Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Portable Speaker

Test Model: CrystalSound212

Environmental Conditions

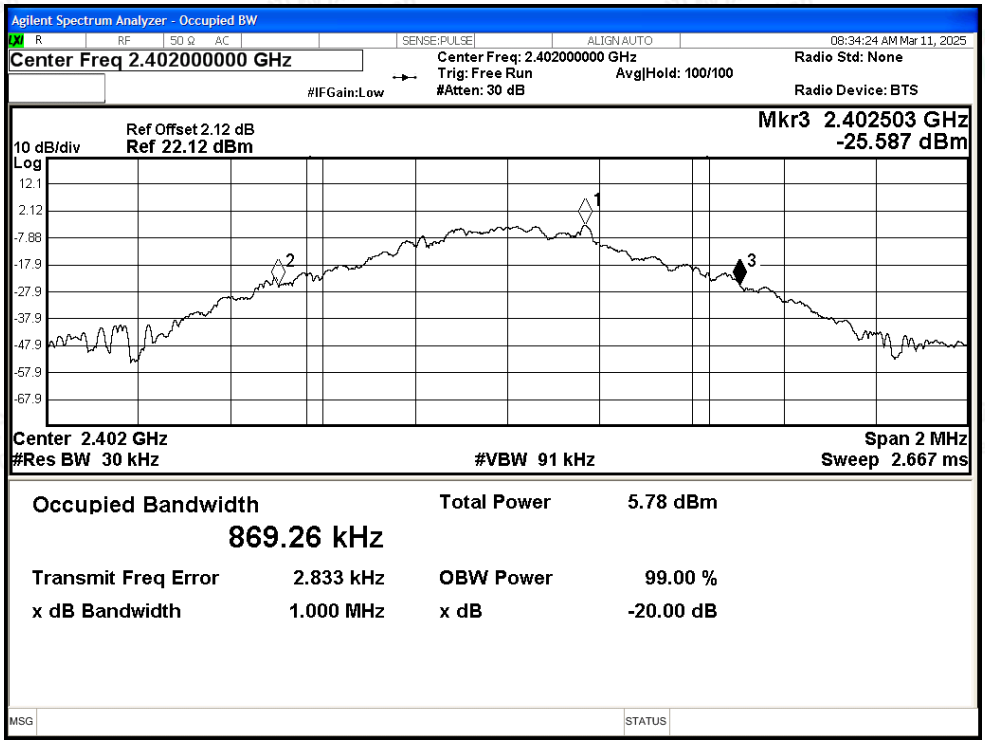
Temperature:	23.8°C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Sean Huang
Supervised by:	Nick Peng

A.1 -20dB Bandwidth

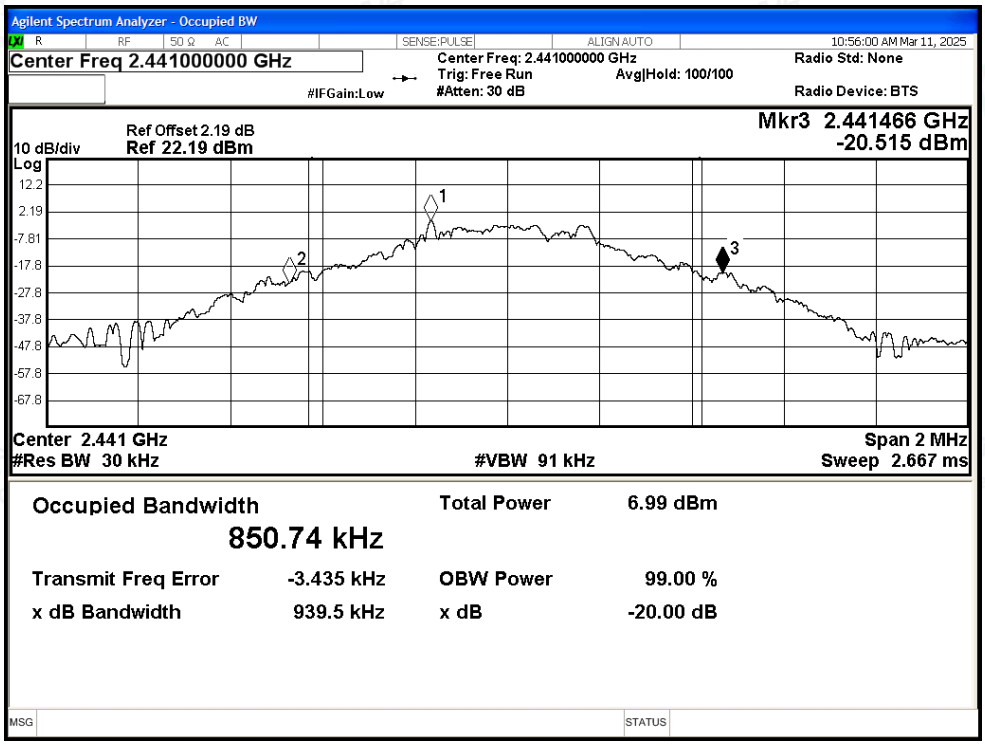
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	1	N/A	Pass
NVNT	1-DH5	2441	Ant1	0.939	N/A	Pass
NVNT	1-DH5	2480	Ant1	1	N/A	Pass
NVNT	2-DH5	2402	Ant1	1.305	N/A	Pass
NVNT	2-DH5	2441	Ant1	1.285	N/A	Pass
NVNT	2-DH5	2480	Ant1	1.306	N/A	Pass

Test Graphs

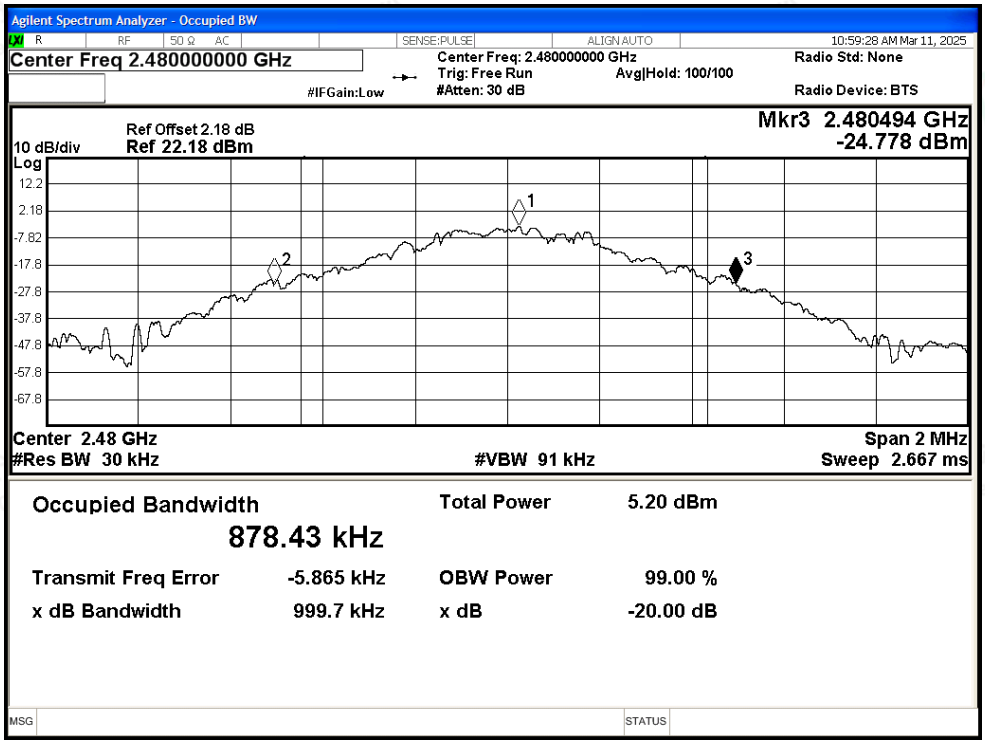
-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1



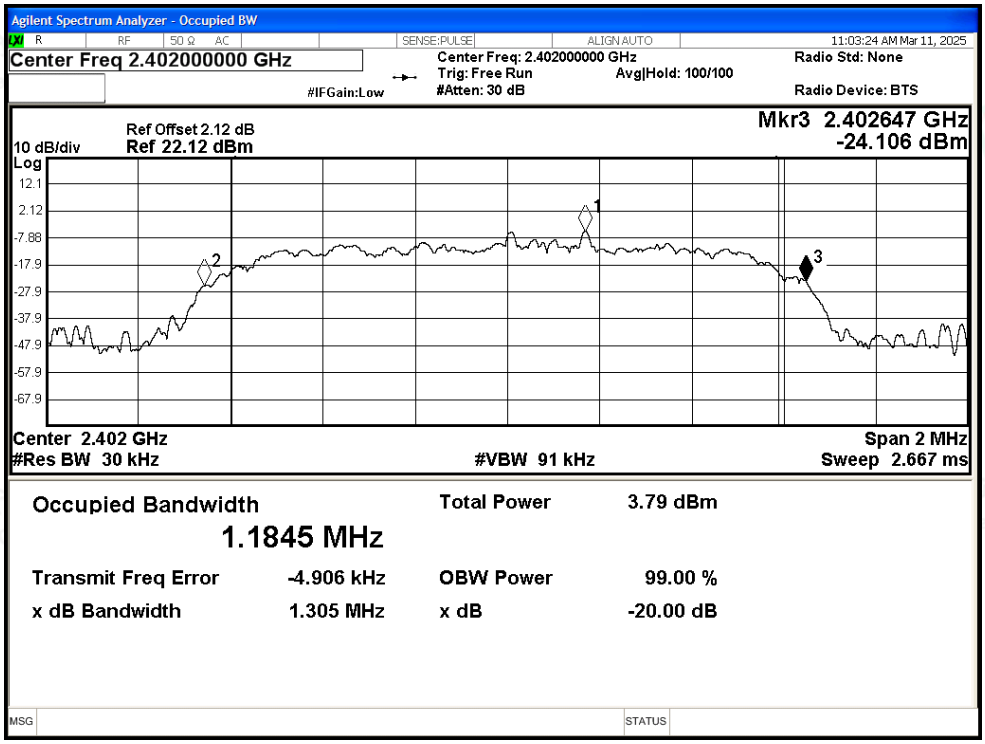
-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1



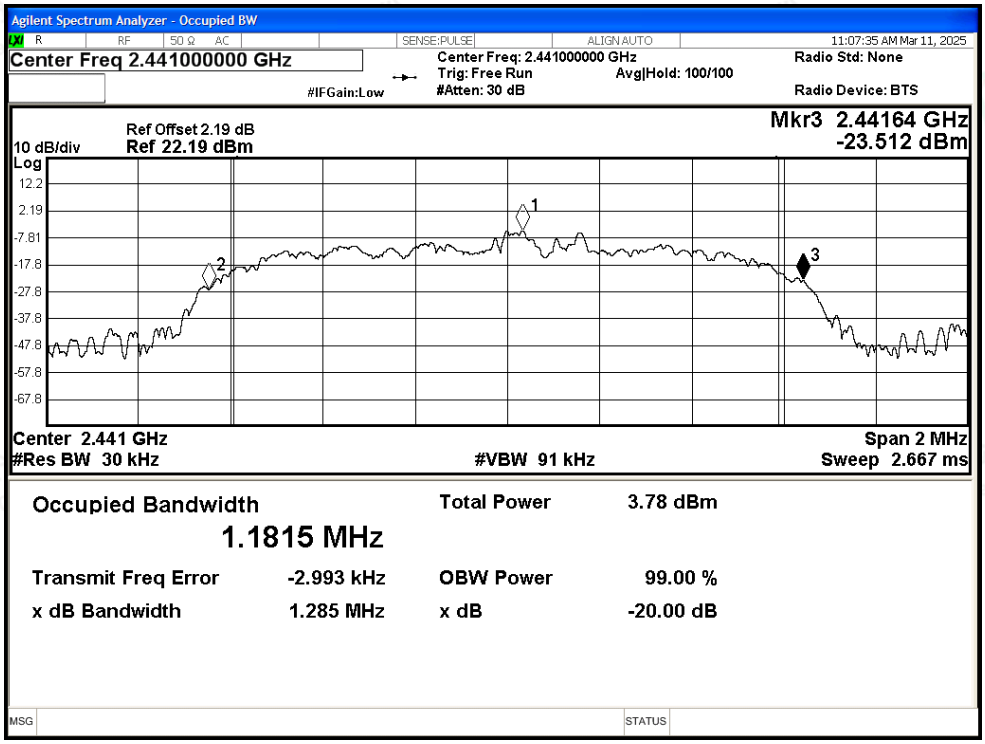
-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1



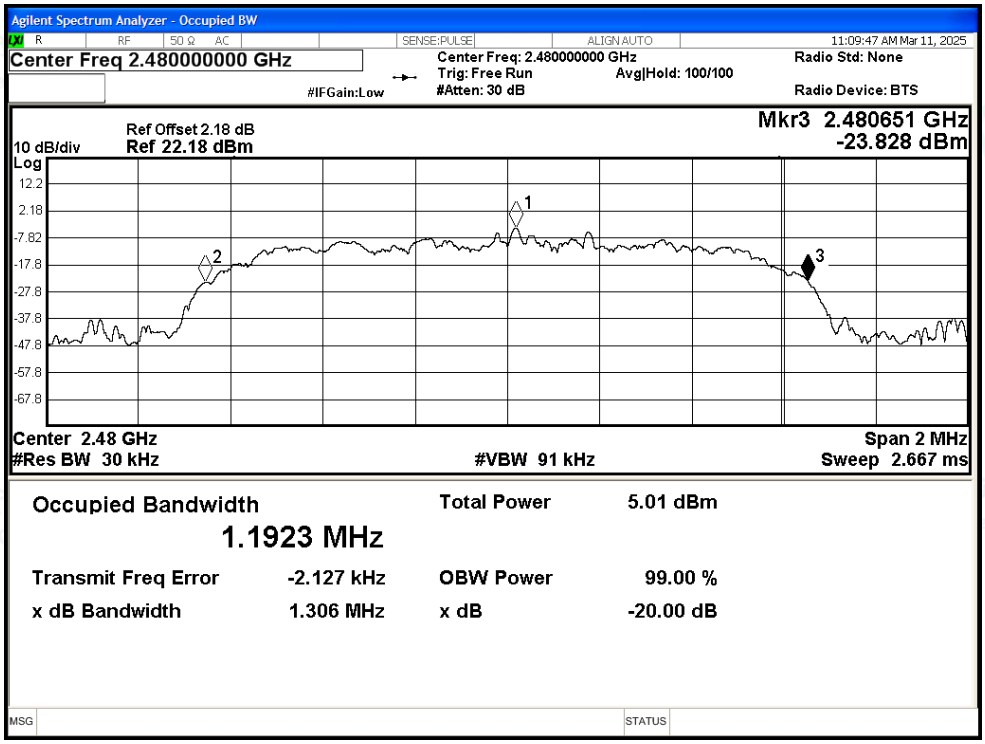
-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1

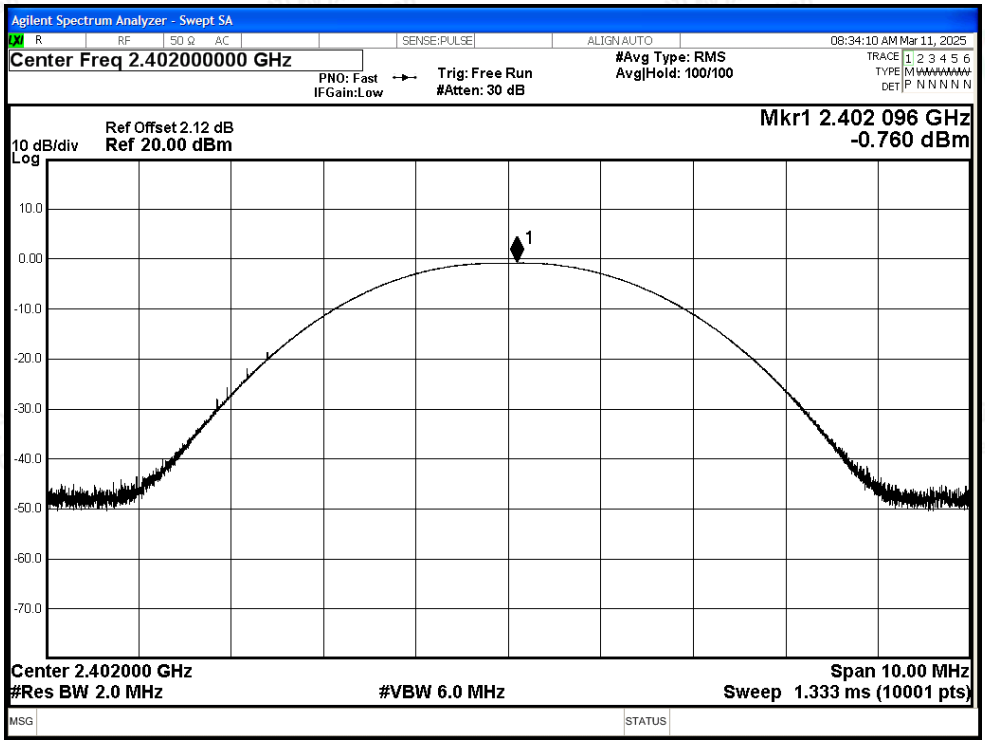


A.2 Maximum Peak Conducted Output Power

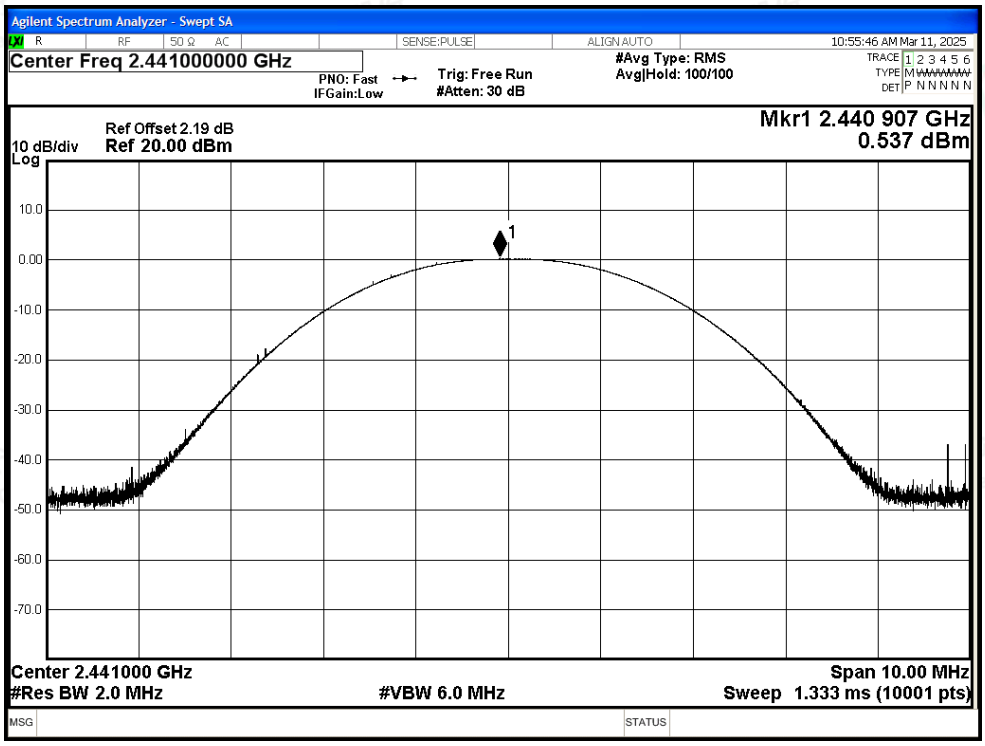
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	-0.76	21	Pass
NVNT	1-DH5	2441	Ant1	0.54	21	Pass
NVNT	1-DH5	2480	Ant1	-0.87	21	Pass
NVNT	2-DH5	2402	Ant1	-0.25	21	Pass
NVNT	2-DH5	2441	Ant1	-0.74	21	Pass
NVNT	2-DH5	2480	Ant1	1.03	21	Pass

