Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: SPEAKER

Test Model: RA 0215

Environmental Conditions

Temperature:	23.8° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Joker Hu
Supervised by:	Ling Zhu

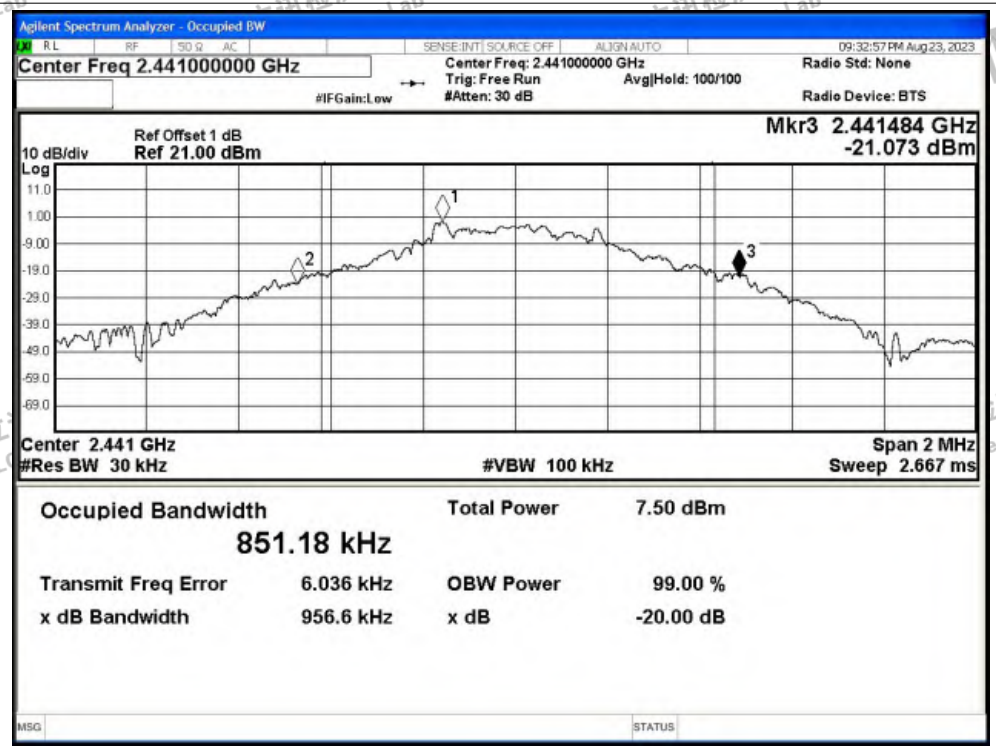
A.1 -20dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	0.943	0	Pass
NVNT	1-DH5	2441	Ant1	0.957	0	Pass
NVNT	1-DH5	2480	Ant1	0.944	0	Pass
NVNT	2-DH5	2402	Ant1	1.283	0	Pass
NVNT	2-DH5	2441	Ant1	1.331	0	Pass
NVNT	2-DH5	2480	Ant1	1.282	0	Pass
NVNT	3-DH5	2402	Ant1	1.286	0	Pass
NVNT	3-DH5	2441	Ant1	1.287	0	Pass
NVNT	3-DH5	2480	Ant1	1.312	0	Pass

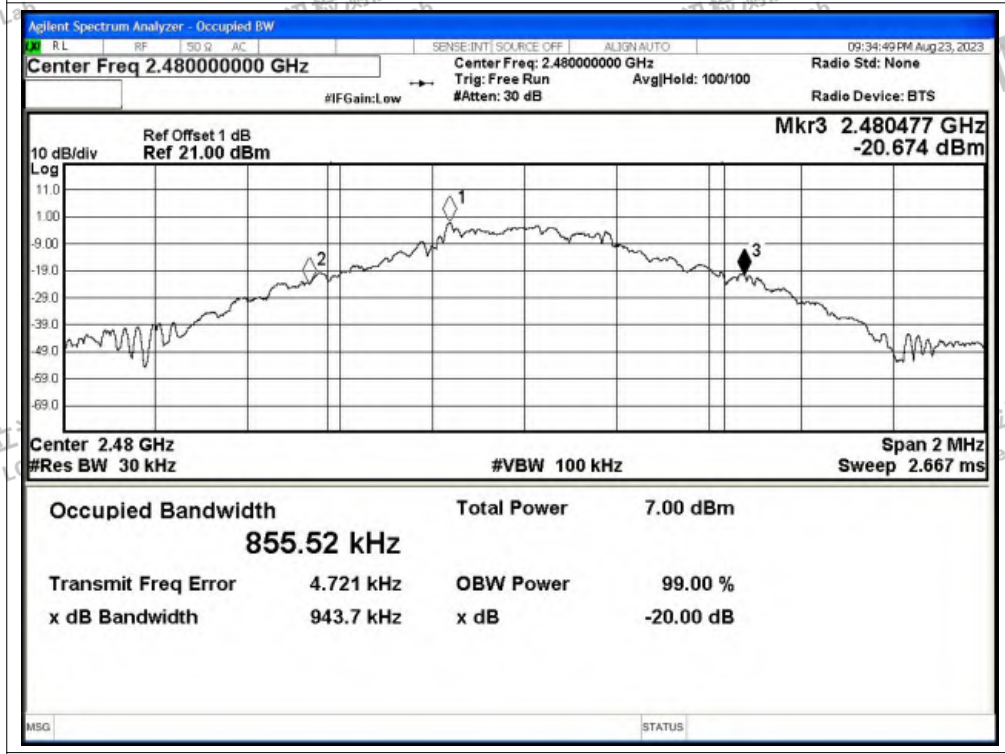
Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1

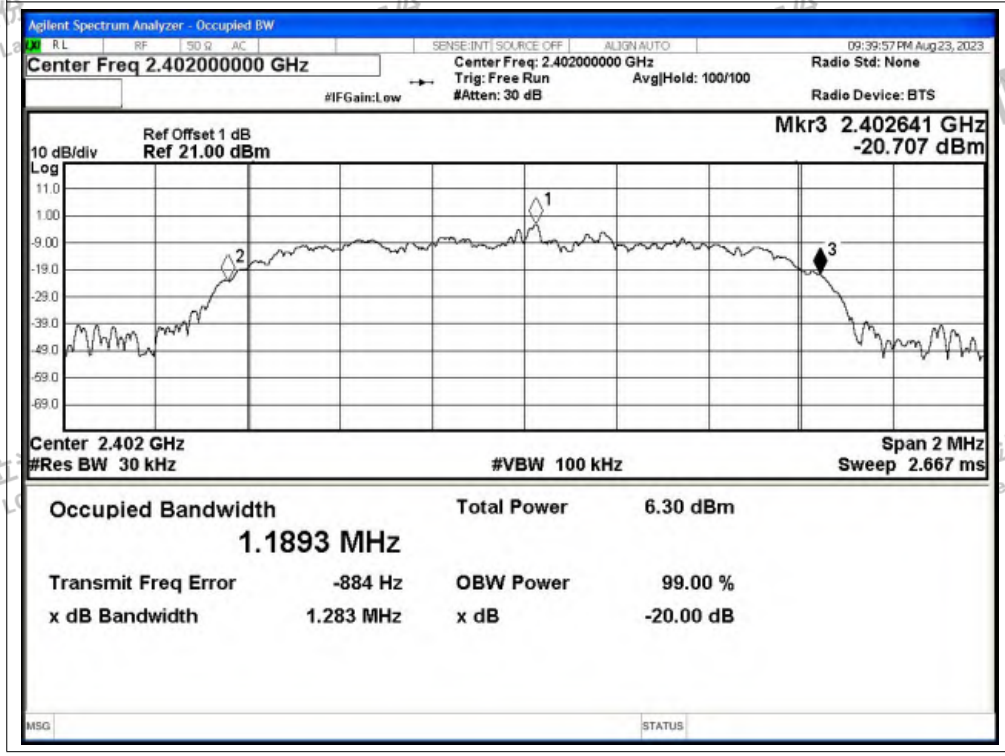
-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1



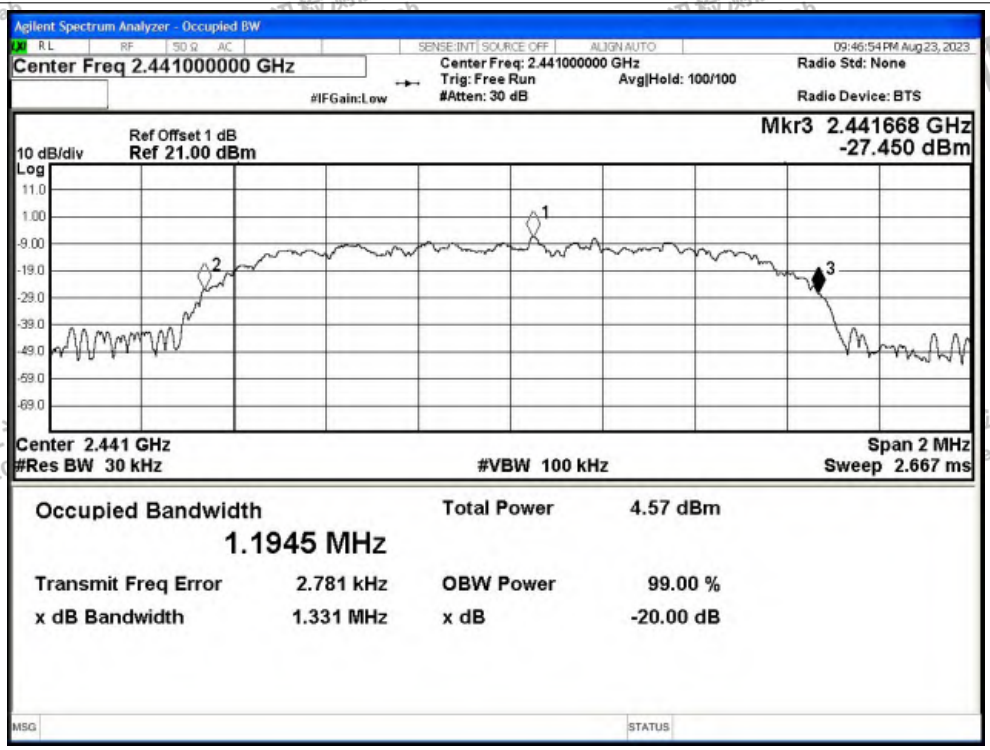
-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1



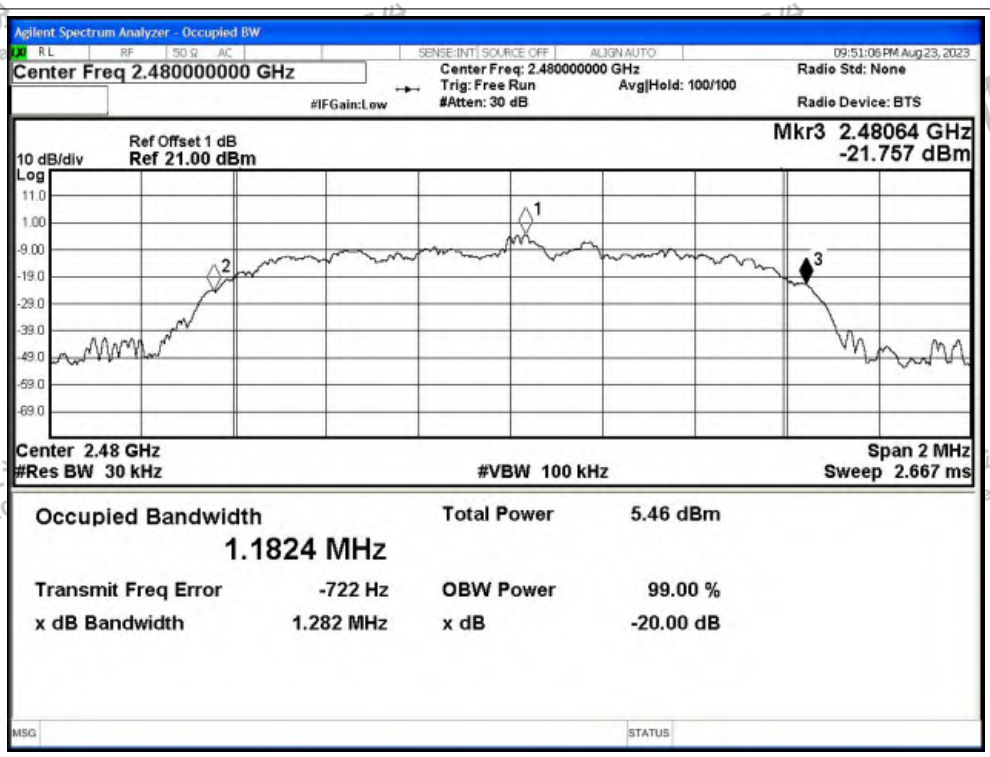
-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1

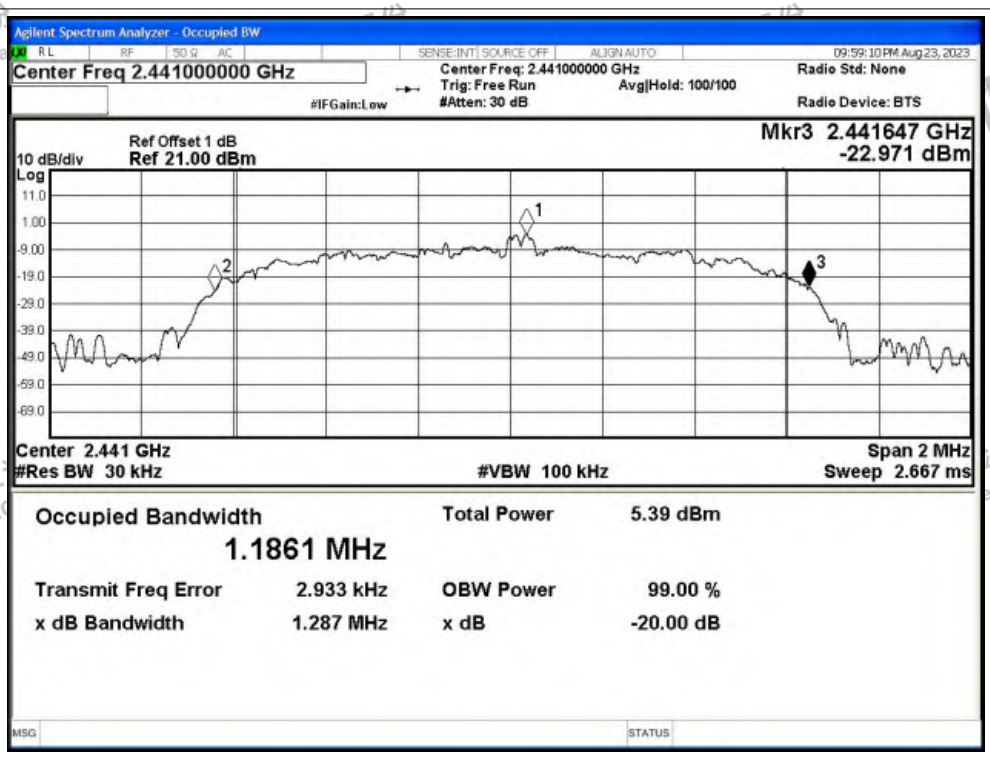


-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1

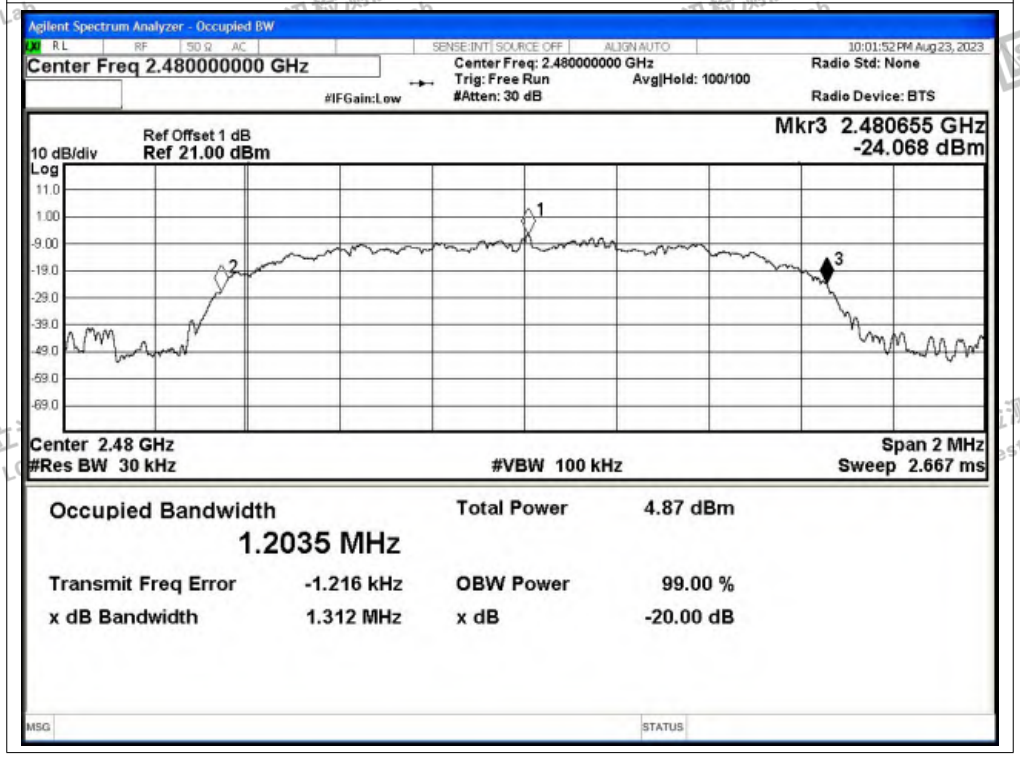


-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1

-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1

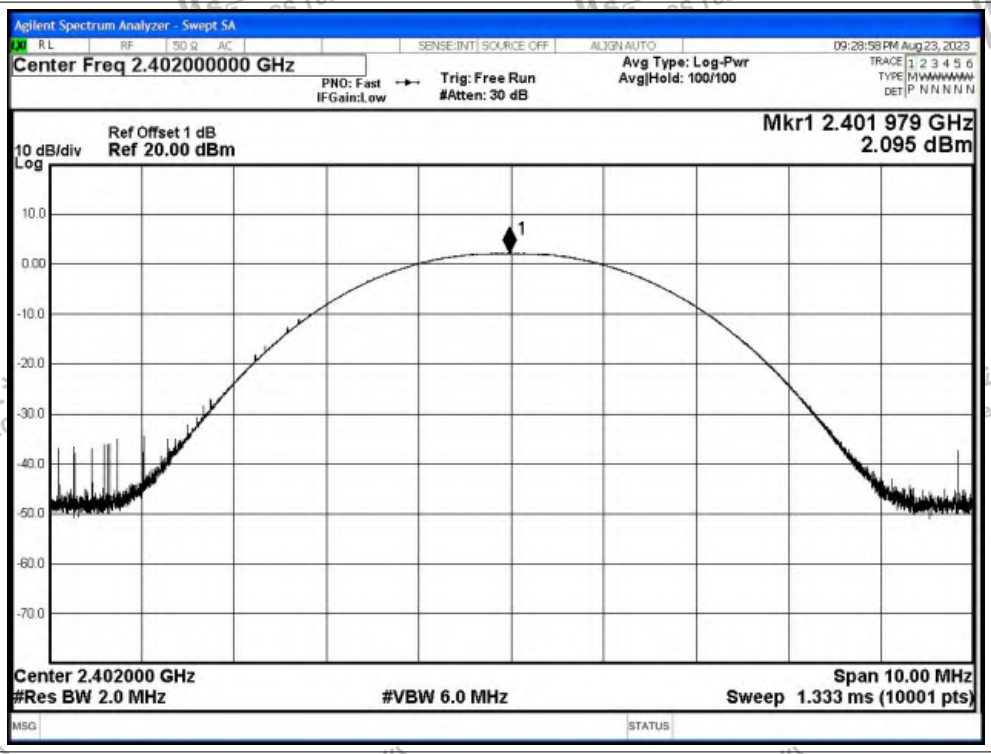


A.2 Maximum Conducted Output Power

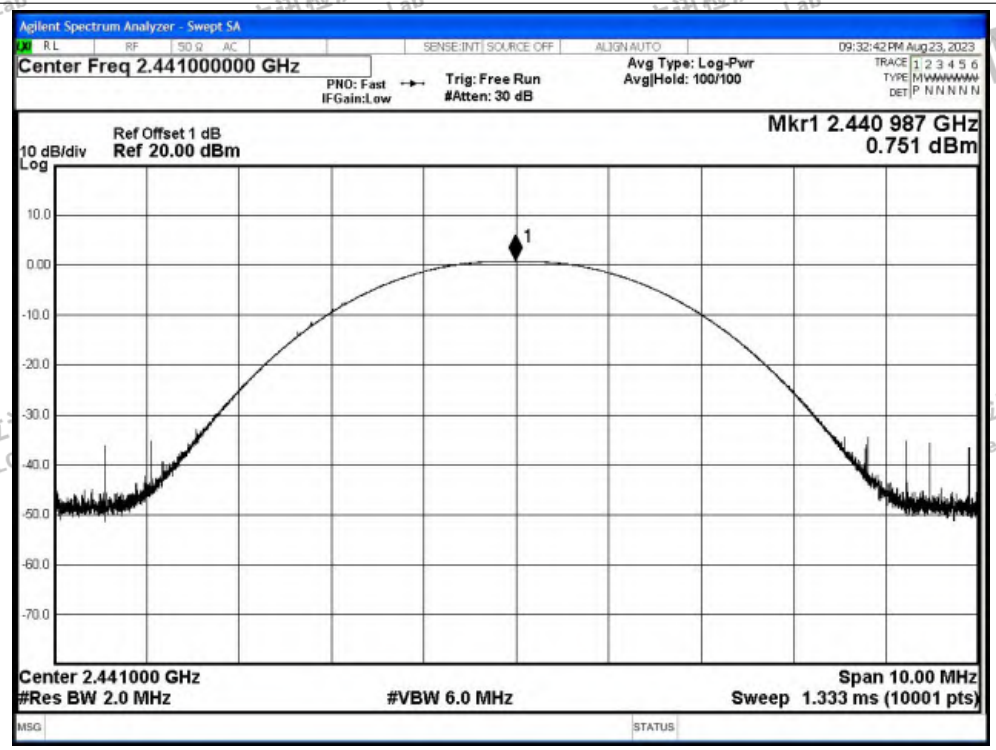
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	2.1	21	Pass
NVNT	1-DH5	2441	Ant1	0.75	21	Pass
NVNT	1-DH5	2480	Ant1	0.25	21	Pass
NVNT	2-DH5	2402	Ant1	2.15	21	Pass
NVNT	2-DH5	2441	Ant1	0.88	21	Pass
NVNT	2-DH5	2480	Ant1	0.9	21	Pass
NVNT	3-DH5	2402	Ant1	2.34	21	Pass
NVNT	3-DH5	2441	Ant1	1.08	21	Pass
NVNT	3-DH5	2480	Ant1	1.04	21	Pass

