# Appendix A

## RF Test Data for BT (Conducted Measurement)

**Product Name: Vivi Wireless Presentation**

**Test Model: VWP-300-16**

**Environmental Conditions**

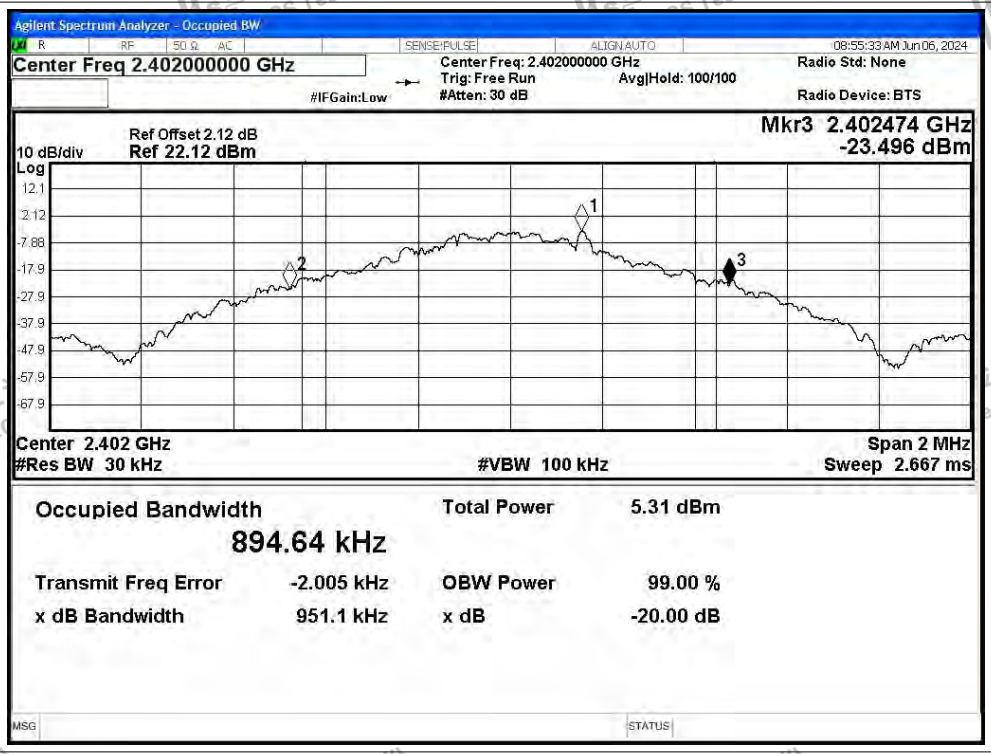
| | |
|---|---|
| Temperature: | 23.8° C |
| Relative Humidity: | 52.1% |
| ATM Pressure: | 100.0 kPa |
| Test Engineer: | Paddi Chen |
| Supervised by: | Nick Peng |

# A.1 -20dB Bandwidth

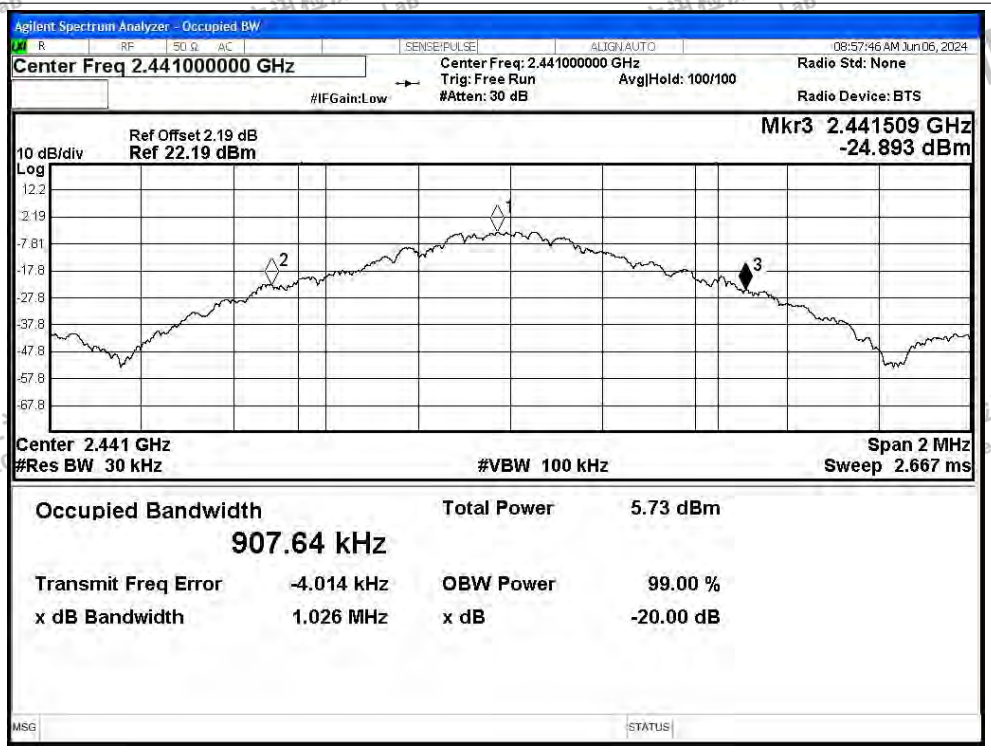
| Condition | Mode | Frequency (MHz) | Antenna | -20 dB Bandwidth (MHz) | Limit -20 dB Bandwidth (MHz) | Verdict |
|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant0 | 0.951 | N/A | Pass |
| NVNT | 1-DH5 | 2441 | Ant0 | 1.026 | N/A | Pass |
| NVNT | 1-DH5 | 2480 | Ant0 | 1.027 | N/A | Pass |
| NVNT | 2-DH5 | 2402 | Ant0 | 1.288 | N/A | Pass |
| NVNT | 2-DH5 | 2441 | Ant0 | 1.286 | N/A | Pass |
| NVNT | 2-DH5 | 2480 | Ant0 | 1.281 | N/A | Pass |
| NVNT | 3-DH5 | 2402 | Ant0 | 1.279 | N/A | Pass |
| NVNT | 3-DH5 | 2441 | Ant0 | 1.287 | N/A | Pass |
| NVNT | 3-DH5 | 2480 | Ant0 | 1.296 | N/A | Pass |

Test Graphs

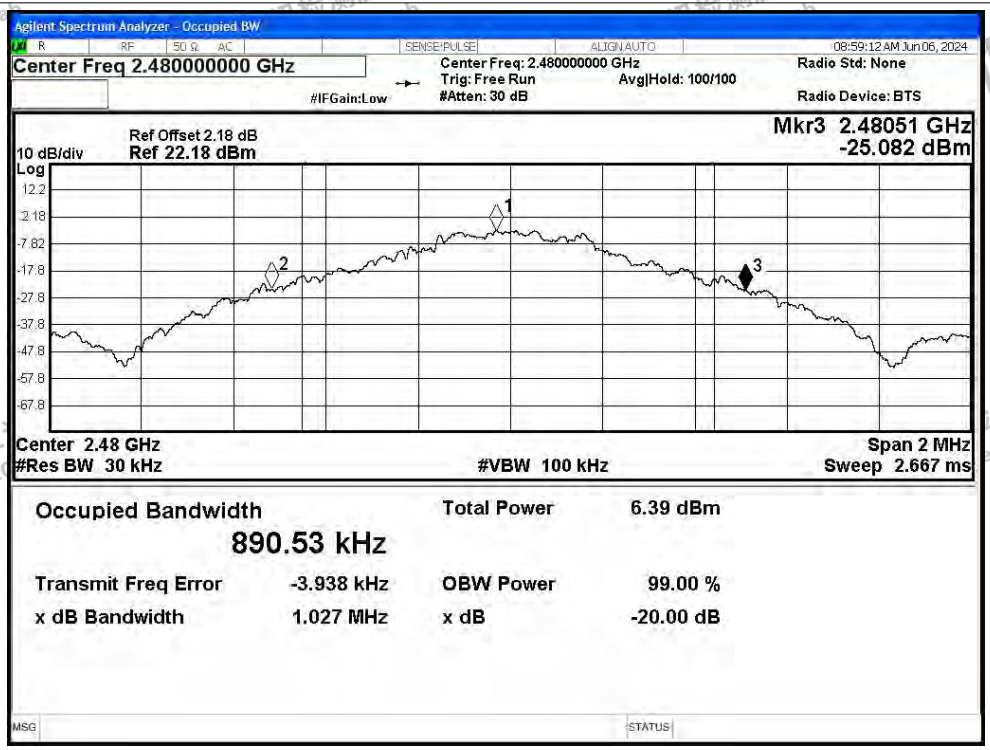
-20dB Bandwidth NVNT 1-DH5 2402MHz Ant0



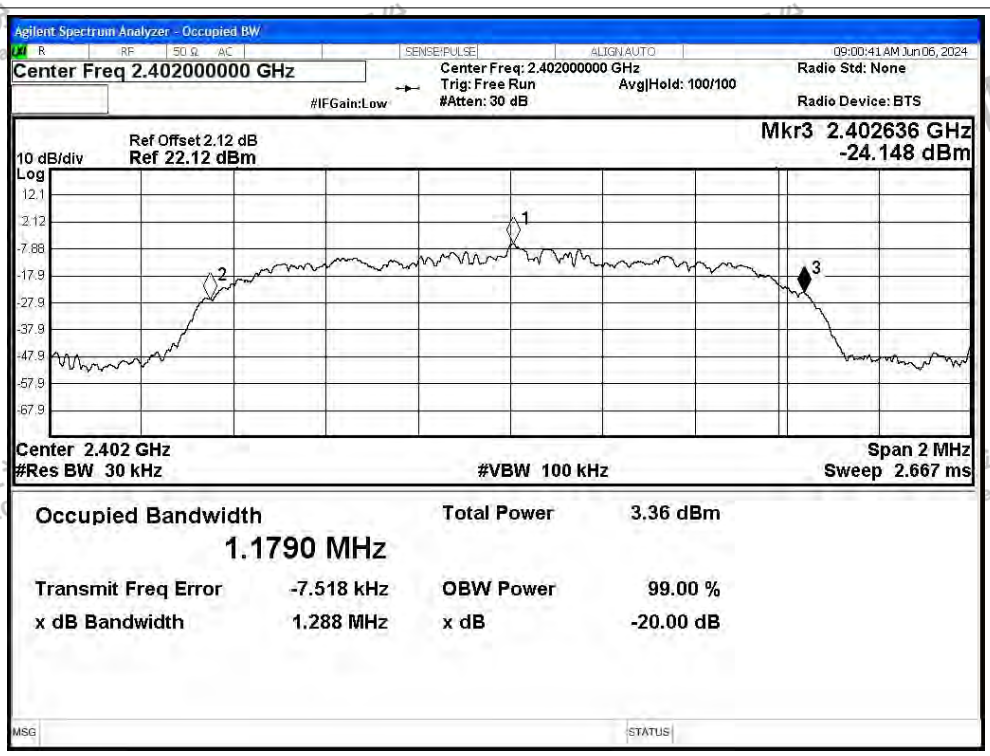

-20dB Bandwidth NVNT 1-DH5 2441MHz Ant0



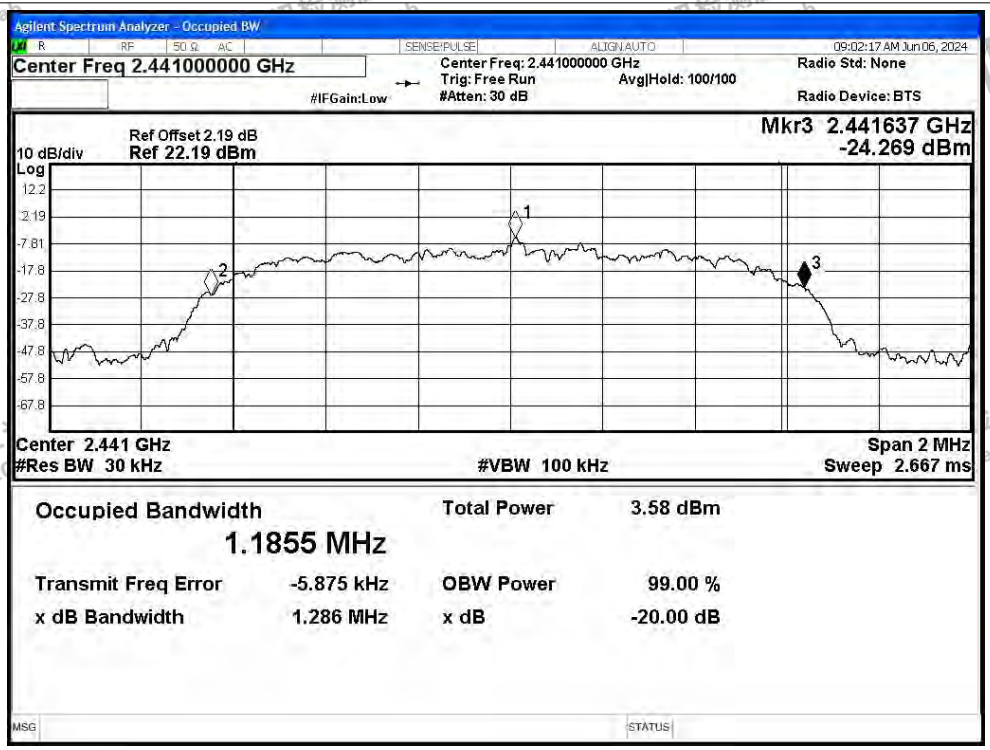
-20dB Bandwidth NVNT 1-DH5 2480MHz Ant0



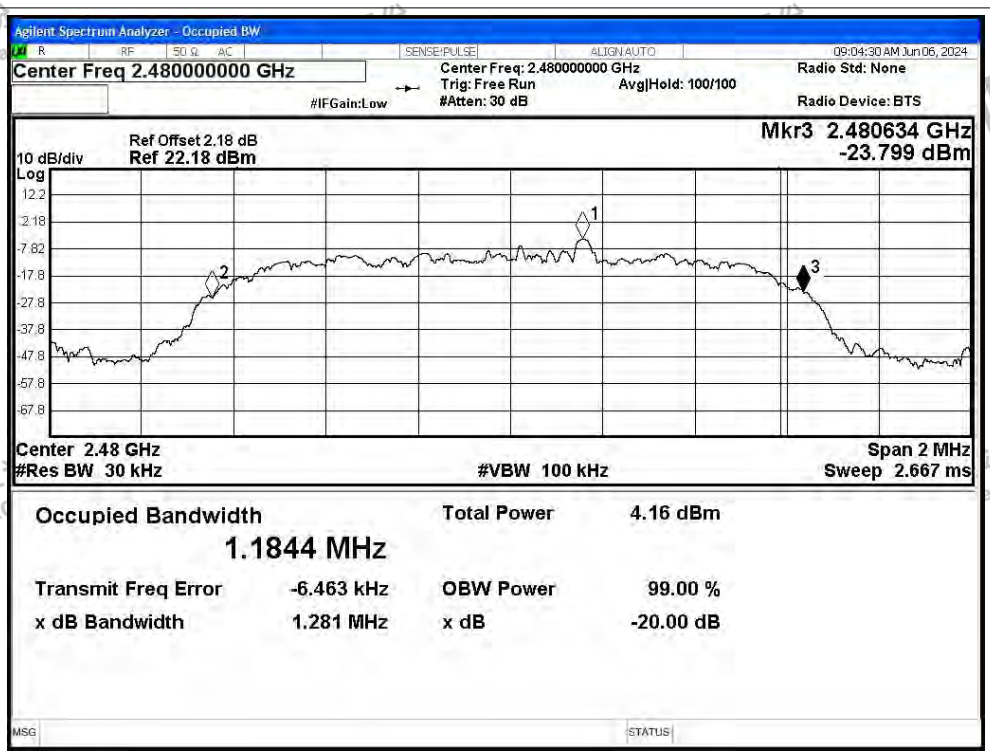

-20dB Bandwidth NVNT 2-DH5 2402MHz Ant0



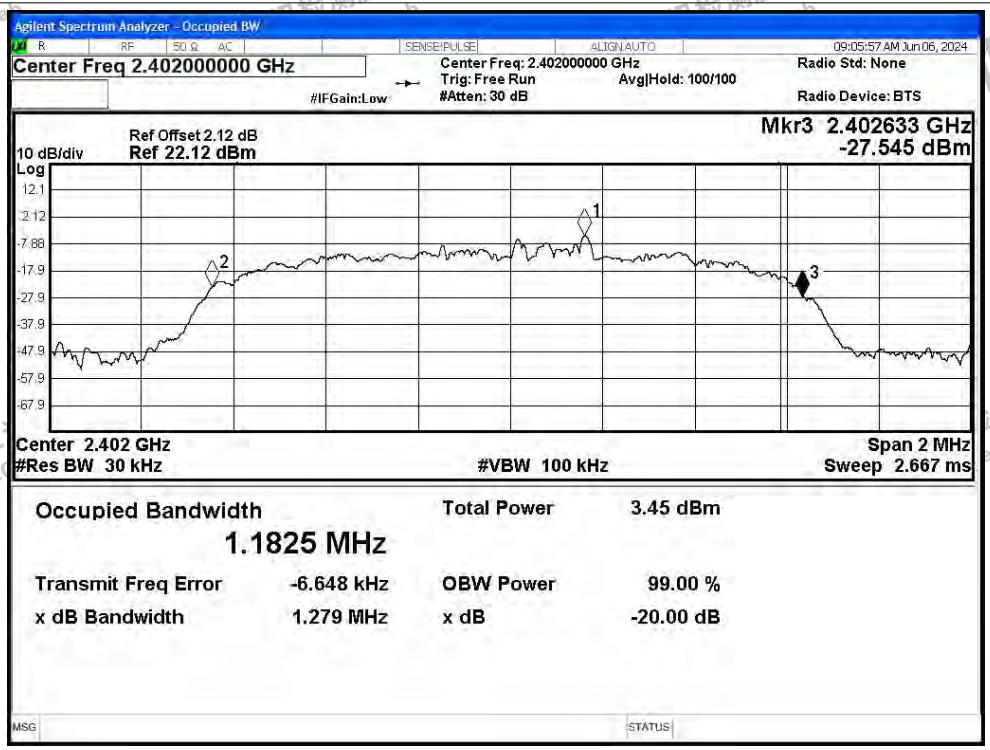
-20dB Bandwidth NVNT 2-DH5 2441MHz Ant0



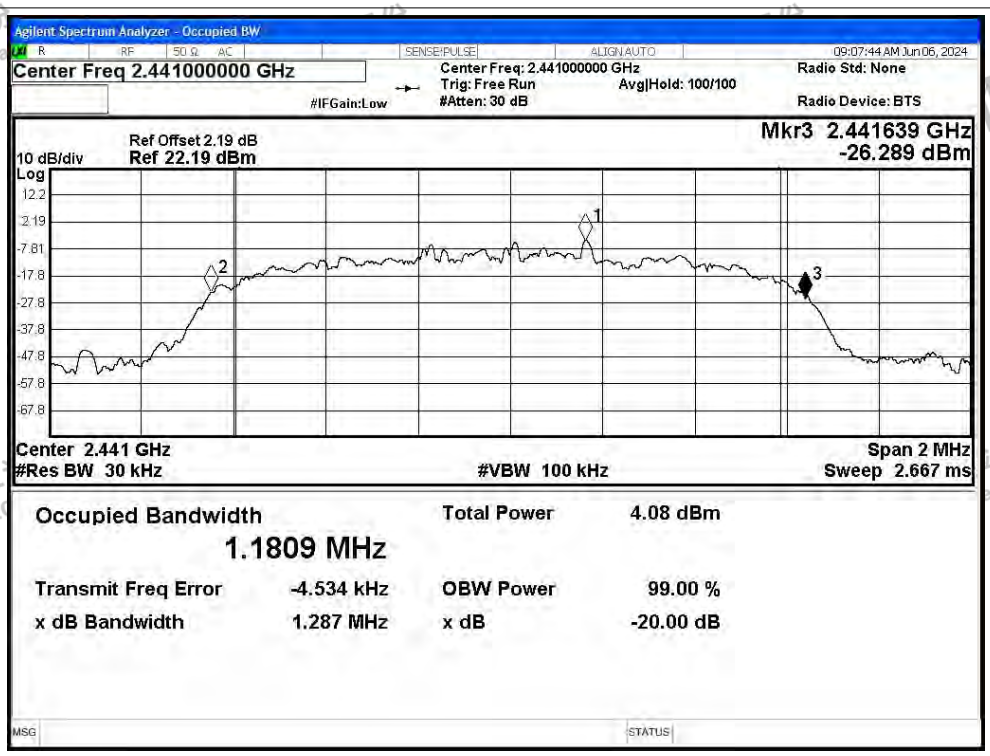

-20dB Bandwidth NVNT 2-DH5 2480MHz Ant0



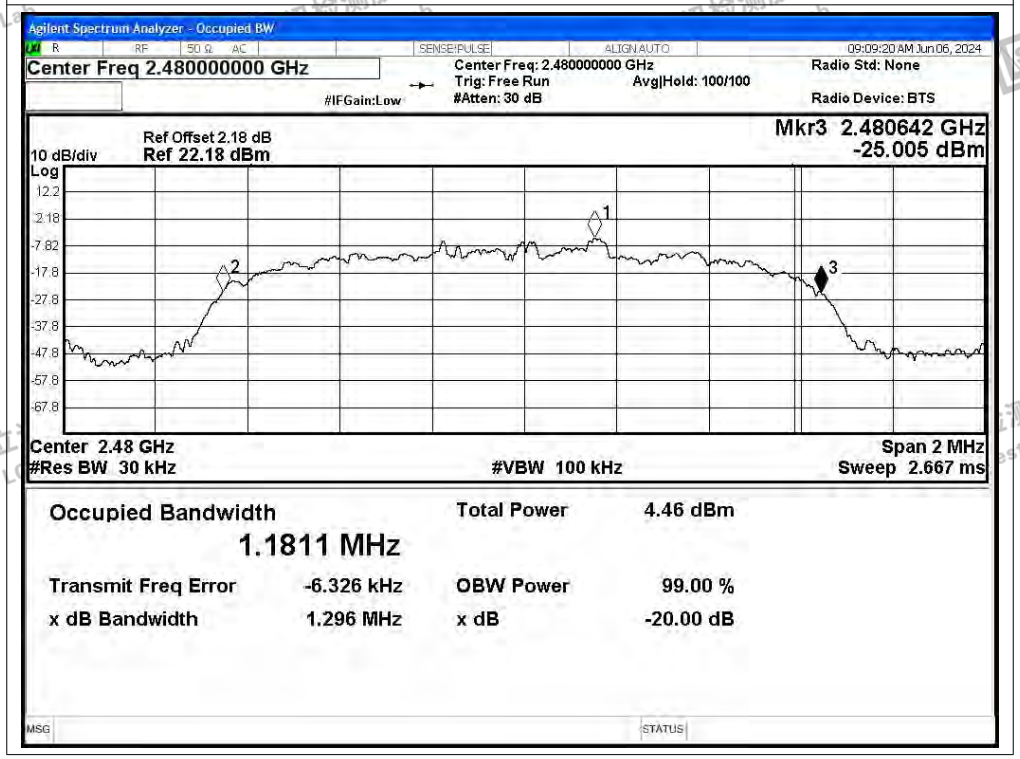
-20dB Bandwidth NVNT 3-DH5 2402MHz Ant0




-20dB Bandwidth NVNT 3-DH5 2441MHz Ant0



-20dB Bandwidth NVNT 3-DH5 2480MHz Ant0

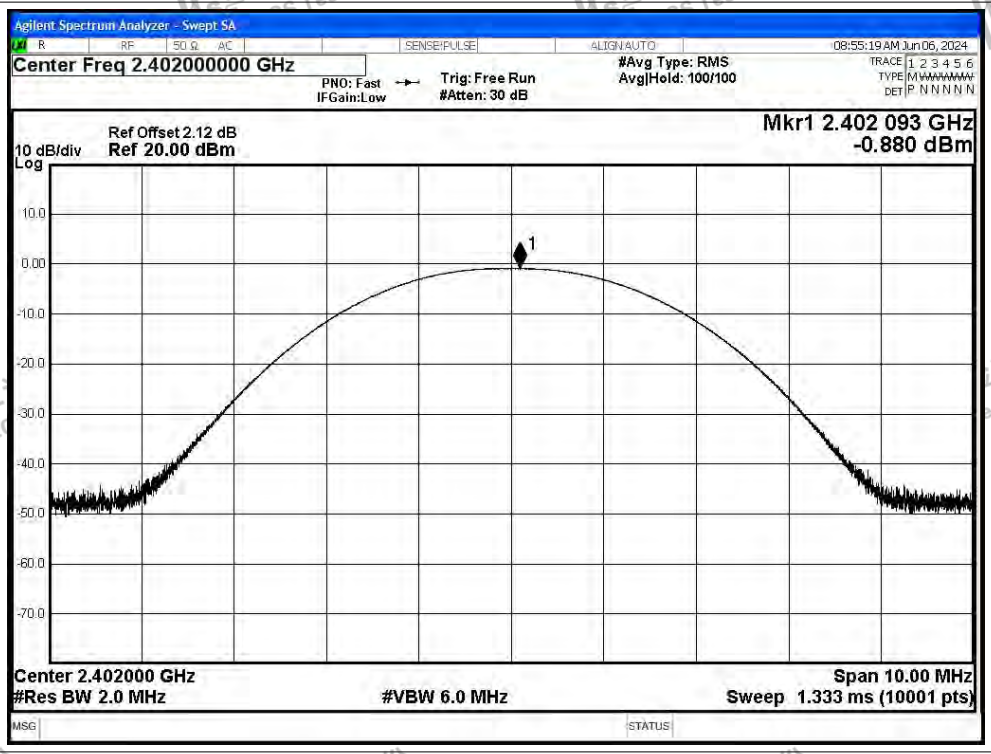


# A.2 Maximum Conducted Output Power

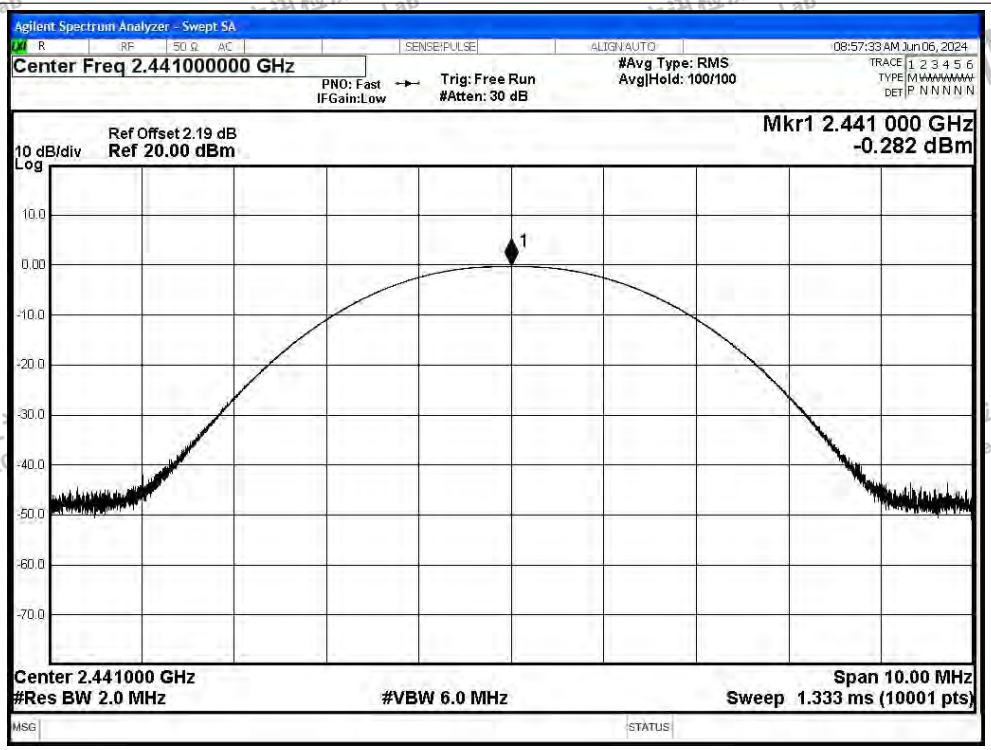
| Condition | Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Limit (dBm) | Verdict |
|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant0 | -0.88 | 21 | Pass |
| NVNT | 1-DH5 | 2441 | Ant0 | -0.28 | 21 | Pass |
| NVNT | 1-DH5 | 2480 | Ant0 | 0.04 | 21 | Pass |
| NVNT | 2-DH5 | 2402 | Ant0 | -1.09 | 21 | Pass |
| NVNT | 2-DH5 | 2441 | Ant0 | -0.5 | 21 | Pass |
| NVNT | 2-DH5 | 2480 | Ant0 | -0.2 | 21 | Pass |
| NVNT | 3-DH5 | 2402 | Ant0 | -1.04 | 21 | Pass |
| NVNT | 3-DH5 | 2441 | Ant0 | -0.42 | 21 | Pass |
| NVNT | 3-DH5 | 2480 | Ant0 | -0.09 | 21 | Pass |