Test Graphs

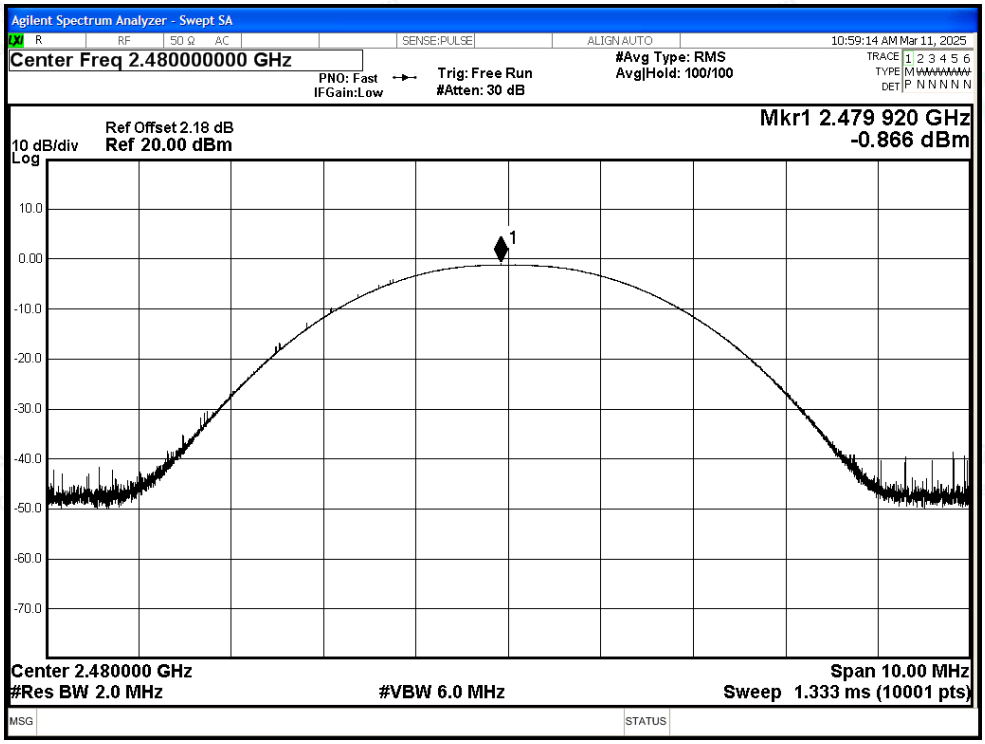
Power NVNT 1-DH5 2402MHz Ant1



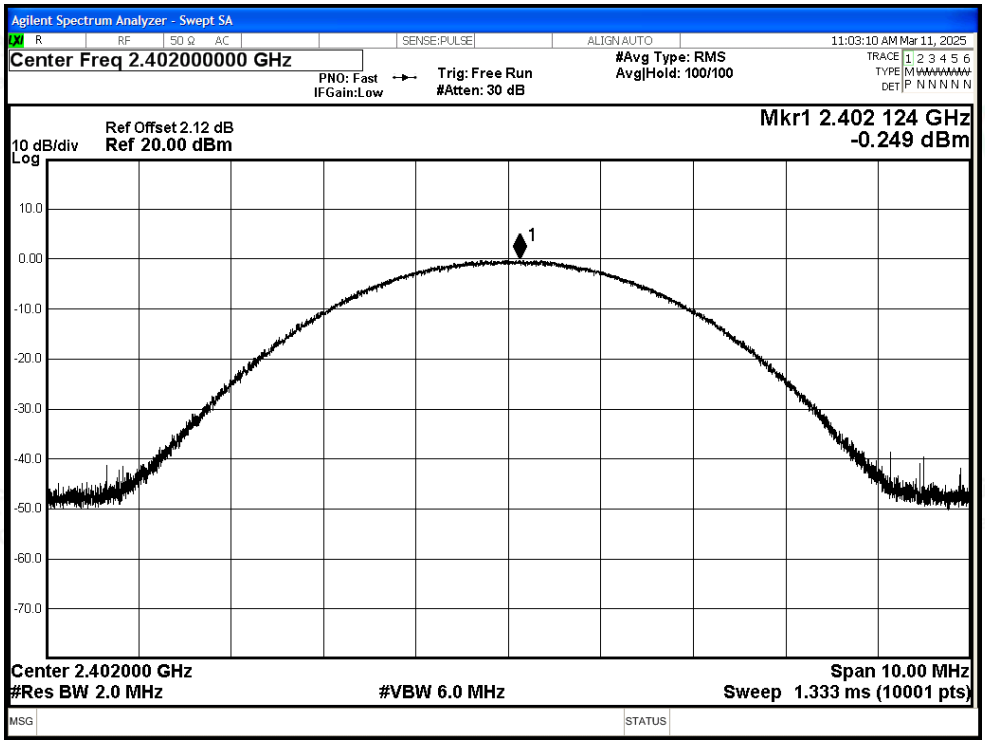
Power NVNT 1-DH5 2441MHz Ant1



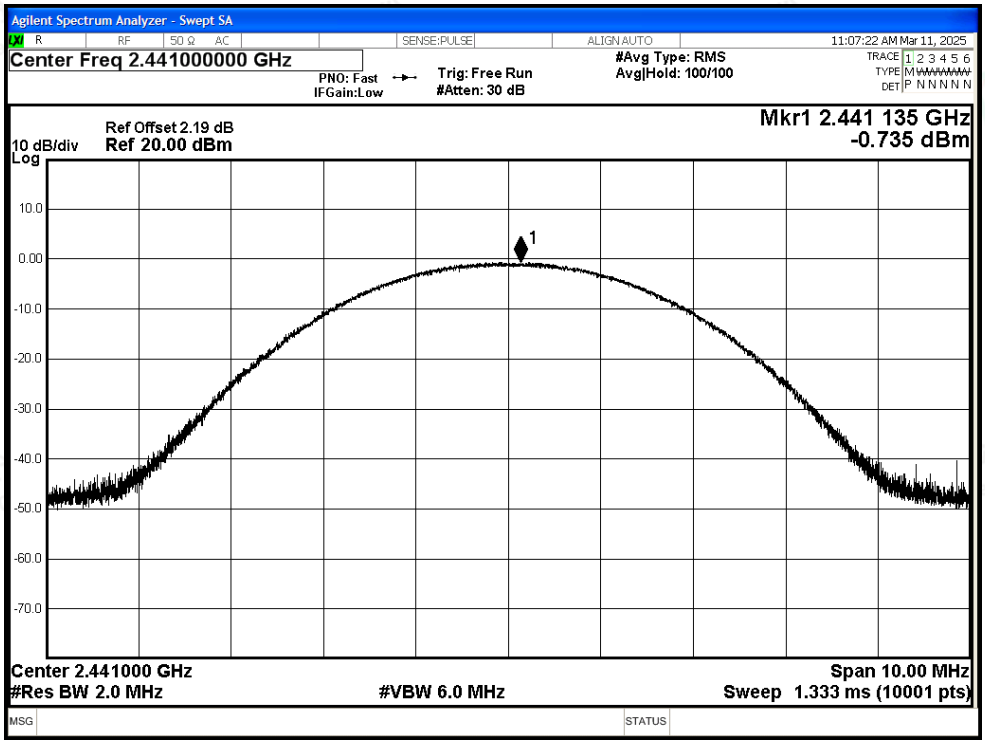
Power NVNT 1-DH5 2480MHz Ant1



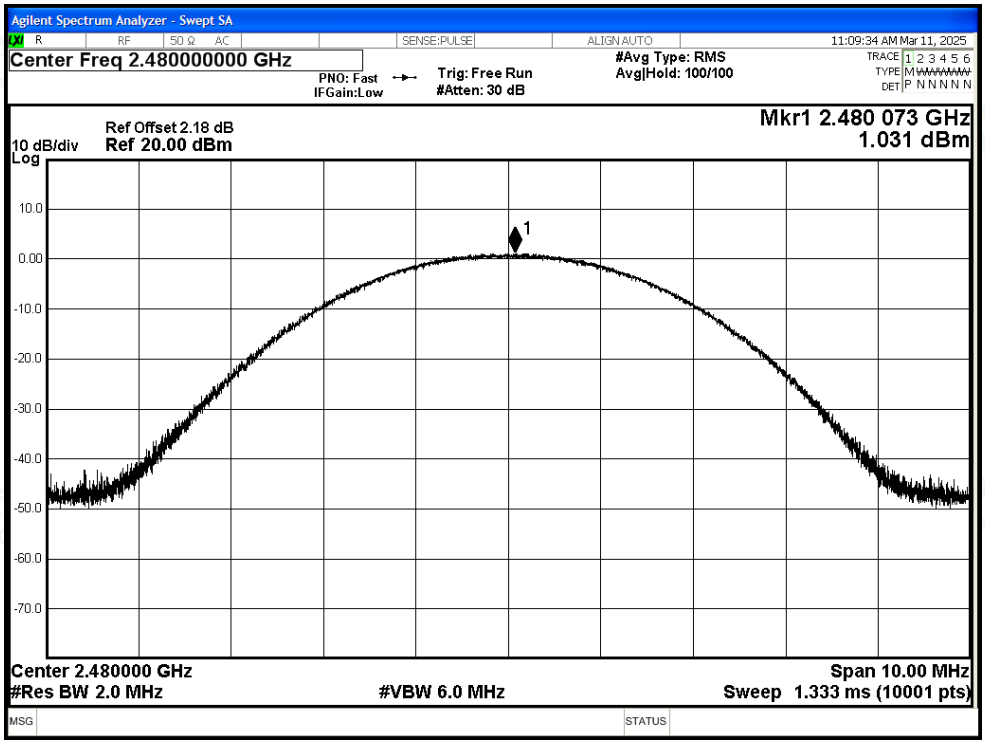
Power NVNT 2-DH5 2402MHz Ant1



Power NVNT 2-DH5 2441MHz Ant1



Power NVNT 2-DH5 2480MHz Ant1

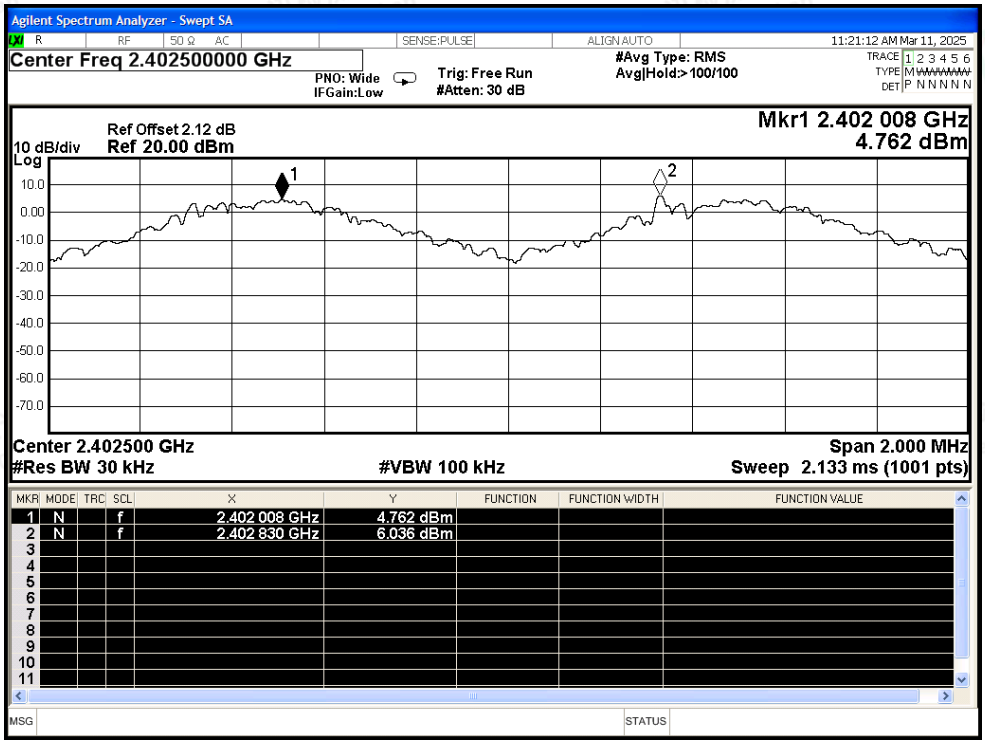


A.3 Carrier Frequencies Separation

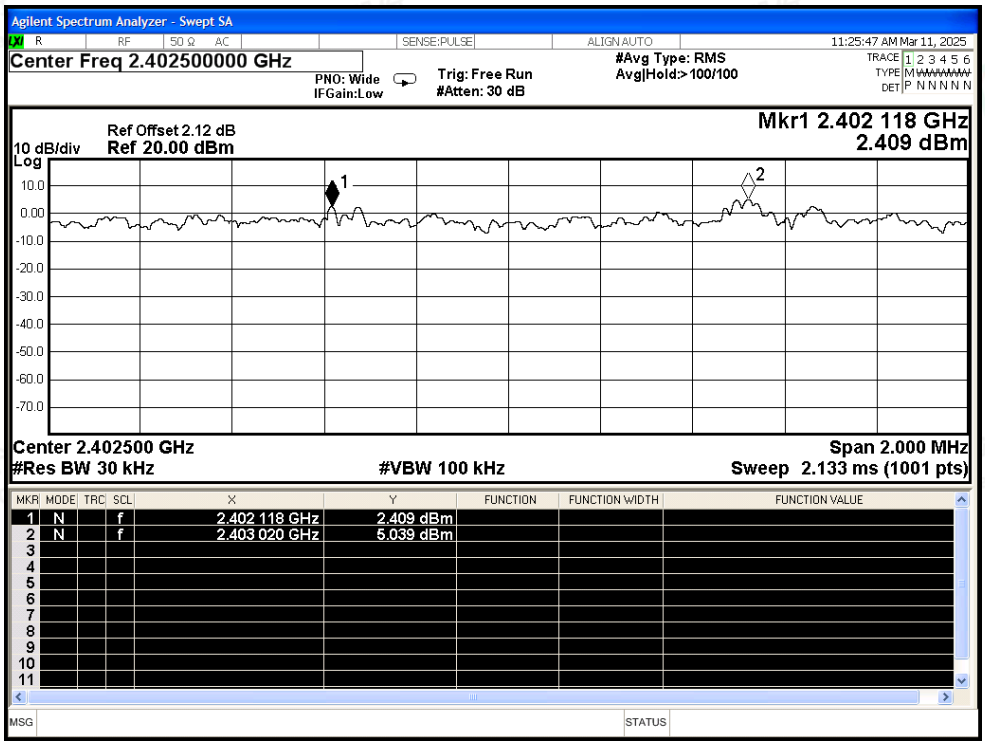
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2402.008	2402.83	0.822	0.667	Pass
NVNT	2-DH5	Ant1	2402.118	2403.02	0.902	0.871	Pass

Test Graphs

CFS NVNT 1-DH5 2402MHz Ant1



CFS NVNT 2-DH5 2402MHz Ant1

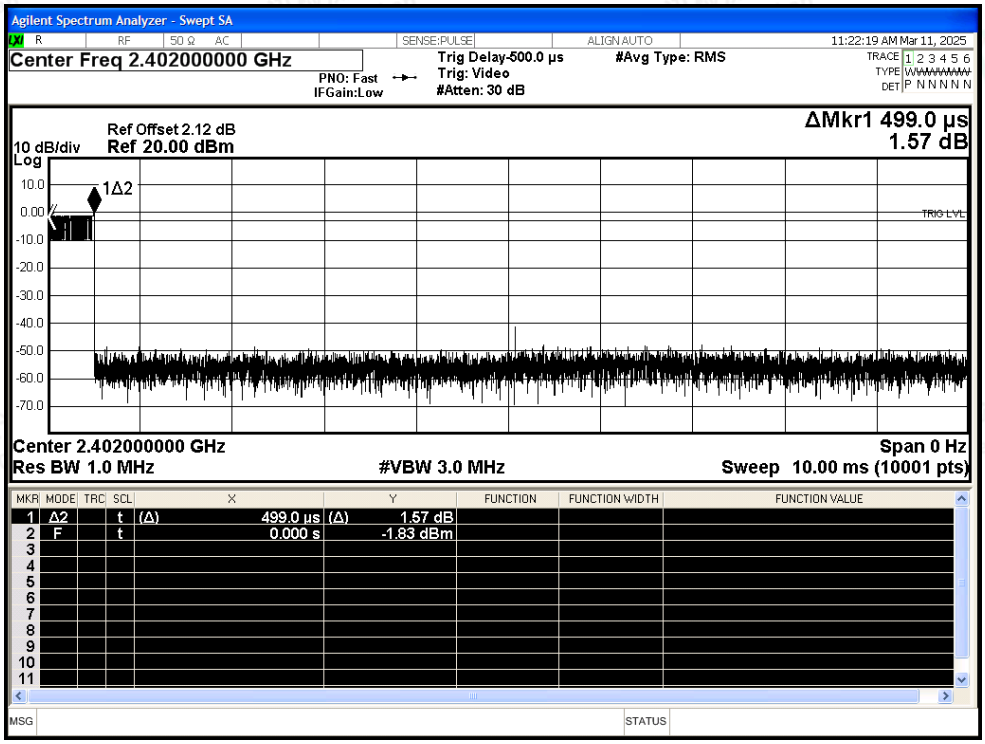


A.4 Dwell Time

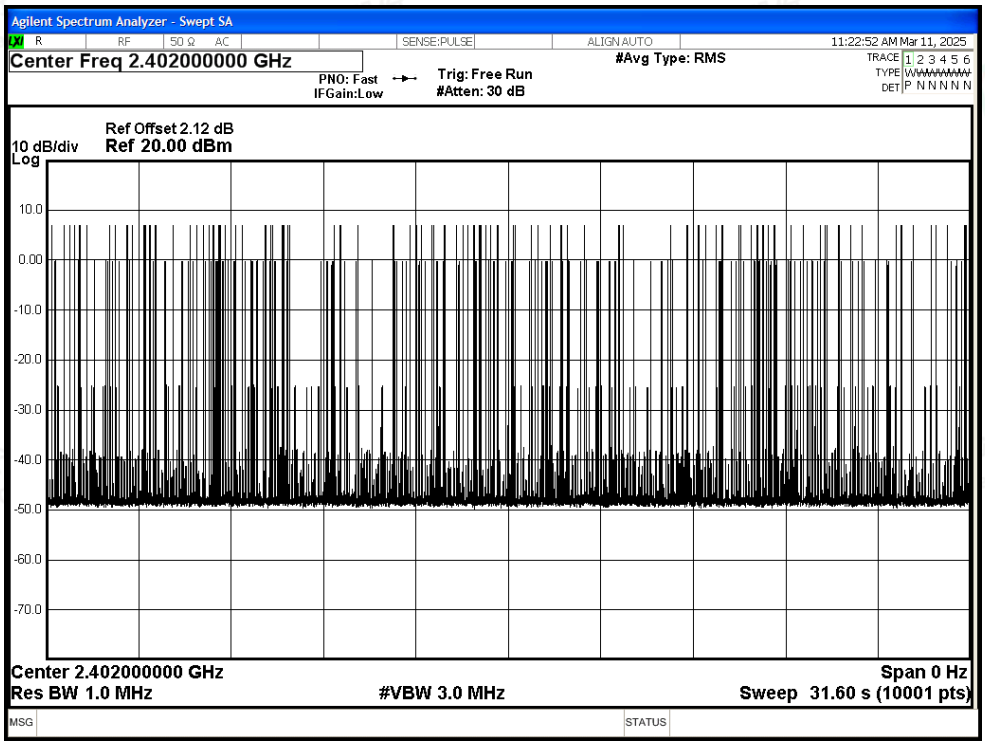
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	0.499	51.896	104	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.899	324.688	112	31600	400	Pass

