Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: TWS Bluetooth Earbuds

Test Model: Immortal 171

Environmental Conditions

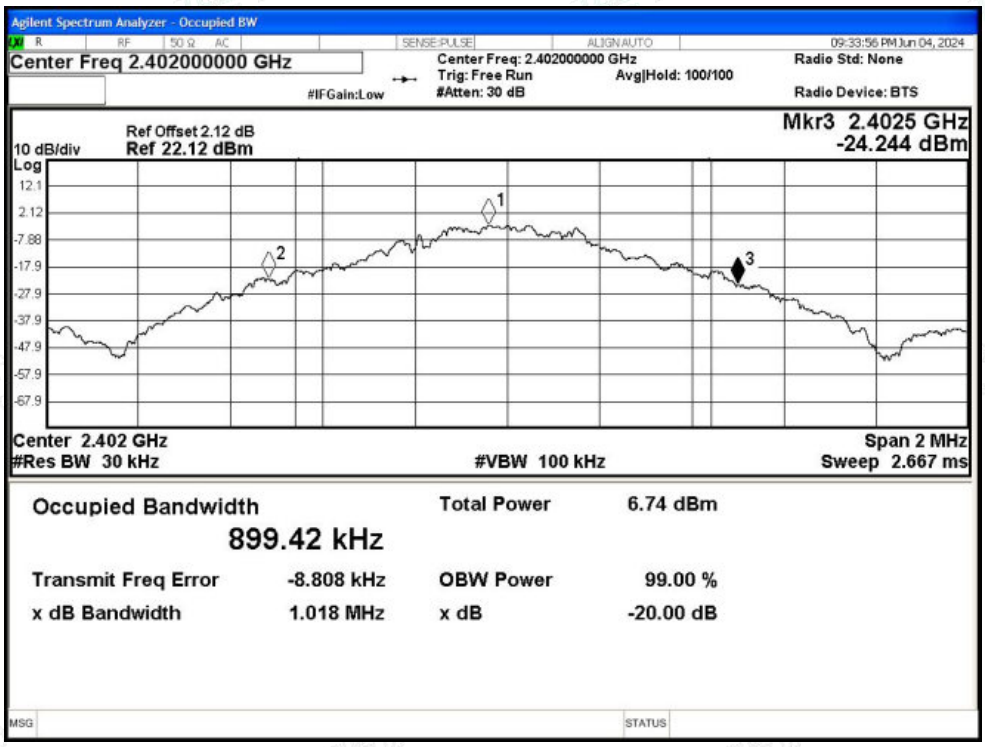
Temperature:	23.8 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Luo
Supervised by:	Nick Peng

A.1 -20dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	1.018	N/A	Pass
NVNT	1-DH5	2441	Ant1	1.02	N/A	Pass
NVNT	1-DH5	2480	Ant1	0.961	N/A	Pass
NVNT	2-DH5	2402	Ant1	1.323	N/A	Pass
NVNT	2-DH5	2441	Ant1	1.288	N/A	Pass
NVNT	2-DH5	2480	Ant1	1.281	N/A	Pass

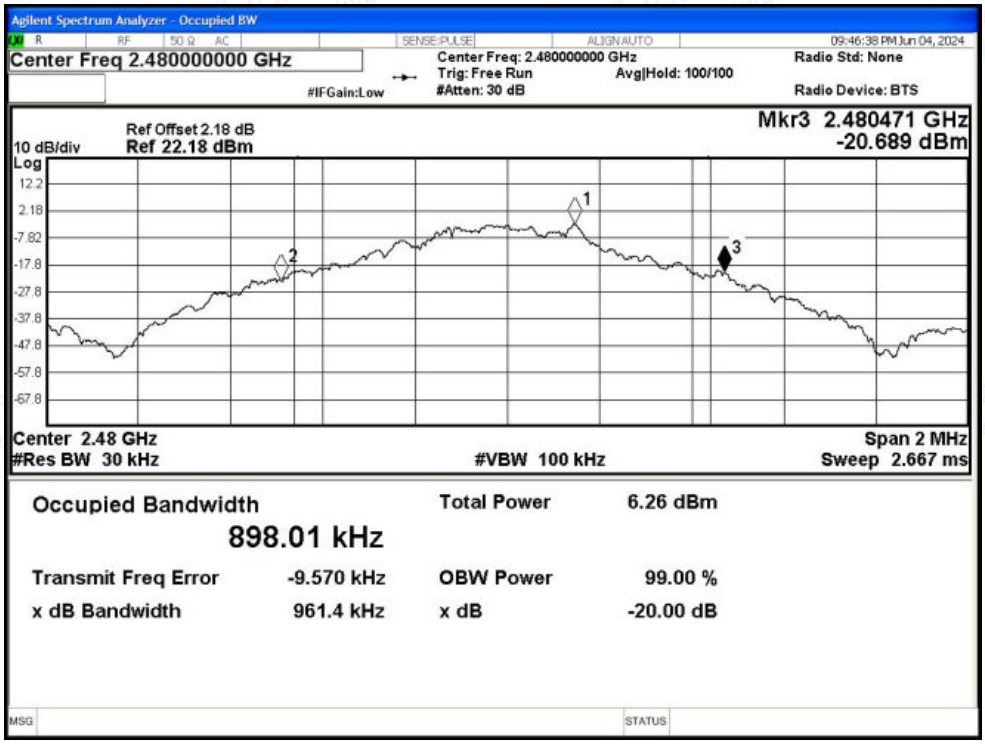
Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1

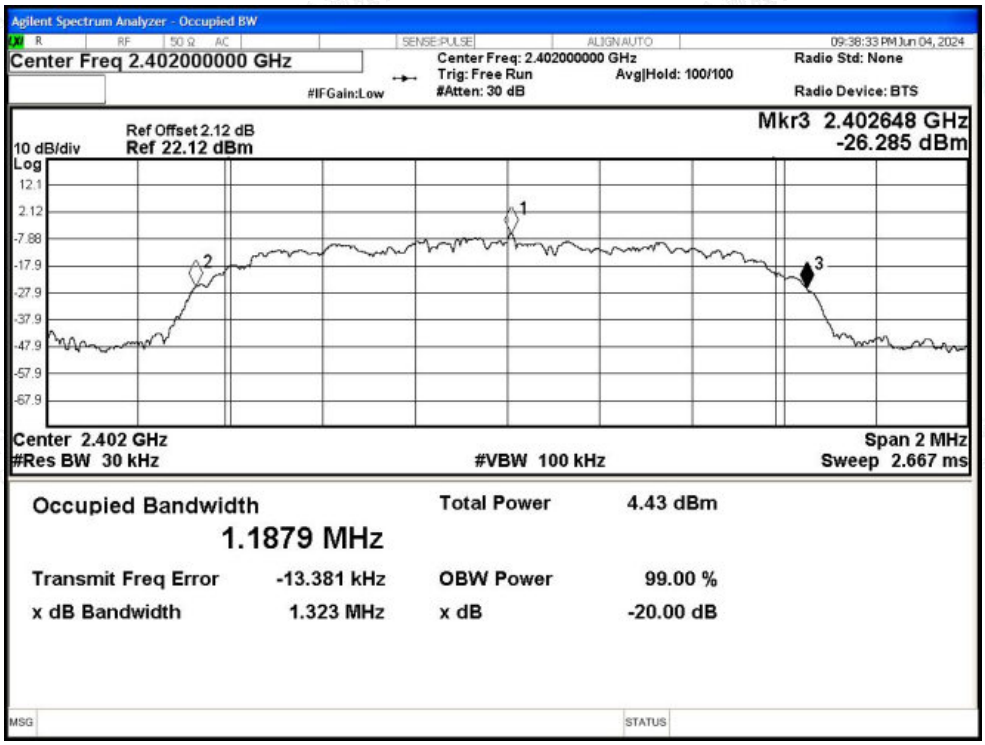


-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1

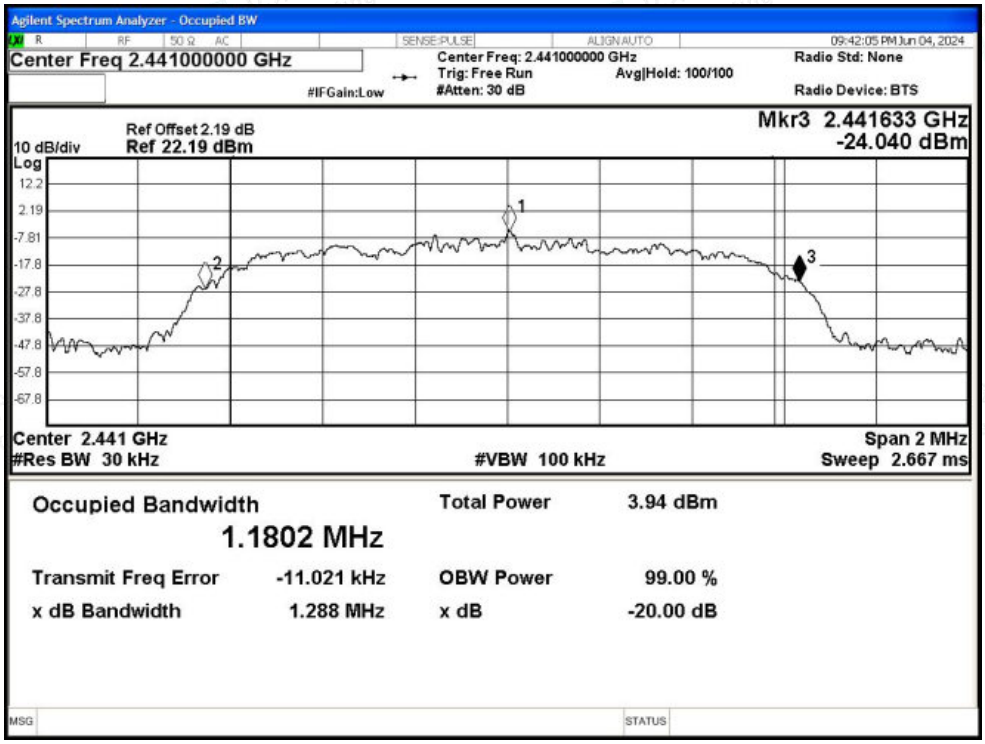
-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1



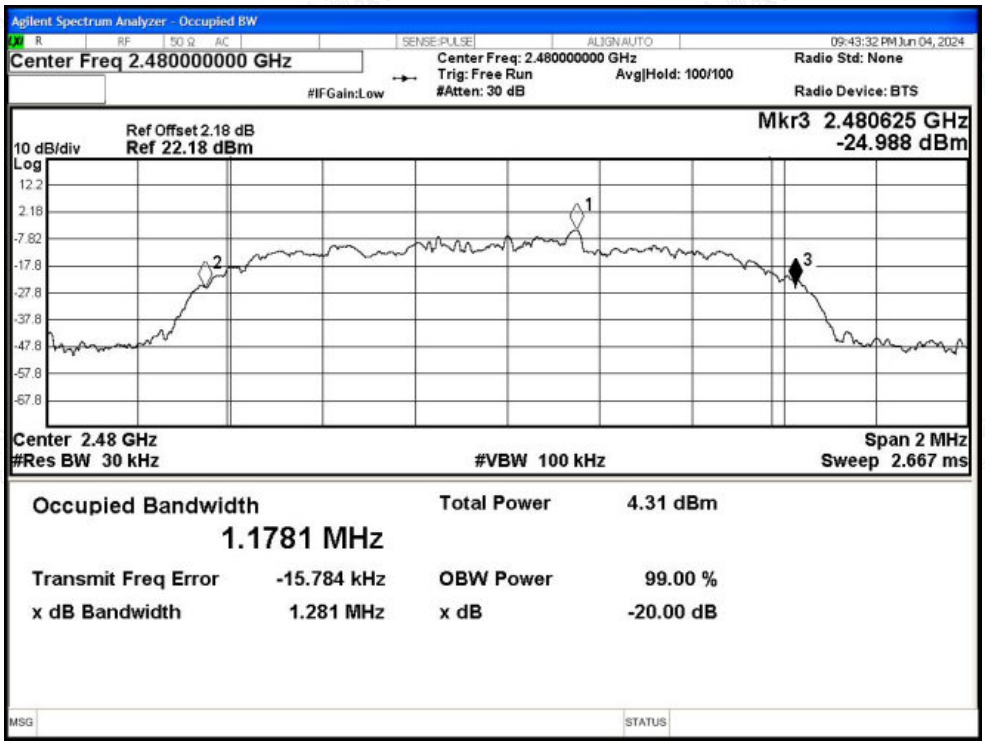
-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1

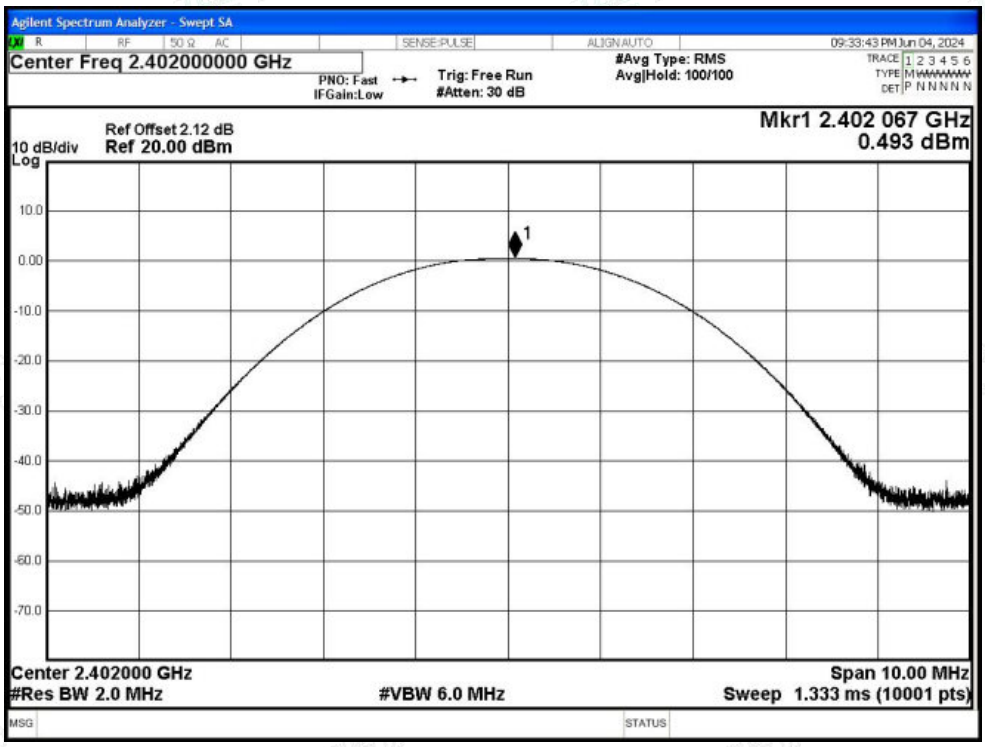


A.2 Maximum Conducted Output Power

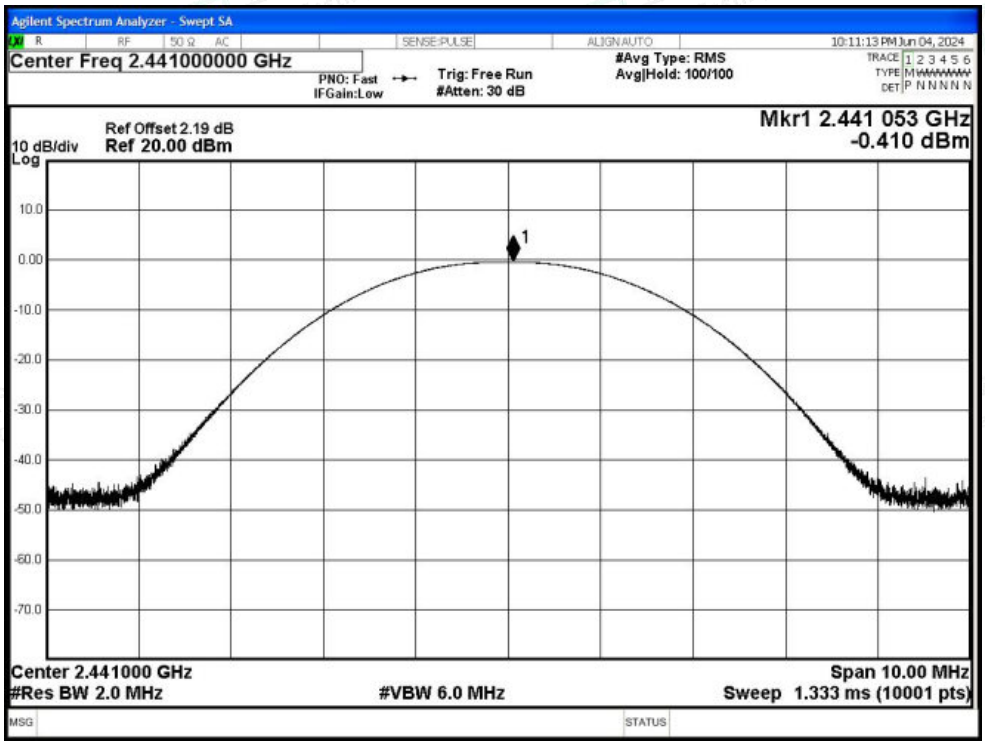
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	0.49	21	Pass
NVNT	1-DH5	2441	Ant1	-0.41	21	Pass
NVNT	1-DH5	2480	Ant1	-0.05	21	Pass
NVNT	2-DH5	2402	Ant1	0.26	21	Pass
NVNT	2-DH5	2441	Ant1	-0.54	21	Pass
NVNT	2-DH5	2480	Ant1	-0.23	21	Pass