Test Graphs

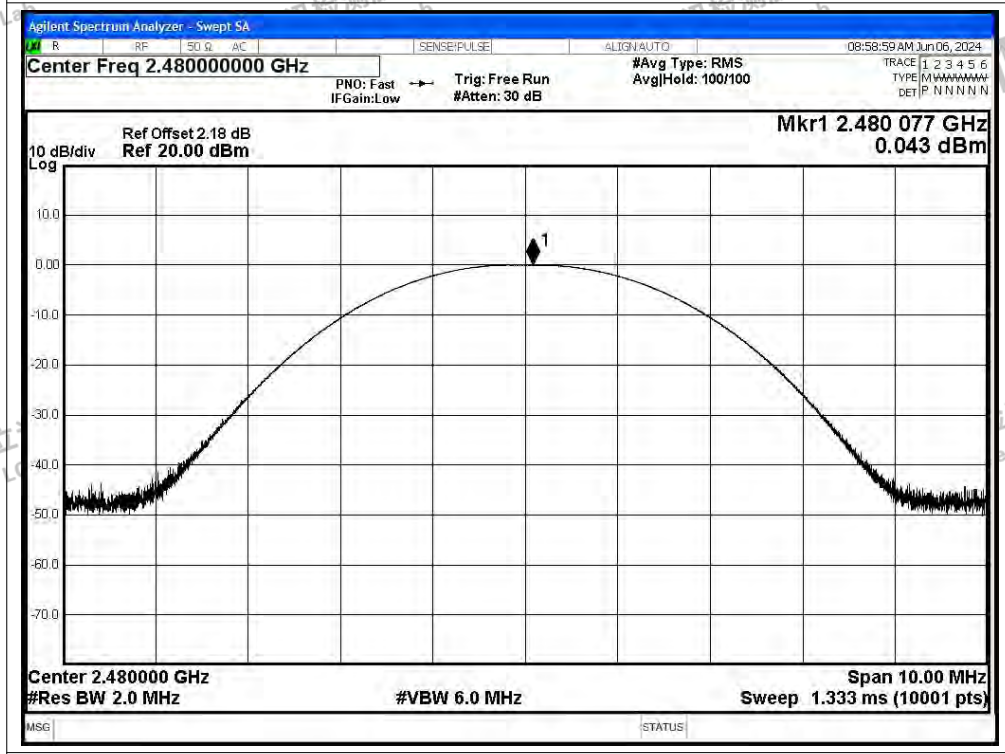
Power NVNT 1-DH5 2402MHz Ant0



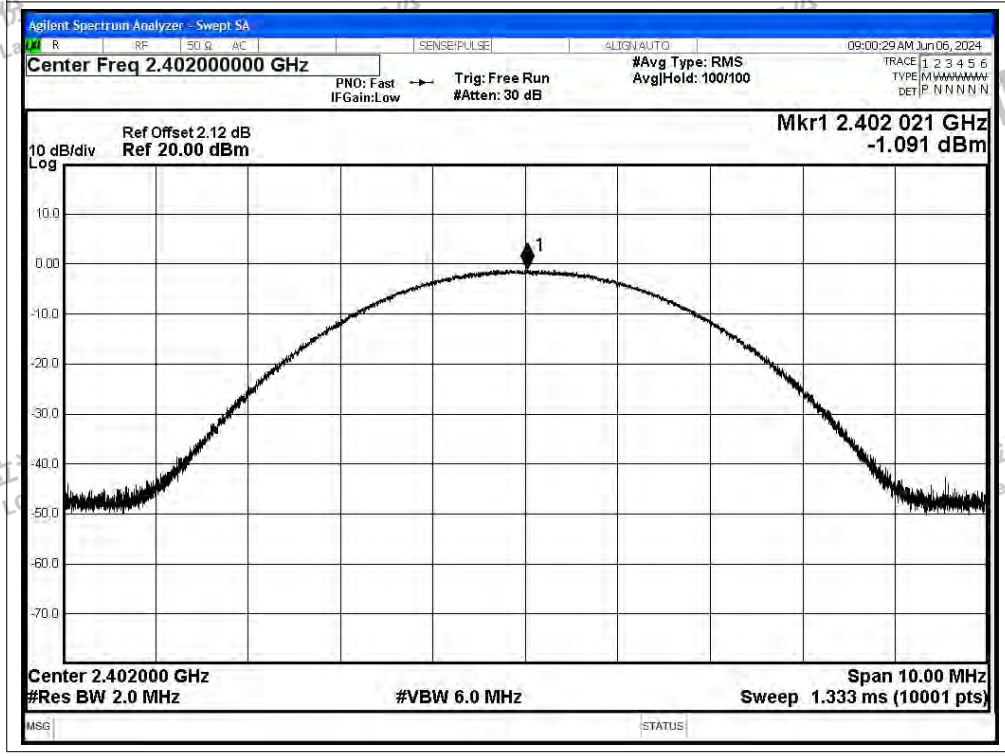

Power NVNT 1-DH5 2441MHz Ant0



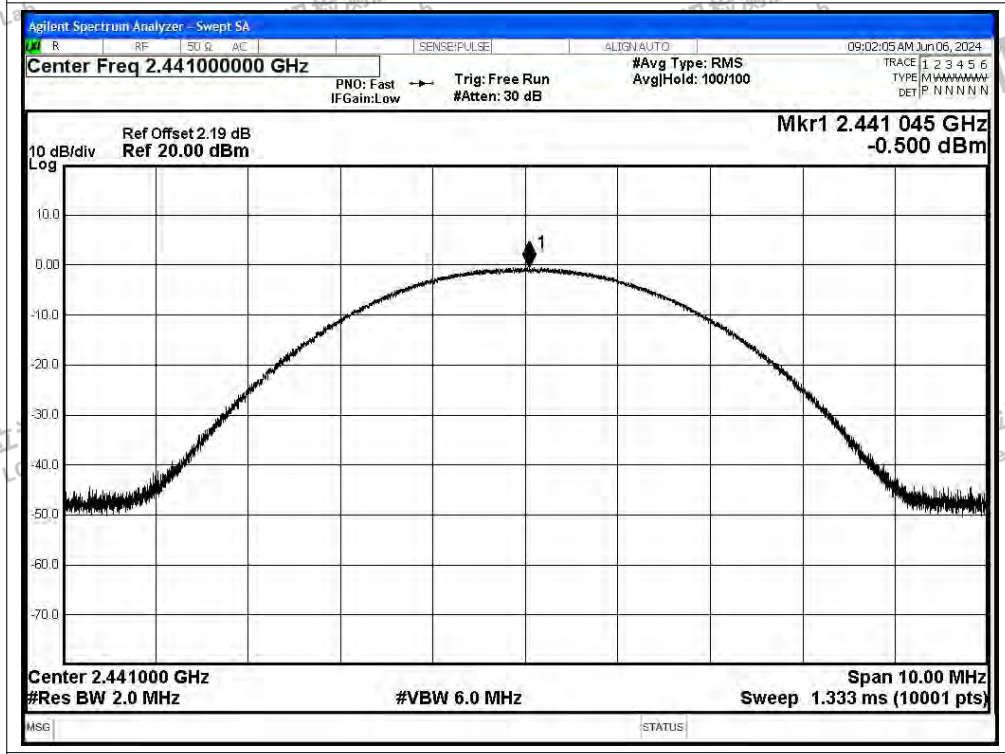
Power NVNT 1-DH5 2480MHz Ant0



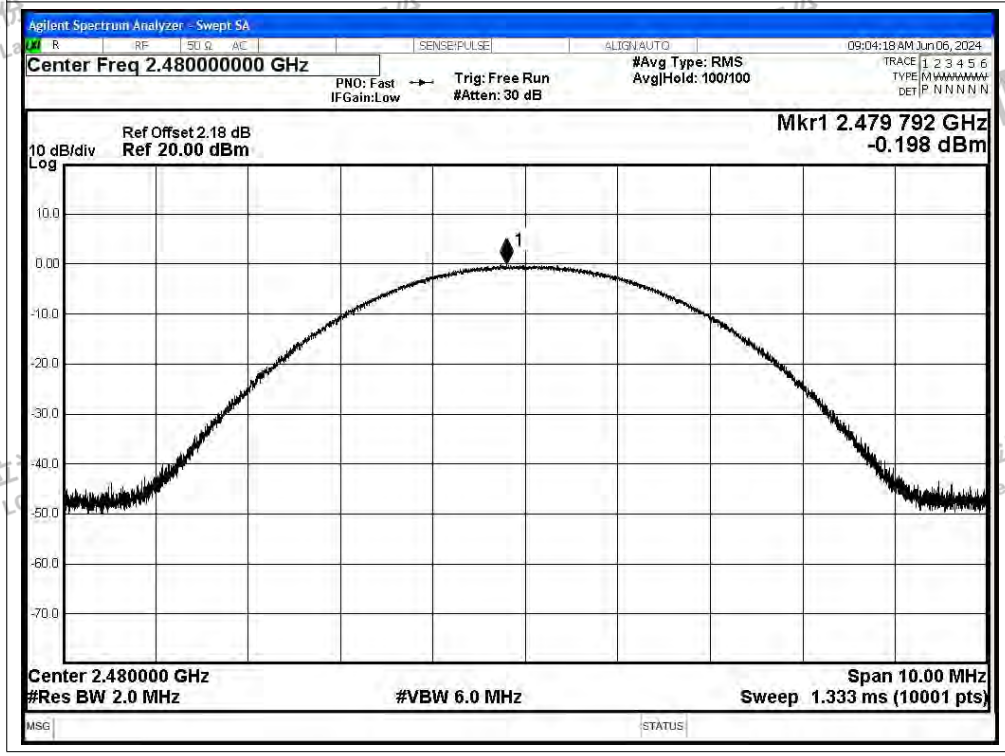

Power NVNT 2-DH5 2402MHz Ant0



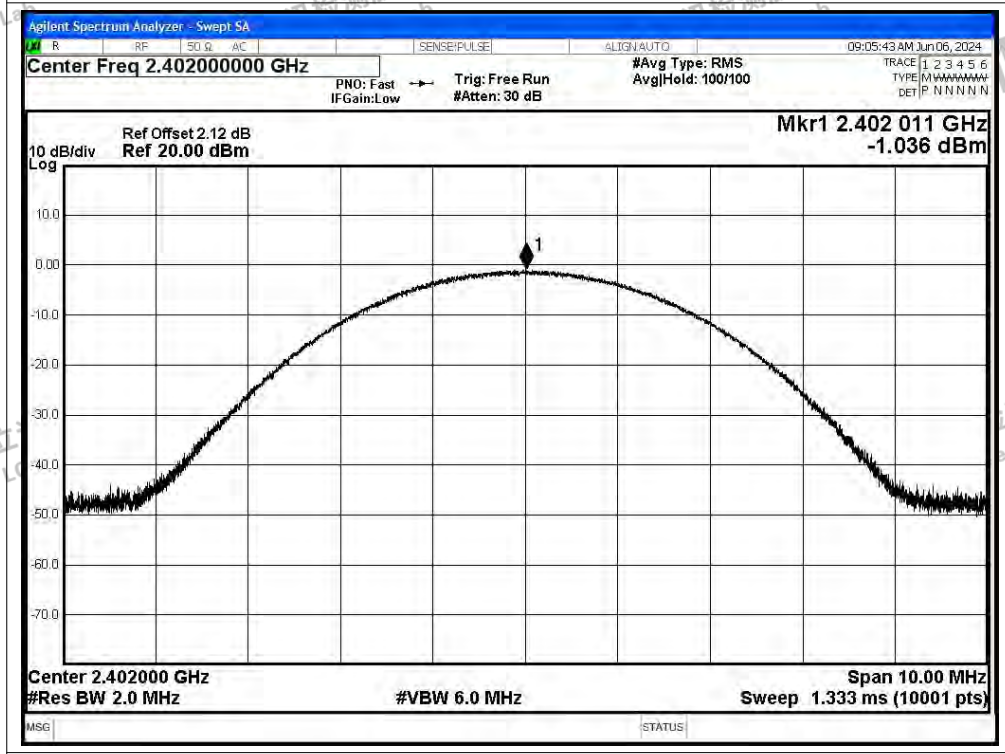
Power NVNT 2-DH5 2441MHz Ant0



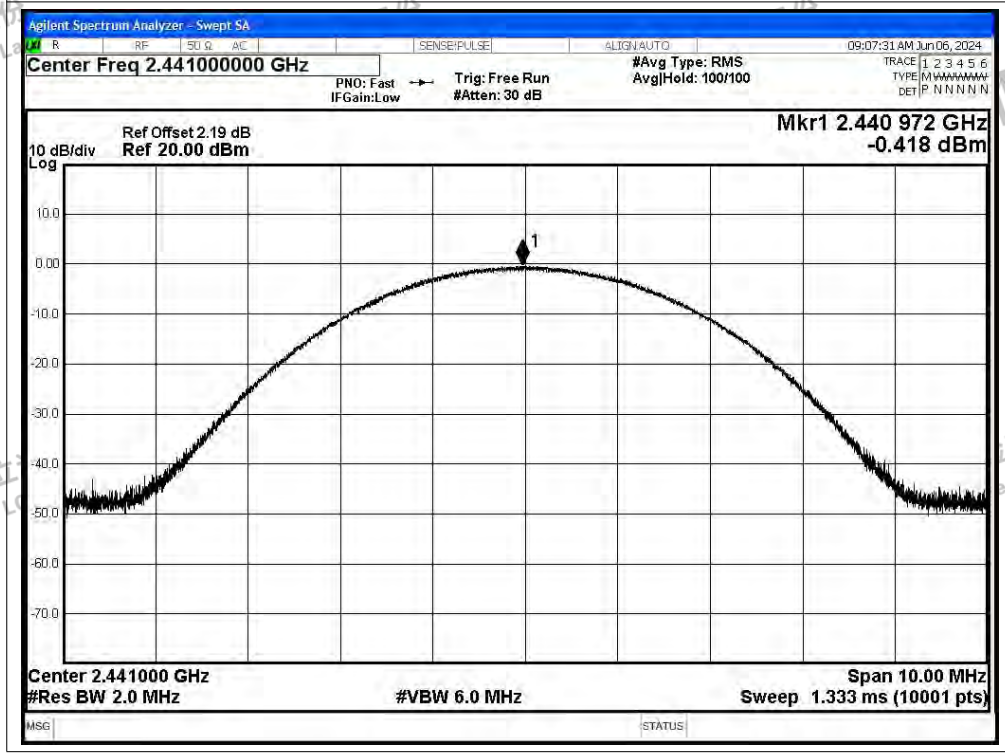

Power NVNT 2-DH5 2480MHz Ant0



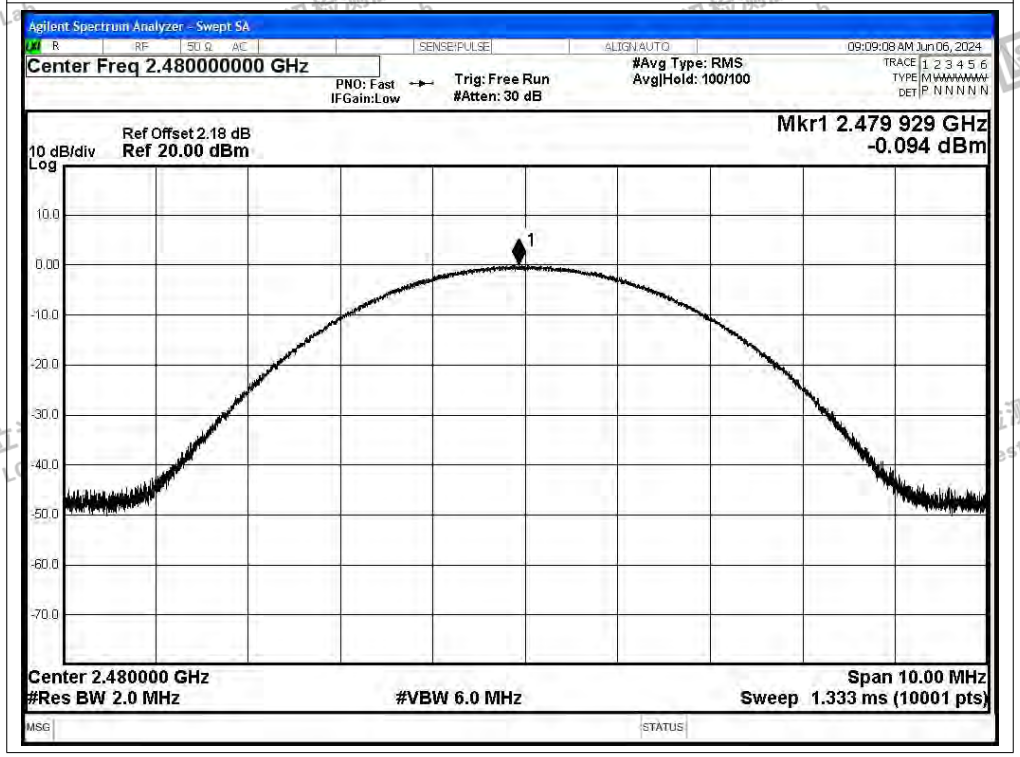
Power NVNT 3-DH5 2402MHz Ant0




Power NVNT 3-DH5 2441MHz Ant0



Power NVNT 3-DH5 2480MHz Ant0

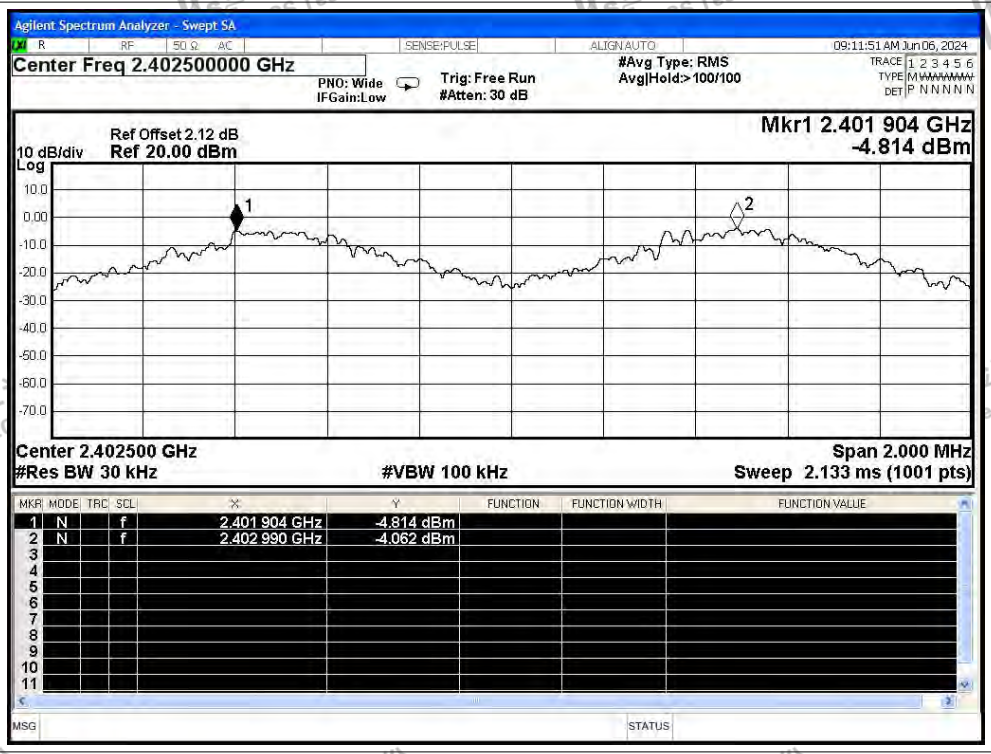


## A.3 Carrier Frequencies Separation

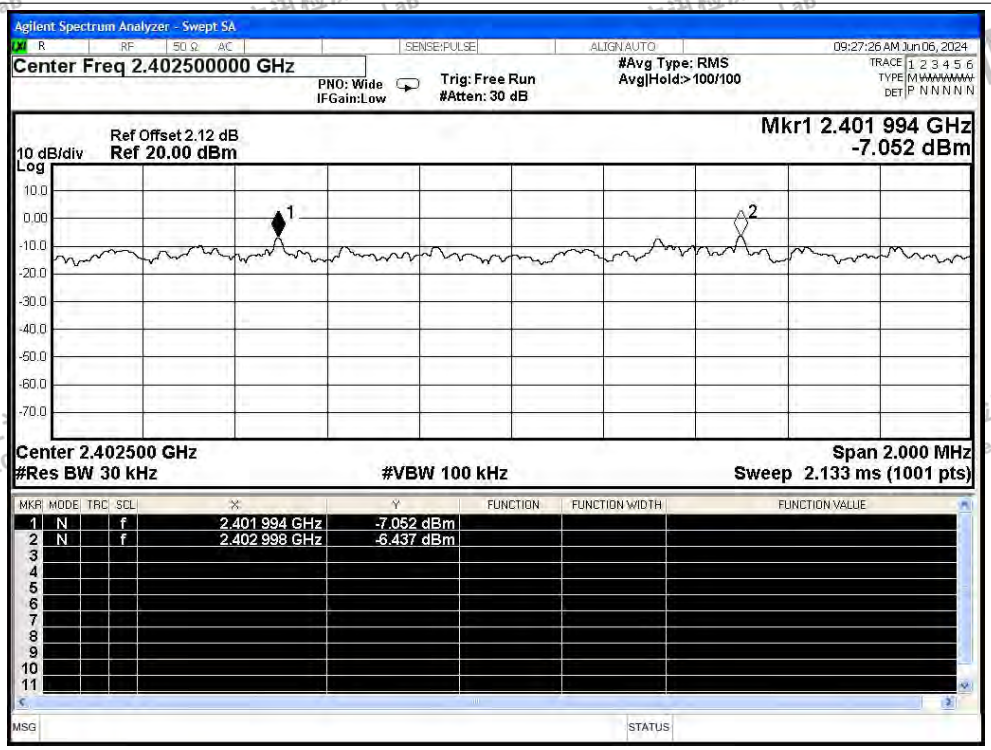
| Condition | Mode | Antenna | Hopping Freq1 (MHz) | Hopping Freq2 (MHz) | HFS (MHz) | Limit (MHz) | Verdict |
|---|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | Ant0 | 2401.904 | 2402.99 | 1.086 | 0.685 | Pass |
| NVNT | 2-DH5 | Ant0 | 2401.994 | 2402.998 | 1.004 | 0.859 | Pass |
| NVNT | 3-DH5 | Ant0 | 2402.156 | 2403.164 | 1.008 | 0.864 | Pass |

Test Graphs

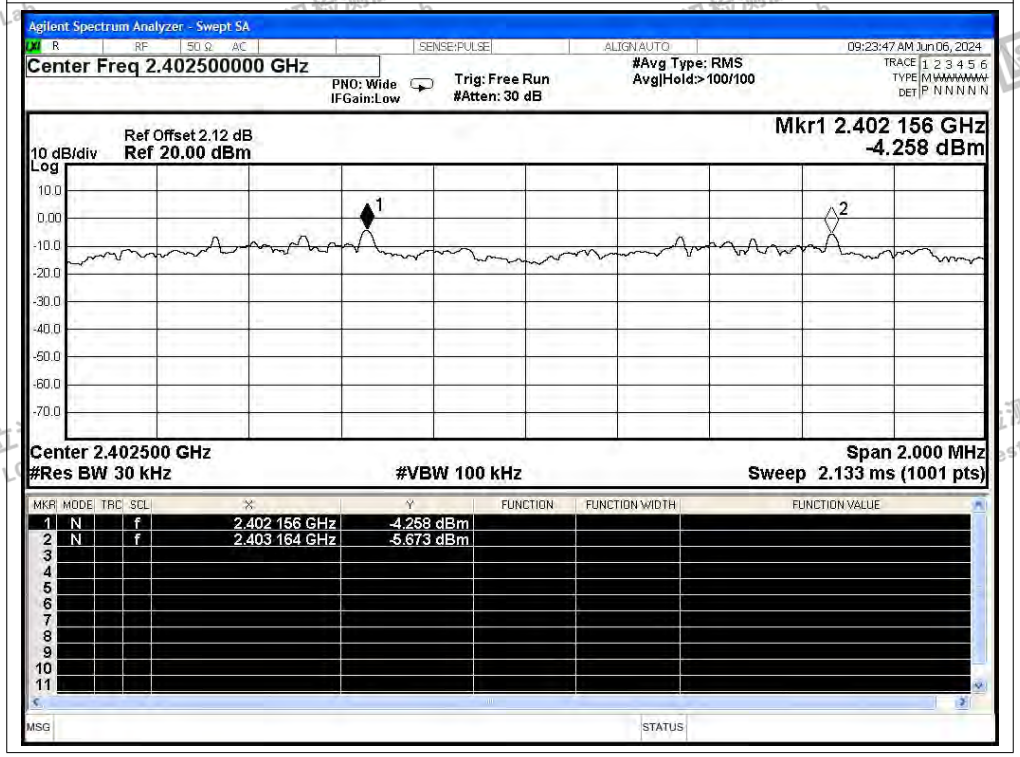
CFS NVNT 1-DH5 2402MHz Ant0




CFS NVNT 2-DH5 2402MHz Ant0



CFS NVNT 3-DH5 2402MHz Ant0

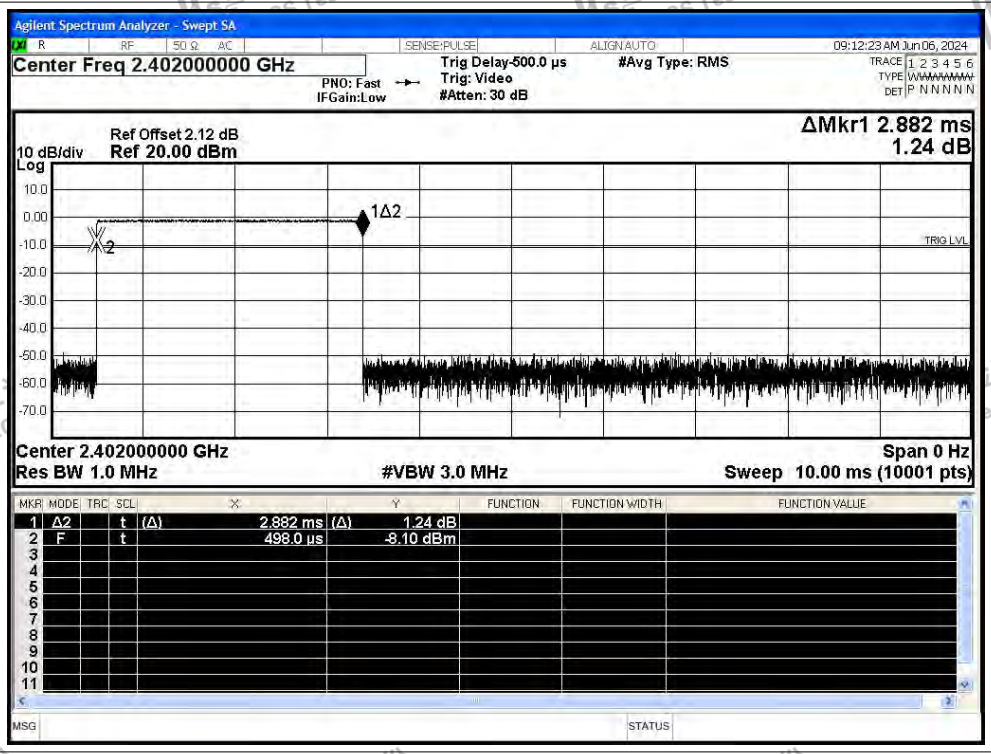


## A.4 Dwell Time

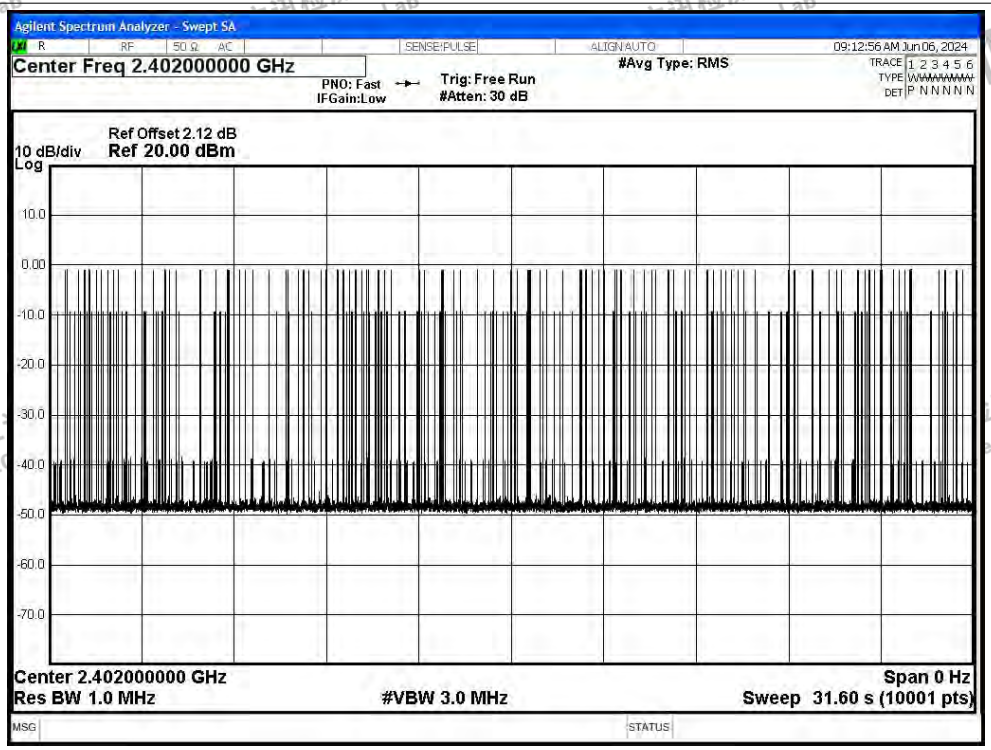
| Condition | Mode | Frequency (MHz) | Antenna | Pulse Time (ms) | Total Dwell Time (ms) | Burst Count | Period Time (ms) | Limit (ms) | Verdict |
|---|---|---|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant0 | 2.882 | 325.666 | 113 | 31600 | 400 | Pass |
| NVNT | 2-DH5 | 2402 | Ant0 | 2.88 | 296.64 | 103 | 31600 | 400 | Pass |
| NVNT | 3-DH5 | 2402 | Ant0 | 2.887 | 291.587 | 101 | 31600 | 400 | Pass |

