

Appendix A

RF Test Data for BT(Conducted Measurement)

Product Name: Wireless Diagnostics Module / Vehicle Communication Interface

Test Model: A200

Environmental Conditions

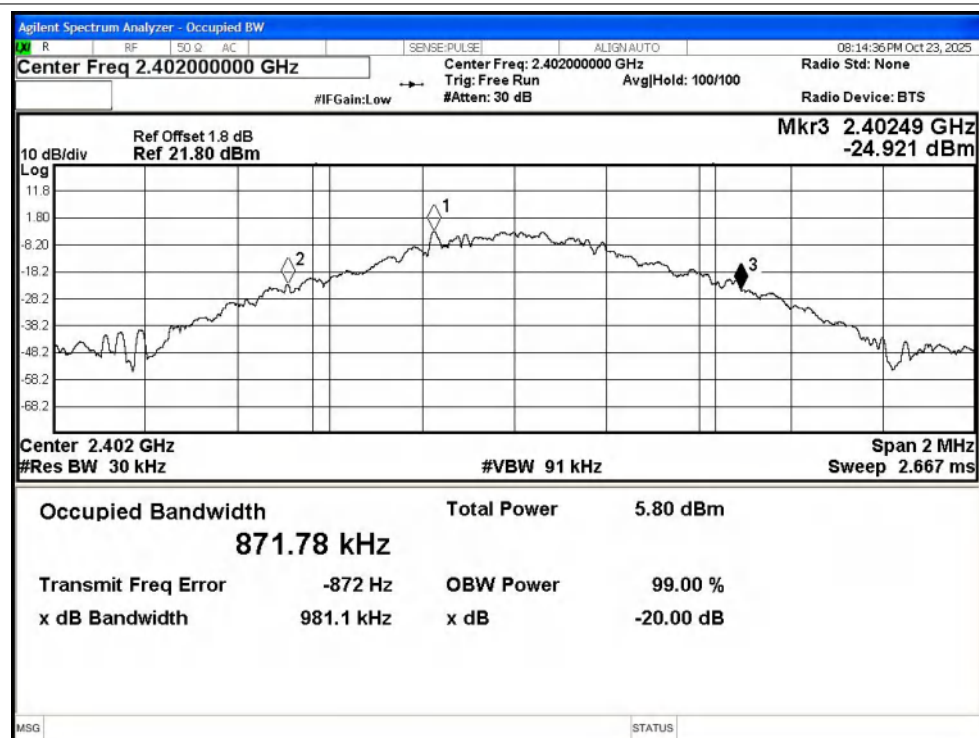
Temperature:	23.7° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Suichao Lai
Supervised by:	Fengliu Tang

A.1 -20dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	0.981	N/A	Pass
NVNT	1-DH5	2441	Ant1	0.958	N/A	Pass
NVNT	1-DH5	2480	Ant1	0.945	N/A	Pass
NVNT	2-DH5	2402	Ant1	1.282	N/A	Pass
NVNT	2-DH5	2441	Ant1	1.284	N/A	Pass
NVNT	2-DH5	2480	Ant1	1.314	N/A	Pass
NVNT	3-DH5	2402	Ant1	1.293	N/A	Pass
NVNT	3-DH5	2441	Ant1	1.292	N/A	Pass
NVNT	3-DH5	2480	Ant1	1.3	N/A	Pass

Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1



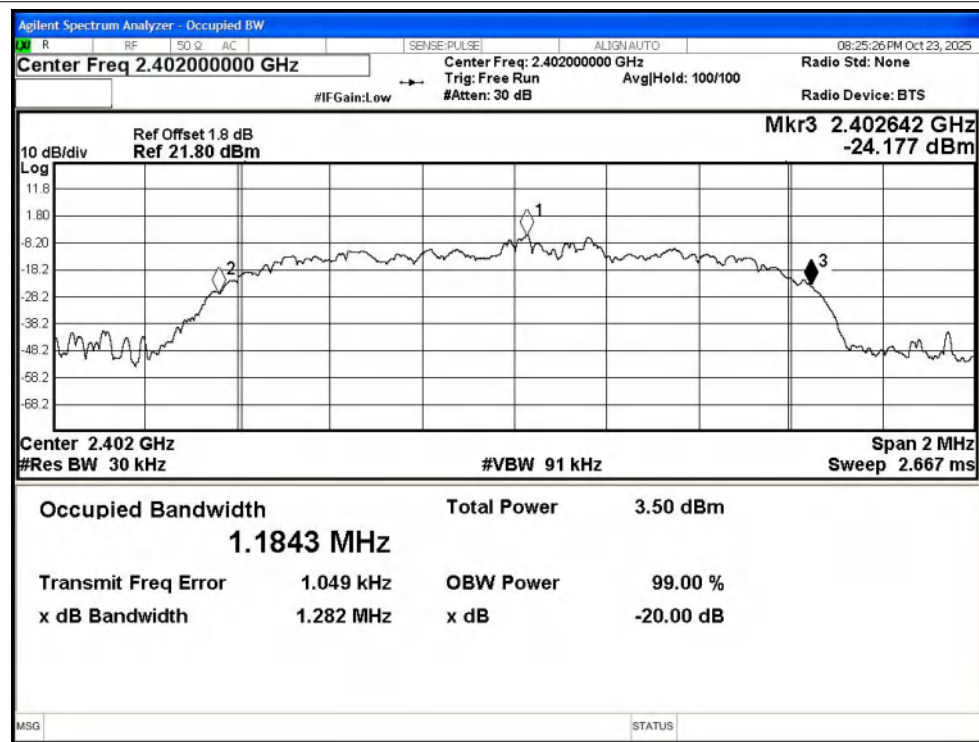
-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1



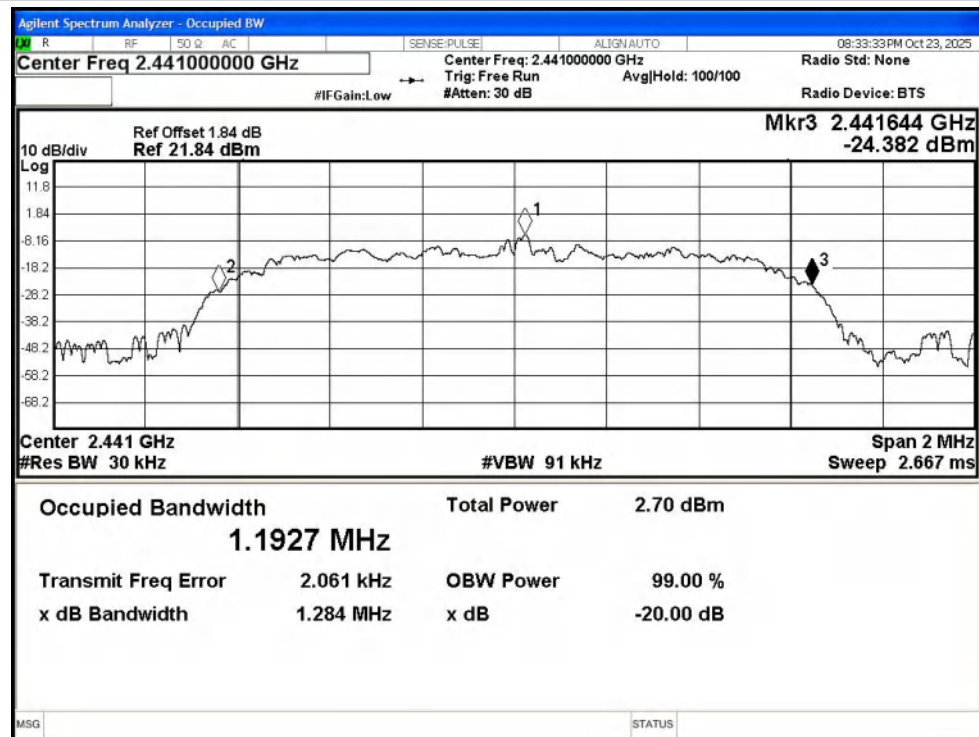
-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1



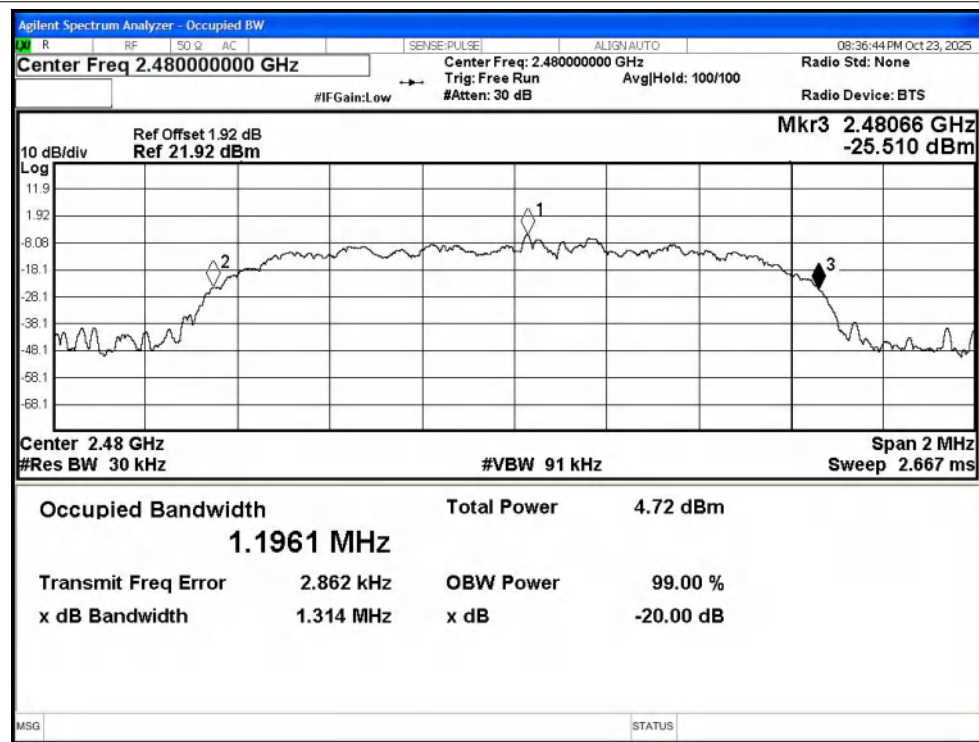
-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1



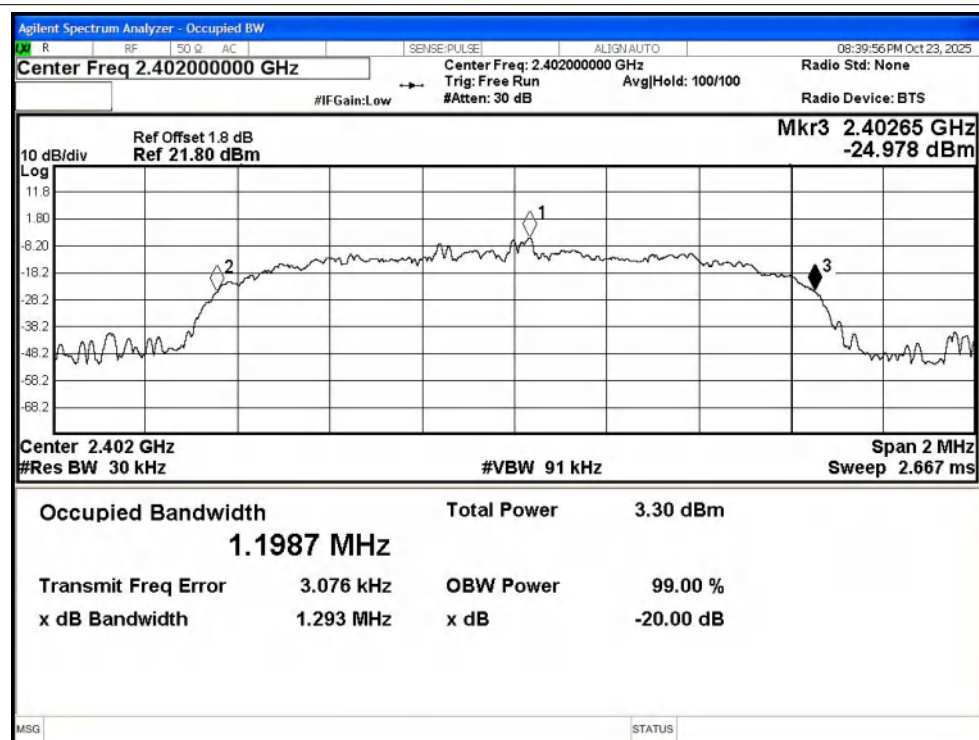
-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1



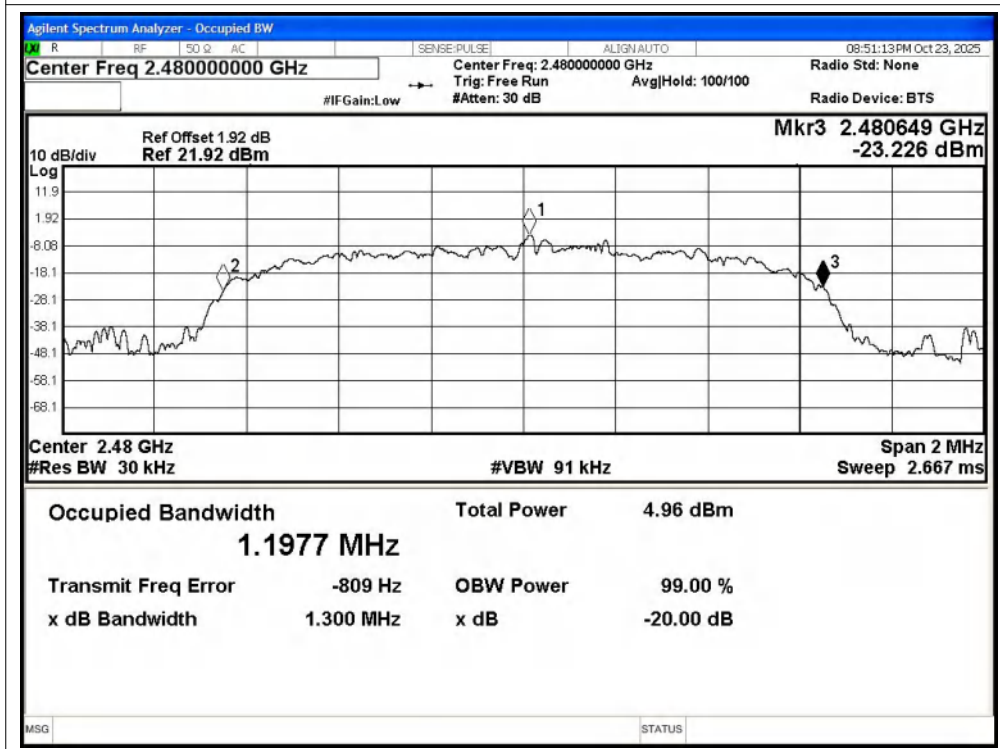
-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1

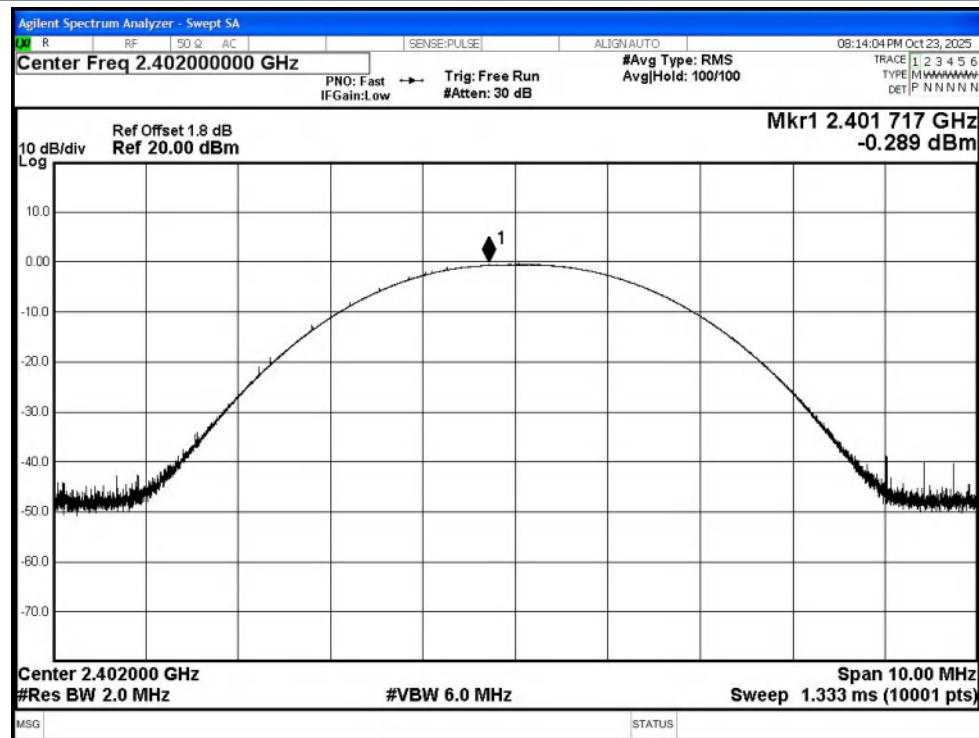


A.2 Maximum Peak Conducted Output Power

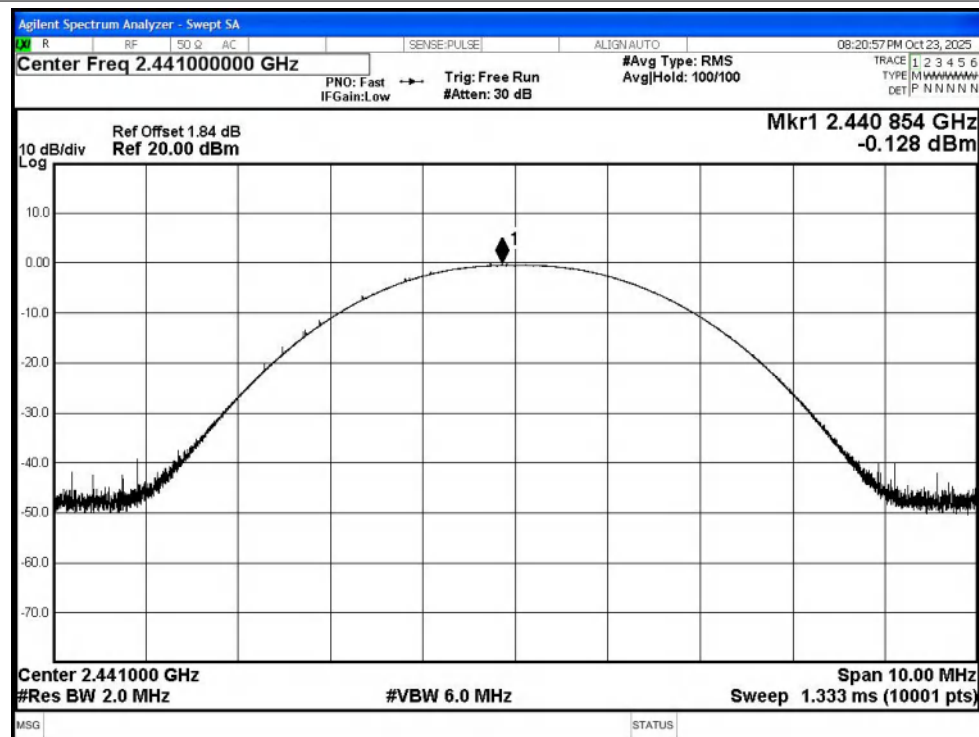
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	-0.29	21	Pass
NVNT	1-DH5	2441	Ant1	-0.13	21	Pass
NVNT	1-DH5	2480	Ant1	-1.04	21	Pass
NVNT	2-DH5	2402	Ant1	-0.97	21	Pass
NVNT	2-DH5	2441	Ant1	-1.37	21	Pass
NVNT	2-DH5	2480	Ant1	0.71	21	Pass
NVNT	3-DH5	2402	Ant1	-0.49	21	Pass
NVNT	3-DH5	2441	Ant1	-1.07	21	Pass
NVNT	3-DH5	2480	Ant1	1.09	21	Pass

