Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Oliver Hemming Drama Speaker

Test Model: DRESA

Environmental Conditions

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

A.1 -20dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	0.996	N/A	Pass
NVNT	1-DH5	2441	Ant1	0.953	N/A	Pass
NVNT	1-DH5	2480	Ant1	0.995	N/A	Pass
NVNT	2-DH5	2402	Ant1	1.286	N/A	Pass
NVNT	2-DH5	2441	Ant1	1.287	N/A	Pass
NVNT	2-DH5	2480	Ant1	1.309	N/A	Pass
NVNT	3-DH5	2402	Ant1	1.303	N/A	Pass
NVNT	3-DH5	2441	Ant1	1.296	N/A	Pass
NVNT	3-DH5	2480	Ant1	1.294	N/A	Pass

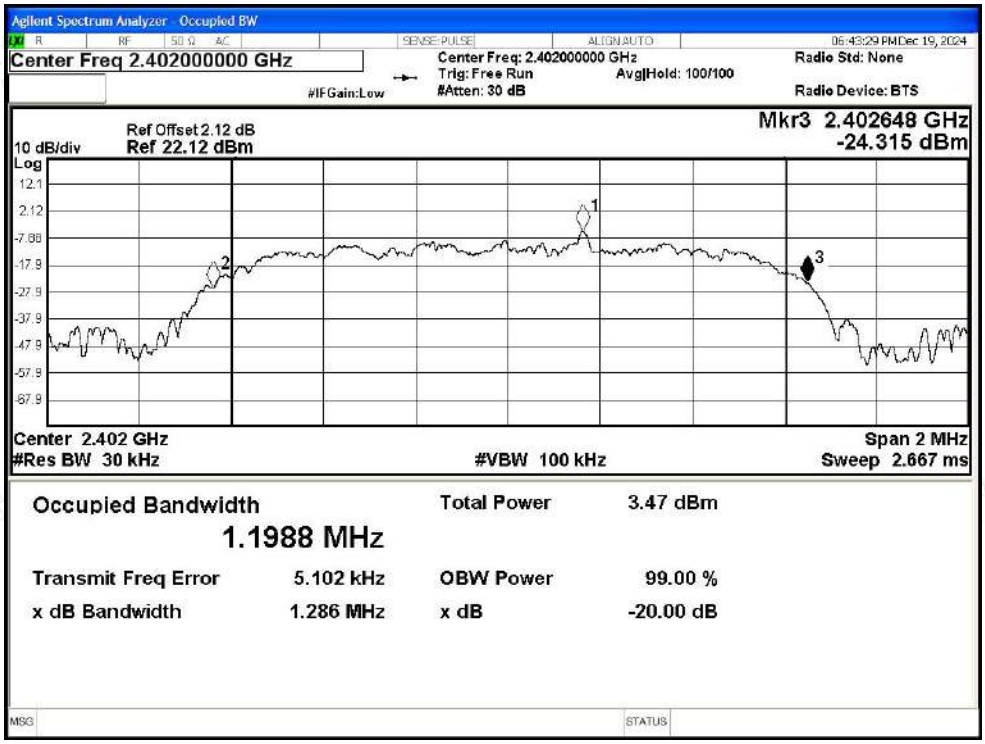
Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1

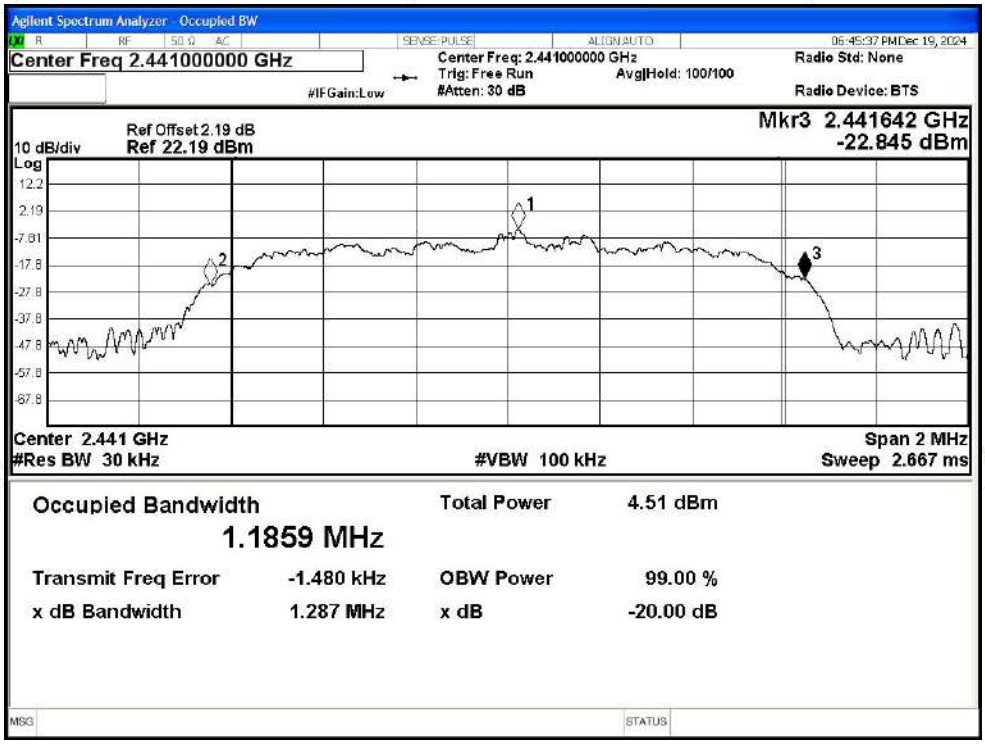
-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1

-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1

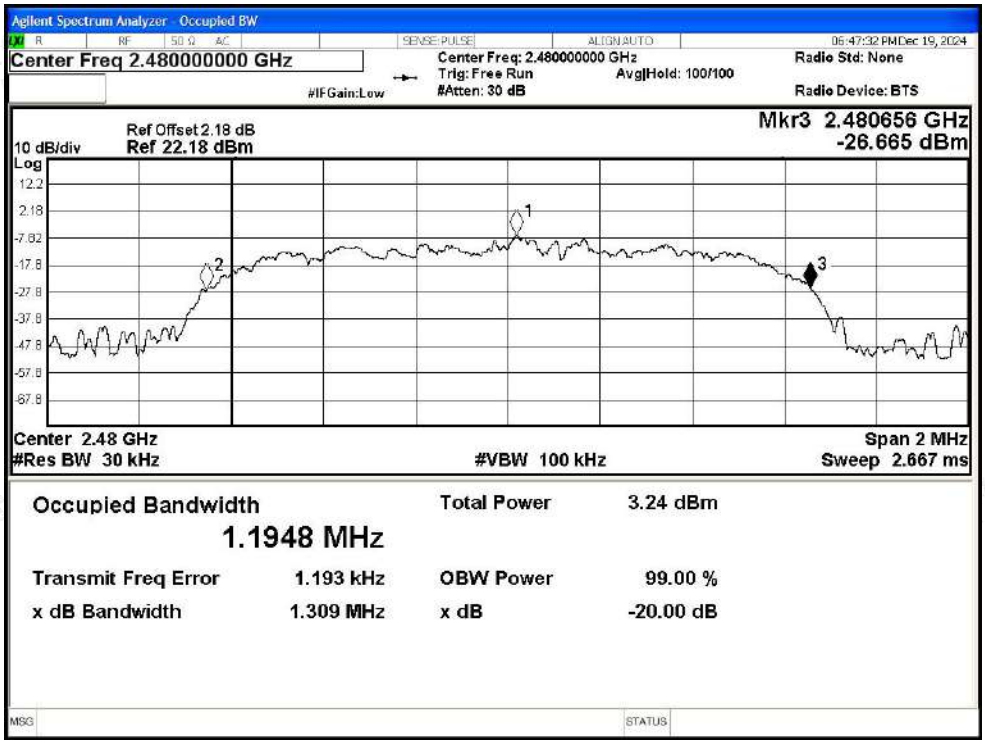
-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1



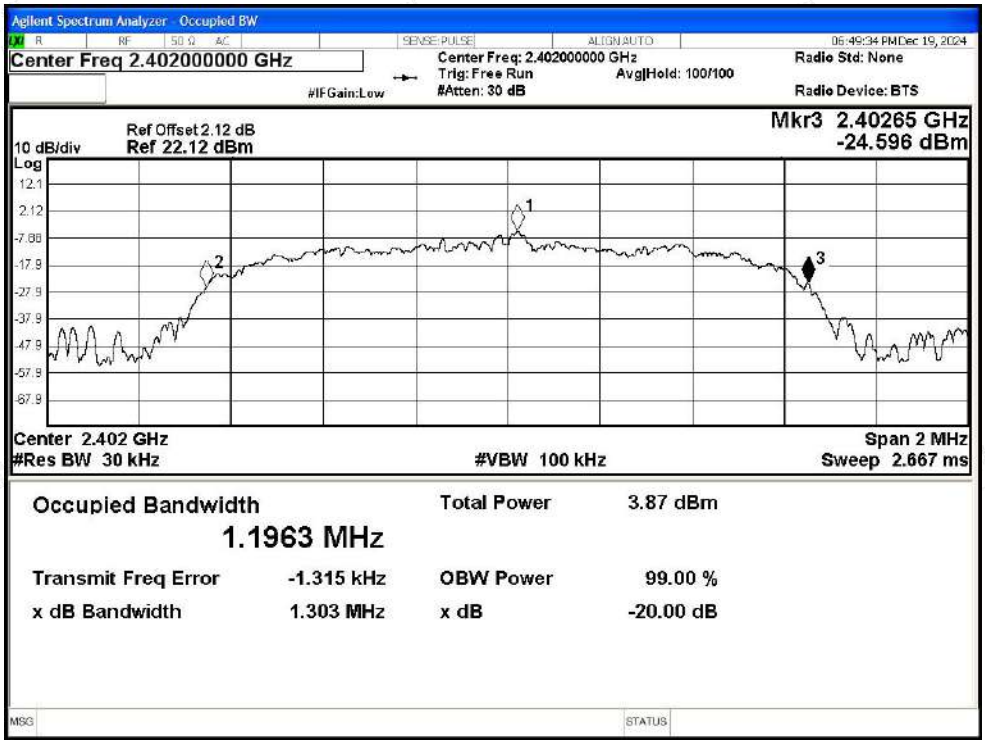
-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1



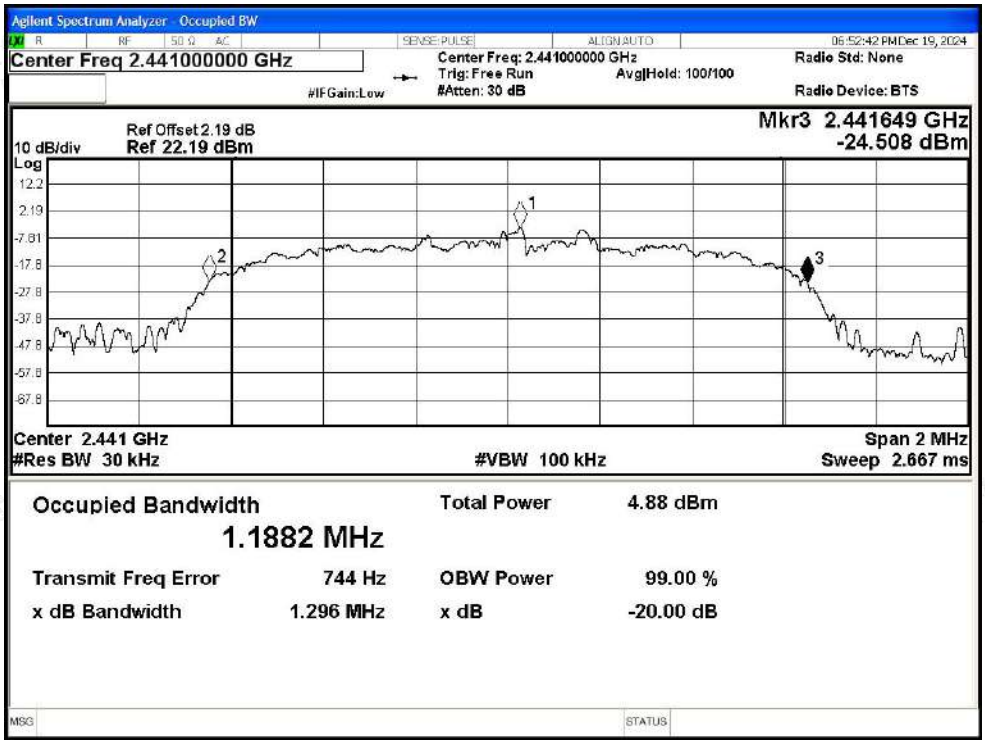
-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1



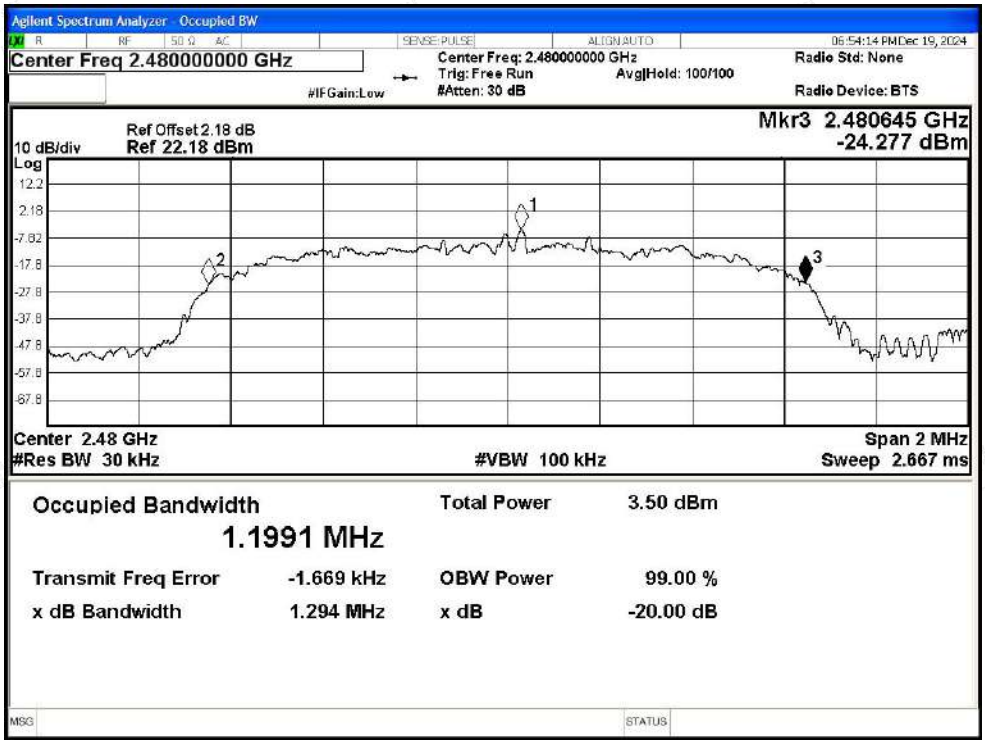
-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1

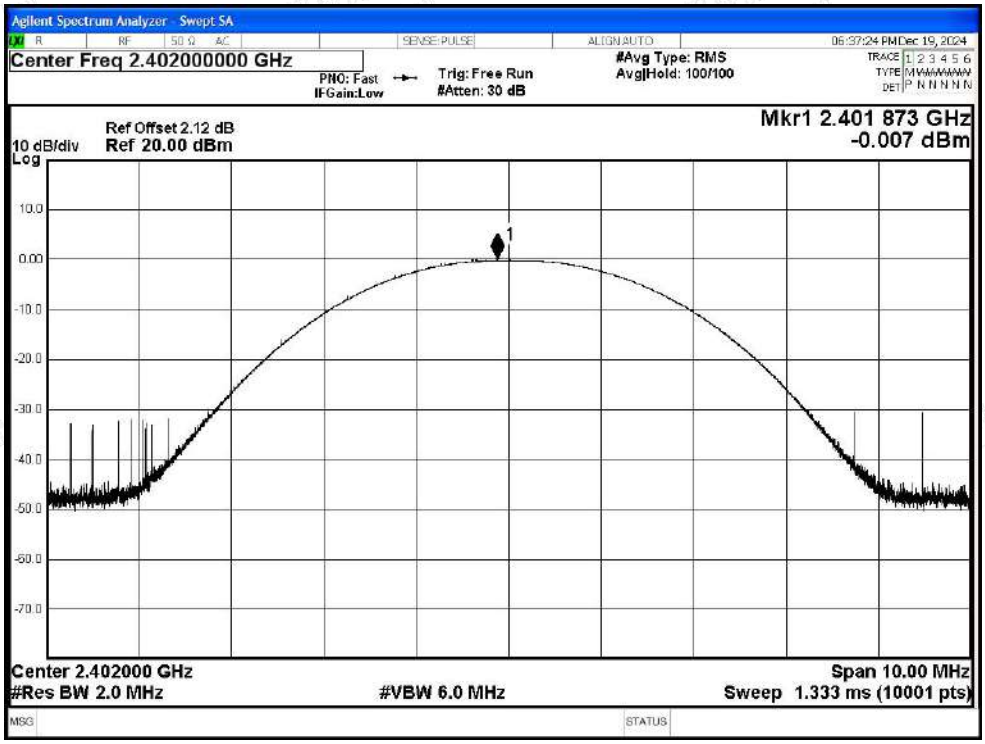


A.2 Maximum Peak Conducted Output Power

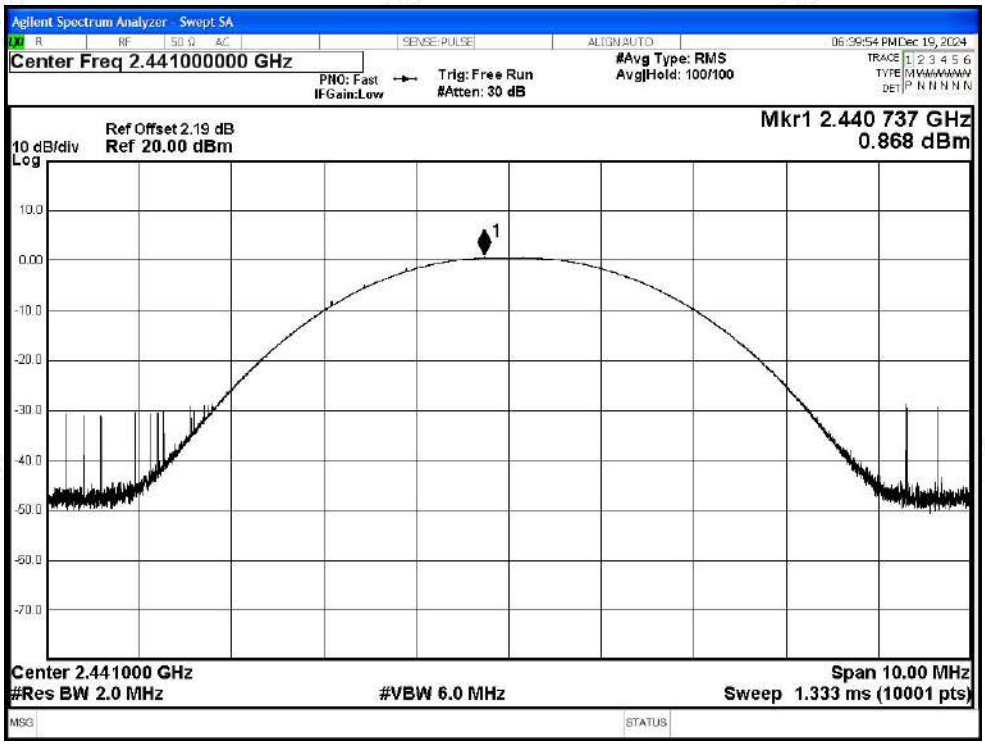
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	-0.01	21	Pass
NVNT	1-DH5	2441	Ant1	0.87	21	Pass
NVNT	1-DH5	2480	Ant1	-0.12	21	Pass
NVNT	2-DH5	2402	Ant1	-0.37	21	Pass
NVNT	2-DH5	2441	Ant1	0.16	21	Pass
NVNT	2-DH5	2480	Ant1	-0.78	21	Pass
NVNT	3-DH5	2402	Ant1	0.03	21	Pass
NVNT	3-DH5	2441	Ant1	0.53	21	Pass
NVNT	3-DH5	2480	Ant1	-0.45	21	Pass