Test Graphs

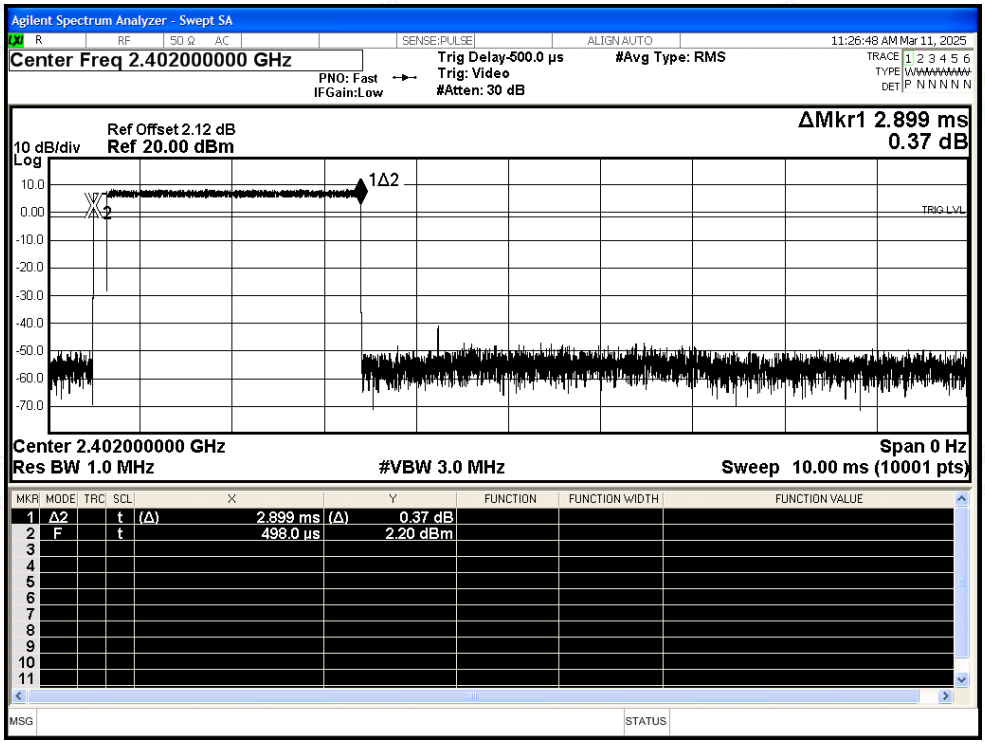
Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



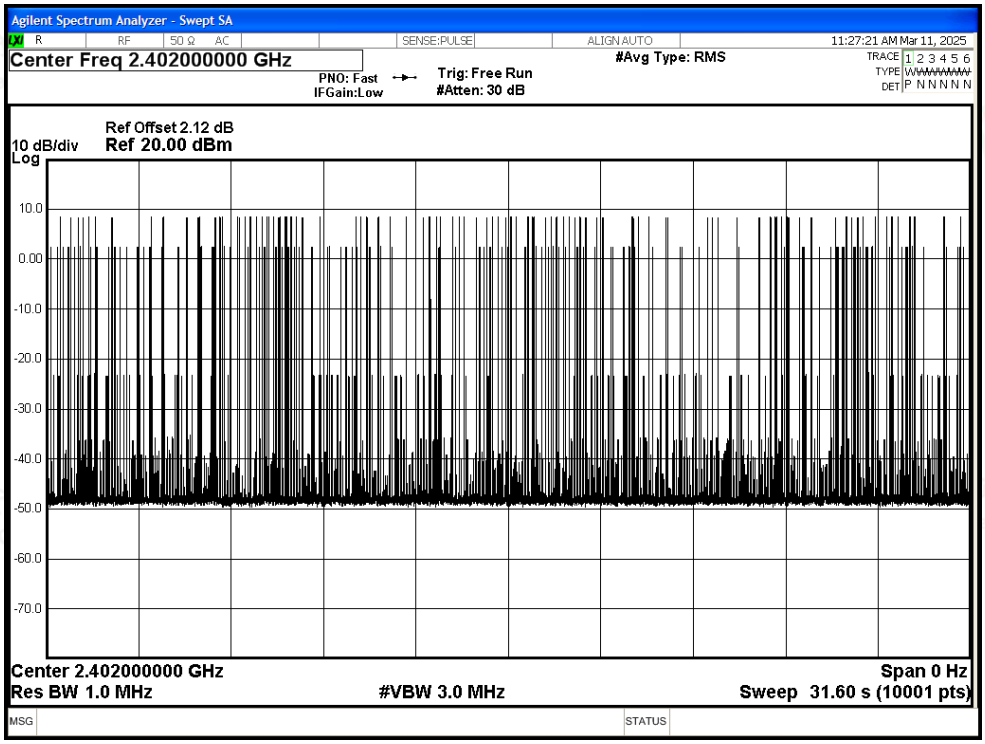
Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated



Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated

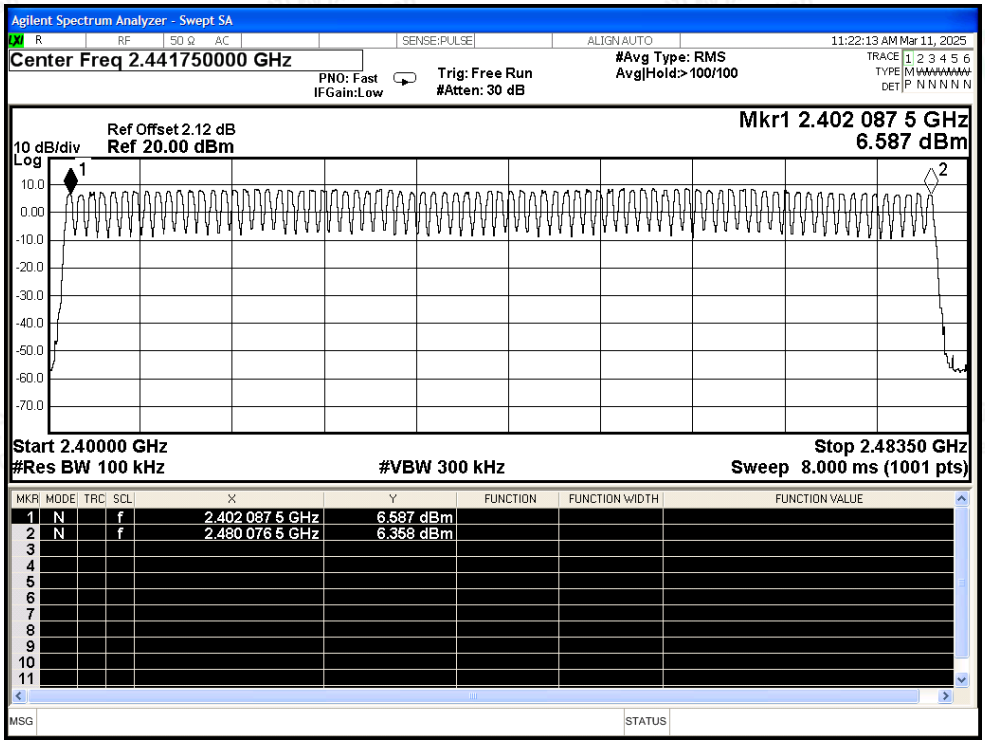


A.5 Number of Hopping Channel

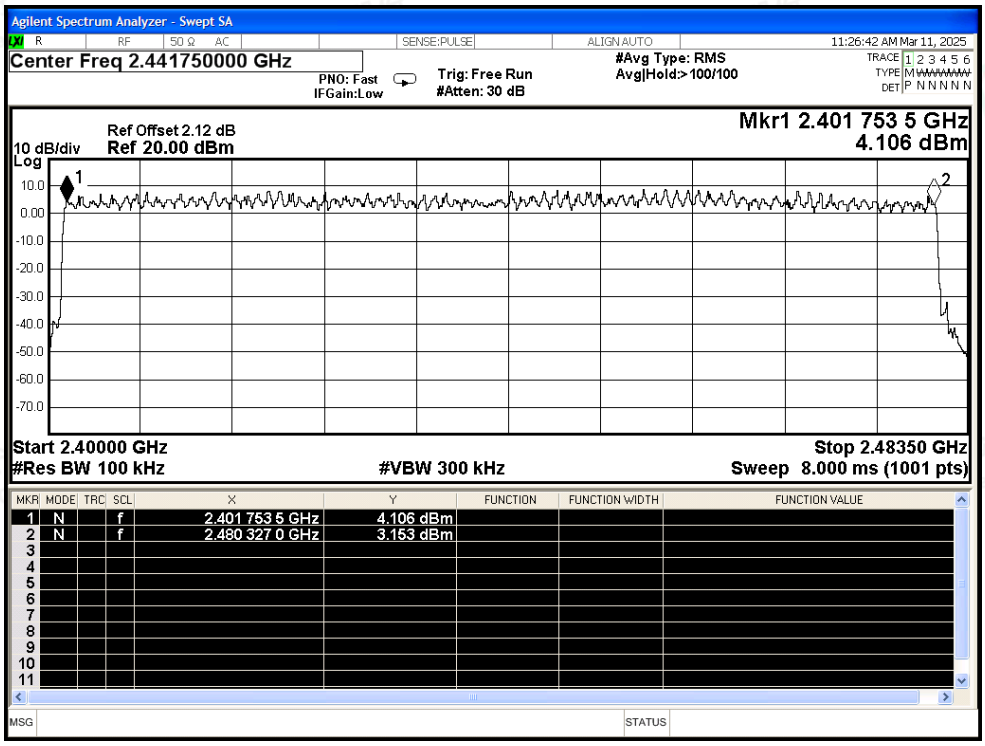
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass

Test Graphs

Hopping No. NVNT 1-DH5 2402MHz Ant1



Hopping No. NVNT 2-DH5 2402MHz Ant1

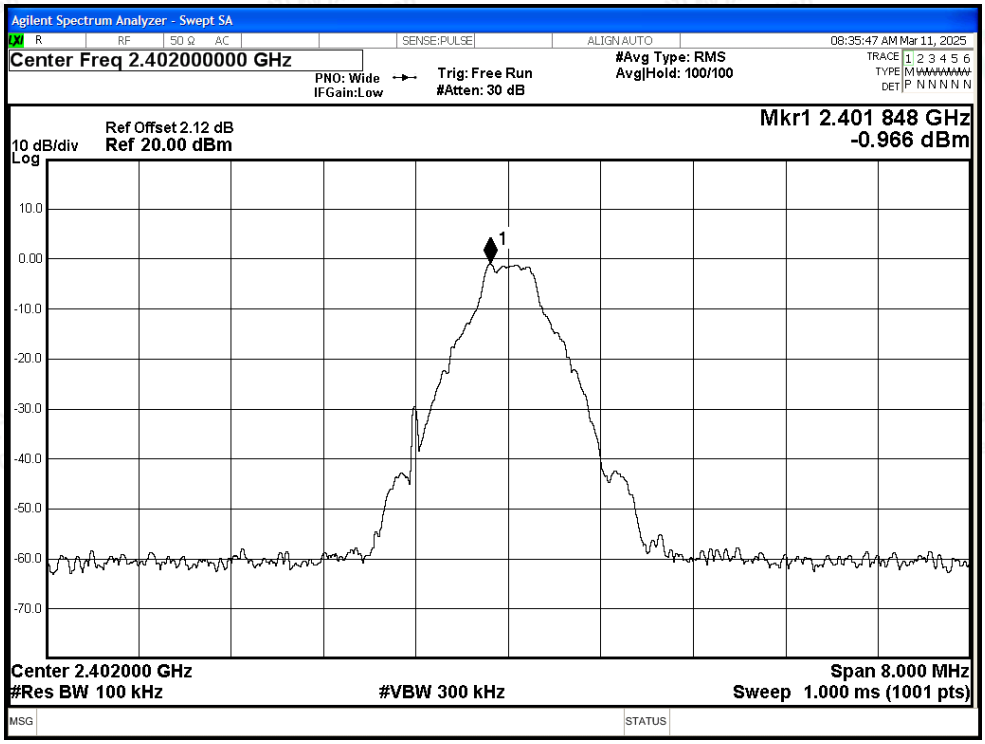


A.6 Band Edge

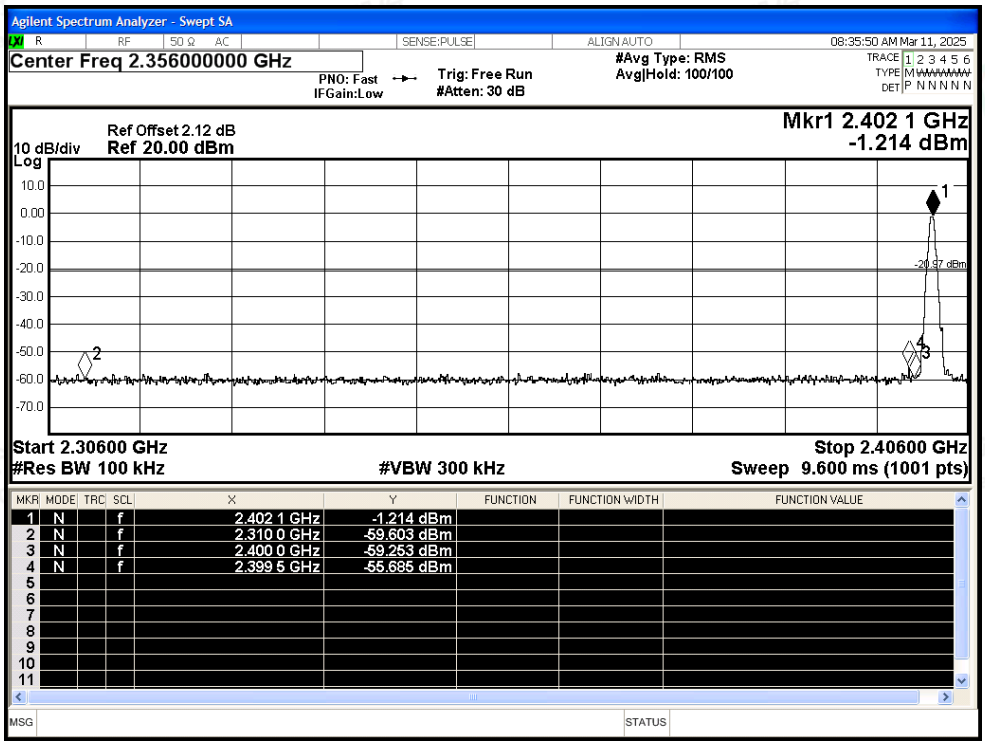
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-54.72	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-55.8	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-50.19	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-54.09	-20	Pass

Test Graphs

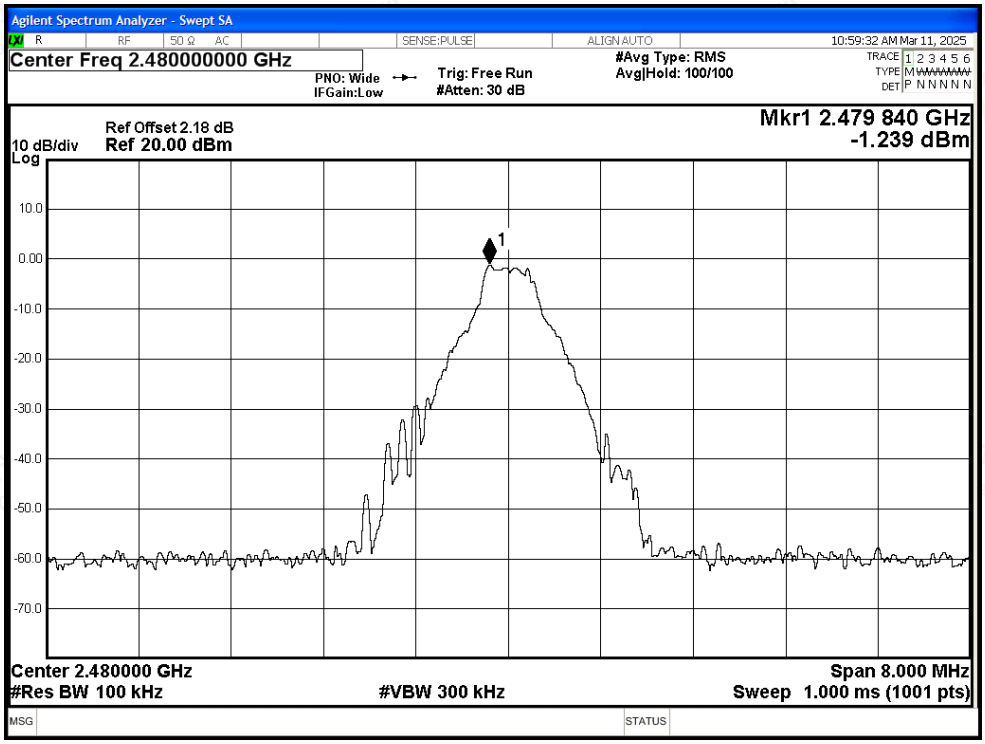
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



