Appendix A

RF Test Data for BT(Conducted Measurement)

Product Name: Automotive Diagnostic Tool

Test Model: VDT700

Environmental Conditions

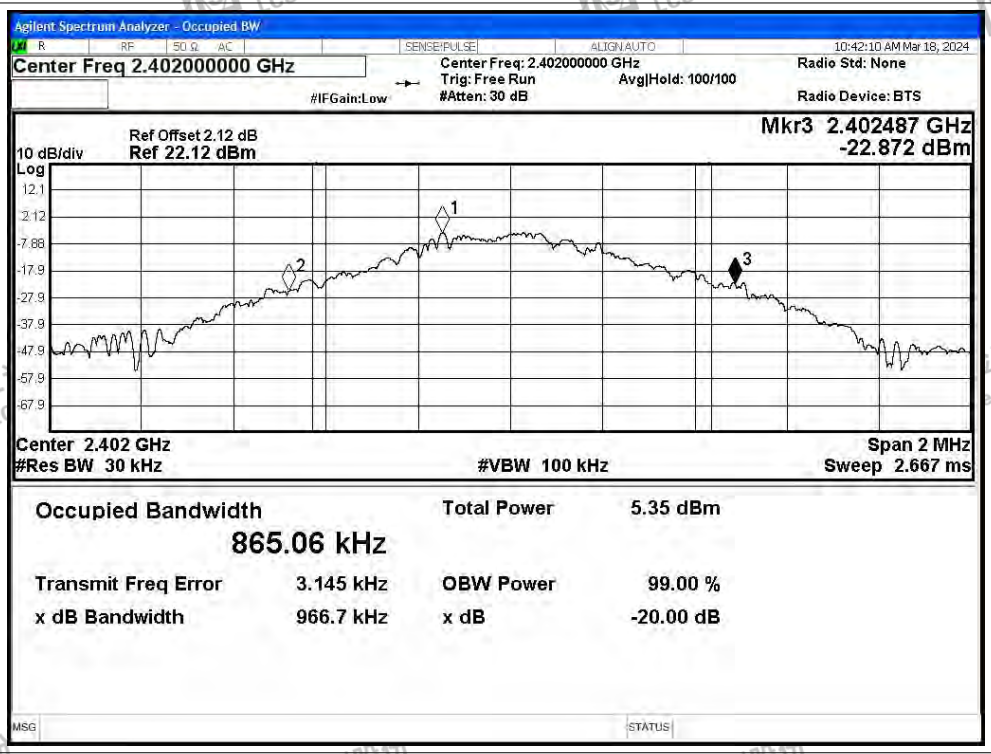
Temperature:	23.8° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Paddi Chen
Supervised by:	Nick Peng

A.1 -20dB Bandwidth

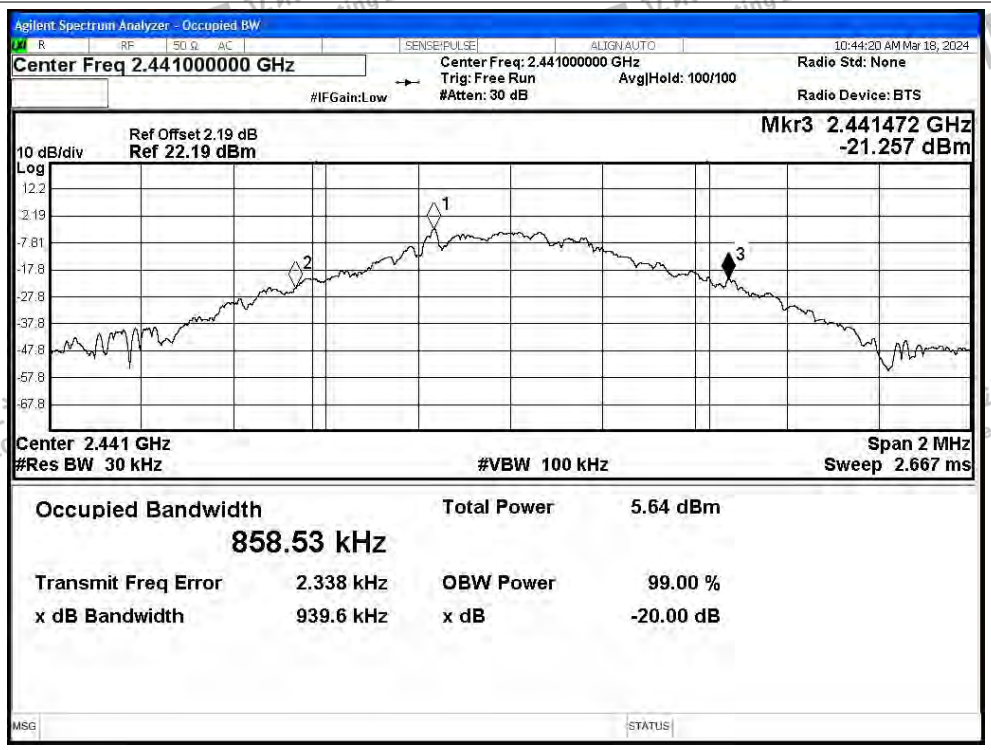
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	0.967	N/A	Pass
NVNT	1-DH5	2441	Ant1	0.94	N/A	Pass
NVNT	1-DH5	2480	Ant1	0.95	N/A	Pass
NVNT	2-DH5	2402	Ant1	1.284	N/A	Pass
NVNT	2-DH5	2441	Ant1	1.329	N/A	Pass
NVNT	2-DH5	2480	Ant1	1.283	N/A	Pass
NVNT	3-DH5	2402	Ant1	1.297	N/A	Pass
NVNT	3-DH5	2441	Ant1	1.304	N/A	Pass
NVNT	3-DH5	2480	Ant1	1.315	N/A	Pass

Test Graphs

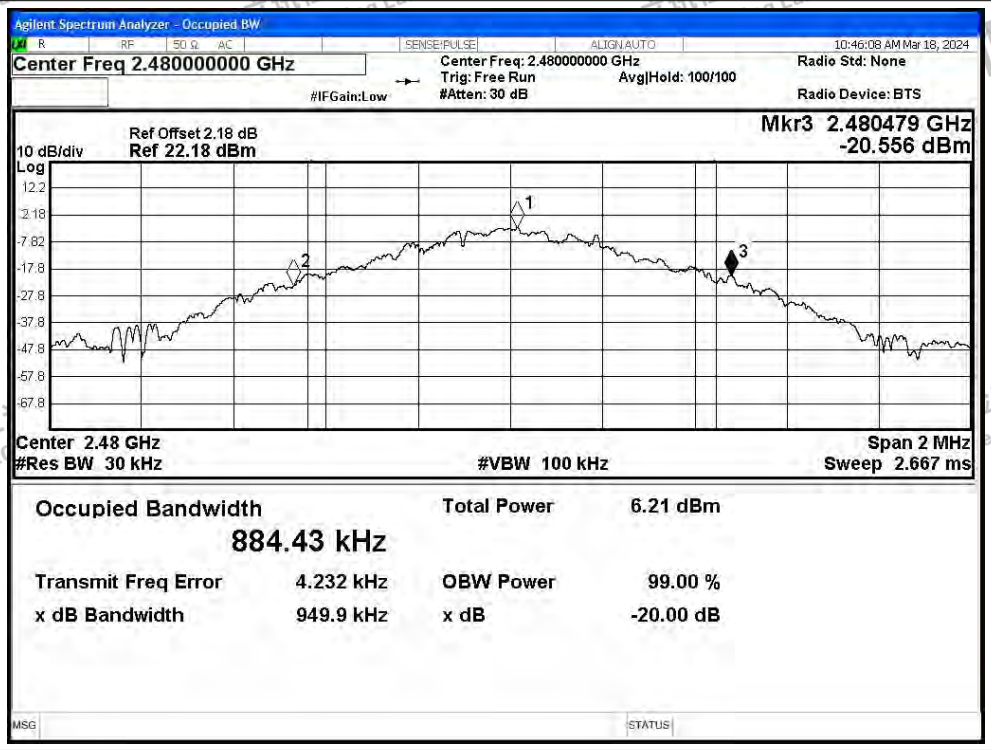
-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1



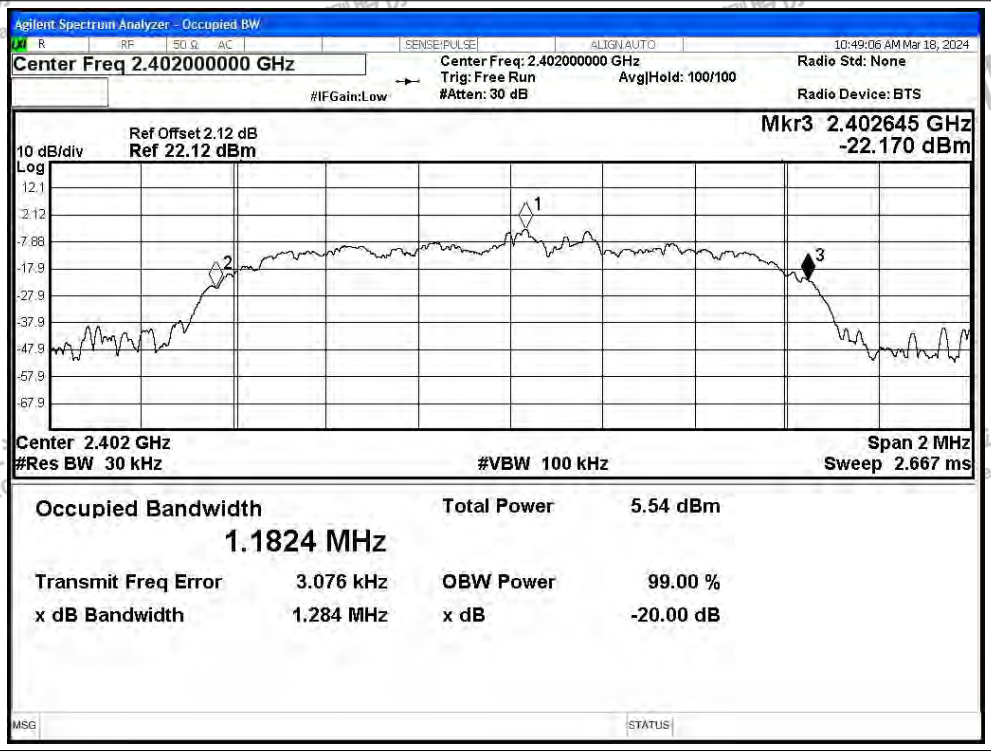
-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1



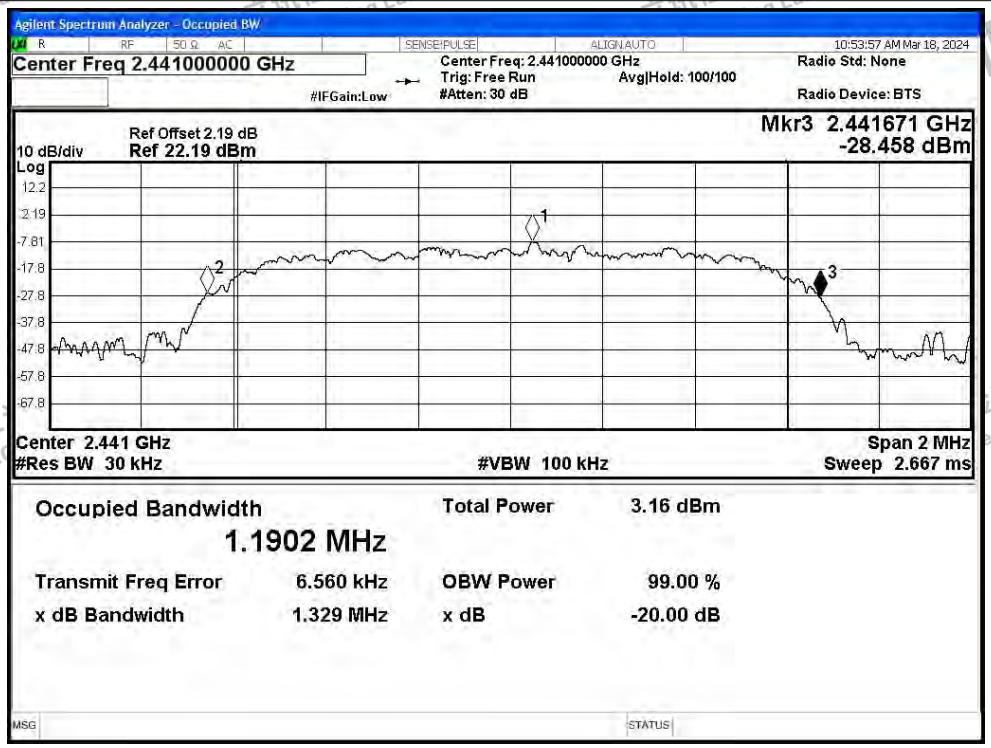
-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1



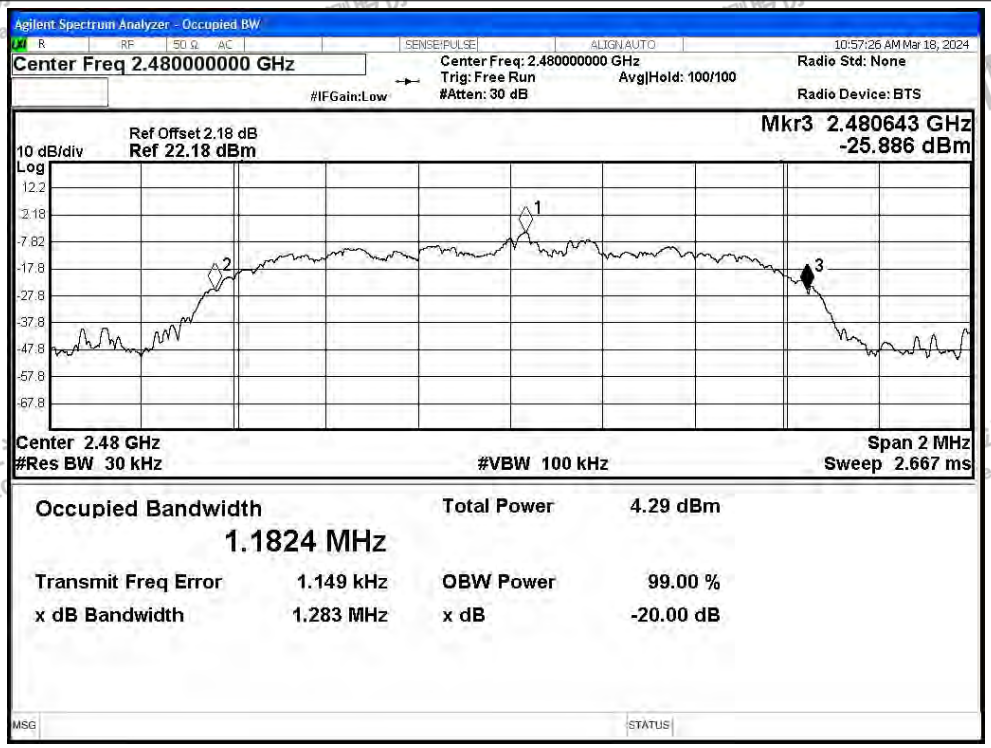
-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1



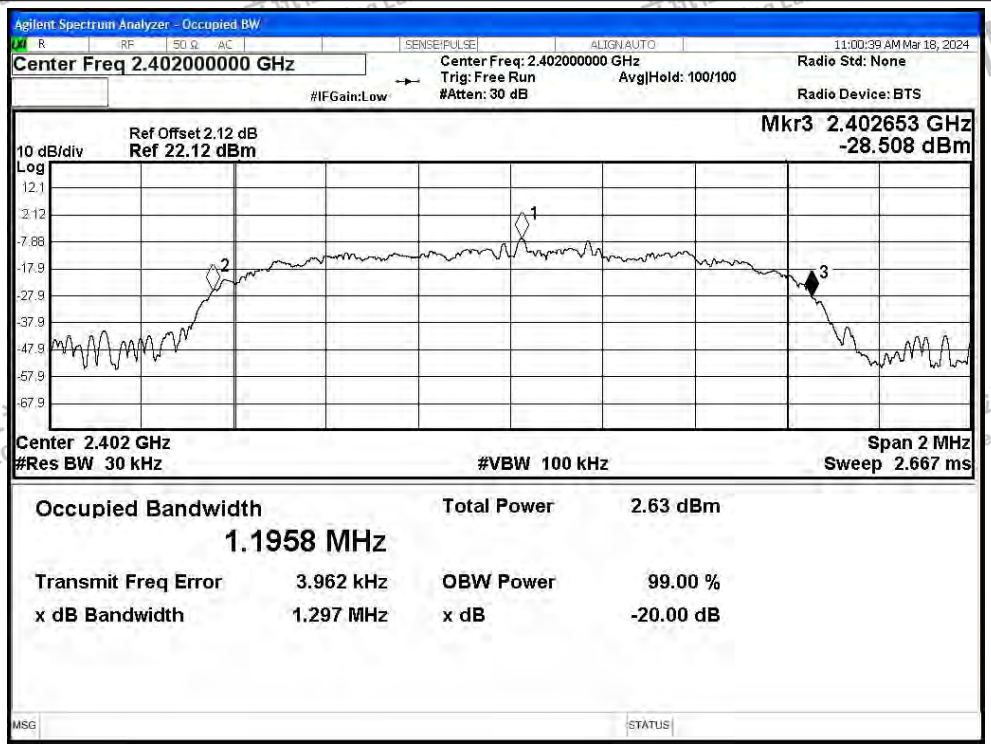
-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1



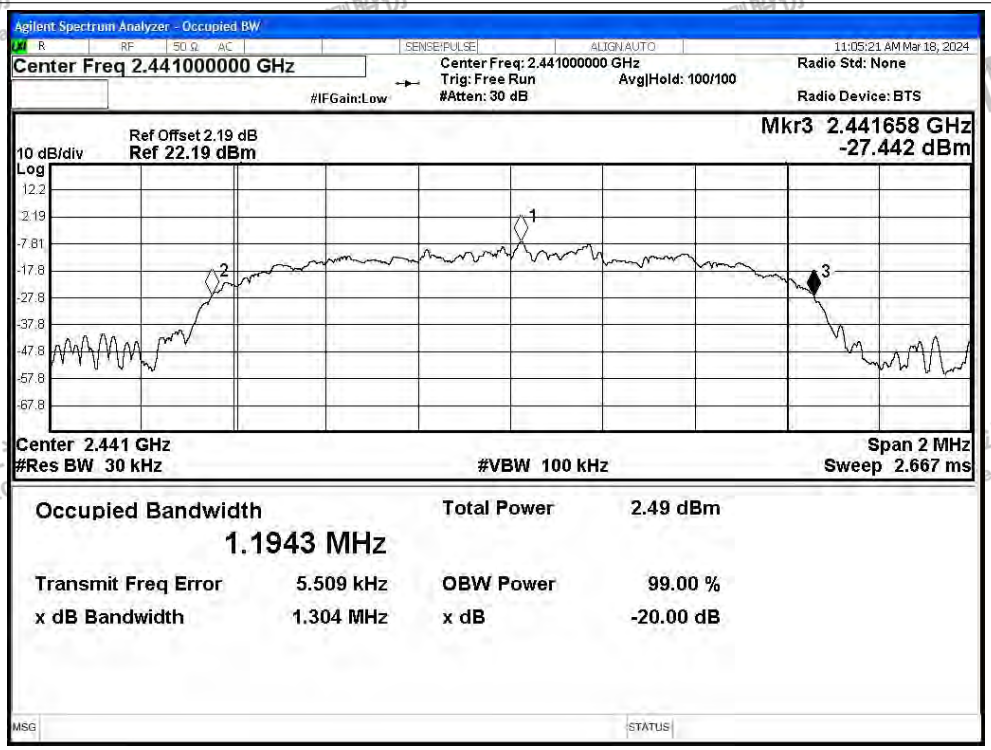
-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1



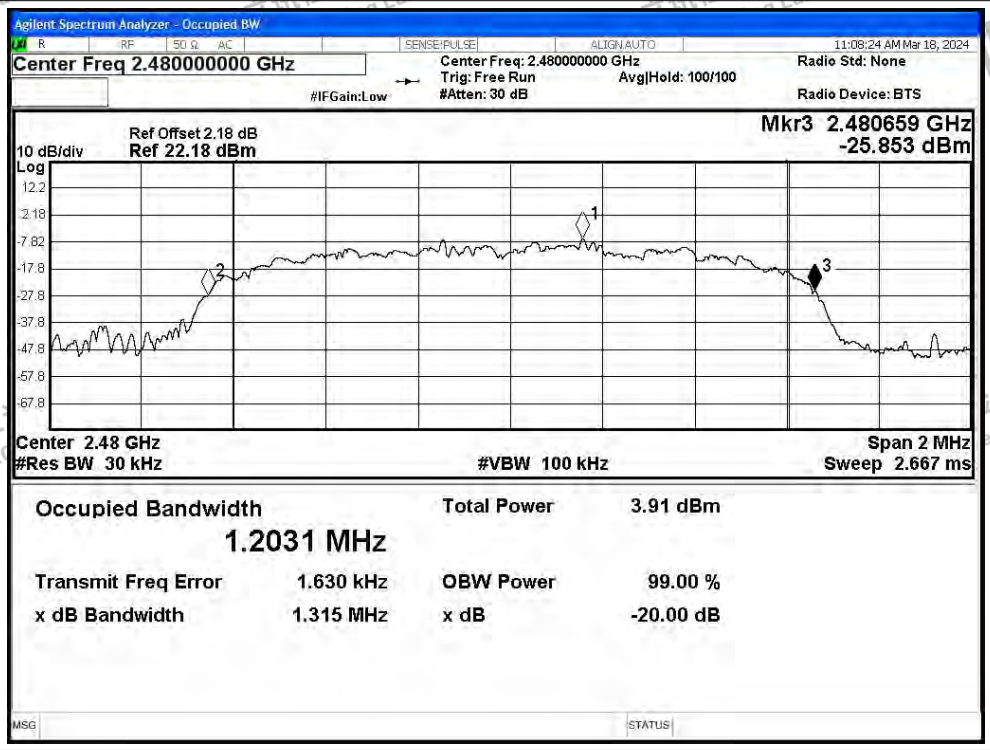
-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1

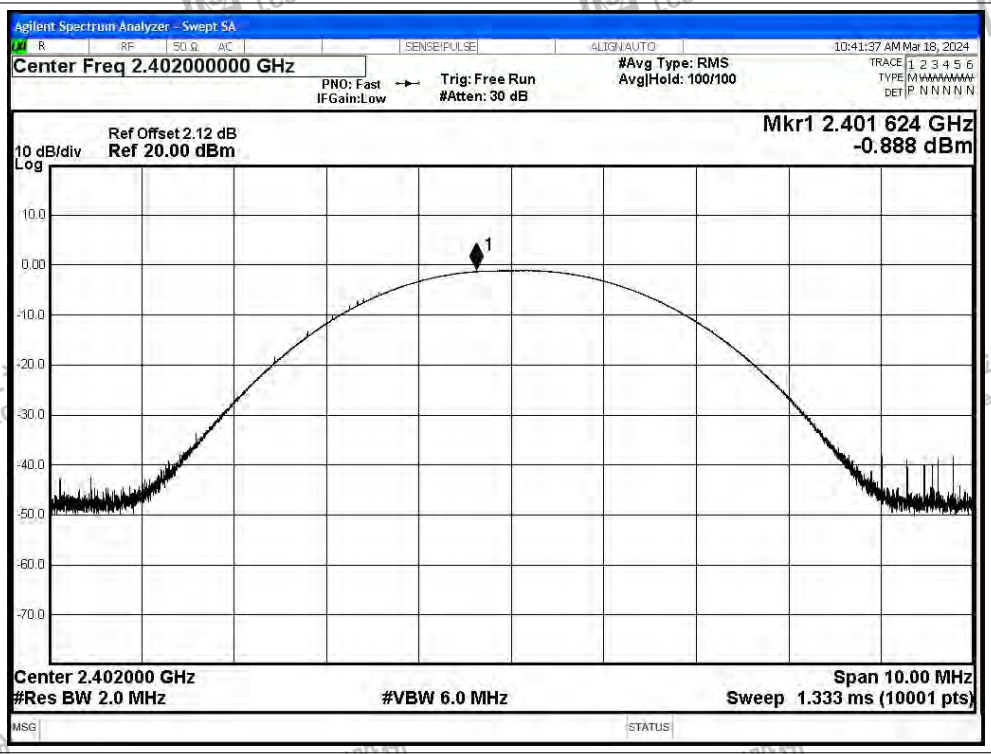


A.2 Maximum Conducted Output Power

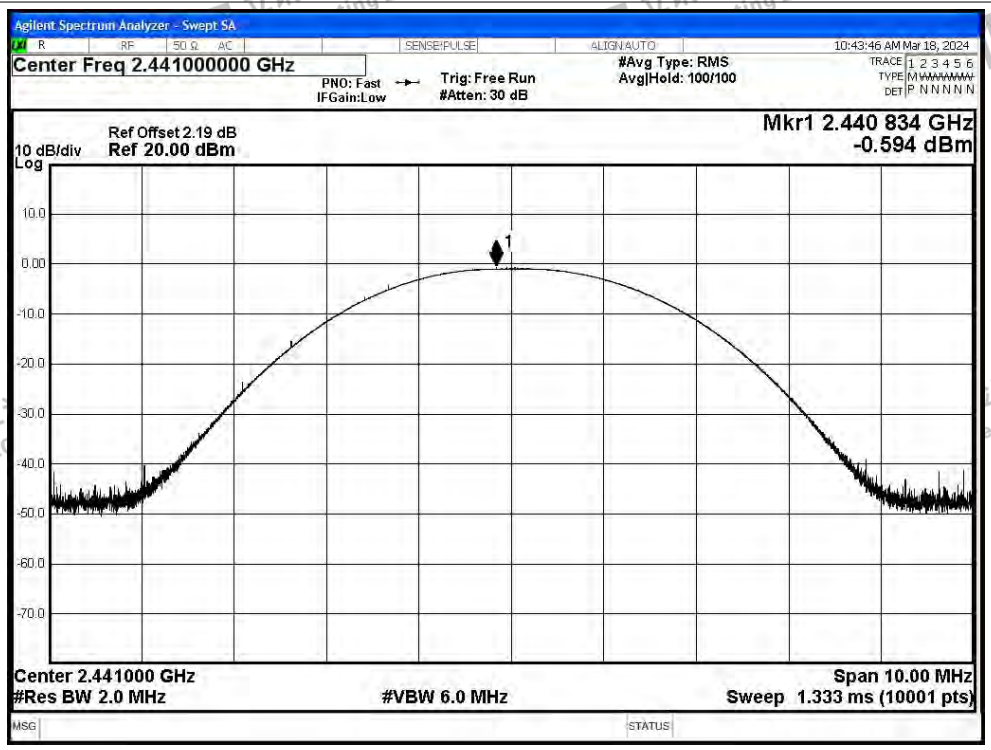
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	-0.89	21	Pass
NVNT	1-DH5	2441	Ant1	-0.59	21	Pass
NVNT	1-DH5	2480	Ant1	0.51	21	Pass
NVNT	2-DH5	2402	Ant1	0.95	21	Pass
NVNT	2-DH5	2441	Ant1	-0.56	21	Pass
NVNT	2-DH5	2480	Ant1	-0.14	21	Pass
NVNT	3-DH5	2402	Ant1	-0.83	21	Pass
NVNT	3-DH5	2441	Ant1	-1.61	21	Pass
NVNT	3-DH5	2480	Ant1	0.23	21	Pass

