480            | Ant1    | No-Hopping   | 2500            | -55.94      | 2          | 5.06             | 46.38      | Average  | 54             | Pass    |
| NVNT      | 2-DH1 | 2402            | Ant1    | No-Hopping   | 2310            | -50.21      | 2          | -                | 47.05      | Peak     | 74             | Pass    |
| NVNT      | 2-DH1 | 2402            | Ant1    | No-Hopping   | 2310            | -56.53      | 2          | 5.06             | 45.79      | Average  | 54             | Pass    |
| NVNT      | 2-DH1 | 2402            | Ant1    | No-Hopping   | 2348.496        | -44.48      | 2          | -                | 52.78      | Peak     | 74             | Pass    |
| NVNT      | 2-DH1 | 2402            | Ant1    | No-Hopping   | 2359.44         | -54.9       | 2          | 5.06             | 47.42      | Average  | 54             | Pass    |
| NVNT      | 2-DH1 | 2402            | Ant1    | No-Hopping   | 2390            | -48.09      | 2          | -                | 49.17      | Peak     | 74             | Pass    |
| NVNT      | 2-DH1 | 2402            | Ant1    | No-Hopping   | 2390            | -55.55      | 2          | 5.06             | 46.77      | Average  | 54             | Pass    |
| NVNT      | 2-DH1 | 2480            | Ant1    | No-Hopping   | 2483.5          | -45.79      | 2          | -                | 51.47      | Peak     | 74             | Pass    |
| NVNT      | 2-DH1 | 2480            | Ant1    | No-Hopping   | 2483.5          | -55.78      | 2          | 5.06             | 46.54      | Average  | 54             | Pass    |
| NVNT      | 2-DH1 | 2480            | Ant1    | No-Hopping   | 2490.736        | -43.84      | 2          | -                | 53.42      | Peak     | 74             | Pass    |
| NVNT      | 2-DH1 | 2480            | Ant1    | No-Hopping   | 2497.336        | -54.57      | 2          | 5.06             | 47.75      | Average  | 54             | Pass    |
| NVNT      | 2-DH1 | 2480            | Ant1    | No-Hopping   | 2500            | -47.55      | 2          | -                | 49.71      | Peak     | 74             | Pass    |
| NVNT      | 2-DH1 | 2480            | Ant1    | No-Hopping   | 2500            | -55.74      | 2          | 5.06             | 46.58      | Average  | 54             | Pass    |

### Test Graphs

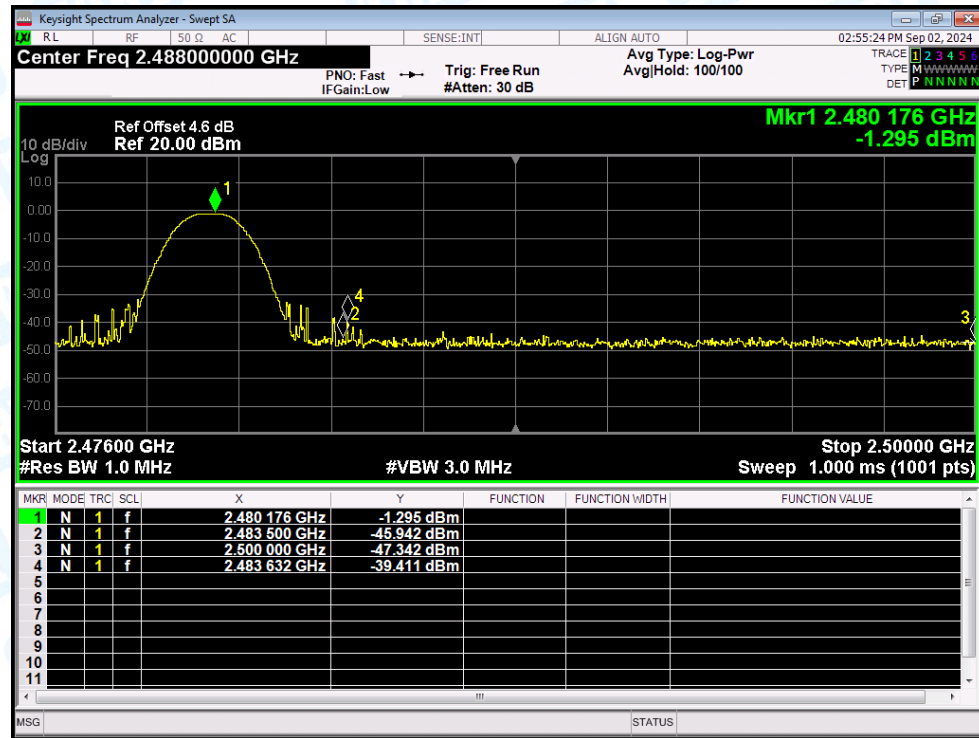
#### Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Peak



