# Appendix A

## RF Test Data for BT (Conducted Measurement)

**Product Name: Smart Watch**

**Test Model: GTS9**

**Environmental Conditions**

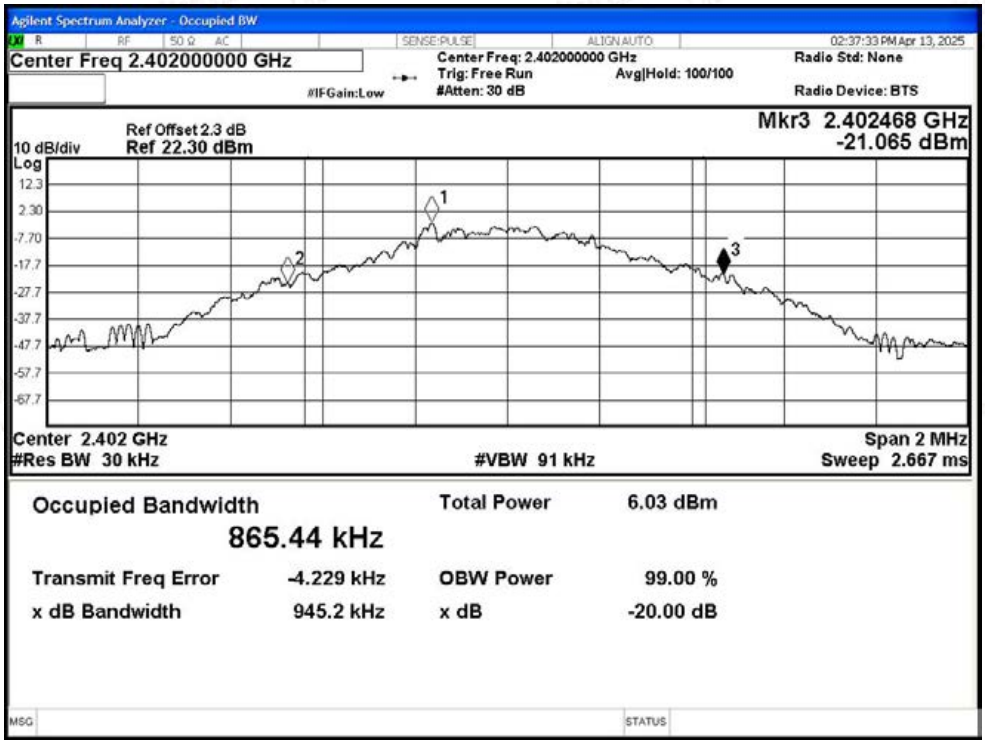
| | |
|---|---|
| Temperature: | 23.8°C |
| Relative Humidity: | 52.1% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | Jerry Chu |
| Supervised by: | Nick Peng |

# A.1 -20dB Bandwidth

| Condition | Mode | Frequency (MHz) | Antenna | -20 dB Bandwidth (MHz) | Limit -20 dB Bandwidth (MHz) | Verdict |
|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant1 | 0.945 | N/A | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | 0.949 | N/A | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | 0.943 | N/A | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 1.282 | N/A | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 1.283 | N/A | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 1.309 | N/A | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 1.312 | N/A | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 1.296 | N/A | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 1.293 | N/A | Pass |

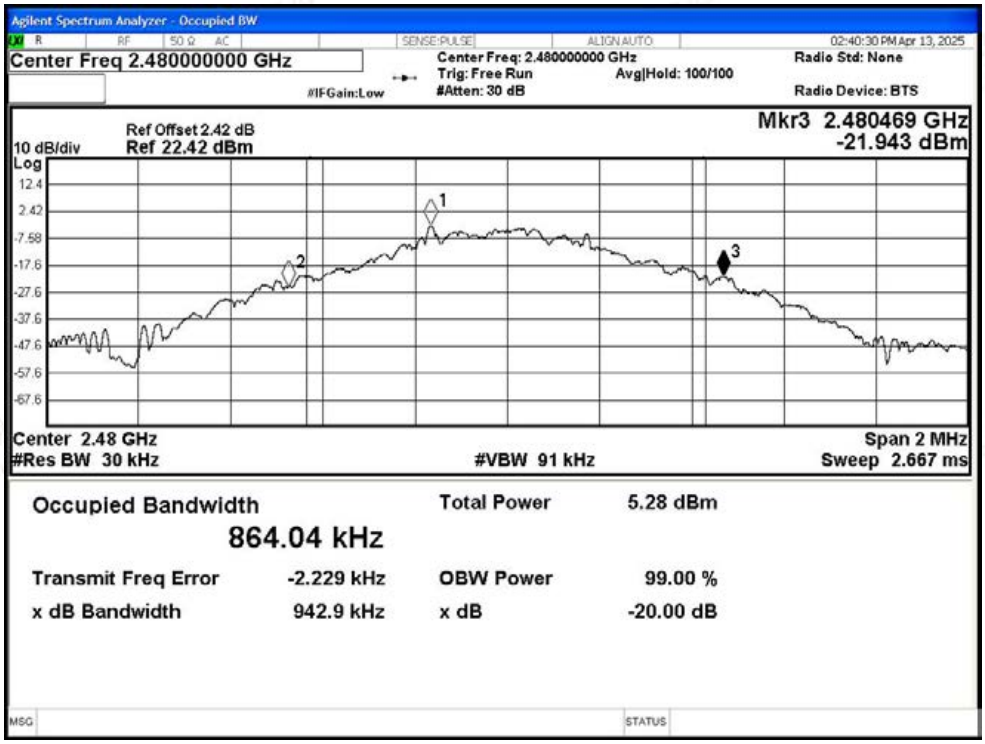
Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1

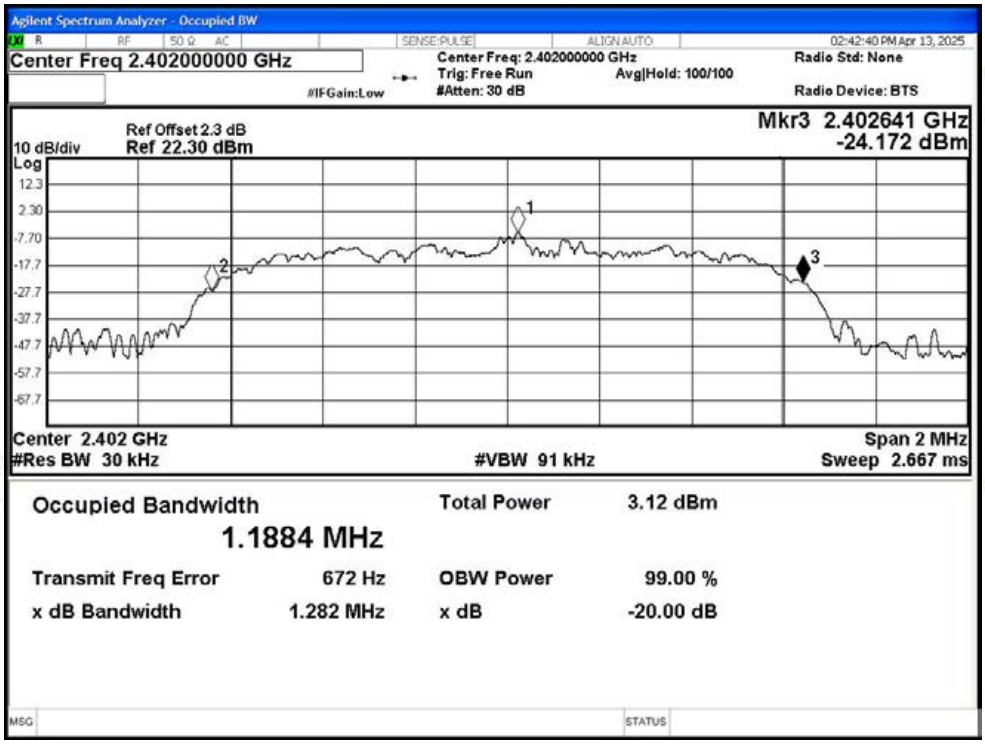



-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1

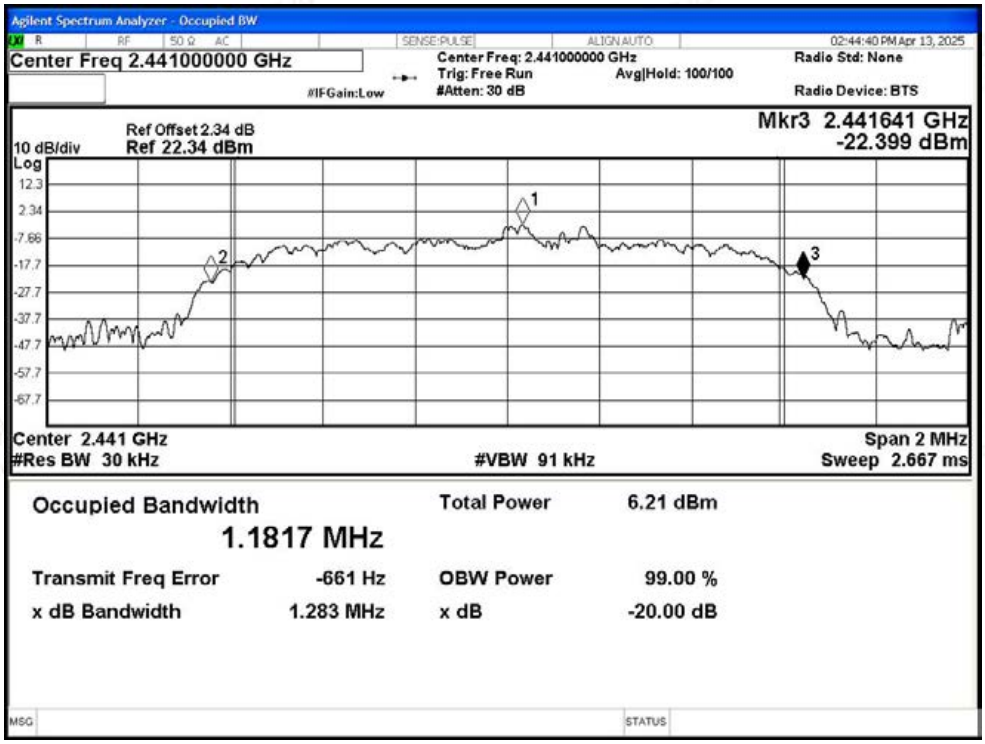
-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1



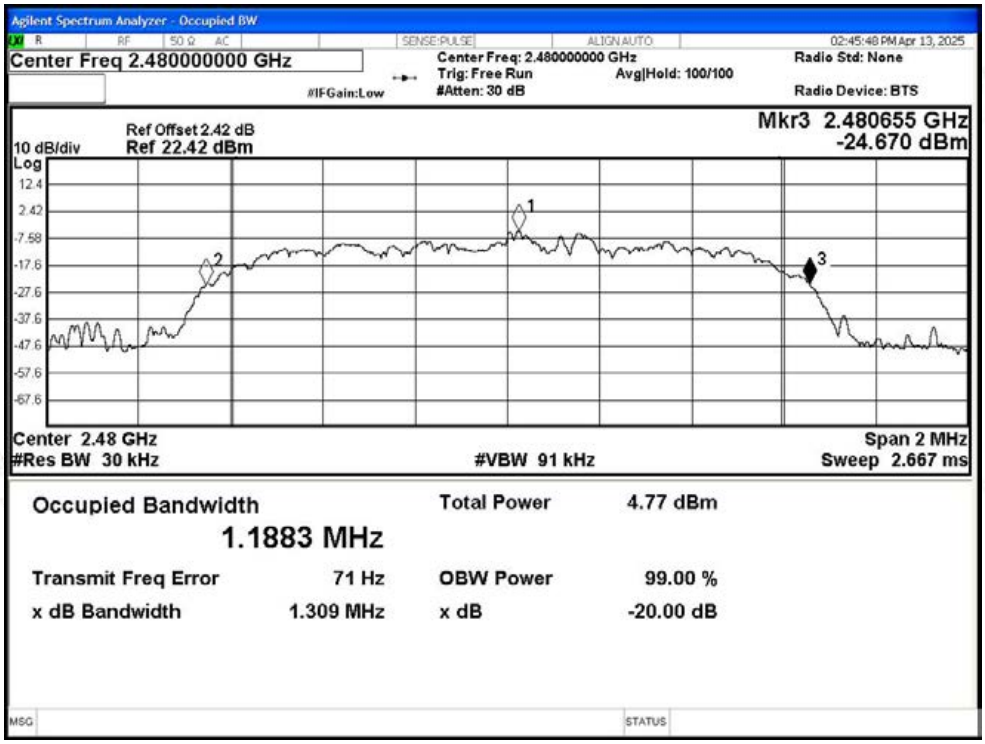

-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1



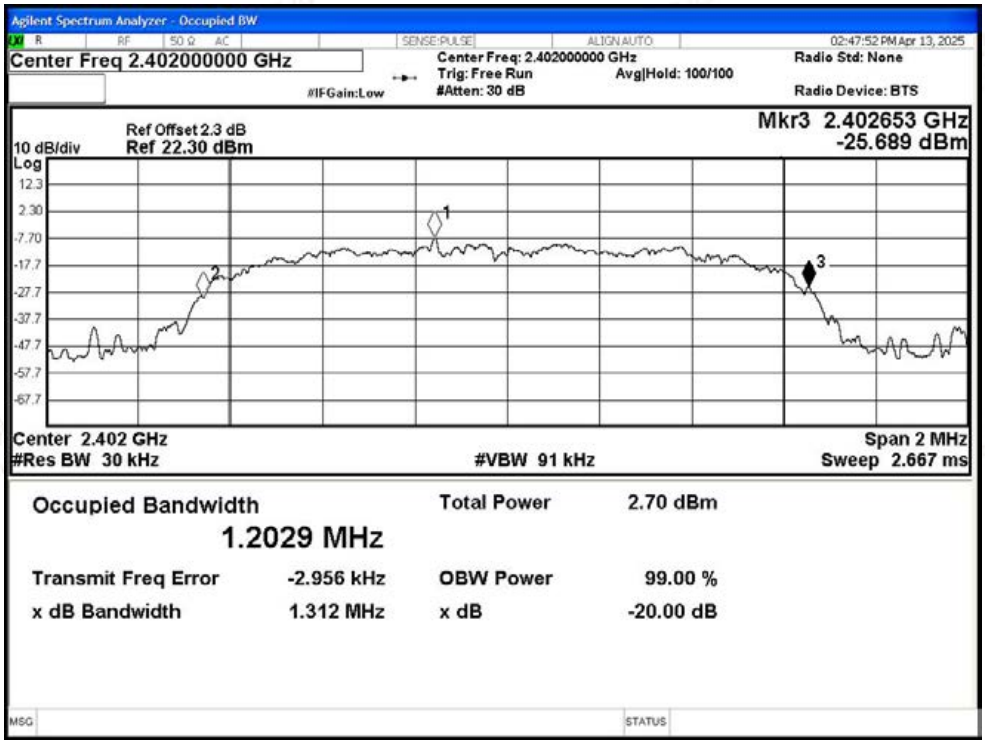
-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1



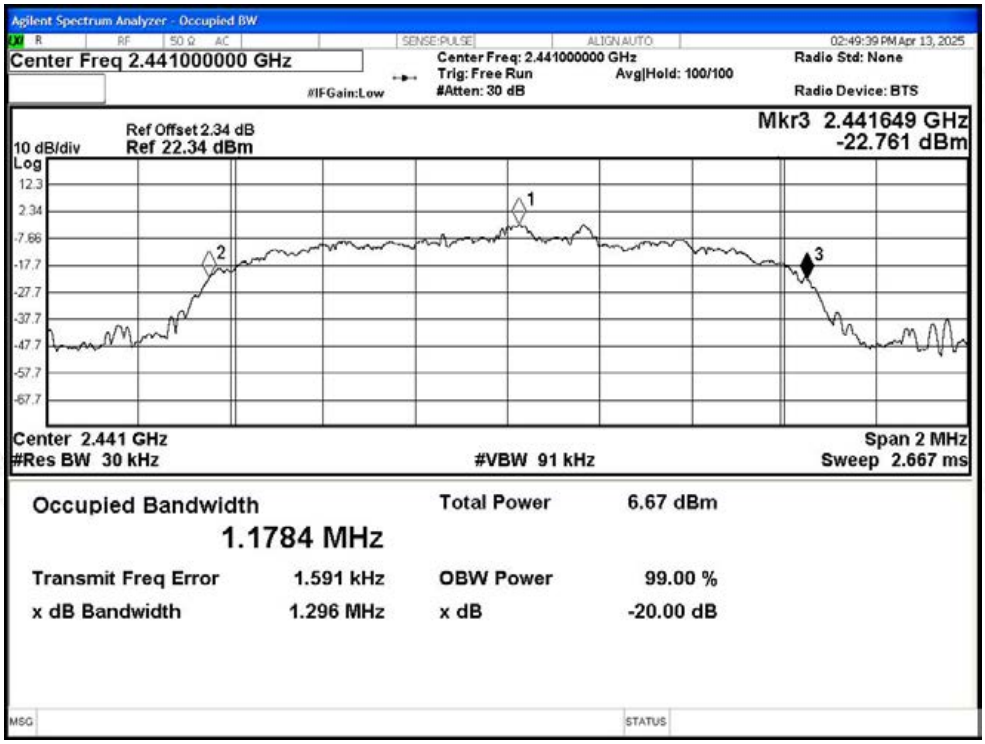

-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1



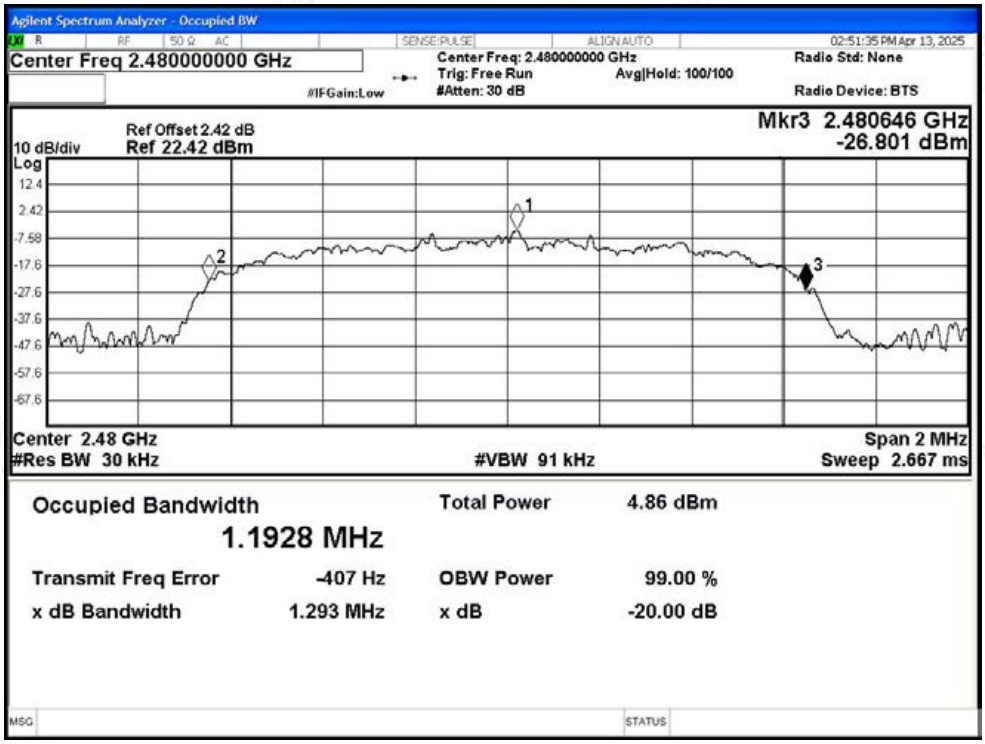
-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1




-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1

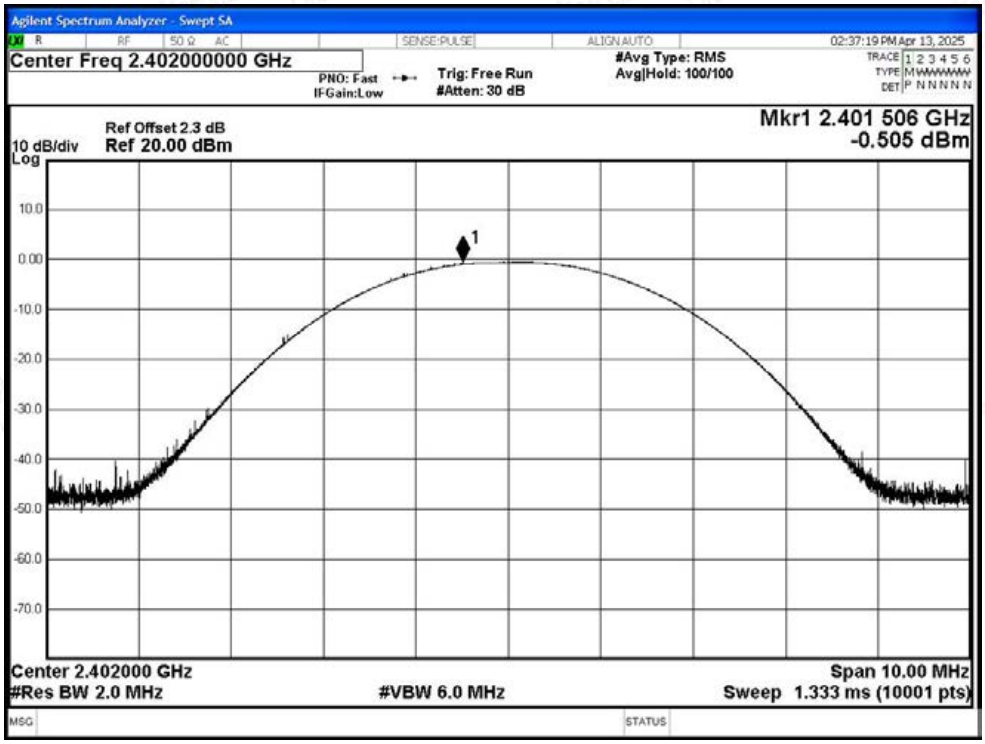


# A.2 Maximum Peak Conducted Output Power

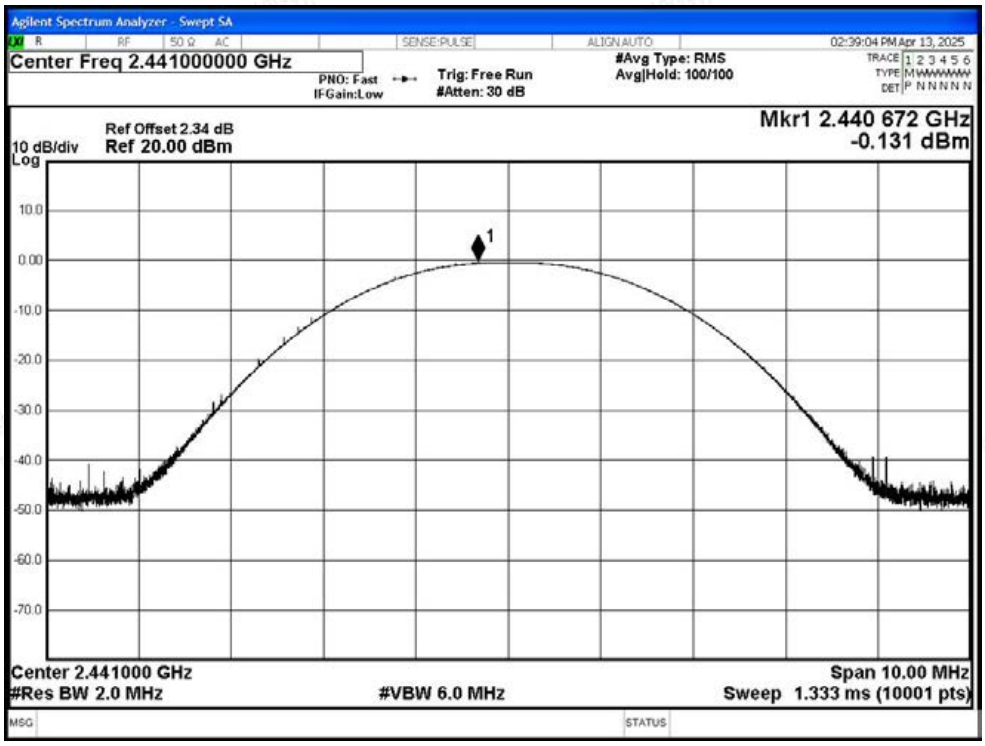
| Condition | Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Limit (dBm) | Verdict |
|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant1 | -0.51 | 21 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | -0.13 | 21 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | -1.12 | 21 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | -0.94 | 21 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | 1.71 | 21 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | 0.64 | 21 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | -0.51 | 21 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | 2.15 | 21 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | 1.02 | 21 | Pass |

