Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: SPEAKER

Test Model: RA 0212

Environmental Conditions

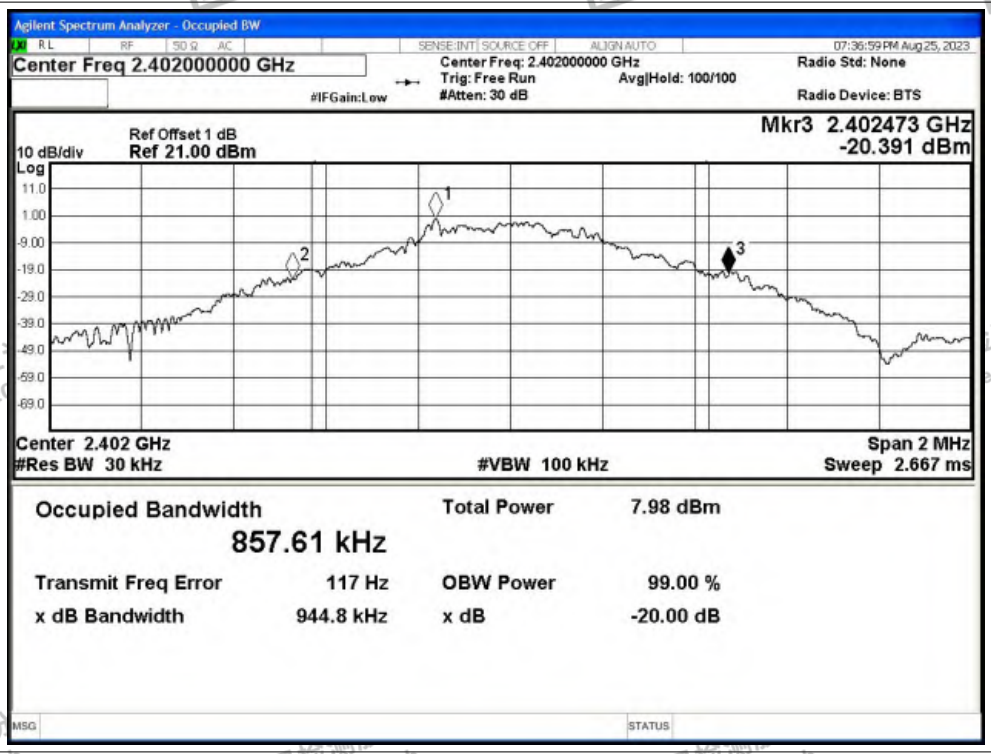
Temperature:	23.8° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Joker Hu
Supervised by:	Ling Zhu

A.1 -20dB Bandwidth

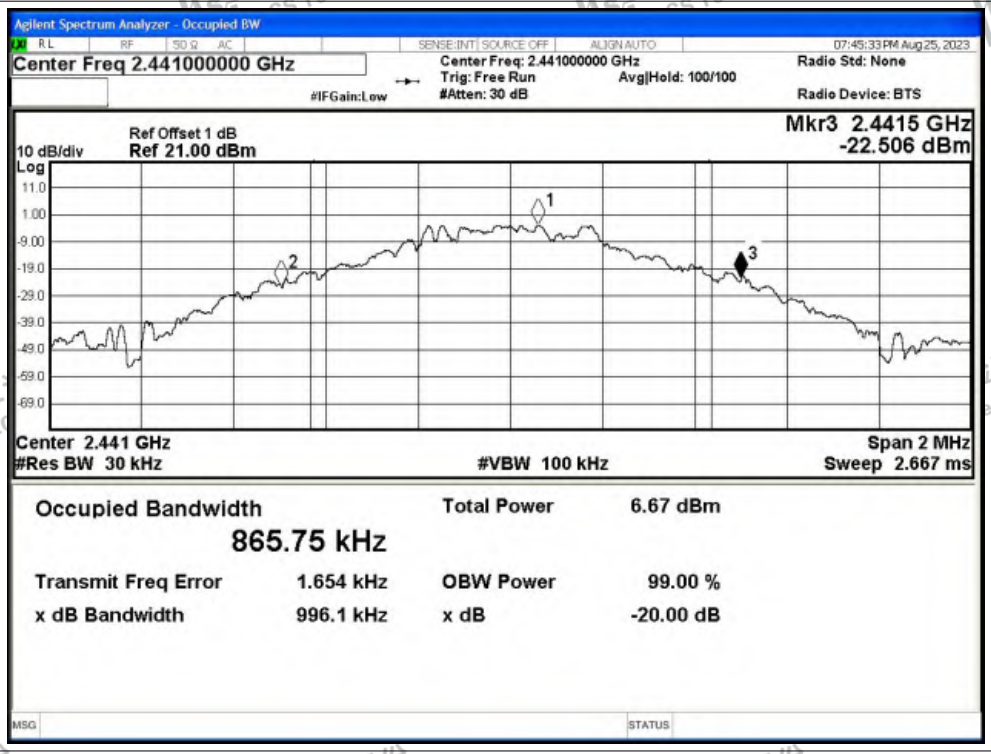
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	0.945	0	Pass
NVNT	1-DH5	2441	Ant1	0.996	0	Pass
NVNT	1-DH5	2480	Ant1	0.971	0	Pass
NVNT	2-DH5	2402	Ant1	1.282	0	Pass
NVNT	2-DH5	2441	Ant1	1.286	0	Pass
NVNT	2-DH5	2480	Ant1	1.283	0	Pass
NVNT	3-DH5	2402	Ant1	1.31	0	Pass
NVNT	3-DH5	2441	Ant1	1.295	0	Pass
NVNT	3-DH5	2480	Ant1	1.286	0	Pass

Test Graphs

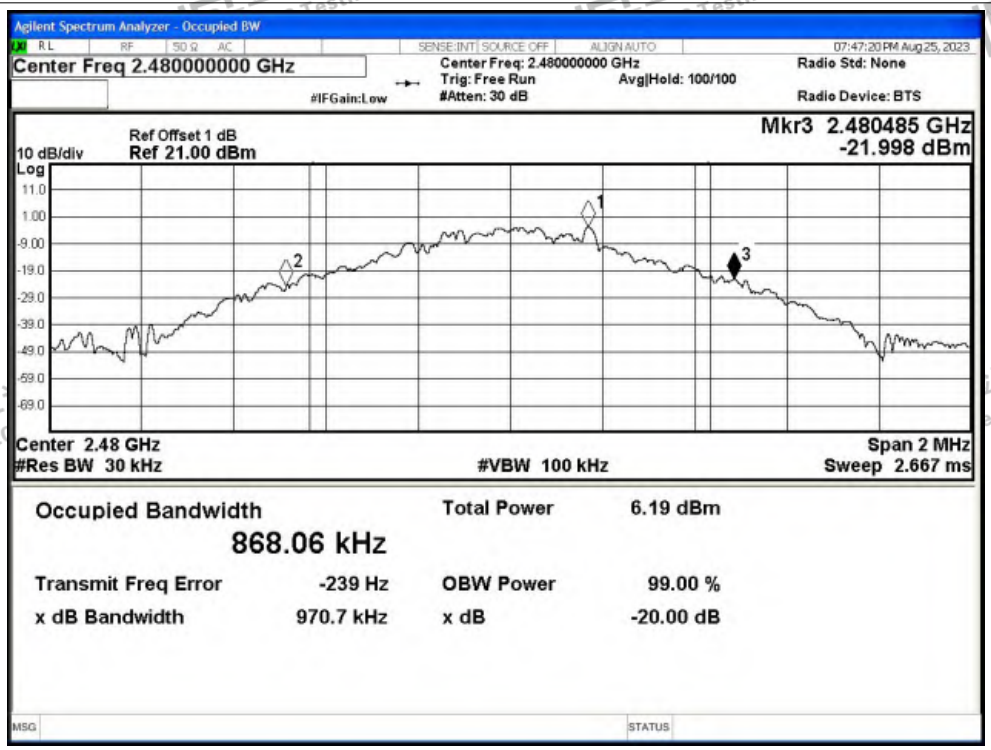
-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1



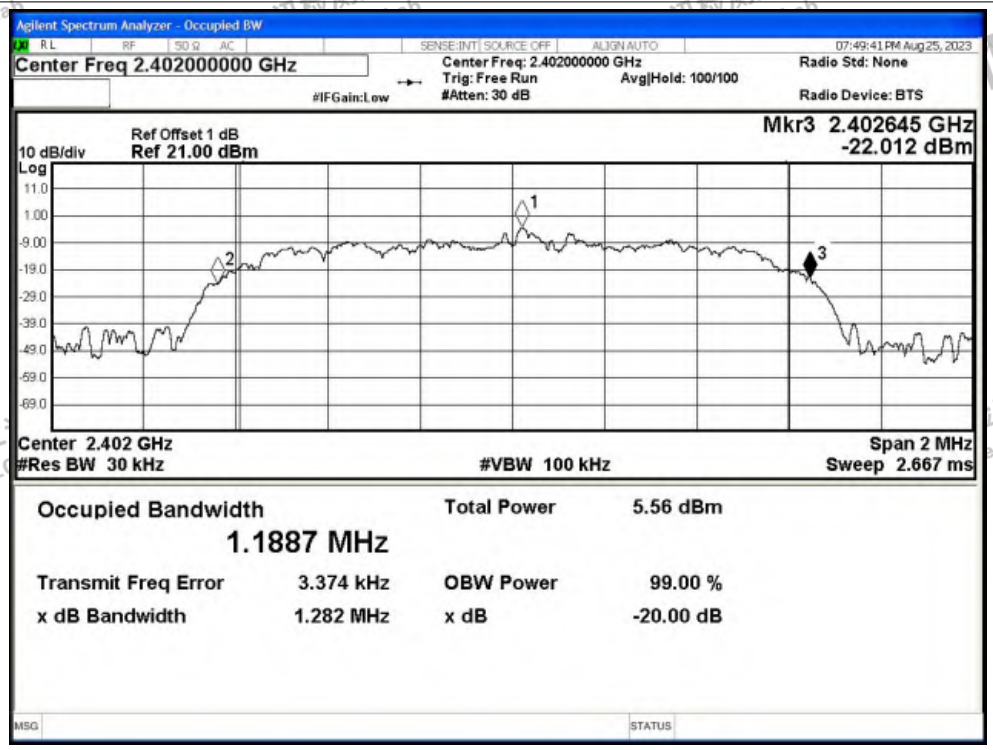
-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1



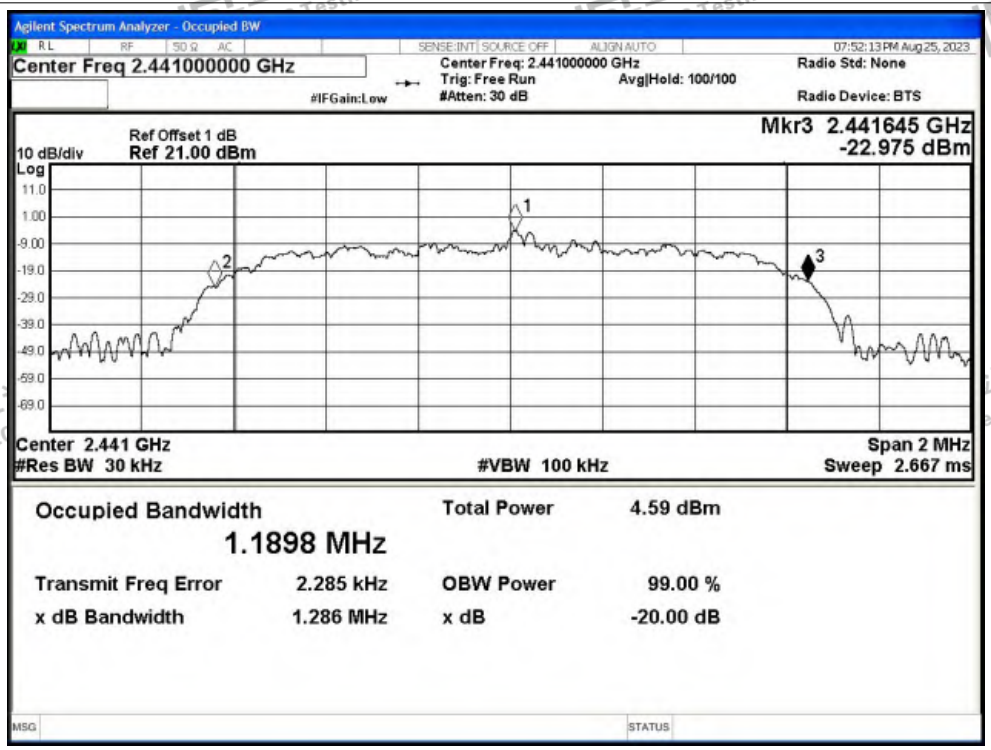
-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1



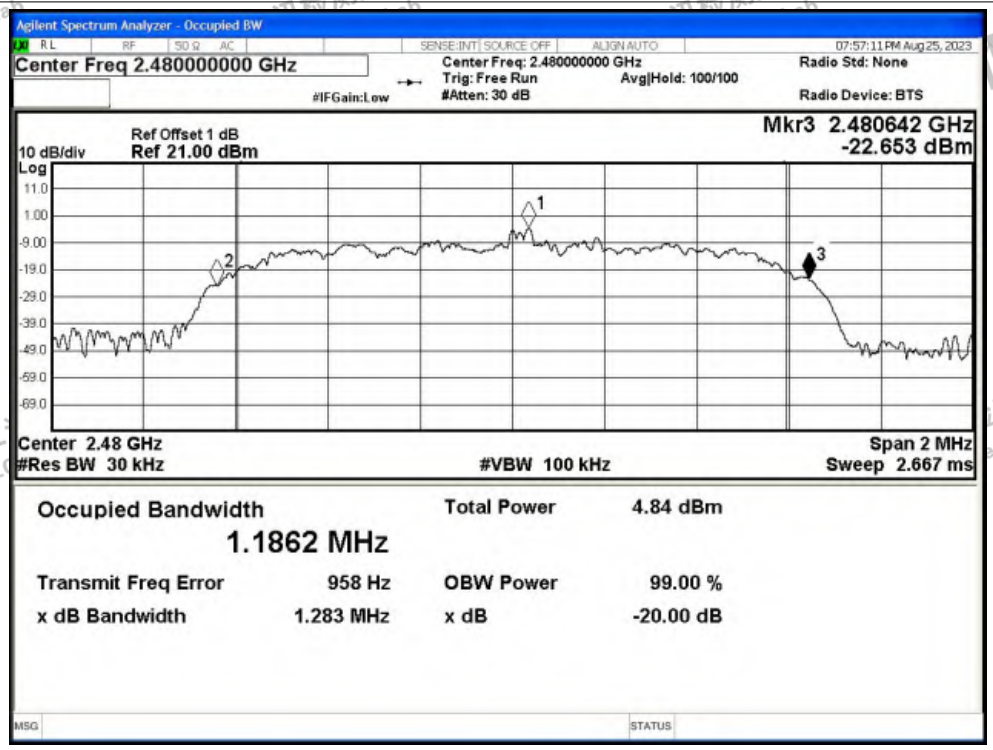
-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1



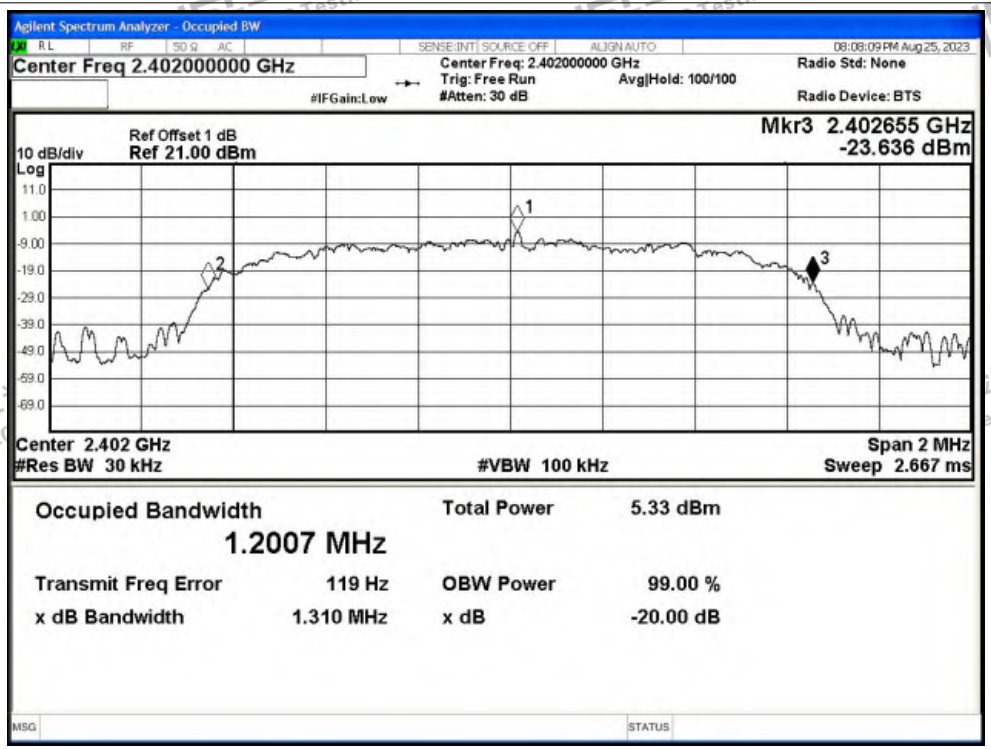
-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1



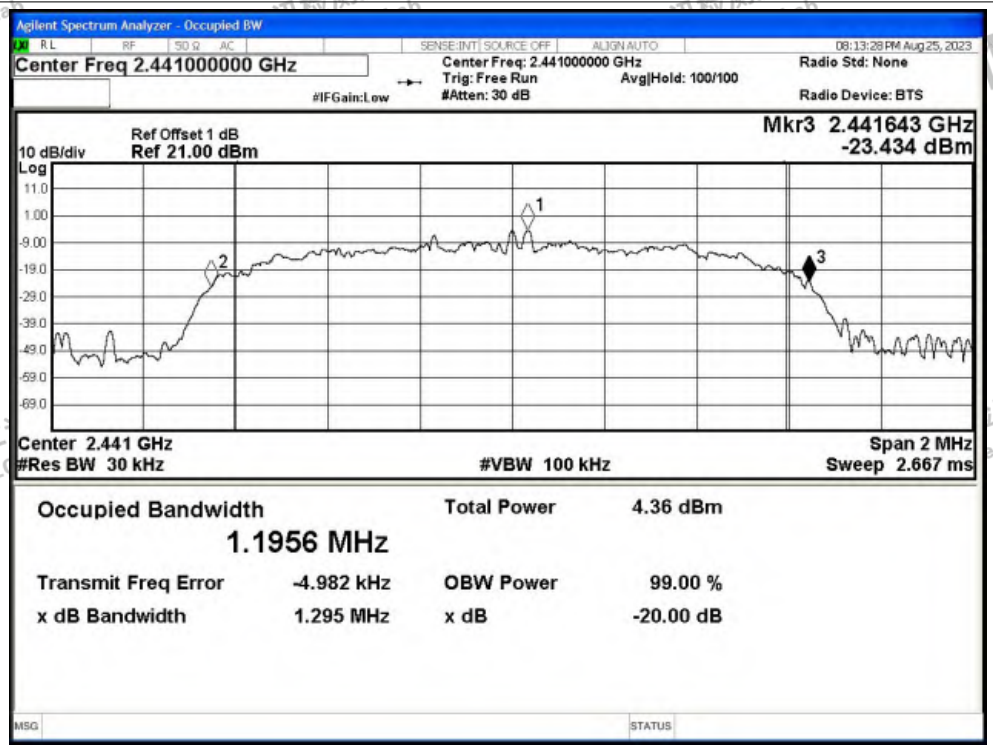
-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1



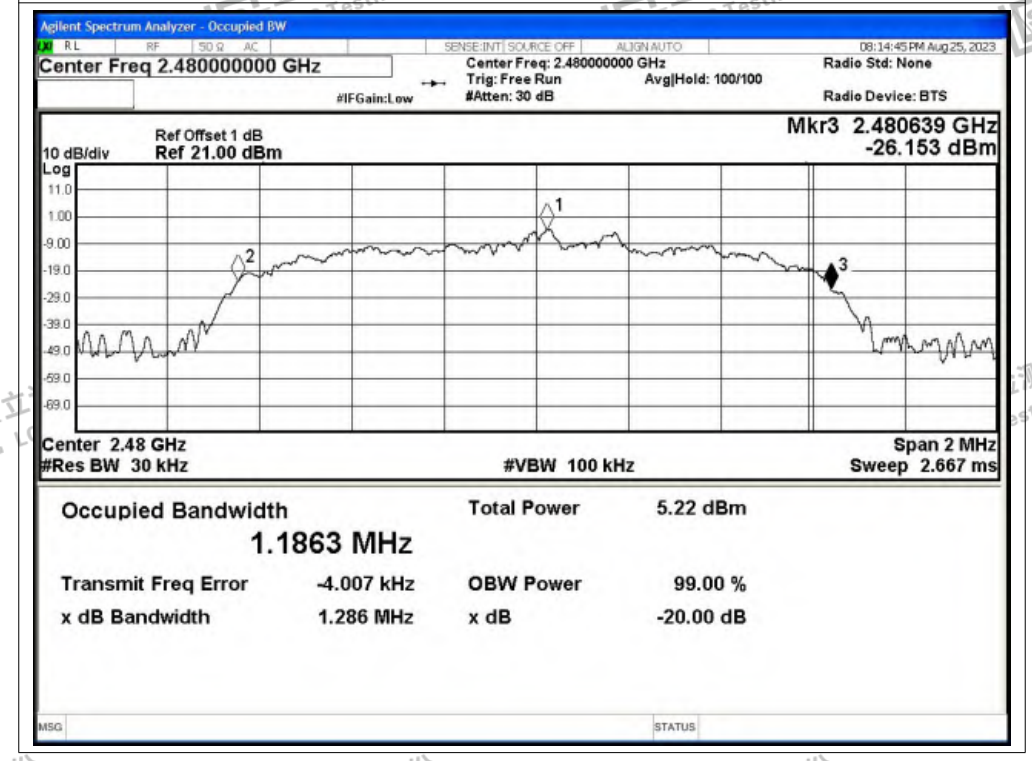
-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1

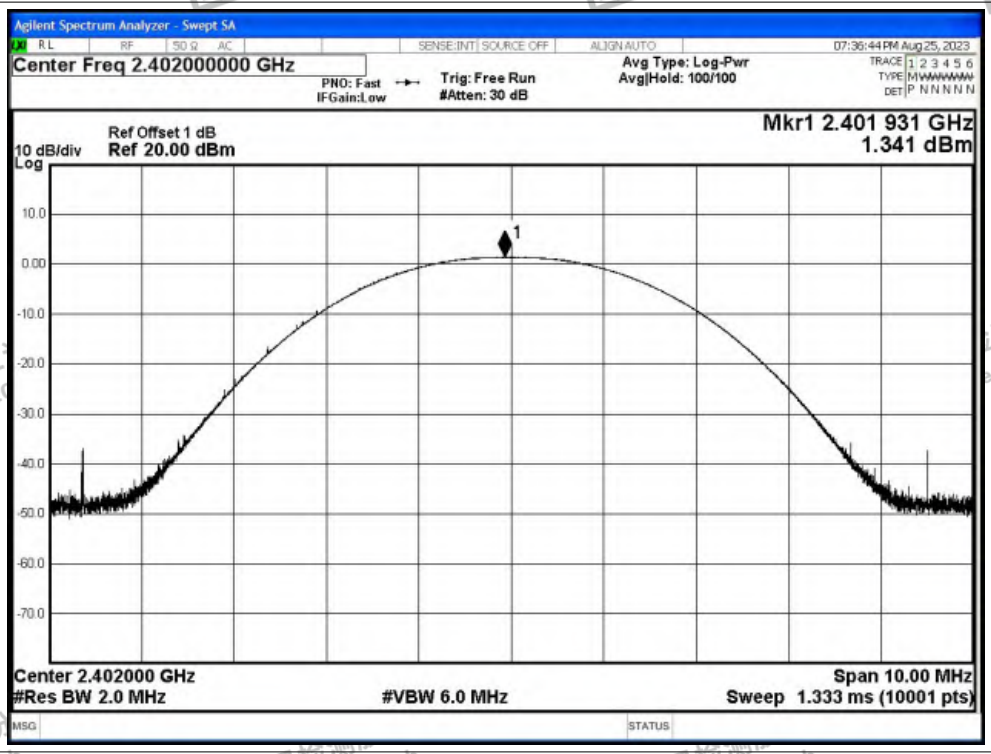


A.2 Maximum Conducted Output Power

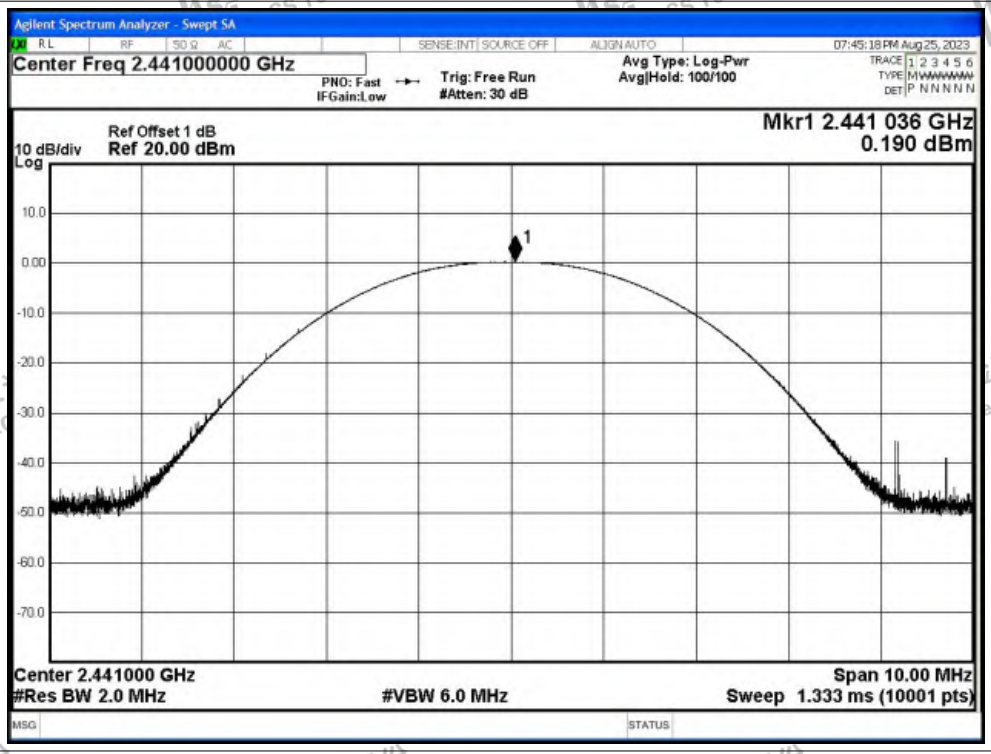
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	1.34	21	Pass
NVNT	1-DH5	2441	Ant1	0.19	21	Pass
NVNT	1-DH5	2480	Ant1	-0.04	21	Pass
NVNT	2-DH5	2402	Ant1	1.38	21	Pass
NVNT	2-DH5	2441	Ant1	0.34	21	Pass
NVNT	2-DH5	2480	Ant1	0.57	21	Pass
NVNT	3-DH5	2402	Ant1	1.54	21	Pass
NVNT	3-DH5	2441	Ant1	0.4	21	Pass
NVNT	3-DH5	2480	Ant1	0.61	21	Pass