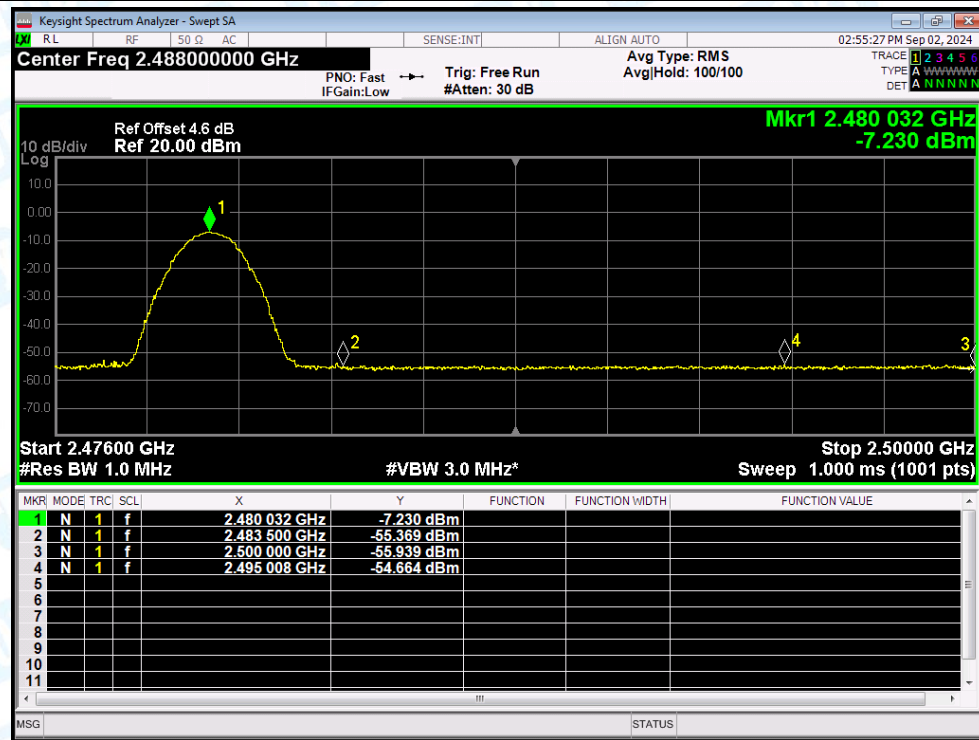
#### Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Average



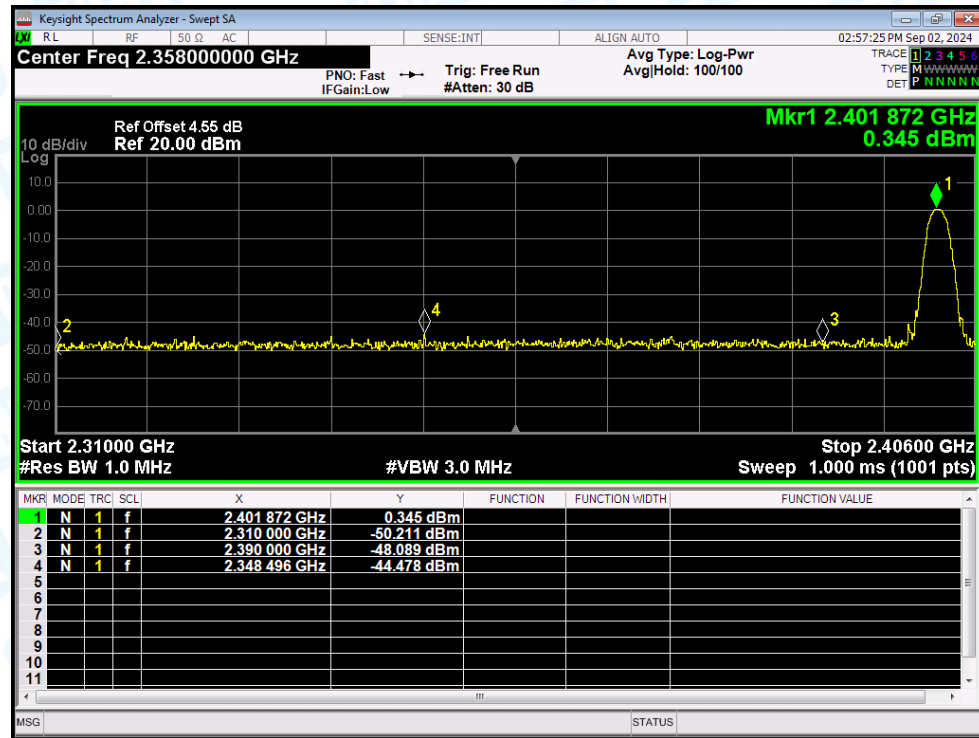
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Peak



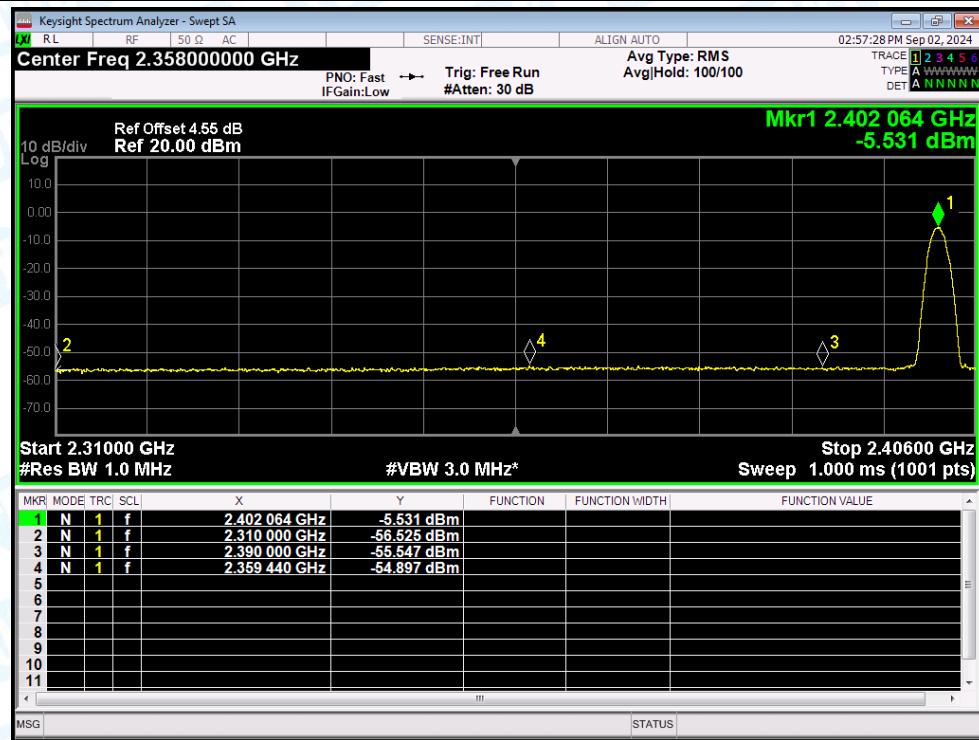
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Average



