



Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Rainforest Floor Fountain w/ LED Lights and Bluetooth Speaker

Test Model: TZL199

Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Bill 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	1.019	0	Pass
NVNT	1-DH5	2441	Ant1	0.985	0	Pass
NVNT	1-DH5	2480	Ant1	1.018	0	Pass
NVNT	2-DH5	2402	Ant1	1.314	0	Pass
NVNT	2-DH5	2441	Ant1	1.285	0	Pass
NVNT	2-DH5	2480	Ant1	1.276	0	Pass
NVNT	3-DH5	2402	Ant1	1.293	0	Pass
NVNT	3-DH5	2441	Ant1	1.3	0	Pass
NVNT	3-DH5	2480	Ant1	1.293	0	Pass

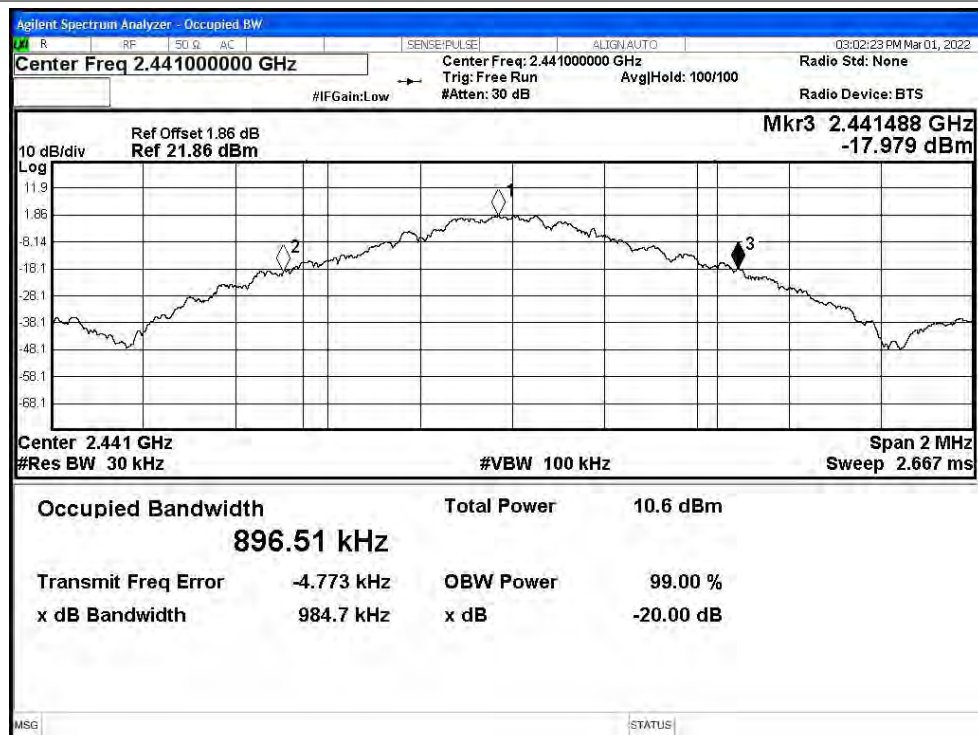


Test Graphs

-20dB Bandwidth NVNT 1-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 1-DH5 2441MHz Ant1





-20dB Bandwidth NVNT 1-DH5 2480MHz Ant1

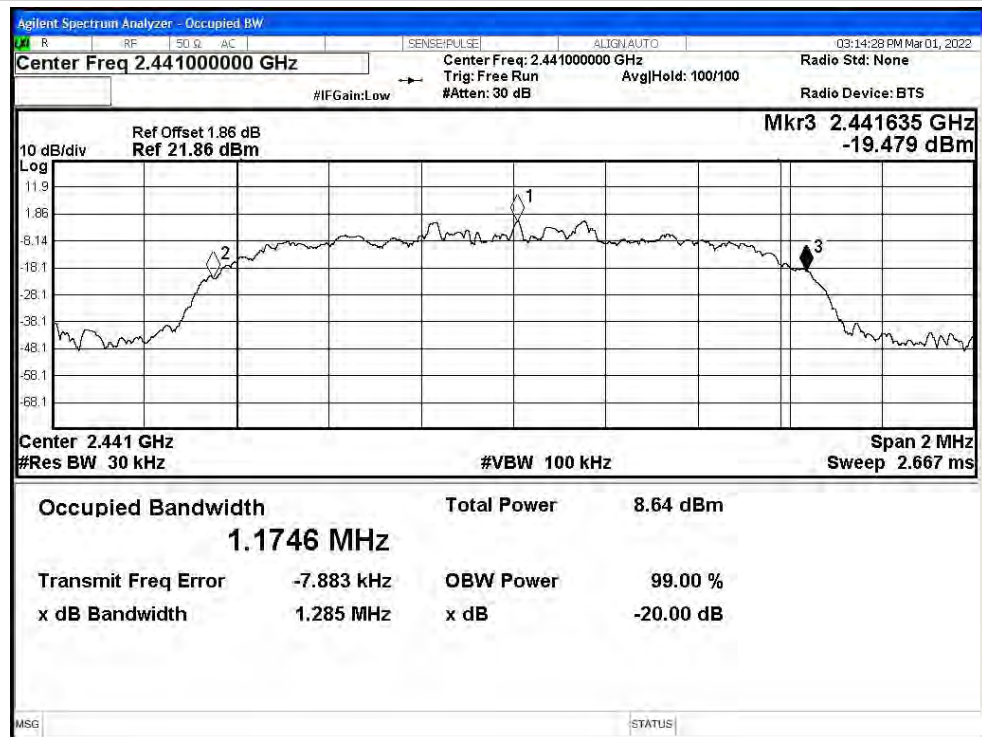


-20dB Bandwidth NVNT 2-DH5 2402MHz Ant1





-20dB Bandwidth NVNT 2-DH5 2441MHz Ant1

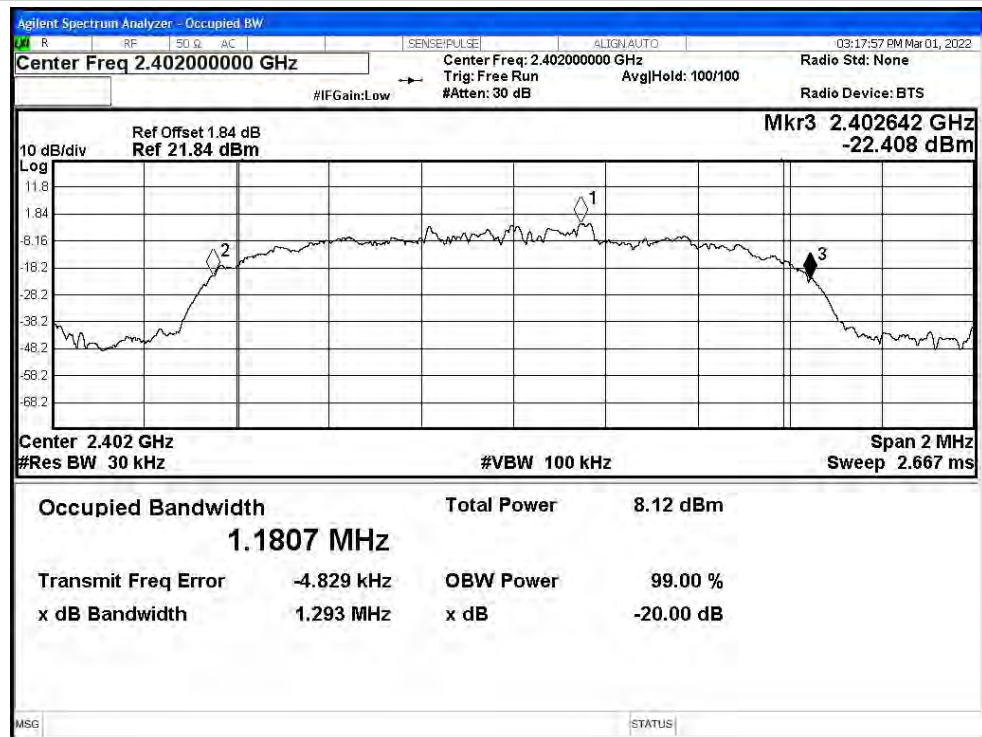


-20dB Bandwidth NVNT 2-DH5 2480MHz Ant1



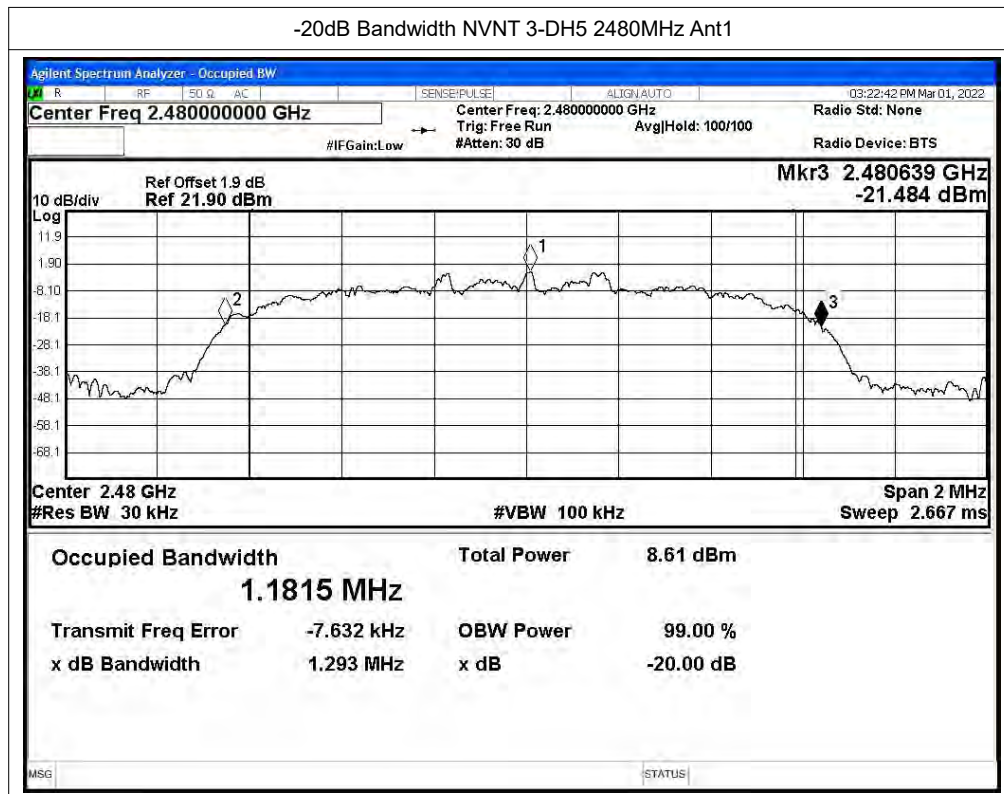


-20dB Bandwidth NVNT 3-DH5 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH5 2441MHz Ant1







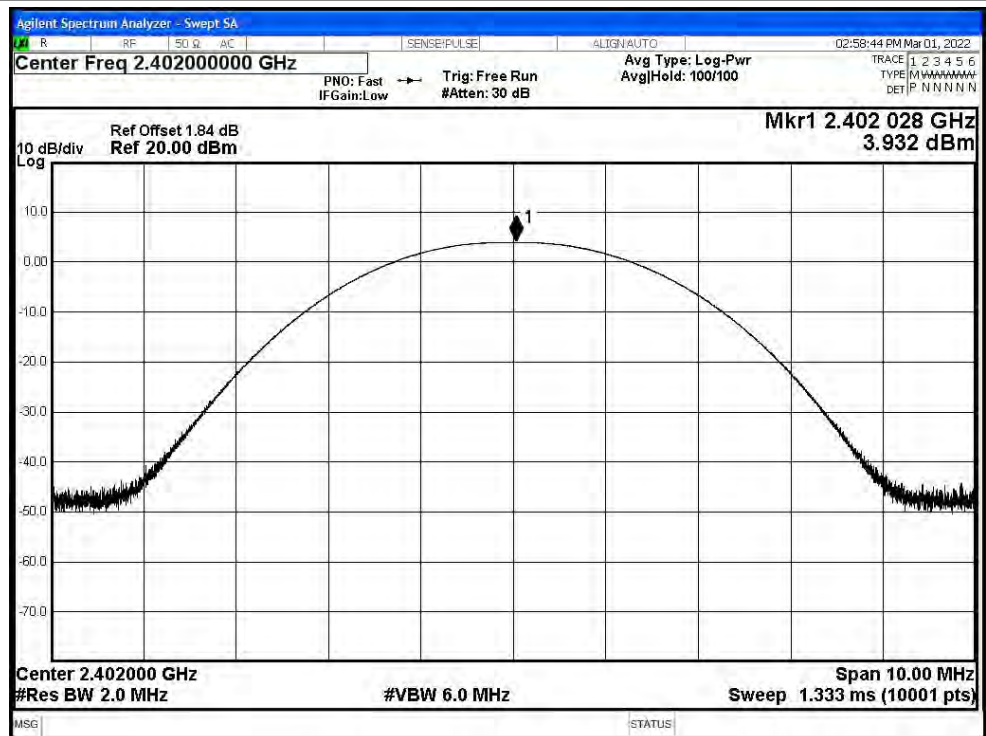
A.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	Ant1	3.93	0	3.93	21	Pass
NVNT	1-DH5	2441	Ant1	4.42	0	4.42	21	Pass
NVNT	1-DH5	2480	Ant1	4.06	0	4.06	21	Pass
NVNT	2-DH5	2402	Ant1	3.42	0	3.42	21	Pass
NVNT	2-DH5	2441	Ant1	3.85	0	3.85	21	Pass
NVNT	2-DH5	2480	Ant1	3.94	0	3.94	21	Pass
NVNT	3-DH5	2402	Ant1	3.58	0	3.58	21	Pass
NVNT	3-DH5	2441	Ant1	4.06	0	4.06	21	Pass
NVNT	3-DH5	2480	Ant1	4.14	0	4.14	21	Pass

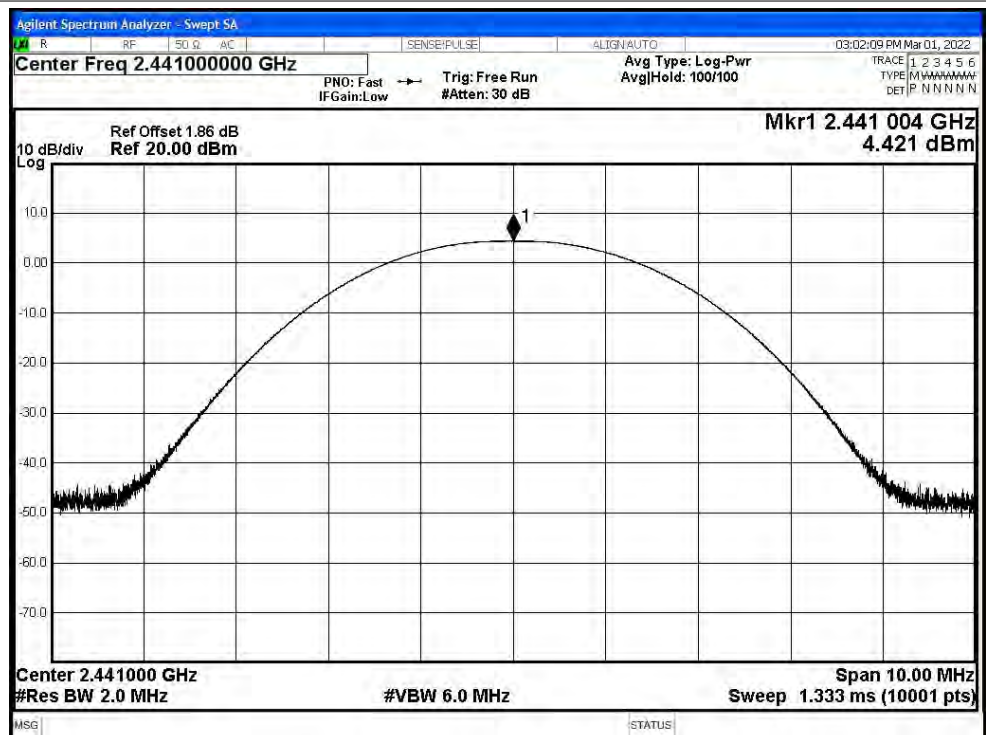


Test Graphs

Power NVNT 1-DH5 2402MHz Ant1

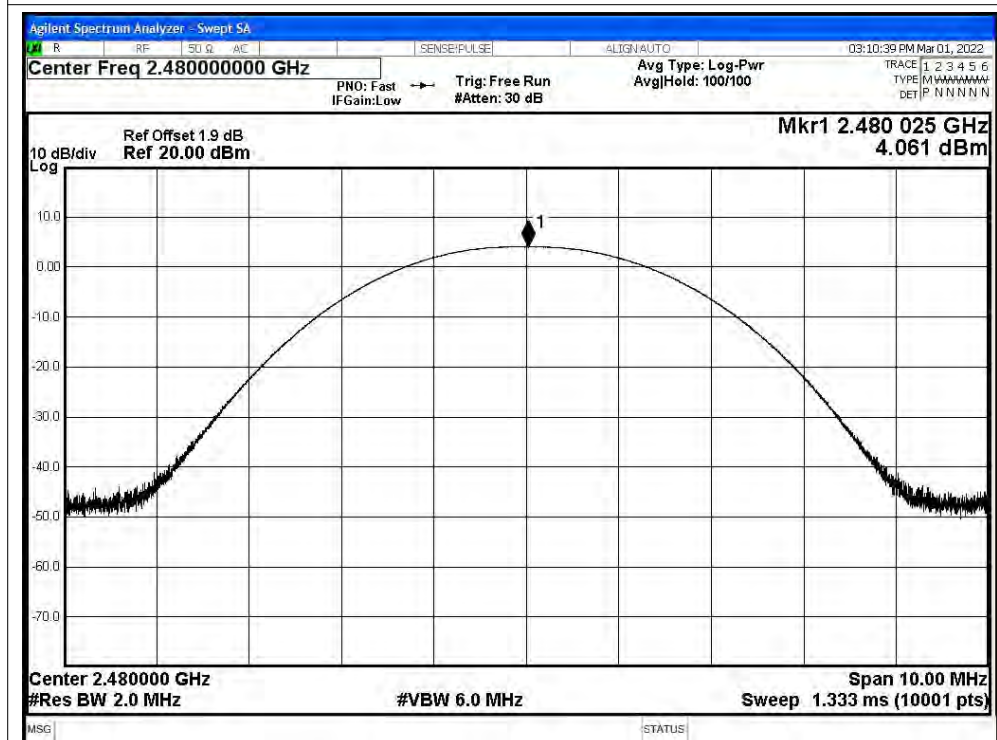


Power NVNT 1-DH5 2441MHz Ant1

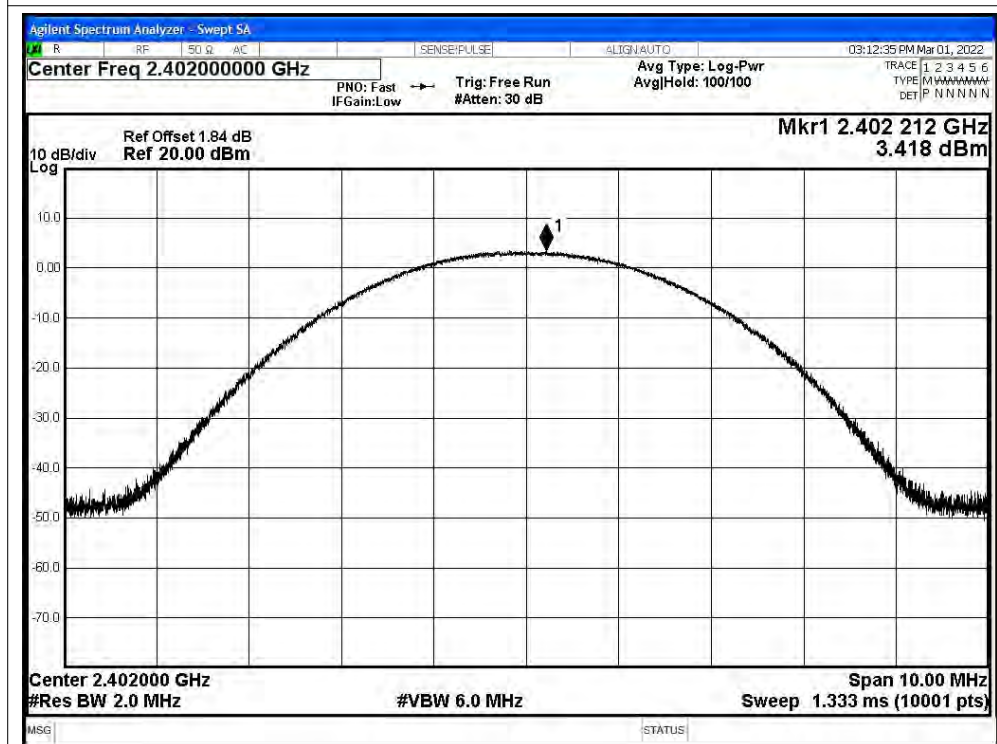


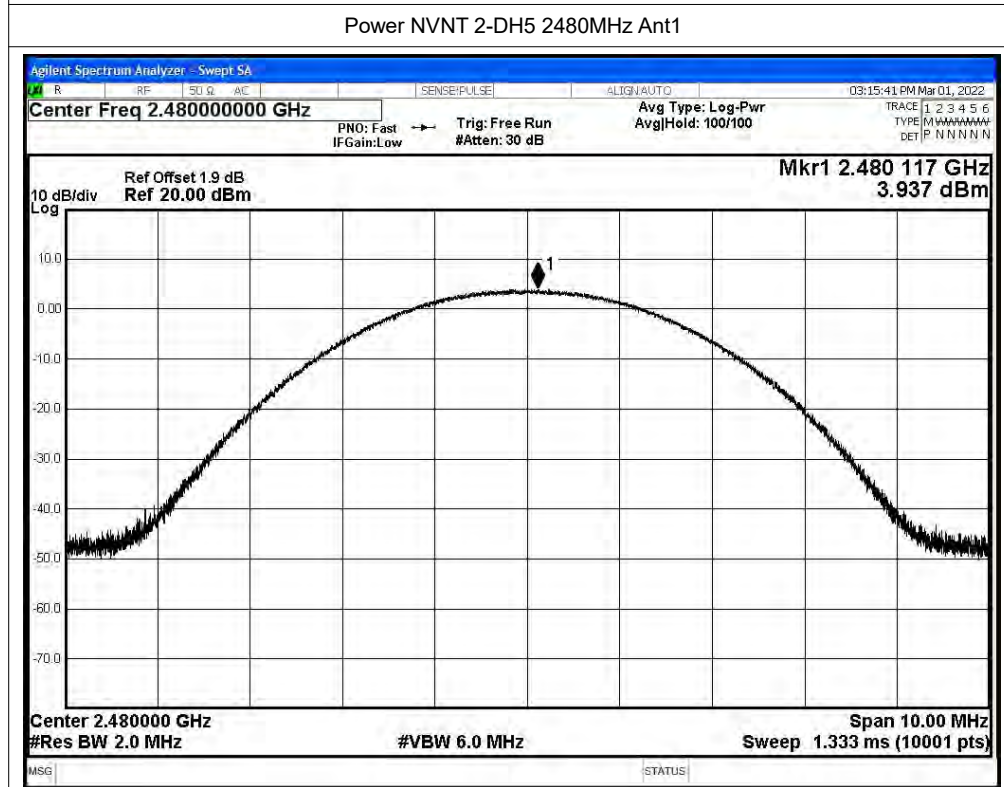
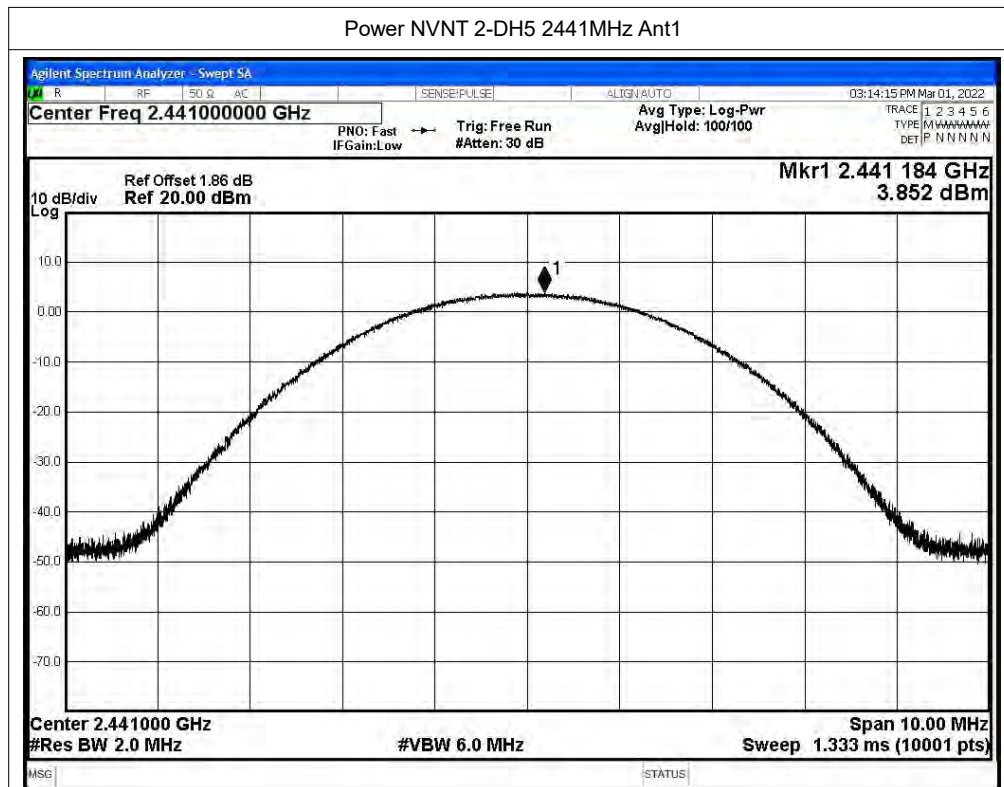


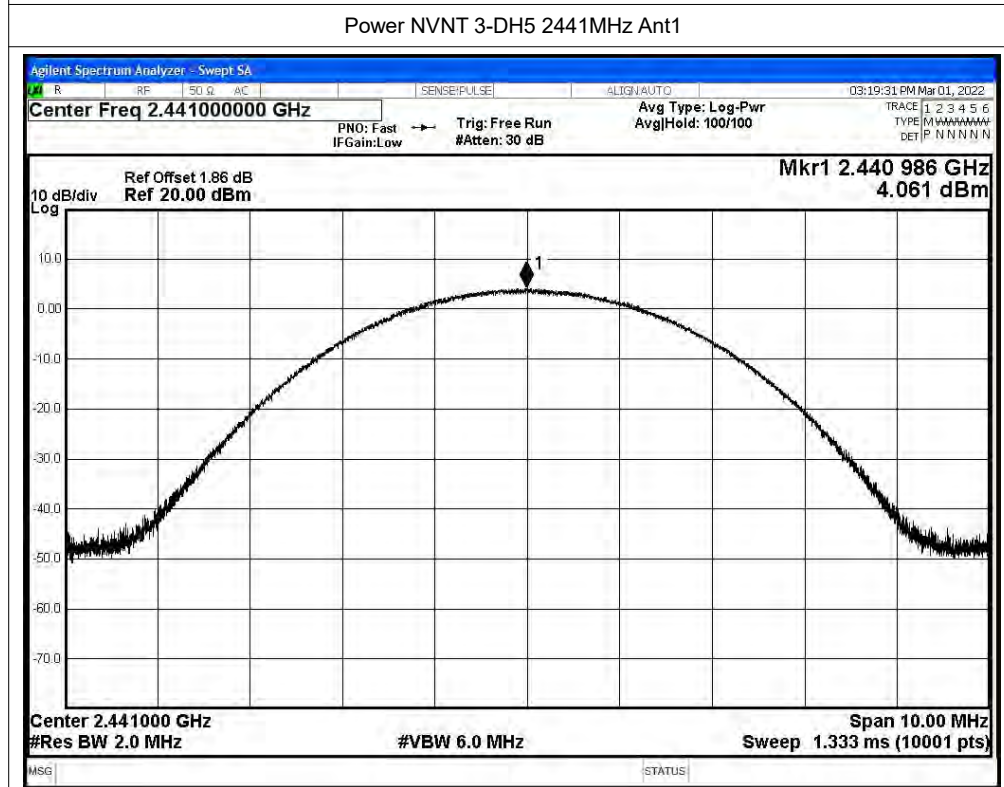
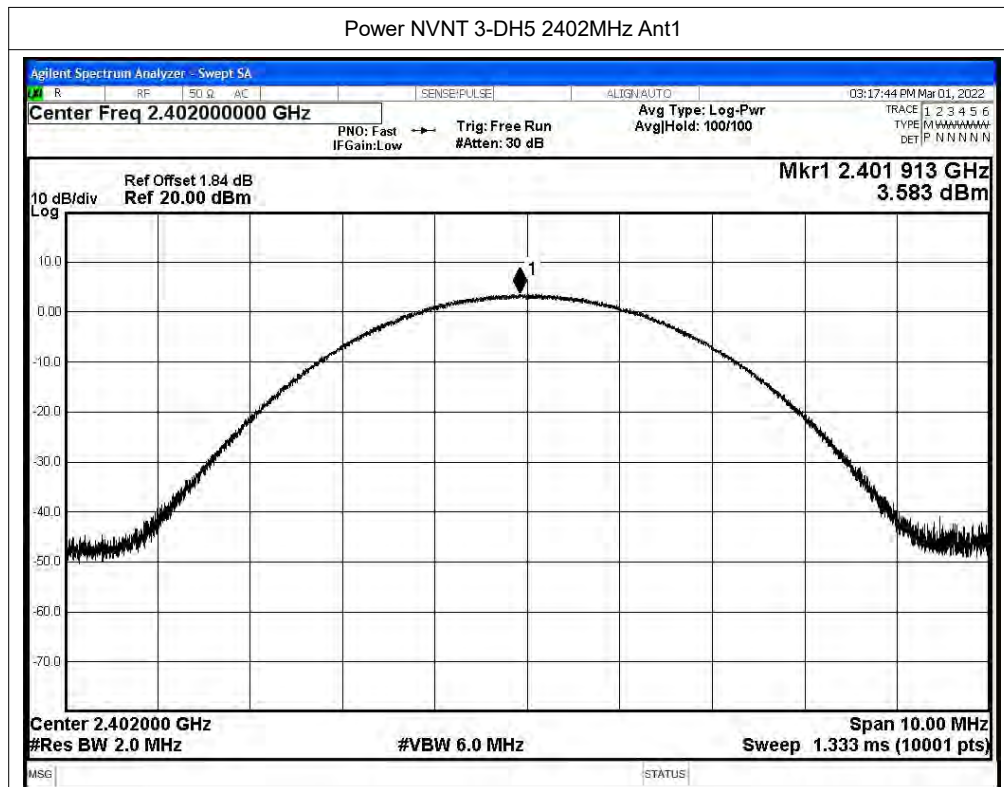
Power NVNT 1-DH5 2480MHz Ant1

