Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Bluetooth speaker

Test Model: DELXO-ZQS1457

Environmental Conditions

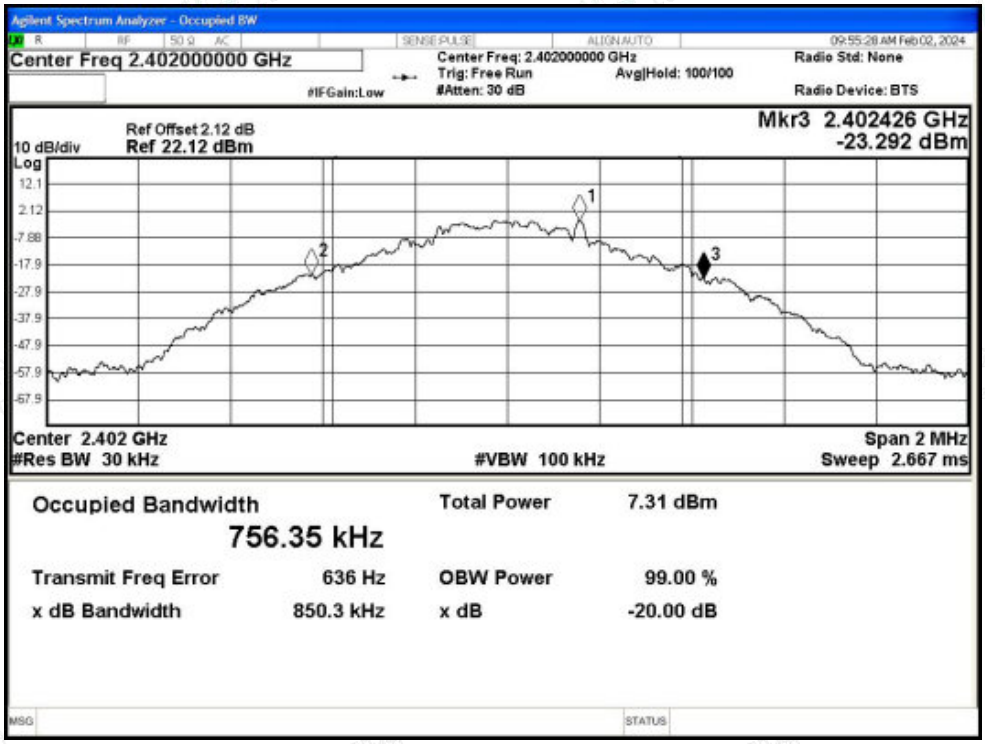
Temperature:	23.8° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Taylor Hu
Supervised by:	Nick Peng

A.1 -20dB Bandwidth

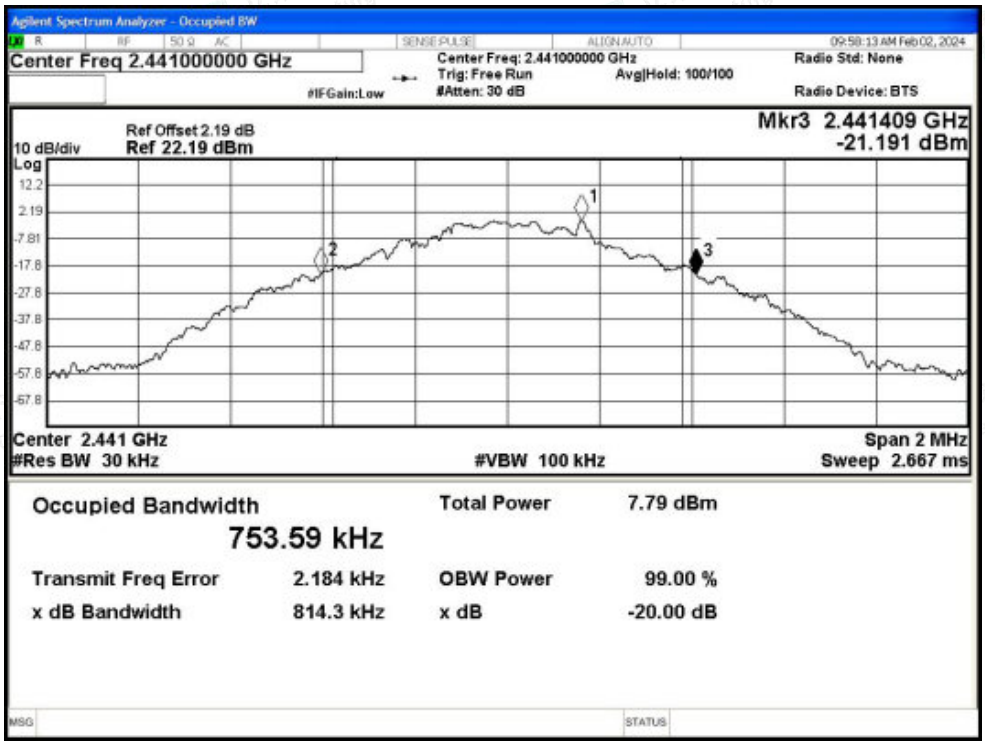
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	0.85	N/A	Pass
NVNT	1-DH5	2441	Ant1	0.814	N/A	Pass
NVNT	1-DH5	2480	Ant1	0.843	N/A	Pass
NVNT	2-DH5	2402	Ant1	1.278	N/A	Pass
NVNT	2-DH5	2441	Ant1	1.33	N/A	Pass
NVNT	2-DH5	2480	Ant1	1.274	N/A	Pass
NVNT	3-DH5	2402	Ant1	1.29	N/A	Pass
NVNT	3-DH5	2441	Ant1	1.296	N/A	Pass
NVNT	3-DH5	2480	Ant1	1.291	N/A	Pass

Test Graphs

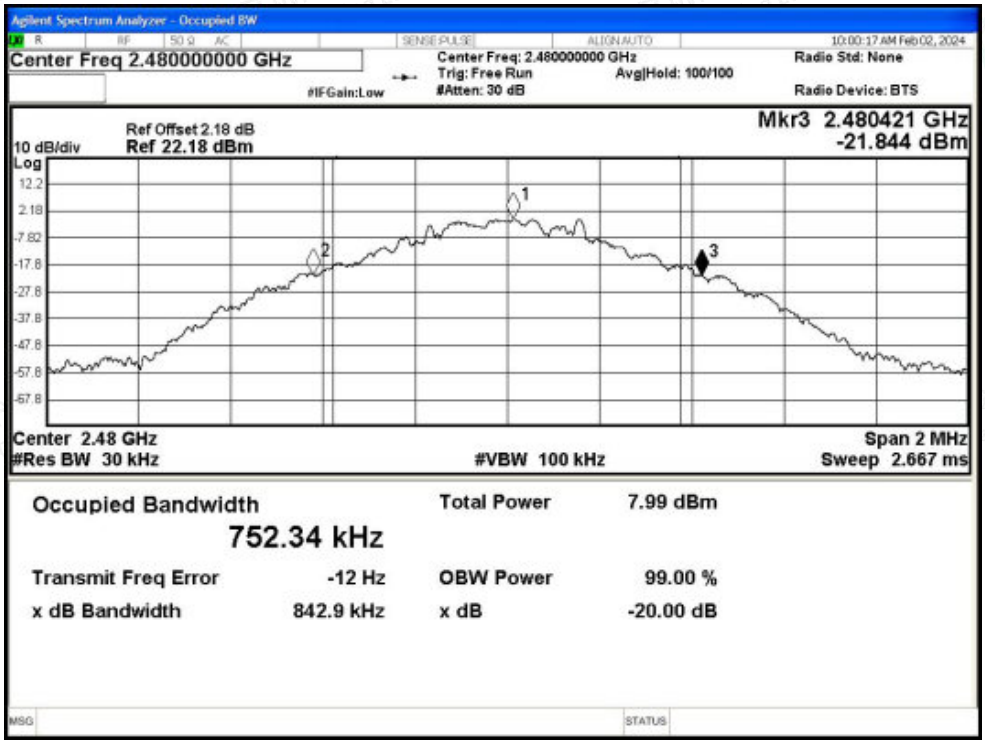
-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1



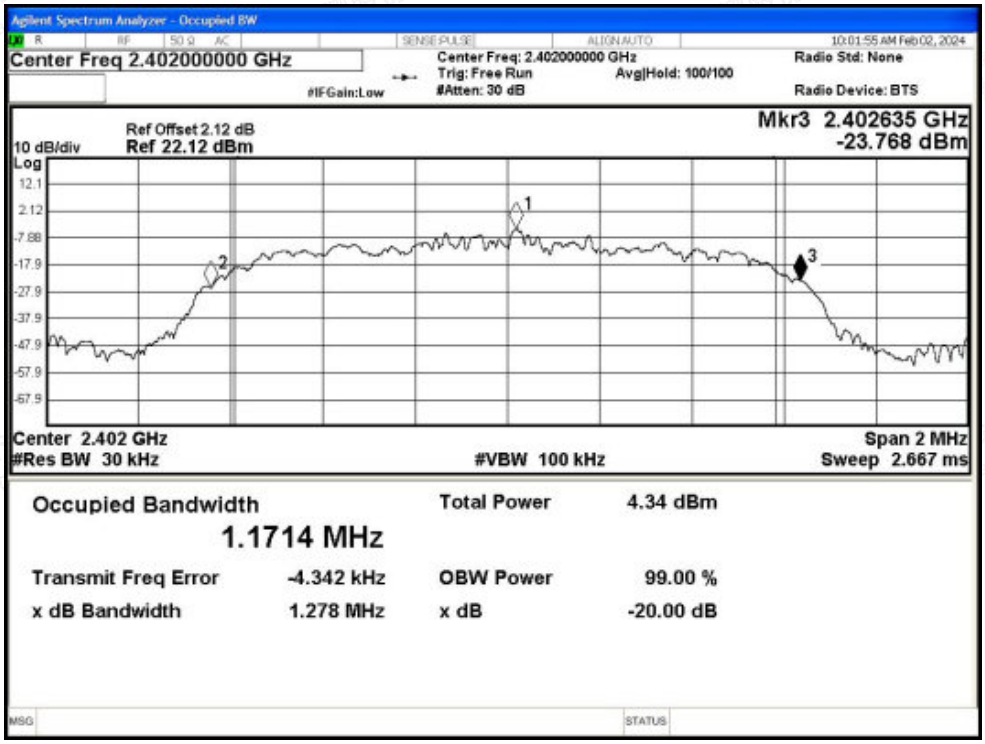
-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1



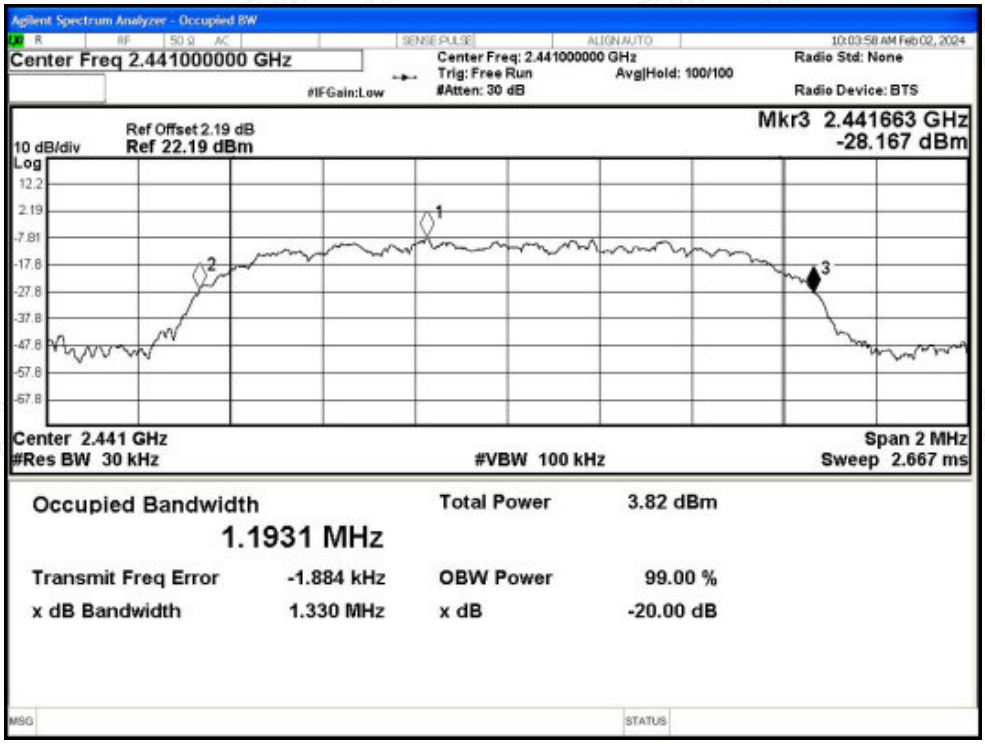
-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1



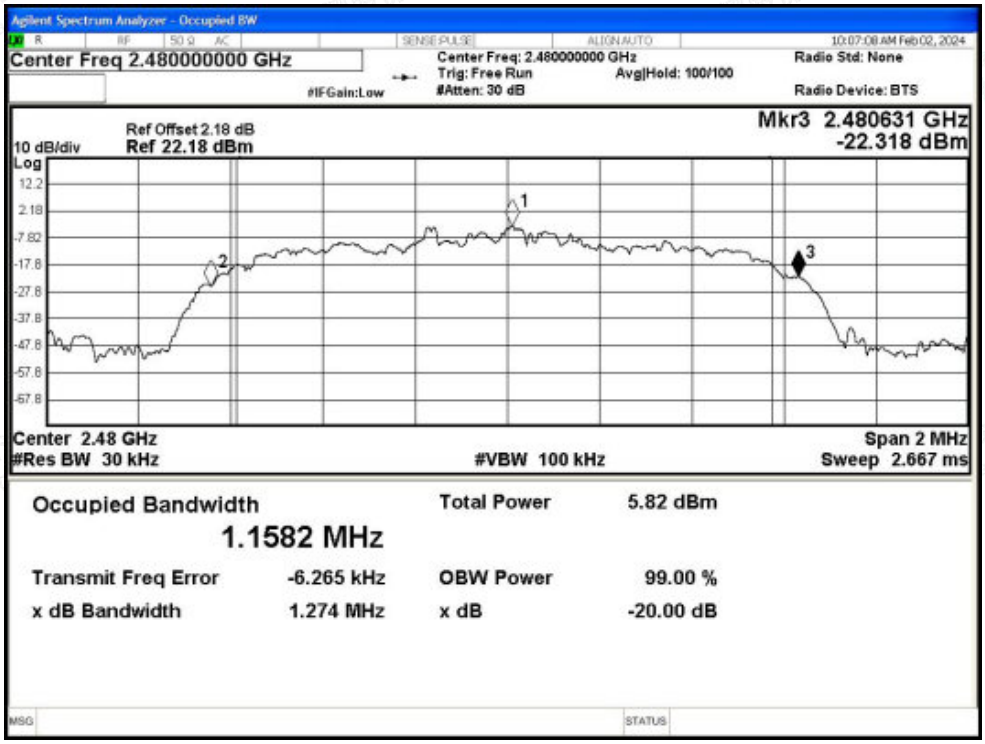
-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1



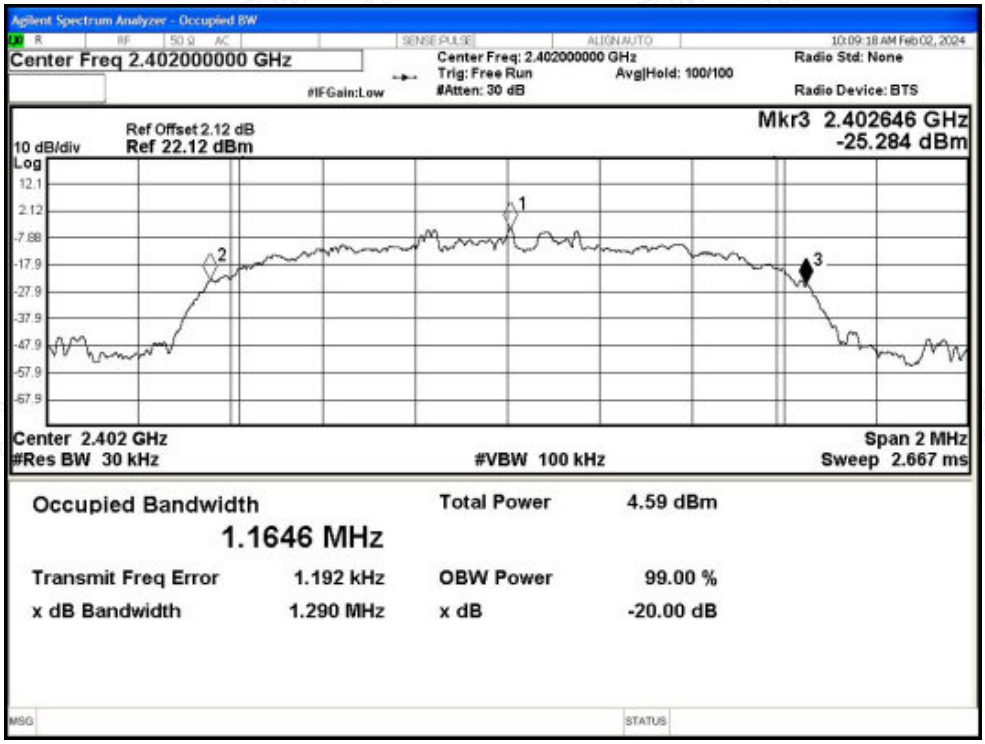
-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1



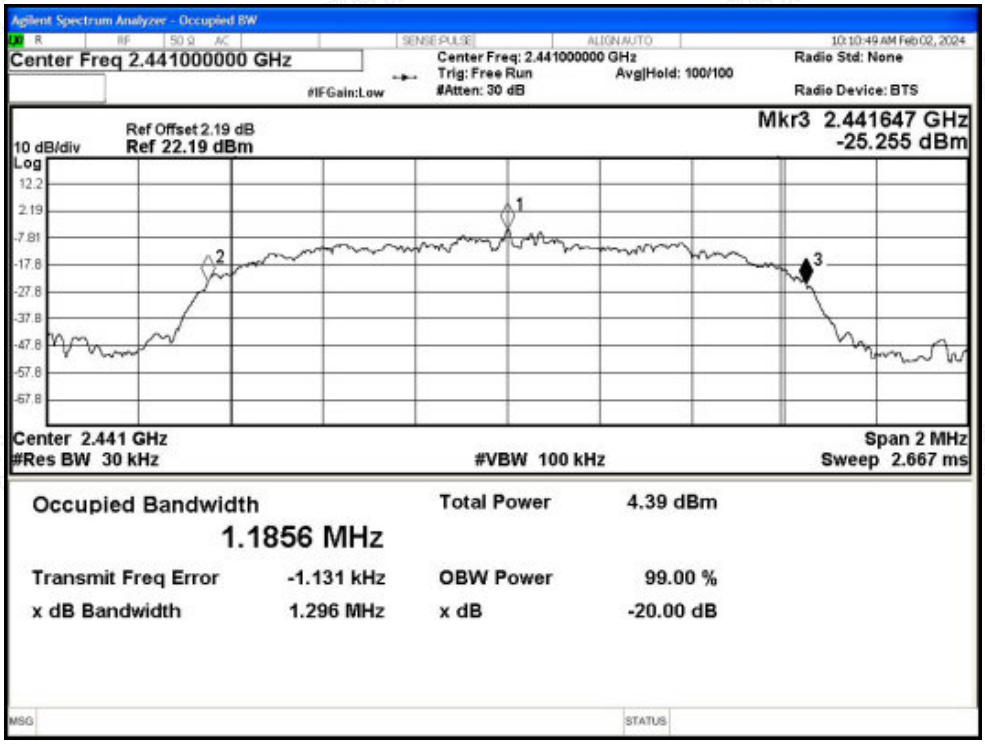
-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1



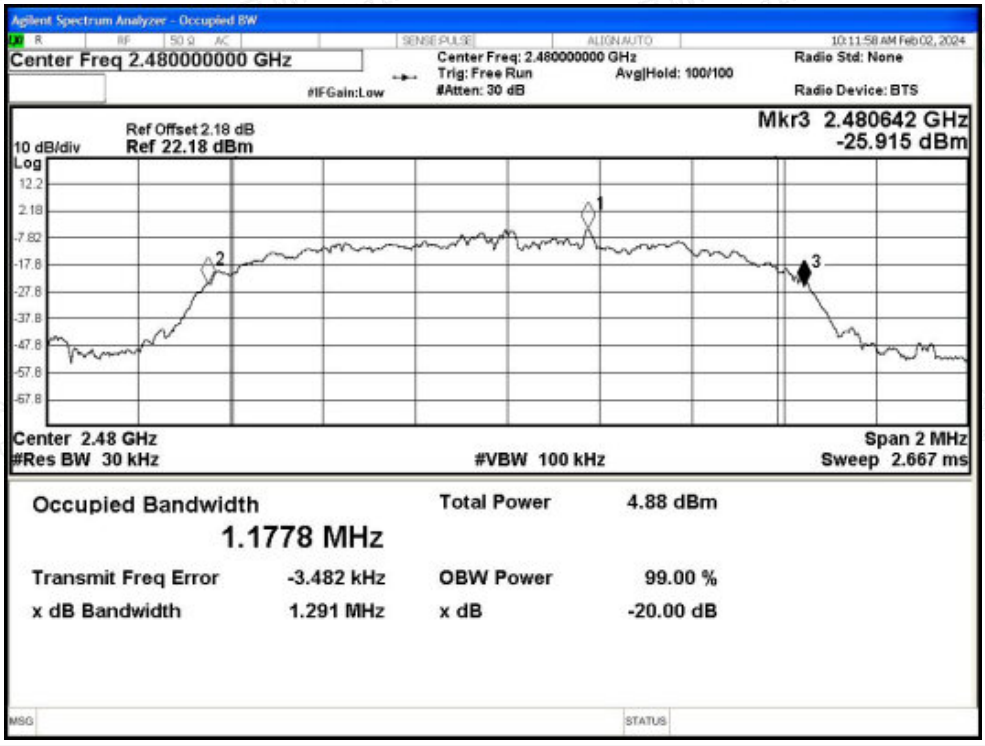
-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1

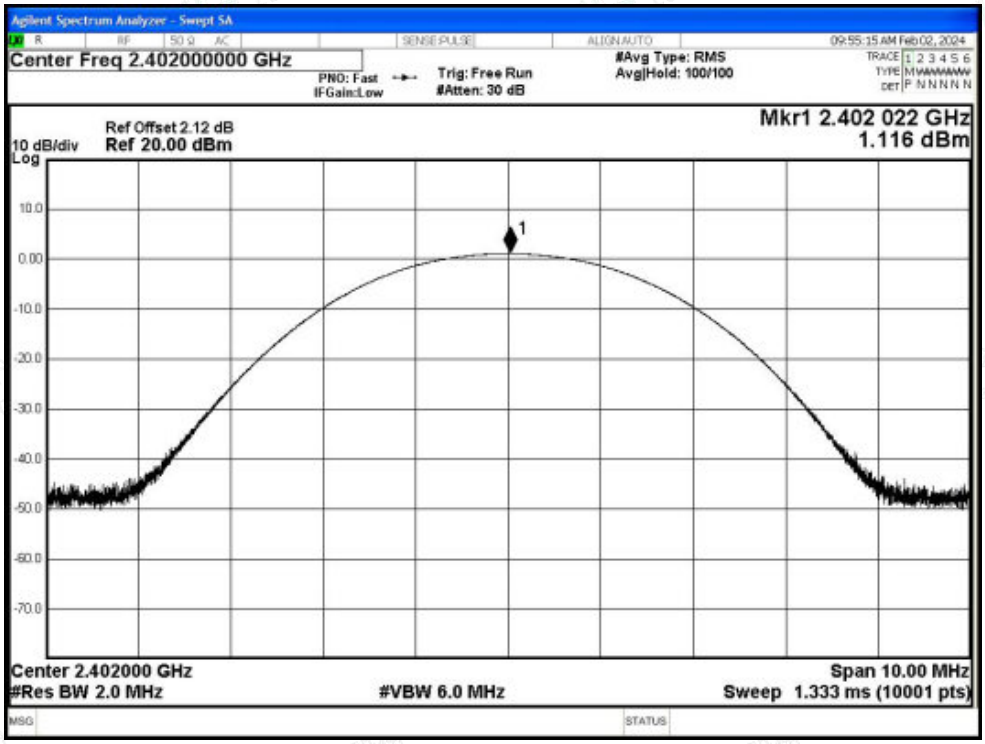


A.2 Maximum Peak Conducted Output Power

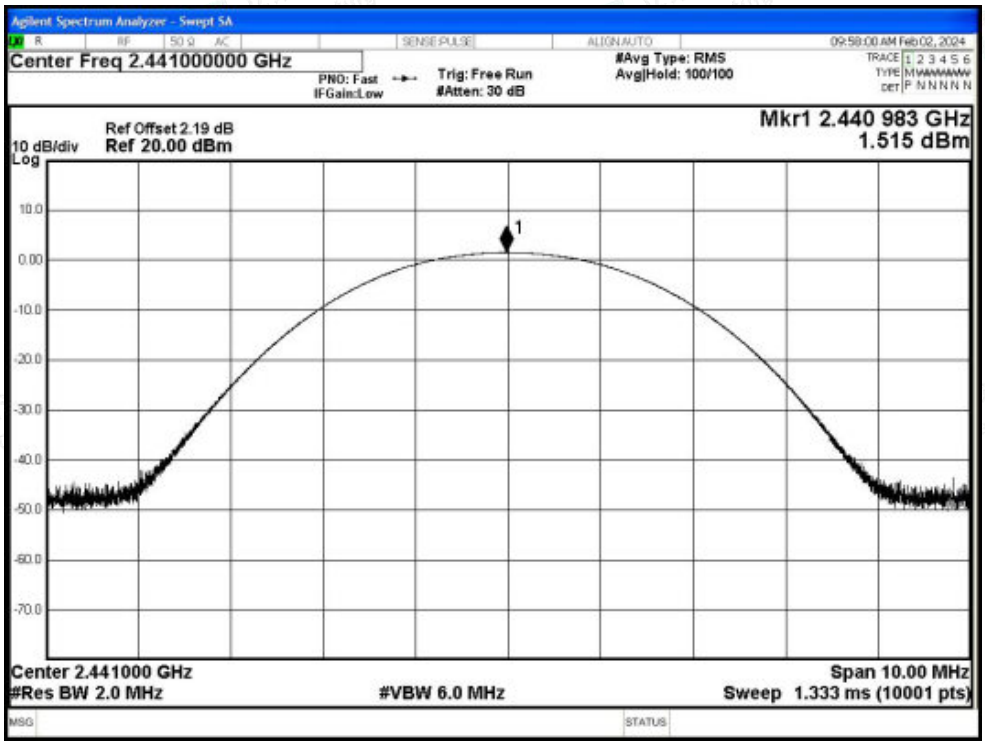
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	1.12	21	Pass
NVNT	1-DH5	2441	Ant1	1.52	21	Pass
NVNT	1-DH5	2480	Ant1	1.66	21	Pass
NVNT	2-DH5	2402	Ant1	-0.1	21	Pass
NVNT	2-DH5	2441	Ant1	0.38	21	Pass
NVNT	2-DH5	2480	Ant1	0.66	21	Pass
NVNT	3-DH5	2402	Ant1	-0.07	21	Pass
NVNT	3-DH5	2441	Ant1	0.41	21	Pass
NVNT	3-DH5	2480	Ant1	0.61	21	Pass

