RF Test Data for Bluetooth (Conducted Measurements)

General Description of EUT	
Product Name:	Smart watch
Test Model:	T13
Sample ID:	HC-C-202411-0222-01-01
Environmental Conditions	
Temperature:	25.6℃
Relative Humidity:	48.6%
Test Voltage:	DC 3.7V
Test Engineer:	Rick.Chen
Note: For a more detailed features description, please refer to the report TBR-C-202411-0222-90 The report only show the worst case data.	

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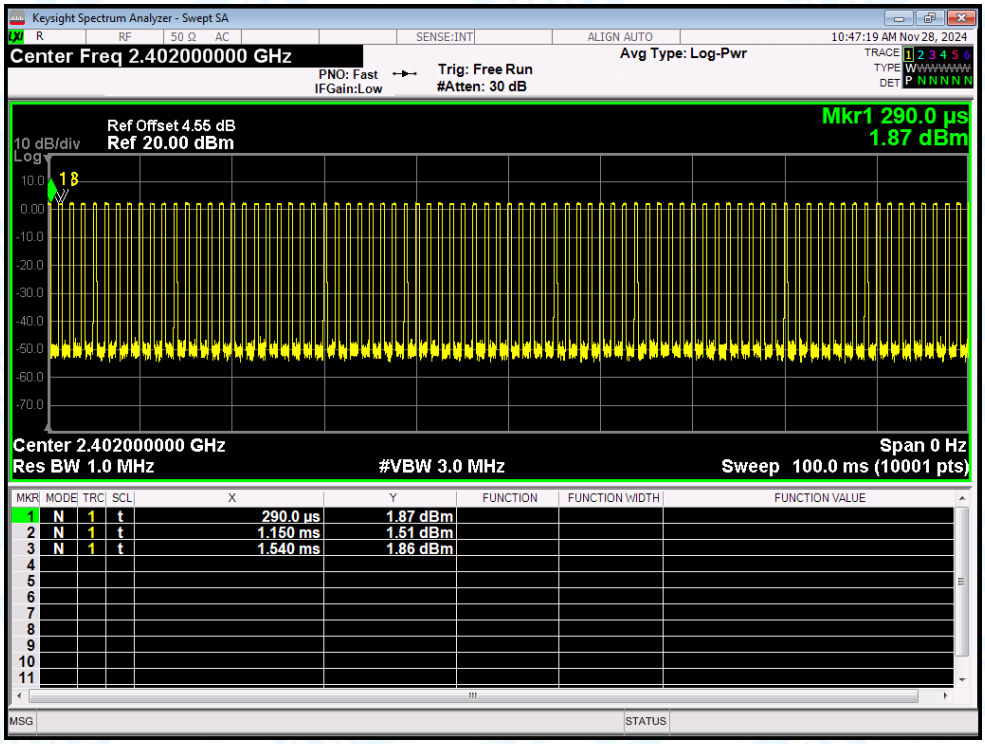
1. Duty Cycle

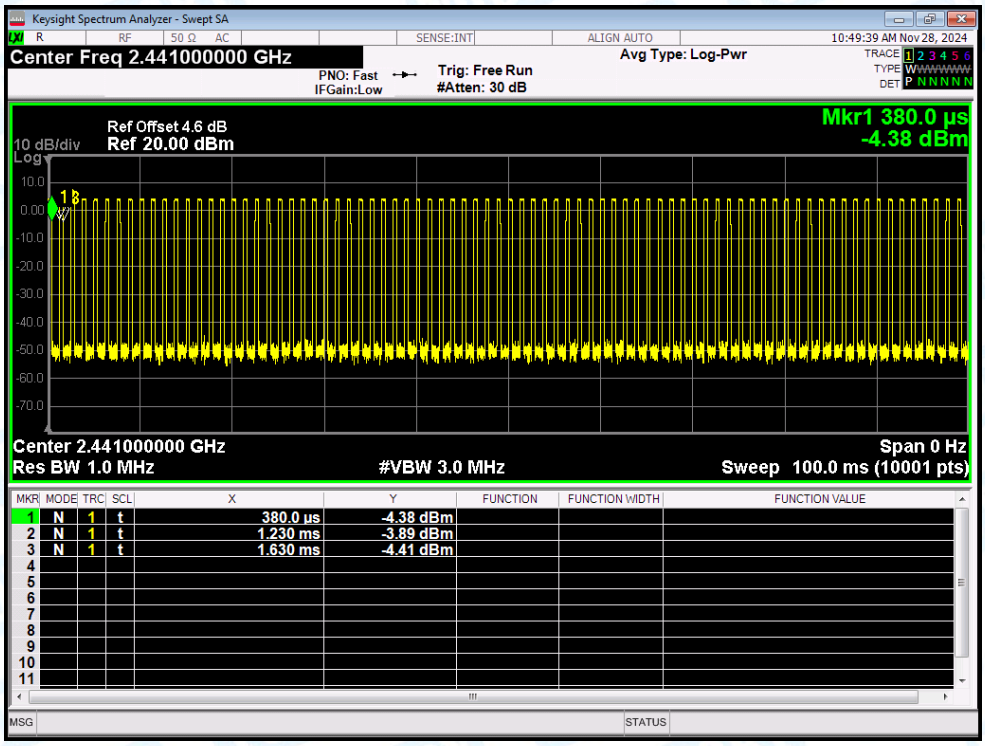
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH1	2402	Ant1	31.2	5.06	2.56
NVNT	1-DH1	2441	Ant1	32	4.95	2.5
NVNT	1-DH1	2480	Ant1	32	4.95	2.5
NVNT	2-DH1	2402	Ant1	32.8	4.84	2.44
NVNT	2-DH1	2441	Ant1	32.8	4.84	2.44
NVNT	2-DH1	2480	Ant1	32.8	4.84	2.44
NVNT	3-DH1	2402	Ant1	32.8	4.84	2.44
NVNT	3-DH1	2441	Ant1	32.8	4.84	2.44
NVNT	3-DH1	2480	Ant1	32.8	4.84	2.44

