

RF Test Data for Bluetooth (Conducted Measurements)

General Description of EUT	
Product Name:	Smart Watch
Test Model:	NoiseFit Halo
Sample ID:	HC-C-202411-0262-01-01
Environmental Conditions	
Temperature:	25.6℃
Relative Humidity:	48.6%
Test Voltage:	DC 3.8V
Test Engineer:	Rick.Chen
Note: For a more detailed features description, please refer to the report TBR-C-202411-0262-23 The report only show the worst case data.	

Contents

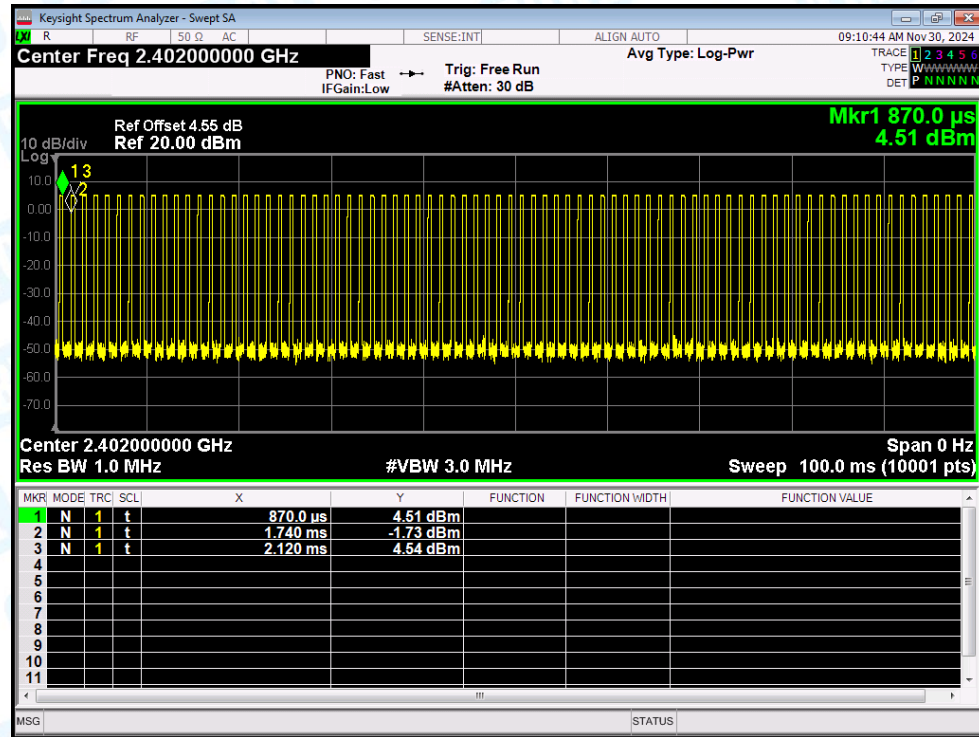
1.	Duty Cycle	3
2.	Maximum Conducted Output Power	9
3.	-20dB Bandwidth	15
4.	Occupied Channel Bandwidth	21
5.	Band Edge	27
6.	Band Edge(Hopping)	34
7.	Conducted RF Spurious Emission	41
8.	Restrict Band	51
9.	Carrier Frequencies Separation	58
10.	Number of Hopping Channel	61
11.	Dwell Time	64

1. Duty Cycle

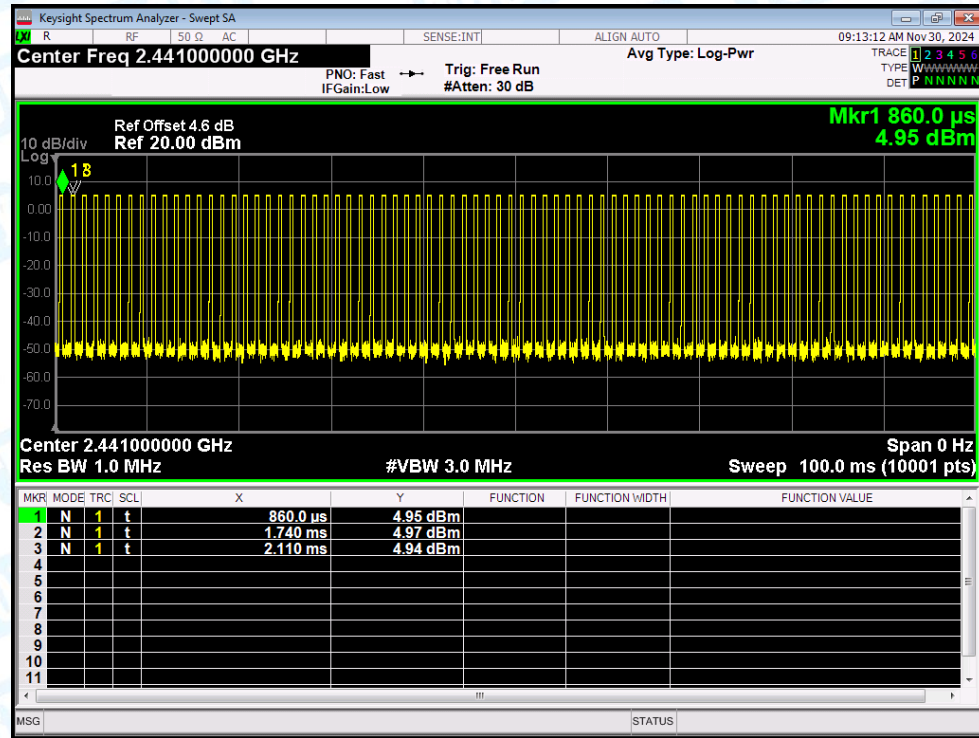
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH1	2402	Ant1	30.4	5.17	2.63
NVNT	1-DH1	2441	Ant1	29.6	5.29	2.7
NVNT	1-DH1	2480	Ant1	29.6	5.29	2.7
NVNT	2-DH1	2402	Ant1	30.4	5.17	2.63
NVNT	2-DH1	2441	Ant1	30.4	5.17	2.63
NVNT	2-DH1	2480	Ant1	30.4	5.17	2.63
NVNT	3-DH1	2402	Ant1	30.4	5.17	2.63
NVNT	3-DH1	2441	Ant1	31.2	5.06	2.56
NVNT	3-DH1	2480	Ant1	30.4	5.17	2.63

Test Graphs

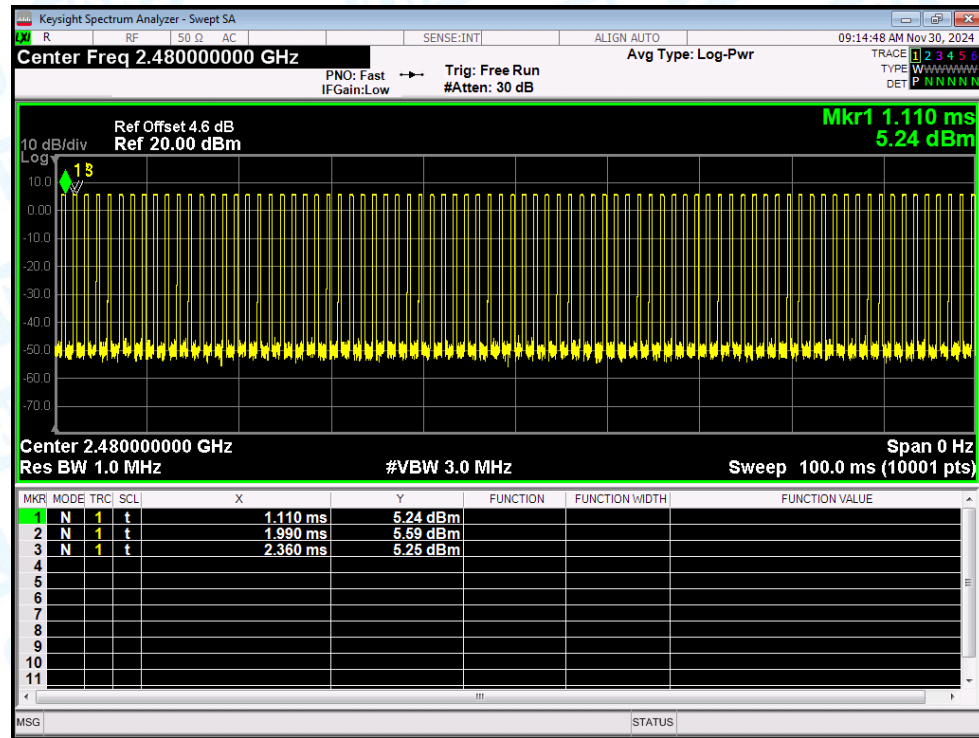
Duty Cycle NVNT 1-DH1 2402MHz Ant1



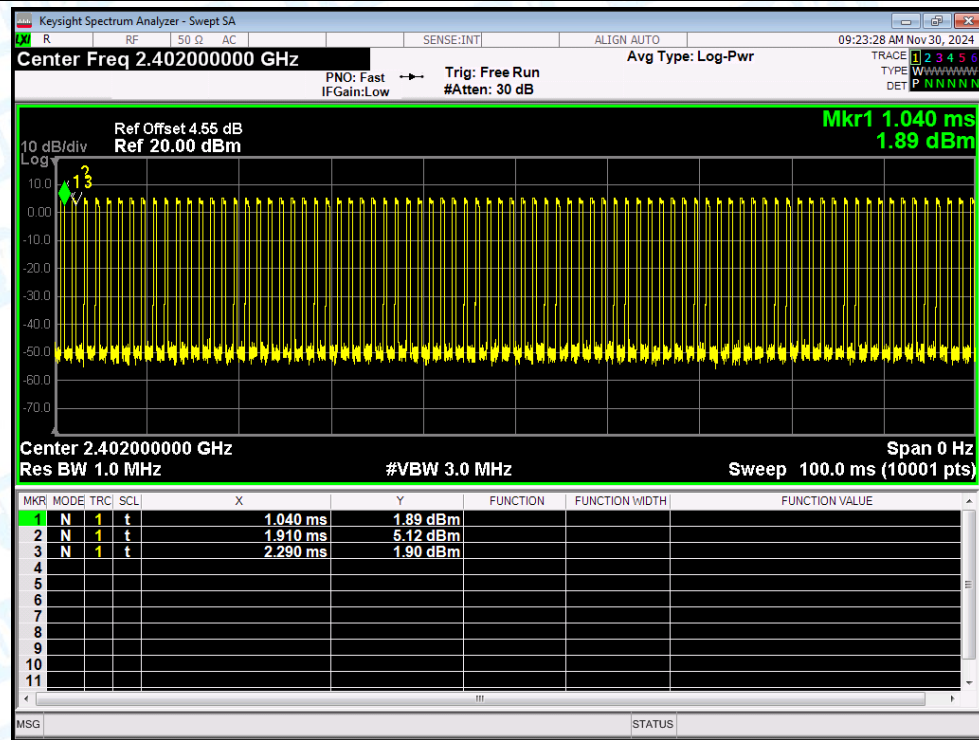
Duty Cycle NVNT 1-DH1 2441MHz Ant1



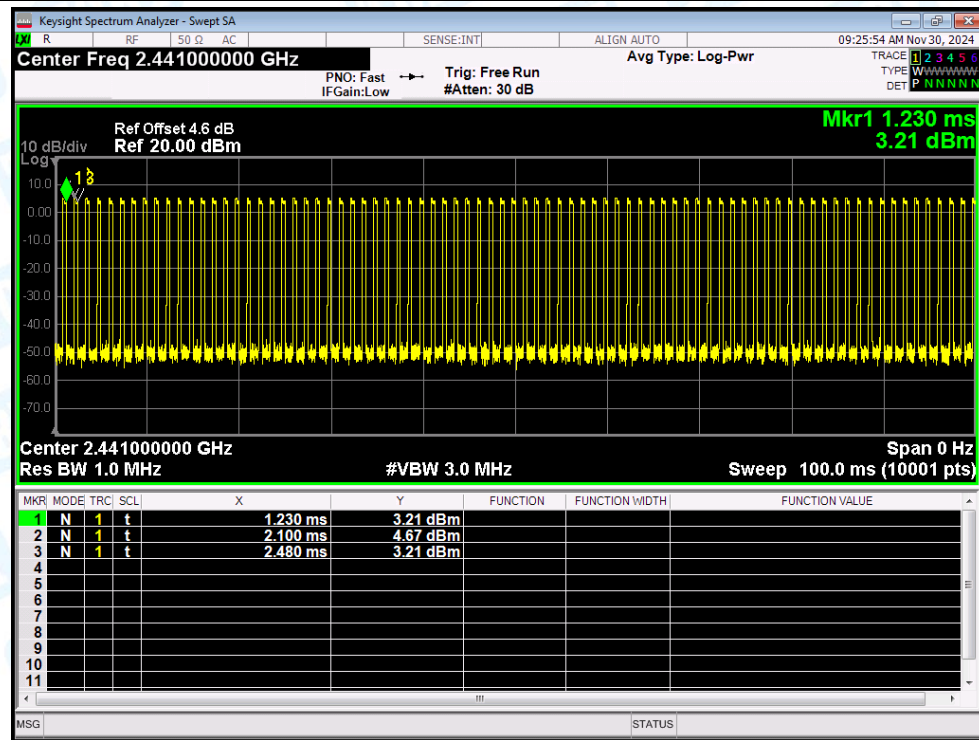
Duty Cycle NVNT 1-DH1 2480MHz Ant1



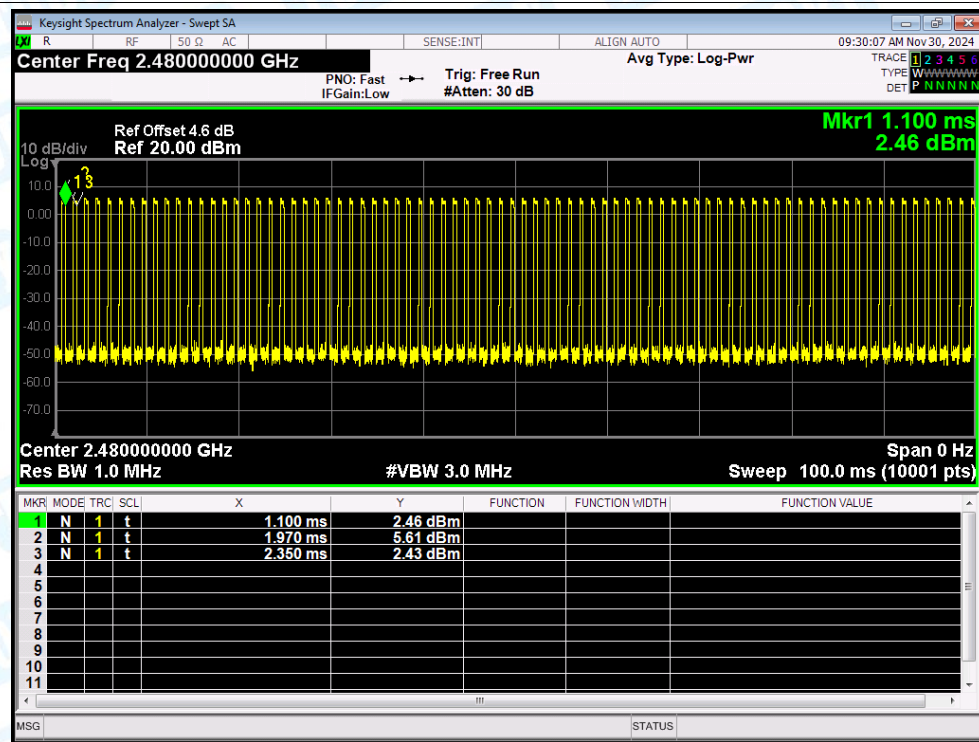
Duty Cycle NVNT 2-DH1 2402MHz Ant1



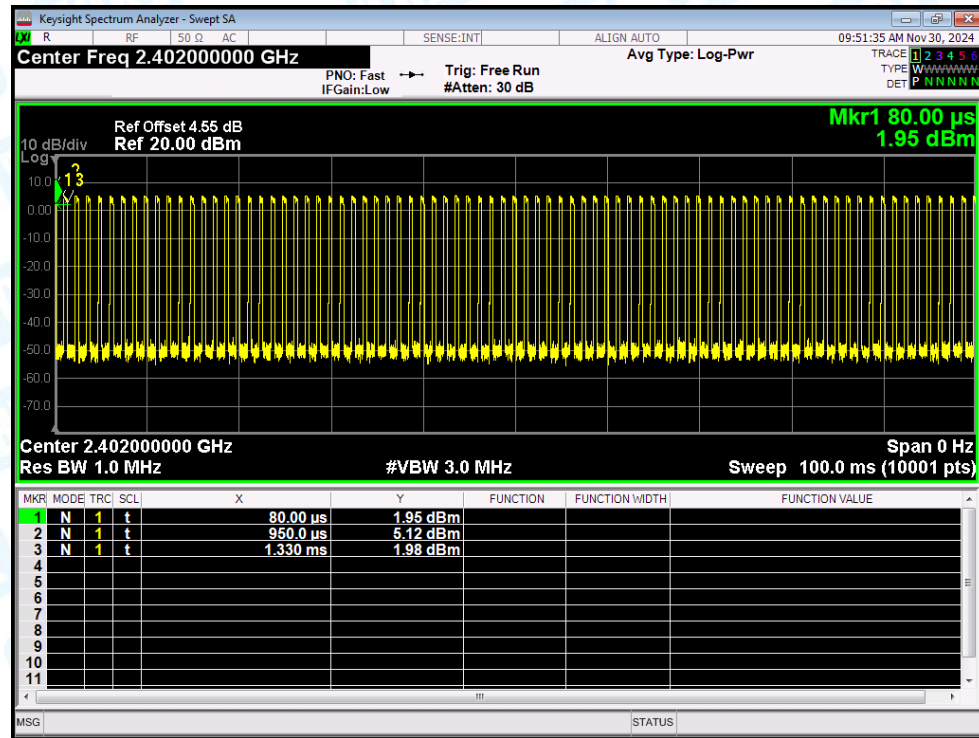
Duty Cycle NVNT 2-DH1 2441MHz Ant1



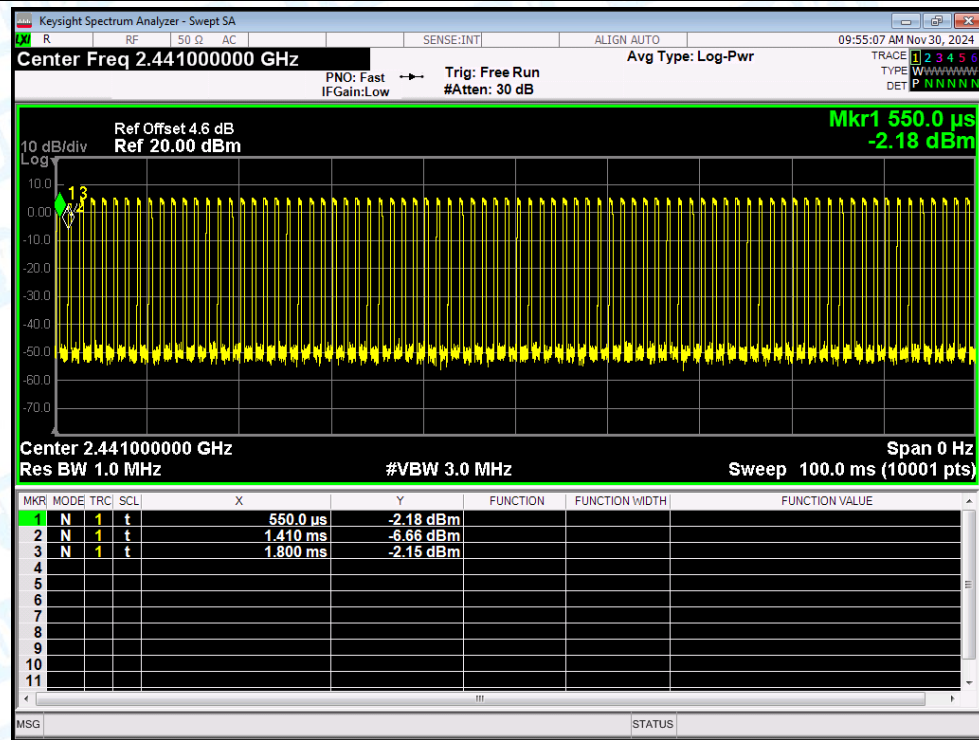
Duty Cycle NVNT 2-DH1 2480MHz Ant1

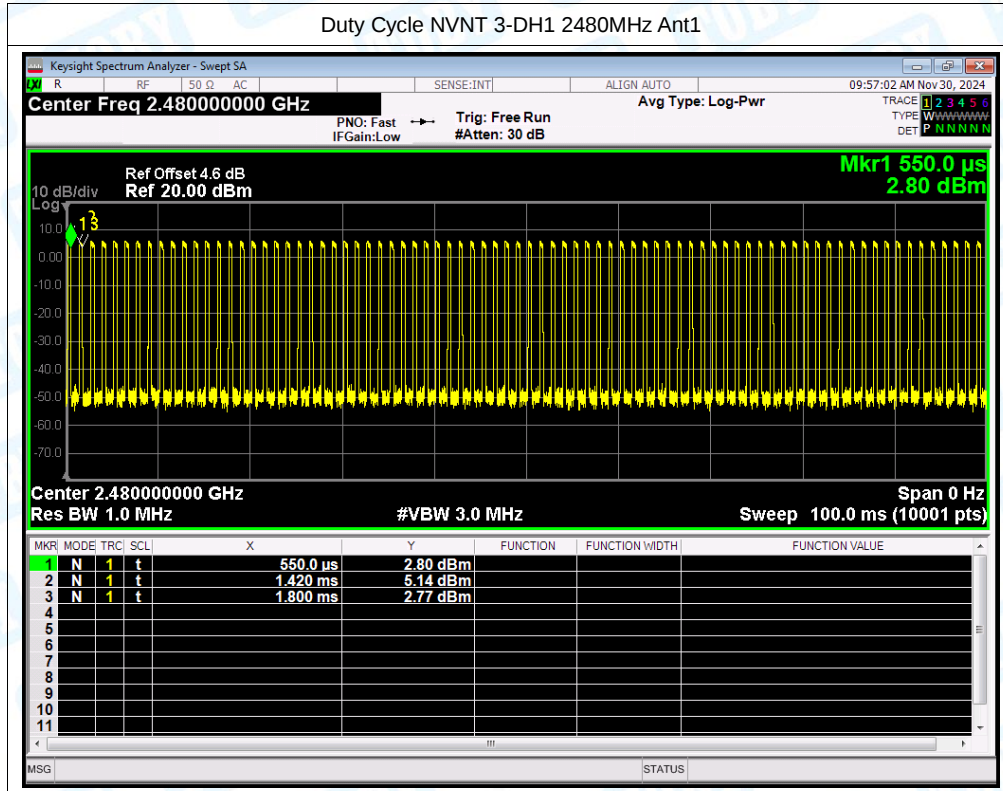


Duty Cycle NVNT 3-DH1 2402MHz Ant1



Duty Cycle NVNT 3-DH1 2441MHz Ant1



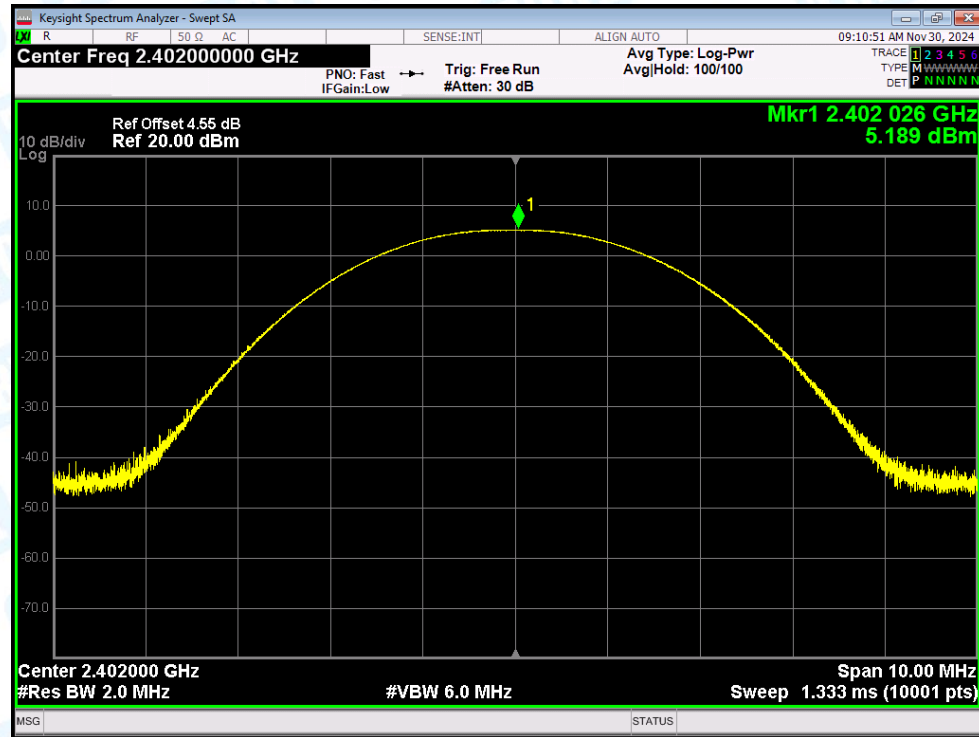


2. Maximum Conducted Output Power

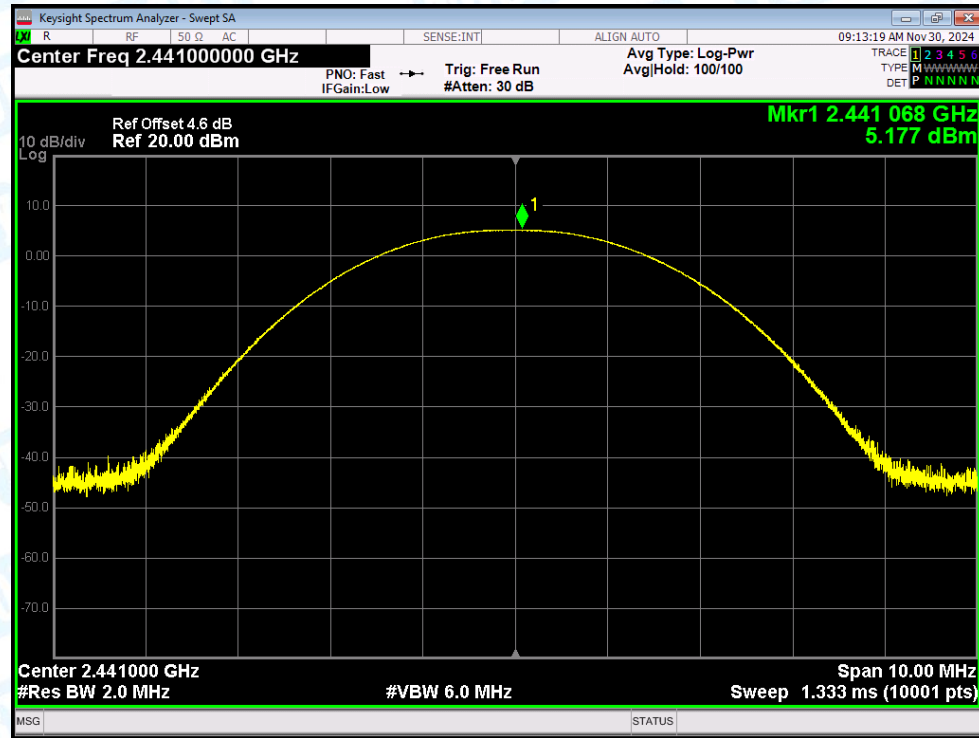
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	Ant1	5.189	21	Pass
NVNT	1-DH1	2441	Ant1	5.177	21	Pass
NVNT	1-DH1	2480	Ant1	5.737	21	Pass
NVNT	2-DH1	2402	Ant1	5.314	21	Pass
NVNT	2-DH1	2441	Ant1	5.238	21	Pass
NVNT	2-DH1	2480	Ant1	5.795	21	Pass
NVNT	3-DH1	2402	Ant1	5.542	21	Pass
NVNT	3-DH1	2441	Ant1	5.461	21	Pass
NVNT	3-DH1	2480	Ant1	6.014	21	Pass

