

RF Test Data for Bluetooth (Conducted Measurements)

General Description of EUT	
Product Name:	Wireless Earbud
Test Model:	SP10
Sample ID:	HC-C-202411-0316-01-01
Environmental Conditions	
Temperature:	24.6℃
Relative Humidity:	48.6%
Test Voltage:	DC 3.7V
Test Engineer:	Dawson
Note: For a more detailed features description, please refer to the report TBR-C-202411-0316-1 The report only show the worst case data.	

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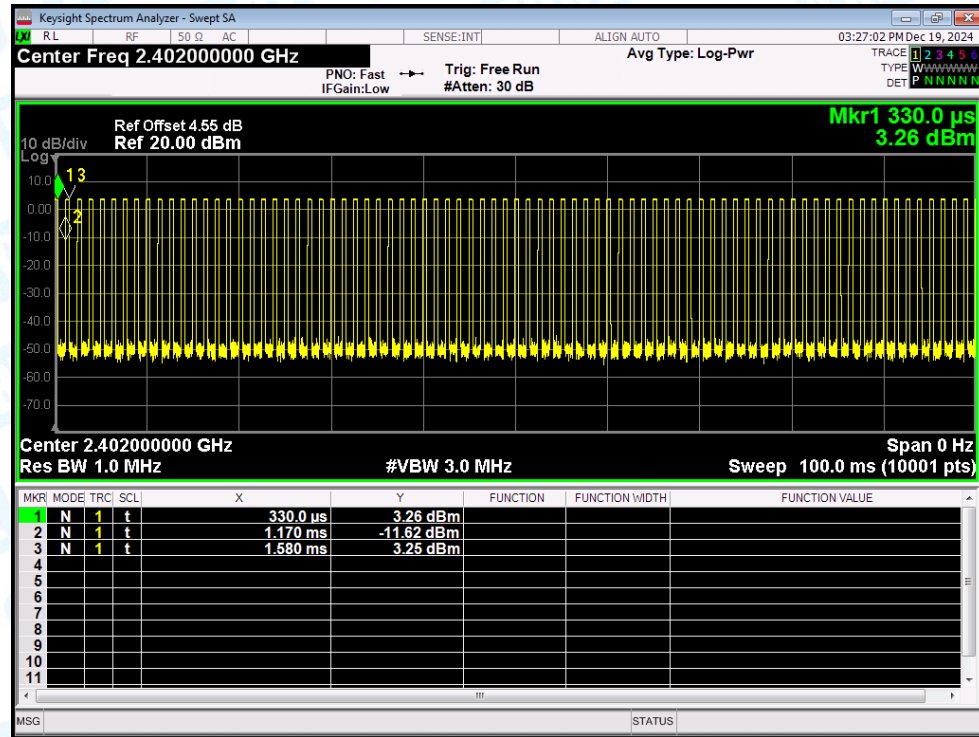
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1. Duty Cycle

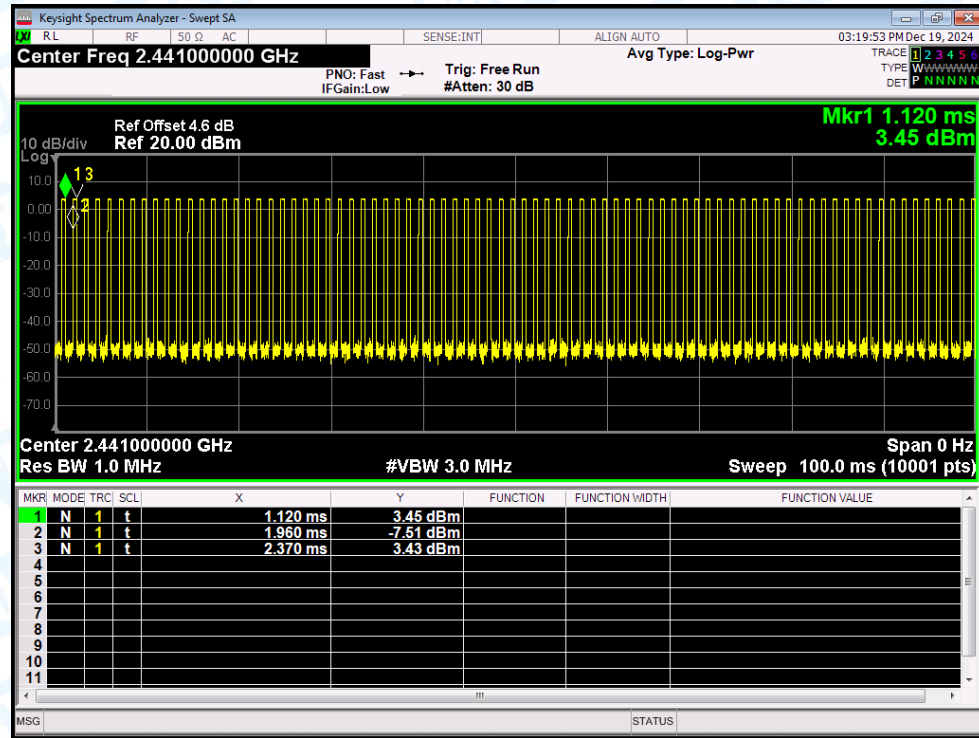
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH1	2402	Ant1	32.8	4.84	2.44
NVNT	1-DH1	2441	Ant1	32.8	4.84	2.44
NVNT	1-DH1	2480	Ant1	32.8	4.84	2.44
NVNT	2-DH1	2402	Ant1	33.6	4.74	2.38
NVNT	2-DH1	2441	Ant1	33.6	4.74	2.38
NVNT	2-DH1	2480	Ant1	33.6	4.74	2.38
NVNT	3-DH1	2402	Ant1	33.6	4.74	2.38
NVNT	3-DH1	2441	Ant1	33.6	4.74	2.38
NVNT	3-DH1	2480	Ant1	33.6	4.74	2.38

Test Graphs

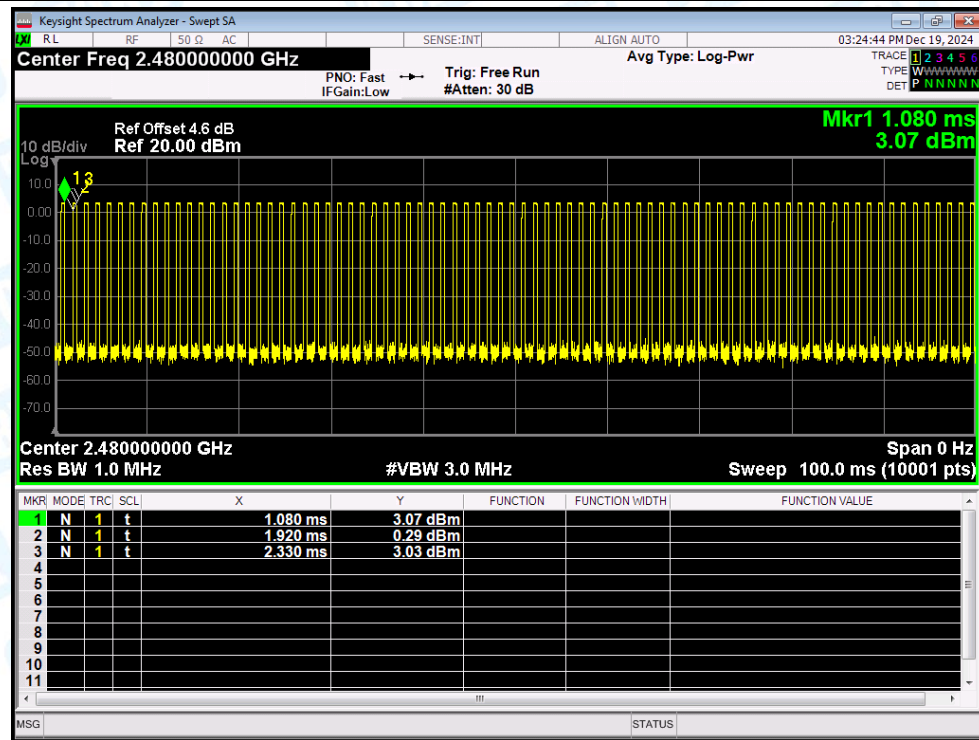
Duty Cycle NVNT 1-DH1 2402MHz Ant1



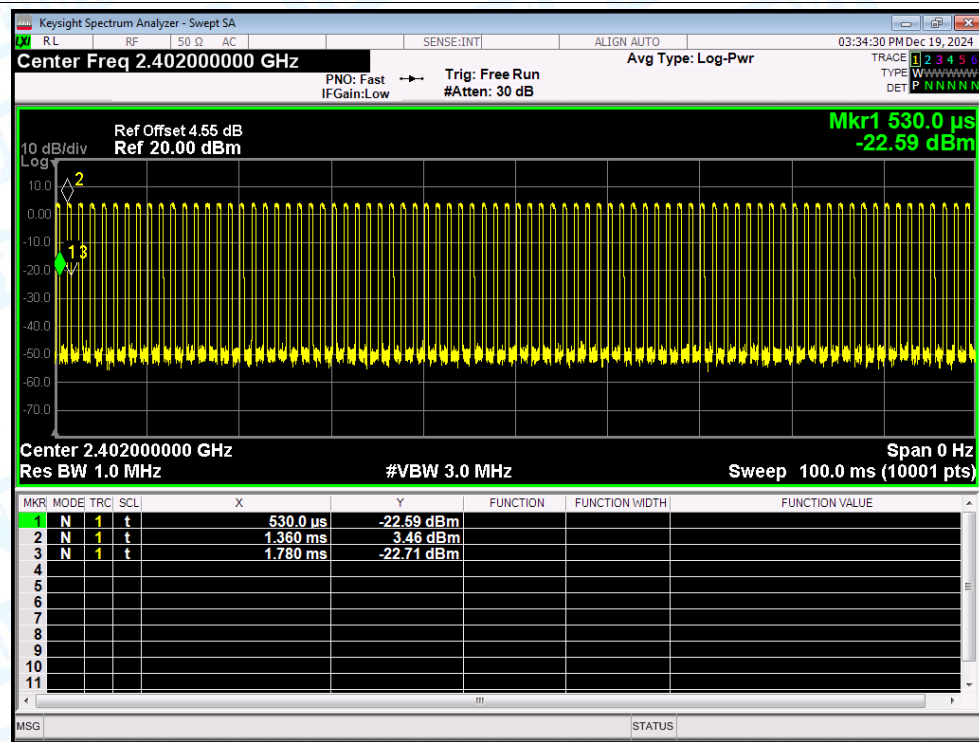
Duty Cycle NVNT 1-DH1 2441MHz Ant1



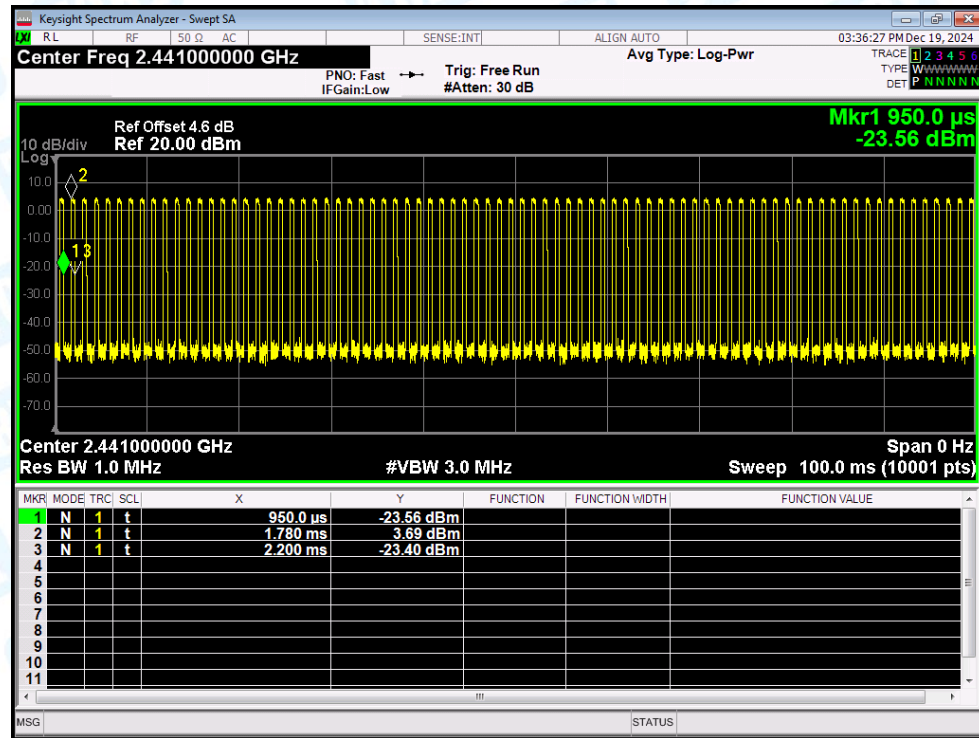
Duty Cycle NVNT 1-DH1 2480MHz Ant1



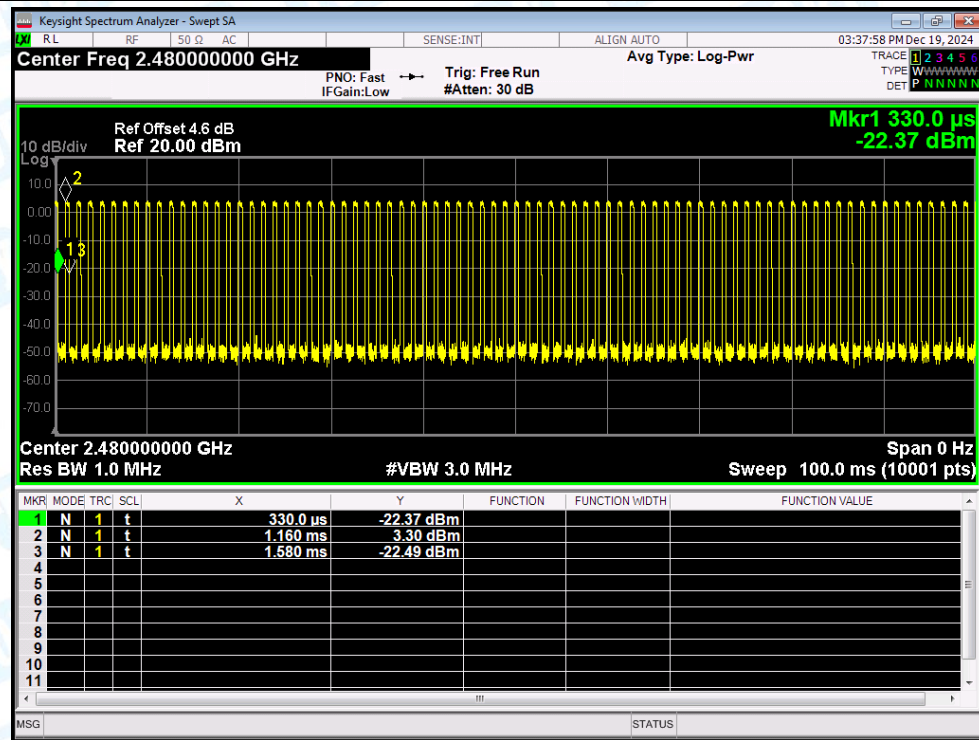
Duty Cycle NVNT 2-DH1 2402MHz Ant1



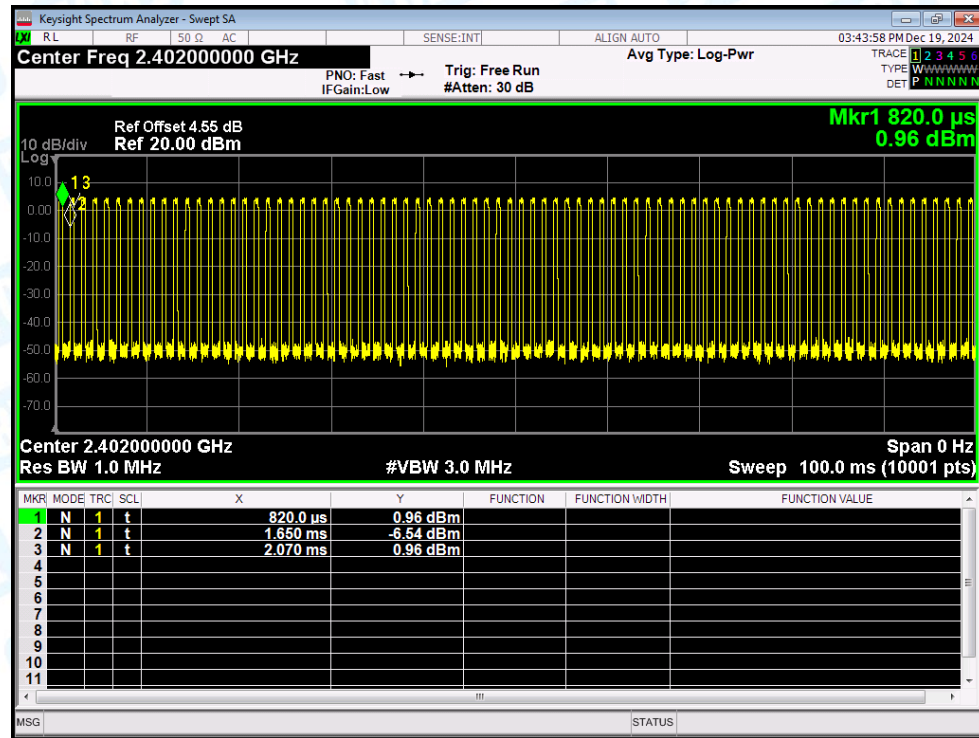
Duty Cycle NVNT 2-DH1 2441MHz Ant1



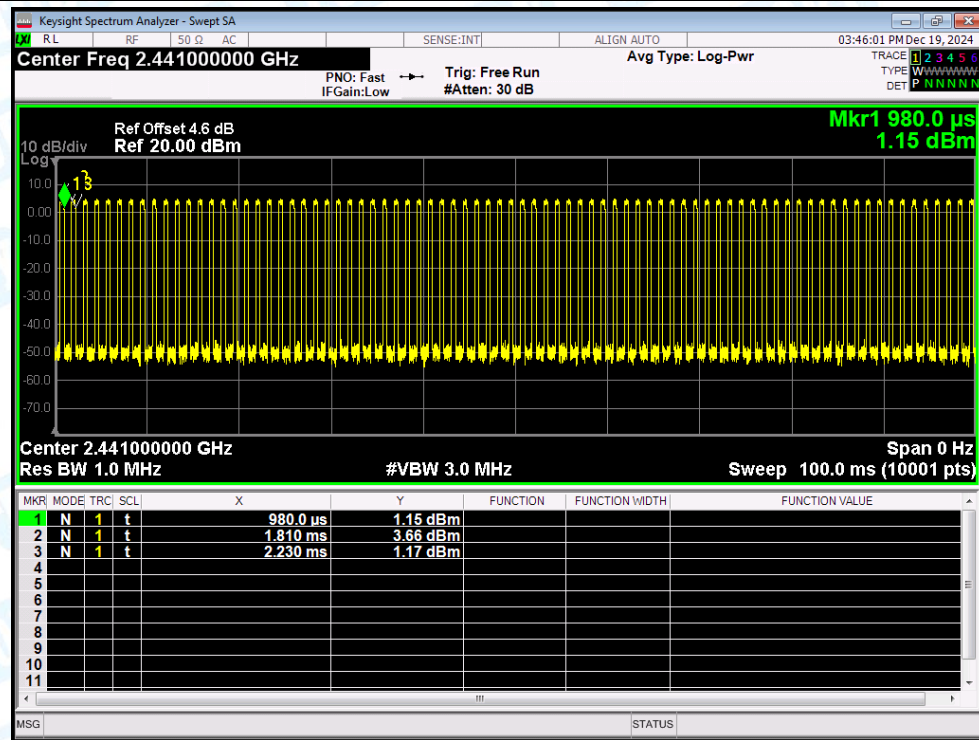
Duty Cycle NVNT 2-DH1 2480MHz Ant1

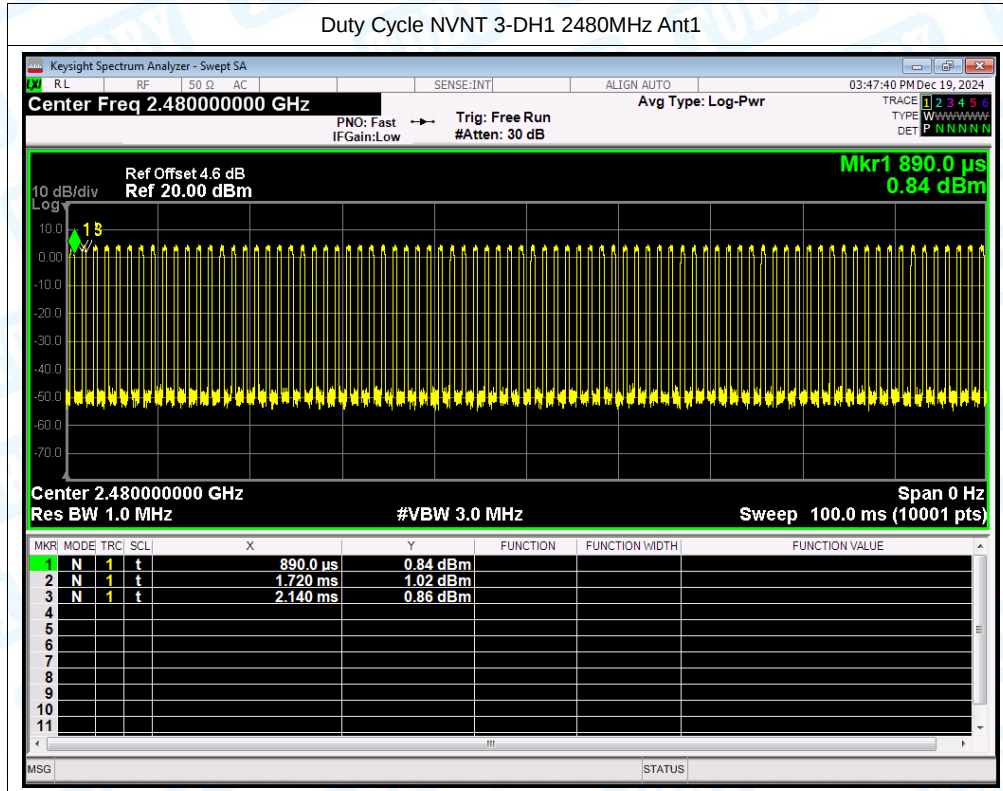


Duty Cycle NVNT 3-DH1 2402MHz Ant1



Duty Cycle NVNT 3-DH1 2441MHz Ant1



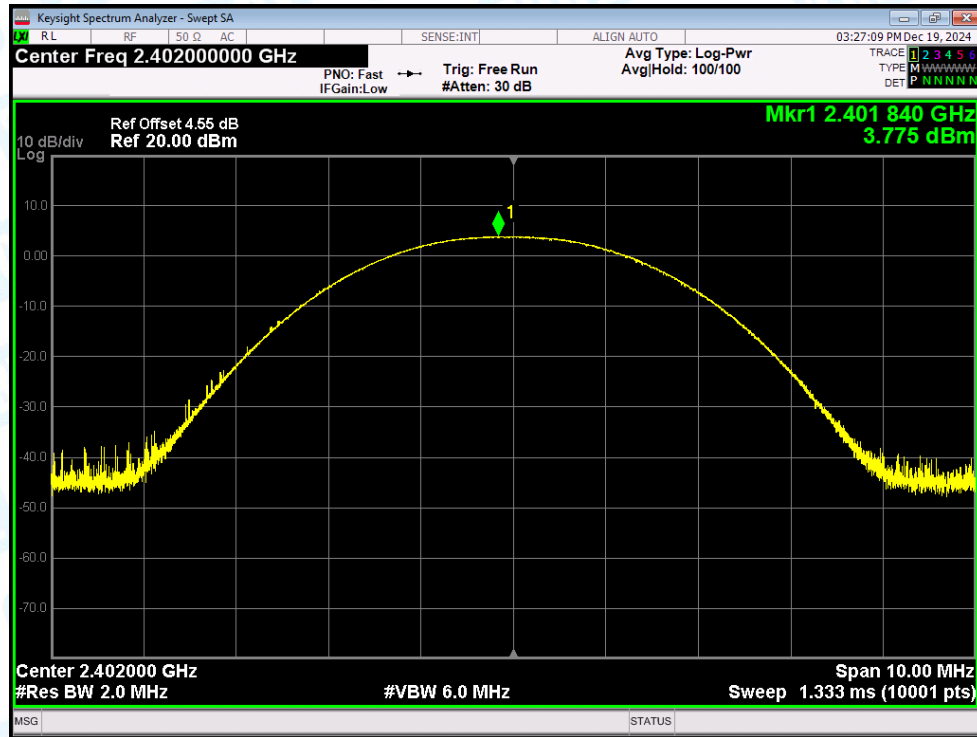


2.1 Maximum Conducted Output Power (Right)

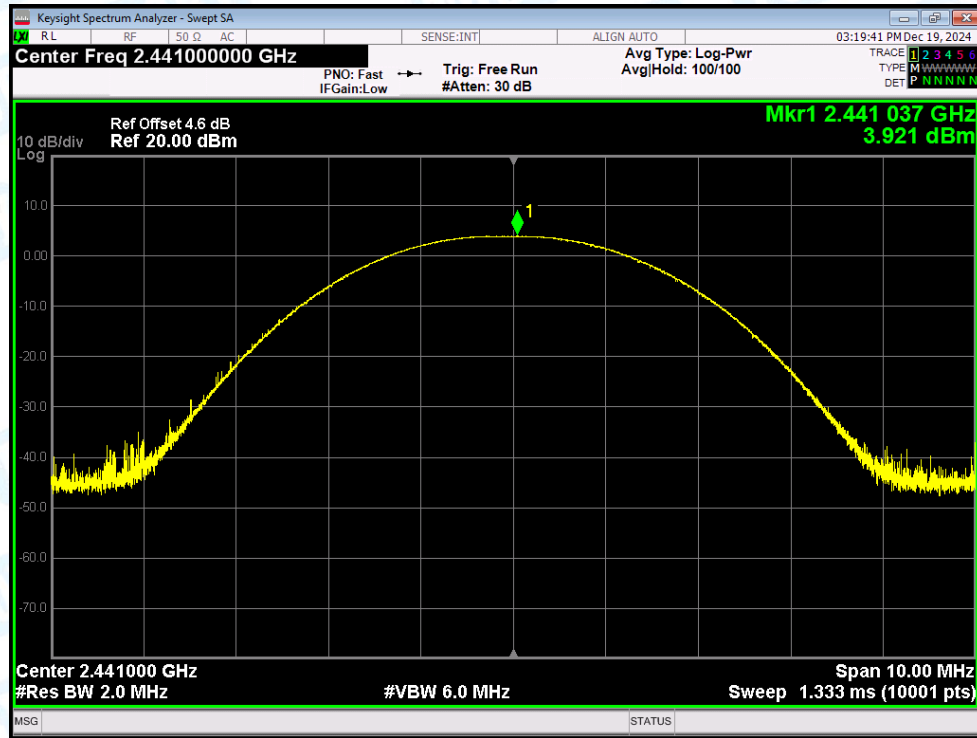
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	Ant1	3.775	21	Pass
NVNT	1-DH1	2441	Ant1	3.921	21	Pass
NVNT	1-DH1	2480	Ant1	3.576	21	Pass
NVNT	2-DH1	2402	Ant1	4.535	21	Pass
NVNT	2-DH1	2441	Ant1	4.769	21	Pass
NVNT	2-DH1	2480	Ant1	4.33	21	Pass
NVNT	3-DH1	2402	Ant1	5.009	21	Pass
NVNT	3-DH1	2441	Ant1	5.31	21	Pass
NVNT	3-DH1	2480	Ant1	4.765	21	Pass

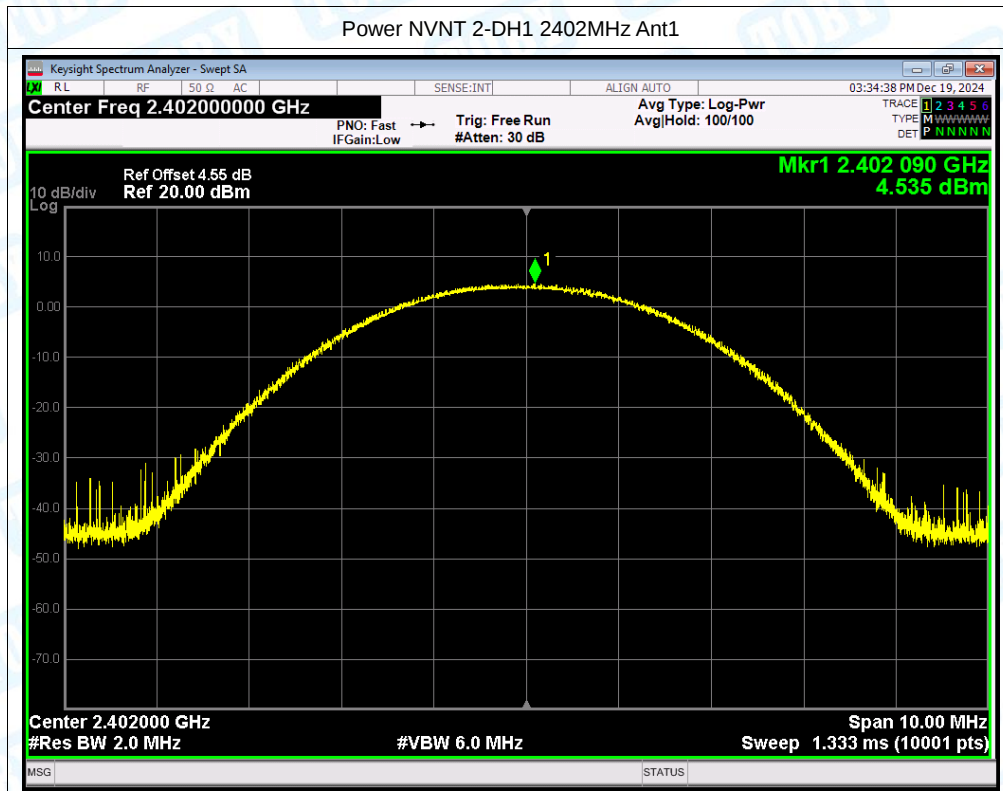
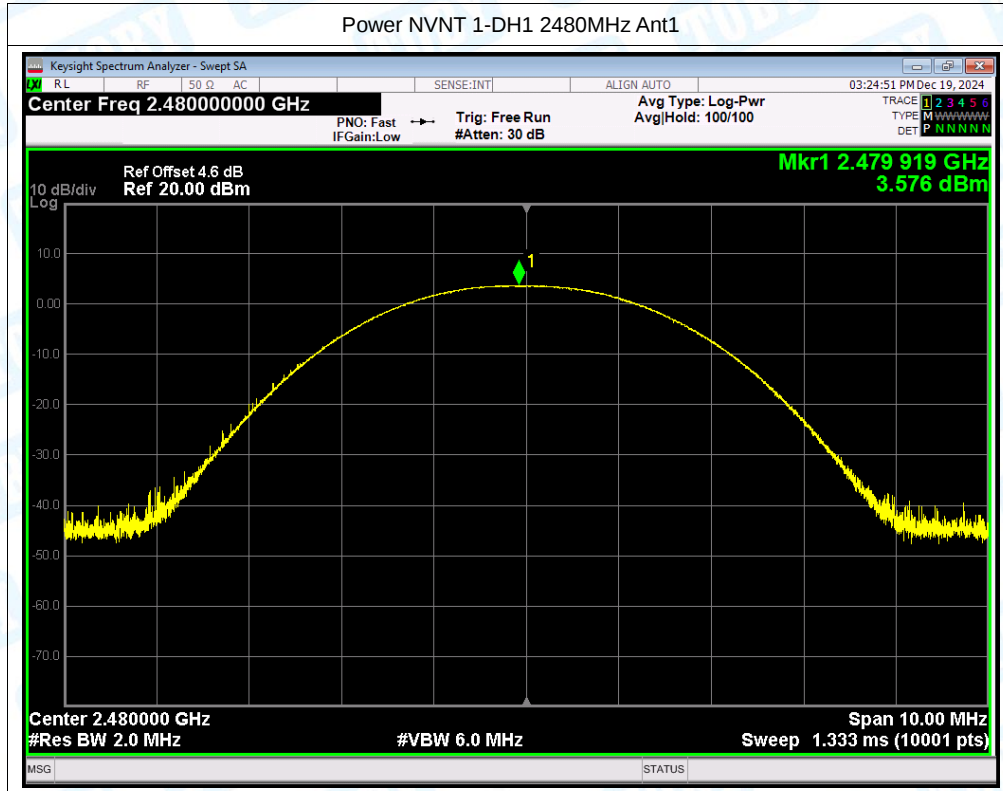
Test Graphs