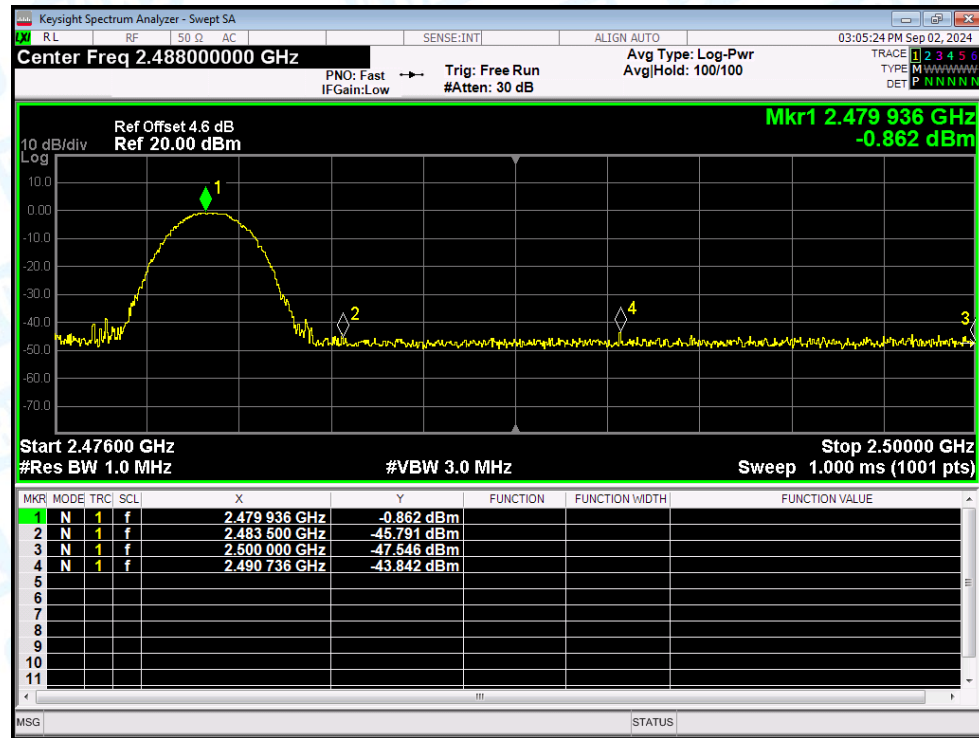
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Peak



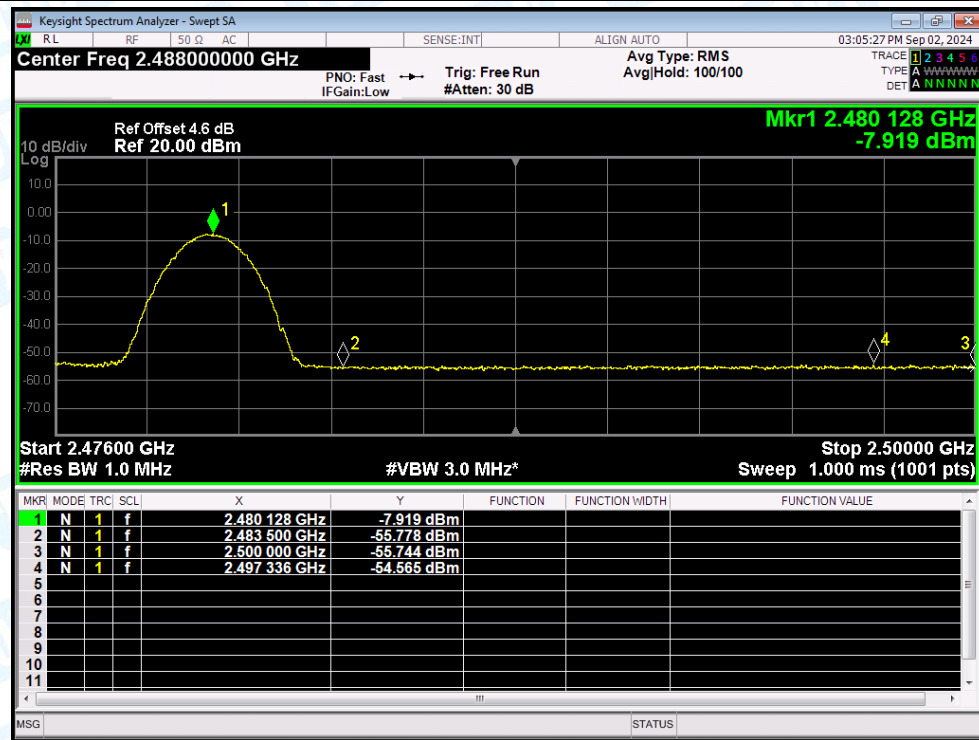
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Average



Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Peak



Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Average

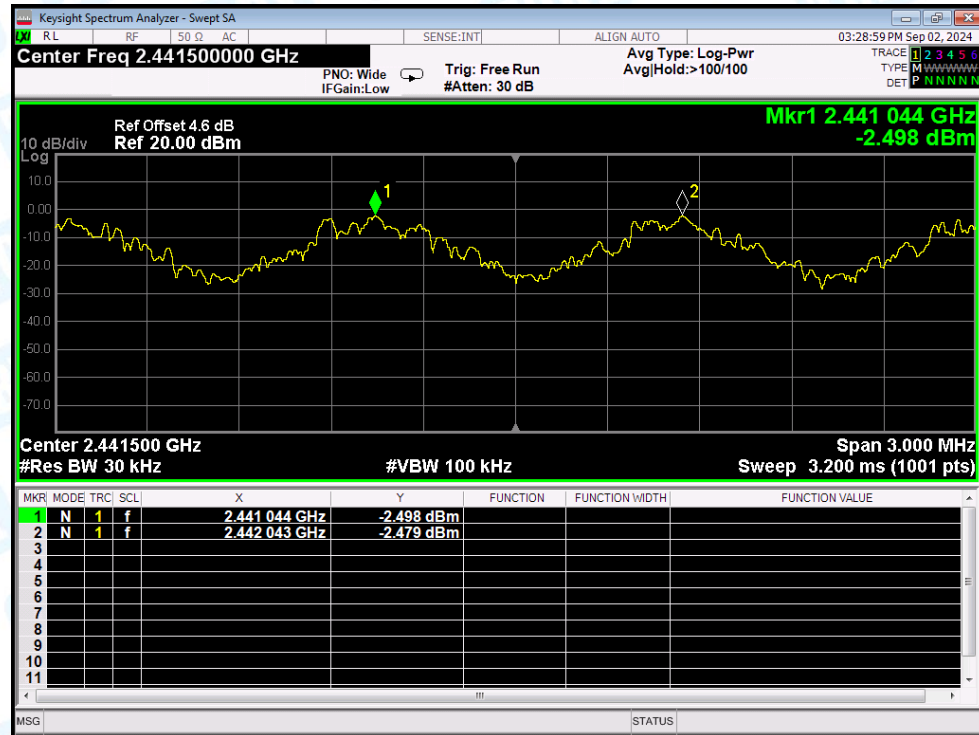


## 9. Carrier Frequencies Separation

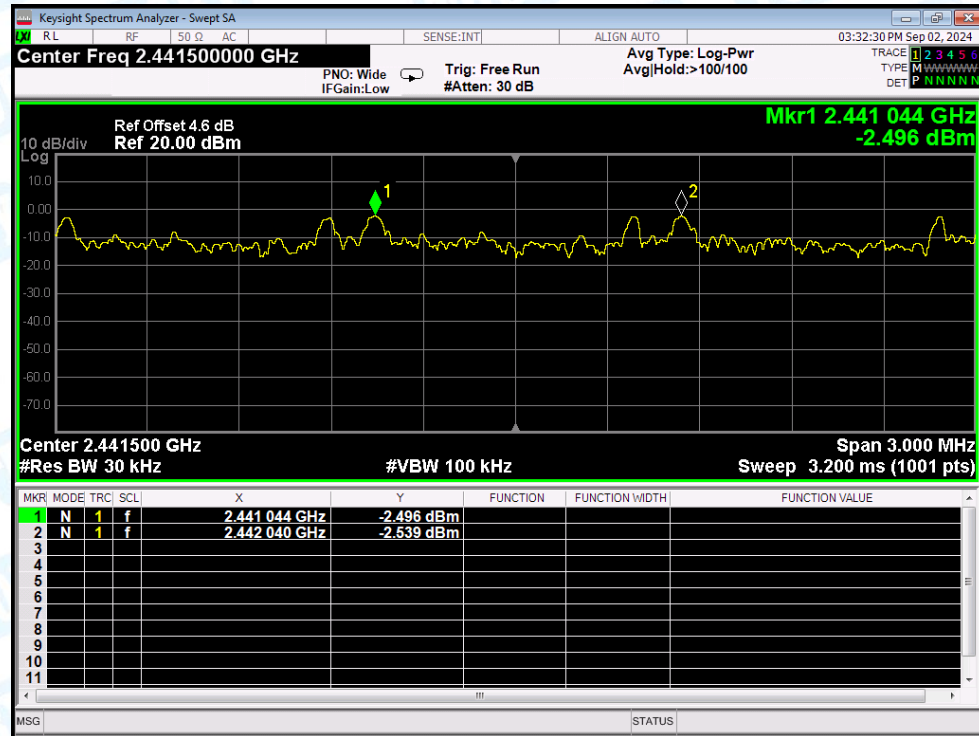
| Condition | Mode  | Antenna | Hopping Freq1 (MHz) | Hopping Freq2 (MHz) | HFS (MHz) | Limit (MHz) | Verdict |
|-----------|-------|---------|---------------------|---------------------|-----------|-------------|---------|
| NVNT      | 1-DH1 | Ant1    | 2441.044            | 2442.043            | 0.999     | 0.62        | Pass    |
| NVNT      | 2-DH1 | Ant1    | 2441.044            | 2442.04             | 0.996     | 0.84        | Pass    |