Test Graphs

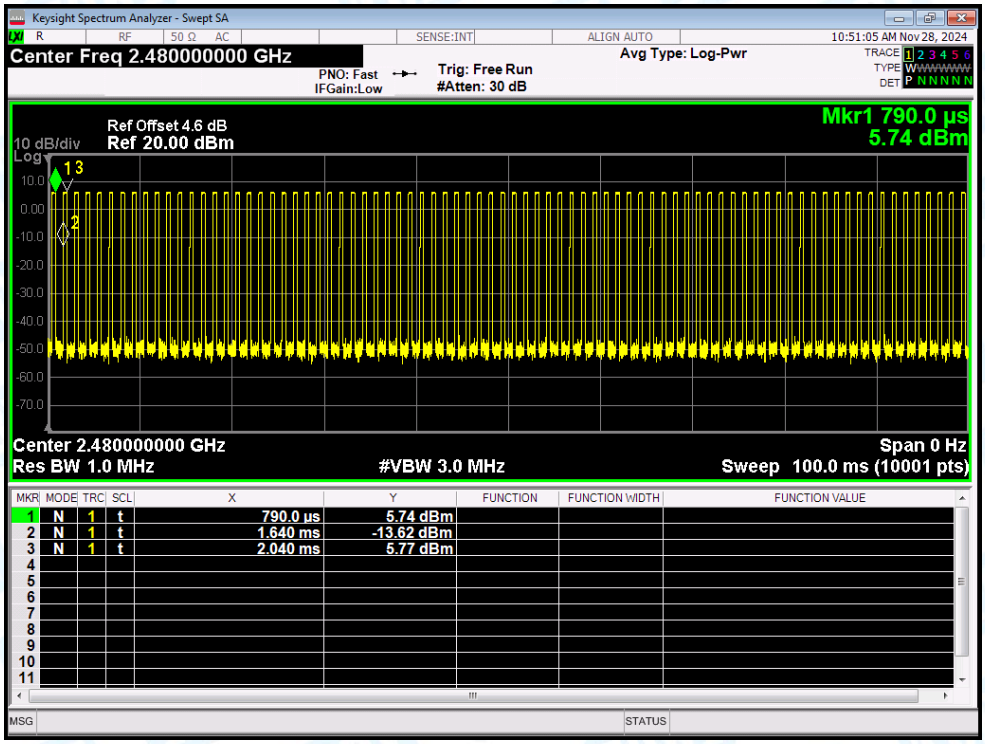
Duty Cycle NVNT 1-DH1 2402MHz Ant1



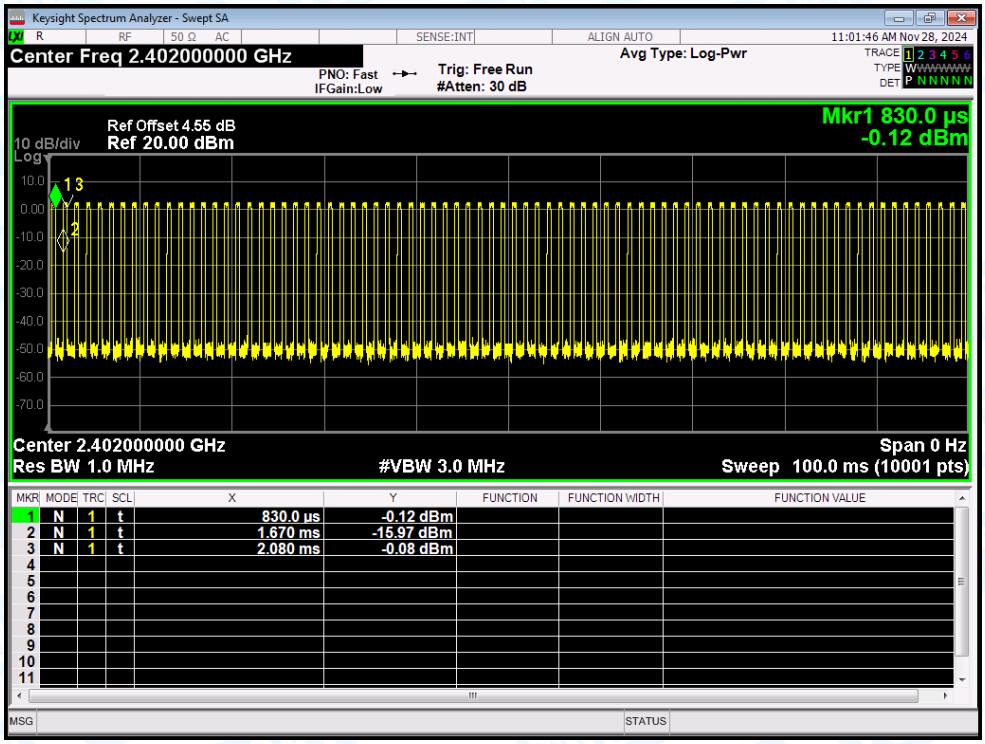
Duty Cycle NVNT 1-DH1 2441MHz Ant1



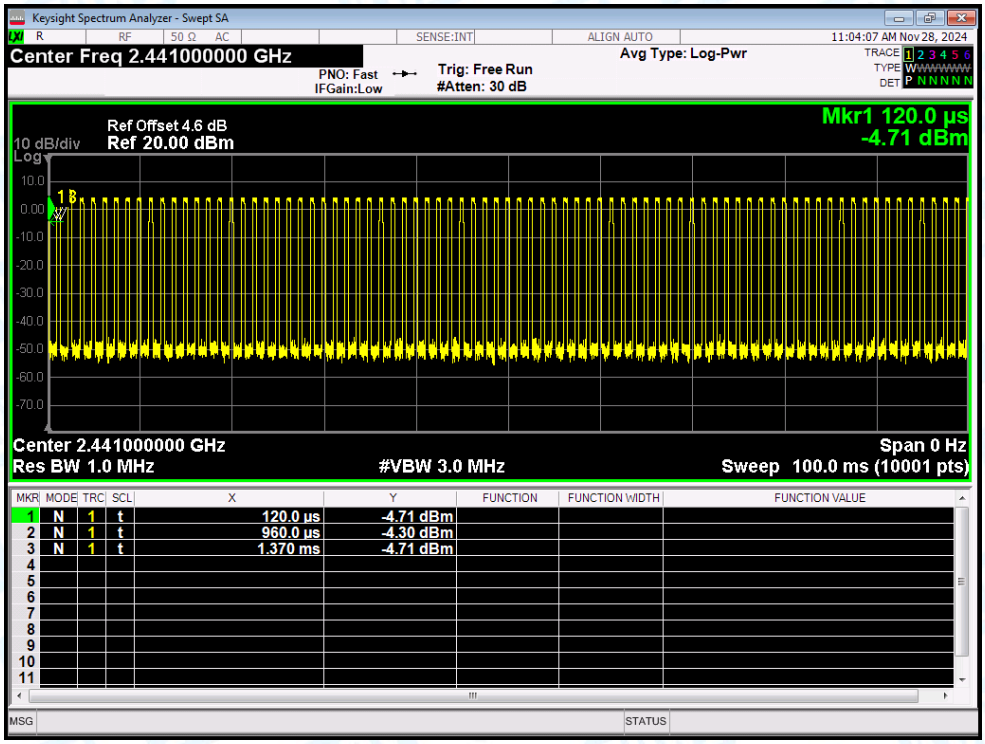
Duty Cycle NVNT 1-DH1 2480MHz Ant1



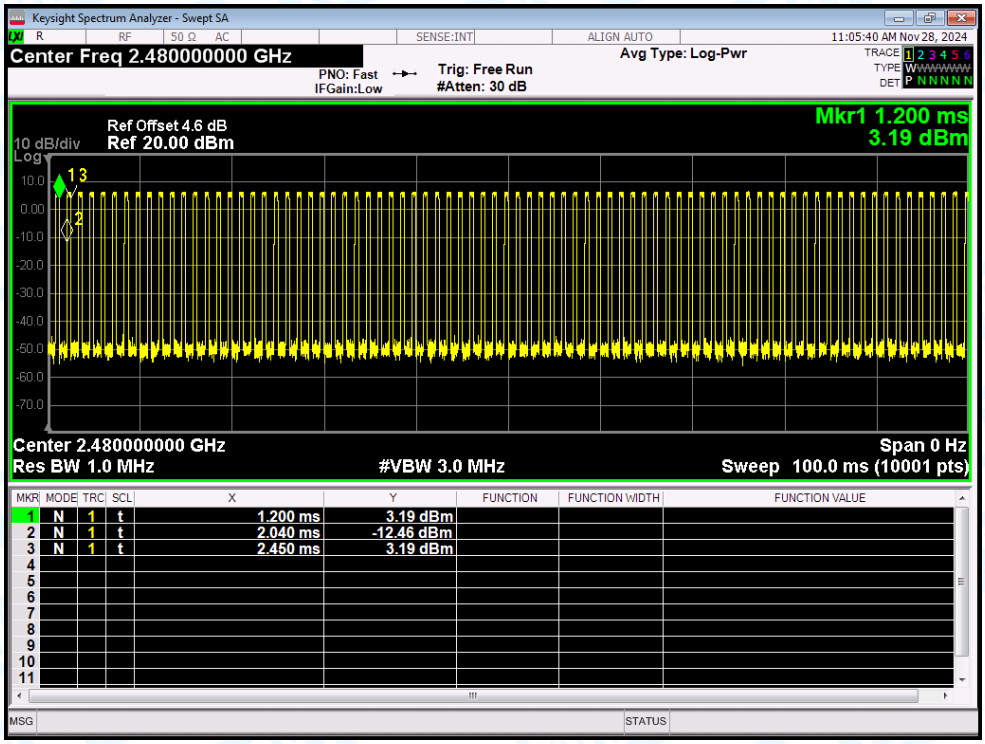
Duty Cycle NVNT 2-DH1 2402MHz Ant1



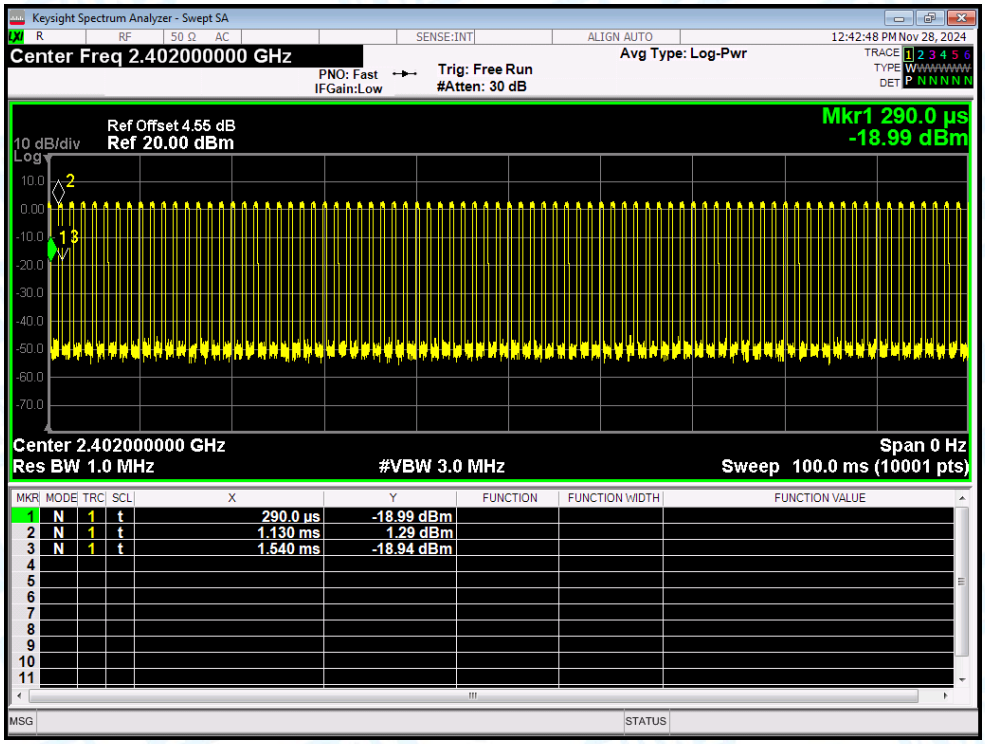