Test Graphs

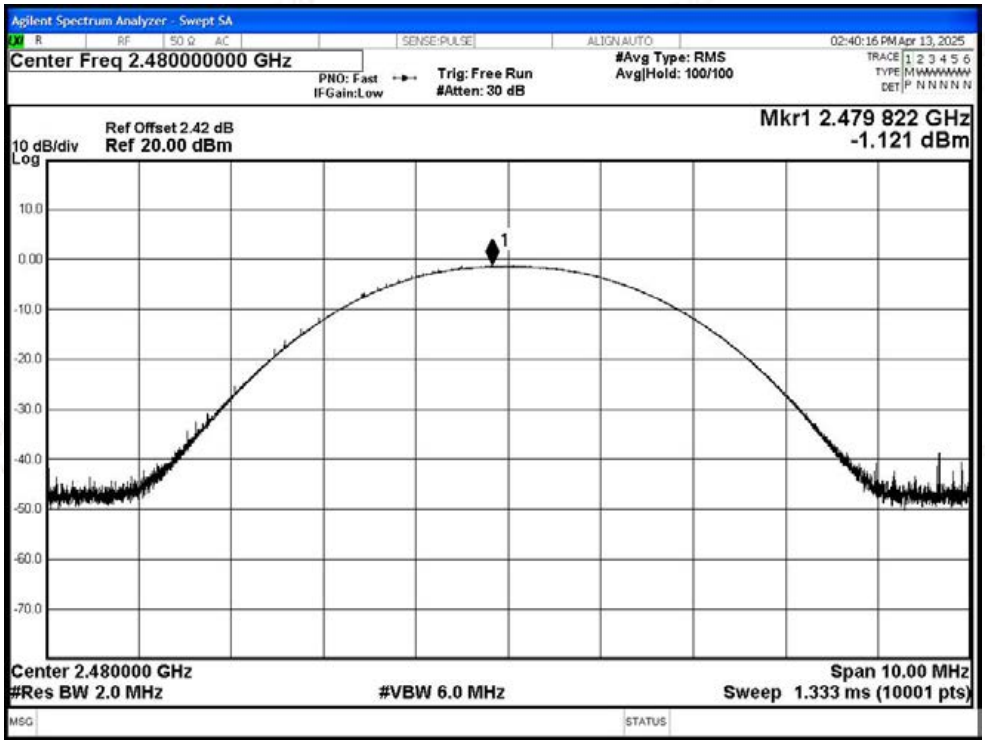
Power NVNT 1-DH5 2402MHz Ant1



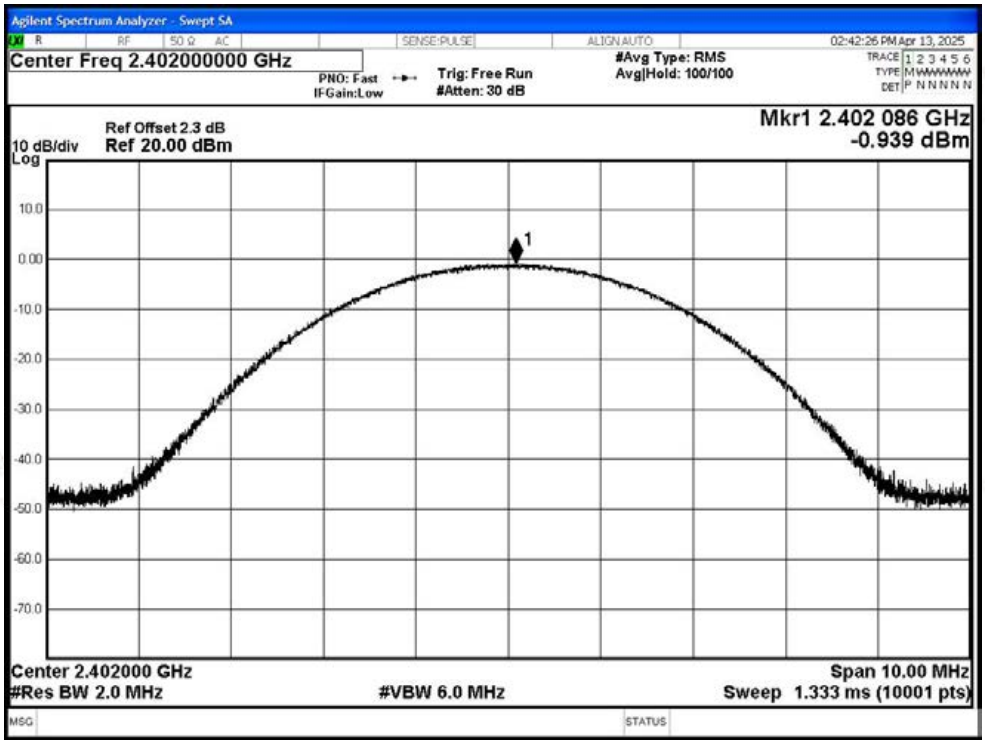

Power NVNT 1-DH5 2441MHz Ant1



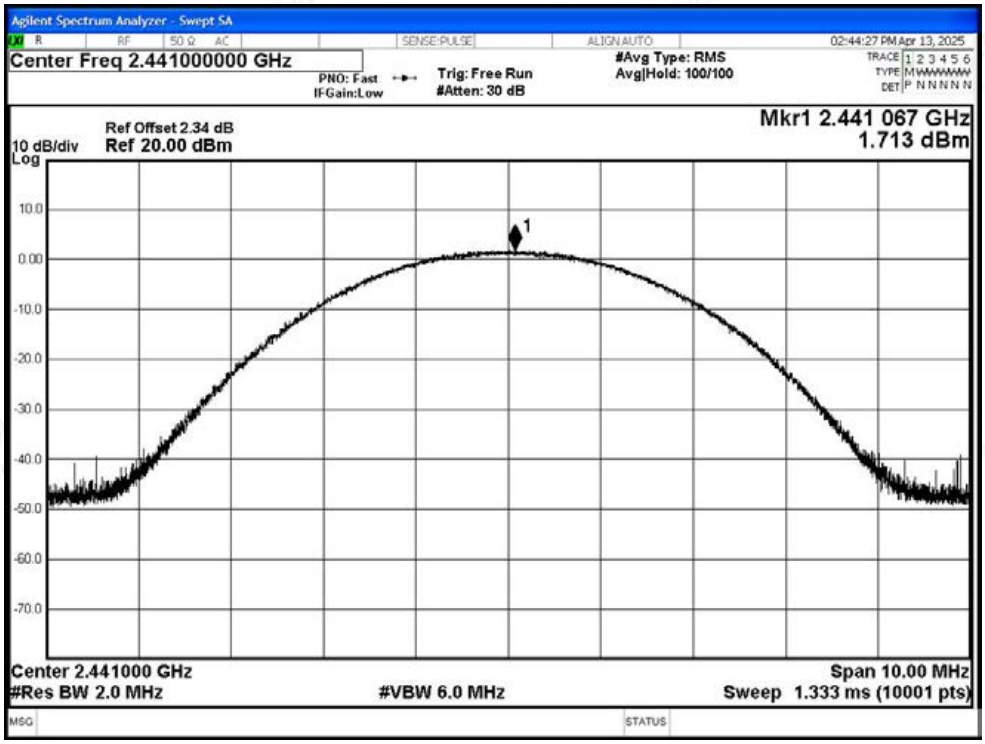
Power NVNT 1-DH5 2480MHz Ant1



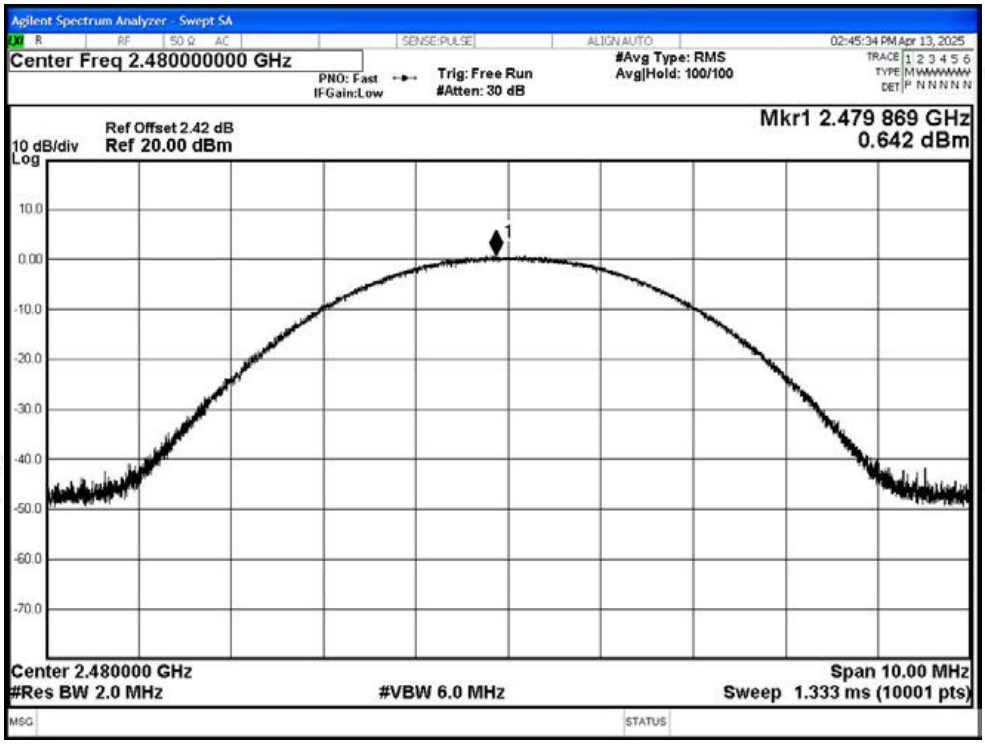

Power NVNT 2-DH5 2402MHz Ant1



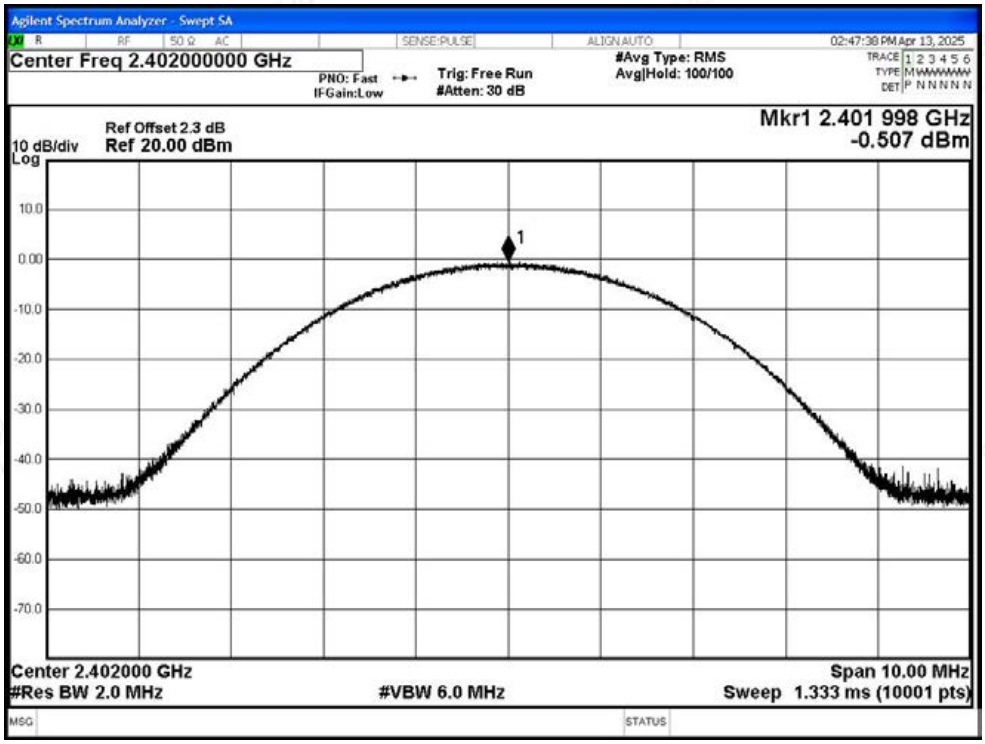
Power NVNT 2-DH5 2441MHz Ant1



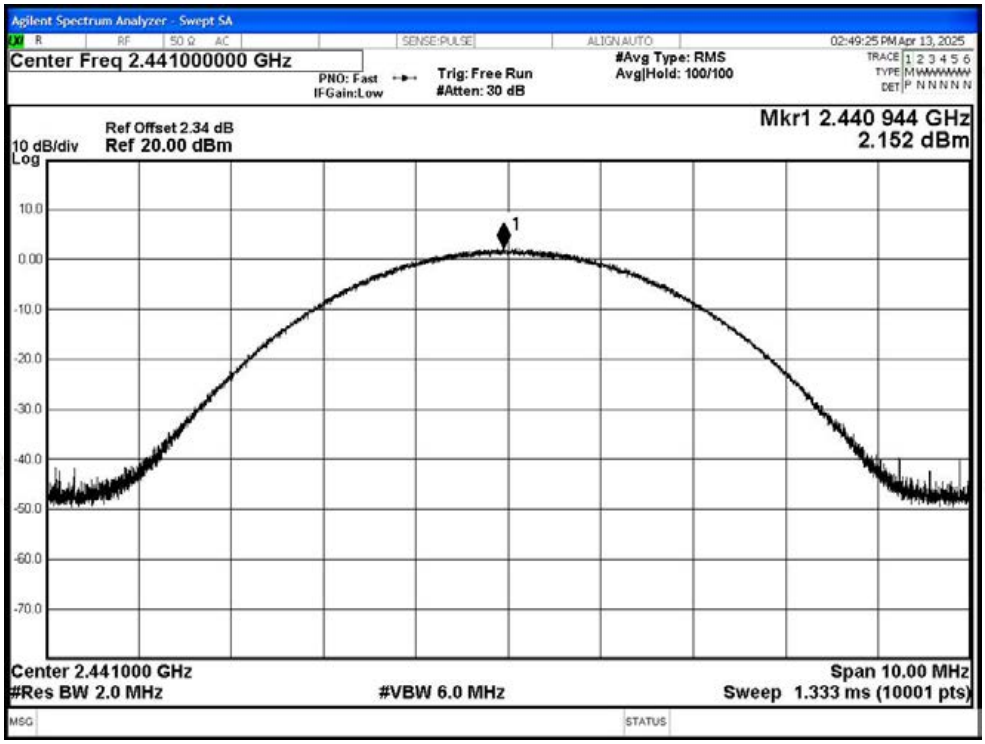

Power NVNT 2-DH5 2480MHz Ant1



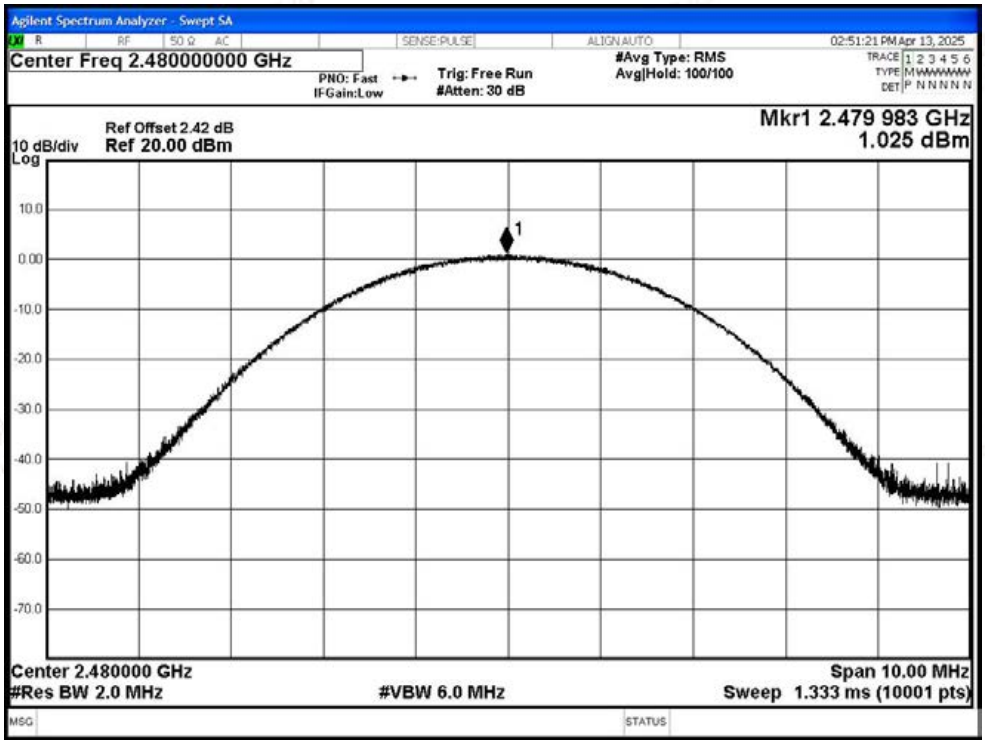
Power NVNT 3-DH5 2402MHz Ant1




Power NVNT 3-DH5 2441MHz Ant1



Power NVNT 3-DH5 2480MHz Ant1

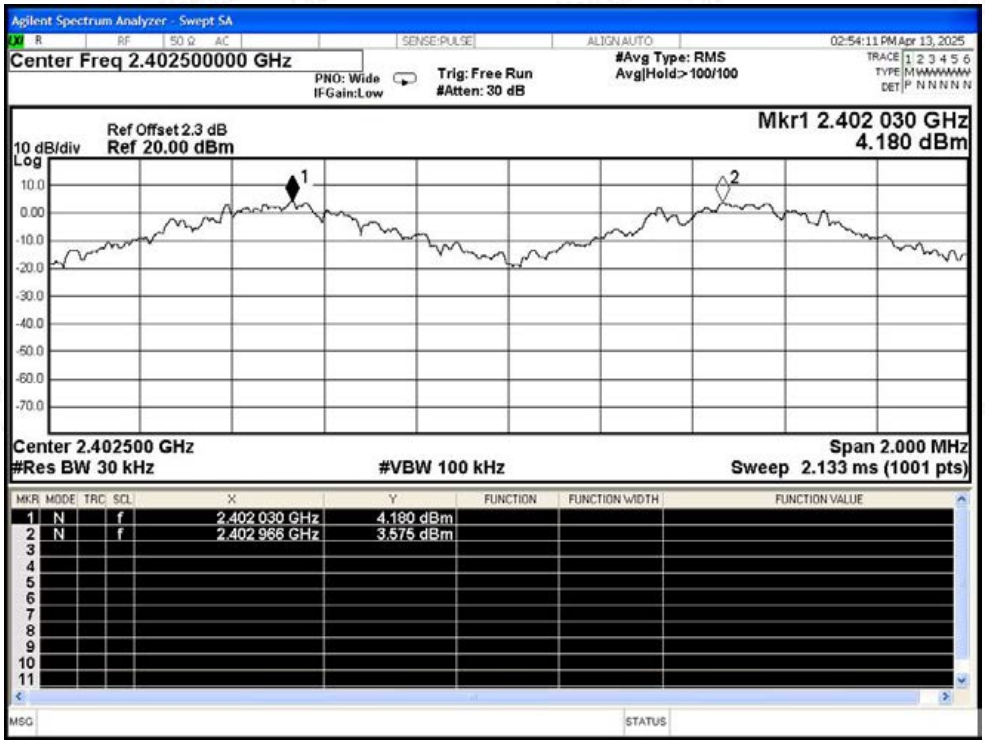


# A.3 Carrier Frequencies Separation

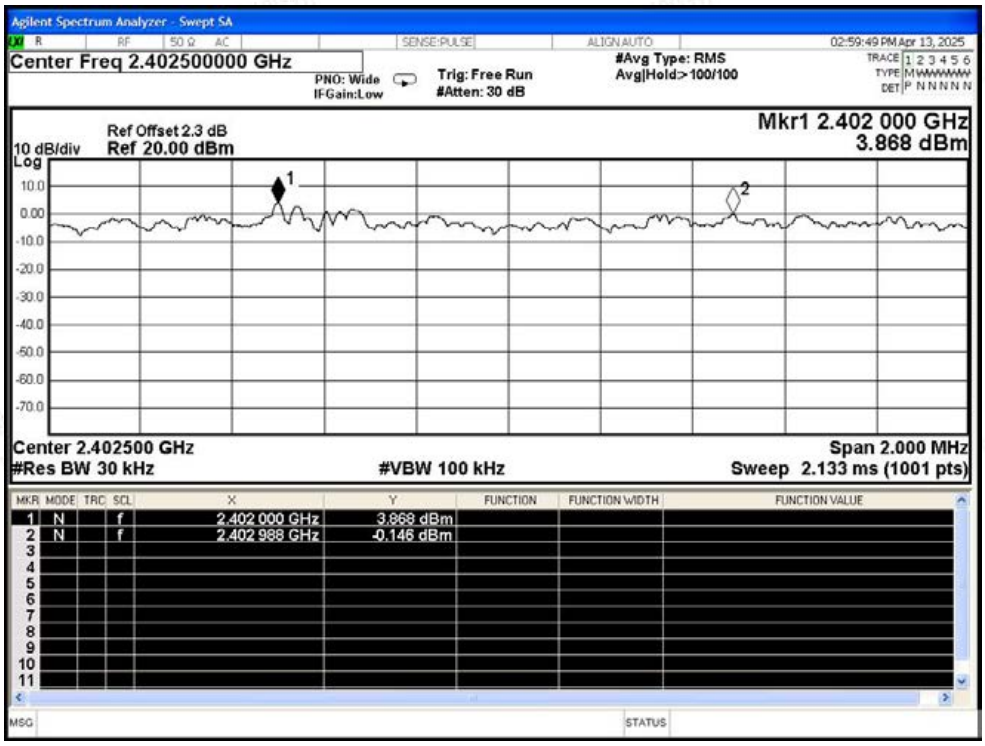
| Condition | Mode | Antenna | Hopping Freq1 (MHz) | Hopping Freq2 (MHz) | HFS (MHz) | Limit (MHz) | Verdict |
|---|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | Ant1 | 2402.03 | 2402.966 | 0.936 | 0.633 | Pass |
| NVNT | 2-DH5 | Ant1 | 2402 | 2402.988 | 0.988 | 0.873 | Pass |
| NVNT | 3-DH5 | Ant1 | 2402.03 | 2403.184 | 1.154 | 0.875 | Pass |

Test Graphs

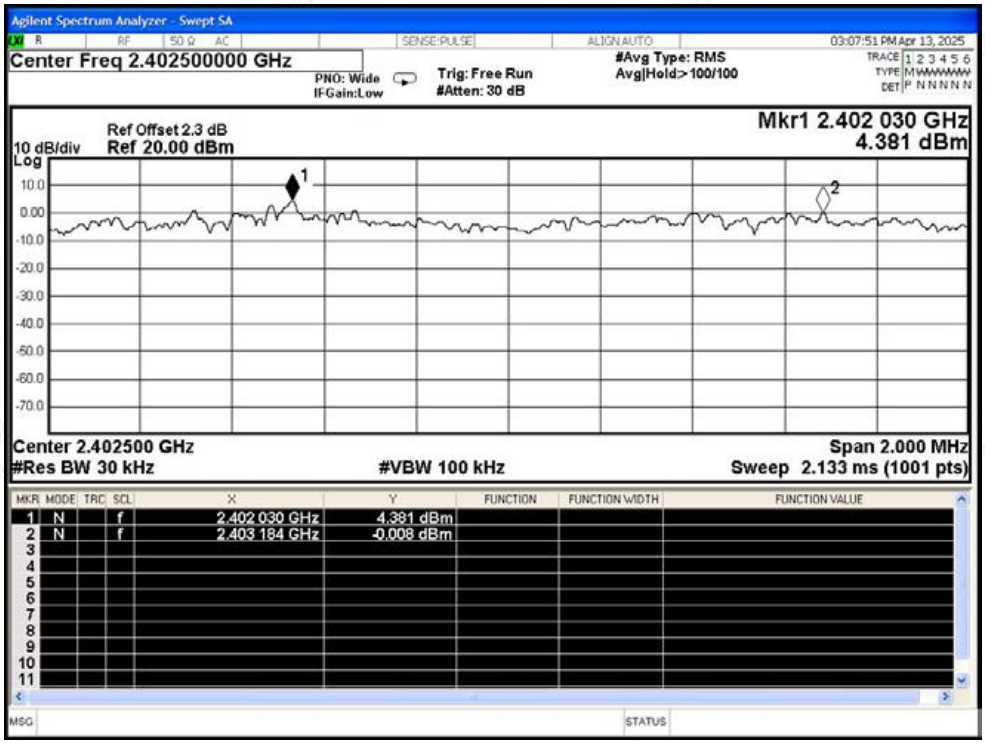
CFS NVNT 1-DH5 2402MHz Ant1




CFS NVNT 2-DH5 2402MHz Ant1



CFS NVNT 3-DH5 2402MHz Ant1

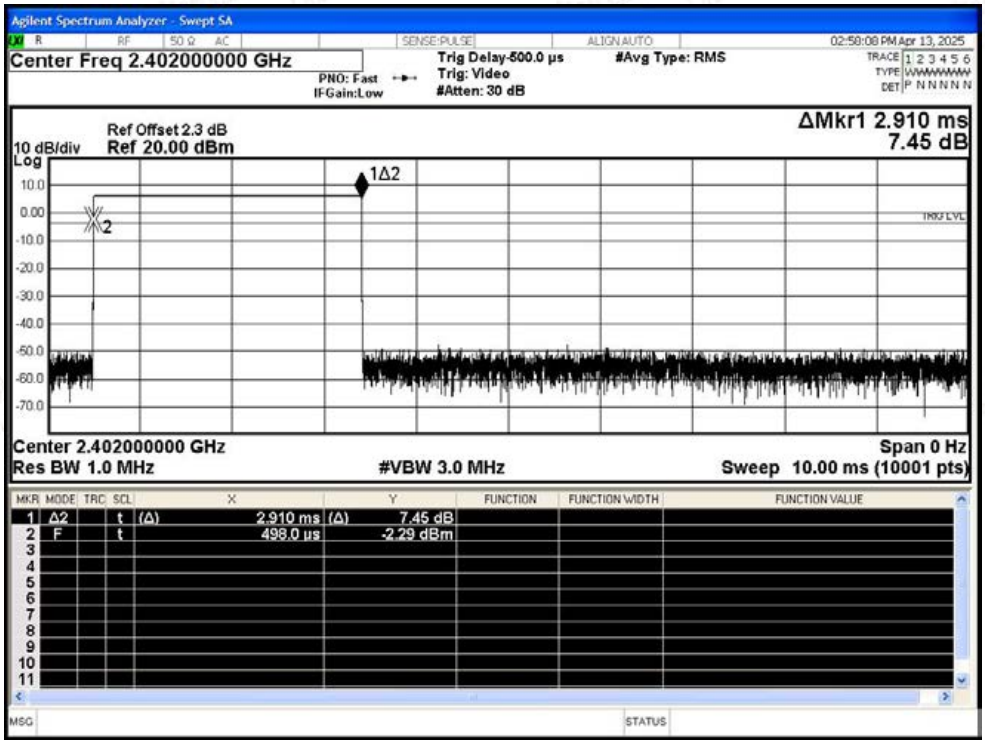


## A.4 Dwell Time

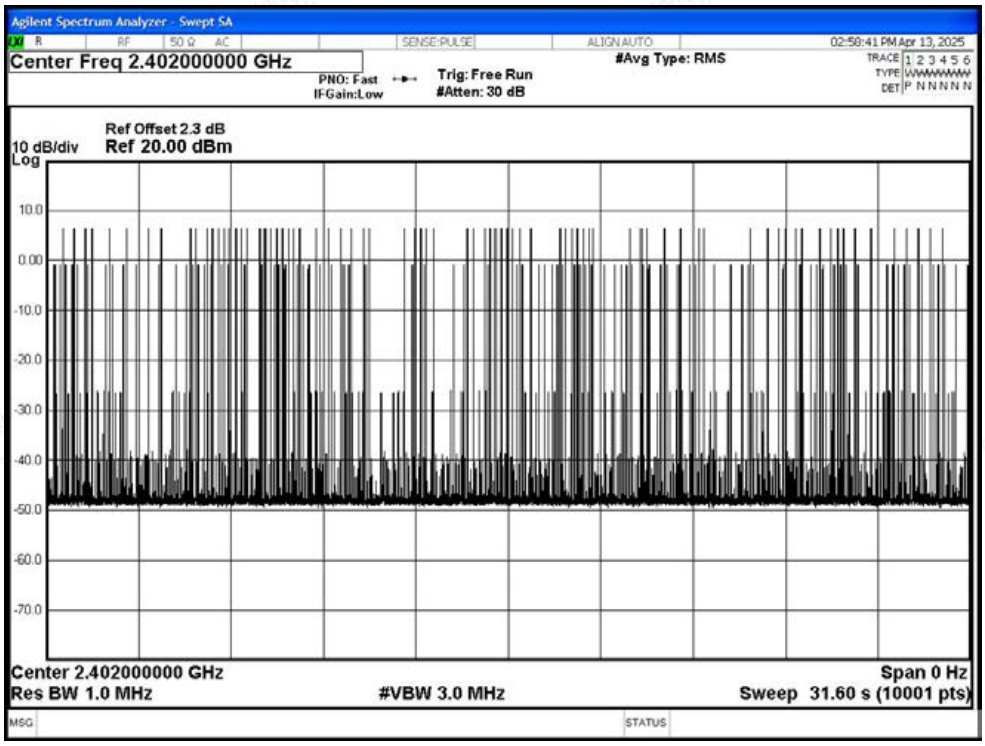
| Condition | Mode | Frequency (MHz) | Antenna | Pulse Time (ms) | Total Dwell Time (ms) | Burst Count | Period Time (ms) | Limit (ms) | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant1 | 2.91 | 296.82 | 102 | 31600 | 400 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | 2.898 | 286.902 | 99 | 31600 | 400 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | 2.897 | 304.185 | 105 | 31600 | 400 | Pass |

Test Graphs

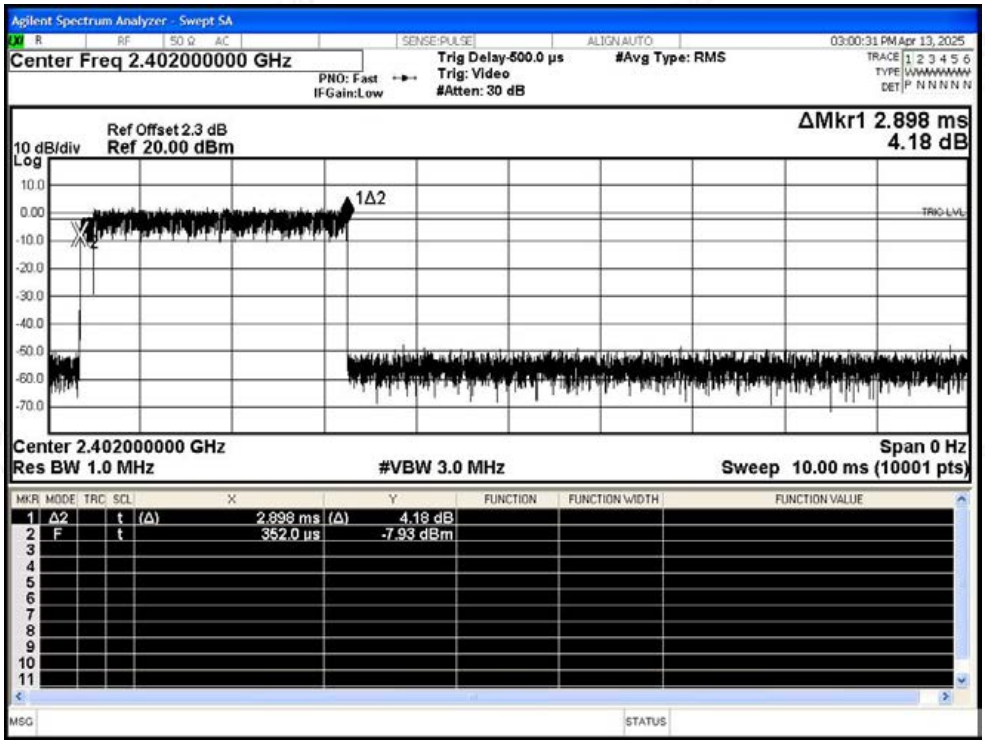
Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