Test Graphs

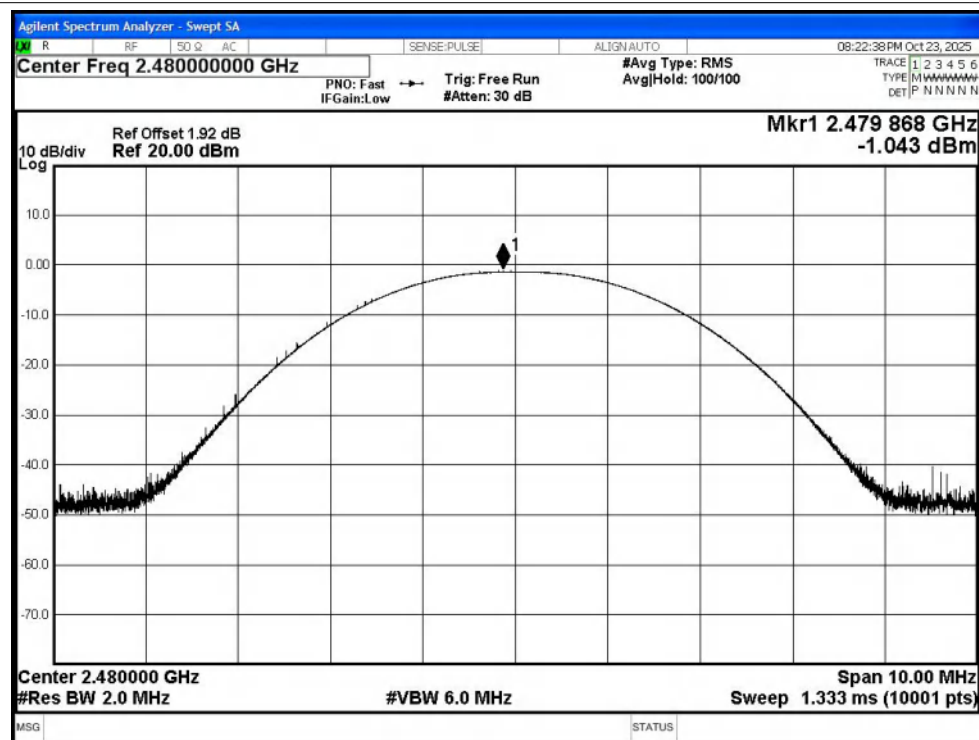
Power NVNT 1-DH5 2402MHz Ant1



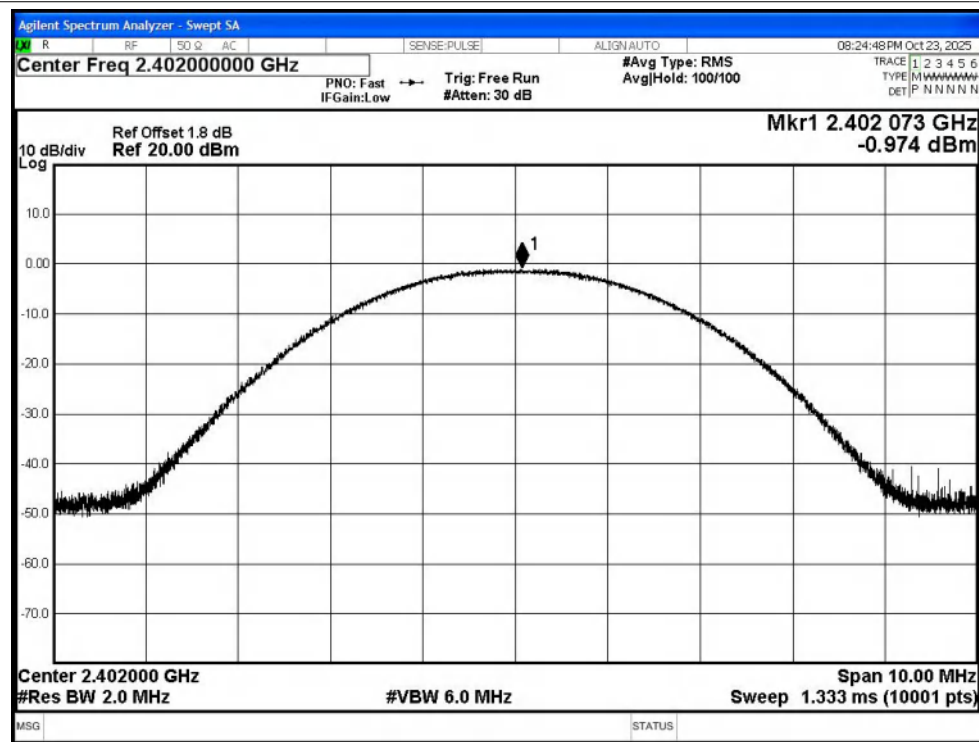
Power NVNT 1-DH5 2441MHz Ant1



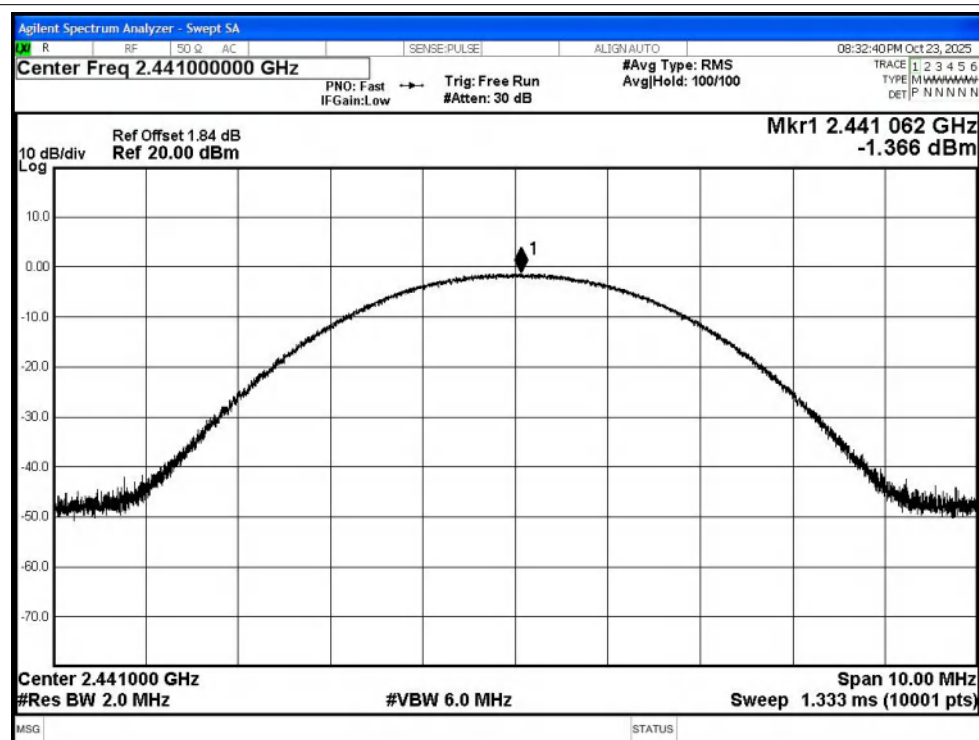
Power NVNT 1-DH5 2480MHz Ant1



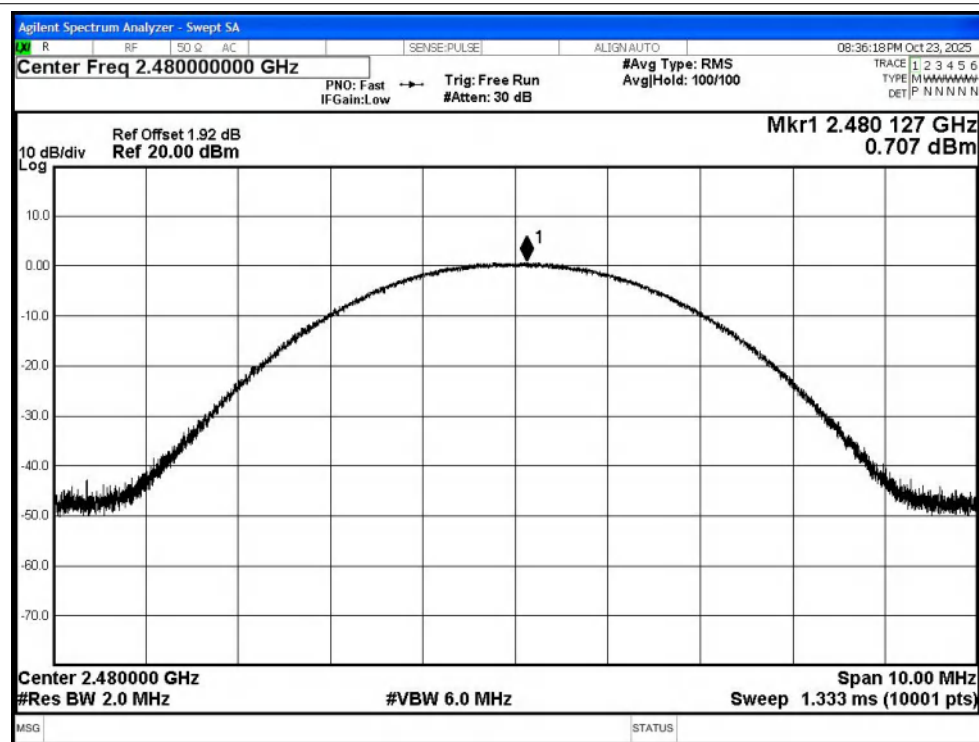
Power NVNT 2-DH5 2402MHz Ant1



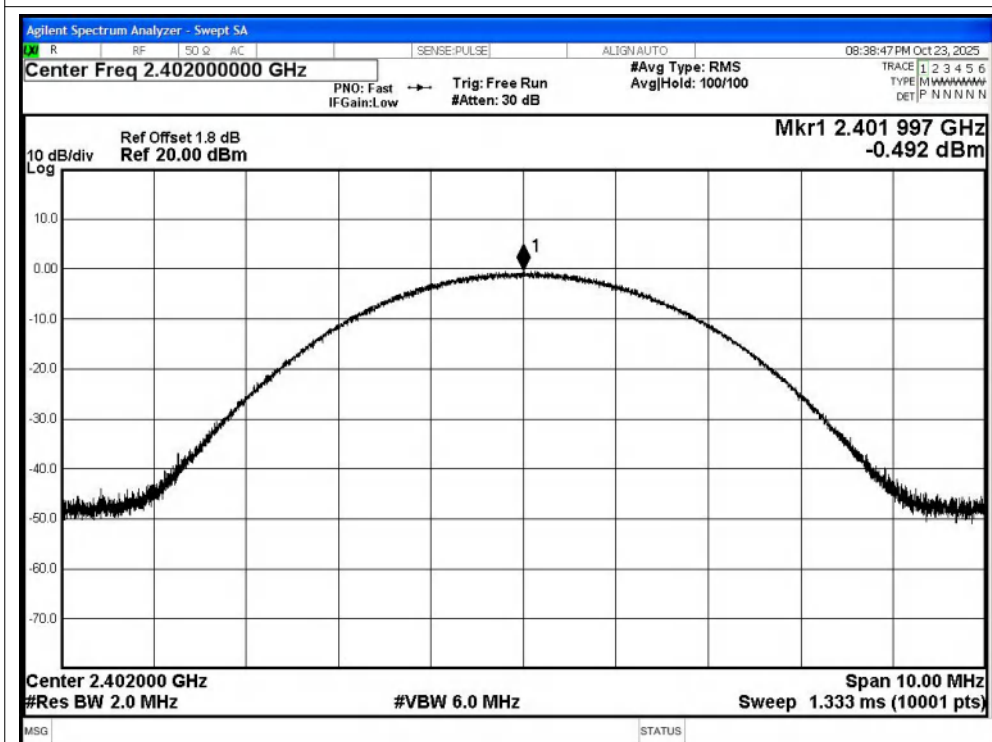
Power NVNT 2-DH5 2441MHz Ant1



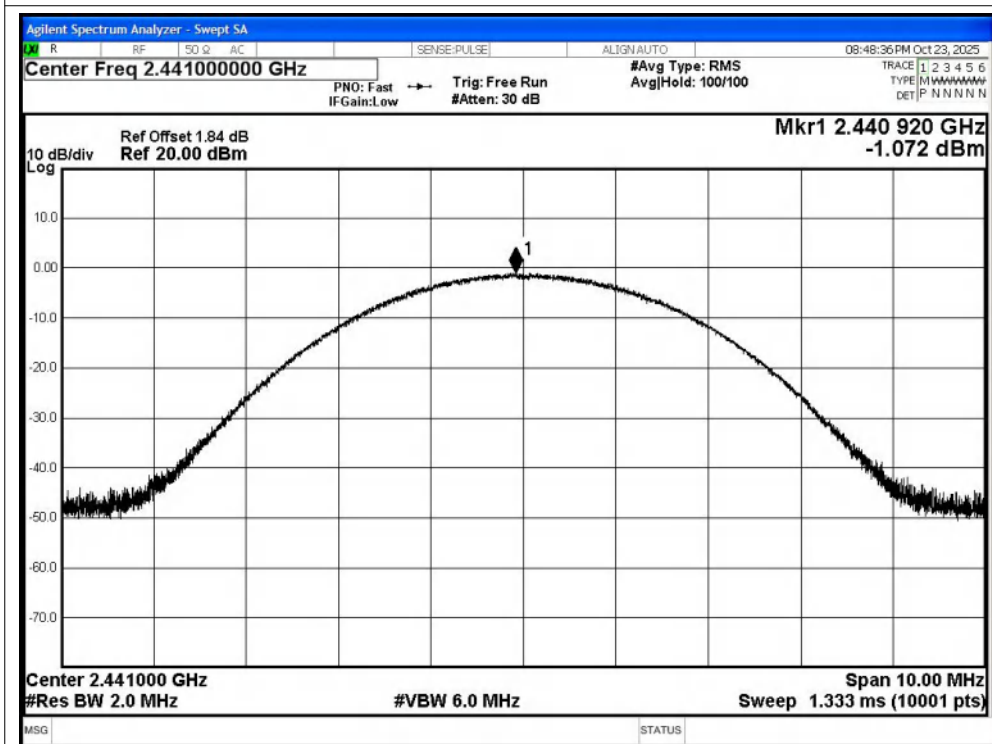
Power NVNT 2-DH5 2480MHz Ant1

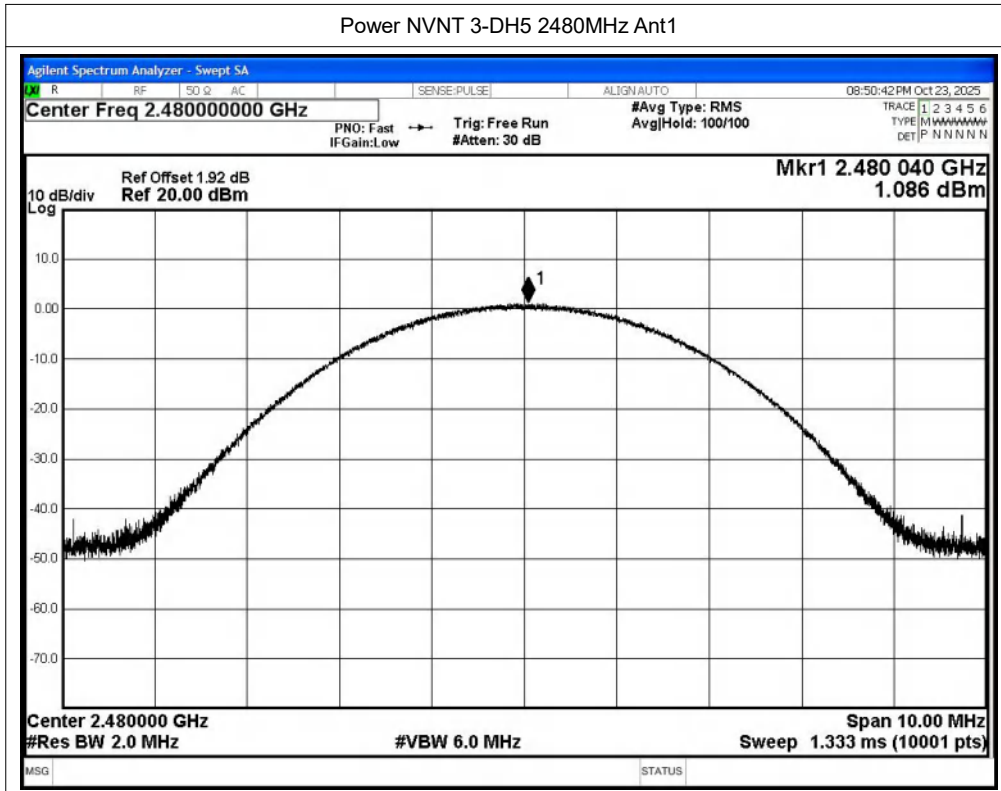


Power NVNT 3-DH5 2402MHz Ant1



Power NVNT 3-DH5 2441MHz Ant1



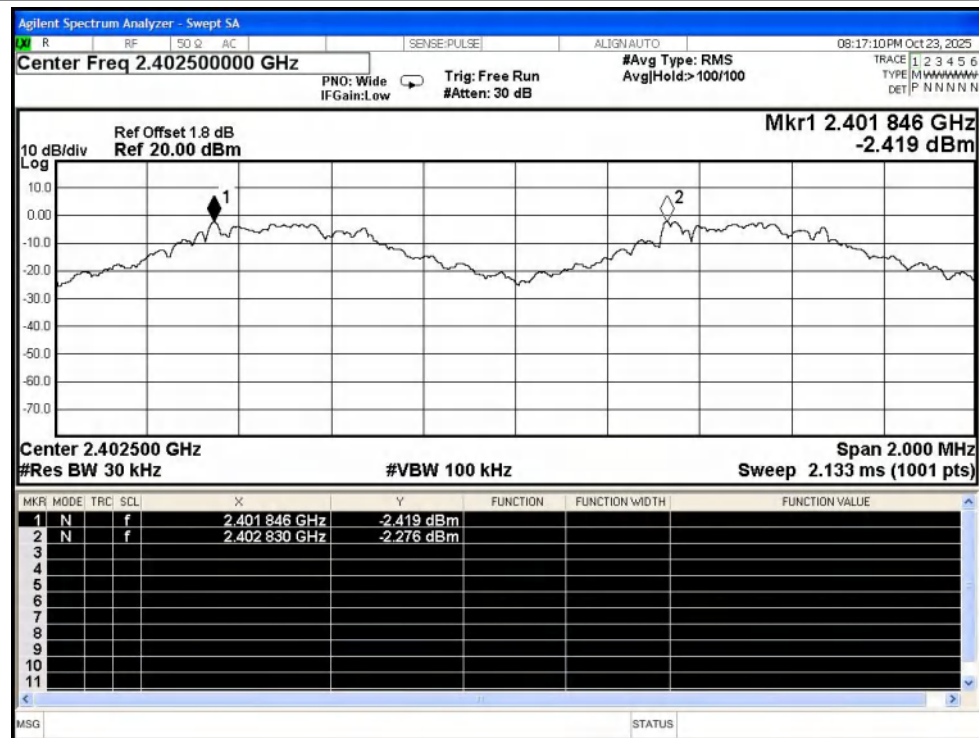


A.3 Carrier Frequencies Separation

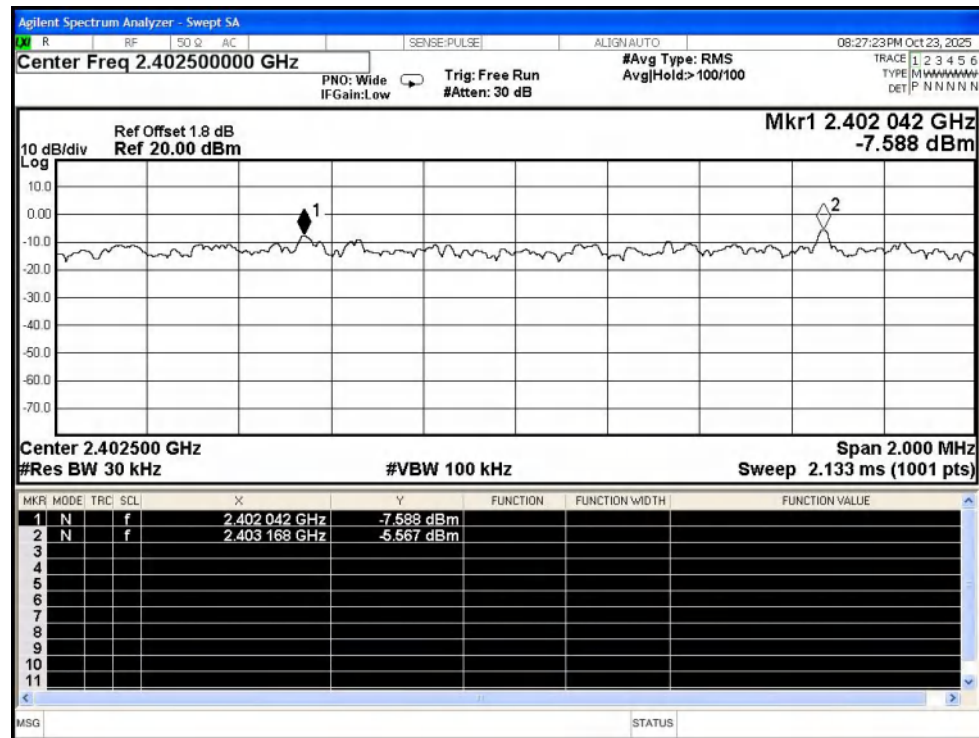
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2401.846	2402.83	0.984	0.654	Pass
NVNT	2-DH5	Ant1	2402.042	2403.168	1.126	0.855	Pass
NVNT	3-DH5	Ant1	2402.02	2403.01	0.99	0.862	Pass

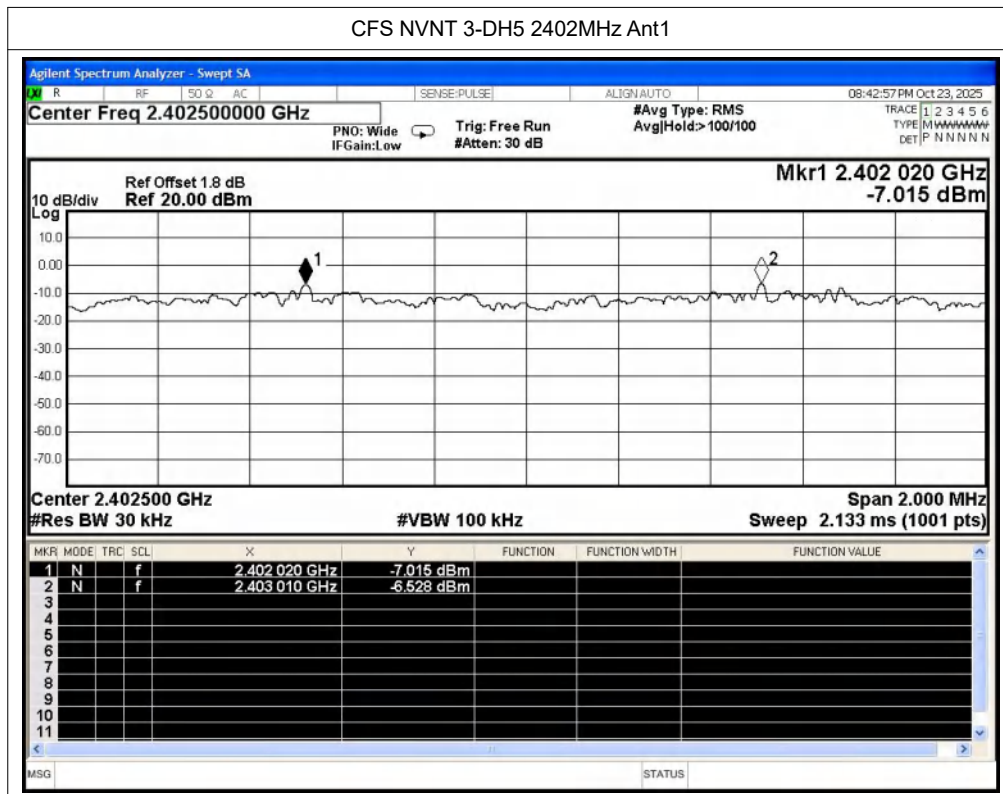
Test Graphs

CFS NVNT 1-DH5 2402MHz Ant1



CFS NVNT 2-DH5 2402MHz Ant1



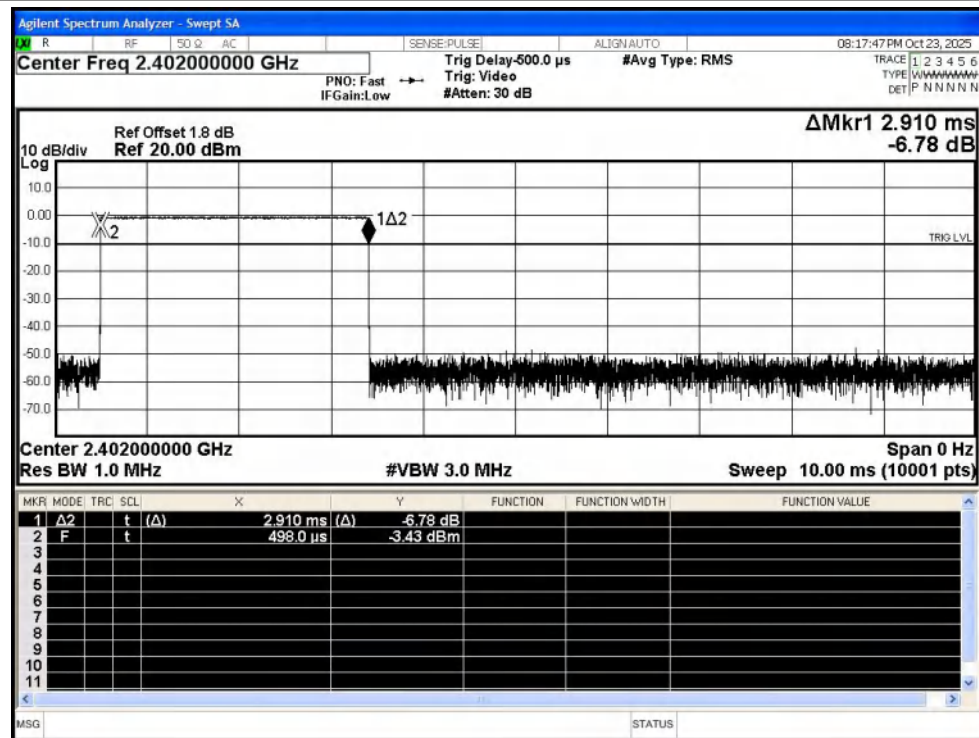


A.4 Dwell Time

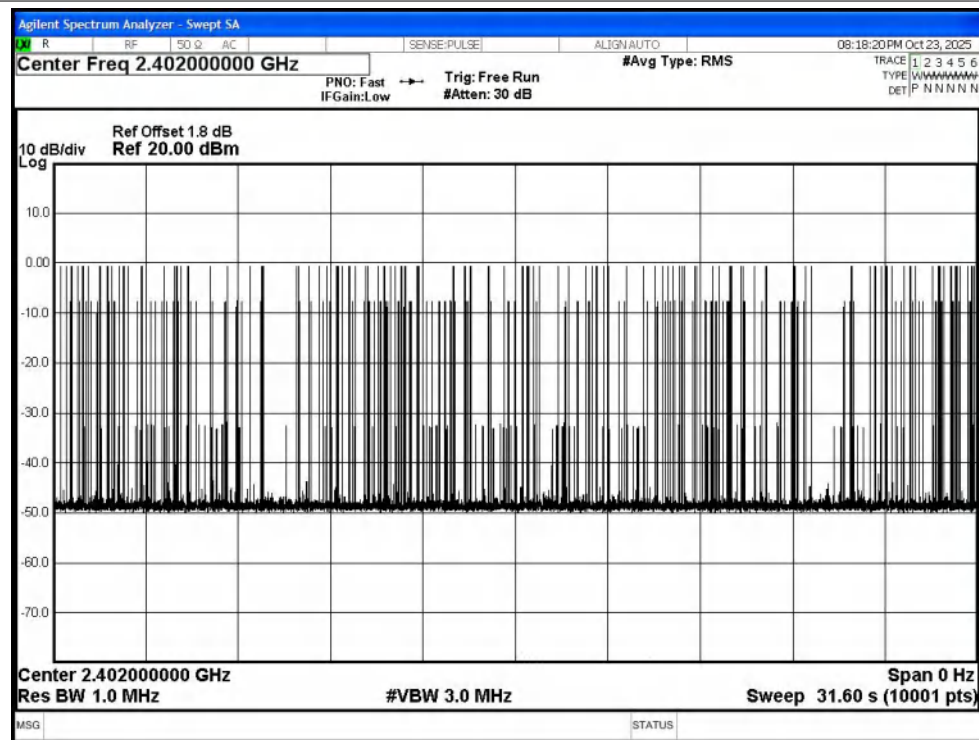
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	2.91	349.2	120	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.898	284.004	98	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.897	281.009	97	31600	400	Pass

Test Graphs

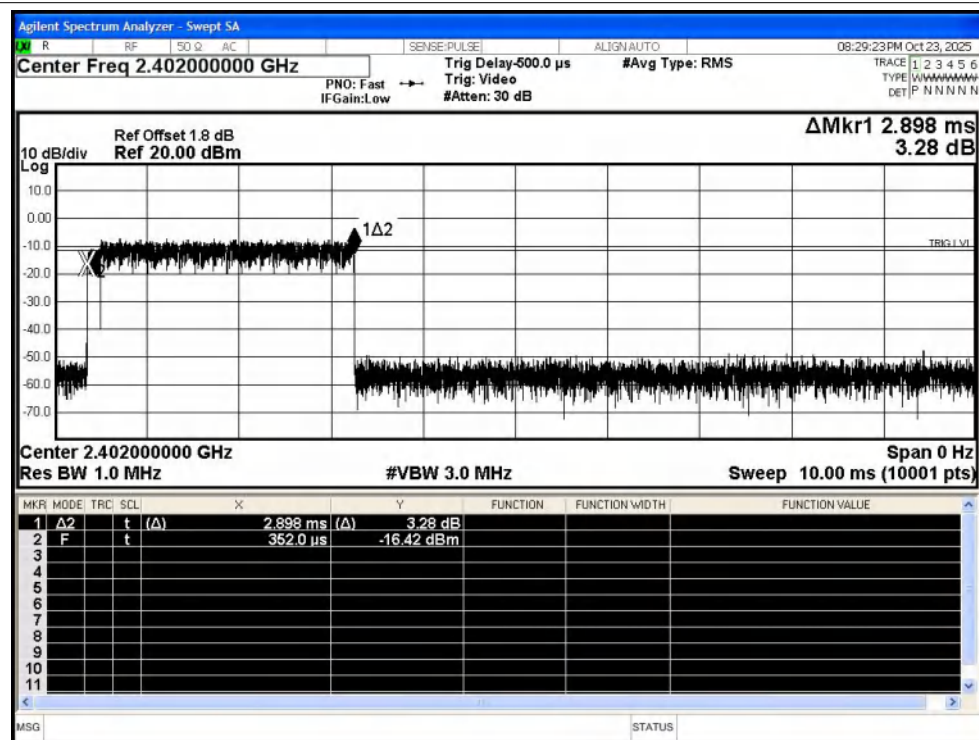
Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