Test Graphs

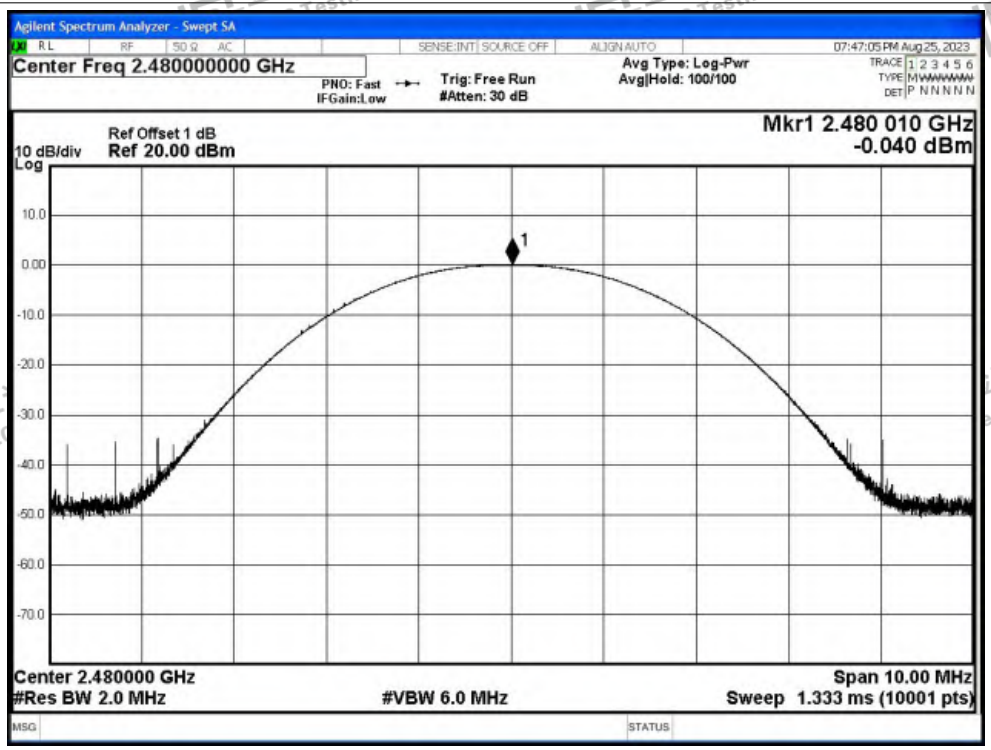
Power NVNT 1-DH5 2402MHz Ant1



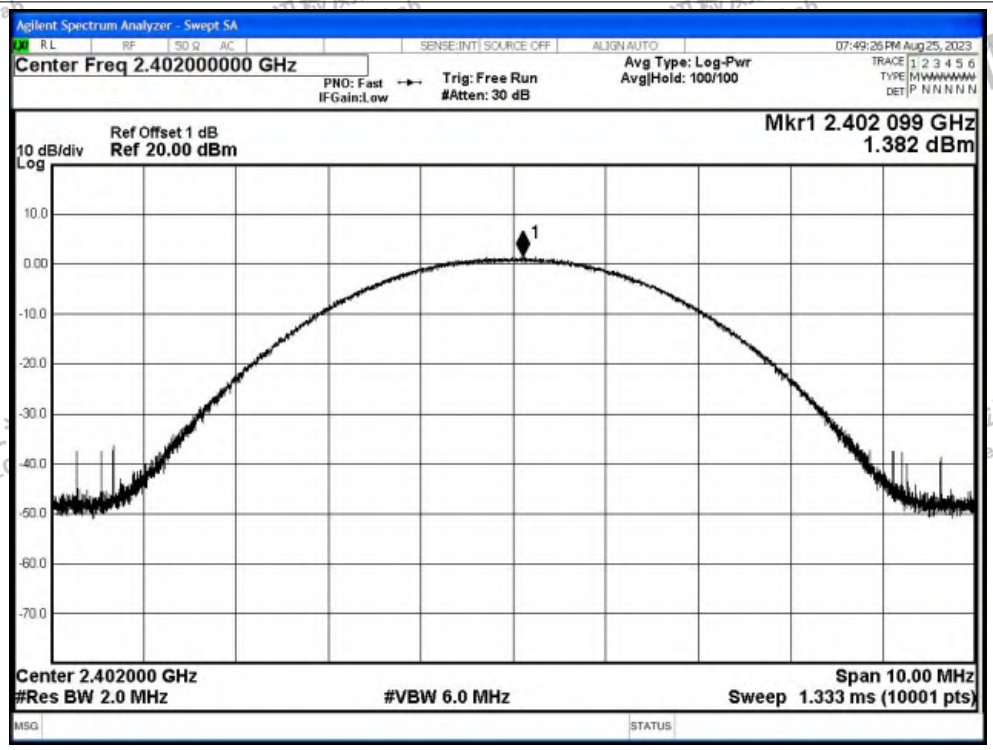
Power NVNT 1-DH5 2441MHz Ant1



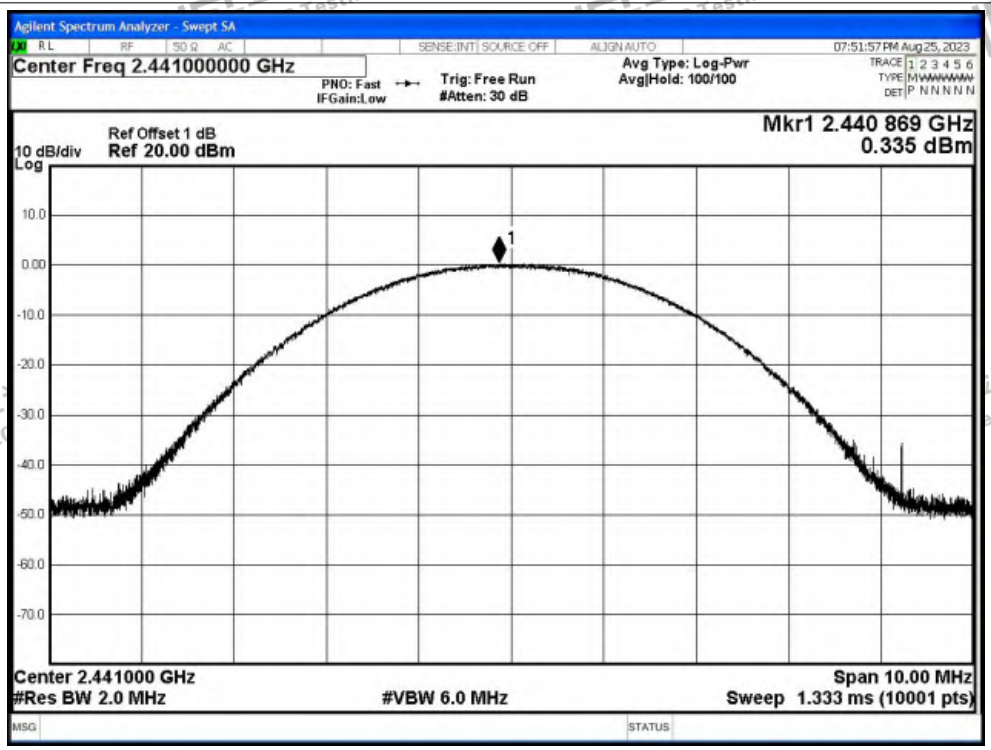
Power NVNT 1-DH5 2480MHz Ant1



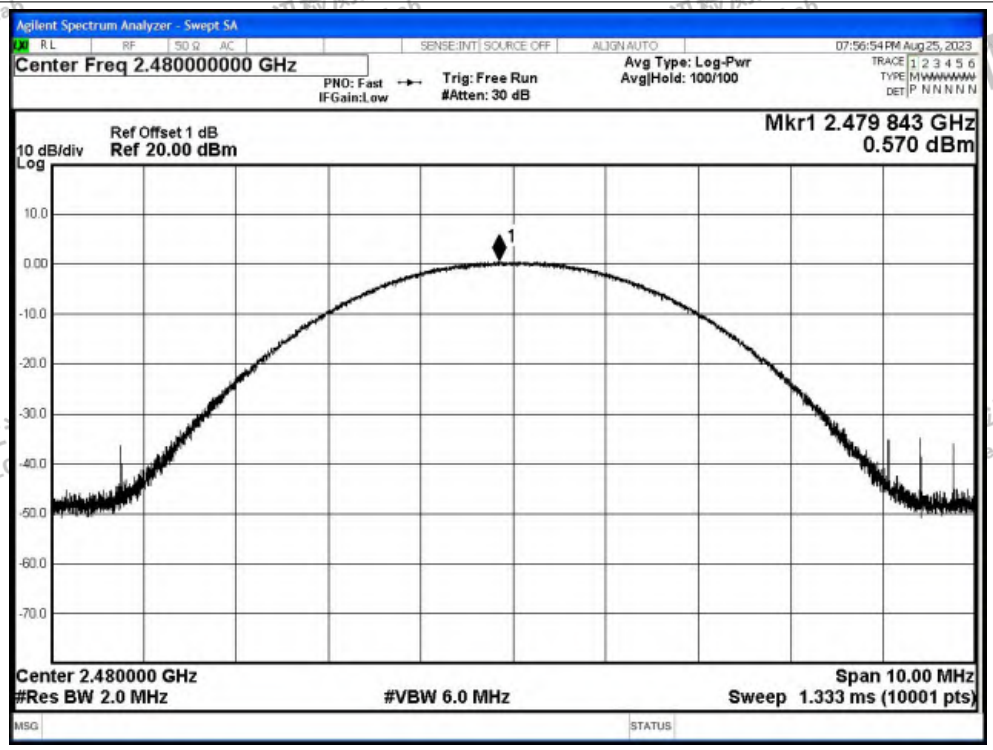
Power NVNT 2-DH5 2402MHz Ant1



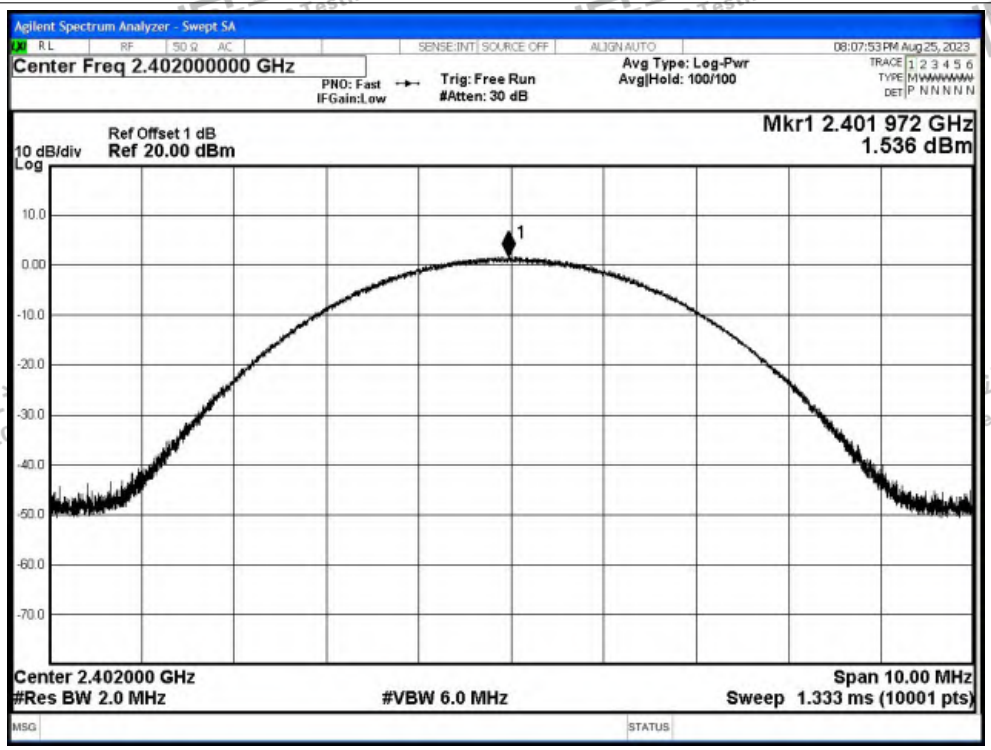
Power NVNT 2-DH5 2441MHz Ant1



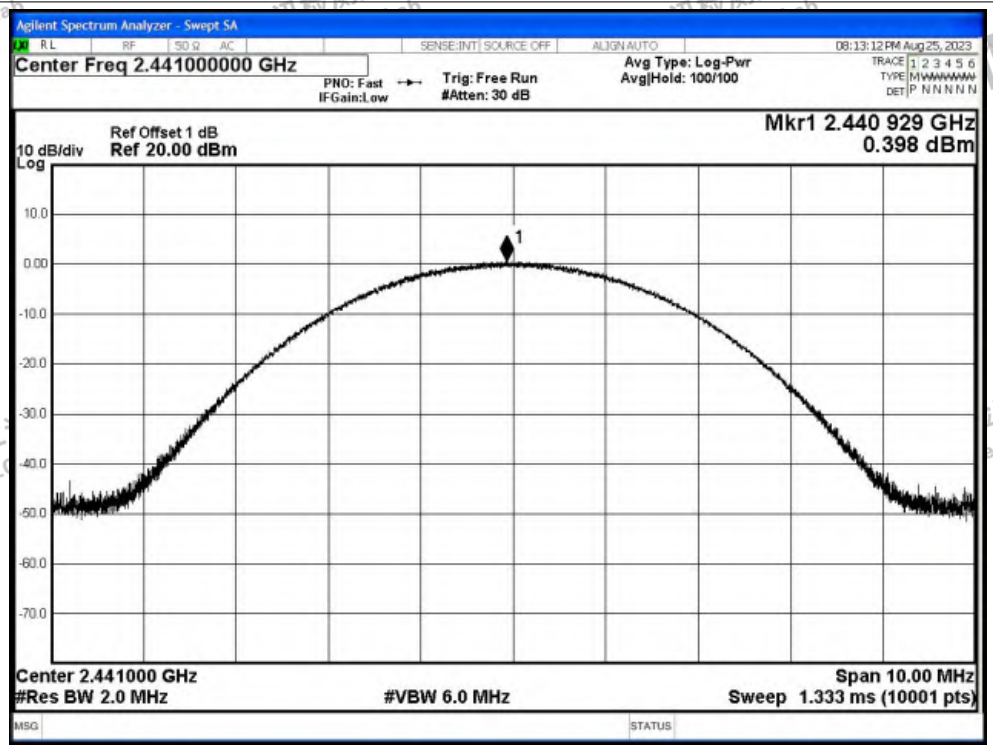
Power NVNT 2-DH5 2480MHz Ant1



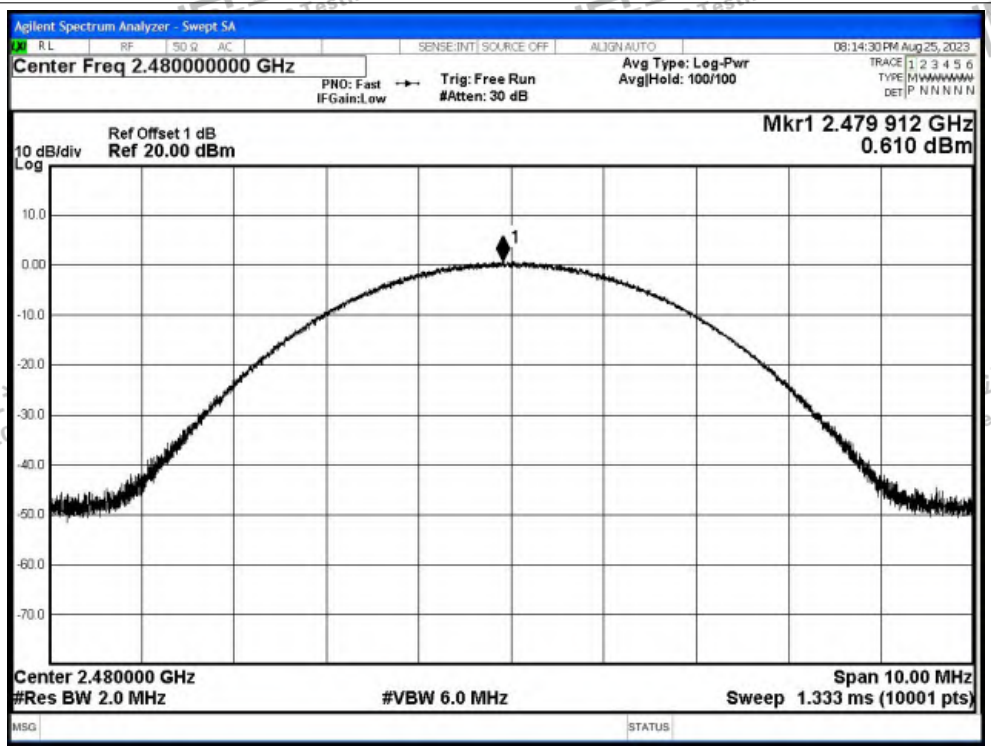
Power NVNT 3-DH5 2402MHz Ant1



Power NVNT 3-DH5 2441MHz Ant1



Power NVNT 3-DH5 2480MHz Ant1



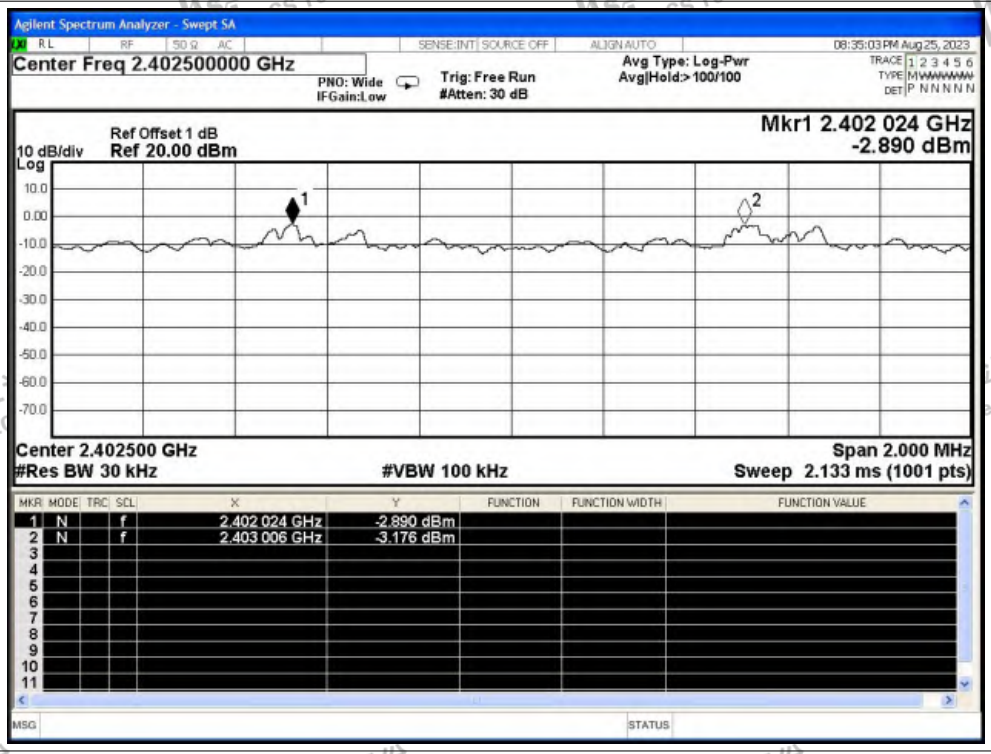
A.3 Carrier Frequencies Separation

Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2401.994	2403.052	1.058	0.664	Pass
NVNT	2-DH5	Ant1	2402.024	2403.006	0.982	0.857	Pass
NVNT	3-DH5	Ant1	2401.914	2403.014	1.1	0.873	Pass