Test Graphs

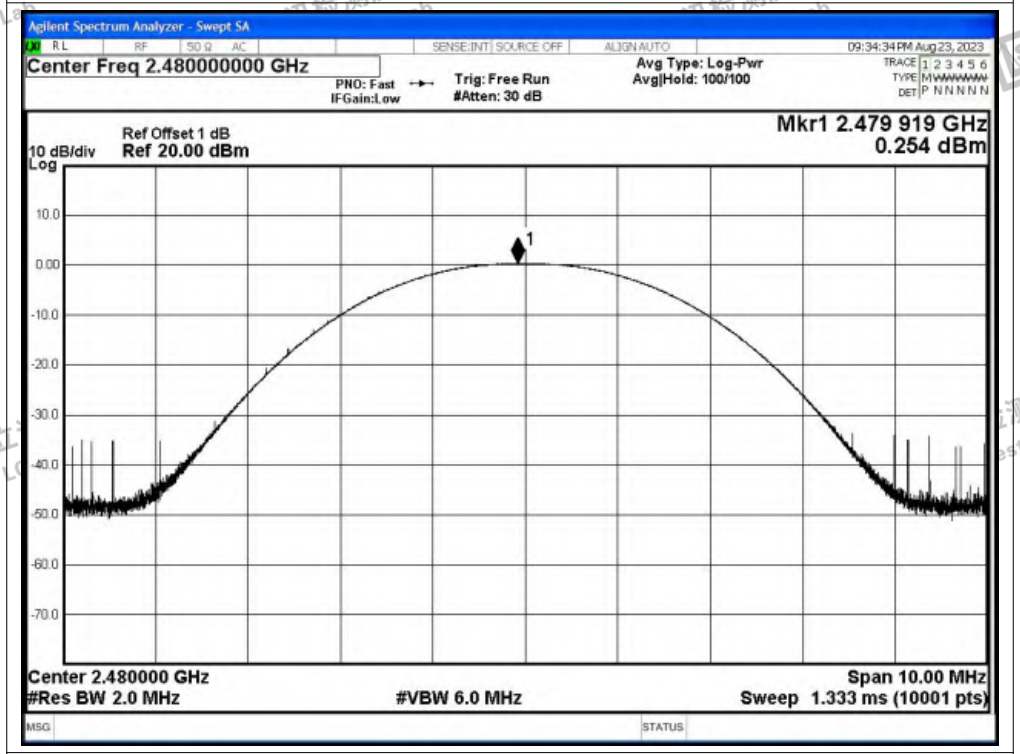
Power NVNT 1-DH5 2402MHz Ant1



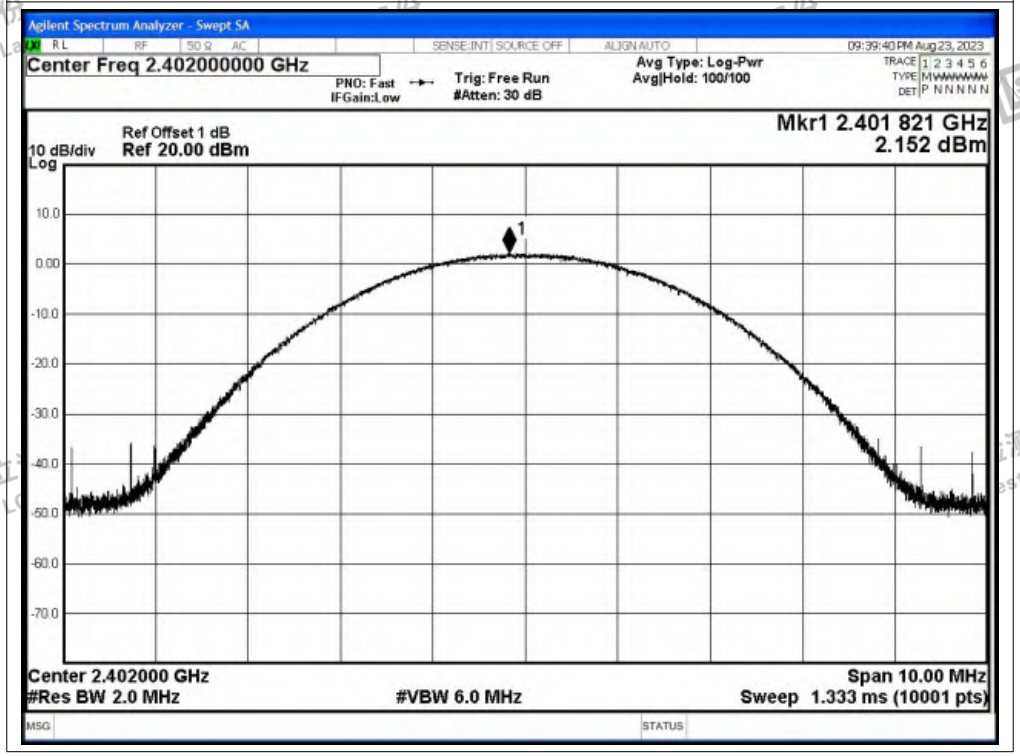
Power NVNT 1-DH5 2441MHz Ant1



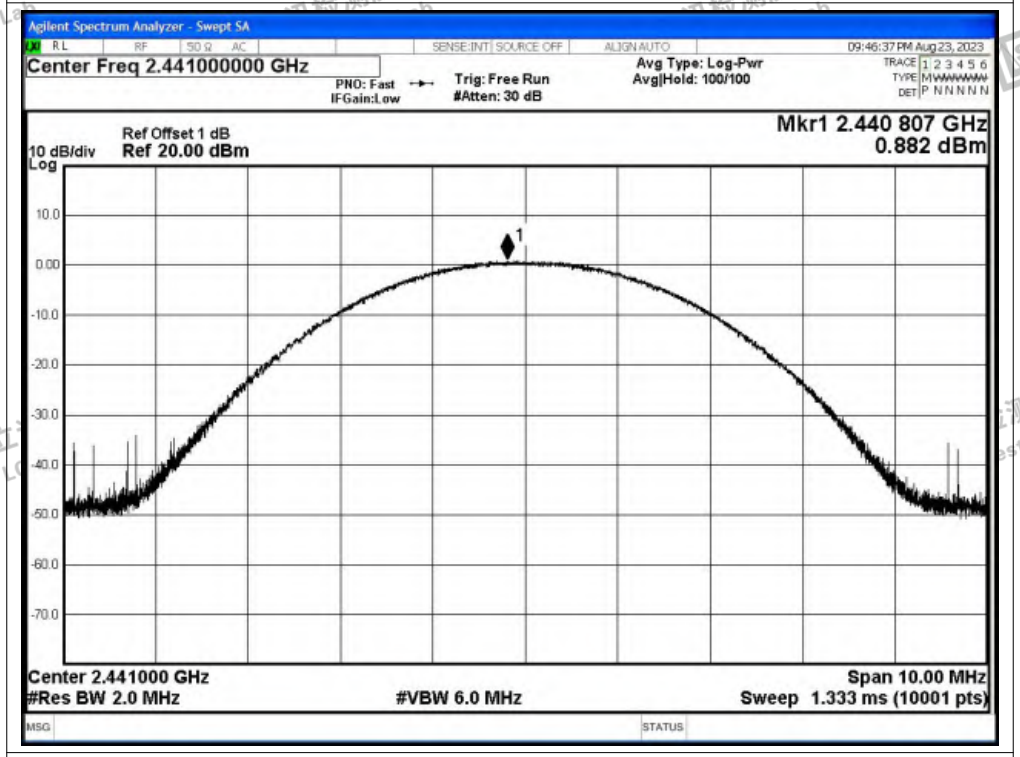
Power NVNT 1-DH5 2480MHz Ant1



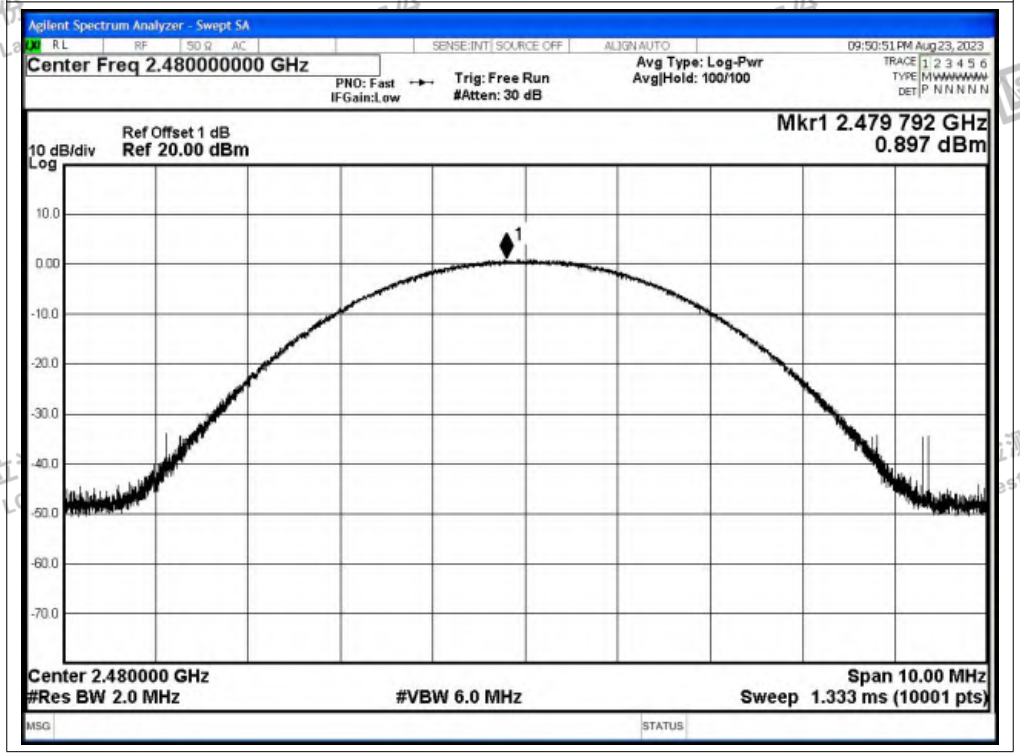
Power NVNT 2-DH5 2402MHz Ant1



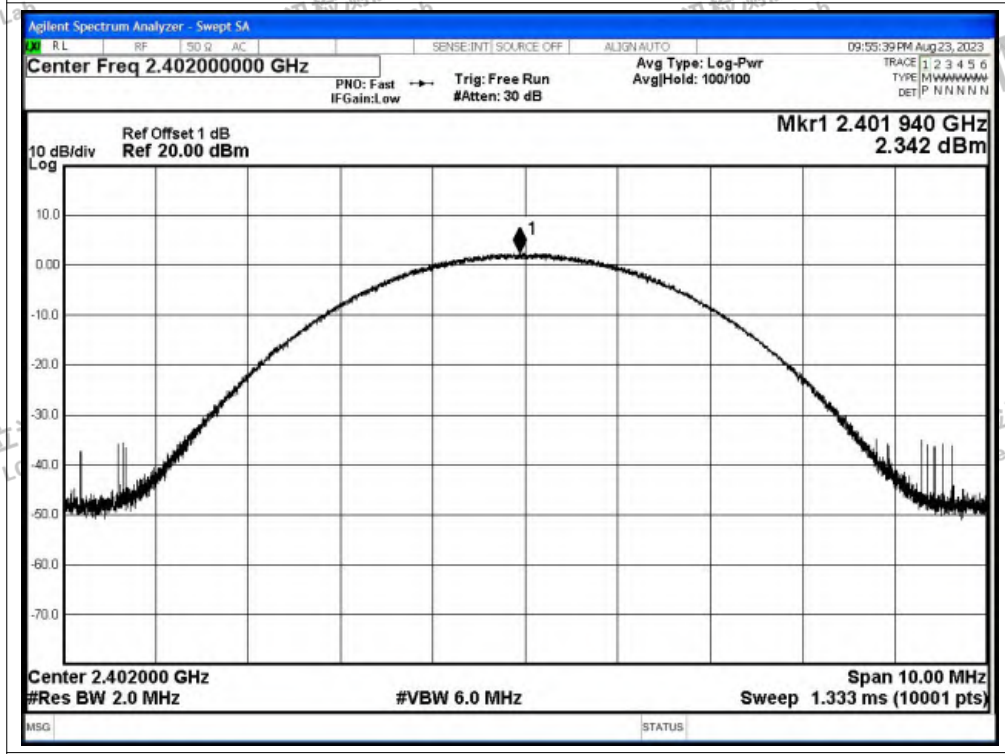
Power NVNT 2-DH5 2441MHz Ant1



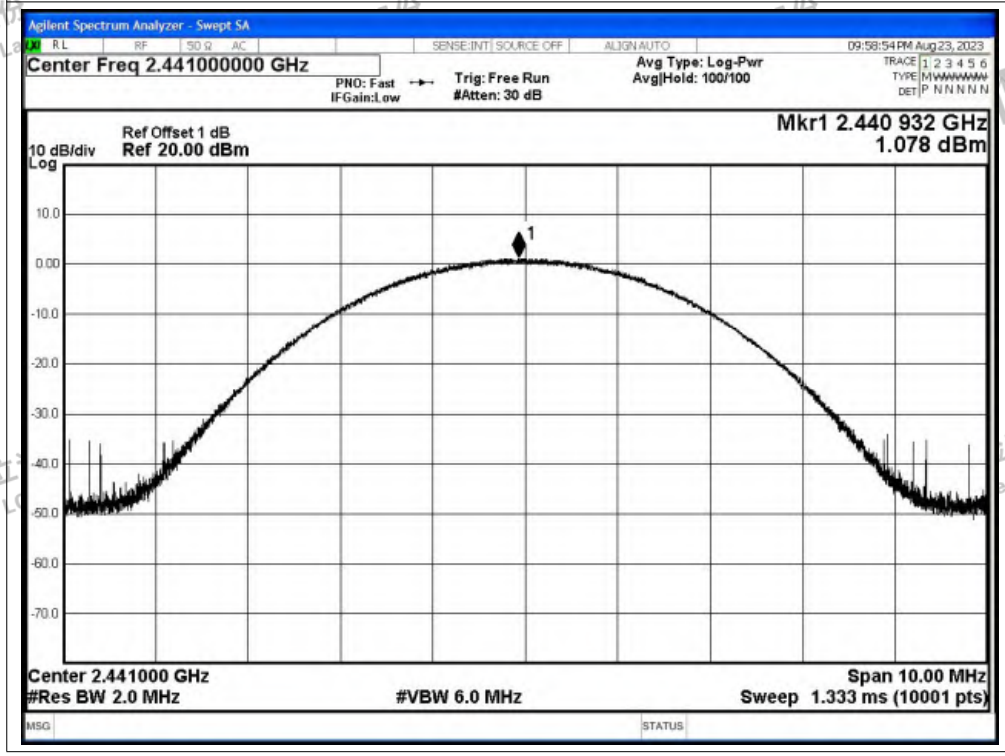
Power NVNT 2-DH5 2480MHz Ant1



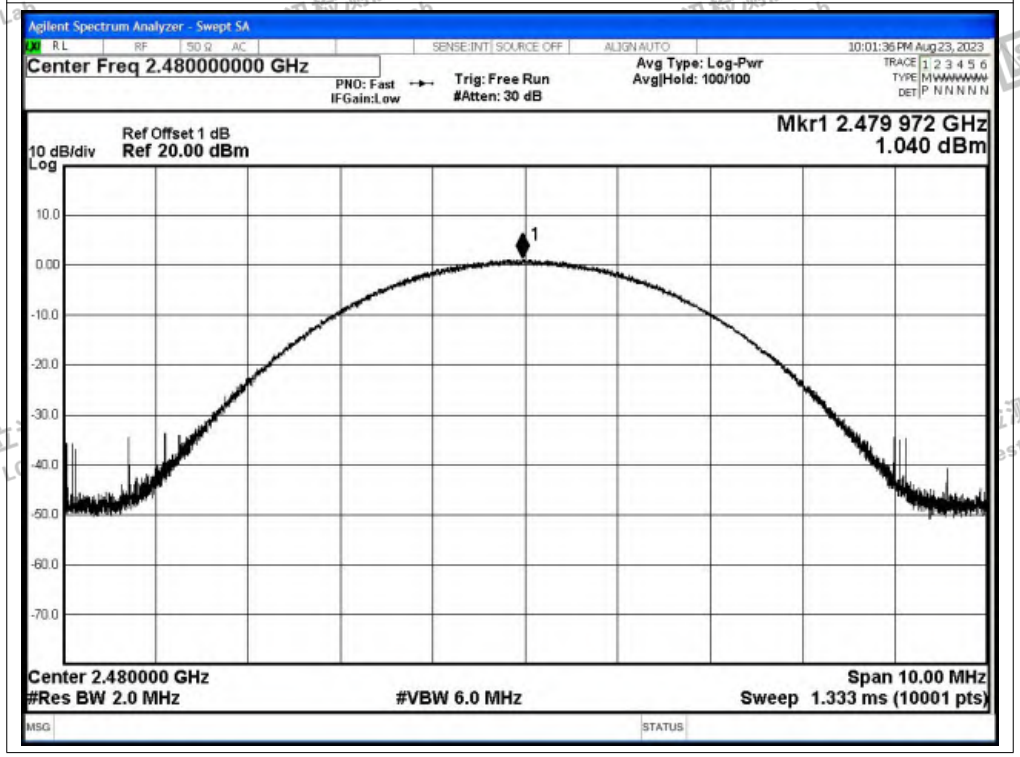
Power NVNT 3-DH5 2402MHz Ant1



Power NVNT 3-DH5 2441MHz Ant1



Power NVNT 3-DH5 2480MHz Ant1



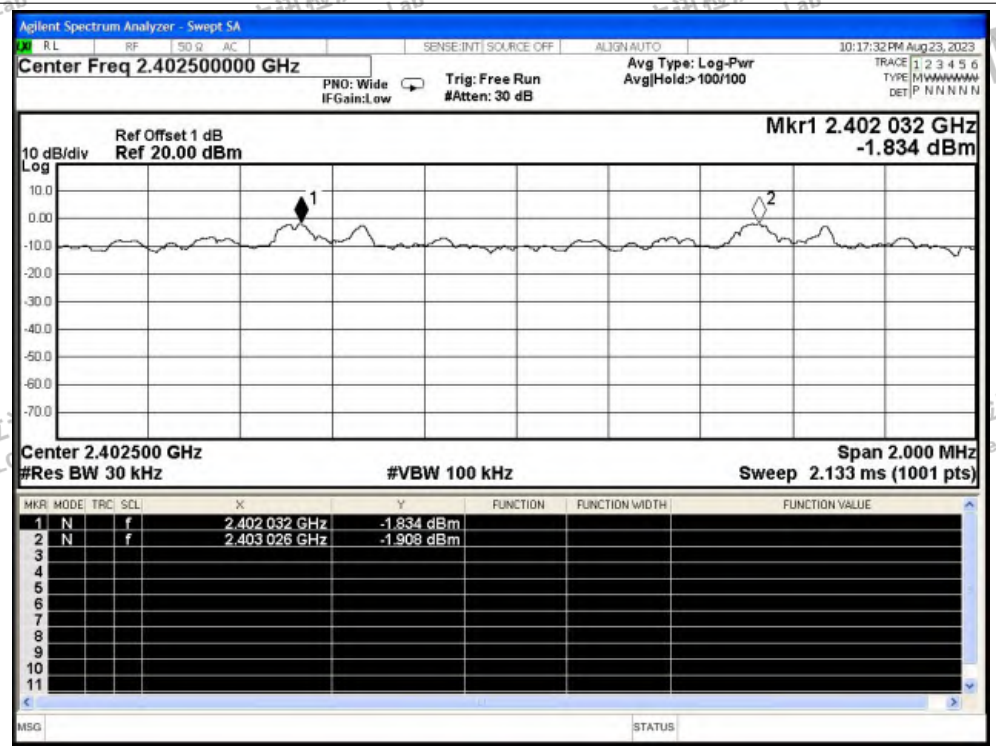
A.3 Carrier Frequencies Separation

Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2401.996	2403	1.004	0.638	Pass
NVNT	2-DH5	Ant1	2402.032	2403.026	0.994	0.887	Pass
NVNT	3-DH5	Ant1	2402.152	2403.03	0.878	0.875	Pass

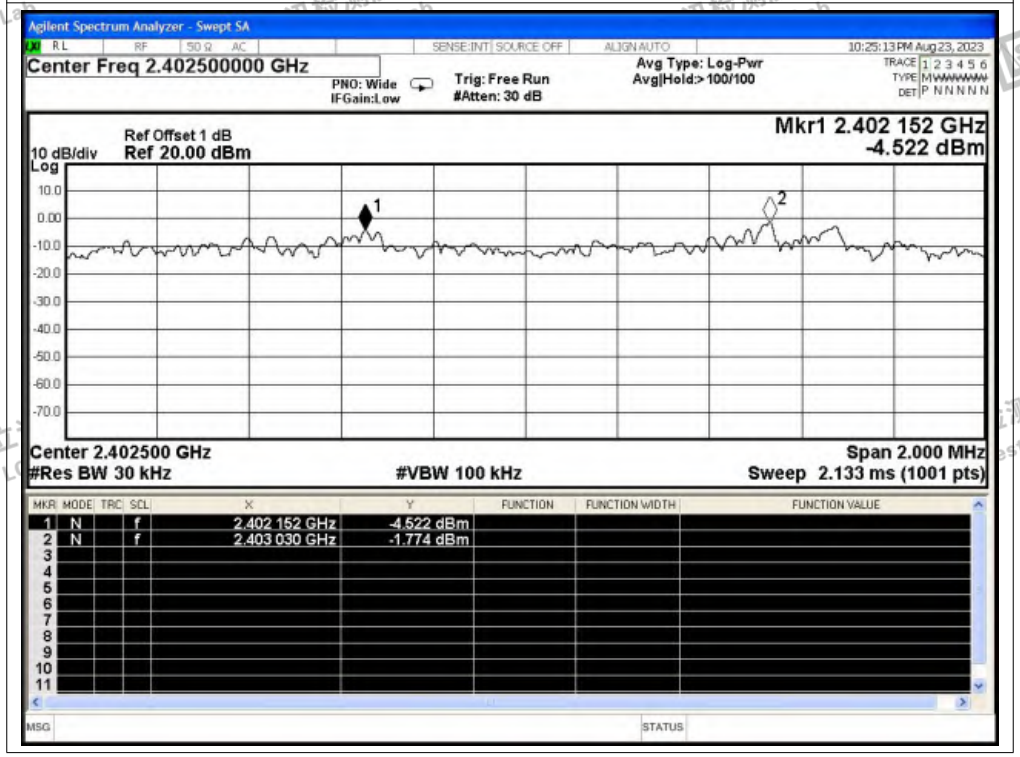
Test Graphs

CFS NVNT 1-DH5 2402MHz Ant1

CFS NVNT 2-DH5 2402MHz Ant1



CFS NVNT 3-DH5 2402MHz Ant1

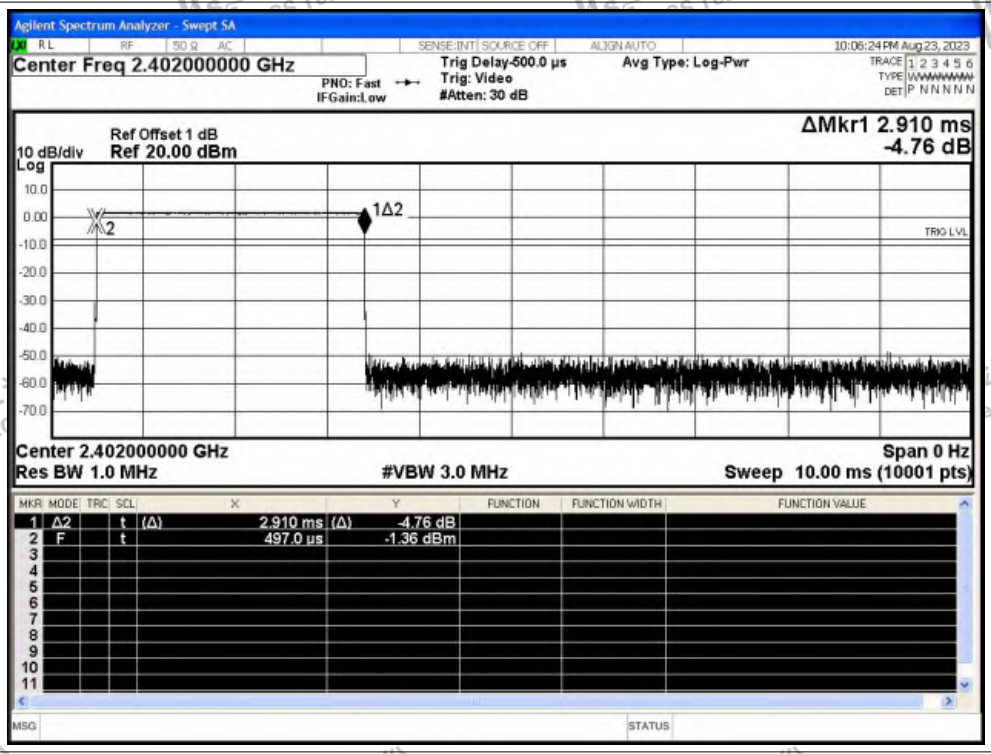


A.4 Dwell Time

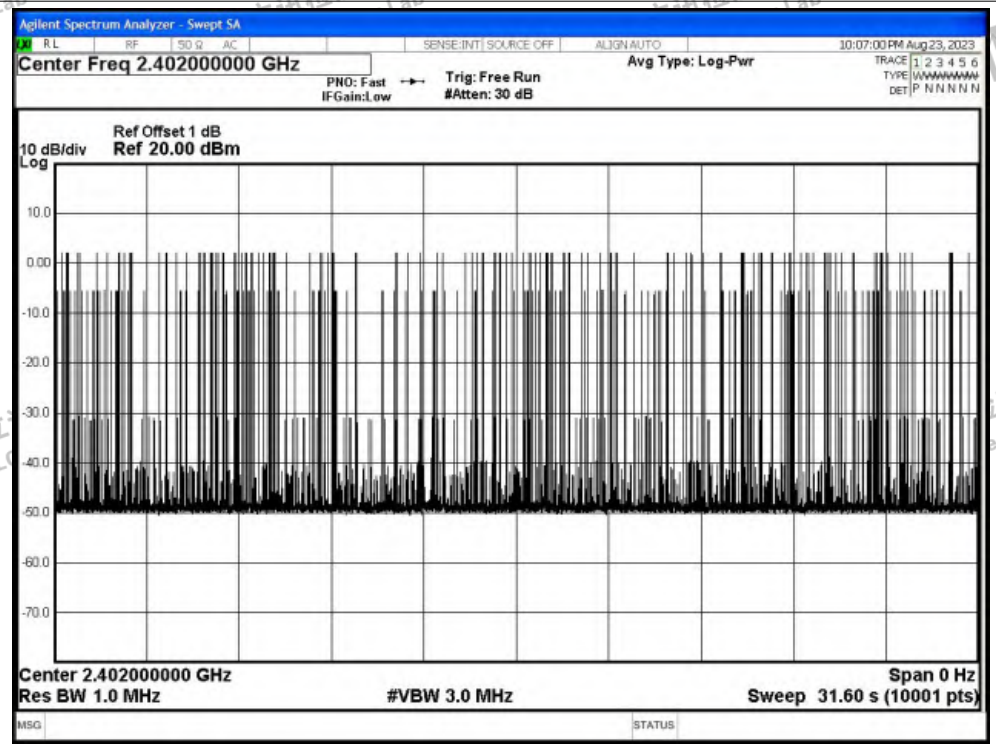
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	2.91	349.2	120	31600	400	Pass
NVNT	2-DH5	2402	Ant1	1.538	179.946	117	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.897	286.803	99	31600	400	Pass

