

RF Test Data for Bluetooth (Conducted Measurements)

General Description of EUT	
Product Name:	Smart Watch
Test Model:	KC89
Sample ID:	HC-C-202409-0231-02-01
Environmental Conditions	
Temperature:	24.2℃
Relative Humidity:	52.1%
Test Voltage:	DC 3.8V
Test Engineer:	Rick Chen
Note: For a more detailed features description, please refer to the report TBR-C-202409-0231-81 The report only show the worst case data.	

Contents

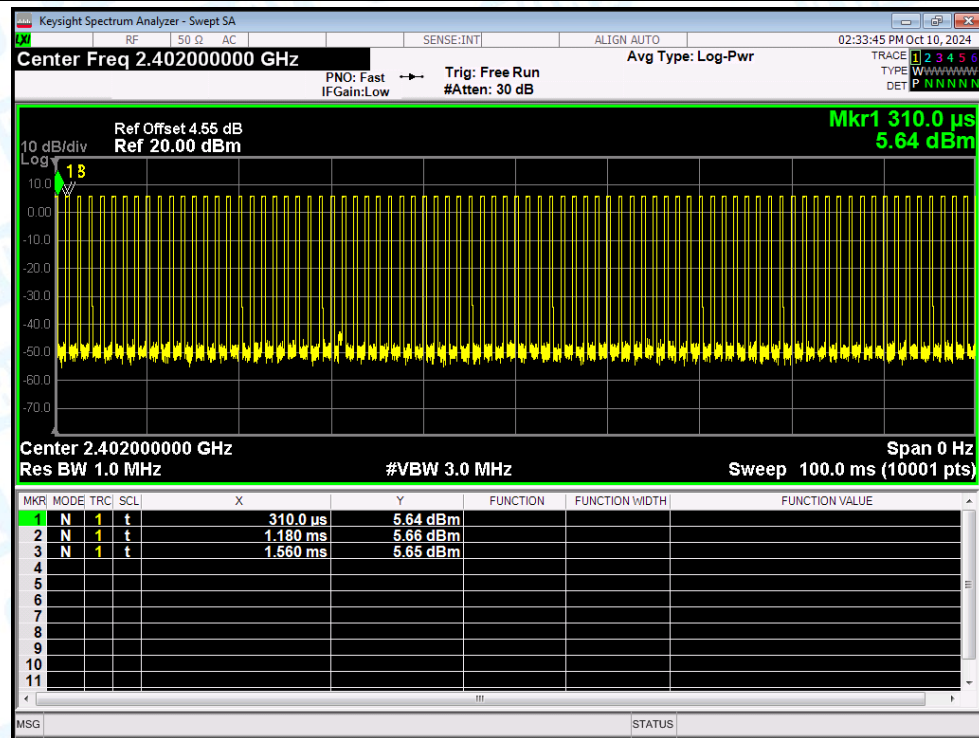
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1. Duty Cycle

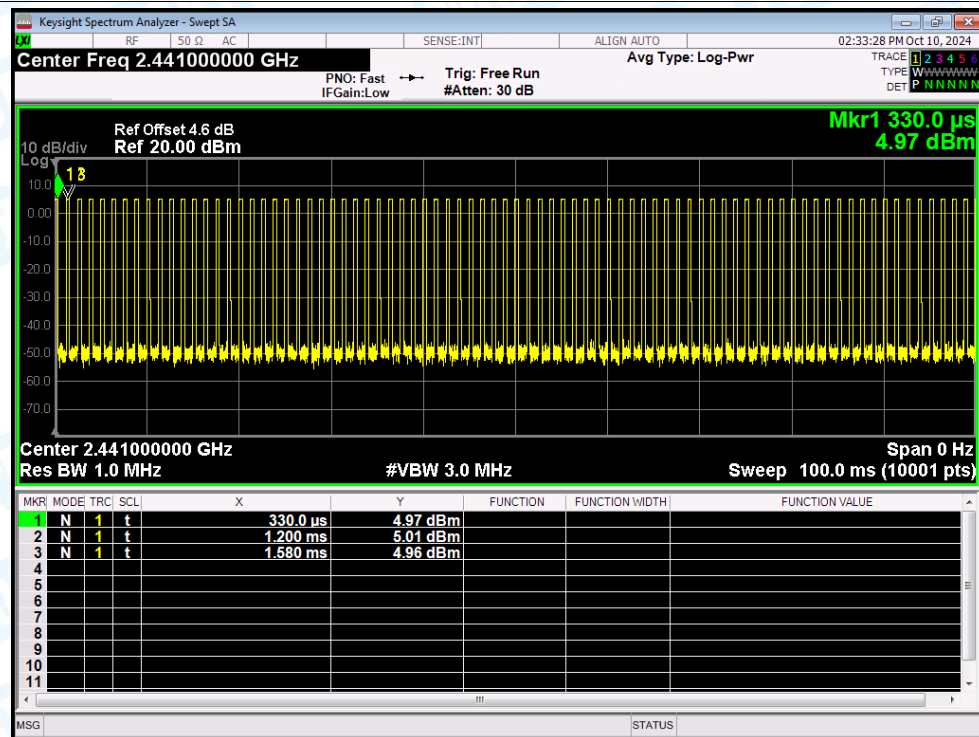
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH1	2402	Ant1	30.4	5.17	2.63
NVNT	1-DH1	2441	Ant1	30.4	5.17	2.63
NVNT	1-DH1	2480	Ant1	31.2	5.06	2.56
NVNT	2-DH1	2402	Ant1	32	4.95	2.5
NVNT	2-DH1	2441	Ant1	31.2	5.06	2.56
NVNT	2-DH1	2480	Ant1	31.2	5.06	2.56
NVNT	3-DH1	2402	Ant1	32	4.95	2.5
NVNT	3-DH1	2441	Ant1	32	4.95	2.5
NVNT	3-DH1	2480	Ant1	31.2	5.06	2.56

Test Graphs

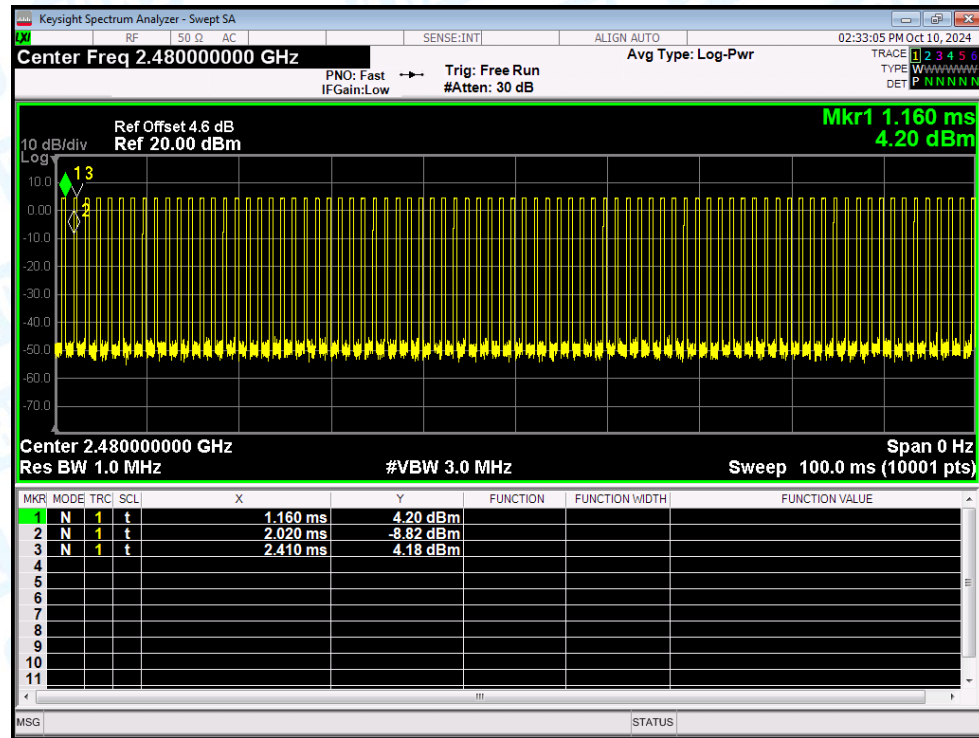
Duty Cycle NVNT 1-DH1 2402MHz Ant1



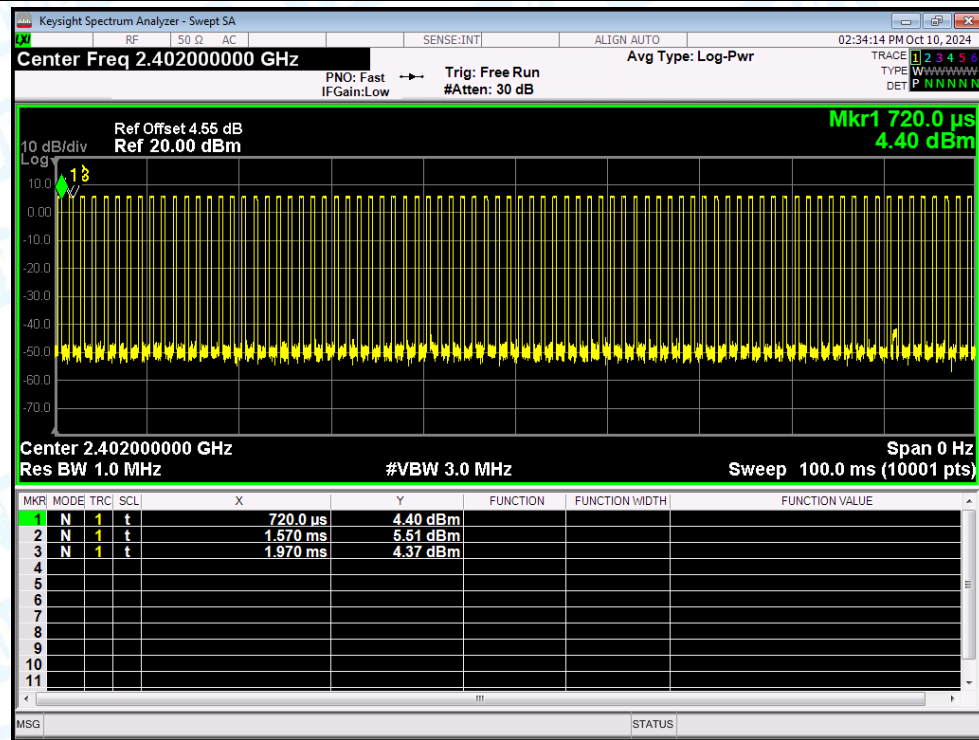
Duty Cycle NVNT 1-DH1 2441MHz Ant1



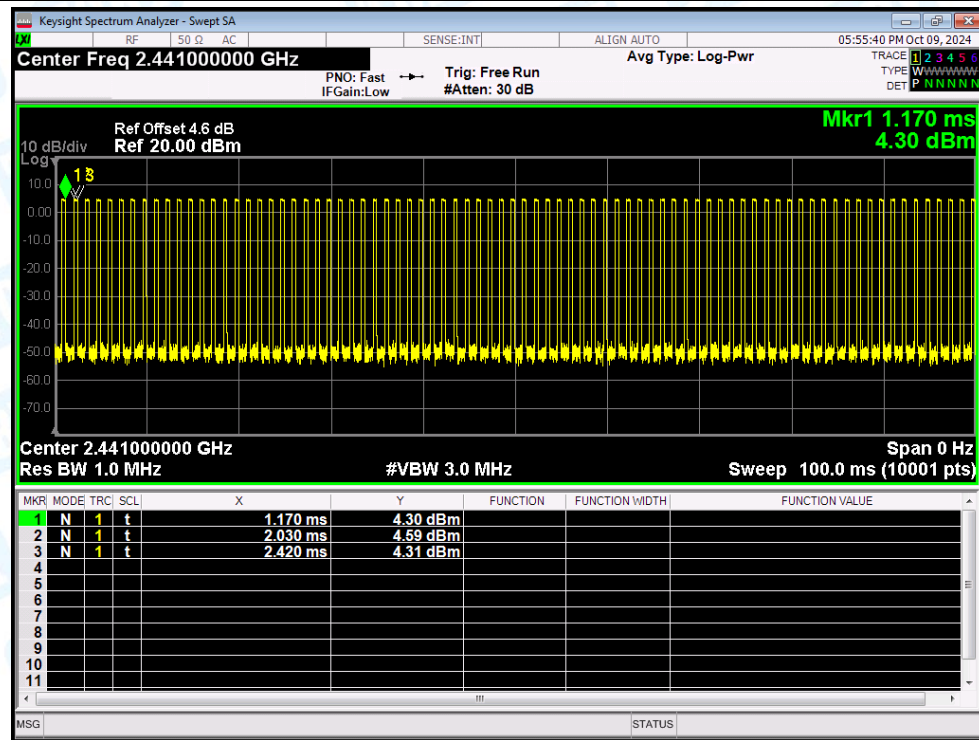
Duty Cycle NVNT 1-DH1 2480MHz Ant1



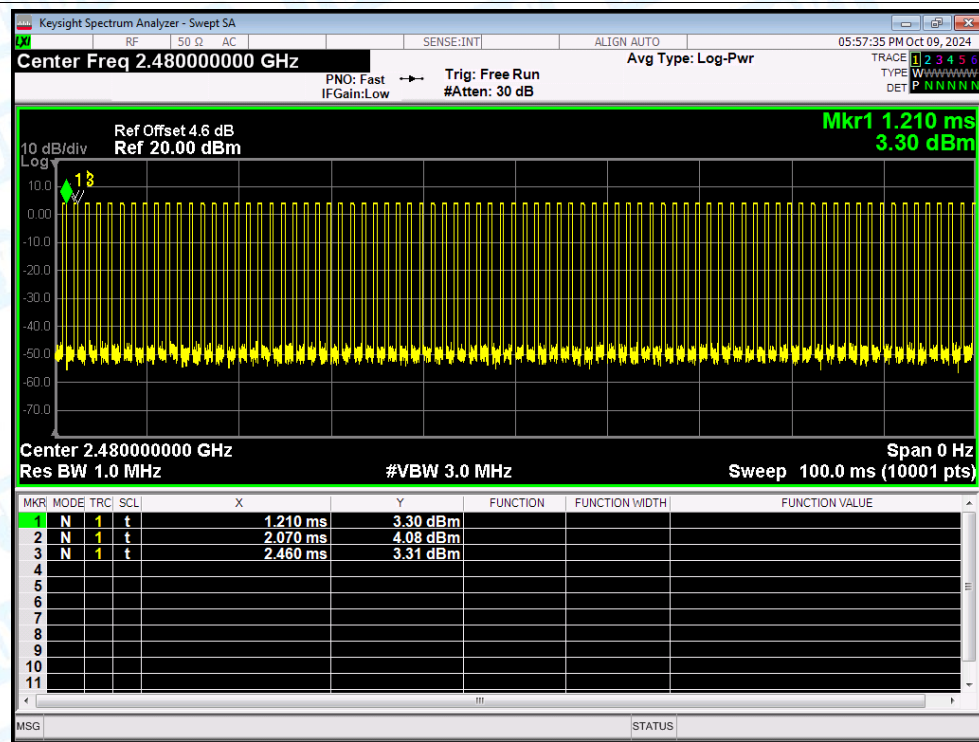
Duty Cycle NVNT 2-DH1 2402MHz Ant1



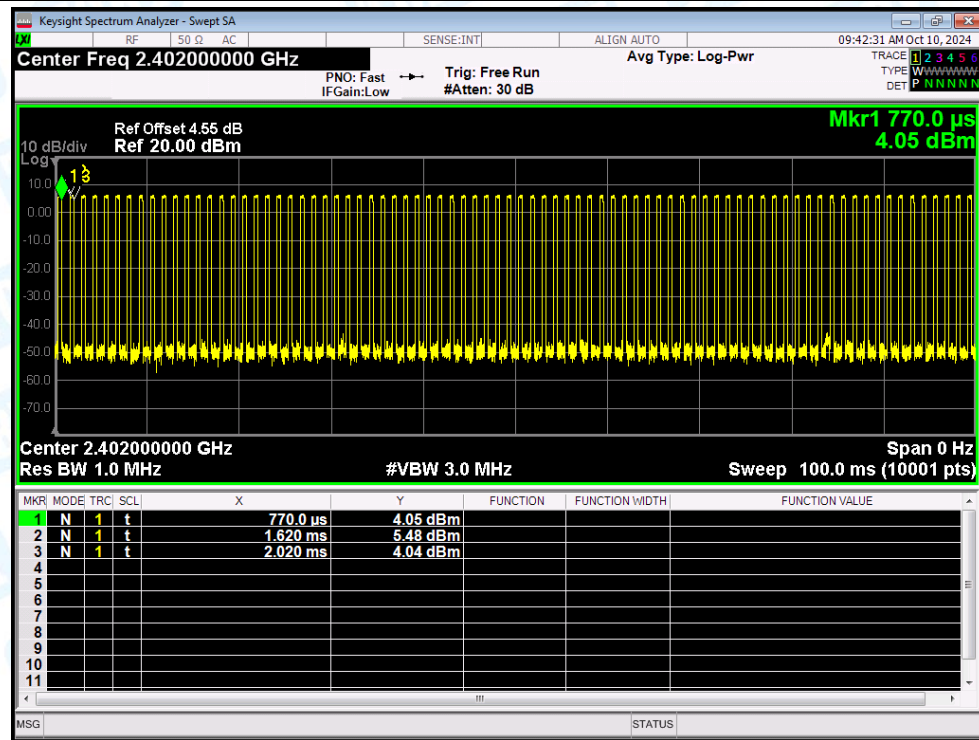
Duty Cycle NVNT 2-DH1 2441MHz Ant1



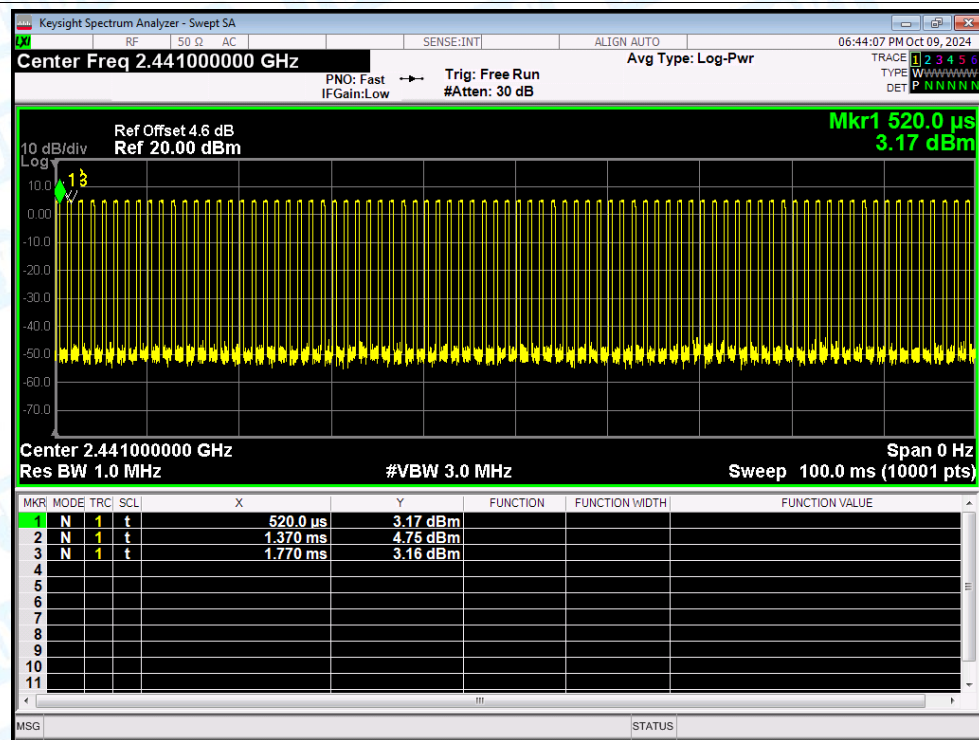
Duty Cycle NVNT 2-DH1 2480MHz Ant1

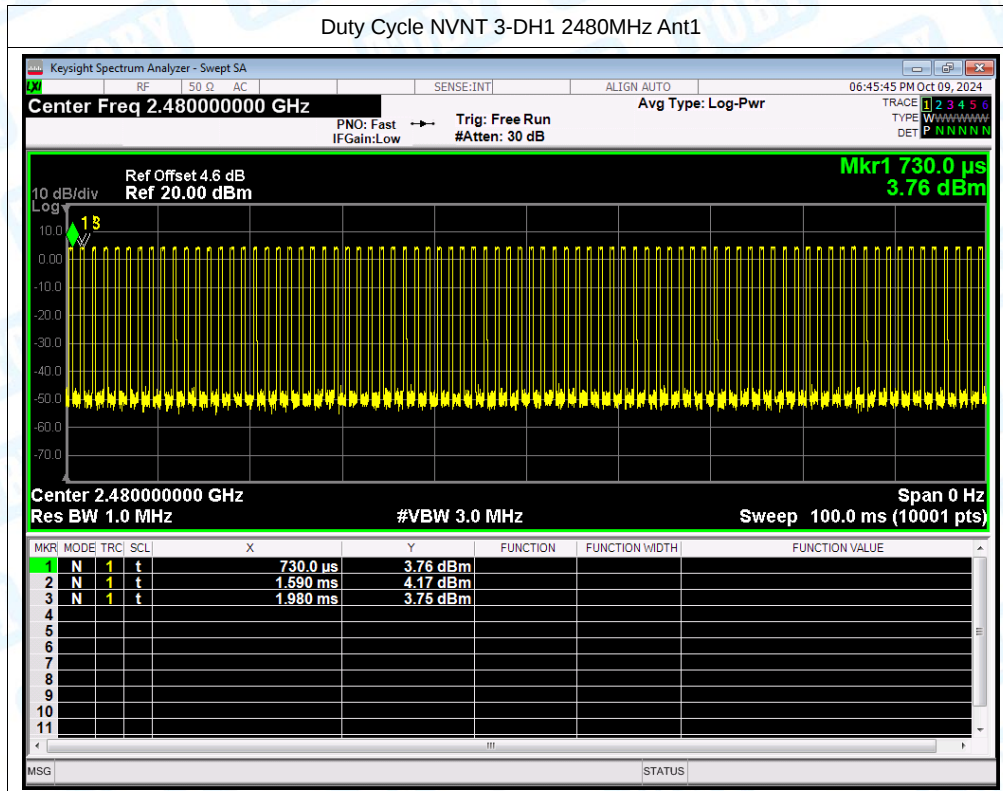


Duty Cycle NVNT 3-DH1 2402MHz Ant1



Duty Cycle NVNT 3-DH1 2441MHz Ant1



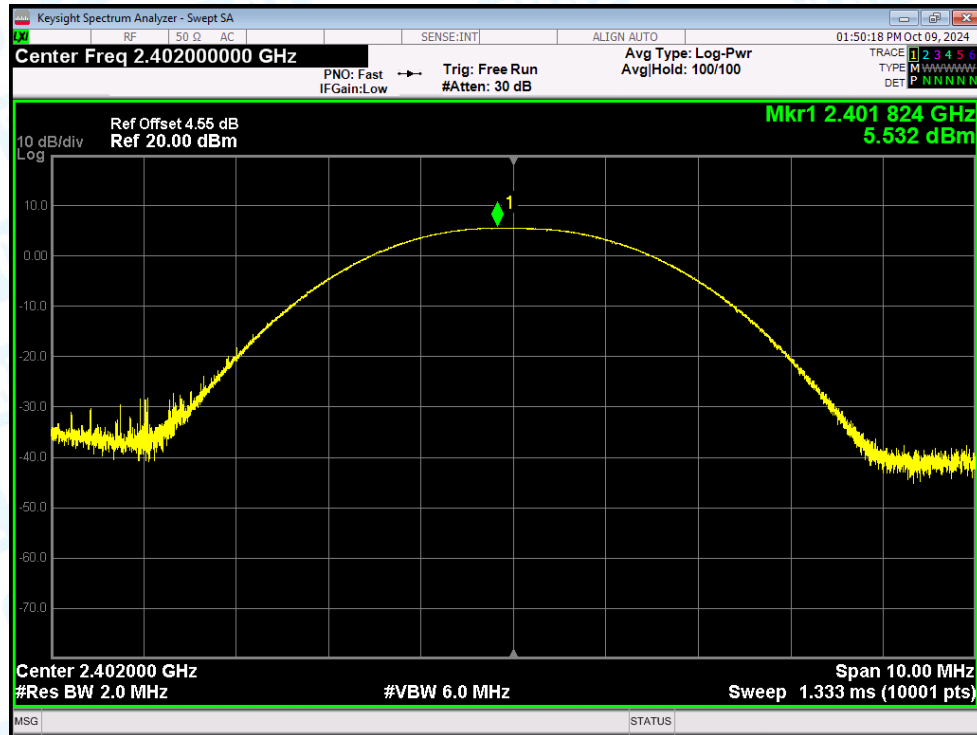


2. Maximum Conducted Output Power

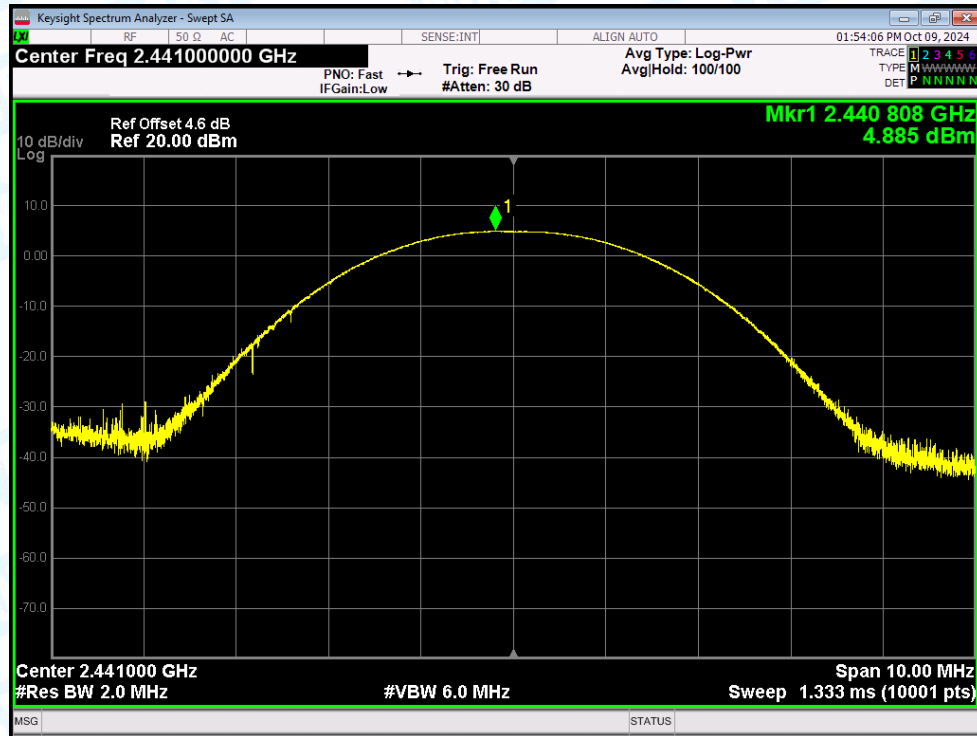
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	Ant1	5.532	21	Pass
NVNT	1-DH1	2441	Ant1	4.885	21	Pass
NVNT	1-DH1	2480	Ant1	4.409	21	Pass
NVNT	2-DH1	2402	Ant1	5.697	21	Pass
NVNT	2-DH1	2441	Ant1	4.953	21	Pass
NVNT	2-DH1	2480	Ant1	4.467	21	Pass
NVNT	3-DH1	2402	Ant1	5.176	21	Pass
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NVNT	3-DH1	2480	Ant1	4.19	21	Pass

