



Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Kids karaoke machine

Test Model: ats-2020

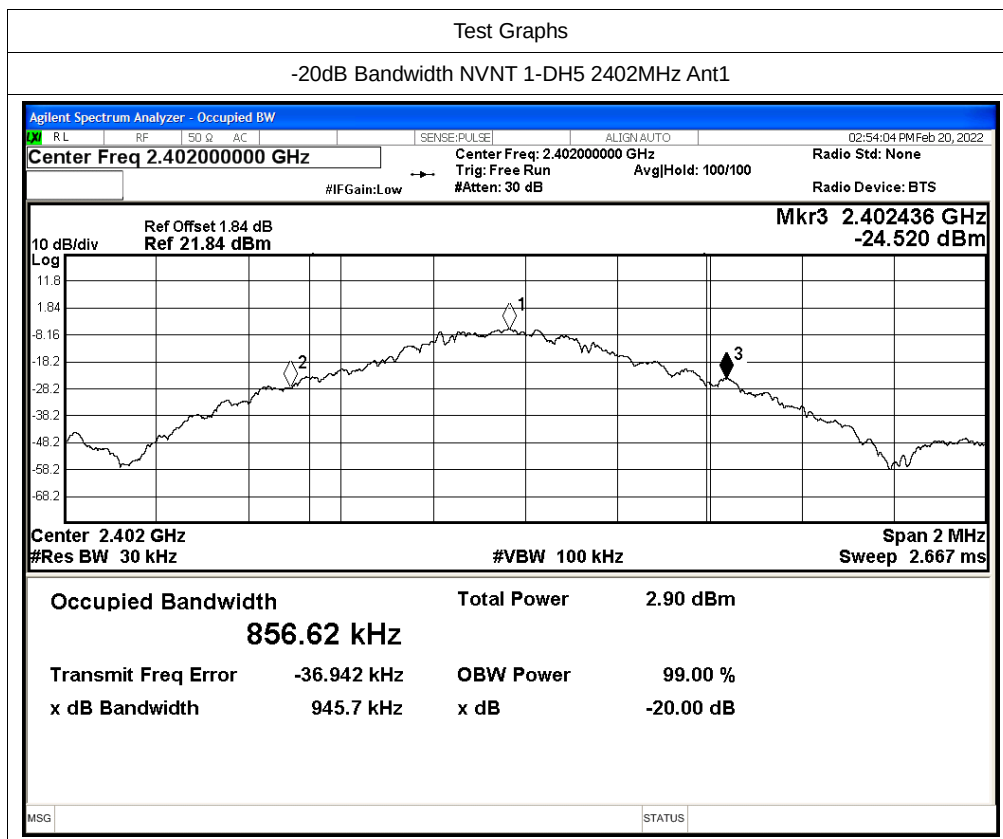
Environmental Conditions

Temperature:	22.5° C
Relative Humidity:	53.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Ling Zhu
Supervised by:	Li Huan



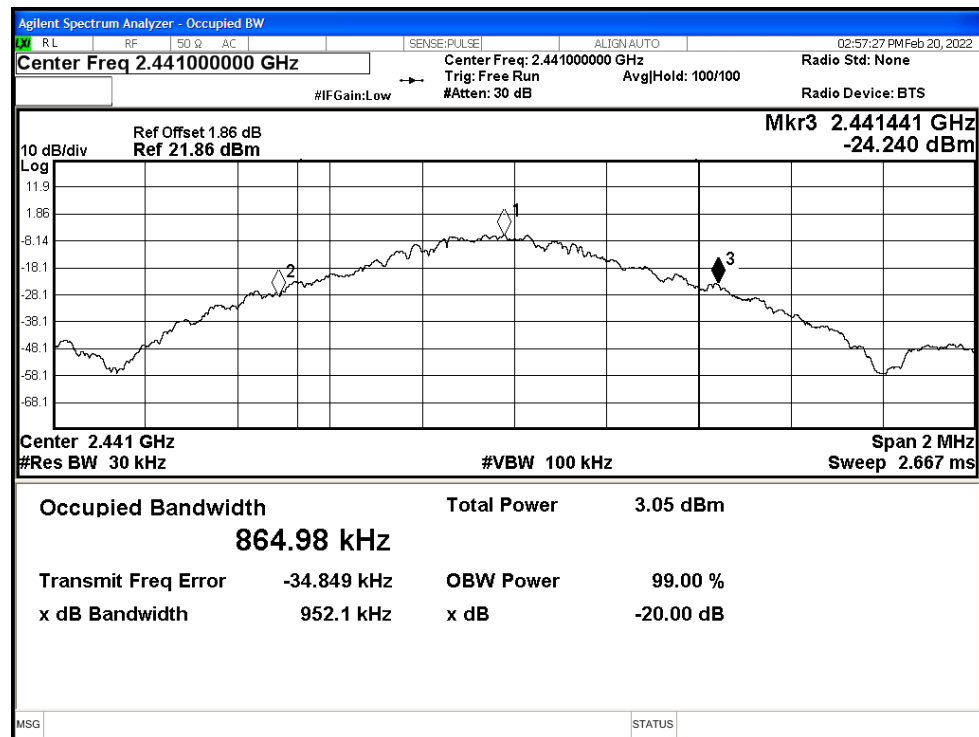
A.1 20dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	Ant1	0.946	No Limit	Pass
NVNT	1-DH5	2441	Ant1	0.952	No Limit	Pass
NVNT	1-DH5	2480	Ant1	0.935	No Limit	Pass
NVNT	2-DH5	2402	Ant1	1.272	No Limit	Pass
NVNT	2-DH5	2441	Ant1	1.297	No Limit	Pass
NVNT	2-DH5	2480	Ant1	1.276	No Limit	Pass
NVNT	3-DH5	2402	Ant1	1.298	No Limit	Pass
NVNT	3-DH5	2441	Ant1	1.296	No Limit	Pass
NVNT	3-DH5	2480	Ant1	1.301	No Limit	Pass

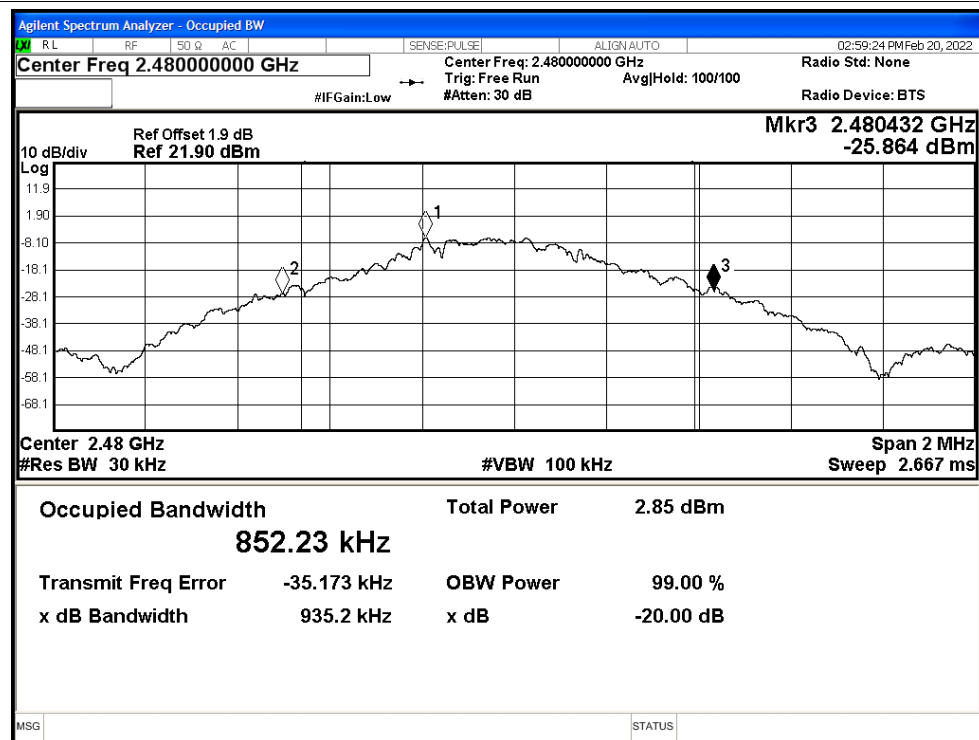




-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1

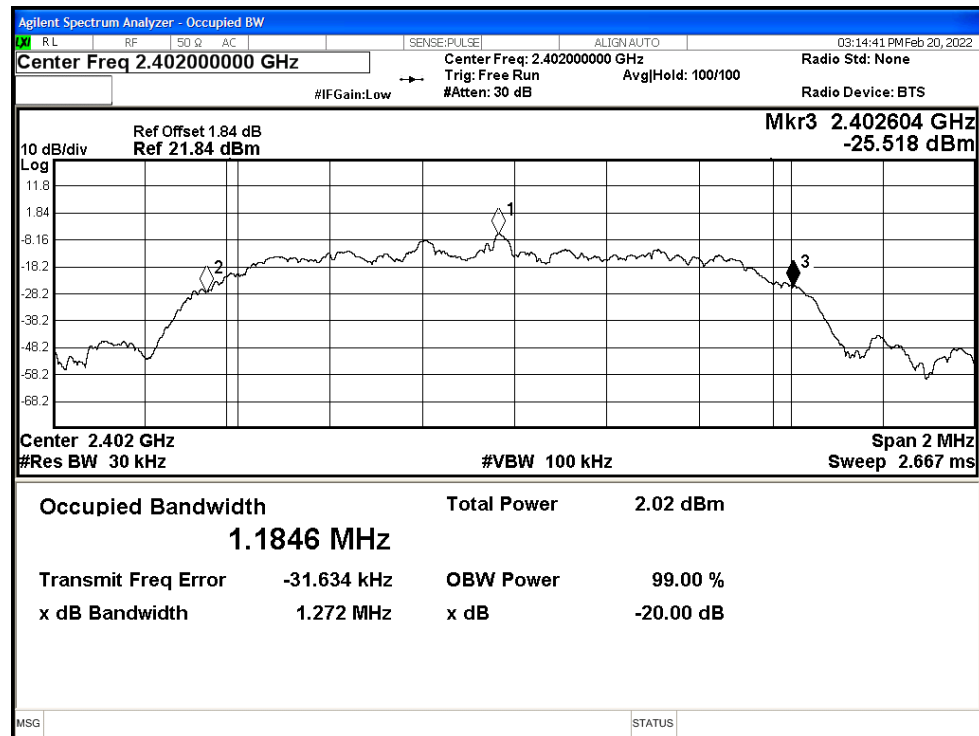


-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1

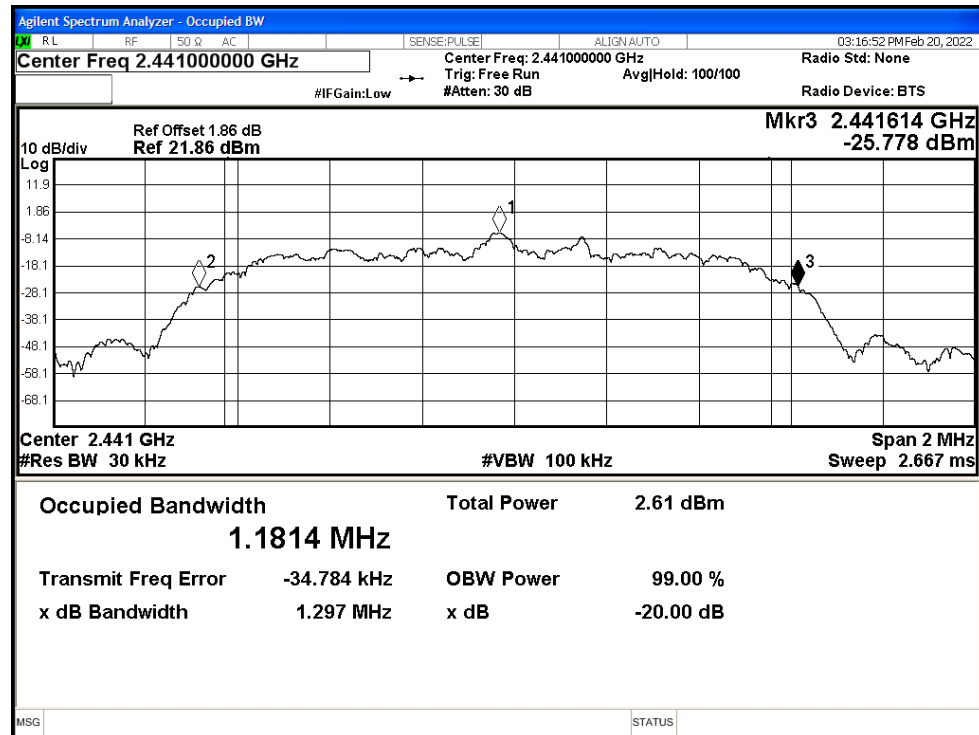




-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1

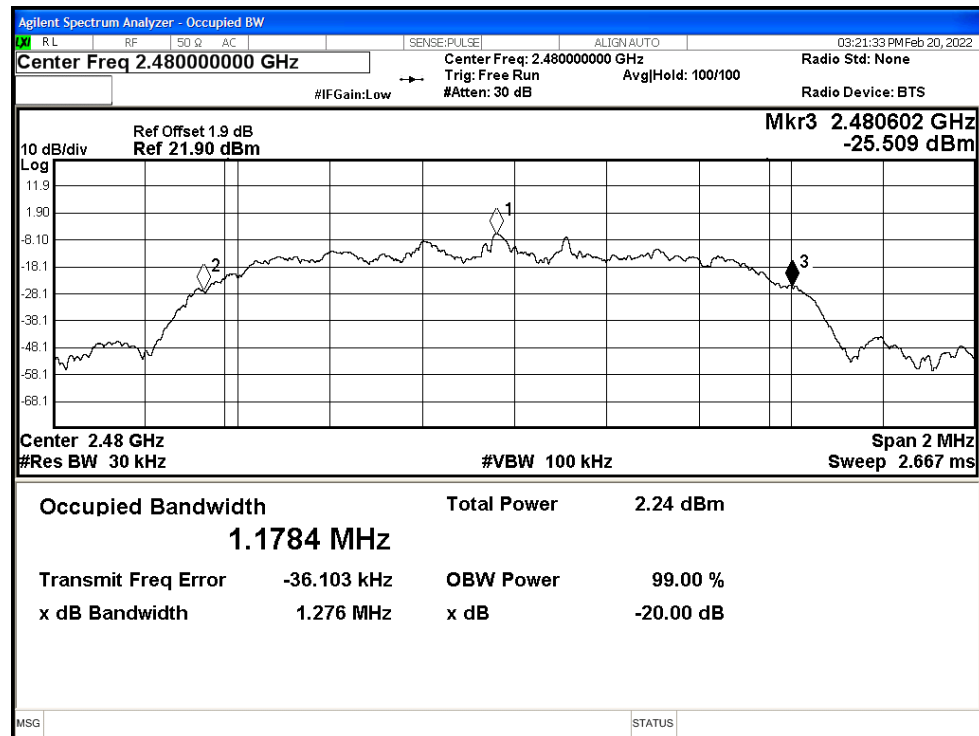


-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1

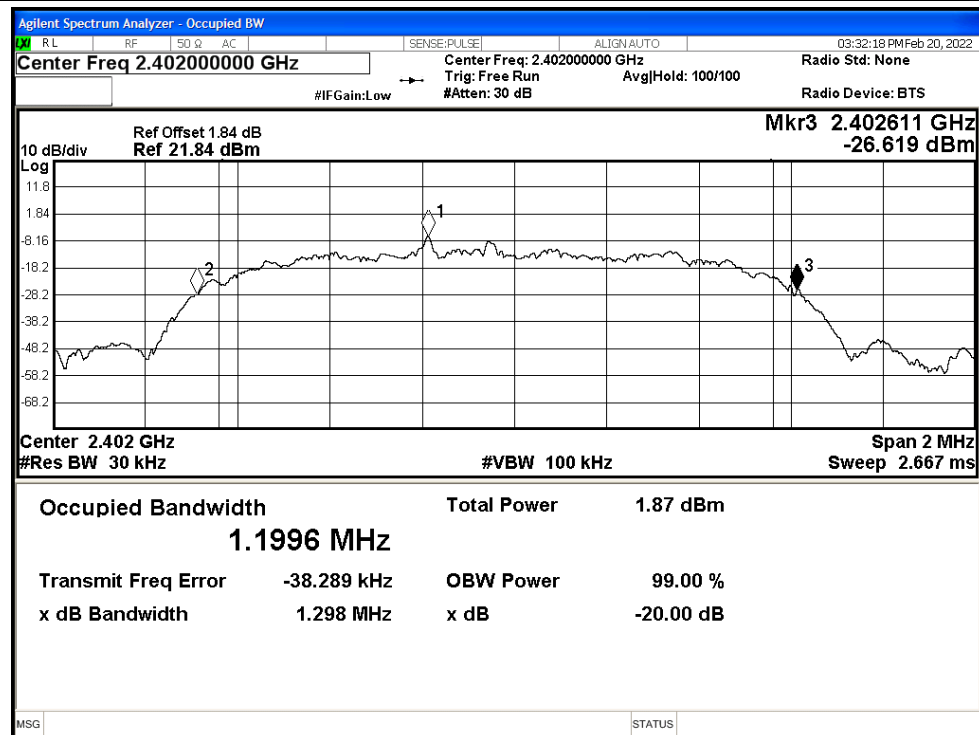




-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1

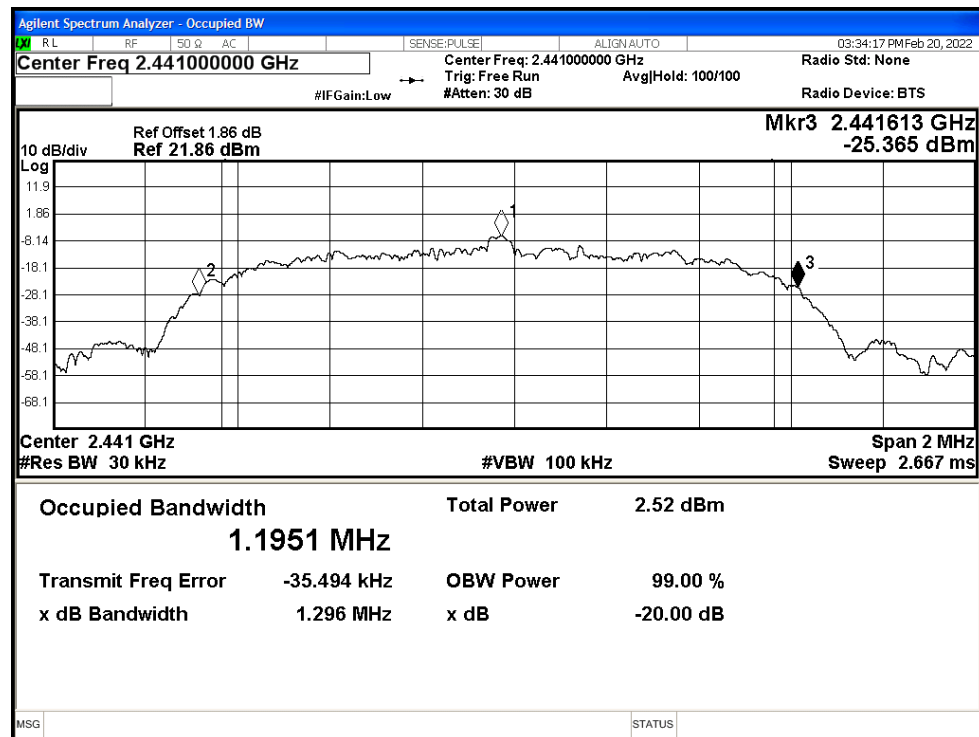


-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1

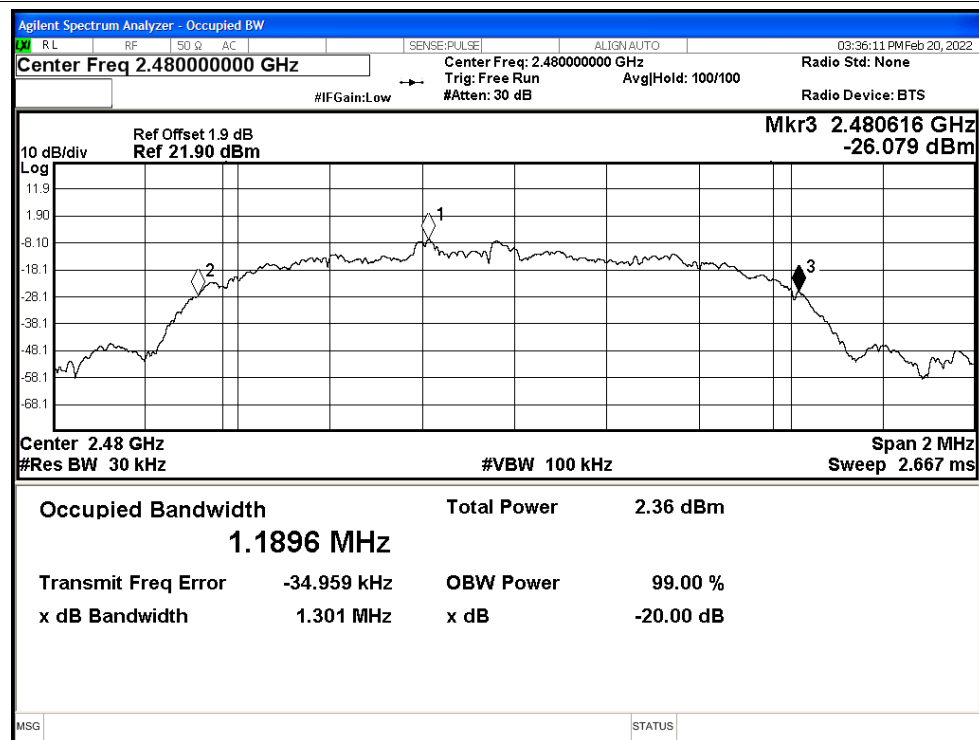




-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1



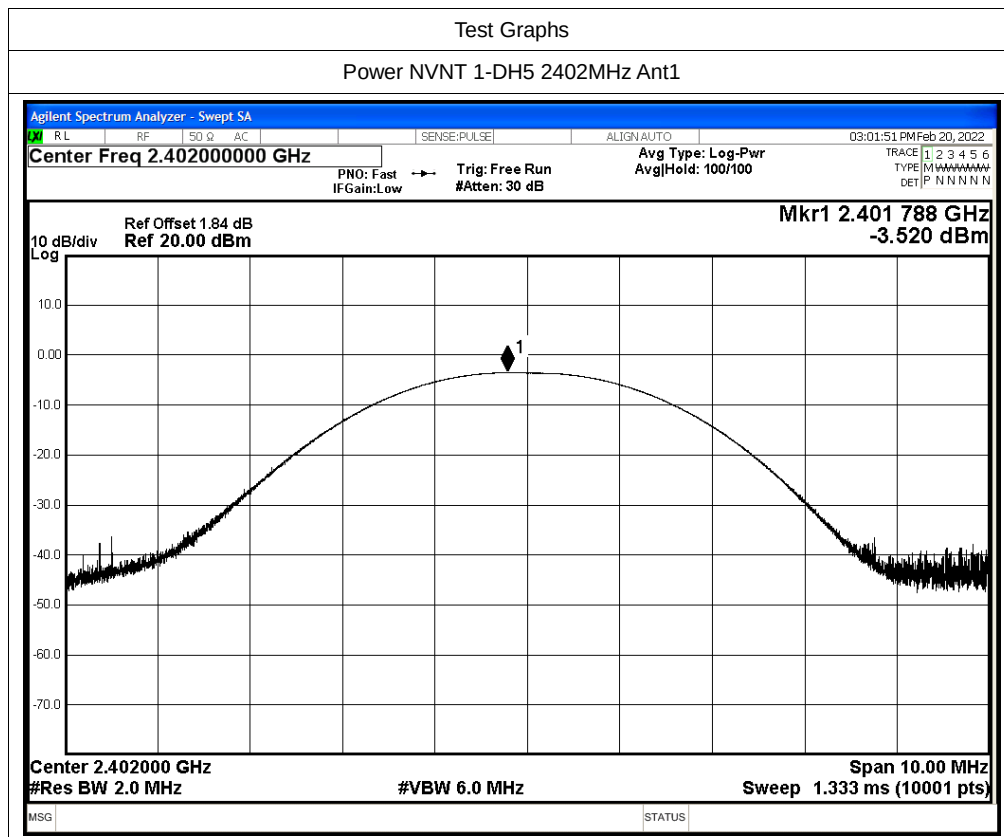
-20dB Bandwidth NVNT 3-DH5 2480MHz Ant1





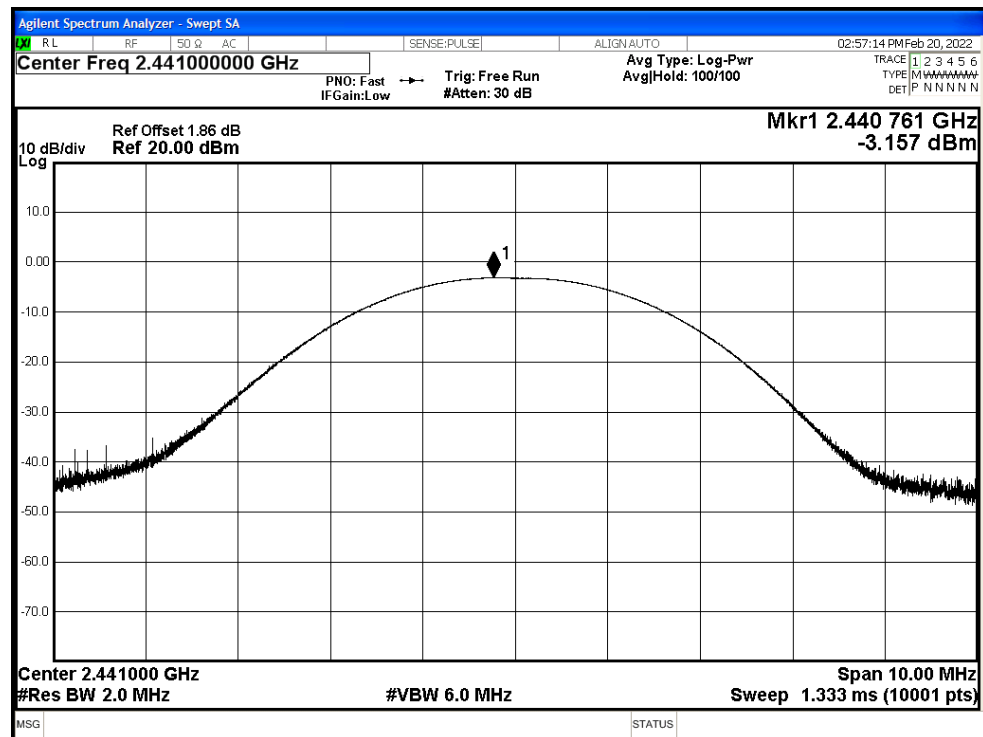
A.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	-3.52	0	-3.52	21	Pass
NVNT	1-DH5	2441	Ant1	-3.16	0	-3.16	21	Pass
NVNT	1-DH5	2480	Ant1	-3.51	0	-3.51	21	Pass
NVNT	2-DH5	2402	Ant1	-2.63	0	-2.63	21	Pass
NVNT	2-DH5	2441	Ant1	-2.26	0	-2.26	21	Pass
NVNT	2-DH5	2480	Ant1	-2.6	0	-2.6	21	Pass
NVNT	3-DH5	2402	Ant1	-2.13	0	-2.13	21	Pass
NVNT	3-DH5	2441	Ant1	-1.79	0	-1.79	21	Pass
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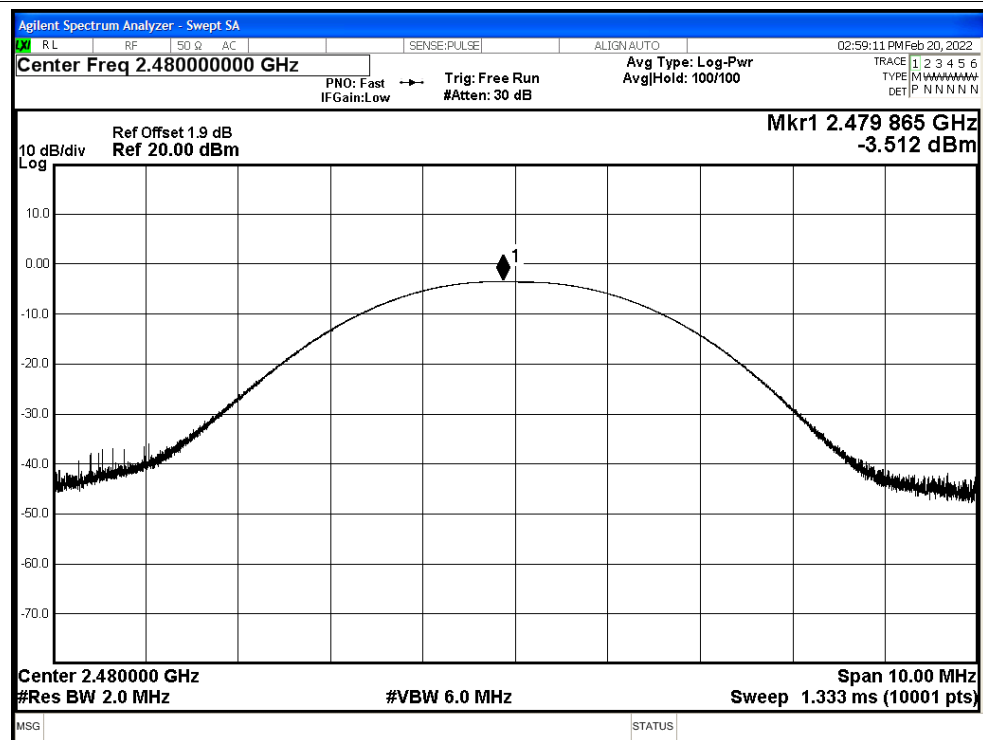