Test Graphs

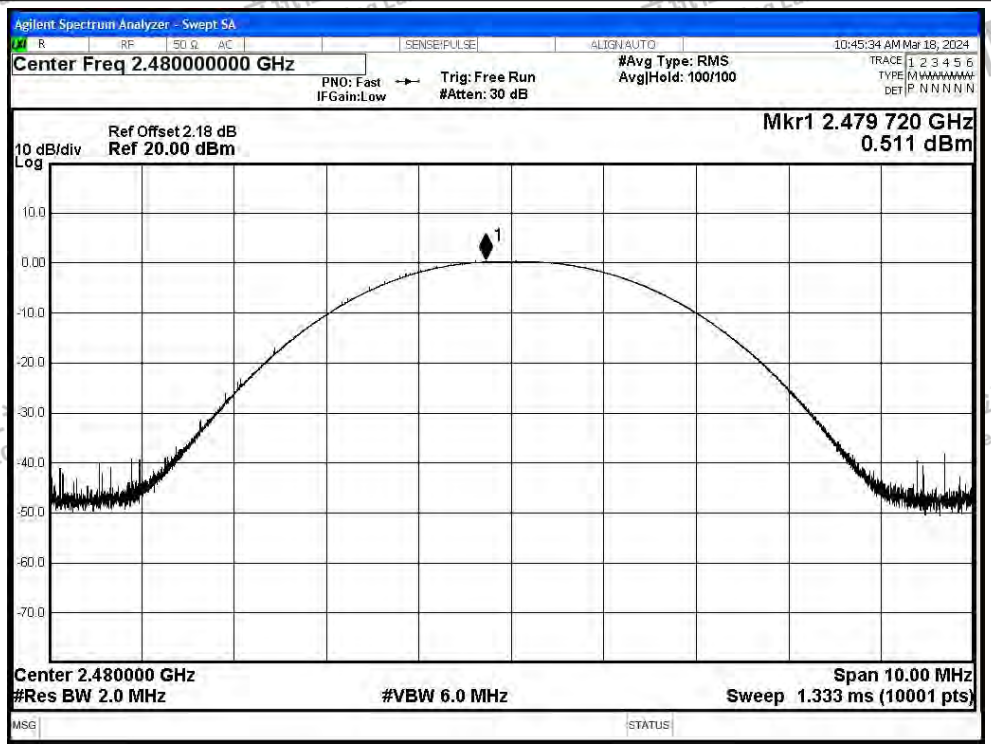
Power NVNT 1-DH5 2402MHz Ant1



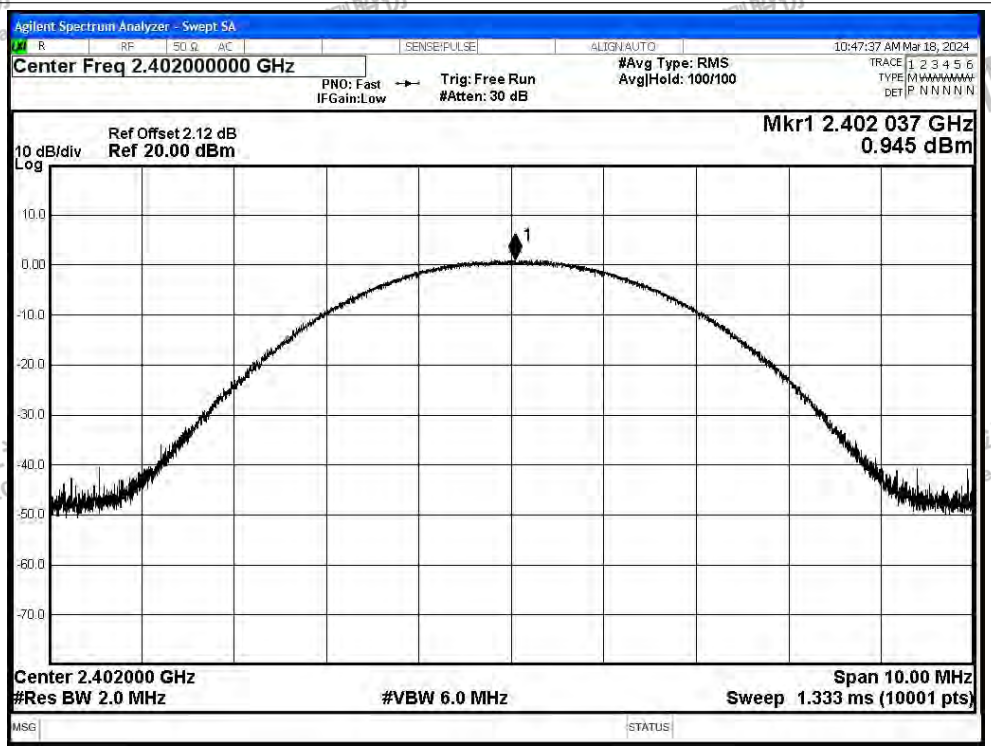
Power NVNT 1-DH5 2441MHz Ant1



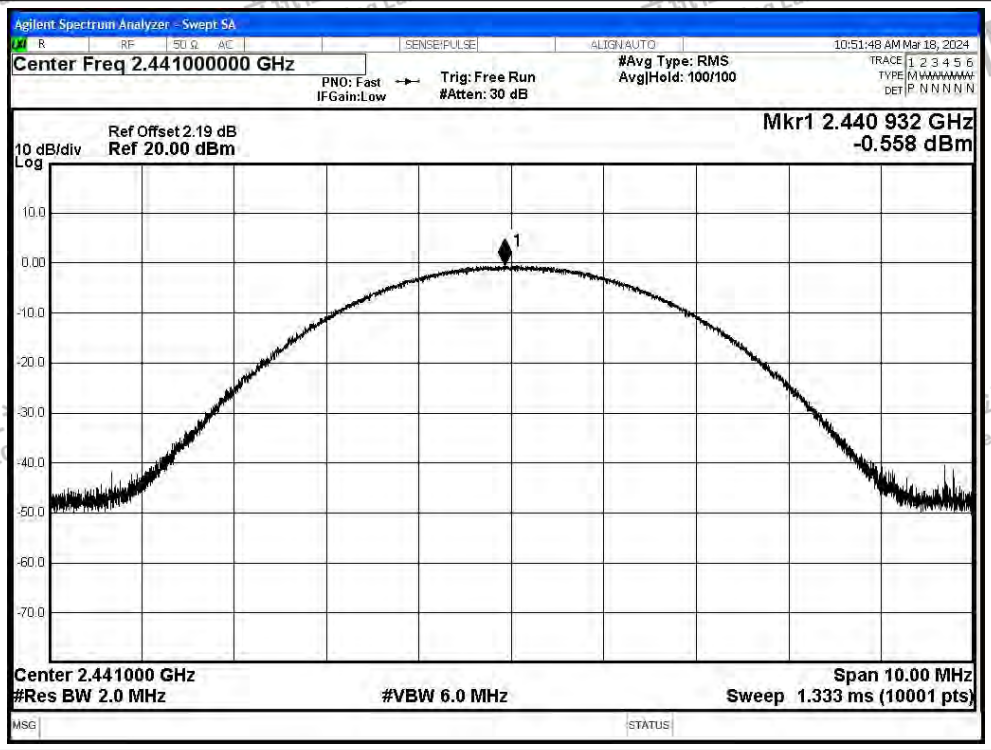
Power NVNT 1-DH5 2480MHz Ant1



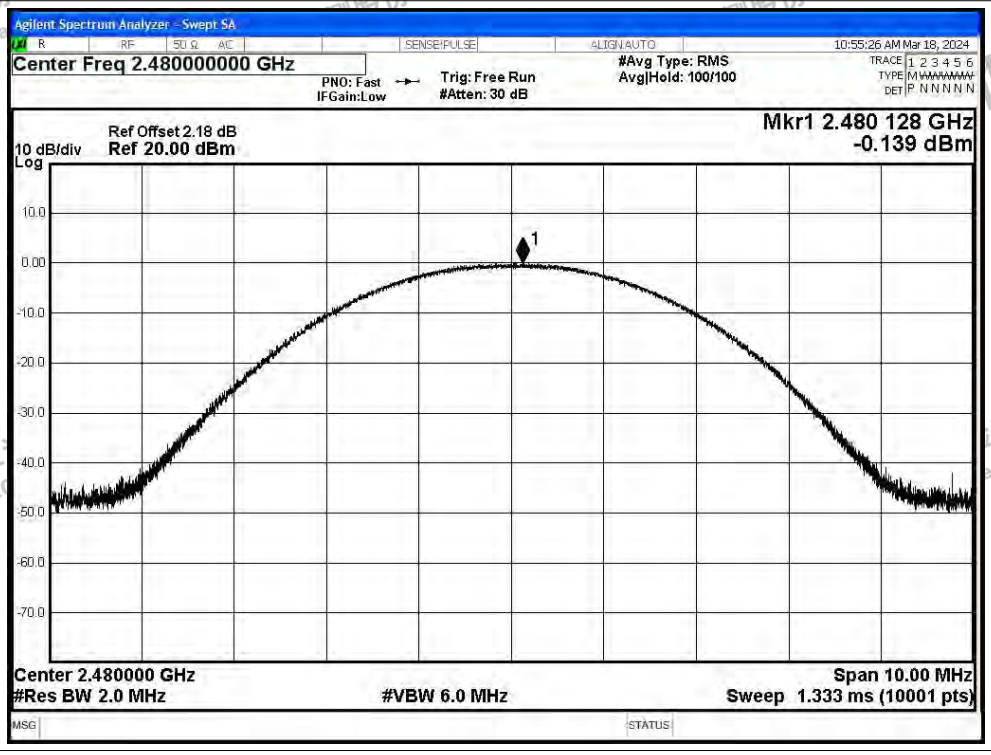
Power NVNT 2-DH5 2402MHz Ant1



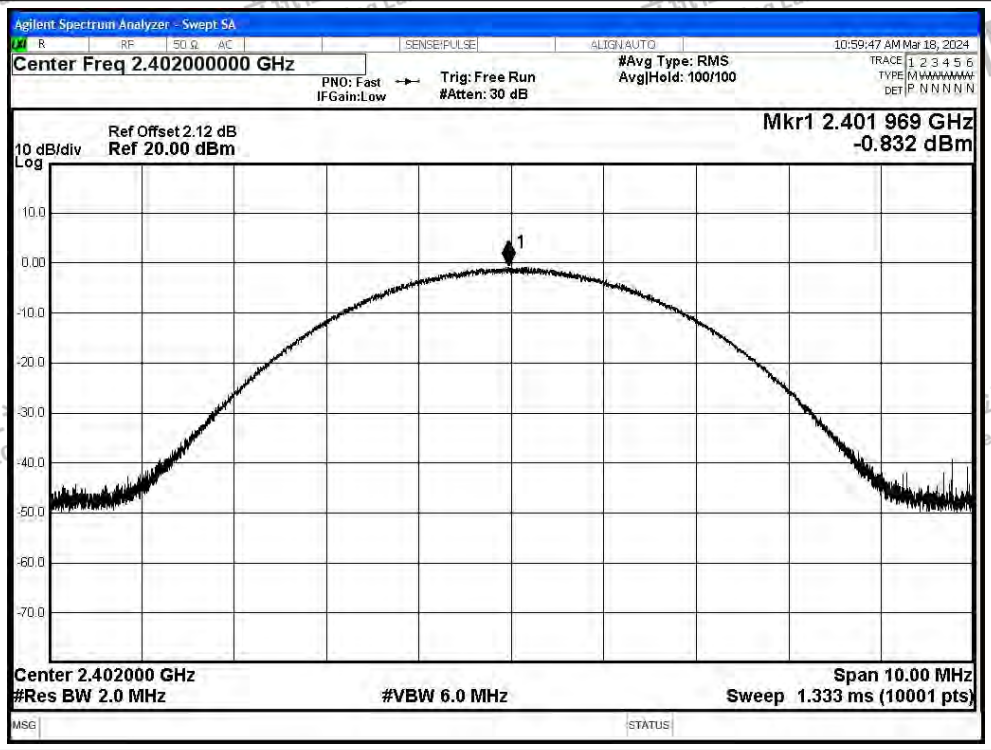
Power NVNT 2-DH5 2441MHz Ant1



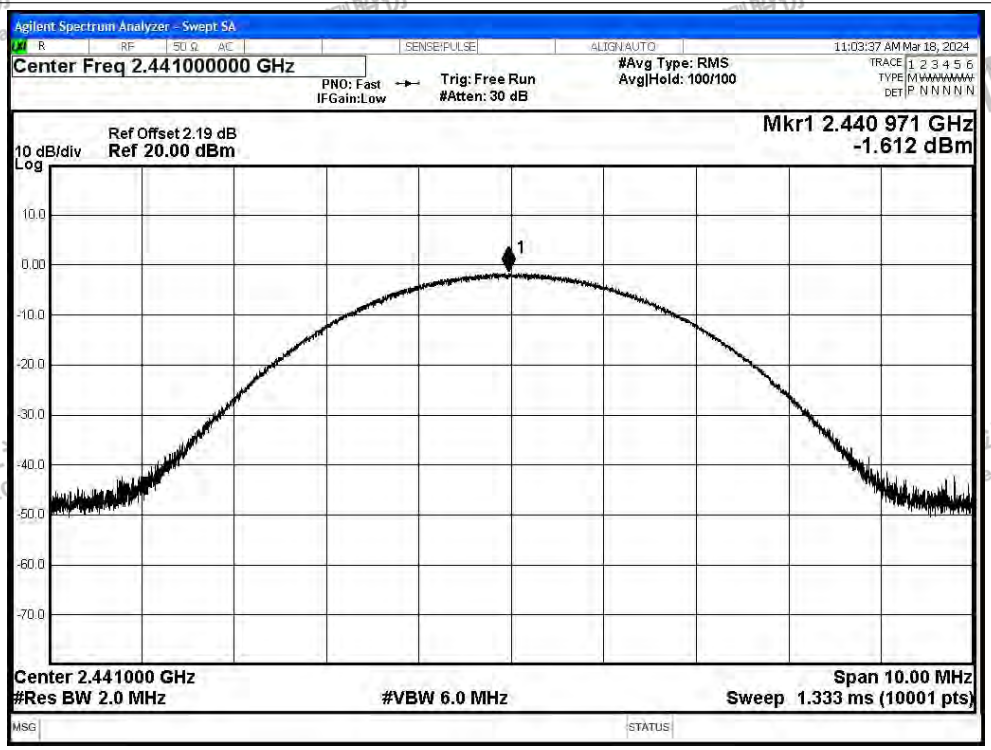
Power NVNT 2-DH5 2480MHz Ant1



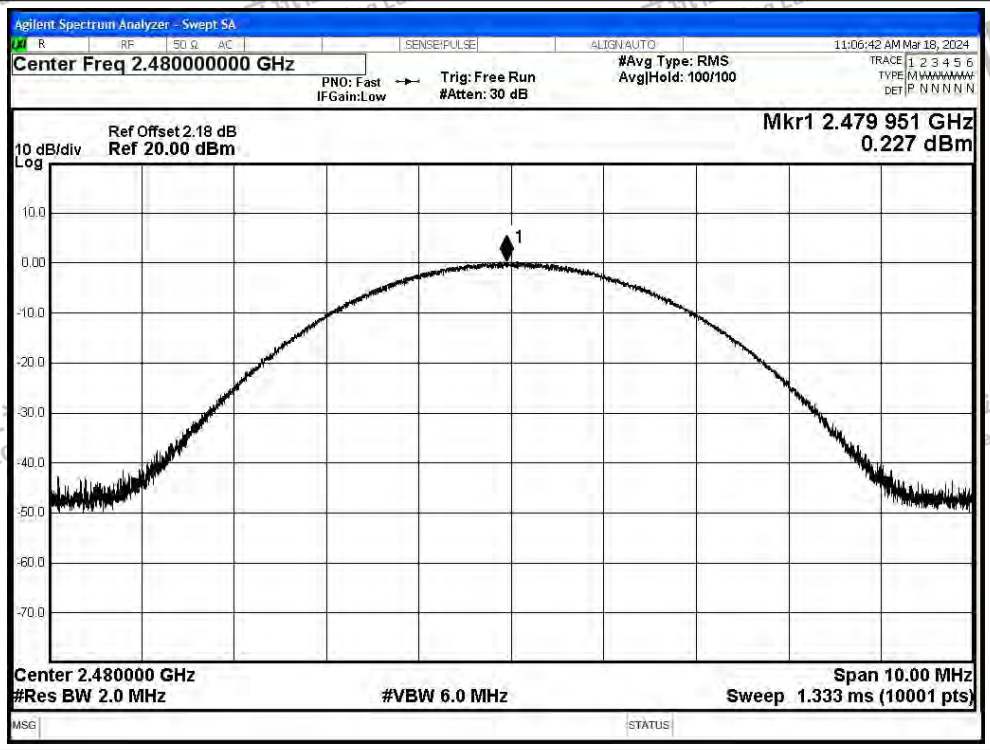
Power NVNT 3-DH5 2402MHz Ant1



Power NVNT 3-DH5 2441MHz Ant1



Power NVNT 3-DH5 2480MHz Ant1

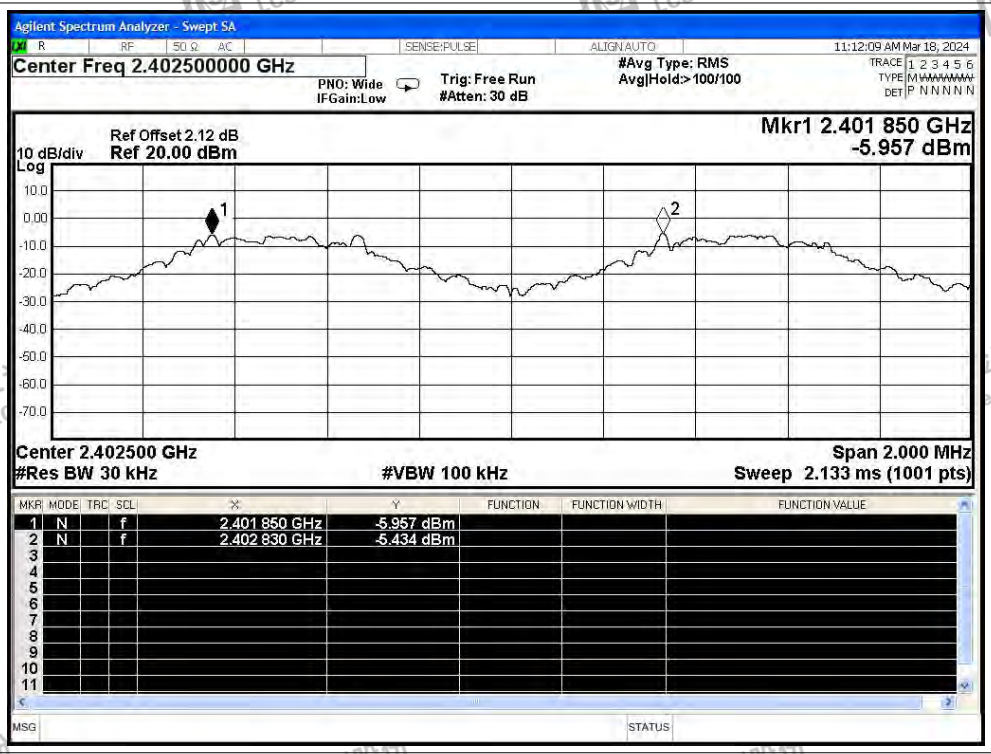


A.3 Carrier Frequencies Separation

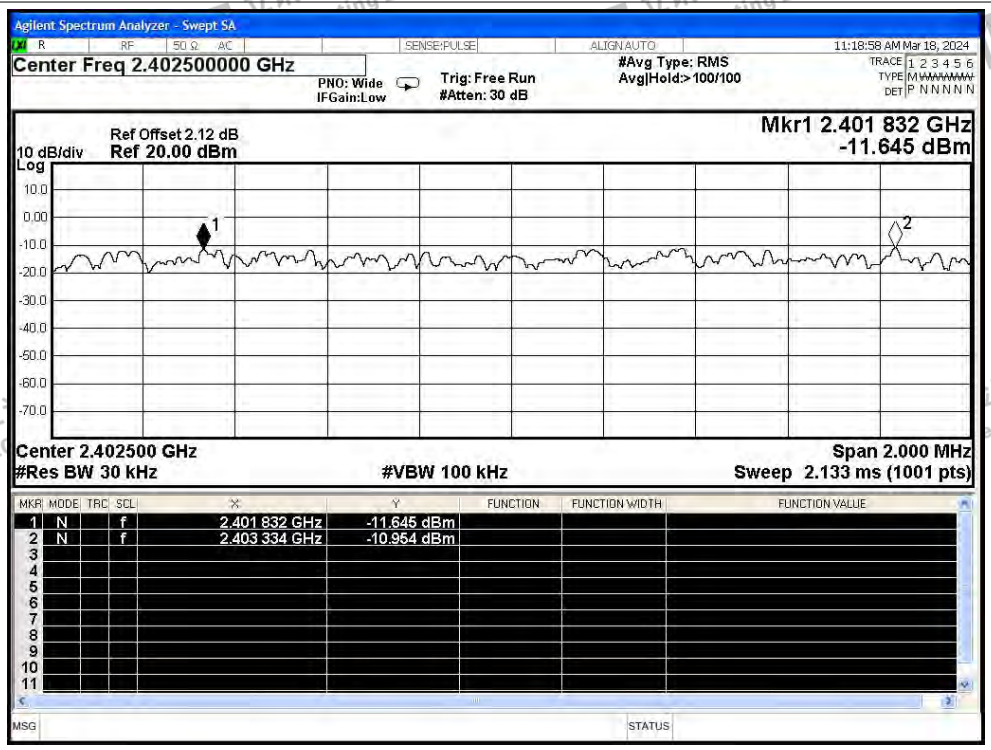
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2401.85	2402.83	0.98	0.645	Pass
NVNT	2-DH5	Ant1	2401.832	2403.334	1.502	0.886	Pass
NVNT	3-DH5	Ant1	2402.006	2403.04	1.034	0.877	Pass

Test Graphs

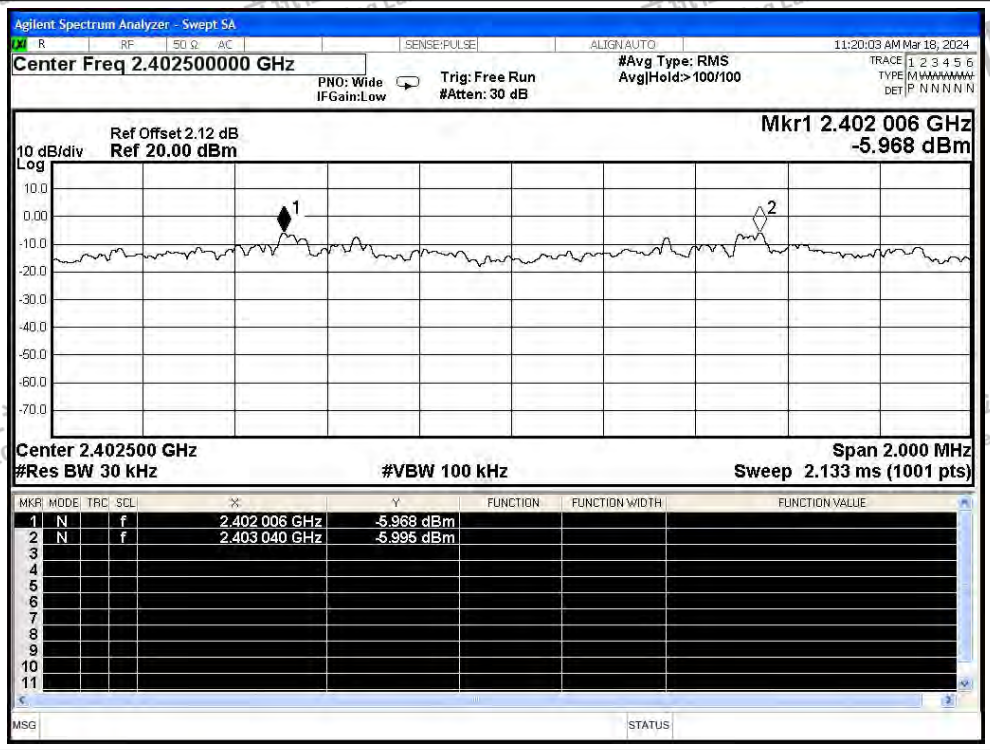
CFS NVNT 1-DH5 2402MHz Ant1



CFS NVNT 2-DH5 2402MHz Ant1



CFS NVNT 3-DH5 2402MHz Ant1

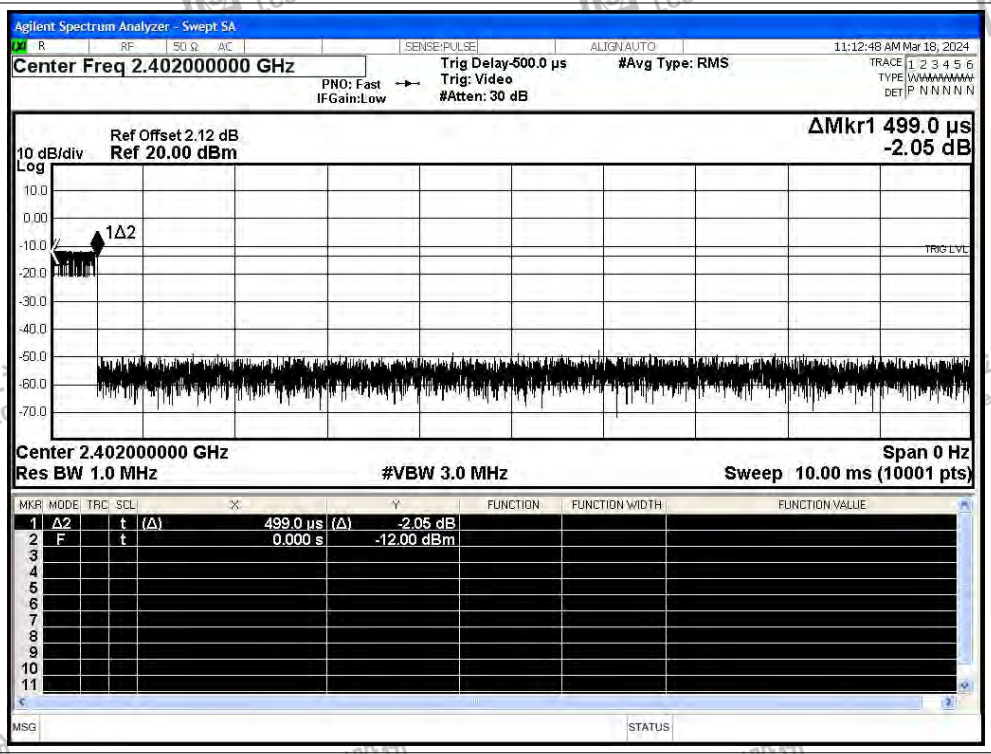


A.4 Dwell Time

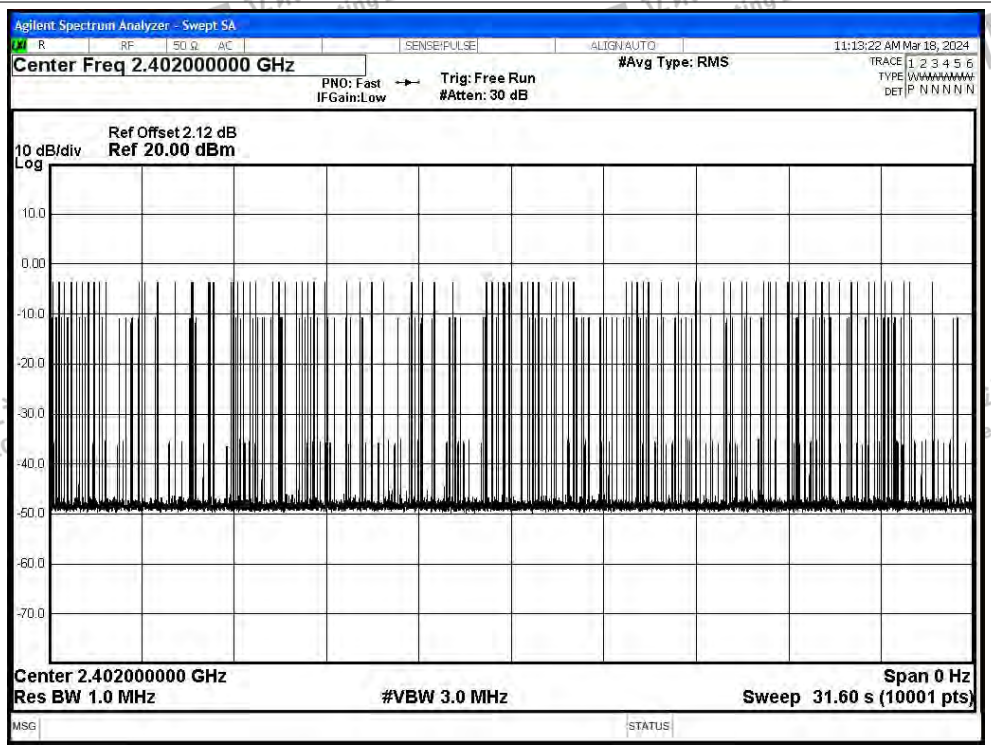
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	0.499	52.395	105	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.898	275.31	95	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.897	309.979	107	31600	400	Pass