Test Graphs

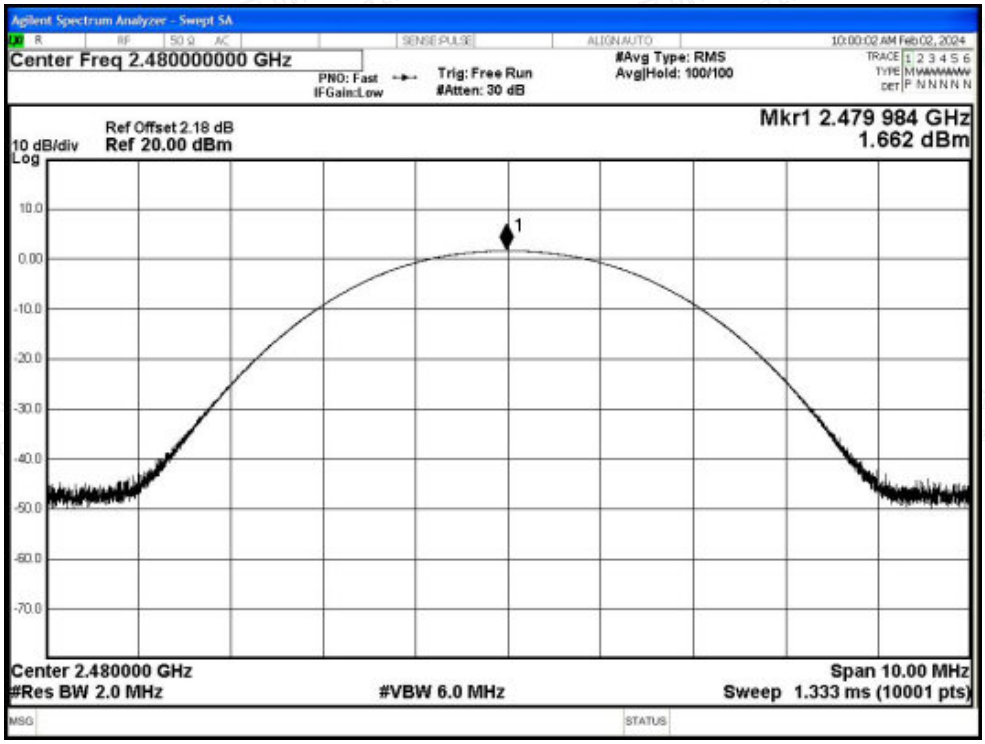
Power NVNT 1-DH5 2402MHz Ant1



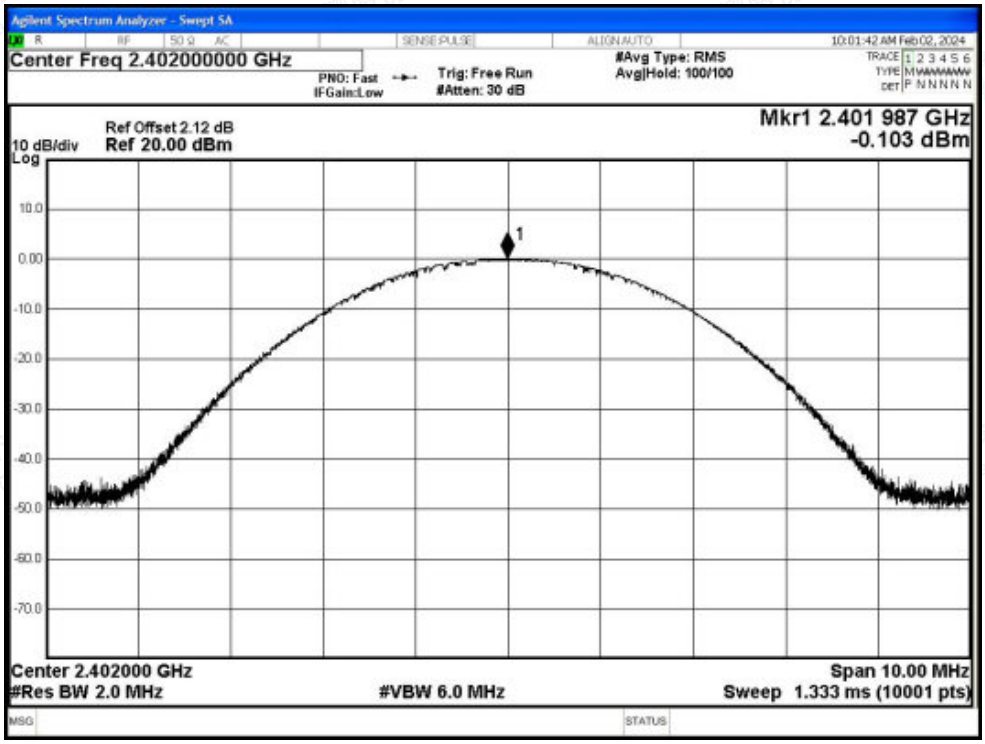
Power NVNT 1-DH5 2441MHz Ant1



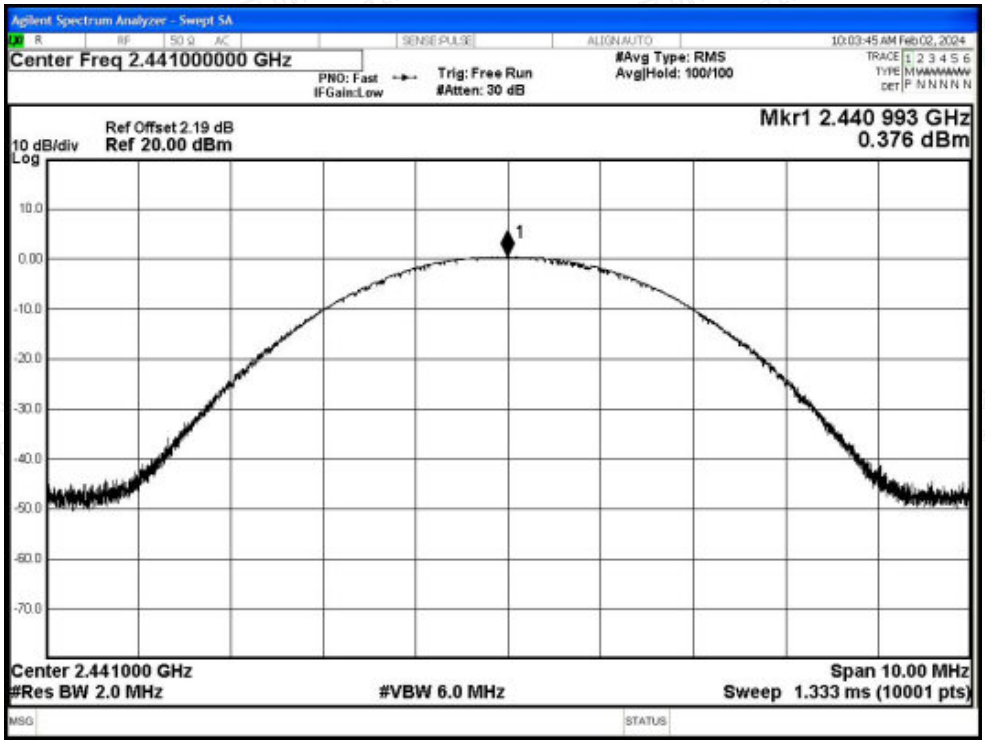
Power NVNT 1-DH5 2480MHz Ant1



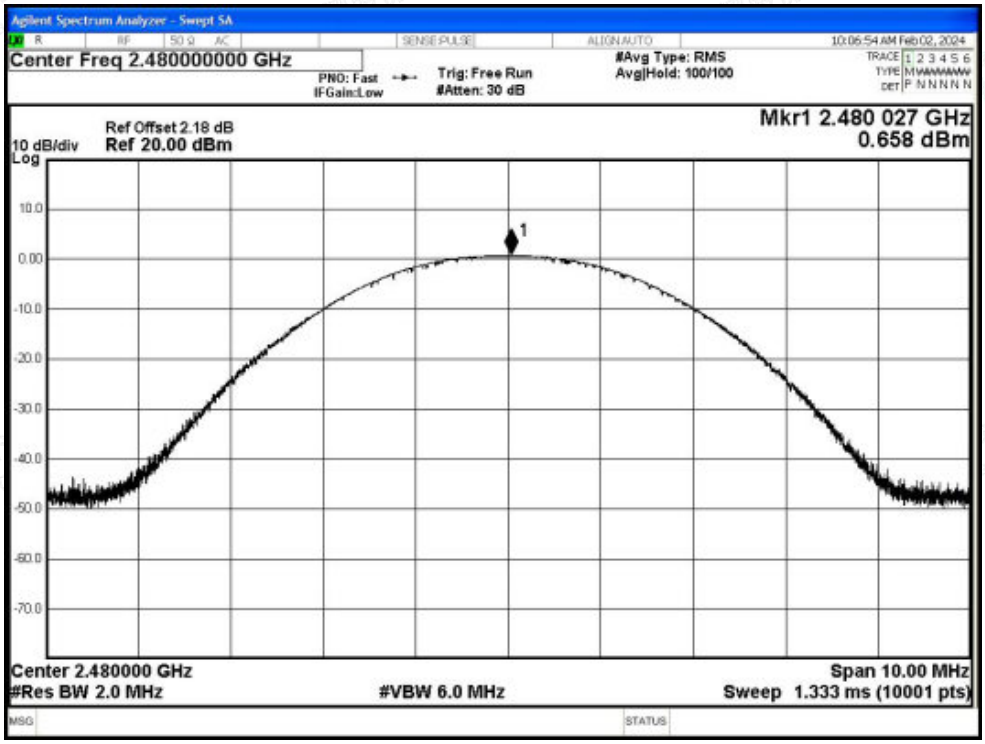
Power NVNT 2-DH5 2402MHz Ant1



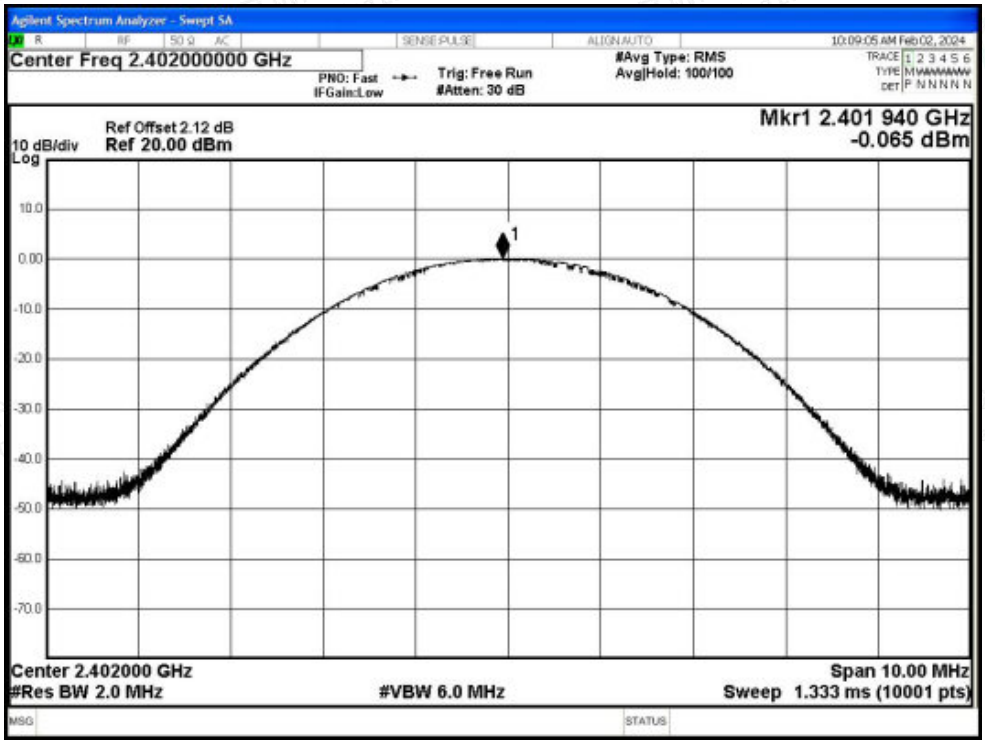
Power NVNT 2-DH5 2441MHz Ant1



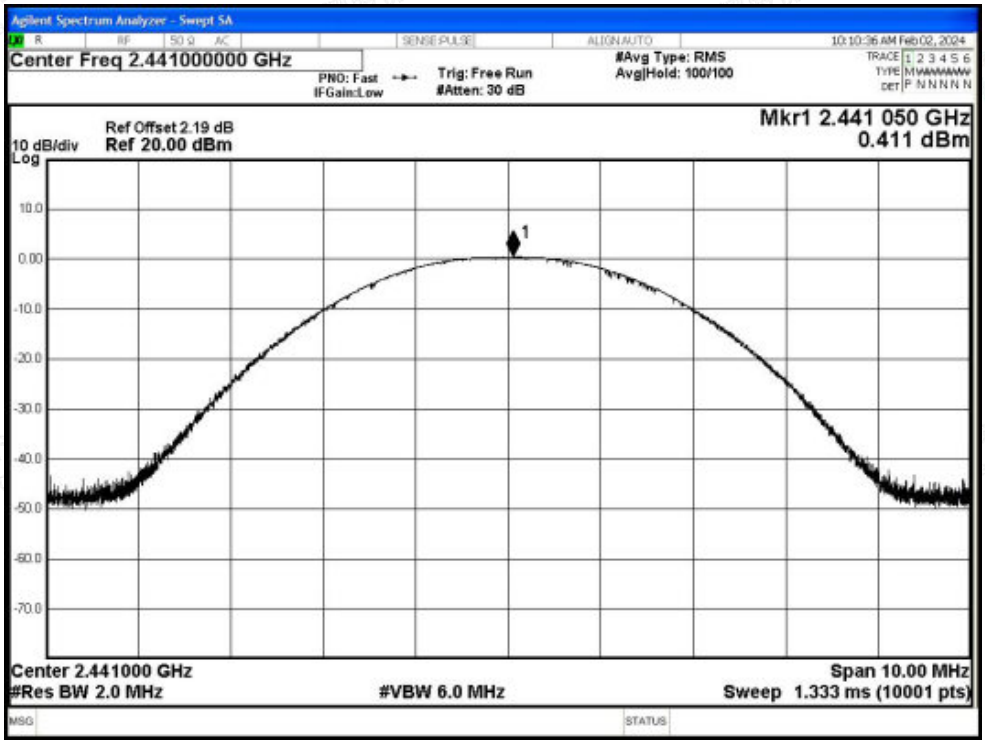
Power NVNT 2-DH5 2480MHz Ant1



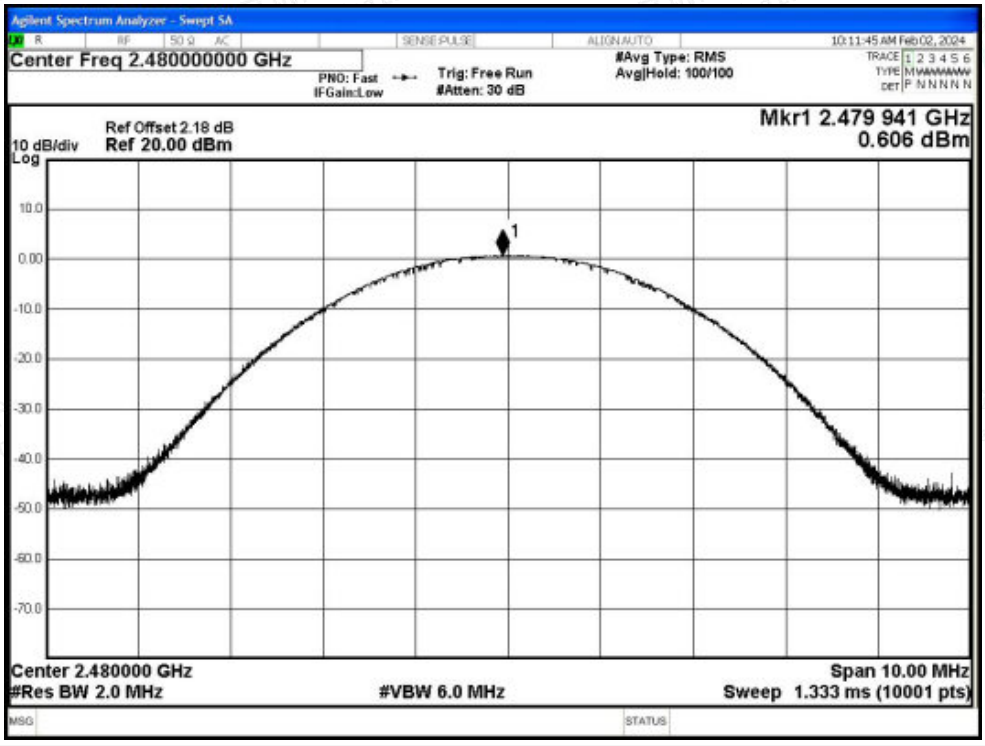
Power NVNT 3-DH5 2402MHz Ant1



Power NVNT 3-DH5 2441MHz Ant1



Power NVNT 3-DH5 2480MHz Ant1

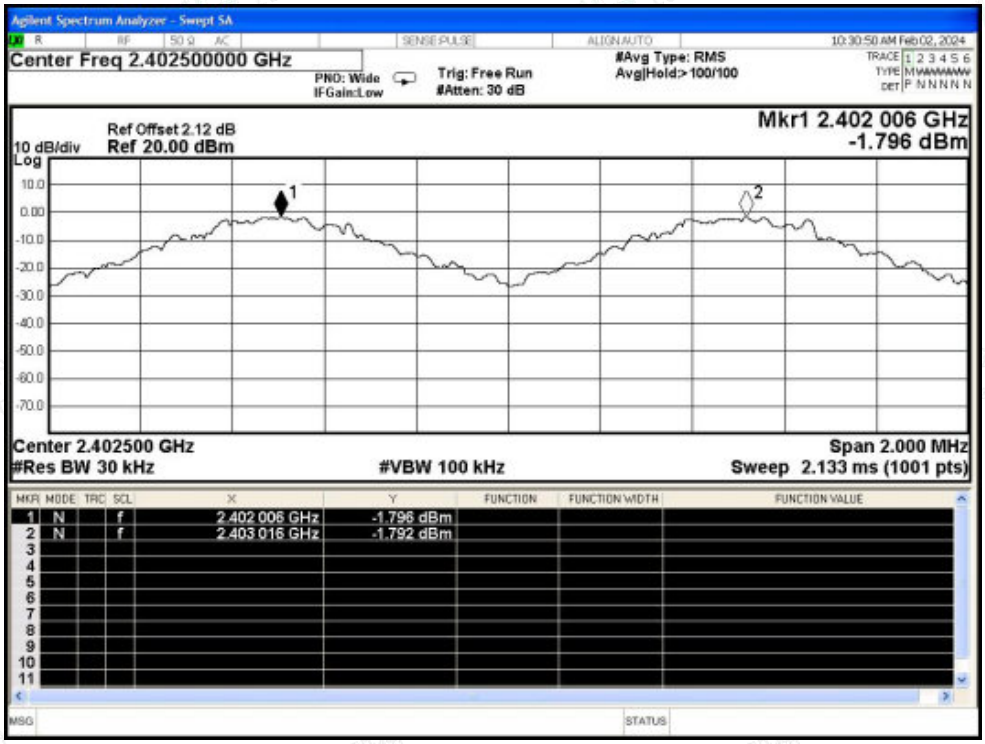


A.3 Carrier Frequencies Separation

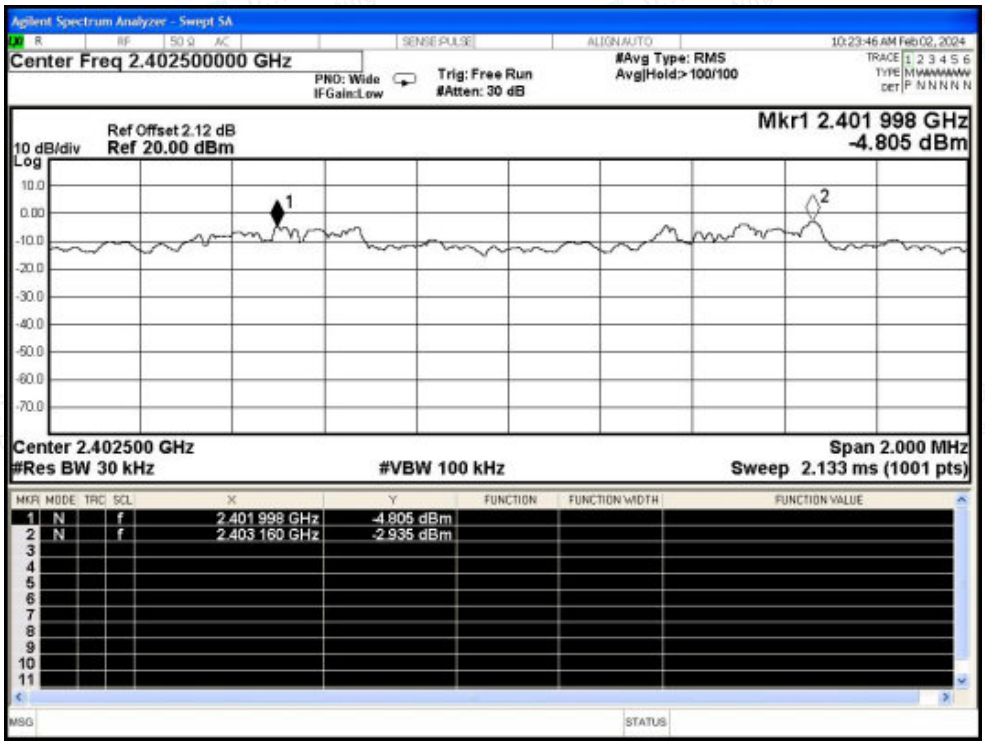
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2402.006	2403.016	1.01	0.567	Pass
NVNT	2-DH5	Ant1	2401.998	2403.16	1.162	0.887	Pass
NVNT	3-DH5	Ant1	2402.17	2403.17	1	0.864	Pass

Test Graphs

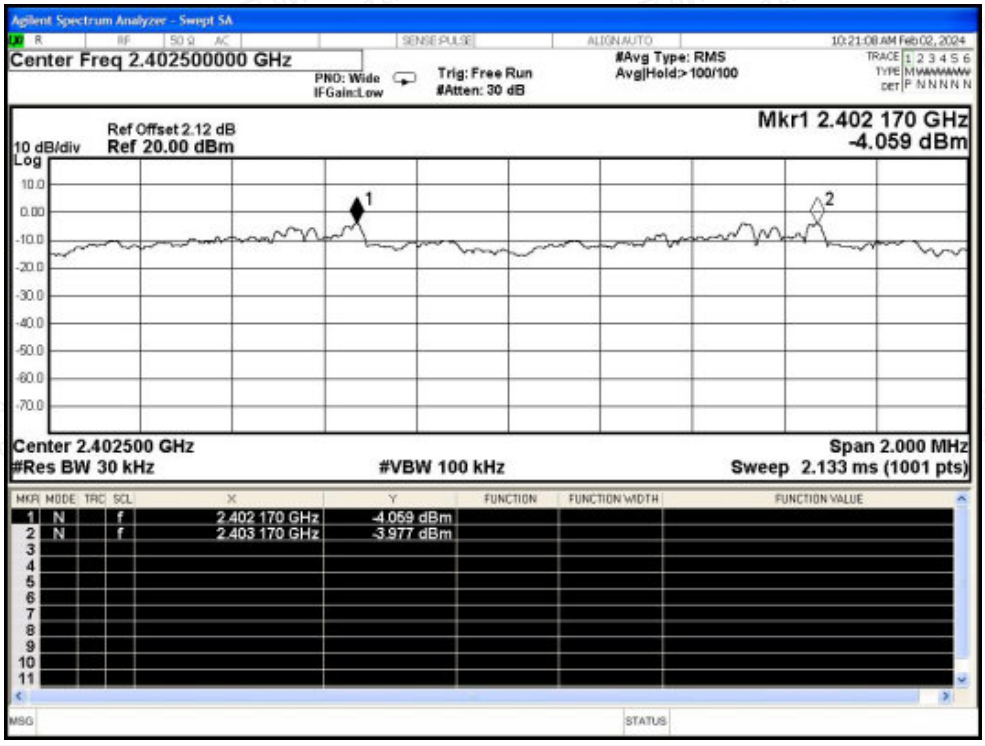
CFS NVNT 1-DH5 2402MHz Ant1



CFS NVNT 2-DH5 2402MHz Ant1



CFS NVNT 3-DH5 2402MHz Ant1

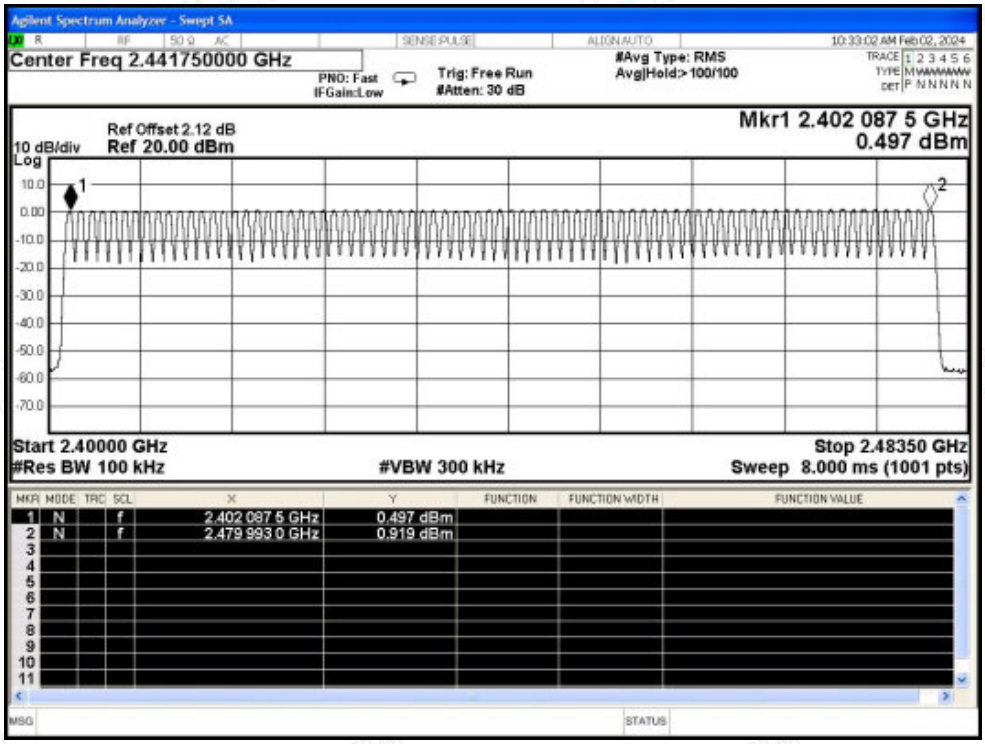


A.4 Number of Hopping Channel

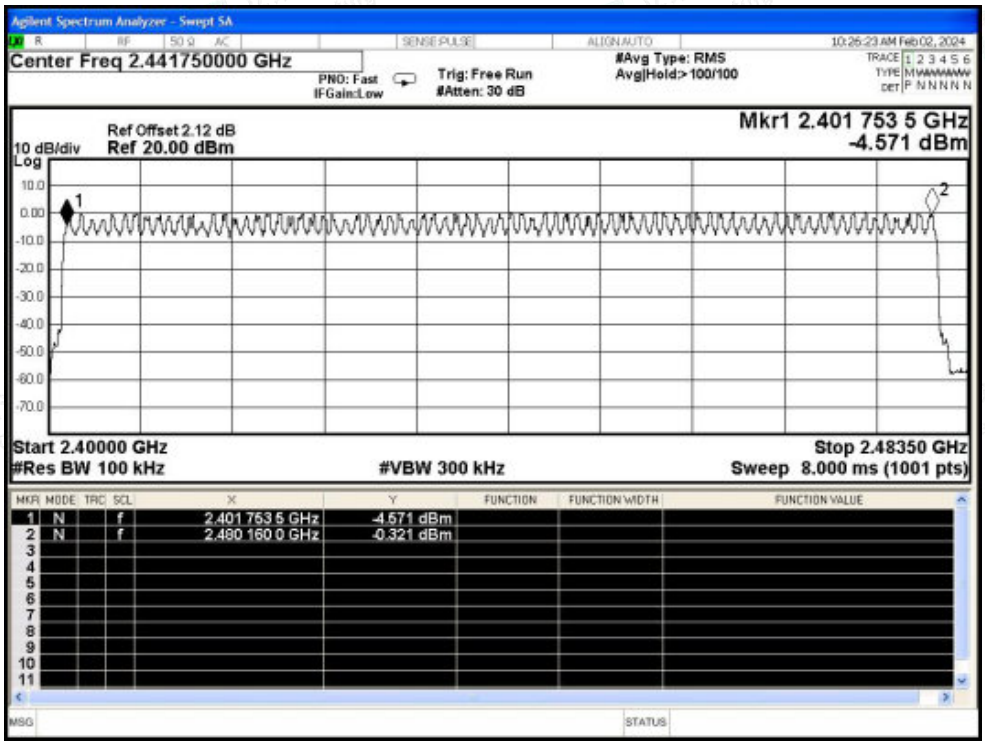
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass
NVNT	3-DH5	Ant1	79	15	Pass