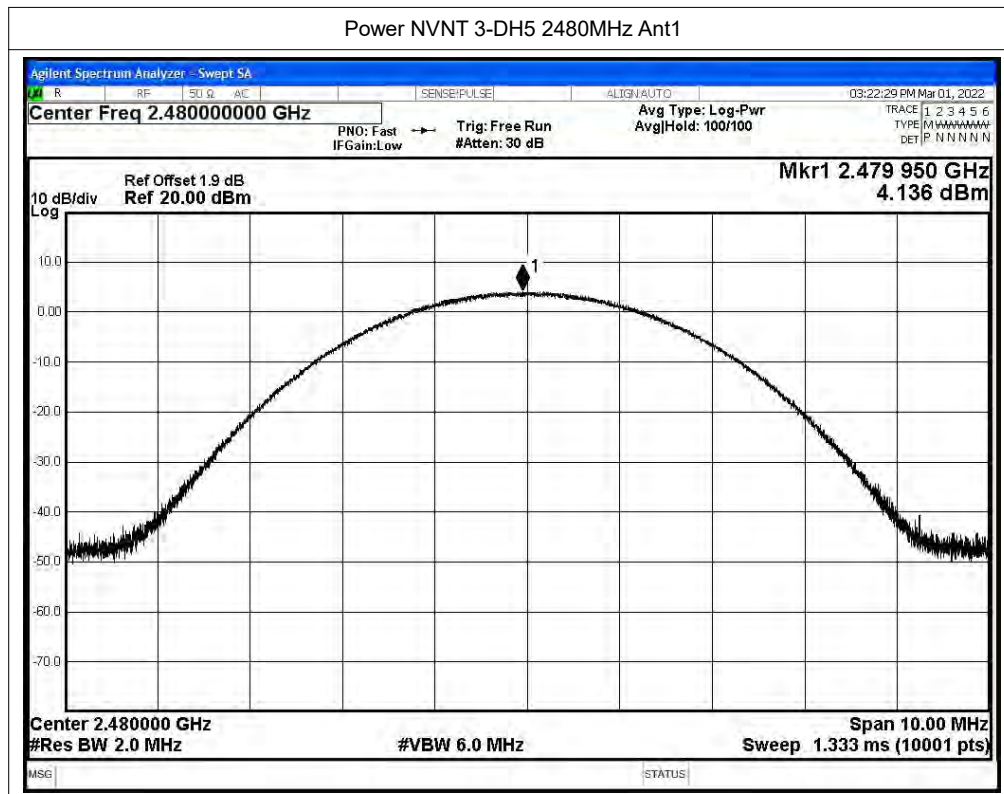


Power NVNT 2-DH5 2402MHz Ant1











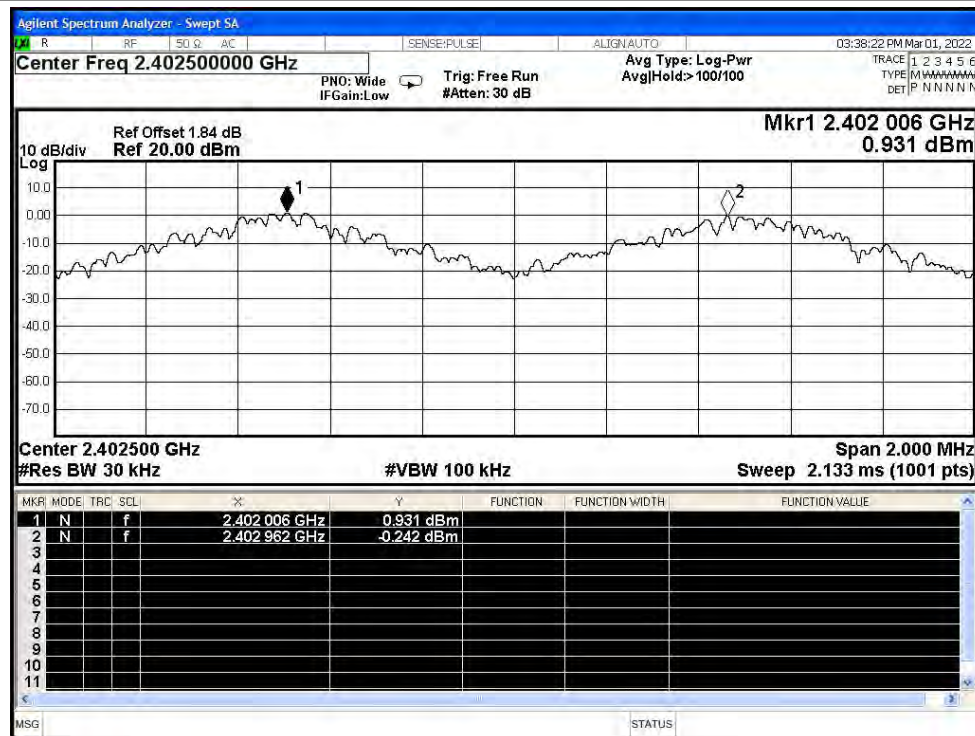
A.3 Carrier Frequencies Separation

Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	Ant1	2402.006	2402.962	0.956	0.679	Pass
NVNT	1-DH5	Ant1	2441.006	2441.98	0.974	0.657	Pass
NVNT	1-DH5	Ant1	2479.006	2479.976	0.97	0.679	Pass
NVNT	2-DH5	Ant1	2401.858	2403.02	1.162	0.876	Pass
NVNT	2-DH5	Ant1	2440.872	2441.912	1.04	0.857	Pass
NVNT	2-DH5	Ant1	2478.838	2480.008	1.17	0.851	Pass
NVNT	3-DH5	Ant1	2402.006	2403.156	1.15	0.862	Pass
NVNT	3-DH5	Ant1	2441.12	2442.122	1.002	0.867	Pass
NVNT	3-DH5	Ant1	2479.096	2480.11	1.014	0.862	Pass



Test Graphs

CFS NVNT 1-DH5 2402MHz Ant1



CFS NVNT 1-DH5 2441MHz Ant1

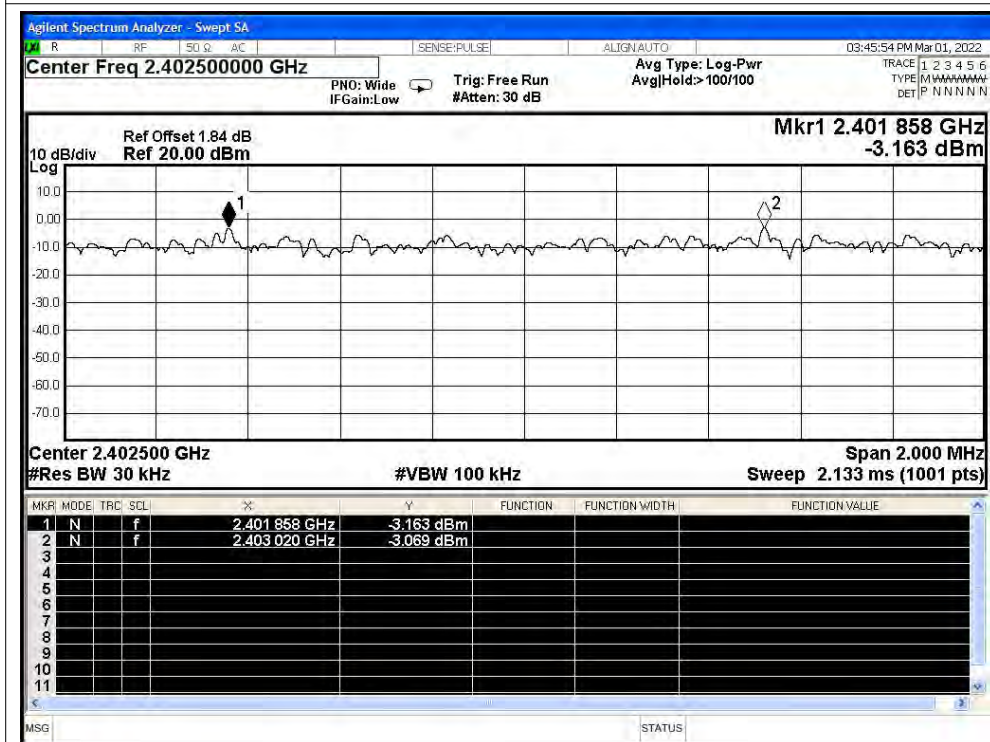




CFS NVNT 1-DH5 2480MHz Ant1

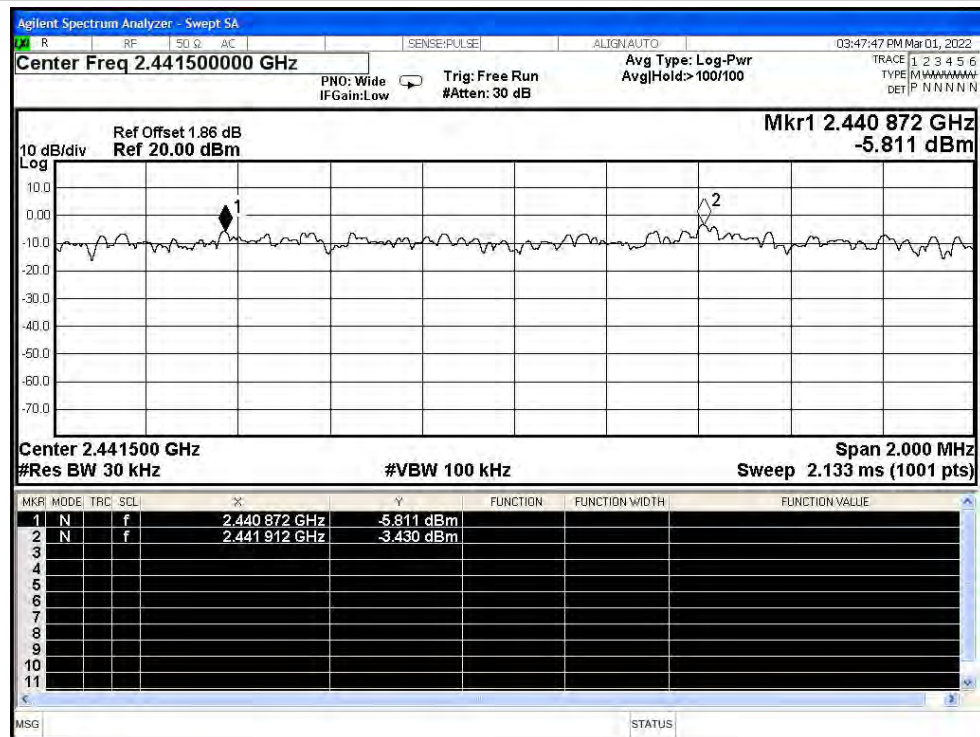


CFS NVNT 2-DH5 2402MHz Ant1

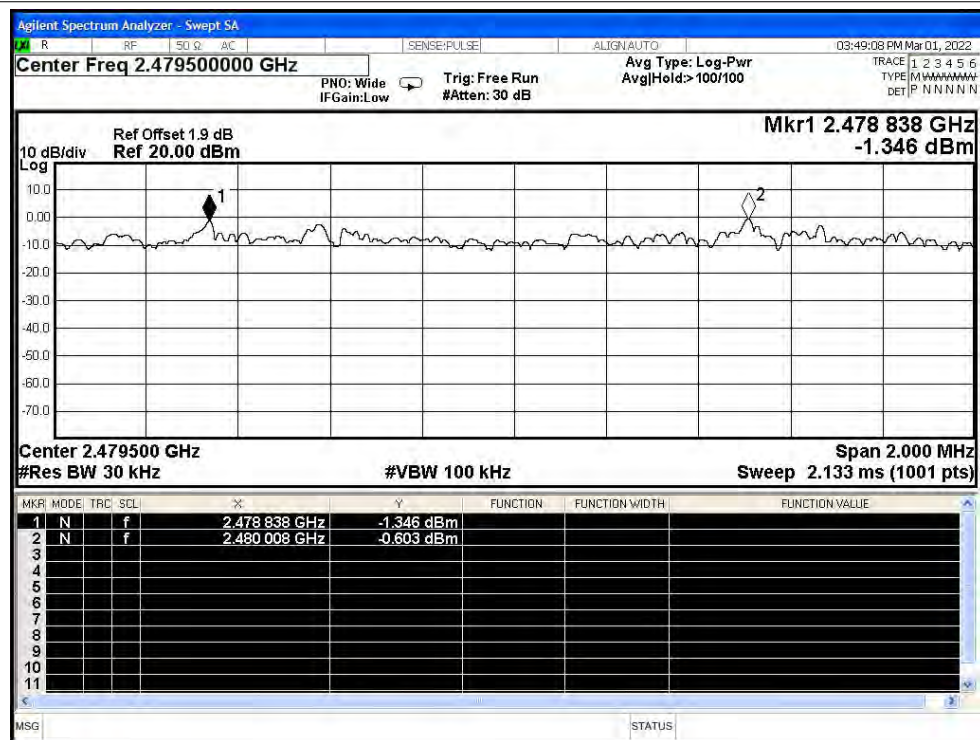




CFS NVNT 2-DH5 2441MHz Ant1

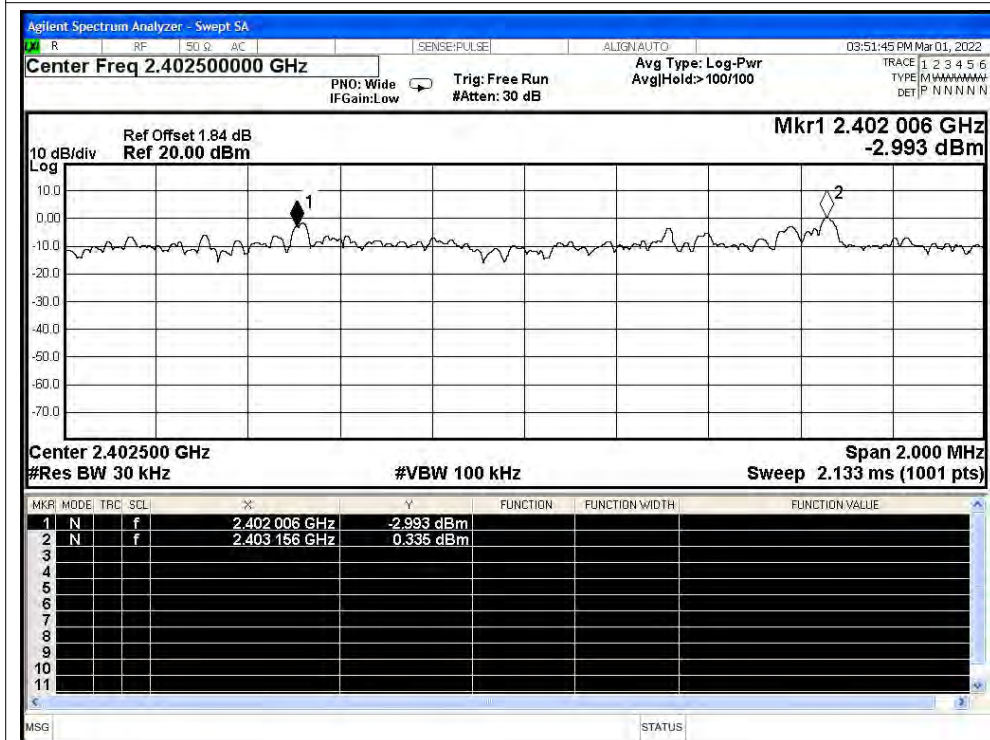


CFS NVNT 2-DH5 2480MHz Ant1

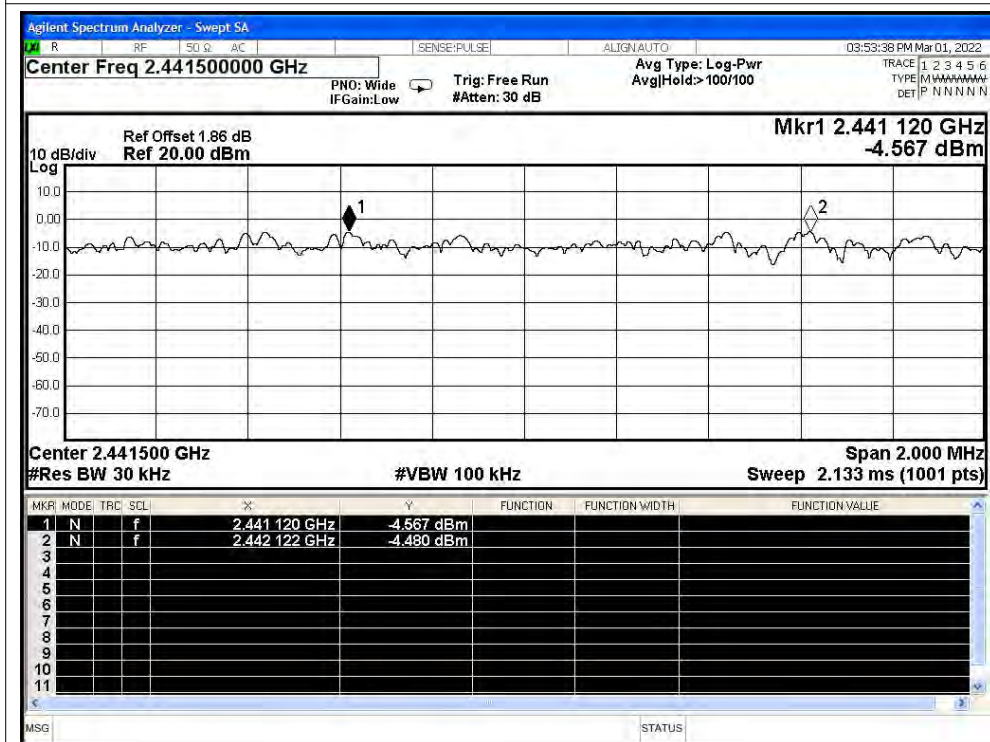


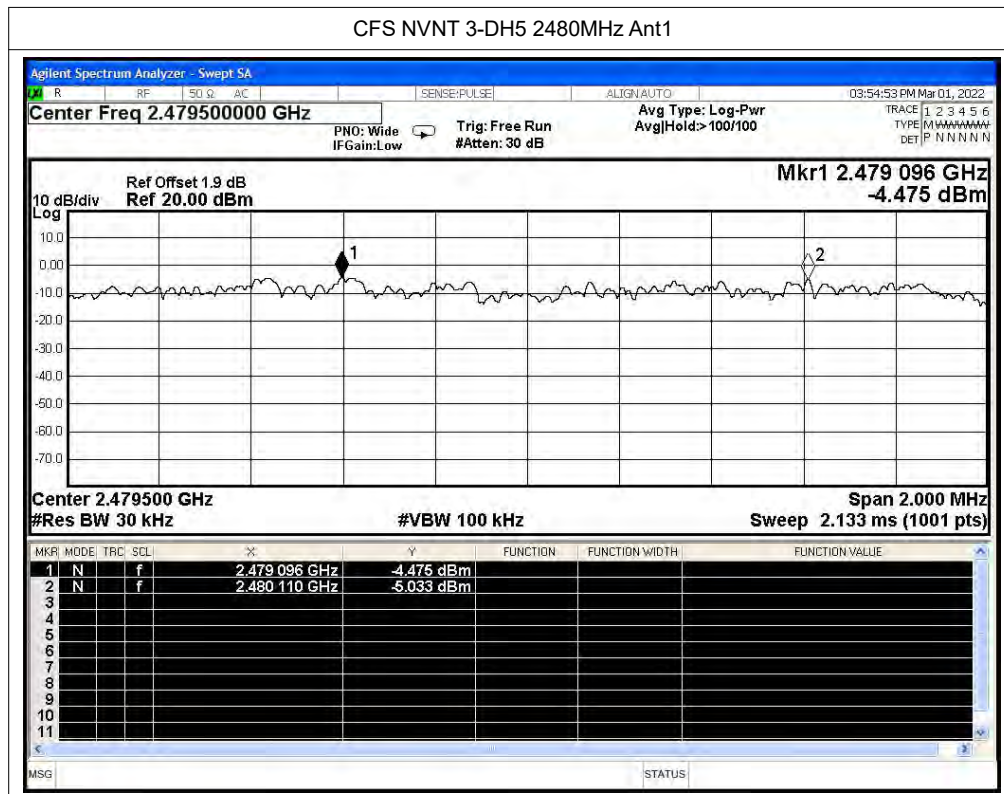


CFS NVNT 3-DH5 2402MHz Ant1



CFS NVNT 3-DH5 2441MHz Ant1







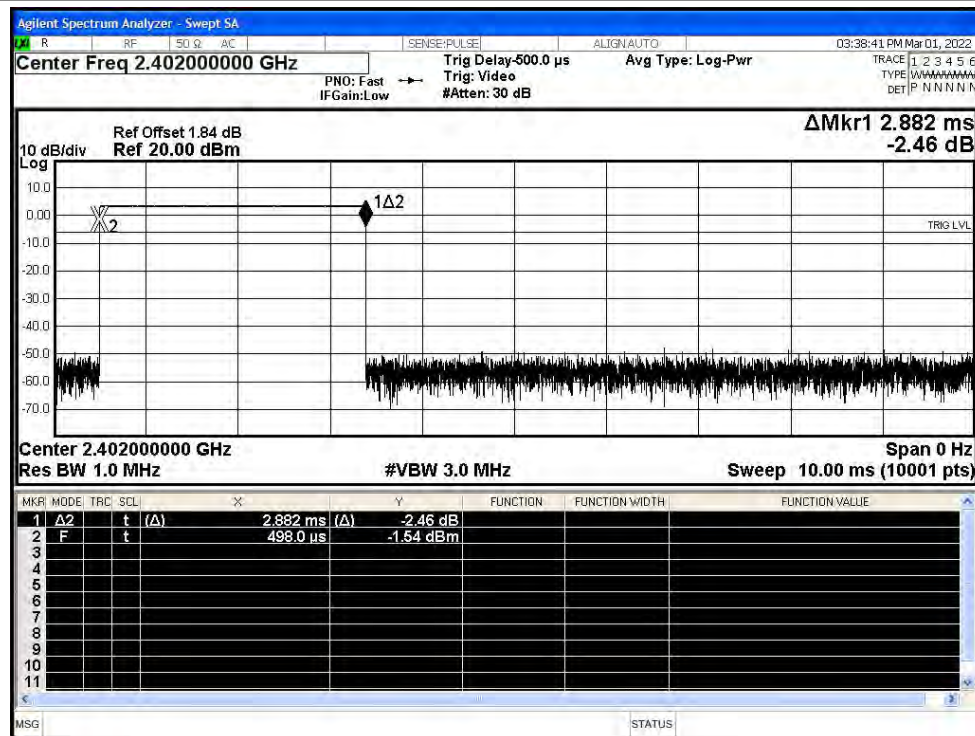
A.4 Dwell Time

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	2.882	288.2	100	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.881	270.814	94	31600	400	Pass
NVNT	1-DH5	2480	Ant1	2.882	265.144	92	31600	400	Pass
NVNT	2-DH5	2402	Ant1	2.88	325.44	113	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.885	317.35	110	31600	400	Pass
NVNT	2-DH5	2480	Ant1	2.882	282.436	98	31600	400	Pass
NVNT	3-DH5	2402	Ant1	2.887	317.57	110	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.887	306.022	106	31600	400	Pass
NVNT	3-DH5	2480	Ant1	2.885	276.96	96	31600	400	Pass