### Test Graphs

#### CFS NVNT 1-DH1 2441MHz Ant1



#### CFS NVNT 2-DH1 2441MHz Ant1

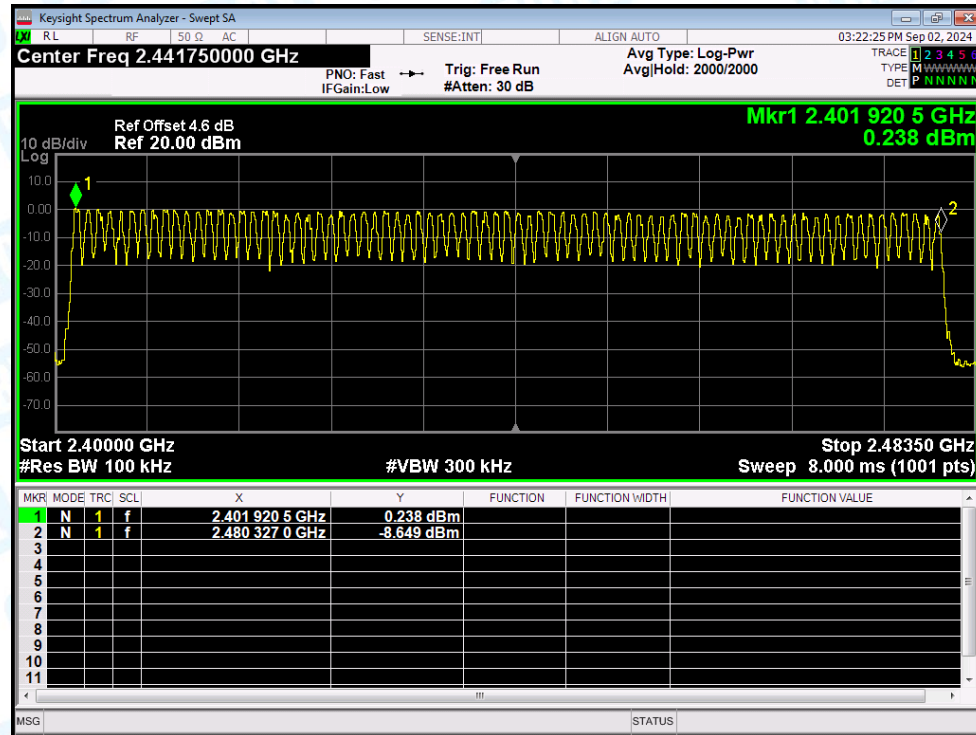


10. Number of Hopping Channel

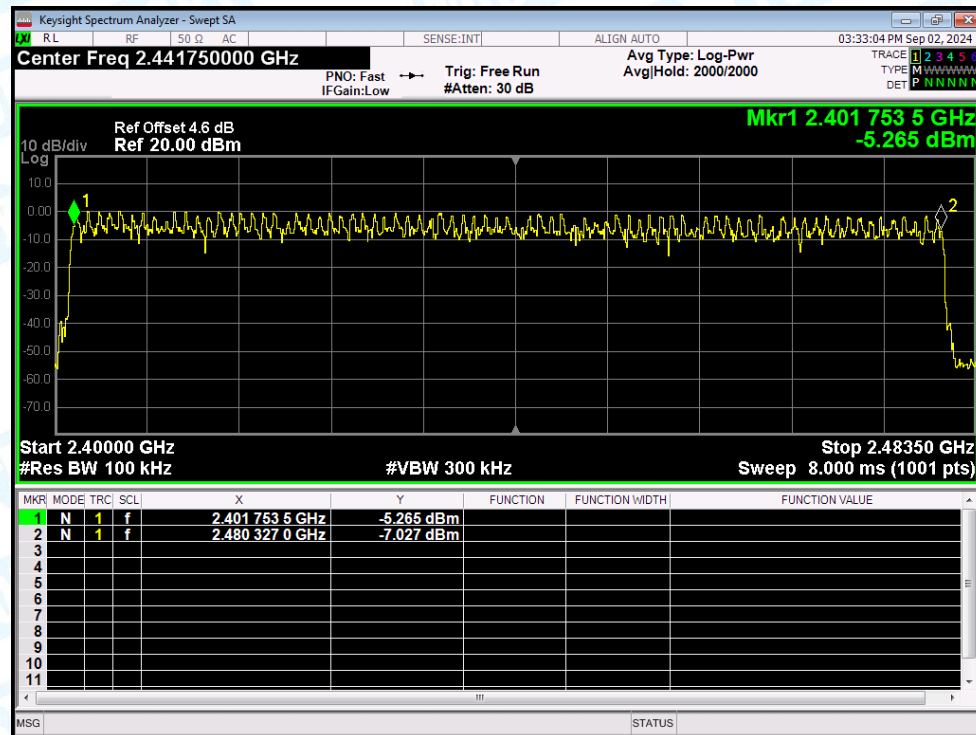
| Condition | Mode  | Antenna | Hopping Number | Limit | Verdict |
|-----------|-------|---------|----------------|-------|---------|
| NVNT      | 1-DH1 | Ant1    | 79             | 15    | Pass    |
| NVNT      | 2-DH1 | Ant1    | 79             | 15    | Pass    |