Test Graphs

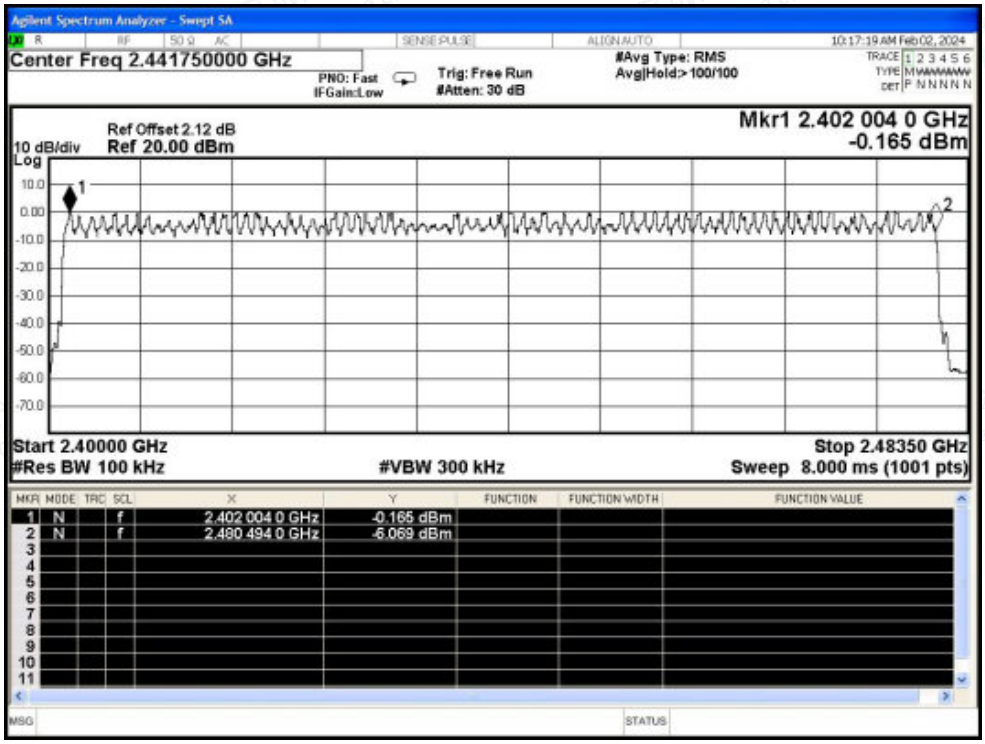
Hopping No. NVNT 1-DH5 2402MHz Ant1



Hopping No. NVNT 2-DH5 2402MHz Ant1



Hopping No. NVNT 3-DH5 2402MHz Ant1

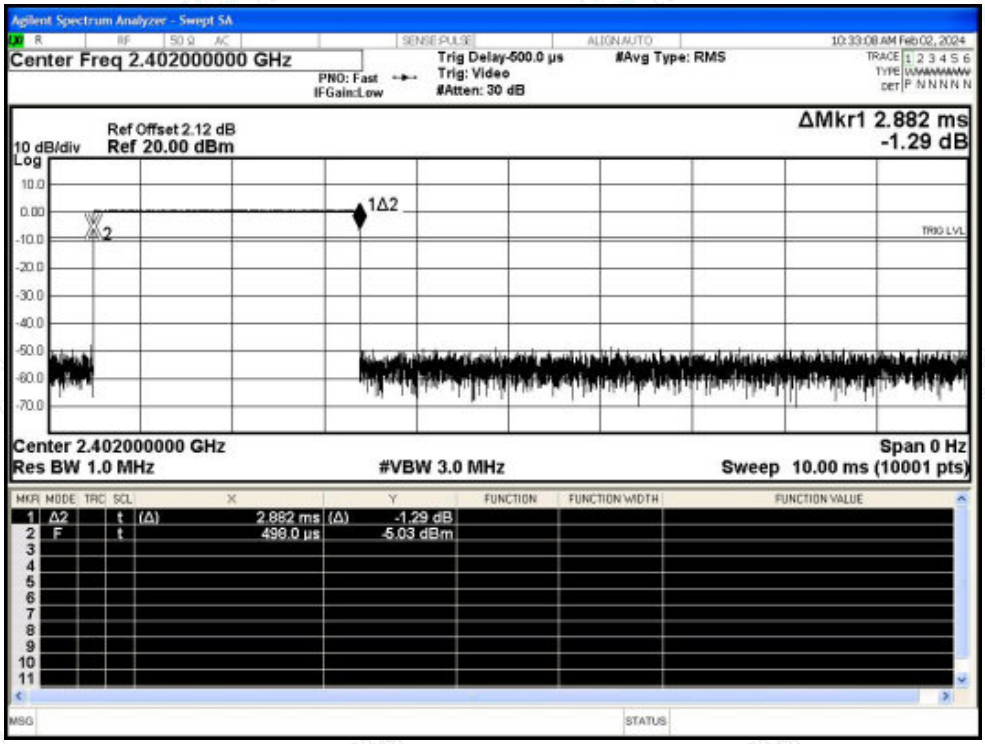


A.5 Dwell Time

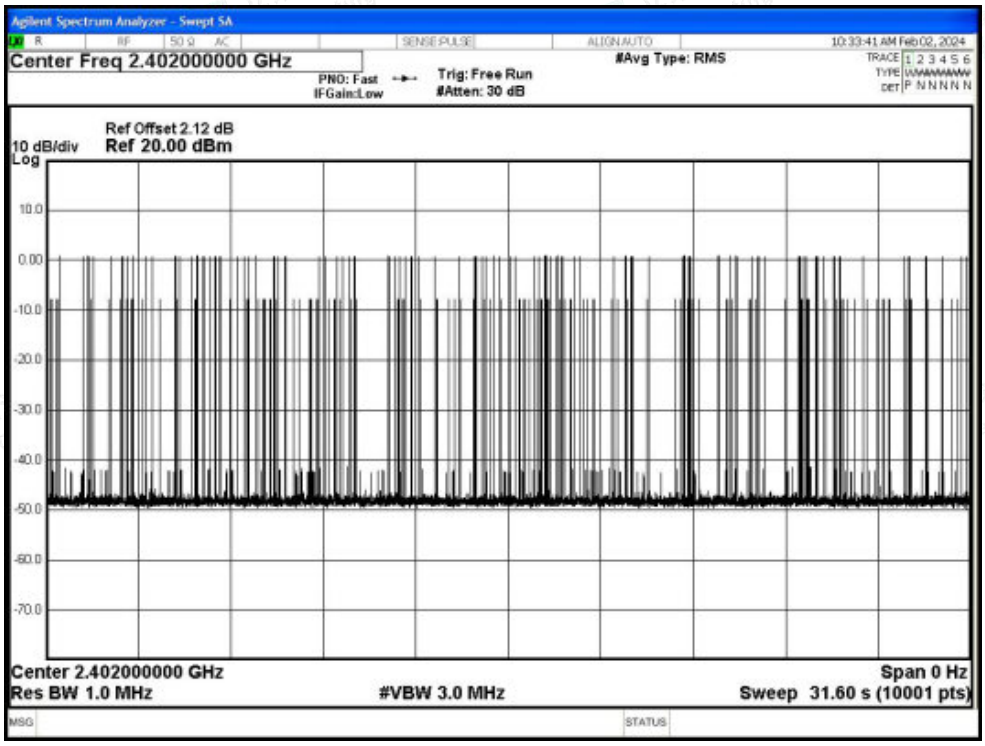
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	2.882	291.082	101	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.88	262.08	91	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.887	311.796	108	31600	400	Pass

Test Graphs

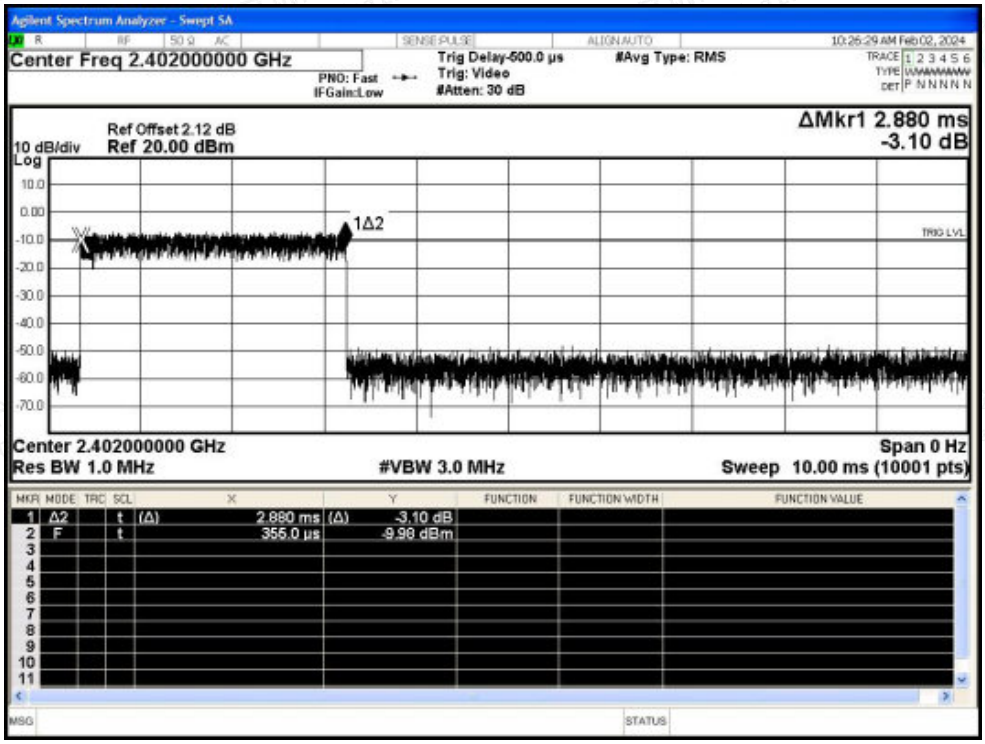
Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



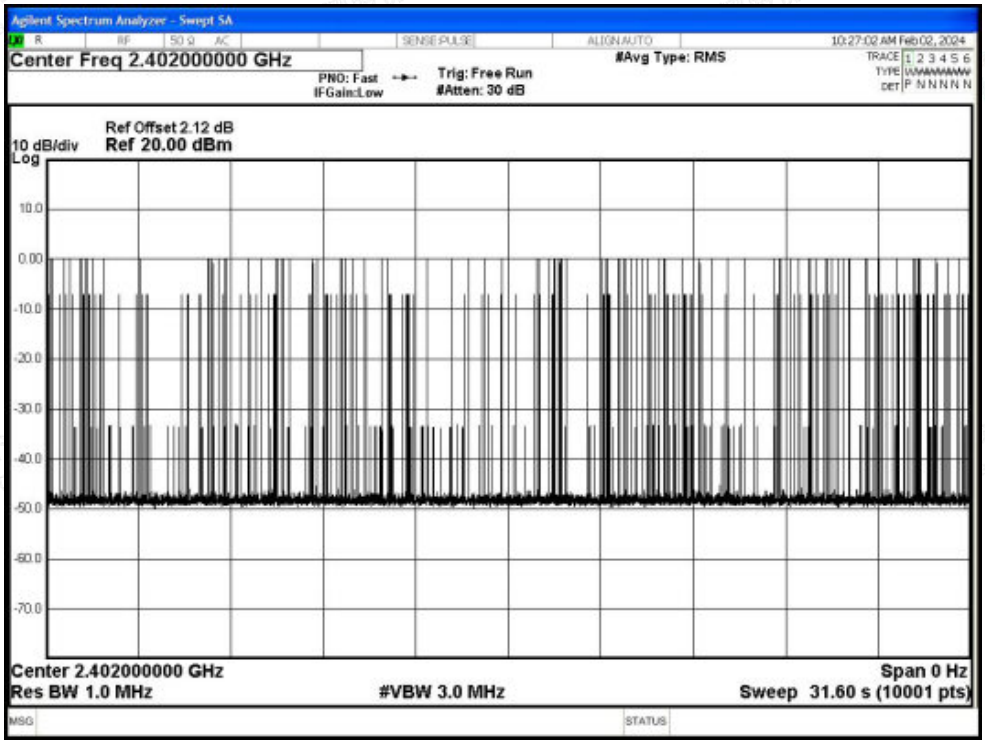
Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated



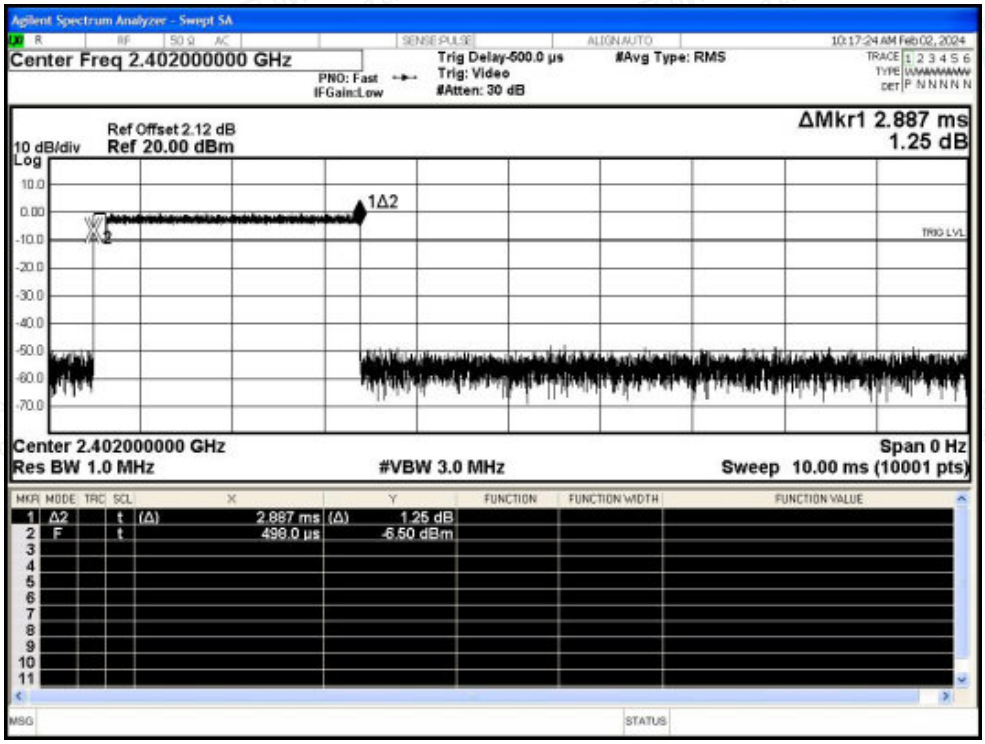
Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



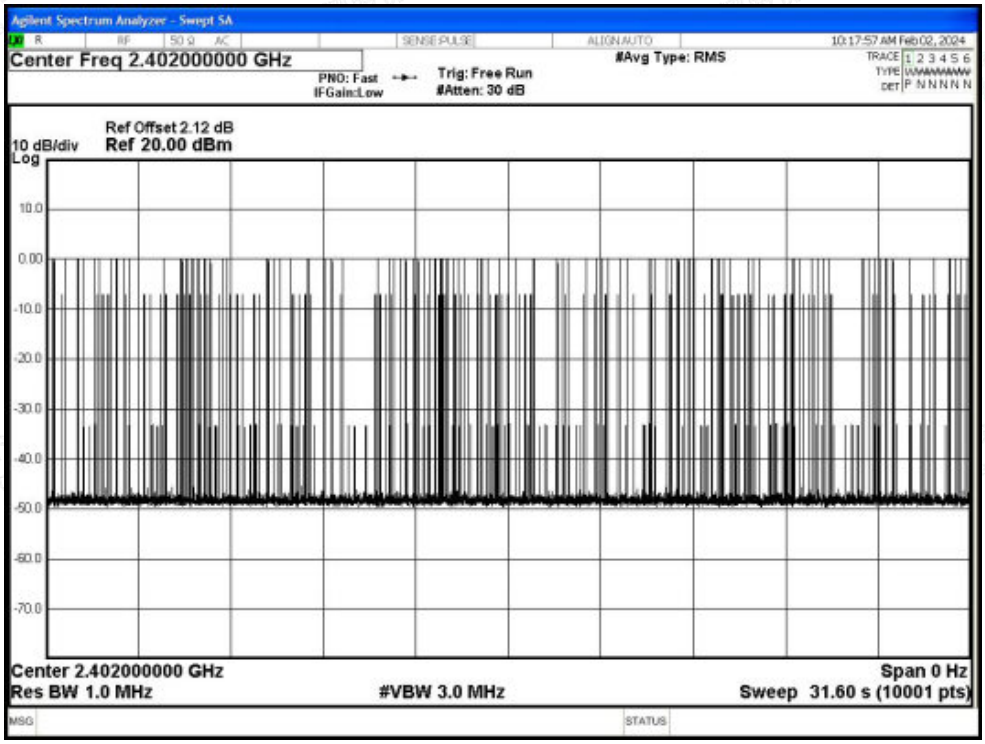
Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated



Dwell NVNT 3-DH5 2402MHz Ant1 One Burst



Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

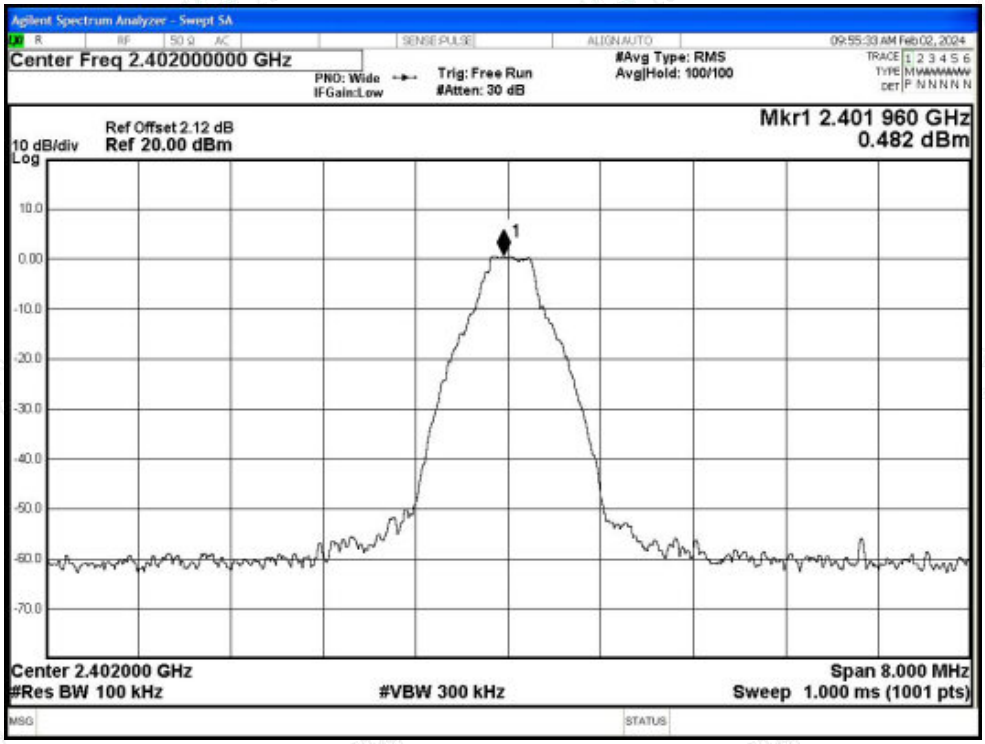


A.6 Band Edge

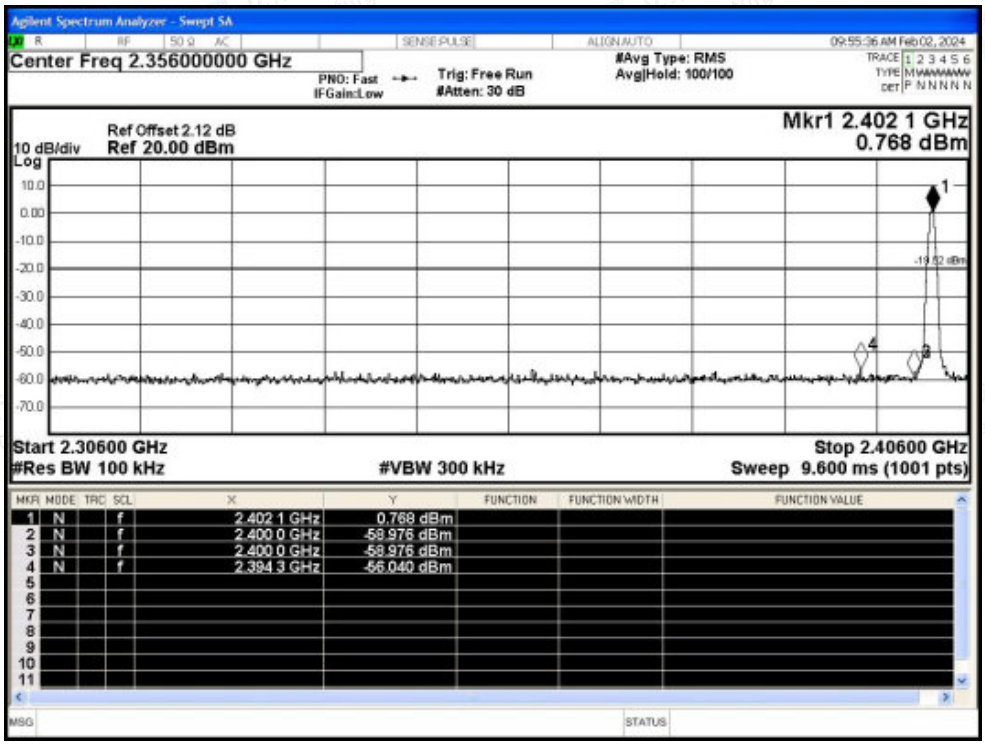
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-56.52	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-58.16	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-55.47	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-57.03	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-55.38	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-57.23	-20	Pass

Test Graphs

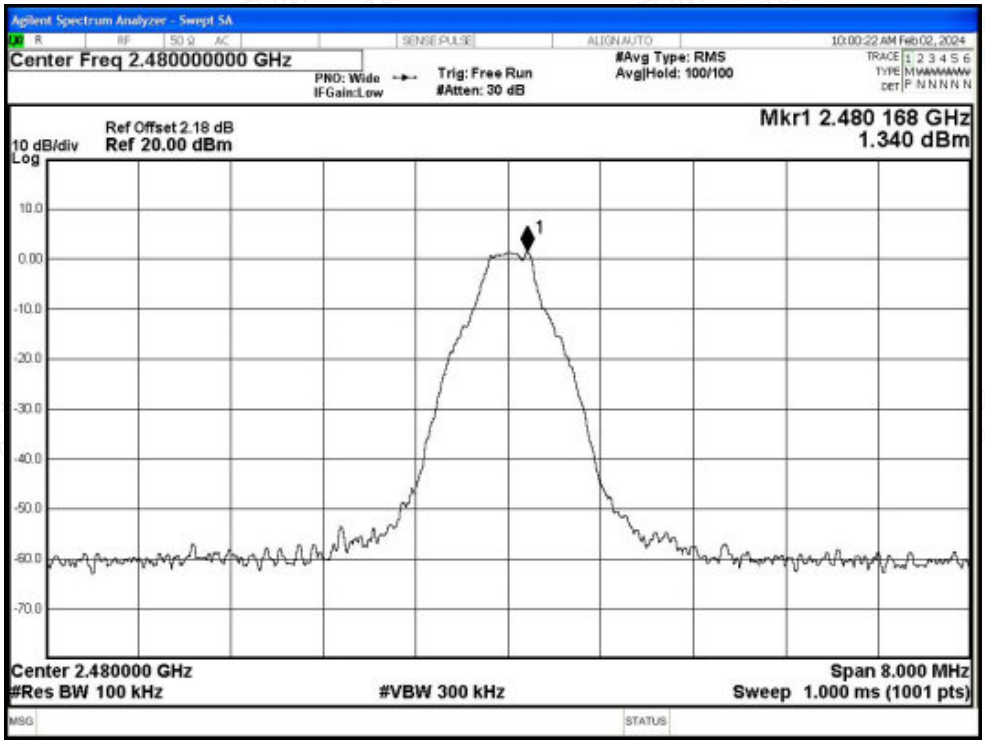
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



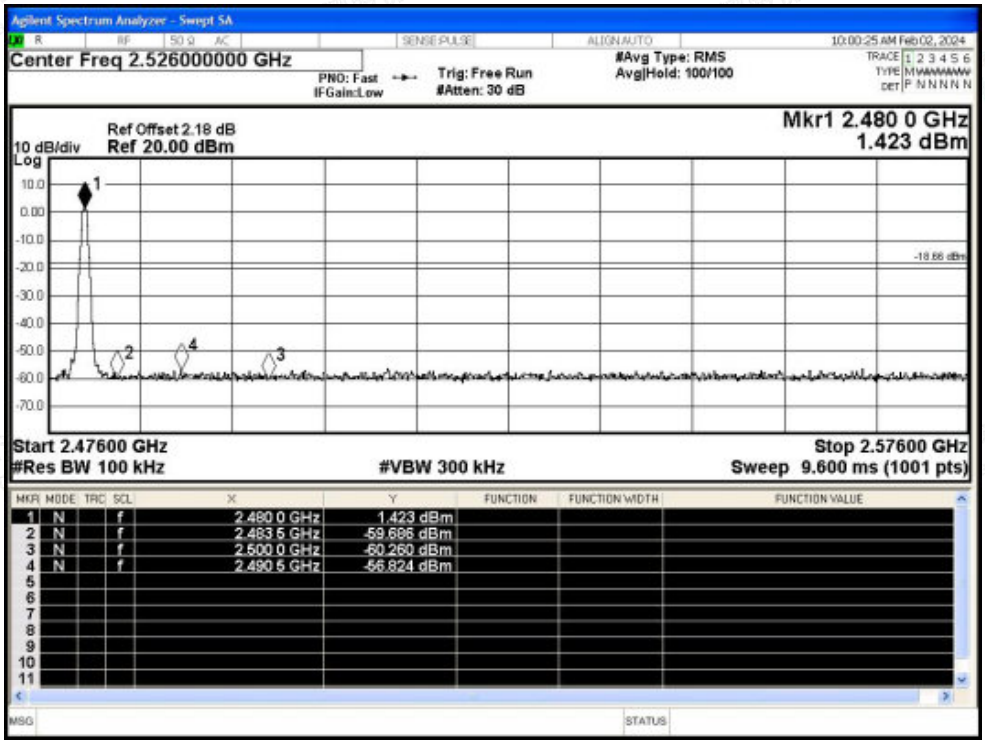
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission



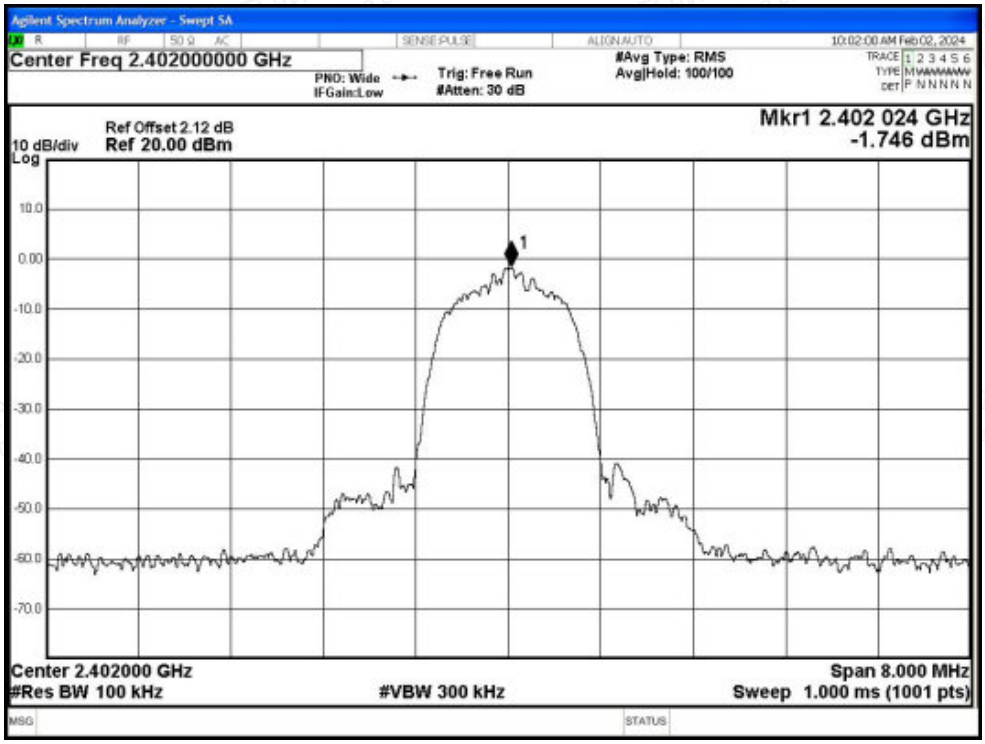
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref



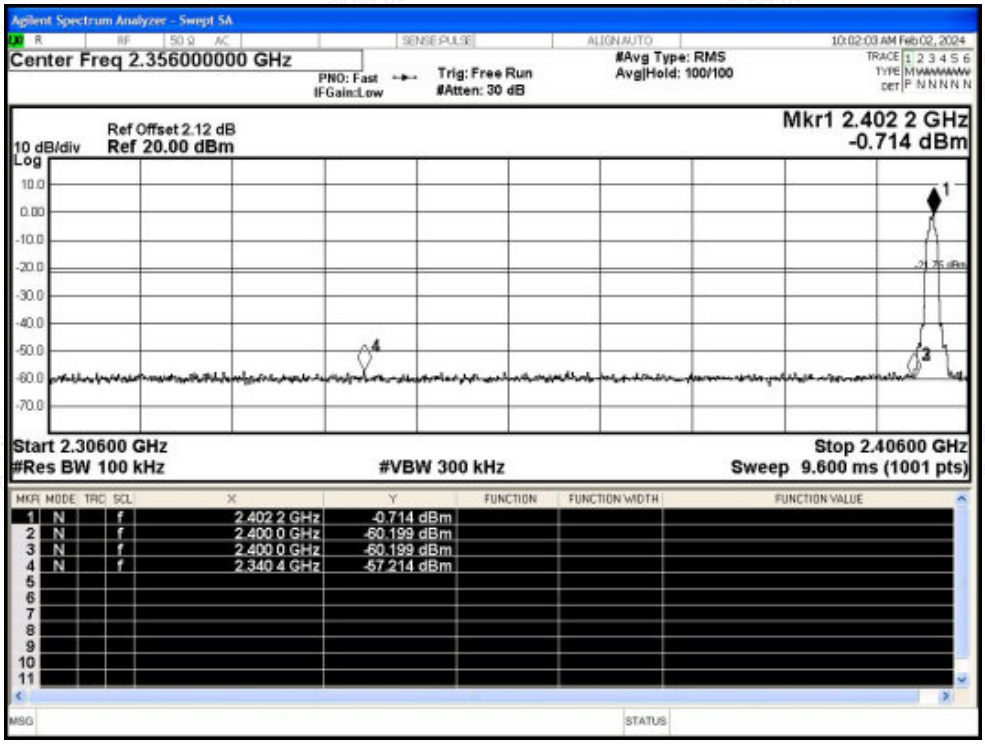
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



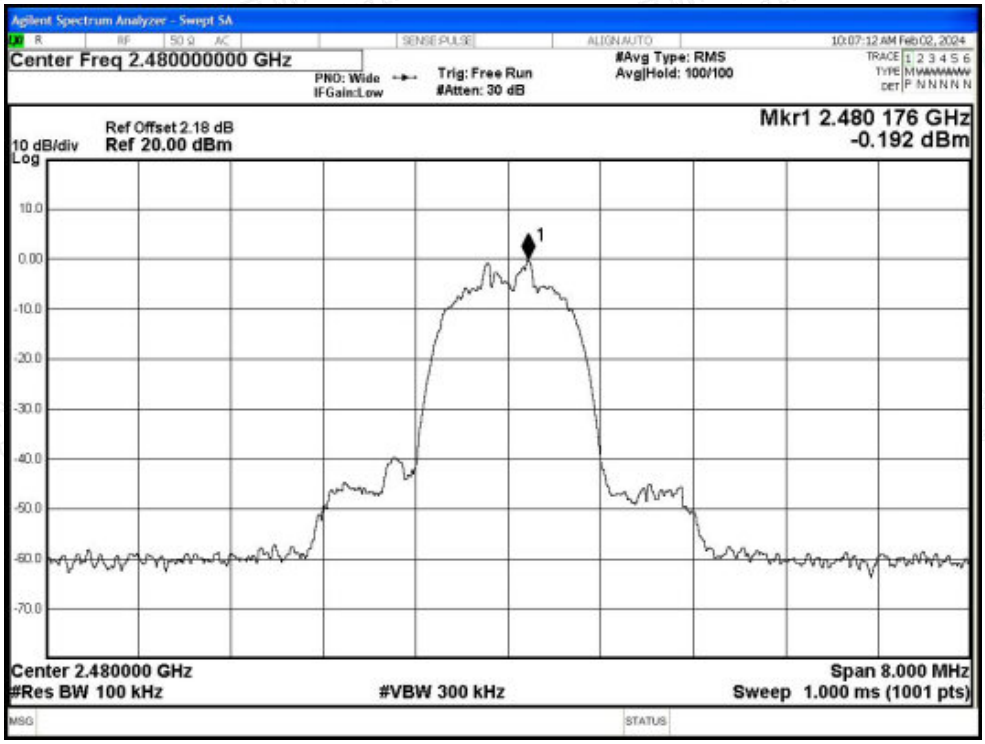
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



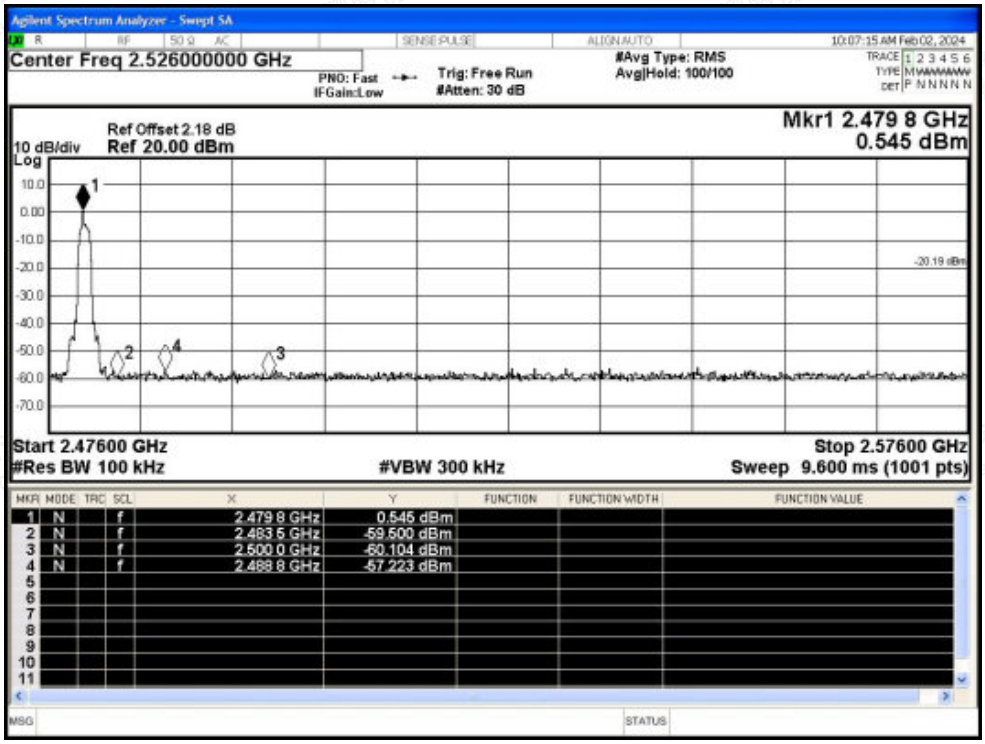
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission



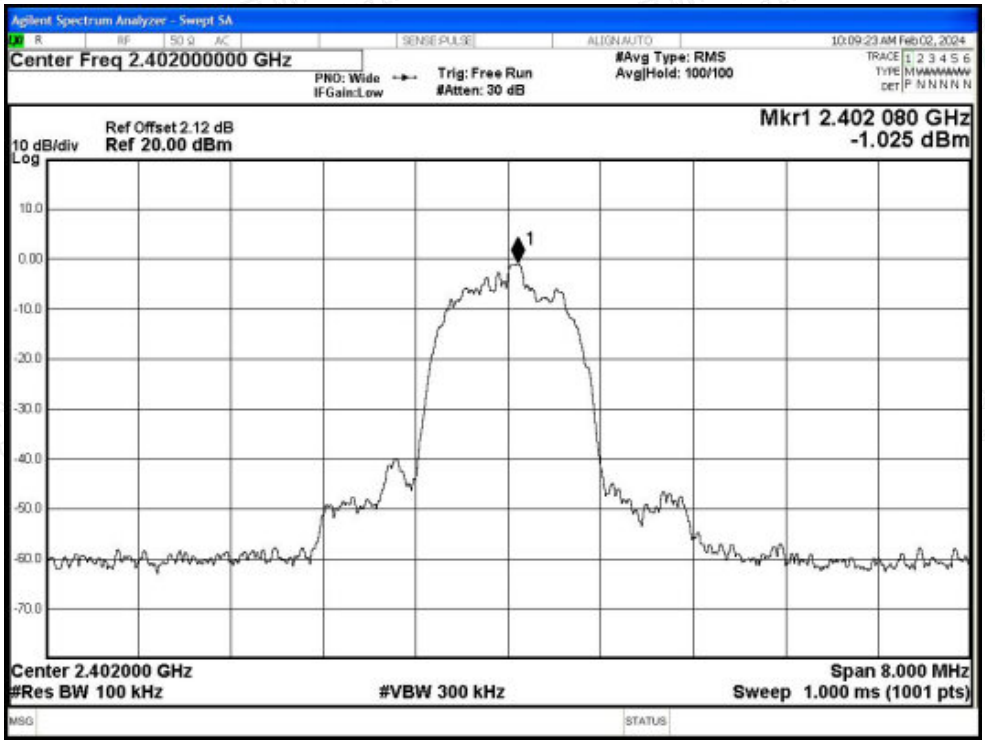
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref



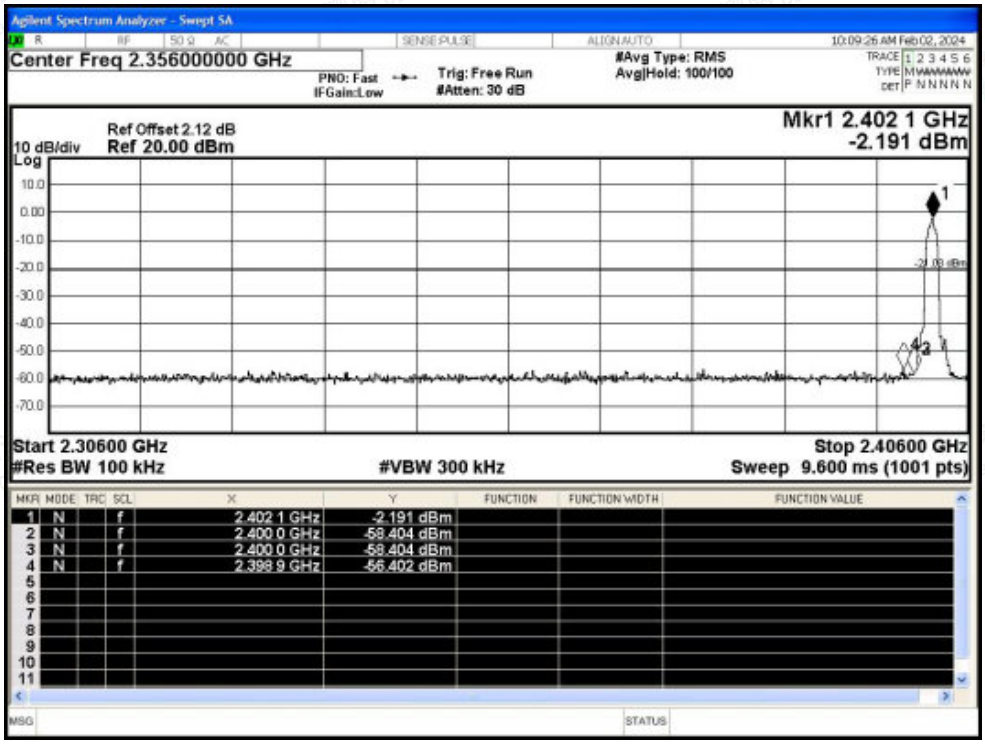
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission



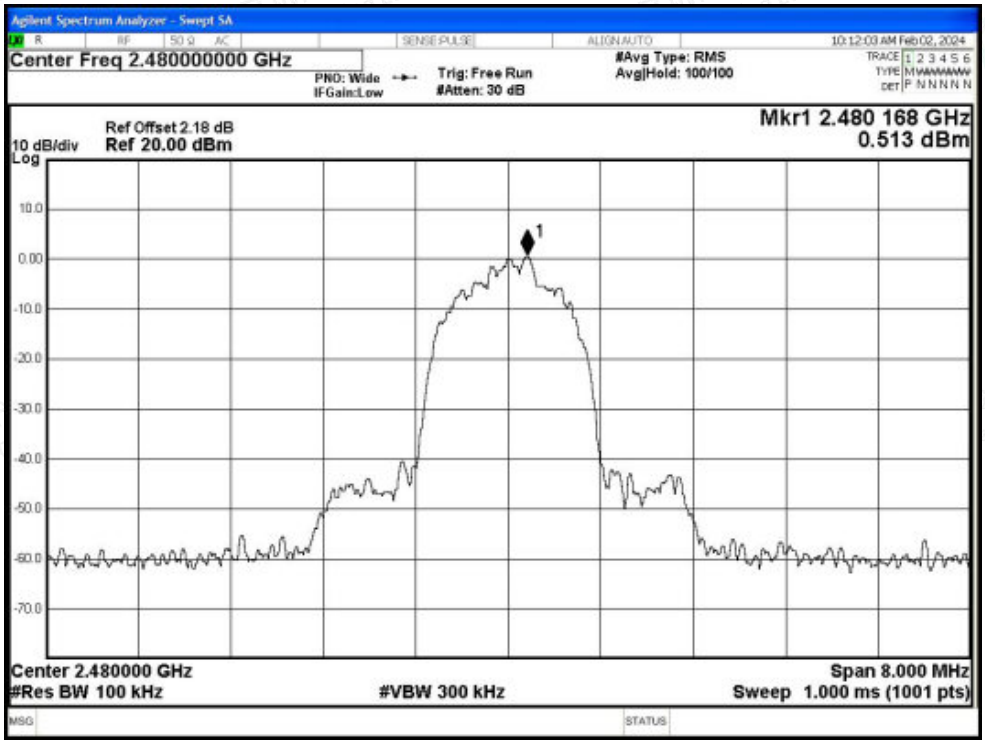
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref



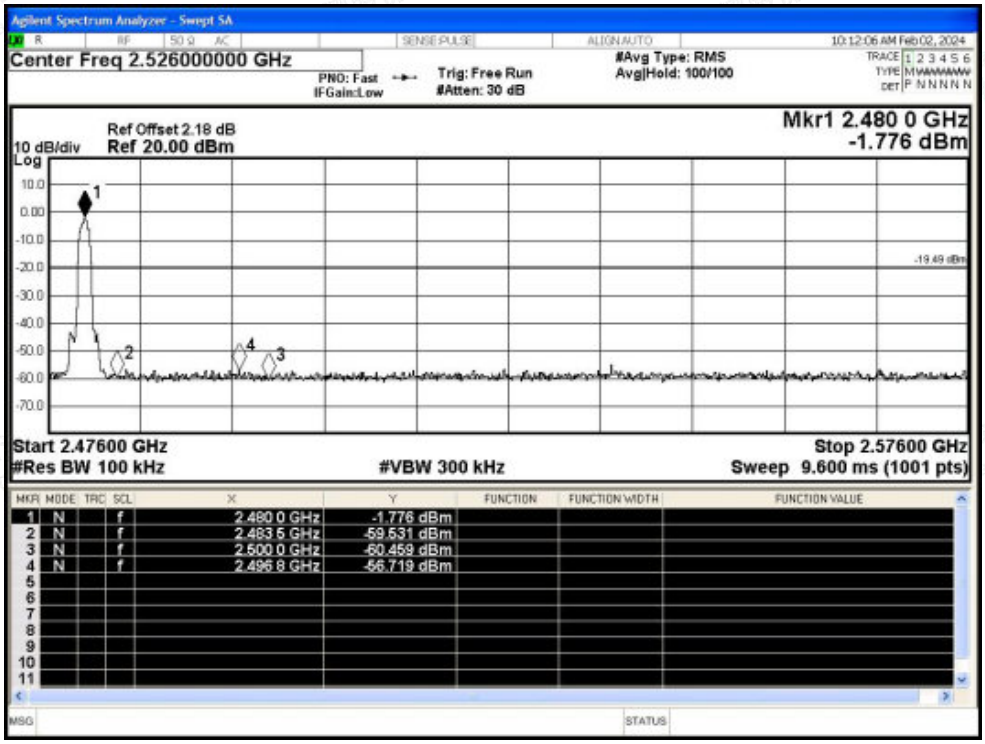
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission



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



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

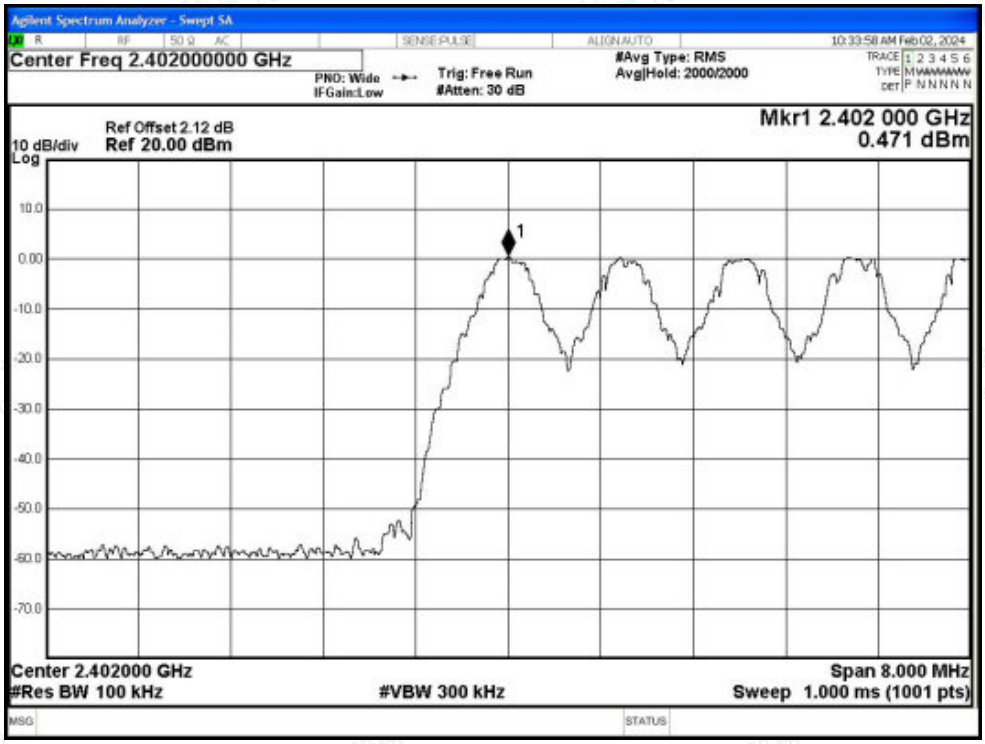


(Hopping)

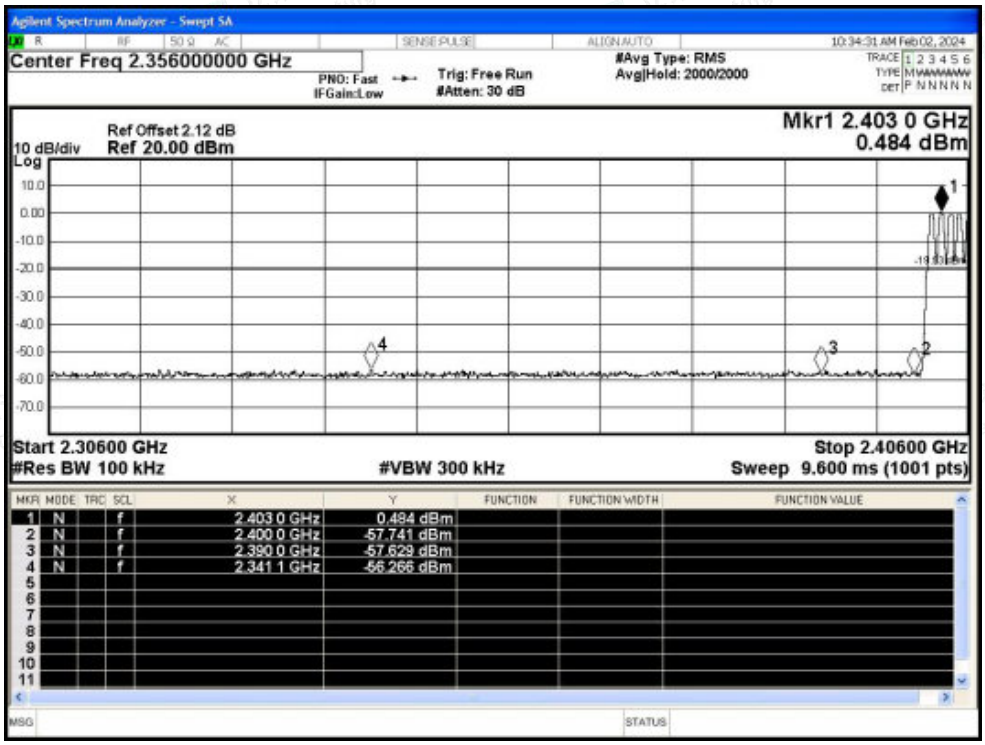
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-56.74	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-56.99	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-55.77	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-54.16	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-55.52	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-55.42	-20	Pass

Test Graphs

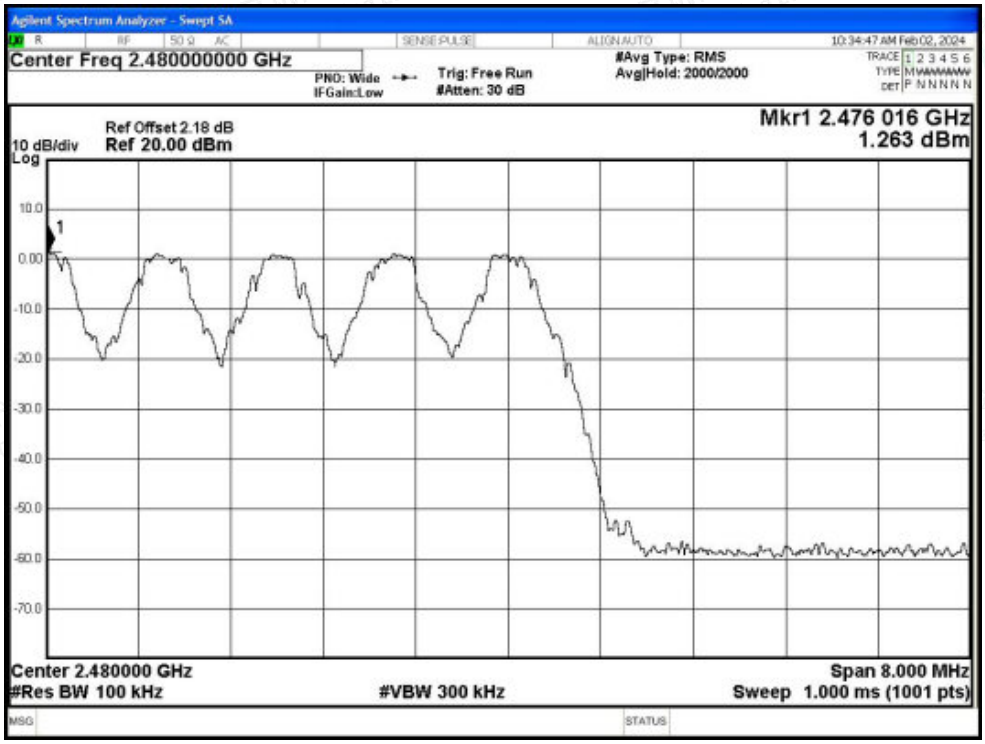
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



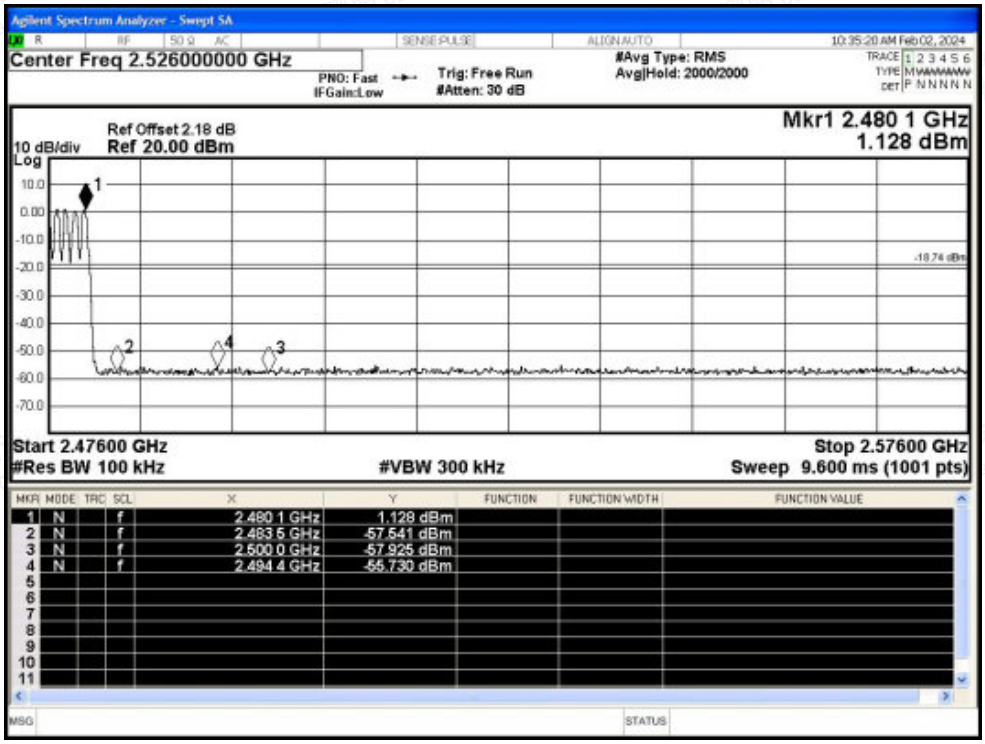
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