Test Graphs

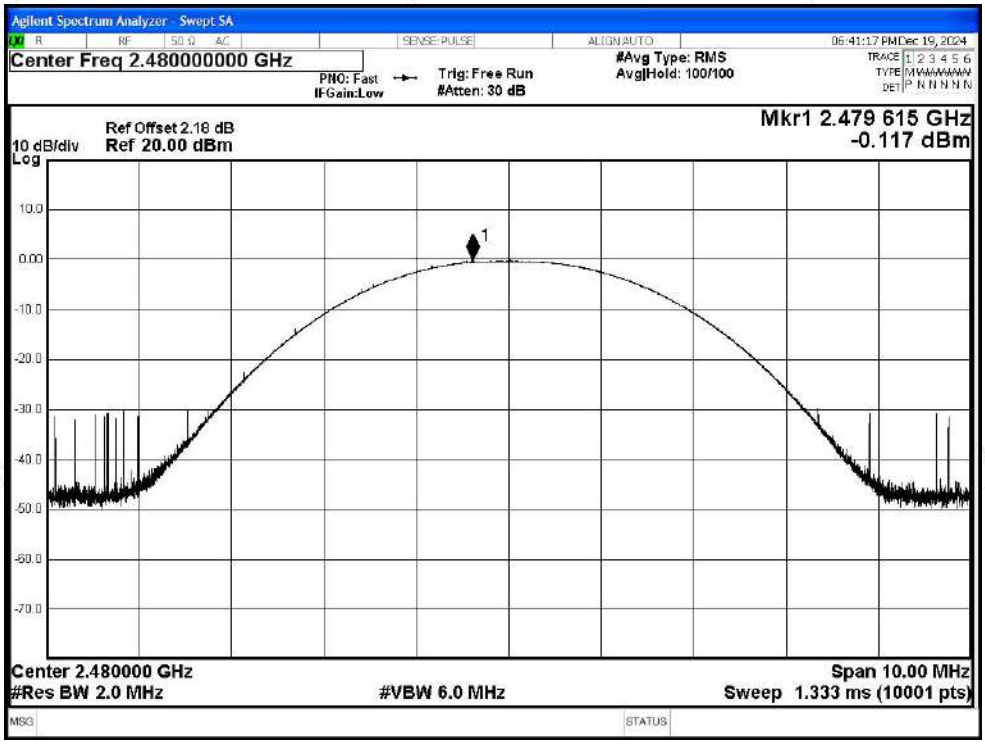
Power NVNT 1-DH5 2402MHz Ant1



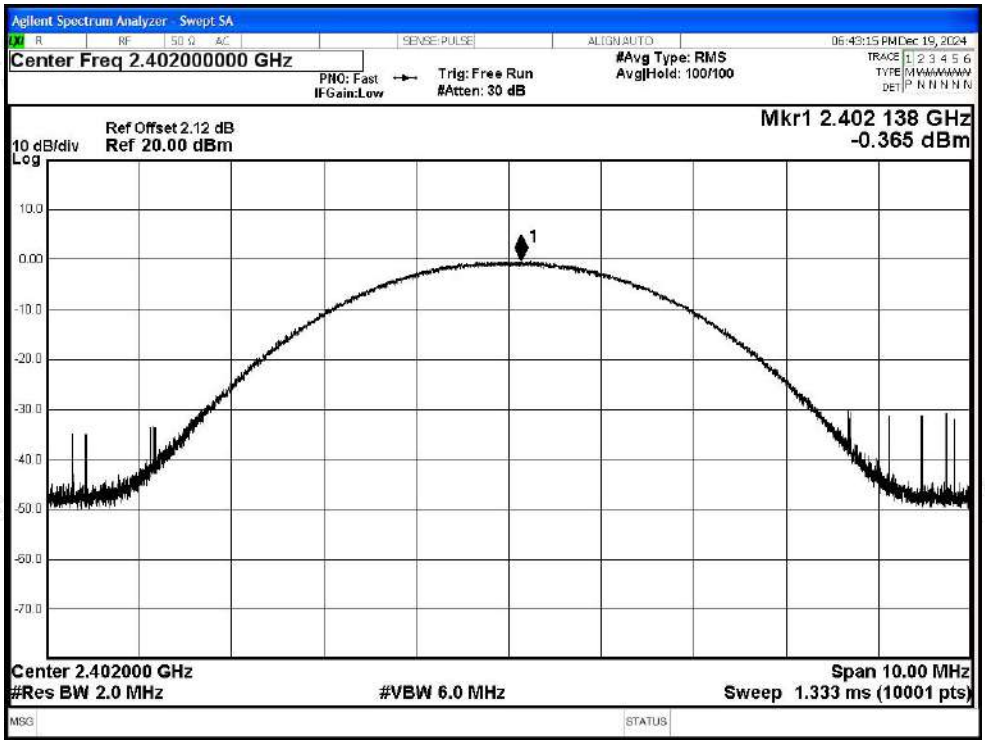
Power NVNT 1-DH5 2441MHz Ant1



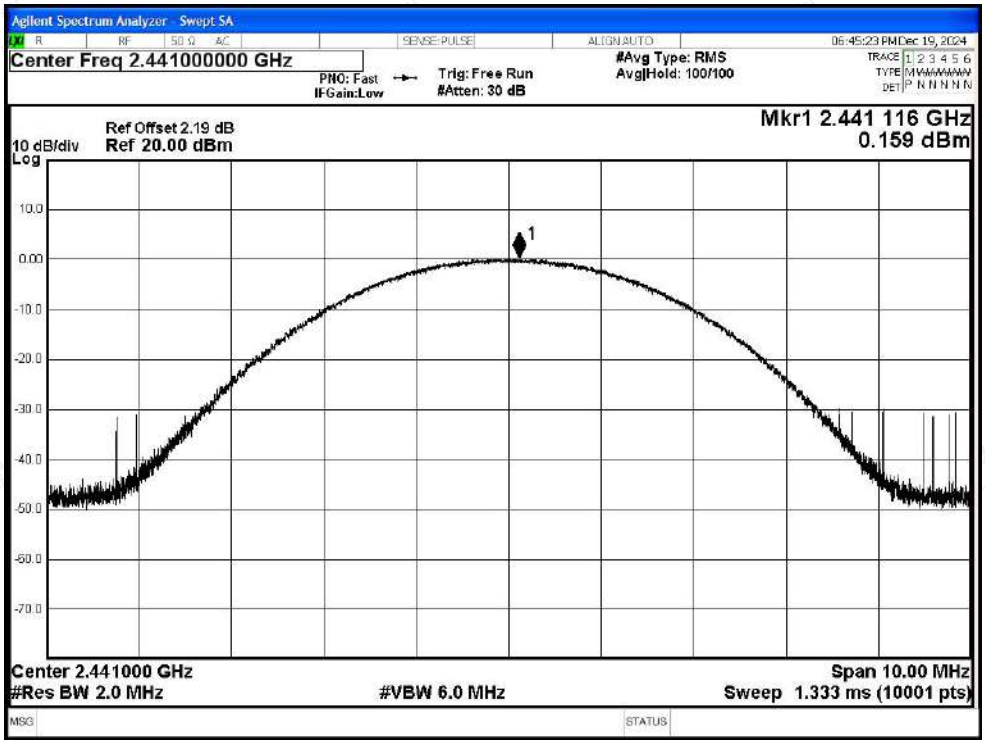
Power NVNT 1-DH5 2480MHz Ant1



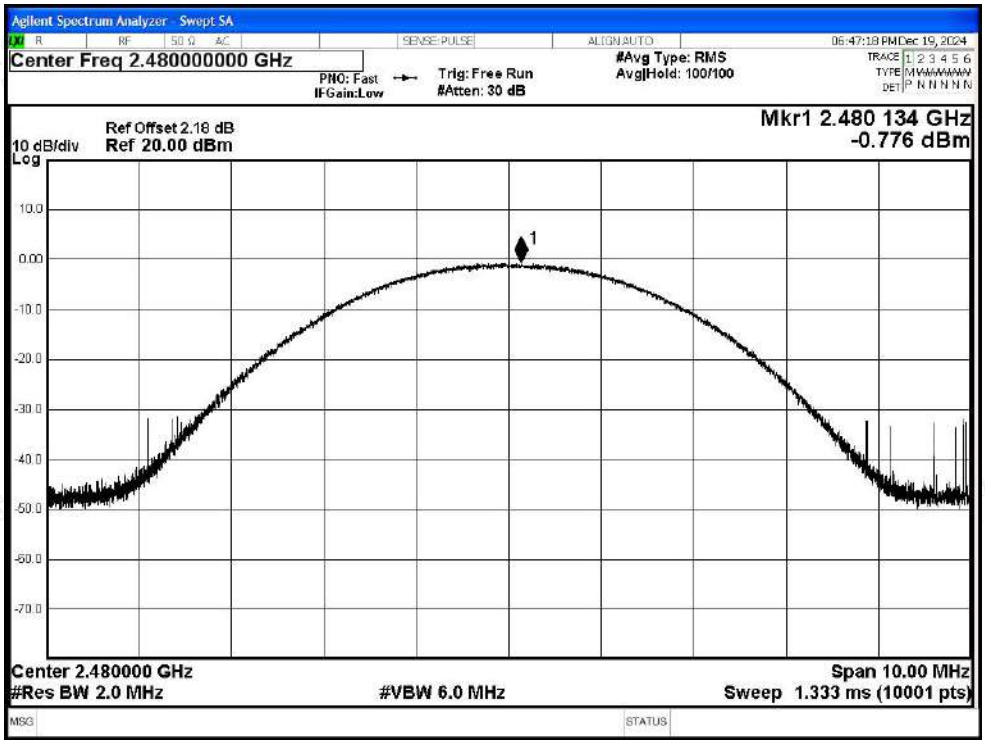
Power NVNT 2-DH5 2402MHz Ant1



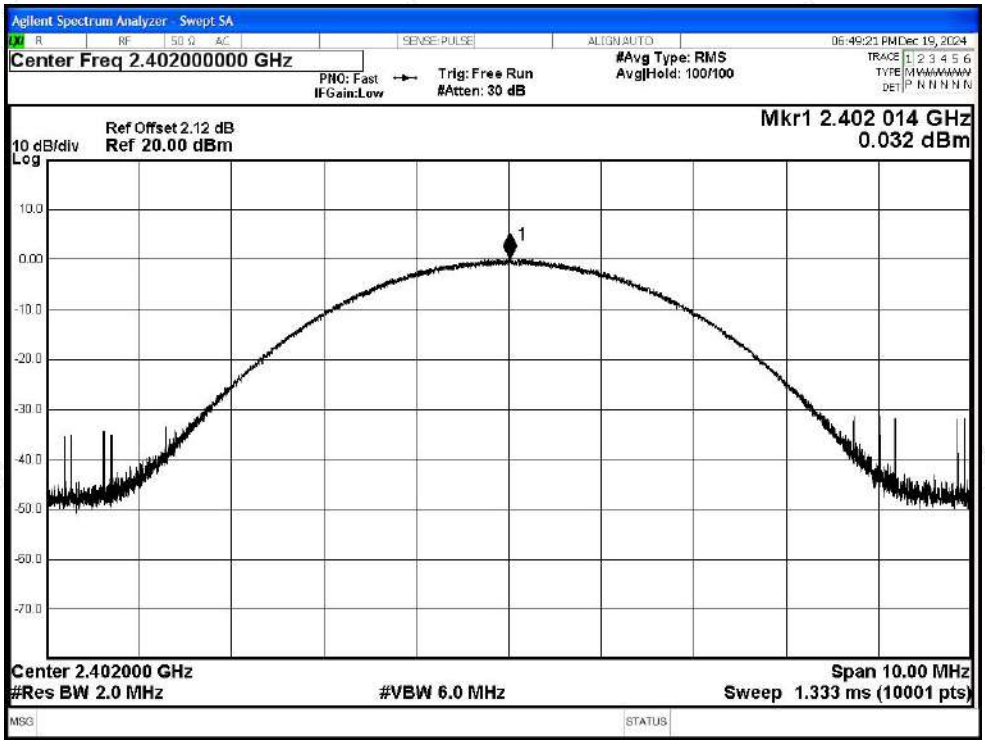
Power NVNT 2-DH5 2441MHz Ant1



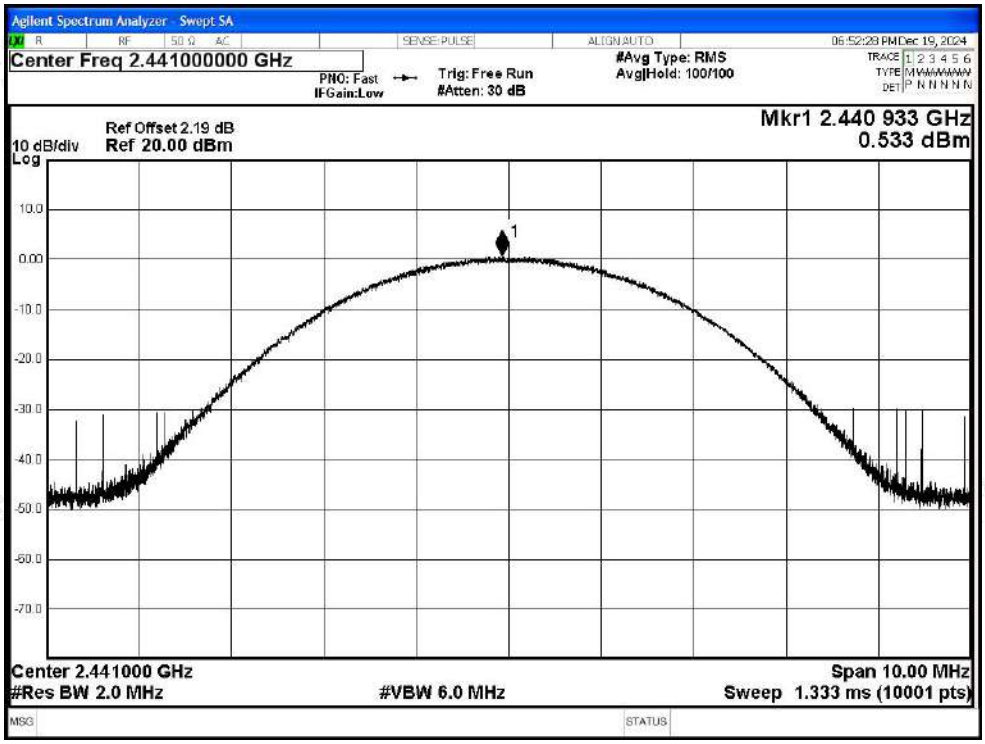
Power NVNT 2-DH5 2480MHz Ant1



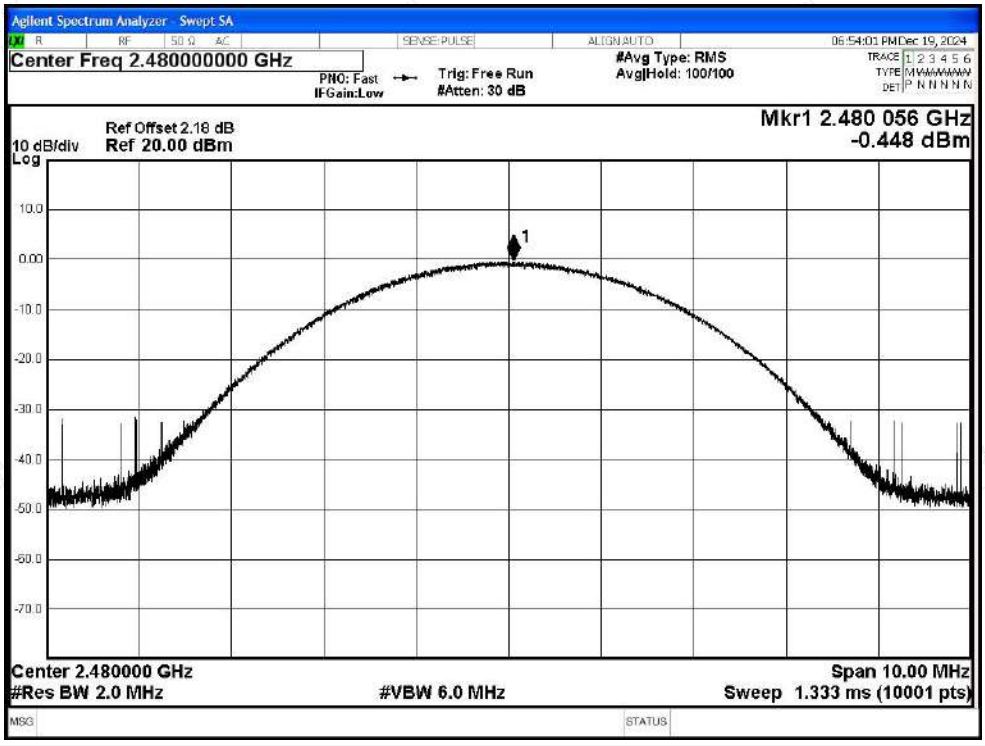
Power NVNT 3-DH5 2402MHz Ant1



Power NVNT 3-DH5 2441MHz Ant1



Power NVNT 3-DH5 2480MHz Ant1

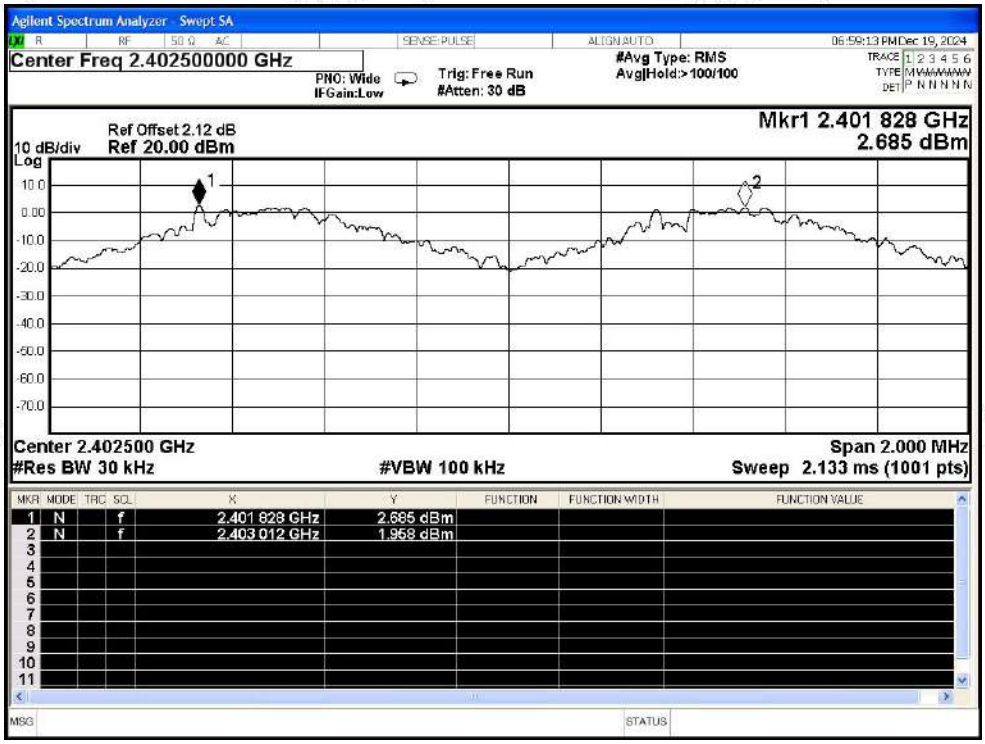


A.3 Carrier Frequencies Separation

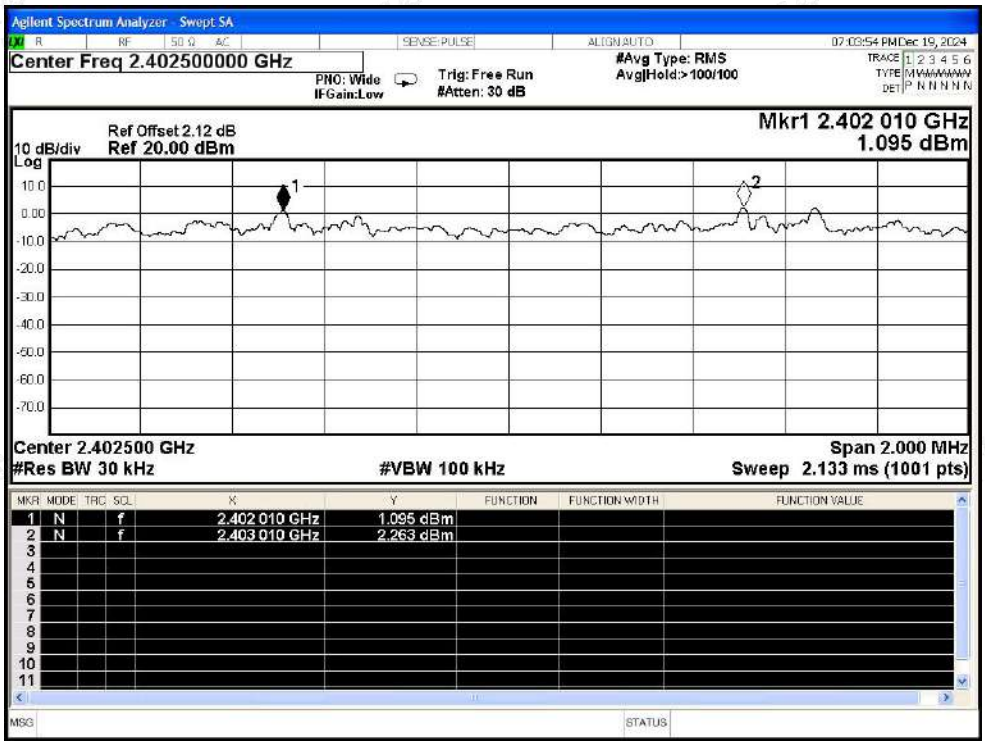
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2401.828	2403.012	1.184	0.664	Pass
NVNT	2-DH5	Ant1	2402.01	2403.01	1	0.873	Pass
NVNT	3-DH5	Ant1	2402.01	2403.032	1.022	0.869	Pass

Test Graphs

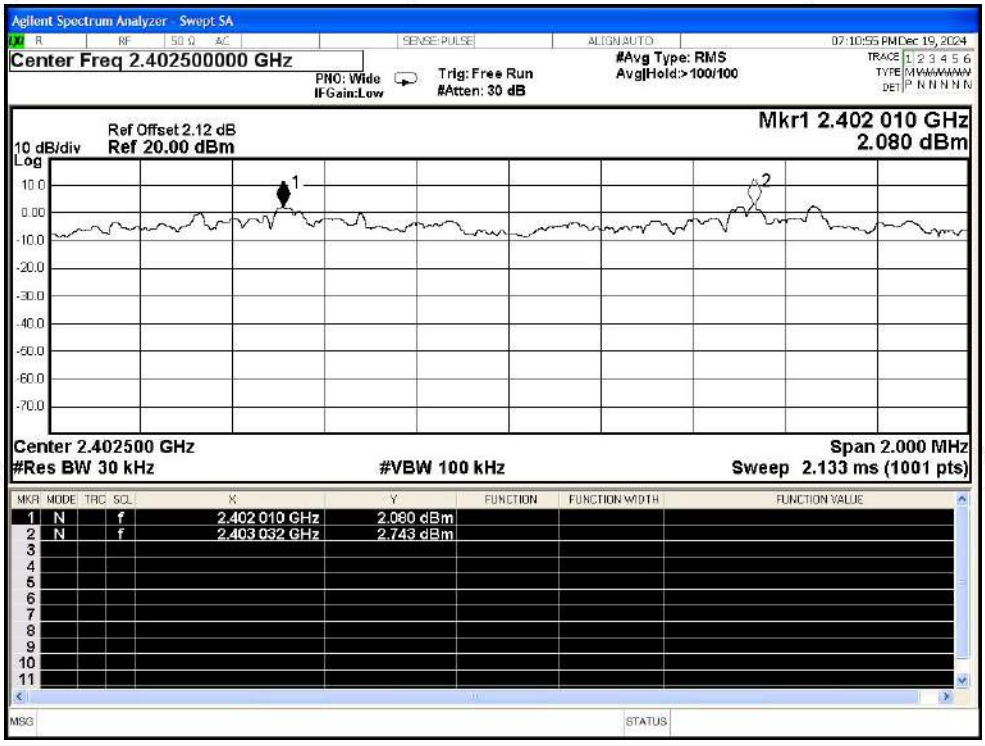
CFS NVNT 1-DH5 2402MHz Ant1



CFS NVNT 2-DH5 2402MHz Ant1



CFS NVNT 3-DH5 2402MHz Ant1

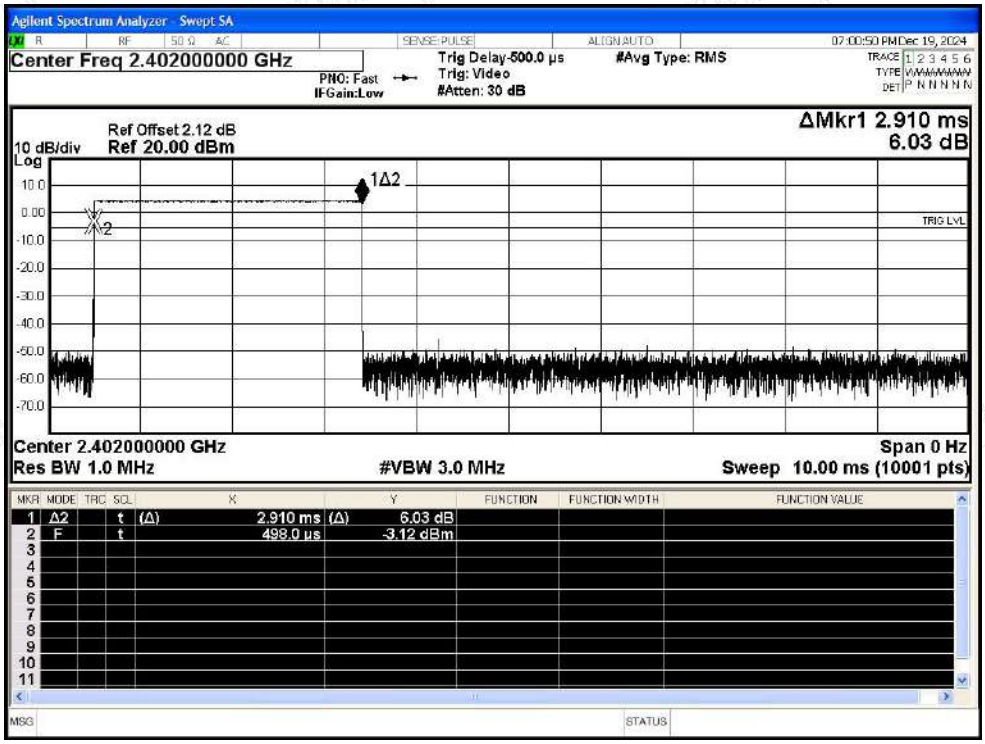


A.4 Dwell Time

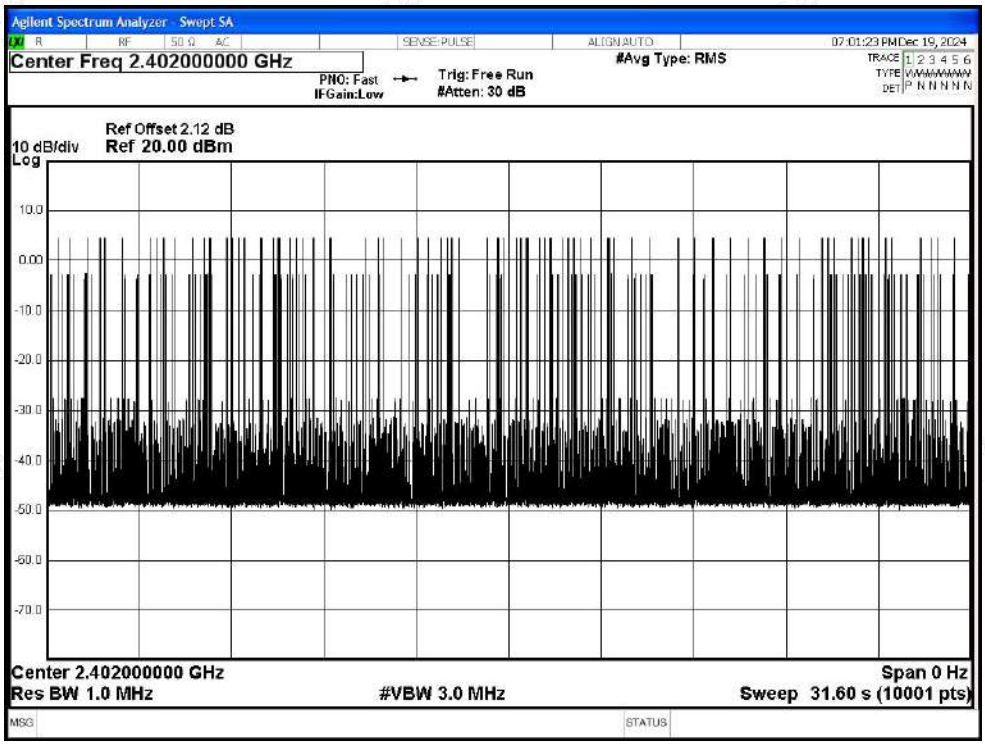
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	2.91	302.64	104	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.898	344.862	119	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.897	278.112	96	31600	400	Pass

Test Graphs

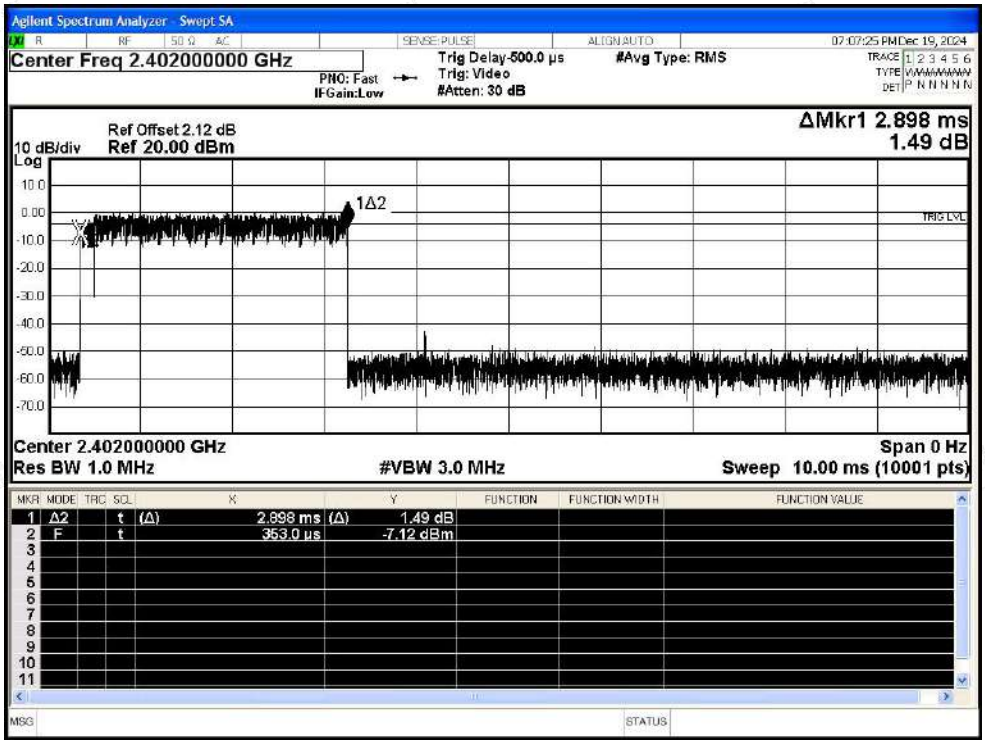
Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



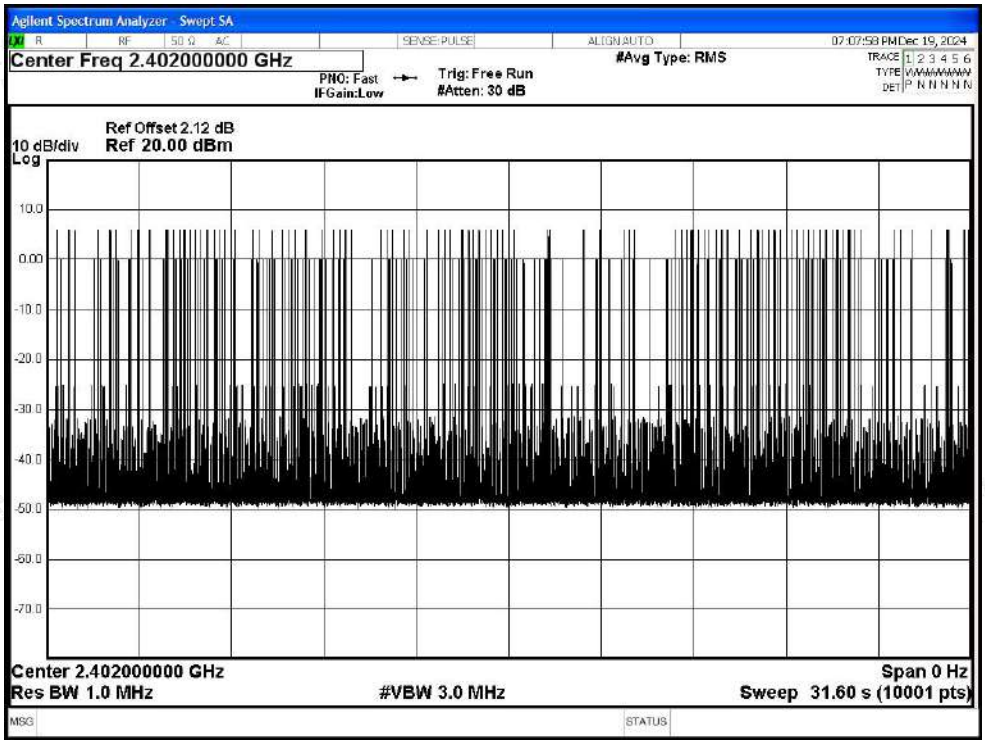
Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated



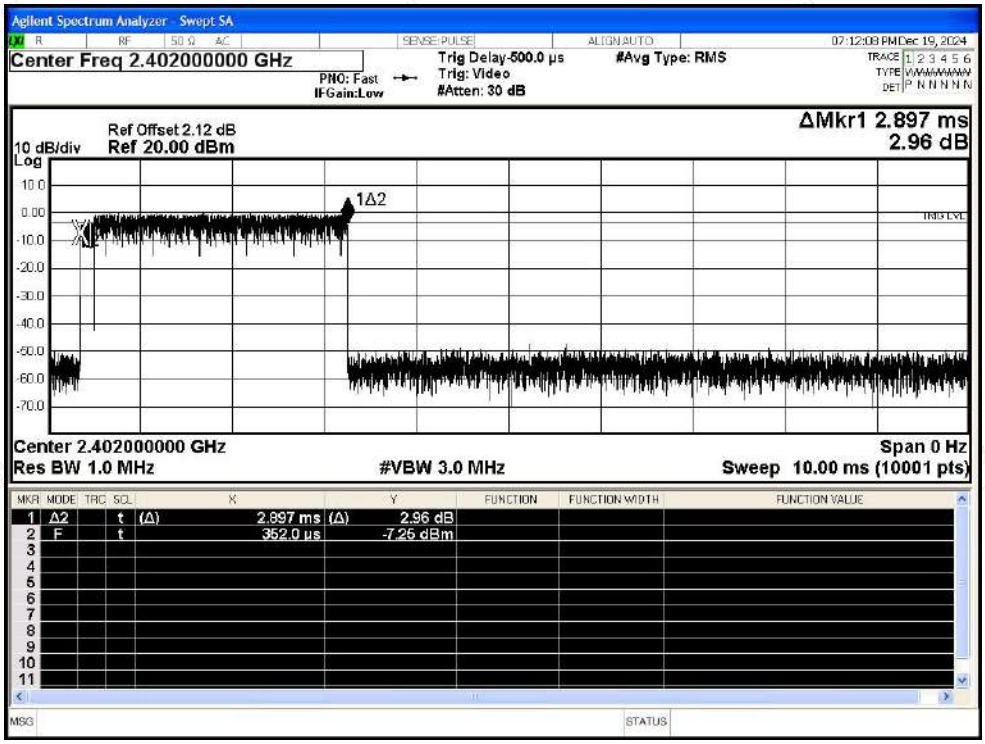
Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



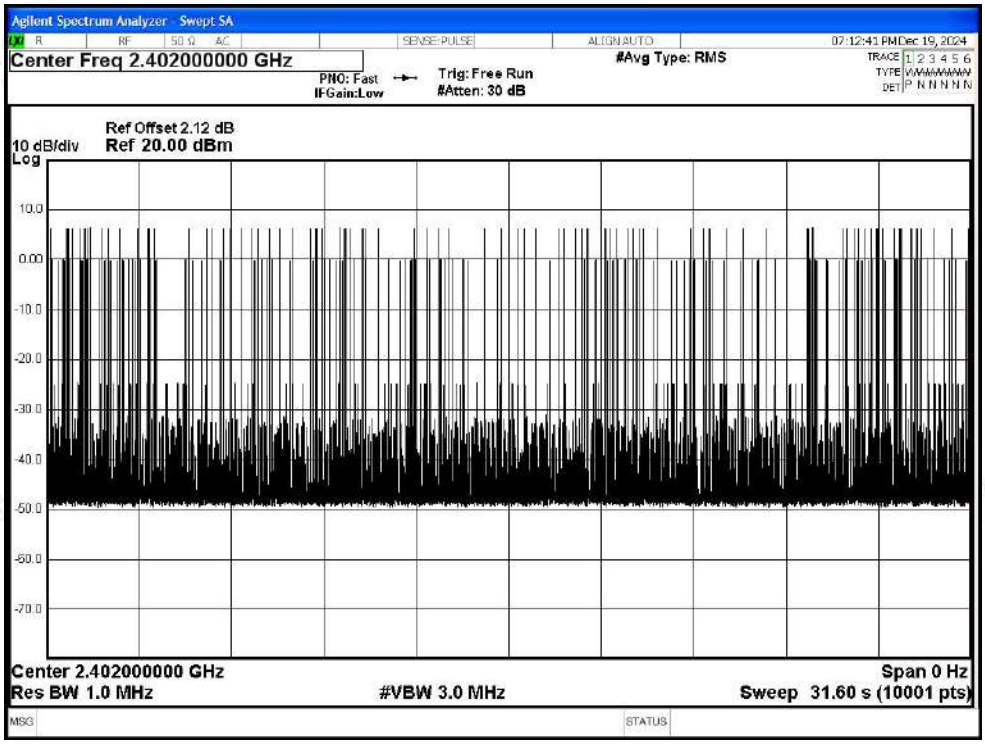
Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated



Dwell NVNT 3-DH5 2402MHz Ant1 One Burst



Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

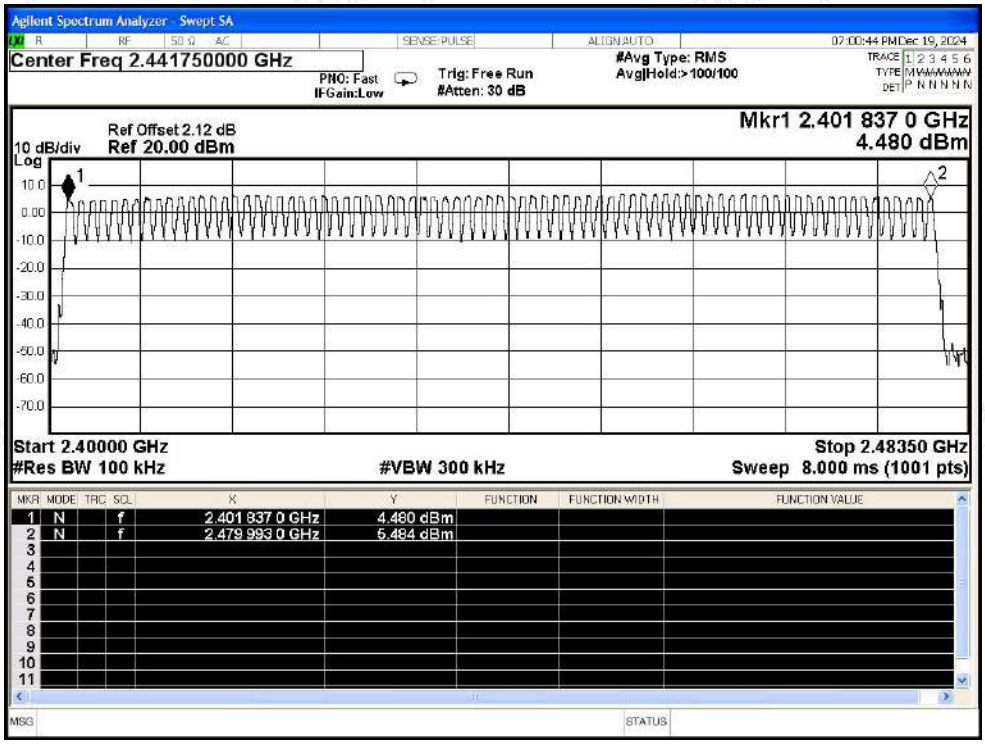


A.5 Number of Hopping Channel

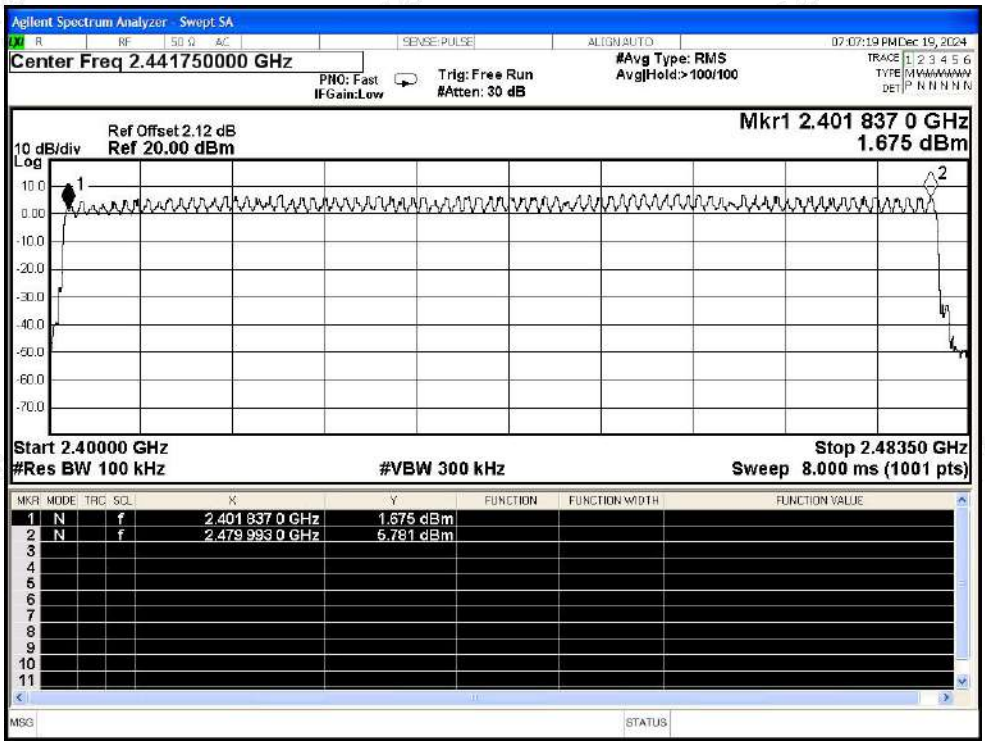
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass
NVNT	3-DH5	Ant1	79	15	Pass

Test Graphs

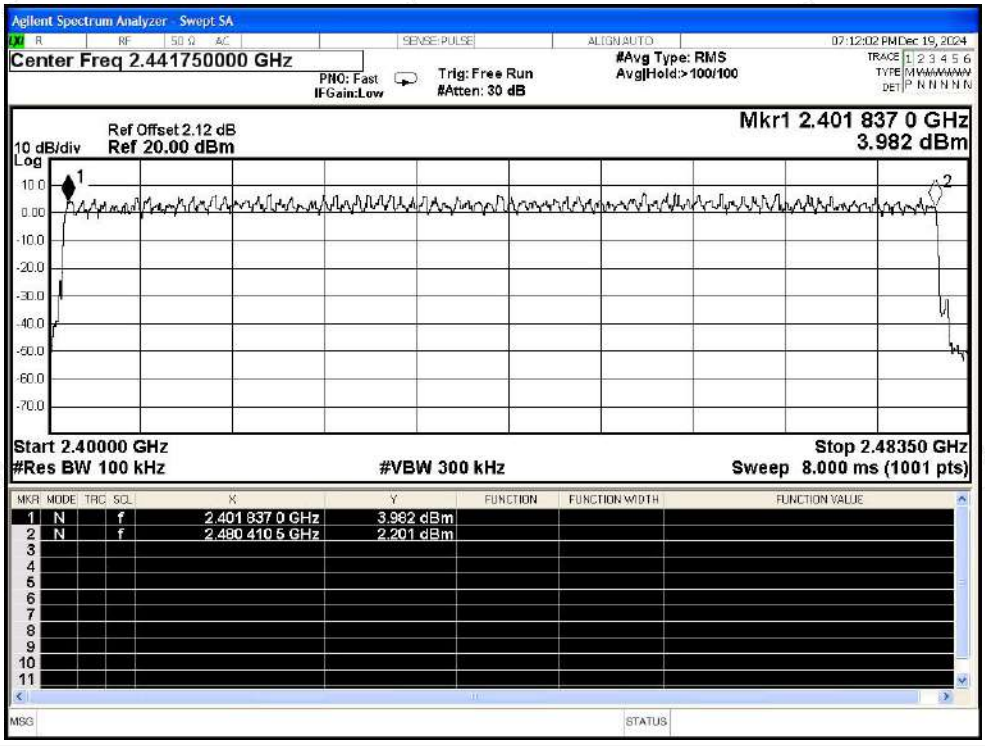
Hopping No. NVNT 1-DH5 2402MHz Ant1



Hopping No. NVNT 2-DH5 2402MHz Ant1



Hopping No. NVNT 3-DH5 2402MHz Ant1

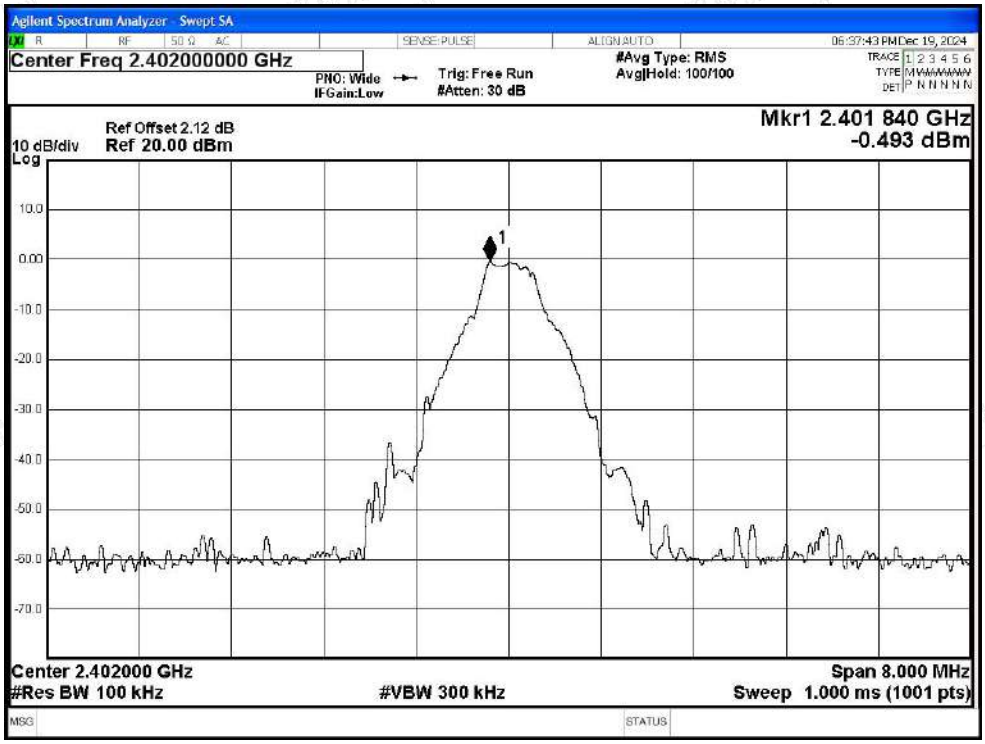


A.6 Band Edge

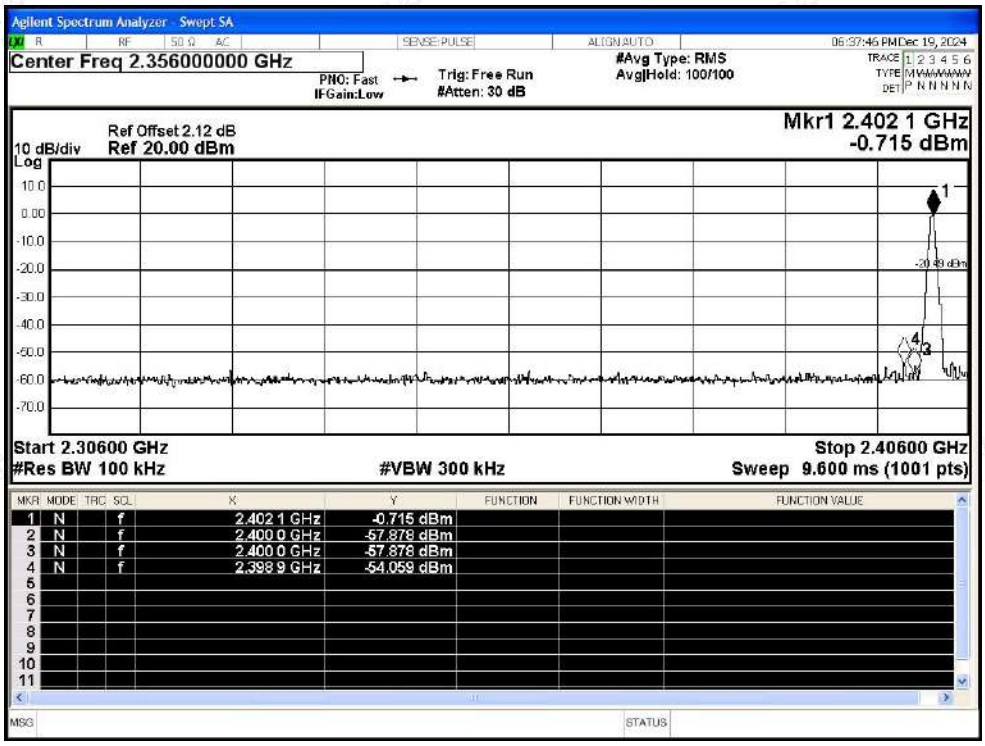
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-53.57	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-53.16	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-50.19	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-52.2	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-50.35	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-52.89	-20	Pass

Test Graphs

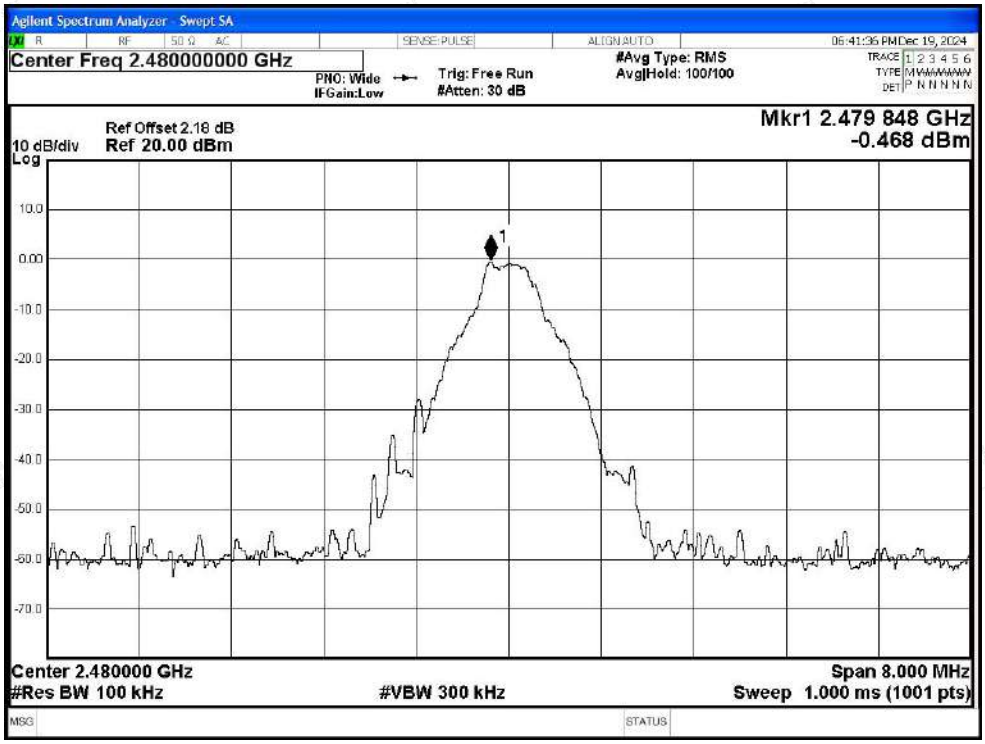
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



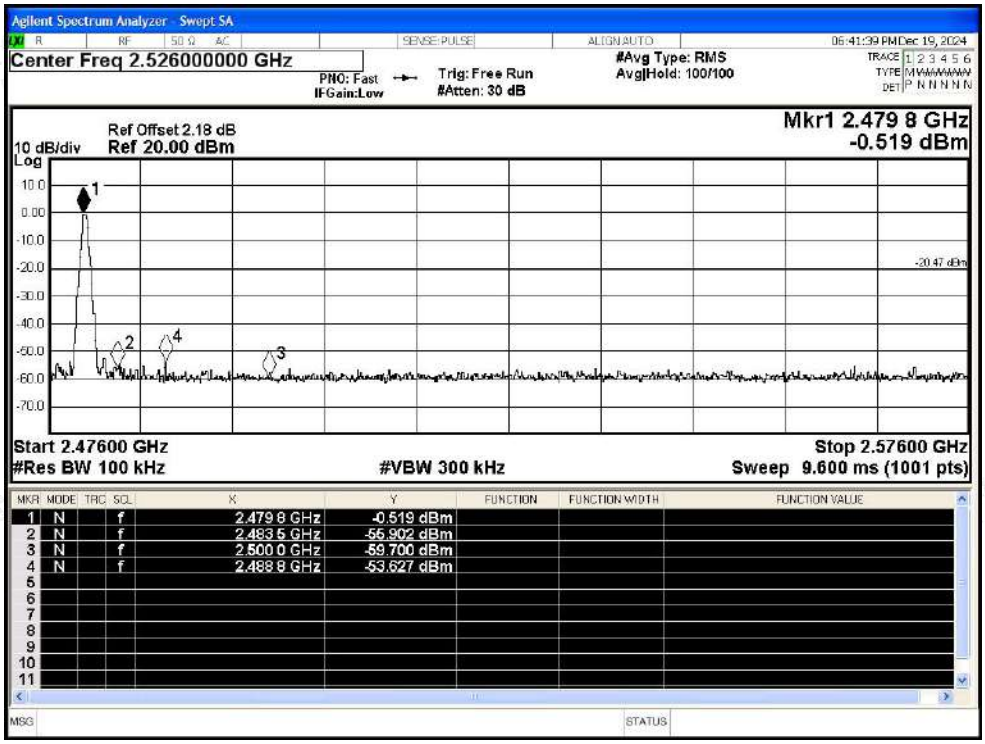
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission



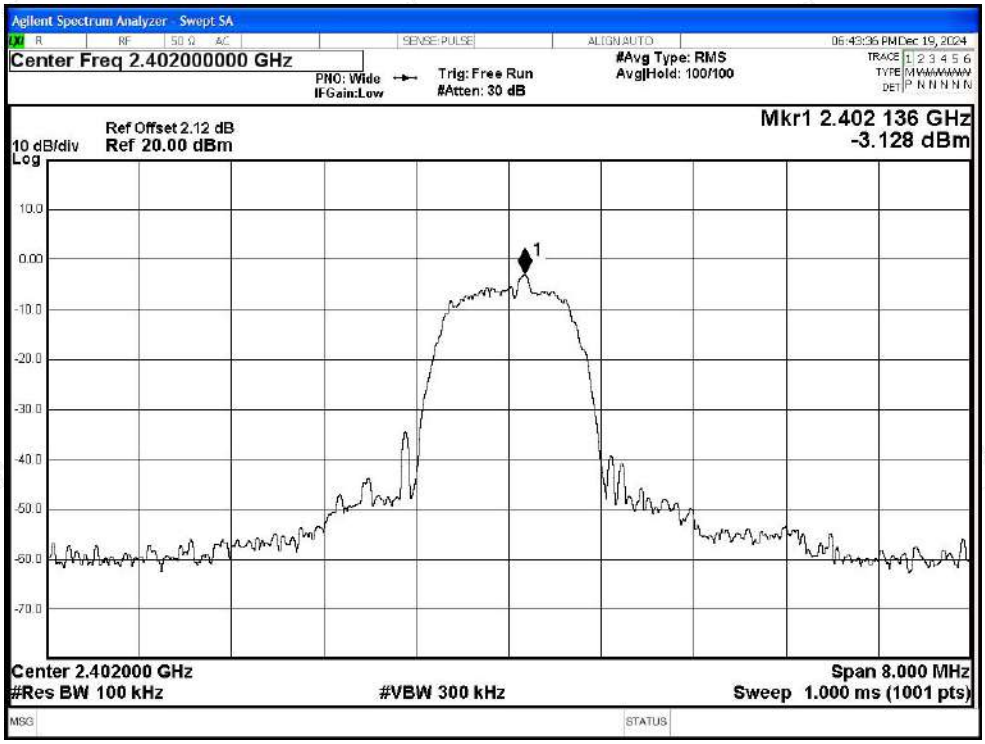
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref



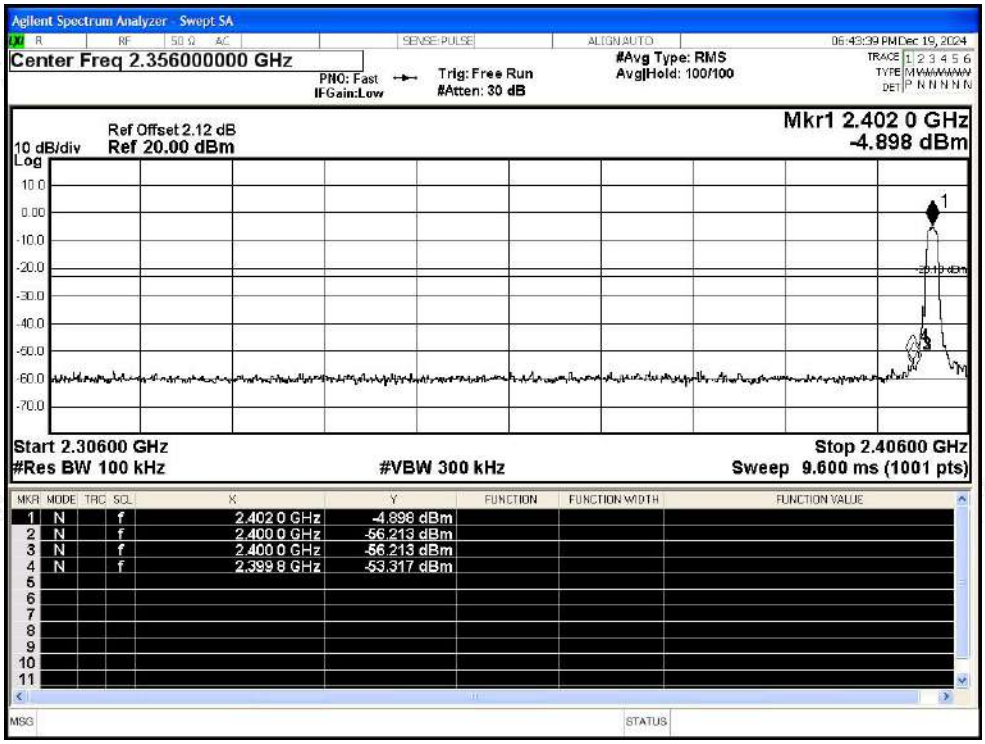
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



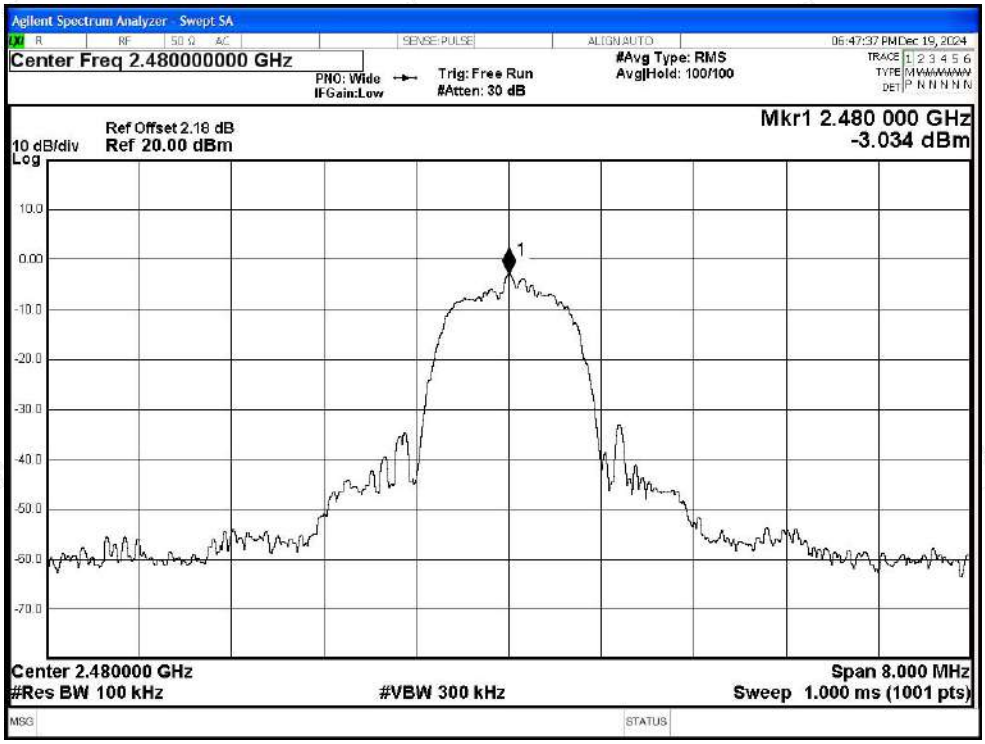
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