Power NVNT 1-DH1 2402MHz Ant1

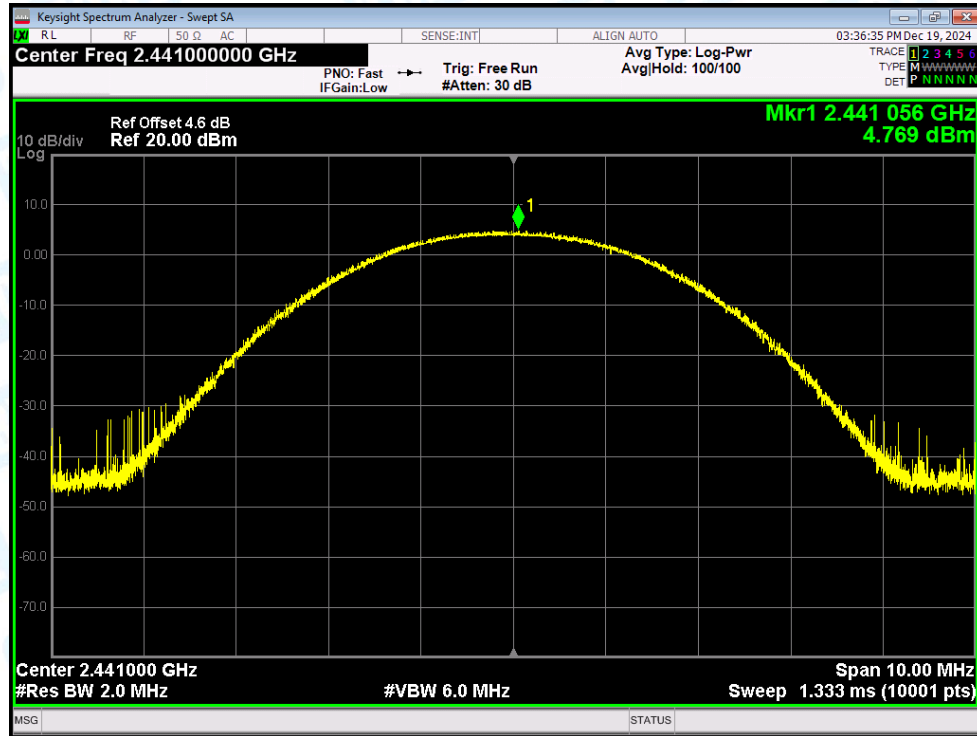


Power NVNT 1-DH1 2441MHz Ant1

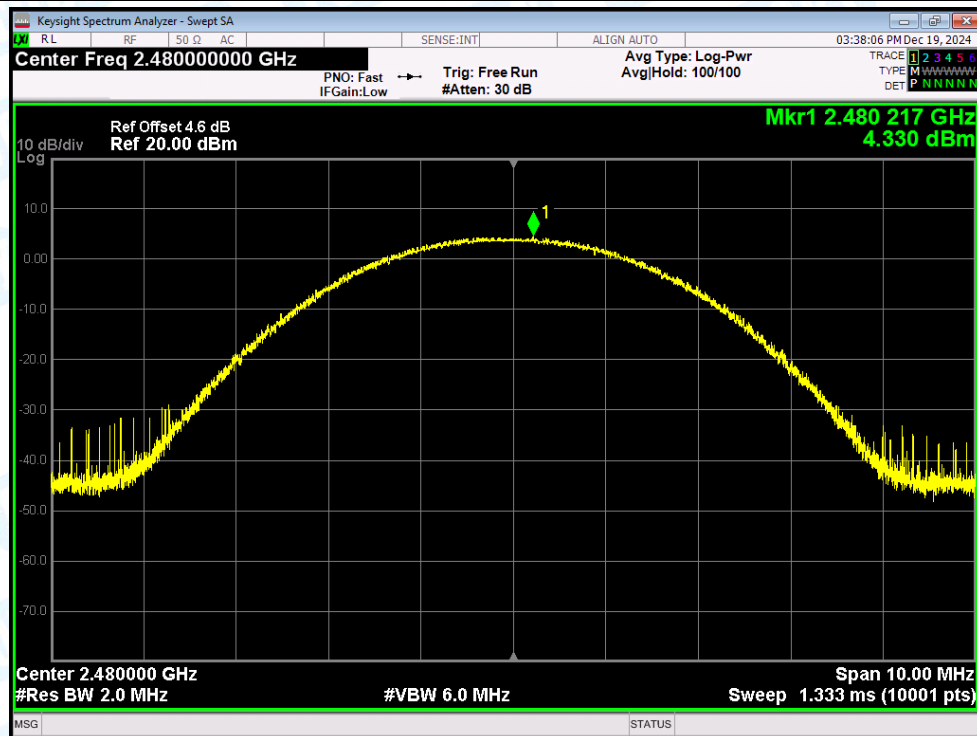




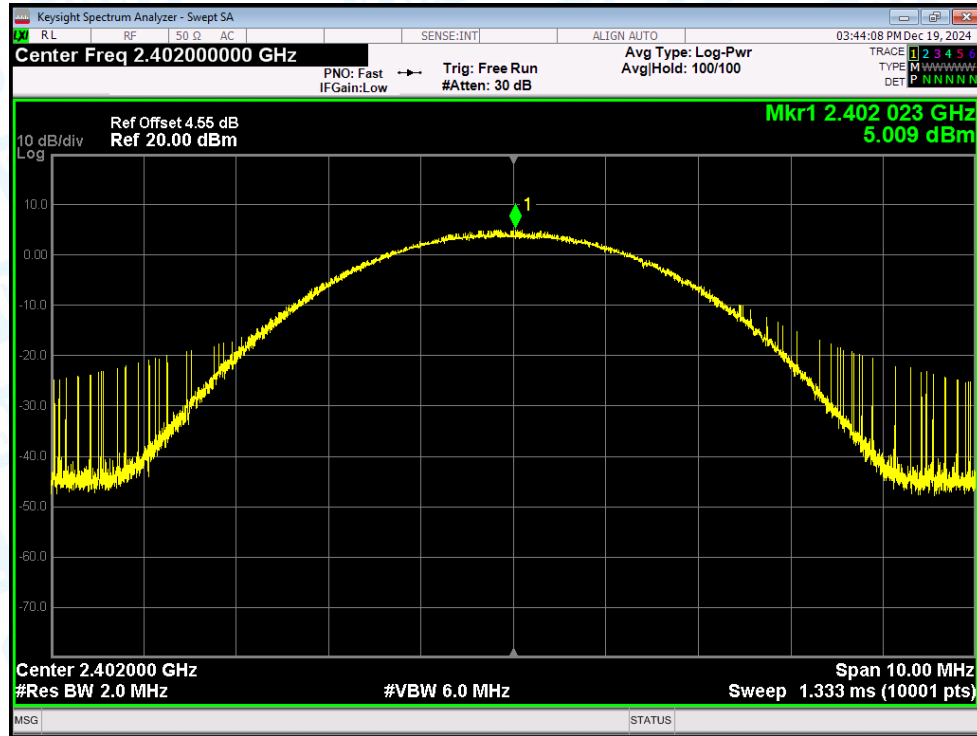
Power NVNT 2-DH1 2441MHz Ant1



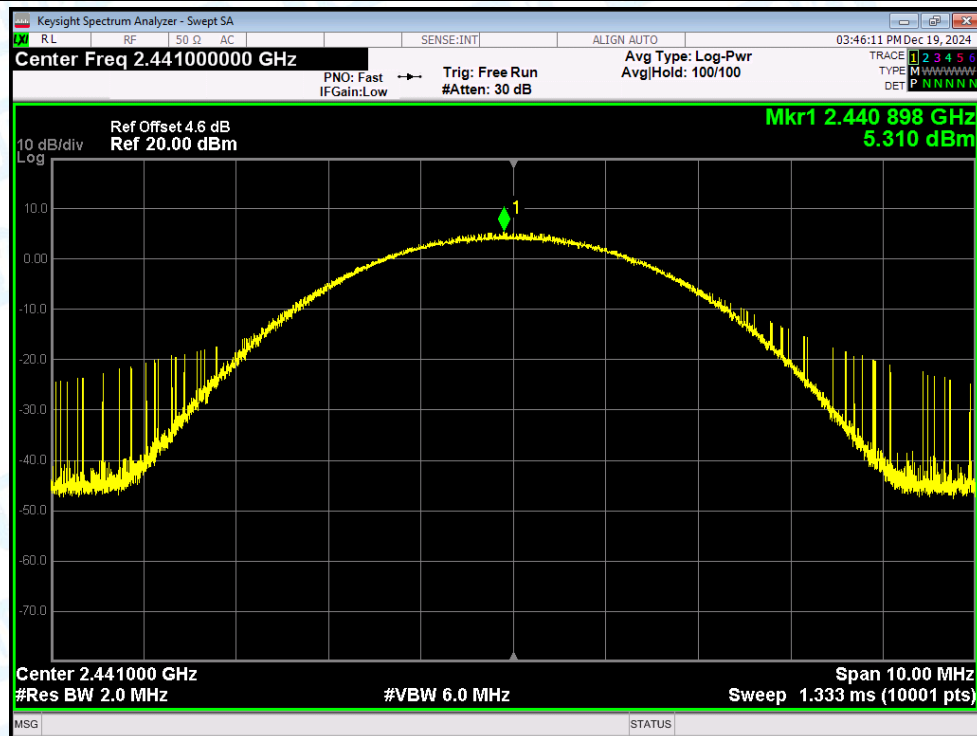
Power NVNT 2-DH1 2480MHz Ant1

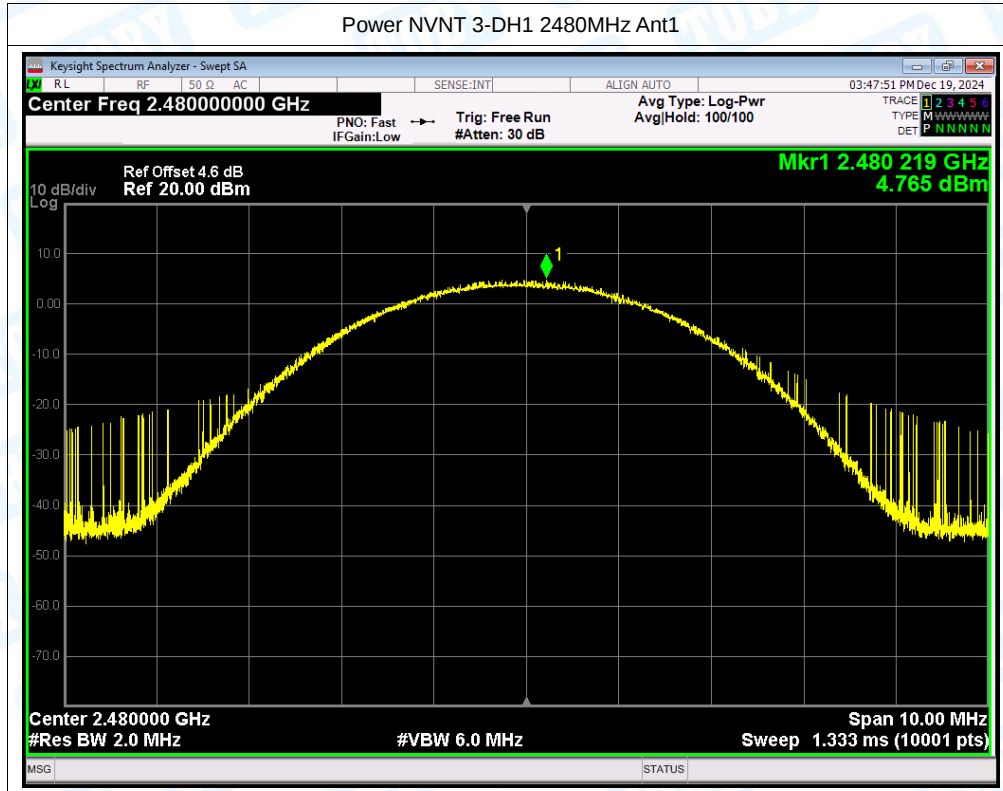


Power NVNT 3-DH1 2402MHz Ant1



Power NVNT 3-DH1 2441MHz Ant1



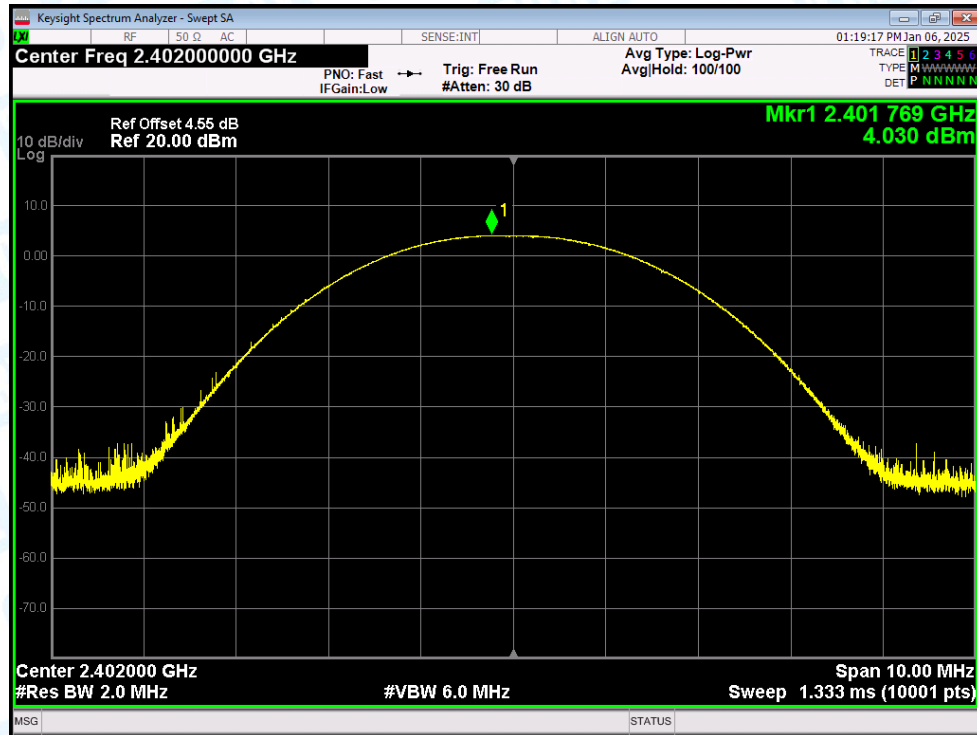


2.2 Maximum Conducted Output Power (Left)

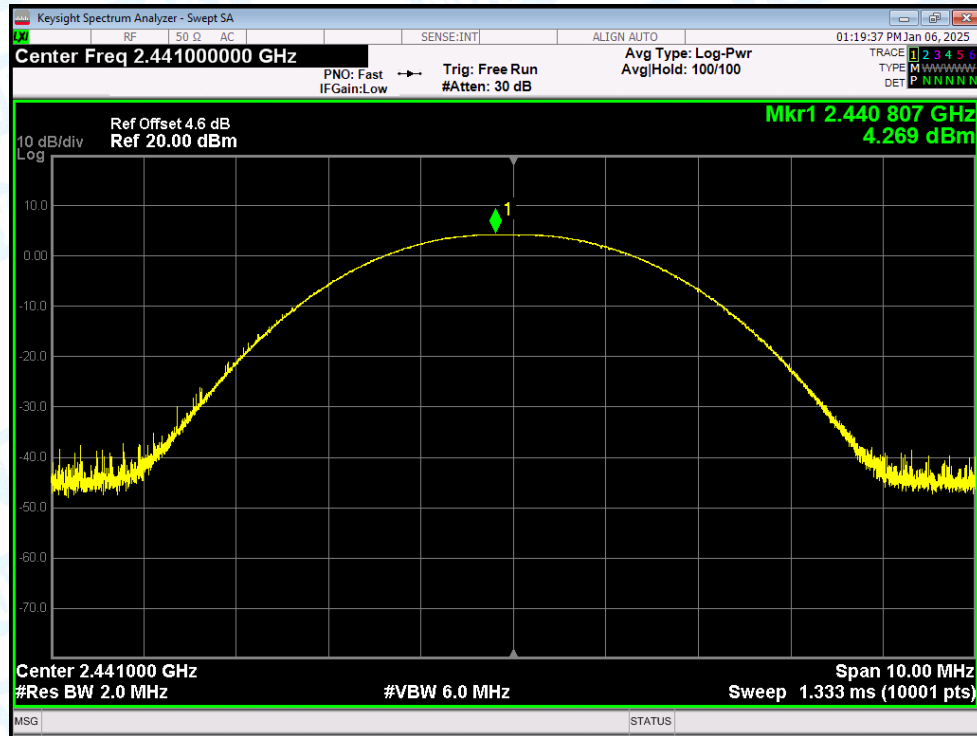
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	Ant1	4.03	21	Pass
NVNT	1-DH1	2441	Ant1	4.269	21	Pass
NVNT	1-DH1	2480	Ant1	3.889	21	Pass
NVNT	2-DH1	2402	Ant1	4.779	21	Pass
NVNT	2-DH1	2441	Ant1	5.001	21	Pass
NVNT	2-DH1	2480	Ant1	4.67	21	Pass
NVNT	3-DH1	2402	Ant1	5.294	21	Pass
NVNT	3-DH1	2441	Ant1	5.568	21	Pass
NVNT	3-DH1	2480	Ant1	5.058	21	Pass

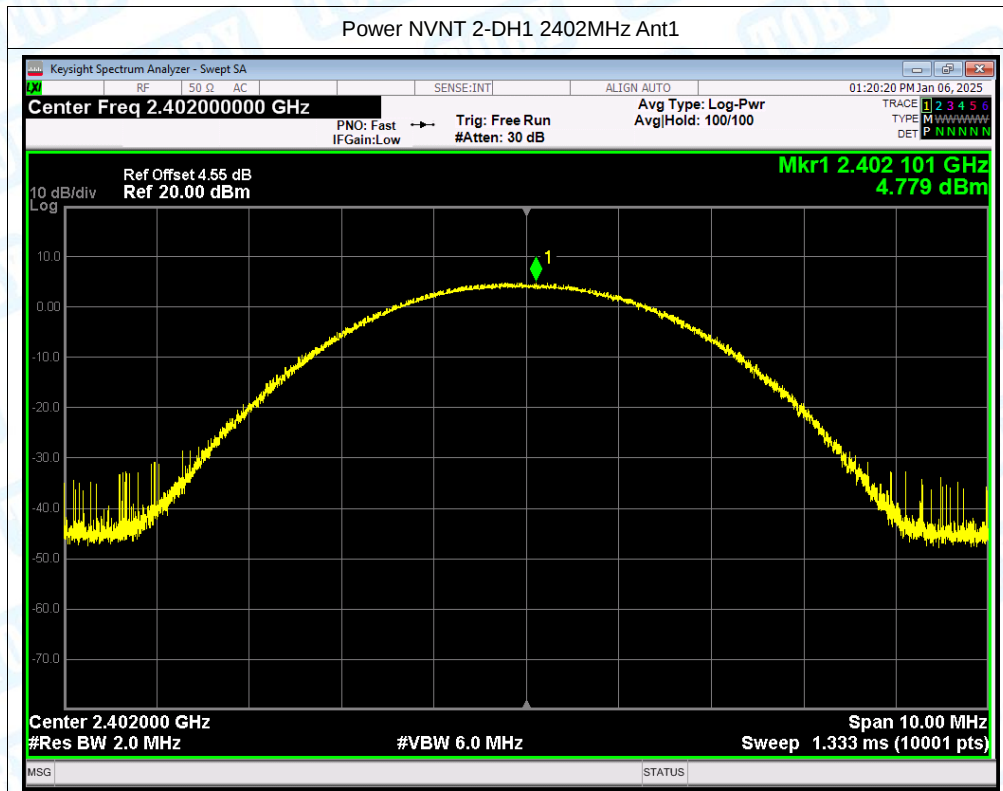
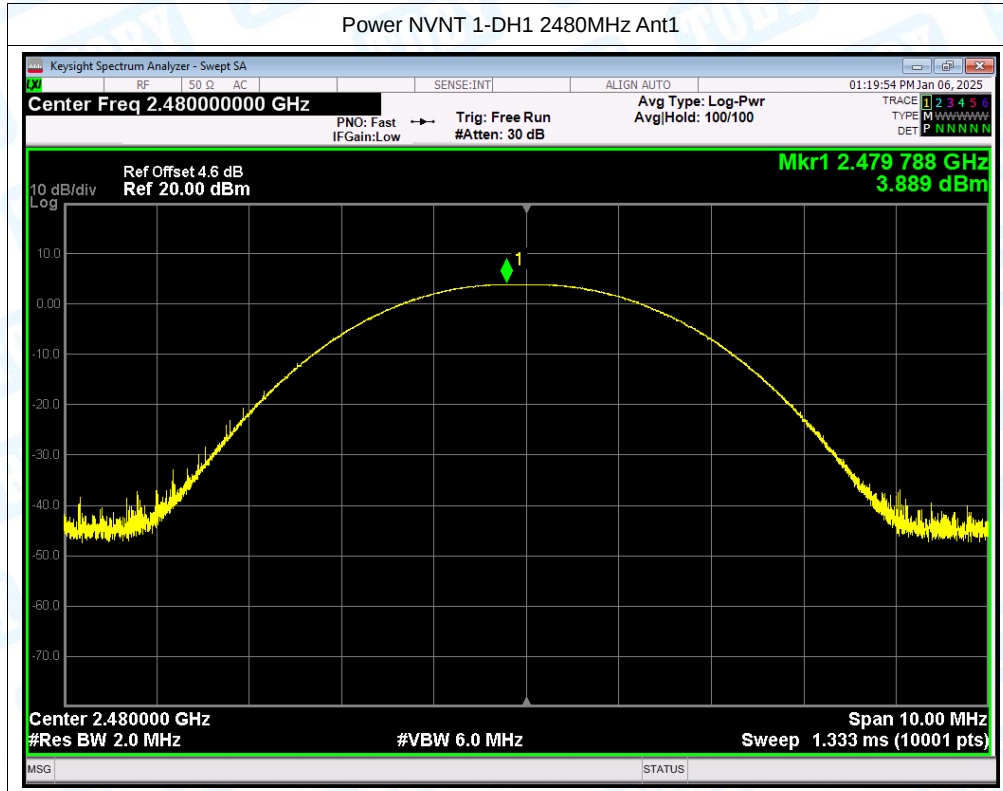
Test Graphs