Power NVNT 1-DH5 2441MHz Ant1

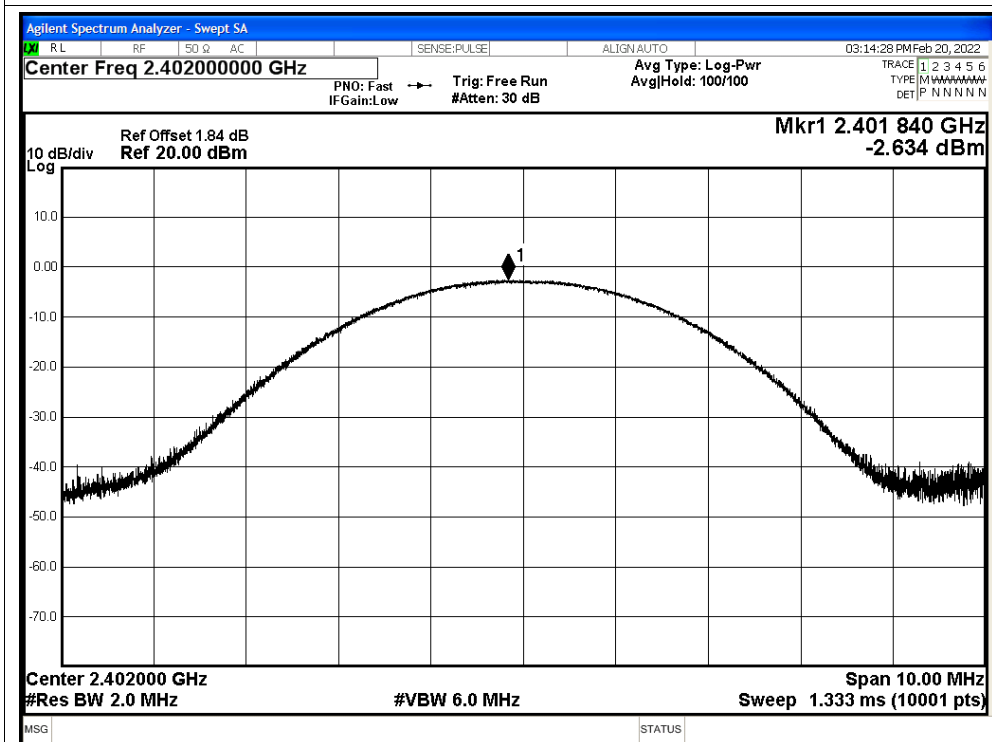


Power NVNT 1-DH5 2480MHz Ant1

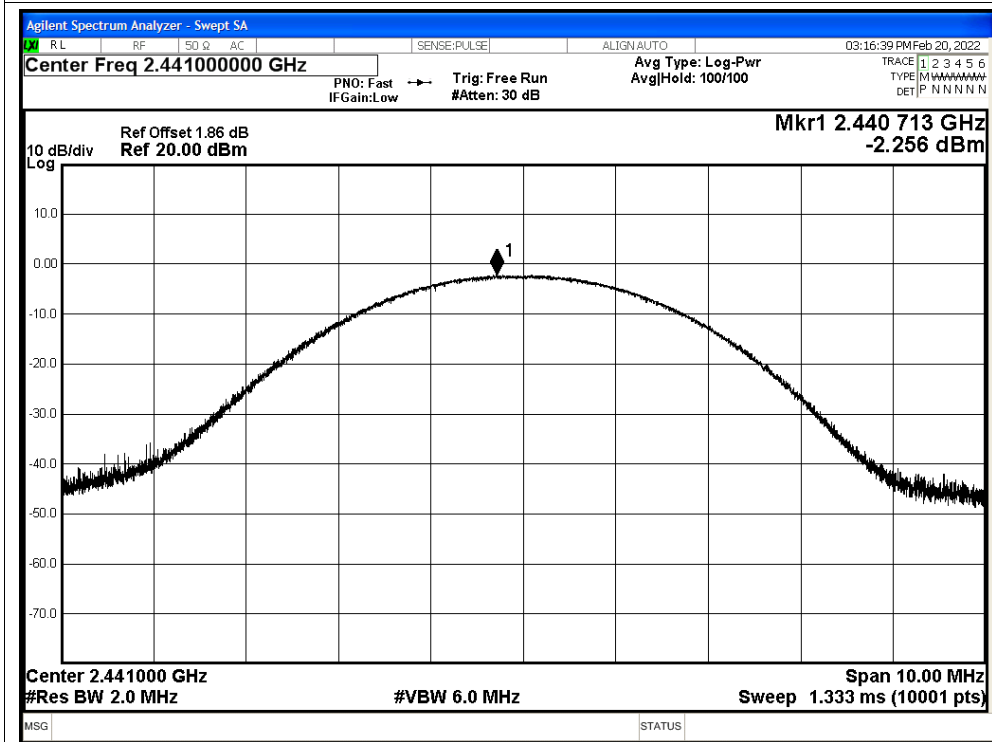




Power NVNT 2-DH5 2402MHz Ant1

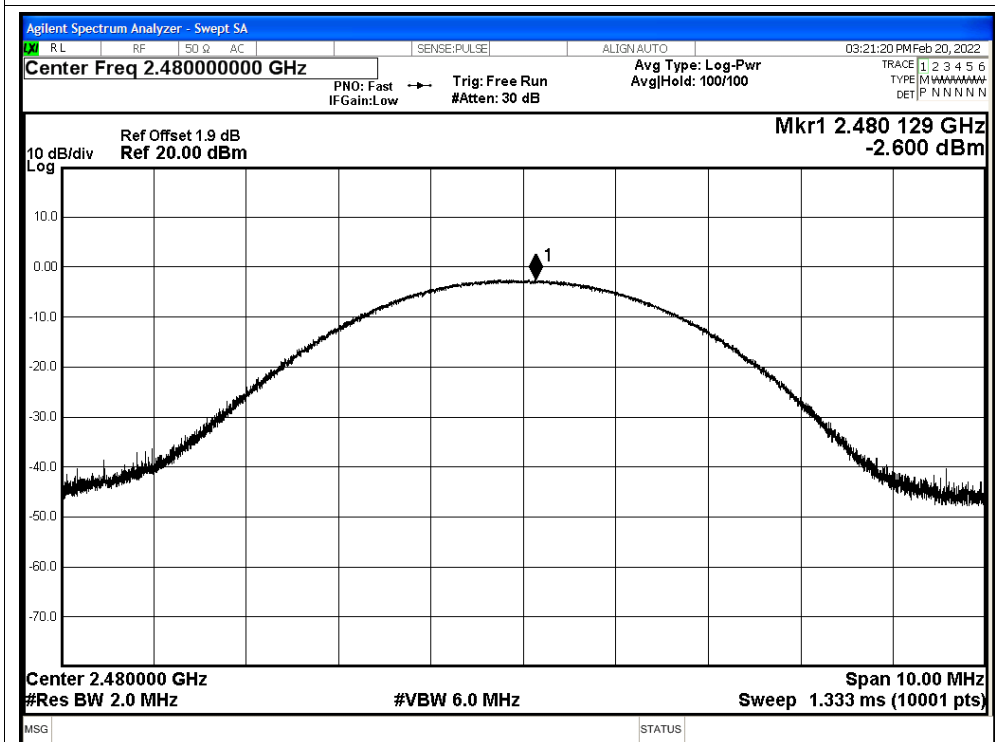


Power NVNT 2-DH5 2441MHz Ant1

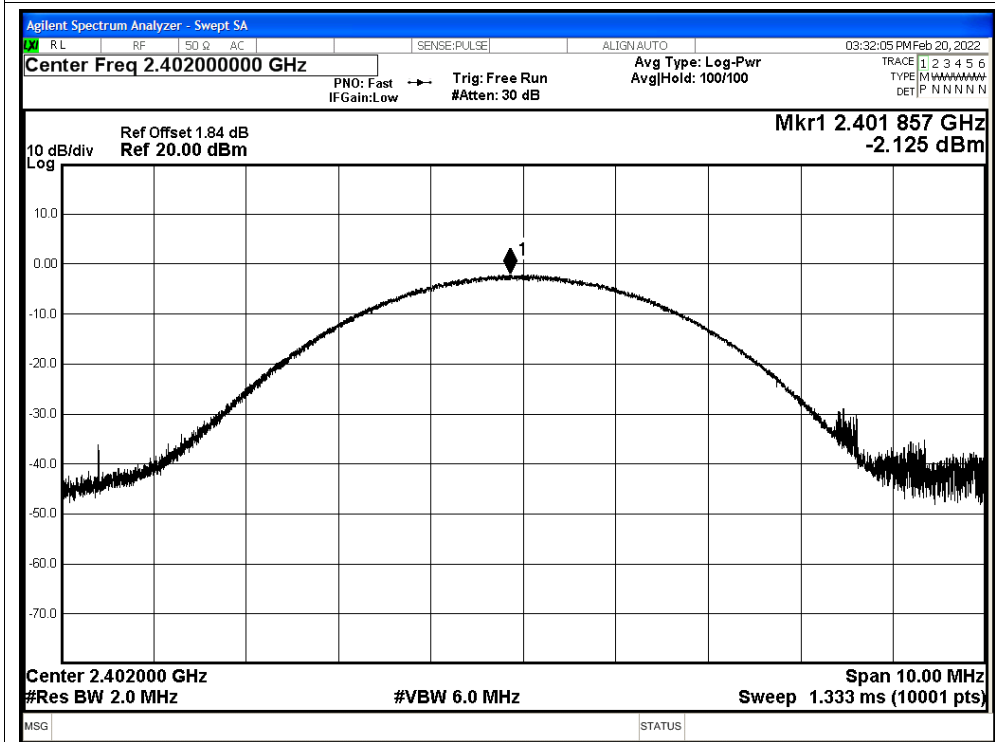




Power NVNT 2-DH5 2480MHz Ant1

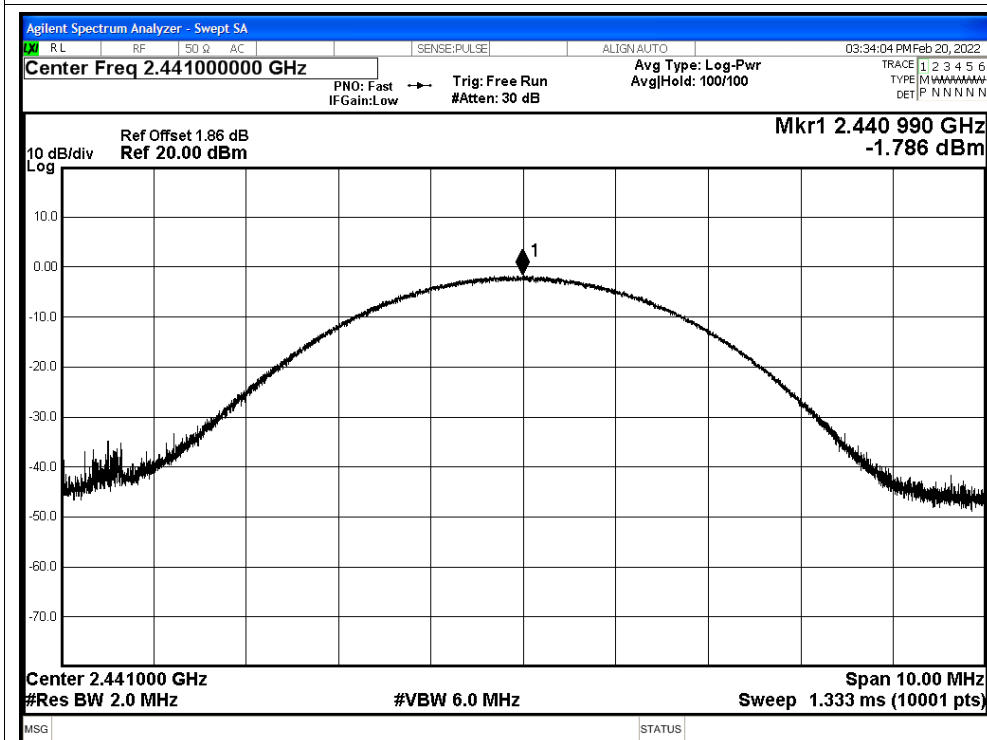


Power NVNT 3-DH5 2402MHz Ant1

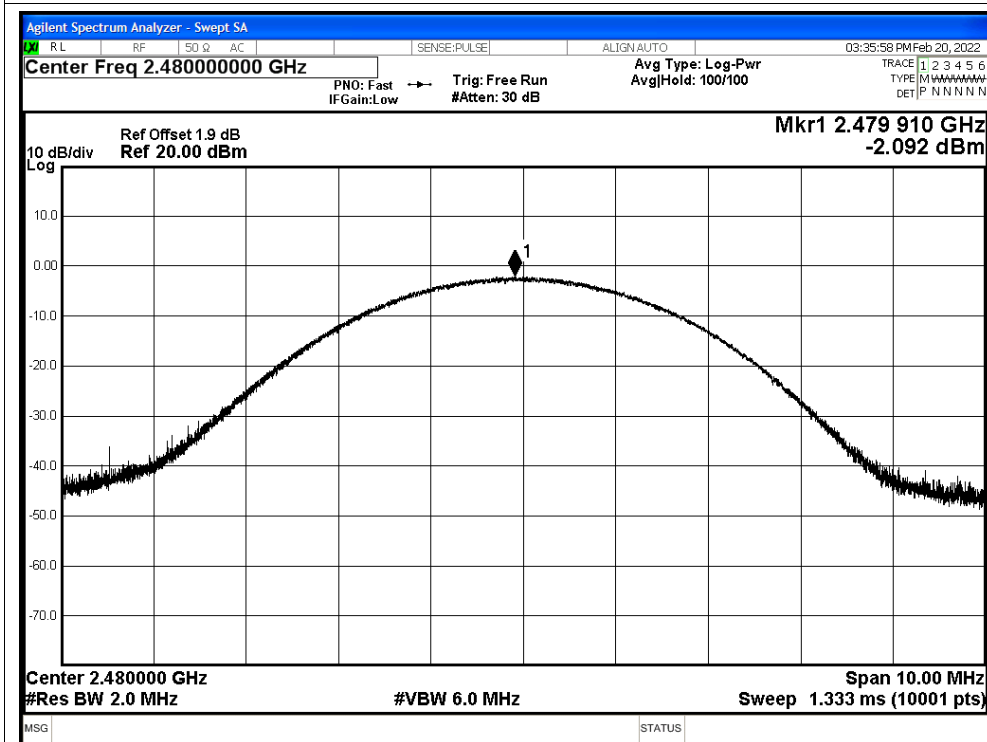




Power NVNT 3-DH5 2441MHz Ant1



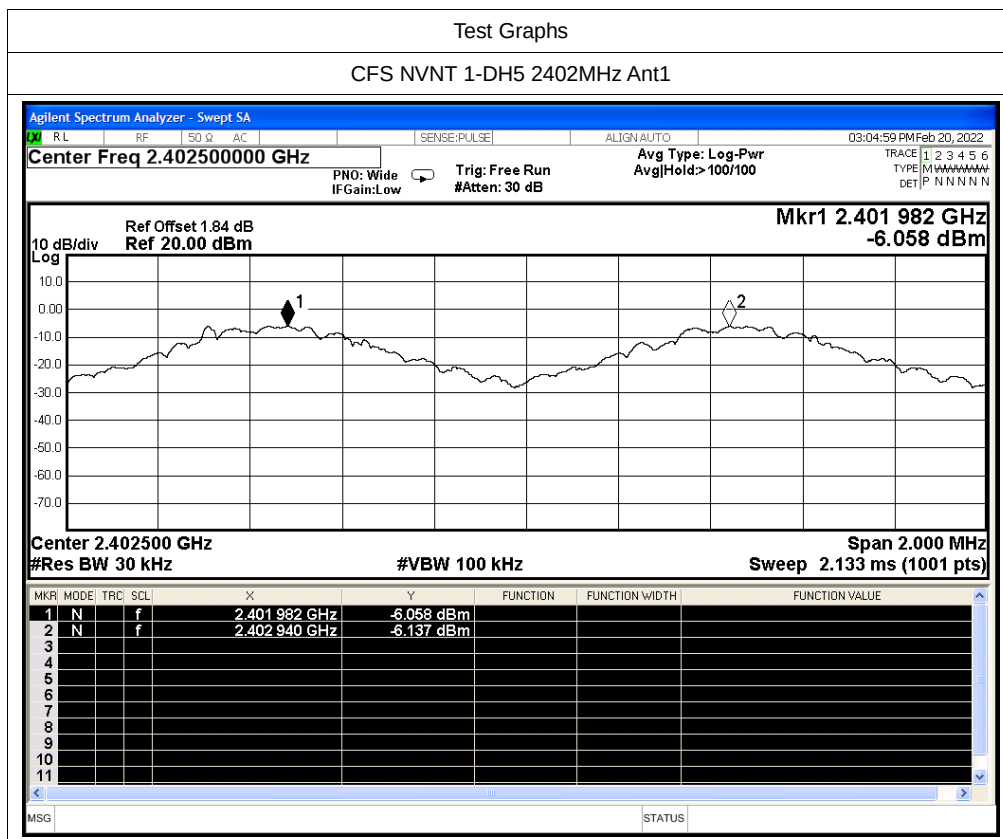
Power NVNT 3-DH5 2480MHz Ant1





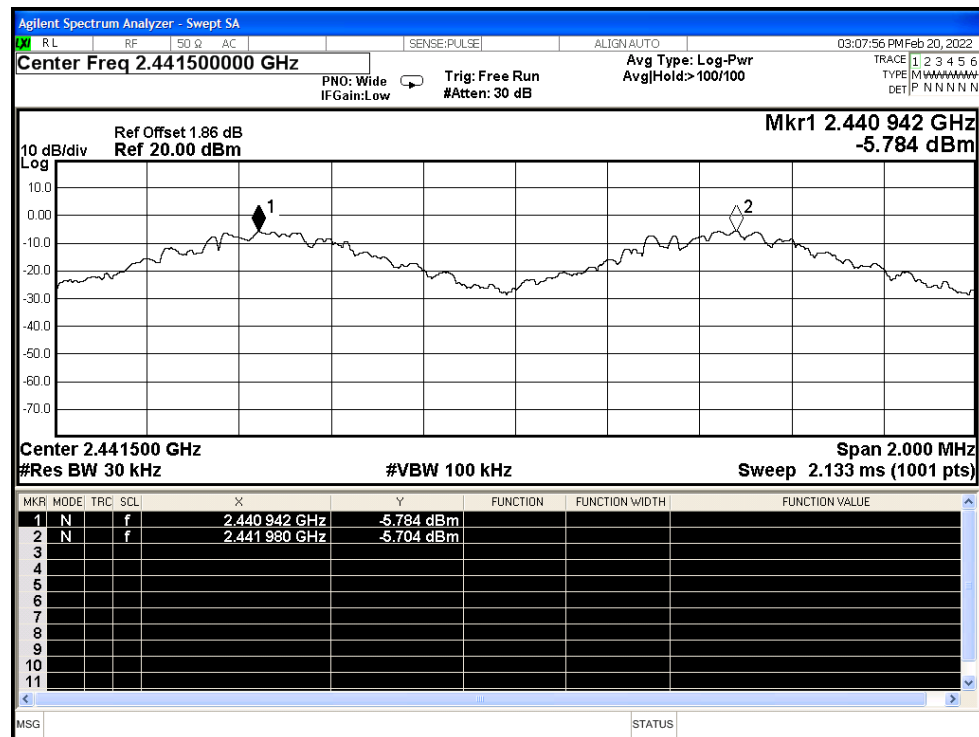
A.3 Frequencies Separation

Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2401.982	2402.94	0.958	0.631	Pass
NVNT	1-DH5	Ant1	2440.942	2441.98	1.038	0.635	Pass
NVNT	1-DH5	Ant1	2478.962	2479.936	0.974	0.623	Pass
NVNT	2-DH5	Ant1	2401.804	2403.146	1.342	0.848	Pass
NVNT	2-DH5	Ant1	2440.962	2442.128	1.166	0.865	Pass
NVNT	2-DH5	Ant1	2478.804	2480.122	1.318	0.851	Pass
NVNT	3-DH5	Ant1	2401.98	2402.962	0.982	0.865	Pass
NVNT	3-DH5	Ant1	2440.802	2441.804	1.002	0.864	Pass
NVNT	3-DH5	Ant1	2478.8	2479.798	0.998	0.867	Pass