Duty Cycle NVNT 2-DH1 2441MHz Ant1



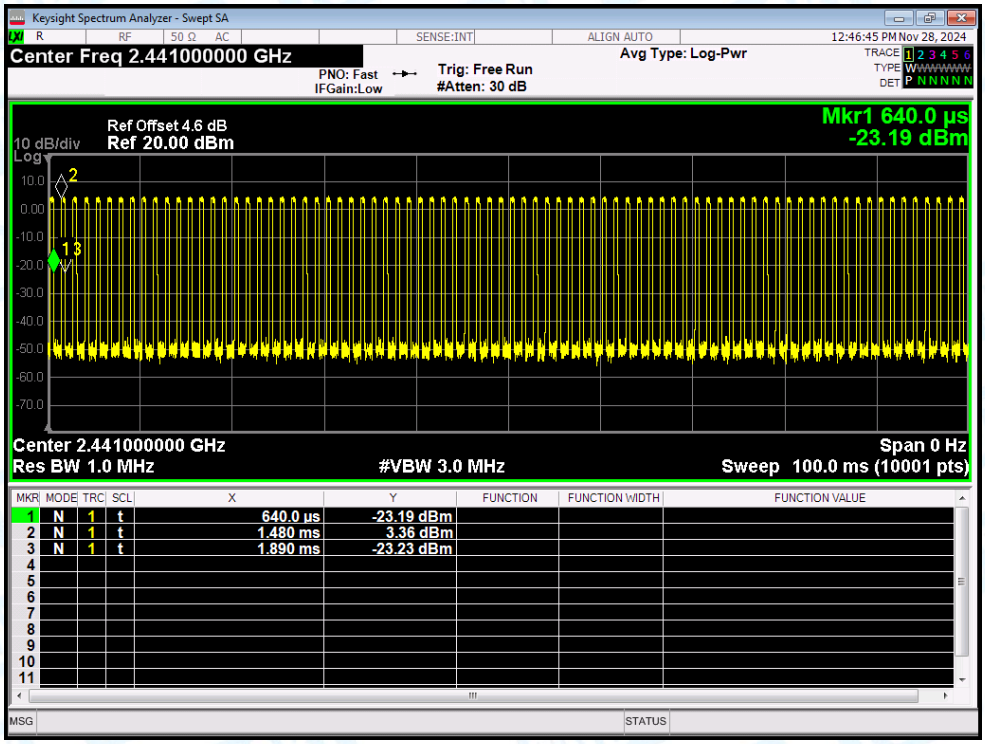
Duty Cycle NVNT 2-DH1 2480MHz Ant1



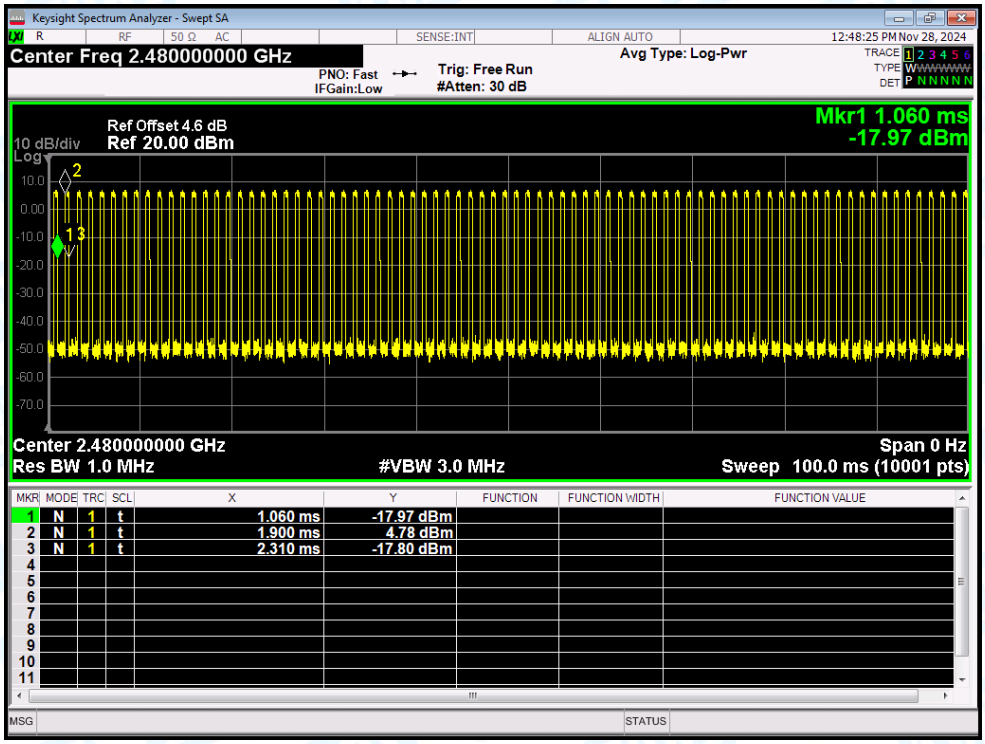
Duty Cycle NVNT 3-DH1 2402MHz Ant1



Duty Cycle NVNT 3-DH1 2441MHz Ant1



Duty Cycle NVNT 3-DH1 2480MHz Ant1

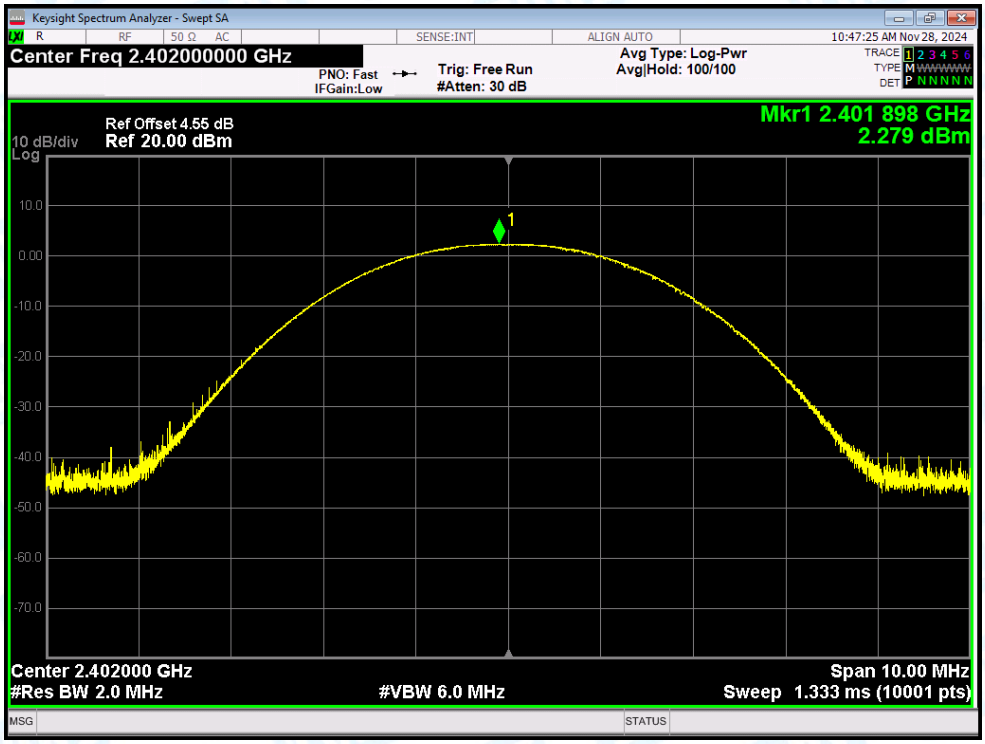


2. Maximum Conducted Output Power

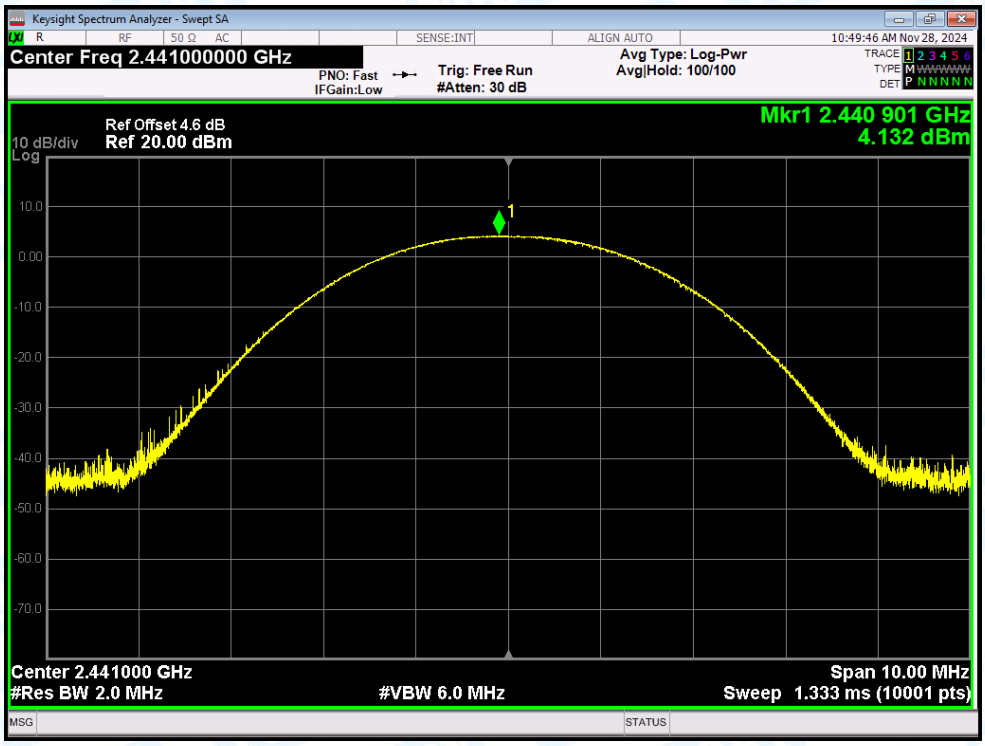
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	Ant1	2.279	21	Pass
NVNT	1-DH1	2441	Ant1	4.132	21	Pass
NVNT	1-DH1	2480	Ant1	6.164	21	Pass
NVNT	2-DH1	2402	Ant1	2.926	21	Pass
NVNT	2-DH1	2441	Ant1	4.682	21	Pass
NVNT	2-DH1	2480	Ant1	6.782	21	Pass
NVNT	3-DH1	2402	Ant1	3.358	21	Pass
NVNT	3-DH1	2441	Ant1	5.21	21	Pass
NVNT	3-DH1	2480	Ant1	7.351	21	Pass