Power NVNT 1-DH1 2402MHz Ant1

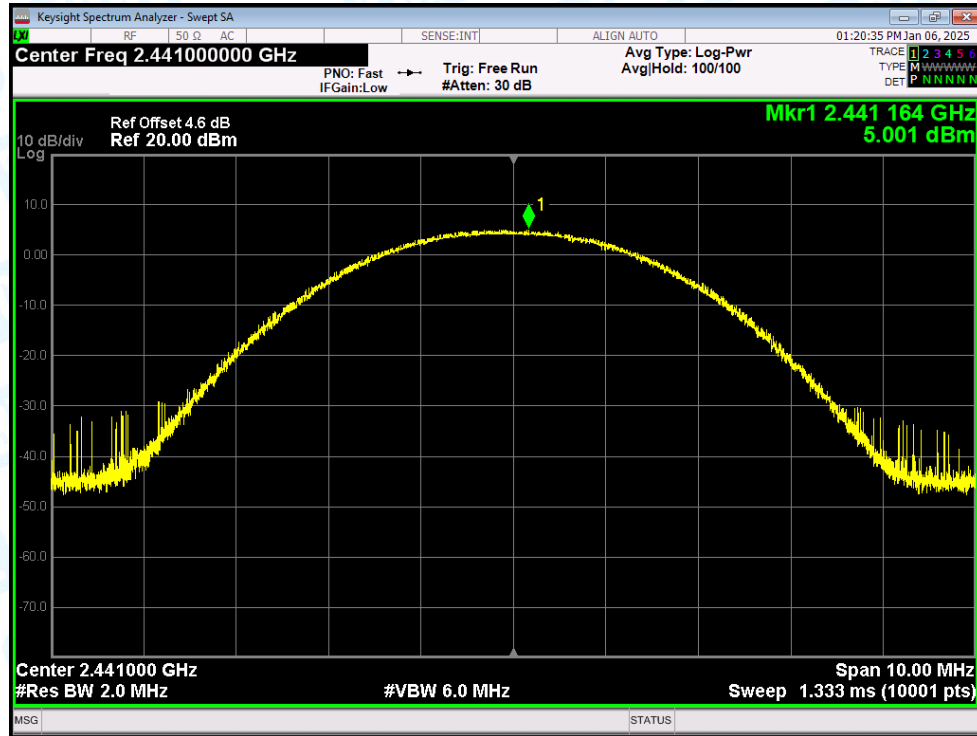


Power NVNT 1-DH1 2441MHz Ant1

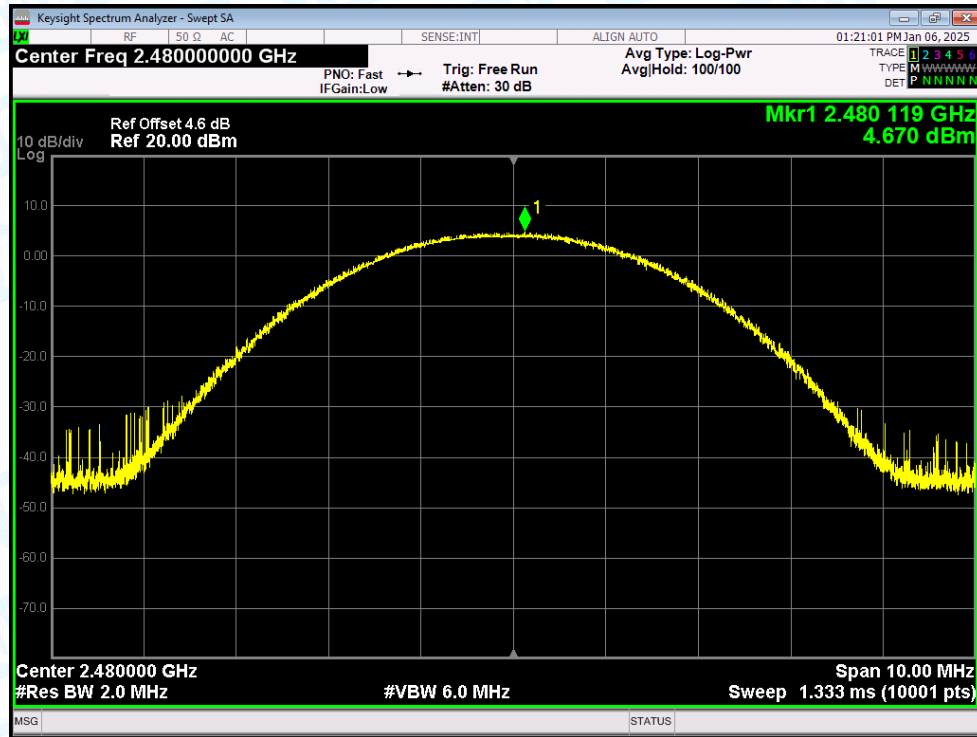




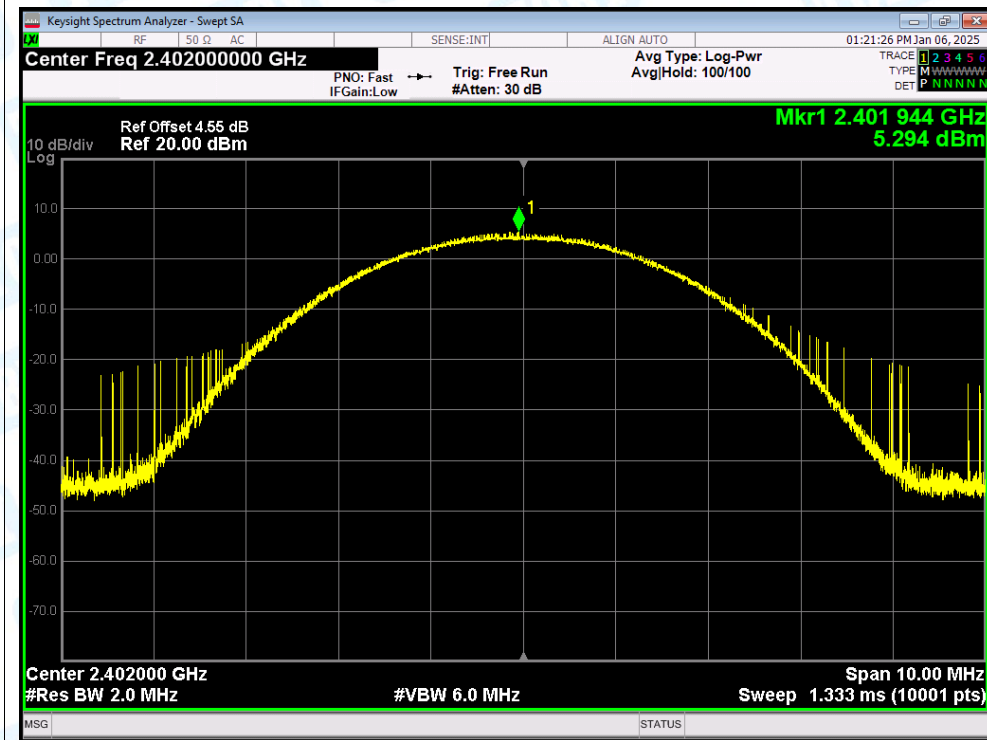
Power NVNT 2-DH1 2441MHz Ant1



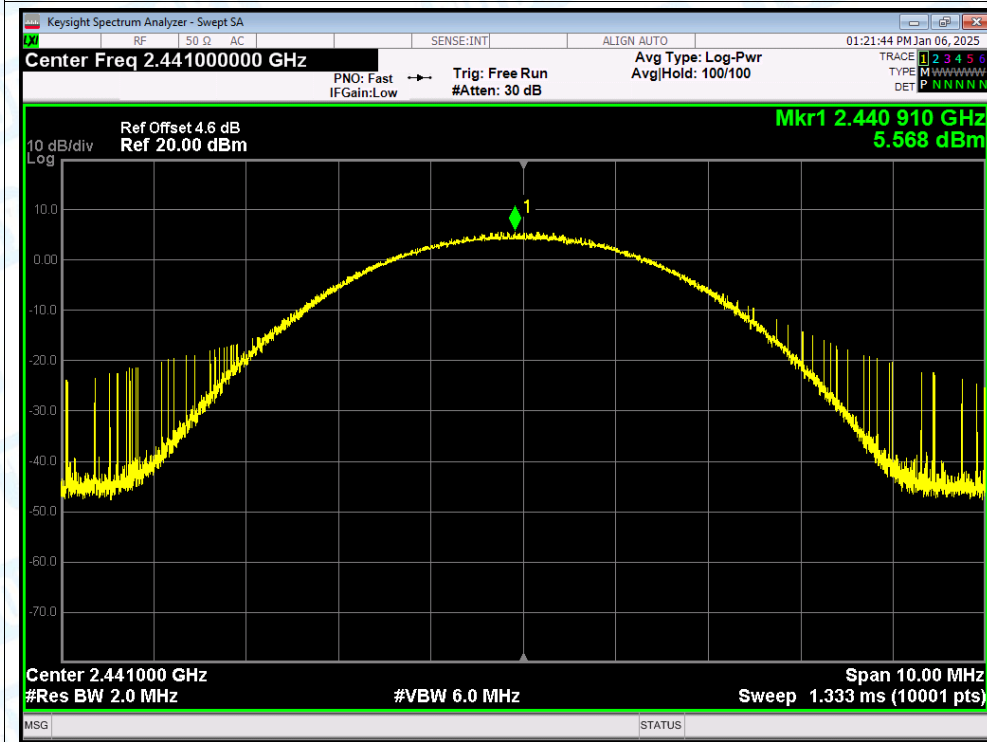
Power NVNT 2-DH1 2480MHz Ant1

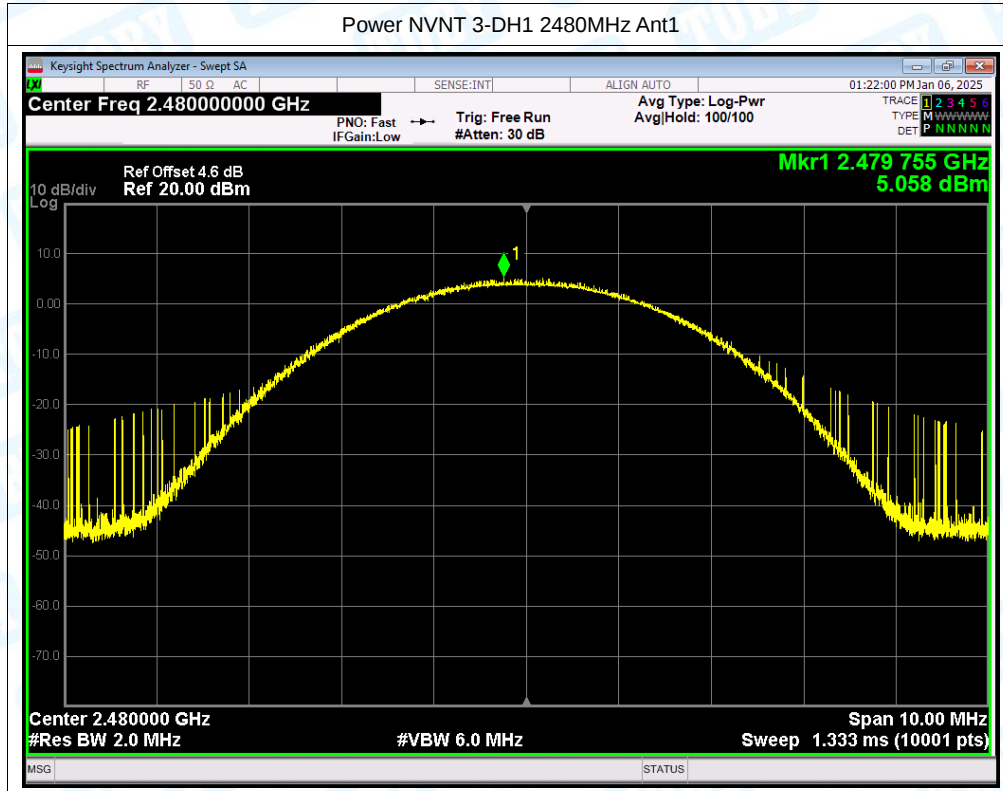


Power NVNT 3-DH1 2402MHz Ant1



Power NVNT 3-DH1 2441MHz Ant1



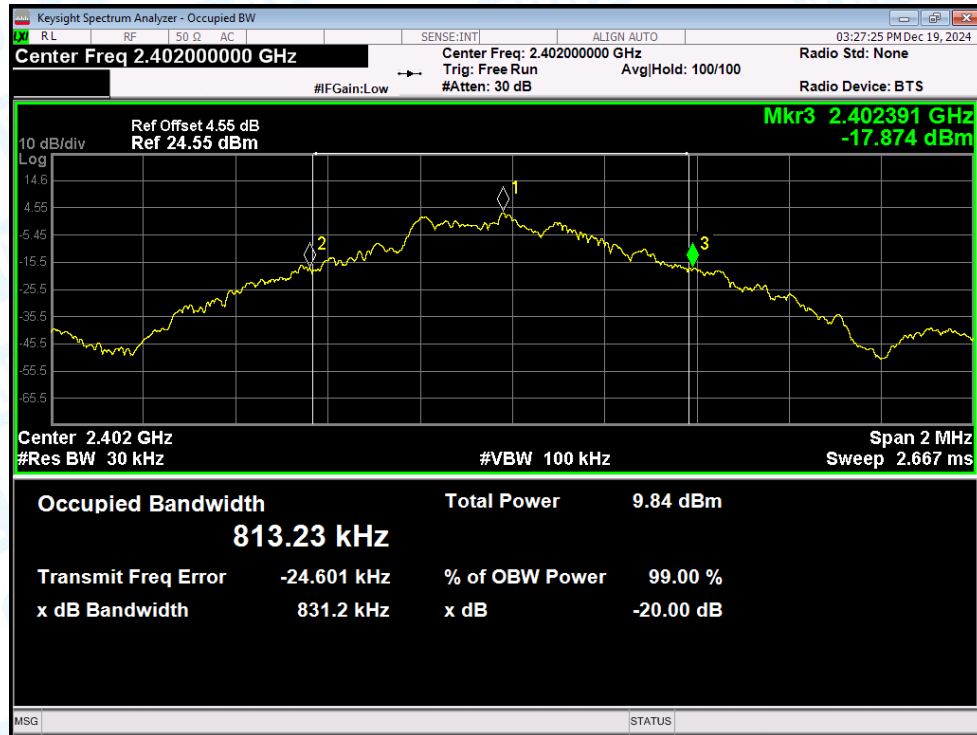


3 -20dB Bandwidth

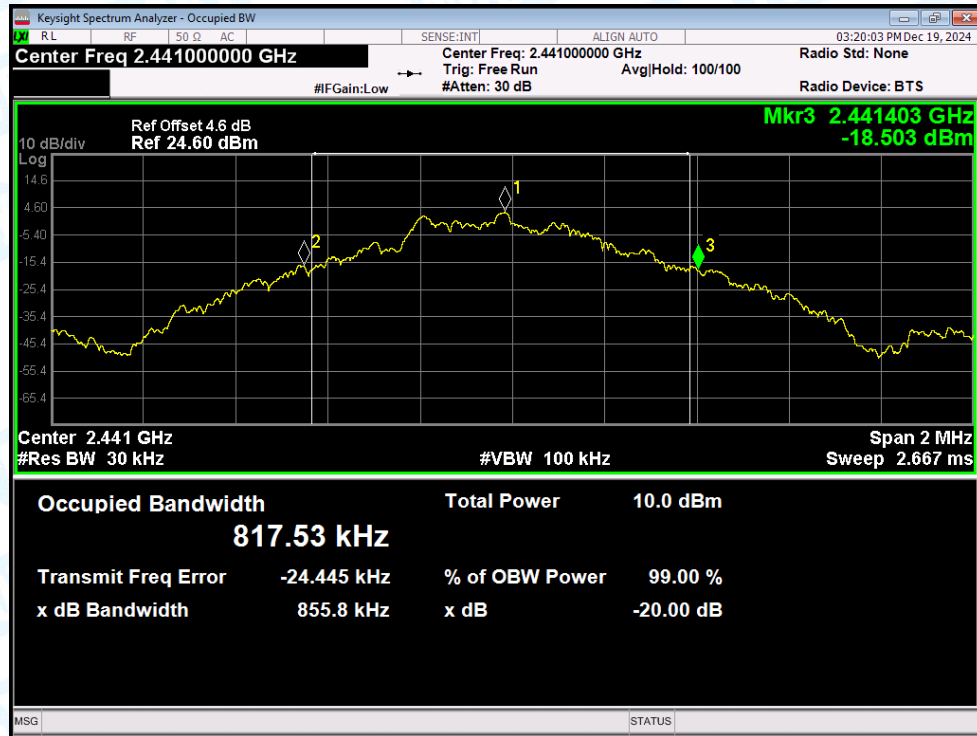
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH1	2402	Ant1	0.83	0	Pass
NVNT	1-DH1	2441	Ant1	0.86	0	Pass
NVNT	1-DH1	2480	Ant1	0.82	0	Pass
NVNT	2-DH1	2402	Ant1	1.19	0	Pass
NVNT	2-DH1	2441	Ant1	1.19	0	Pass
NVNT	2-DH1	2480	Ant1	1.24	0	Pass
NVNT	3-DH1	2402	Ant1	1.19	0	Pass
NVNT	3-DH1	2441	Ant1	1.2	0	Pass
NVNT	3-DH1	2480	Ant1	1.2	0	Pass

Test Graphs

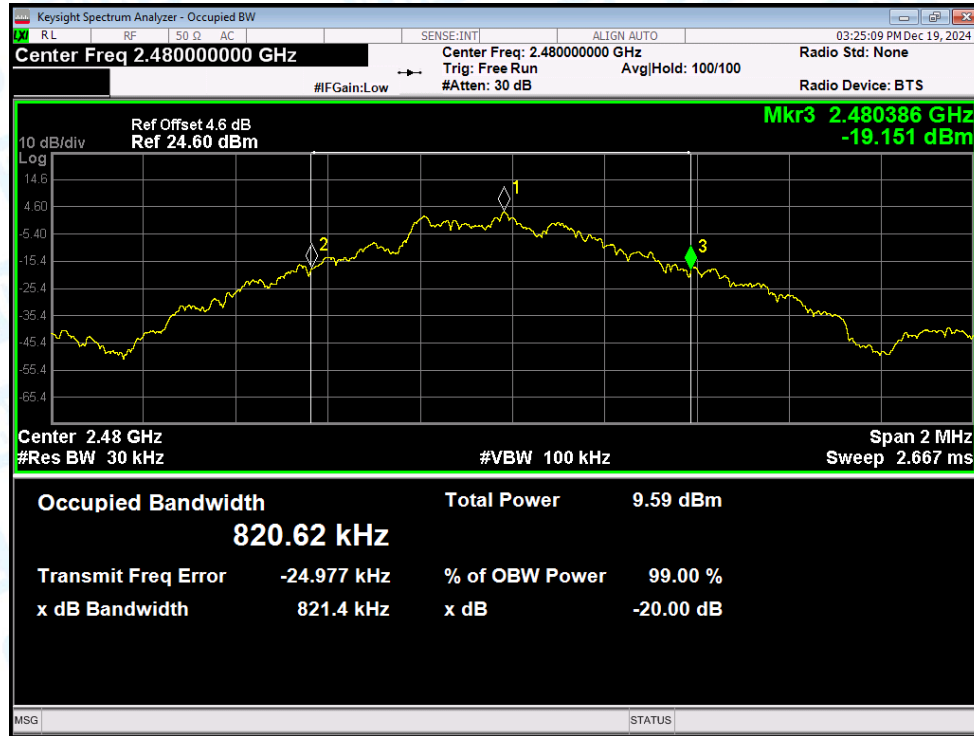
-20dB Bandwidth NVNT 1-DH1 2402MHz Ant1



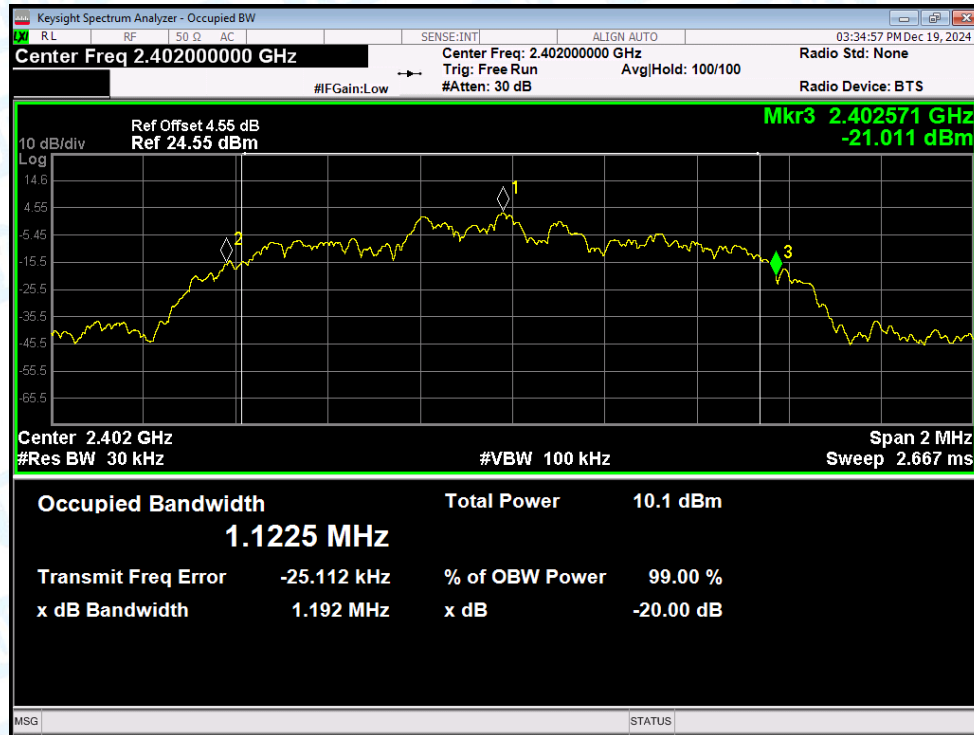
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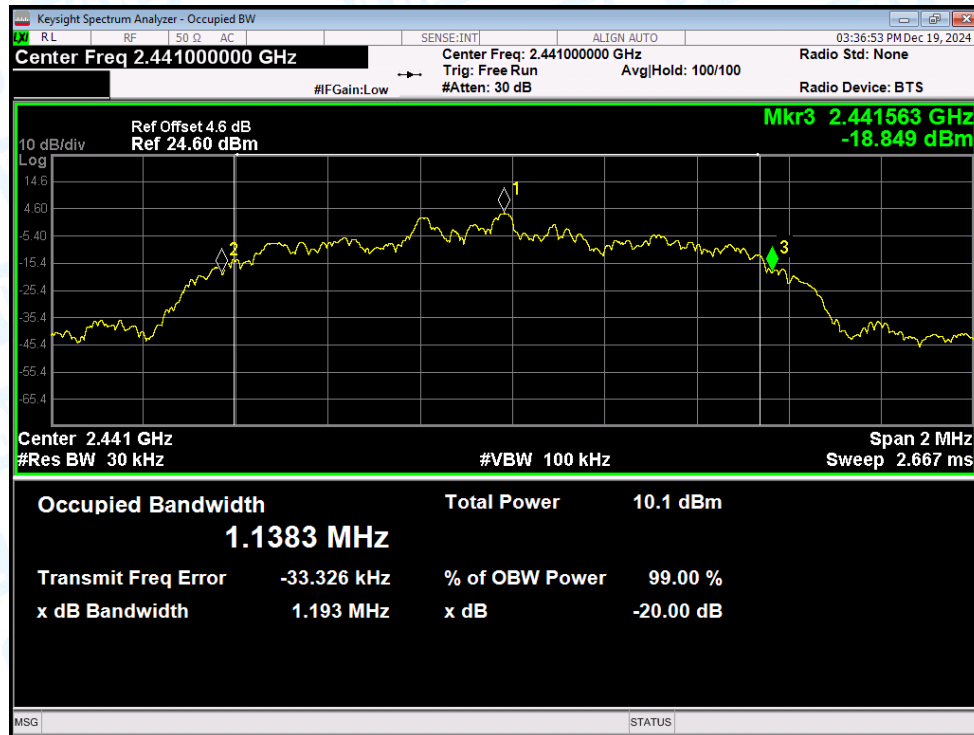
-20dB Bandwidth NVNT 1-DH1 2480MHz Ant1



-20dB Bandwidth NVNT 2-DH1 2402MHz Ant1



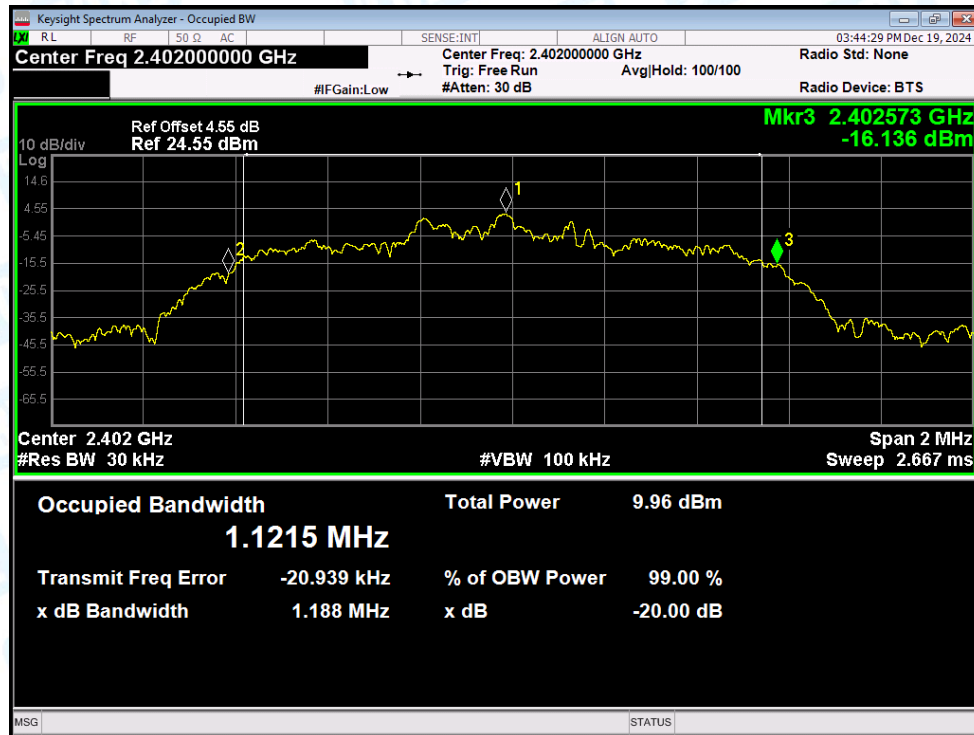
-20dB Bandwidth NVNT 2-DH1 2441MHz Ant1



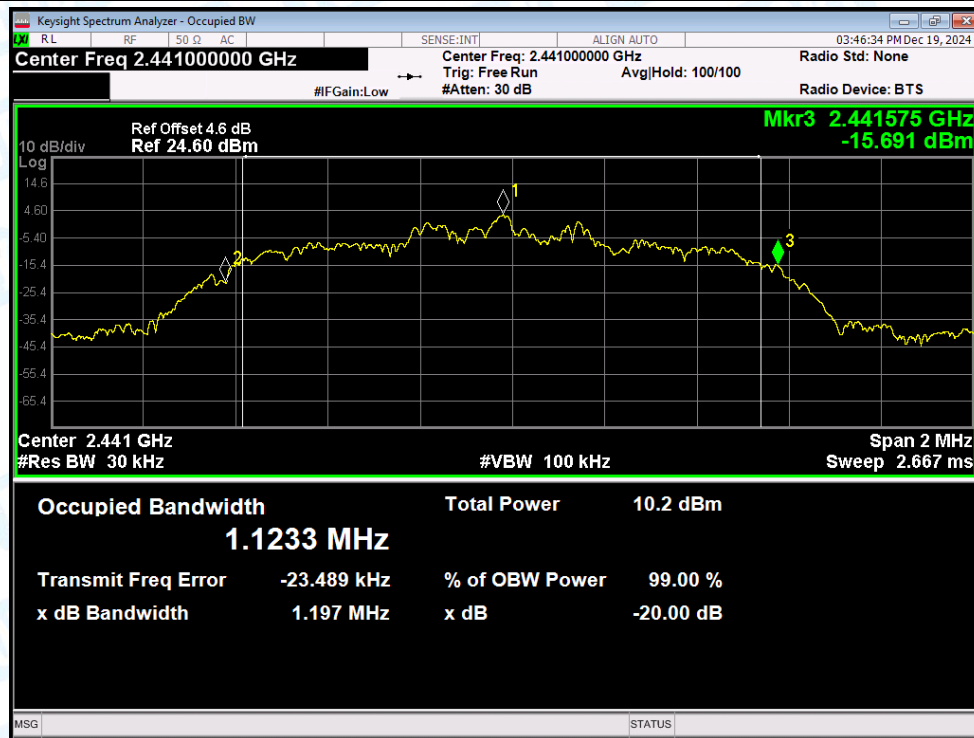
-20dB Bandwidth NVNT 2-DH1 2480MHz Ant1

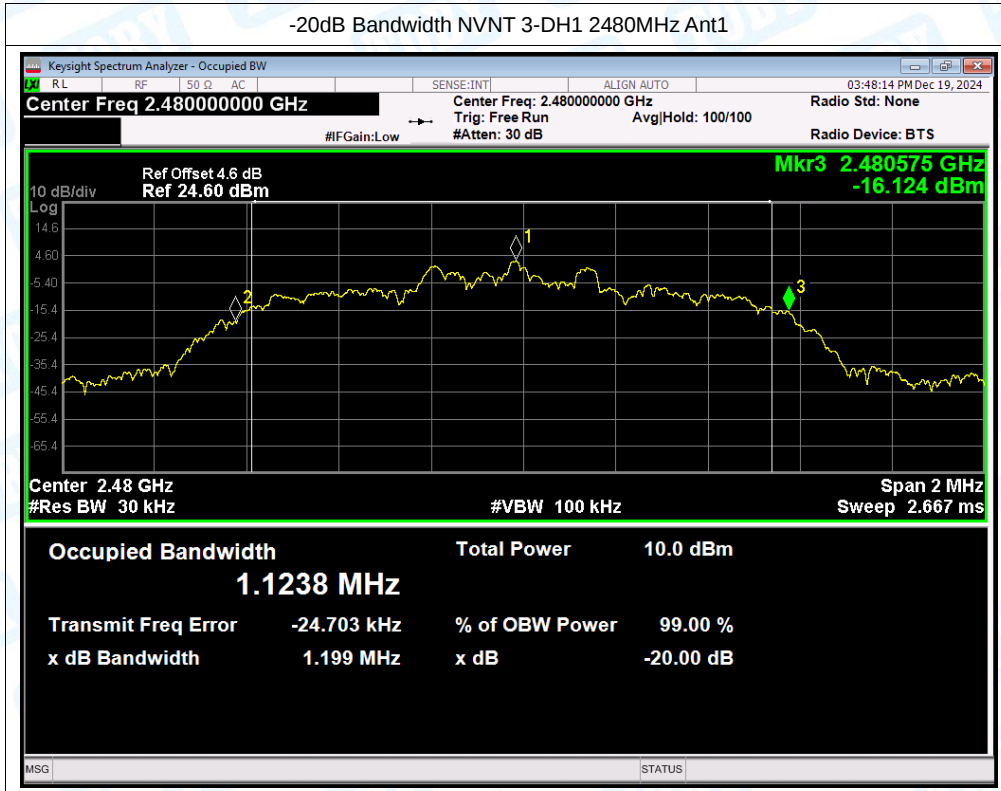


-20dB Bandwidth NVNT 3-DH1 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH1 2441MHz Ant1



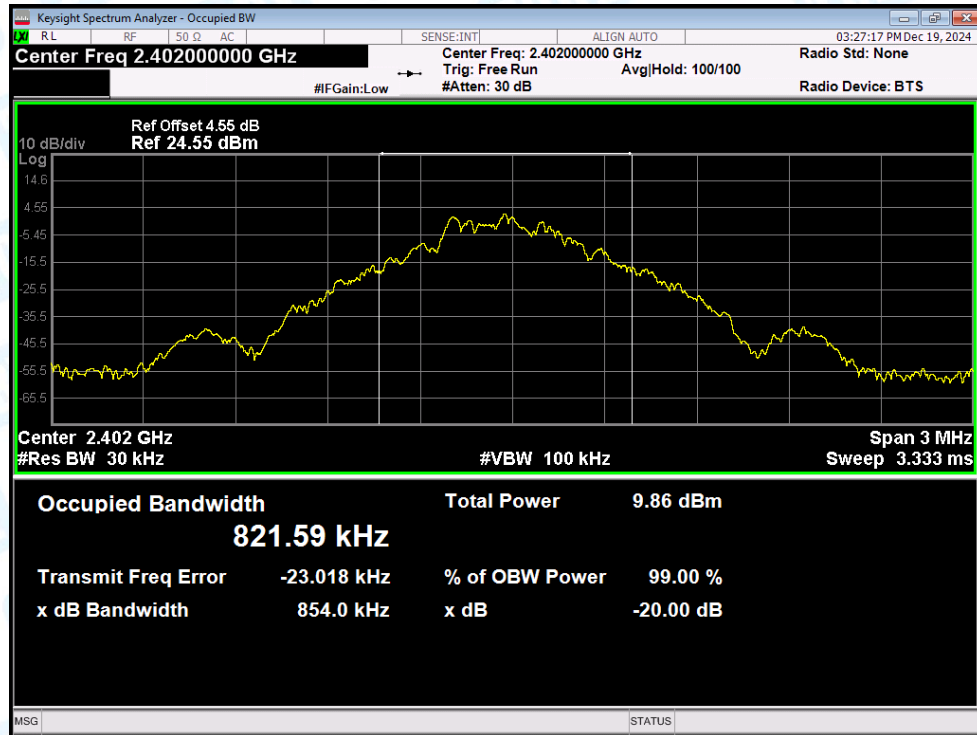


4 Occupied Channel Bandwidth

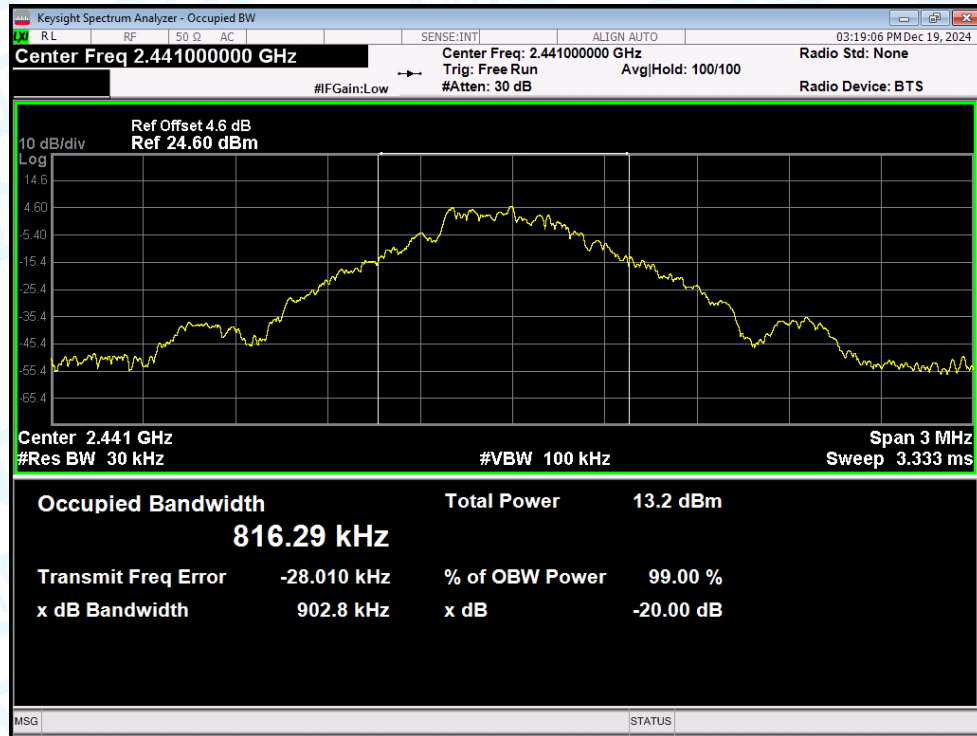
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	1-DH1	2402	Ant1	0.822
NVNT	1-DH1	2441	Ant1	0.816
NVNT	1-DH1	2480	Ant1	0.834
NVNT	2-DH1	2402	Ant1	1.122
NVNT	2-DH1	2441	Ant1	1.132
NVNT	2-DH1	2480	Ant1	1.144
NVNT	3-DH1	2402	Ant1	1.121
NVNT	3-DH1	2441	Ant1	1.114
NVNT	3-DH1	2480	Ant1	1.131