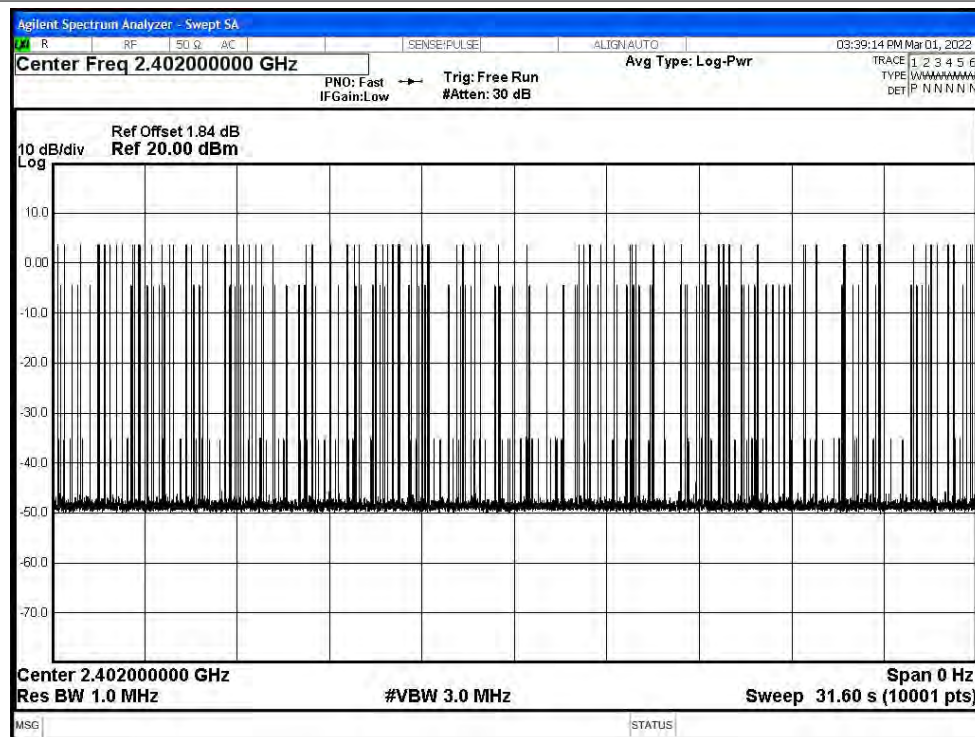


Test Graphs

Dwell NVNT 1-DH5 2402MHz Ant1 One Burst

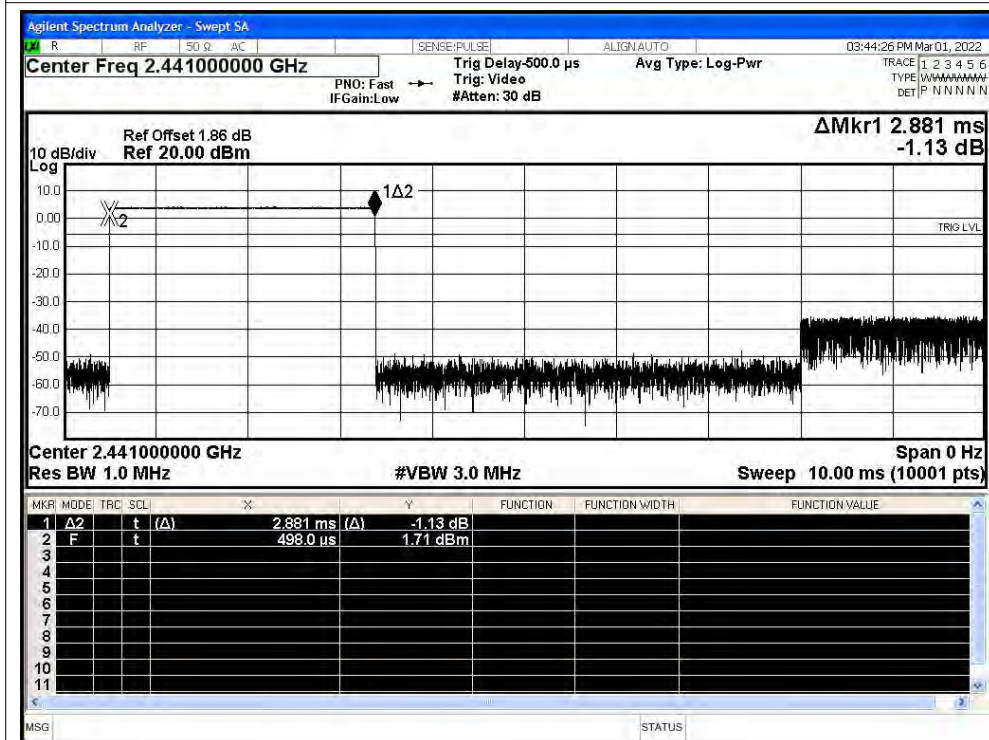


Dwell NVNT 1-DH5 2402MHz Ant1 Accumulated

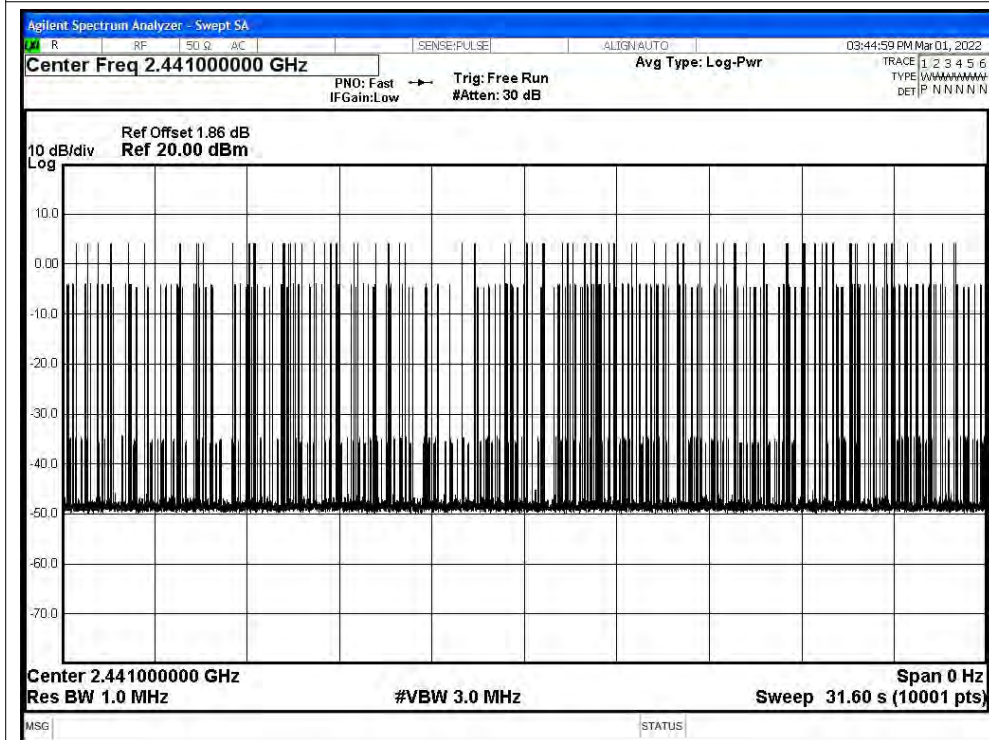




Dwell NVNT 1-DH5 2441MHz Ant1 One Burst

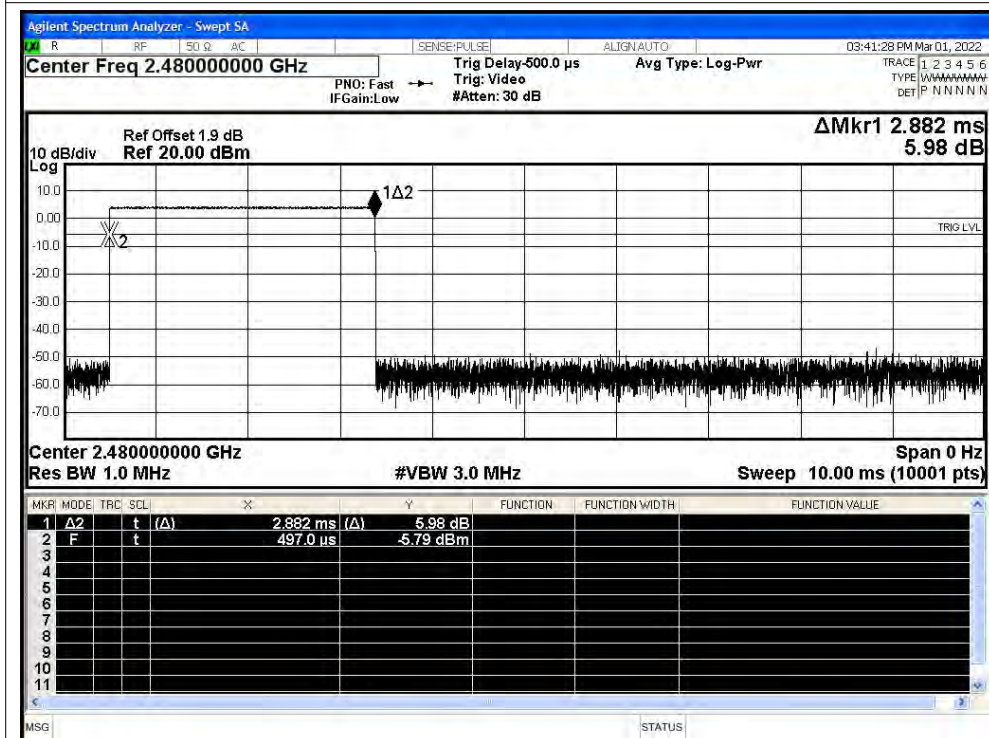


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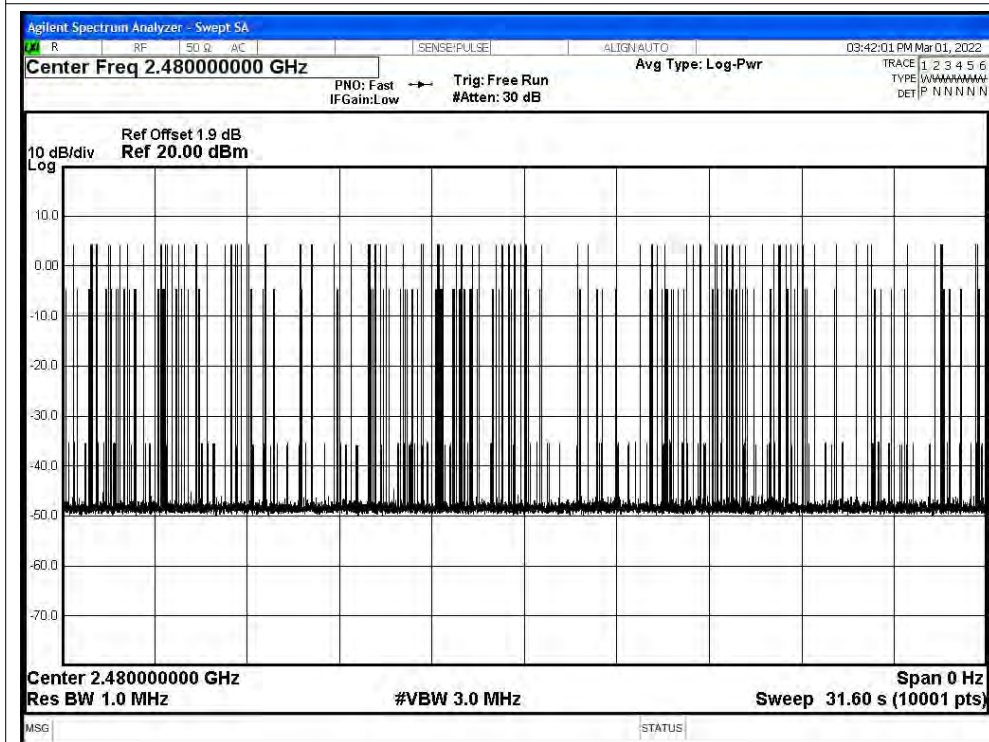




Dwell NVNT 1-DH5 2480MHz Ant1 One Burst

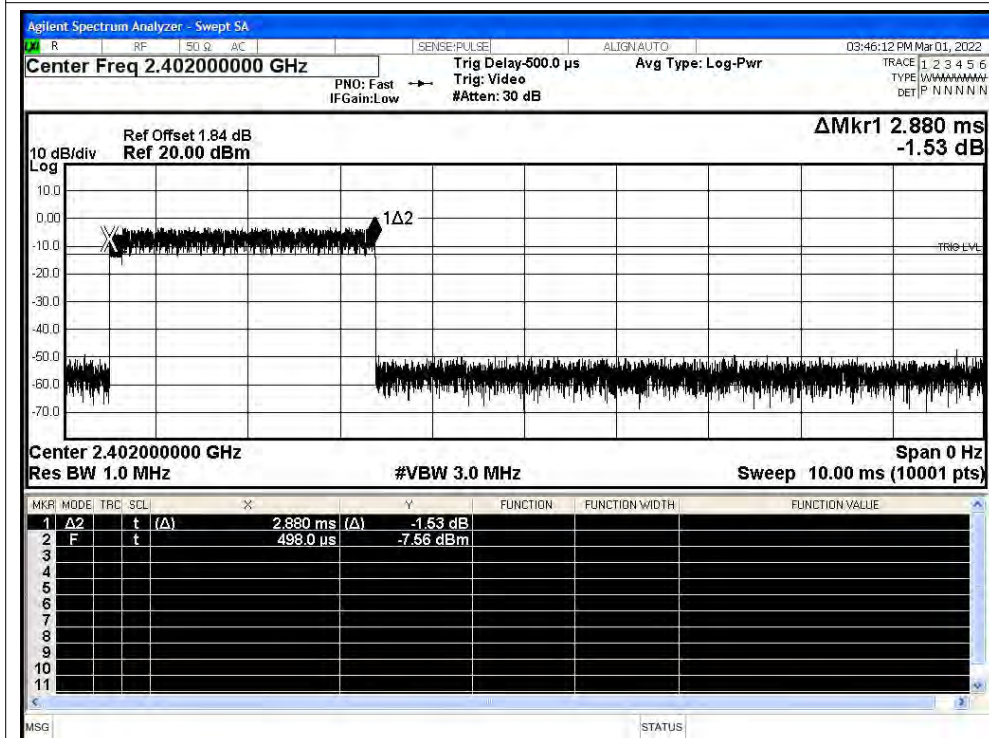


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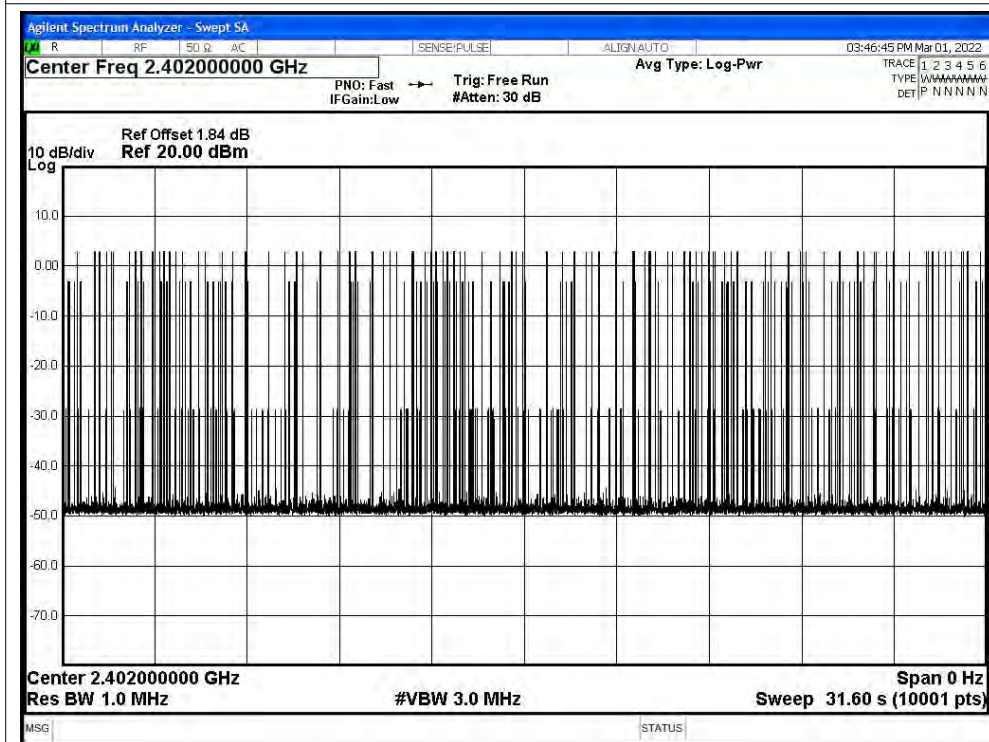