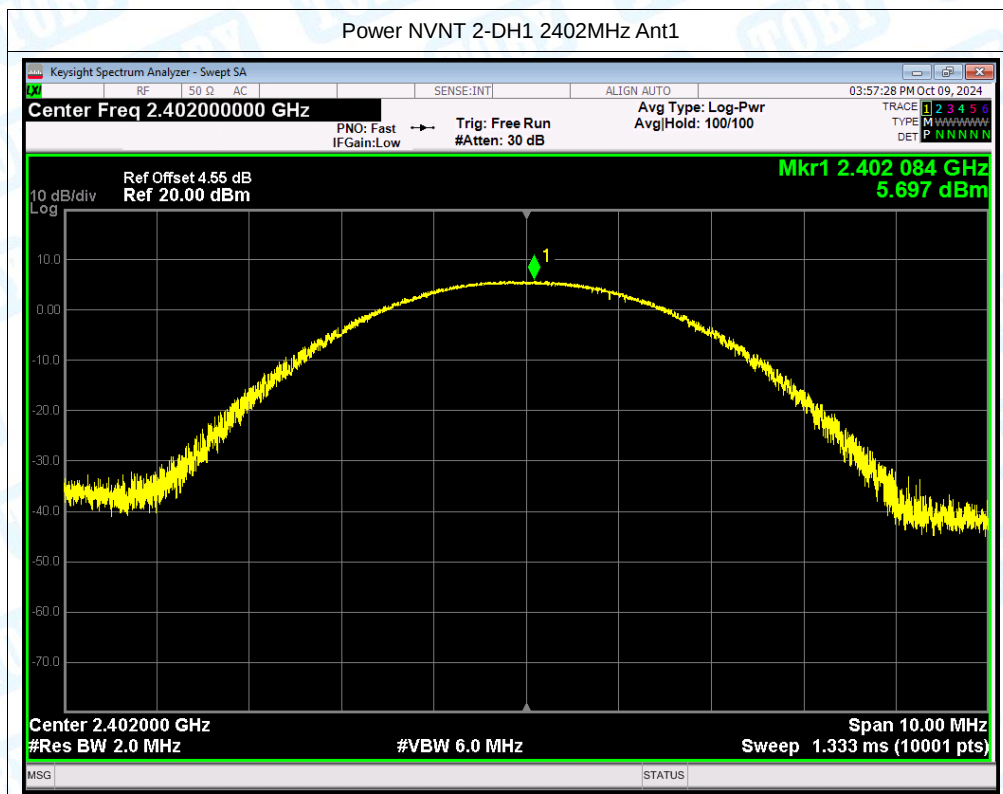
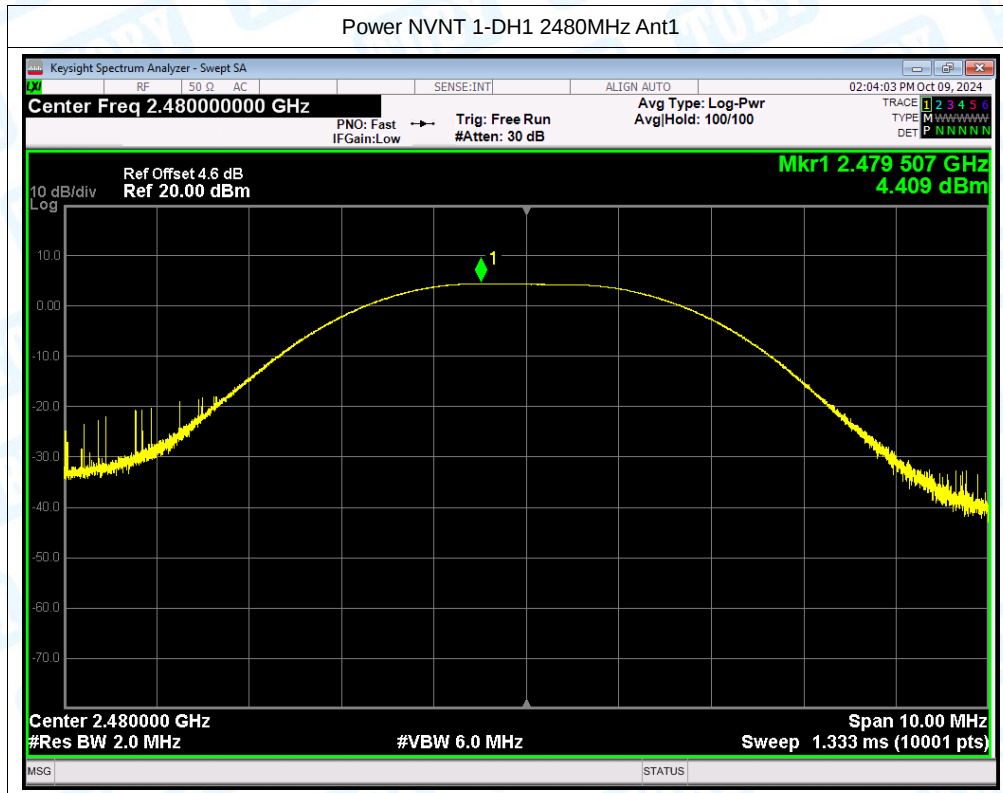
Test Graphs

Power NVNT 1-DH1 2402MHz Ant1

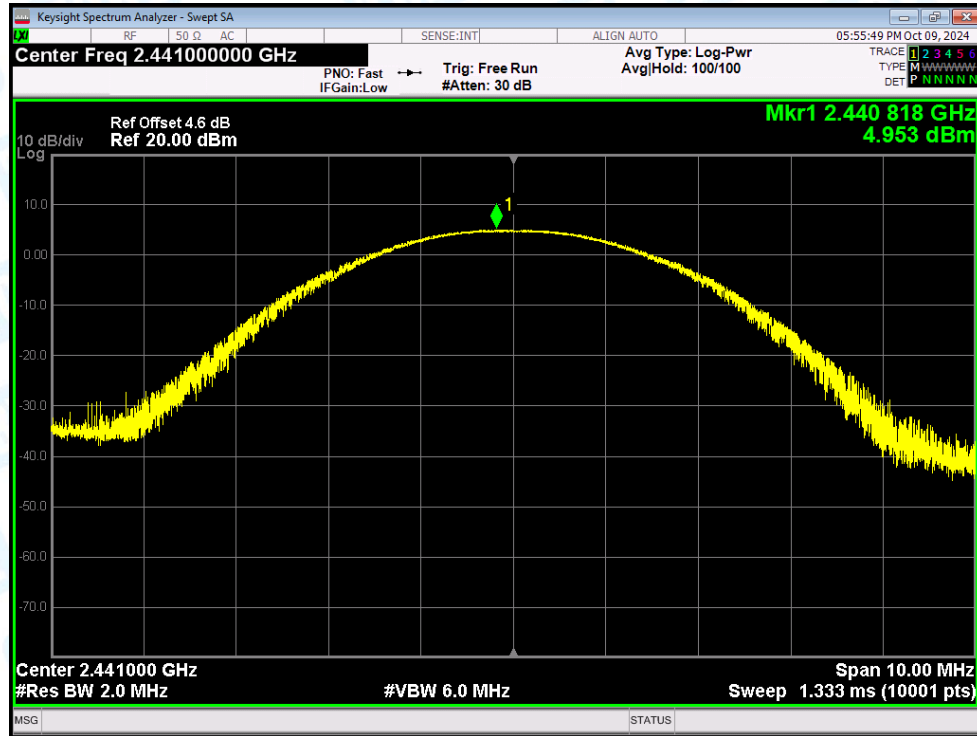


Power NVNT 1-DH1 2441MHz Ant1

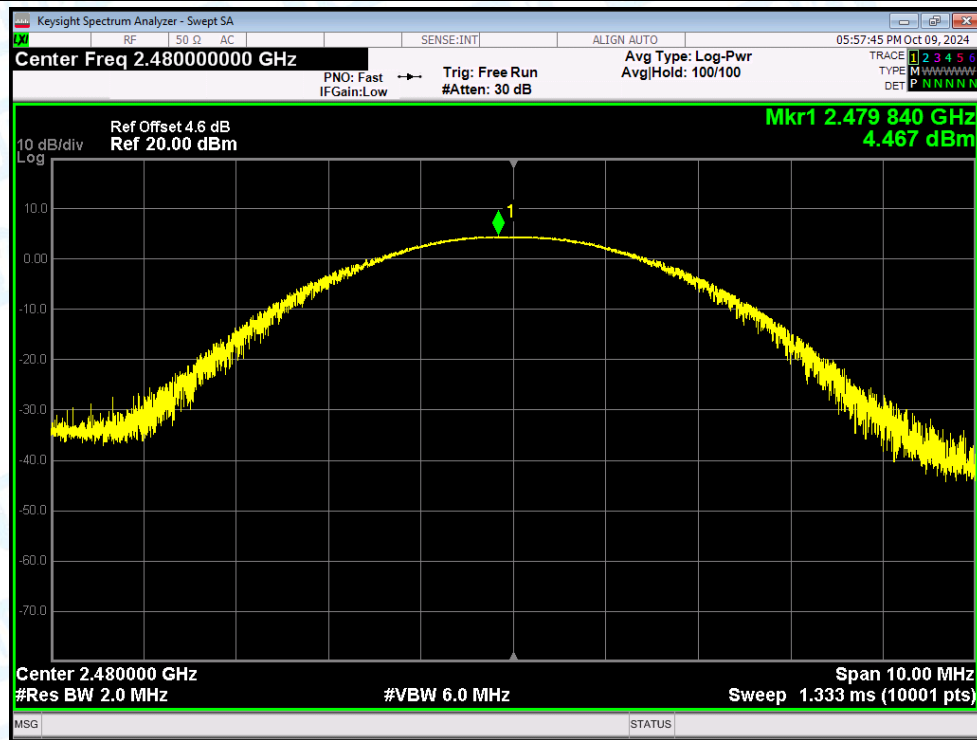




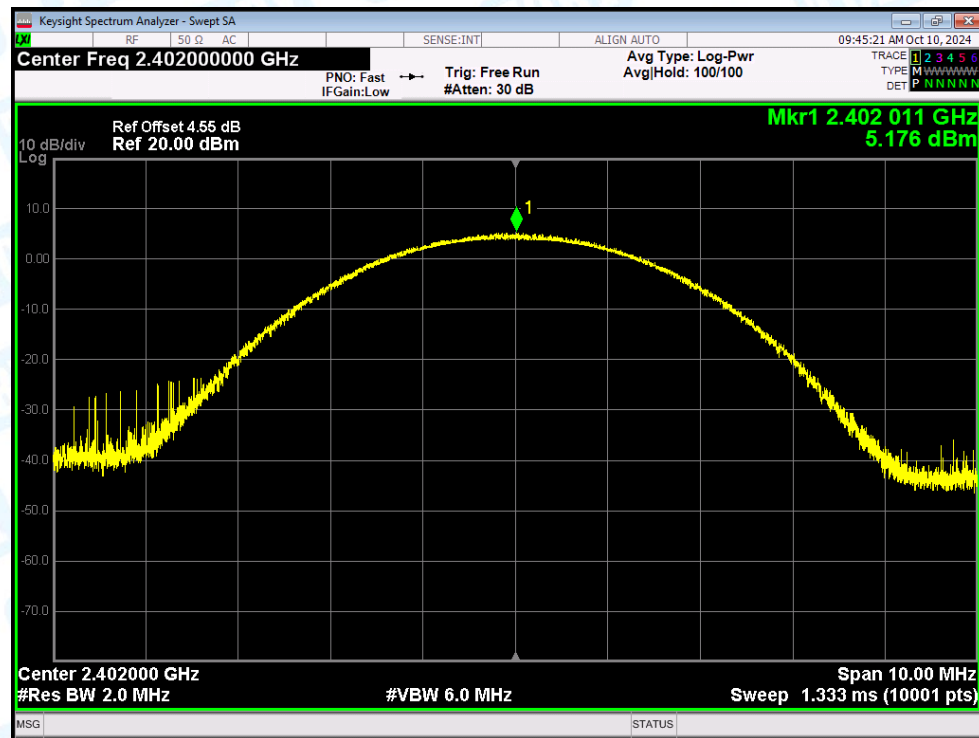
Power NVNT 2-DH1 2441MHz Ant1



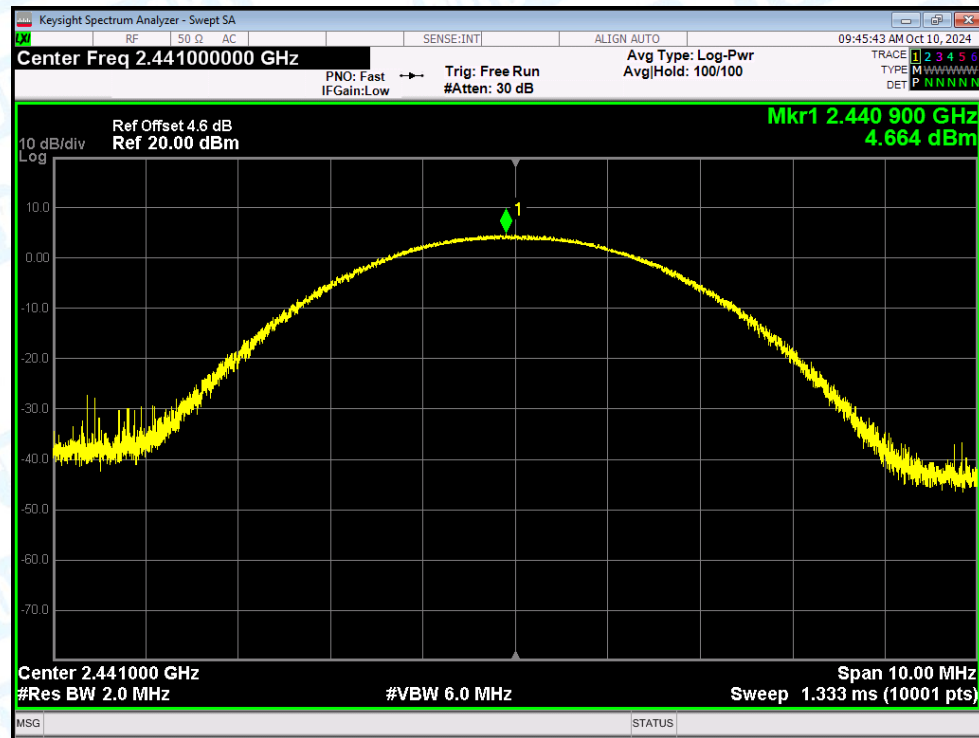
Power NVNT 2-DH1 2480MHz Ant1

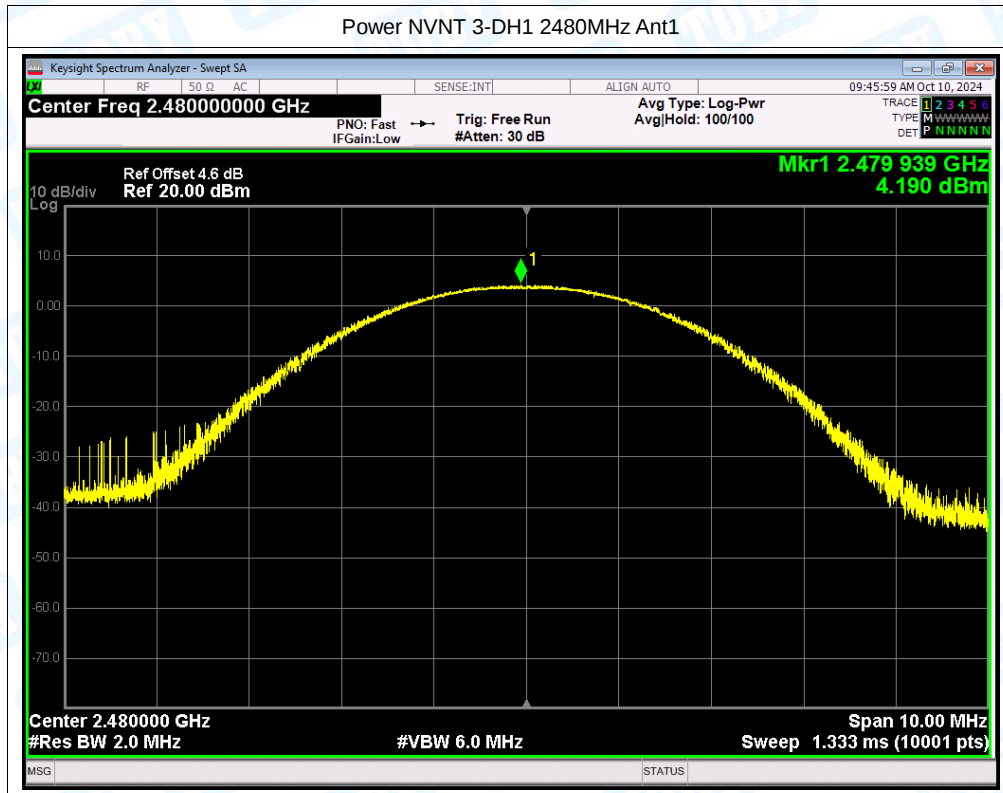


Power NVNT 3-DH1 2402MHz Ant1



Power NVNT 3-DH1 2441MHz Ant1



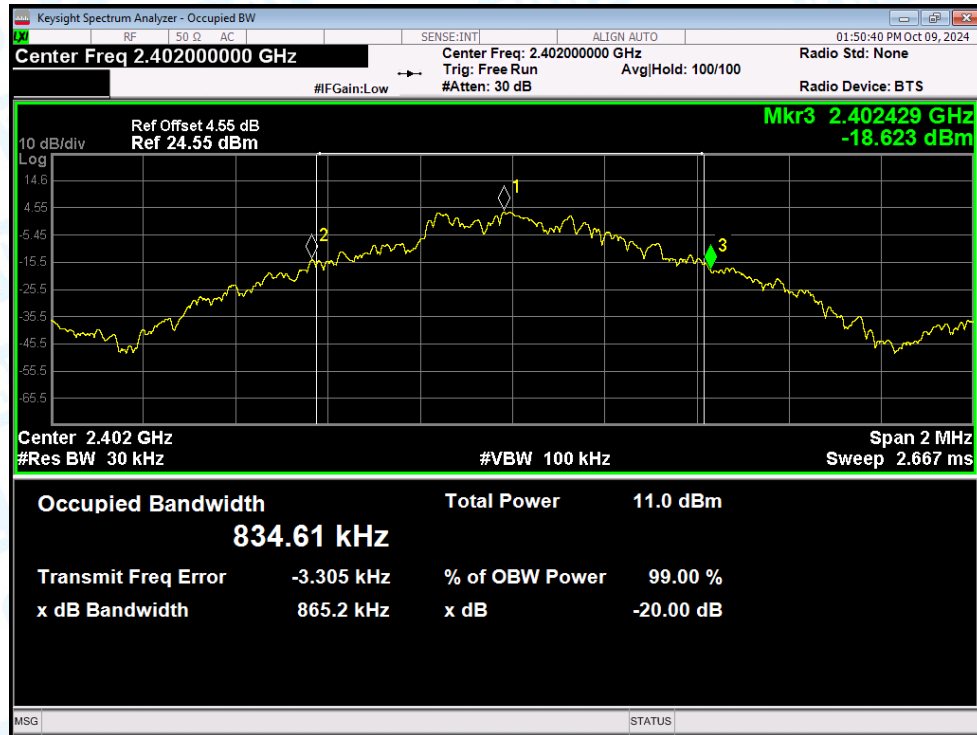


3. -20dB Bandwidth

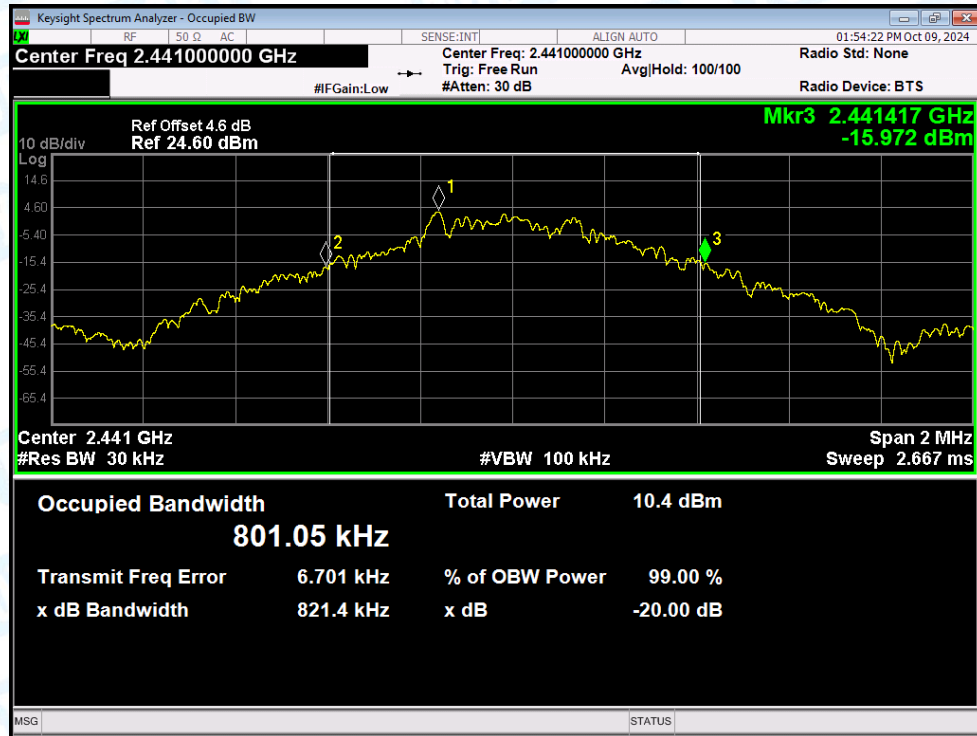
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH1	2402	Ant1	0.87	0	Pass
NVNT	1-DH1	2441	Ant1	0.82	0	Pass
NVNT	1-DH1	2480	Ant1	0.86	0	Pass
NVNT	2-DH1	2402	Ant1	1.2	0	Pass
NVNT	2-DH1	2441	Ant1	1.29	0	Pass
NVNT	2-DH1	2480	Ant1	1.26	0	Pass
NVNT	3-DH1	2402	Ant1	1.24	0	Pass
NVNT	3-DH1	2441	Ant1	1.21	0	Pass
NVNT	3-DH1	2480	Ant1	1.22	0	Pass