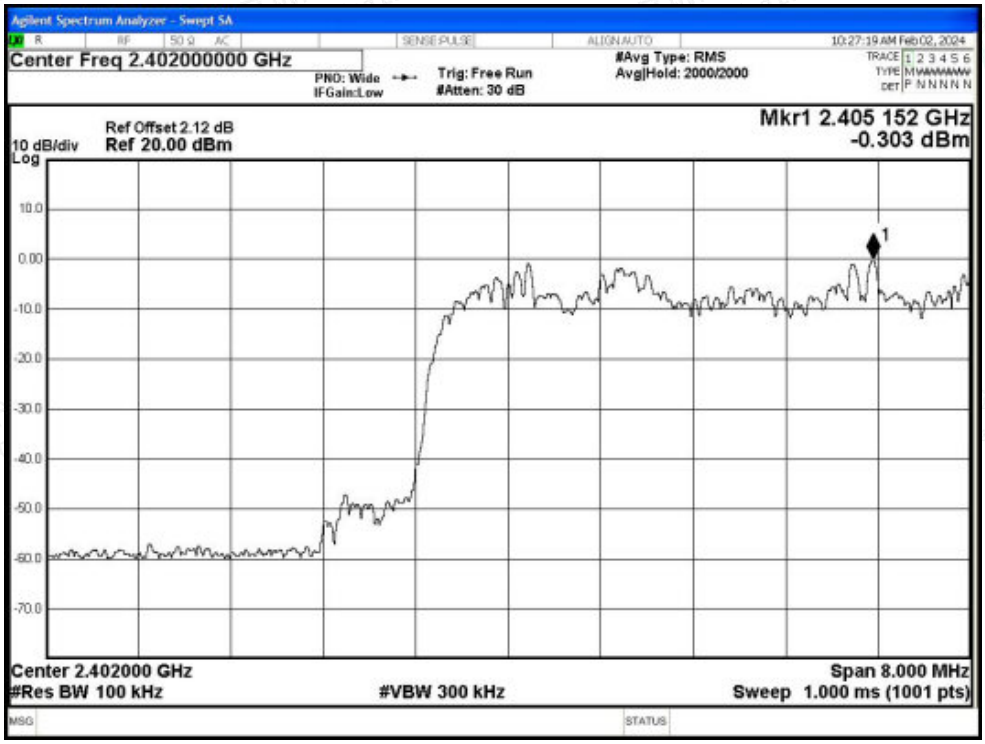
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



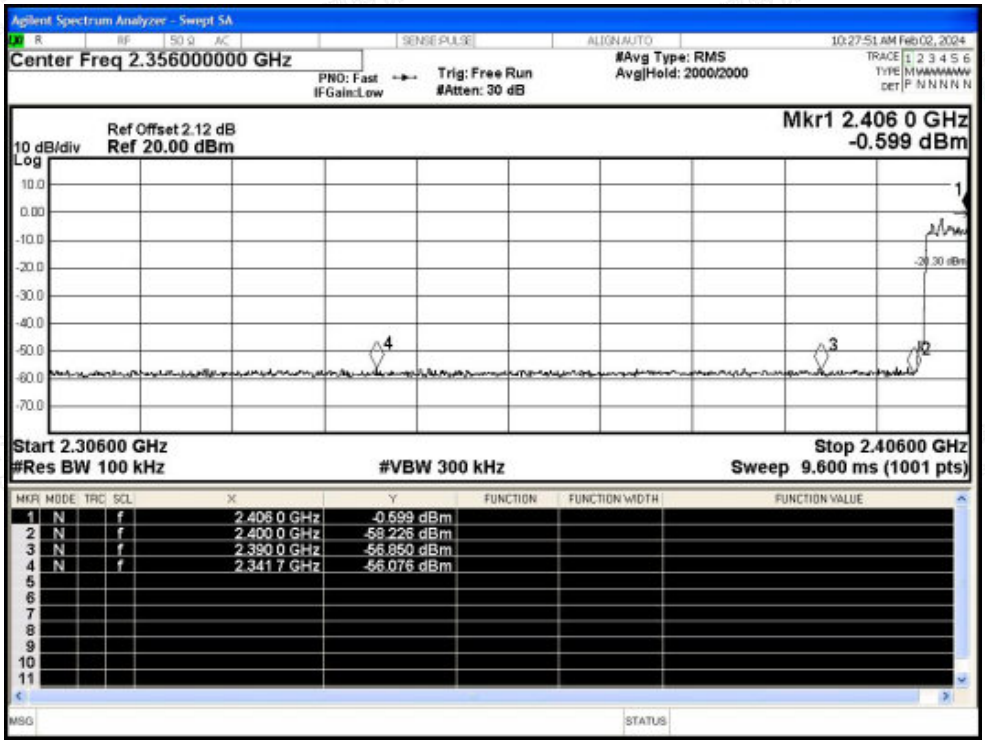
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission



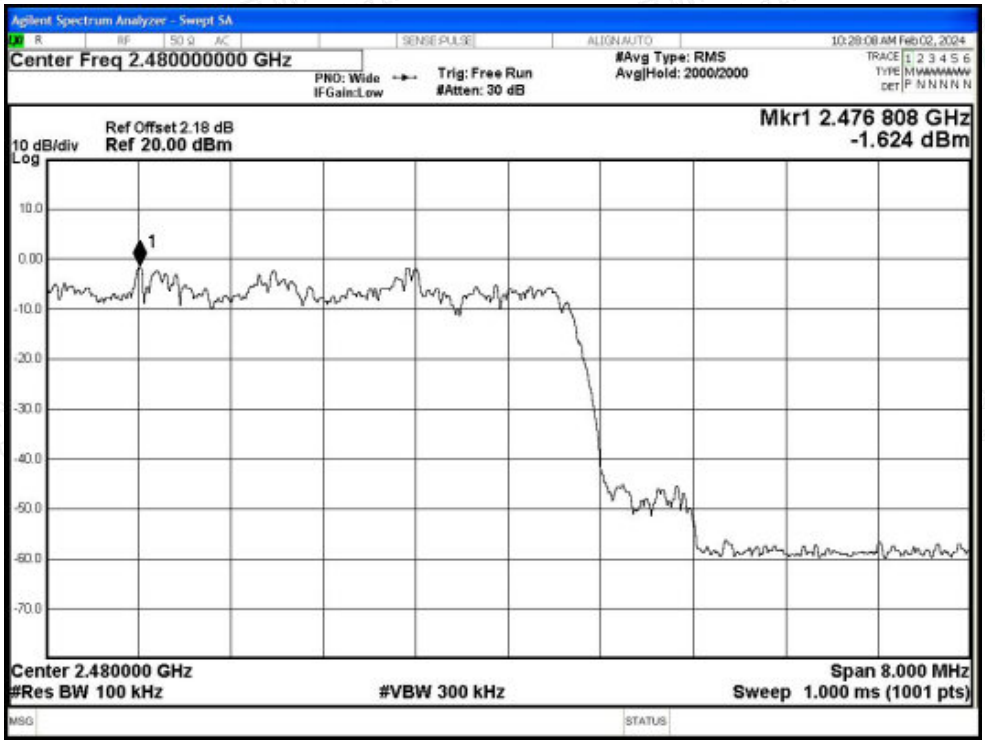
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref



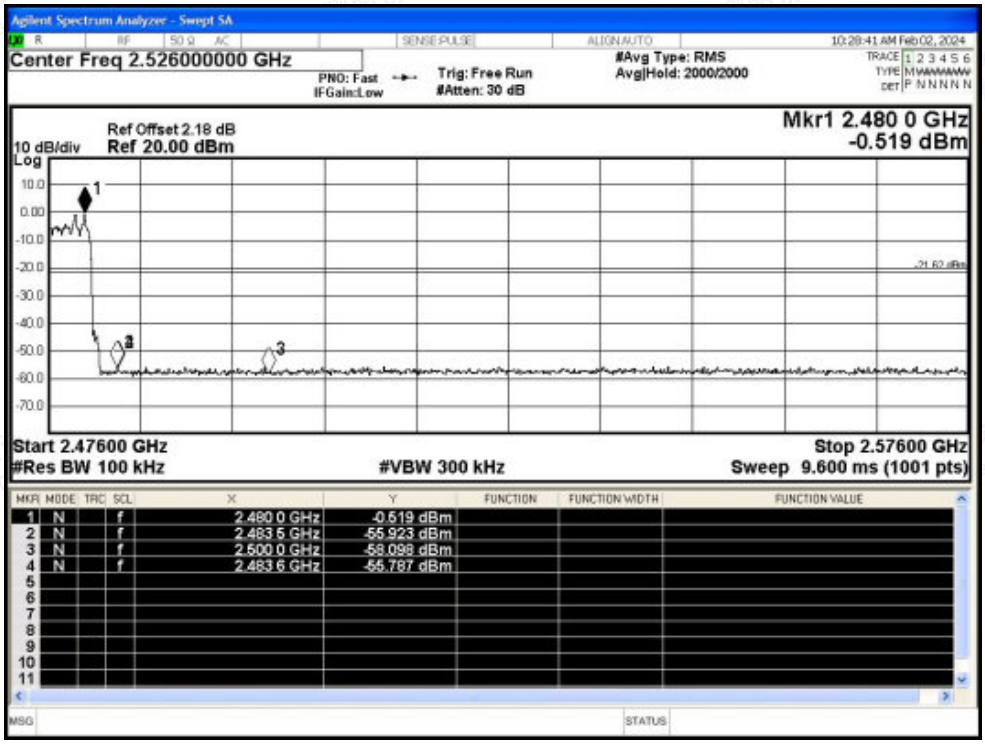
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



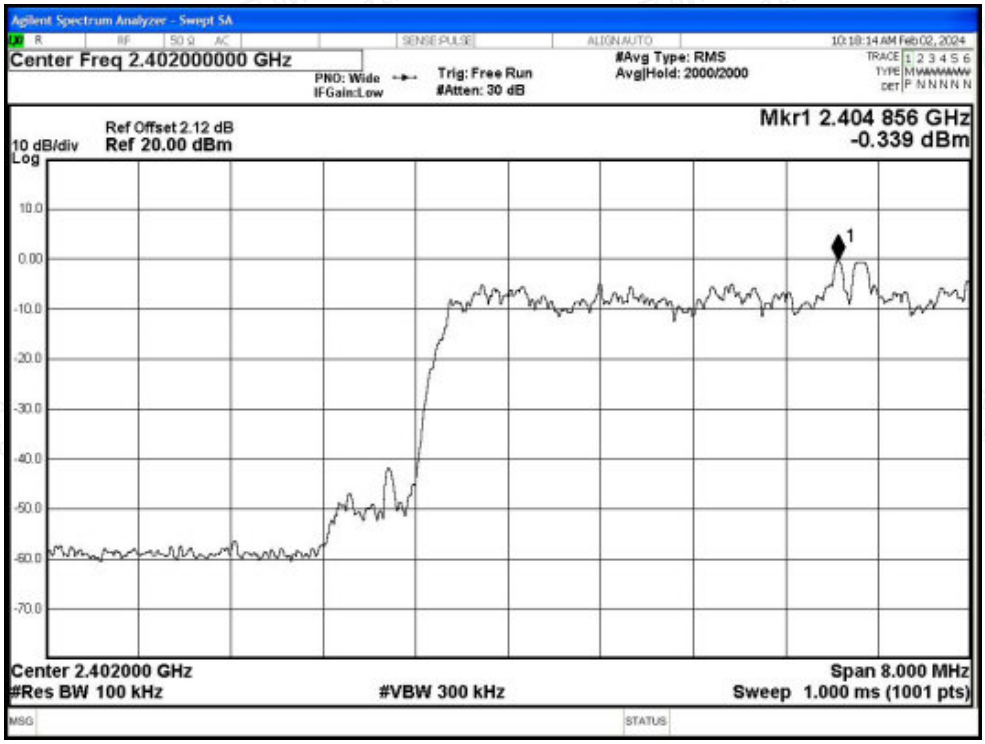
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



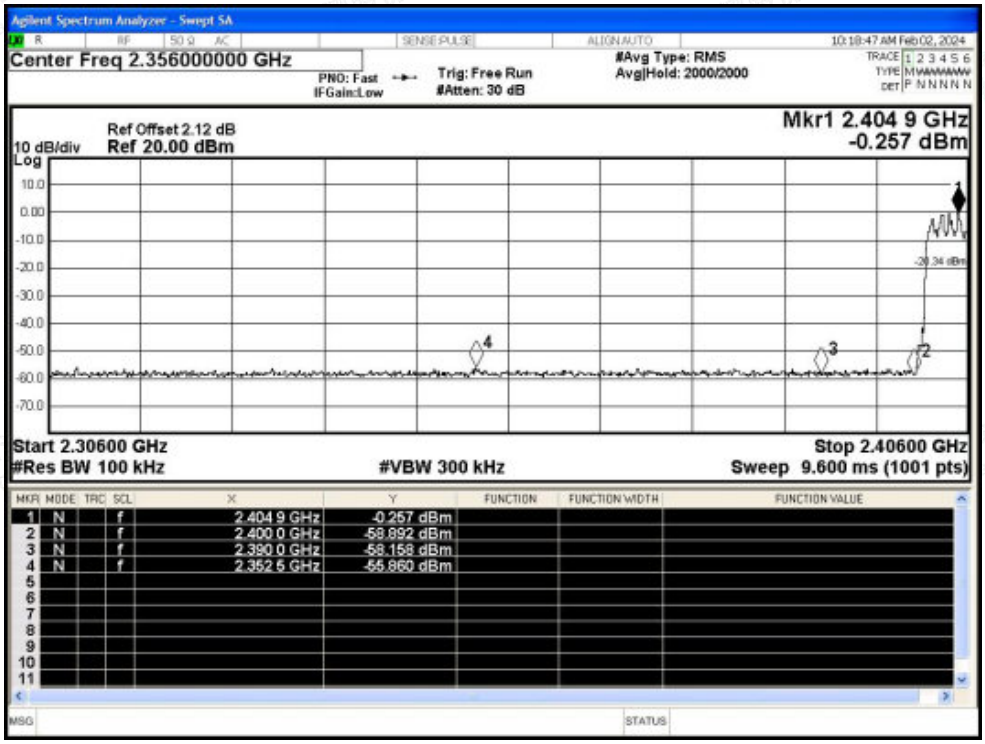
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission



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

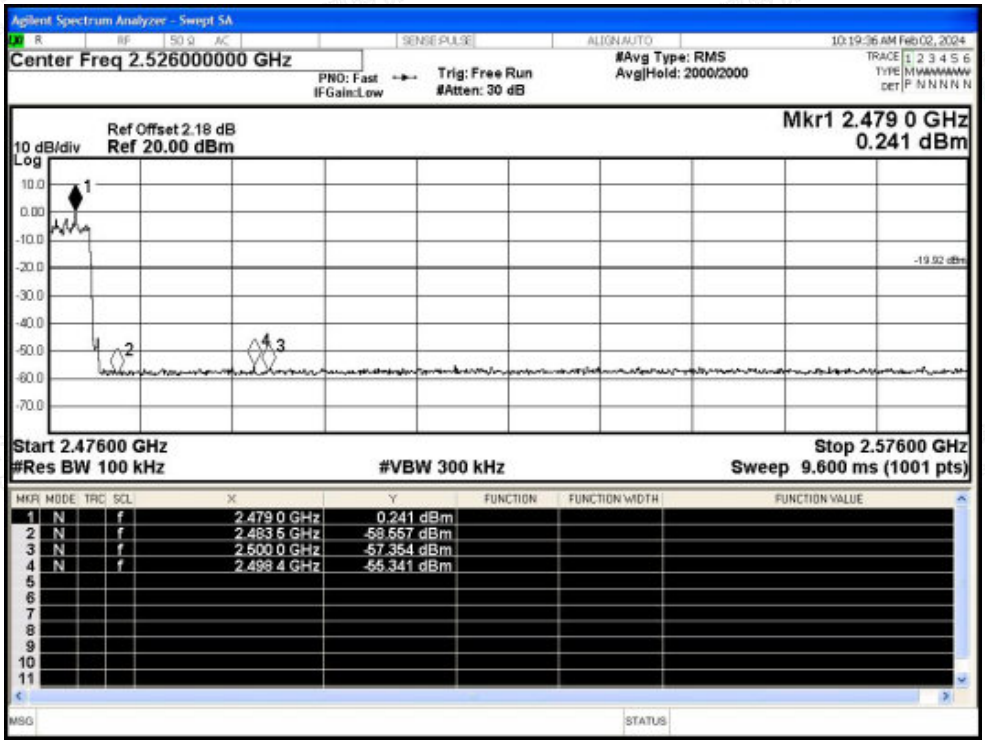


Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission



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

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

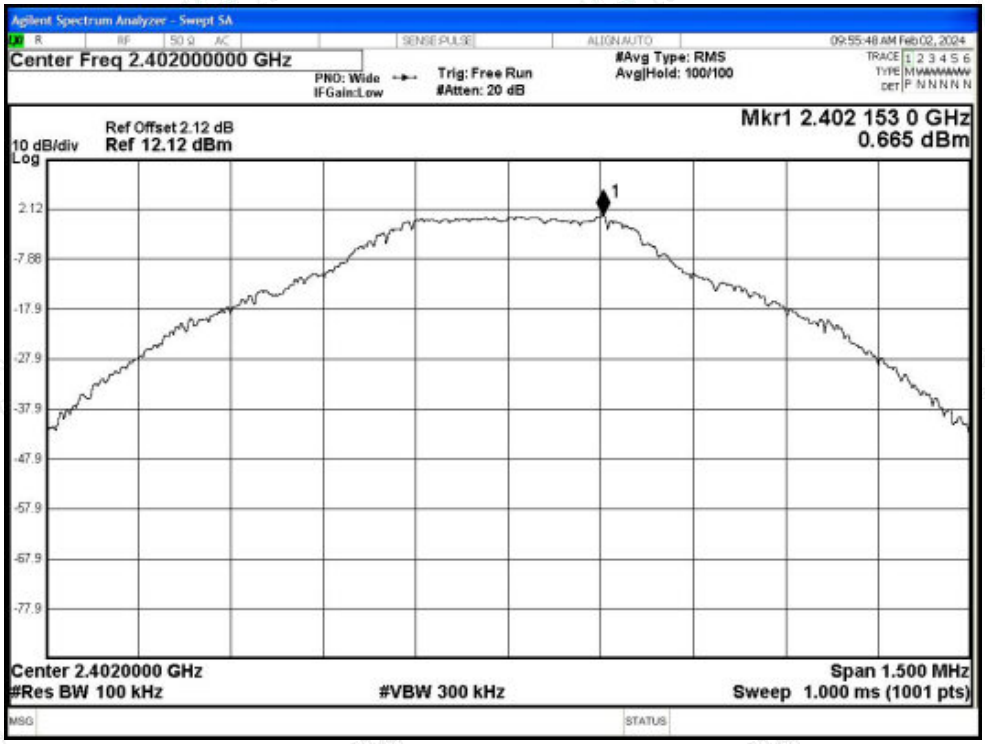


A.7 Conducted RF Spurious Emission

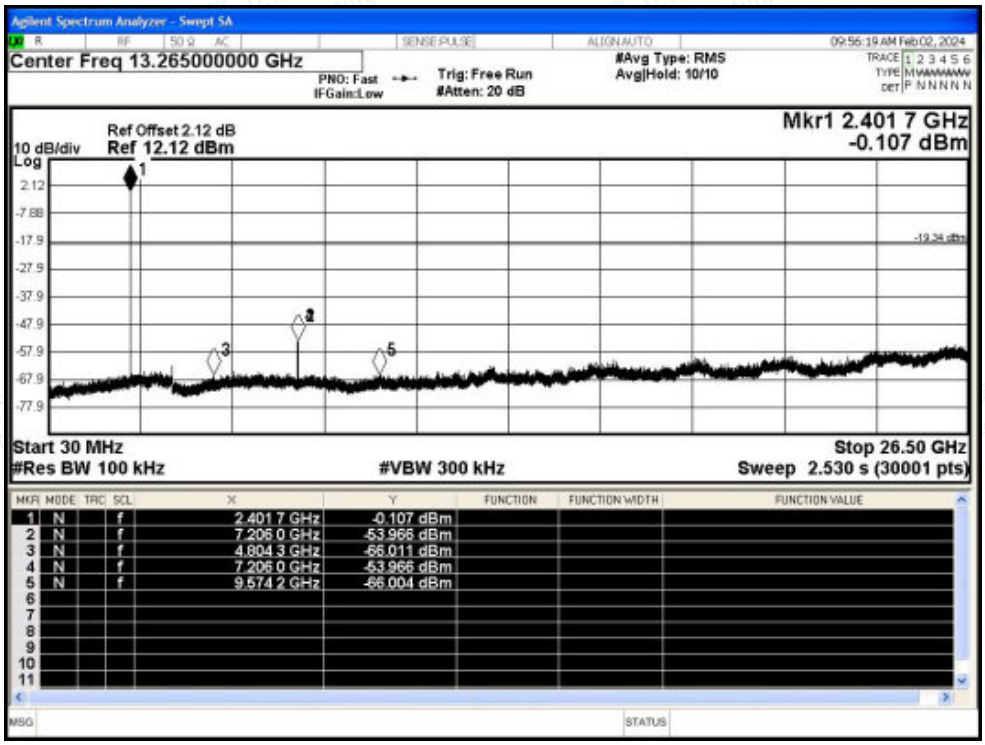
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-54.63	-20	Pass
NVNT	1-DH5	2441	Ant1	-56.19	-20	Pass
NVNT	1-DH5	2480	Ant1	-56.9	-20	Pass
NVNT	2-DH5	2402	Ant1	-53.82	-20	Pass
NVNT	2-DH5	2441	Ant1	-55.45	-20	Pass
NVNT	2-DH5	2480	Ant1	-53.79	-20	Pass
NVNT	3-DH5	2402	Ant1	-54.63	-20	Pass
NVNT	3-DH5	2441	Ant1	-55.19	-20	Pass
NVNT	3-DH5	2480	Ant1	-54.95	-20	Pass

Test Graphs

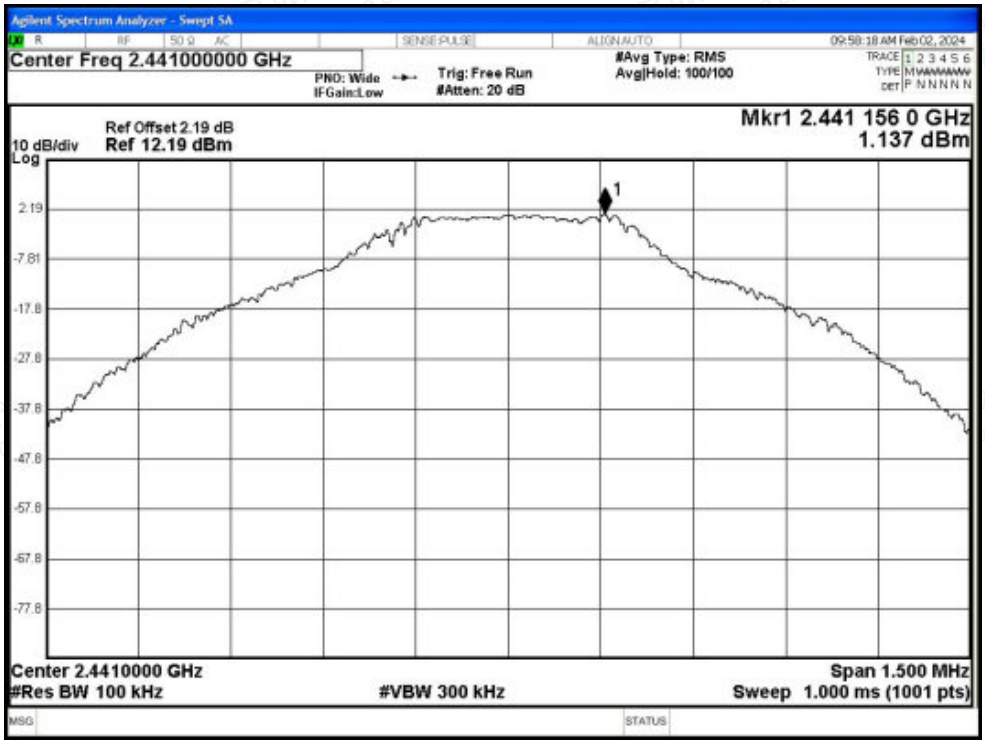
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref



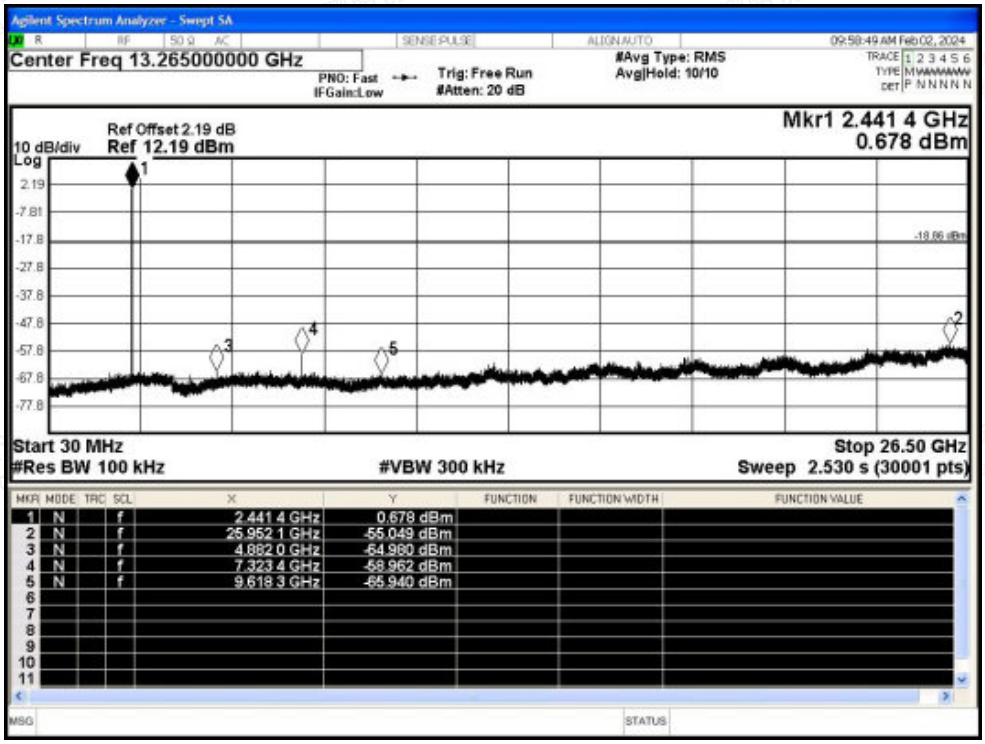
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



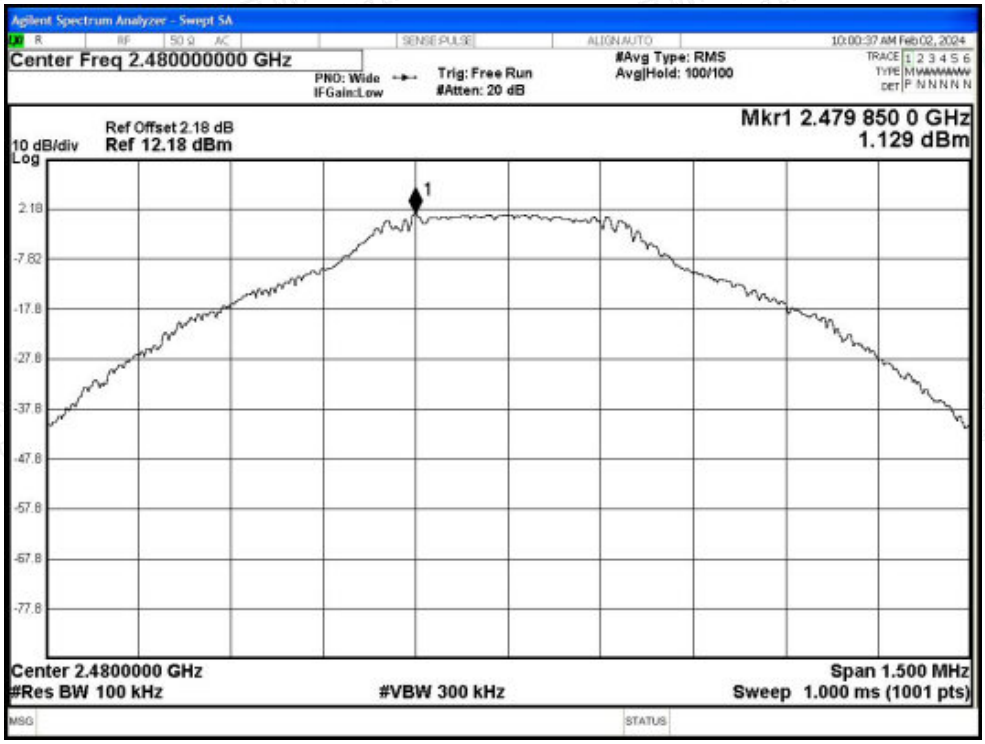
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref



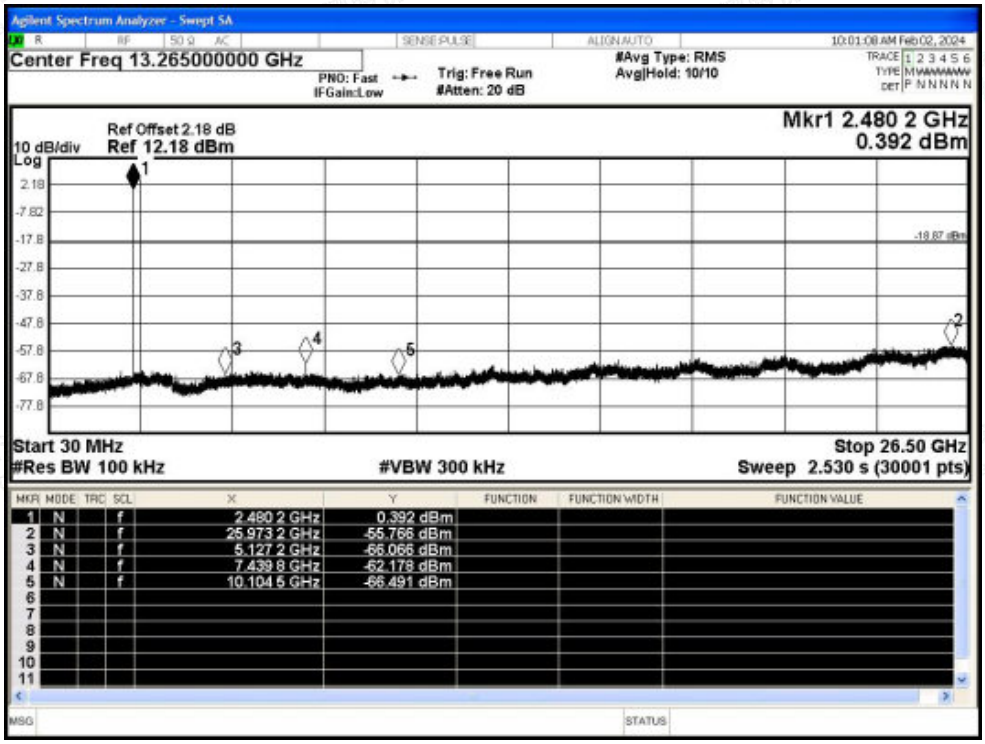
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission



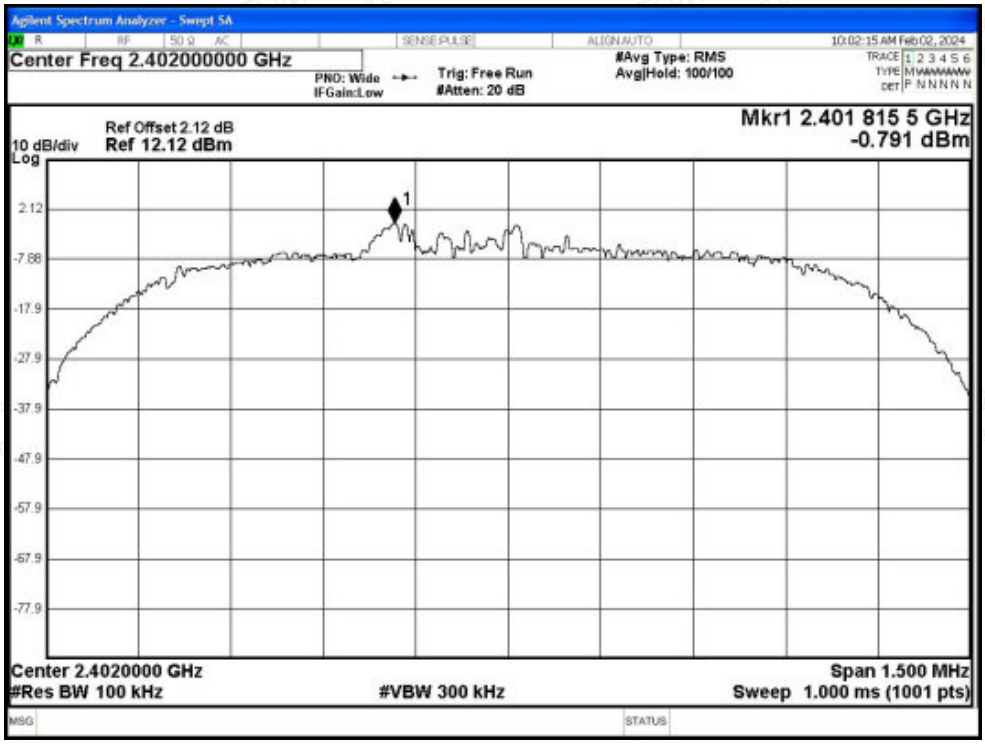
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref



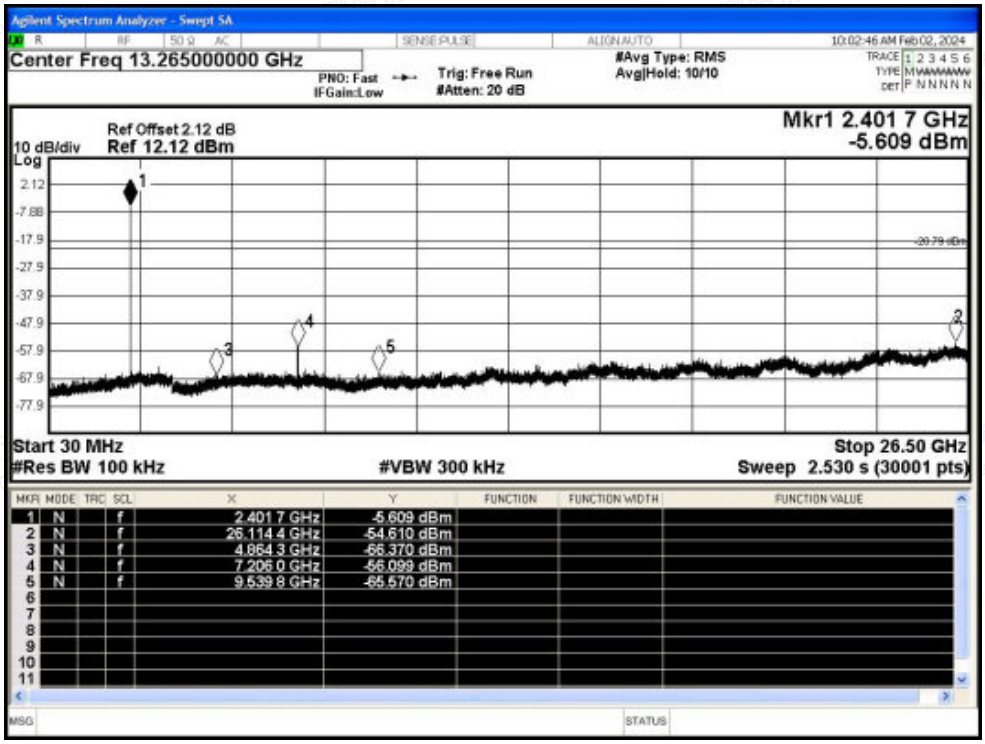
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission



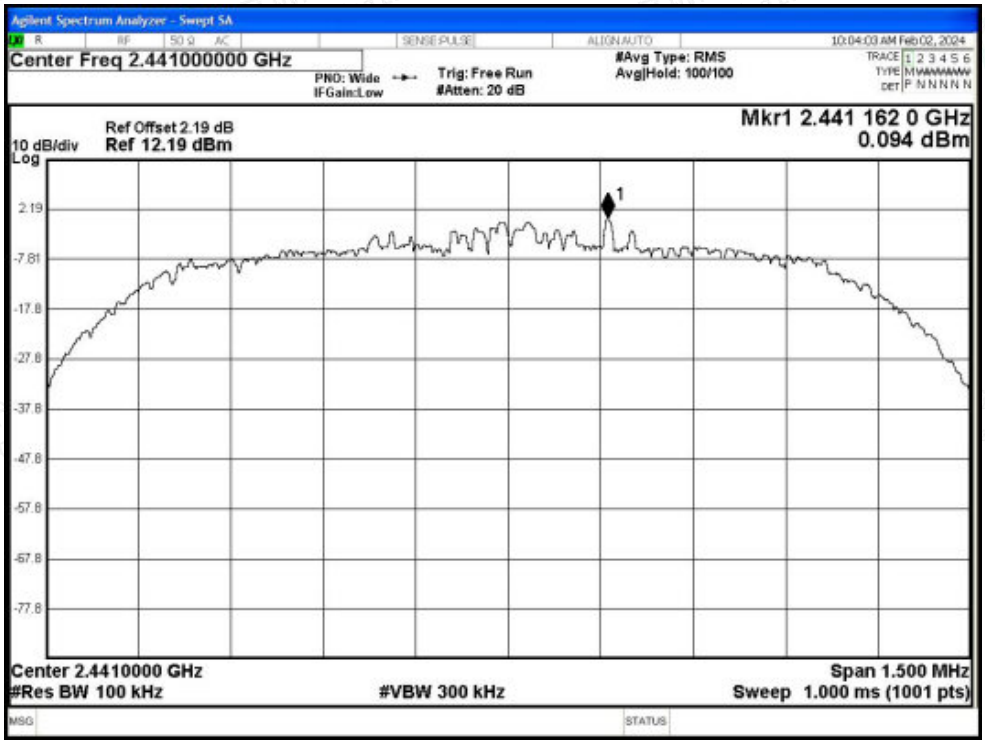
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref



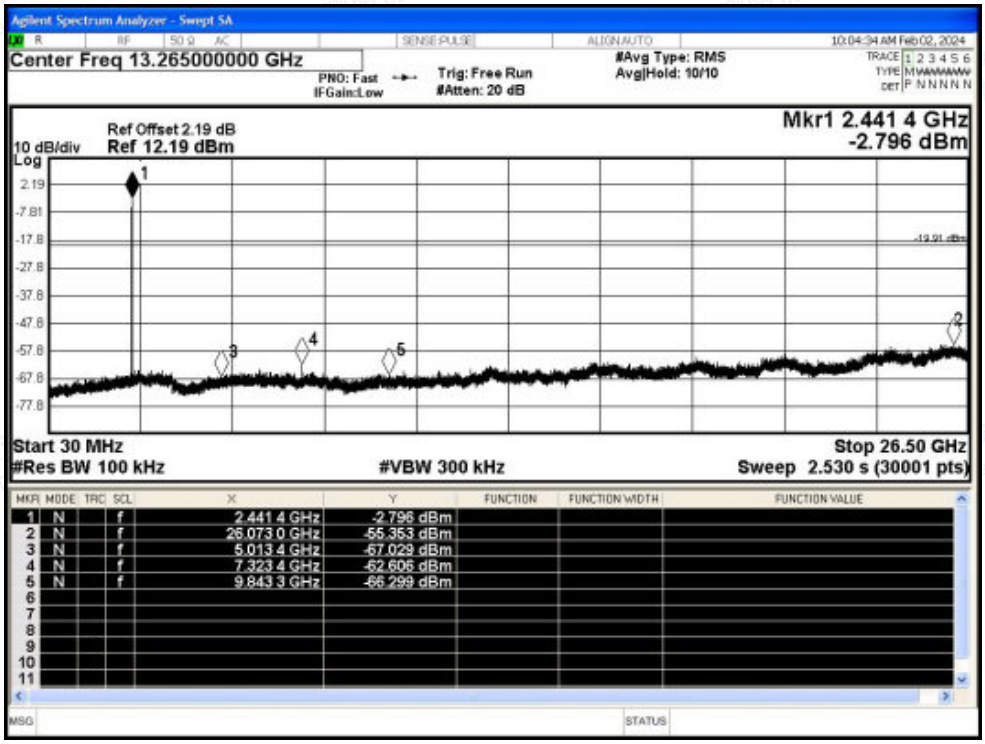
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission



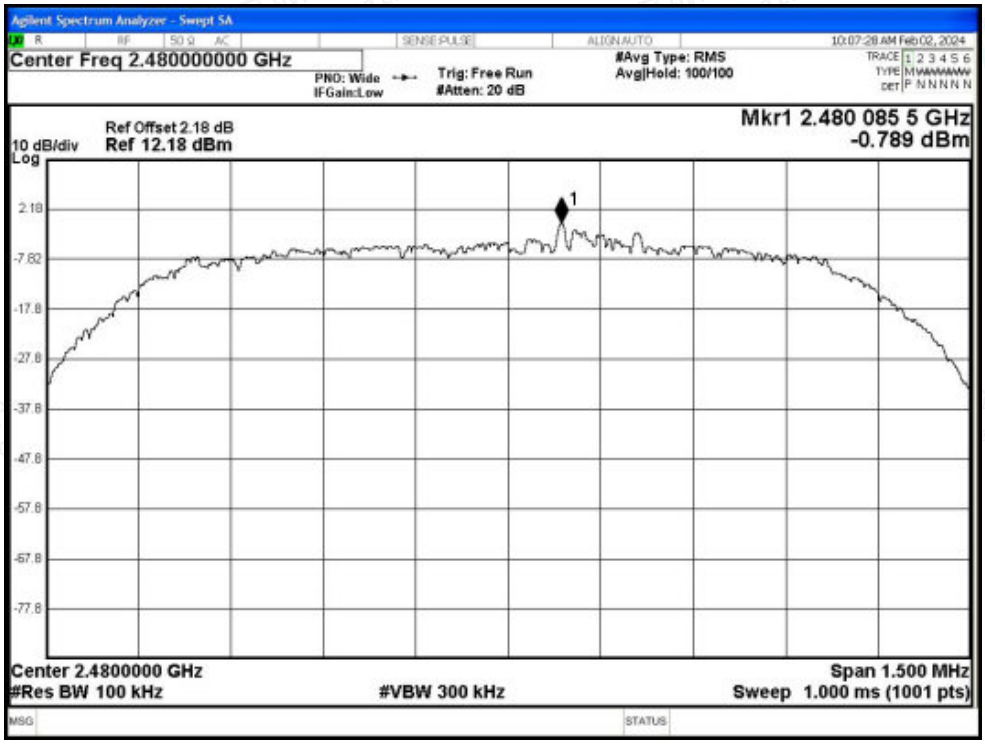
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



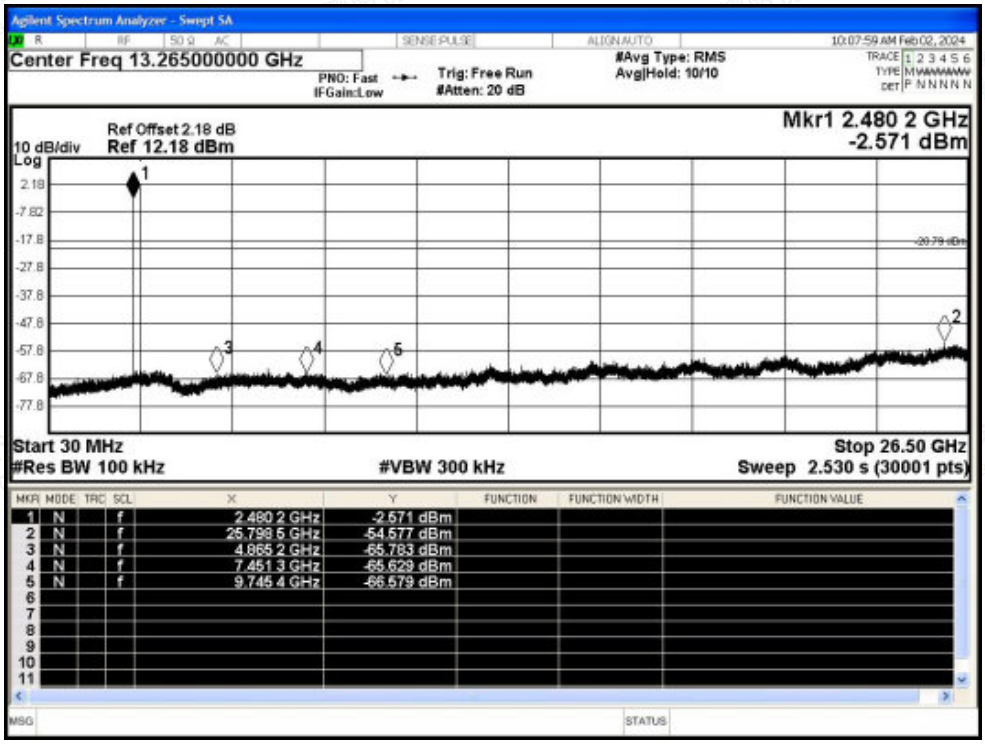
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



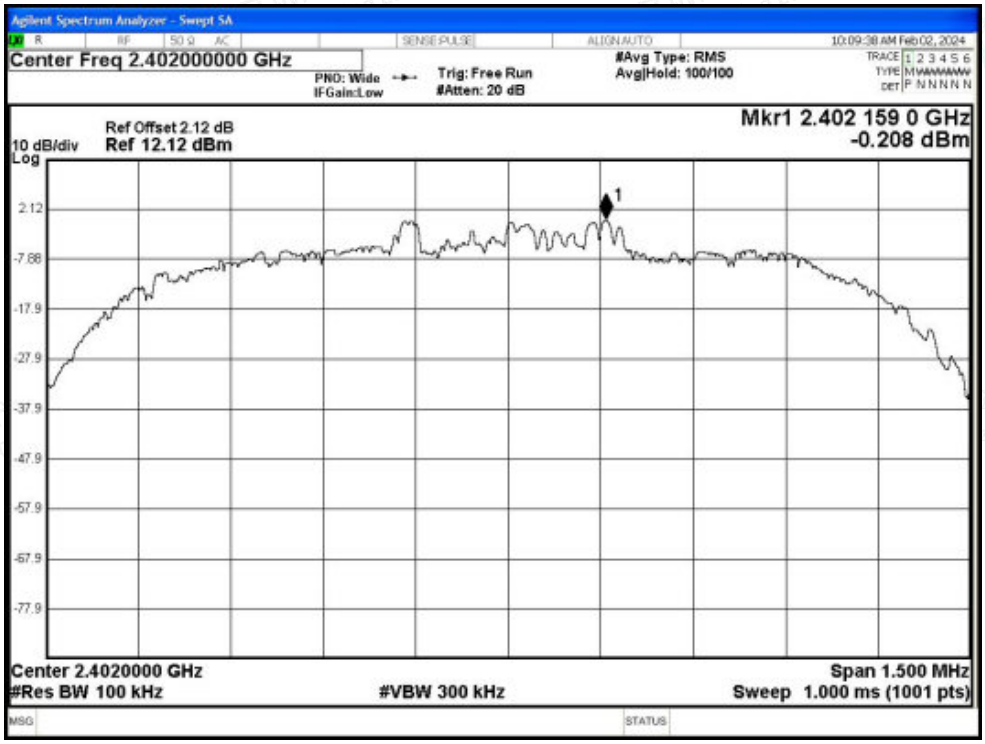
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



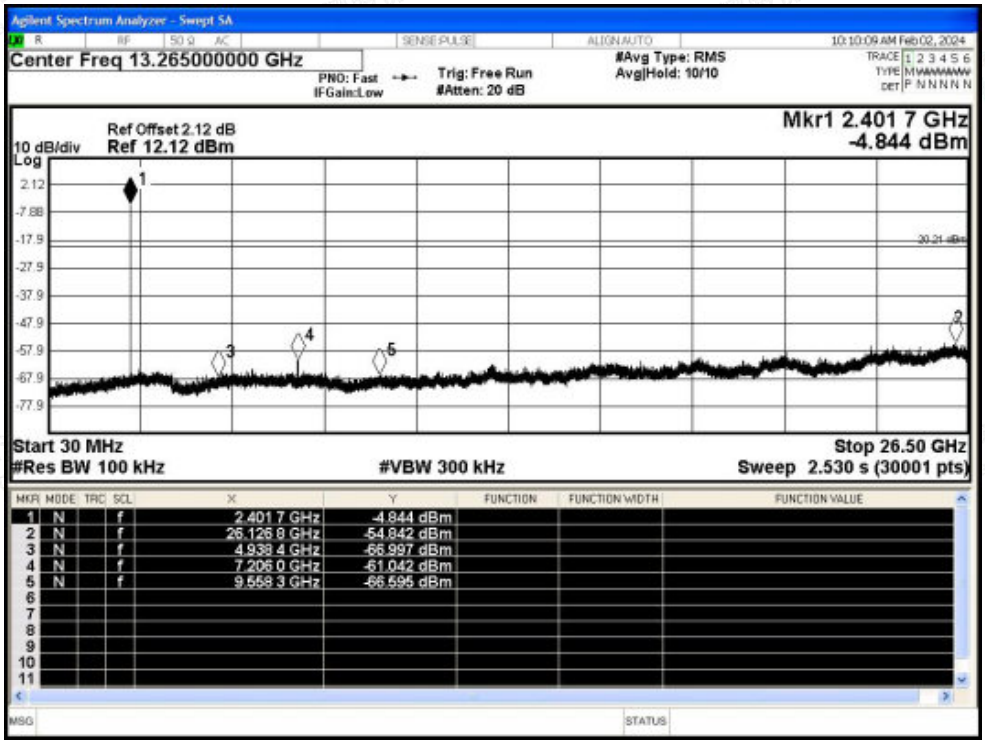
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission



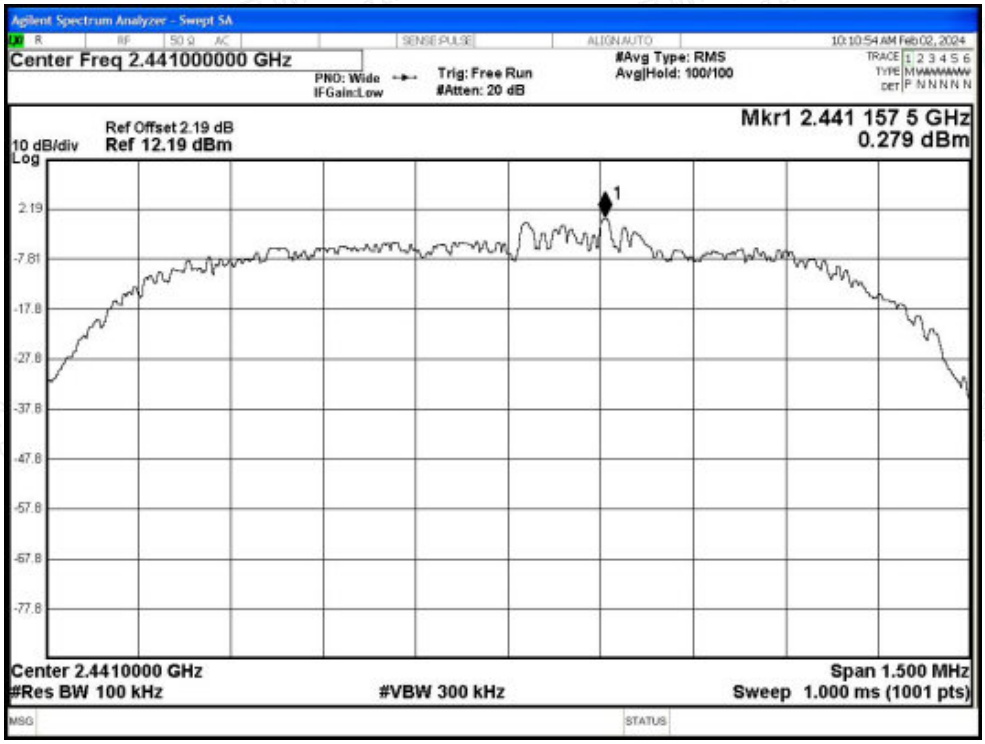
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref



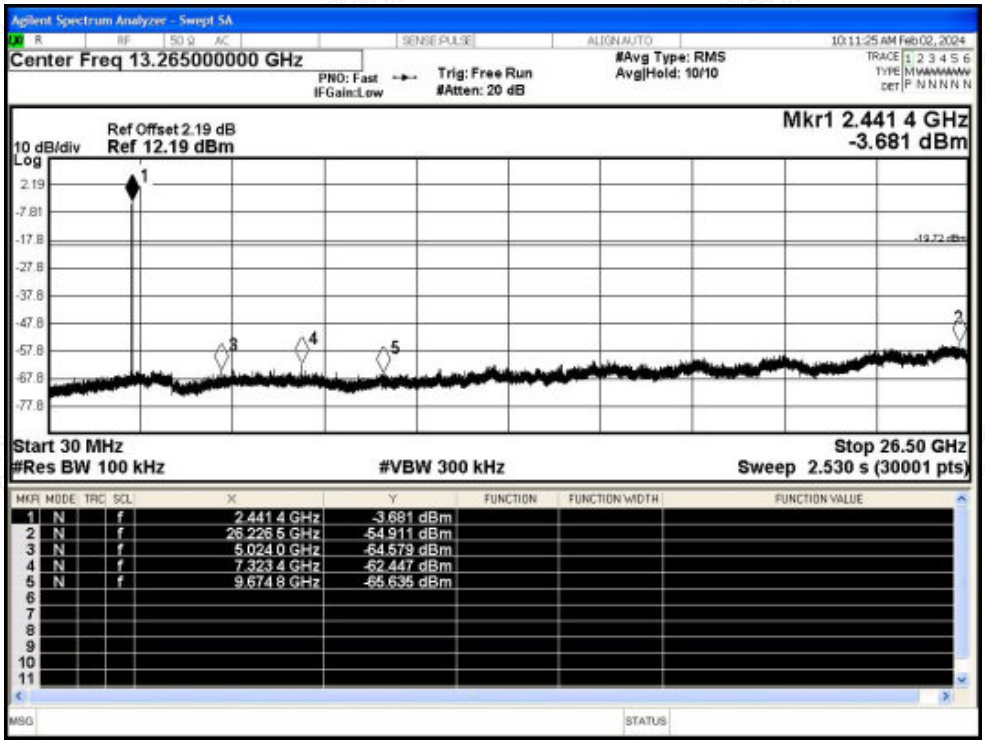
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Emission



