Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Wireless Earphone

Test Model: X5Pro

Environmental Conditions

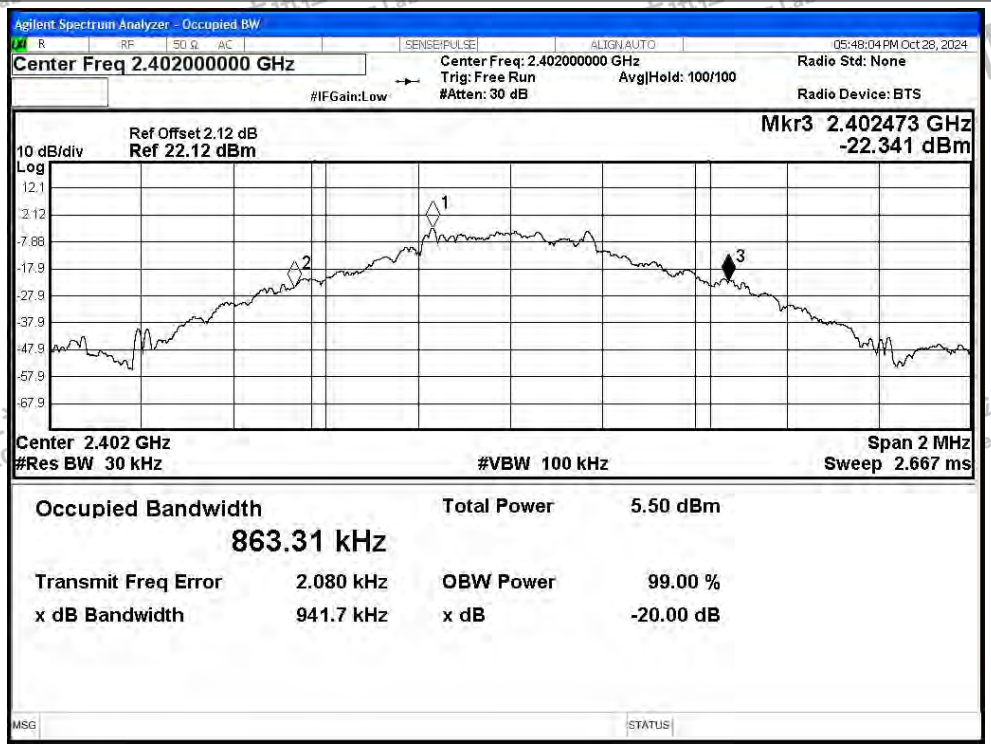
Temperature:	23.8° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Paddi Chen
Supervised by:	Nick Peng

A.1 -20dB Bandwidth

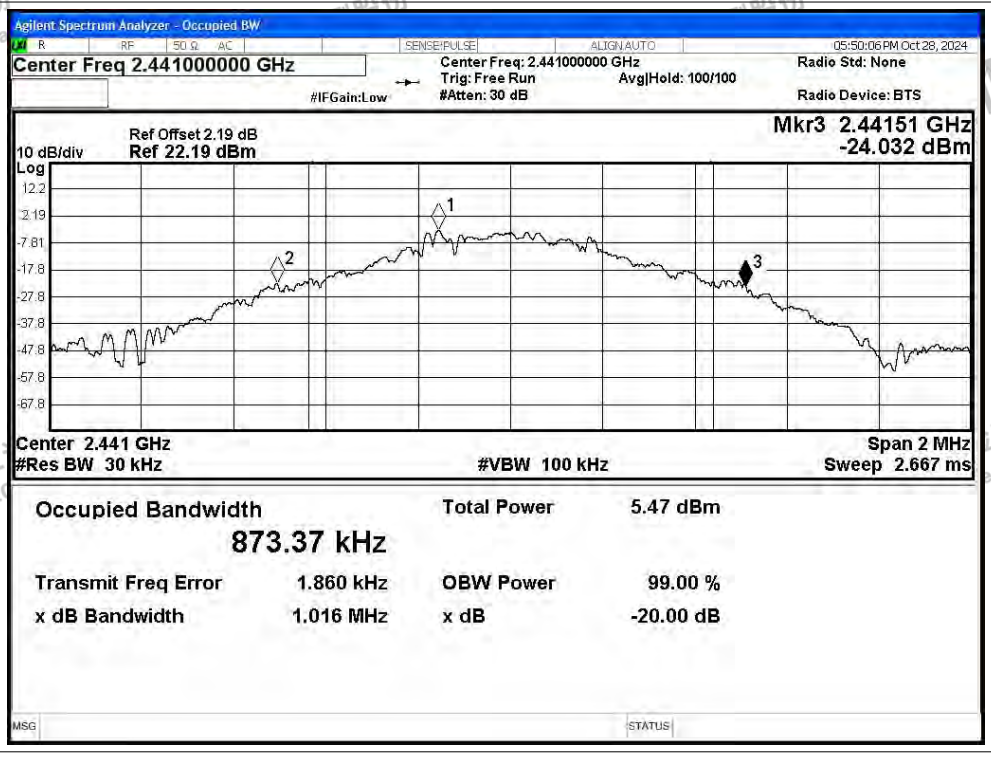
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	0.942	N/A	Pass
NVNT	1-DH5	2441	Ant1	1.016	N/A	Pass
NVNT	1-DH5	2480	Ant1	0.951	N/A	Pass
NVNT	2-DH5	2402	Ant1	1.287	N/A	Pass
NVNT	2-DH5	2441	Ant1	1.318	N/A	Pass
NVNT	2-DH5	2480	Ant1	1.287	N/A	Pass
NVNT	3-DH5	2402	Ant1	1.293	N/A	Pass
NVNT	3-DH5	2441	Ant1	1.294	N/A	Pass
NVNT	3-DH5	2480	Ant1	1.308	N/A	Pass

Test Graphs

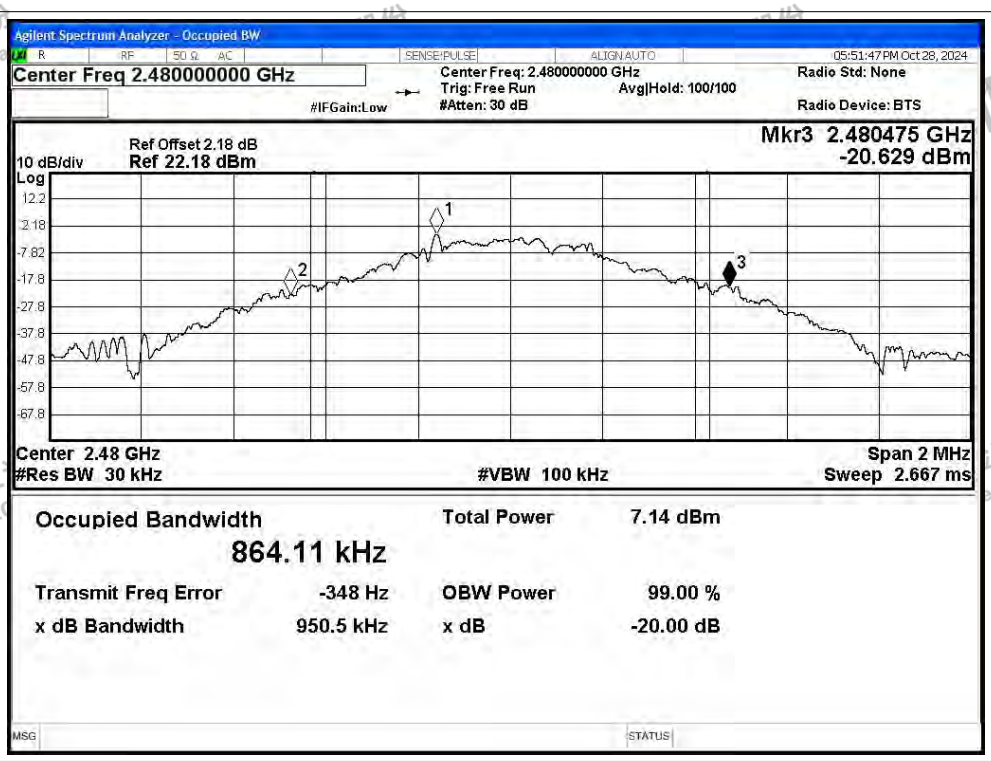
-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1



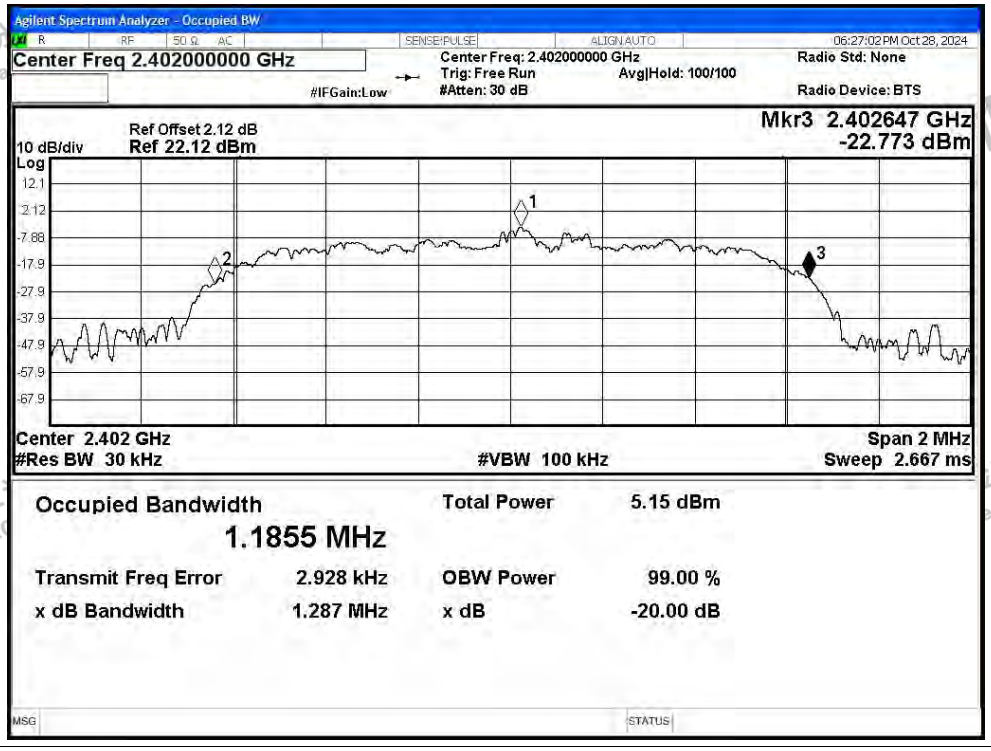
-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1



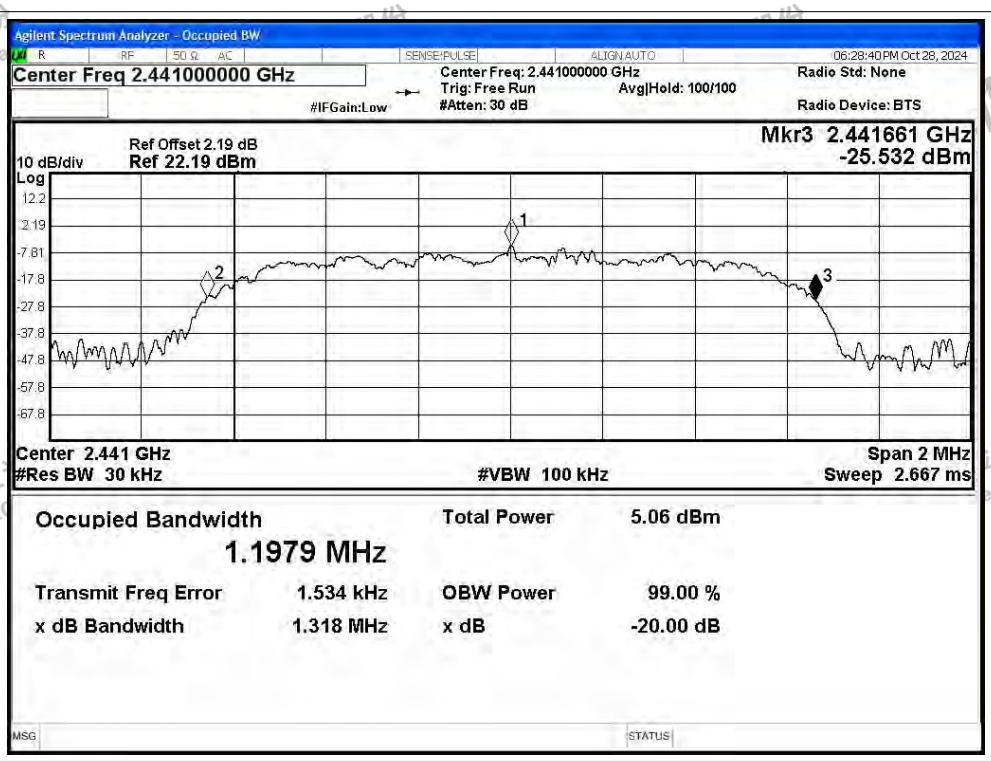
-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1



-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1

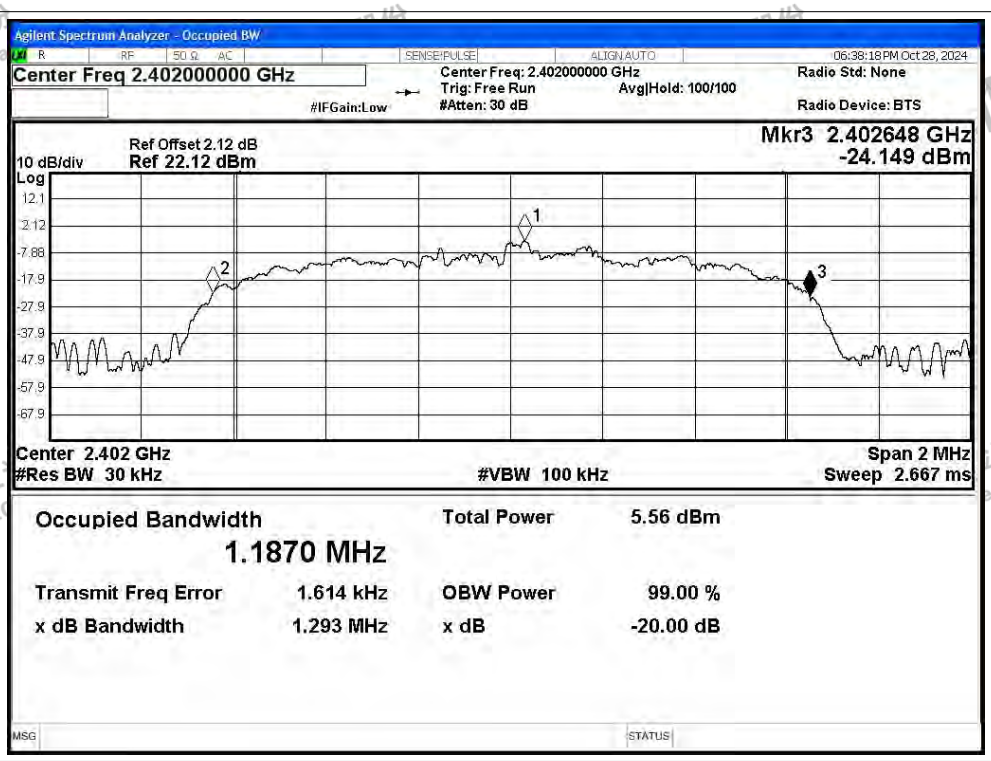


-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1

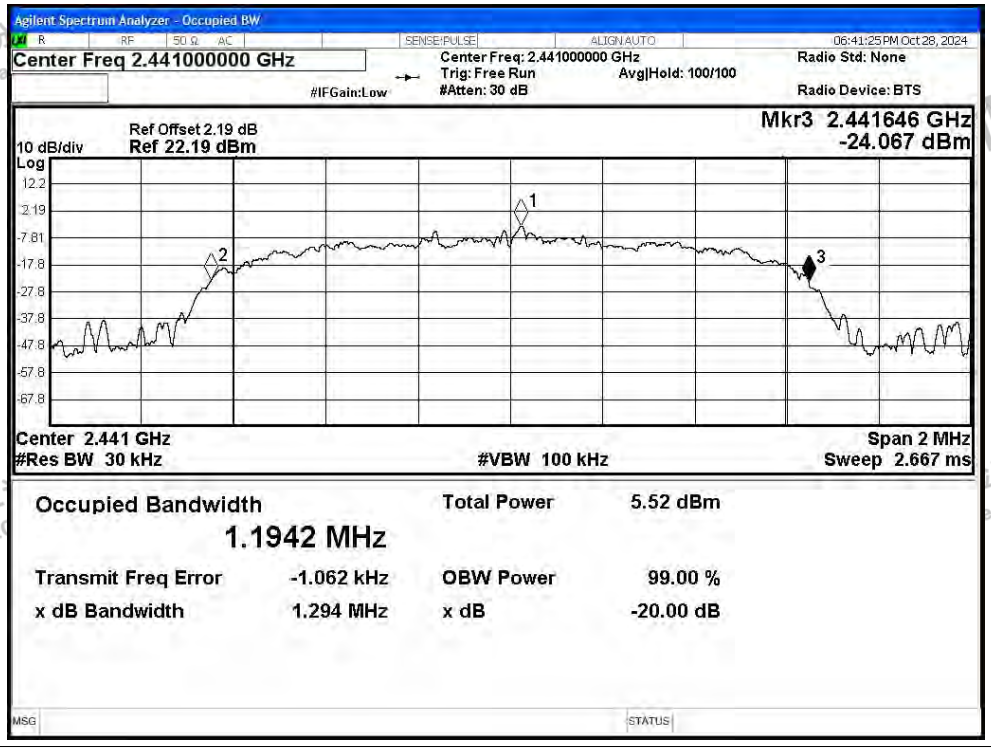


-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1

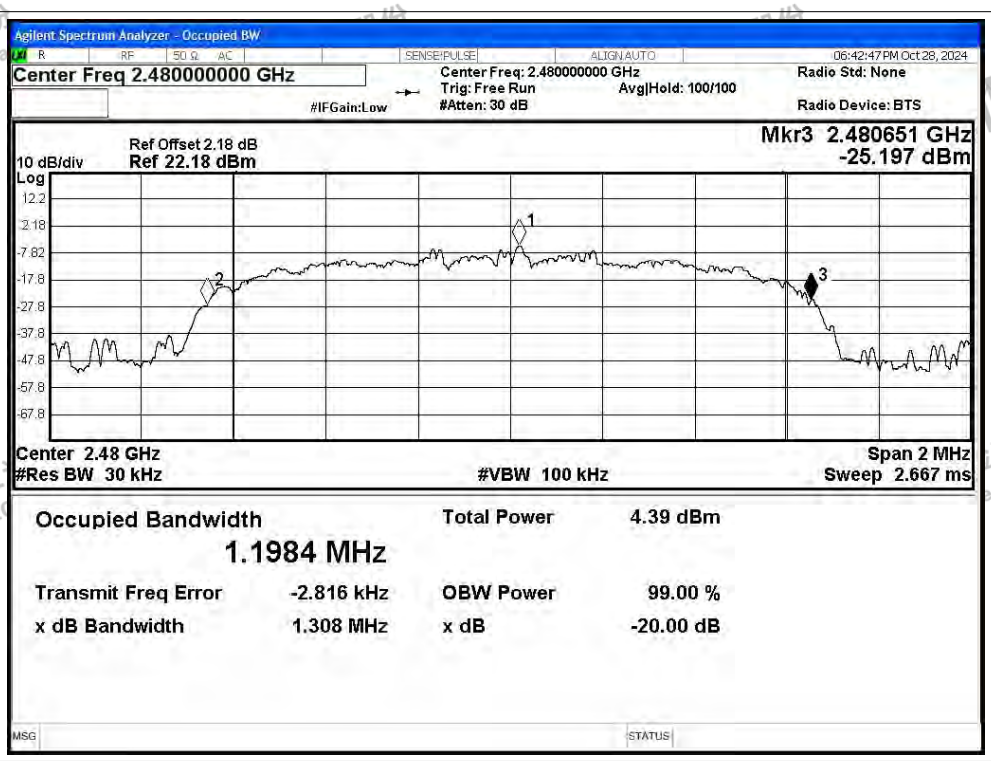
-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1

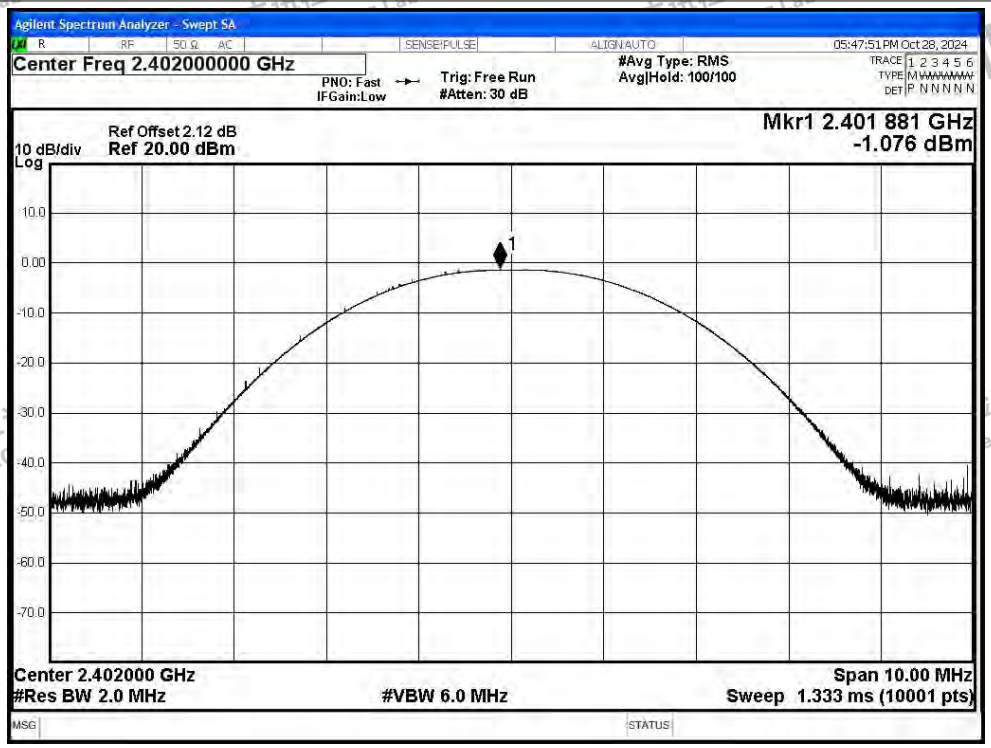


A.2 Maximum Peak Conducted Output Power

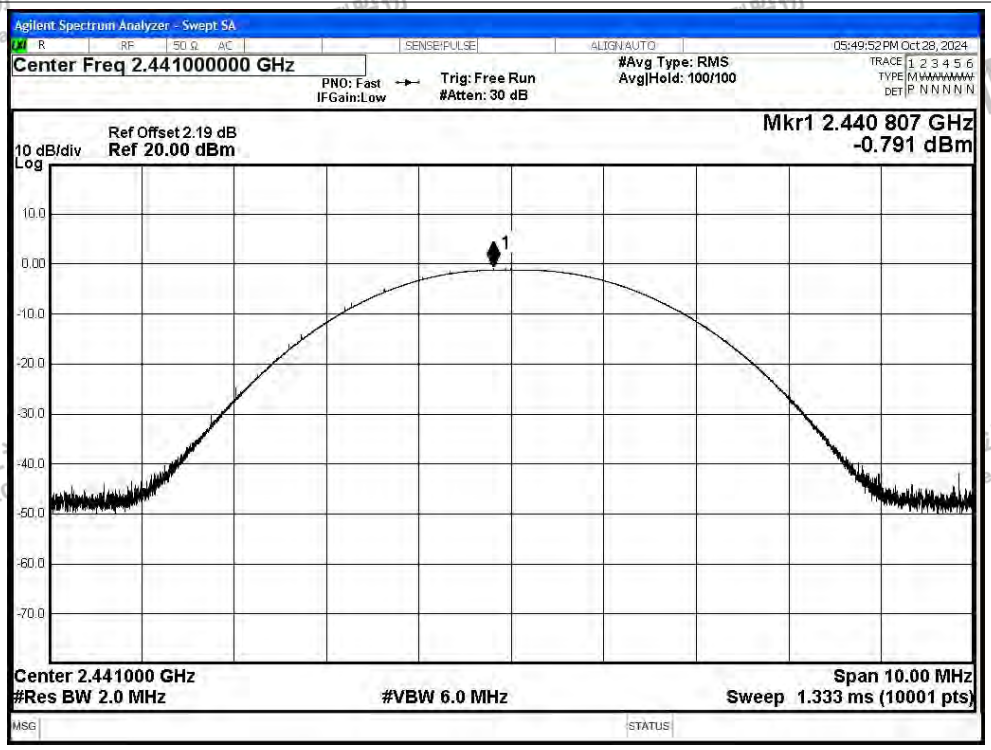
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	-1.08	21	Pass
NVNT	1-DH5	2441	Ant1	-0.79	21	Pass
NVNT	1-DH5	2480	Ant1	0.34	21	Pass
NVNT	2-DH5	2402	Ant1	0.85	21	Pass
NVNT	2-DH5	2441	Ant1	1.09	21	Pass
NVNT	2-DH5	2480	Ant1	0.06	21	Pass
NVNT	3-DH5	2402	Ant1	1.14	21	Pass
NVNT	3-DH5	2441	Ant1	1.46	21	Pass
NVNT	3-DH5	2480	Ant1	0.42	21	Pass