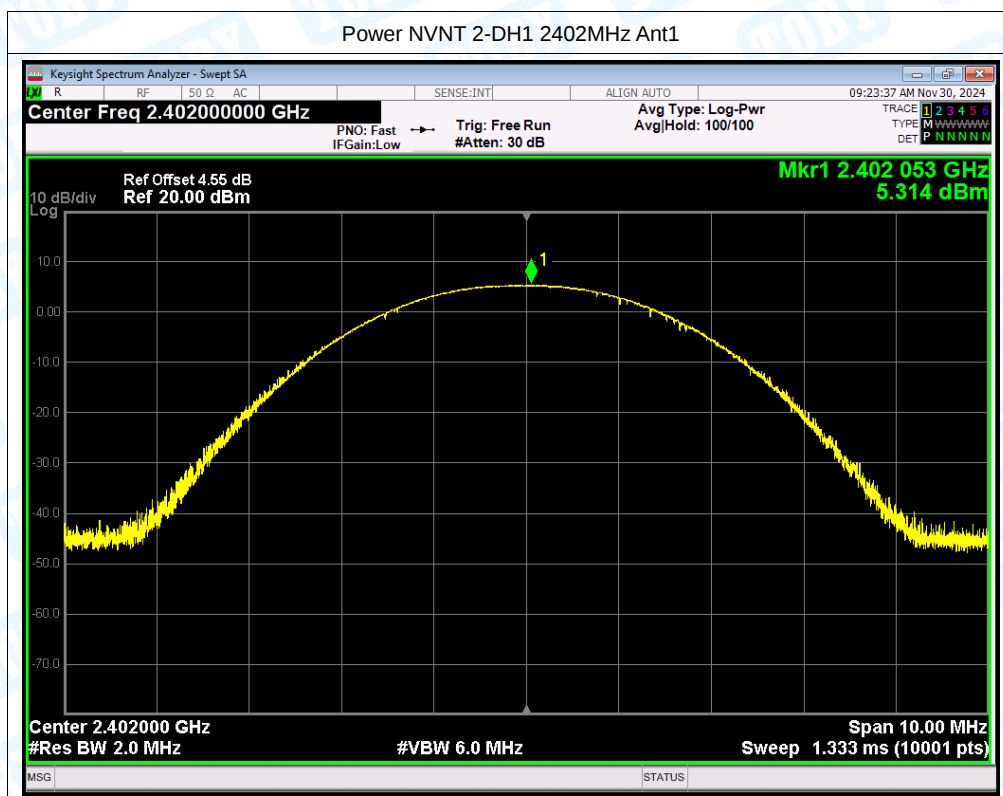
Test Graphs

Power NVNT 1-DH1 2402MHz Ant1

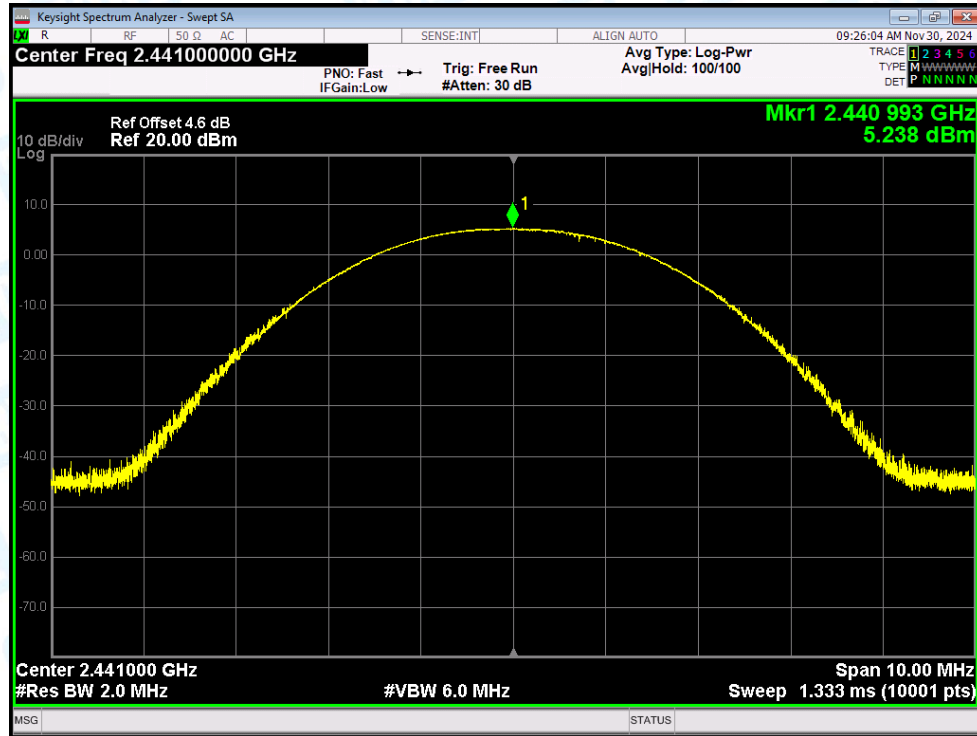


Power NVNT 1-DH1 2441MHz Ant1

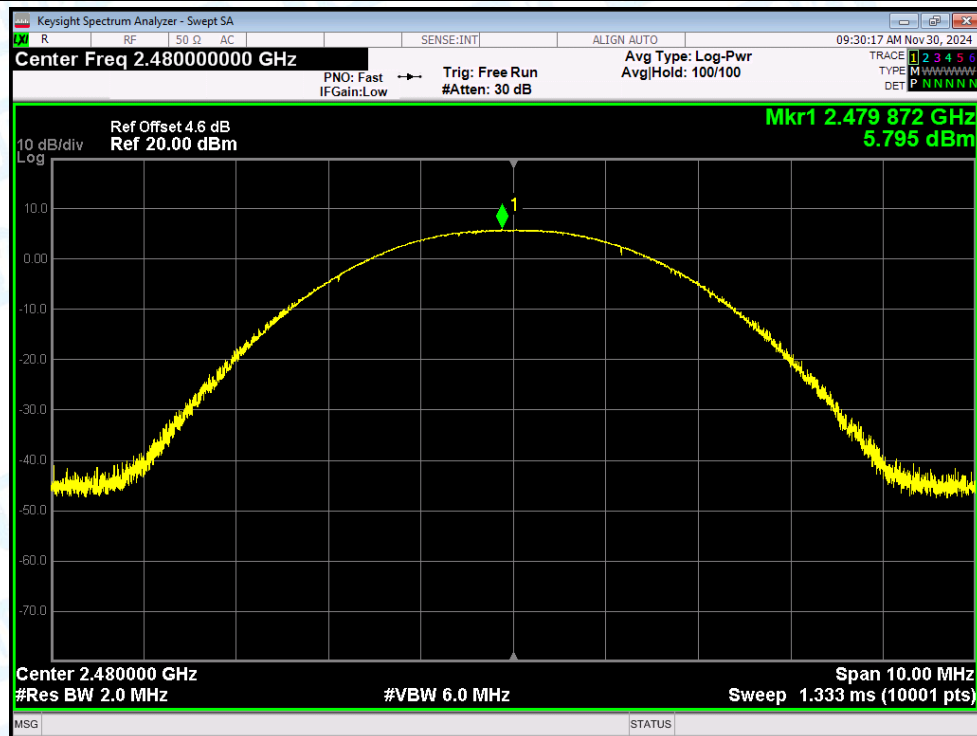




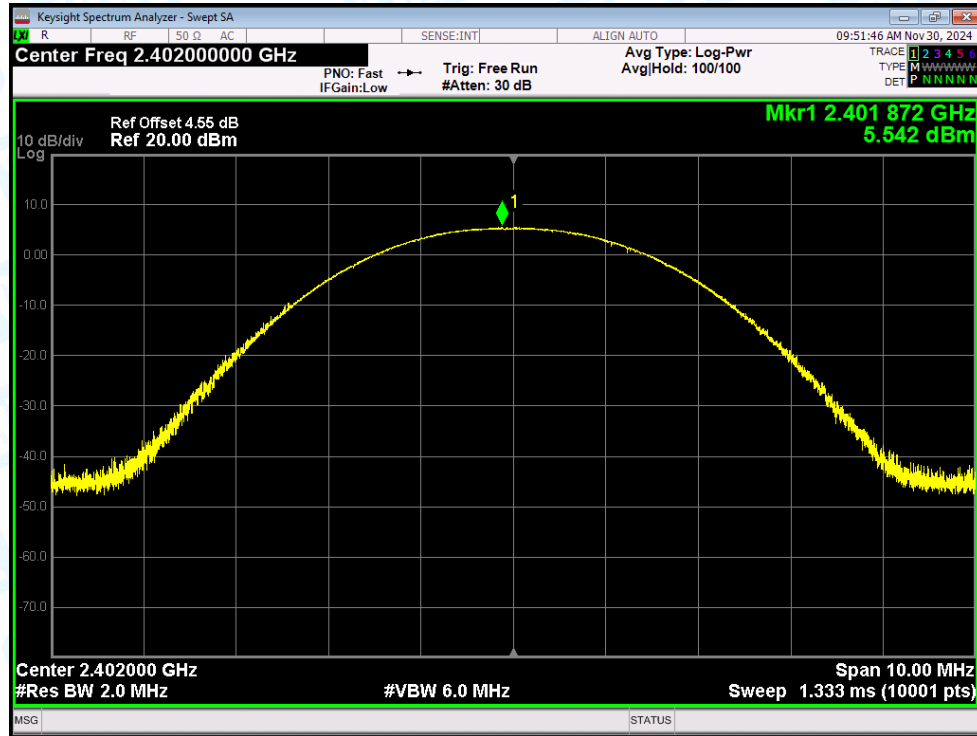
Power NVNT 2-DH1 2441MHz Ant1



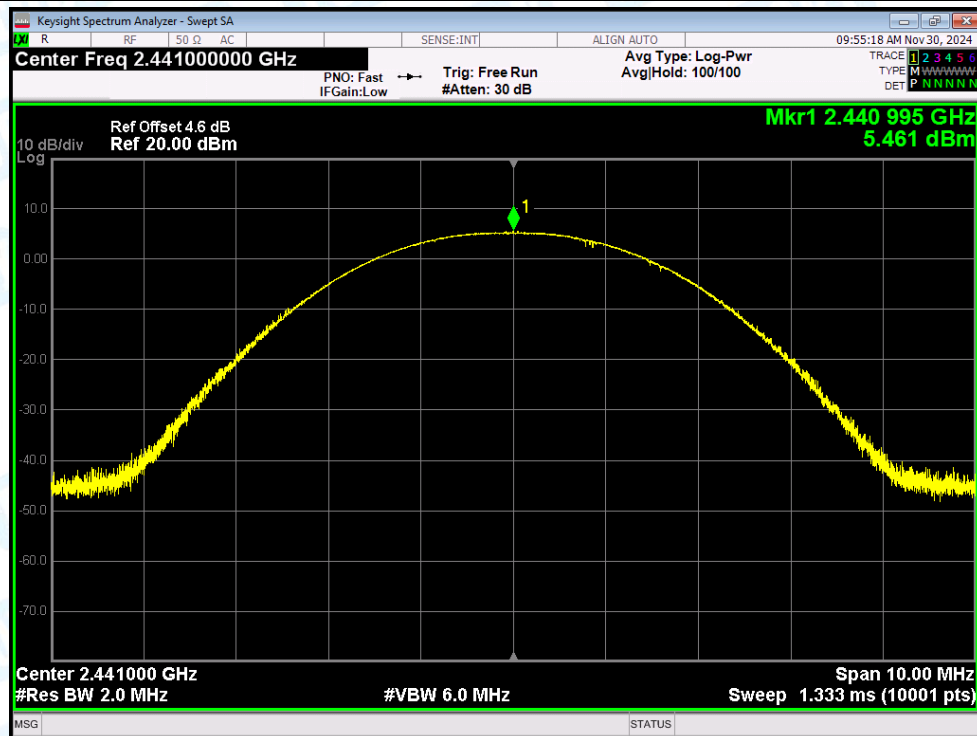
Power NVNT 2-DH1 2480MHz Ant1

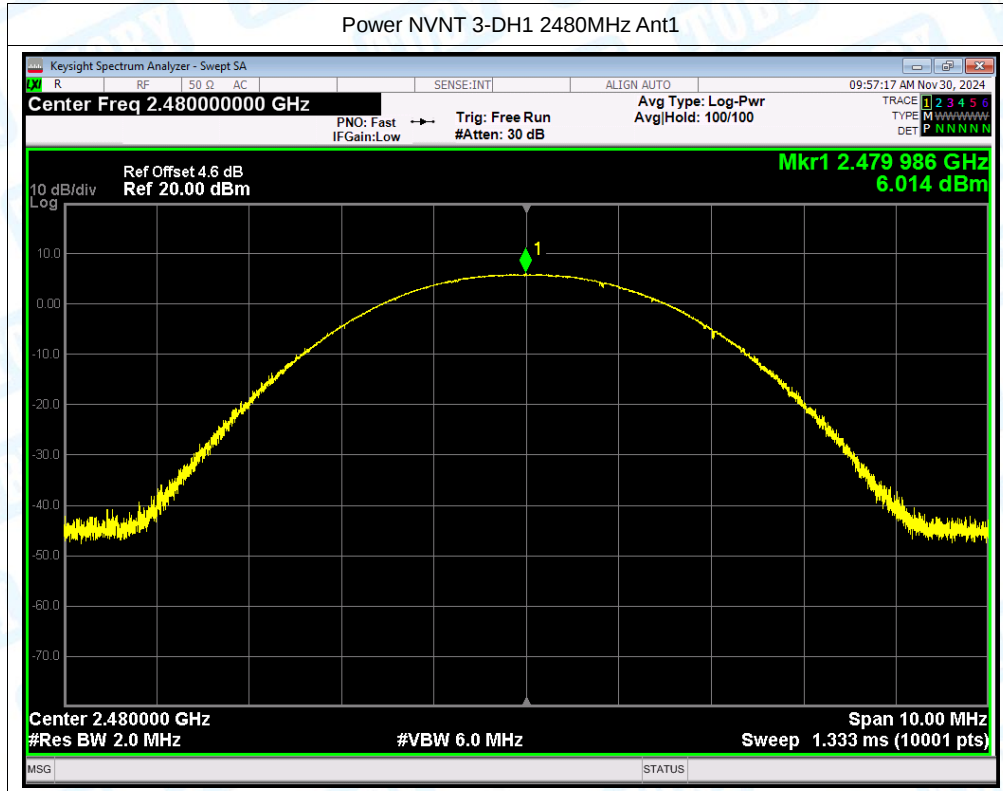


Power NVNT 3-DH1 2402MHz Ant1



Power NVNT 3-DH1 2441MHz Ant1



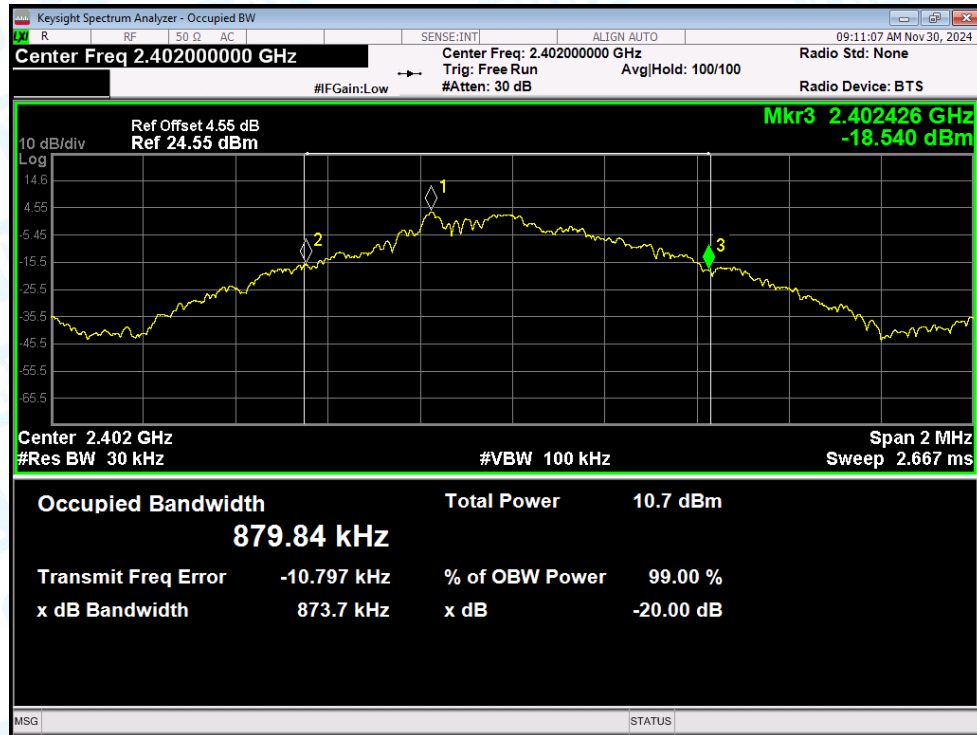


3. -20dB Bandwidth

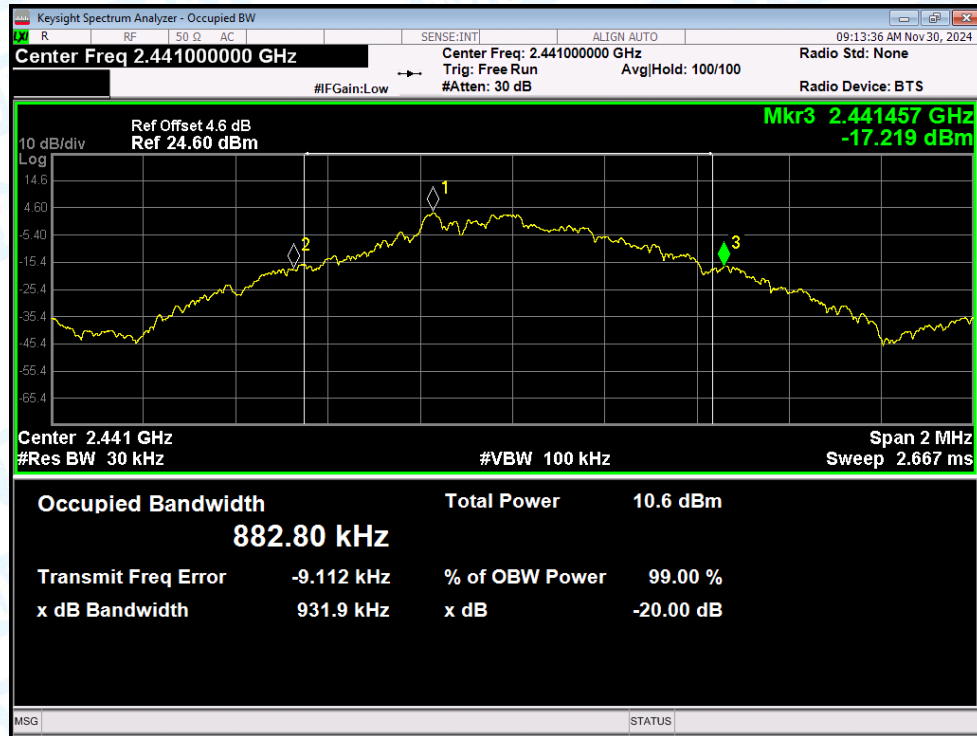
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH1	2402	Ant1	0.87	0	Pass
NVNT	1-DH1	2441	Ant1	0.93	0	Pass
NVNT	1-DH1	2480	Ant1	0.87	0	Pass
NVNT	2-DH1	2402	Ant1	1.21	0	Pass
NVNT	2-DH1	2441	Ant1	1.2	0	Pass
NVNT	2-DH1	2480	Ant1	1.2	0	Pass
NVNT	3-DH1	2402	Ant1	1.19	0	Pass
NVNT	3-DH1	2441	Ant1	1.21	0	Pass
NVNT	3-DH1	2480	Ant1	1.2	0	Pass