Test Graphs

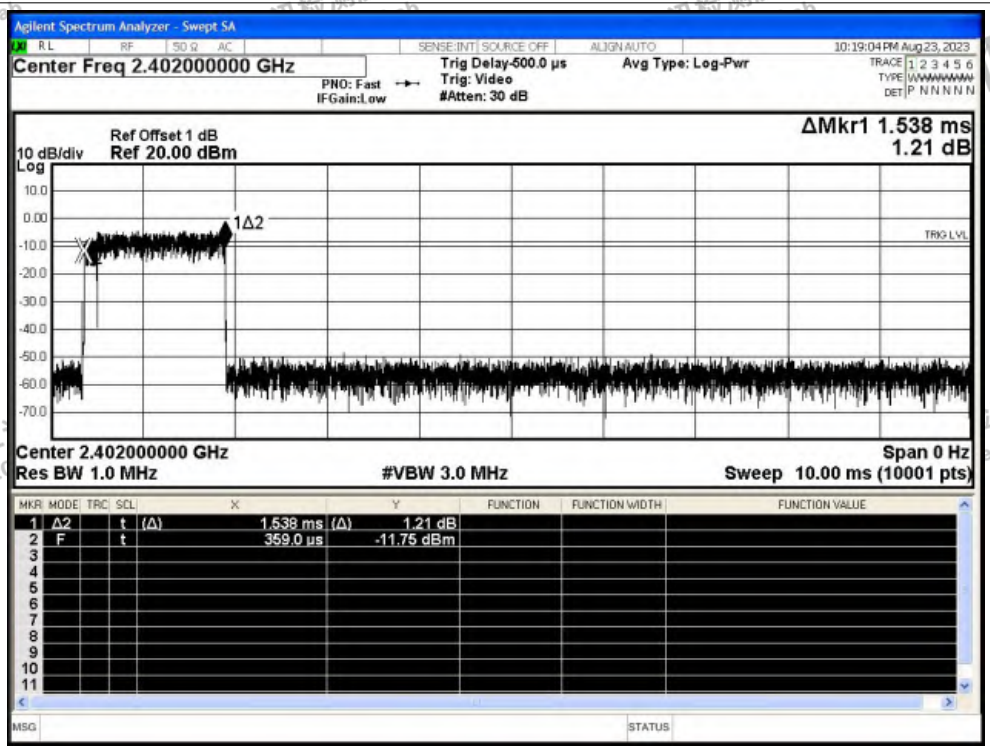
Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



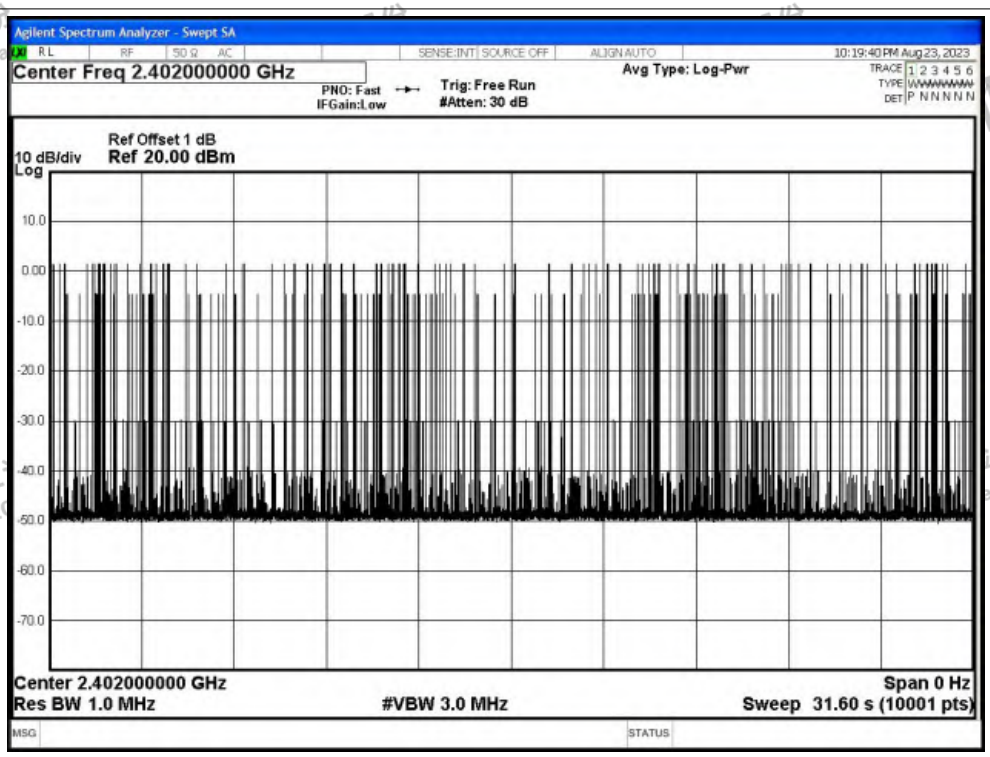
Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated



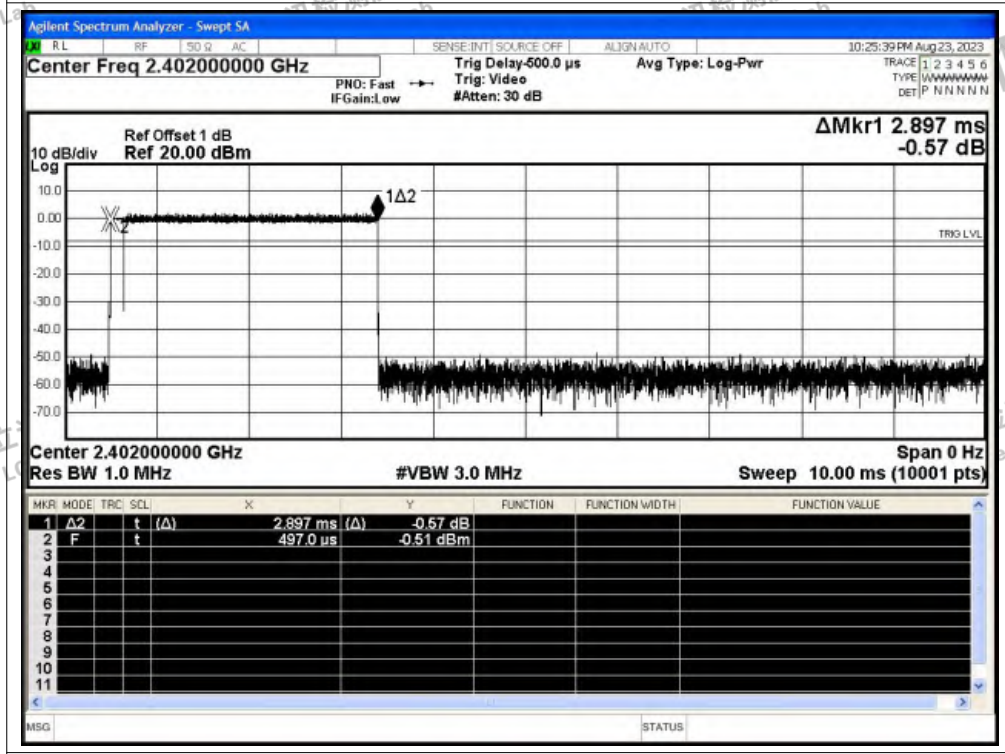
Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



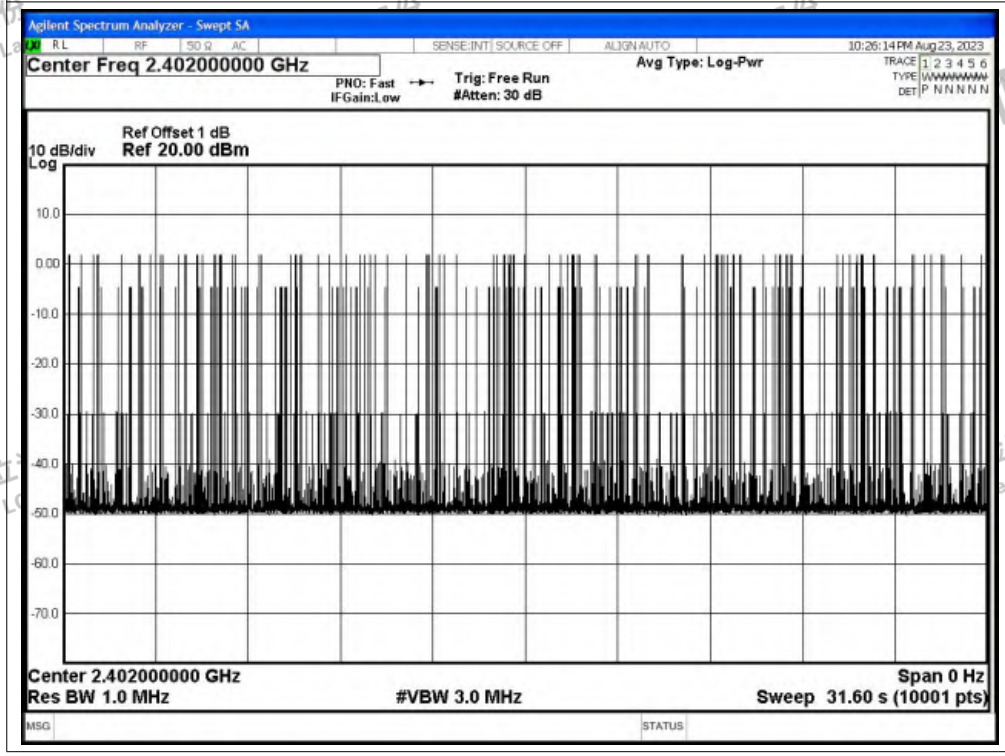
Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated



Dwell NVNT 3-DH5 2402MHz Ant1 One Burst



Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

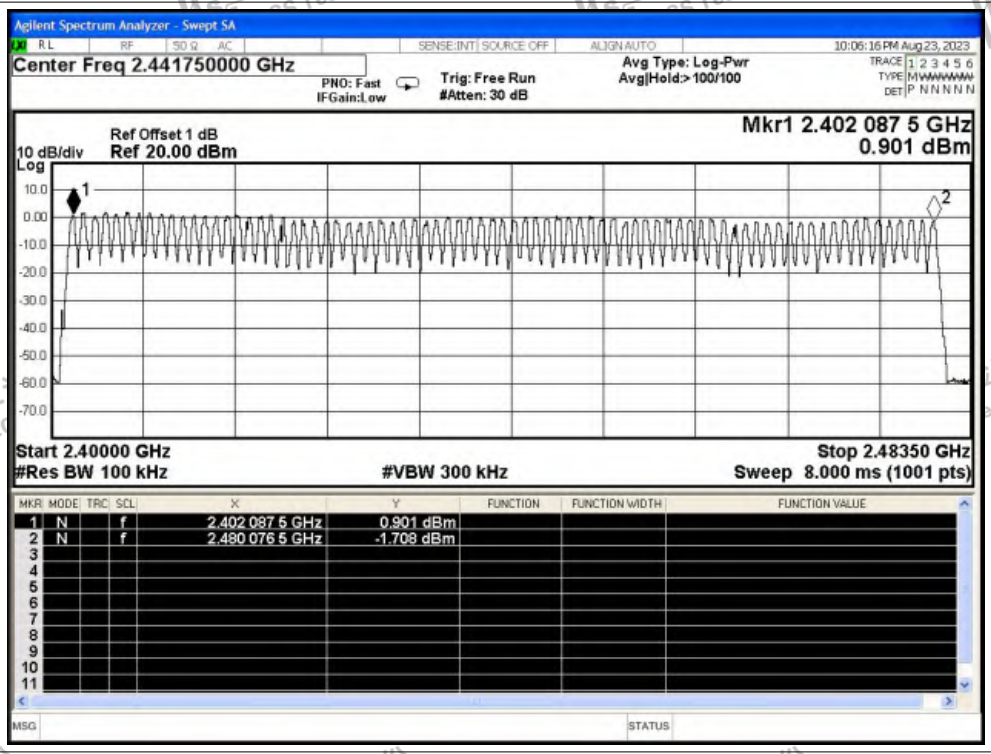


A.5 Number of Hopping Channel

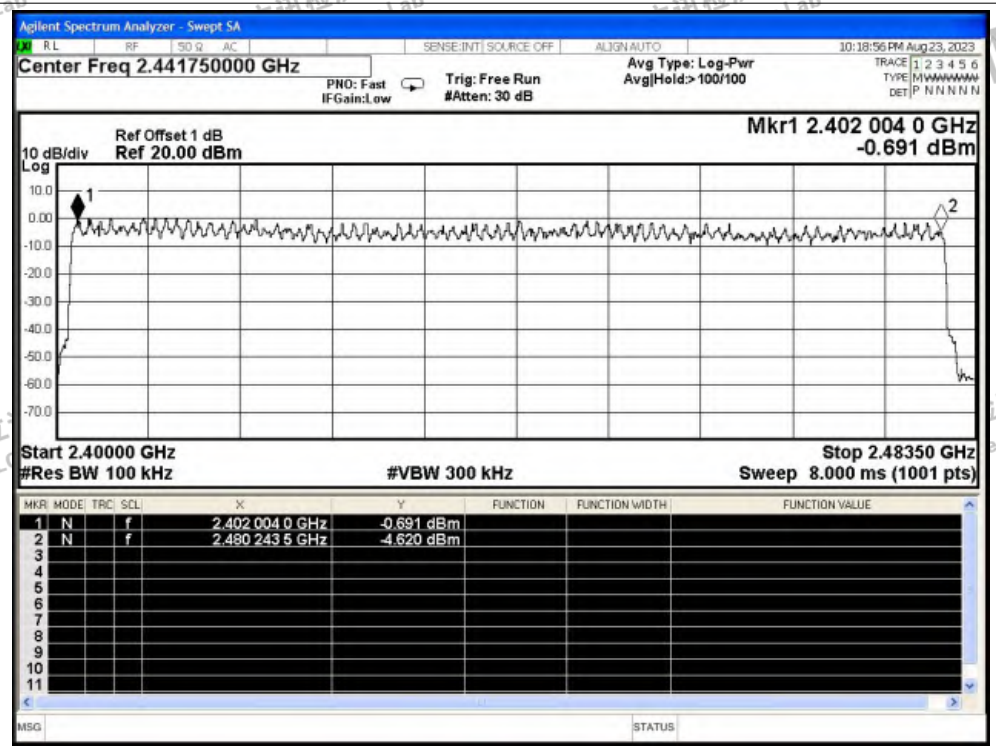
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass
NVNT	3-DH5	Ant1	79	15	Pass

Test Graphs

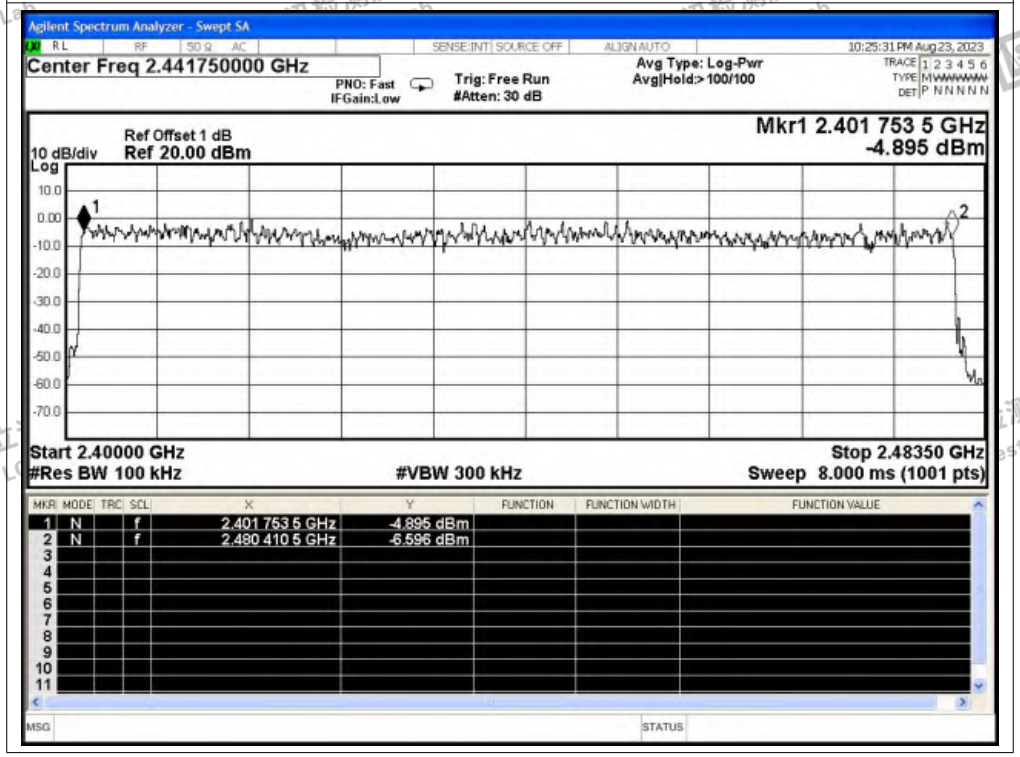
Hopping No. NVNT 1-DH5 2402MHz Ant1



Hopping No. NVNT 2-DH5 2402MHz Ant1



Hopping No. NVNT 3-DH5 2402MHz Ant1

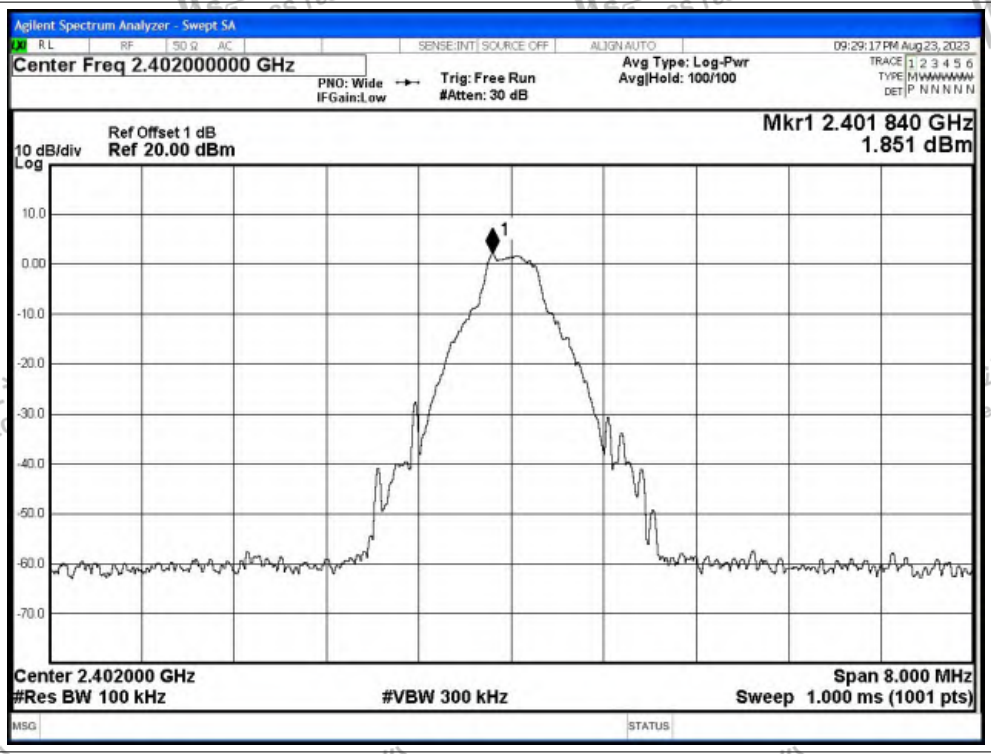


A.6 Band Edge

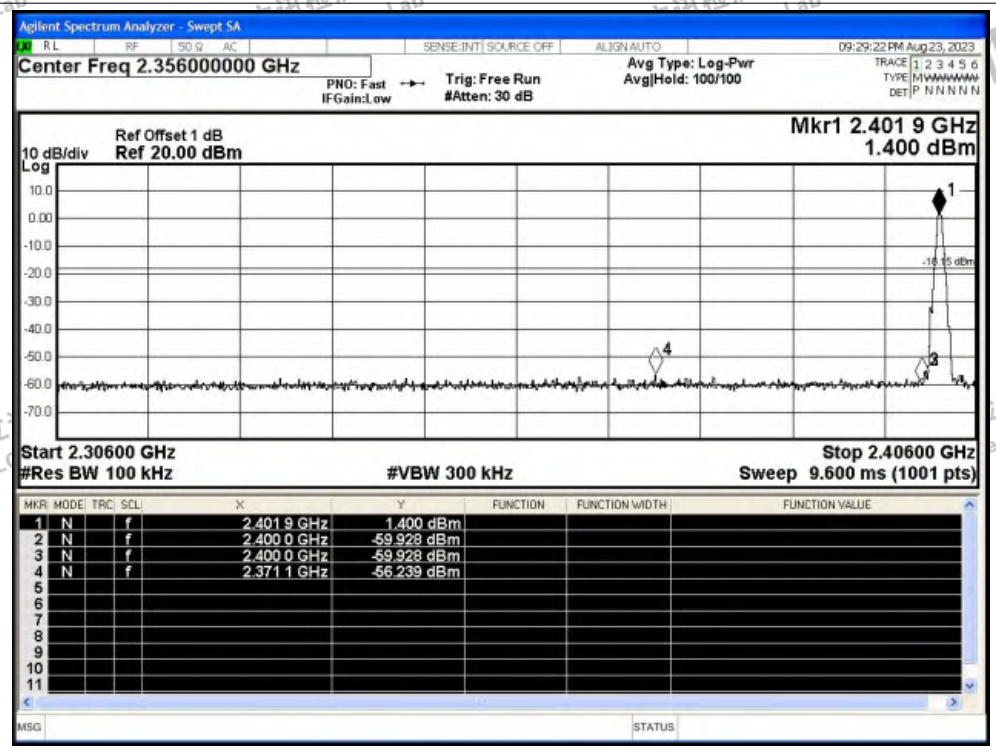
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-58.09	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-57.04	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-54.62	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-55.88	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-54.43	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-55.01	-20	Pass

Test Graphs

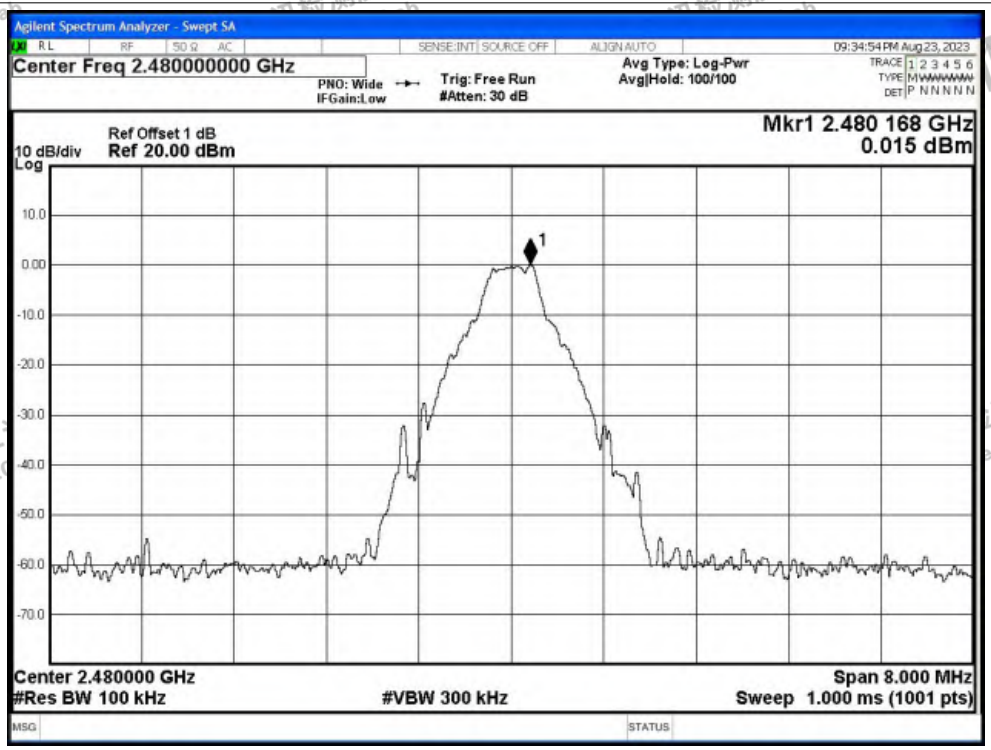
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