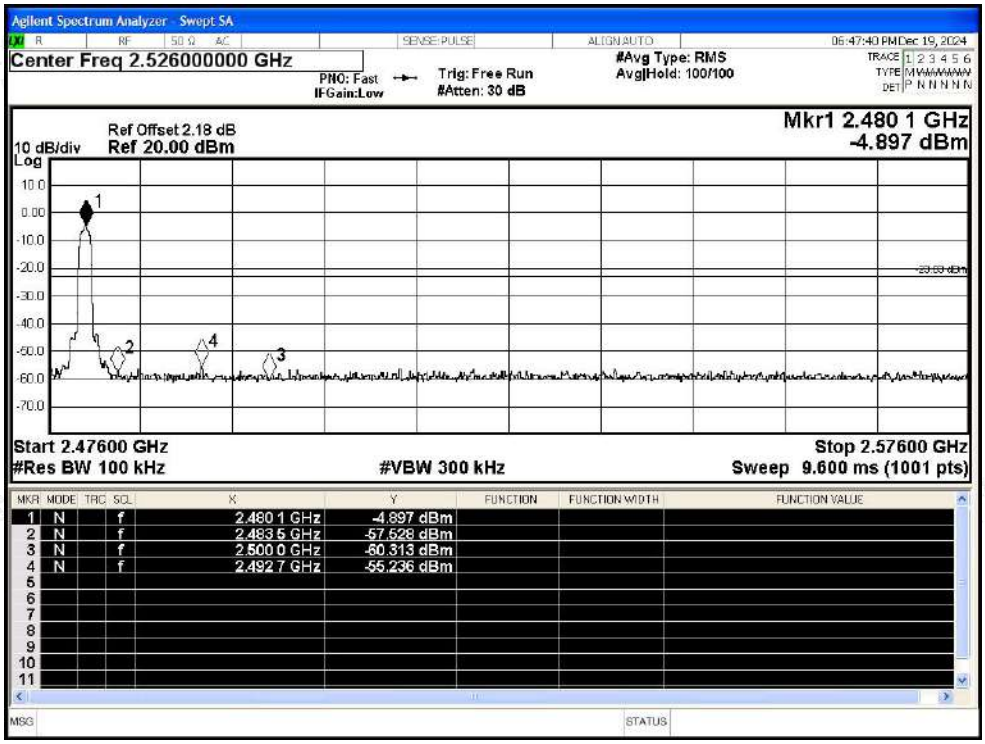
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission



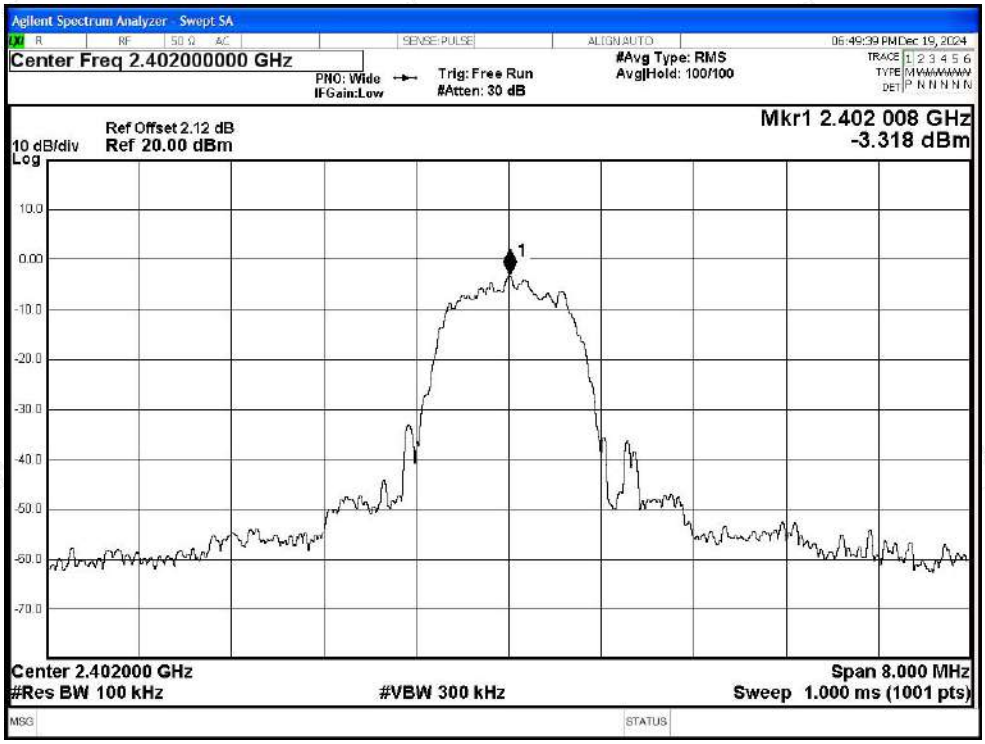
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref



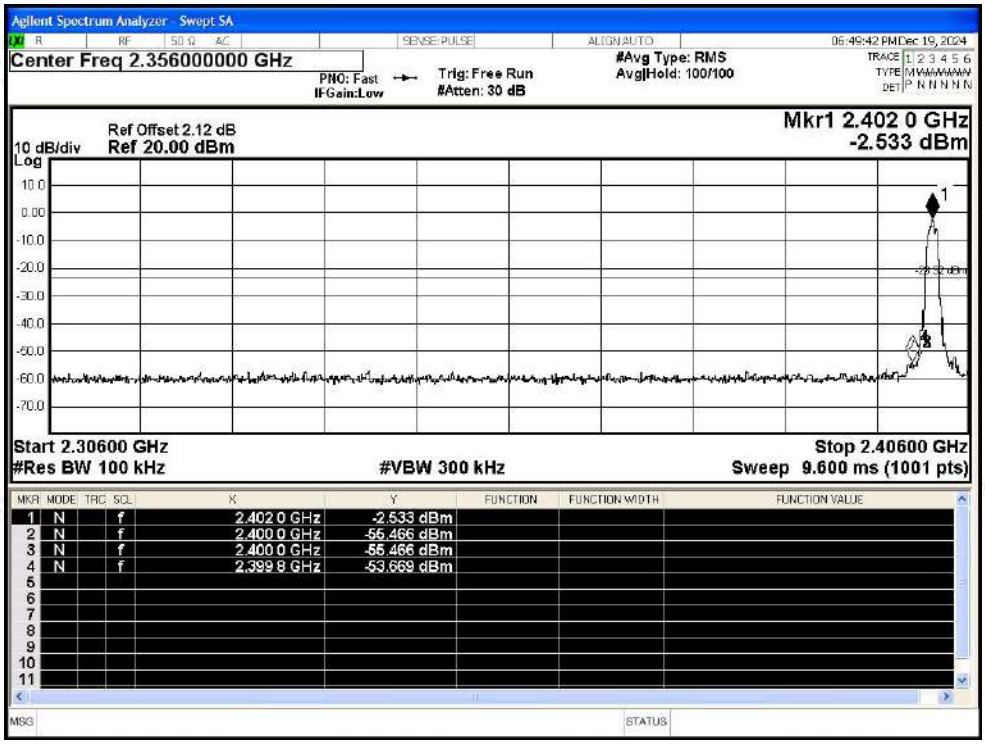
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission



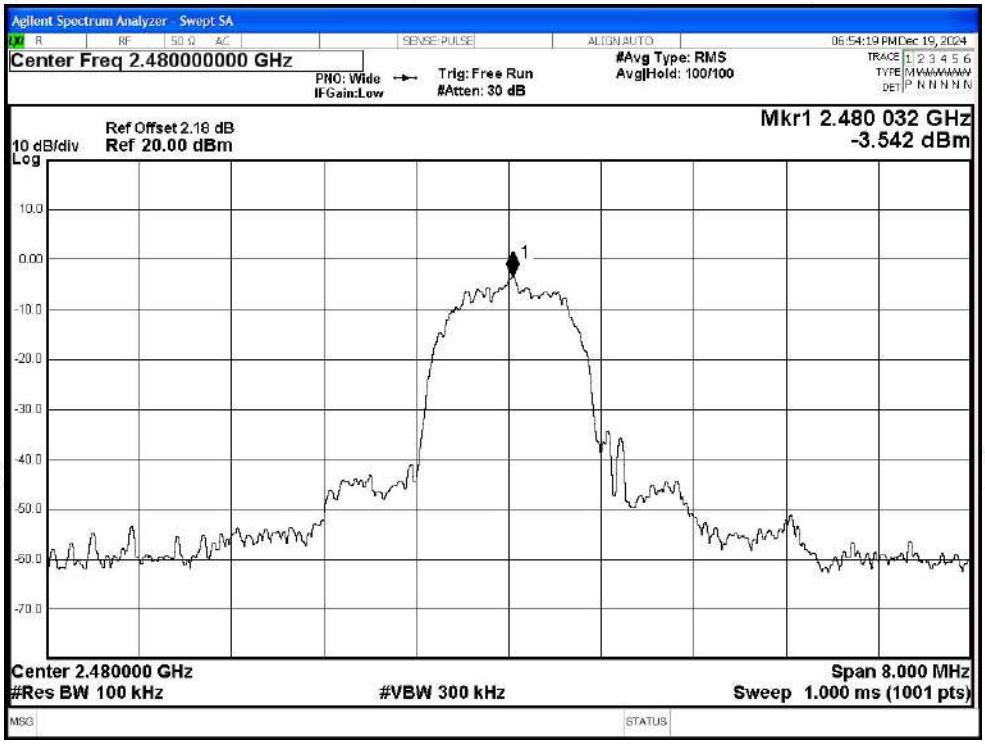
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref



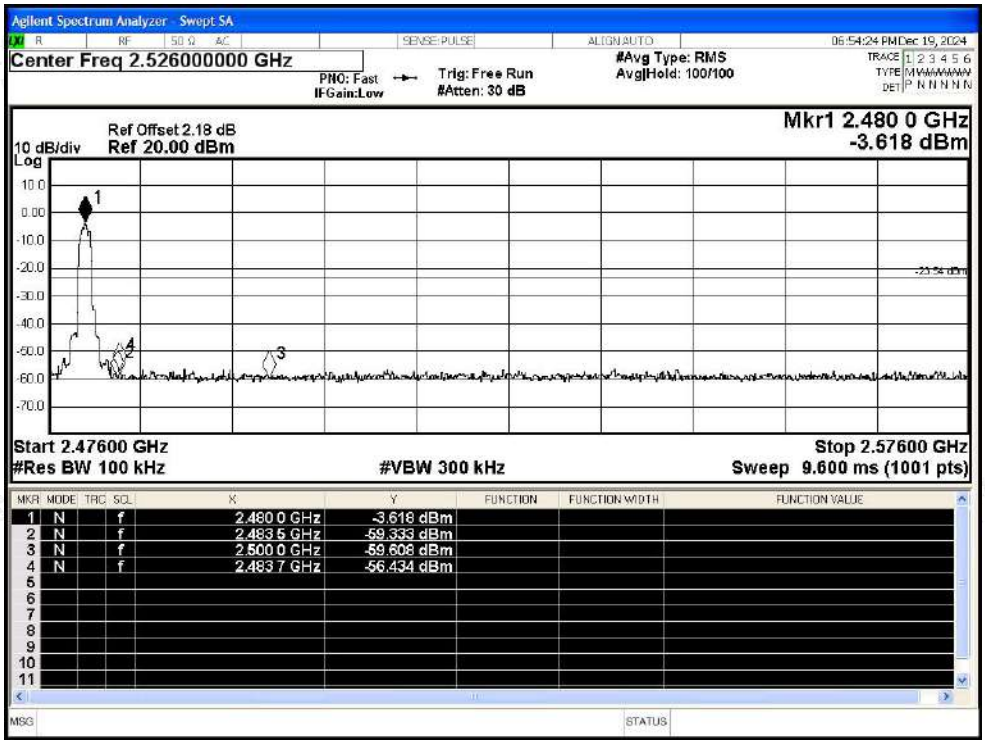
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission



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



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

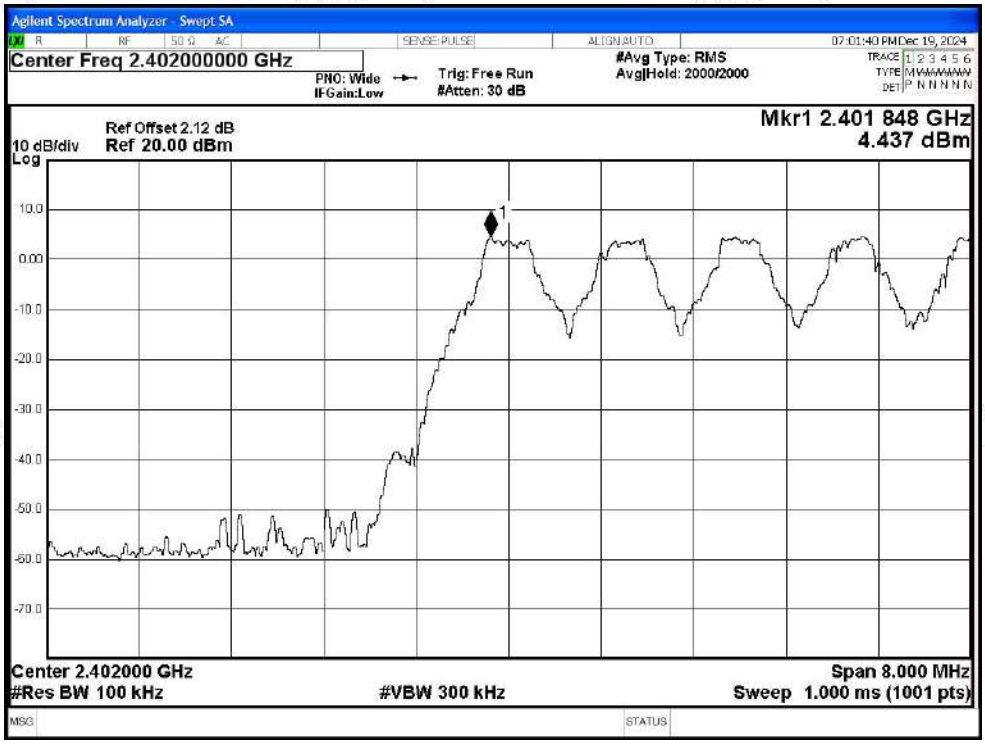


(Hopping)

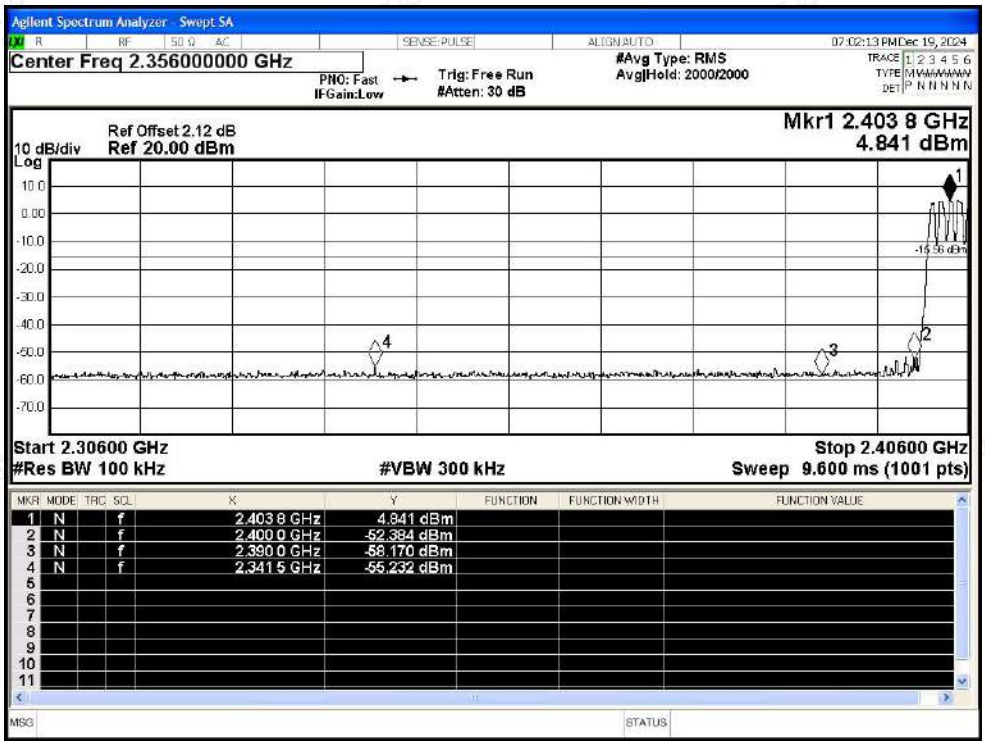
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-59.67	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-54.55	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-60.8	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-54.9	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-60.78	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-55.86	-20	Pass

Test Graphs

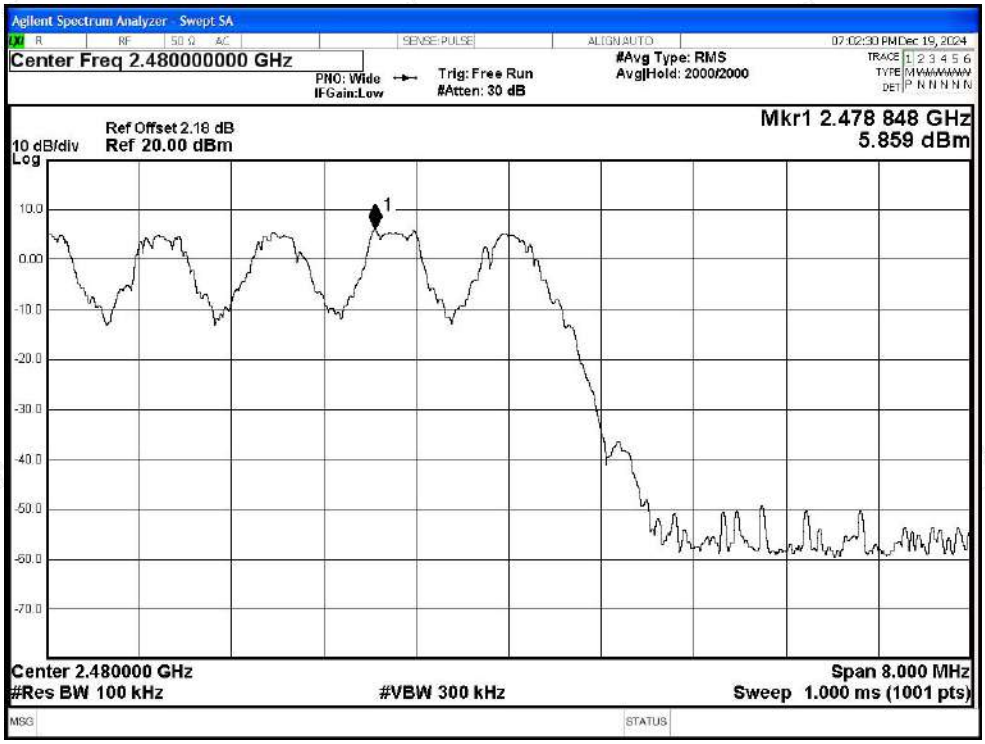
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



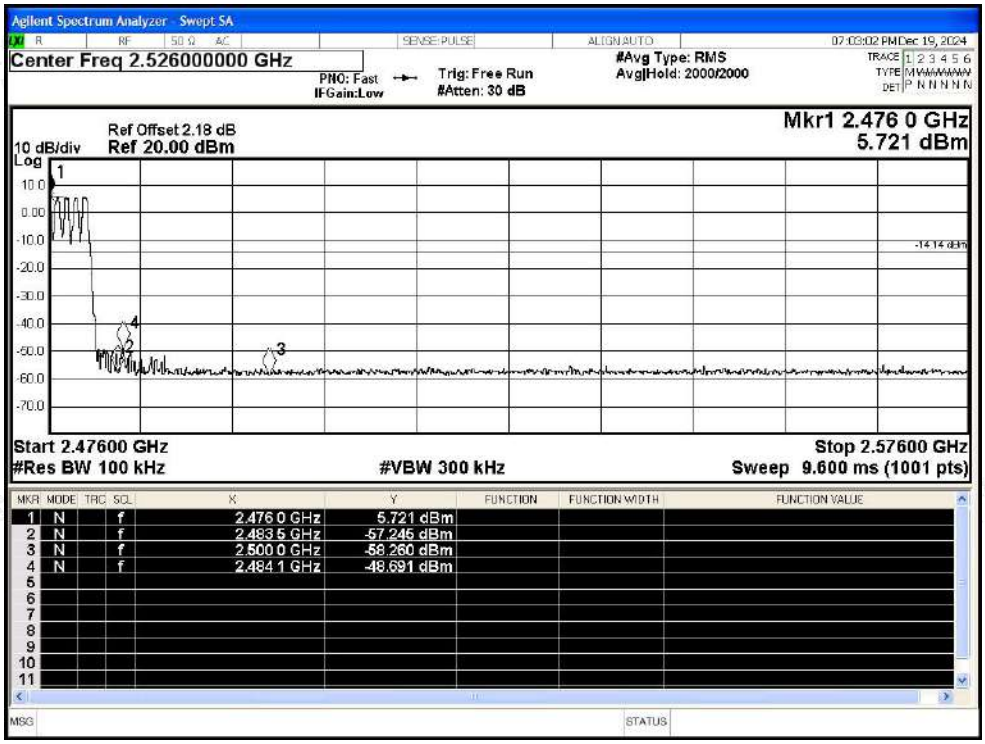
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



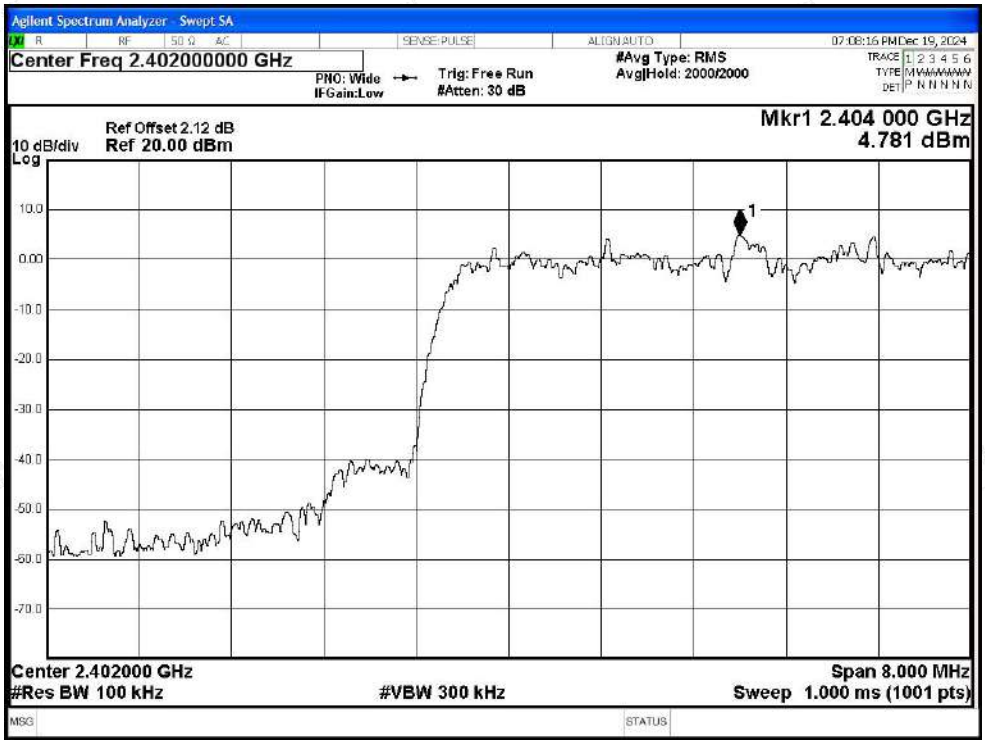
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



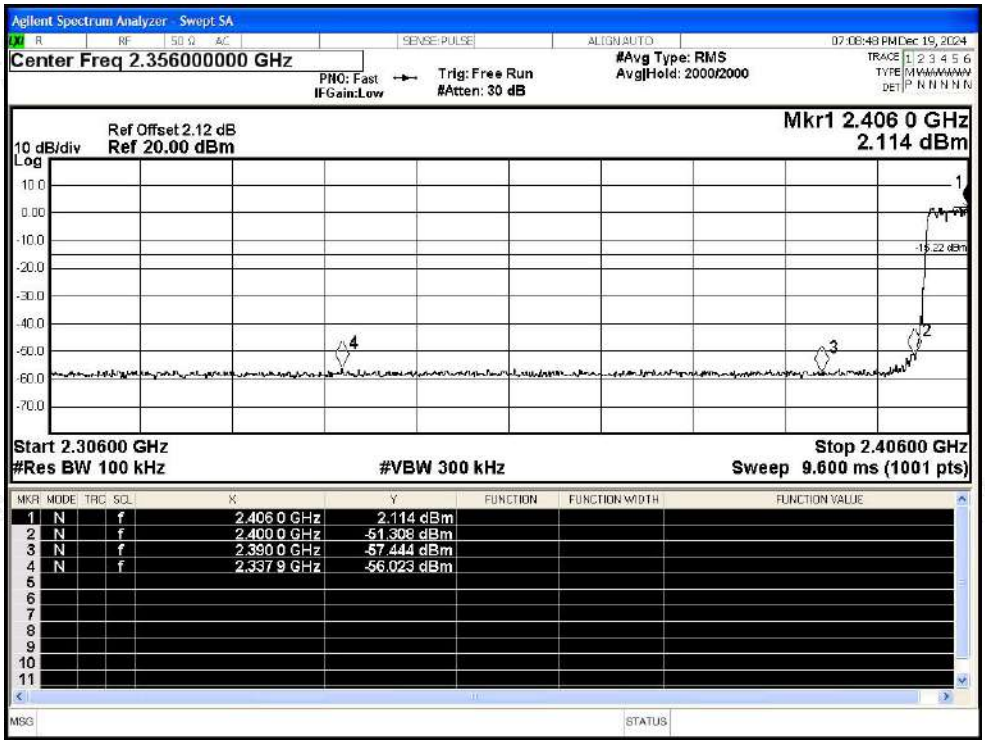
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission