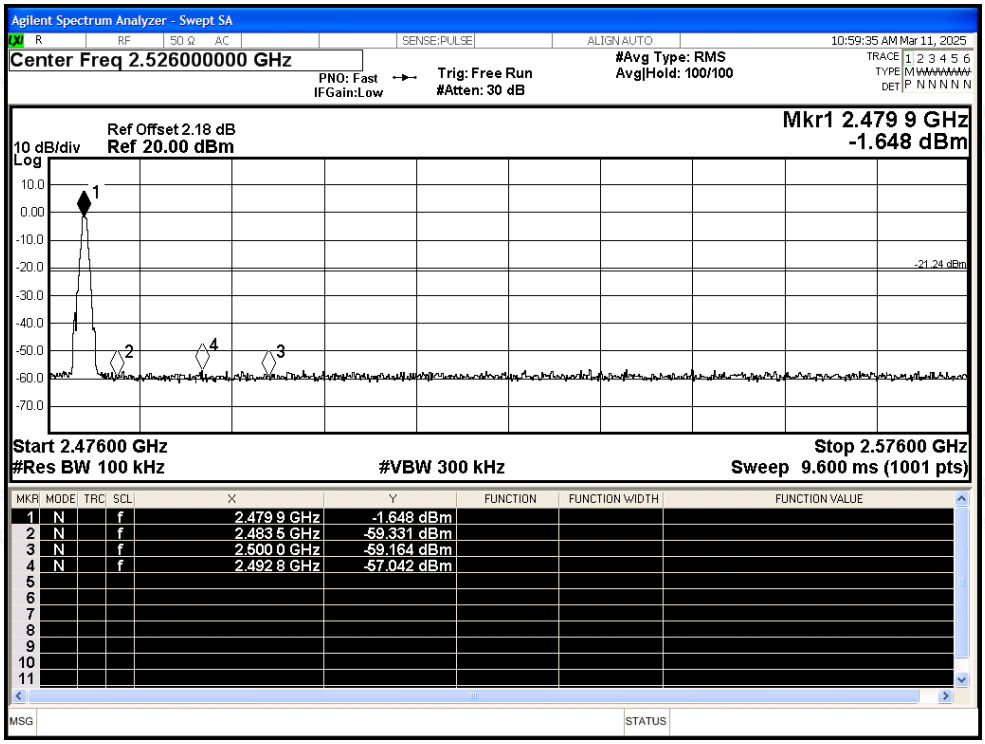
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission



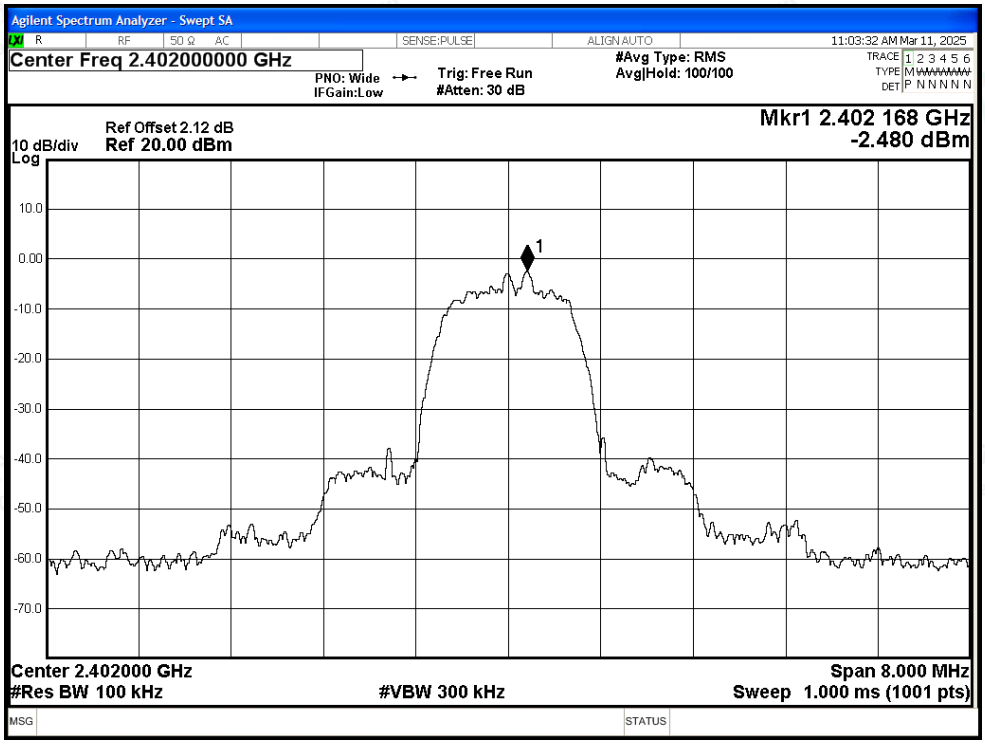
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref



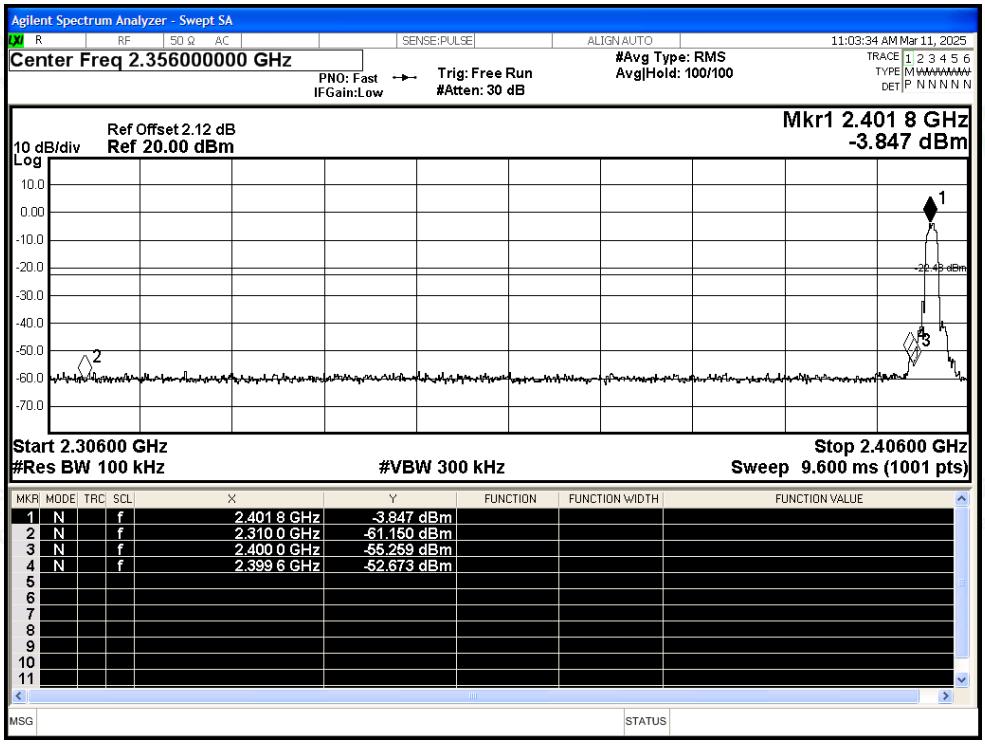
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



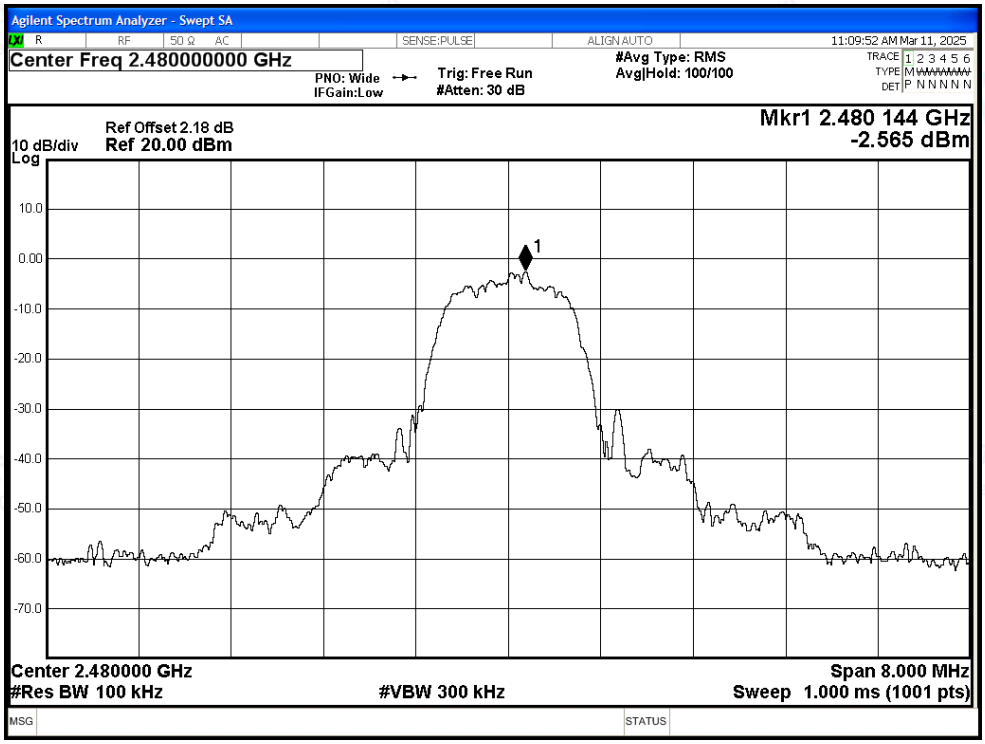
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



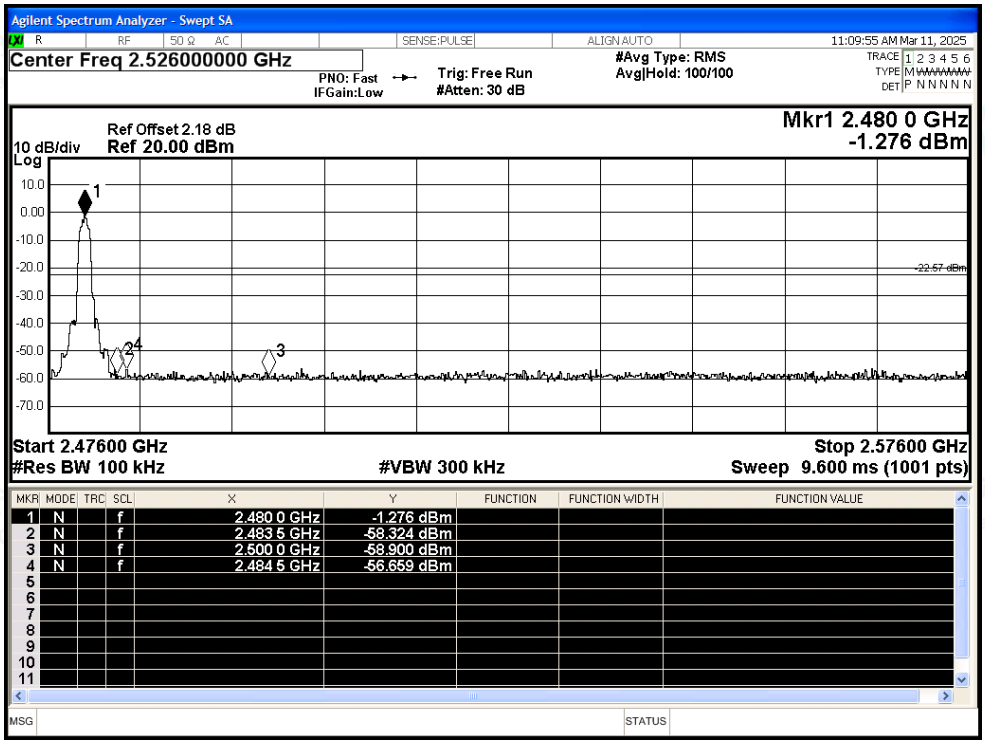
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission



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



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

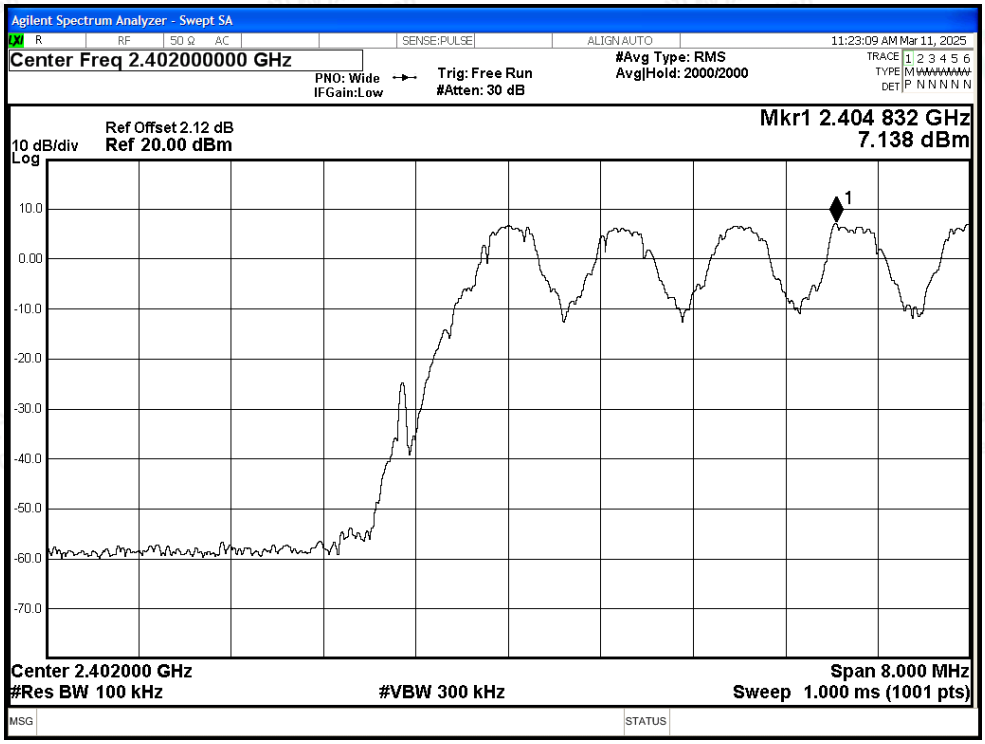


(Hopping)

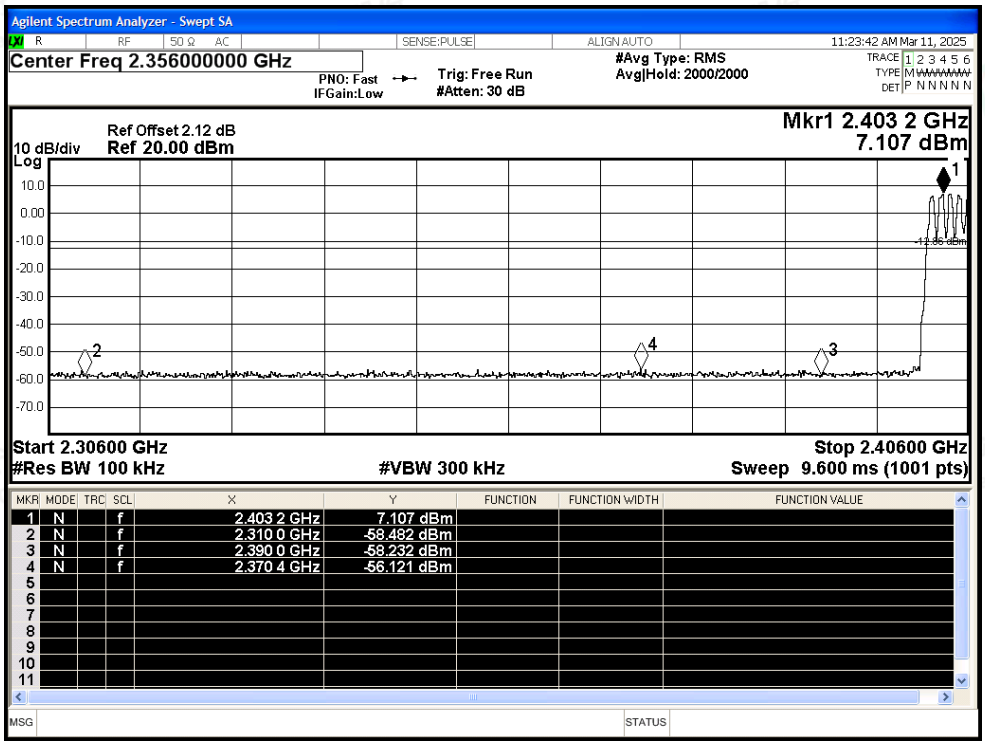
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-63.26	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-62.63	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-62.73	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-57.38	-20	Pass

Test Graphs

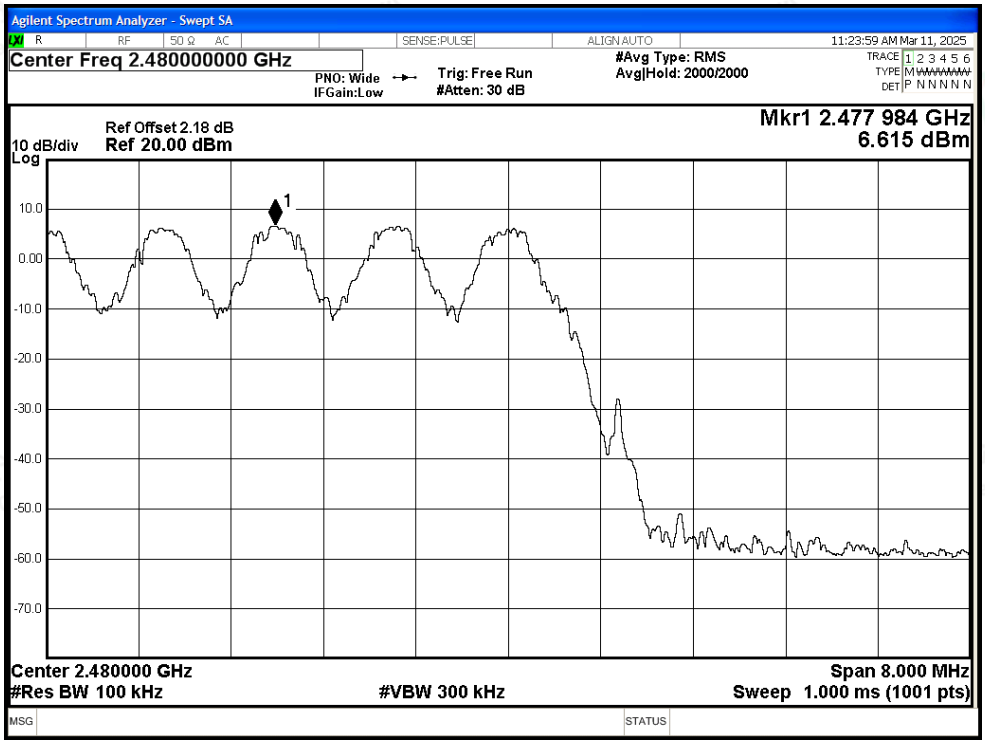
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