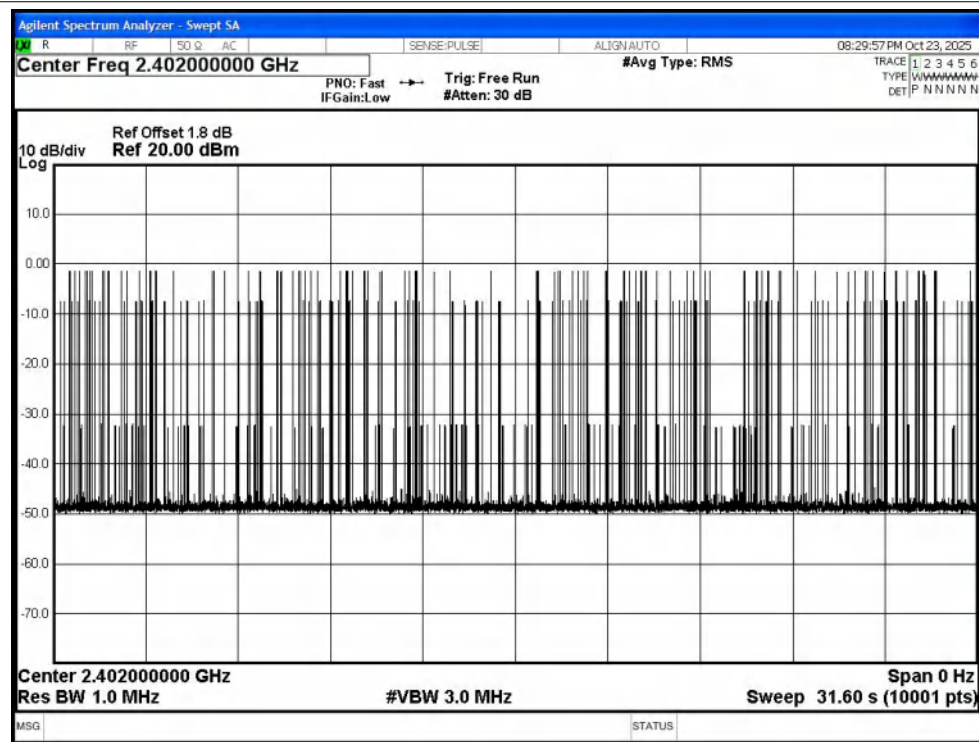
Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated



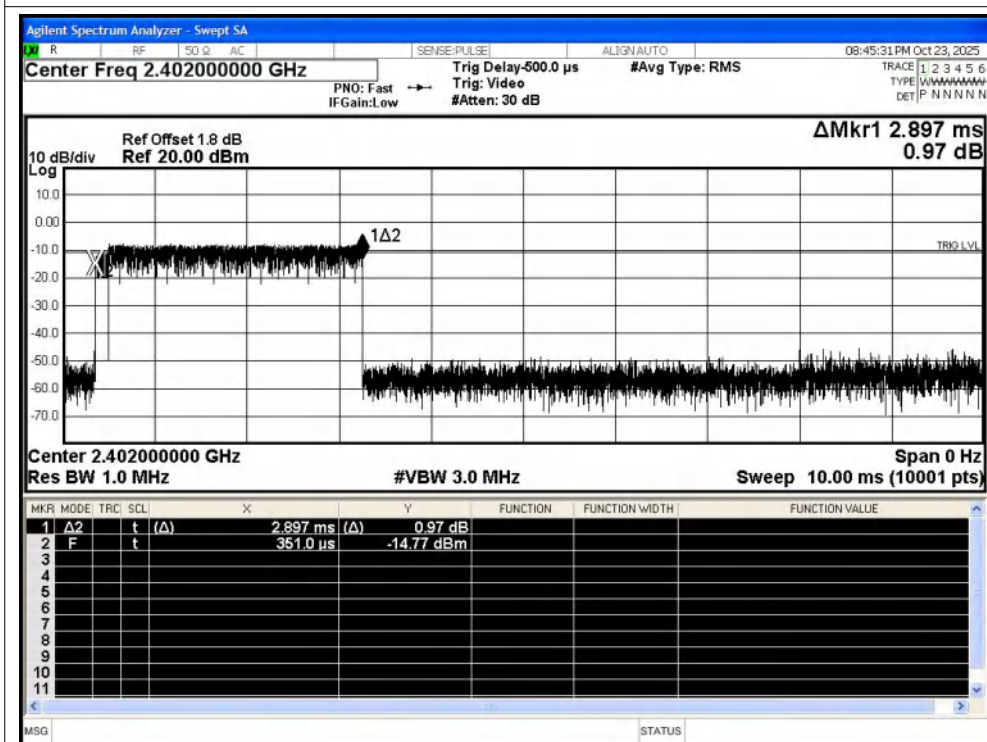
Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



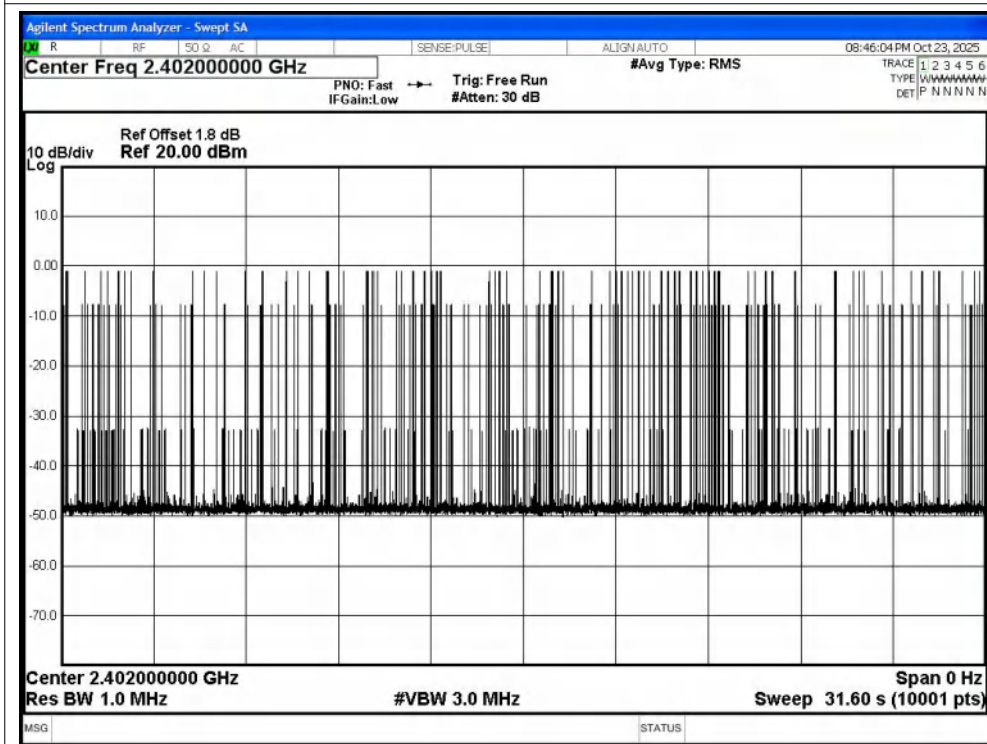
Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated



Dwell NVNT 3-DH5 2402MHz Ant1 One Burst



Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

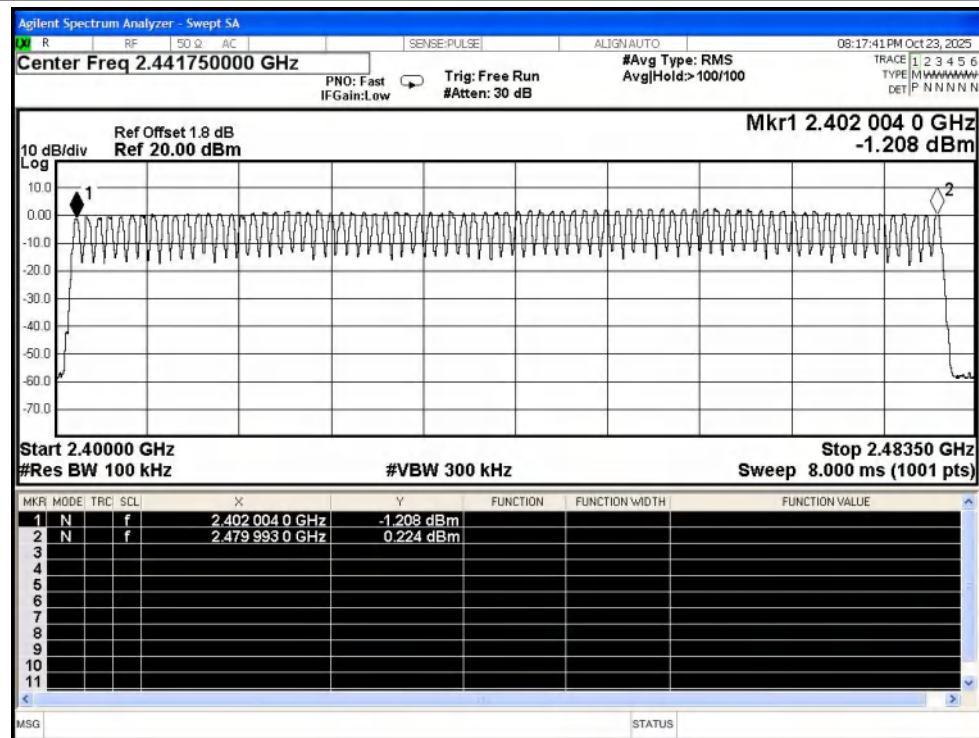


A.5 Number of Hopping Channel

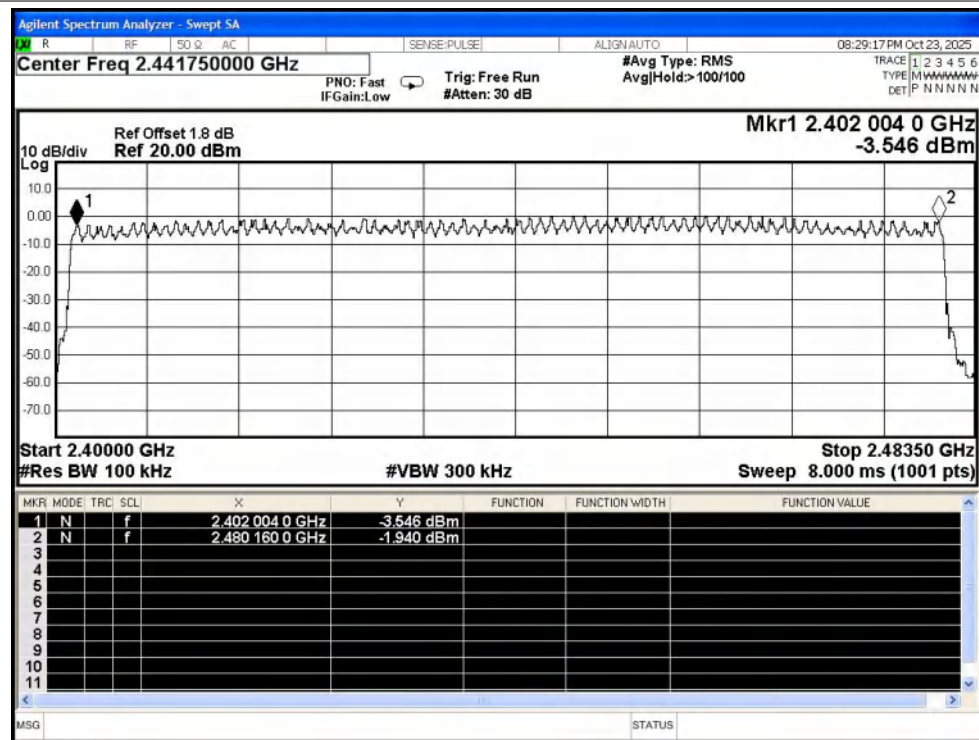
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass
NVNT	3-DH5	Ant1	79	15	Pass

Test Graphs

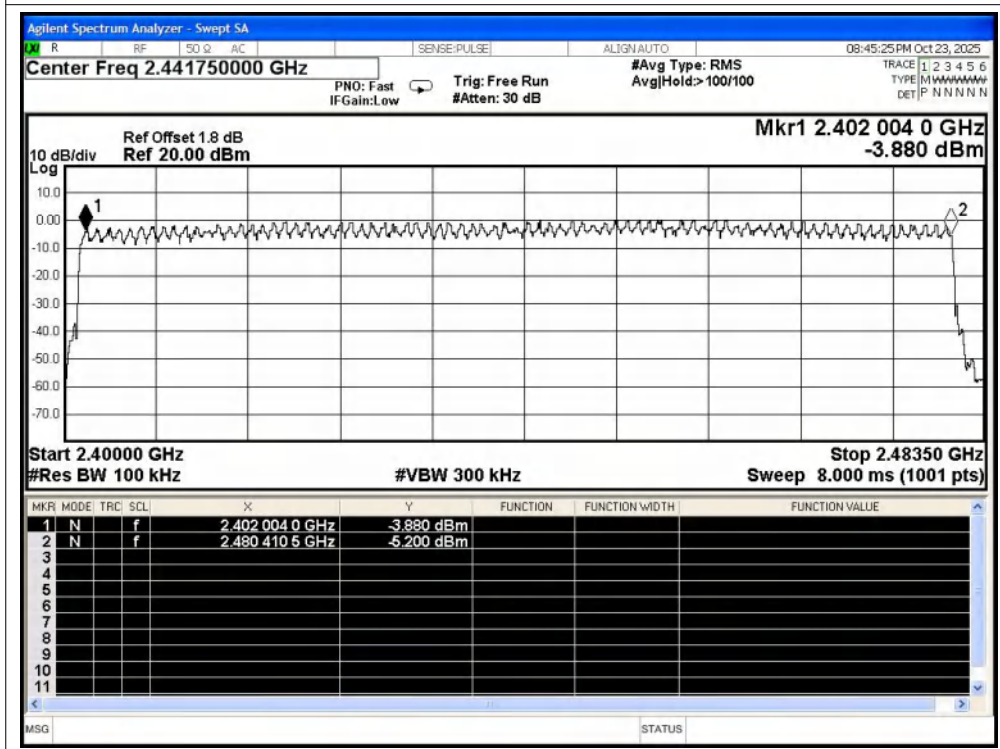
Hopping No. NVNT 1-DH5 2402MHz Ant1



Hopping No. NVNT 2-DH5 2402MHz Ant1



Hopping No. NVNT 3-DH5 2402MHz Ant1

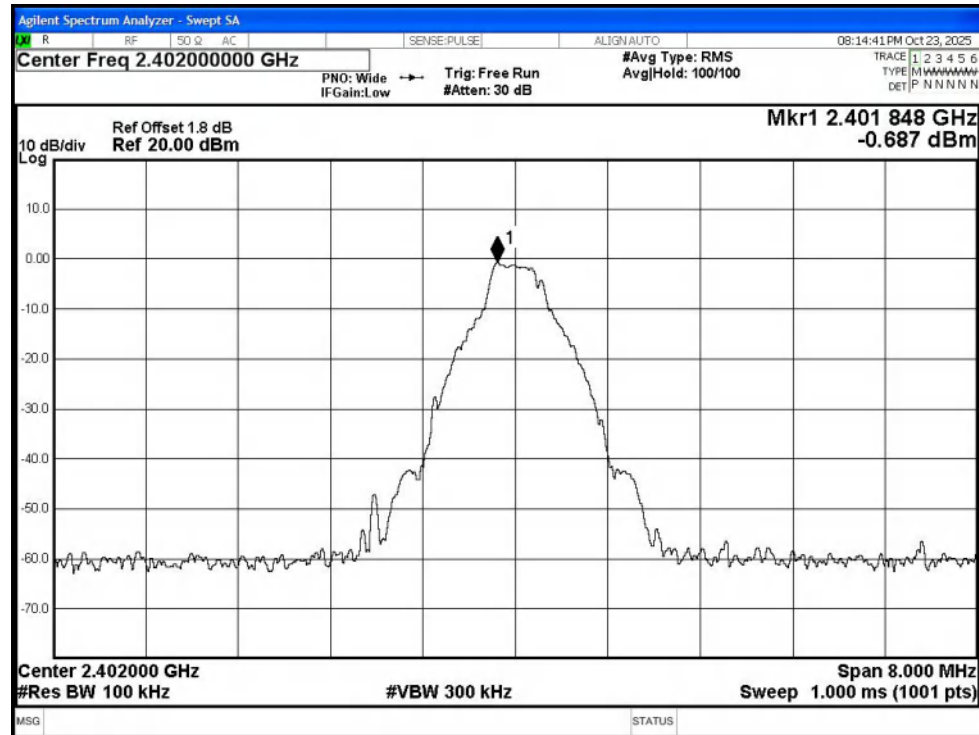


A.6 Band Edge

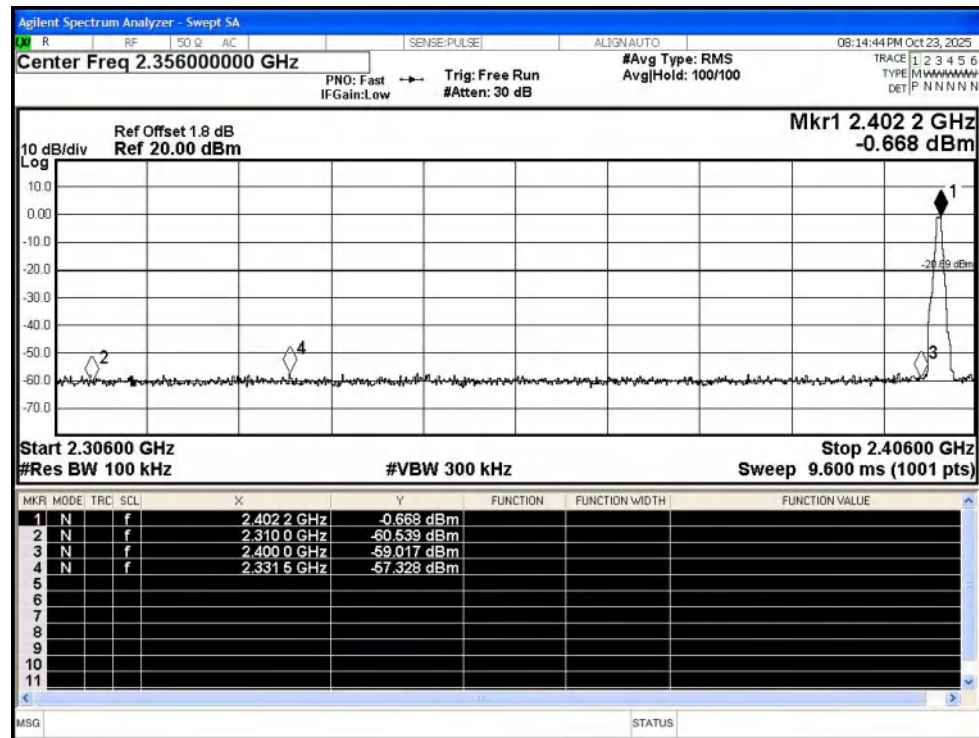
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-56.64	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-55.26	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-50.68	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-54.65	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-50.98	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-55.37	-20	Pass

Test Graphs

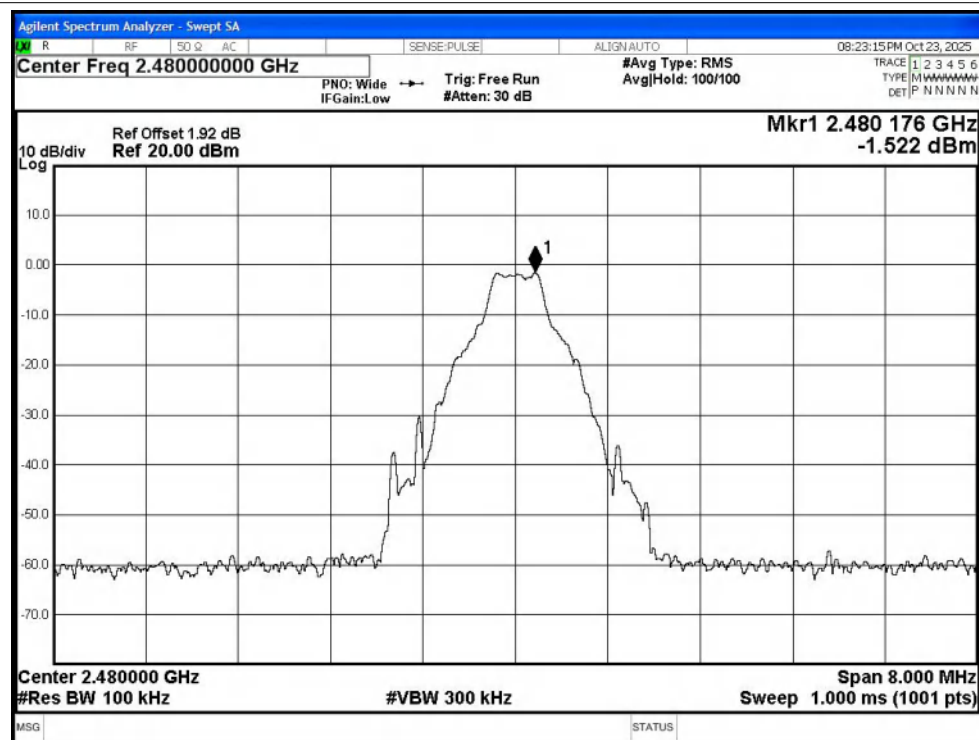
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



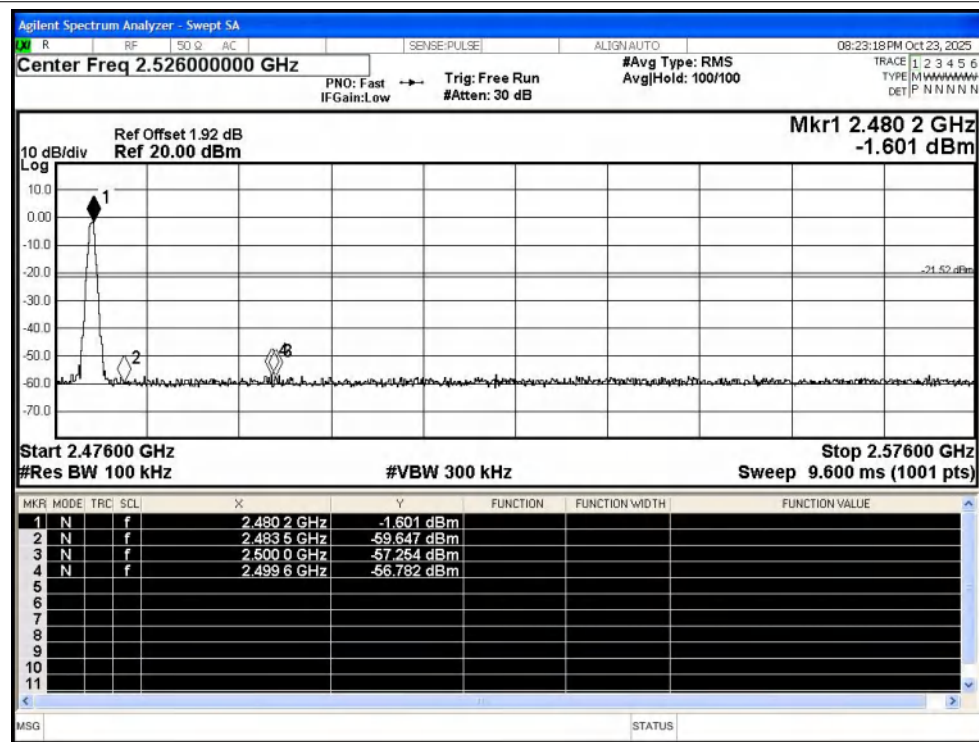
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission



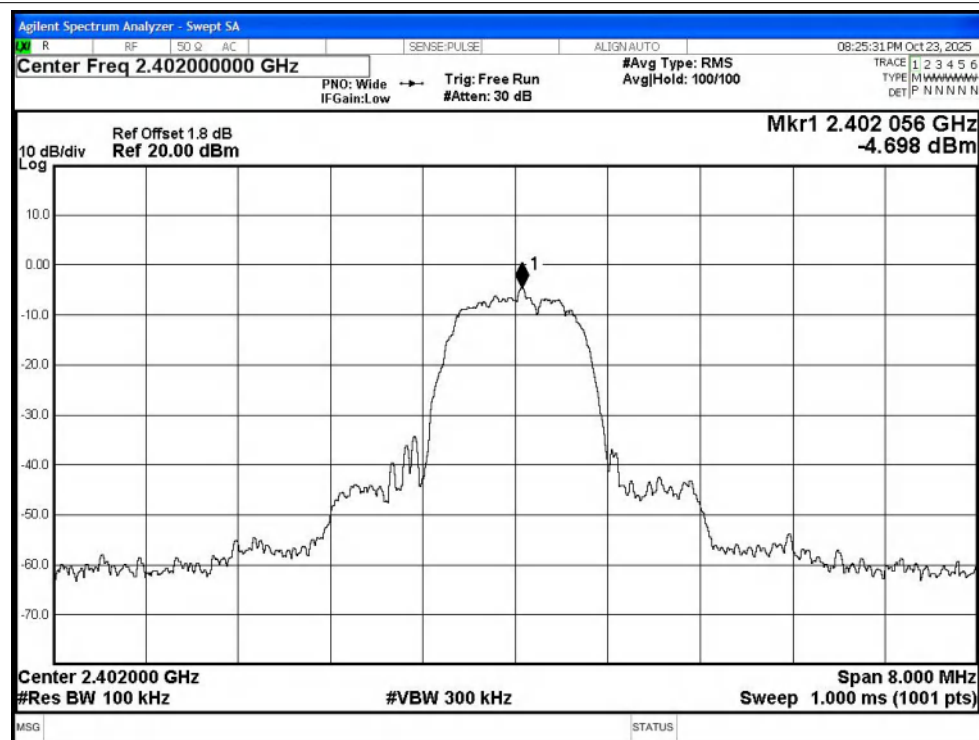
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref



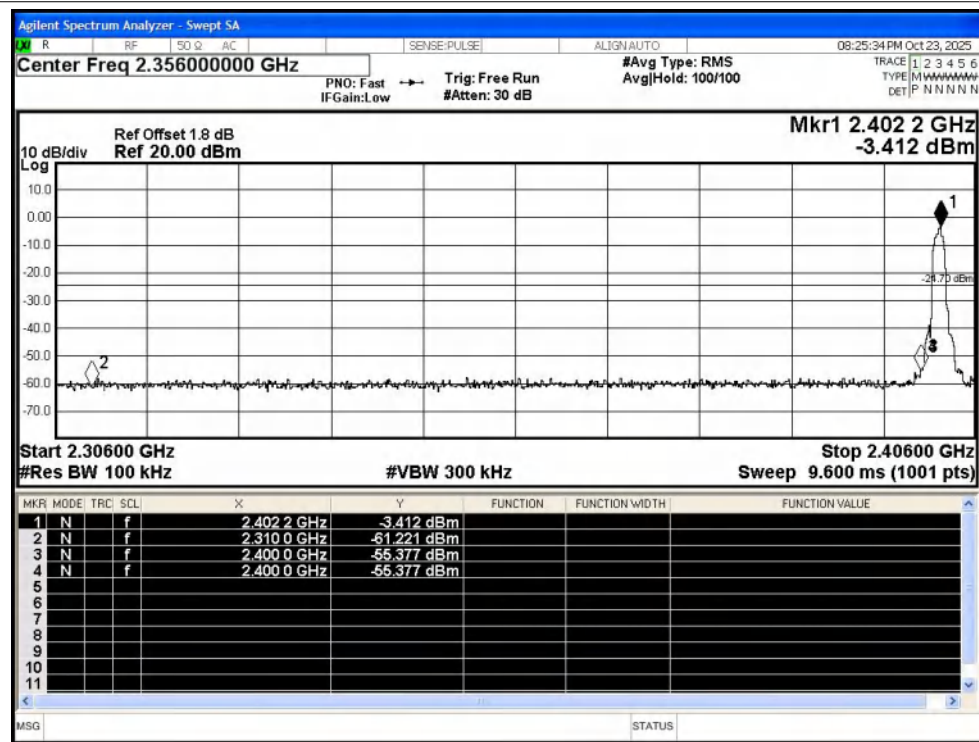
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



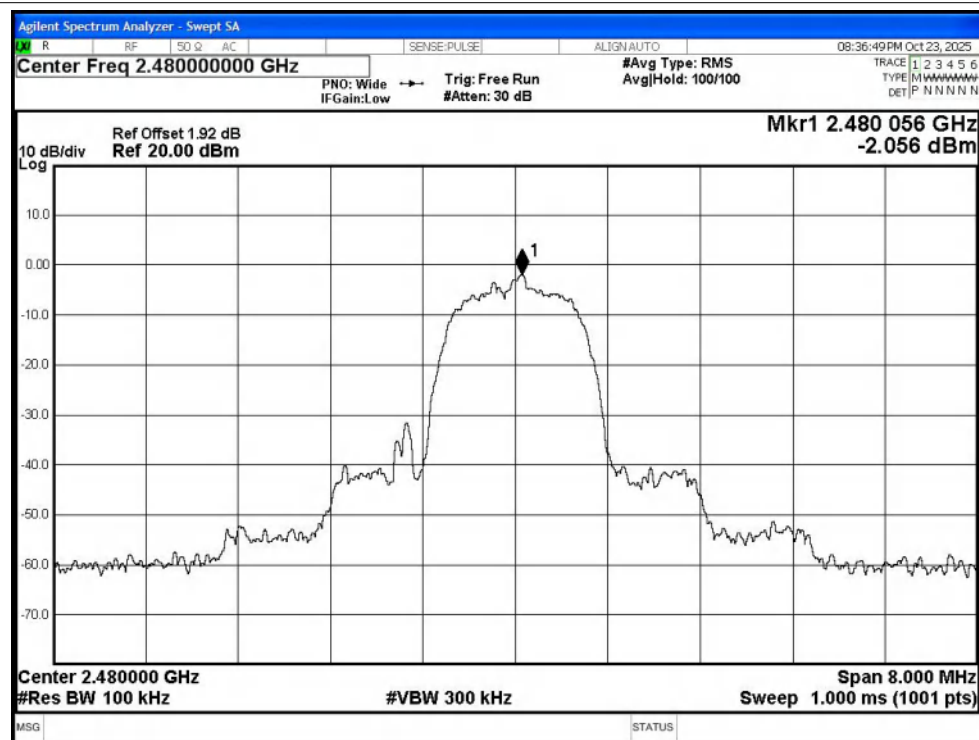
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



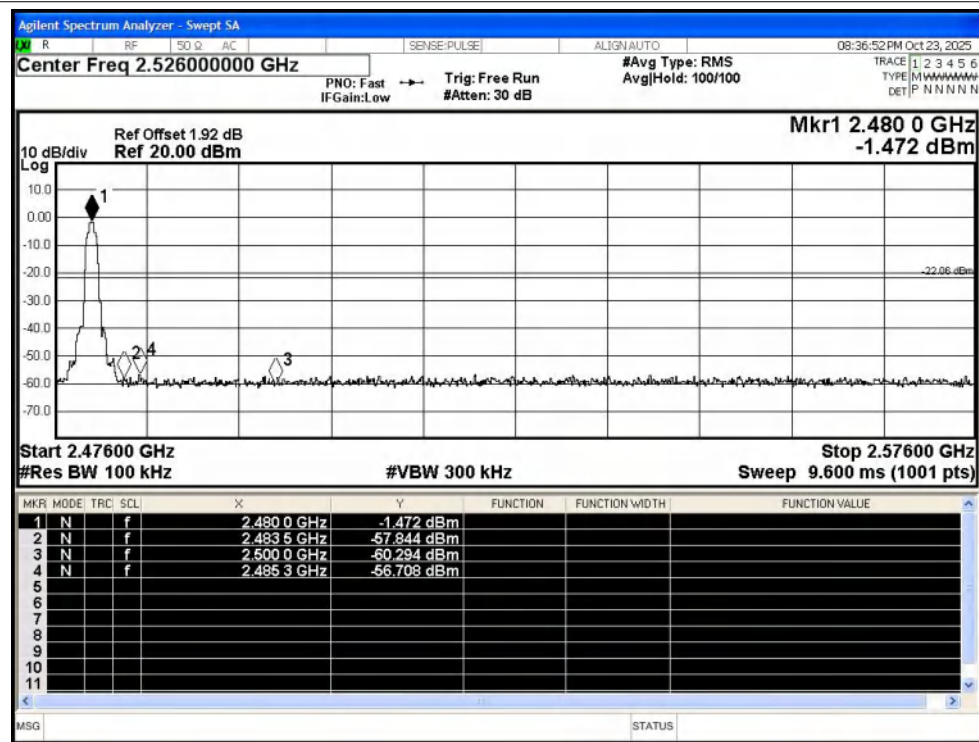
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission



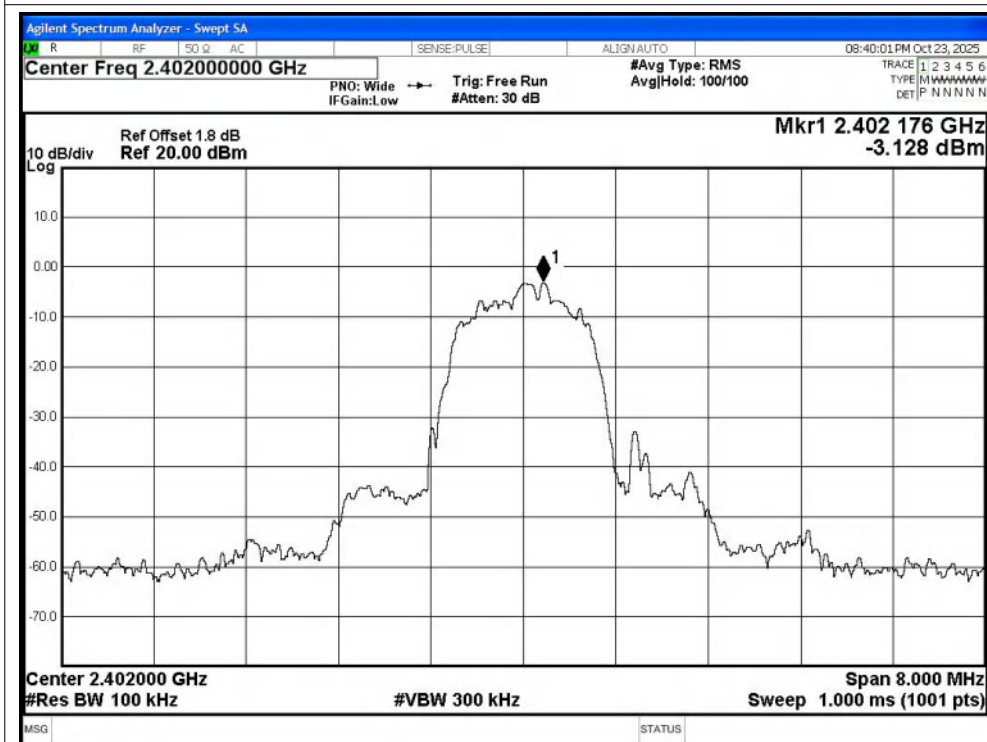
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref



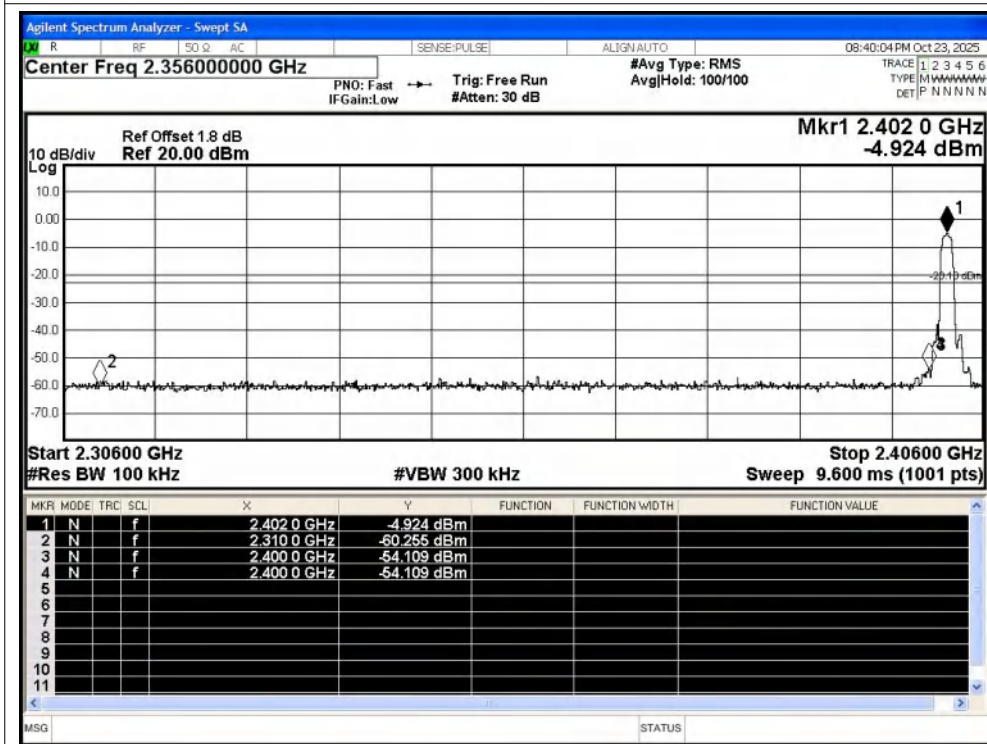
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission



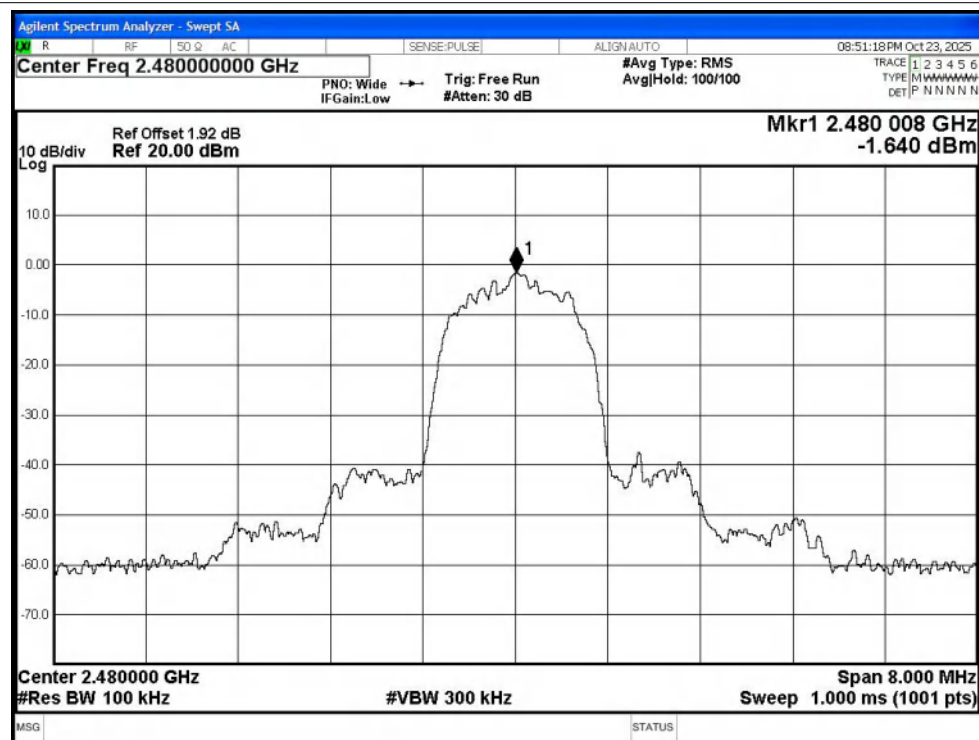
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref



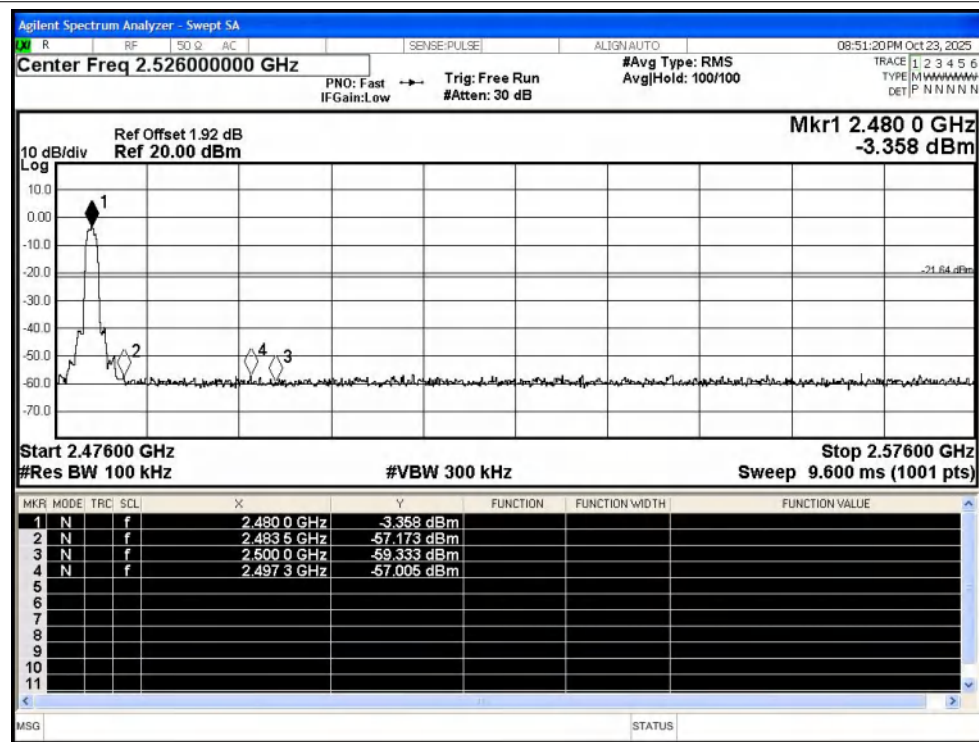
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission



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



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

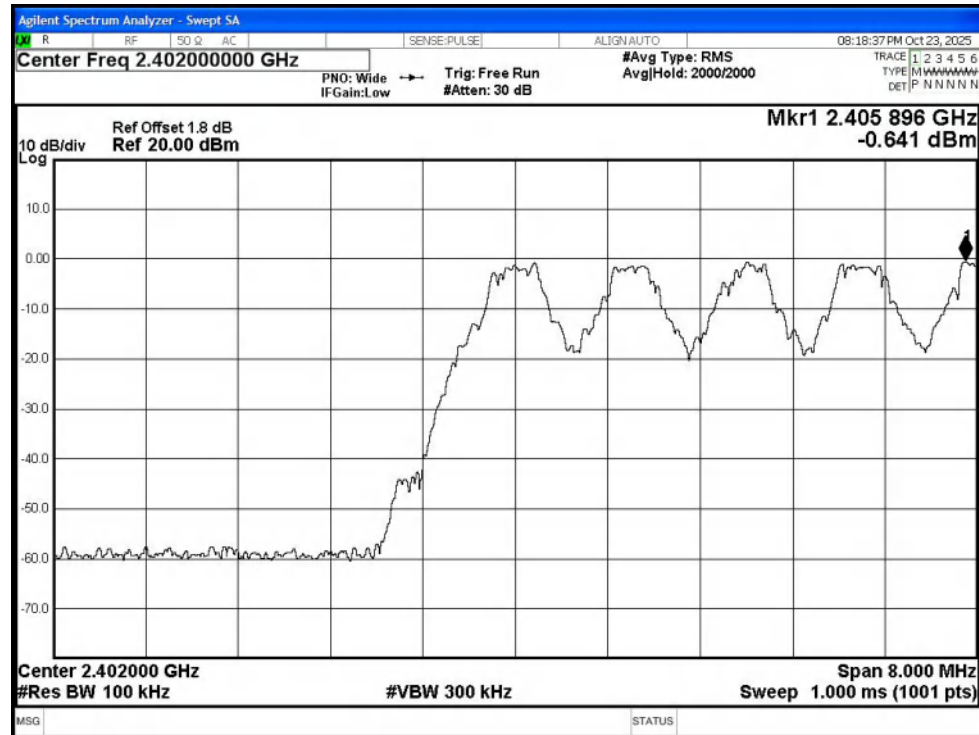


(Hopping)

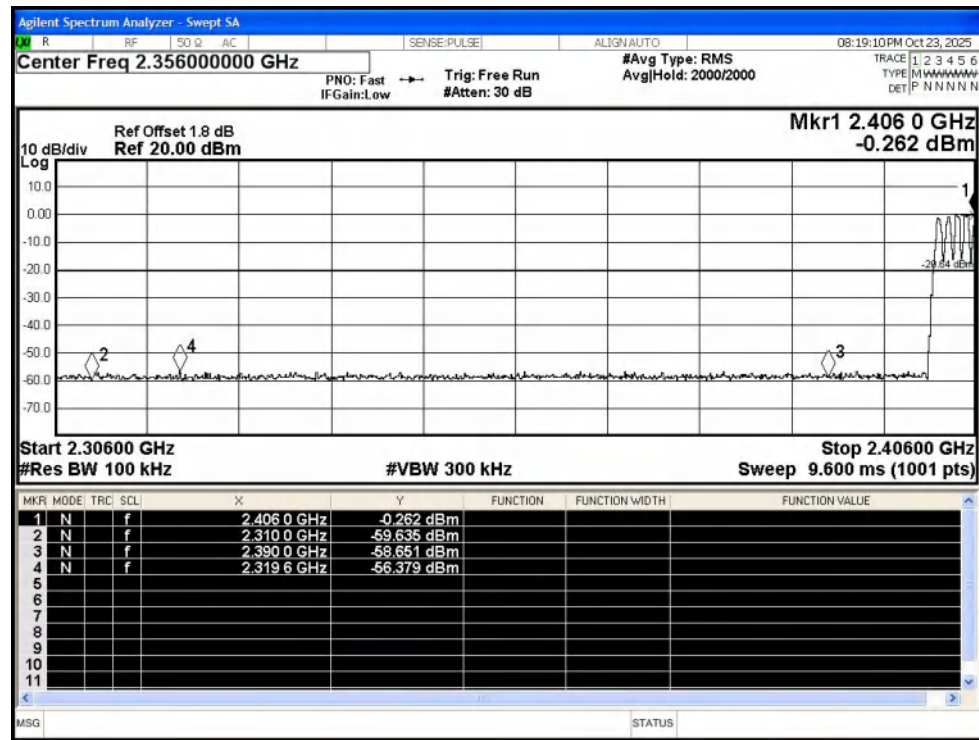
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-55.74	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-56.05	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-52.42	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-53.92	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-53.14	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-54.25	-20	Pass

Test Graphs

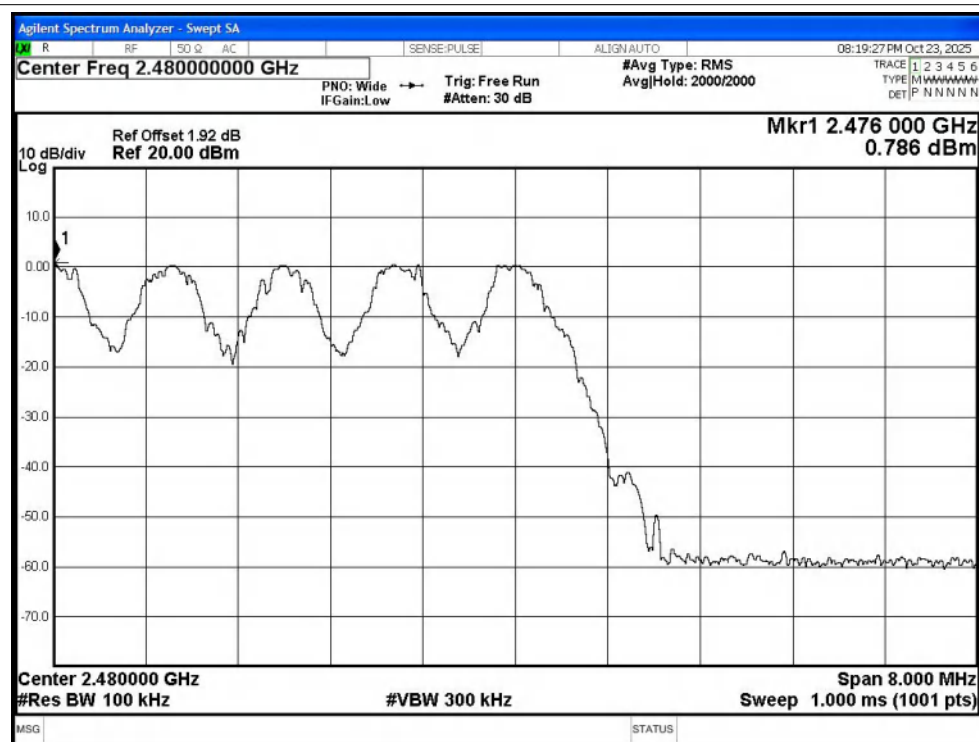
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