Test Graphs

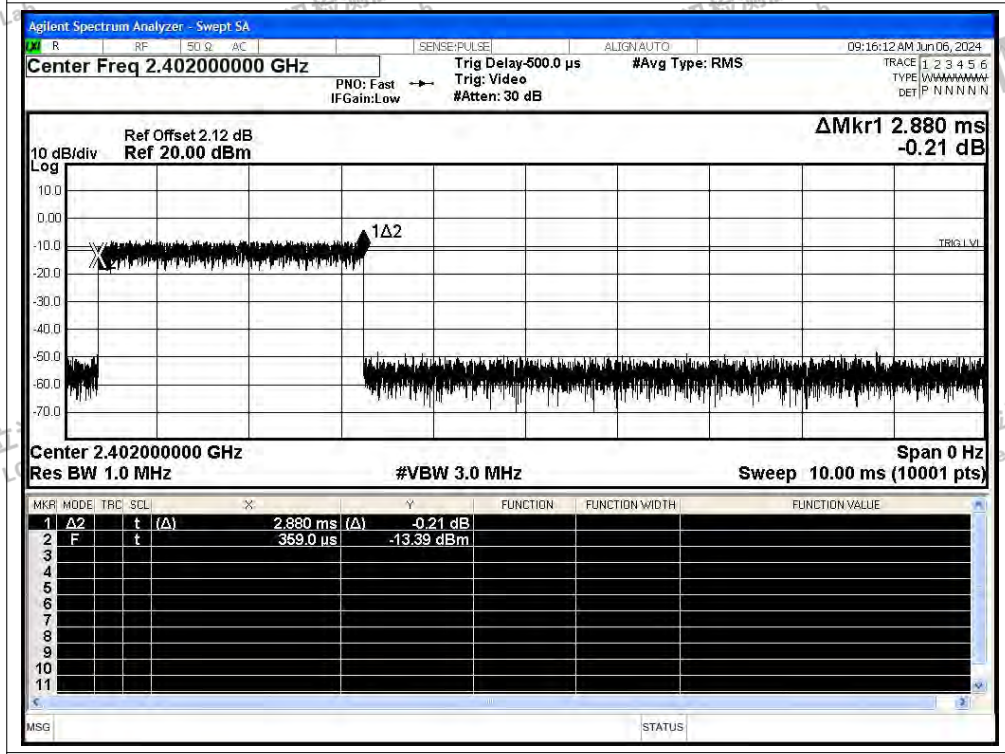
Dwell NVNT 1-DH5 2402MHz Ant0 One Burst



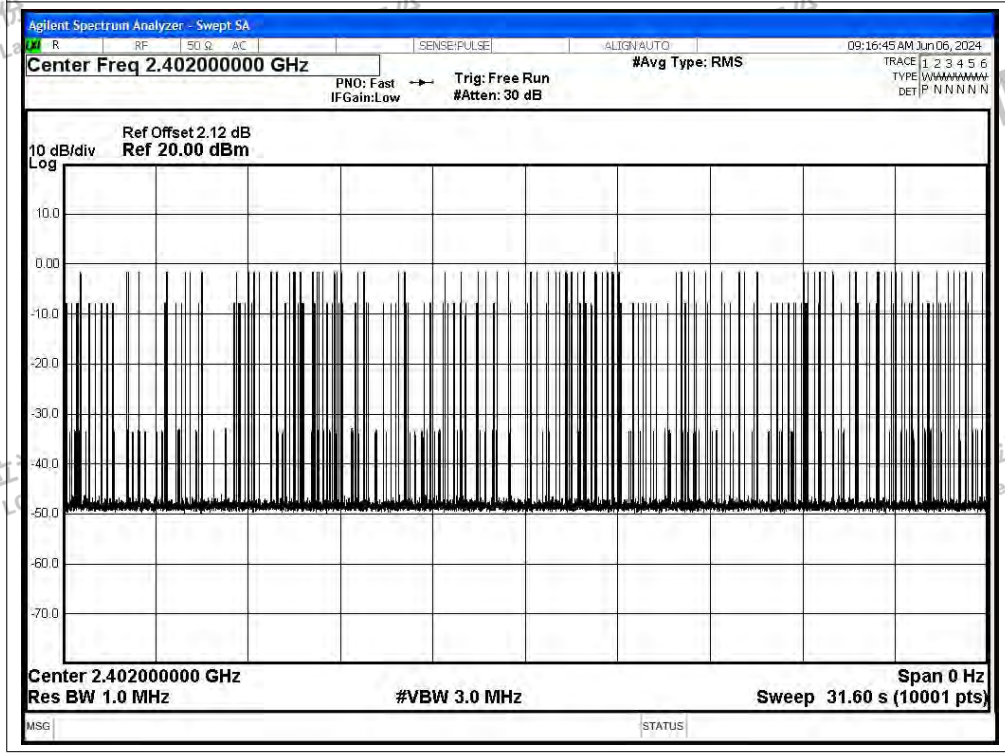

Dwell NVNT 1-DH5 2402MHz Ant0 Accumulated



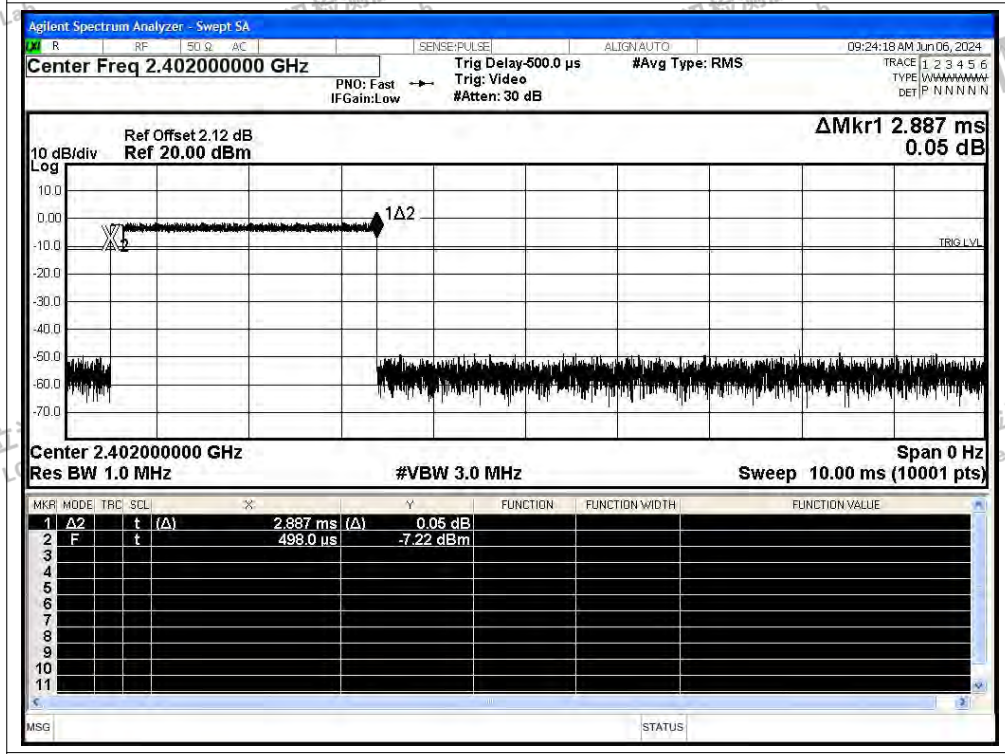
Dwell NVNT 2-DH5 2402MHz Ant0 One Burst



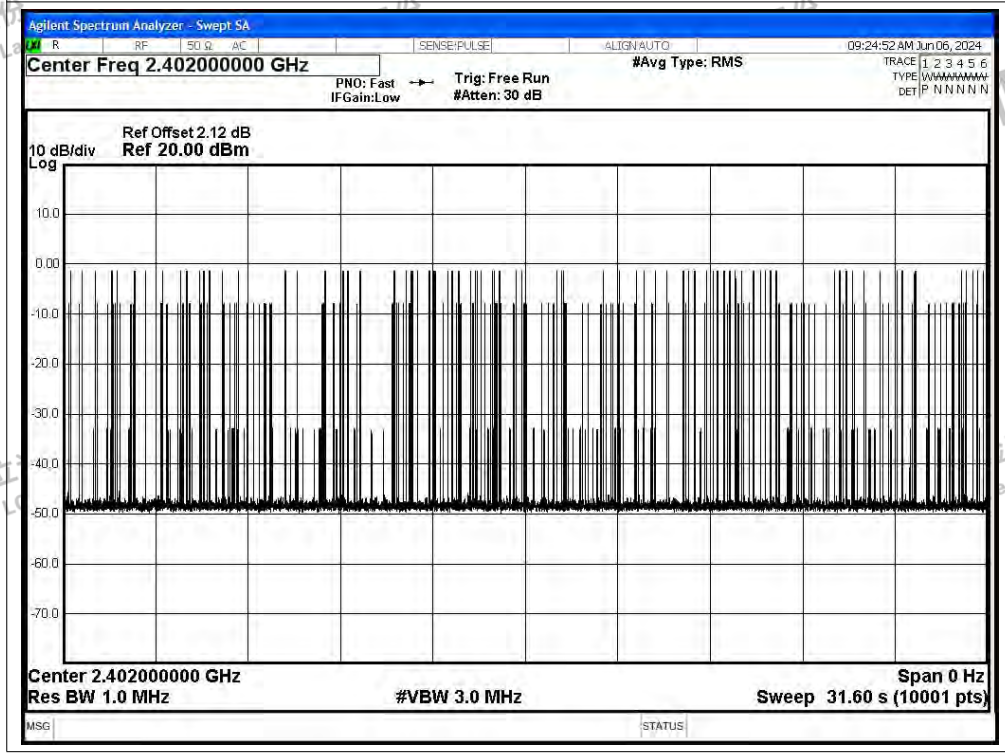

Dwell NVNT 2-DH5 2402MHz Ant0 Accumulated



Dwell NVNT 3-DH5 2402MHz Ant0 One Burst




Dwell NVNT 3-DH5 2402MHz Ant0 Accumulated

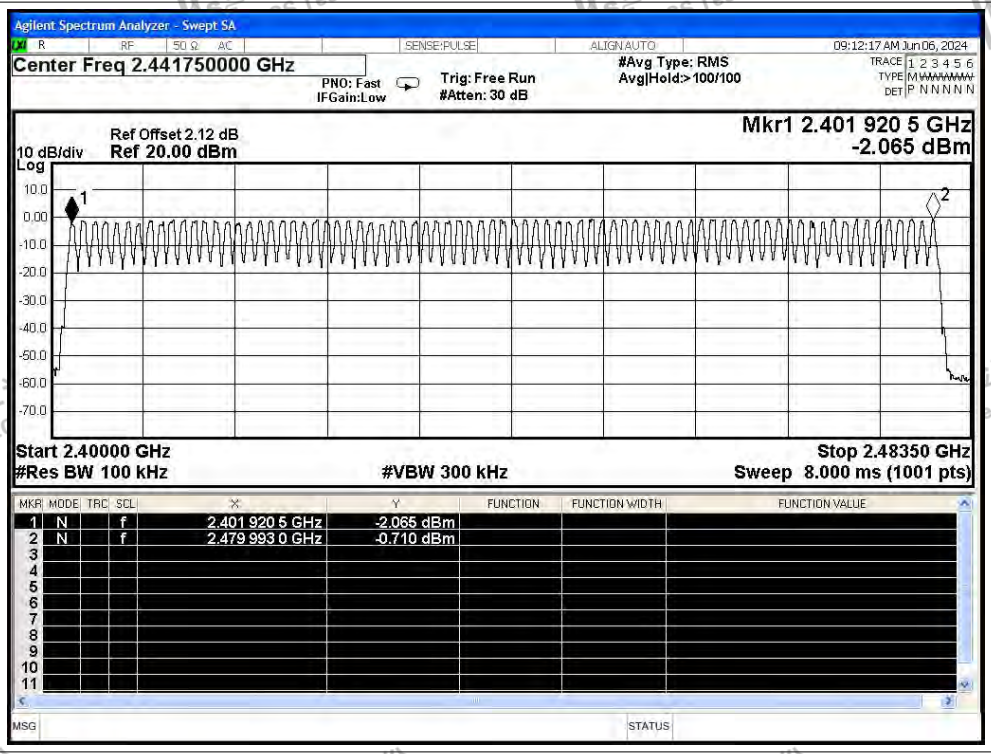


# A.5 Number of Hopping Channel

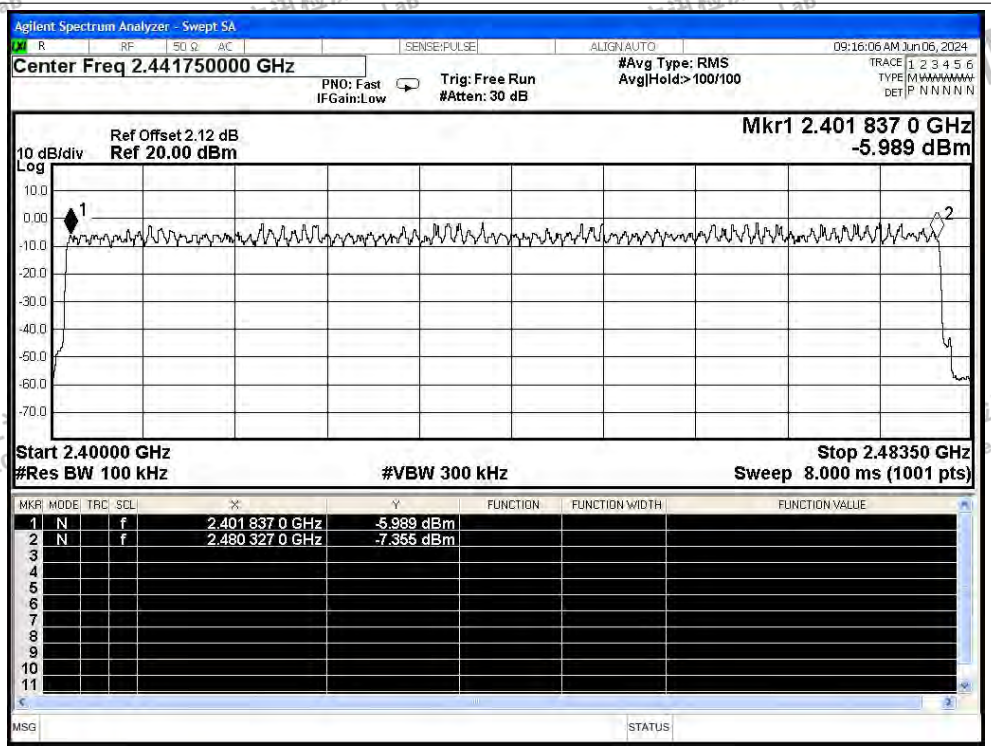
| Condition | Mode | Antenna | Hopping Number | Limit | Verdict |
|---|---|---|---|---|---|
| NVNT | 1-DH5 | Ant0 | 79 | 15 | Pass |
| NVNT | 2-DH5 | Ant0 | 79 | 15 | Pass |
| NVNT | 3-DH5 | Ant0 | 79 | 15 | Pass |

Test Graphs

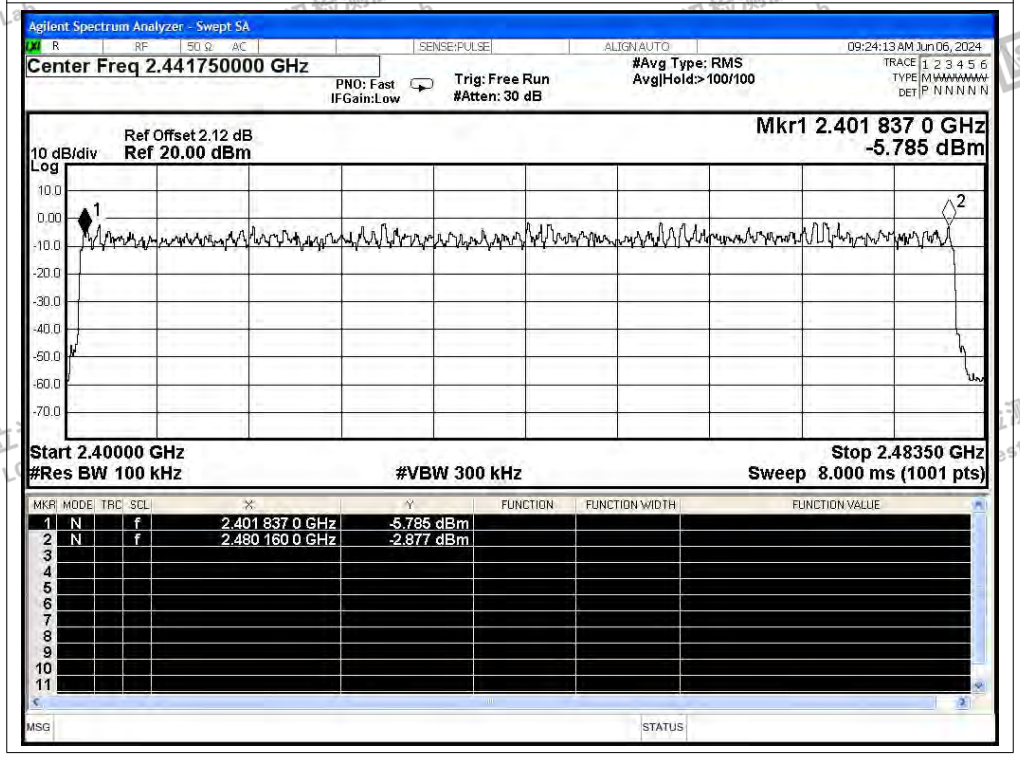
Hopping No. NVNT 1-DH5 2402MHz Ant0




Hopping No. NVNT 2-DH5 2402MHz Ant0



Hopping No. NVNT 3-DH5 2402MHz Ant0

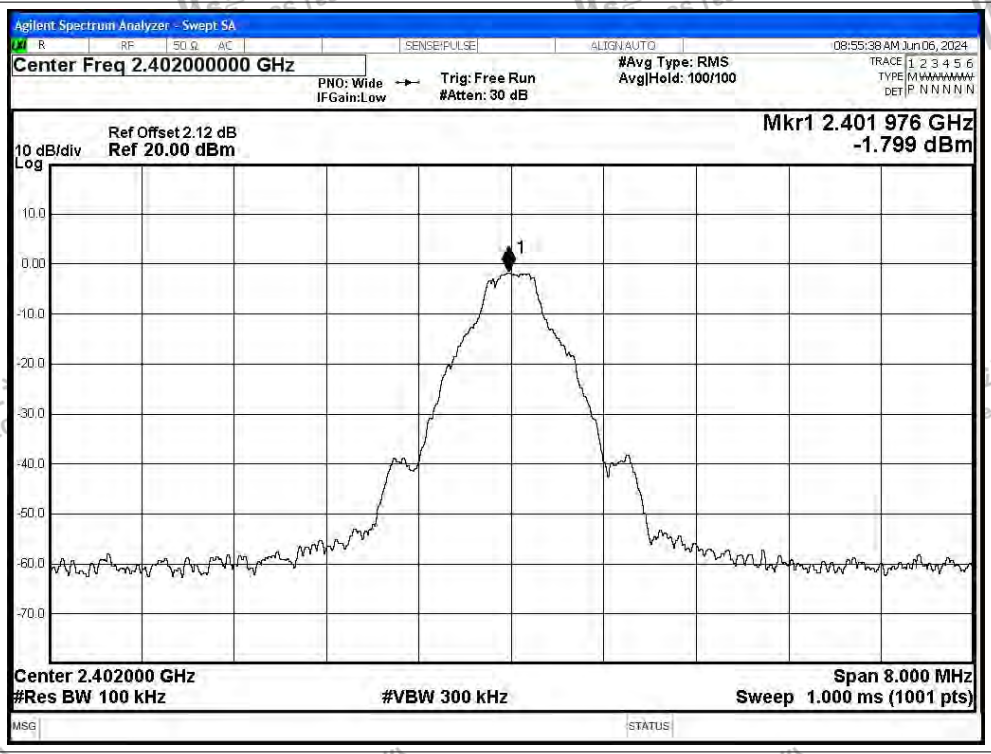


## A.6 Band Edge

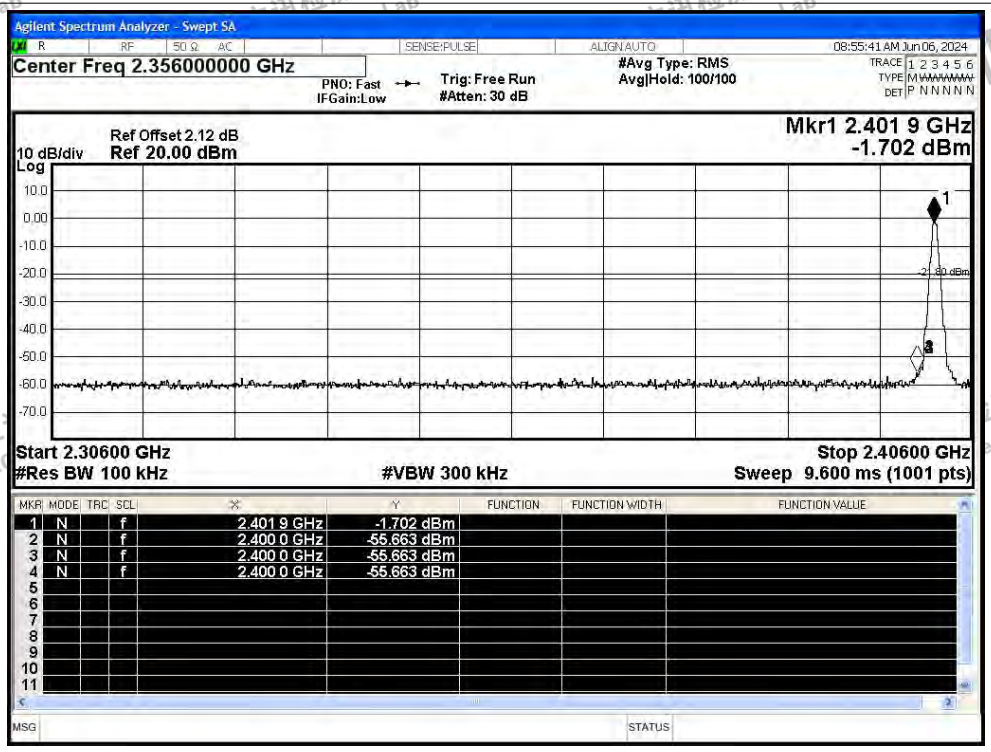
| Condition | Mode | Frequency (MHz) | Antenna | Hopping Mode | Max Value (dBc) | Limit (dBc) | Verdict |
|---|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant0 | No-Hopping | -53.86 | -20 | Pass |
| NVNT | 1-DH5 | 2480 | Ant0 | No-Hopping | -56.72 | -20 | Pass |
| NVNT | 2-DH5 | 2402 | Ant0 | No-Hopping | -49.66 | -20 | Pass |
| NVNT | 2-DH5 | 2480 | Ant0 | No-Hopping | -53.35 | -20 | Pass |
| NVNT | 3-DH5 | 2402 | Ant0 | No-Hopping | -53.65 | -20 | Pass |
| NVNT | 3-DH5 | 2480 | Ant0 | No-Hopping | -55.88 | -20 | Pass |

Test Graphs

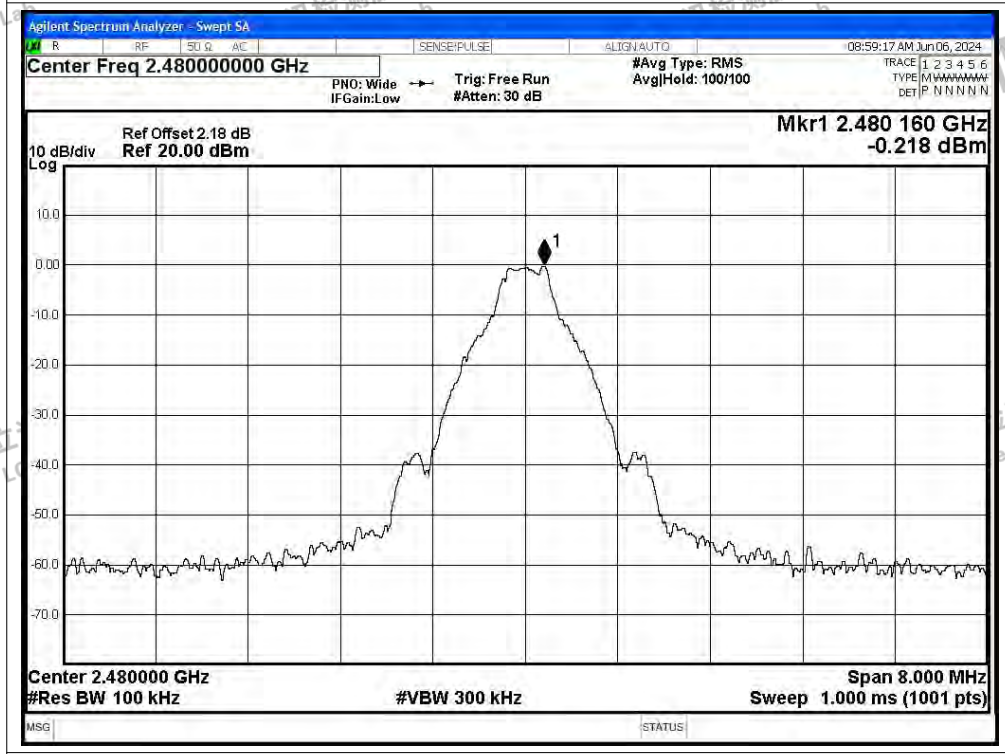
Band Edge NVNT 1-DH5 2402MHz Ant0 No-Hopping Ref



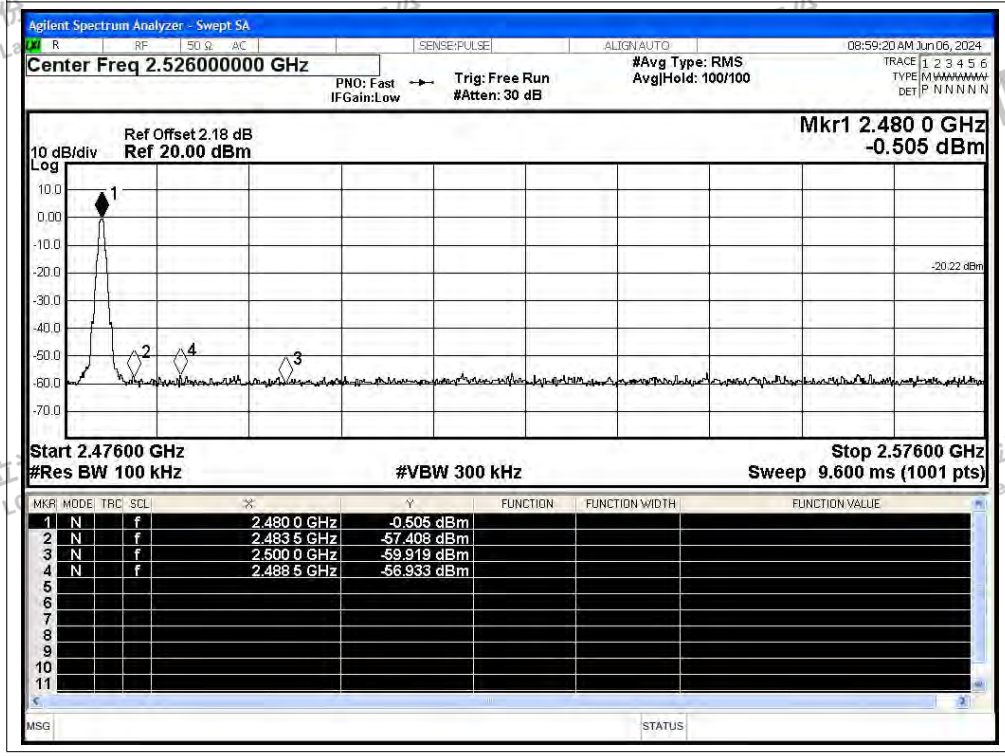

Band Edge NVNT 1-DH5 2402MHz Ant0 No-Hopping Emission



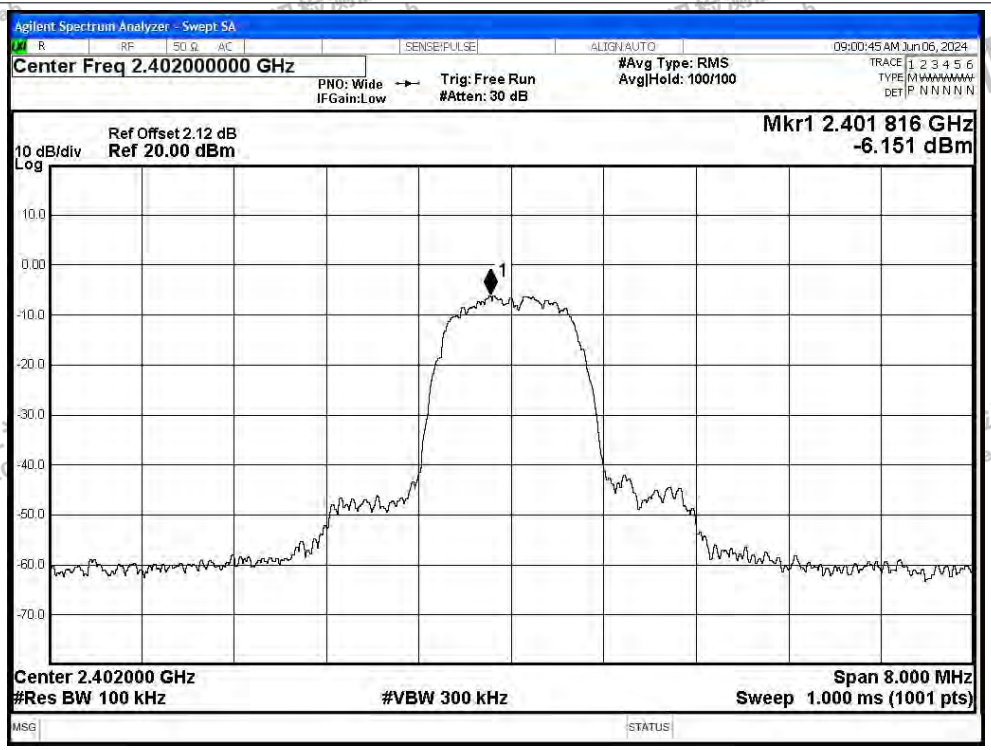
Band Edge NVNT 1-DH5 2480MHz Ant0 No-Hopping Ref