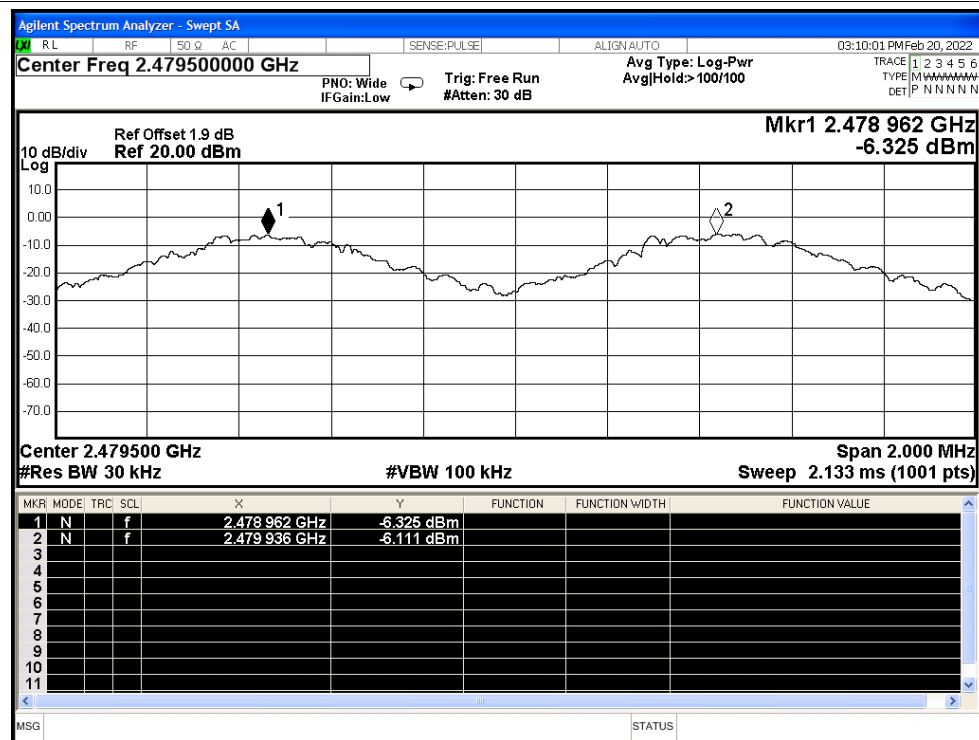




CFS NVNT 1-DH5 2441MHz Ant1

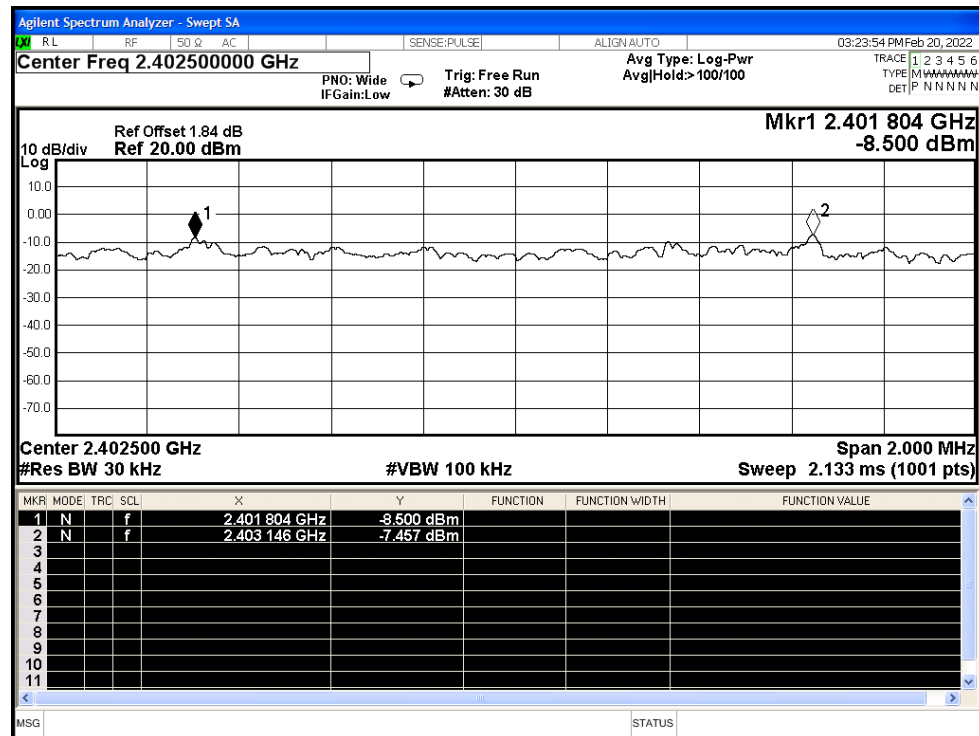


CFS NVNT 1-DH5 2480MHz Ant1

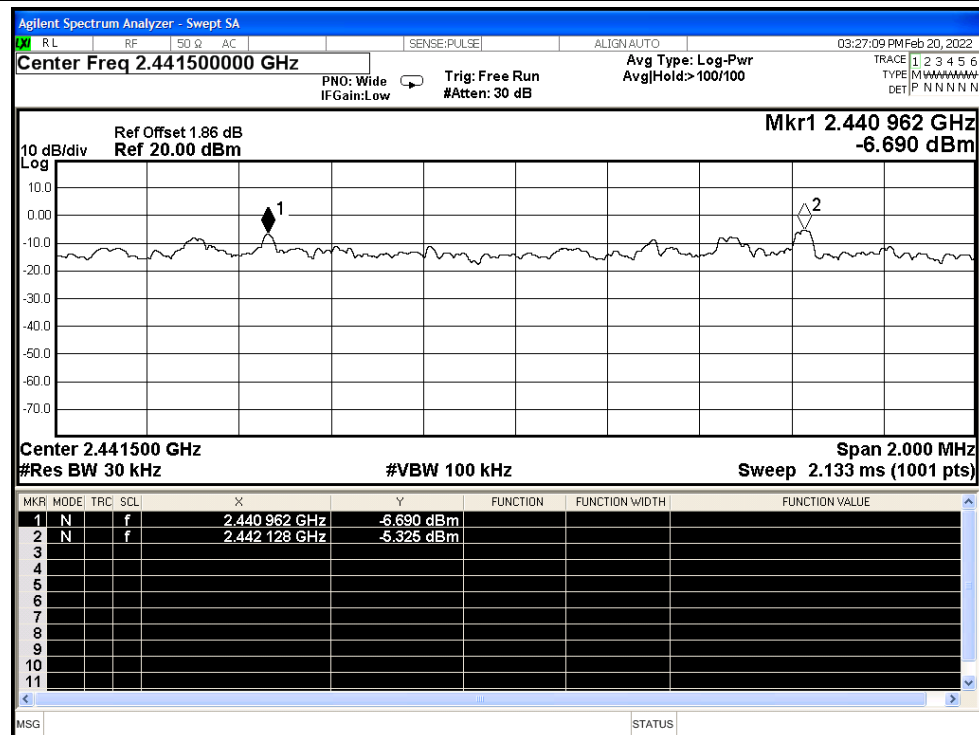




CFS NVNT 2-DH5 2402MHz Ant1

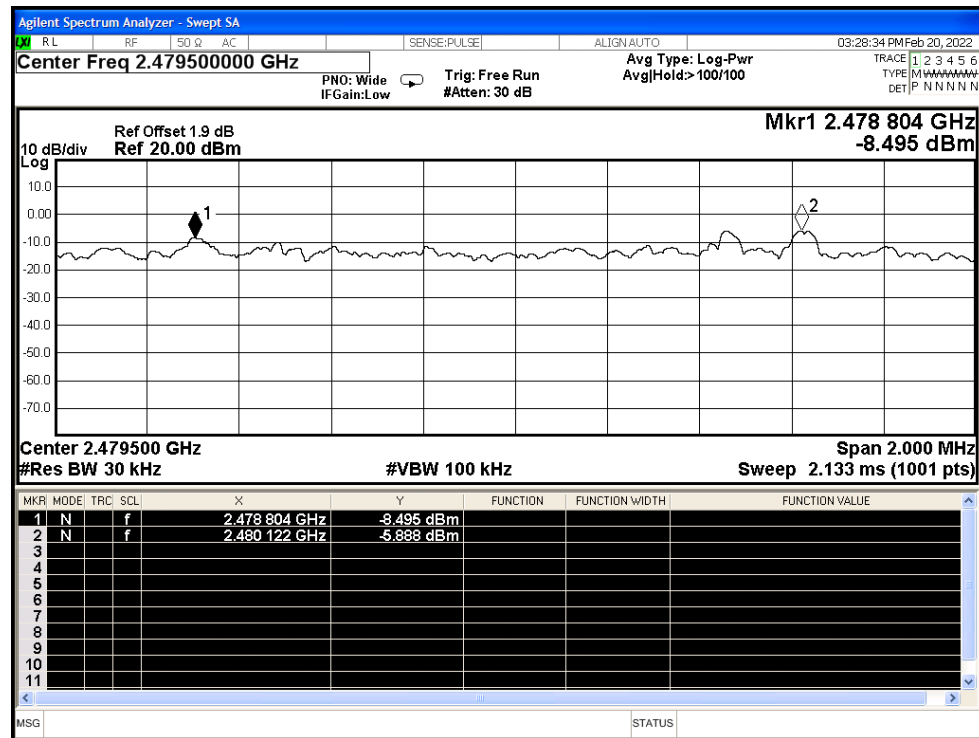


CFS NVNT 2-DH5 2441MHz Ant1

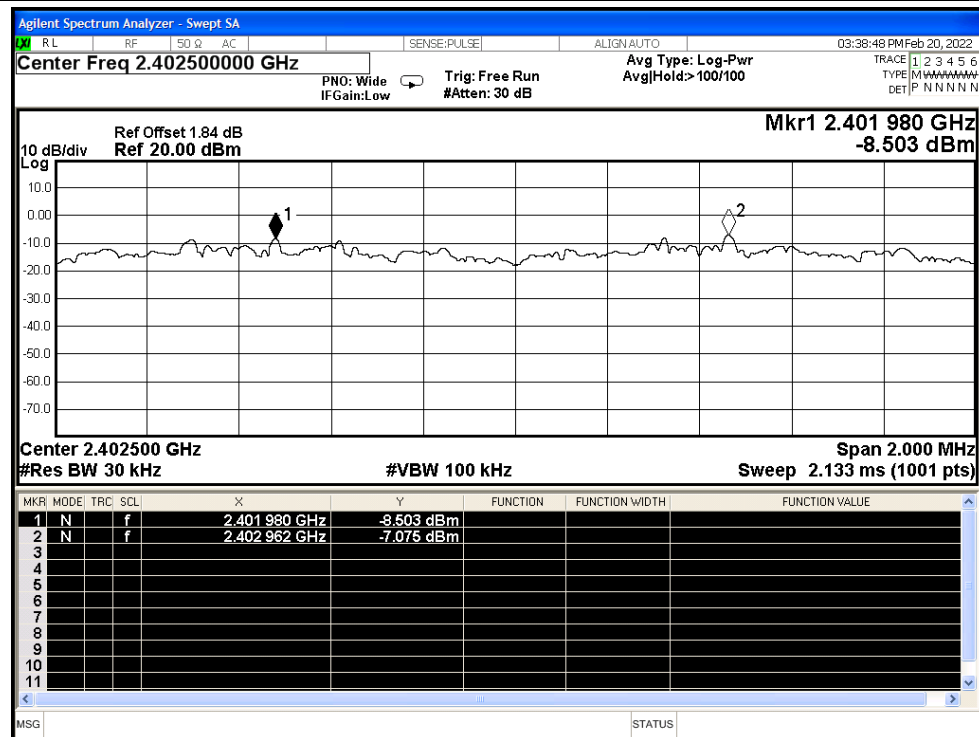




CFS NVNT 2-DH5 2480MHz Ant1

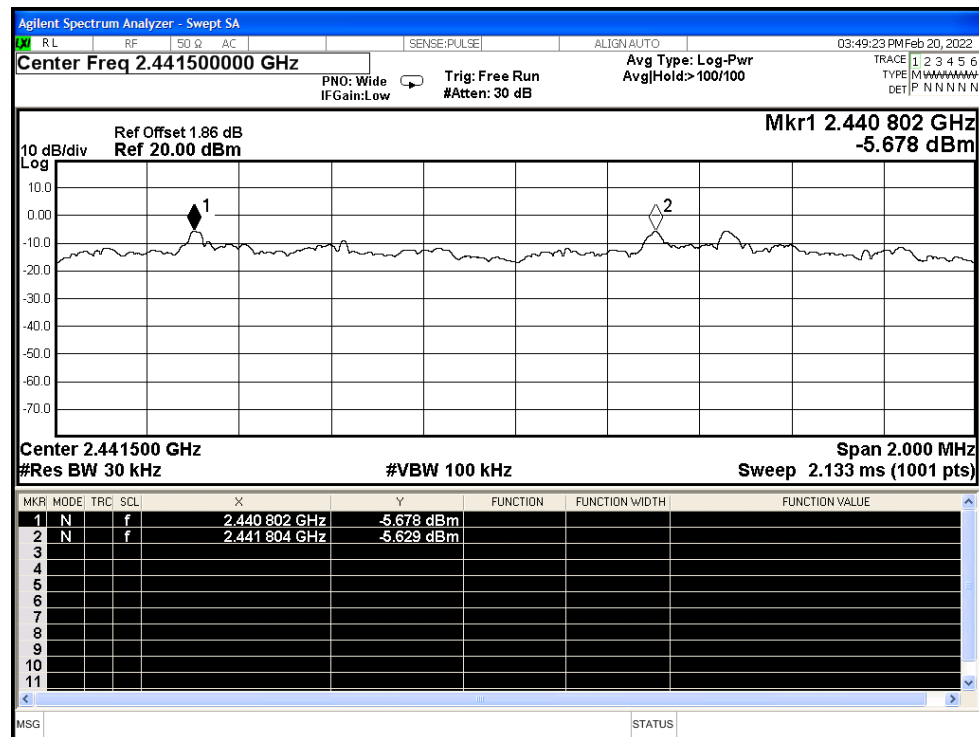


CFS NVNT 3-DH5 2402MHz Ant1

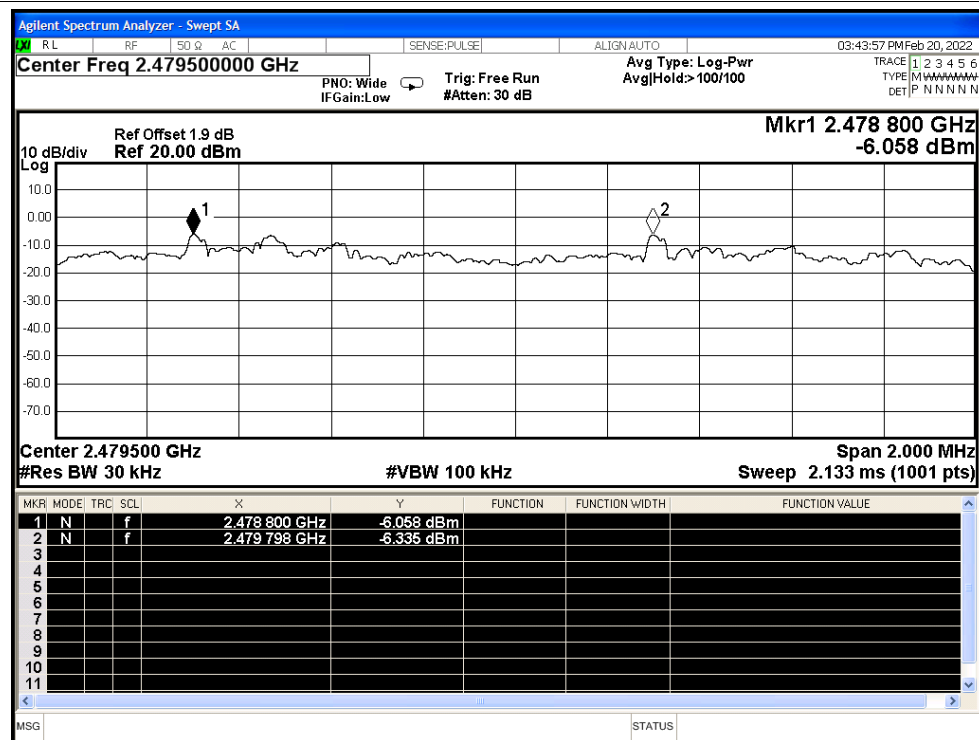




CFS NVNT 3-DH5 2441MHz Ant1



CFS NVNT 3-DH5 2480MHz Ant1





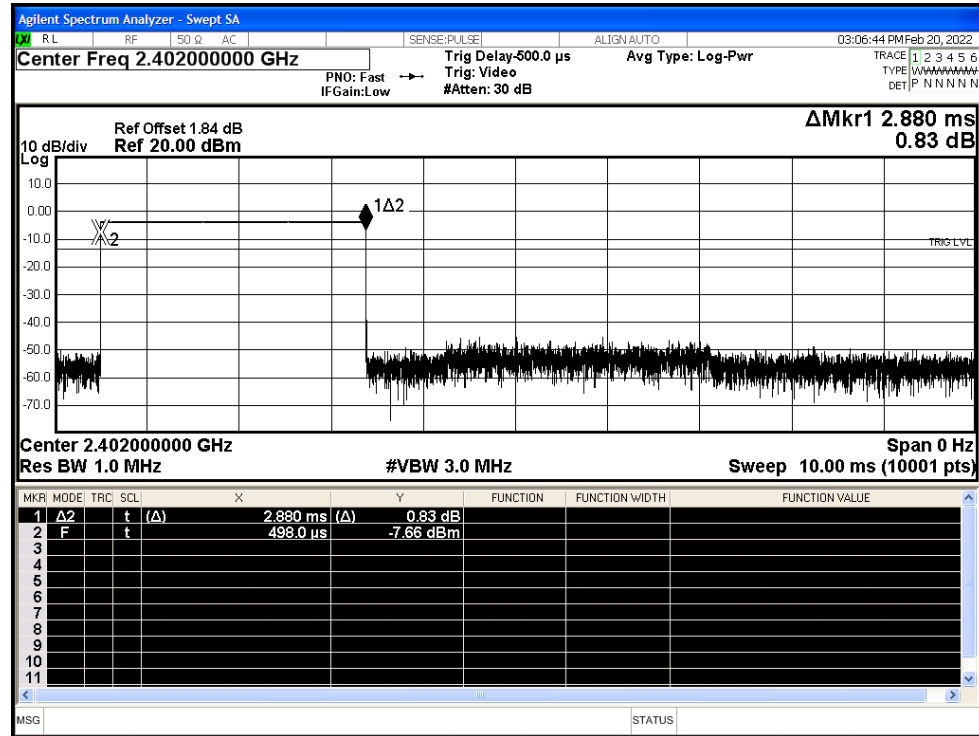
A.4 Dwell Time

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	2.88	290.88	101	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.88	325.44	113	31600	400	Pass
NVNT	1-DH5	2480	Ant1	2.88	316.8	110	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.885	297.155	103	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.885	305.81	106	31600	400	Pass
NVNT	2-DH5	2480	Ant1	2.886	308.802	107	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.888	317.68	110	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.887	349.327	121	31600	400	Pass
NVNT	3-DH5	2480	Ant1	2.888	294.576	102	31600	400	Pass