Test Graphs

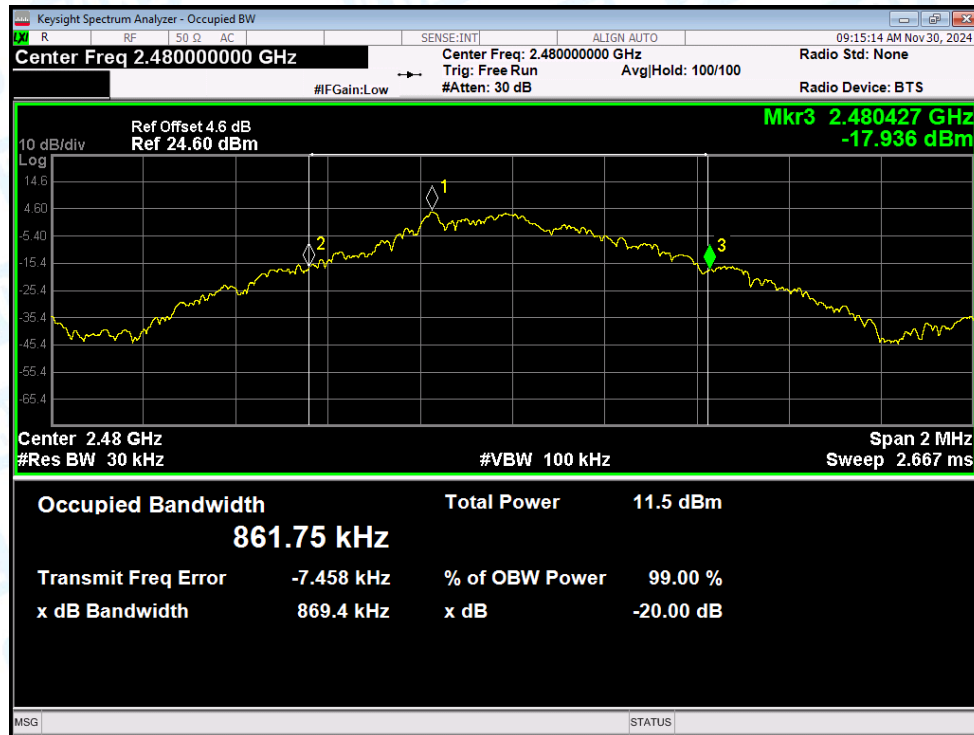
-20dB Bandwidth NVNT 1-DH1 2402MHz Ant1



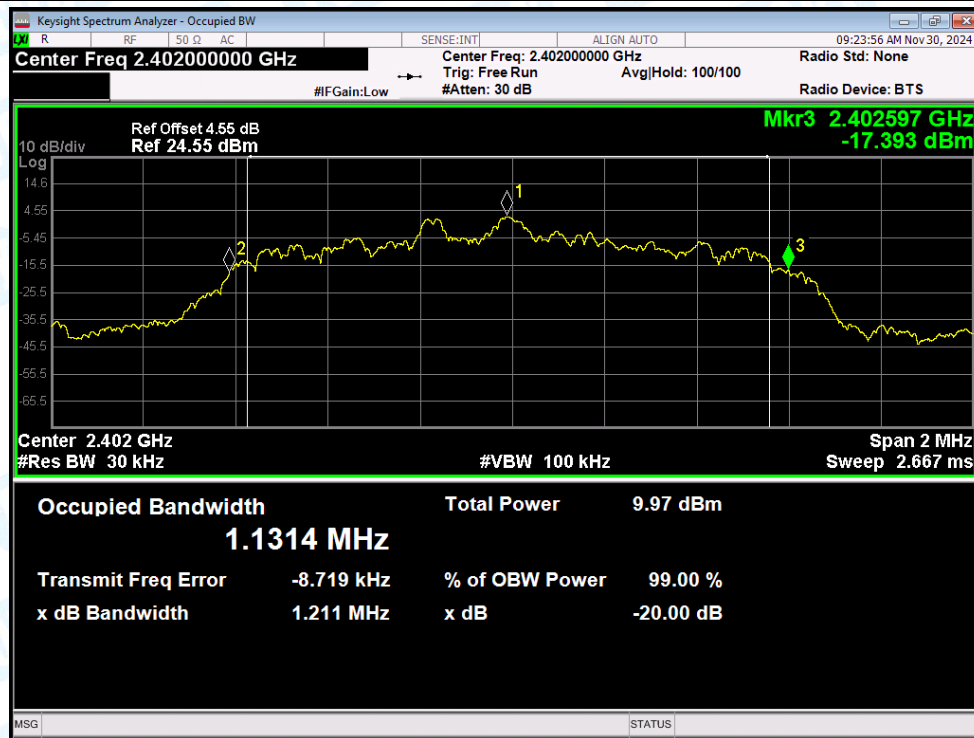
-20dB Bandwidth NVNT 1-DH1 2441MHz Ant1



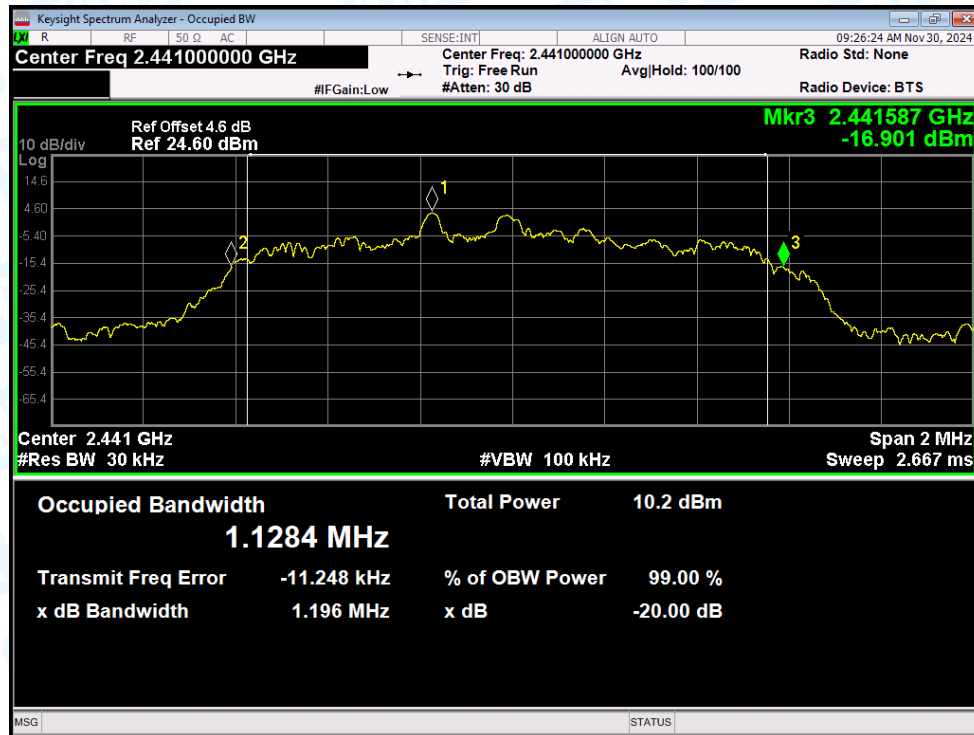
-20dB Bandwidth NVNT 1-DH1 2480MHz Ant1



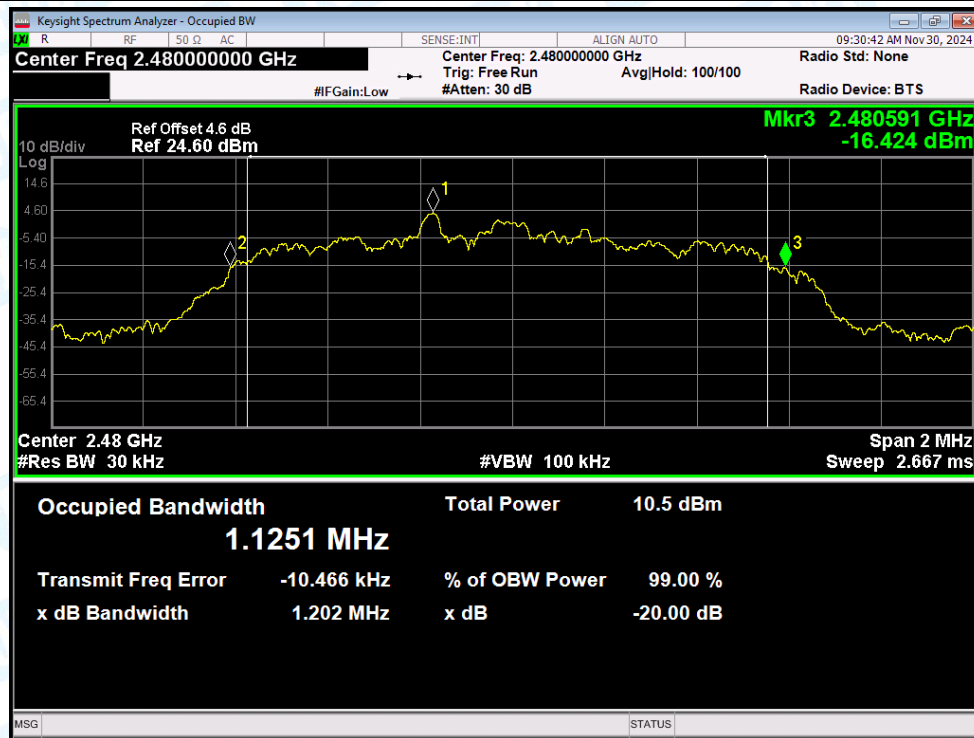
-20dB Bandwidth NVNT 2-DH1 2402MHz Ant1



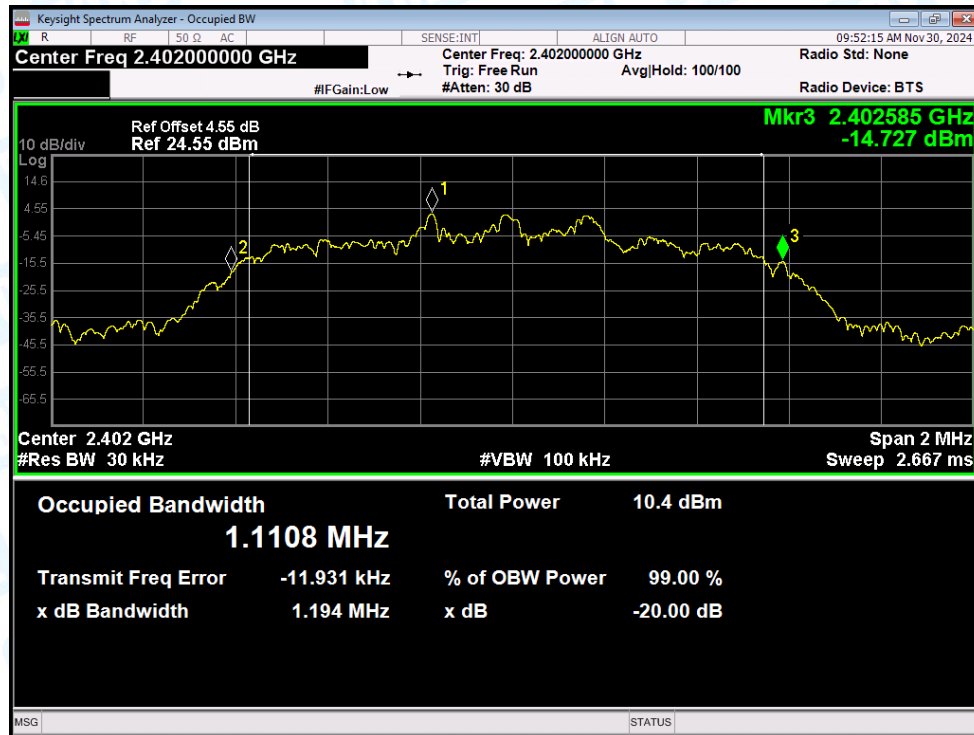
-20dB Bandwidth NVNT 2-DH1 2441MHz Ant1



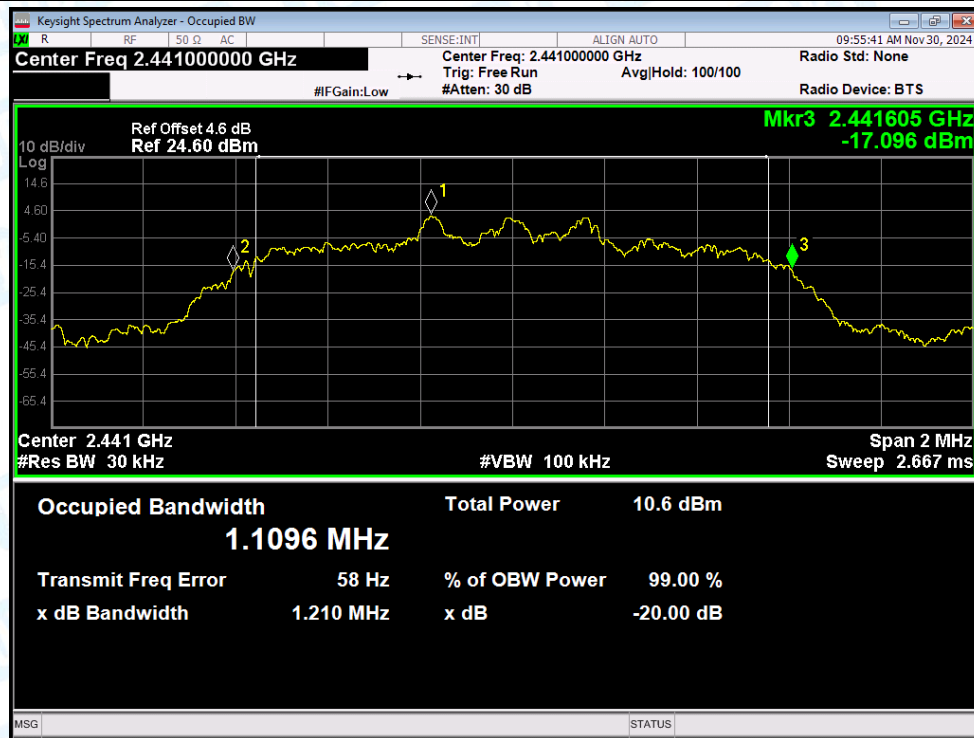
-20dB Bandwidth NVNT 2-DH1 2480MHz Ant1

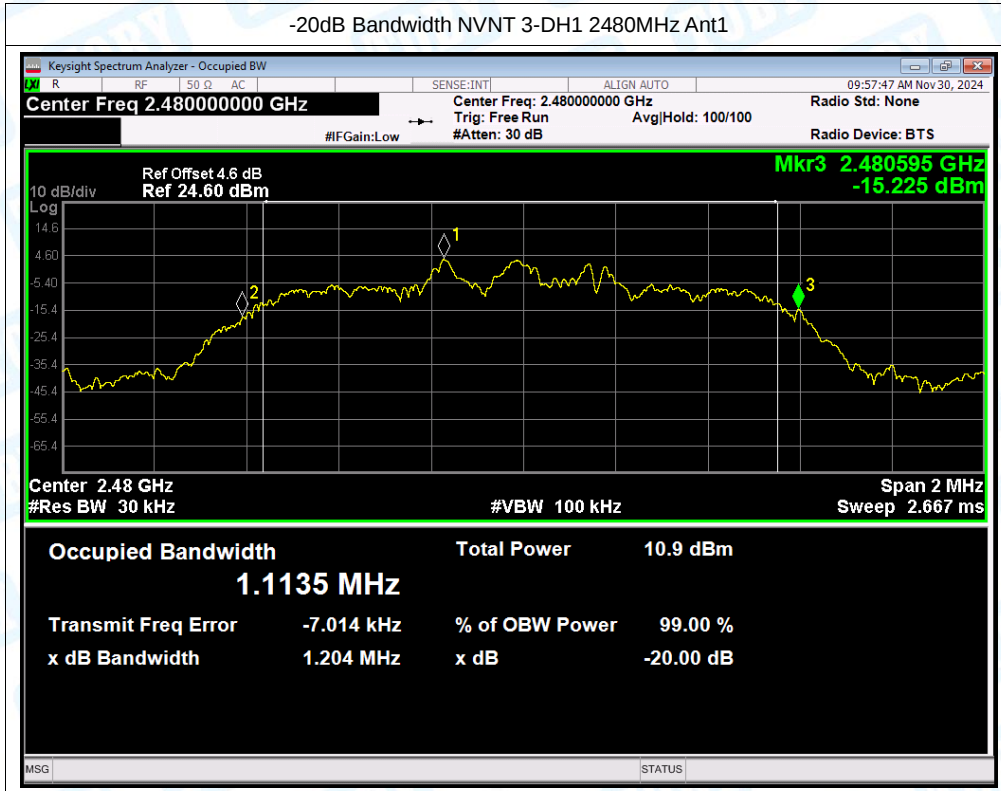


-20dB Bandwidth NVNT 3-DH1 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH1 2441MHz Ant1



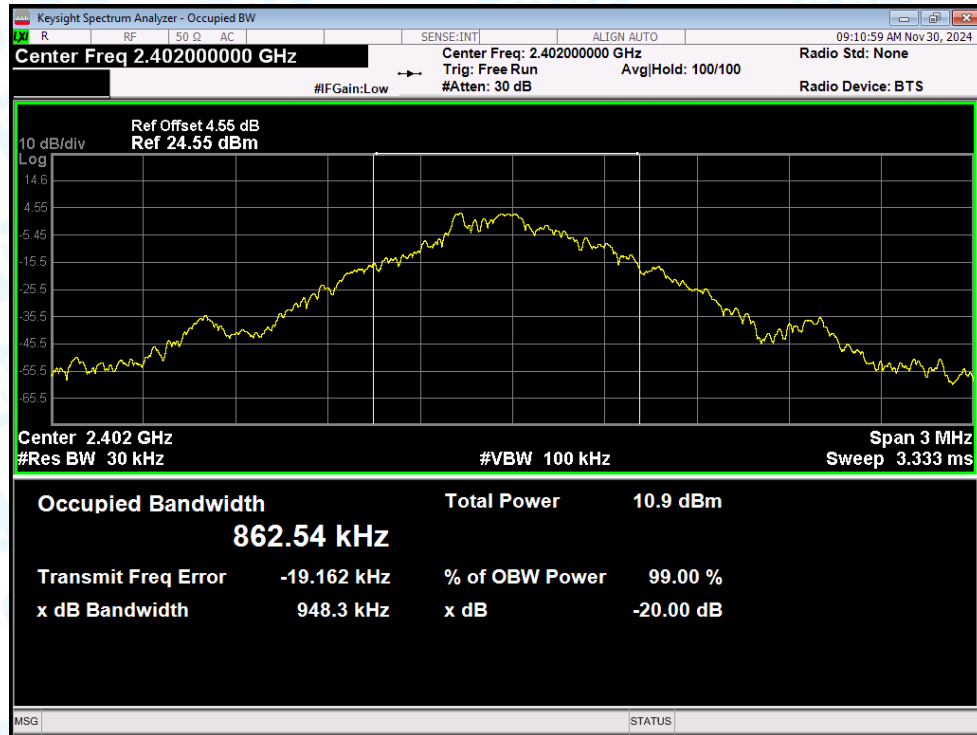


4. Occupied Channel Bandwidth

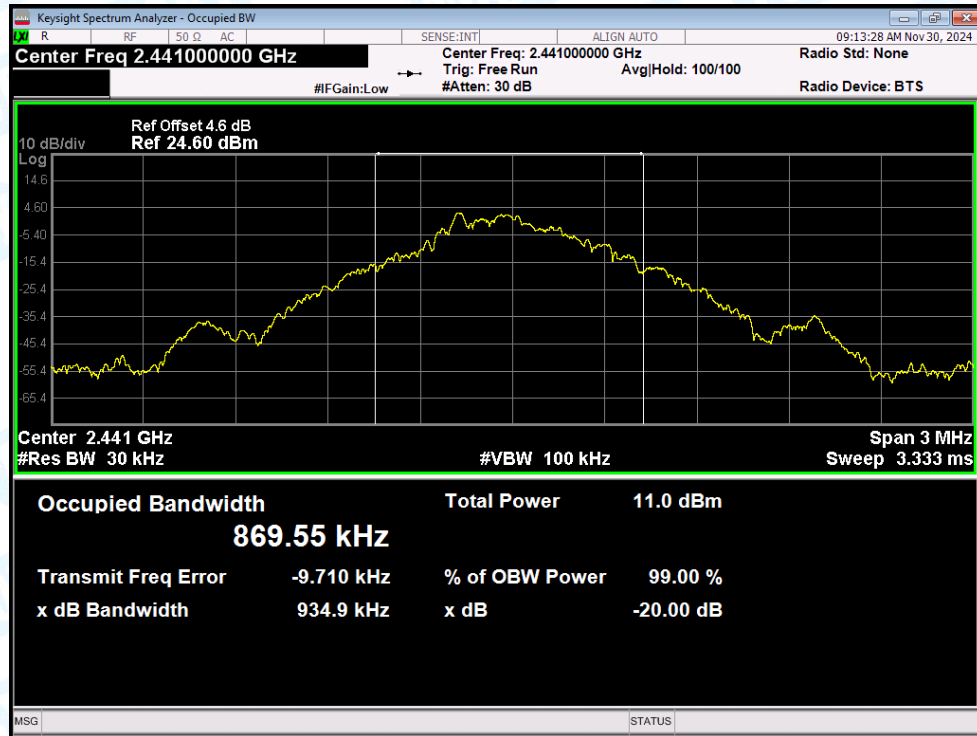
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	1-DH1	2402	Ant1	0.863
NVNT	1-DH1	2441	Ant1	0.87
NVNT	1-DH1	2480	Ant1	0.899
NVNT	2-DH1	2402	Ant1	1.136
NVNT	2-DH1	2441	Ant1	1.121
NVNT	2-DH1	2480	Ant1	1.13
NVNT	3-DH1	2402	Ant1	1.128
NVNT	3-DH1	2441	Ant1	1.124
NVNT	3-DH1	2480	Ant1	1.125

Test Graphs

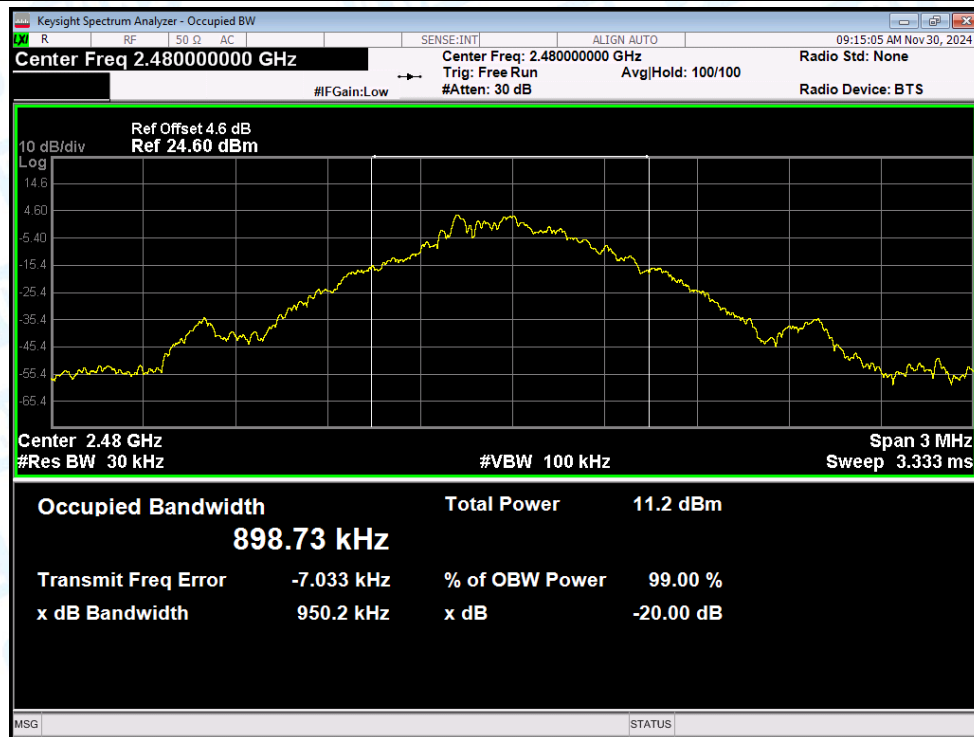
OBW NVNT 1-DH1 2402MHz Ant1



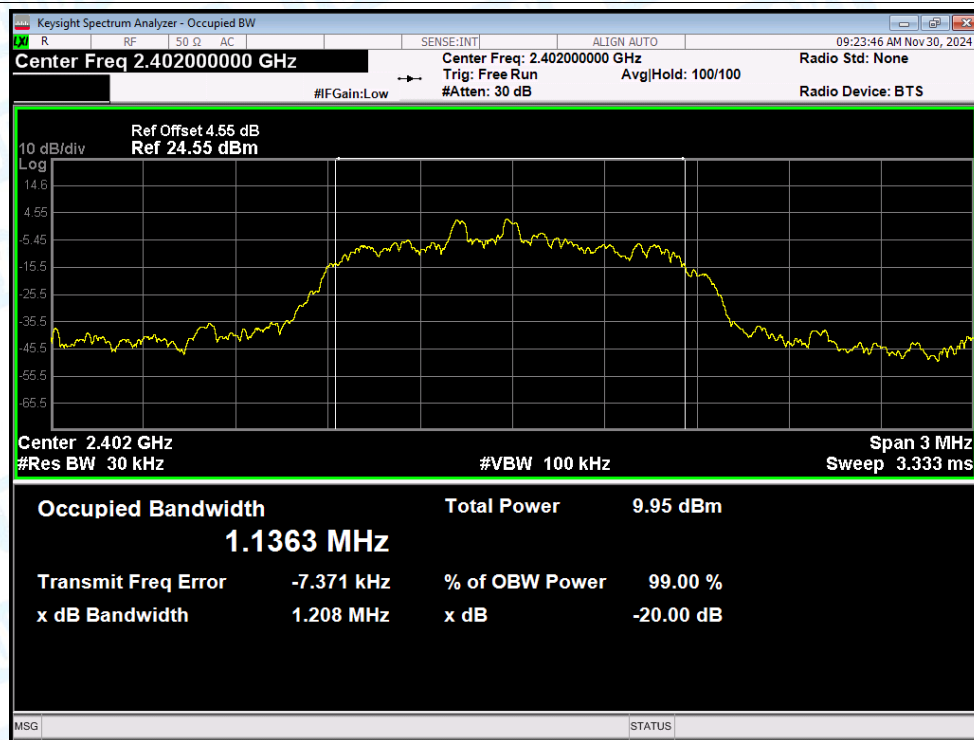
OBW NVNT 1-DH1 2441MHz Ant1



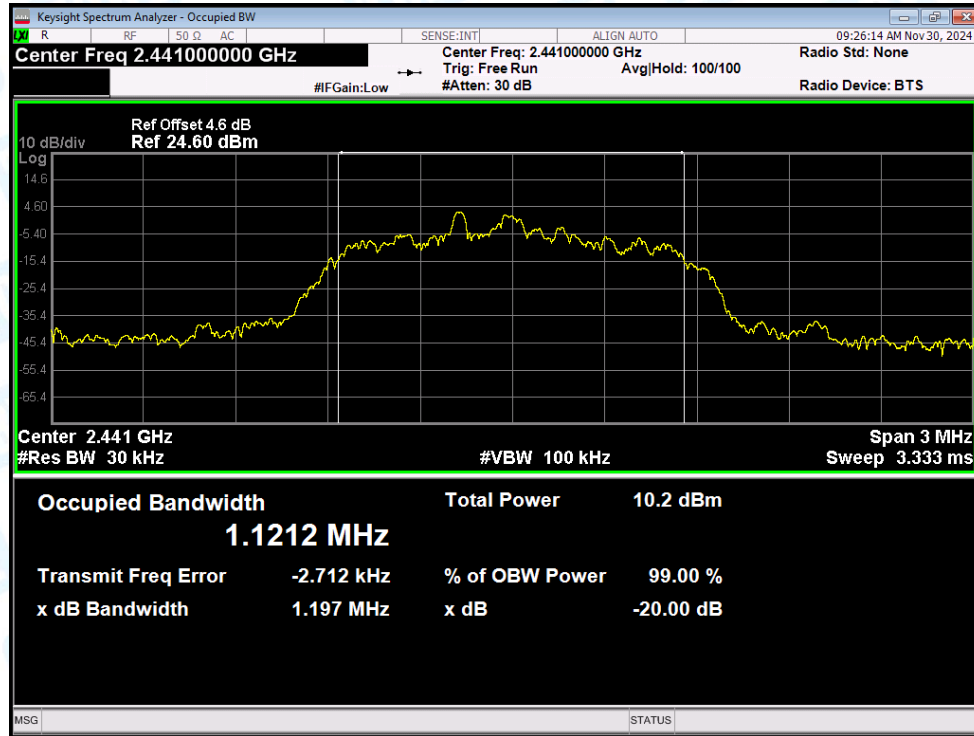
OBW NVNT 1-DH1 2480MHz Ant1



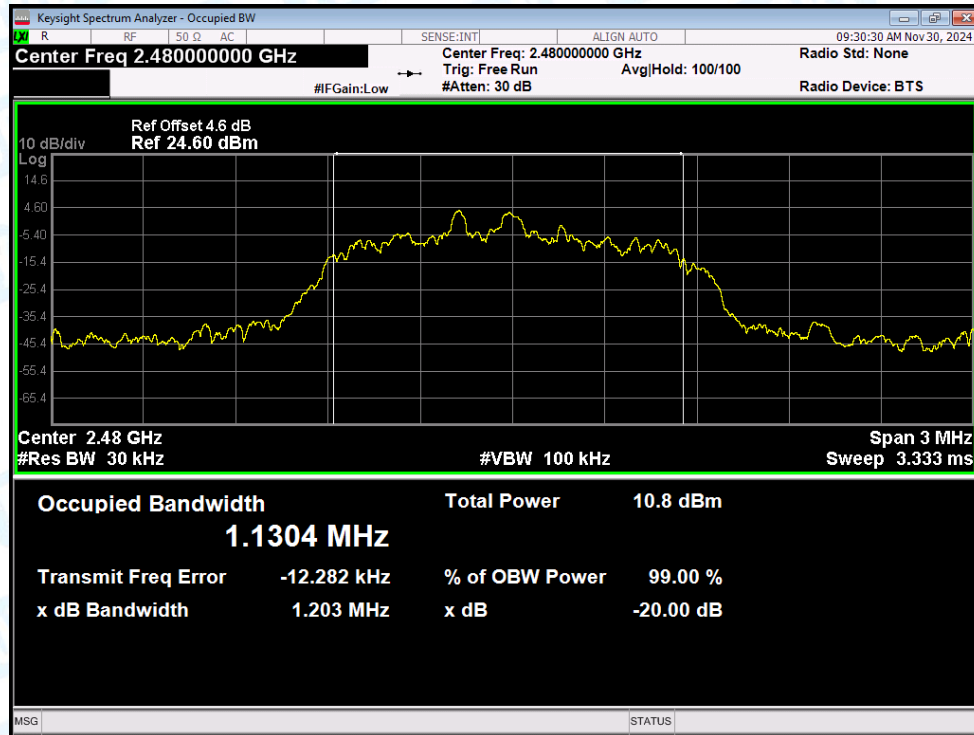
OBW NVNT 2-DH1 2402MHz Ant1



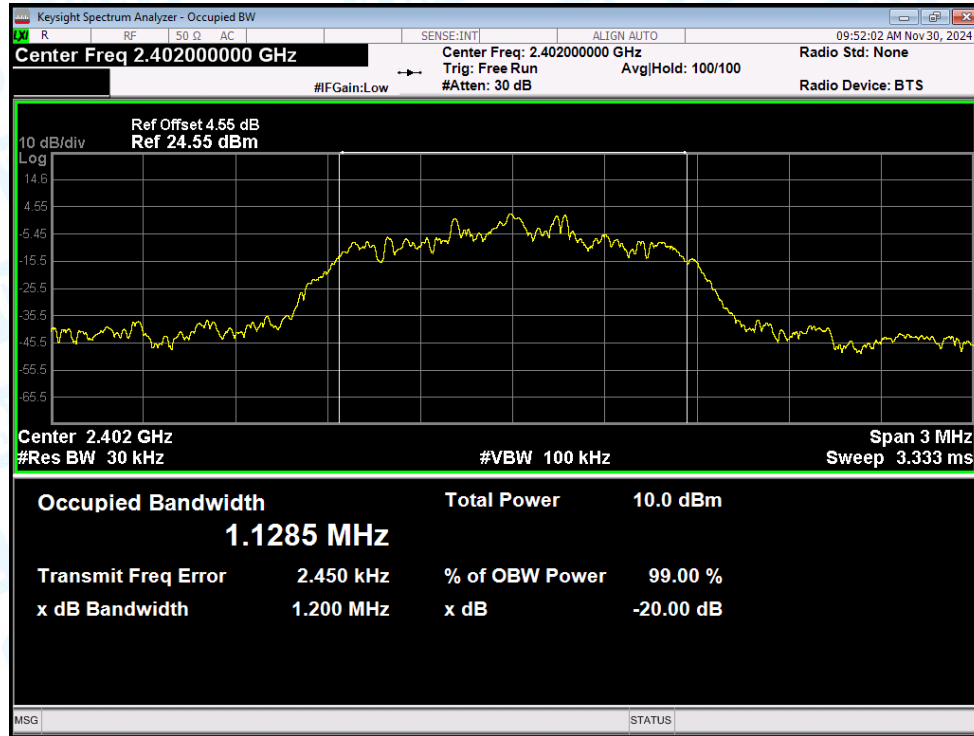
OBW NVNT 2-DH1 2441MHz Ant1



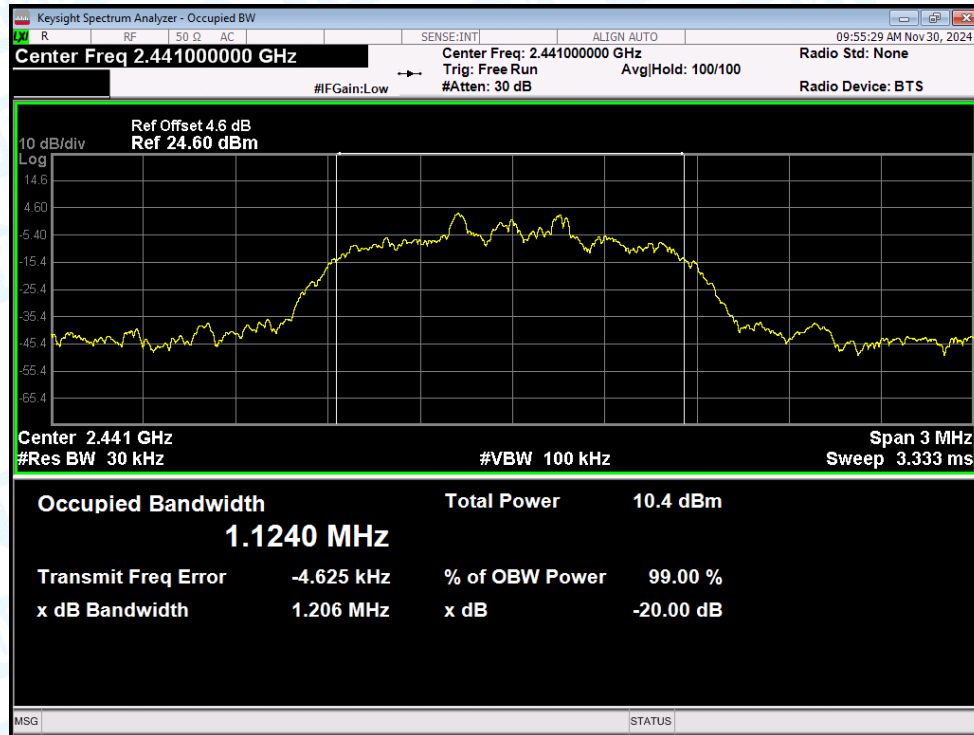
OBW NVNT 2-DH1 2480MHz Ant1

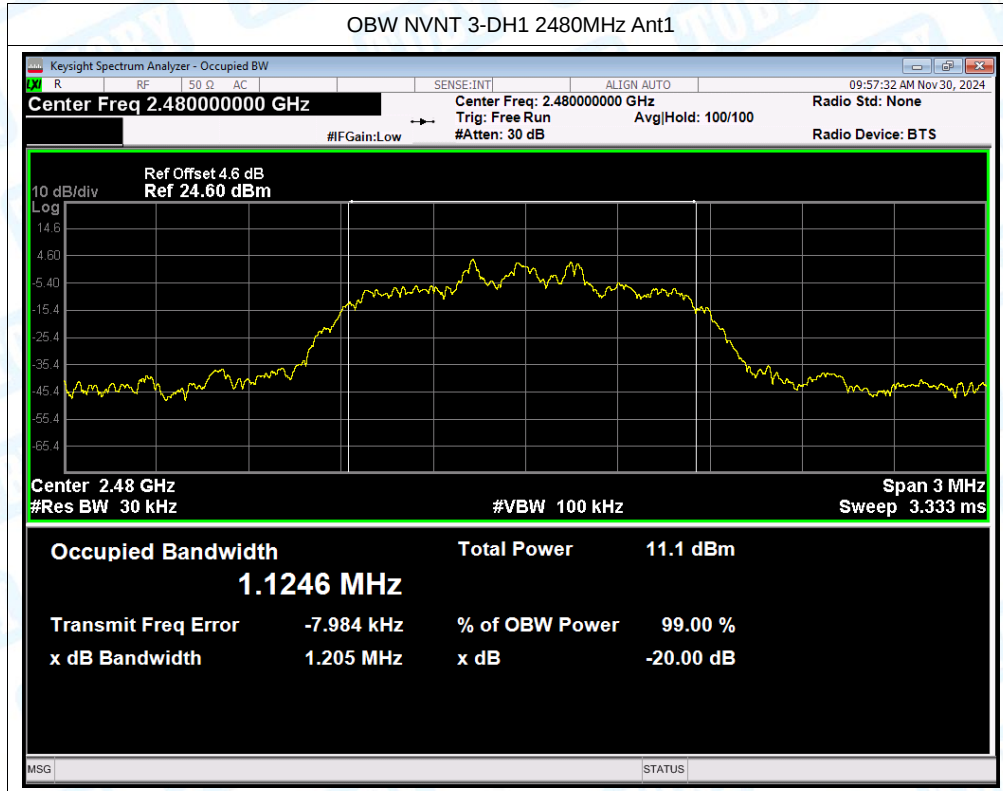


OBW NVNT 3-DH1 2402MHz Ant1



OBW NVNT 3-DH1 2441MHz Ant1



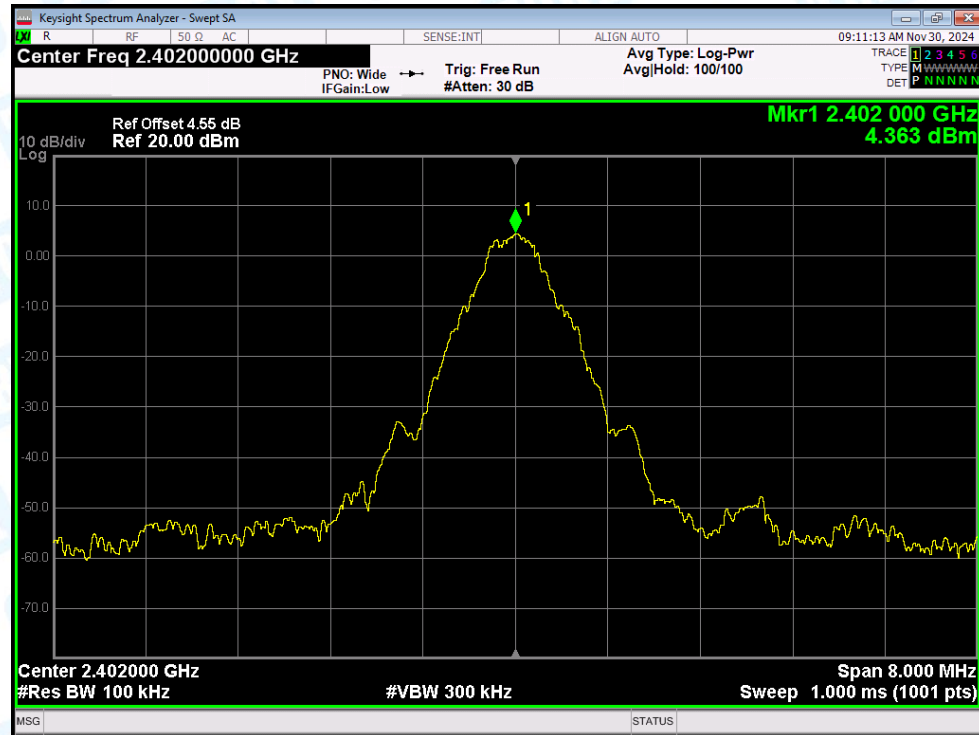


5. Band Edge

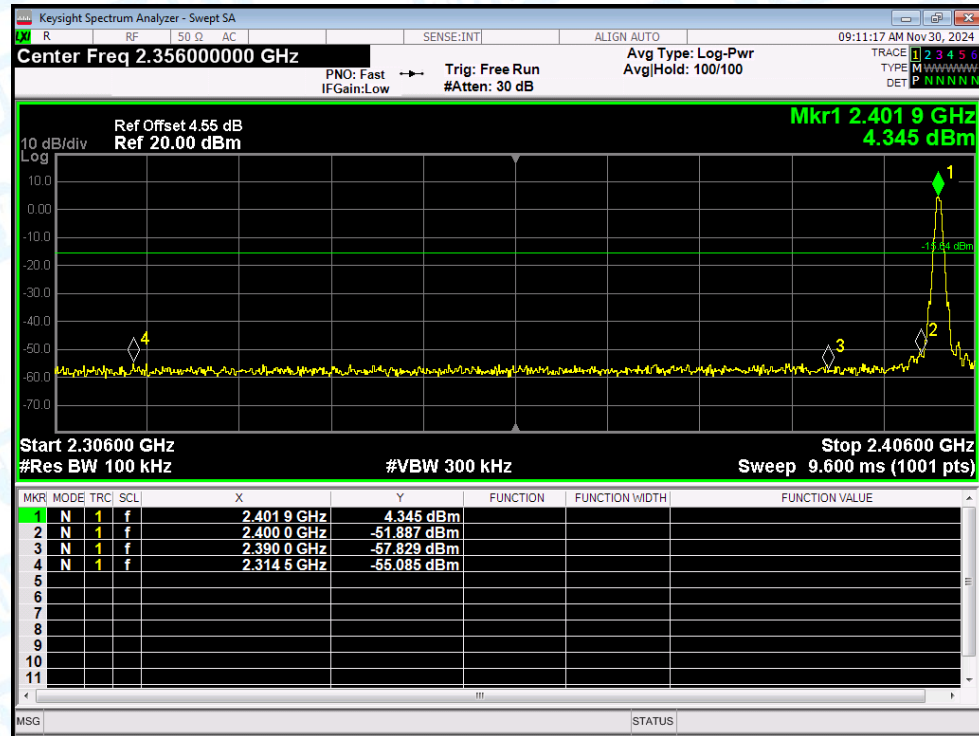
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	-59.44	-20	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	-57.56	-20	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	-58.58	-20	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	-59.45	-20	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	-59.88	-20	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	-58.74	-20	Pass