Test Graphs

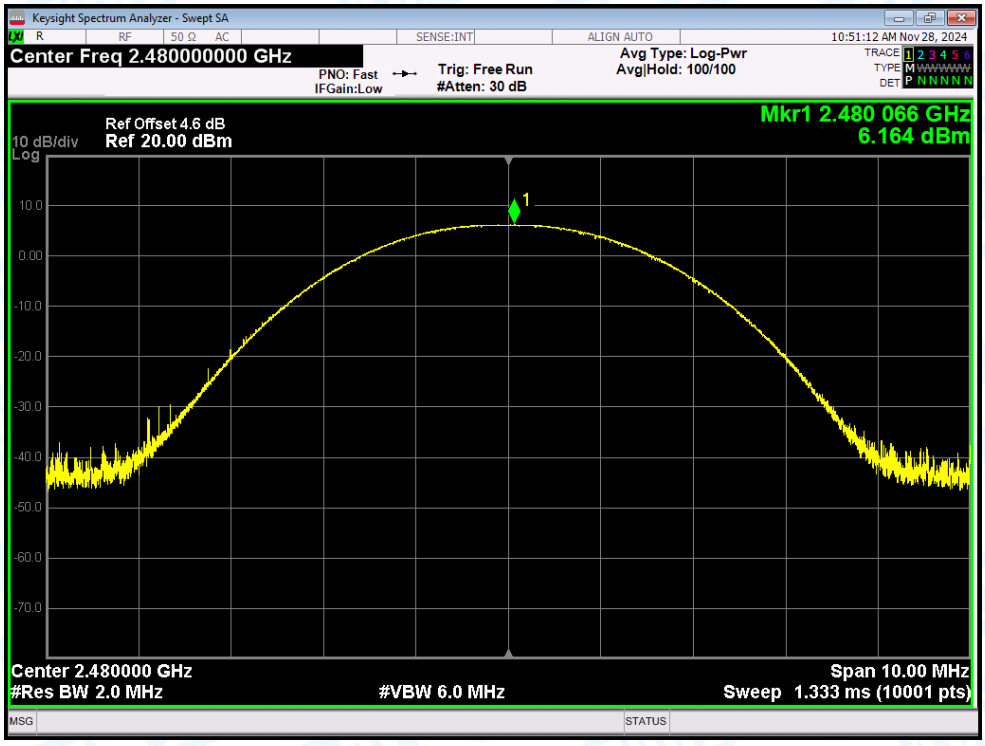
Power NVNT 1-DH1 2402MHz Ant1



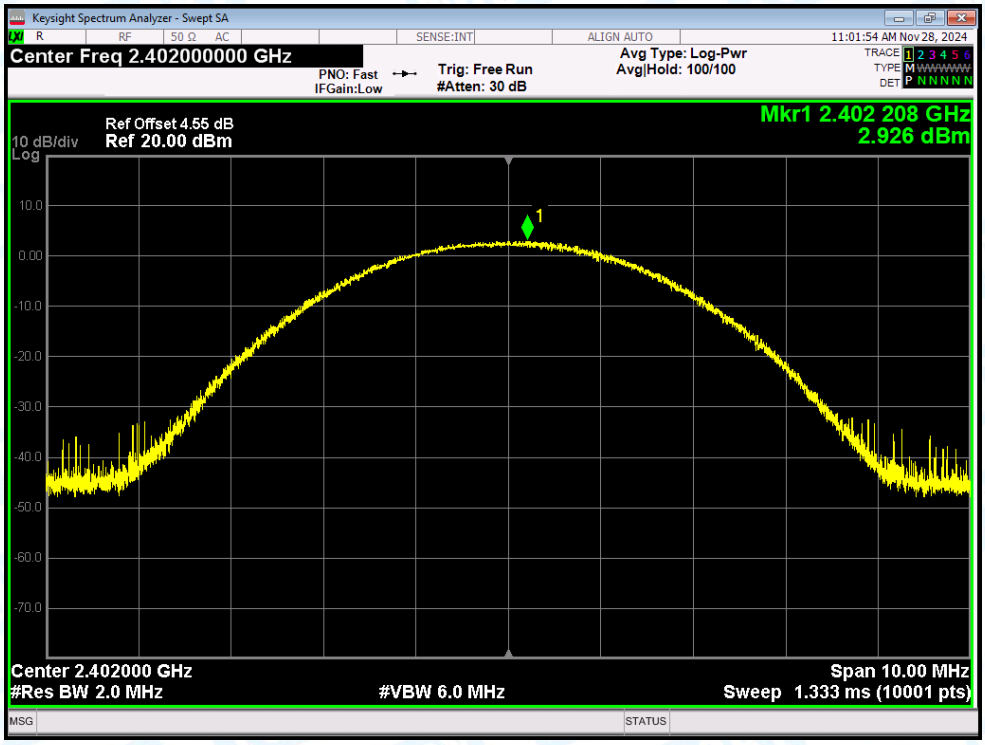
Power NVNT 1-DH1 2441MHz Ant1



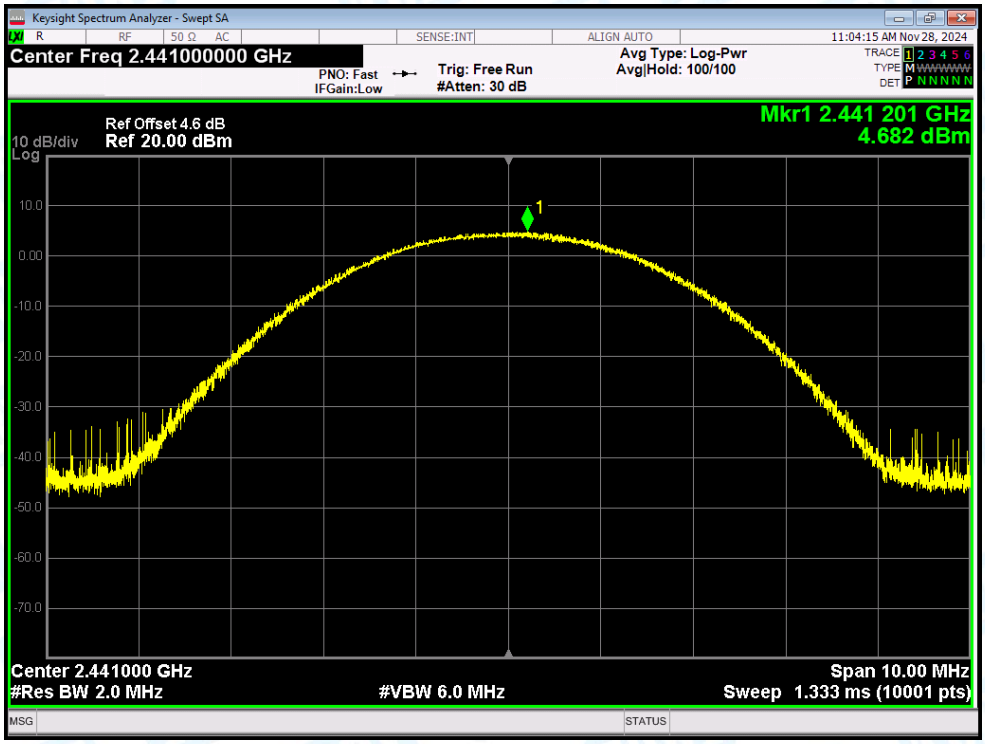
Power NVNT 1-DH1 2480MHz Ant1



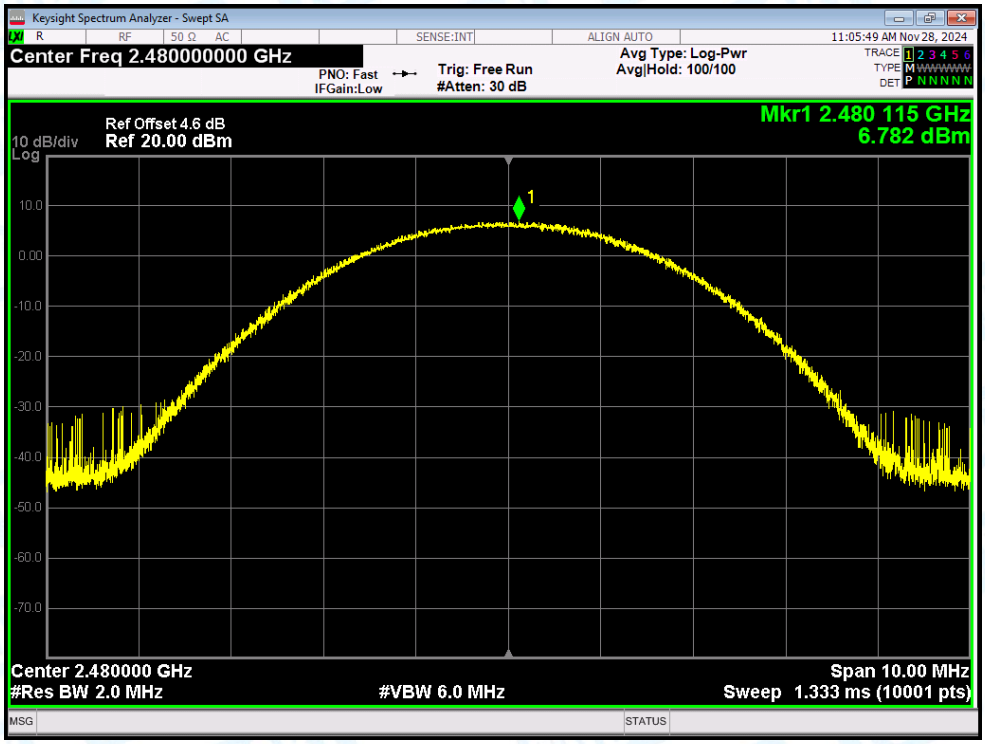
Power NVNT 2-DH1 2402MHz Ant1



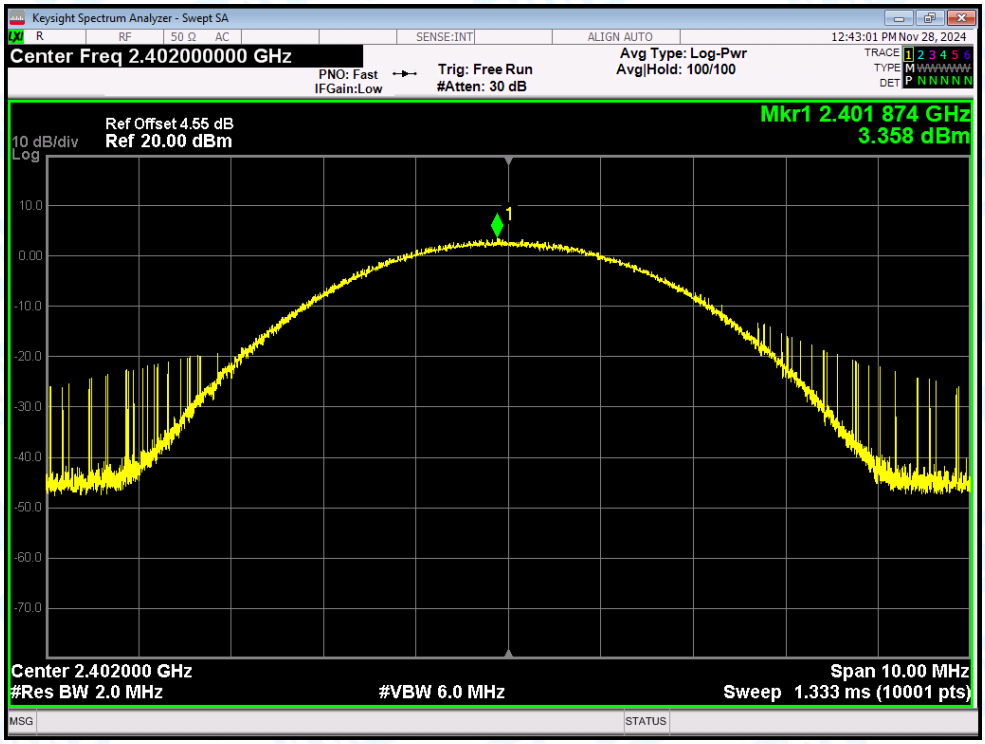