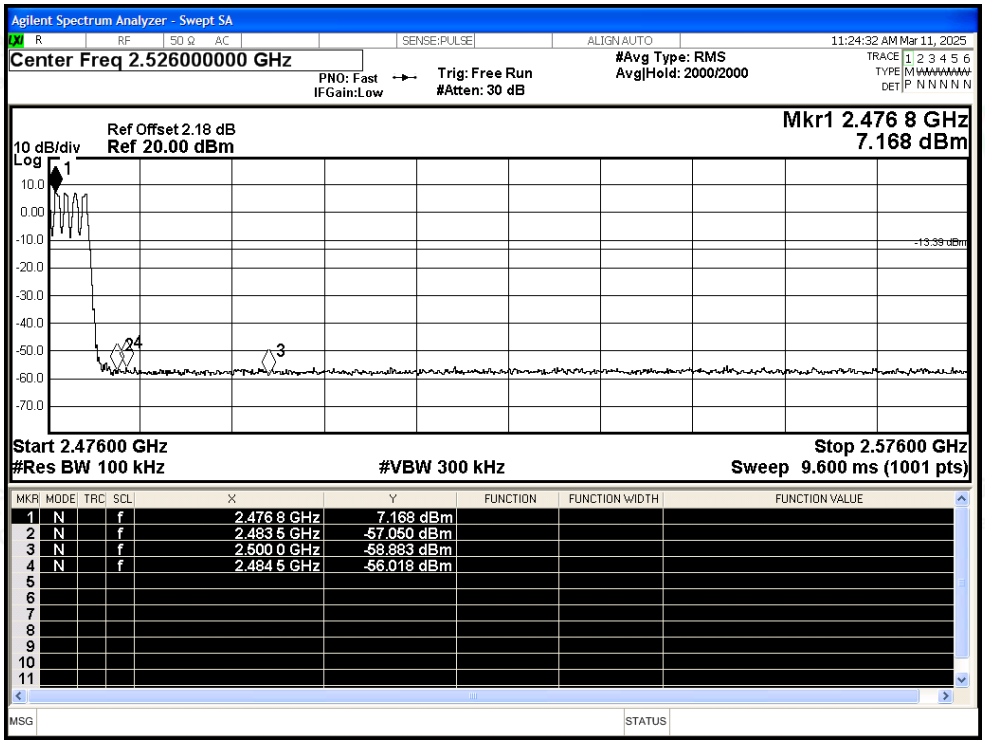
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



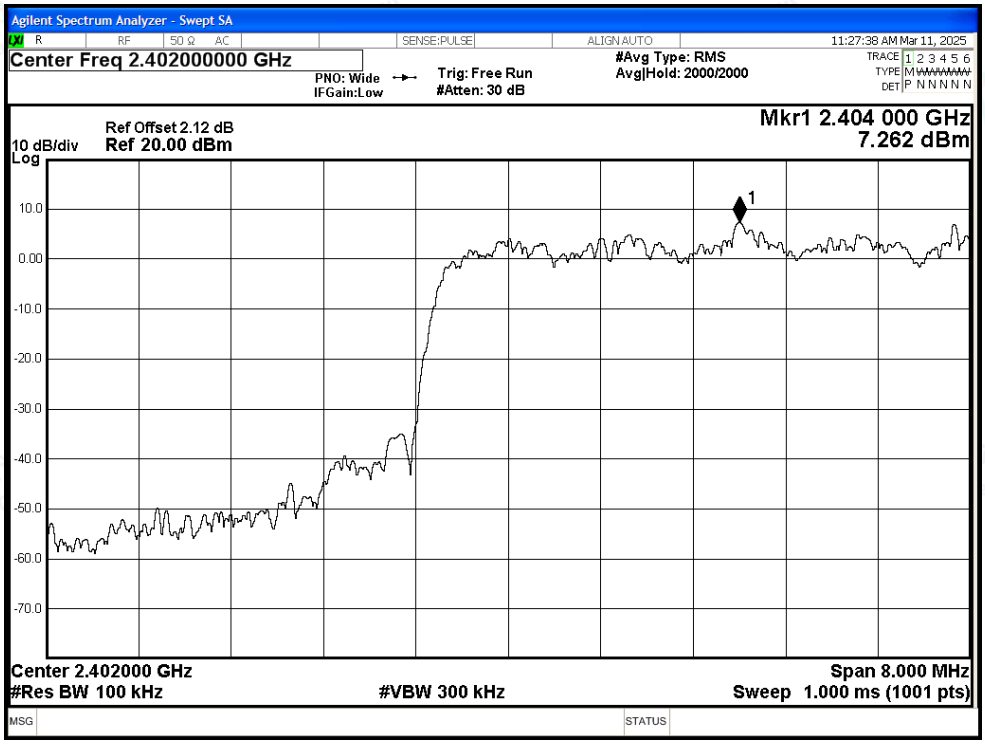
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



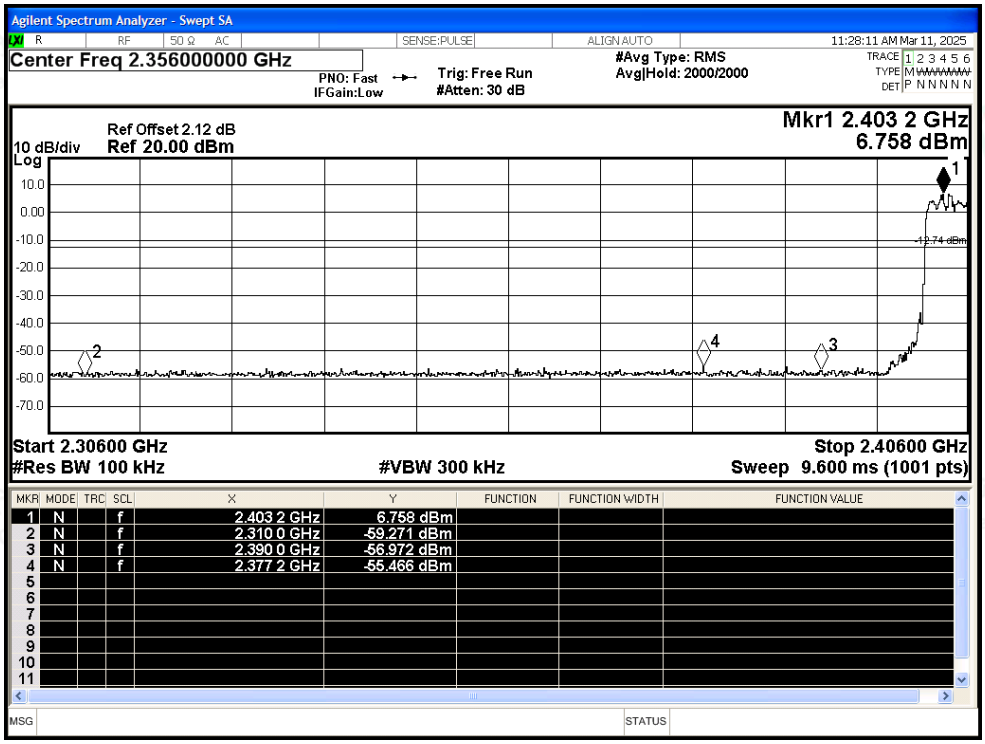
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission



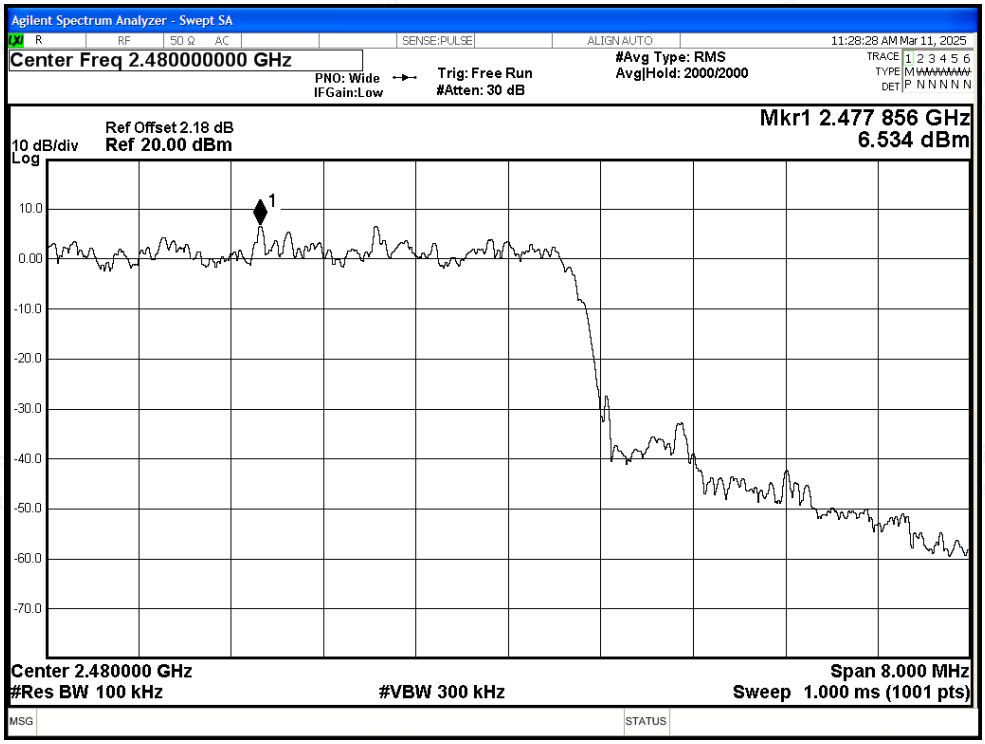
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref



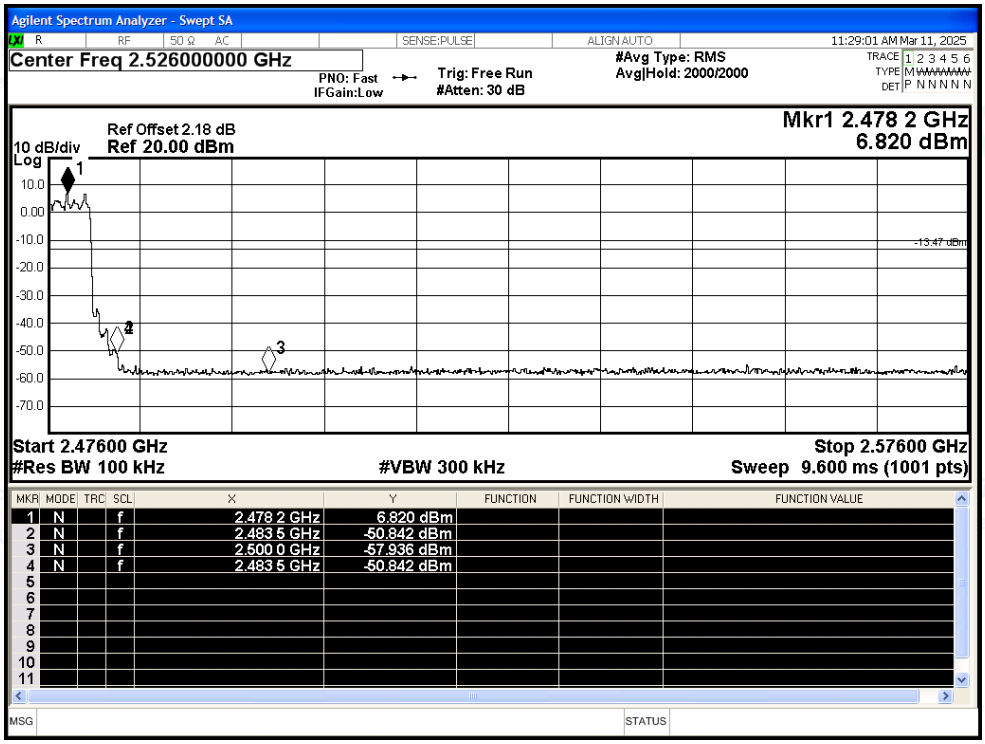
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



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



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

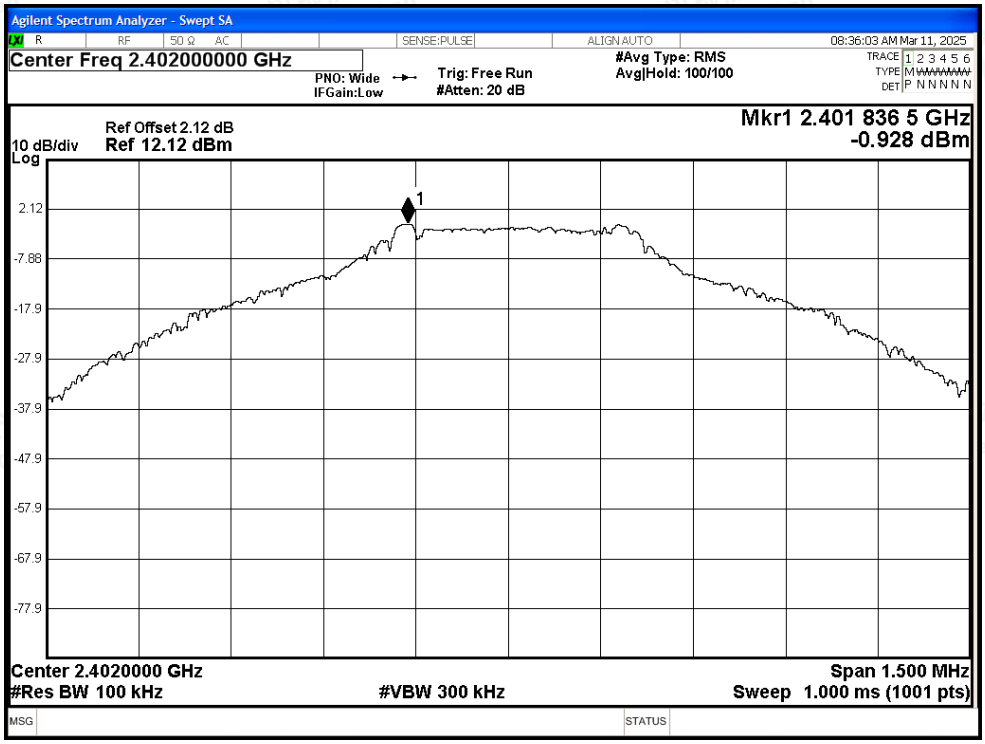


A.7 Conducted RF Spurious Emission

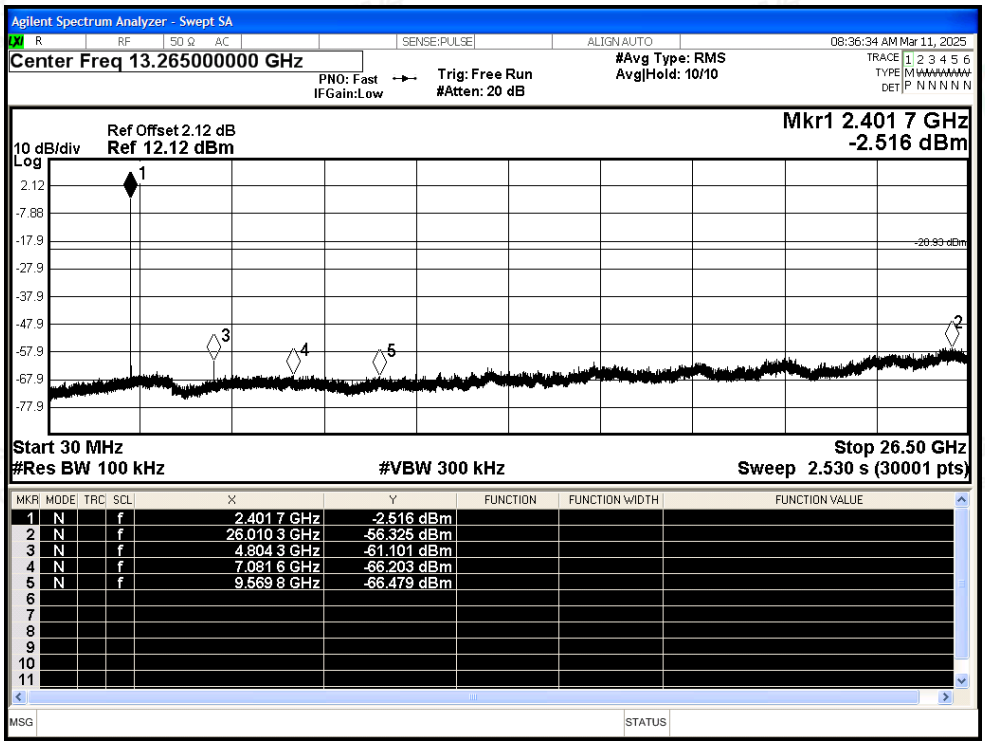
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-55.4	-20	Pass
NVNT	1-DH5	2441	Ant1	-55.59	-20	Pass
NVNT	1-DH5	2480	Ant1	-52.92	-20	Pass
NVNT	2-DH5	2402	Ant1	-52.31	-20	Pass
NVNT	2-DH5	2441	Ant1	-51.42	-20	Pass
NVNT	2-DH5	2480	Ant1	-53.28	-20	Pass

Test Graphs

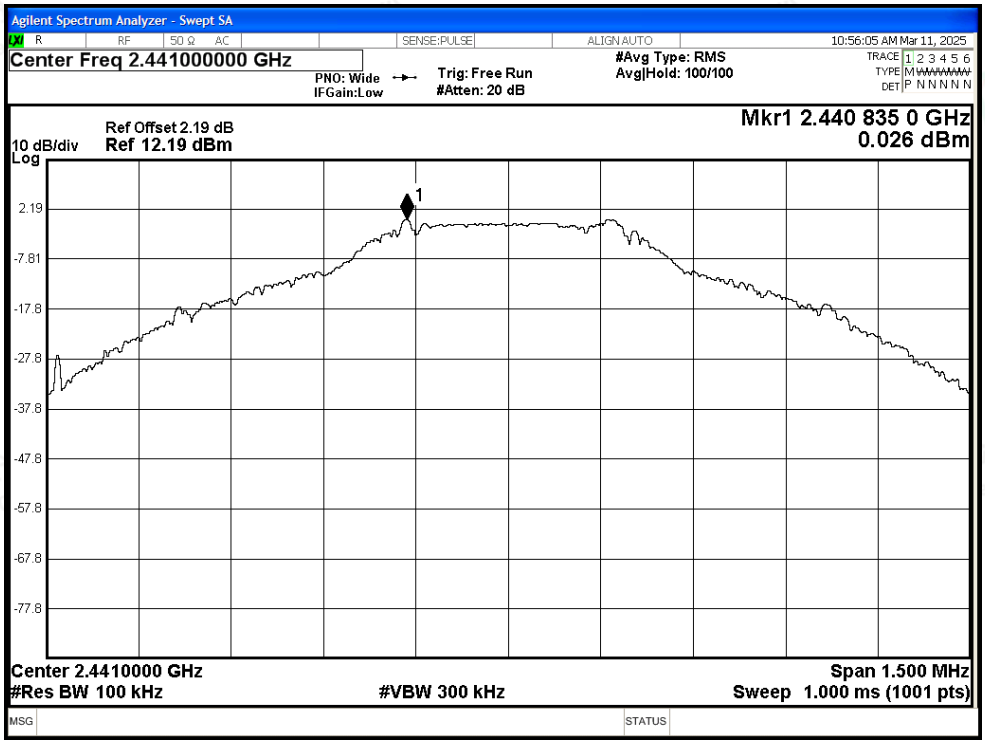
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref



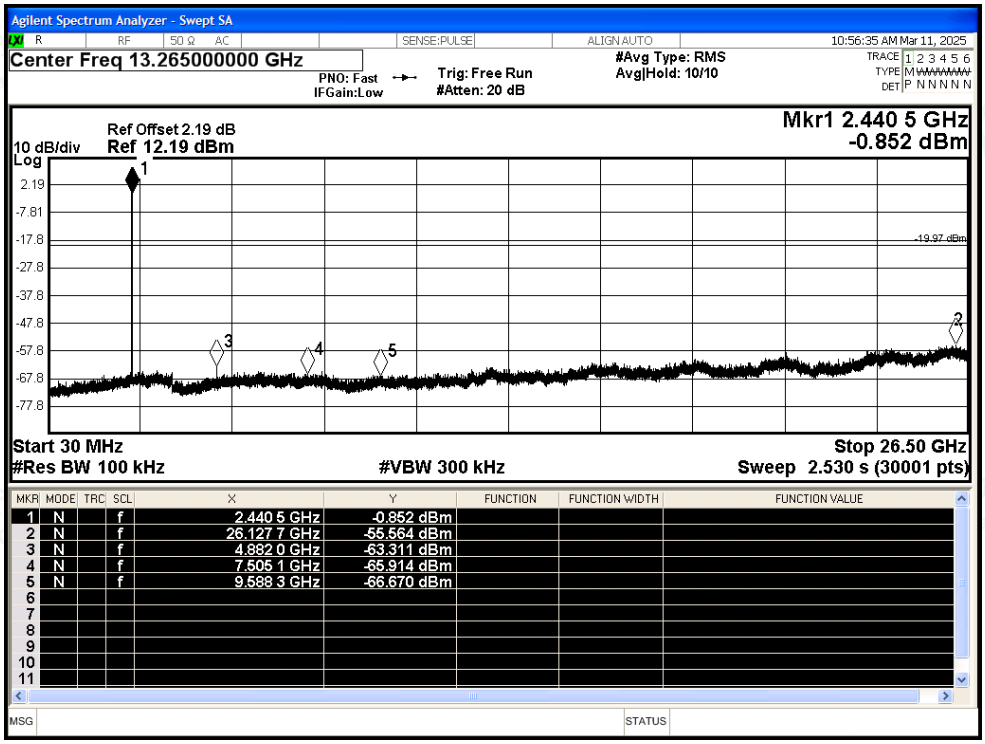
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



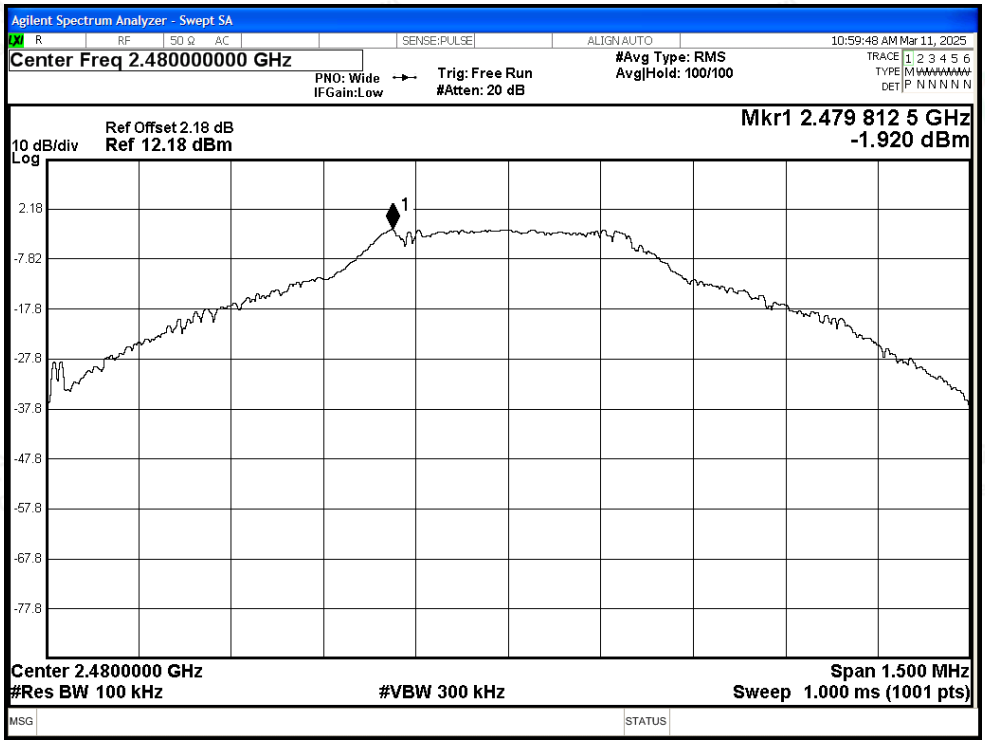
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref



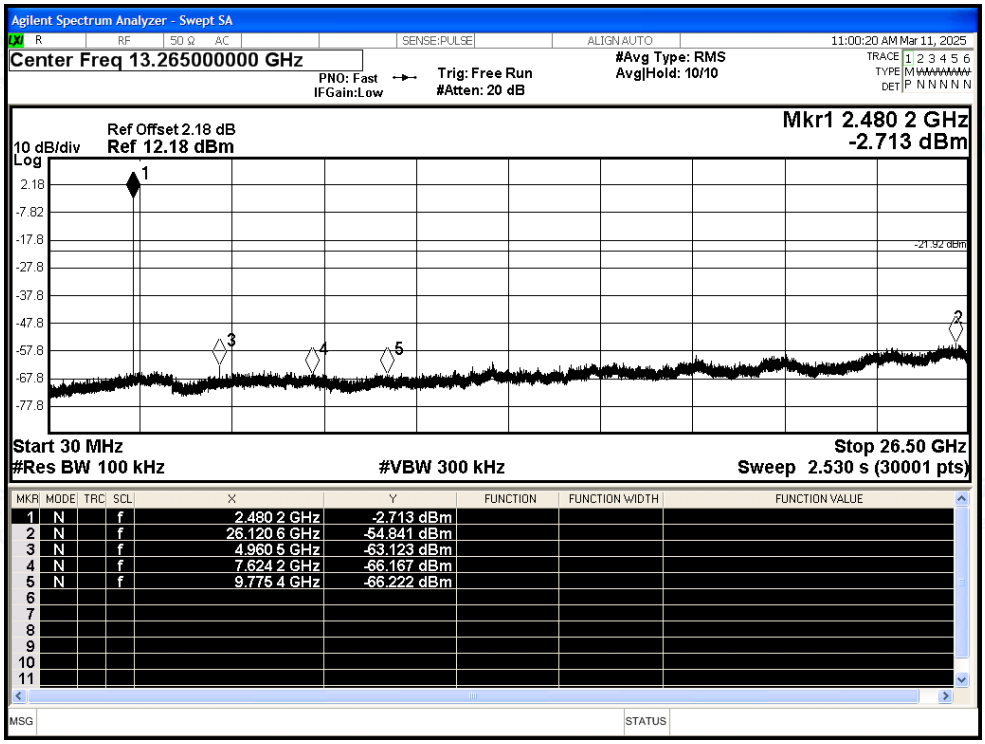
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission



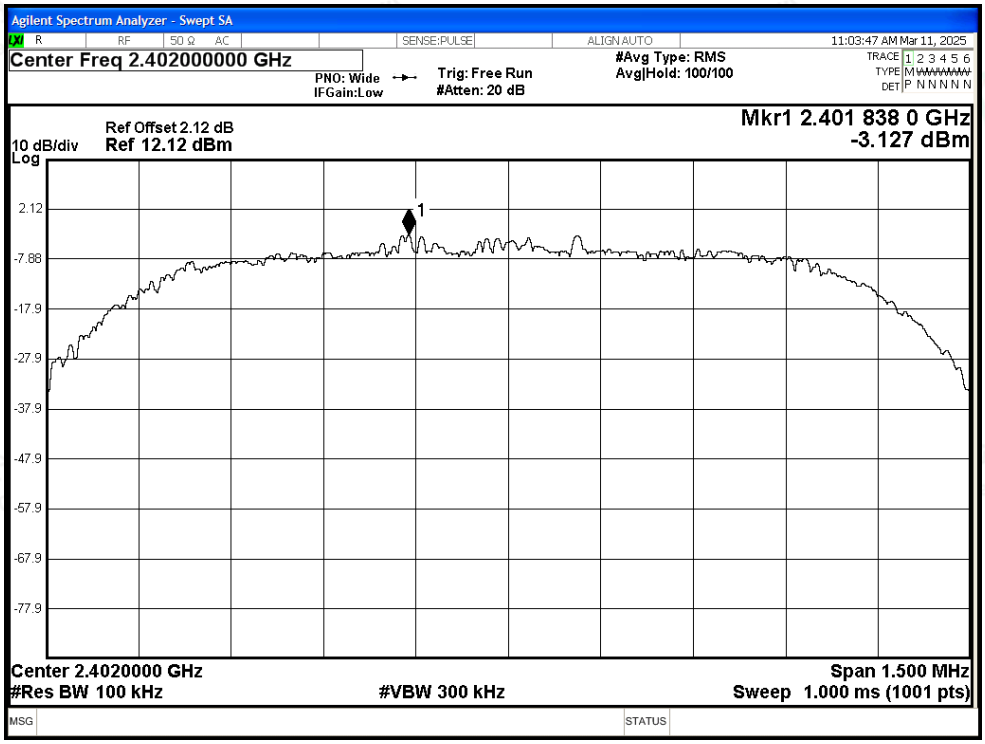
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref



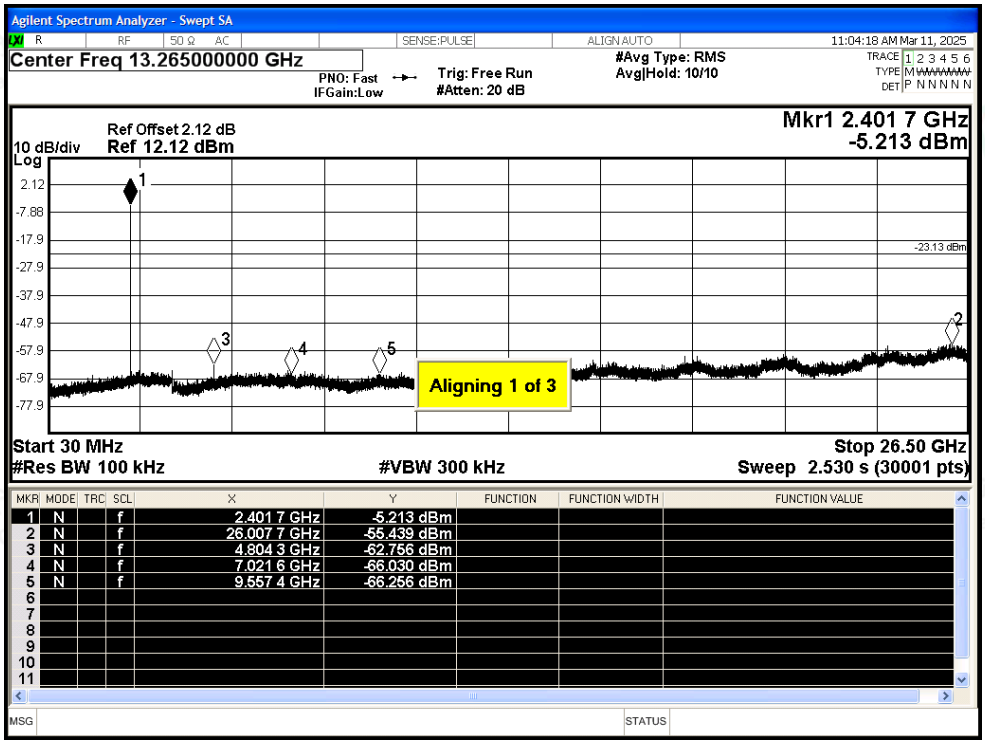
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission



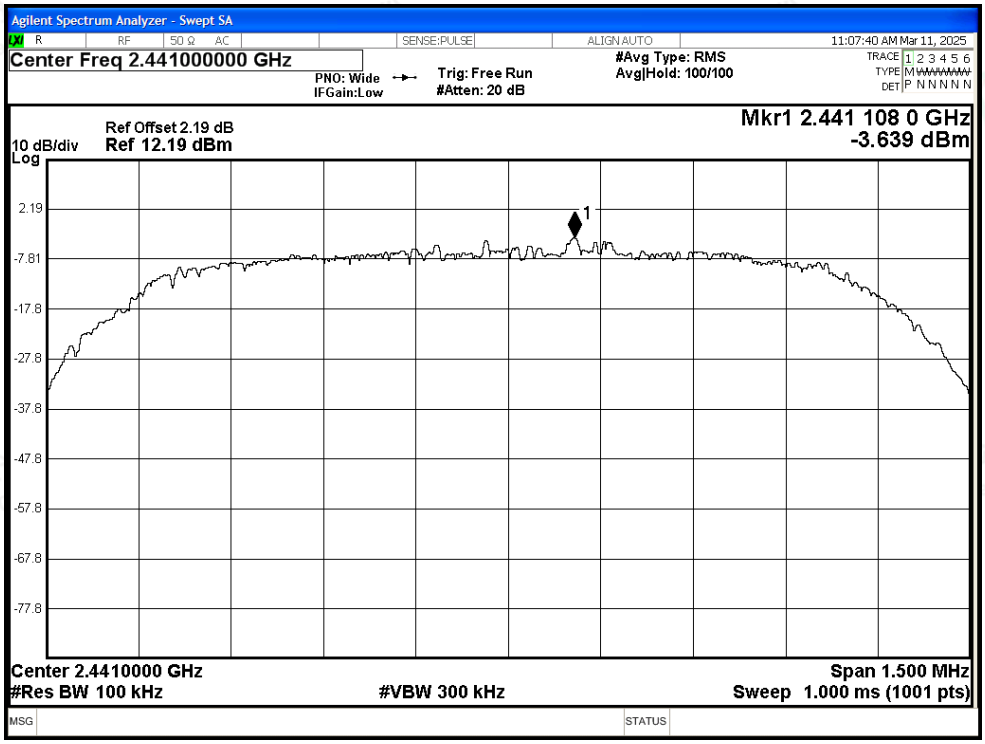
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref



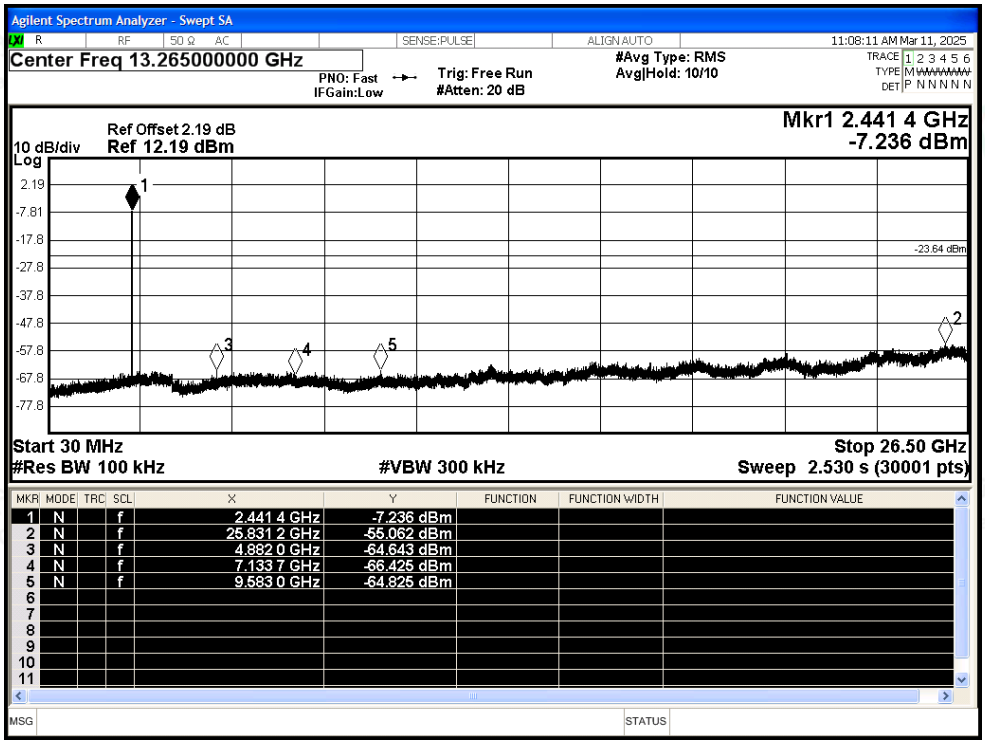
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission



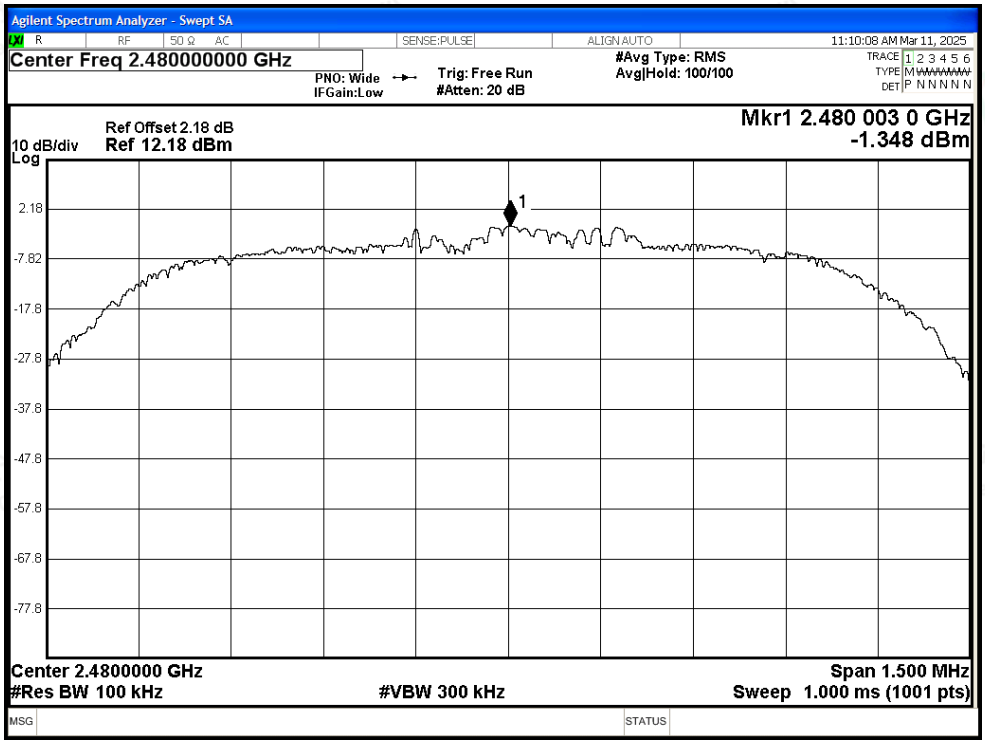
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