Test Graphs

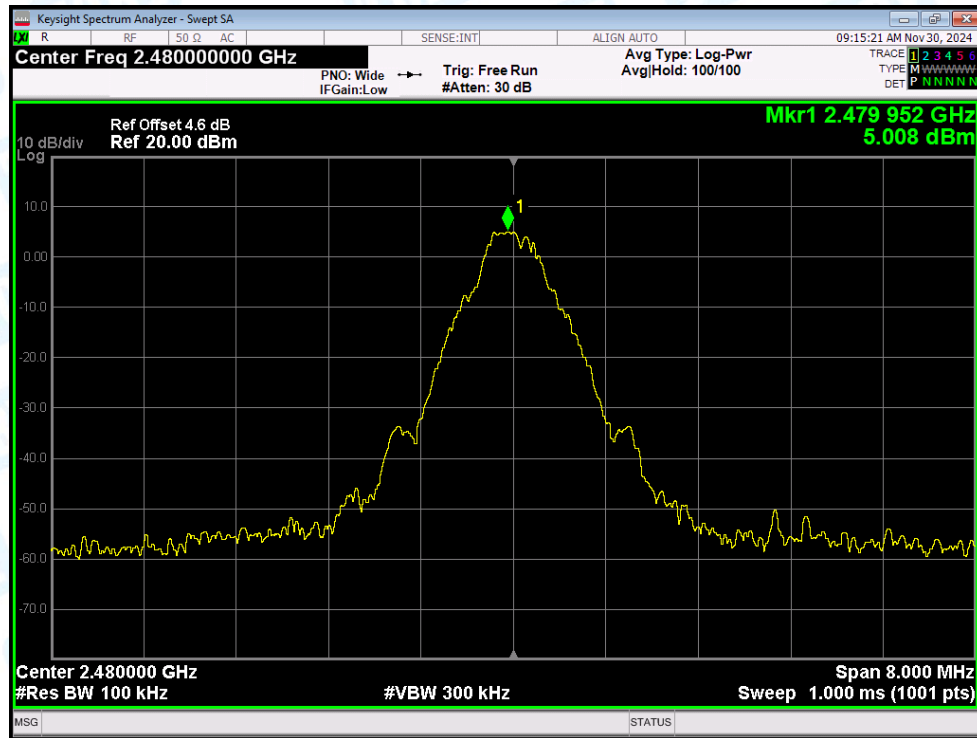
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Ref



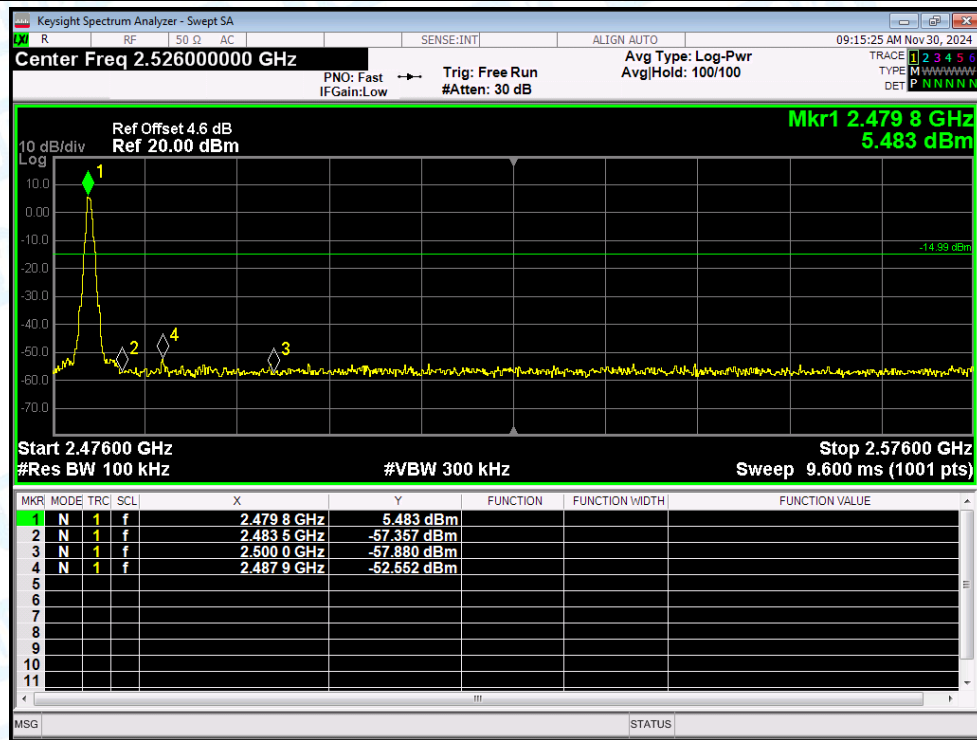
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Emission



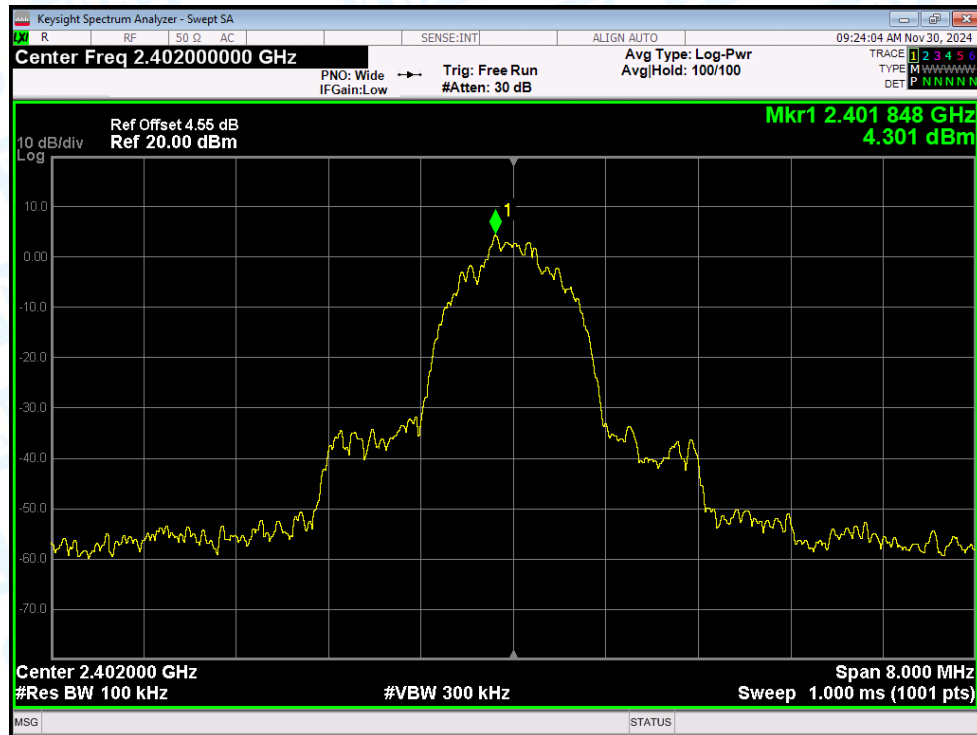
Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Ref



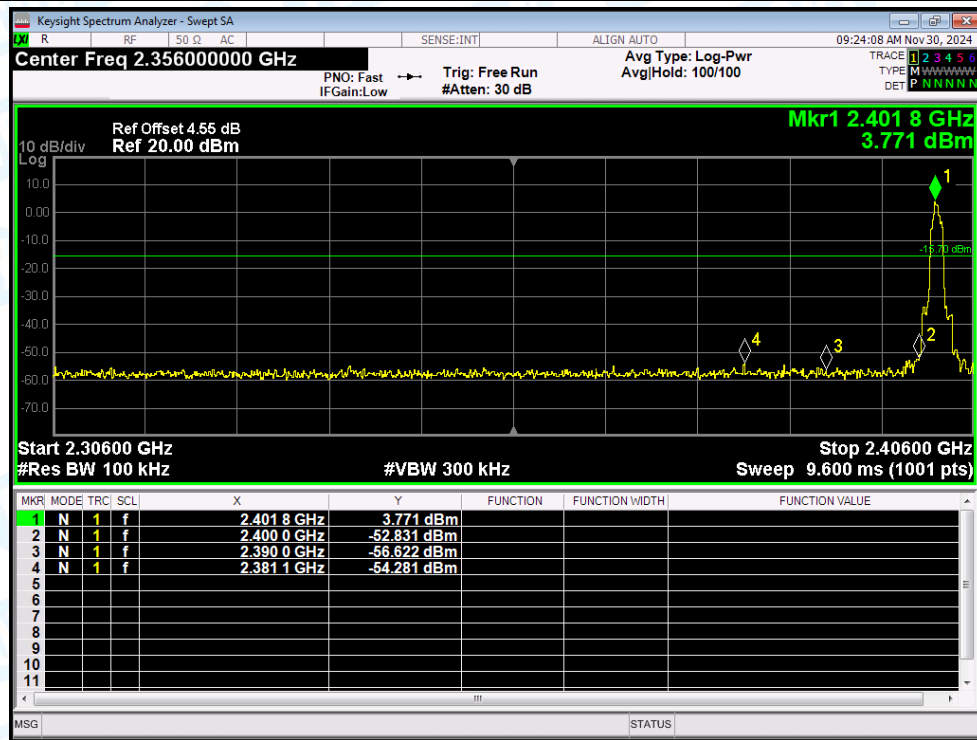
Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Emission



Band Edge NVNT 2-DH1 2402MHz Ant1 No-Hopping Ref



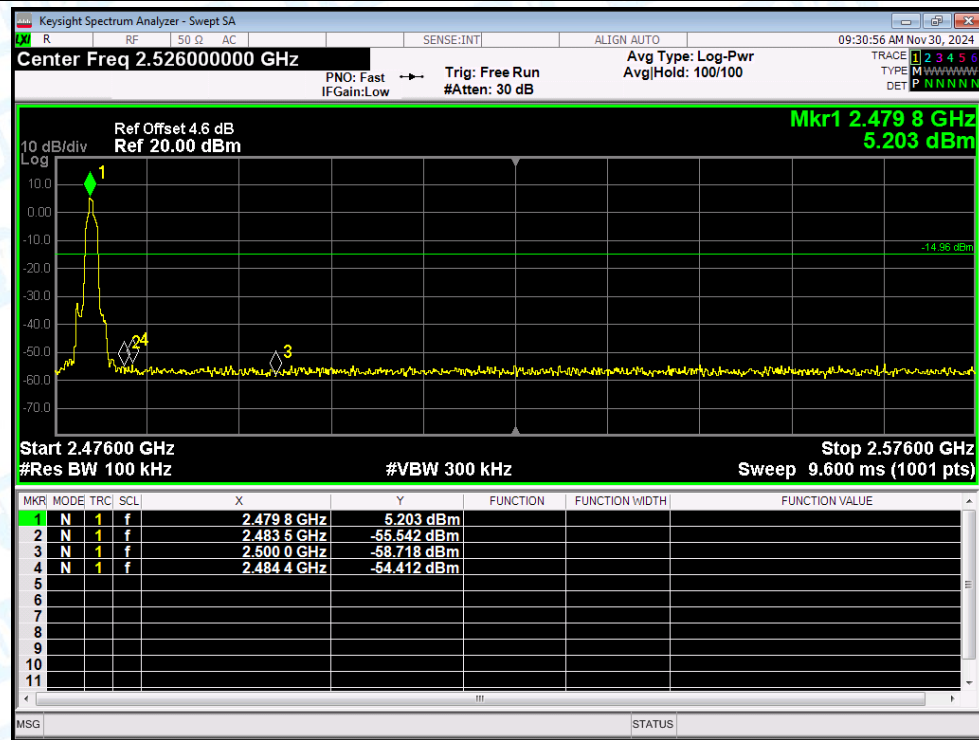
Band Edge NVNT 2-DH1 2402MHz Ant1 No-Hopping Emission

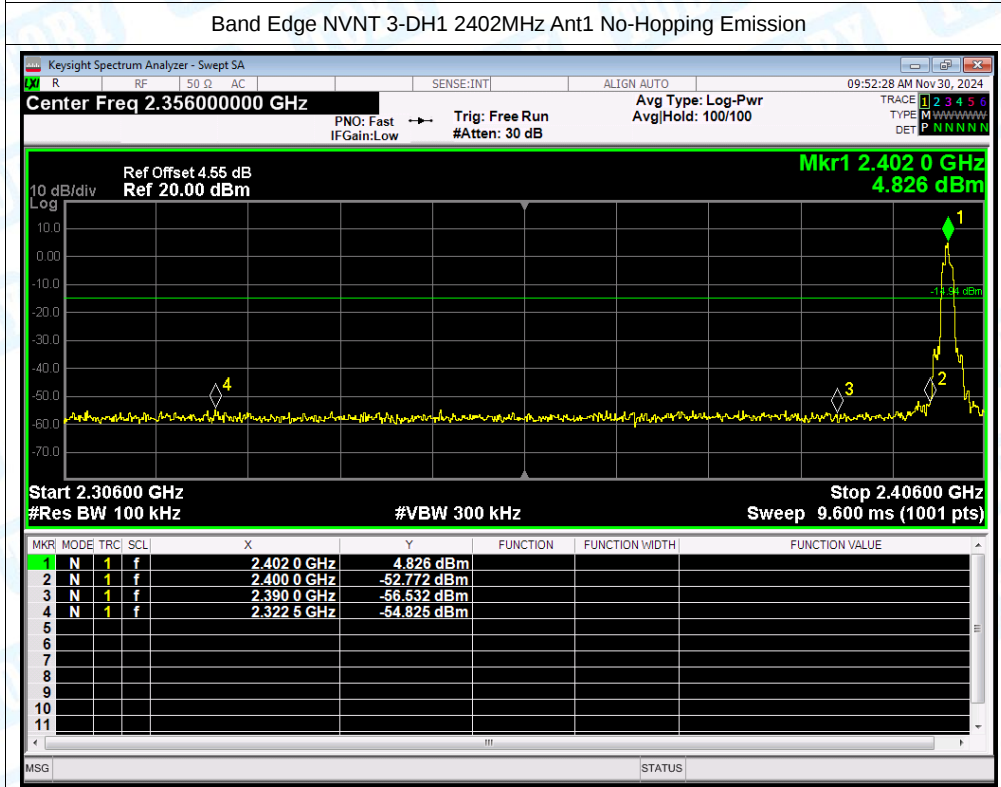
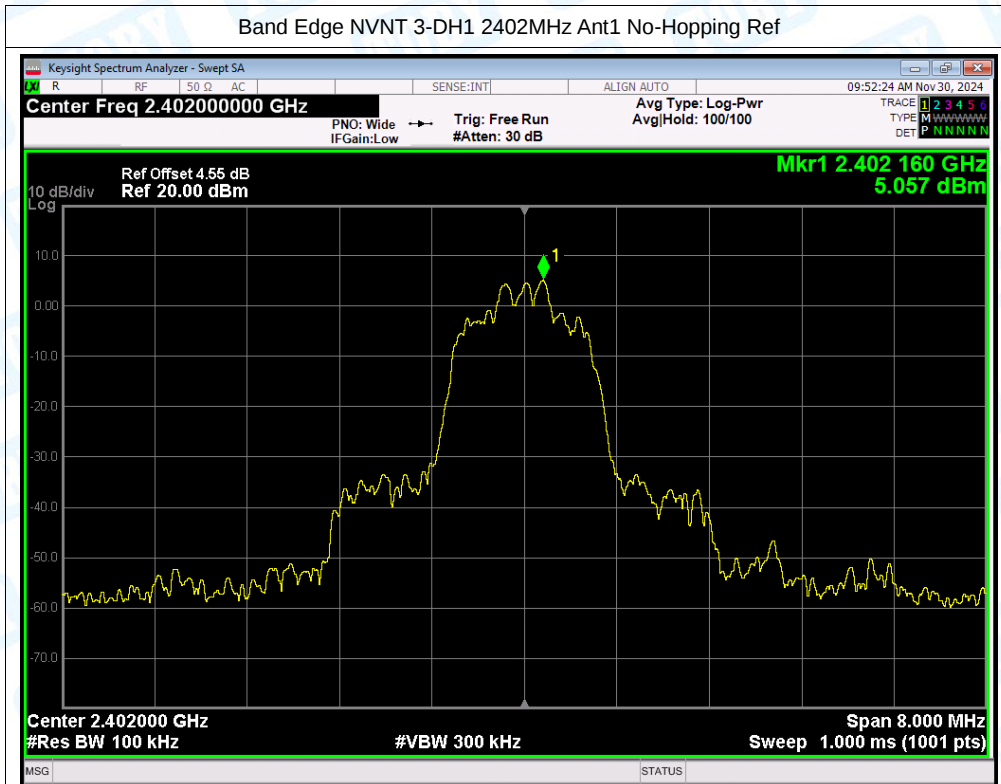


Band Edge NVNT 2-DH1 2480MHz Ant1 No-Hopping Ref



Band Edge NVNT 2-DH1 2480MHz Ant1 No-Hopping Emission

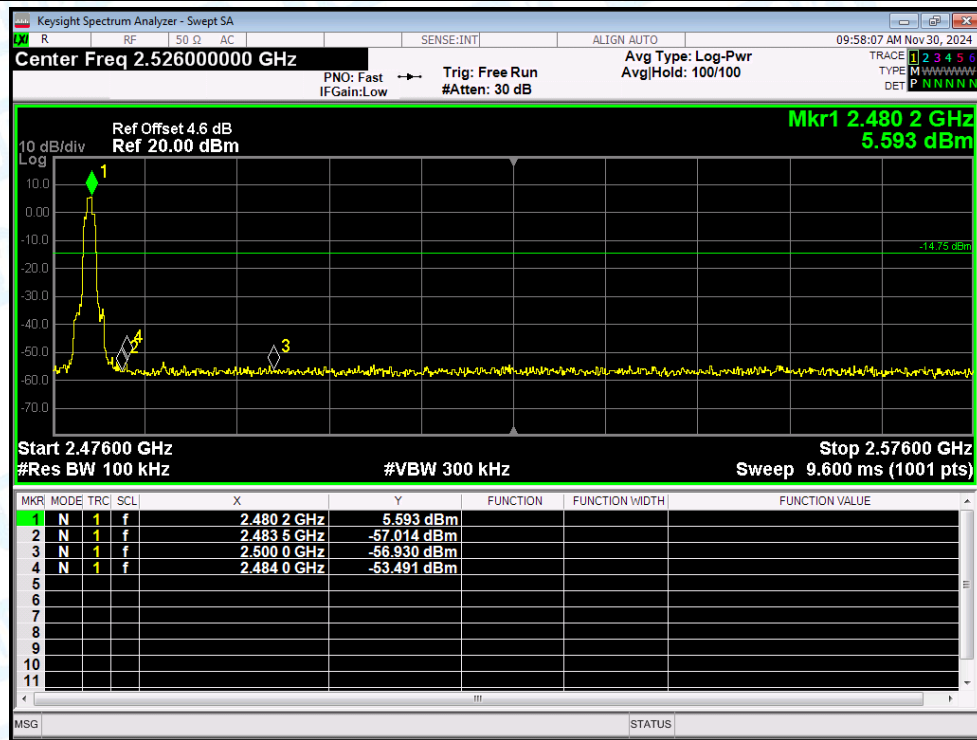




Band Edge NVNT 3-DH1 2480MHz Ant1 No-Hopping Ref



Band Edge NVNT 3-DH1 2480MHz Ant1 No-Hopping Emission

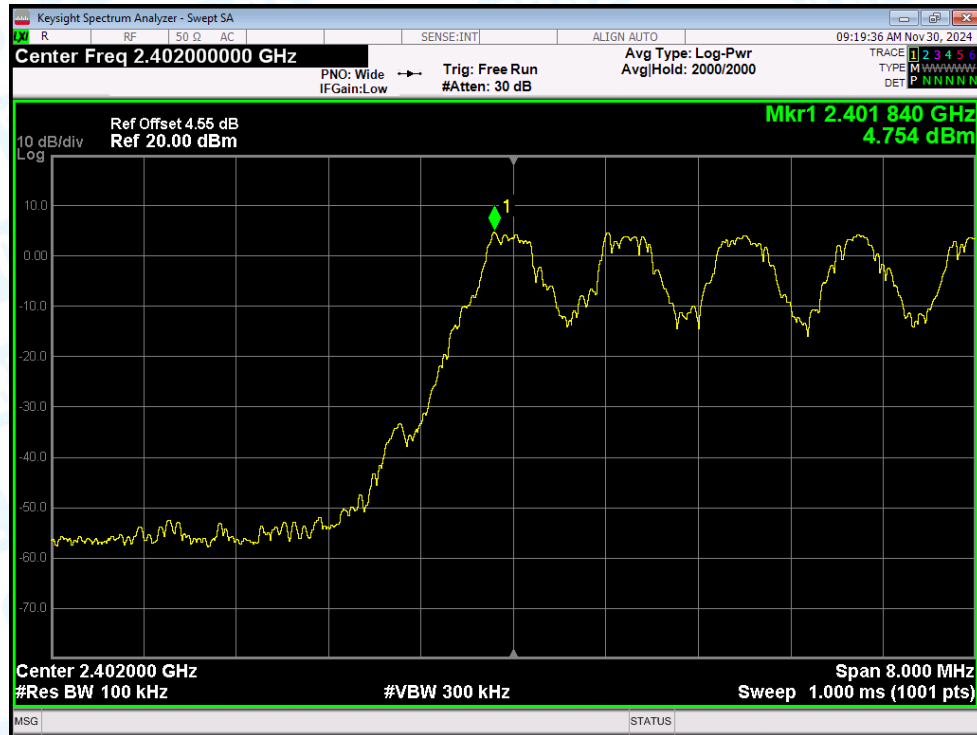


6. Band Edge(Hopping)

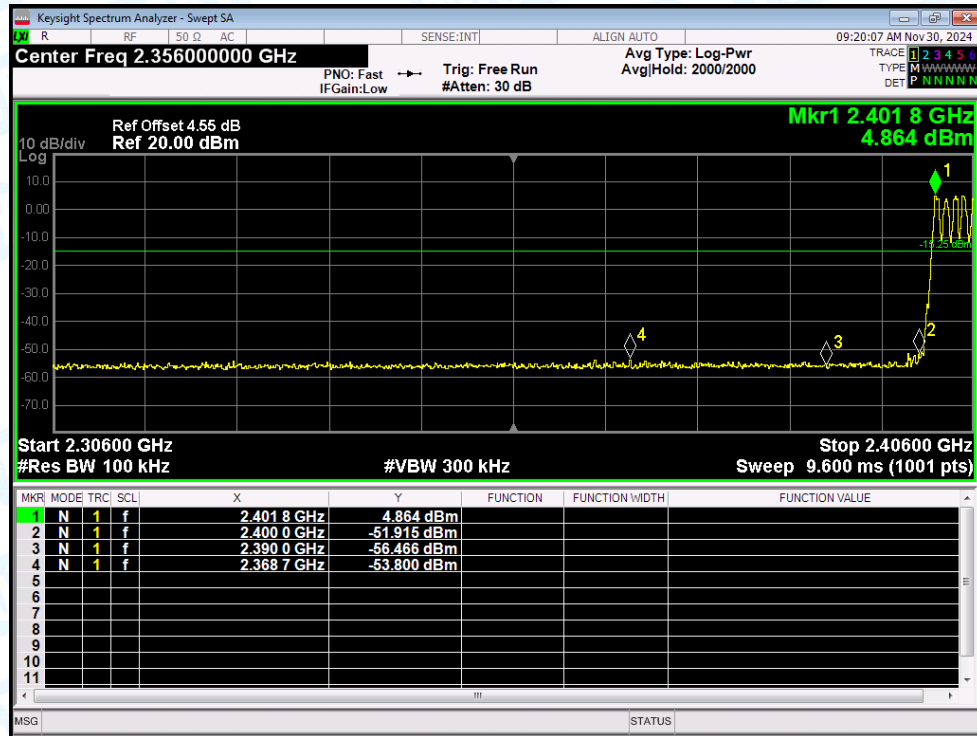
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	Hopping	-58.55	-20	Pass
NVNT	1-DH1	2480	Ant1	Hopping	-58.82	-20	Pass
NVNT	2-DH1	2402	Ant1	Hopping	-58.49	-20	Pass
NVNT	2-DH1	2480	Ant1	Hopping	-58.3	-20	Pass
NVNT	3-DH1	2402	Ant1	Hopping	-58.83	-20	Pass
NVNT	3-DH1	2480	Ant1	Hopping	-58.89	-20	Pass

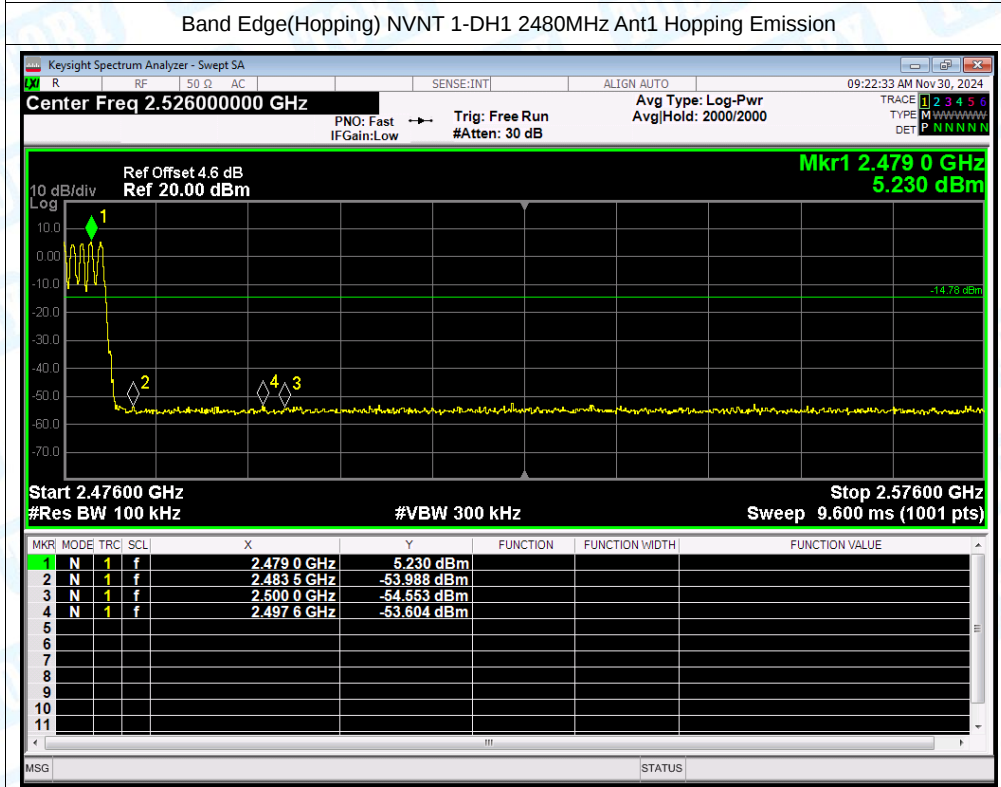
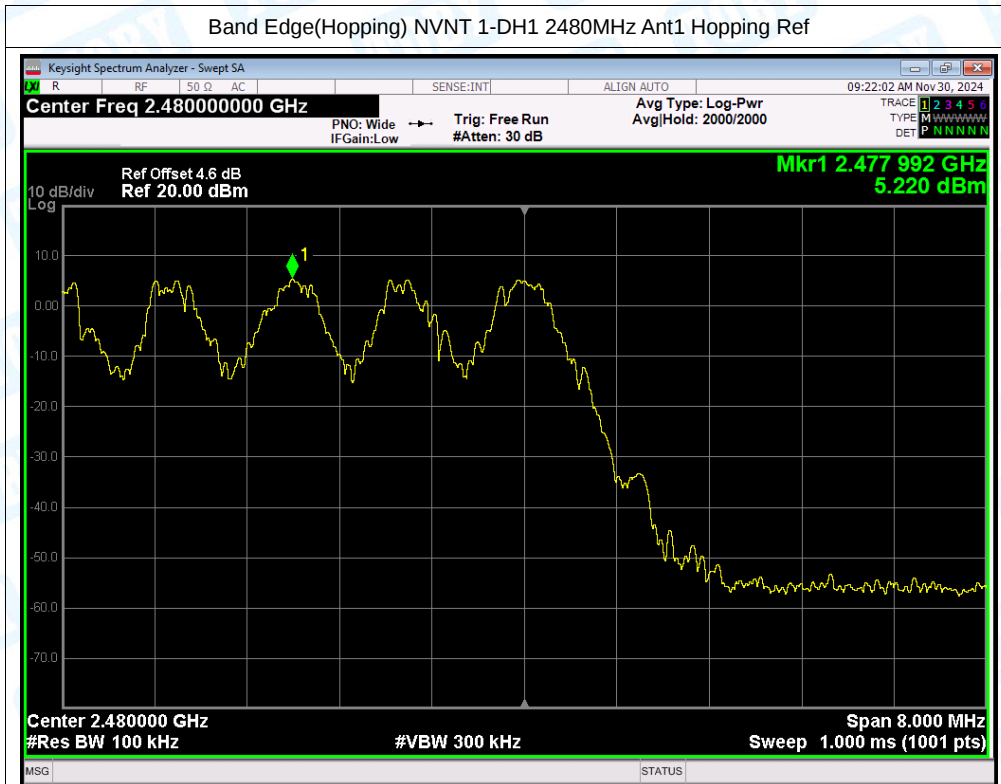
Test Graphs