Test Graphs

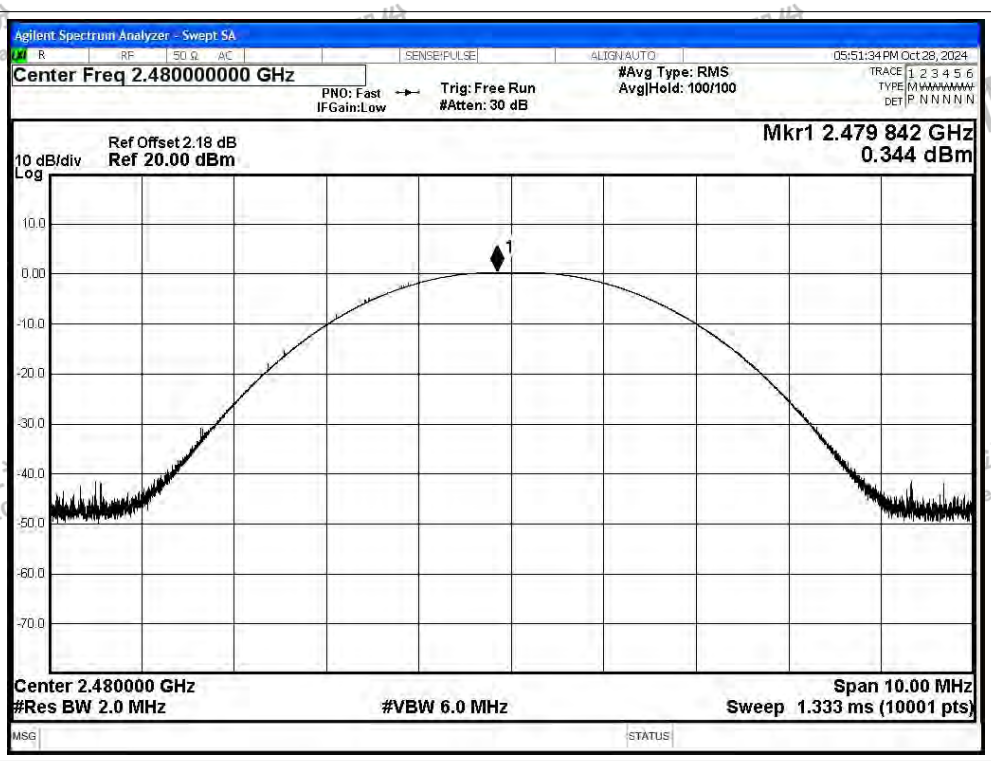
Power NVNT 1-DH5 2402MHz Ant1



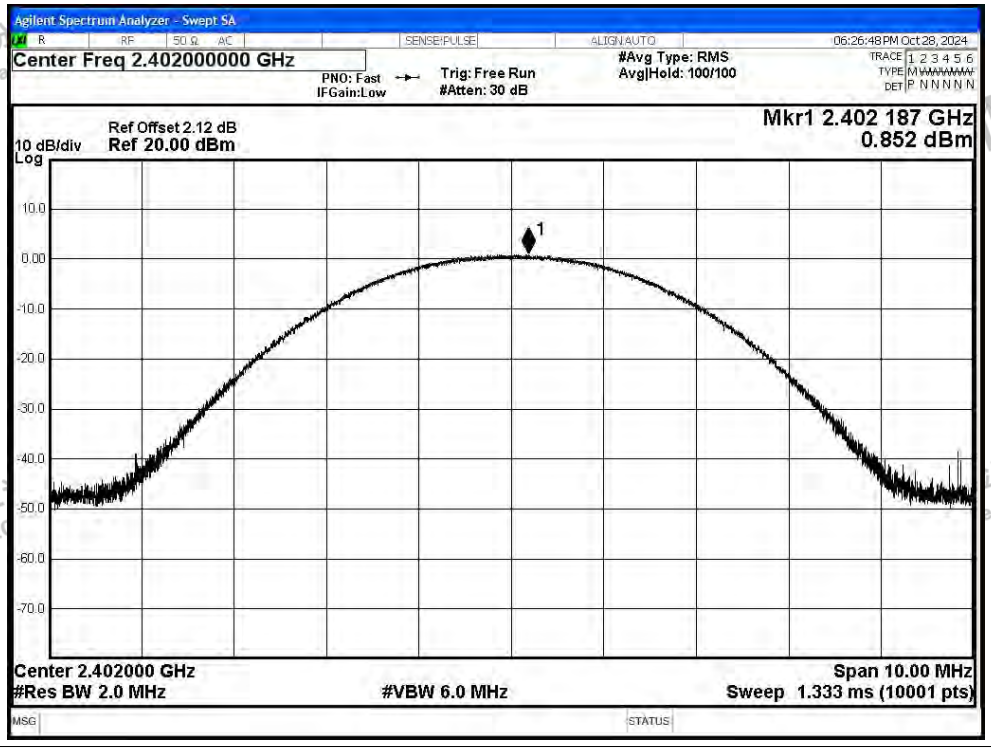
Power NVNT 1-DH5 2441MHz Ant1



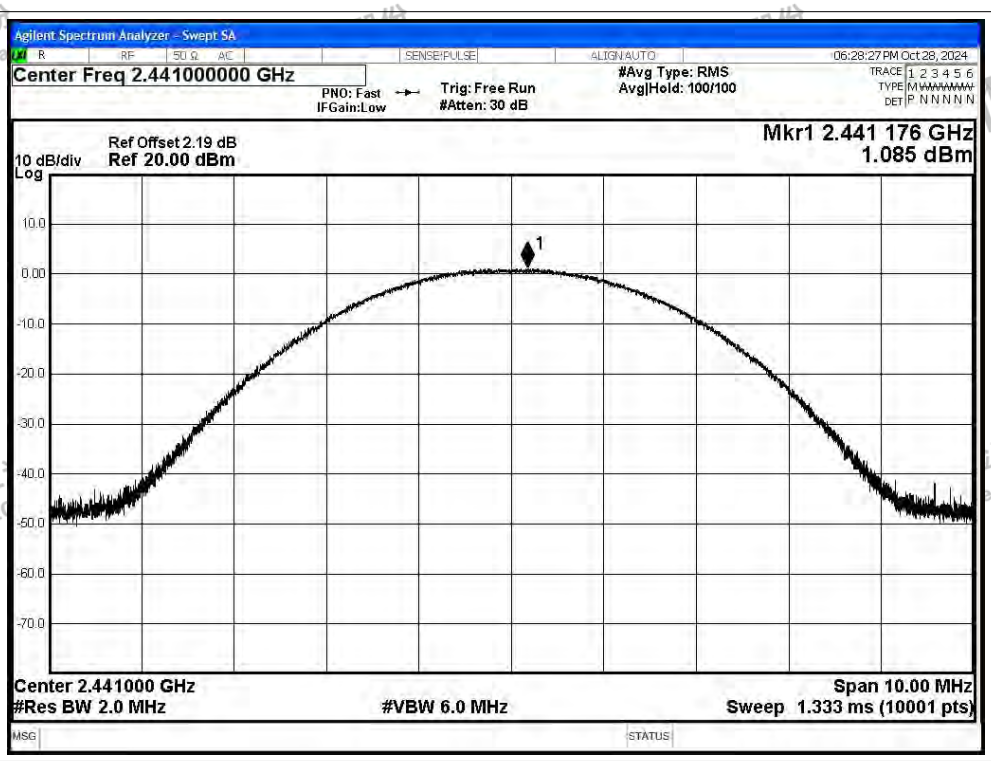
Power NVNT 1-DH5 2480MHz Ant1



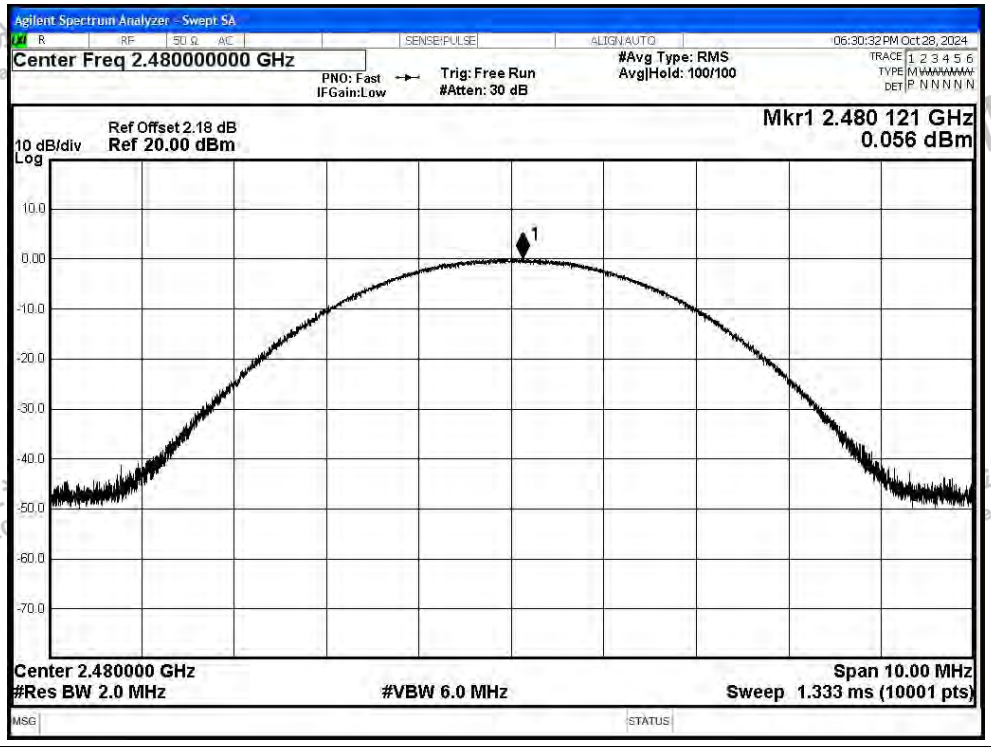
Power NVNT 2-DH5 2402MHz Ant1



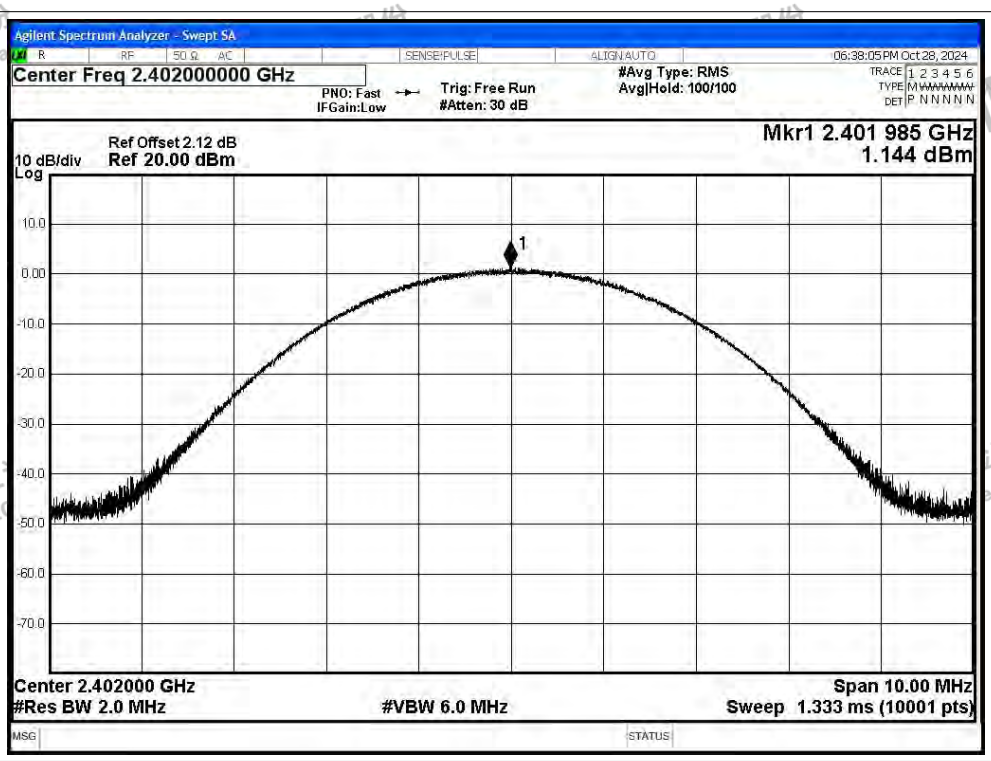
Power NVNT 2-DH5 2441MHz Ant1



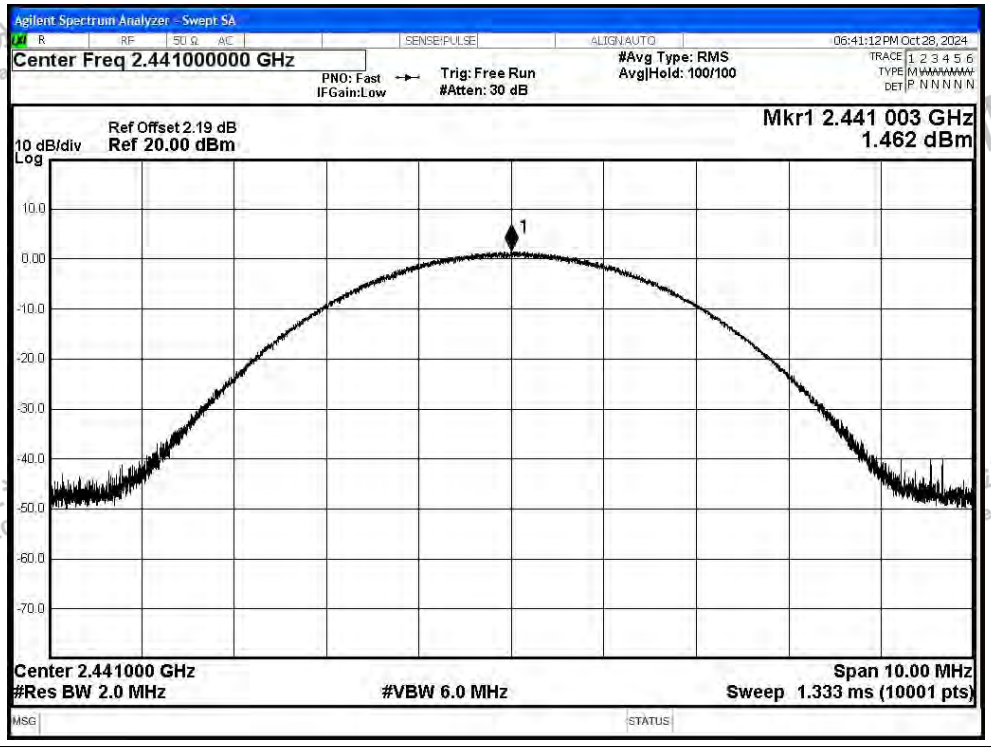
Power NVNT 2-DH5 2480MHz Ant1



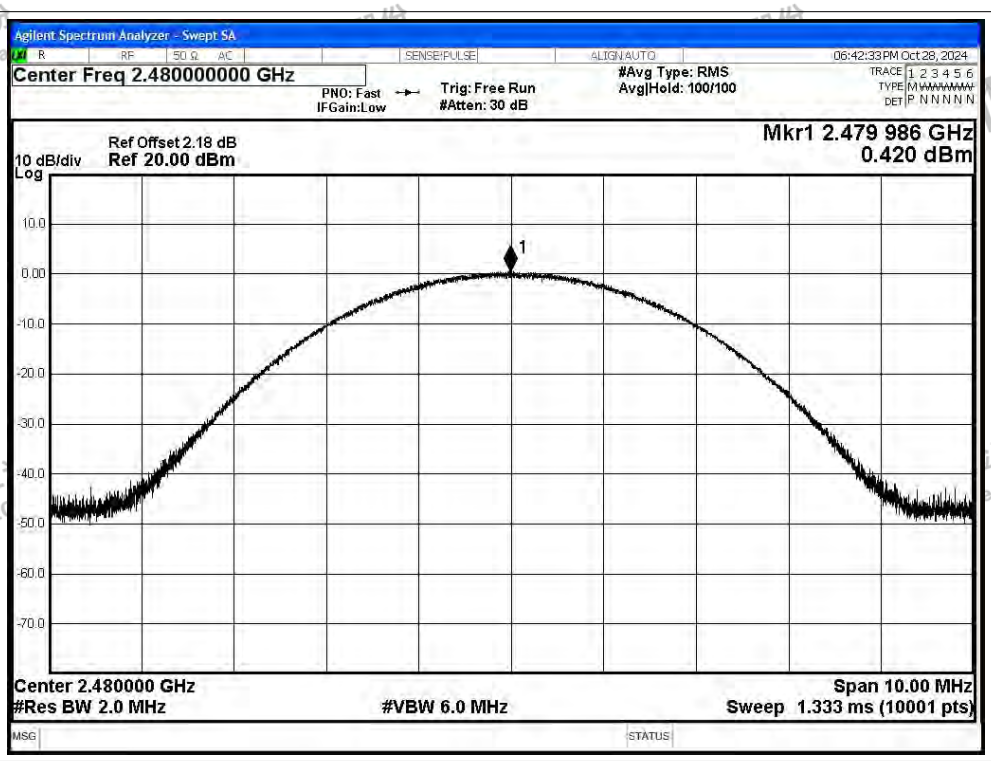
Power NVNT 3-DH5 2402MHz Ant1



Power NVNT 3-DH5 2441MHz Ant1



Power NVNT 3-DH5 2480MHz Ant1

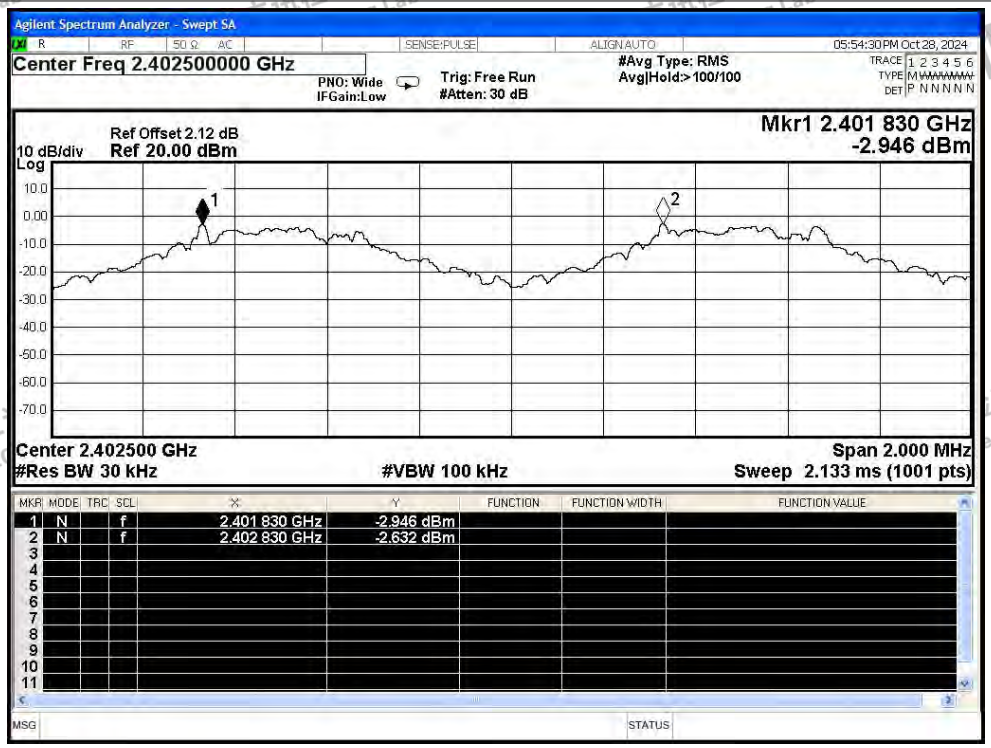


A.3 Carrier Frequencies Separation

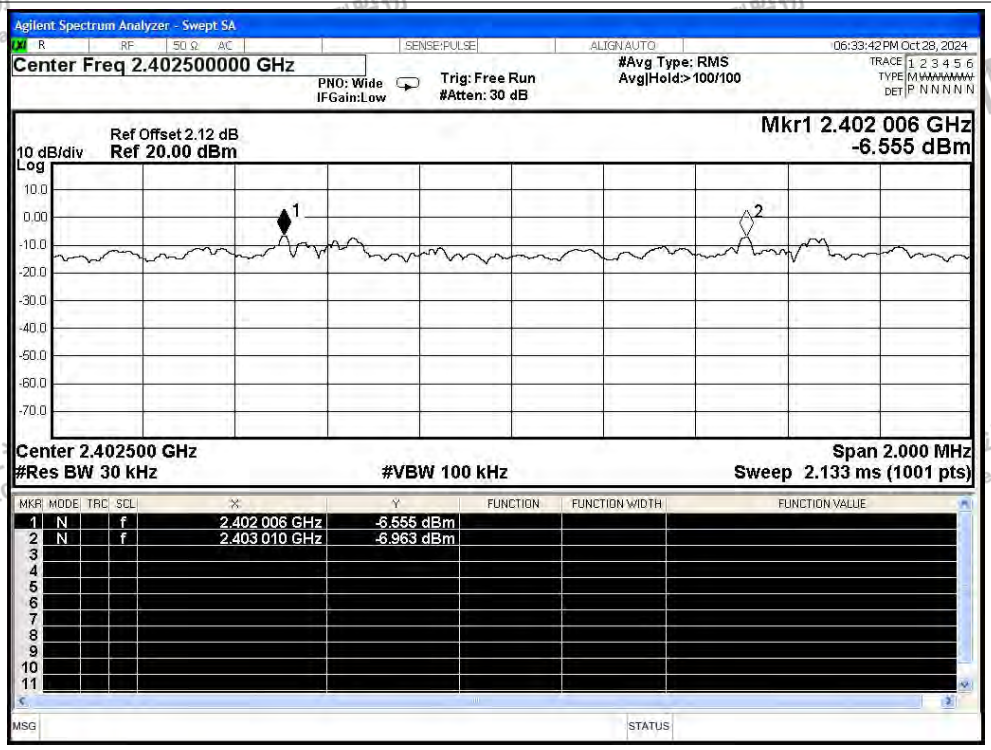
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2401.83	2402.83	1	0.628	Pass
NVNT	2-DH5	Ant1	2402.006	2403.01	1.004	0.858	Pass
NVNT	3-DH5	Ant1	2402.014	2403.026	1.012	0.862	Pass

Test Graphs

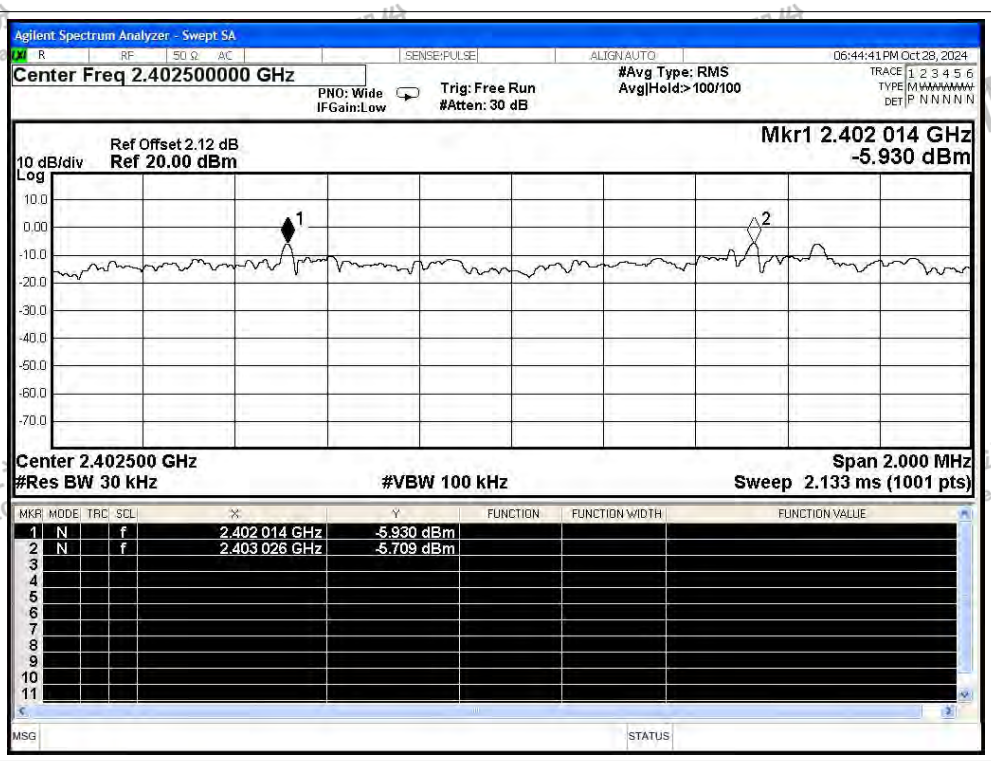
CFS NVNT 1-DH5 2402MHz Ant1



CFS NVNT 2-DH5 2402MHz Ant1



CFS NVNT 3-DH5 2402MHz Ant1

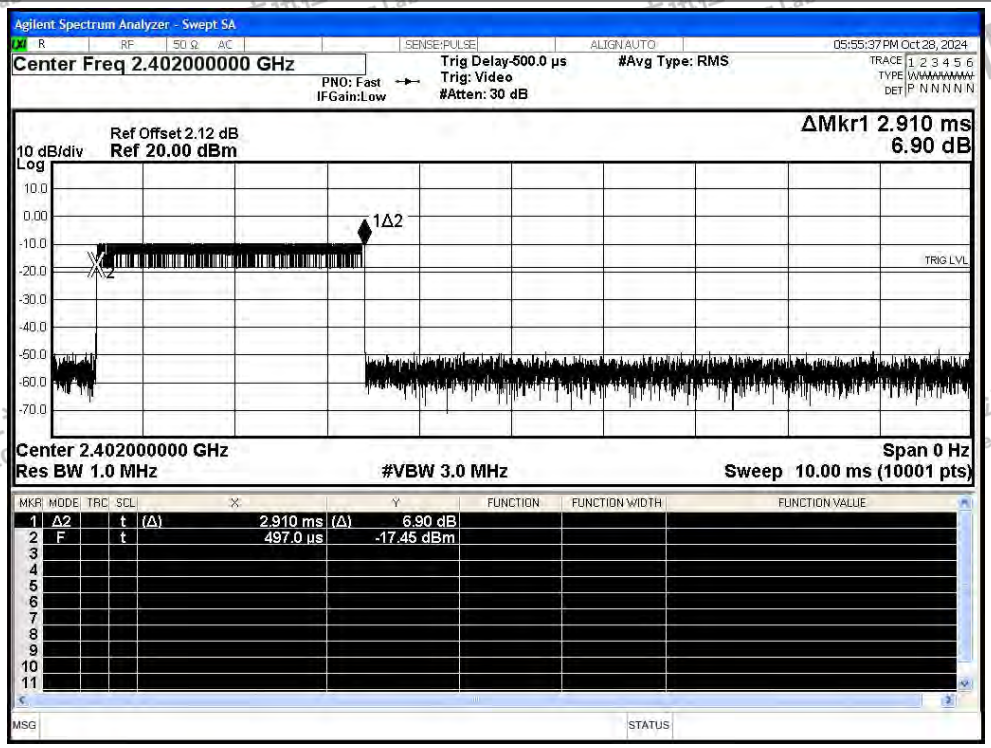


A.4 Dwell Time

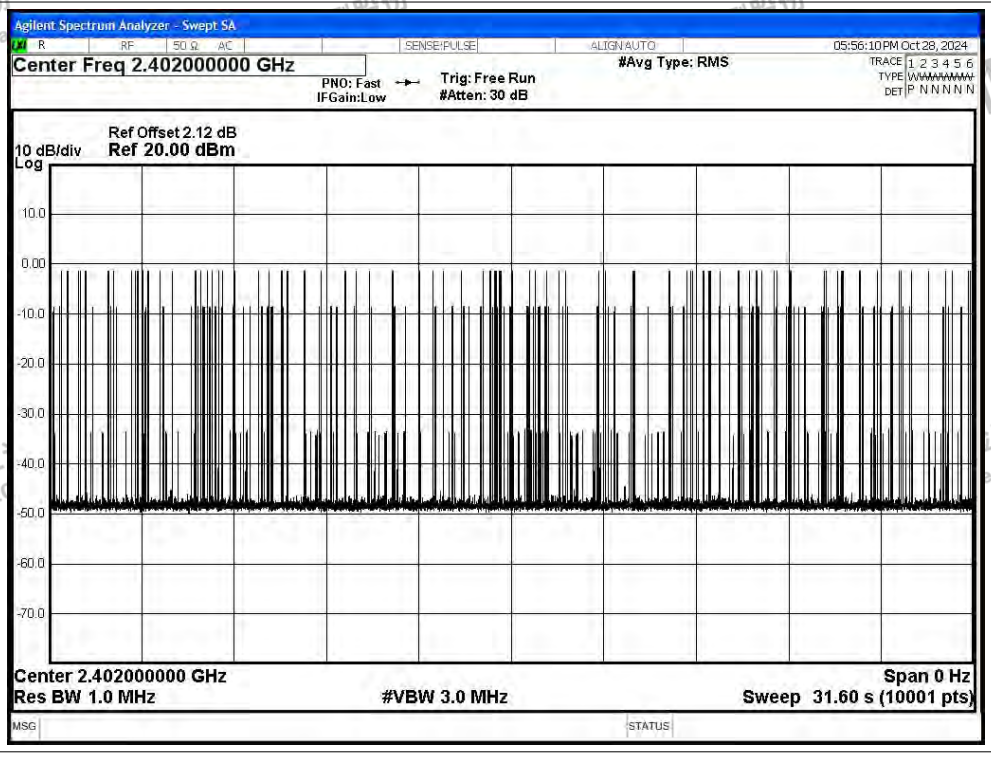
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH5	2402	Ant1	2.91	276.45	95	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.898	281.106	97	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.897	336.052	116	31600	400	Pass