Test Graphs

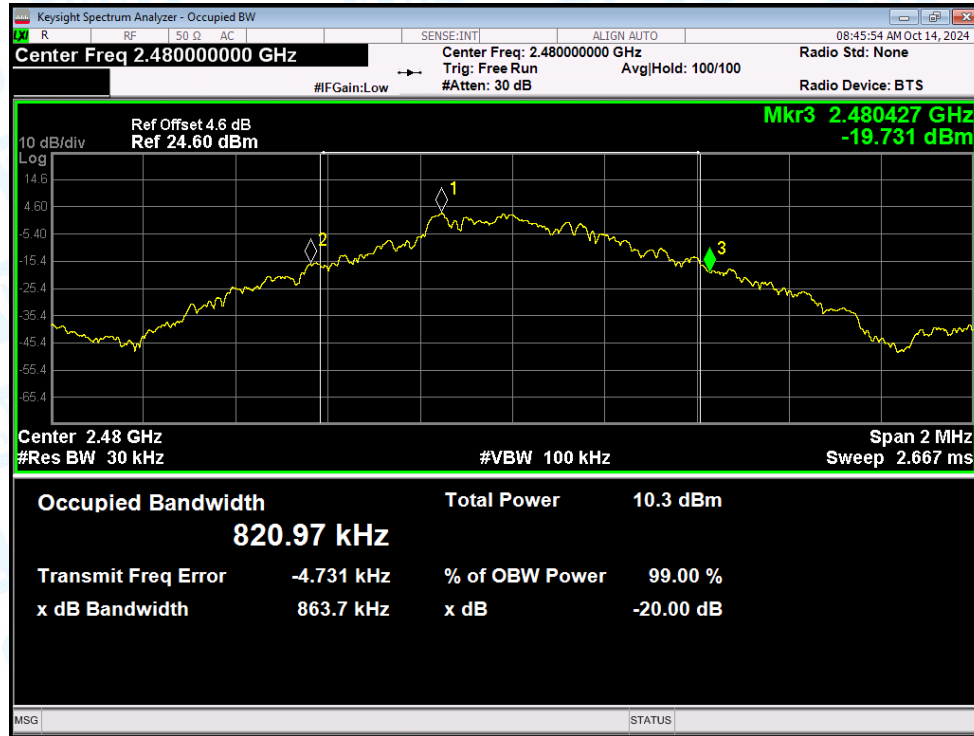
-20dB Bandwidth NVNT 1-DH1 2402MHz Ant1



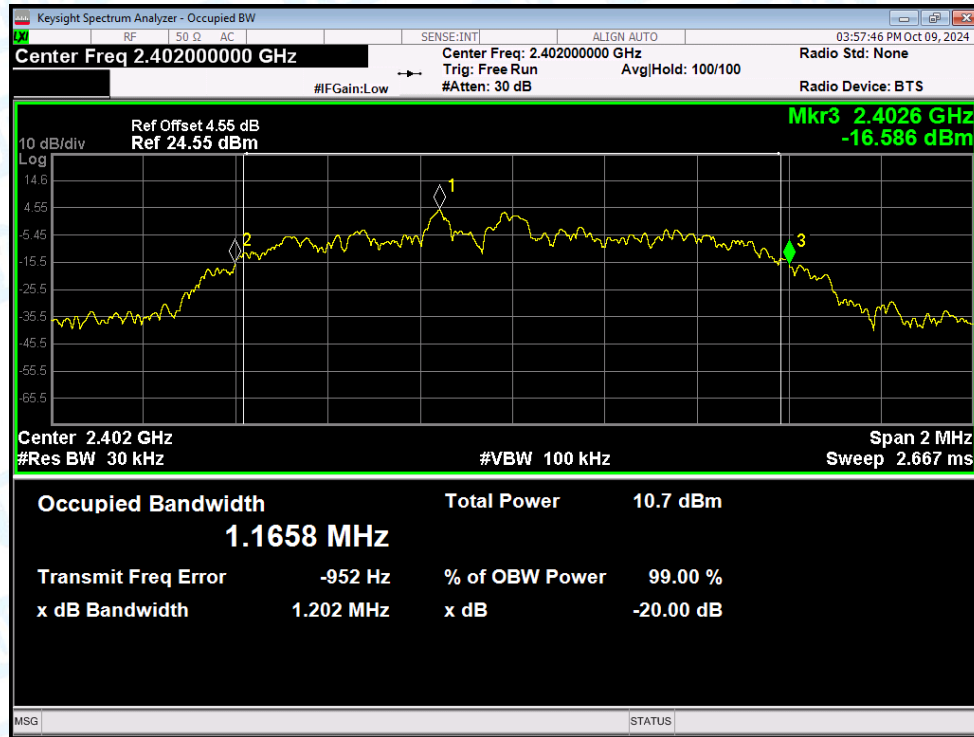
-20dB Bandwidth NVNT 1-DH1 2441MHz Ant1



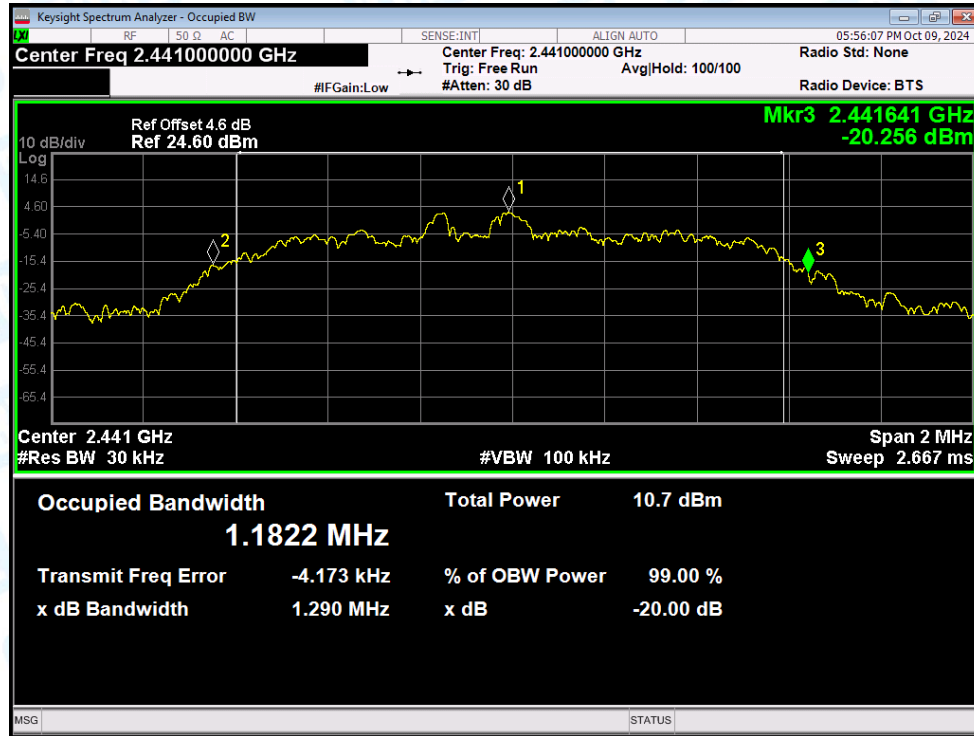
-20dB Bandwidth NVNT 1-DH1 2480MHz Ant1



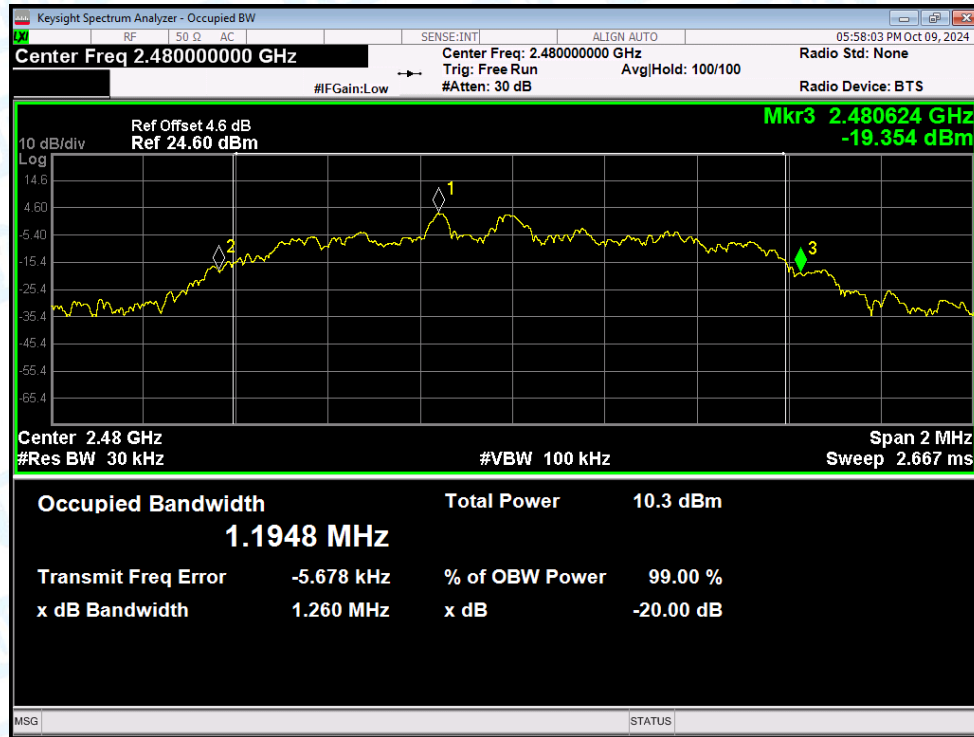
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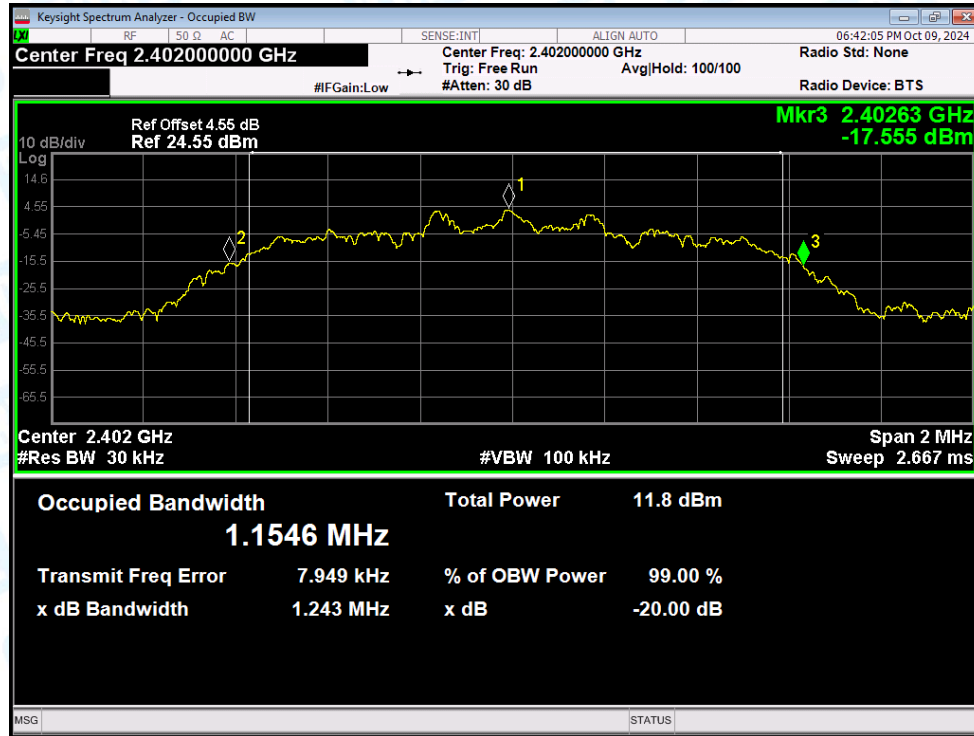
-20dB Bandwidth NVNT 2-DH1 2441MHz Ant1



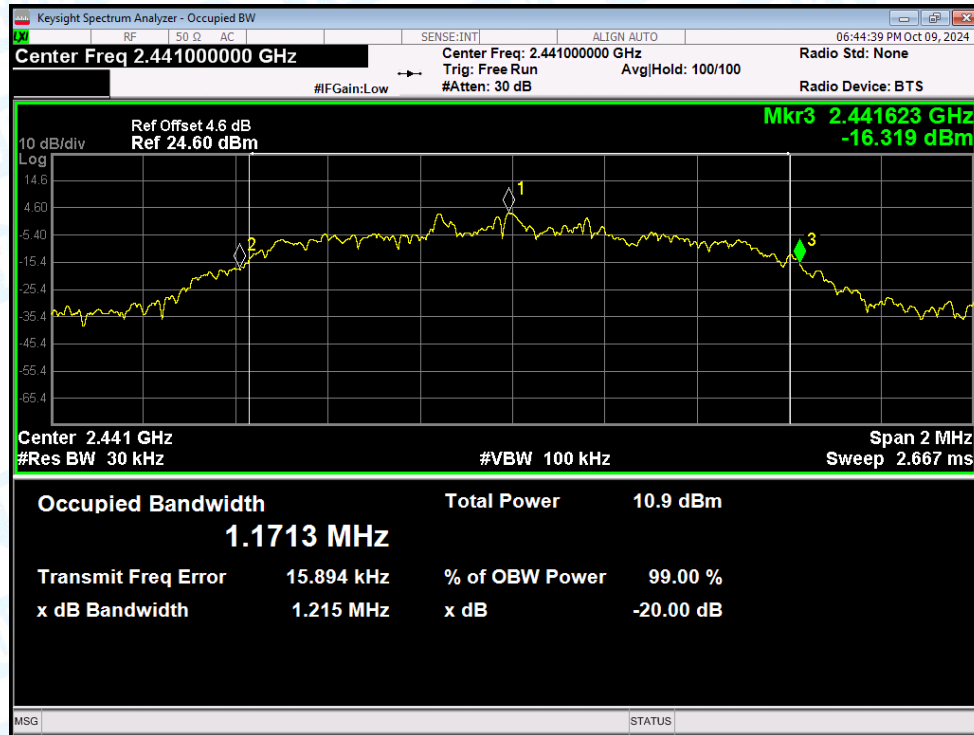
-20dB Bandwidth NVNT 2-DH1 2480MHz Ant1

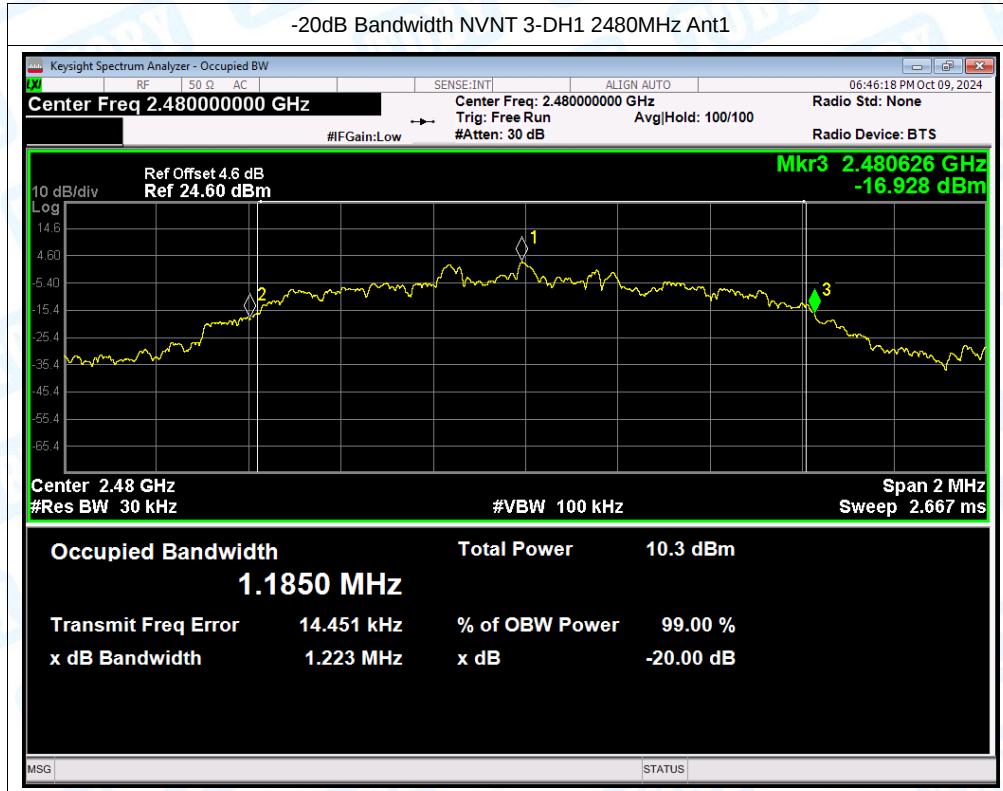


-20dB Bandwidth NVNT 3-DH1 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH1 2441MHz Ant1



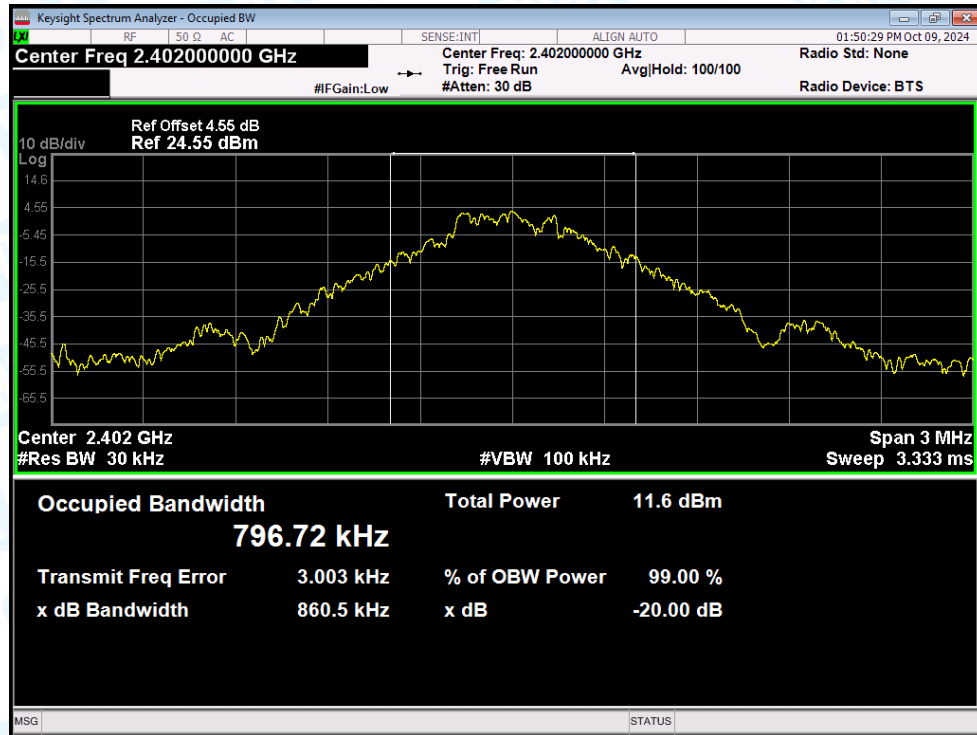


4. Occupied Channel Bandwidth

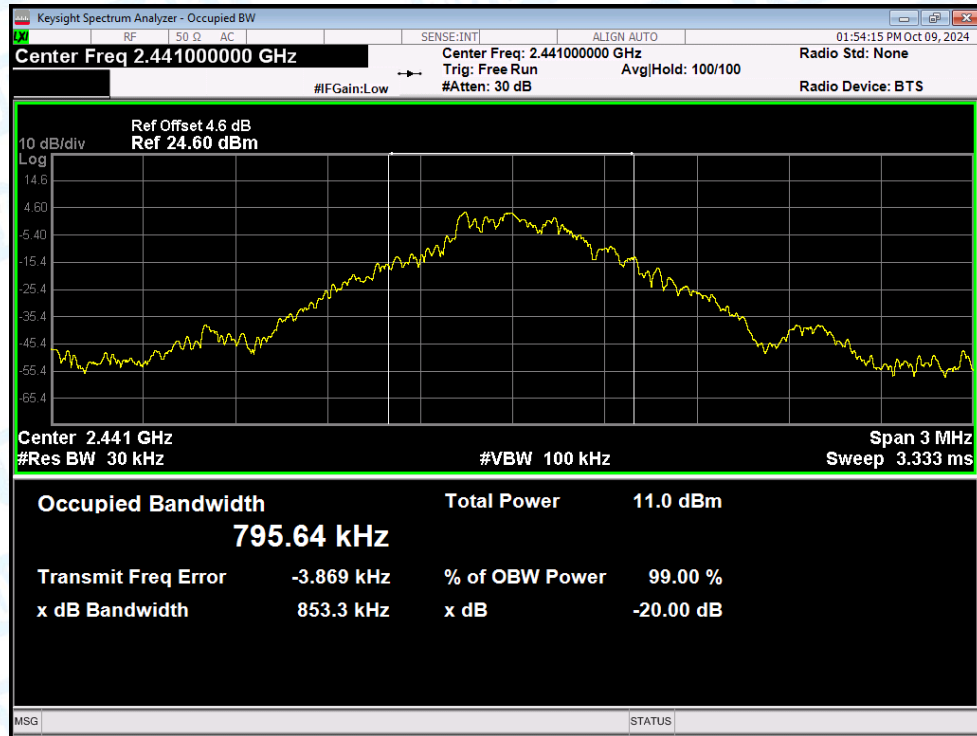
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	1-DH1	2402	Ant1	0.797
NVNT	1-DH1	2441	Ant1	0.796
NVNT	1-DH1	2480	Ant1	0.814
NVNT	2-DH1	2402	Ant1	1.162
NVNT	2-DH1	2441	Ant1	1.192
NVNT	2-DH1	2480	Ant1	1.244
NVNT	3-DH1	2402	Ant1	1.161
NVNT	3-DH1	2441	Ant1	1.191
NVNT	3-DH1	2480	Ant1	1.213