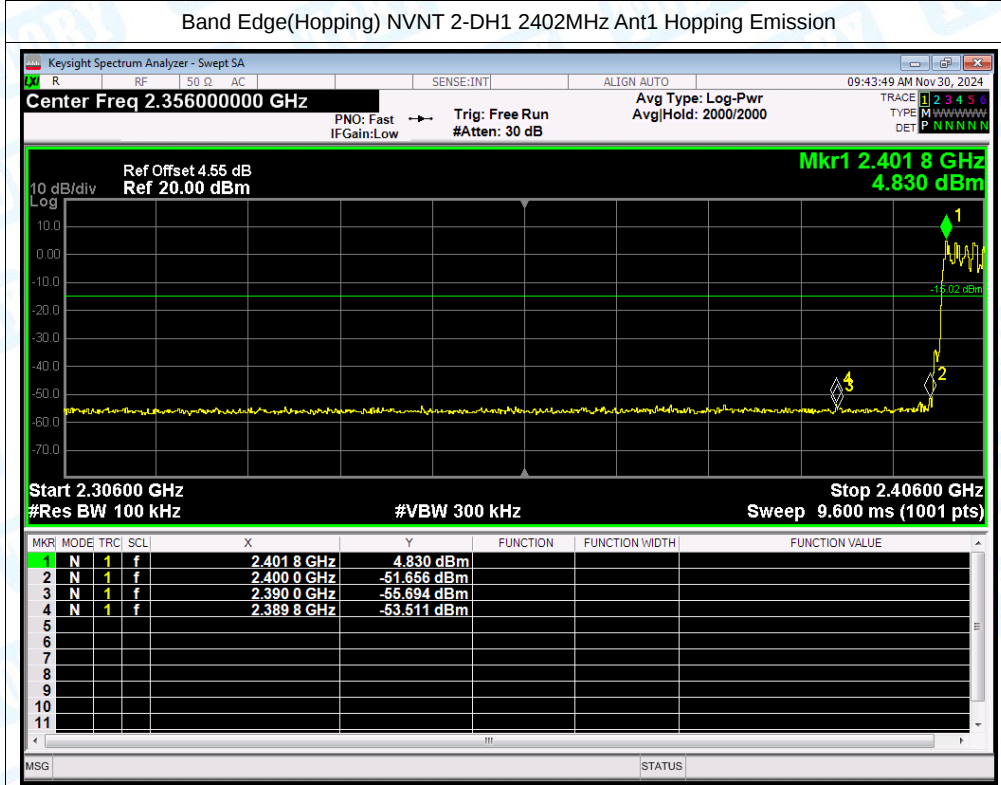
Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Ref

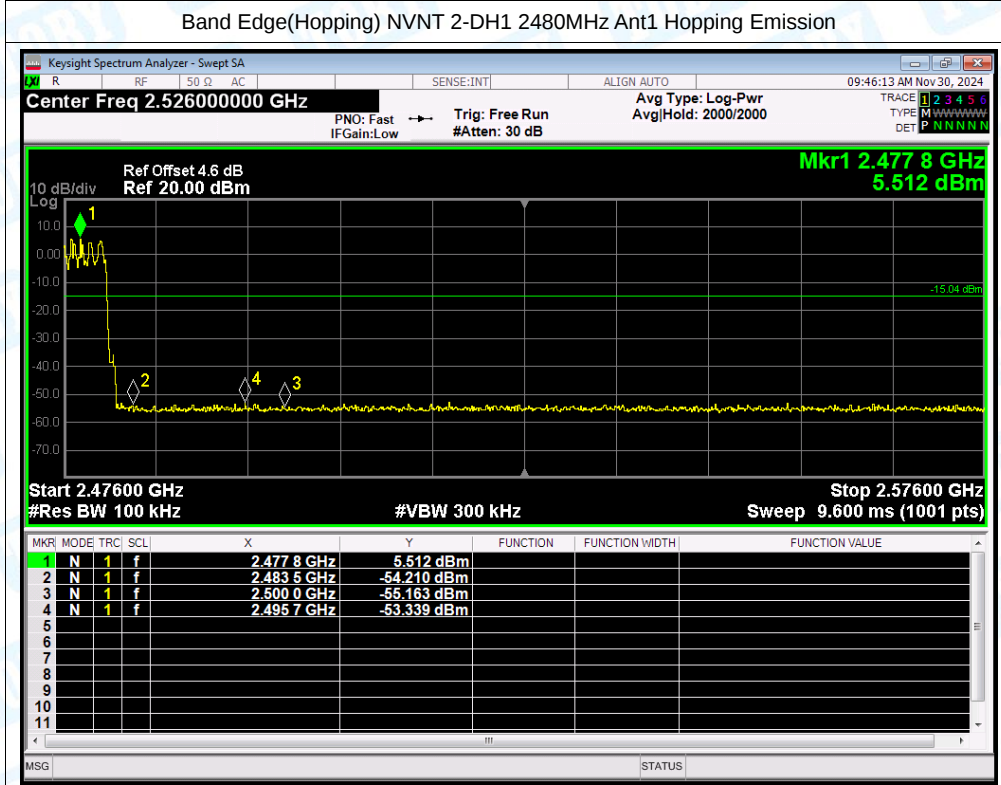


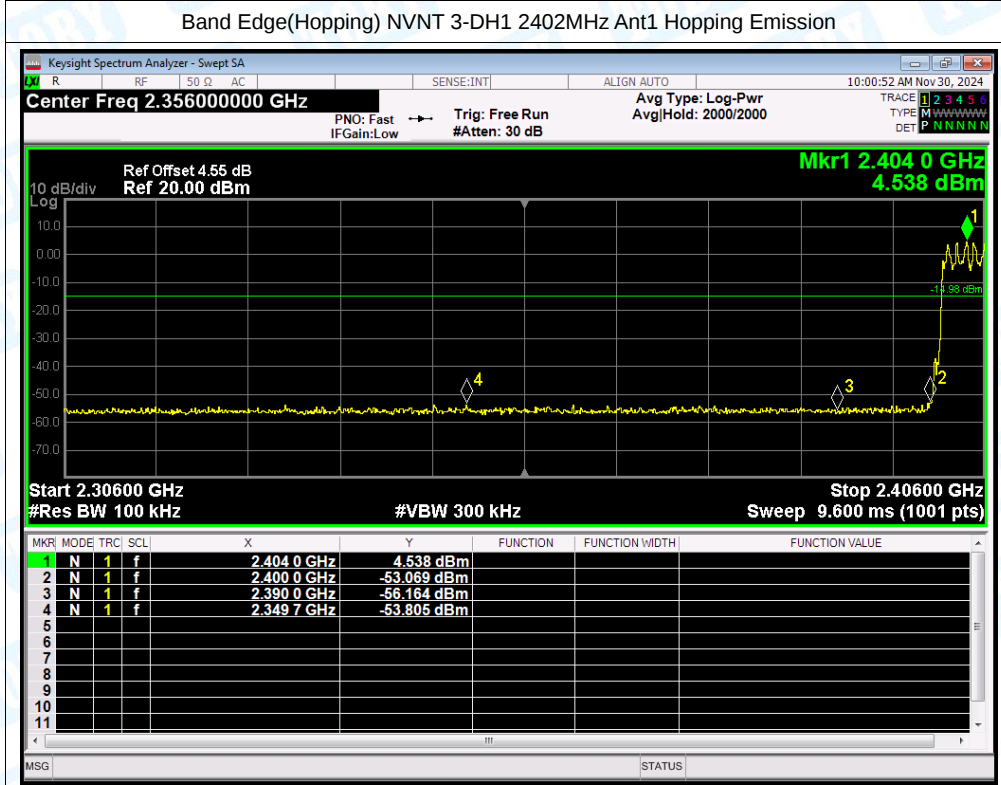
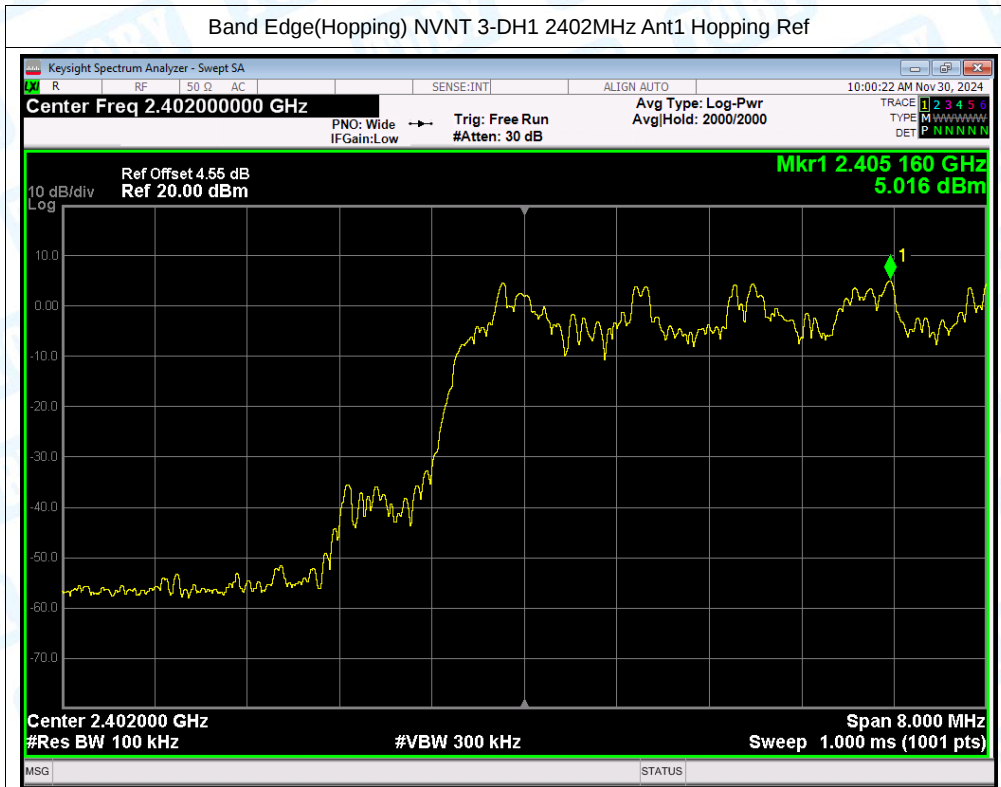
Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Emission

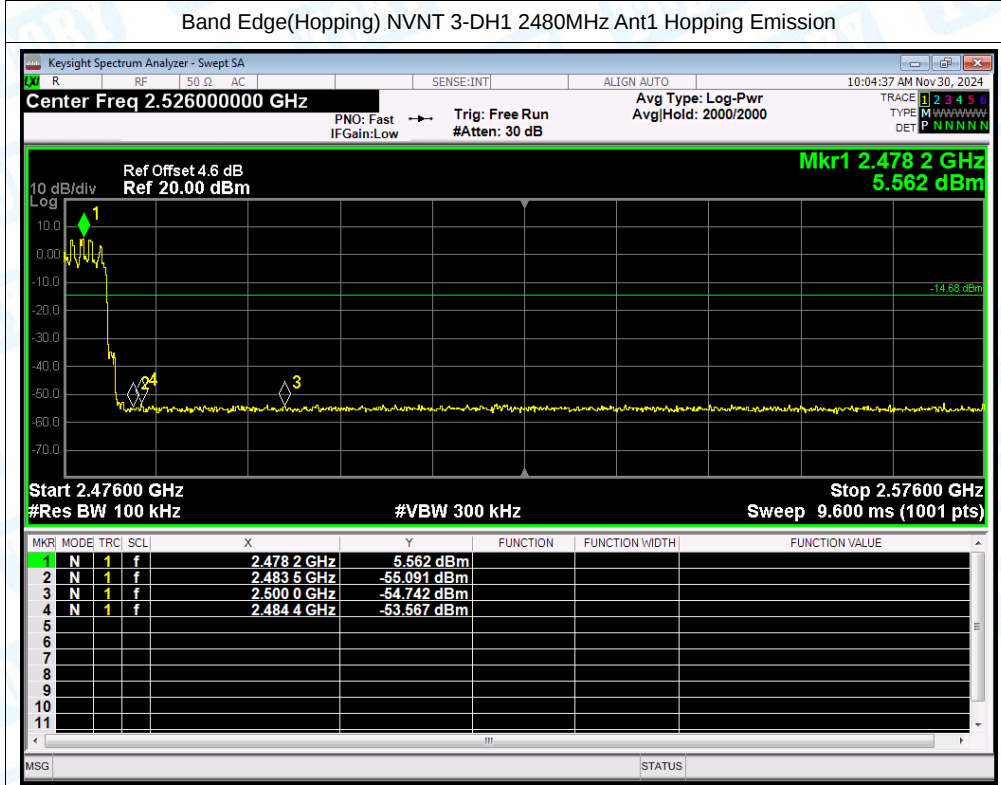










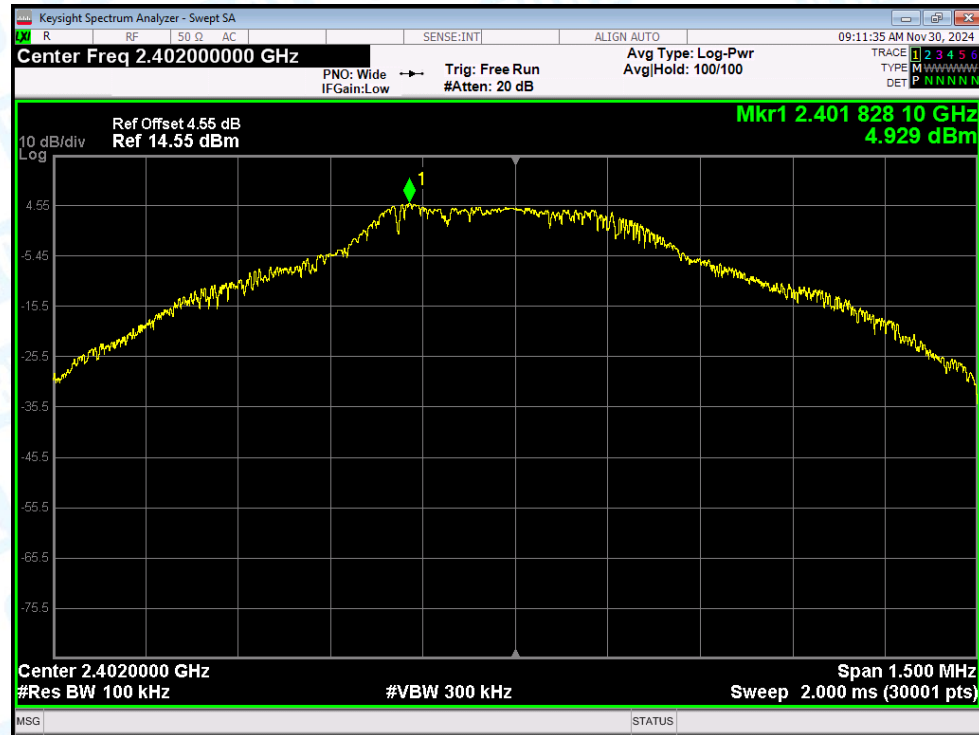


7. Conducted RF Spurious Emission

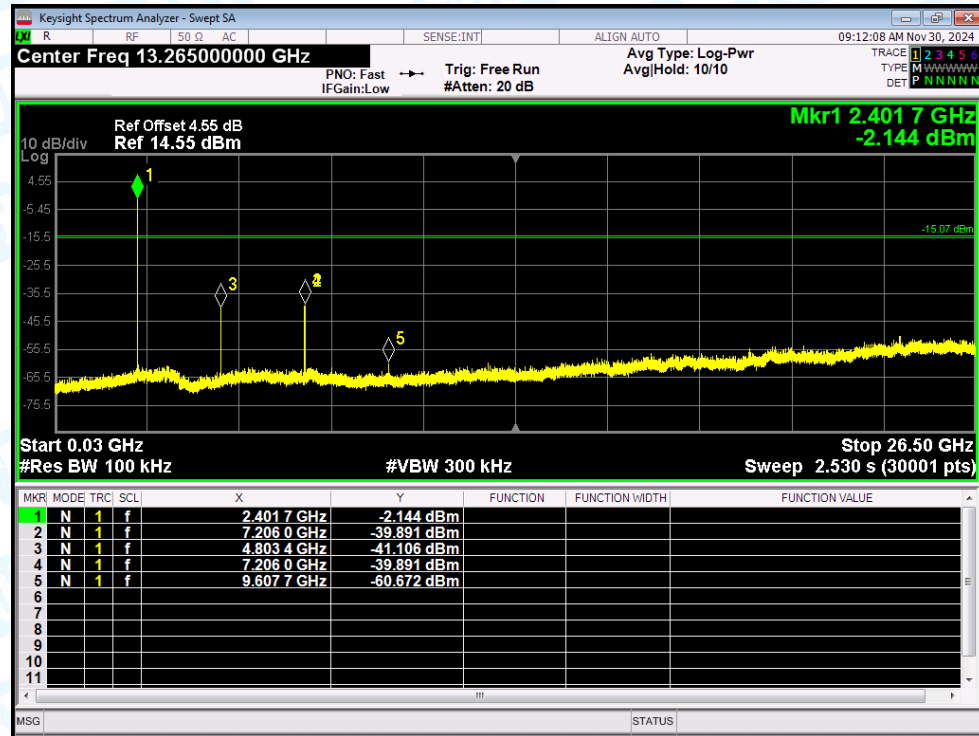
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	-44.82	-20	Pass
NVNT	1-DH1	2441	Ant1	-44.11	-20	Pass
NVNT	1-DH1	2480	Ant1	-42.09	-20	Pass
NVNT	2-DH1	2402	Ant1	-45.08	-20	Pass
NVNT	2-DH1	2441	Ant1	-45.16	-20	Pass
NVNT	2-DH1	2480	Ant1	-42.81	-20	Pass
NVNT	3-DH1	2402	Ant1	-49.43	-20	Pass
NVNT	3-DH1	2441	Ant1	-44.97	-20	Pass
NVNT	3-DH1	2480	Ant1	-44.17	-20	Pass

Test Graphs

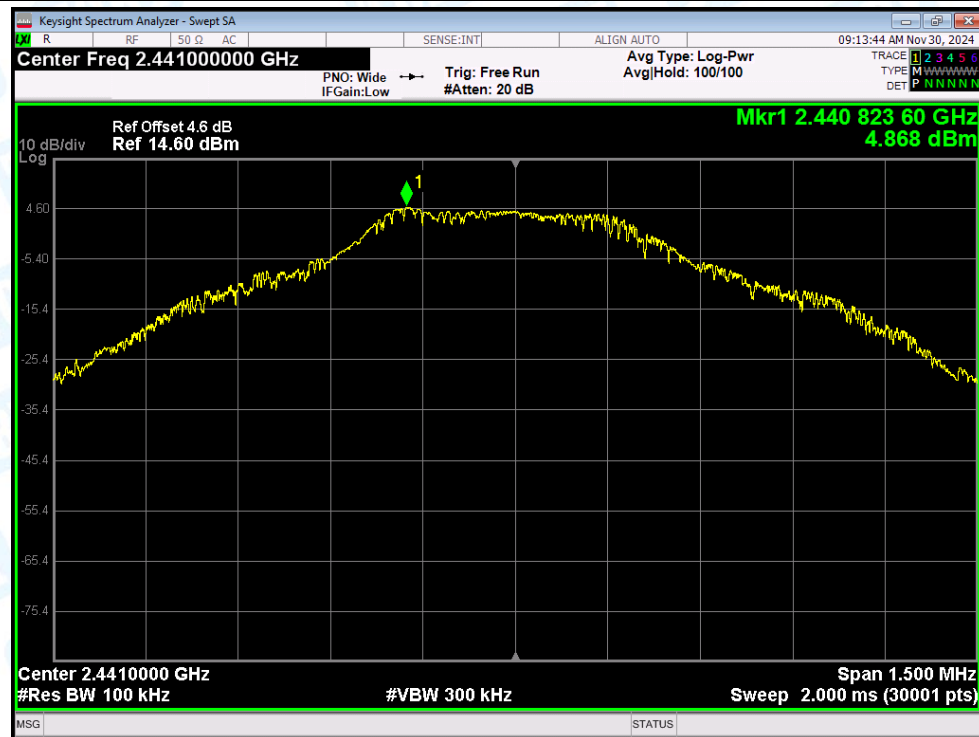
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Ref



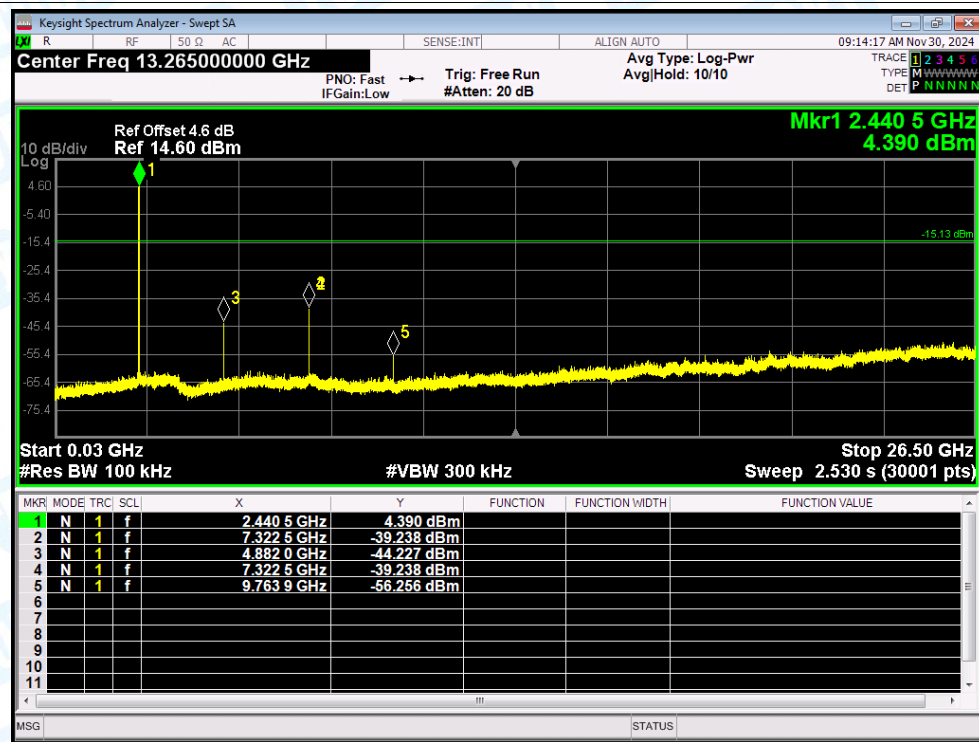
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Emission



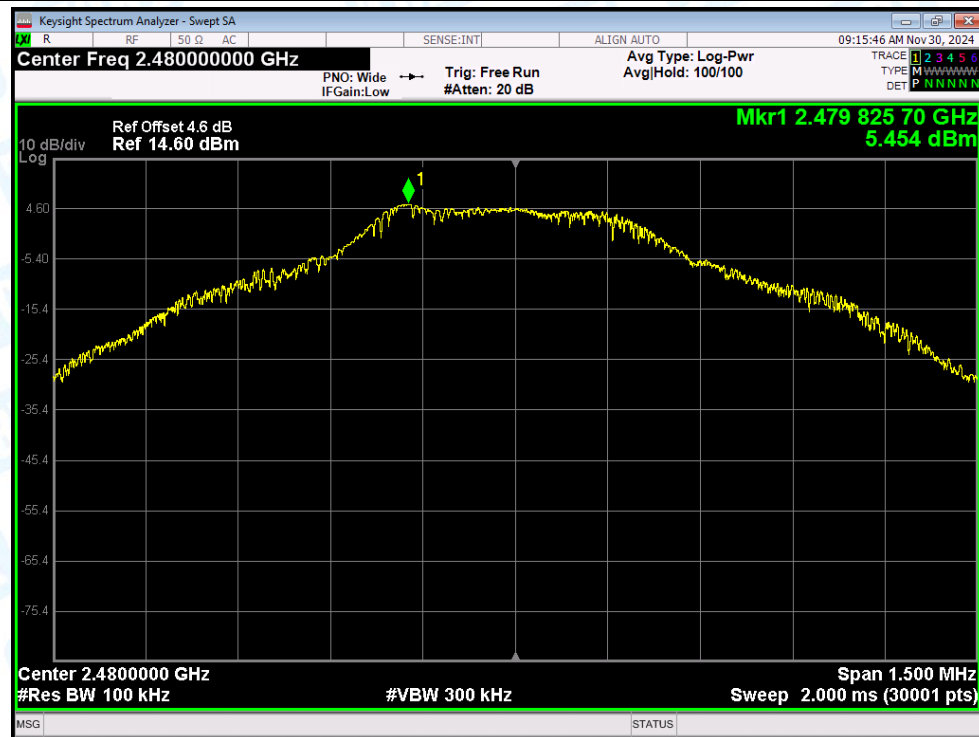
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Ref



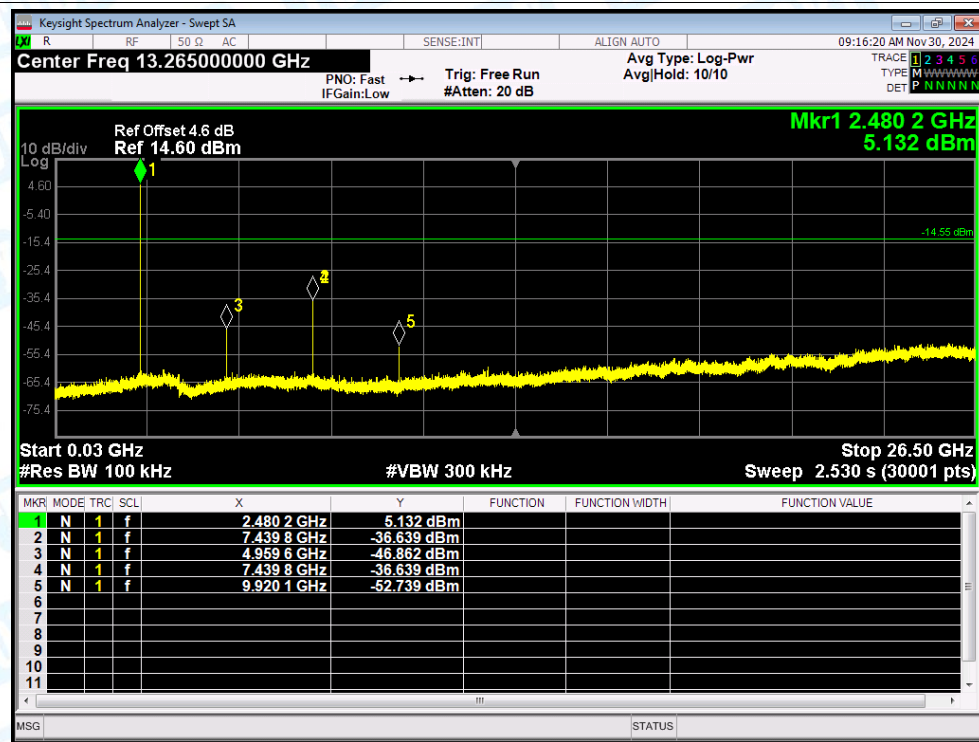
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Emission



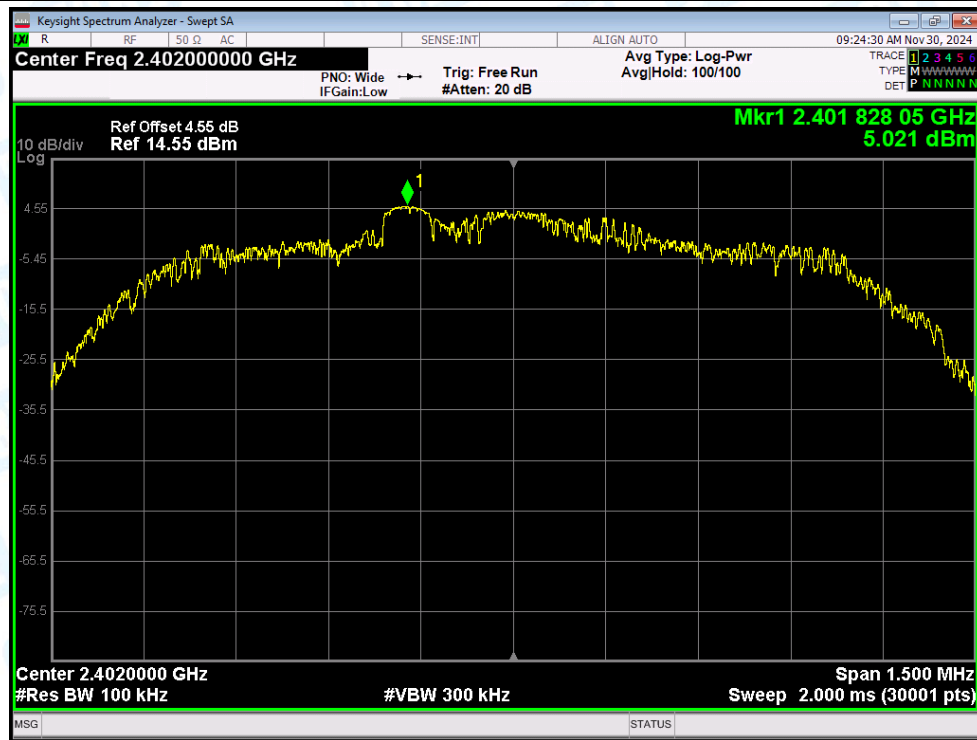
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Ref