Test Graphs

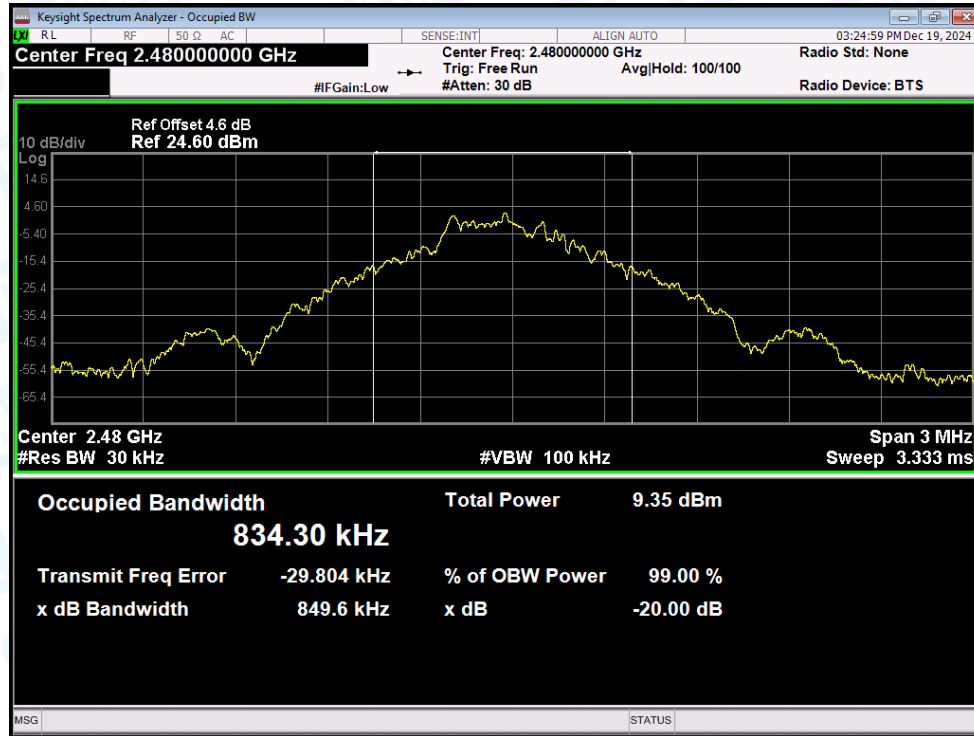
OBW NVNT 1-DH1 2402MHz Ant1



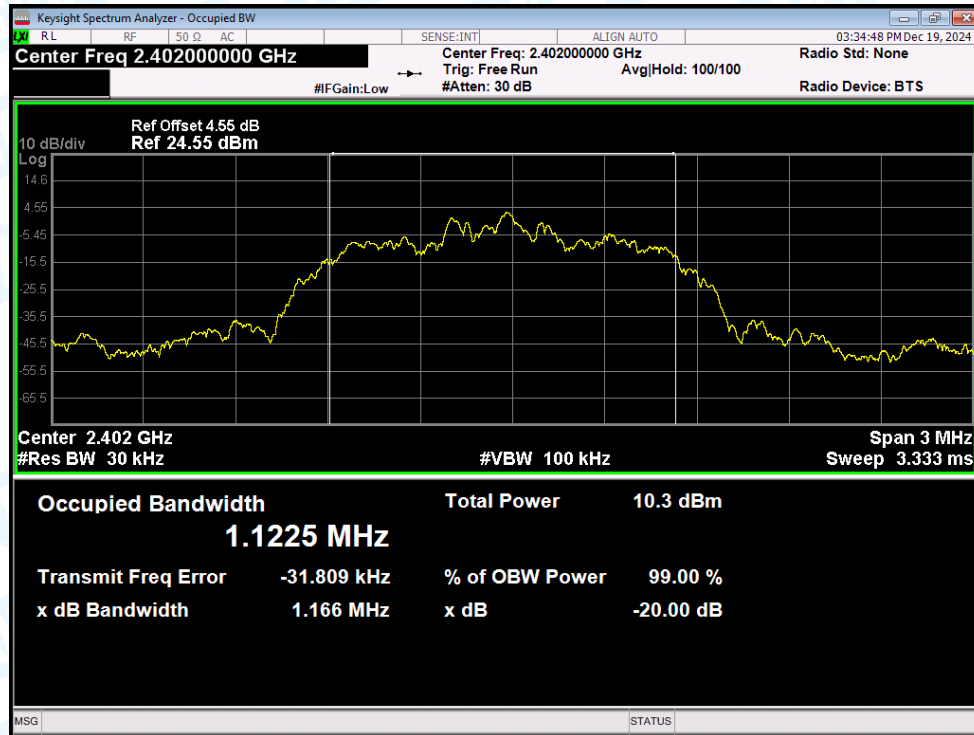
OBW NVNT 1-DH1 2441MHz Ant1



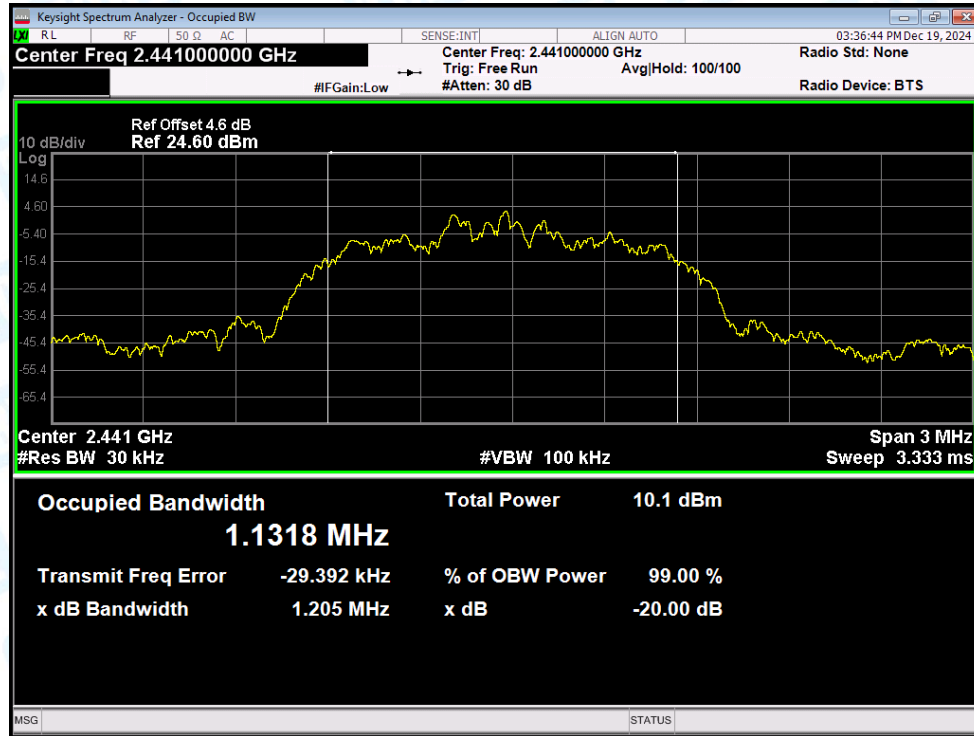
OBW NVNT 1-DH1 2480MHz Ant1



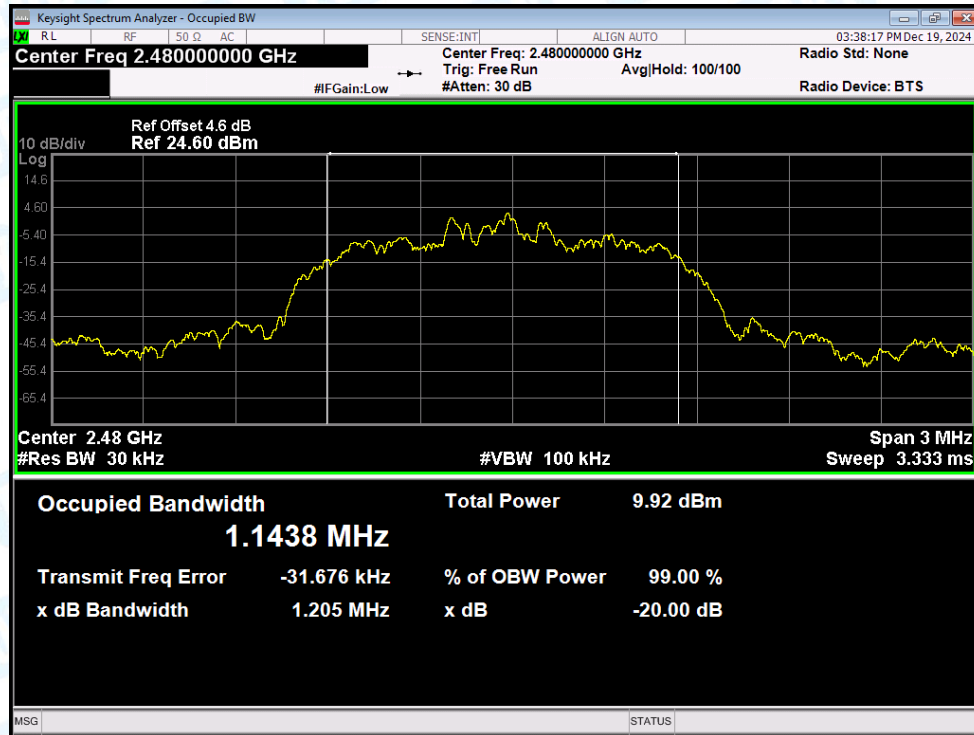
OBW NVNT 2-DH1 2402MHz Ant1



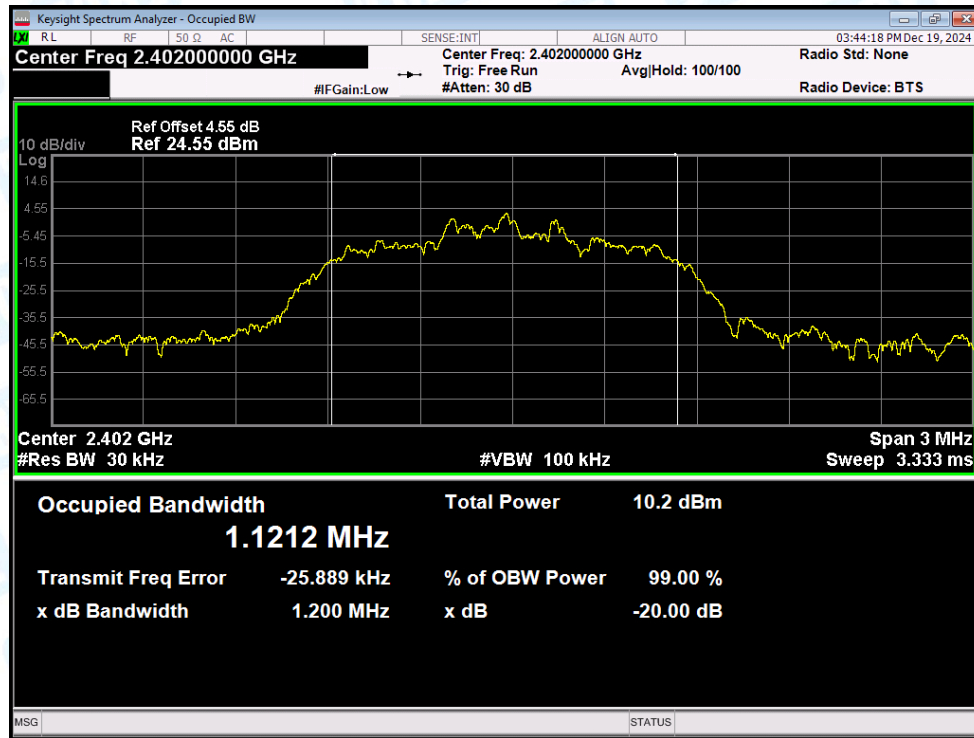
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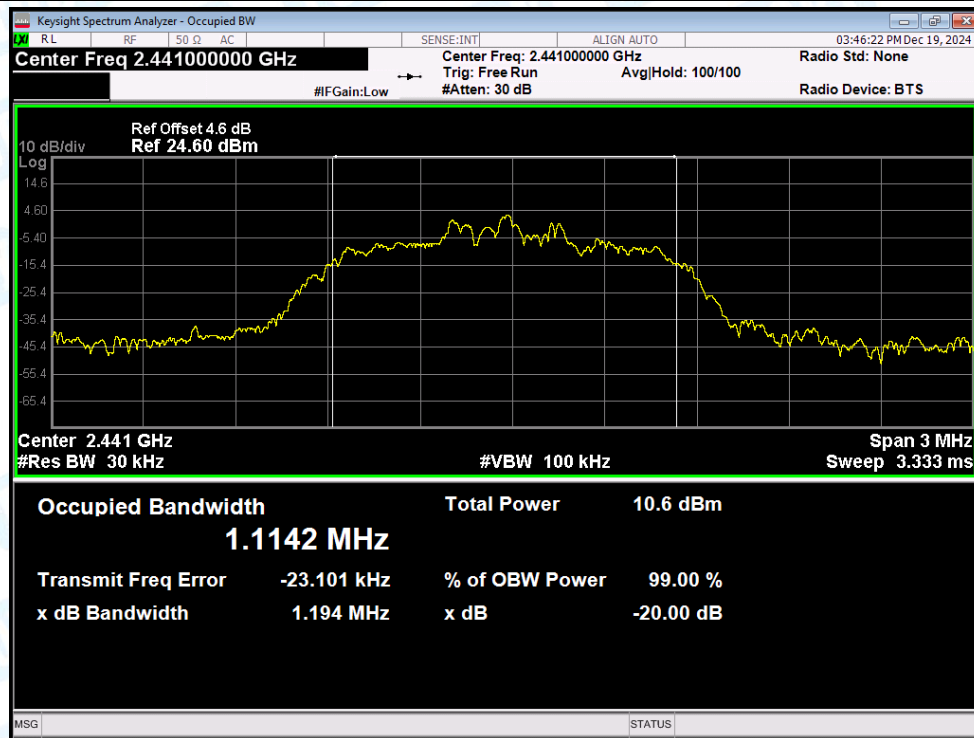
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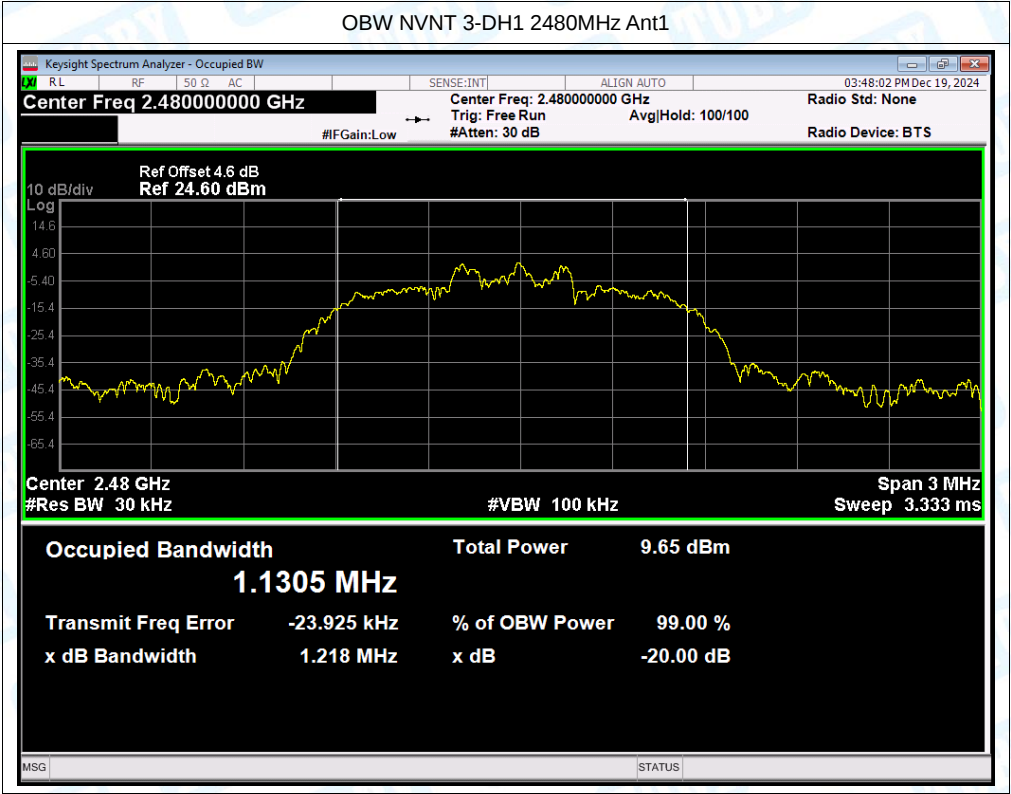


OBW NVNT 3-DH1 2402MHz Ant1



OBW NVNT 3-DH1 2441MHz Ant1



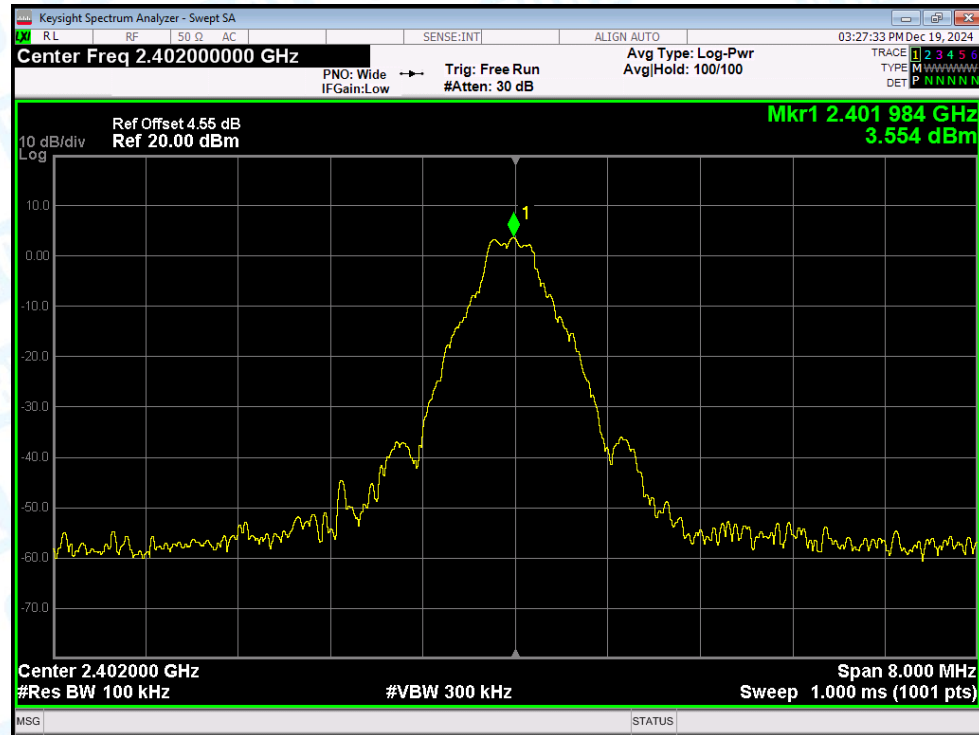


5 Band Edge

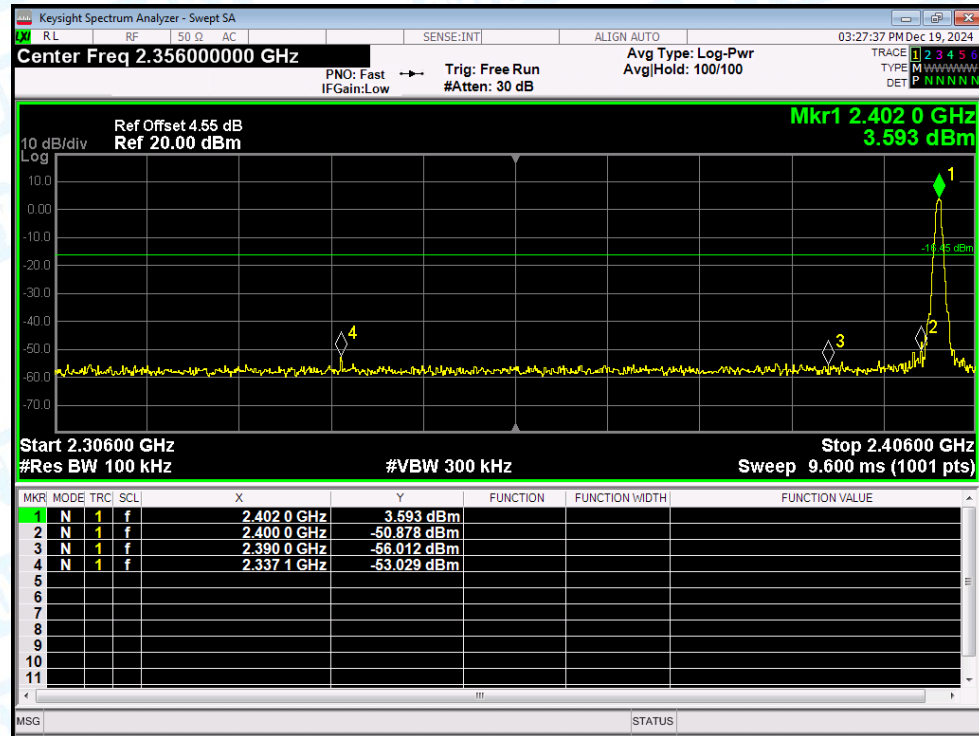
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	-56.58	-20	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	-57.34	-20	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	-57.93	-20	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	-58.05	-20	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	-58.52	-20	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	-50.92	-20	Pass

Test Graphs

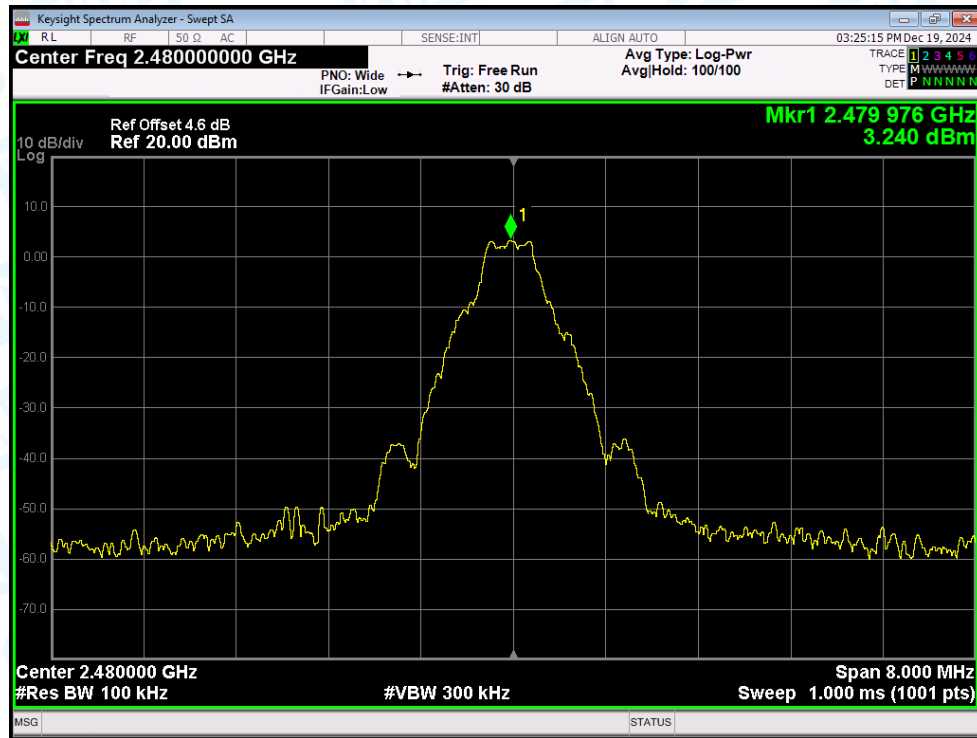
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Ref



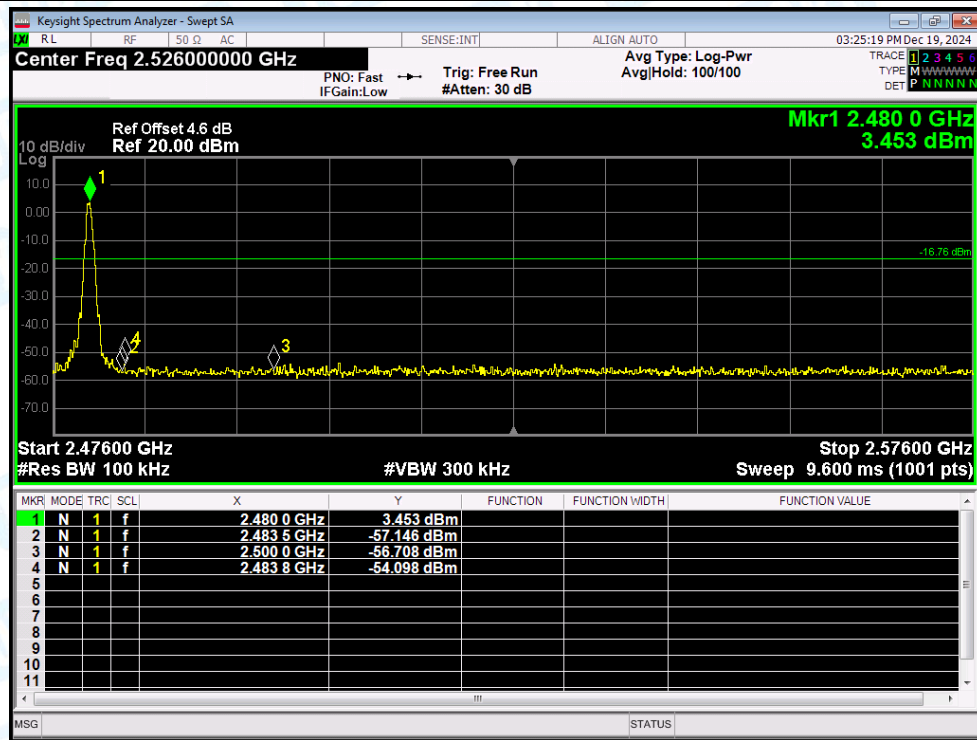
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Emission



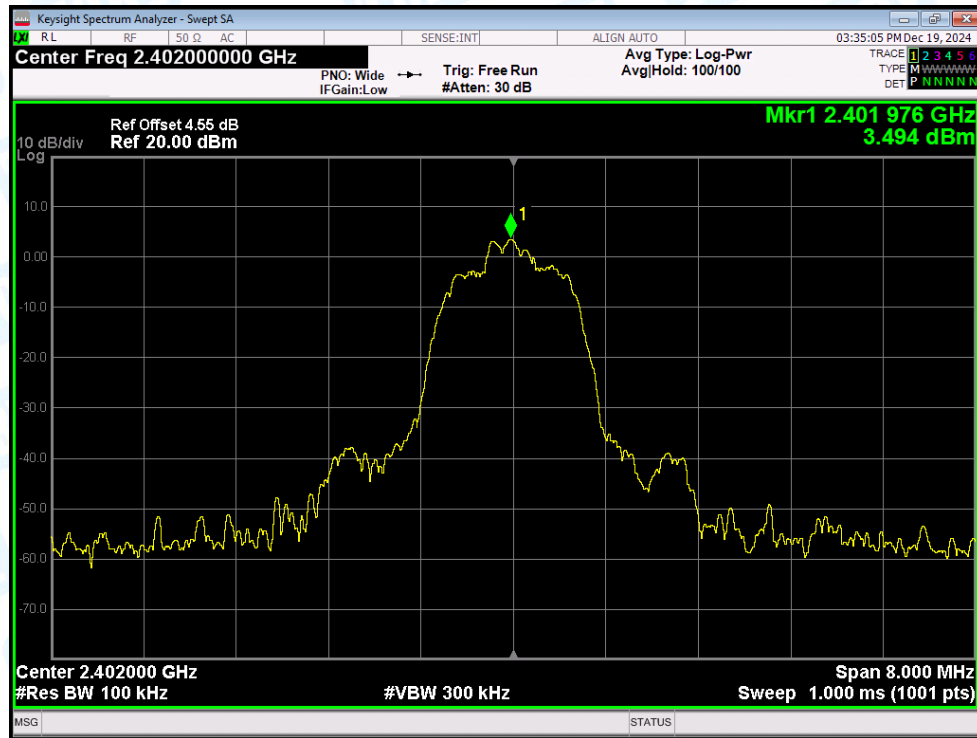
Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Ref



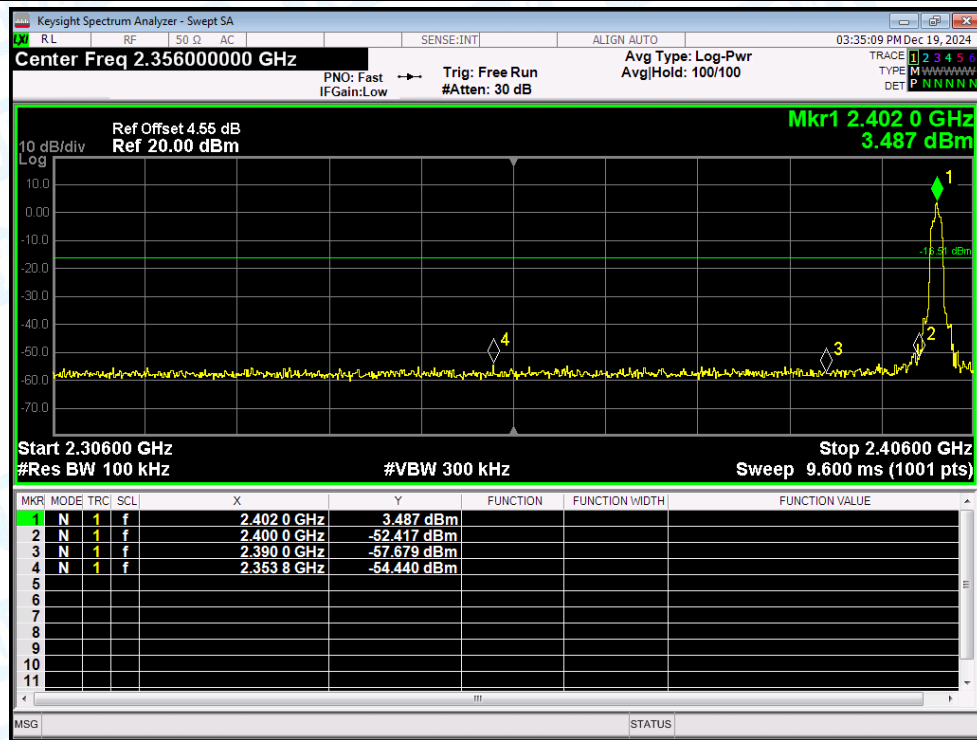
Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Emission



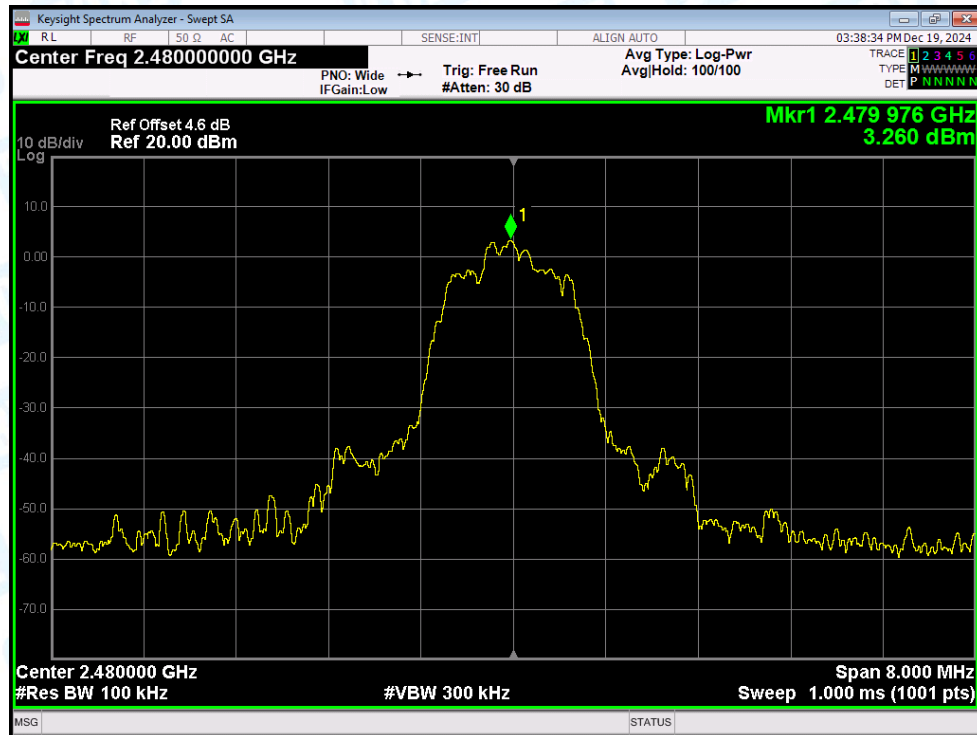
Band Edge NVNT 2-DH1 2402MHz Ant1 No-Hopping Ref



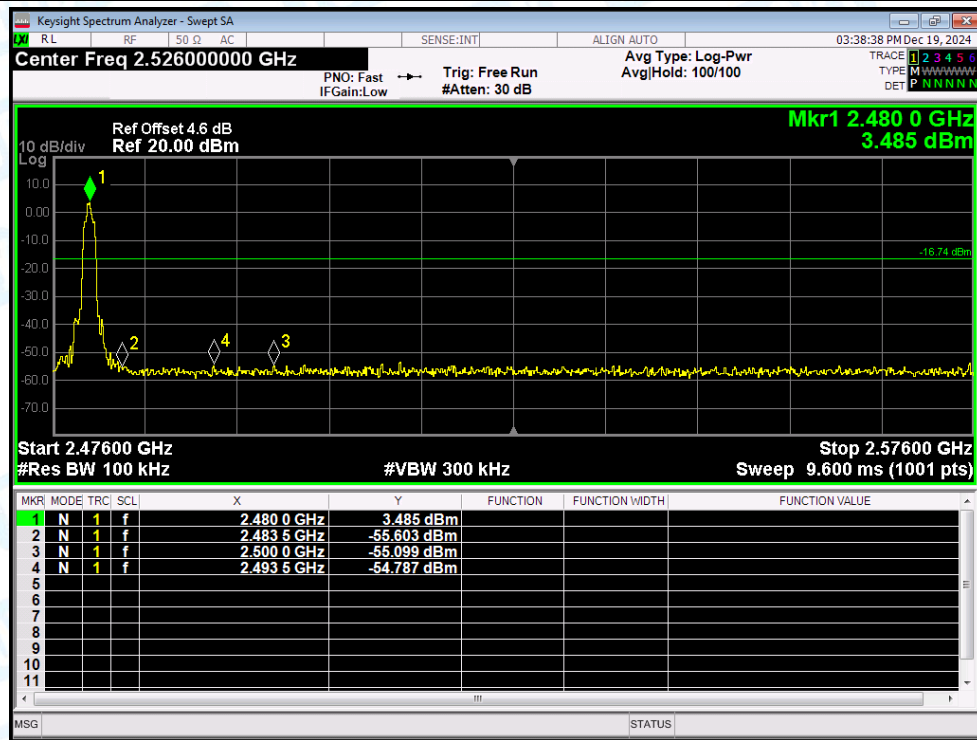
Band Edge NVNT 2-DH1 2402MHz Ant1 No-Hopping Emission

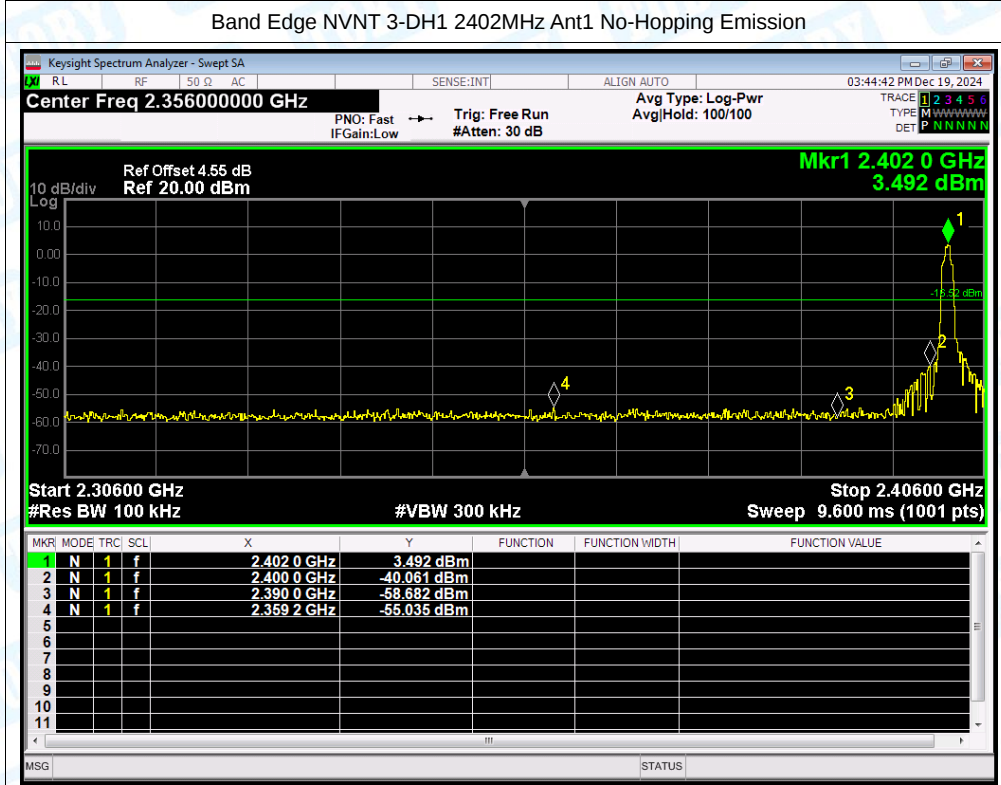
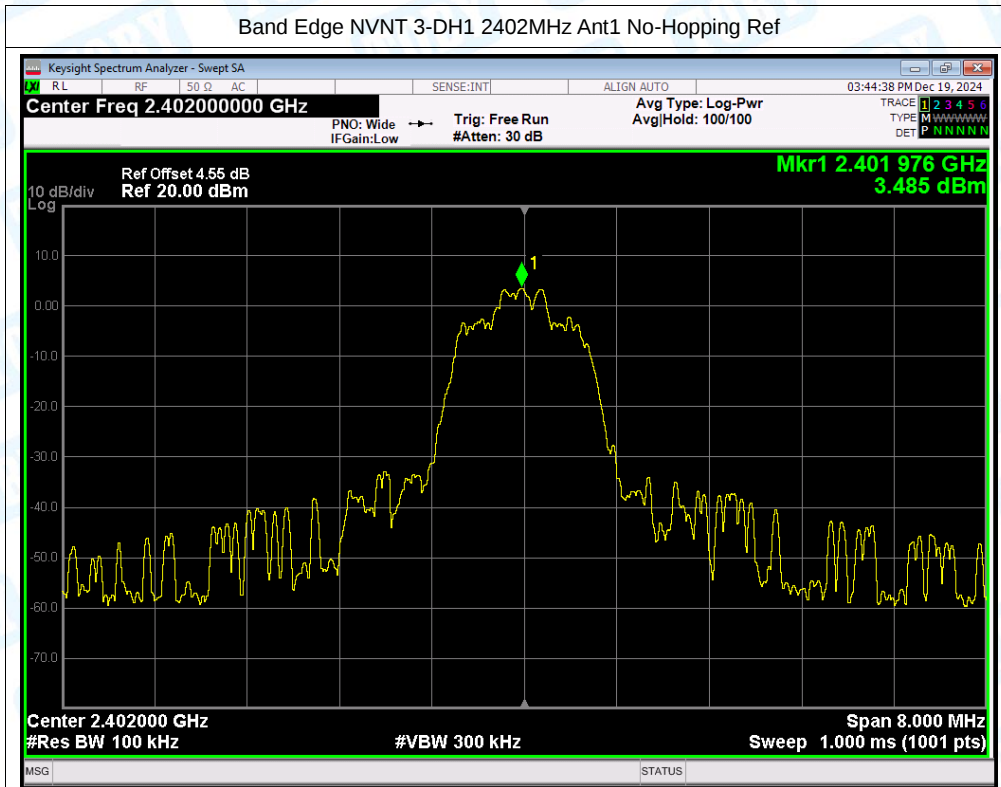