Test Graphs

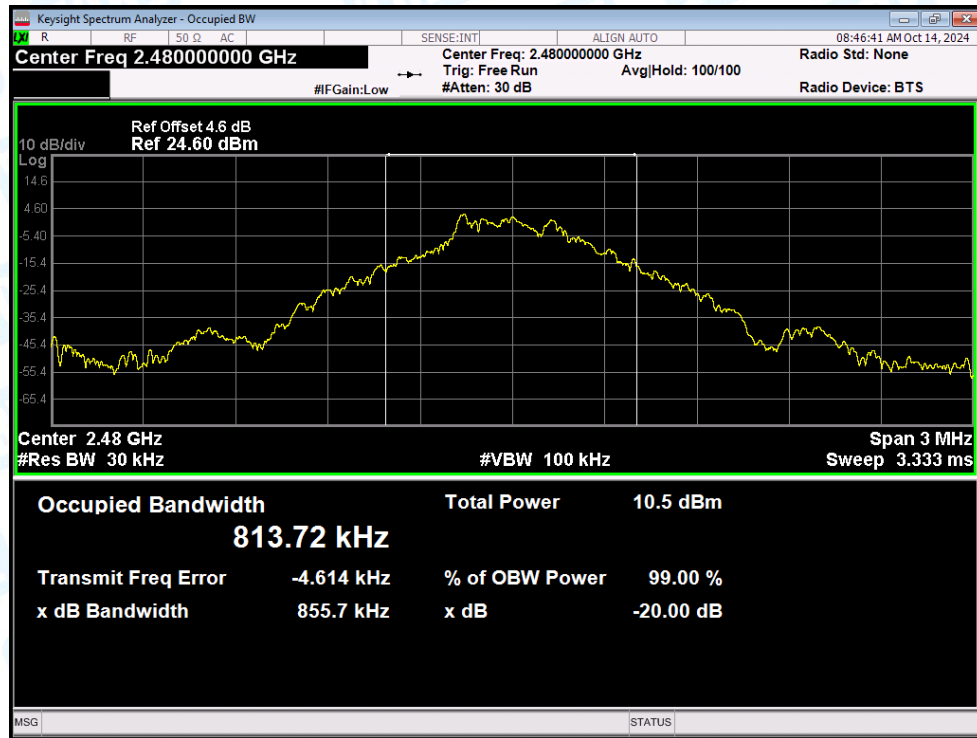
OBW NVNT 1-DH1 2402MHz Ant1



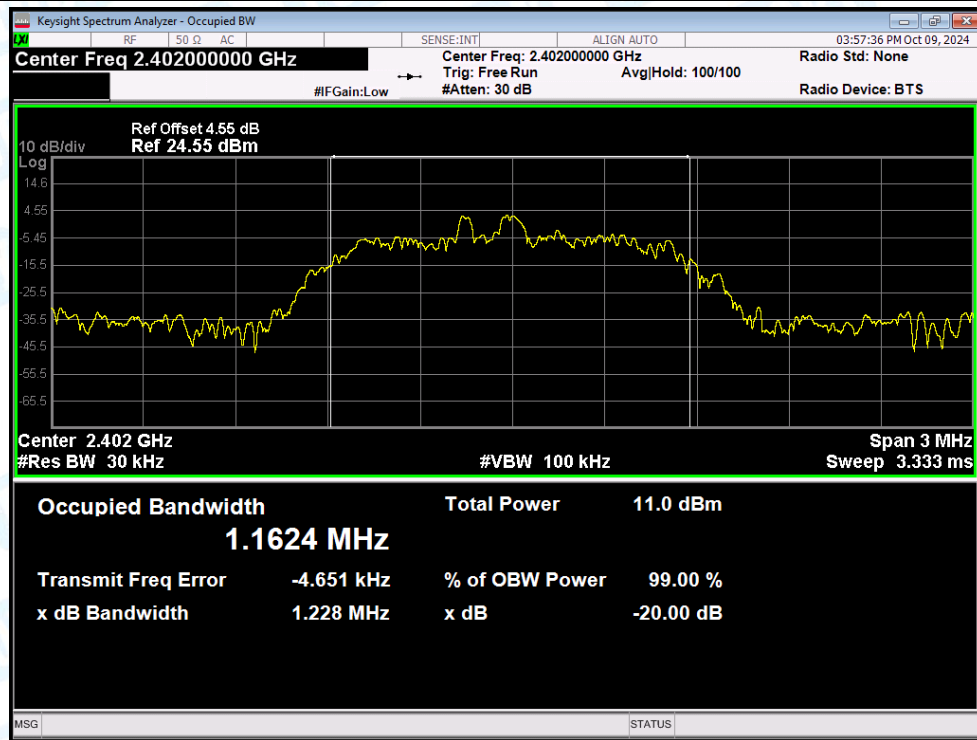
OBW NVNT 1-DH1 2441MHz Ant1



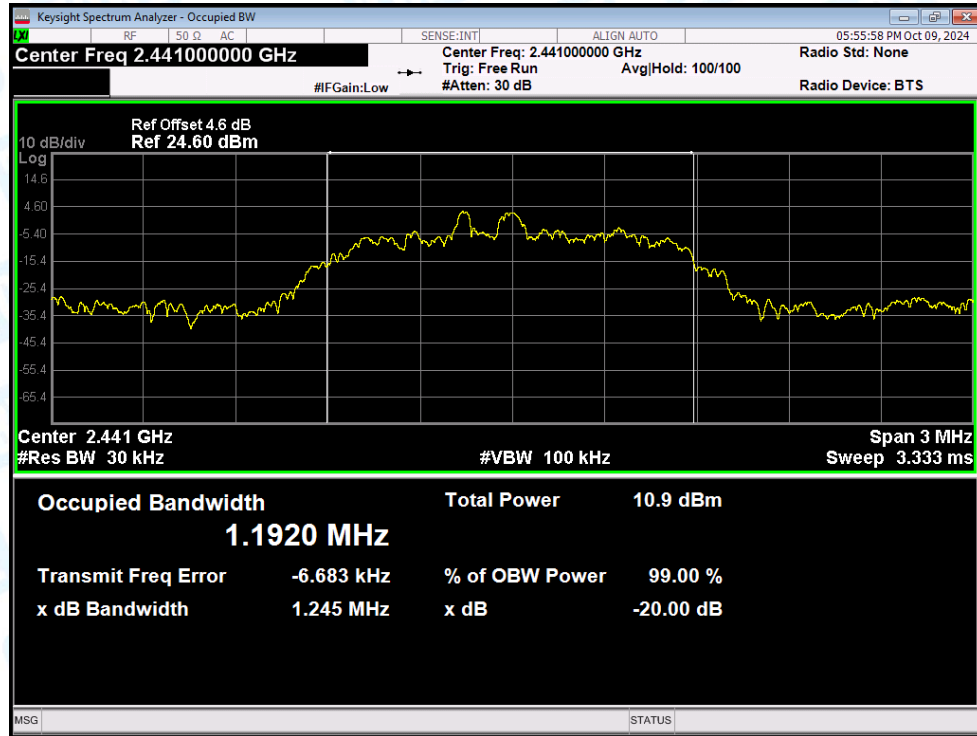
OBW NVNT 1-DH1 2480MHz Ant1



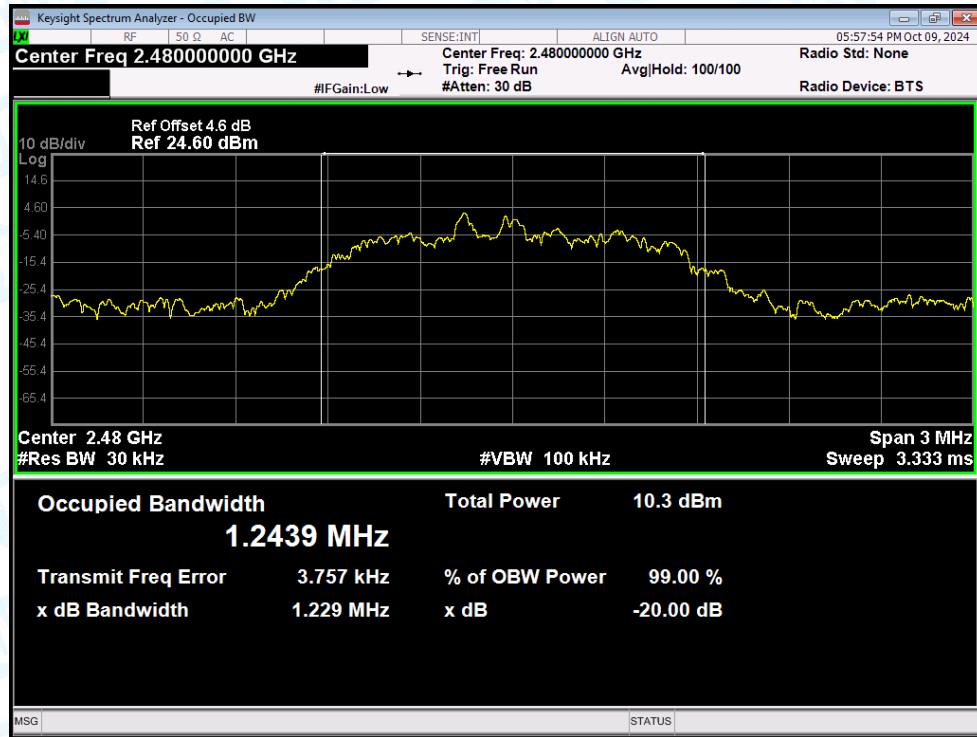
OBW NVNT 2-DH1 2402MHz Ant1



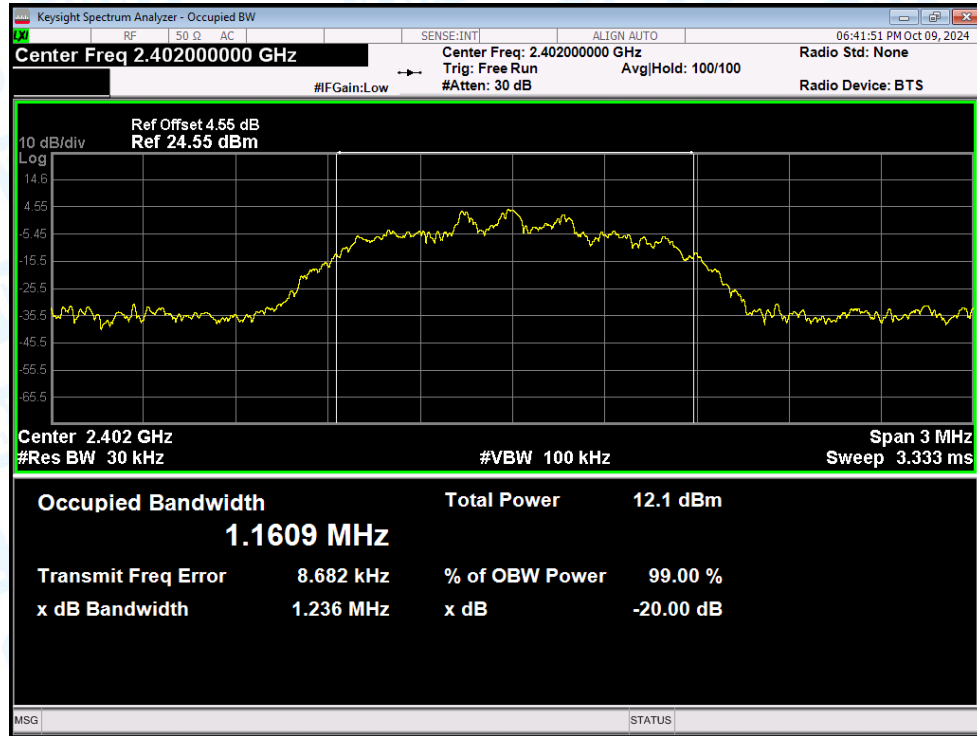
OBW NVNT 2-DH1 2441MHz Ant1



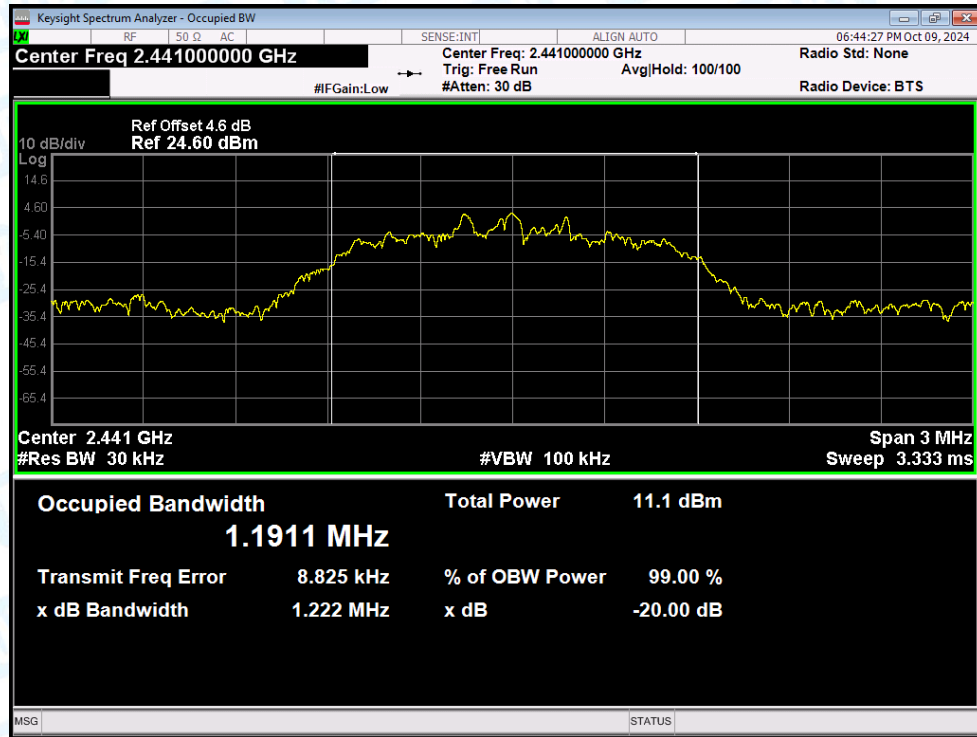
OBW NVNT 2-DH1 2480MHz Ant1

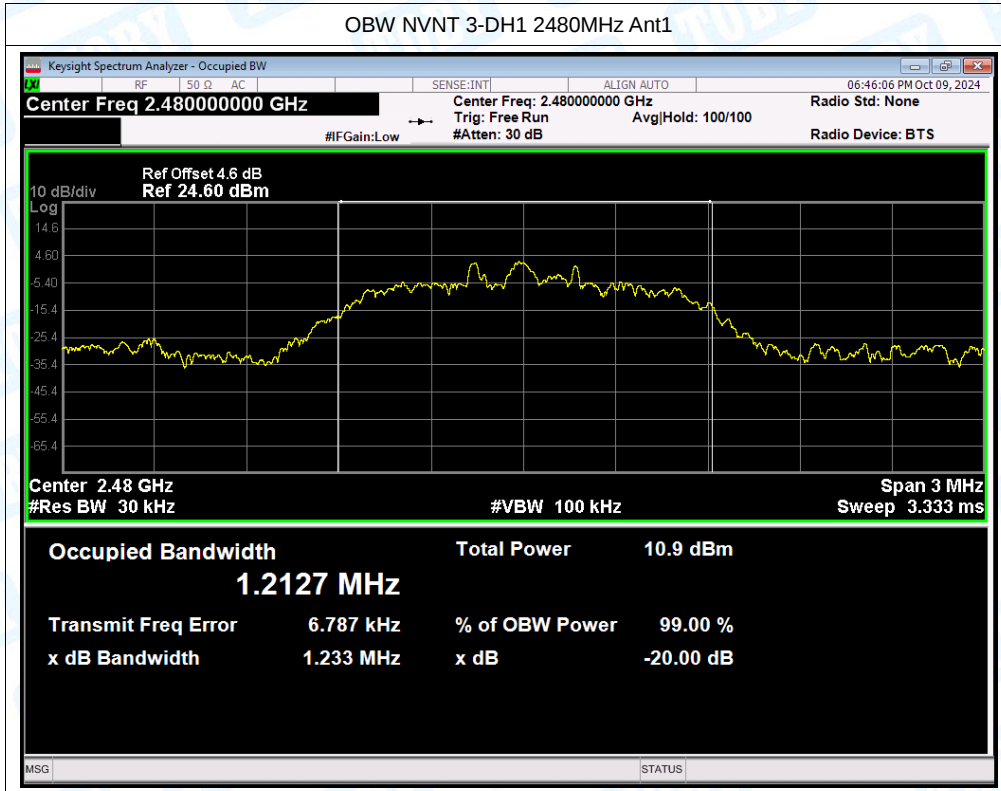


OBW NVNT 3-DH1 2402MHz Ant1



OBW NVNT 3-DH1 2441MHz Ant1





5. Band Edge

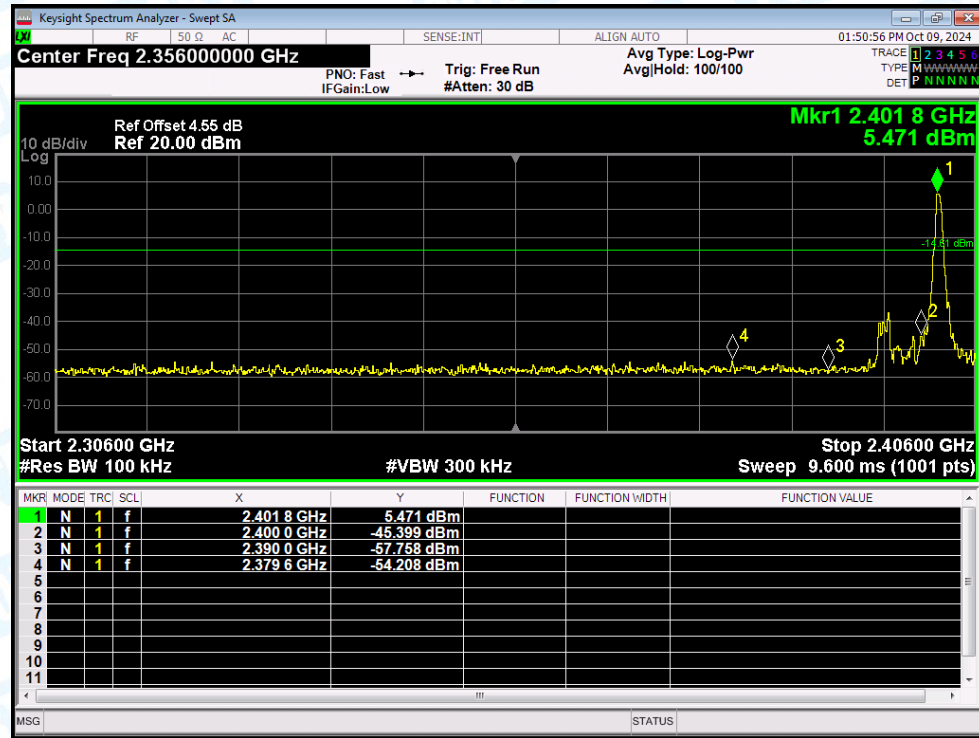
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	-59.6	-20	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	-51.72	-20	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	-59.62	-20	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	-52.1	-20	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	-59.49	-20	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	-48.15	-20	Pass

Test Graphs

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



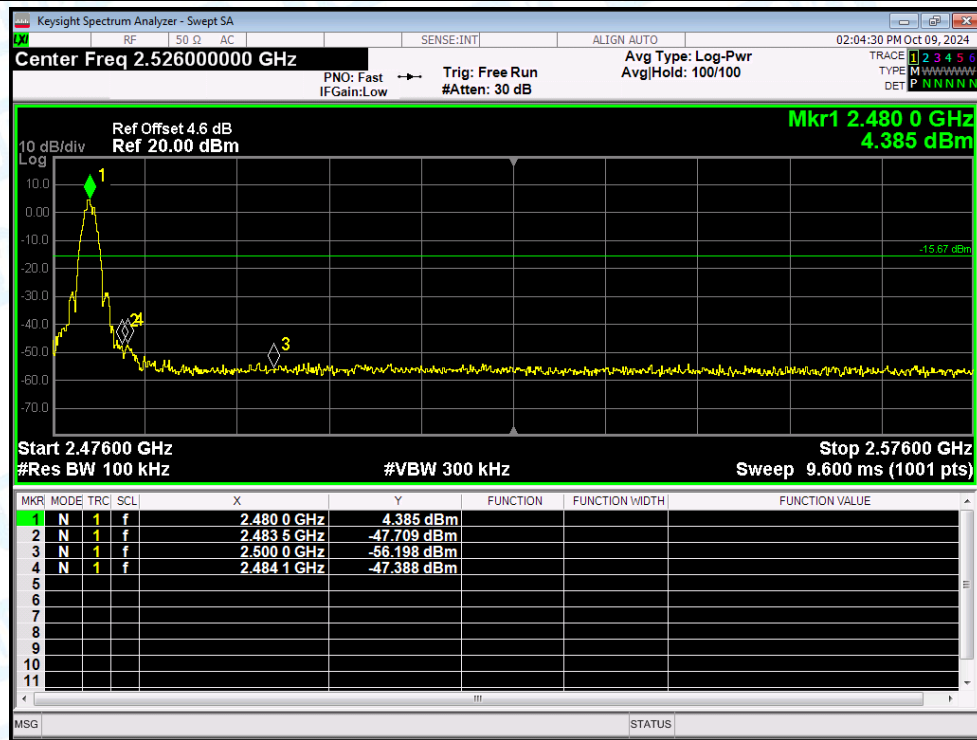
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Emission



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



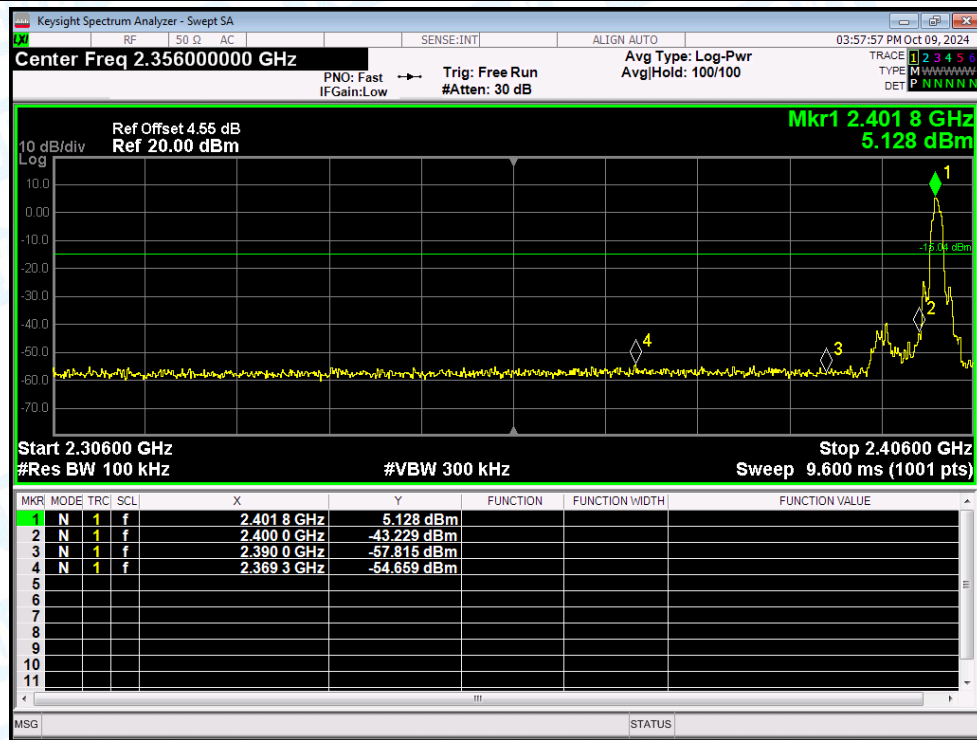
Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Emission

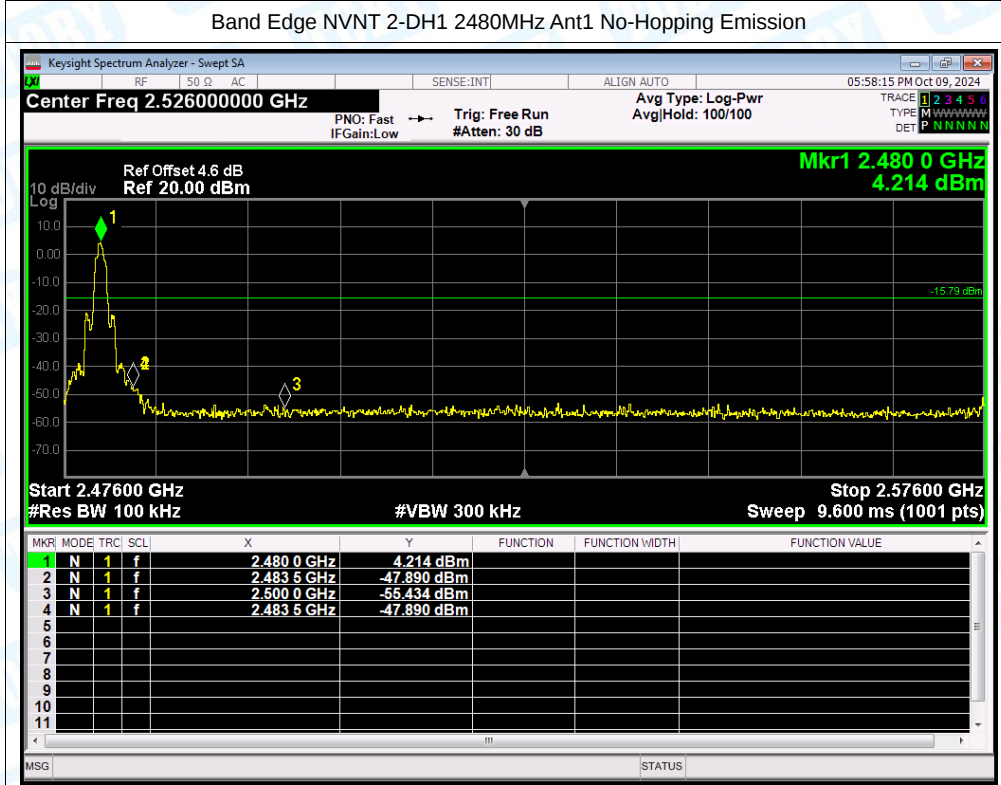


Band Edge NVNT 2-DH1 2402MHz Ant1 No-Hopping Ref



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

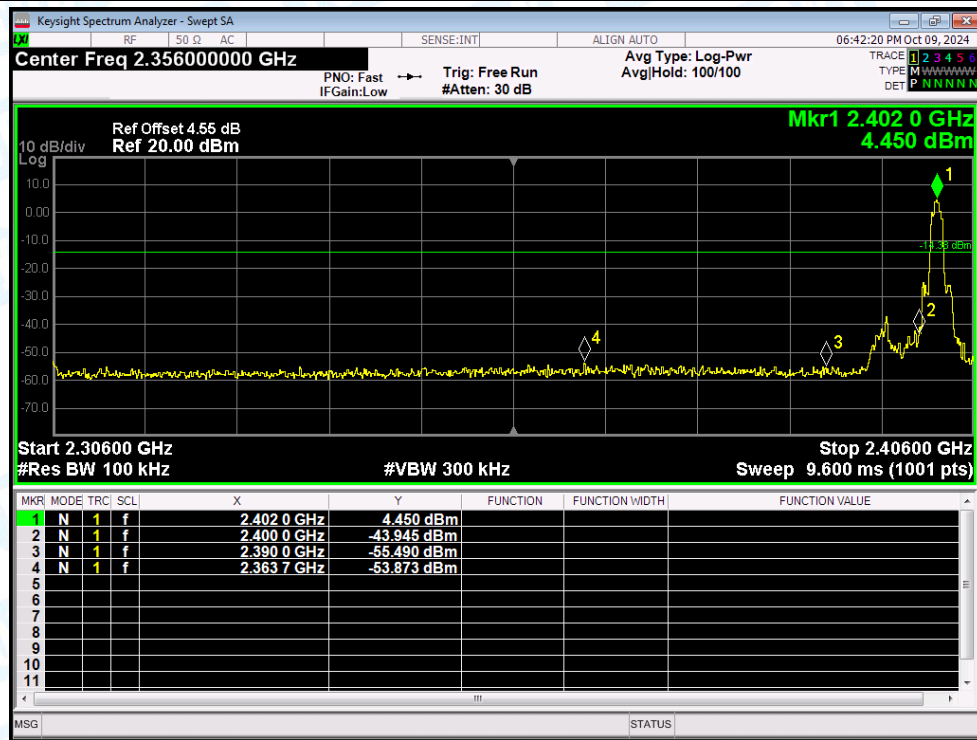




Band Edge NVNT 3-DH1 2402MHz Ant1 No-Hopping Ref



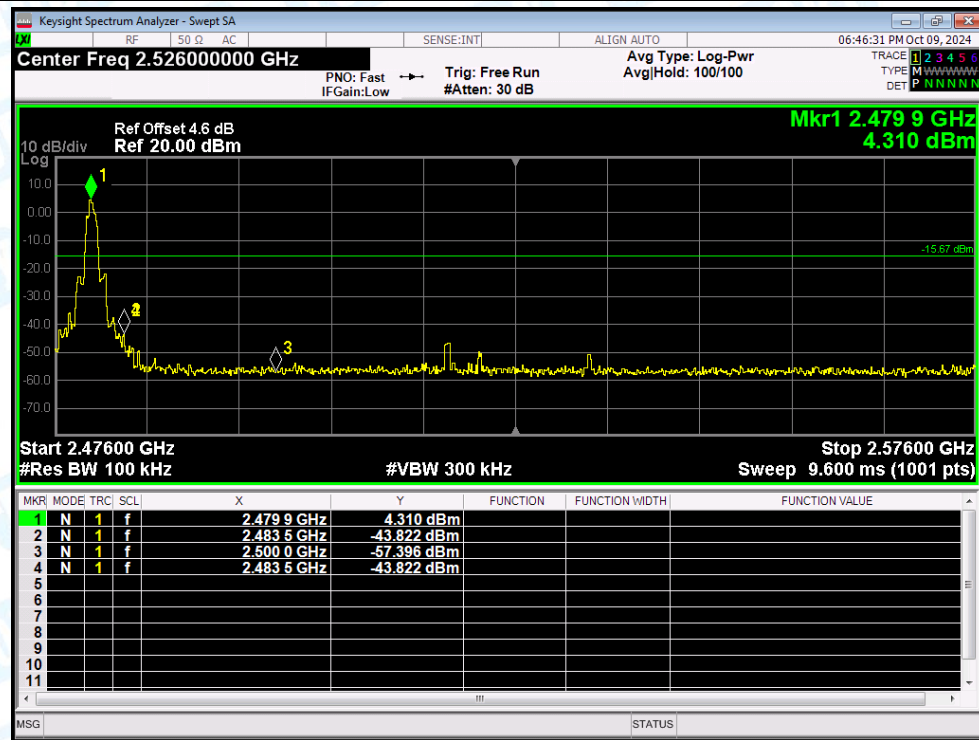
Band Edge NVNT 3-DH1 2402MHz Ant1 No-Hopping Emission



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



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



6. Band Edge(Hopping)

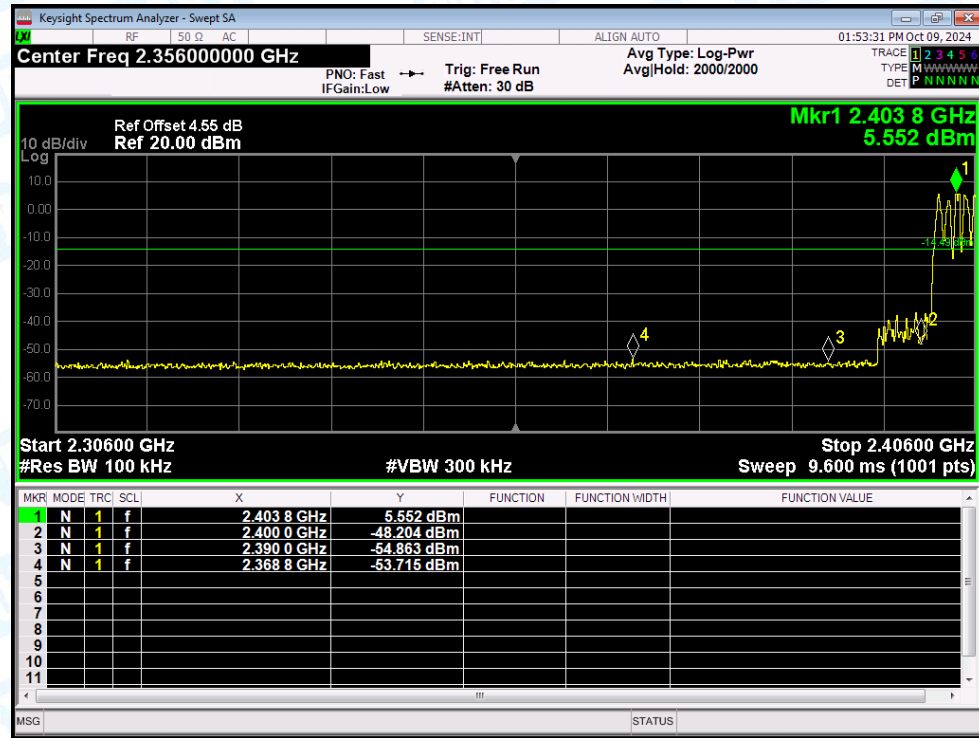
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	Hopping	-59.23	-20	Pass
NVNT	1-DH1	2480	Ant1	Hopping	-48.86	-20	Pass
NVNT	2-DH1	2402	Ant1	Hopping	-56.61	-20	Pass
NVNT	2-DH1	2480	Ant1	Hopping	-53.22	-20	Pass
NVNT	3-DH1	2402	Ant1	Hopping	-56.14	-20	Pass
NVNT	3-DH1	2480	Ant1	Hopping	-51.86	-20	Pass