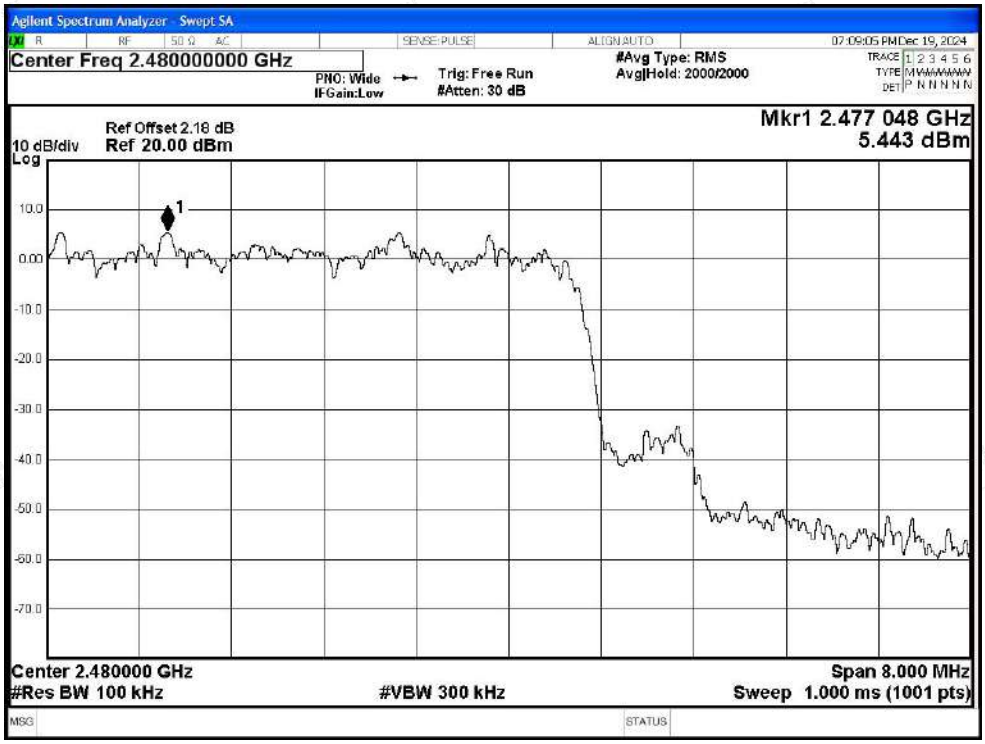
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref



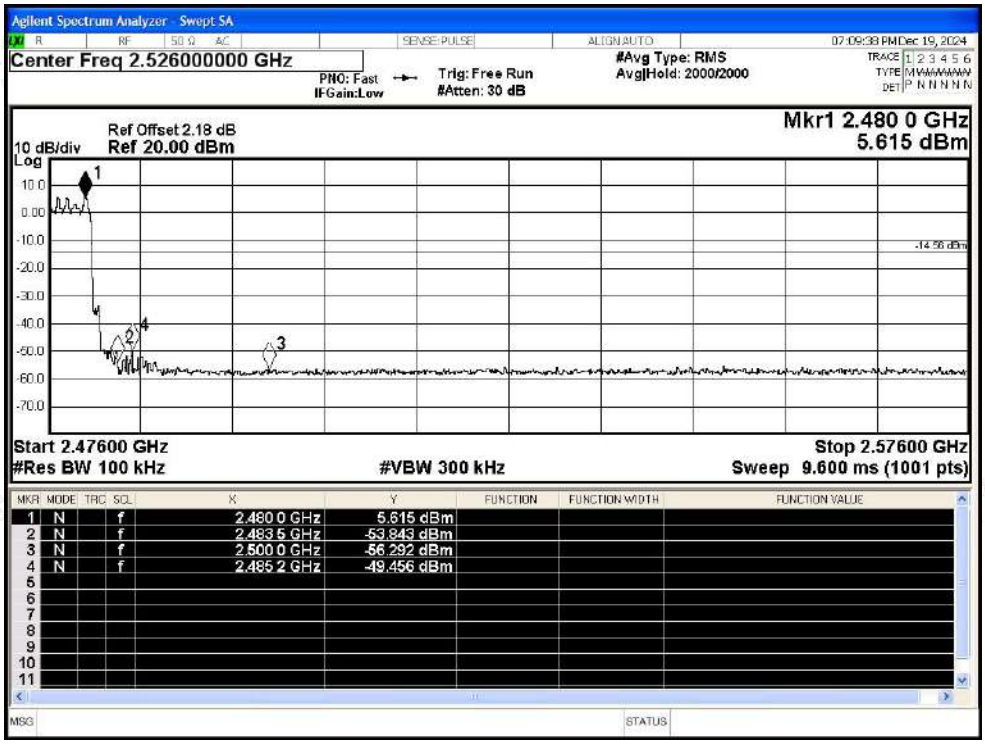
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



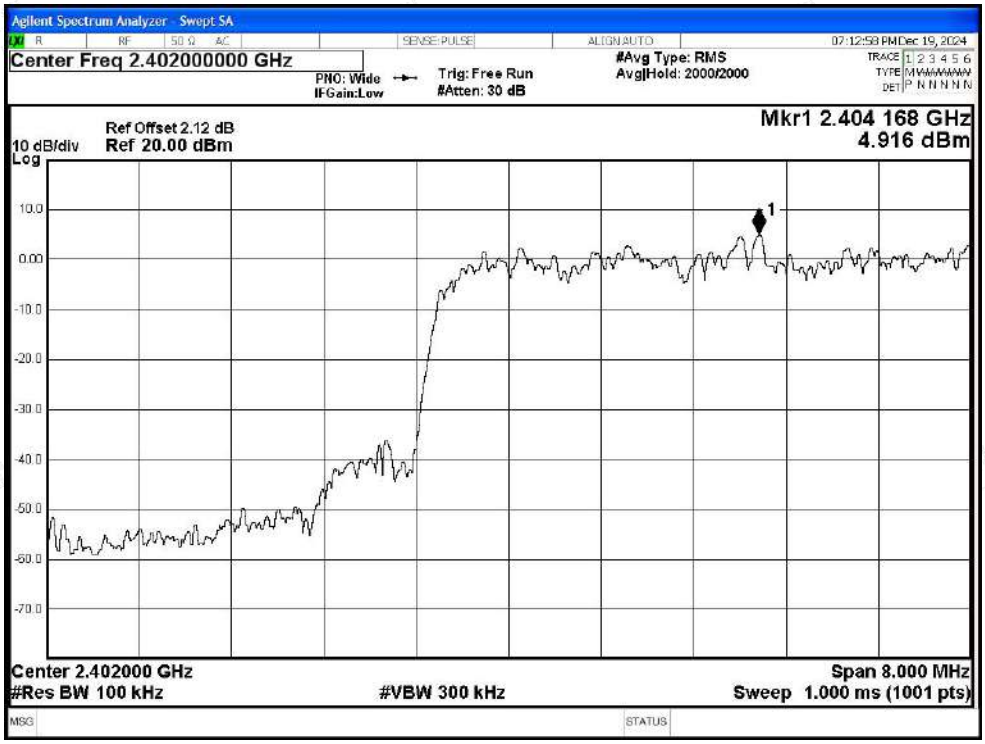
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



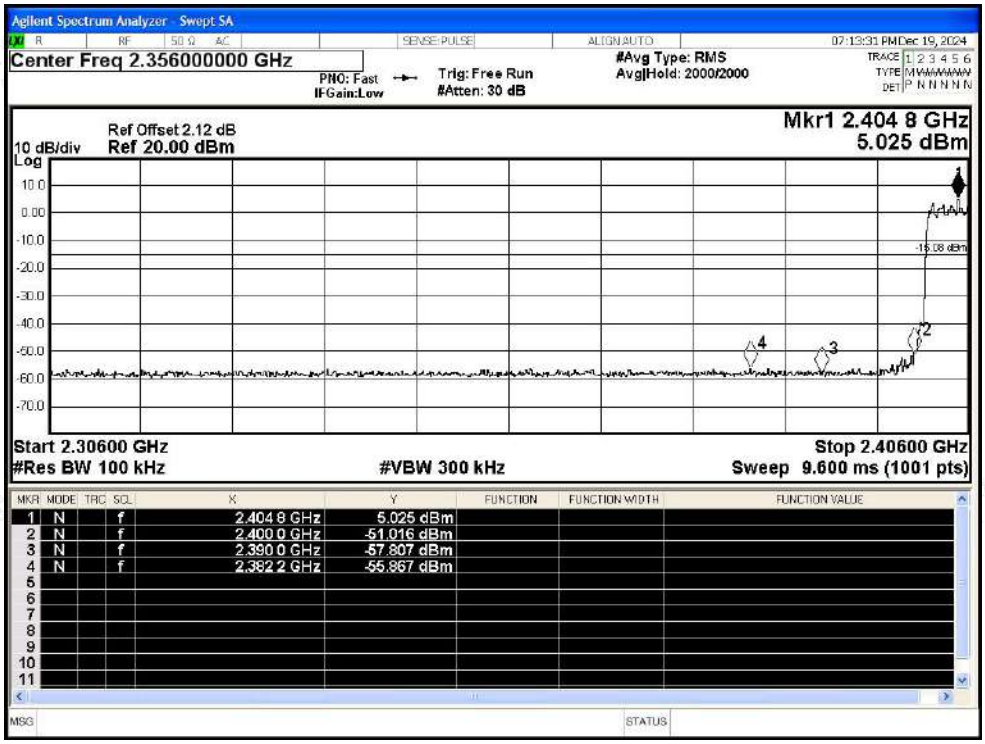
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission



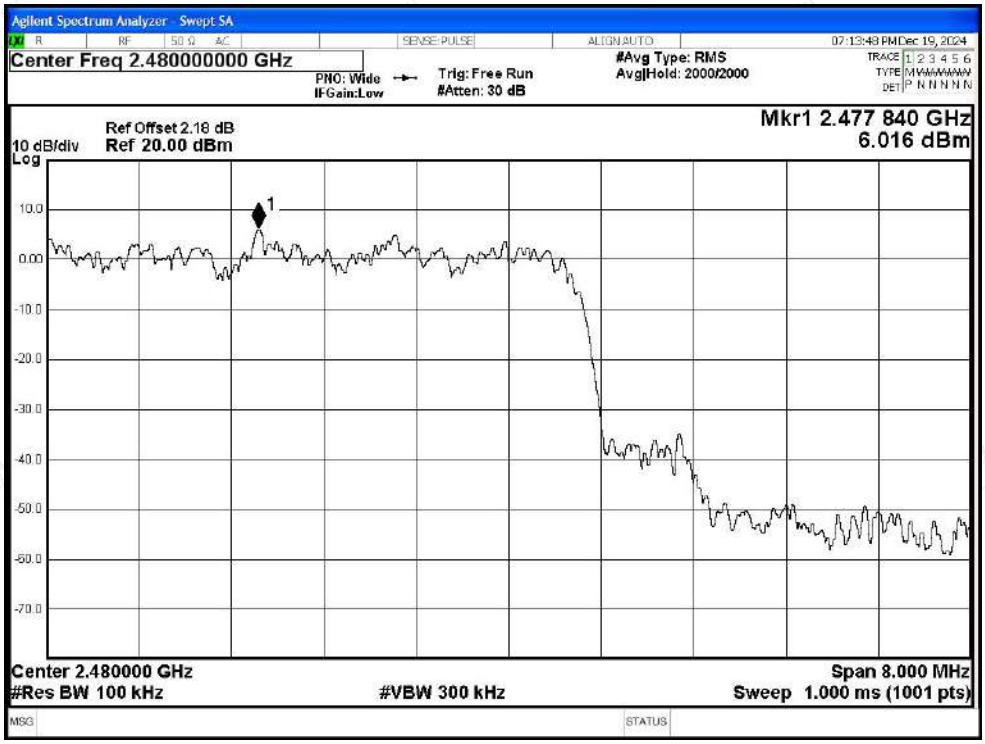
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref



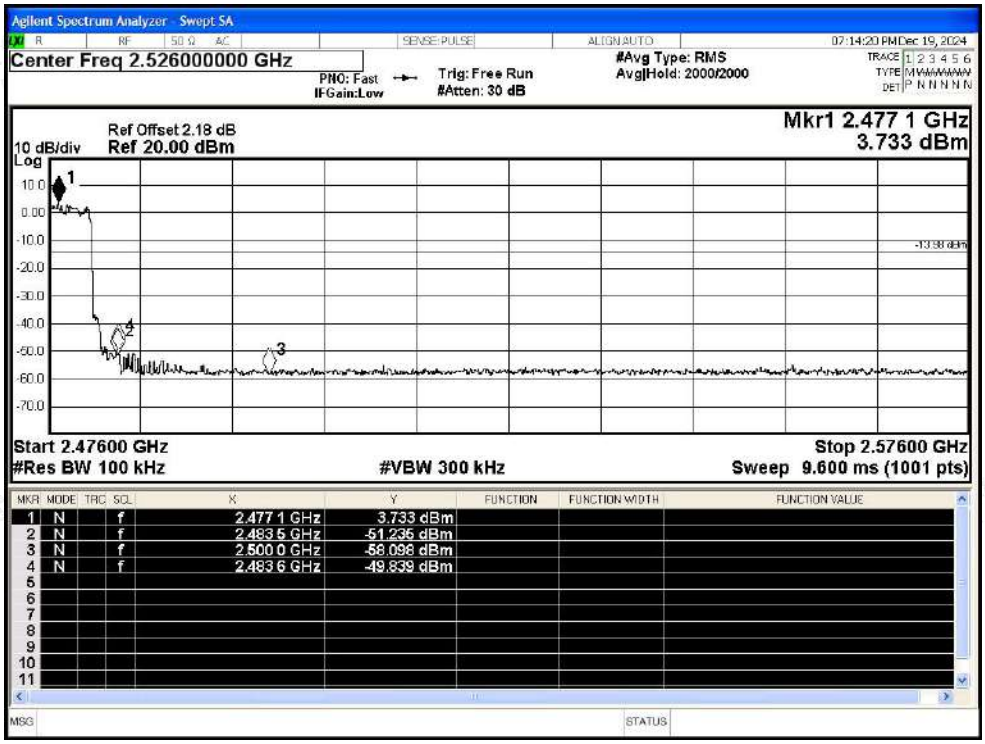
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission



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



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

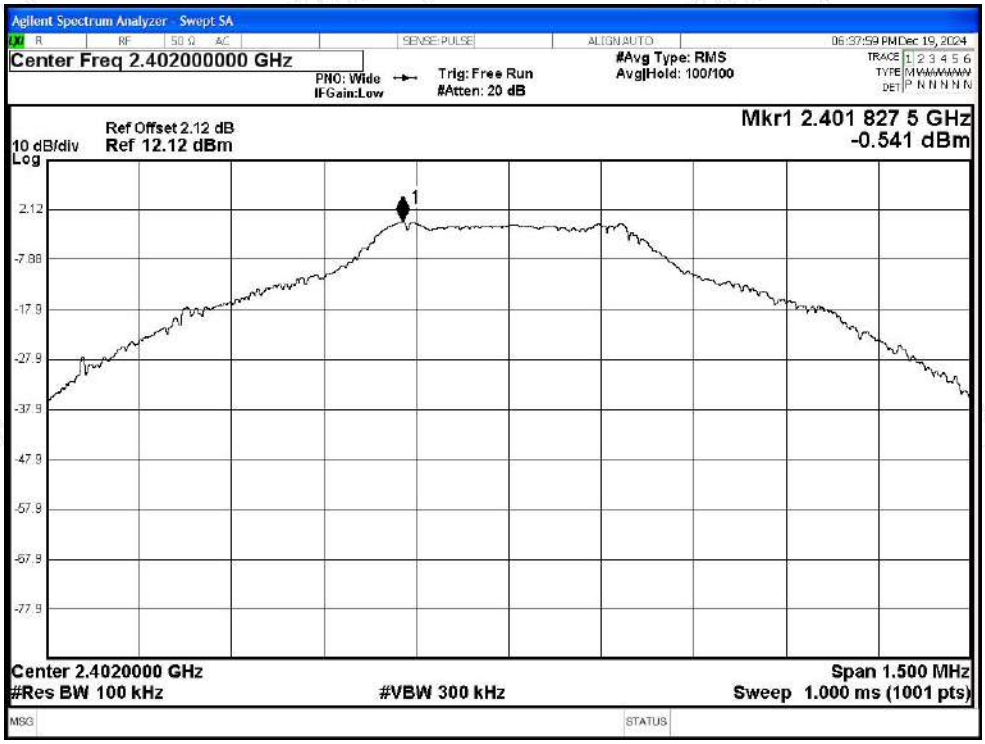


A.7 Conducted RF Spurious Emission

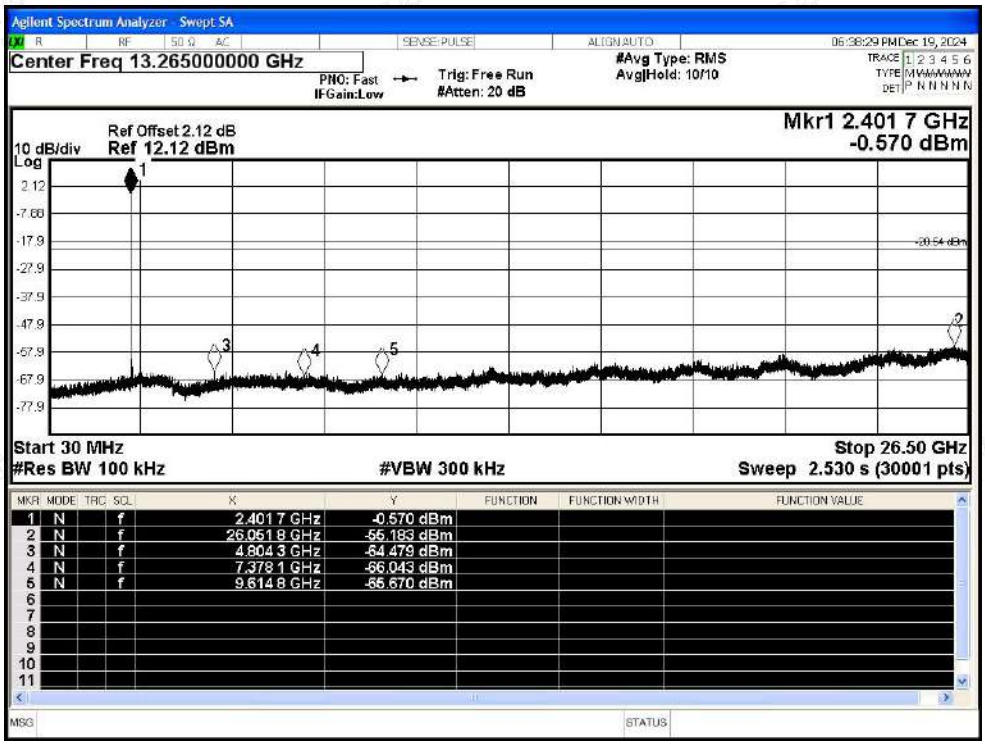
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-54.64	-20	Pass
NVNT	1-DH5	2441	Ant1	-55.25	-20	Pass
NVNT	1-DH5	2480	Ant1	-54.02	-20	Pass
NVNT	2-DH5	2402	Ant1	-51.05	-20	Pass
NVNT	2-DH5	2441	Ant1	-52.91	-20	Pass
NVNT	2-DH5	2480	Ant1	-52.1	-20	Pass
NVNT	3-DH5	2402	Ant1	-53.17	-20	Pass
NVNT	3-DH5	2441	Ant1	-52.95	-20	Pass
NVNT	3-DH5	2480	Ant1	-52.1	-20	Pass

Test Graphs

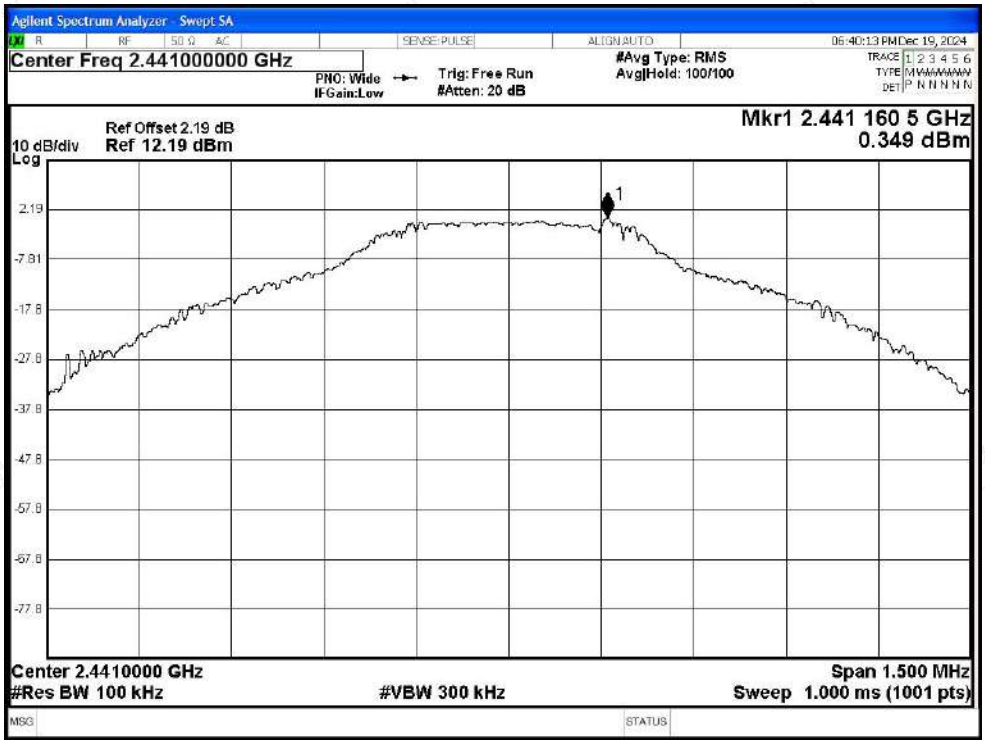
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref



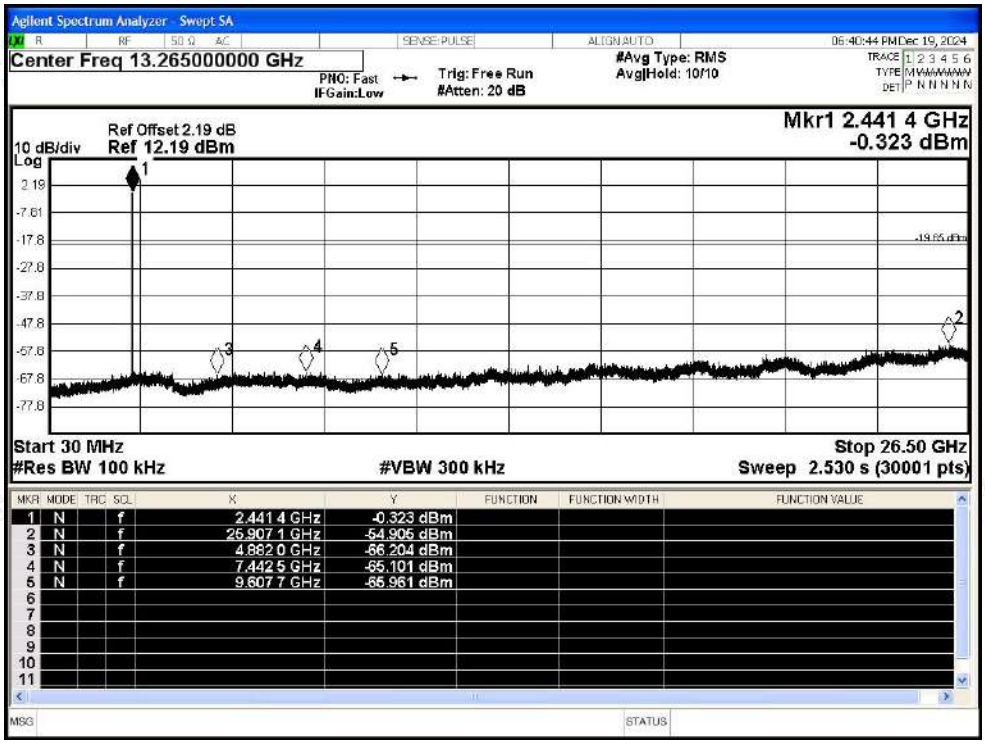
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



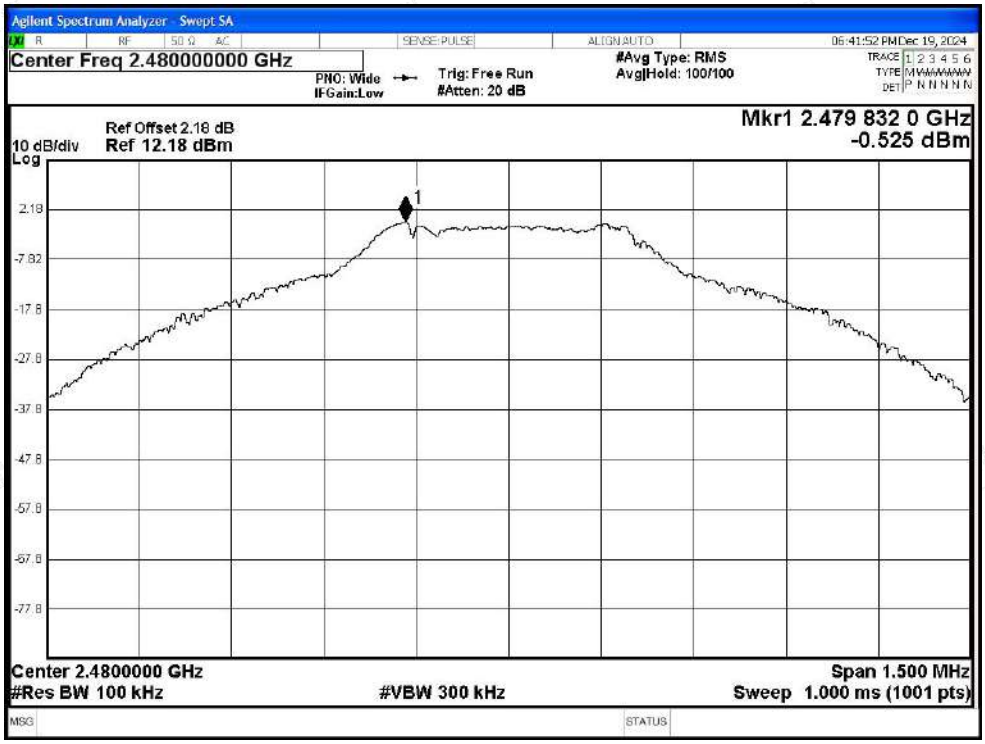
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref



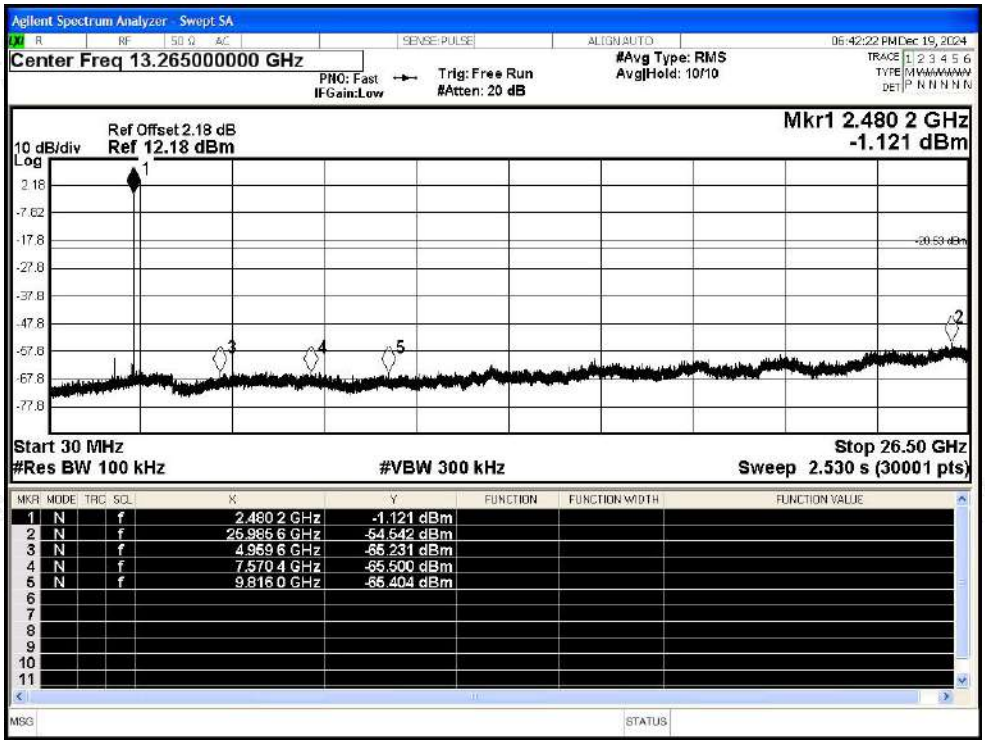
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission



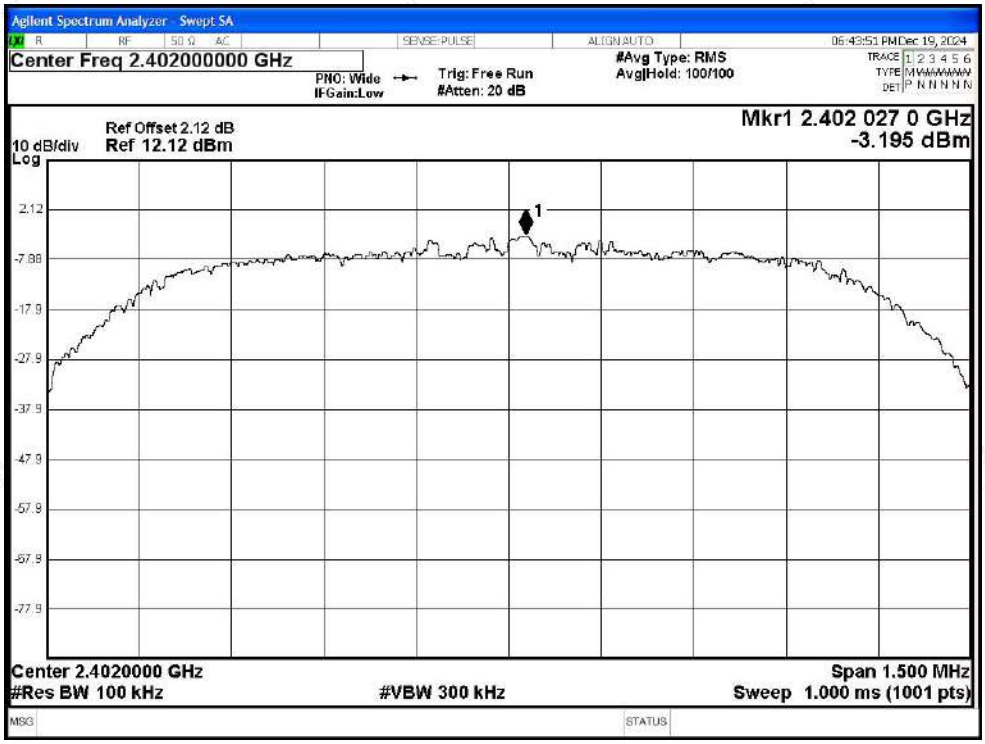
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref



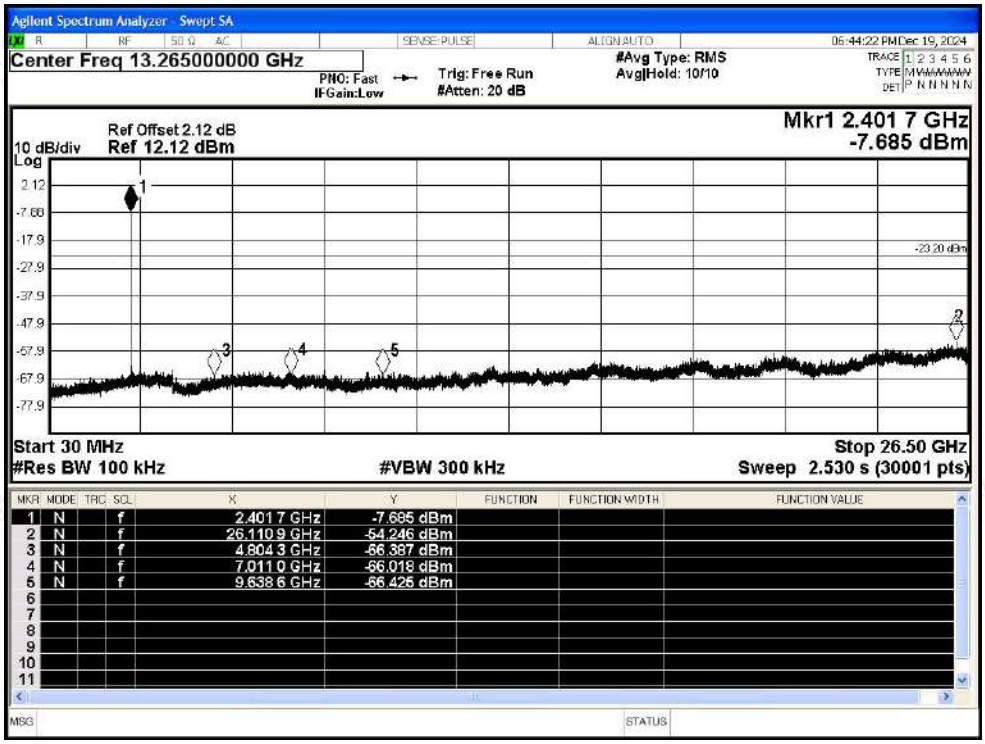
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission



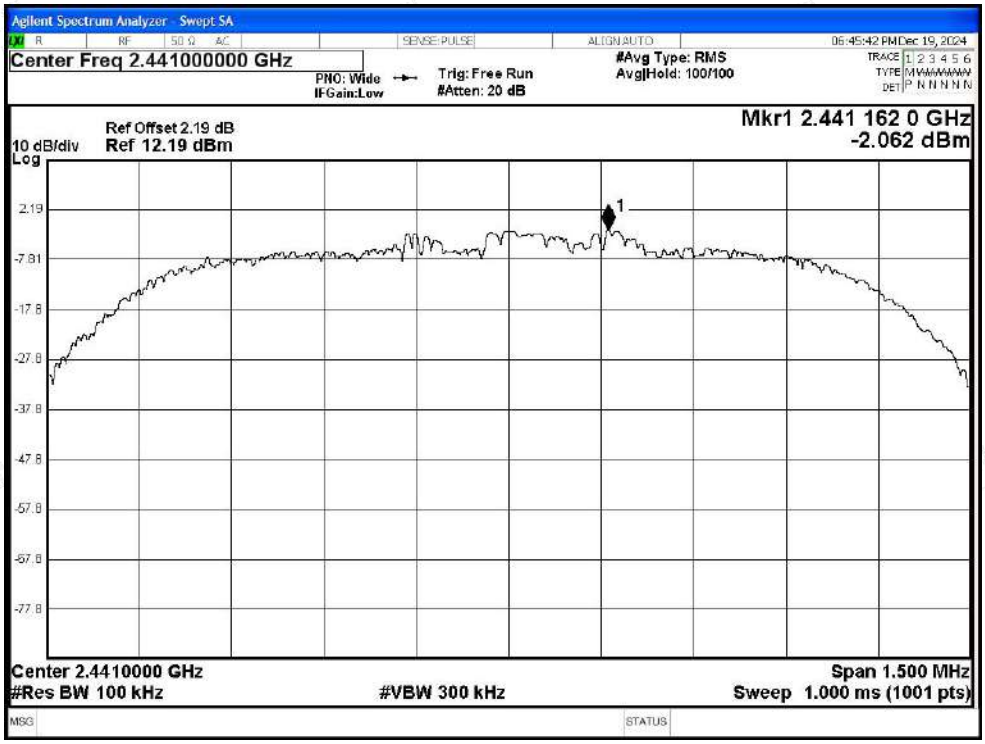
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref



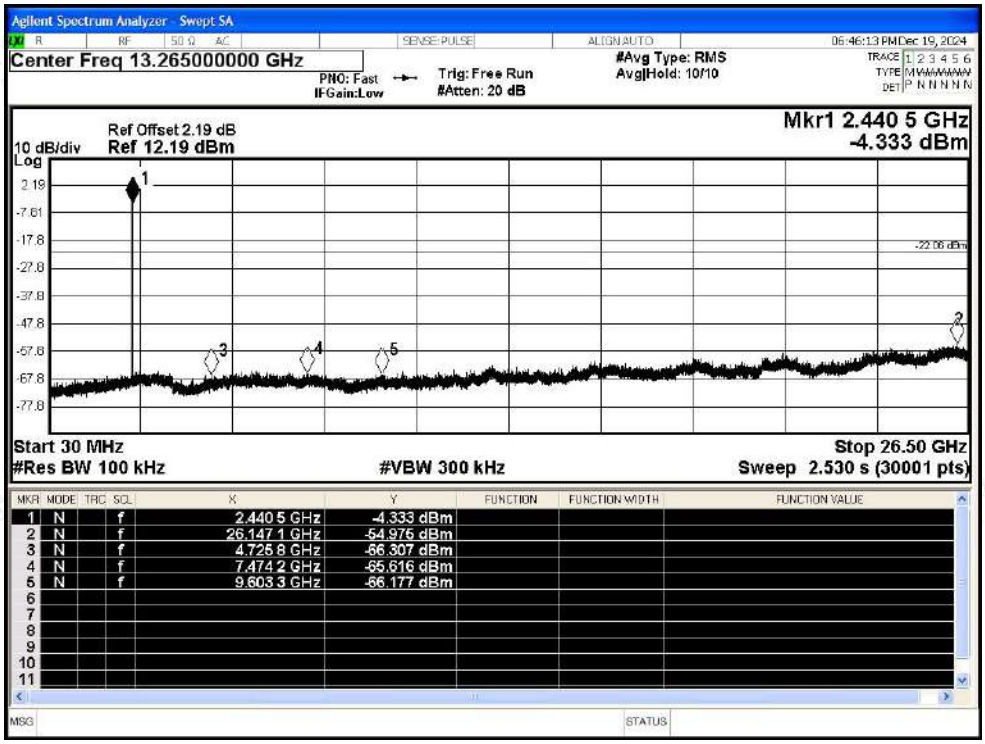
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission



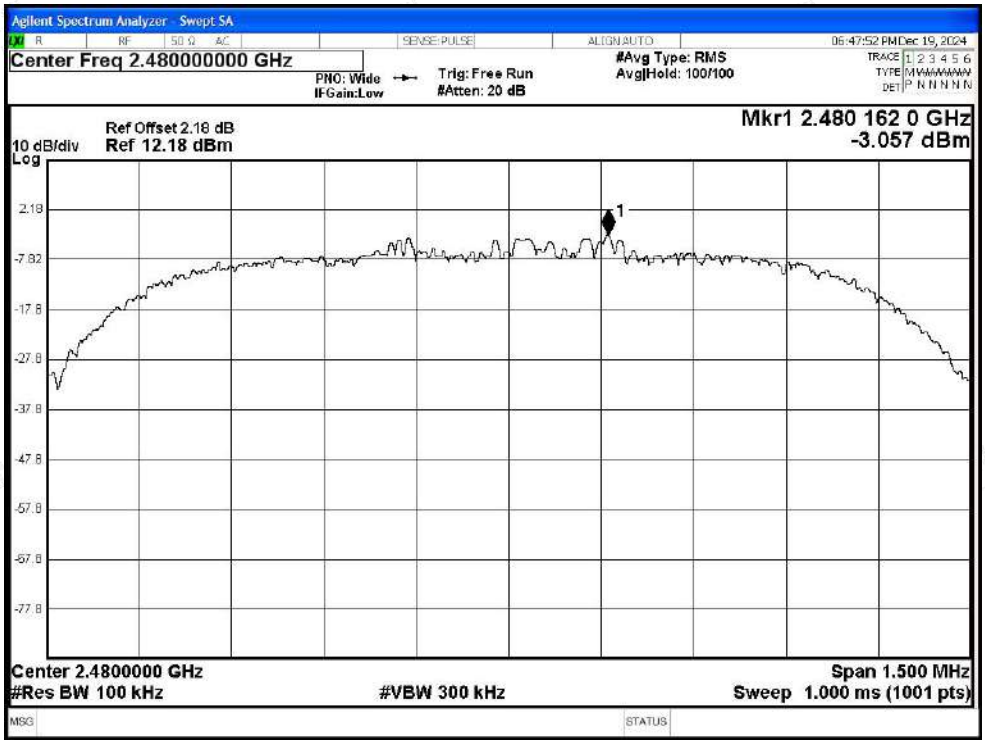
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



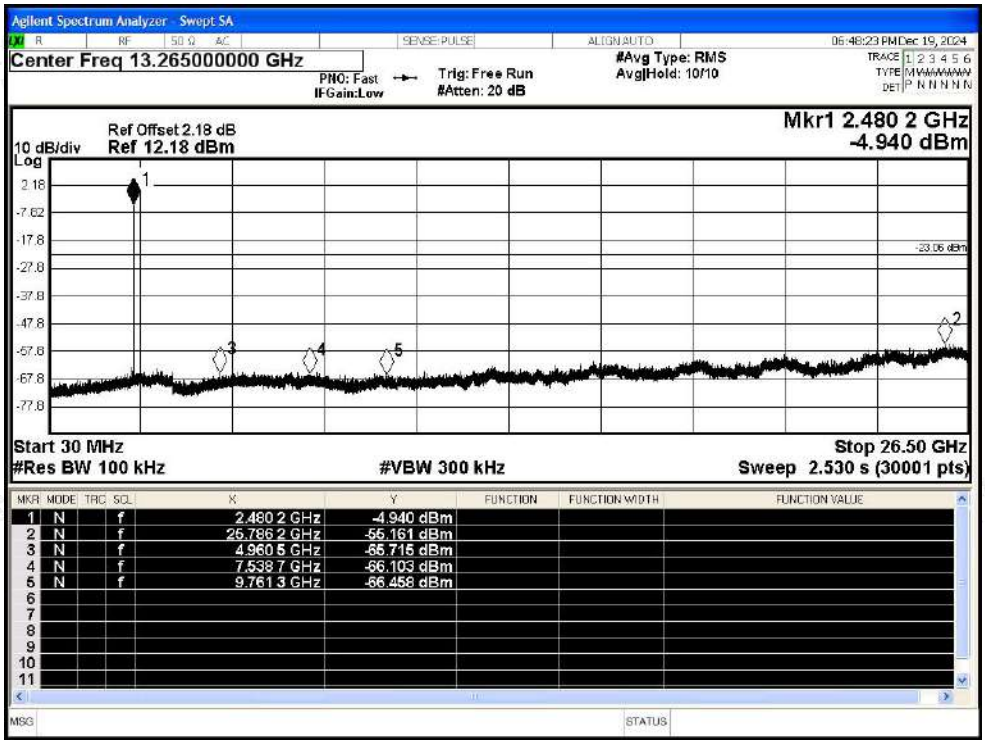
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



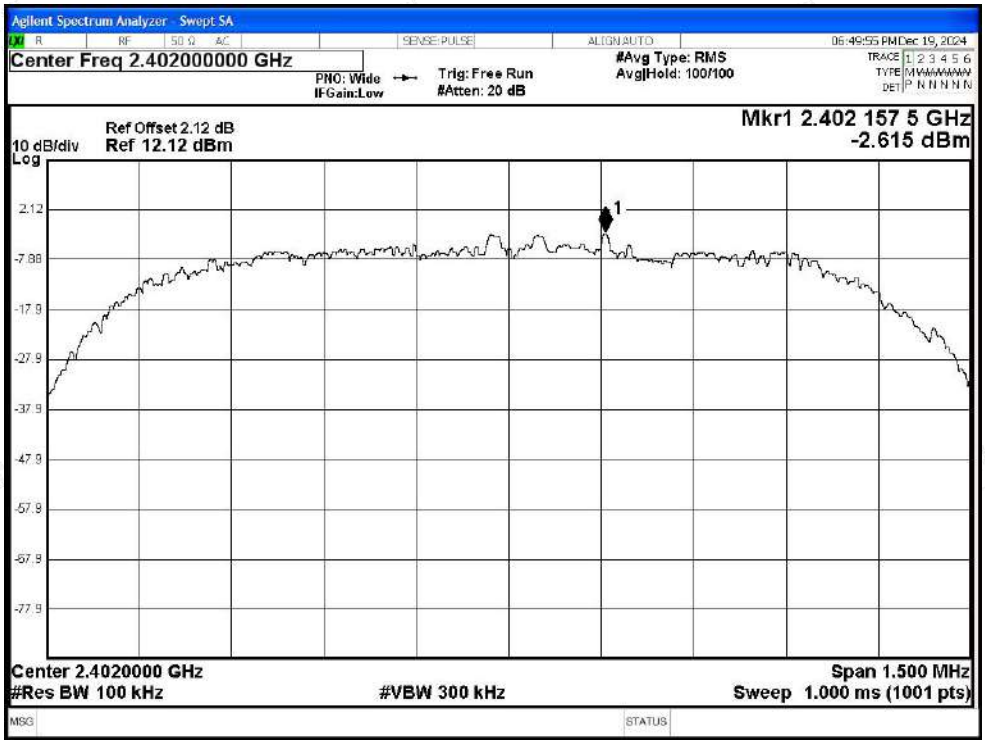
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



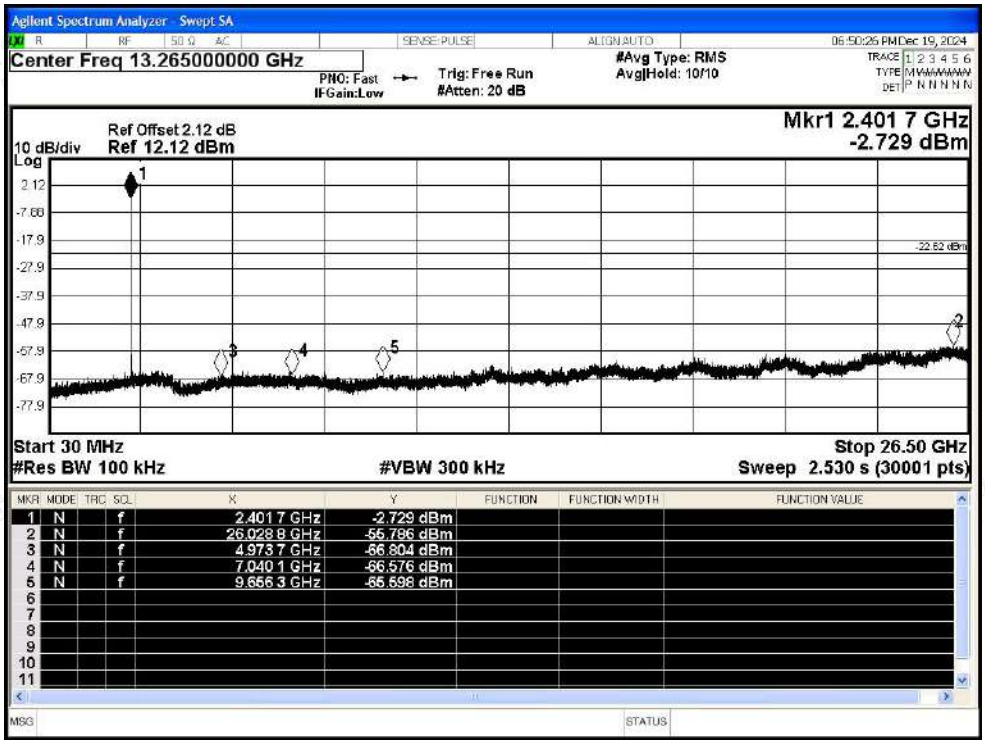
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission



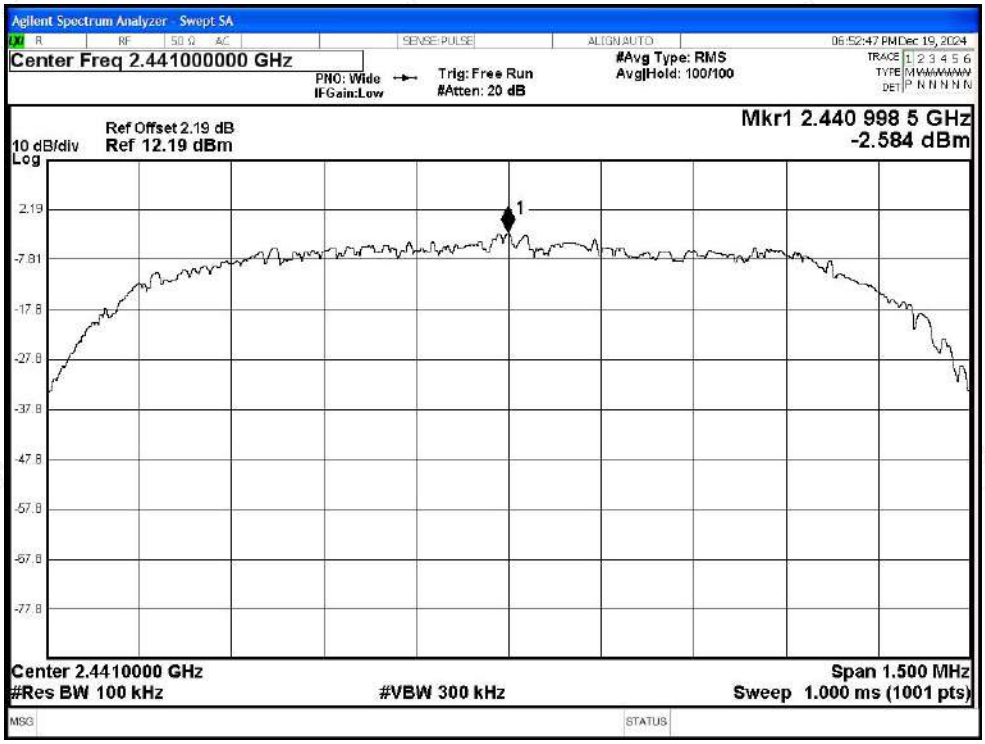
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref



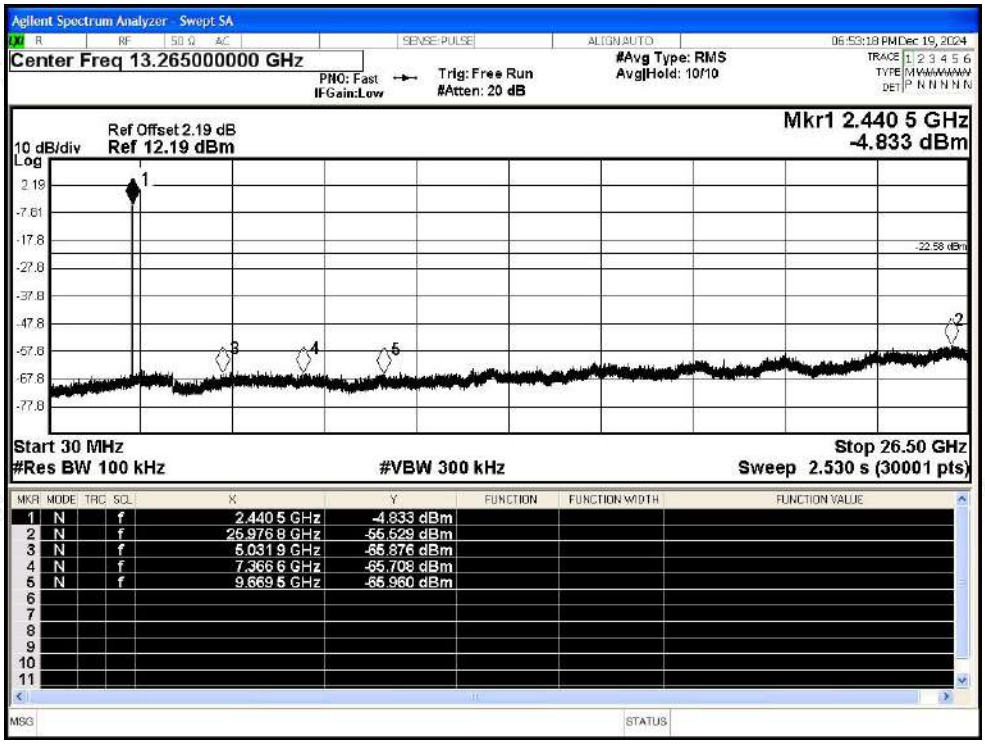
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Emission



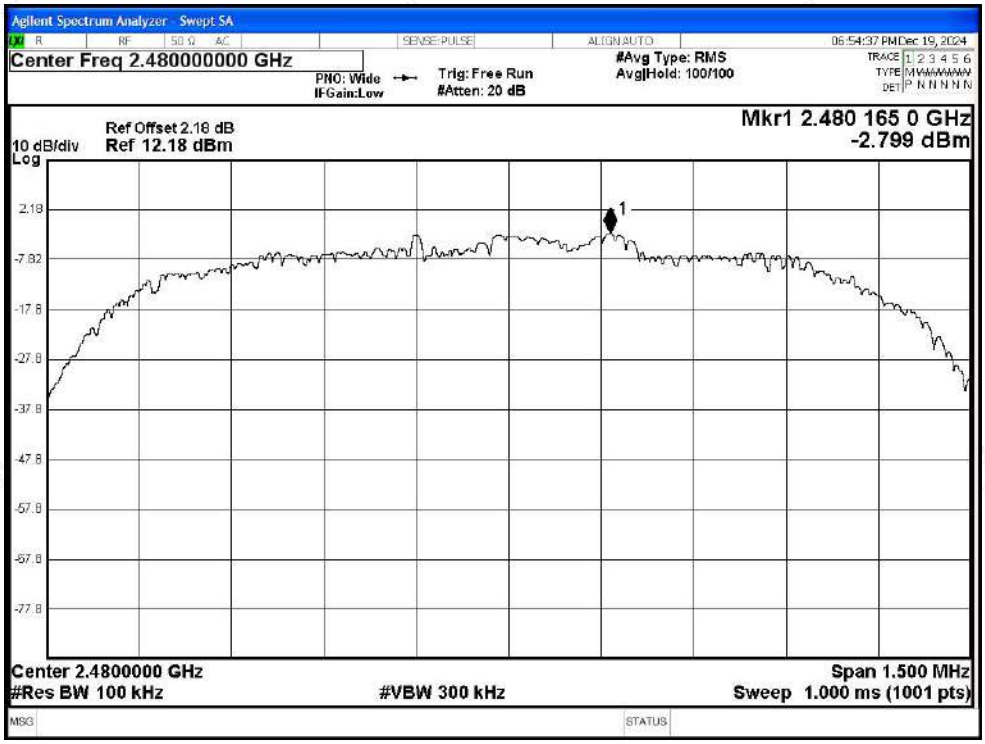
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref



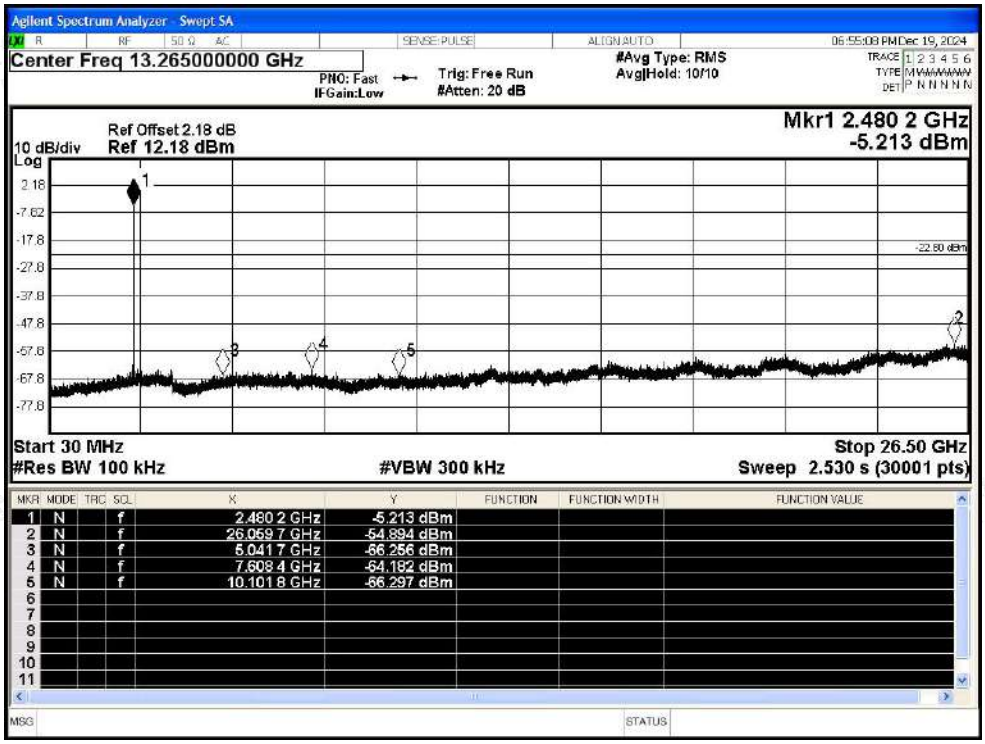
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission

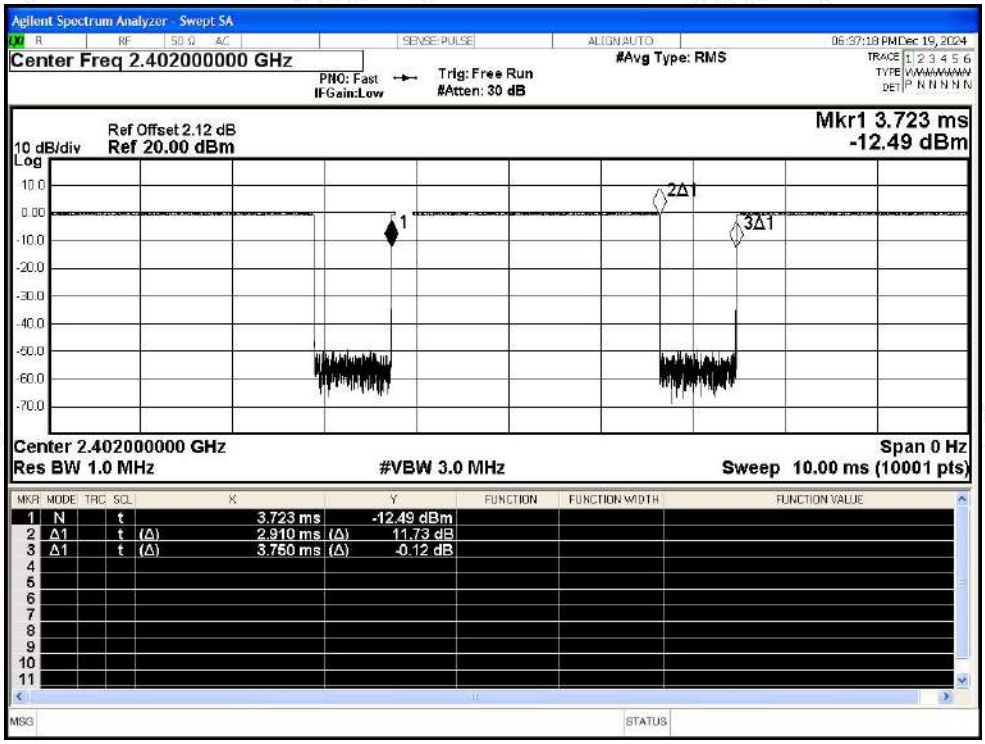


A.8 Duty Cycle

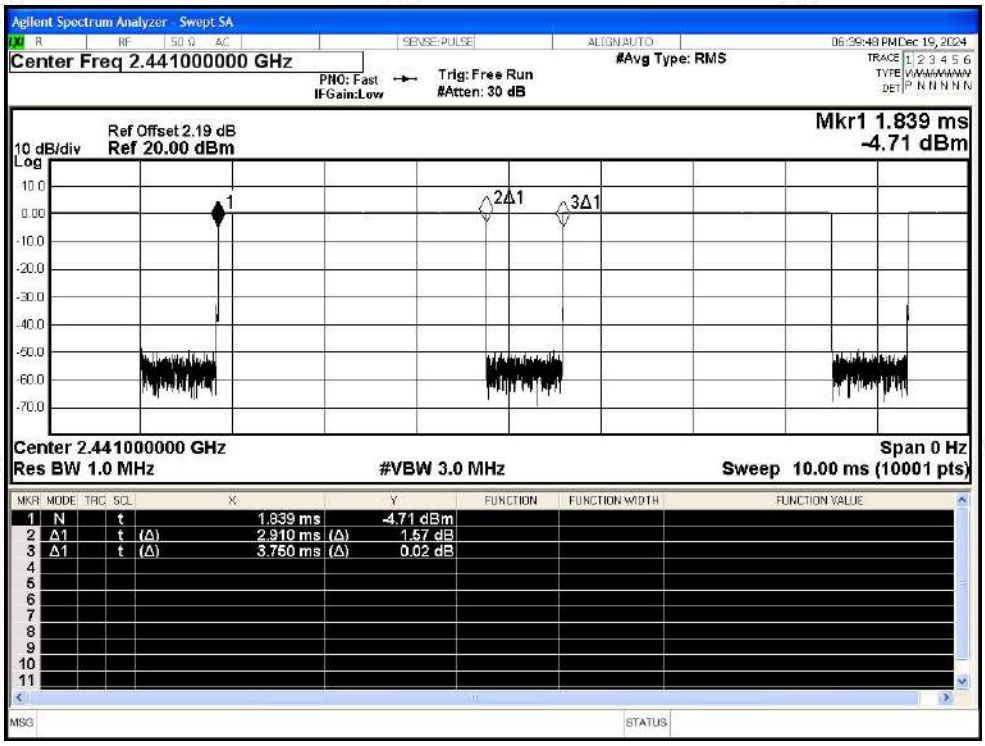
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH5	2402	Ant1	77.6	1.1	0.34
NVNT	1-DH5	2441	Ant1	77.6	1.1	0.34
NVNT	1-DH5	2480	Ant1	77.6	1.1	0.34
NVNT	2-DH5	2402	Ant1	77.28	1.12	0.35
NVNT	2-DH5	2441	Ant1	77.28	1.12	0.35
NVNT	2-DH5	2480	Ant1	77.33	1.12	0.34
NVNT	3-DH5	2402	Ant1	77.33	1.12	0.34
NVNT	3-DH5	2441	Ant1	77.28	1.12	0.35
NVNT	3-DH5	2480	Ant1	77.28	1.12	0.35

Test Graphs

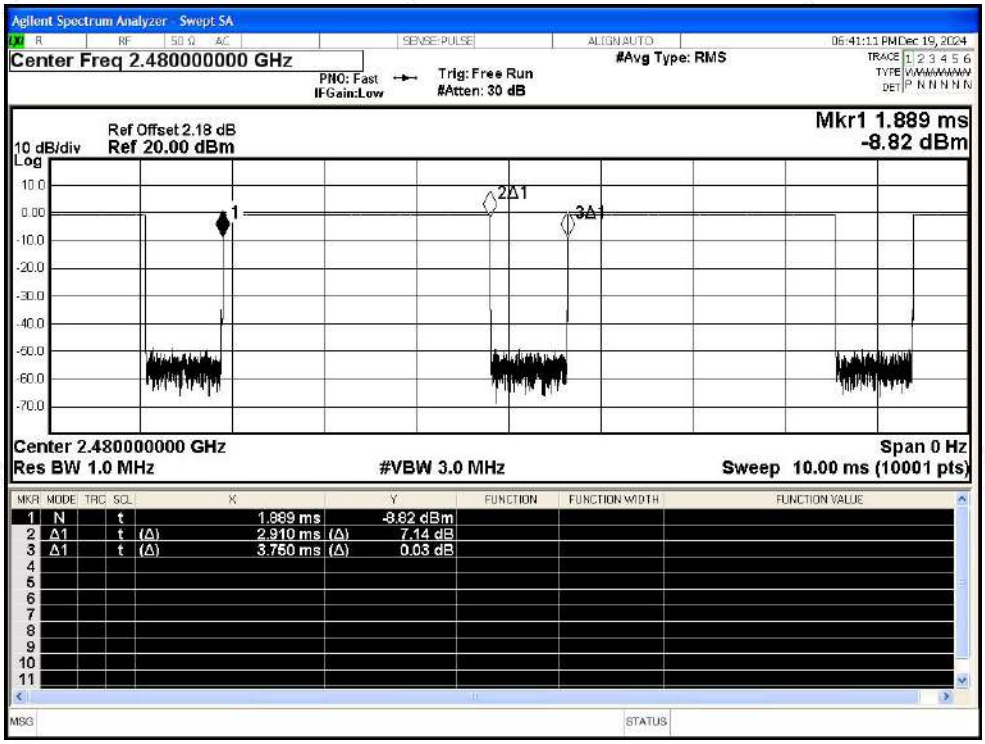
Duty Cycle NVNT 1-DH5 2402MHz Ant1



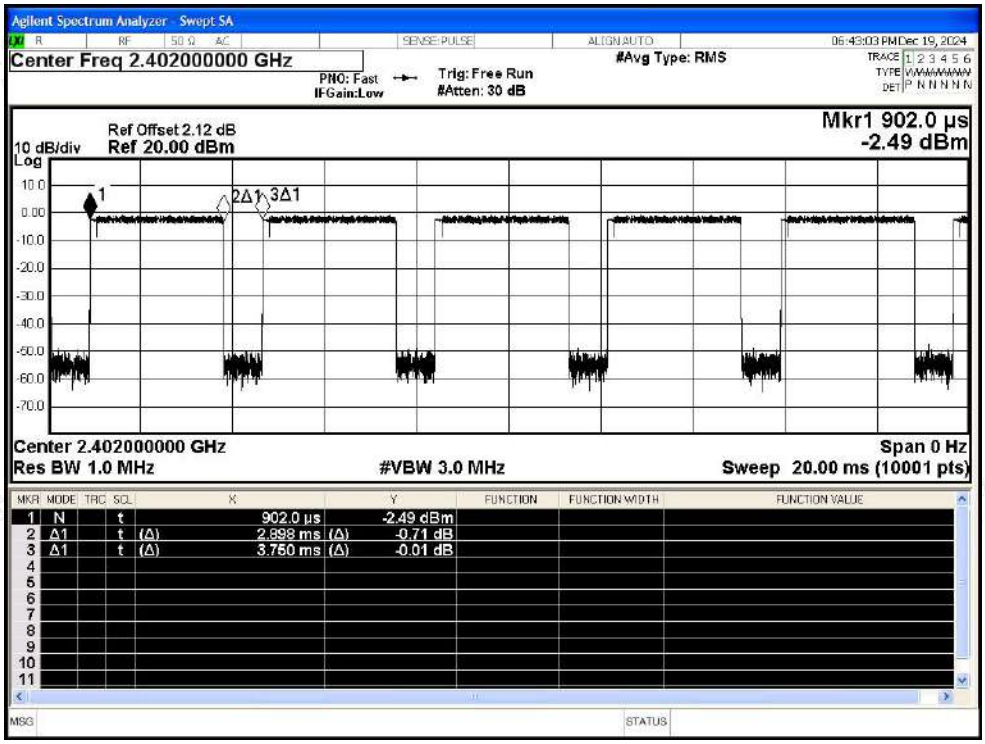
Duty Cycle NVNT 1-DH5 2441MHz Ant1



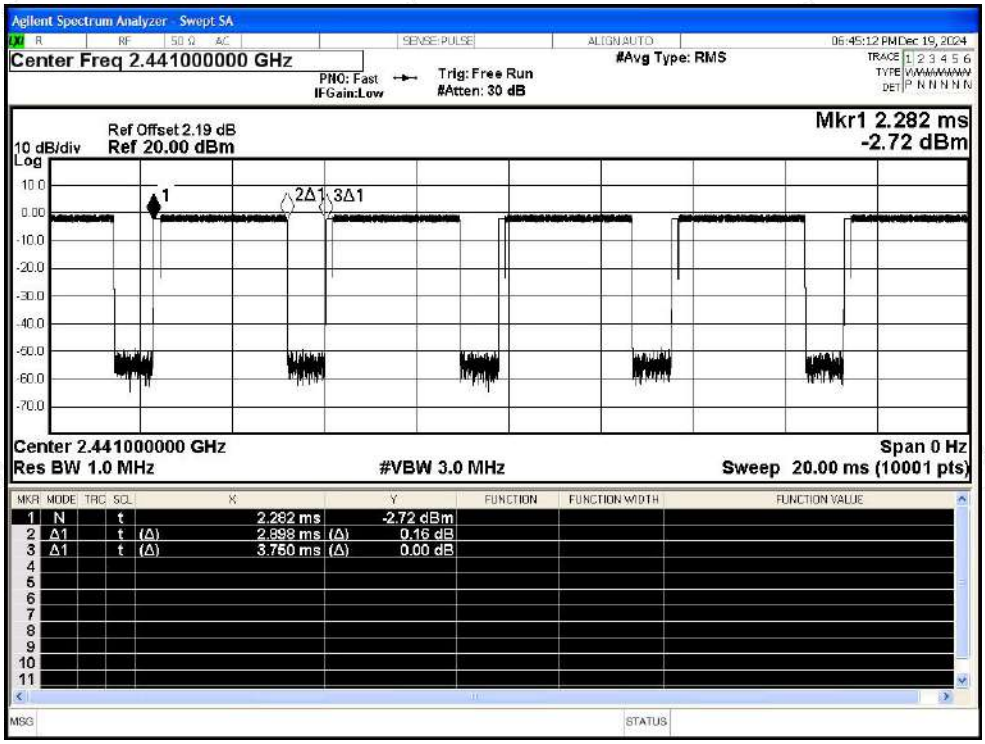
Duty Cycle NVNT 1-DH5 2480MHz Ant1



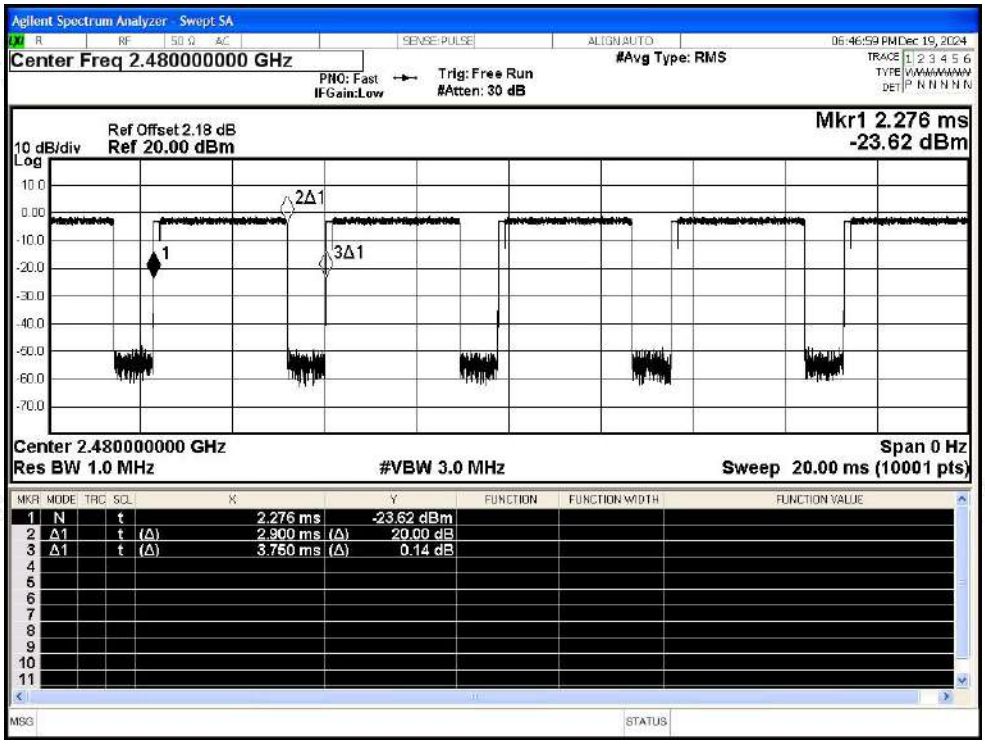
Duty Cycle NVNT 2-DH5 2402MHz Ant1



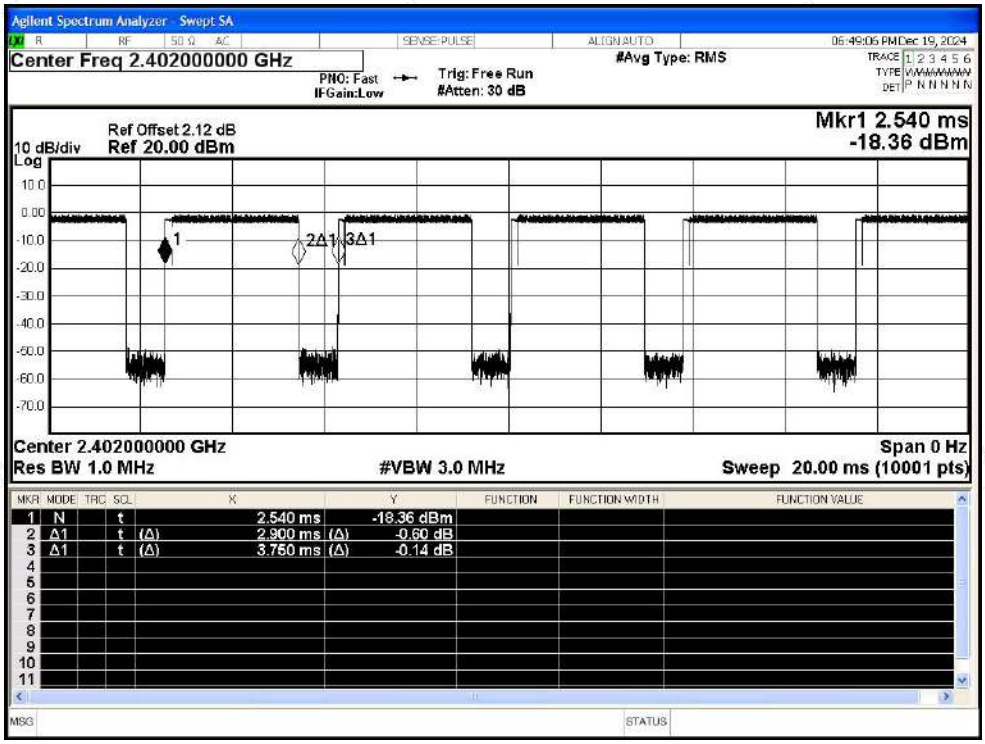
Duty Cycle NVNT 2-DH5 2441MHz Ant1



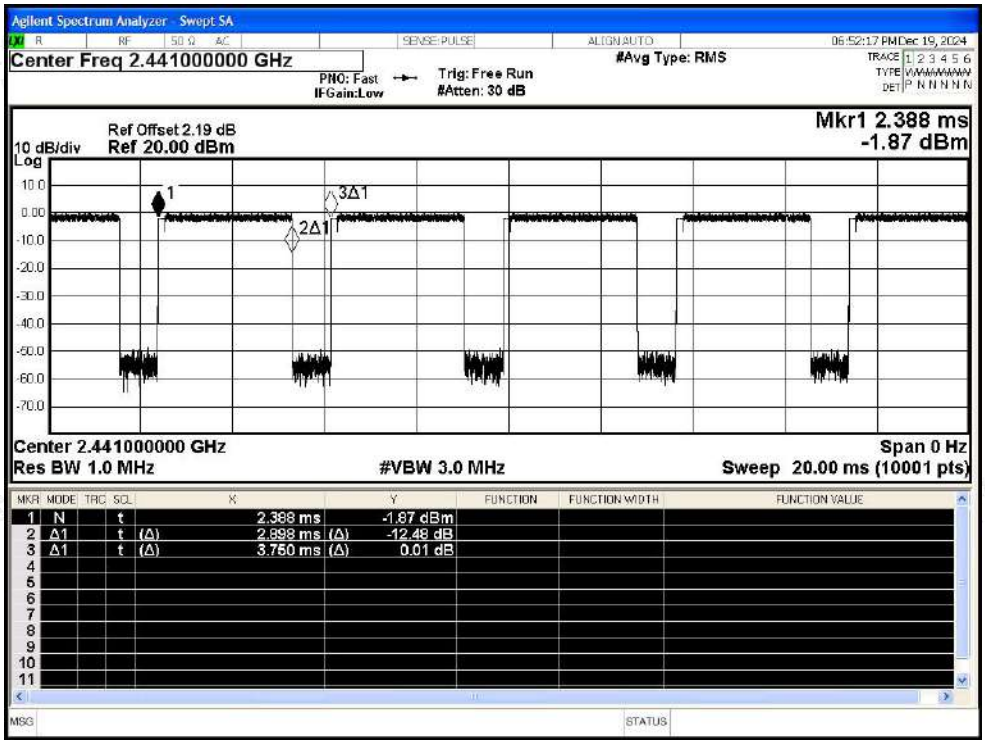
Duty Cycle NVNT 2-DH5 2480MHz Ant1



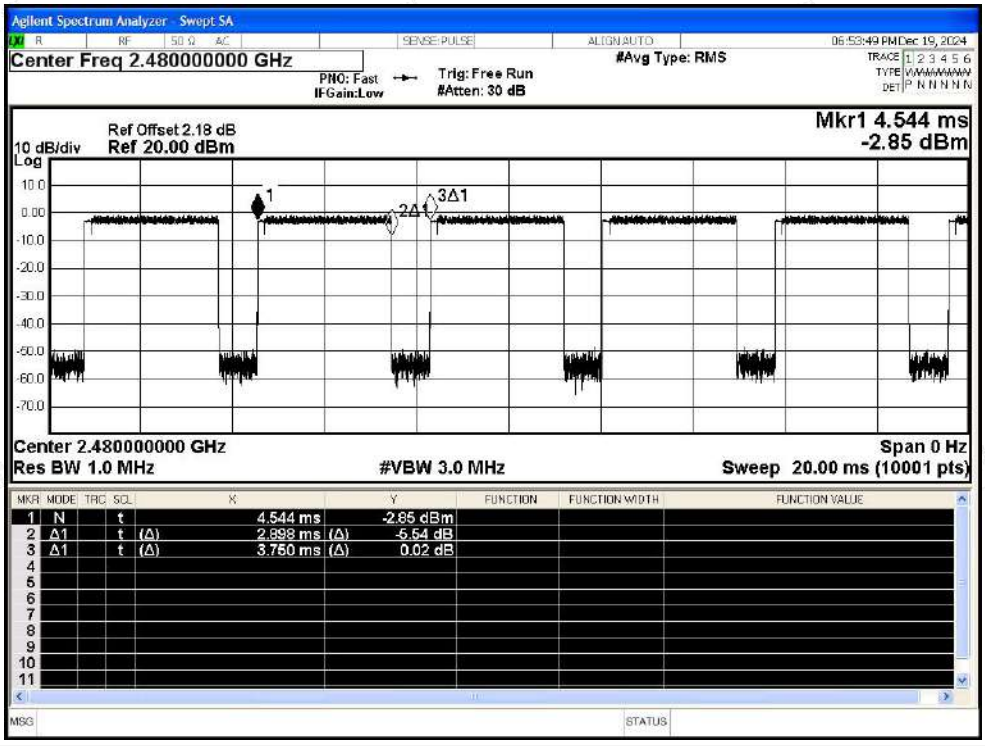
Duty Cycle NVNT 3-DH5 2402MHz Ant1



Duty Cycle NVNT 3-DH5 2441MHz Ant1



Duty Cycle NVNT 3-DH5 2480MHz Ant1

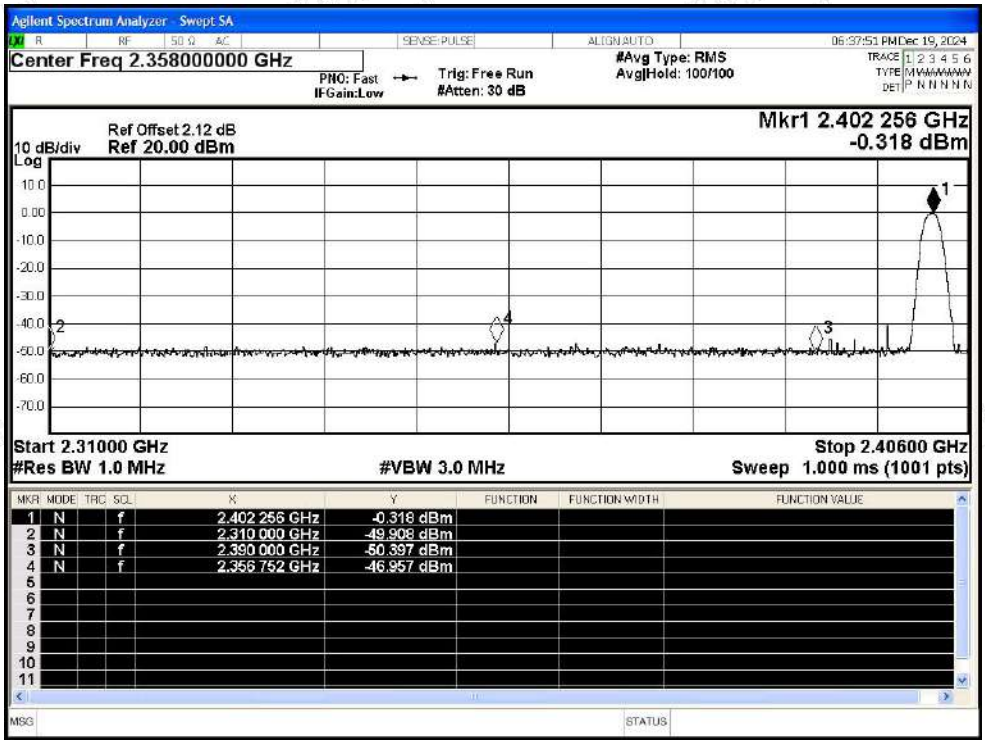


A.9 Restrict Band

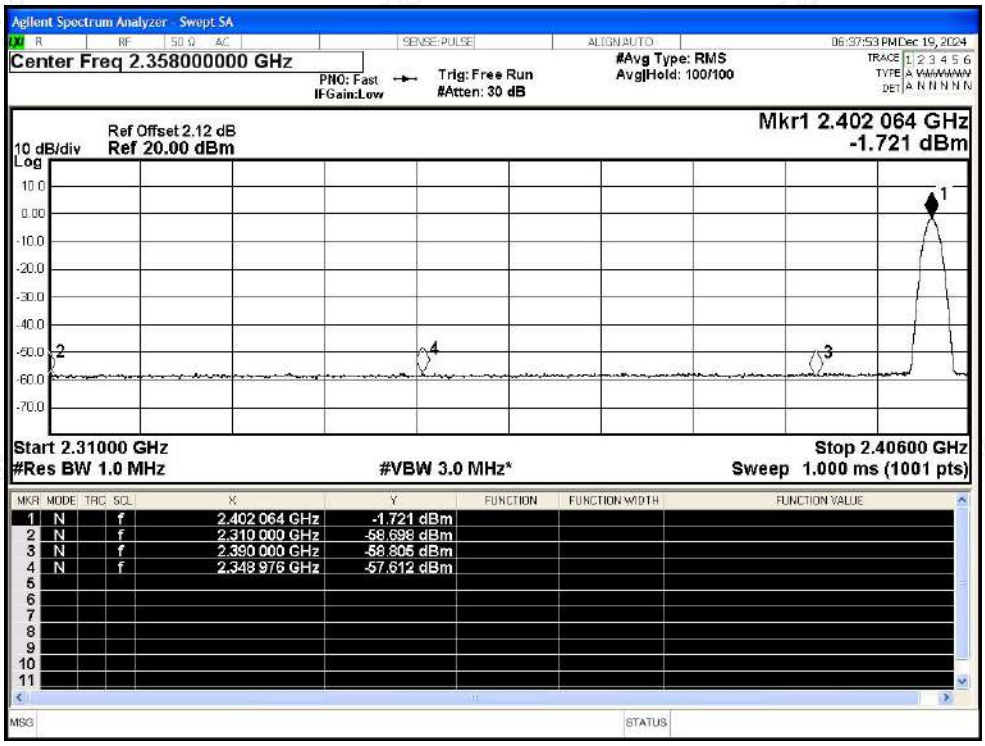
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-49.91	2	-	47.35	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-58.7	2	1.1	39.66	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2356.752	-46.96	2	-	50.3	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2348.976	-57.61	2	1.1	40.75	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-50.4	2	-	46.86	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-58.81	2	1.1	39.55	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-50.26	2	-	47	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-57.68	2	1.1	40.68	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2484.784	-37.04	2	-	60.22	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2484.592	-56	2	1.1	42.36	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-50.02	2	-	47.24	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-58.06	2	1.1	40.3	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-50.98	2	-	46.28	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-59.19	2	1.12	39.19	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2361.264	-46.79	2	-	50.47	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2379.6	-57.57	2	1.12	40.81	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-51.08	2	-	46.18	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-58.26	2	1.12	40.12	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-50.24	2	-	47.02	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-57.75	2	1.12	40.63	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2484.112	-37.64	2	-	59.62	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.68	-56.13	2	1.12	42.25	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-49.97	2	-	47.29	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-57.49	2	1.12	40.89	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-50.43	2	-	46.83	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-58.46	2	1.12	39.92	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2375.568	-47.72	2	-	49.54	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2334.288	-57.37	2	1.12	41.01	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-49.36	2	-	47.9	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-58.13	2	1.12	40.25	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-49.8	2	-	47.46	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-57.09	2	1.12	41.29	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2484.088	-37.71	2	-	59.55	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2484.16	-56.42	2	1.12	41.96	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-50.8	2	-	46.46	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-58.21	2	1.12	40.17	Average	54	Pass