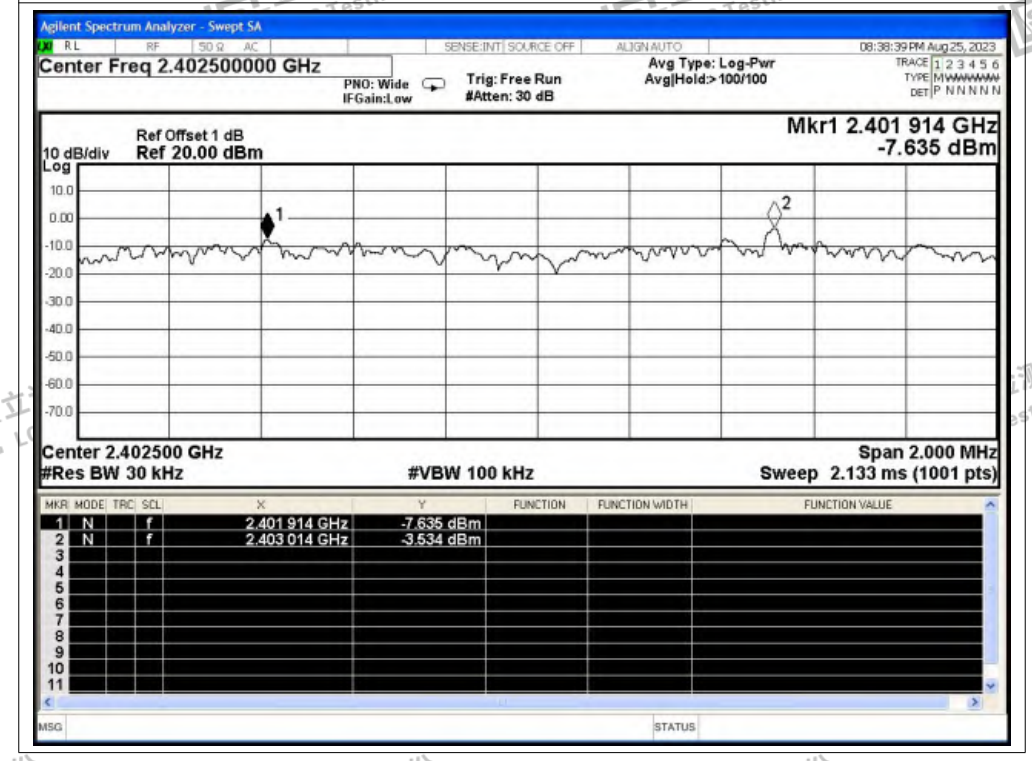
Test Graphs

CFS NVNT 1-DH5 2402MHz Ant1

CFS NVNT 2-DH5 2402MHz Ant1



CFS NVNT 3-DH5 2402MHz Ant1

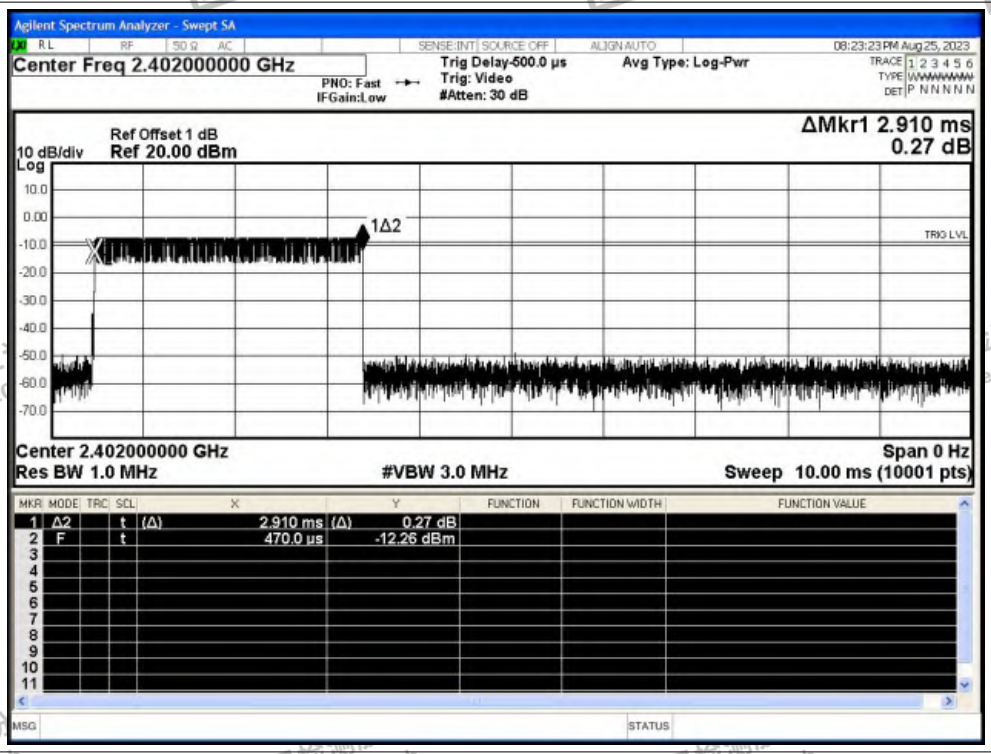


A.4 Dwell Time

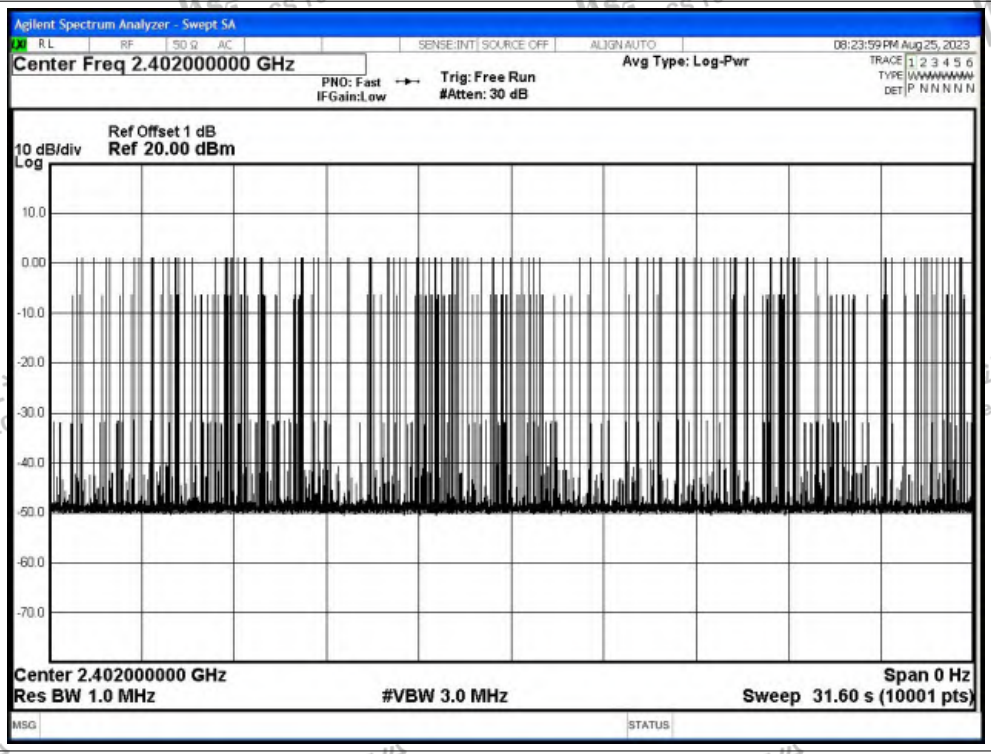
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	2.91	317.19	109	31600	400	Pass
NVNT	2-DH5	2402	Ant1	0.885	95.58	108	31600	400	Pass
NVNT	3-DH5	2402	Ant1	1.616	171.296	106	31600	400	Pass

Test Graphs

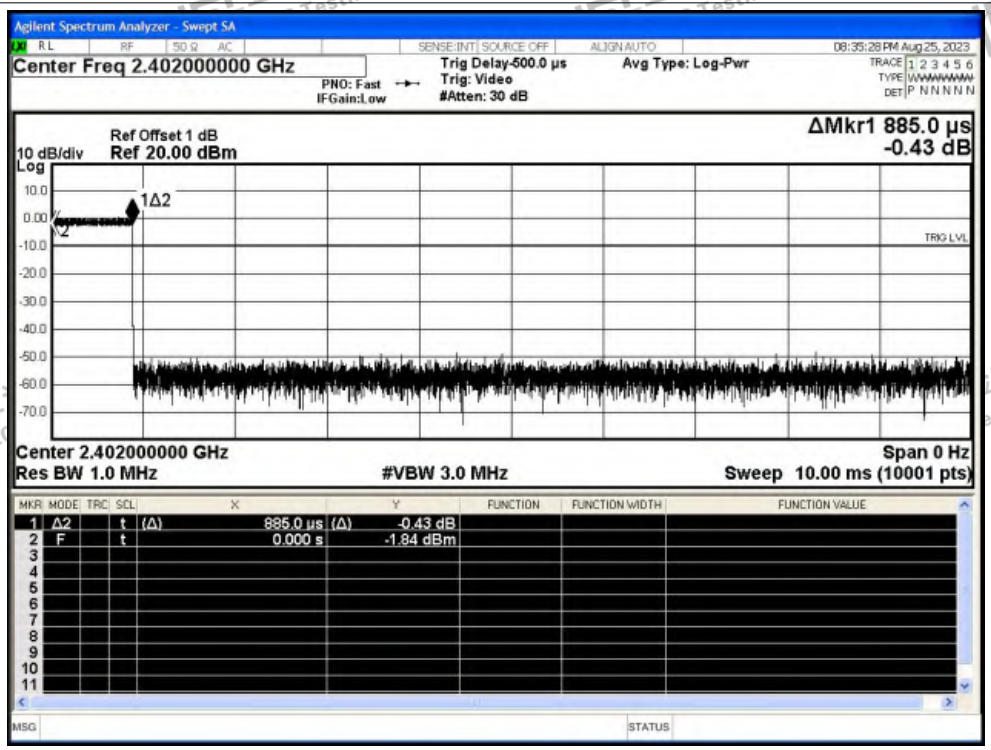
Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



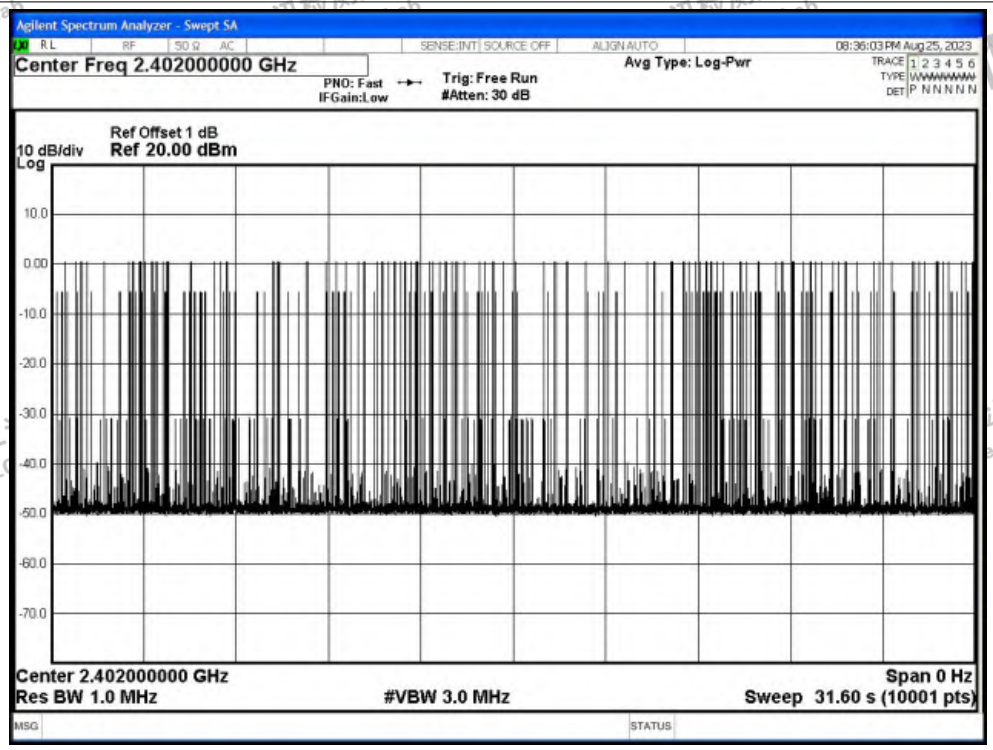
Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated



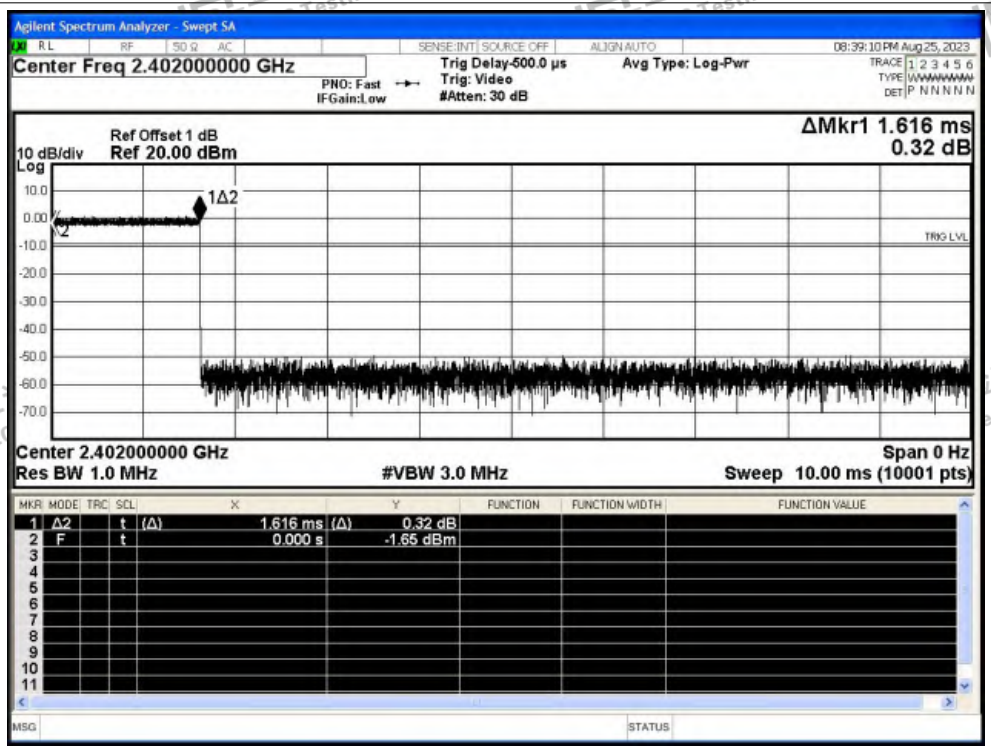
Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



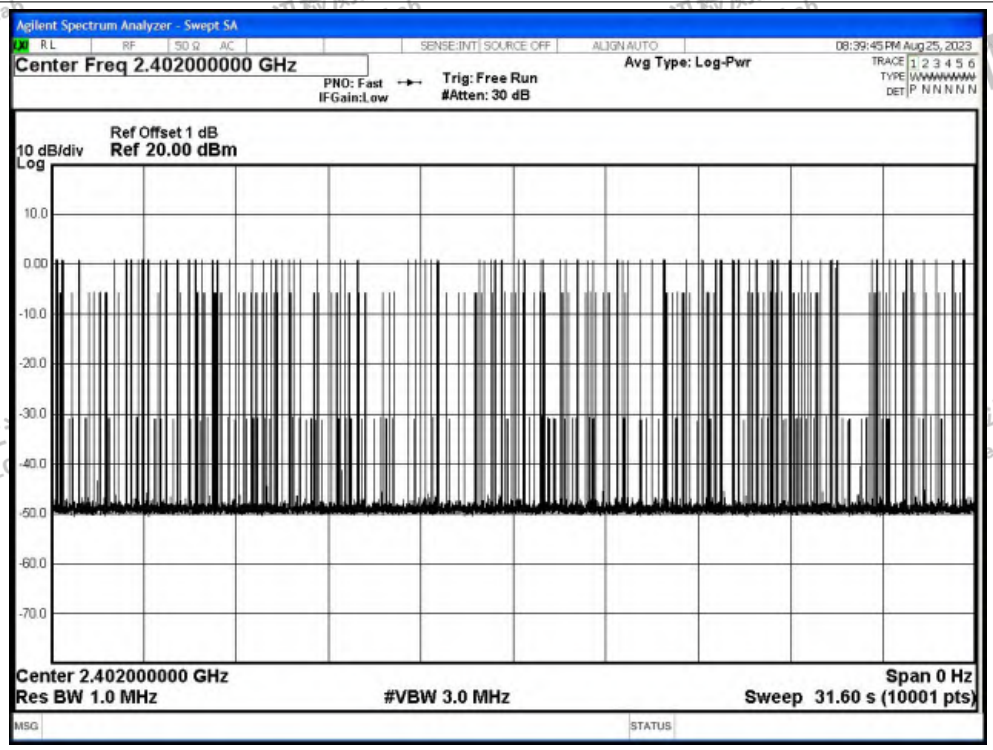
Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated



Dwell NVNT 3-DH5 2402MHz Ant1 One Burst



Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

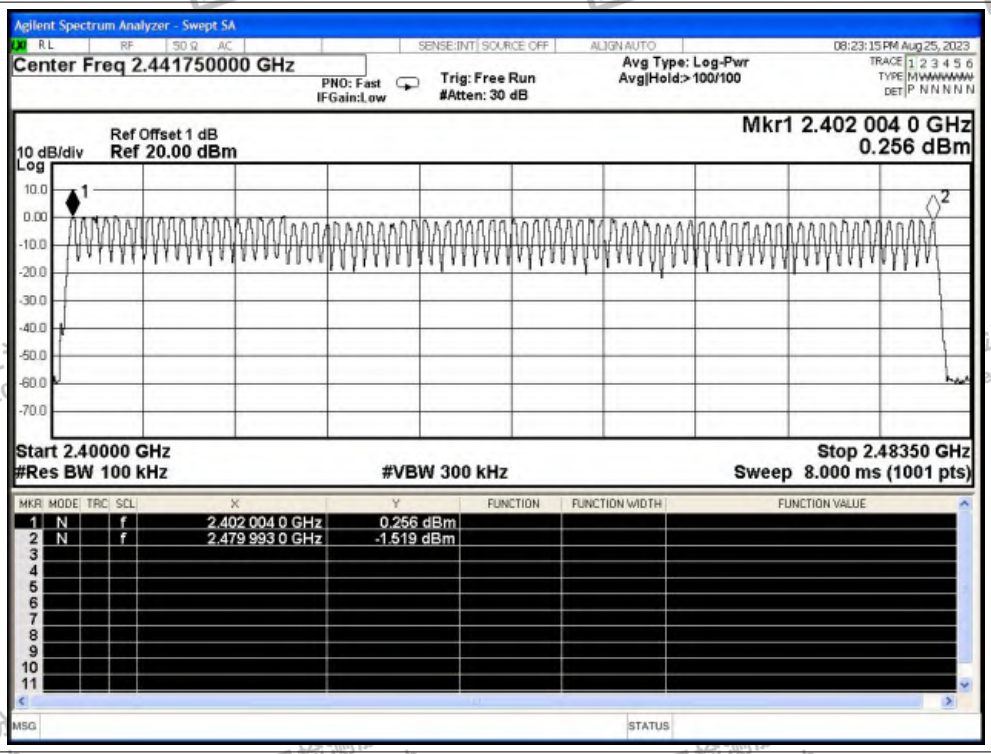


A.5 Number of Hopping Channel

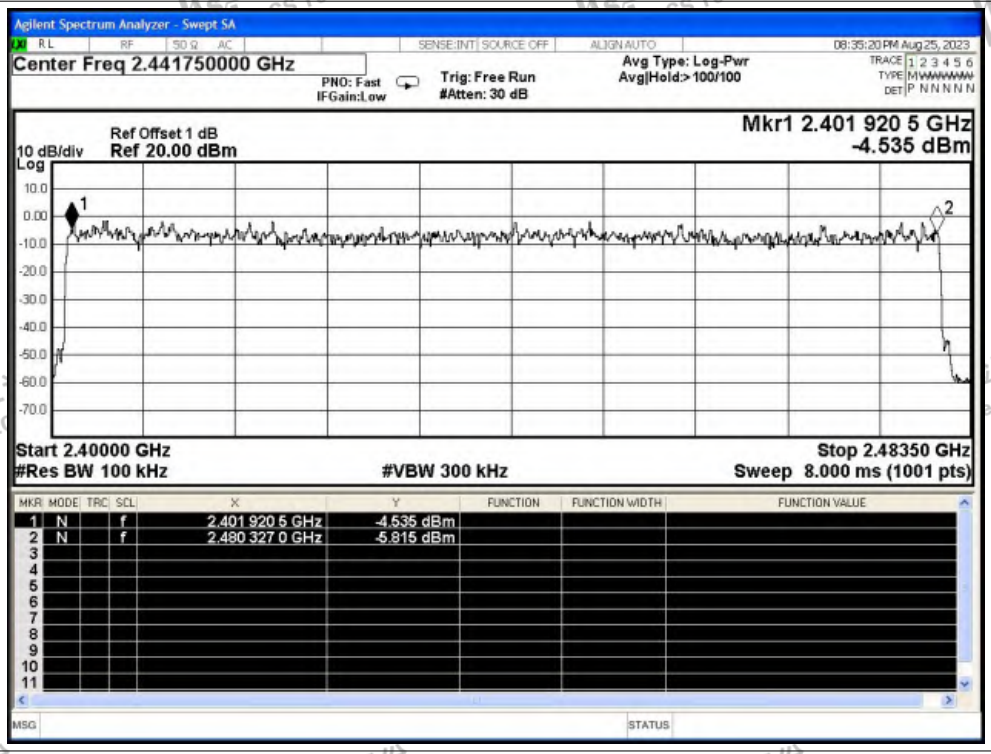
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass
NVNT	3-DH5	Ant1	79	15	Pass

Test Graphs

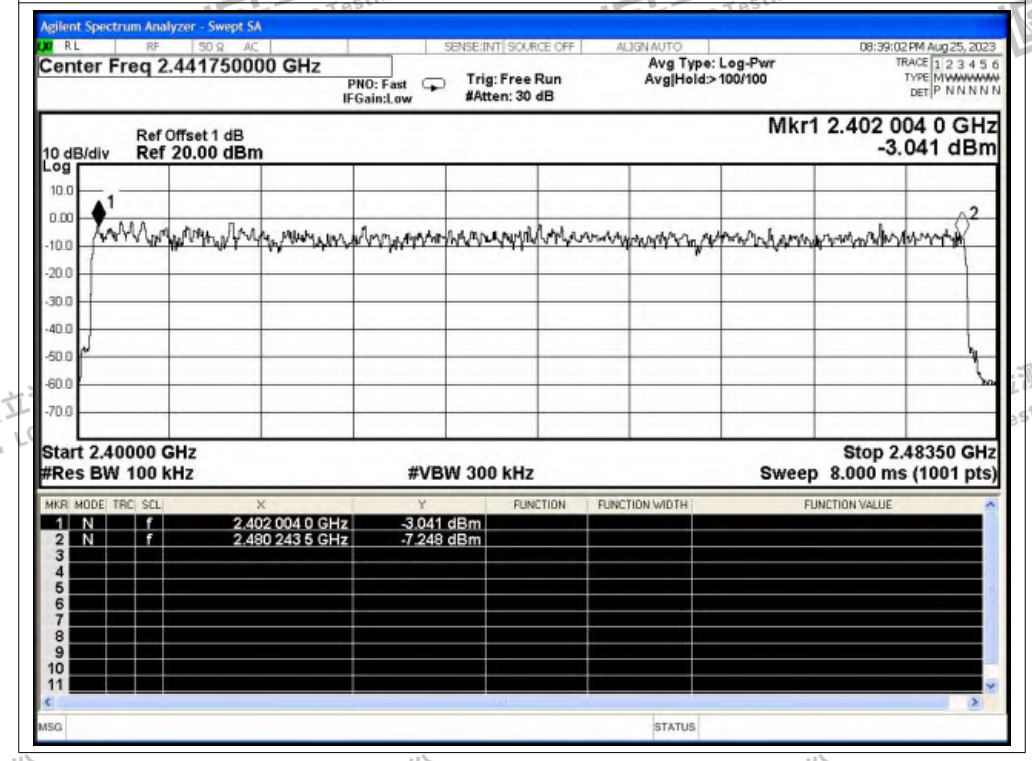
Hopping No. NVNT 1-DH5 2402MHz Ant1



Hopping No. NVNT 2-DH5 2402MHz Ant1



Hopping No. NVNT 3-DH5 2402MHz Ant1

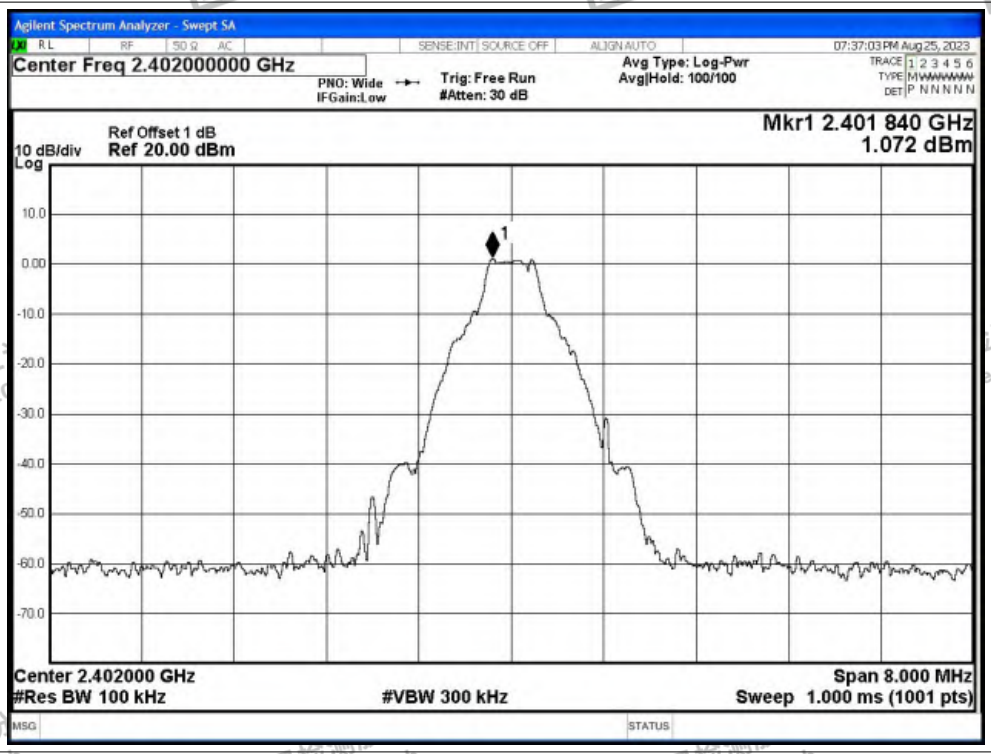


A.6 Band Edge

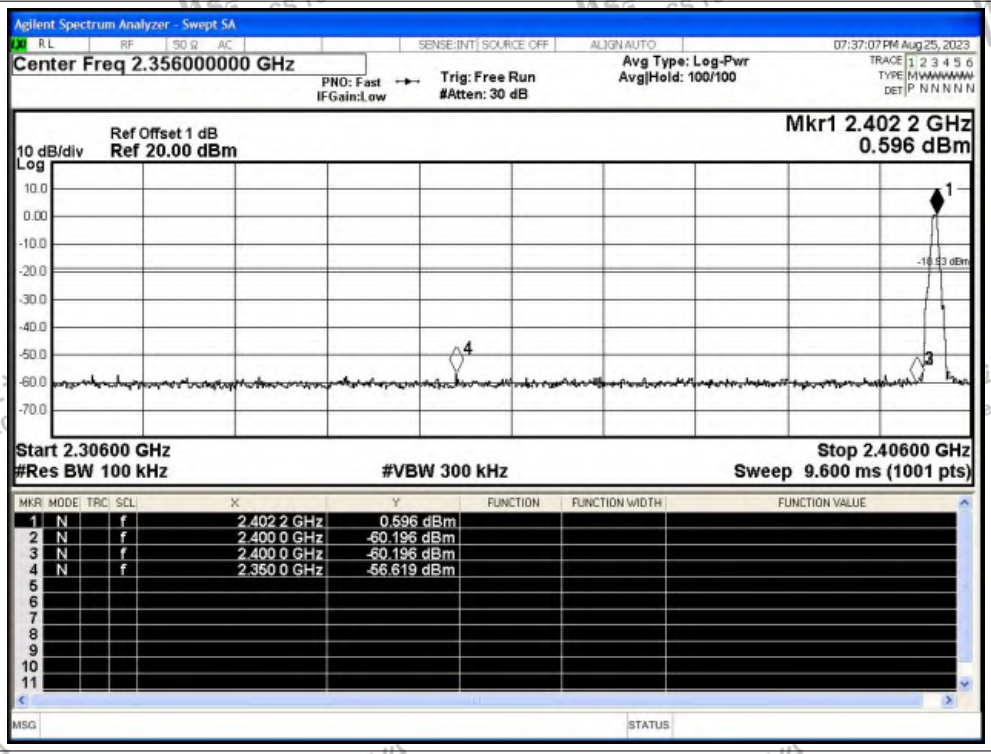
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-57.69	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-57.19	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-52.13	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-55.74	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-54.29	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-54.59	-20	Pass