Test Graphs

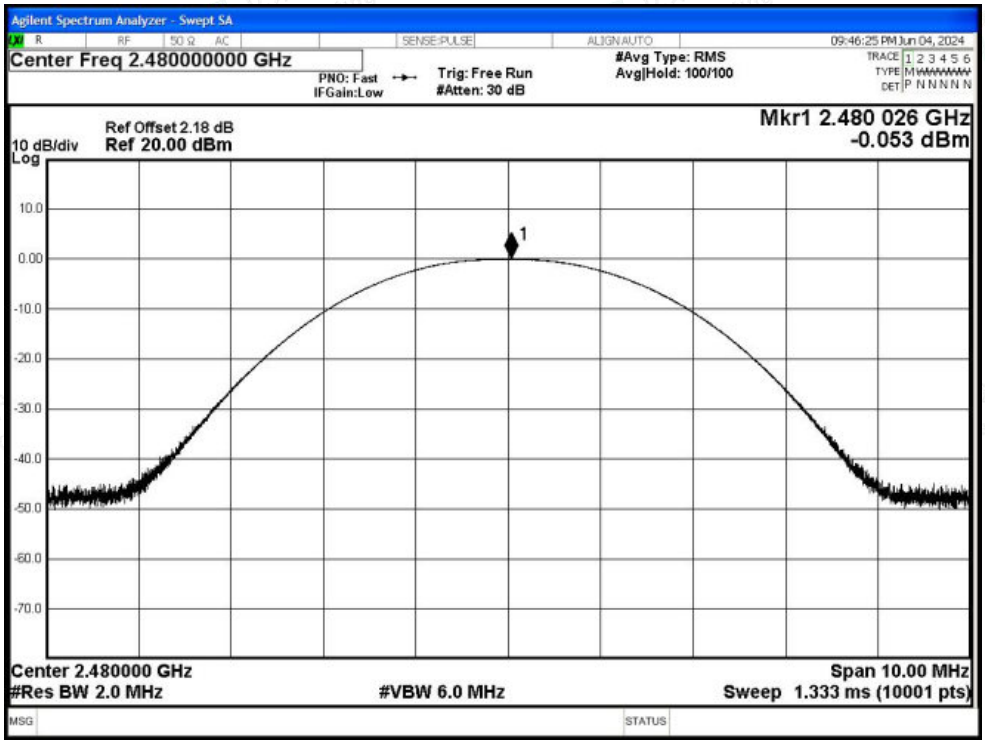
Power NVNT 1-DH5 2402MHz Ant1



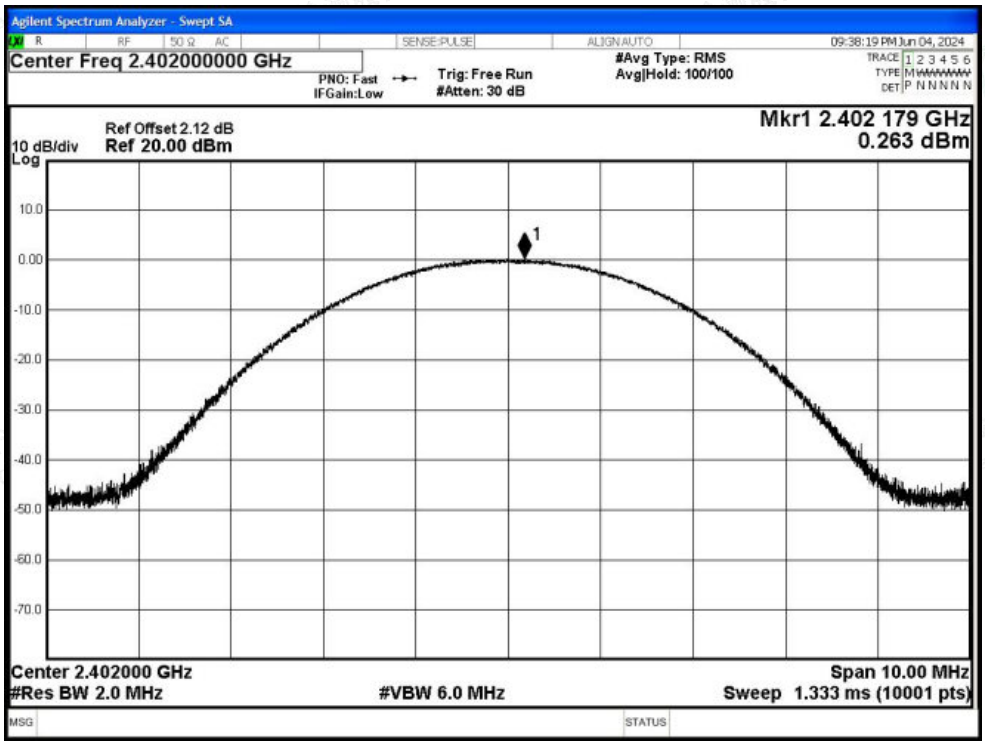
Power NVNT 1-DH5 2441MHz Ant1



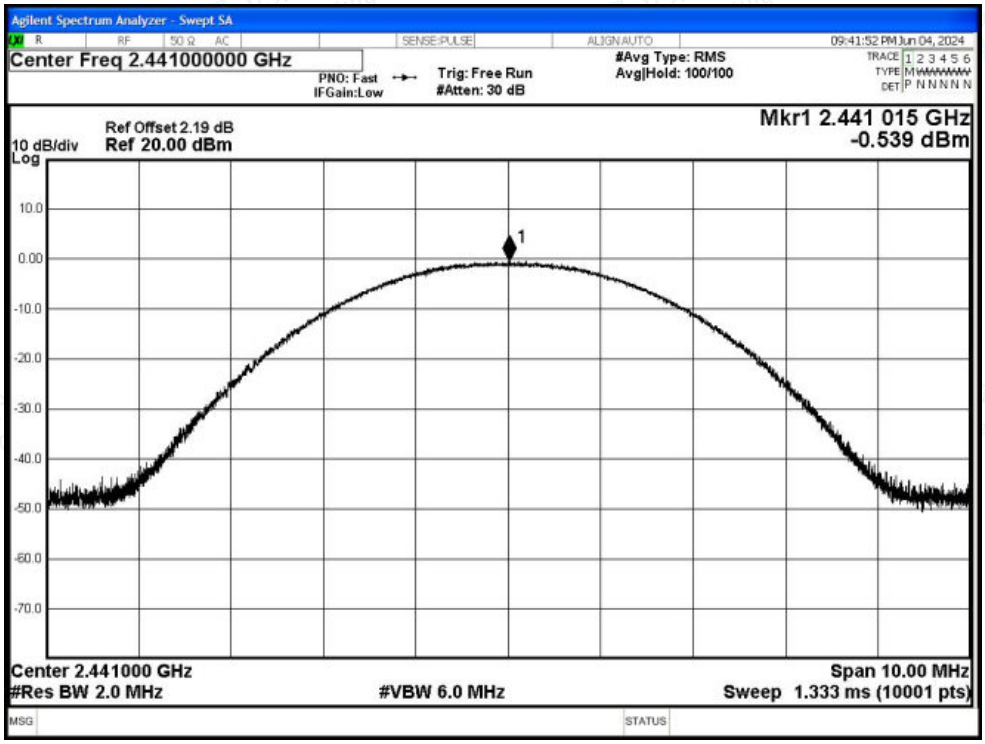
Power NVNT 1-DH5 2480MHz Ant1



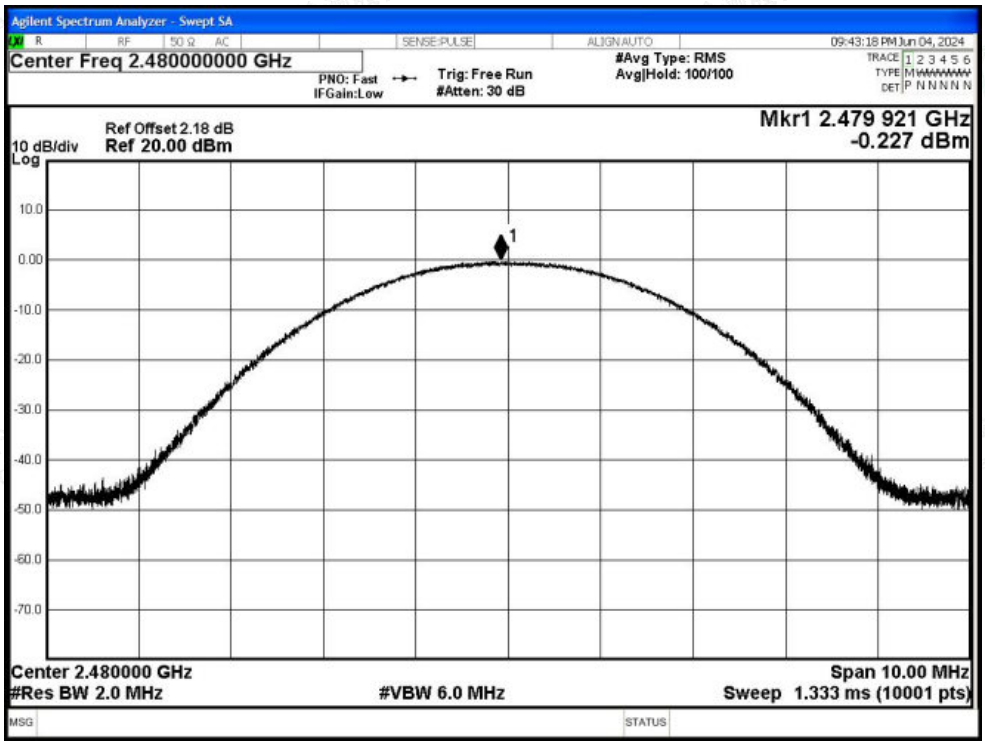
Power NVNT 2-DH5 2402MHz Ant1



Power NVNT 2-DH5 2441MHz Ant1



Power NVNT 2-DH5 2480MHz Ant1

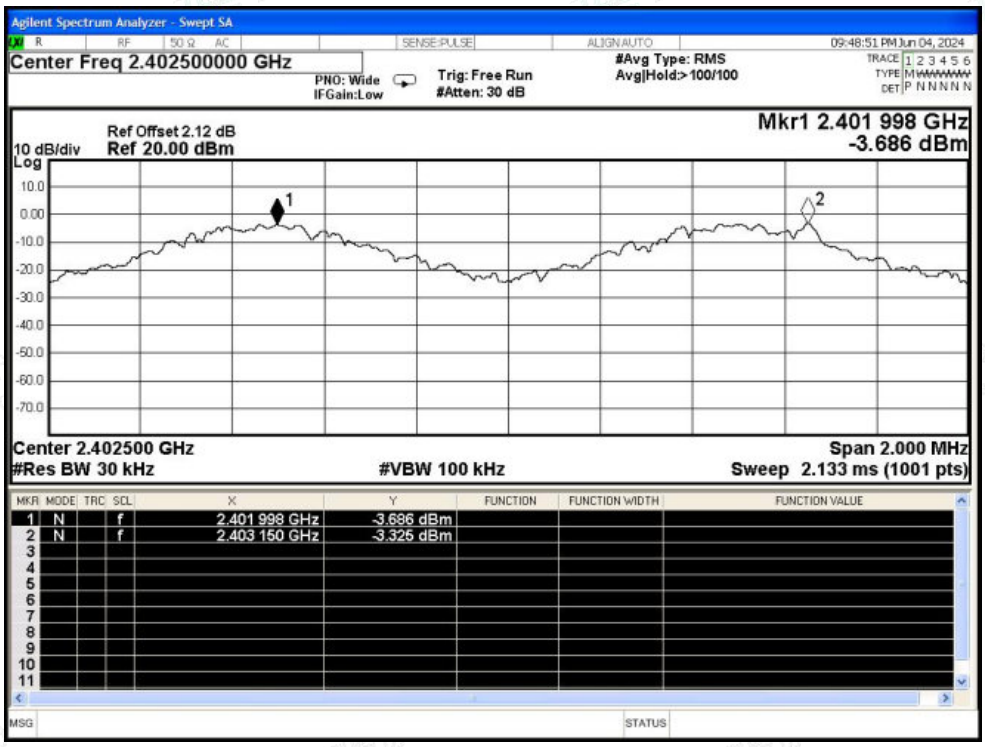


A.3 Carrier Frequencies Separation

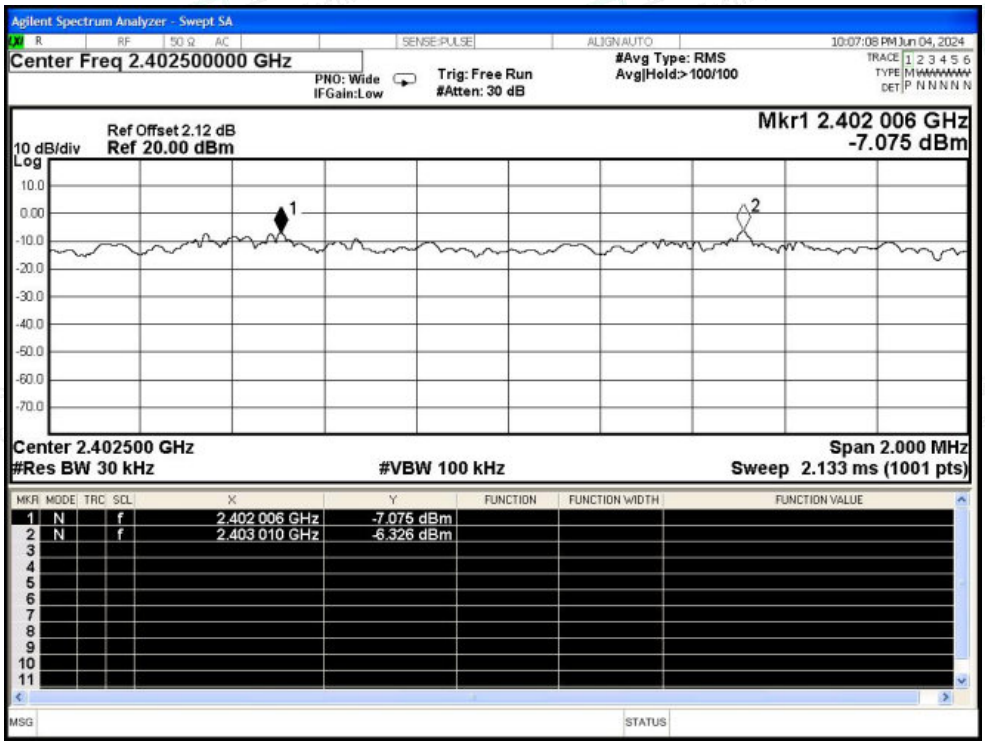
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2401.998	2403.15	1.152	0.679	Pass
NVNT	2-DH5	Ant1	2402.006	2403.01	1.004	0.882	Pass

Test Graphs

CFS NVNT 1-DH5 2402MHz Ant1



CFS NVNT 2-DH5 2402MHz Ant1

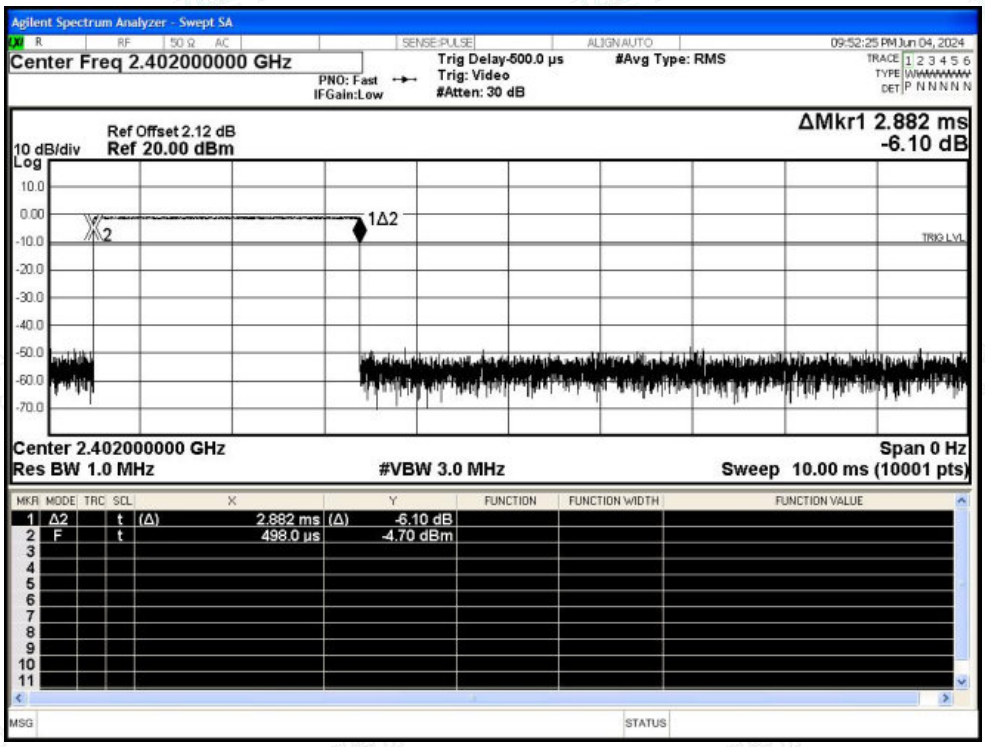


A.4 Dwell Time

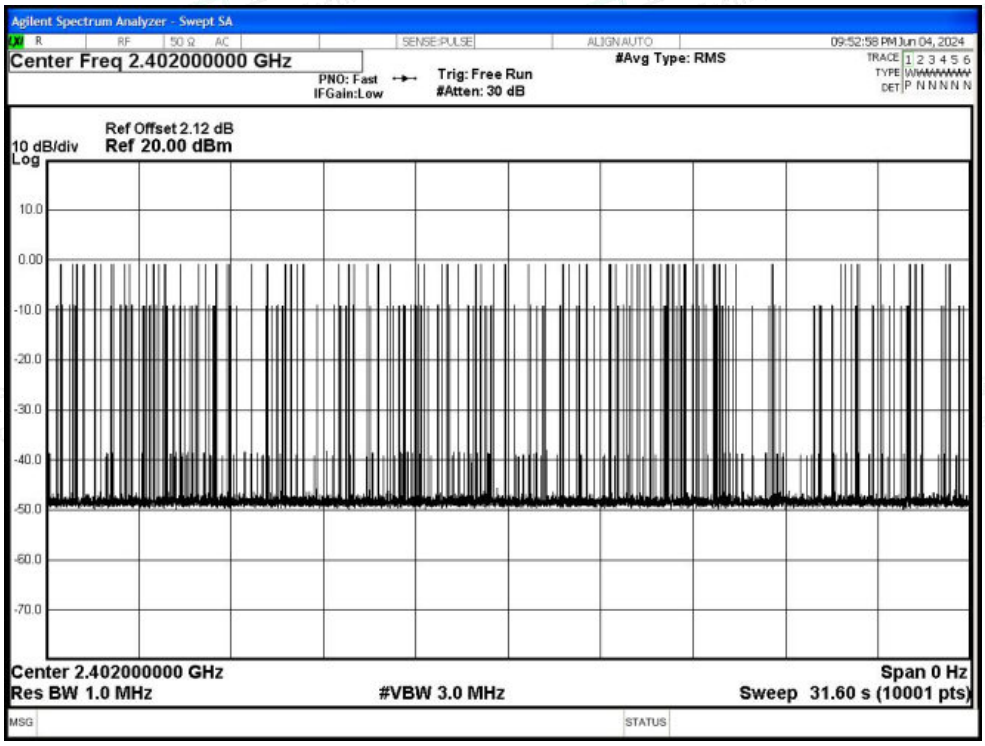
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	2.882	273.79	95	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.88	293.76	102	31600	400	Pass