Band Edge NVNT 2-DH1 2480MHz Ant1 No-Hopping Ref

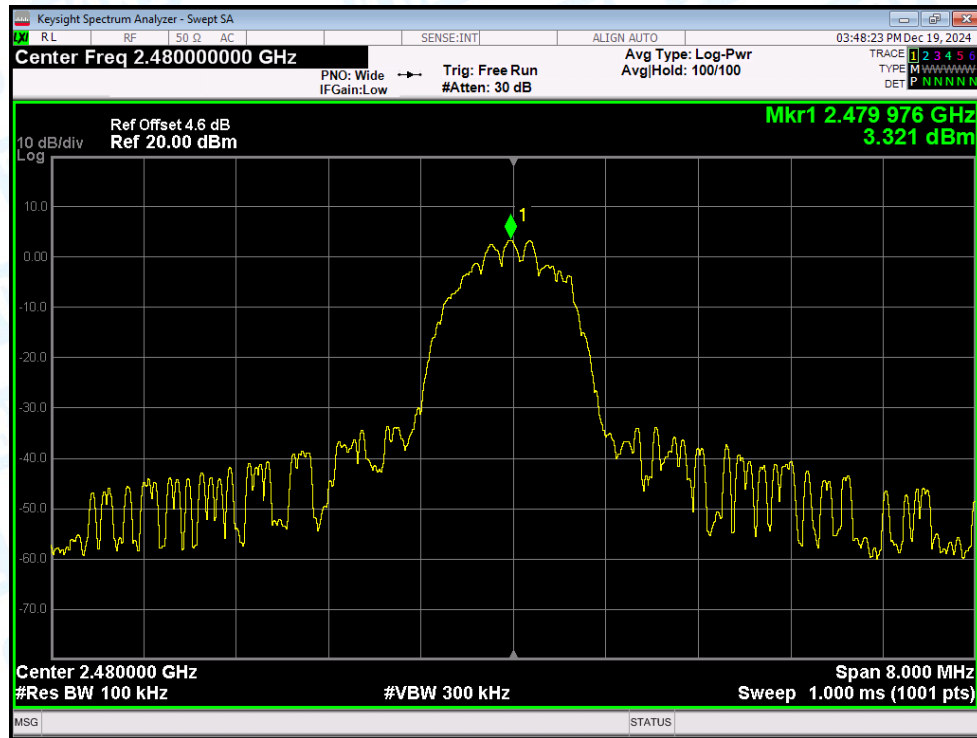


Band Edge NVNT 2-DH1 2480MHz Ant1 No-Hopping Emission

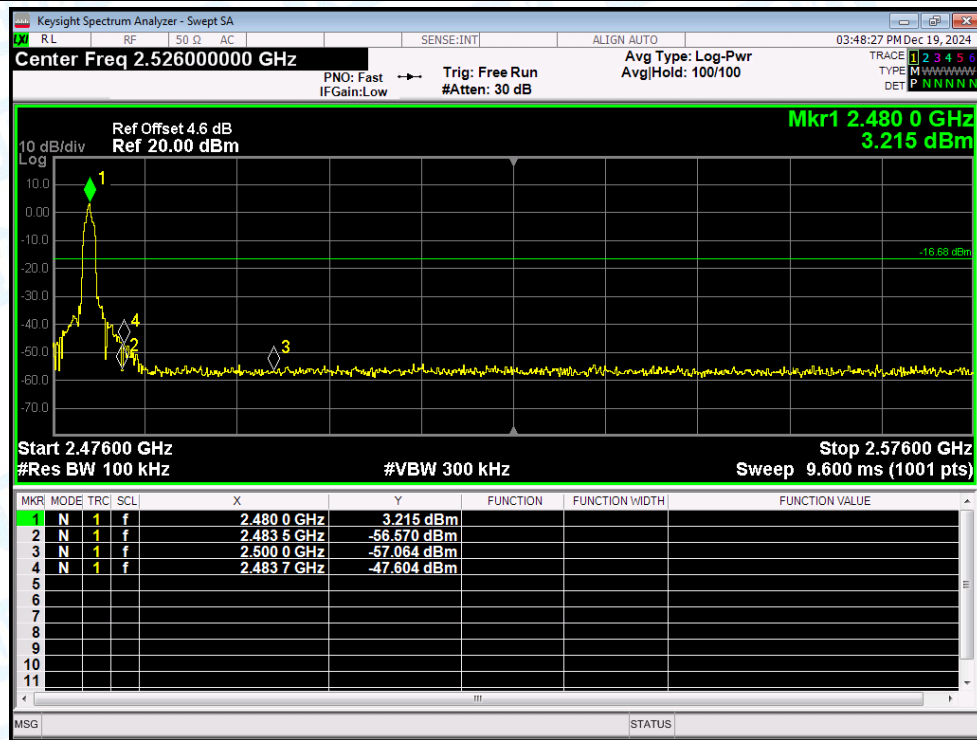




Band Edge NVNT 3-DH1 2480MHz Ant1 No-Hopping Ref



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

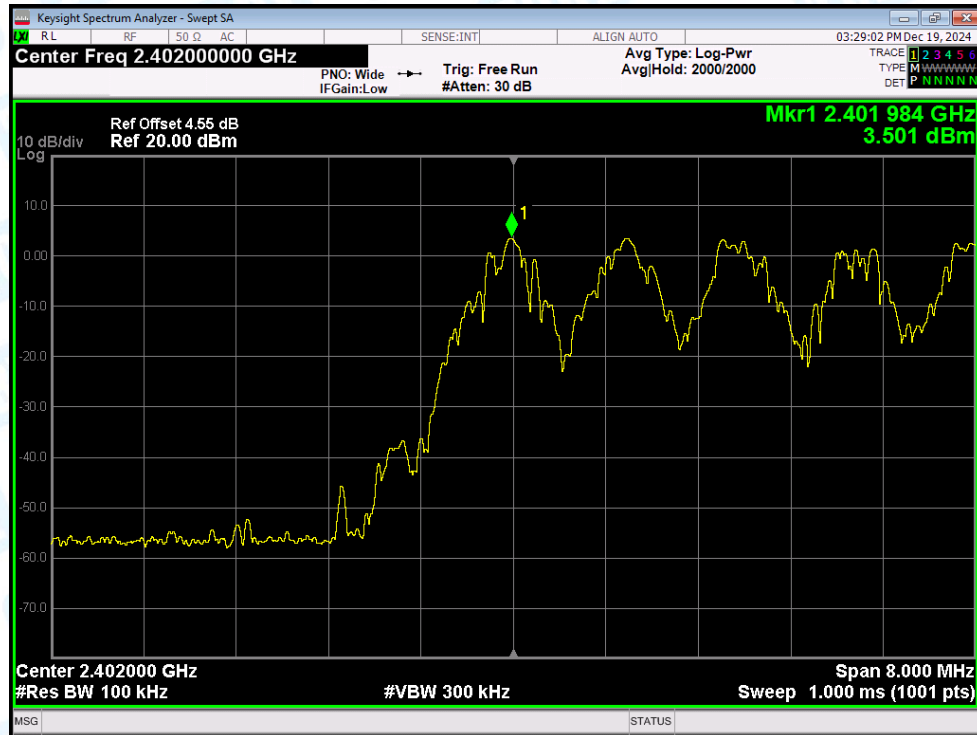


6 Band Edge(Hopping)

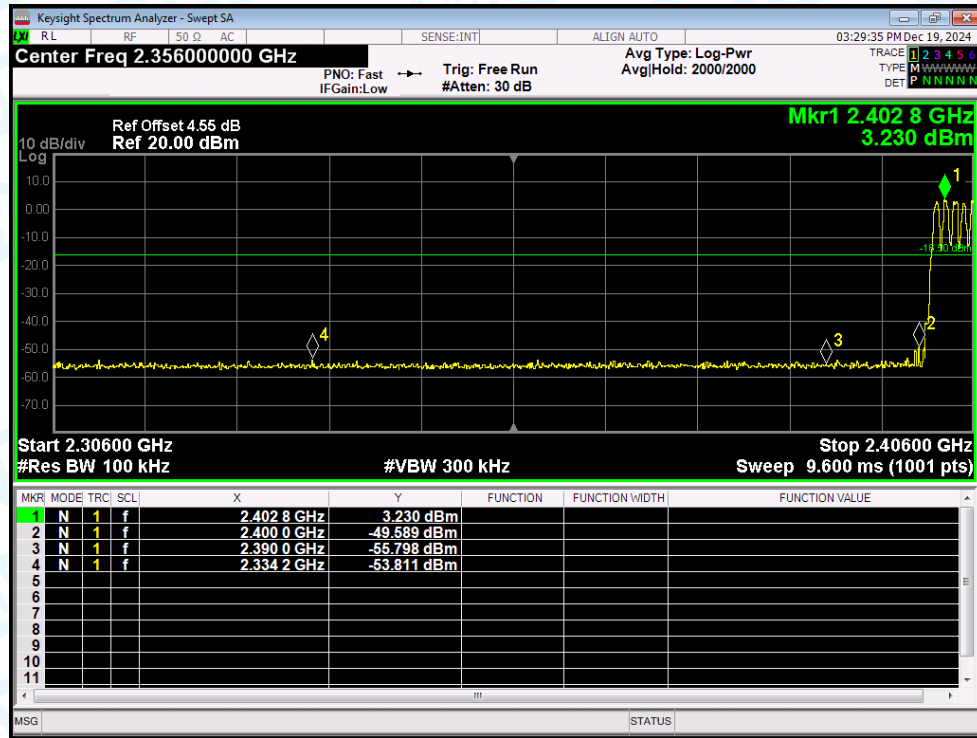
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	Hopping	-57.31	-20	Pass
NVNT	1-DH1	2480	Ant1	Hopping	-56.55	-20	Pass
NVNT	2-DH1	2402	Ant1	Hopping	-56.8	-20	Pass
NVNT	2-DH1	2480	Ant1	Hopping	-57.11	-20	Pass
NVNT	3-DH1	2402	Ant1	Hopping	-57.35	-20	Pass
NVNT	3-DH1	2480	Ant1	Hopping	-50.27	-20	Pass

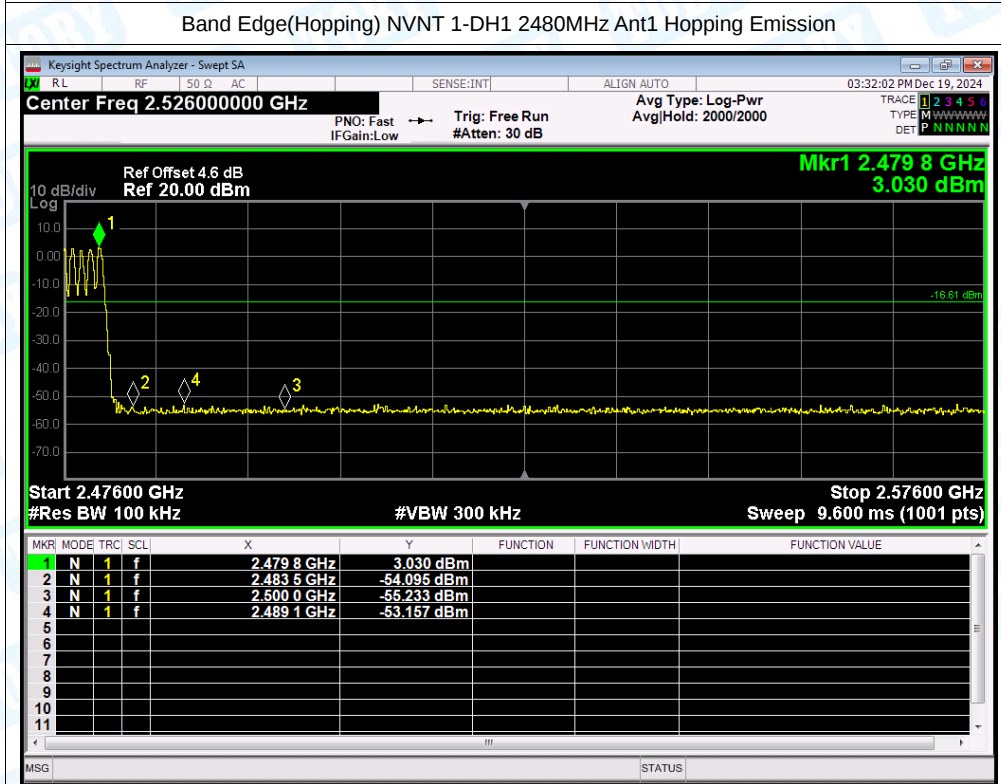
Test Graphs

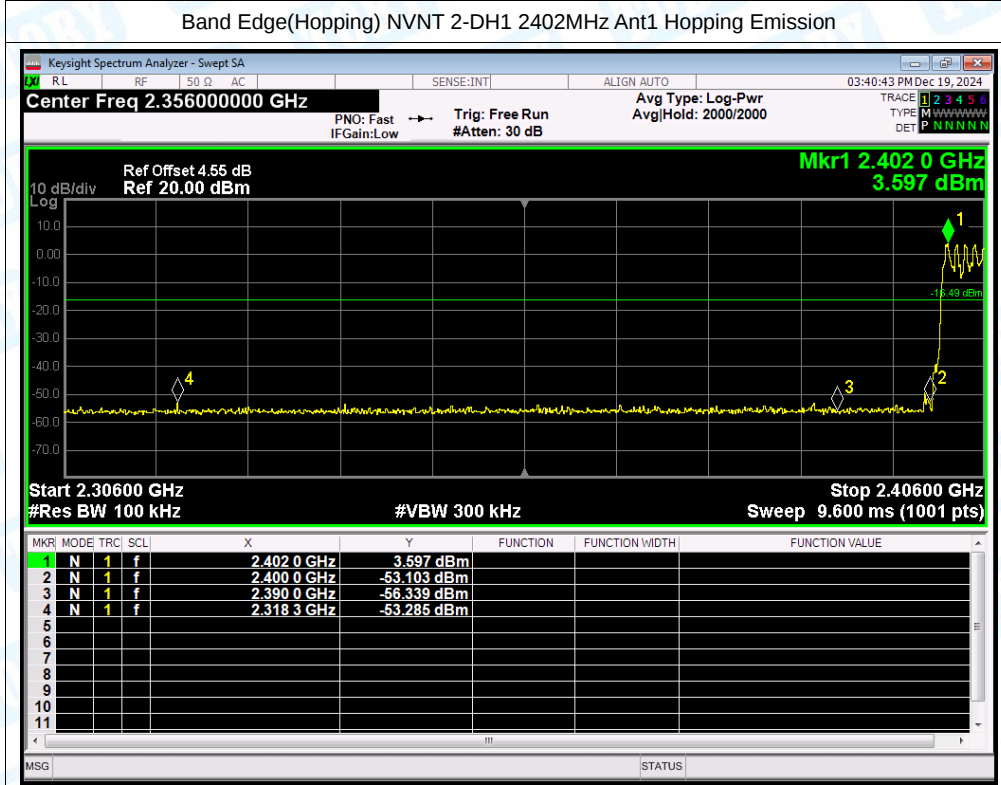
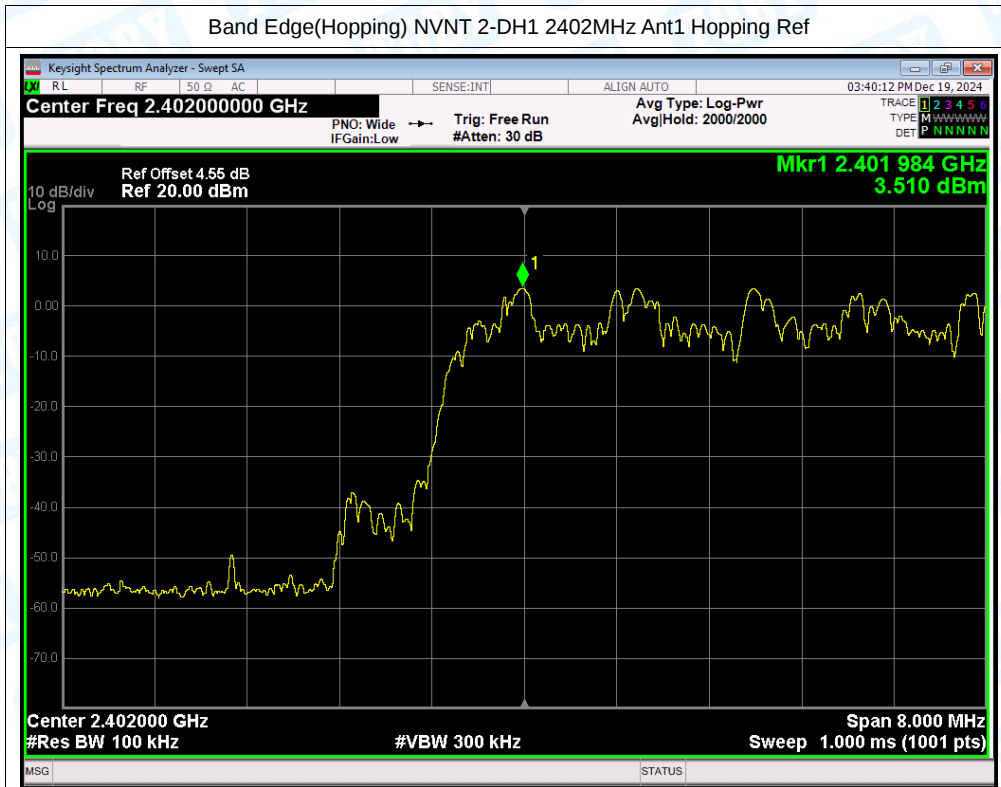
Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Ref

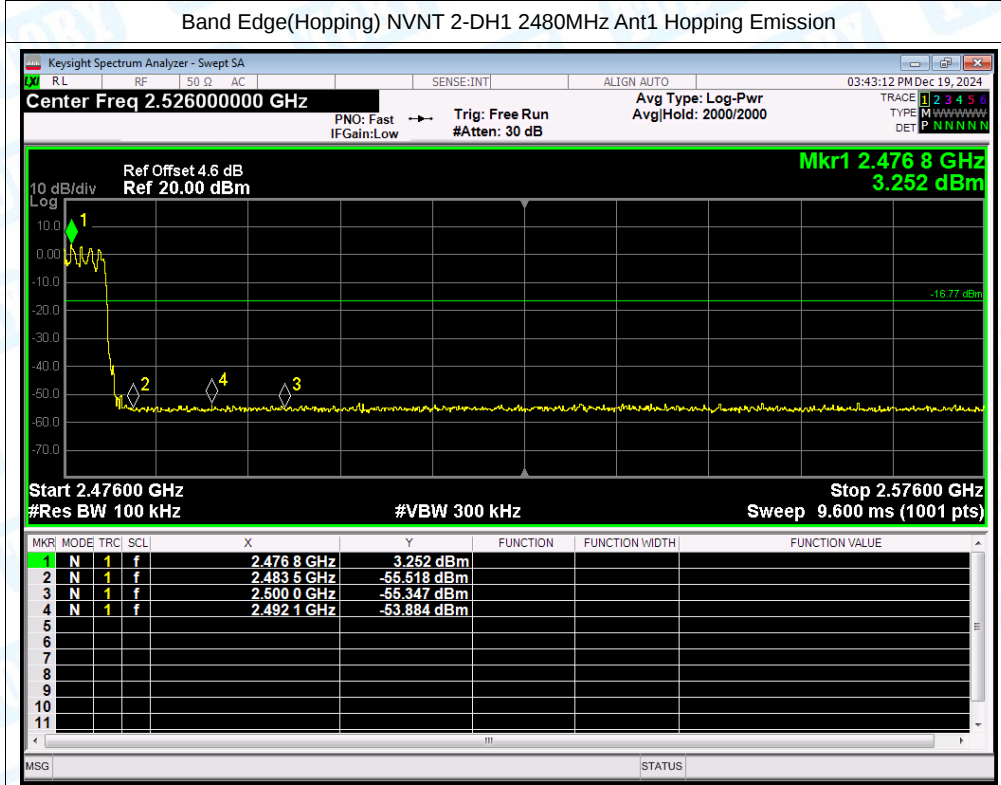


Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Emission





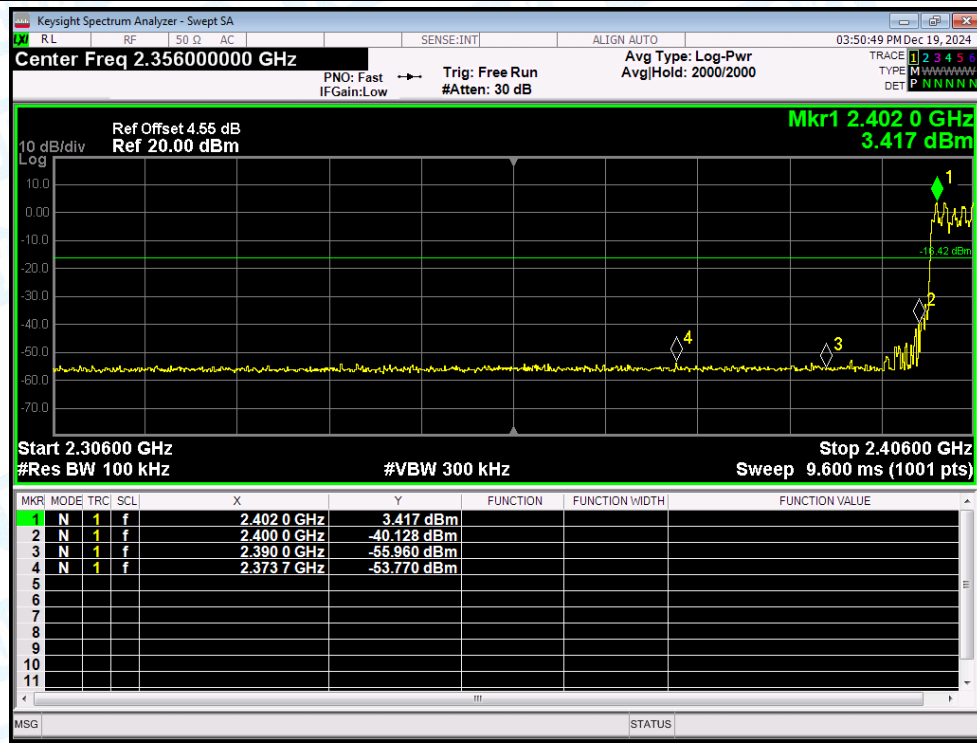


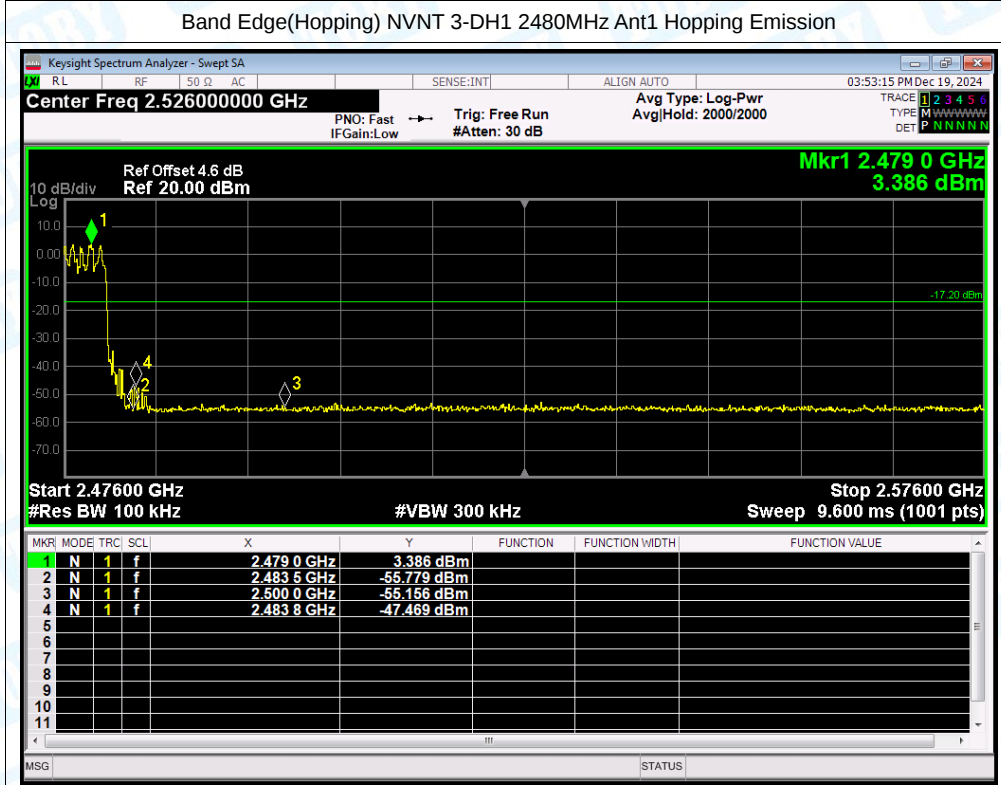
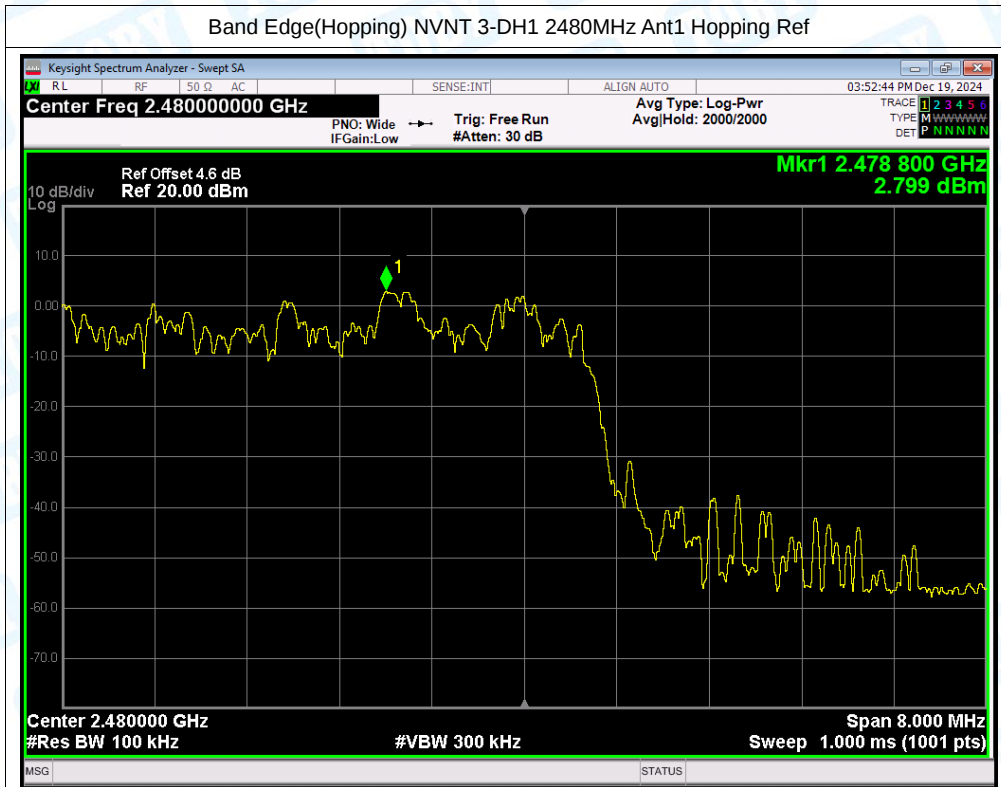


Band Edge(Hopping) NVNT 3-DH1 2402MHz Ant1 Hopping Ref



Band Edge(Hopping) NVNT 3-DH1 2402MHz Ant1 Hopping Emission



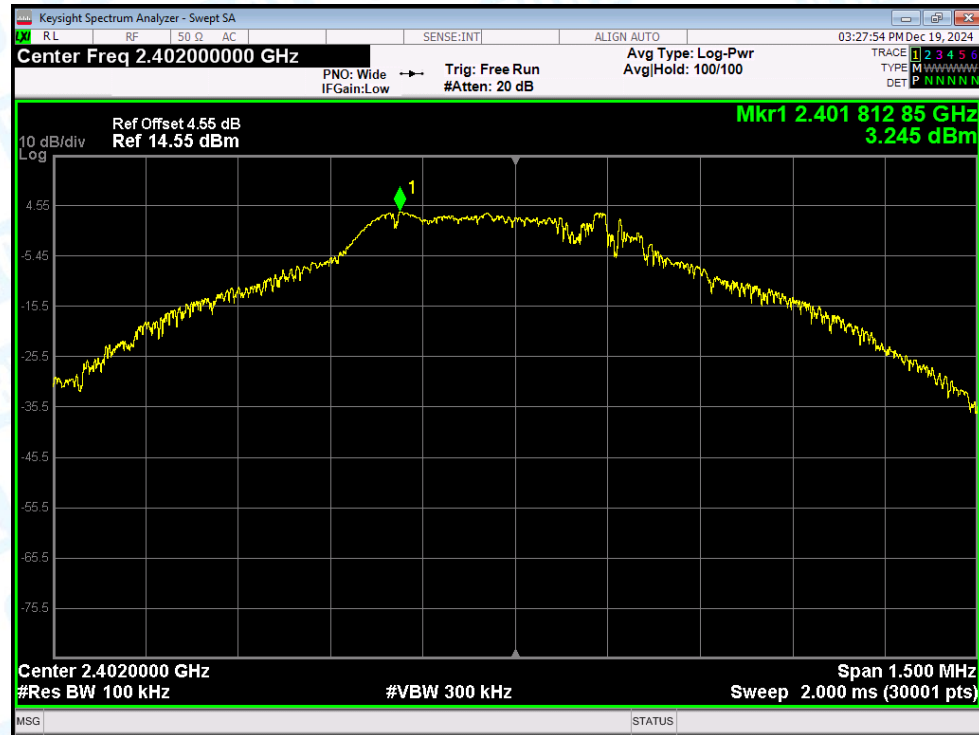


7 Conducted RF Spurious Emission

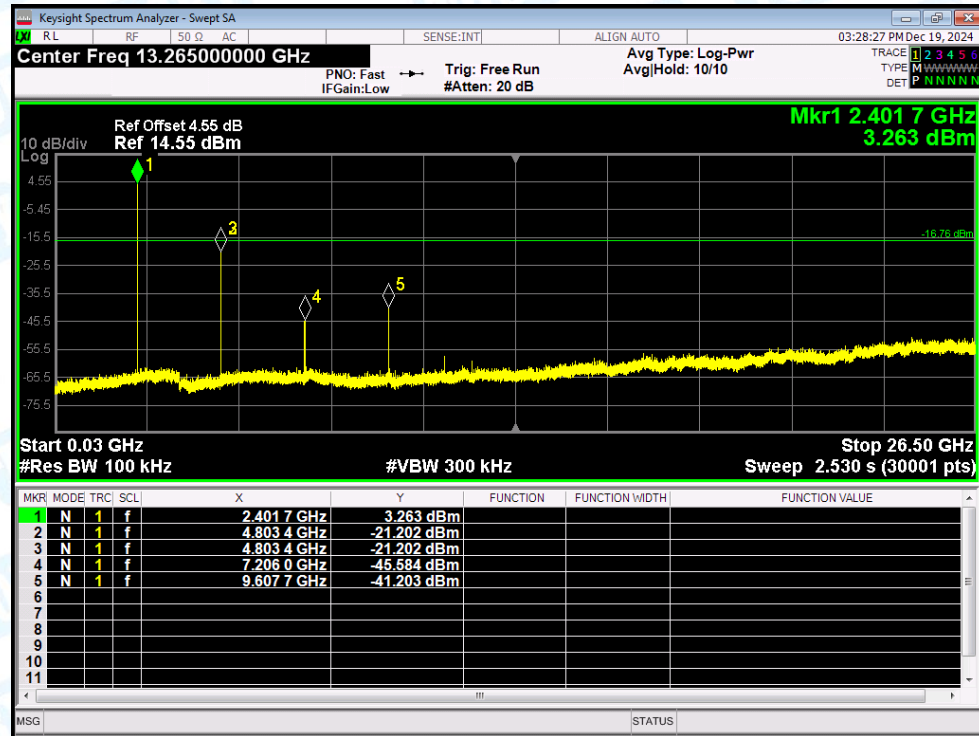
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	-24.45	-20	Pass
NVNT	1-DH1	2441	Ant1	-23.99	-20	Pass
NVNT	1-DH1	2480	Ant1	-27.97	-20	Pass
NVNT	2-DH1	2402	Ant1	-24.51	-20	Pass
NVNT	2-DH1	2441	Ant1	-25.33	-20	Pass
NVNT	2-DH1	2480	Ant1	-32.26	-20	Pass
NVNT	3-DH1	2402	Ant1	-25.2	-20	Pass
NVNT	3-DH1	2441	Ant1	-30.21	-20	Pass
NVNT	3-DH1	2480	Ant1	-29.35	-20	Pass