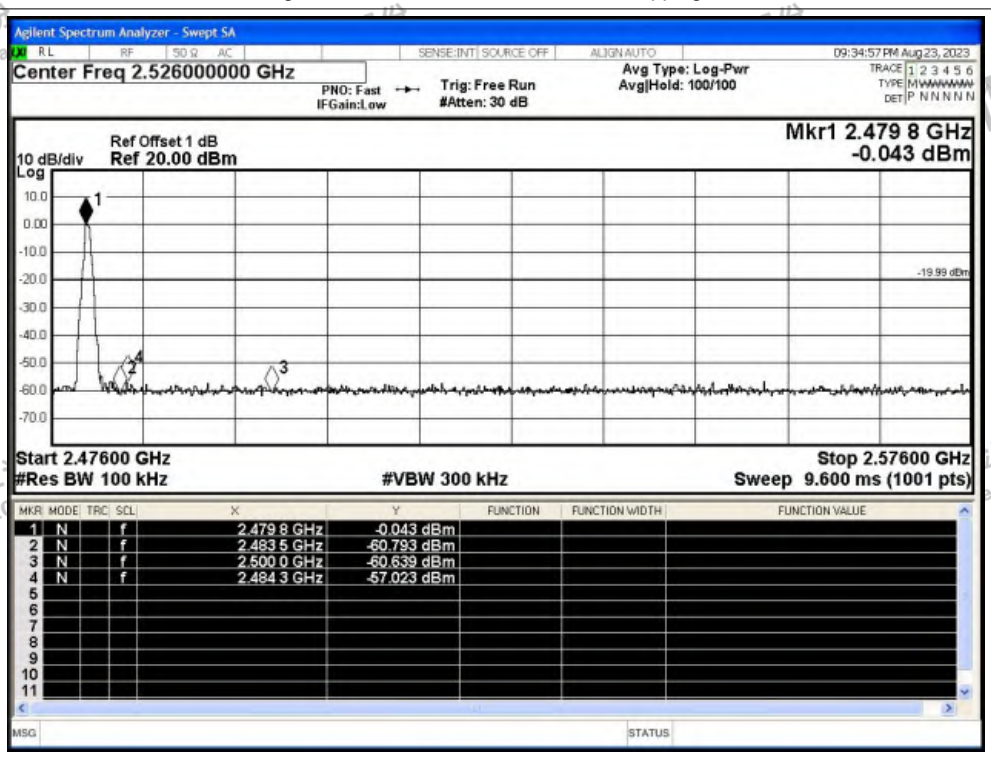
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission



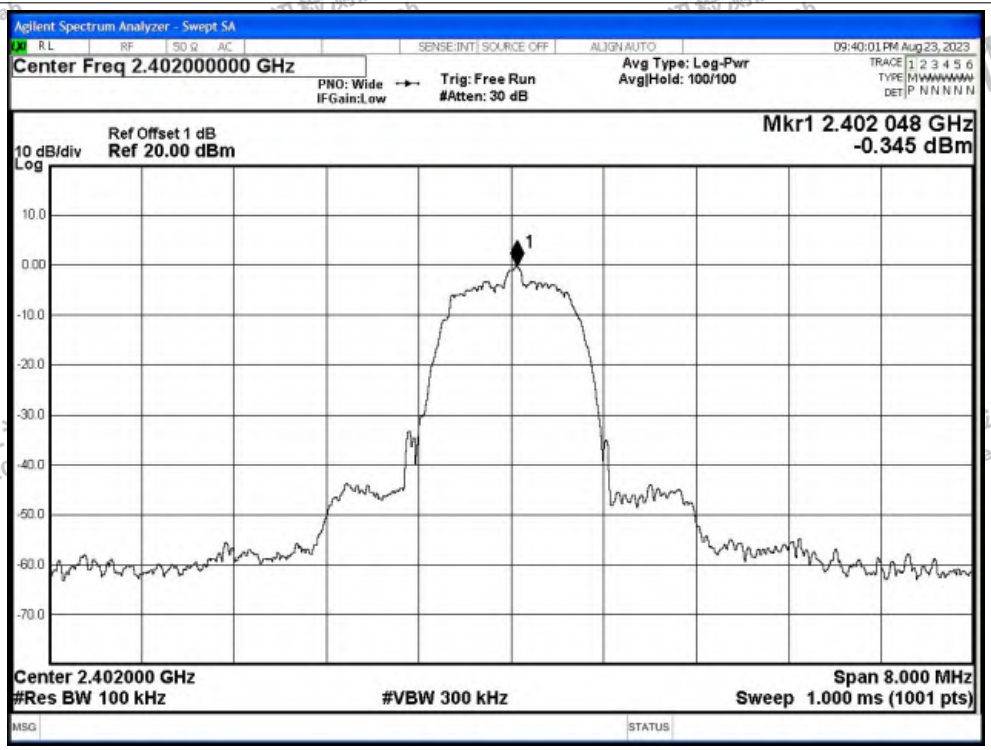
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref



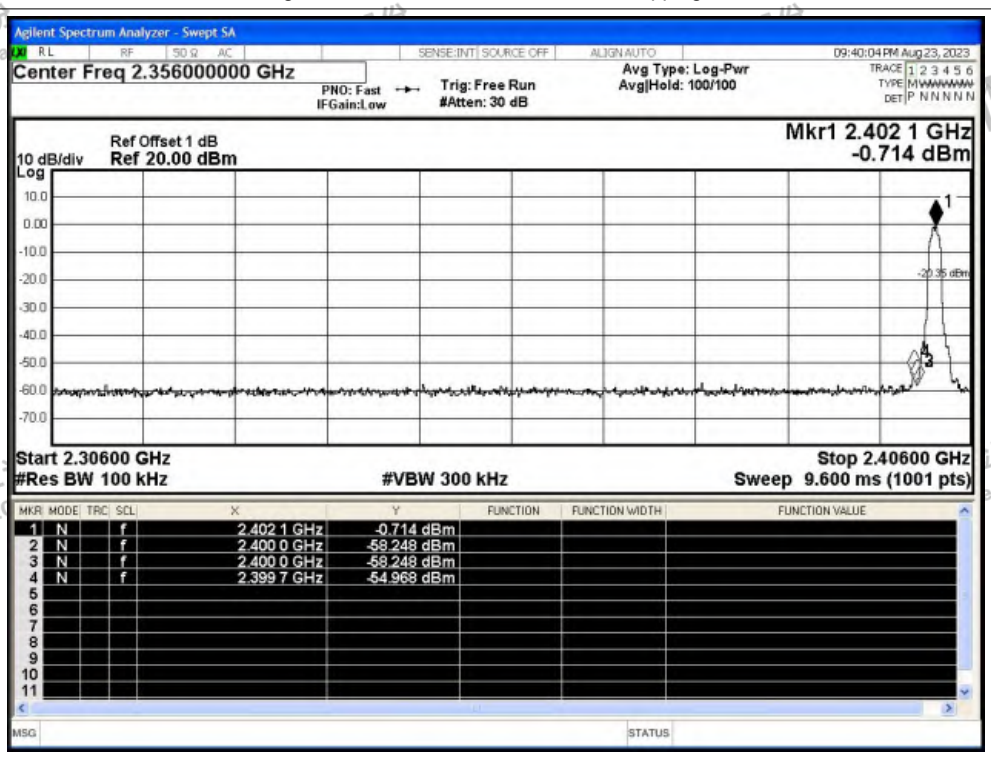
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



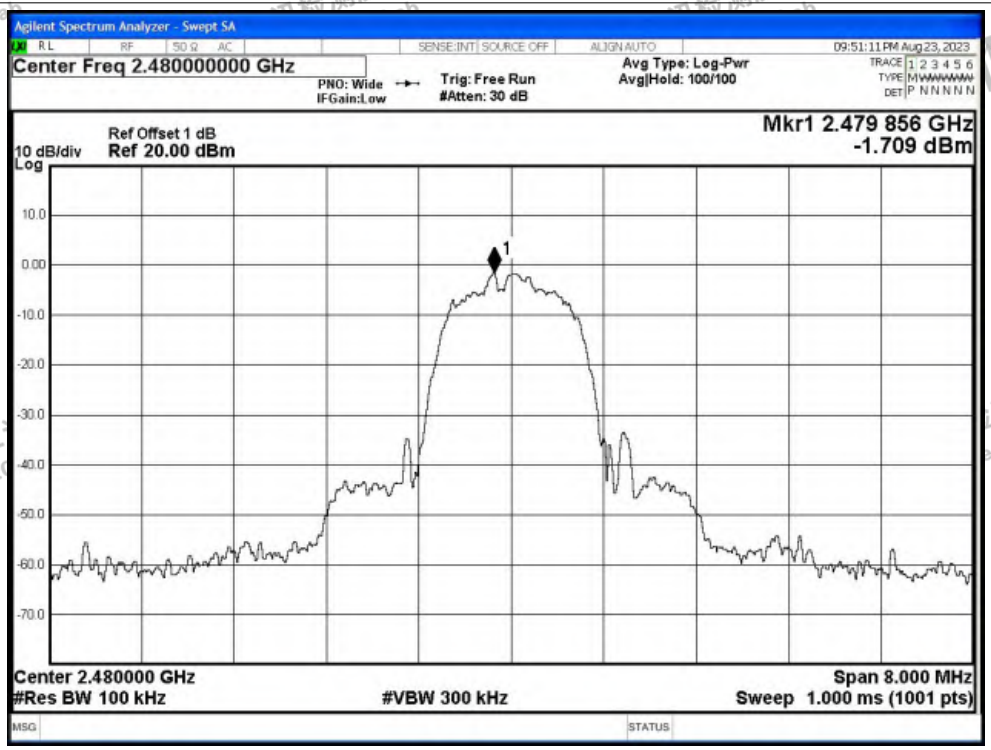
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



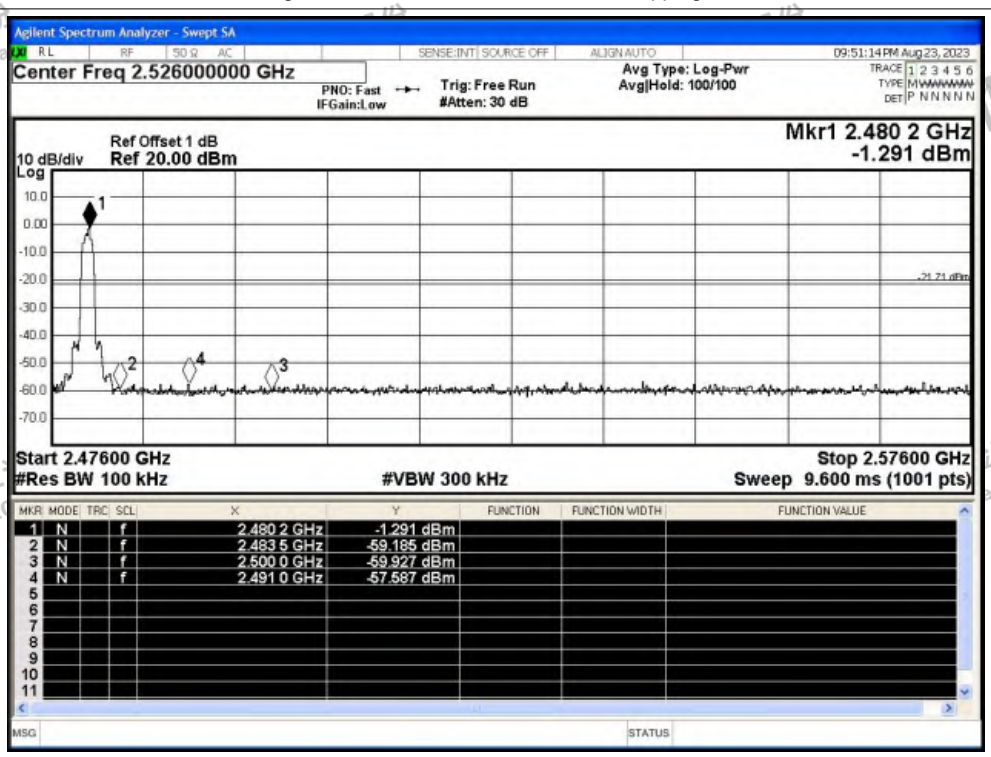
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission



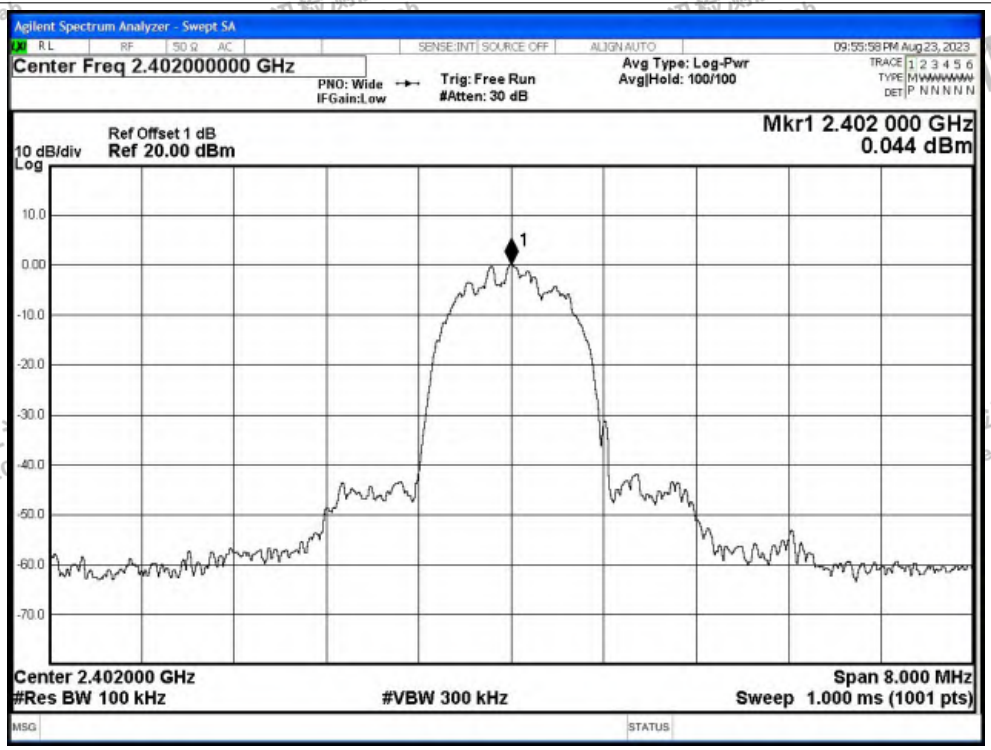
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref



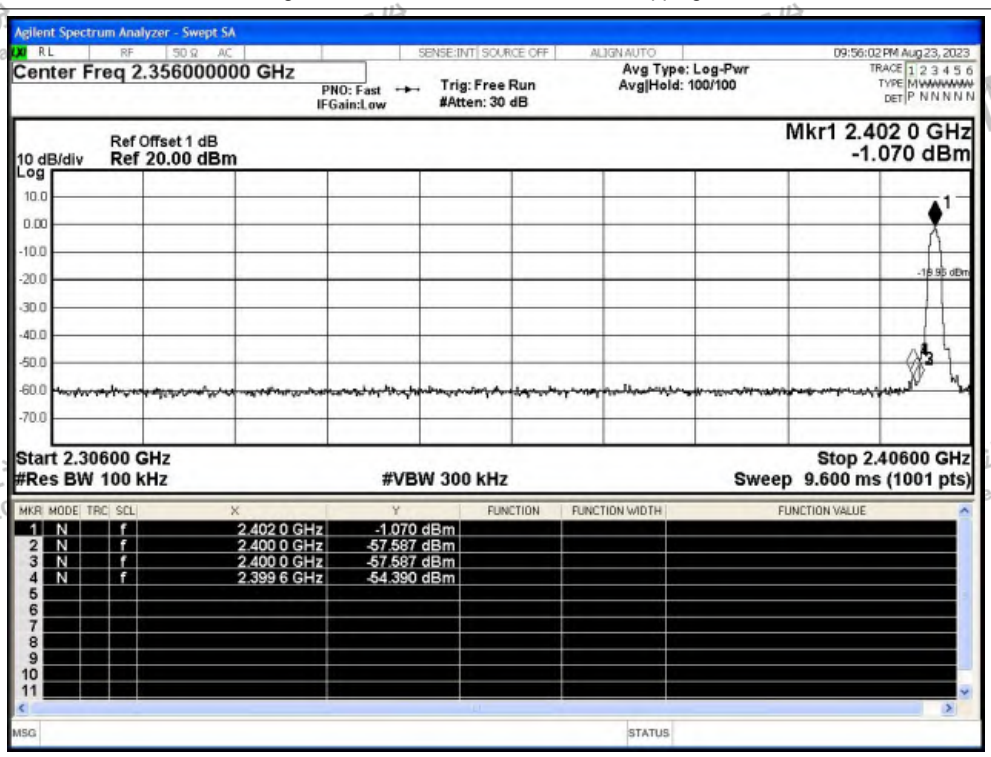
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission



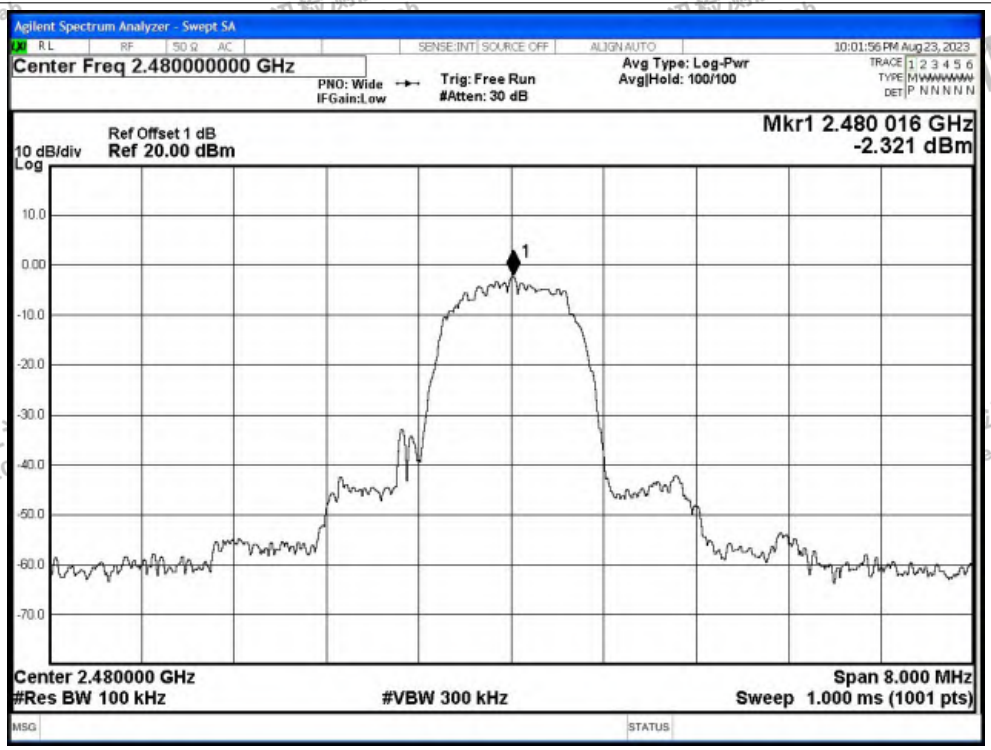
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref



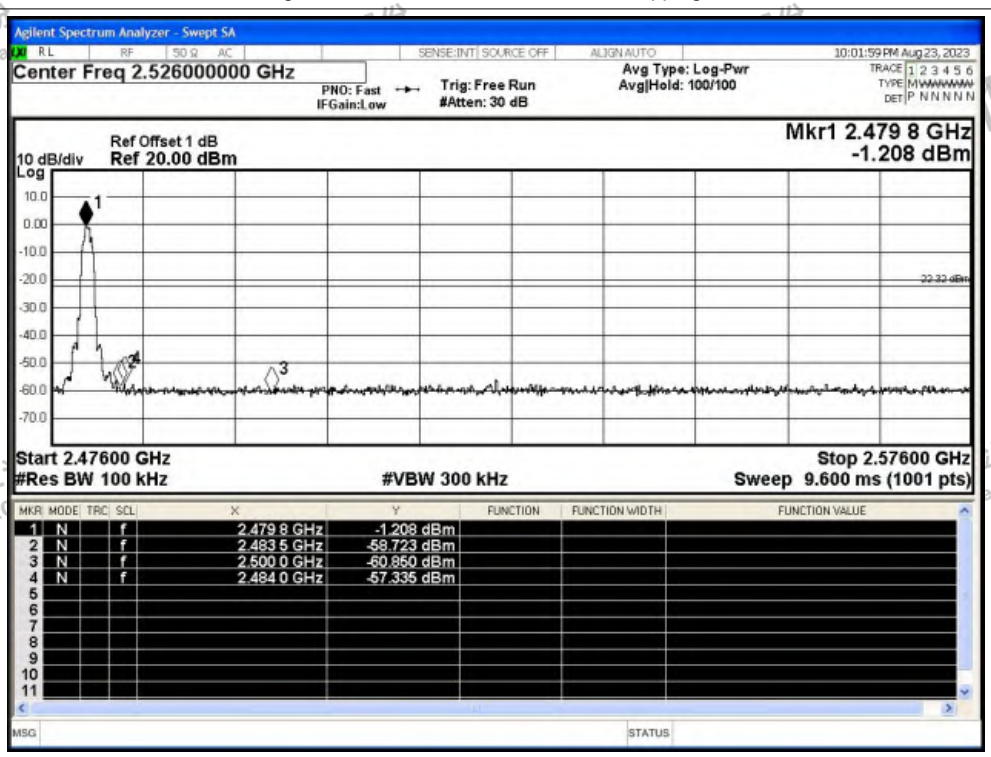
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission



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



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

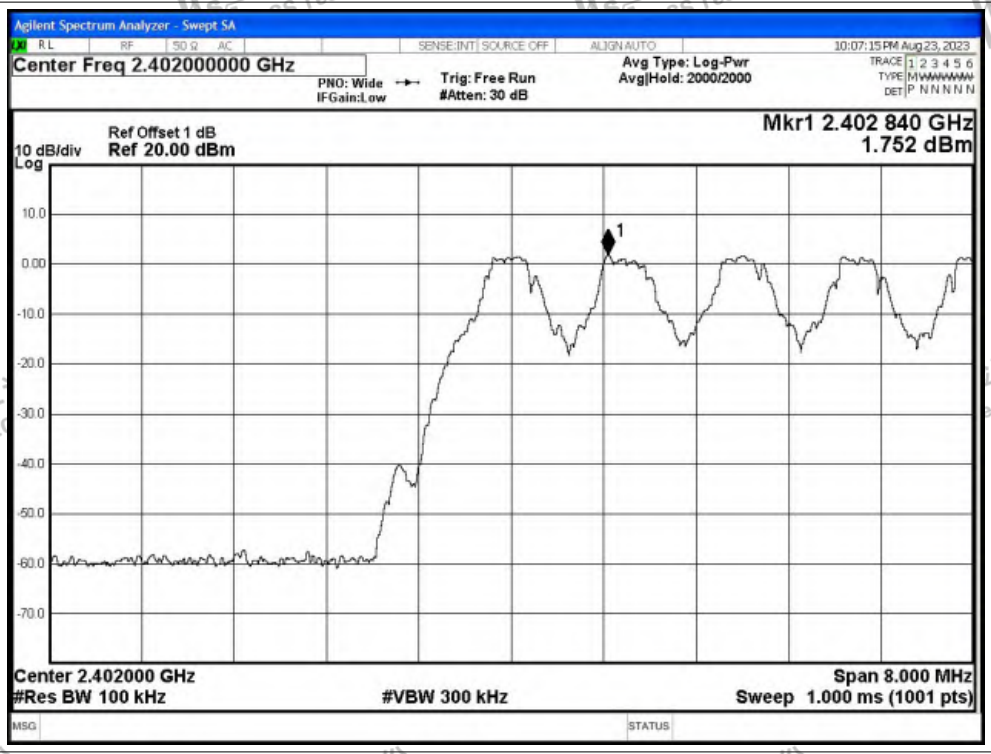


(Hopping)