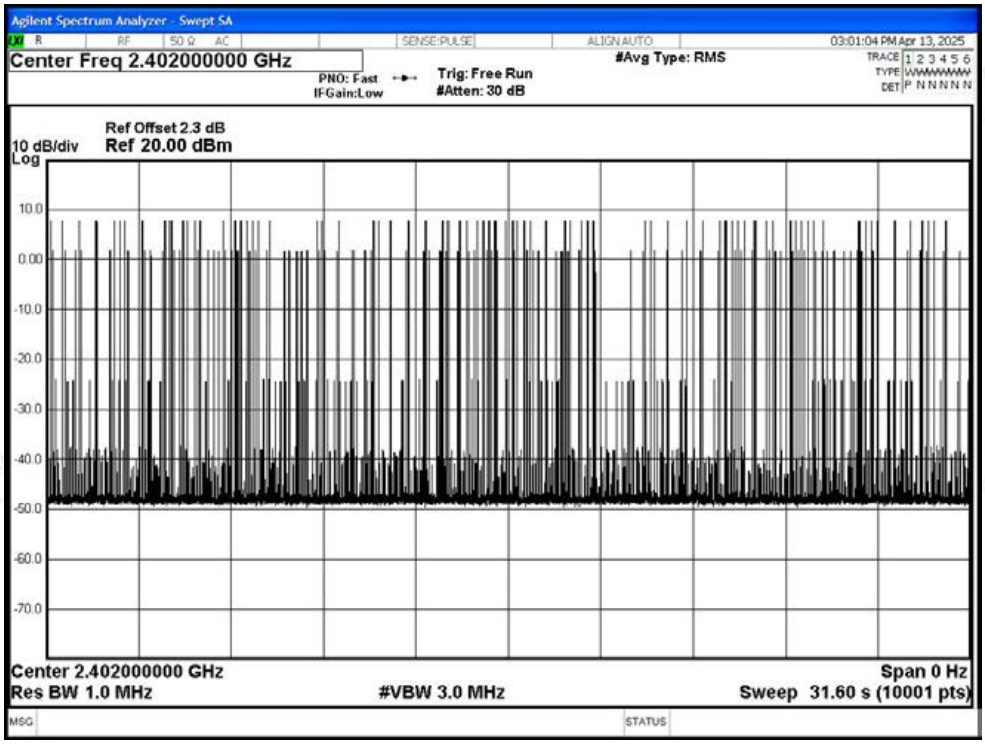

Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated



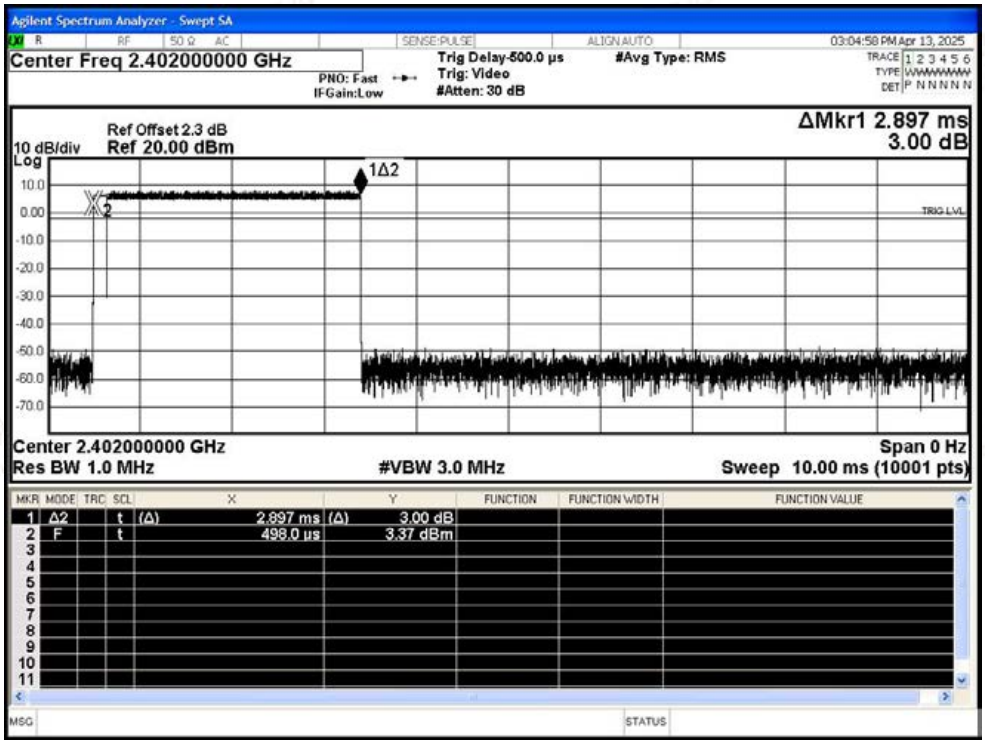
Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



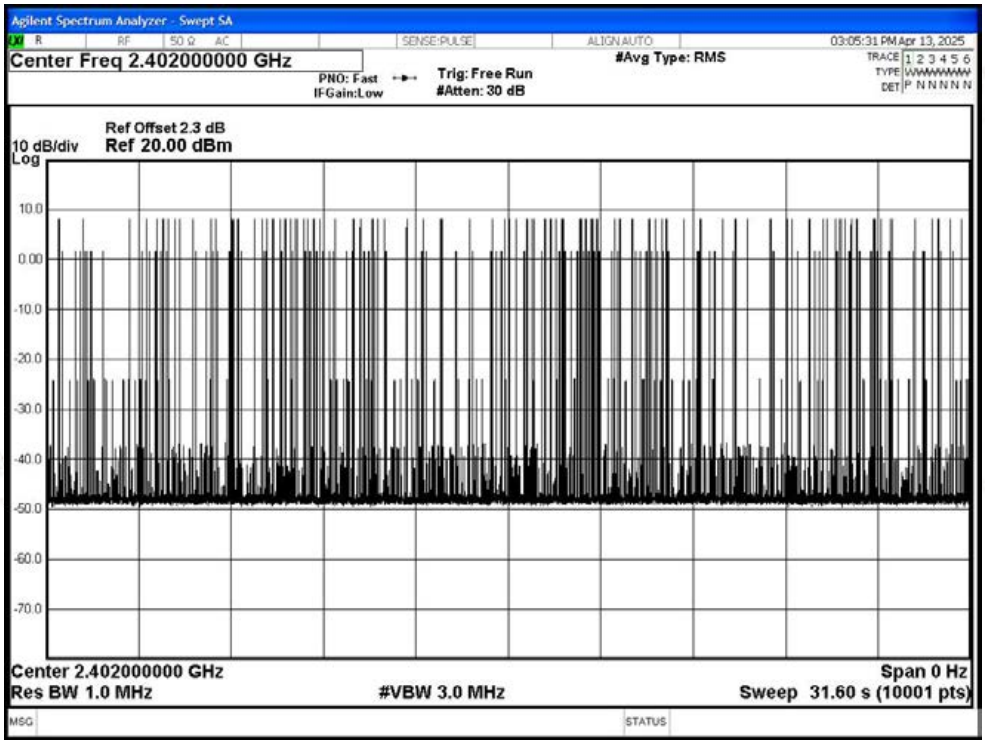

Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated



Dwell NVNT 3-DH5 2402MHz Ant1 One Burst




Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

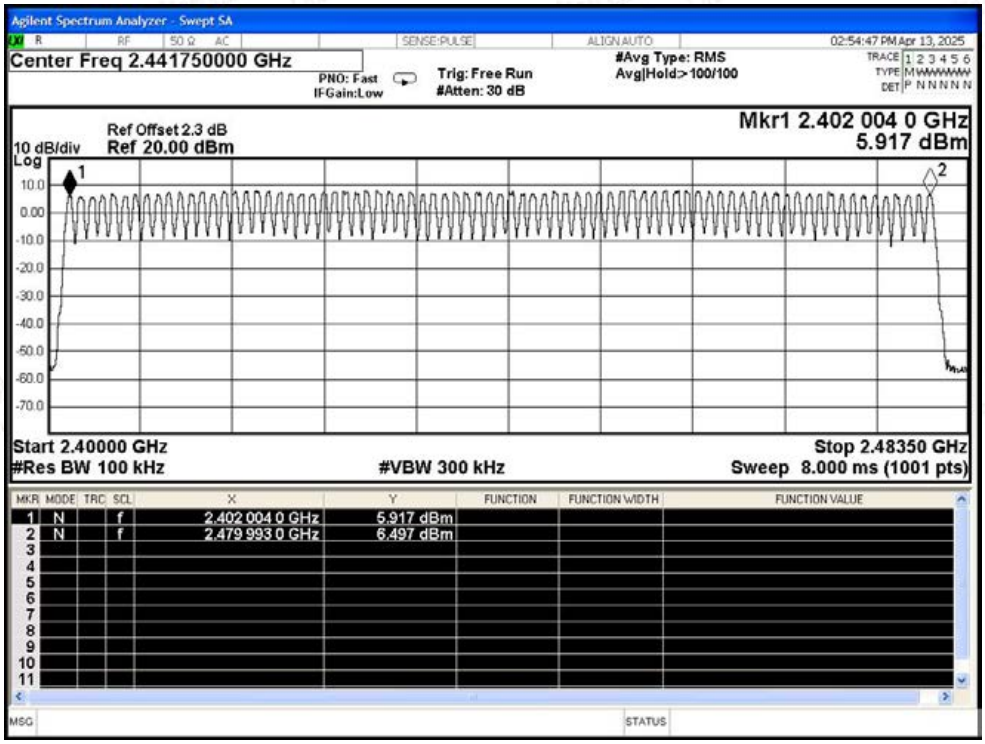


# A.5 Number of Hopping Channel

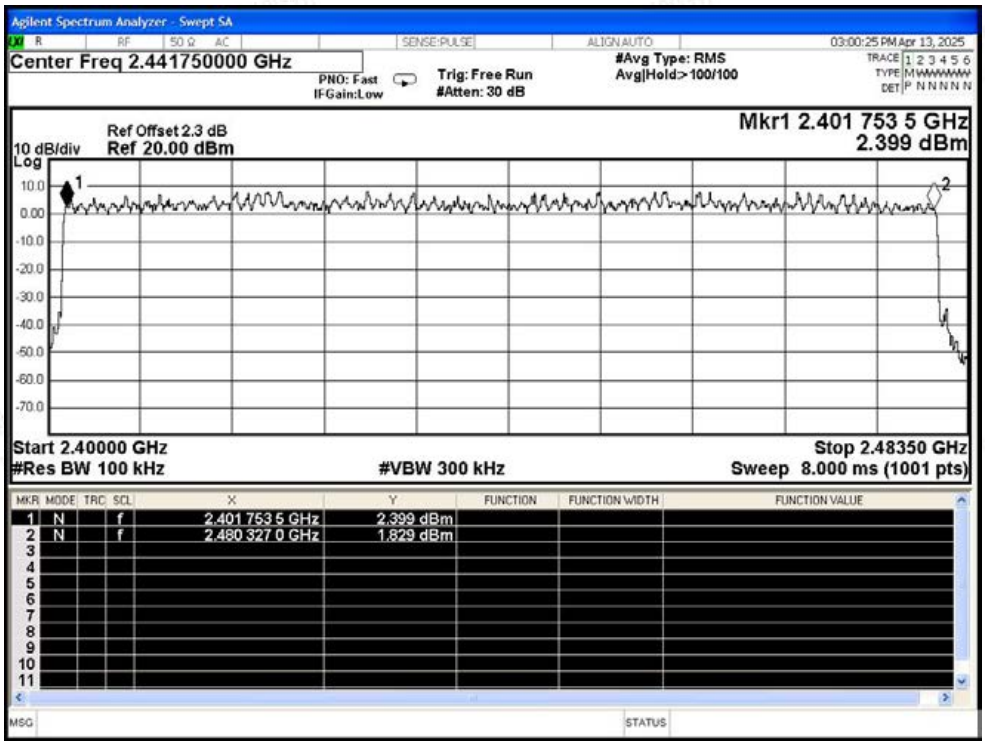
| Condition | Mode | Antenna | Hopping Number | Limit | Verdict |
|---|---|---|---|---|---|
| NVNT | 1-DH5 | Ant1 | 79 | 15 | Pass |
| NVNT | 2-DH5 | Ant1 | 79 | 15 | Pass |
| NVNT | 3-DH5 | Ant1 | 79 | 15 | Pass |

Test Graphs

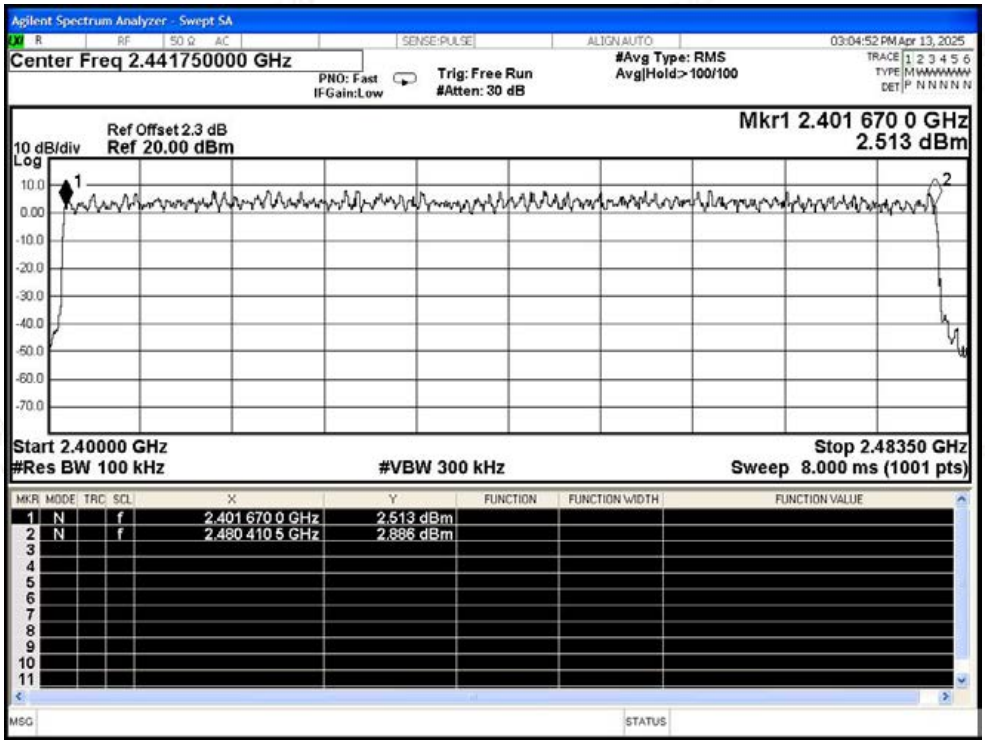
Hopping No. NVNT 1-DH5 2402MHz Ant1




Hopping No. NVNT 2-DH5 2402MHz Ant1



Hopping No. NVNT 3-DH5 2402MHz Ant1

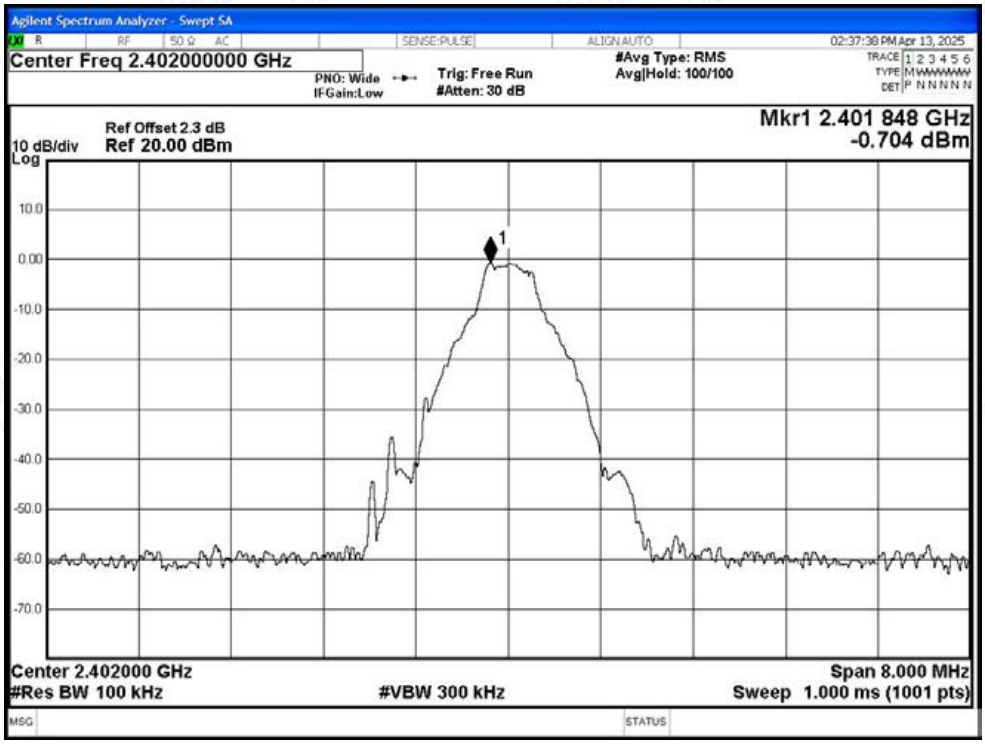


# A.6 Band Edge

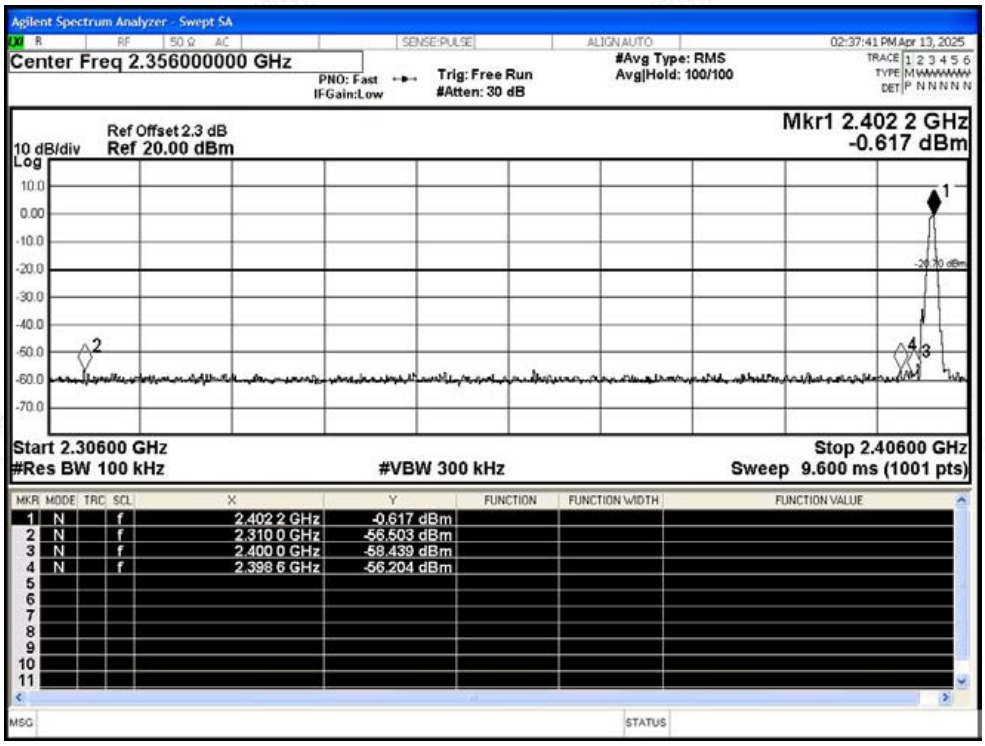
| Condition | Mode | Frequency (MHz) | Antenna | Hopping Mode | Max Value (dBc) | Limit (dBc) | Verdict |
|---|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant1 | No-Hopping | -55.5 | -20 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | No-Hopping | -54.39 | -20 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | No-Hopping | -51.21 | -20 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | No-Hopping | -53.27 | -20 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | No-Hopping | -51.53 | -20 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | No-Hopping | -52.97 | -20 | Pass |

Test Graphs

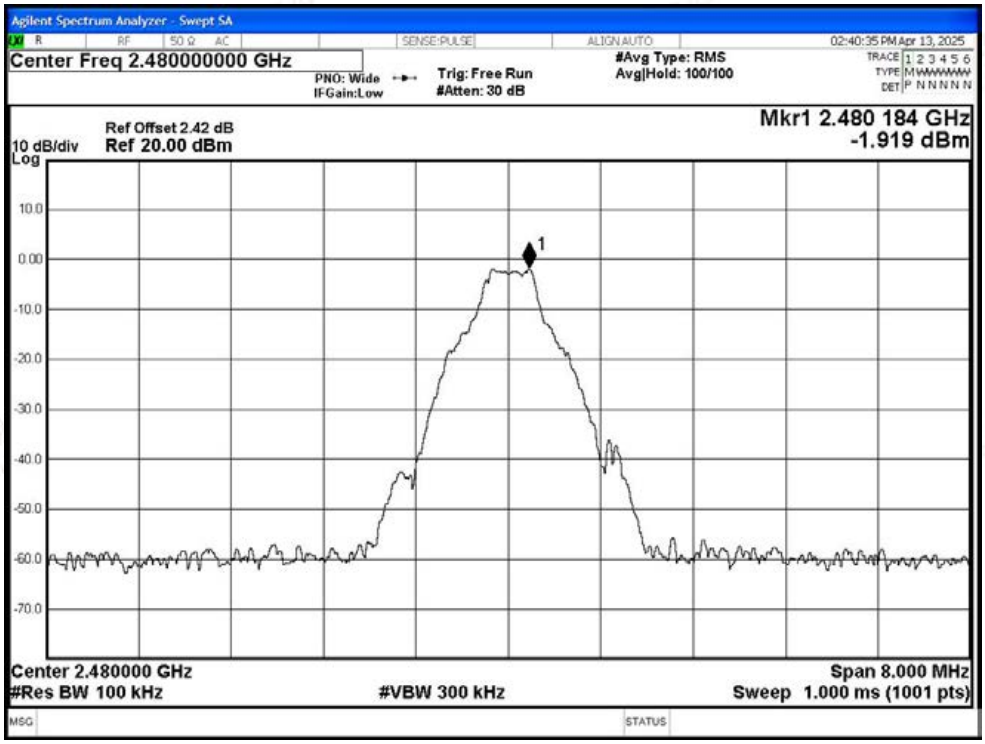
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



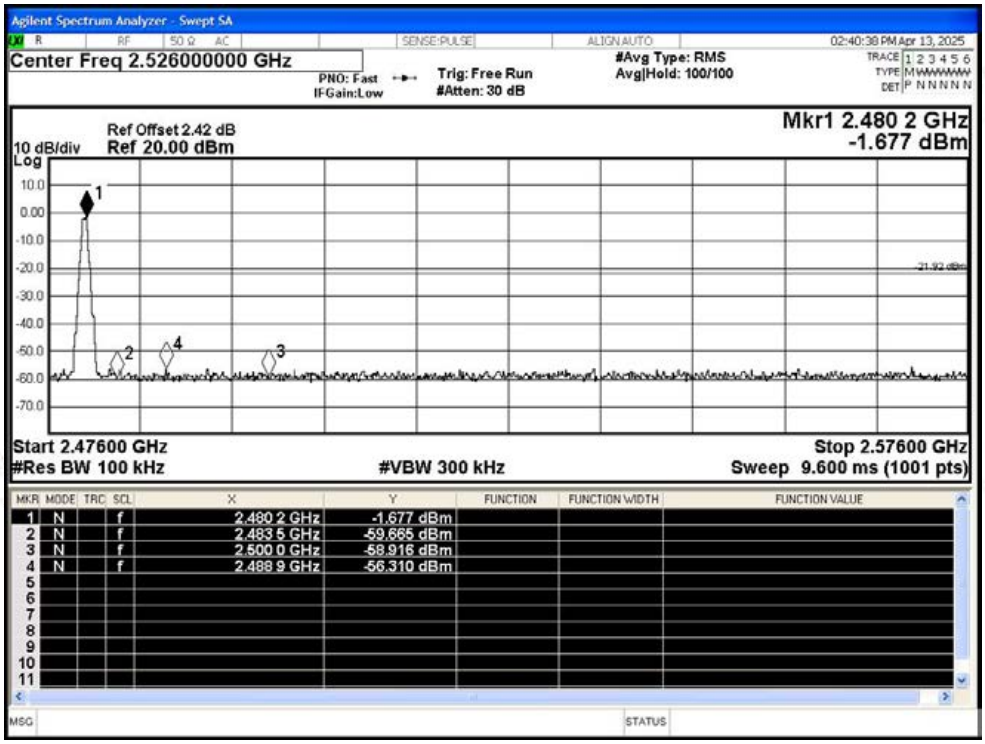

Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission



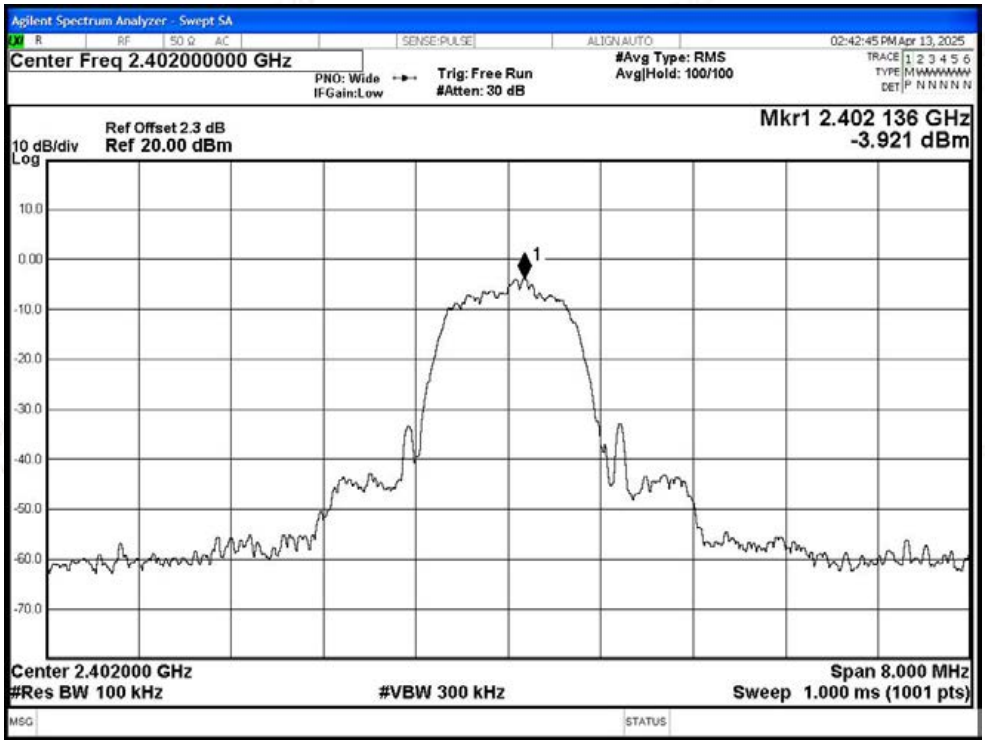
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref



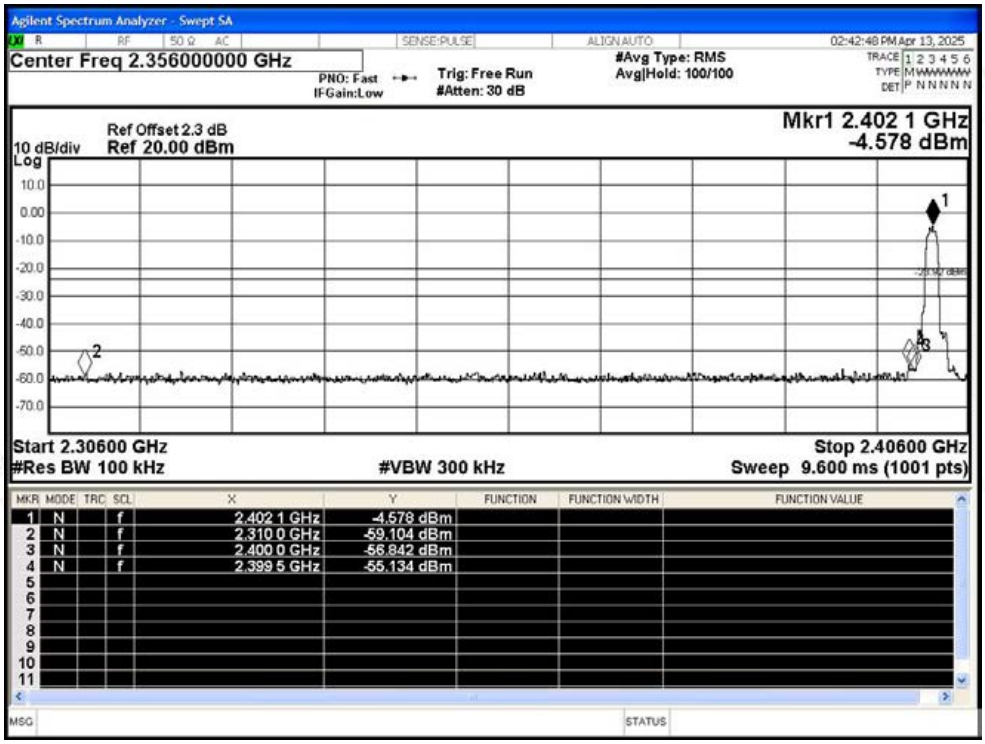

Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



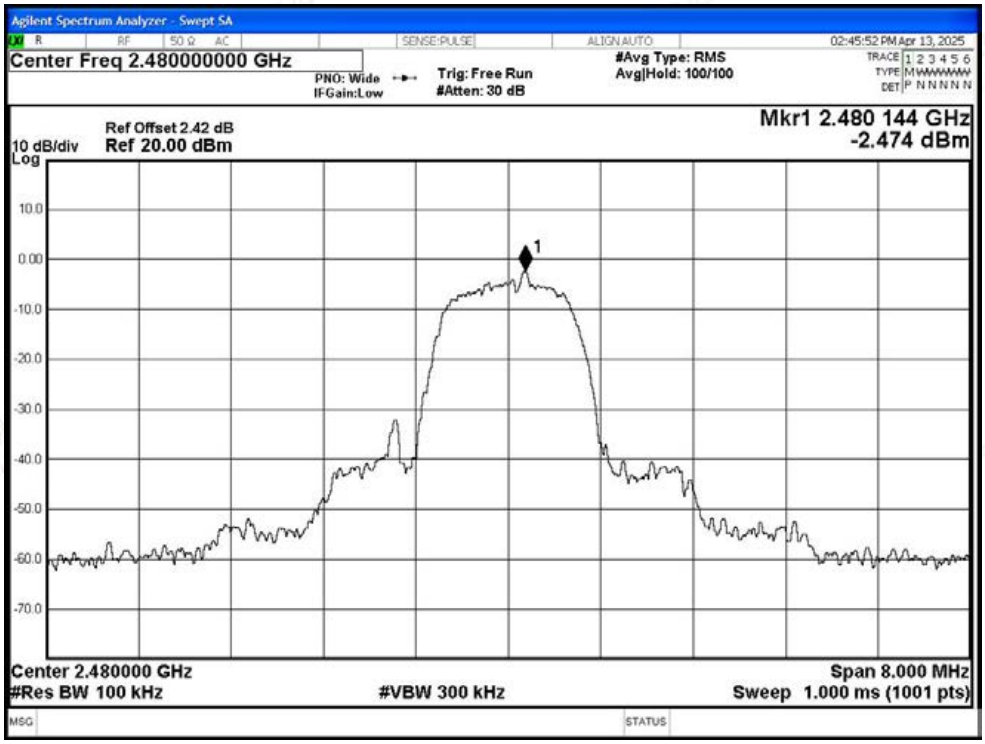
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



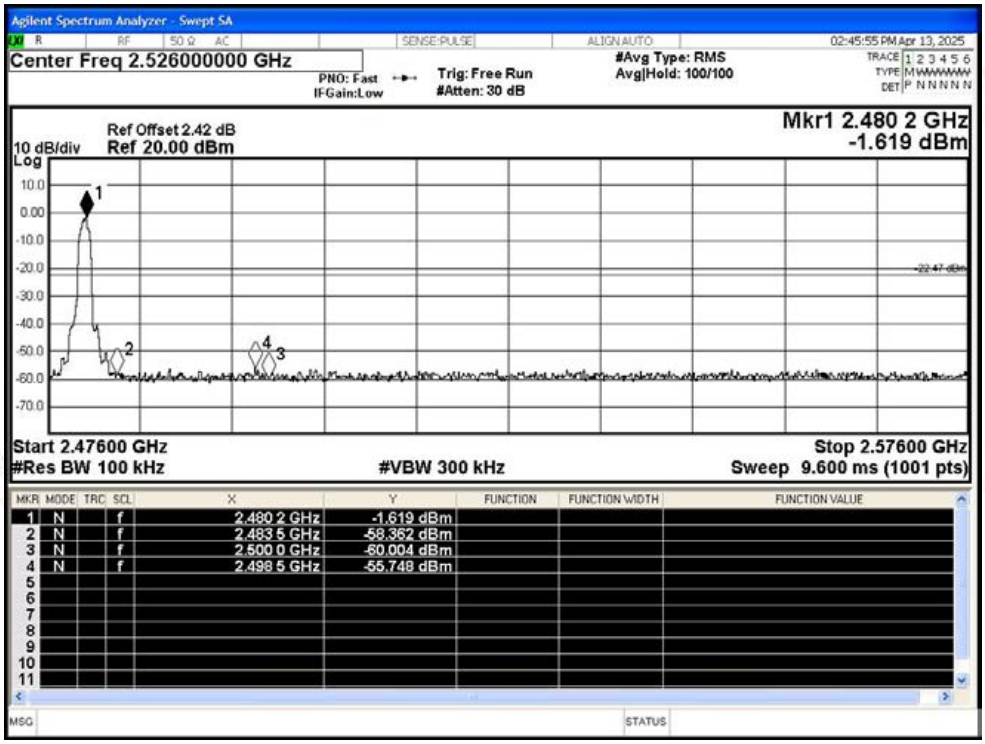

Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission



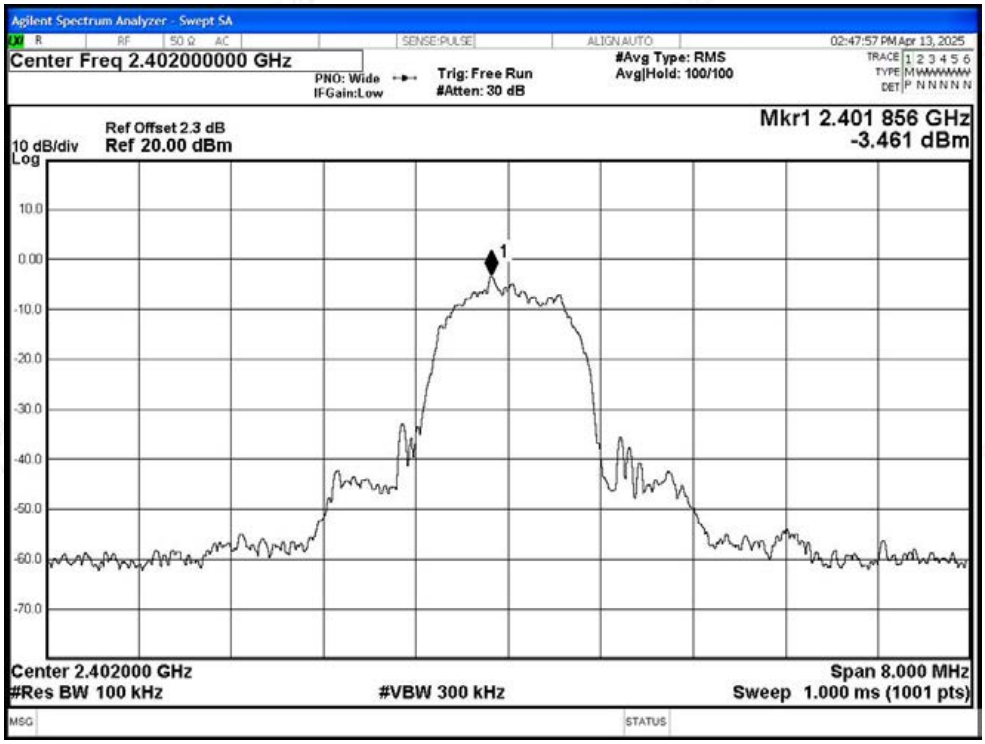
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref



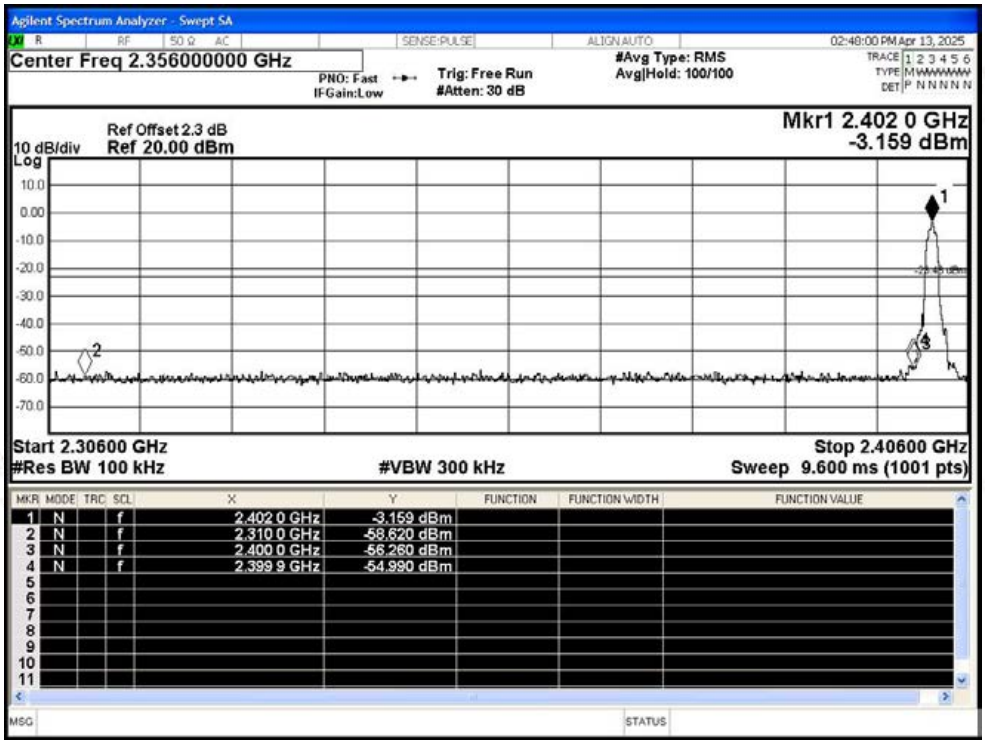

Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission



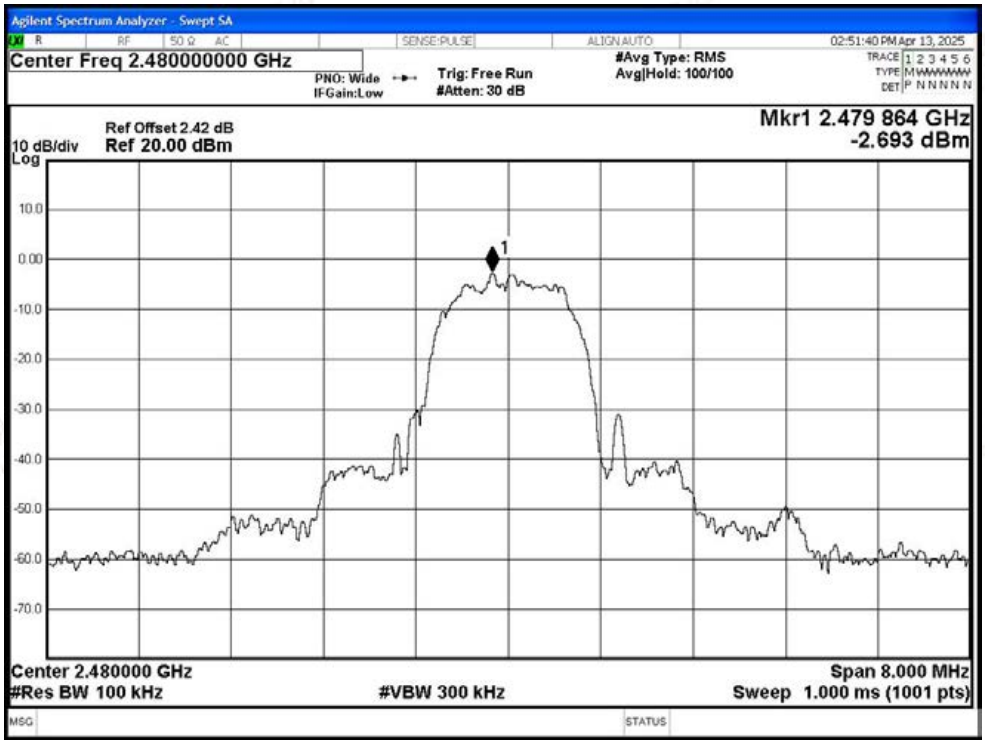
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref



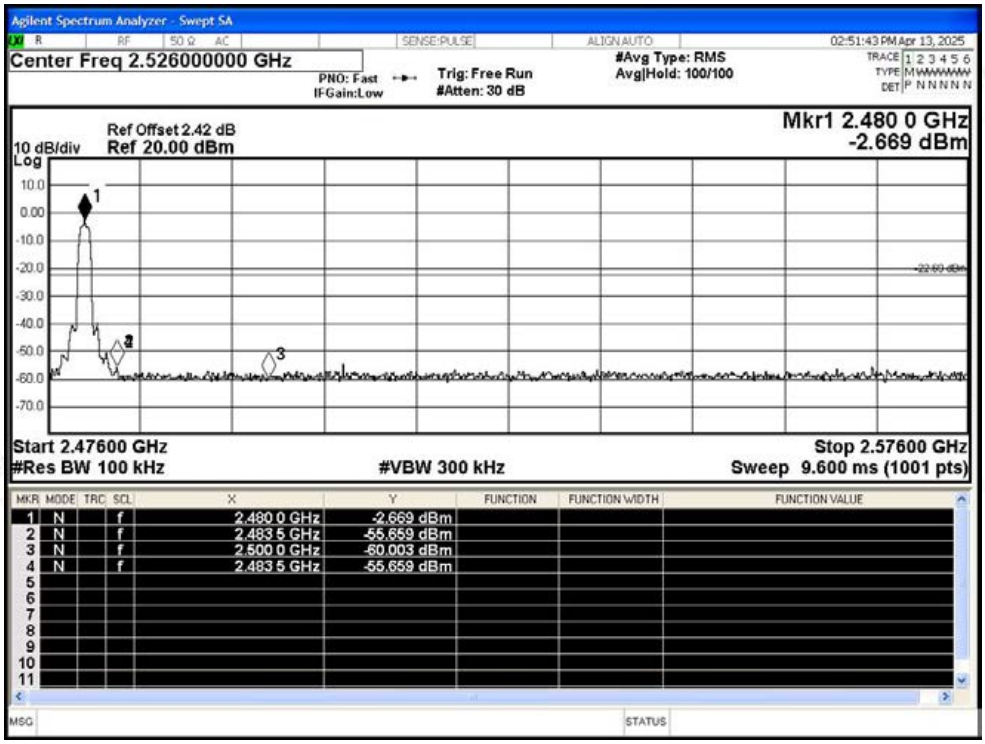

Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission



Band Edge NVNT 3-DH5 2480MHz Ant1 No-Hopping Ref




Band Edge NVNT 3-DH5 2480MHz Ant1 No-Hopping Emission

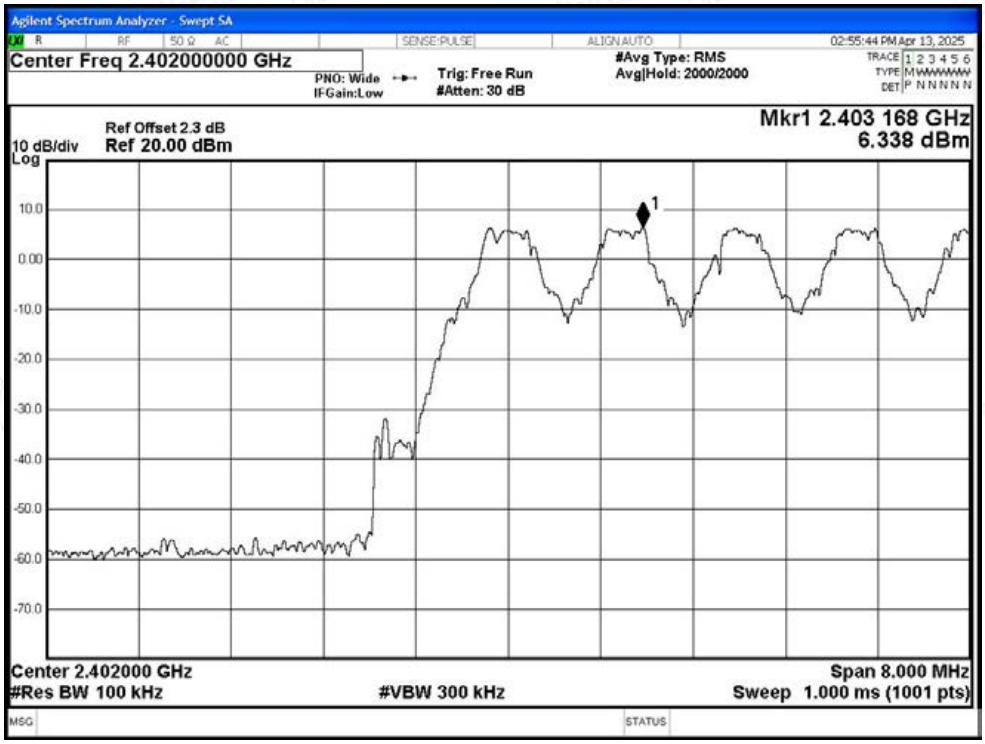


## (Hopping)

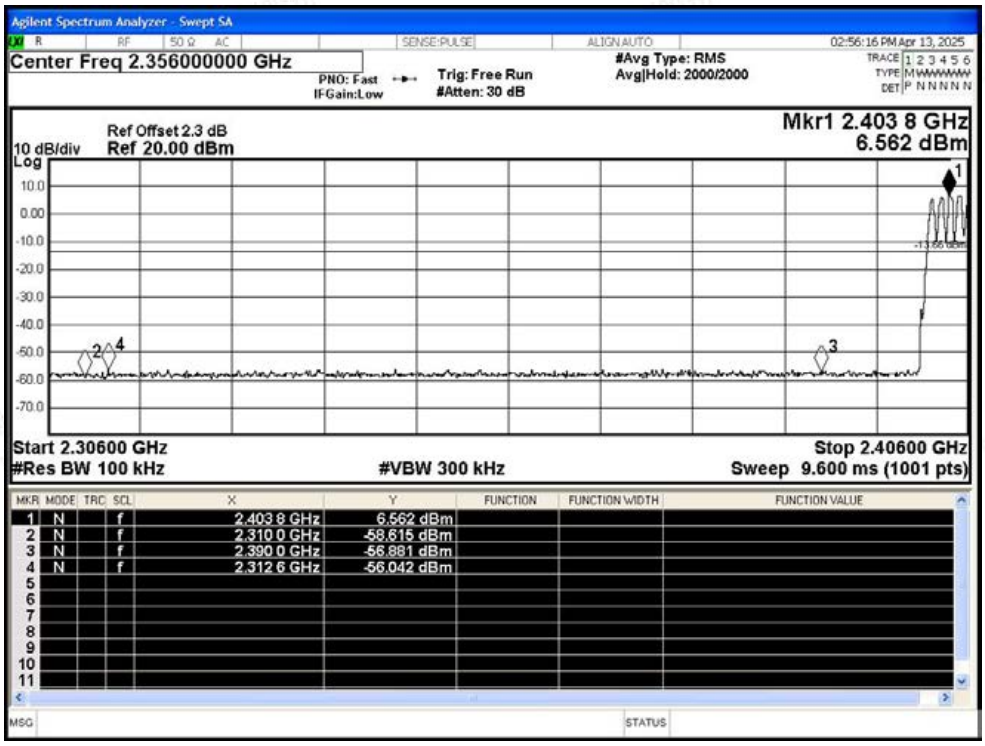
| Condition | Mode | Frequency (MHz) | Antenna | Hopping Mode | Max Value (dBc) | Limit (dBc) | Verdict |
|---|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant1 | Hopping | -62.38 | -20 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | Hopping | -62.55 | -20 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | Hopping | -61.85 | -20 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | Hopping | -59.87 | -20 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | Hopping | -62.25 | -20 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | Hopping | -58.52 | -20 | Pass |

Test Graphs

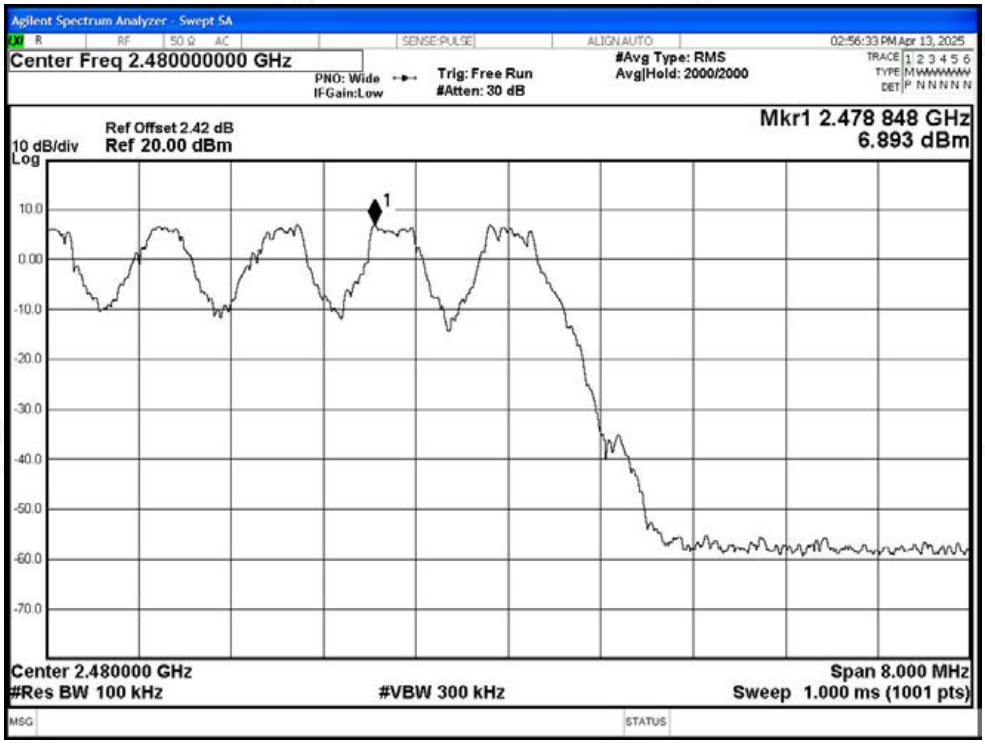
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