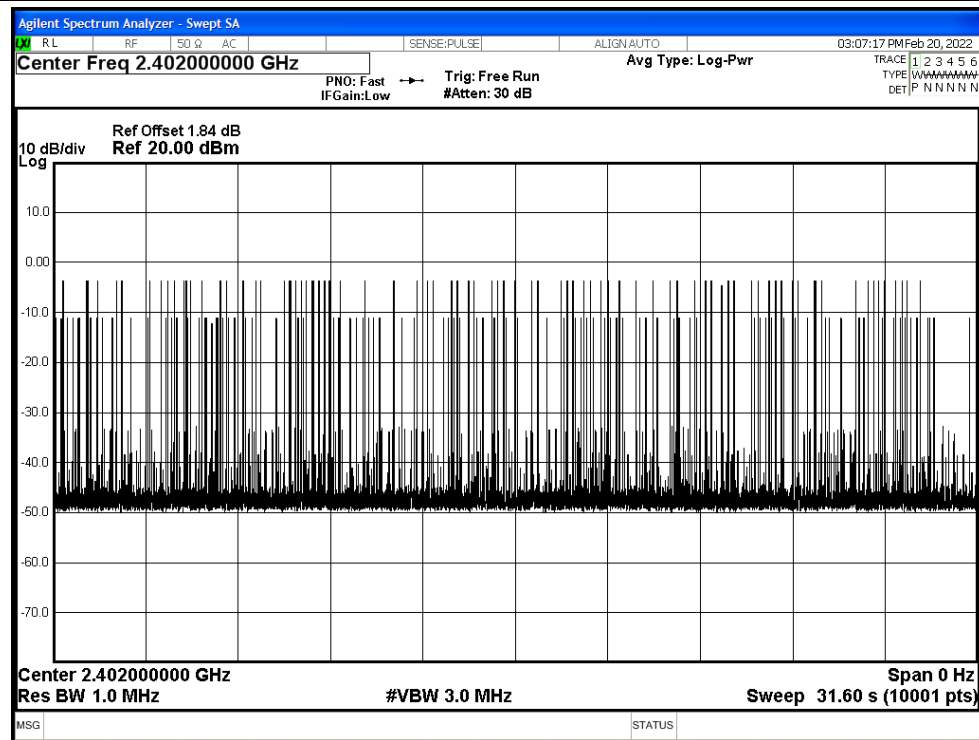


Test Graphs

Dwell NVNT 1-DH5 2402MHz Ant1 One Burst

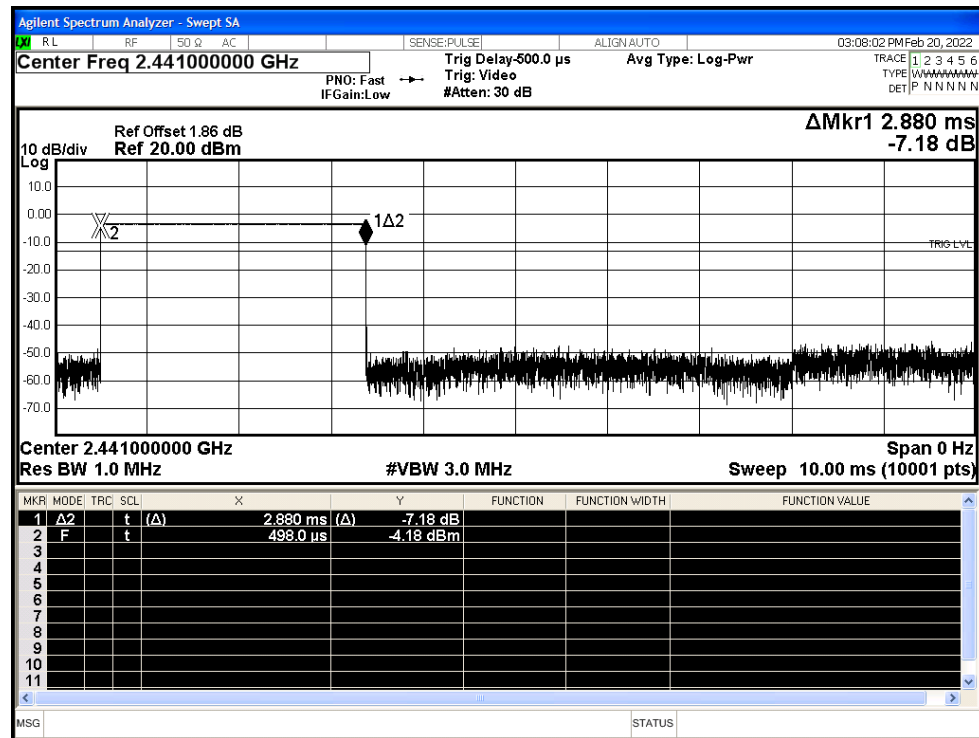


Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated

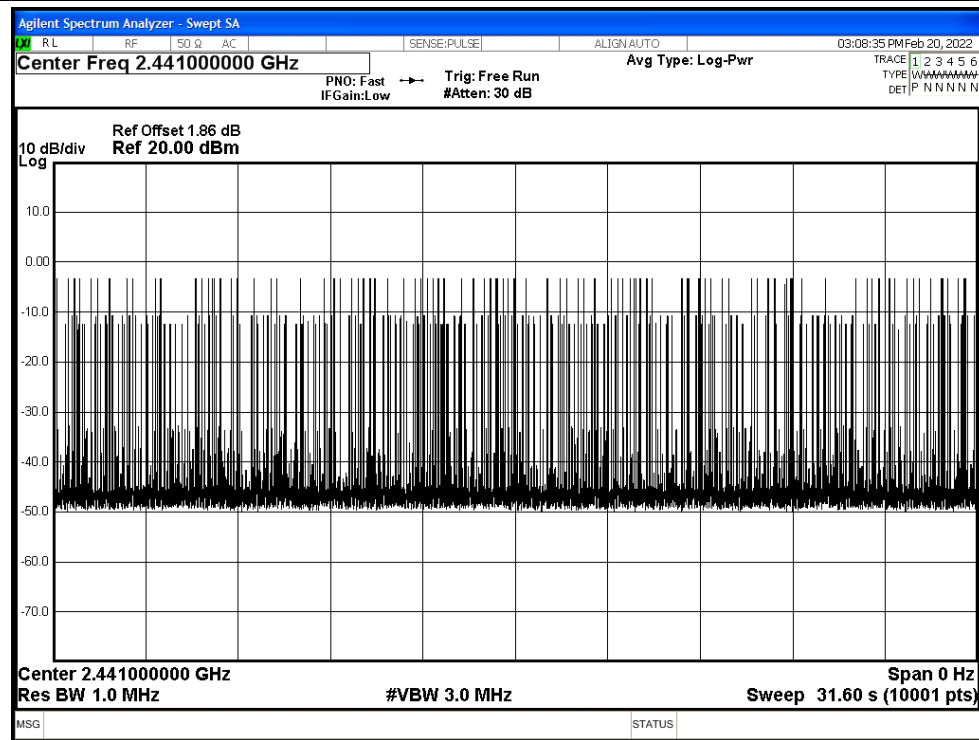




Dwell NVNT 1-DH5 2441MHz Ant1 One Burst

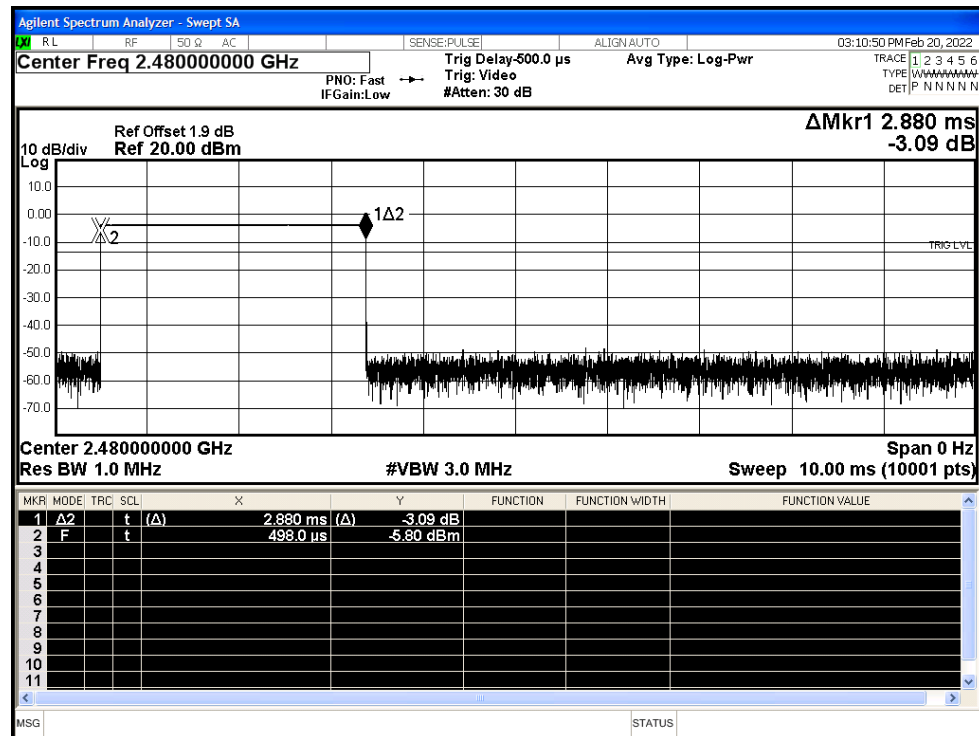


Dwell NVNT 1-DH5 2441MHz Ant1 Accumulated

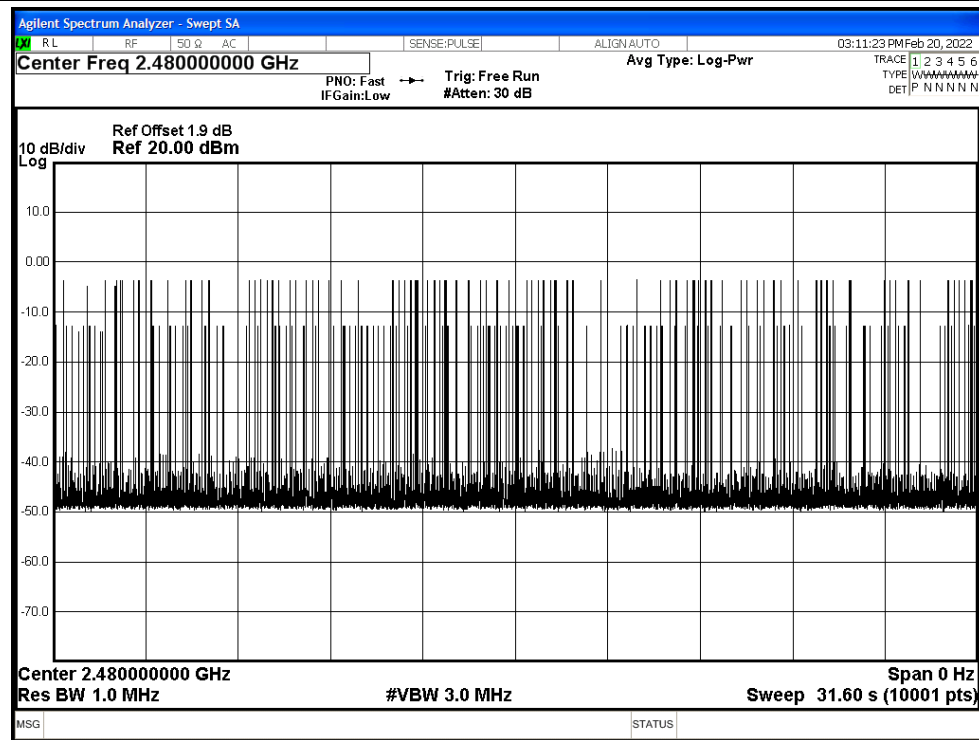




Dwell NVNT 1-DH5 2480MHz Ant1 One Burst

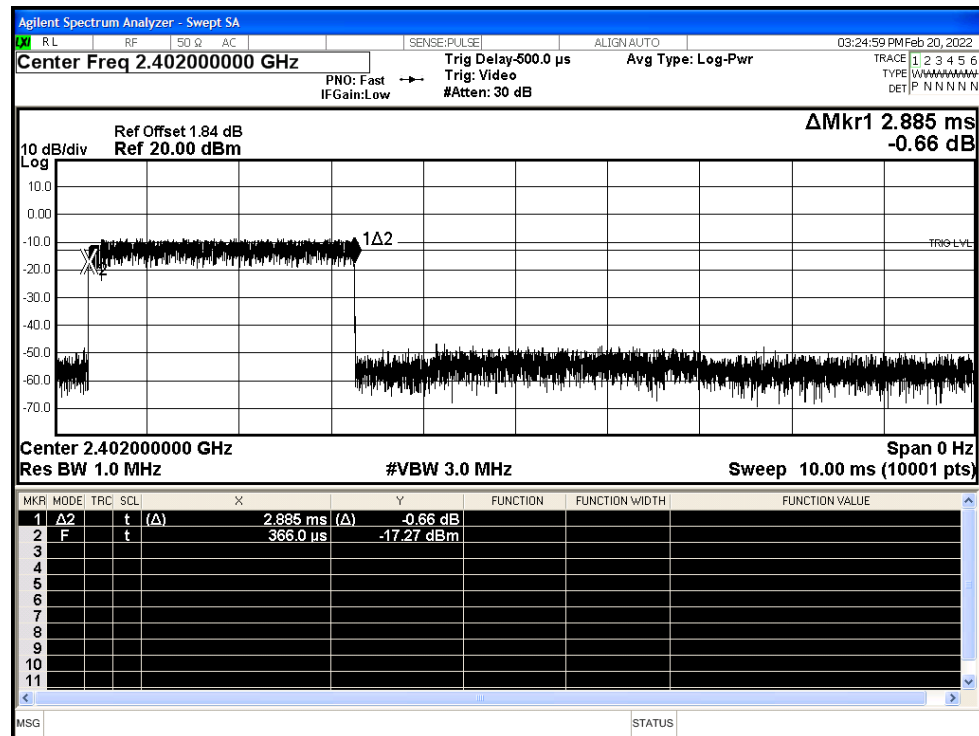


Dwell NVNT 1-DH5 2480MHz Ant1 Accumulated

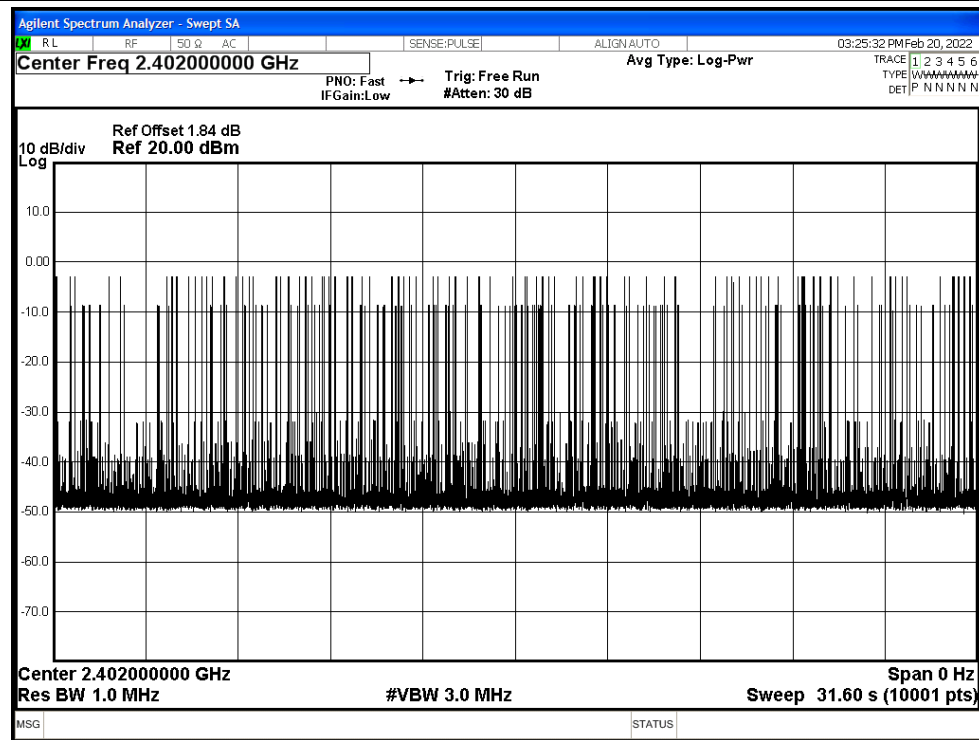




Dwell NVNT 2-DH5 2402MHz Ant1 One Burst

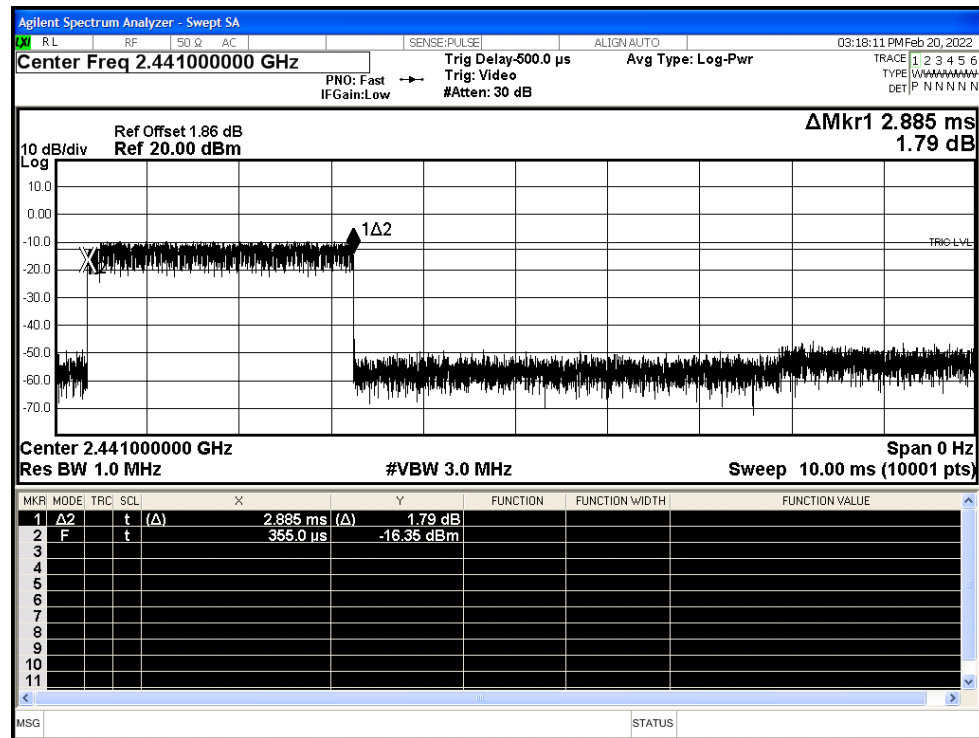


Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated

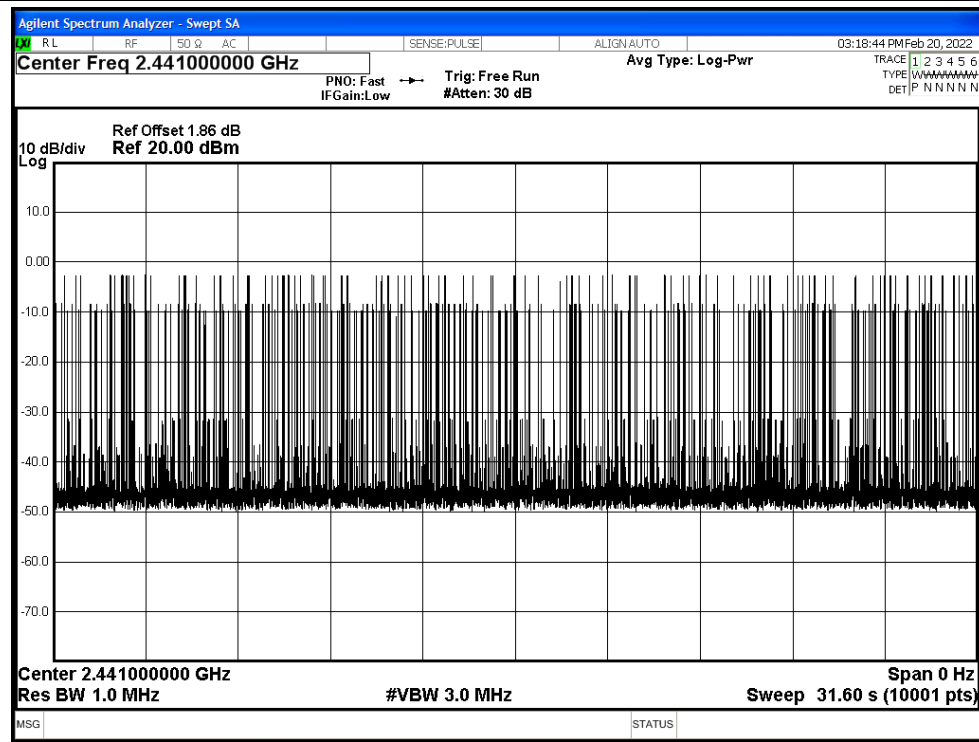




Dwell NVNT 2-DH5 2441MHz Ant1 One Burst

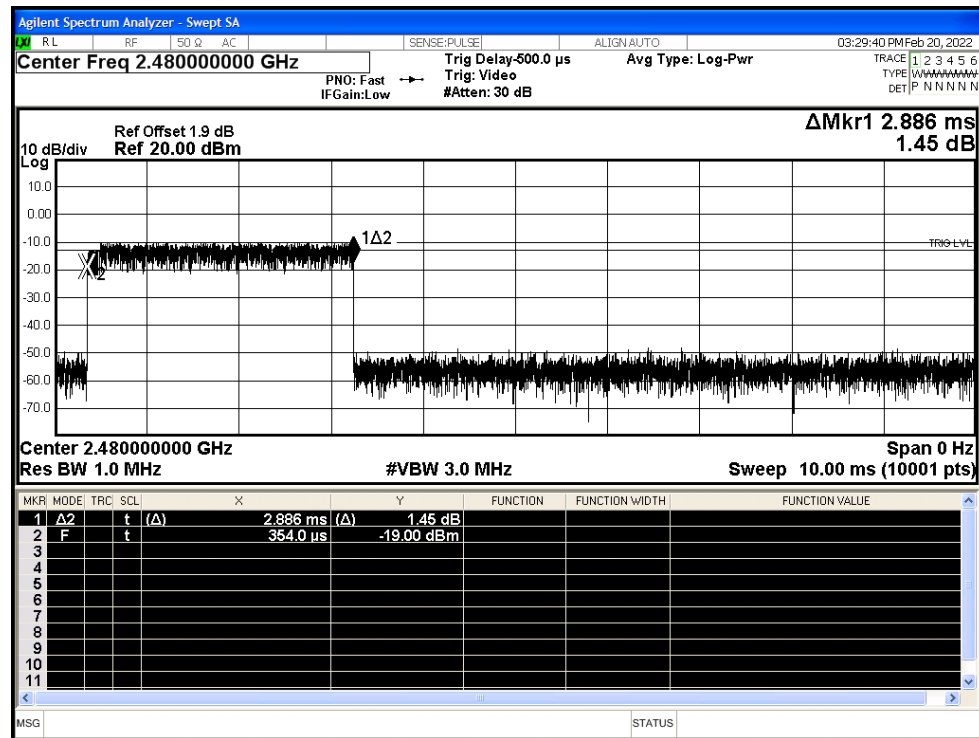


Dwell NVNT 2-DH5 2441MHz Ant1 Accumulated

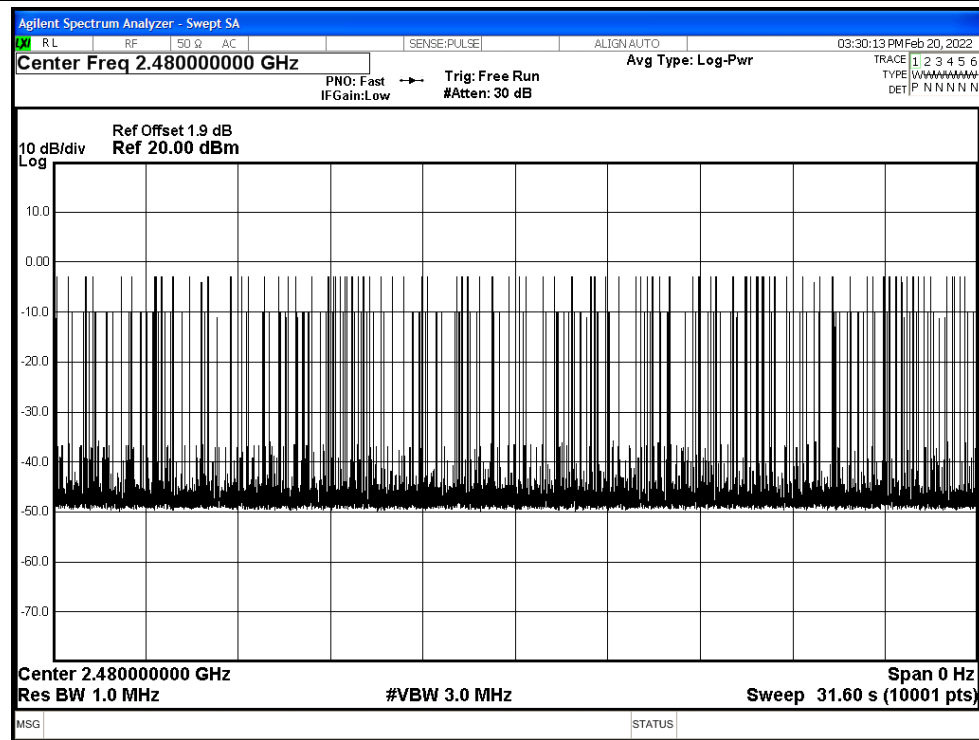




Dwell NVNT 2-DH5 2480MHz Ant1 One Burst

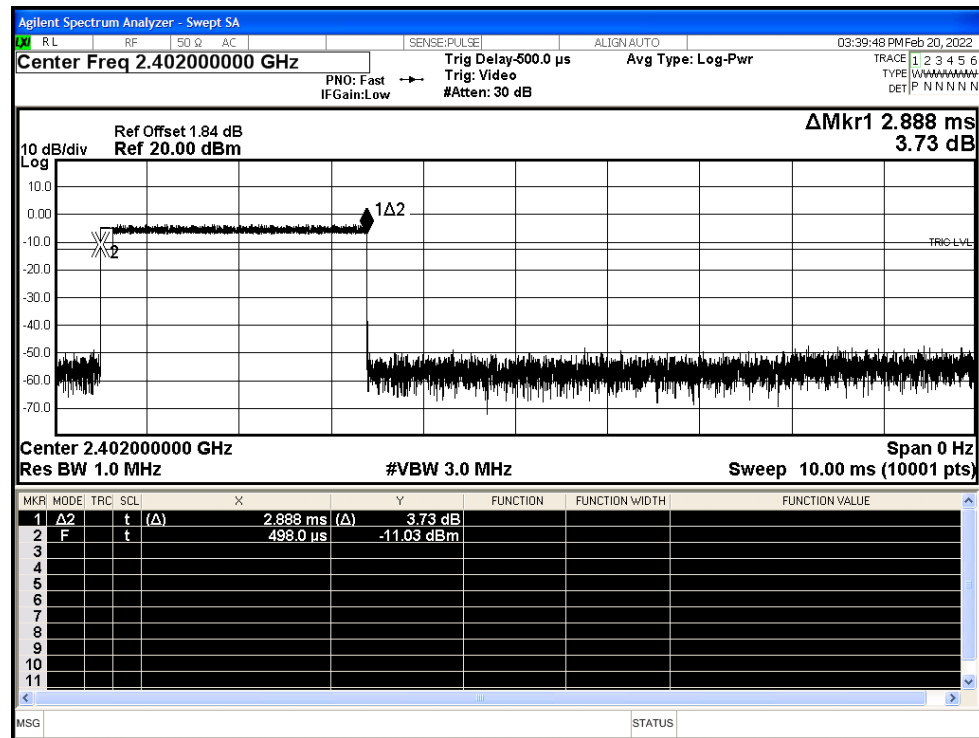


Dwell NVNT 2-DH5 2480MHz Ant1 Accumulated

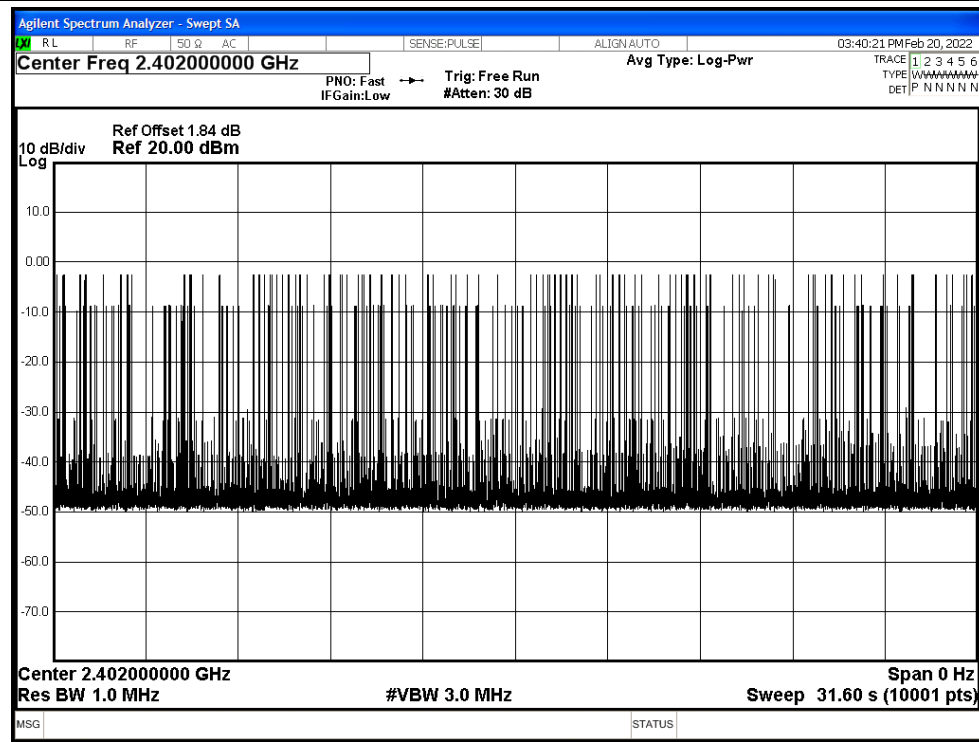




Dwell NVNT 3-DH5 2402MHz Ant1 One Burst

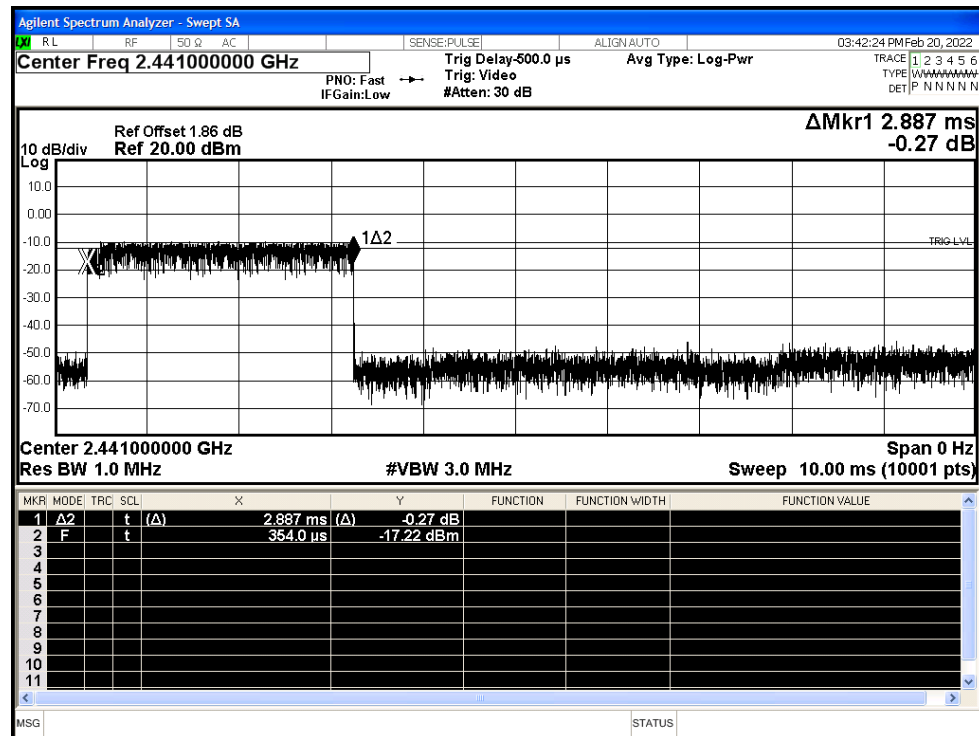


Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

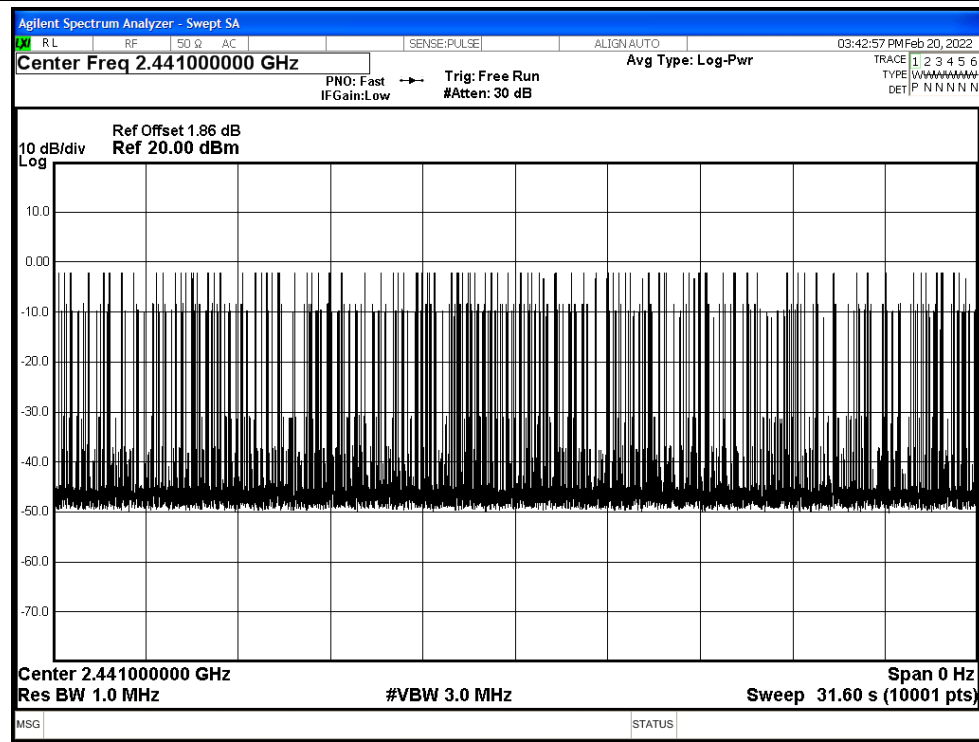




Dwell NVNT 3-DH5 2441MHz Ant1 One Burst

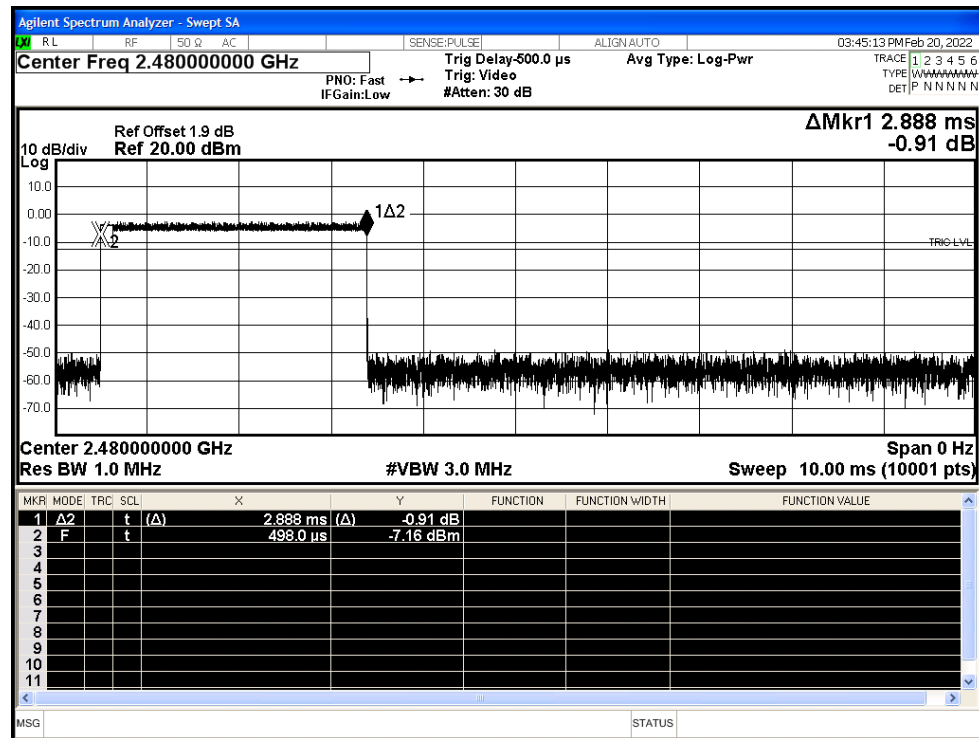


Dwell NVNT 3-DH5 2441MHz Ant1 Accumulated

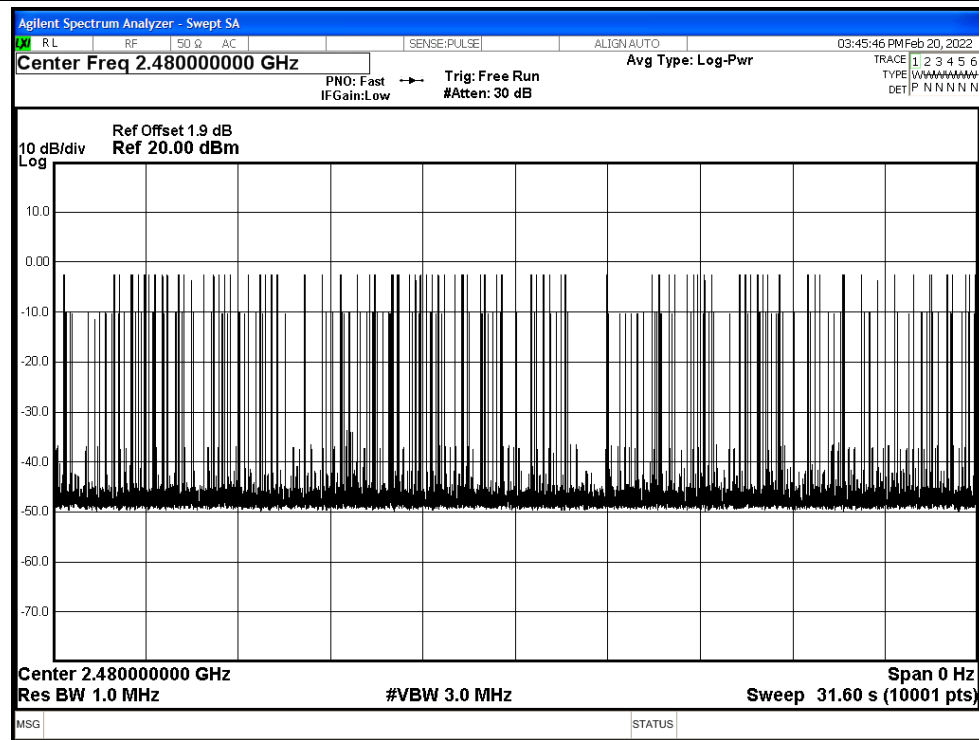




Dwell NVNT 3-DH5 2480MHz Ant1 One Burst



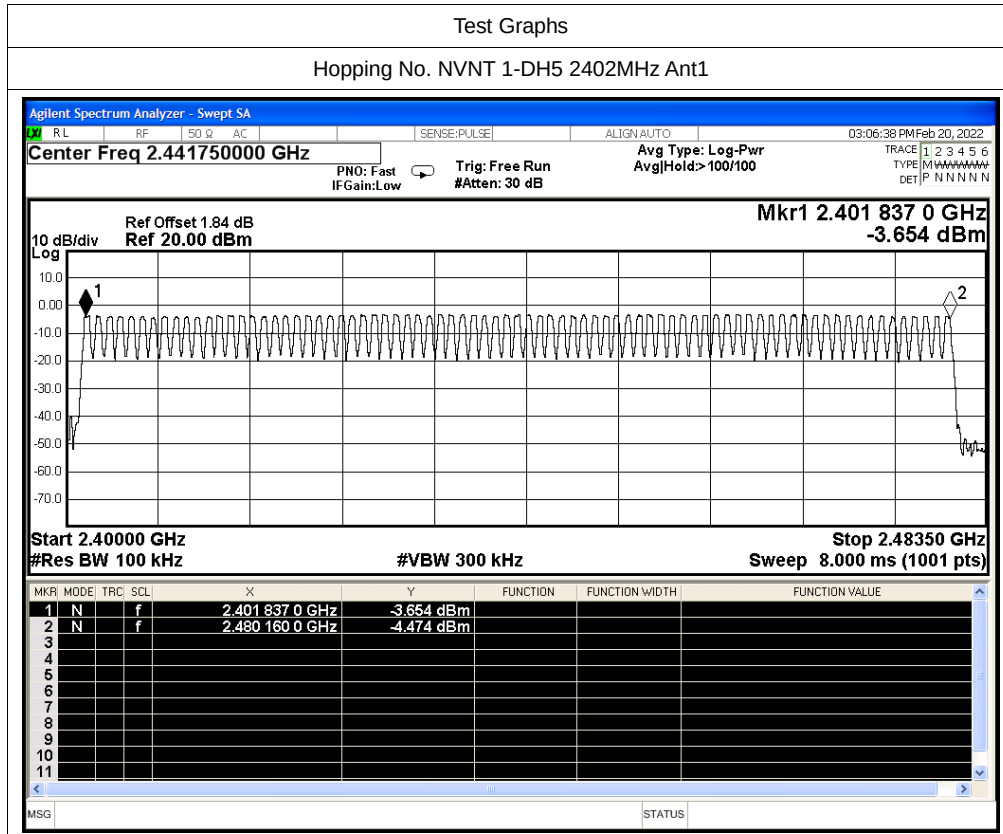
Dwell NVNT 3-DH5 2480MHz Ant1 Accumulated





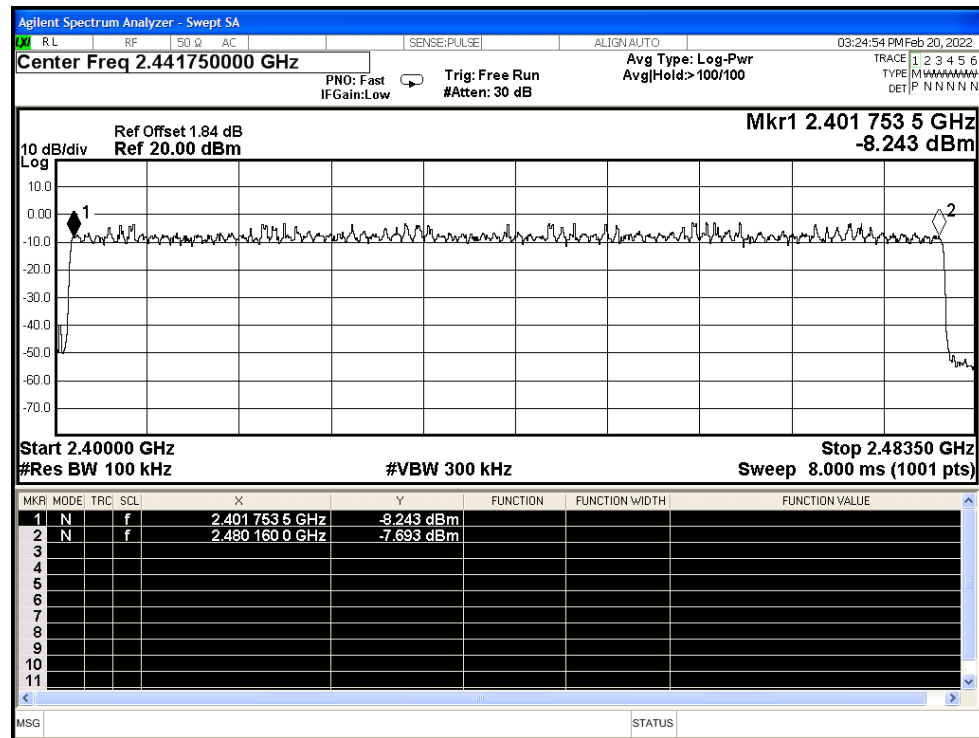
A.5 Number of Hopping Channel

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

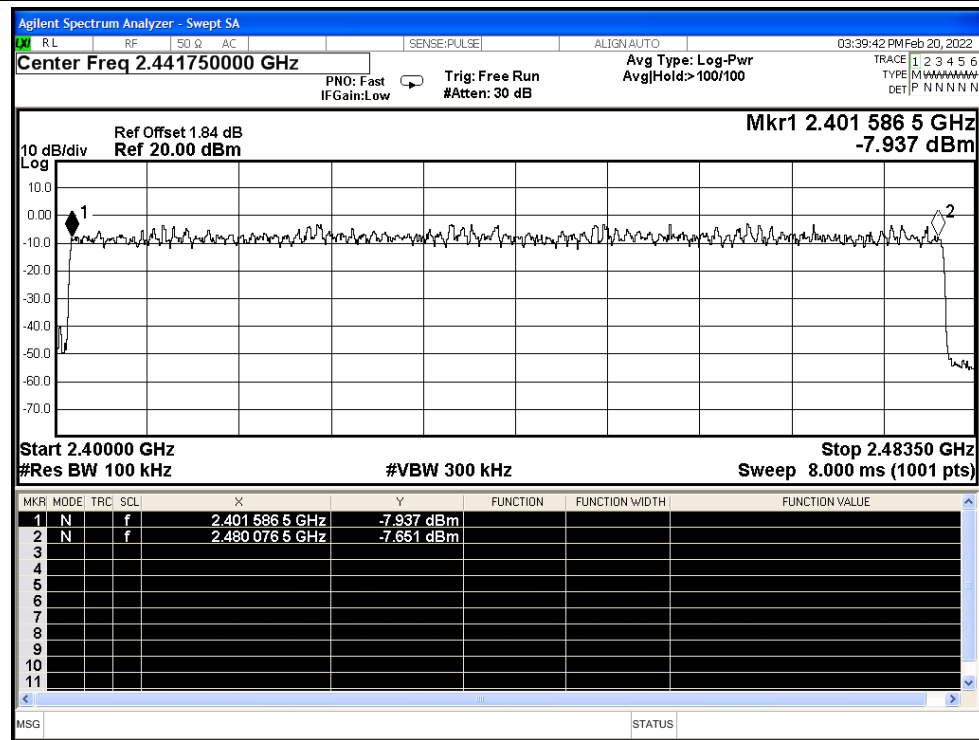




Hopping No. NVNT 2-DH5 Ant1



Hopping No. NVNT 3-DH5 Ant1





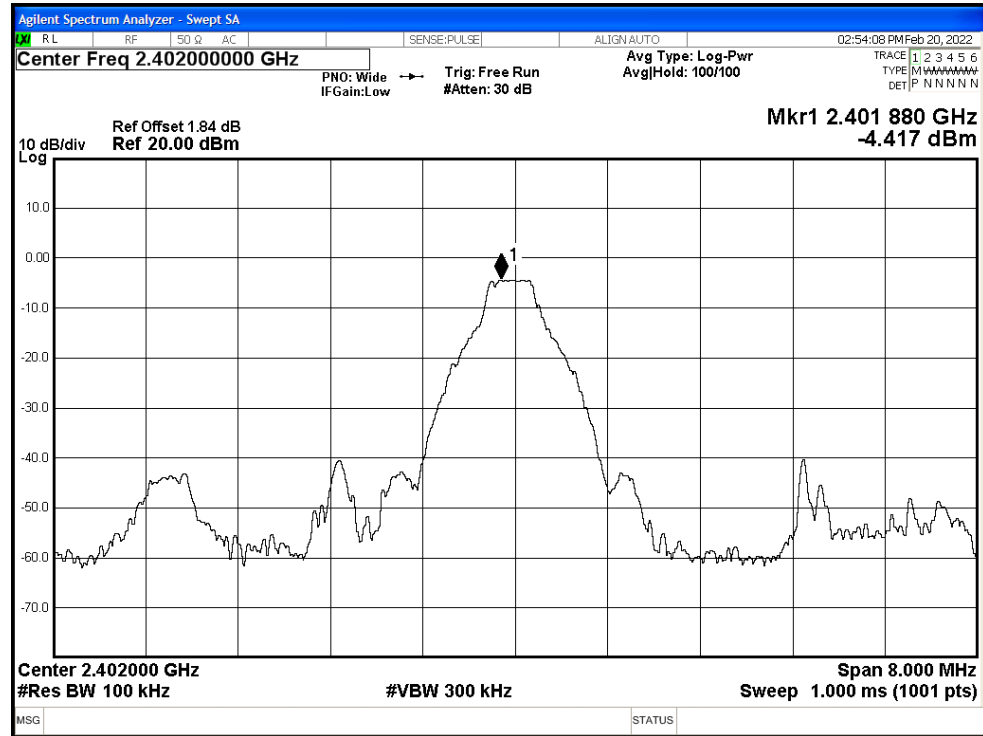
A.6 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-39.16	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-47.02	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-40.01	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-48.16	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-38.38	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-47.09	-20	Pass