Test Graphs

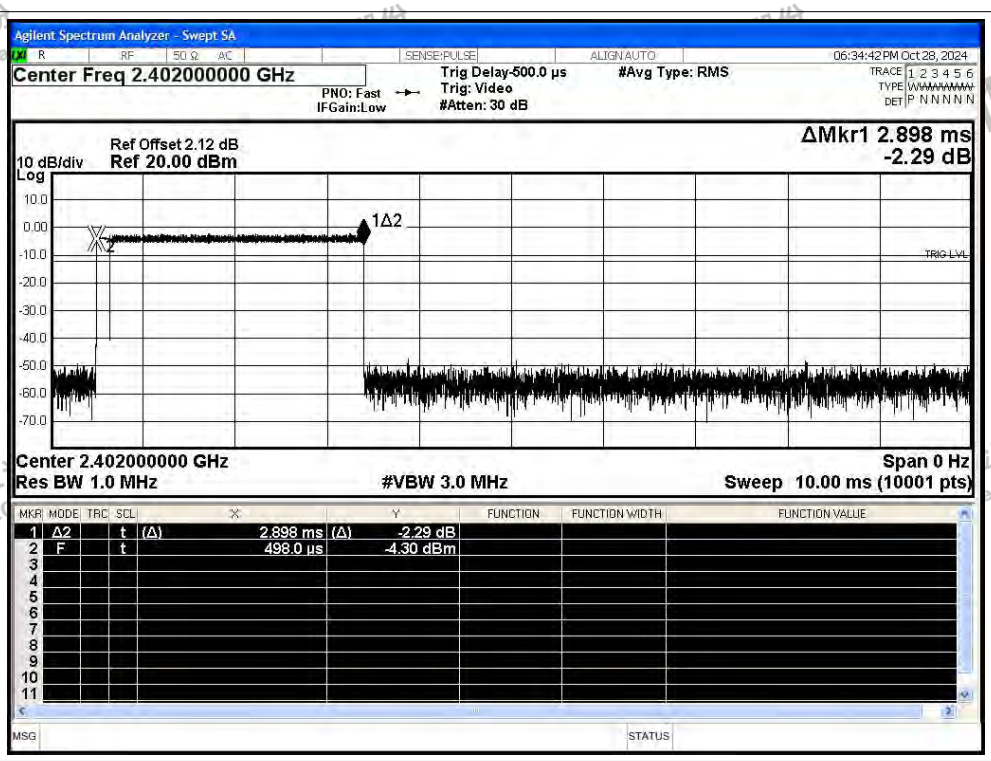
Dwell NVNT 1-DH5 2402MHz Ant1 One Burst



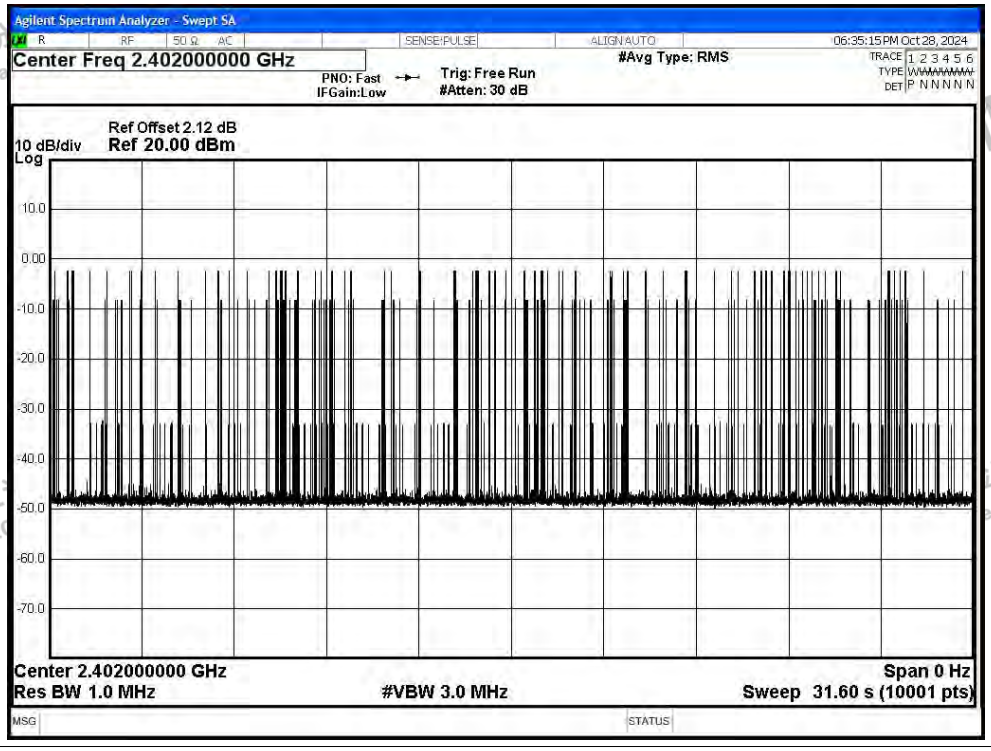
Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated



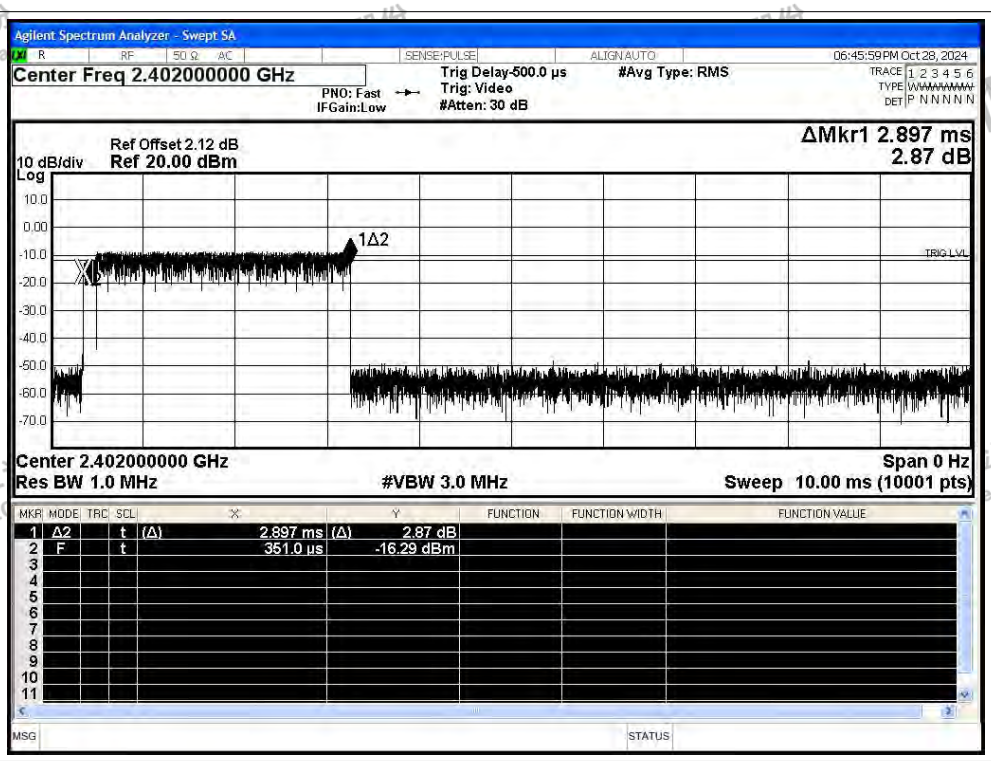
Dwell NVNT 2-DH5 2402MHz Ant1 One Burst



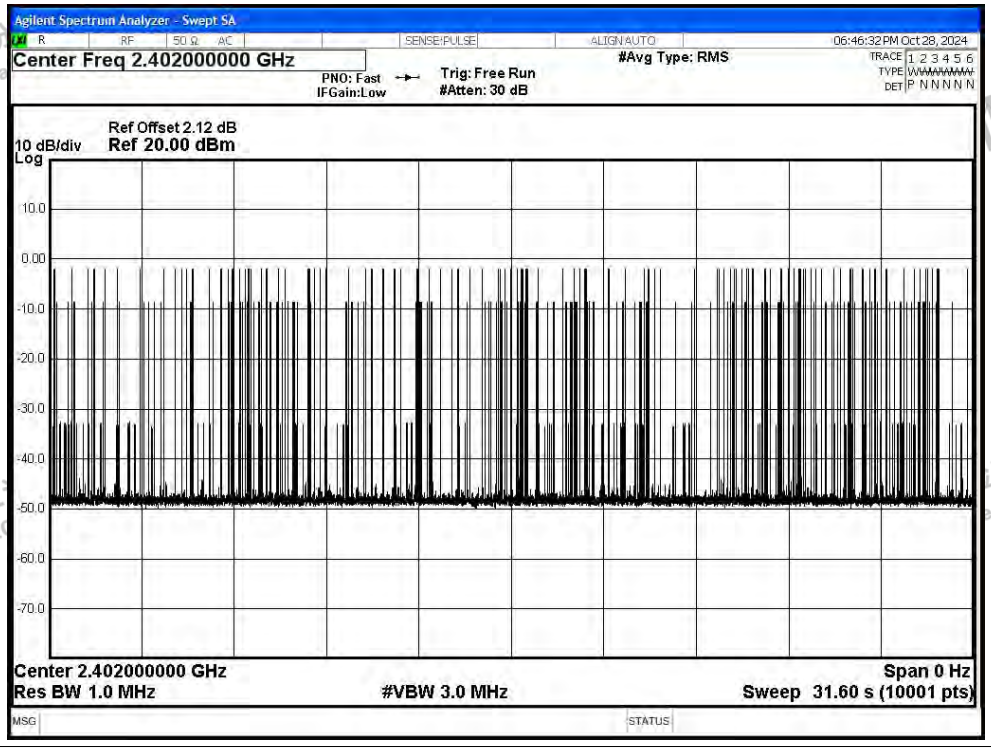
Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated



Dwell NVNT 3-DH5 2402MHz Ant1 One Burst



Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

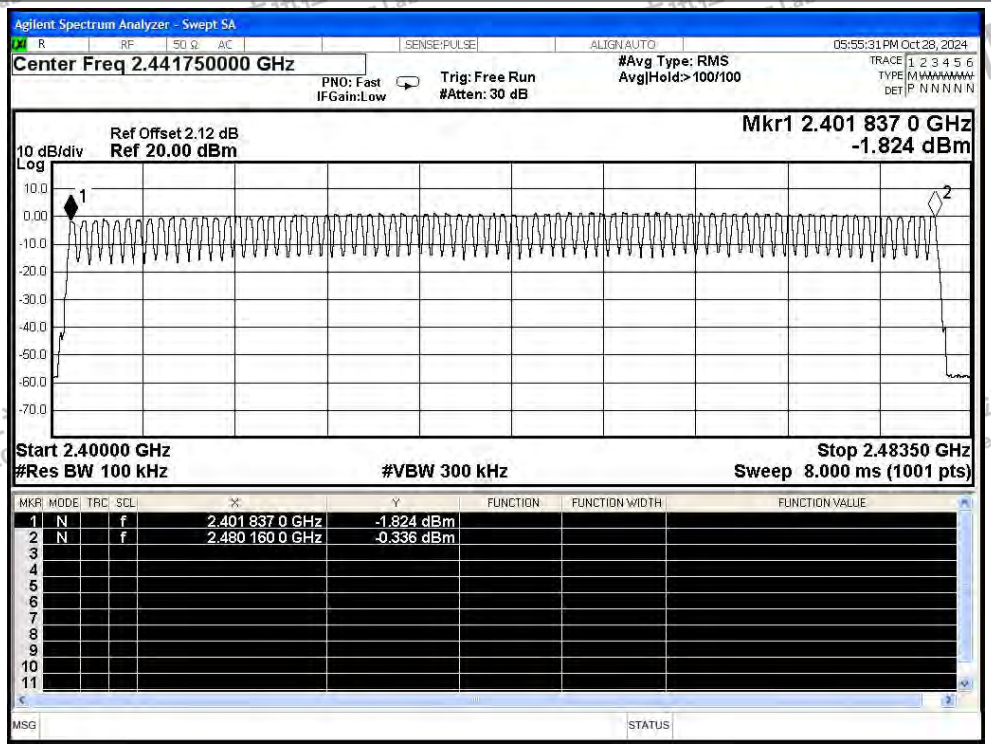


A.5 Number of Hopping Channel

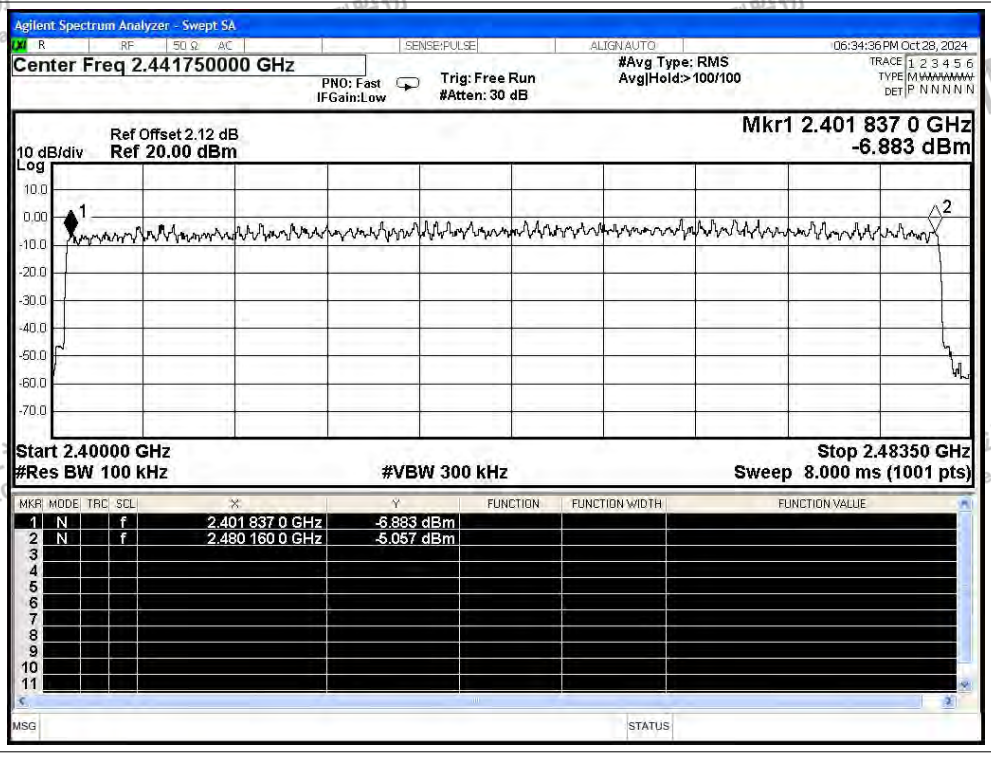
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH5	Ant1	79	15	Pass
NVNT	2-DH5	Ant1	79	15	Pass
NVNT	3-DH5	Ant1	79	15	Pass

Test Graphs

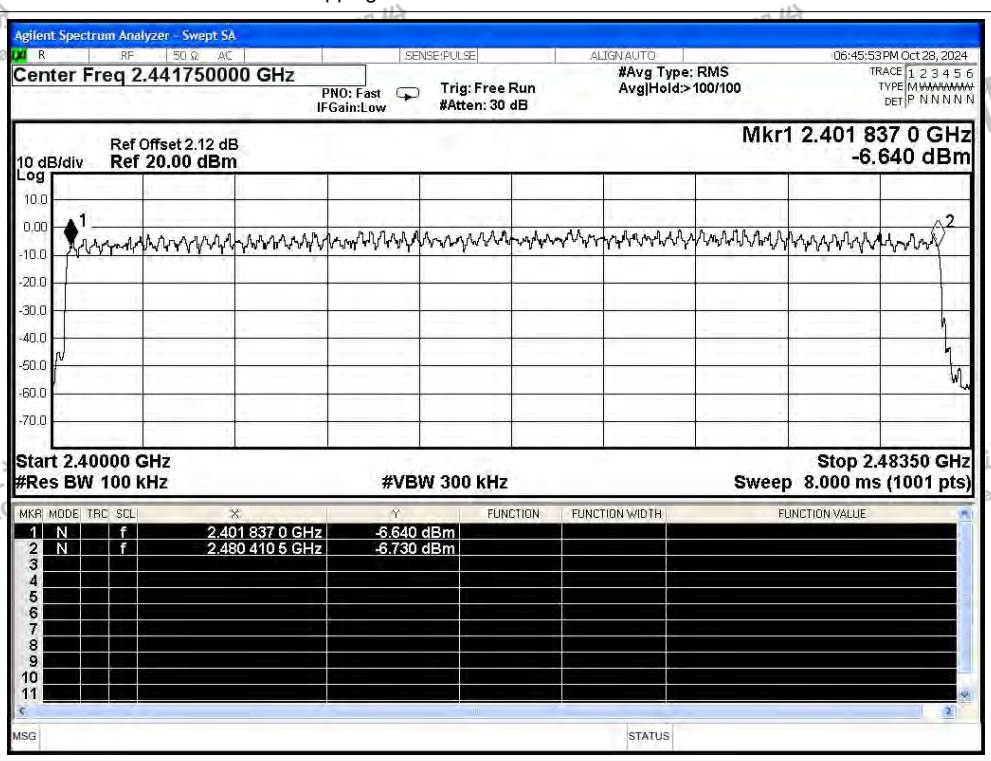
Hopping No. NVNT 1-DH5 2402MHz Ant1



Hopping No. NVNT 2-DH5 2402MHz Ant1



Hopping No. NVNT 3-DH5 2402MHz Ant1

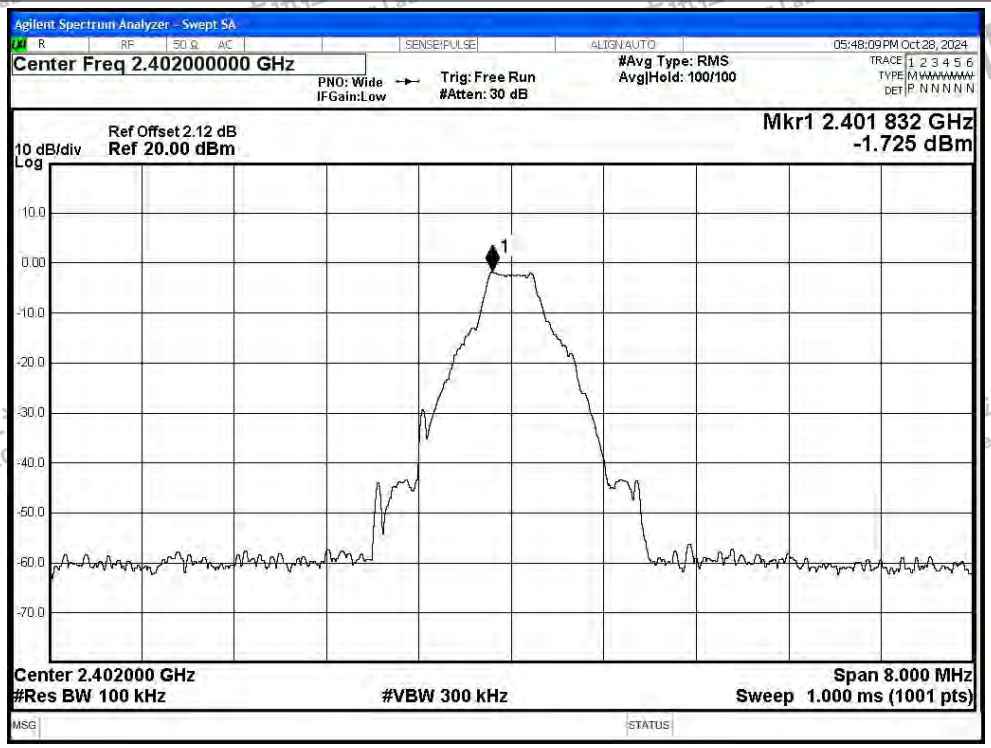


A.6 Band Edge

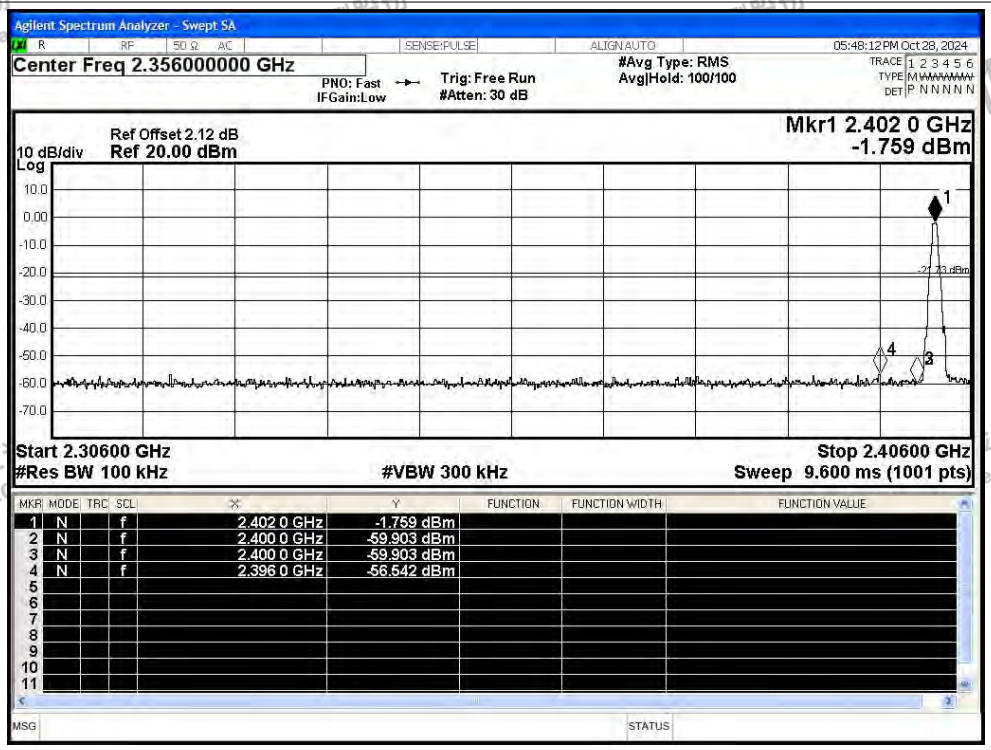
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-54.82	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-57.36	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-48.09	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-54.2	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-51.97	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-55.19	-20	Pass

Test Graphs

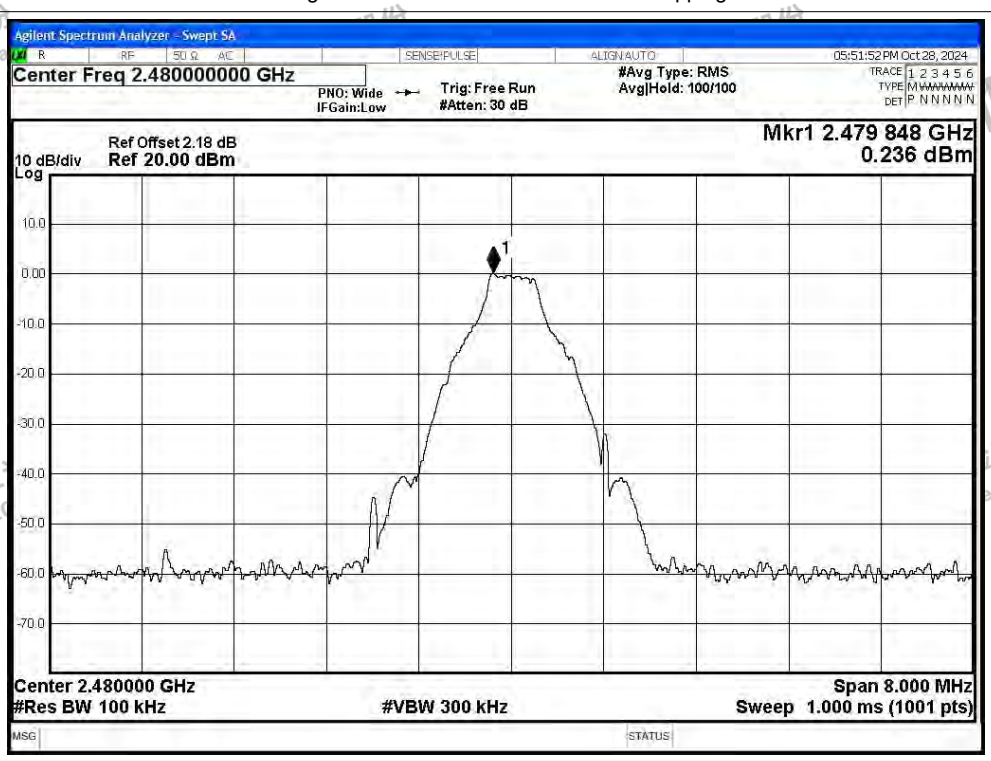
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Ref



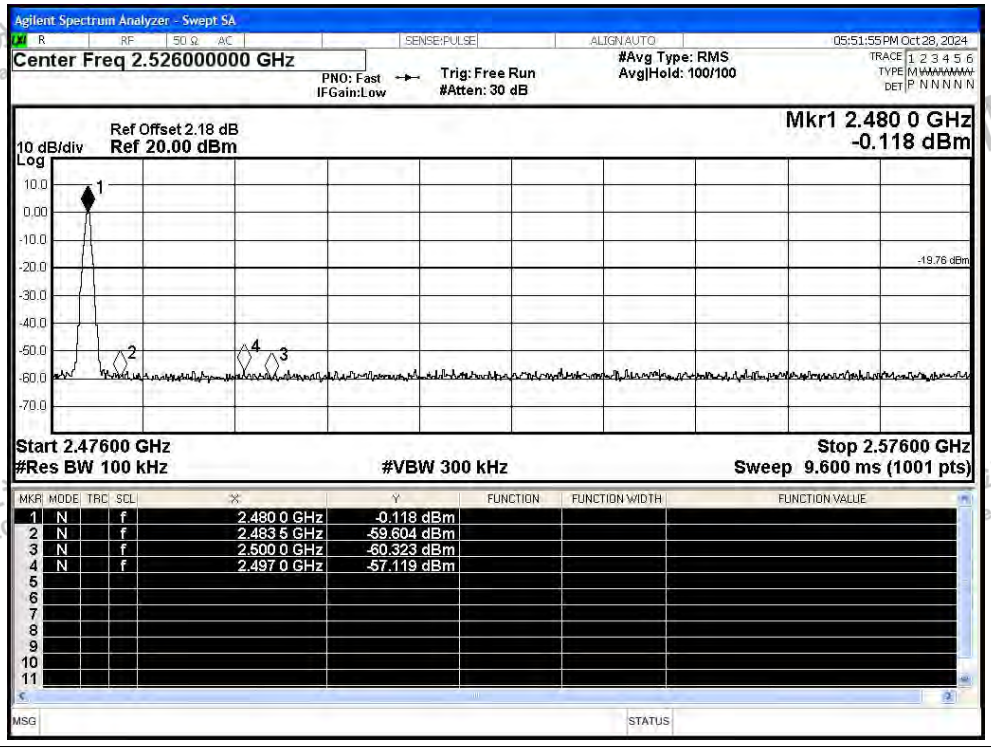
Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission



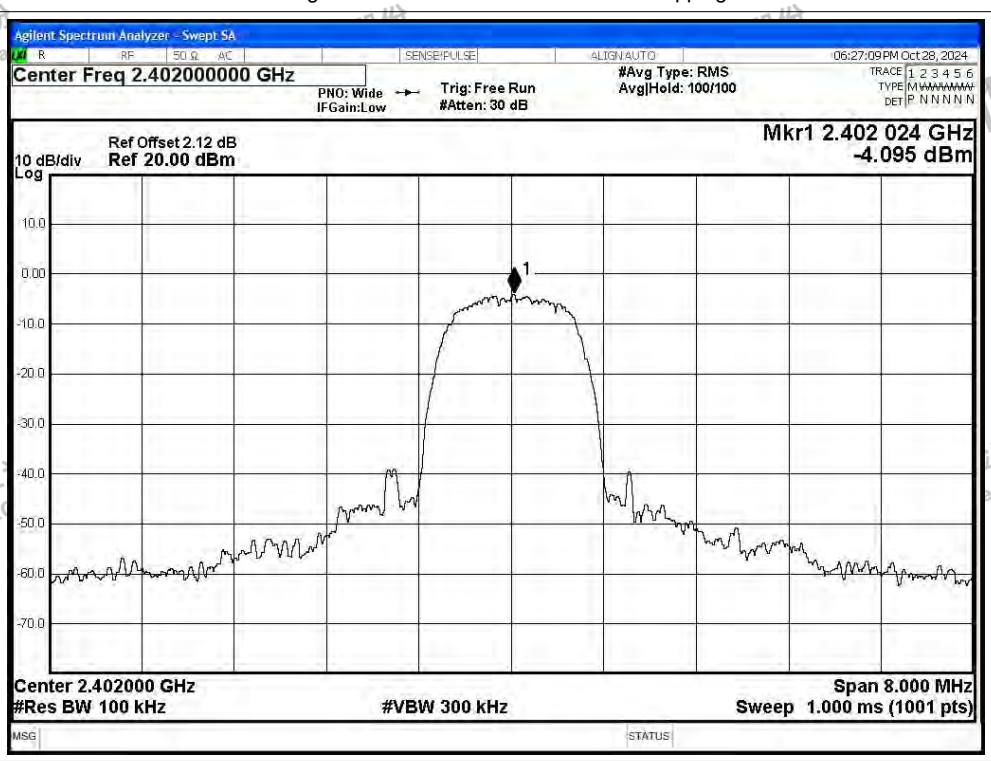
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref



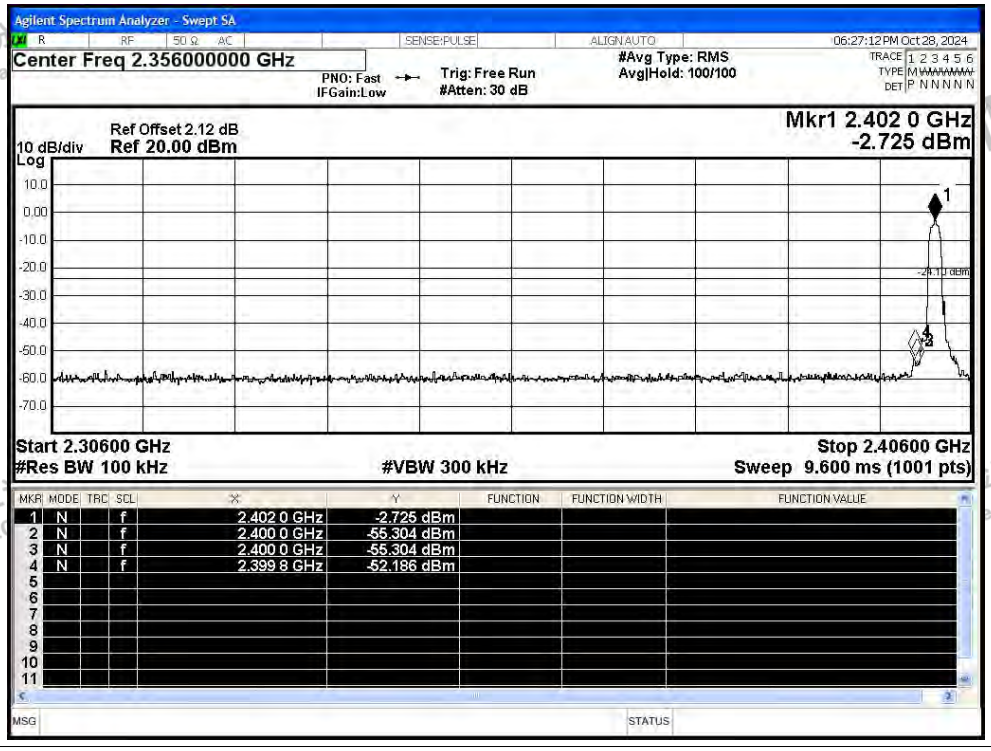
Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission



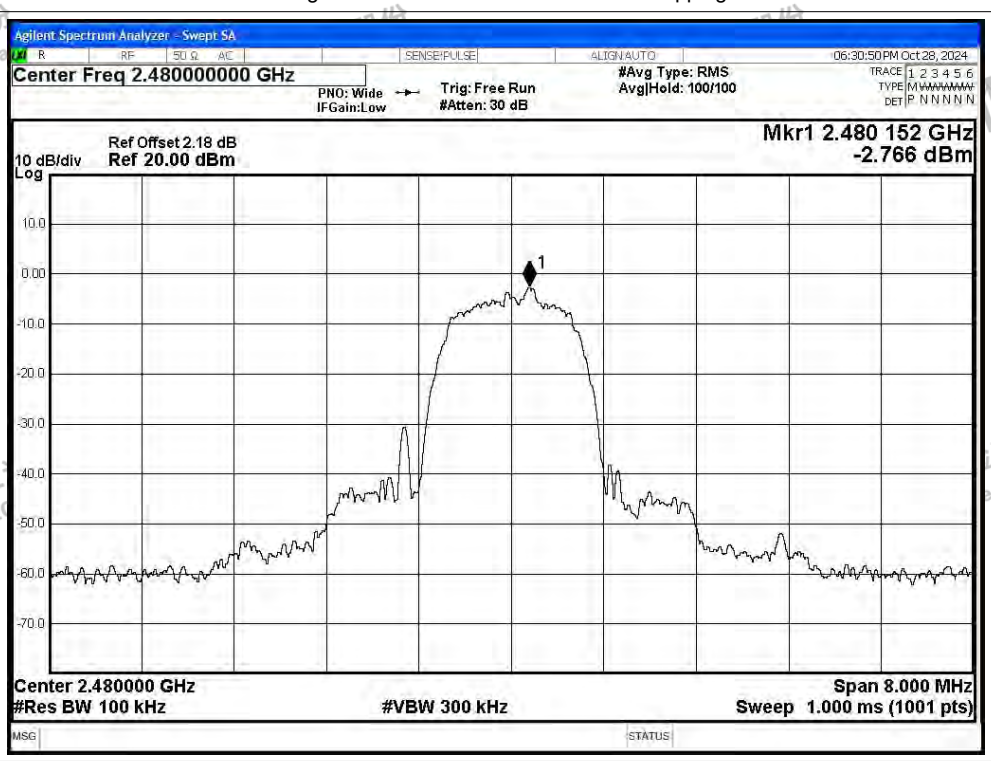
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref



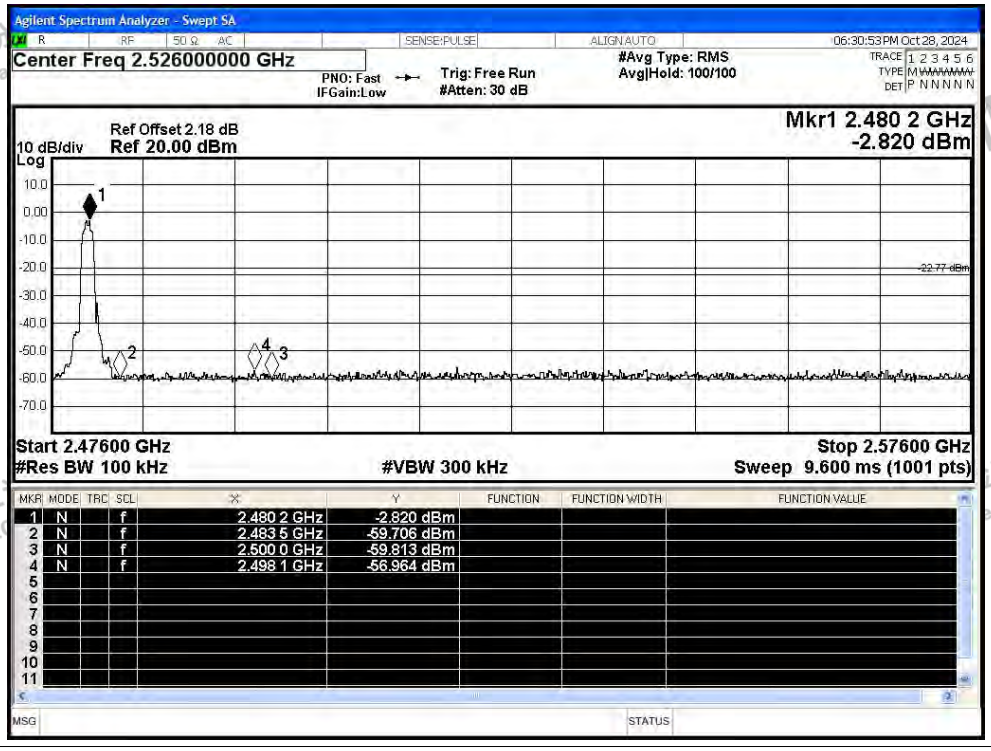
Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission



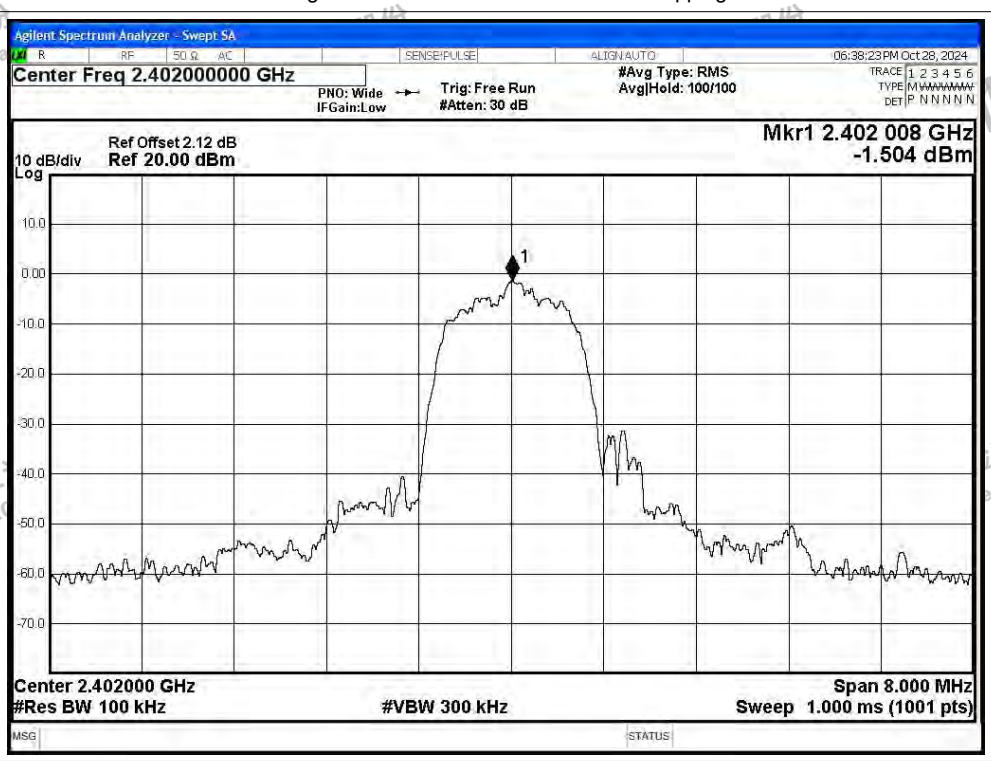
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref



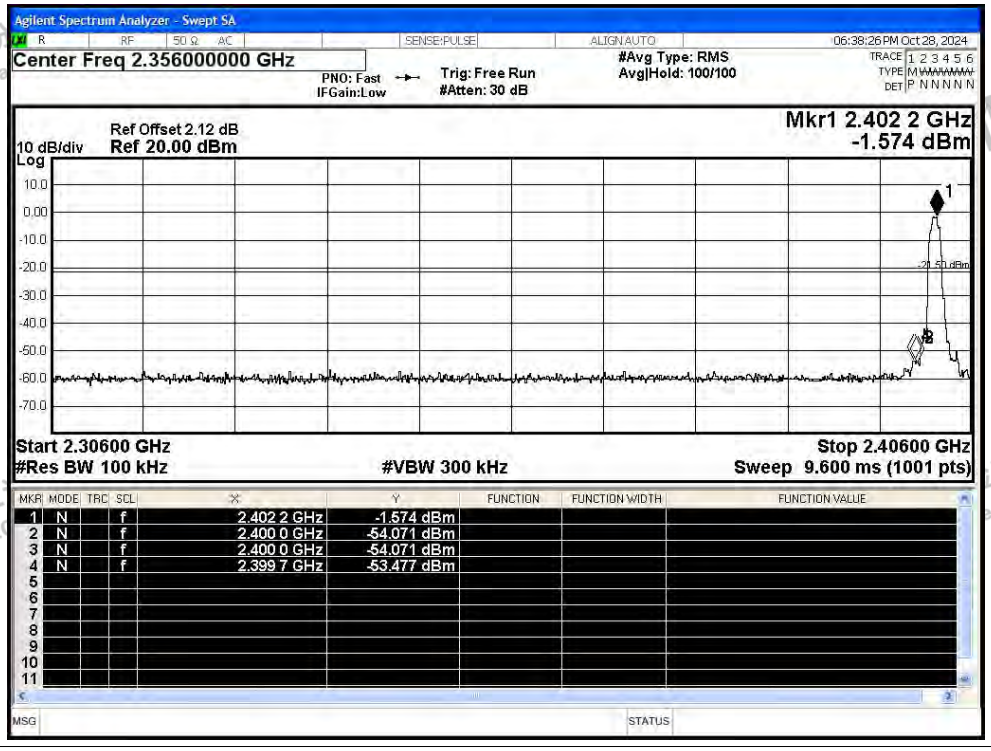
Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission



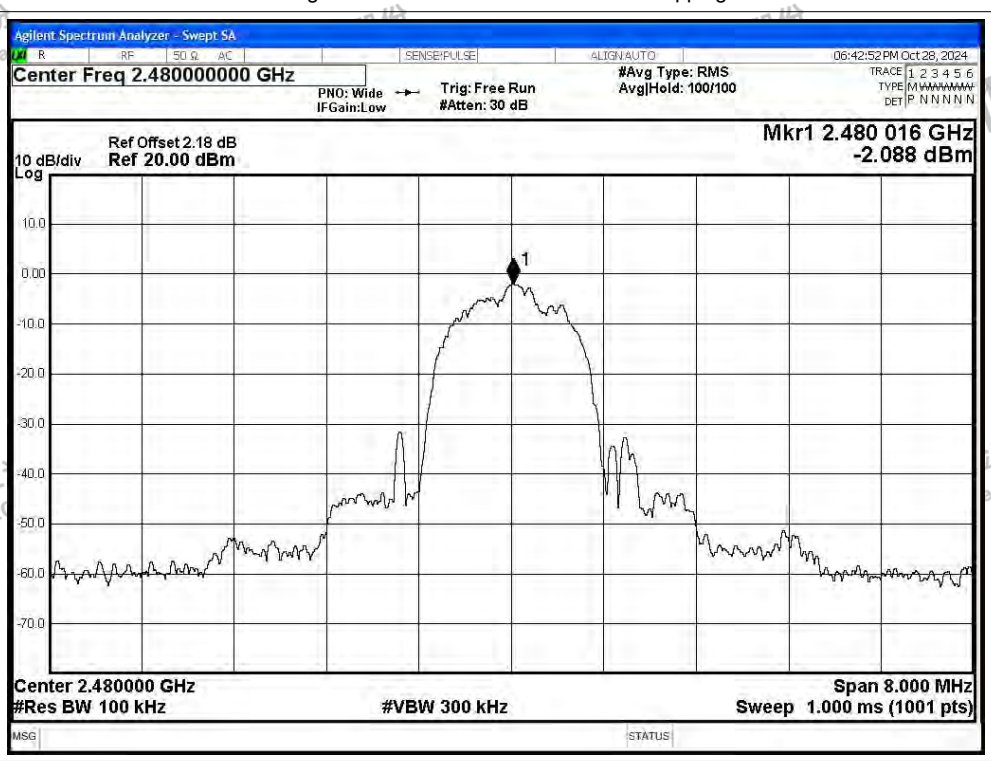
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref



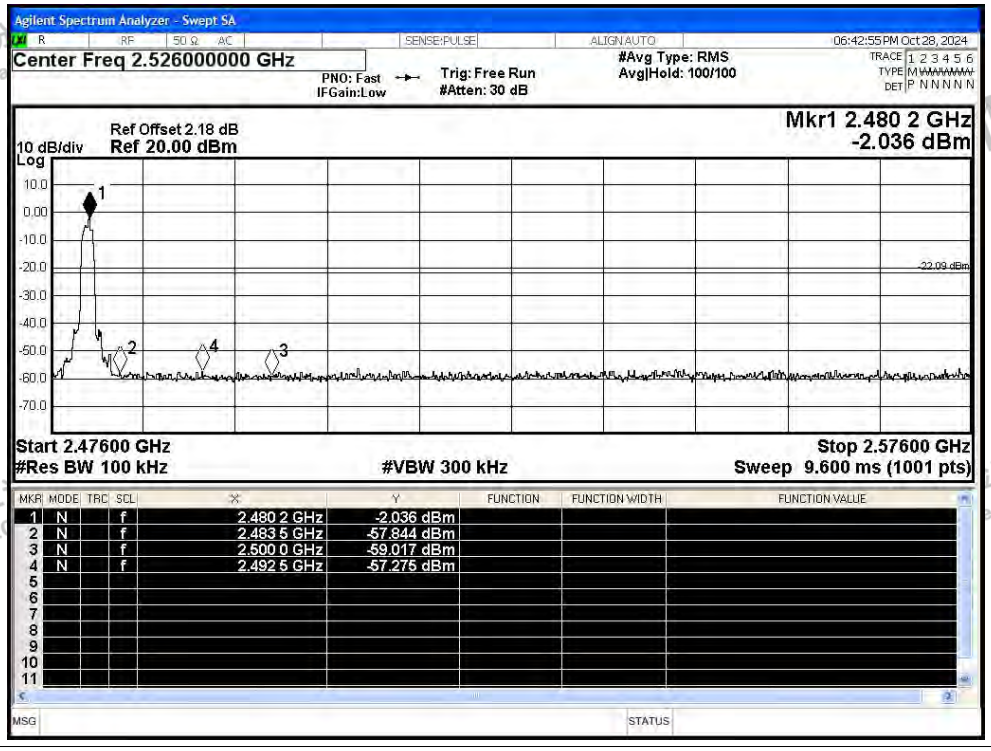
Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission



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



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

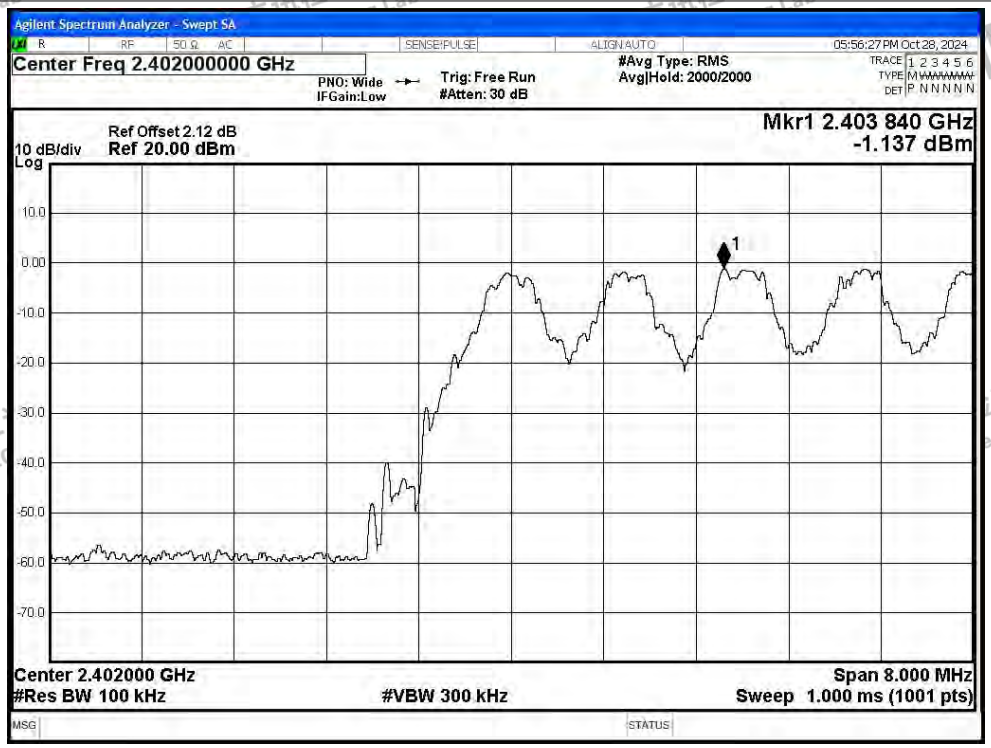


(Hopping)

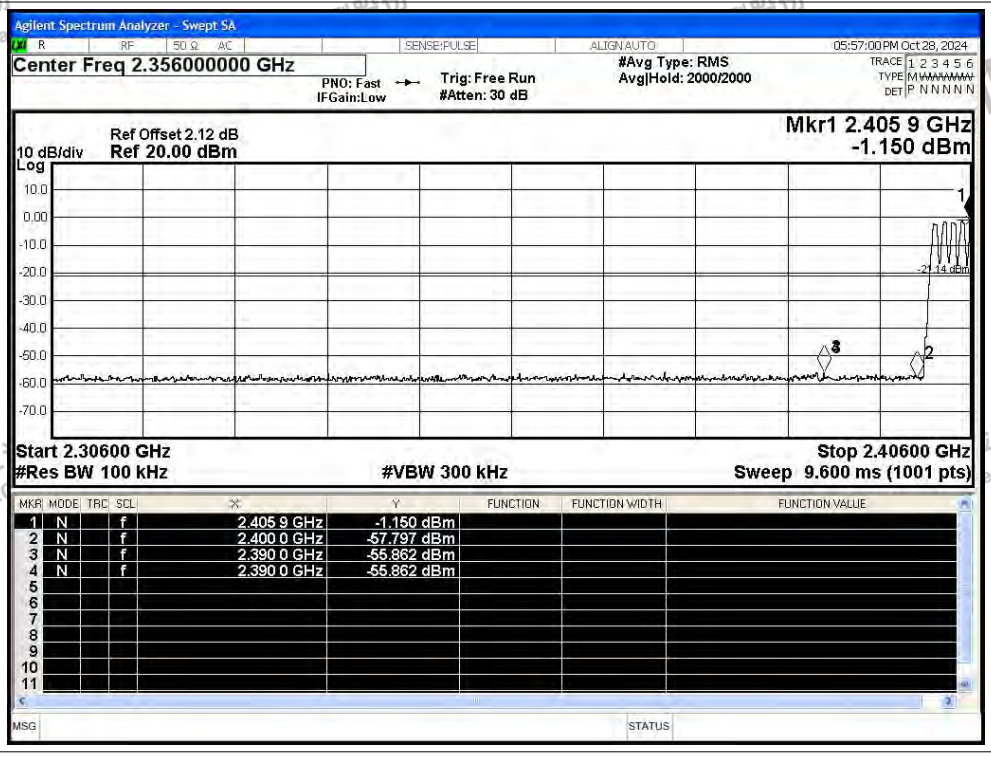
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-54.73	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-56.03	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-52.34	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-53.42	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-49.78	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-53.12	-20	Pass

Test Graphs

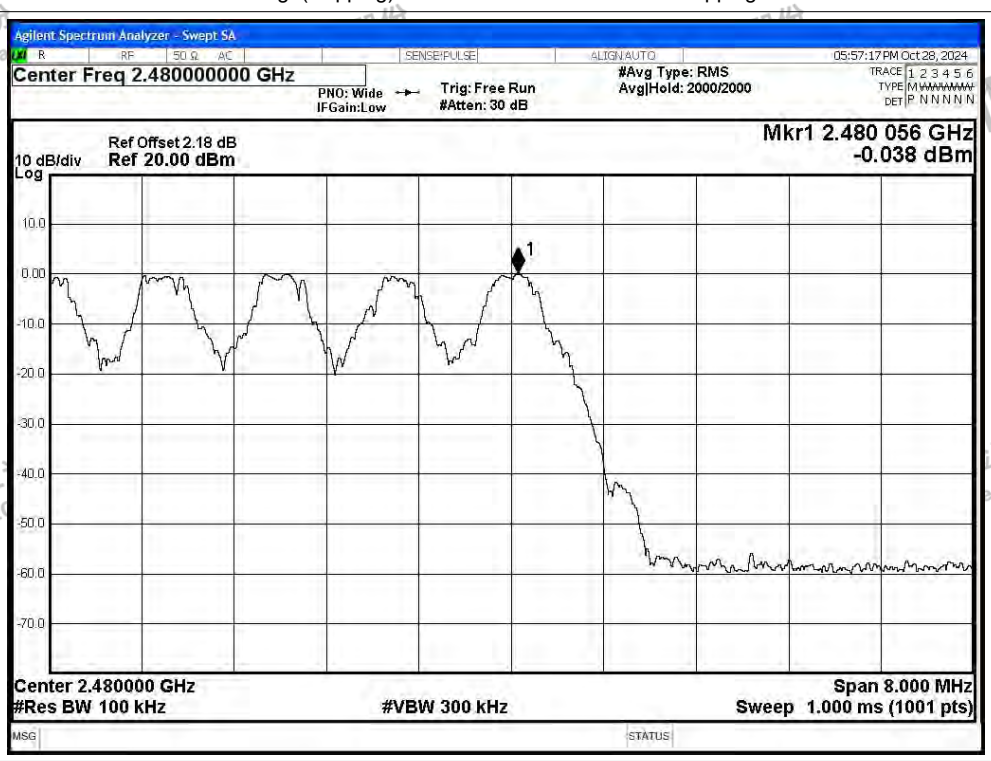
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Ref



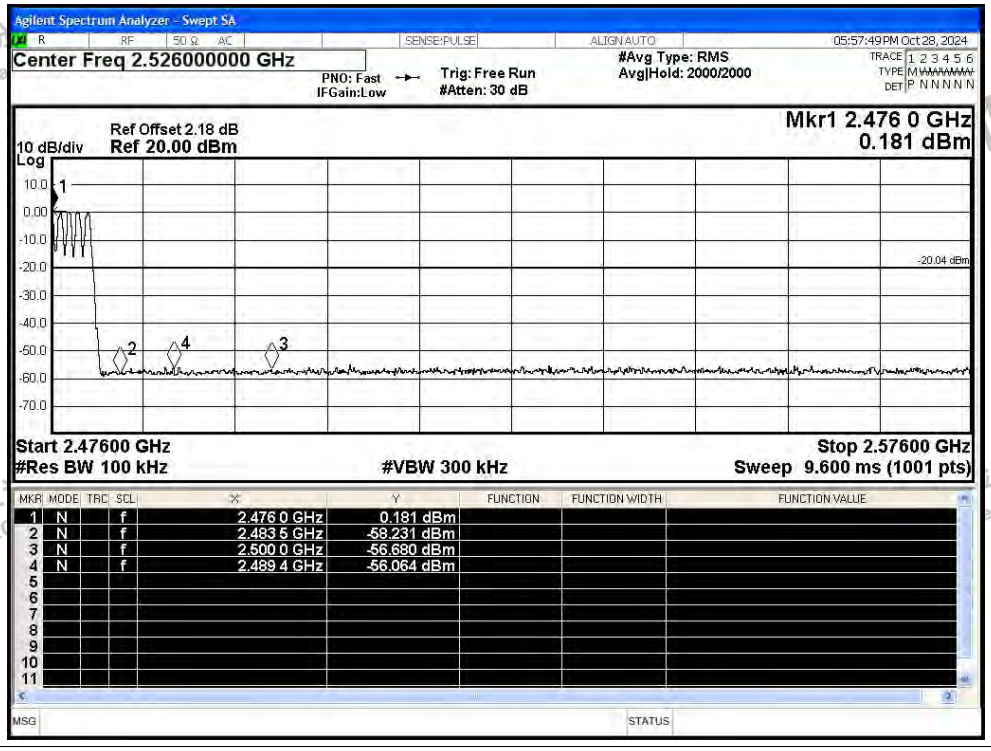
Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission



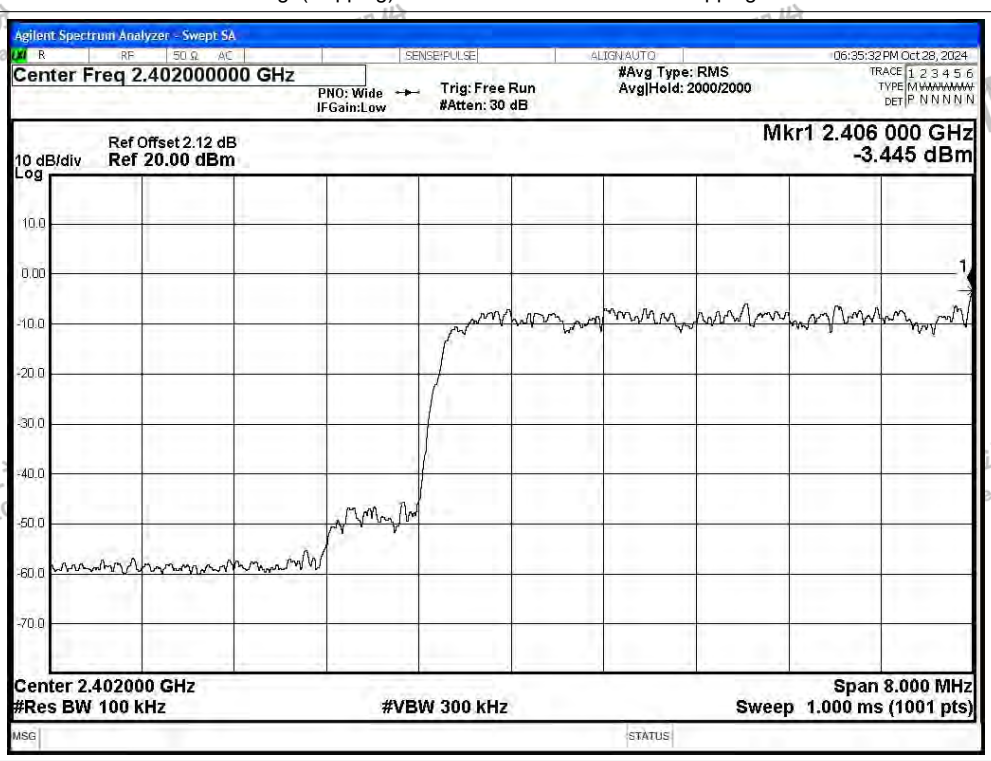
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



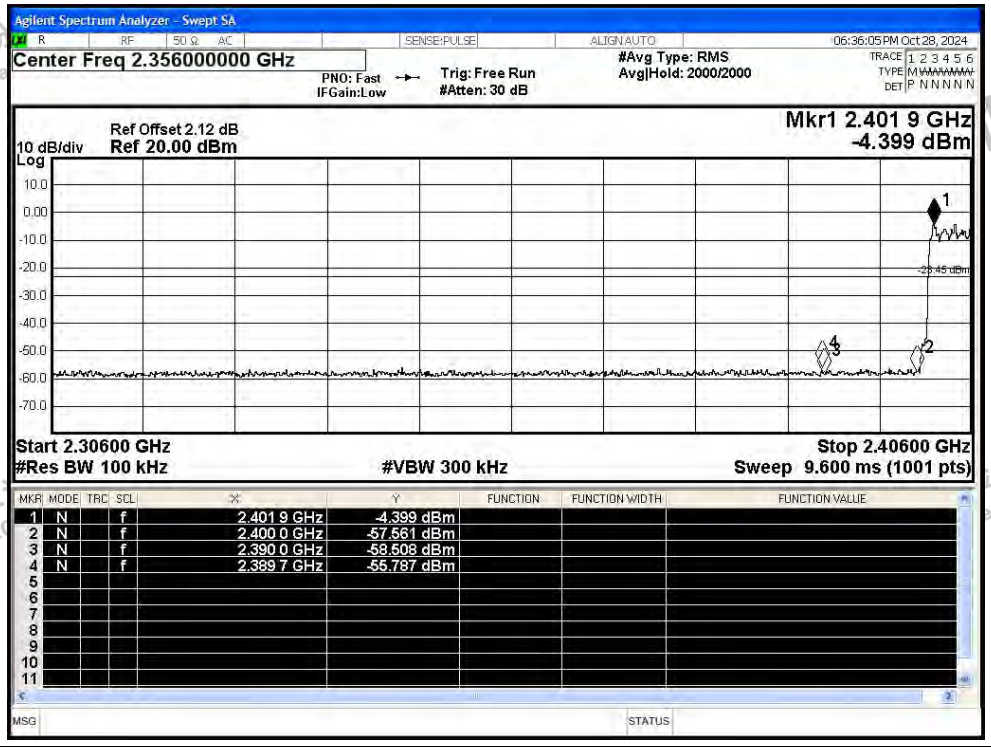
Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission



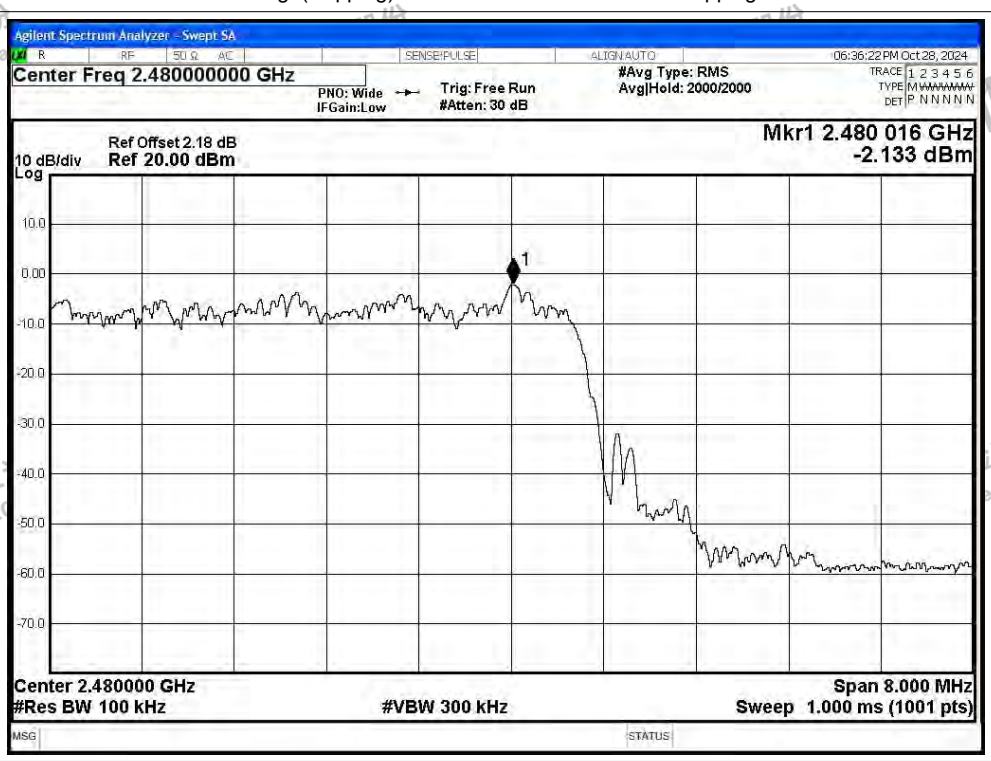
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref



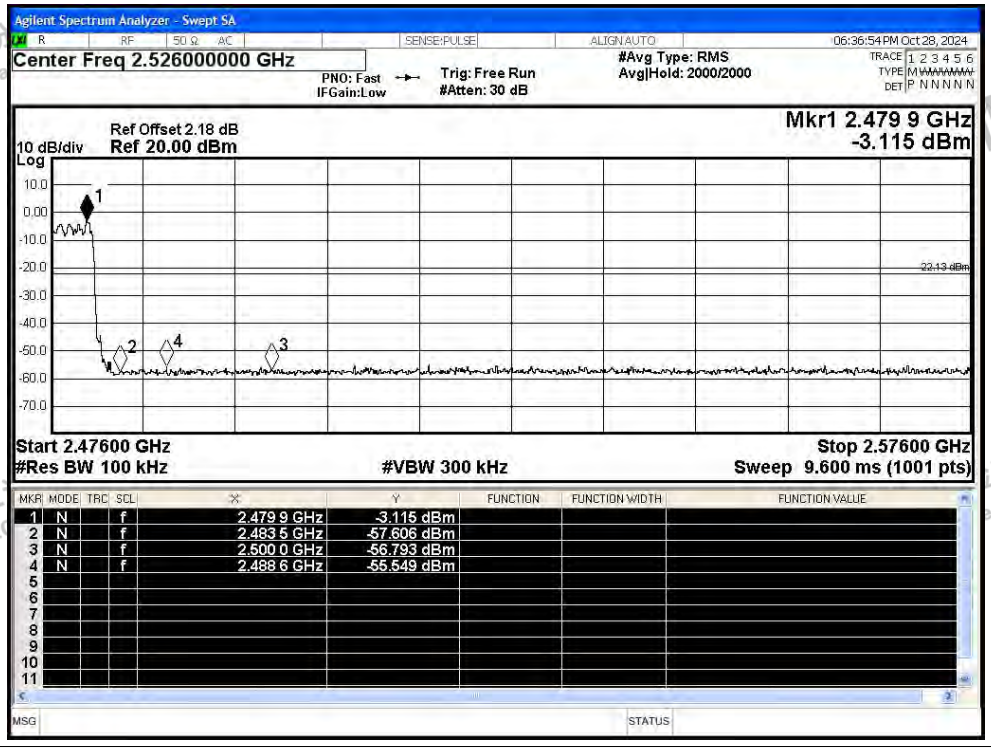
Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission



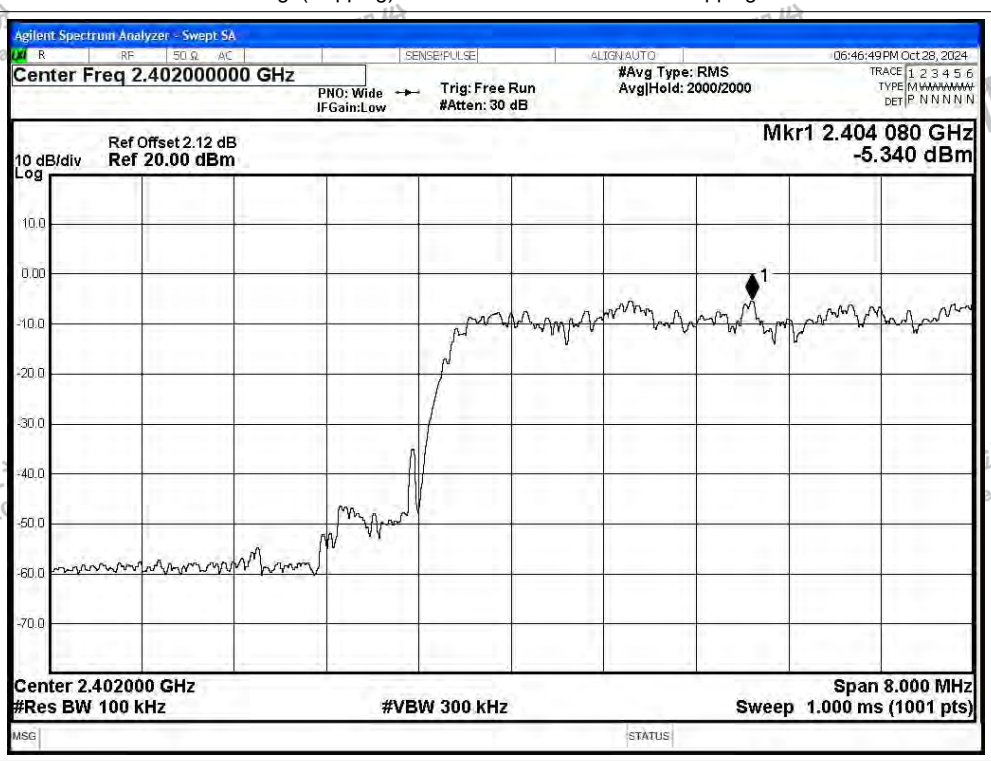
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



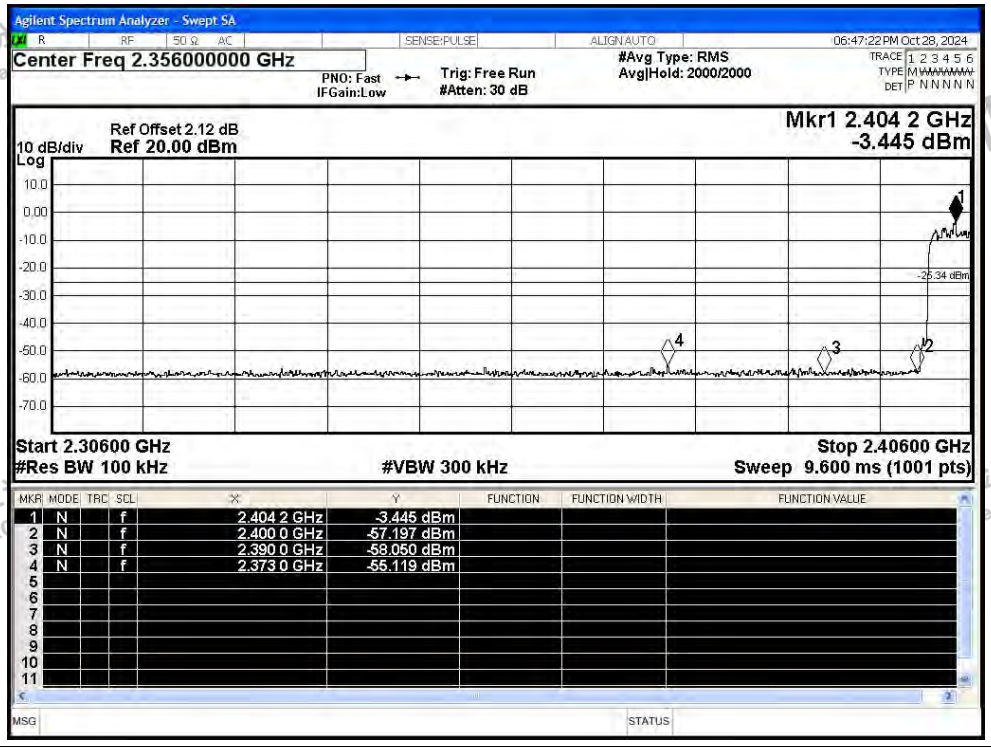
Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission



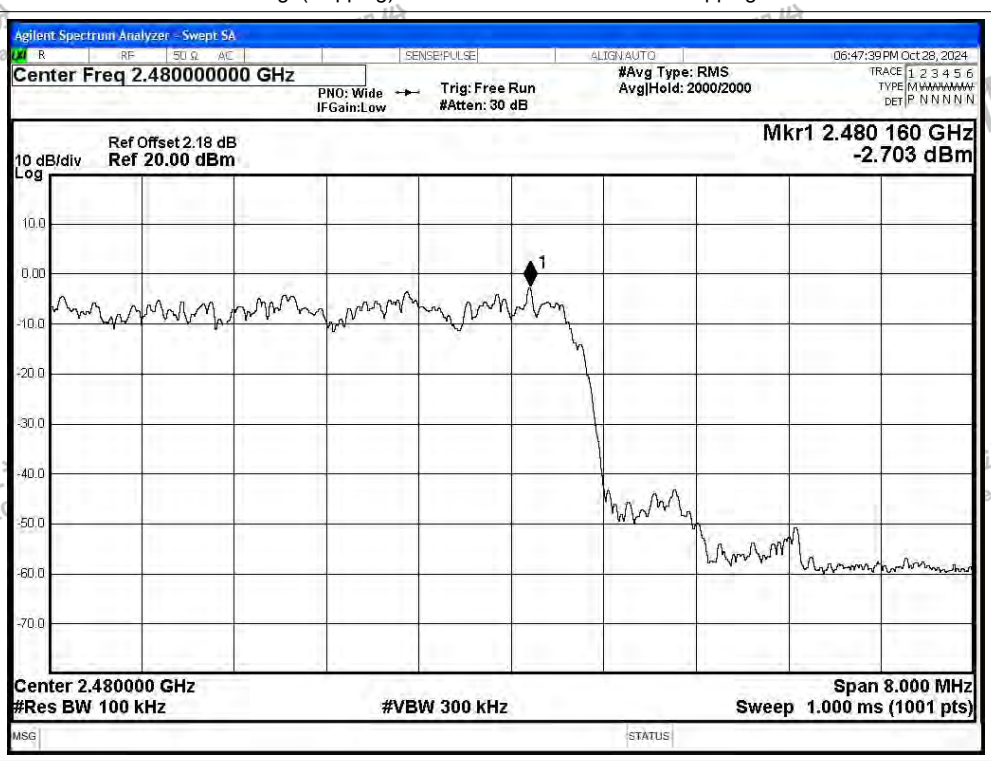
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref



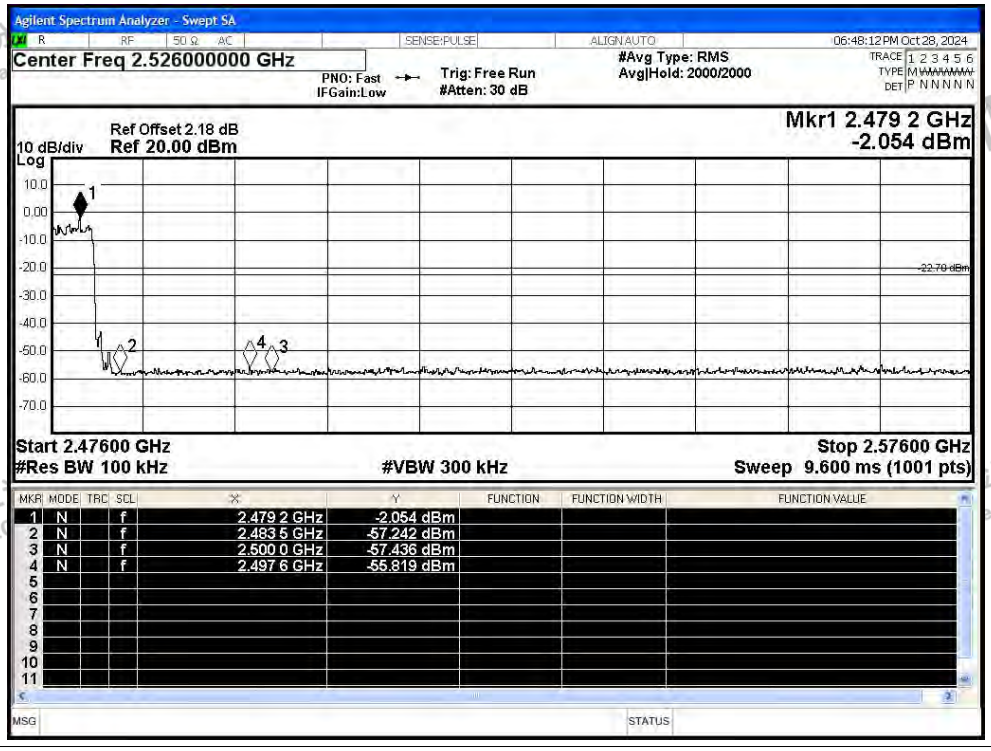
Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission



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



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



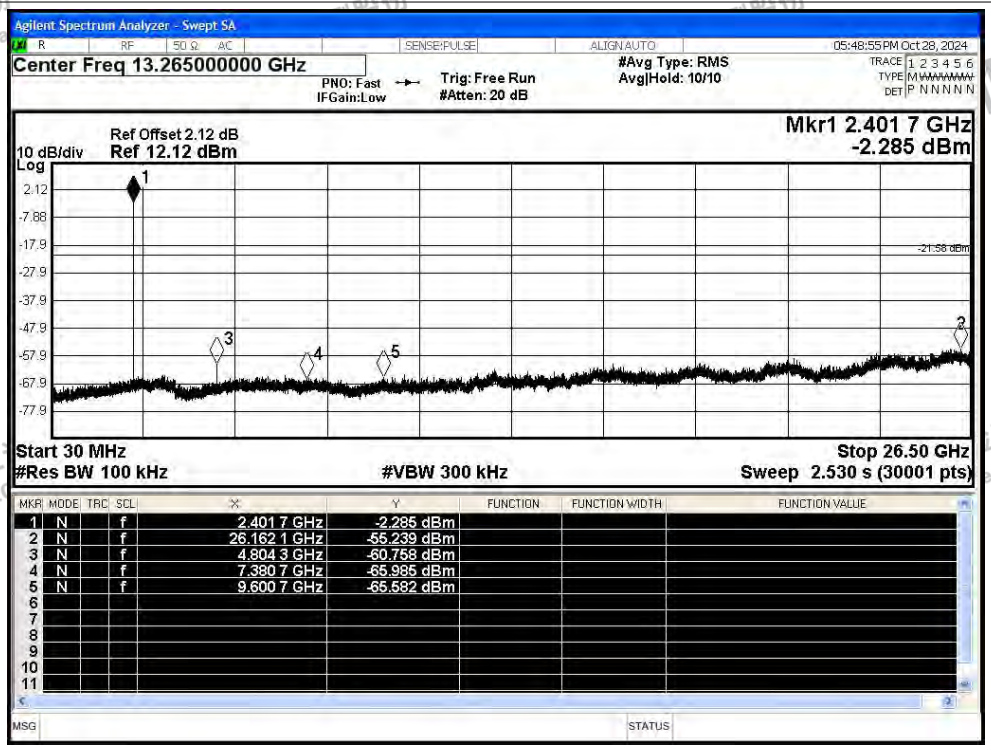
A.7 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-53.65	-20	Pass
NVNT	1-DH5	2441	Ant1	-54.13	-20	Pass
NVNT	1-DH5	2480	Ant1	-54.98	-20	Pass
NVNT	2-DH5	2402	Ant1	-53.4	-20	Pass
NVNT	2-DH5	2441	Ant1	-53.94	-20	Pass
NVNT	2-DH5	2480	Ant1	-52.82	-20	Pass
NVNT	3-DH5	2402	Ant1	-52.59	-20	Pass
NVNT	3-DH5	2441	Ant1	-52.97	-20	Pass
NVNT	3-DH5	2480	Ant1	-53.56	-20	Pass

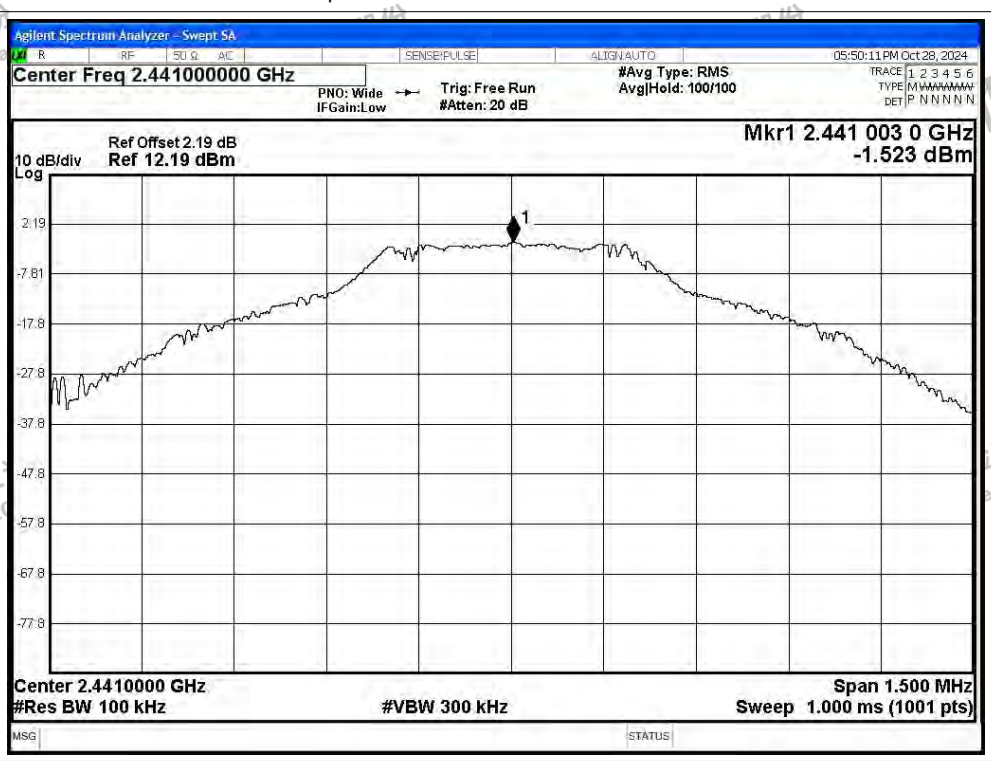
Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref

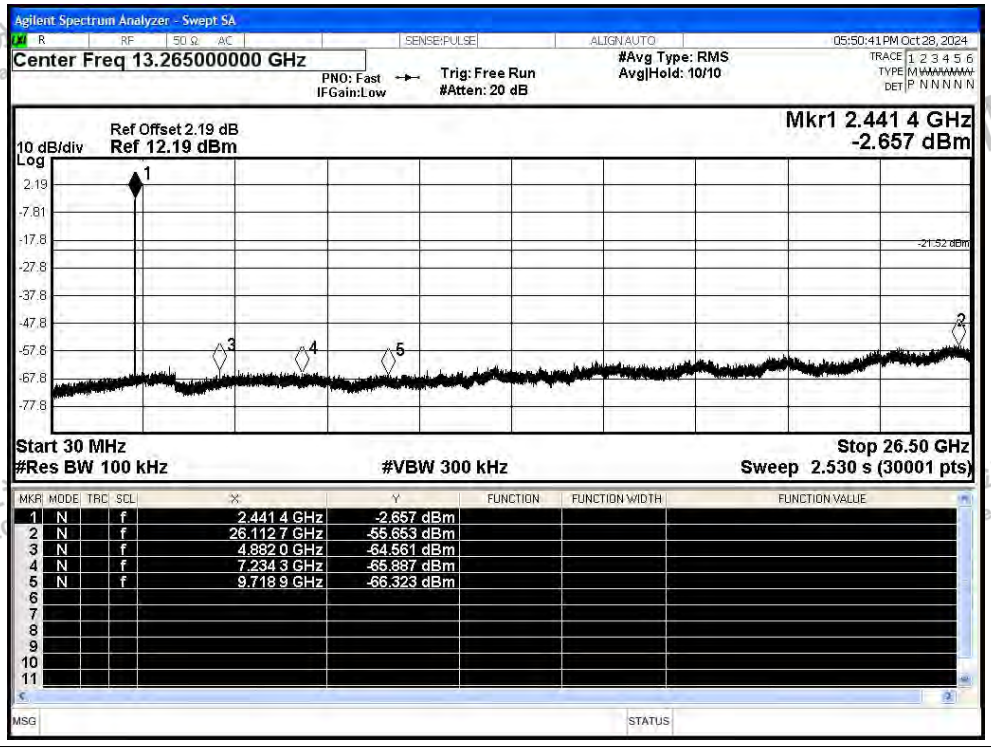
Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission



Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref

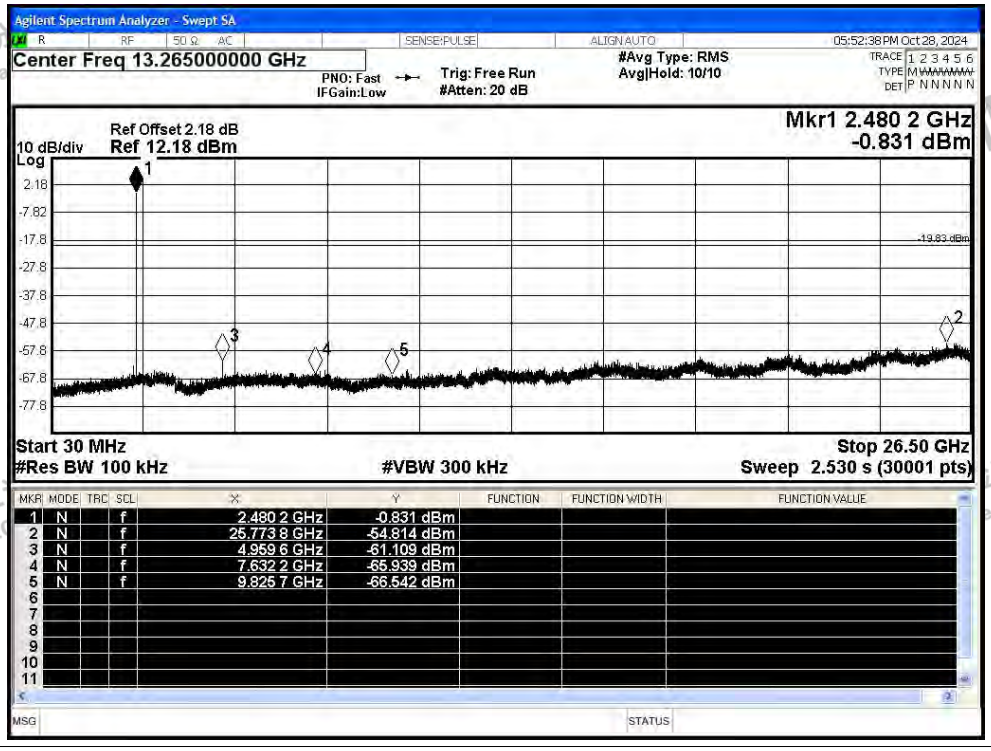


Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission

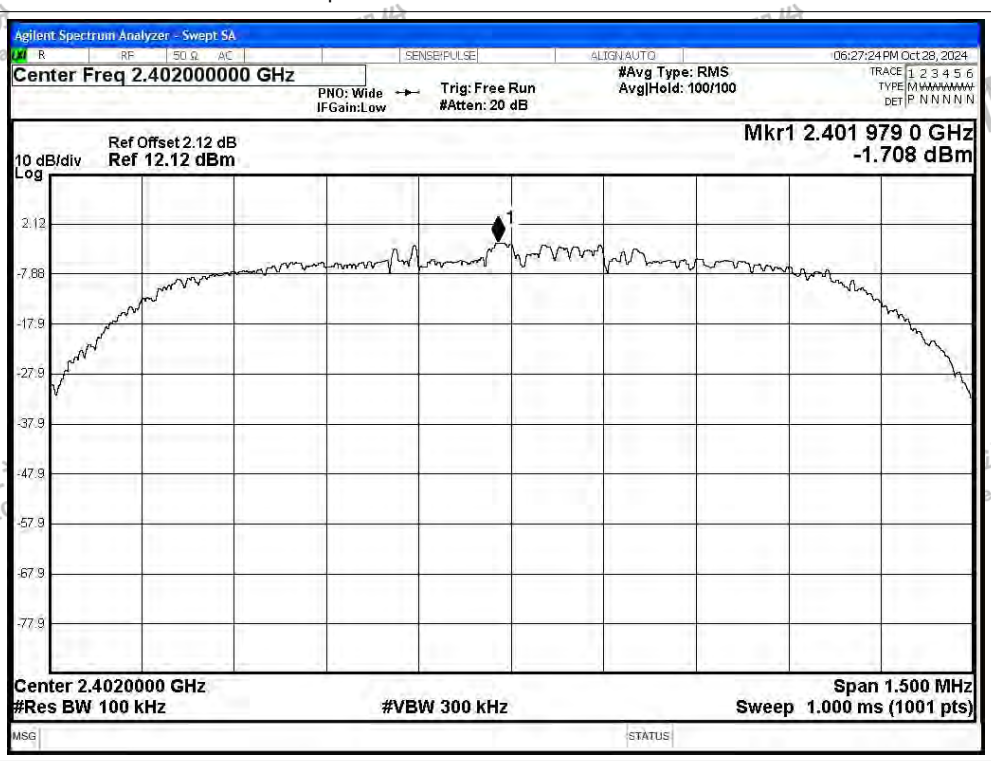


Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref

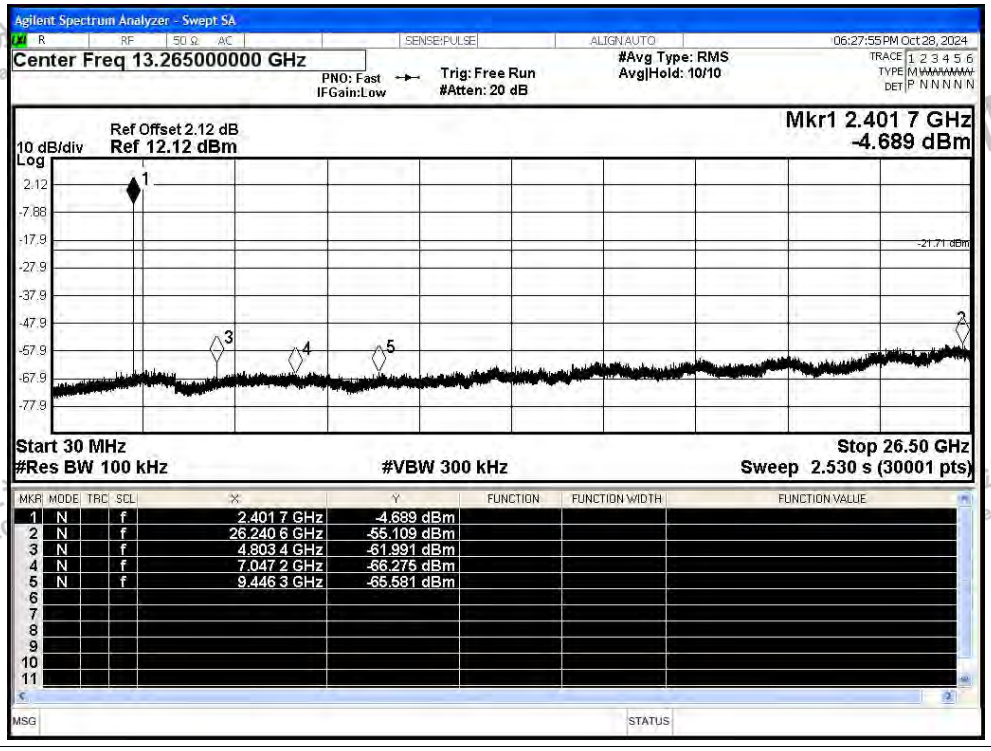
Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission



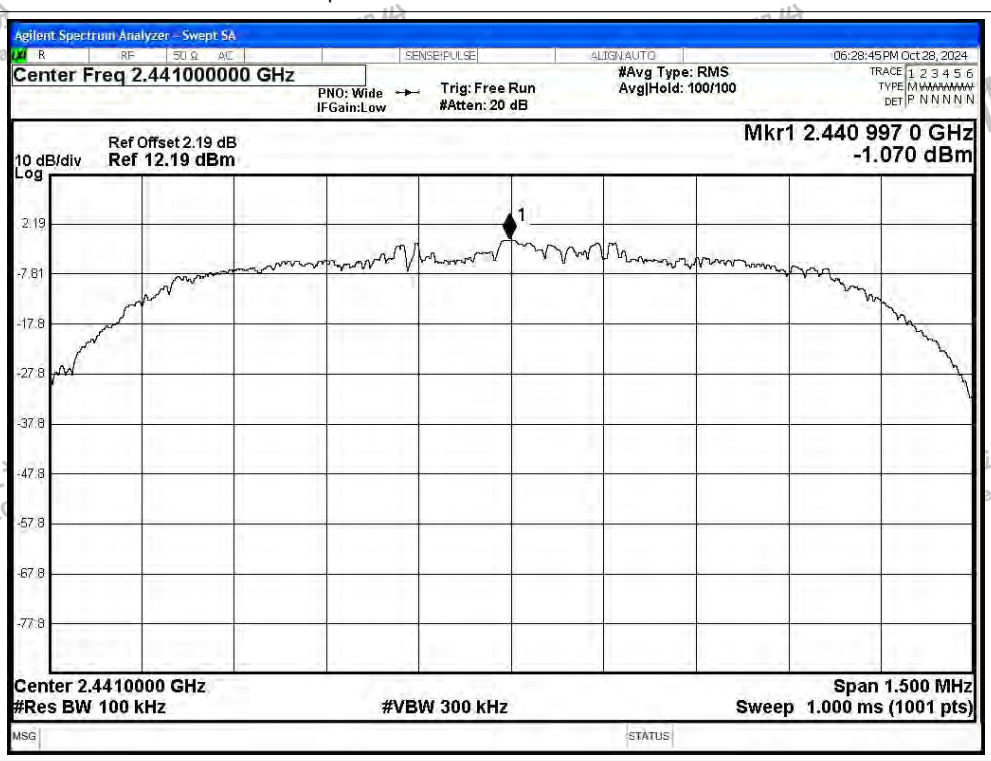
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref



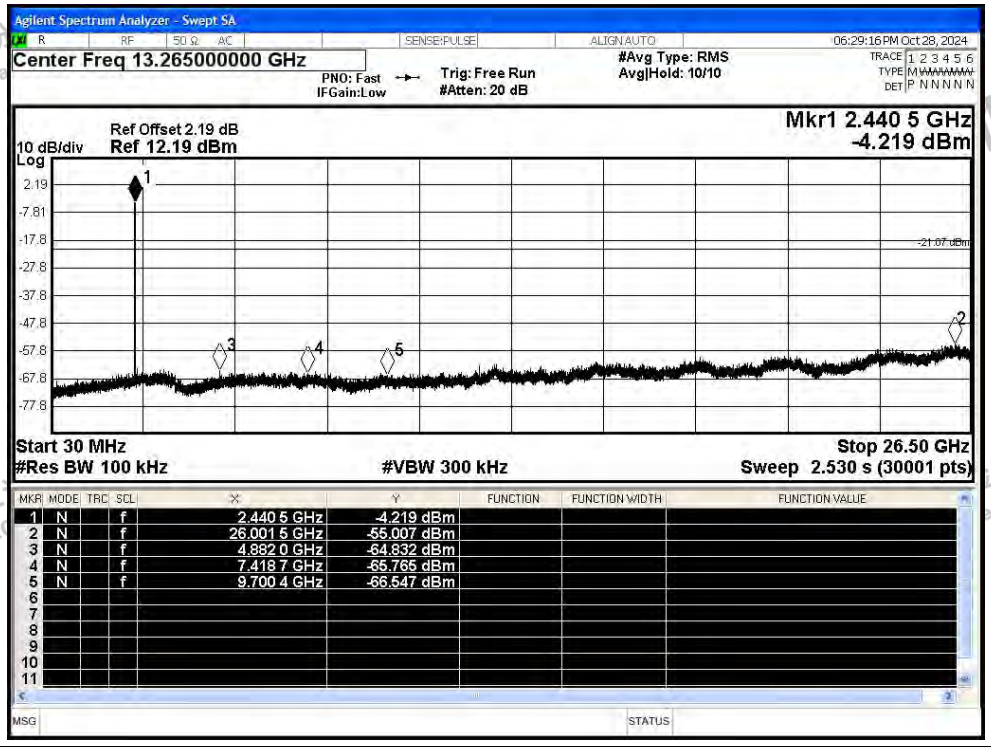
Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission



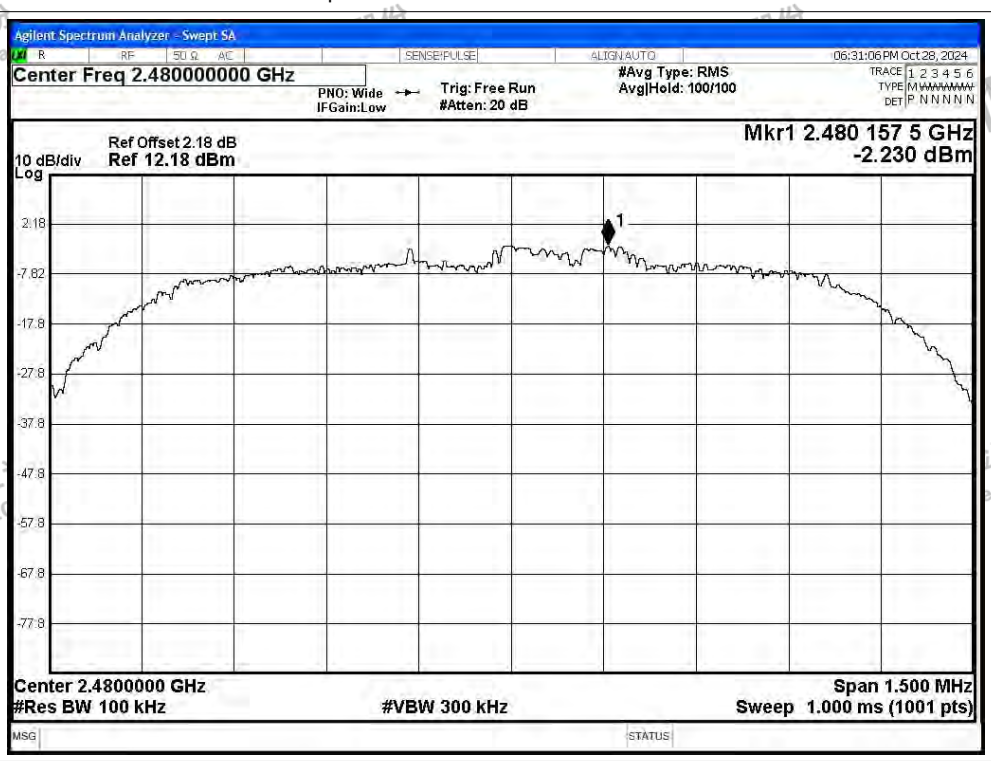
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref



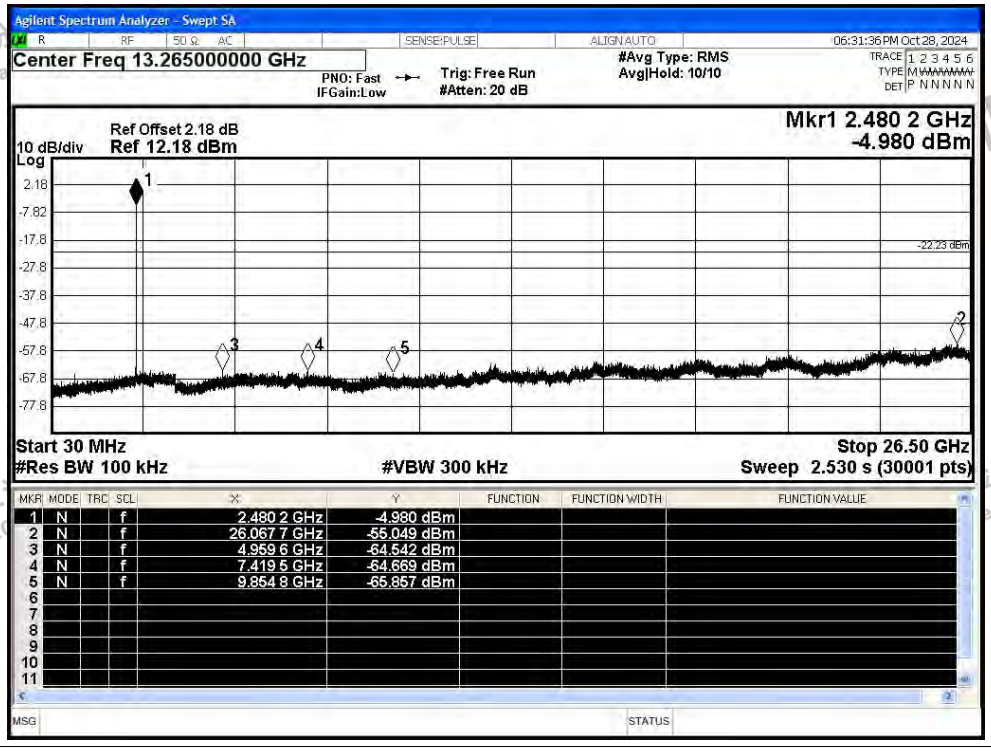
Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission



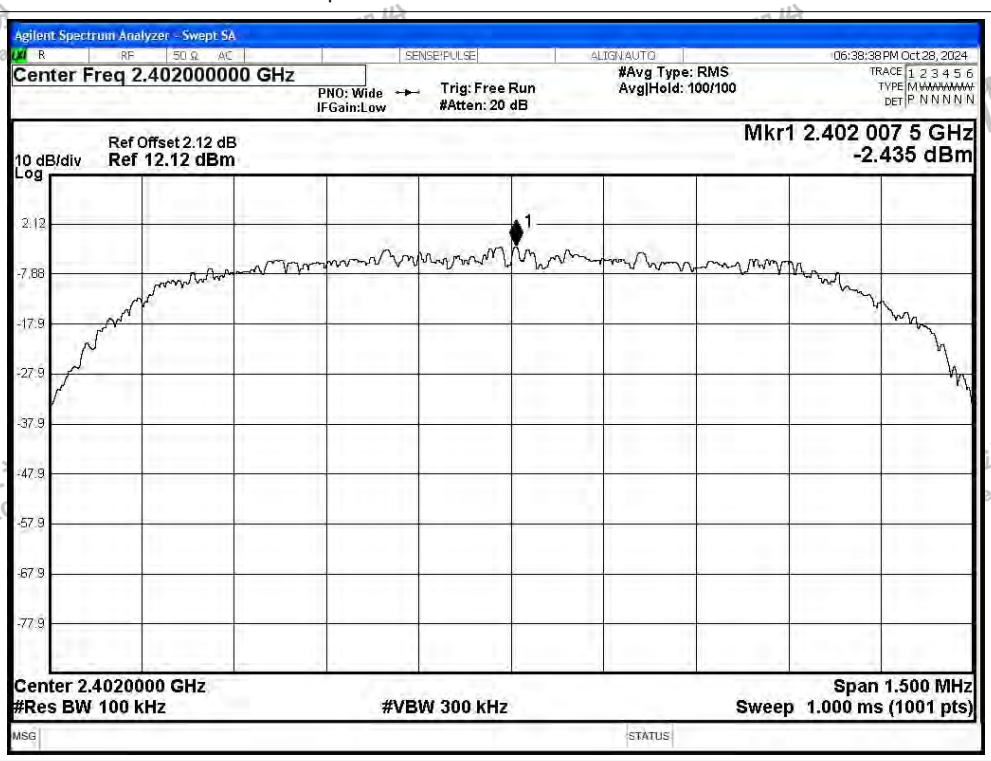
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref



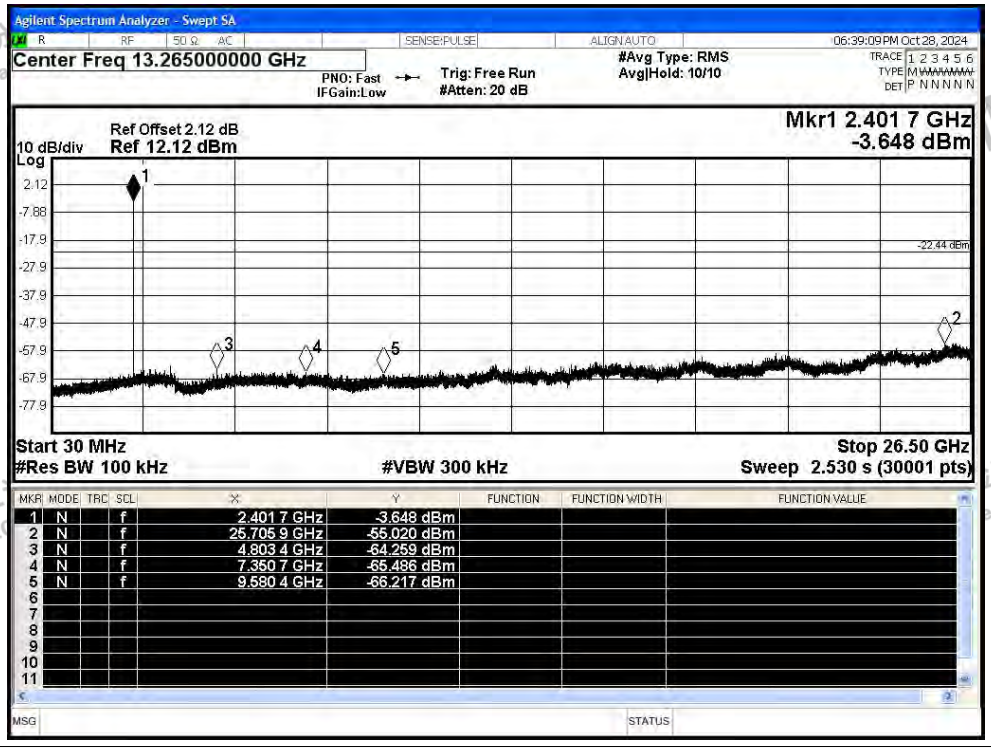
Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Emission



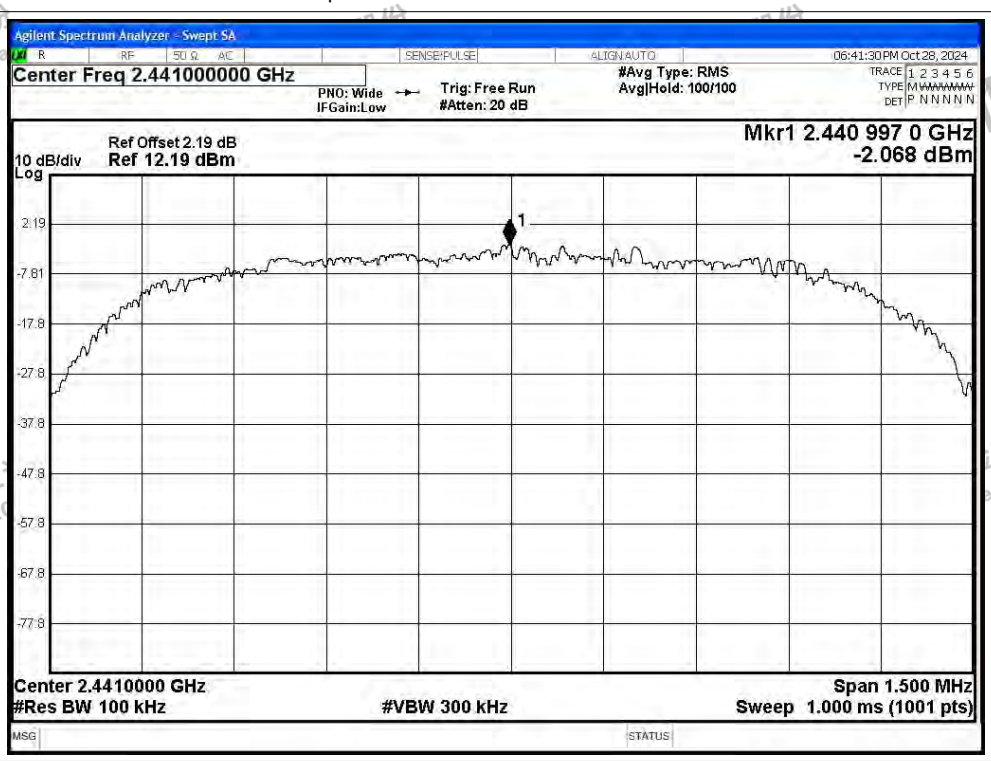
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref



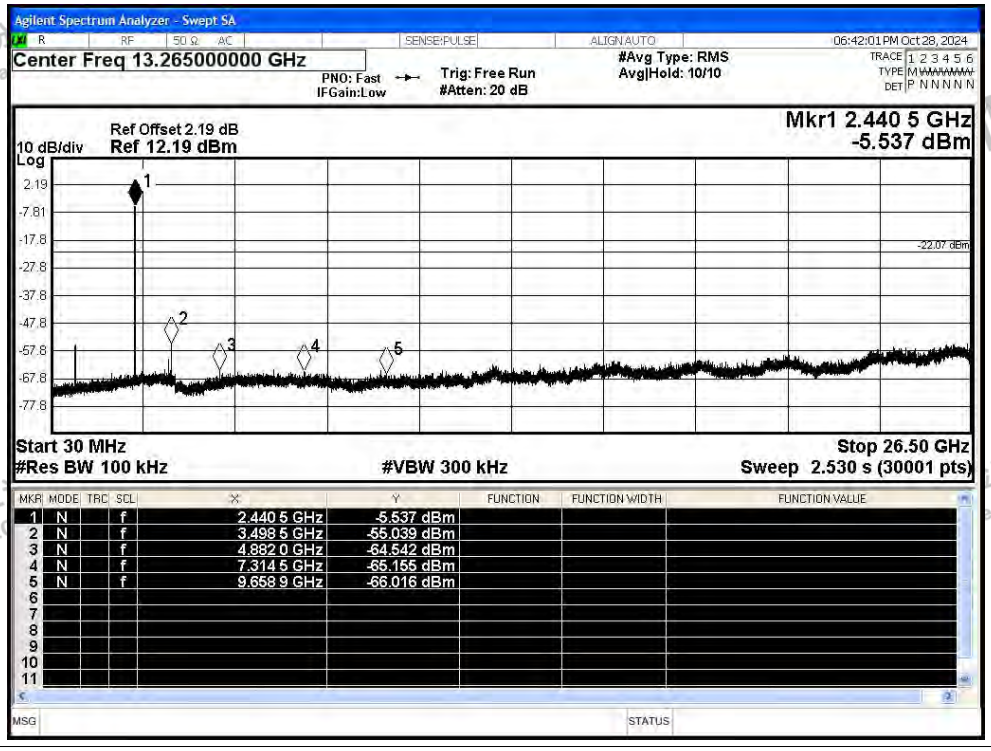
Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Emission



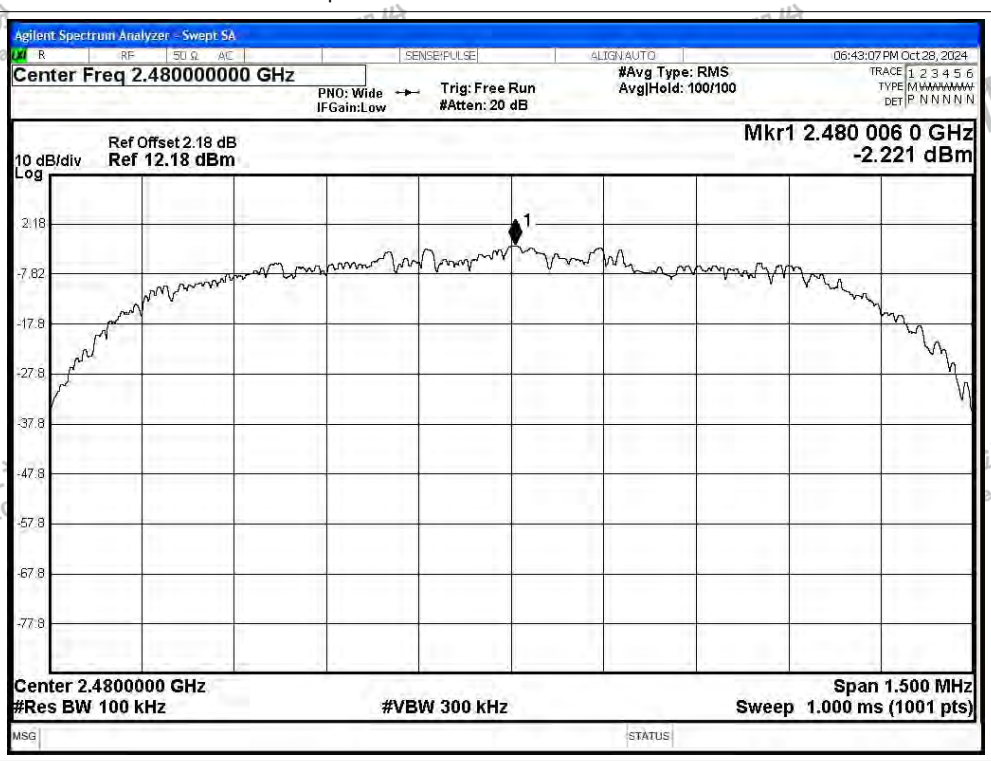
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref



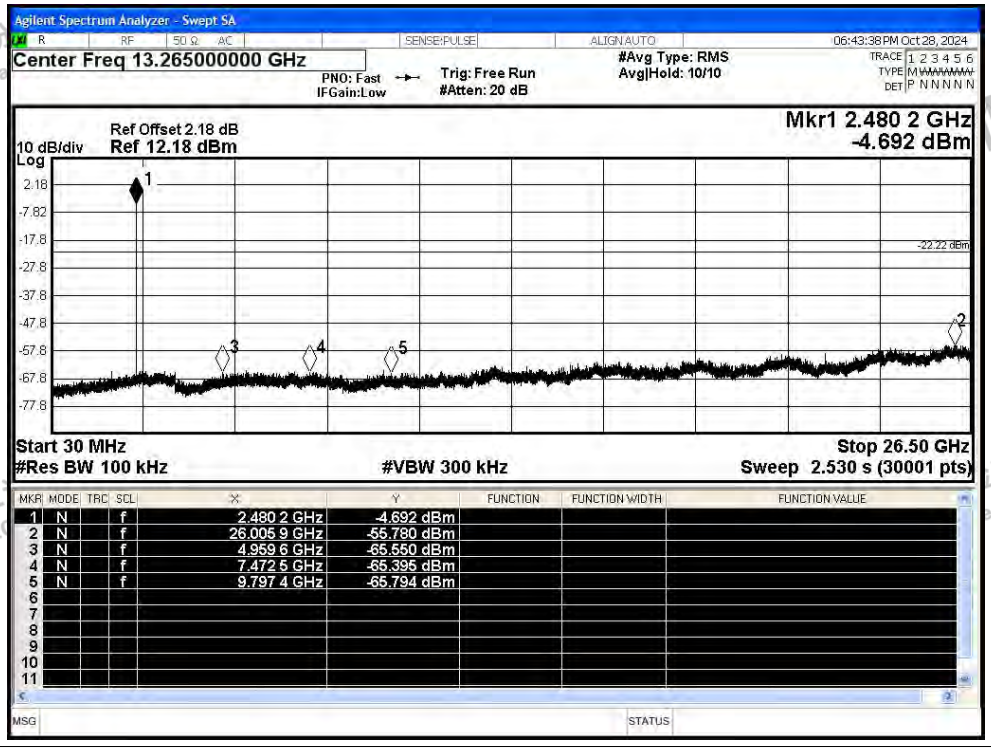
Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission

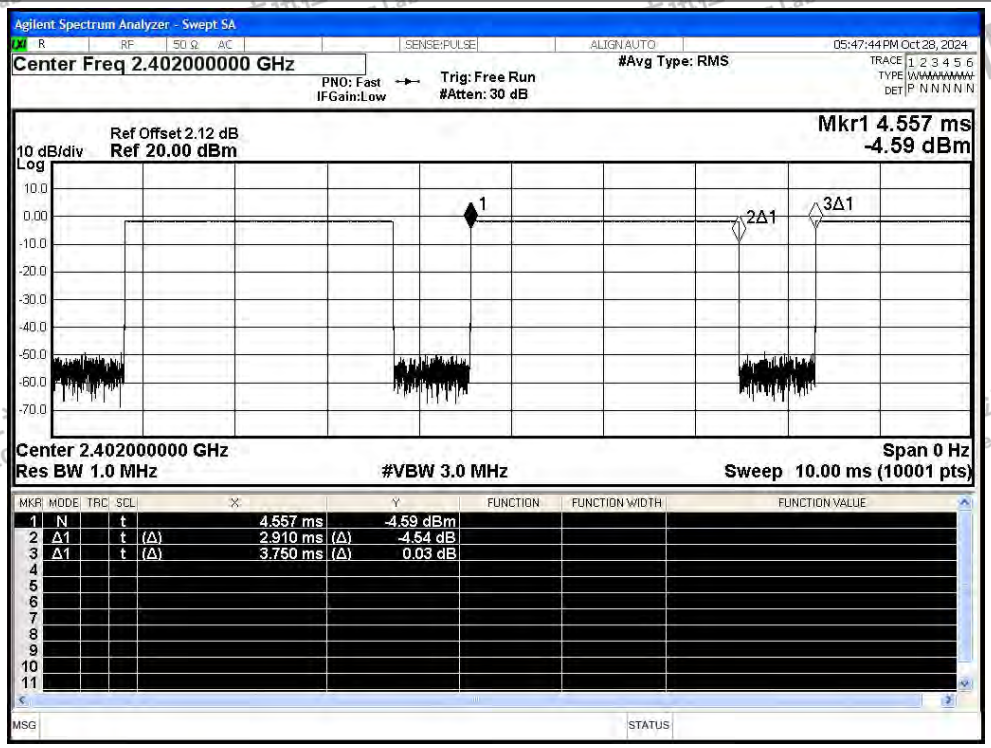


A.8 Duty Cycle

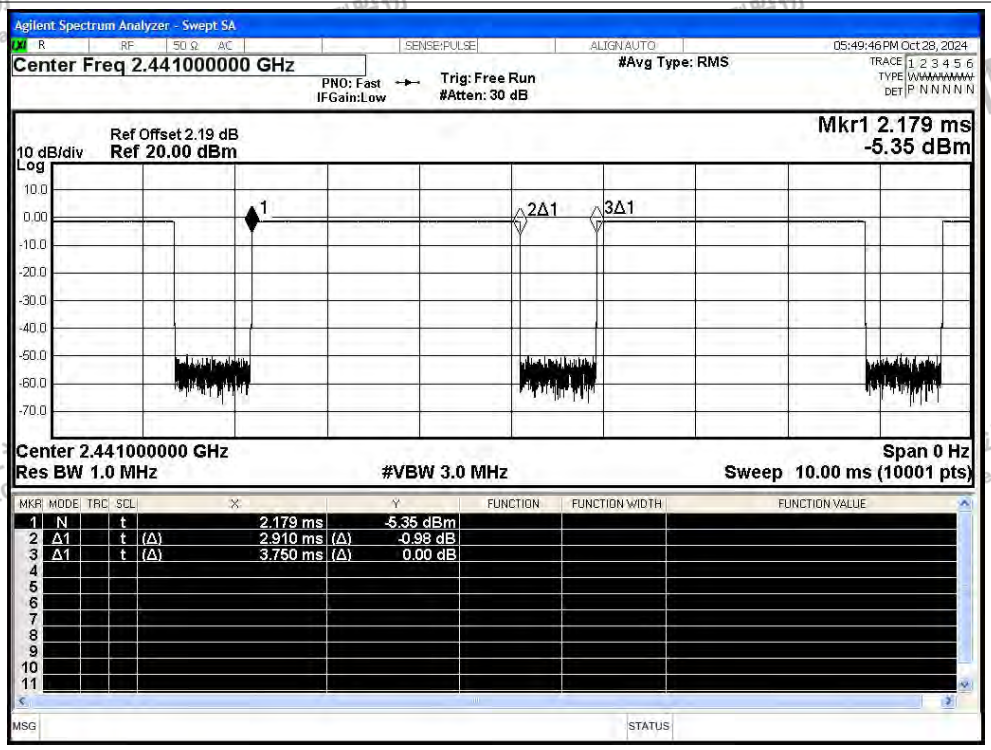
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH5	2402	Ant1	77.6	1.1	0.34
NVNT	1-DH5	2441	Ant1	77.6	1.1	0.34
NVNT	1-DH5	2480	Ant1	77.63	1.1	0.34
NVNT	2-DH5	2402	Ant1	77.28	1.12	0.35
NVNT	2-DH5	2441	Ant1	77.33	1.12	0.34
NVNT	2-DH5	2480	Ant1	77.28	1.12	0.35
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	77.28	1.12	0.35

Test Graphs

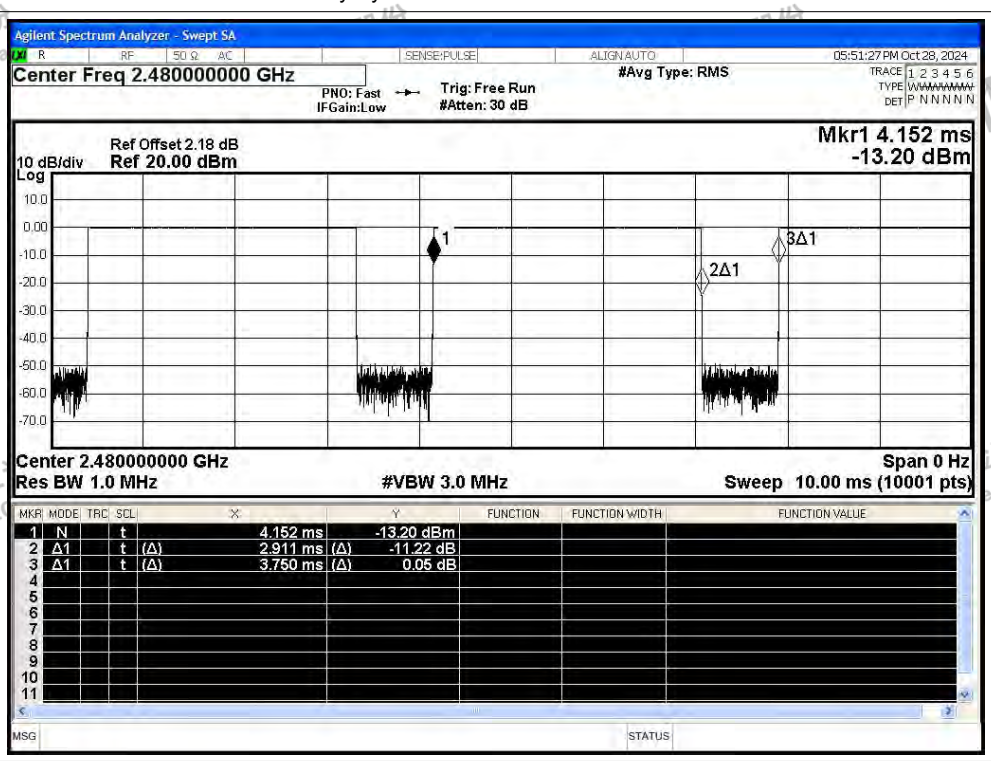
Duty Cycle NVNT 1-DH5 2402MHz Ant1



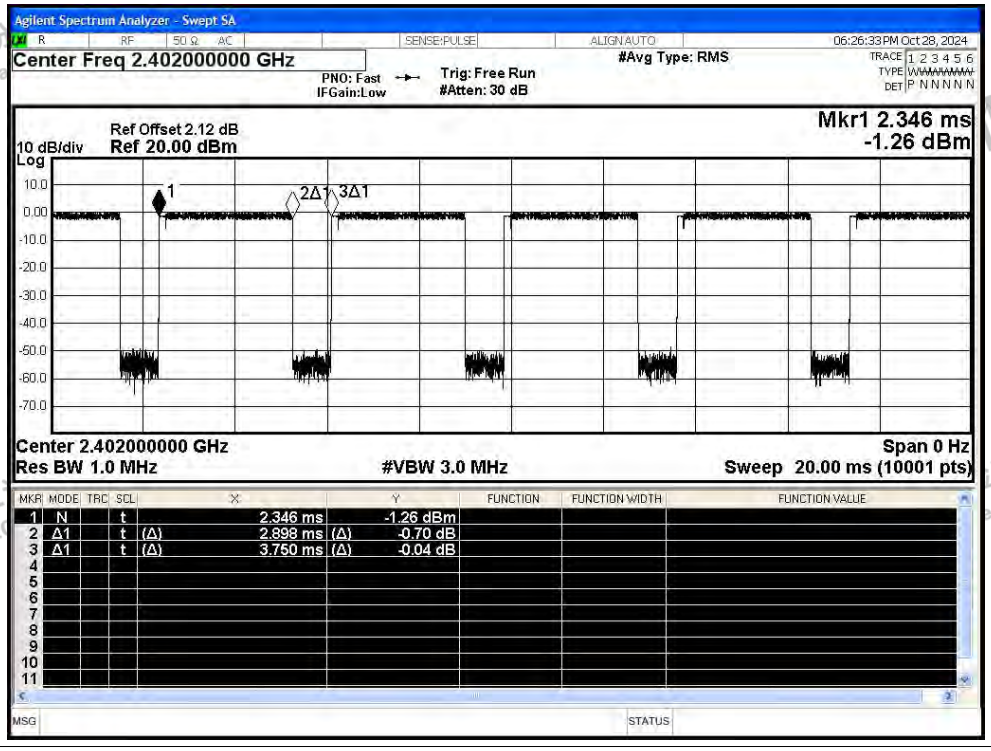
Duty Cycle NVNT 1-DH5 2441MHz Ant1



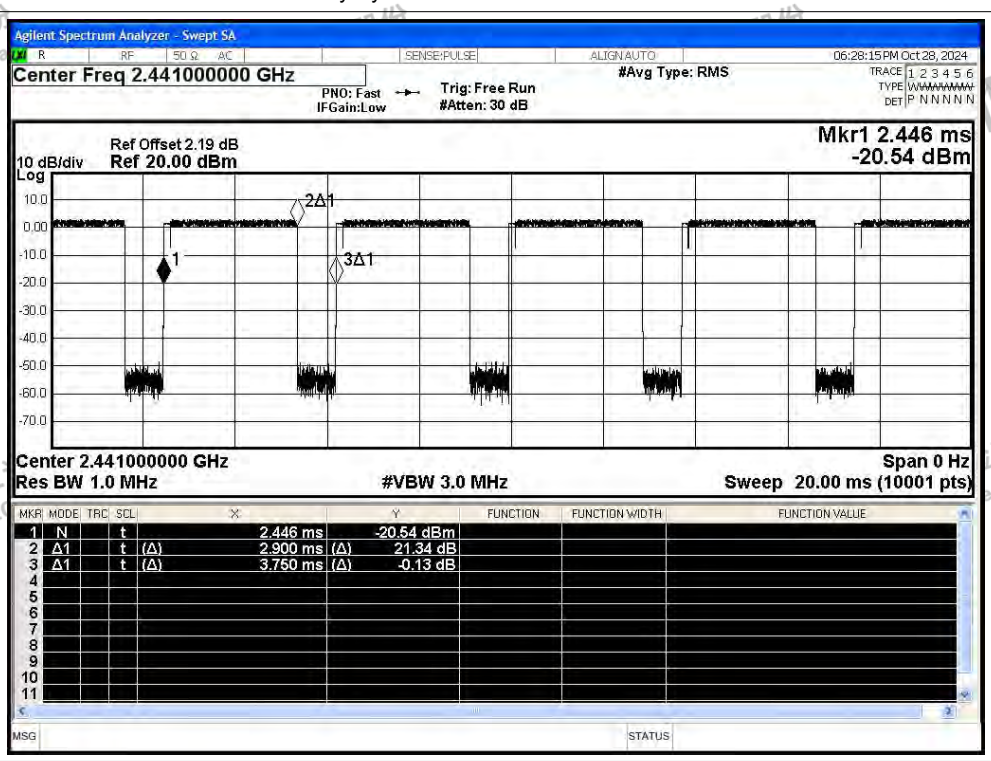
Duty Cycle NVNT 1-DH5 2480MHz Ant1



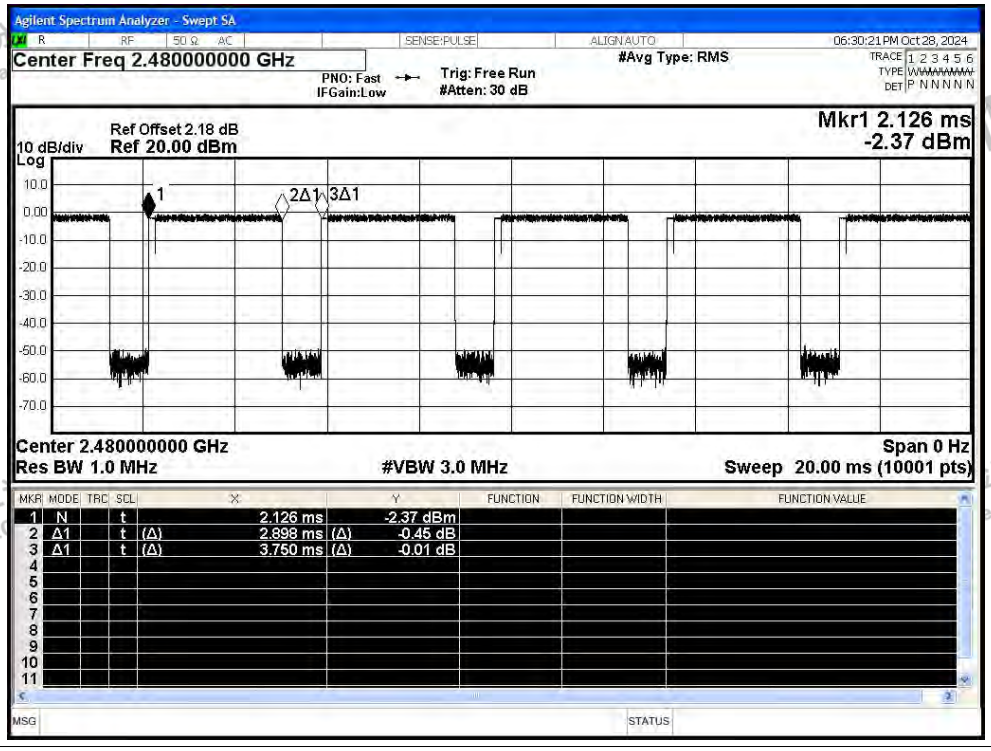
Duty Cycle NVNT 2-DH5 2402MHz Ant1



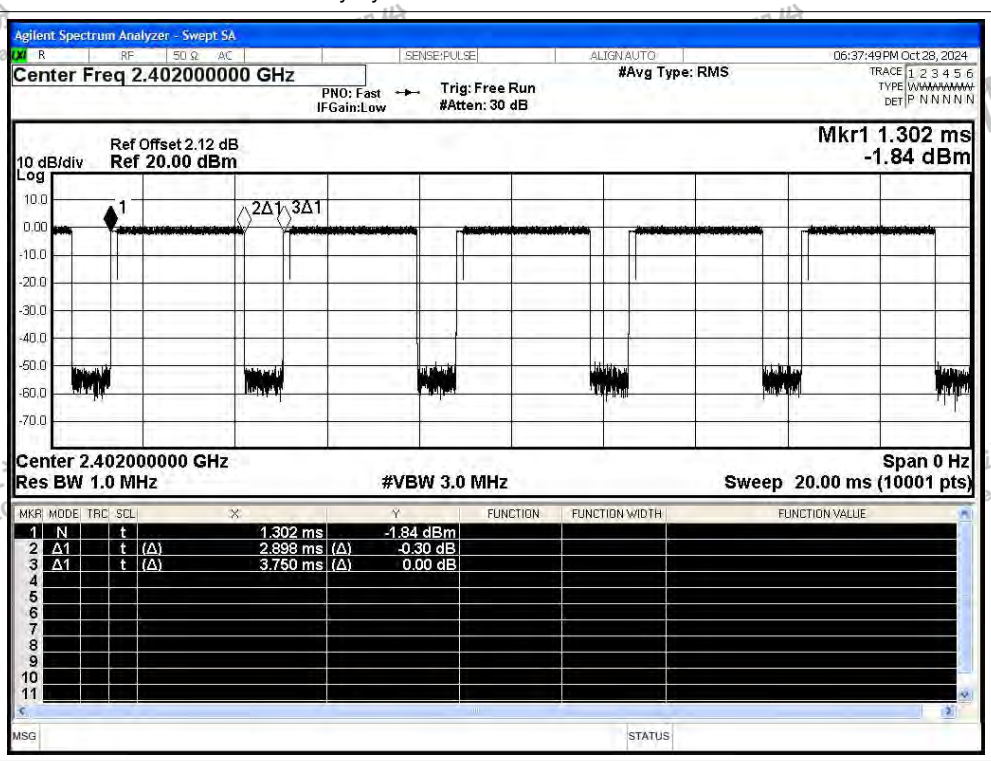
Duty Cycle NVNT 2-DH5 2441MHz Ant1



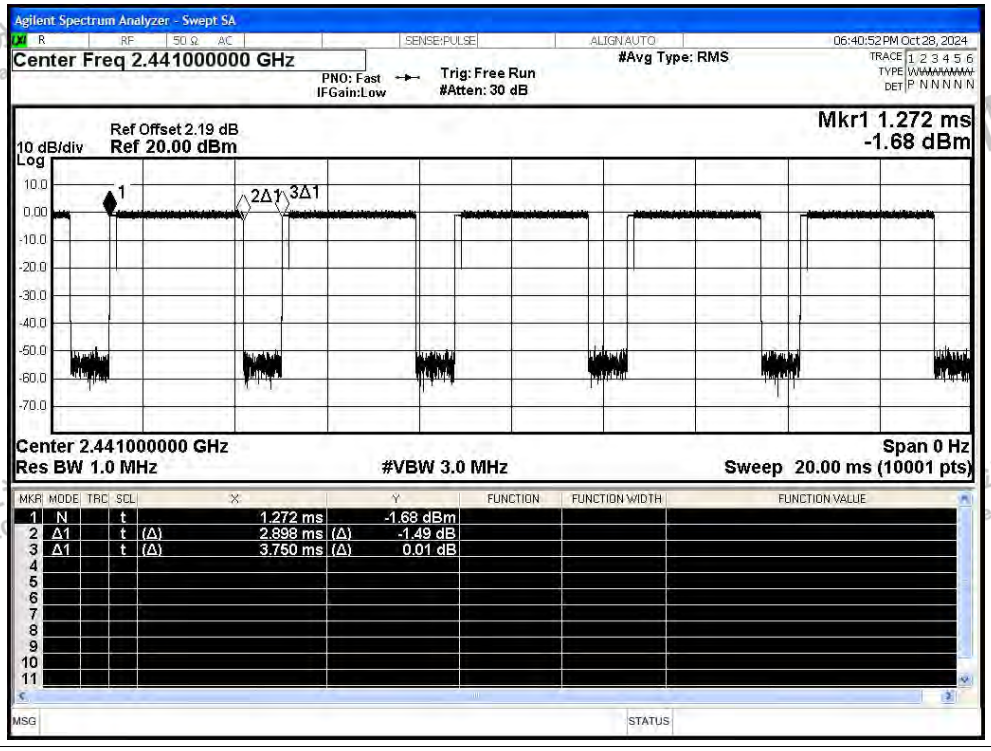
Duty Cycle NVNT 2-DH5 2480MHz Ant1



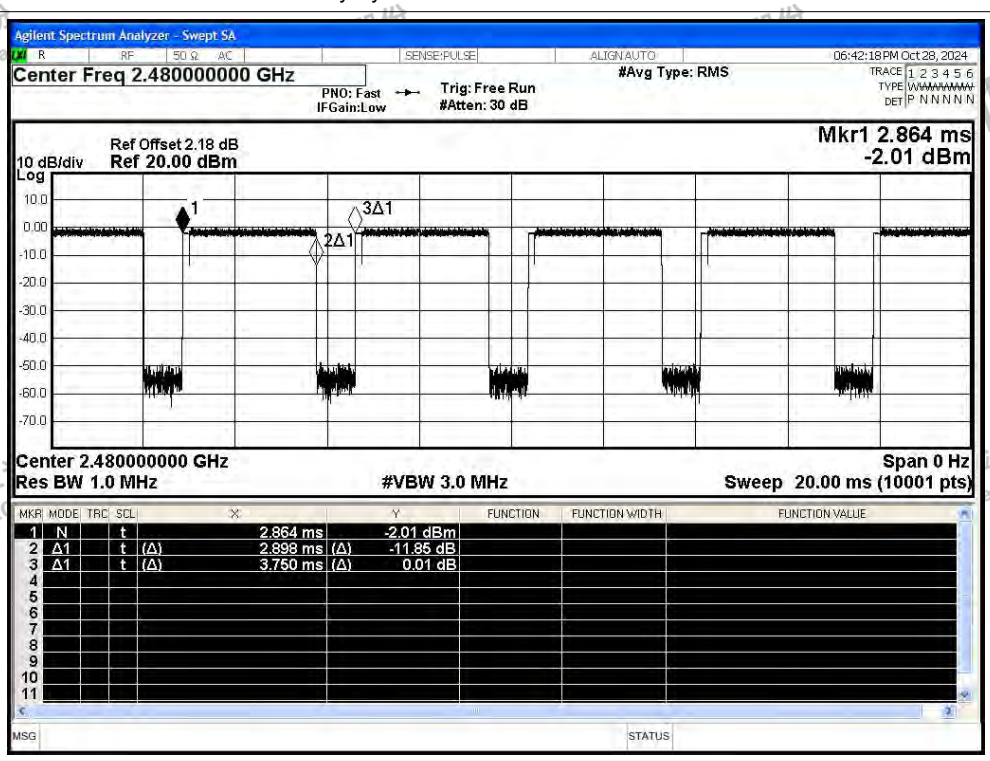
Duty Cycle NVNT 3-DH5 2402MHz Ant1



Duty Cycle NVNT 3-DH5 2441MHz Ant1



Duty Cycle NVNT 3-DH5 2480MHz Ant1

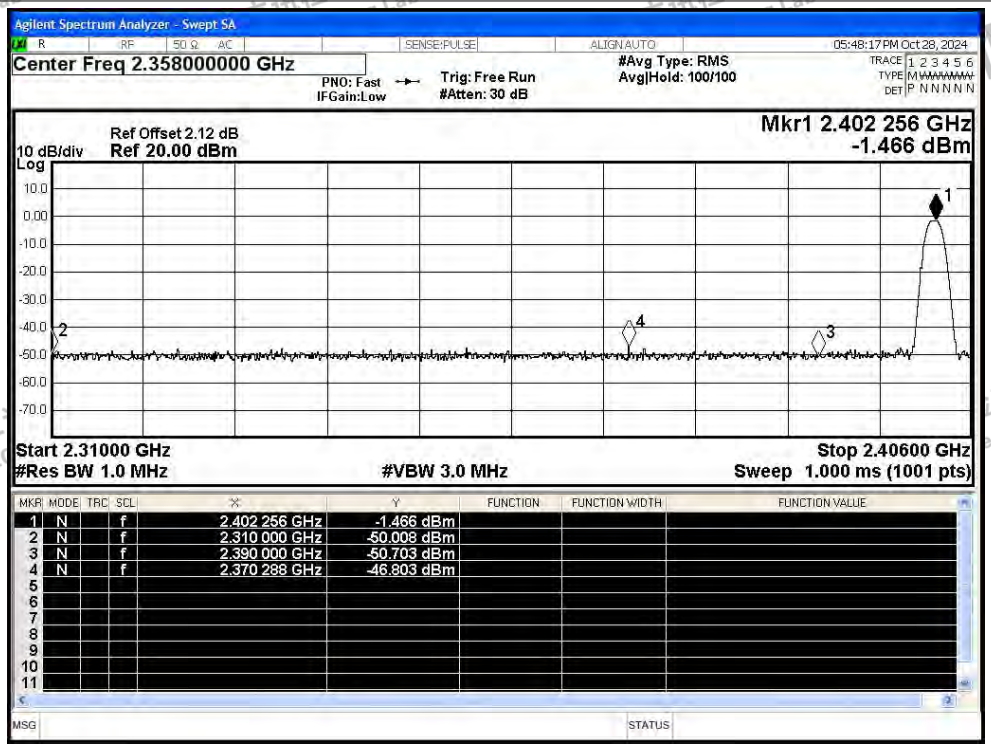


A.9 Restrict Band

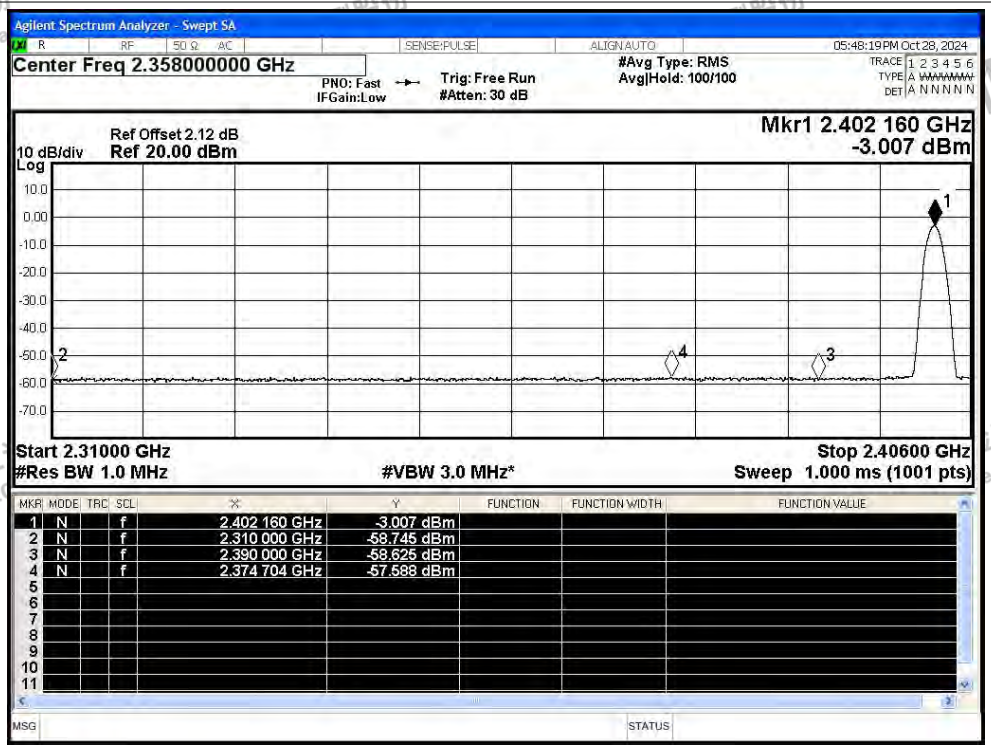
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-50.01	2.48	-	47.73	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-58.75	2.48	1.1	40.09	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2370.288	-46.8	2.48	-	50.94	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2374.704	-57.59	2.48	1.1	41.25	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-50.7	2.48	-	47.04	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-58.63	2.48	1.1	40.21	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-49.69	2.48	-	48.05	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-57.67	2.48	1.1	41.17	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2490.184	-47.23	2.48	-	50.51	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2484.52	-56.84	2.48	1.1	42	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-50.1	2.48	-	47.64	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-57.78	2.48	1.1	41.06	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-51.15	2.48	-	46.59	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-58.49	2.48	1.12	40.37	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2334.288	-47.6	2.48	-	50.14	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2374.032	-57.55	2.48	1.12	41.31	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-51.92	2.48	-	45.82	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-58.42	2.48	1.12	40.44	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-50.01	2.48	-	47.73	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-57.27	2.48	1.12	41.59	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2485.864	-46.4	2.48	-	51.34	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.968	-56.99	2.48	1.12	41.87	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-50.31	2.48	-	47.43	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-57.93	2.48	1.12	40.93	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-50.42	2.48	-	47.32	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-58.58	2.48	1.12	40.28	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2332.656	-47.31	2.48	-	50.43	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2344.176	-57.56	2.48	1.12	41.3	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-50.51	2.48	-	47.23	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-58.04	2.48	1.12	40.82	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-48.42	2.48	-	49.32	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-57.33	2.48	1.12	41.53	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.656	-45.5	2.48	-	52.24	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.8	-56.98	2.48	1.12	41.88	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-48.67	2.48	-	49.07	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-58.08	2.48	1.12	40.78	Average	54	Pass