Test Graphs

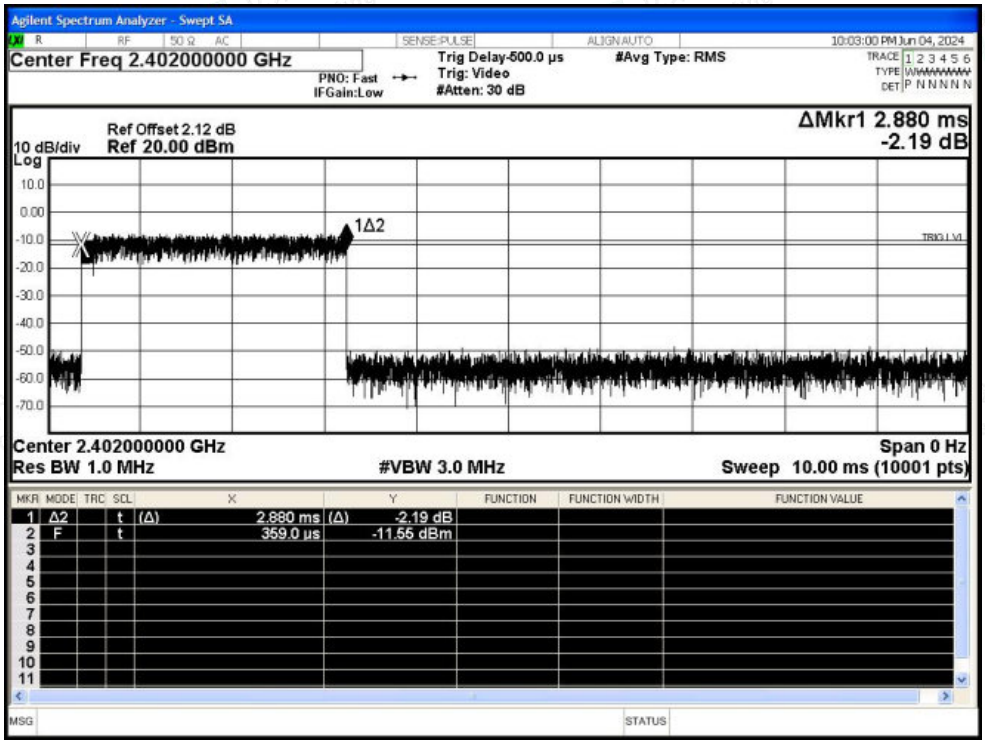
Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



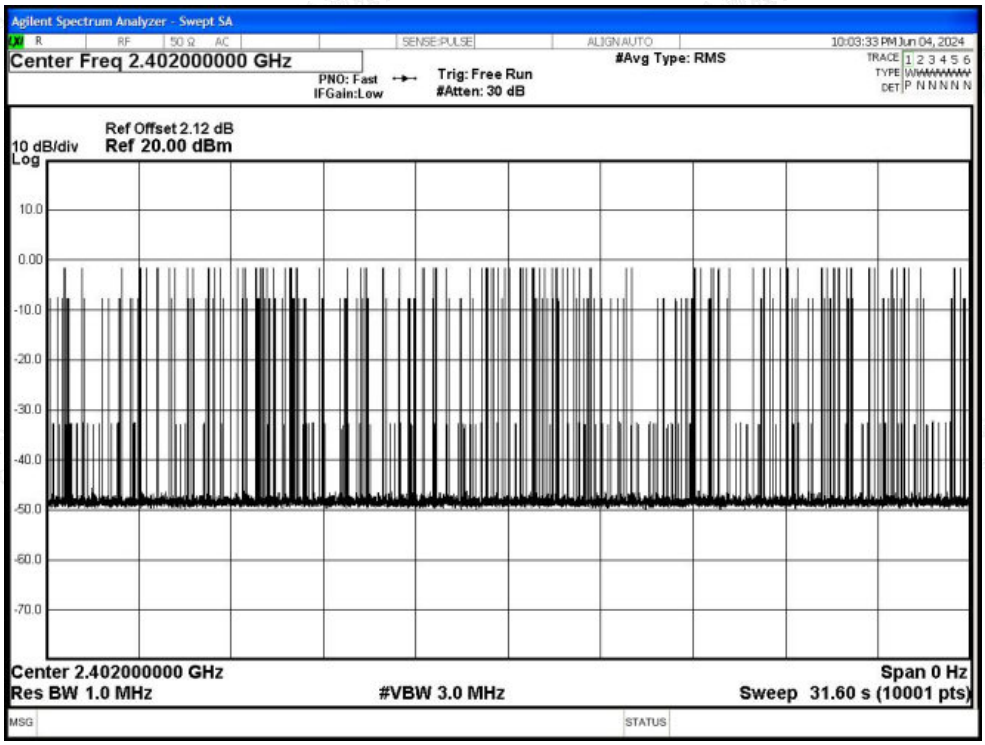
Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated



Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated

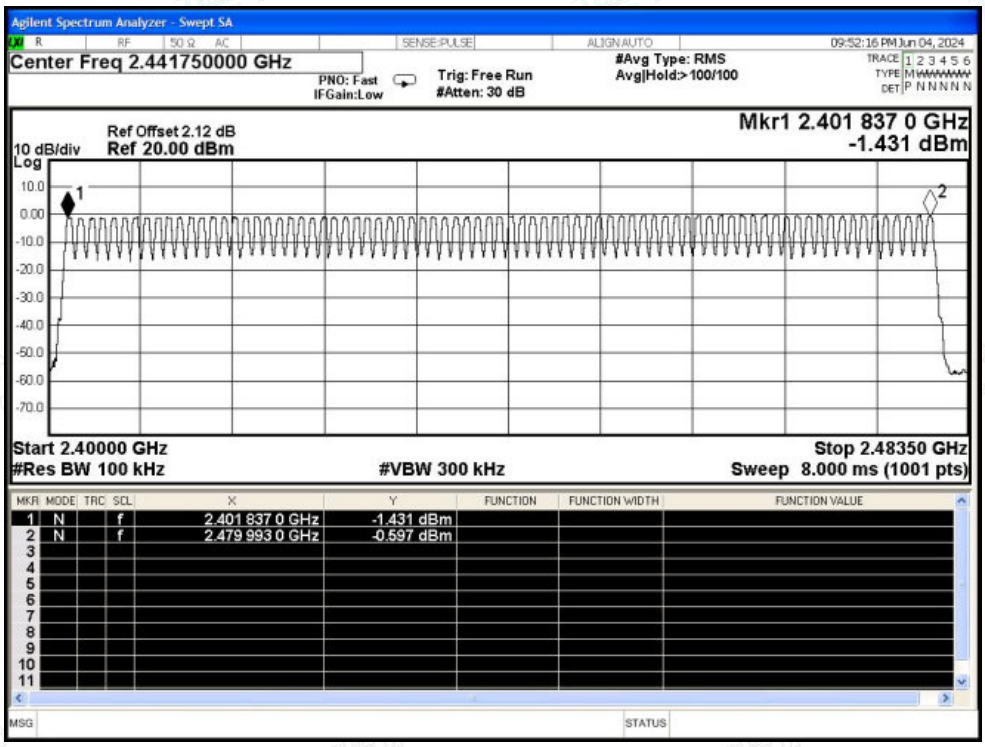


A.5 Number of Hopping Channel

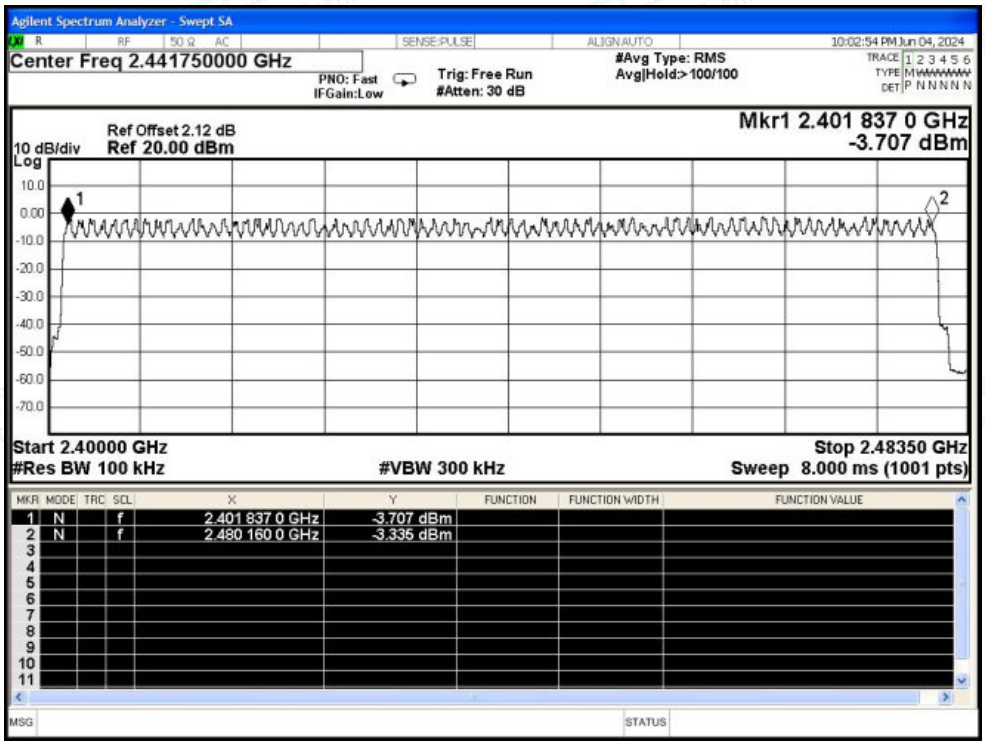
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass

Test Graphs

Hopping No. NVNT 1-DH5 2402MHz Ant1



Hopping No. NVNT 2-DH5 2402MHz Ant1

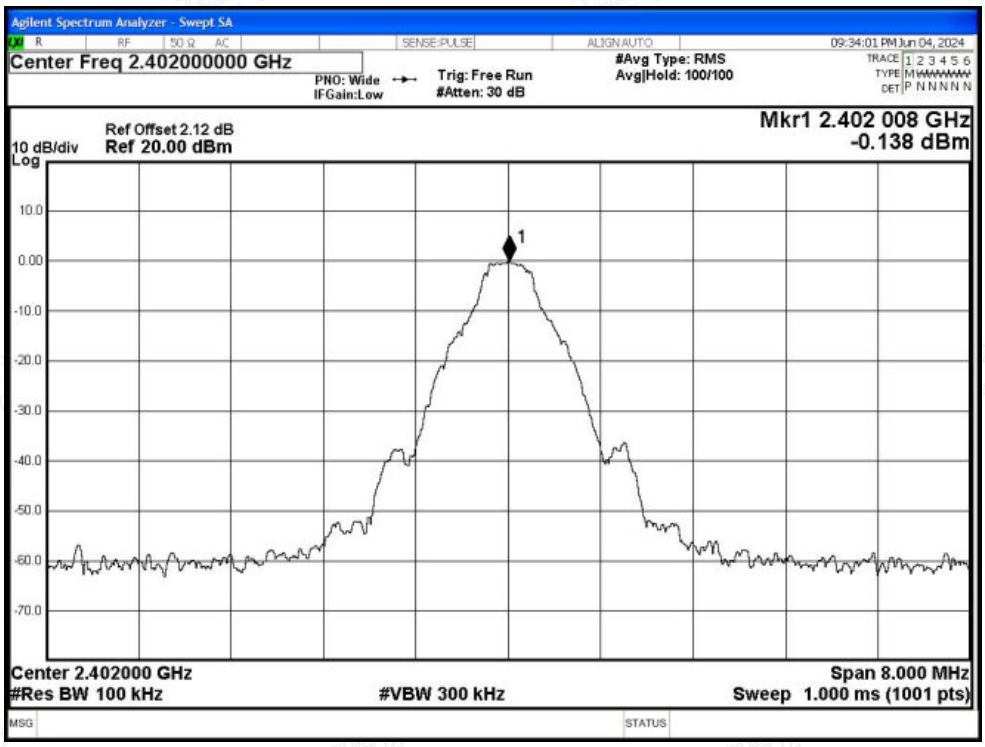


A.6 Band Edge

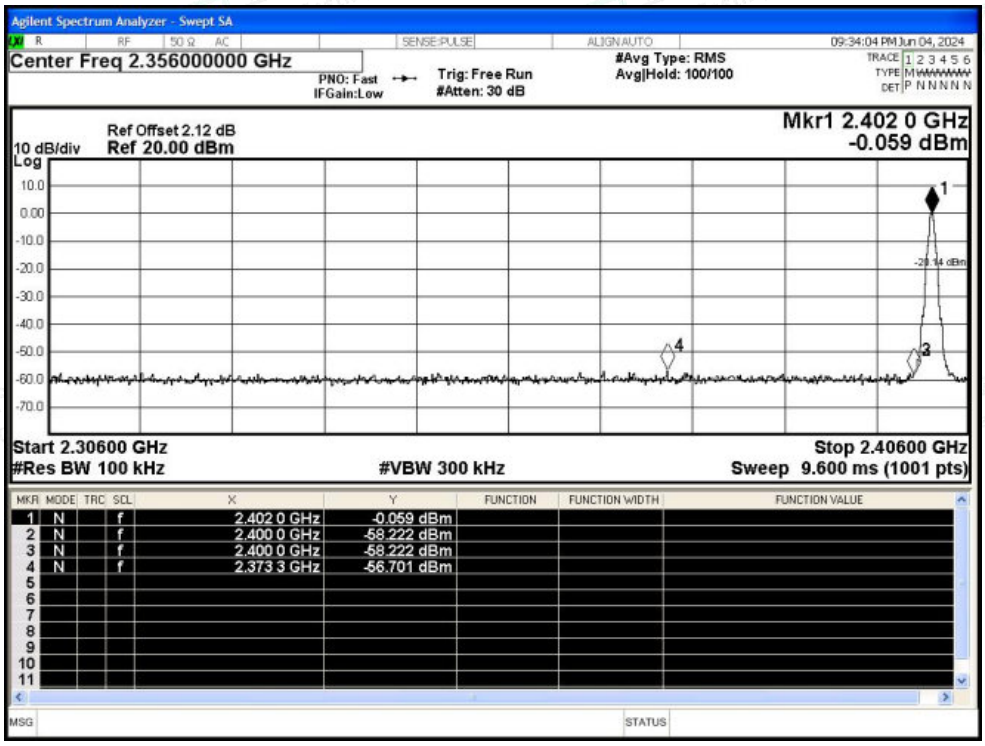
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-56.56	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-56.47	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-52.62	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-55.03	-20	Pass

Test Graphs

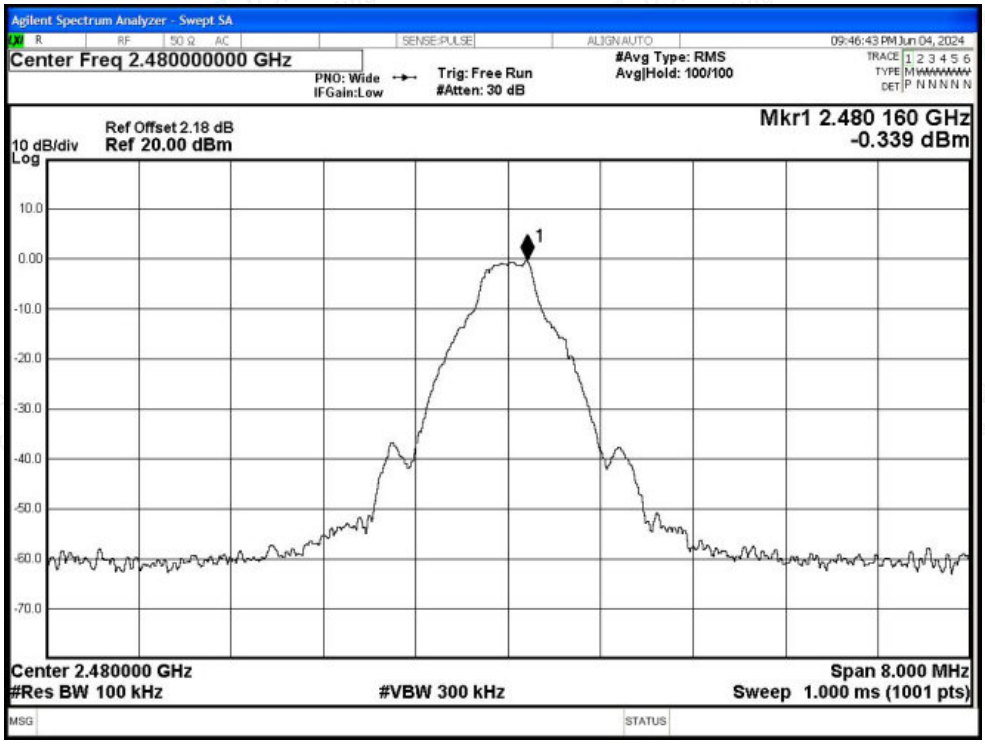
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



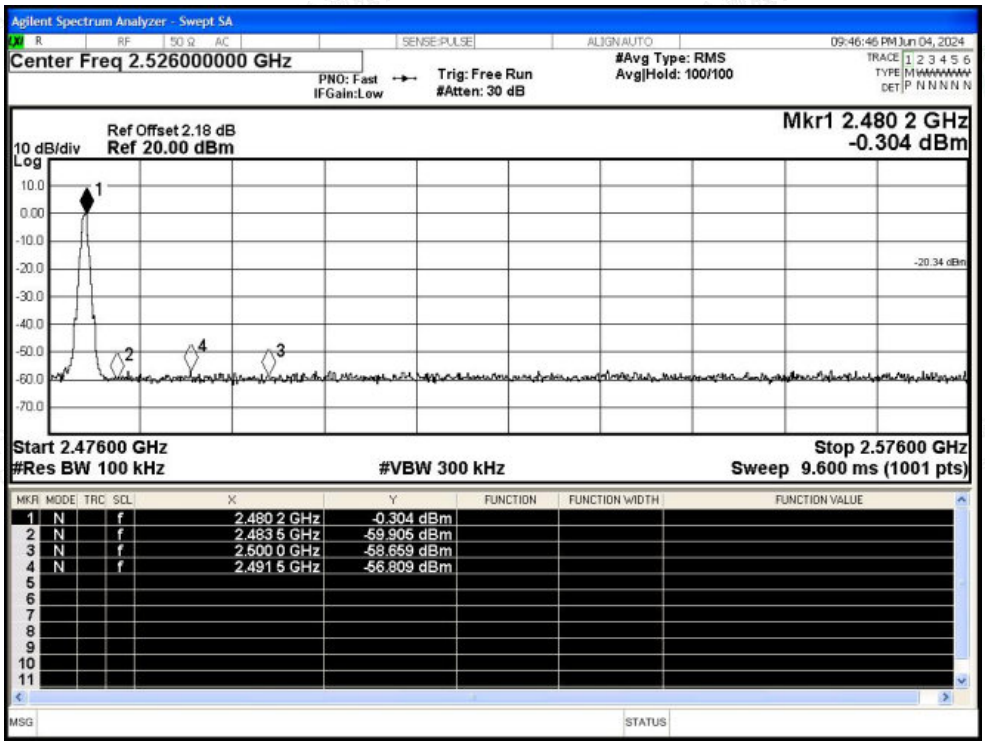
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission



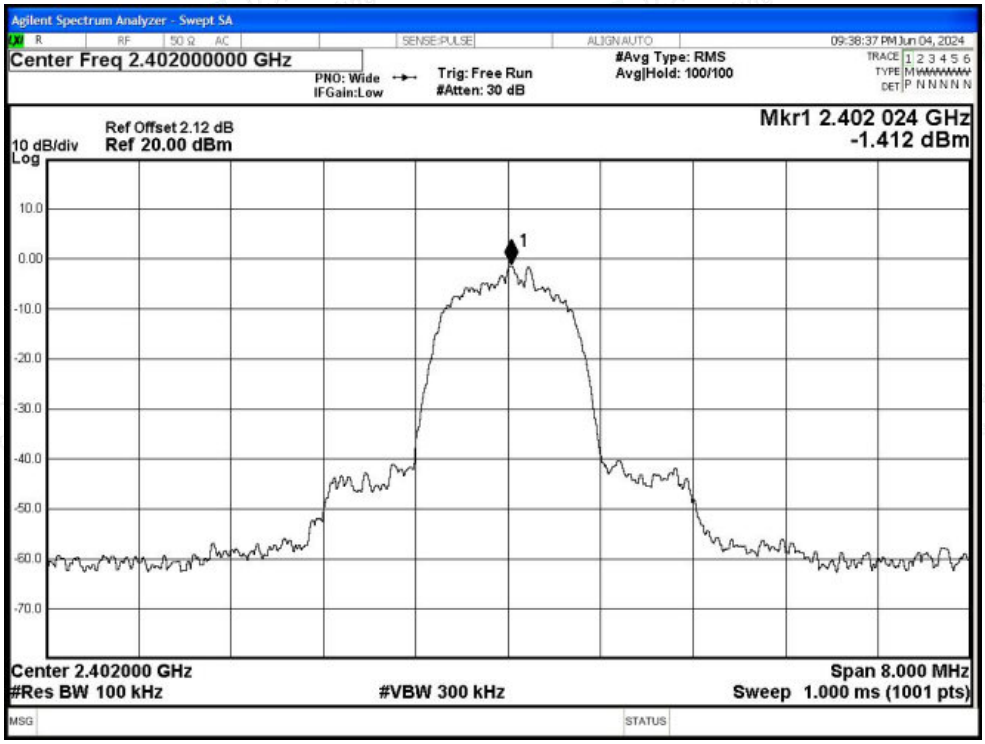
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref



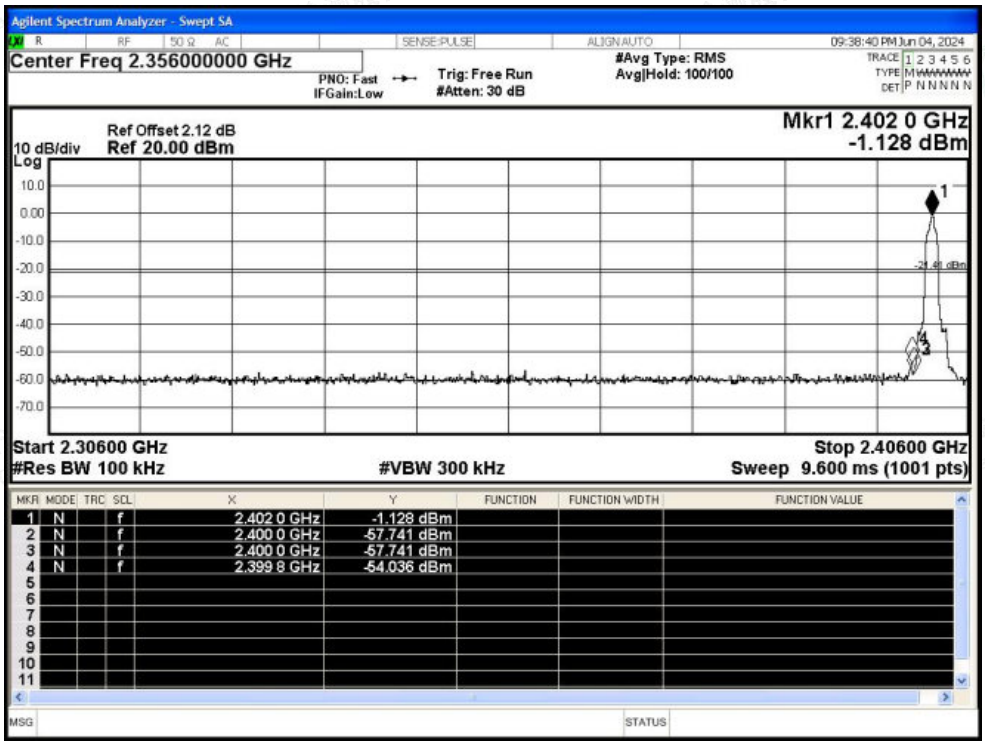
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



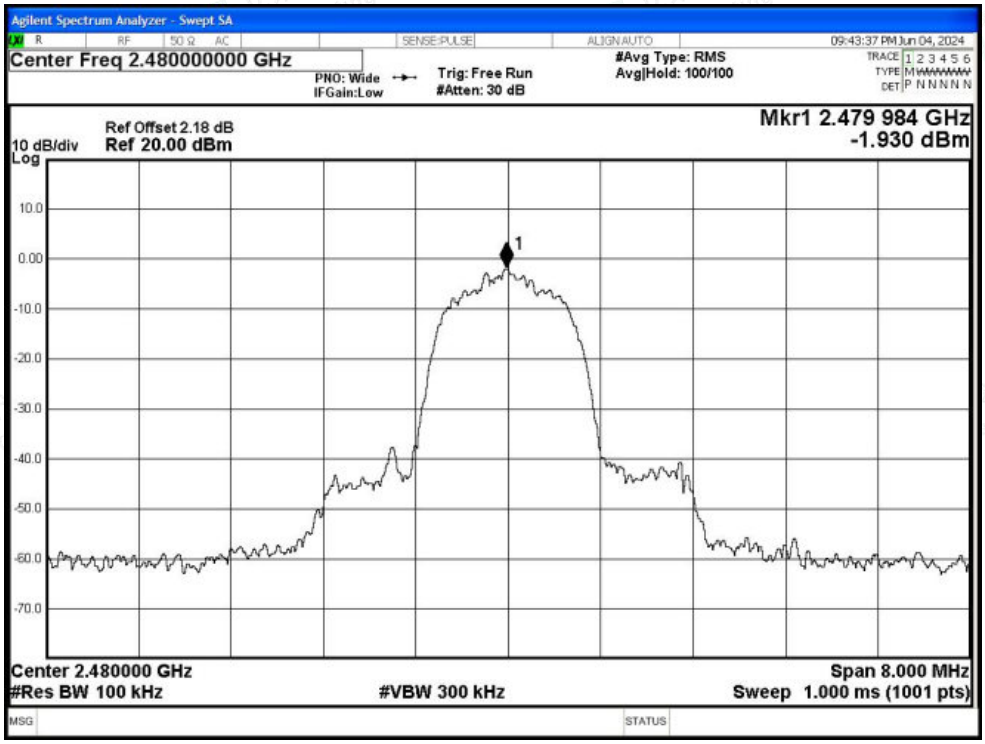
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



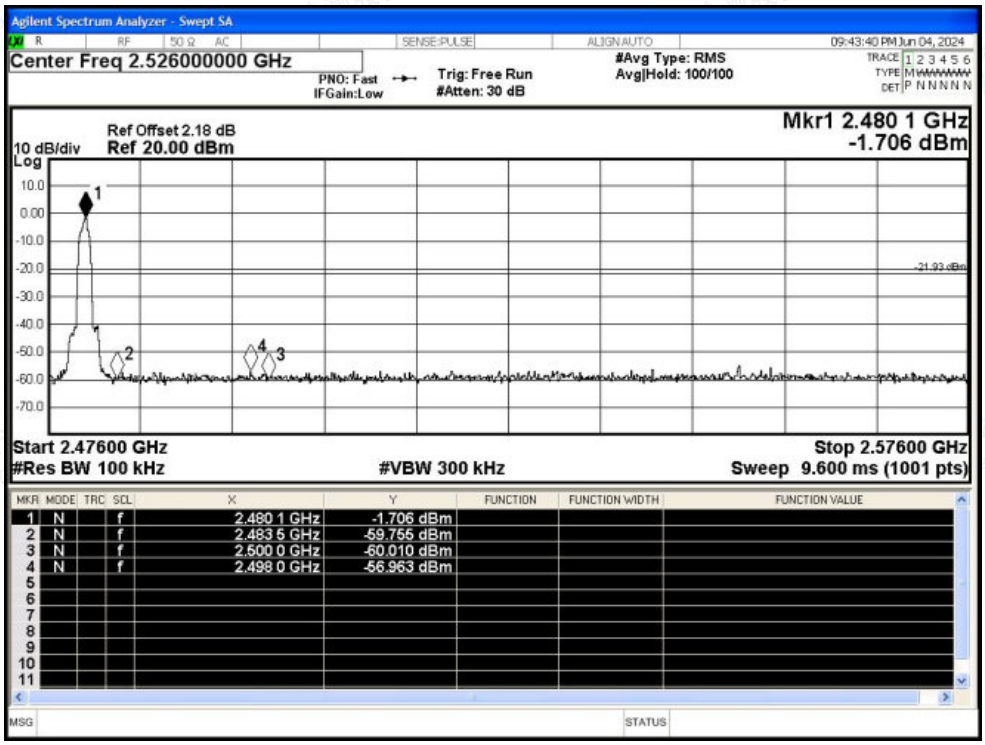
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission



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



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

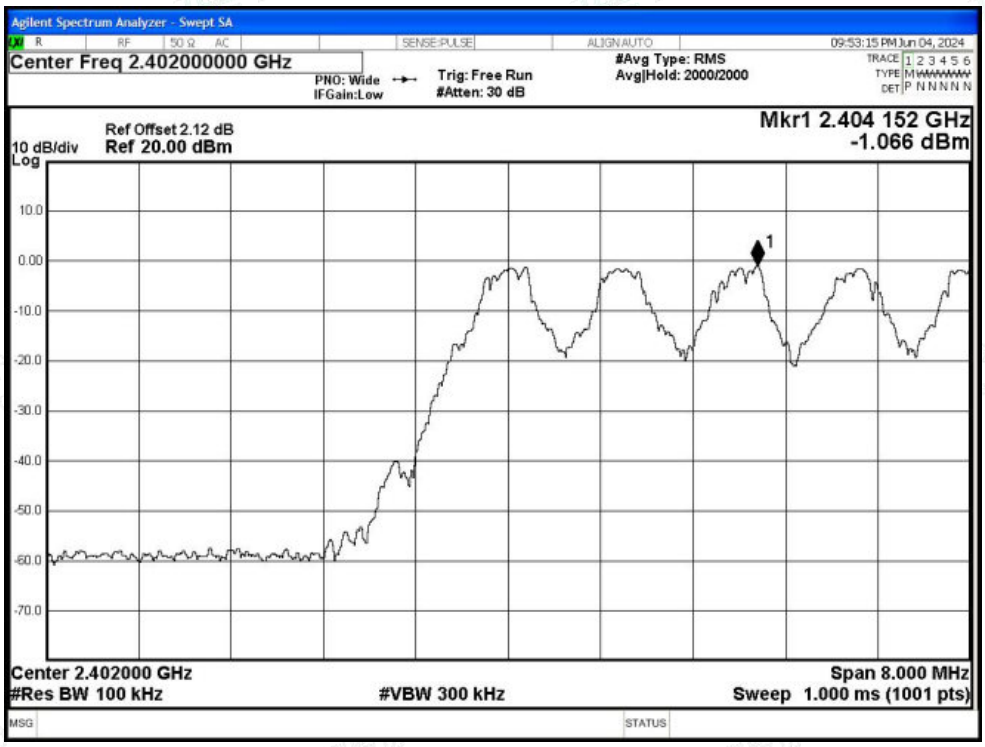


(Hopping)

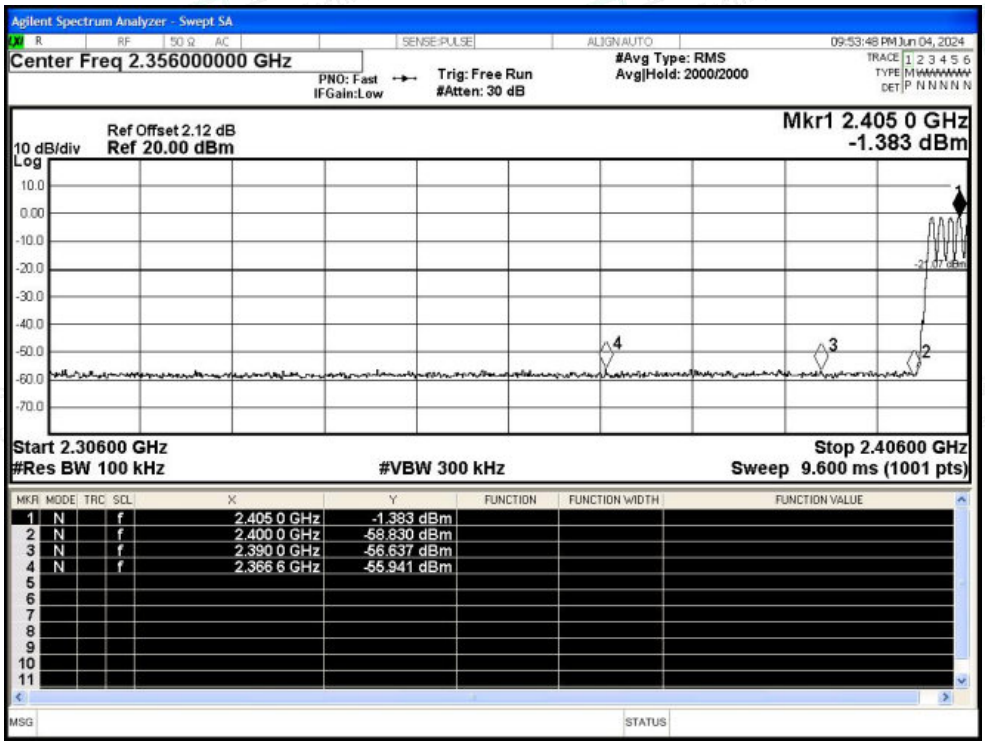
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-54.88	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-55.71	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-51.25	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-54.21	-20	Pass

Test Graphs

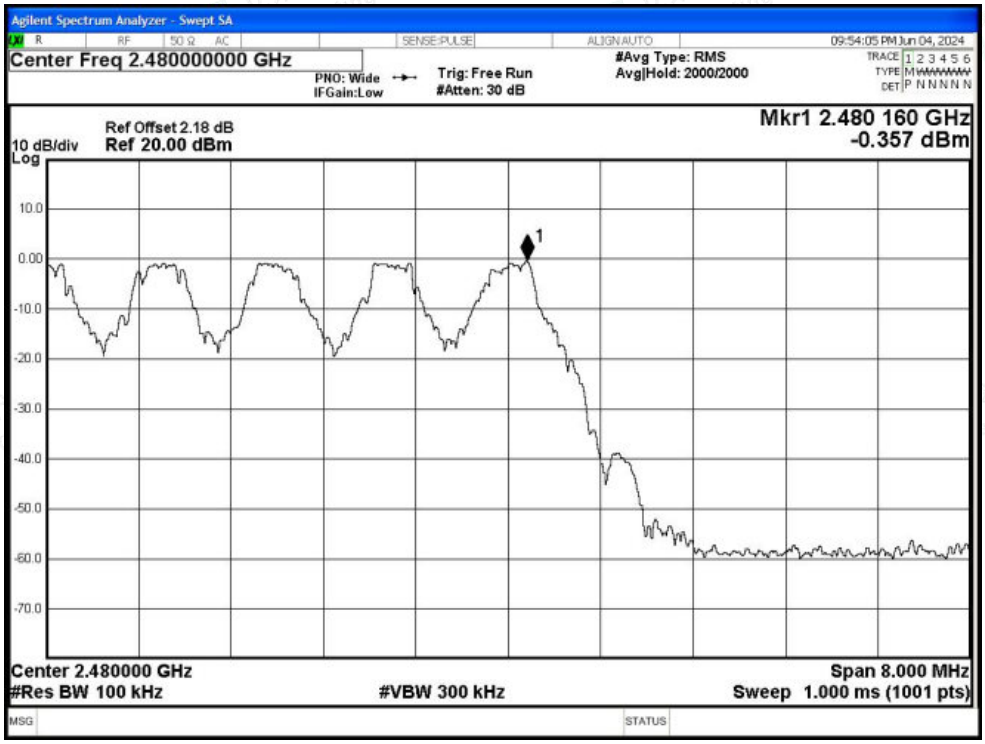
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



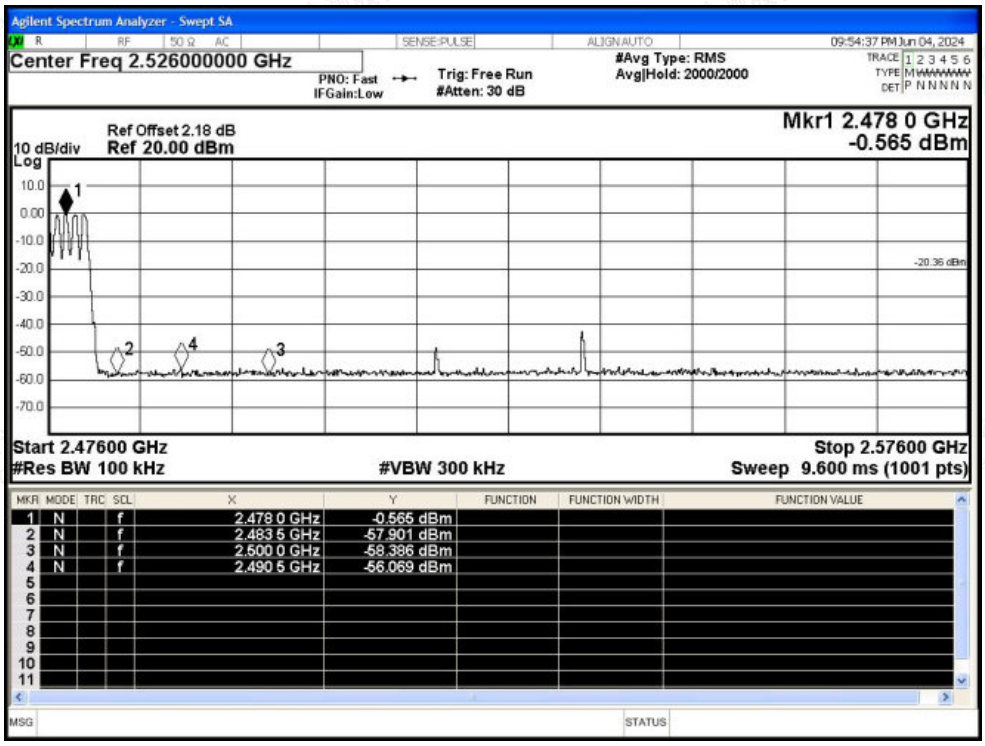
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