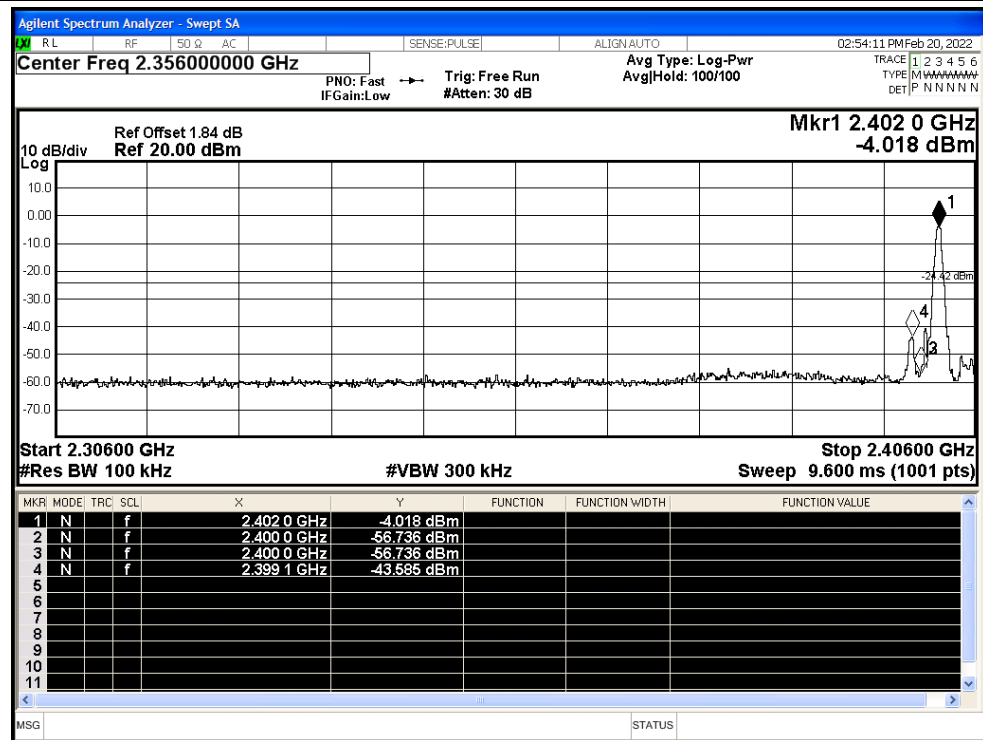


Test Graphs

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

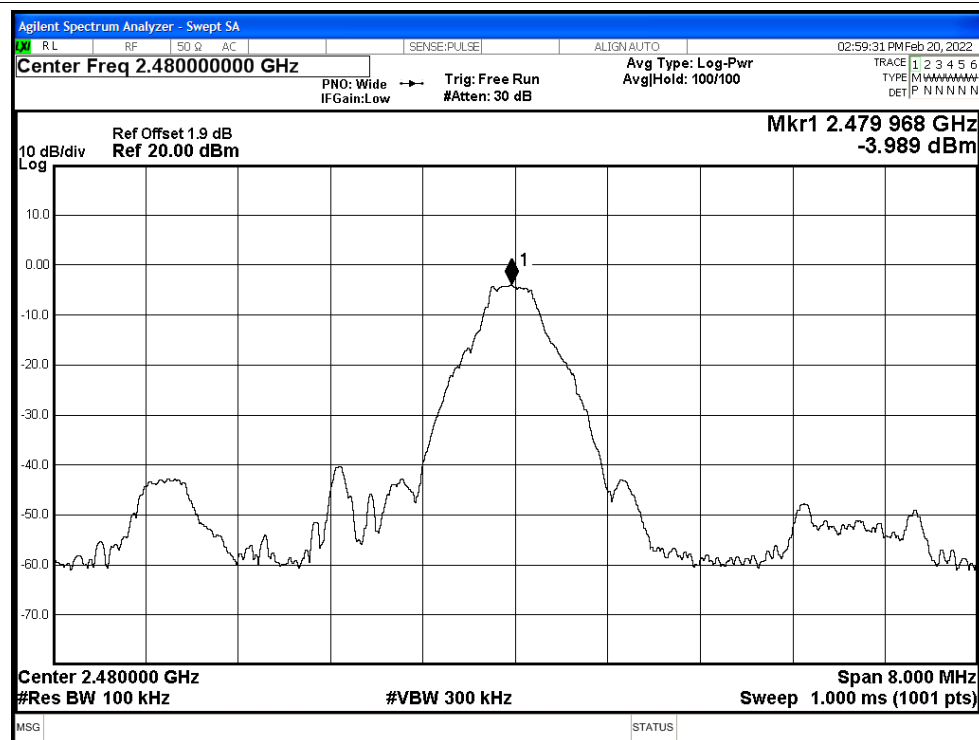


Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission

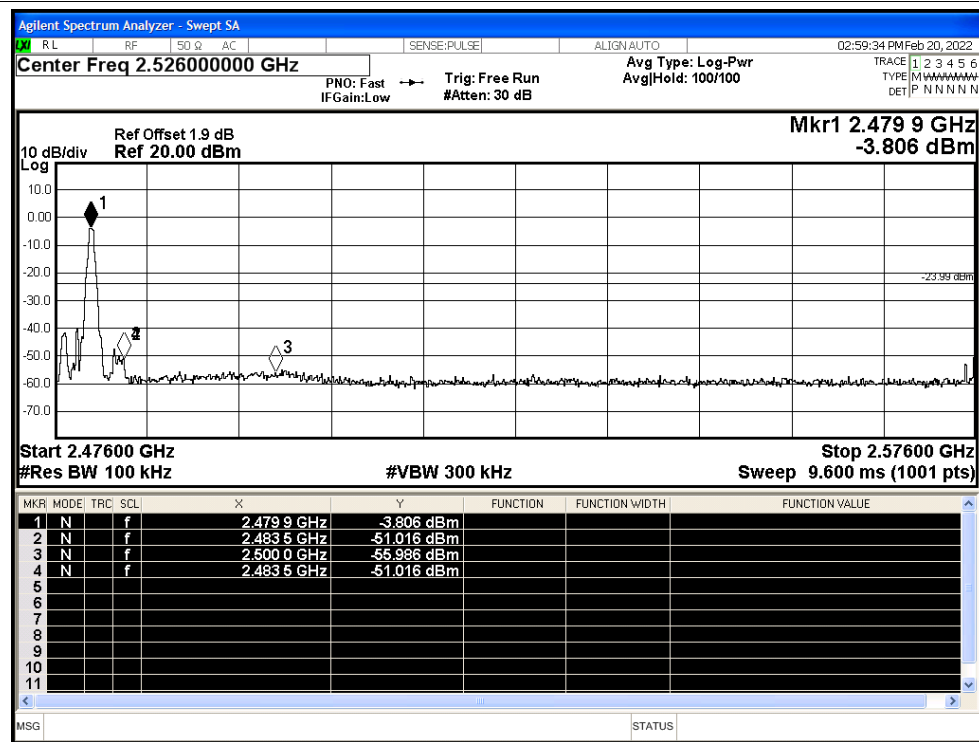




Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref

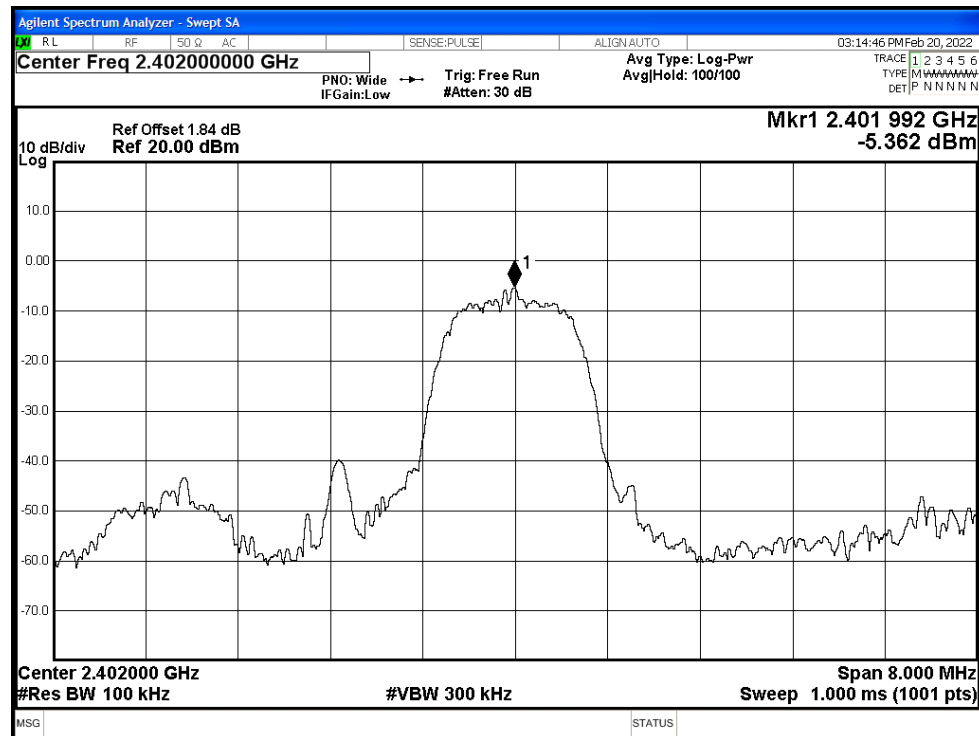


Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission

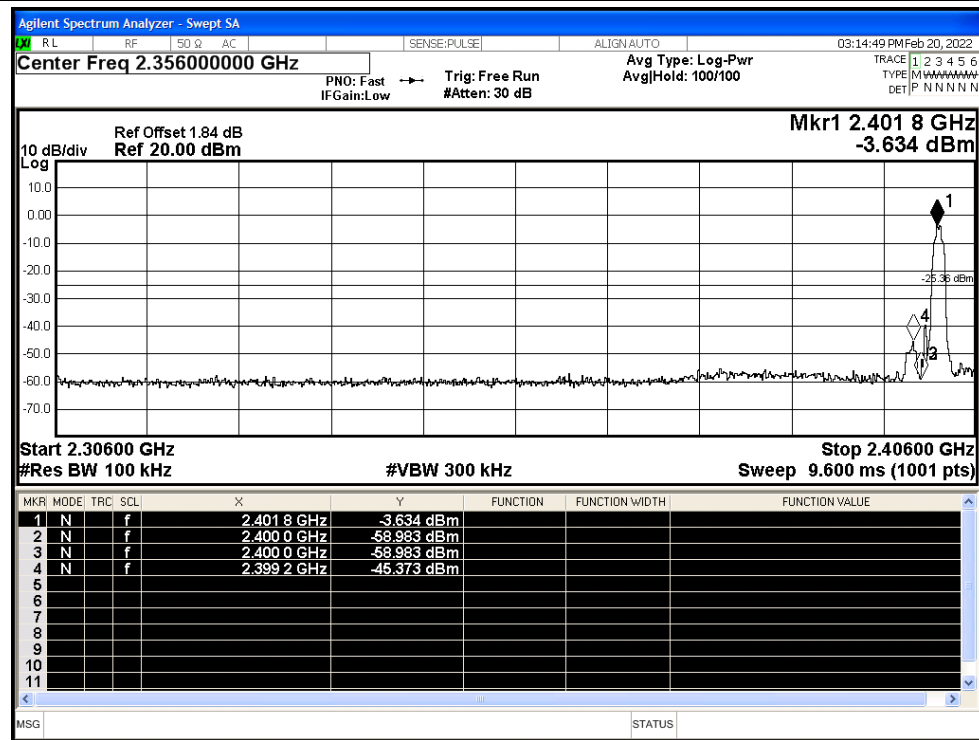




Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref

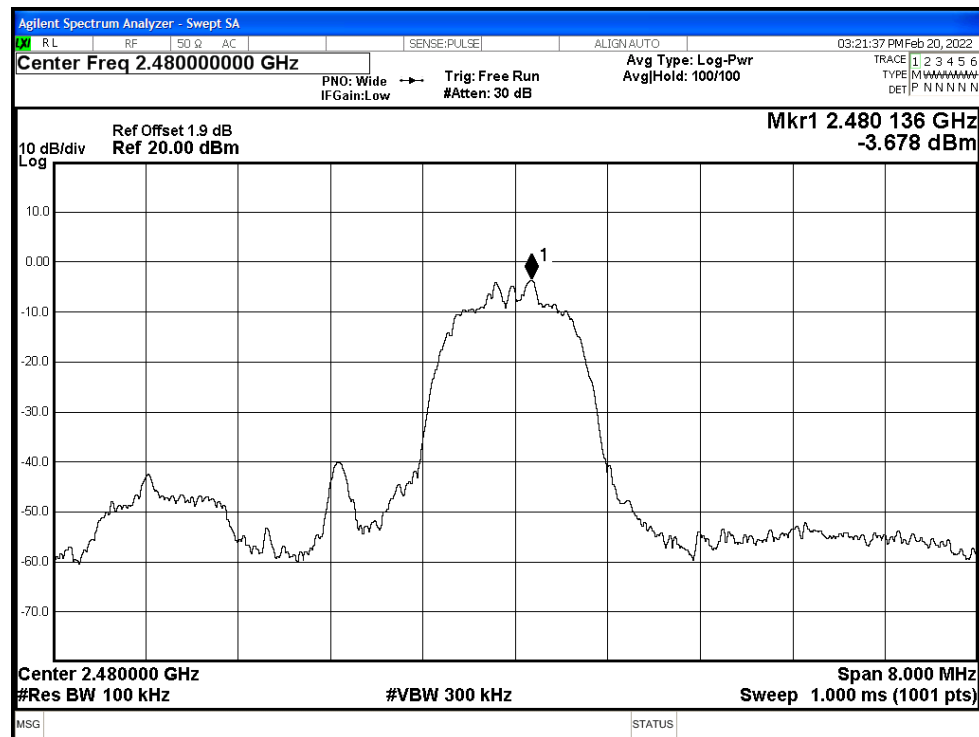


Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission

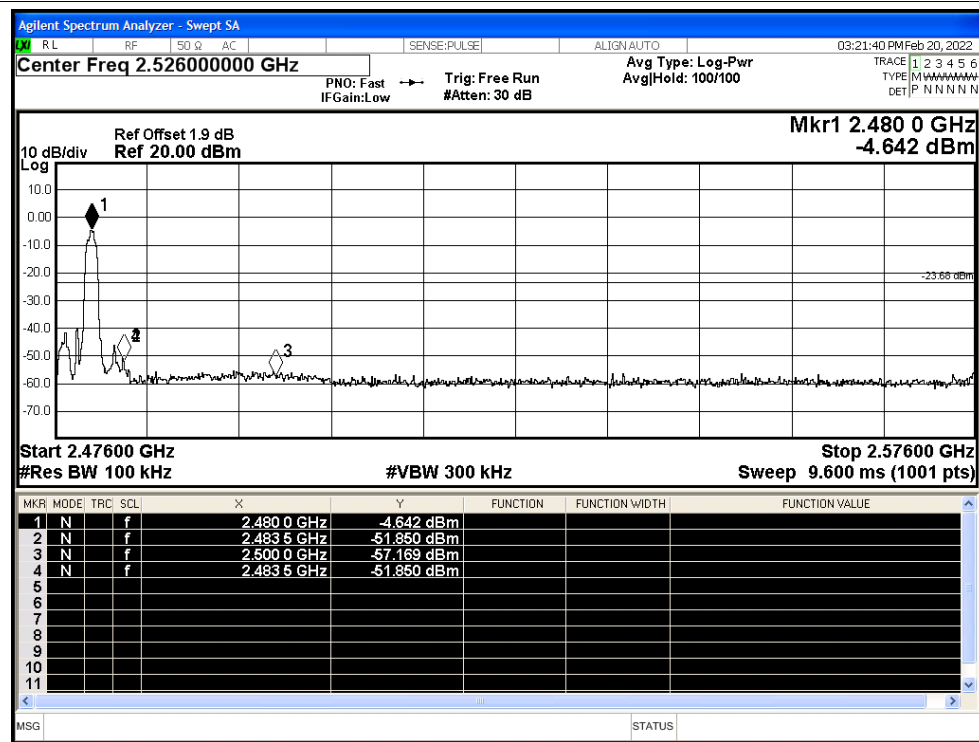




Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref

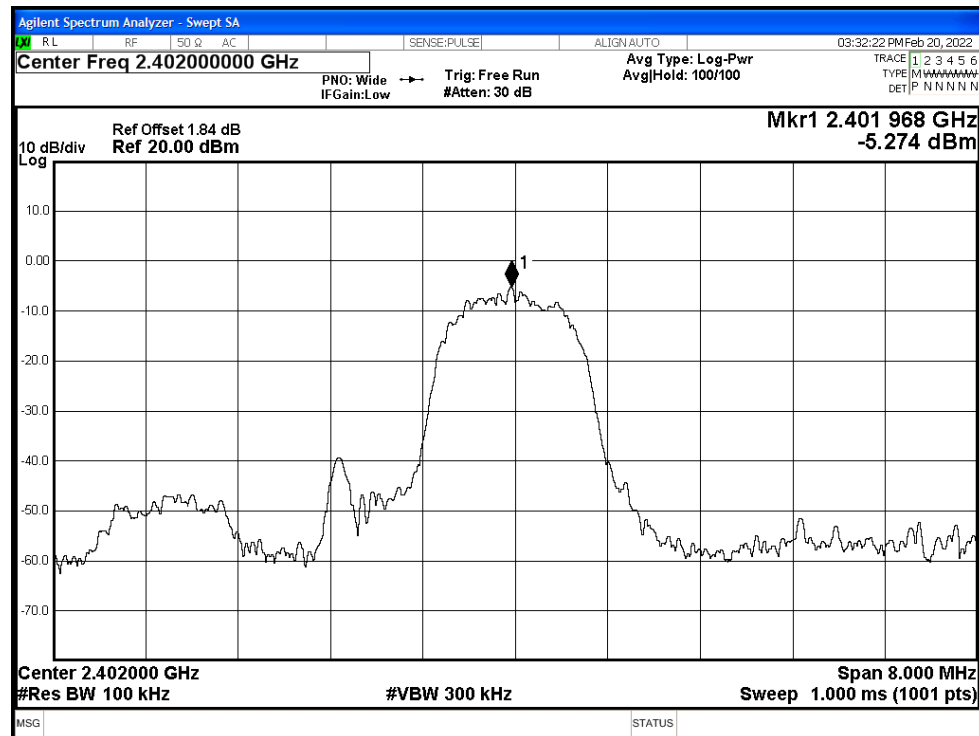


Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission

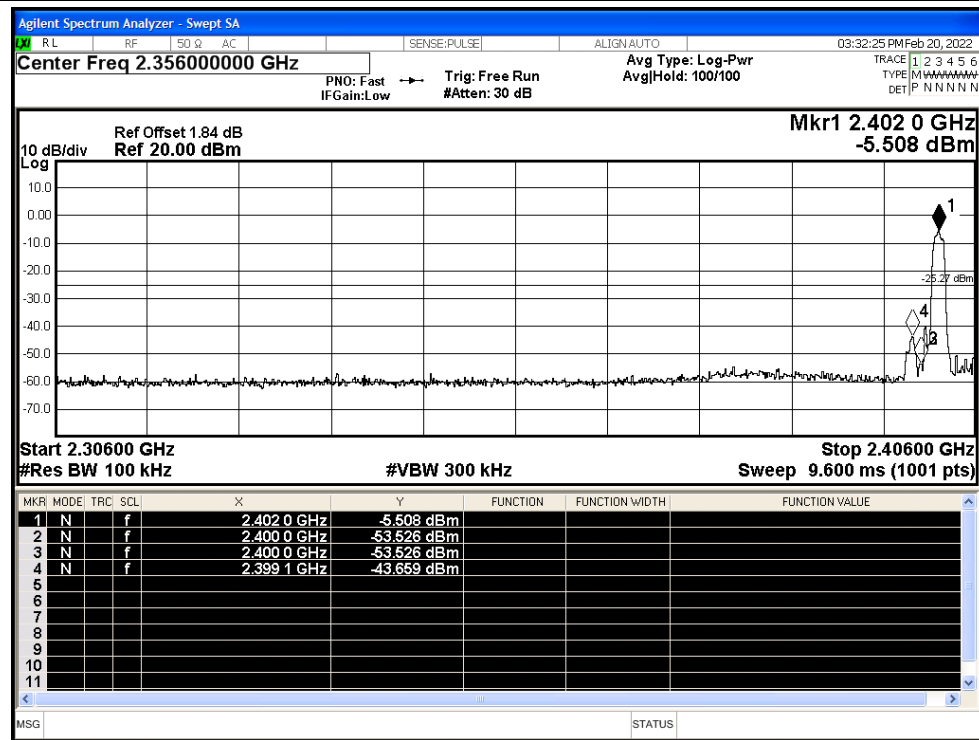




Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref

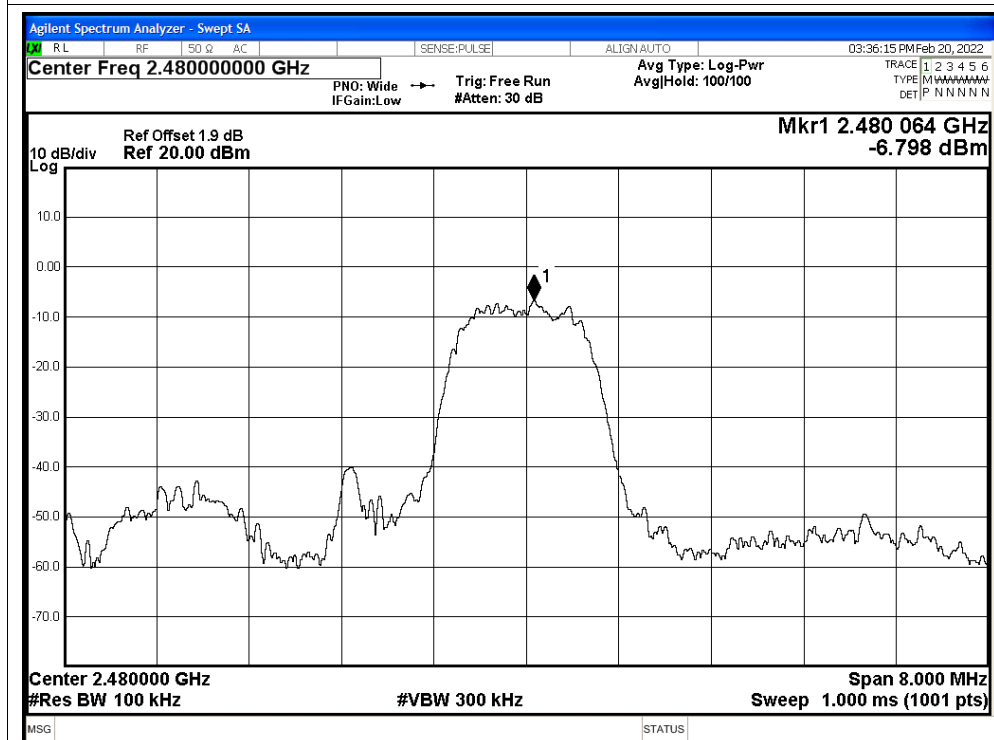


Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission

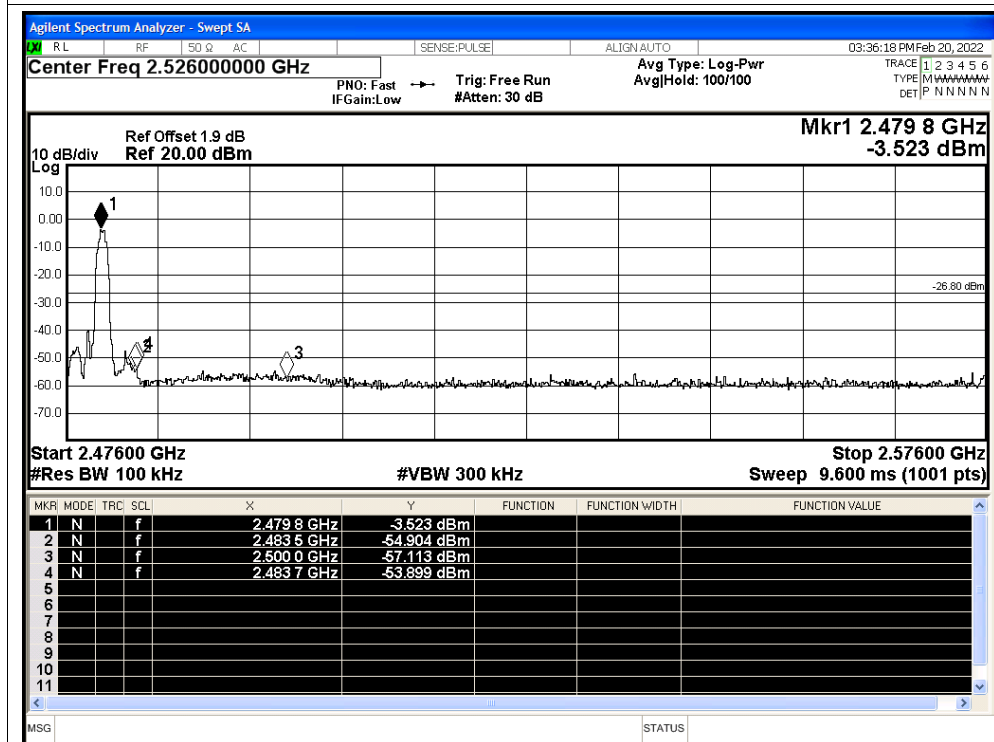




Band Edge NVNT 3-DH5 2480MHz Ant1 No-Hopping Ref



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





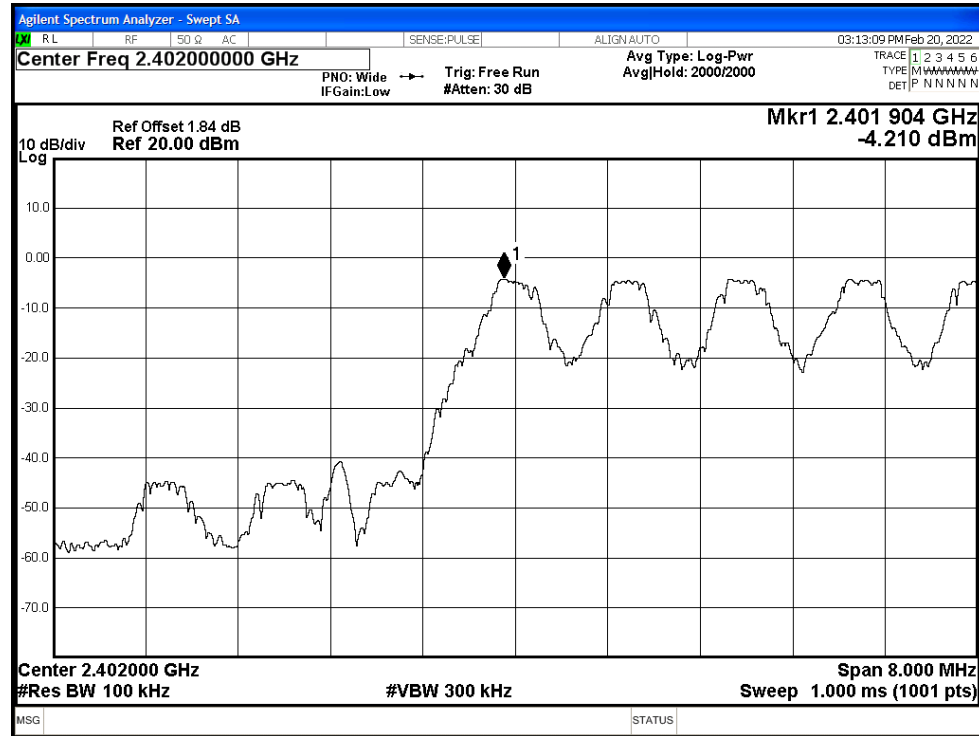
(Hopping)

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-39.99	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-46.57	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-42.95	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-47.83	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-41.96	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-49.44	-20	Pass