Test Graphs

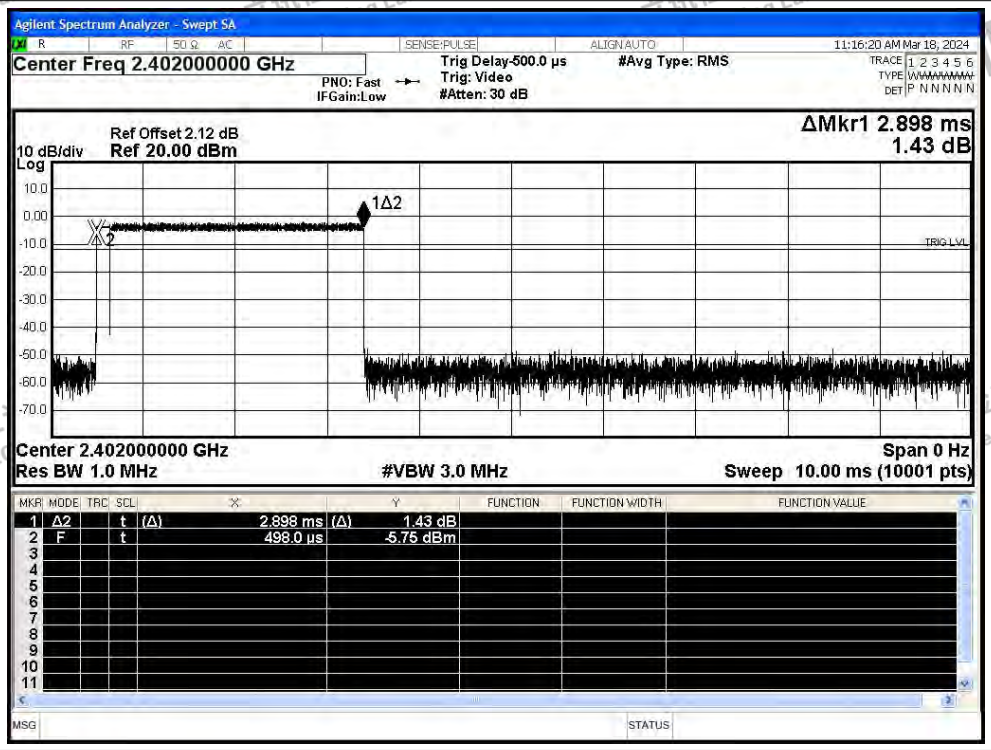
Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



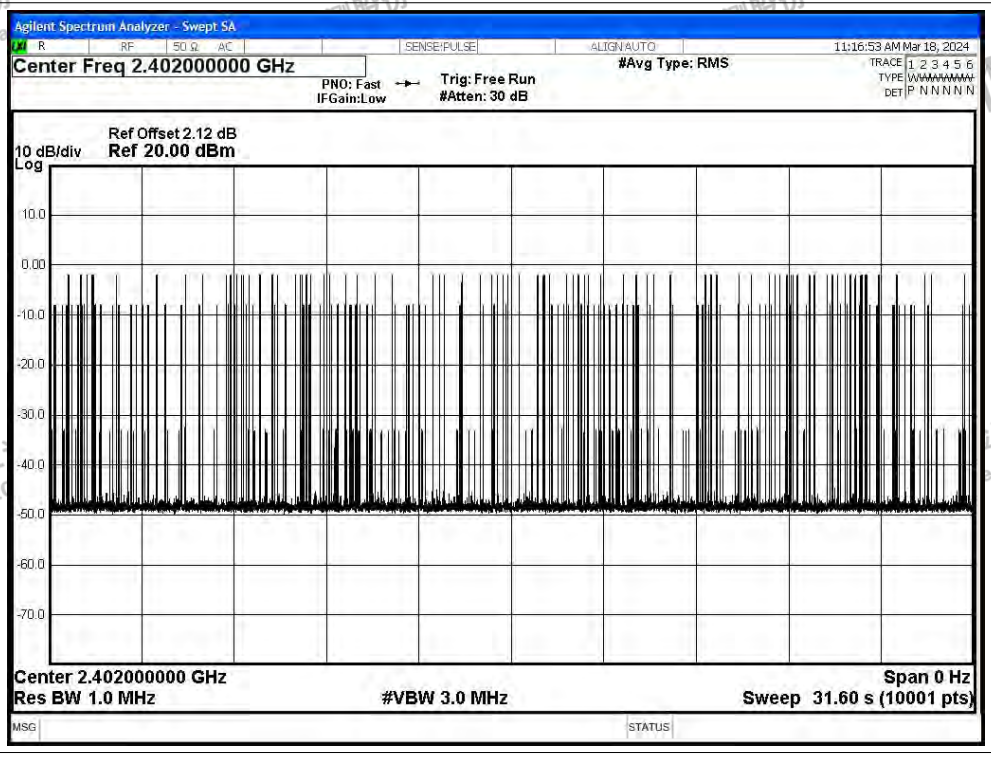
Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated



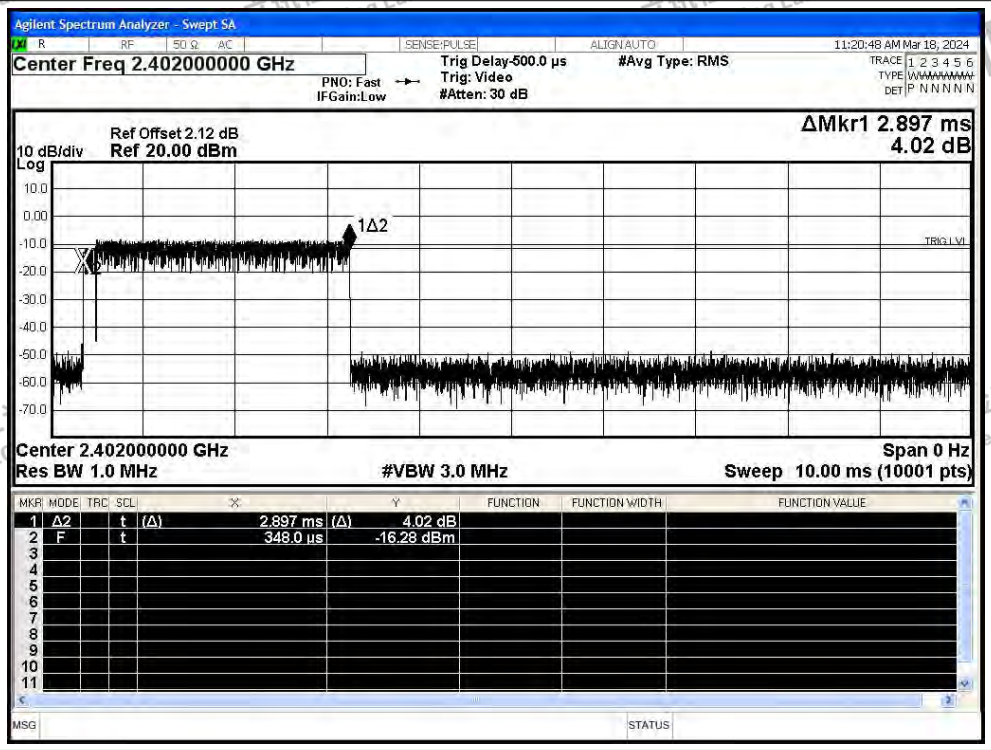
Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



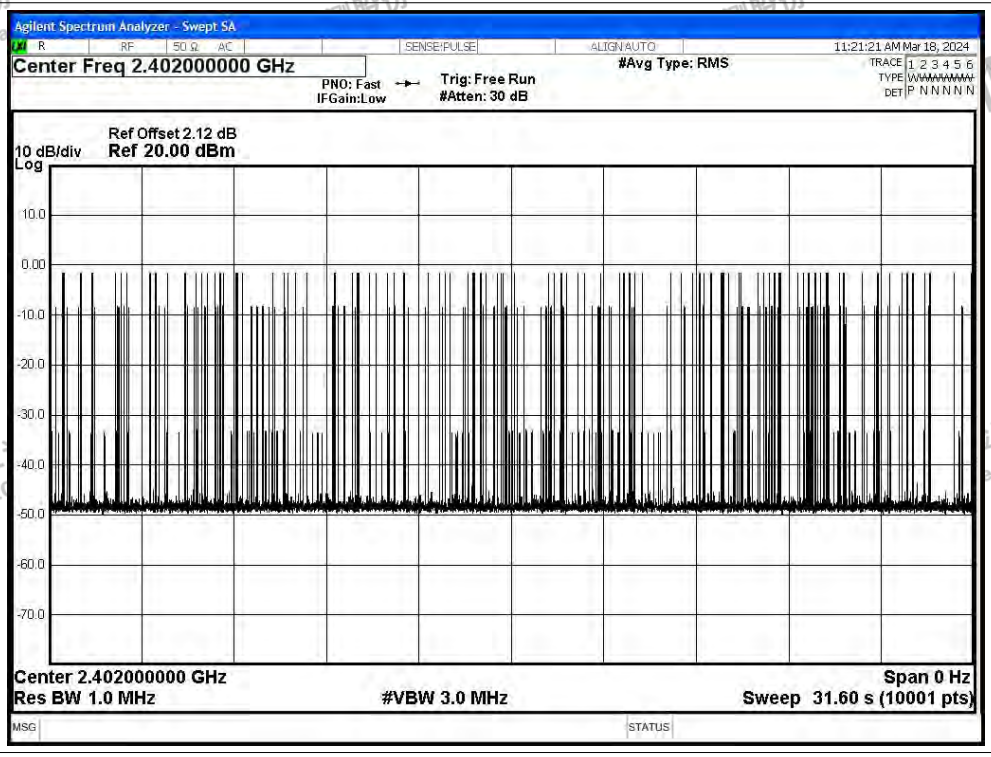
Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated



Dwell NVNT 3-DH5 2402MHz Ant1 One Burst



Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

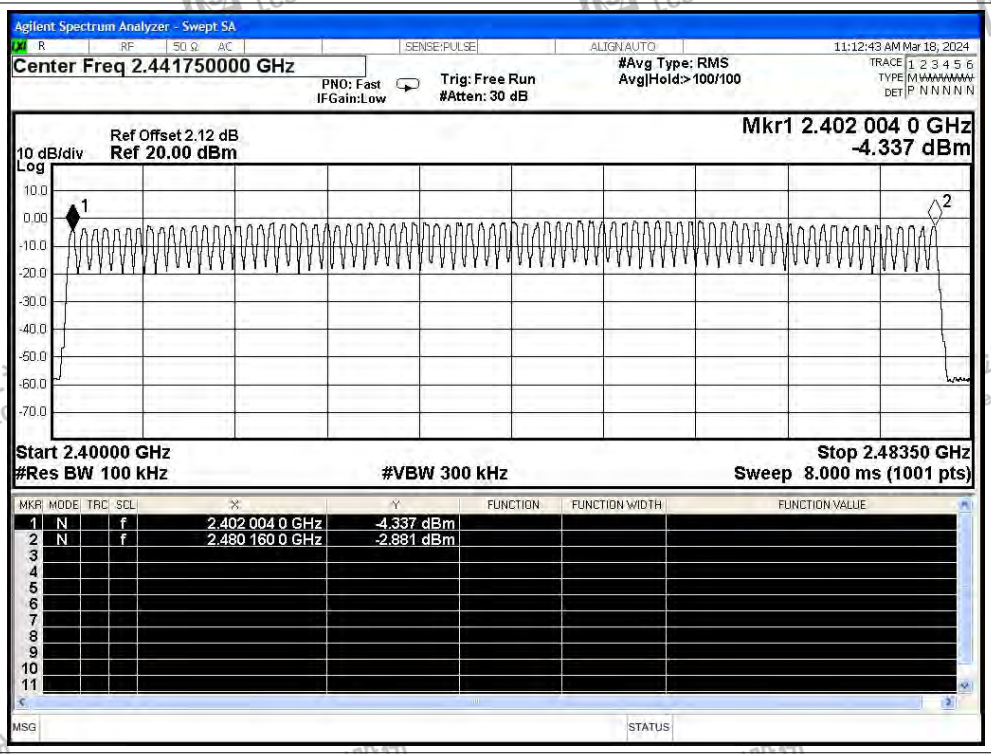


A.5 Number of Hopping Channel

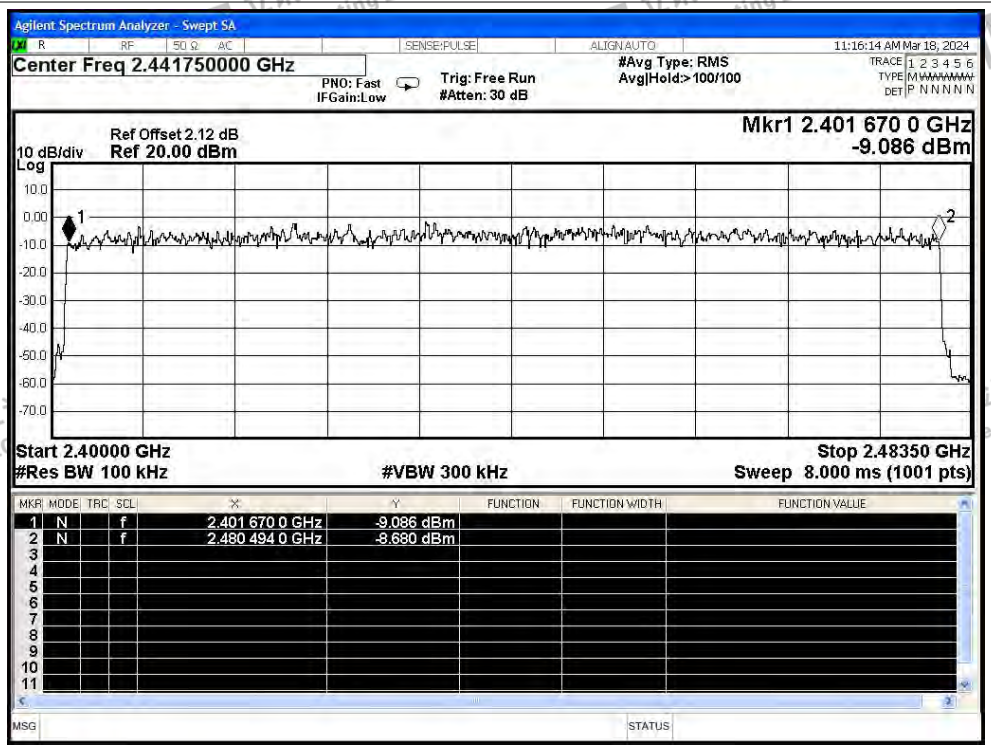
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass
NVNT	3-DH5	Ant1	79	15	Pass

Test Graphs

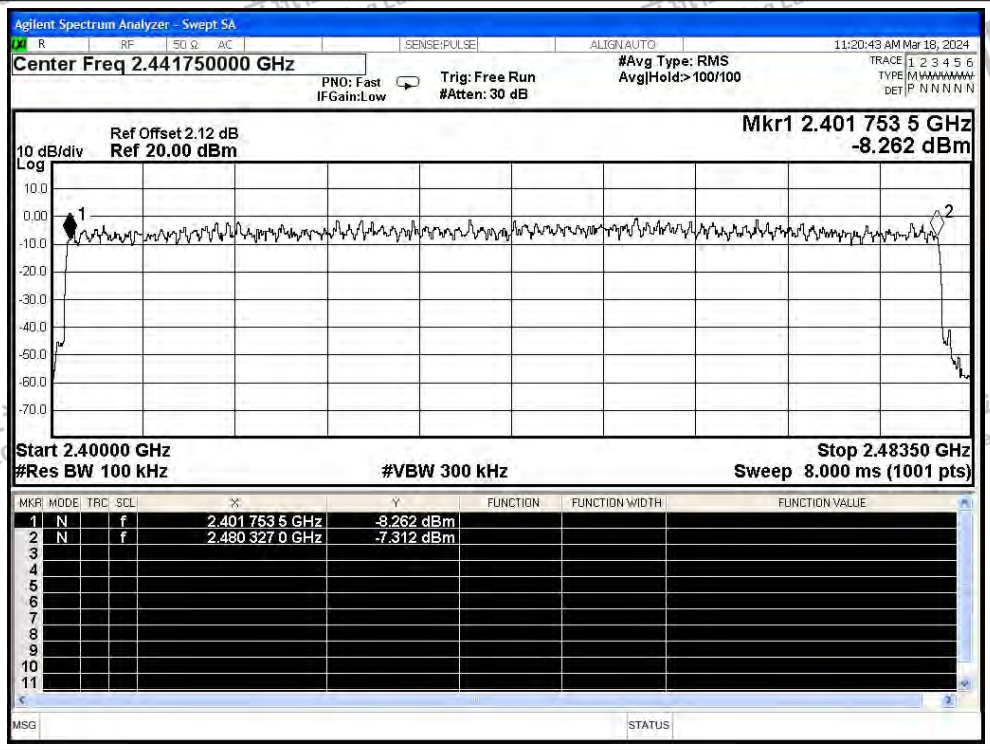
Hopping No. NVNT 1-DH5 2402MHz Ant1



Hopping No. NVNT 2-DH5 2402MHz Ant1



Hopping No. NVNT 3-DH5 2402MHz Ant1

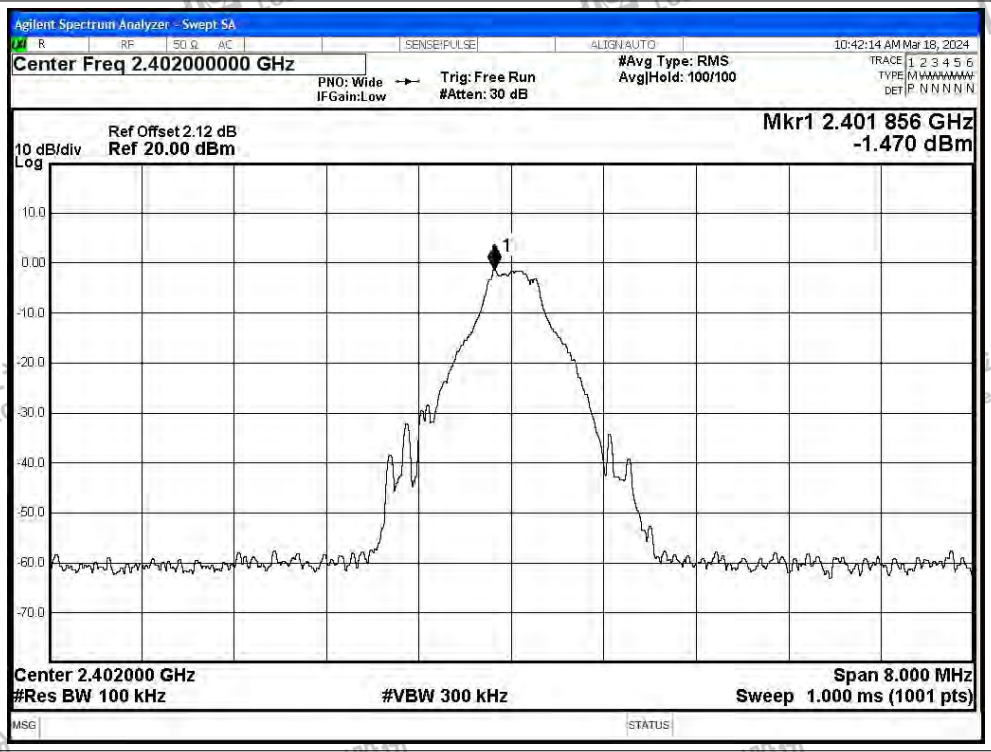


A.6 Band Edge

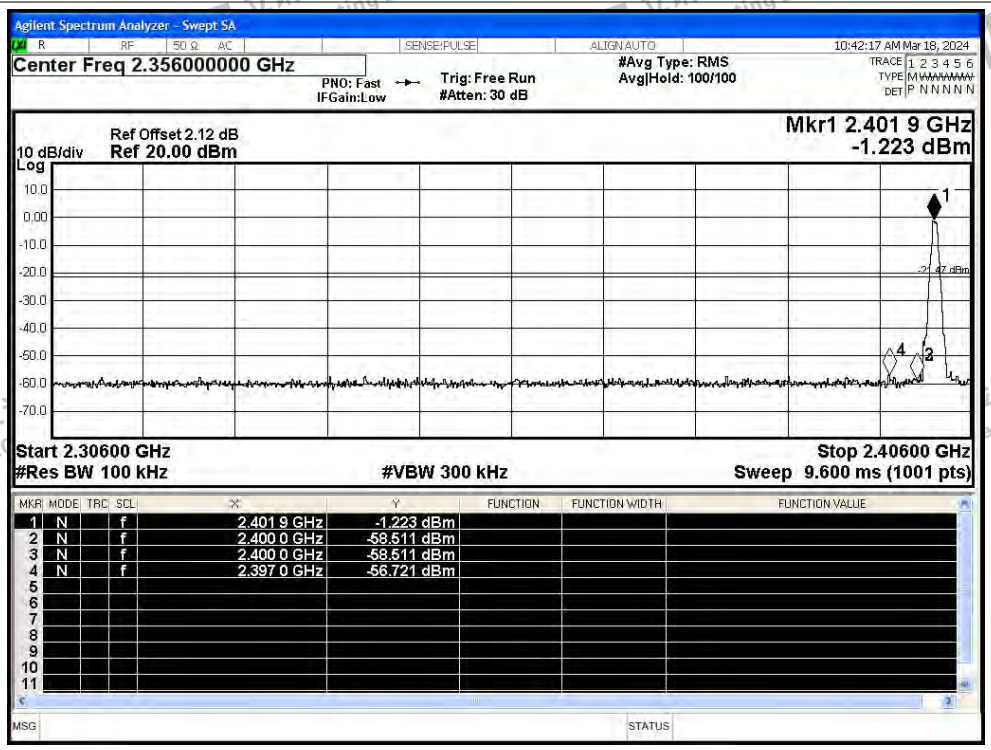
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-55.25	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-57.29	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-51.87	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-54.74	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-51.74	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-54.96	-20	Pass

Test Graphs

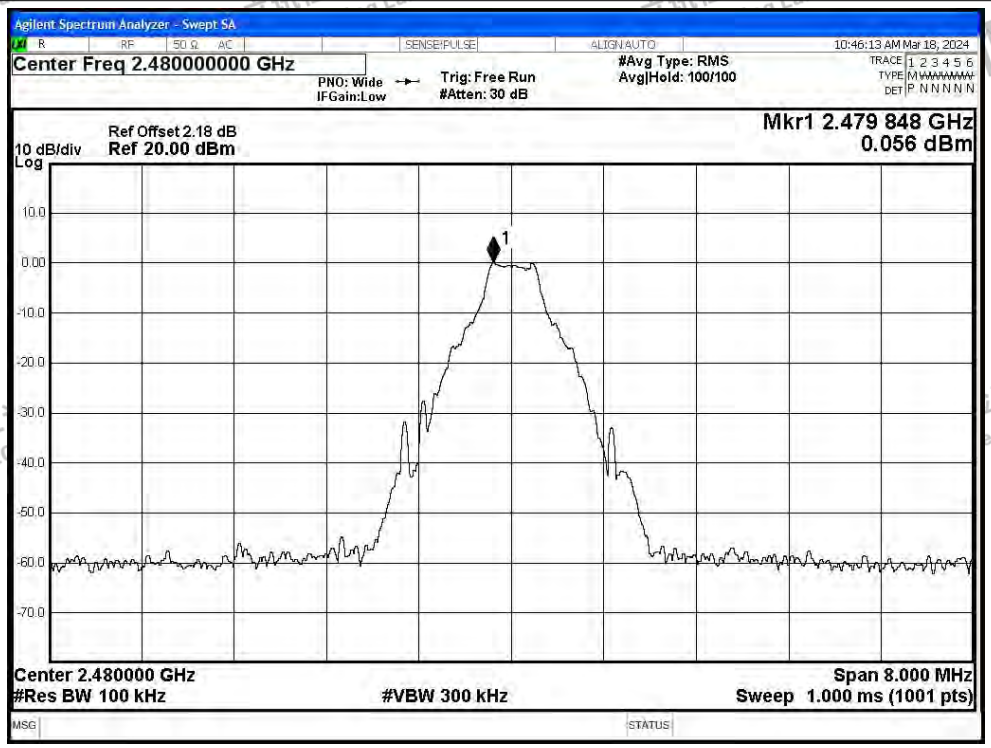
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