Test Graphs

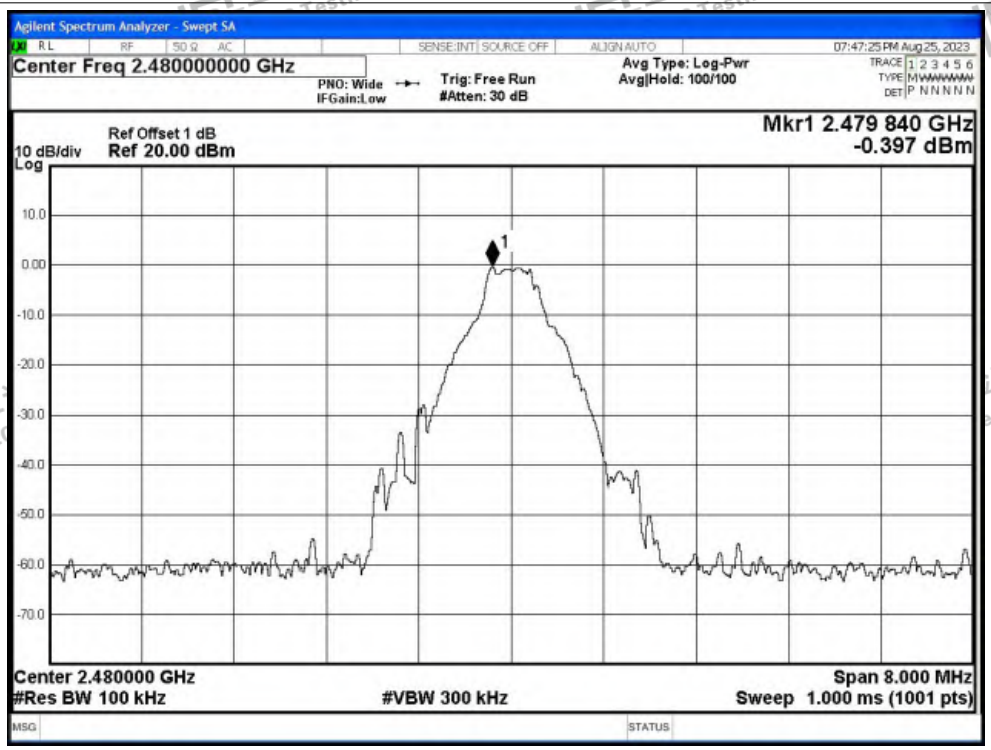
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



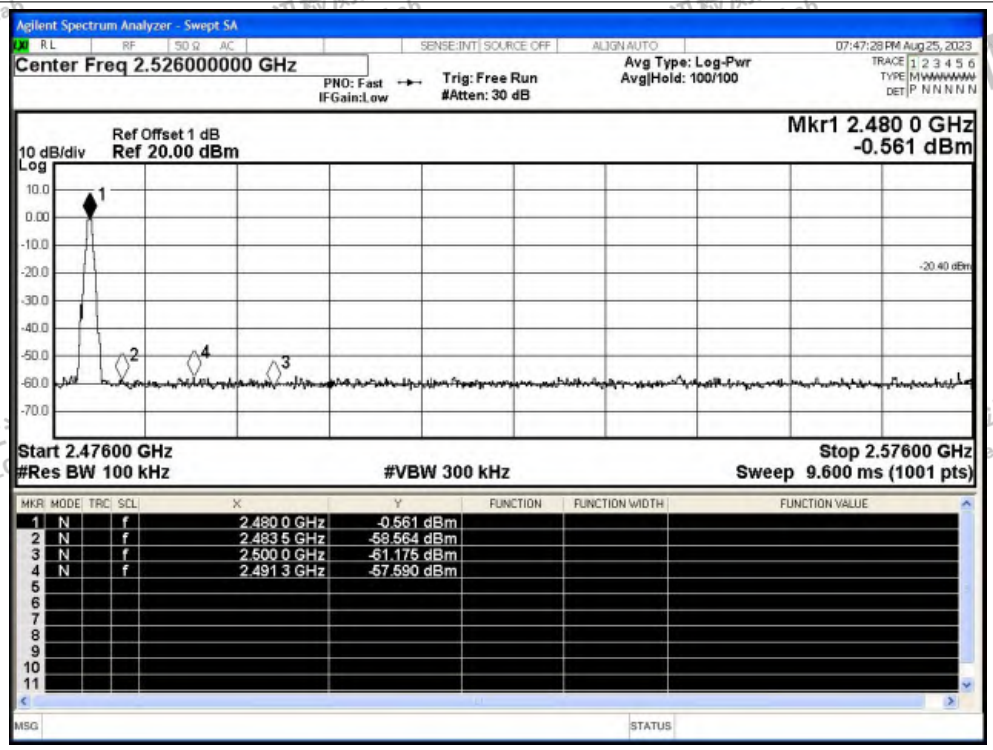
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission



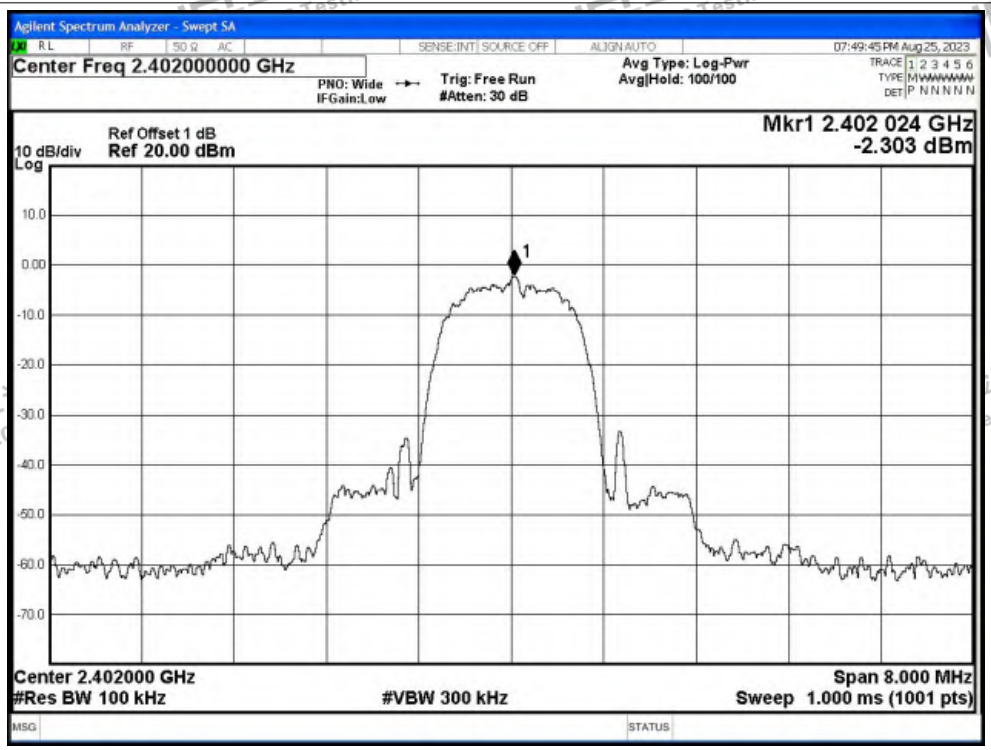
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref



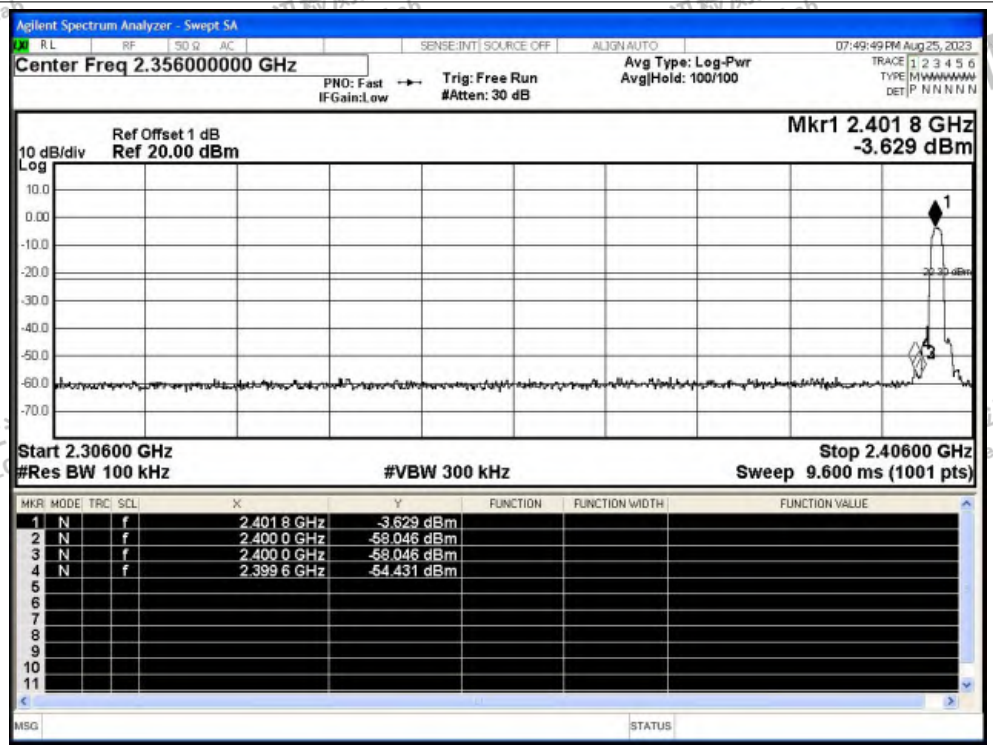
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



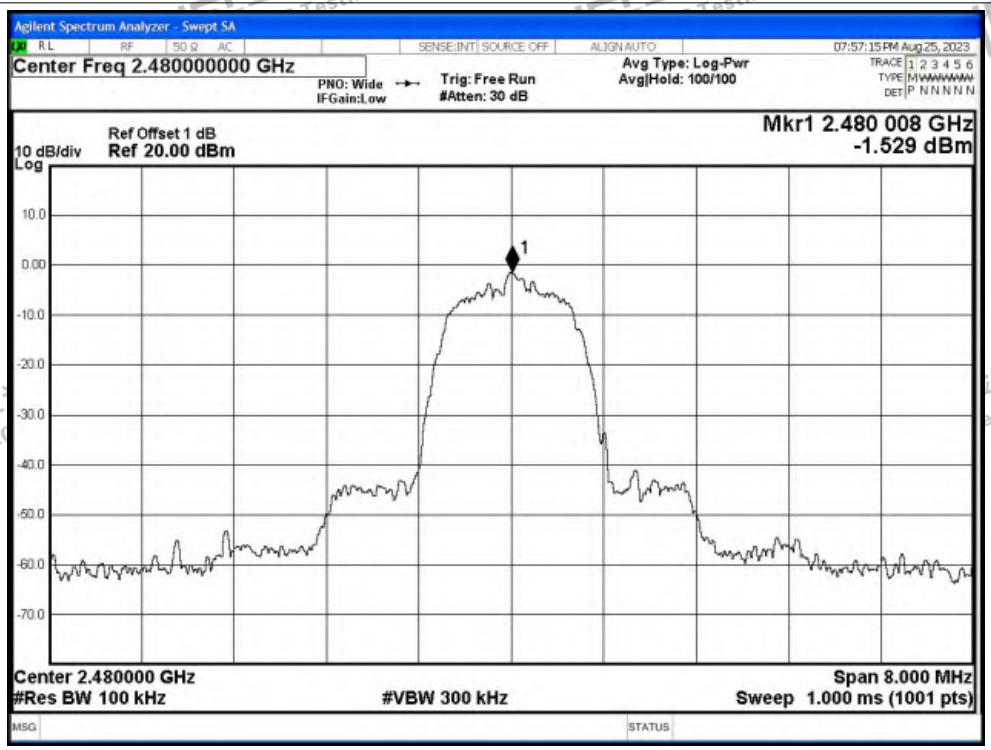
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



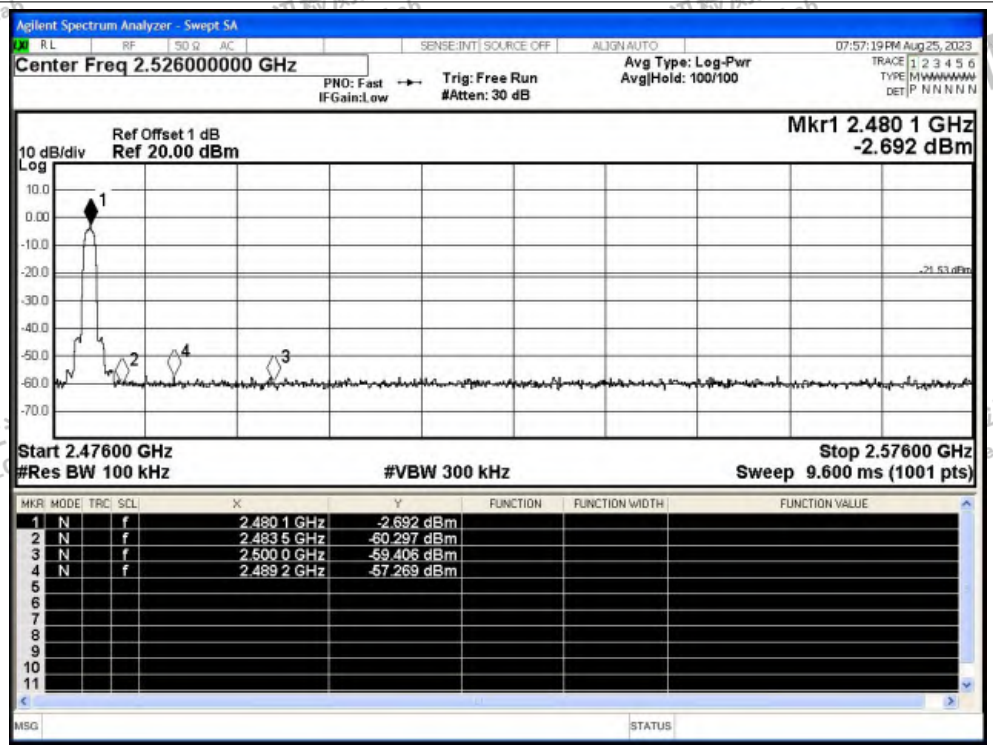
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission



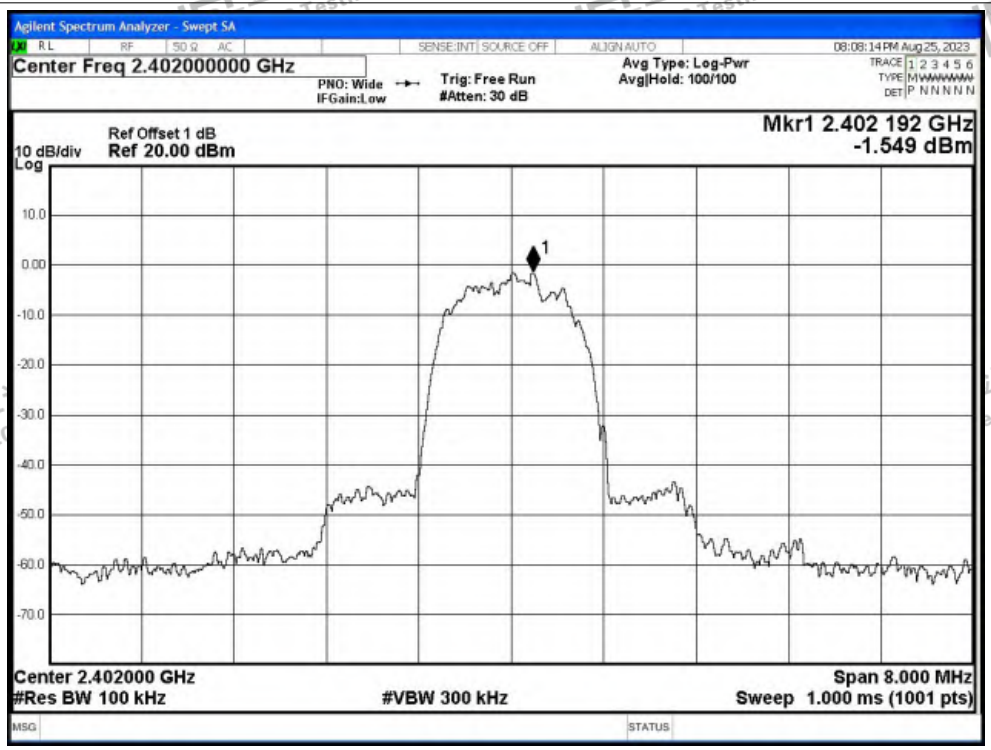
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref



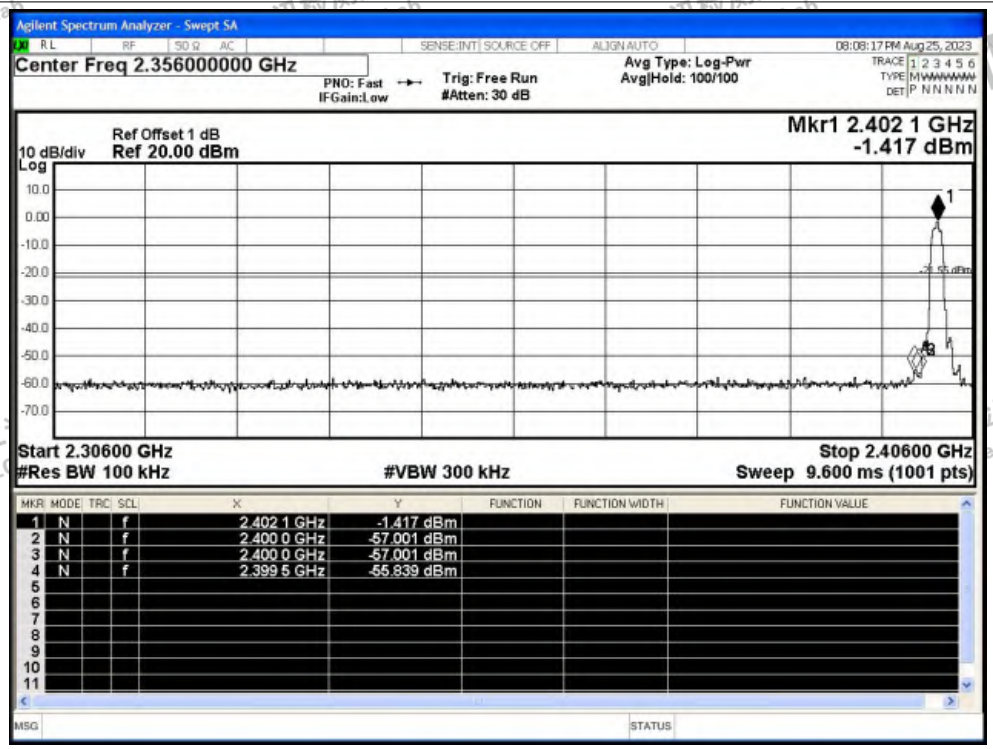
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission



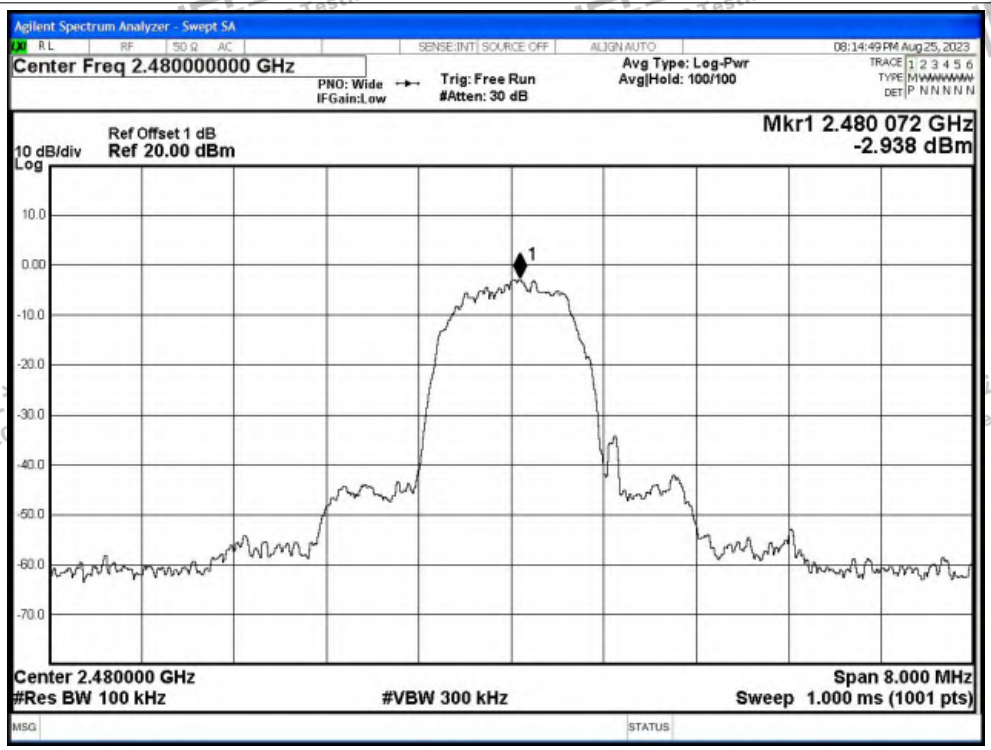
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref



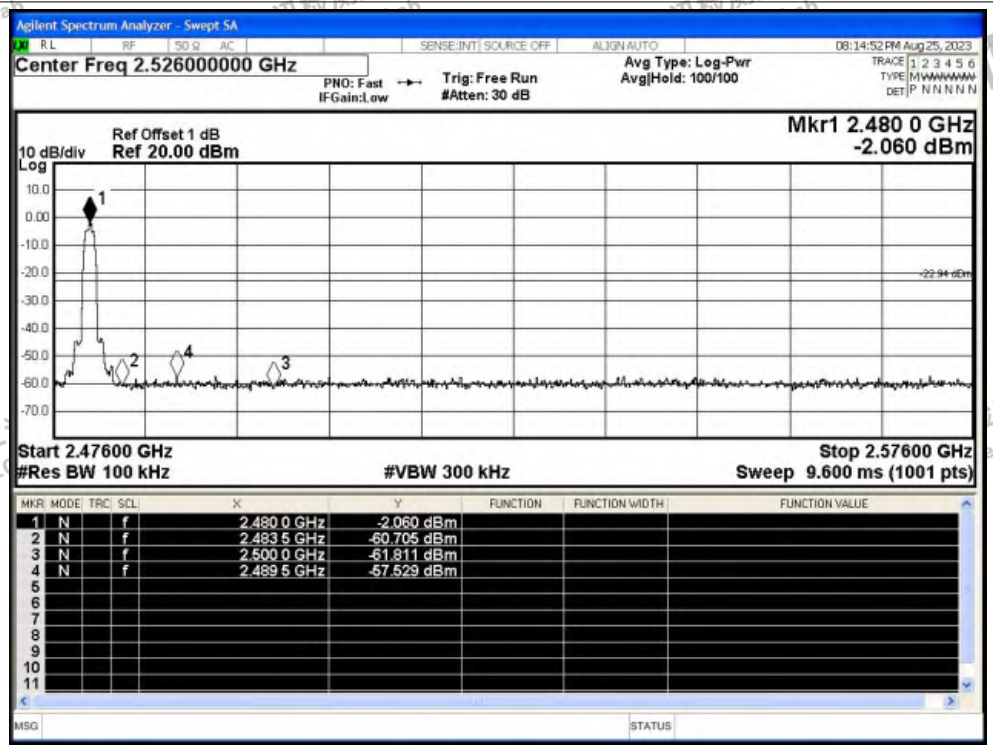
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission



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



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

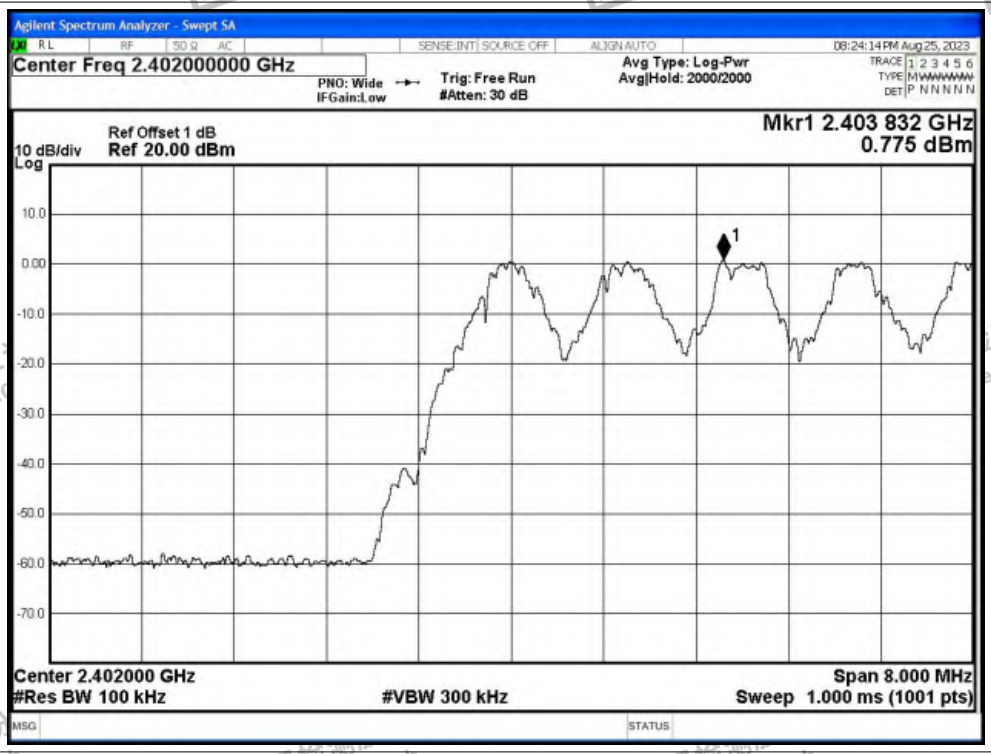


(Hopping)

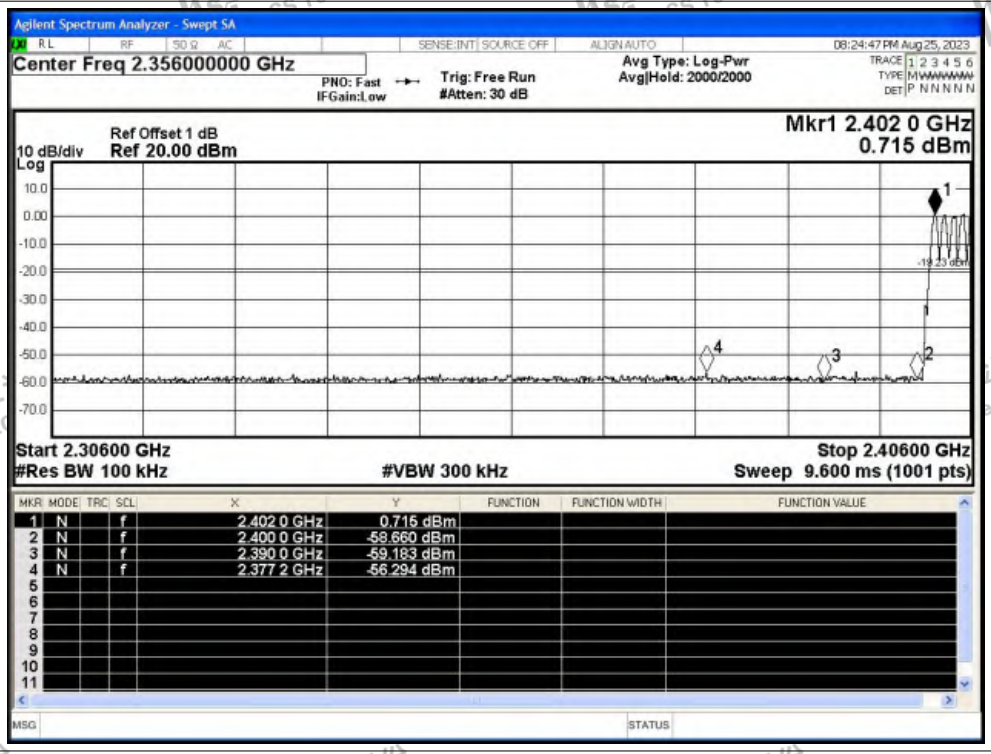
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-57.07	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-55.45	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-55.53	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-53.74	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-55.38	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-55.17	-20	Pass

Test Graphs

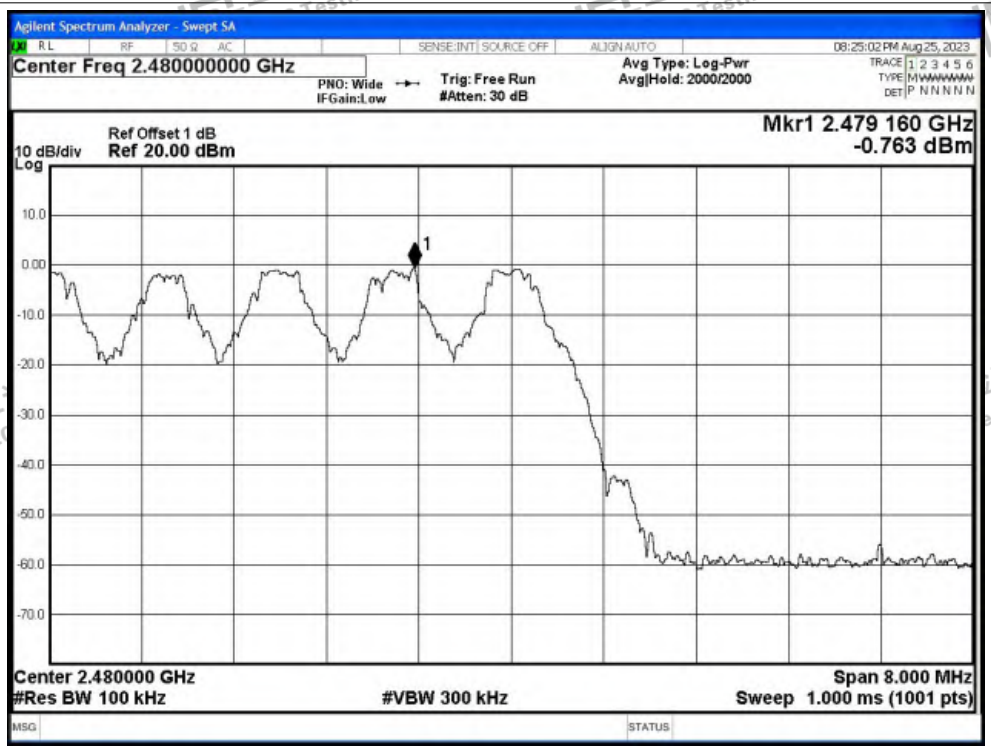
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



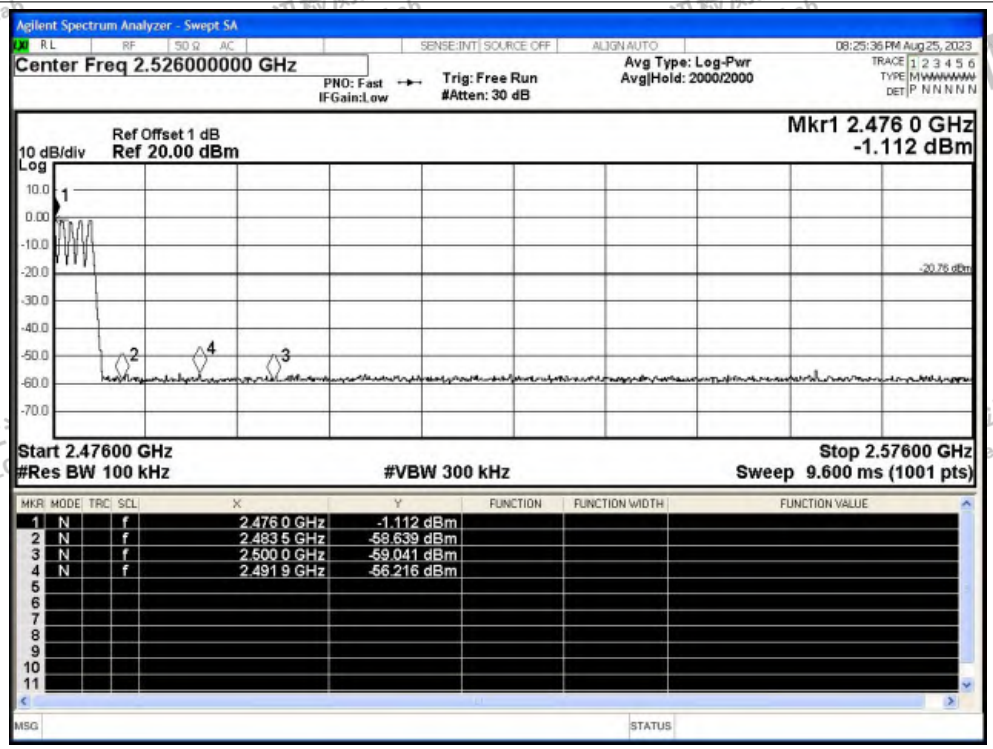
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



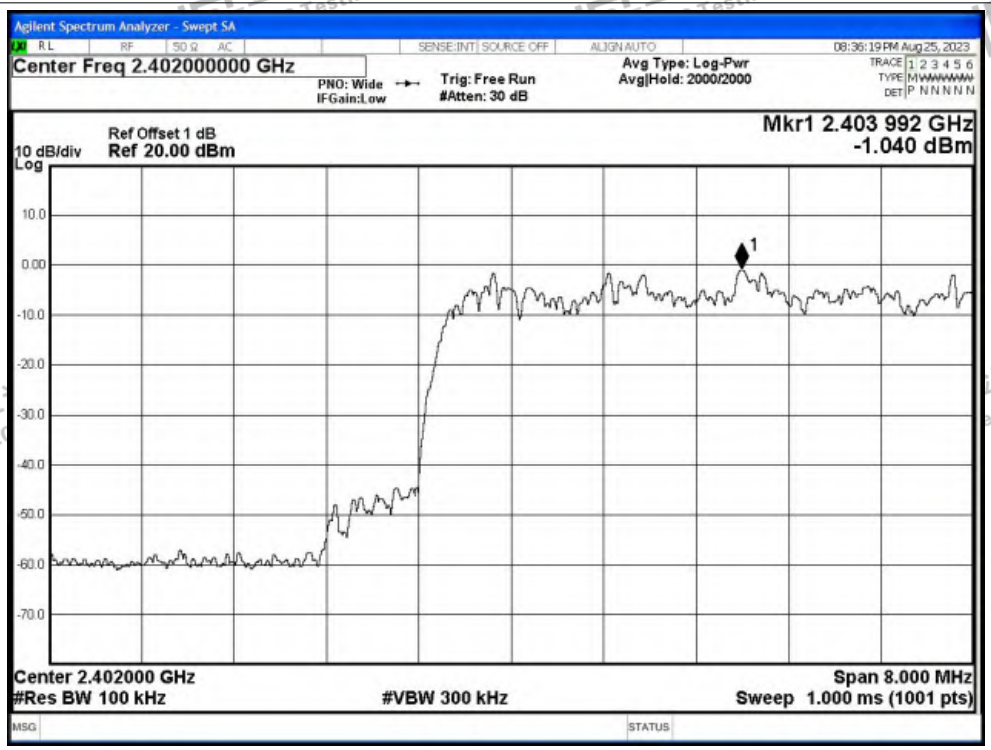
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



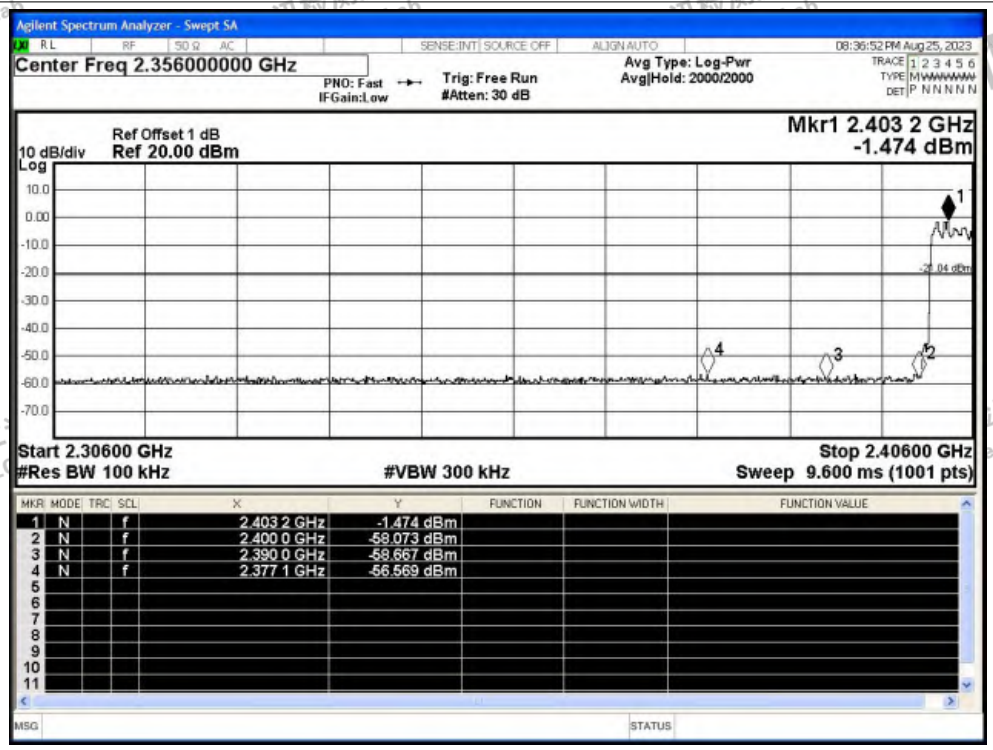
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission



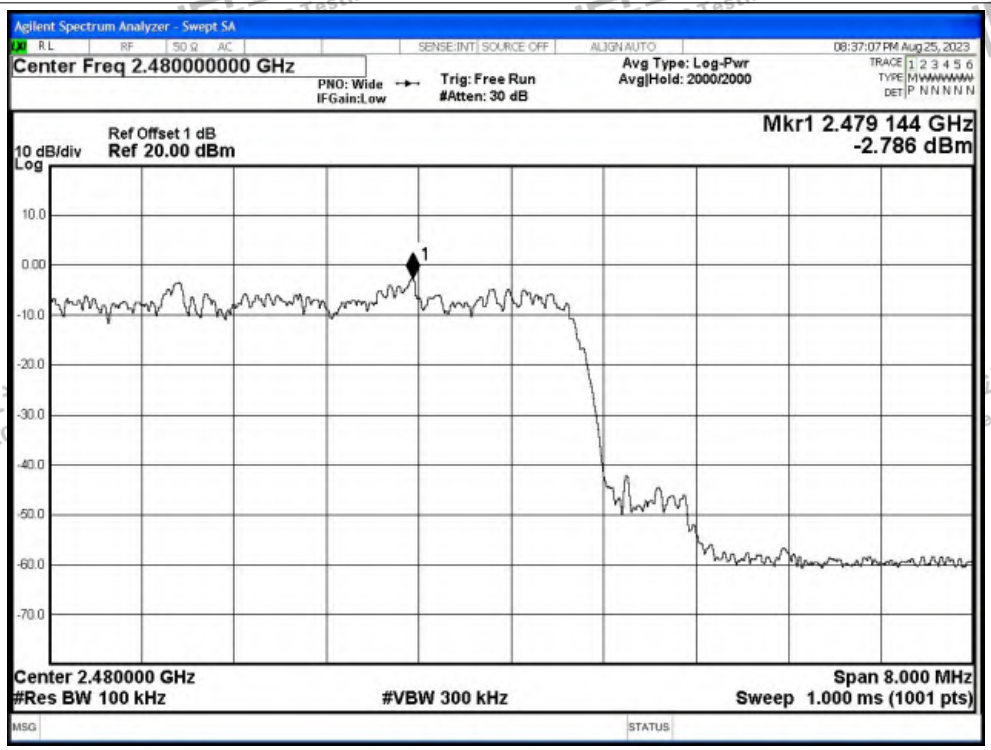
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref



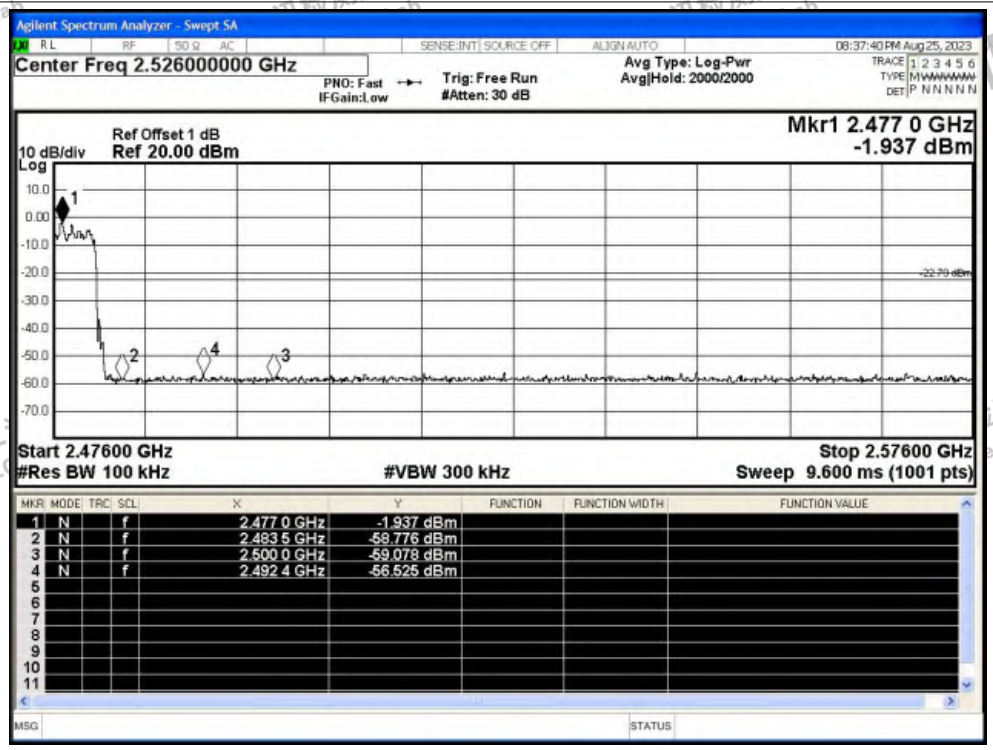
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



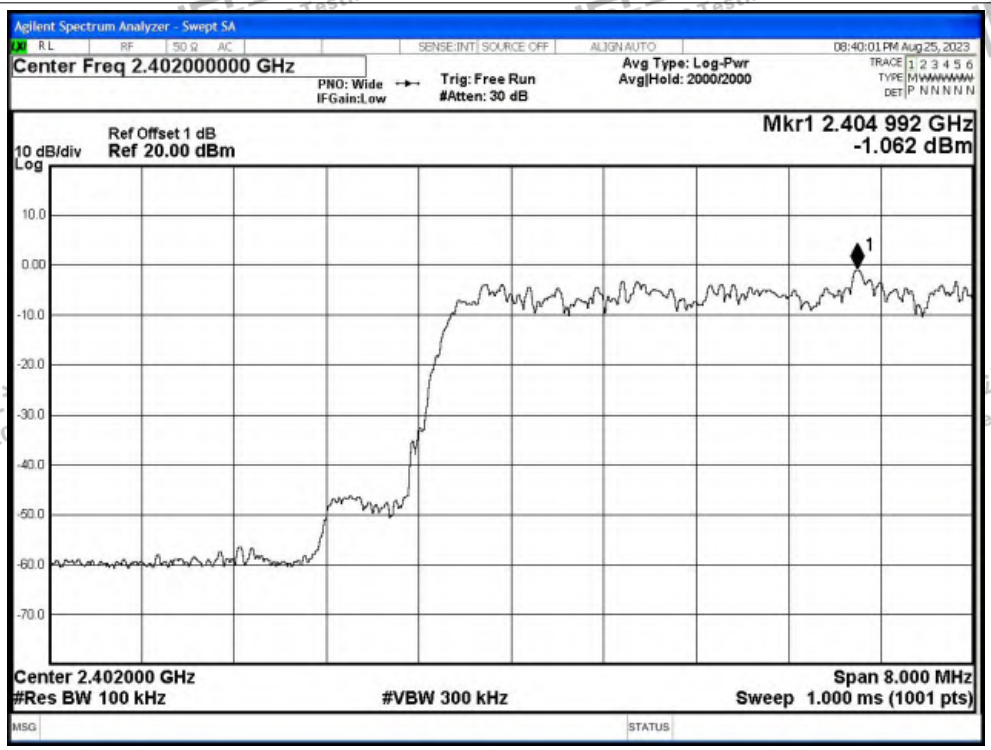
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



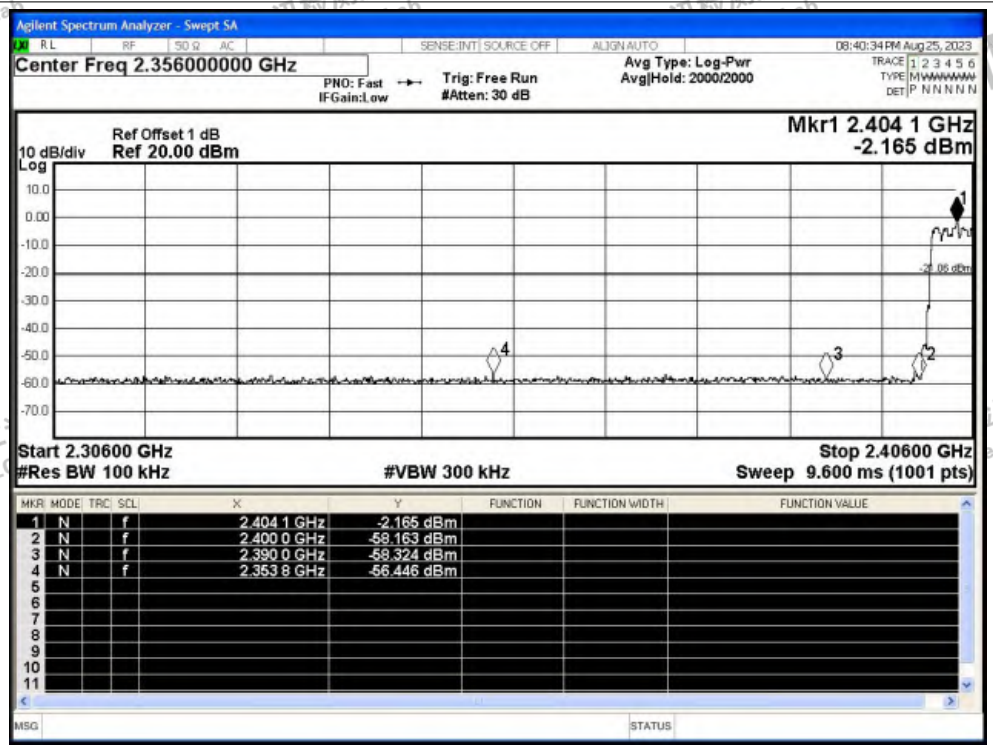
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission



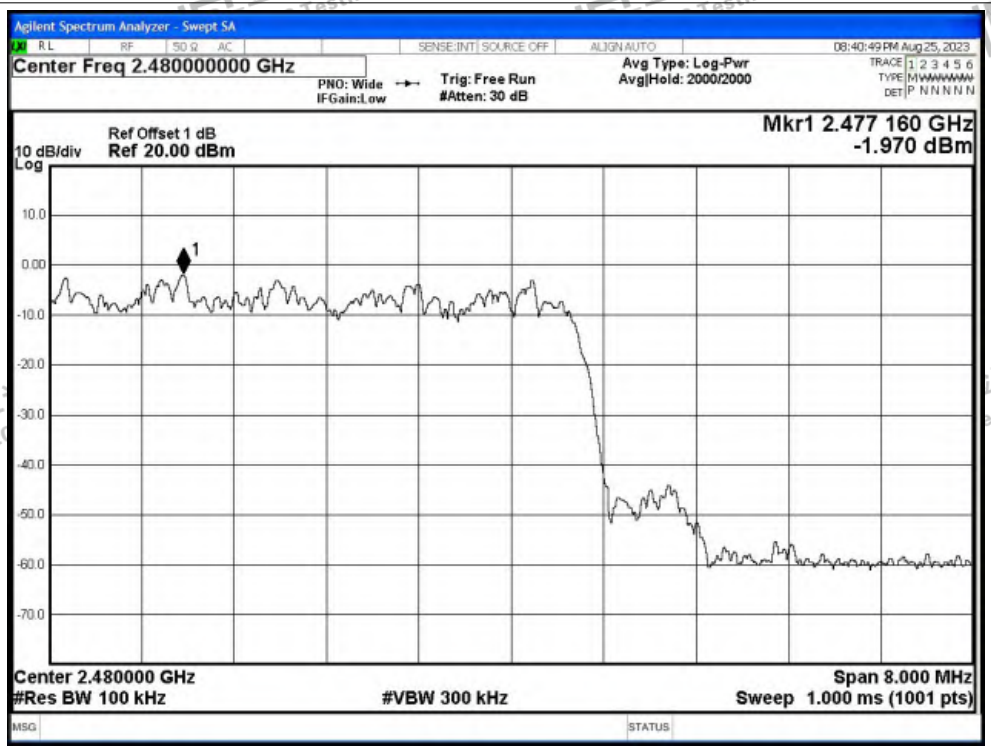
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref



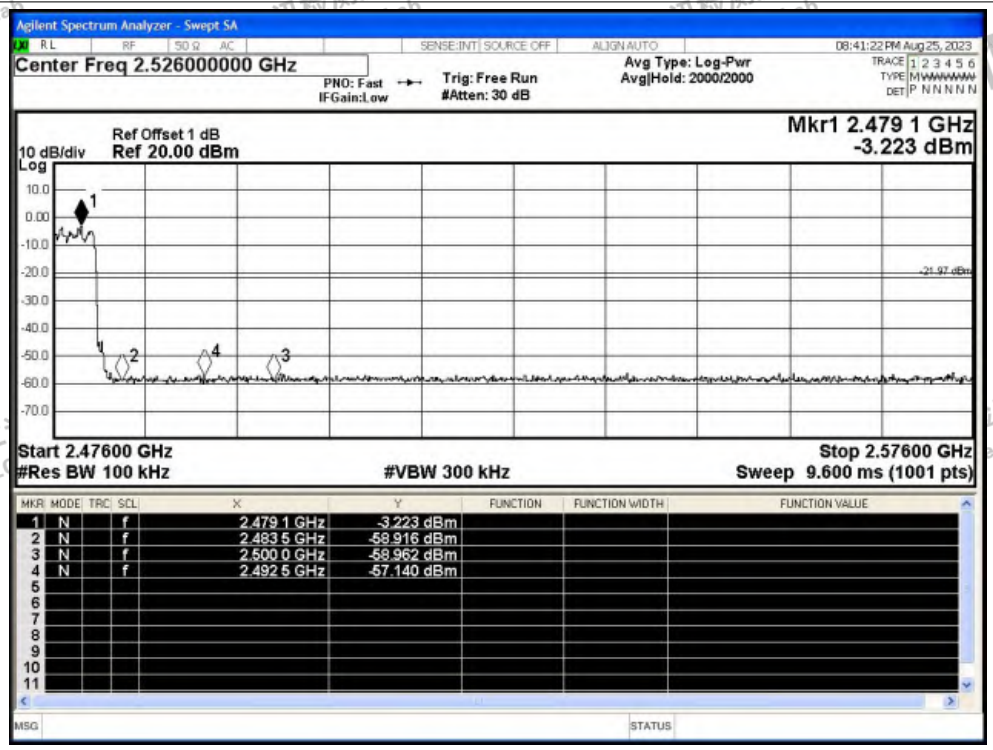
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission



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



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

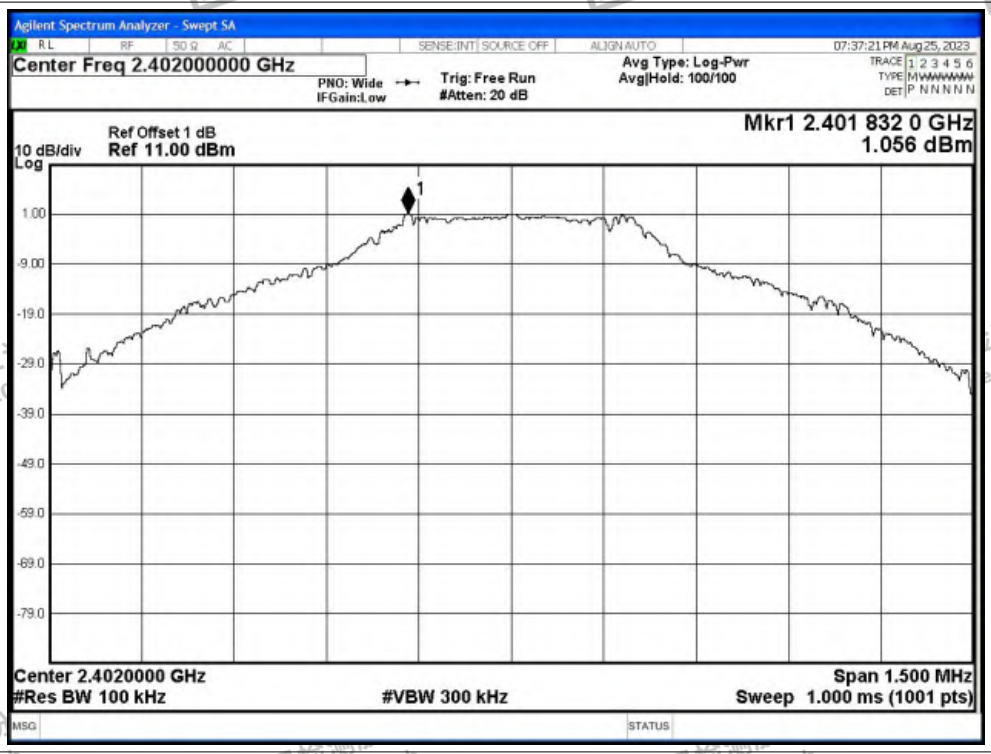


A.7 Conducted RF Spurious Emission

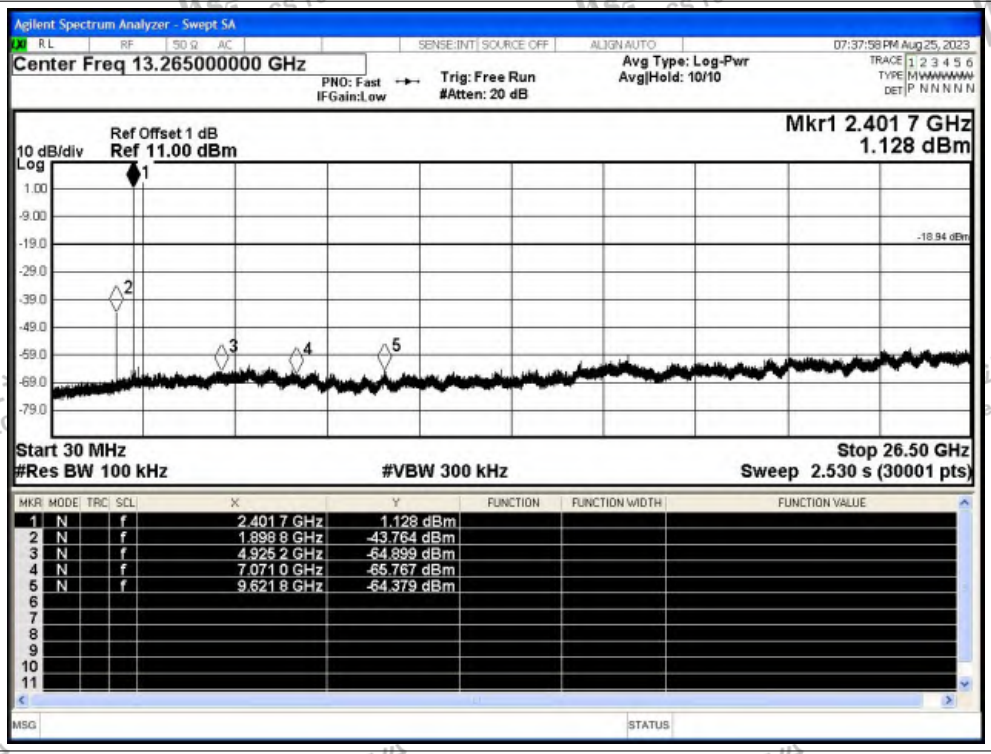
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-44.82	-20	Pass
NVNT	1-DH5	2441	Ant1	-52.52	-20	Pass
NVNT	1-DH5	2480	Ant1	-55.86	-20	Pass
NVNT	2-DH5	2402	Ant1	-50.04	-20	Pass
NVNT	2-DH5	2441	Ant1	-49.62	-20	Pass
NVNT	2-DH5	2480	Ant1	-37.19	-20	Pass
NVNT	3-DH5	2402	Ant1	-43.84	-20	Pass
NVNT	3-DH5	2441	Ant1	-54.01	-20	Pass
NVNT	3-DH5	2480	Ant1	-53.01	-20	Pass

Test Graphs

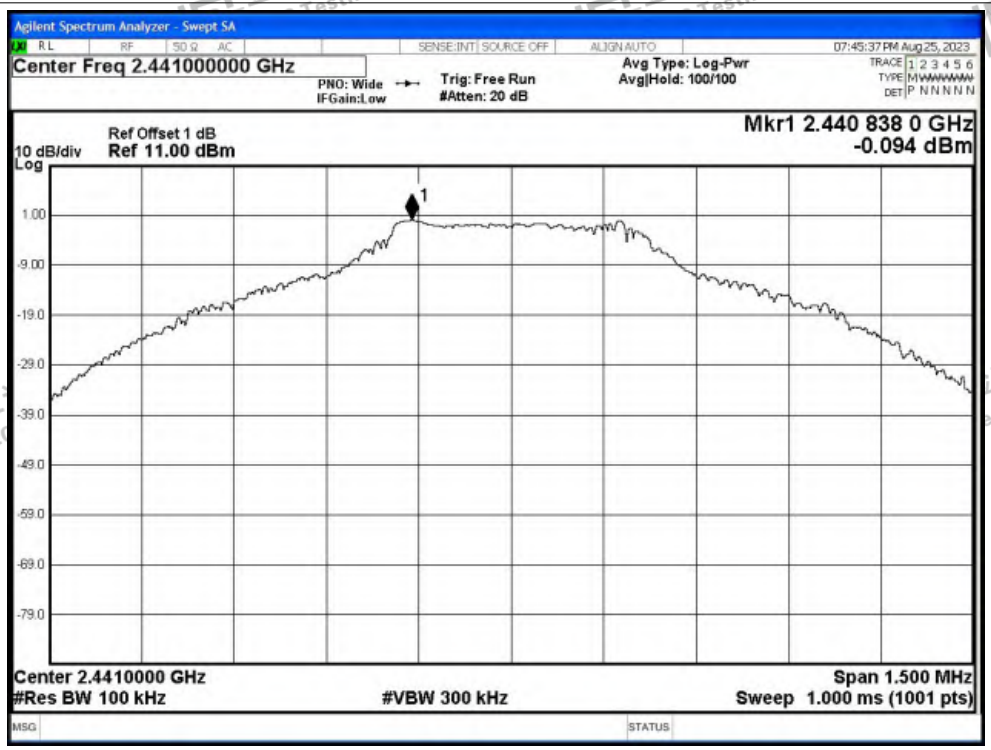
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref



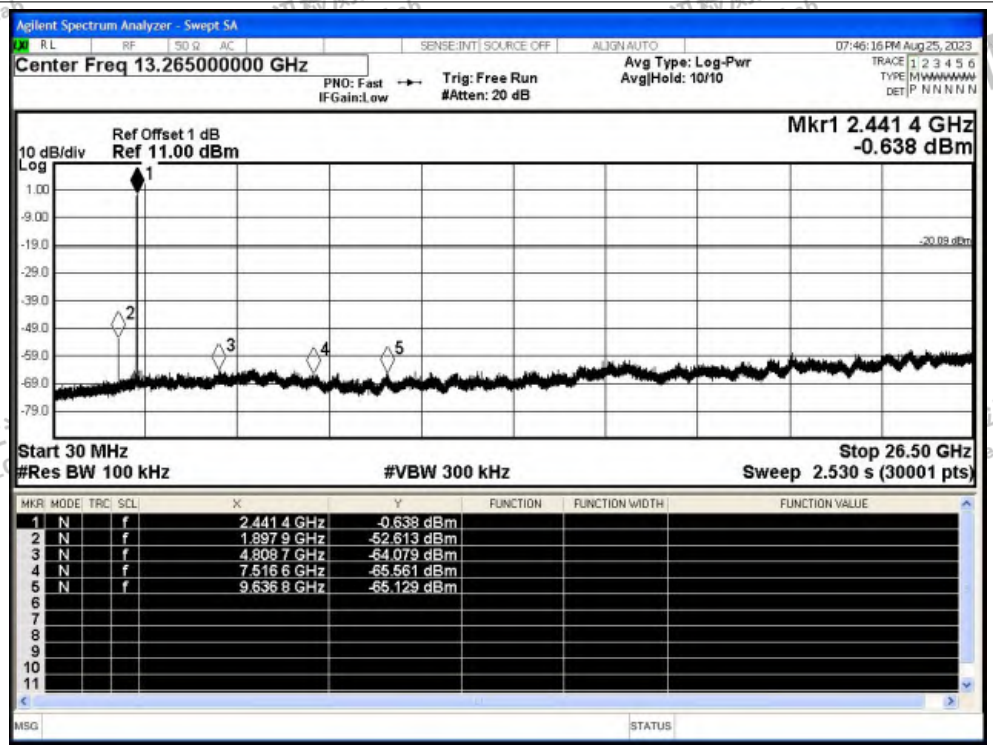
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



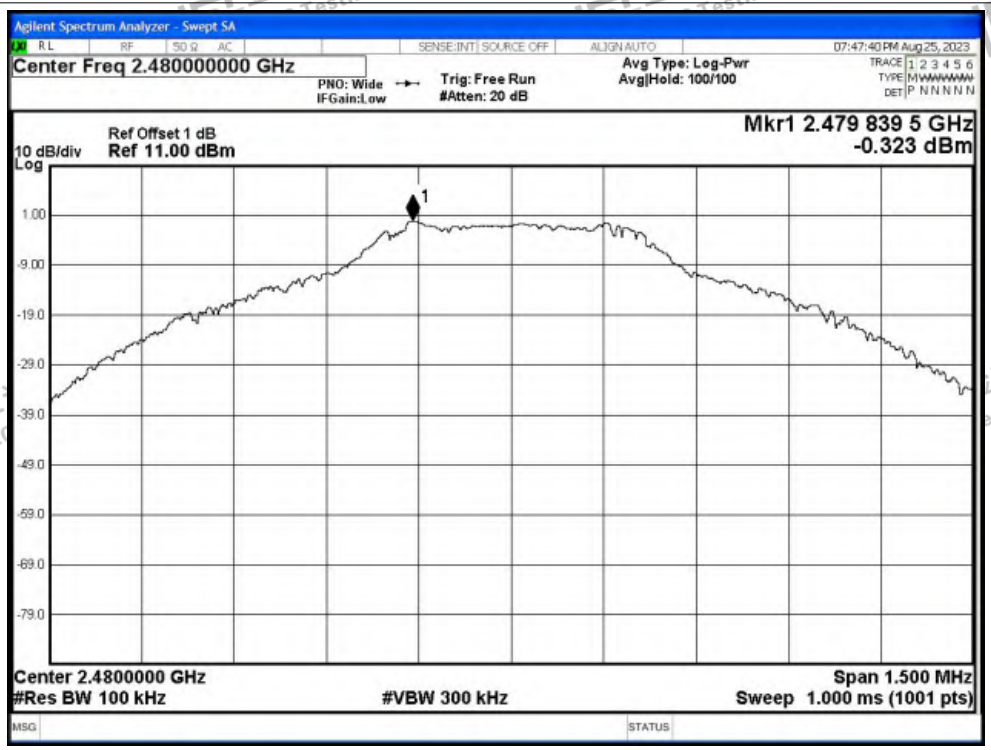
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref



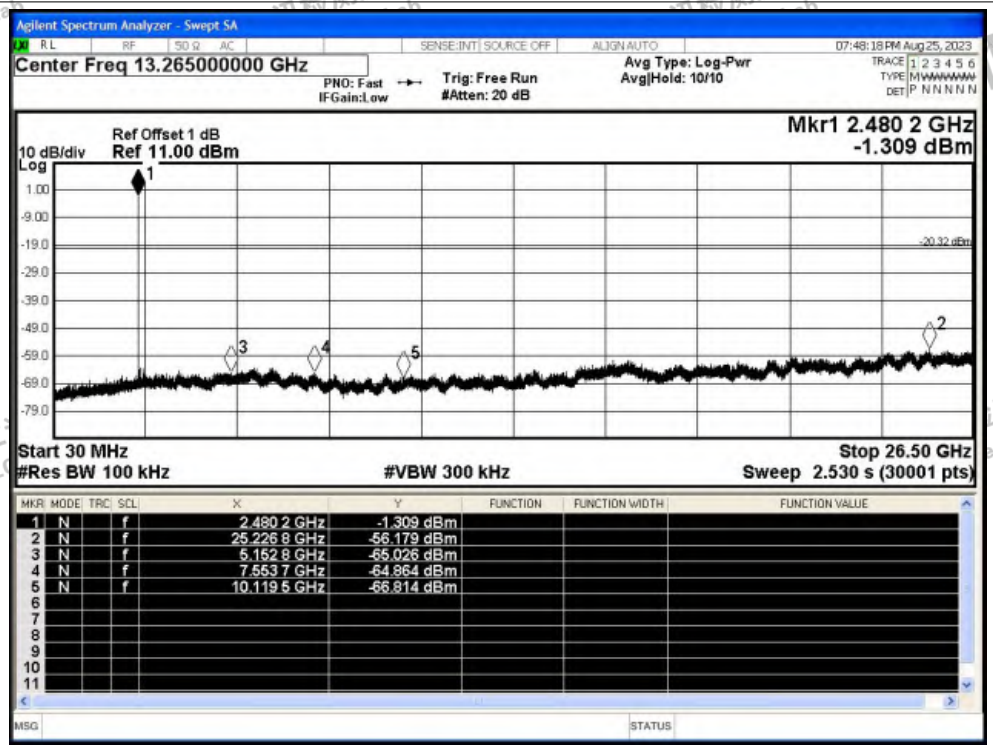
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission



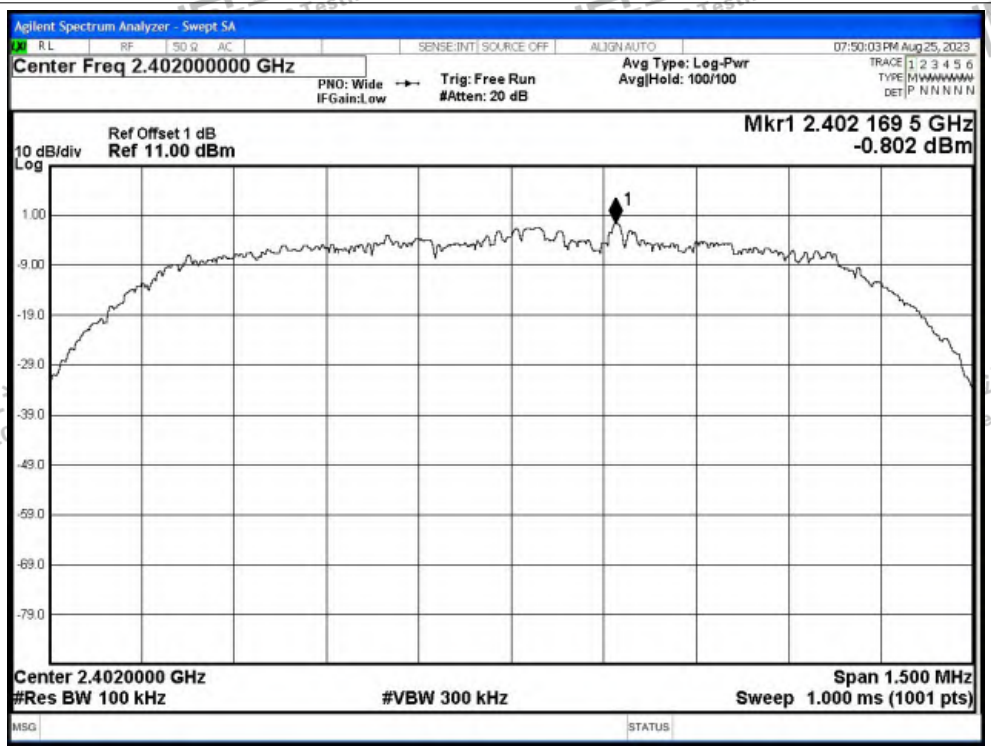
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref



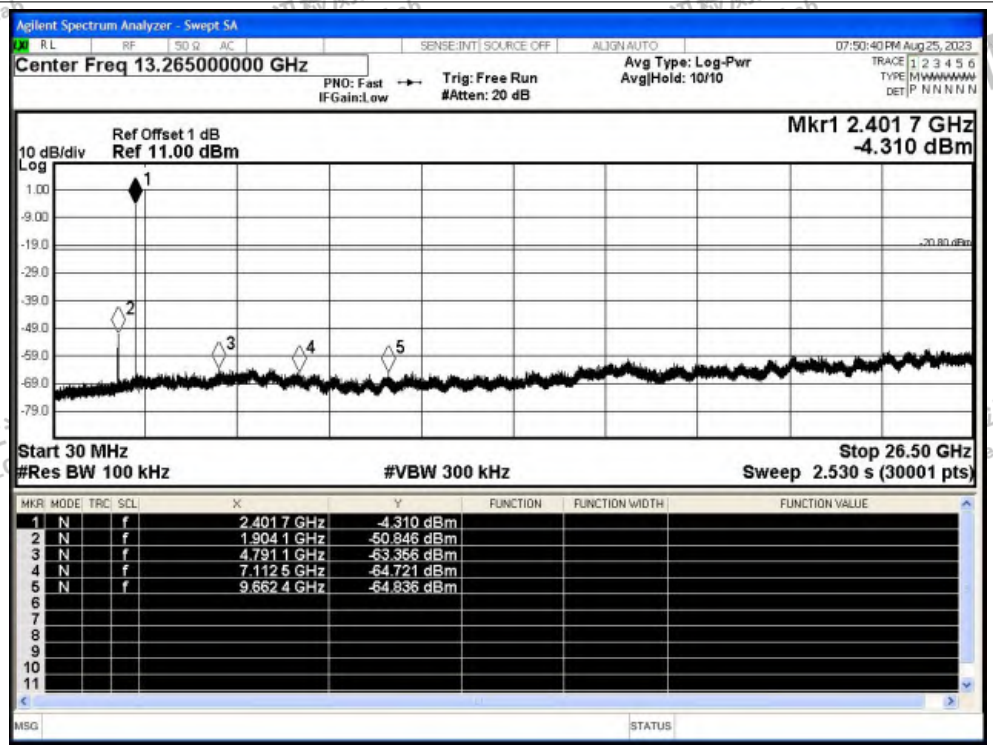
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission



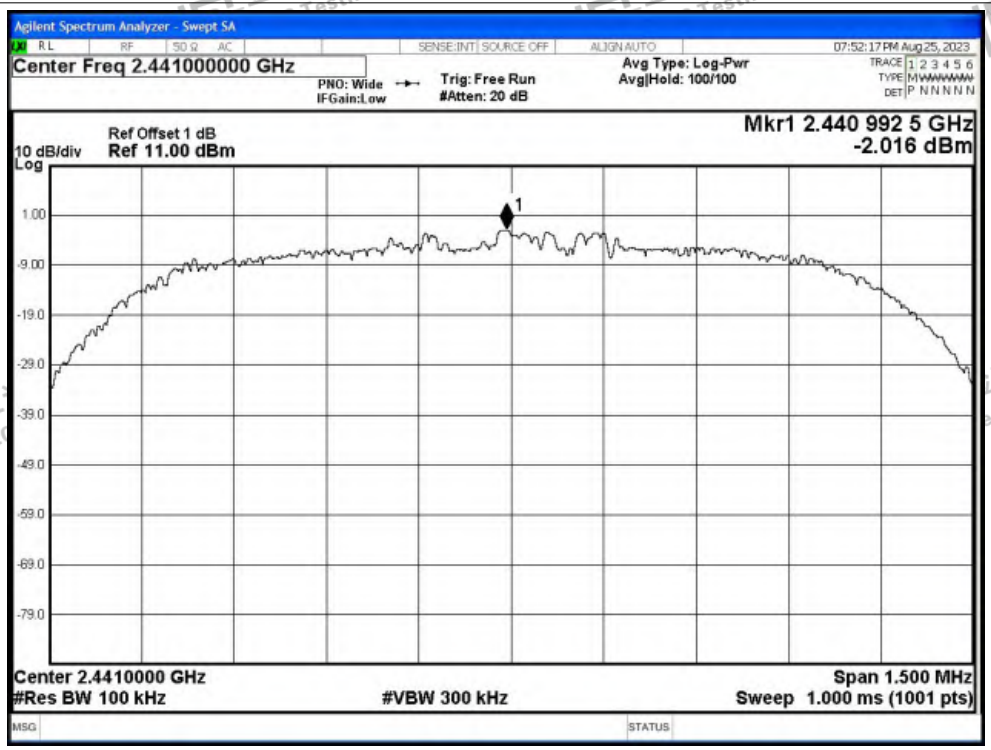
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref



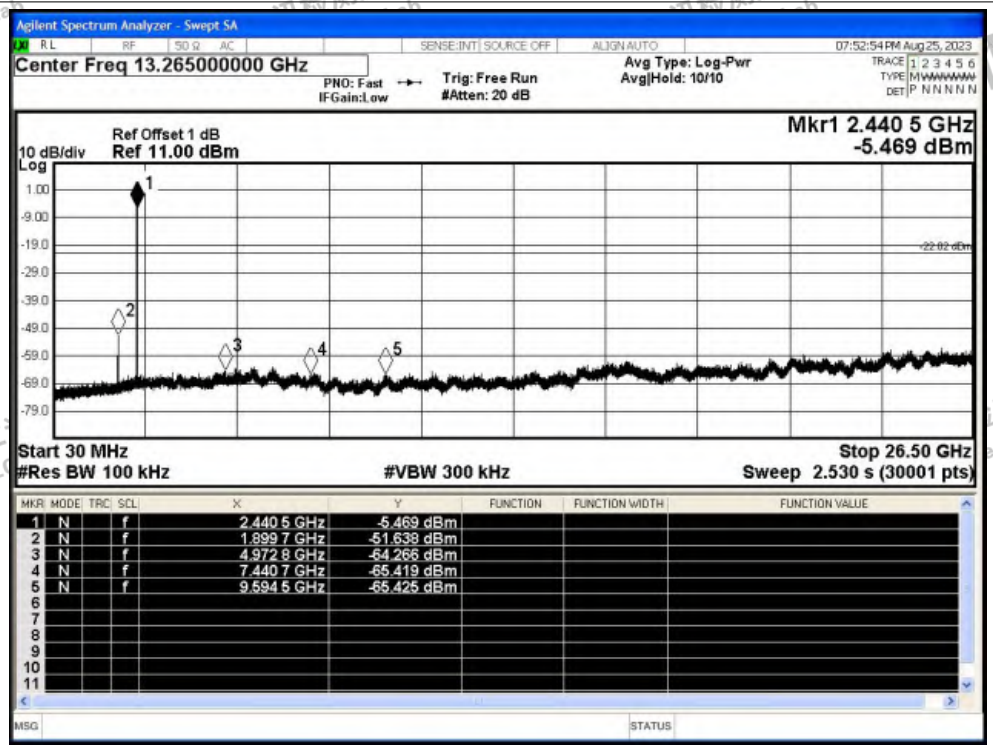
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission



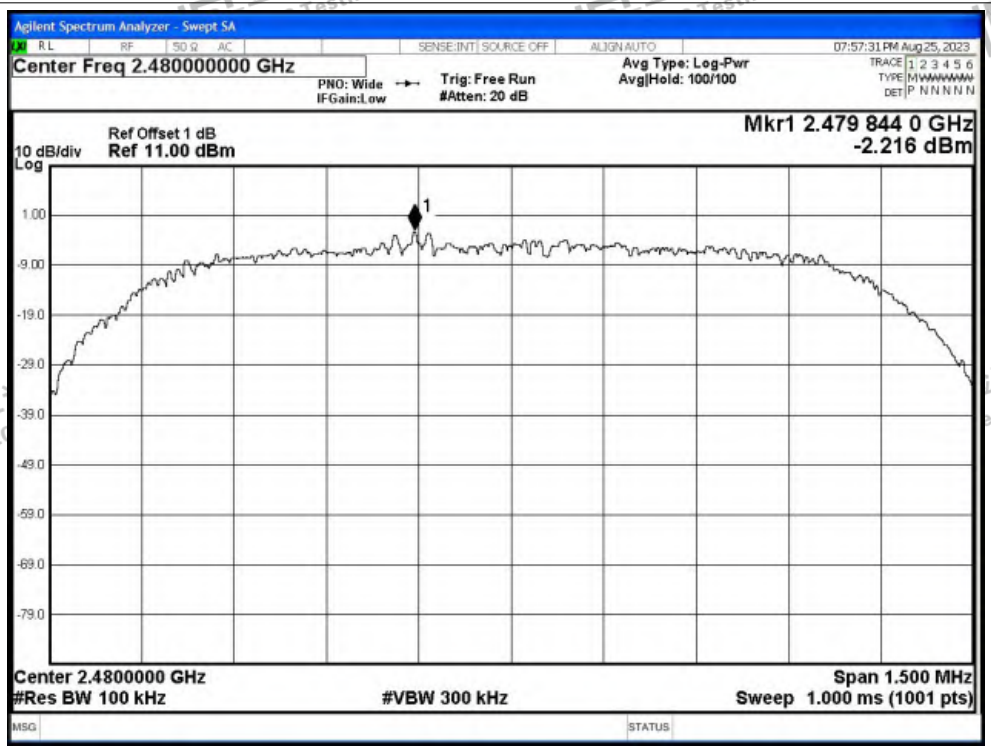
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



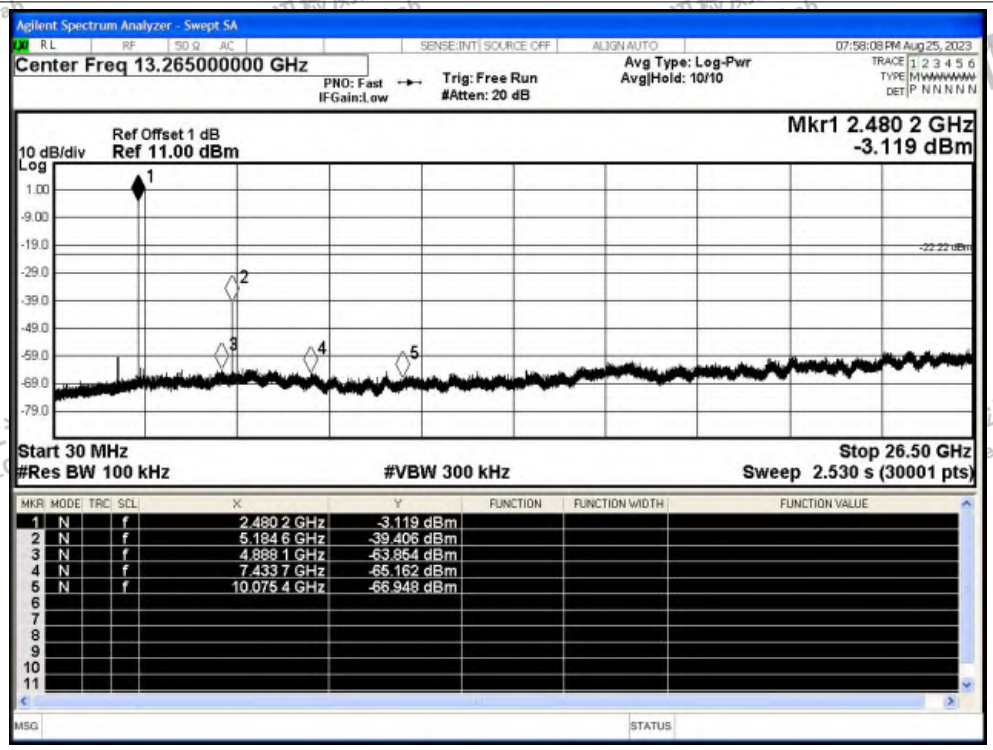
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



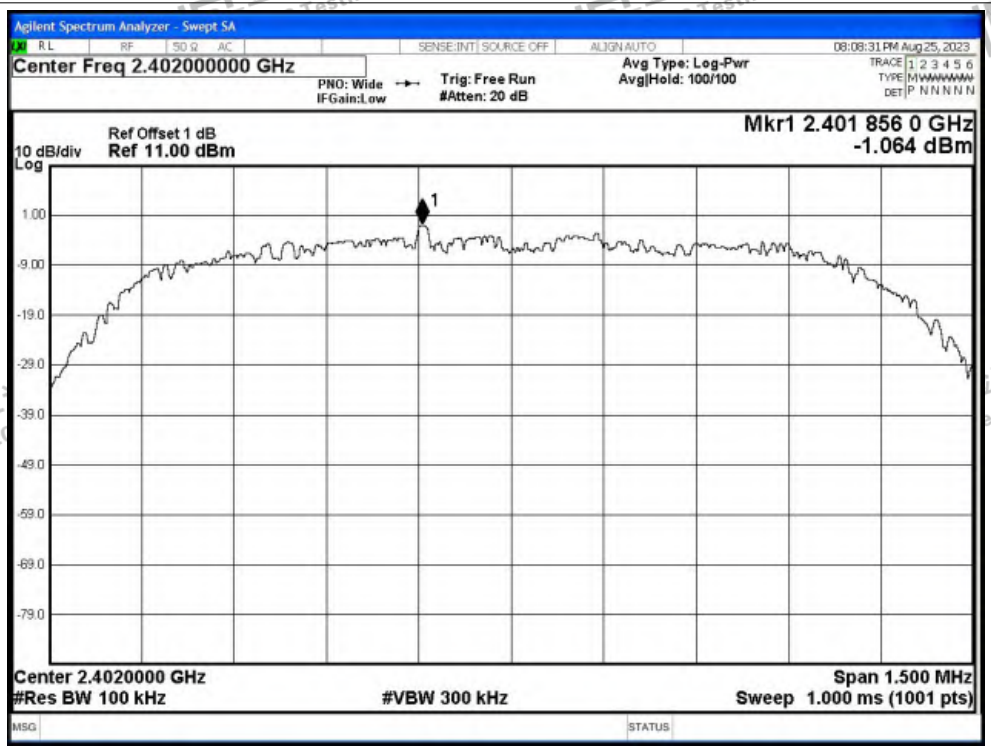
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



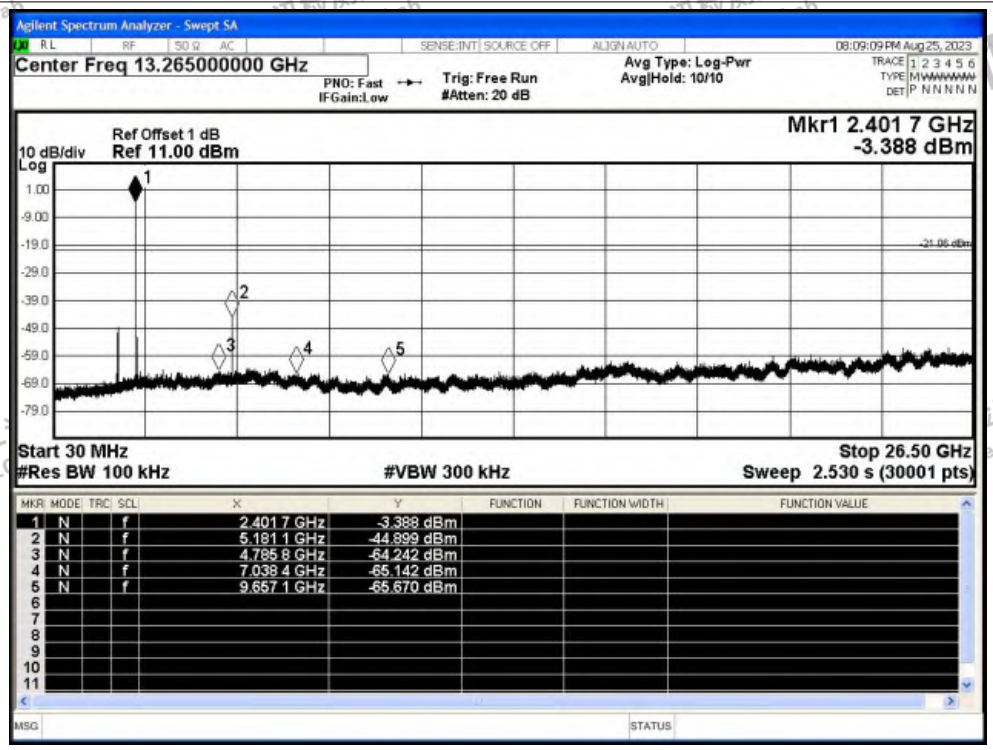
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission



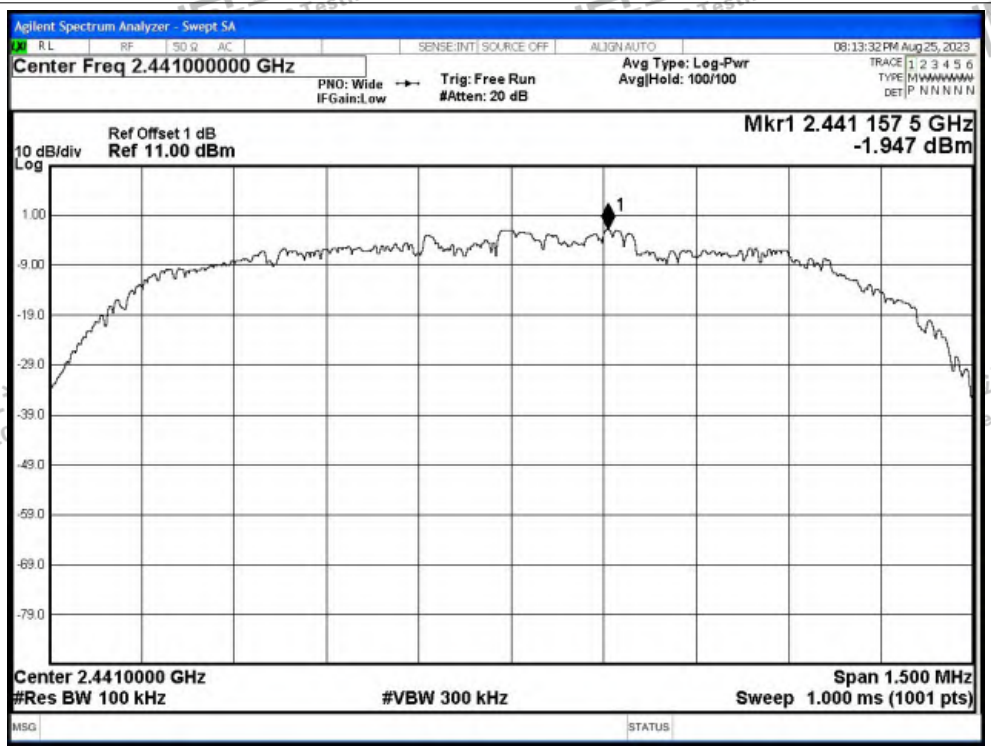
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref



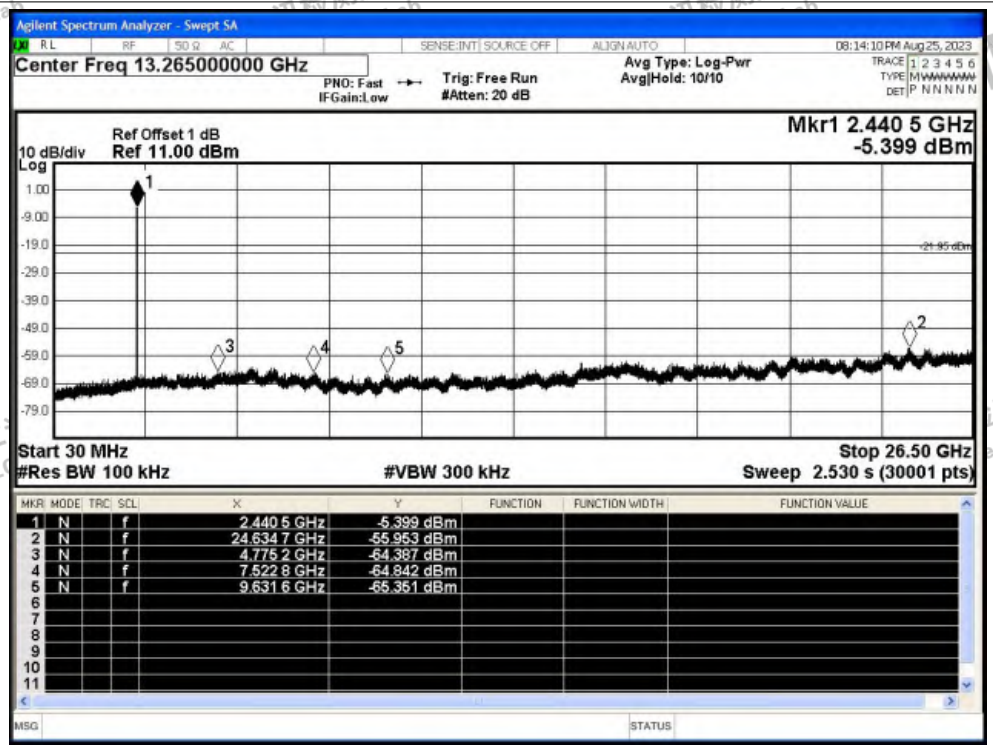
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Emission



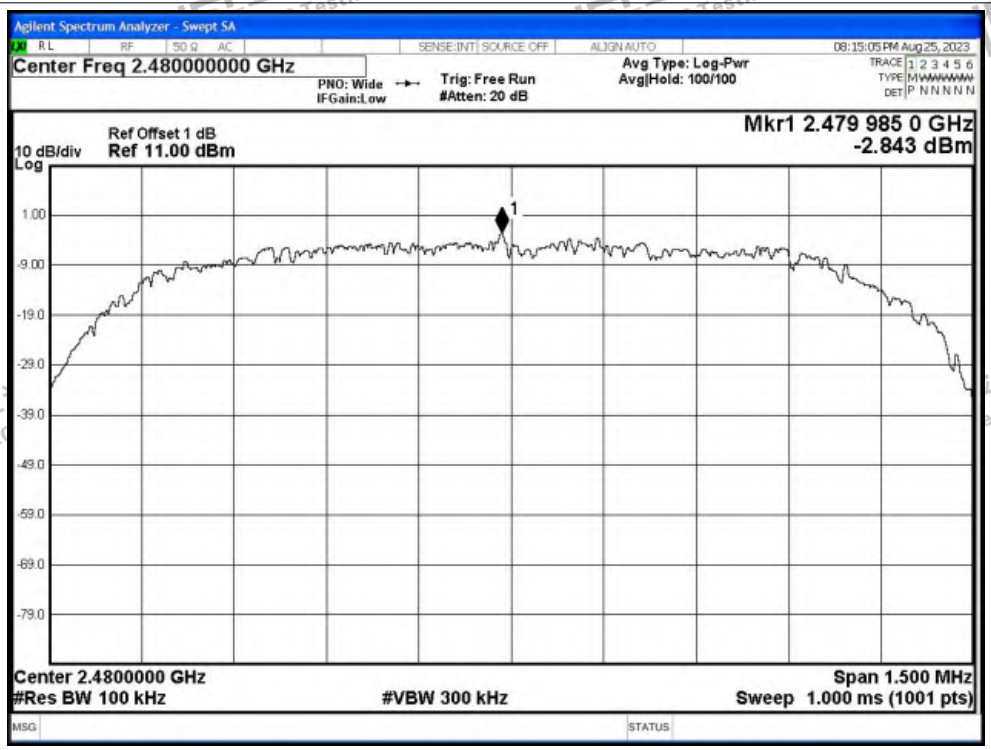
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref



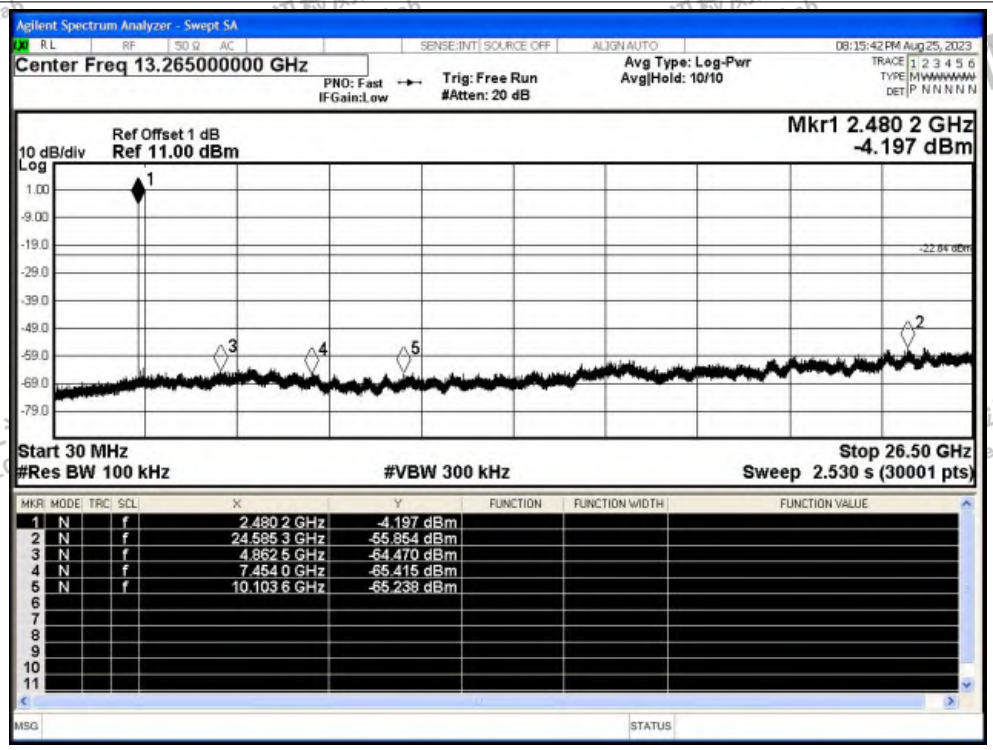
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission

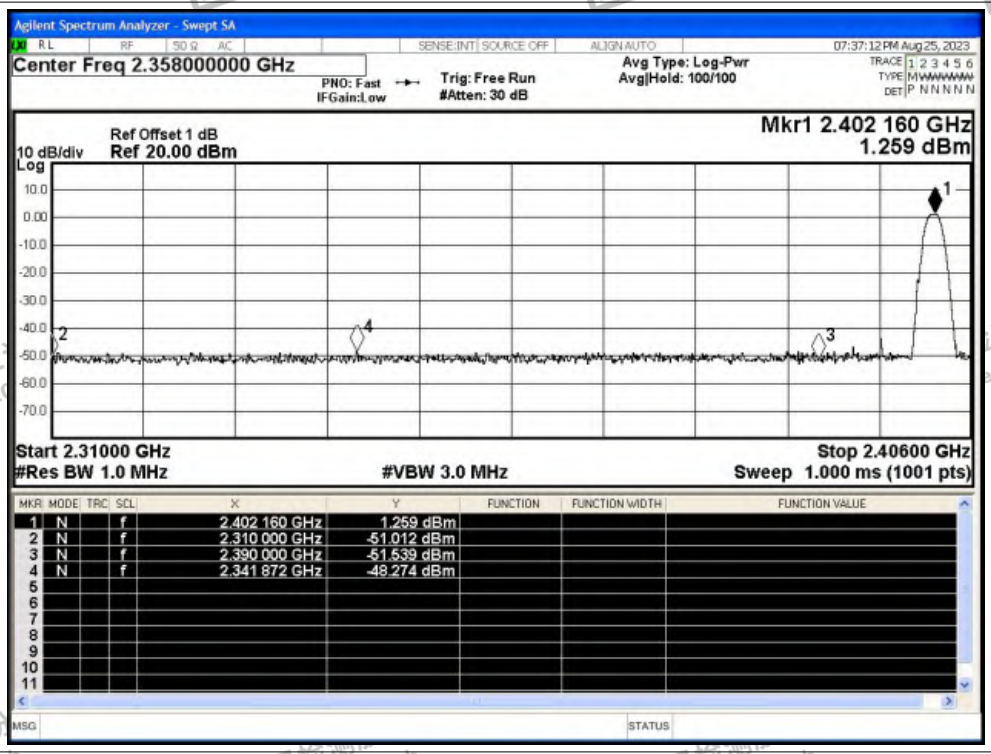


A.8 Restrict Band

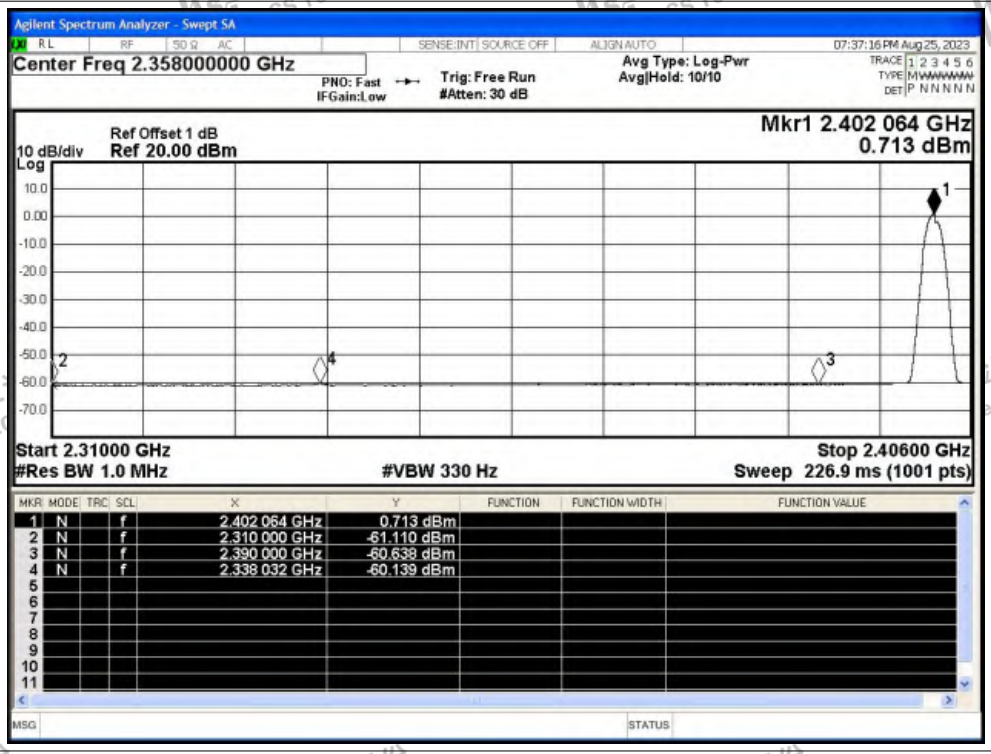
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-51.01	2	46.25	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-61.11	2	36.15	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2341.872	-48.27	2	48.99	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2338.032	-60.14	2	37.12	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-51.54	2	45.72	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-60.64	2	36.62	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-49.46	2	47.8	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-60.17	2	37.09	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2484.208	-41.54	2	55.72	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.512	-60.17	2	37.09	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-49.25	2	48.01	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-60.48	2	36.78	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-52.39	2	44.87	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-60.95	2	36.31	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2357.04	-48.46	2	48.8	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2385.648	-60.4	2	36.86	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-52.11	2	45.15	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-60.78	2	36.48	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-47.66	2	49.6	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-60.24	2	37.02	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2487.304	-43.84	2	53.42	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.752	-60.13	2	37.13	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-51.93	2	45.33	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-60.46	2	36.8	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-51.03	2	46.23	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-61.01	2	36.25	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2327.568	-47.62	2	49.64	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2381.232	-60.38	2	36.88	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-52.02	2	45.24	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-60.66	2	36.6	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-51.15	2	46.11	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-60.25	2	37.01	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2487.232	-46.04	2	51.22	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.728	-60.19	2	37.07	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-51.31	2	45.95	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-60.57	2	36.69	Average	54	Pass