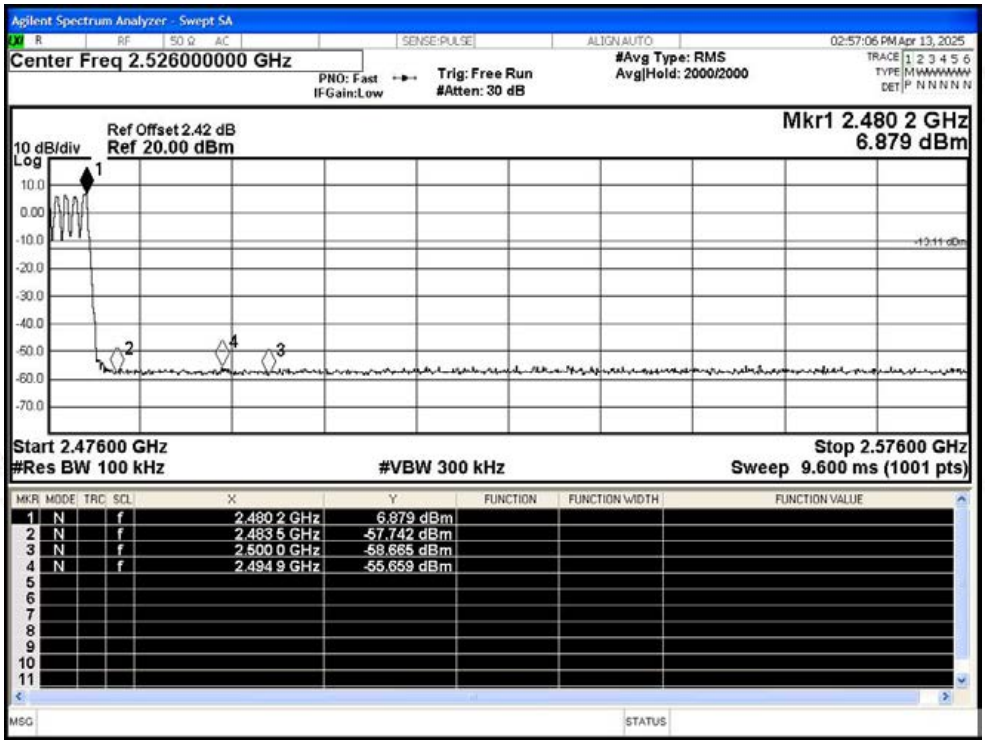

Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref

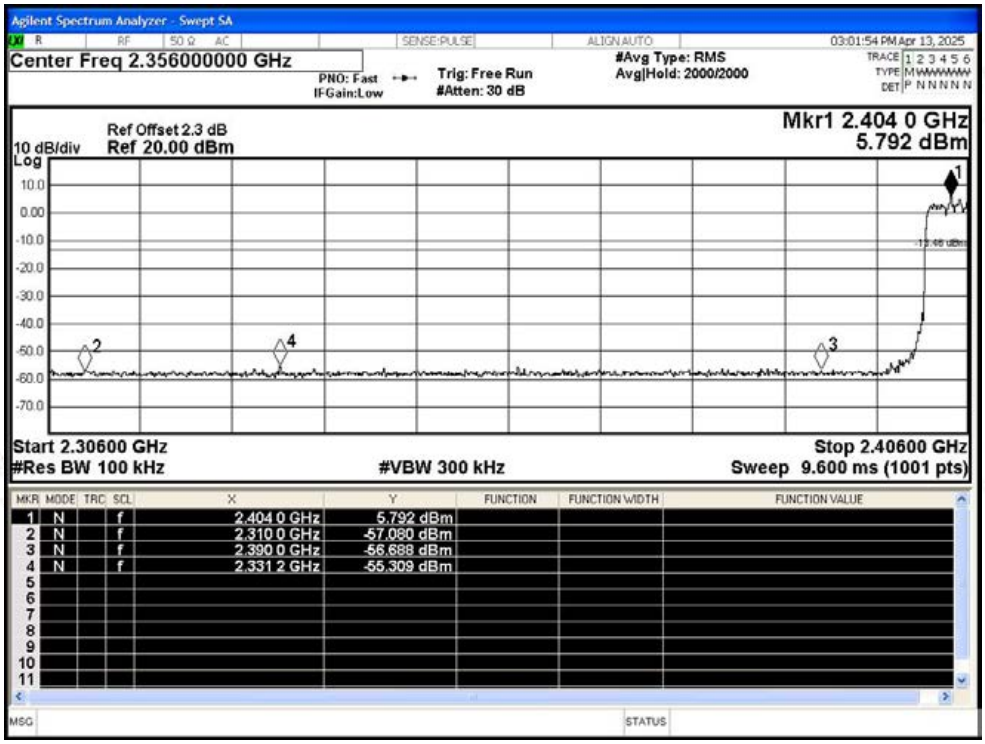



Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission

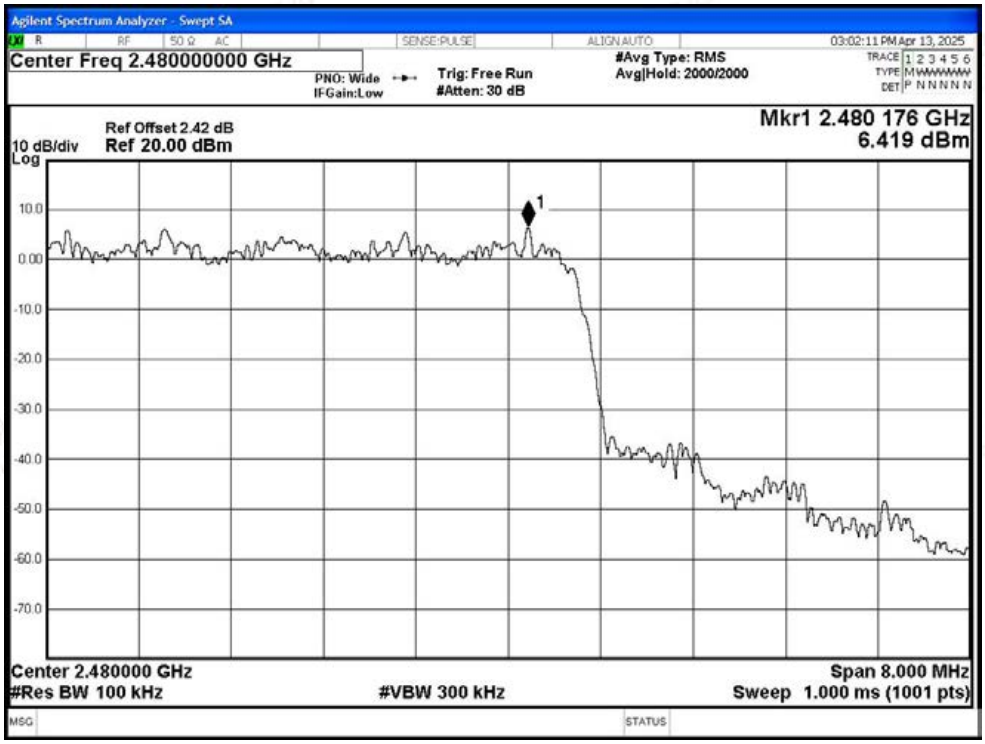


Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref

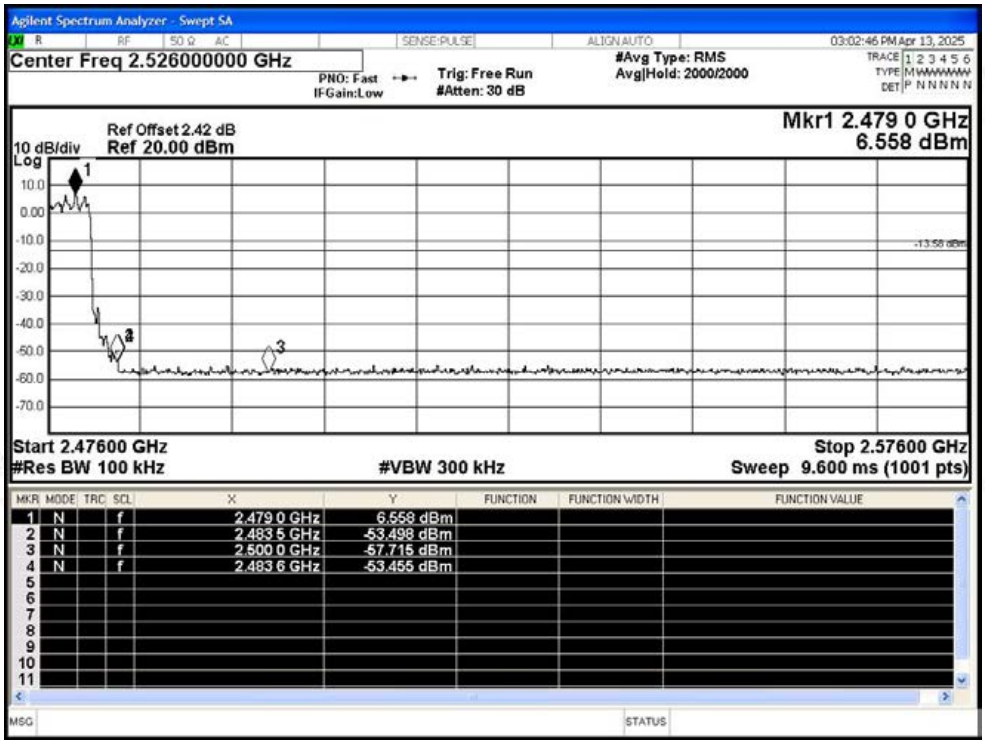
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



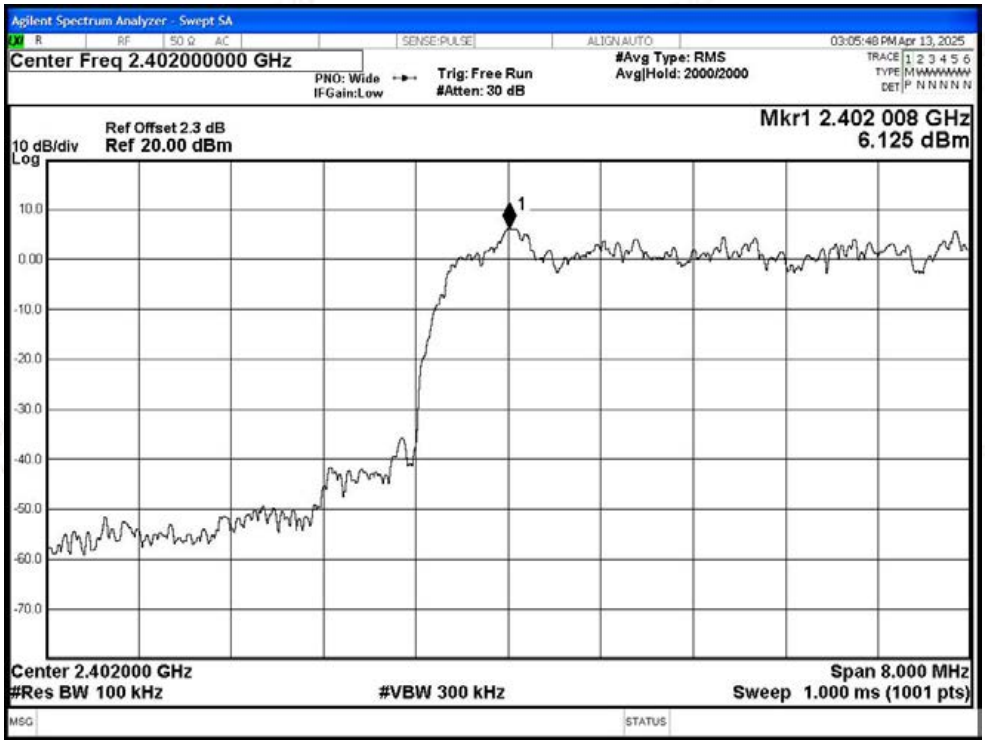
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



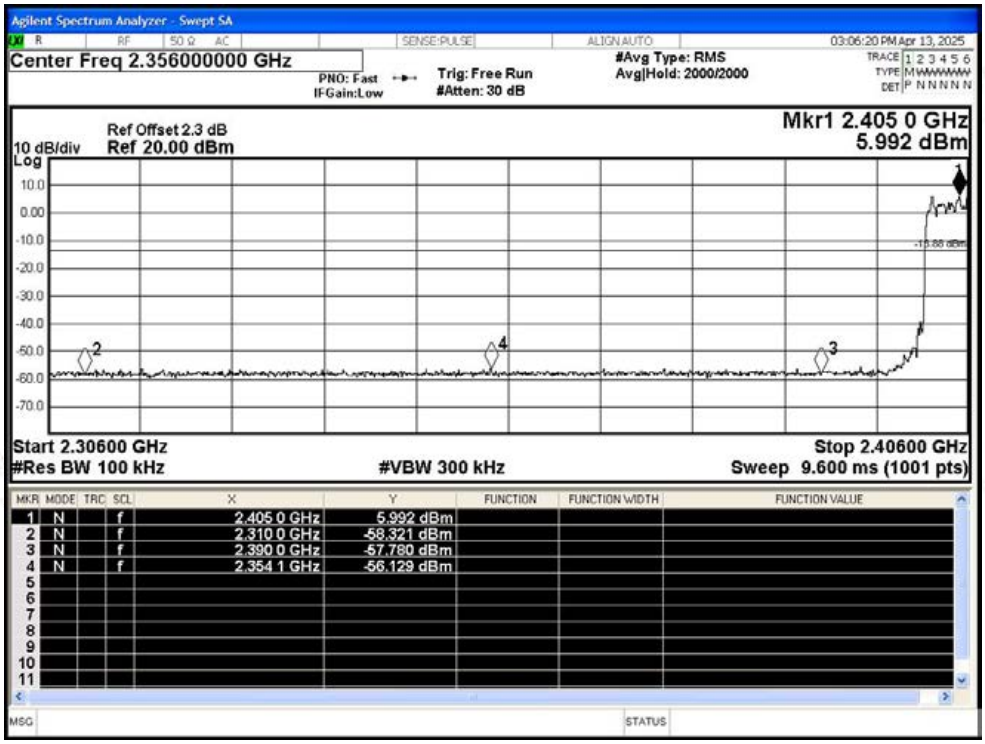

Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission



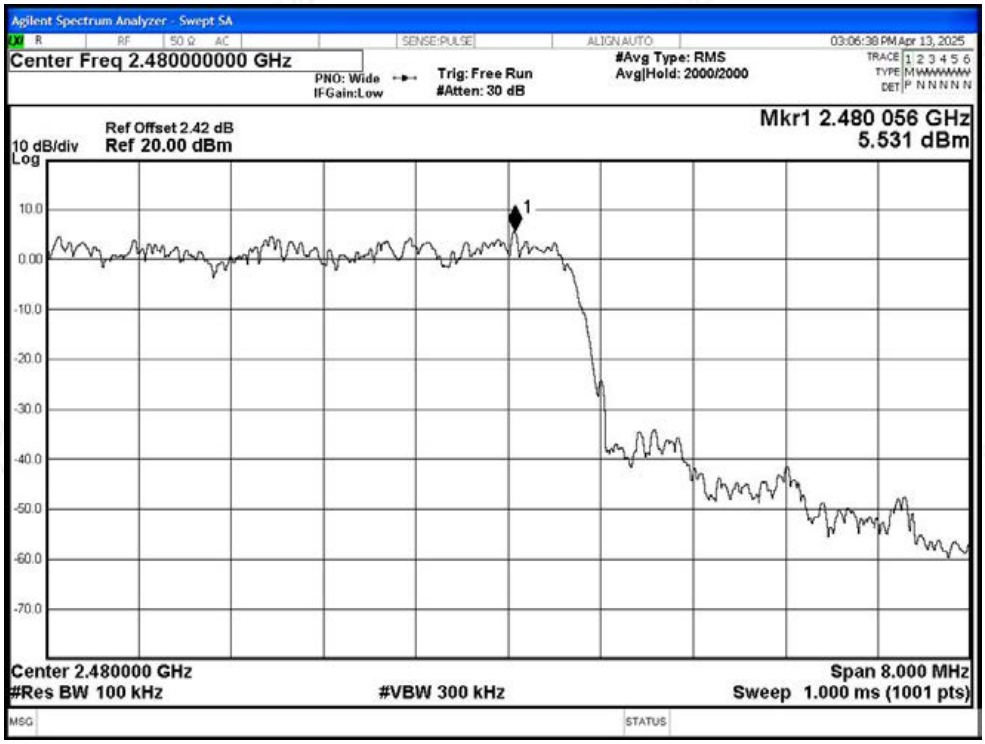
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref



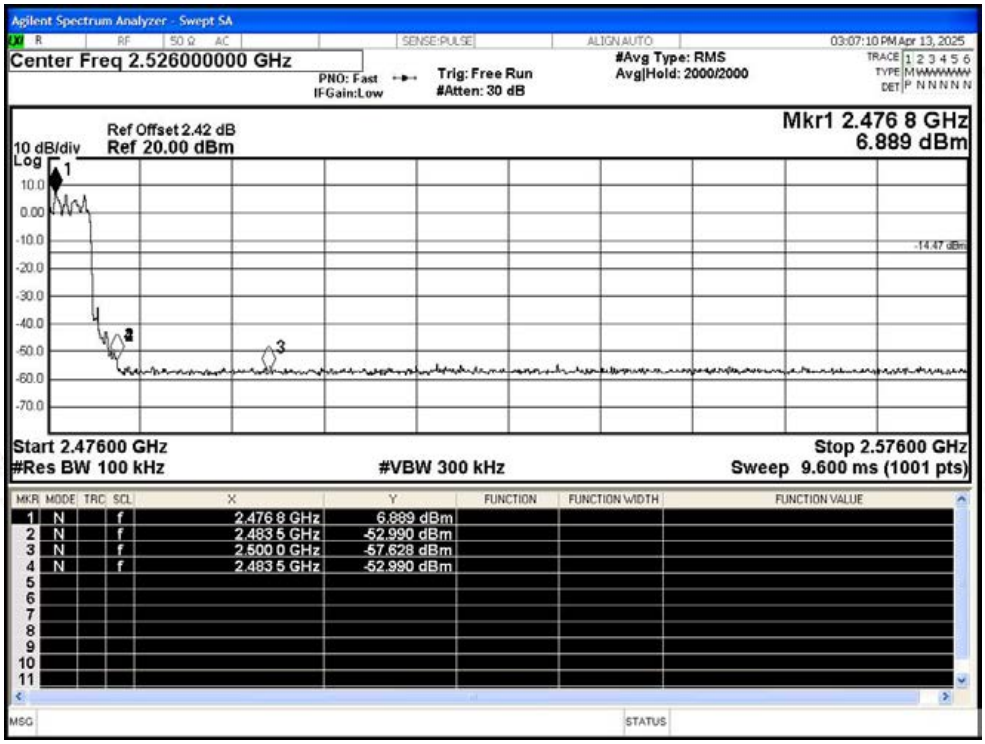

Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Ref




Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Emission

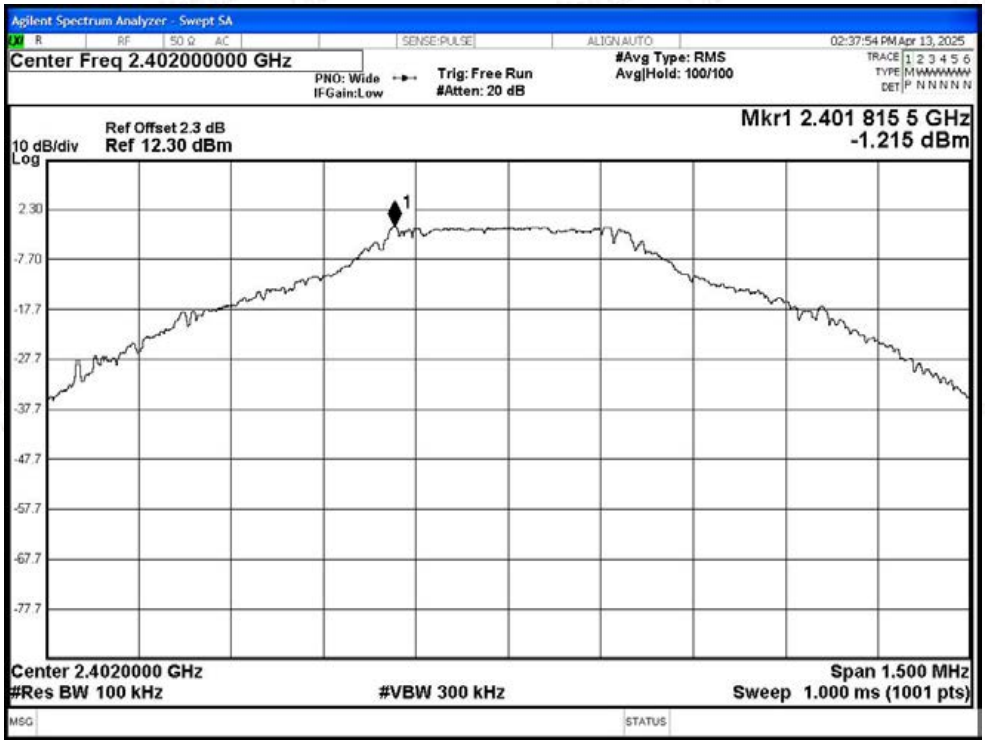


# A.7 Conducted RF Spurious Emission

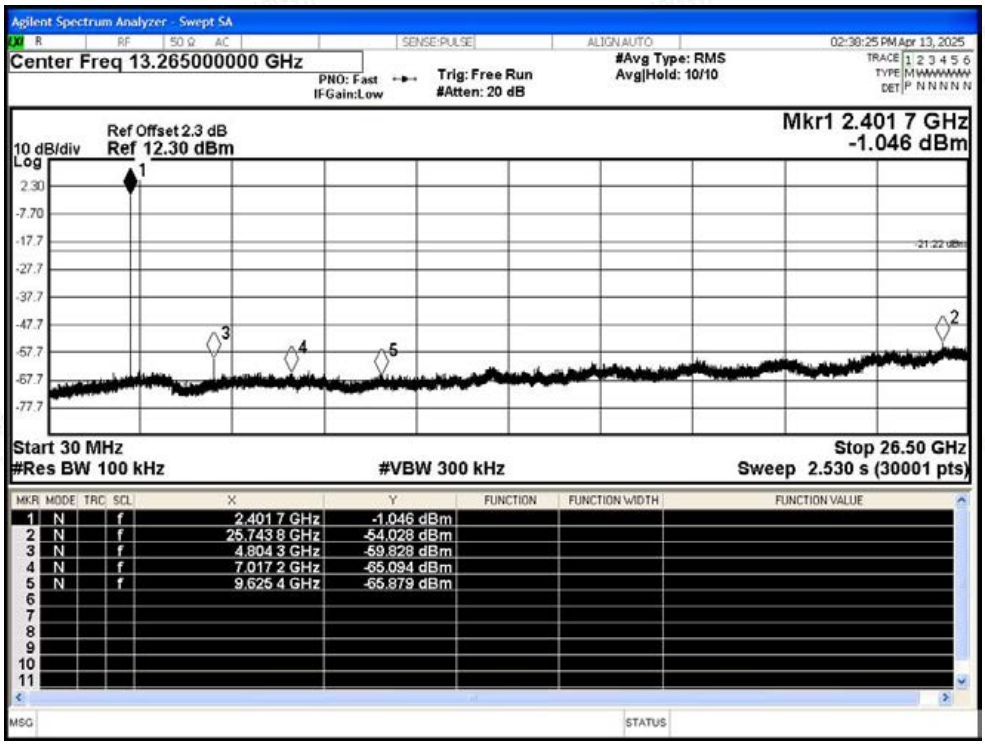
| Condition | Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant1 | -52.81 | -20 | Pass |
| NVNT | 1-DH5 | 2441 | Ant1 | -53.5 | -20 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | -53.57 | -20 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | -50.15 | -20 | Pass |
| NVNT | 2-DH5 | 2441 | Ant1 | -54.05 | -20 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | -53.52 | -20 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | -51.82 | -20 | Pass |
| NVNT | 3-DH5 | 2441 | Ant1 | -53.98 | -20 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | -53.07 | -20 | Pass |

Test Graphs

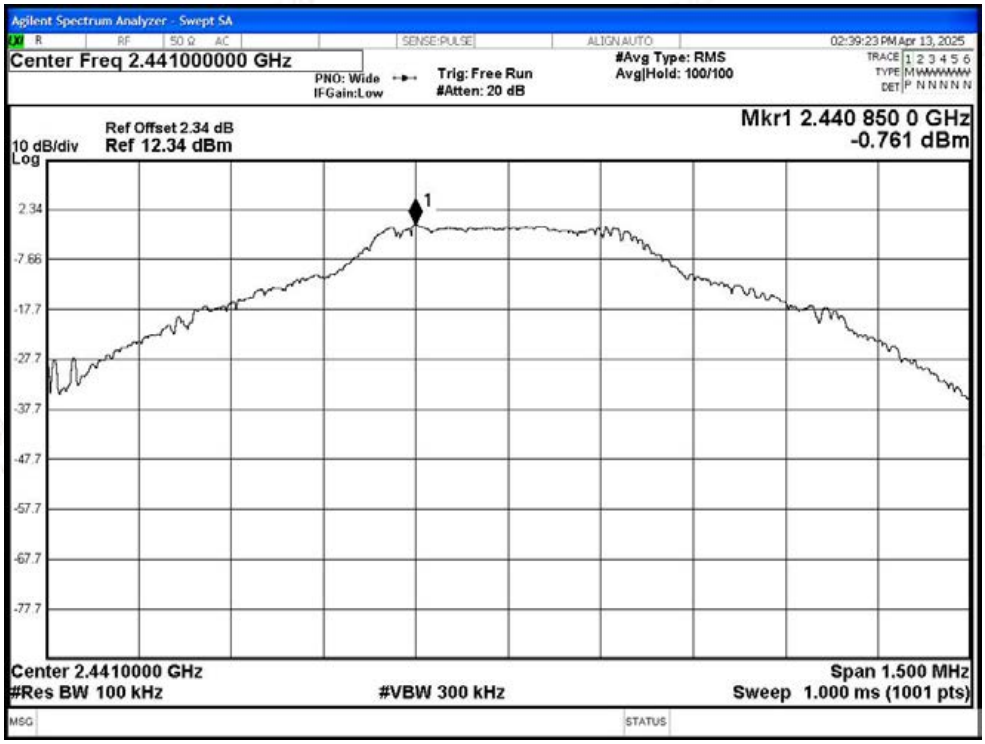
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref



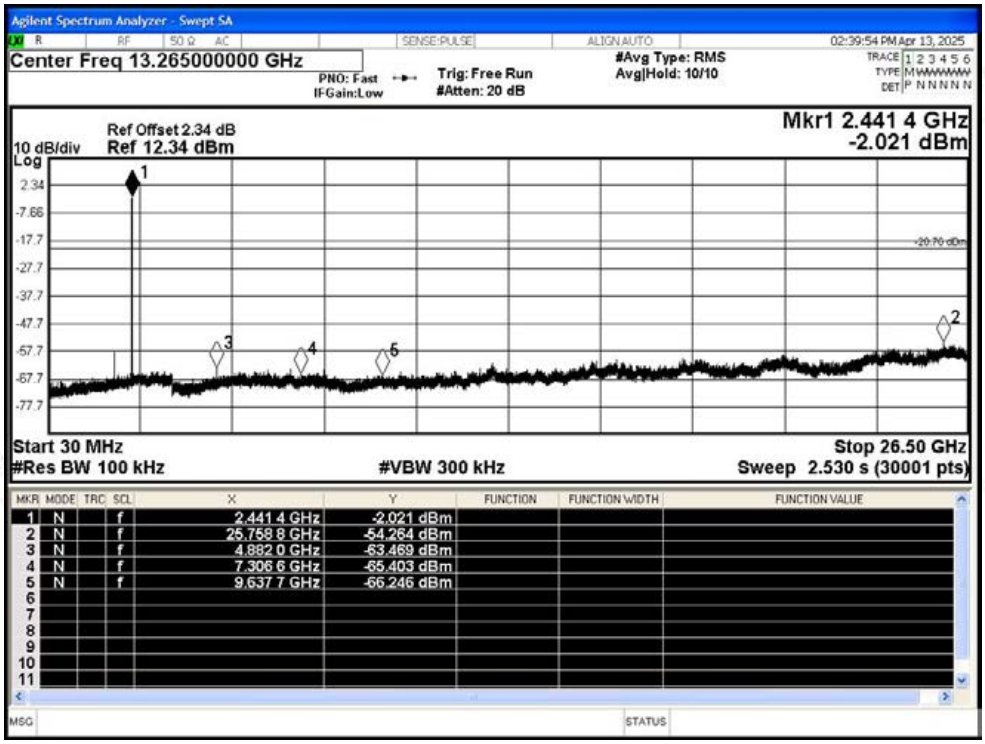

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



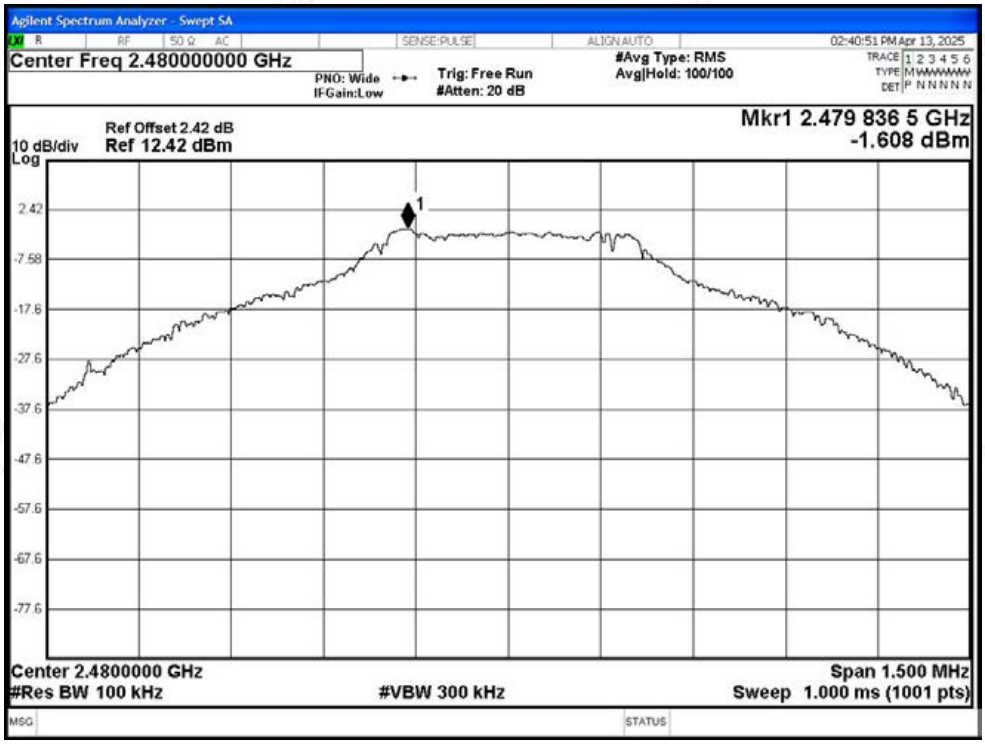
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref



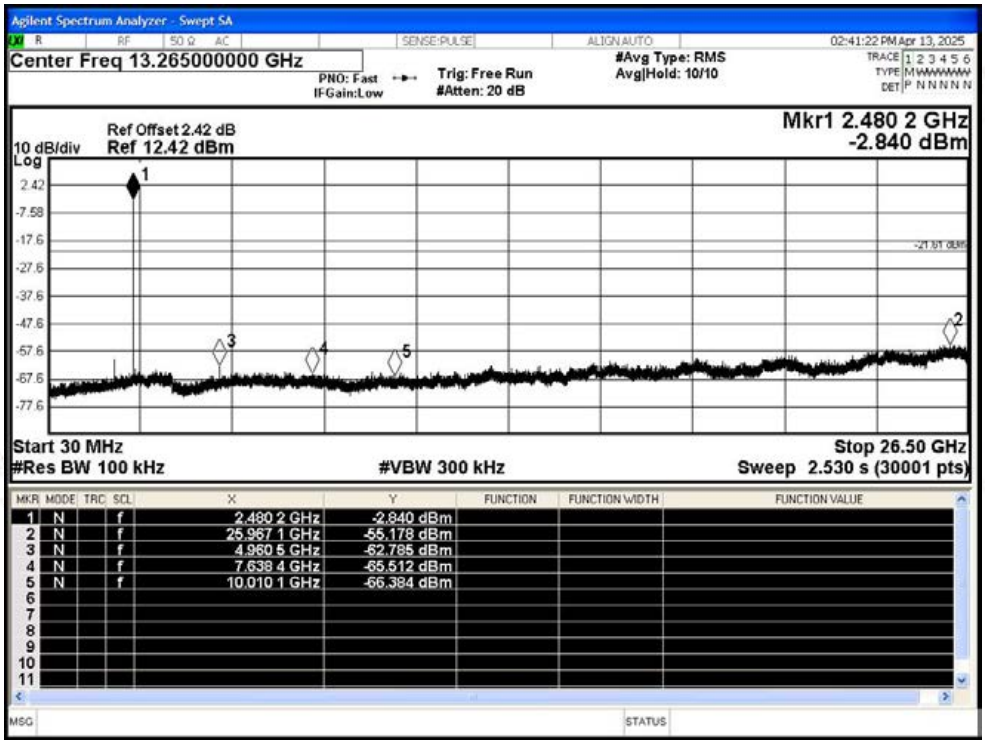

Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission



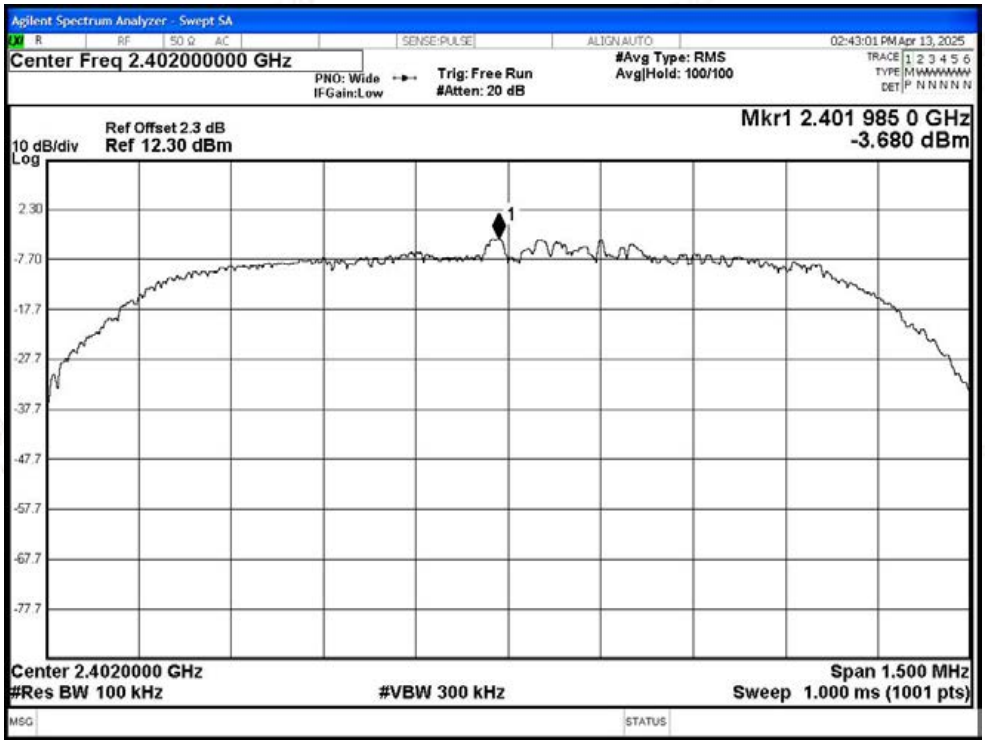
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref



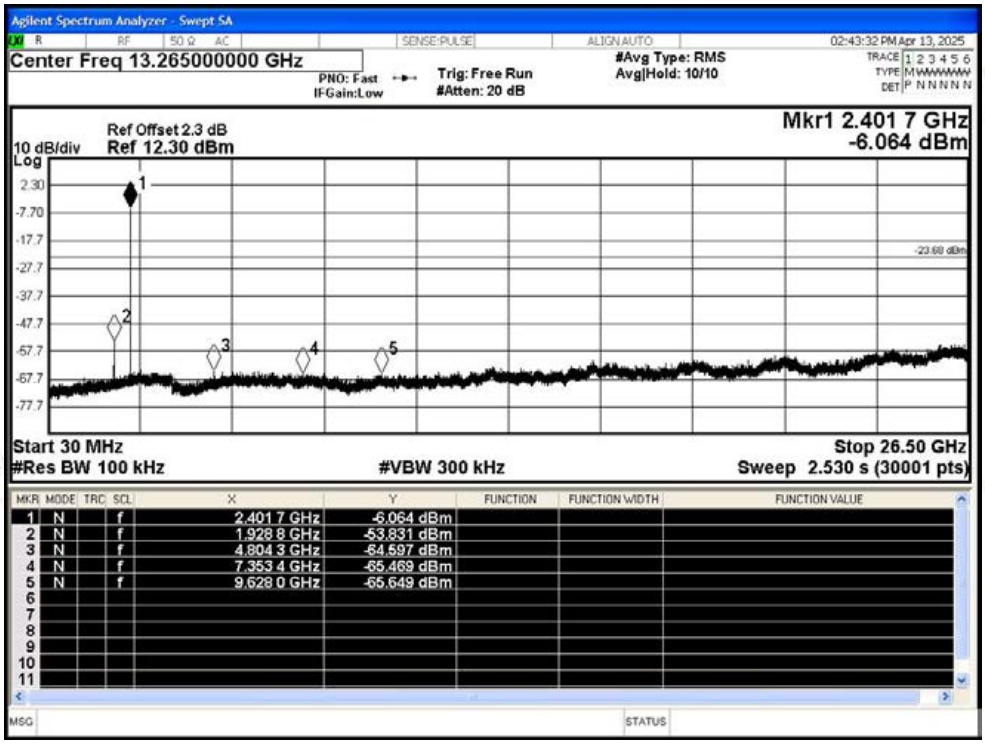

Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission



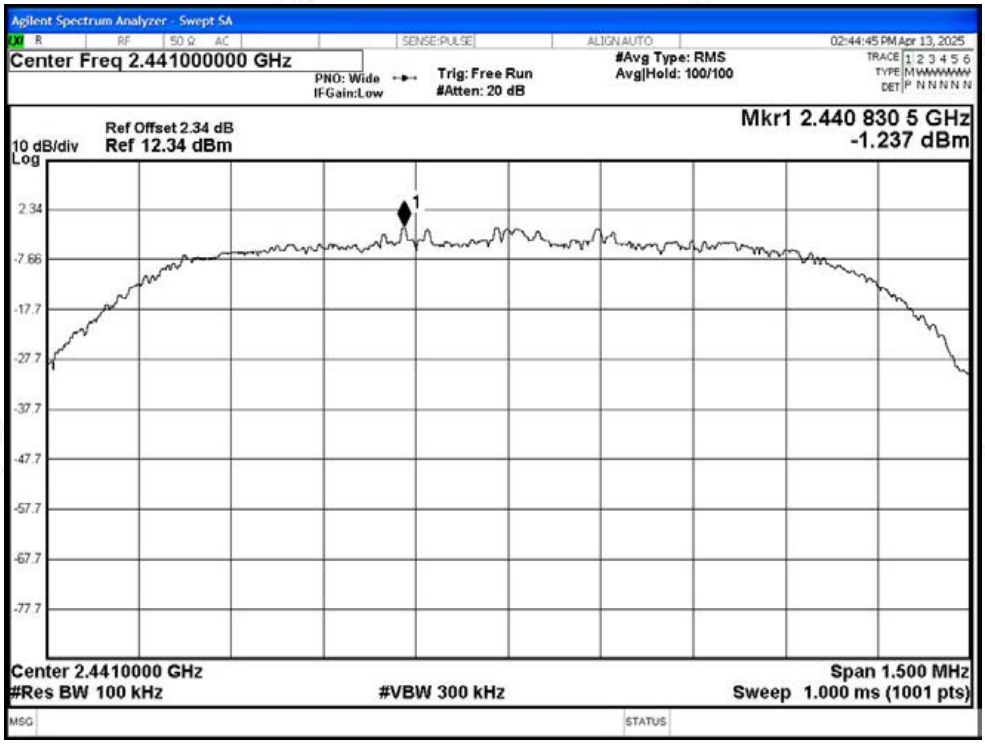
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref



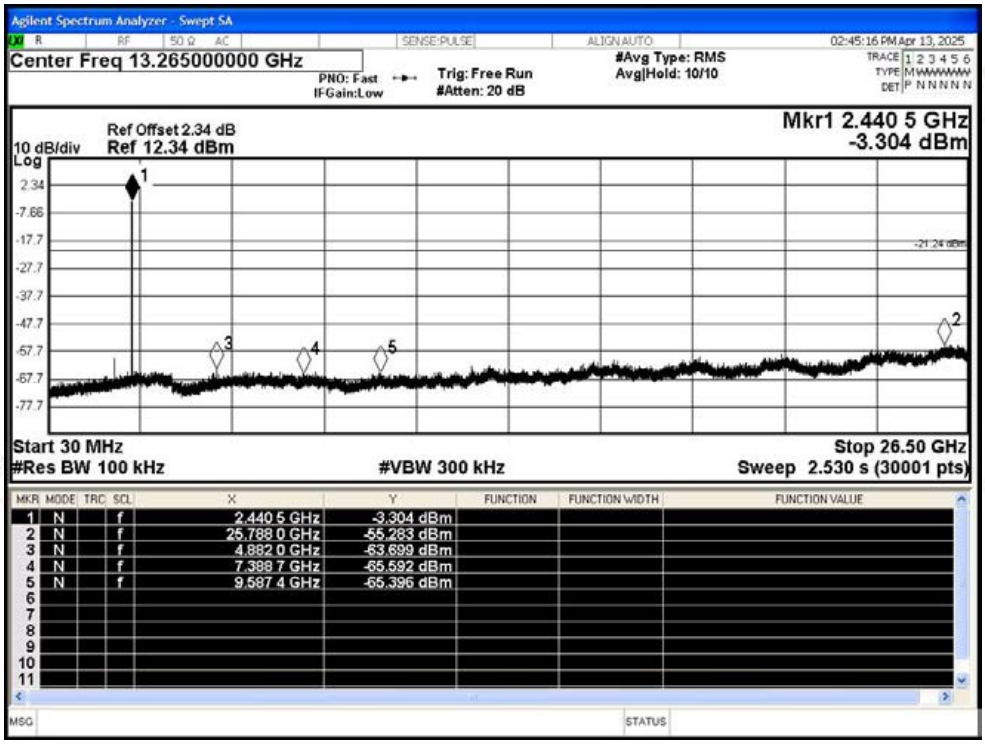

Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission



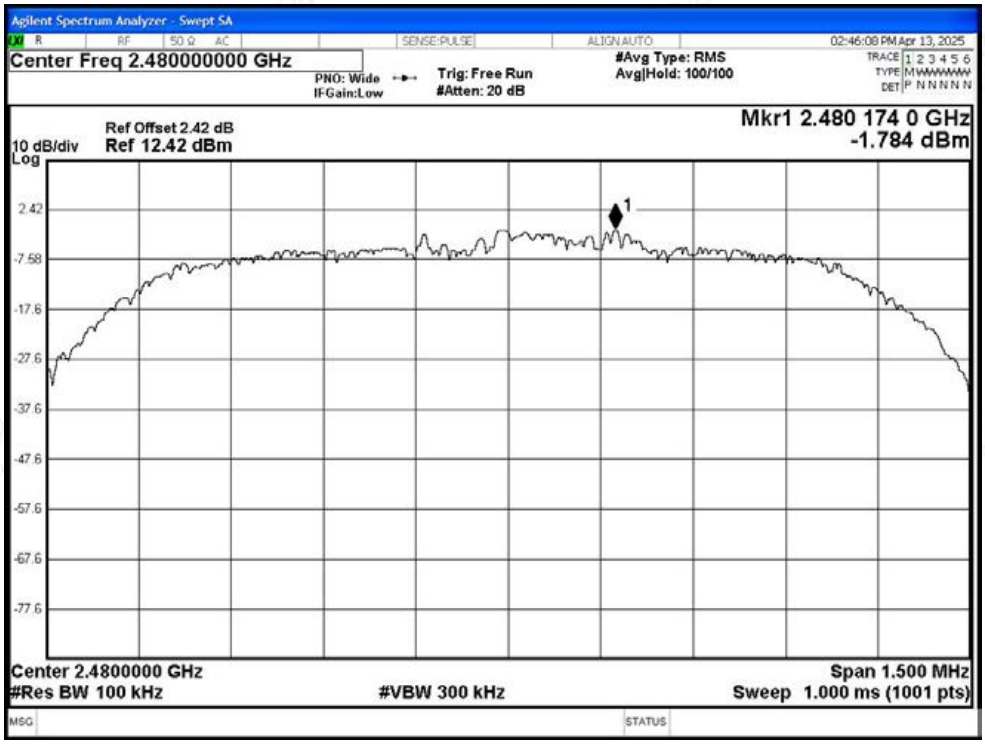
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



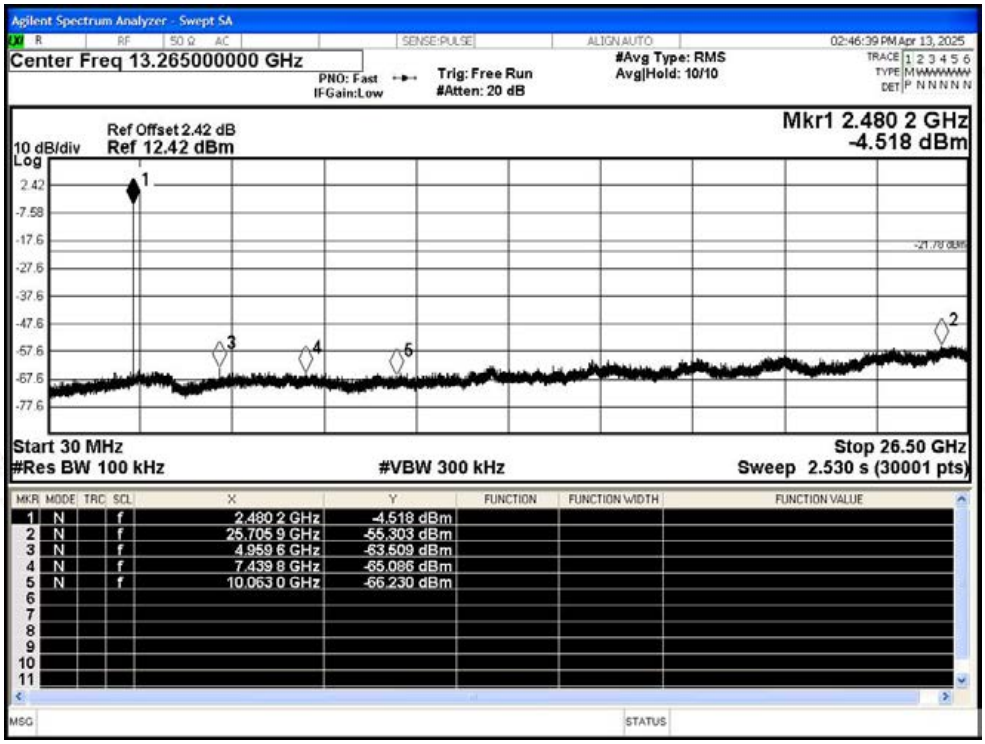

Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



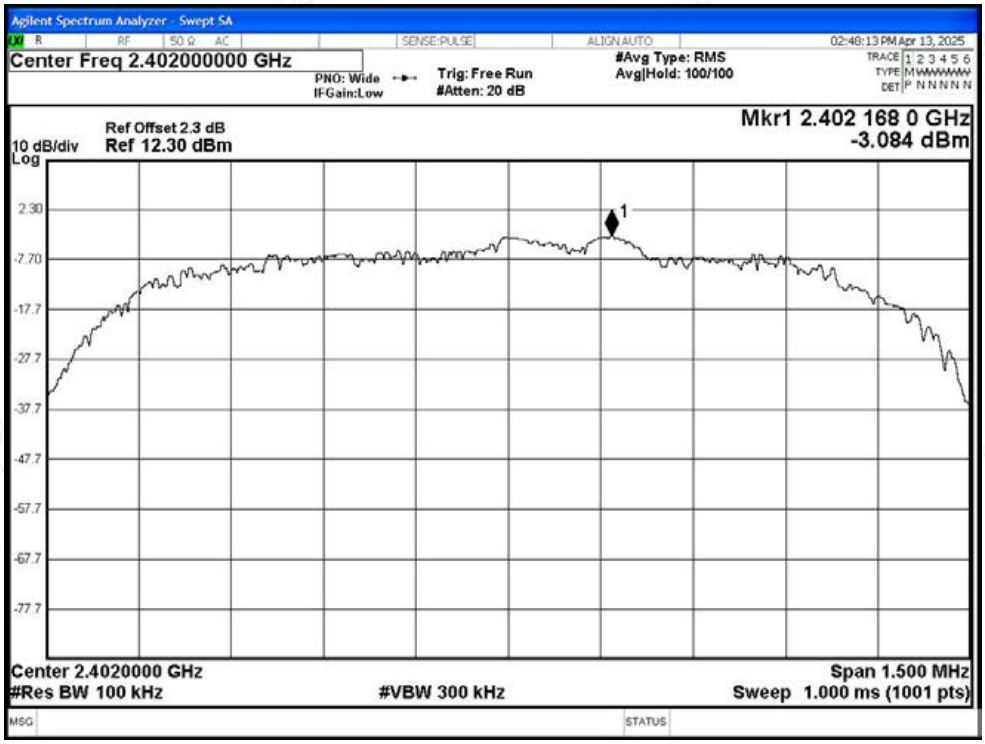
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



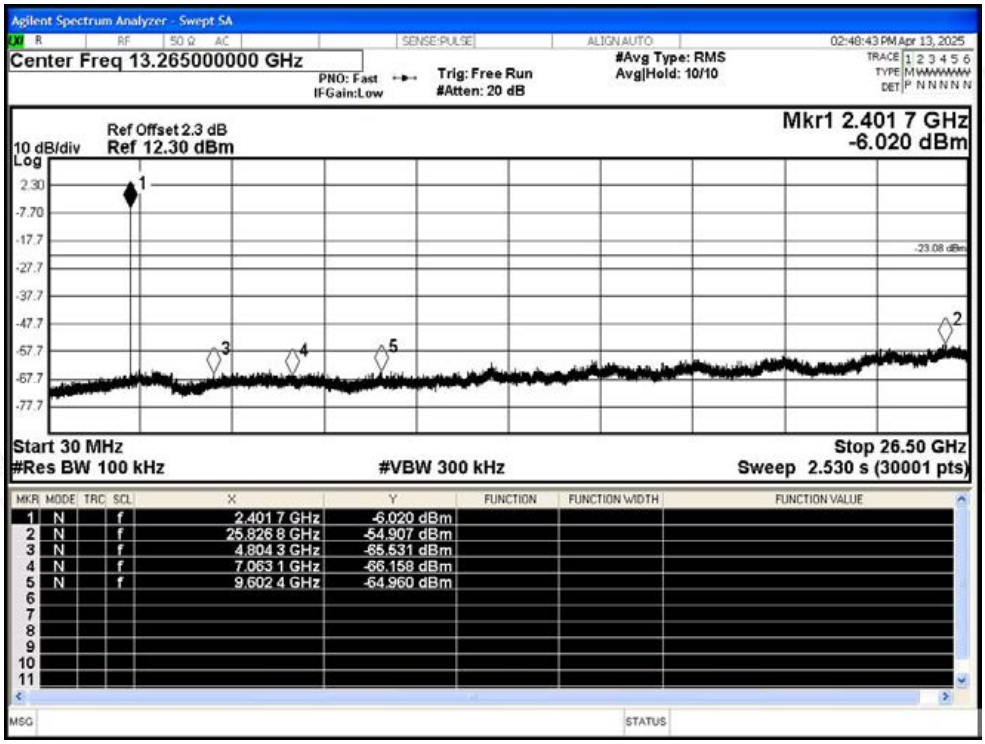

Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission



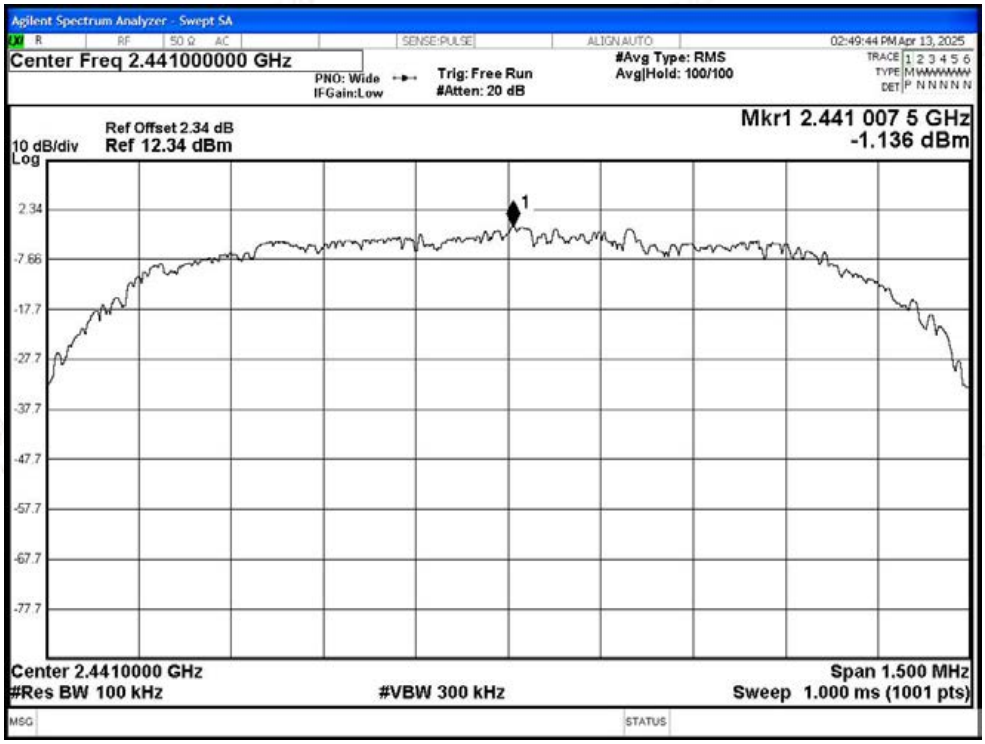
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref



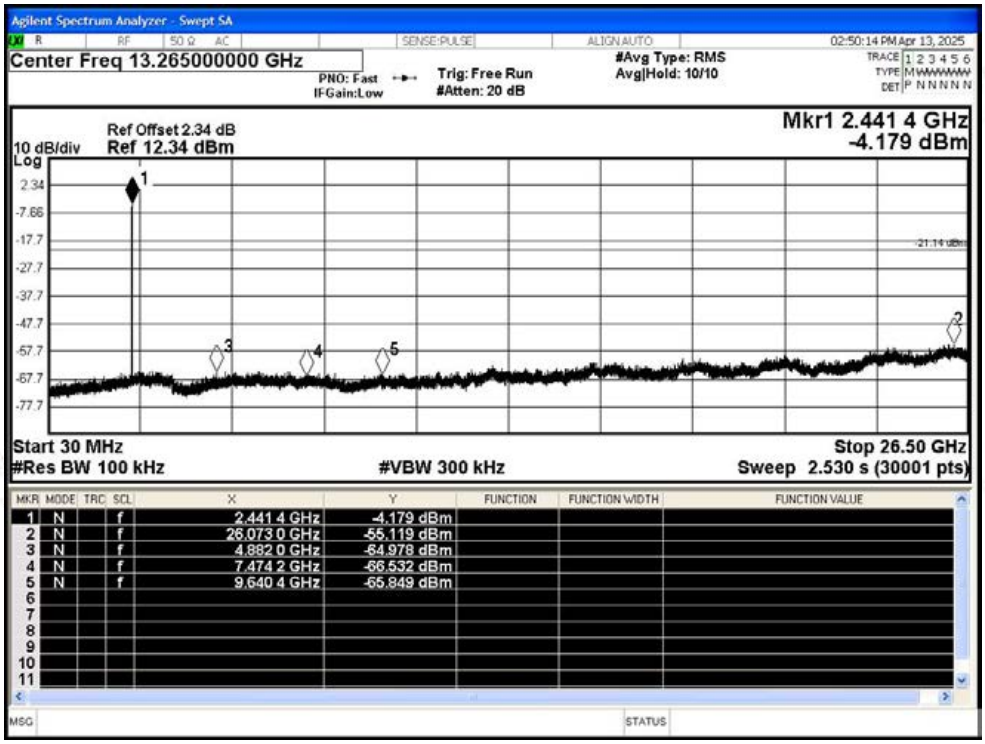

Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Emission



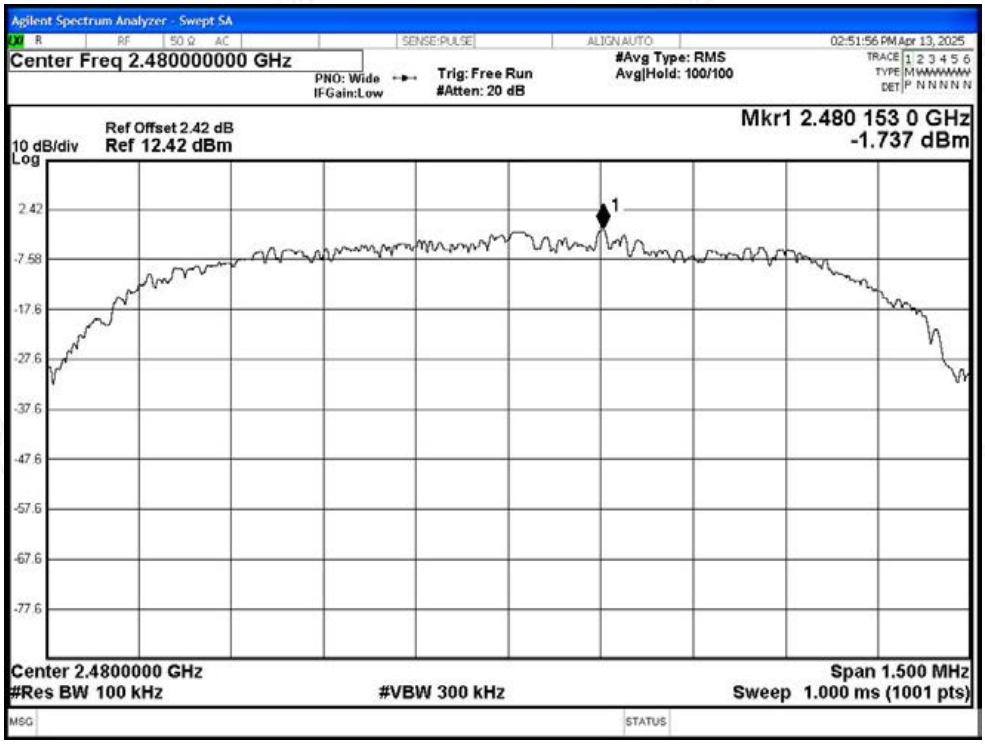
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref



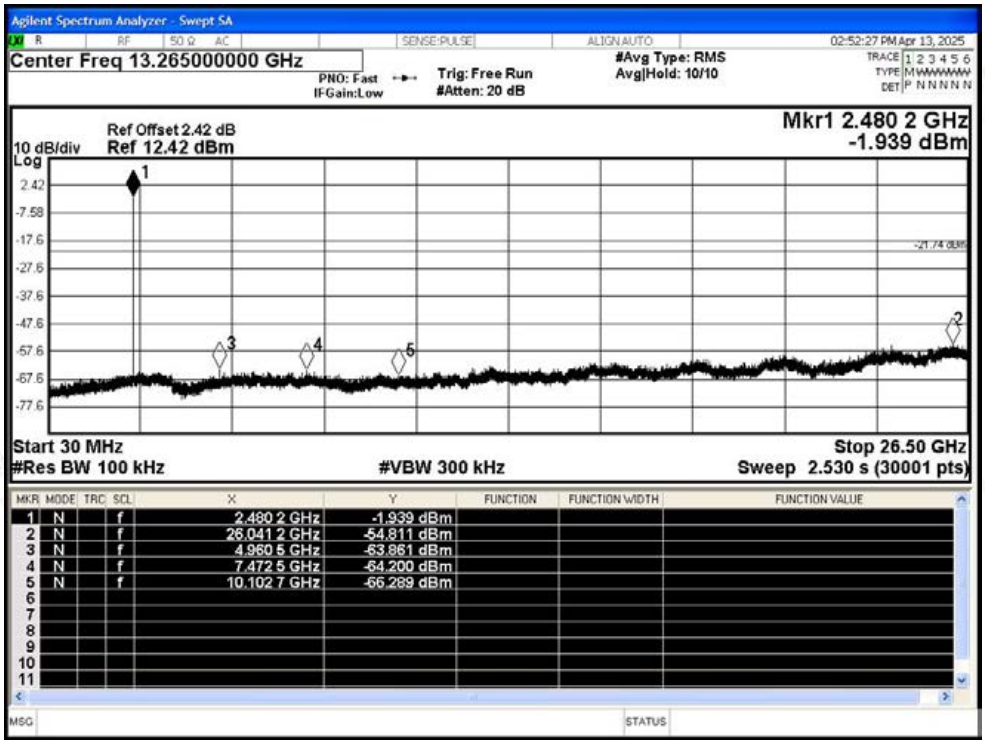

Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref




Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission

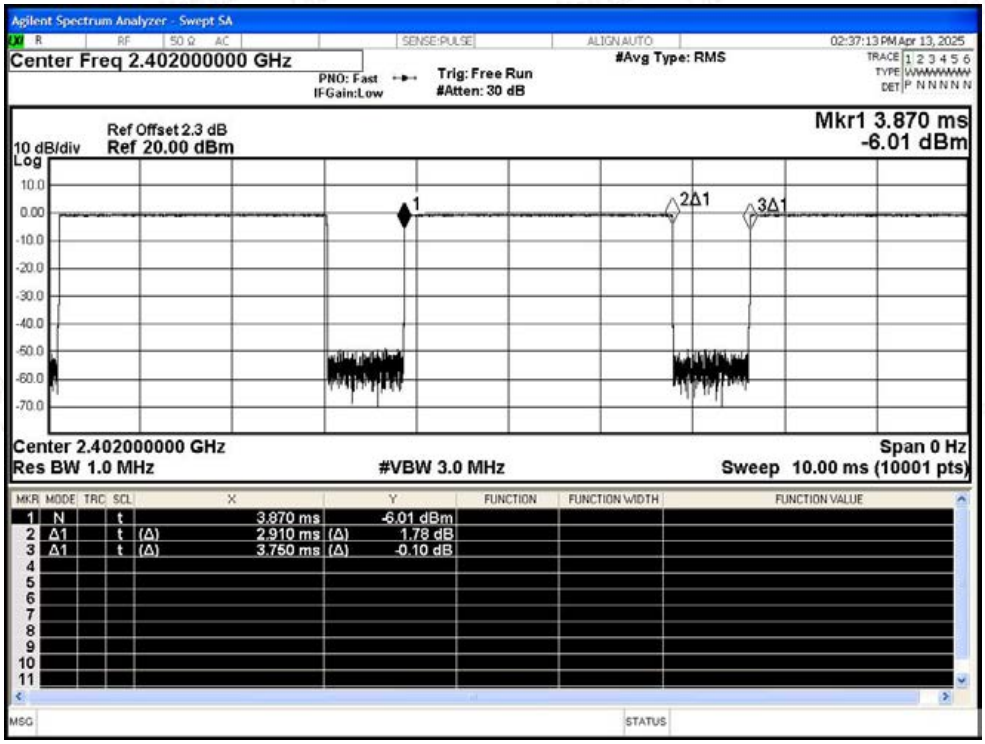


# A.8 Duty Cycle

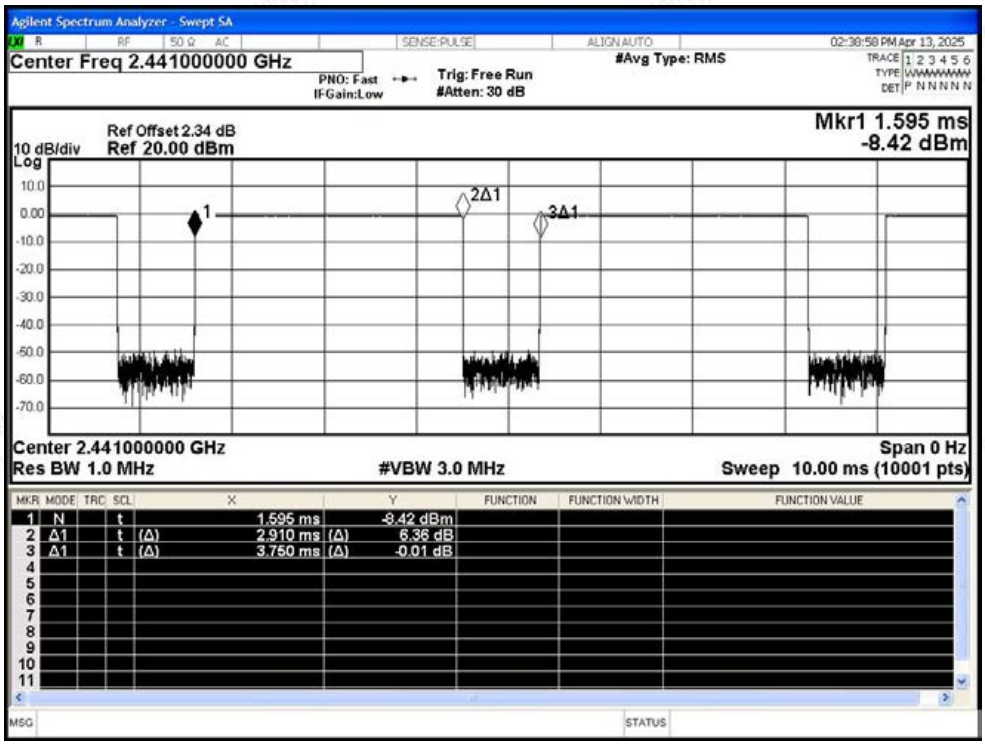
| Condition | Mode | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant1 | 77.6 | 1.1 | 0.34 |
| NVNT | 1-DH5 | 2441 | Ant1 | 77.6 | 1.1 | 0.34 |
| NVNT | 1-DH5 | 2480 | Ant1 | 77.63 | 1.1 | 0.34 |
| NVNT | 2-DH5 | 2402 | Ant1 | 77.28 | 1.12 | 0.35 |
| NVNT | 2-DH5 | 2441 | Ant1 | 77.28 | 1.12 | 0.35 |
| NVNT | 2-DH5 | 2480 | Ant1 | 77.28 | 1.12 | 0.35 |
| NVNT | 3-DH5 | 2402 | Ant1 | 77.28 | 1.12 | 0.35 |
| NVNT | 3-DH5 | 2441 | Ant1 | 77.28 | 1.12 | 0.35 |
| NVNT | 3-DH5 | 2480 | Ant1 | 77.23 | 1.12 | 0.35 |