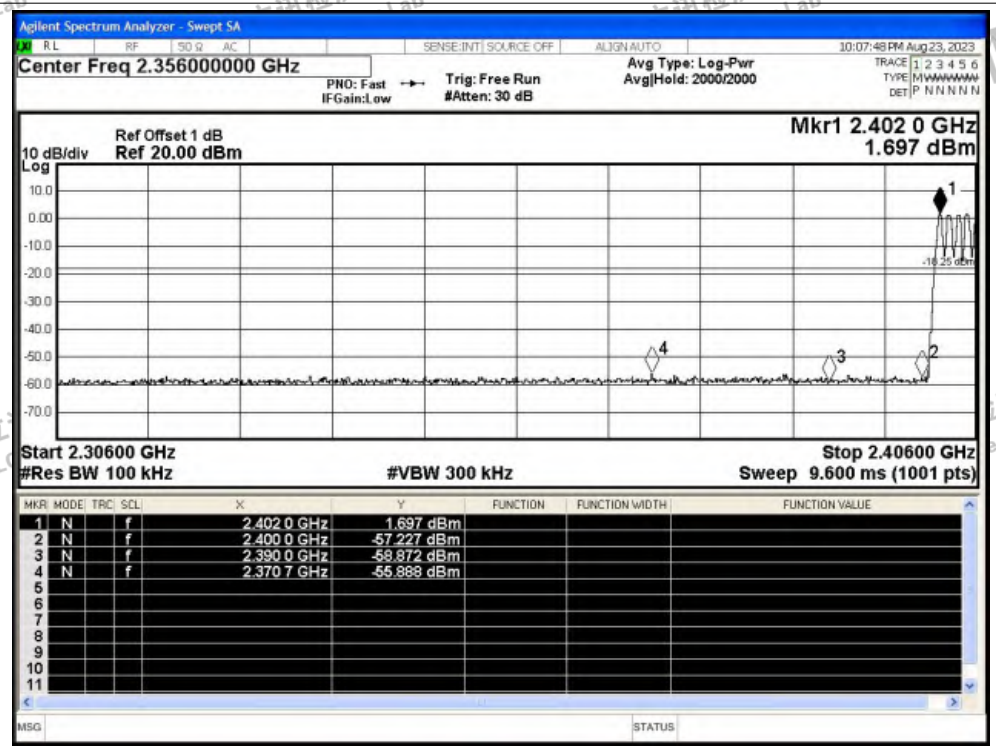
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-57.64	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-55.86	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-56.04	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-54.37	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-55.22	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-56.02	-20	Pass

Test Graphs

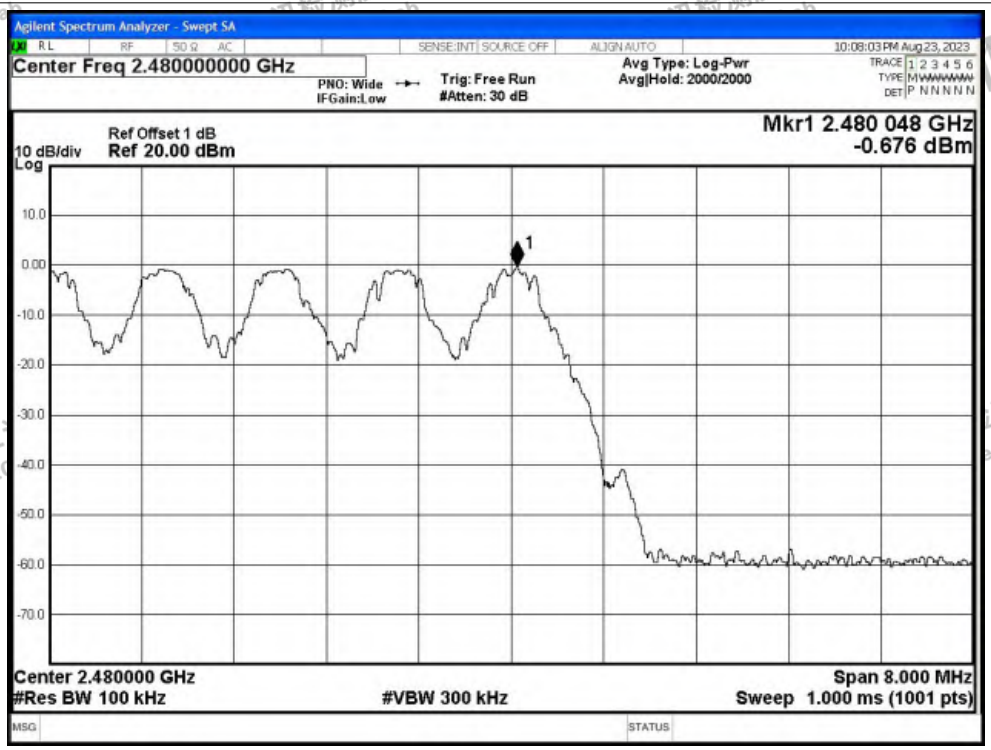
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



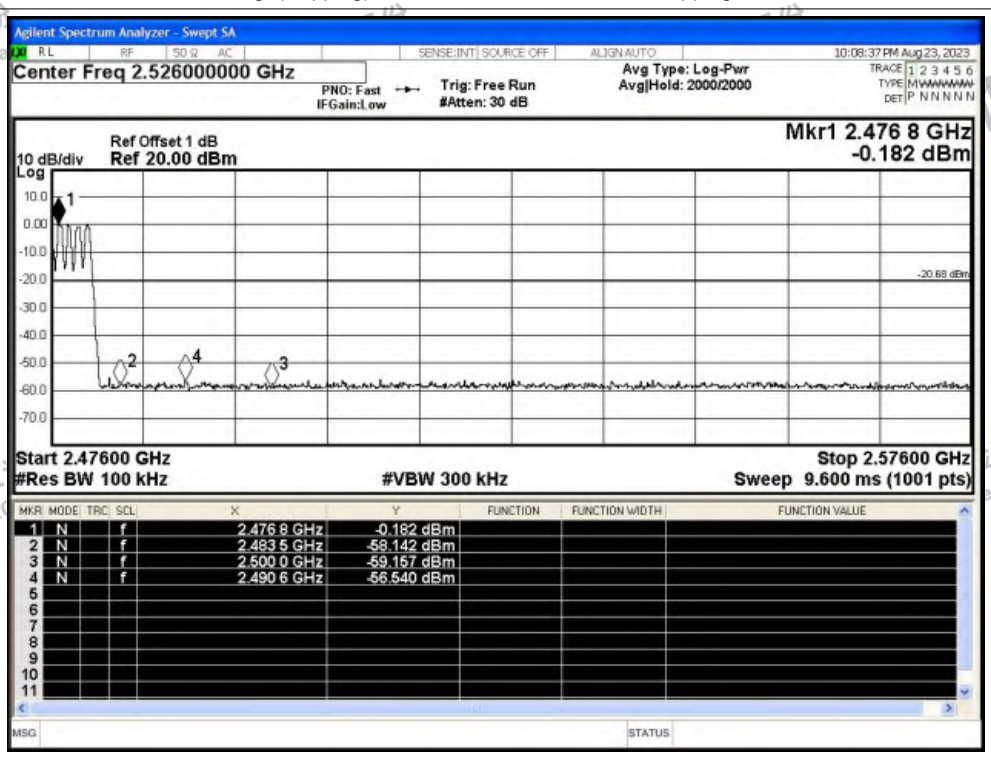
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



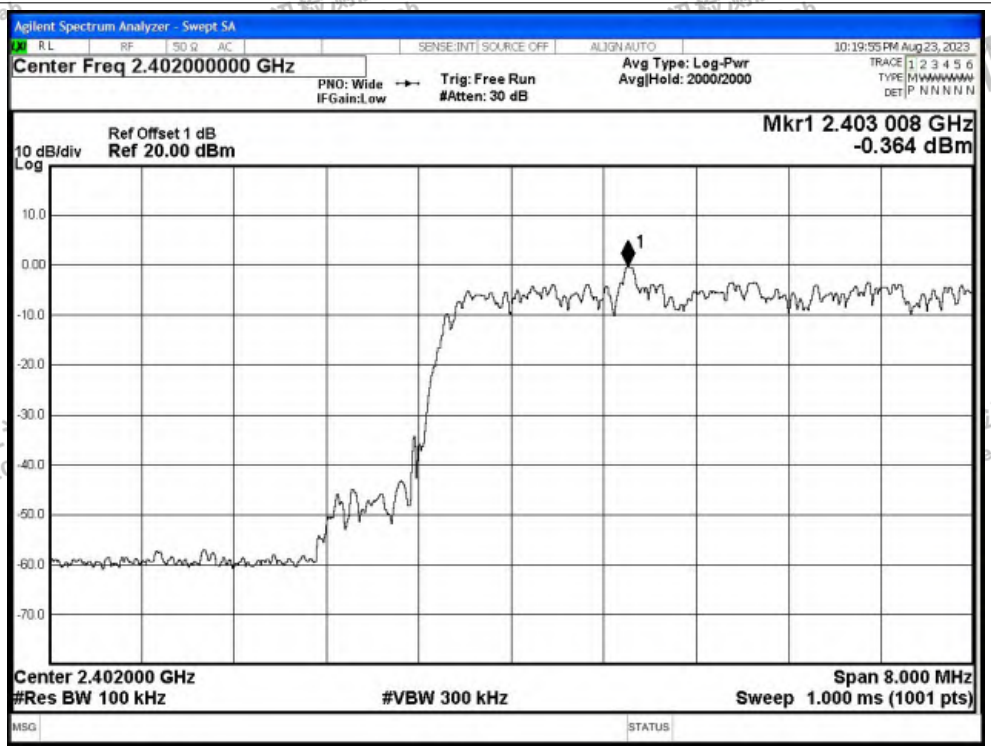
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



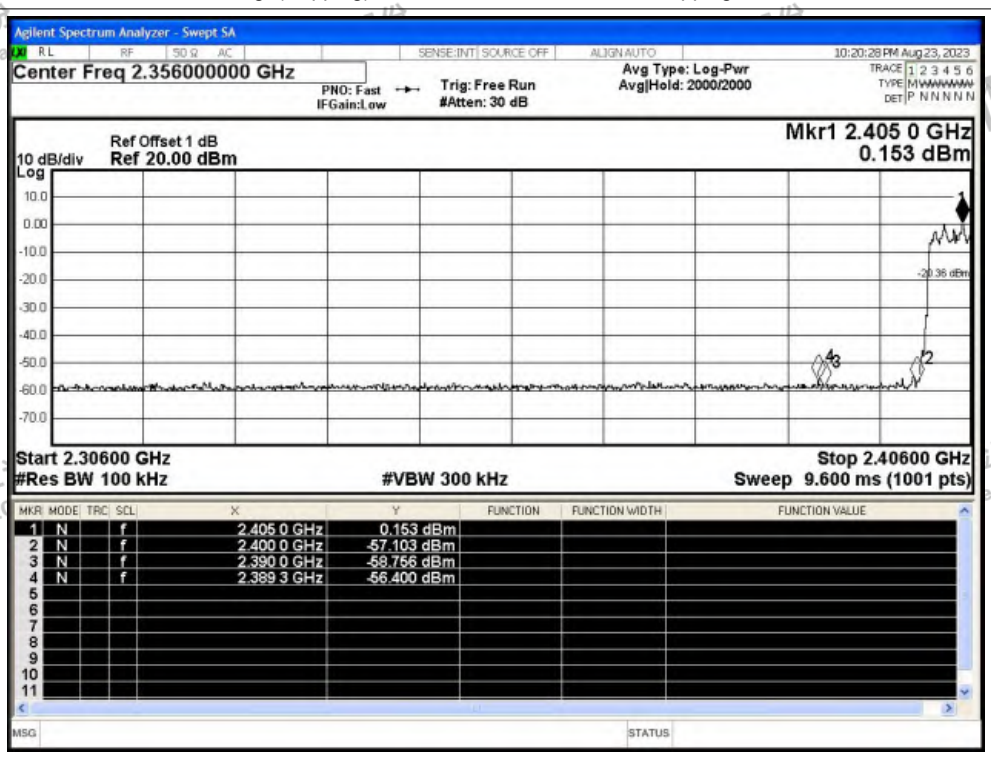
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission



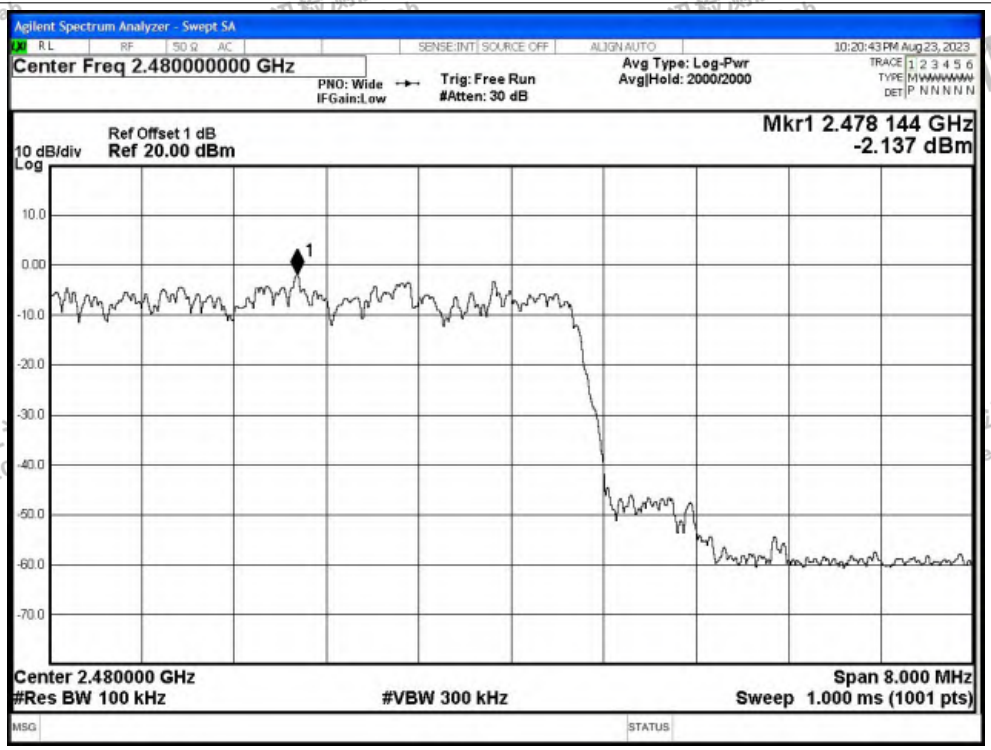
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref



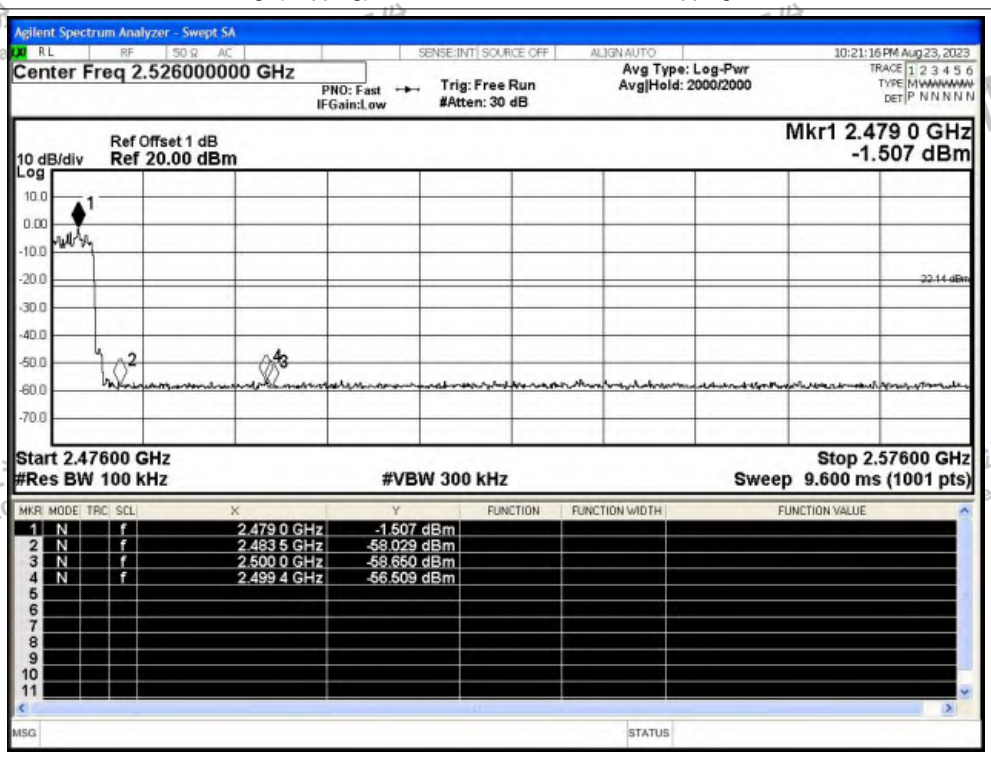
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



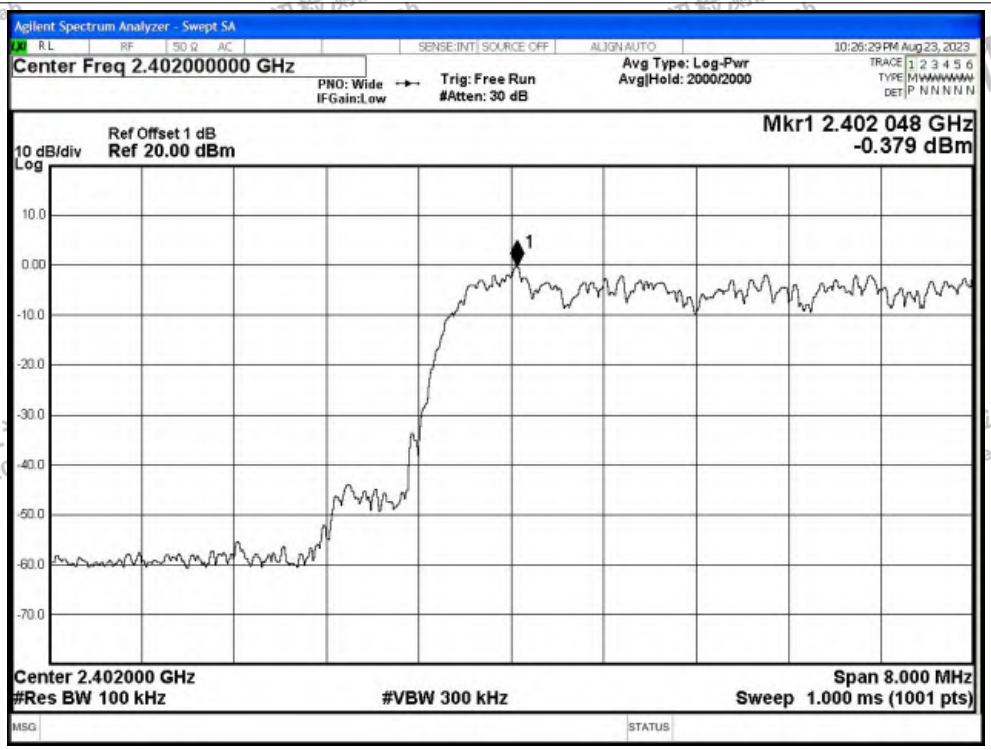
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



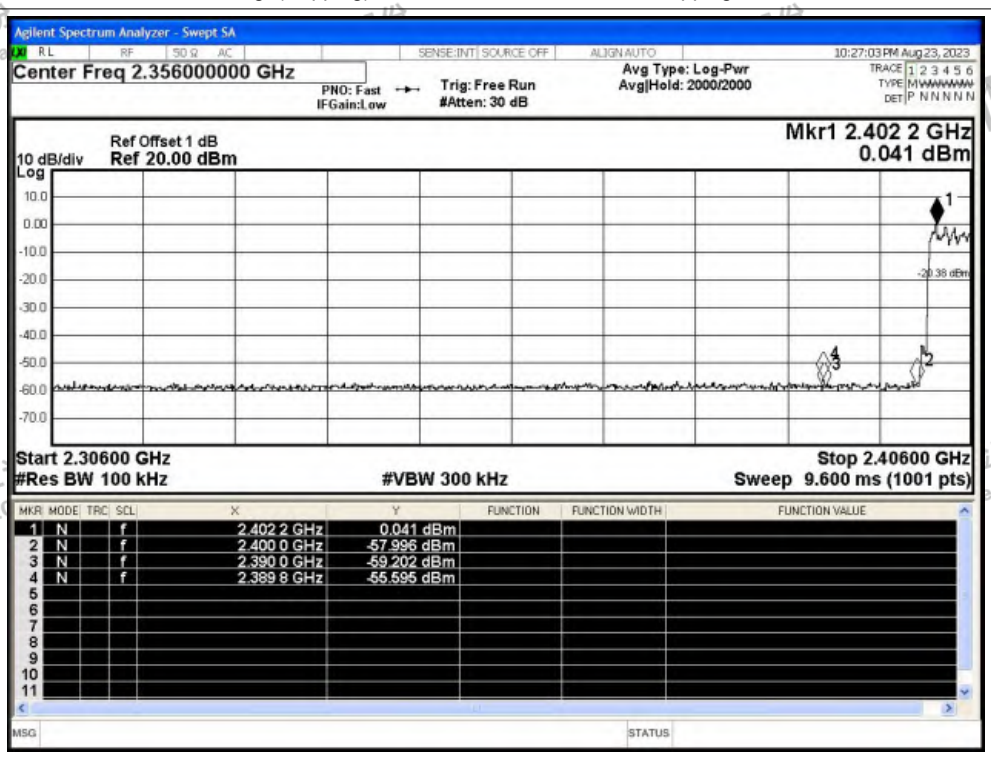
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission



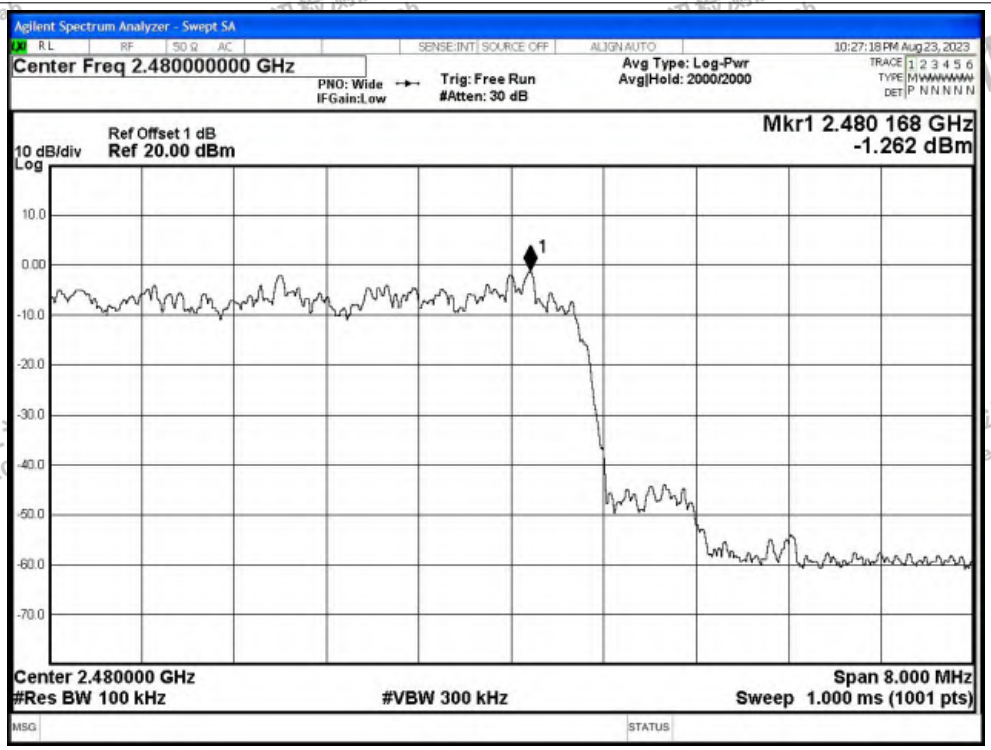
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref



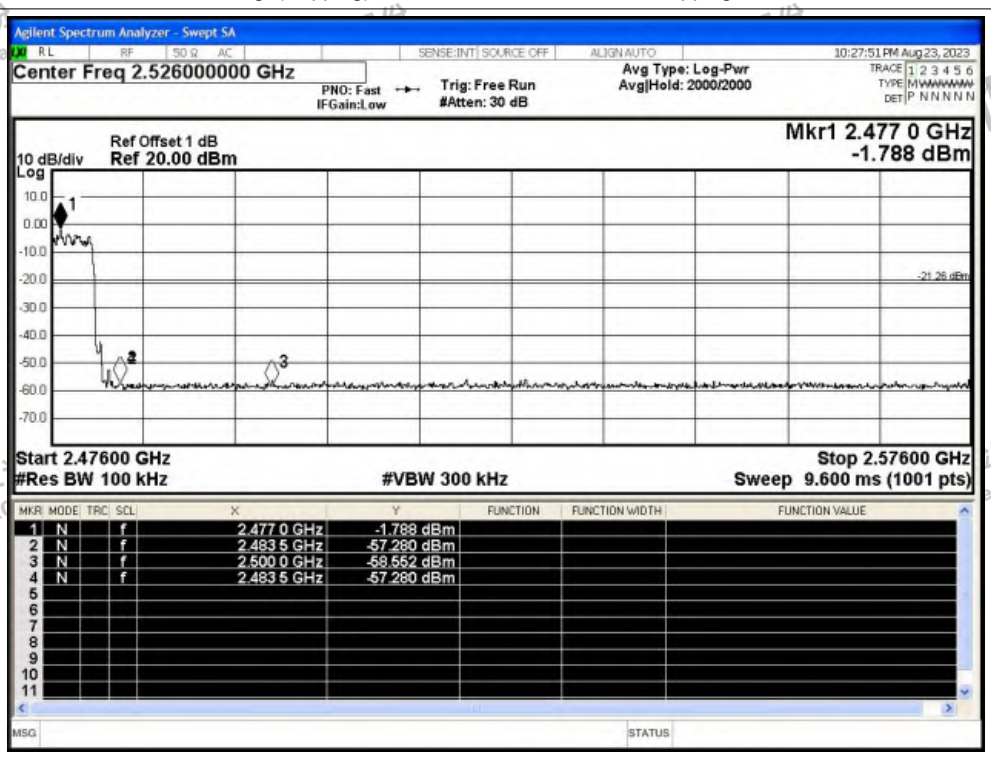
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission



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



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

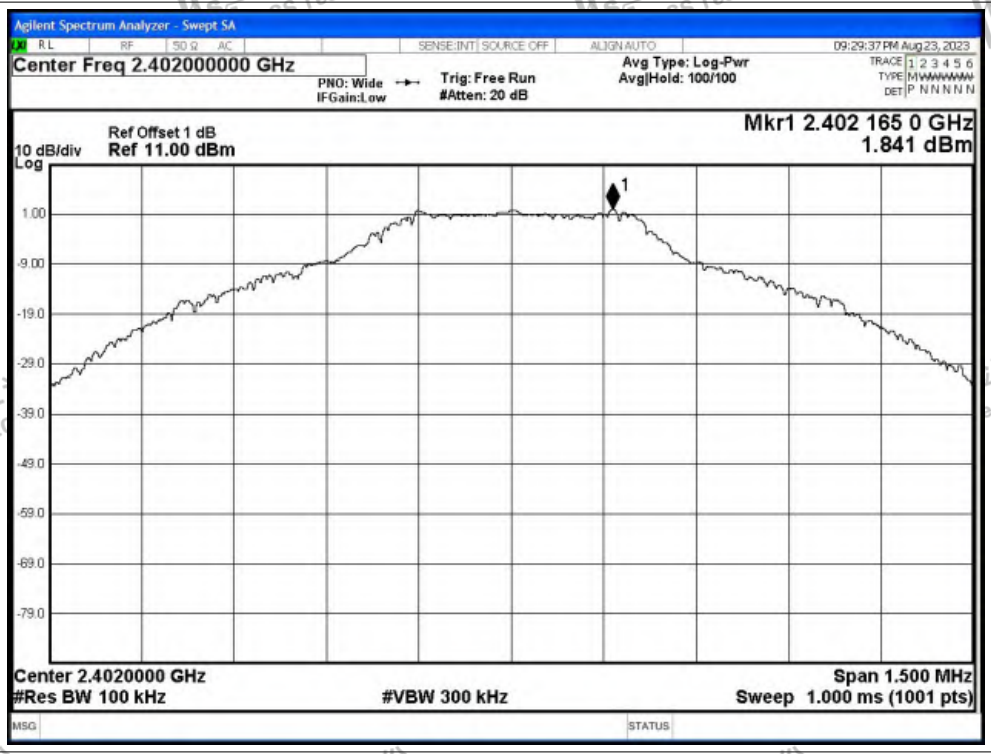


A.7 Conducted RF Spurious Emission

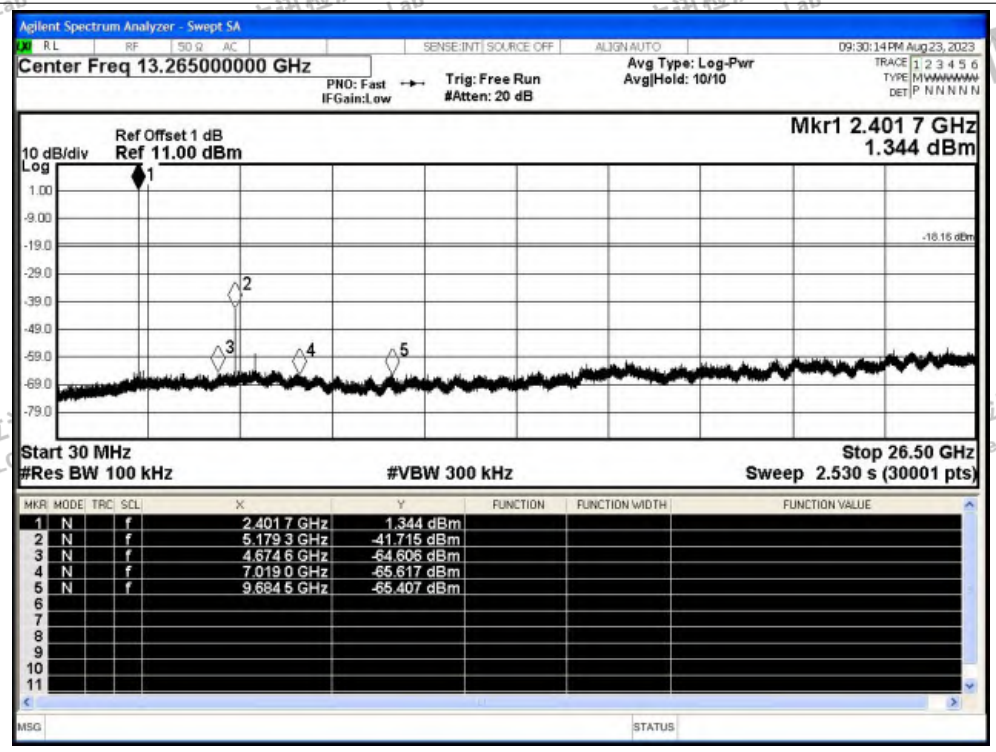
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-43.56	-20	Pass
NVNT	1-DH5	2441	Ant1	-56.76	-20	Pass
NVNT	1-DH5	2480	Ant1	-56.13	-20	Pass
NVNT	2-DH5	2402	Ant1	-56.02	-20	Pass
NVNT	2-DH5	2441	Ant1	-51.11	-20	Pass
NVNT	2-DH5	2480	Ant1	-54.61	-20	Pass
NVNT	3-DH5	2402	Ant1	-53.89	-20	Pass
NVNT	3-DH5	2441	Ant1	-54.02	-20	Pass
NVNT	3-DH5	2480	Ant1	-54.98	-20	Pass

Test Graphs

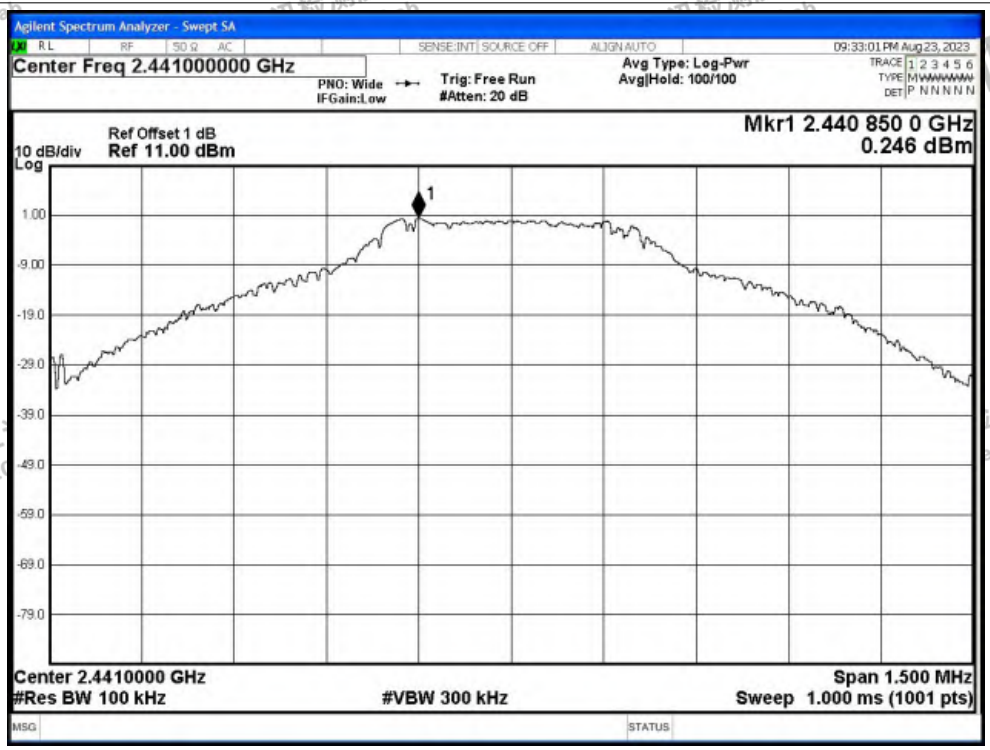
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref



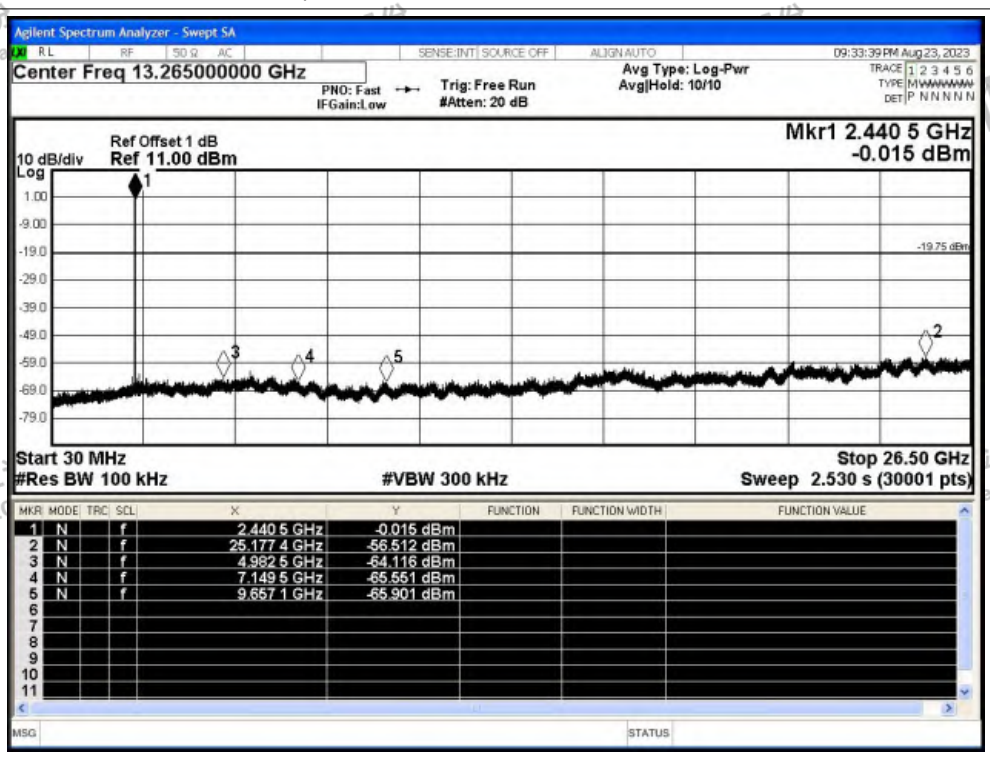
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



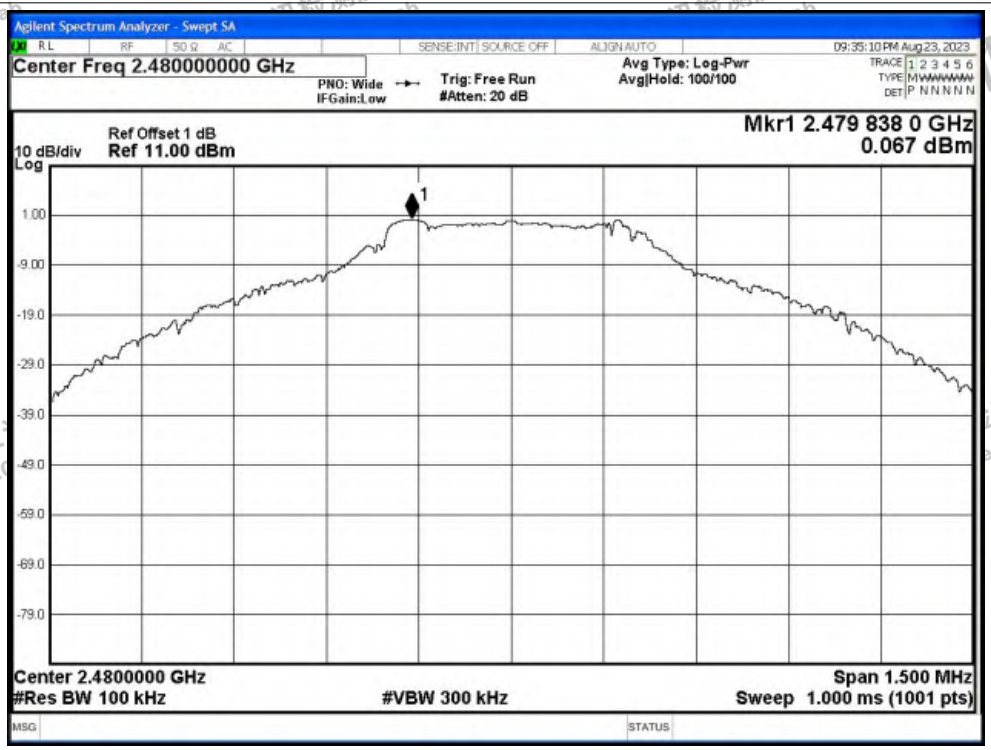
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref



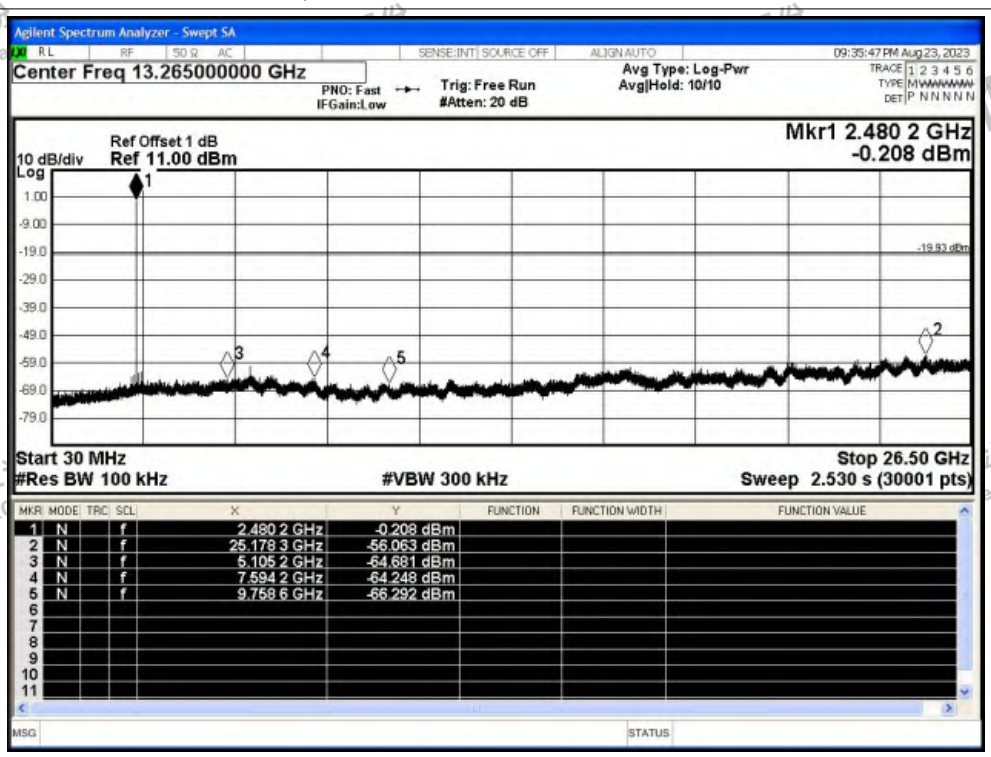
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission



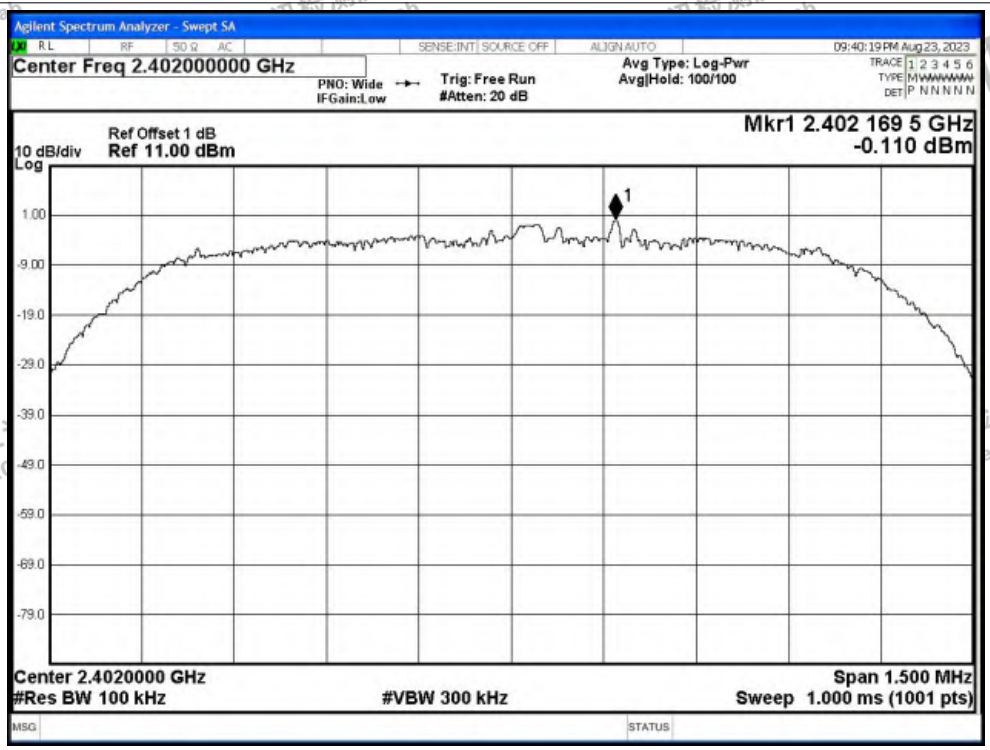
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref



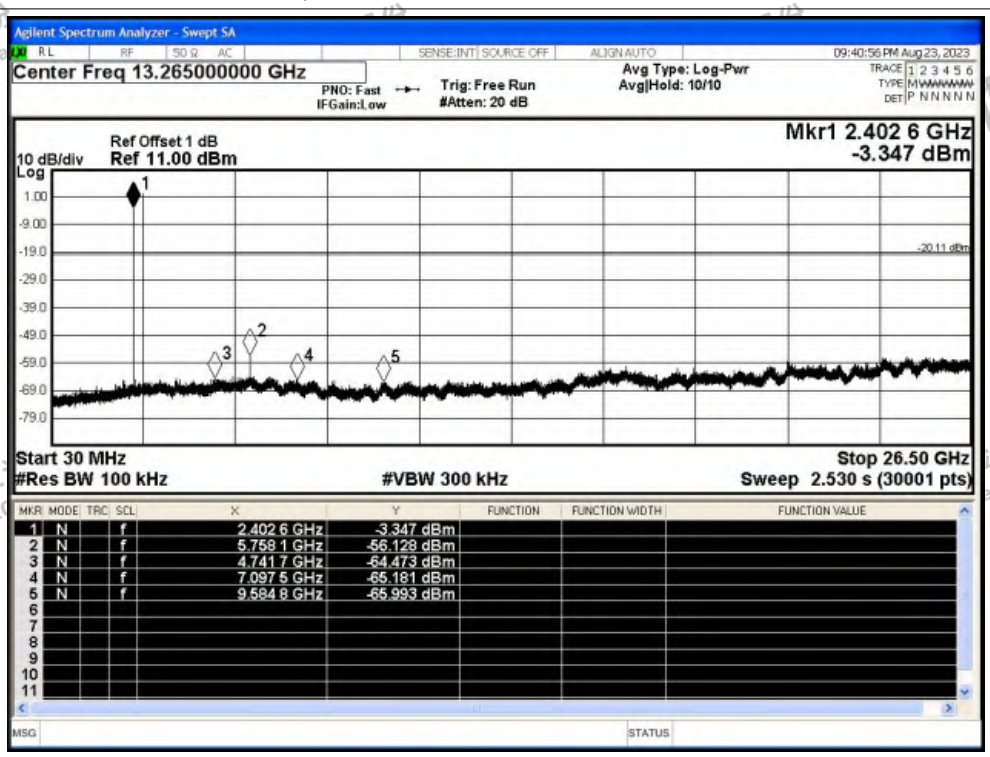
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission



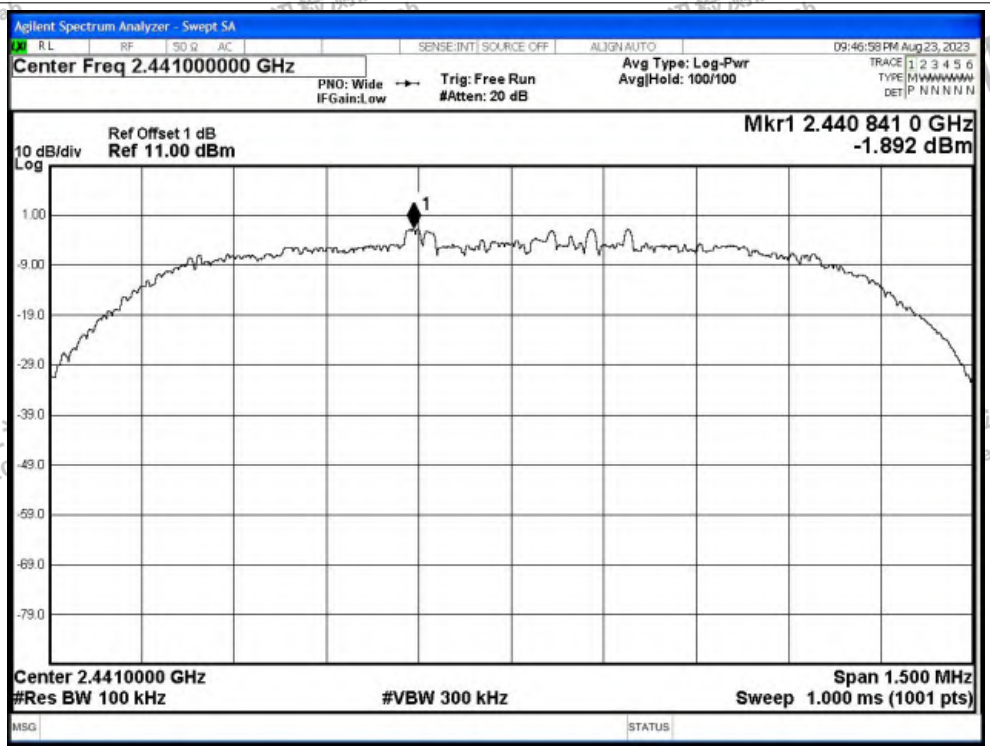
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref



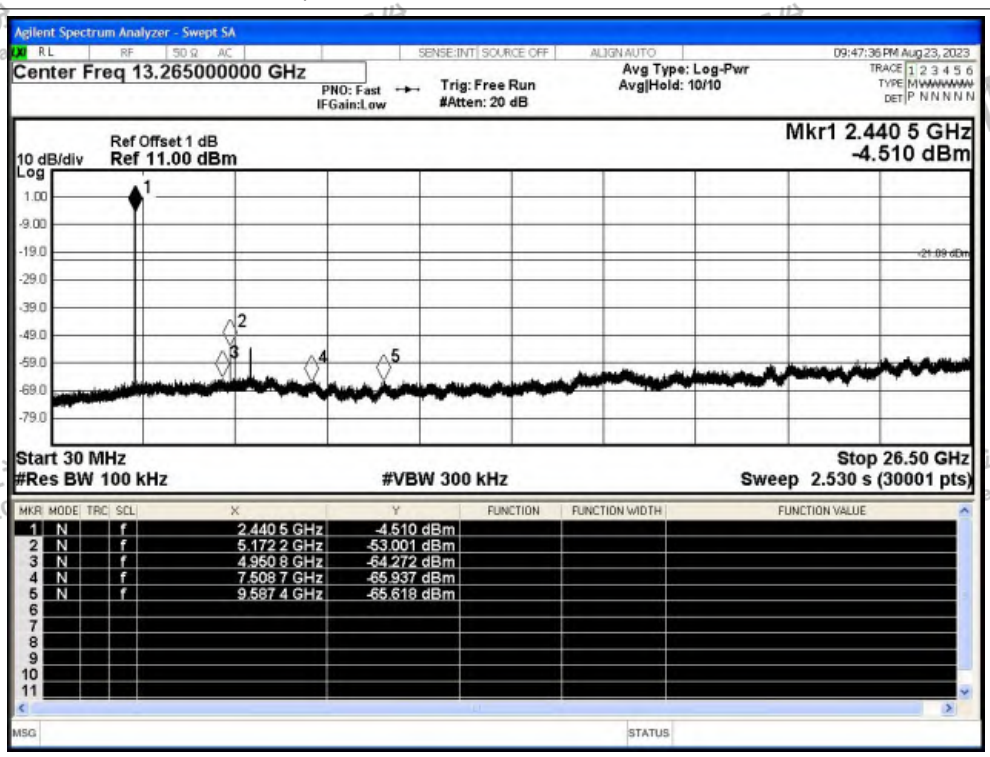
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission



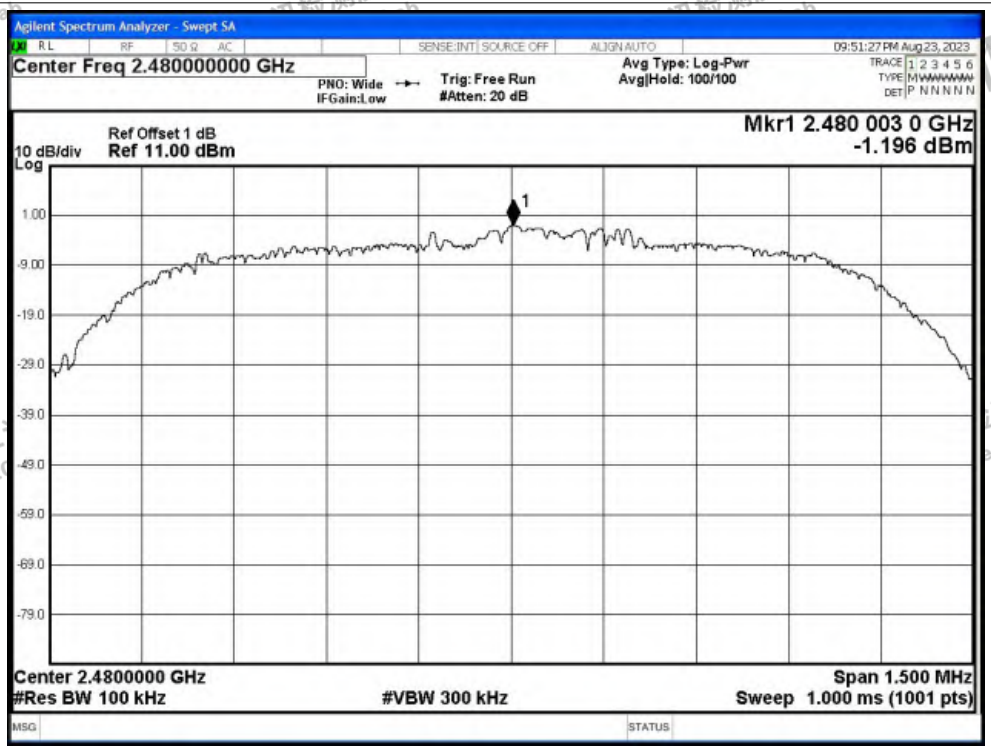
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



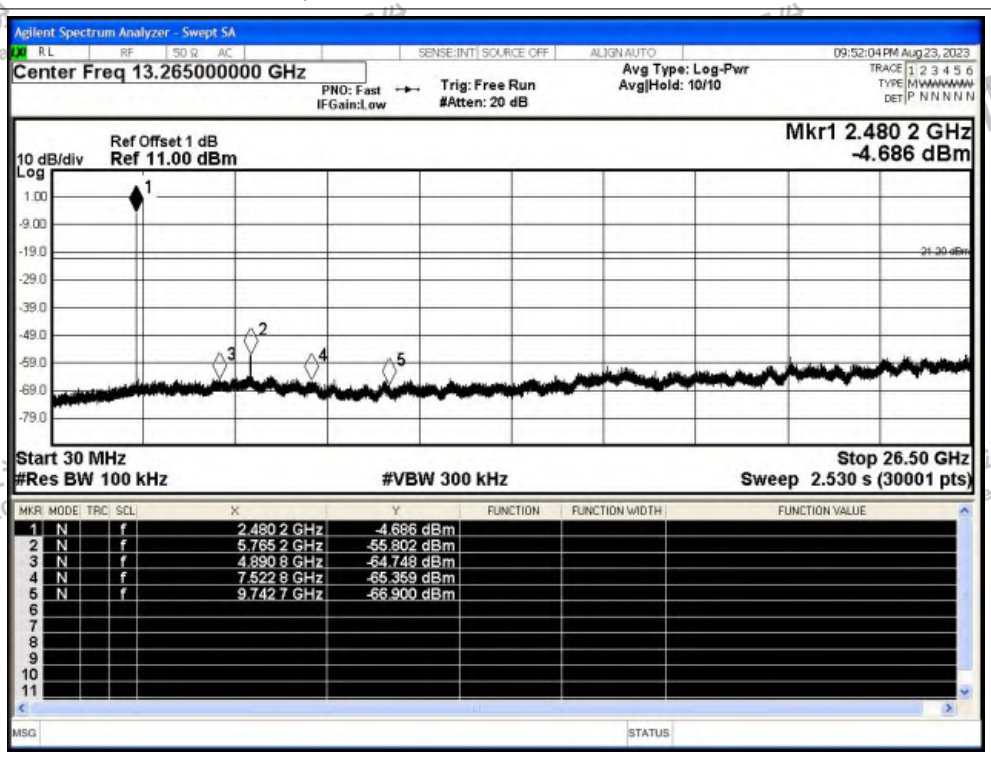
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



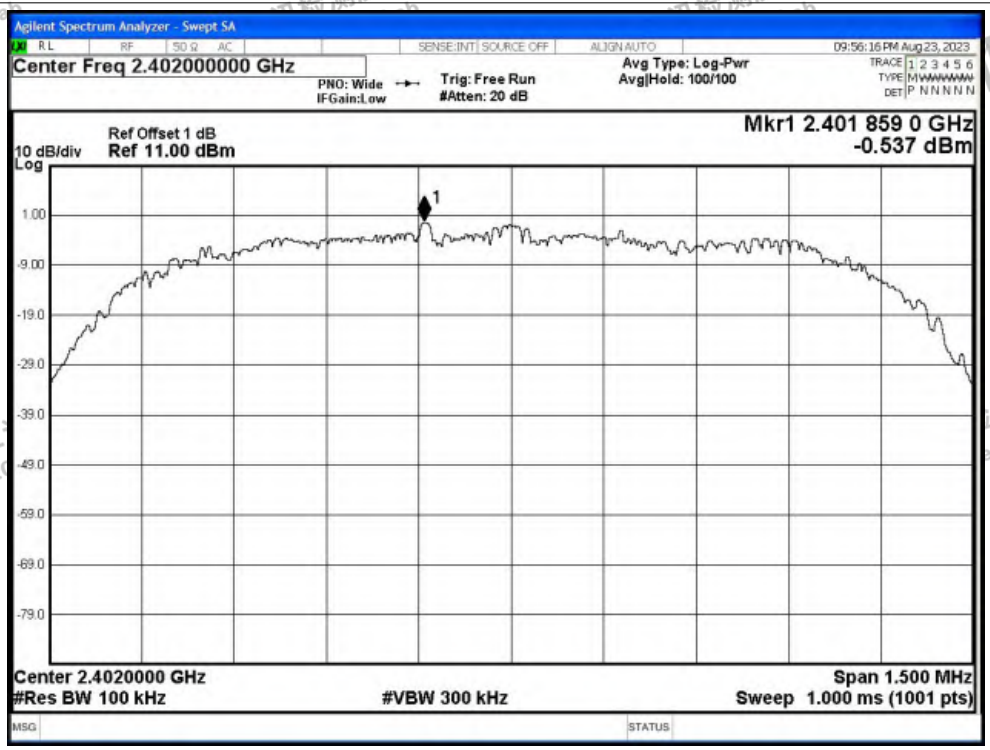
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



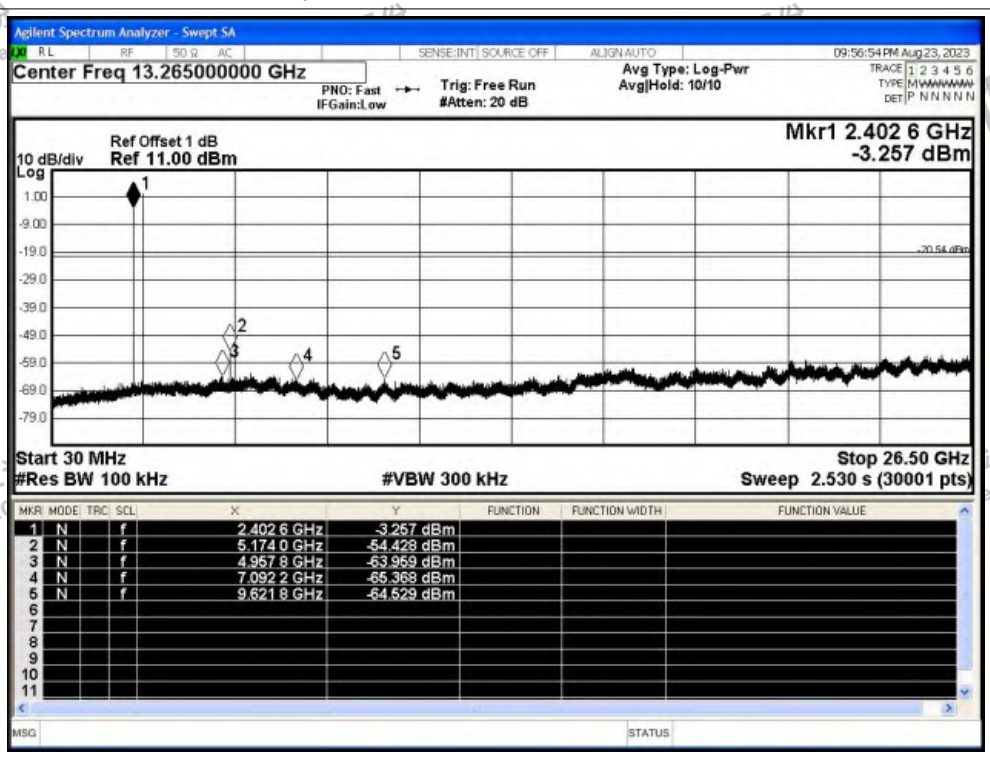
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission



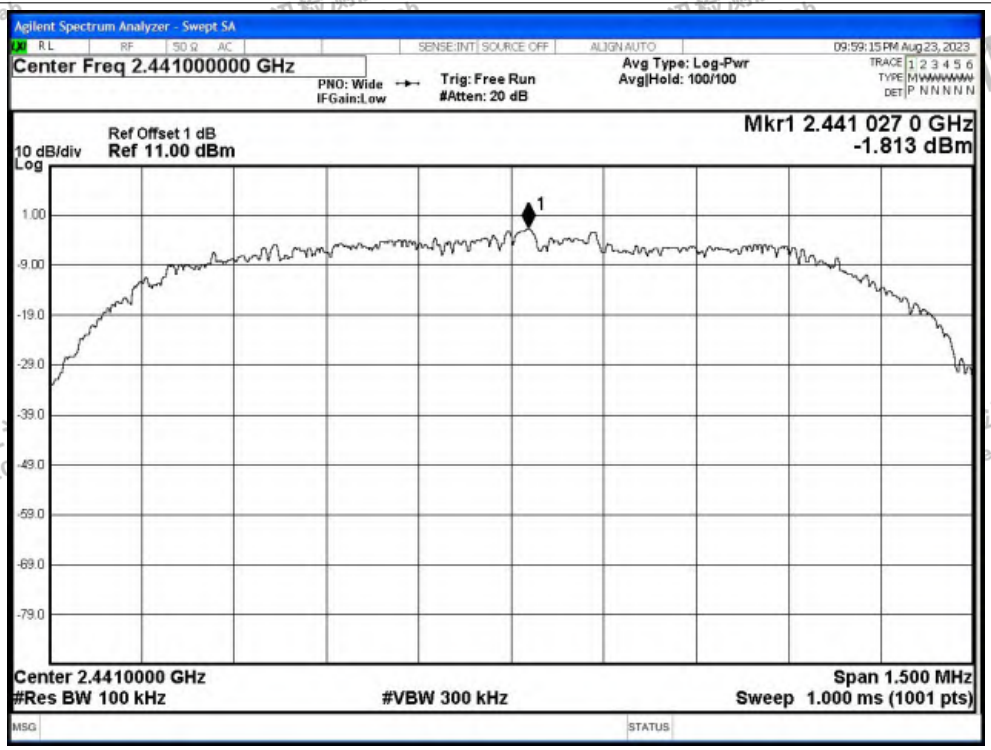
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref



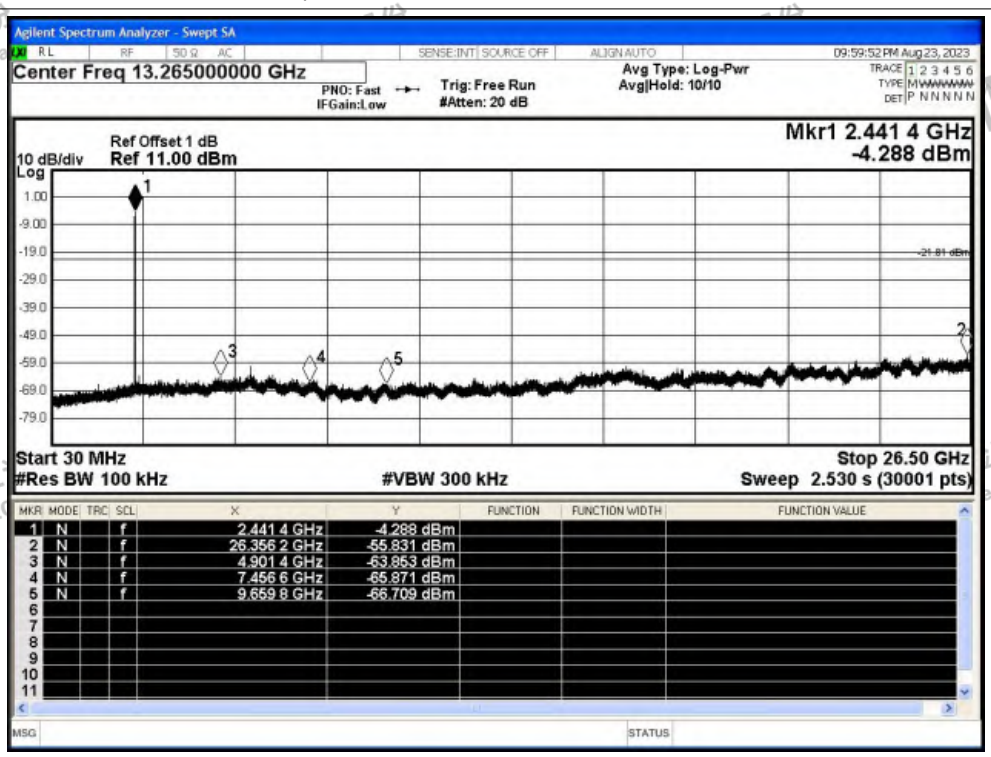
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Emission



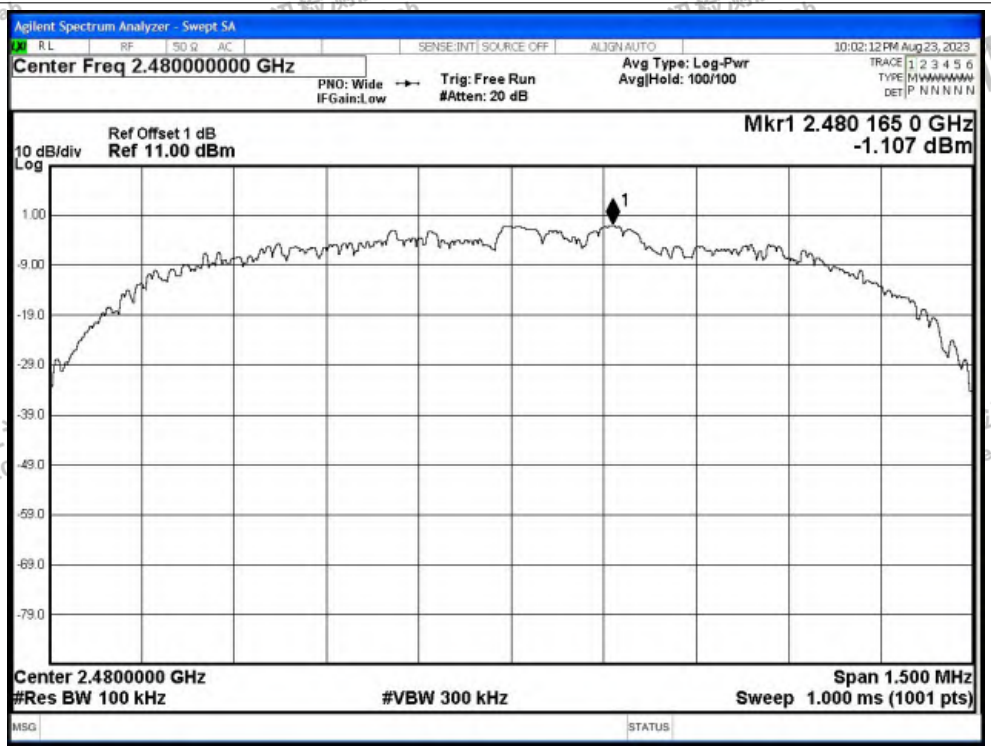
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref



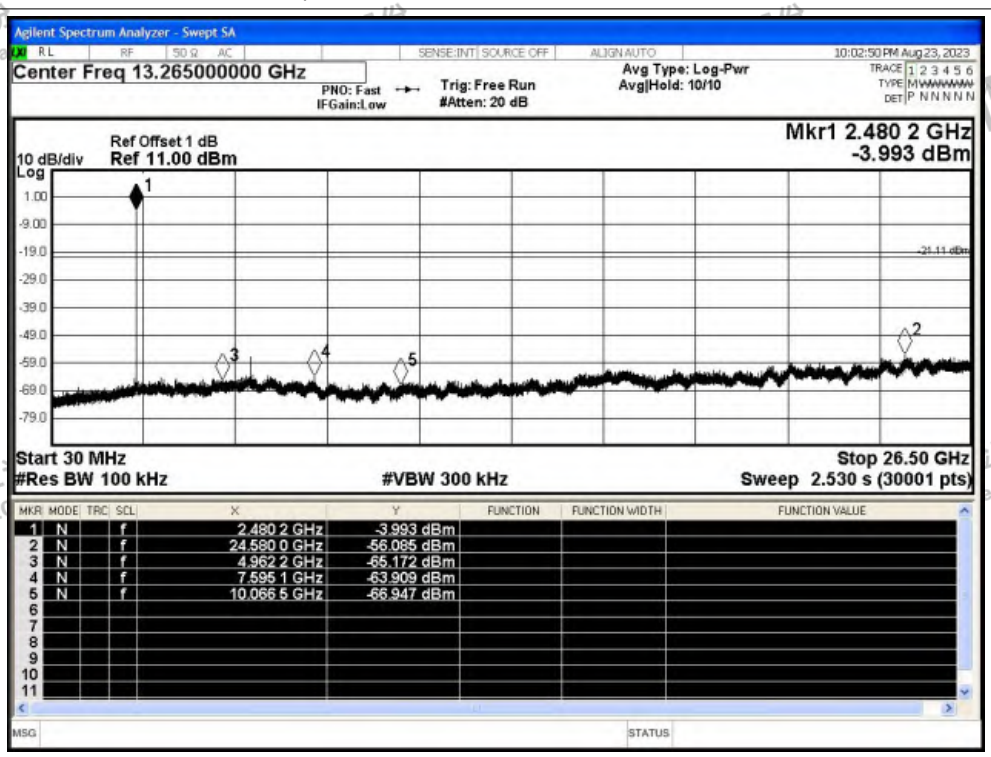
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission

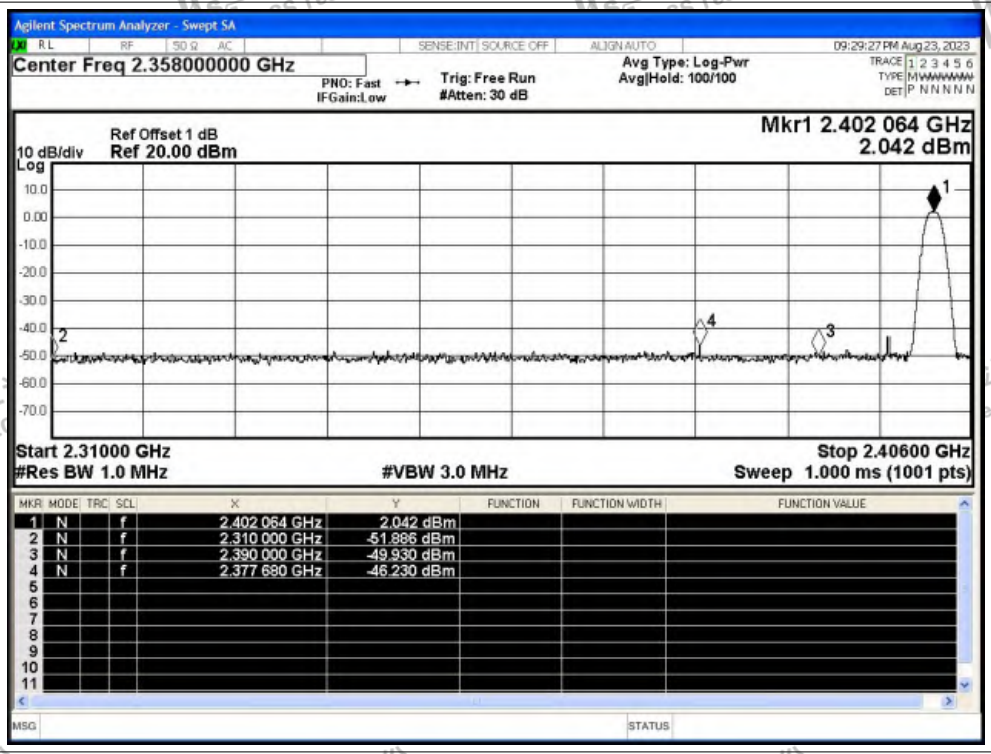


A.8 Restrict Band

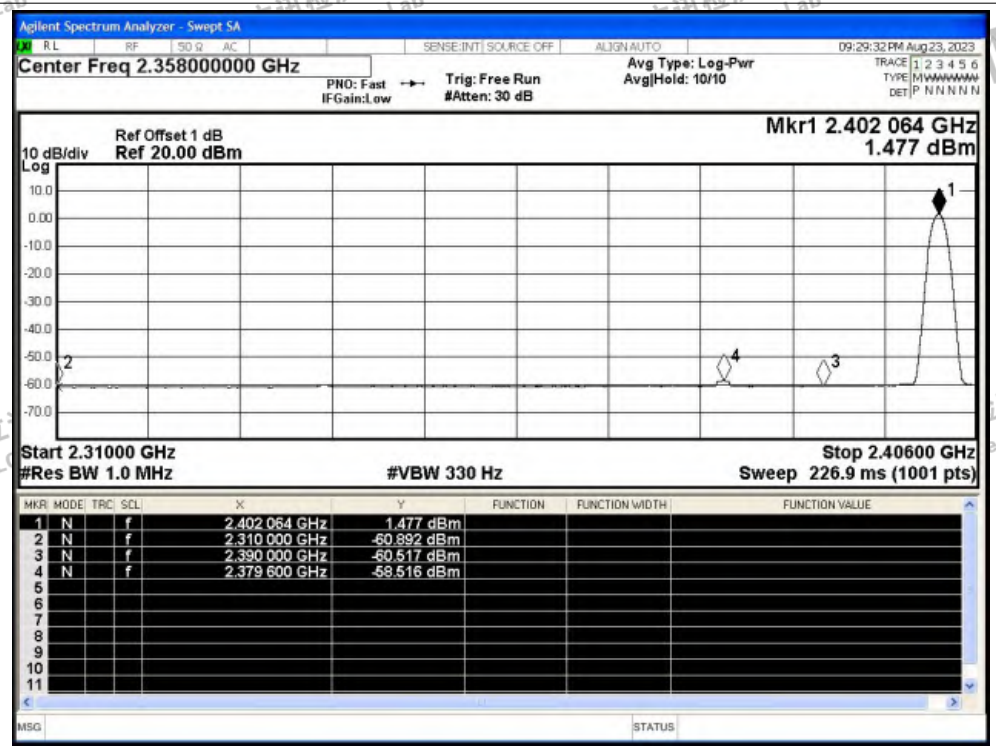
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-51.89	2	45.37	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-60.89	2	36.37	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2377.68	-46.23	2	51.03	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2379.6	-58.52	2	38.74	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-49.93	2	47.33	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-60.52	2	36.74	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-50.37	2	46.89	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-60.1	2	37.16	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.536	-40.39	2	56.87	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.728	-59.97	2	37.29	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-50.98	2	46.28	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-60.37	2	36.89	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-51.8	2	45.46	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-60.89	2	36.37	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2323.44	-47.83	2	49.43	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2386.992	-60.27	2	36.99	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-51.53	2	45.73	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-60.52	2	36.74	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-51.28	2	45.98	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-60.29	2	36.97	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2484.28	-41.13	2	56.13	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2484.832	-60.07	2	37.19	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-49.28	2	47.98	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-60.41	2	36.85	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-51.51	2	45.75	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-60.97	2	36.29	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2363.856	-48.43	2	48.83	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2370.576	-60.3	2	36.96	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-51.4	2	45.86	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-60.53	2	36.73	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-49.63	2	47.63	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-59.98	2	37.28	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2484.76	-41.66	2	55.6	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.536	-59.95	2	37.31	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-50.82	2	46.44	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-60.27	2	36.99	Average	54	Pass