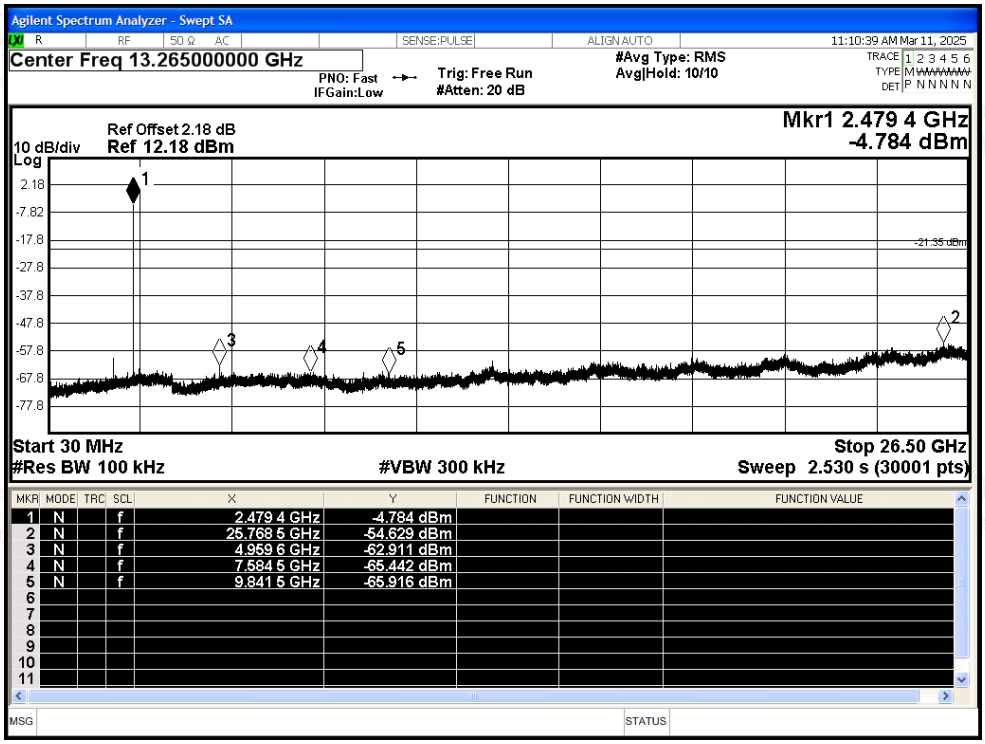
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission

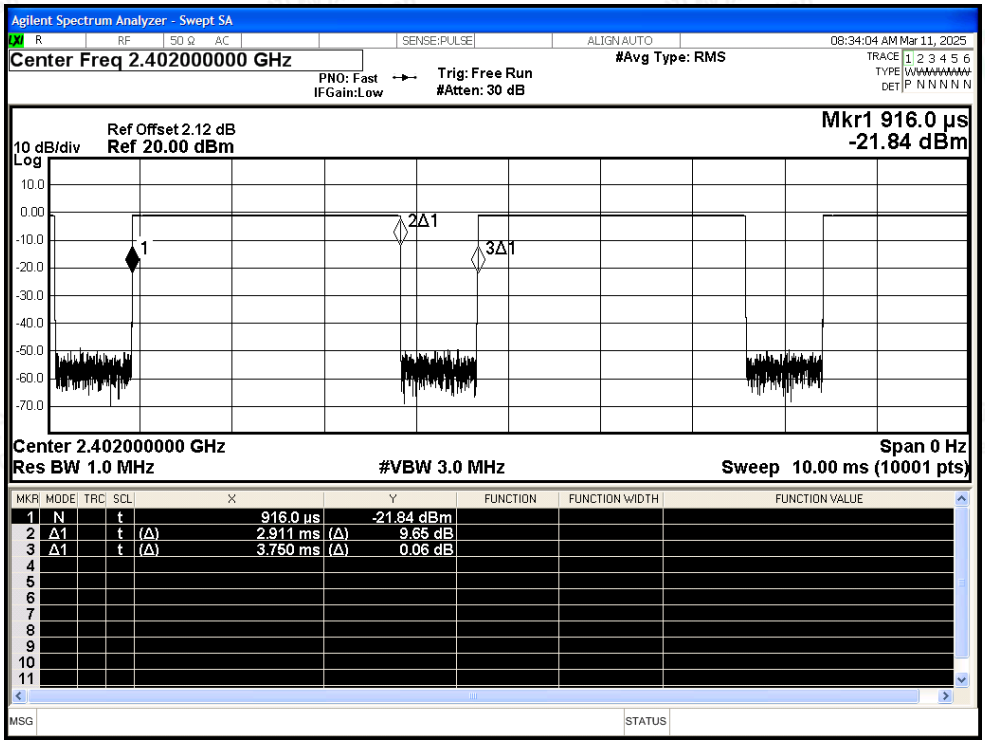


A.8 Duty Cycle

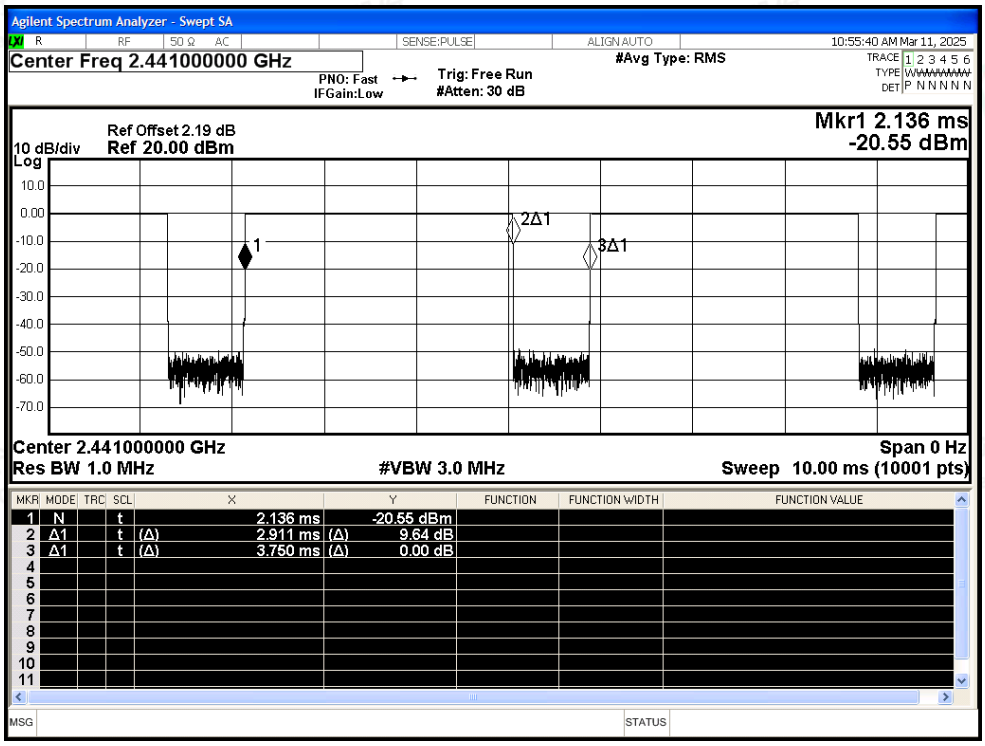
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH5	2402	Ant1	77.63	1.1	0.34
NVNT	1-DH5	2441	Ant1	77.63	1.1	0.34
NVNT	1-DH5	2480	Ant1	77.6	1.1	0.34
NVNT	2-DH5	2402	Ant1	77.28	1.12	0.35
NVNT	2-DH5	2441	Ant1	76.43	1.17	0.36
NVNT	2-DH5	2480	Ant1	77.33	1.12	0.34