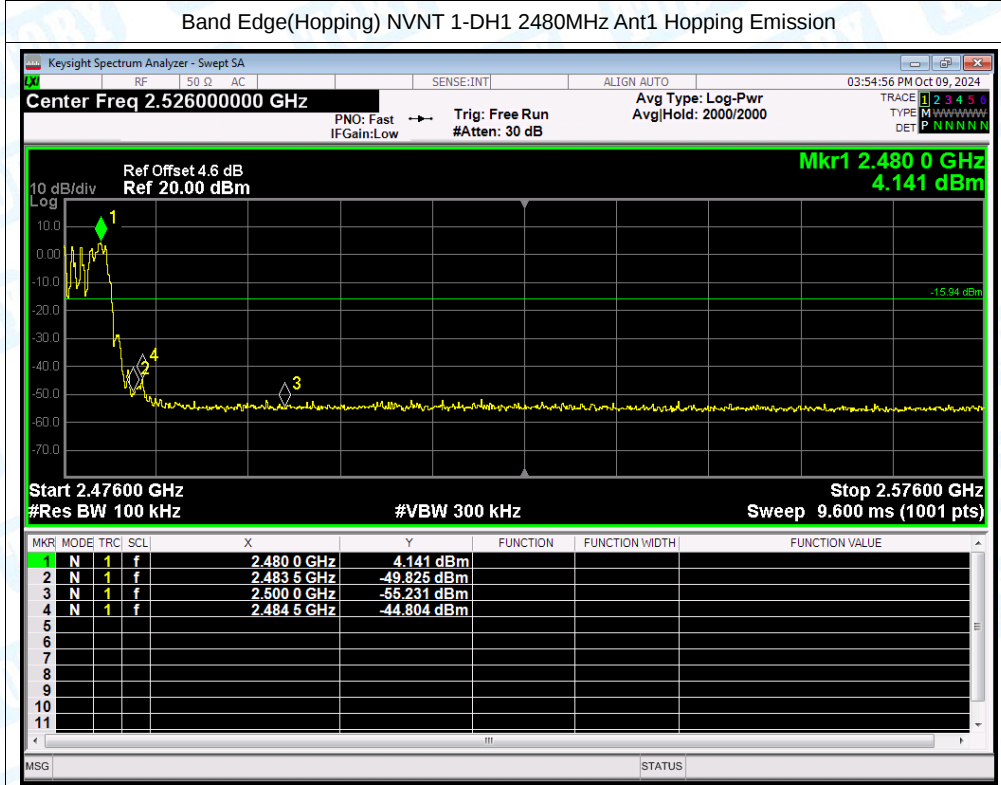
Test Graphs

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

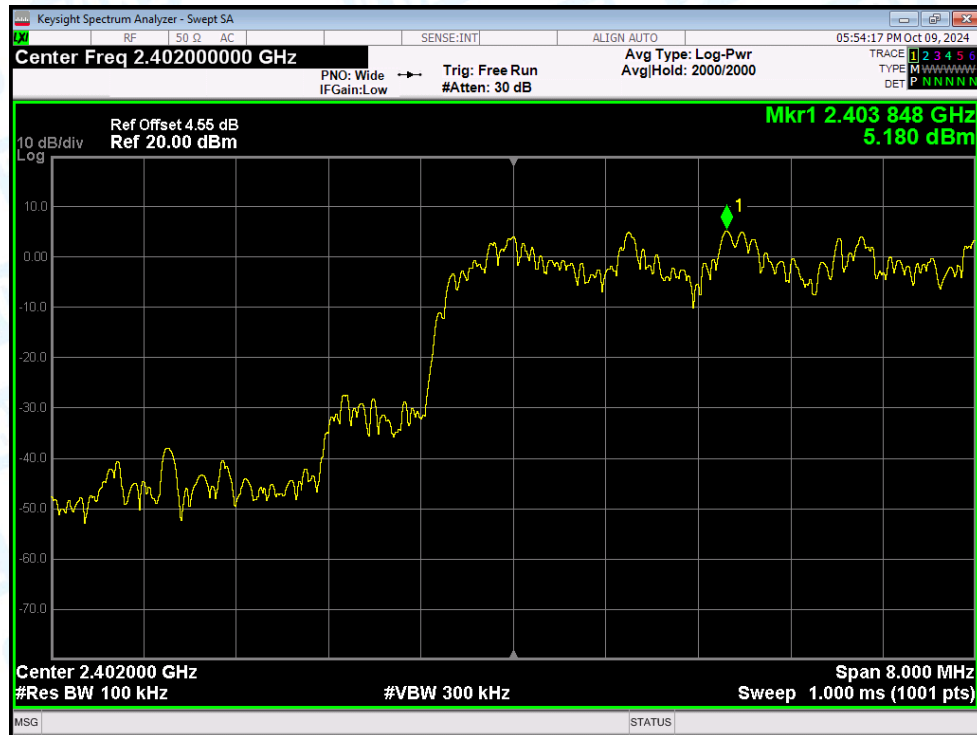


Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Emission

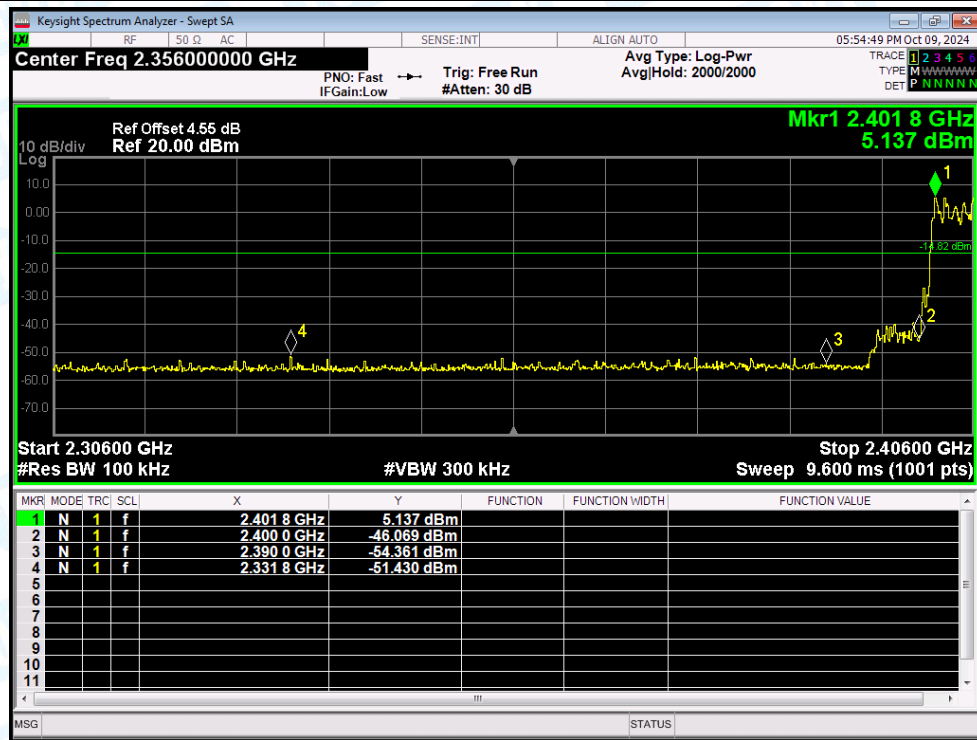


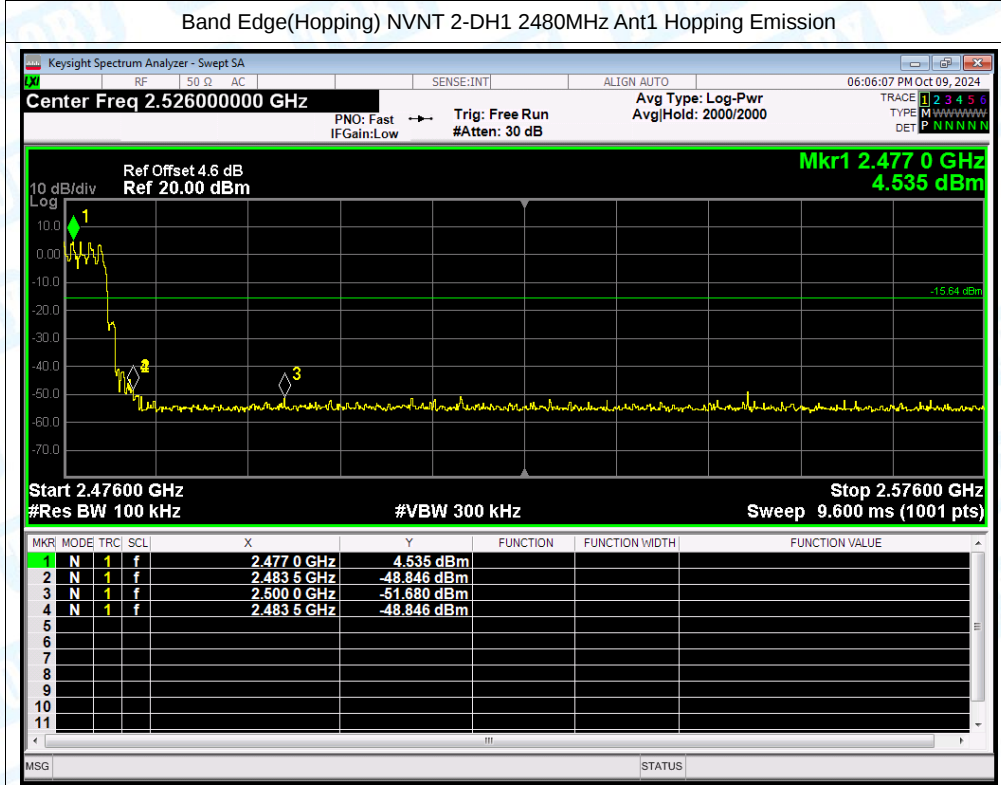


Band Edge(Hopping) NVNT 2-DH1 2402MHz Ant1 Hopping Ref

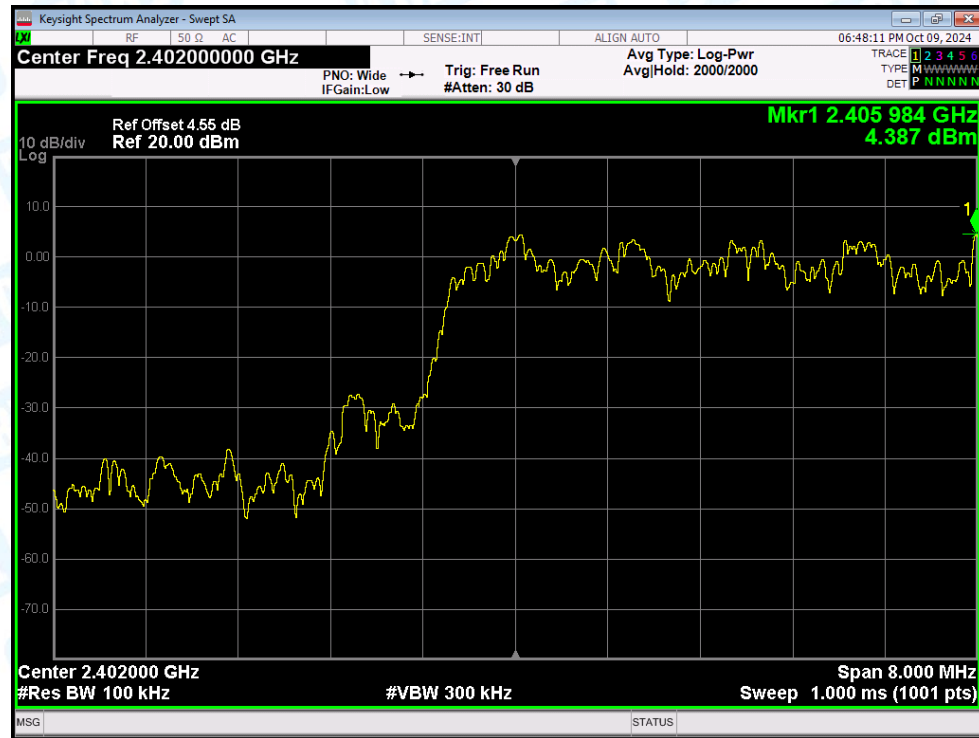


Band Edge(Hopping) NVNT 2-DH1 2402MHz Ant1 Hopping Emission

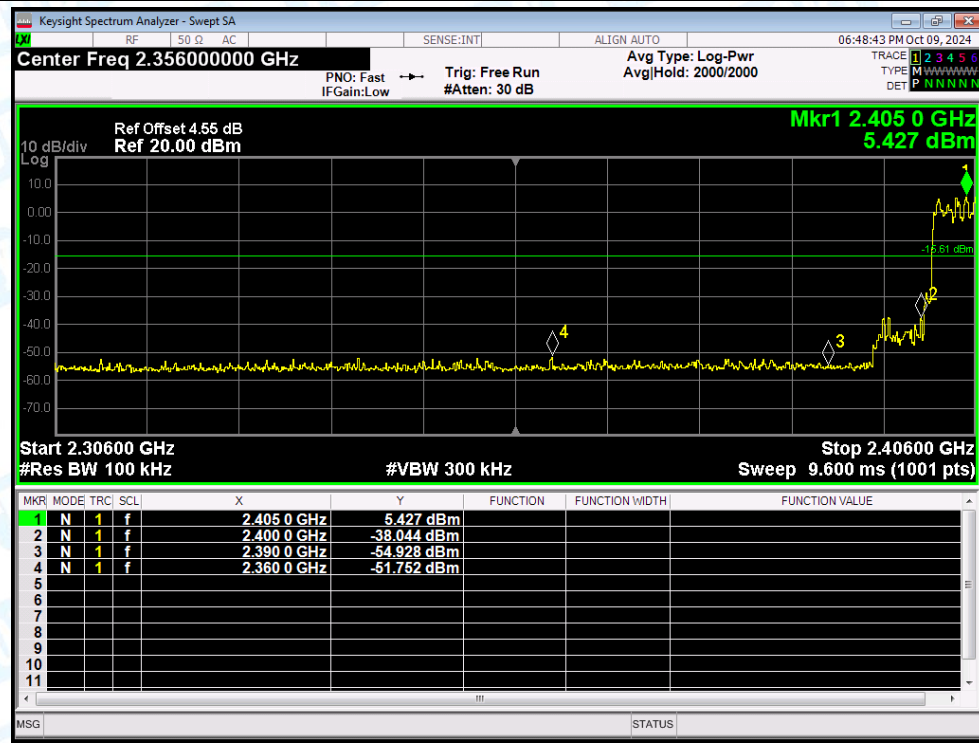


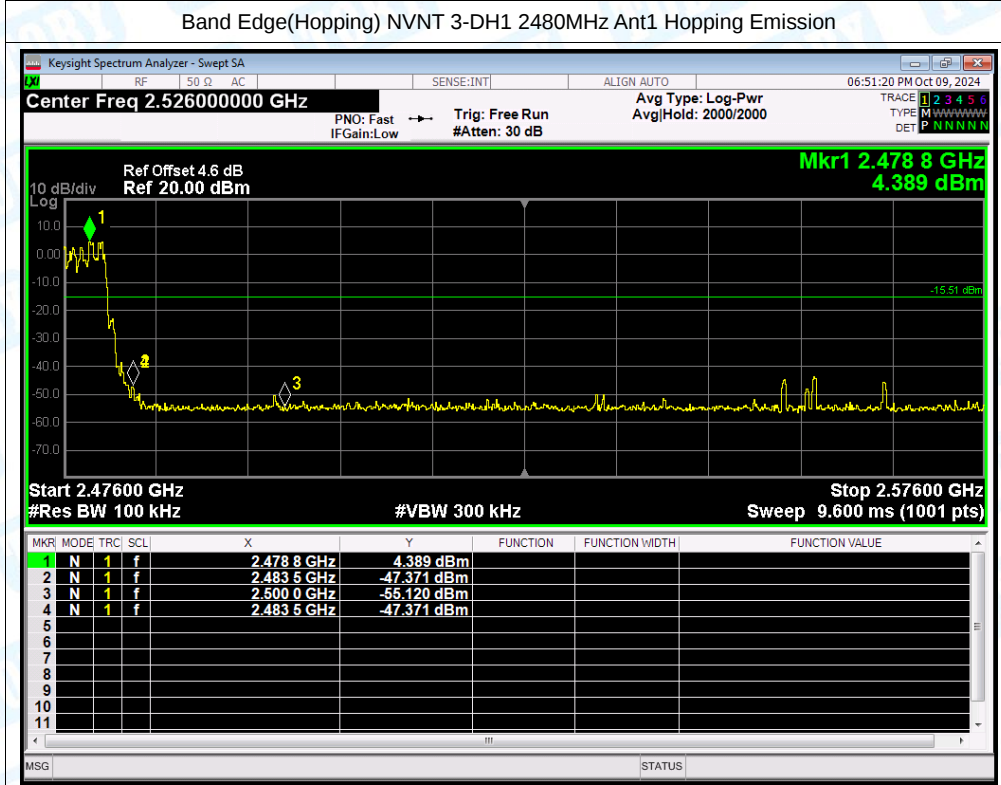


Band Edge(Hopping) NVNT 3-DH1 2402MHz Ant1 Hopping Ref



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



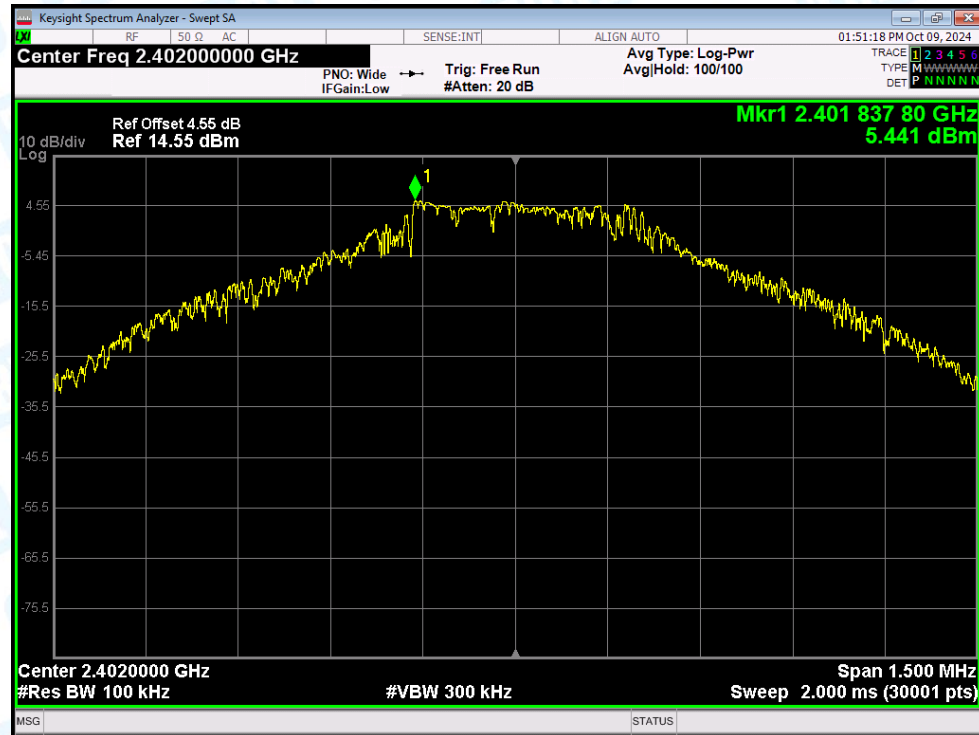


7. Conducted RF Spurious Emission

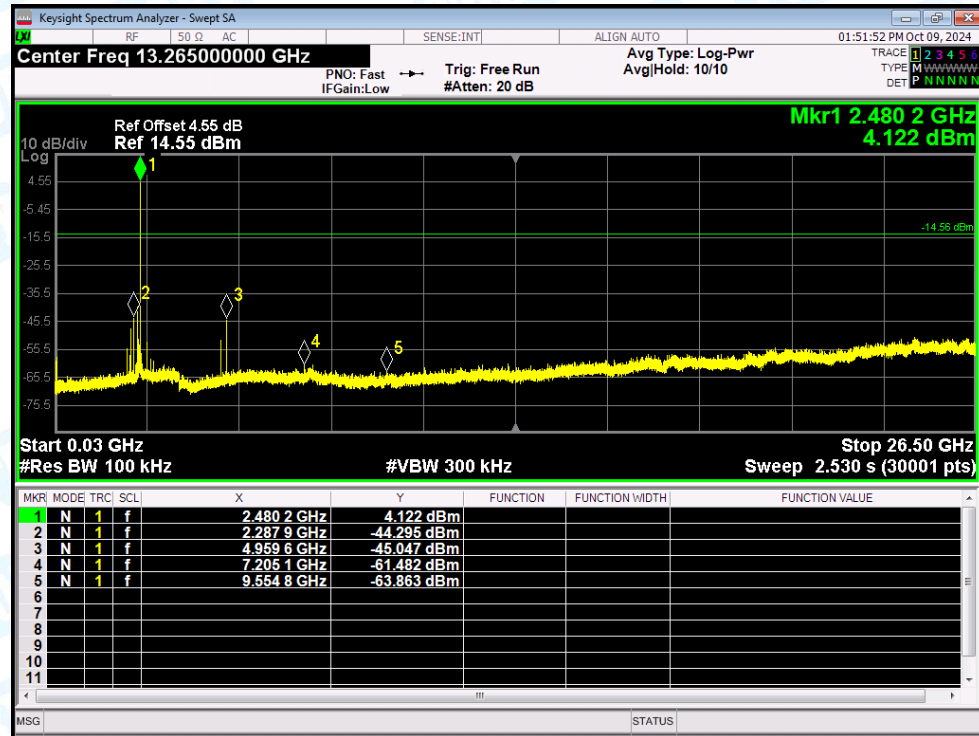
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	-49.73	-20	Pass
NVNT	1-DH1	2441	Ant1	-46.94	-20	Pass
NVNT	1-DH1	2480	Ant1	-47.73	-20	Pass
NVNT	2-DH1	2402	Ant1	-44.77	-20	Pass
NVNT	2-DH1	2441	Ant1	-47.54	-20	Pass
NVNT	2-DH1	2480	Ant1	-51.72	-20	Pass
NVNT	3-DH1	2402	Ant1	-49.71	-20	Pass
NVNT	3-DH1	2441	Ant1	-51.05	-20	Pass
NVNT	3-DH1	2480	Ant1	-49.05	-20	Pass

Test Graphs

Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Ref



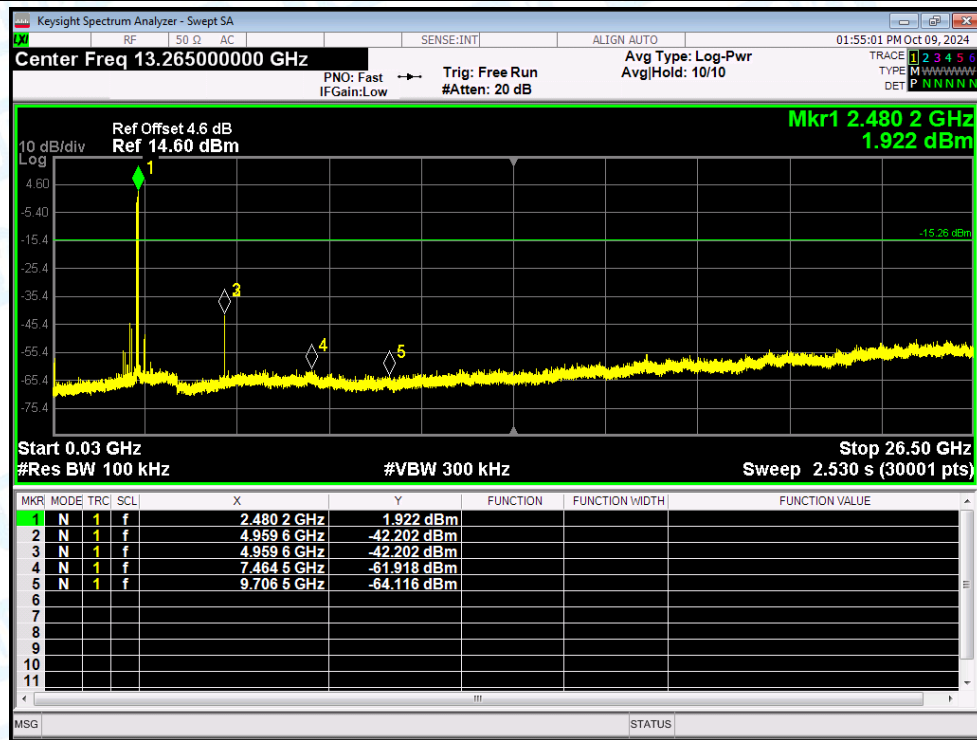
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Emission



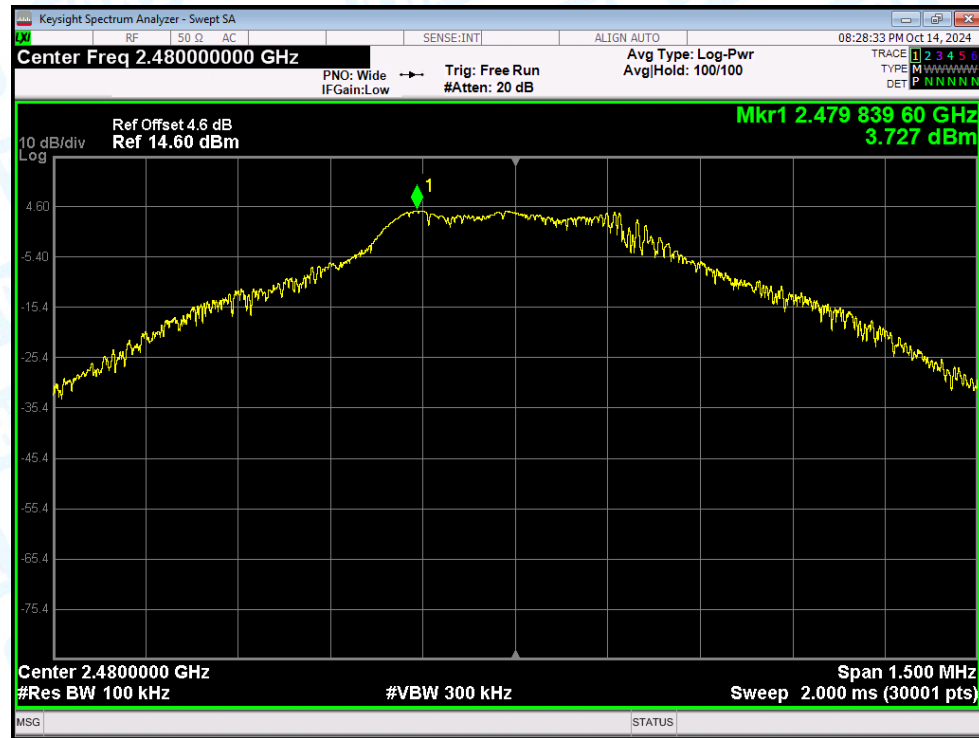
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Ref



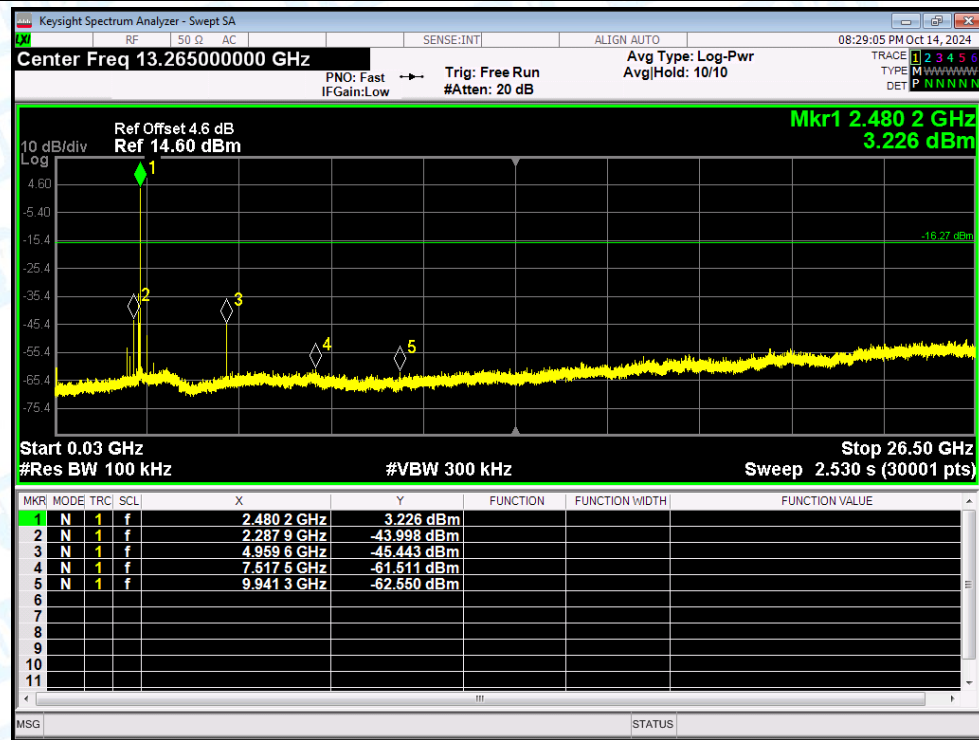
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Emission



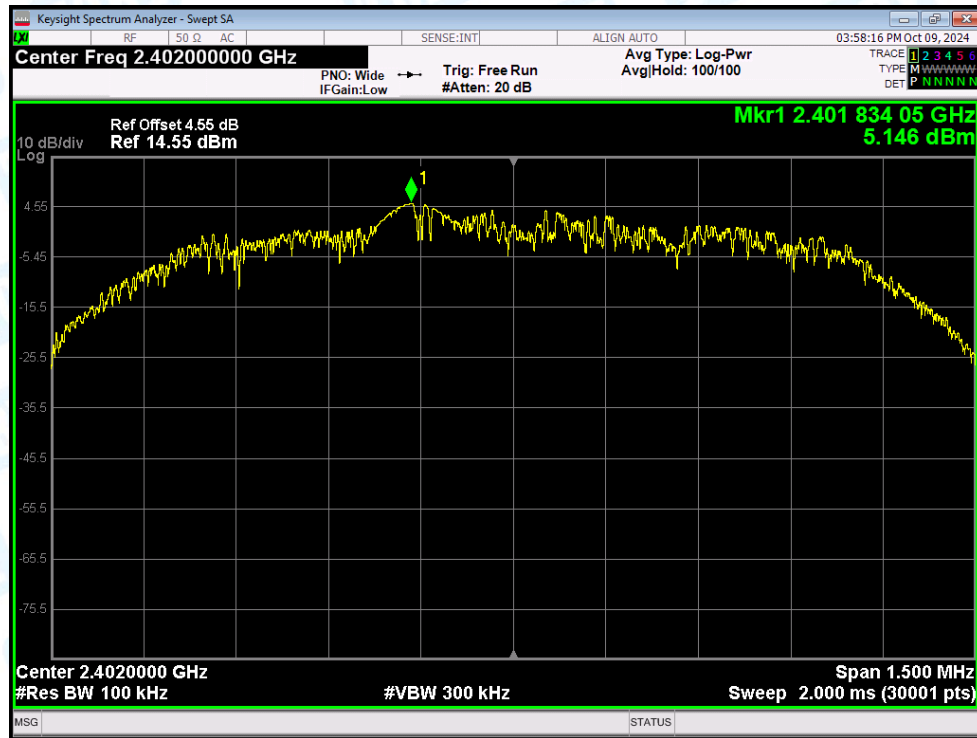
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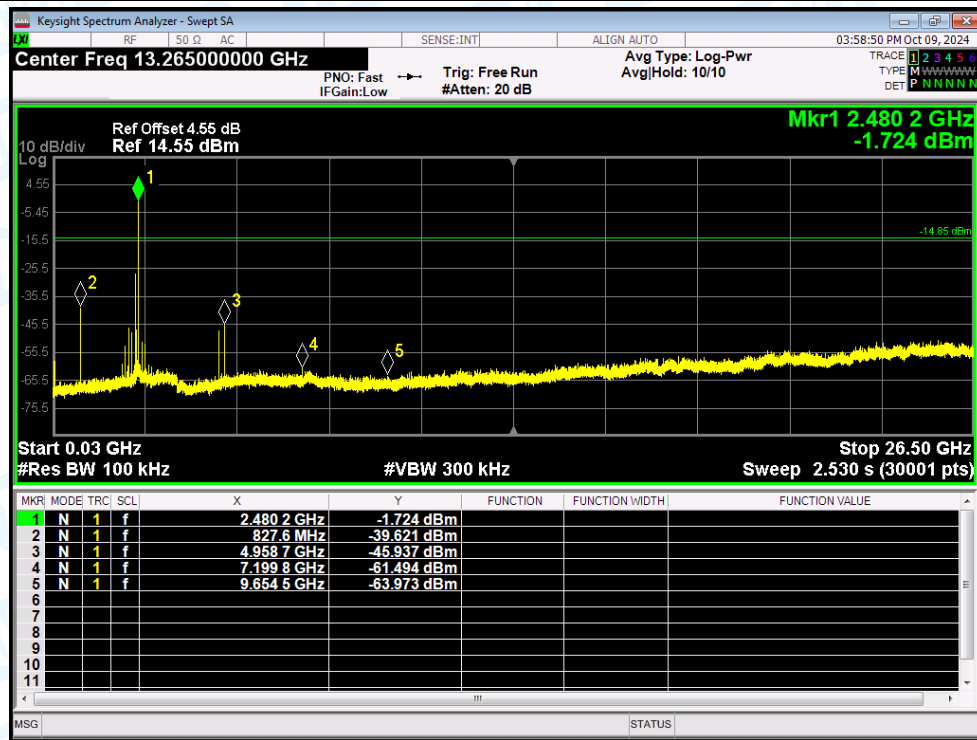
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Emission



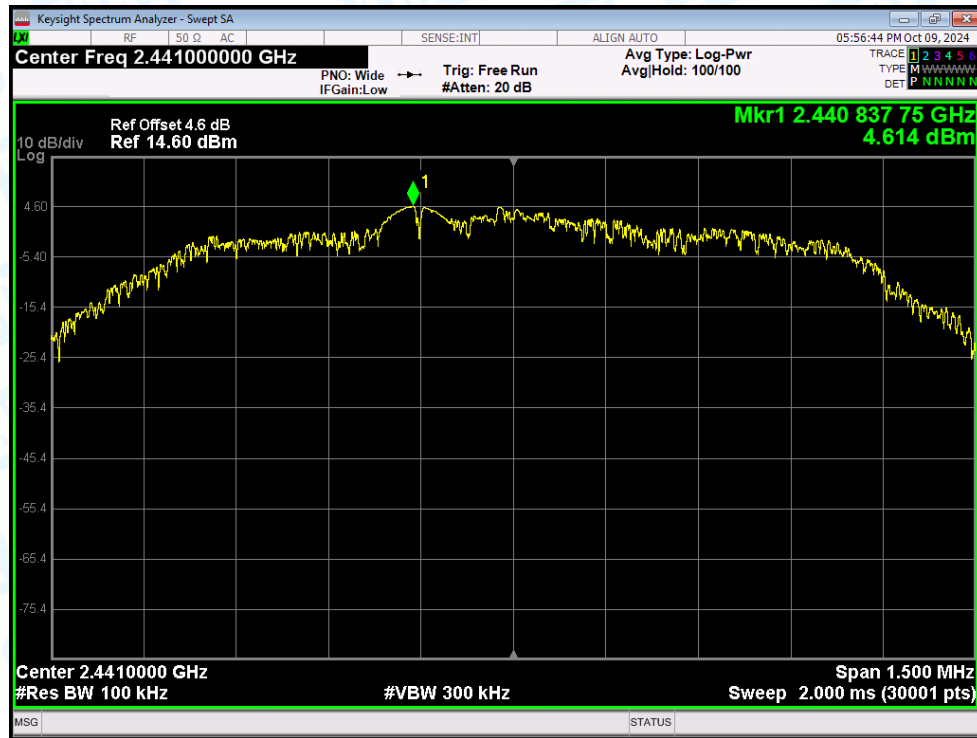
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Ref