Power NVNT 2-DH1 2441MHz Ant1



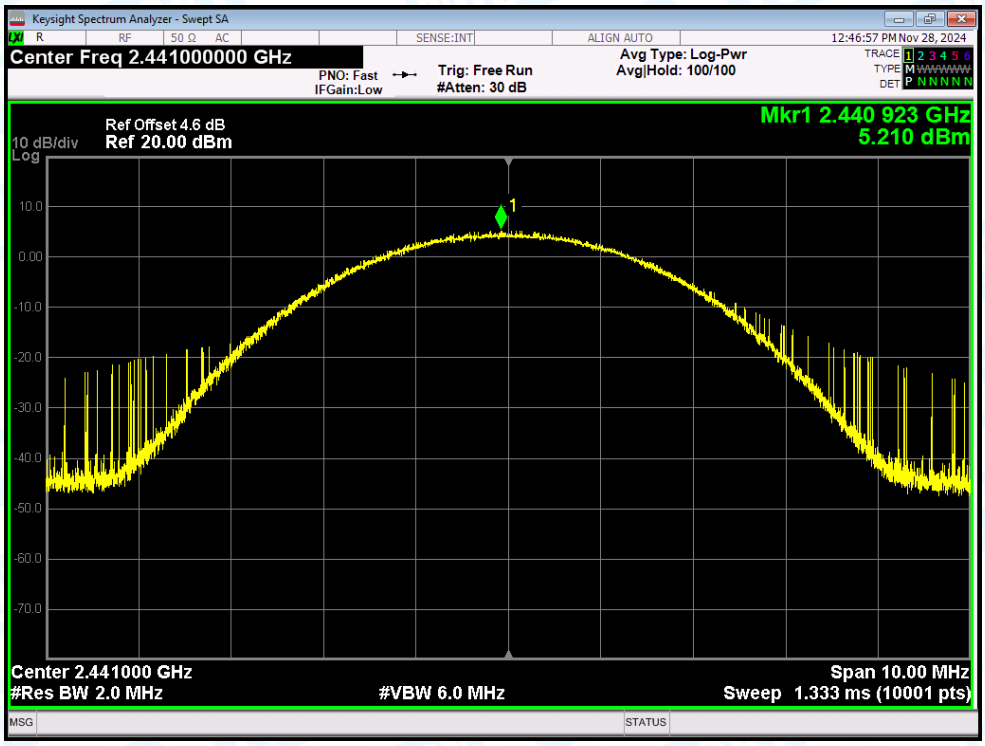
Power NVNT 2-DH1 2480MHz Ant1



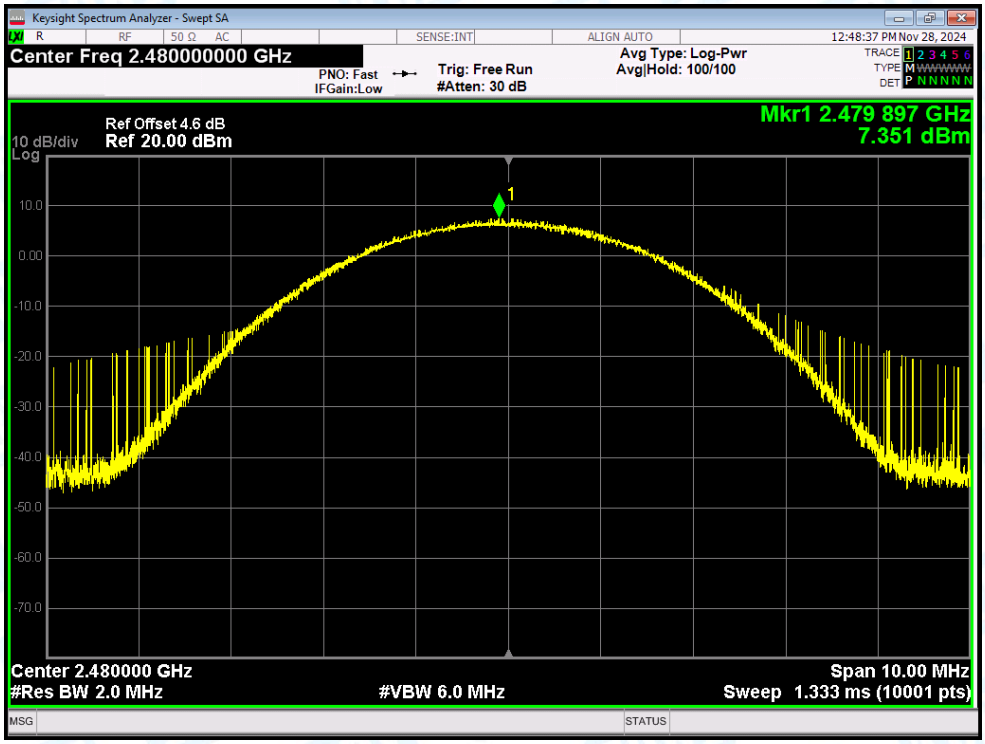
Power NVNT 3-DH1 2402MHz Ant1



Power NVNT 3-DH1 2441MHz Ant1



Power NVNT 3-DH1 2480MHz Ant1

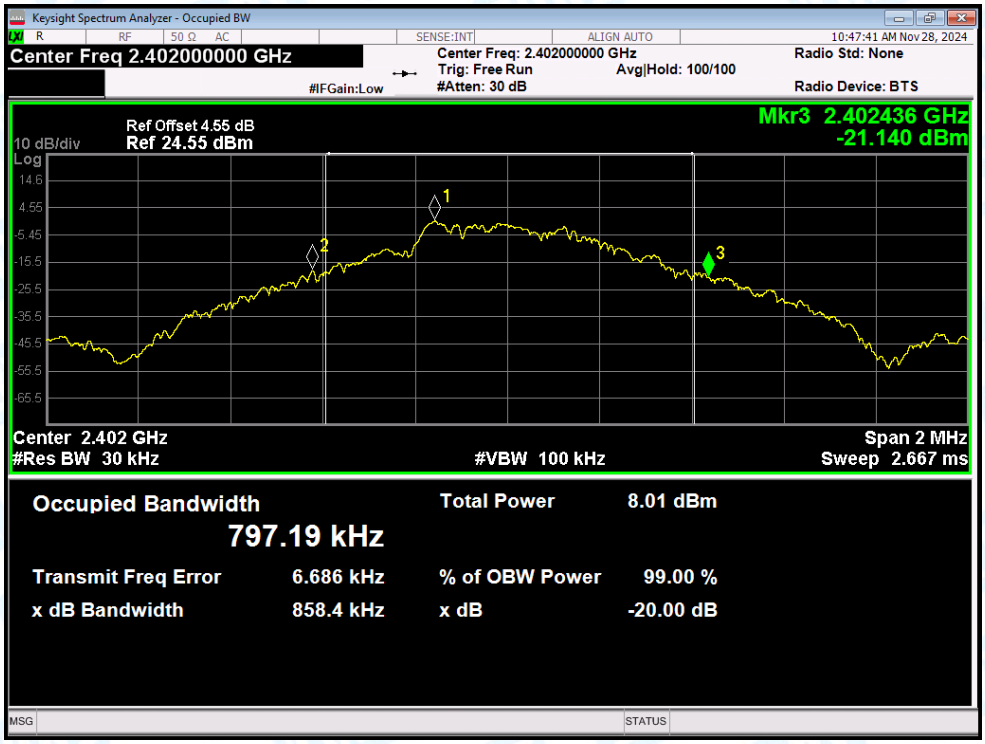


3. -20dB Bandwidth

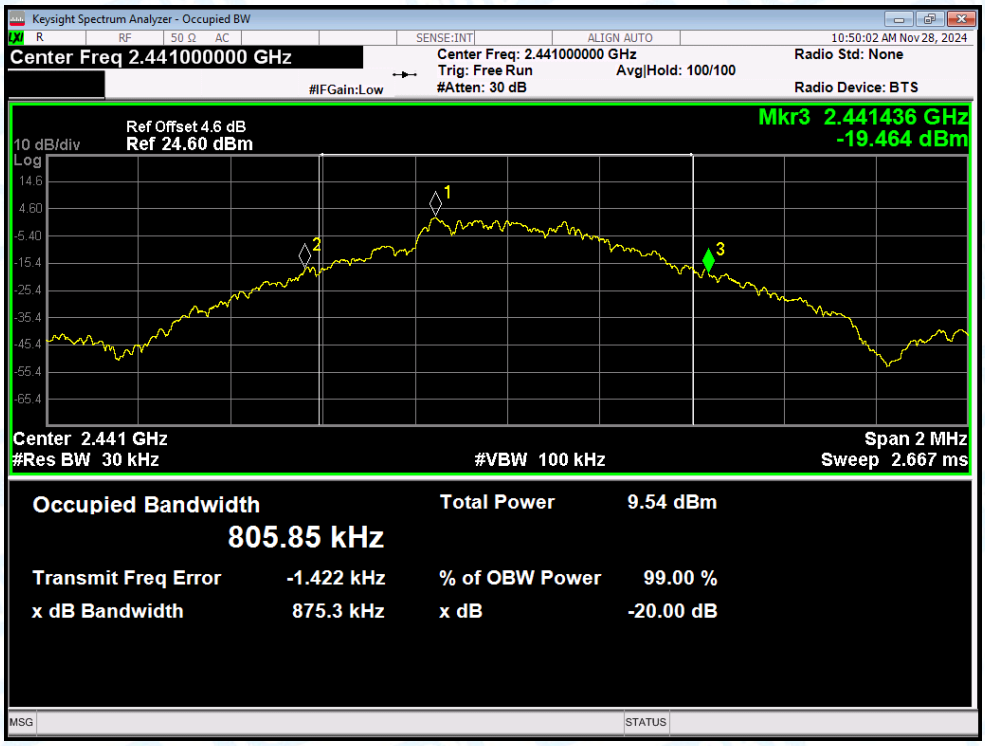
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH1	2402	Ant1	0.86	0	Pass
NVNT	1-DH1	2441	Ant1	0.88	0	Pass
NVNT	1-DH1	2480	Ant1	0.88	0	Pass
NVNT	2-DH1	2402	Ant1	1.25	0	Pass
NVNT	2-DH1	2441	Ant1	1.25	0	Pass
NVNT	2-DH1	2480	Ant1	1.26	0	Pass
NVNT	3-DH1	2402	Ant1	1.24	0	Pass
NVNT	3-DH1	2441	Ant1	1.25	0	Pass
NVNT	3-DH1	2480	Ant1	1.24	0	Pass