Dwell NVNT 2-DH5 2402MHz Ant1 One Burst

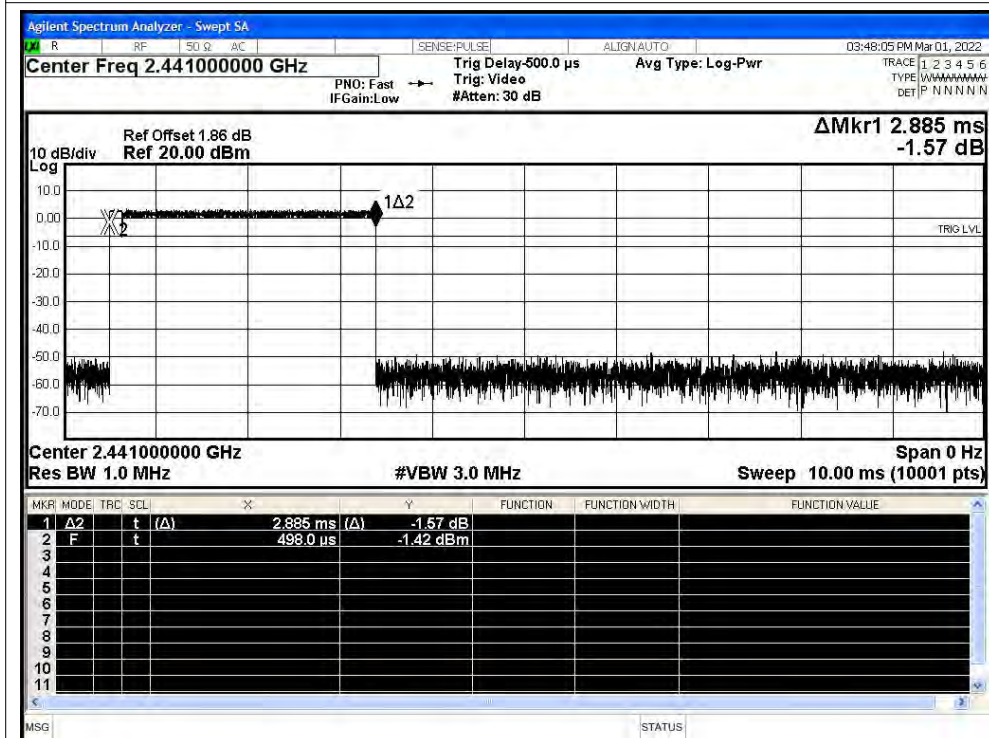


Dwell NVNT 2-DH5 2402MHz Ant1 Accumulated

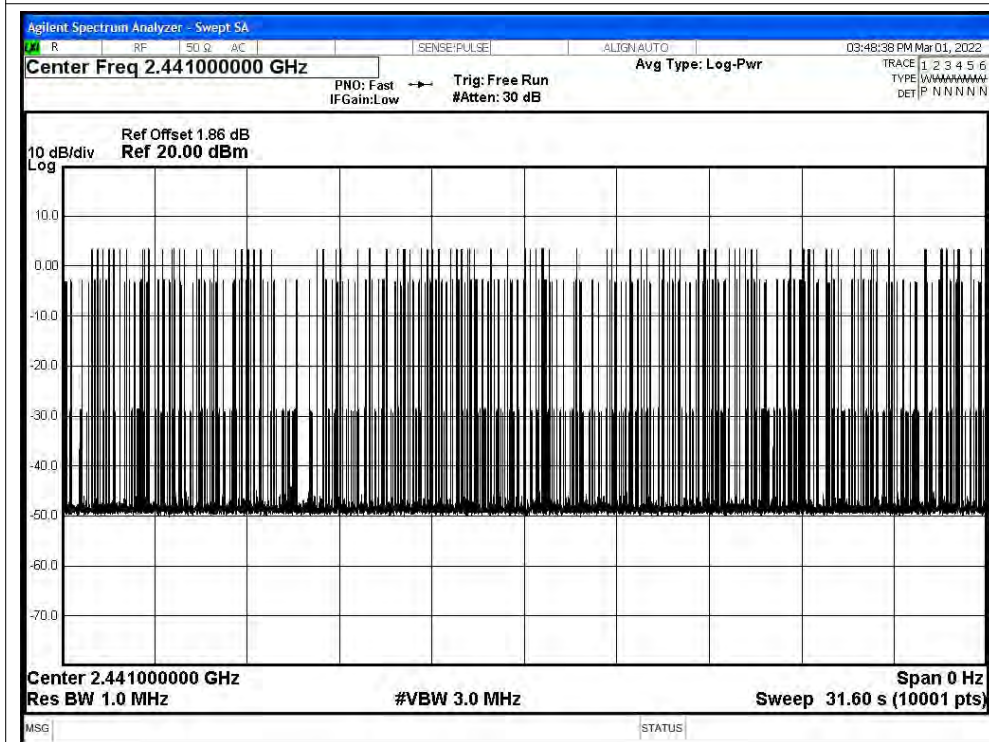




Dwell NVNT 2-DH5 2441MHz Ant1 One Burst

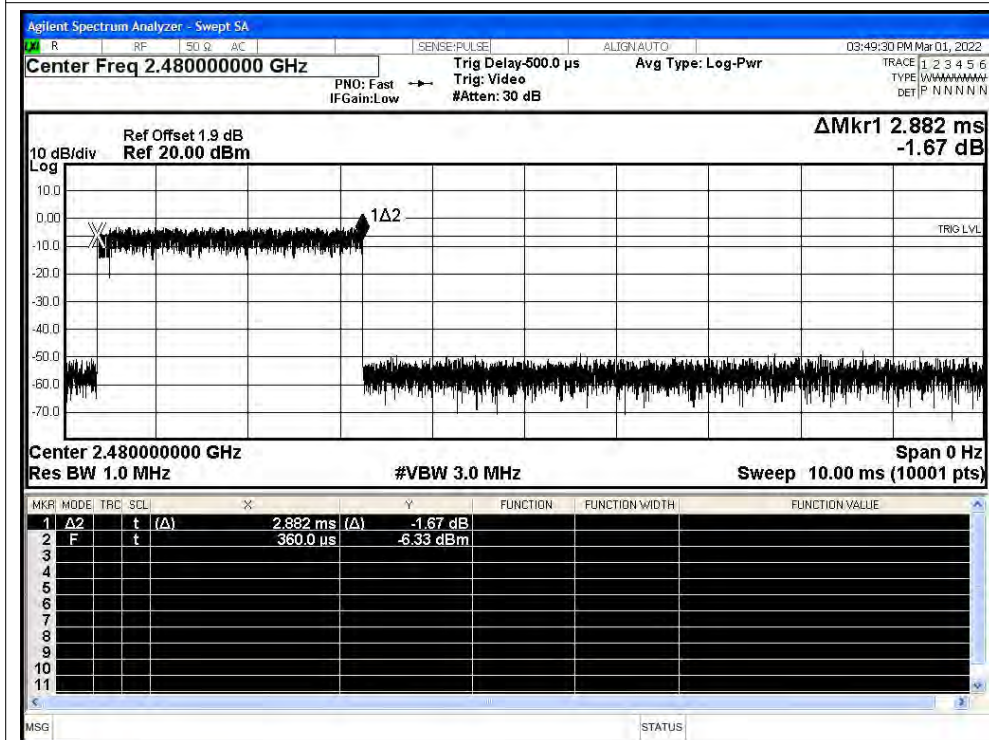


Dwell NVNT 2-DH5 2441MHz Ant1 Accumulated

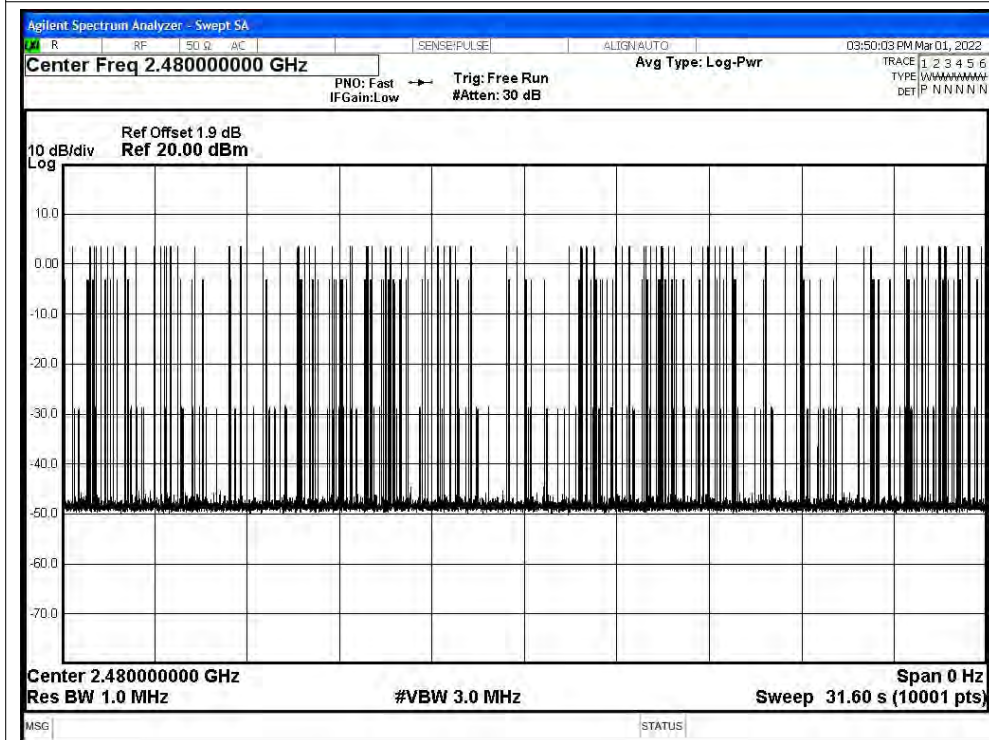




Dwell NVNT 2-DH5 2480MHz Ant1 One Burst

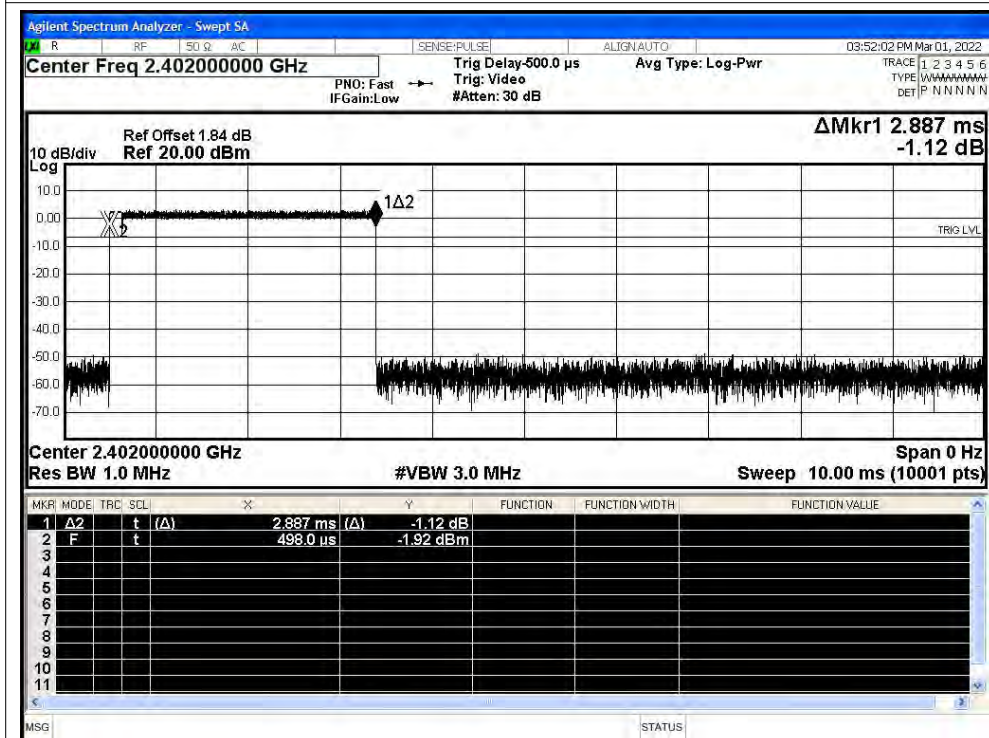


Dwell NVNT 2-DH5 2480MHz Ant1 Accumulated

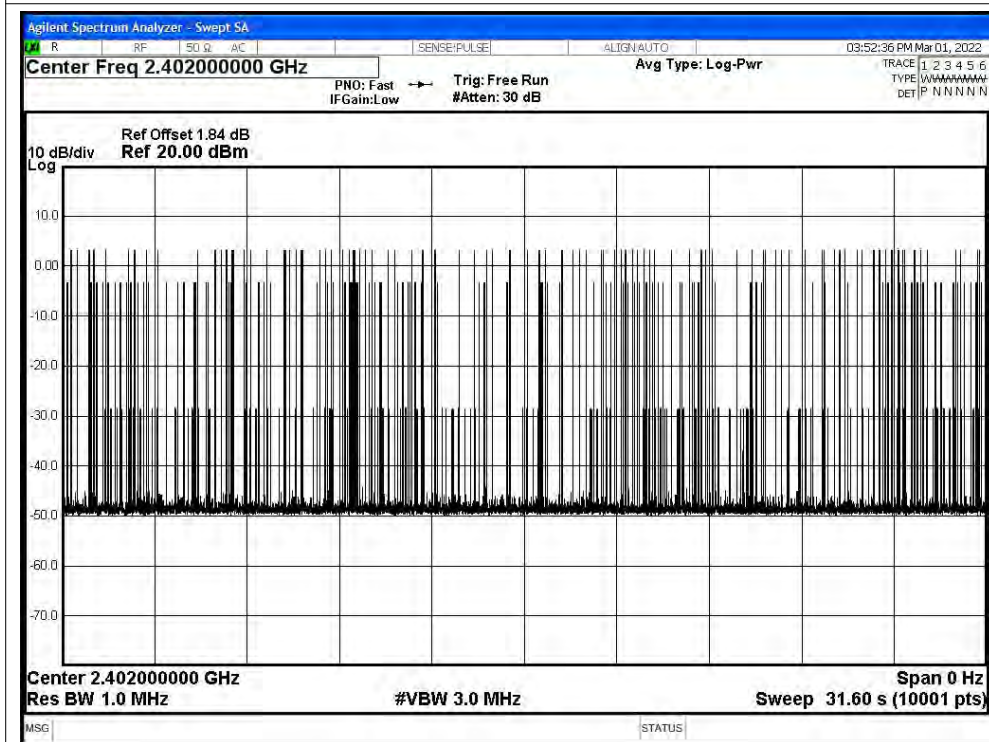




Dwell NVNT 3-DH5 2402MHz Ant1 One Burst

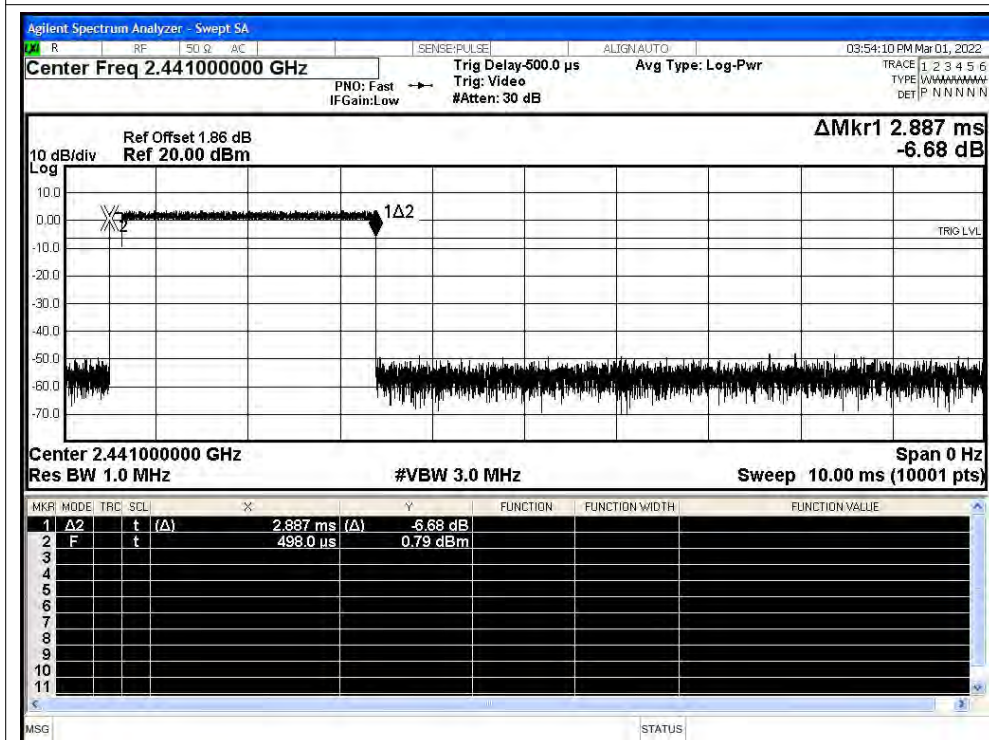


Dwell NVNT 3-DH5 2402MHz Ant1 Accumulated

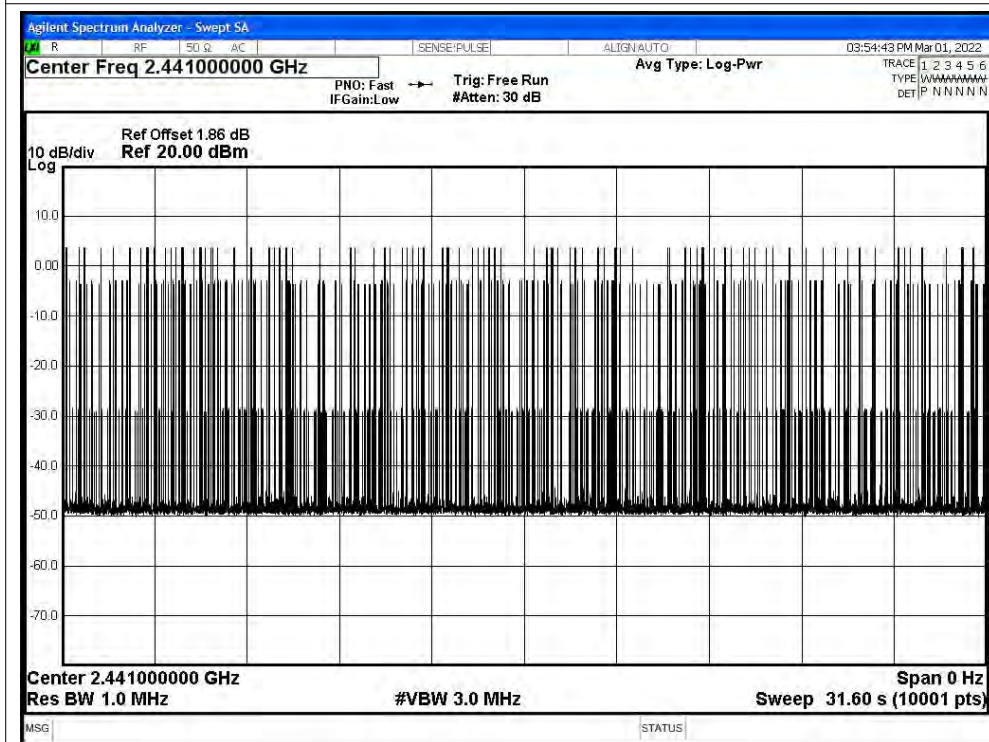




Dwell NVNT 3-DH5 2441MHz Ant1 One Burst

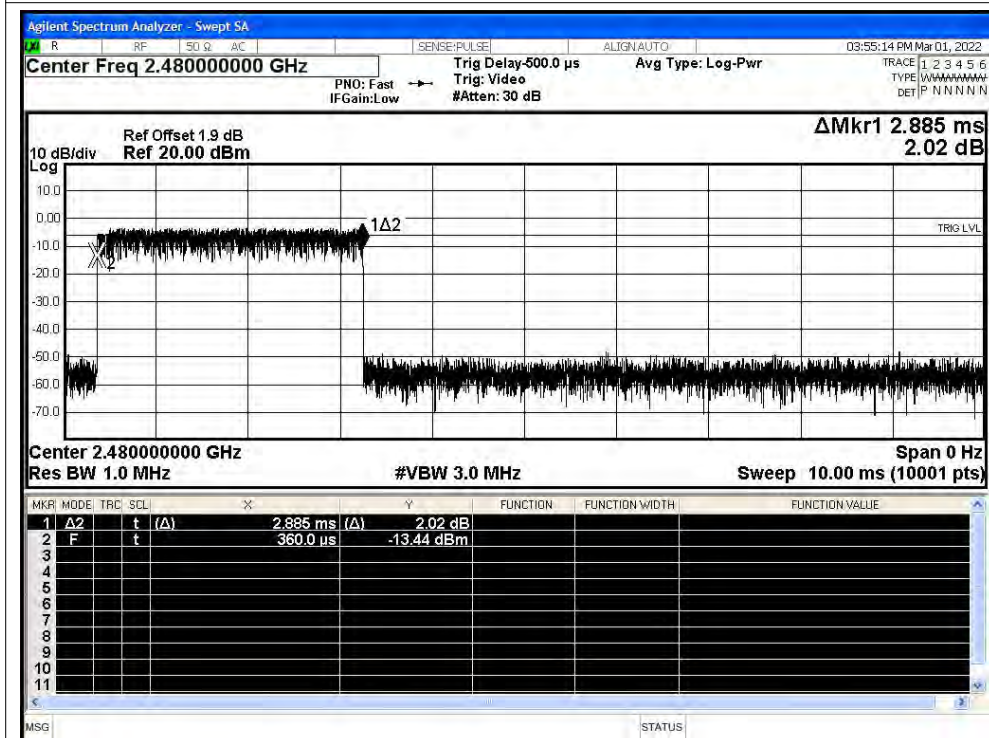


Dwell NVNT 3-DH5 2441MHz Ant1 Accumulated

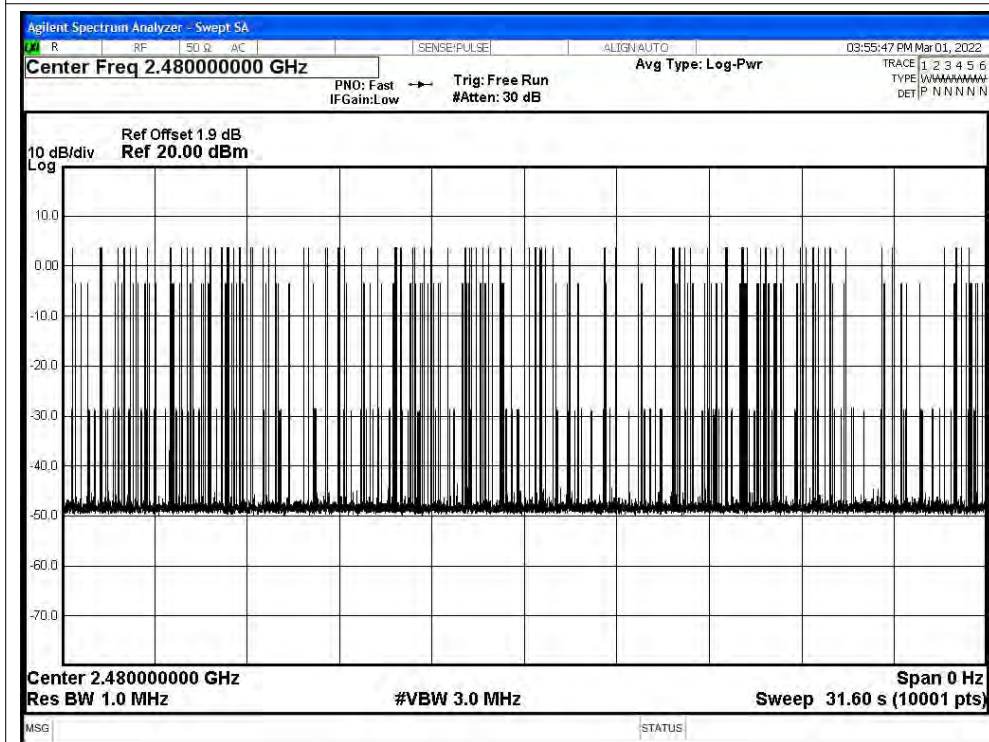




Dwell NVNT 3-DH5 2480MHz Ant1 One Burst



Dwell NVNT 3-DH5 2480MHz Ant1 Accumulated





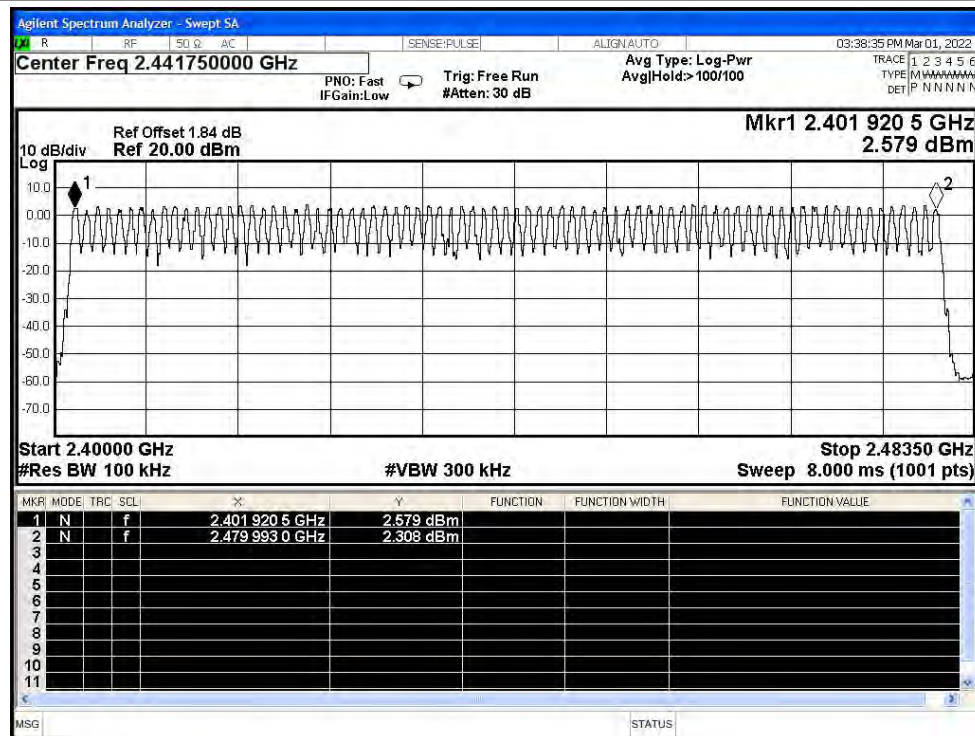
A.5 Number of Hopping Channel

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

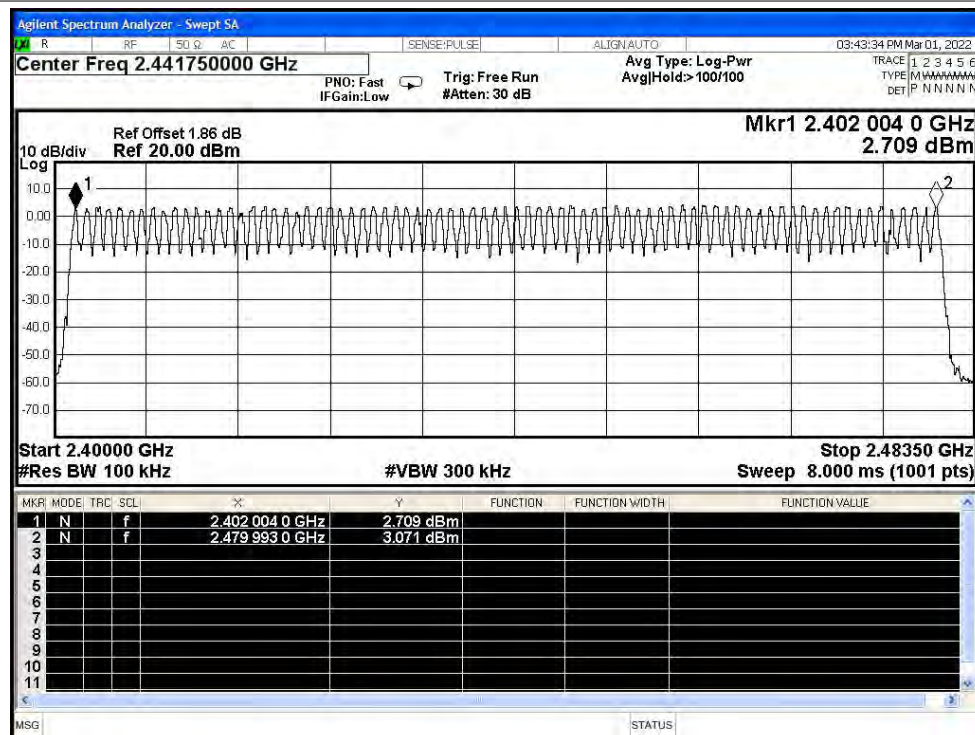


Test Graphs

Hopping No. NVNT 1-DH5 2402MHz Ant1

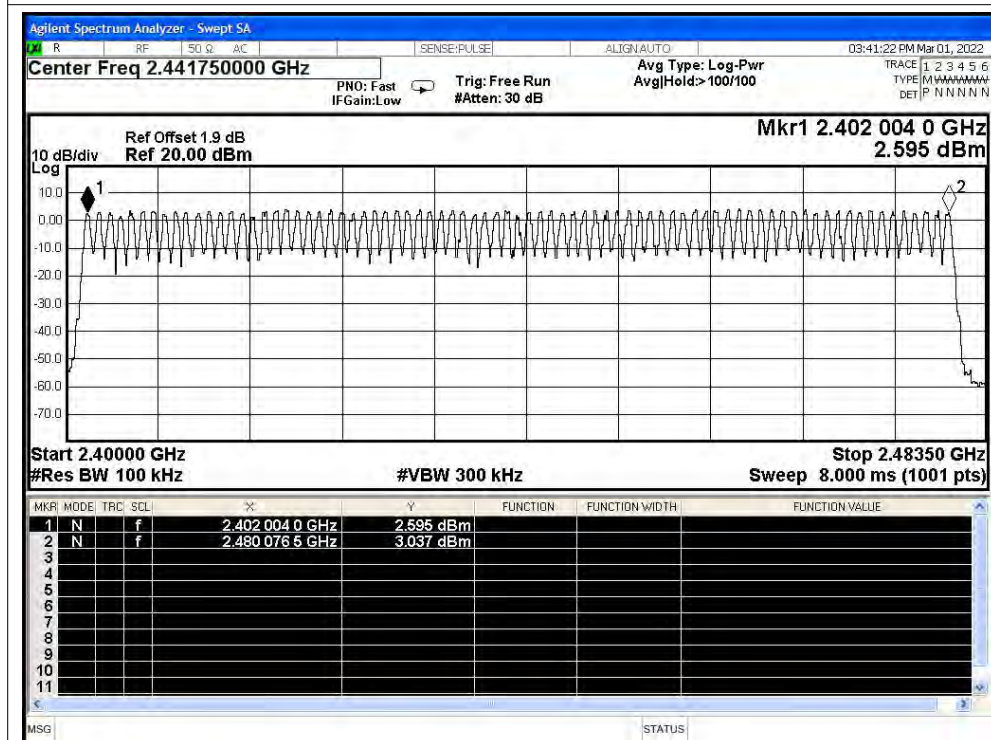


Hopping No. NVNT 1-DH5 2441MHz Ant1

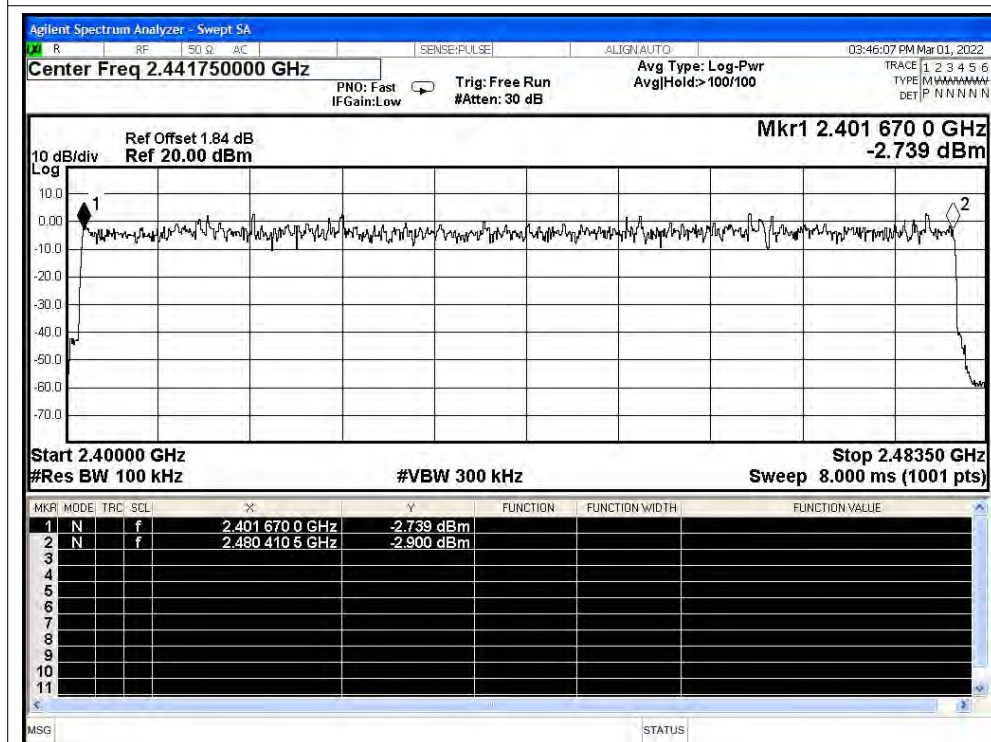




Hopping No. NVNT 1-DH5 2480MHz Ant1

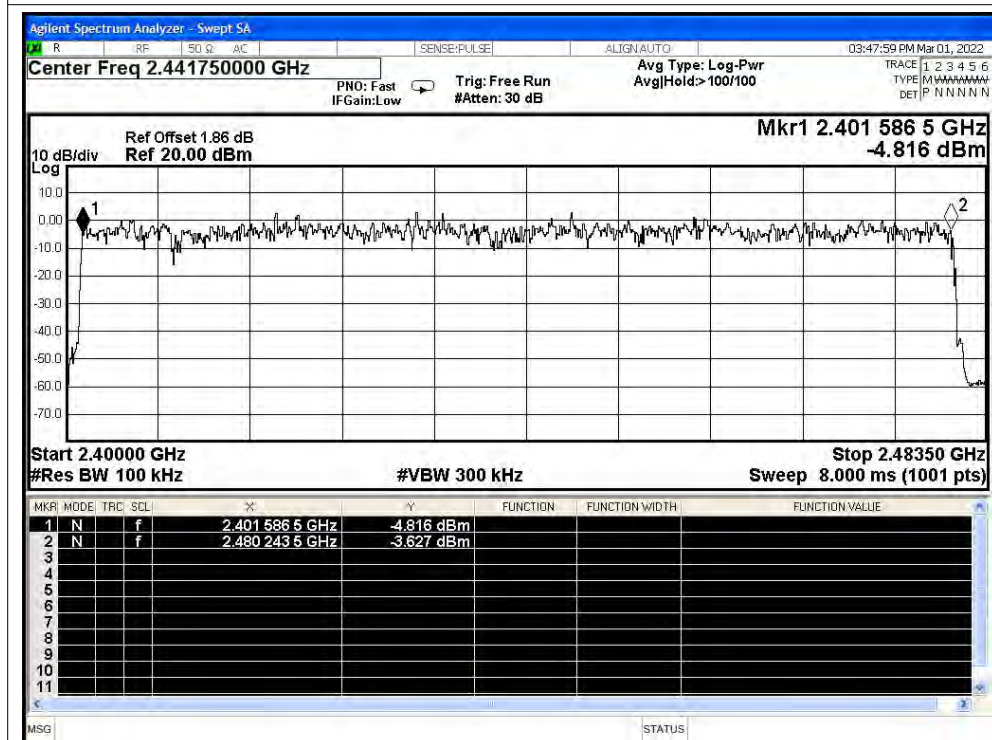


Hopping No. NVNT 2-DH5 2402MHz Ant1

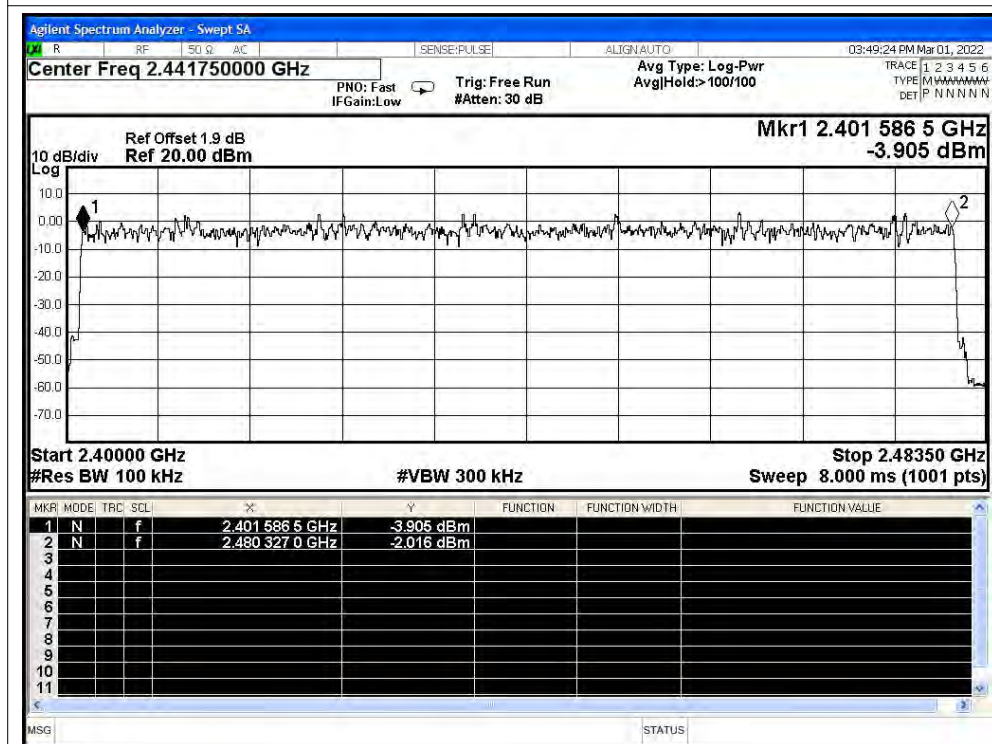




Hopping No. NVNT 2-DH5 2441MHz Ant1

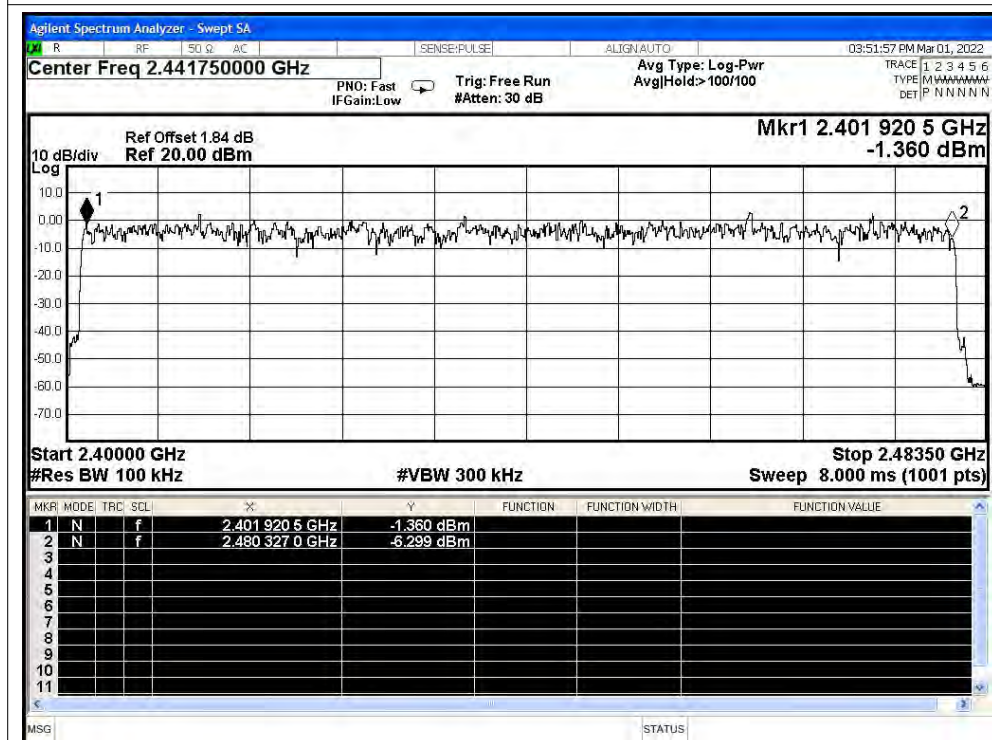


Hopping No. NVNT 2-DH5 2480MHz Ant1

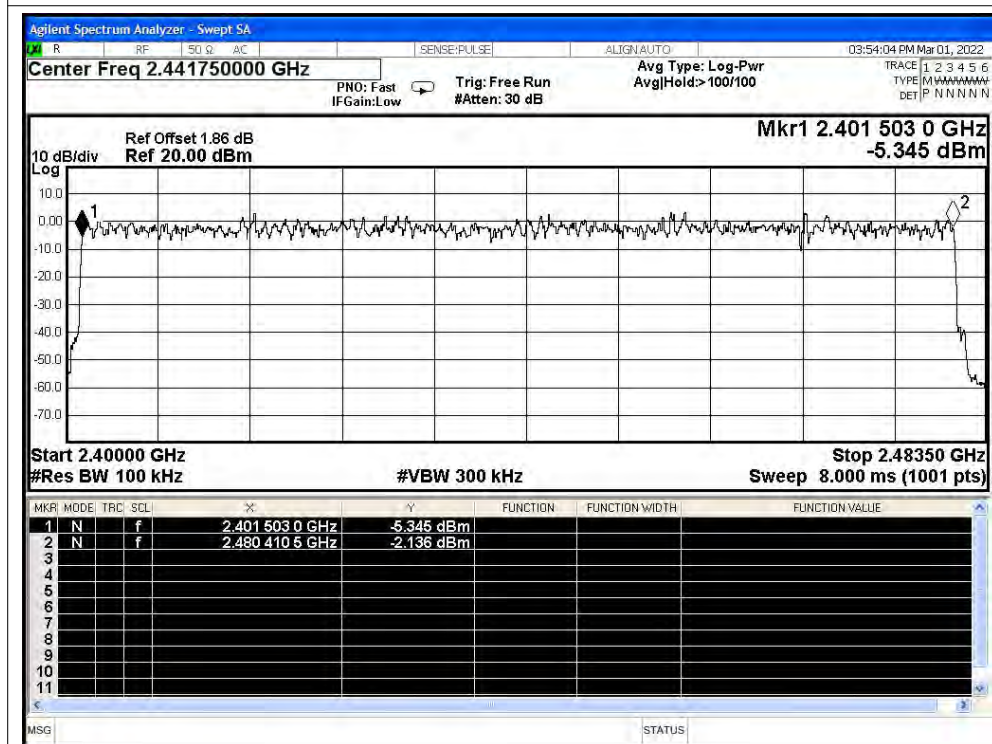


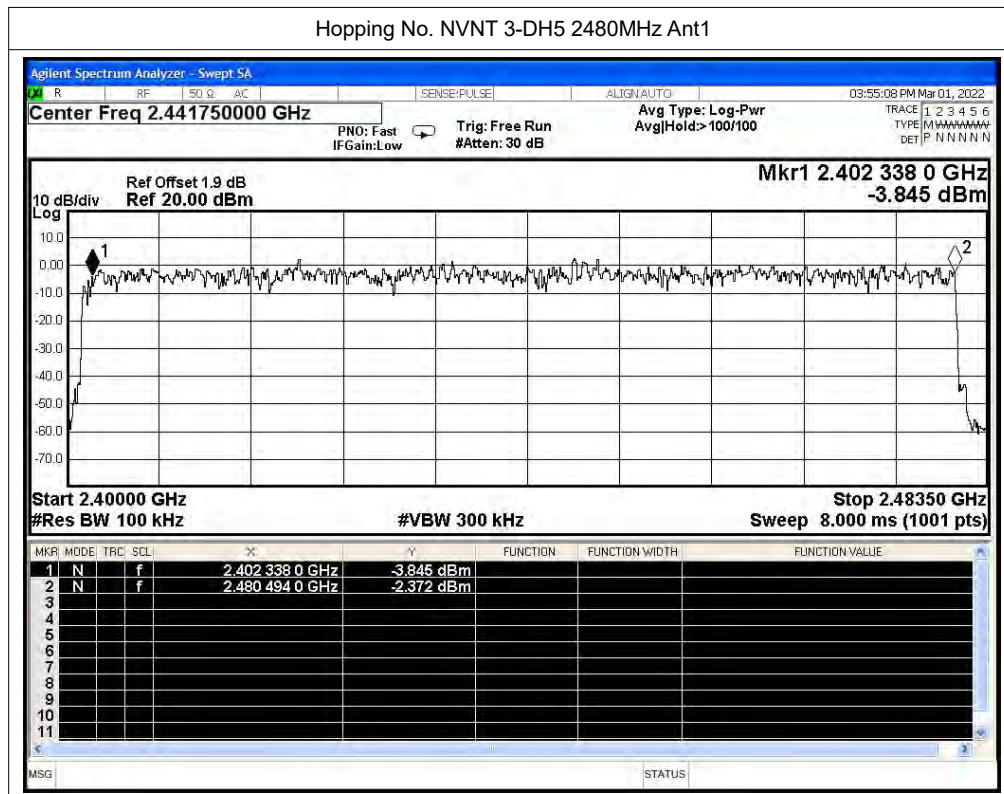


Hopping No. NVNT 3-DH5 2402MHz Ant1



Hopping No. NVNT 3-DH5 2441MHz Ant1







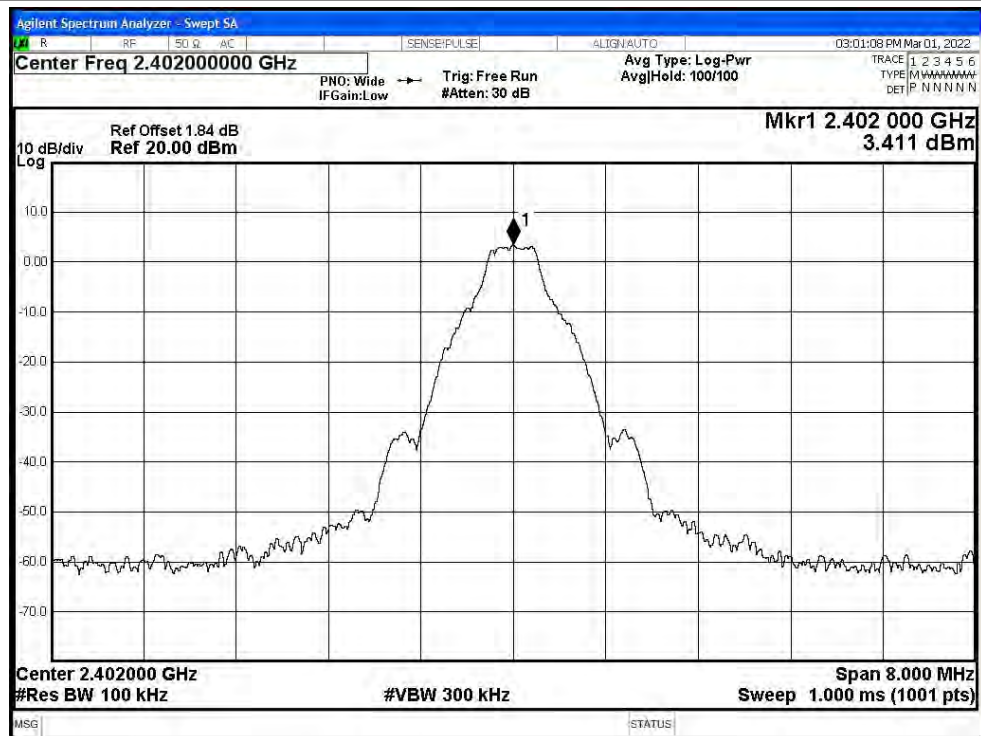
A.6 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	No-Hopping	-58.12	-20	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	-61.36	-20	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	-51.63	-20	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	-57.01	-20	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	-54.67	-20	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	-58.68	-20	Pass