### Test Graphs

Hopping No. NVNT 1-DH1 2441MHz Ant1



Hopping No. NVNT 2-DH1 2441MHz Ant1

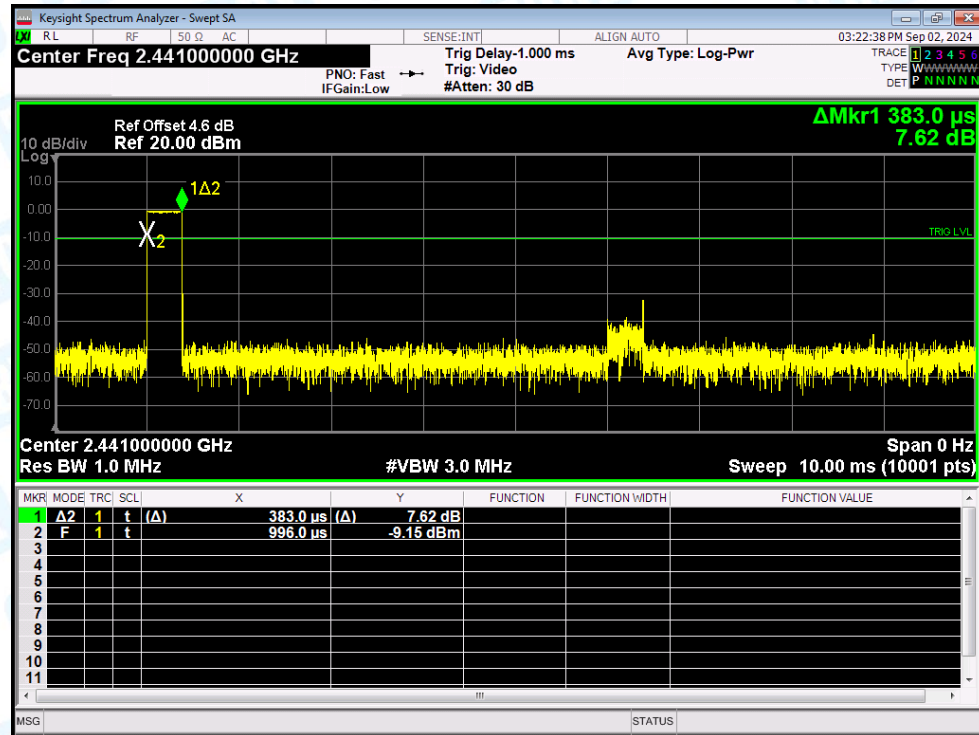


## 11. Dwell Time

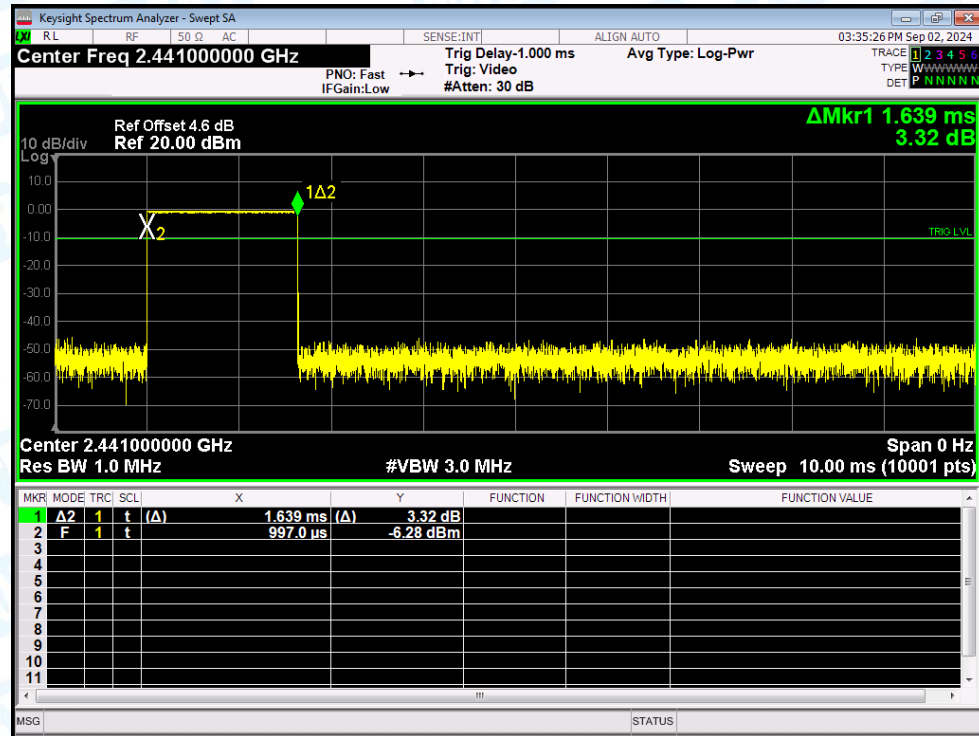
| Condition | Mode  | Frequency (MHz) | Antenna | Pulse Time (ms) | Total Dwell Time (ms) | Period Time (ms) | Limit (ms) | Verdict |
|-----------|-------|-----------------|---------|-----------------|-----------------------|------------------|------------|---------|
| NVNT      | 1-DH1 | 2441            | Ant1    | 0.383           | 122.56                | 31600            | 400        | Pass    |
| NVNT      | 1-DH3 | 2441            | Ant1    | 1.639           | 262.24                | 31600            | 400        | Pass    |
| NVNT      | 1-DH5 | 2441            | Ant1    | 2.887           | 307.947               | 31600            | 400        | Pass    |
| NVNT      | 2-DH1 | 2441            | Ant1    | 0.392           | 125.44                | 31600            | 400        | Pass    |
| NVNT      | 2-DH3 | 2441            | Ant1    | 1.644           | 263.04                | 31600            | 400        | Pass    |
| NVNT      | 2-DH5 | 2441            | Ant1    | 2.891           | 308.373               | 31600            | 400        | Pass    |