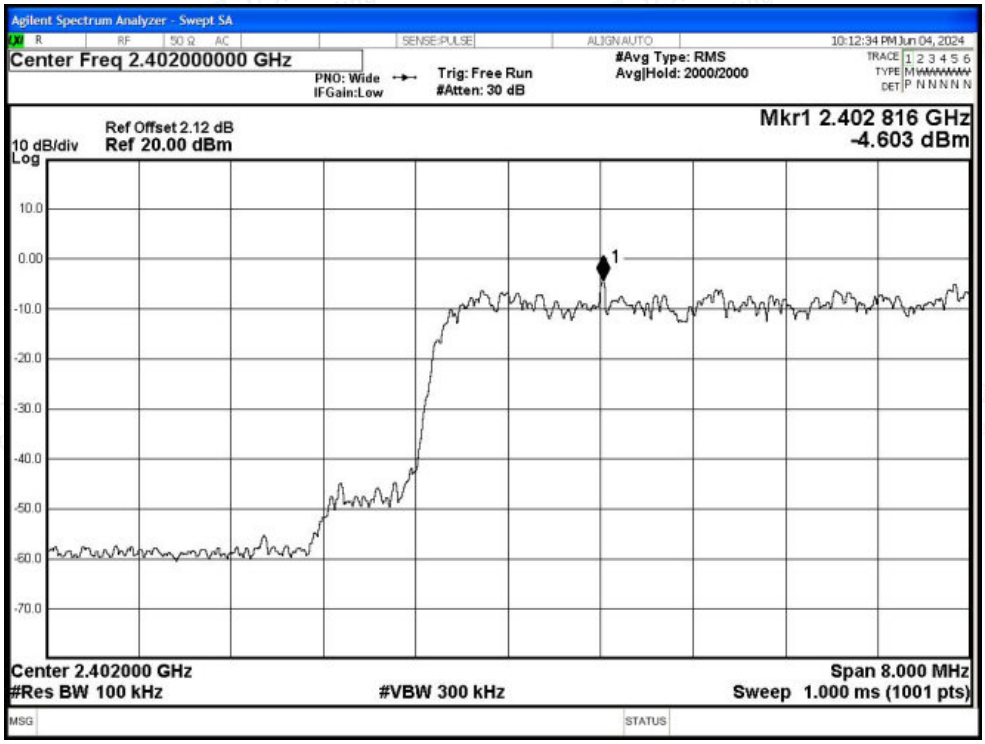
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



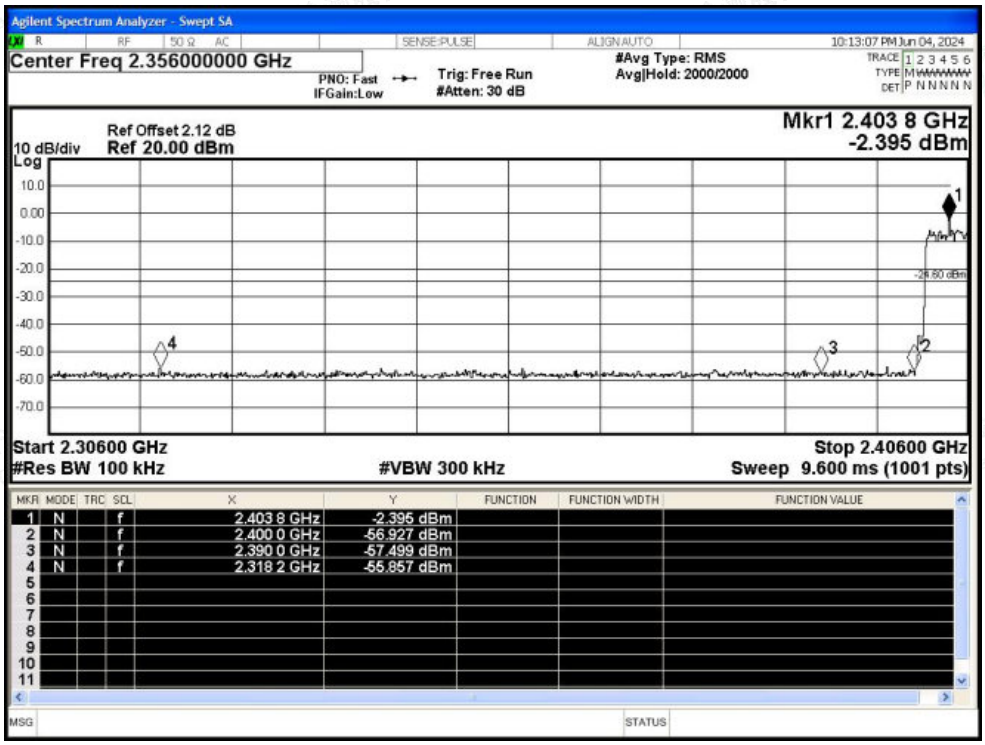
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission



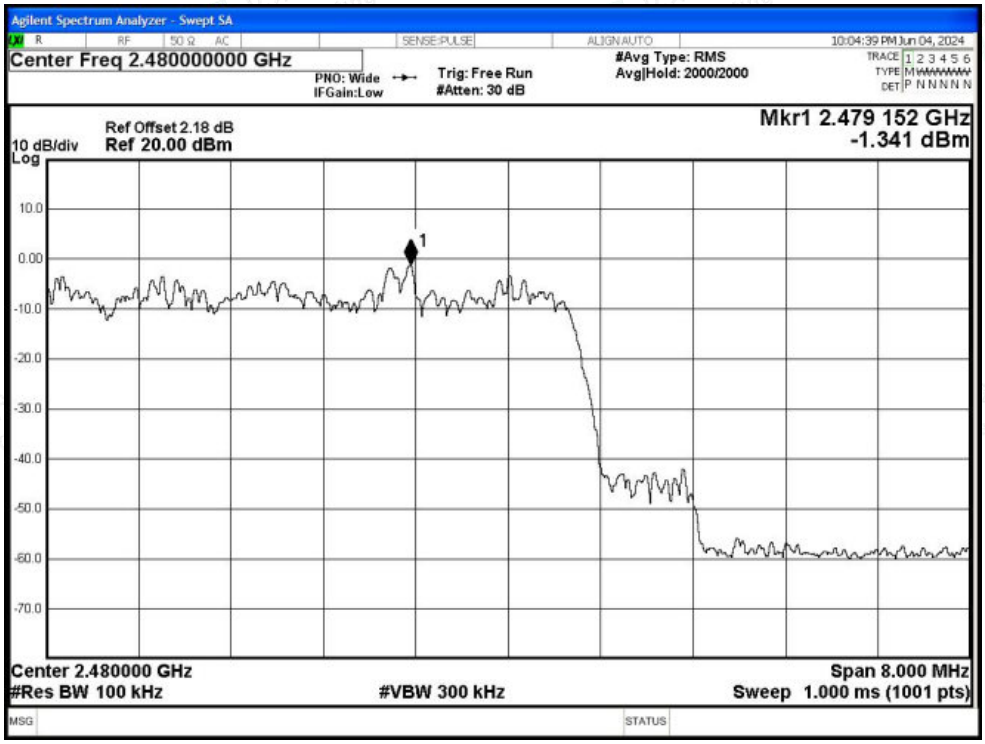
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref



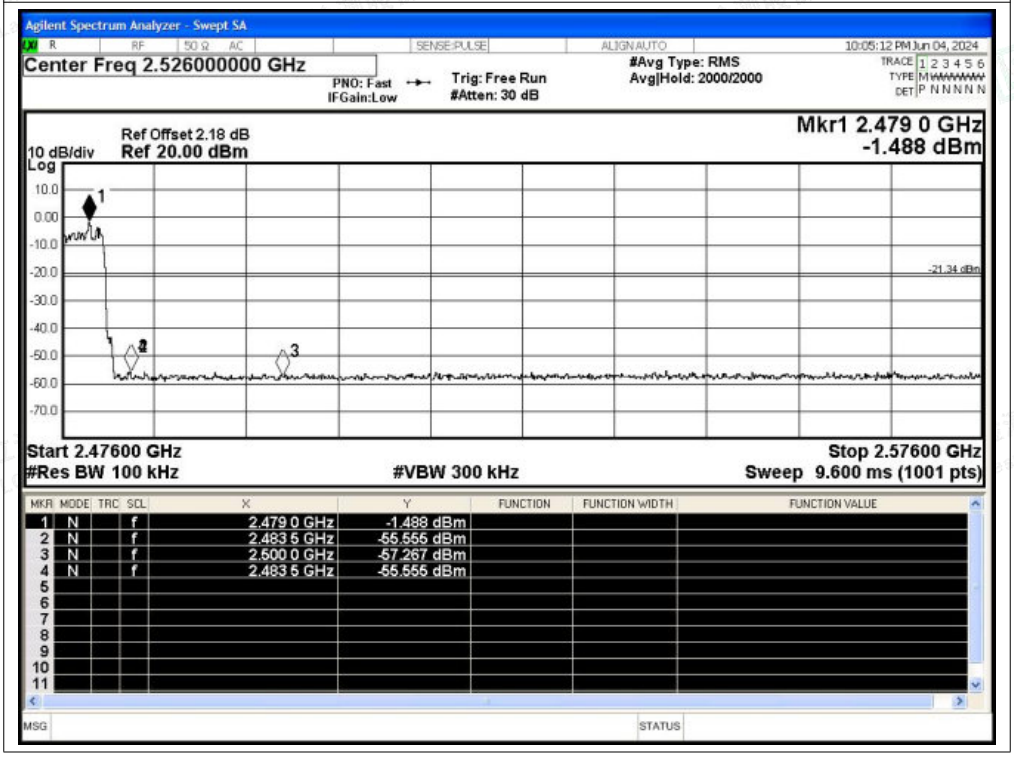
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



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



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

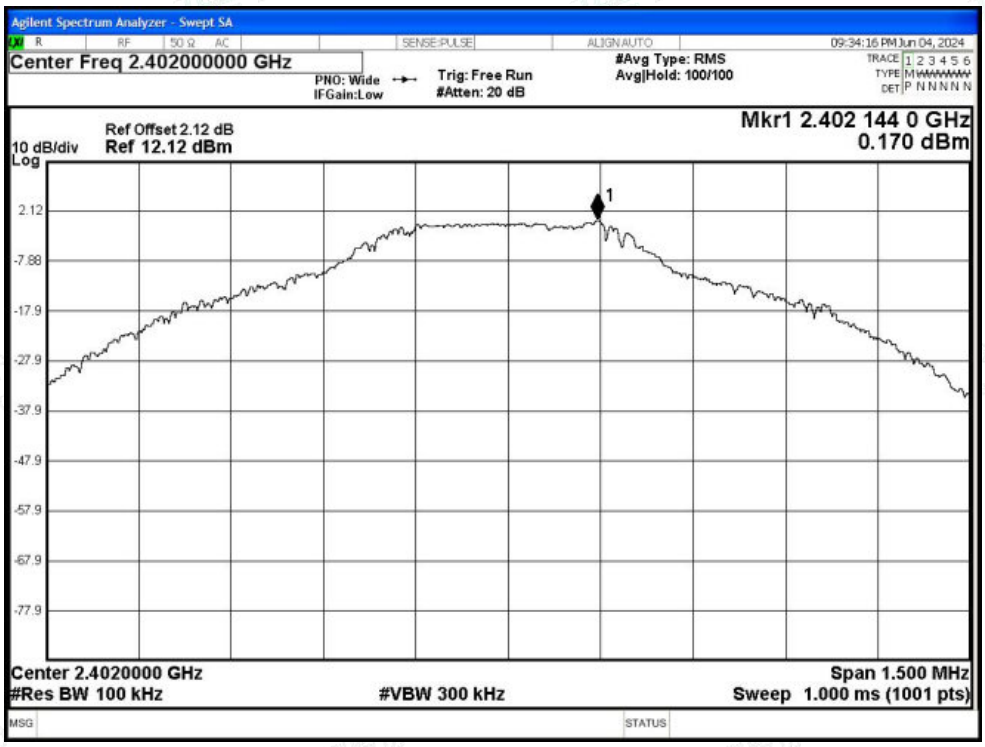


A.7 Conducted RF Spurious Emission

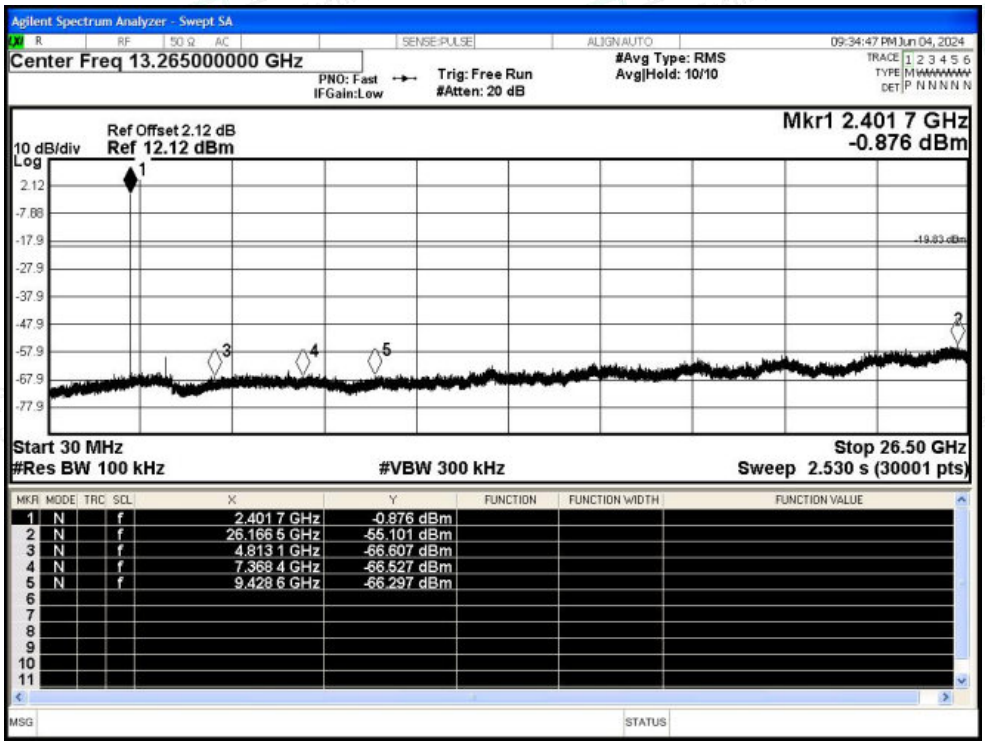
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-55.27	-20	Pass
NVNT	1-DH5	2441	Ant1	-56.08	-20	Pass
NVNT	1-DH5	2480	Ant1	-54.48	-20	Pass
NVNT	2-DH5	2402	Ant1	-54.88	-20	Pass
NVNT	2-DH5	2441	Ant1	-52.39	-20	Pass
NVNT	2-DH5	2480	Ant1	-52.49	-20	Pass

Test Graphs

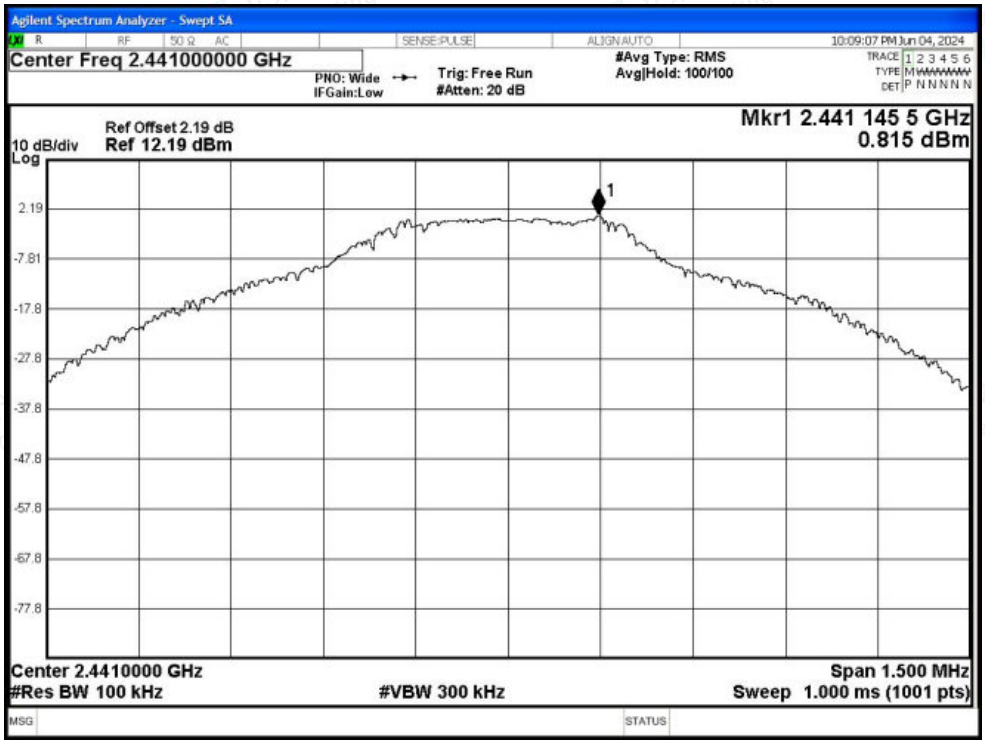
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref



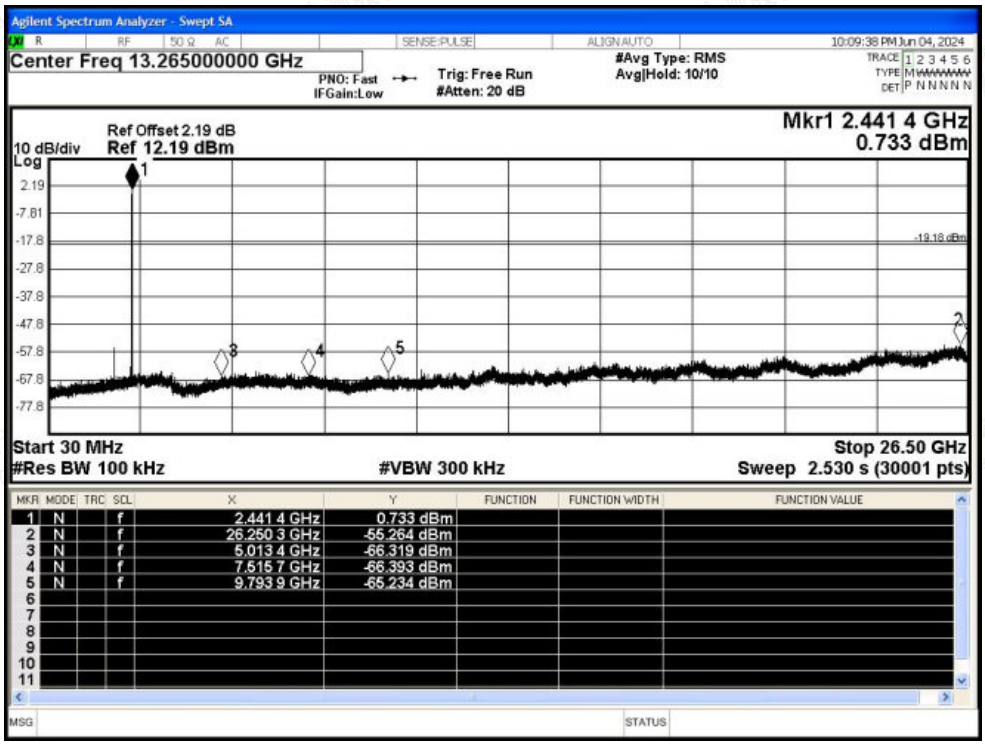
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



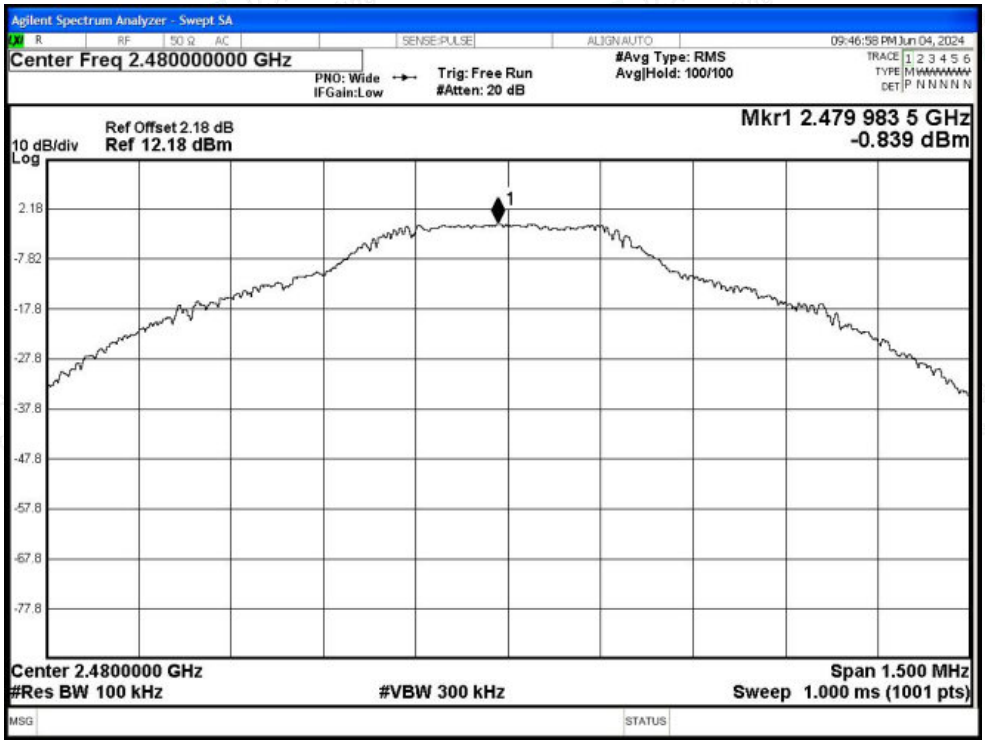
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref



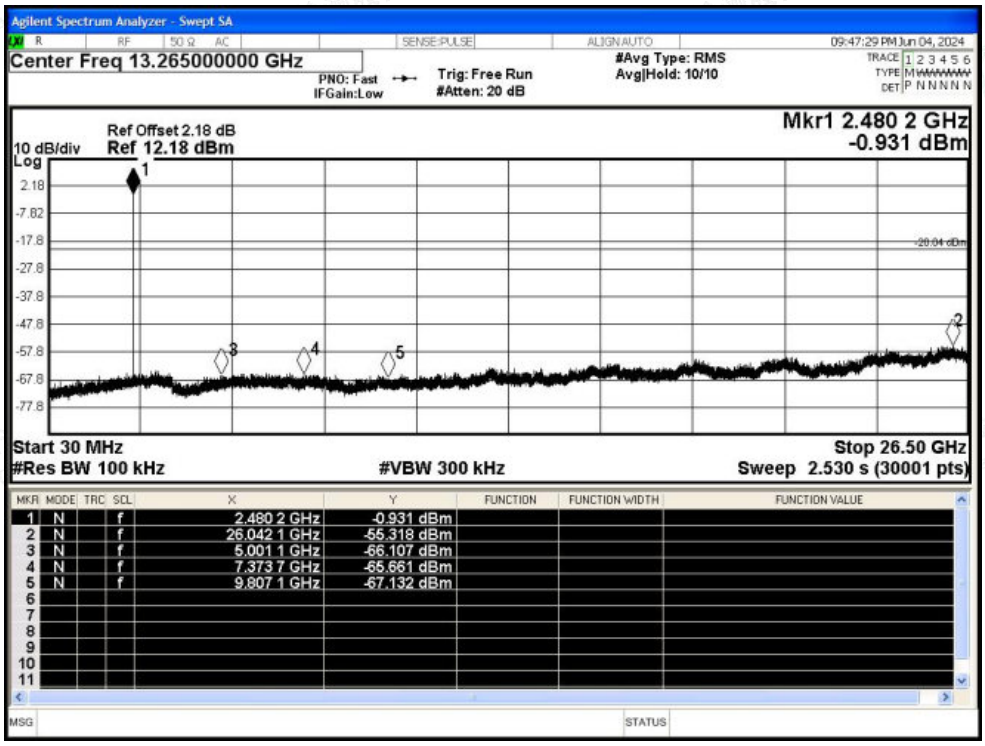
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission



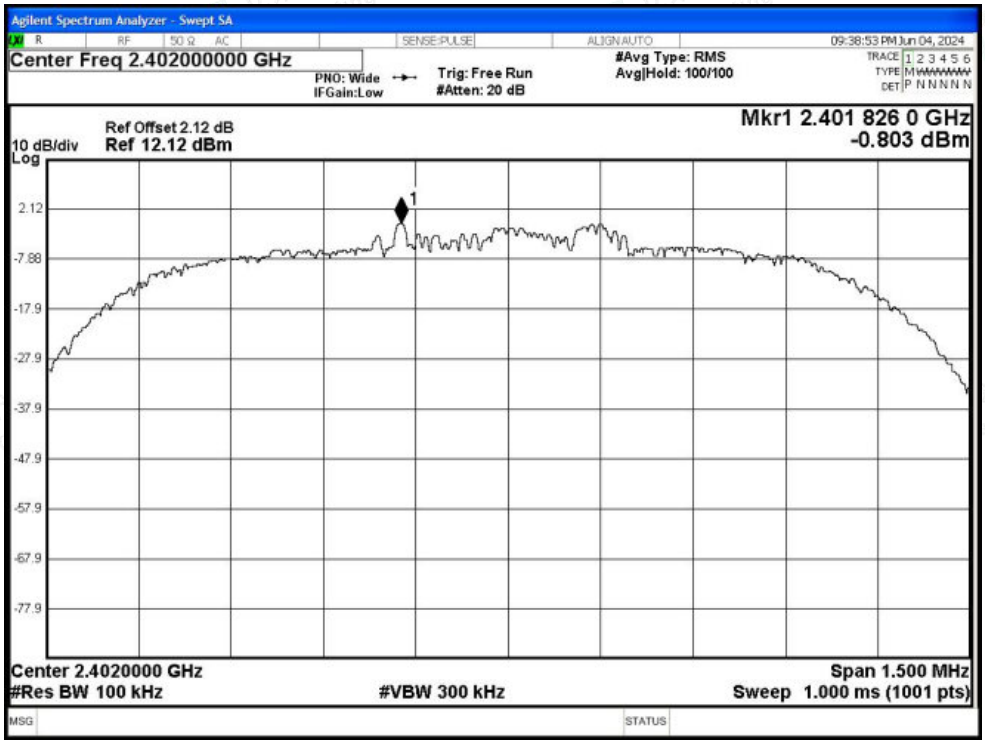
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref



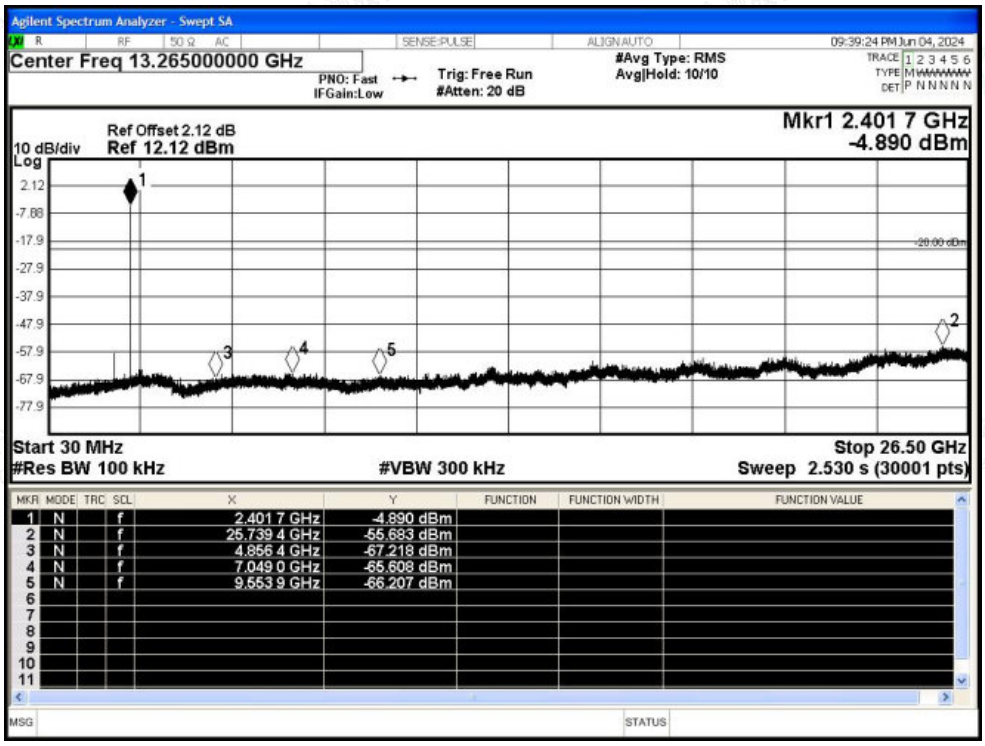
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission



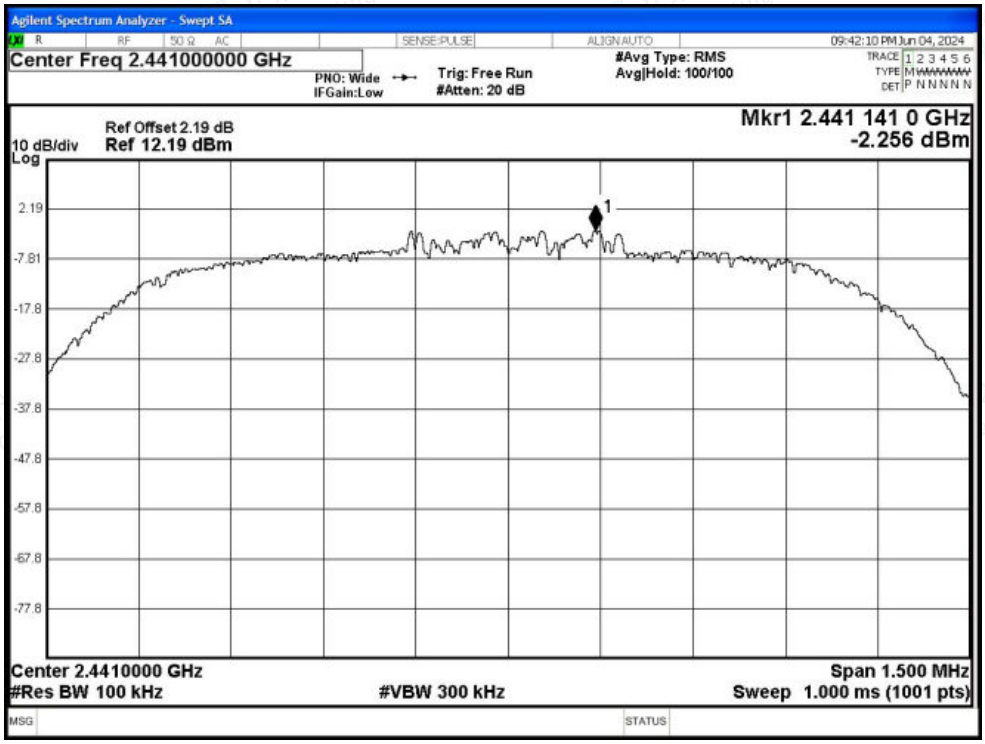
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref



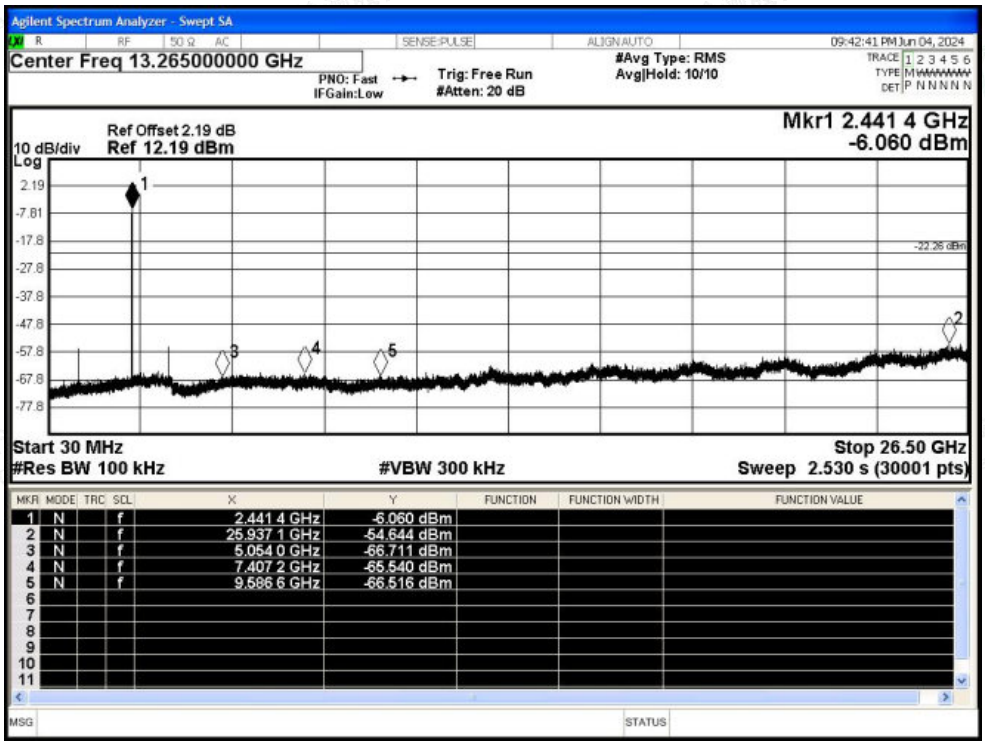
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission



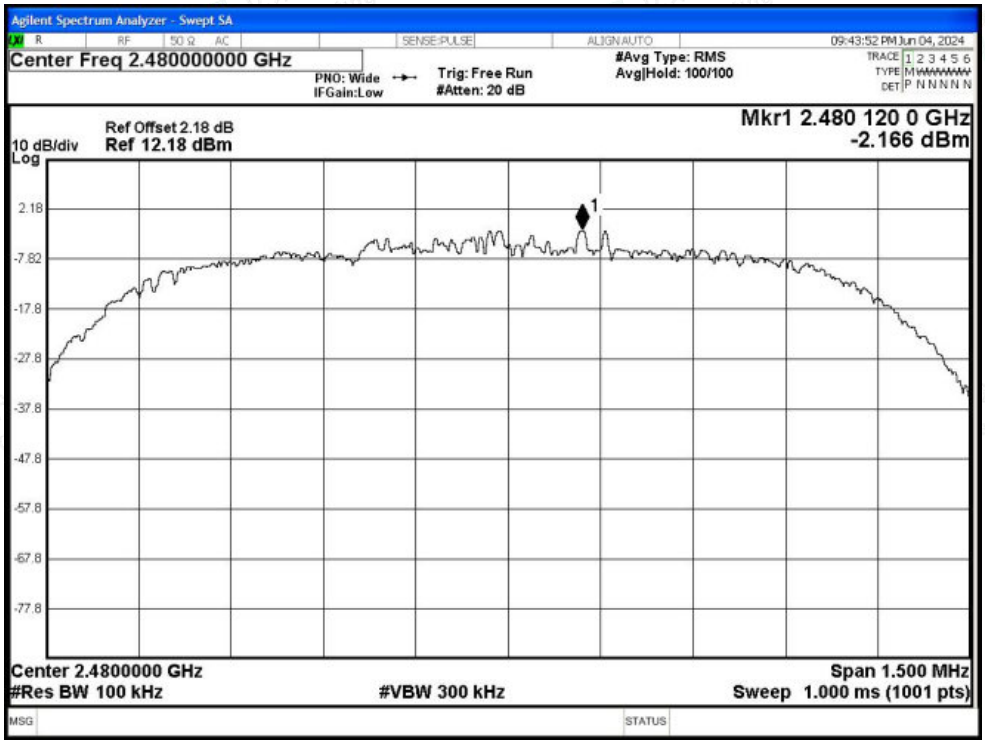
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