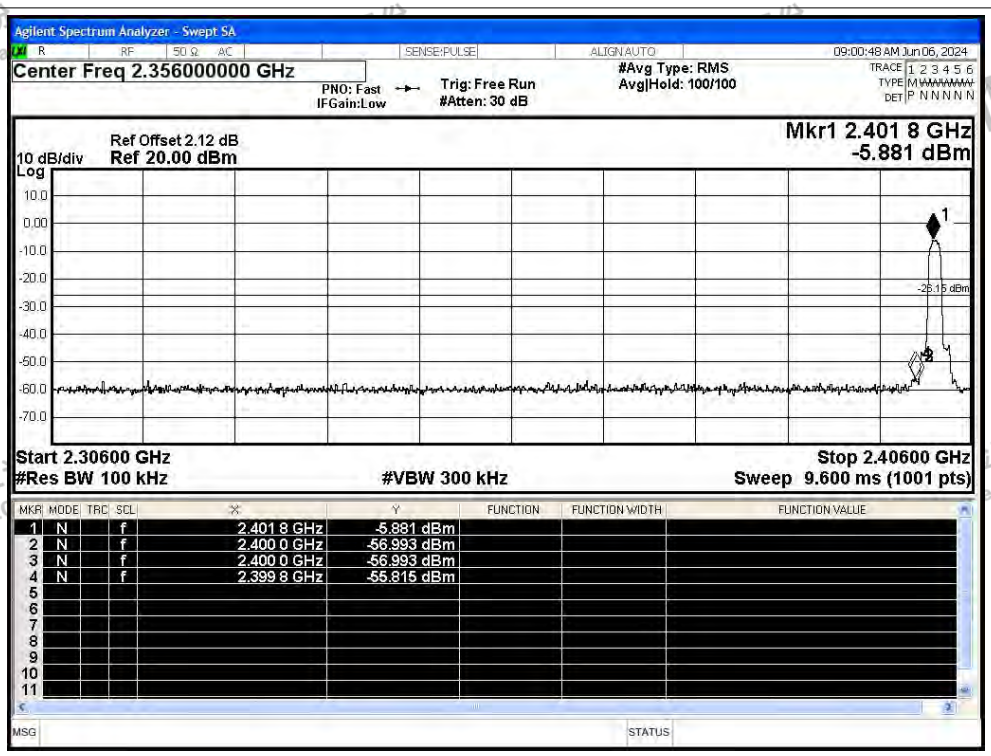

Band Edge NVNT 1-DH5 2480MHz Ant0 No-Hopping Emission



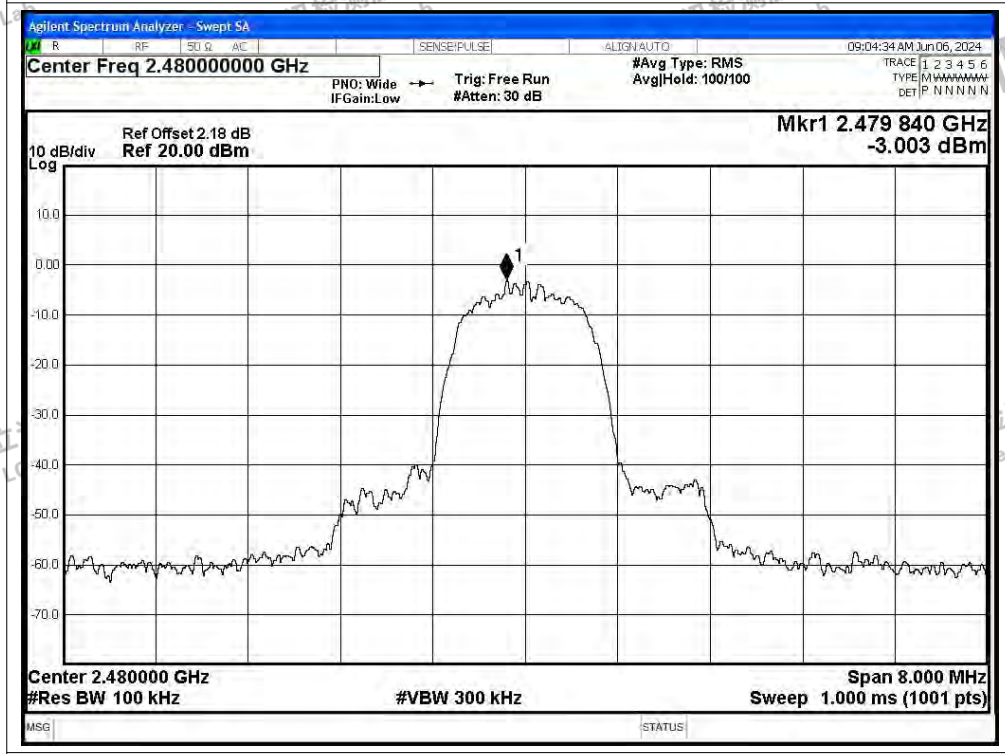
Band Edge NVNT 2-DH5 2402MHz Ant0 No-Hopping Ref



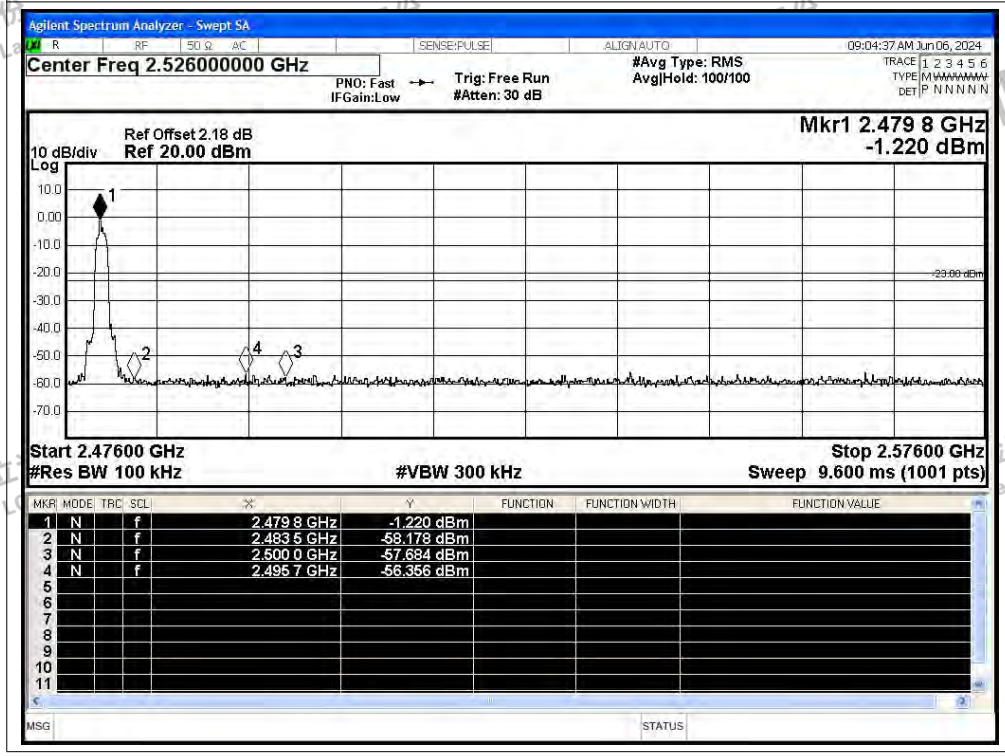

Band Edge NVNT 2-DH5 2402MHz Ant0 No-Hopping Emission



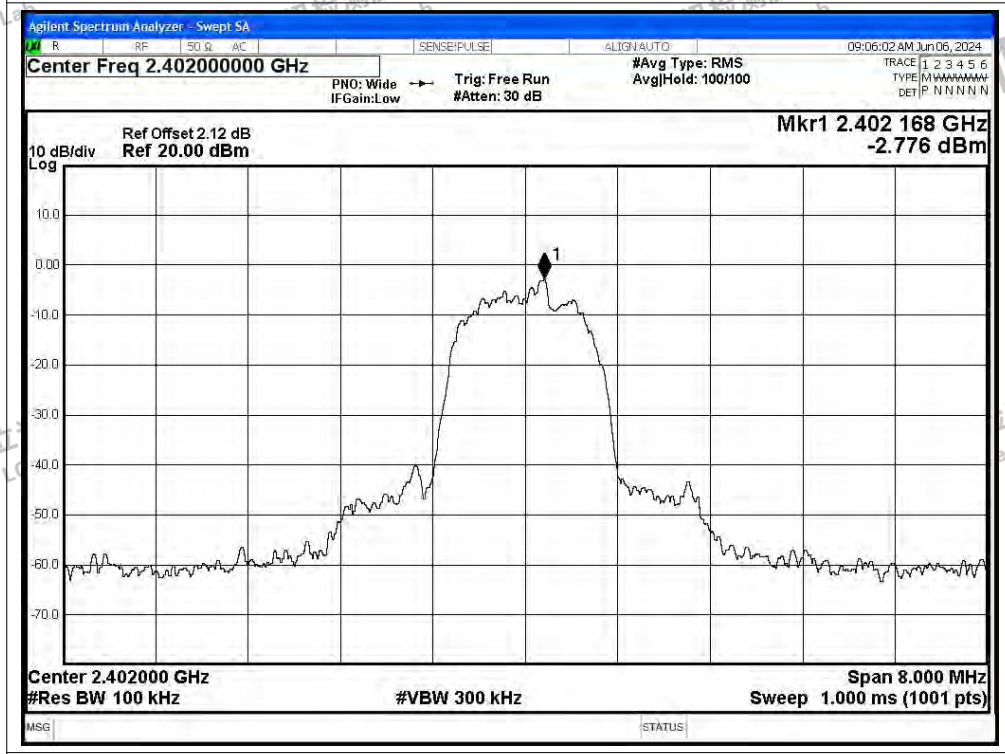
Band Edge NVNT 2-DH5 2480MHz Ant0 No-Hopping Ref



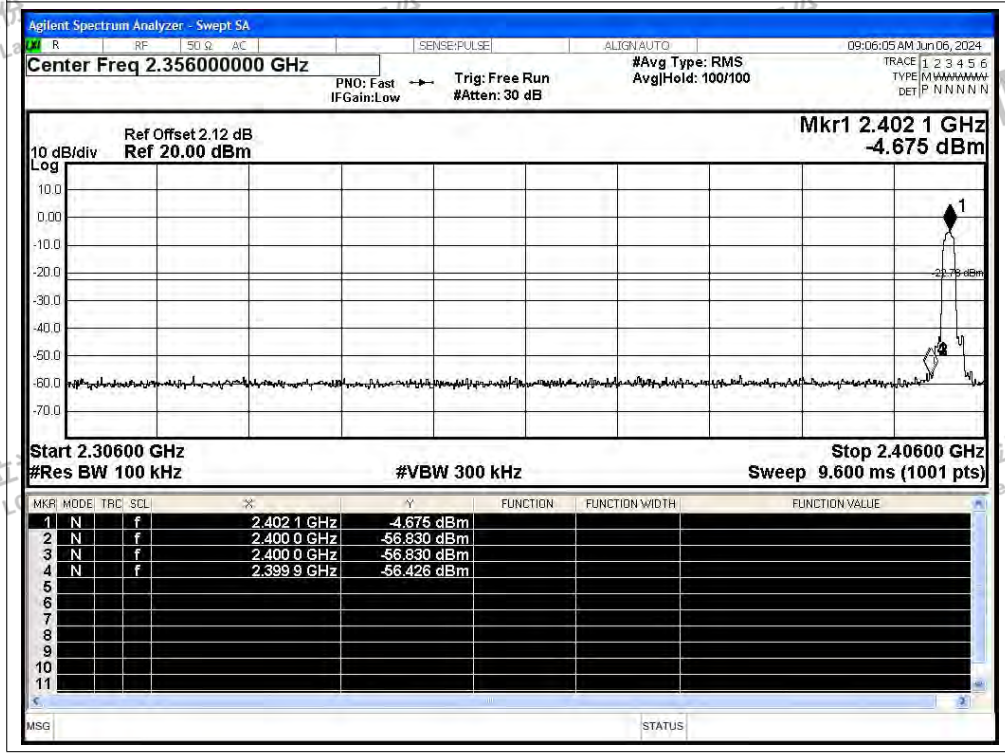

Band Edge NVNT 2-DH5 2480MHz Ant0 No-Hopping Emission



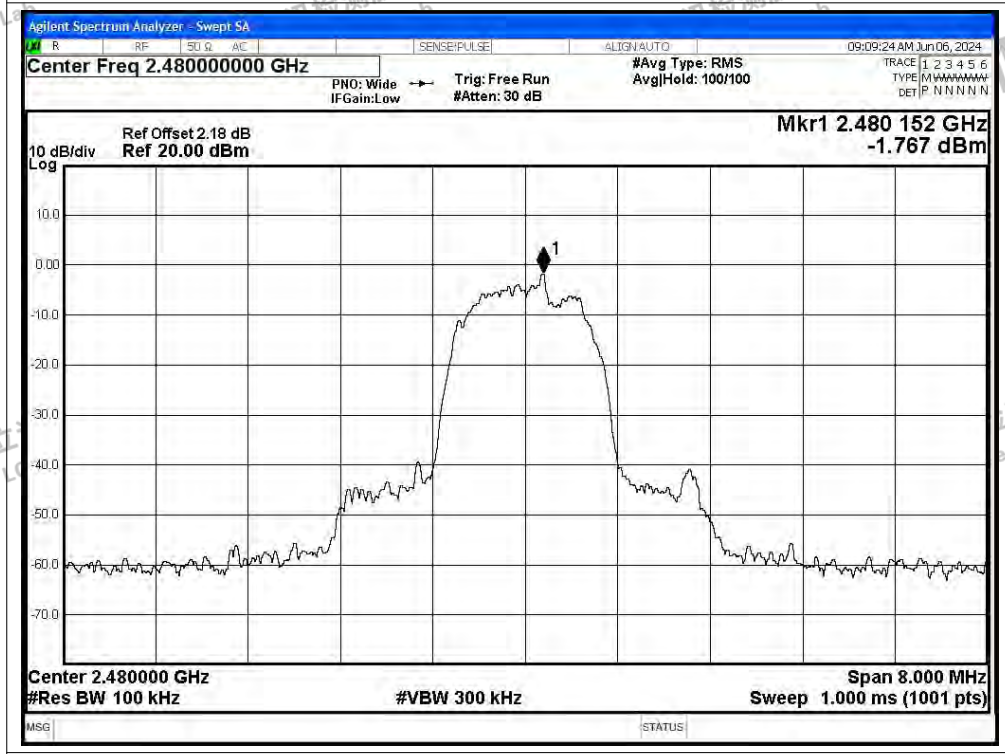
Band Edge NVNT 3-DH5 2402MHz Ant0 No-Hopping Ref



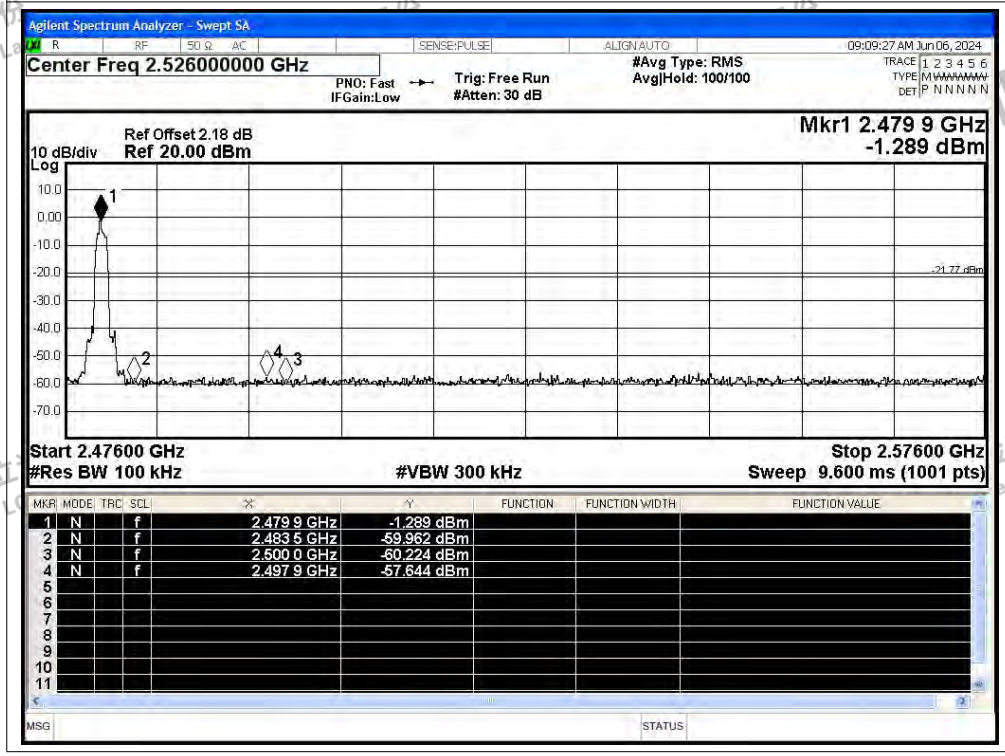

Band Edge NVNT 3-DH5 2402MHz Ant0 No-Hopping Emission



Band Edge NVNT 3-DH5 2480MHz Ant0 No-Hopping Ref




Band Edge NVNT 3-DH5 2480MHz Ant0 No-Hopping Emission

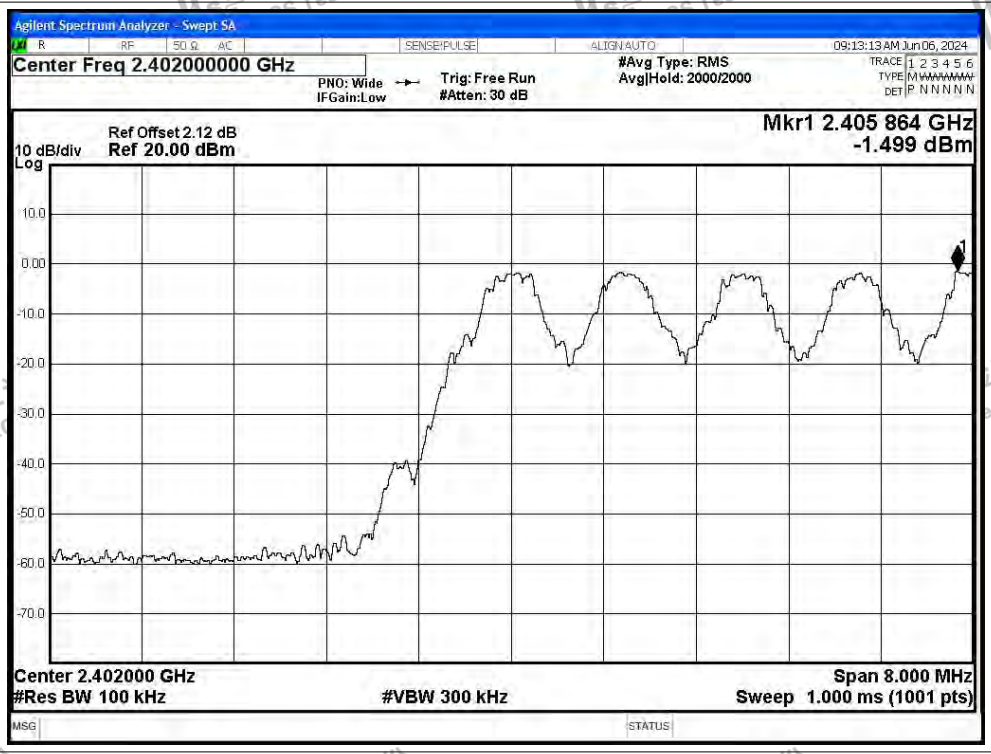


## (Hopping)

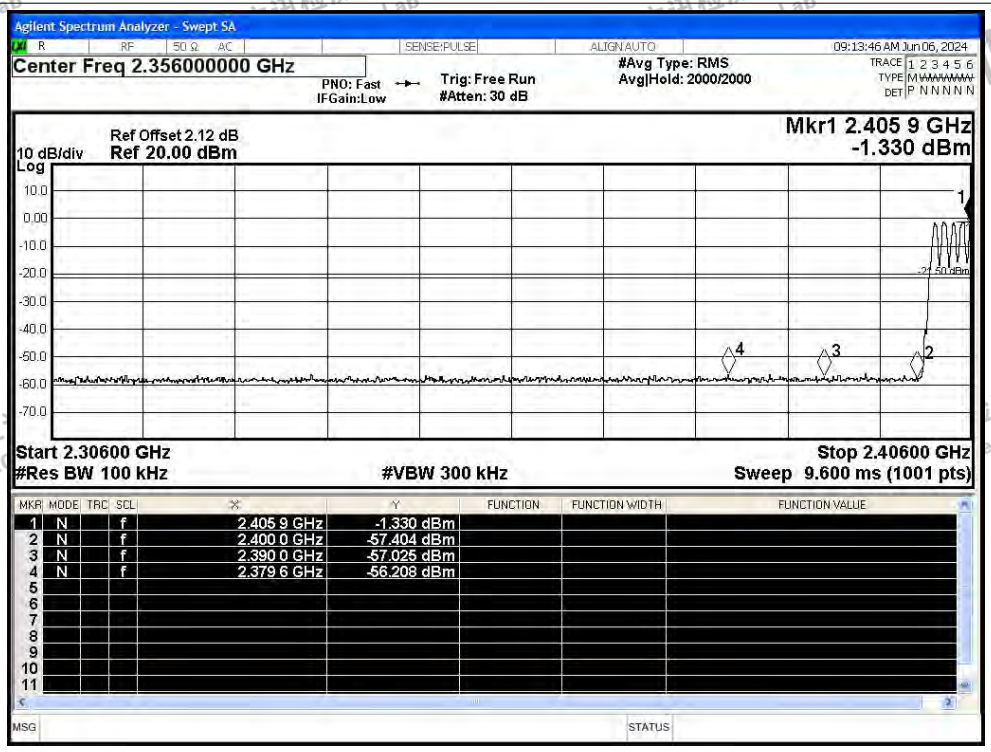
| Condition | Mode | Frequency (MHz) | Antenna | Hopping Mode | Max Value (dBc) | Limit (dBc) | Verdict |
|---|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant0 | Hopping | -54.71 | -20 | Pass |
| NVNT | 1-DH5 | 2480 | Ant0 | Hopping | -55.99 | -20 | Pass |
| NVNT | 2-DH5 | 2402 | Ant0 | Hopping | -53.66 | -20 | Pass |
| NVNT | 2-DH5 | 2480 | Ant0 | Hopping | -54.72 | -20 | Pass |
| NVNT | 3-DH5 | 2402 | Ant0 | Hopping | -52.02 | -20 | Pass |
| NVNT | 3-DH5 | 2480 | Ant0 | Hopping | -54.5 | -20 | Pass |

Test Graphs

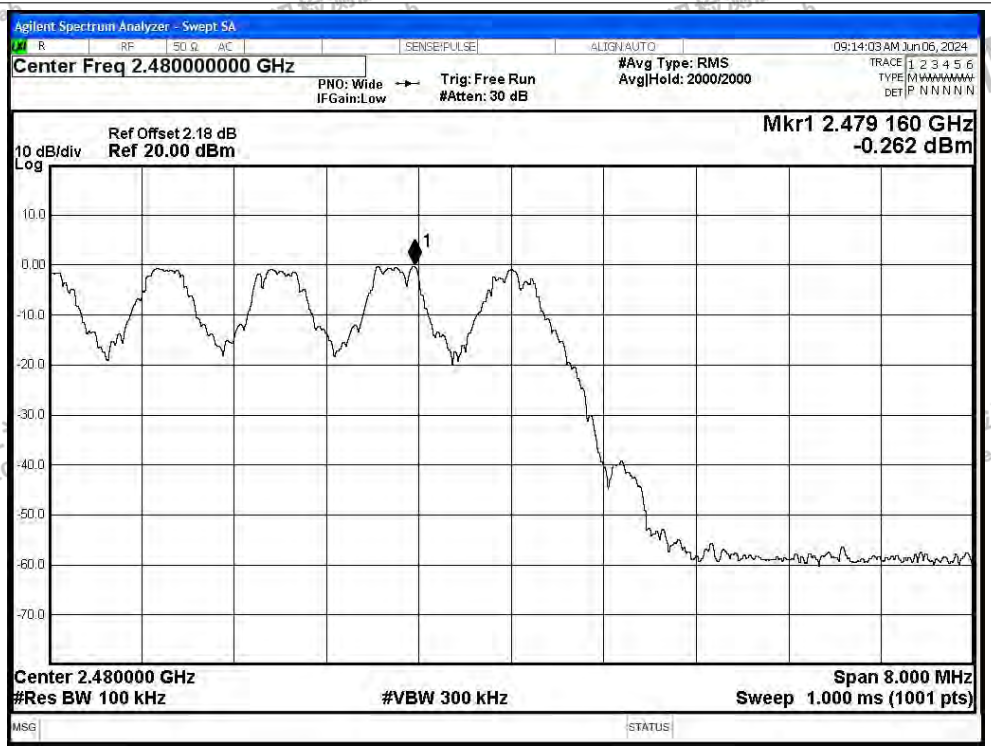
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant0 Hopping Ref



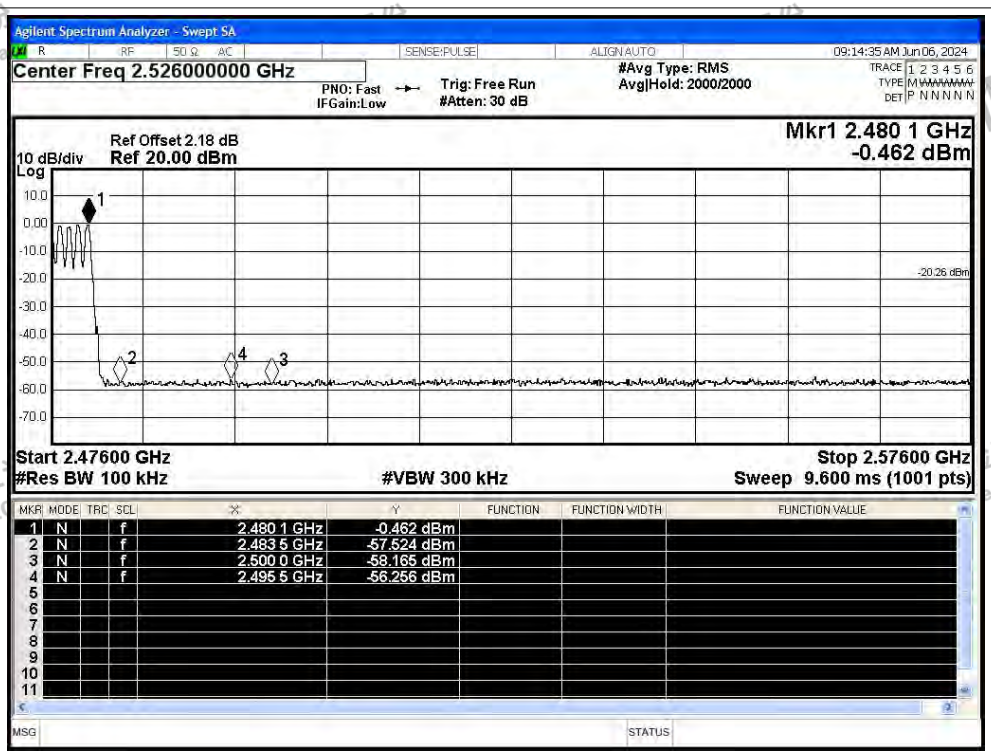

Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant0 Hopping Emission



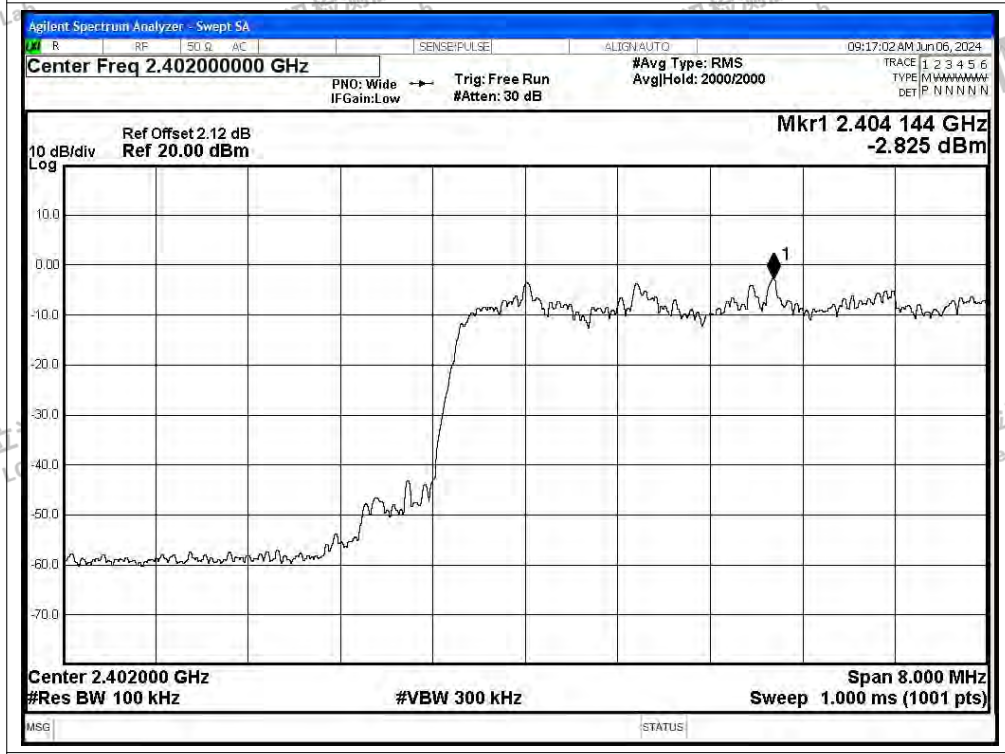
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant0 Hopping Ref