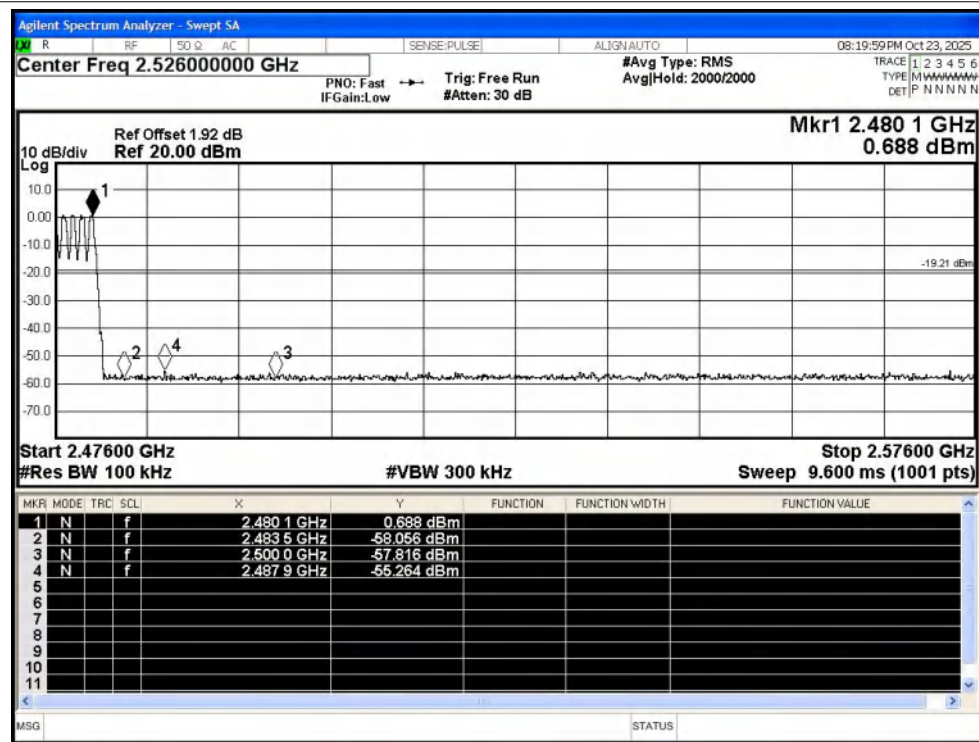
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



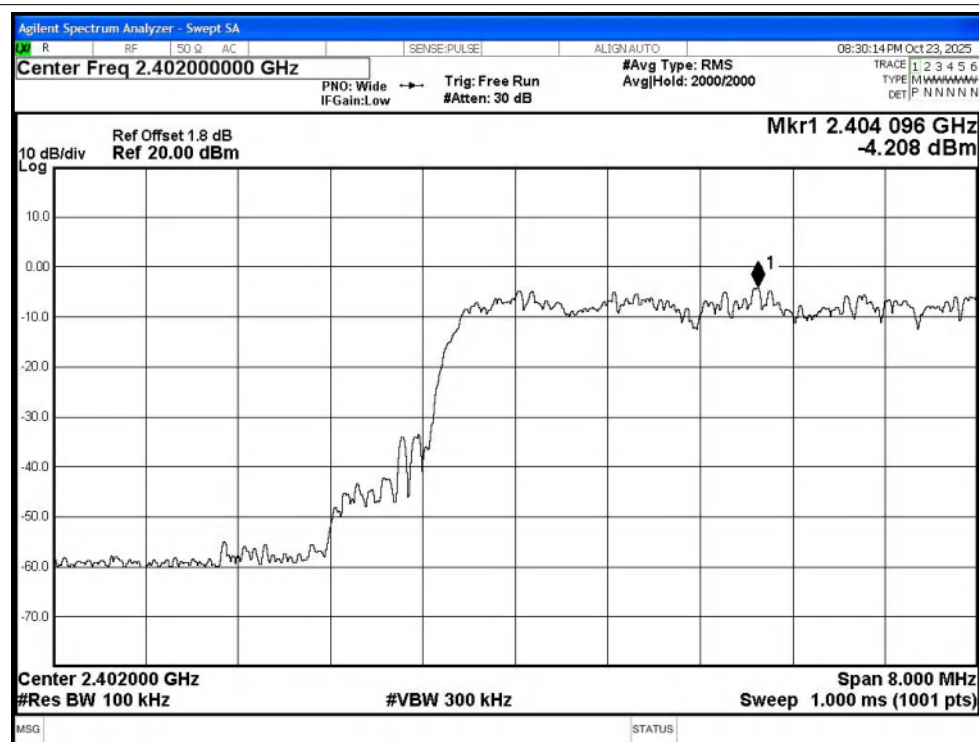
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



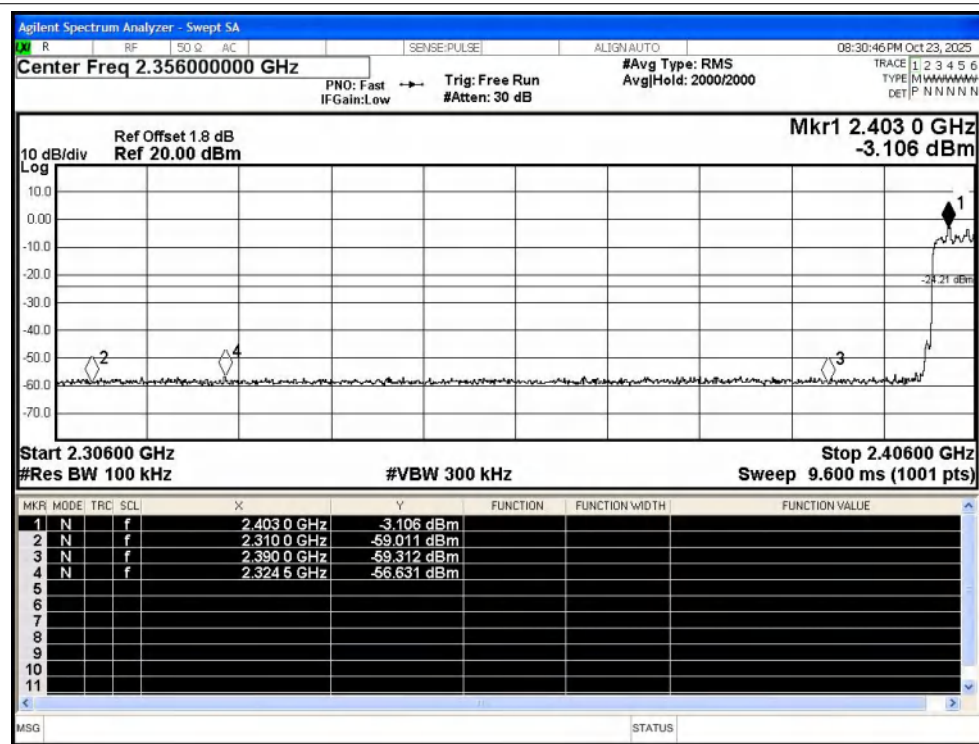
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission



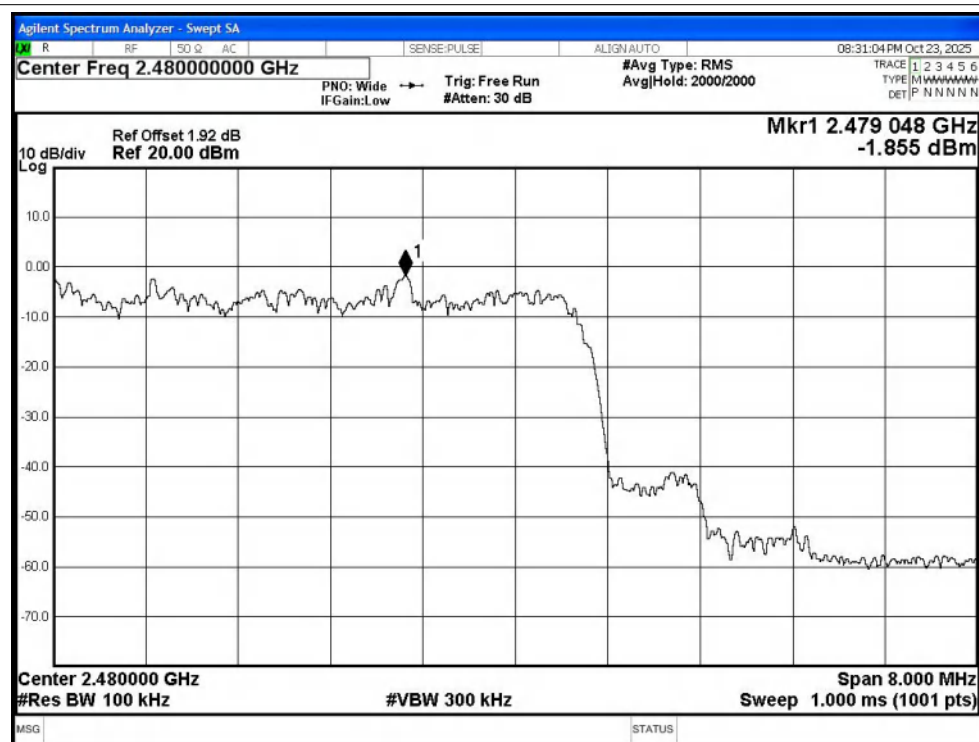
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref



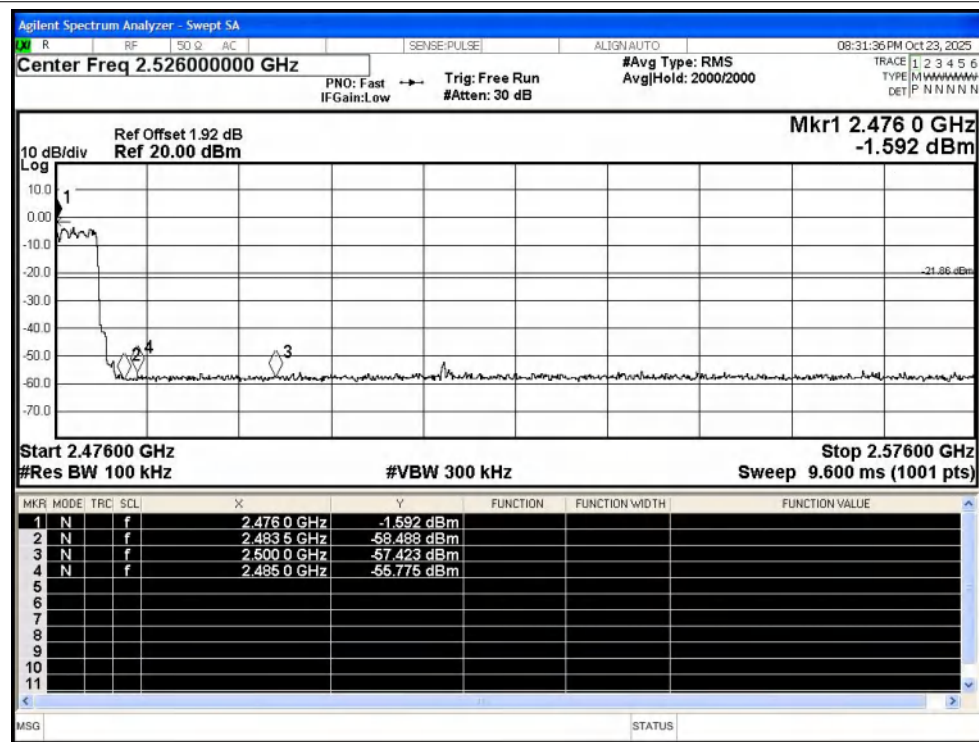
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



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



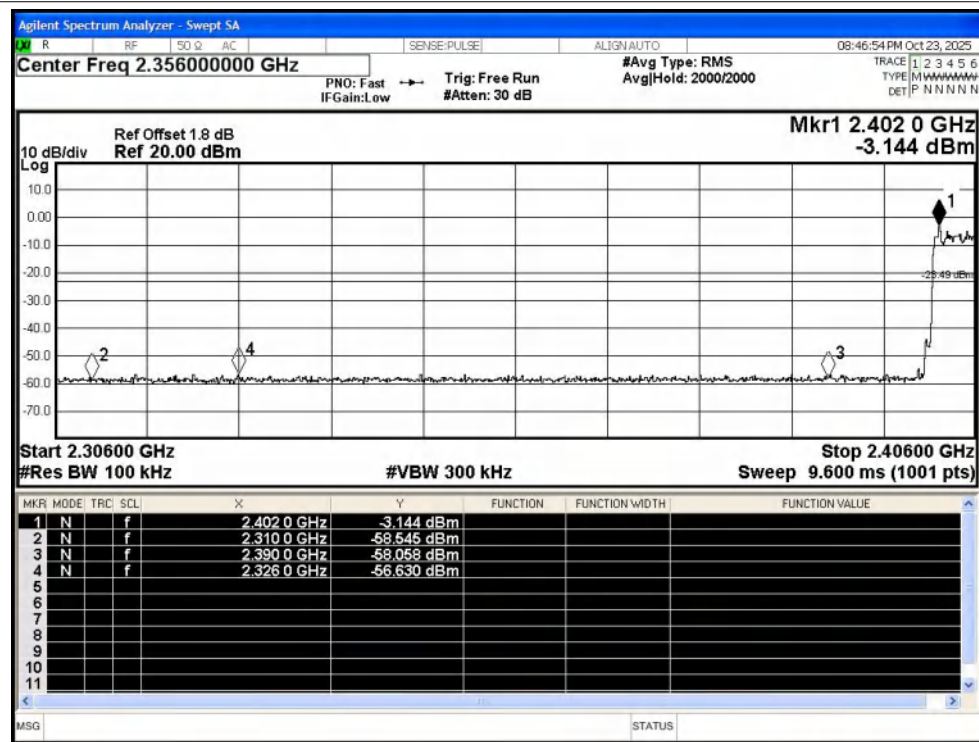
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission



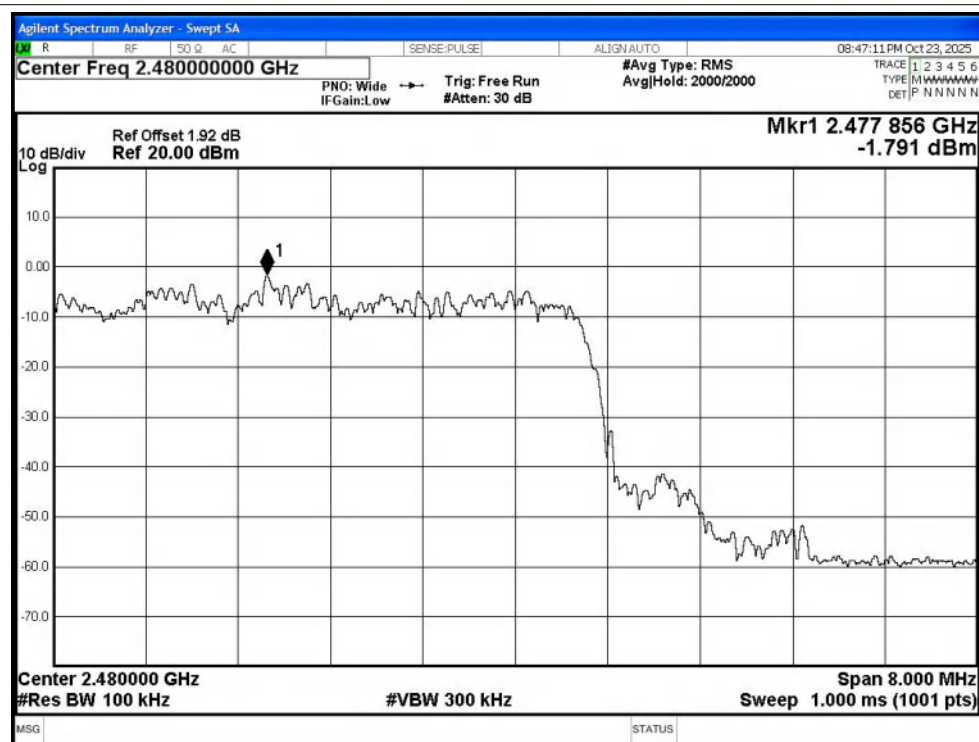
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref



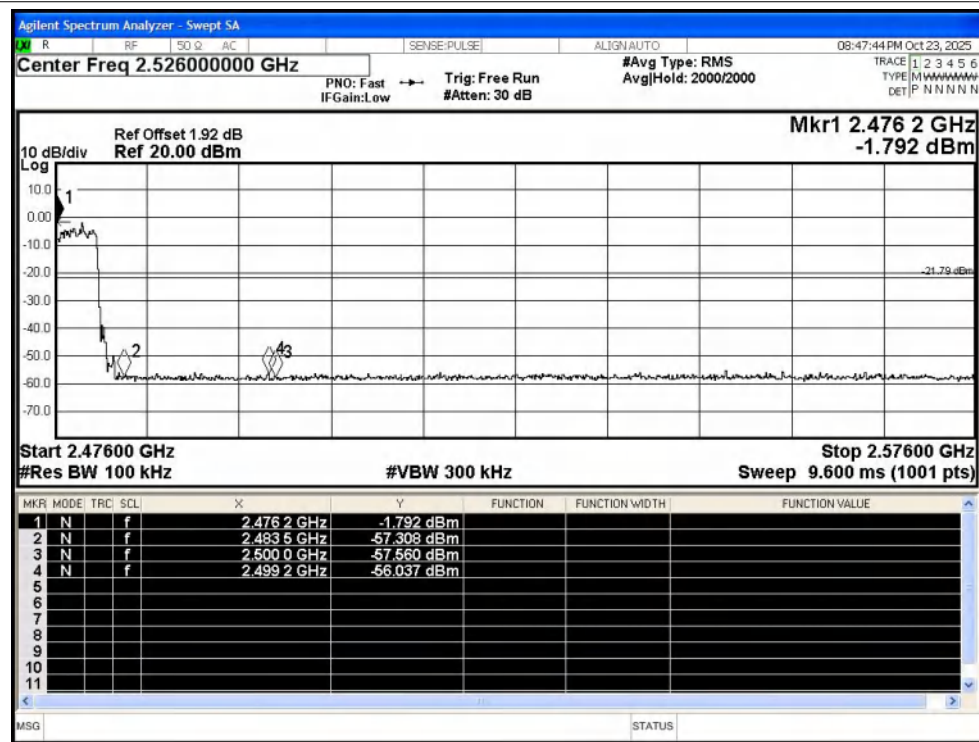
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission



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



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

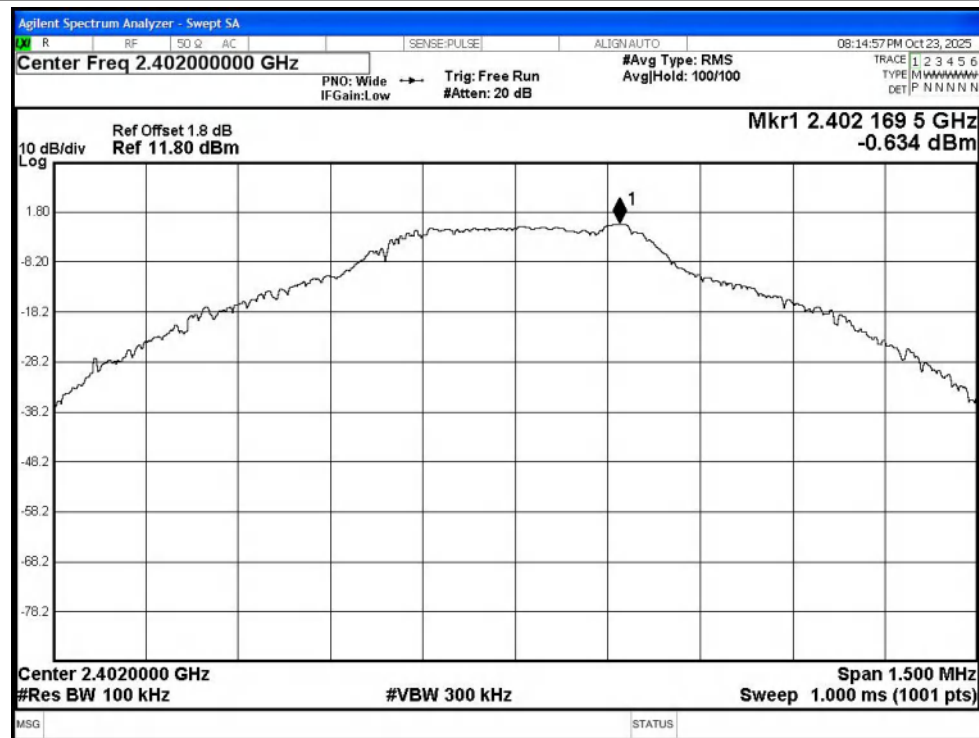


A.7 Conducted RF Spurious Emission

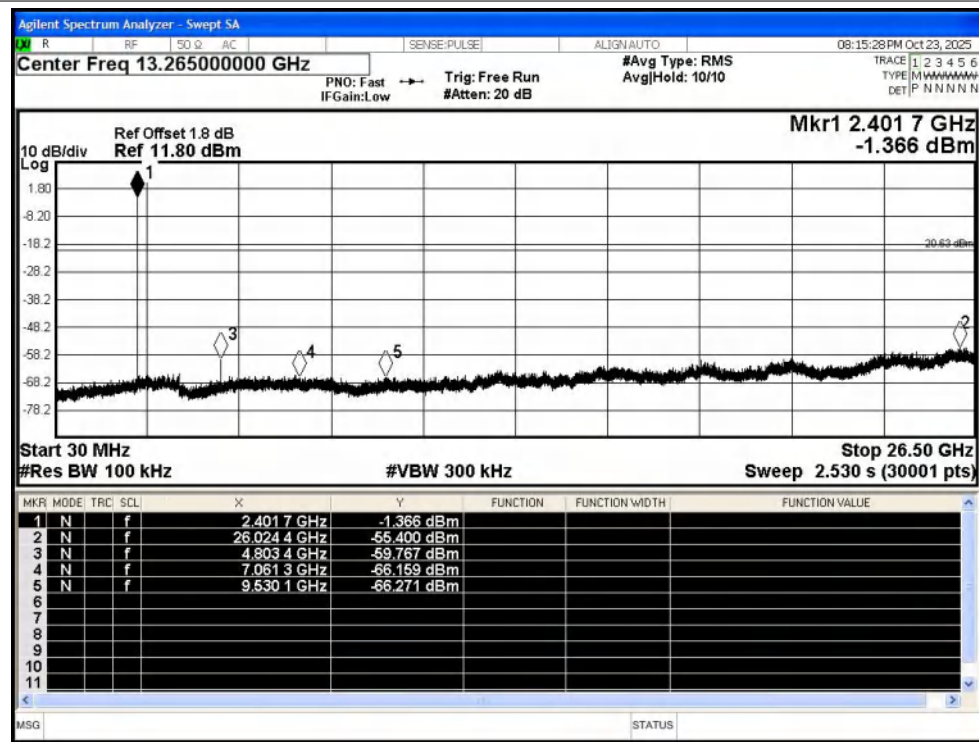
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-54.77	-20	Pass
NVNT	1-DH5	2441	Ant1	-54.39	-20	Pass
NVNT	1-DH5	2480	Ant1	-53.76	-20	Pass
NVNT	2-DH5	2402	Ant1	-51.84	-20	Pass
NVNT	2-DH5	2441	Ant1	-51.8	-20	Pass
NVNT	2-DH5	2480	Ant1	-53.58	-20	Pass
NVNT	3-DH5	2402	Ant1	-49.96	-20	Pass
NVNT	3-DH5	2441	Ant1	-51.92	-20	Pass
NVNT	3-DH5	2480	Ant1	-53.75	-20	Pass

Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref



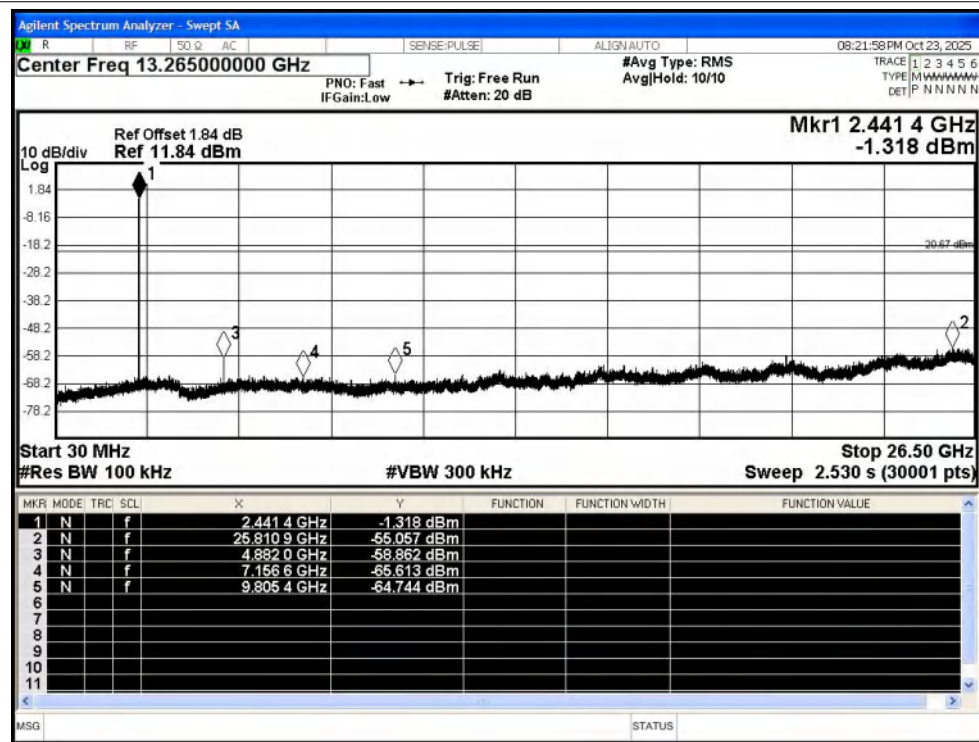
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