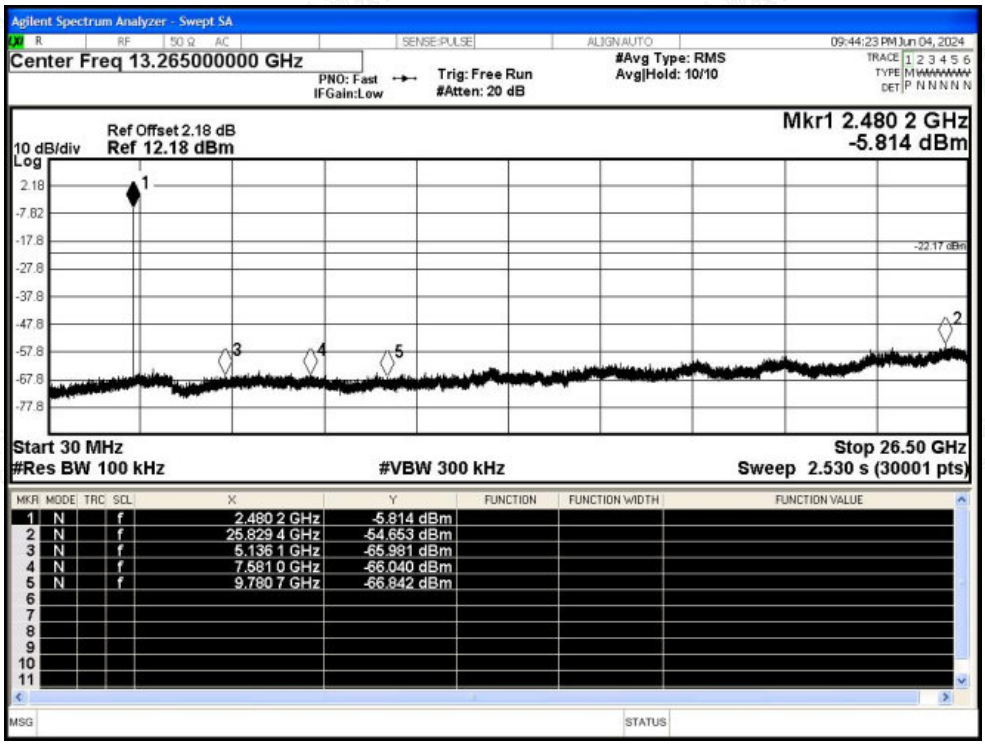
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission

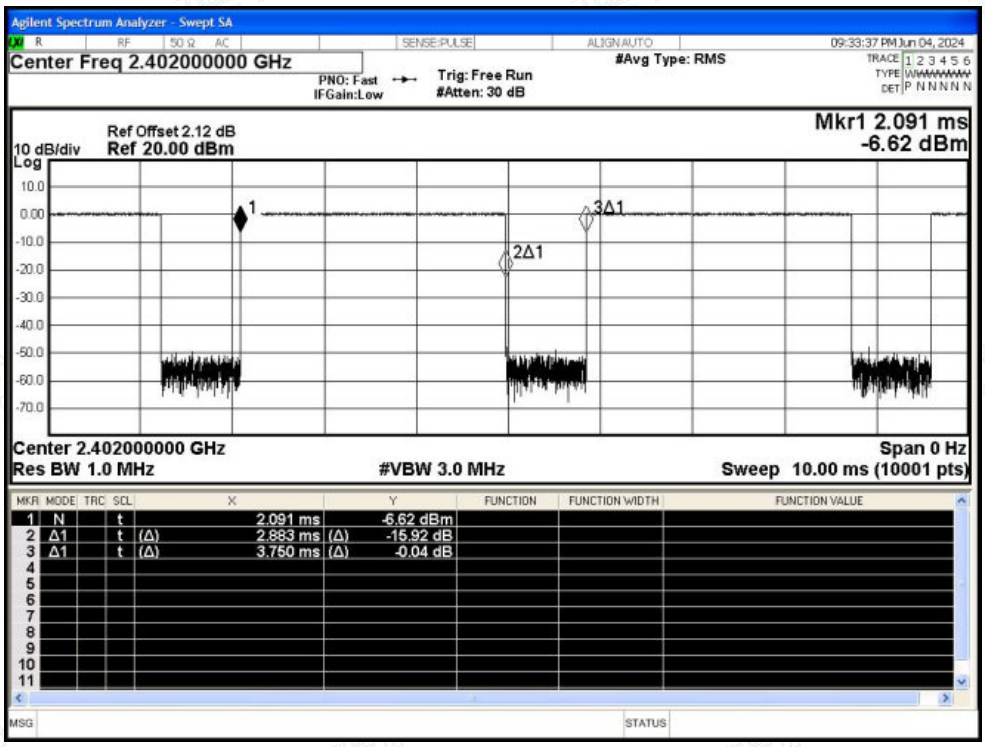


A.8 Duty Cycle

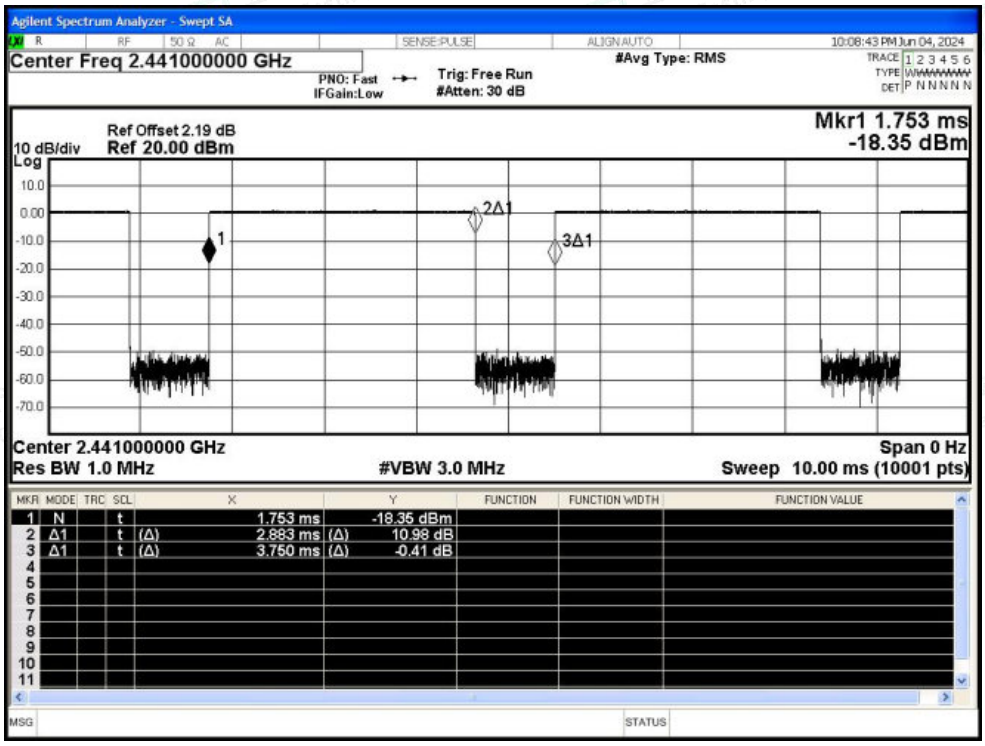
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH5	2402	Ant1	76.88	1.14	0.35
NVNT	1-DH5	2441	Ant1	76.88	1.14	0.35
NVNT	1-DH5	2480	Ant1	76.88	1.14	0.35
NVNT	2-DH5	2402	Ant1	76.96	1.14	0.35
NVNT	2-DH5	2441	Ant1	76.96	1.14	0.35
NVNT	2-DH5	2480	Ant1	76.99	1.14	0.35