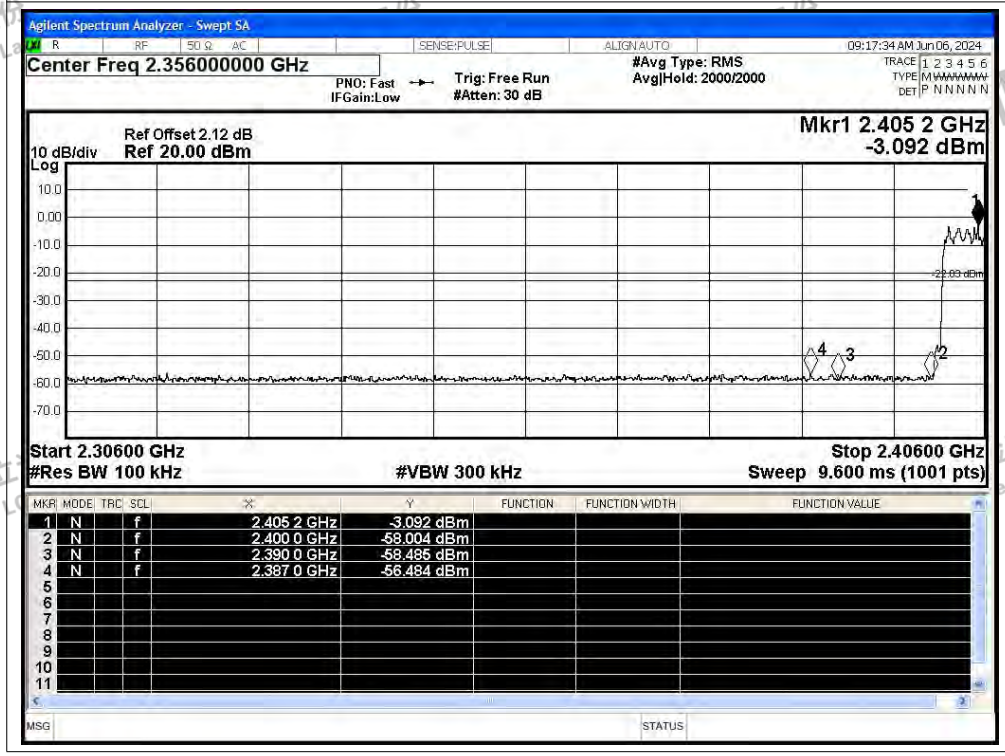

Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant0 Hopping Emission



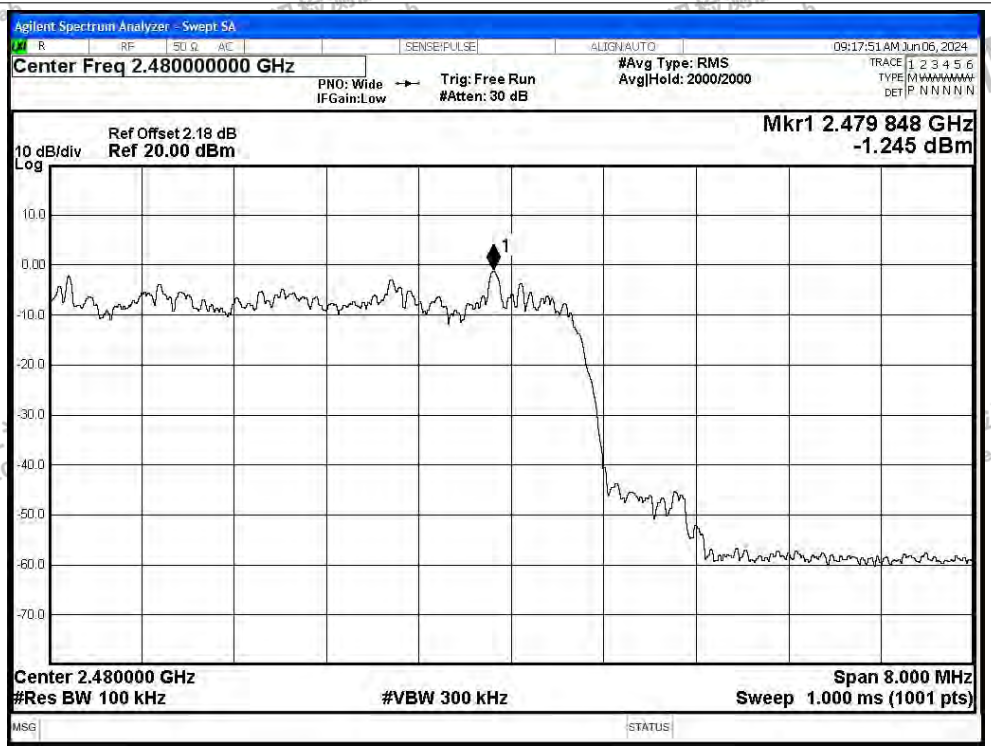
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant0 Hopping Ref



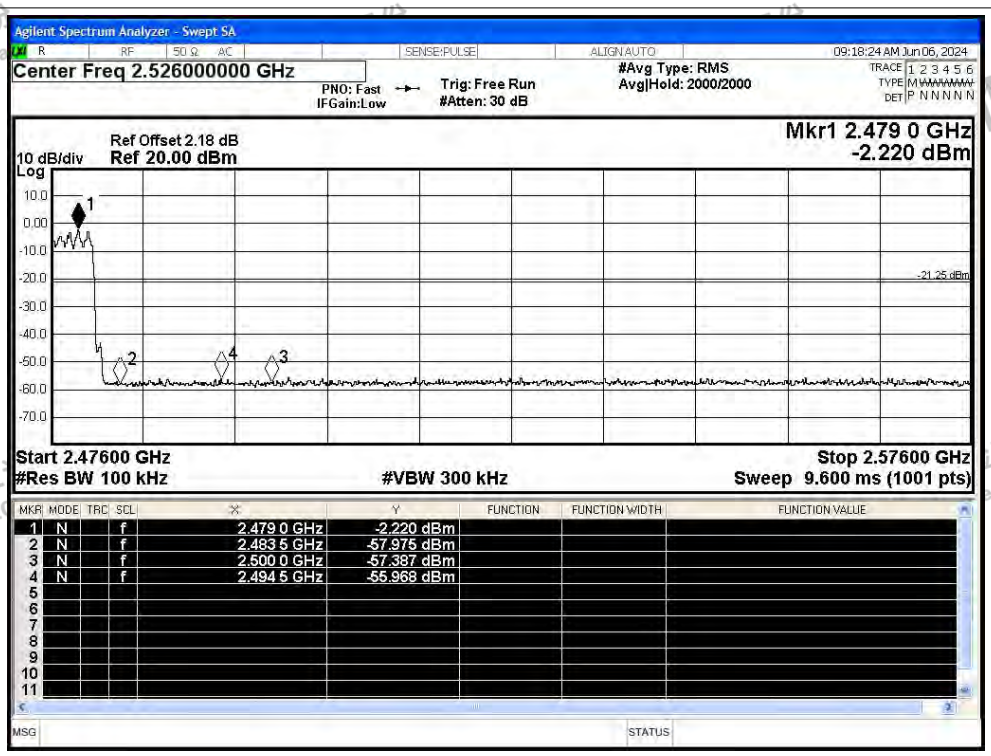

Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant0 Hopping Emission



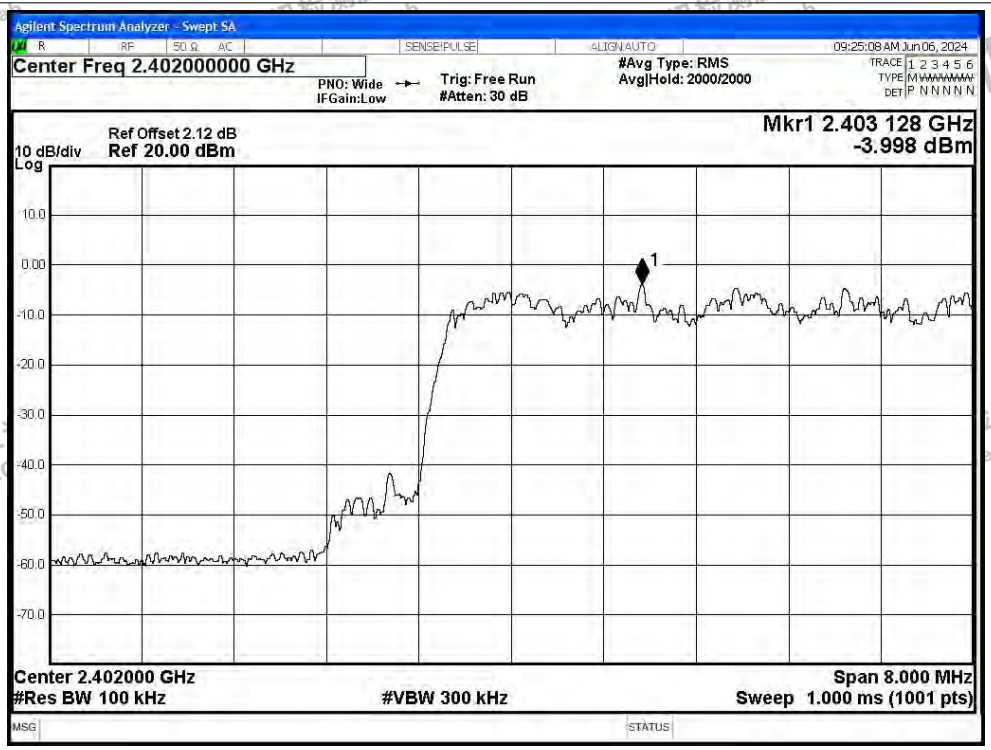
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant0 Hopping Ref



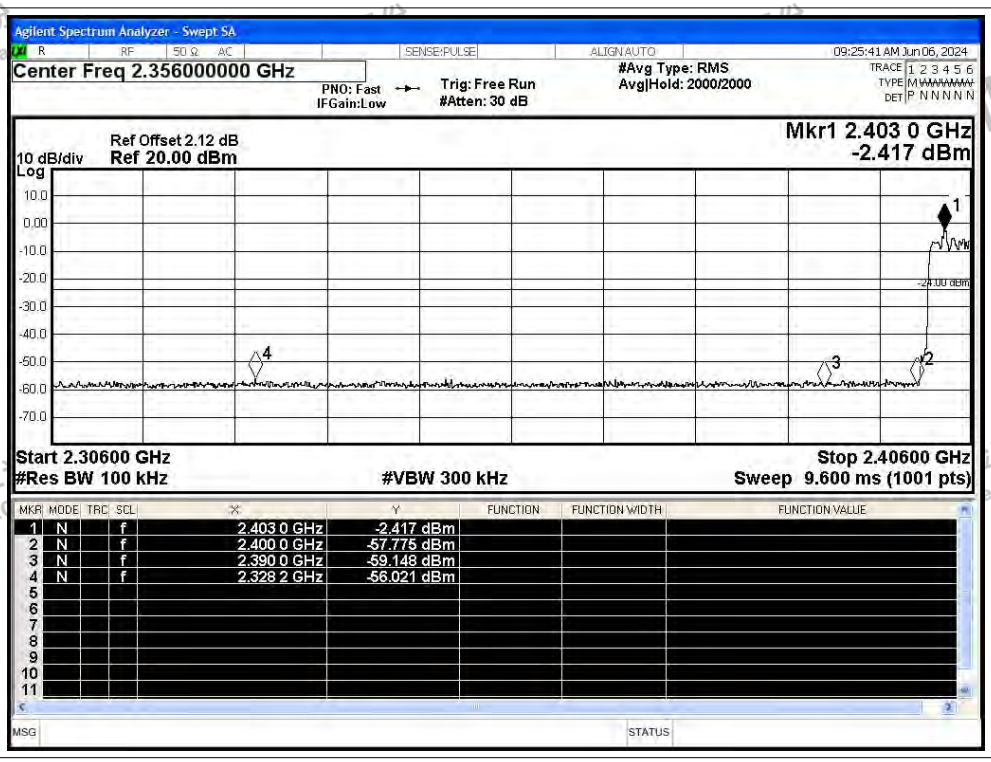

Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant0 Hopping Emission



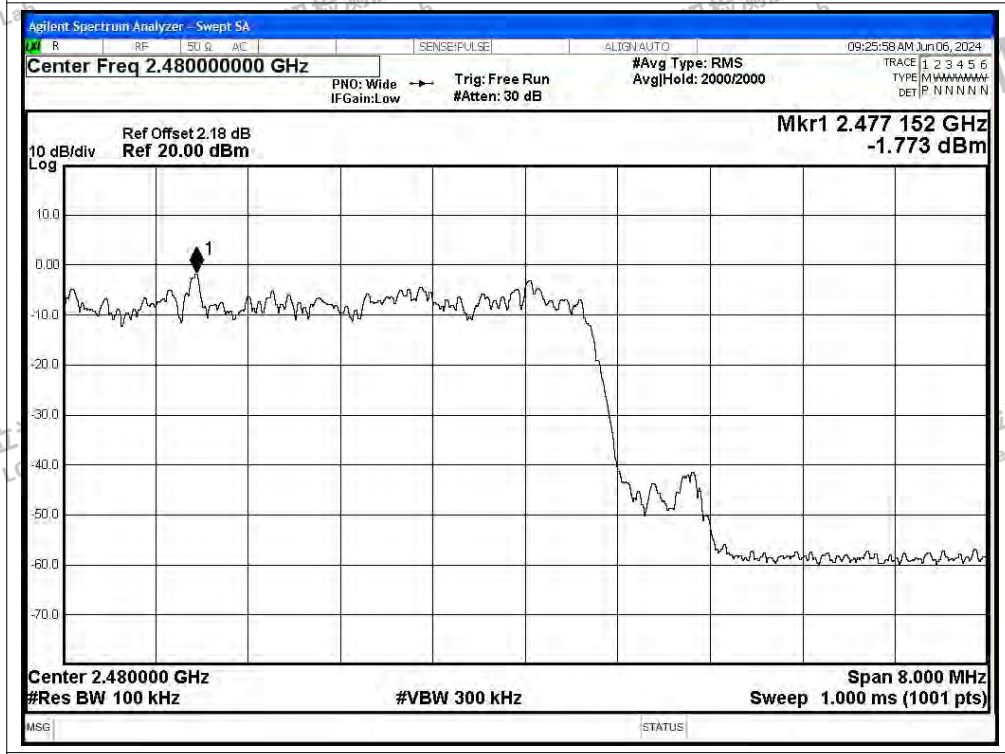
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant0 Hopping Ref



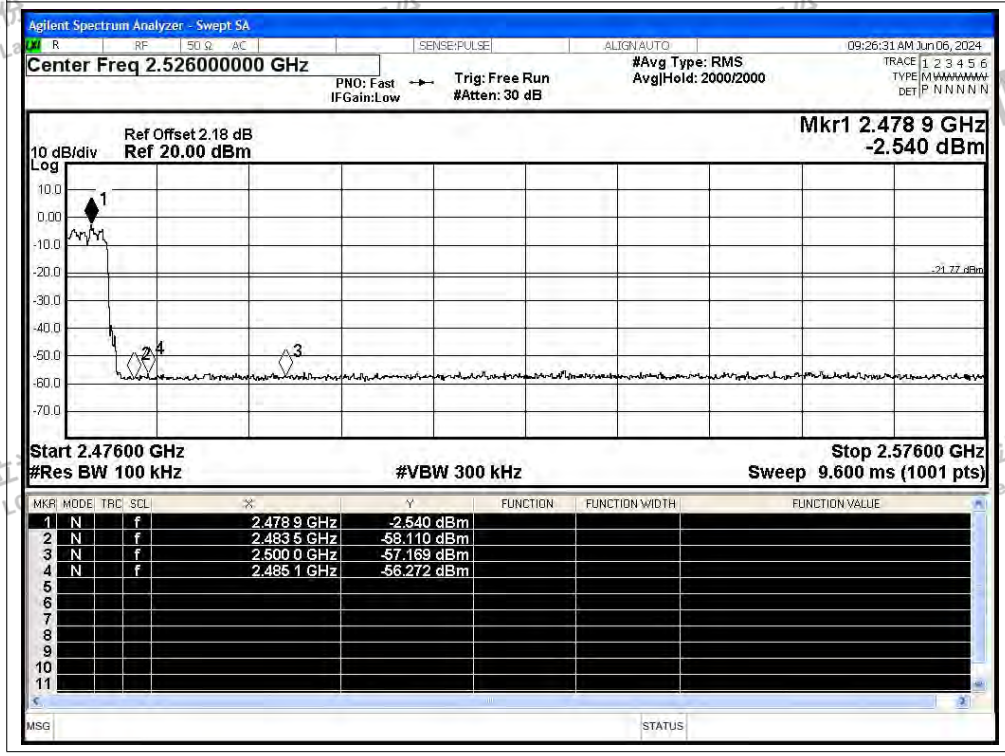

Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant0 Hopping Emission



Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant0 Hopping Ref




Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant0 Hopping Emission

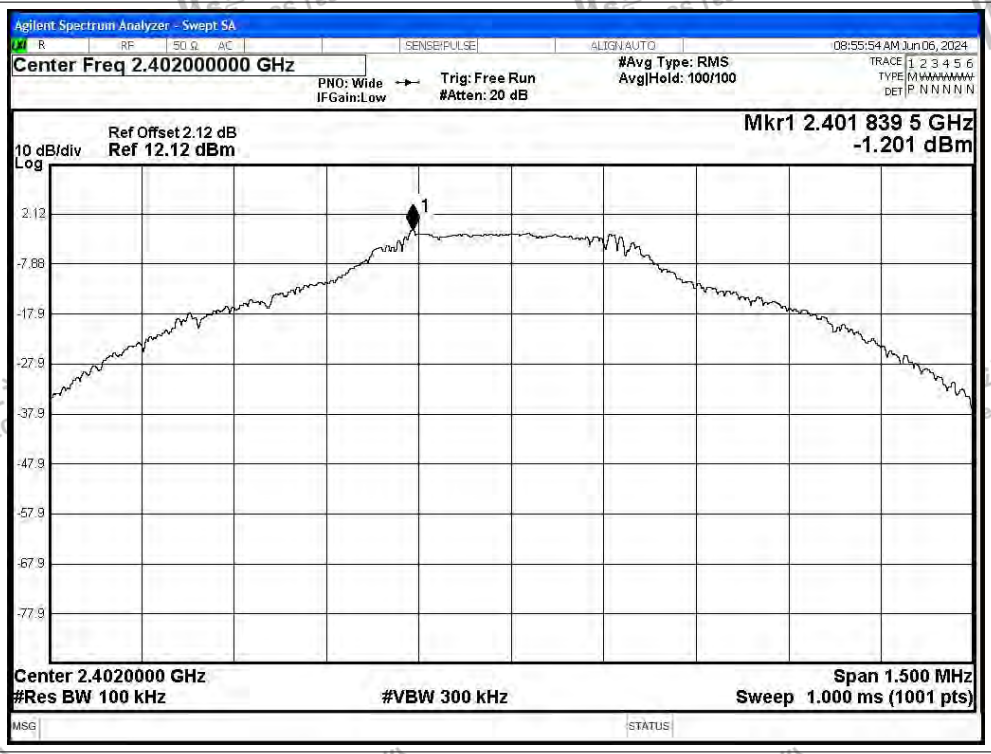


# A.7 Conducted RF Spurious Emission

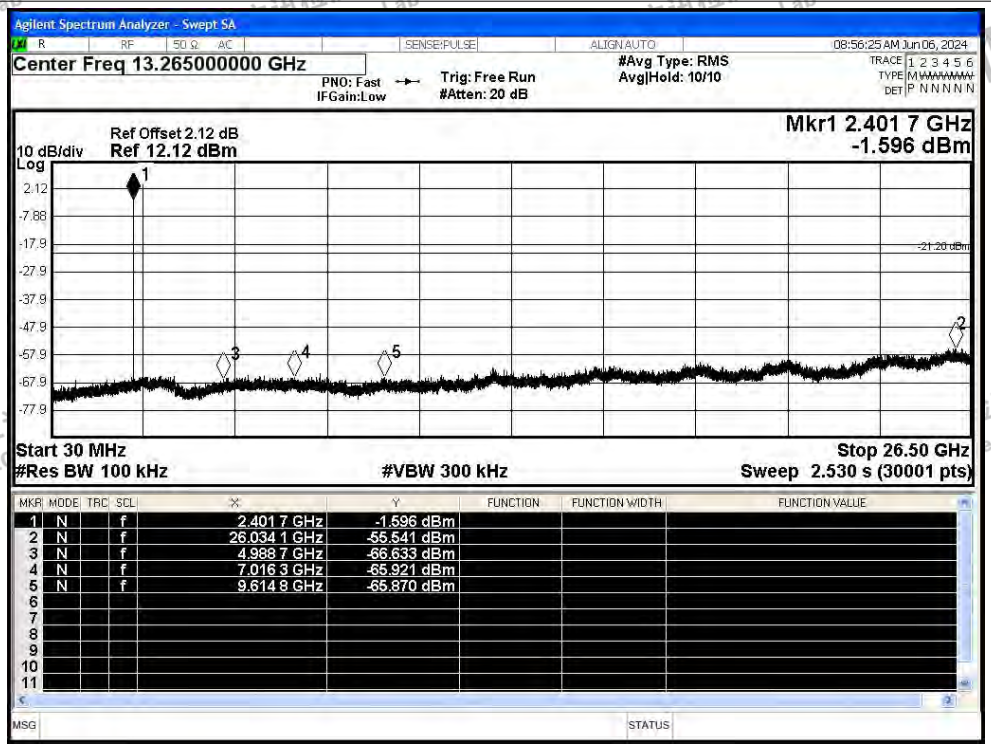
| Condition | Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant0 | -54.34 | -20 | Pass |
| NVNT | 1-DH5 | 2441 | Ant0 | -54.69 | -20 | Pass |
| NVNT | 1-DH5 | 2480 | Ant0 | -54.31 | -20 | Pass |
| NVNT | 2-DH5 | 2402 | Ant0 | -51.62 | -20 | Pass |
| NVNT | 2-DH5 | 2441 | Ant0 | -52.63 | -20 | Pass |
| NVNT | 2-DH5 | 2480 | Ant0 | -53.9 | -20 | Pass |
| NVNT | 3-DH5 | 2402 | Ant0 | -52.82 | -20 | Pass |
| NVNT | 3-DH5 | 2441 | Ant0 | -53.62 | -20 | Pass |
| NVNT | 3-DH5 | 2480 | Ant0 | -52.19 | -20 | Pass |

Test Graphs

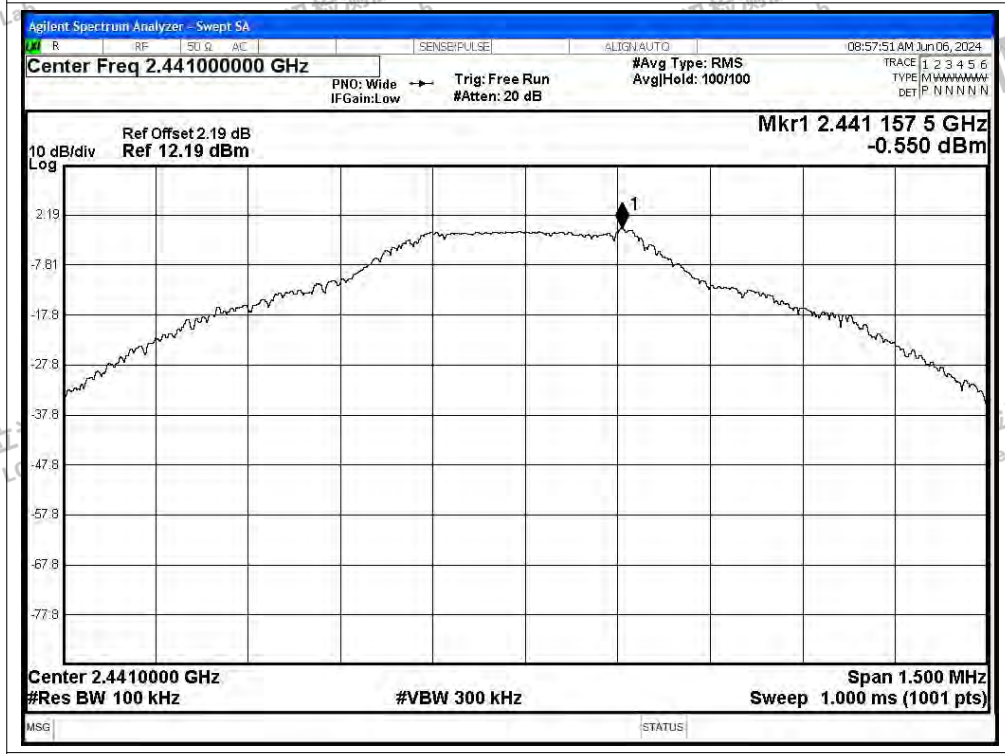
Tx. Spurious NVNT 1-DH5 2402MHz Ant0 Ref



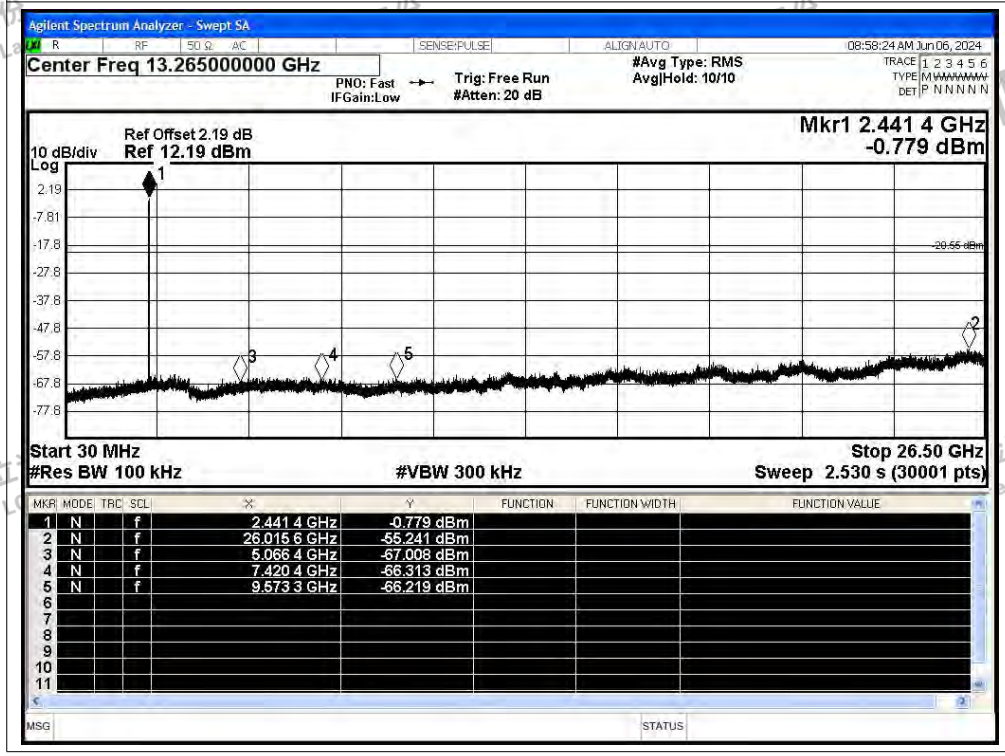

Tx. Spurious NVNT 1-DH5 2402MHz Ant0 Emission



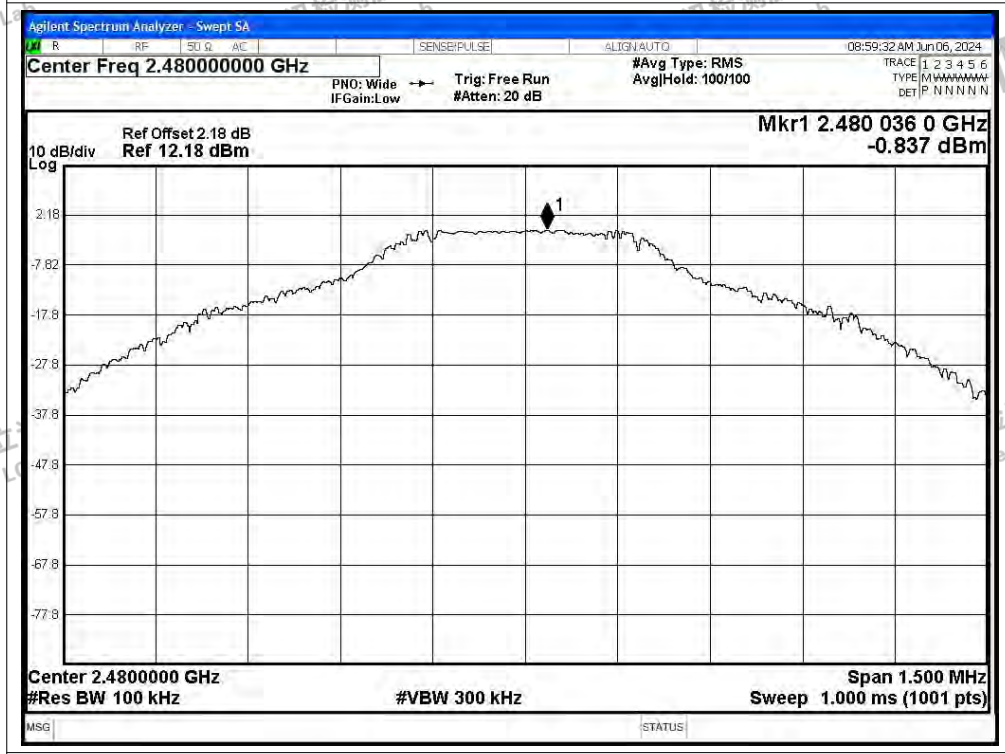
Tx. Spurious NVNT 1-DH5 2441MHz Ant0 Ref