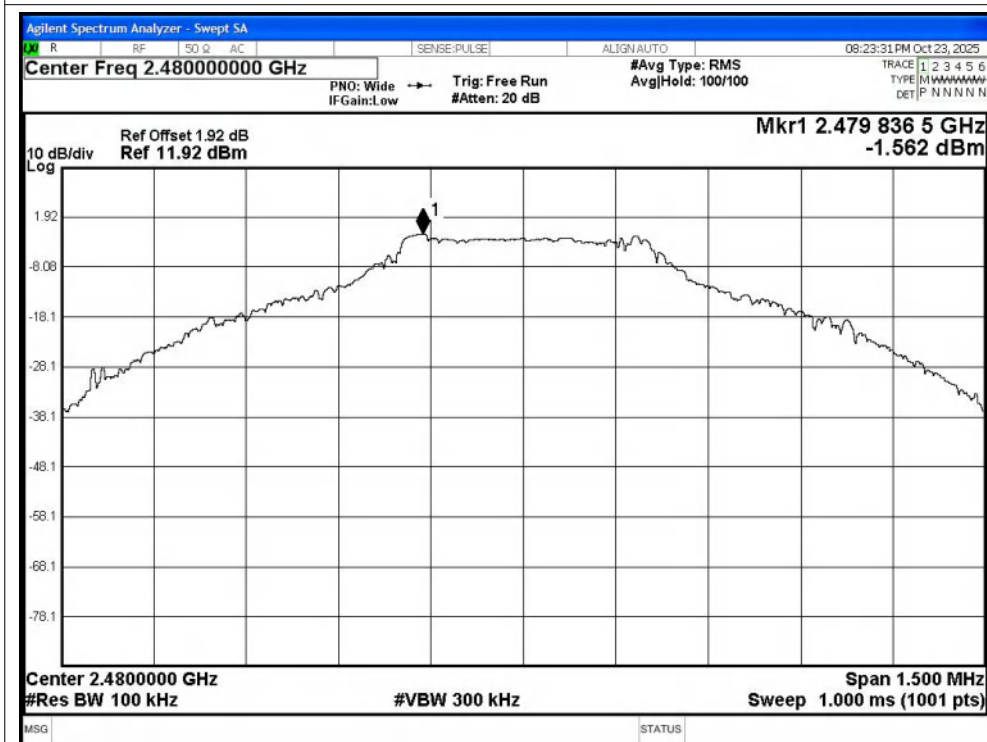
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref



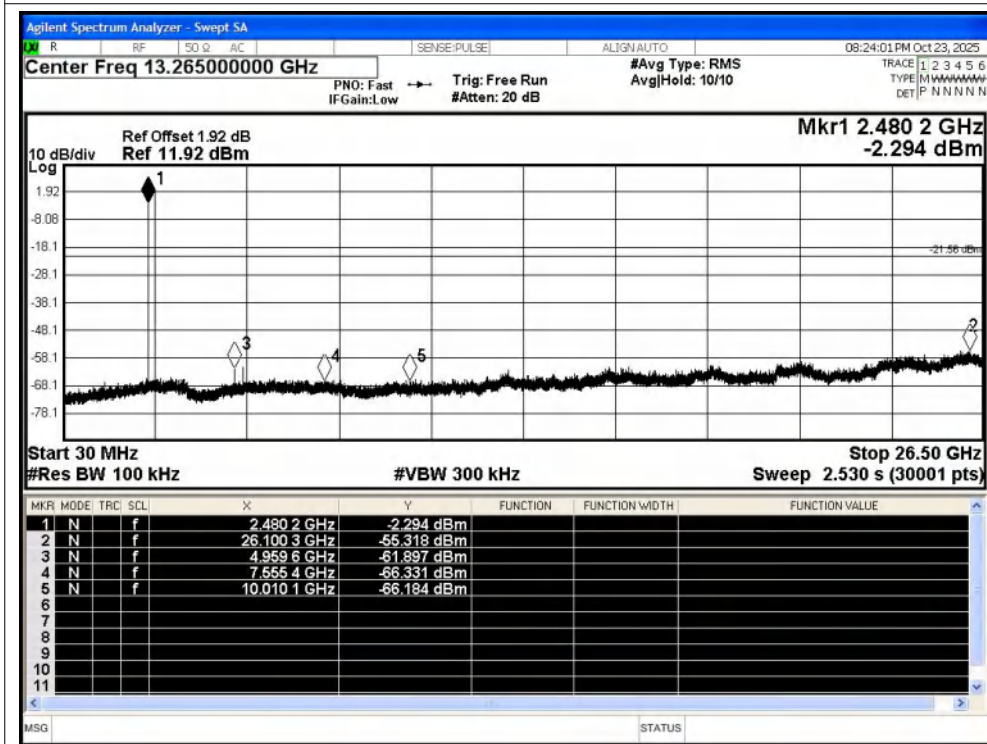
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission



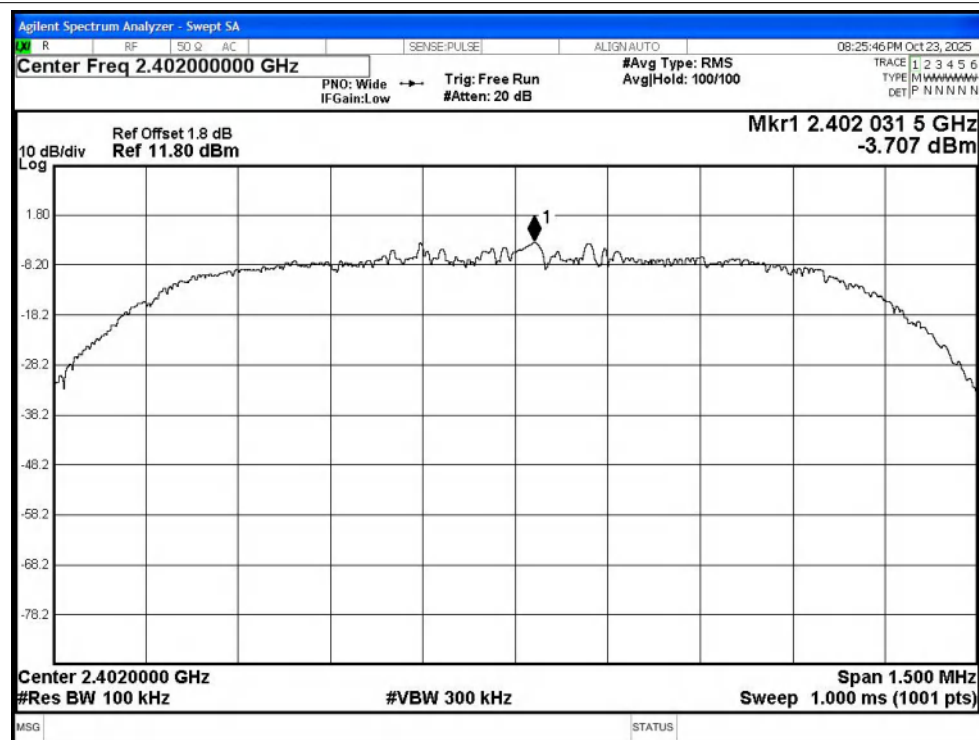
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref



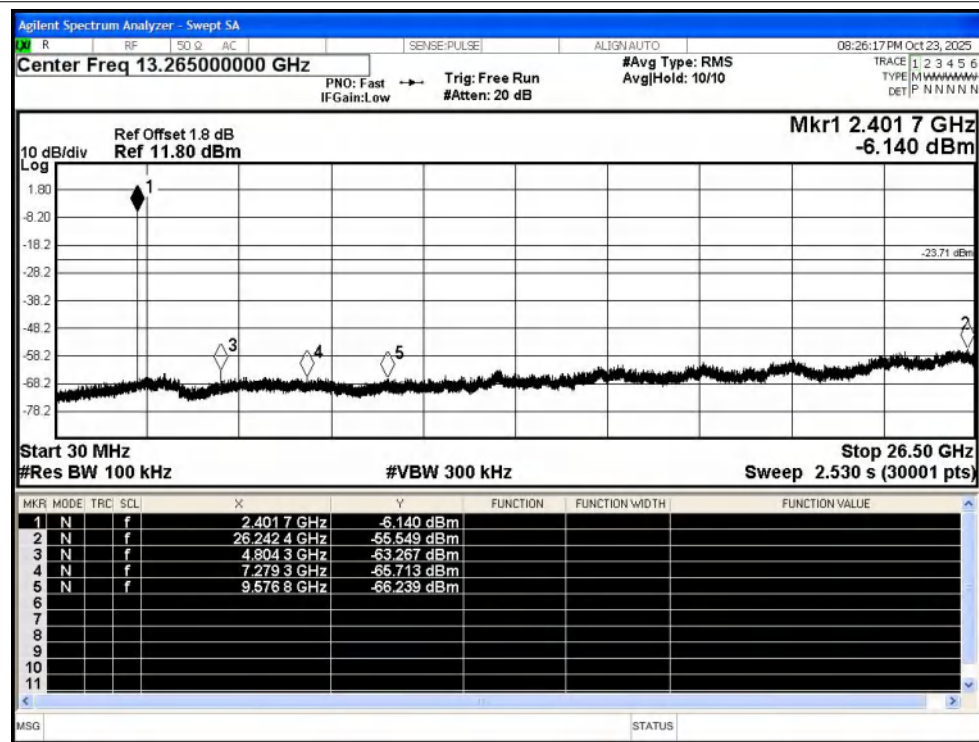
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission



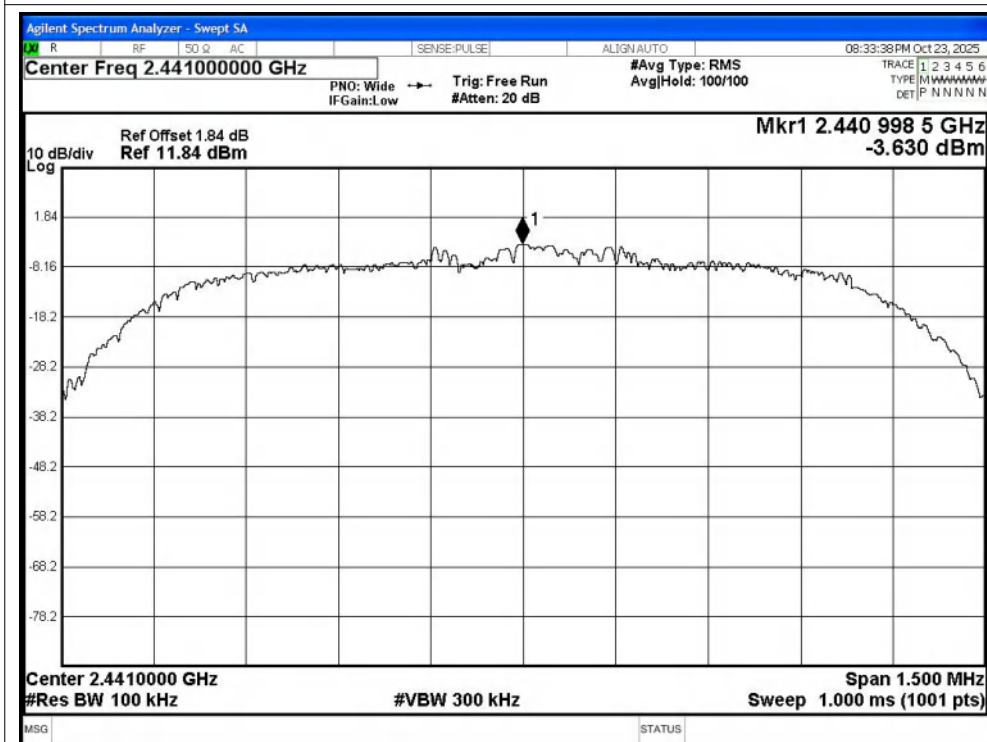
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref



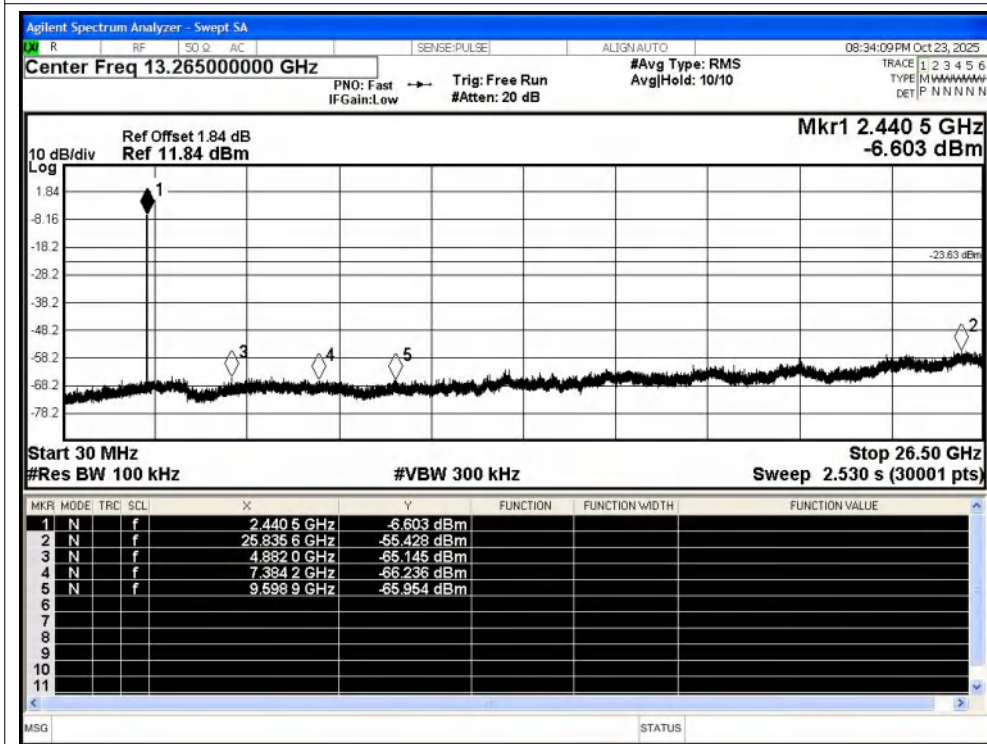
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission



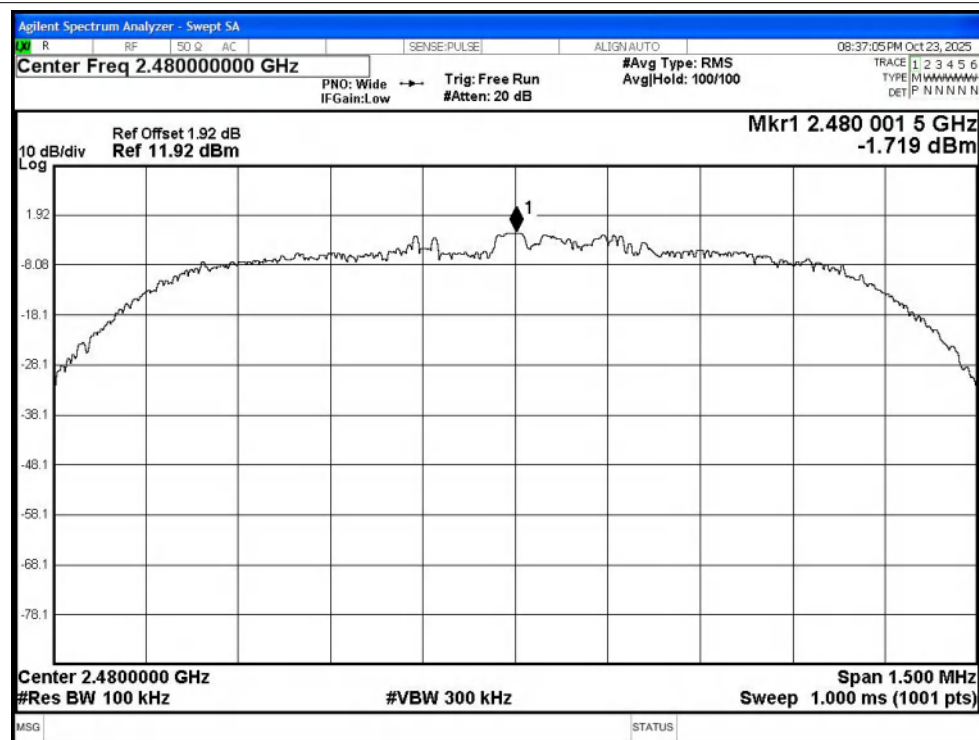
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



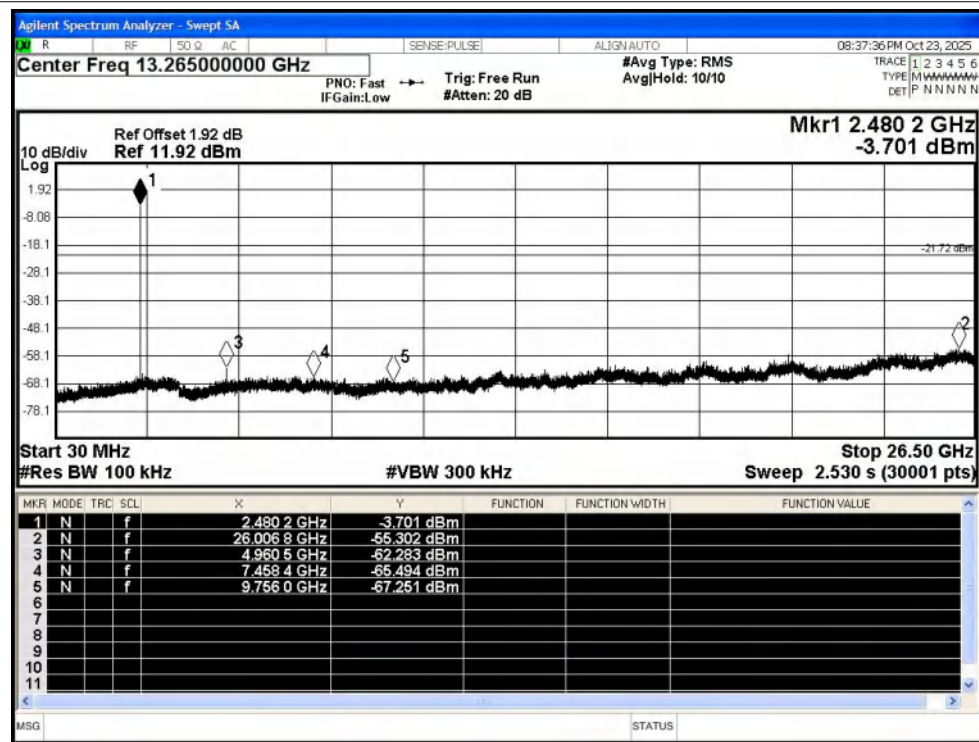
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



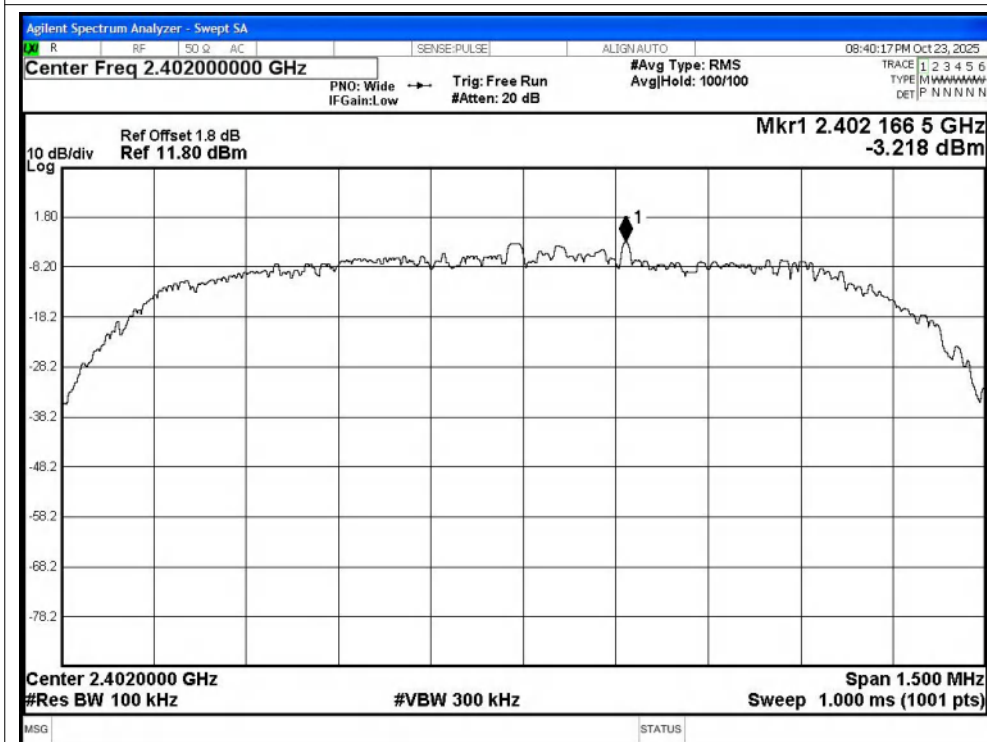
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



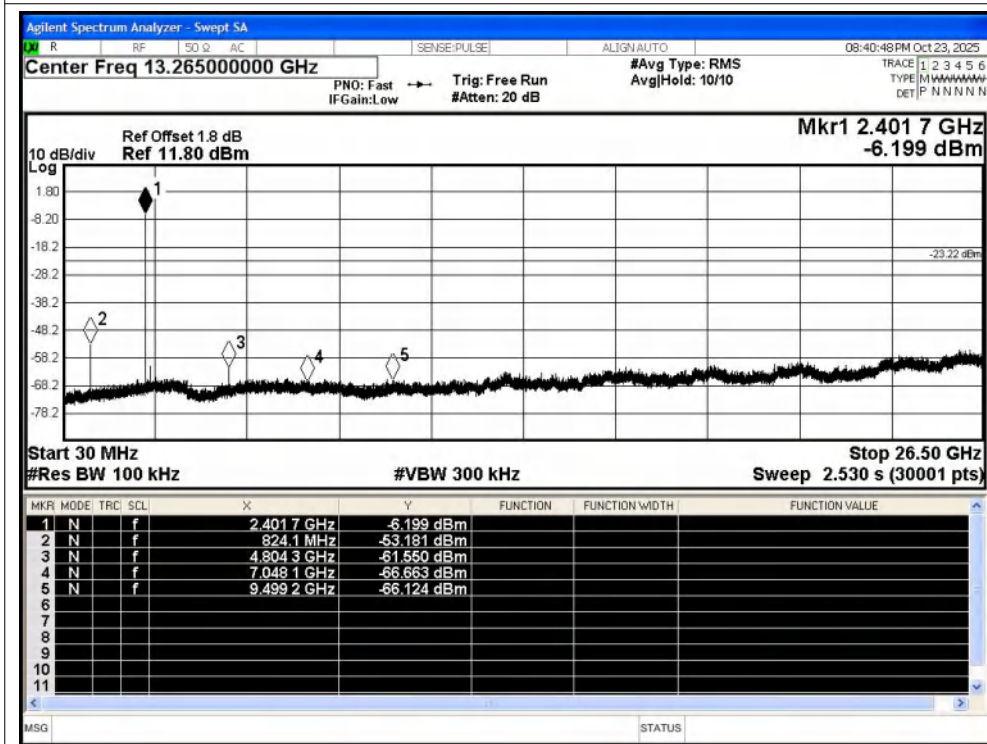
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission



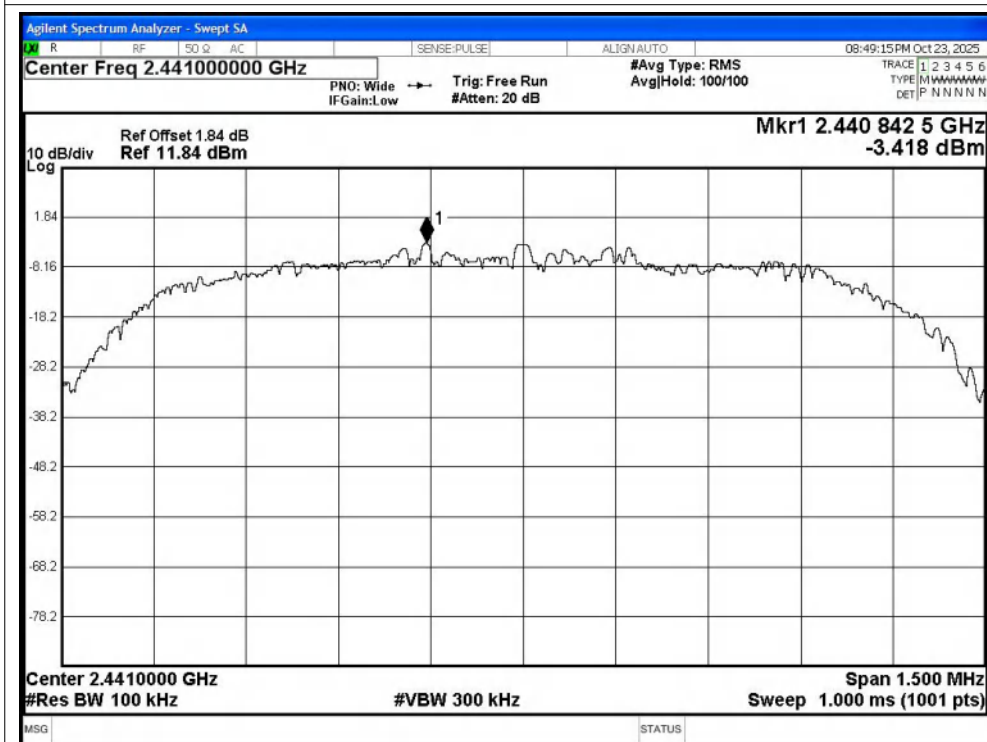
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref



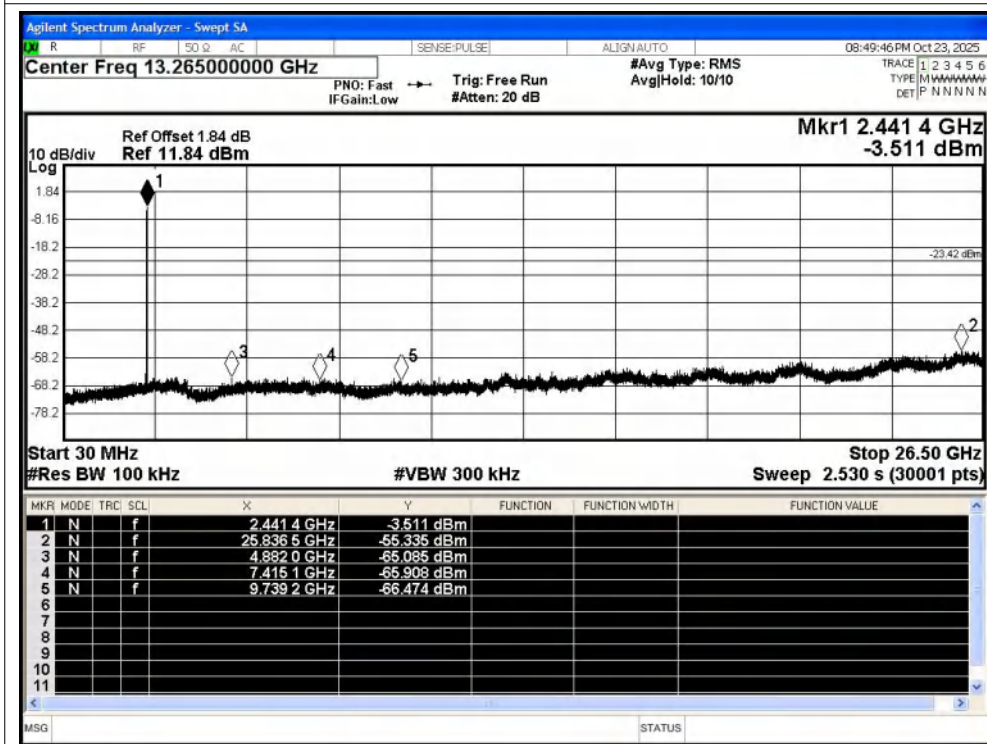
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Emission



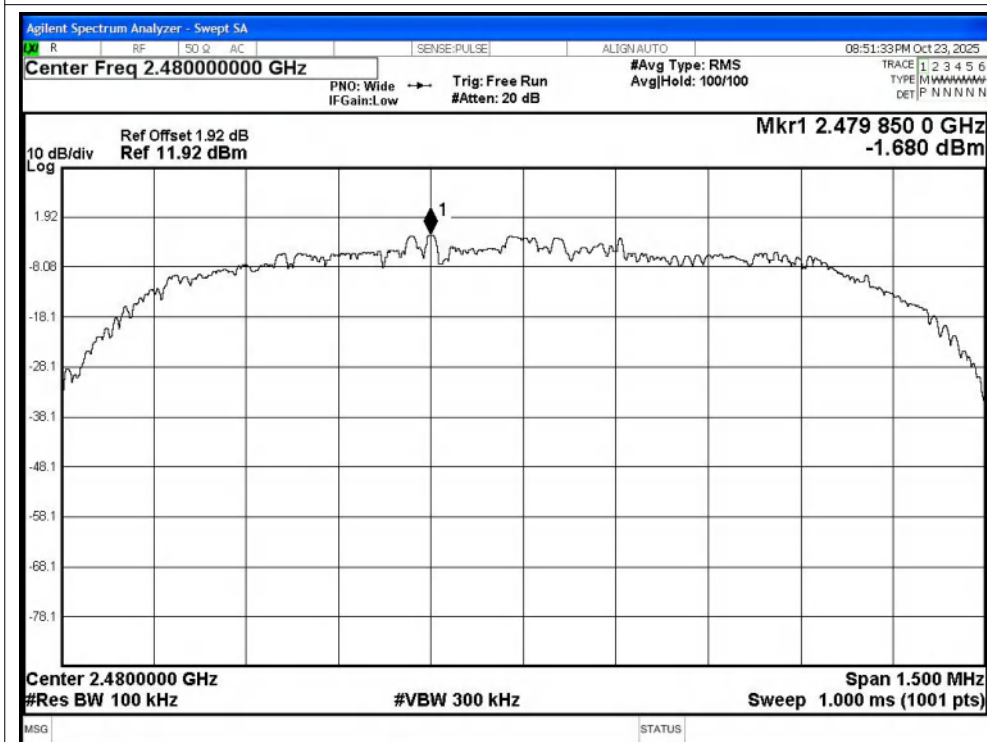
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref



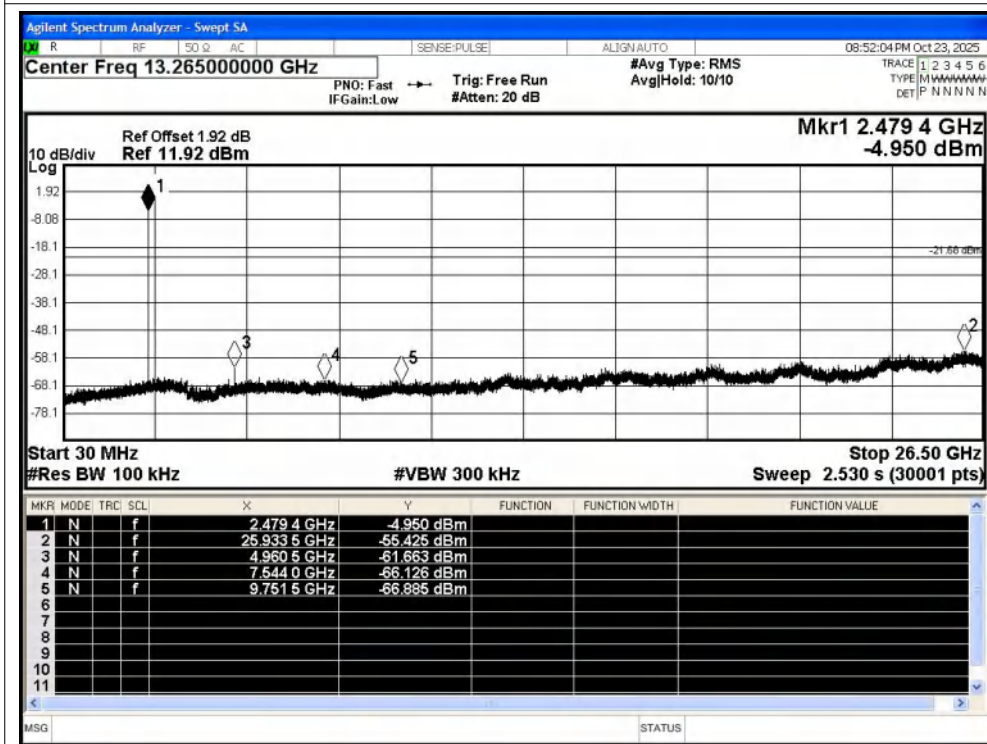
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission

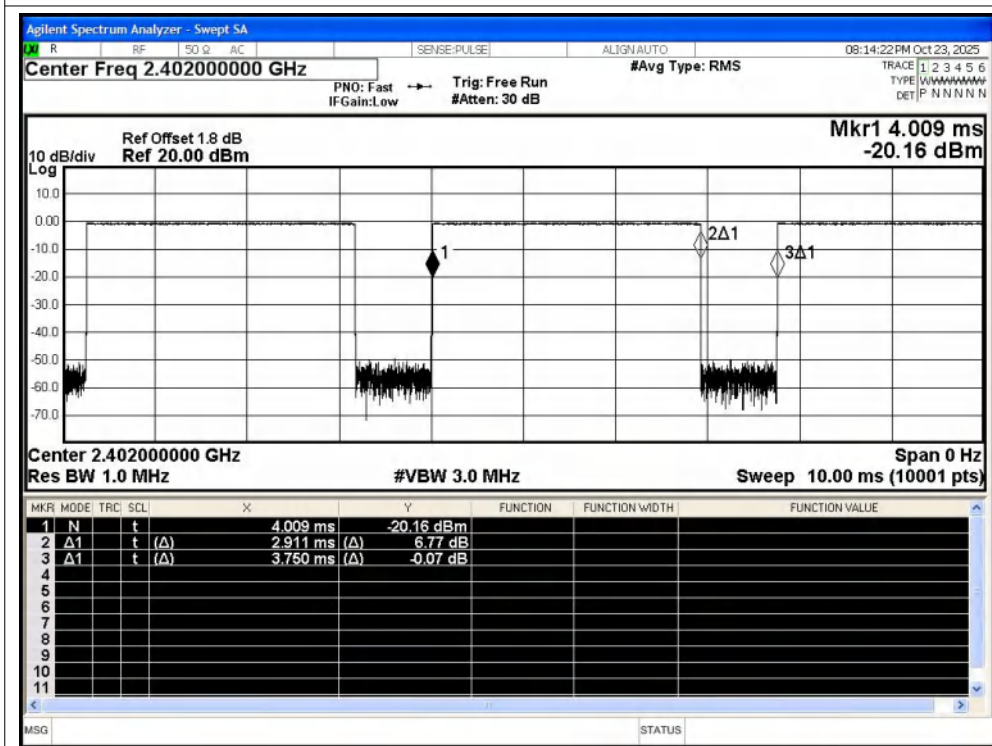


A.8 Duty Cycle

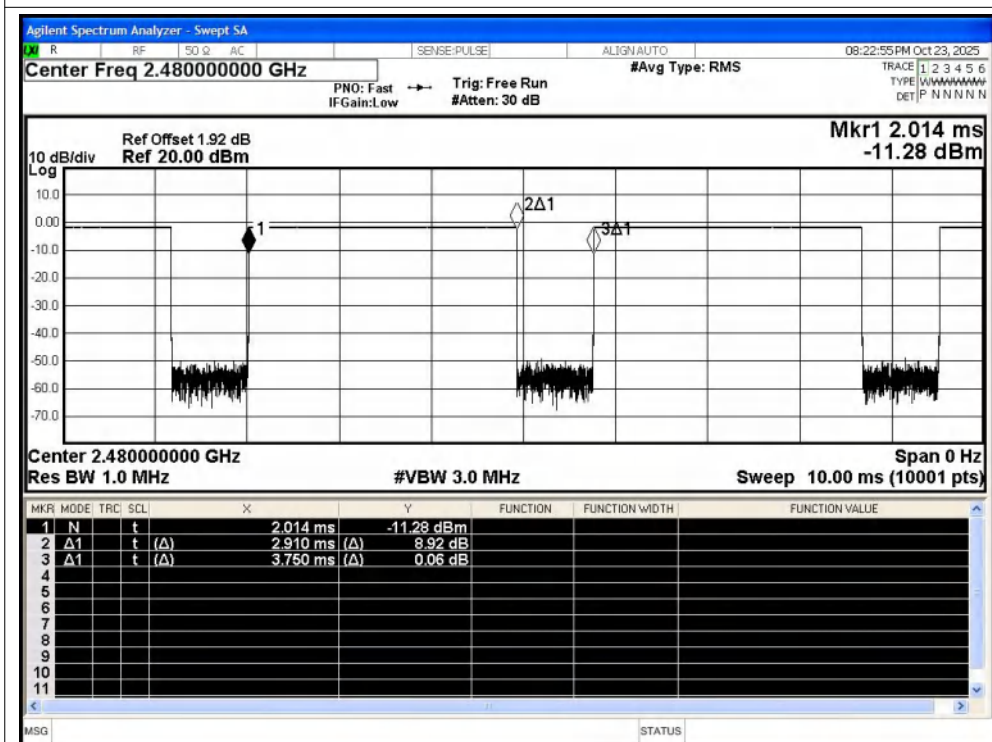
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH5	2402	Ant1	77.63	1.1	0.34
NVNT	1-DH5	2480	Ant1	77.6	1.1	0.34
NVNT	2-DH5	2402	Ant1	77.28	1.12	0.35
NVNT	2-DH5	2480	Ant1	77.28	1.12	0.35
NVNT	3-DH5	2402	Ant1	76.37	1.17	0.36
NVNT	3-DH5	2480	Ant1	77.28	1.12	0.35