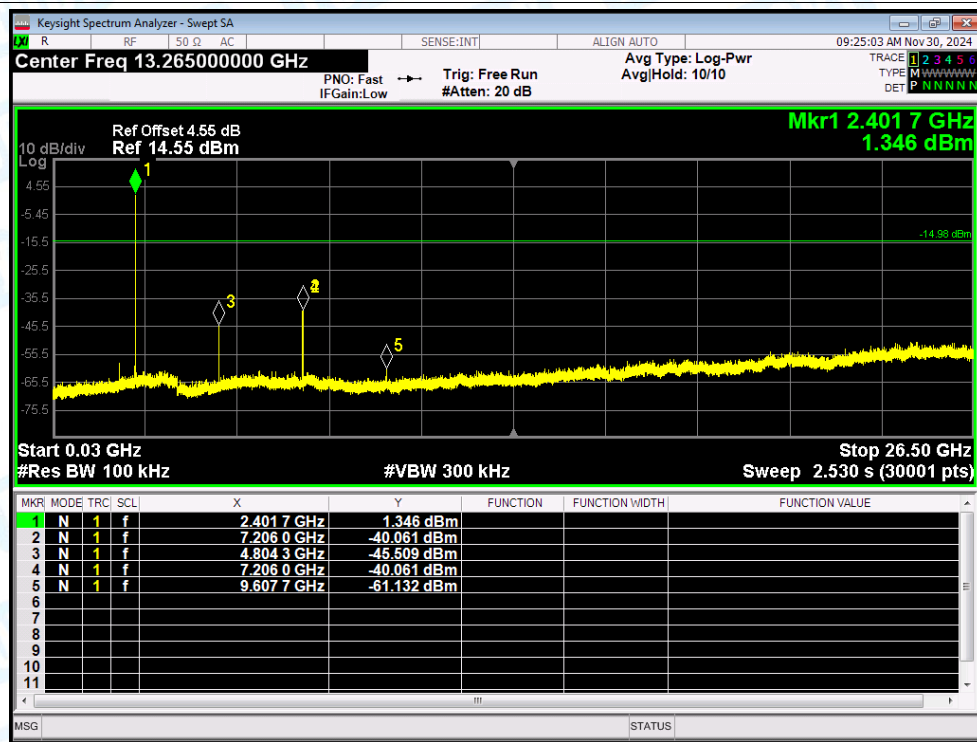
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Emission



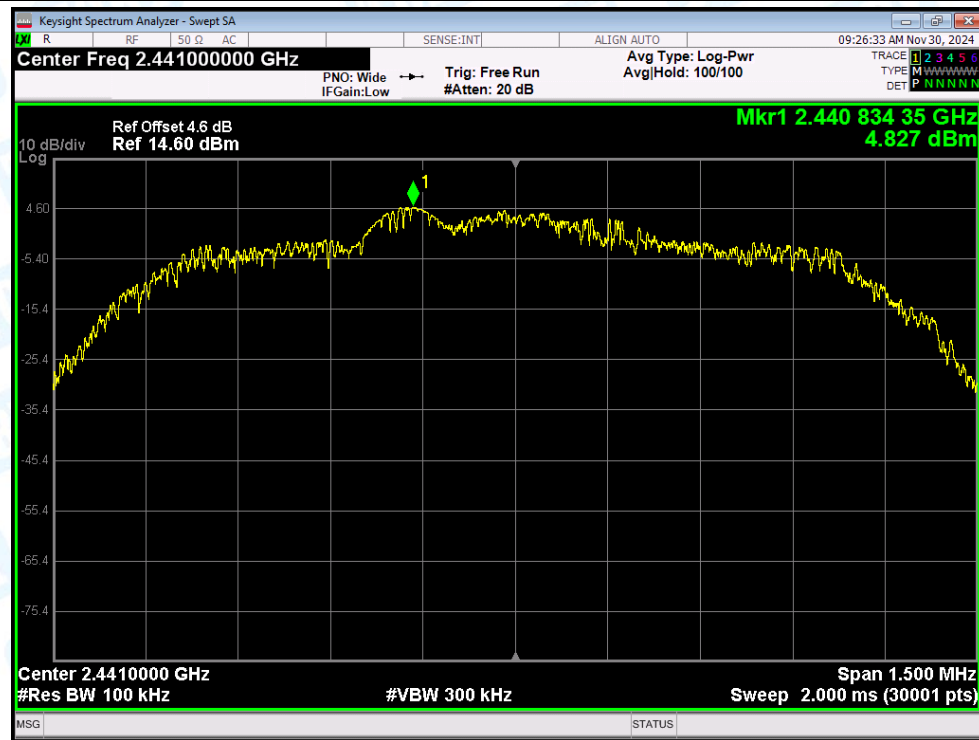
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Ref



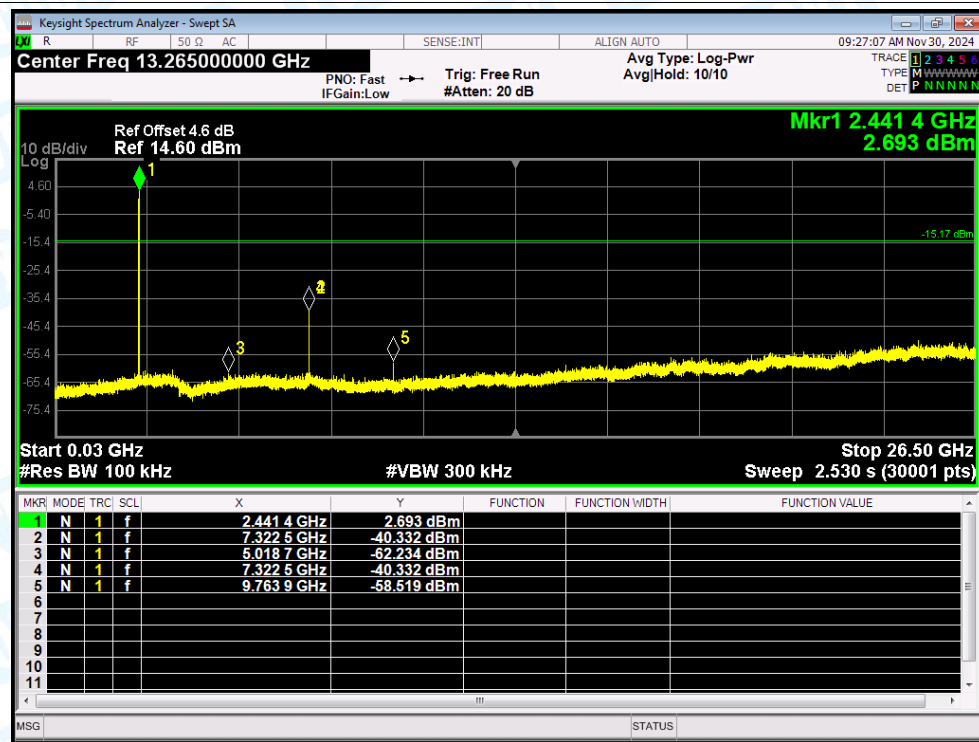
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Emission



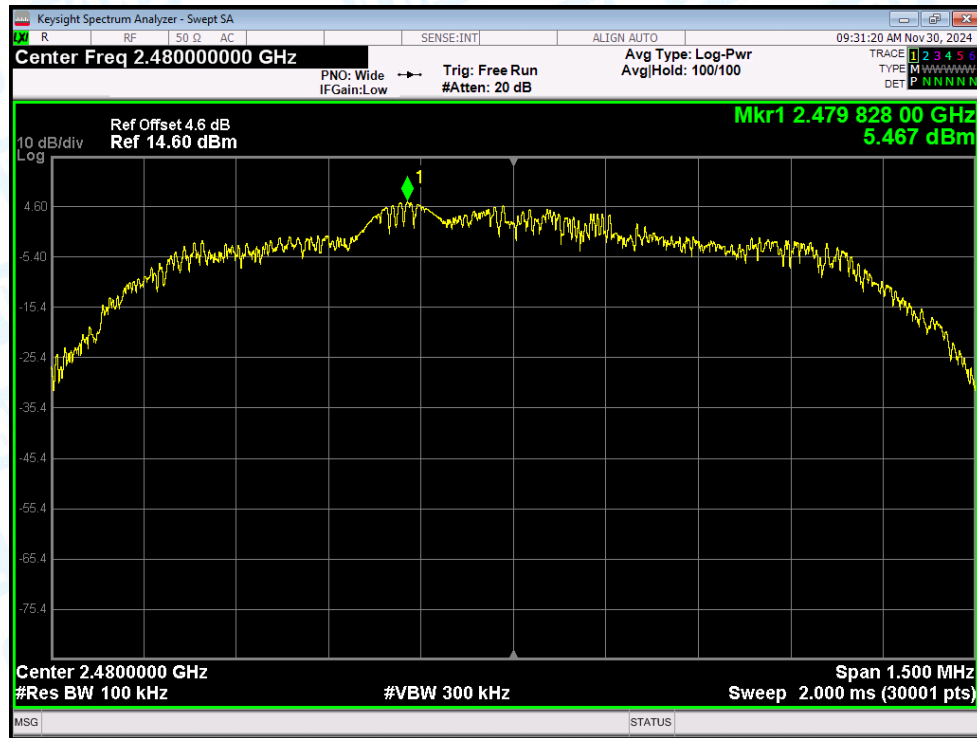
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Ref



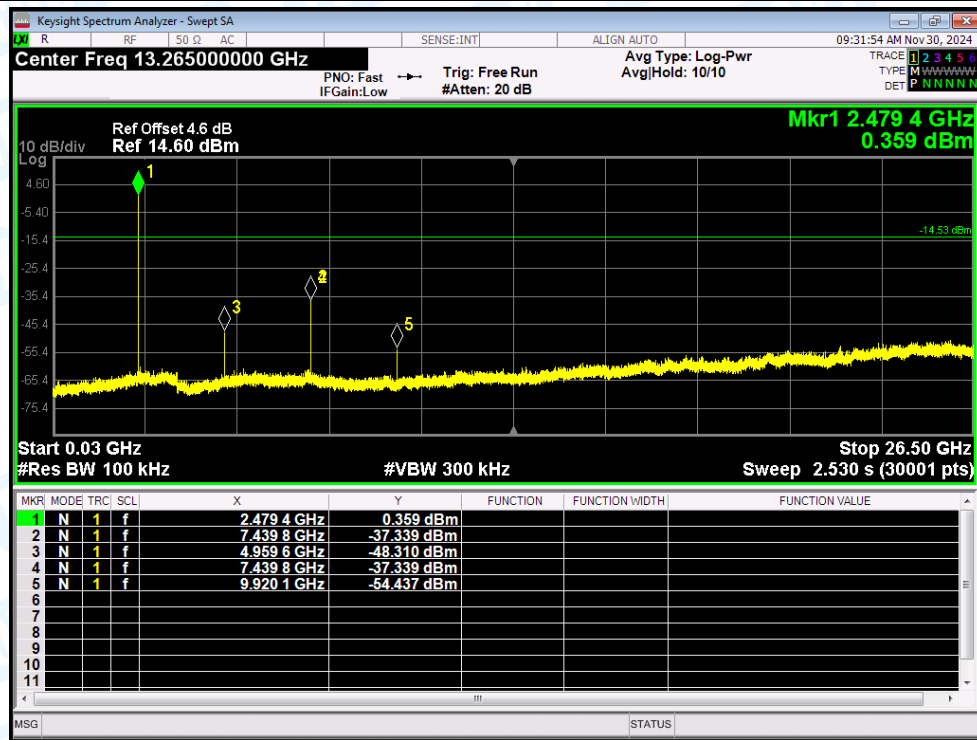
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Emission



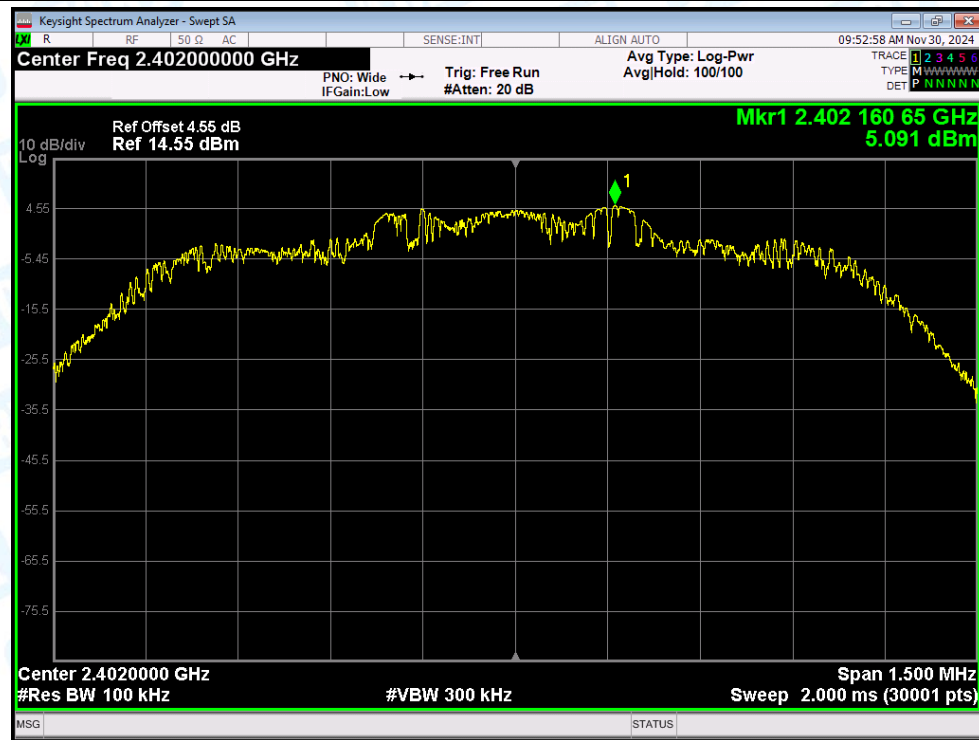
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Ref



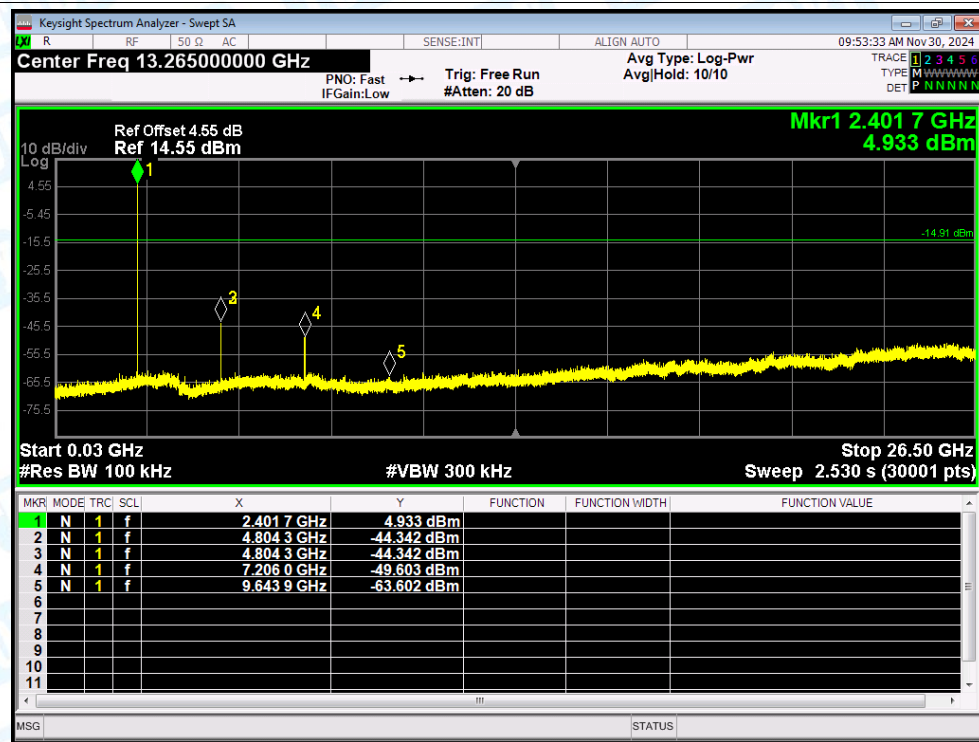
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Emission



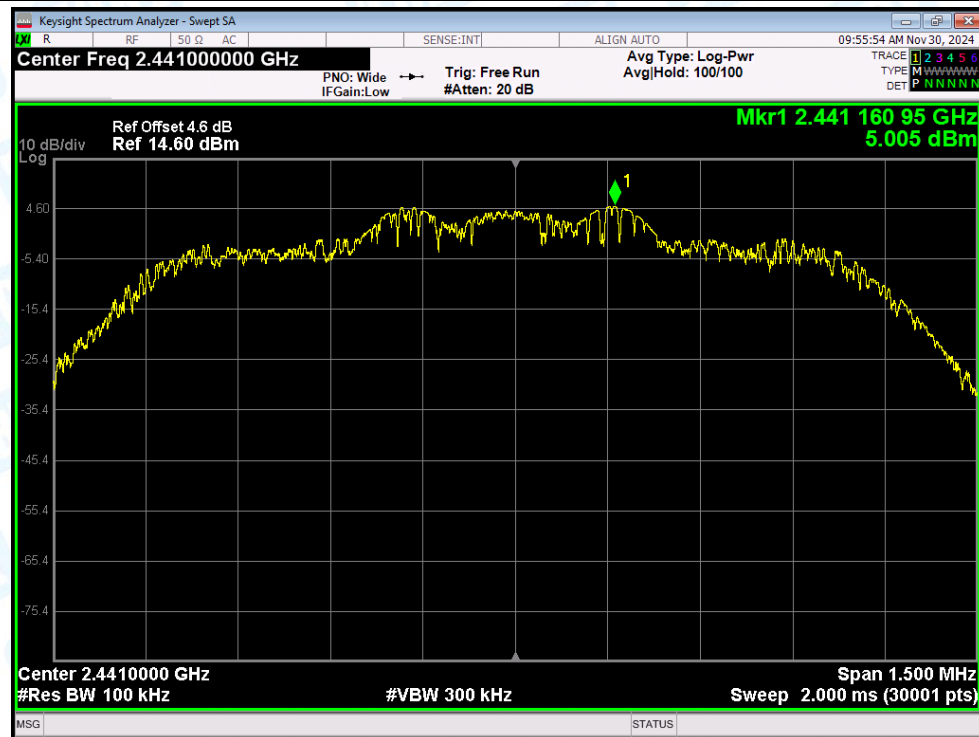
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Ref



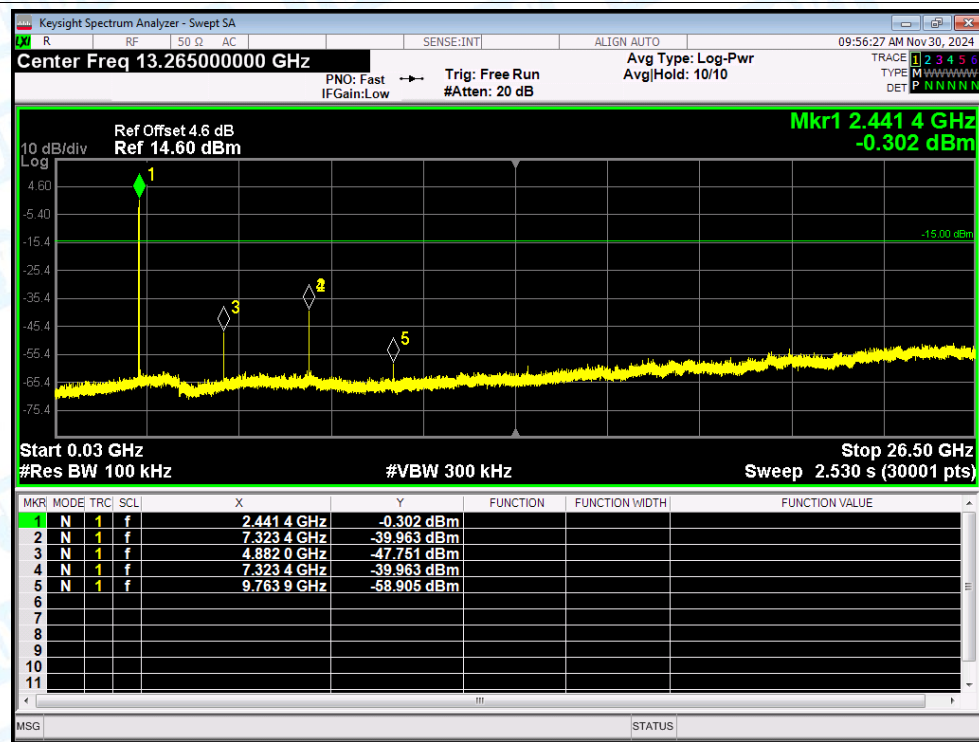
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Emission



Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Ref



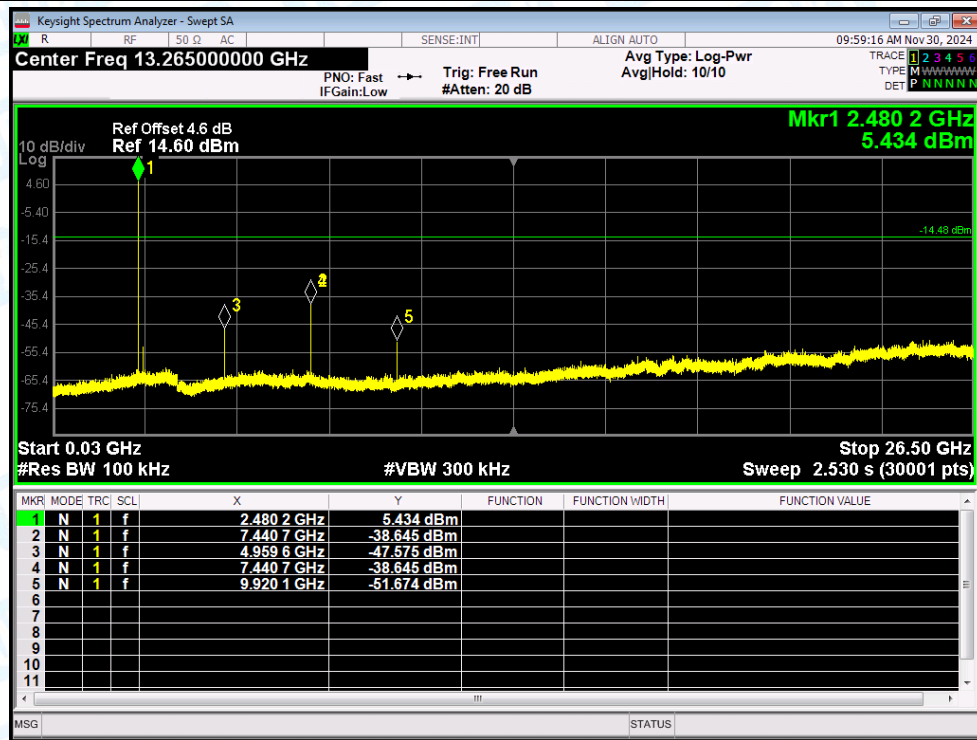
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Emission

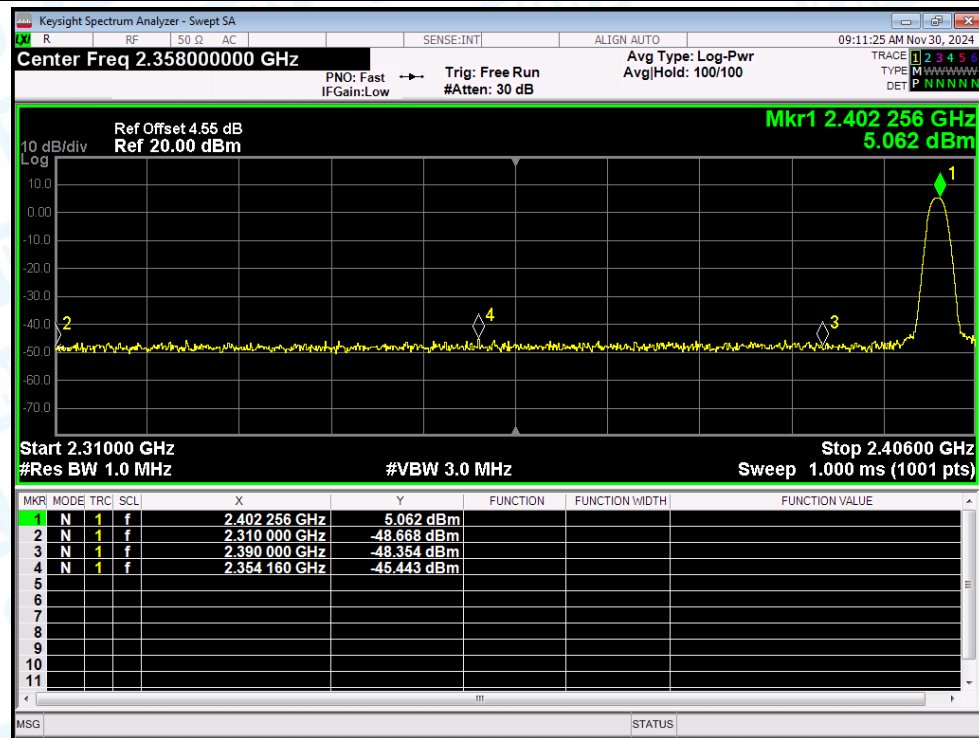


8. Restrict Band

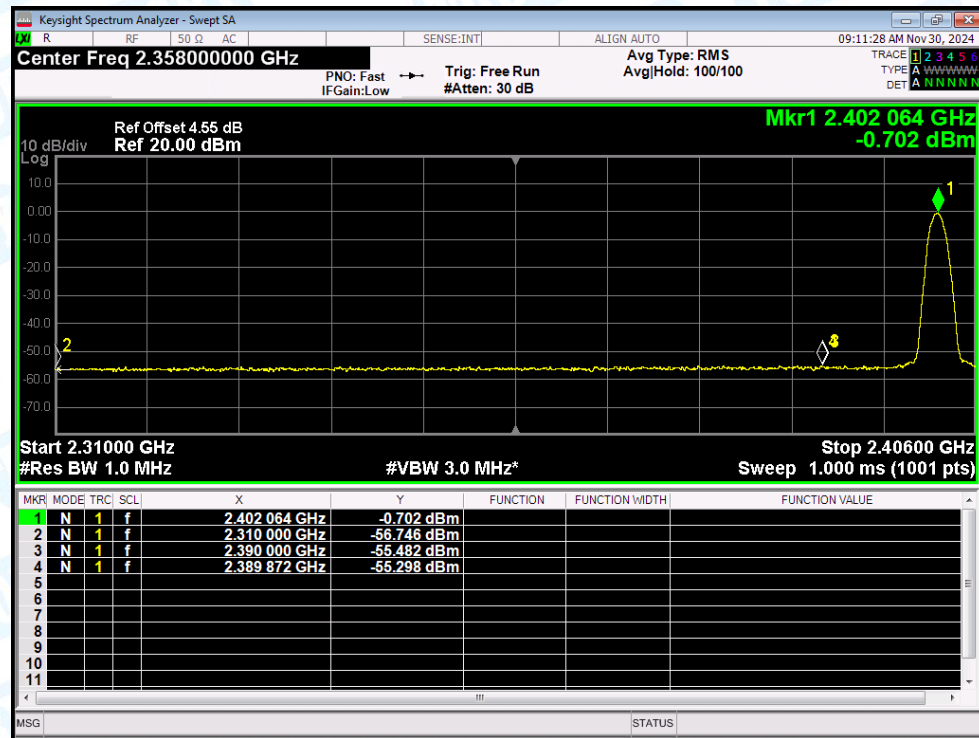
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-48.67	2	-	48.59	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-56.75	2	5.17	45.68	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2354.16	-45.44	2	-	51.82	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2389.872	-55.3	2	5.17	47.13	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-48.35	2	-	48.91	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-55.48	2	5.17	46.95	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-46.74	2	-	50.52	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-55.31	2	5.29	47.24	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2488.048	-43.6	2	-	53.66	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.872	-54.54	2	5.29	48.01	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-47.53	2	-	49.73	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-55.6	2	5.29	46.95	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-49.27	2	-	47.99	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-55.94	2	5.17	46.49	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2342.352	-44.83	2	-	52.43	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2382.192	-55.21	2	5.17	47.22	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-47.69	2	-	49.57	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-56.23	2	5.17	46.2	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-46.89	2	-	50.37	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-55.08	2	5.17	47.35	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2494.936	-43.96	2	-	53.3	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2484.664	-54.75	2	5.17	47.68	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-46.59	2	-	50.67	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-55.01	2	5.17	47.42	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-49.14	2	-	48.12	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-56.72	2	5.17	45.71	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2347.152	-45.26	2	-	52	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2384.4	-55.34	2	5.17	47.09	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-46.91	2	-	50.35	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-56.34	2	5.17	46.09	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-46.53	2	-	50.73	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-54.89	2	5.17	47.54	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2485.048	-44.5	2	-	52.76	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2498.752	-54.6	2	5.17	47.83	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-48.01	2	-	49.25	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-55.62	2	5.17	46.81	Average	54	Pass