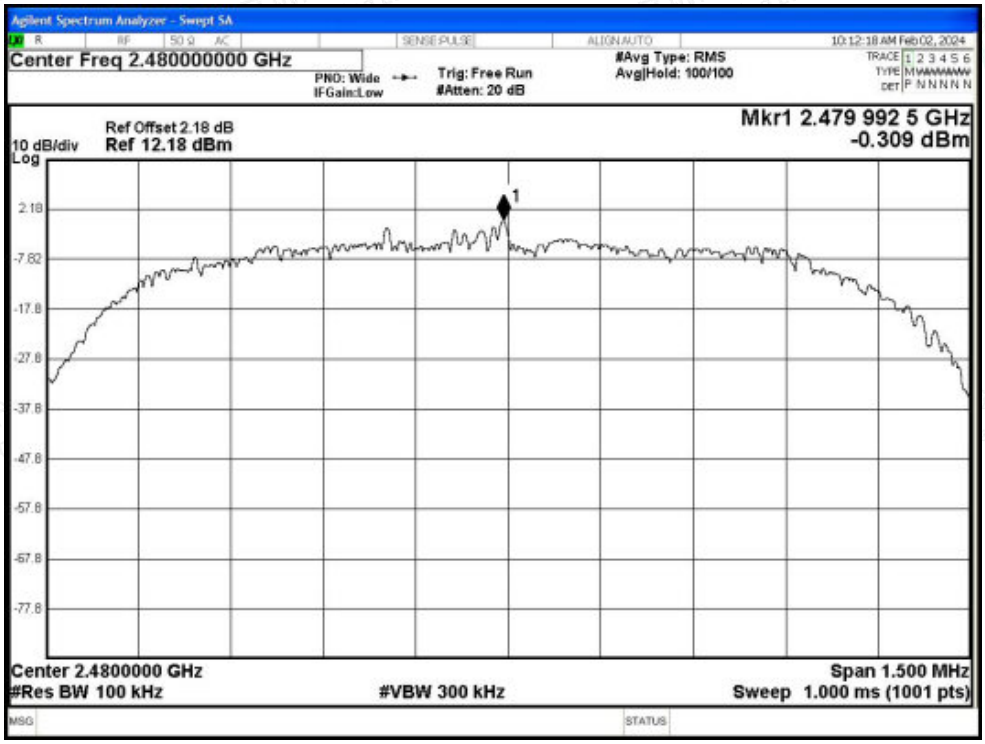
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref



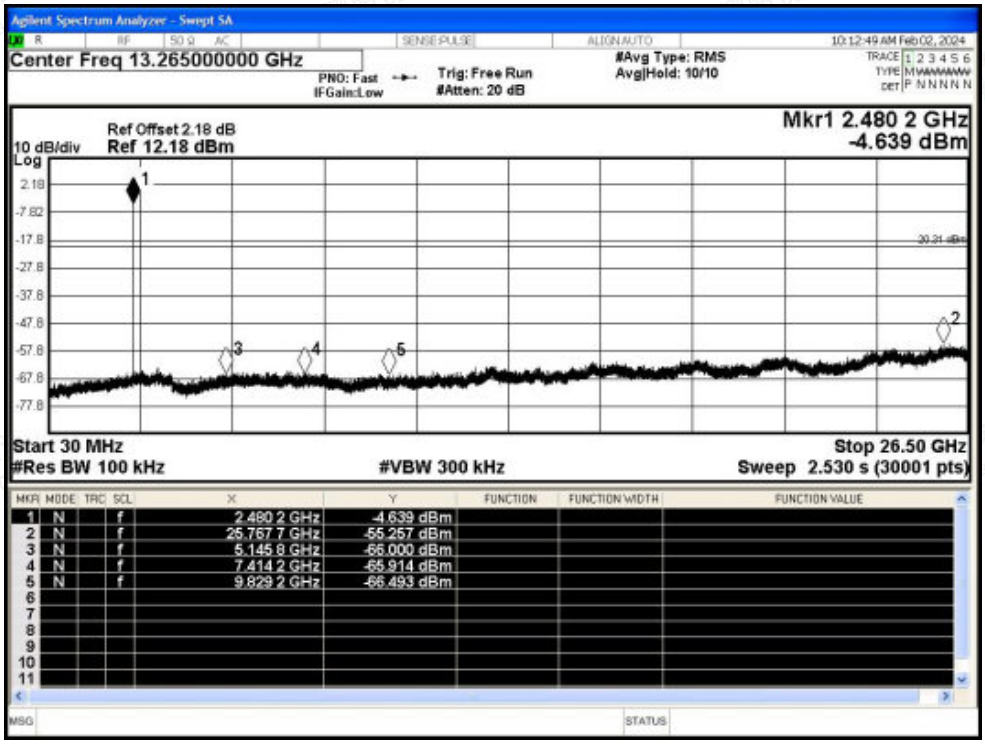
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission

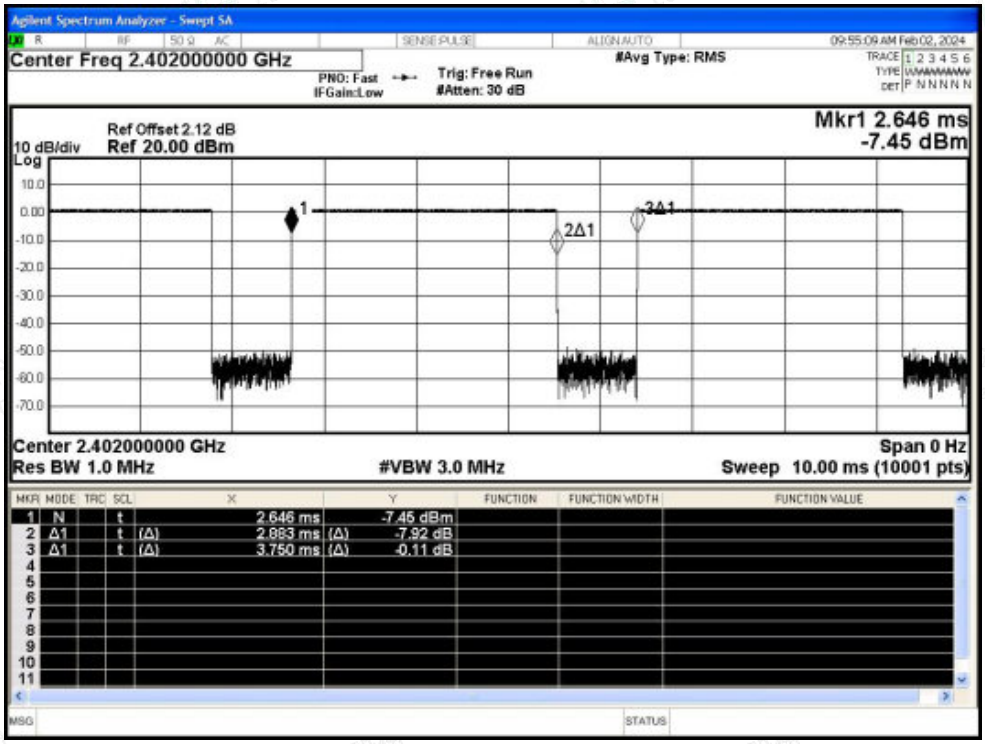


A.8 Duty Cycle

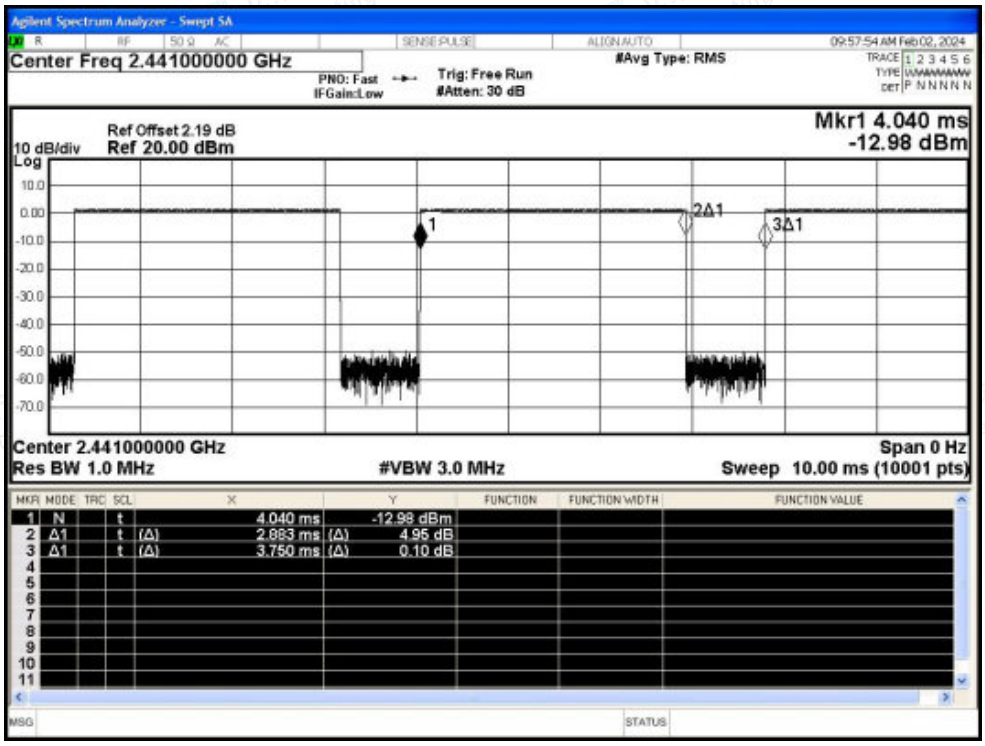
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH5	2402	Ant1	76.88	1.14	0.35
NVNT	1-DH5	2441	Ant1	76.88	1.14	0.35
NVNT	1-DH5	2480	Ant1	76.88	1.14	0.35
NVNT	2-DH5	2402	Ant1	76.99	1.14	0.35
NVNT	2-DH5	2441	Ant1	76.96	1.14	0.35
NVNT	2-DH5	2480	Ant1	76.96	1.14	0.35
NVNT	3-DH5	2402	Ant1	77.01	1.13	0.35
NVNT	3-DH5	2441	Ant1	77.01	1.13	0.35
NVNT	3-DH5	2480	Ant1	77.01	1.13	0.35