Test Graphs

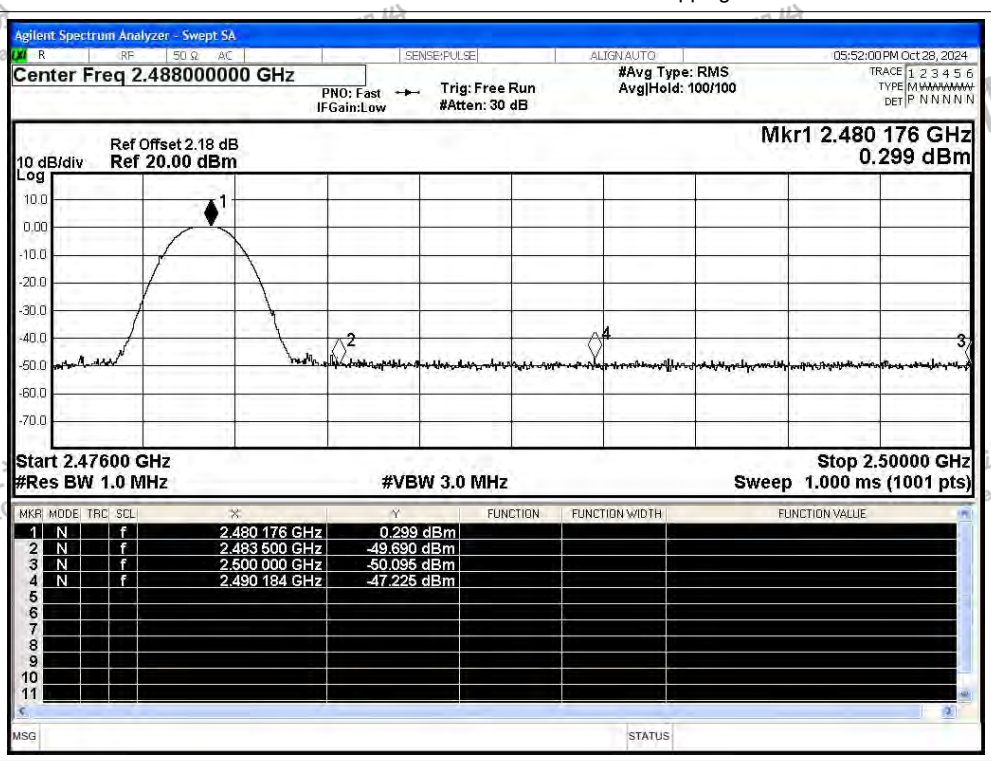
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak



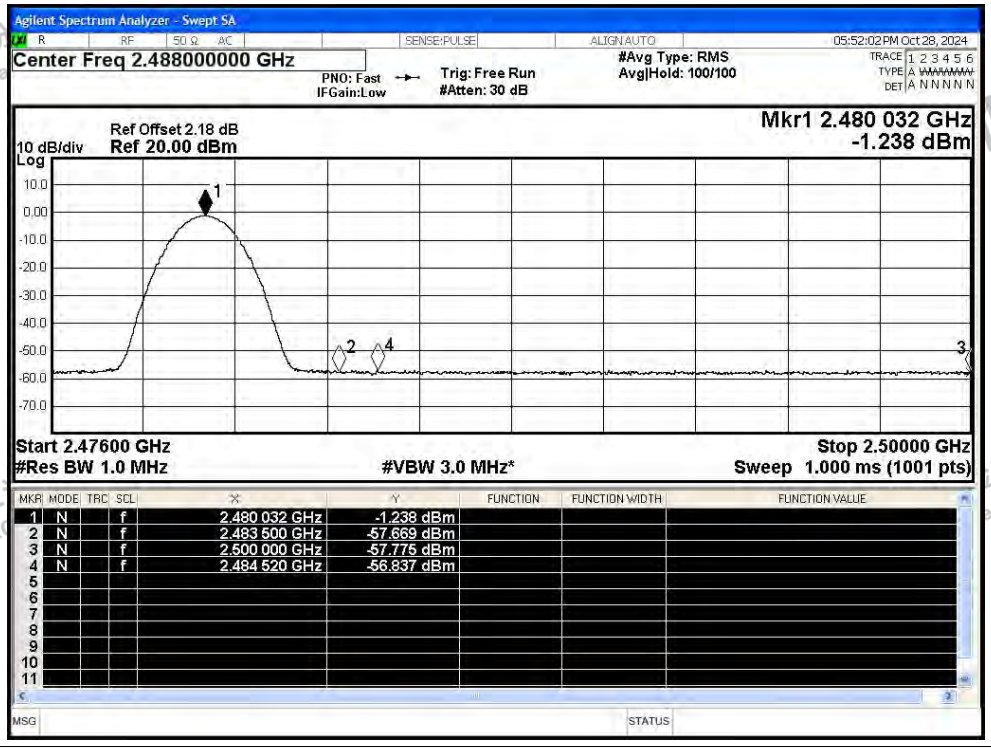
Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average



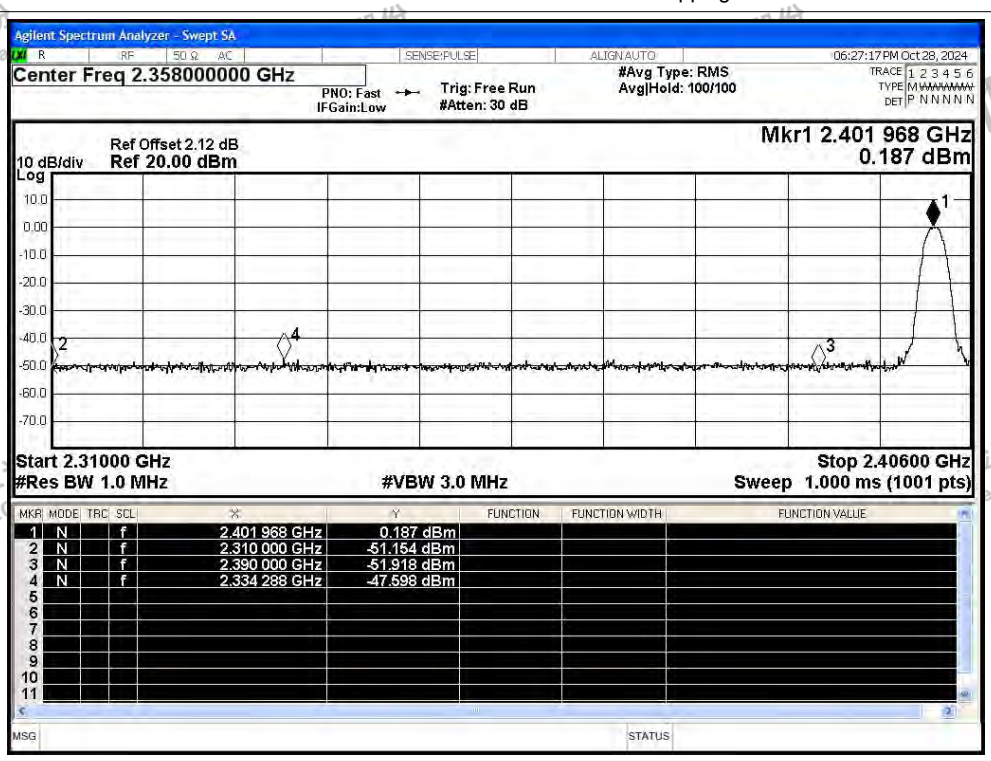
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak



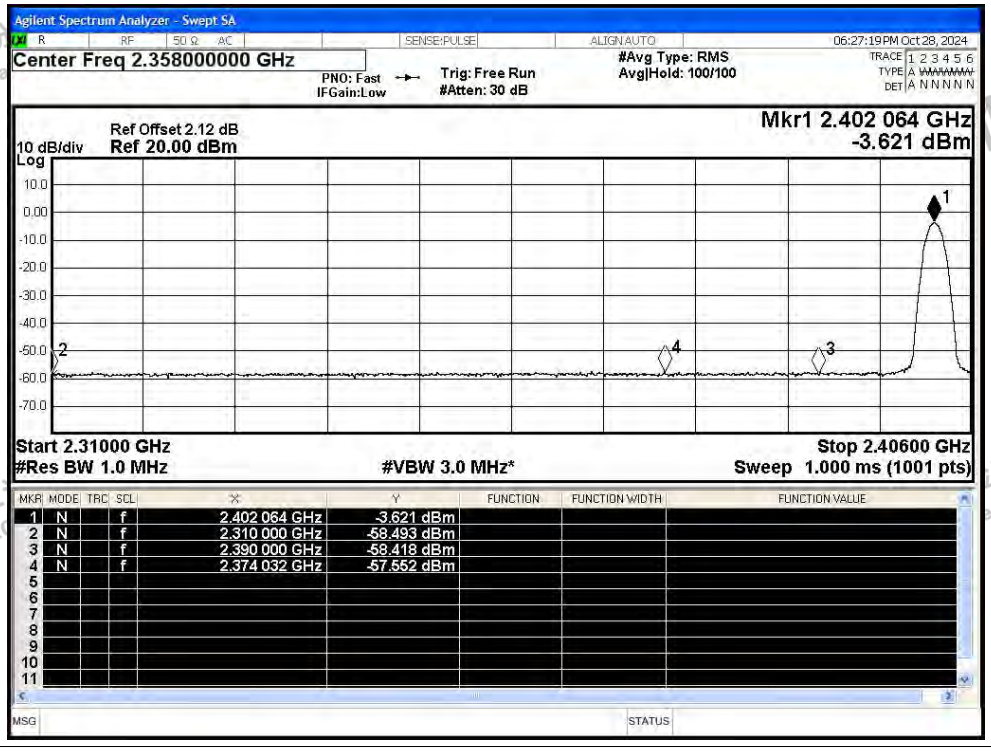
Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average



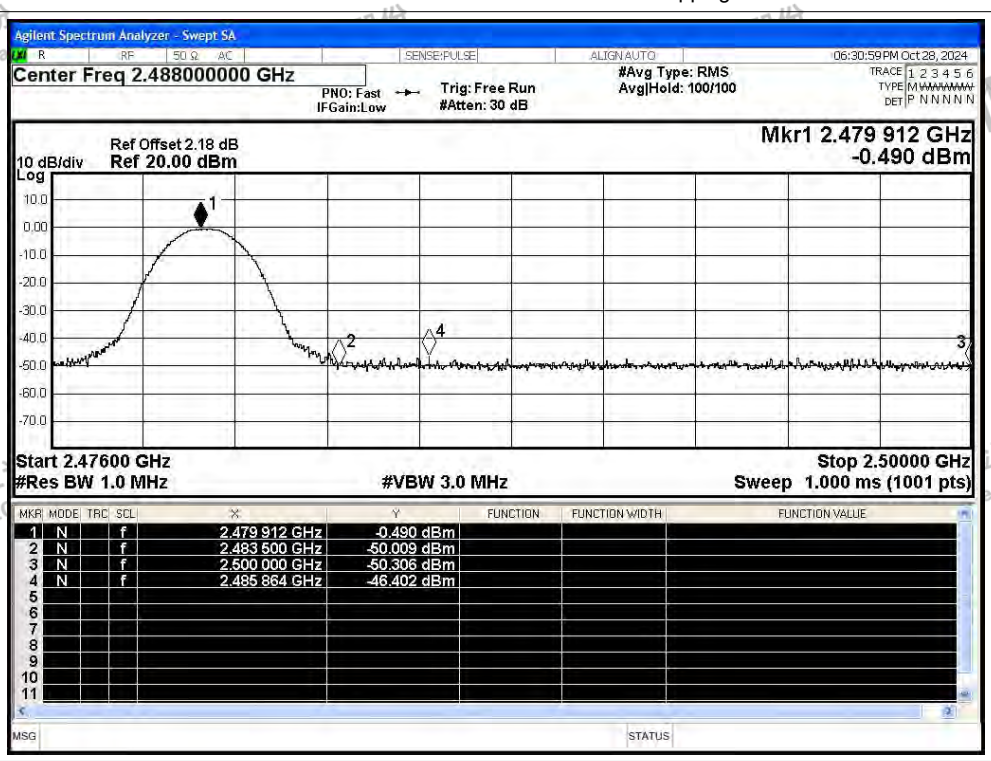
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak



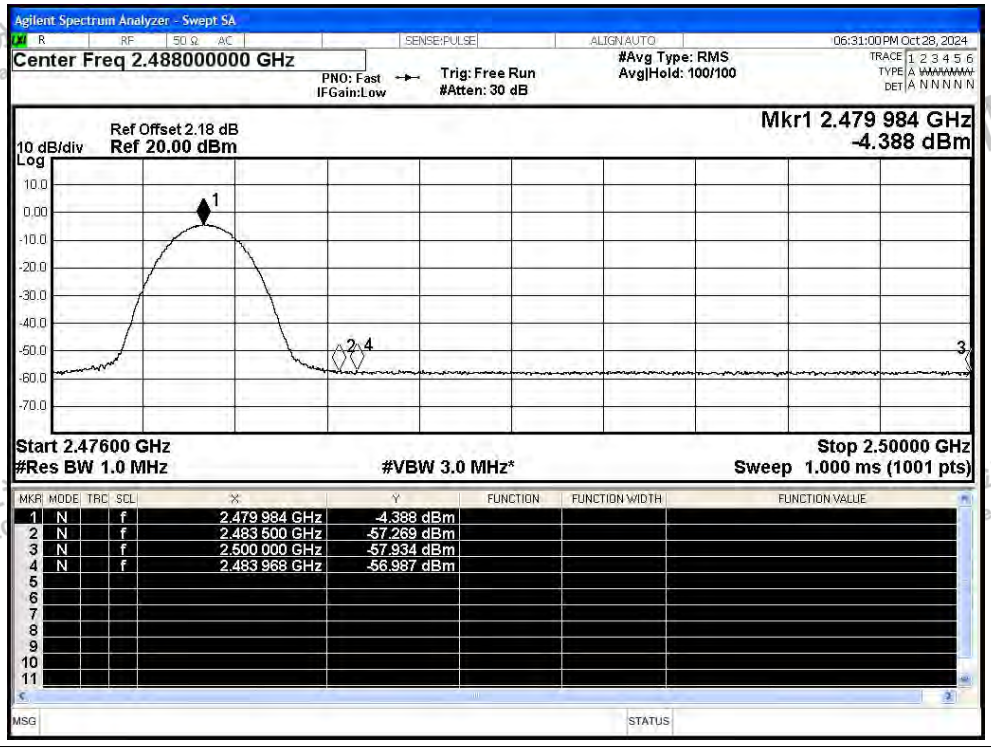
Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average



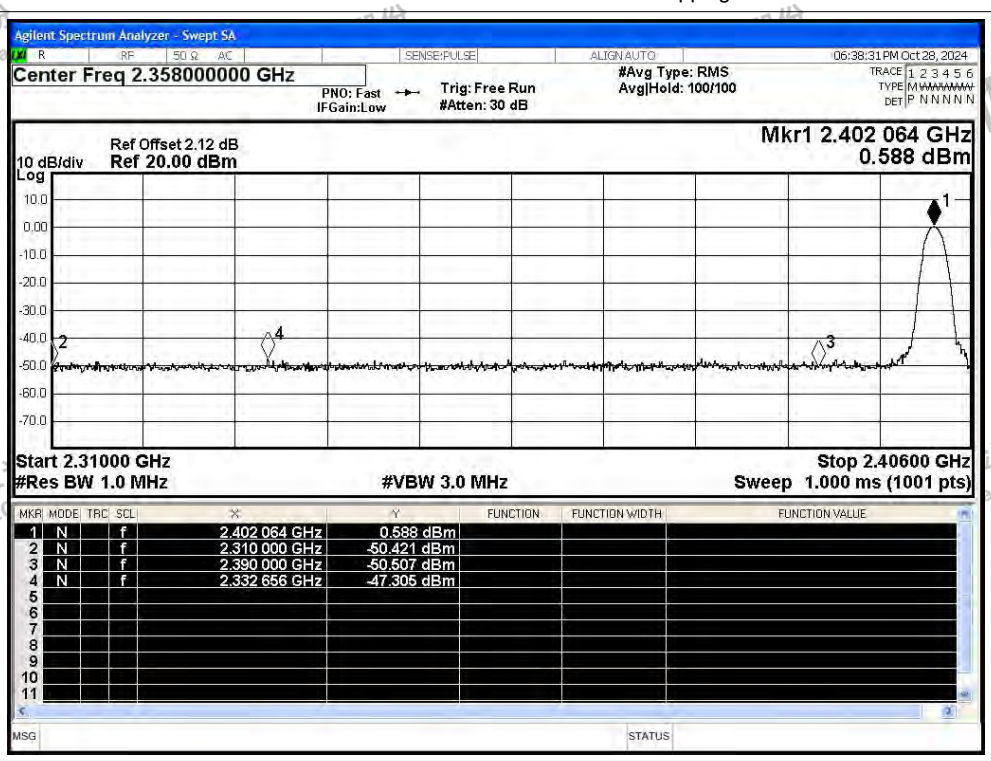
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak



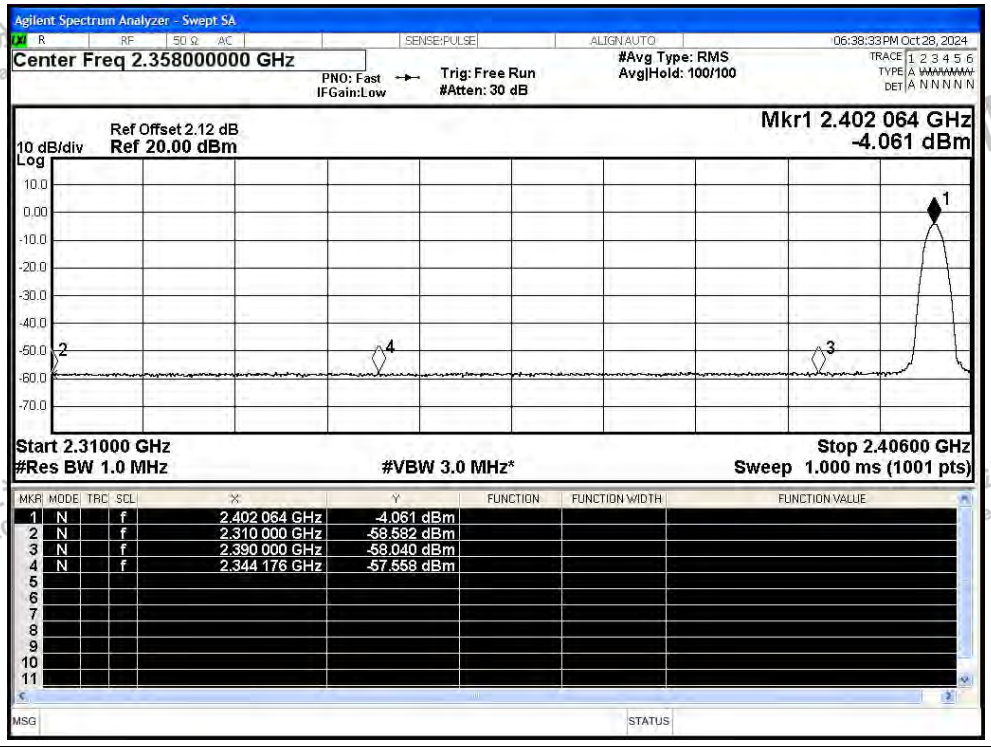
Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Average



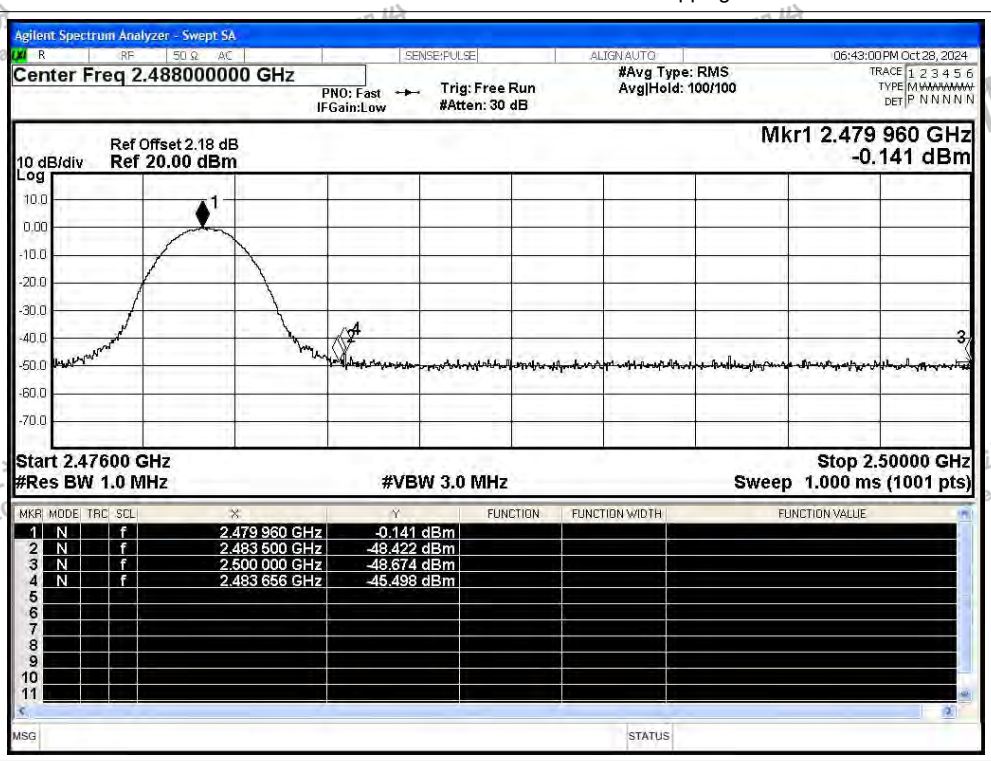
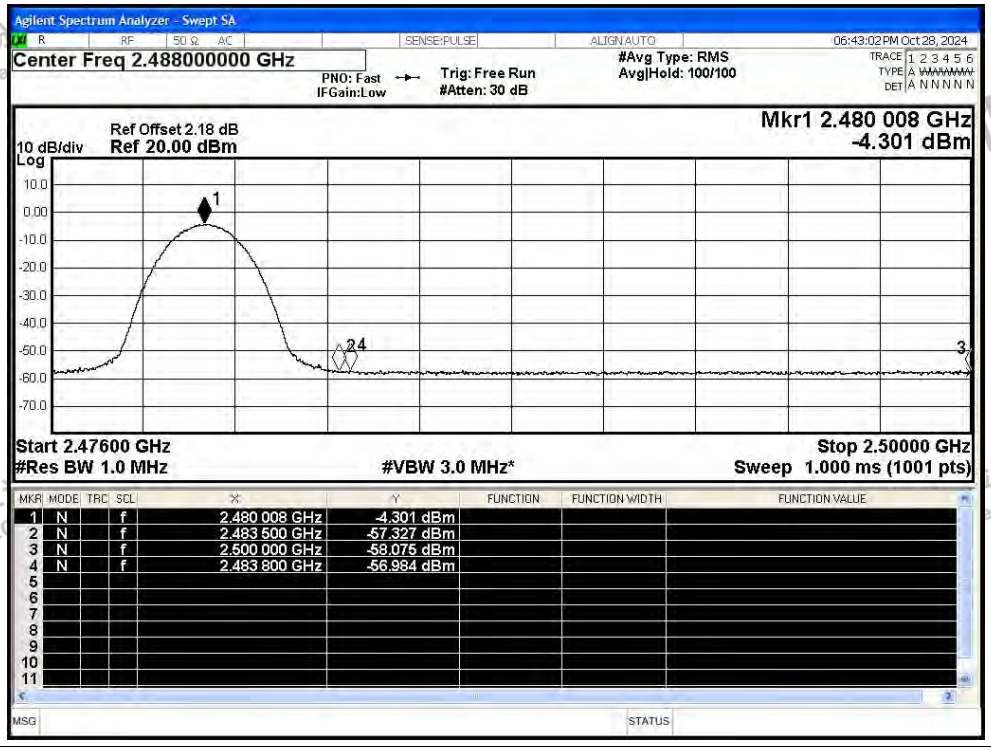
Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak



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