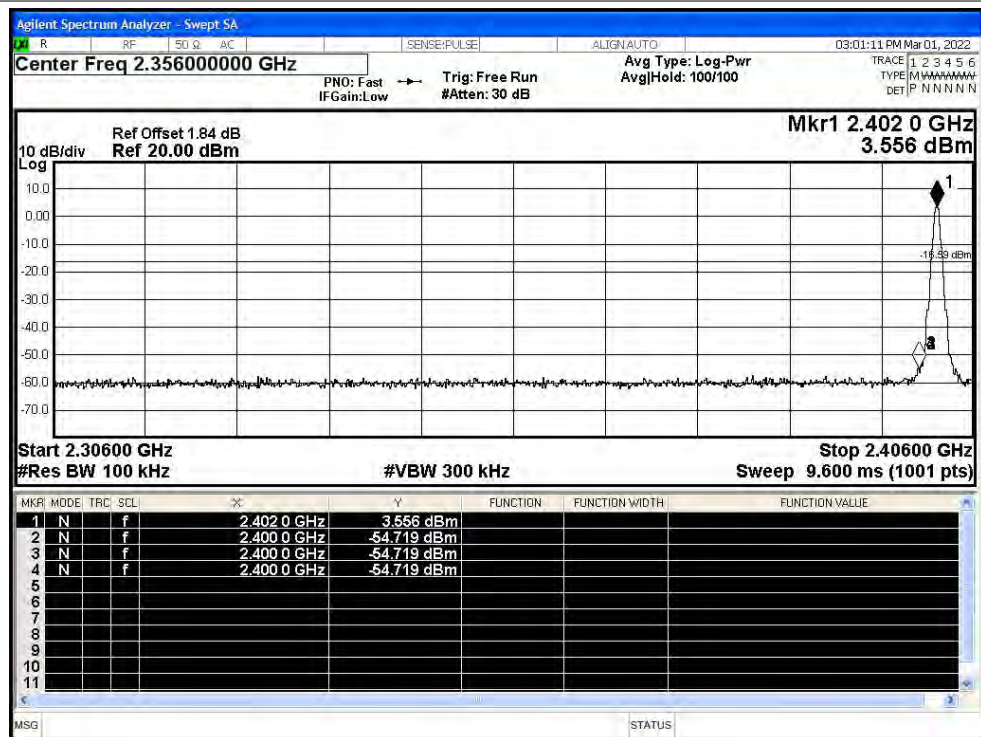


Test Graphs

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

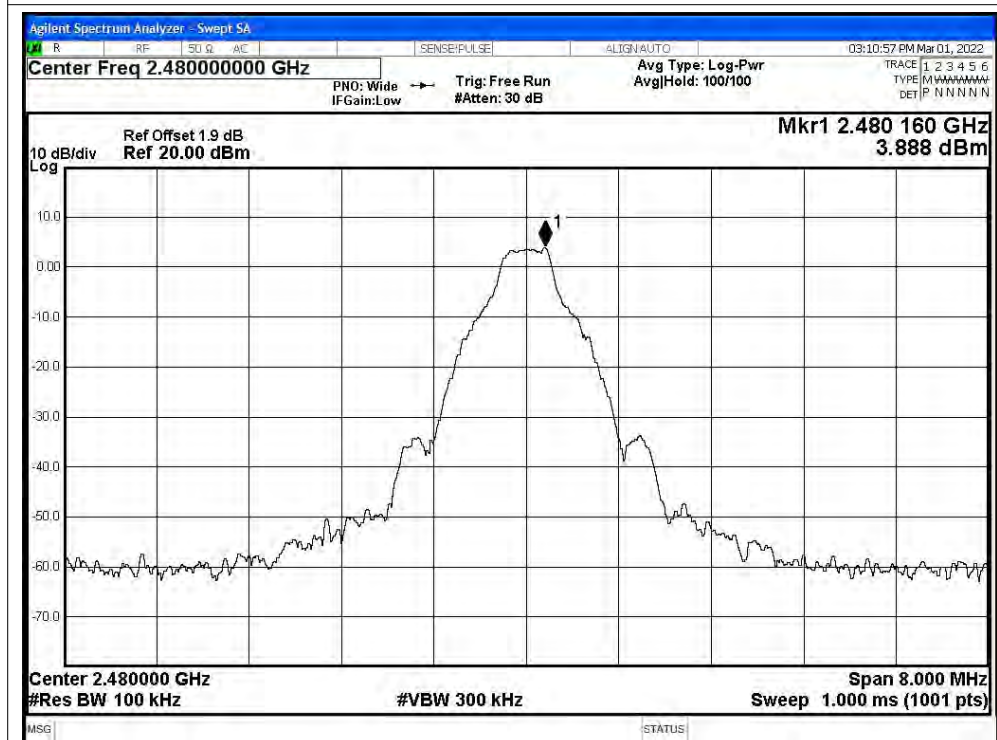


Band Edge NVNT 1-DH5 2402MHz Ant1 No-Hopping Emission

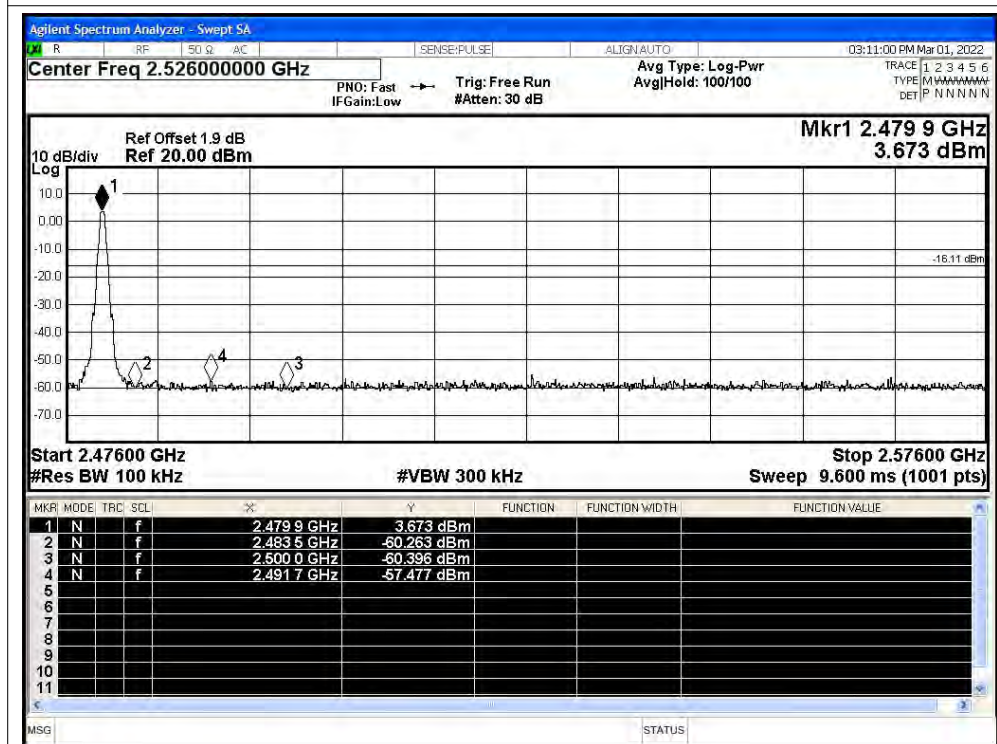




Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Ref

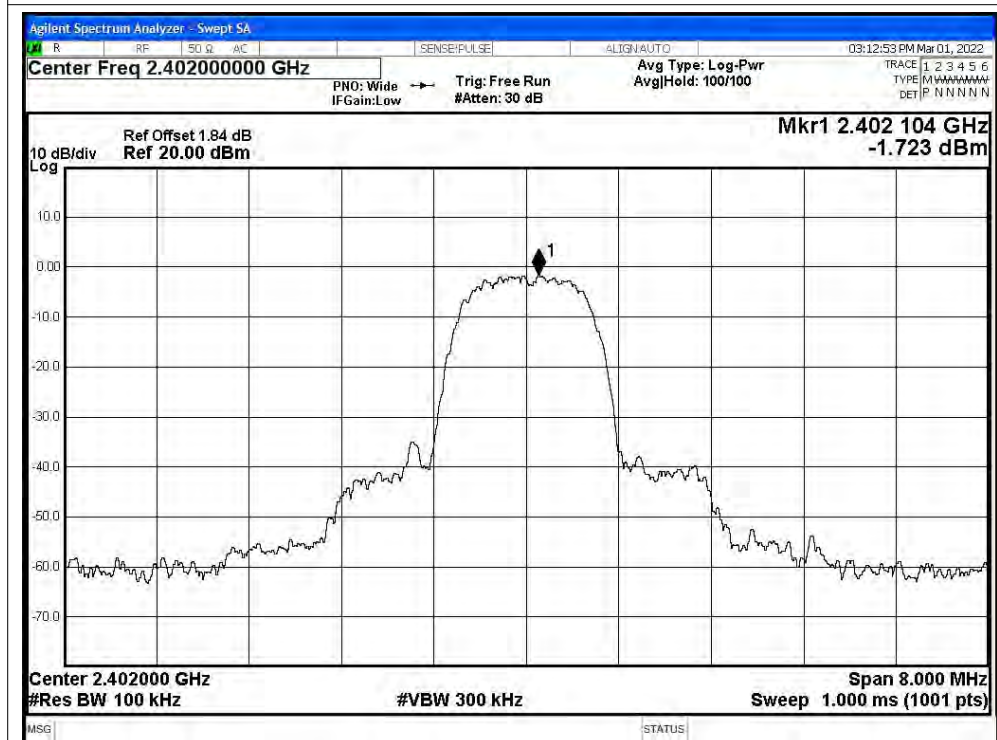


Band Edge NVNT 1-DH5 2480MHz Ant1 No-Hopping Emission

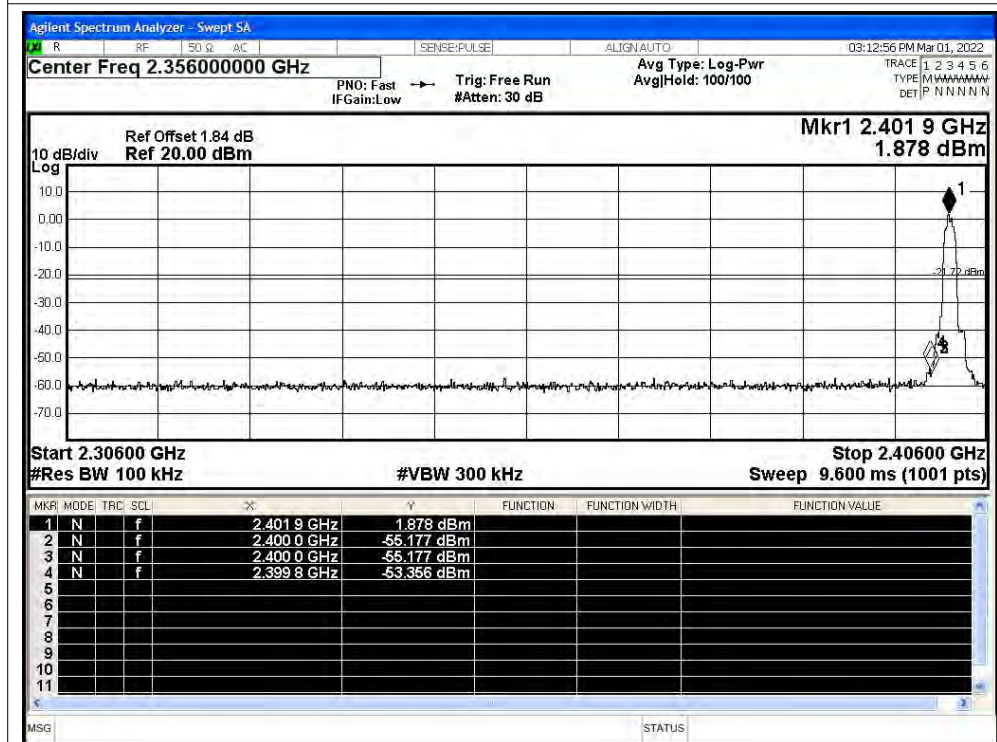




Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Ref

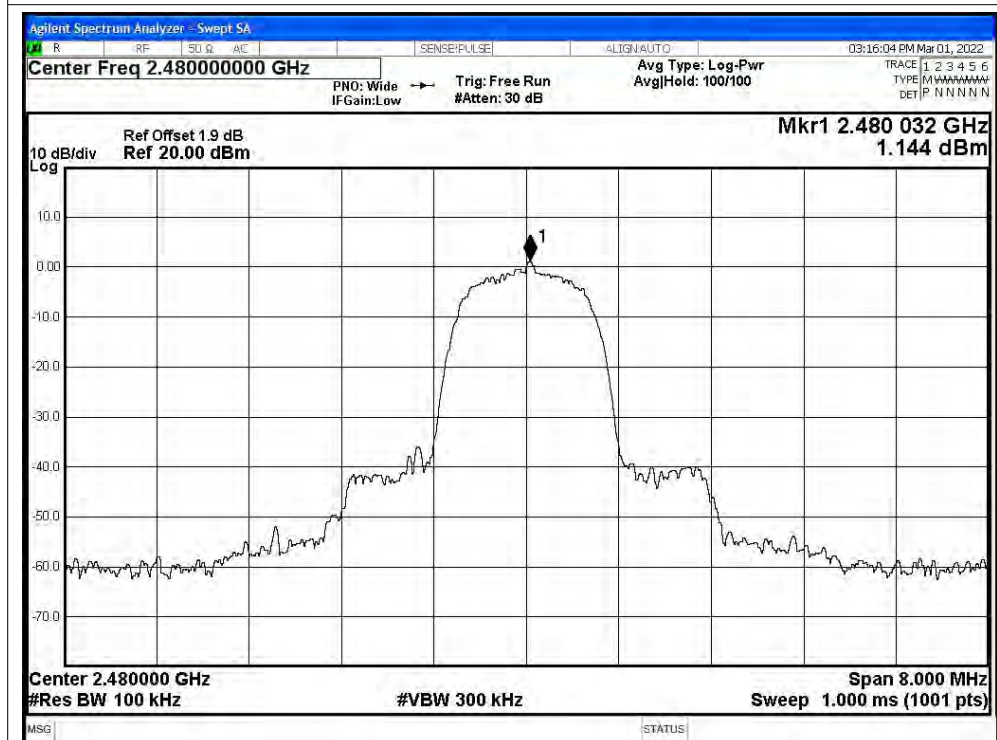


Band Edge NVNT 2-DH5 2402MHz Ant1 No-Hopping Emission

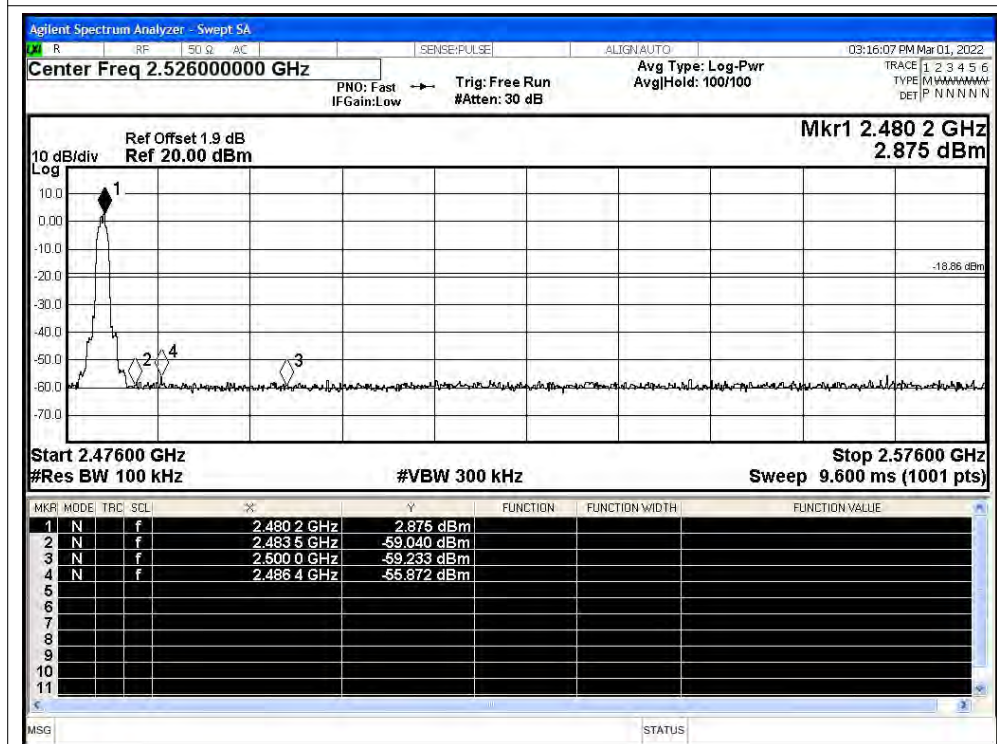




Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Ref

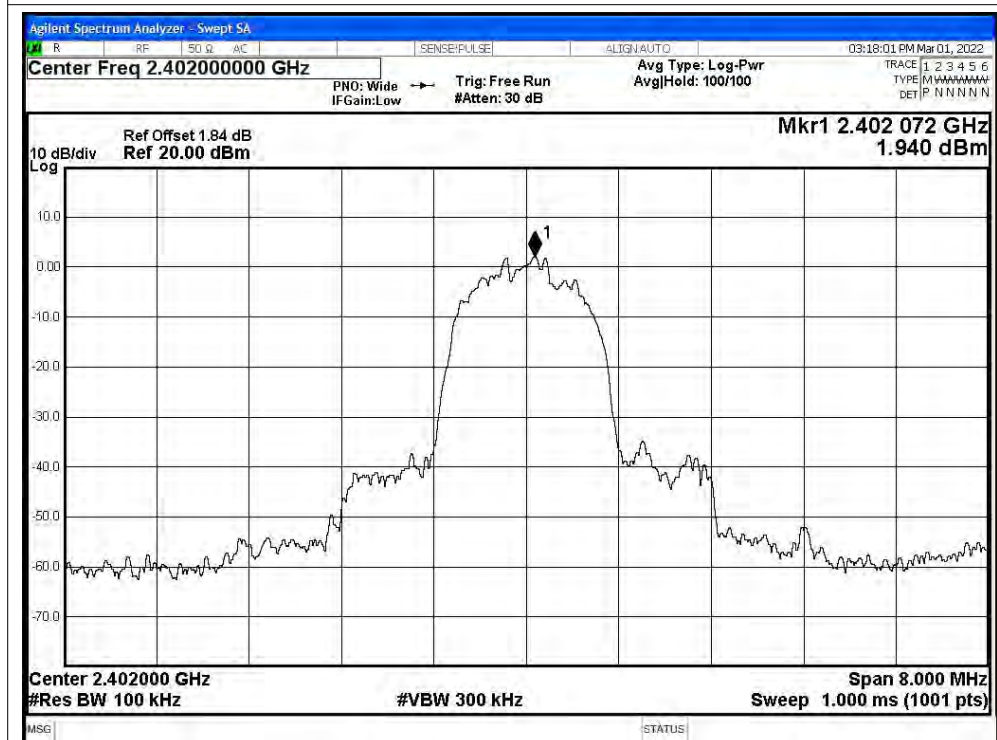


Band Edge NVNT 2-DH5 2480MHz Ant1 No-Hopping Emission

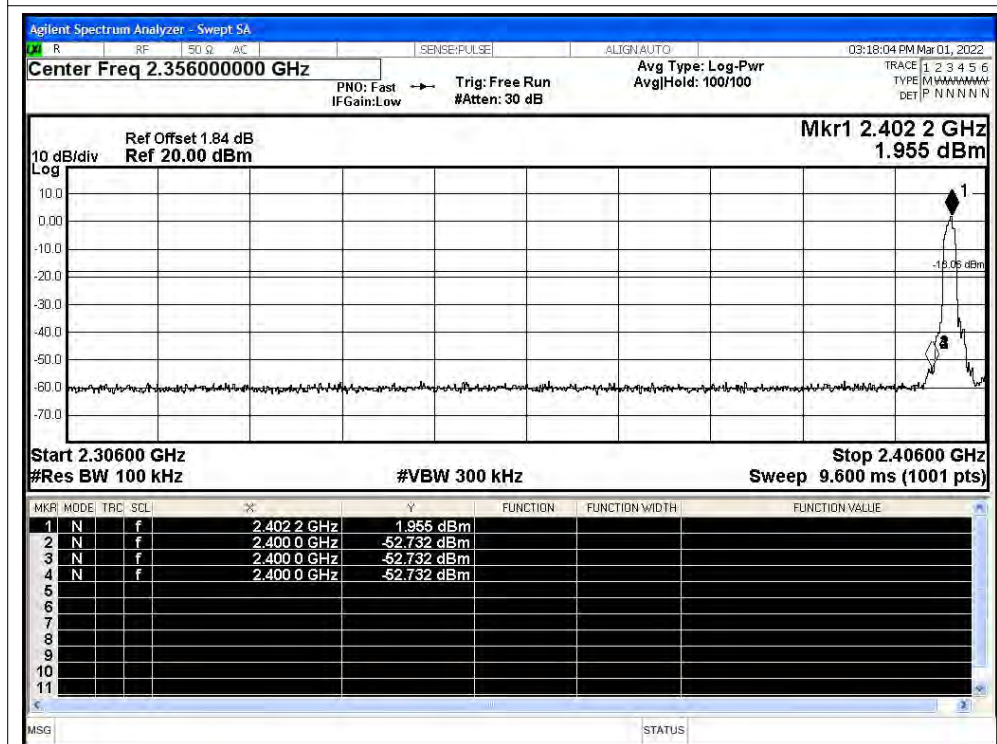




Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Ref

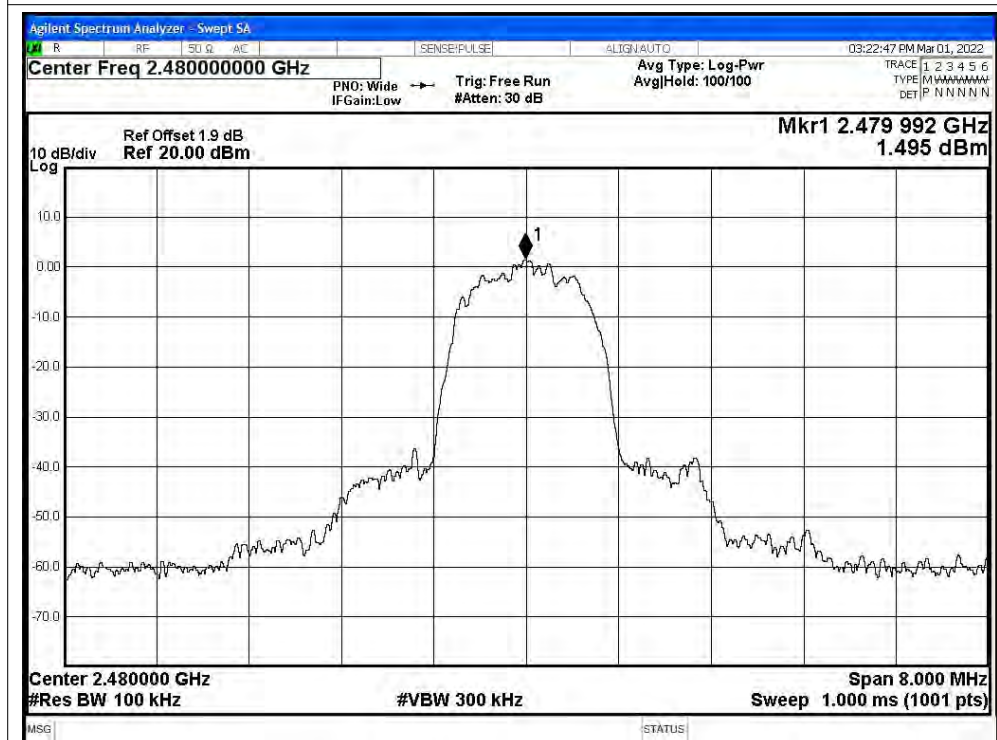


Band Edge NVNT 3-DH5 2402MHz Ant1 No-Hopping Emission

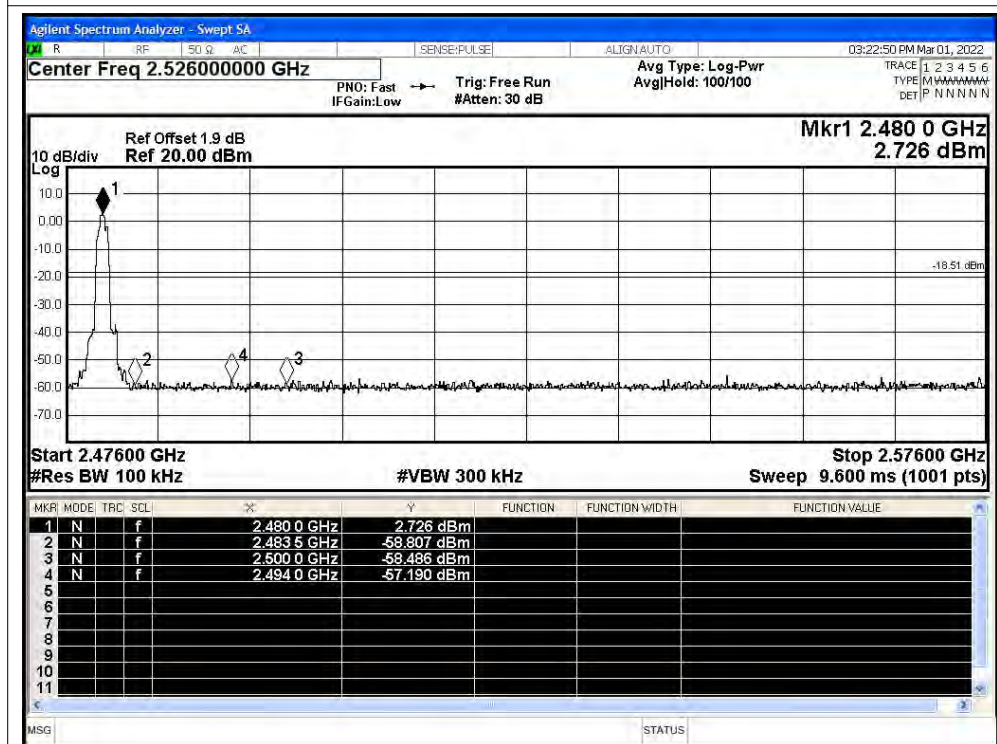




Band Edge NVNT 3-DH5 2480MHz Ant1 No-Hopping Ref



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





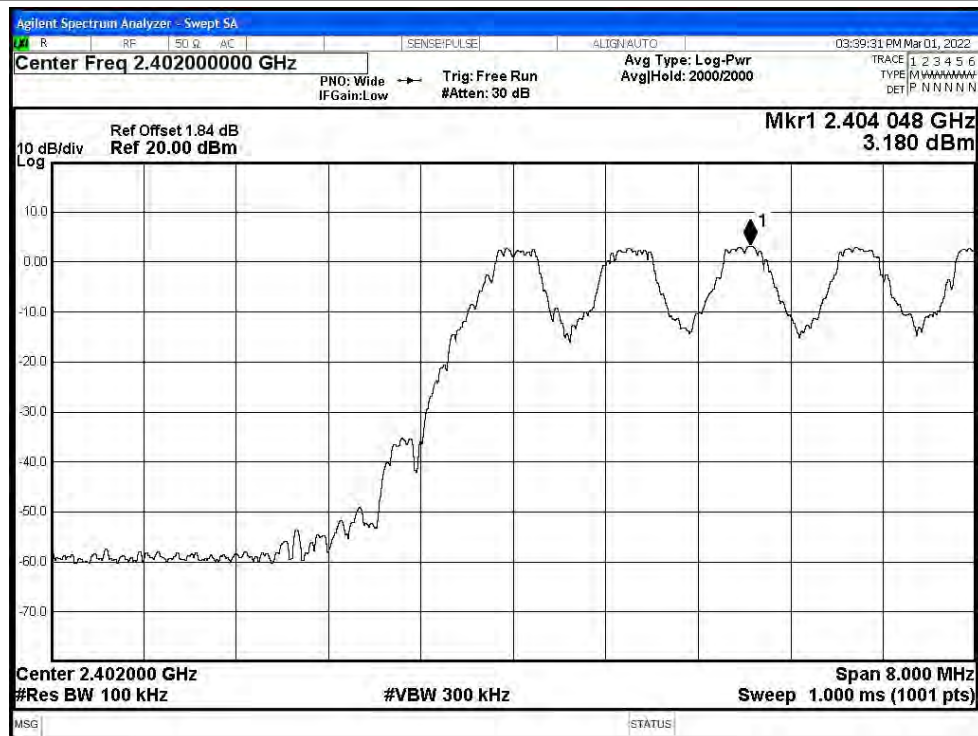
(Hopping)

Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	Hopping	-59.74	-20	Pass
NVNT	1-DH5	2480	Ant1	Hopping	-60.64	-20	Pass
NVNT	2-DH5	2402	Ant1	Hopping	-57.02	-20	Pass
NVNT	2-DH5	2480	Ant1	Hopping	-57.05	-20	Pass
NVNT	3-DH5	2402	Ant1	Hopping	-58.94	-20	Pass
NVNT	3-DH5	2480	Ant1	Hopping	-58.79	-20	Pass

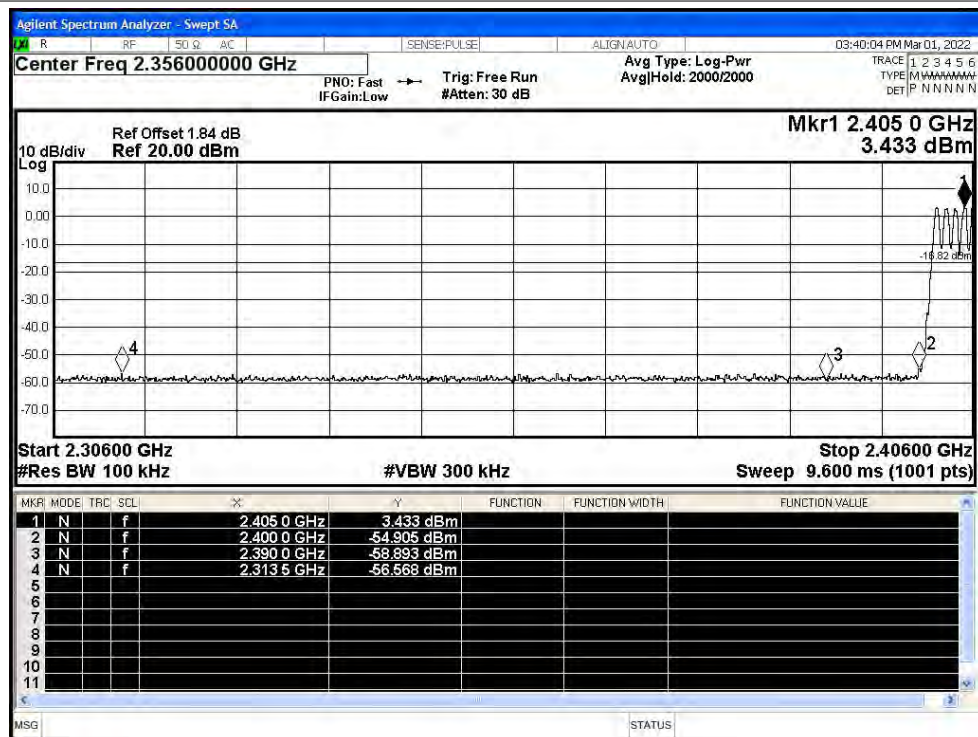


Test Graphs

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

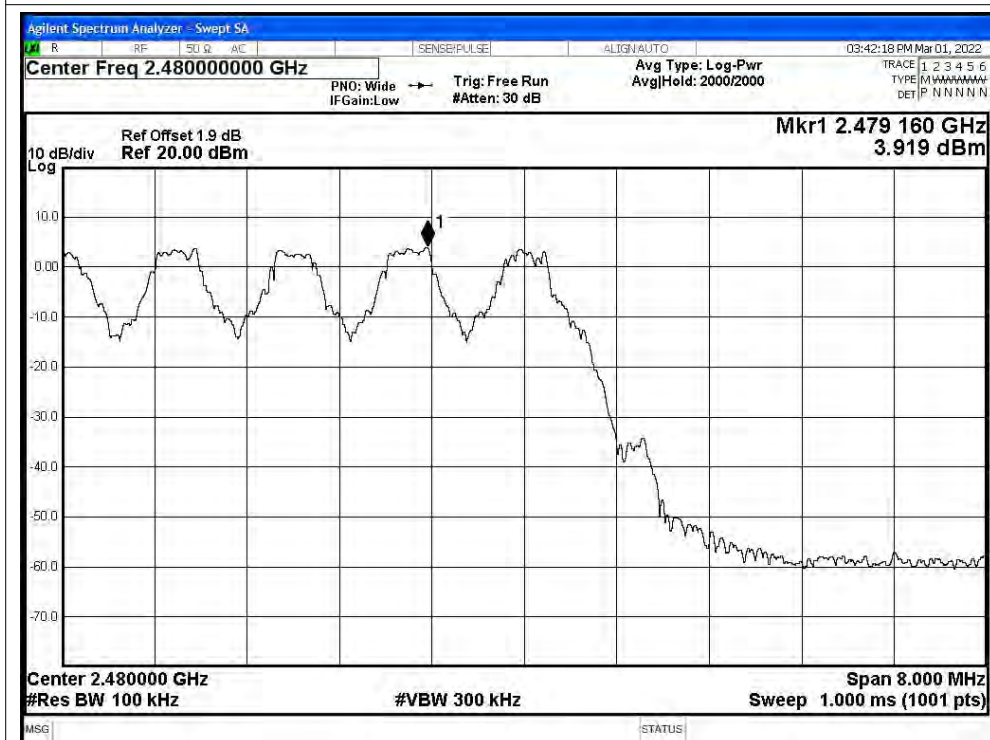


Band Edge(Hopping) NVNT 1-DH5 2402MHz Ant1 Hopping Emission

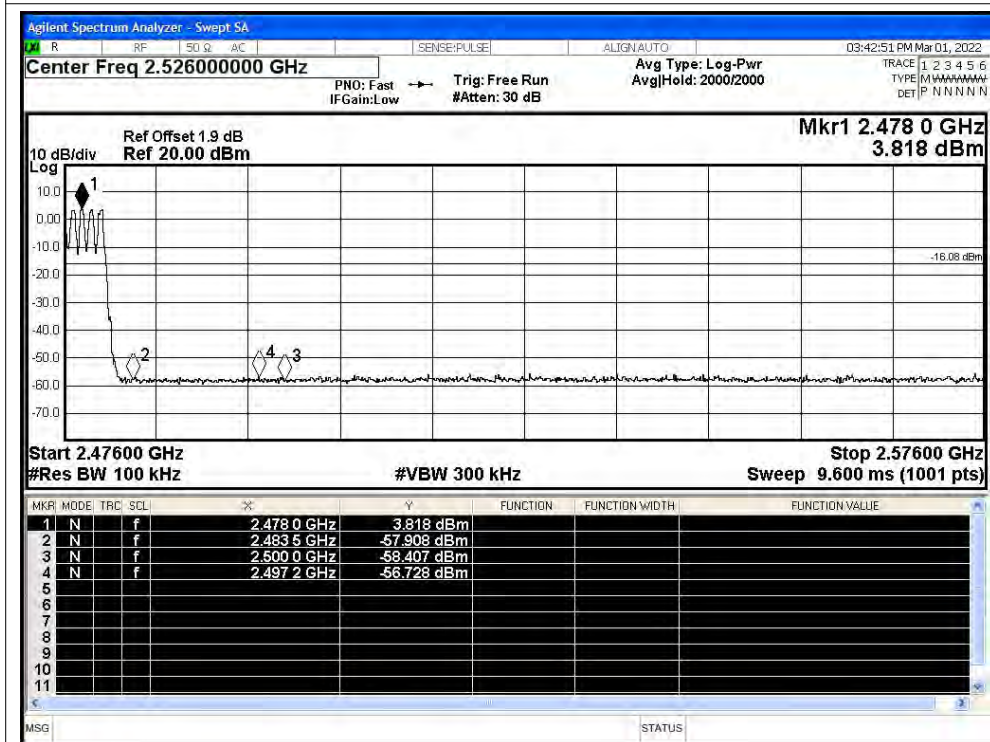




Band Edge(Hopping) NVNT 1-DH5 2480MHz Ant1 Hopping Ref



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

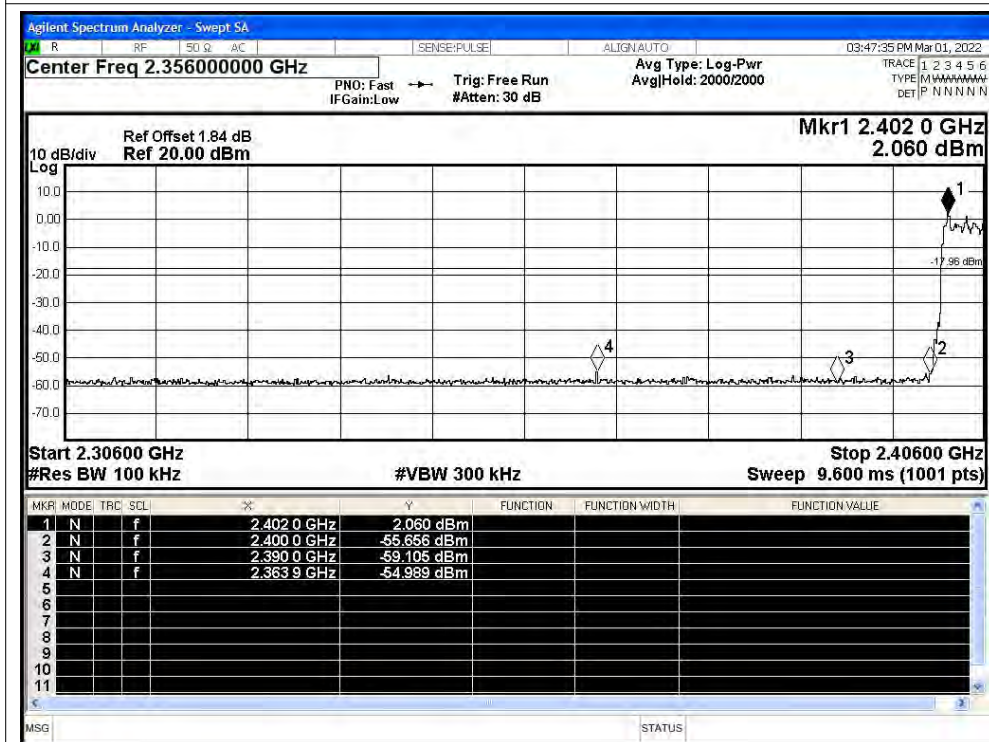




Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Ref

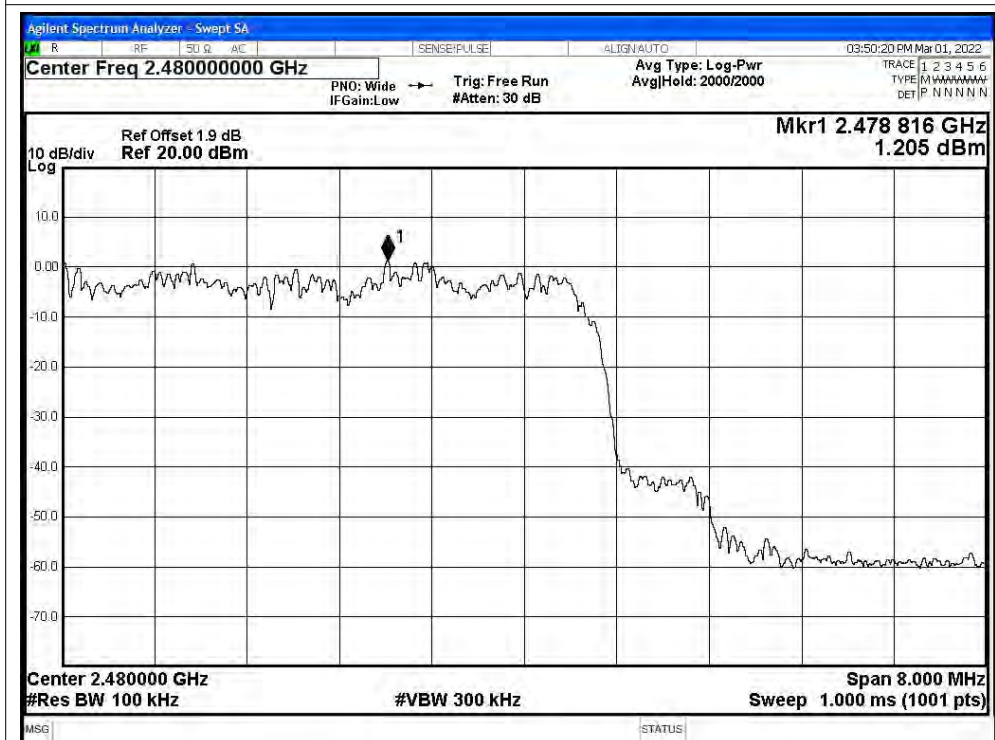


Band Edge(Hopping) NVNT 2-DH5 2402MHz Ant1 Hopping Emission

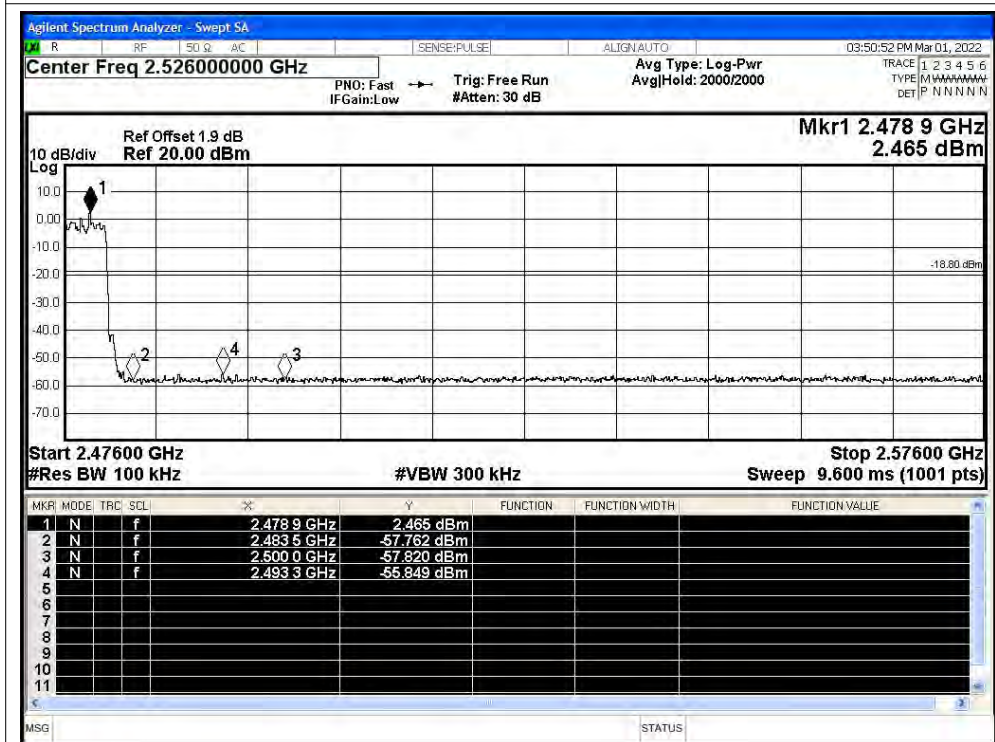




Band Edge(Hopping) NVNT 2-DH5 2480MHz Ant1 Hopping Ref



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

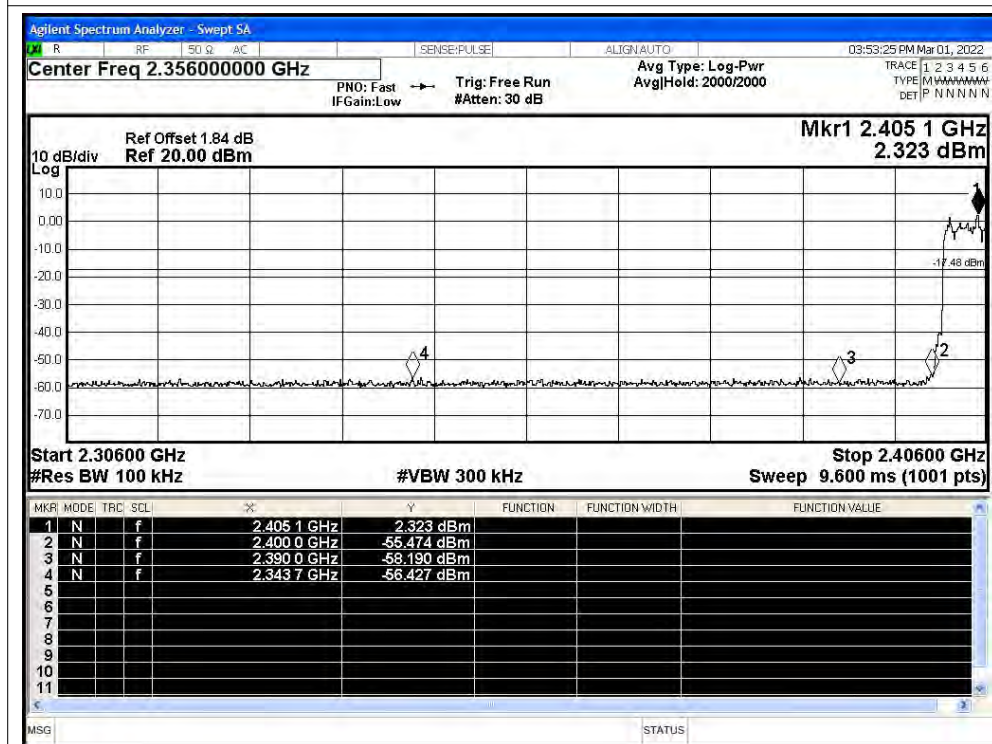




Band Edge(Hopping) NVNT 3-DH5 2402MHz Ant1 Hopping Ref



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

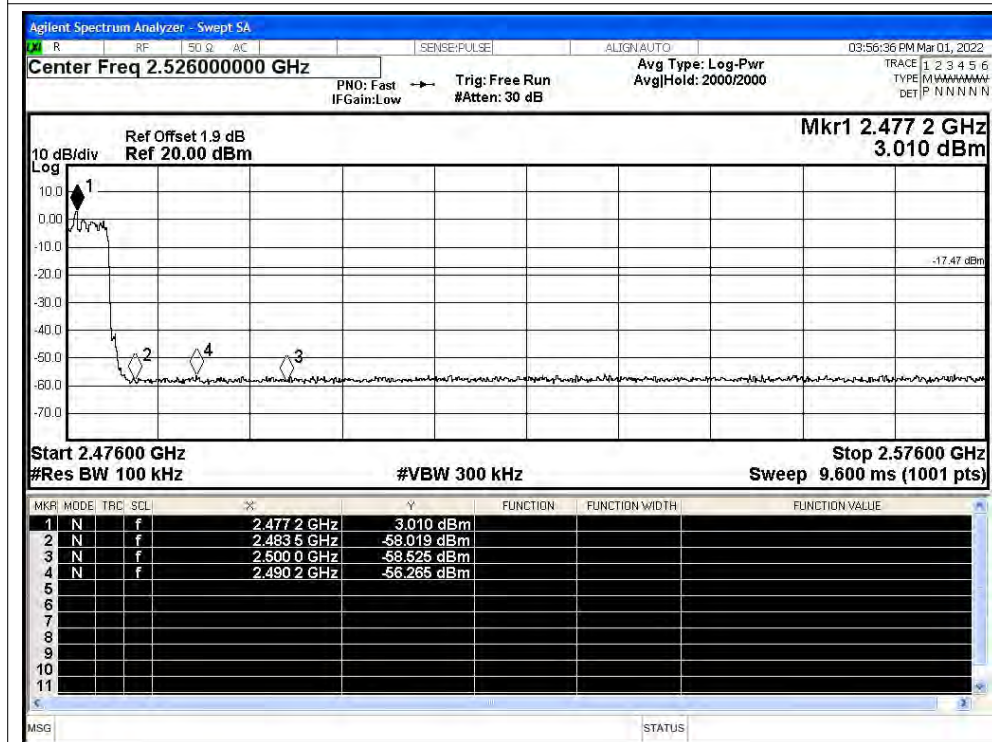




Band Edge(Hopping) NVNT 3-DH5 2480MHz Ant1 Hopping Ref



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





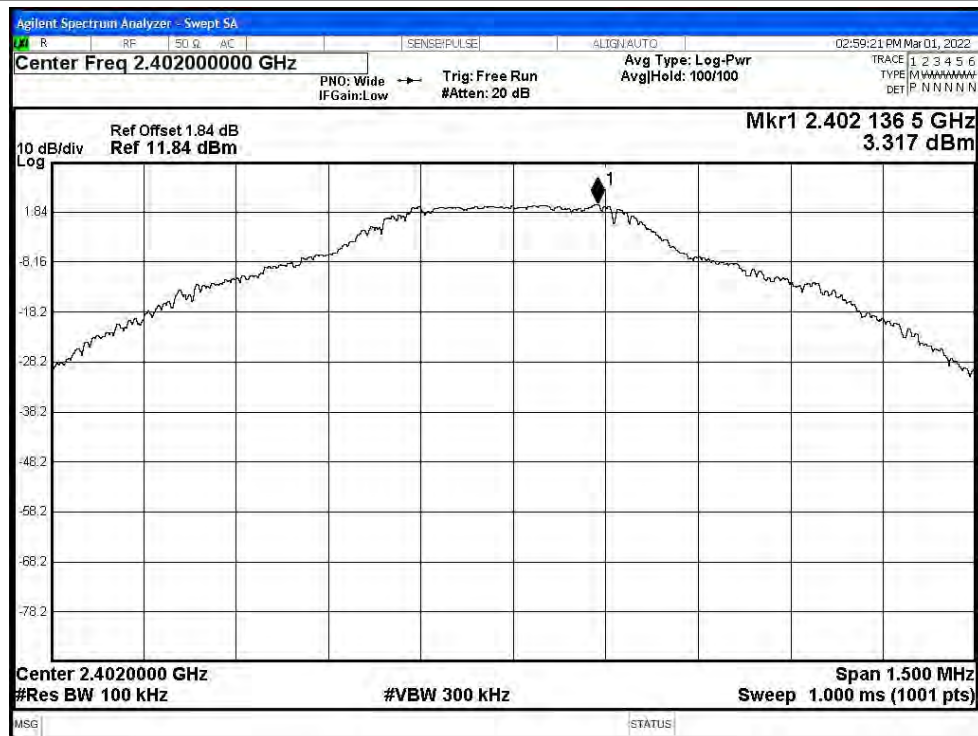
A.7 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH5	2402	Ant1	-57.52	-20	Pass
NVNT	1-DH5	2441	Ant1	-58.38	-20	Pass
NVNT	1-DH5	2480	Ant1	-59.31	-20	Pass
NVNT	2-DH5	2402	Ant1	-56.38	-20	Pass
NVNT	2-DH5	2441	Ant1	-58.25	-20	Pass
NVNT	2-DH5	2480	Ant1	-58.44	-20	Pass
NVNT	3-DH5	2402	Ant1	-57.85	-20	Pass
NVNT	3-DH5	2441	Ant1	-58.09	-20	Pass
NVNT	3-DH5	2480	Ant1	-58.37	-20	Pass

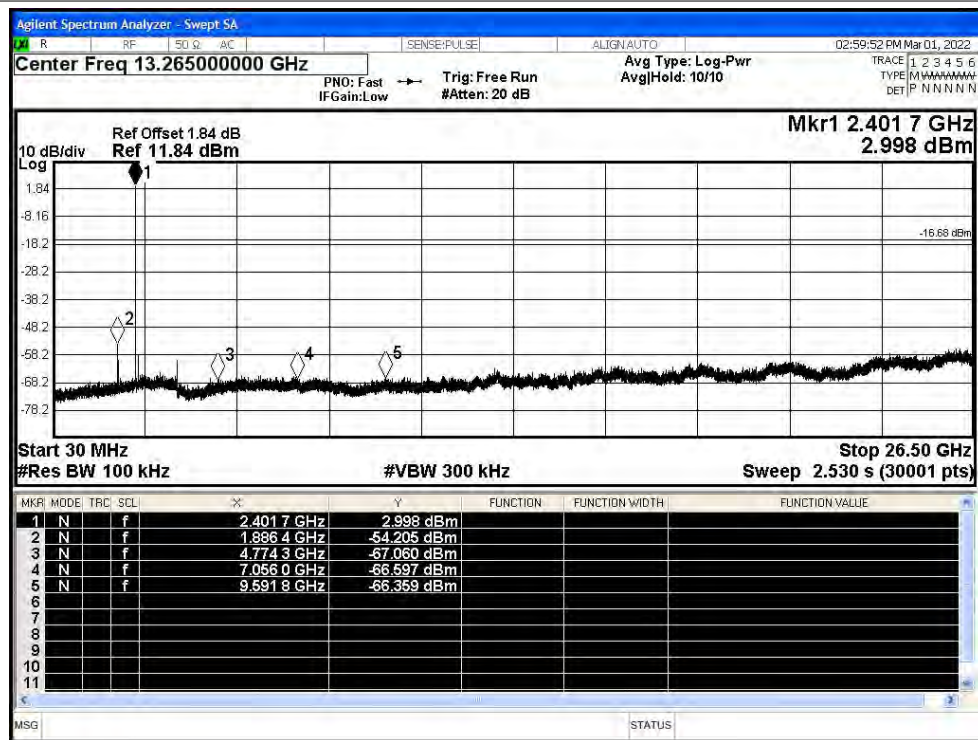


Test Graphs

Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Ref

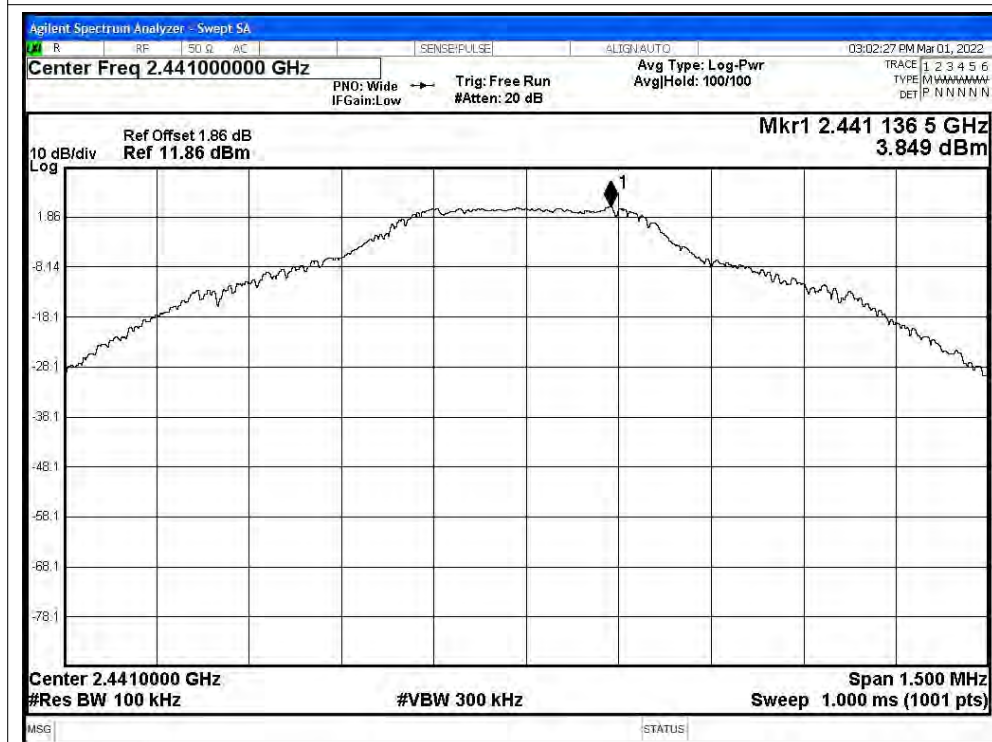


Tx. Spurious NVNT 1-DH5 2402MHz Ant1 Emission

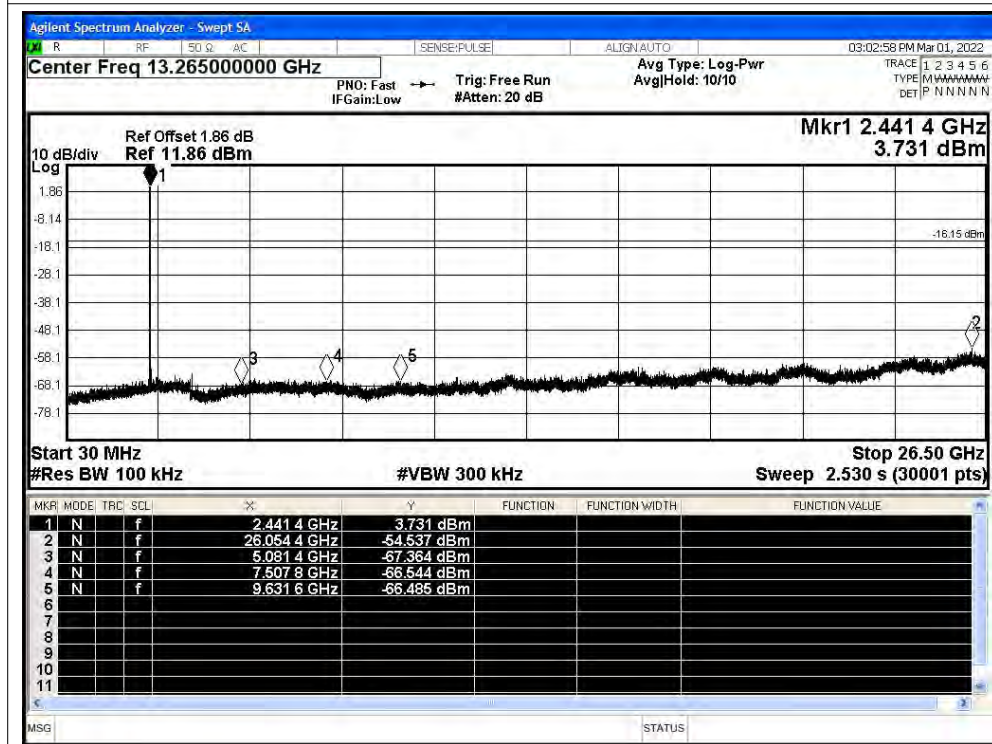




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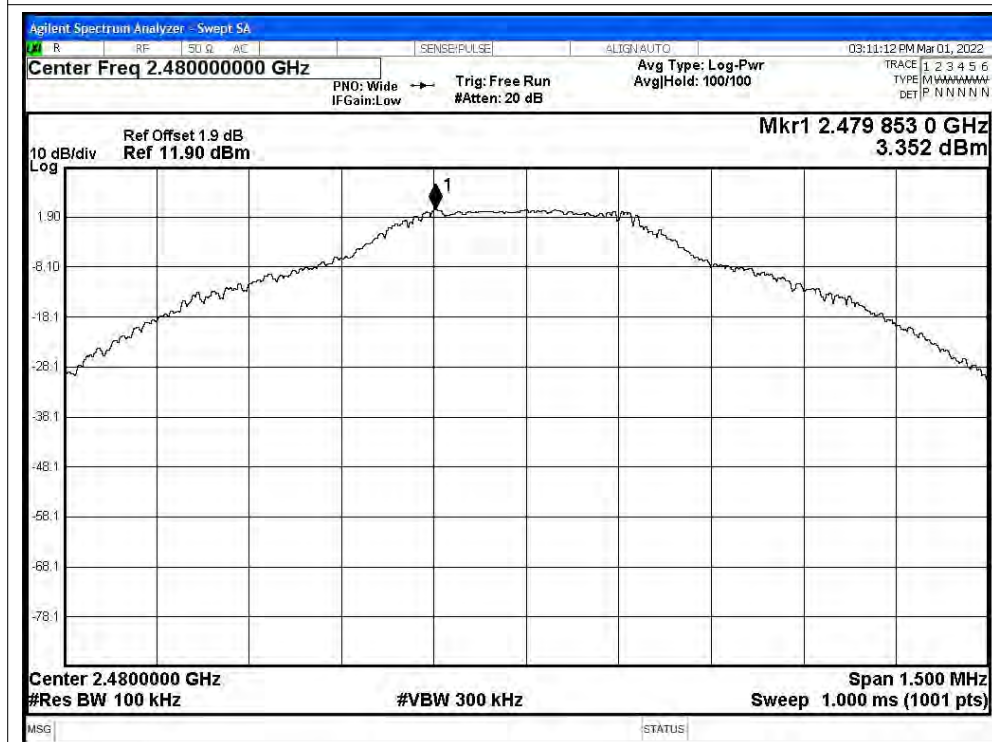