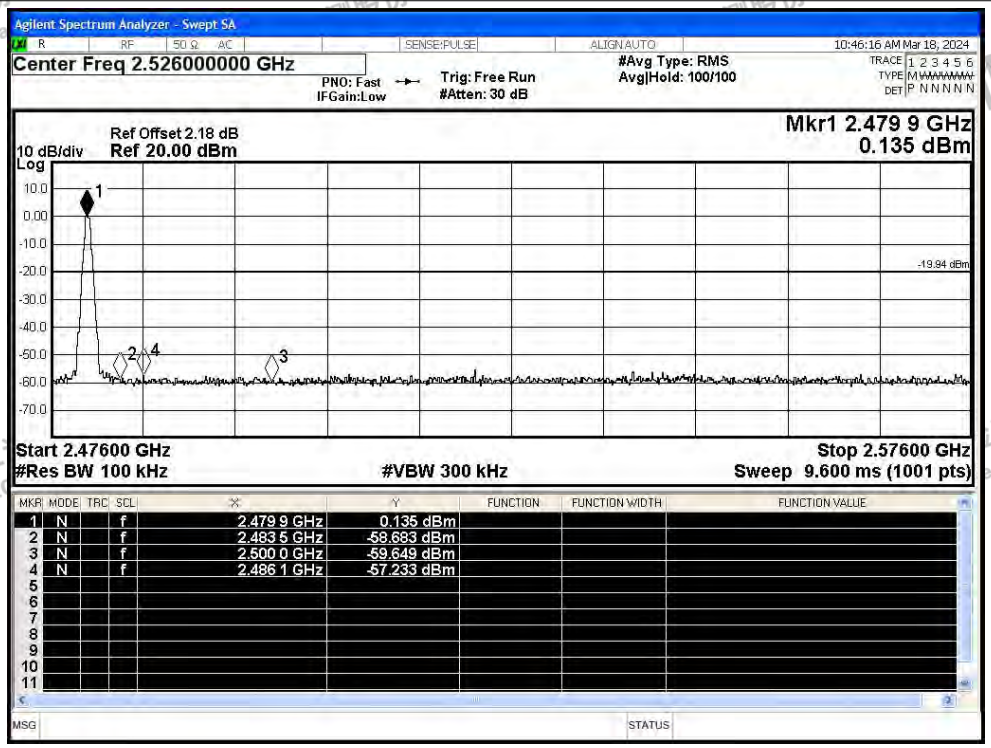
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission



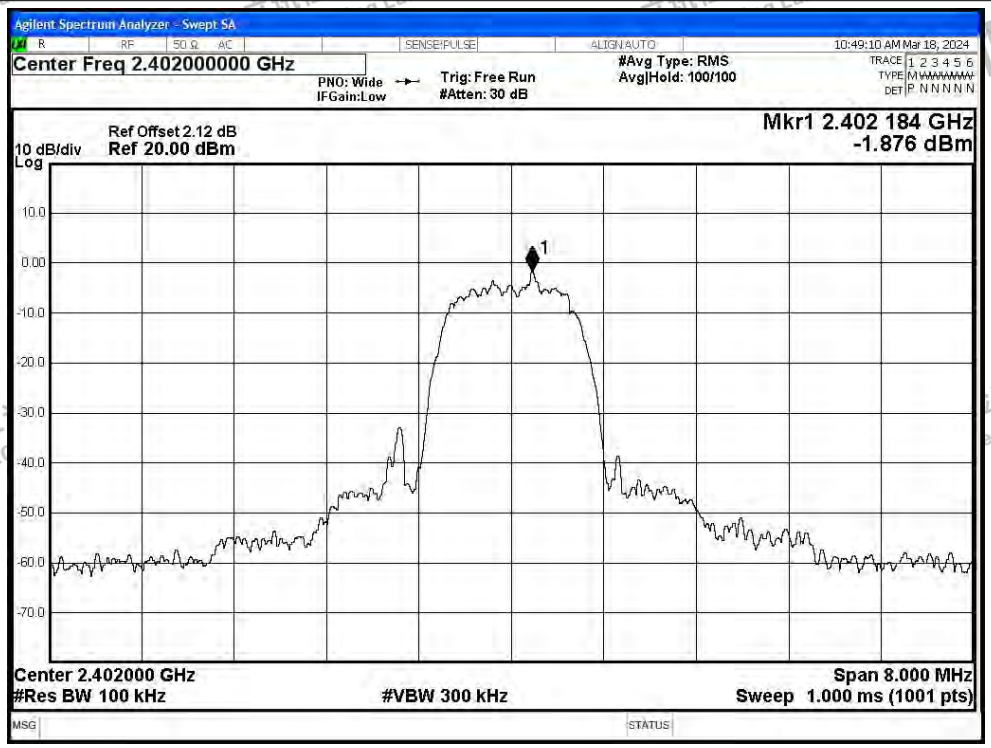
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref



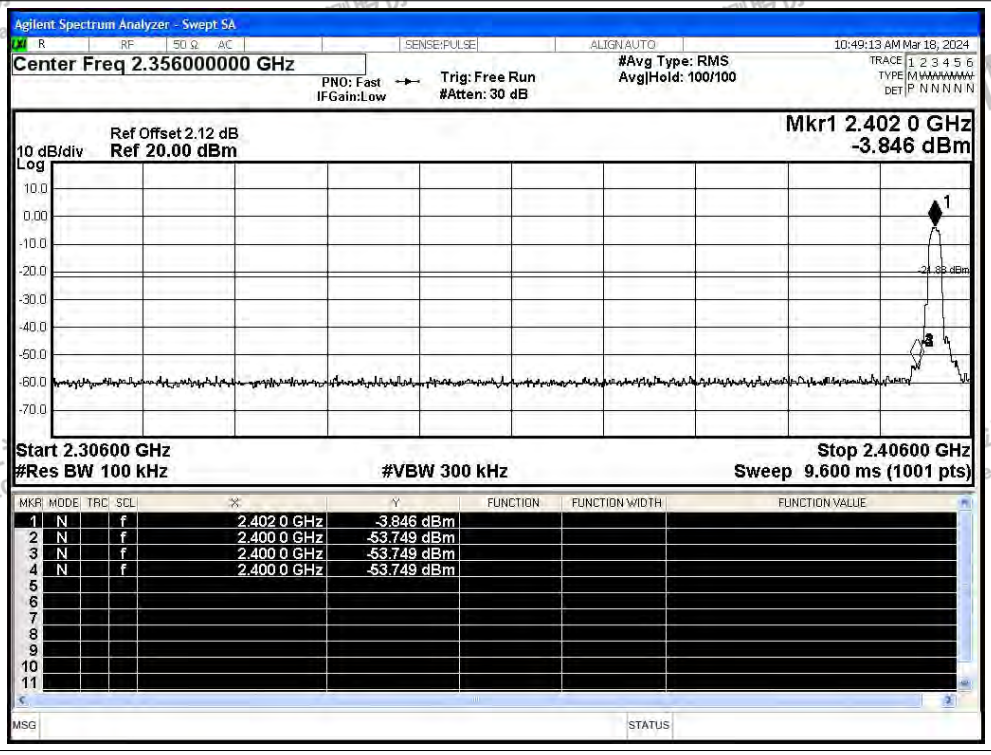
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



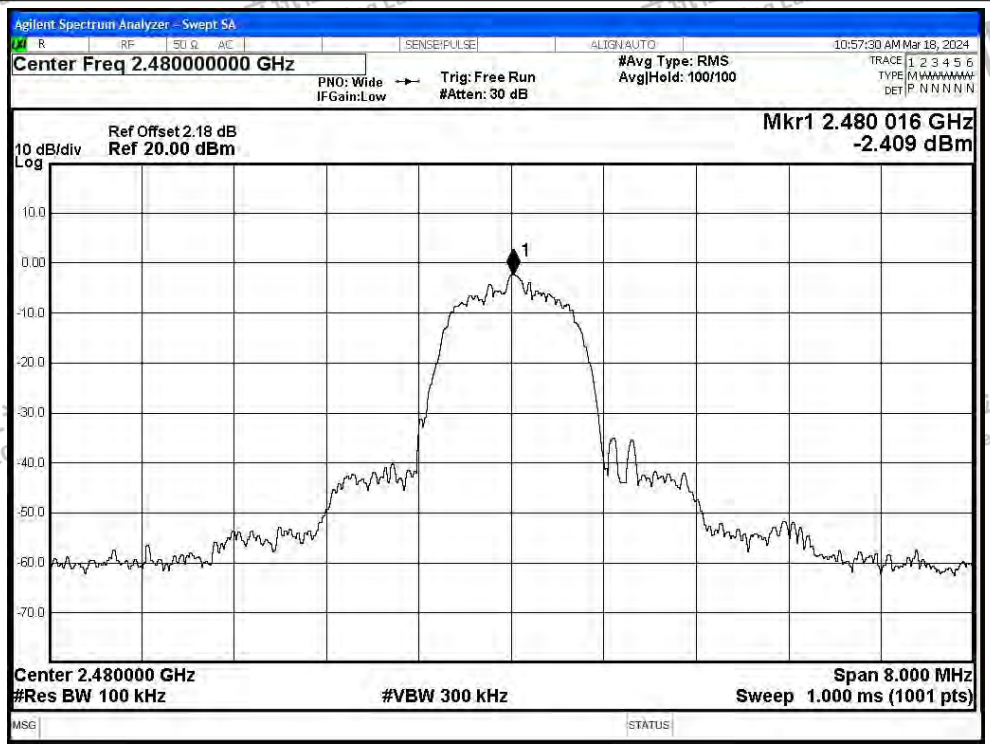
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



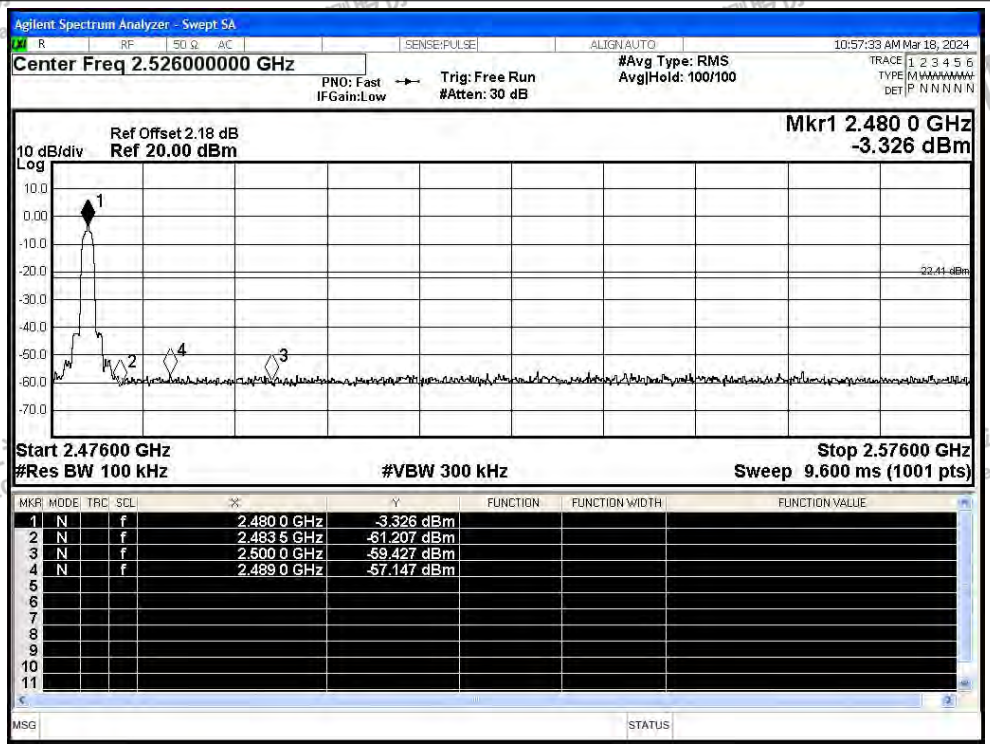
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission



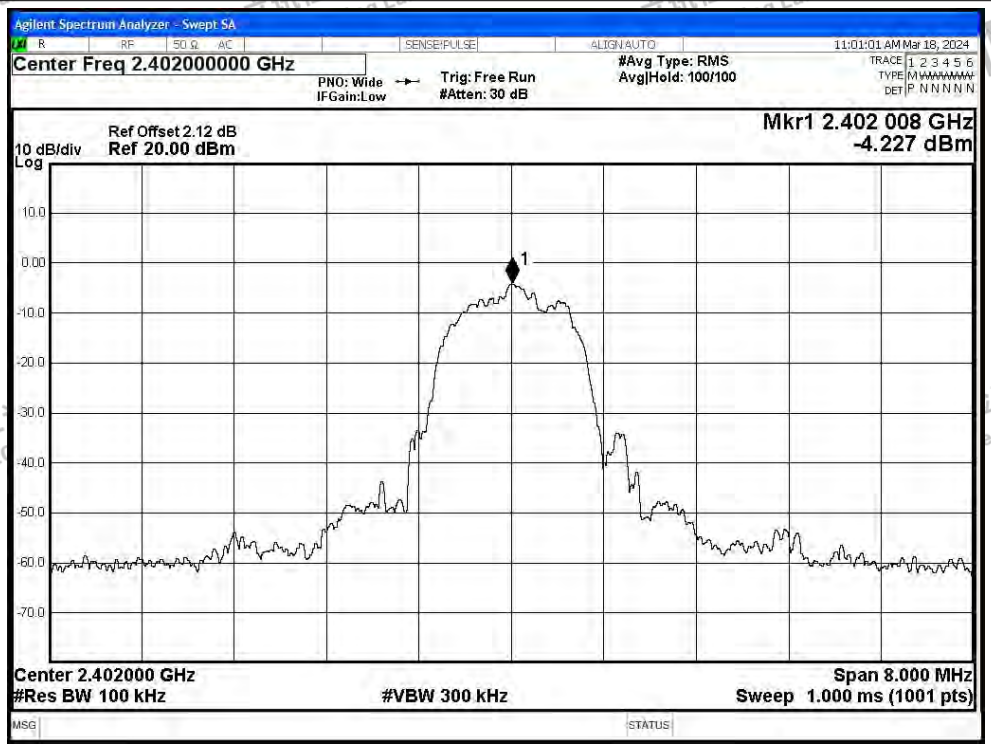
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref



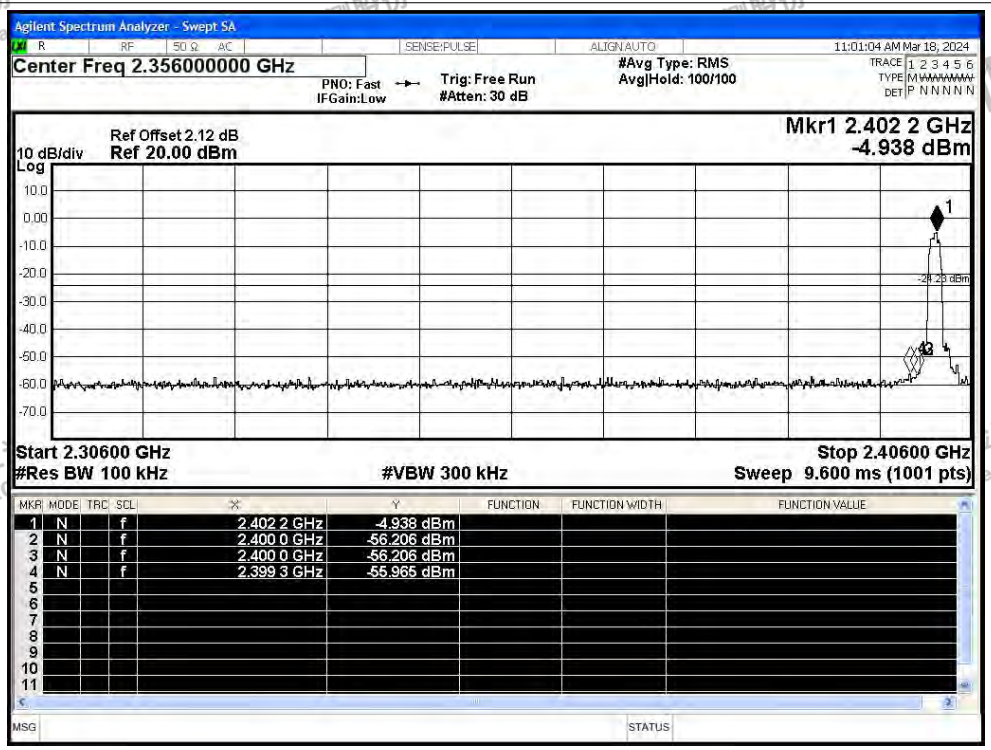
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission



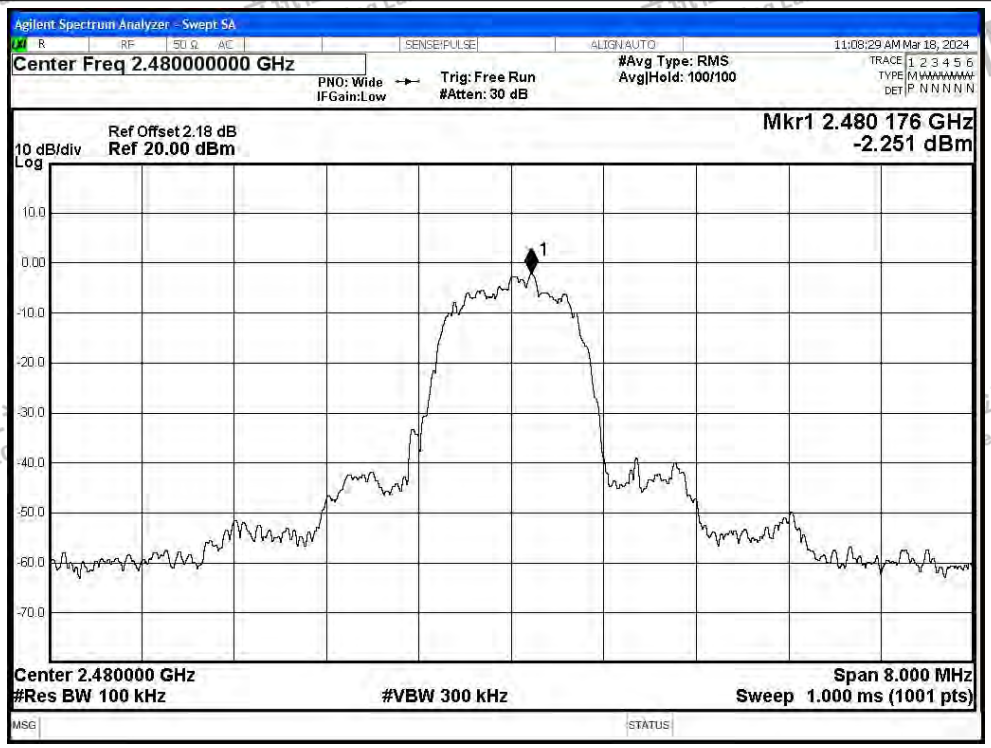
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref



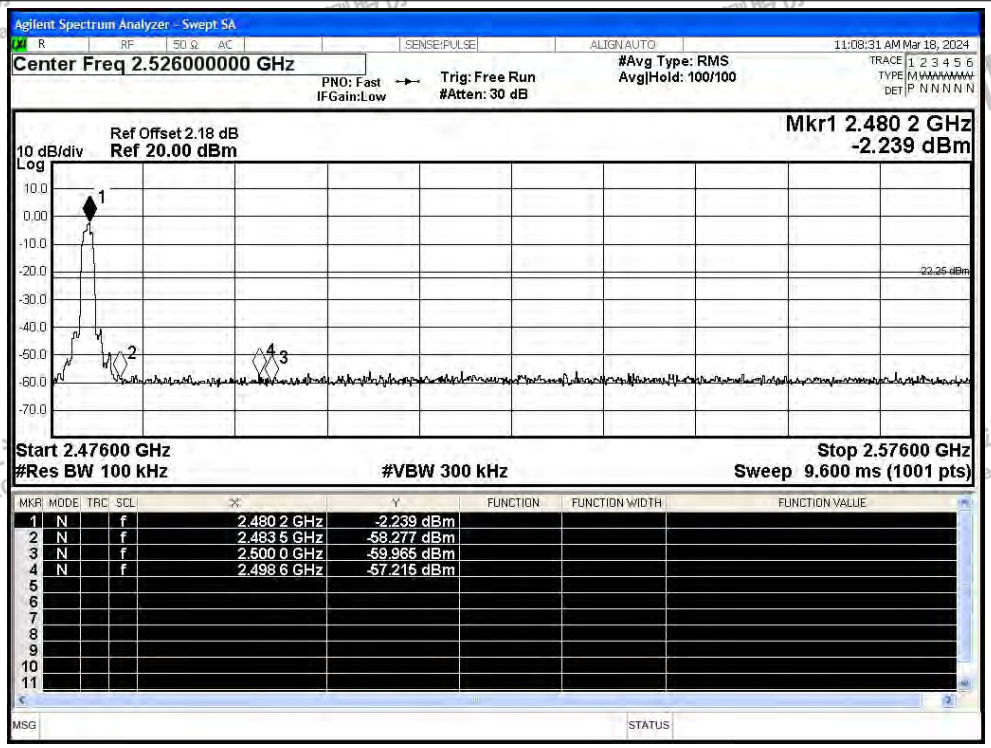
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission



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



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

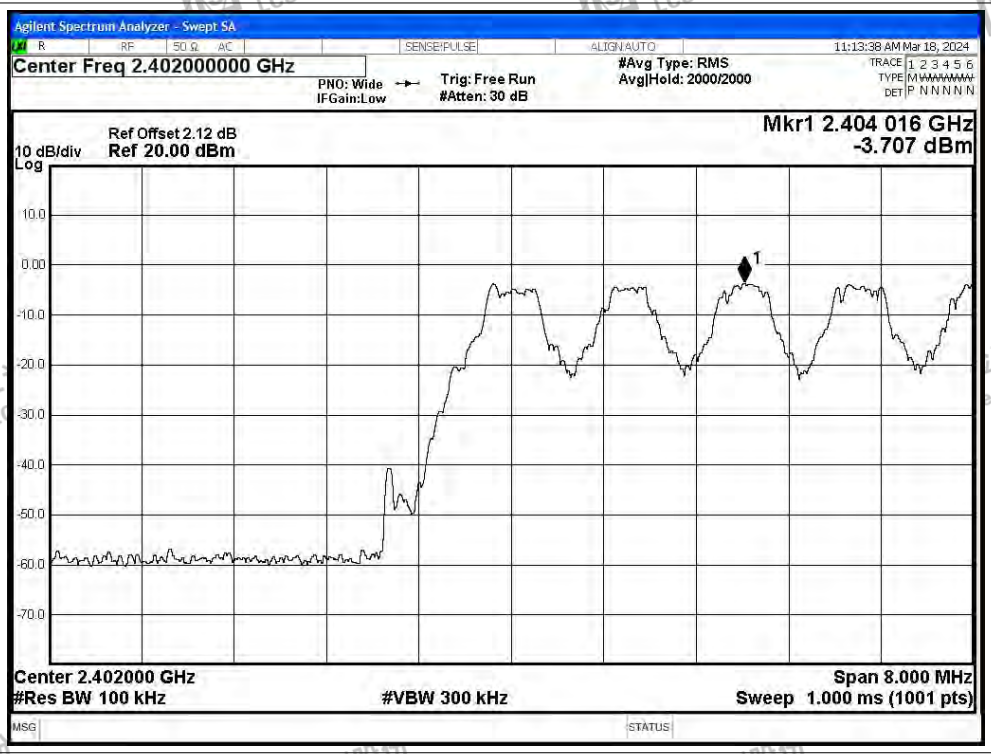


(Hopping)

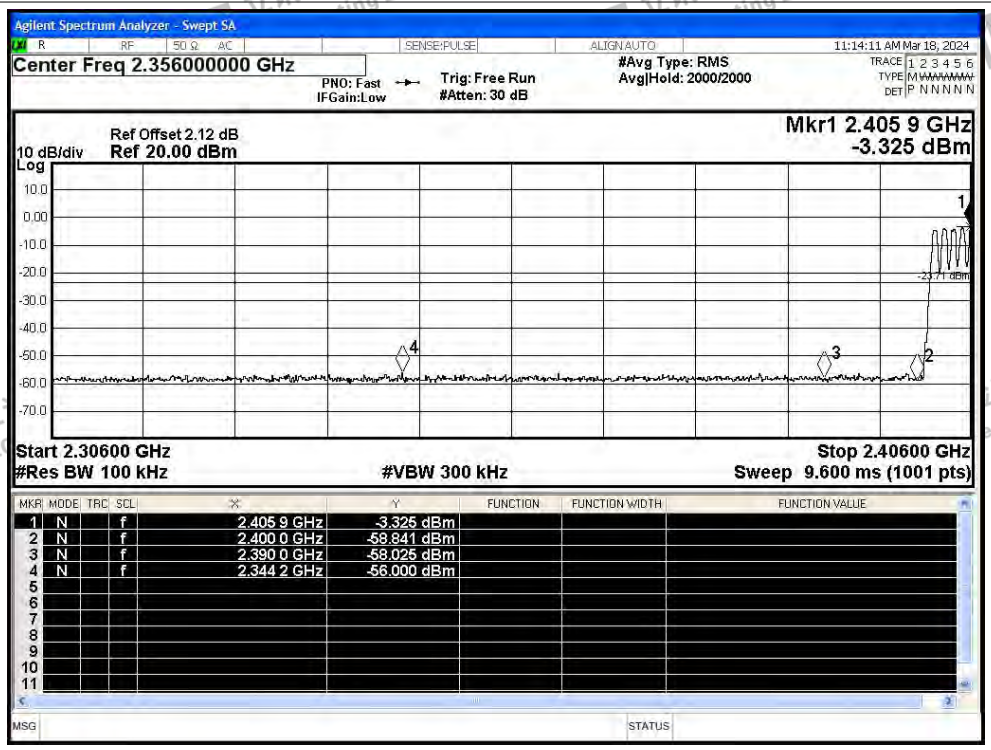
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-52.29	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-53.67	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-52.32	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-51.78	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-52.26	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-53.12	-20	Pass

Test Graphs

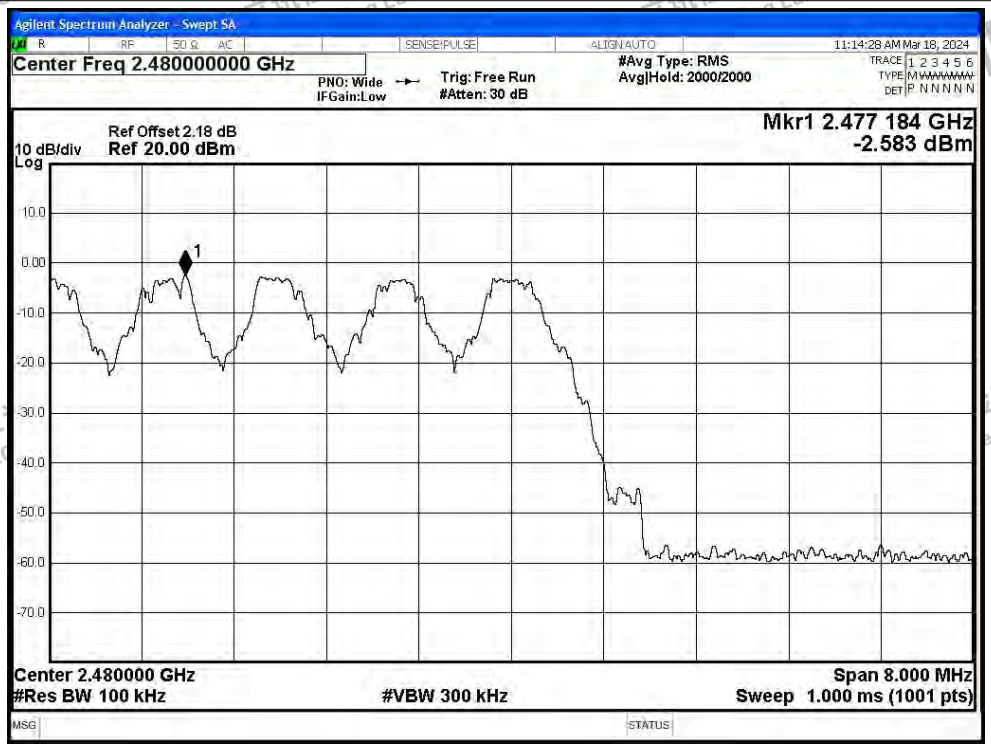
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