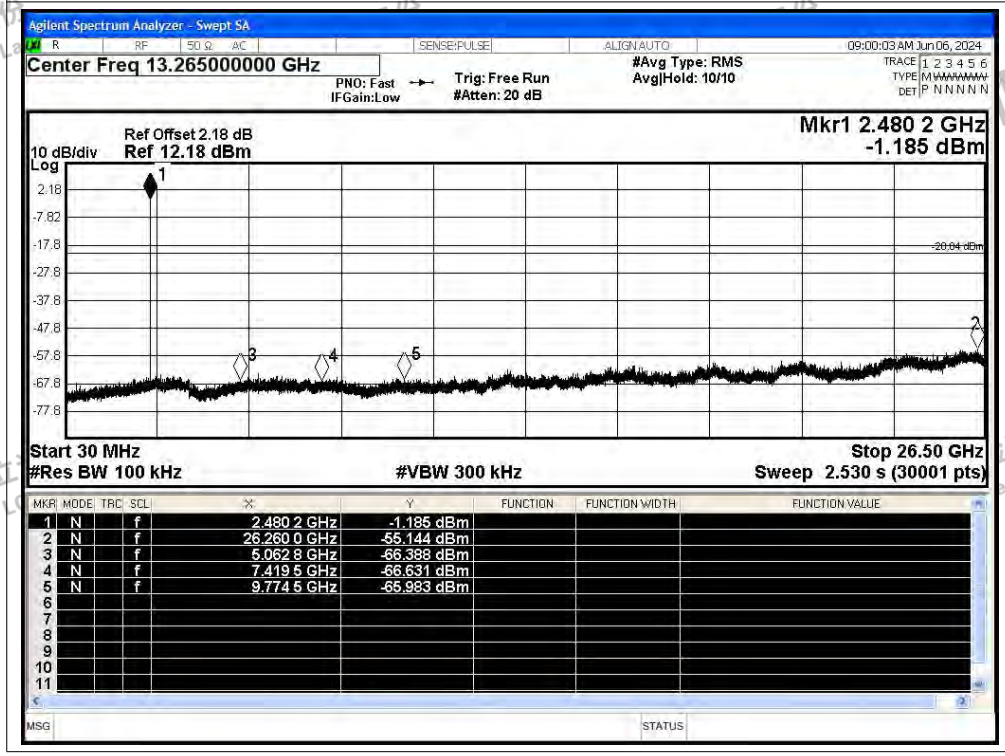

Tx. Spurious NVNT 1-DH5 2441MHz Ant0 Emission



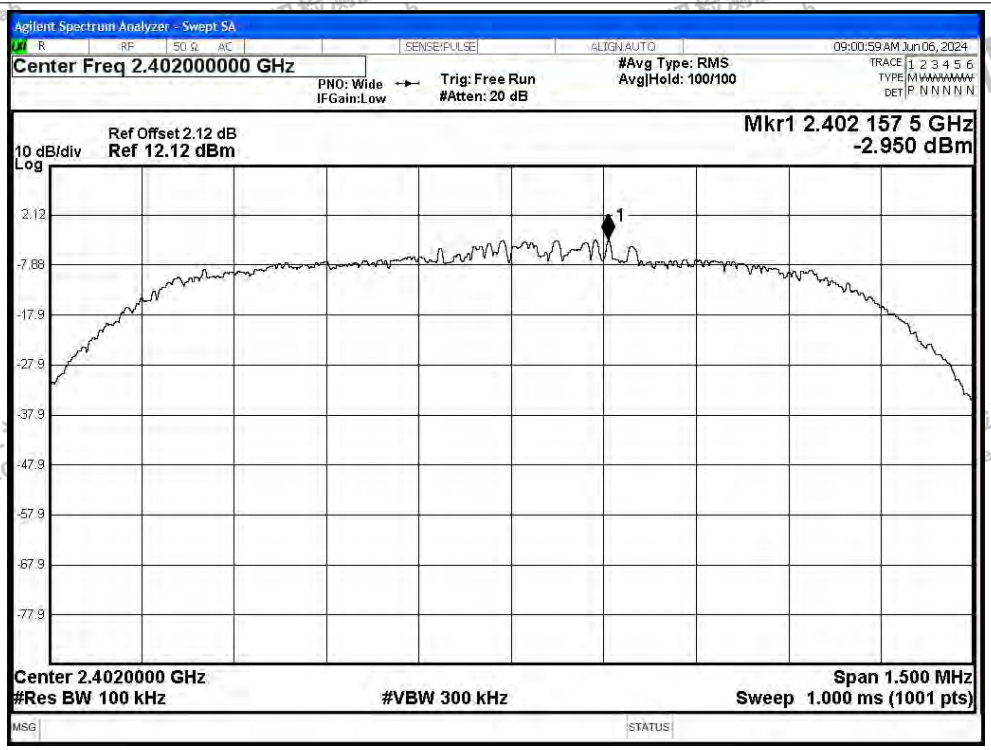
Tx. Spurious NVNT 1-DH5 2480MHz Ant0 Ref



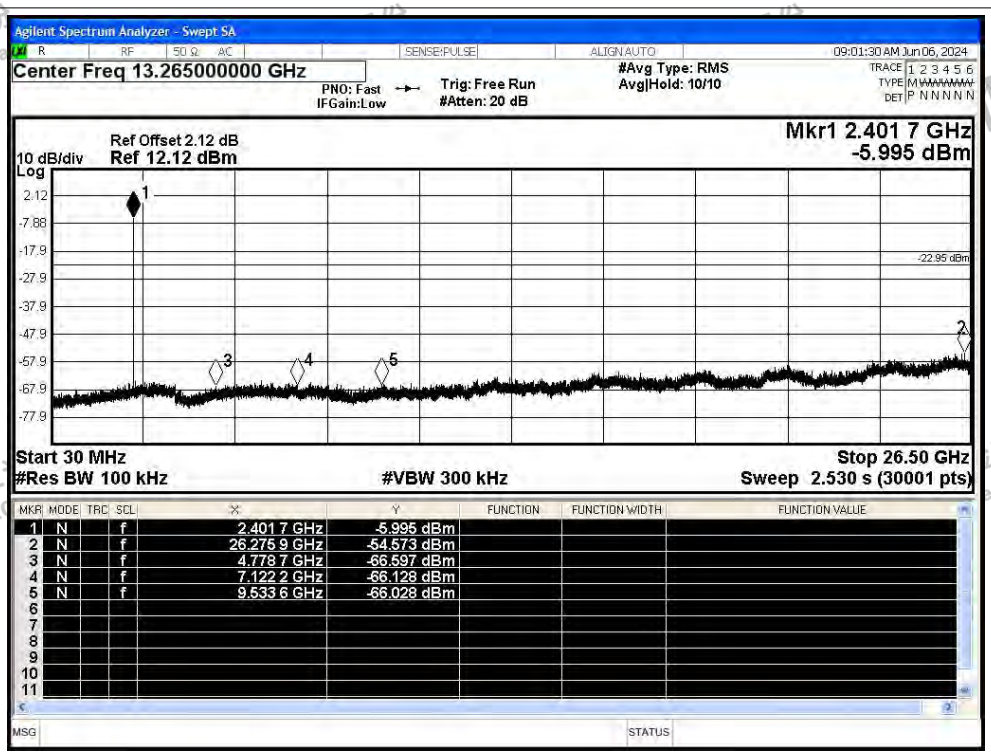

Tx. Spurious NVNT 1-DH5 2480MHz Ant0 Emission



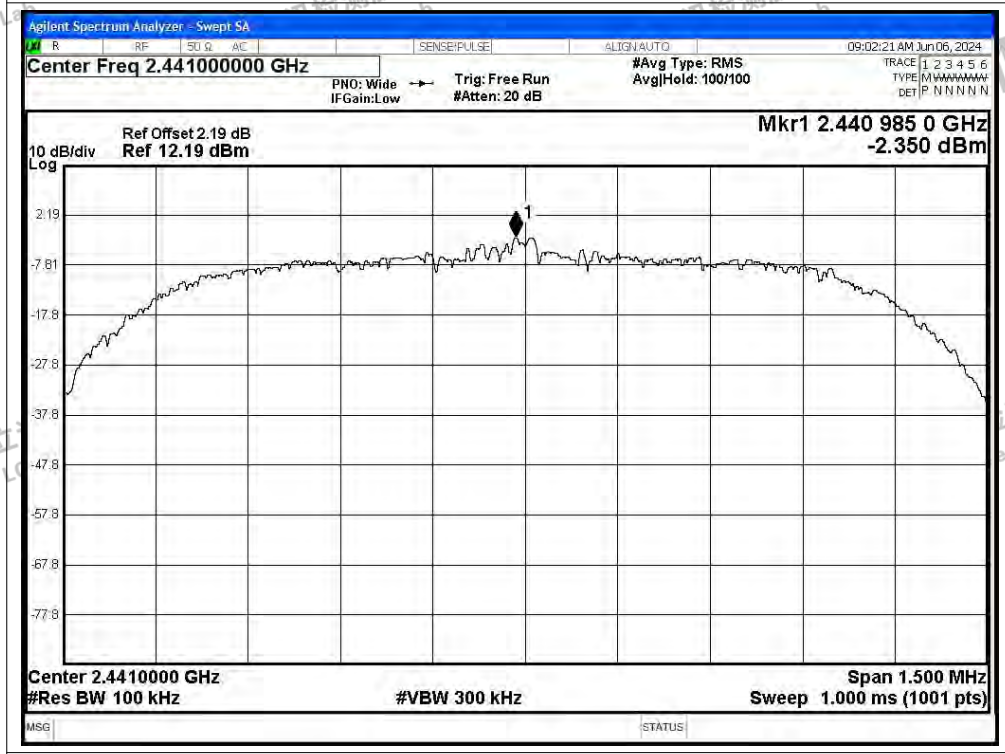
Tx. Spurious NVNT 2-DH5 2402MHz Ant0 Ref



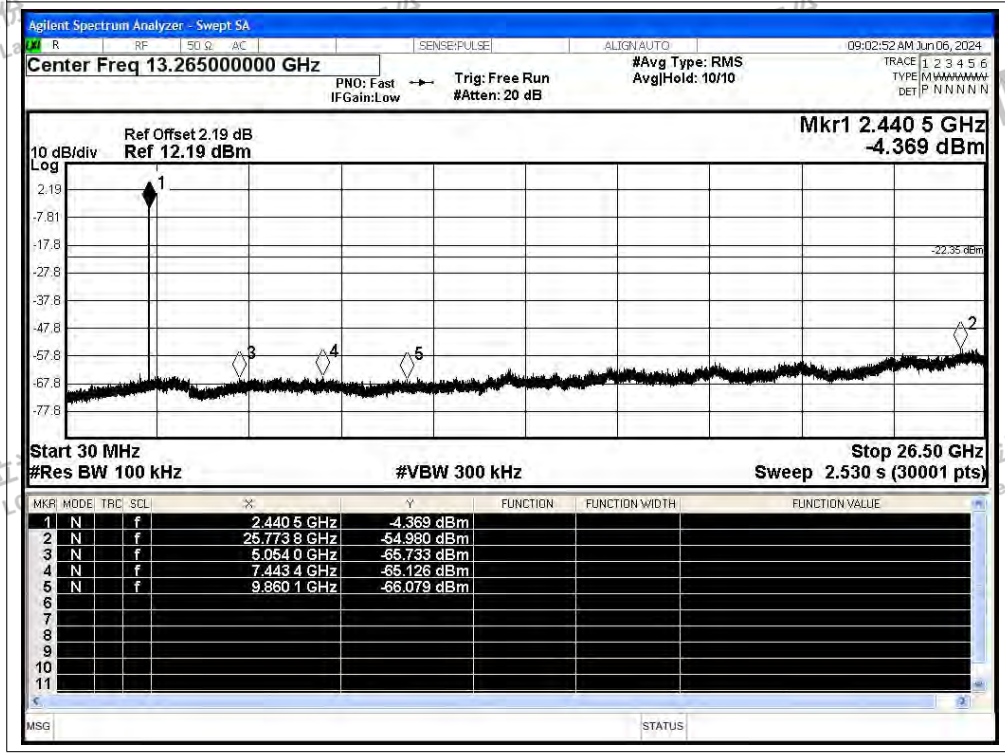

Tx. Spurious NVNT 2-DH5 2402MHz Ant0 Emission



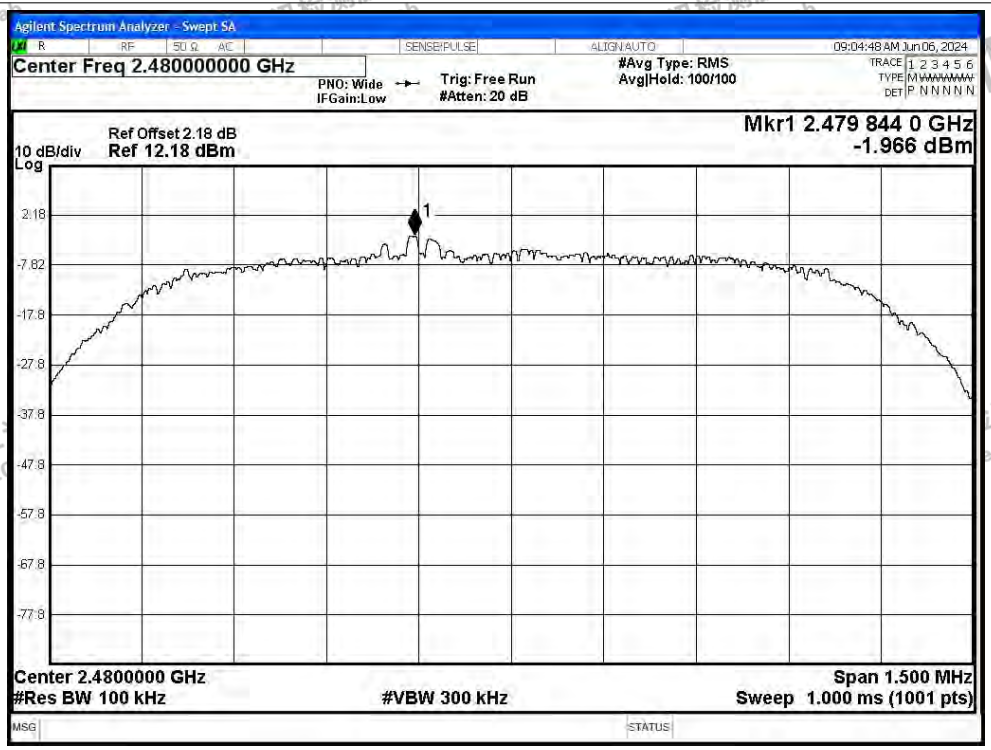
Tx. Spurious NVNT 2-DH5 2441MHz Ant0 Ref



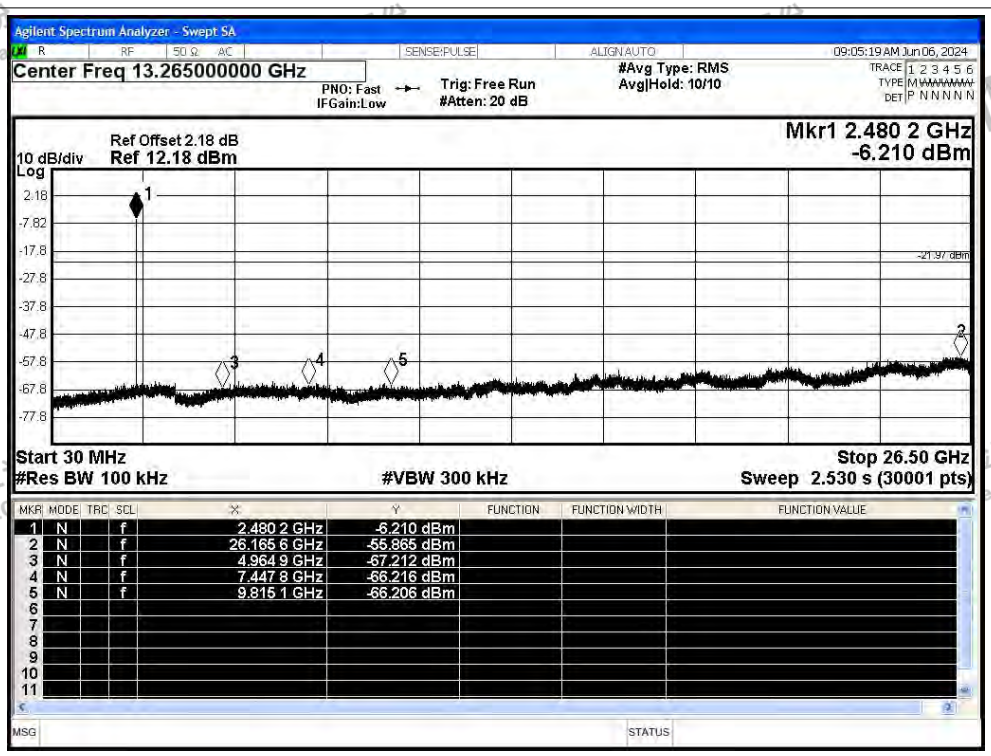

Tx. Spurious NVNT 2-DH5 2441MHz Ant0 Emission



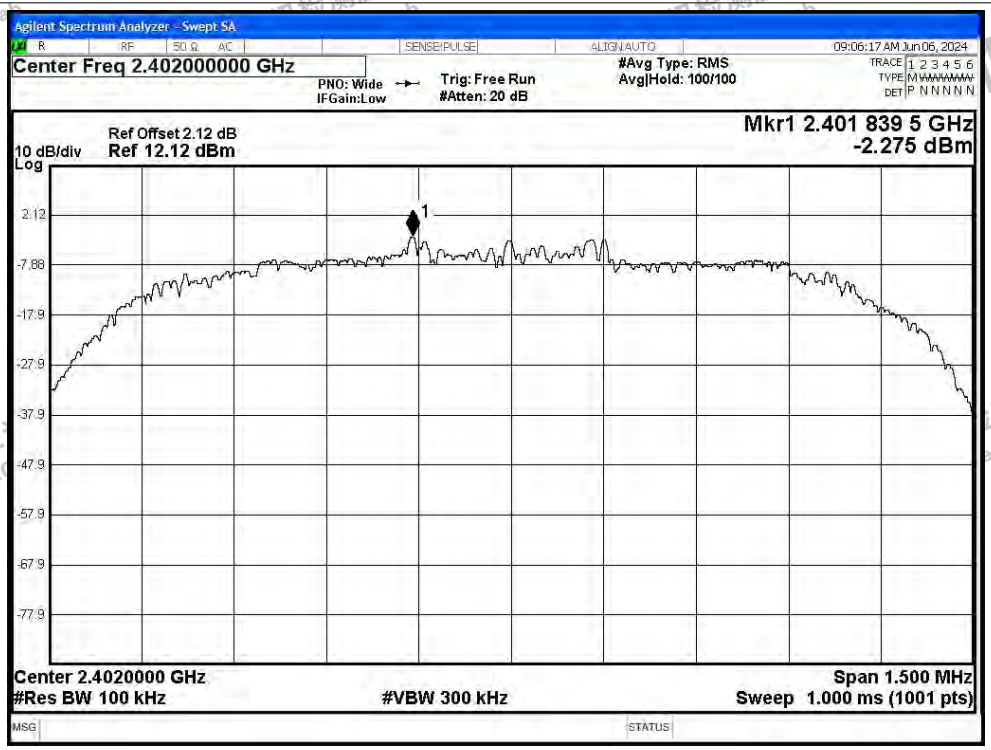
Tx. Spurious NVNT 2-DH5 2480MHz Ant0 Ref



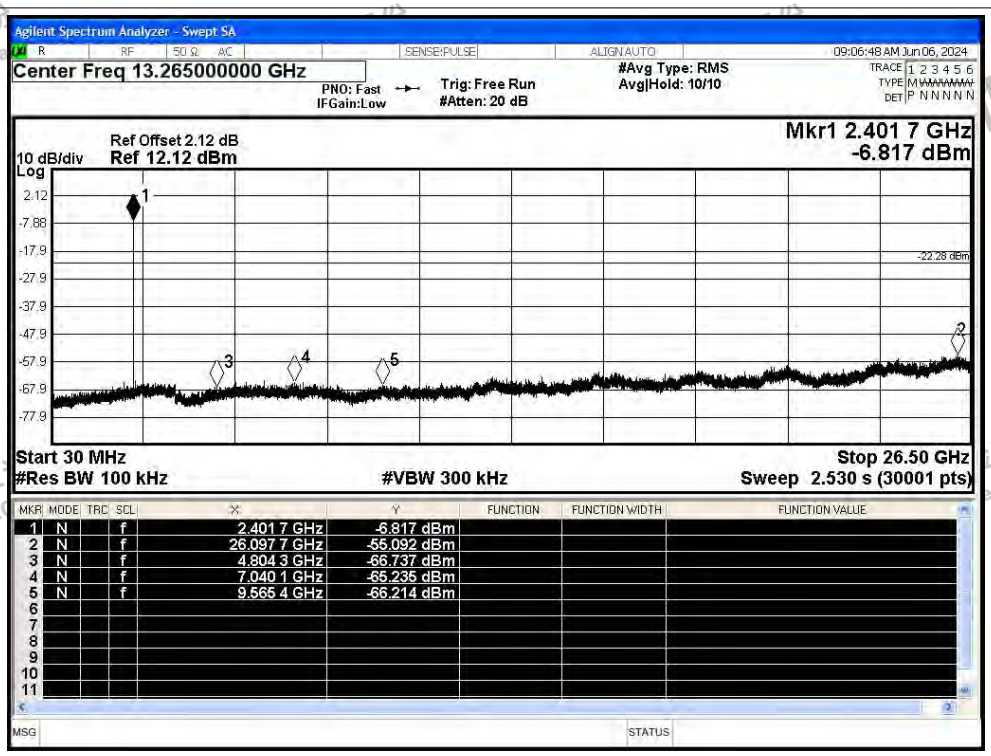

Tx. Spurious NVNT 2-DH5 2480MHz Ant0 Emission



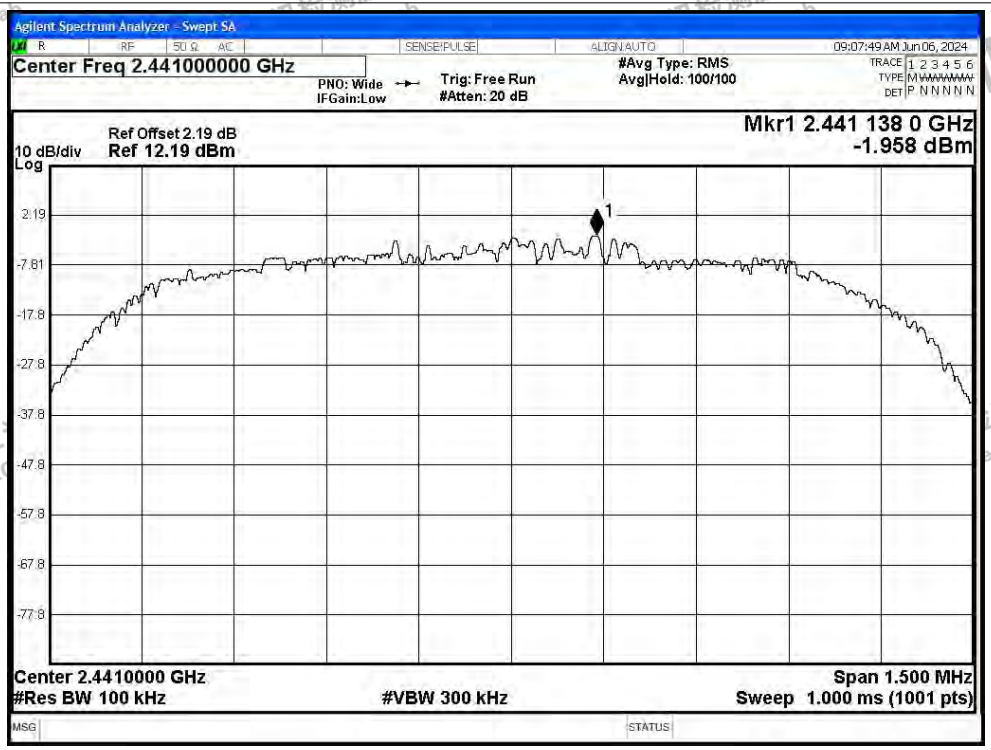
Tx. Spurious NVNT 3-DH5 2402MHz Ant0 Ref



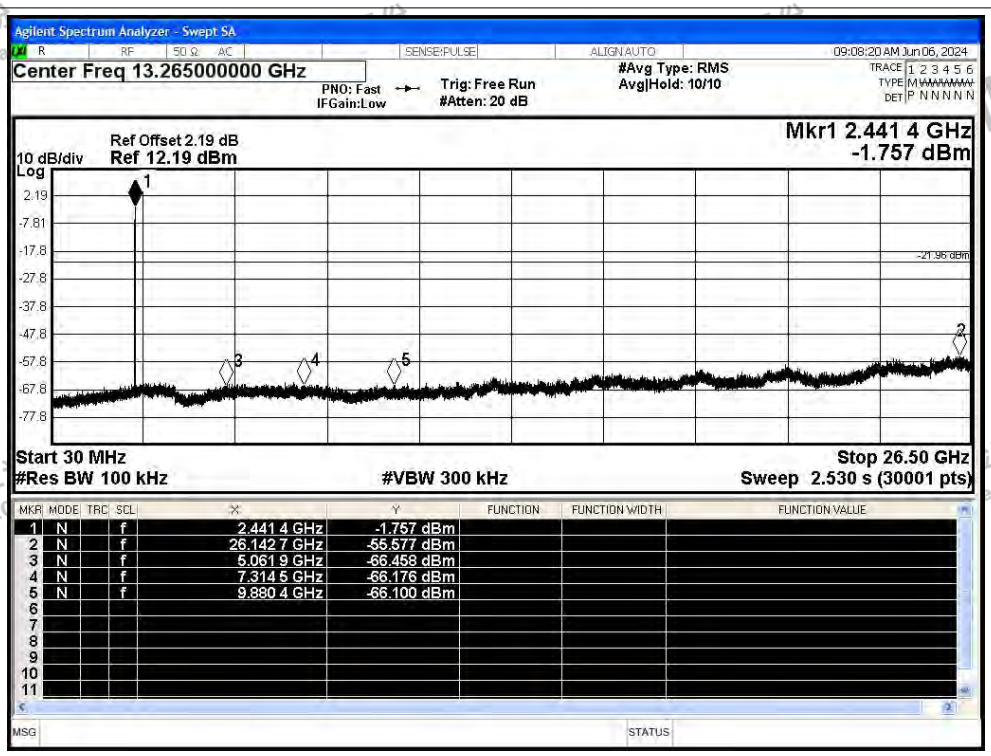

Tx. Spurious NVNT 3-DH5 2402MHz Ant0 Emission



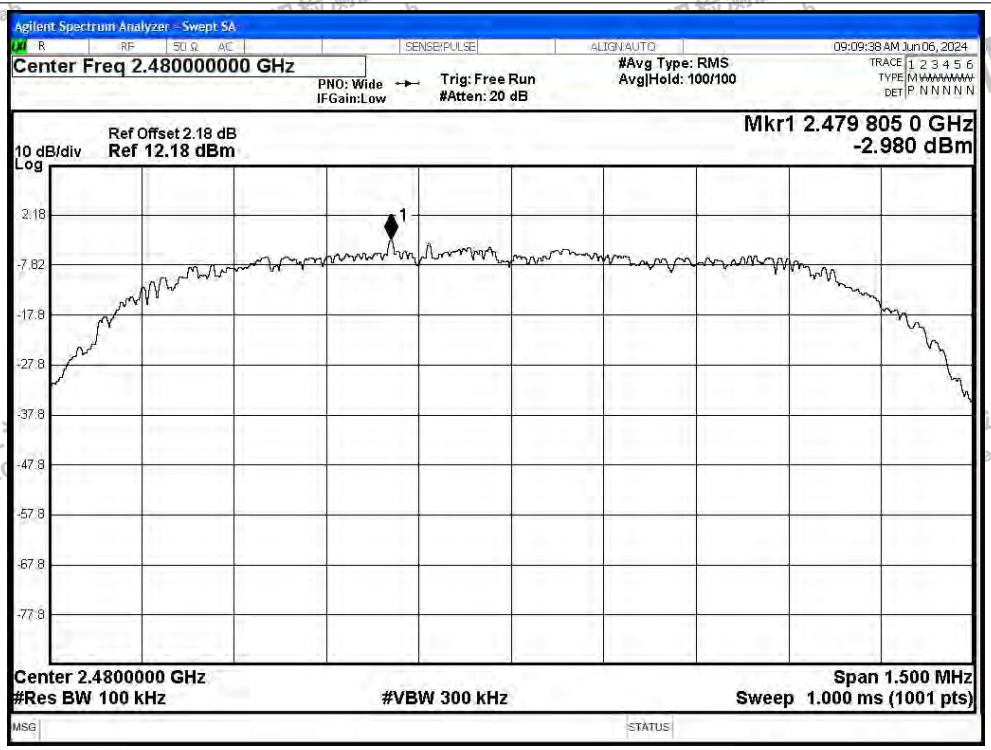
Tx. Spurious NVNT 3-DH5 2441MHz Ant0 Ref