### Test Graphs

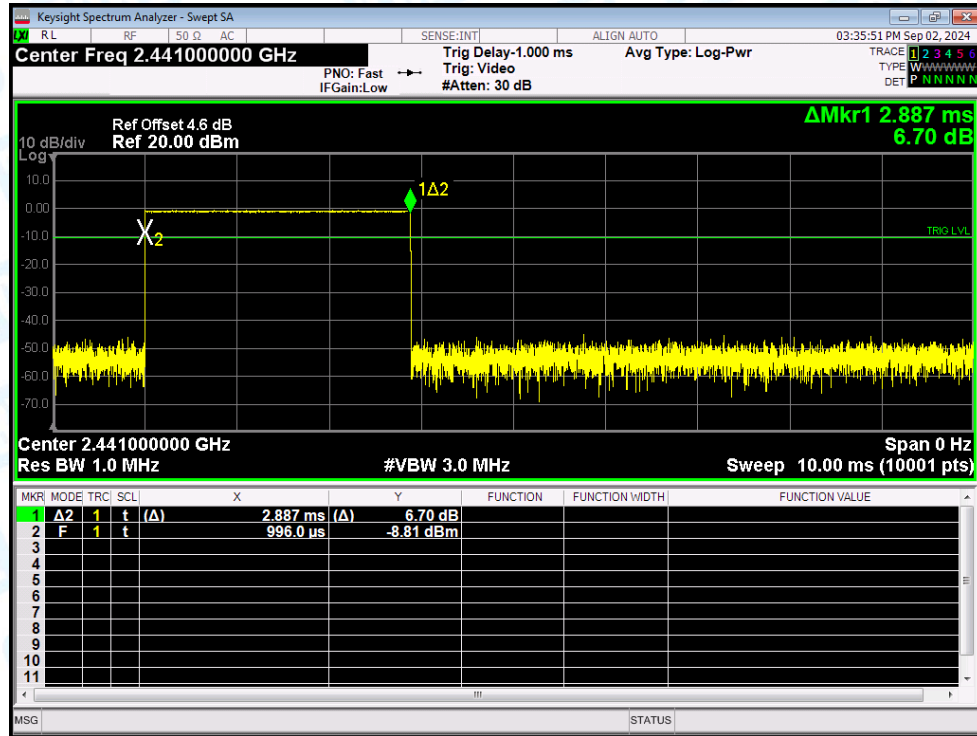
#### Dwell NVNT 1-DH1 2441MHz Ant1



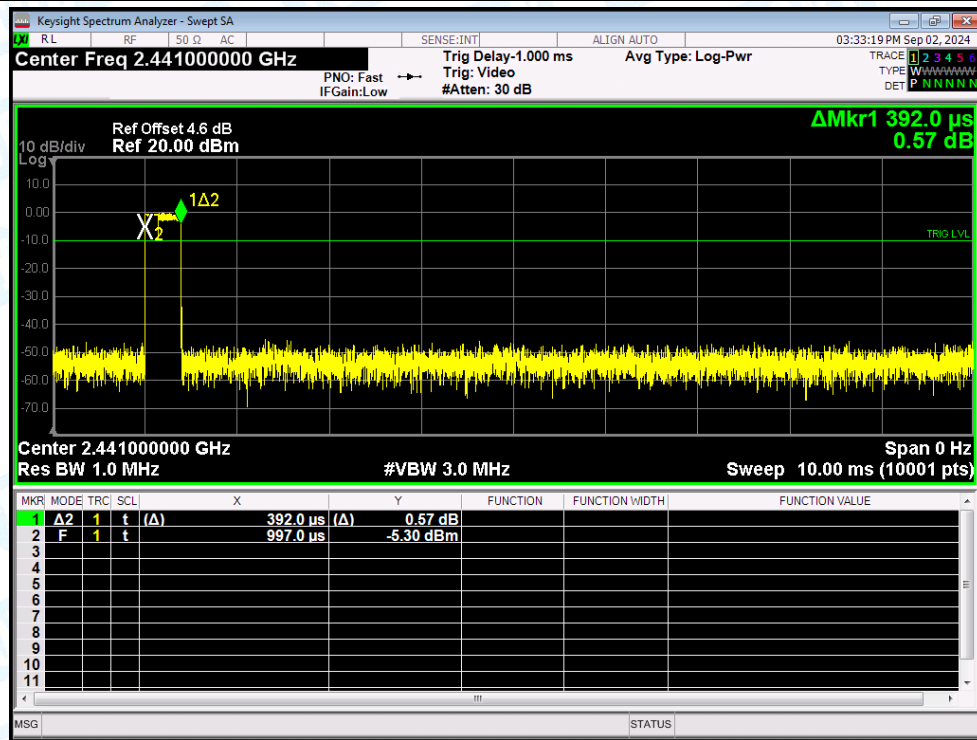
#### Dwell NVNT 1-DH3 2441MHz Ant1



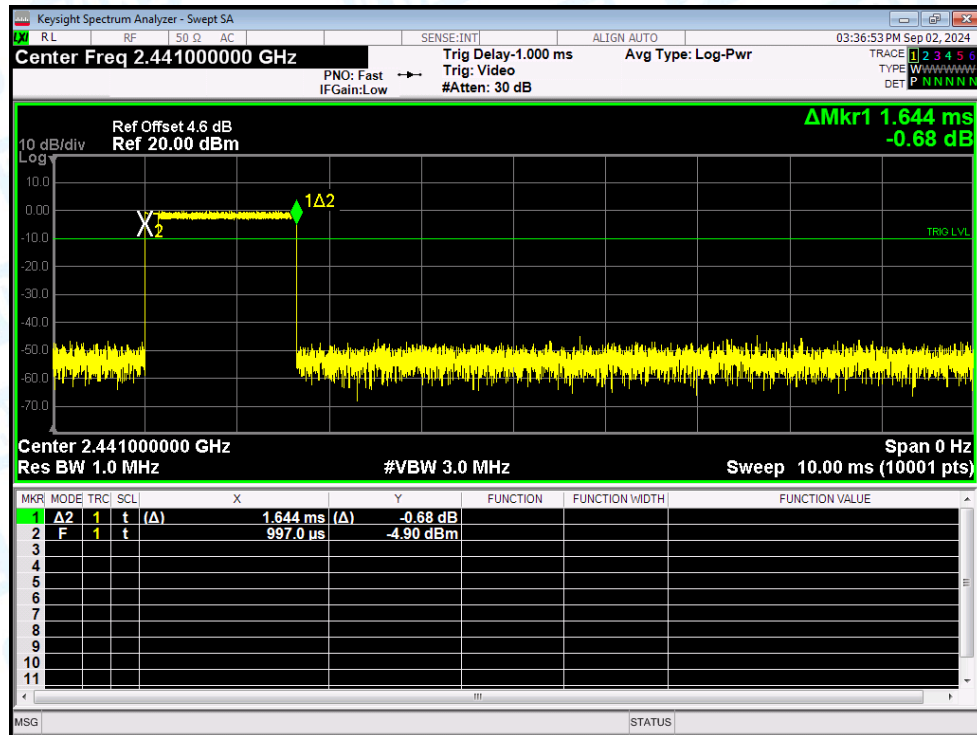