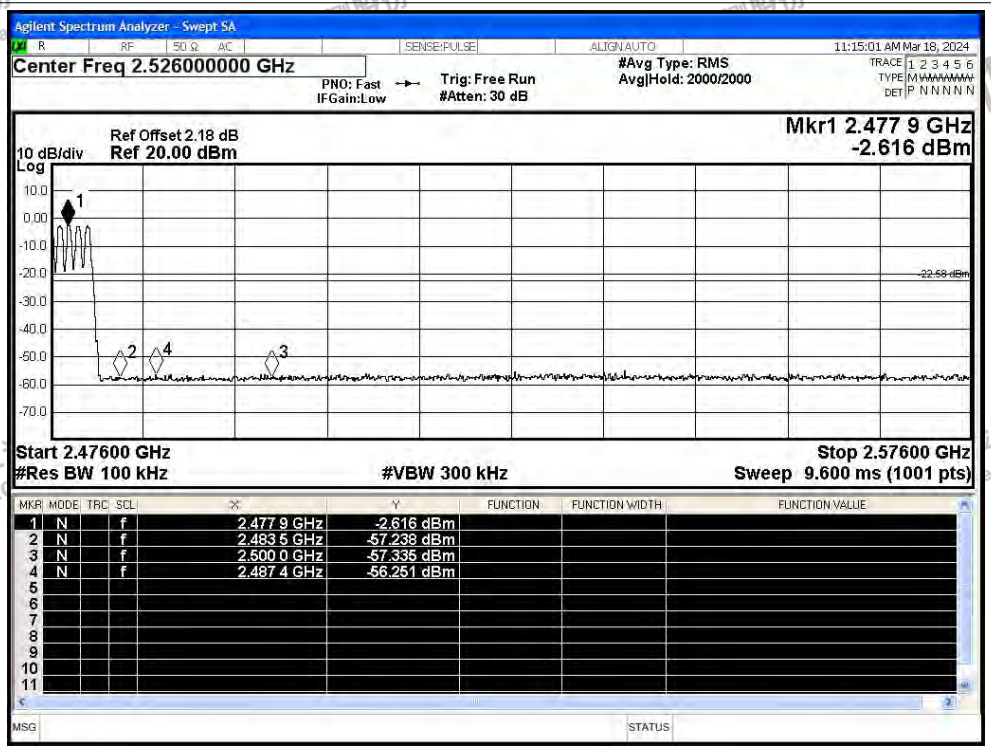
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



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

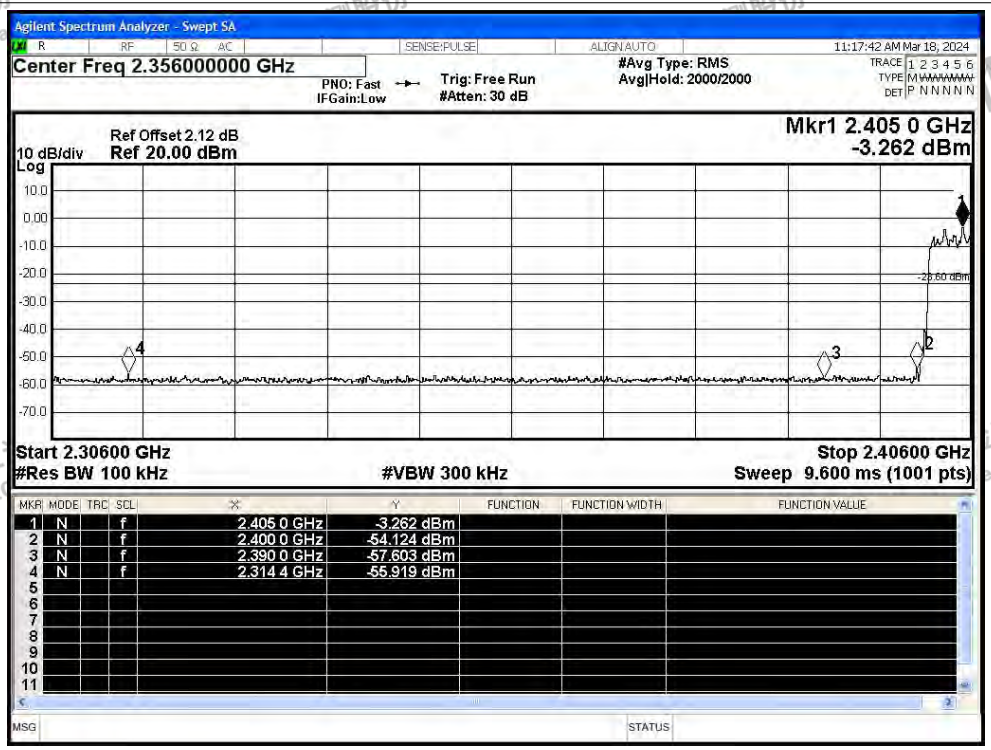


Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission

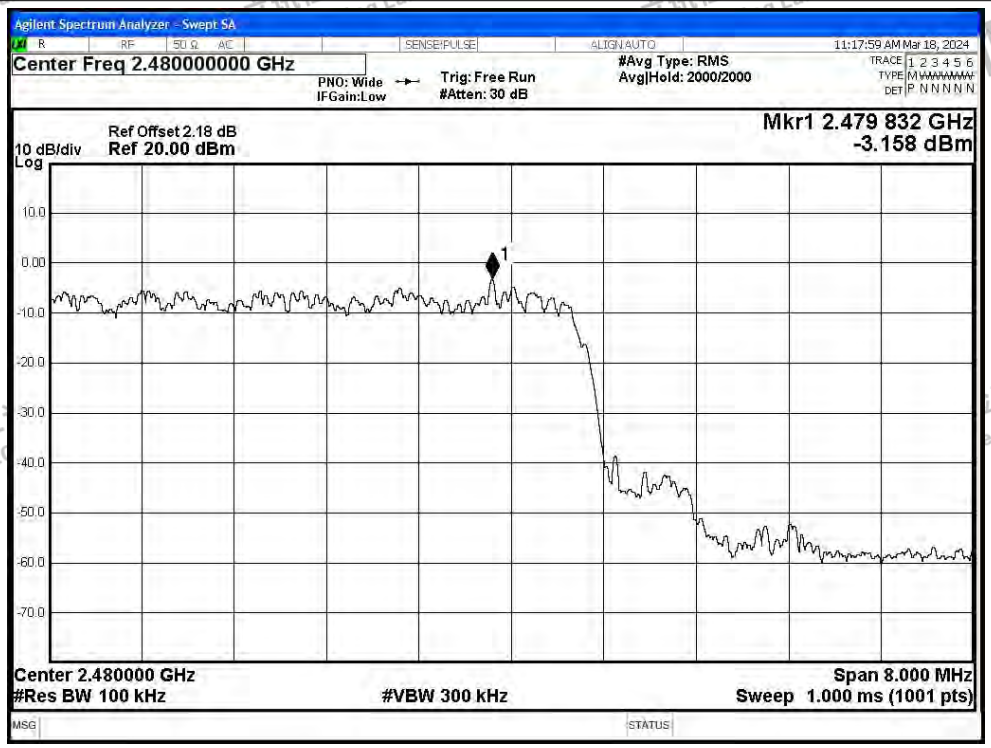


Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref

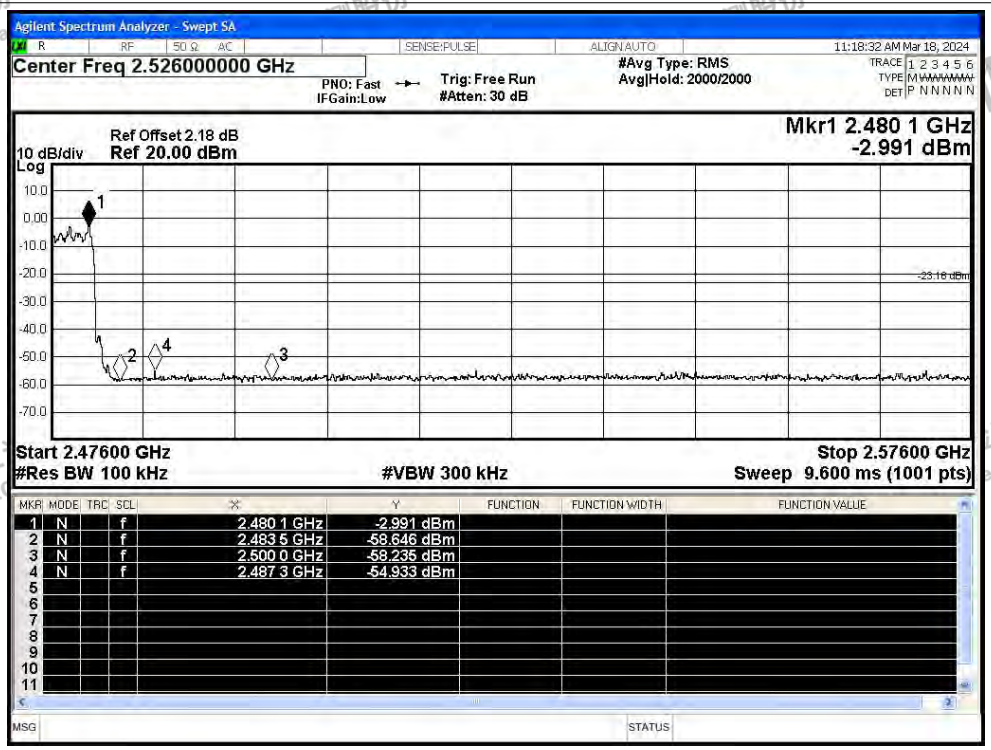
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



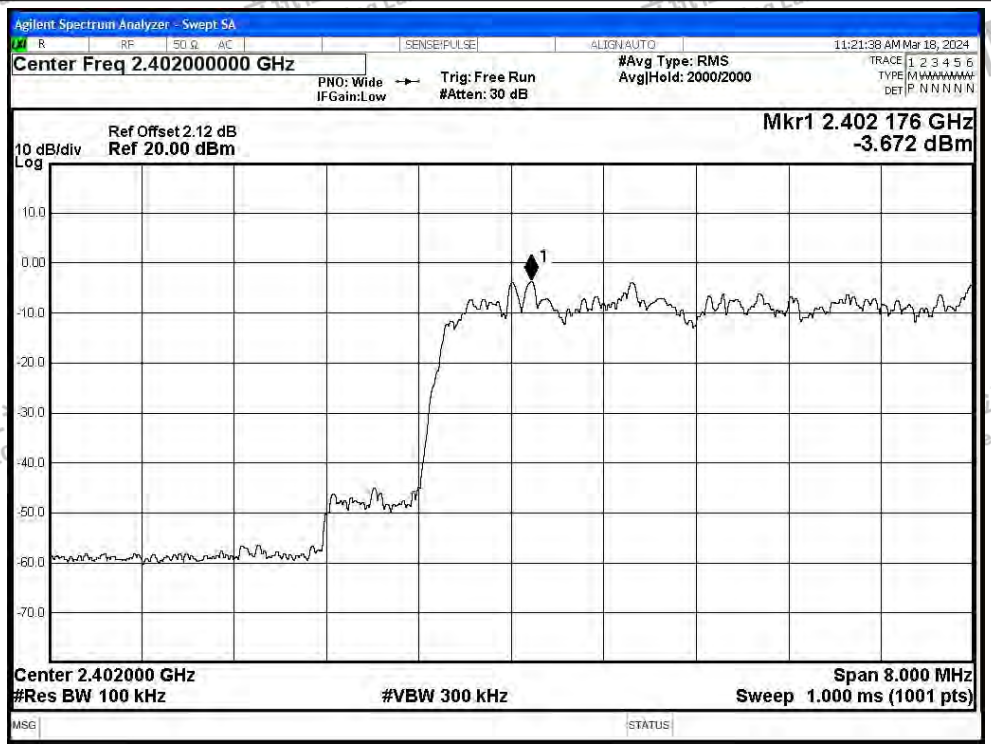
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



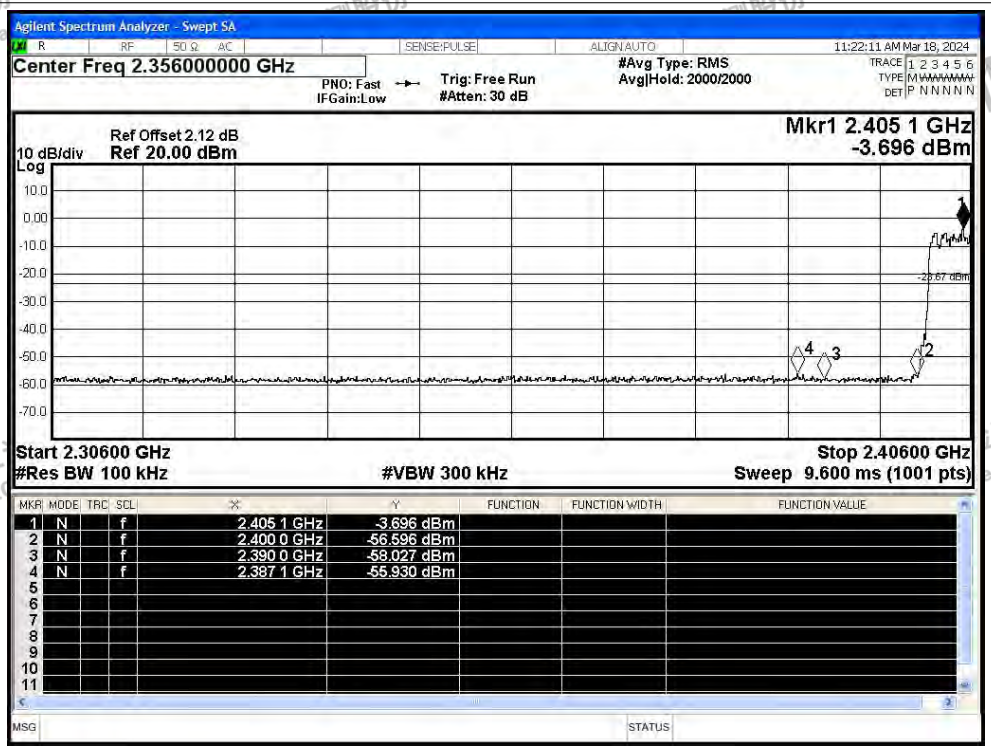
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission



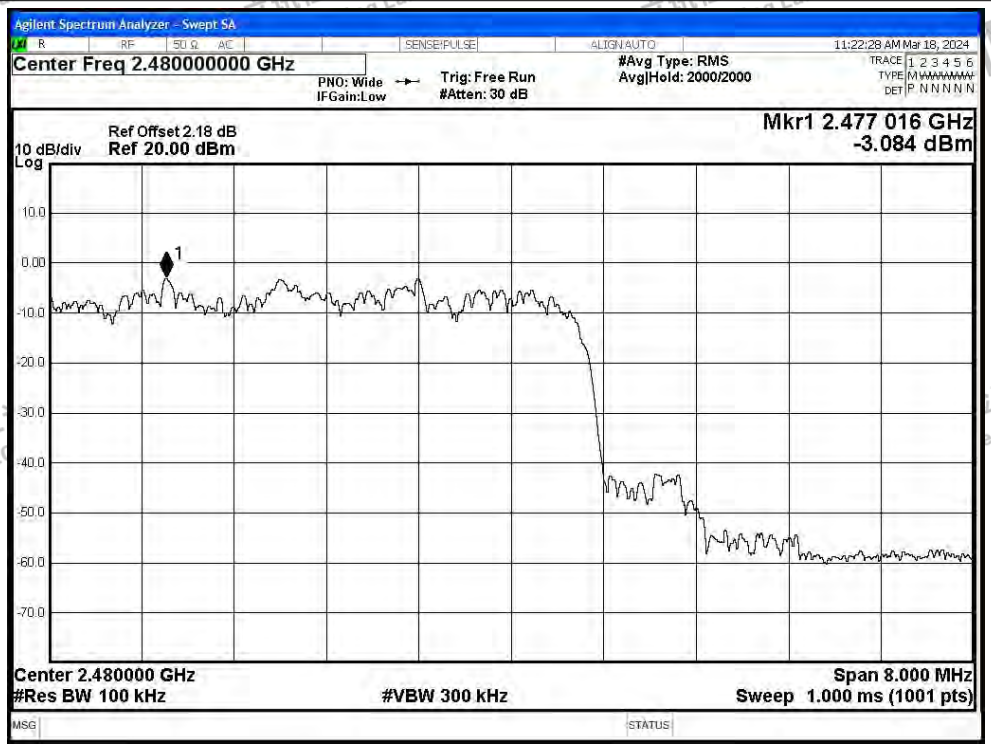
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref



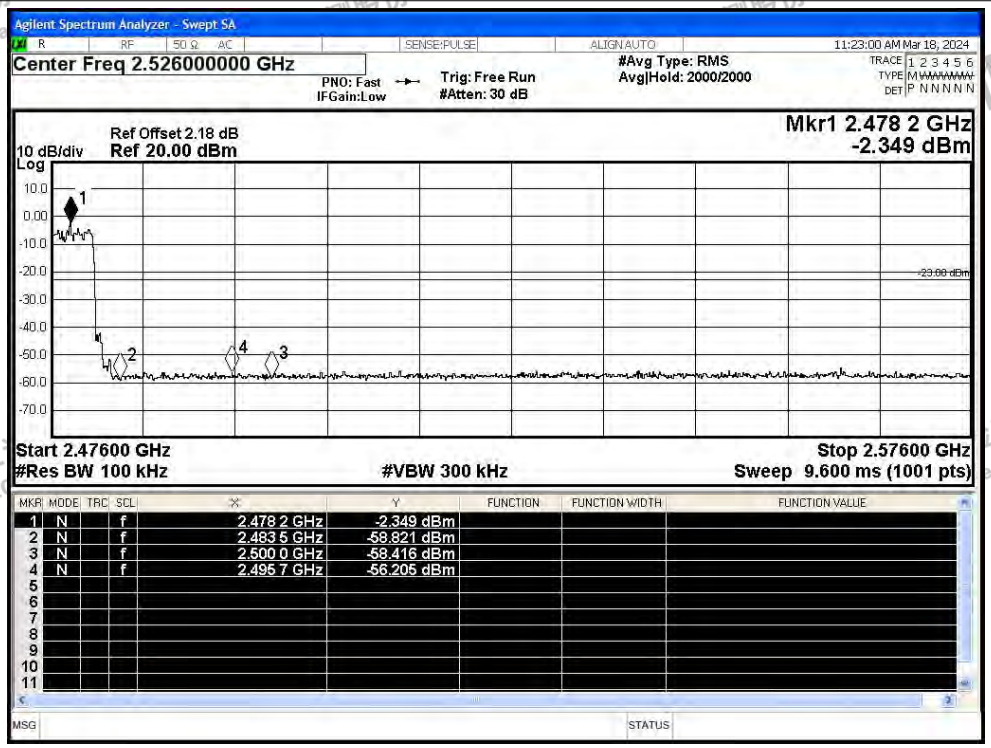
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission



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



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



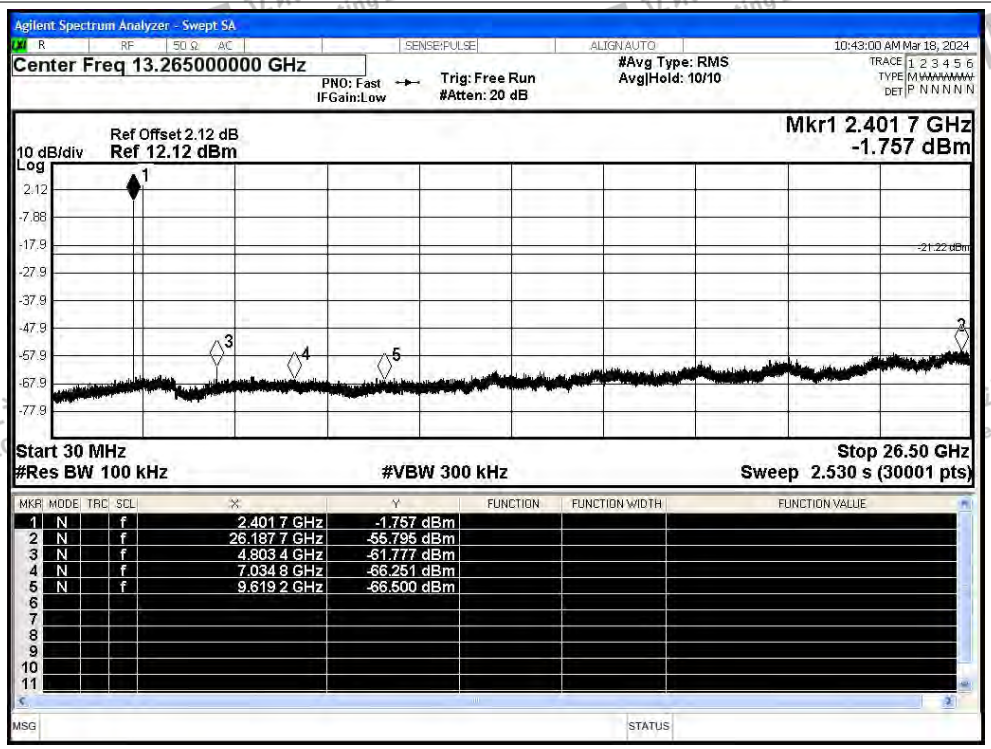
A.7 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-54.58	-20	Pass
NVNT	1-DH5	2441	Ant1	-54.86	-20	Pass
NVNT	1-DH5	2480	Ant1	-54.94	-20	Pass
NVNT	2-DH5	2402	Ant1	-53.91	-20	Pass
NVNT	2-DH5	2441	Ant1	-52.68	-20	Pass
NVNT	2-DH5	2480	Ant1	-52.59	-20	Pass
NVNT	3-DH5	2402	Ant1	-51.91	-20	Pass
NVNT	3-DH5	2441	Ant1	-51.54	-20	Pass
NVNT	3-DH5	2480	Ant1	-52.05	-20	Pass

Test Graphs

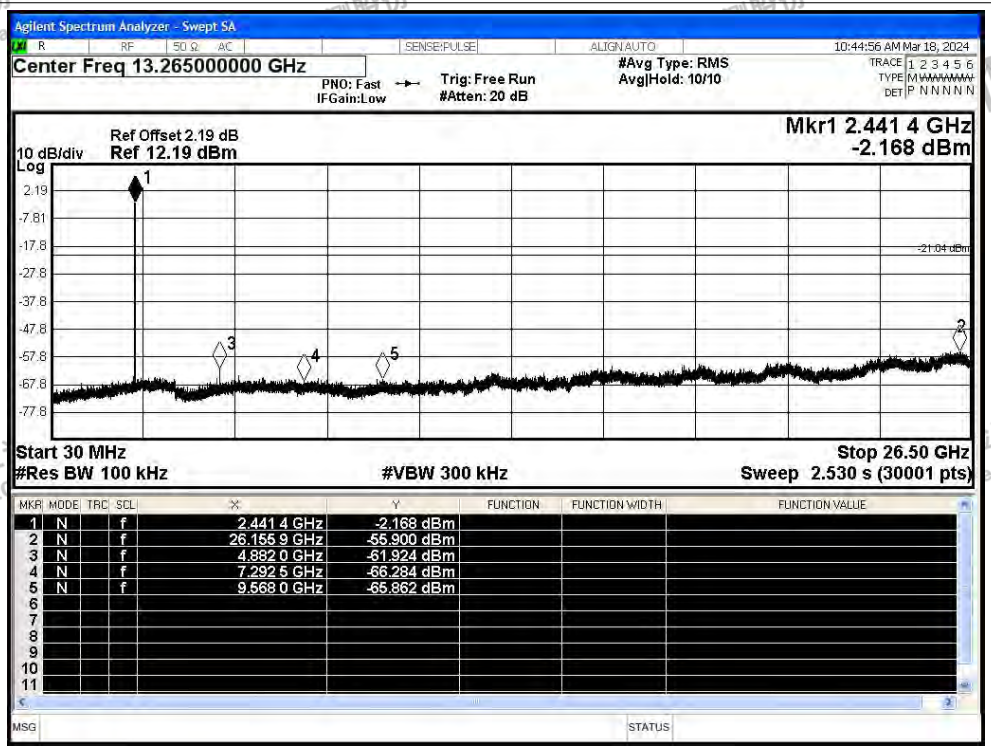
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



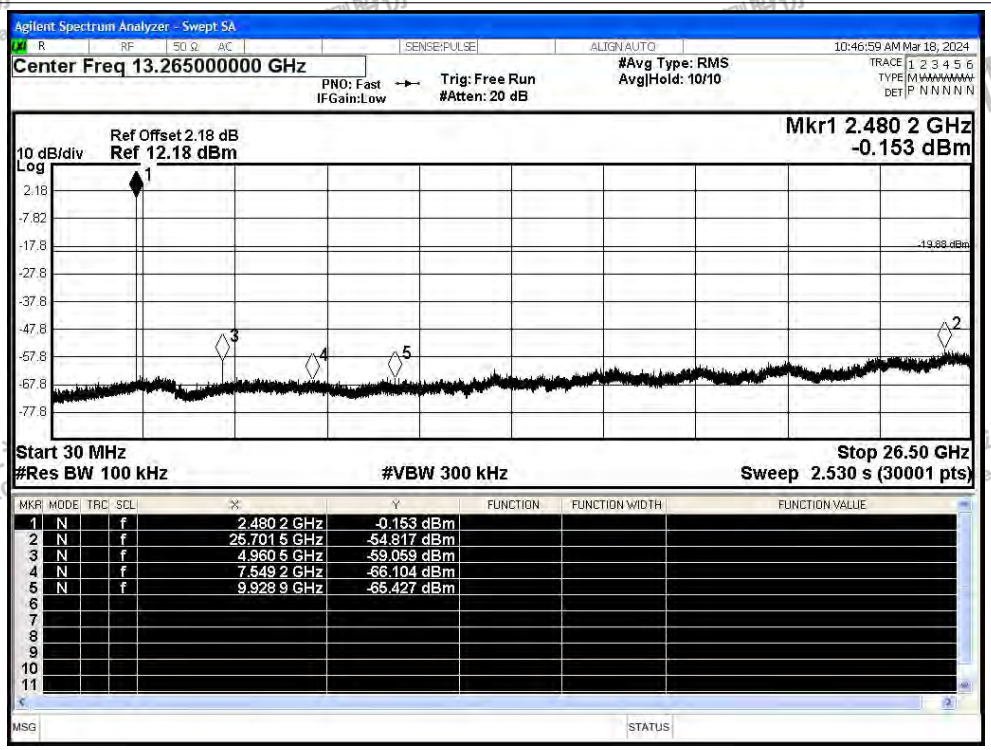
Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref

Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission

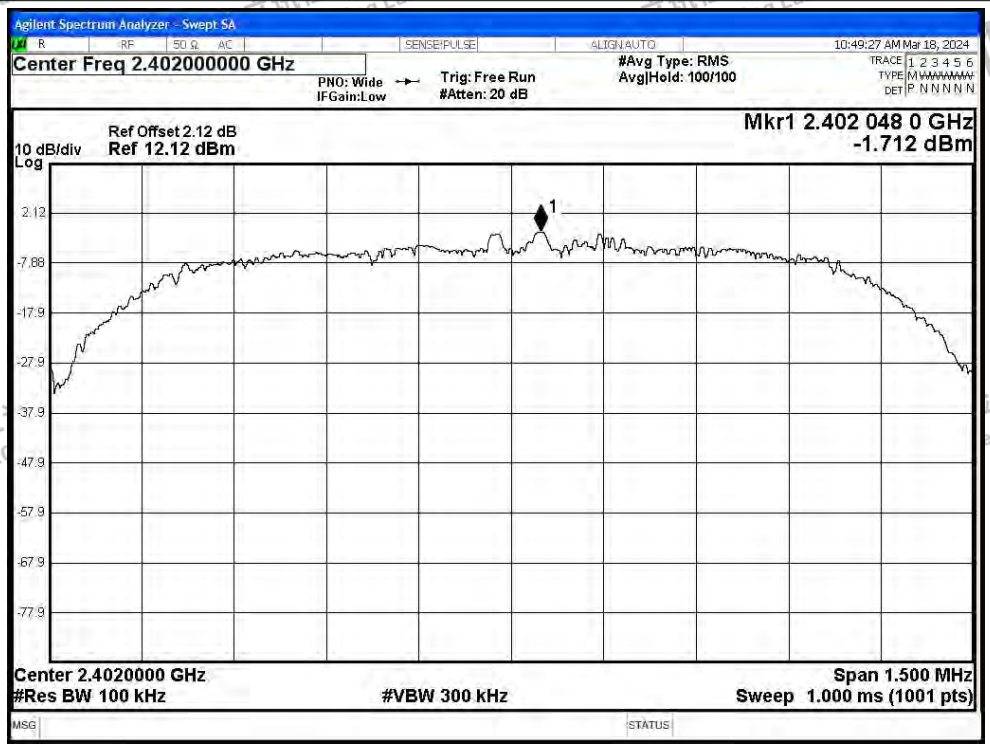


Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref

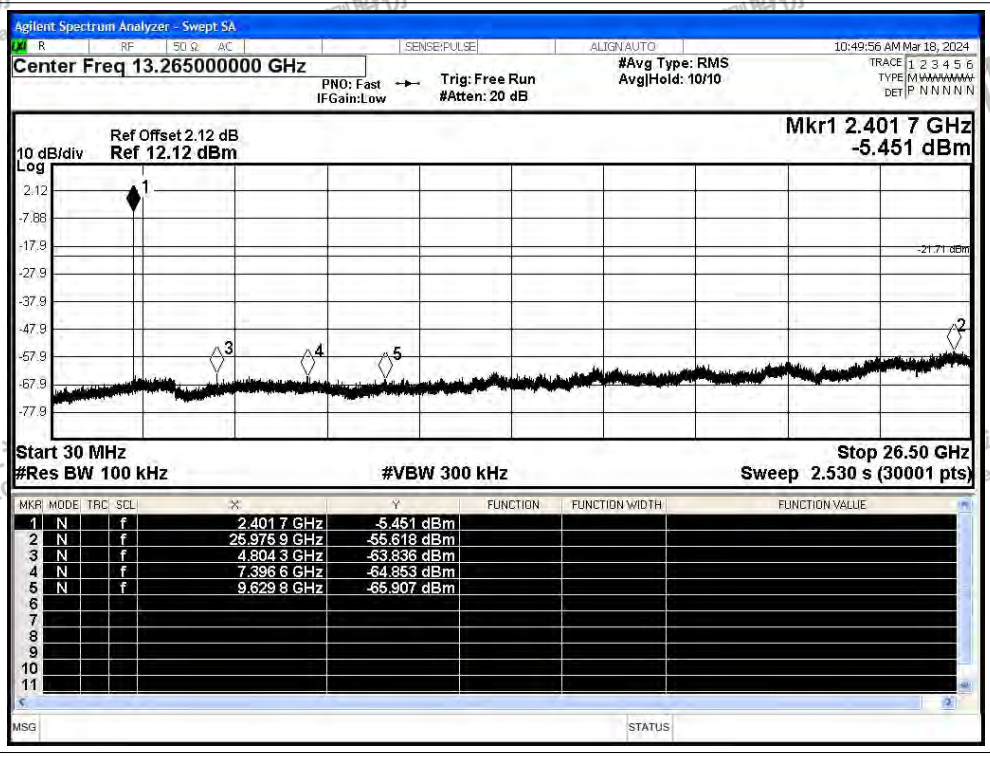
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission



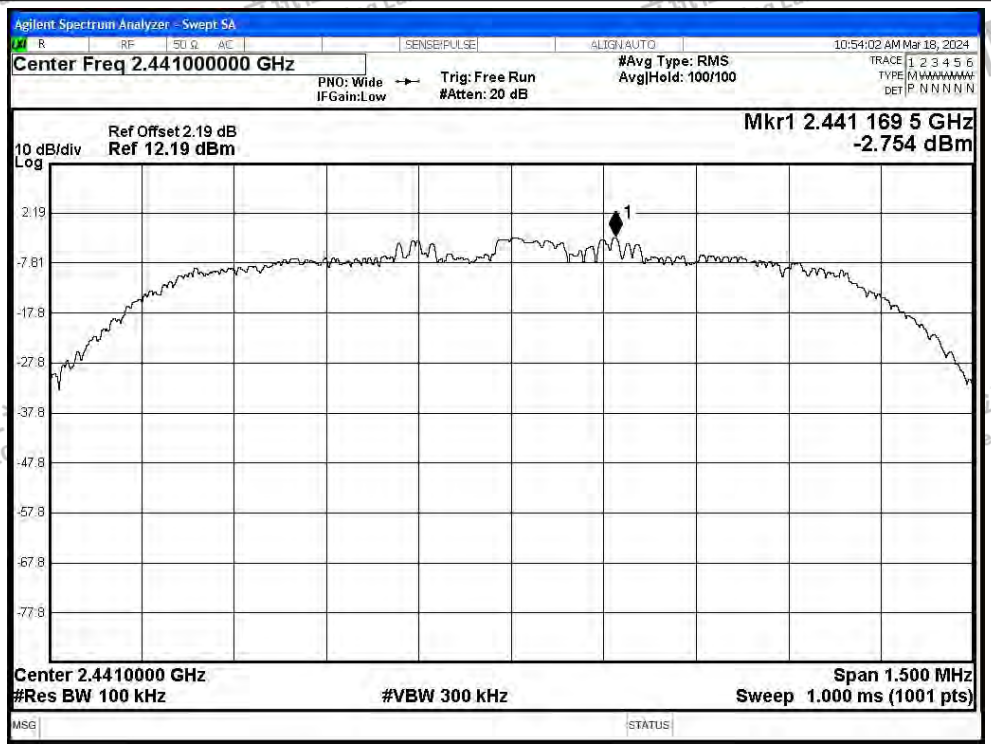
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref



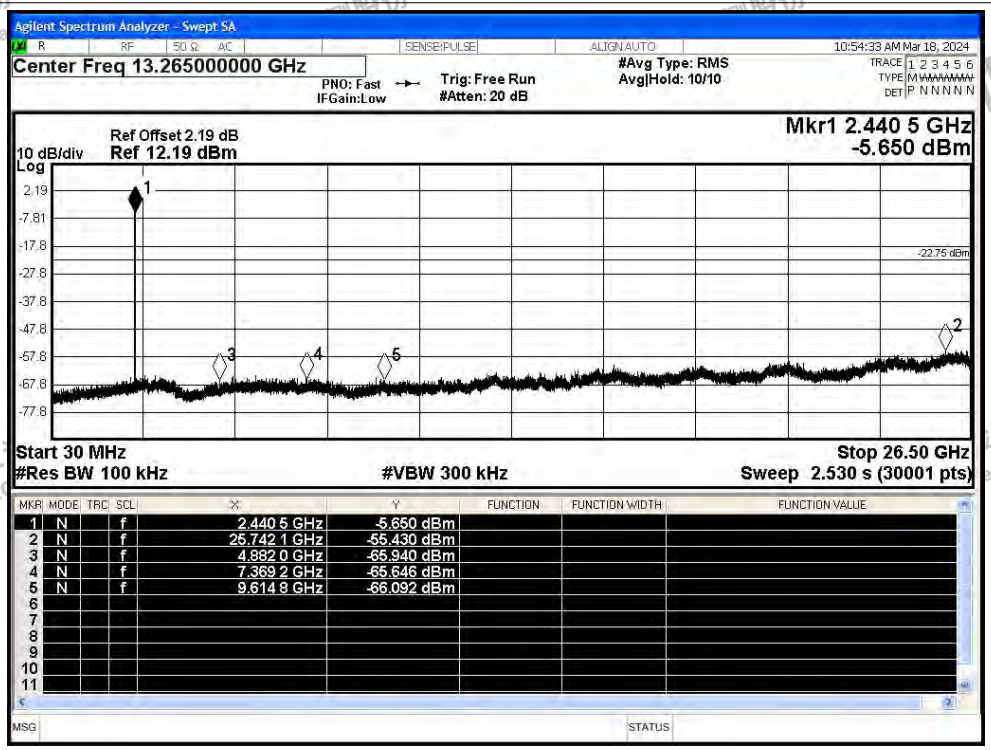
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission



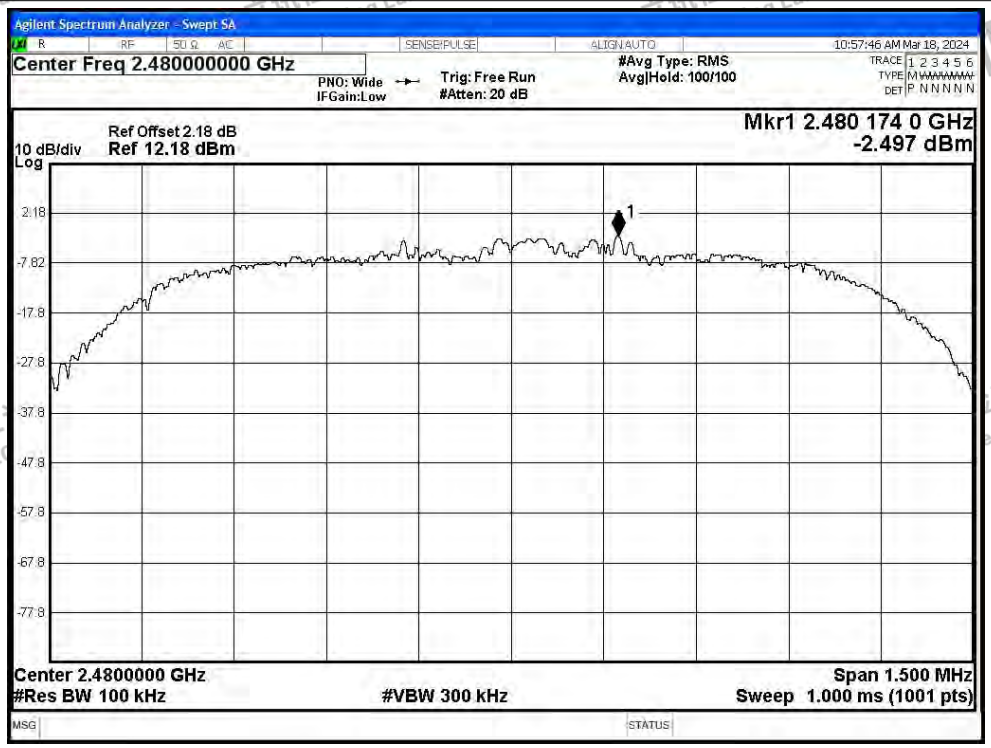
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



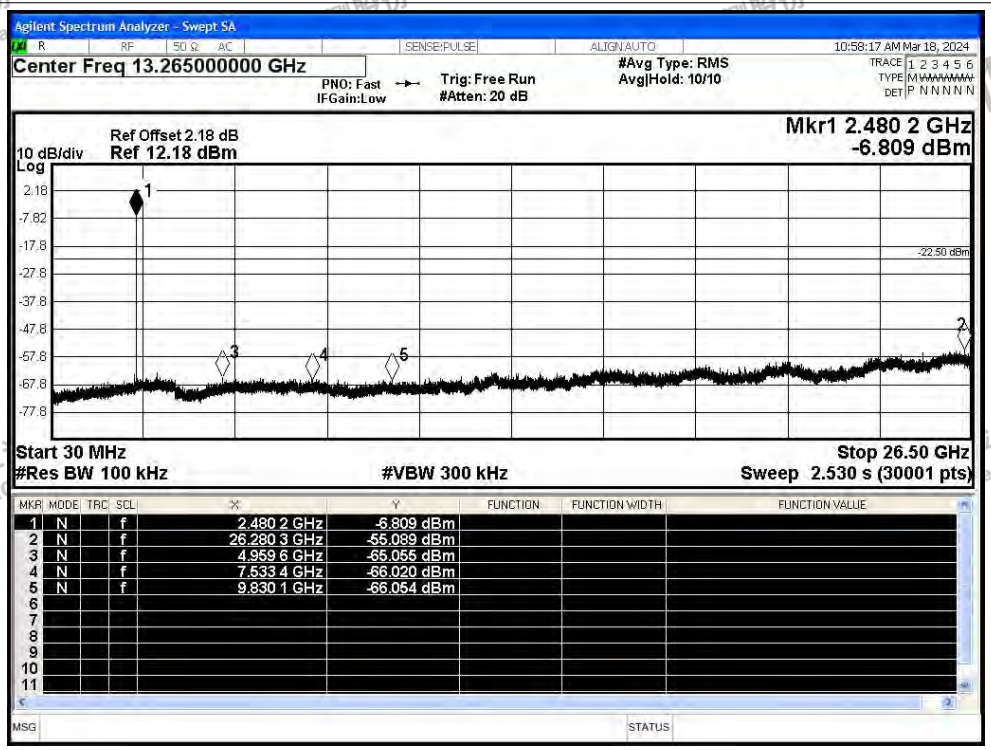
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



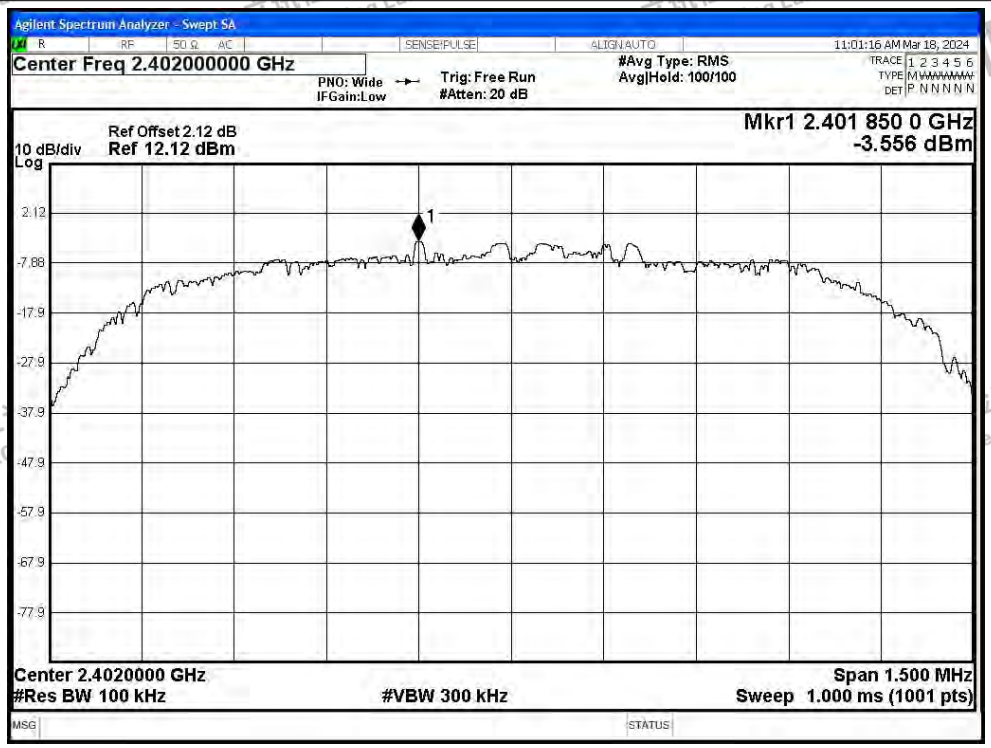
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



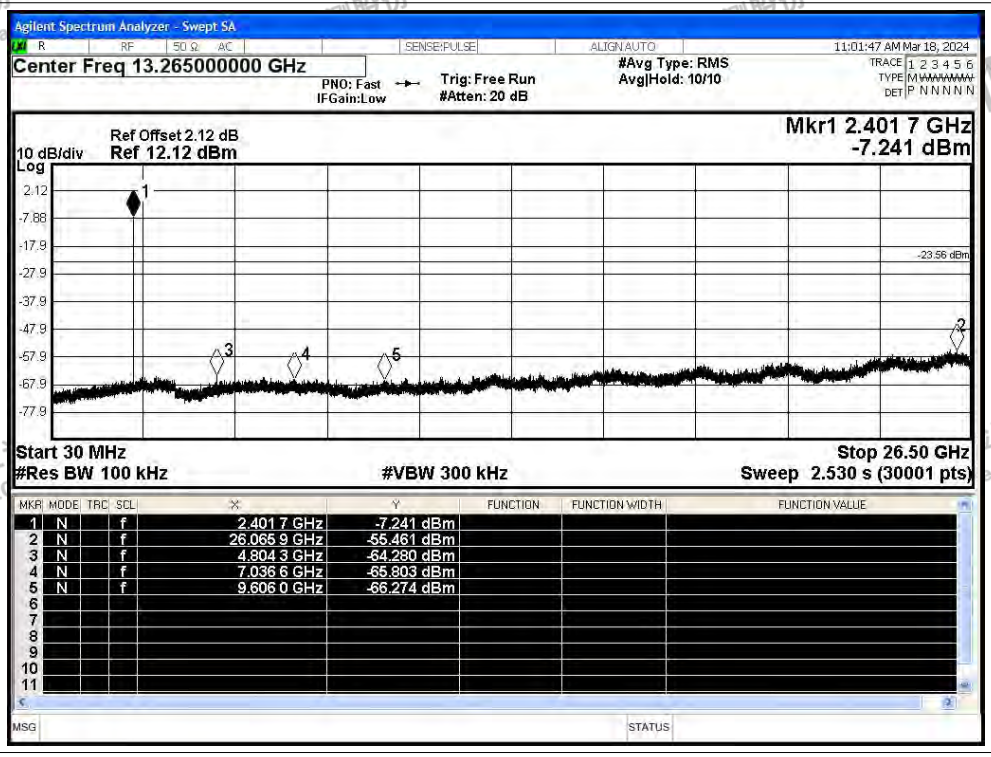
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission



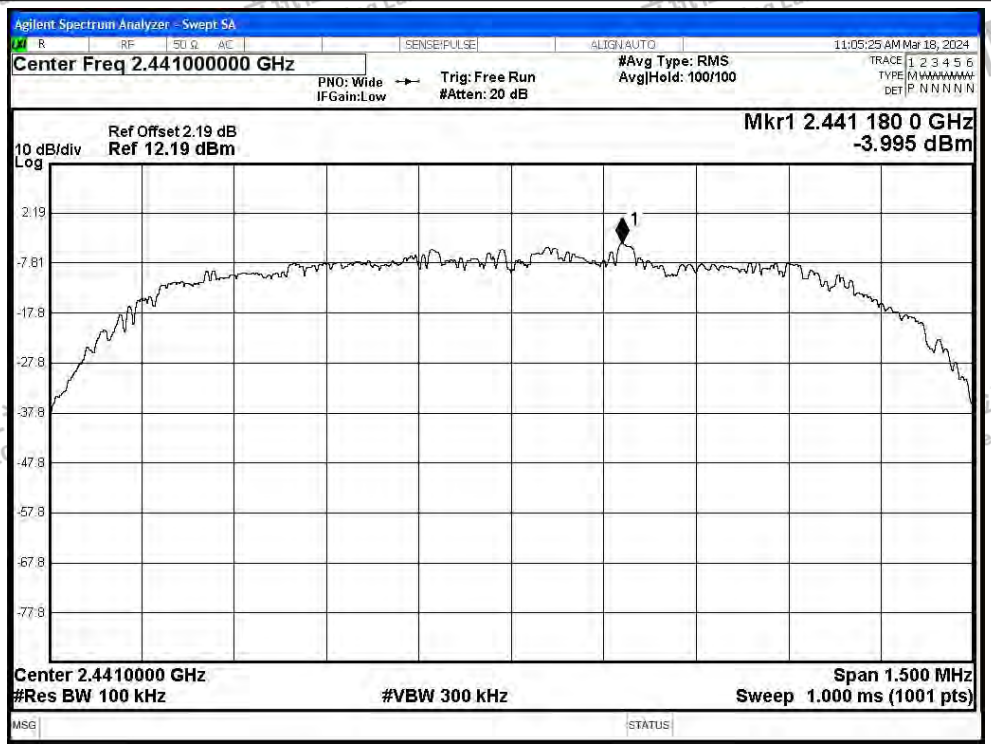
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref



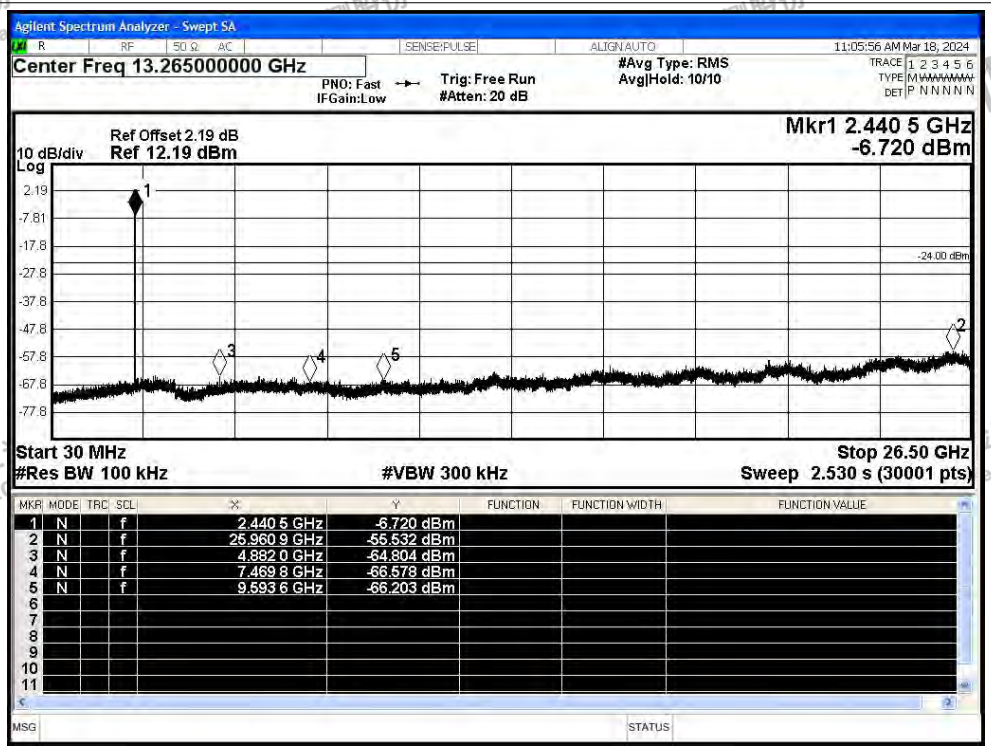
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Emission



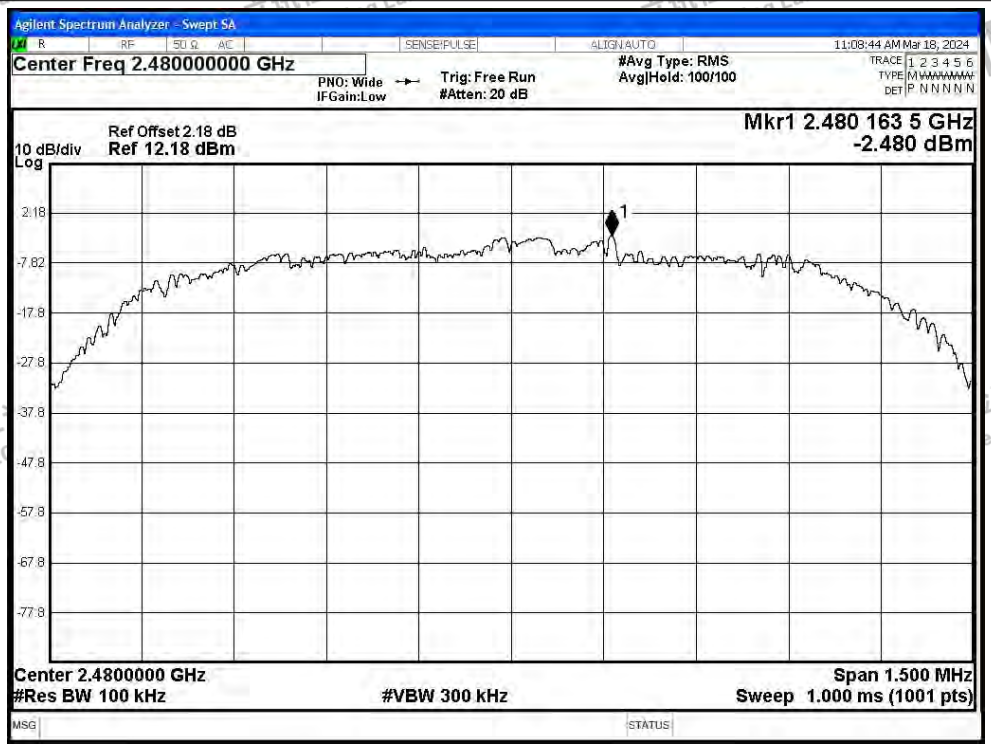
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref



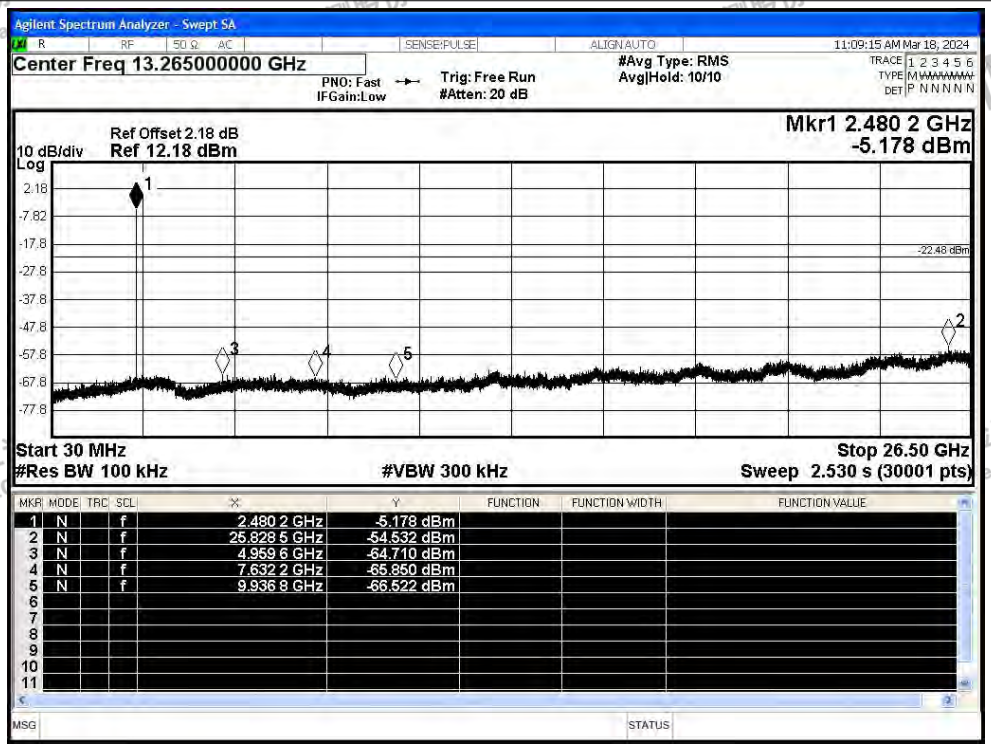
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission

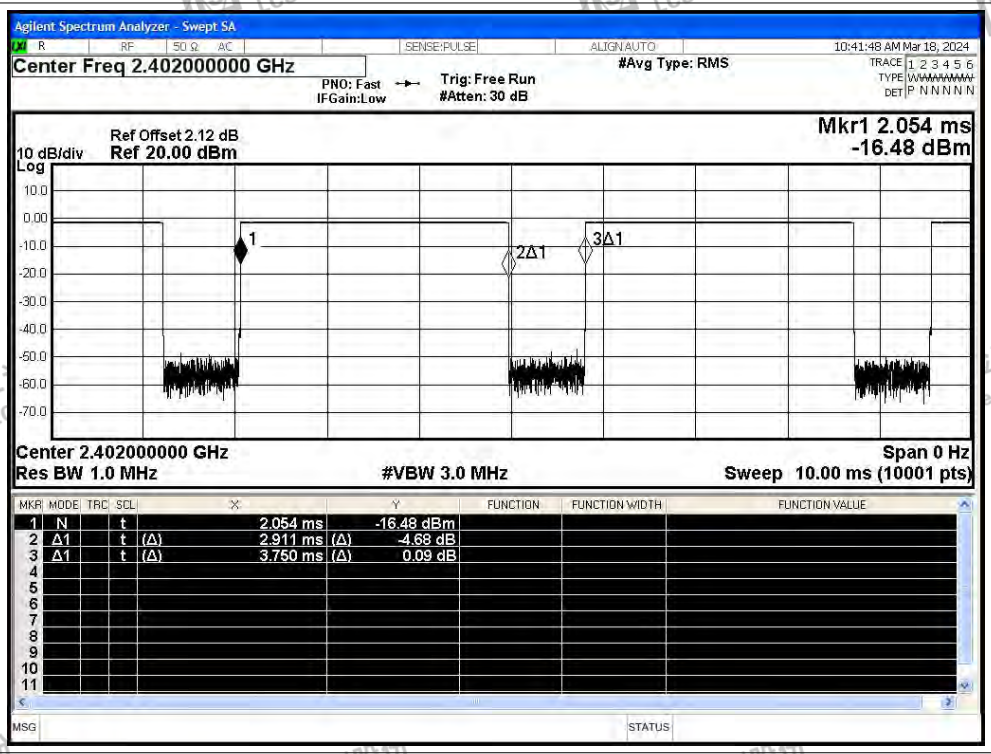


A.8 Duty Cycle

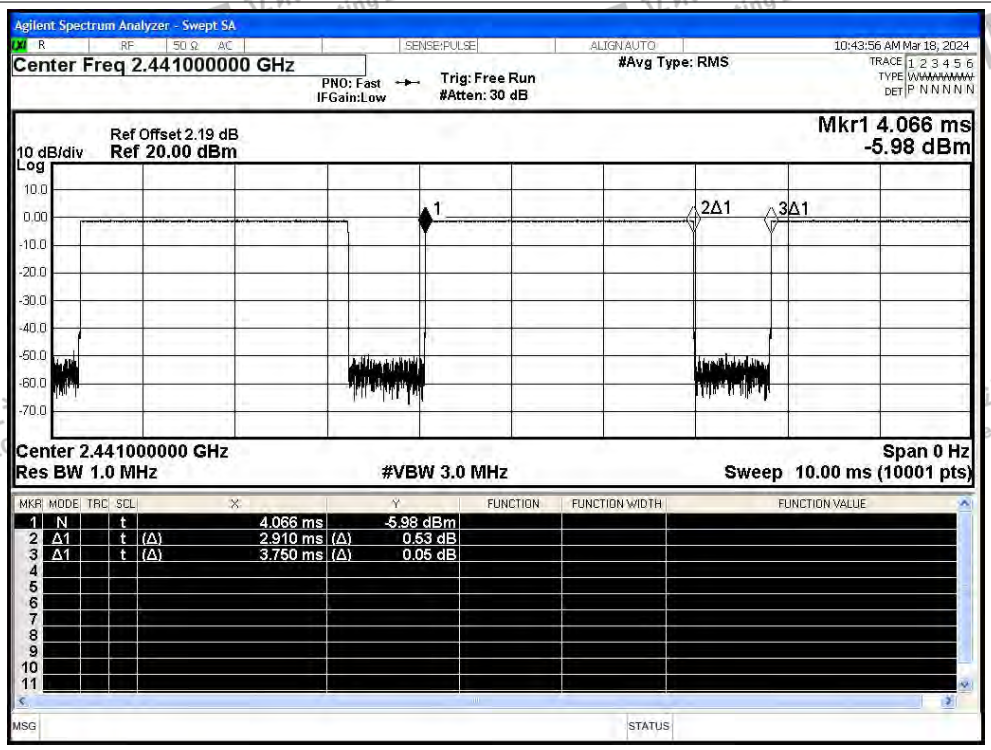
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH5	2402	Ant1	77.63	1.1	0.34
NVNT	1-DH5	2441	Ant1	77.6	1.1	0.34
NVNT	1-DH5	2480	Ant1	77.6	1.1	0.34
NVNT	2-DH5	2402	Ant1	77.28	1.12	0.35
NVNT	2-DH5	2441	Ant1	77.28	1.12	0.35
NVNT	2-DH5	2480	Ant1	77.3	1.12	0.35
NVNT	3-DH5	2402	Ant1	77.28	1.12	0.35
NVNT	3-DH5	2441	Ant1	77.28	1.12	0.35
NVNT	3-DH5	2480	Ant1	77.25	1.12	0.35

Test Graphs

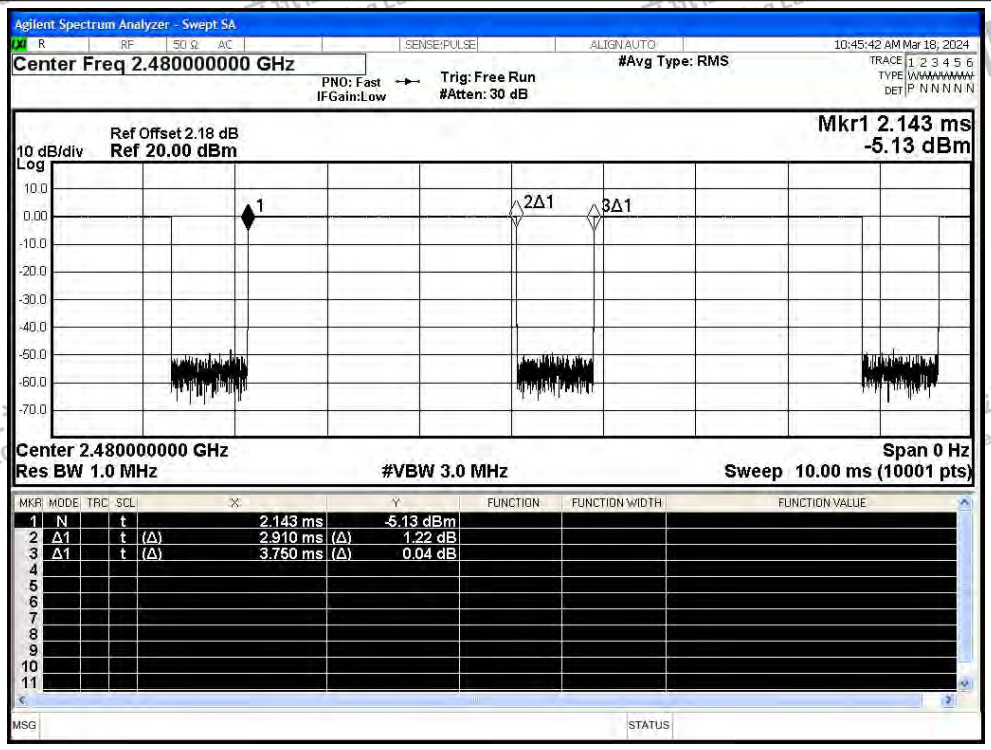
Duty Cycle NVNT 1-DH5 2402MHz Ant1



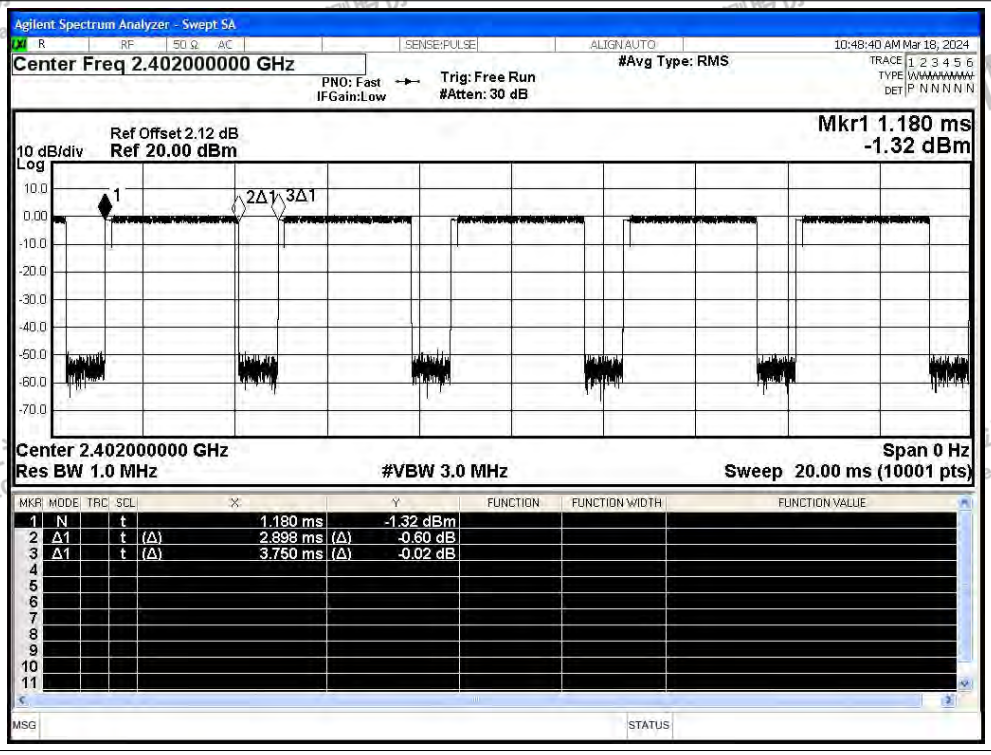
Duty Cycle NVNT 1-DH5 2441MHz Ant1



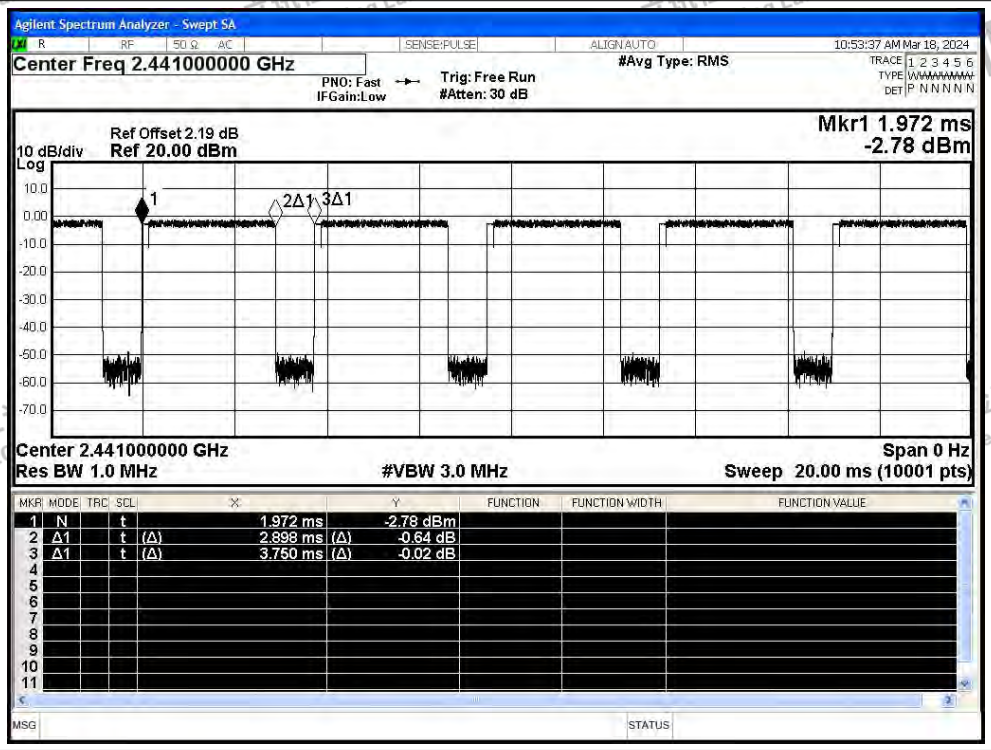
Duty Cycle NVNT 1-DH5 2480MHz Ant1



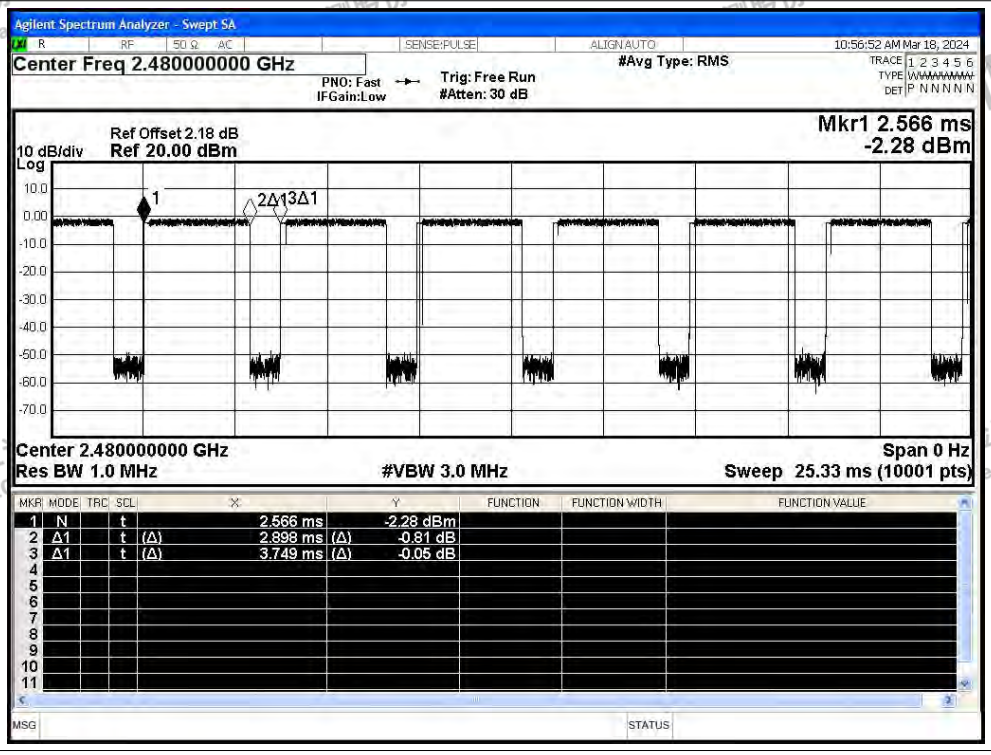
Duty Cycle NVNT 2-DH5 2402MHz Ant1



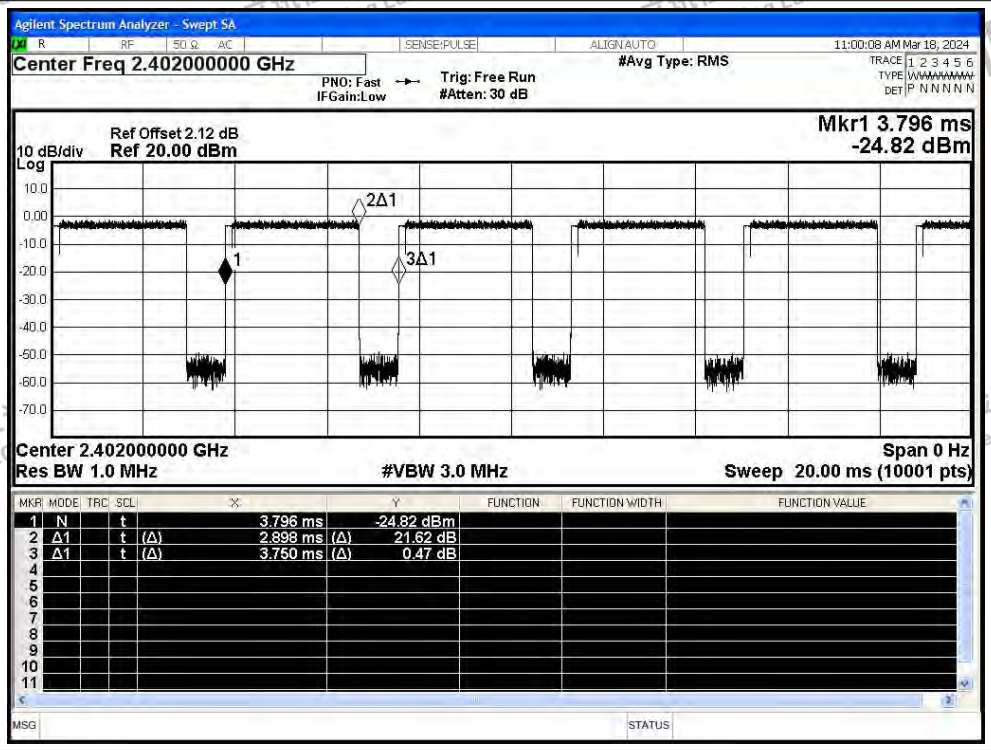
Duty Cycle NVNT 2-DH5 2441MHz Ant1



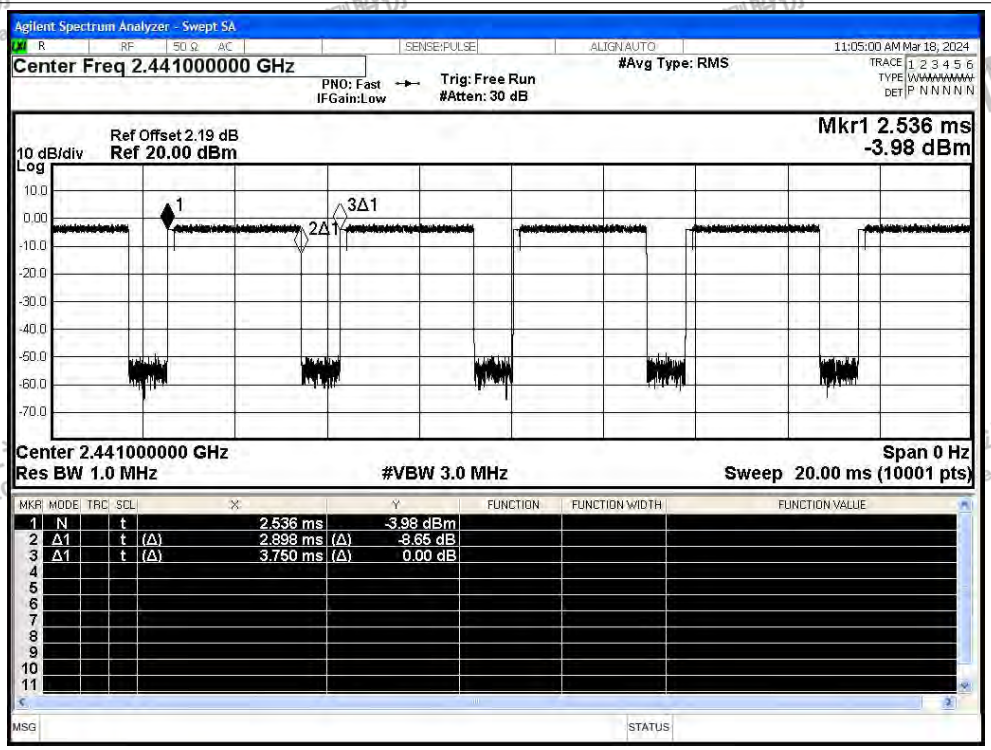
Duty Cycle NVNT 2-DH5 2480MHz Ant1



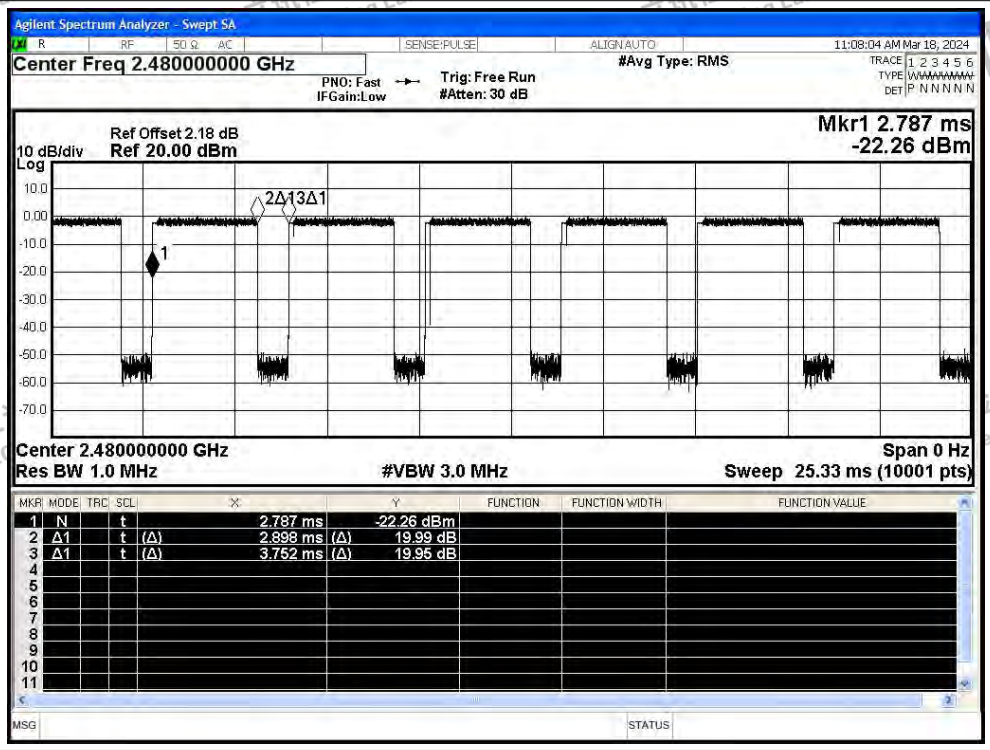
Duty Cycle NVNT 3-DH5 2402MHz Ant1



Duty Cycle NVNT 3-DH5 2441MHz Ant1



Duty Cycle NVNT 3-DH5 2480MHz Ant1

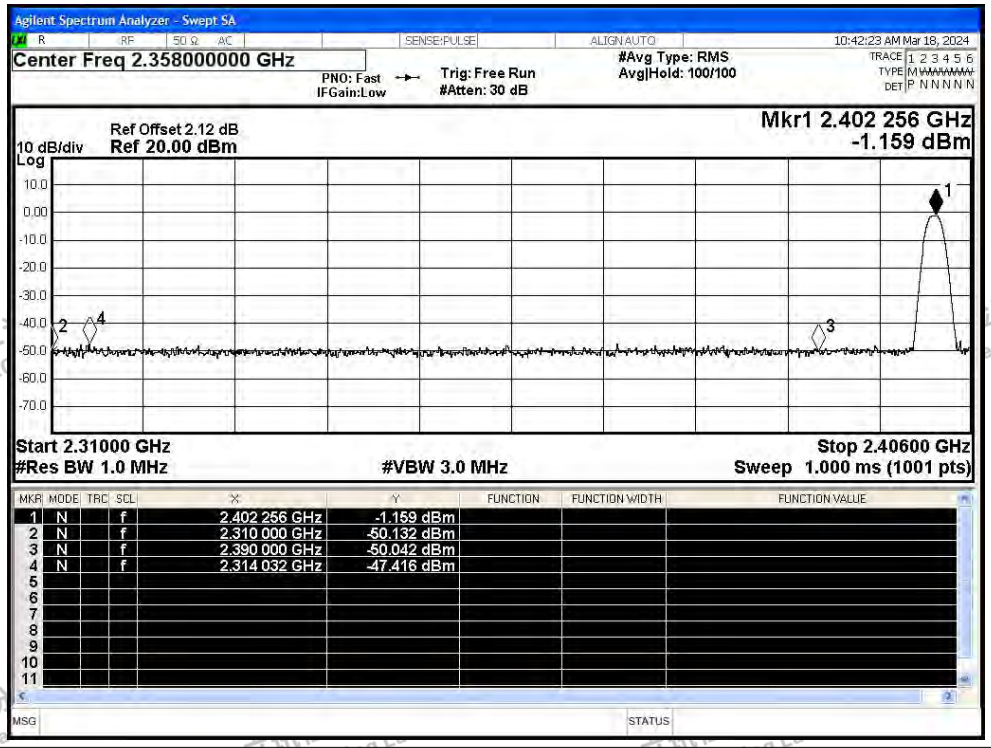


A.9 Restrict Band

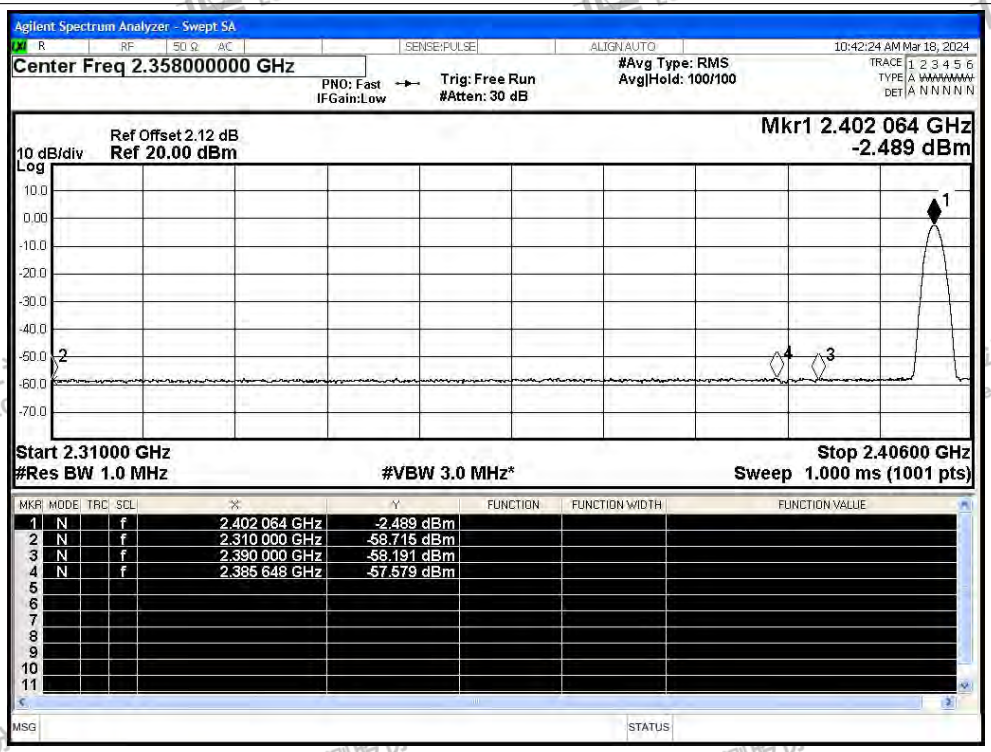
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-50.13	3.27	-	48.40	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-58.72	3.27	1.1	39.81	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2314.032	-47.42	3.27	-	51.11	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2385.648	-57.58	3.27	1.1	40.95	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-50.04	3.27	-	48.49	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-58.19	3.27	1.1	40.34	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-48.89	3.27	-	49.64	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-57.45	3.27	1.1	41.08	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2484.064	-43.29	3.27	-	55.24	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2486.944	-57.09	3.27	1.1	41.44	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-50.06	3.27	-	48.47	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-57.62	3.27	1.1	40.91	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-49.65	3.27	-	48.88	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-58.26	3.27	1.12	40.27	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2329.776	-47.92	3.27	-	50.61	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2370.672	-57.47	3.27	1.12	41.06	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-49.73	3.27	-	48.80	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-58.52	3.27	1.12	40.01	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-48	3.27	-	50.53	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-57.86	3.27	1.12	40.67	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2484.616	-46	3.27	-	52.53	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.56	-57.11	3.27	1.12	41.42	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-49.26	3.27	-	49.27	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-57.35	3.27	1.12	41.18	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-50.46	3.27	-	48.07	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-58.44	3.27	1.12	40.09	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2379.6	-47.97	3.27	-	50.56	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2374.416	-57.68	3.27	1.12	40.85	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-48.42	3.27	-	50.11	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-58.57	3.27	1.12	39.96	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-49.68	3.27	-	48.85	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-57.84	3.27	1.12	40.69	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2490.4	-47.11	3.27	-	51.42	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2495.128	-56.94	3.27	1.12	41.59	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-50.3	3.27	-	48.23	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-57.8	3.27	1.12	40.73	Average	54	Pass