Test Graphs

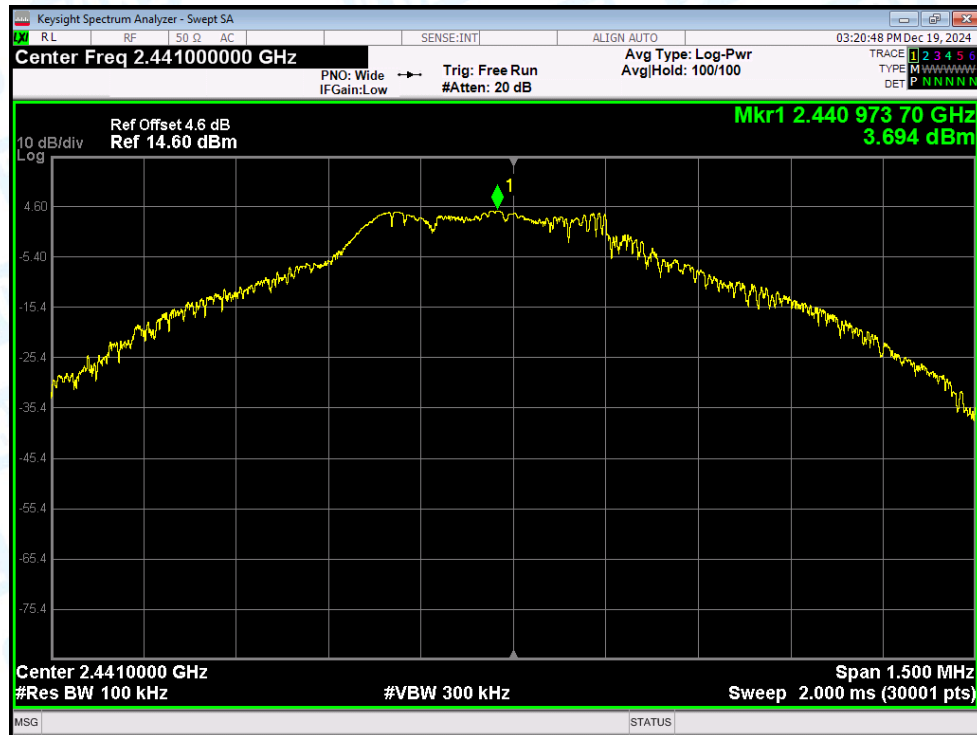
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Ref



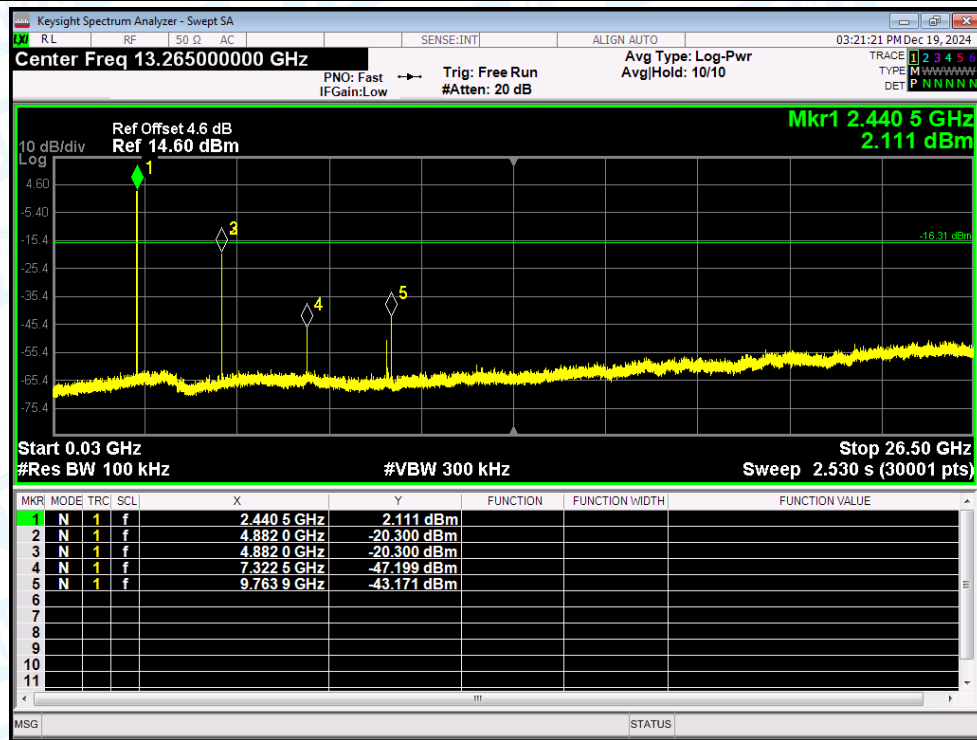
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Emission



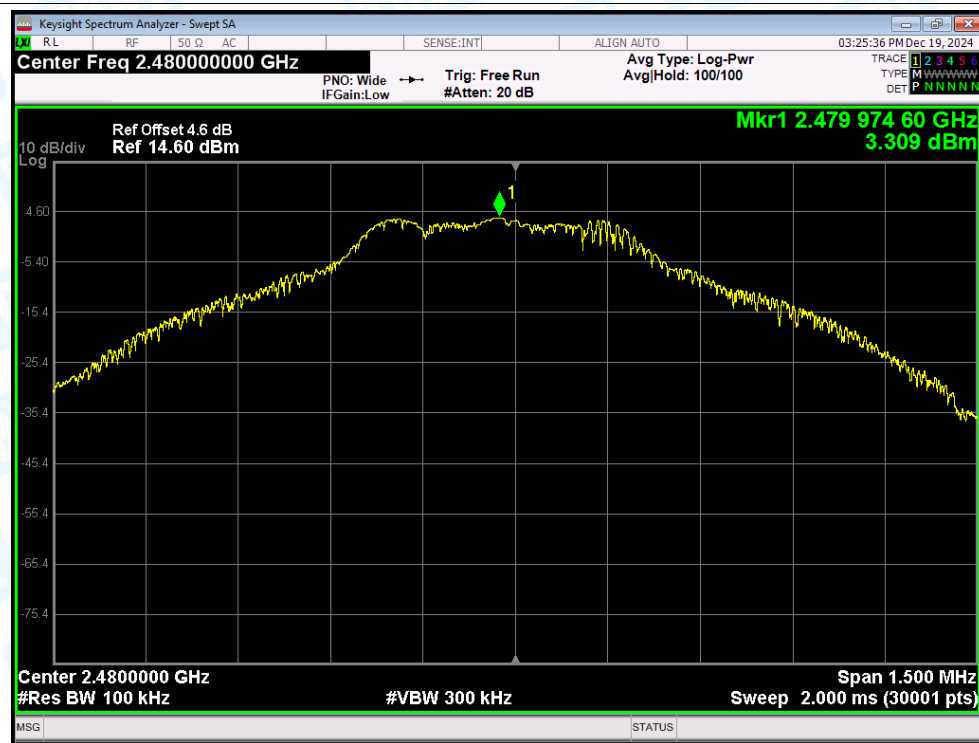
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Ref



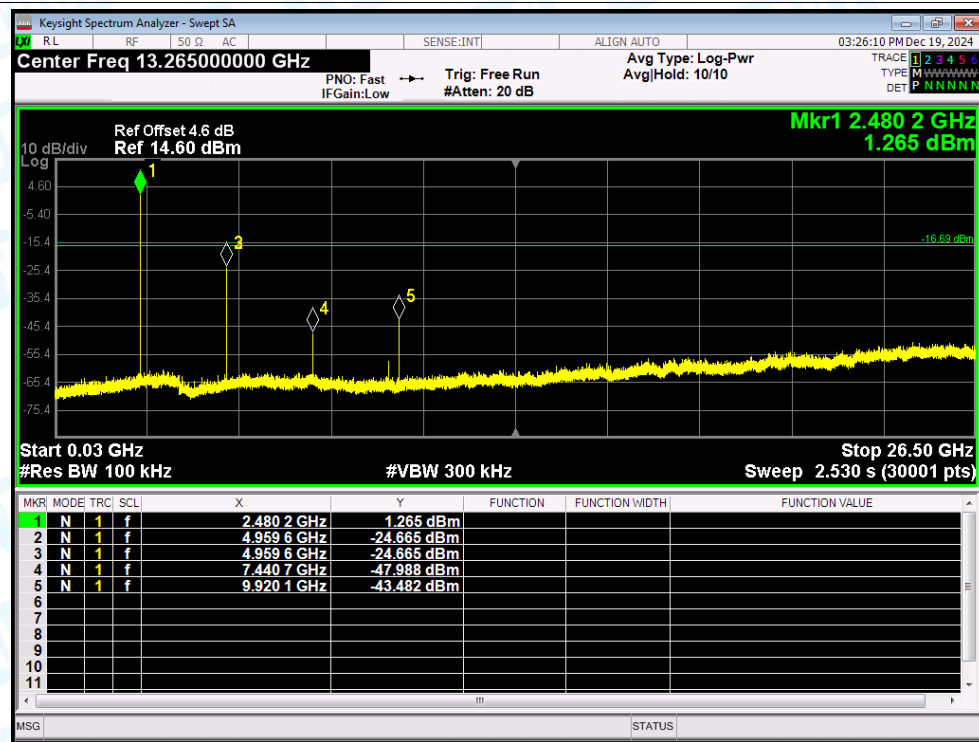
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Emission



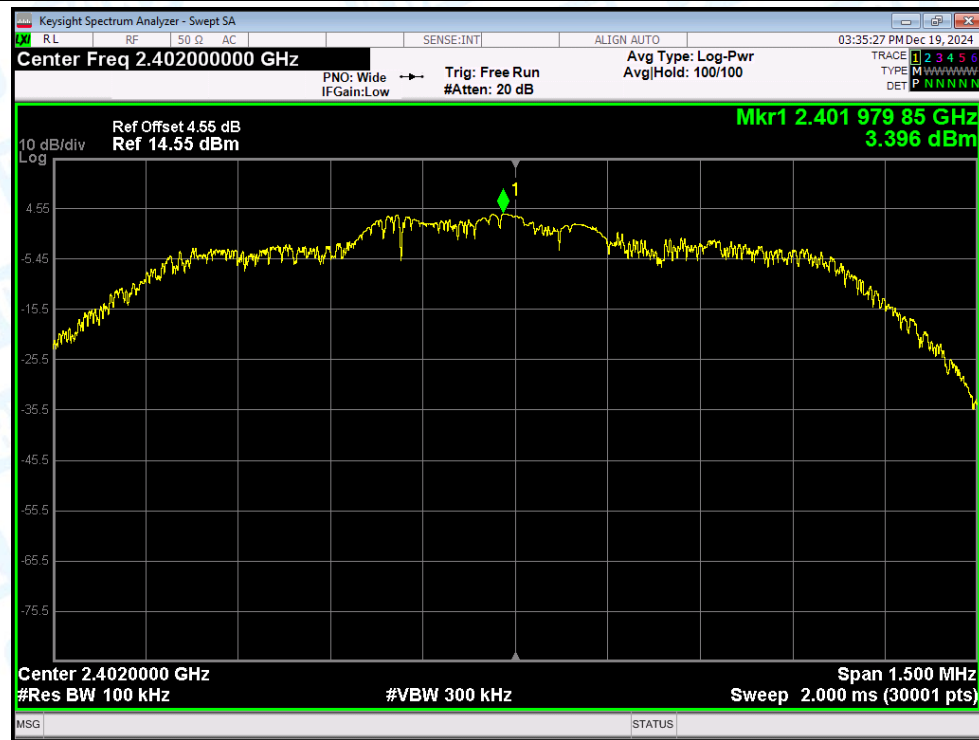
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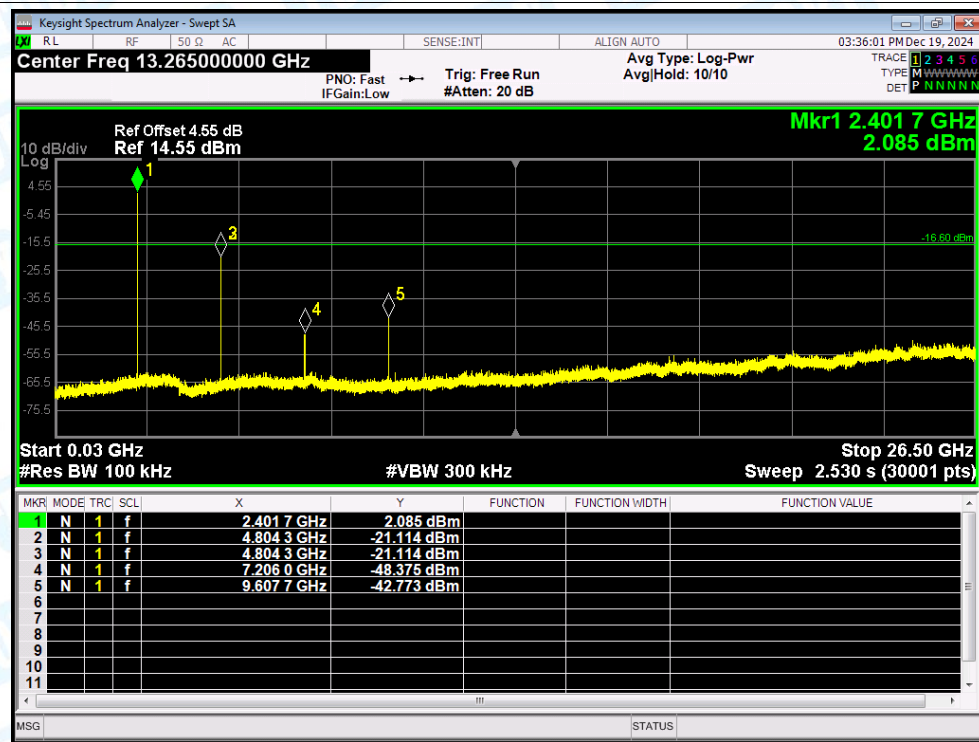
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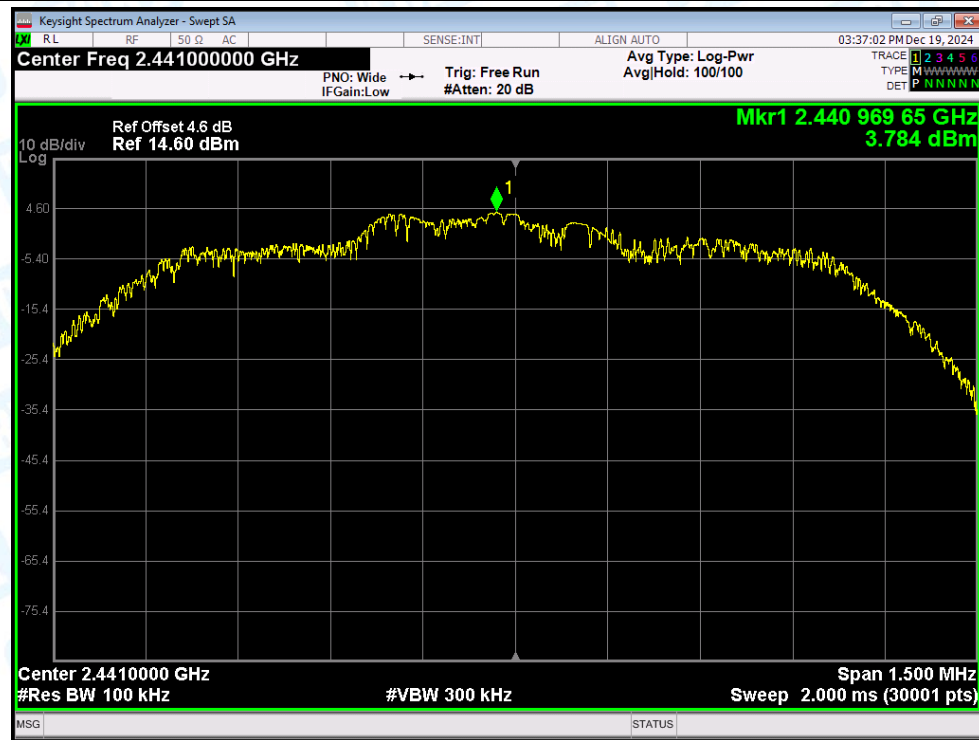
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Ref



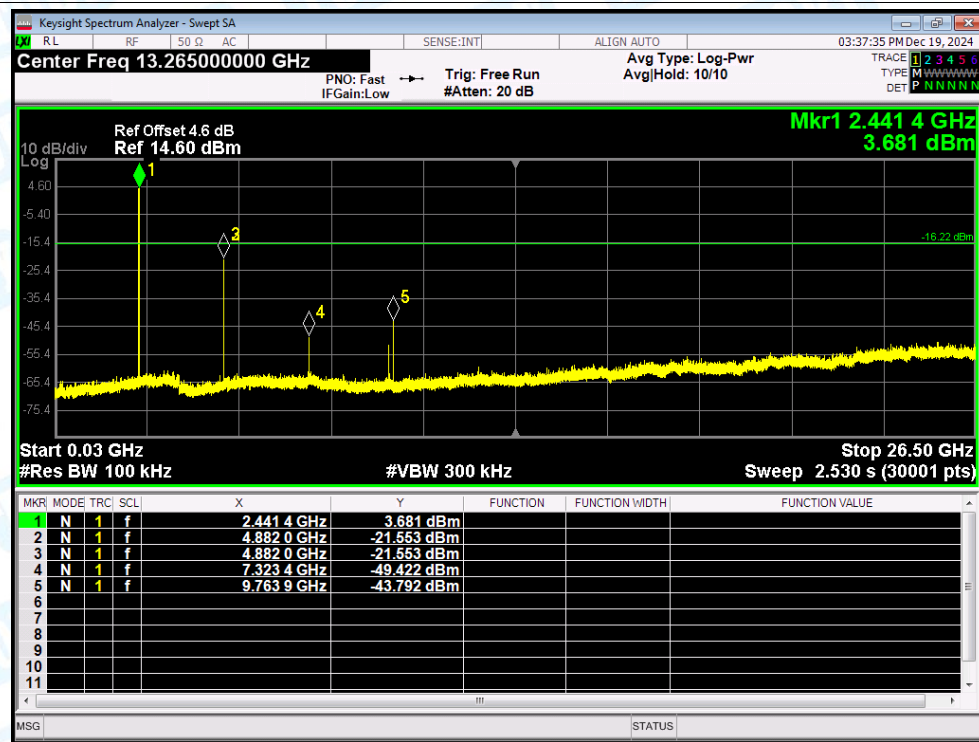
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Emission



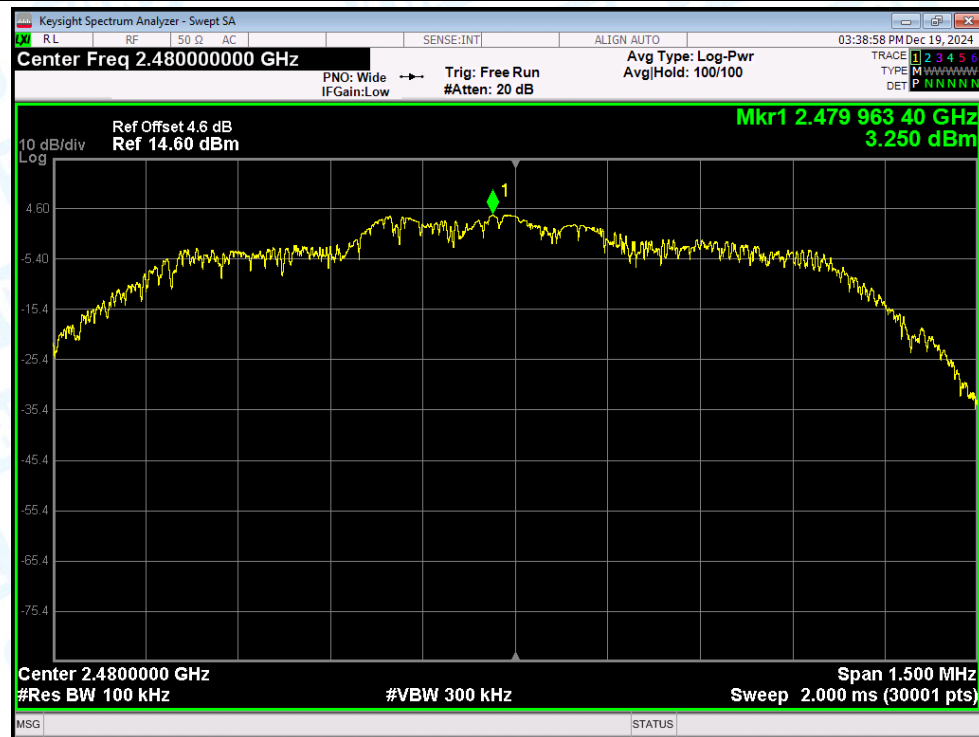
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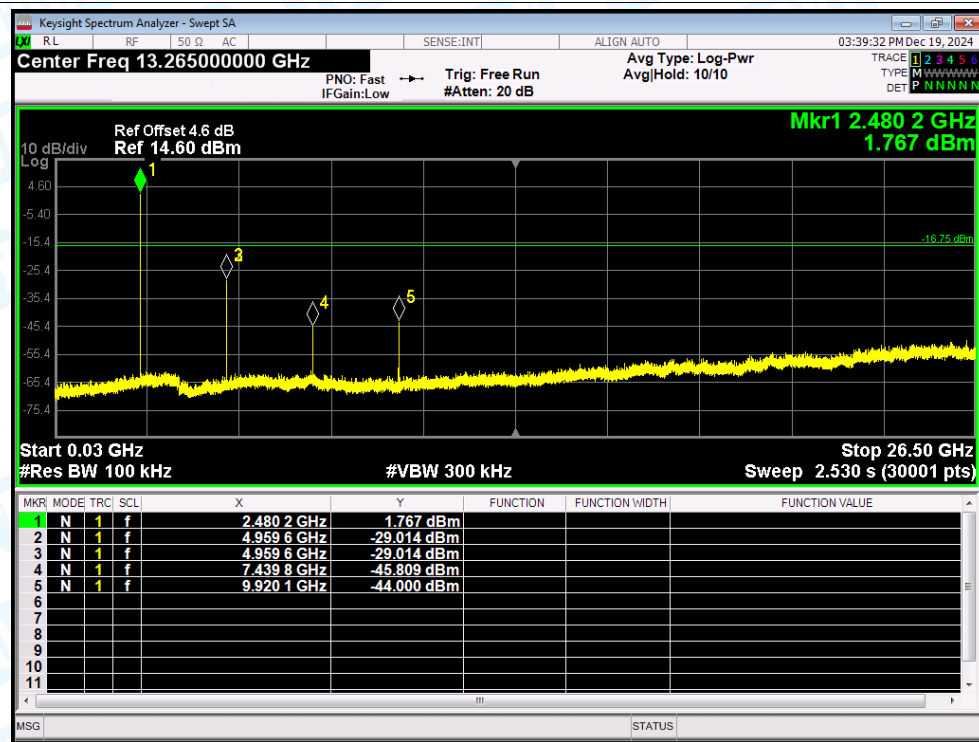
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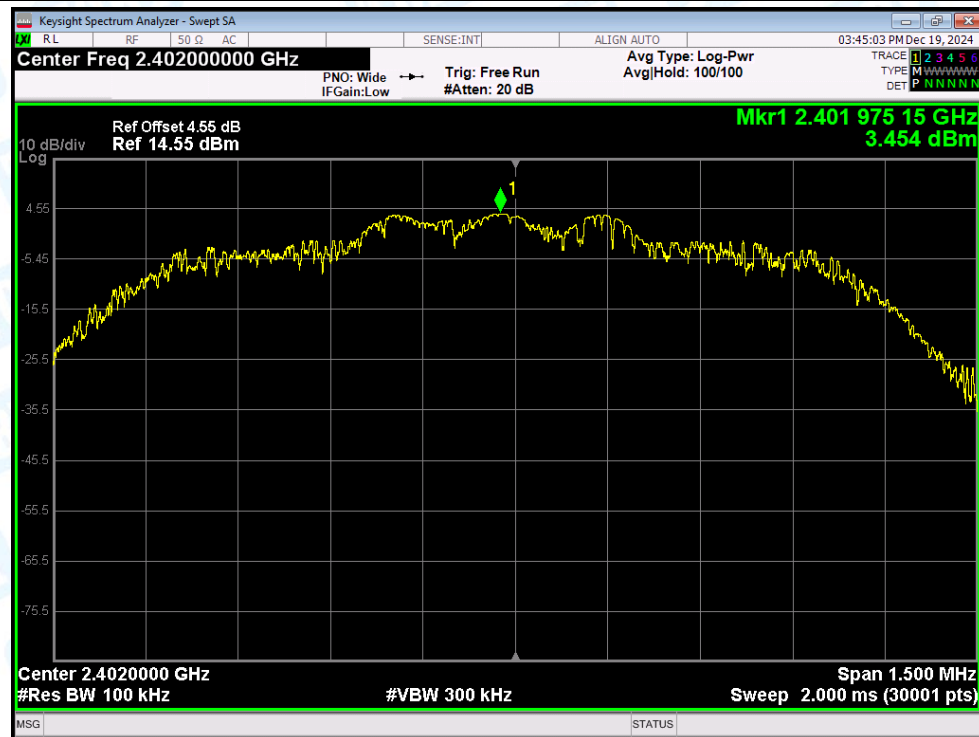
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Ref



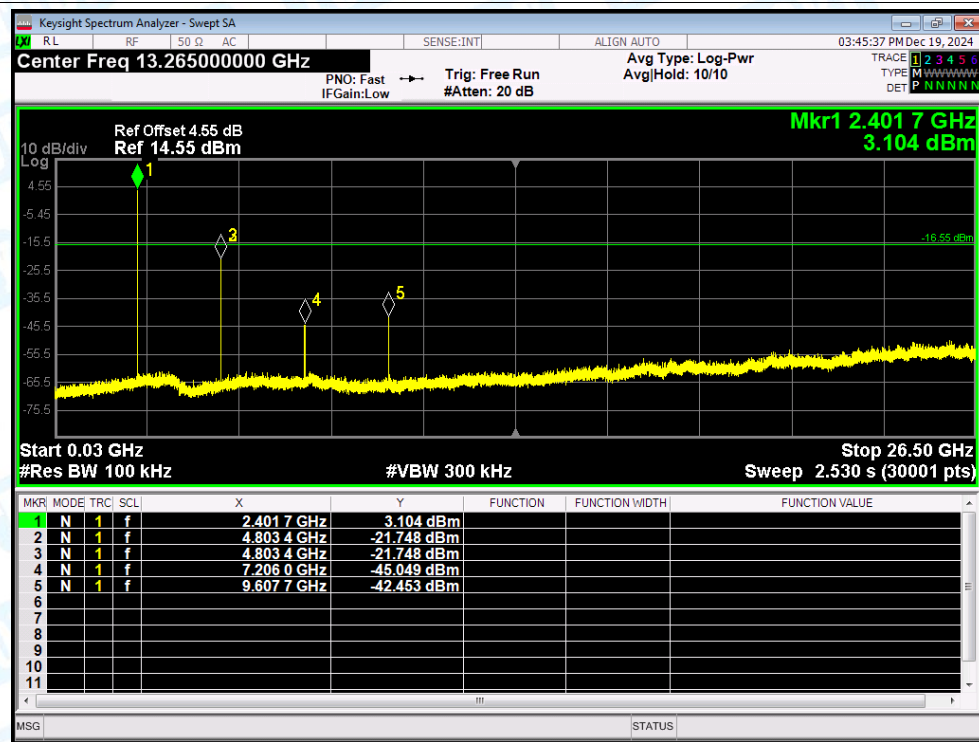
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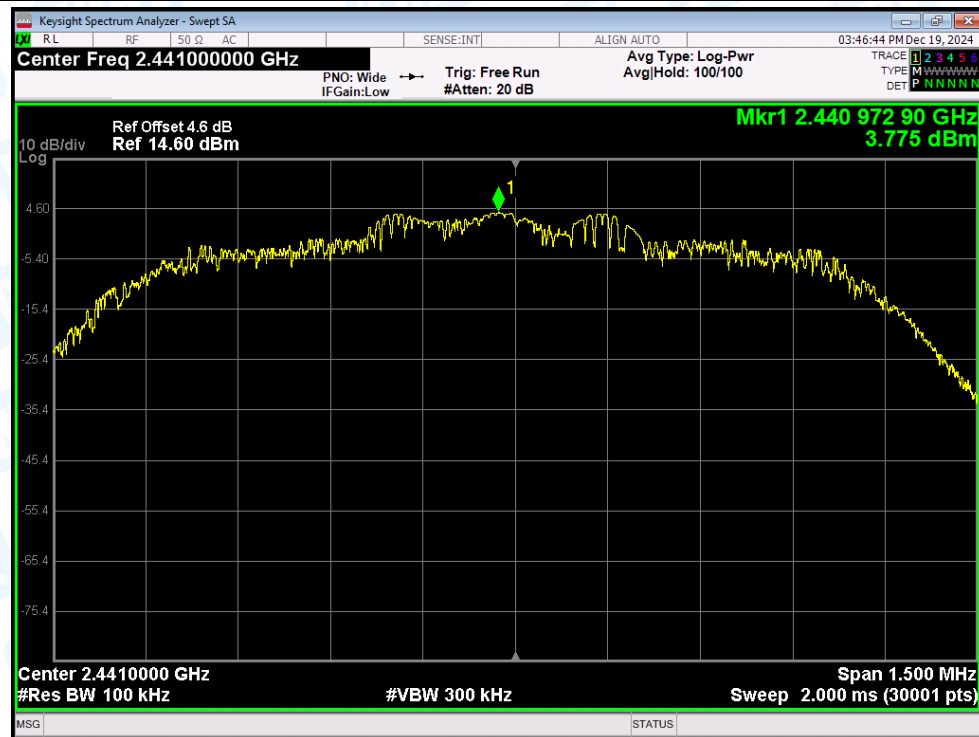
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Ref



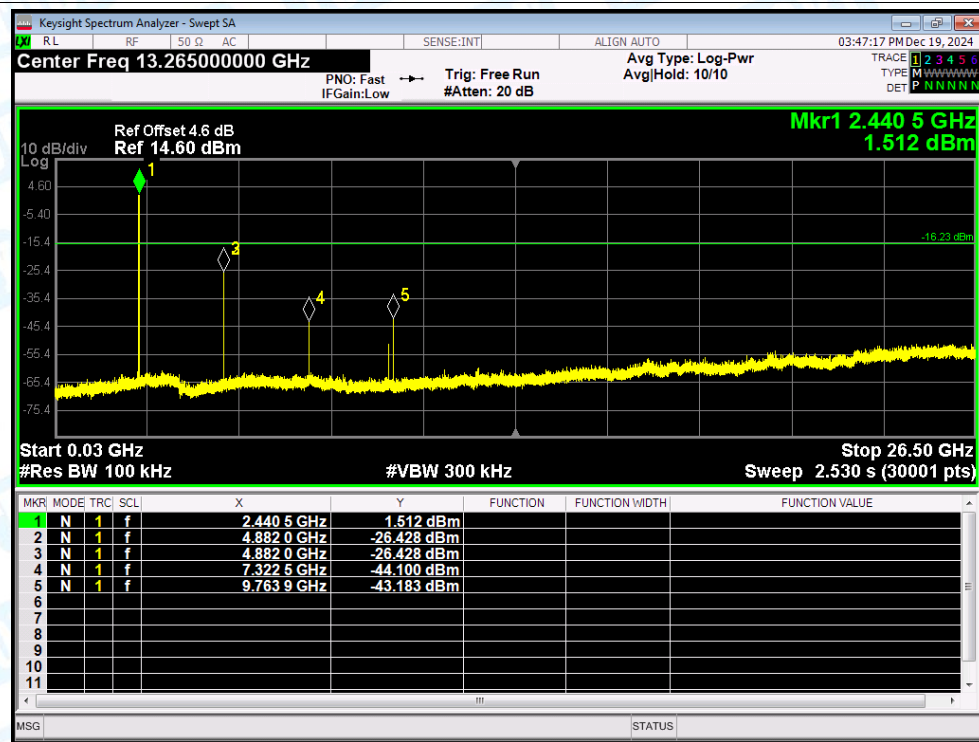
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Emission



Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Ref



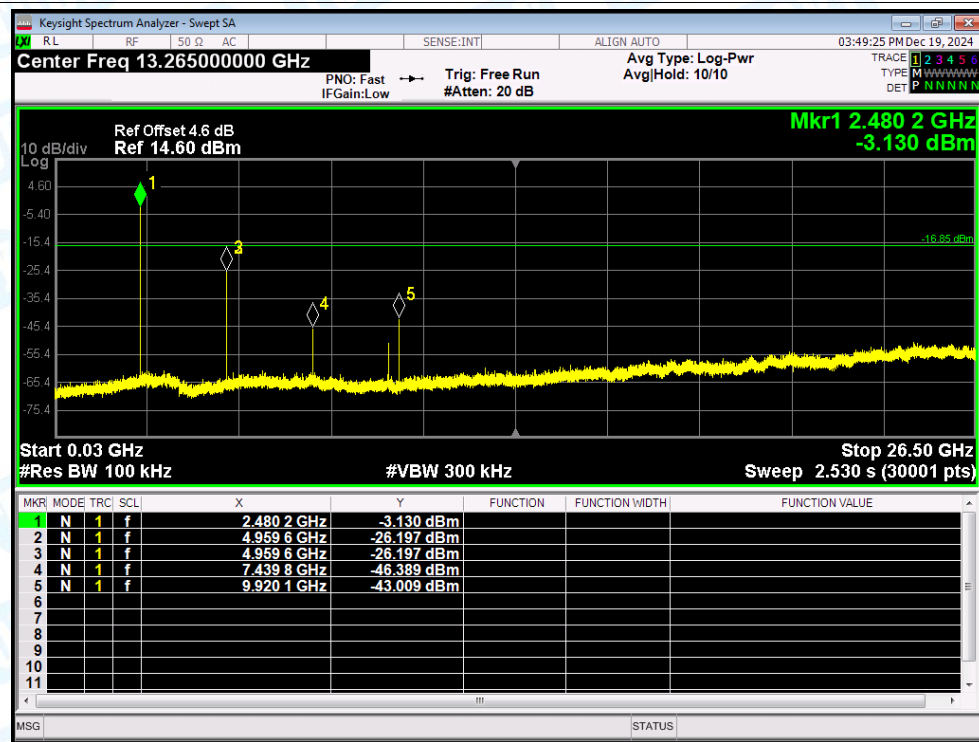
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Emission