Test Graphs

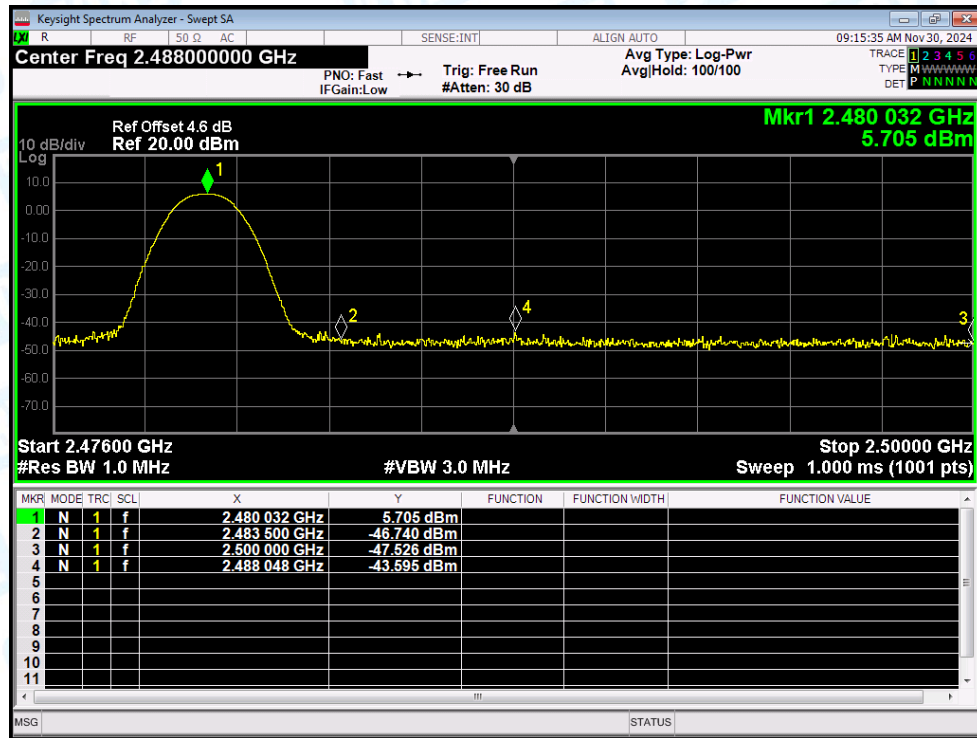
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Peak



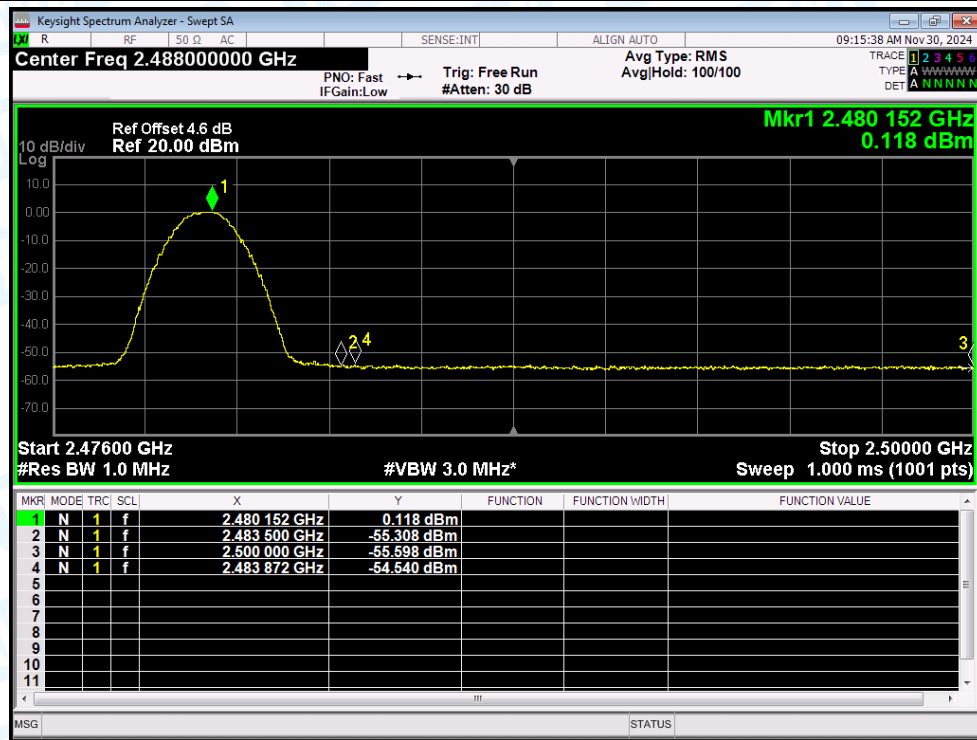
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Average



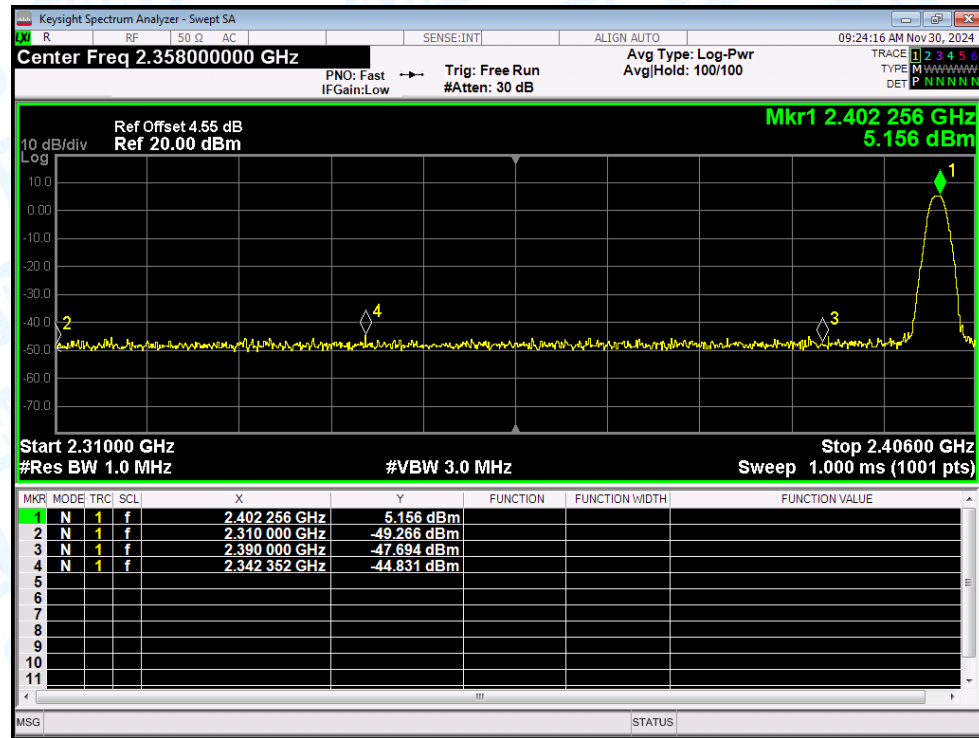
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Peak



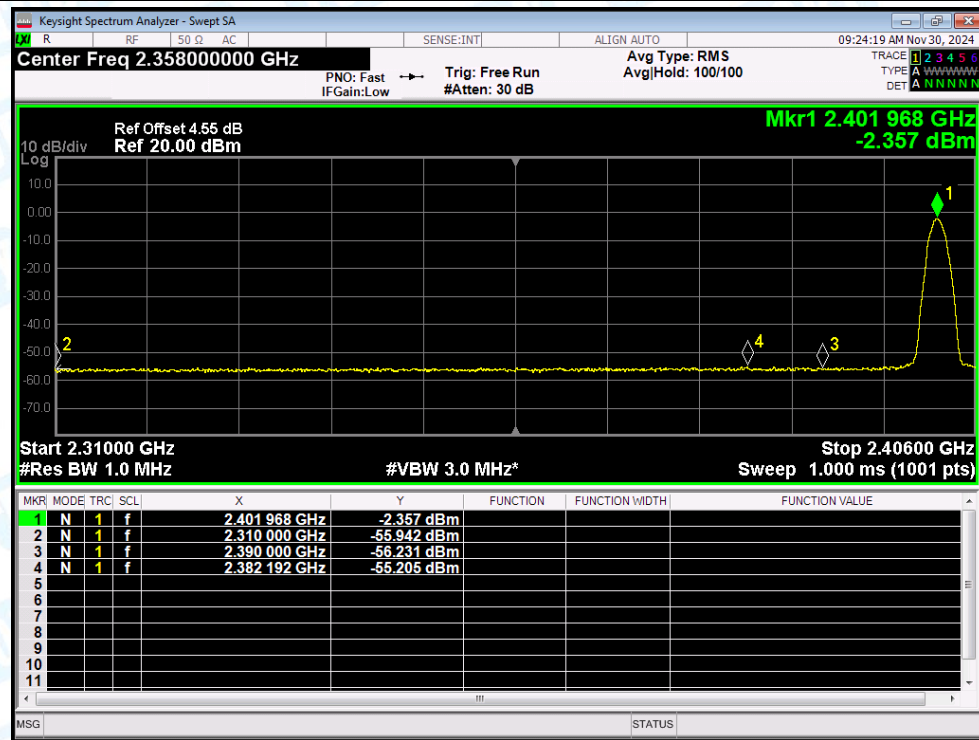
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Average



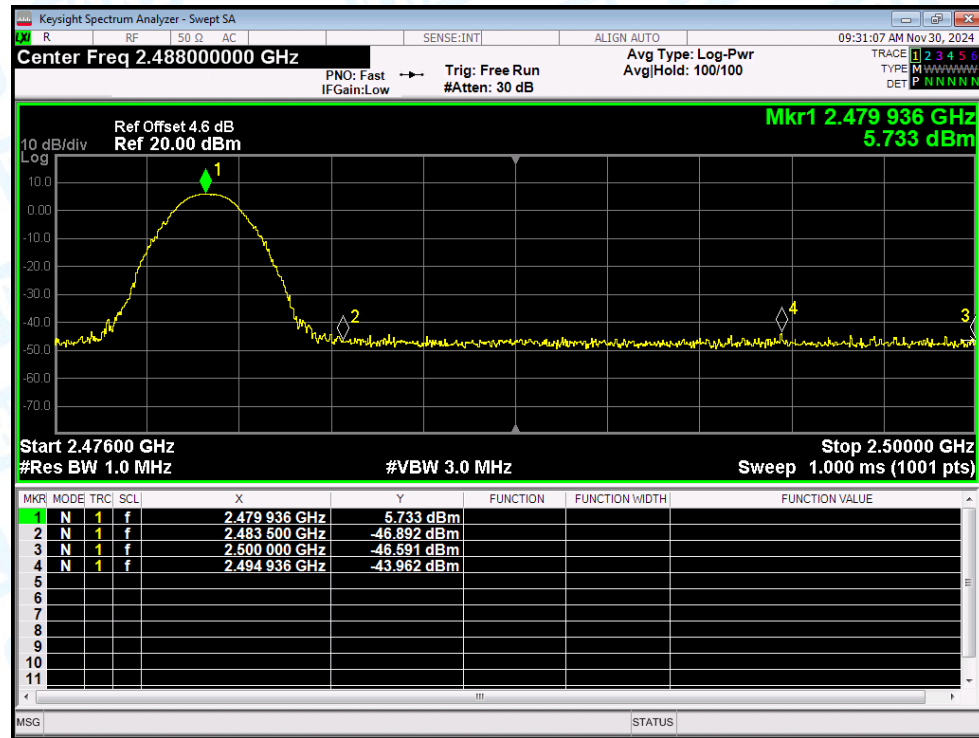
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Peak



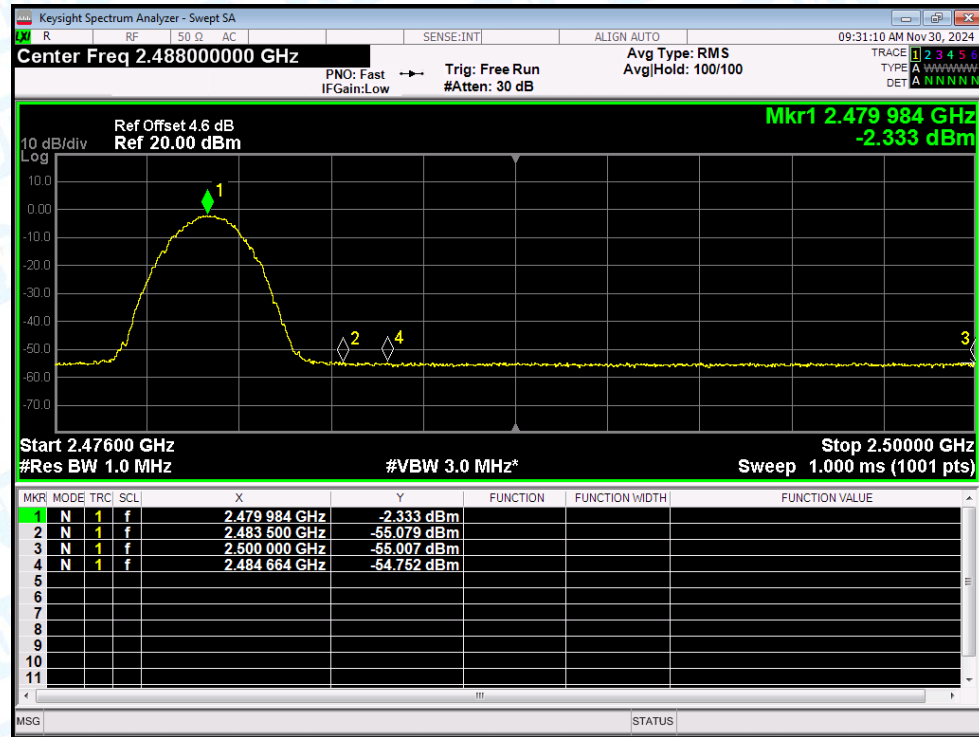
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Average



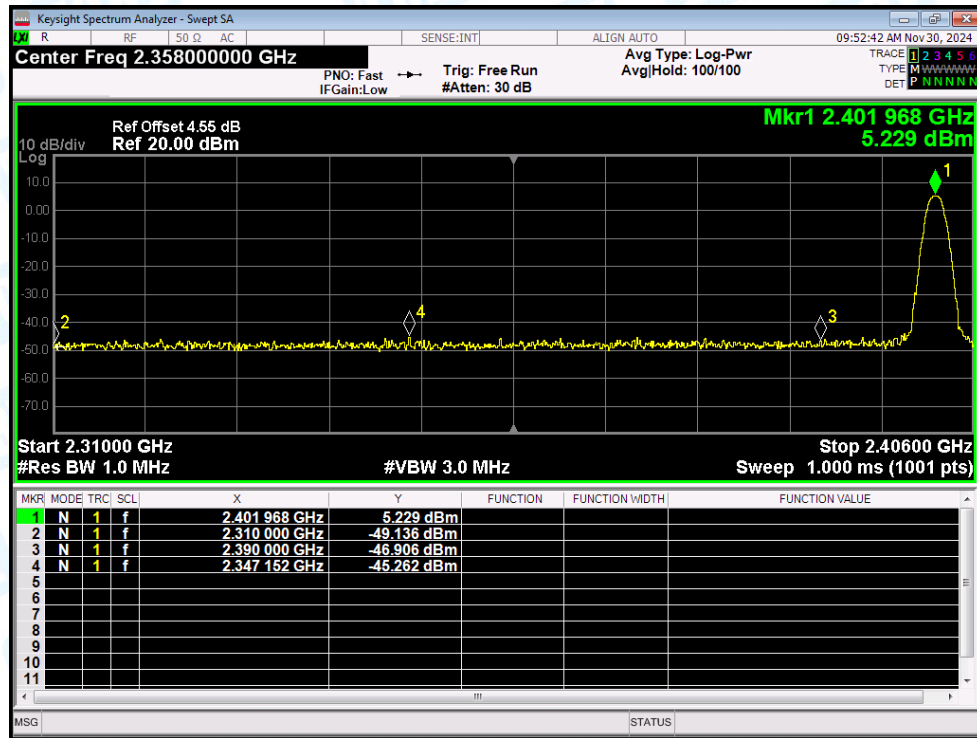
Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Peak



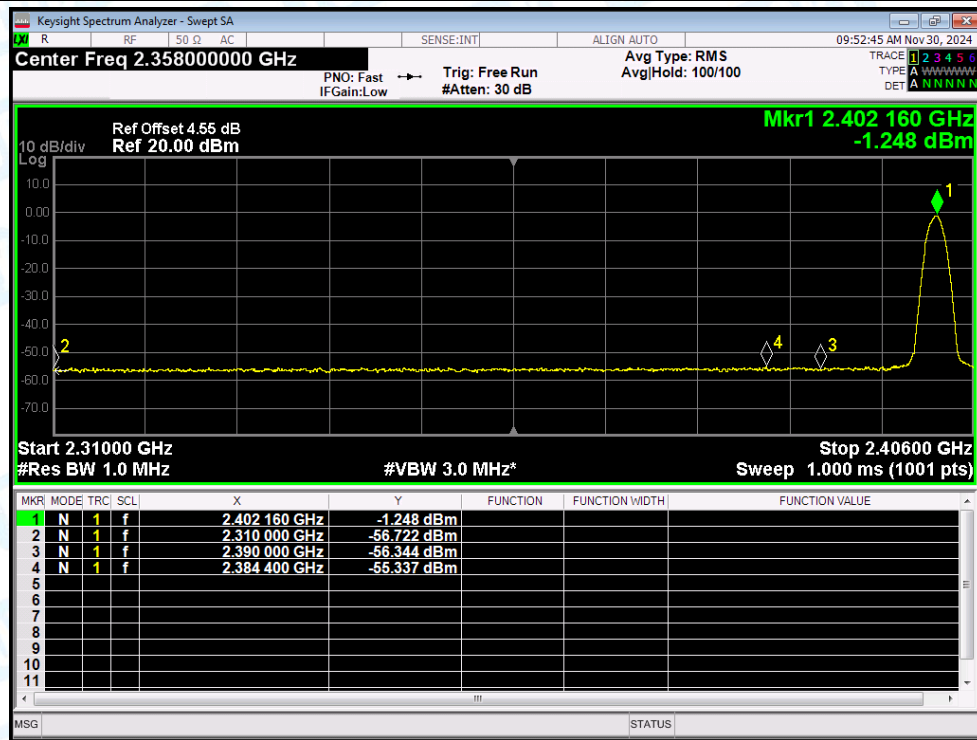
Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Average



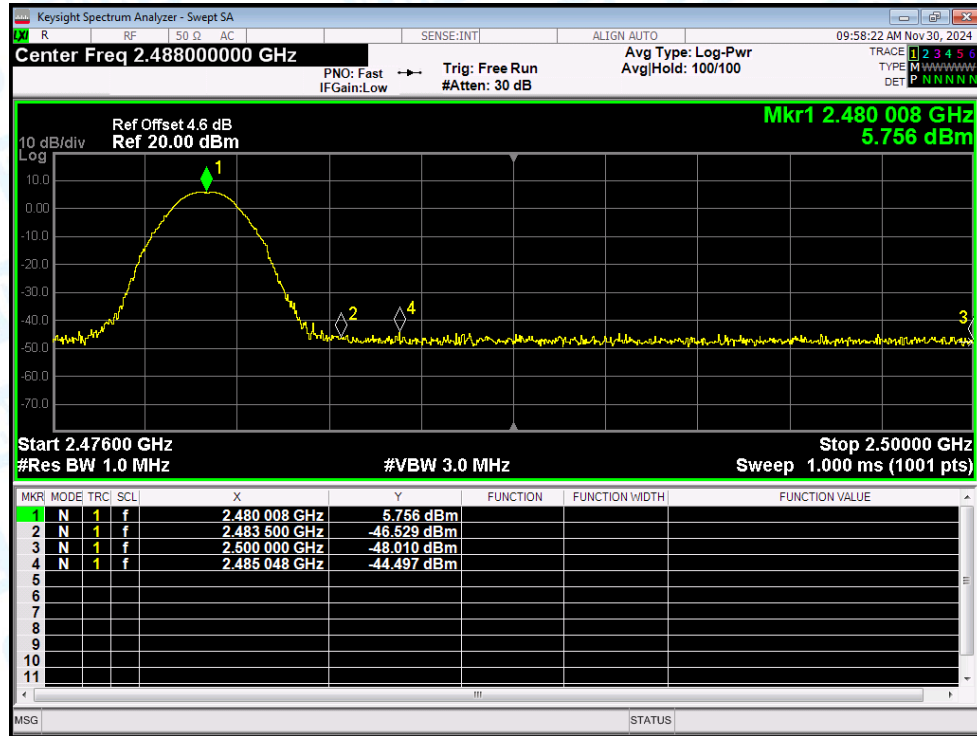
Restrict Band NVNT 3-DH1 2402MHz Ant1 No-Hopping Peak



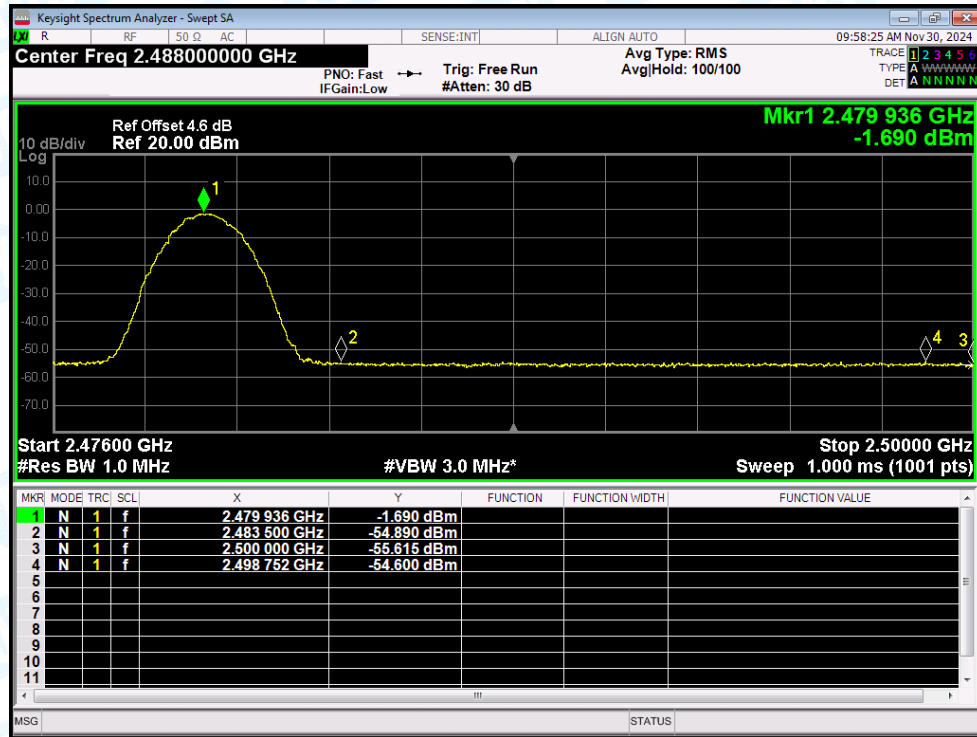
Restrict Band NVNT 3-DH1 2402MHz Ant1 No-Hopping Average



Restrict Band NVNT 3-DH1 2480MHz Ant1 No-Hopping Peak



Restrict Band NVNT 3-DH1 2480MHz Ant1 No-Hopping Average

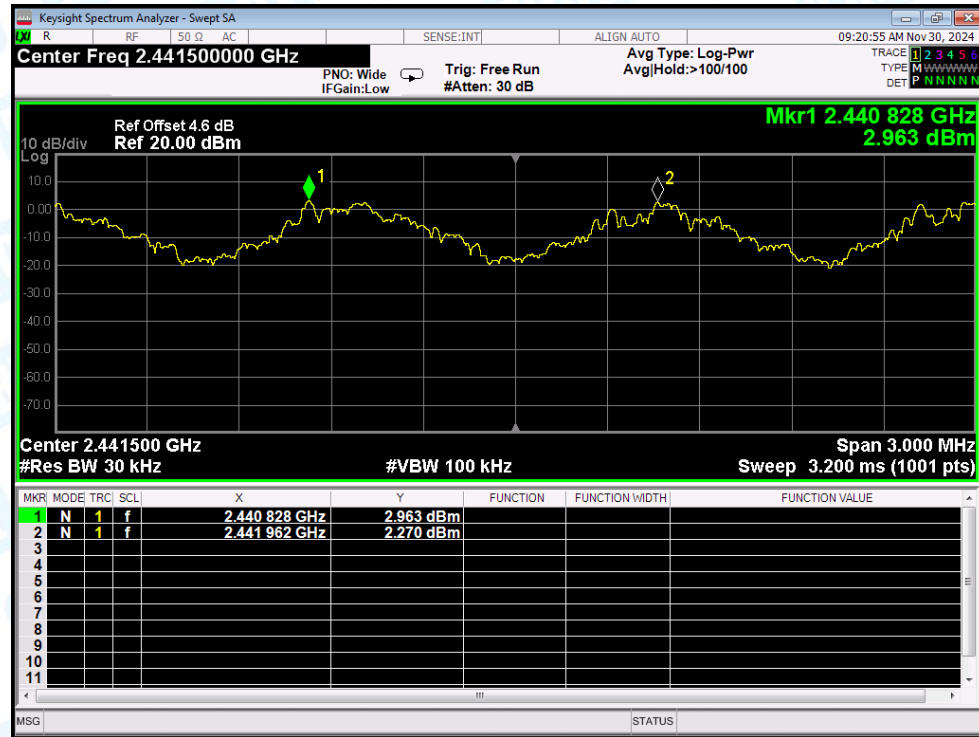


9. Carrier Frequencies Separation

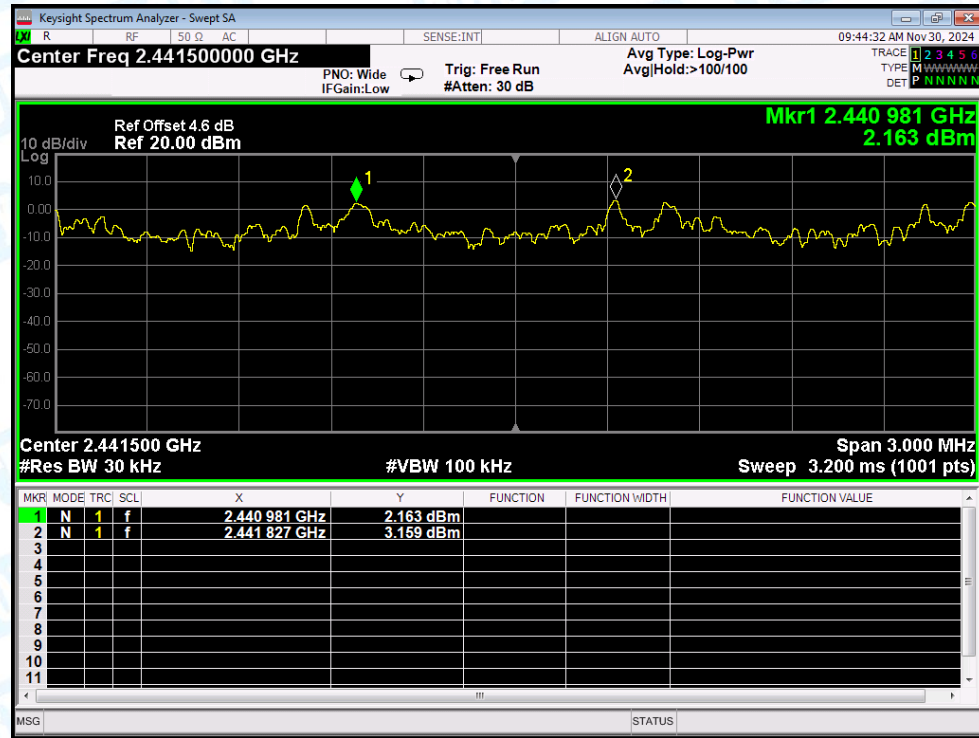
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	Ant1	2440.828	2441.962	1.134	0.62	Pass
NVNT	2-DH1	Ant1	2440.981	2441.827	0.846	0.8	Pass
NVNT	3-DH1	Ant1	2441.155	2441.986	0.831	0.807	Pass