Test Graphs

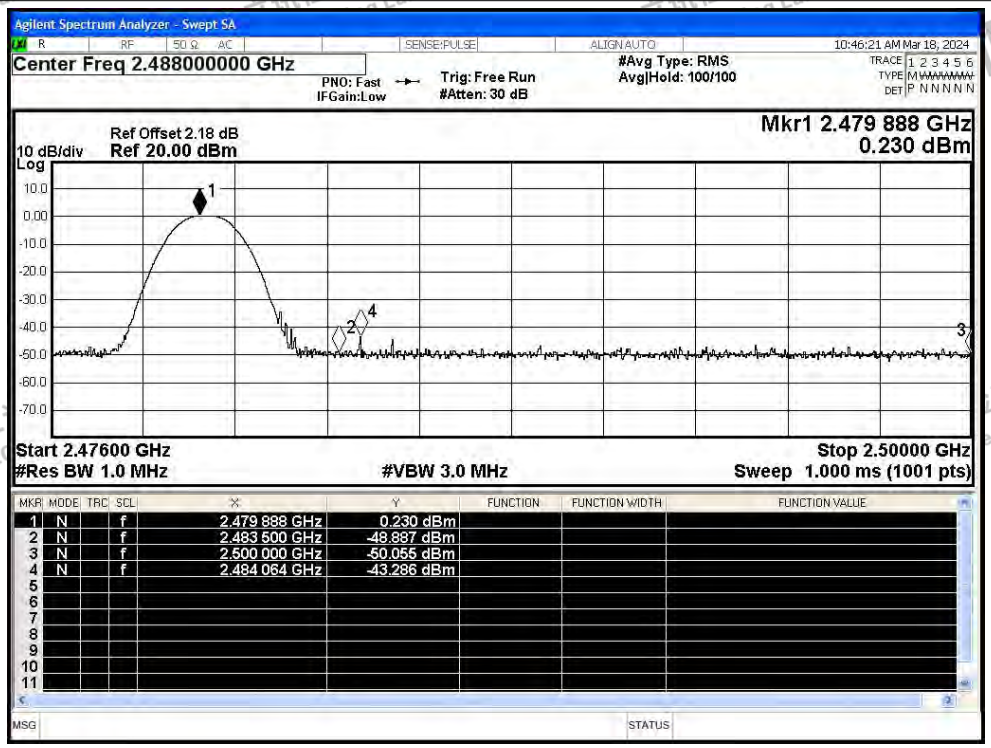
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak



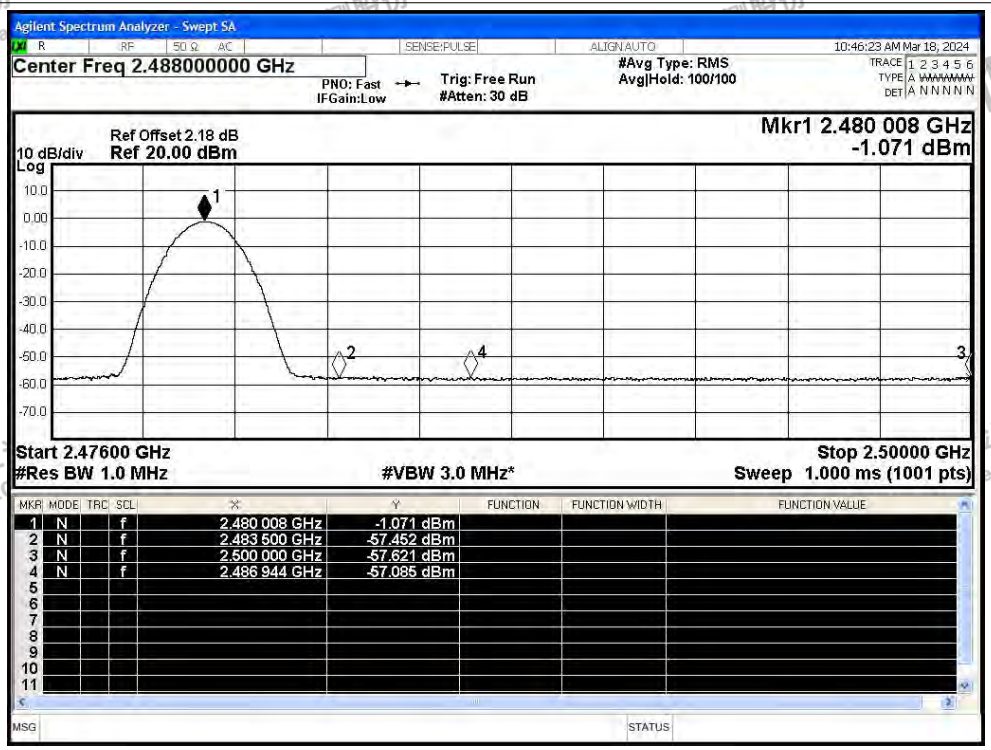
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



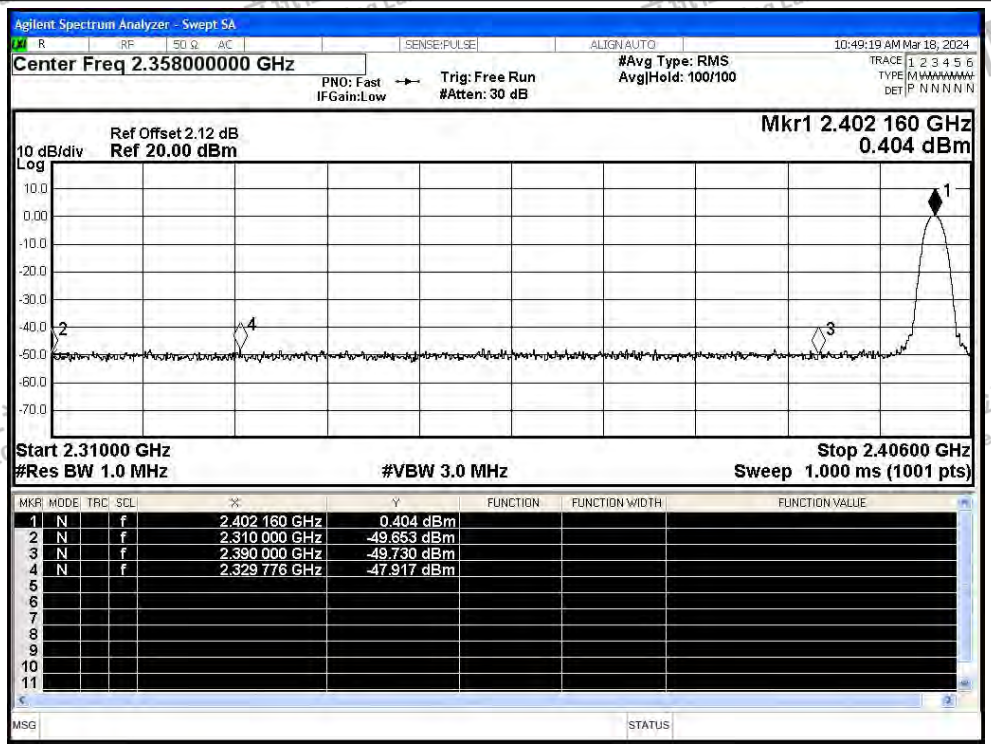
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak



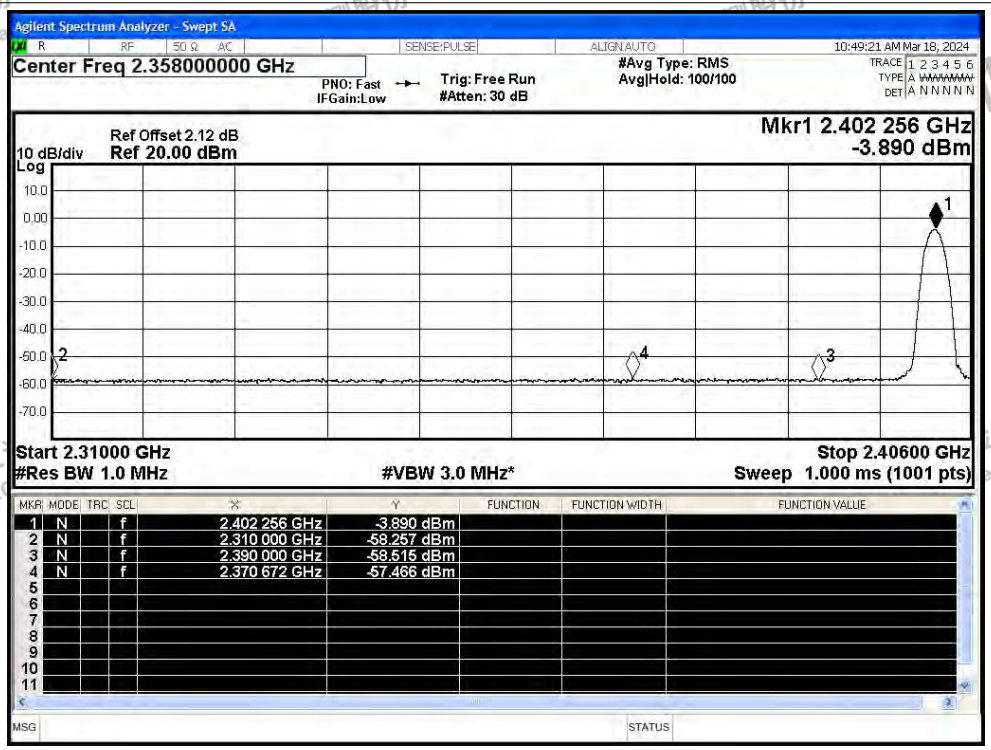
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average



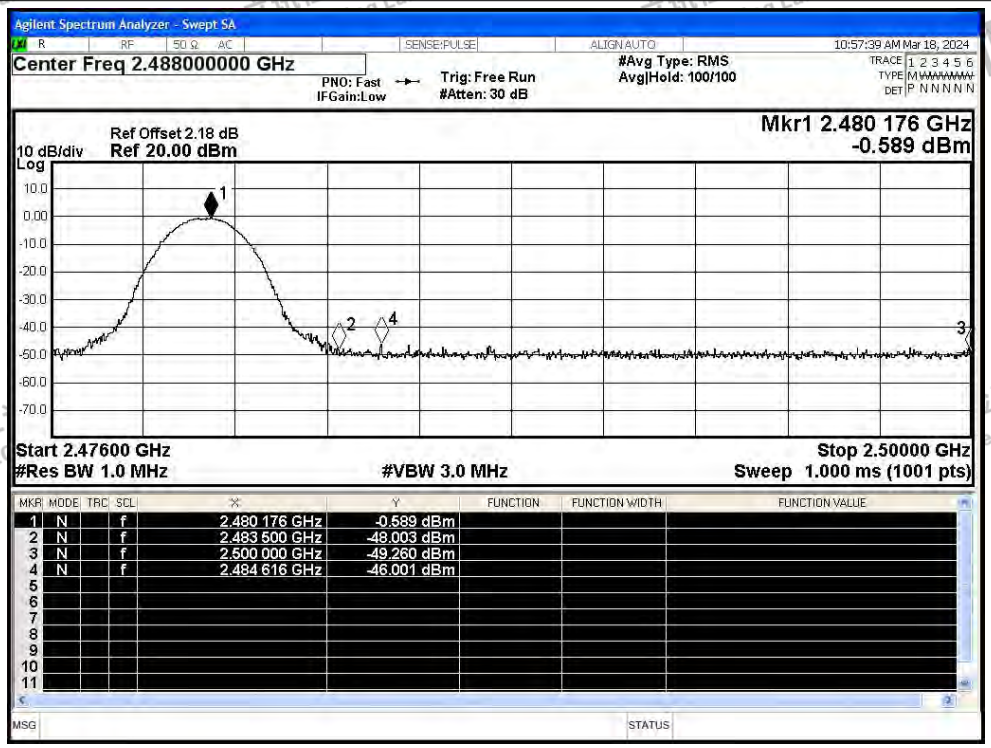
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak



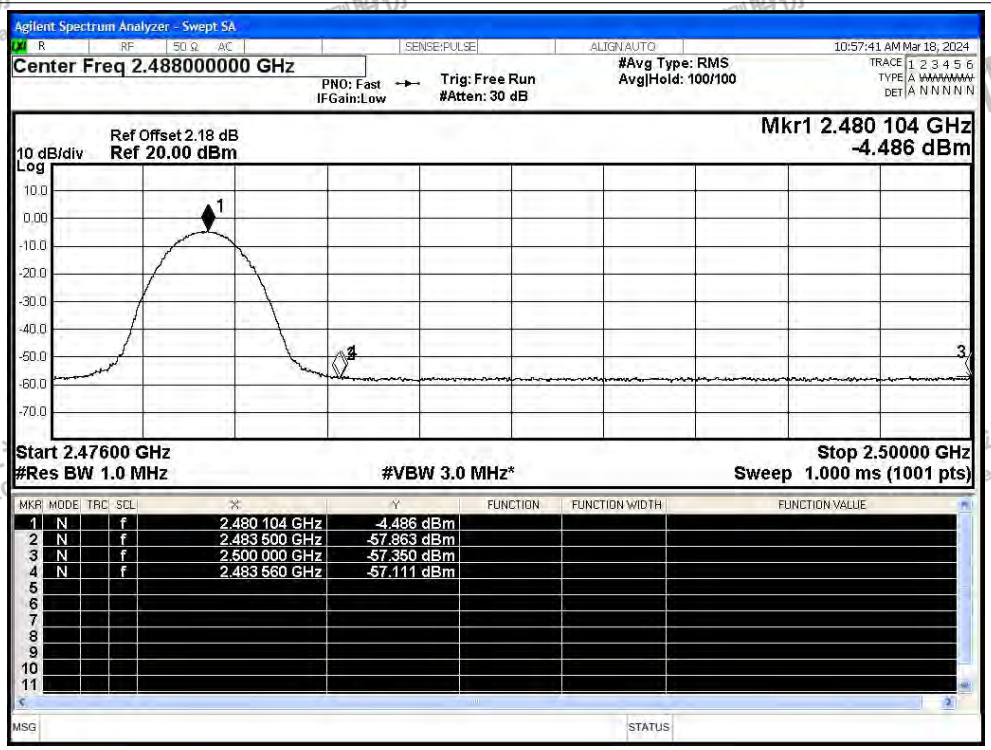
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average



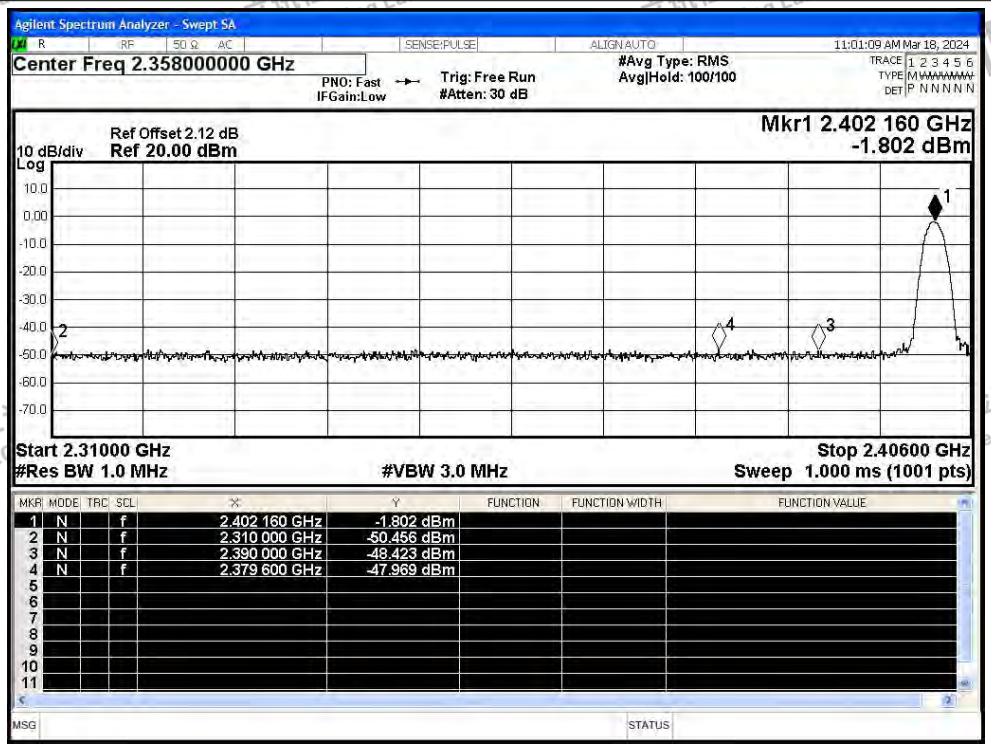
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak



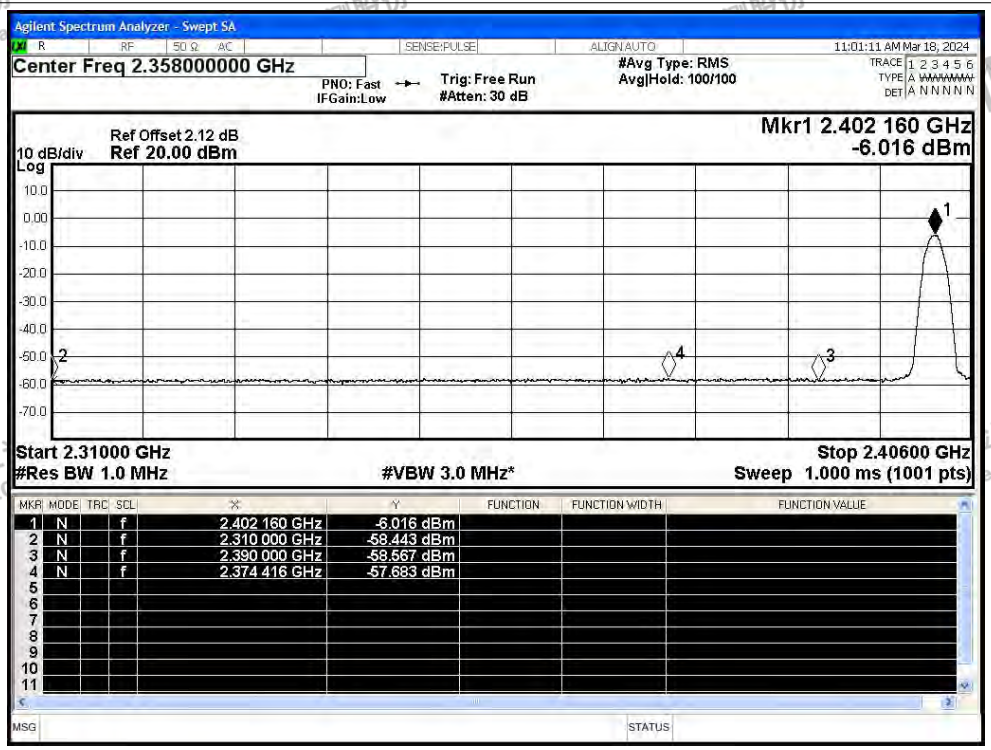
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Average



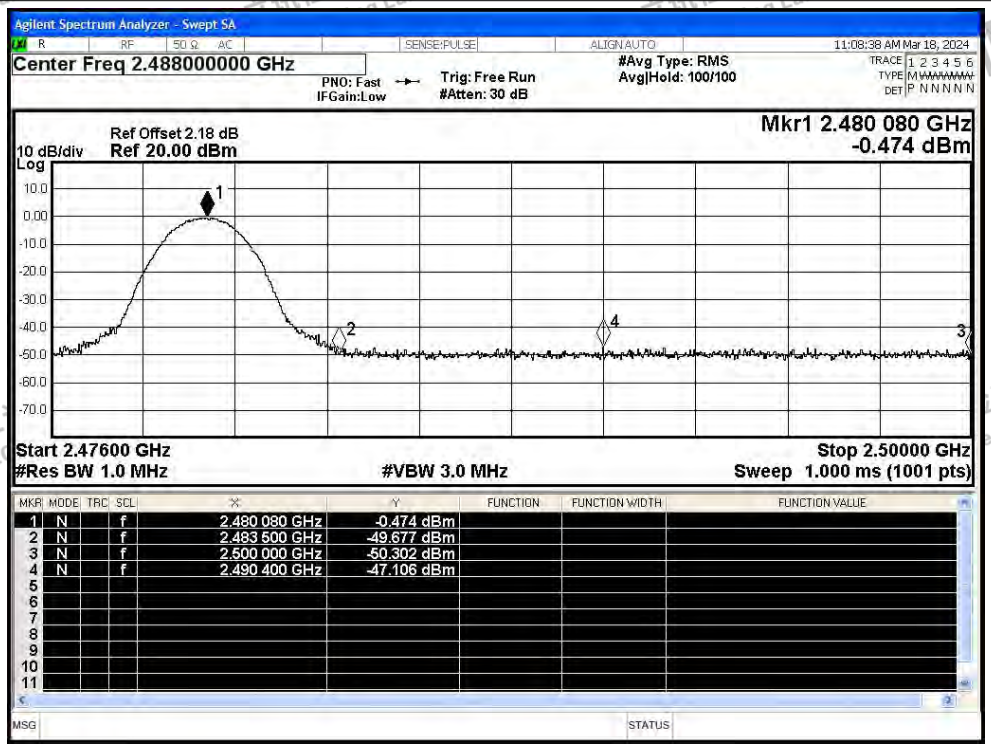
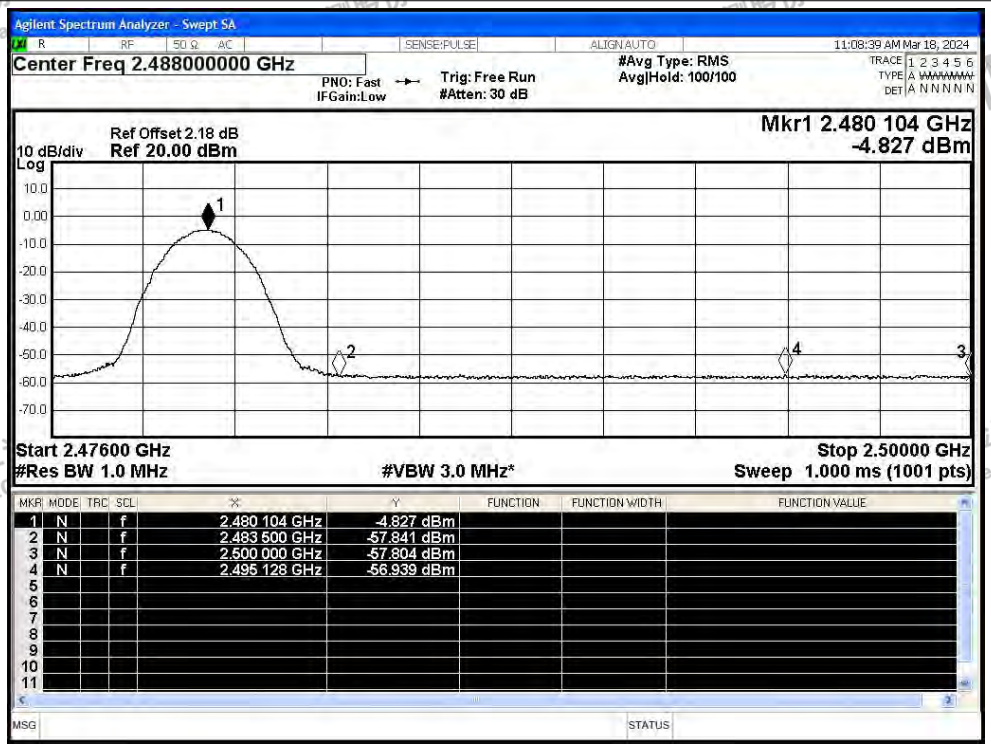
Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak



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



Restrict Band NVNT 3-DH5 2480MHz Ant1 No-Hopping Peak



Restrict Band NVNT 3-DH5 2480MHz Ant1 No-Hopping Average