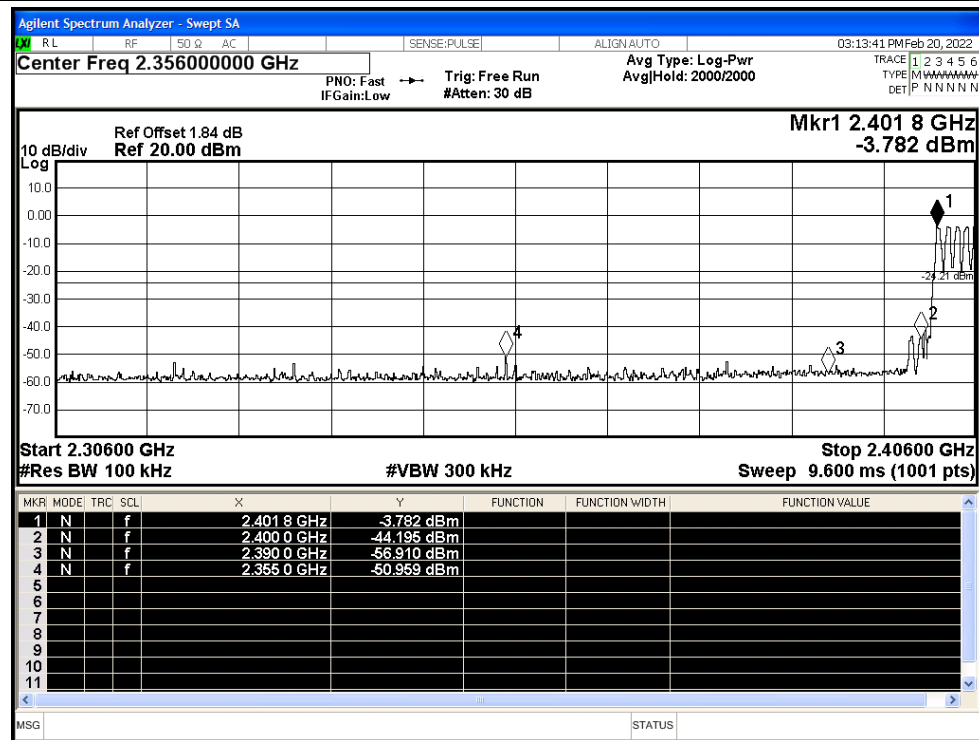


Test Graphs

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

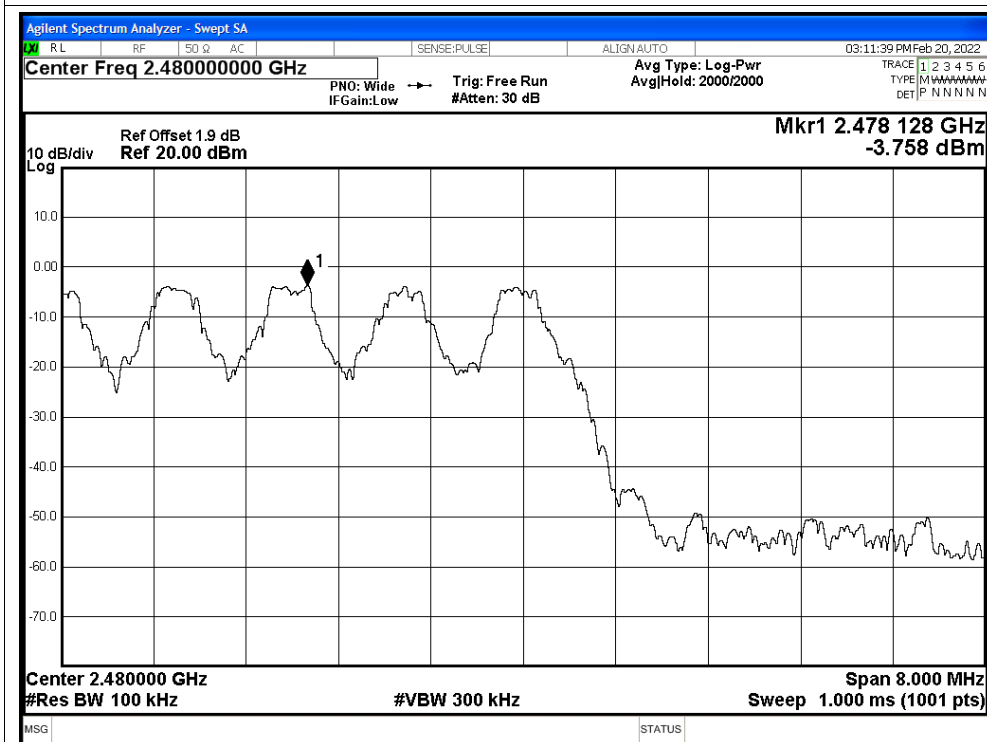


Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission

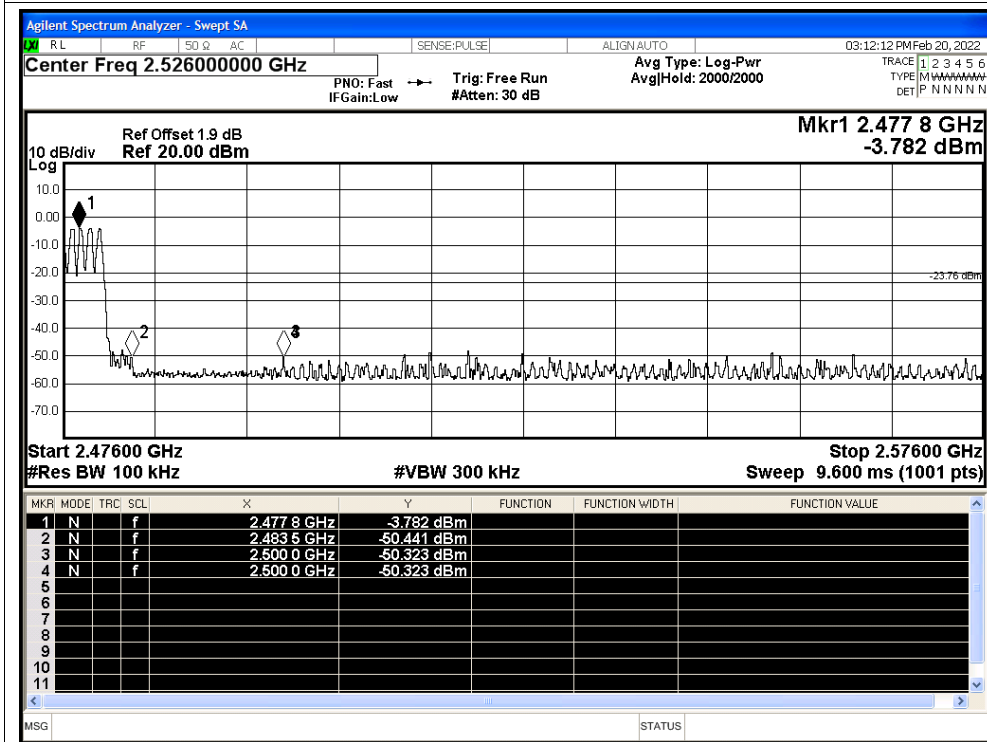




Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref

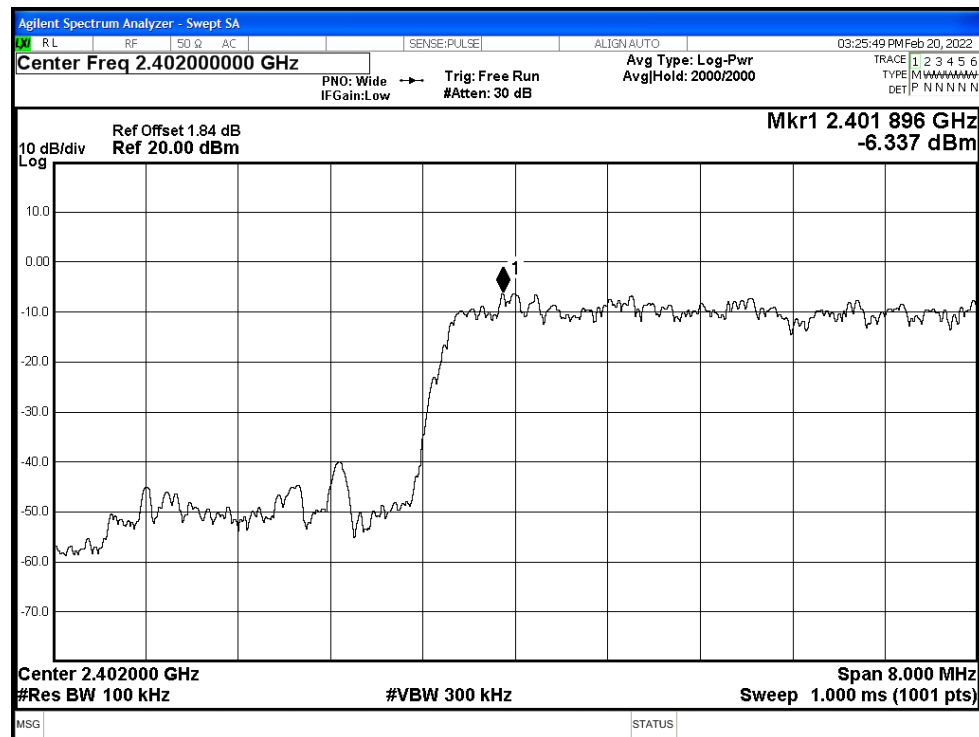


Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Emission

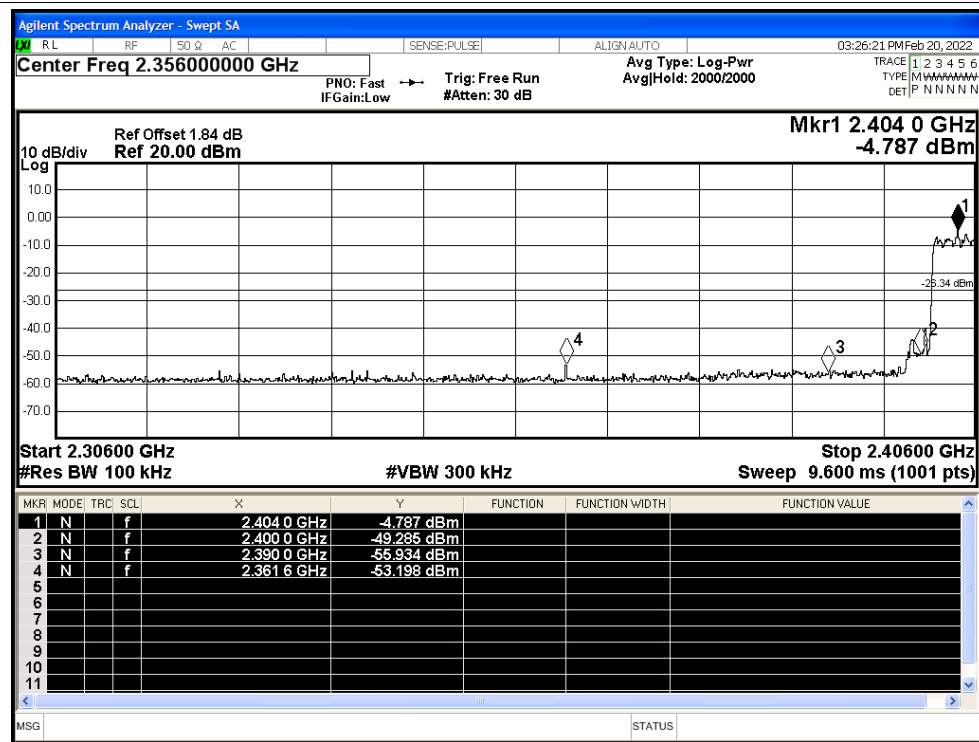




Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref

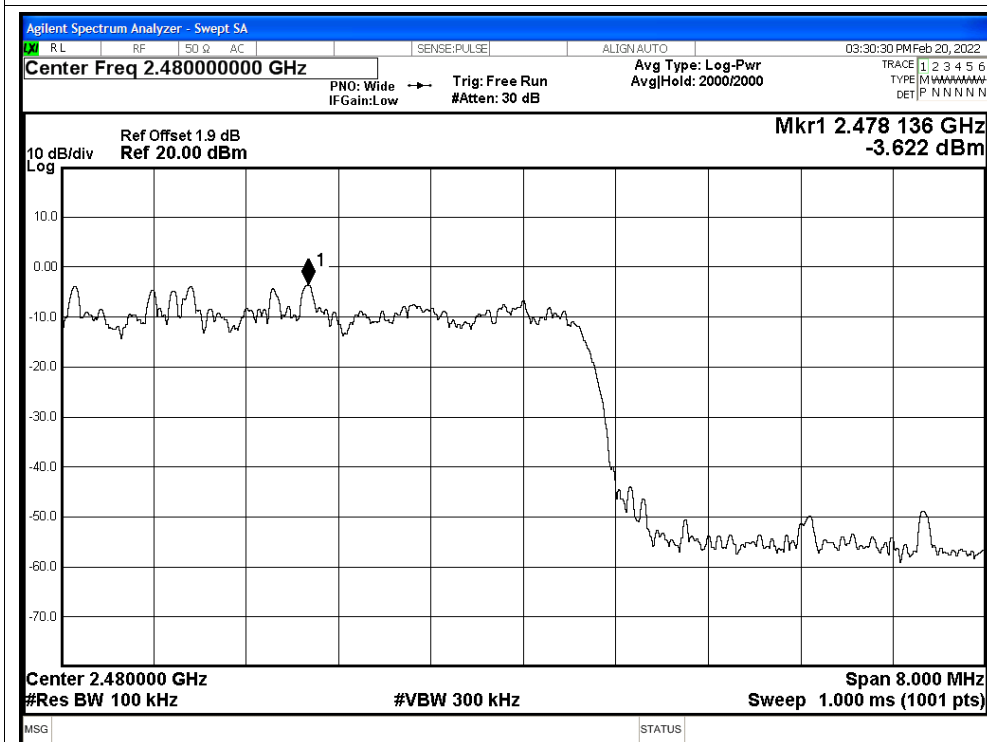


Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission

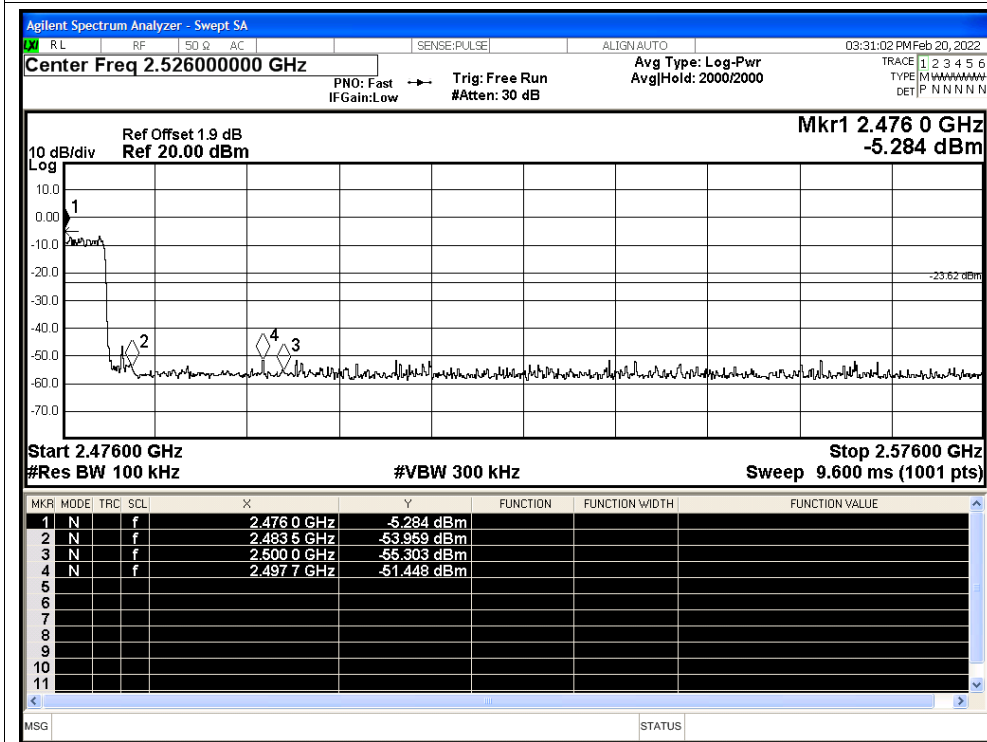




Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref

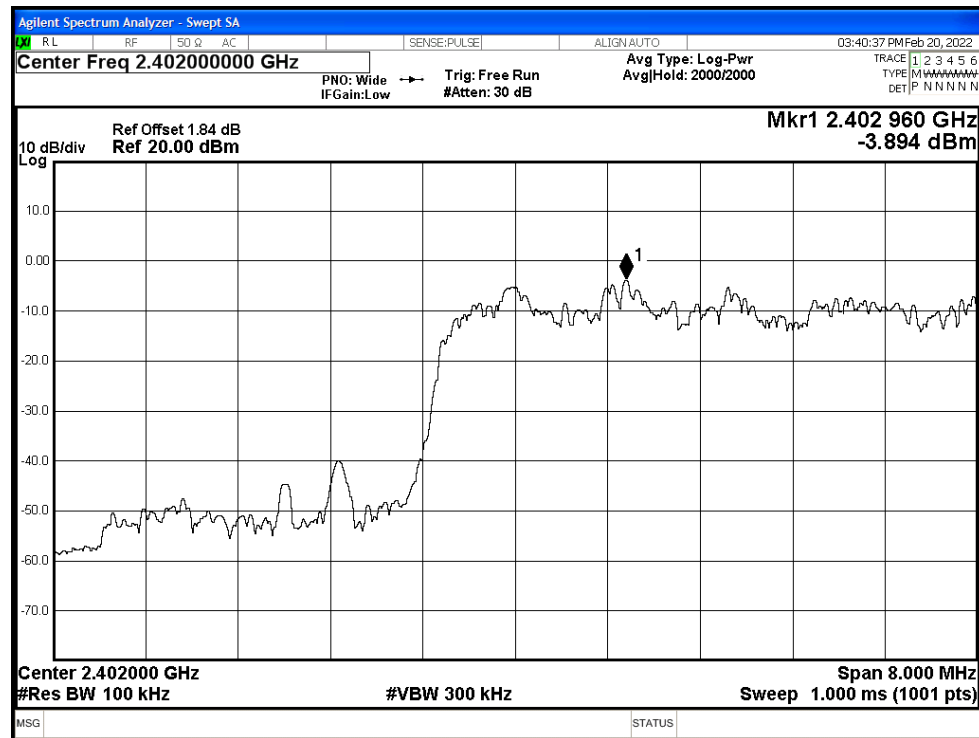


Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Emission

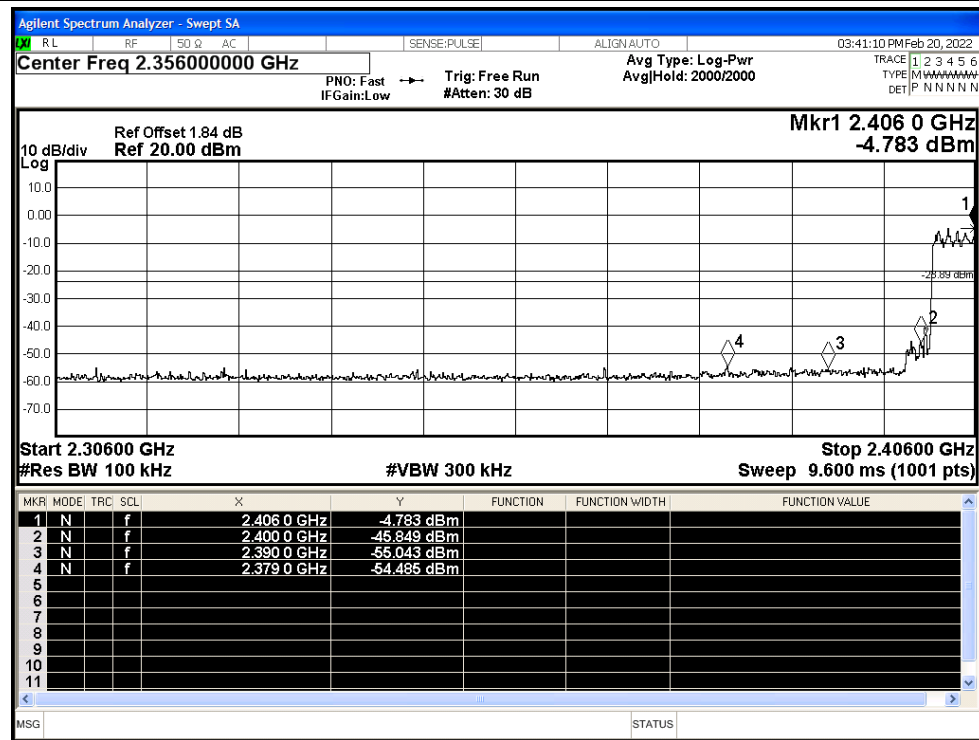




Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref

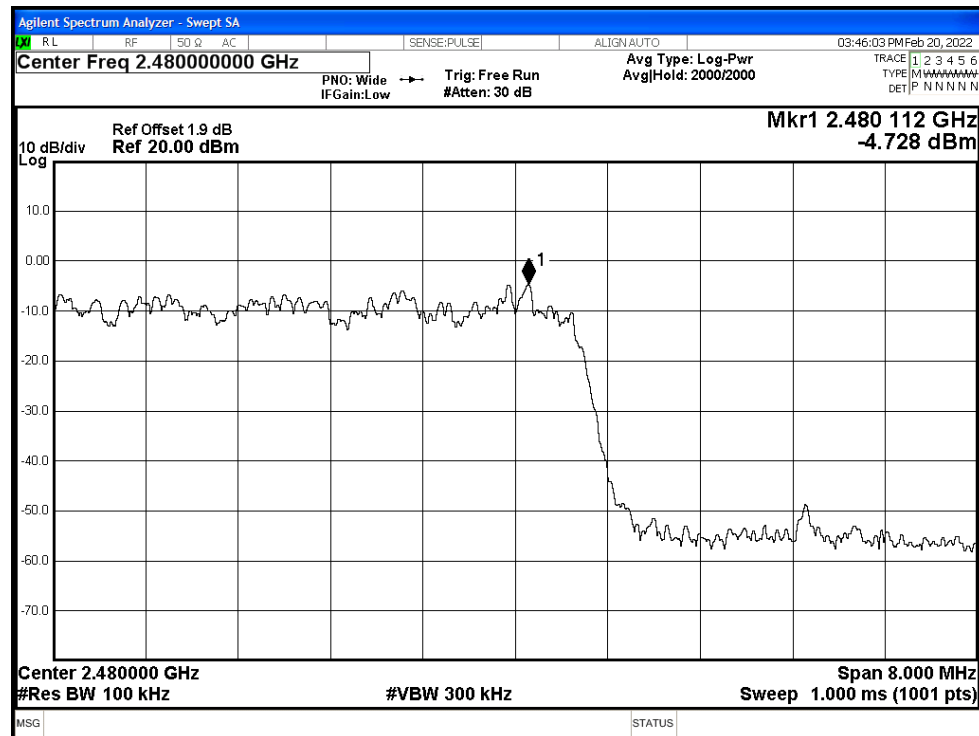


Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Emission

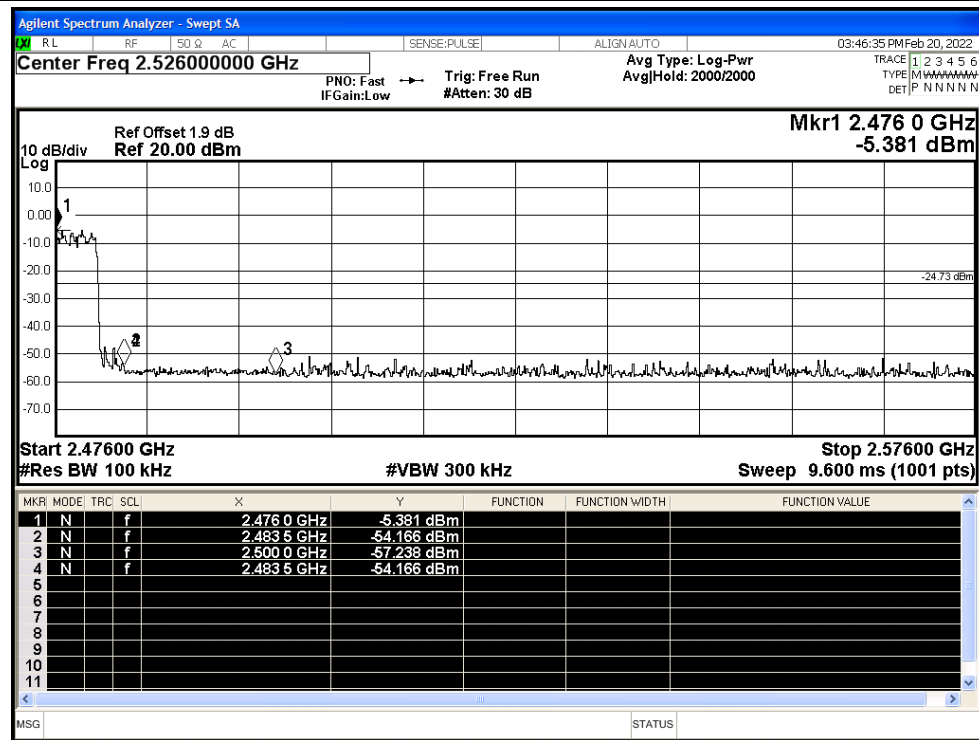




Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Ref



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





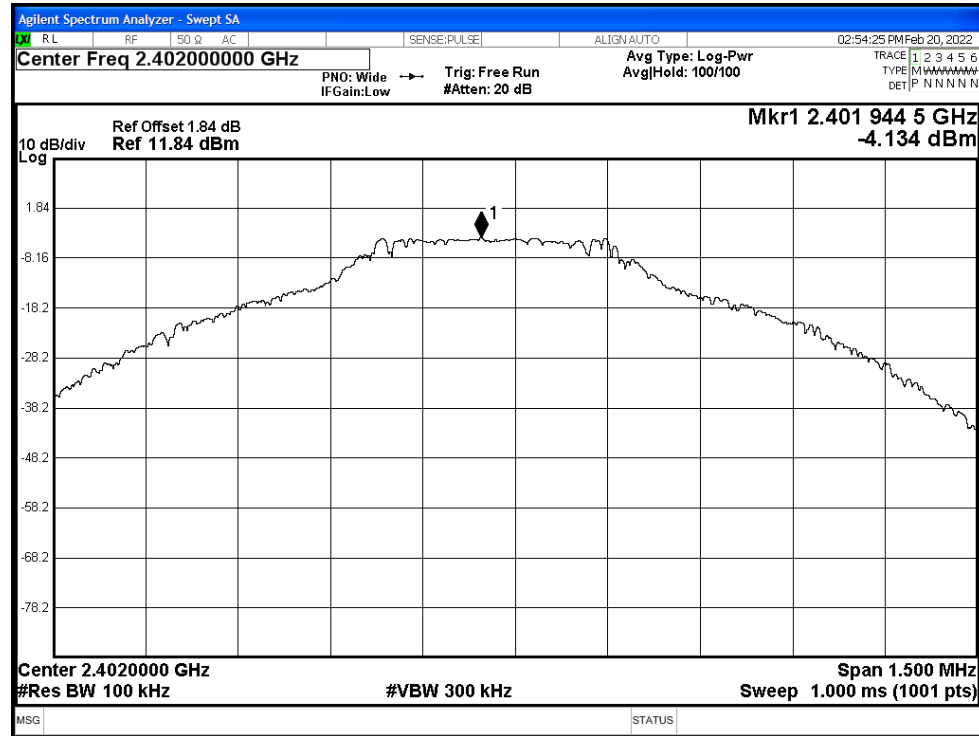
A.7 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-30.27	-20	Pass
NVNT	1-DH5	2441	Ant1	-31.15	-20	Pass
NVNT	1-DH5	2480	Ant1	-30.69	-20	Pass
NVNT	2-DH5	2402	Ant1	-30.69	-20	Pass
NVNT	2-DH5	2441	Ant1	-31.16	-20	Pass
NVNT	2-DH5	2480	Ant1	-30.91	-20	Pass
NVNT	3-DH5	2402	Ant1	-29.85	-20	Pass
NVNT	3-DH5	2441	Ant1	-30.12	-20	Pass
NVNT	3-DH5	2480	Ant1	-31.4	-20	Pass