Test Graphs

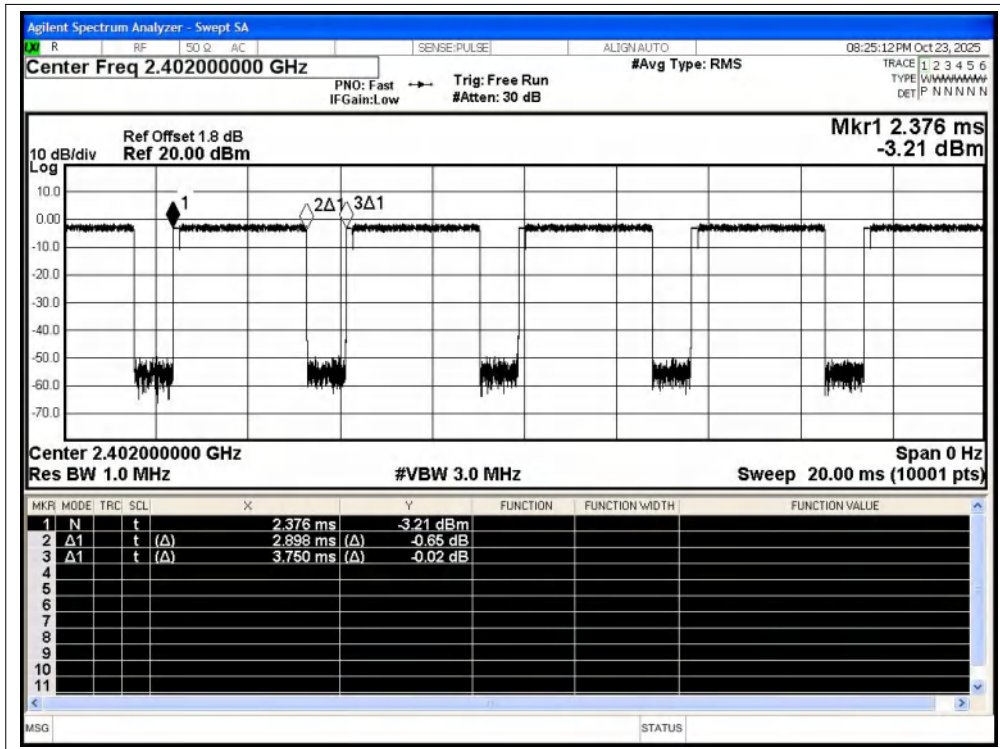
Duty Cycle NVNT 1-DH5 2402MHz Ant1



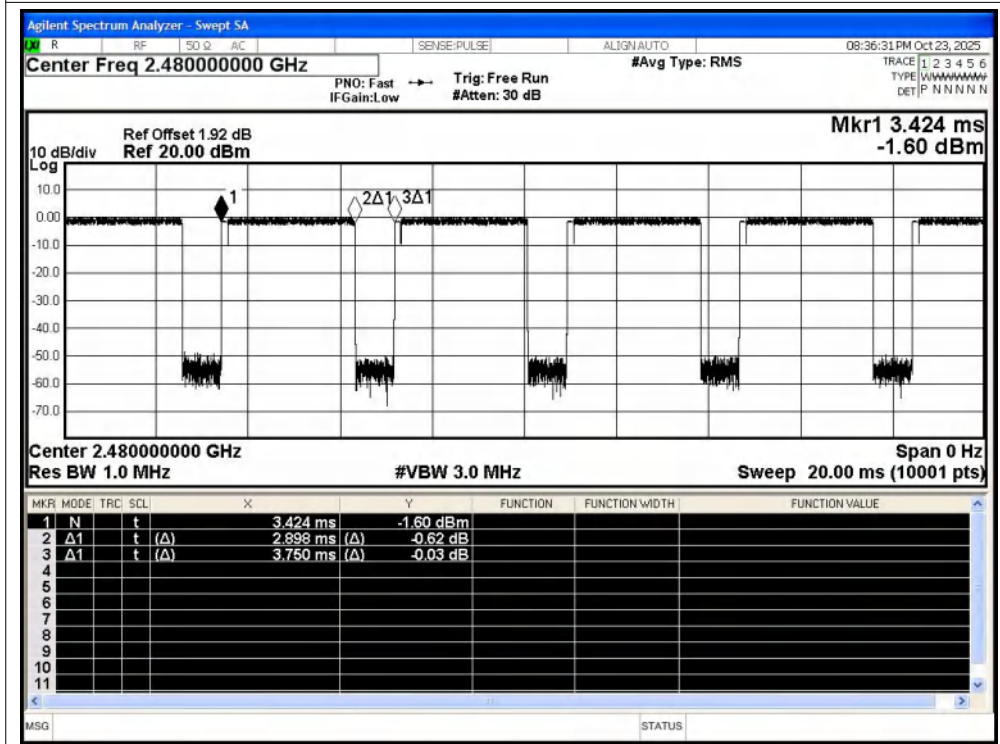
Duty Cycle NVNT 1-DH5 2480MHz Ant1



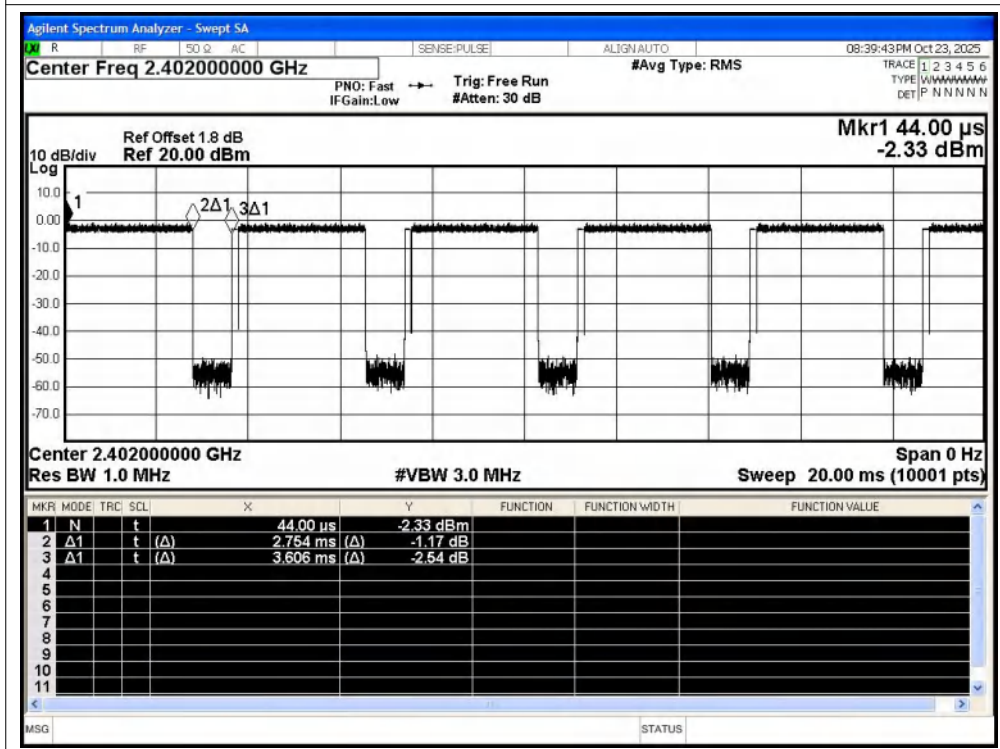
Duty Cycle NVNT 2-DH5 2402MHz Ant1



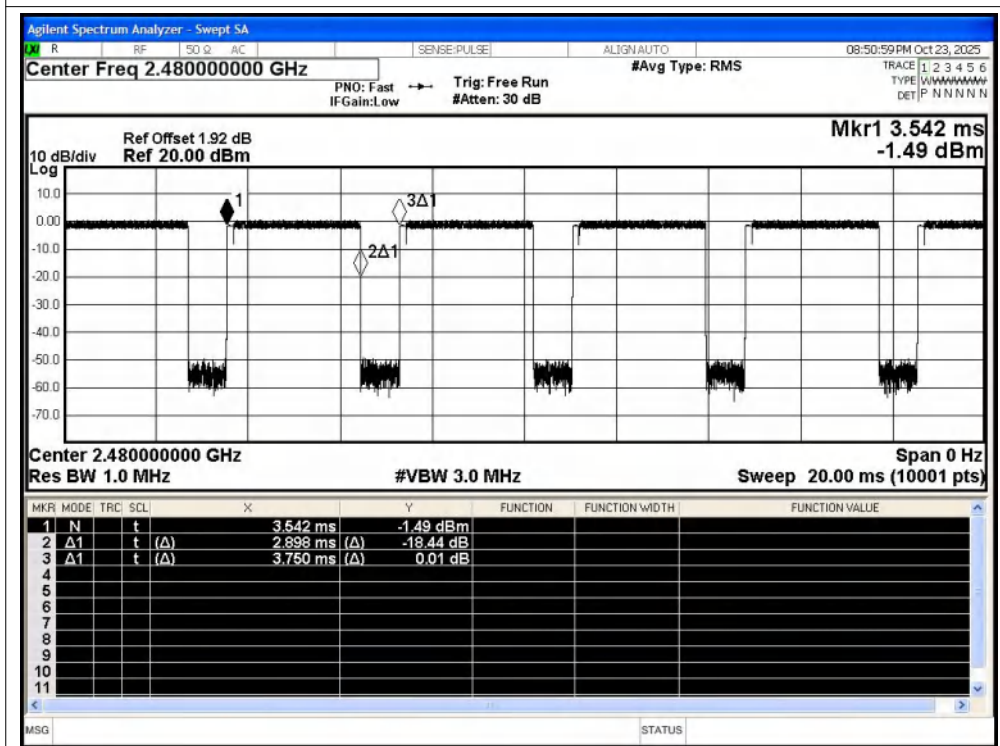
Duty Cycle NVNT 2-DH5 2480MHz Ant1



Duty Cycle NVNT 3-DH5 2402MHz Ant1



Duty Cycle NVNT 3-DH5 2480MHz Ant1

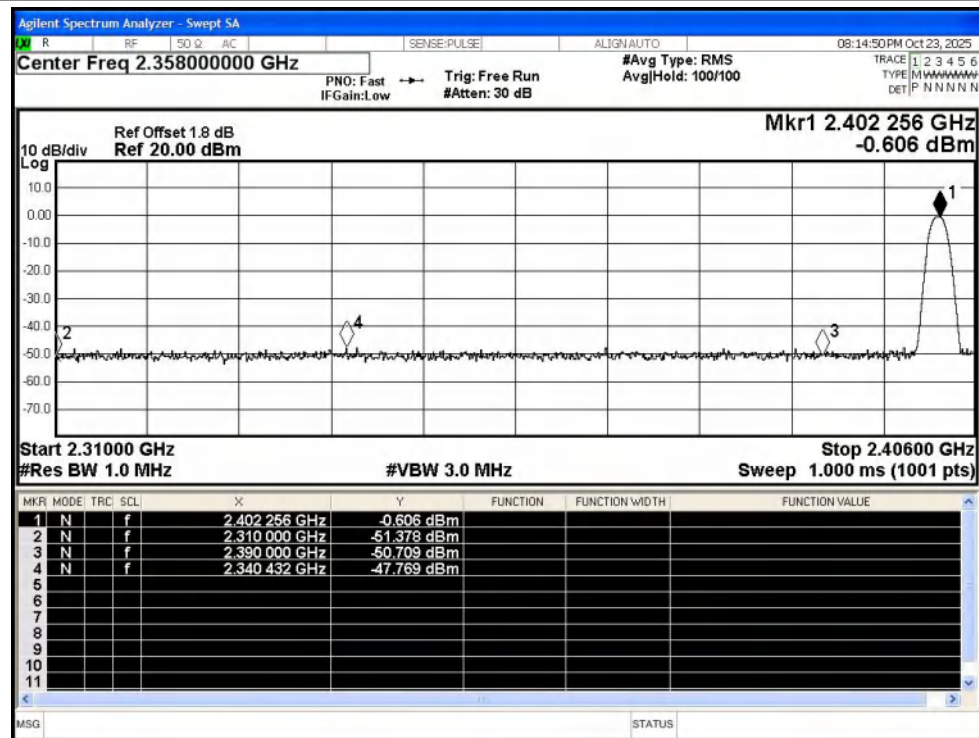


A.9 Restrict Band

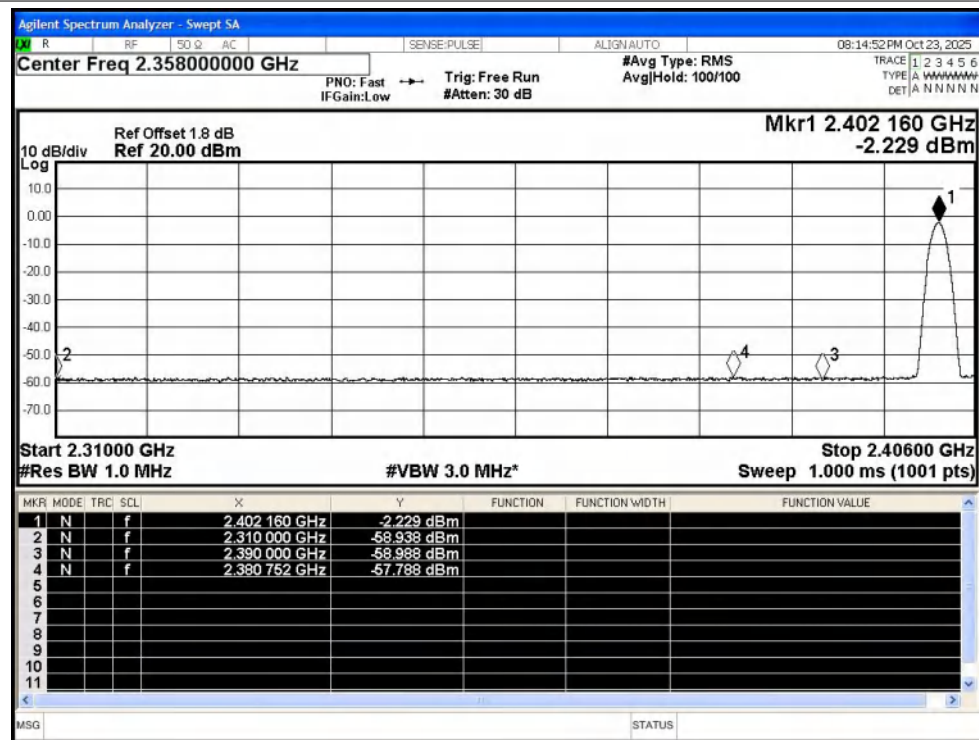
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-51.38	3.95	-	47.83	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-58.94	3.95	1.1	41.37	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2340.432	-47.77	3.95	-	51.44	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2380.752	-57.79	3.95	1.1	42.52	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-50.71	3.95	-	48.50	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-58.99	3.95	1.1	41.32	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-49.52	3.95	-	49.69	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-57.7	3.95	1.1	42.61	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2484.136	-46.69	3.95	-	52.52	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2485	-57.29	3.95	1.1	43.02	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-50.21	3.95	-	49.00	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-57.66	3.95	1.1	42.65	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-50.42	3.95	-	48.79	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-58.94	3.95	1.12	41.39	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2312.304	-48.12	3.95	-	51.09	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2381.136	-57.89	3.95	1.12	42.44	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-48.46	3.95	-	50.75	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-58.52	3.95	1.12	41.81	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-48.76	3.95	-	50.45	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-57.22	3.95	1.12	43.11	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2485.984	-45.89	3.95	-	53.32	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2490.472	-57.15	3.95	1.12	43.18	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-48.5	3.95	-	50.71	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-57.97	3.95	1.12	42.36	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-51.62	3.95	-	47.59	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-59.29	3.95	1.17	41.09	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2316.336	-47.91	3.95	-	51.30	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2364.912	-57.82	3.95	1.17	42.56	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-49.85	3.95	-	49.36	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-59.27	3.95	1.17	41.11	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-48.68	3.95	-	50.53	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-57.31	3.95	1.12	43.02	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2484.184	-45.28	3.95	-	53.93	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.608	-57.13	3.95	1.12	43.20	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-50.82	3.95	-	48.39	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-58.6	3.95	1.12	41.73	Average	54	Pass

Test Graphs

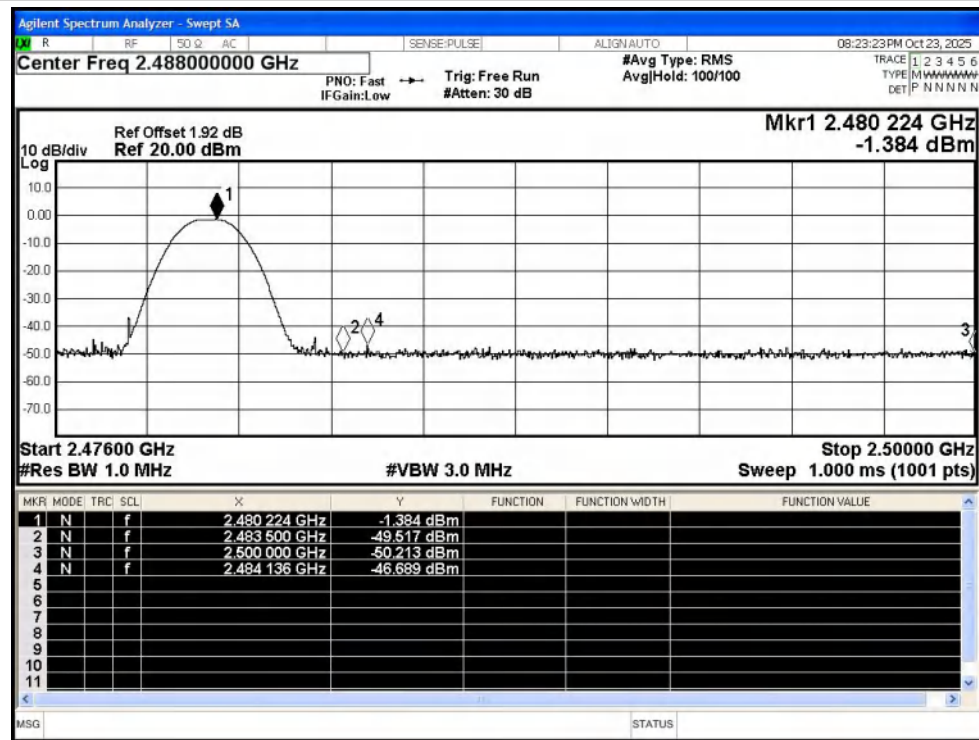
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak



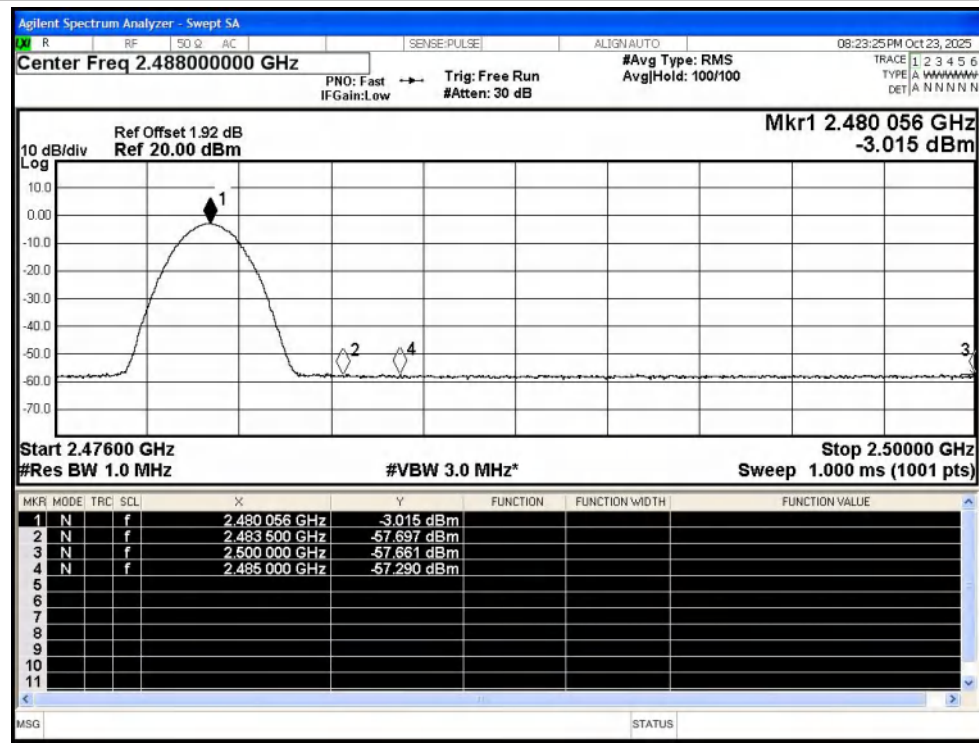
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



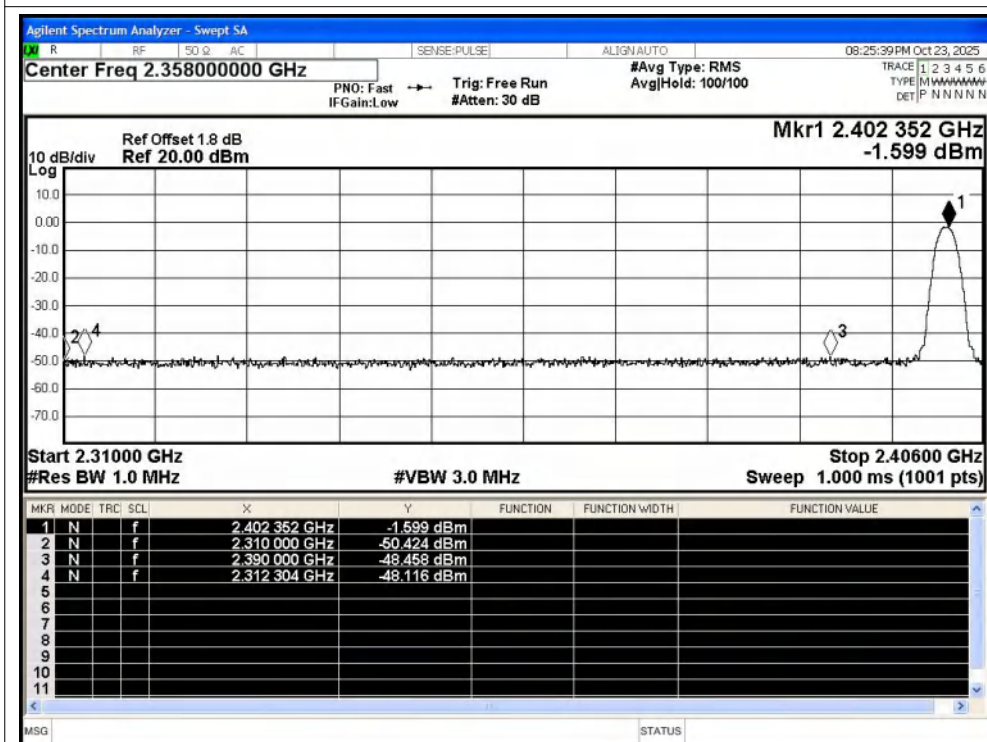
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak



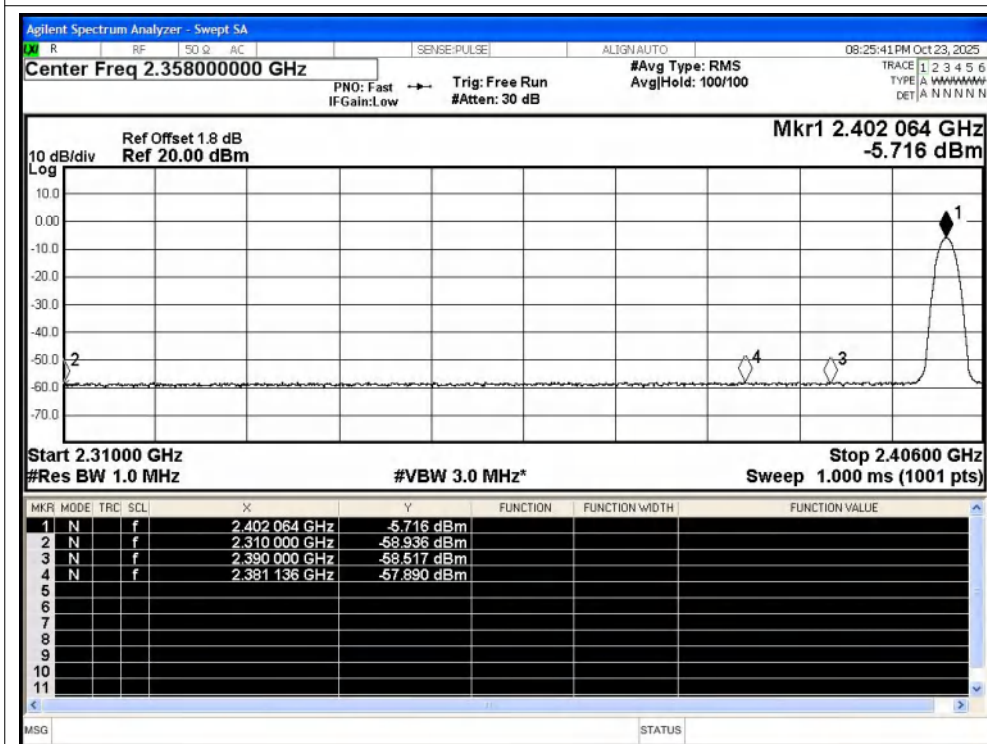
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average



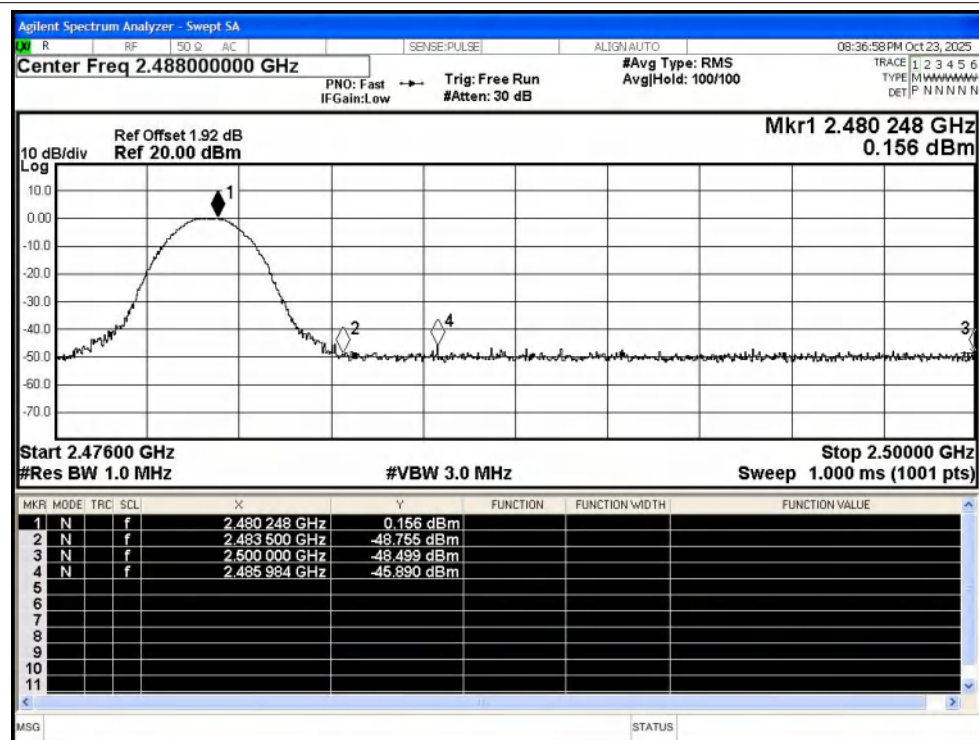
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak



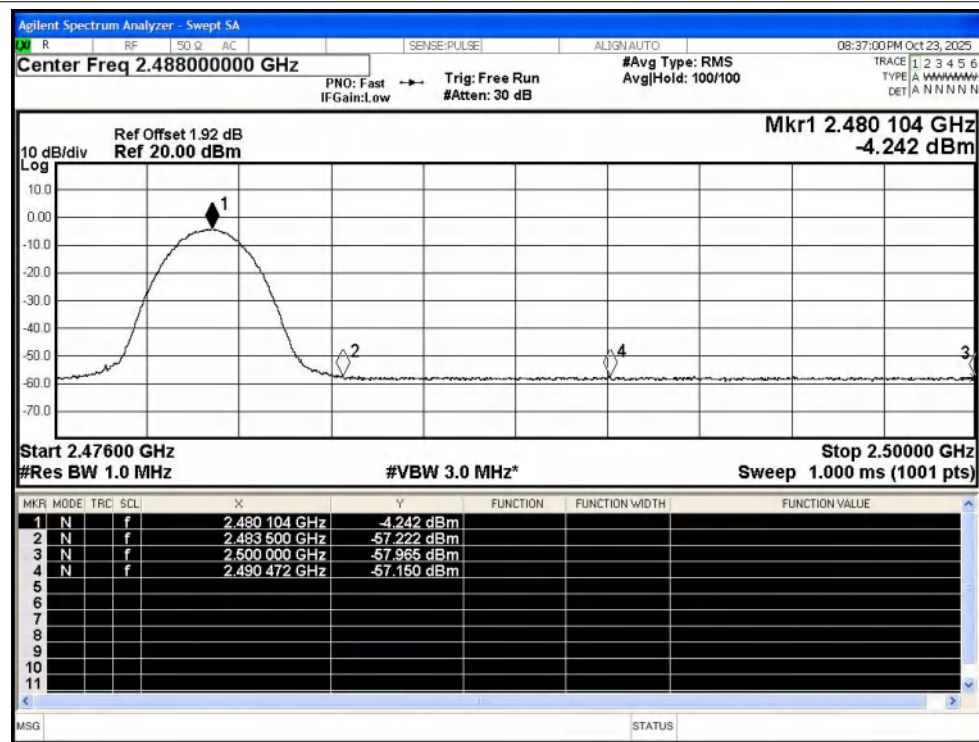
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average



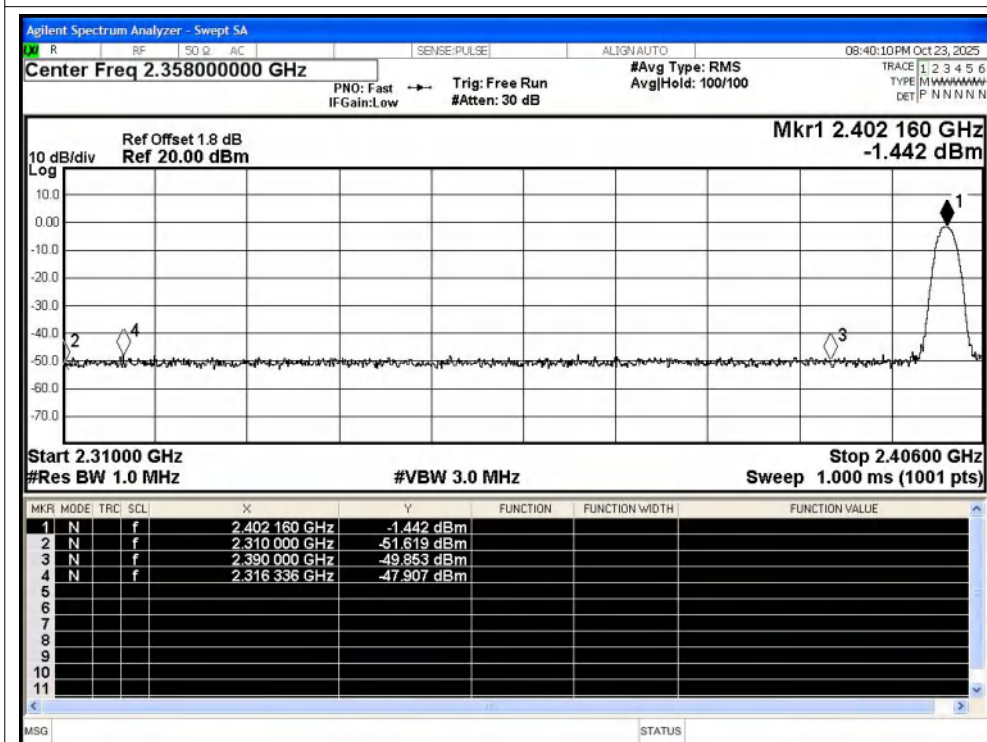
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak



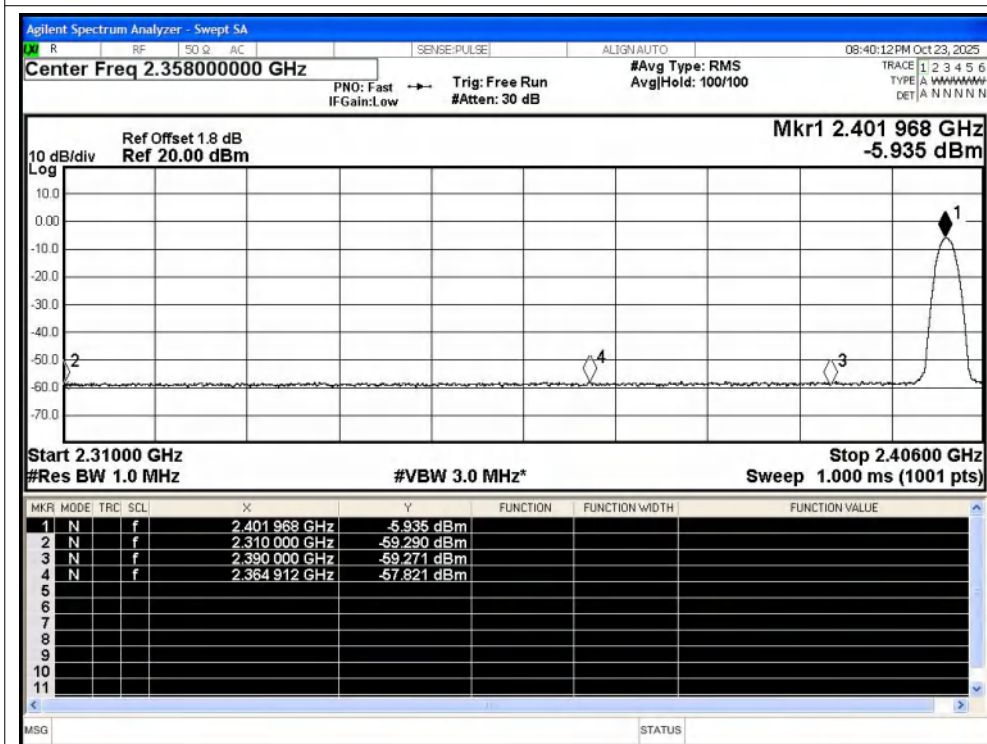
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Average



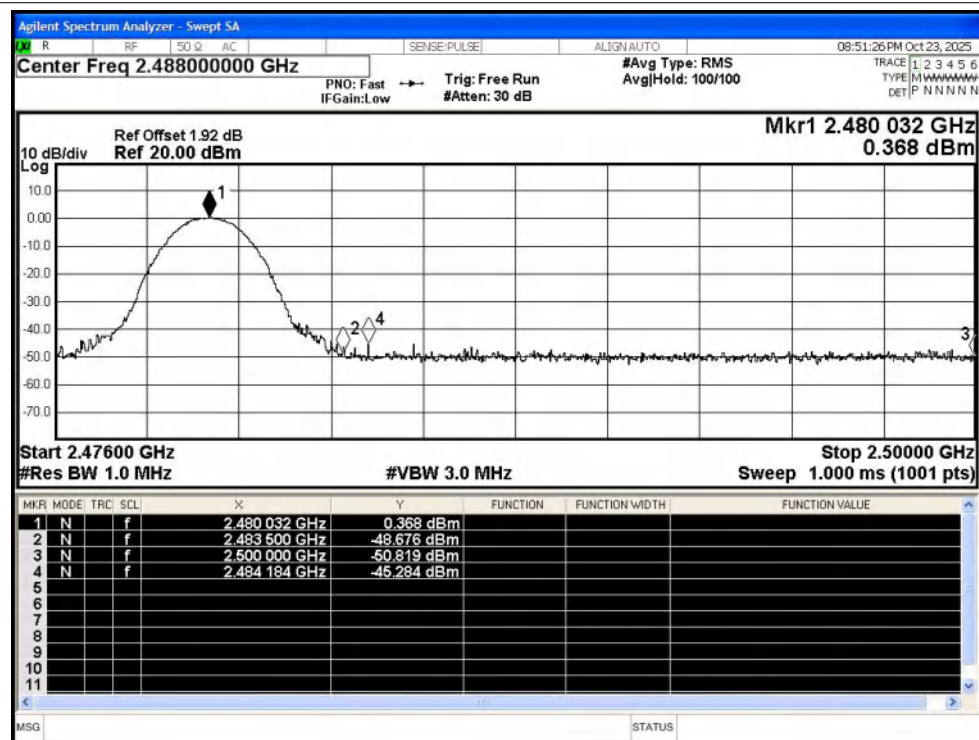
Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak



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