Test Graphs

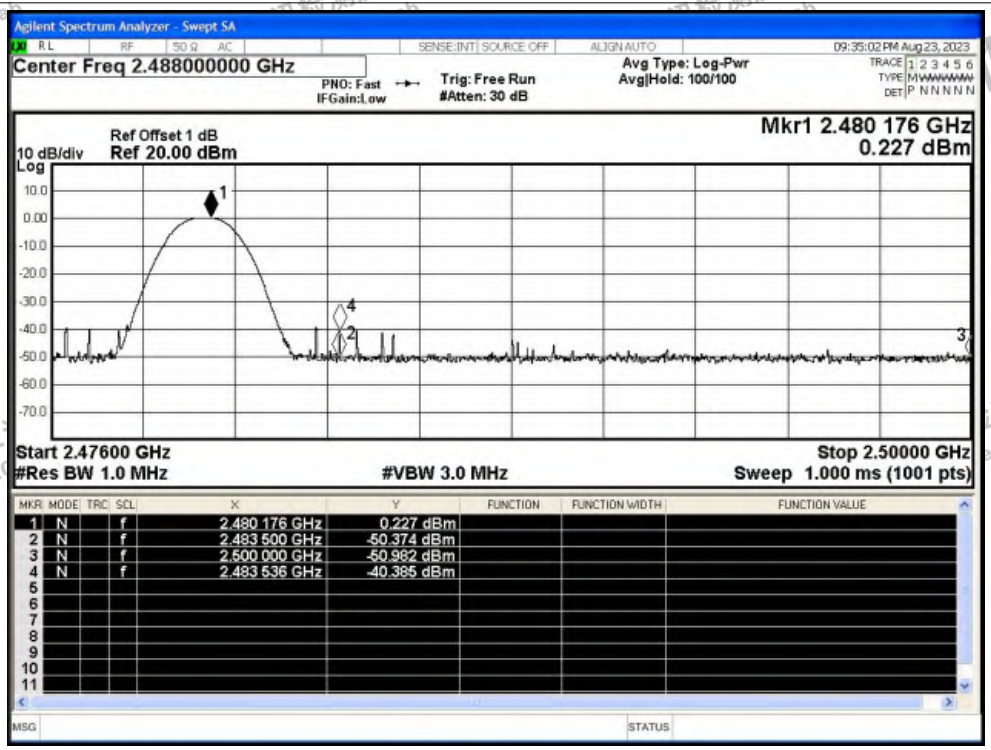
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak



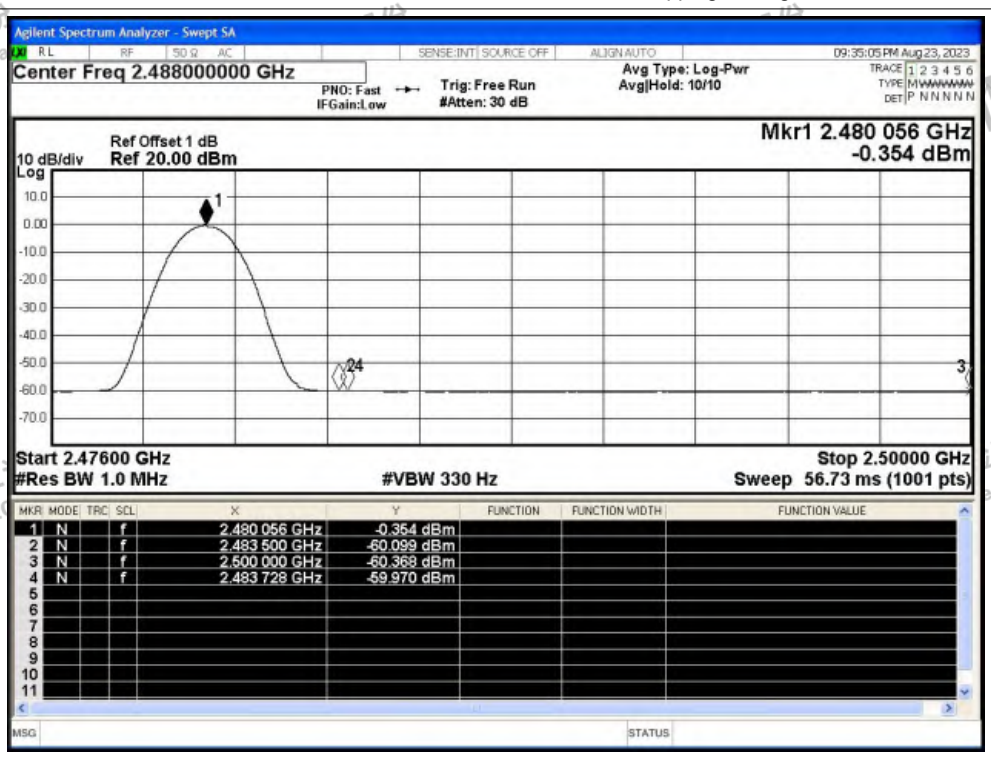
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



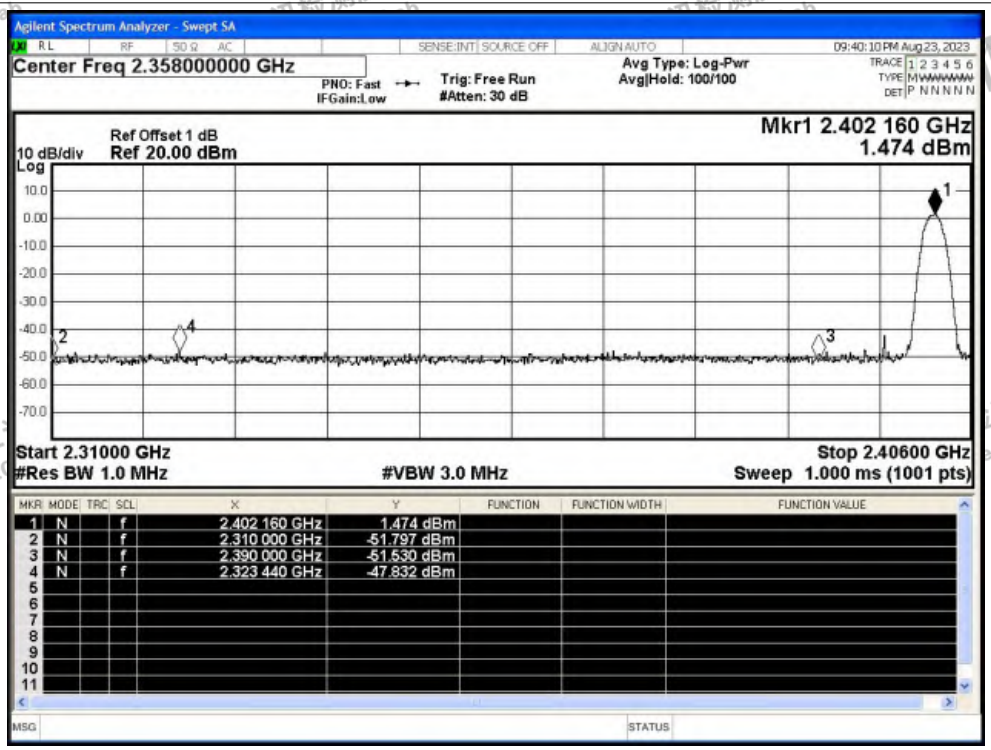
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak



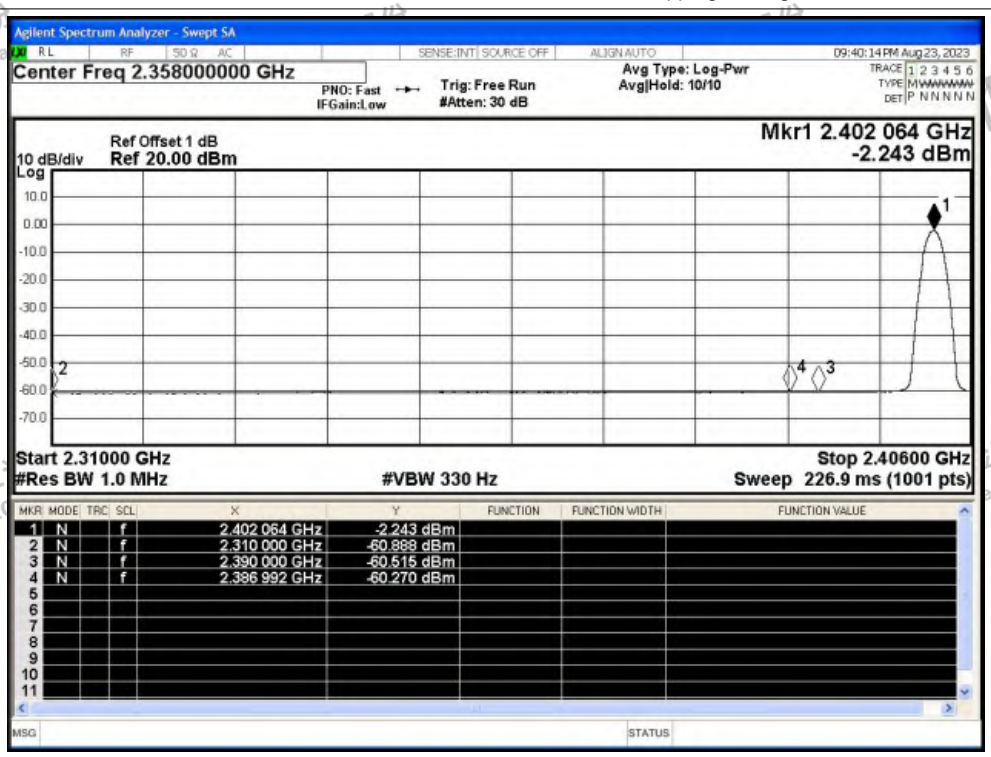
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average



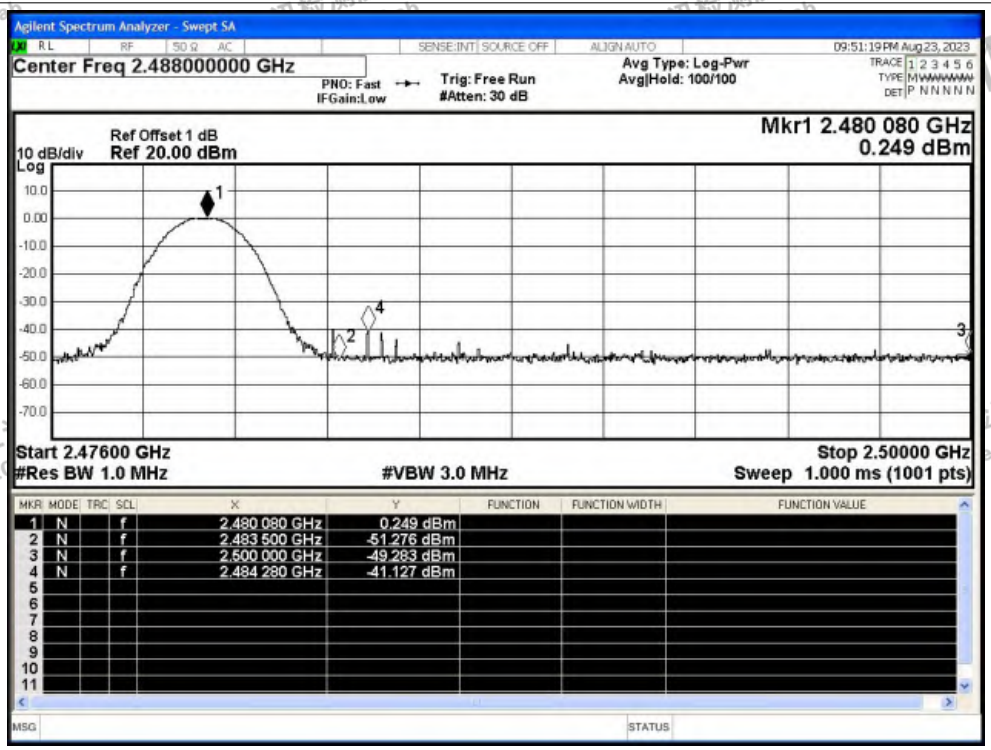
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak



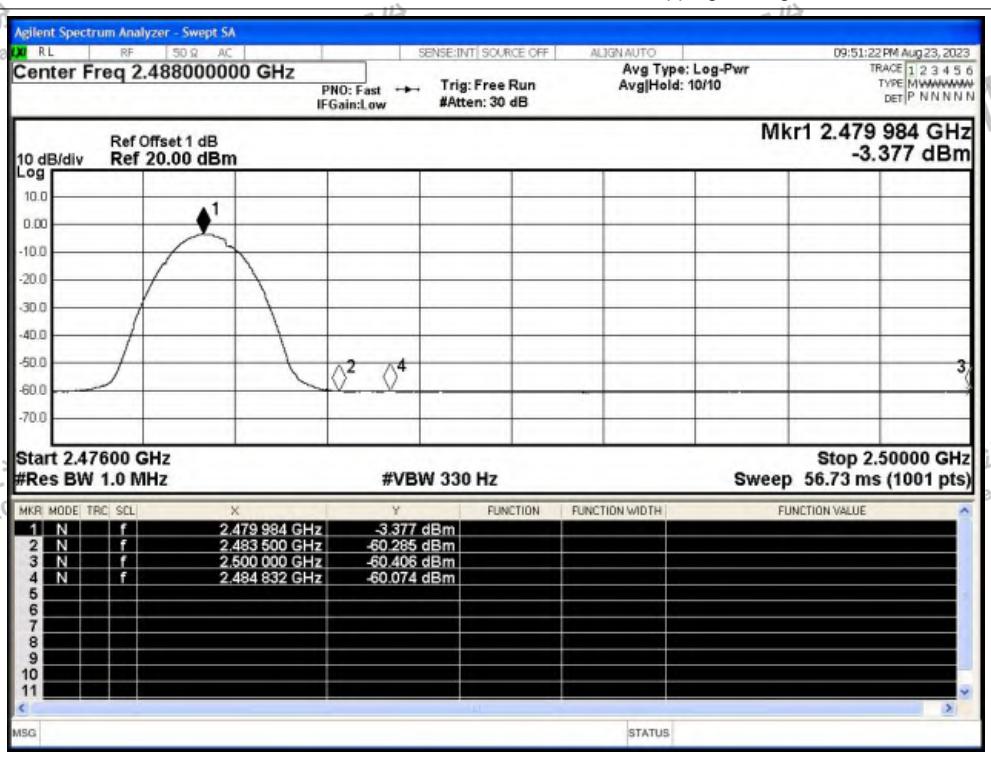
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average



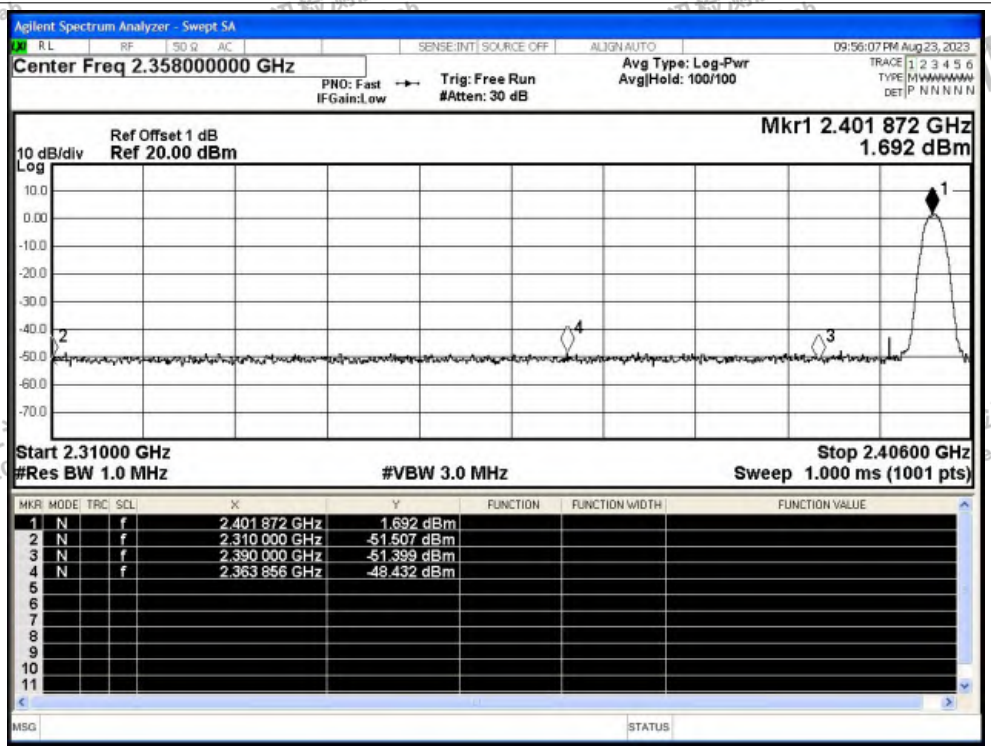
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak



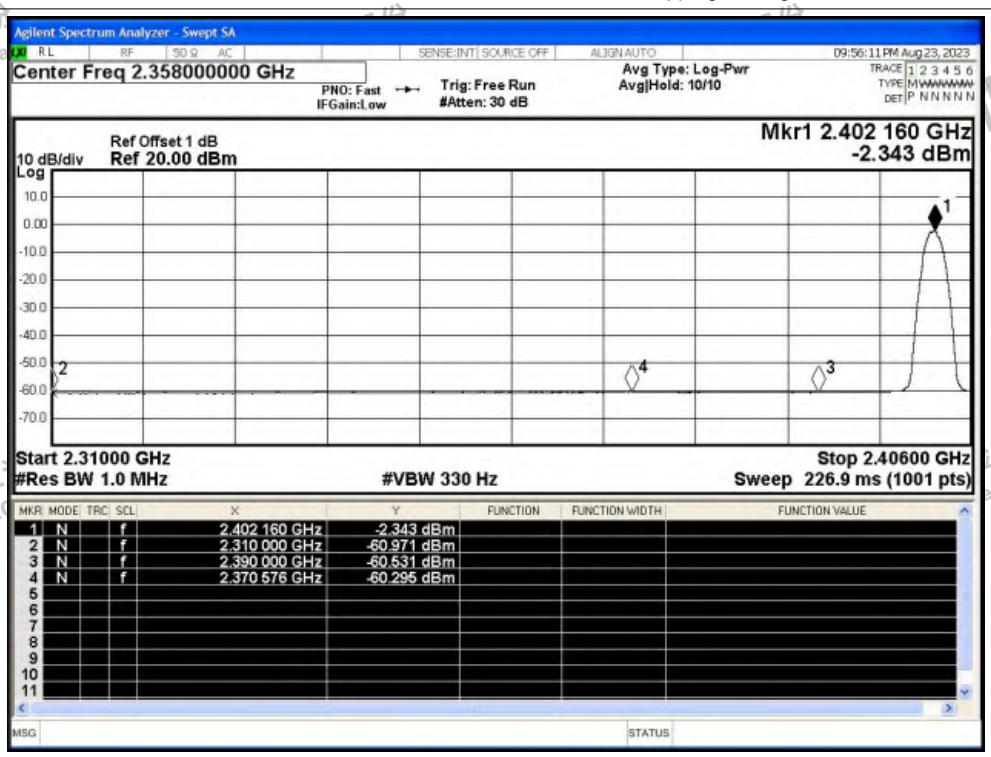
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Average



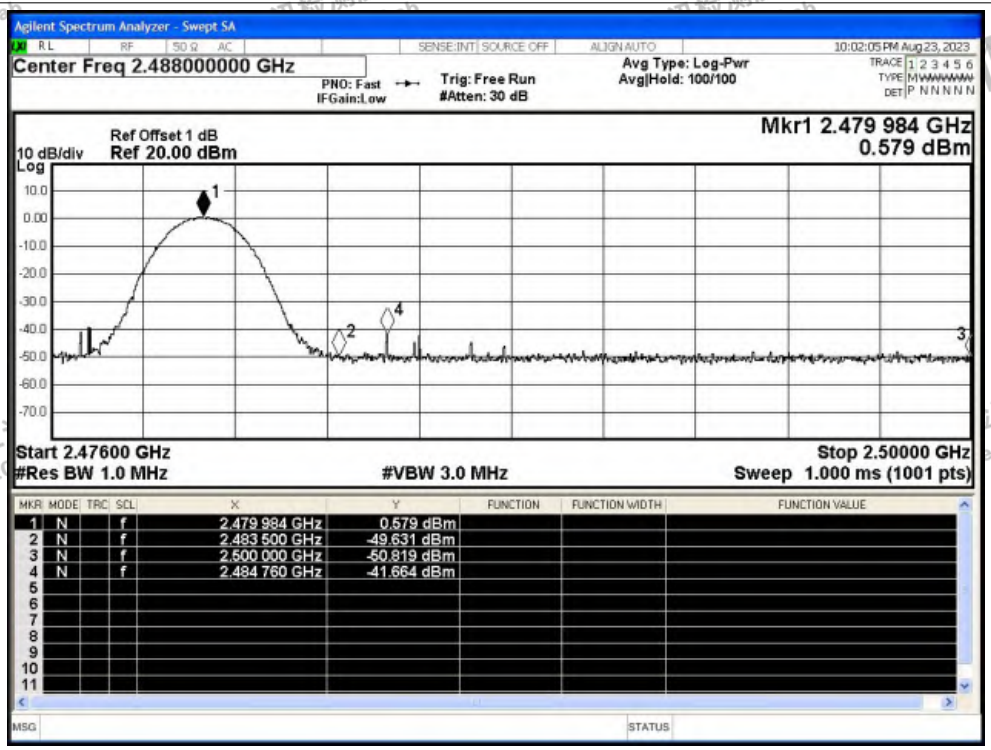
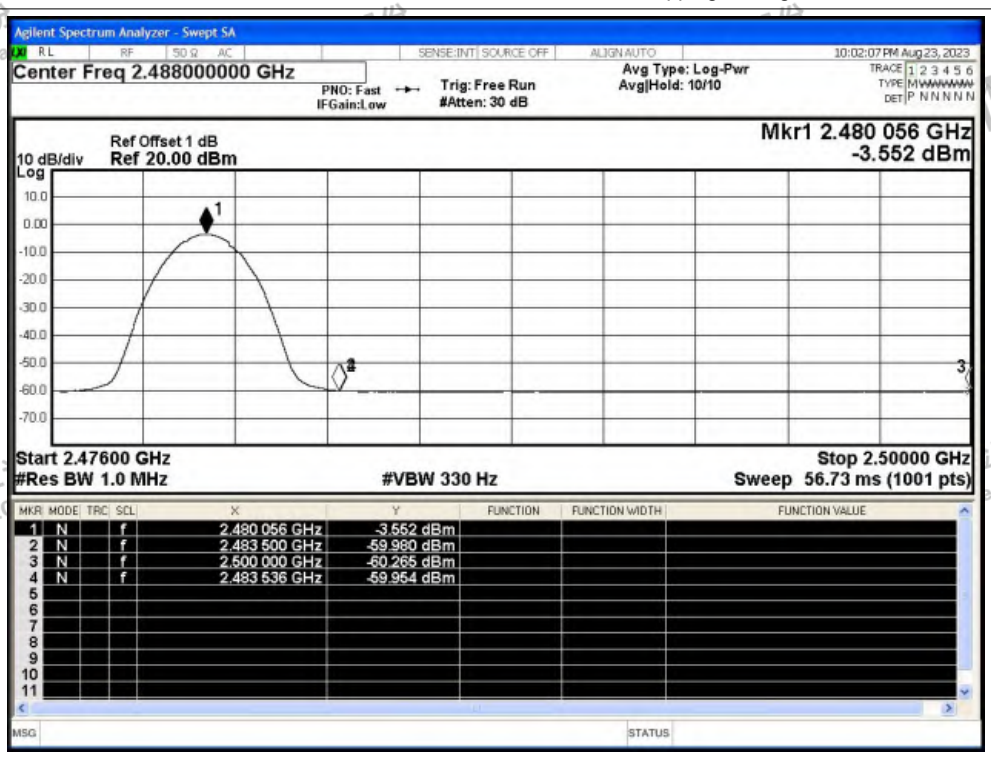
Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak



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