Test Graphs

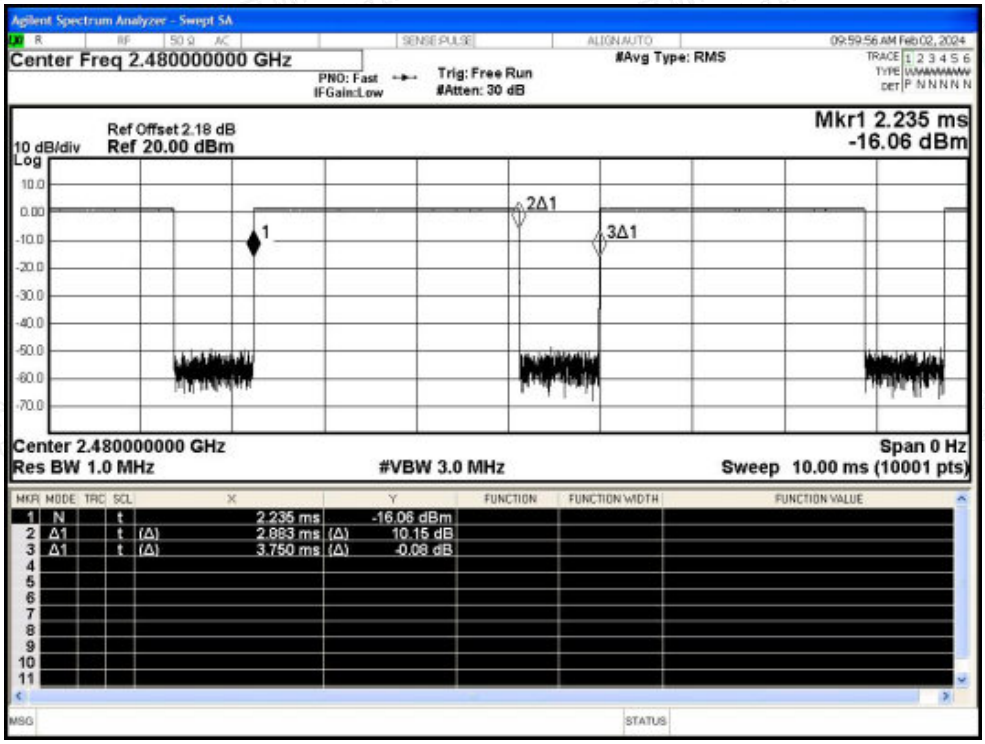
Duty Cycle NVNT 1-DH5 2402MHz Ant1



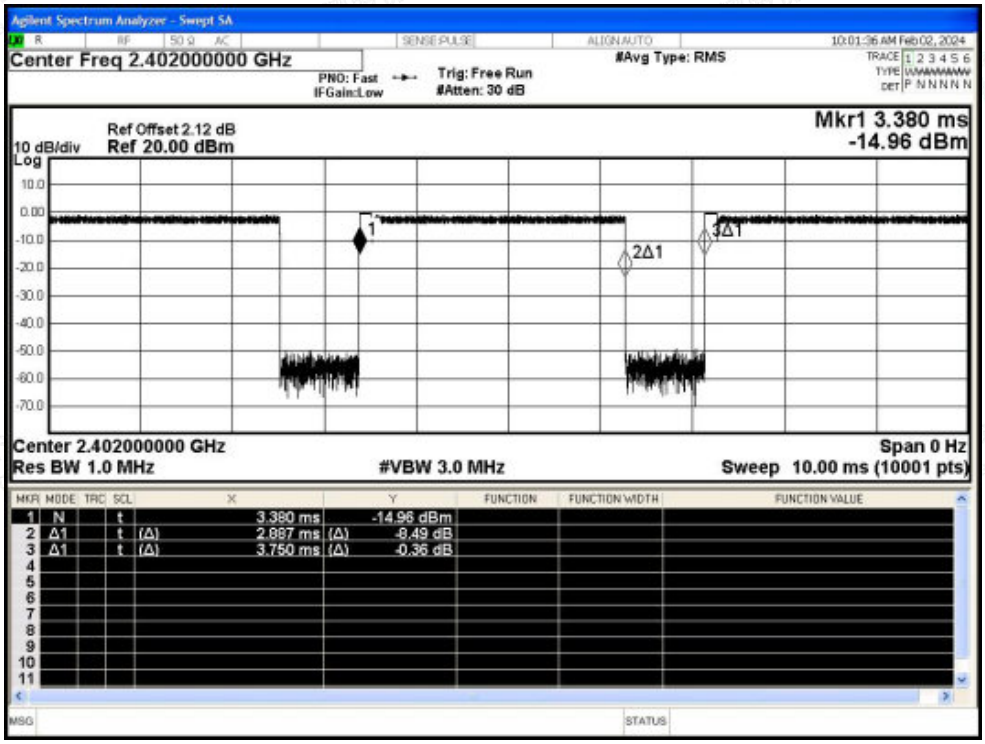
Duty Cycle NVNT 1-DH5 2441MHz Ant1



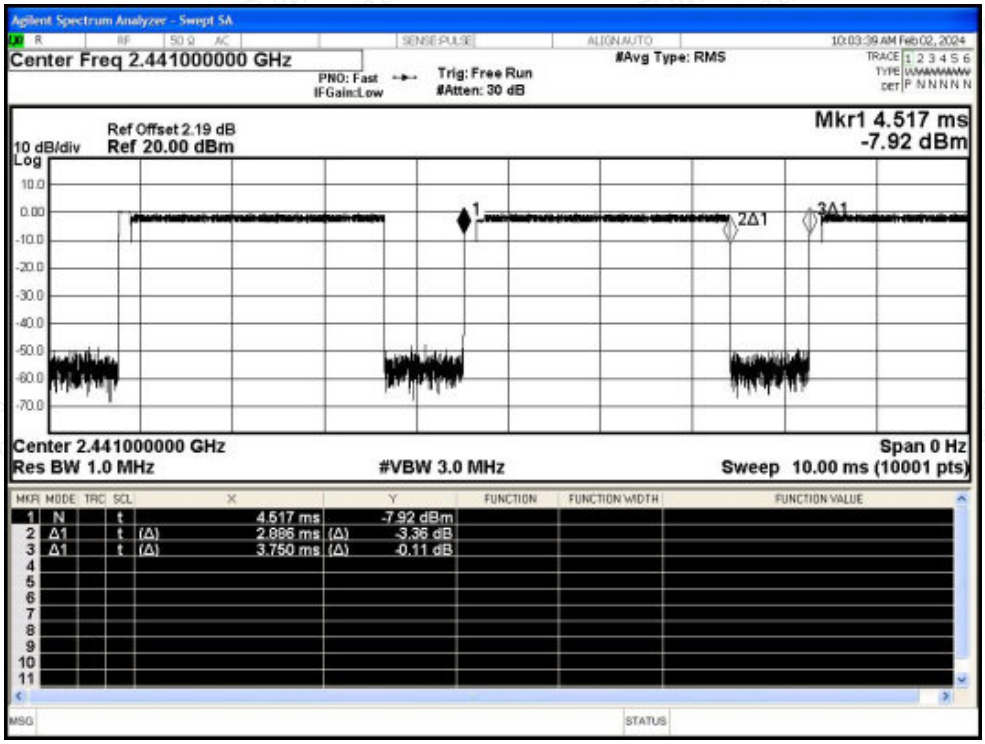
Duty Cycle NVNT 1-DH5 2480MHz Ant1



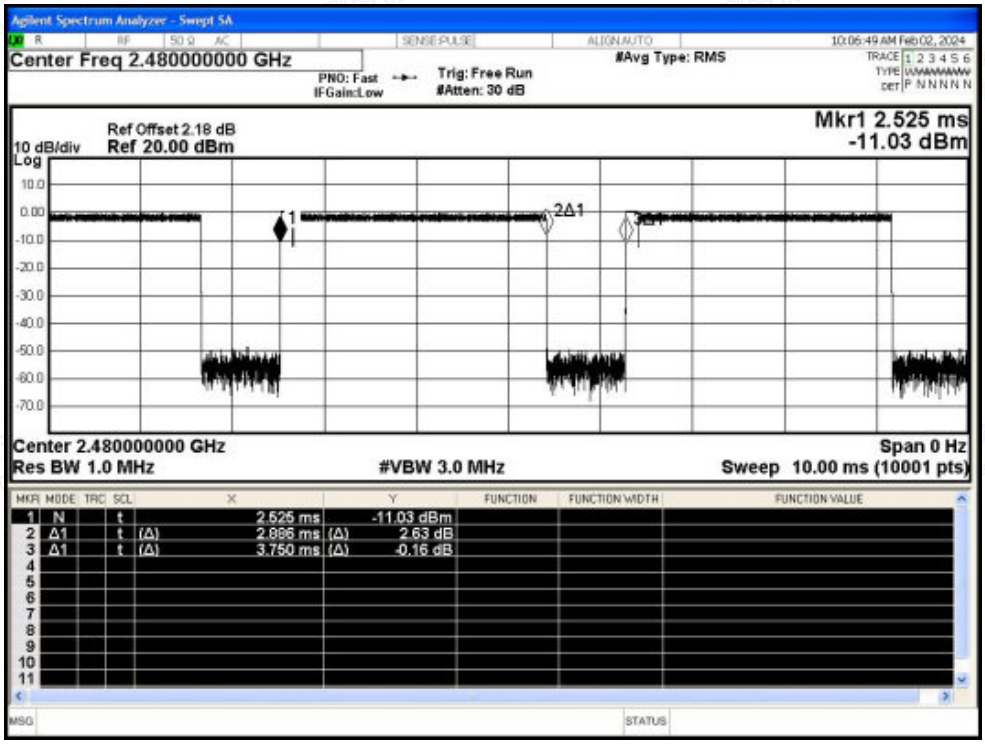
Duty Cycle NVNT 2-DH5 2402MHz Ant1



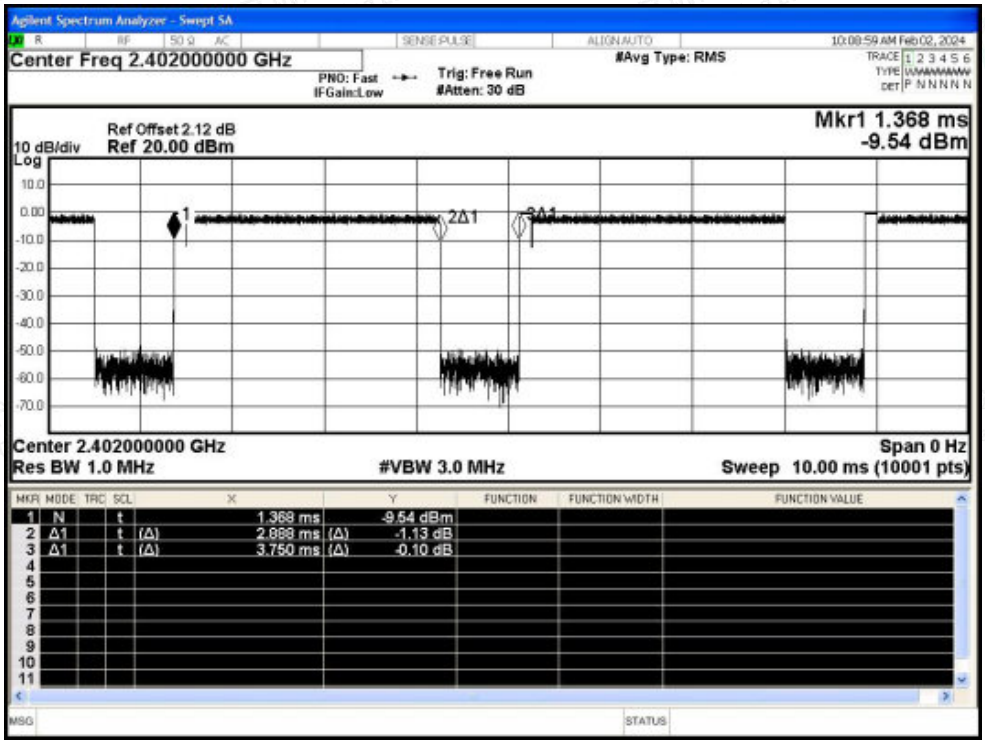
Duty Cycle NVNT 2-DH5 2441MHz Ant1



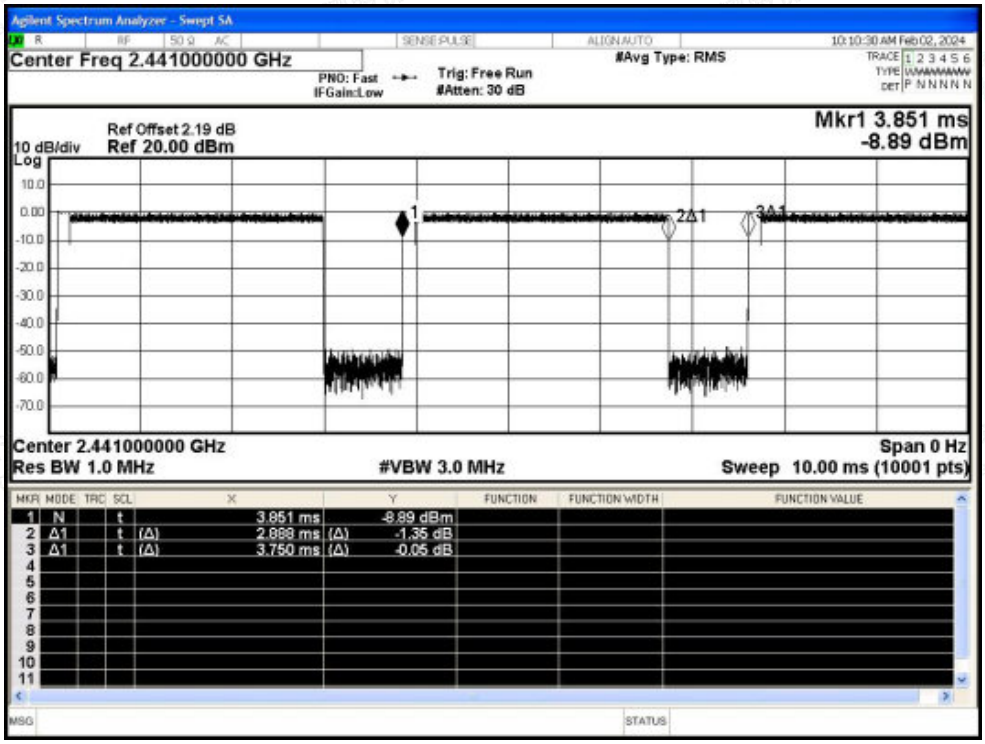
Duty Cycle NVNT 2-DH5 2480MHz Ant1



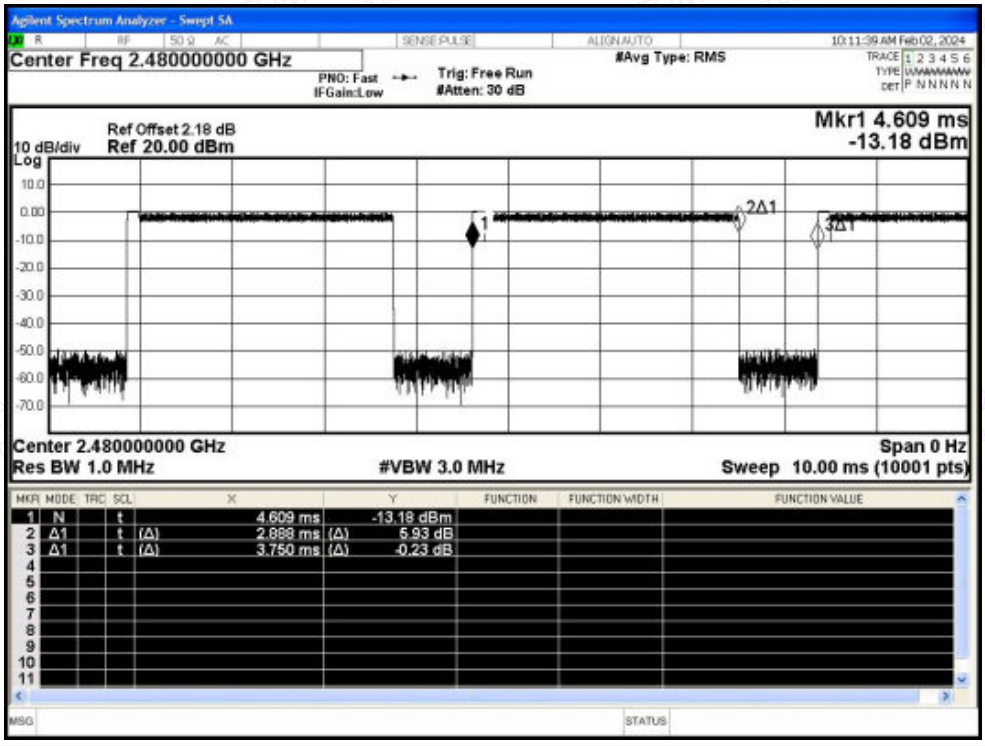
Duty Cycle NVNT 3-DH5 2402MHz Ant1



Duty Cycle NVNT 3-DH5 2441MHz Ant1



Duty Cycle NVNT 3-DH5 2480MHz Ant1

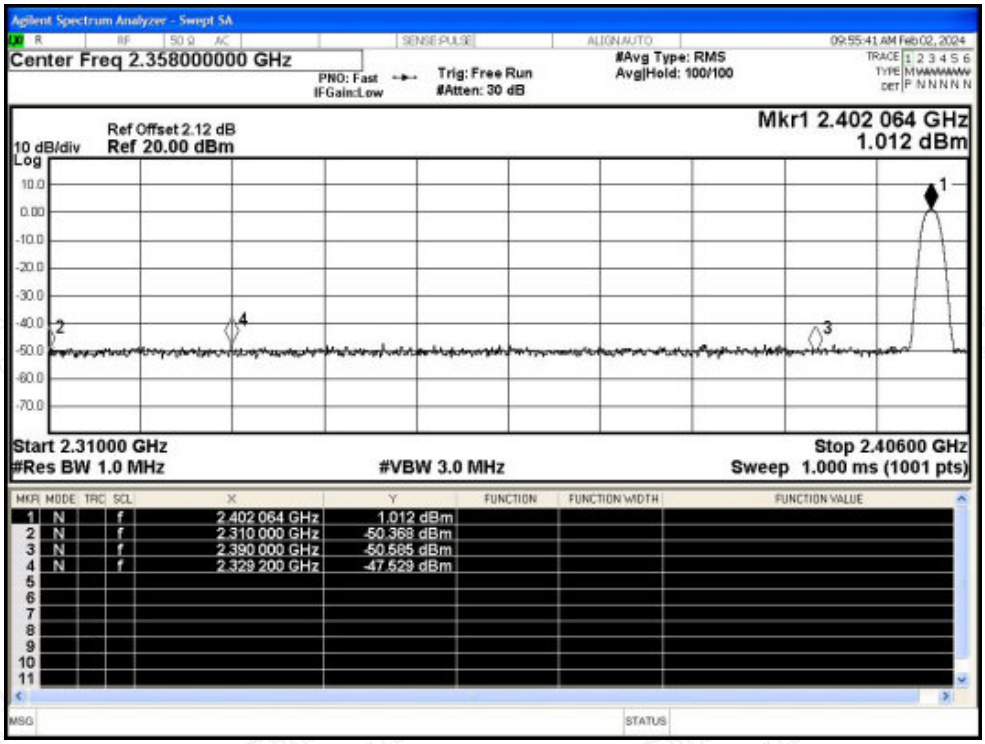


A.9 Restrict Band

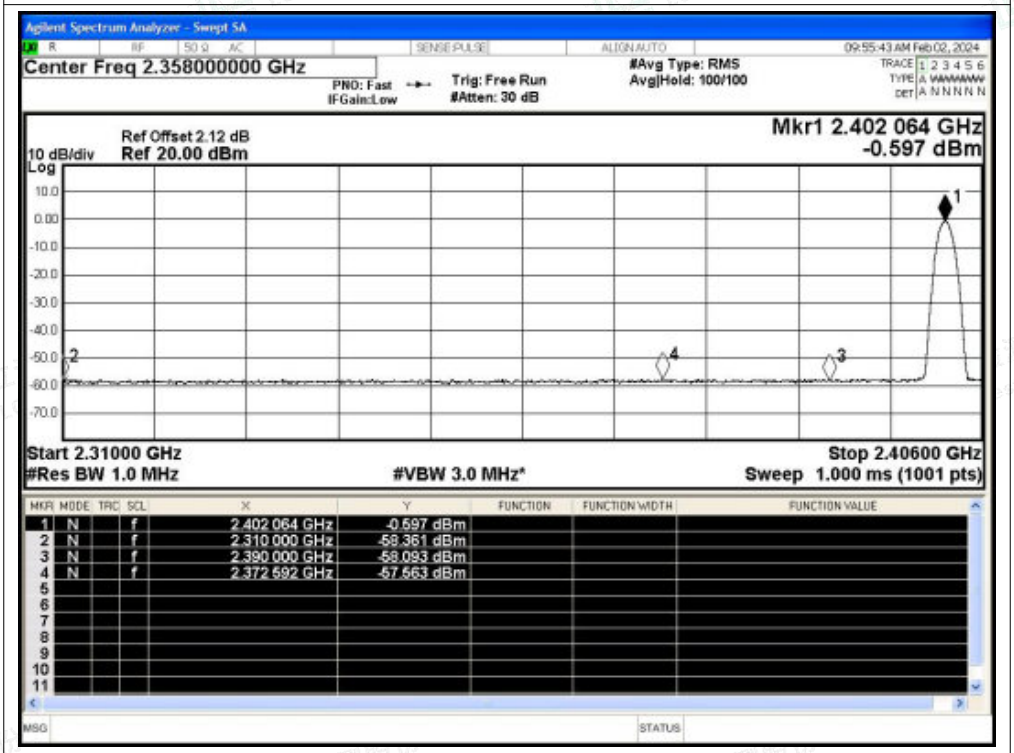
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-50.37	2	-	46.89	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-58.36	2	1.14	40.04	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2329.2	-47.53	2	-	49.73	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2372.592	-57.56	2	1.14	40.84	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-50.59	2	-	46.67	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-58.09	2	1.14	40.31	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-49.02	2	-	48.24	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-57.51	2	1.14	40.89	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2484.616	-46.59	2	-	50.67	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2489.536	-57.12	2	1.14	41.28	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	-57.57	2	1.14	40.83	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-51	2	-	46.26	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-59	2	1.14	39.4	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2361.552	-47.6	2	-	49.66	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2387.28	-57.49	2	1.14	40.91	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-49.03	2	-	48.23	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-58.5	2	1.14	39.9	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-50.15	2	-	47.11	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-57.53	2	1.14	40.87	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2499.016	-46.38	2	-	50.88	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2497.408	-56.83	2	1.14	41.57	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-48.97	2	-	48.29	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-57.37	2	1.14	41.03	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-49.86	2	-	47.4	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-59.23	2	1.13	39.16	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2362.512	-47.36	2	-	49.9	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2376.048	-57.61	2	1.13	40.78	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-49.64	2	-	47.62	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-58.51	2	1.13	39.88	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-49.76	2	-	47.5	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-57.64	2	1.13	40.75	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2487.688	-46	2	-	51.26	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.752	-57.03	2	1.13	41.36	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-50.77	2	-	46.49	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-58	2	1.13	40.39	Average	54	Pass

Test Graphs

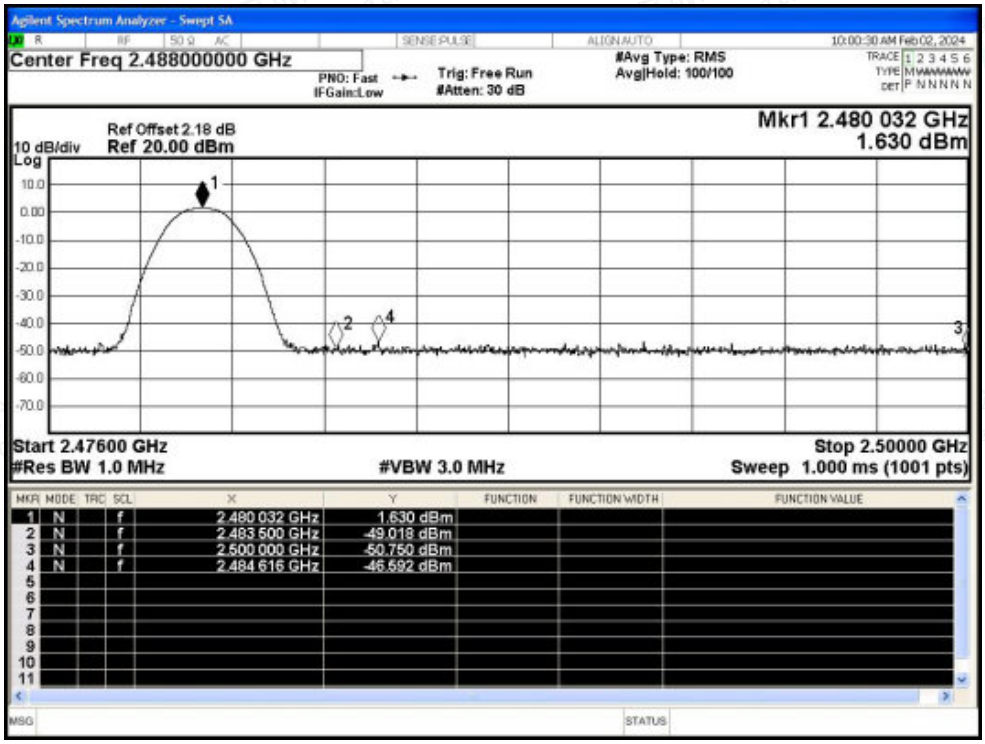
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak



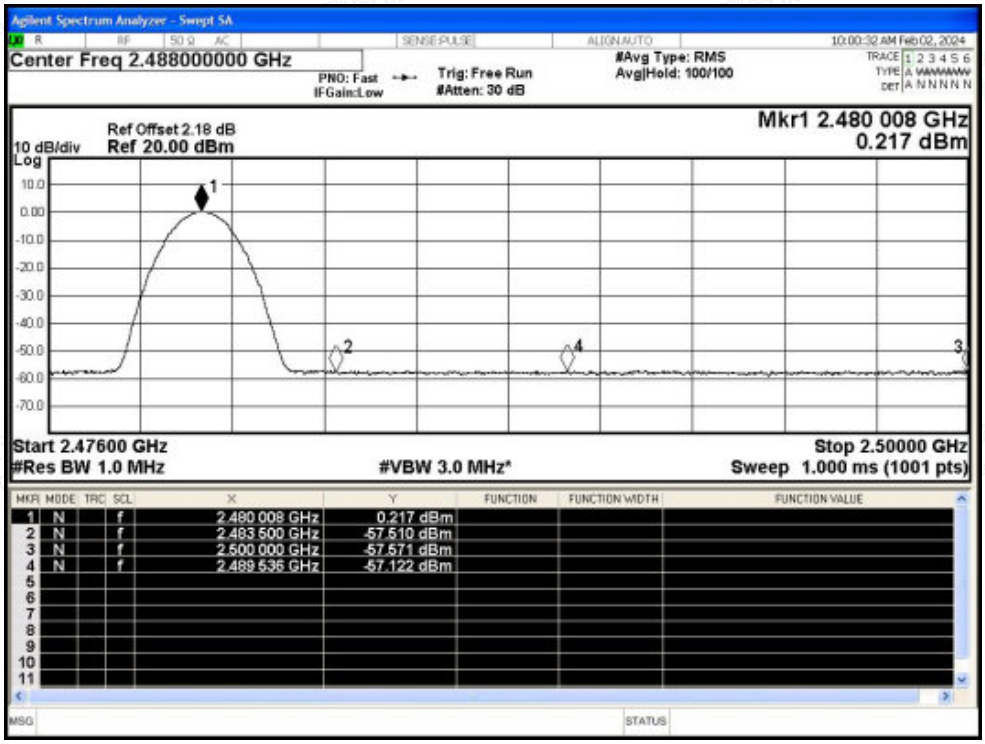
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



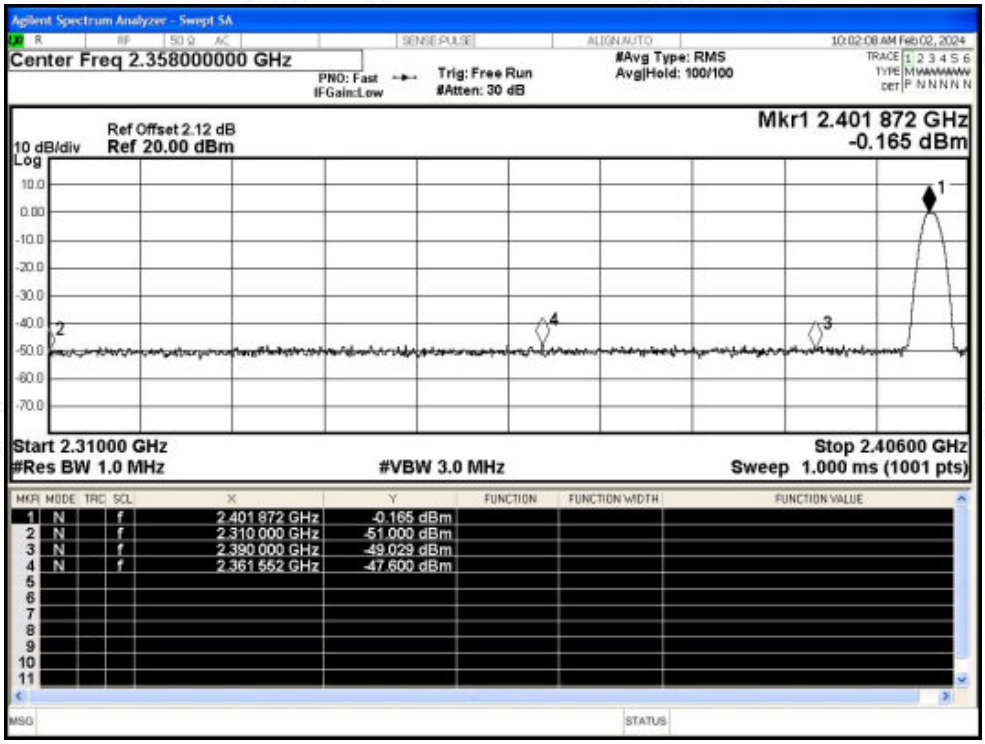
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak



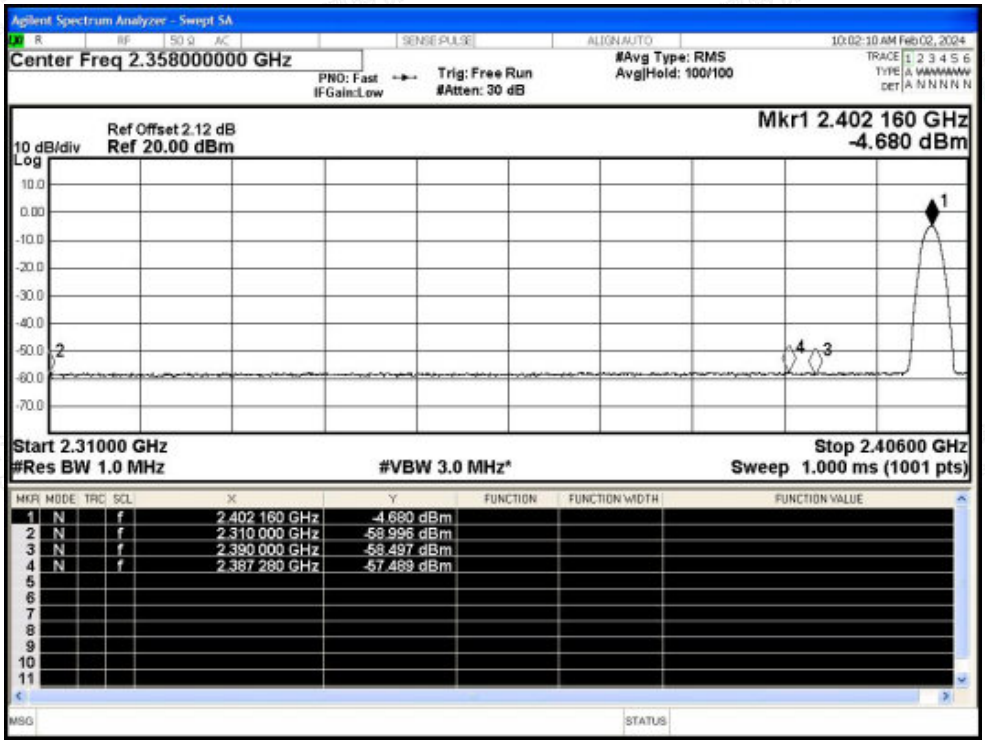
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average



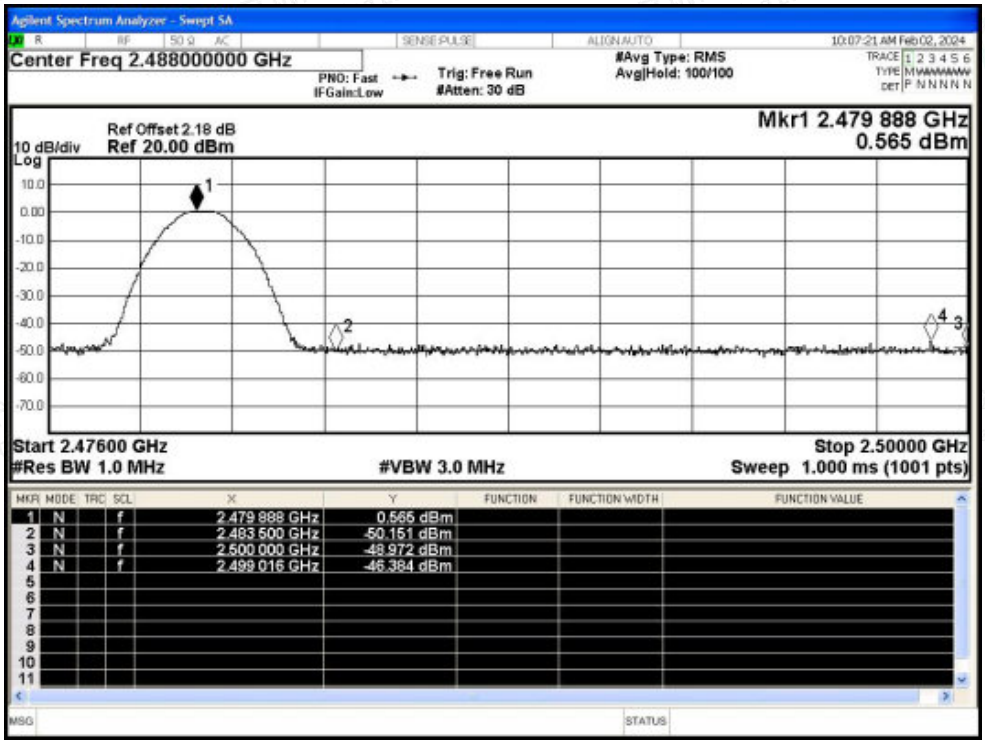
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak



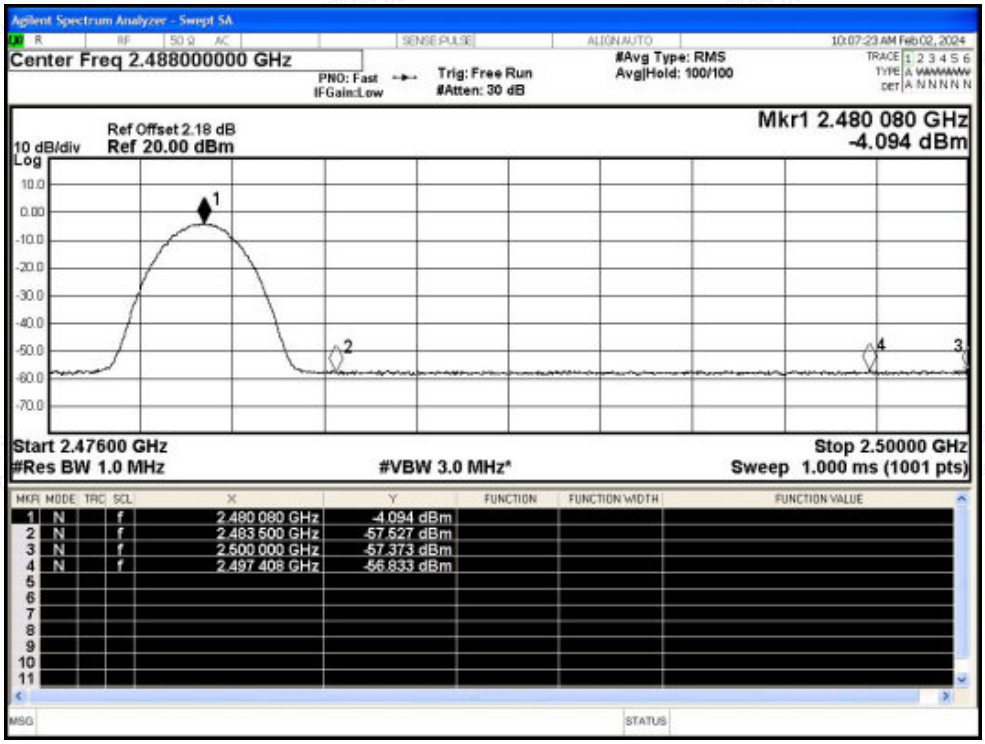
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average



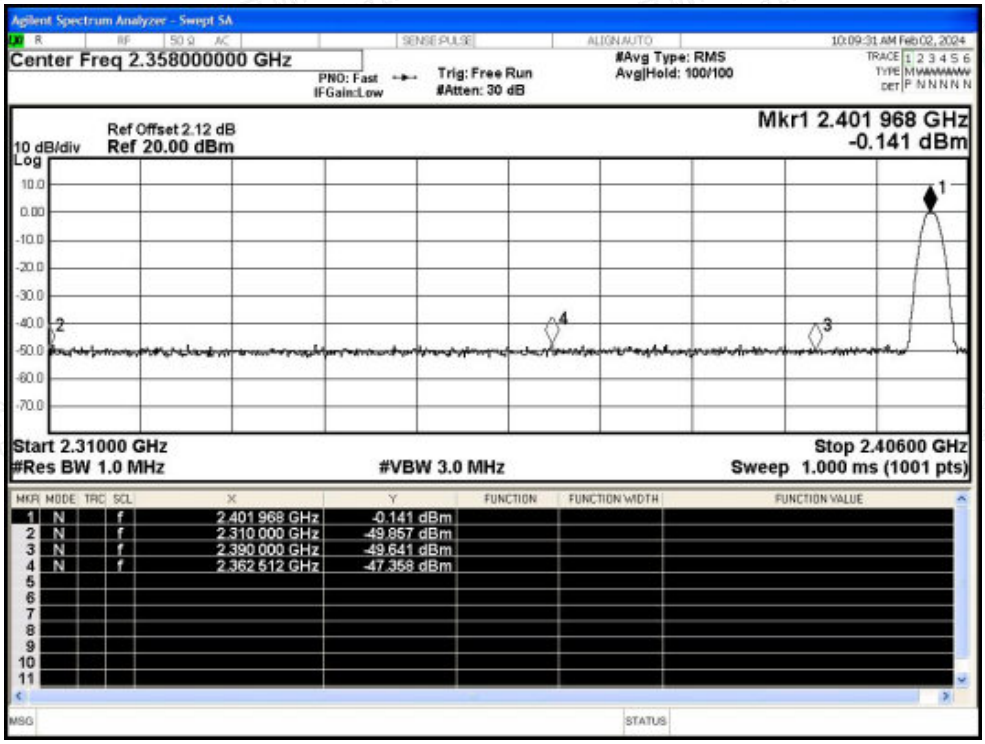
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak



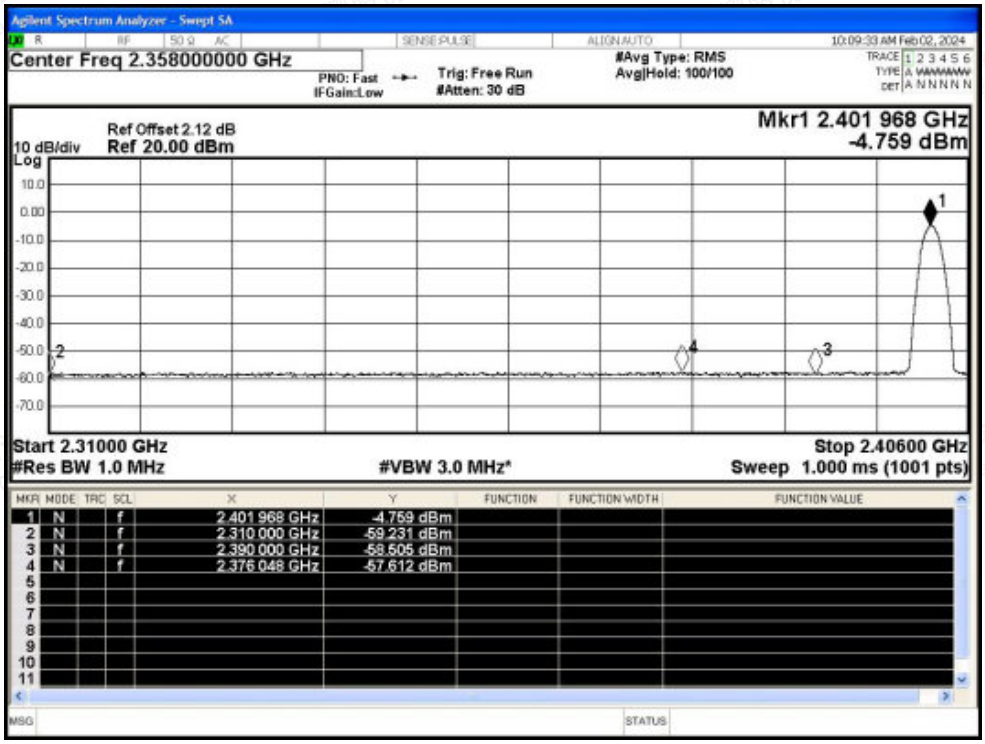
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Average



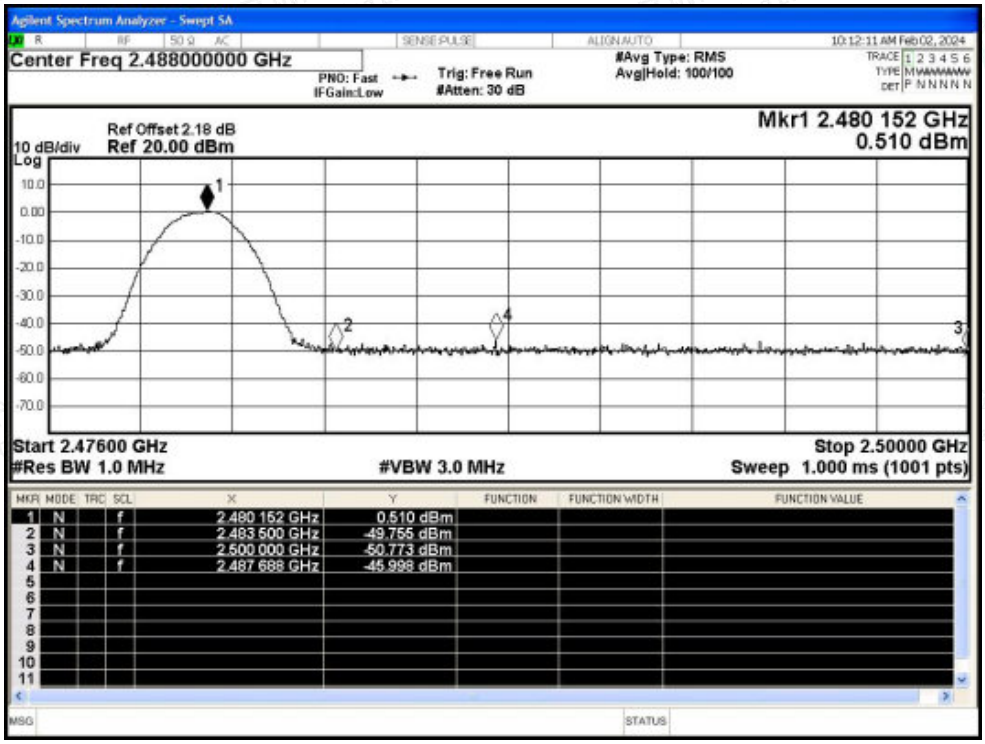
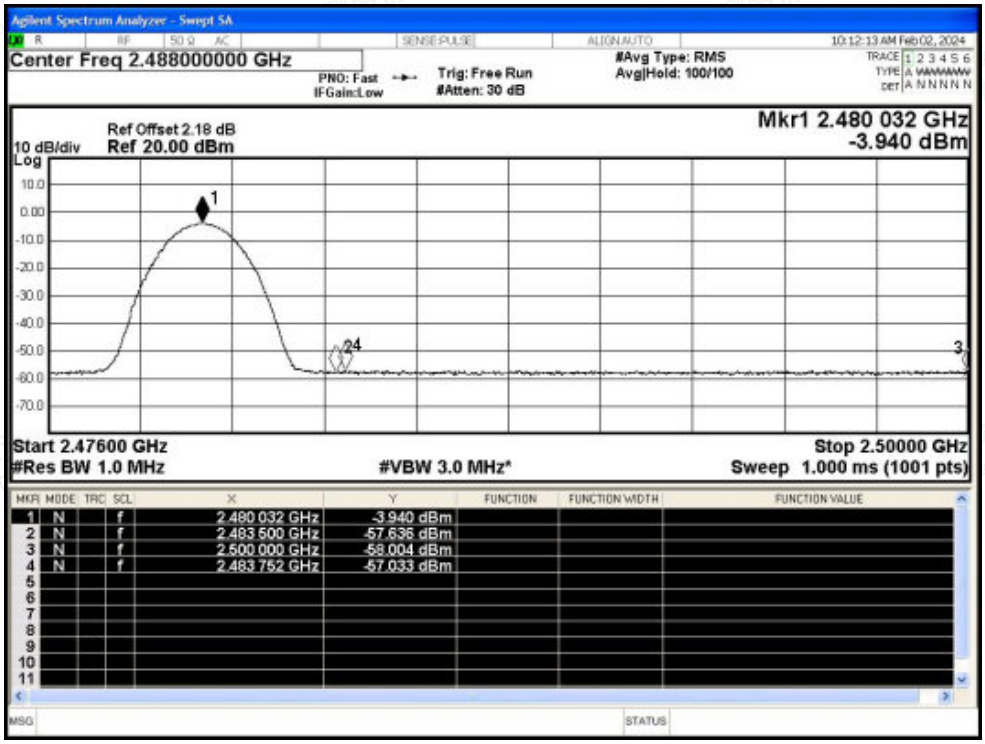
Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak



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