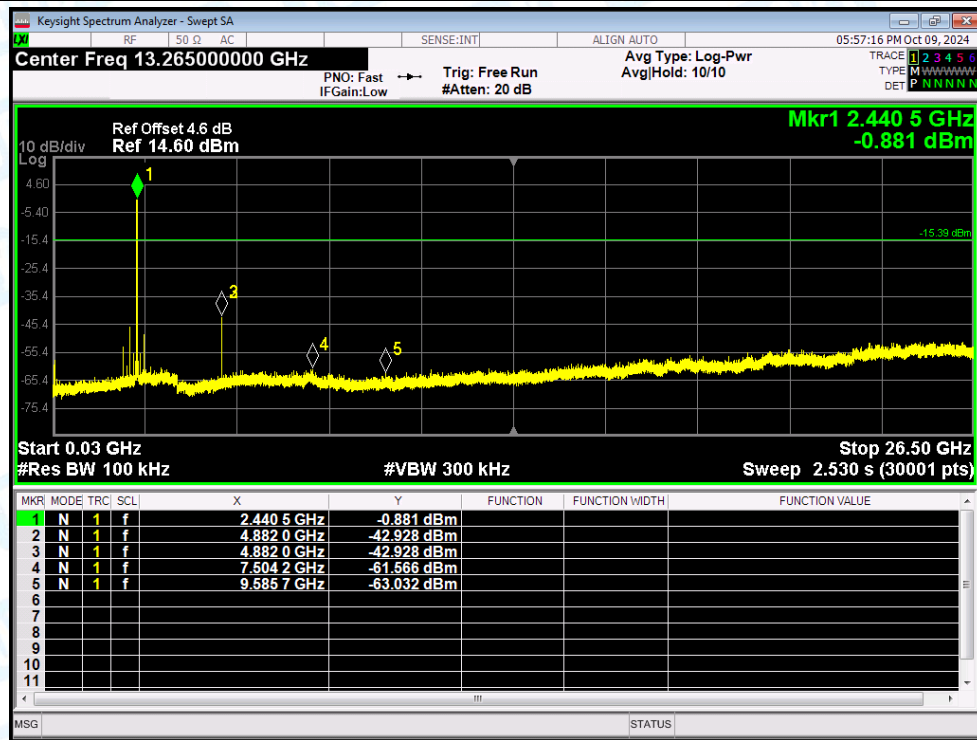
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Emission



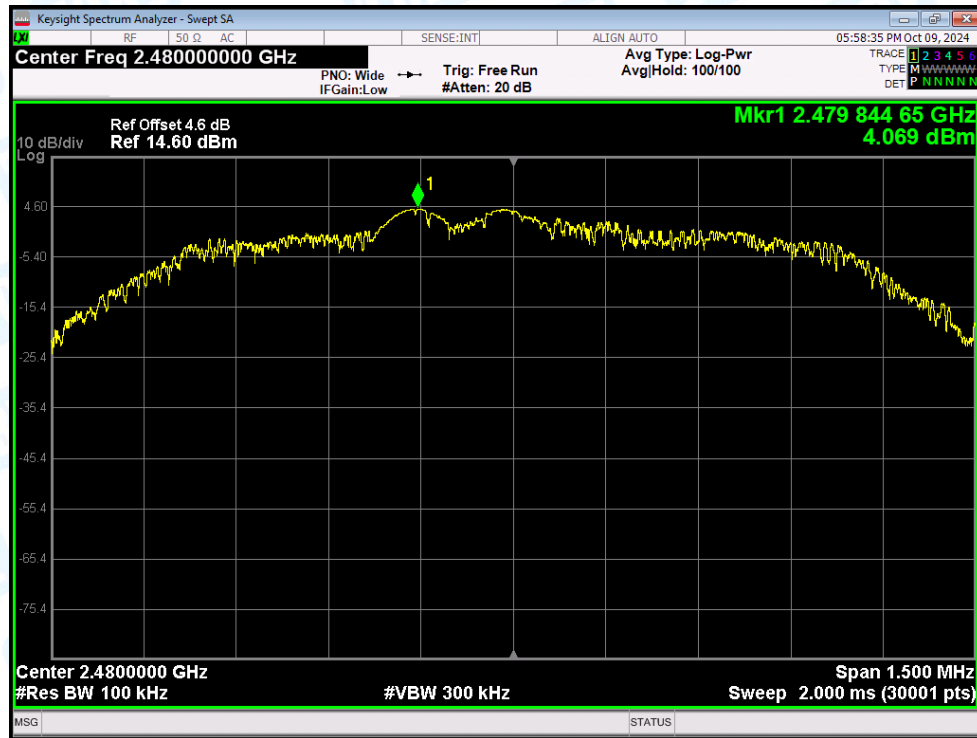
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Ref



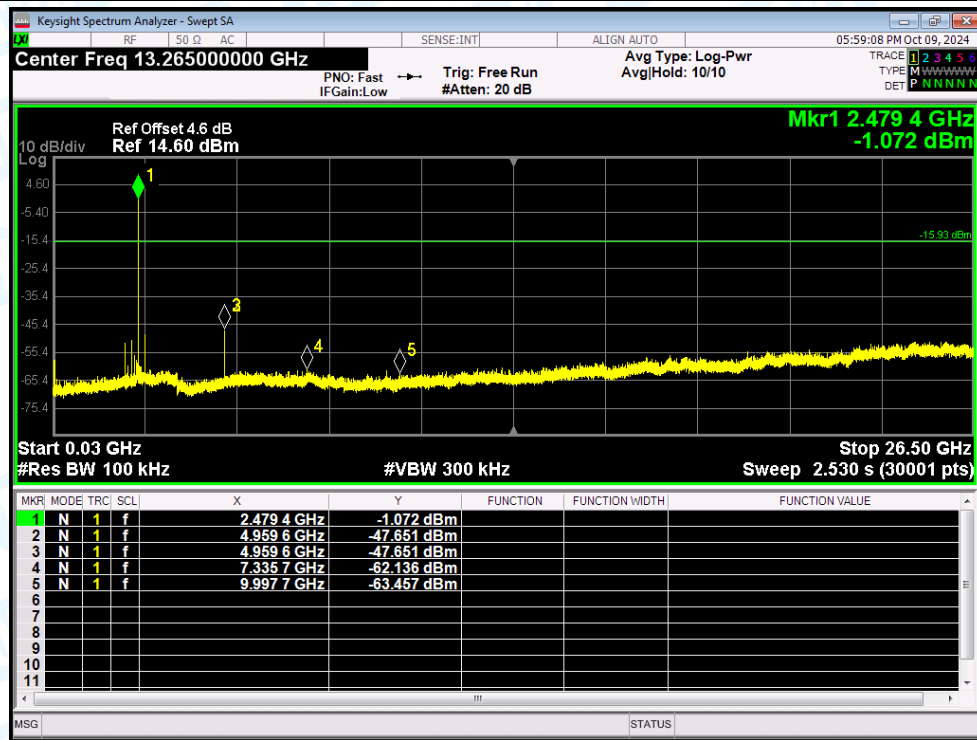
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Emission



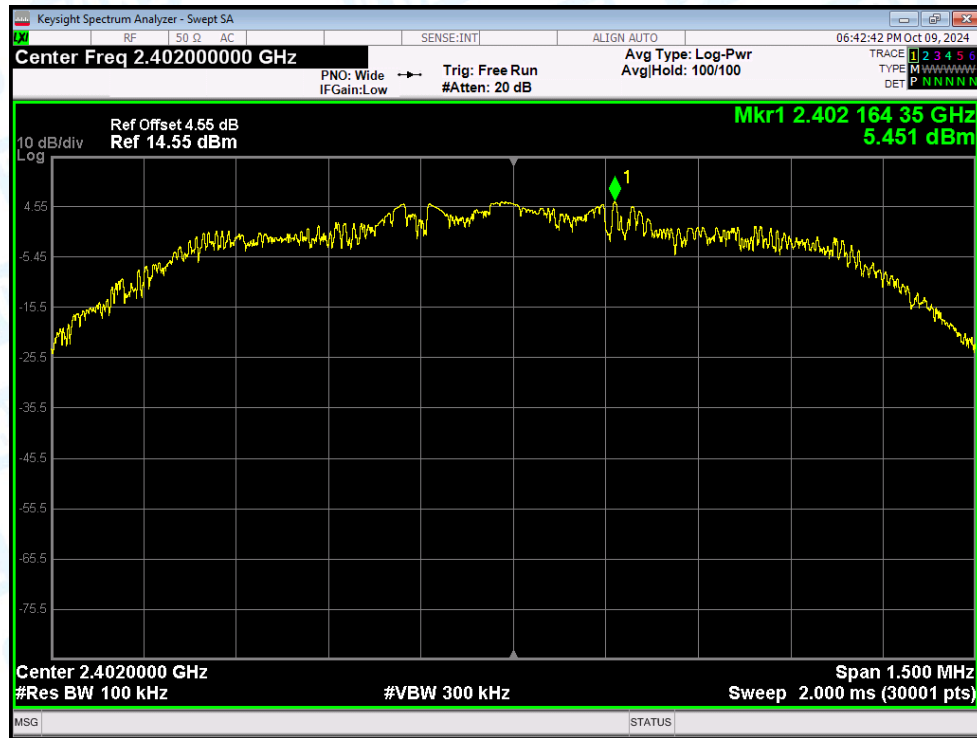
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Ref



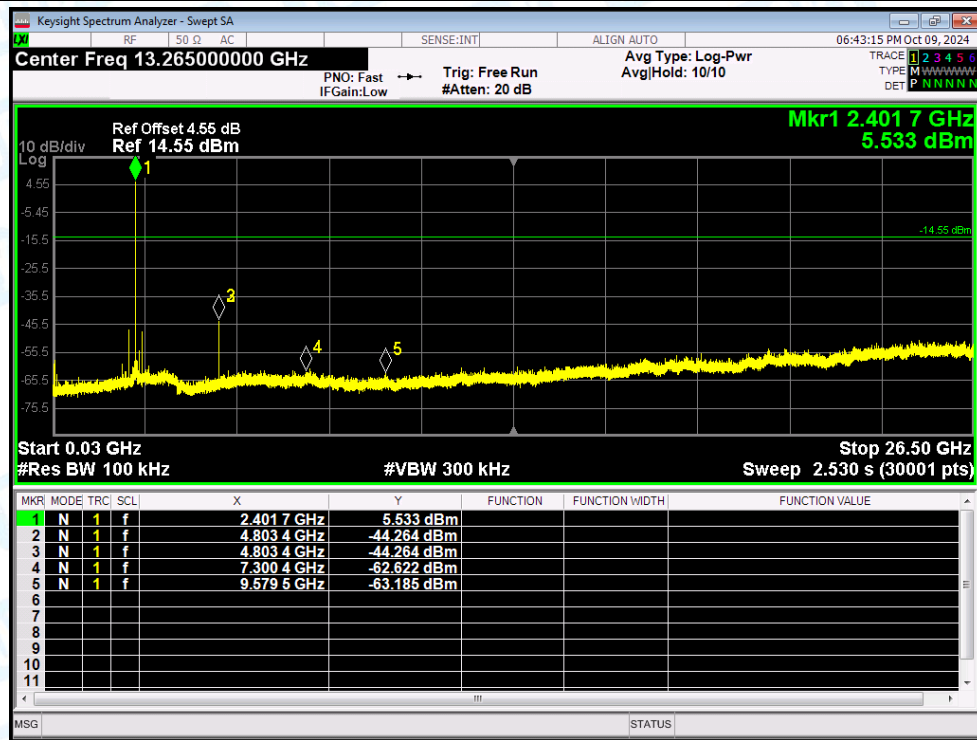
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Emission



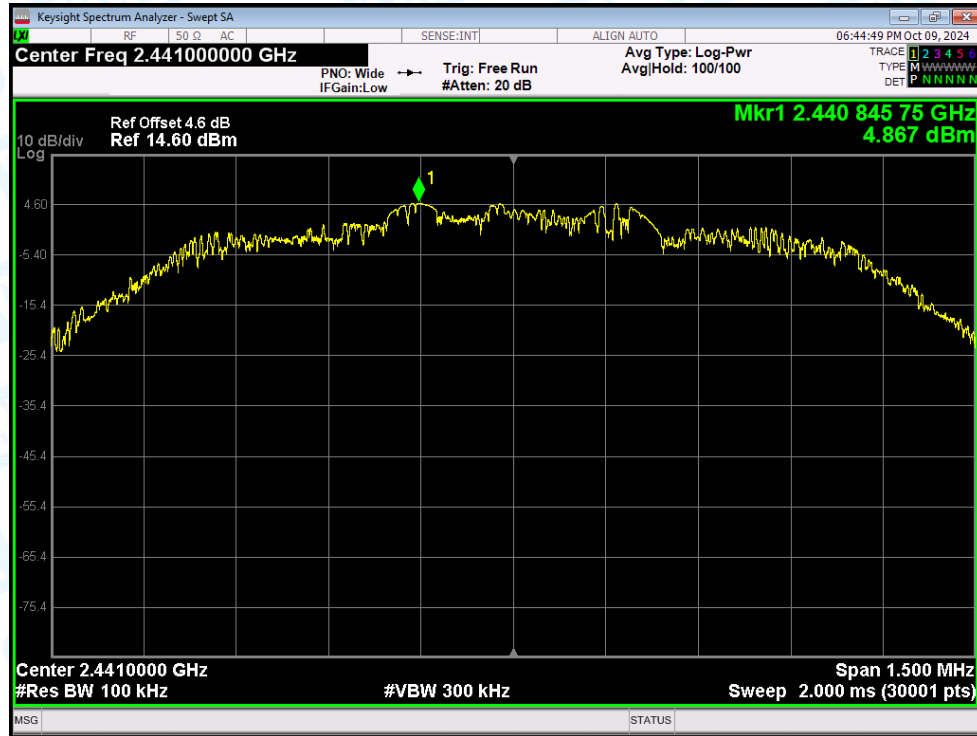
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Ref



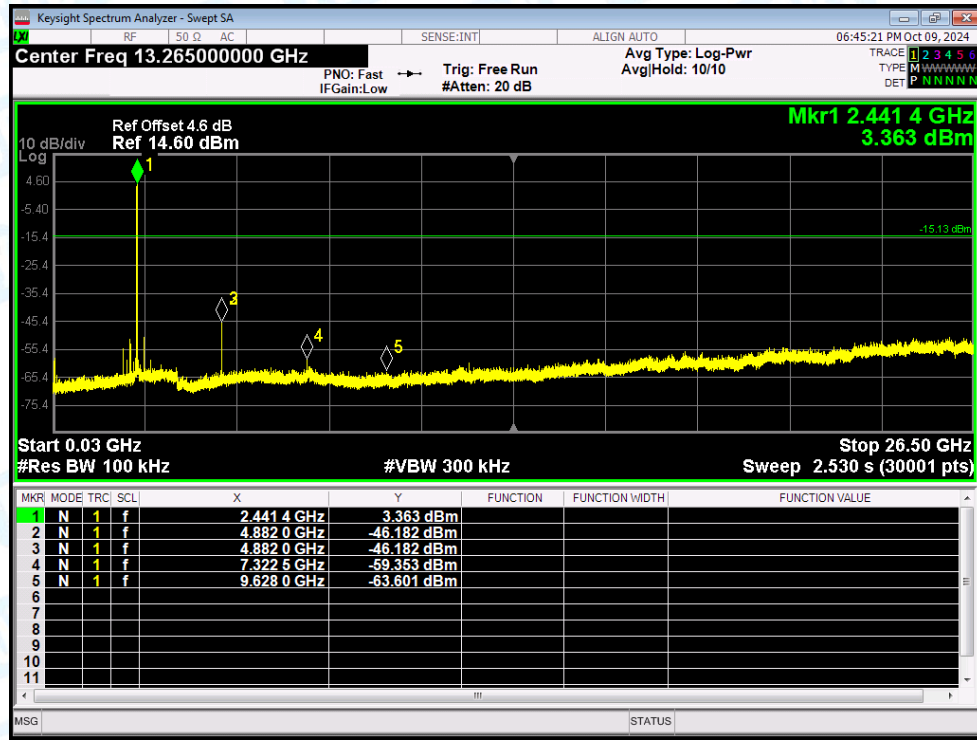
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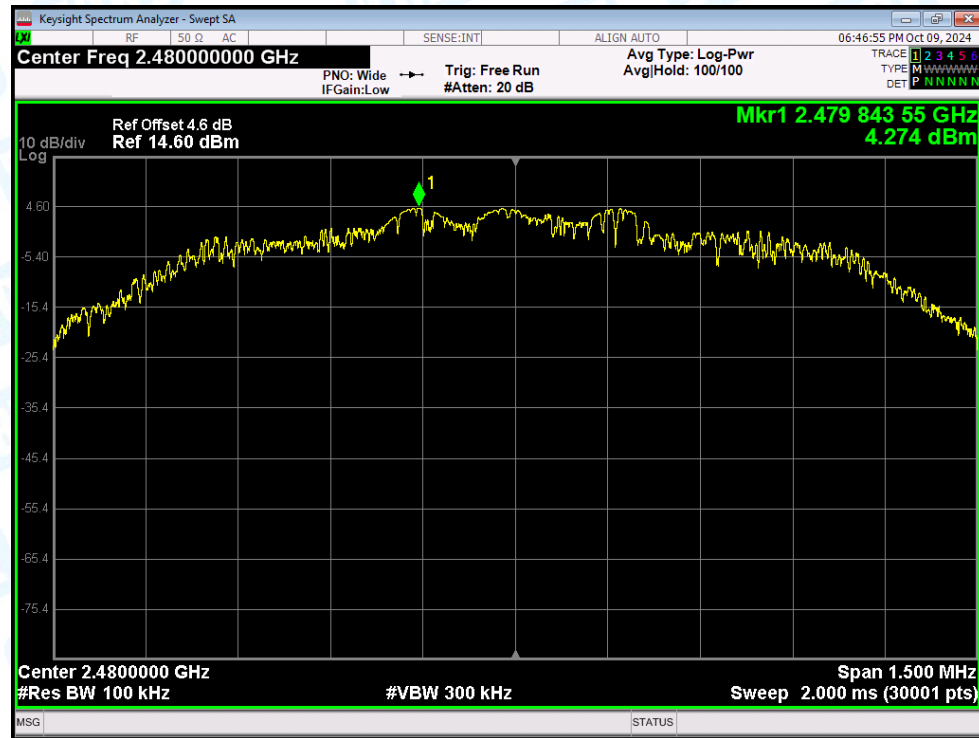
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Ref



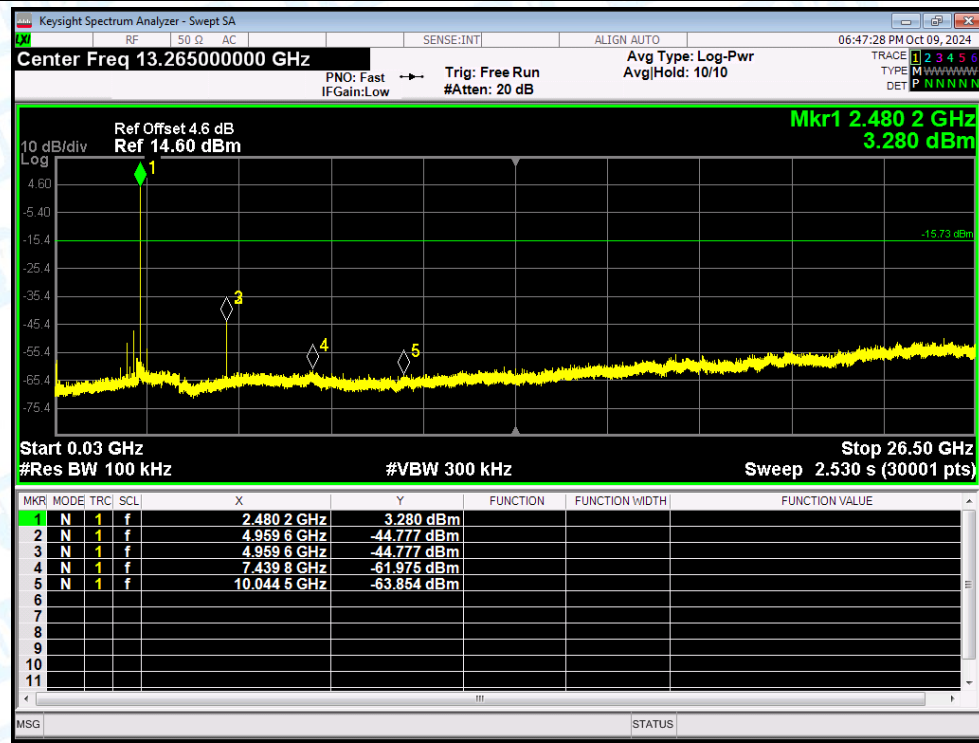
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Emission

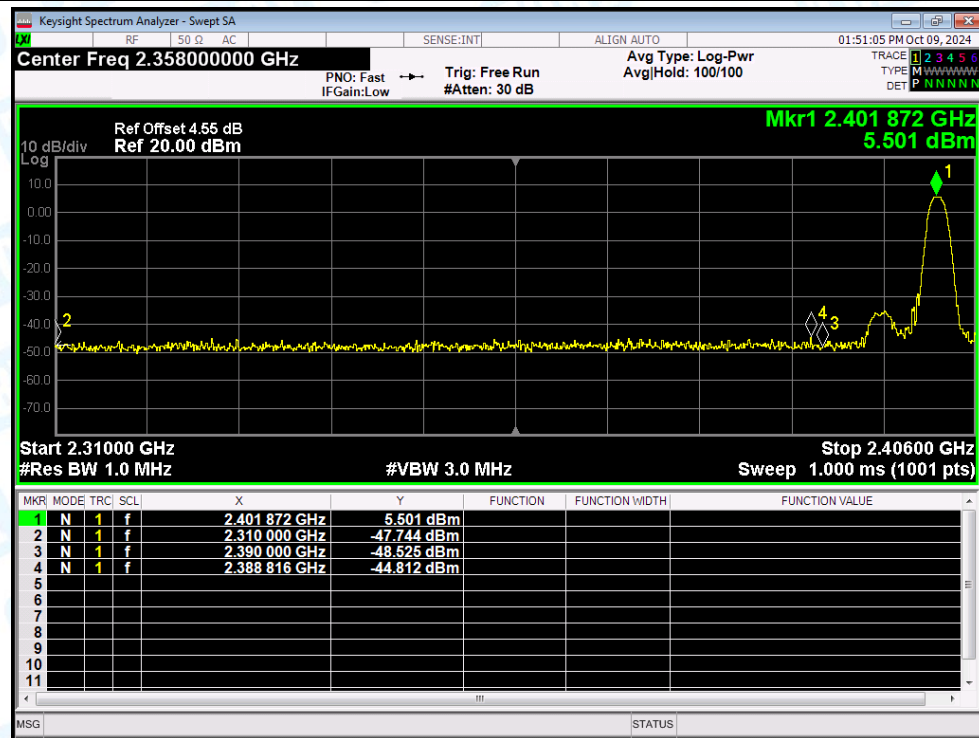


8. Restrict Band

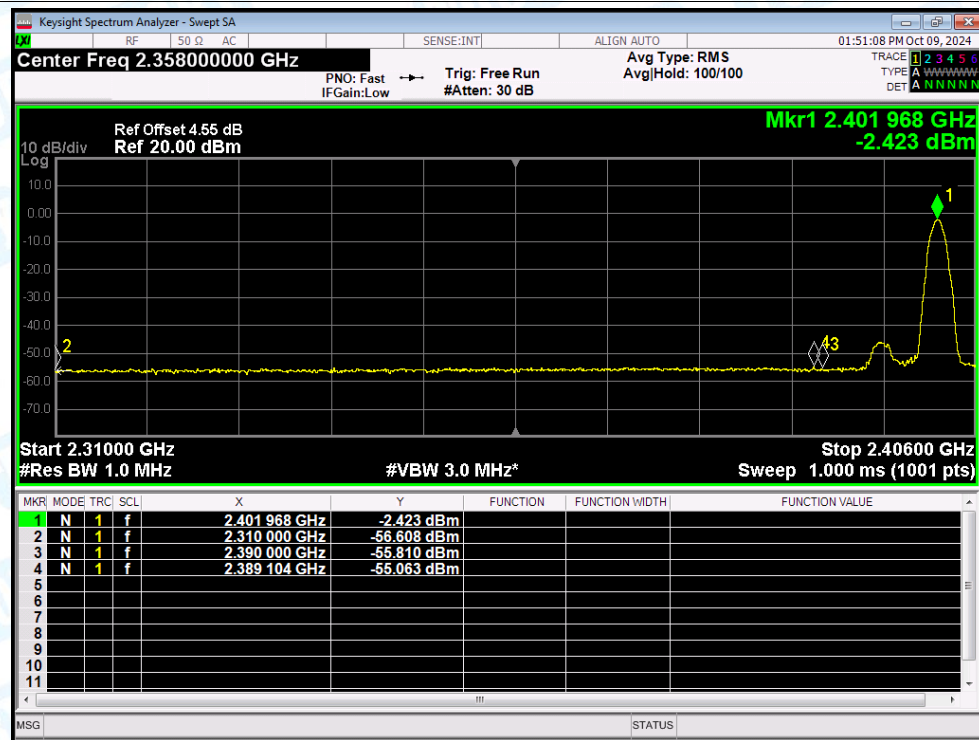
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-47.74	2	-	49.52	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-56.61	2	8.07	48.72	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2388.816	-44.81	2	-	52.45	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2389.104	-55.06	2	8.07	50.27	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-48.53	2	-	48.73	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-55.81	2	8.07	49.52	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-39.94	2	-	57.32	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-48.83	2	0	48.43	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2485.456	-36.55	2	-	60.71	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.656	-48.63	2	0	48.63	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-47.15	2	-	50.11	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-54.82	2	0	42.44	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-48.22	2	-	49.04	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-57.01	2	7.96	48.21	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2385.264	-44.83	2	-	52.43	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2384.016	-54.76	2	7.96	50.46	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-47.51	2	-	49.75	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-56.55	2	7.96	48.67	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-37.38	2	-	59.88	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-49.22	2	5.06	53.1	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.56	-36.61	2	-	60.65	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.512	-49.22	2	5.06	53.1	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-47.39	2	-	49.87	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-55.36	2	5.06	46.96	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-49.53	2	-	47.73	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-56.7	2	5.06	45.62	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2380.272	-44.17	2	-	53.09	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2380.56	-54.76	2	5.06	47.56	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-47.4	2	-	49.86	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-55.38	2	5.06	46.94	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-39.41	2	-	57.85	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-49.2	2	5.06	53.12	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.656	-36.98	2	-	60.28	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.512	-49.2	2	5.06	53.12	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-47.23	2	-	50.03	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-55.13	2	5.06	47.19	Average	54	Pass

Test Graphs

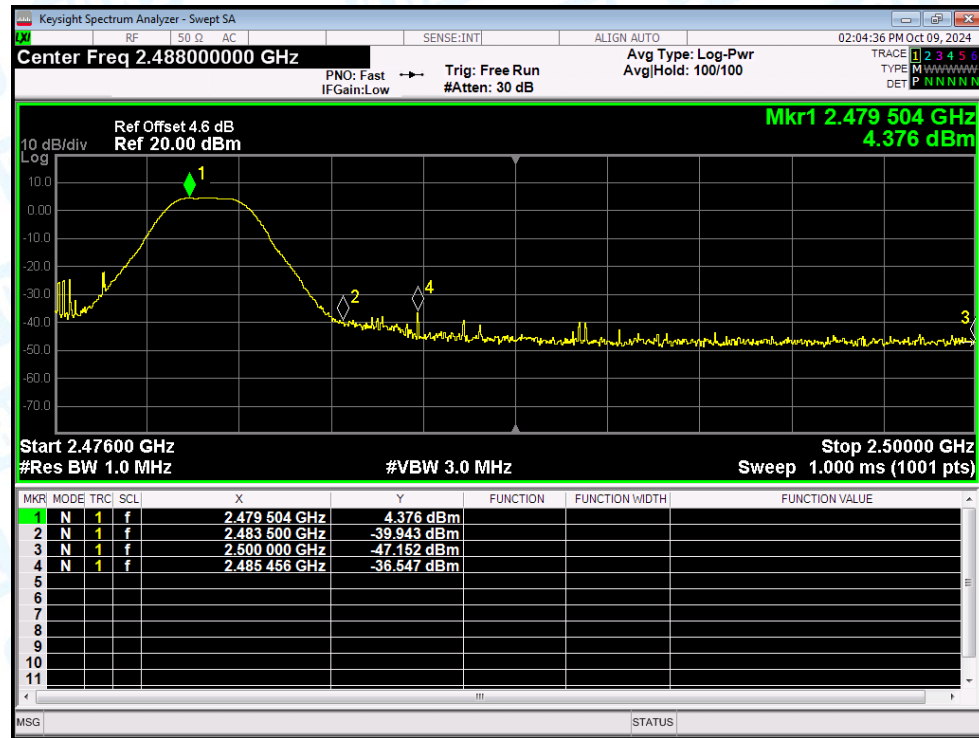
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Peak