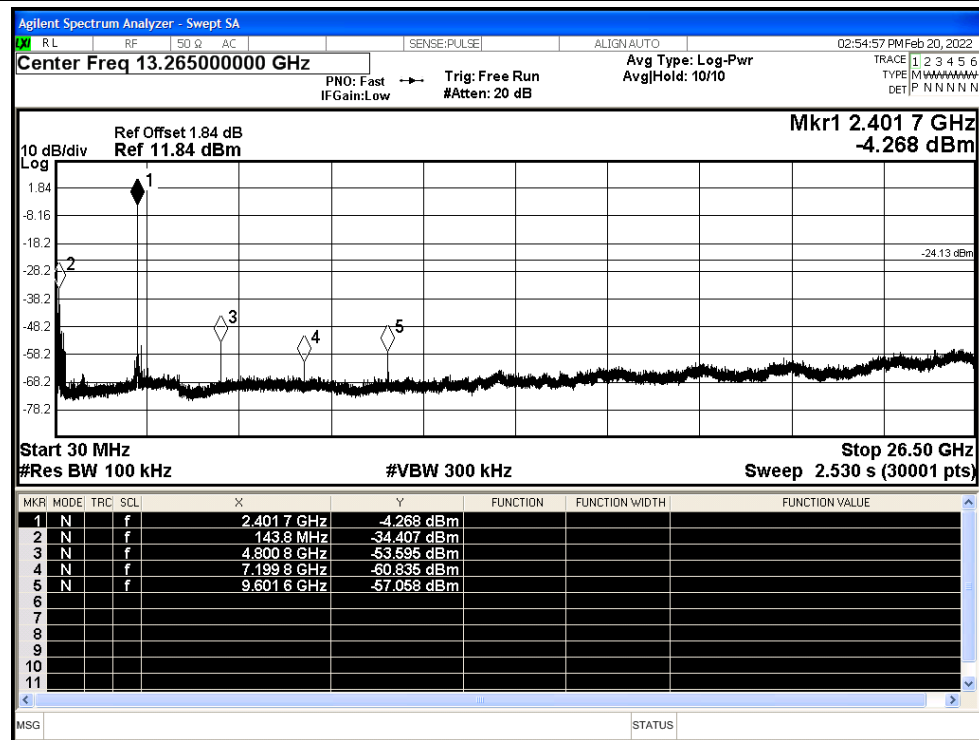


Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref

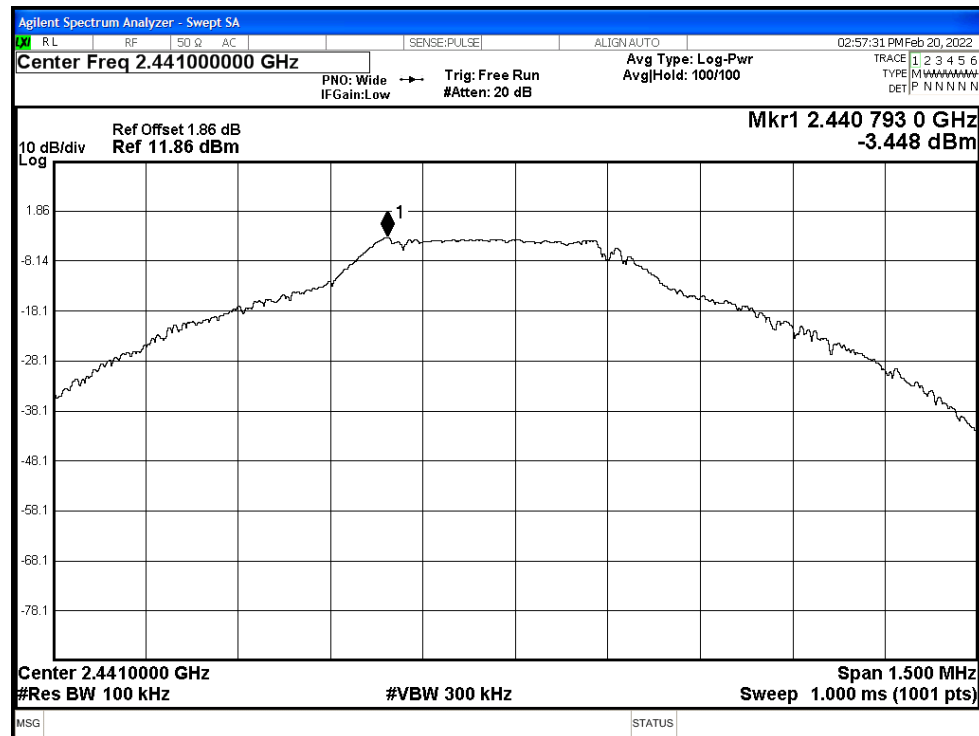


Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission

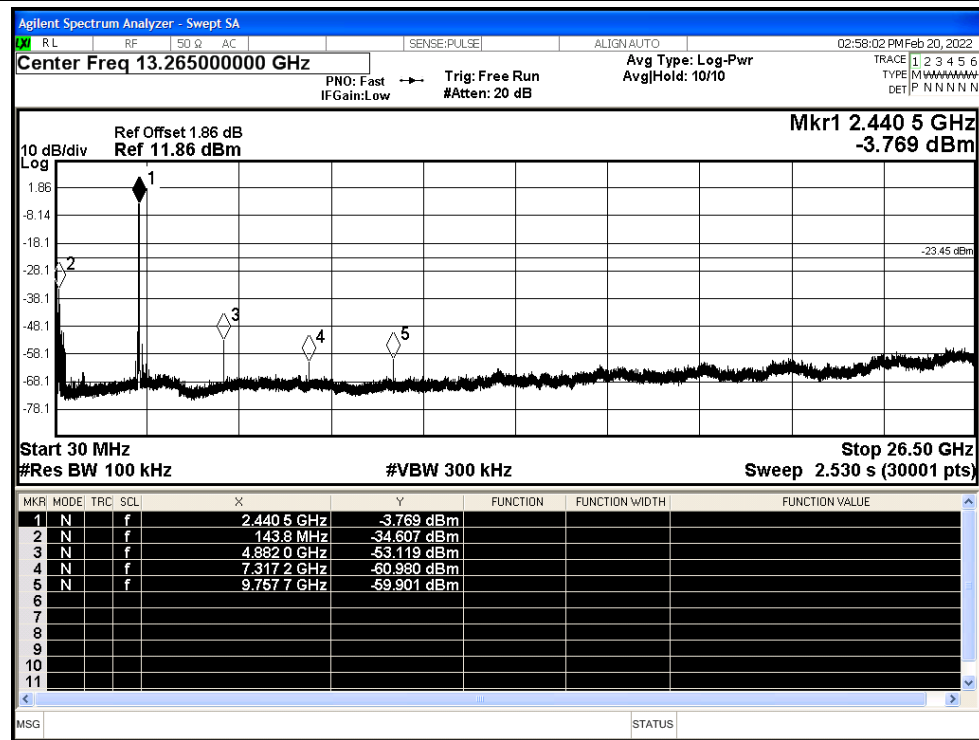




Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Ref

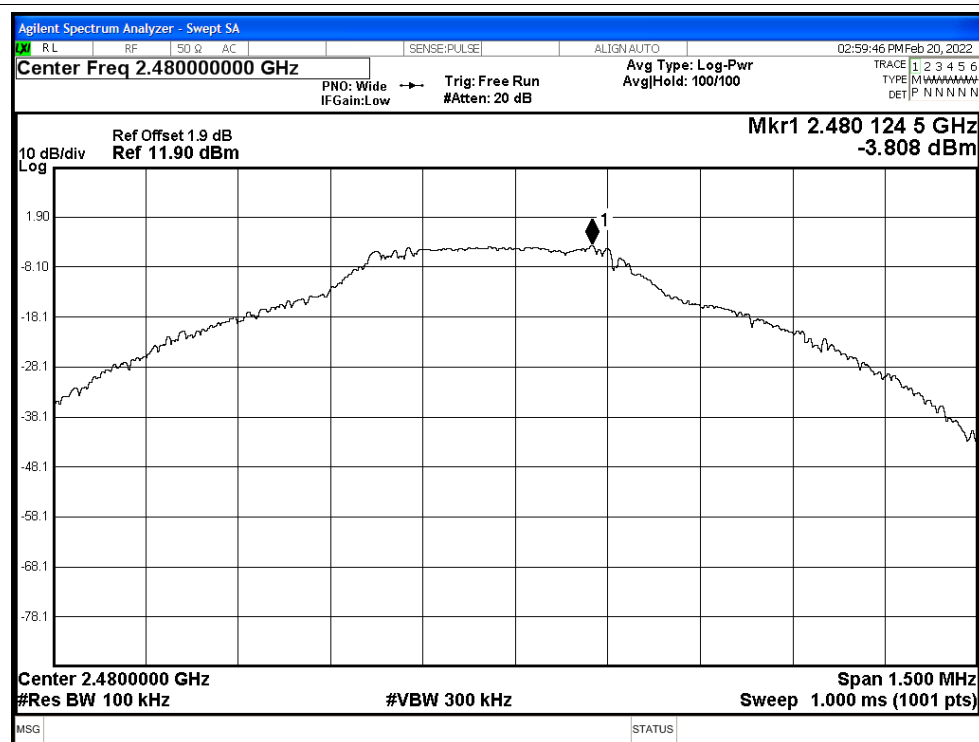


Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission

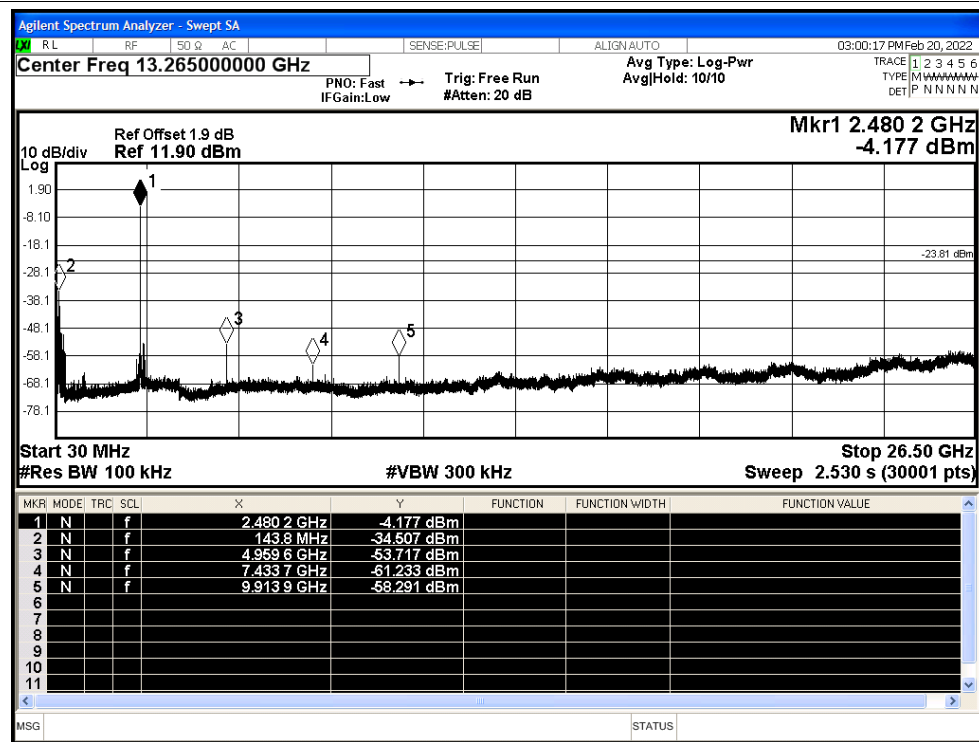




Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref

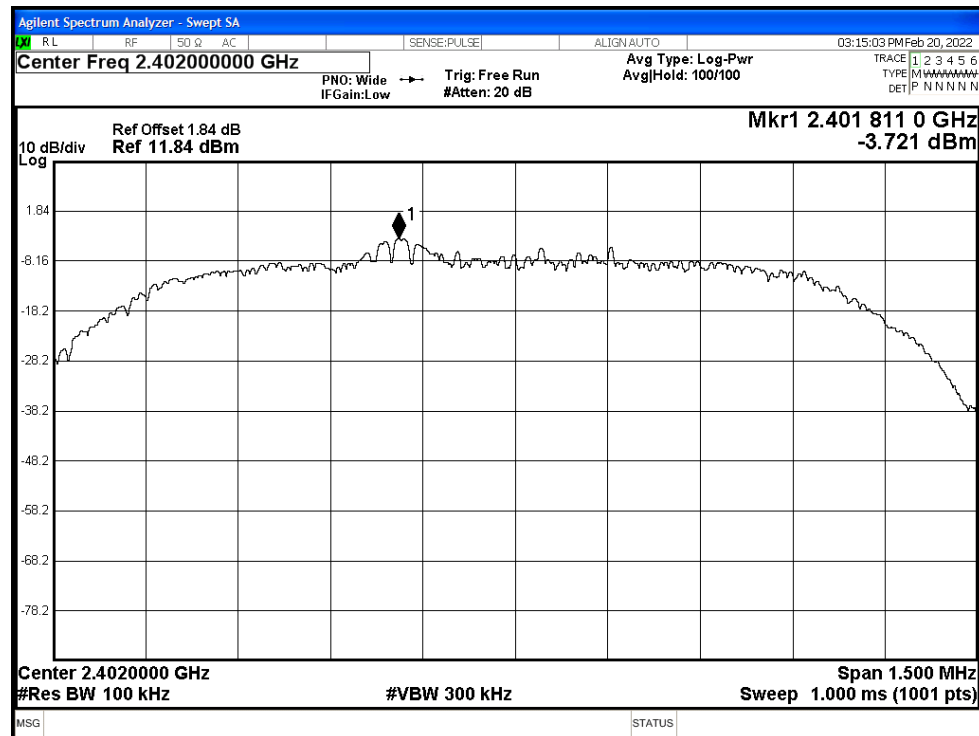


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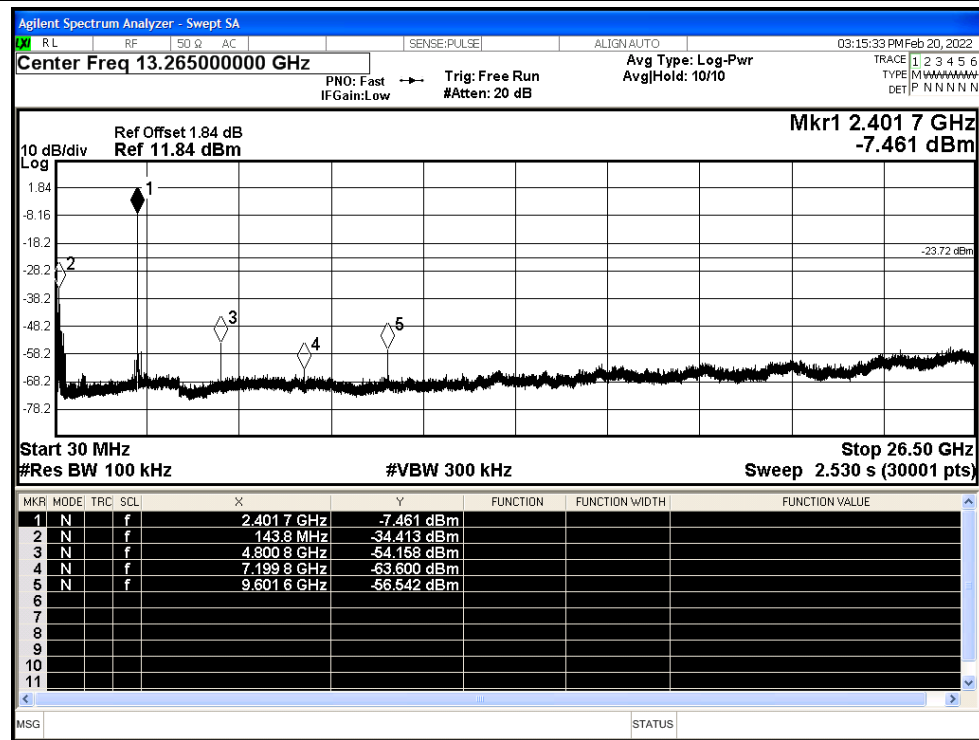




Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref

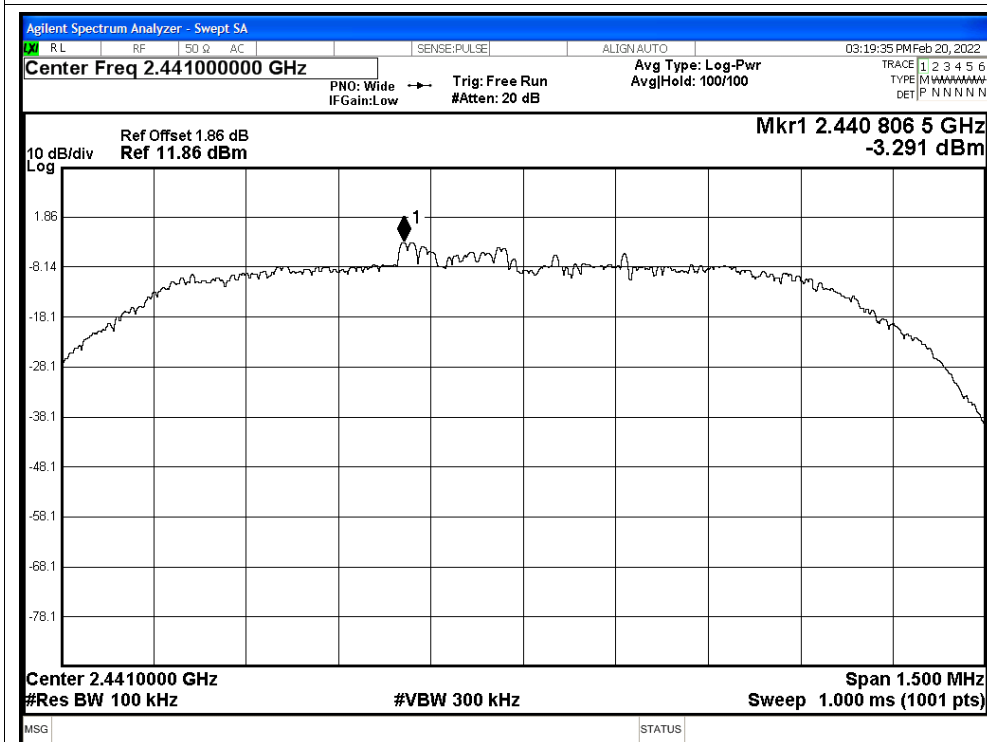


Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Emission

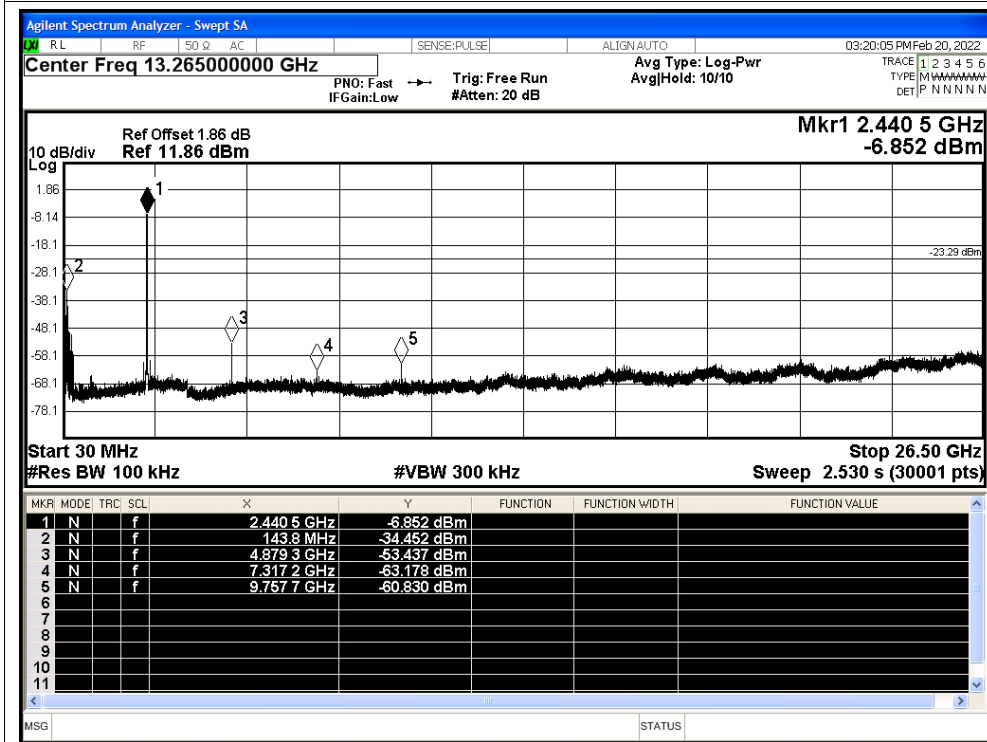




Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Ref

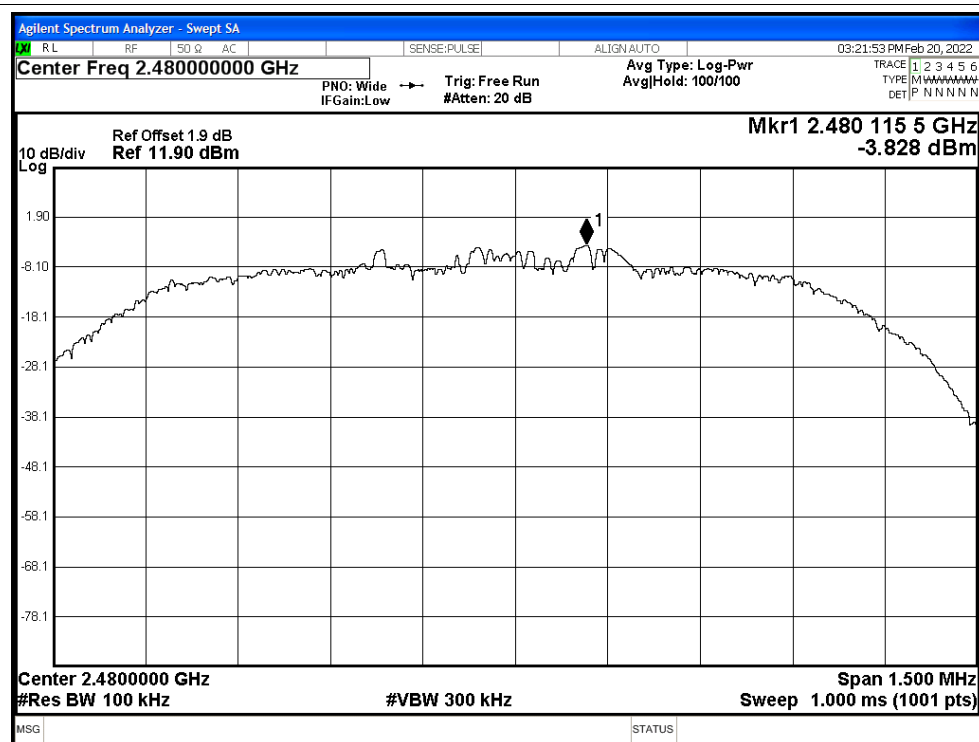


Tx. Spurious NVNT 2-DH5 2441MHz Ant1 Emission

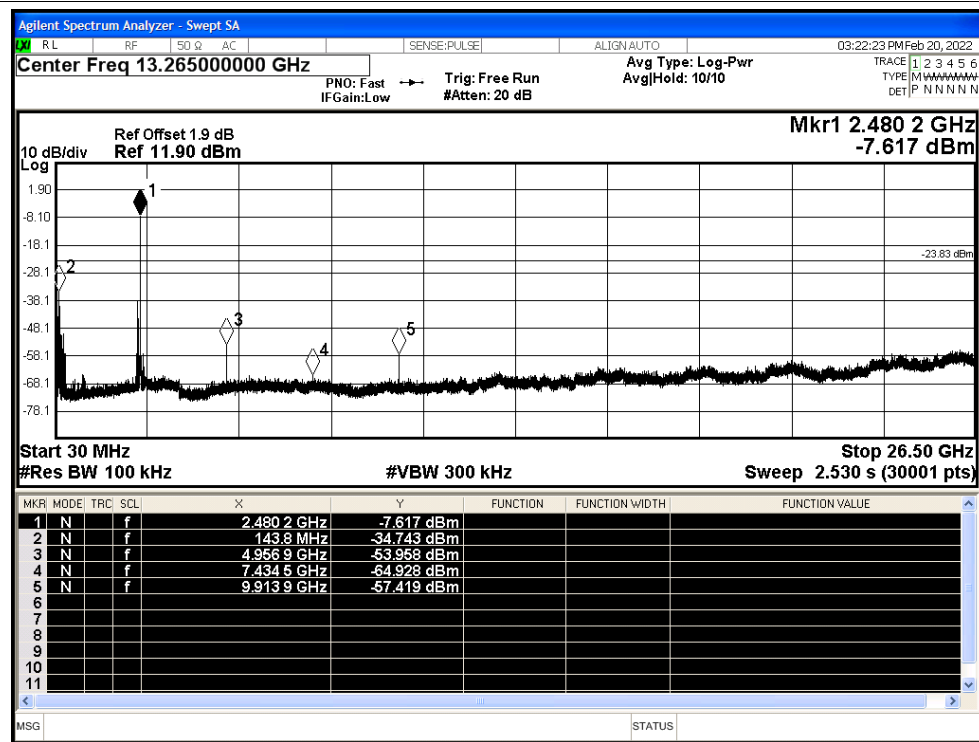




Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref

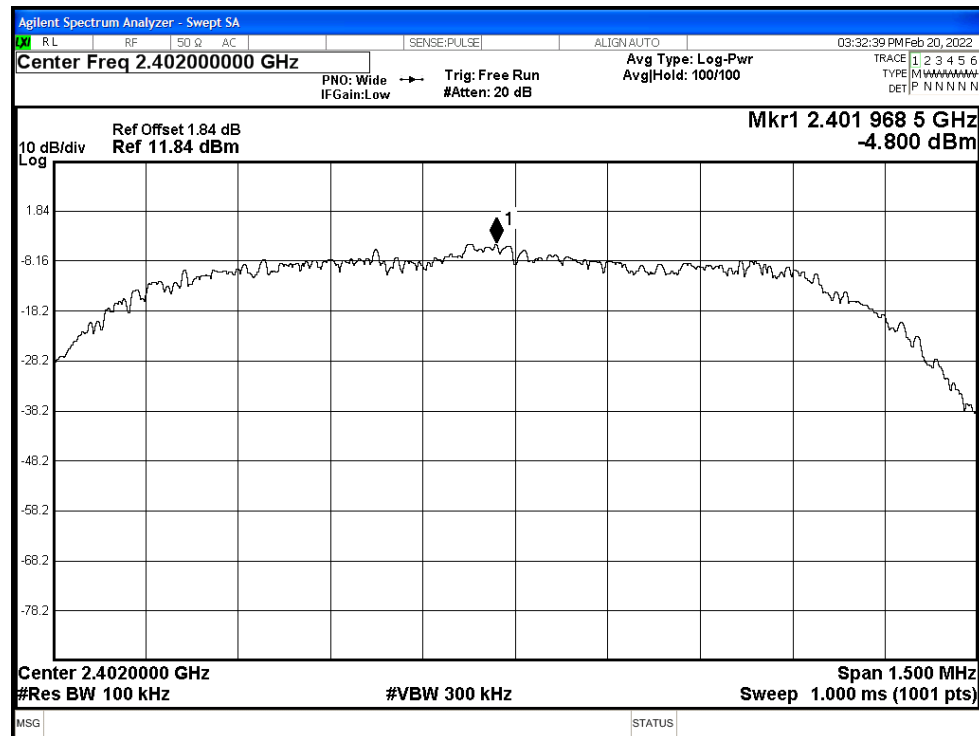


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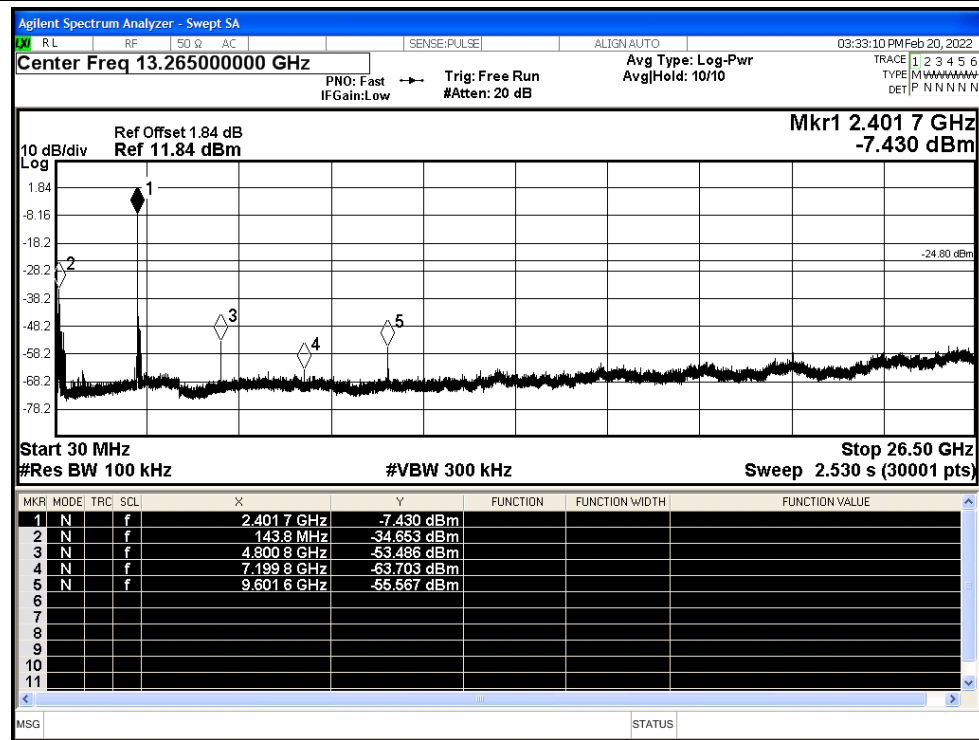




Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref

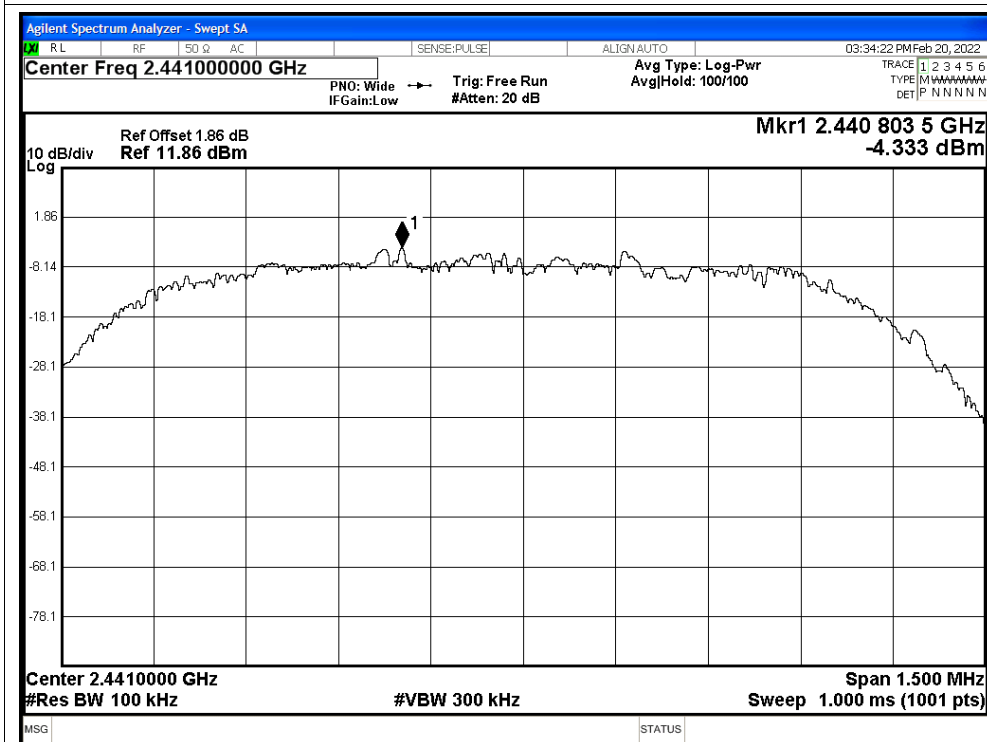


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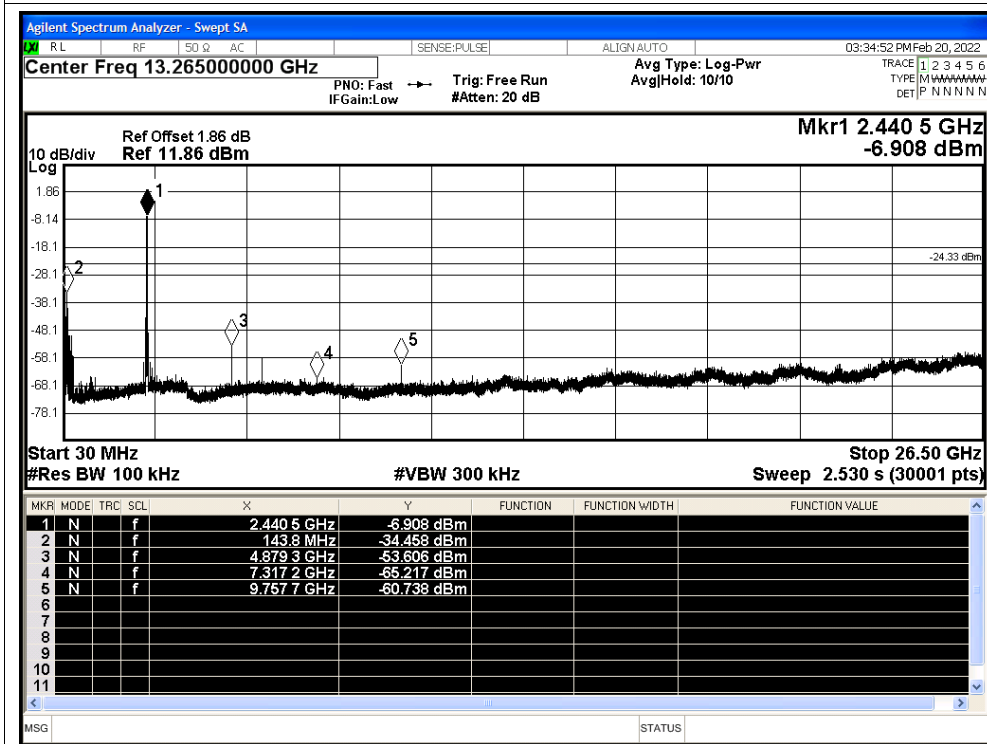




Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref

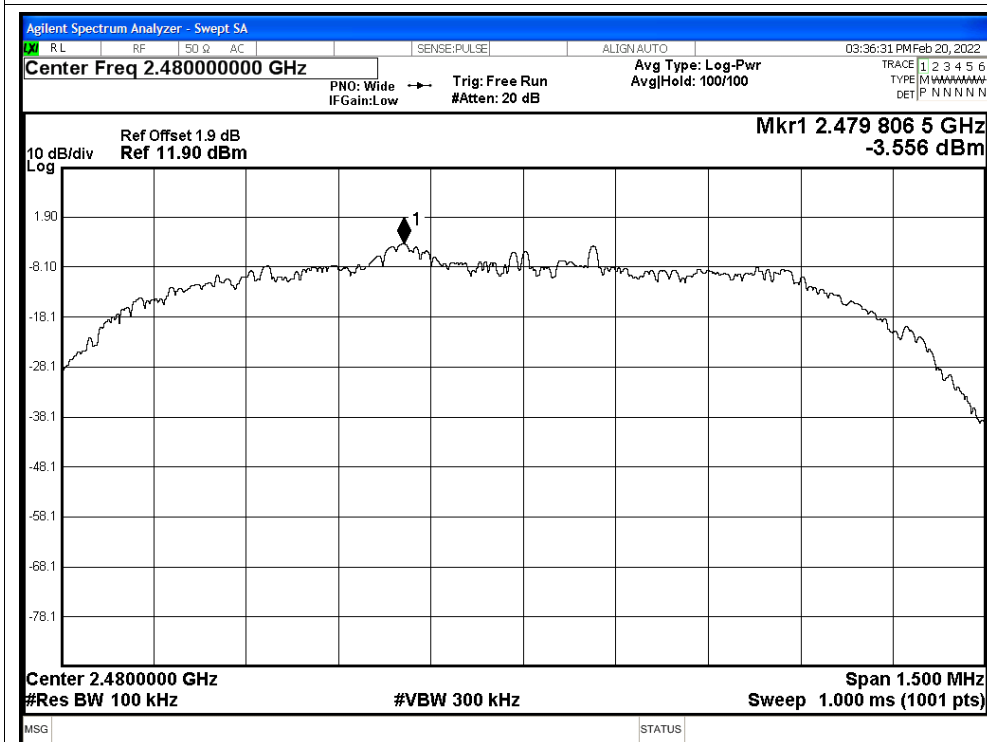


Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission

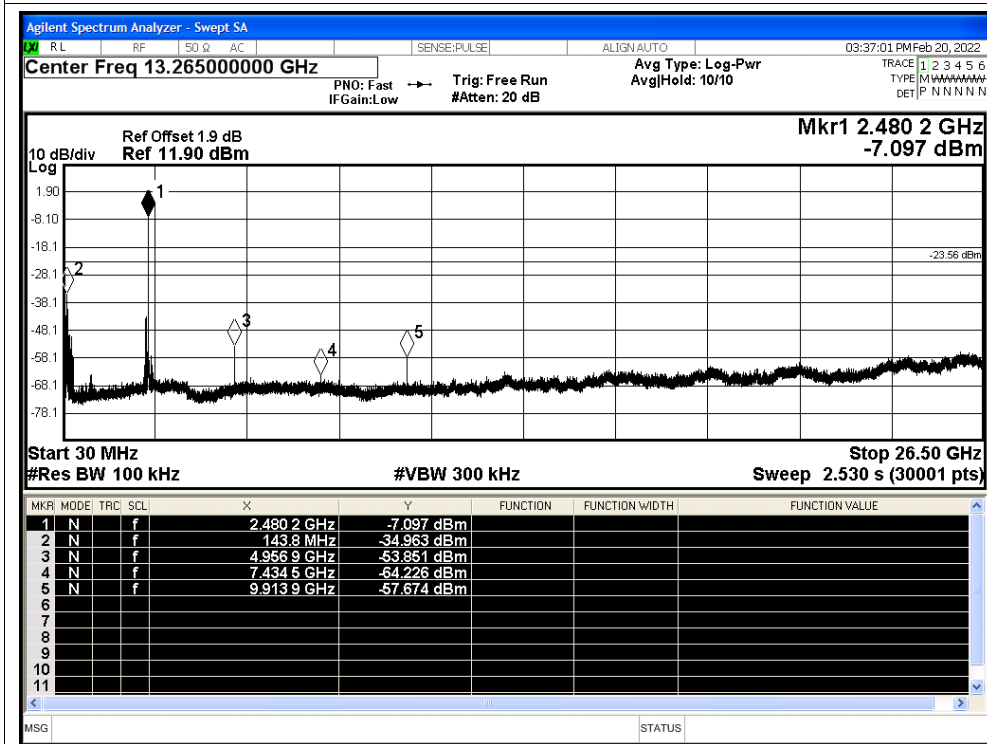




Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission





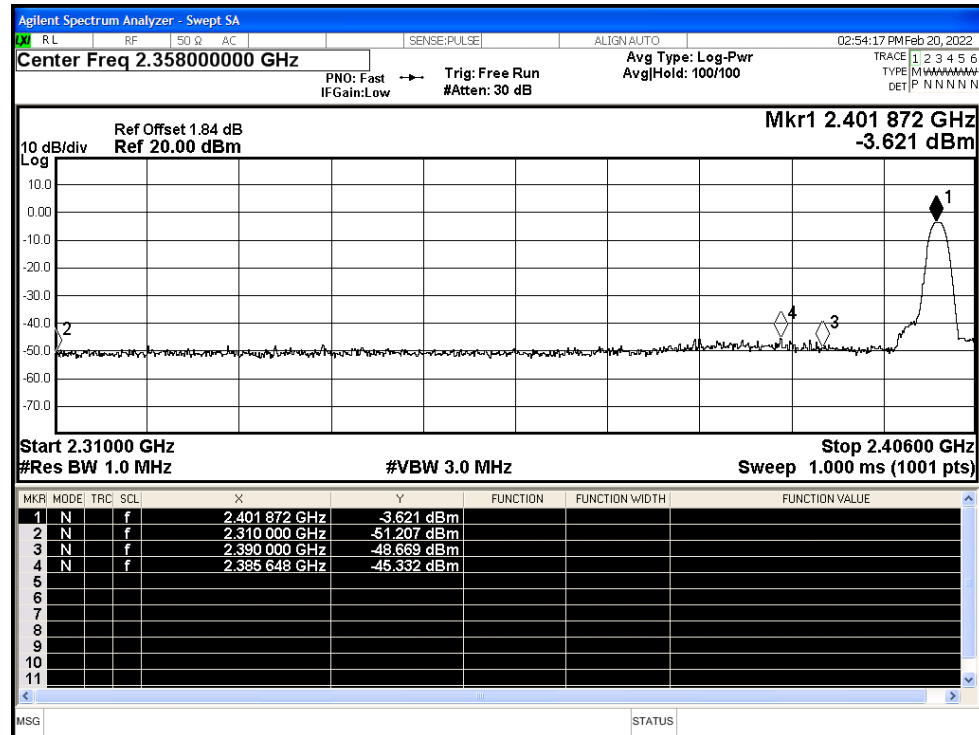
A.8 Emissions at Restricted Band

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-51.2	2	46.06	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-60.74	2	36.52	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2385.648	-45.33	2	51.93	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2380.752	-57.49	2	39.77	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-48.85	2	48.41	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-58.37	2	38.89	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-44.94	2	52.32	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-52.26	2	45	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.608	-44.27	2	52.99	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.512	-52.26	2	45	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-47.89	2	49.37	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-57.19	2	40.07	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-51.78	2	45.48	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-60.68	2	36.58	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2384.784	-45.05	2	52.21	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2381.04	-57.36	2	39.9	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-47.66	2	49.6	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-58.28	2	38.98	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-45.75	2	51.51	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-54.75	2	42.51	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.56	-44.01	2	53.25	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.512	-54.75	2	42.51	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-47.98	2	49.28	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-56.94	2	40.32	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-51.51	2	45.75	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-60.59	2	36.67	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2382.672	-45.83	2	51.43	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2382.864	-57.48	2	39.78	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-47.12	2	50.14	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-58.4	2	38.86	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-44.39	2	52.87	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-54.72	2	42.54	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.536	-44.21	2	53.05	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.512	-54.72	2	42.54	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-47.2	2	50.06	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-57.13	2	40.13	Average	54	Pass

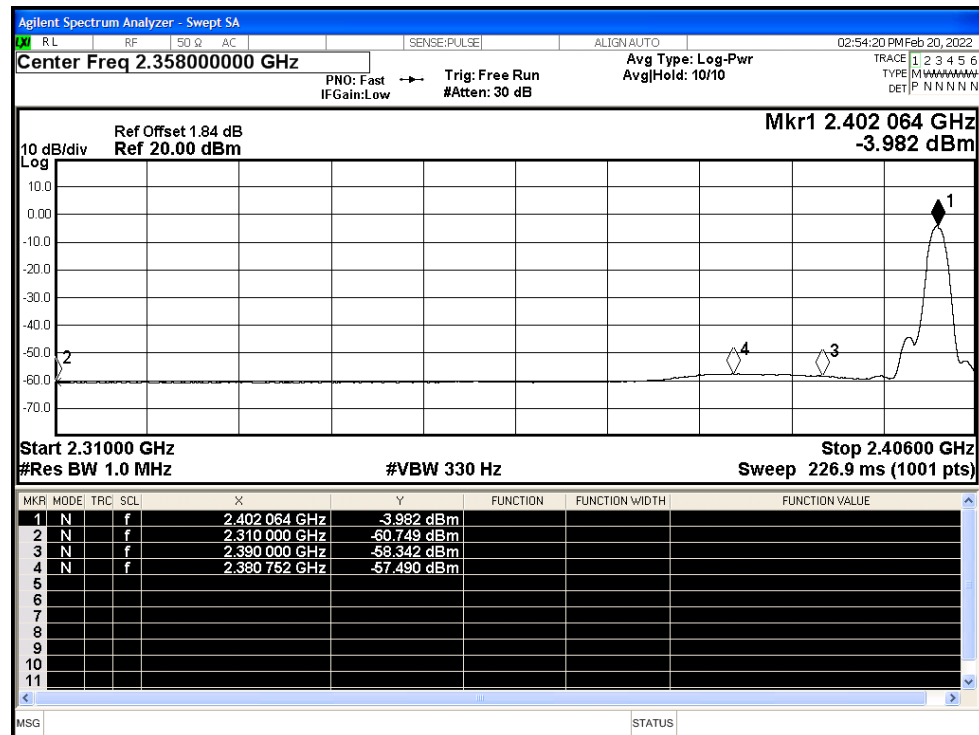


Test Graphs

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

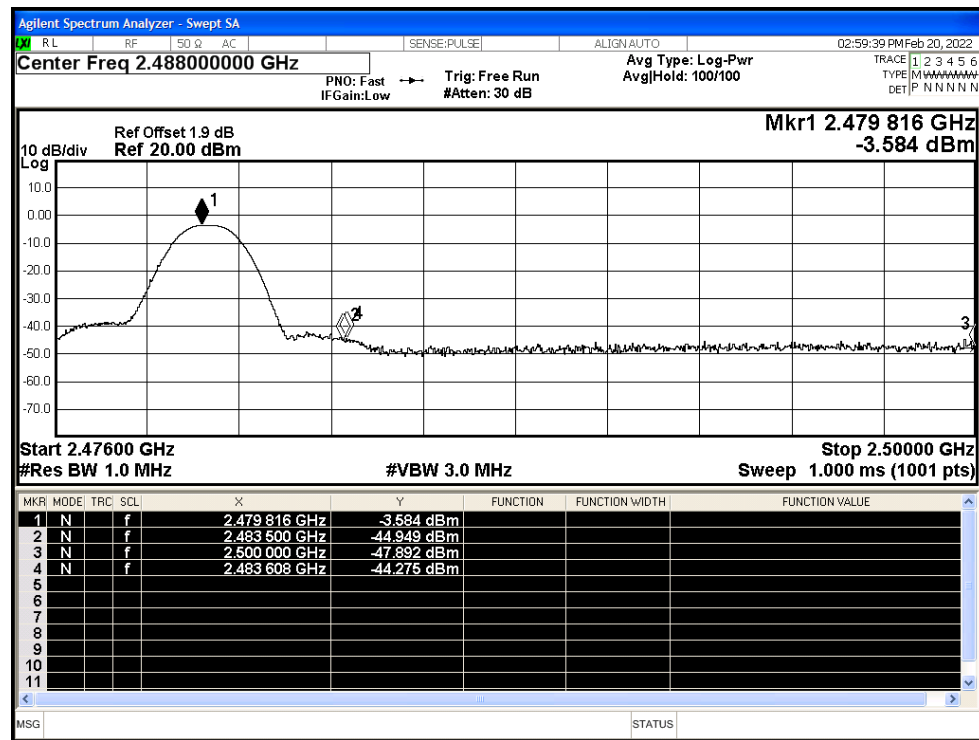


Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Average

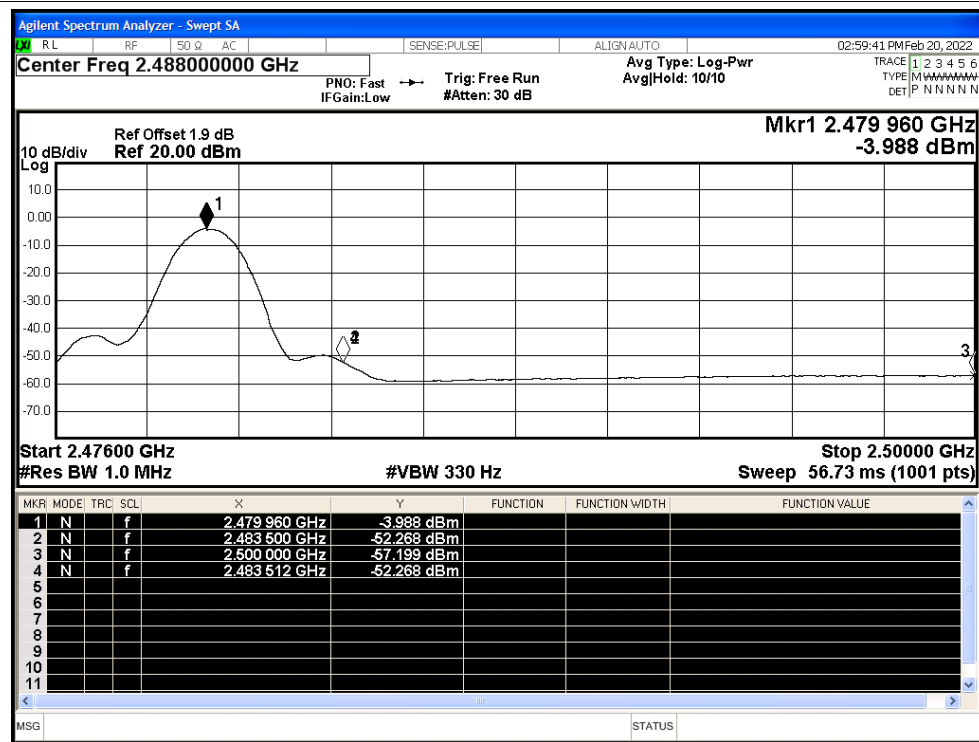




Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak

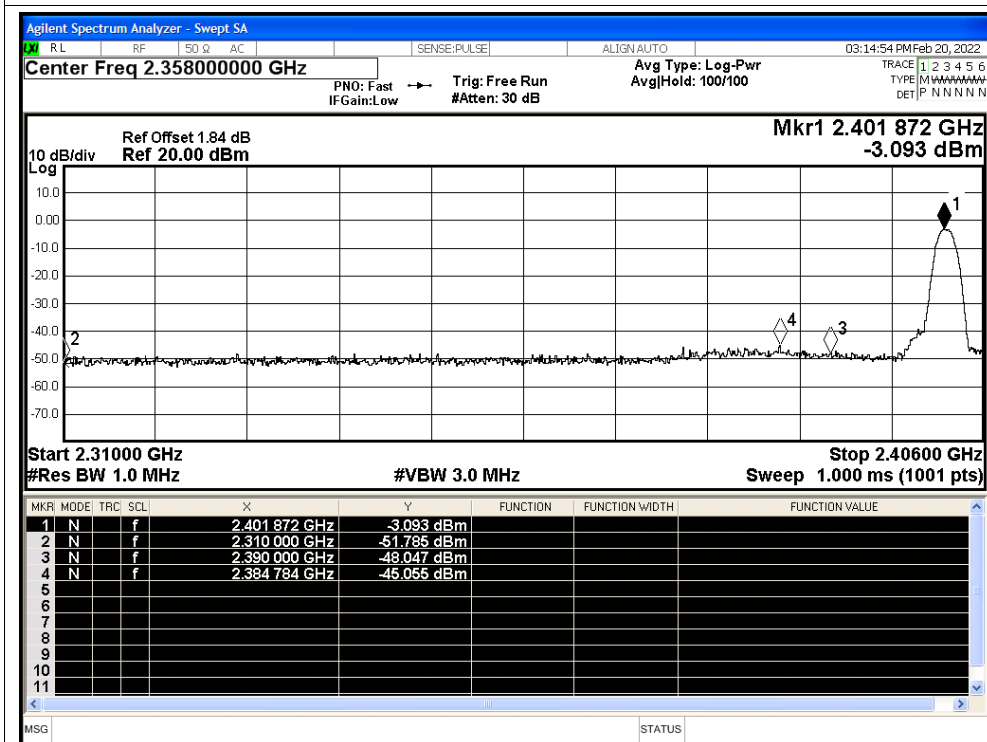


Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average

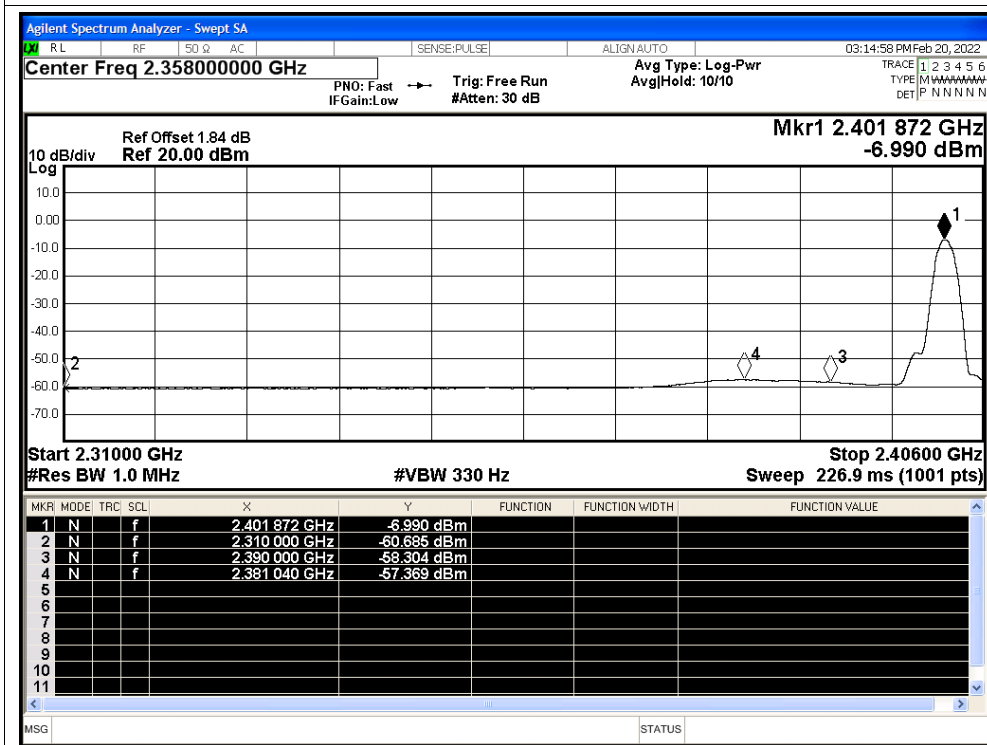




Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak

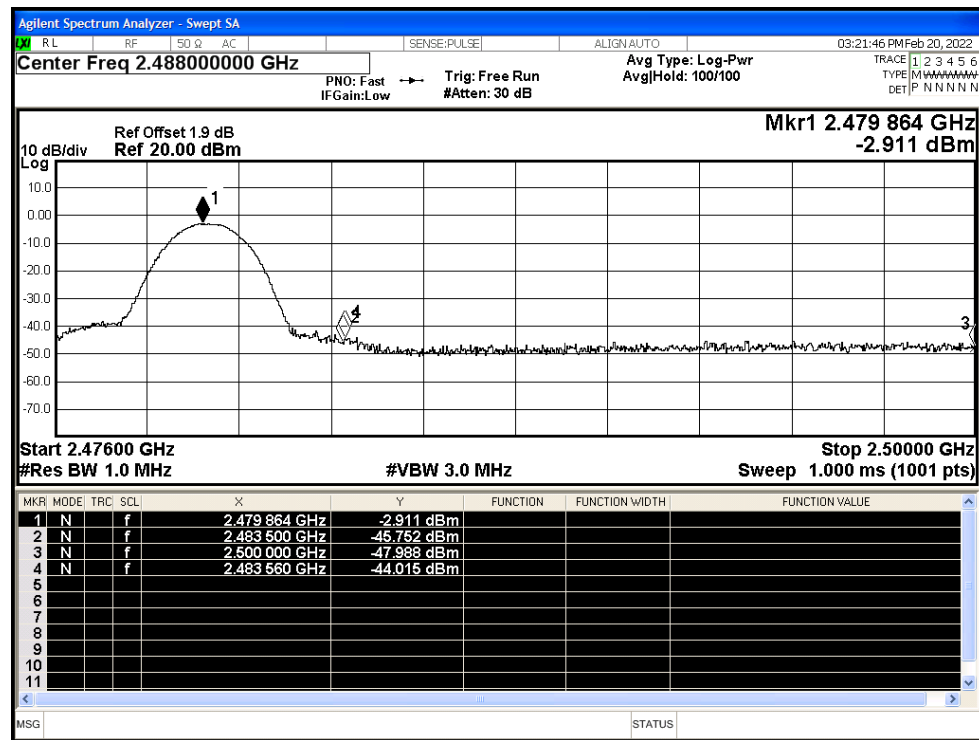


Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average

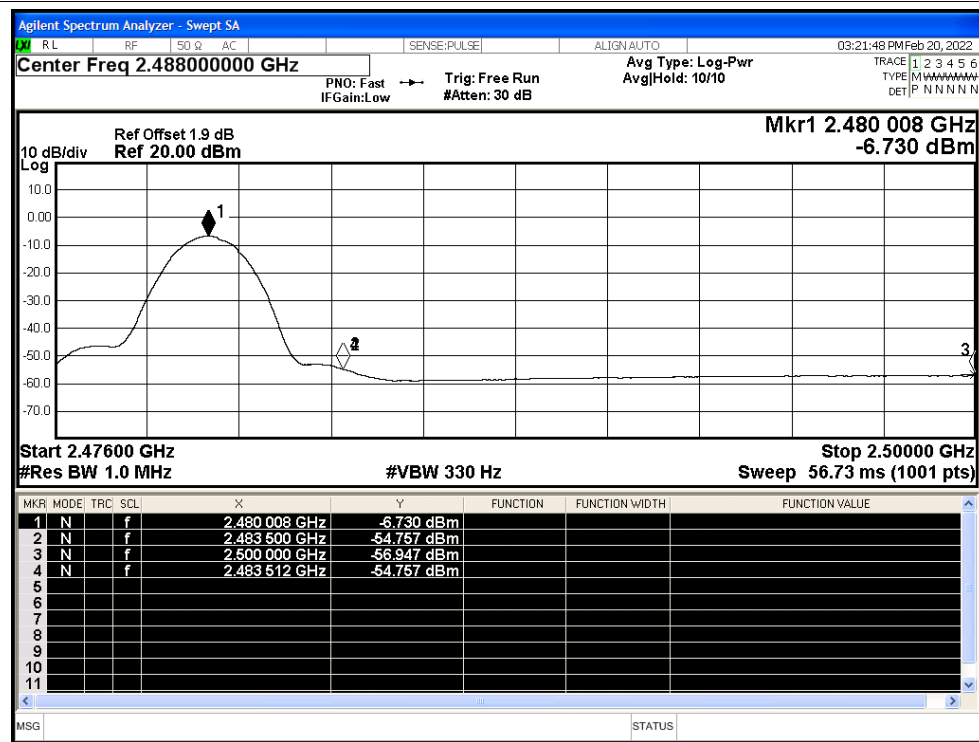




Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Peak

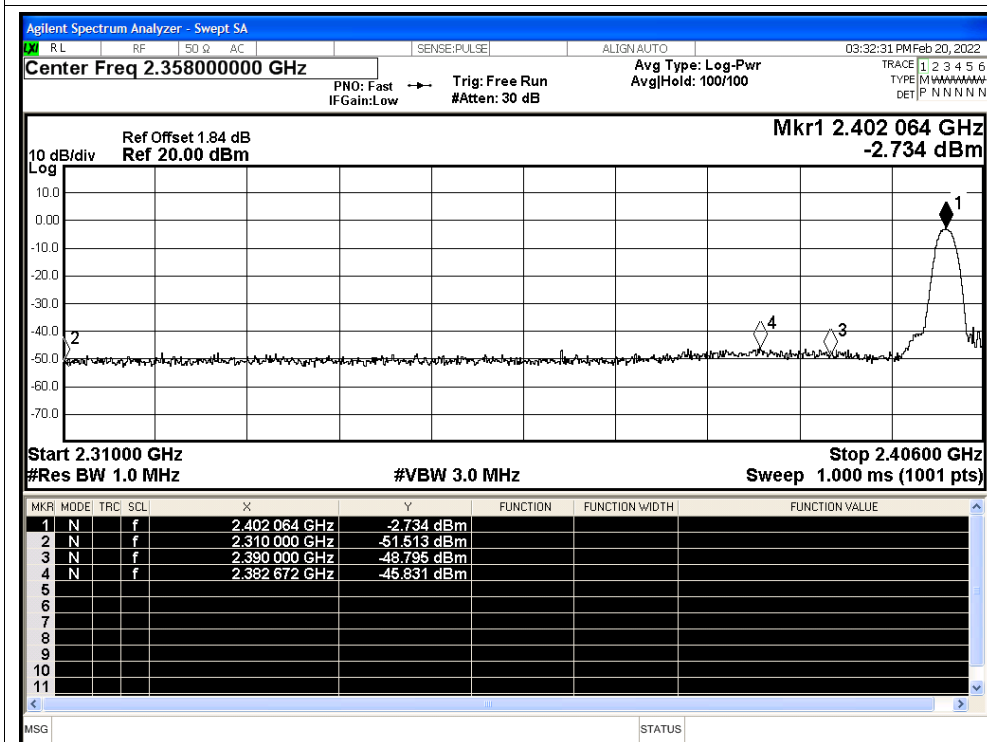


Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Average

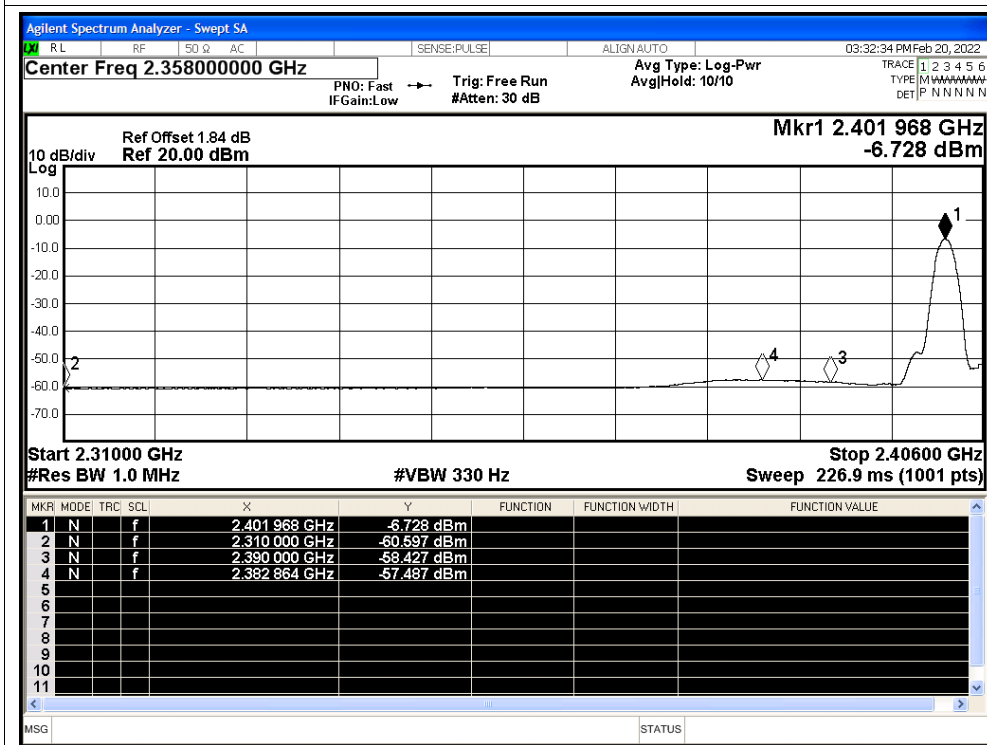




Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak

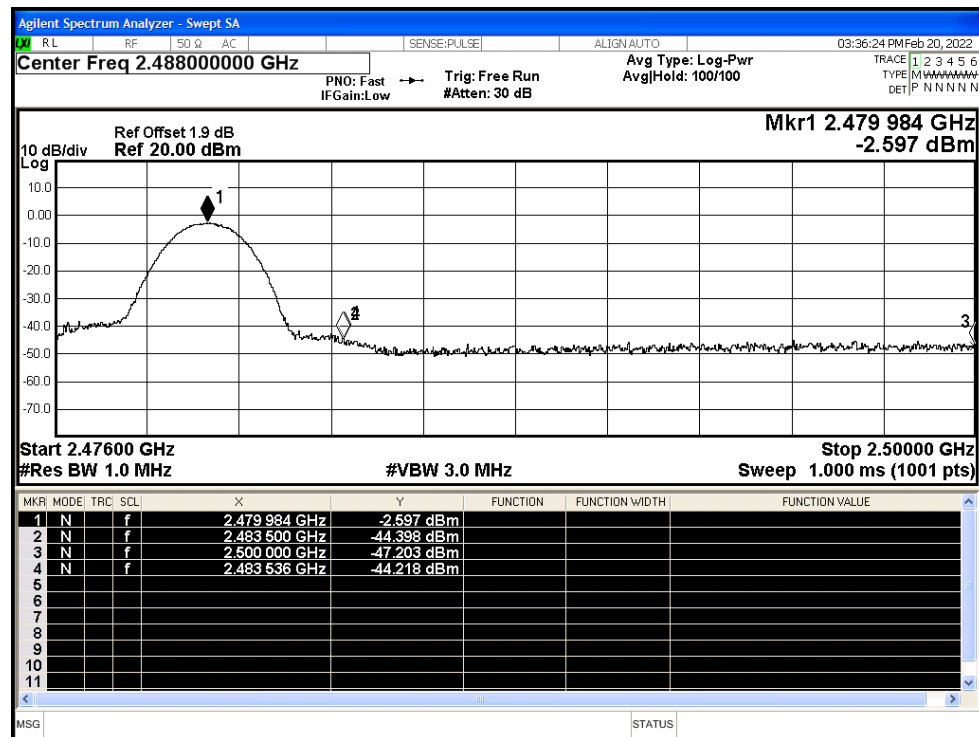


Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Average





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



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