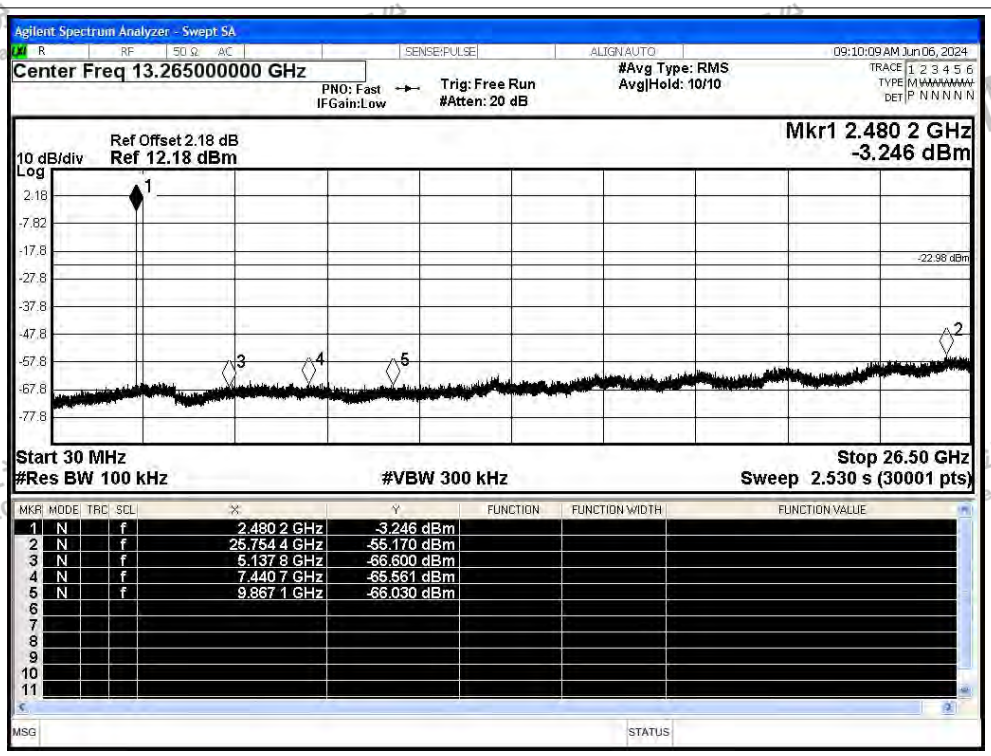

Tx. Spurious NVNT 3-DH5 2441MHz Ant0 Emission



Tx. Spurious NVNT 3-DH5 2480MHz Ant0 Ref




Tx. Spurious NVNT 3-DH5 2480MHz Ant0 Emission

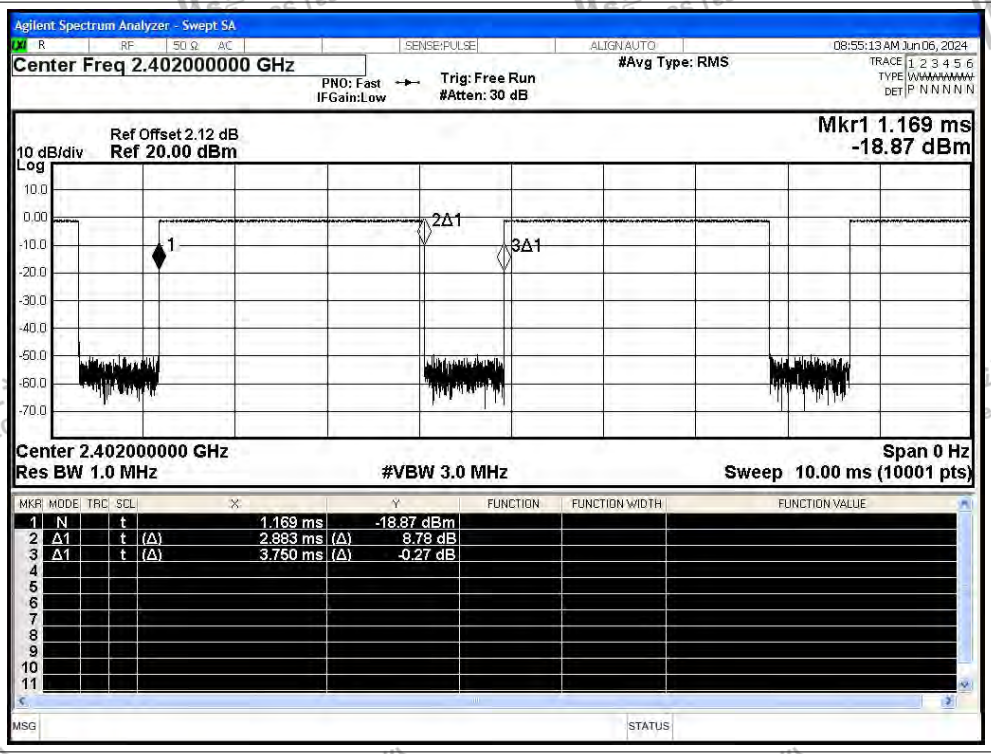


# A.8 Duty Cycle

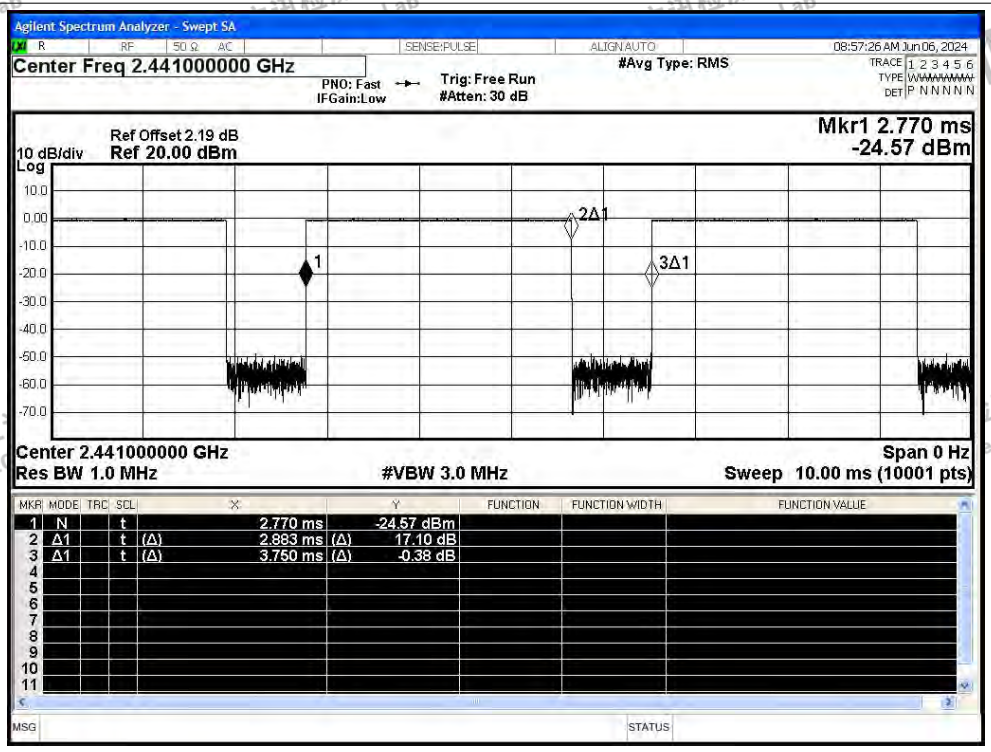
| Condition | Mode | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant0 | 76.88 | 1.14 | 0.35 |
| NVNT | 1-DH5 | 2441 | Ant0 | 76.88 | 1.14 | 0.35 |
| NVNT | 1-DH5 | 2480 | Ant0 | 76.88 | 1.14 | 0.35 |
| NVNT | 2-DH5 | 2402 | Ant0 | 76.96 | 1.14 | 0.35 |
| NVNT | 2-DH5 | 2441 | Ant0 | 76.96 | 1.14 | 0.35 |
| NVNT | 2-DH5 | 2480 | Ant0 | 76.96 | 1.14 | 0.35 |
| NVNT | 3-DH5 | 2402 | Ant0 | 77.01 | 1.13 | 0.35 |
| NVNT | 3-DH5 | 2441 | Ant0 | 77.01 | 1.13 | 0.35 |
| NVNT | 3-DH5 | 2480 | Ant0 | 77.01 | 1.13 | 0.35 |