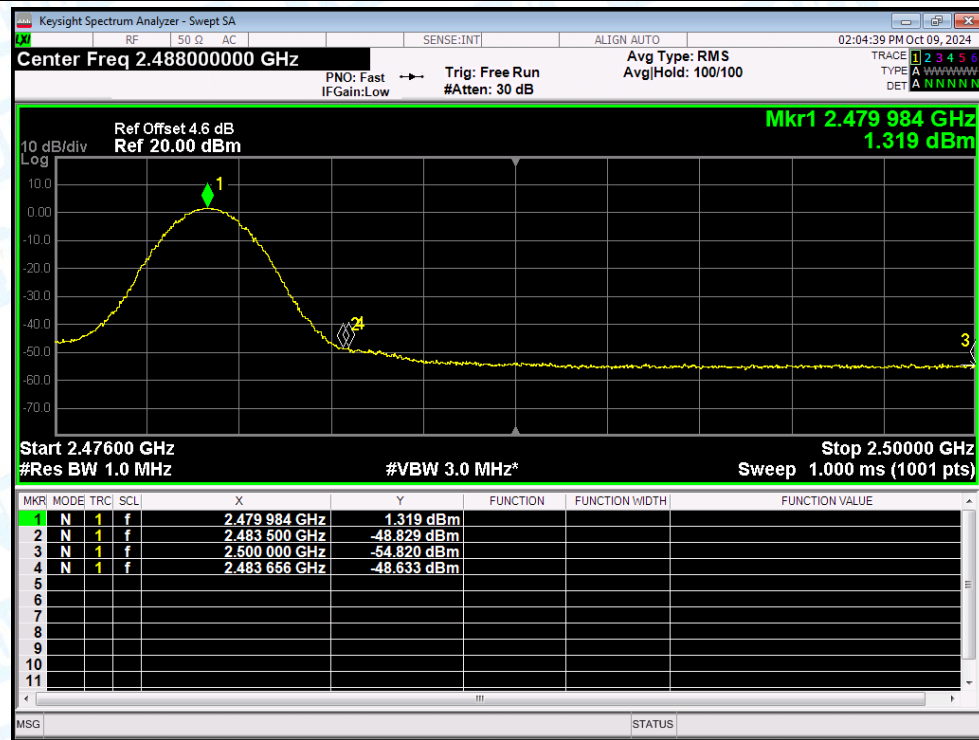
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Average



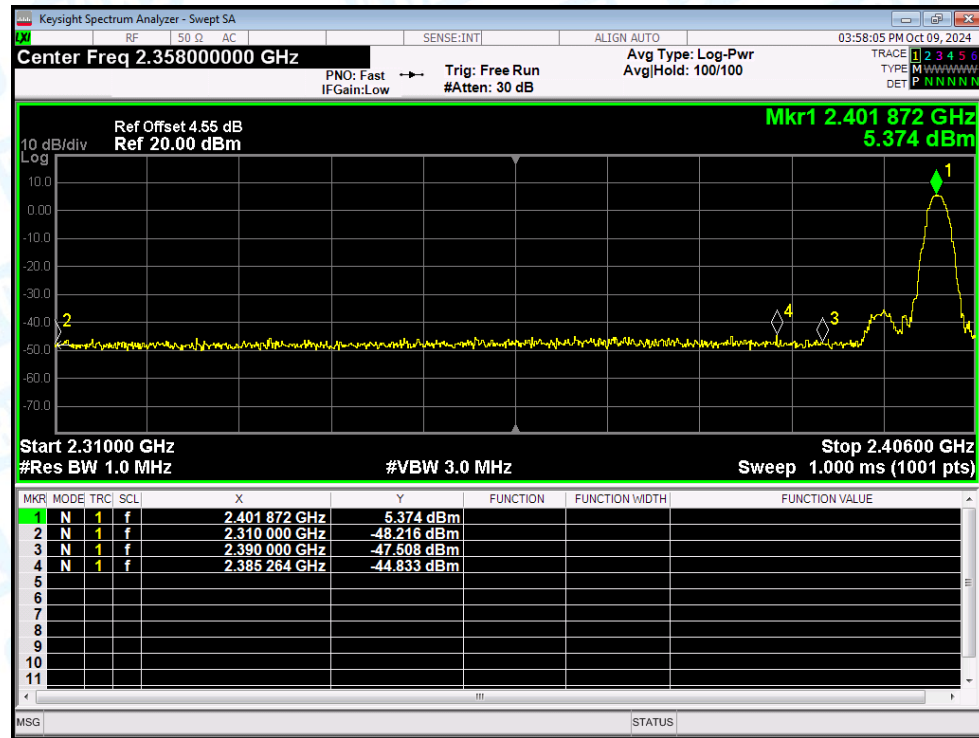
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Peak



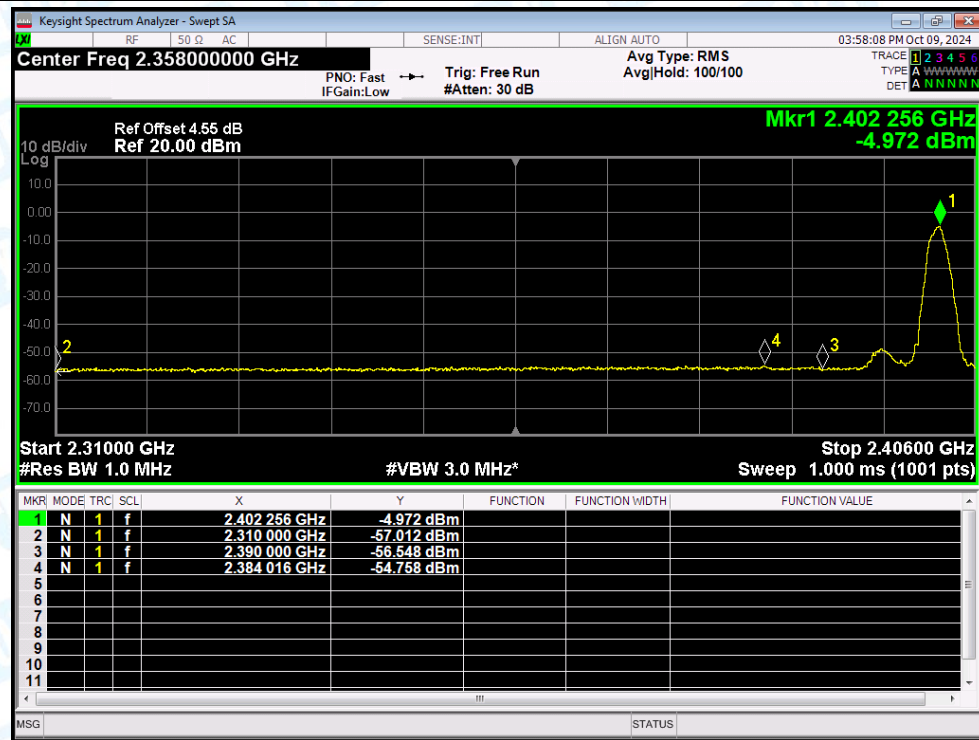
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Average



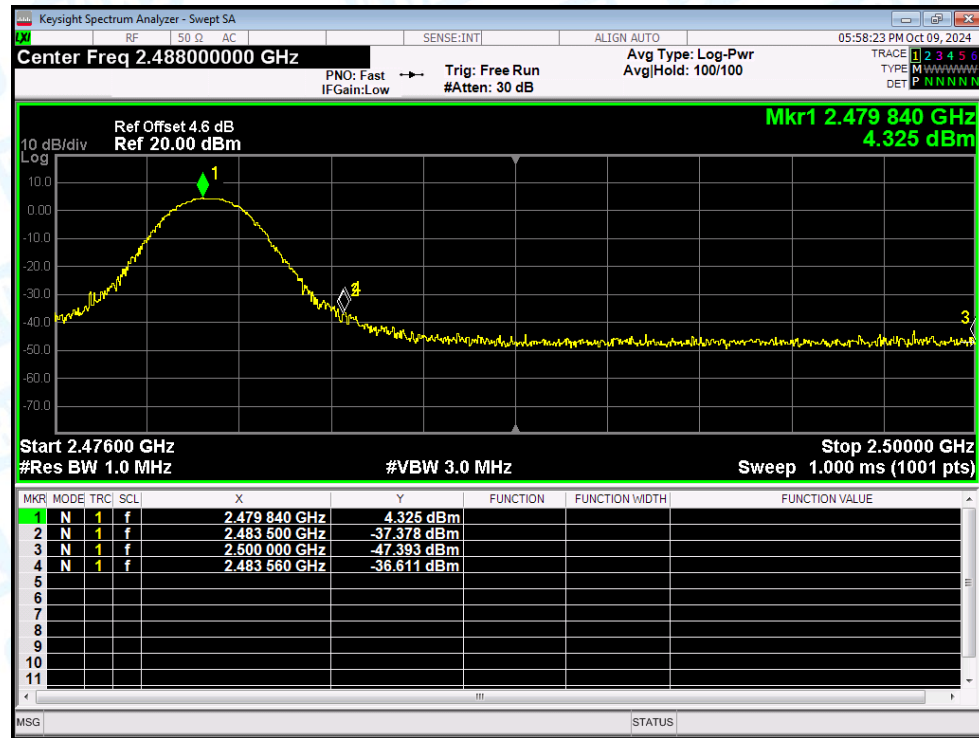
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Peak



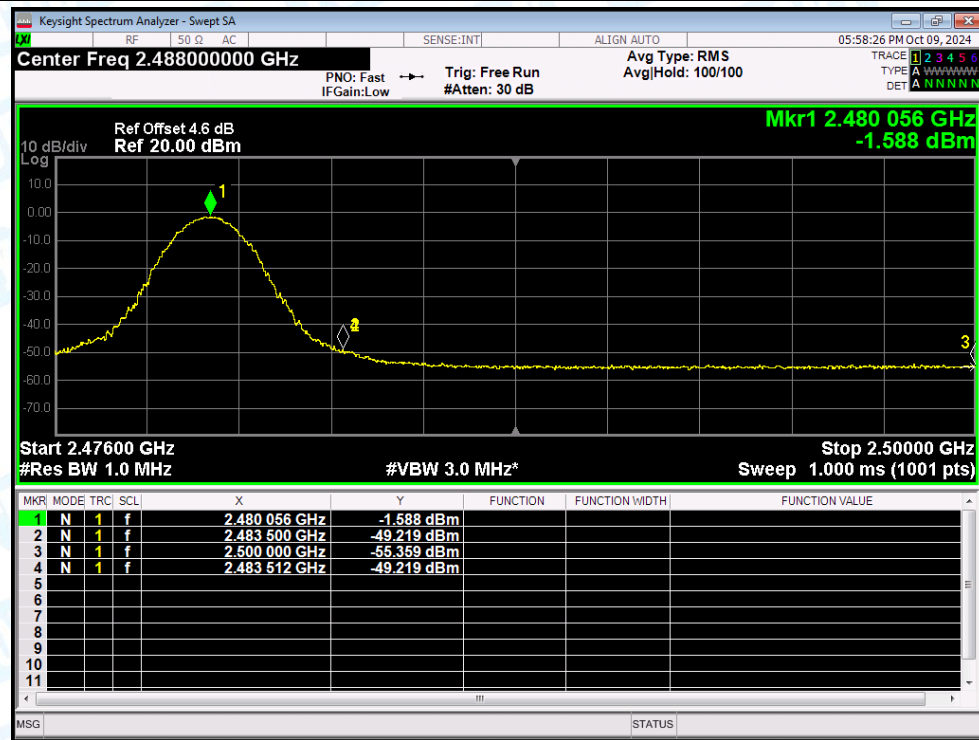
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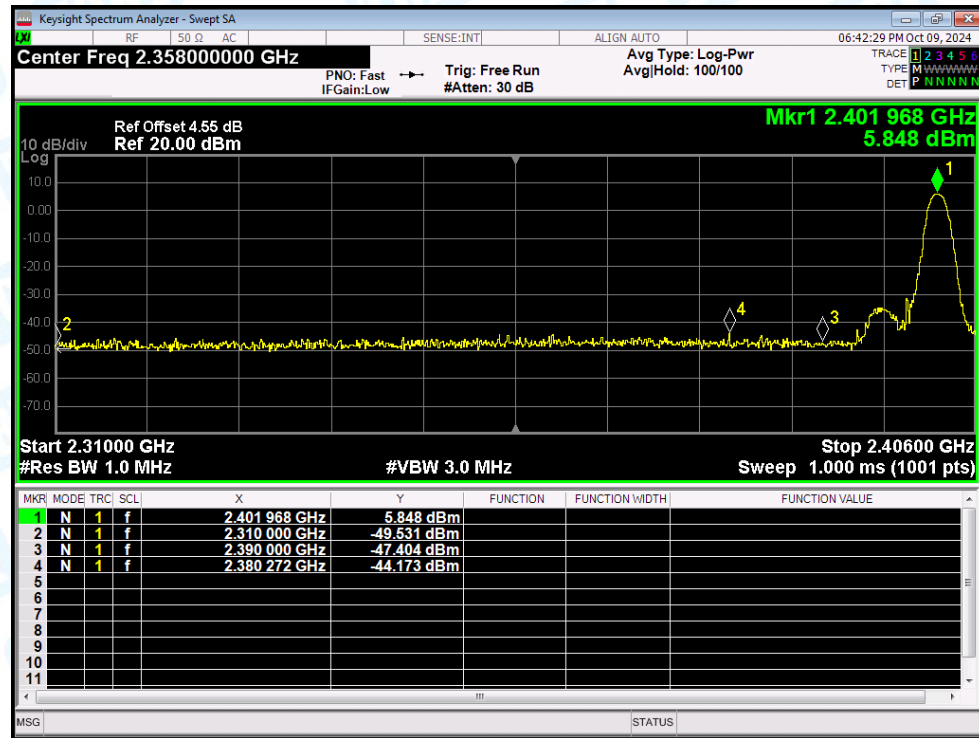
Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Peak



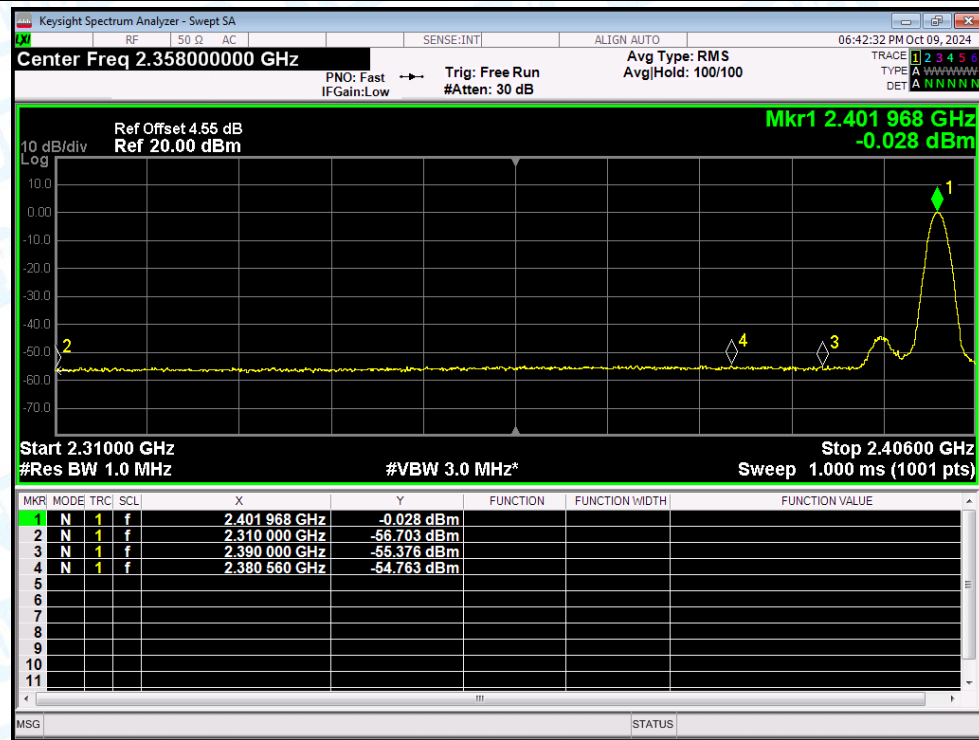
Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Average



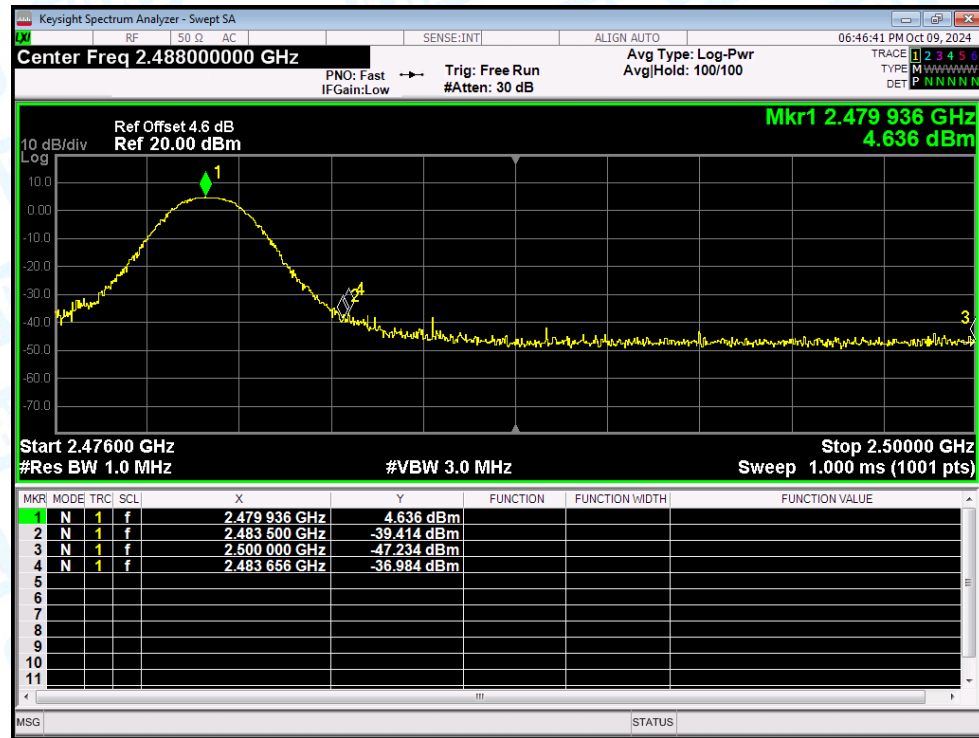
Restrict Band NVNT 3-DH1 2402MHz Ant1 No-Hopping Peak



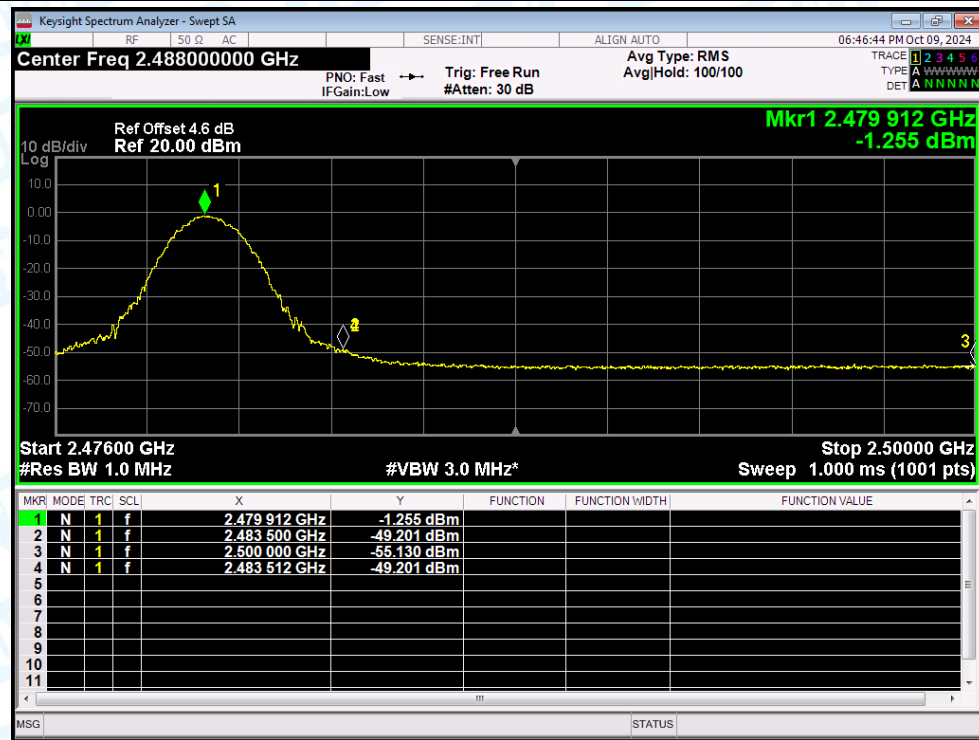
Restrict Band NVNT 3-DH1 2402MHz Ant1 No-Hopping Average



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



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

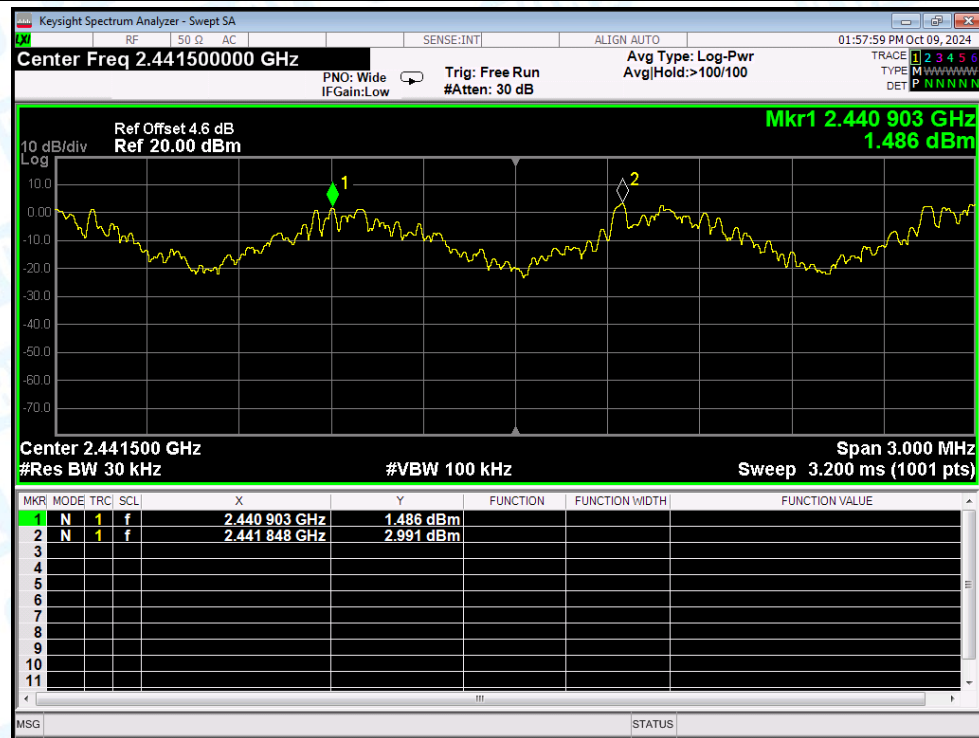


9. Carrier Frequencies Separation

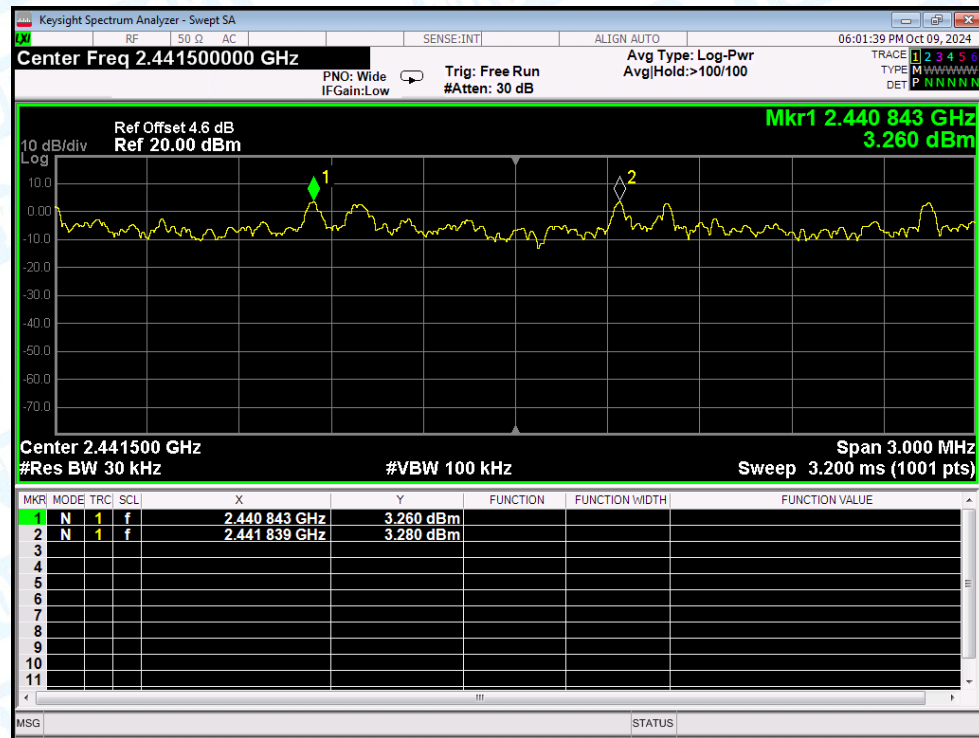
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	Ant1	2440.903	2441.848	0.945	0.547	Pass
NVNT	2-DH1	Ant1	2440.843	2441.839	0.996	0.86	Pass
NVNT	3-DH1	Ant1	2441.002	2442.001	0.999	0.807	Pass