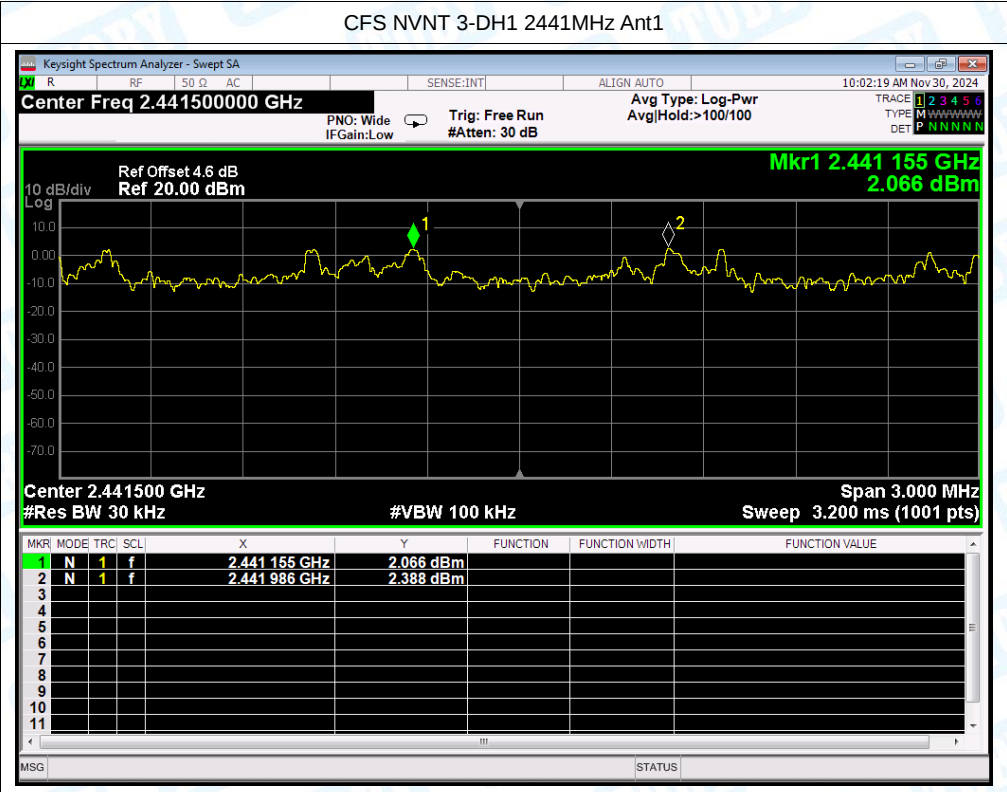
Test Graphs

CFS NVNT 1-DH1 2441MHz Ant1



CFS NVNT 2-DH1 2441MHz Ant1



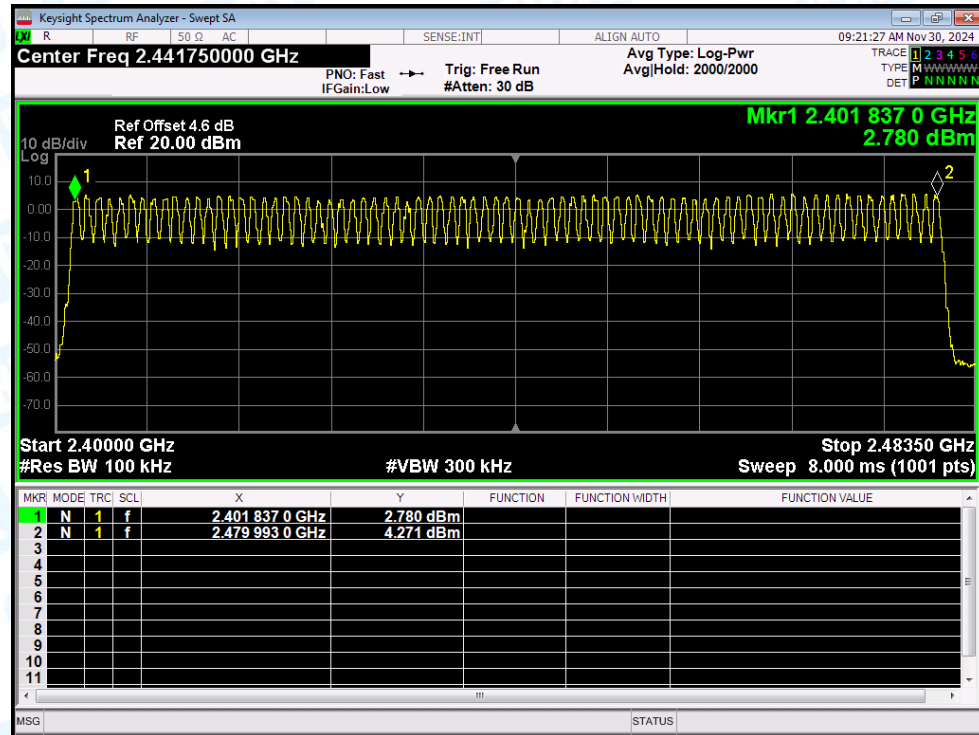


10. Number of Hopping Channel

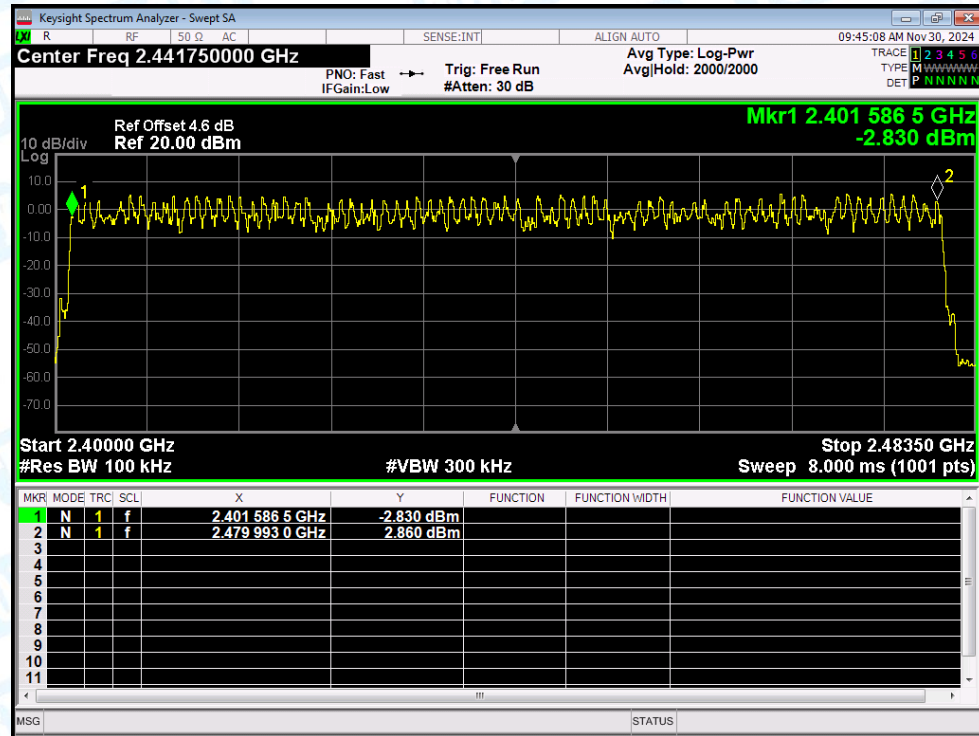
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH1	Ant1	79	15	Pass
NVNT	2-DH1	Ant1	79	15	Pass
NVNT	3-DH1	Ant1	79	15	Pass

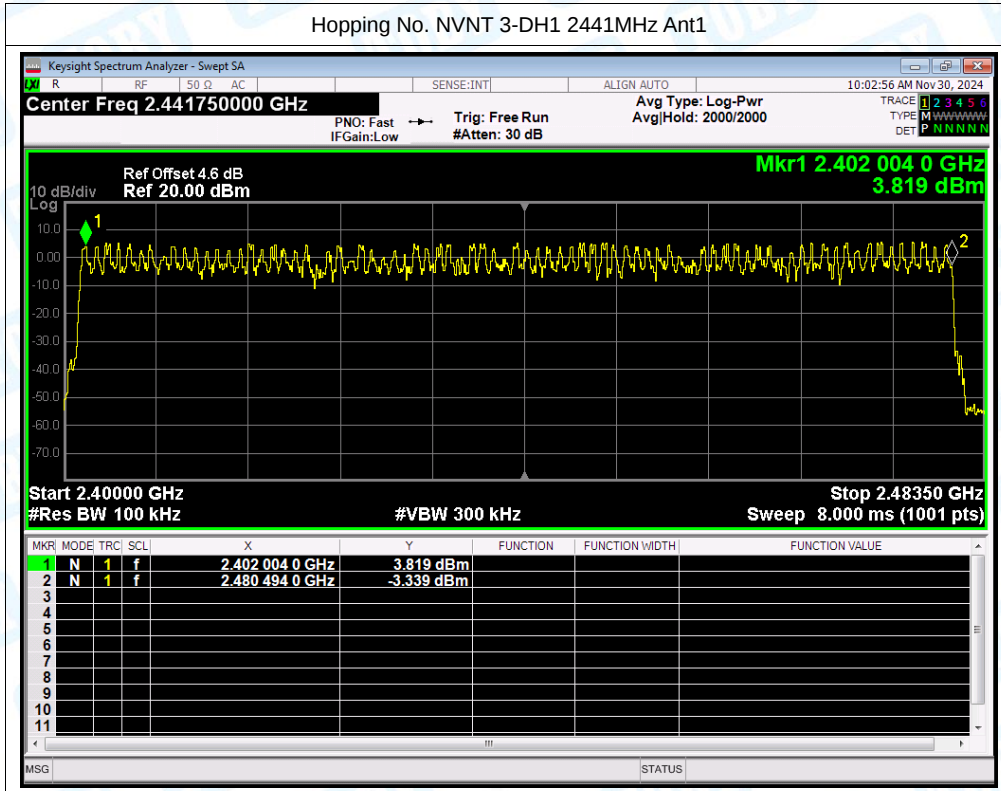
Test Graphs

Hopping No. NVNT 1-DH1 2441MHz Ant1



Hopping No. NVNT 2-DH1 2441MHz Ant1



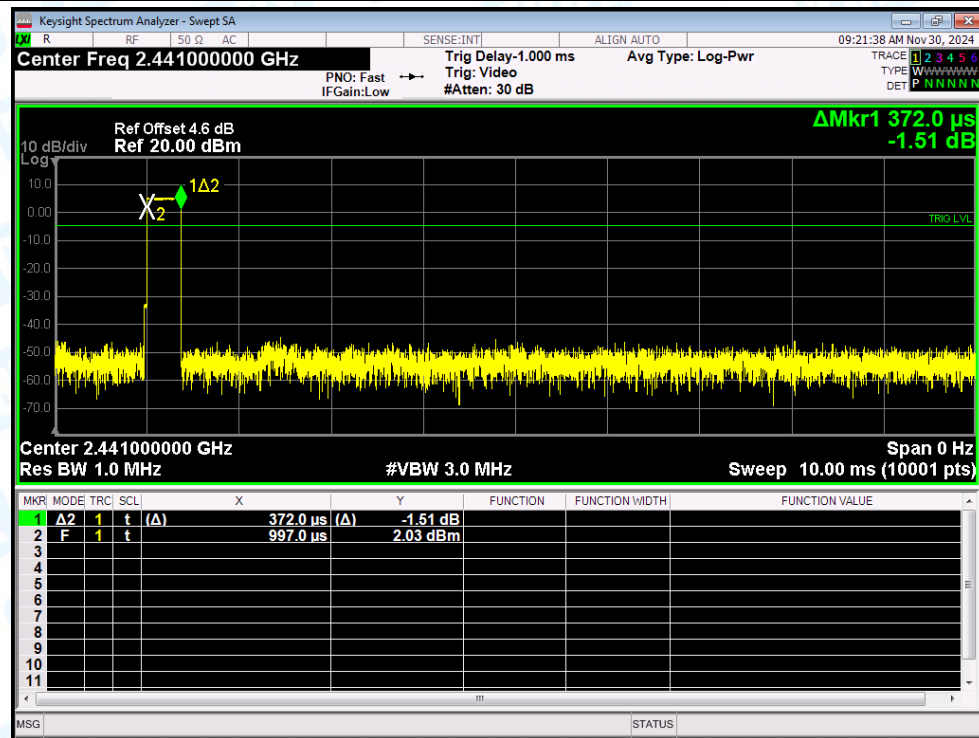


11. Dwell Time

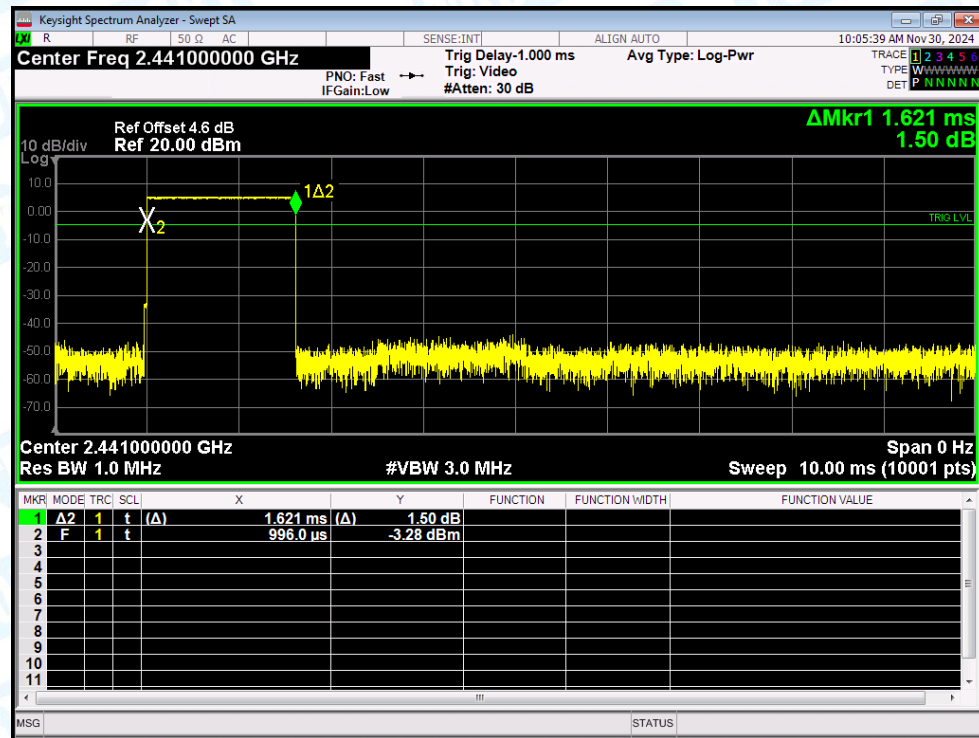
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	Ant1	0.372	119.04	31600	400	Pass
NVNT	1-DH3	2441	Ant1	1.621	259.36	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.869	306.027	31600	400	Pass
NVNT	2-DH1	2441	Ant1	0.38	121.6	31600	400	Pass
NVNT	2-DH3	2441	Ant1	1.632	261.12	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.881	307.307	31600	400	Pass
NVNT	3-DH1	2441	Ant1	0.38	121.6	31600	400	Pass
NVNT	3-DH3	2441	Ant1	1.63	260.8	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.881	307.307	31600	400	Pass

Test Graphs

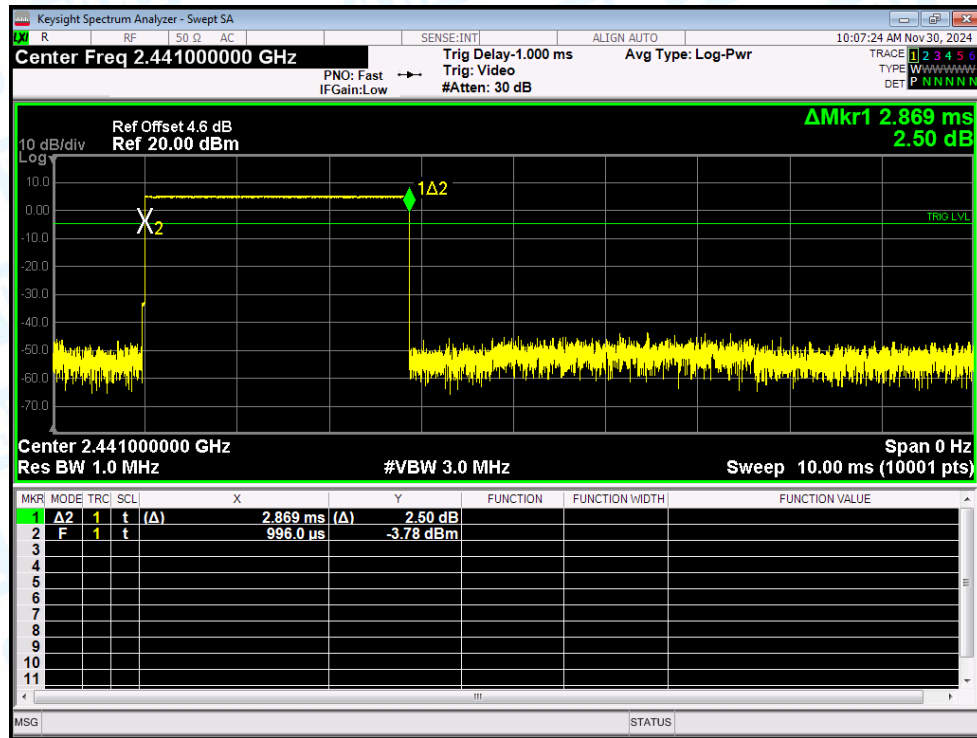
Dwell NVNT 1-DH1 2441MHz Ant1



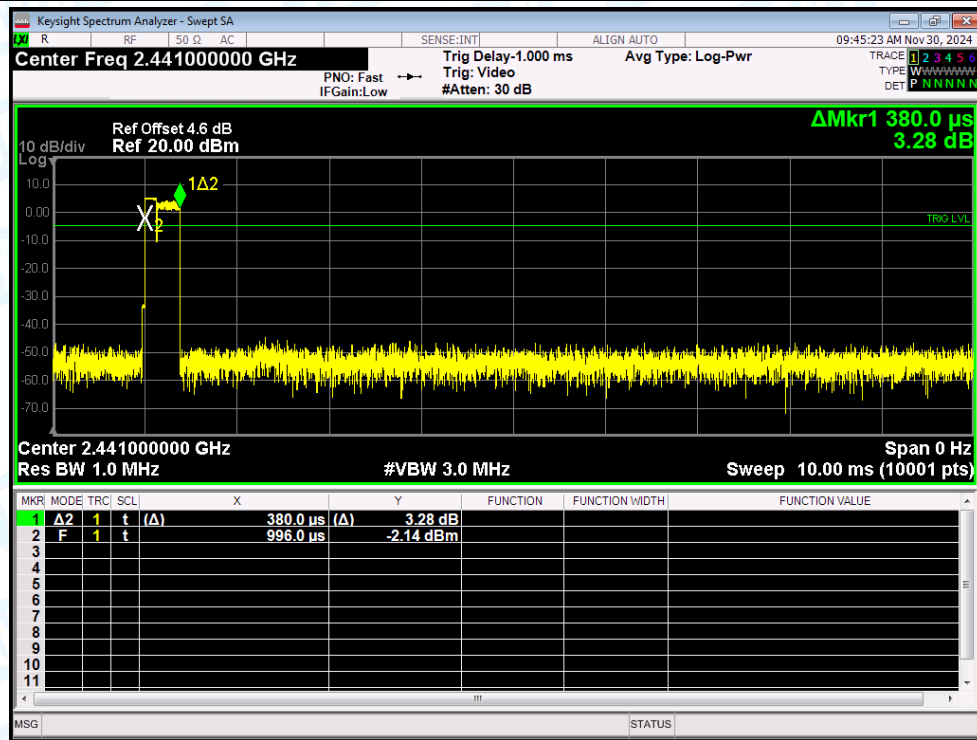
Dwell NVNT 1-DH3 2441MHz Ant1



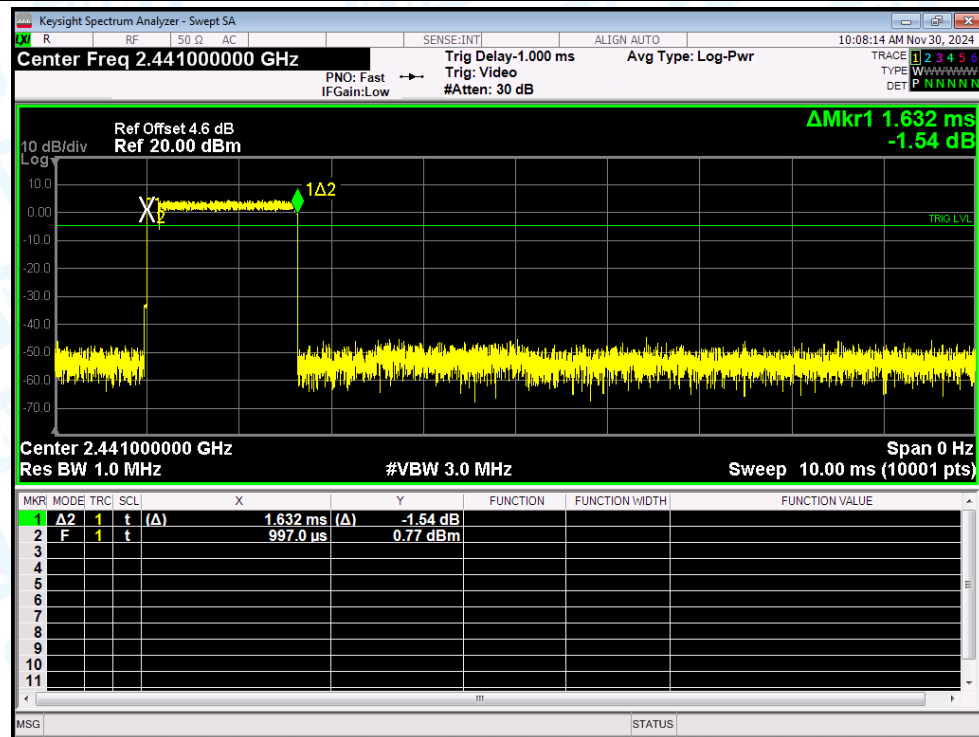
Dwell NVNT 1-DH5 2441MHz Ant1



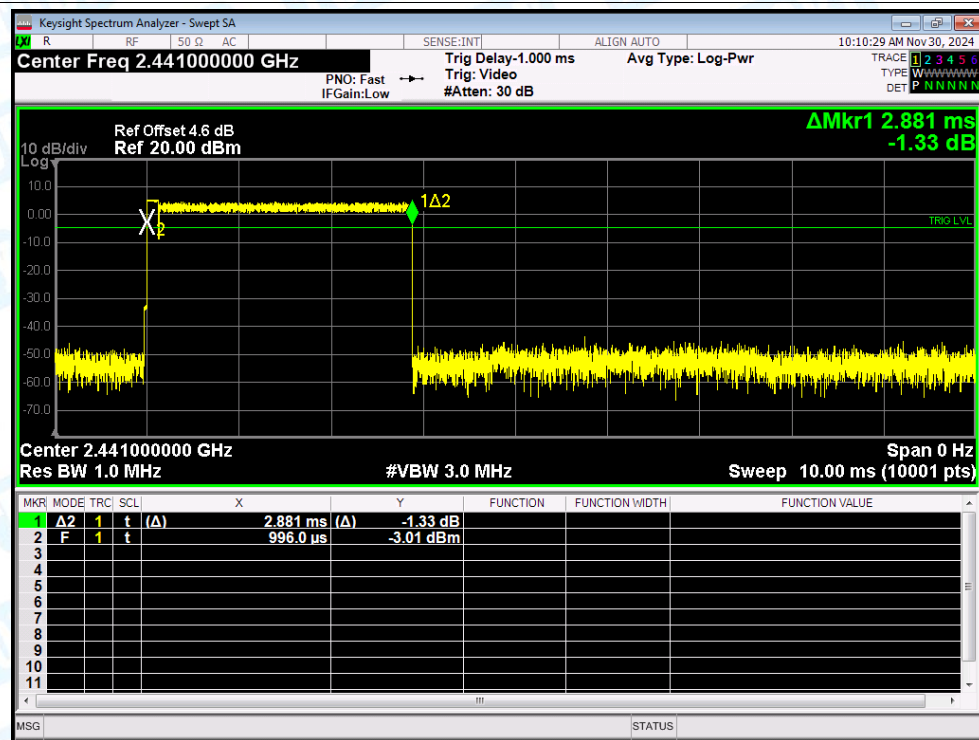
Dwell NVNT 2-DH1 2441MHz Ant1



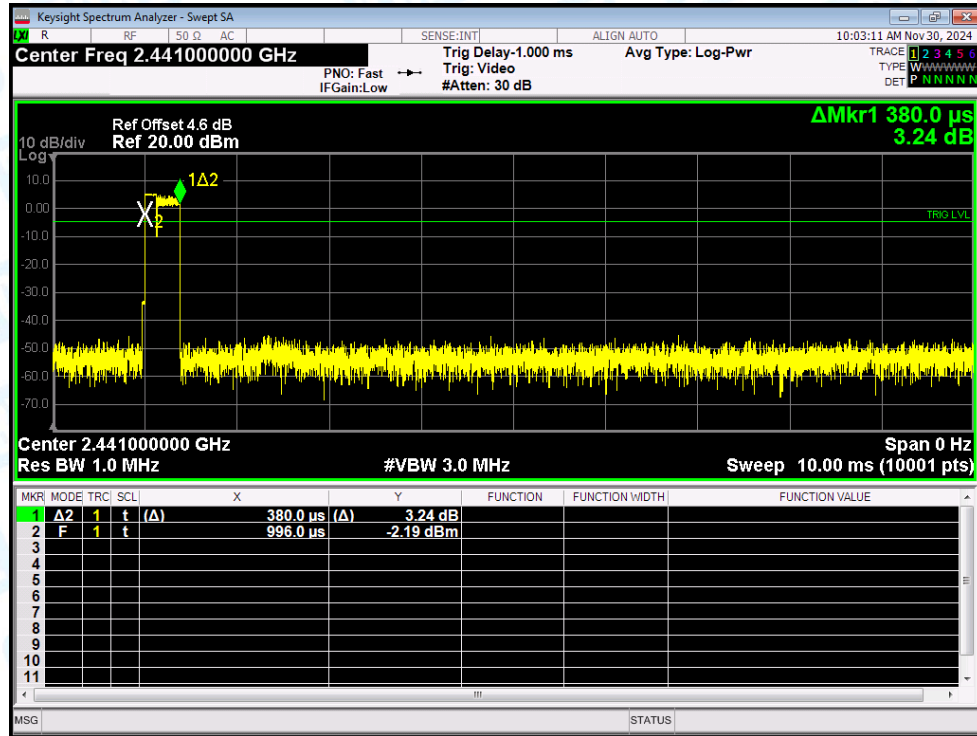
Dwell NVNT 2-DH3 2441MHz Ant1



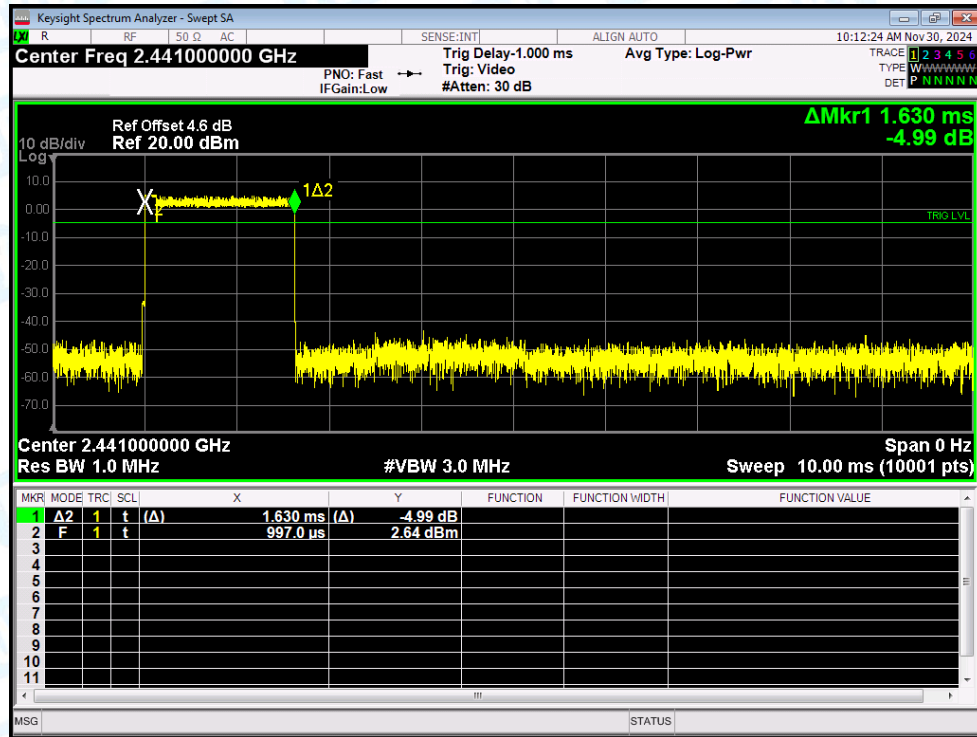
Dwell NVNT 2-DH5 2441MHz Ant1

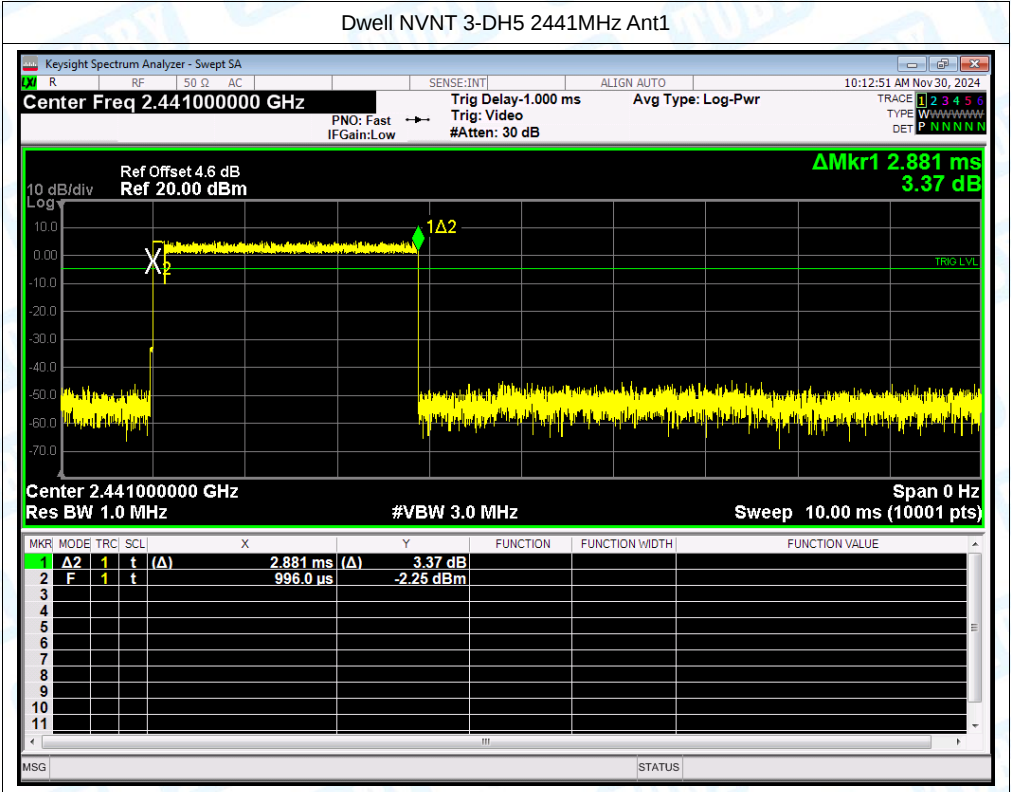


Dwell NVNT 3-DH1 2441MHz Ant1



Dwell NVNT 3-DH3 2441MHz Ant1





--- END OF REPORT ---