Test Graphs

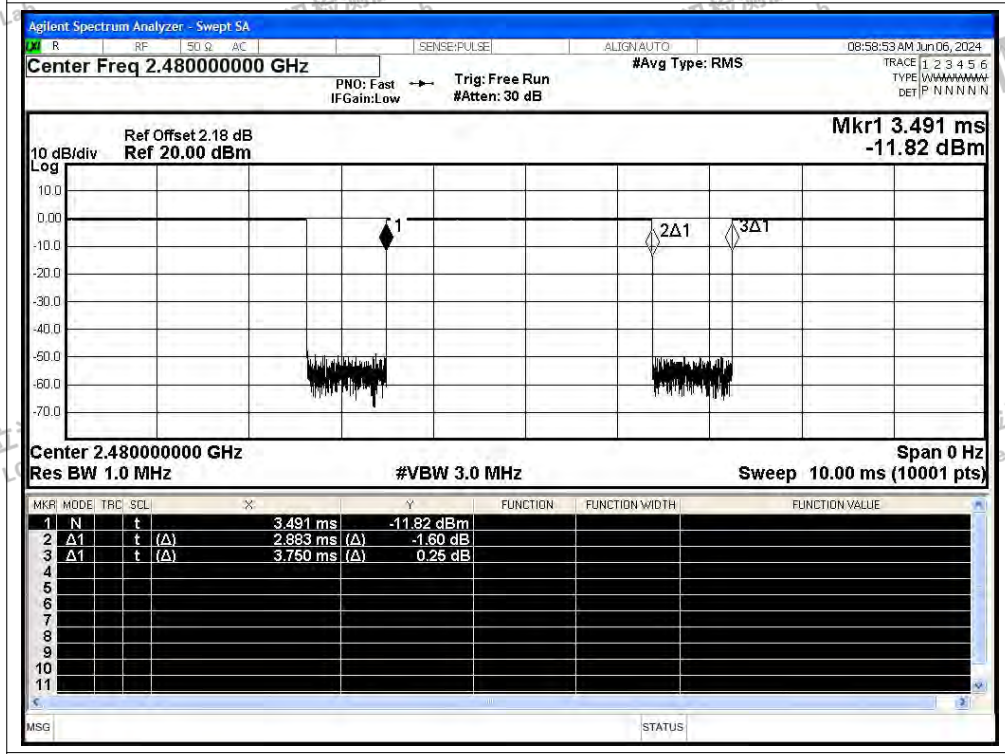
Duty Cycle NVNT 1-DH5 2402MHz Ant0



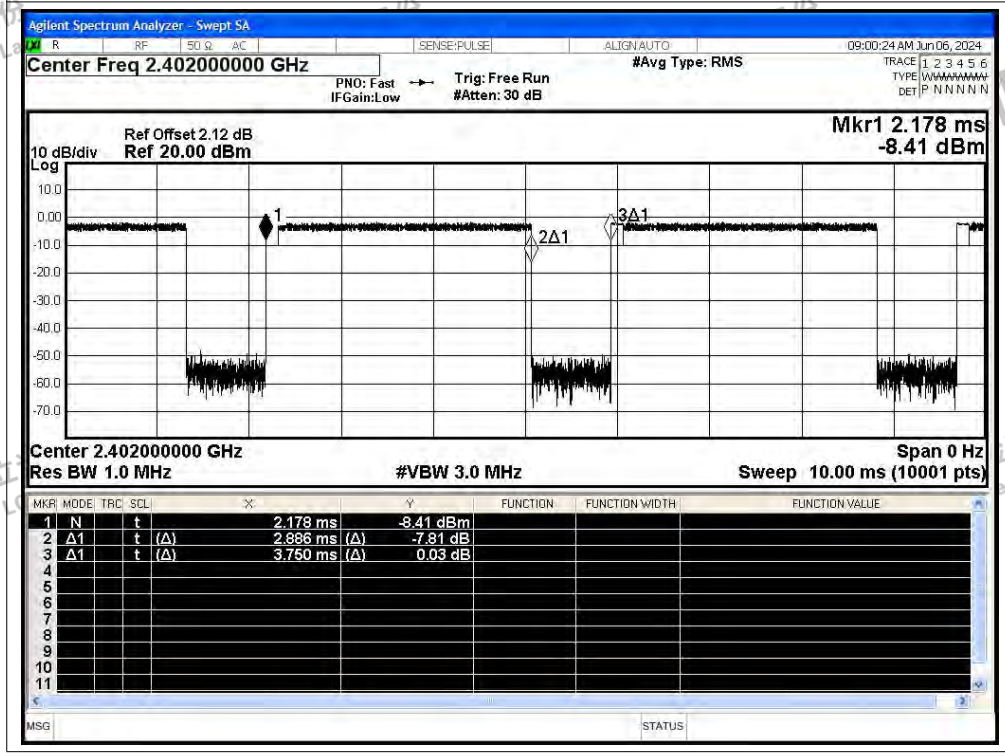

Duty Cycle NVNT 1-DH5 2441MHz Ant0



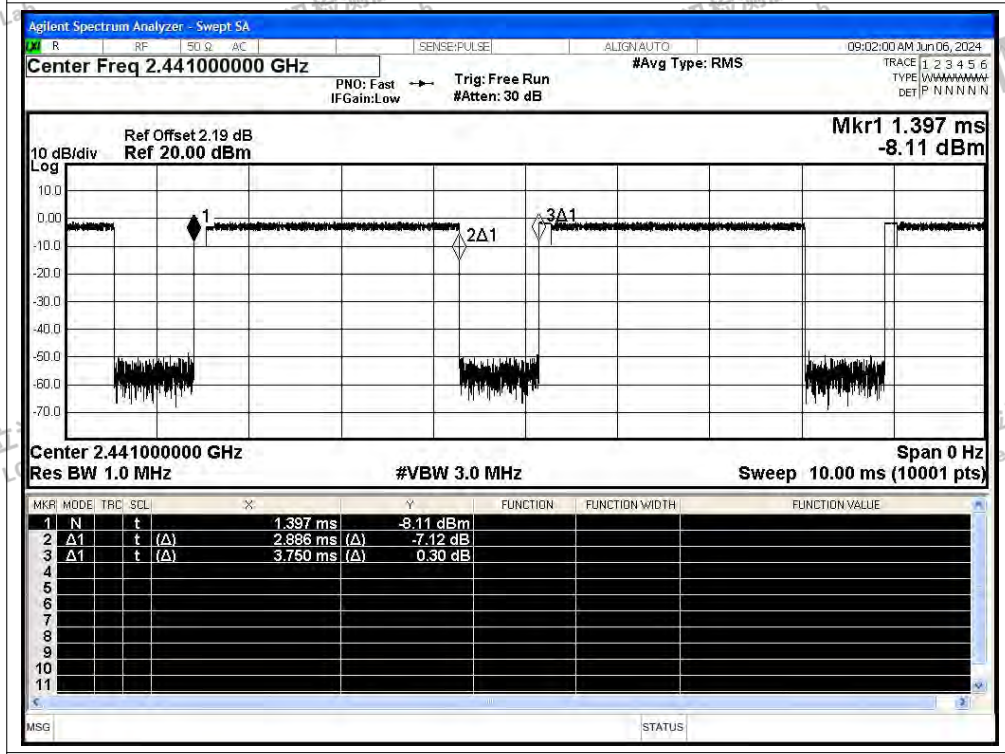
Duty Cycle NVNT 1-DH5 2480MHz Ant0



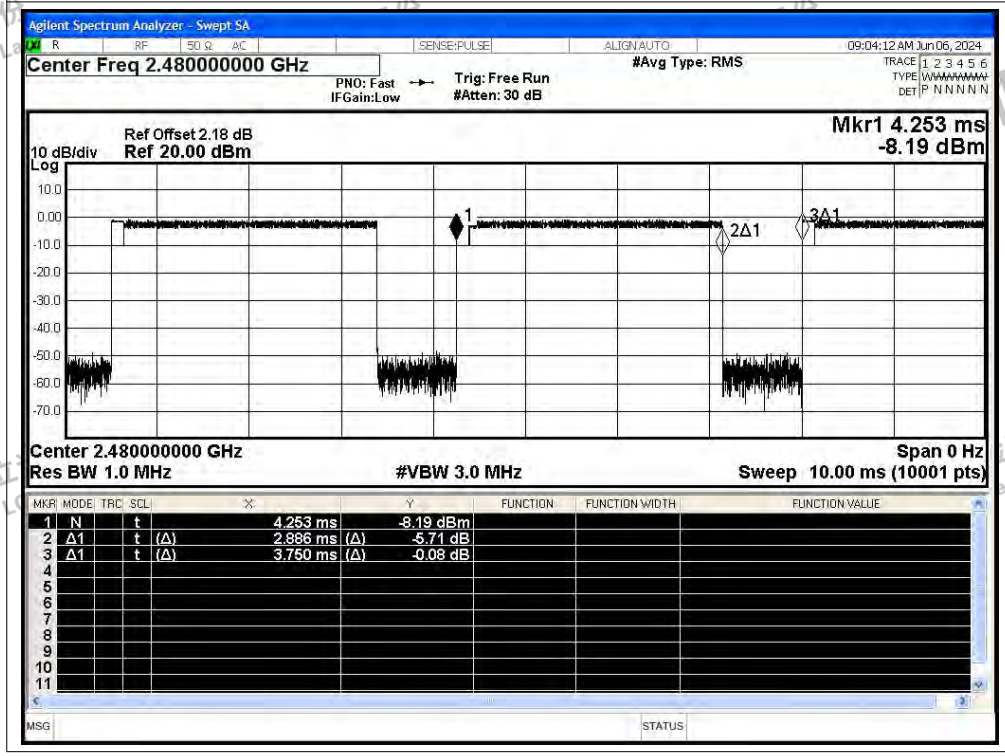

Duty Cycle NVNT 2-DH5 2402MHz Ant0



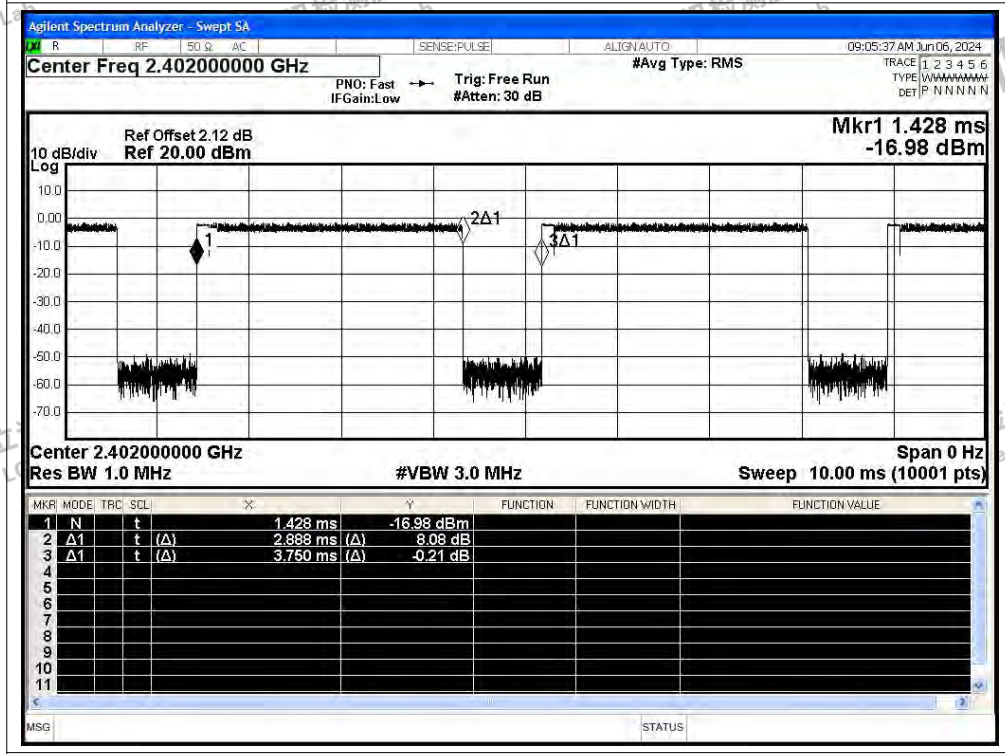
Duty Cycle NVNT 2-DH5 2441MHz Ant0



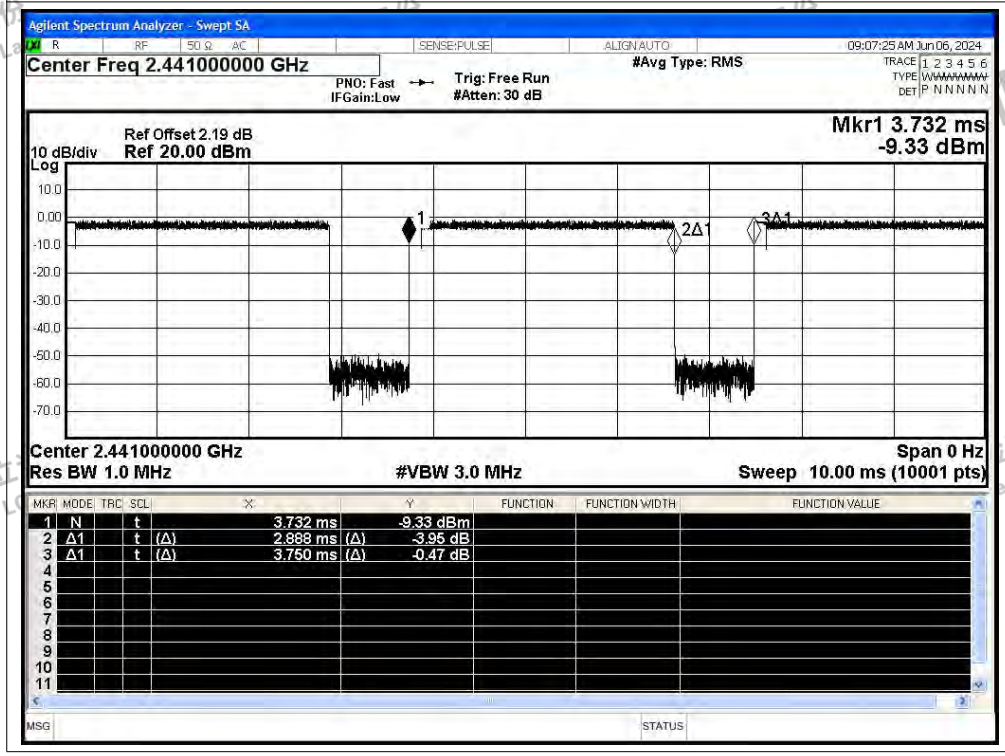

Duty Cycle NVNT 2-DH5 2480MHz Ant0



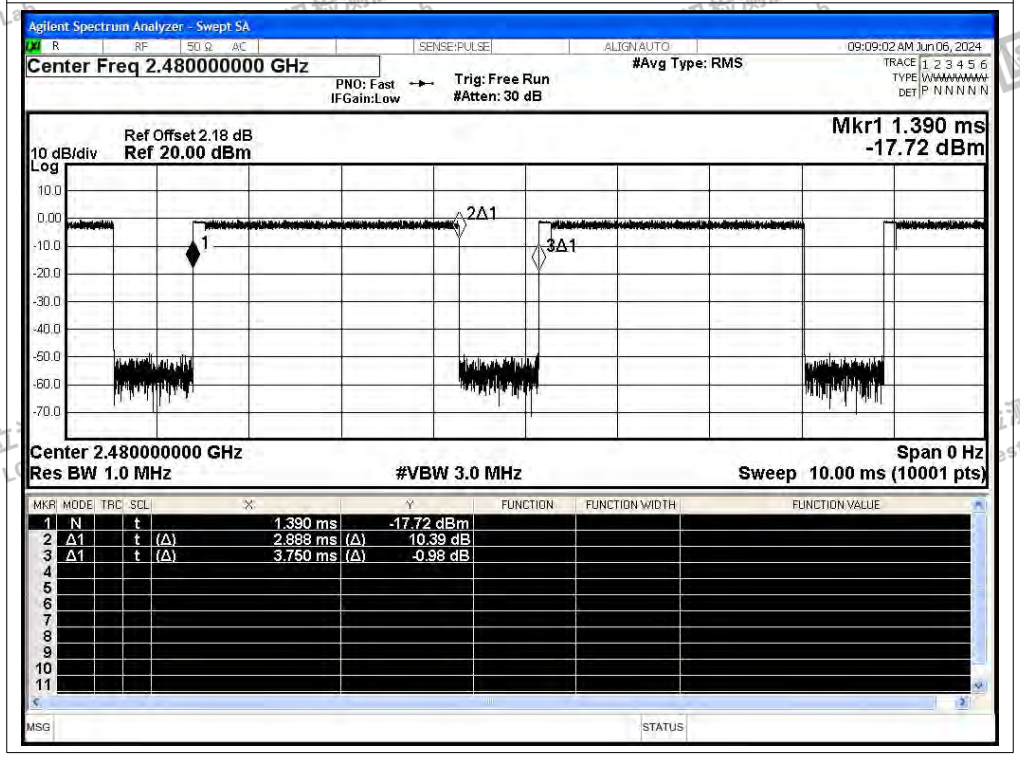
Duty Cycle NVNT 3-DH5 2402MHz Ant0




Duty Cycle NVNT 3-DH5 2441MHz Ant0



Duty Cycle NVNT 3-DH5 2480MHz Ant0

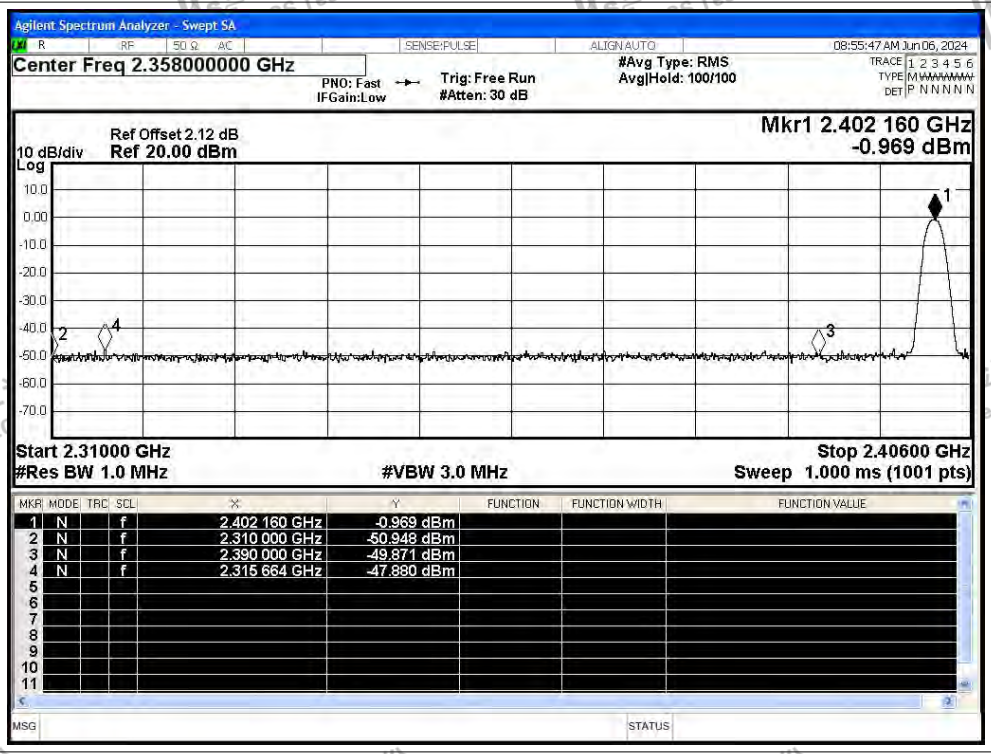


## A.9 Restrict Band

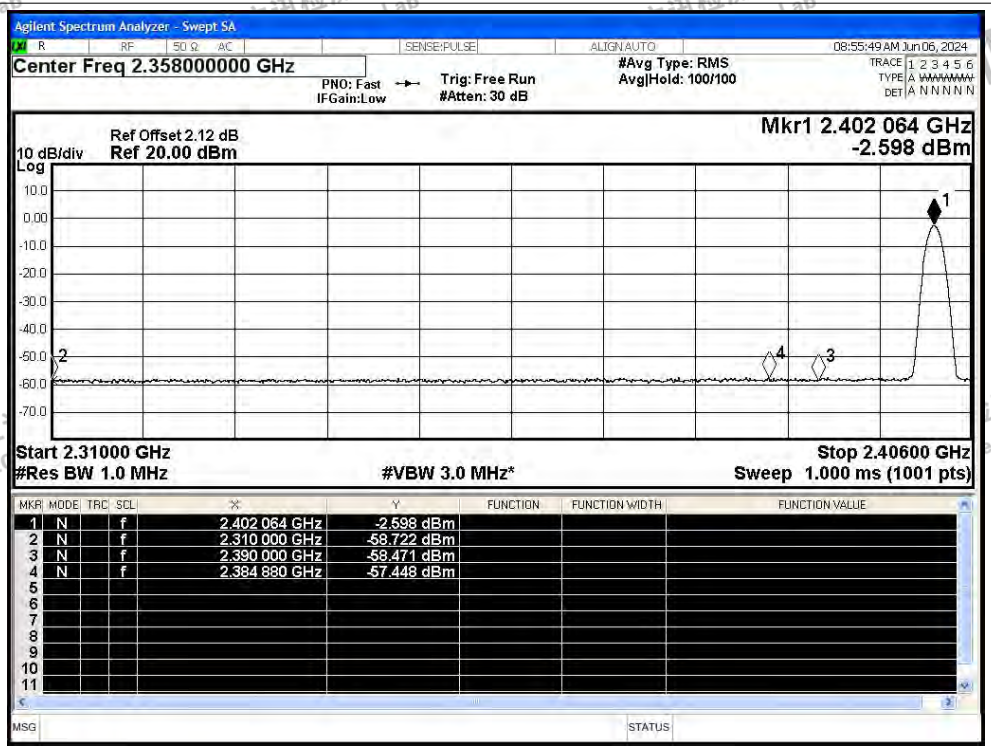
| Condition | Mode | Frequency (MHz) | Antenna | Hopping Mode | Spur Freq (MHz) | Power (dBm) | Gain (dBi) | Duty Factor (dB) | E (dBuV/m) | Detector | Limit (dBuV/m) | Verdict |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NVNT | 1-DH5 | 2402 | Ant0 | No-Hopping | 2310 | -50.95 | 2.91 | - | 47.22 | Peak | 74 | Pass |
| NVNT | 1-DH5 | 2402 | Ant0 | No-Hopping | 2310 | -58.72 | 2.91 | 1.14 | 40.59 | Average | 54 | Pass |
| NVNT | 1-DH5 | 2402 | Ant0 | No-Hopping | 2315.664 | -47.88 | 2.91 | - | 50.29 | Peak | 74 | Pass |
| NVNT | 1-DH5 | 2402 | Ant0 | No-Hopping | 2384.88 | -57.45 | 2.91 | 1.14 | 41.86 | Average | 54 | Pass |
| NVNT | 1-DH5 | 2402 | Ant0 | No-Hopping | 2390 | -49.87 | 2.91 | - | 48.30 | Peak | 74 | Pass |
| NVNT | 1-DH5 | 2402 | Ant0 | No-Hopping | 2390 | -58.47 | 2.91 | 1.14 | 40.84 | Average | 54 | Pass |
| NVNT | 1-DH5 | 2480 | Ant0 | No-Hopping | 2483.5 | -47.87 | 2.91 | - | 50.30 | Peak | 74 | Pass |
| NVNT | 1-DH5 | 2480 | Ant0 | No-Hopping | 2483.5 | -58.13 | 2.91 | 1.14 | 41.18 | Average | 54 | Pass |
| NVNT | 1-DH5 | 2480 | Ant0 | No-Hopping | 2498.104 | -46.88 | 2.91 | - | 51.29 | Peak | 74 | Pass |
| NVNT | 1-DH5 | 2480 | Ant0 | No-Hopping | 2489.344 | -56.95 | 2.91 | 1.14 | 42.36 | Average | 54 | Pass |
| NVNT | 1-DH5 | 2480 | Ant0 | No-Hopping | 2500 | -49.59 | 2.91 | - | 48.58 | Peak | 74 | Pass |
| NVNT | 1-DH5 | 2480 | Ant0 | No-Hopping | 2500 | -57.71 | 2.91 | 1.14 | 41.60 | Average | 54 | Pass |
| NVNT | 2-DH5 | 2402 | Ant0 | No-Hopping | 2310 | -49.95 | 2.91 | - | 48.22 | Peak | 74 | Pass |
| NVNT | 2-DH5 | 2402 | Ant0 | No-Hopping | 2310 | -58.59 | 2.91 | 1.14 | 40.72 | Average | 54 | Pass |
| NVNT | 2-DH5 | 2402 | Ant0 | No-Hopping | 2312.4 | -47.63 | 2.91 | - | 50.54 | Peak | 74 | Pass |
| NVNT | 2-DH5 | 2402 | Ant0 | No-Hopping | 2379.024 | -57.68 | 2.91 | 1.14 | 41.63 | Average | 54 | Pass |
| NVNT | 2-DH5 | 2402 | Ant0 | No-Hopping | 2390 | -49.95 | 2.91 | - | 48.22 | Peak | 74 | Pass |
| NVNT | 2-DH5 | 2402 | Ant0 | No-Hopping | 2390 | -58.18 | 2.91 | 1.14 | 41.13 | Average | 54 | Pass |
| NVNT | 2-DH5 | 2480 | Ant0 | No-Hopping | 2483.5 | -49.62 | 2.91 | - | 48.55 | Peak | 74 | Pass |
| NVNT | 2-DH5 | 2480 | Ant0 | No-Hopping | 2483.5 | -58.16 | 2.91 | 1.14 | 41.15 | Average | 54 | Pass |
| NVNT | 2-DH5 | 2480 | Ant0 | No-Hopping | 2496.376 | -47.05 | 2.91 | - | 51.12 | Peak | 74 | Pass |
| NVNT | 2-DH5 | 2480 | Ant0 | No-Hopping | 2493.736 | -56.96 | 2.91 | 1.14 | 42.35 | Average | 54 | Pass |
| NVNT | 2-DH5 | 2480 | Ant0 | No-Hopping | 2500 | -49.85 | 2.91 | - | 48.32 | Peak | 74 | Pass |
| NVNT | 2-DH5 | 2480 | Ant0 | No-Hopping | 2500 | -57.88 | 2.91 | 1.14 | 41.43 | Average | 54 | Pass |
| NVNT | 3-DH5 | 2402 | Ant0 | No-Hopping | 2310 | -50.03 | 2.91 | - | 48.14 | Peak | 74 | Pass |
| NVNT | 3-DH5 | 2402 | Ant0 | No-Hopping | 2310 | -58.04 | 2.91 | 1.13 | 41.26 | Average | 54 | Pass |
| NVNT | 3-DH5 | 2402 | Ant0 | No-Hopping | 2320.56 | -47.57 | 2.91 | - | 50.60 | Peak | 74 | Pass |
| NVNT | 3-DH5 | 2402 | Ant0 | No-Hopping | 2364.624 | -57.76 | 2.91 | 1.13 | 41.54 | Average | 54 | Pass |
| NVNT | 3-DH5 | 2402 | Ant0 | No-Hopping | 2390 | -51.1 | 2.91 | - | 47.07 | Peak | 74 | Pass |
| NVNT | 3-DH5 | 2402 | Ant0 | No-Hopping | 2390 | -58.5 | 2.91 | 1.13 | 40.80 | Average | 54 | Pass |
| NVNT | 3-DH5 | 2480 | Ant0 | No-Hopping | 2483.5 | -50.55 | 2.91 | - | 47.62 | Peak | 74 | Pass |
| NVNT | 3-DH5 | 2480 | Ant0 | No-Hopping | 2483.5 | -57.62 | 2.91 | 1.13 | 41.68 | Average | 54 | Pass |
| NVNT | 3-DH5 | 2480 | Ant0 | No-Hopping | 2493.784 | -46.49 | 2.91 | - | 51.68 | Peak | 74 | Pass |
| NVNT | 3-DH5 | 2480 | Ant0 | No-Hopping | 2483.632 | -56.84 | 2.91 | 1.13 | 42.46 | Average | 54 | Pass |
| NVNT | 3-DH5 | 2480 | Ant0 | No-Hopping | 2500 | -47.44 | 2.91 | - | 50.73 | Peak | 74 | Pass |
| NVNT | 3-DH5 | 2480 | Ant0 | No-Hopping | 2500 | -57.74 | 2.91 | 1.13 | 41.56 | Average | 54 | Pass |

Test Graphs

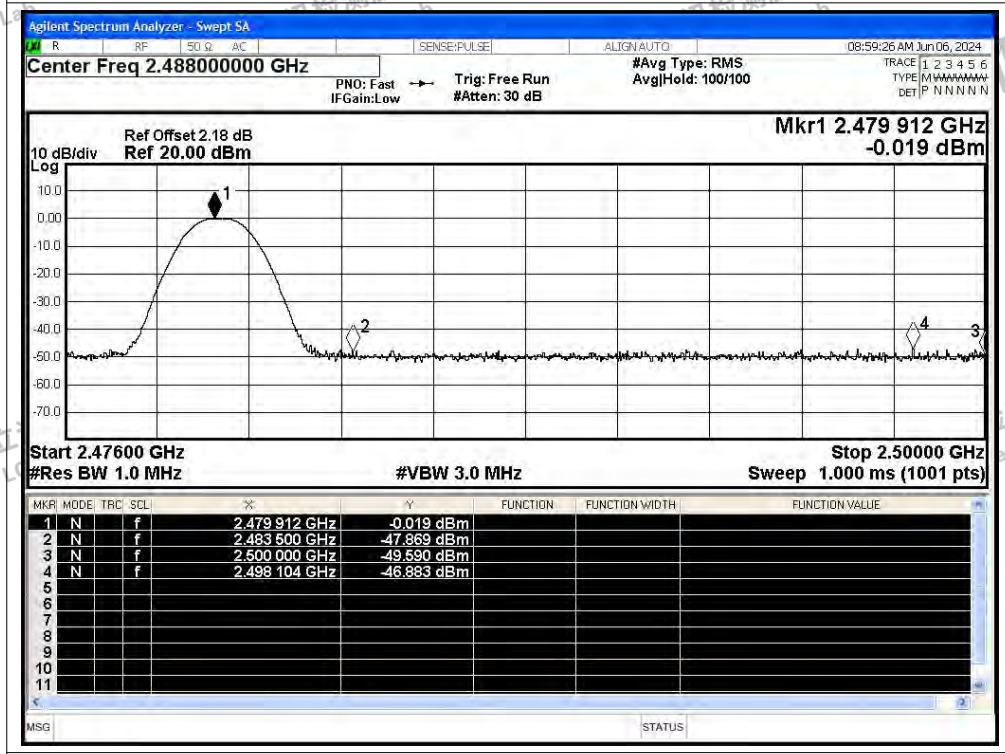
Restrict Band NVNT 1-DH5 2402MHz Ant0 No-Hopping Peak



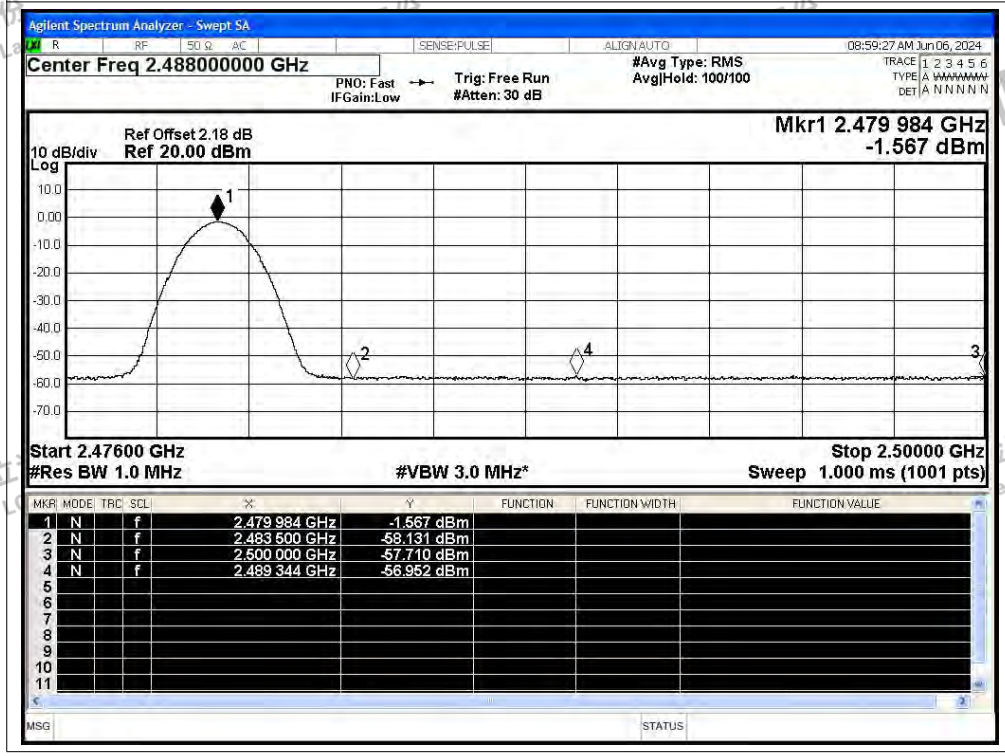

Restrict Band NVNT 1-DH5 2402MHz Ant0 No-Hopping Average



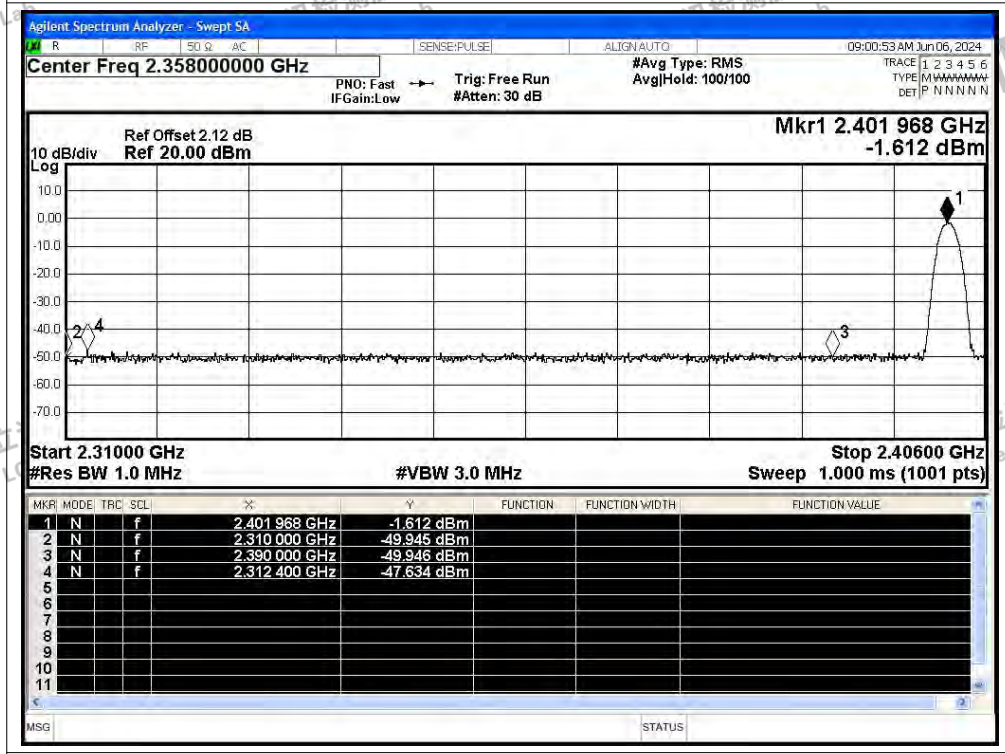
Restrict Band NVNT 1-DH5 2480MHz Ant0 No-Hopping Peak



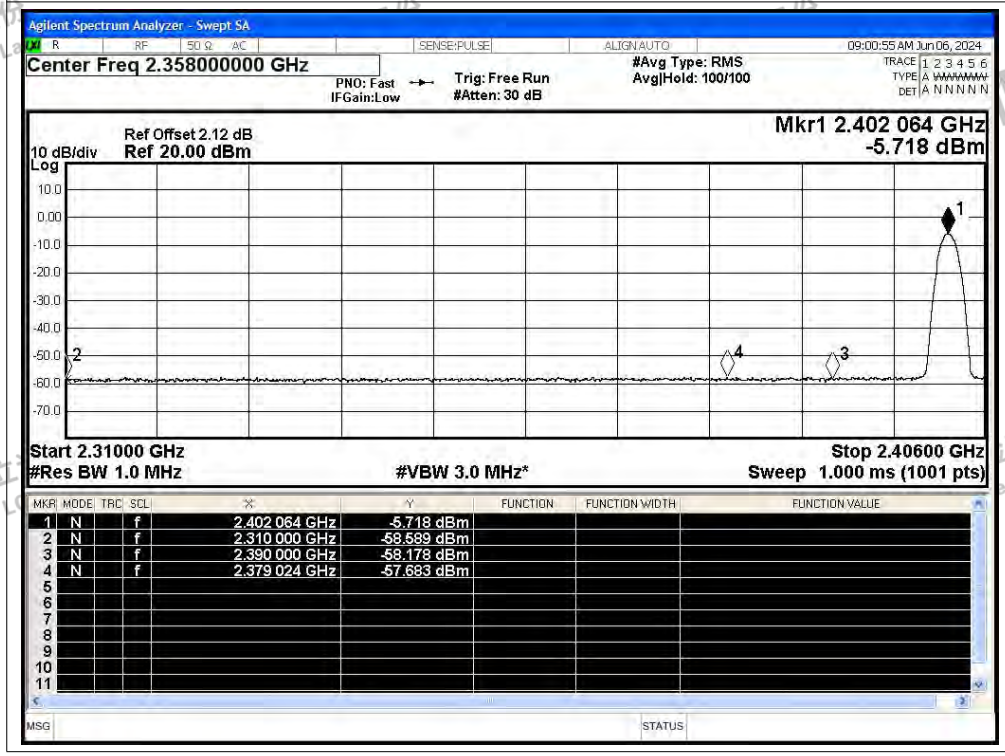

Restrict Band NVNT 1-DH5 2480MHz Ant0 No-Hopping Average



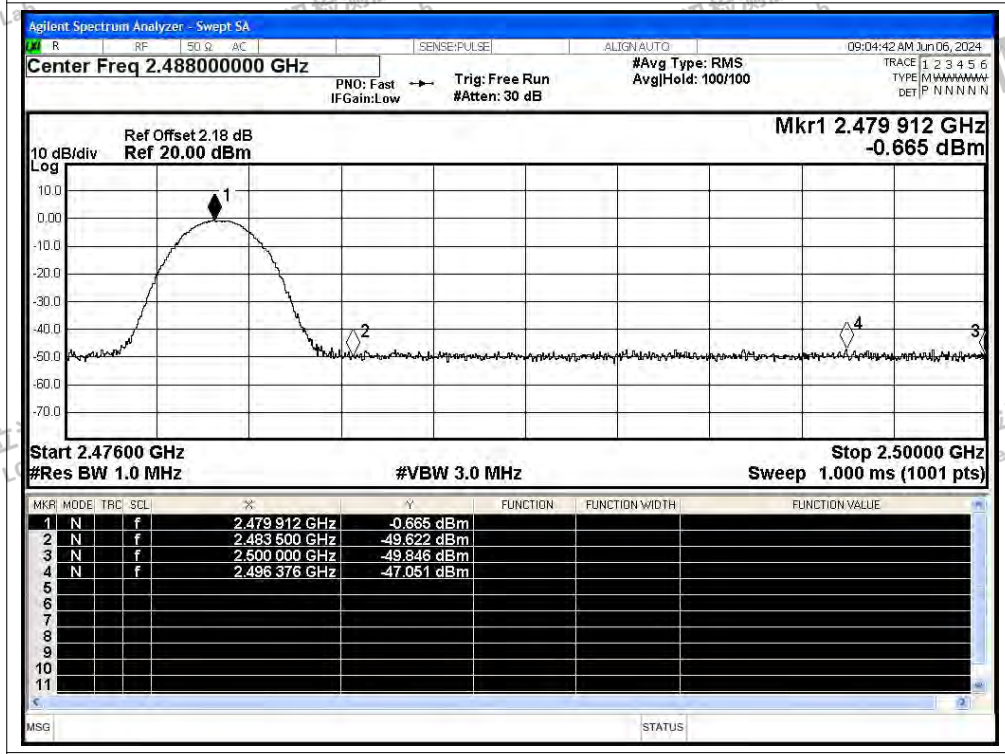
Restrict Band NVNT 2-DH5 2402MHz Ant0 No-Hopping Peak



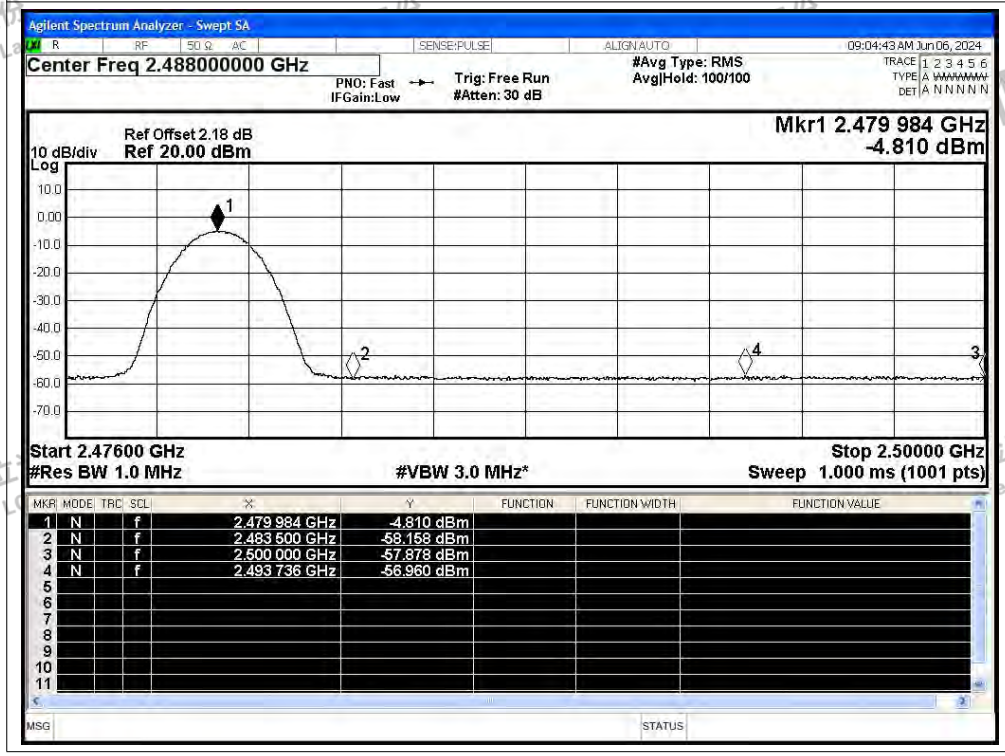

Restrict Band NVNT 2-DH5 2402MHz Ant0 No-Hopping Average



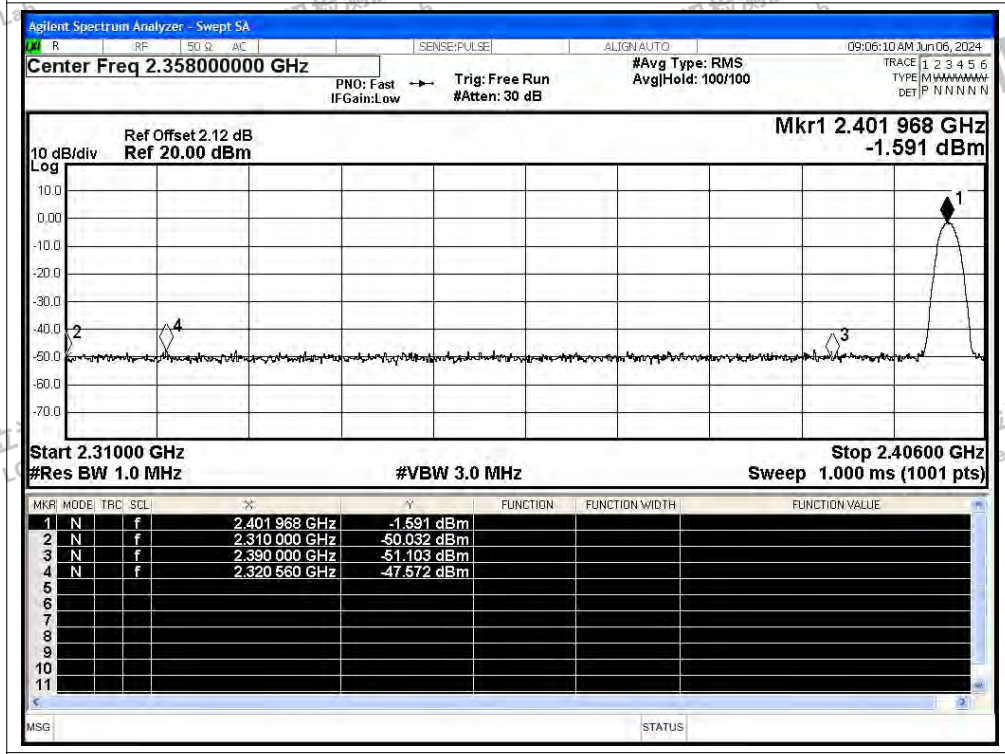
Restrict Band NVNT 2-DH5 2480MHz Ant0 No-Hopping Peak



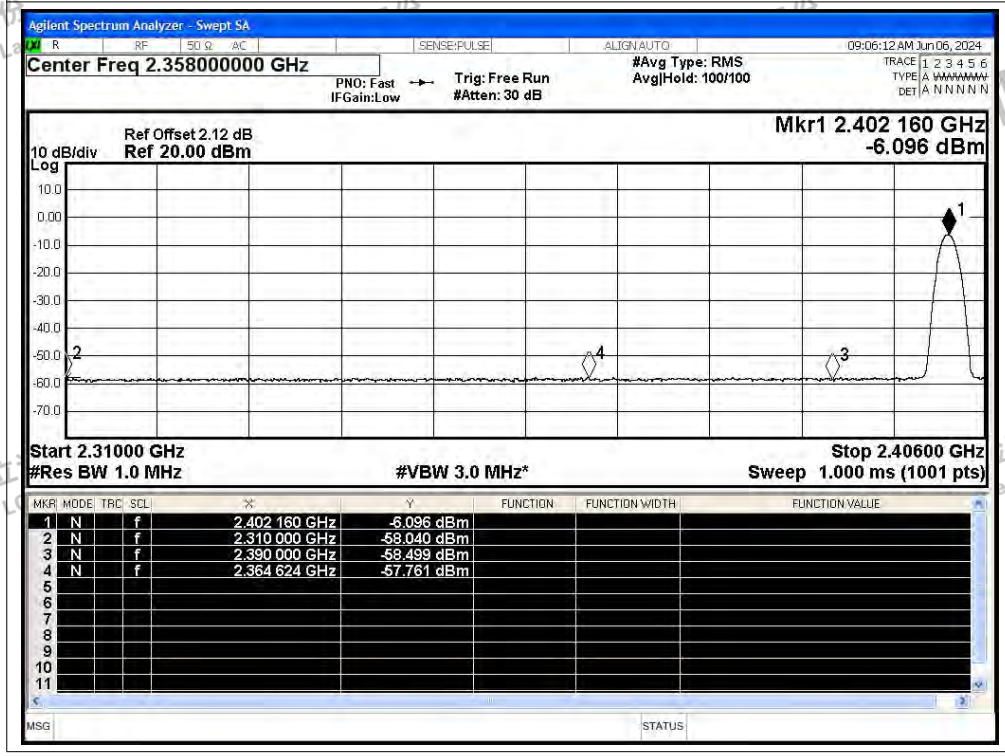

Restrict Band NVNT 2-DH5 2480MHz Ant0 No-Hopping Average



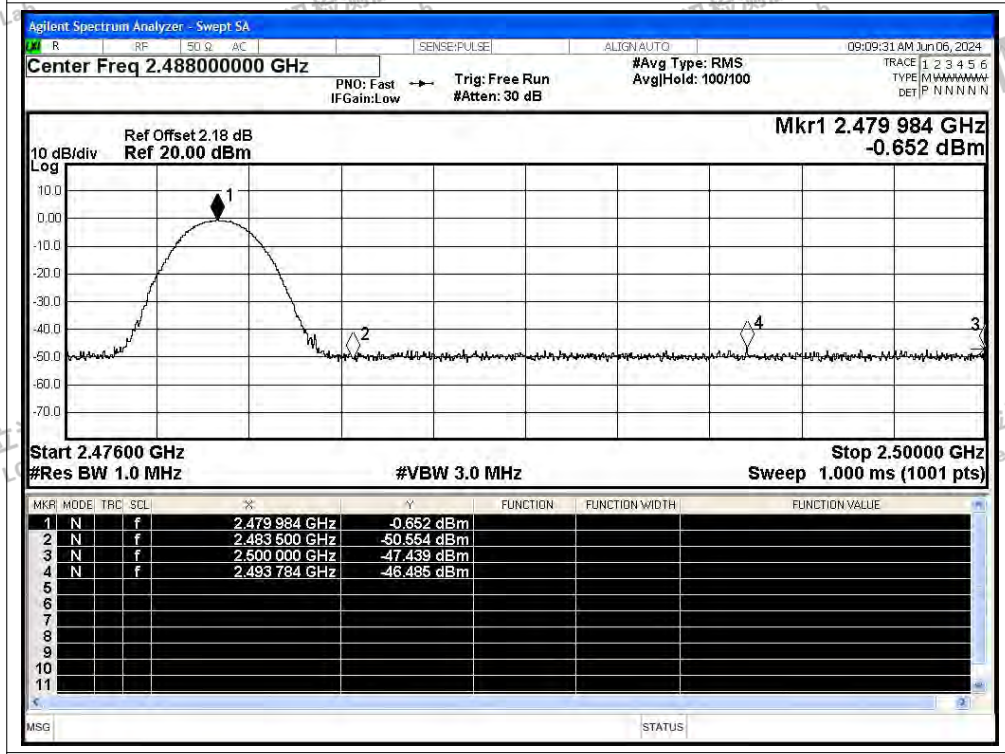
Restrict Band NVNT 3-DH5 2402MHz Ant0 No-Hopping Peak

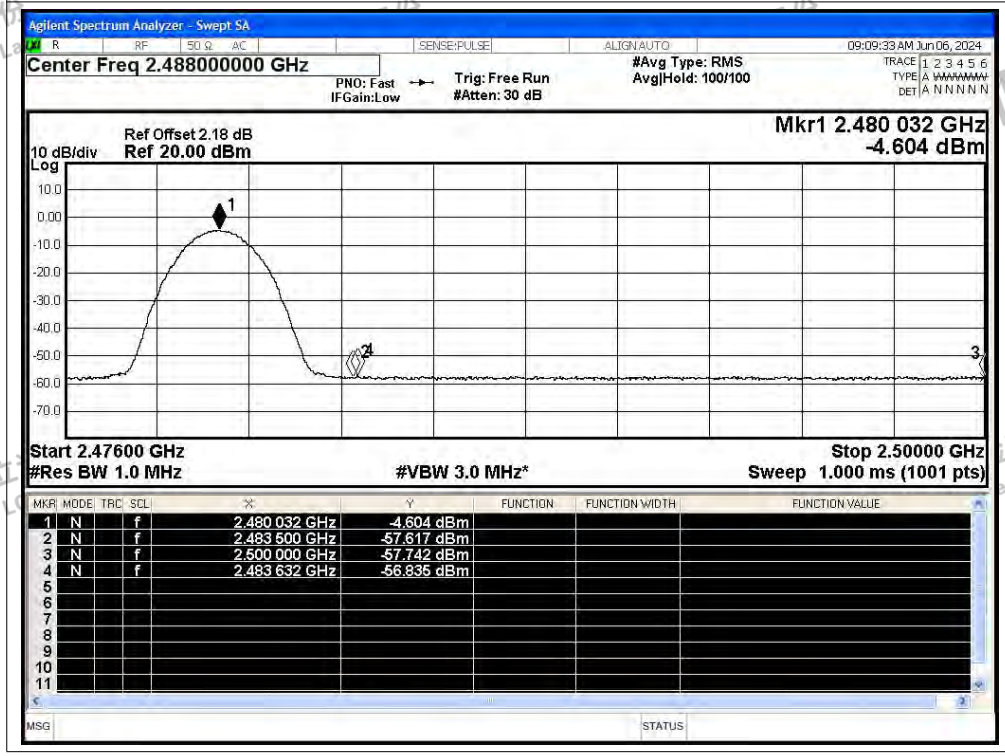



Restrict Band NVNT 3-DH5 2402MHz Ant0 No-Hopping Average



Restrict Band NVNT 3-DH5 2480MHz Ant0 No-Hopping Peak




Restrict Band NVNT 3-DH5 2480MHz Ant0 No-Hopping Average