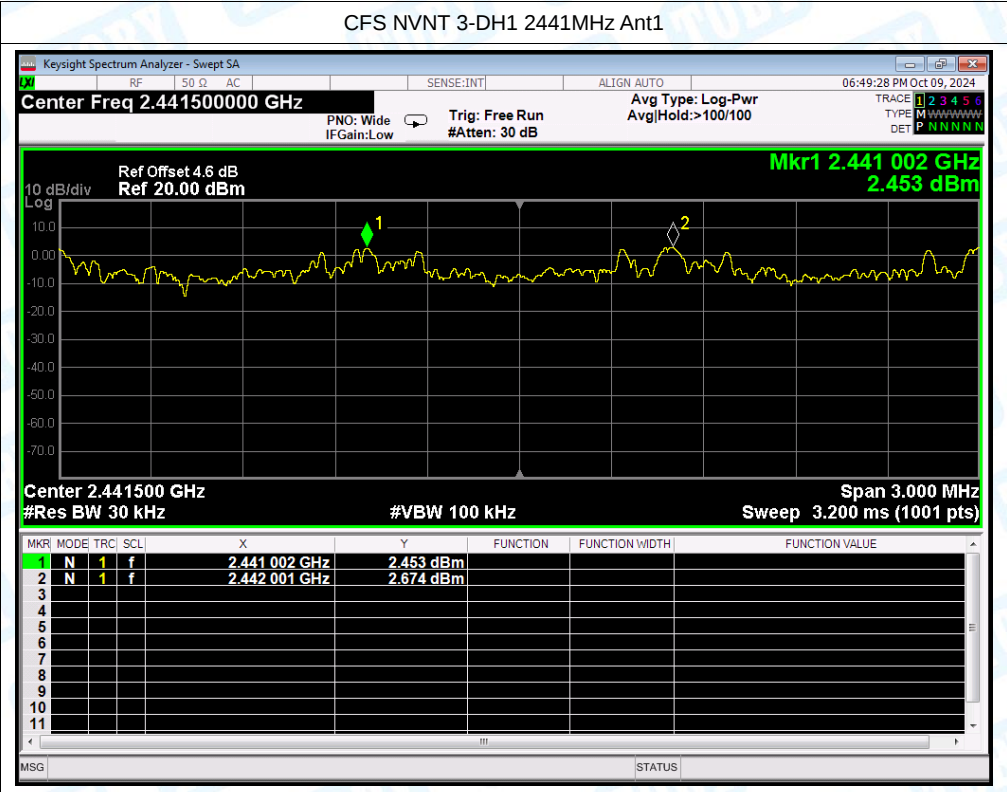
Test Graphs

CFS NVNT 1-DH1 2441MHz Ant1



CFS NVNT 2-DH1 2441MHz Ant1



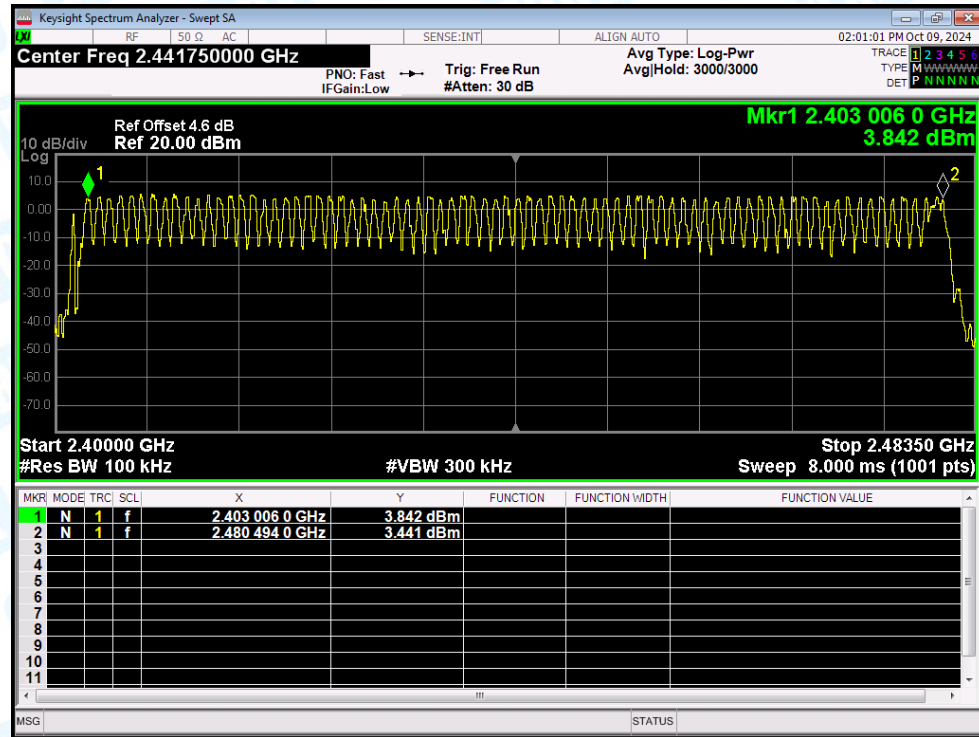


10. Number of Hopping Channel

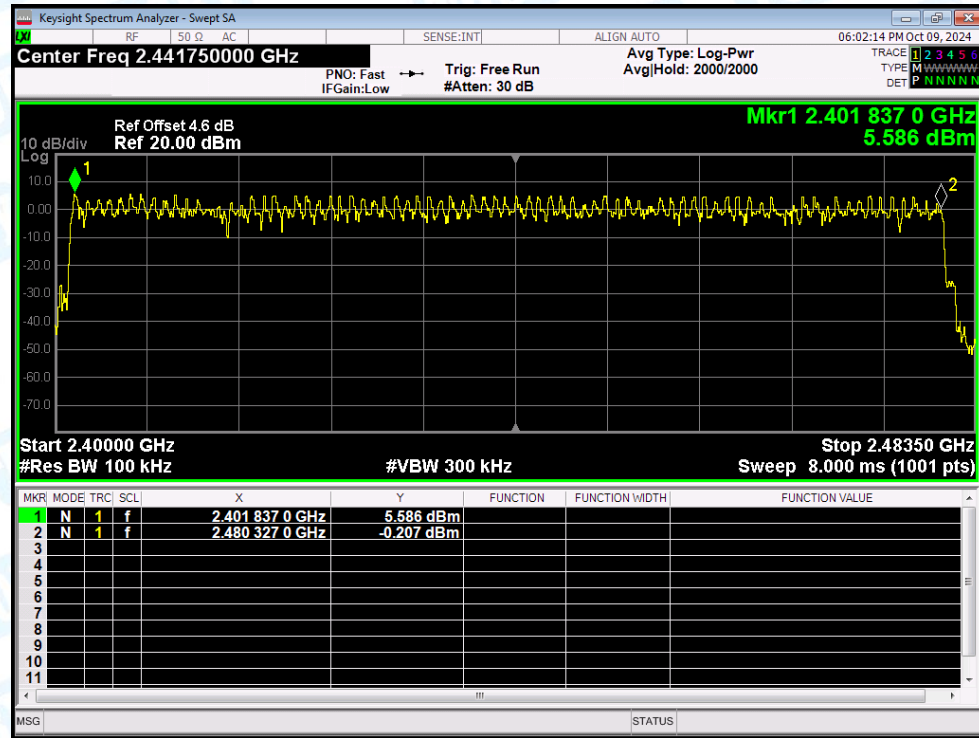
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH1	Ant1	79	15	Pass
NVNT	2-DH1	Ant1	79	15	Pass
NVNT	3-DH1	Ant1	79	15	Pass

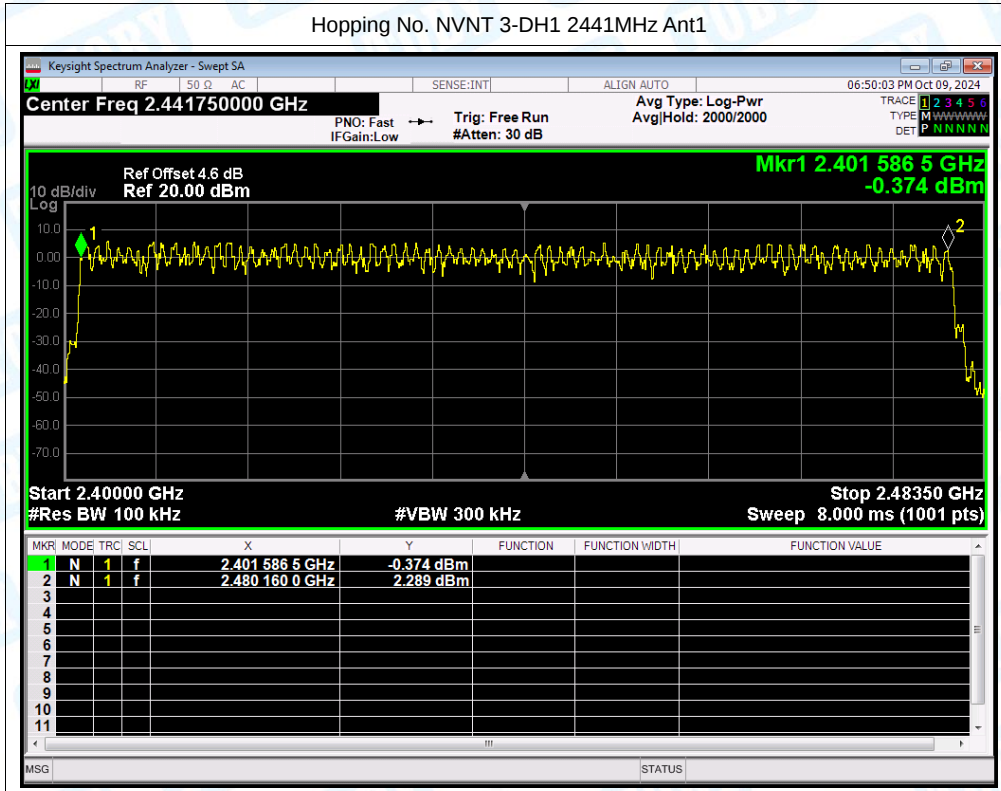
Test Graphs

Hopping No. NVNT 1-DH1 2441MHz Ant1



Hopping No. NVNT 2-DH1 2441MHz Ant1



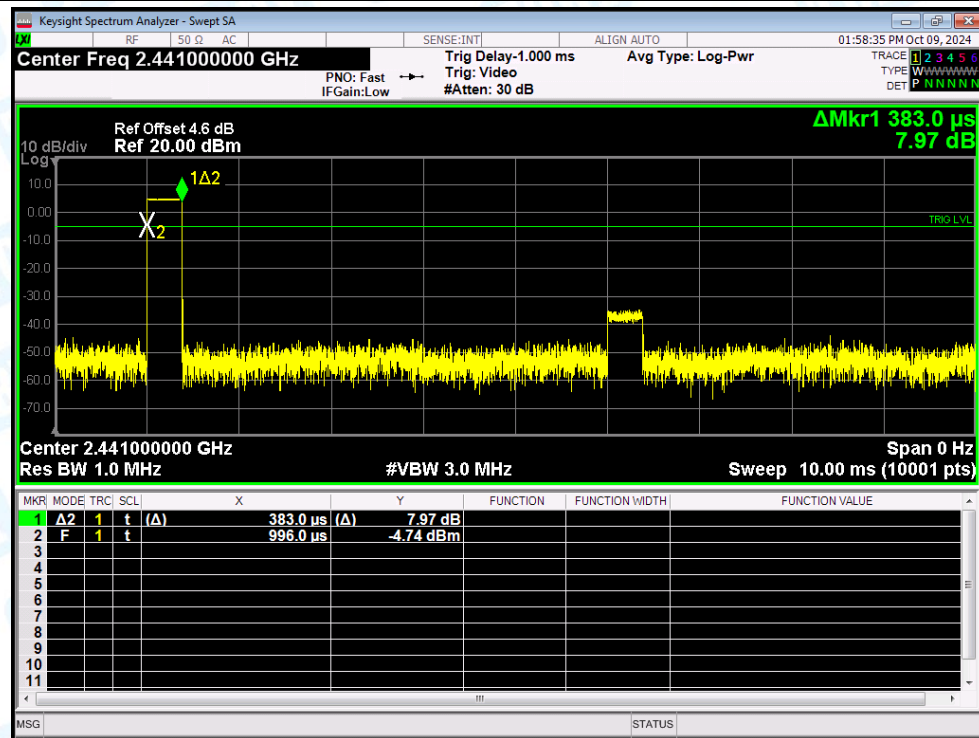


11. Dwell Time

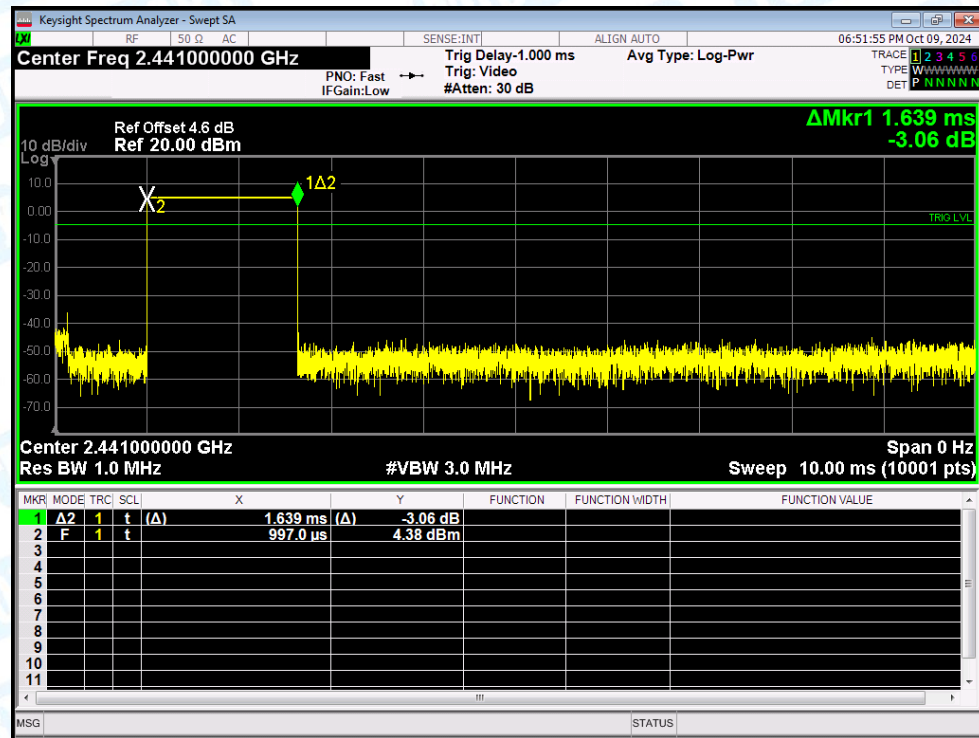
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	Ant1	0.383	122.56	31600	400	Pass
NVNT	1-DH3	2441	Ant1	1.639	262.24	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.887	307.947	31600	400	Pass
NVNT	2-DH1	2441	Ant1	0.391	125.12	31600	400	Pass
NVNT	2-DH3	2441	Ant1	1.644	263.04	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.892	308.48	31600	400	Pass
NVNT	3-DH1	2441	Ant1	0.392	125.44	31600	400	Pass
NVNT	3-DH3	2441	Ant1	1.642	262.72	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.895	308.8	31600	400	Pass

Test Graphs

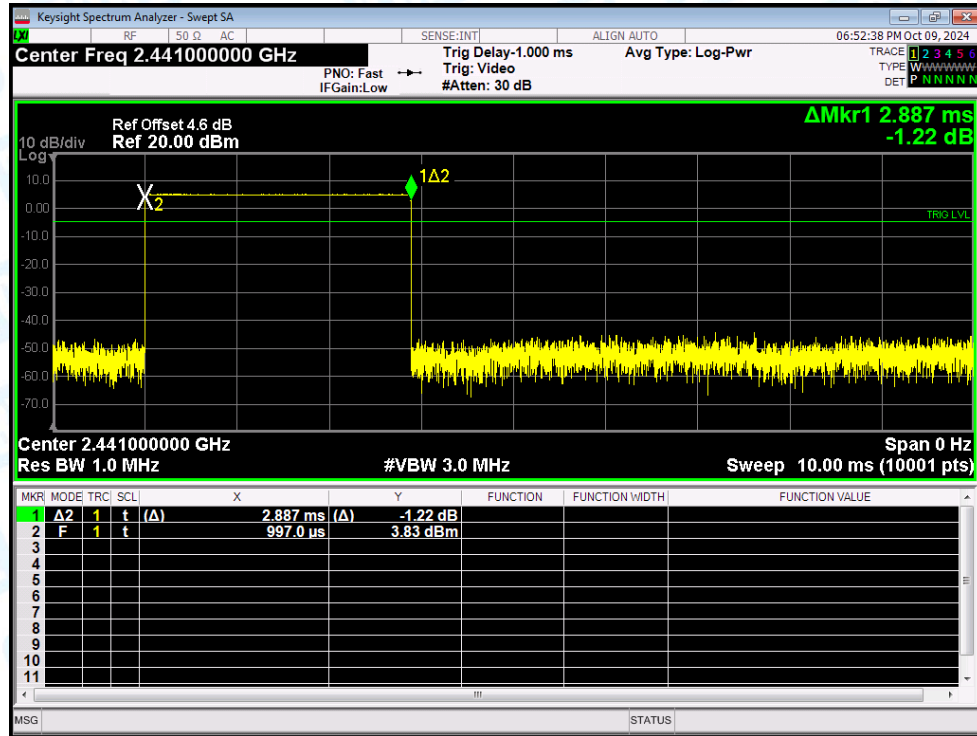
Dwell NVNT 1-DH1 2441MHz Ant1



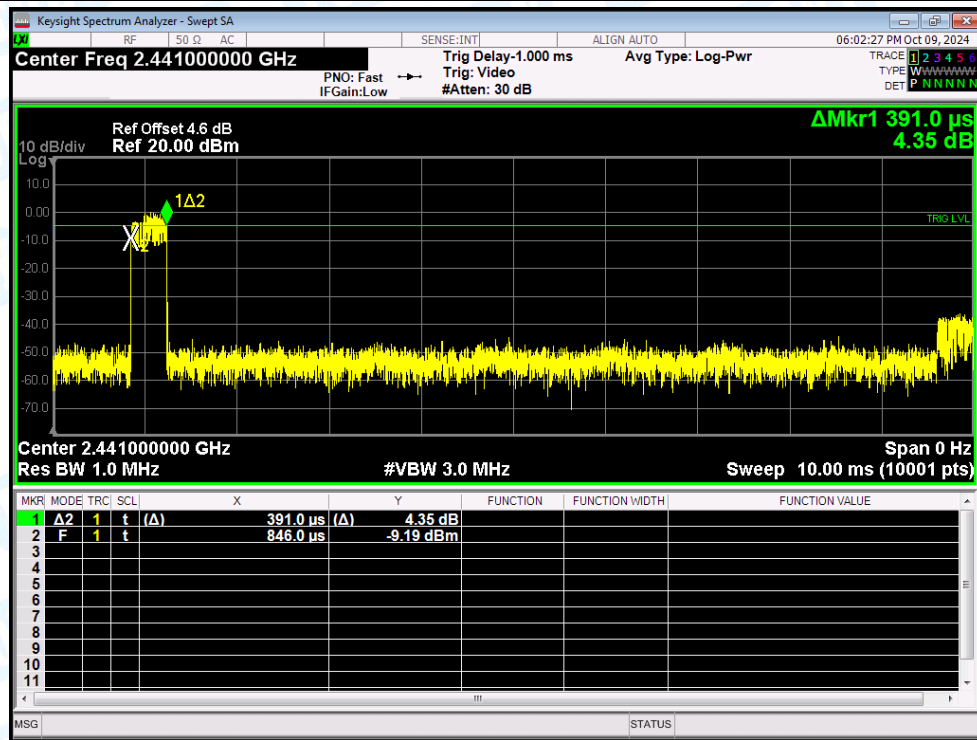
Dwell NVNT 1-DH3 2441MHz Ant1



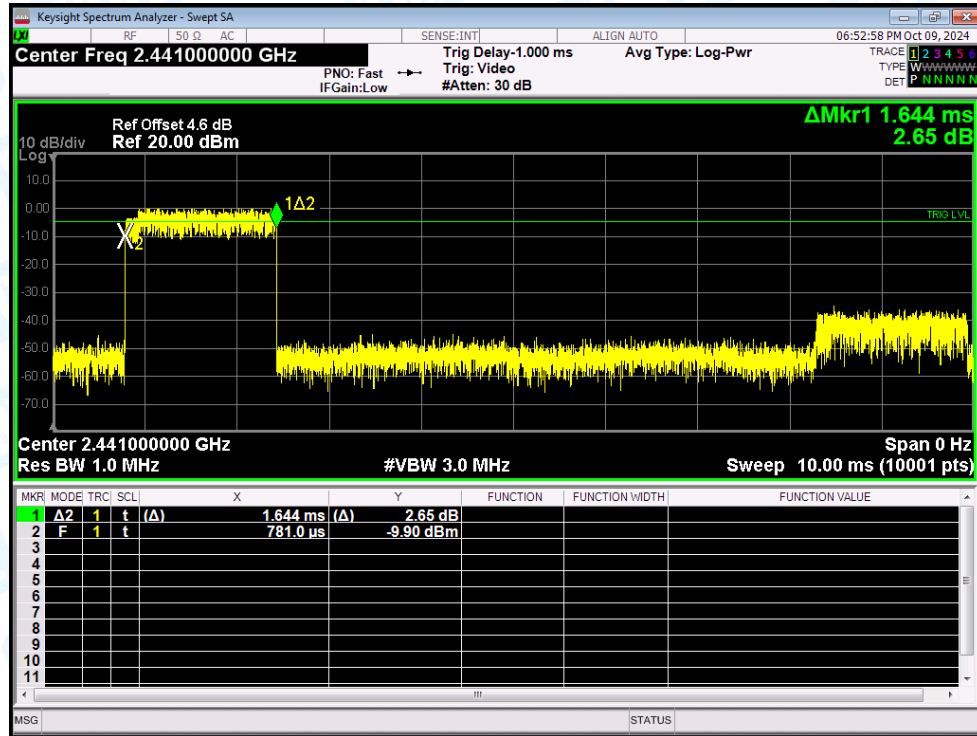
Dwell NVNT 1-DH5 2441MHz Ant1



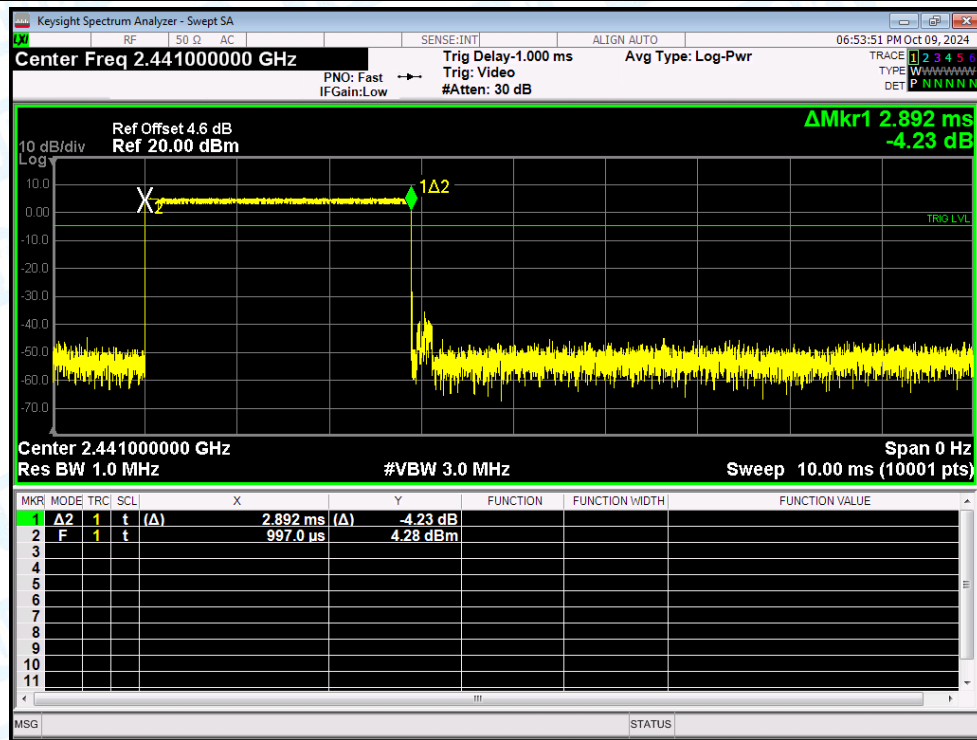
Dwell NVNT 2-DH1 2441MHz Ant1



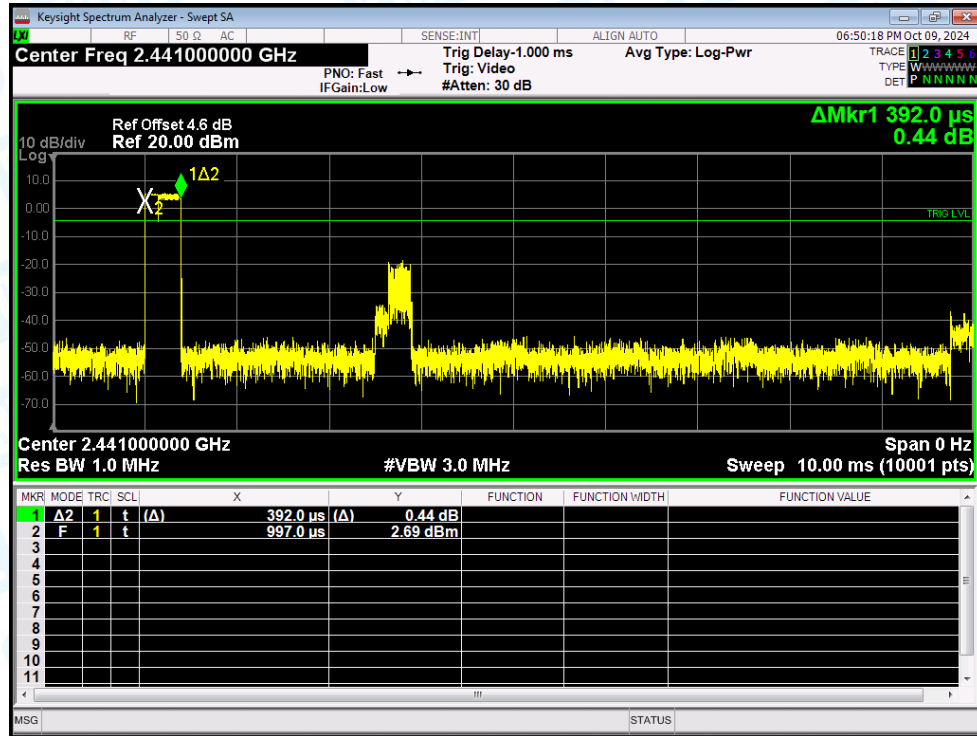
Dwell NVNT 2-DH3 2441MHz Ant1



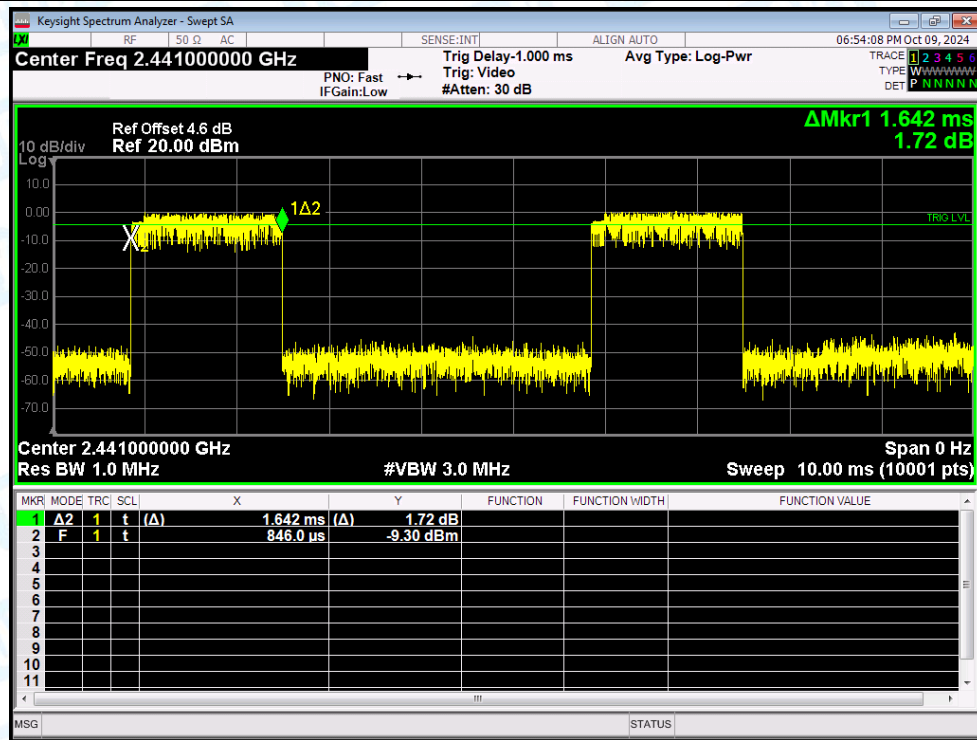
Dwell NVNT 2-DH5 2441MHz Ant1

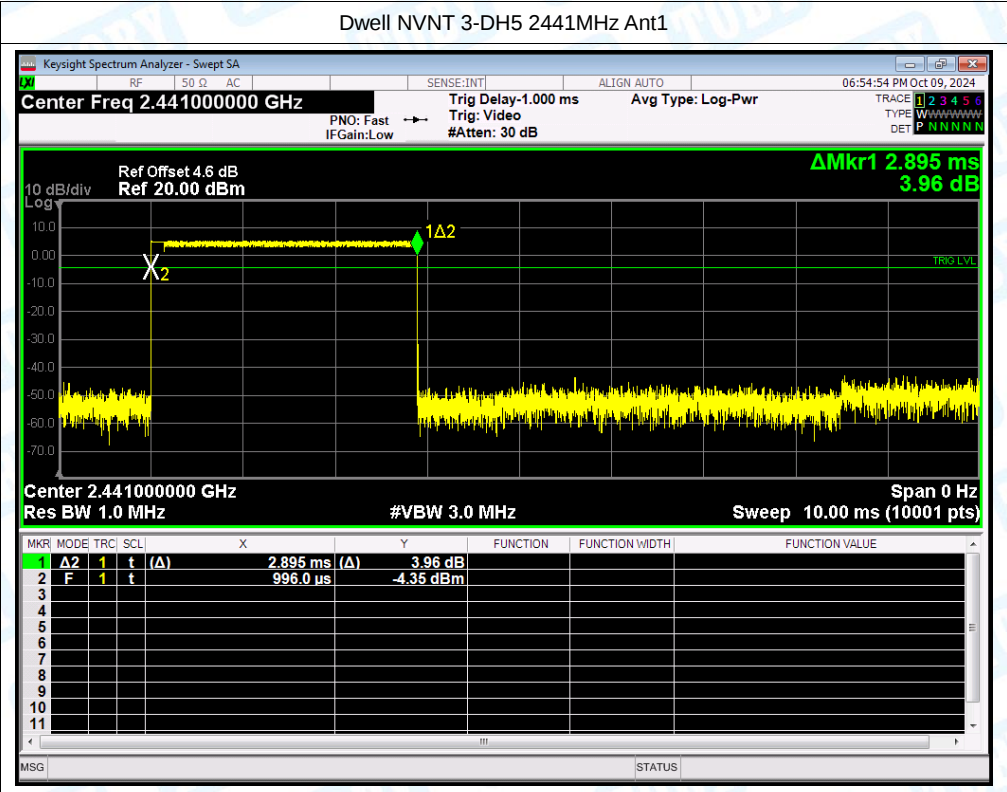


Dwell NVNT 3-DH1 2441MHz Ant1



Dwell NVNT 3-DH3 2441MHz Ant1





---- END OF REPORT ----