Tx. Spurious NVNT 1-DH5 2441MHz Ant1 Emission

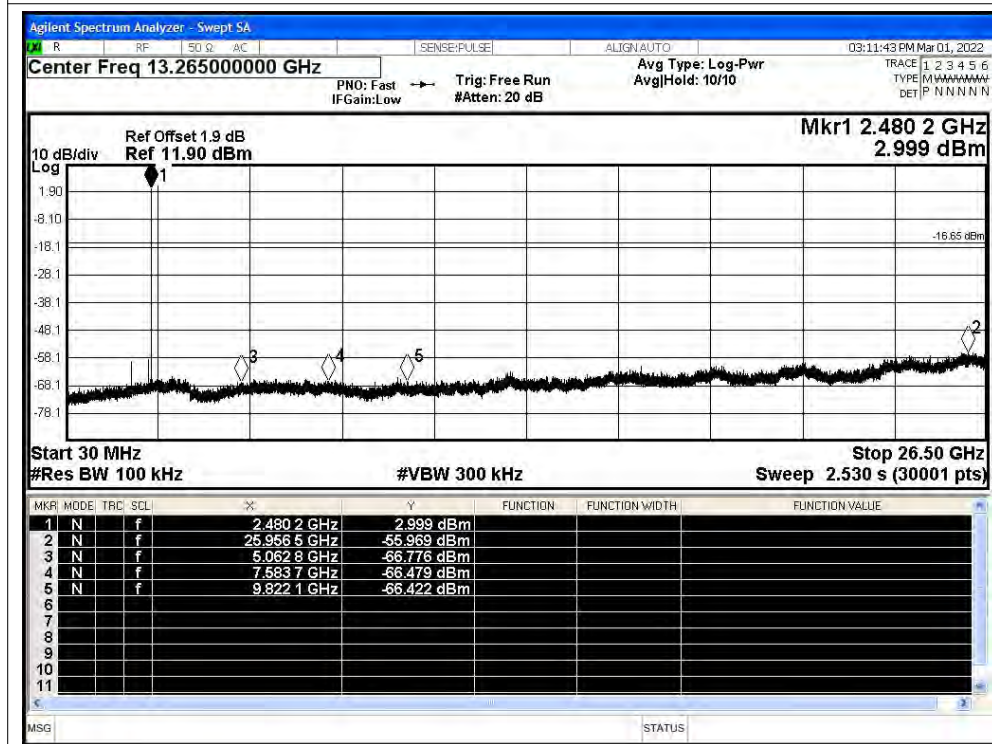




Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Ref

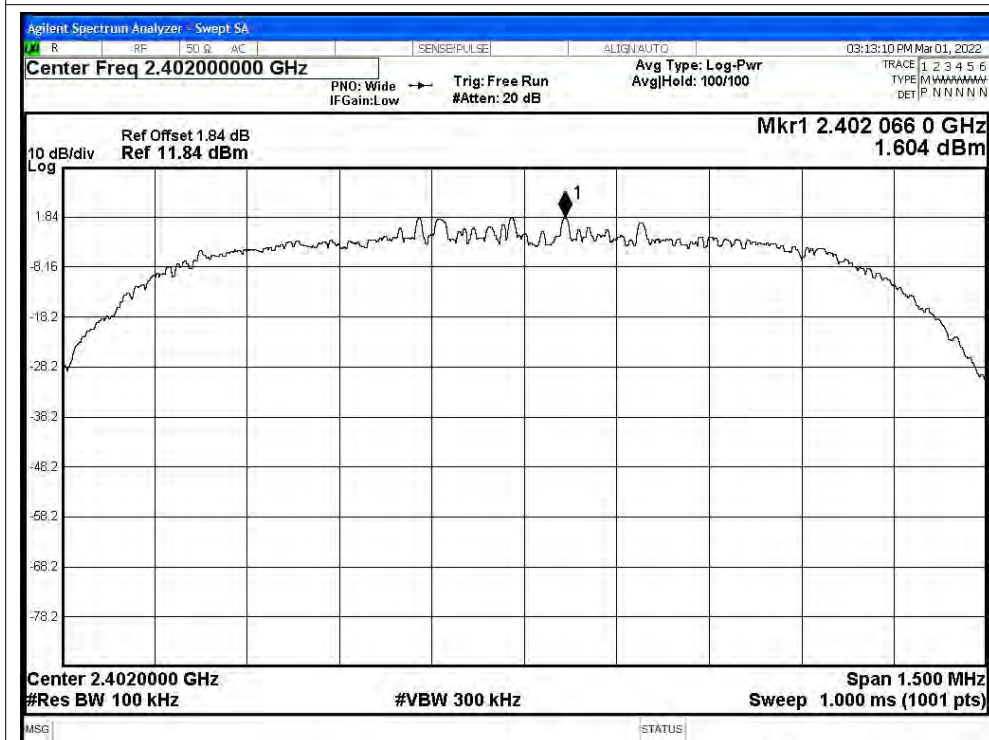


Tx. Spurious NVNT 1-DH5 2480MHz Ant1 Emission

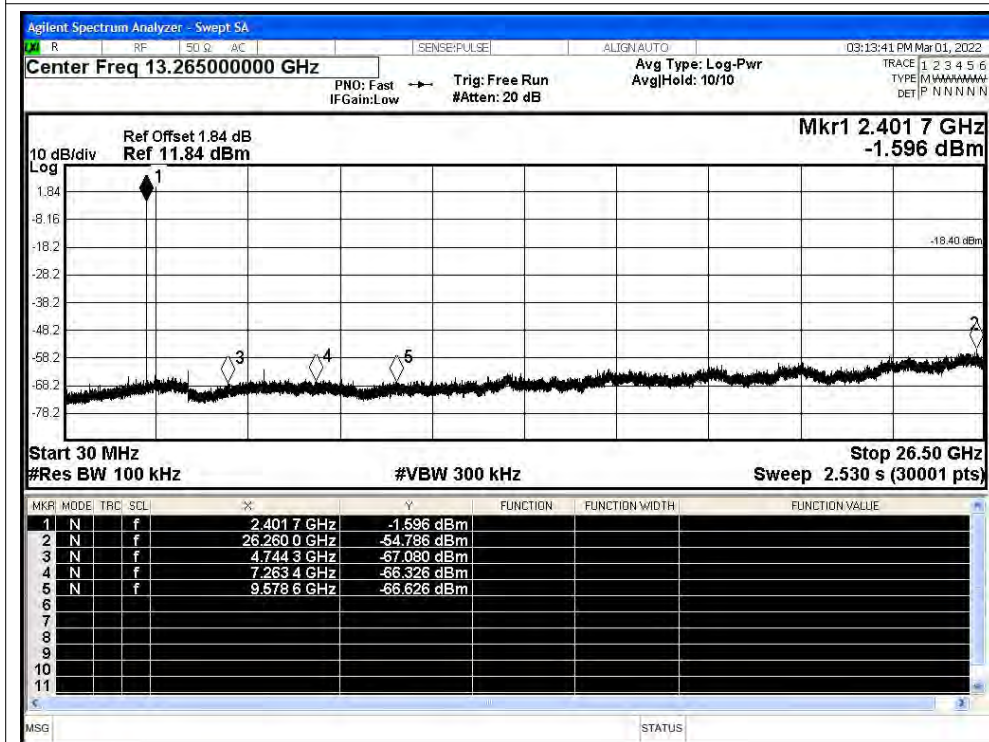




Tx. Spurious NVNT 2-DH5 2402MHz Ant1 Ref

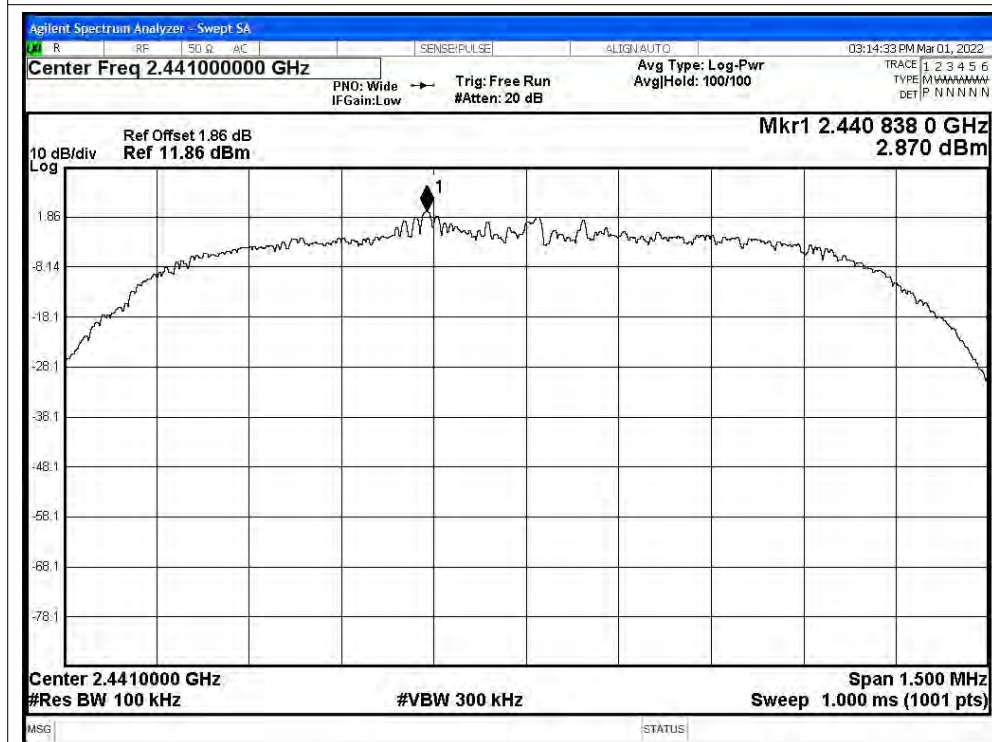


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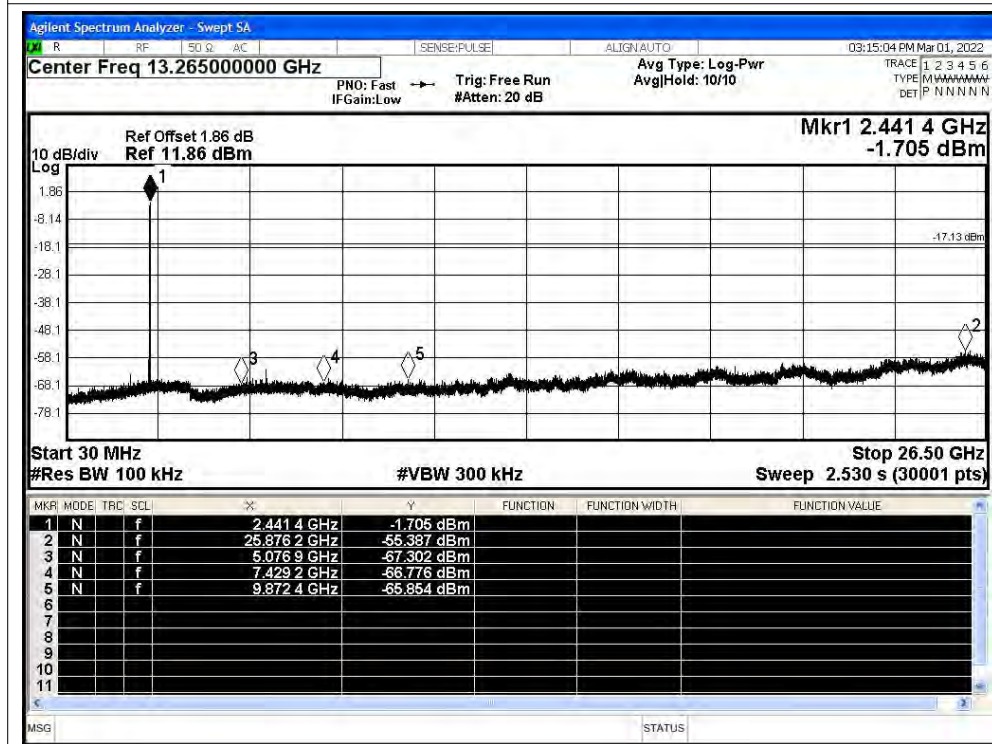




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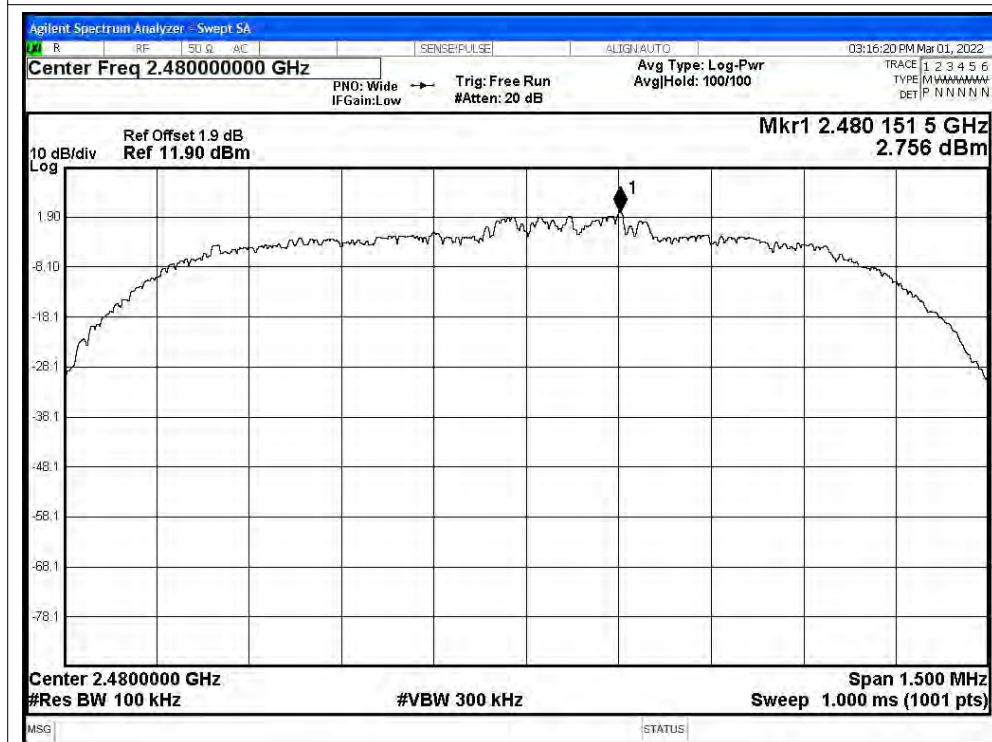


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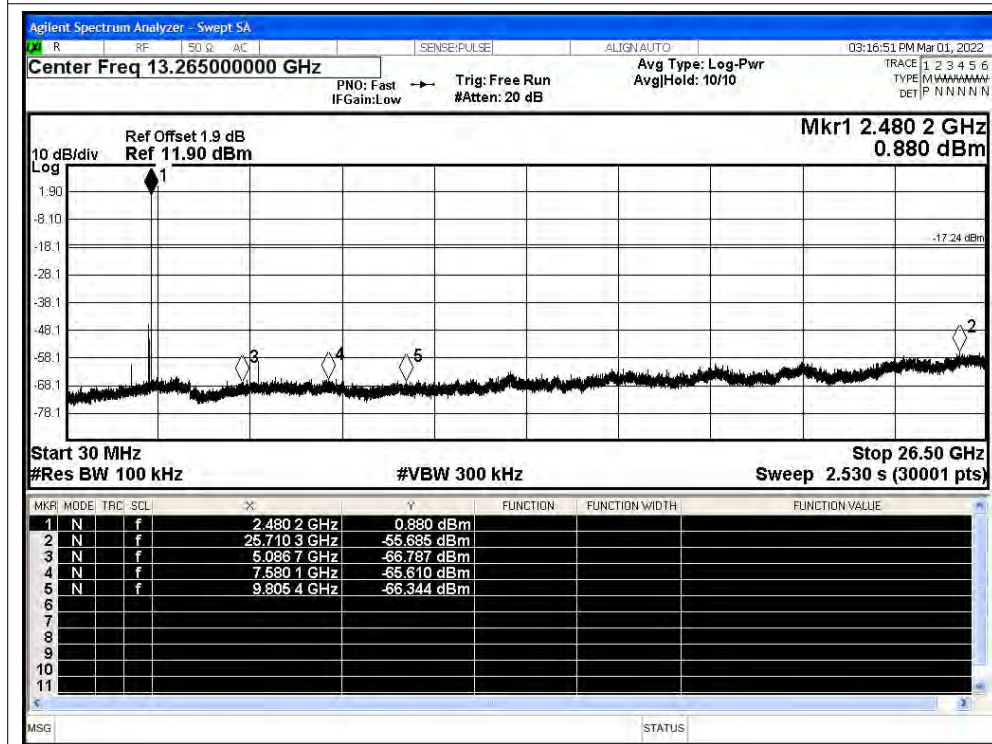




Tx. Spurious NVNT 2-DH5 2480MHz Ant1 Ref

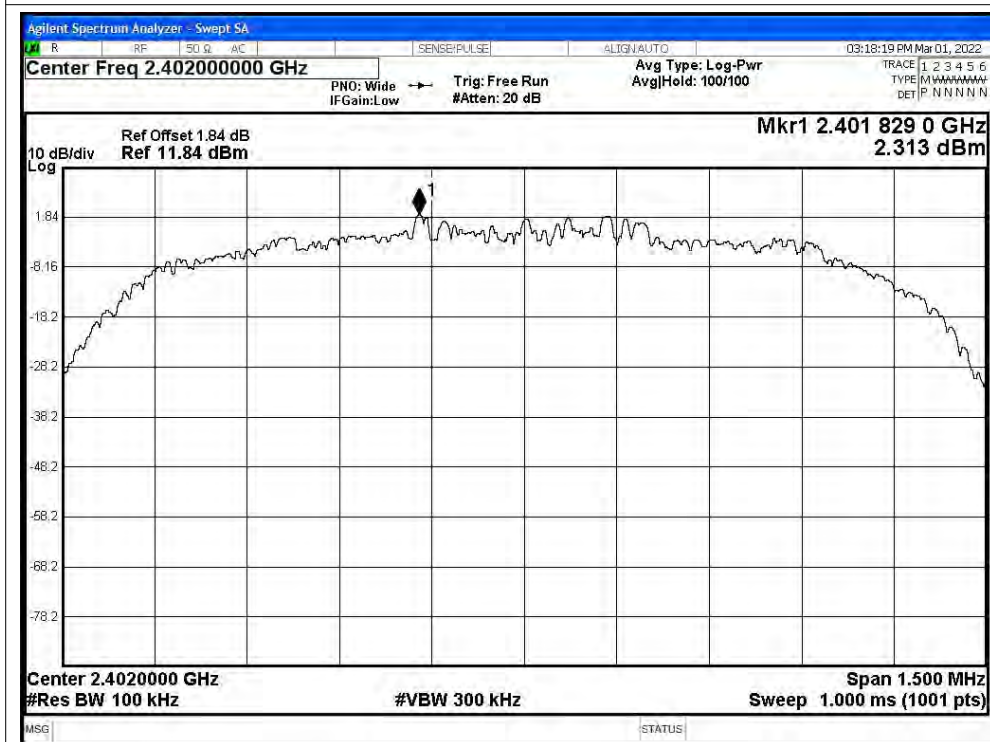


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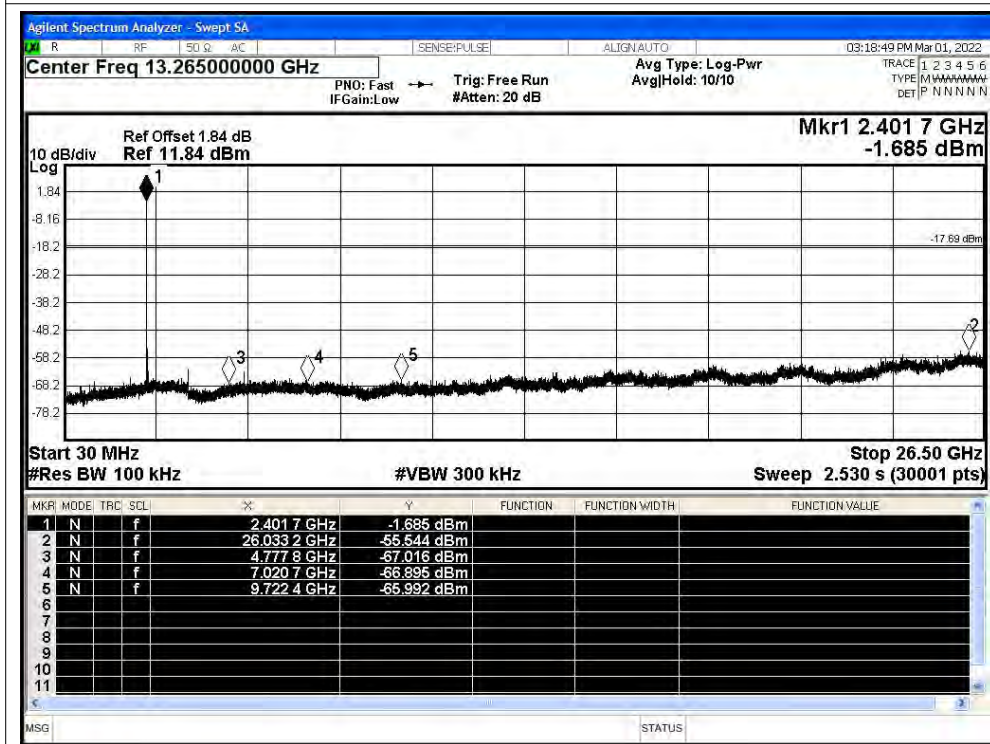




Tx. Spurious NVNT 3-DH5 2402MHz Ant1 Ref

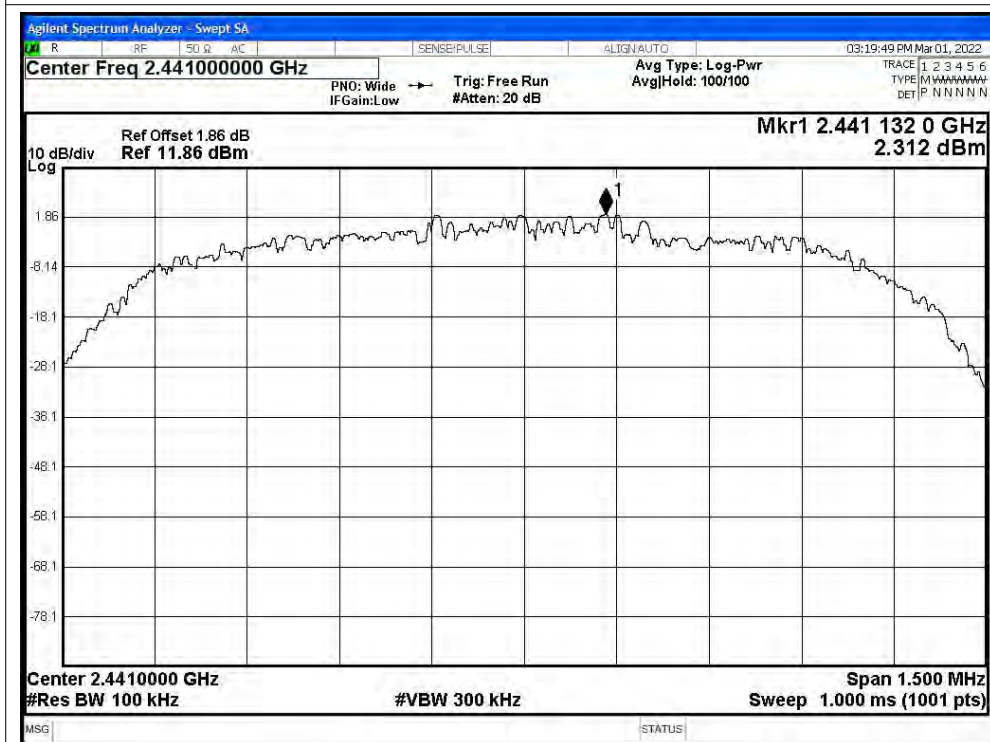


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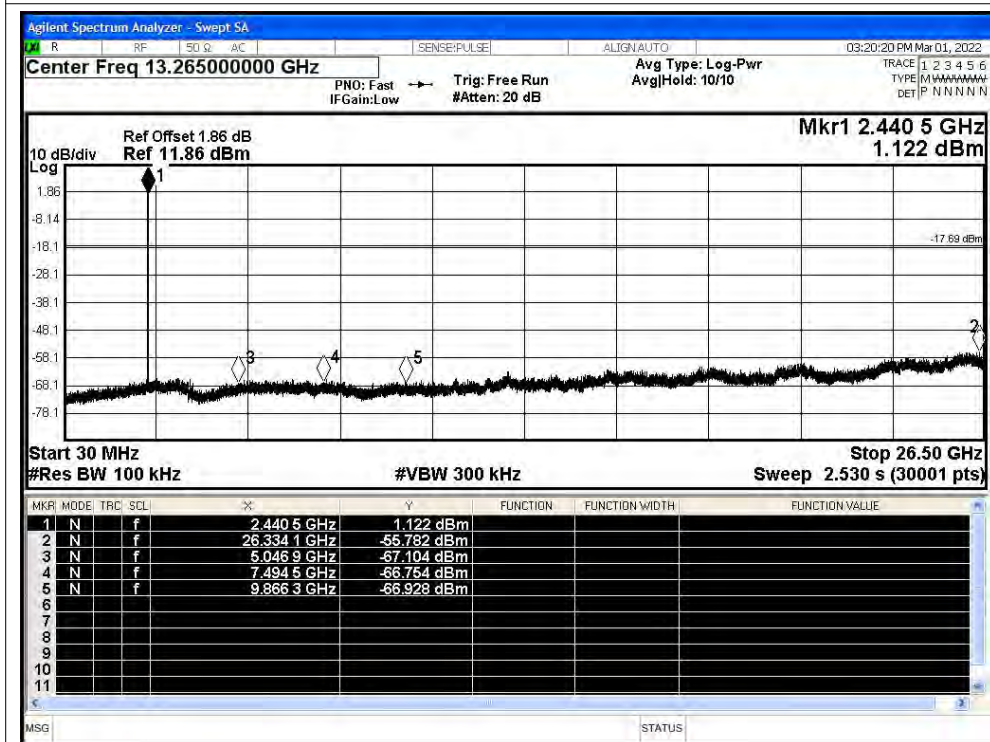




Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Ref

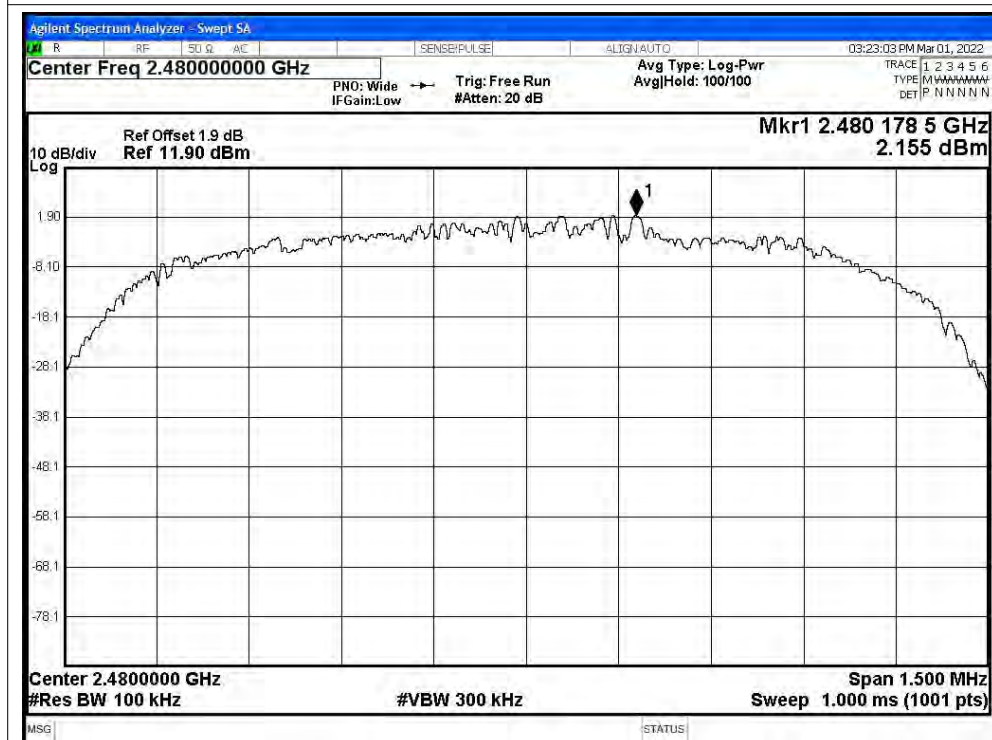


Tx. Spurious NVNT 3-DH5 2441MHz Ant1 Emission

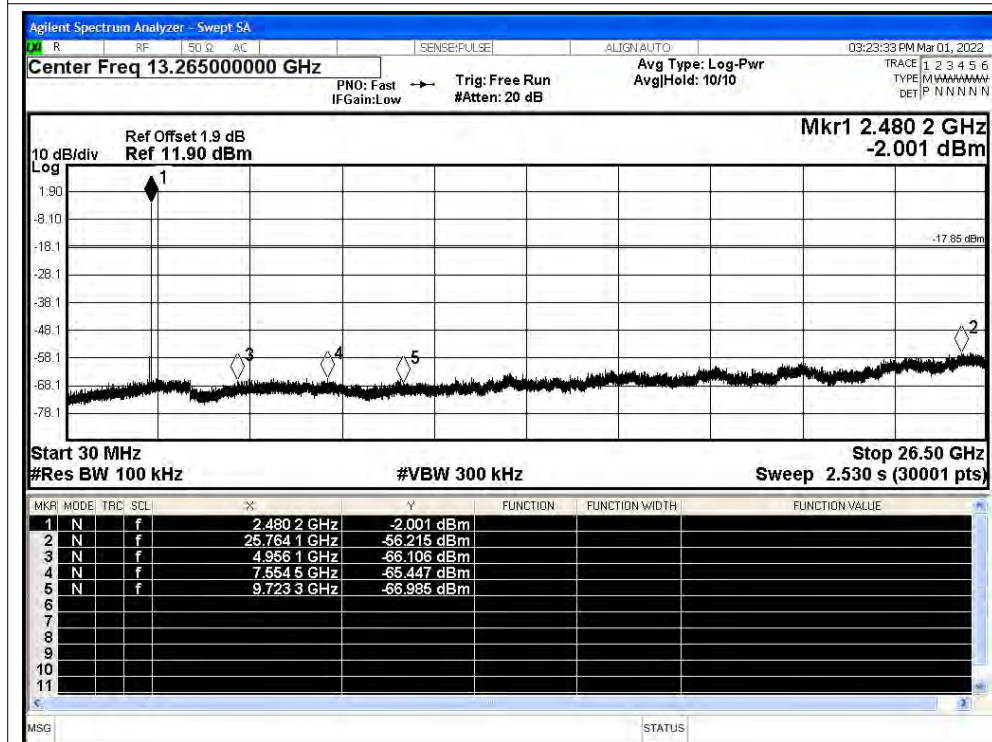




Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH5 2480MHz Ant1 Emission



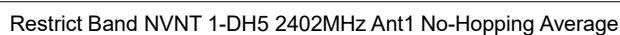


A.8 Emissions at Restricted Band

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	-50.73	2	46.53	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2310	-60.6	2	36.66	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2383.33	-47.91	2	49.35	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2386.19	-60.09	2	37.17	Average	54	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-50.97	2	46.29	Peak	74	Pass
NVNT	1-DH5	2402	Ant1	No-Hopping	2390	-60.27	2	36.99	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-50.32	2	46.94	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.5	-59.27	2	37.99	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2491.84	-46.4	2	50.86	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2483.56	-59.19	2	38.07	Average	54	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-48.66	2	48.6	Peak	74	Pass
NVNT	1-DH5	2480	Ant1	No-Hopping	2500	-60.07	2	37.19	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-50.74	2	46.52	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2310	-60.71	2	36.55	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2349.84	-47.79	2	49.47	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2389.872	-60.14	2	37.12	Average	54	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-50.4	2	46.86	Peak	74	Pass
NVNT	2-DH5	2402	Ant1	No-Hopping	2390	-60.26	2	37	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-48.72	2	48.54	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.5	-59.26	2	38	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2491.888	-47.18	2	50.08	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2483.752	-59.23	2	38.03	Average	54	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-50.27	2	46.99	Peak	74	Pass
NVNT	2-DH5	2480	Ant1	No-Hopping	2500	-59.95	2	37.31	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-49.76	2	47.5	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2310	-60.64	2	36.62	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2361.072	-47.37	2	49.89	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2379.12	-60.12	2	37.14	Average	54	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-50.95	2	46.31	Peak	74	Pass
NVNT	3-DH5	2402	Ant1	No-Hopping	2390	-60.27	2	36.99	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-49.15	2	48.11	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.5	-59.28	2	37.98	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2484.04	-46.82	2	50.44	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2483.536	-59.26	2	38	Average	54	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-50.98	2	46.28	Peak	74	Pass
NVNT	3-DH5	2480	Ant1	No-Hopping	2500	-59.95	2	37.31	Average	54	Pass

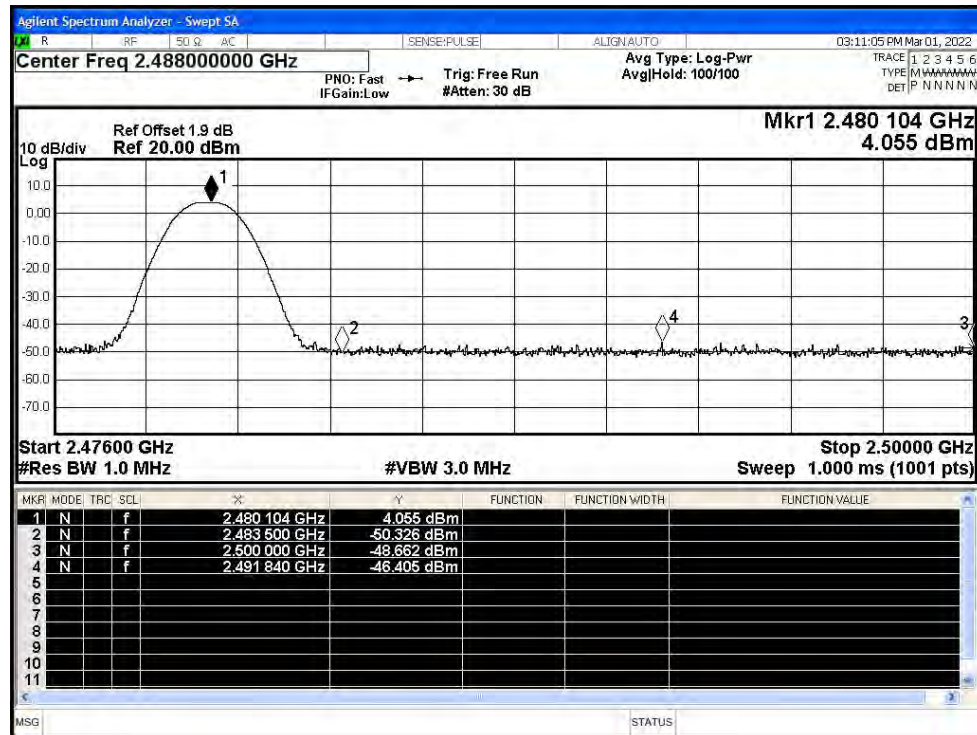


Restrict Band NVNT 1-DH5 2402MHz Ant1 No-Hopping Peak

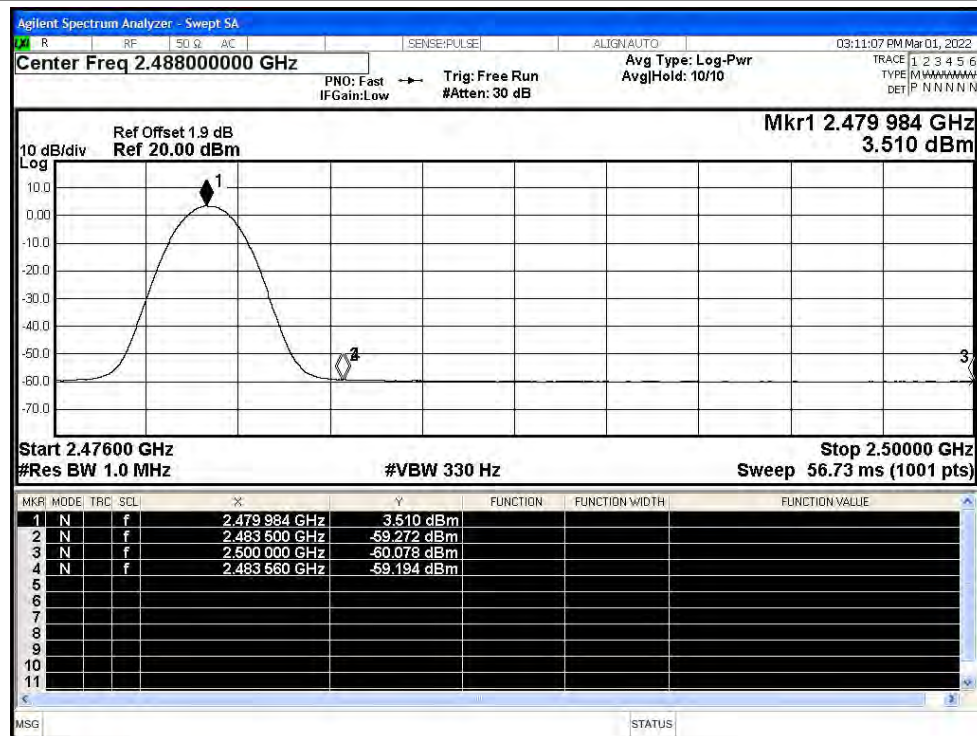




Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Peak

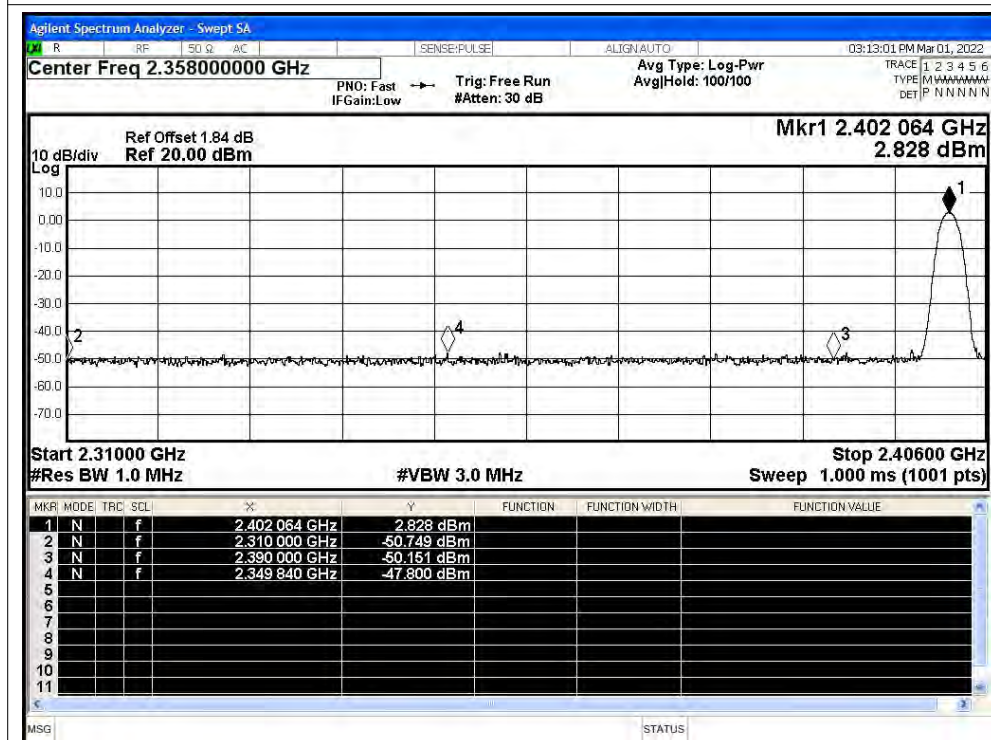


Restrict Band NVNT 1-DH5 2480MHz Ant1 No-Hopping Average

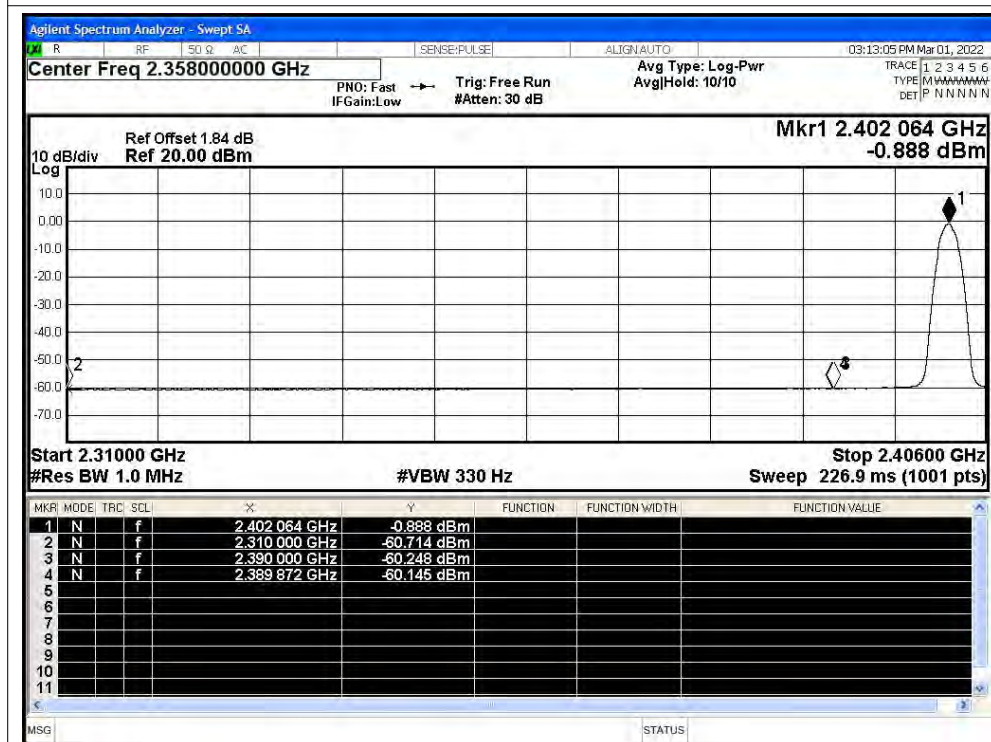




Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Peak

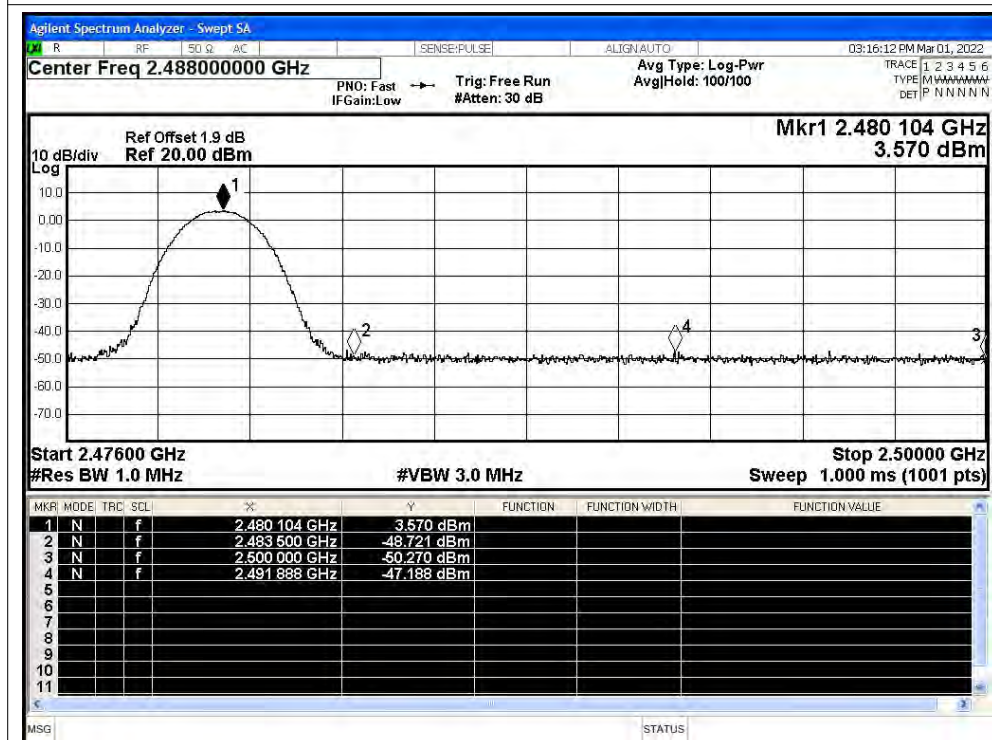


Restrict Band NVNT 2-DH5 2402MHz Ant1 No-Hopping Average

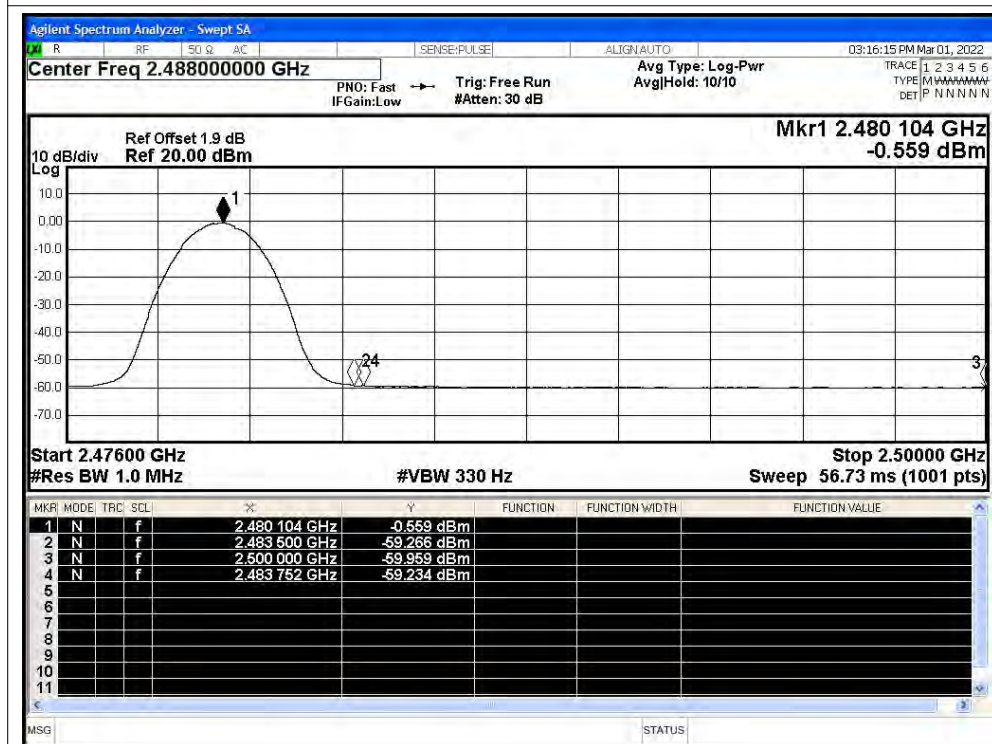




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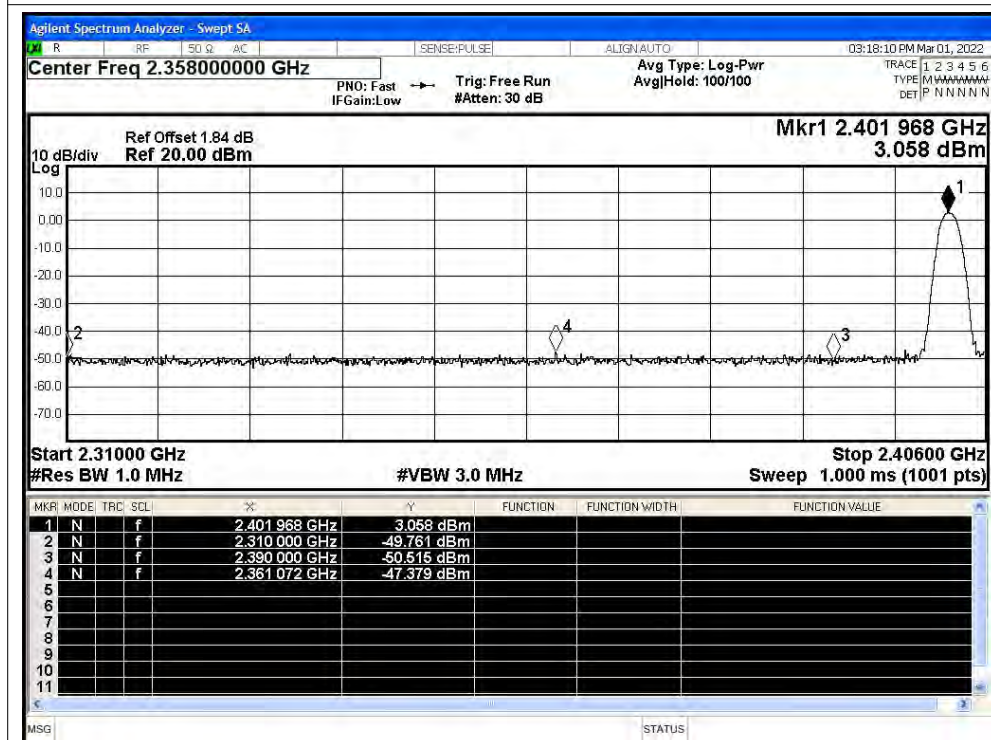


Restrict Band NVNT 2-DH5 2480MHz Ant1 No-Hopping Average

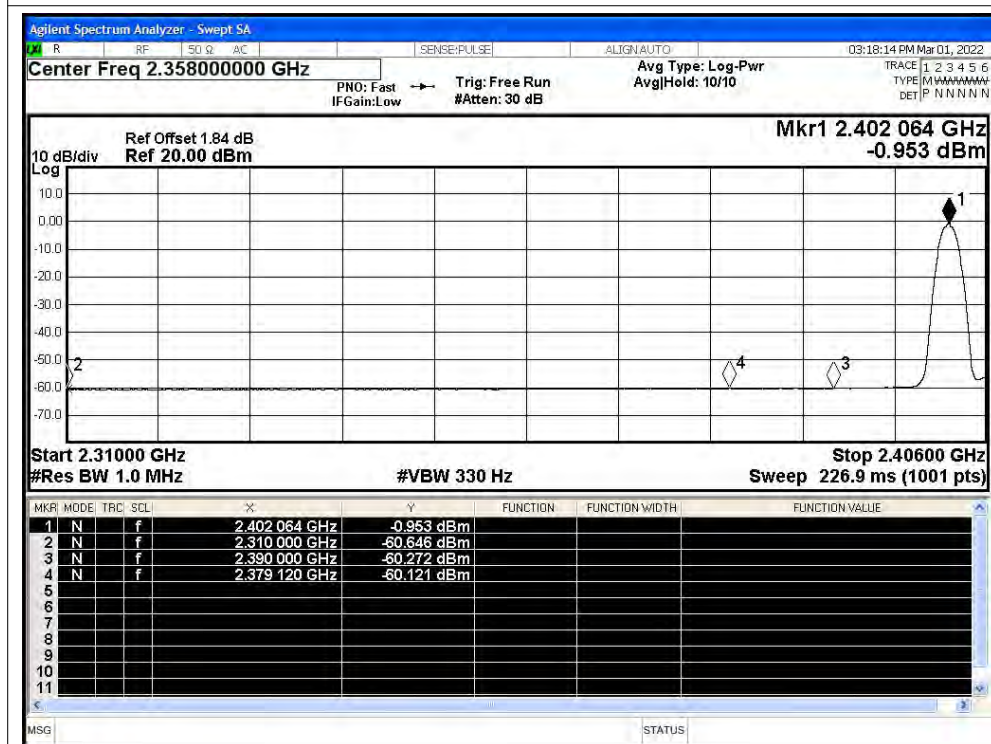




Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Peak

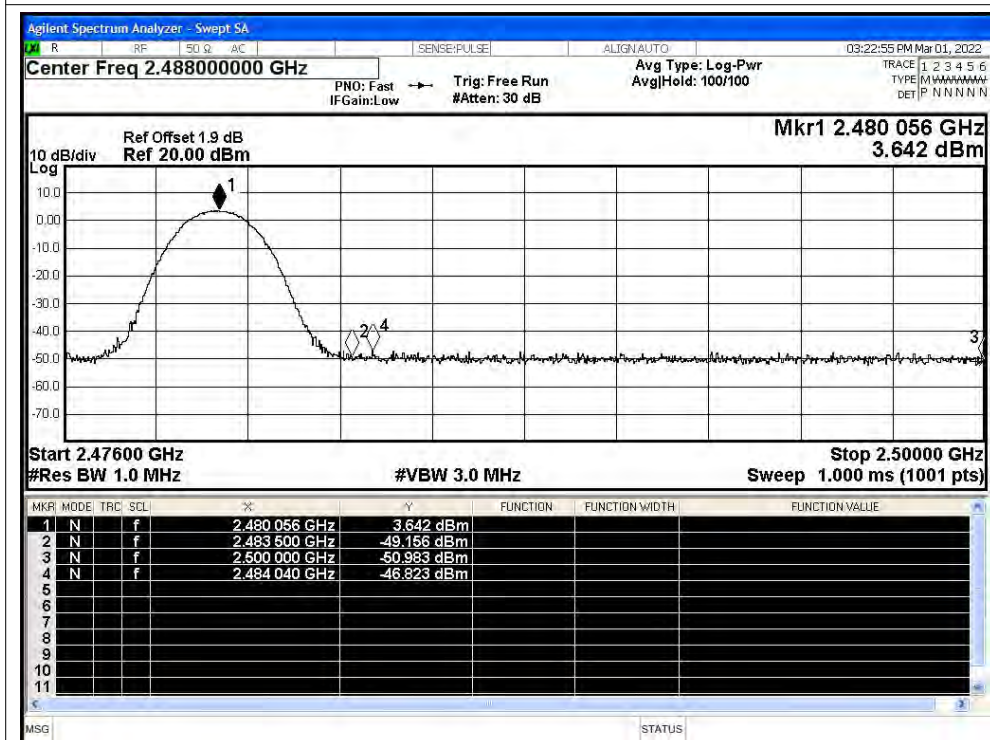


Restrict Band NVNT 3-DH5 2402MHz Ant1 No-Hopping Average





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



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