Test Graphs

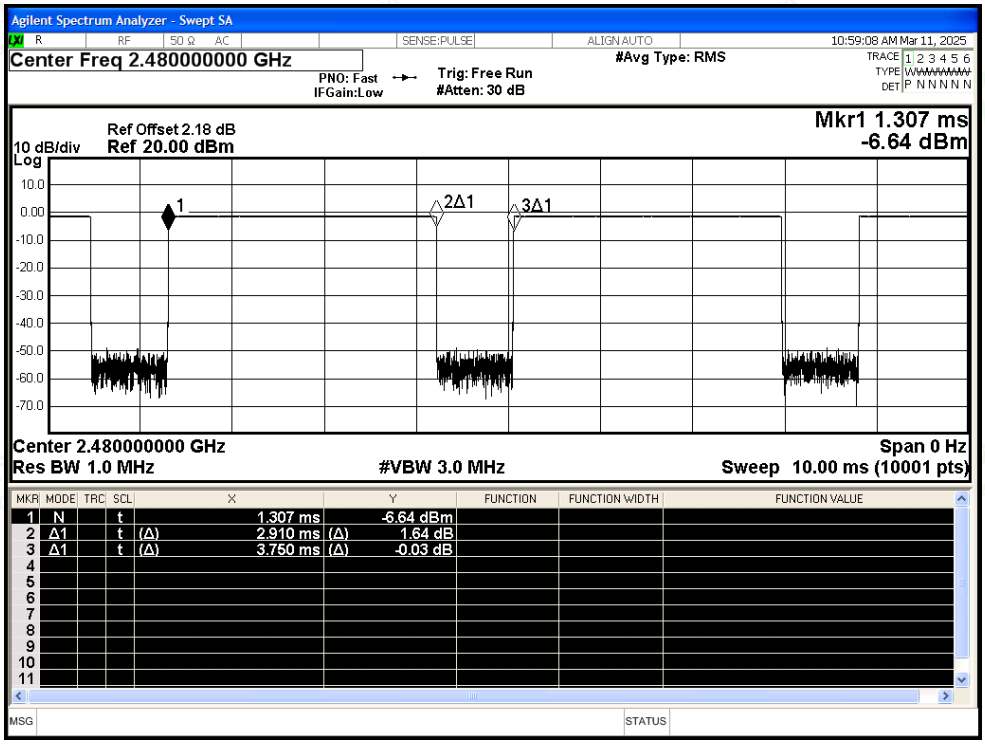
Duty Cycle NVNT 1-DH5 2402MHz Ant1



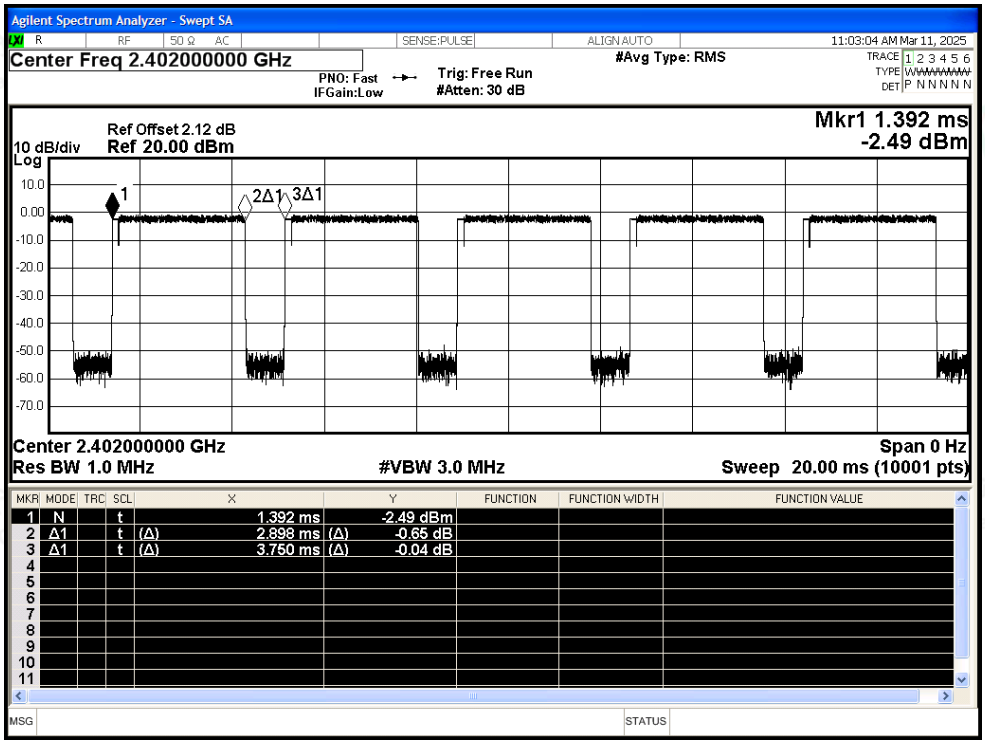
Duty Cycle NVNT 1-DH5 2441MHz Ant1



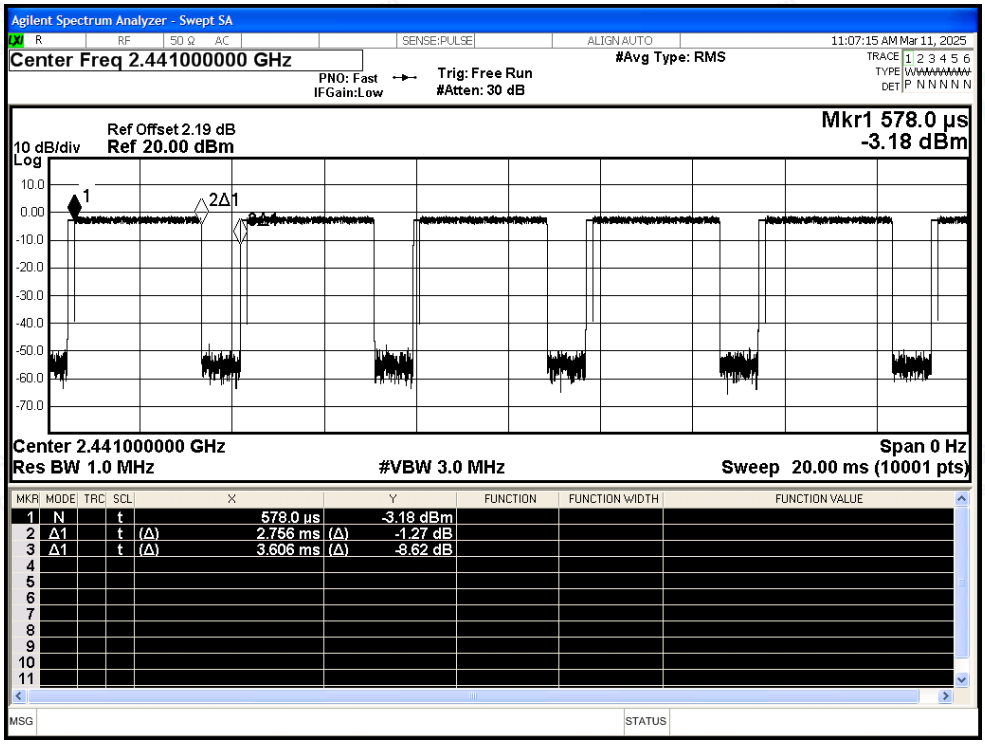
Duty Cycle NVNT 1-DH5 2480MHz Ant1



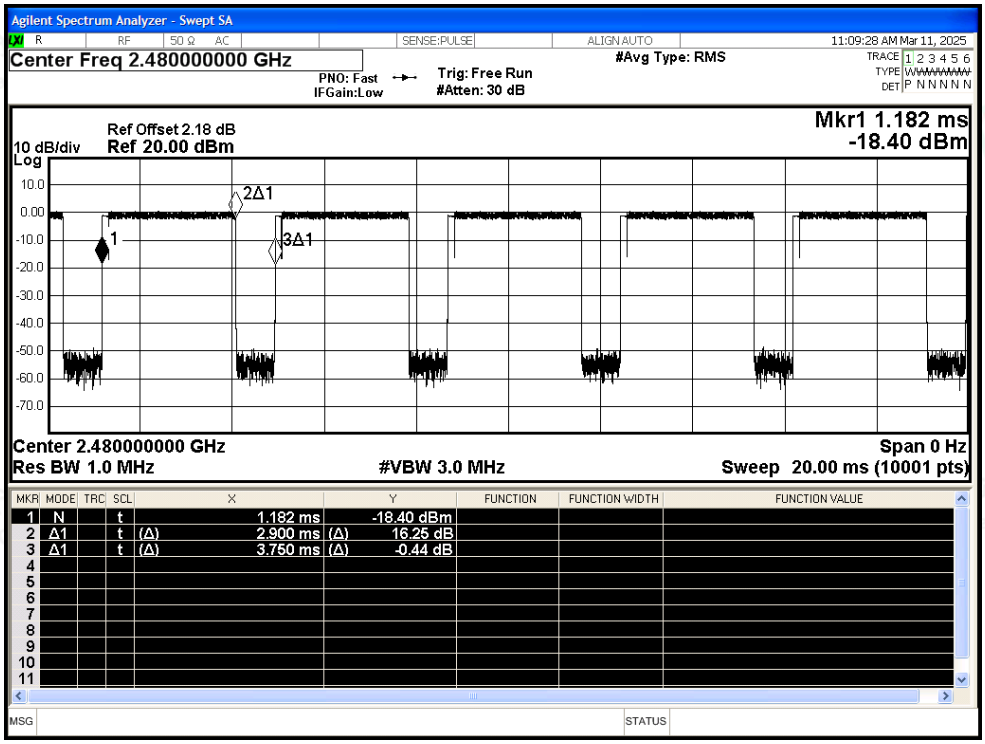
Duty Cycle NVNT 2-DH5 2402MHz Ant1



Duty Cycle NVNT 2-DH5 2441MHz Ant1



Duty Cycle NVNT 2-DH5 2480MHz Ant1

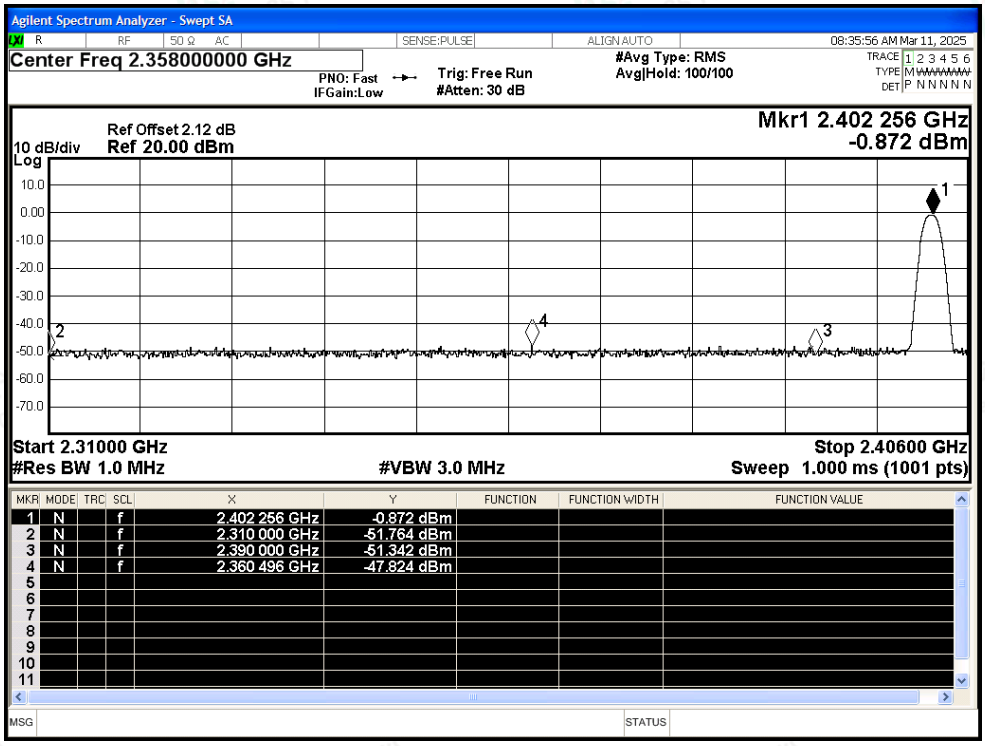


A.9 Restrict Band

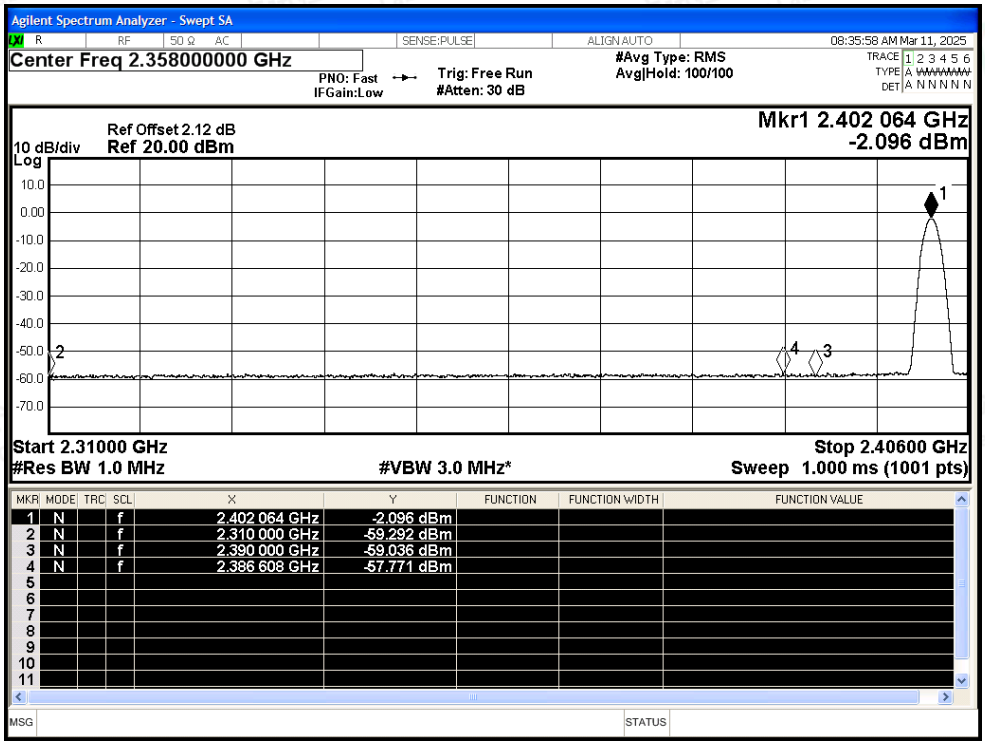
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-51.76	2	-	45.5	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-59.29	2	1.1	39.07	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2360.496	-47.82	2	-	49.44	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2386.608	-57.77	2	1.1	40.59	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-51.34	2	-	45.92	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-59.04	2	1.1	39.32	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-49.74	2	-	47.52	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-58.14	2	1.1	40.22	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2485.12	-44.14	2	-	53.12	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2498.992	-57.09	2	1.1	41.27	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-50.75	2	-	46.51	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-58.28	2	1.1	40.08	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-49.63	2	-	47.63	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-58.96	2	1.12	39.42	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2375.856	-47.42	2	-	49.84	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2385.648	-57.68	2	1.12	40.7	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-51.17	2	-	46.09	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-58.4	2	1.12	39.98	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-47.13	2	-	50.13	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-56.85	2	1.12	41.53	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2485.744	-44.33	2	-	52.93	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.56	-56.46	2	1.12	41.92	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-50.65	2	-	46.61	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-57.83	2	1.12	40.55	Average	54	Pass

Test Graphs

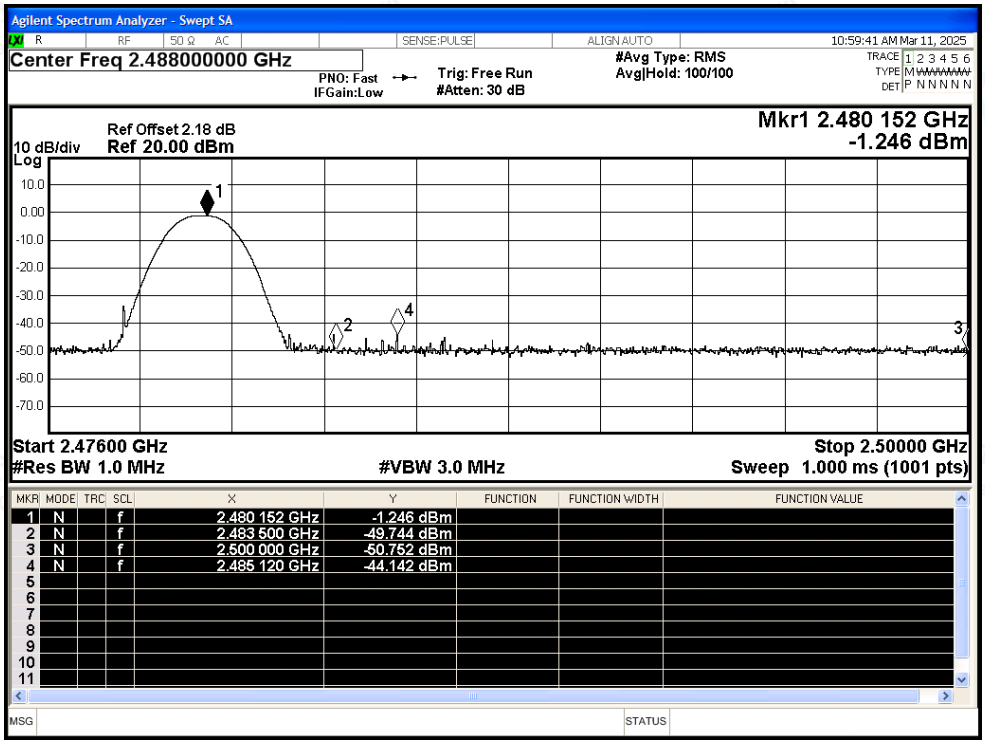
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak



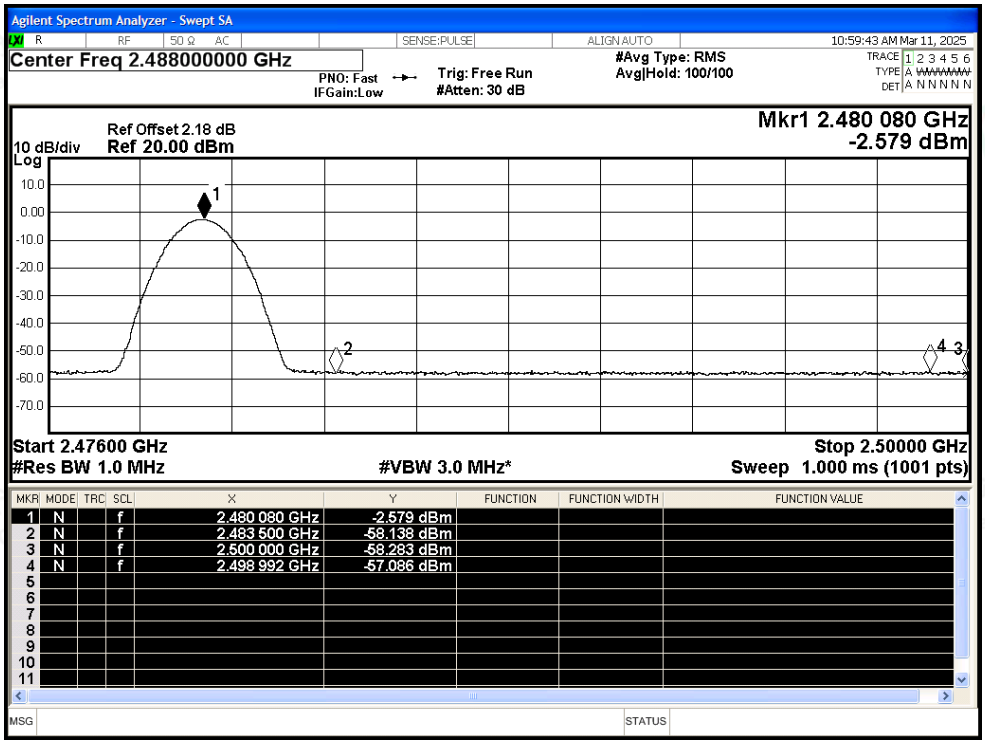
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



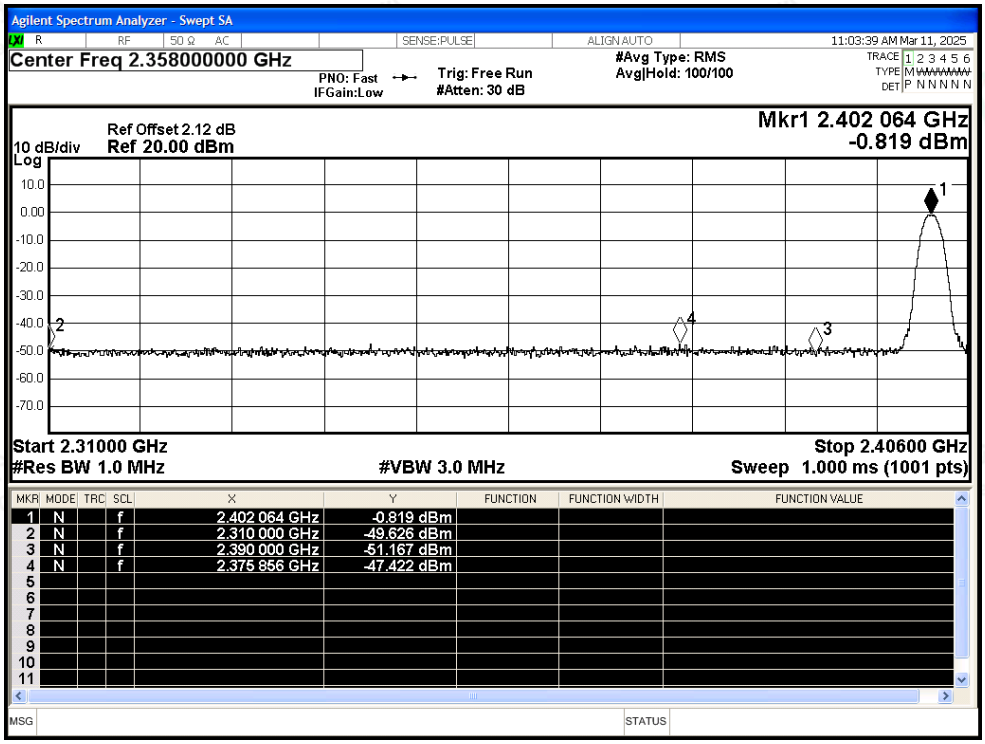
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak



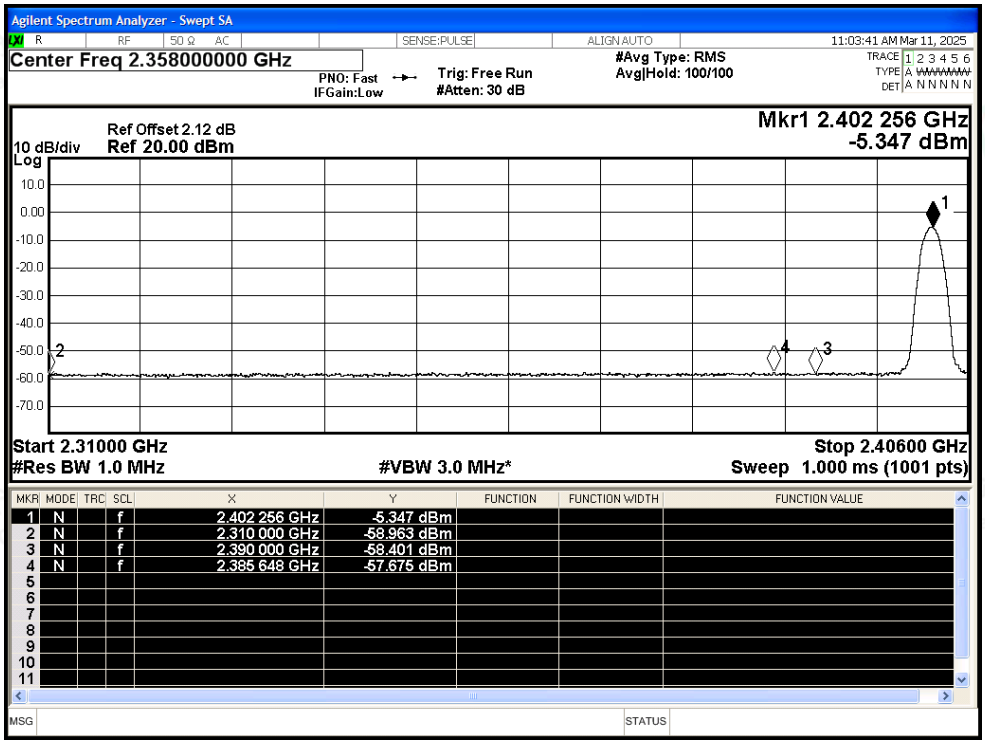
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average



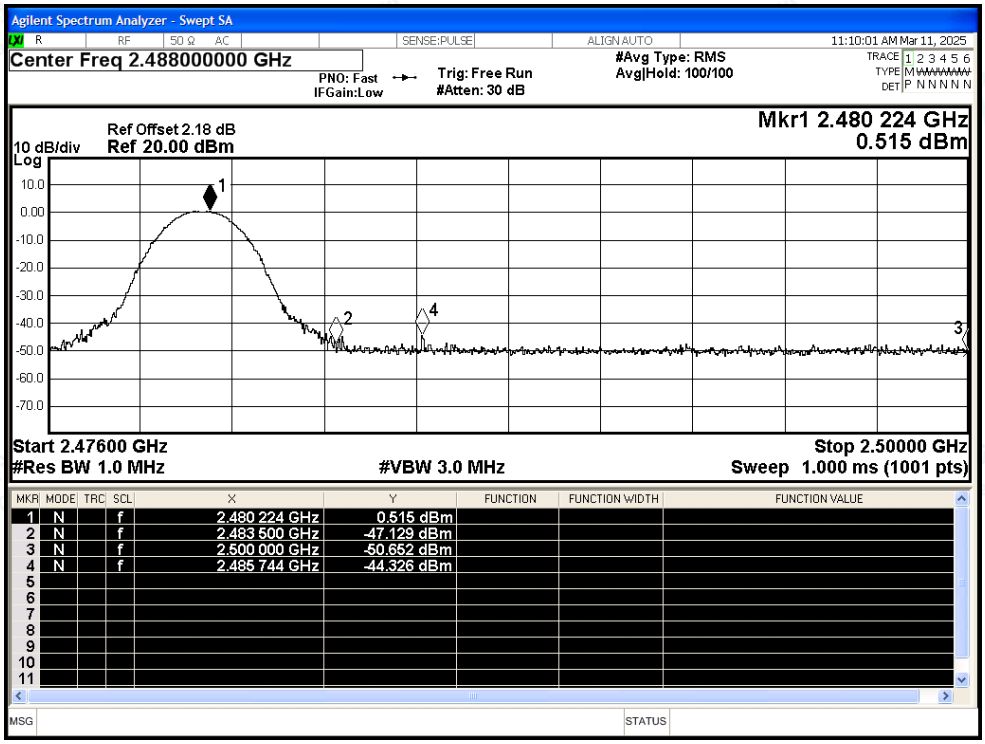
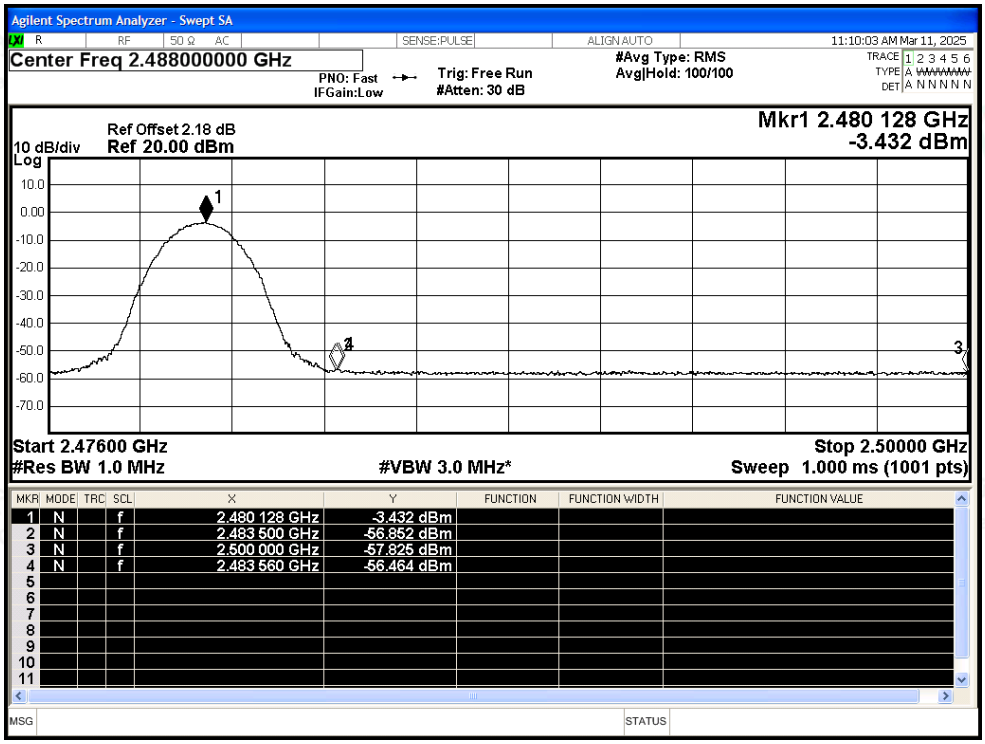
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak



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