Test Graphs

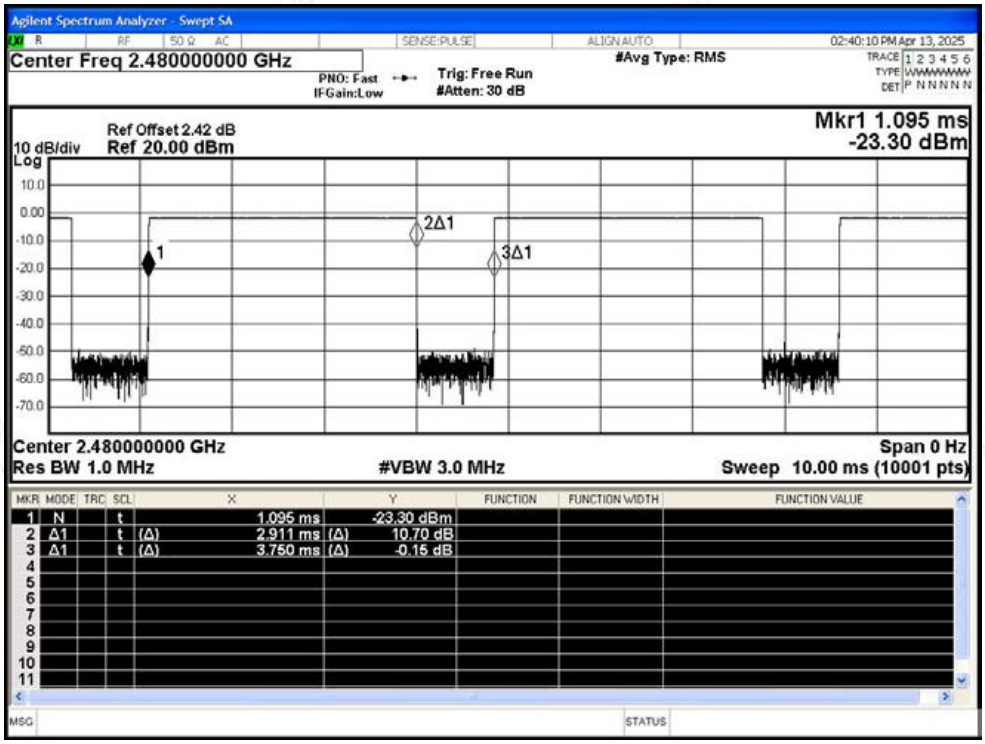
Duty Cycle NVNT 1-DH5 2402MHz Ant1



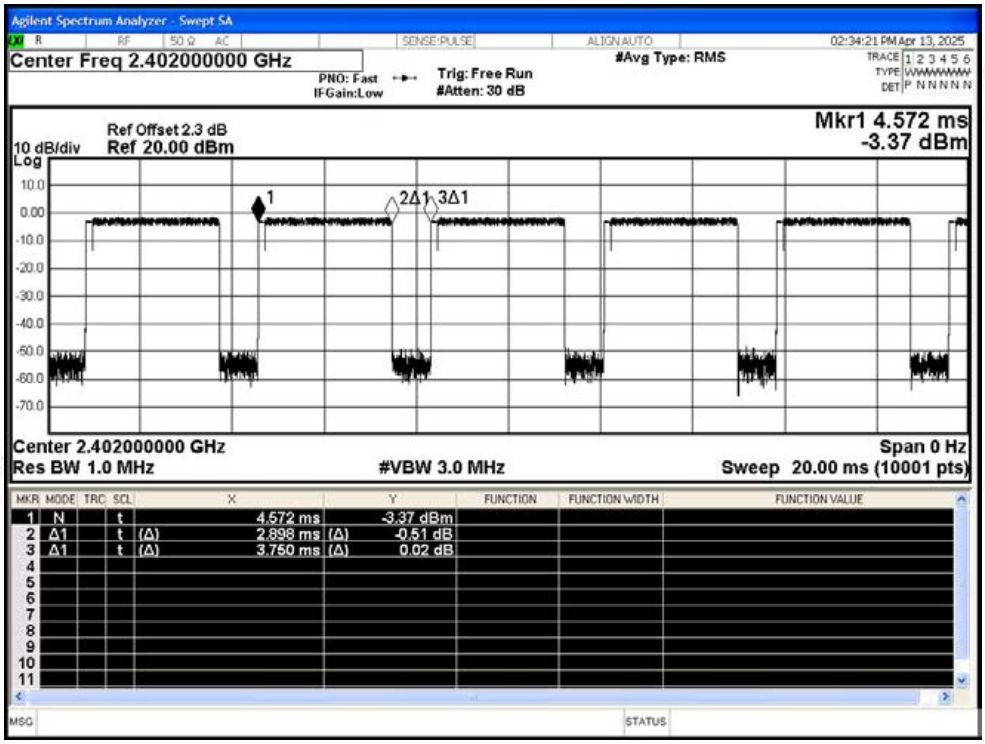

Duty Cycle NVNT 1-DH5 2441MHz Ant1



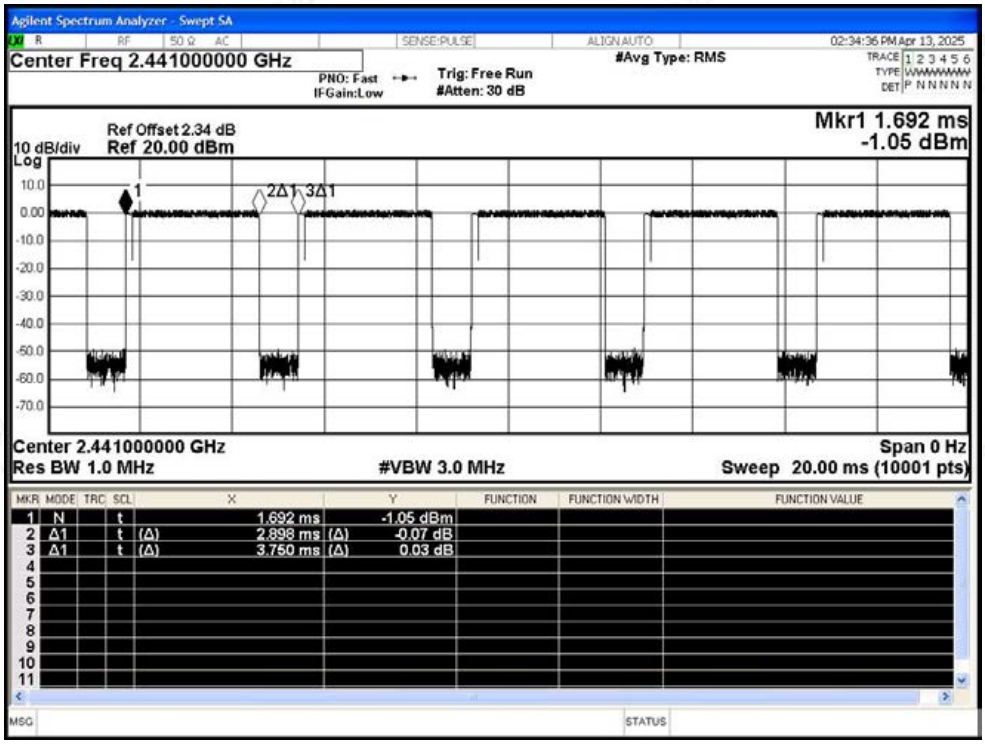
Duty Cycle NVNT 1-DH5 2480MHz Ant1



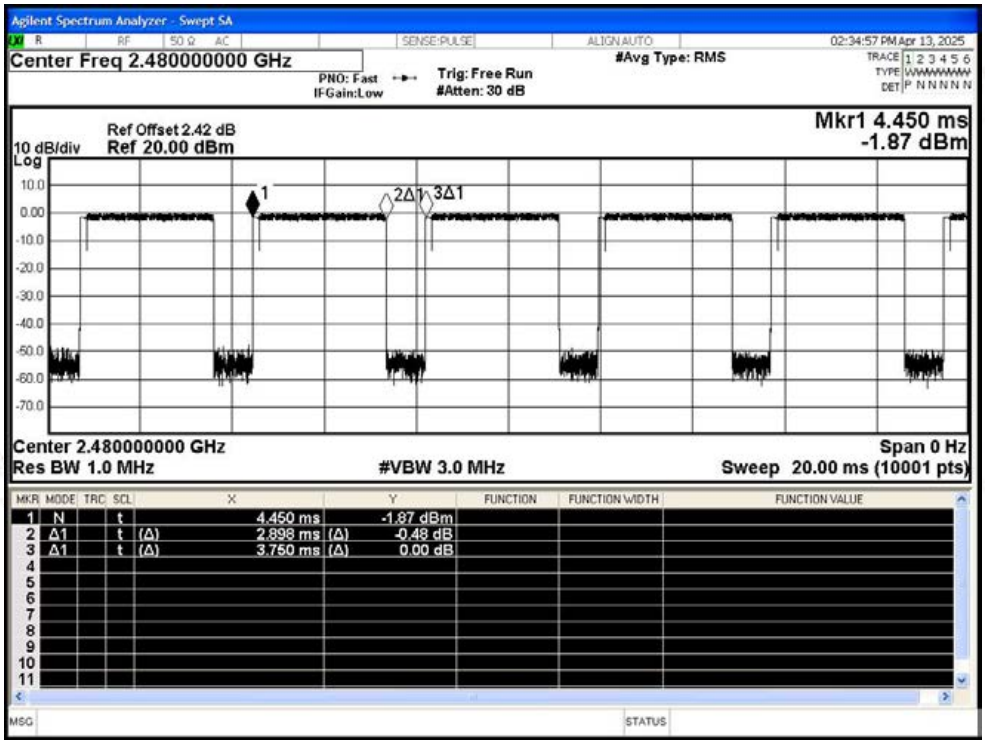

Duty Cycle NVNT 2-DH5 2402MHz Ant1



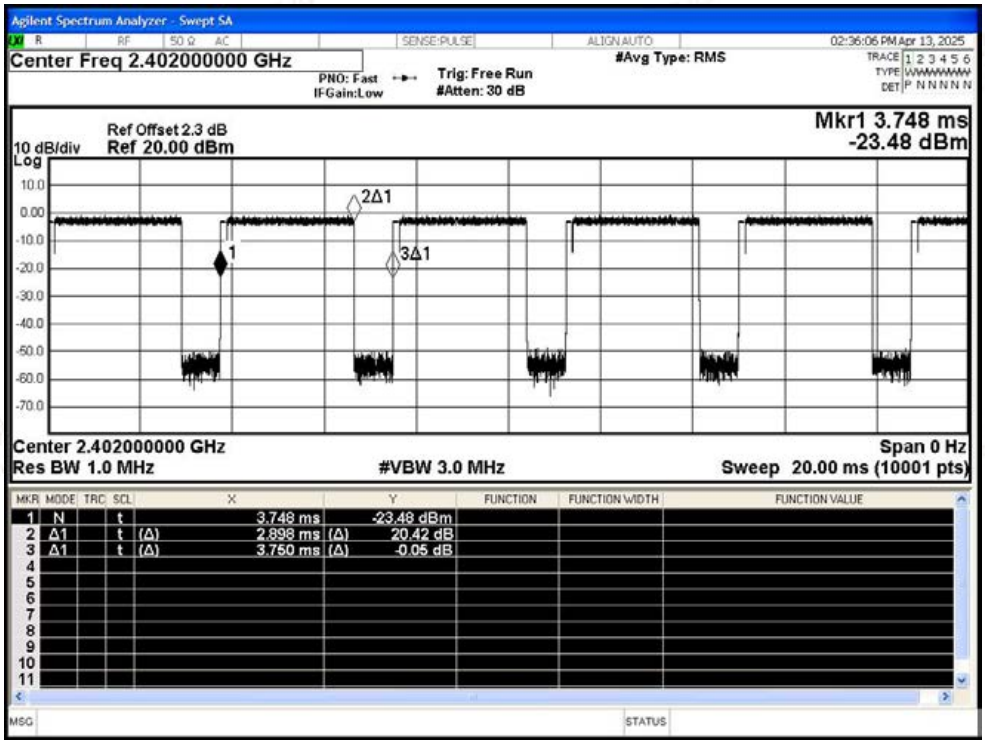
Duty Cycle NVNT 2-DH5 2441MHz Ant1



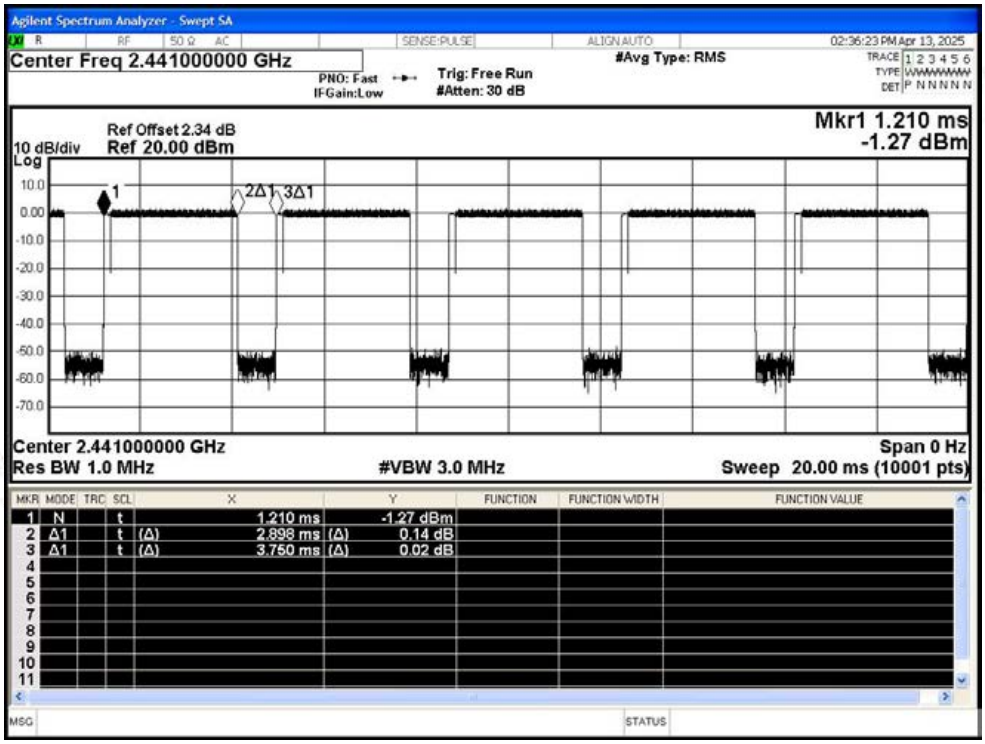

Duty Cycle NVNT 2-DH5 2480MHz Ant1



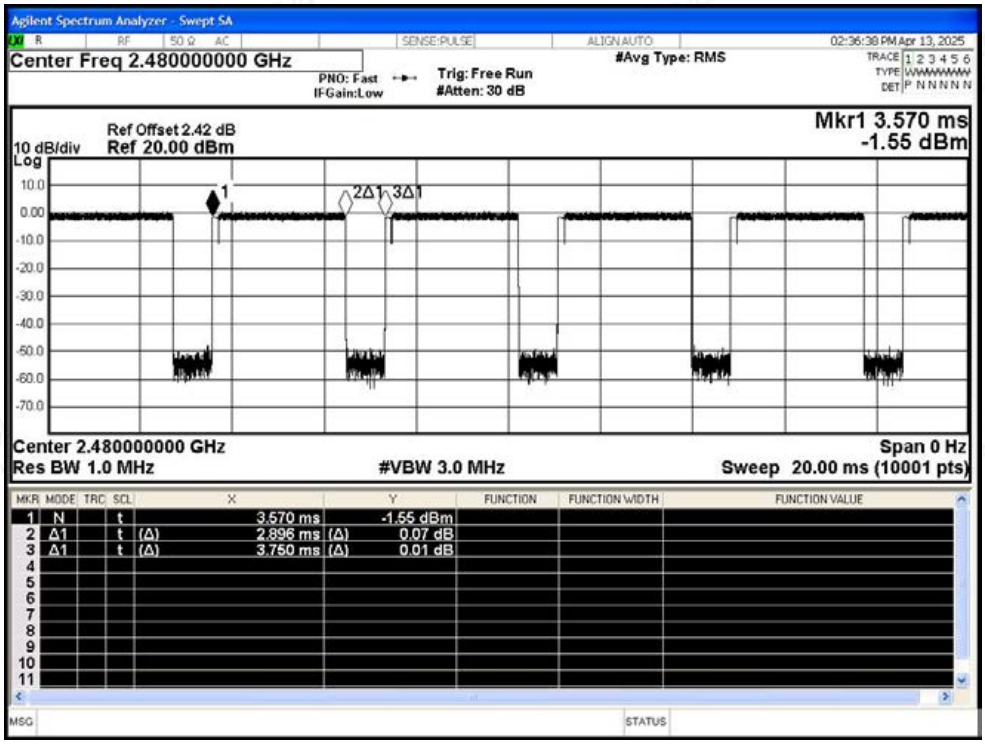
Duty Cycle NVNT 3-DH5 2402MHz Ant1




Duty Cycle NVNT 3-DH5 2441MHz Ant1



Duty Cycle NVNT 3-DH5 2480MHz Ant1

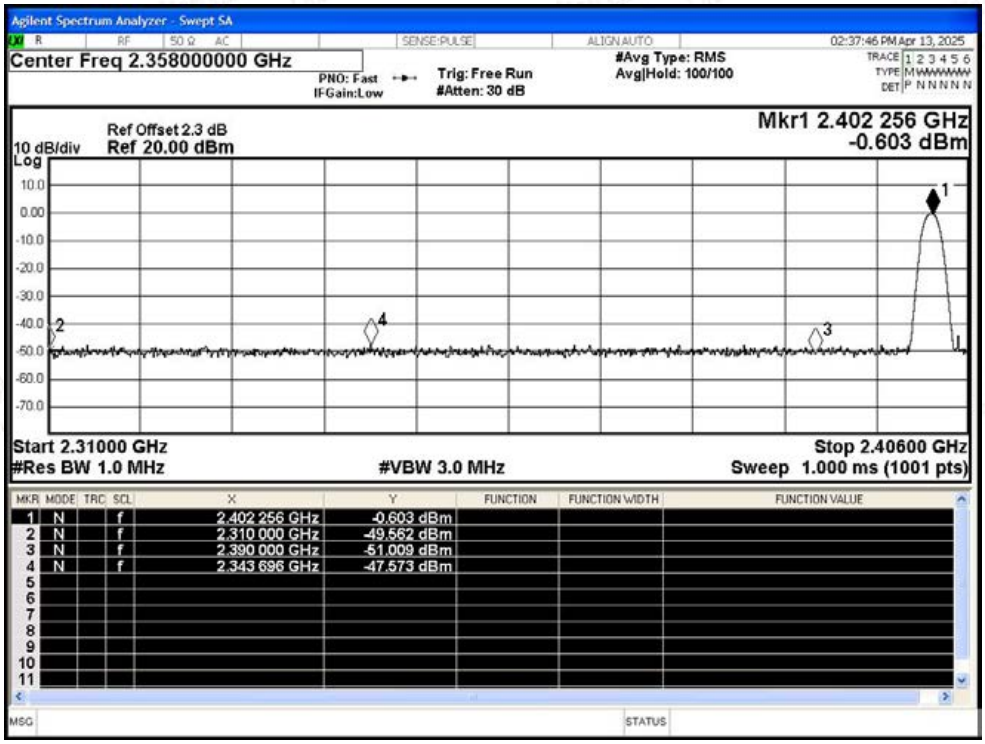


# A.9 Restrict Band

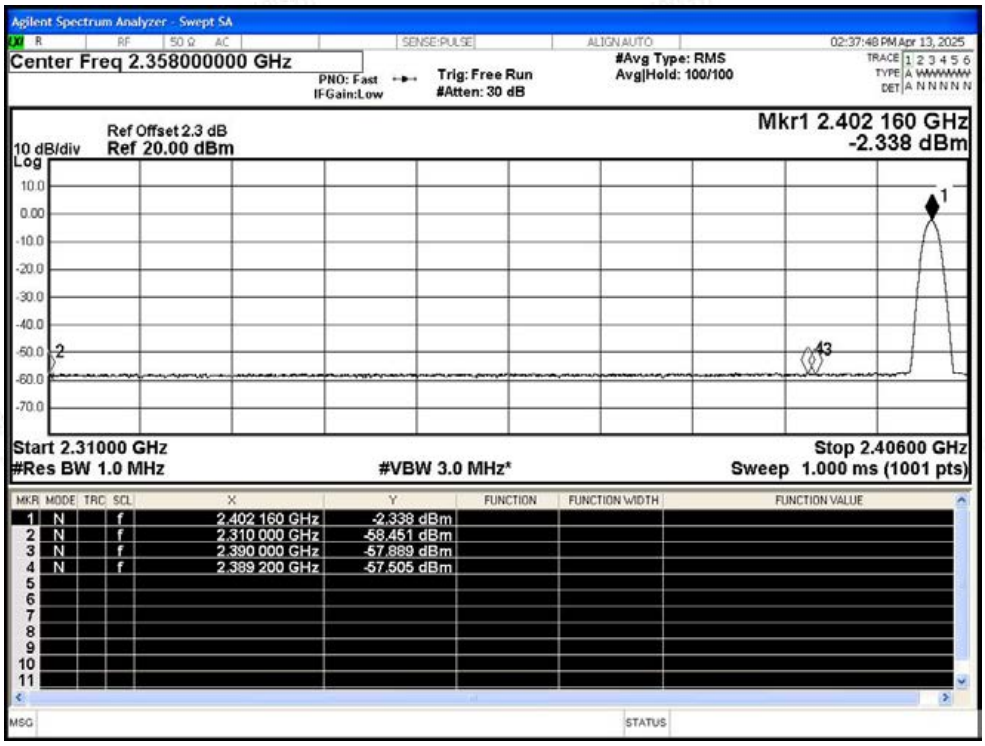
| Condition | Mode | Frequency (MHz) | Antenna | Hopping Mode | Spur Freq (MHz) | Power (dBm) | Gain (dBi) | Duty Factor (dB) | E (dBuV/m) | Detector | Limit (dBuV/m) | Verdict |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant1 | No-Hopping | 2310 | -49.56 | 2 | - | 47.7 | Peak | 74 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | No-Hopping | 2310 | -58.45 | 2 | 1.1 | 39.91 | Average | 54 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | No-Hopping | 2343.696 | -47.57 | 2 | - | 49.69 | Peak | 74 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | No-Hopping | 2389.2 | -57.51 | 2 | 1.1 | 40.85 | Average | 54 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | No-Hopping | 2390 | -51.01 | 2 | - | 46.25 | Peak | 74 | Pass |
| NVNT | 1-DH5 | 2402 | Ant1 | No-Hopping | 2390 | -57.89 | 2 | 1.1 | 40.47 | Average | 54 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | No-Hopping | 2483.5 | -50.3 | 2 | - | 46.96 | Peak | 74 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | No-Hopping | 2483.5 | -57.81 | 2 | 1.1 | 40.55 | Average | 54 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | No-Hopping | 2483.872 | -45.12 | 2 | - | 52.14 | Peak | 74 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | No-Hopping | 2483.536 | -56.83 | 2 | 1.1 | 41.53 | Average | 54 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | No-Hopping | 2500 | -51.26 | 2 | - | 46 | Peak | 74 | Pass |
| NVNT | 1-DH5 | 2480 | Ant1 | No-Hopping | 2500 | -58.58 | 2 | 1.1 | 39.78 | Average | 54 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | No-Hopping | 2310 | -51.23 | 2 | - | 46.03 | Peak | 74 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | No-Hopping | 2310 | -58.38 | 2 | 1.12 | 40 | Average | 54 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | No-Hopping | 2346.864 | -47.3 | 2 | - | 49.96 | Peak | 74 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | No-Hopping | 2370.48 | -57.45 | 2 | 1.12 | 40.93 | Average | 54 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | No-Hopping | 2390 | -48.49 | 2 | - | 48.77 | Peak | 74 | Pass |
| NVNT | 2-DH5 | 2402 | Ant1 | No-Hopping | 2390 | -57.62 | 2 | 1.12 | 40.76 | Average | 54 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | No-Hopping | 2483.5 | -49.48 | 2 | - | 47.78 | Peak | 74 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | No-Hopping | 2483.5 | -57.04 | 2 | 1.12 | 41.34 | Average | 54 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | No-Hopping | 2487.184 | -46.87 | 2 | - | 50.39 | Peak | 74 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | No-Hopping | 2486.128 | -56.9 | 2 | 1.12 | 41.48 | Average | 54 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | No-Hopping | 2500 | -48.61 | 2 | - | 48.65 | Peak | 74 | Pass |
| NVNT | 2-DH5 | 2480 | Ant1 | No-Hopping | 2500 | -57.8 | 2 | 1.12 | 40.58 | Average | 54 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | No-Hopping | 2310 | -49.92 | 2 | - | 47.34 | Peak | 74 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | No-Hopping | 2310 | -58.69 | 2 | 1.12 | 39.69 | Average | 54 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | No-Hopping | 2363.856 | -47.11 | 2 | - | 50.15 | Peak | 74 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | No-Hopping | 2364.72 | -57.33 | 2 | 1.12 | 41.05 | Average | 54 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | No-Hopping | 2390 | -48.42 | 2 | - | 48.84 | Peak | 74 | Pass |
| NVNT | 3-DH5 | 2402 | Ant1 | No-Hopping | 2390 | -58.31 | 2 | 1.12 | 40.07 | Average | 54 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | No-Hopping | 2483.5 | -46.53 | 2 | - | 50.73 | Peak | 74 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | No-Hopping | 2483.5 | -57.11 | 2 | 1.12 | 41.27 | Average | 54 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | No-Hopping | 2483.656 | -45.92 | 2 | - | 51.34 | Peak | 74 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | No-Hopping | 2483.704 | -56.65 | 2 | 1.12 | 41.73 | Average | 54 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | No-Hopping | 2500 | -50.02 | 2 | - | 47.24 | Peak | 74 | Pass |
| NVNT | 3-DH5 | 2480 | Ant1 | No-Hopping | 2500 | -57.64 | 2 | 1.12 | 40.74 | Average | 54 | Pass |

Test Graphs

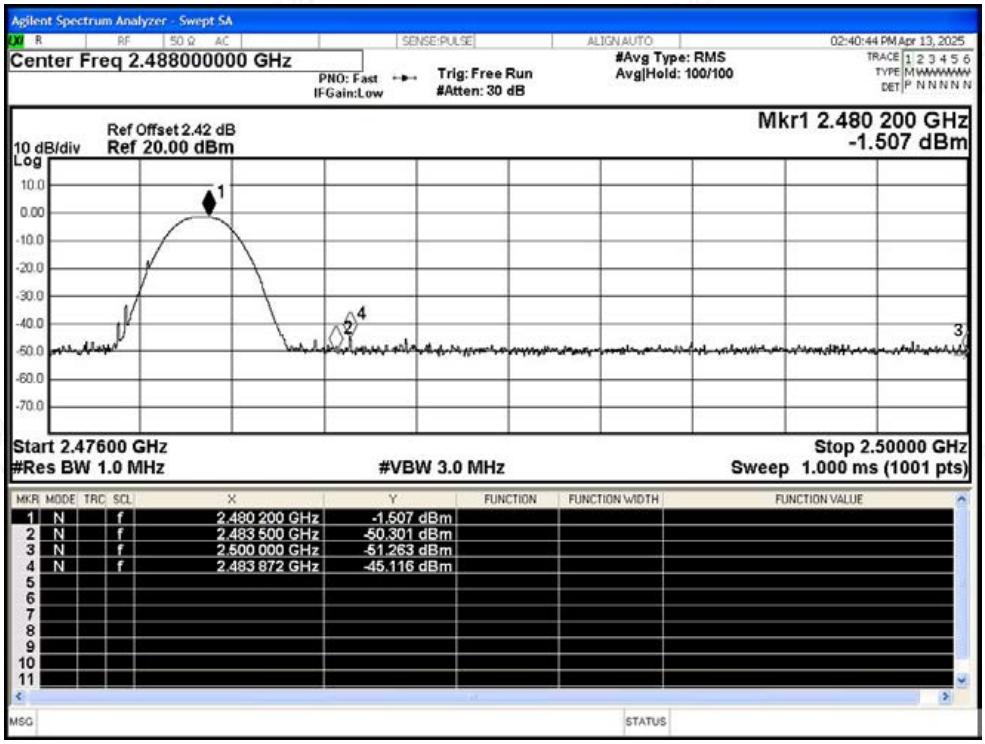
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak



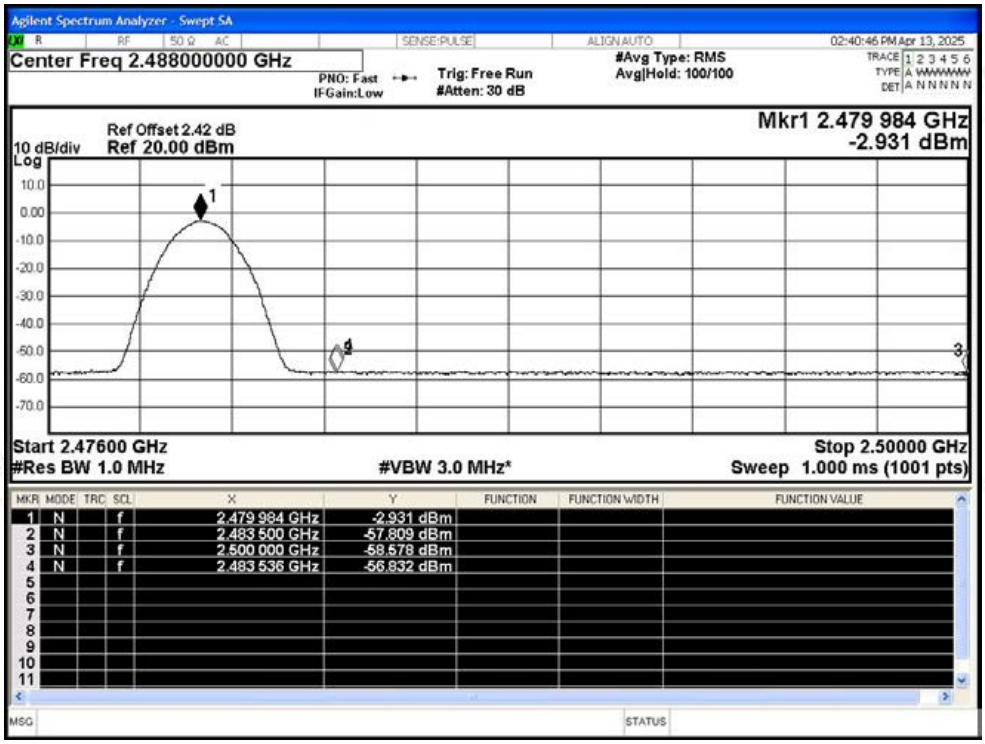

Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



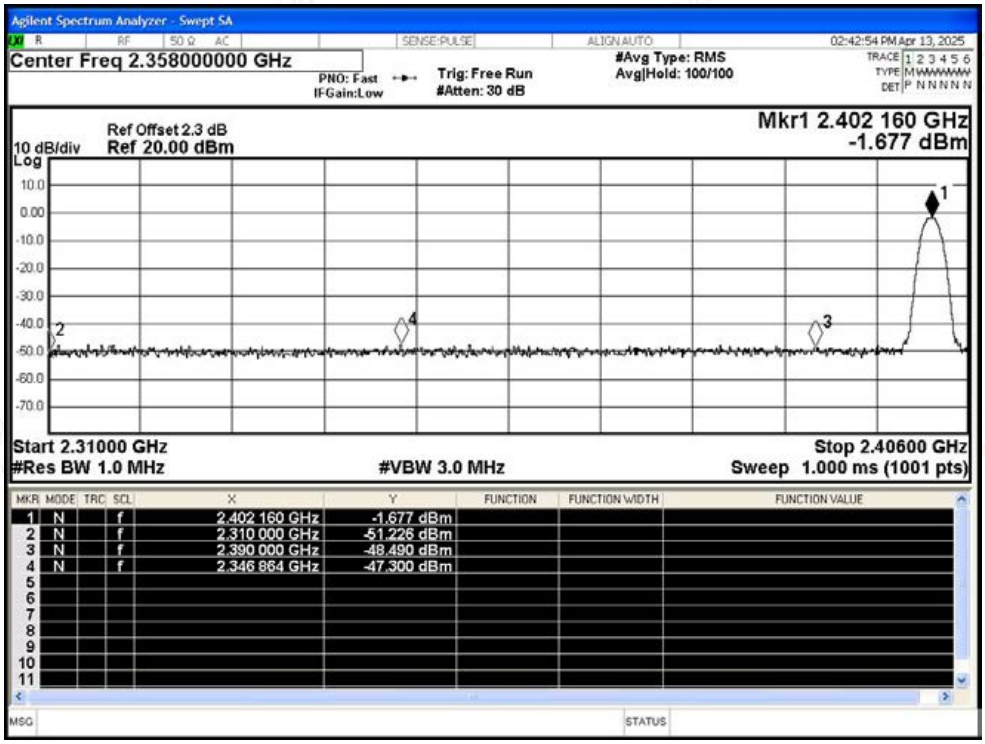
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak



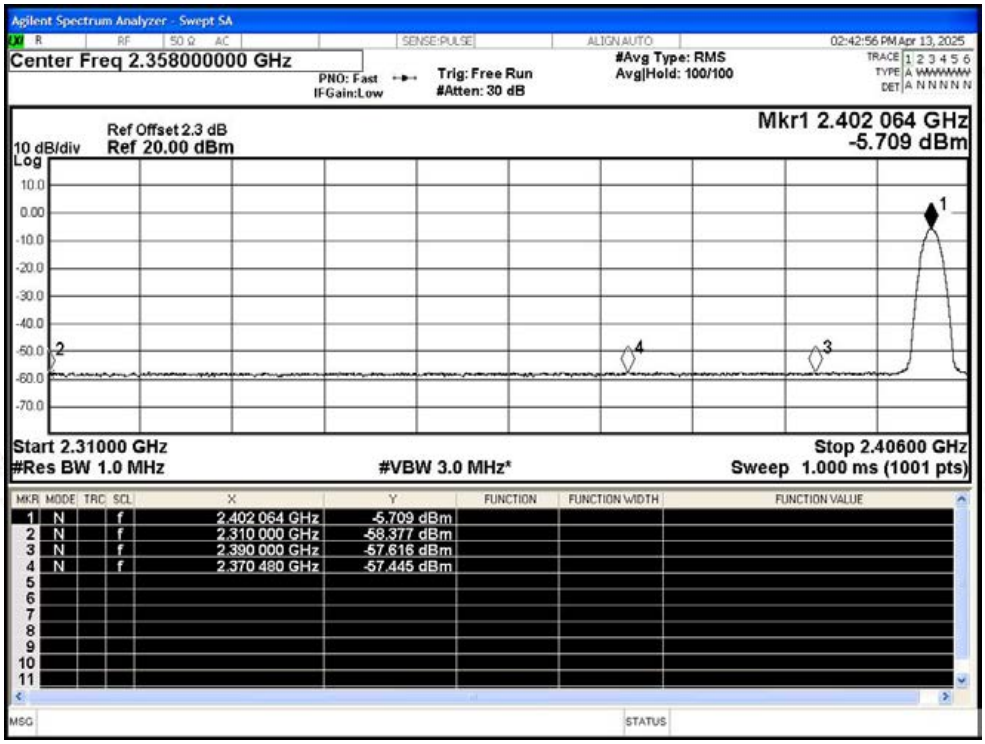

Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average



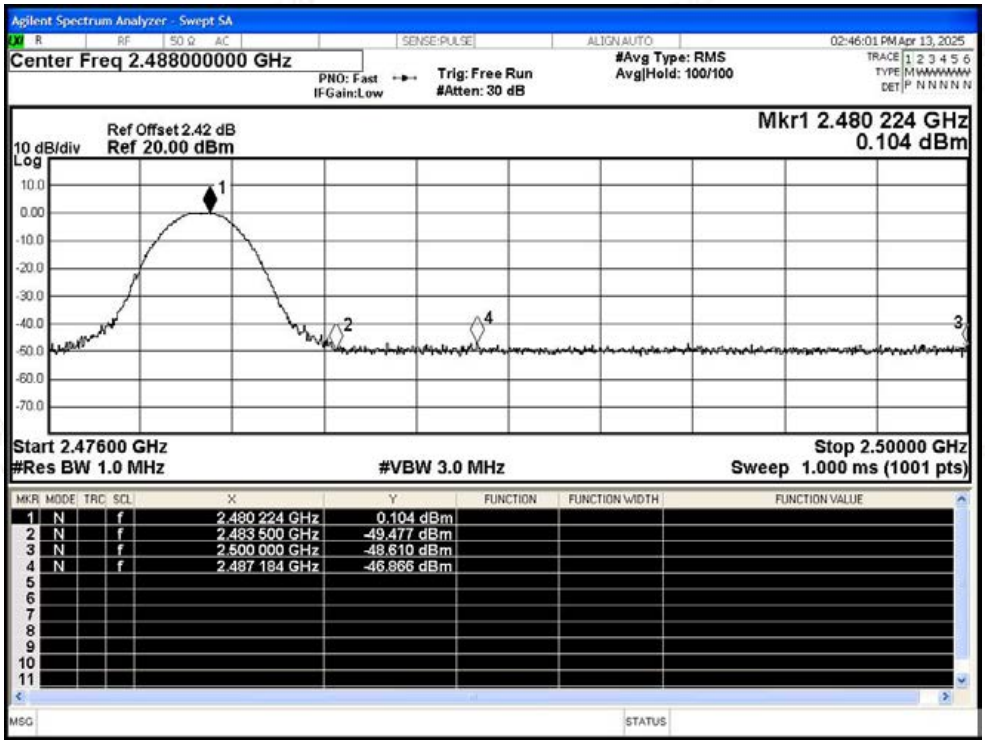
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak



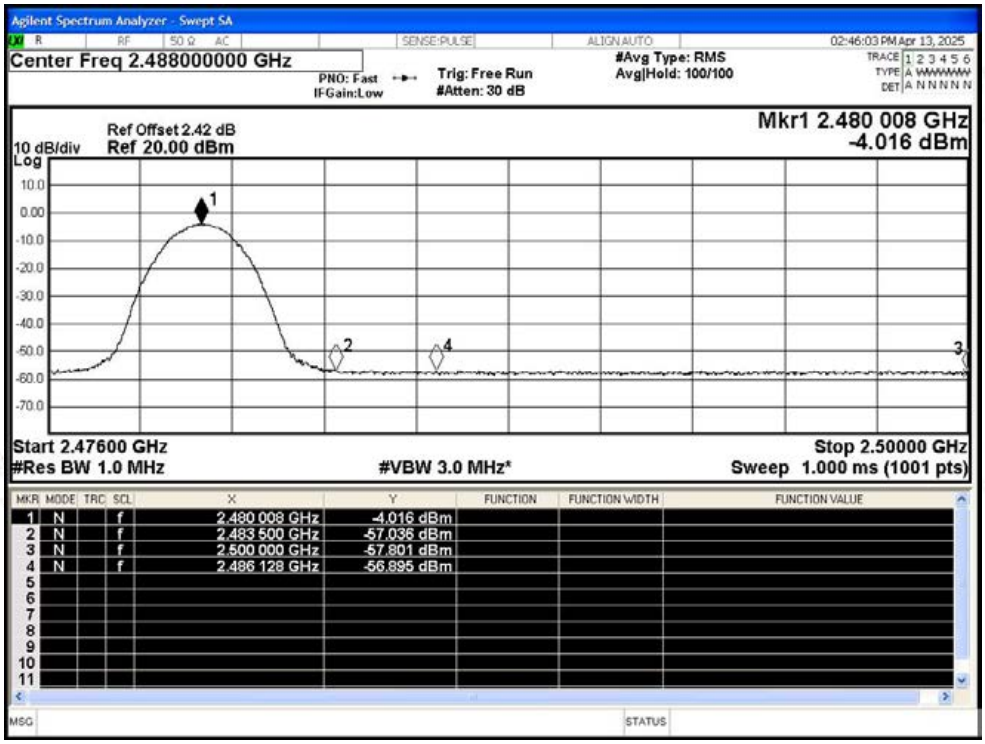

Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average



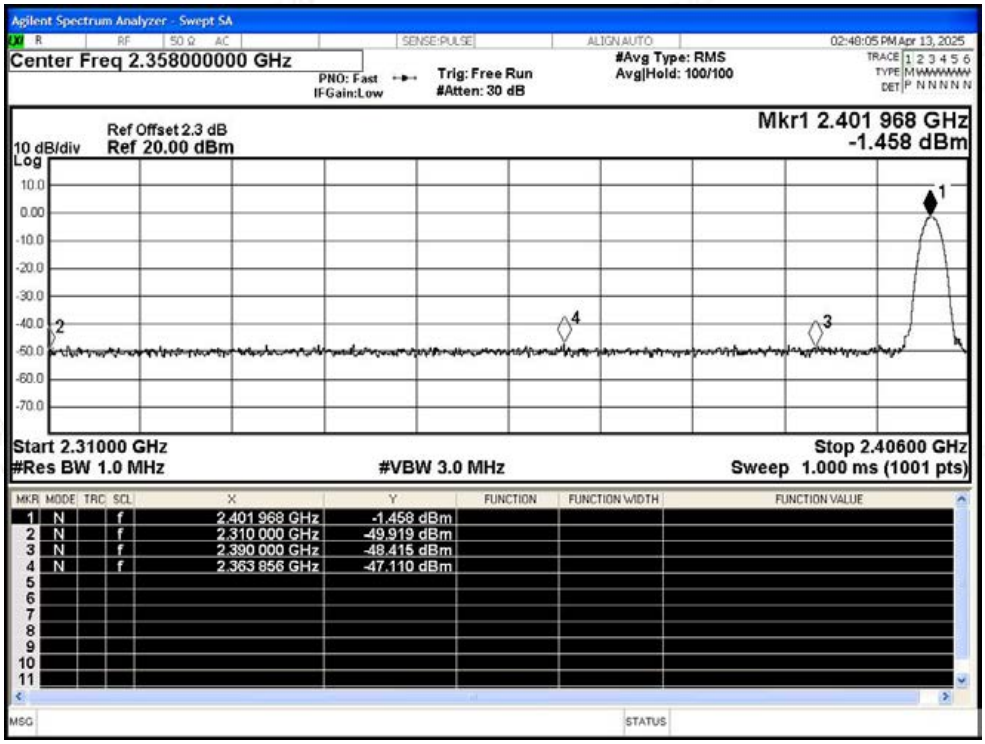
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak



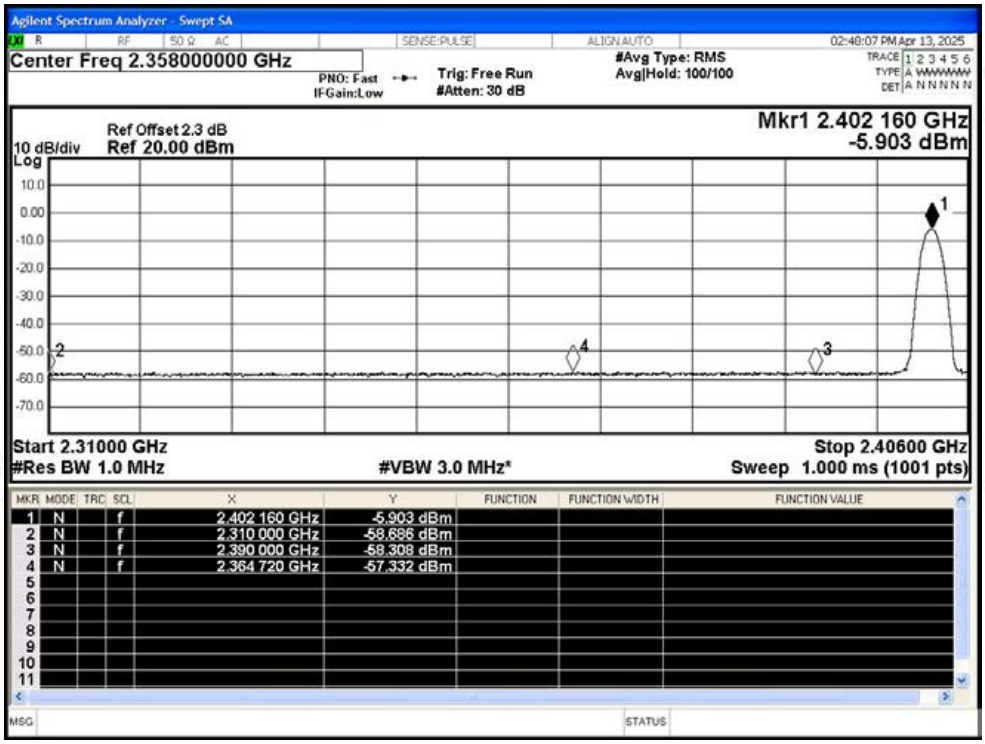

Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Average



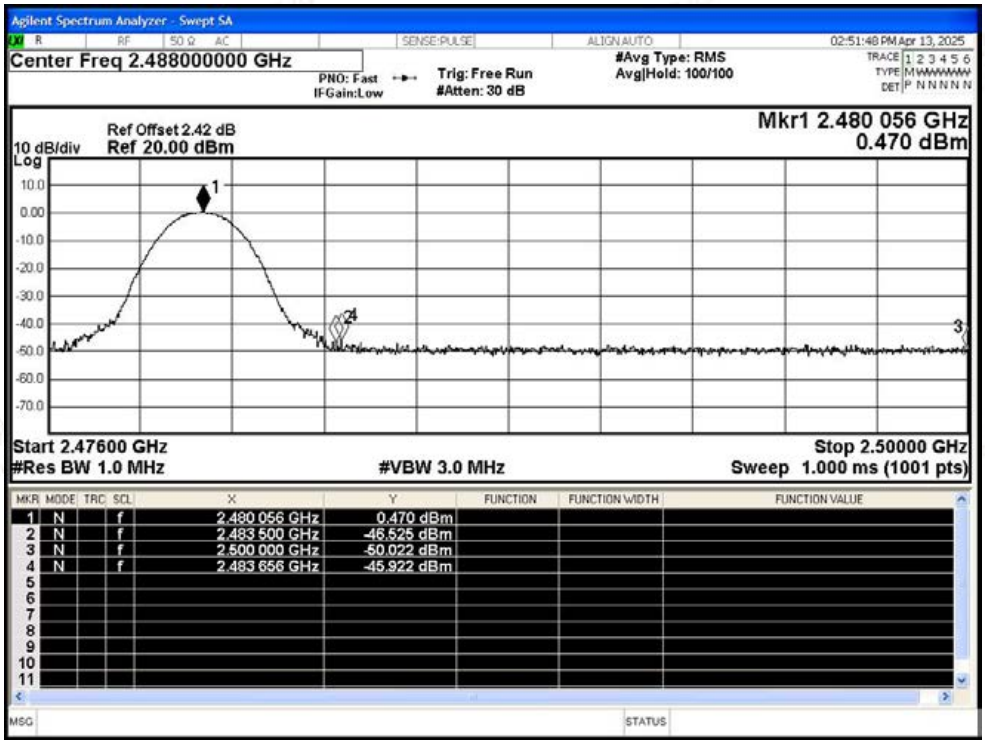
Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak

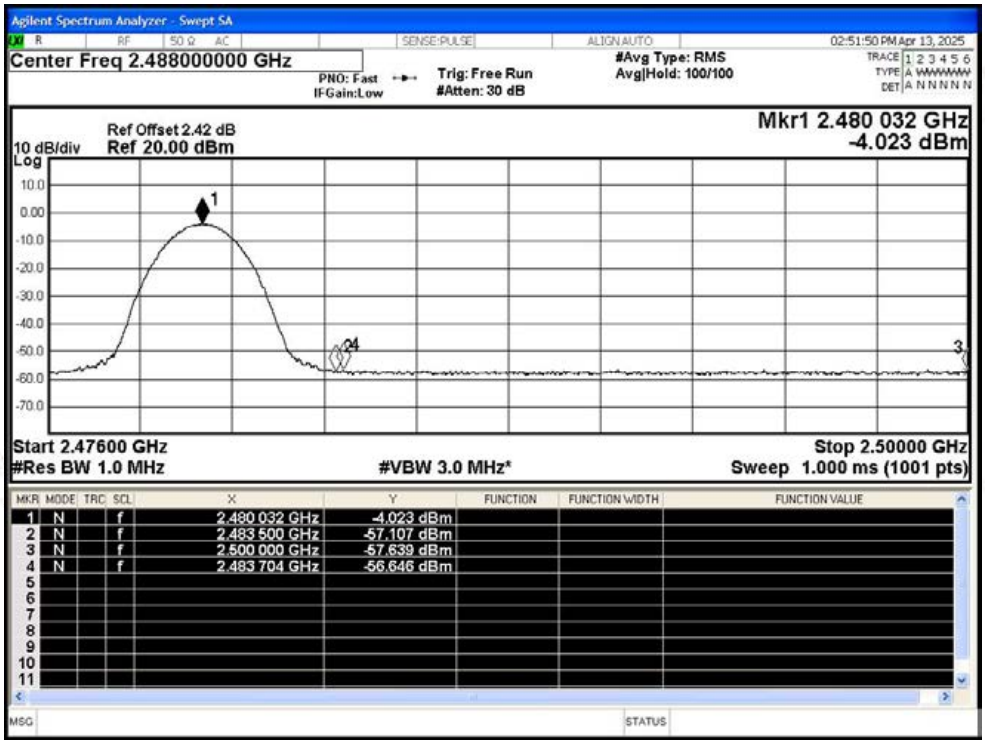



Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Average



Restrict Band NVNT 3-DH5 2480MHz Ant1 No-Hopping Peak




Restrict Band NVNT 3-DH5 2480MHz Ant1 No-Hopping Average