Test Graphs

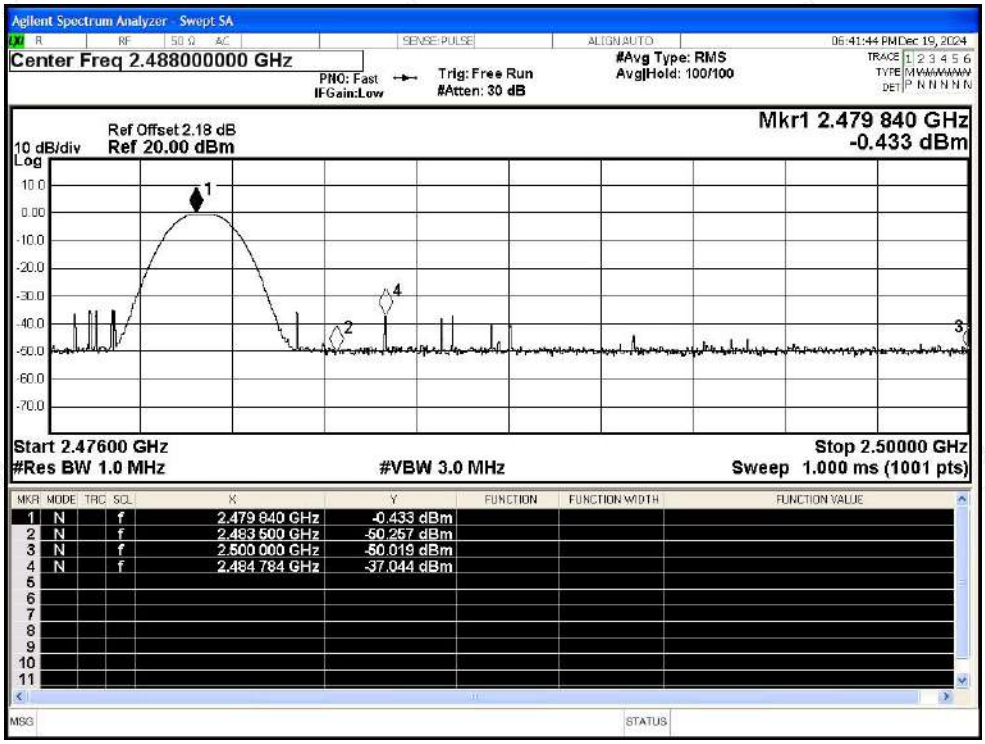
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak



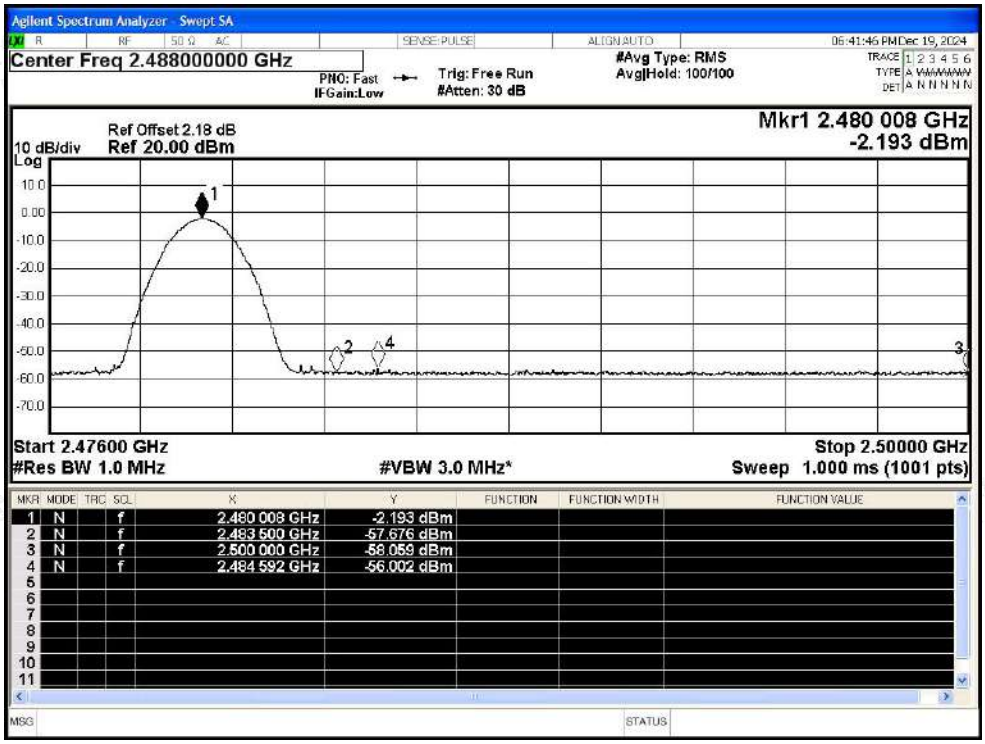
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



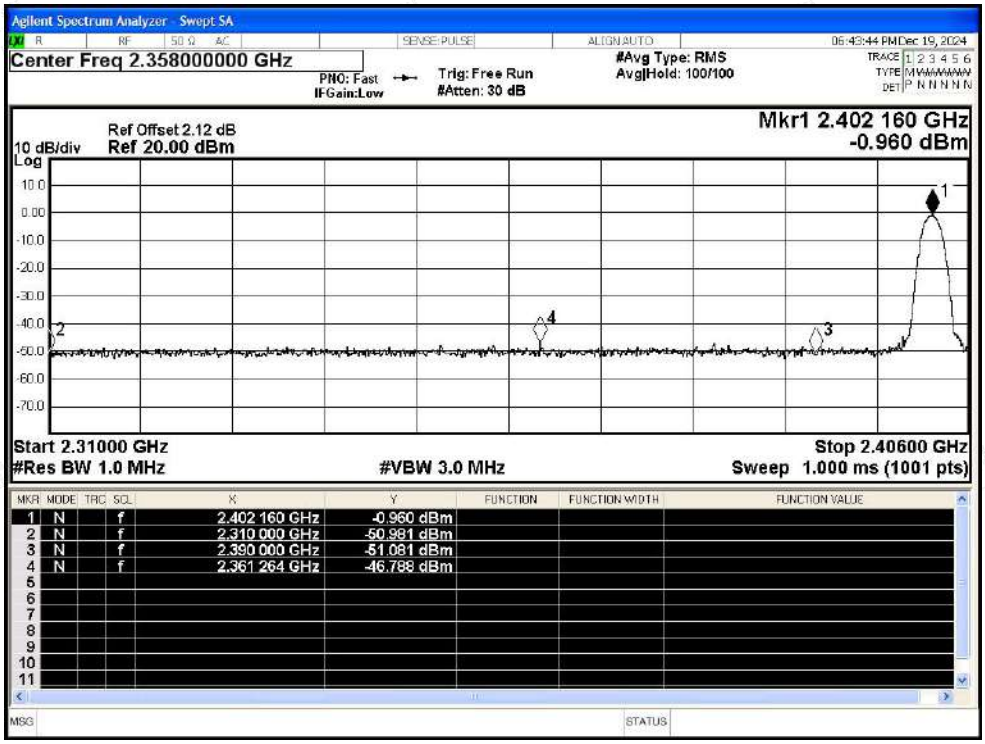
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak



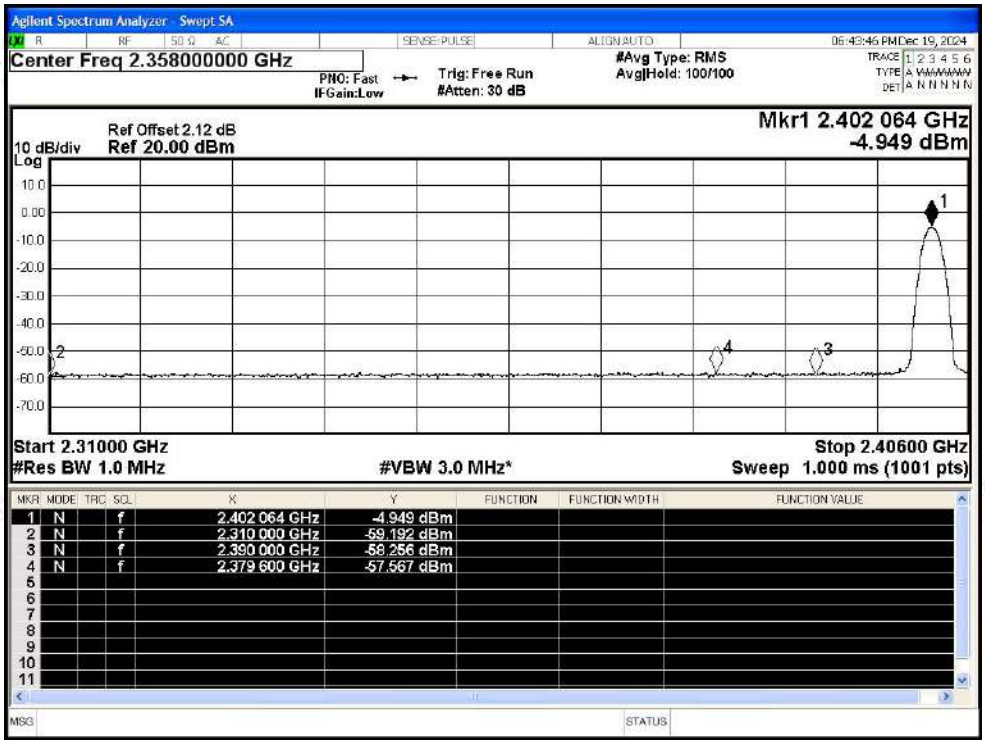
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average



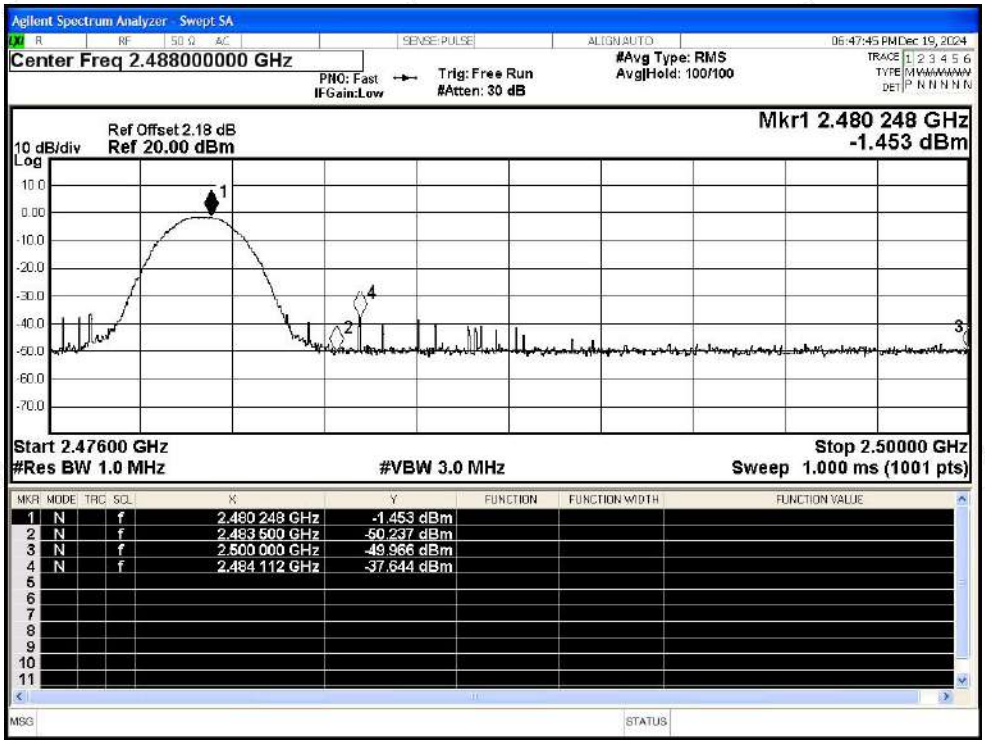
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak



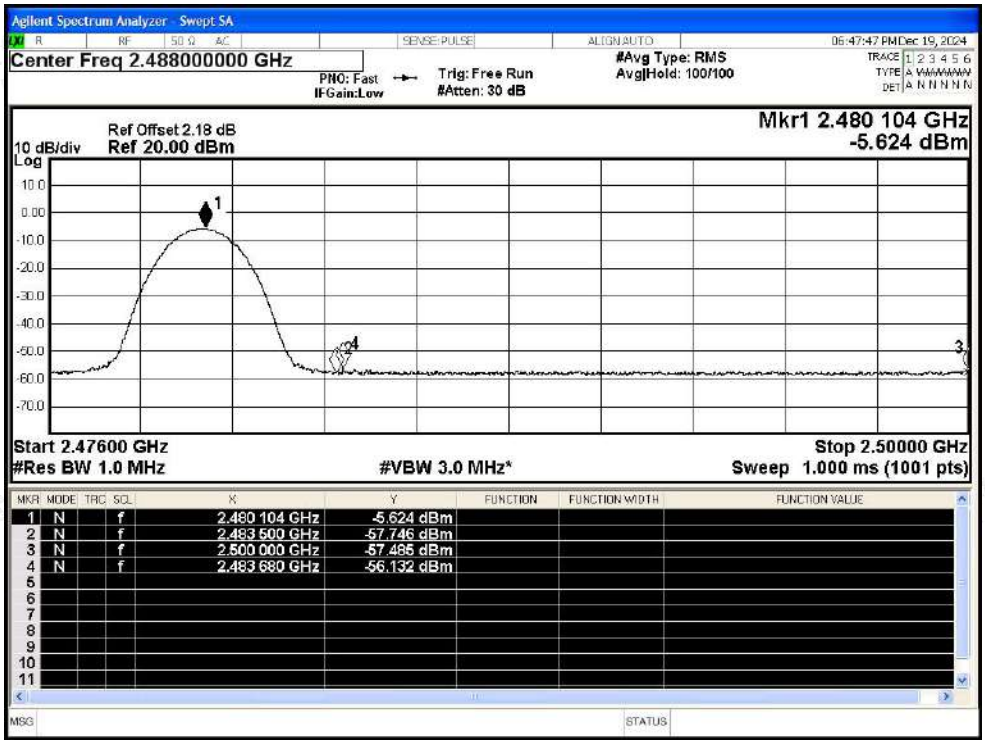
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average



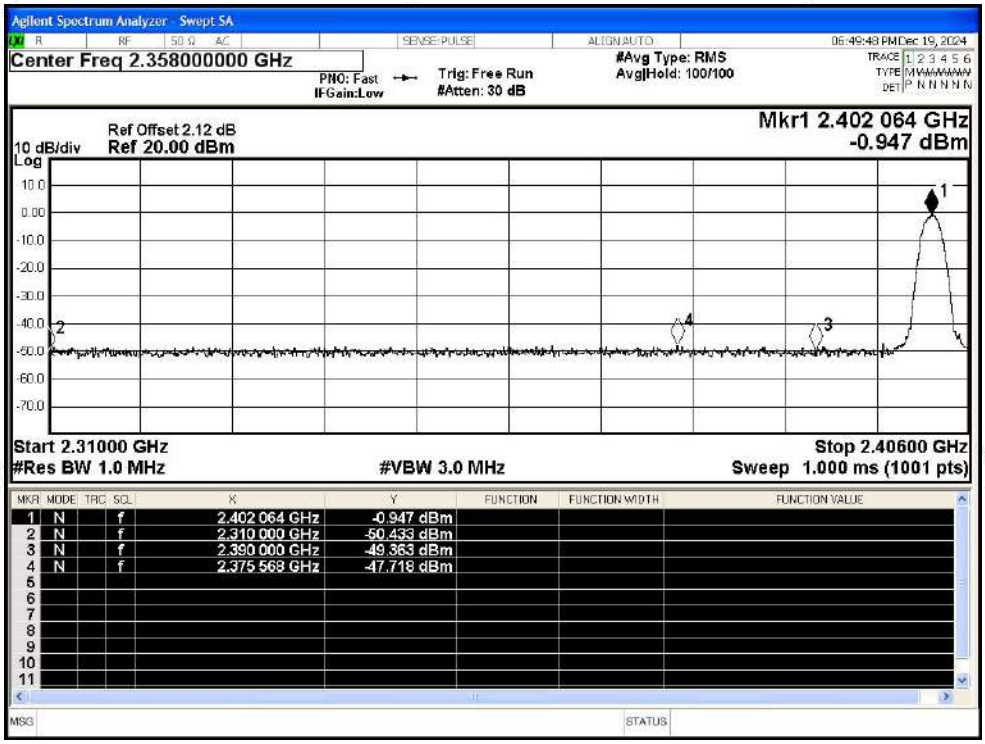
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak



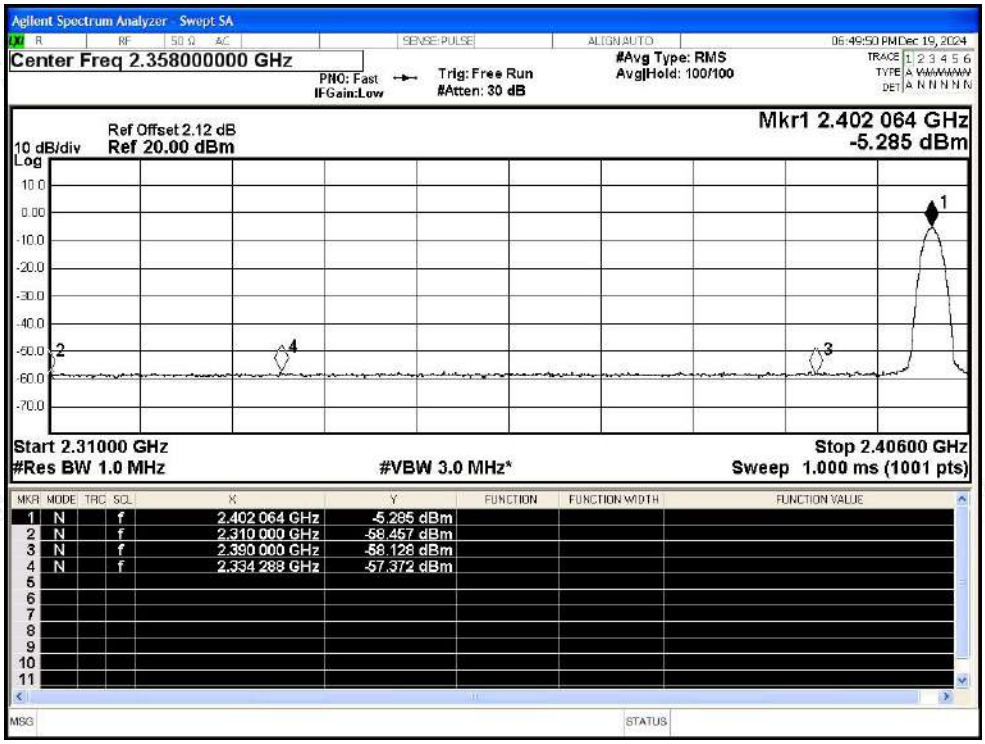
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Average



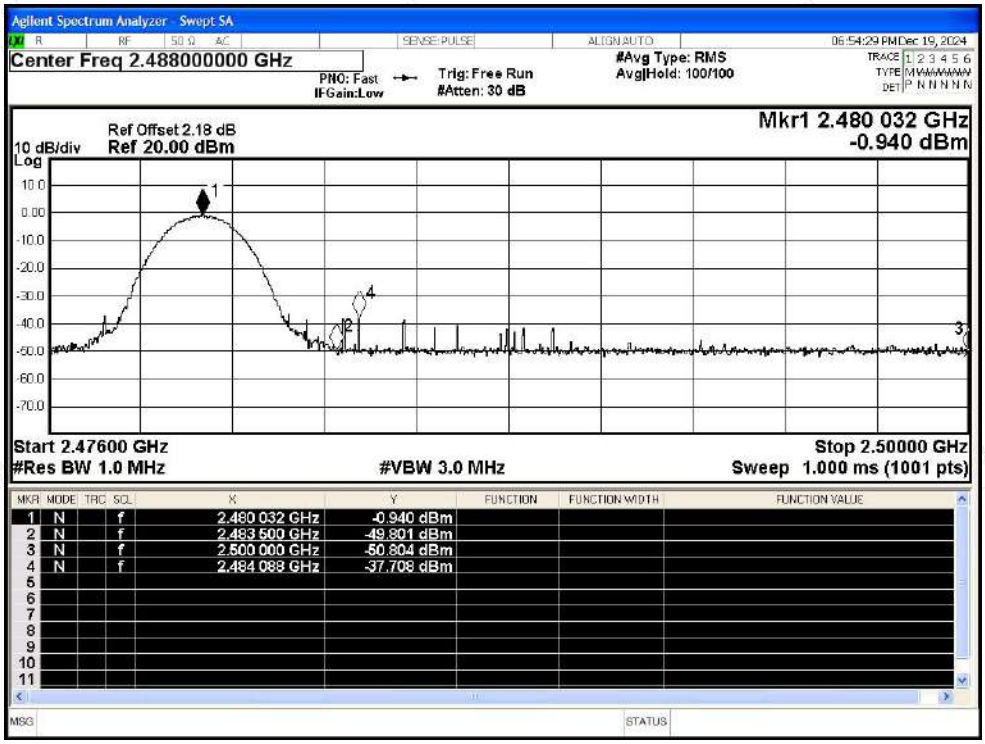
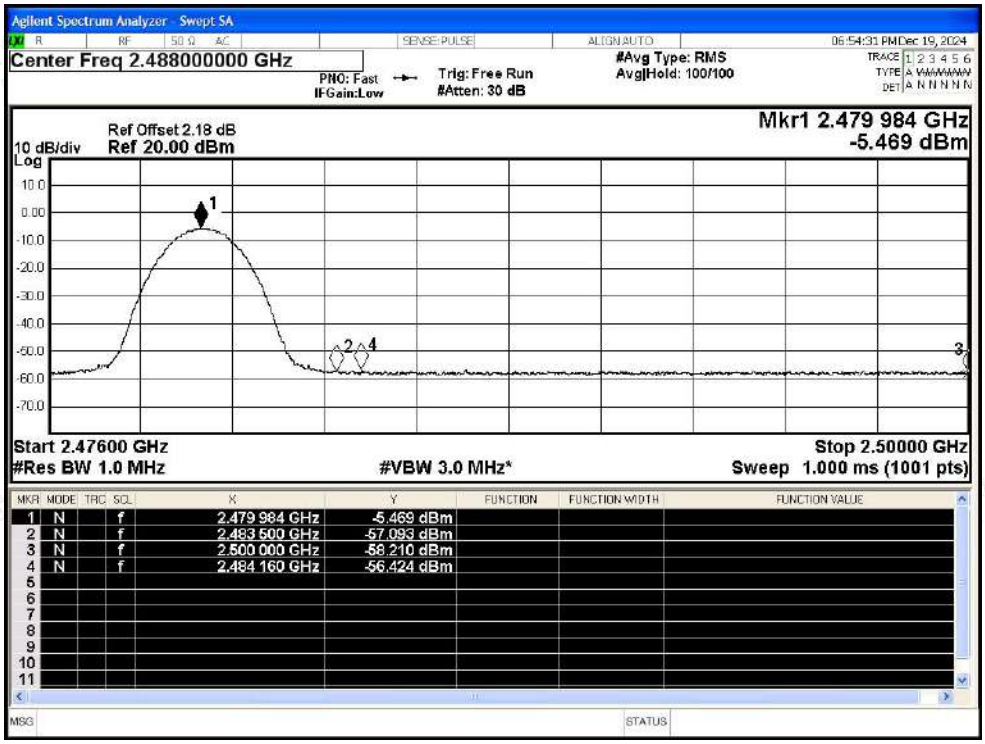
Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak



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