Test Graphs

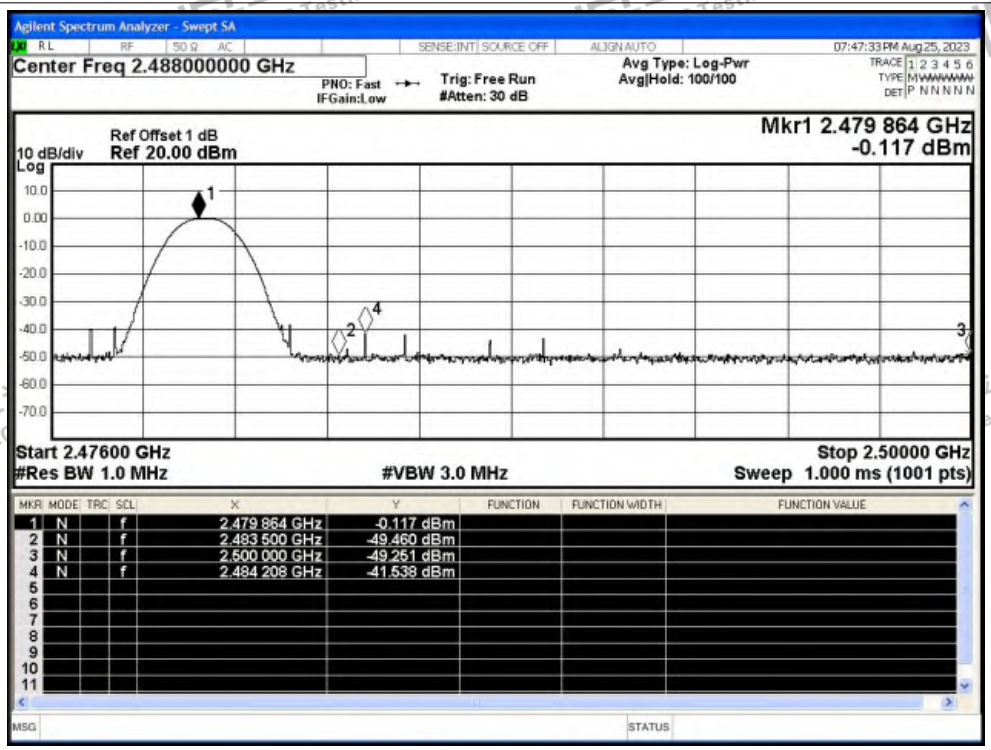
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak



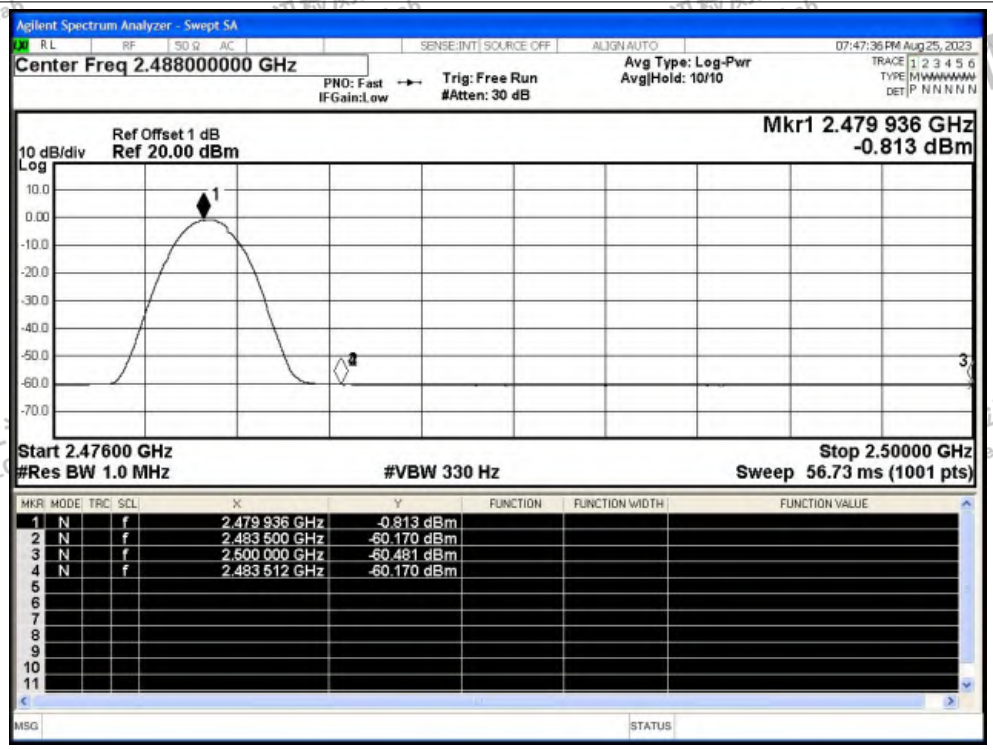
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



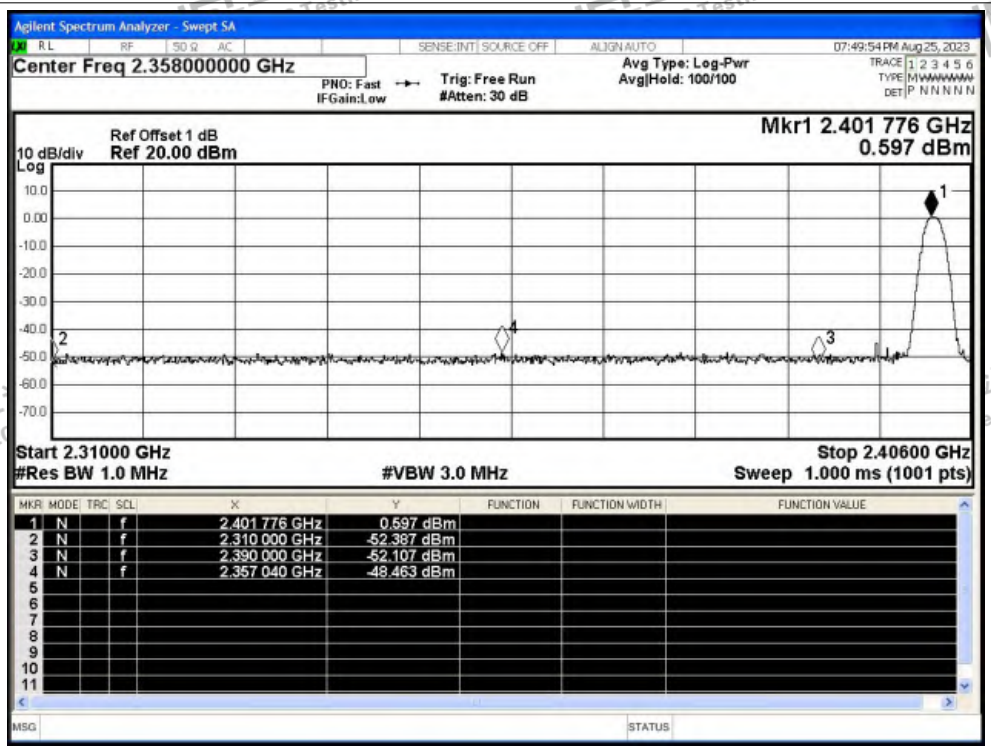
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak



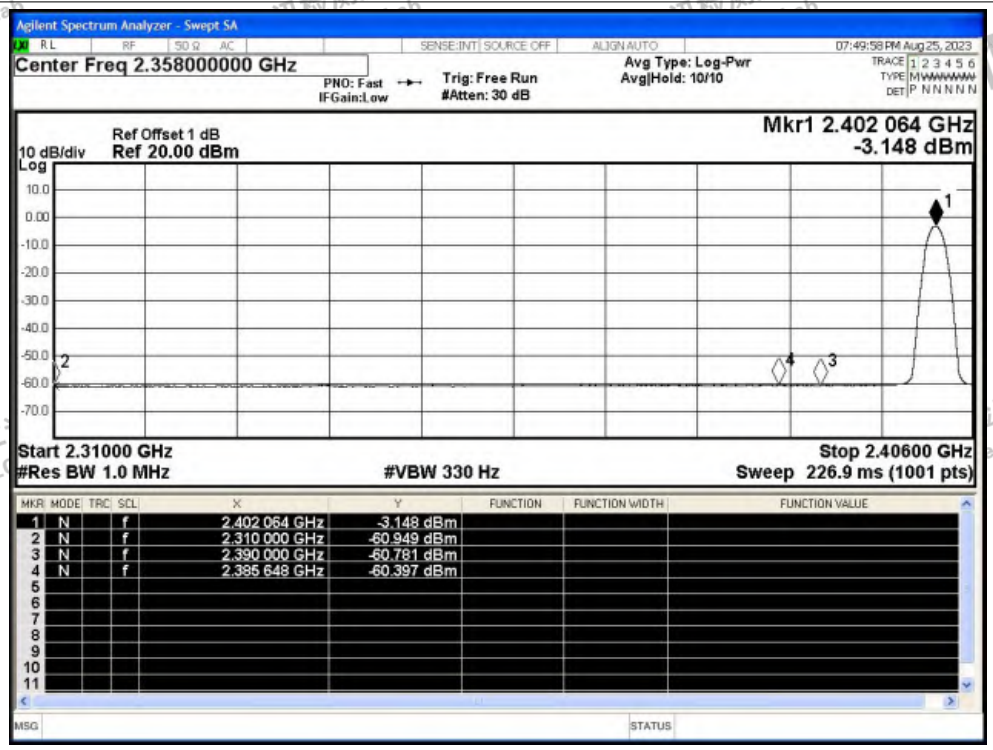
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average



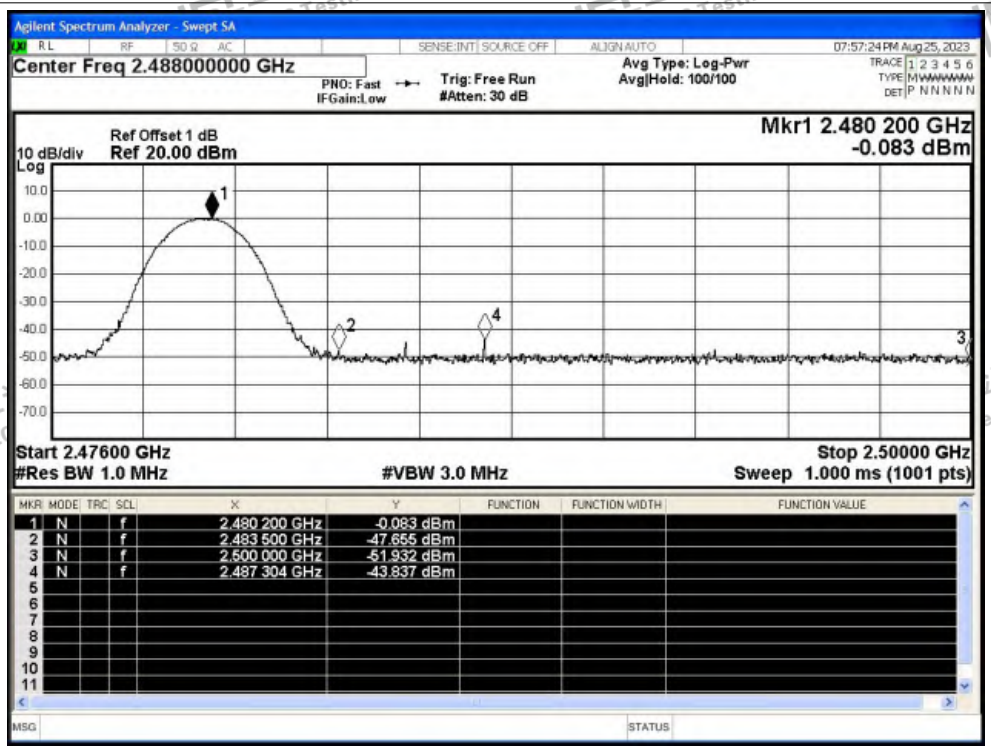
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak



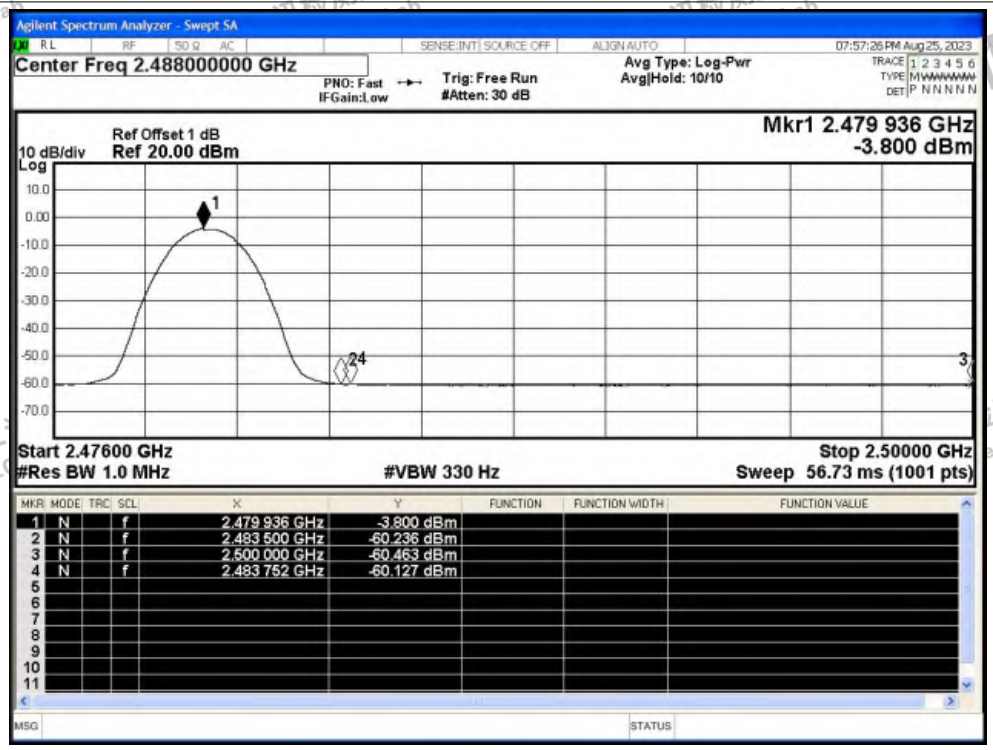
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average



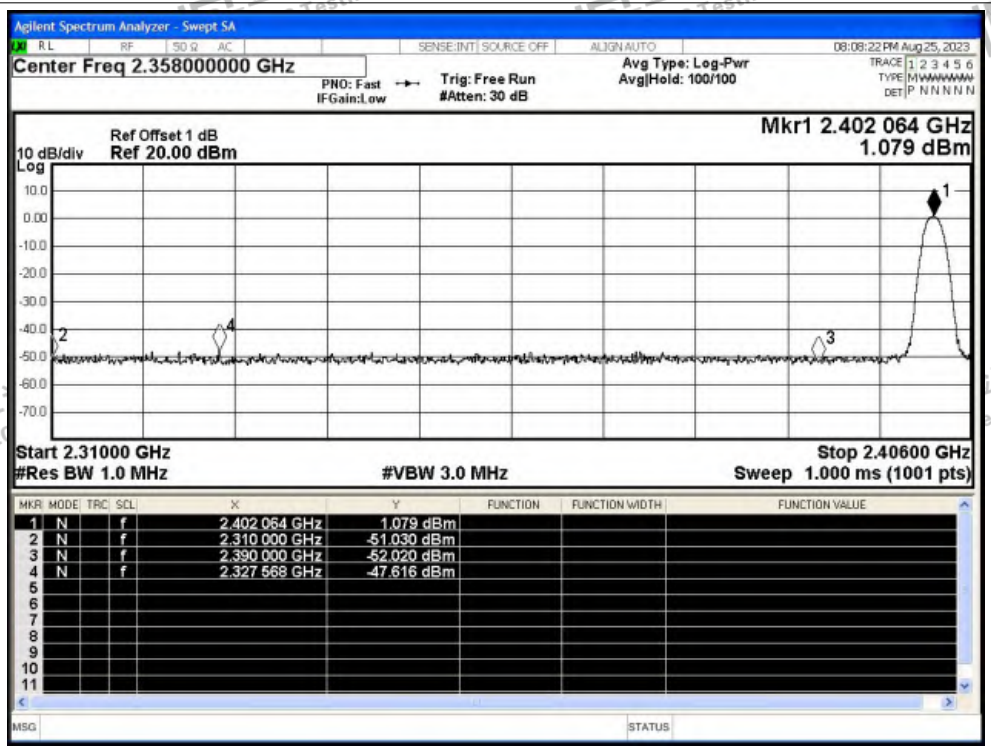
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak



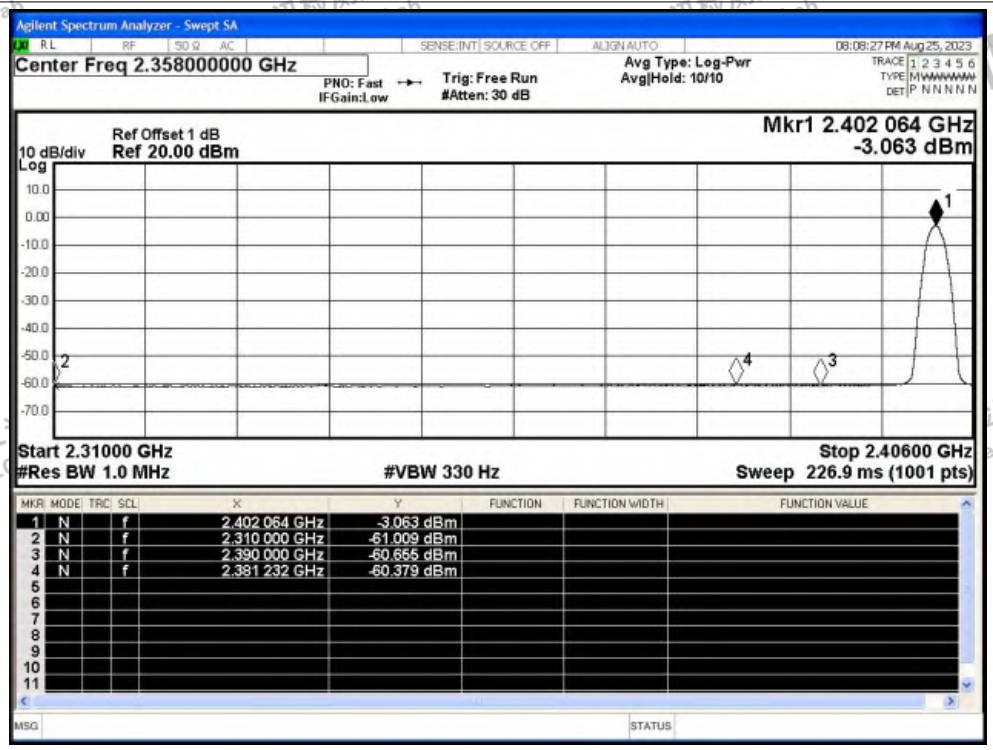
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Average



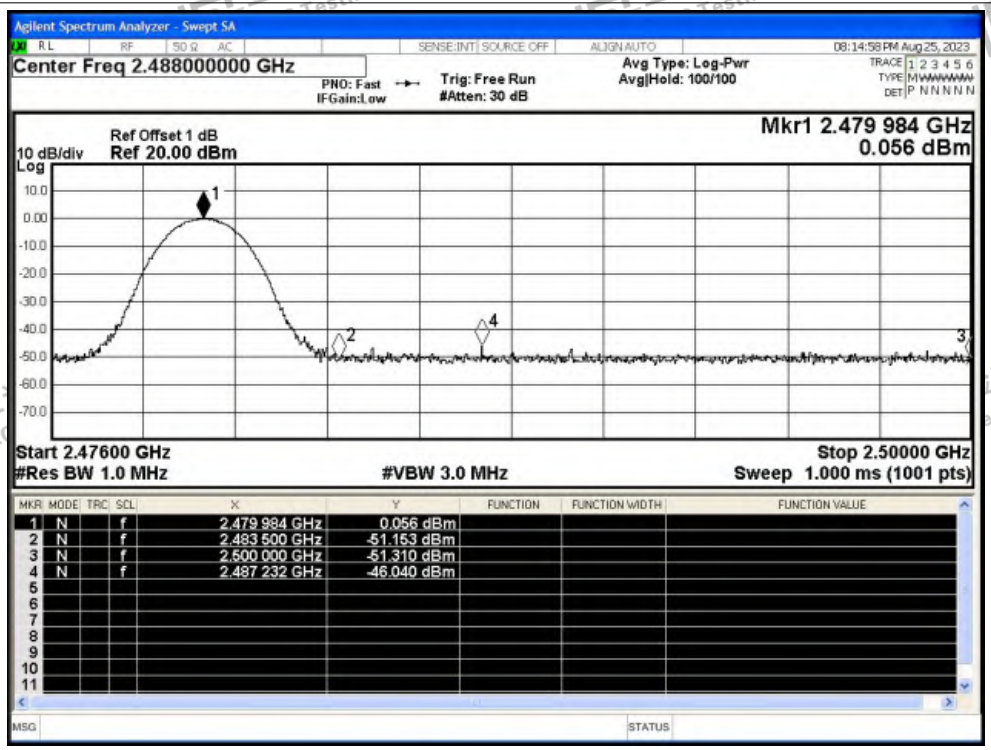
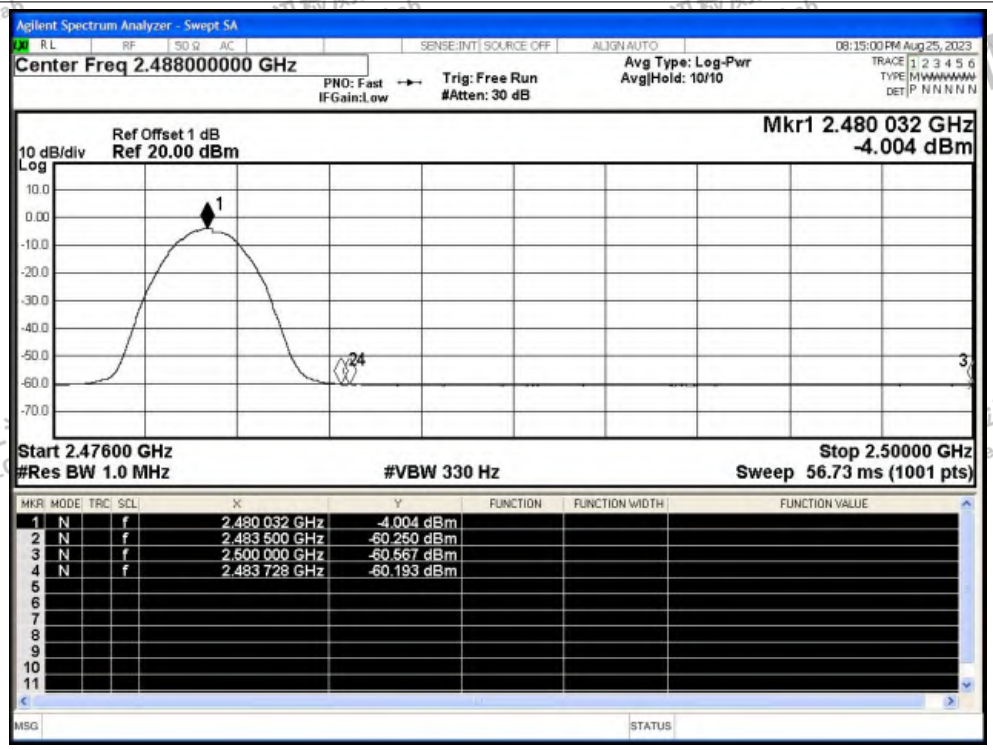
Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak



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