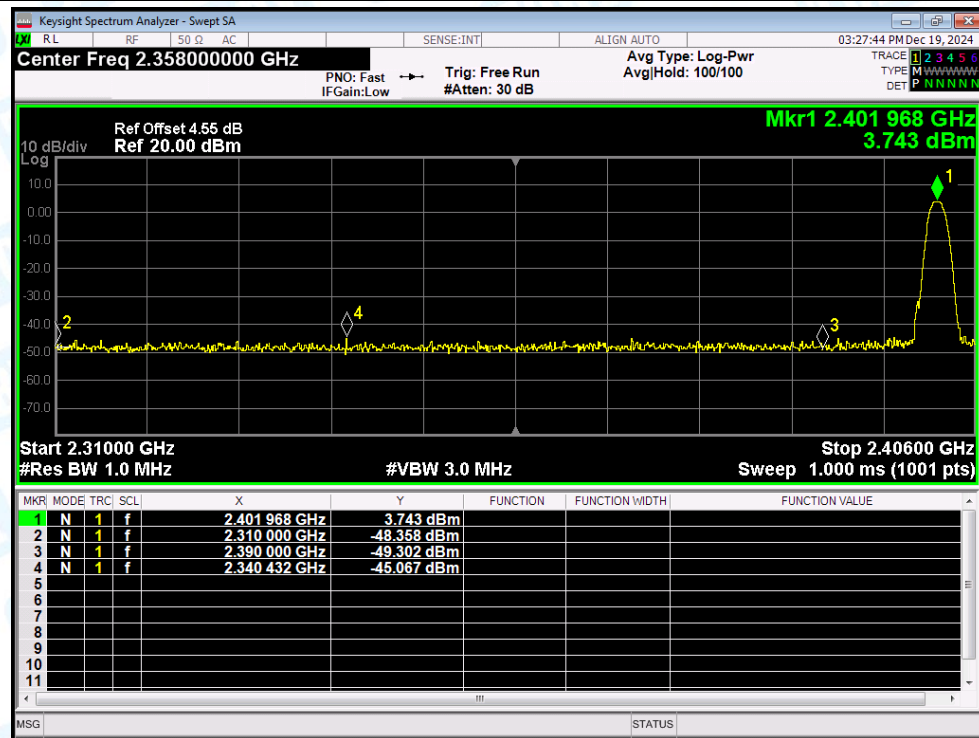


8 Restrict Band

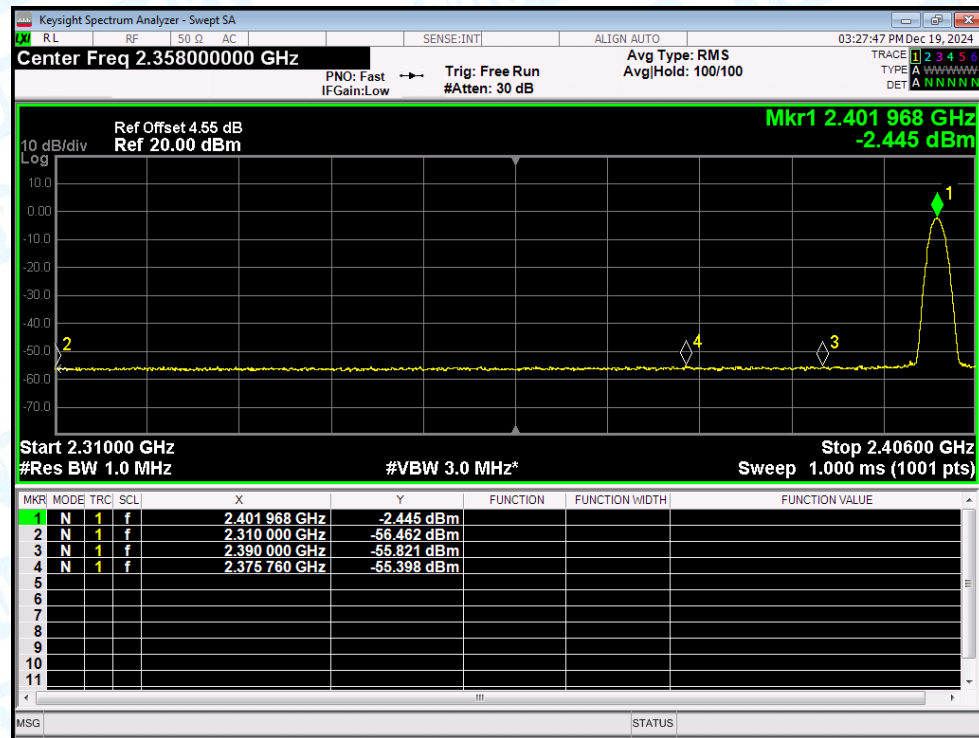
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-48.36	2.5	-	49.4	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-56.46	2.5	4.84	46.14	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2340.432	-45.07	2.5	-	52.69	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2375.76	-55.4	2.5	4.84	47.2	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-49.3	2.5	-	48.46	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-55.82	2.5	4.84	46.78	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-47.52	2.5	-	50.24	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-55	2.5	4.84	47.6	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2486.704	-43.88	2.5	-	53.88	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.56	-54.4	2.5	4.84	48.2	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-47.87	2.5	-	49.89	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-55.36	2.5	4.84	47.24	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-48.8	2.5	-	48.96	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-56.61	2.5	4.74	45.89	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2369.04	-44.89	2.5	-	52.87	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2384.688	-55.39	2.5	4.74	47.11	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-48.06	2.5	-	49.7	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-56.39	2.5	4.74	46.11	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-46.26	2.5	-	51.5	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-55.28	2.5	4.74	47.22	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.608	-40.42	2.5	-	57.34	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.536	-53.97	2.5	4.74	48.53	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-47.79	2.5	-	49.97	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-55.22	2.5	4.74	47.28	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-48.67	2.5	-	49.09	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-56.66	2.5	4.74	45.84	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2312.208	-45.63	2.5	-	52.13	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2347.632	-55.3	2.5	4.74	47.2	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-46.87	2.5	-	50.89	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-56.22	2.5	4.74	46.28	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-45.73	2.5	-	52.03	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-54.72	2.5	4.74	47.78	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.584	-26.81	2.5	-	70.95	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2484.04	-50.26	2.5	4.74	52.24	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-45.68	2.5	-	52.08	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-55.37	2.5	4.74	47.13	Average	54	Pass

Test Graphs

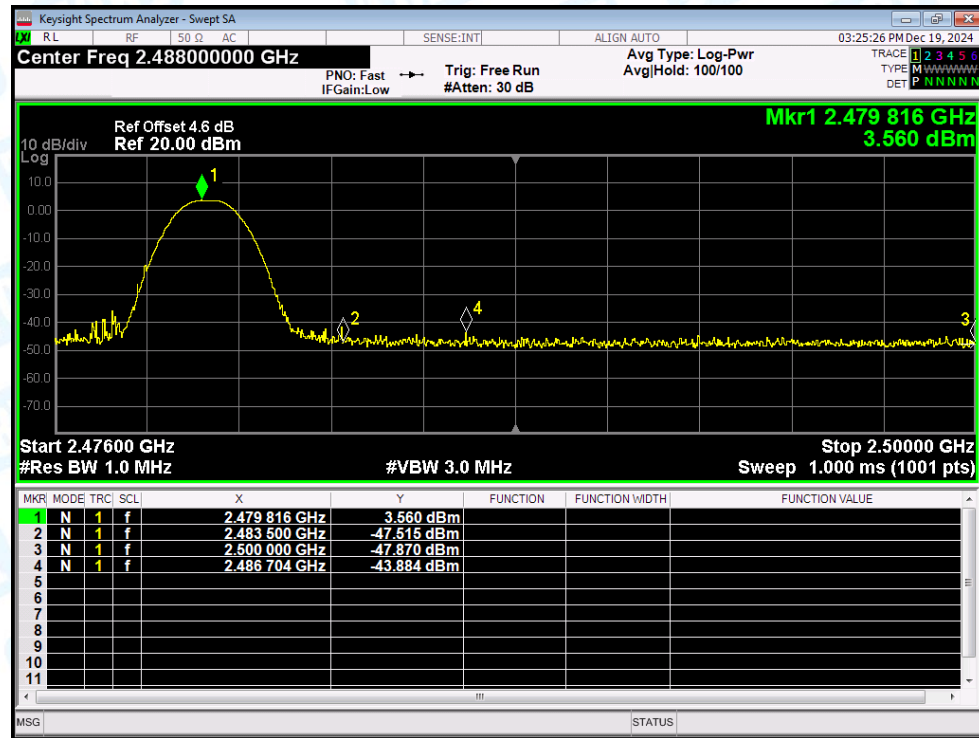
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Peak



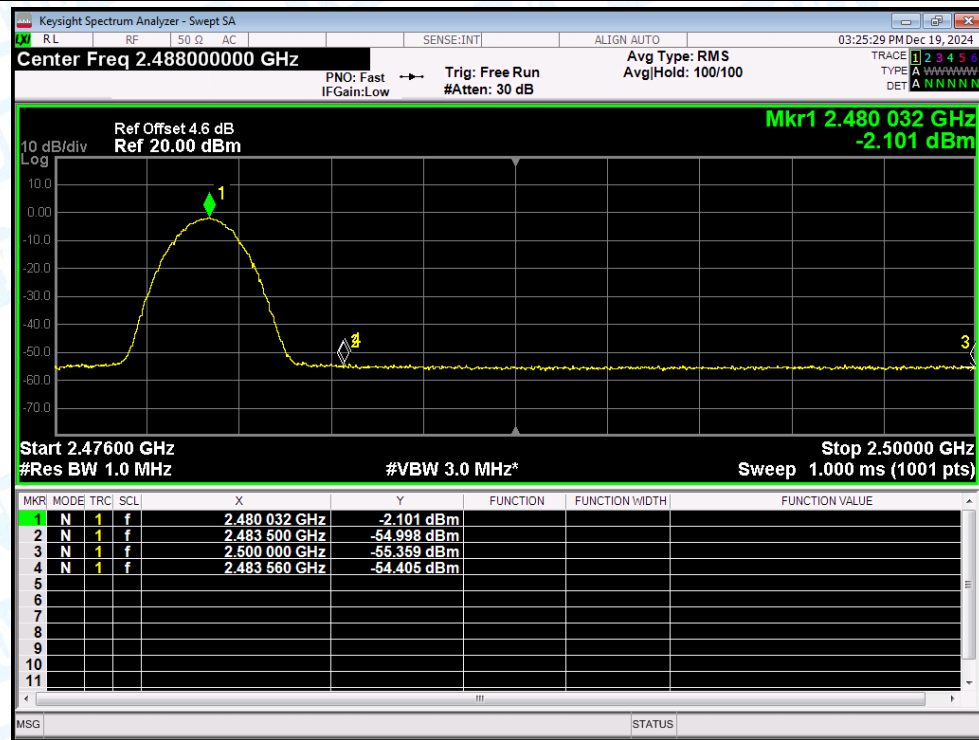
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Average



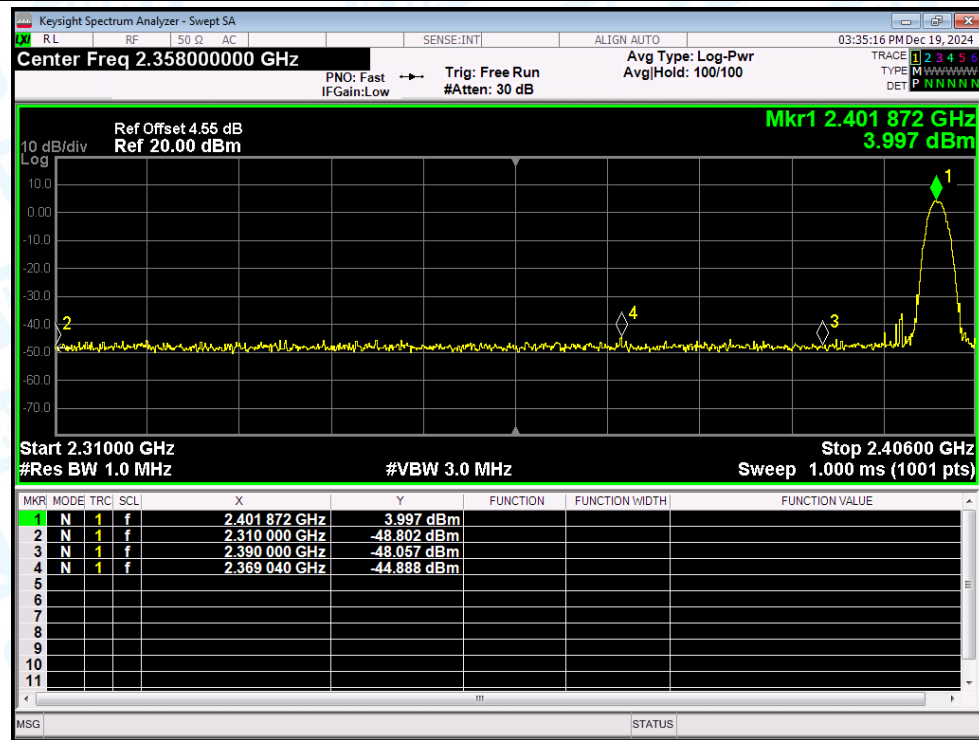
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Peak



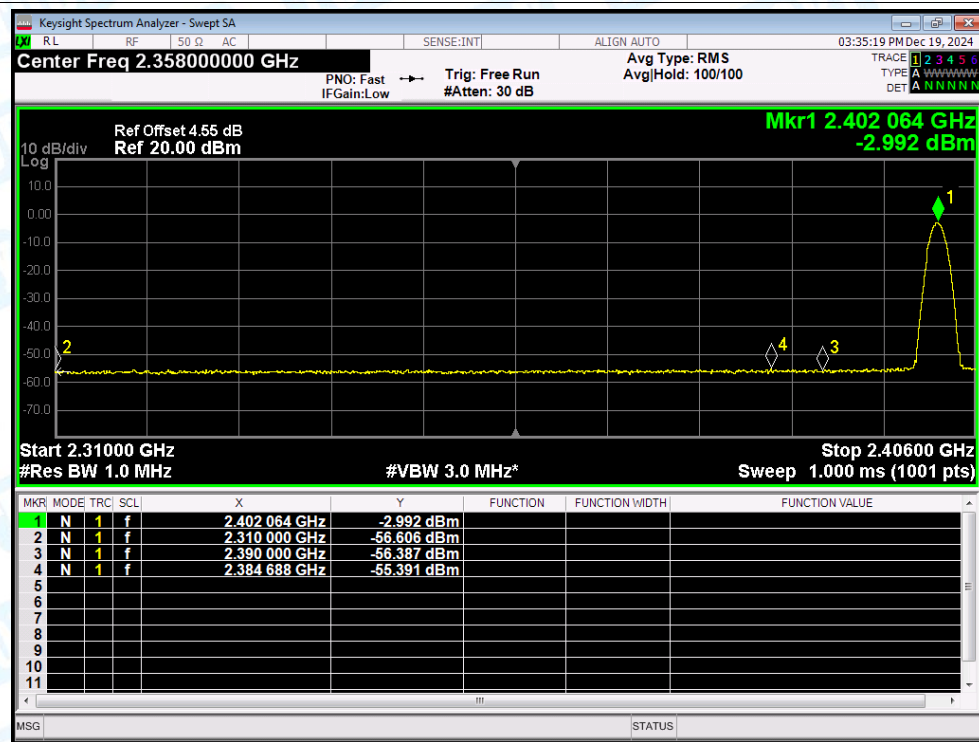
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Average



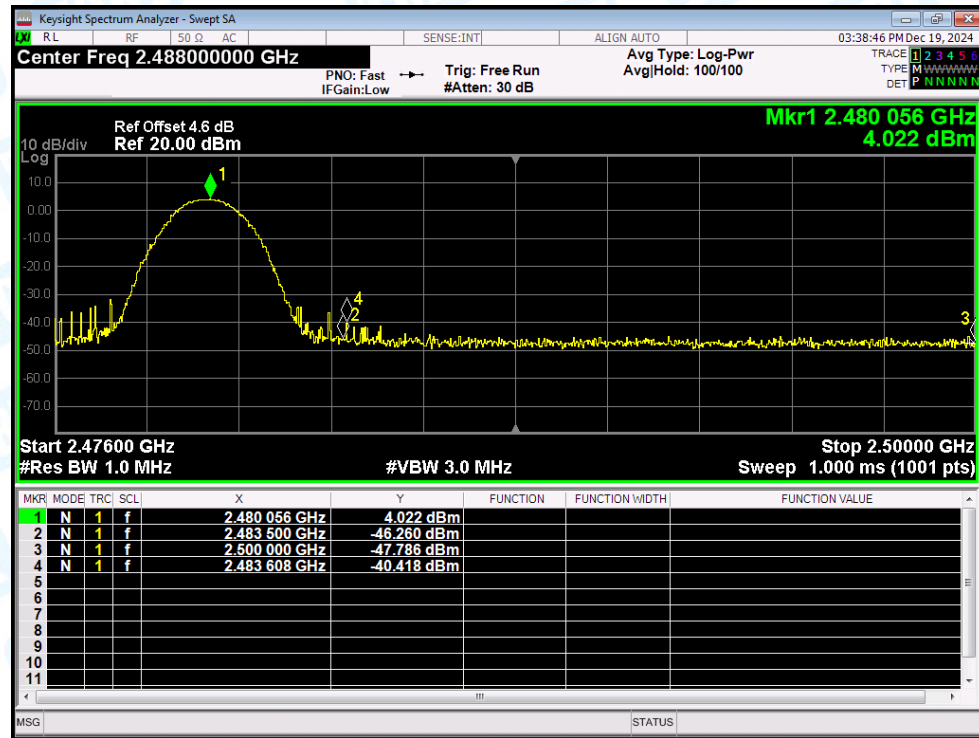
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Peak



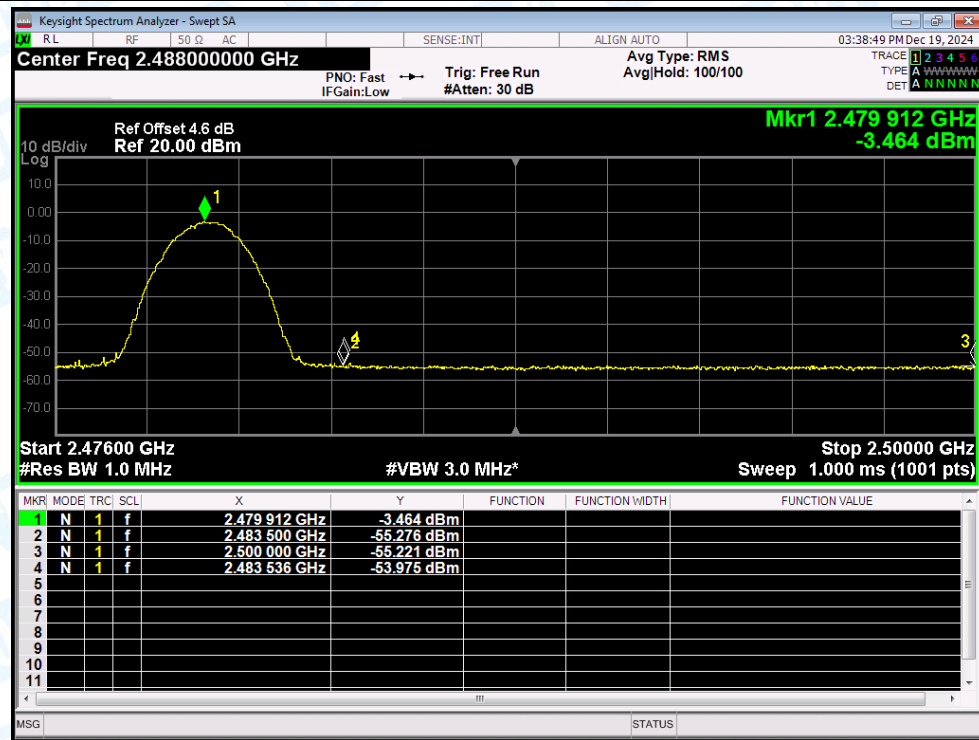
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Average



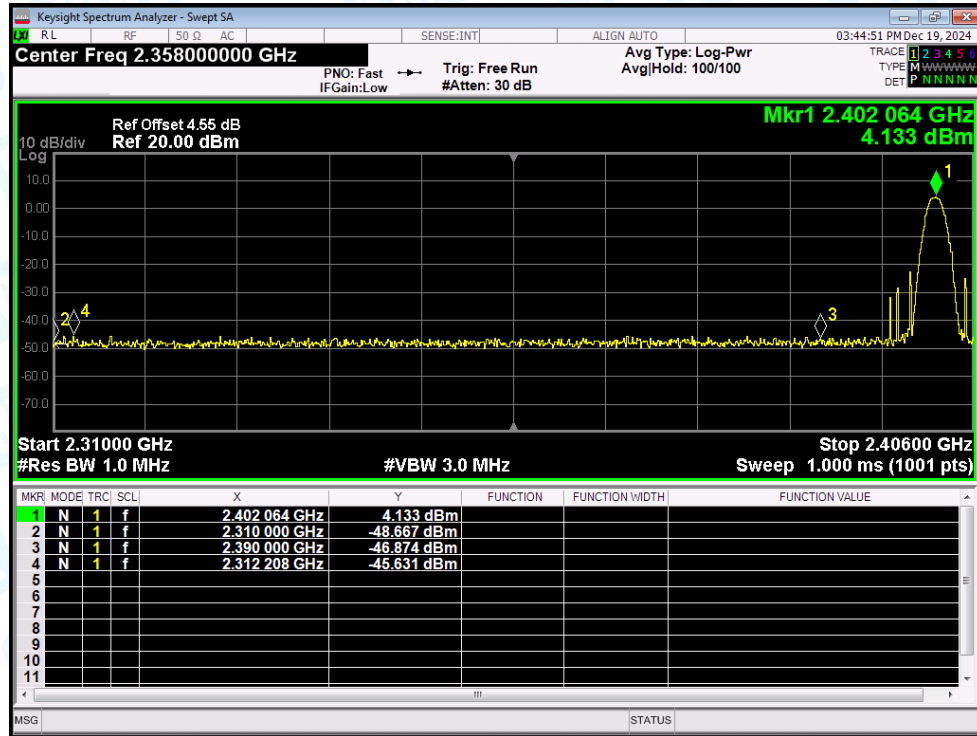
Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Peak



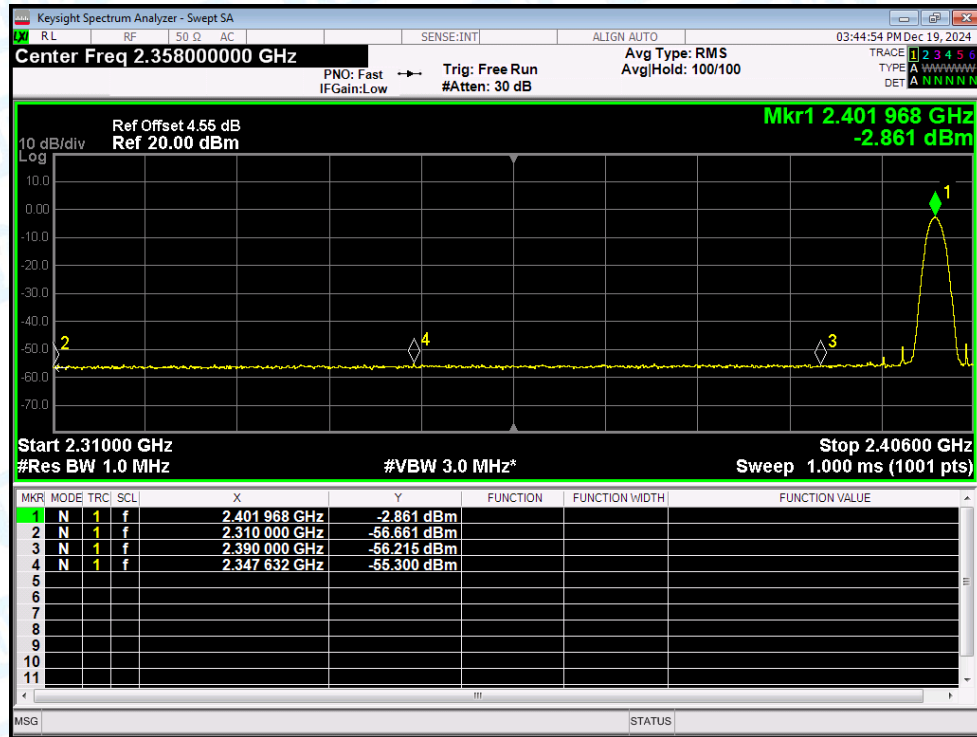
Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Average



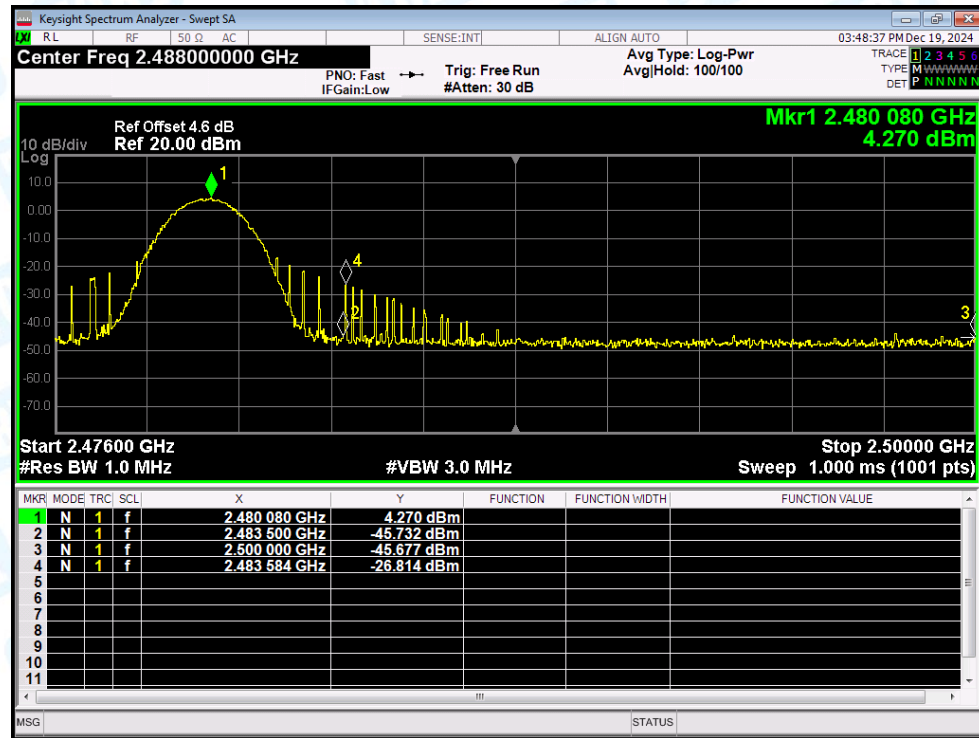
Restrict Band NVNT 3-DH1 2402MHz Ant1 No-Hopping Peak



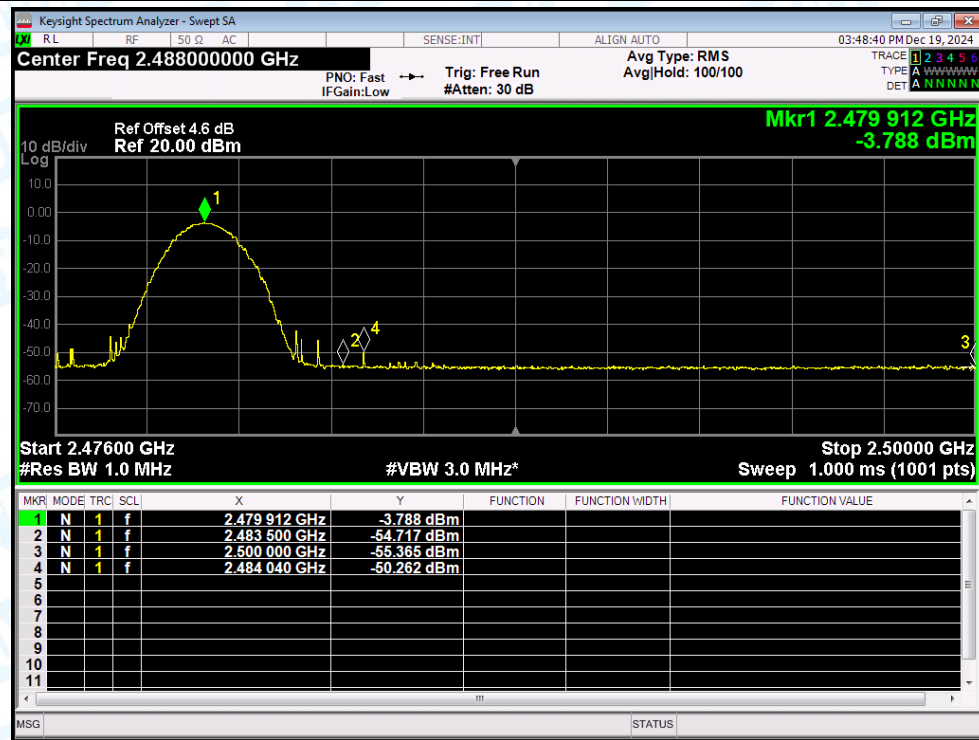
Restrict Band NVNT 3-DH1 2402MHz Ant1 No-Hopping Average



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



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

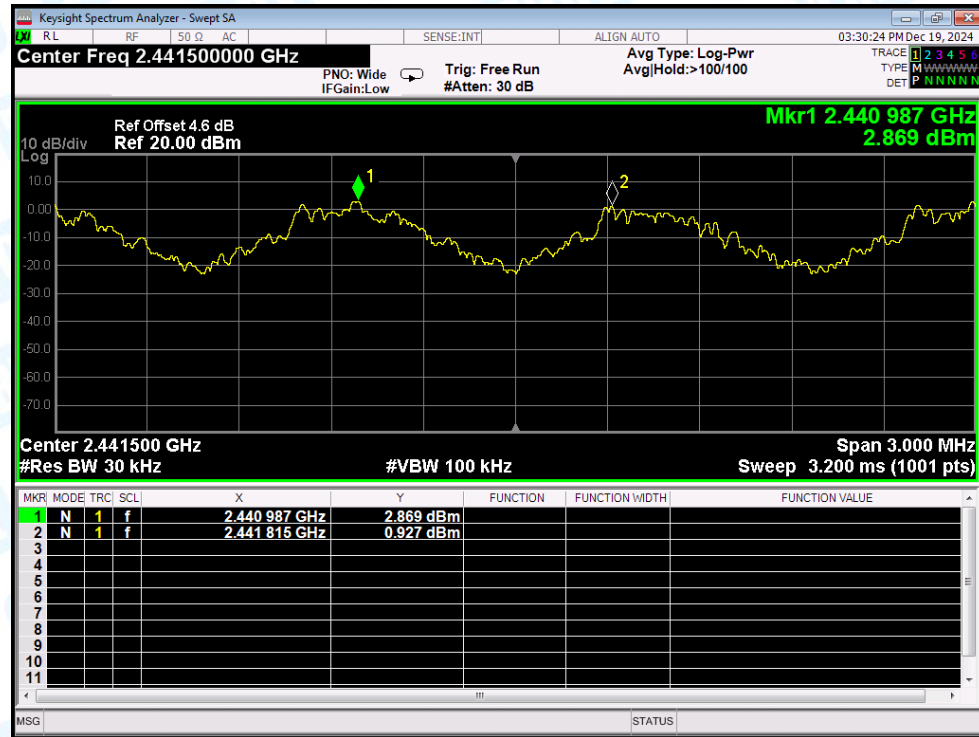


9 Carrier Frequencies Separation

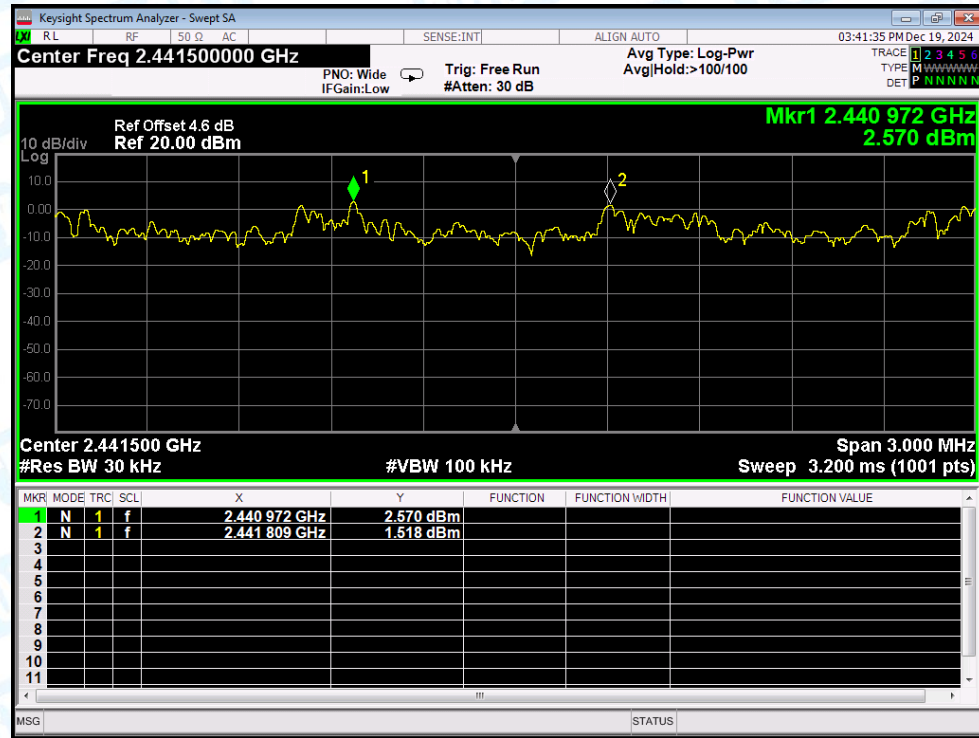
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	Ant1	2440.987	2441.815	0.828	0.573	Pass
NVNT	2-DH1	Ant1	2440.972	2441.809	0.837	0.793	Pass
NVNT	3-DH1	Ant1	2440.804	2441.98	1.176	0.8	Pass