Dwell NVNT 1-DH5 2441MHz Ant1



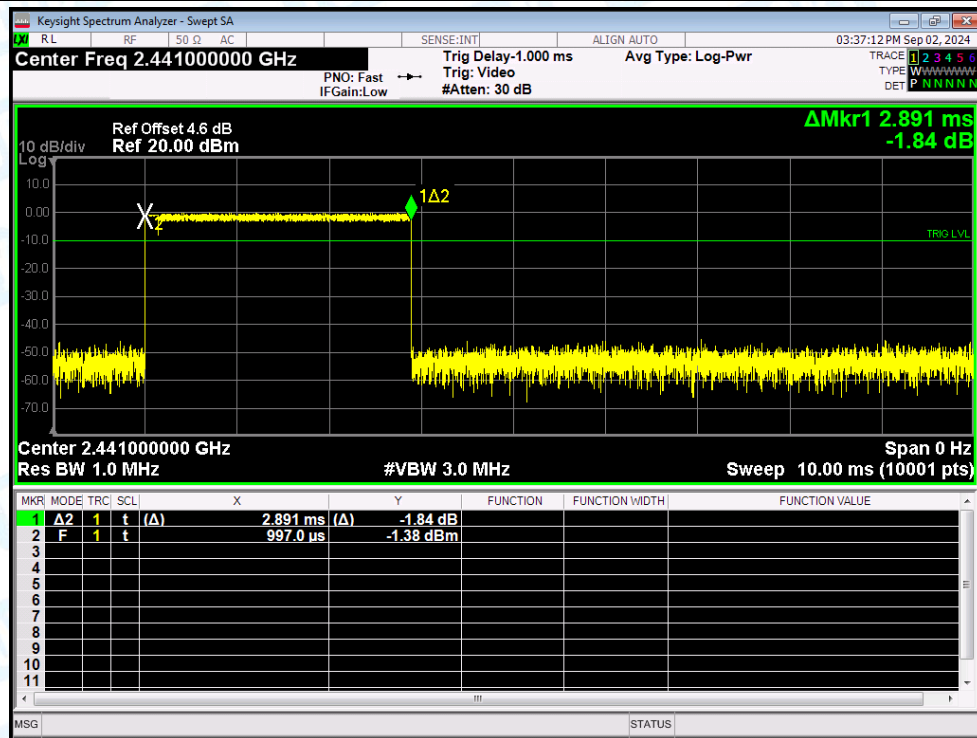
Dwell NVNT 2-DH1 2441MHz Ant1



Dwell NVNT 2-DH3 2441MHz Ant1



Dwell NVNT 2-DH5 2441MHz Ant1



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