Test Graphs

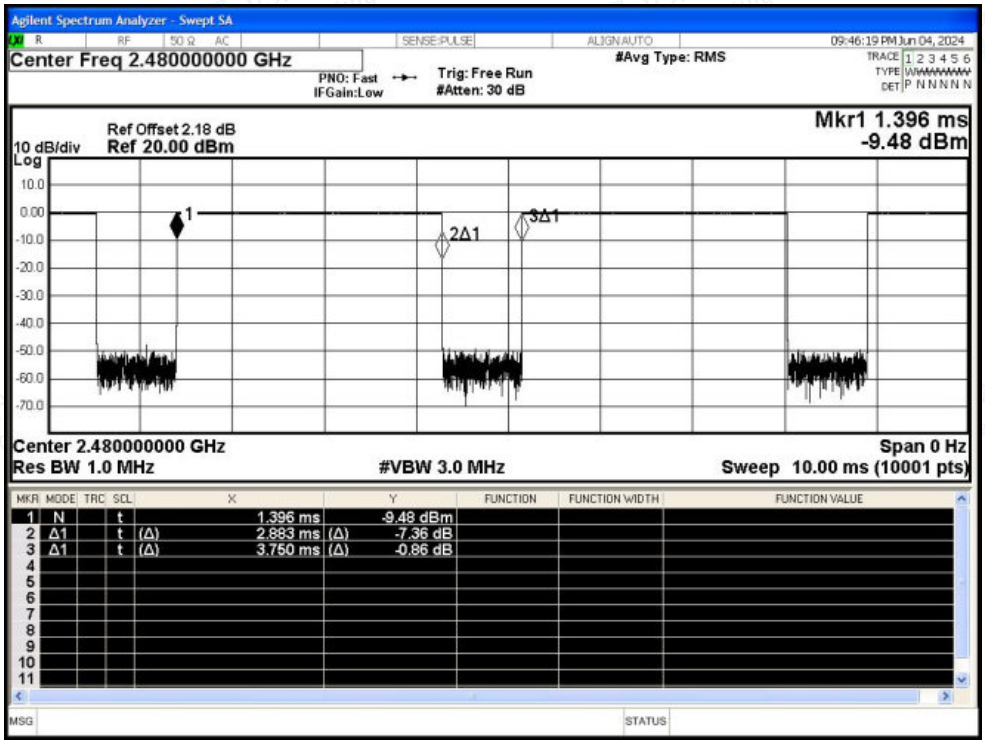
Duty Cycle NVNT 1-DH5 2402MHz Ant1



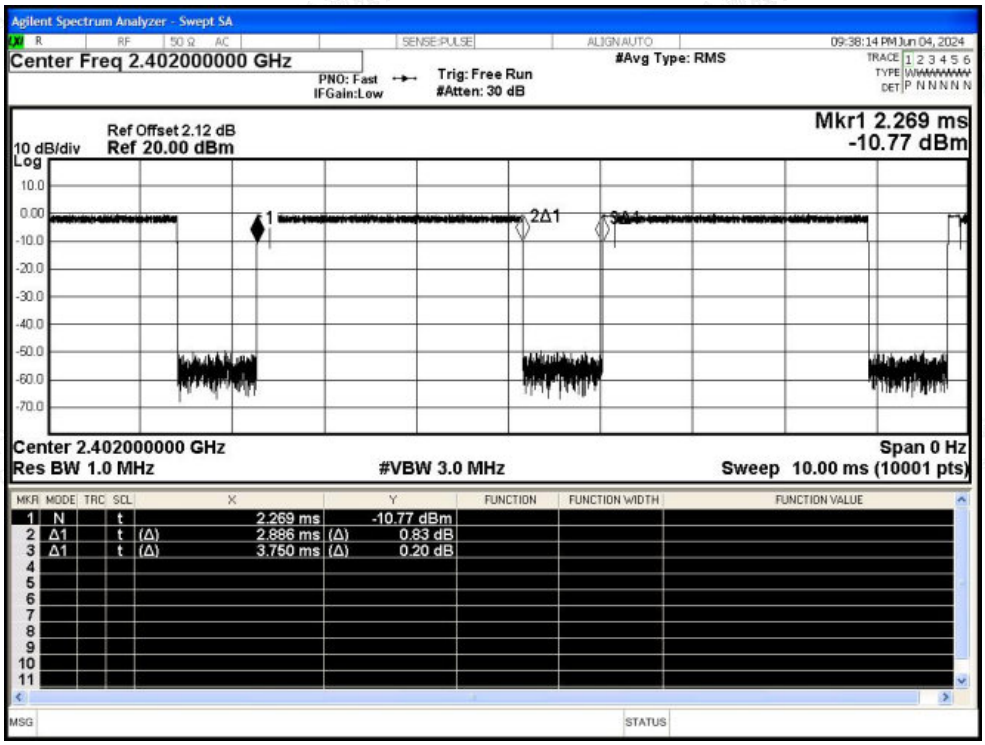
Duty Cycle NVNT 1-DH5 2441MHz Ant1



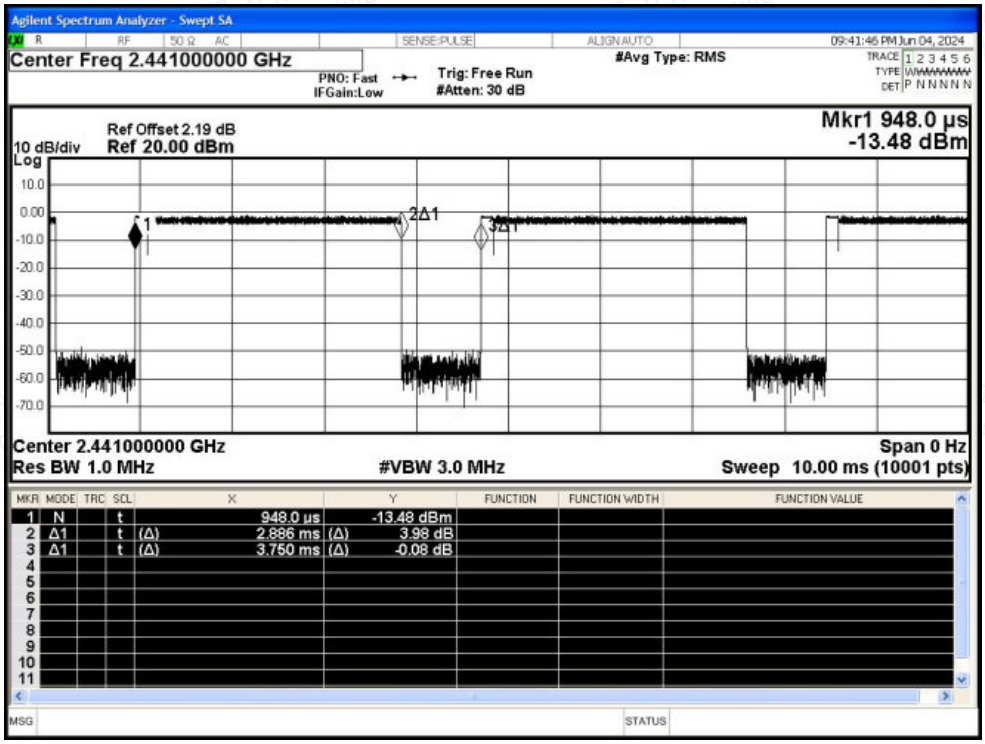
Duty Cycle NVNT 1-DH5 2480MHz Ant1



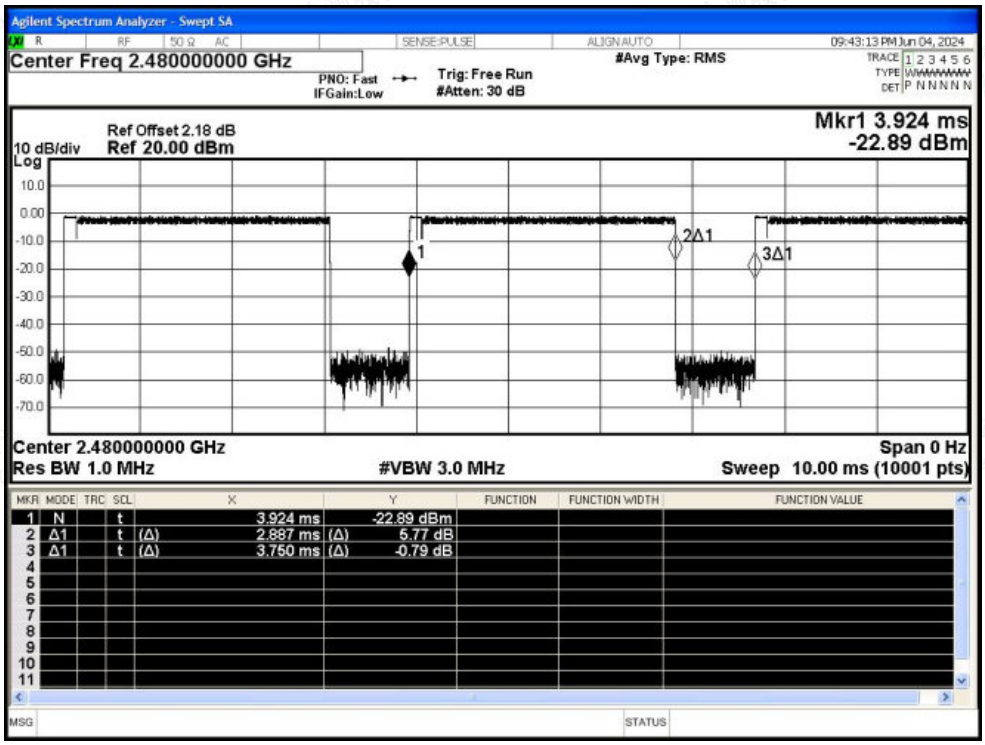
Duty Cycle NVNT 2-DH5 2402MHz Ant1



Duty Cycle NVNT 2-DH5 2441MHz Ant1



Duty Cycle NVNT 2-DH5 2480MHz Ant1

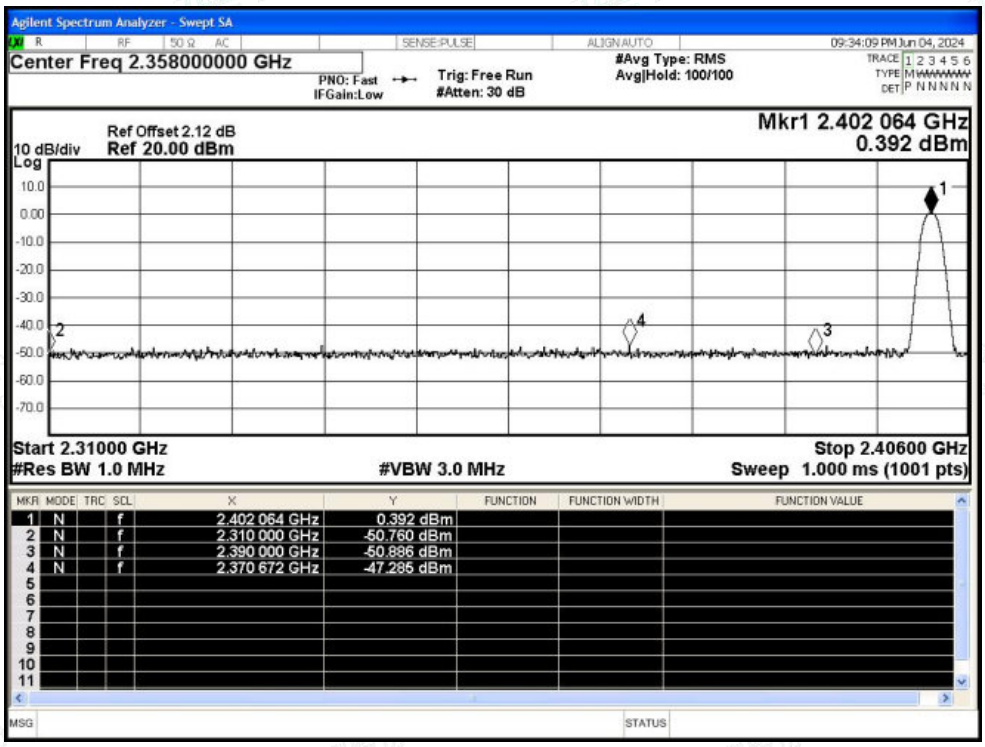


A.9 Restrict Band

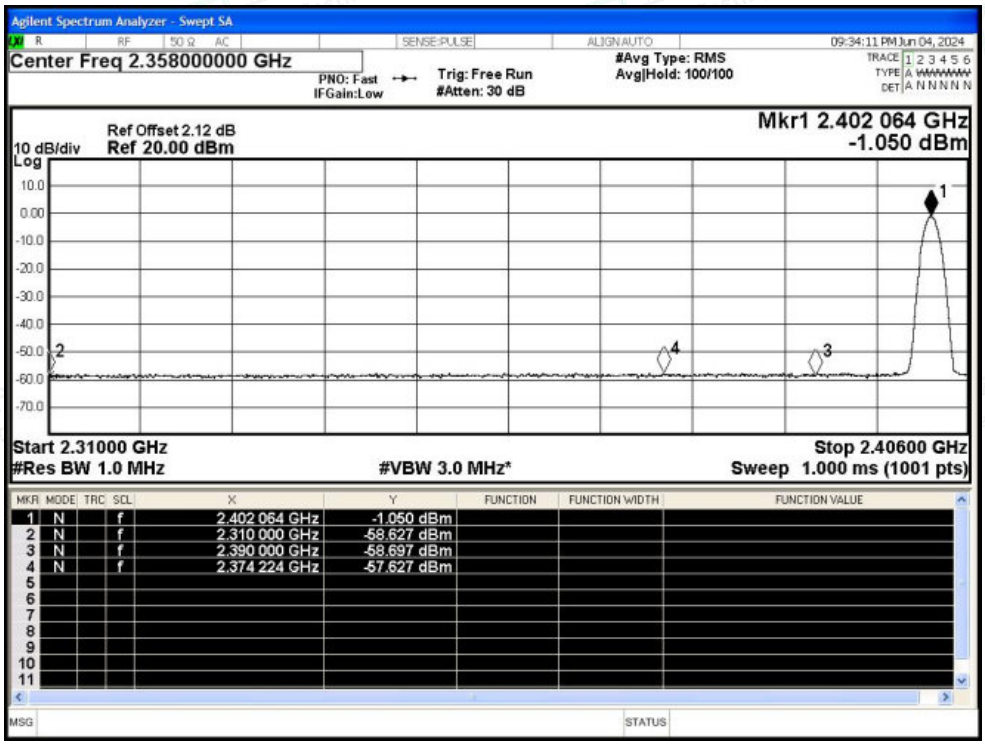
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-50.76	2	-	46.5	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-58.63	2	1.14	39.77	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2370.672	-47.29	2	-	49.97	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2374.224	-57.63	2	1.14	40.77	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-50.89	2	-	46.37	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-58.7	2	1.14	39.7	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-49.99	2	-	47.27	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-57.79	2	1.14	40.61	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2490.928	-46.25	2	-	51.01	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2493.64	-57.35	2	1.14	41.05	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-51.04	2	-	46.22	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-58.12	2	1.14	40.28	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-50.77	2	-	46.49	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-58.54	2	1.14	39.86	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2349.744	-48.09	2	-	49.17	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2379.024	-57.74	2	1.14	40.66	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-50.53	2	-	46.73	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-58.53	2	1.14	39.87	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-47.73	2	-	49.53	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-58.03	2	1.14	40.37	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2484.28	-47.34	2	-	49.92	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2492.344	-57.19	2	1.14	41.21	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-49.55	2	-	47.71	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-58.36	2	1.14	40.04	Average	54	Pass

Test Graphs

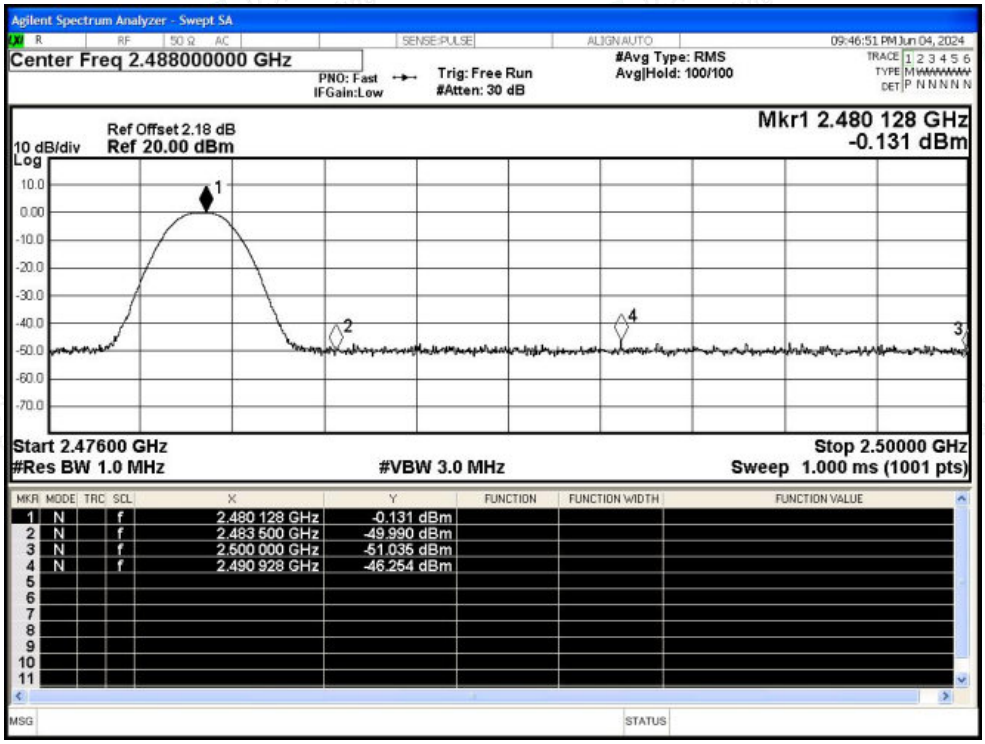
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak



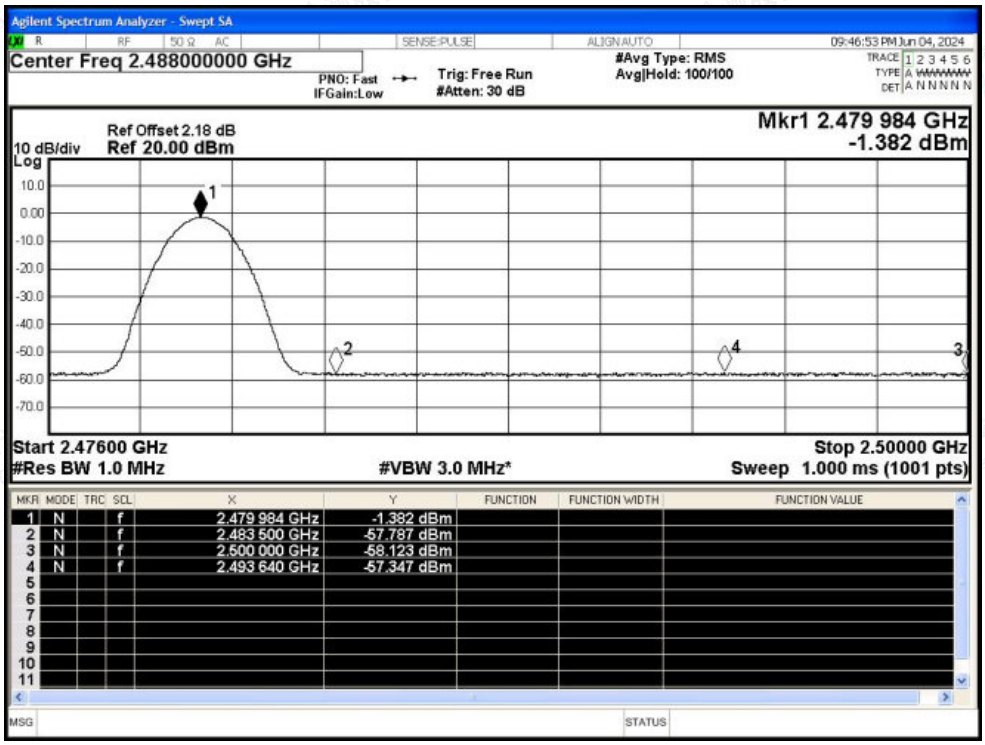
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



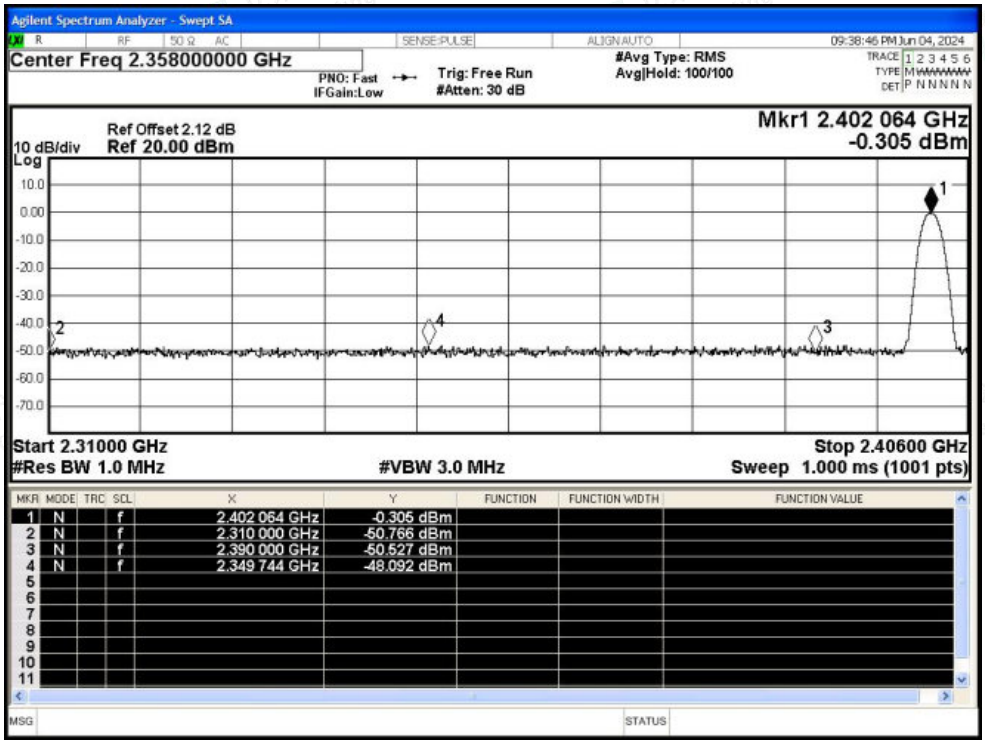
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak



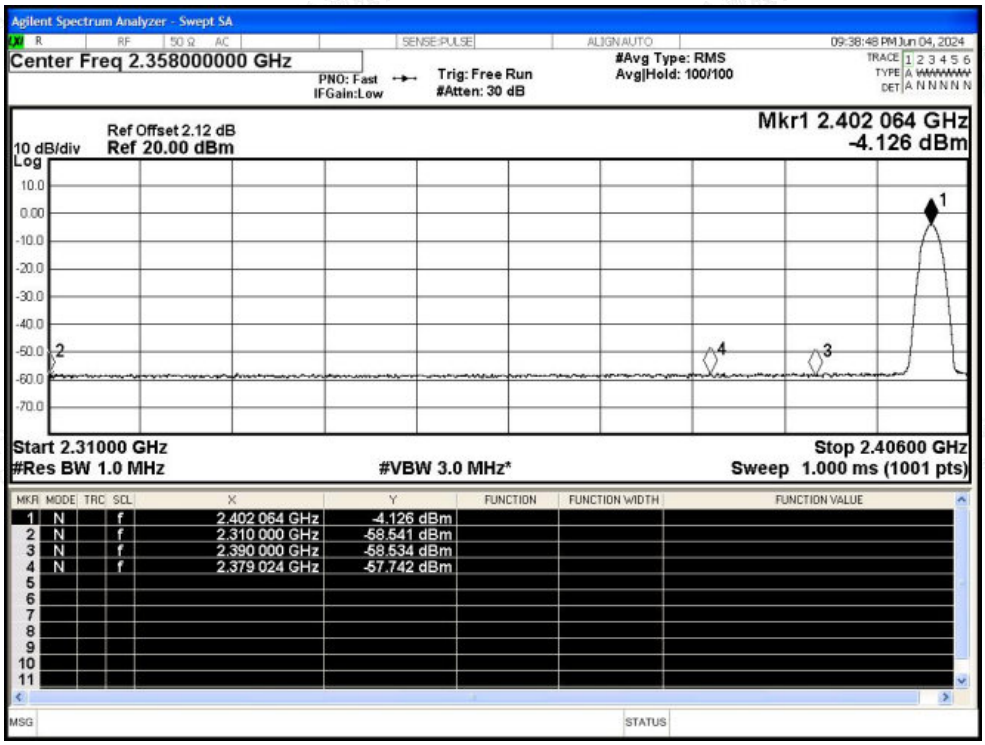
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average



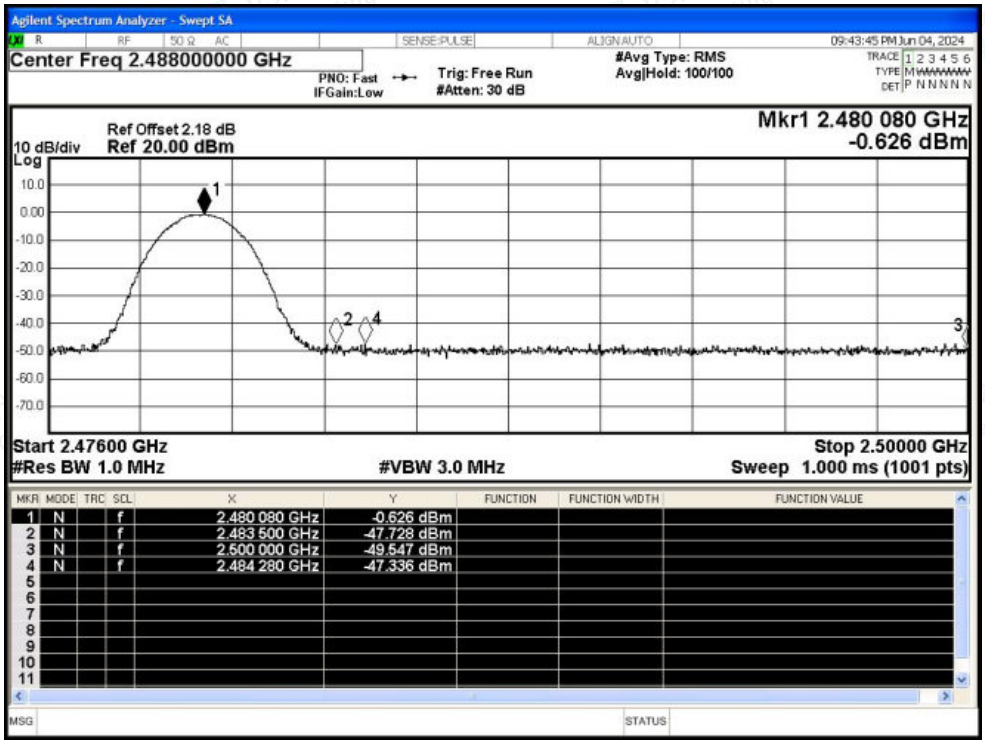
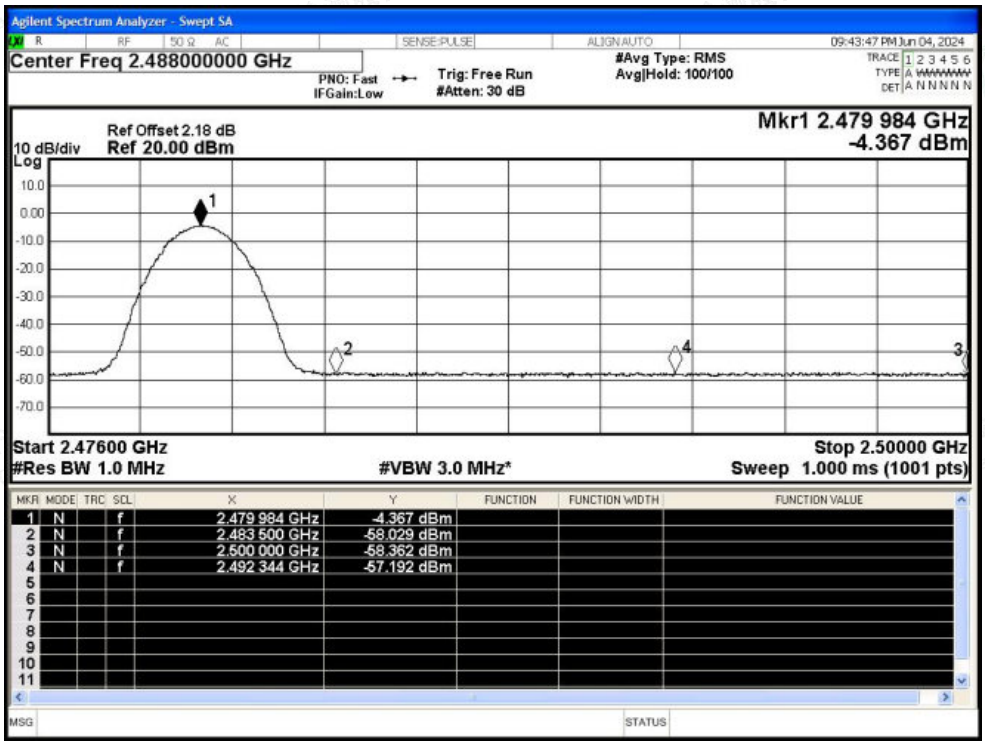
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak



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