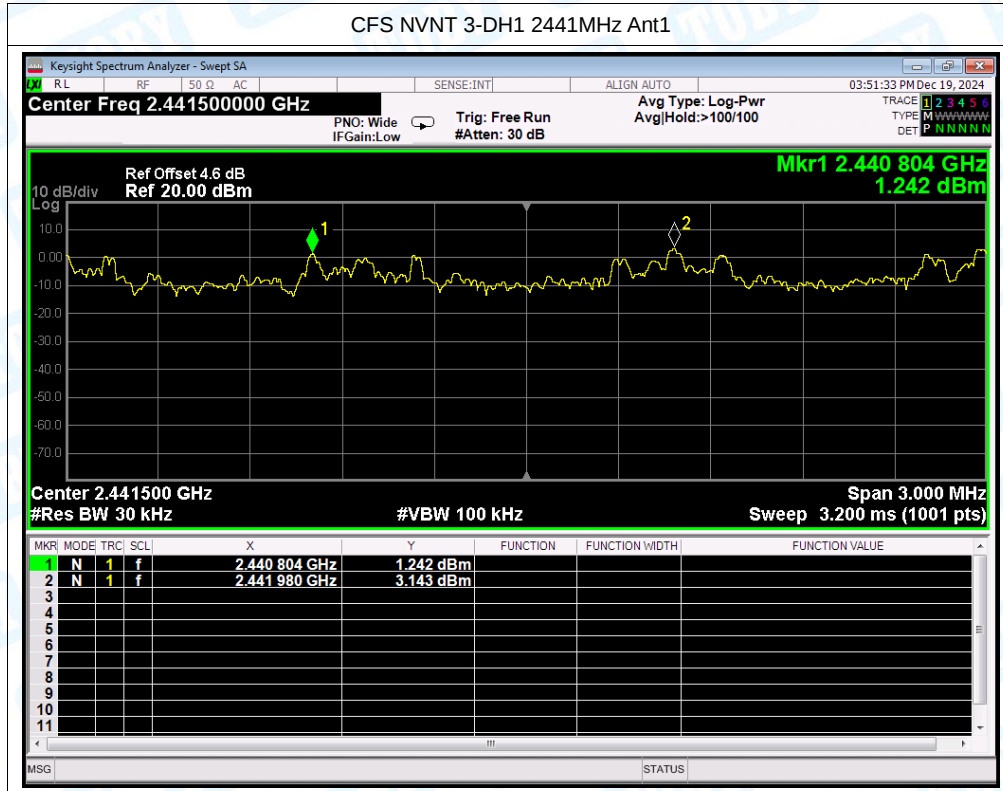
Test Graphs

CFS NVNT 1-DH1 2441MHz Ant1



CFS NVNT 2-DH1 2441MHz Ant1



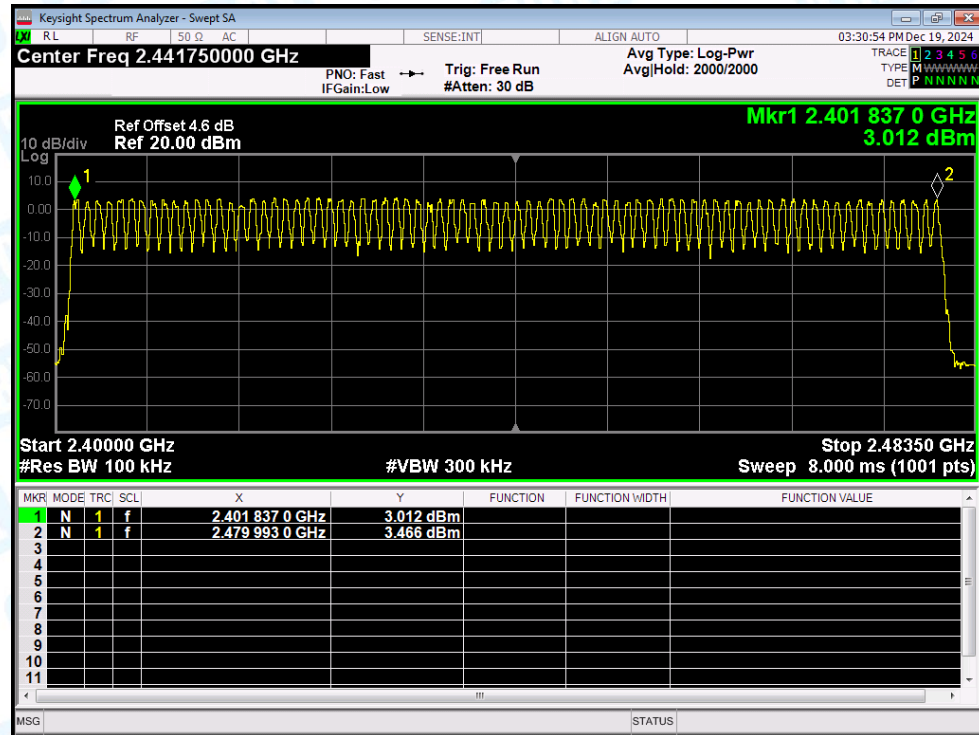


10 Number of Hopping Channel

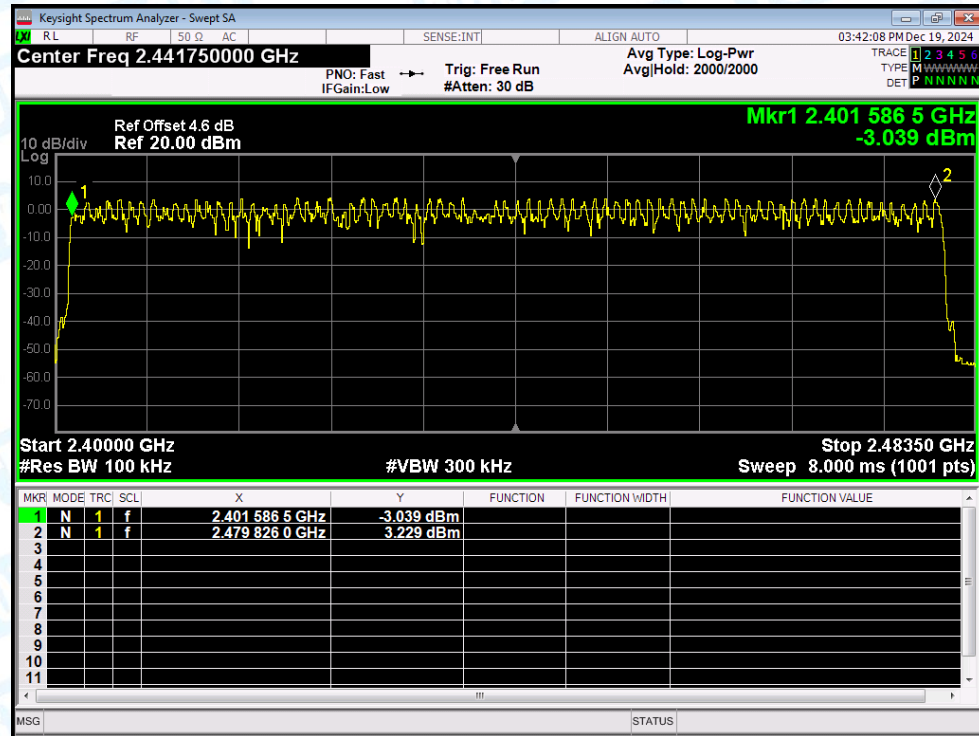
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH1	Ant1	79	15	Pass
NVNT	2-DH1	Ant1	79	15	Pass
NVNT	3-DH1	Ant1	79	15	Pass

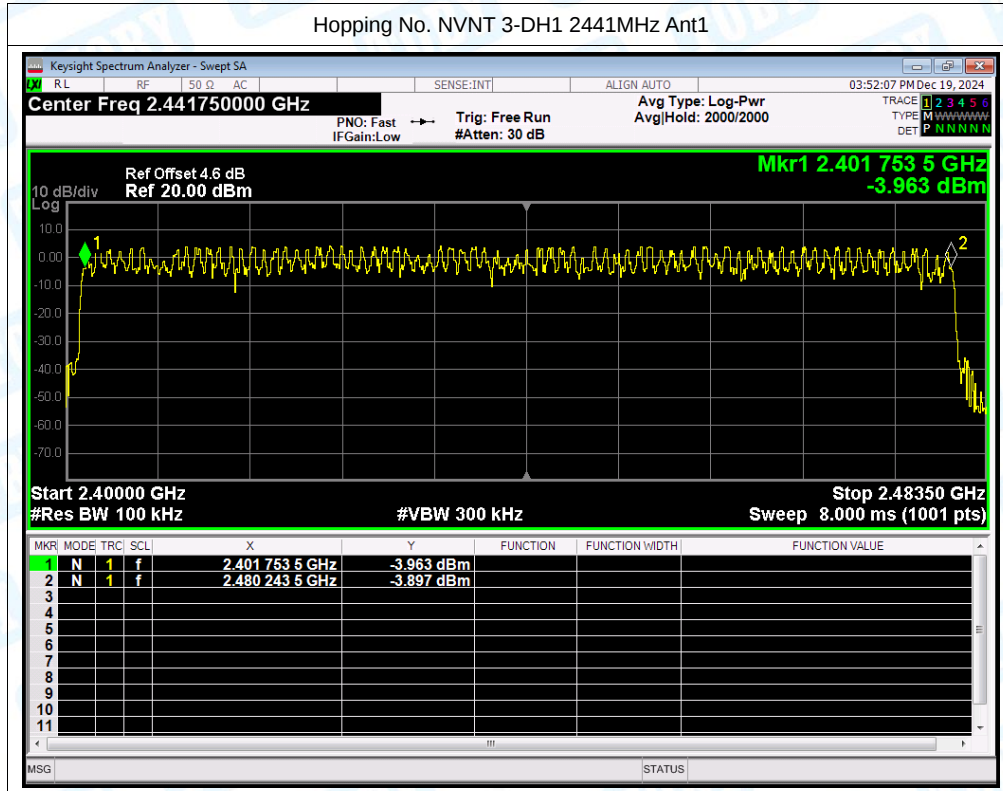
Test Graphs

Hopping No. NVNT 1-DH1 2441MHz Ant1



Hopping No. NVNT 2-DH1 2441MHz Ant1



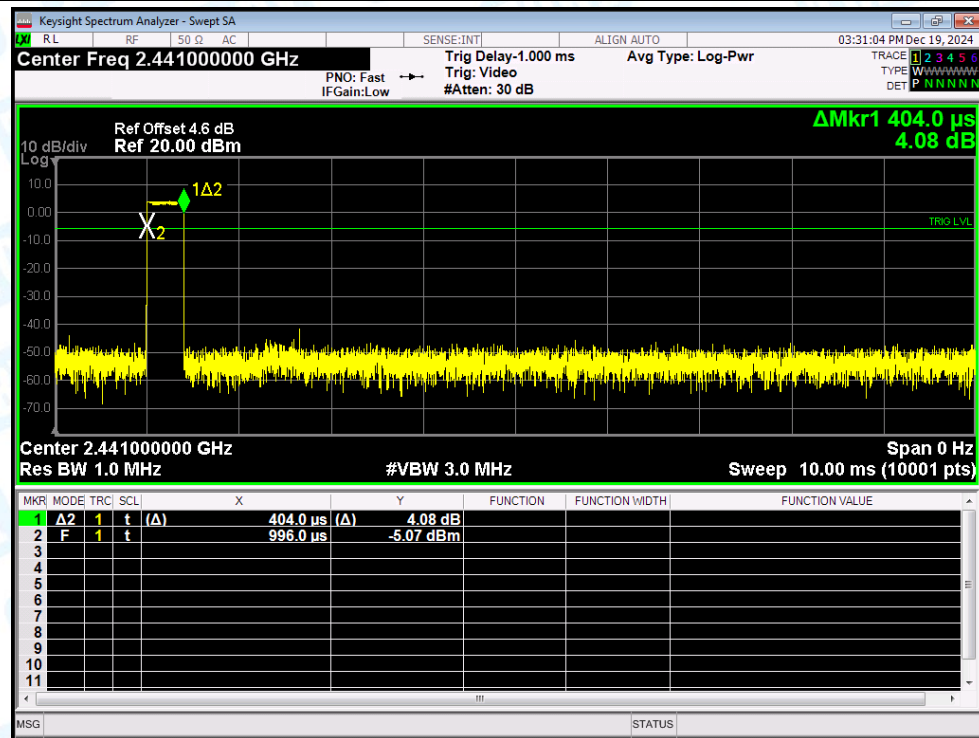


11 Dwell Time

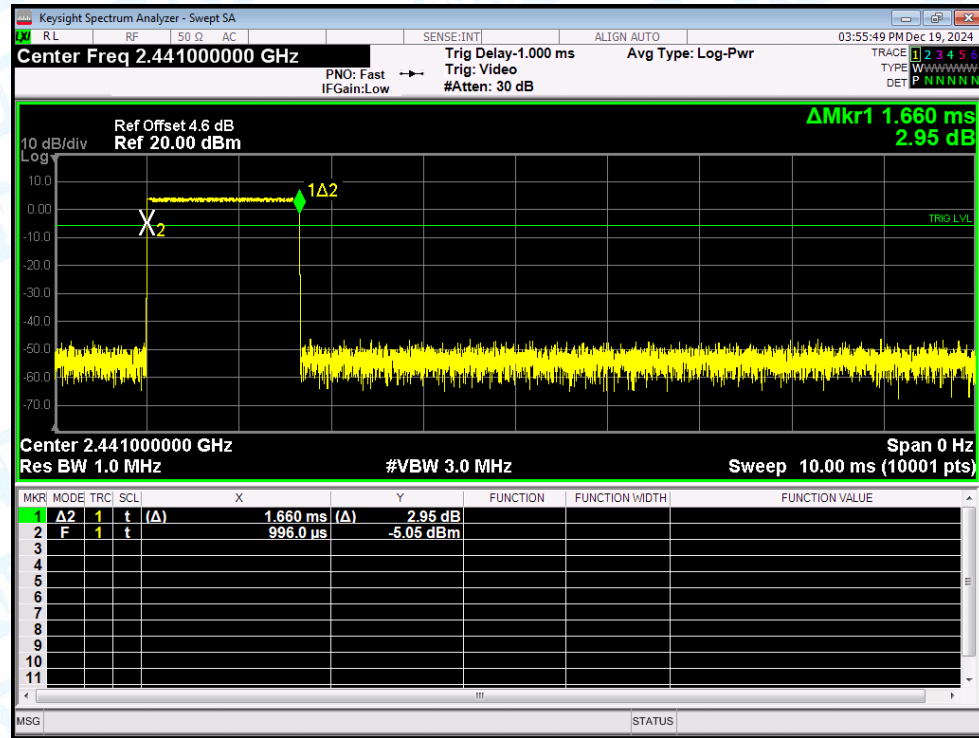
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	Ant1	0.404	129.28	31600	400	Pass
NVNT	1-DH3	2441	Ant1	1.66	265.6	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.908	310.187	31600	400	Pass
NVNT	2-DH1	2441	Ant1	0.413	132.16	31600	400	Pass
NVNT	2-DH3	2441	Ant1	1.665	266.4	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.914	310.827	31600	400	Pass
NVNT	3-DH1	2441	Ant1	0.416	133.12	31600	400	Pass
NVNT	3-DH3	2441	Ant1	1.665	266.4	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.916	311.04	31600	400	Pass

Test Graphs

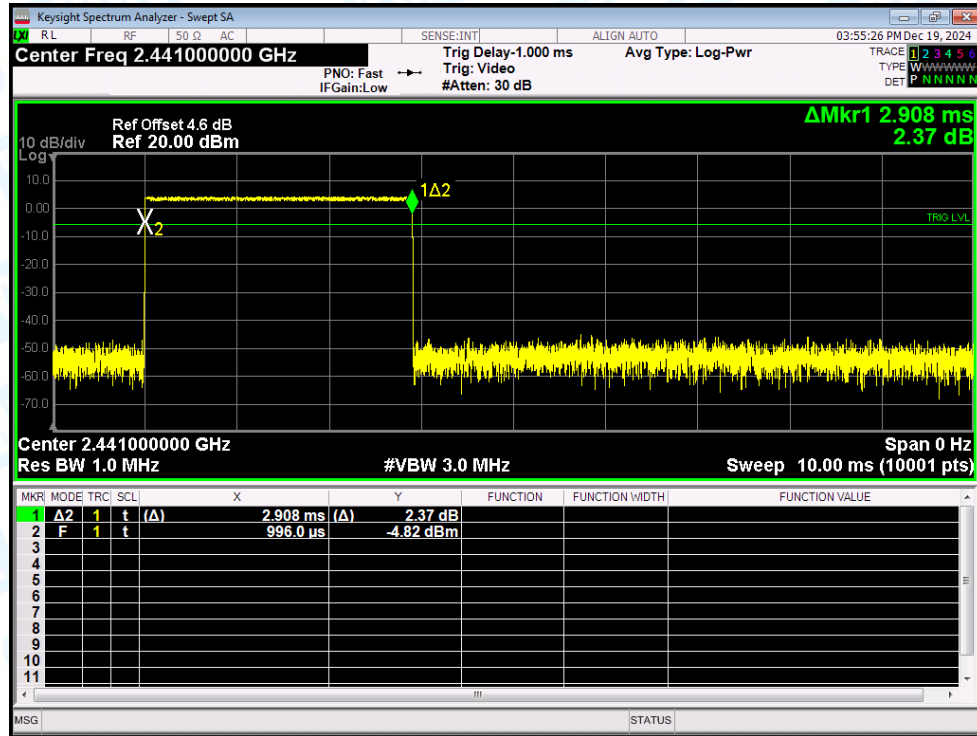
Dwell NVNT 1-DH1 2441MHz Ant1



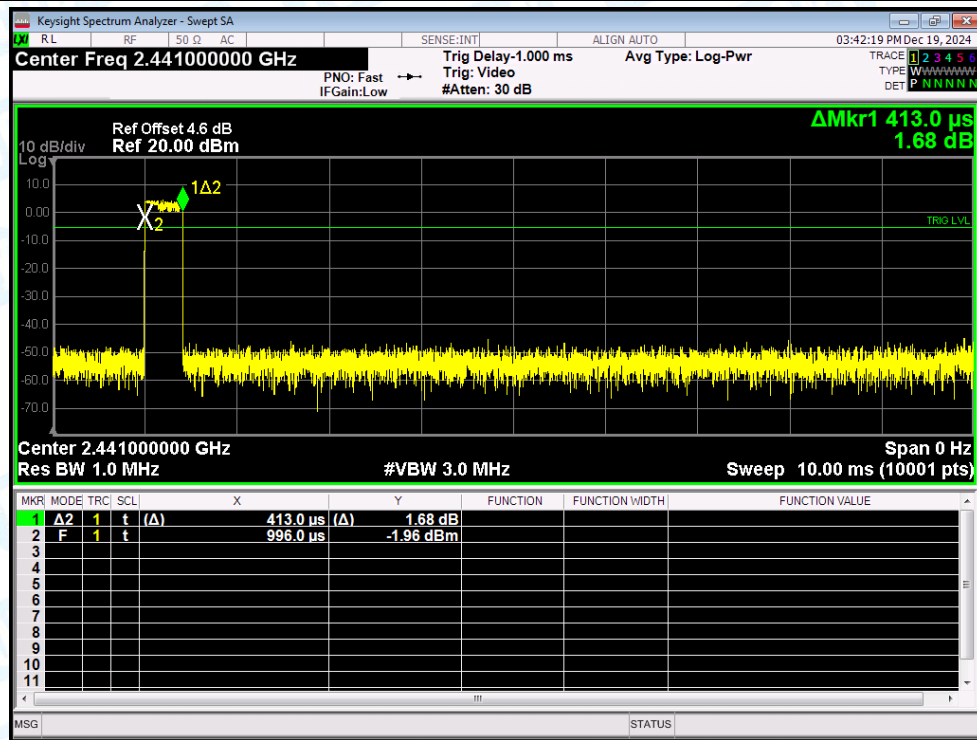
Dwell NVNT 1-DH3 2441MHz Ant1



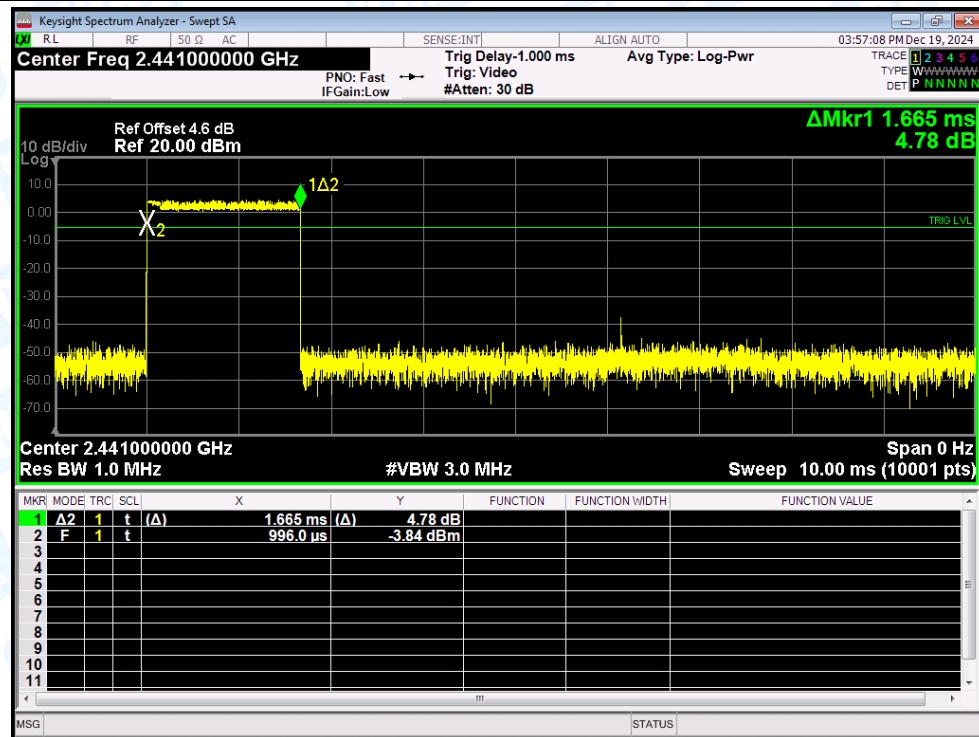
Dwell NVNT 1-DH5 2441MHz Ant1



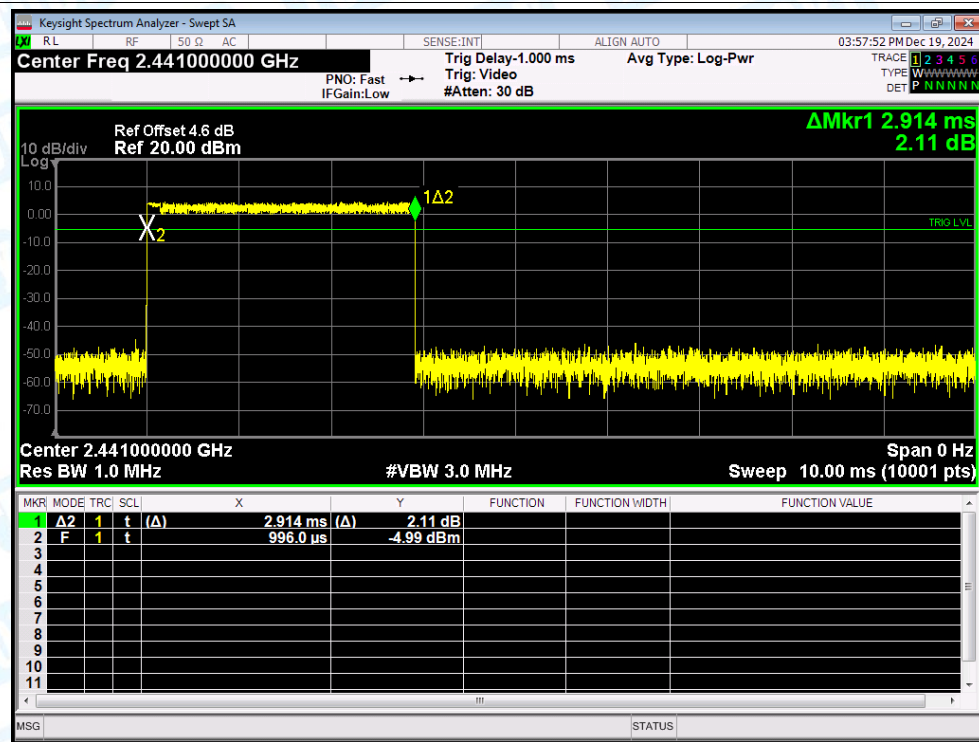
Dwell NVNT 2-DH1 2441MHz Ant1



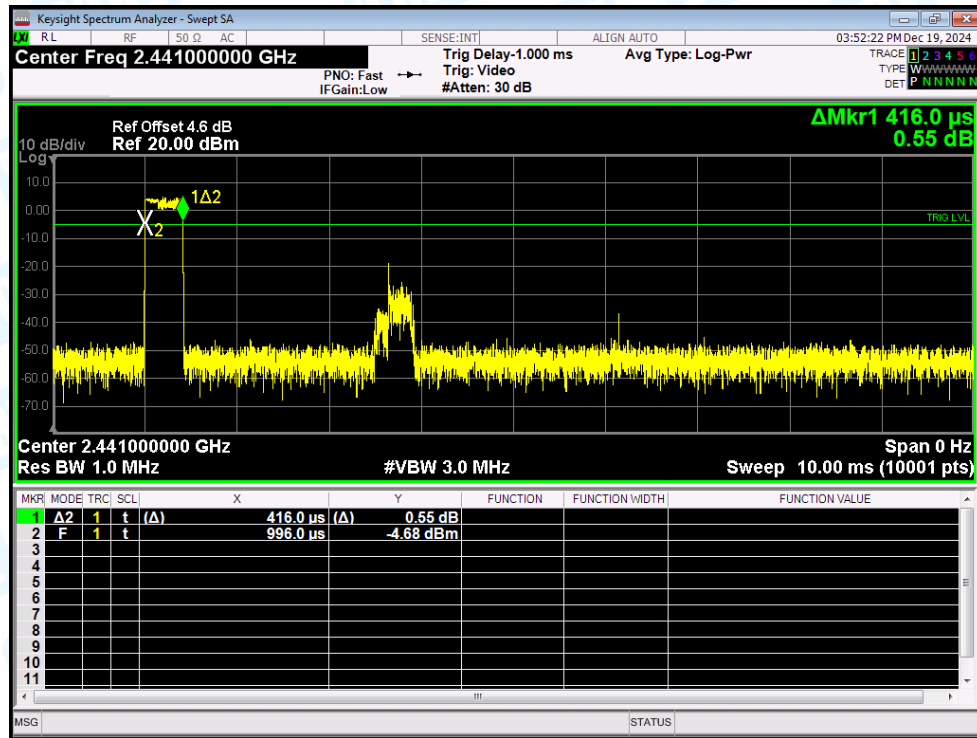
Dwell NVNT 2-DH3 2441MHz Ant1



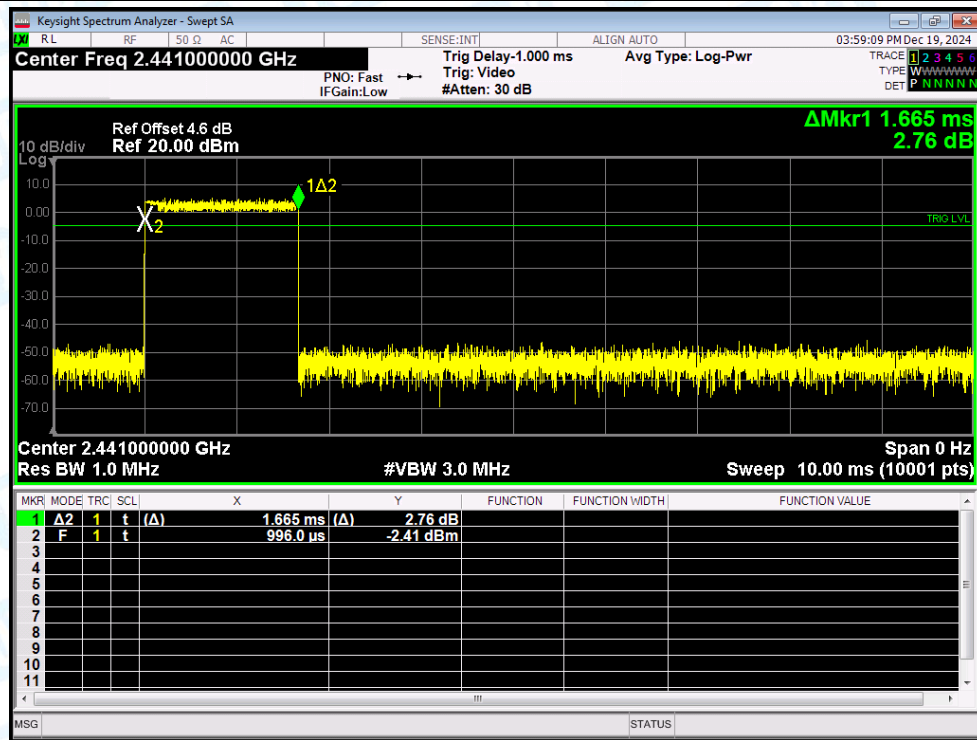
Dwell NVNT 2-DH5 2441MHz Ant1

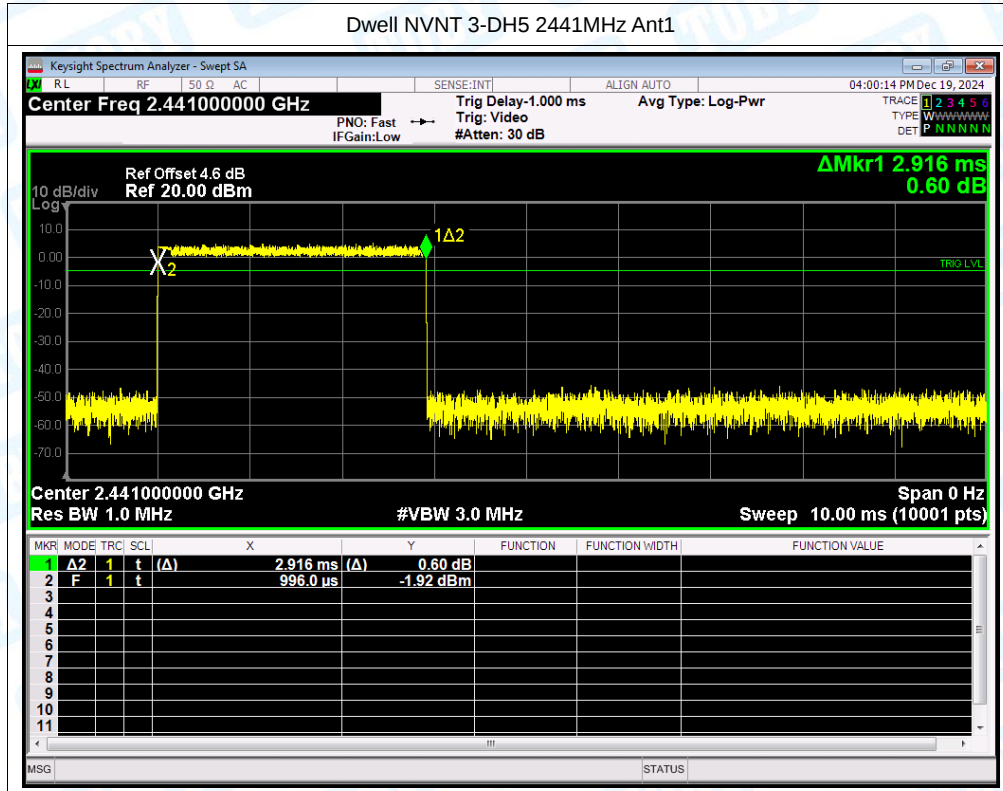


Dwell NVNT 3-DH1 2441MHz Ant1



Dwell NVNT 3-DH3 2441MHz Ant1





--- END OF REPORT ---