Test Graphs

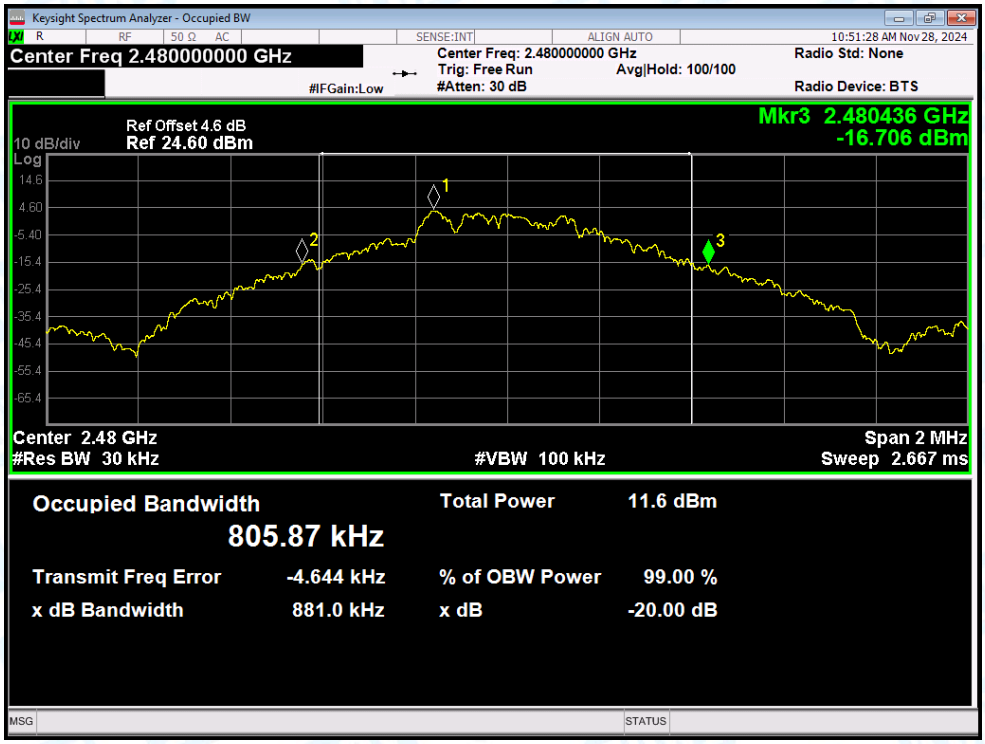
-20dB Bandwidth NVNT 1-DH1 2402MHz Ant1



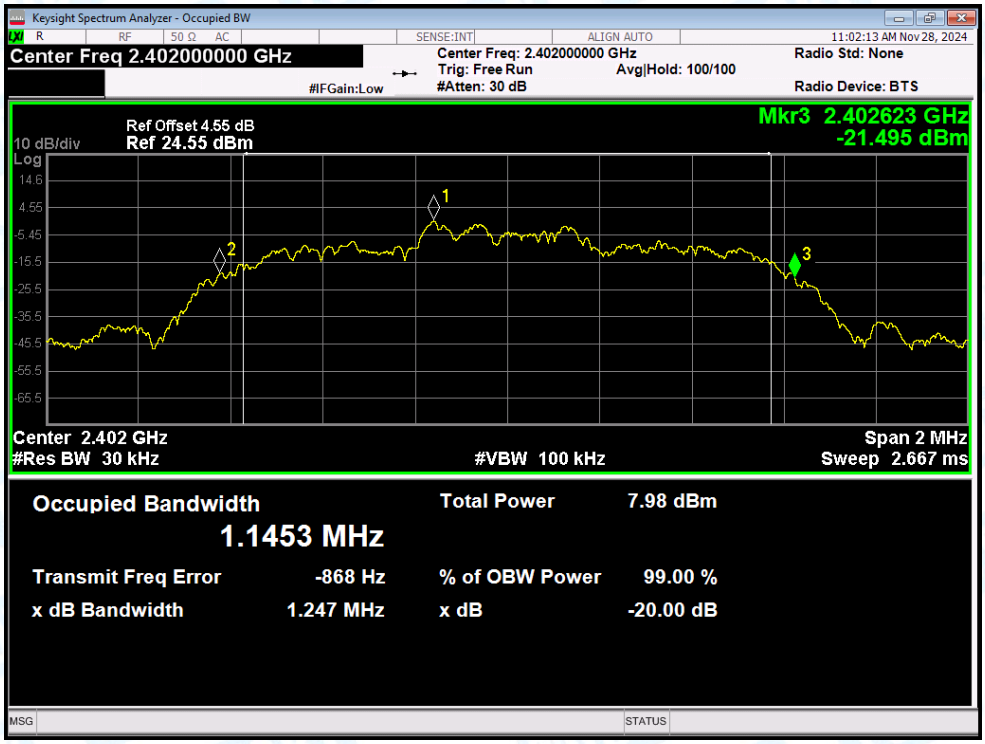
-20dB Bandwidth NVNT 1-DH1 2441MHz Ant1



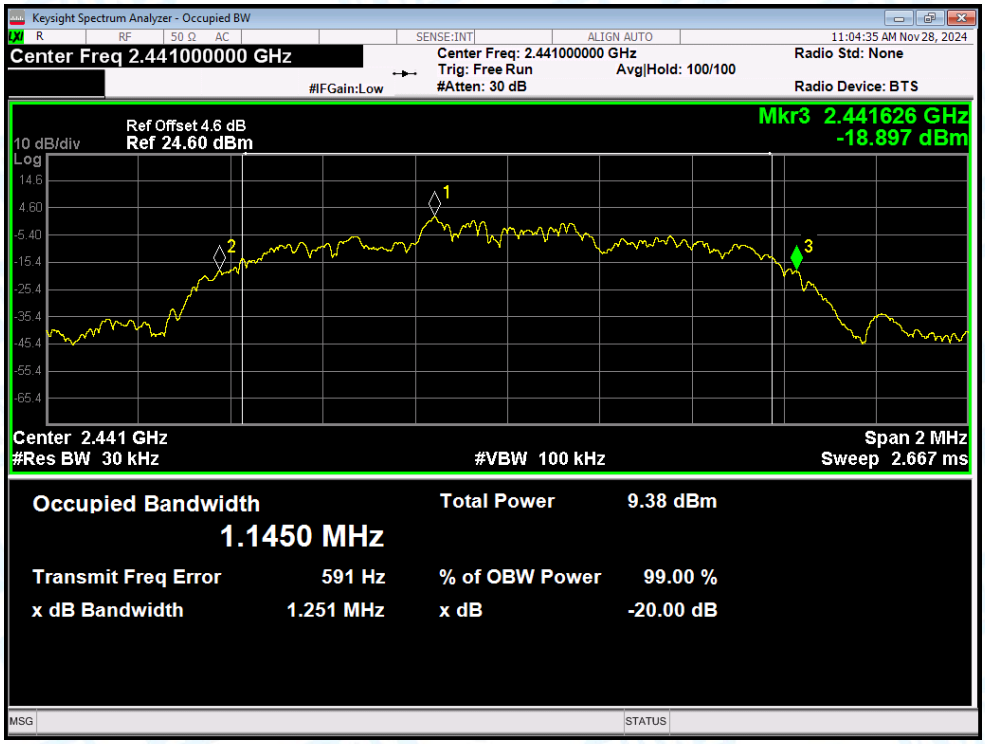
-20dB Bandwidth NVNT 1-DH1 2480MHz Ant1



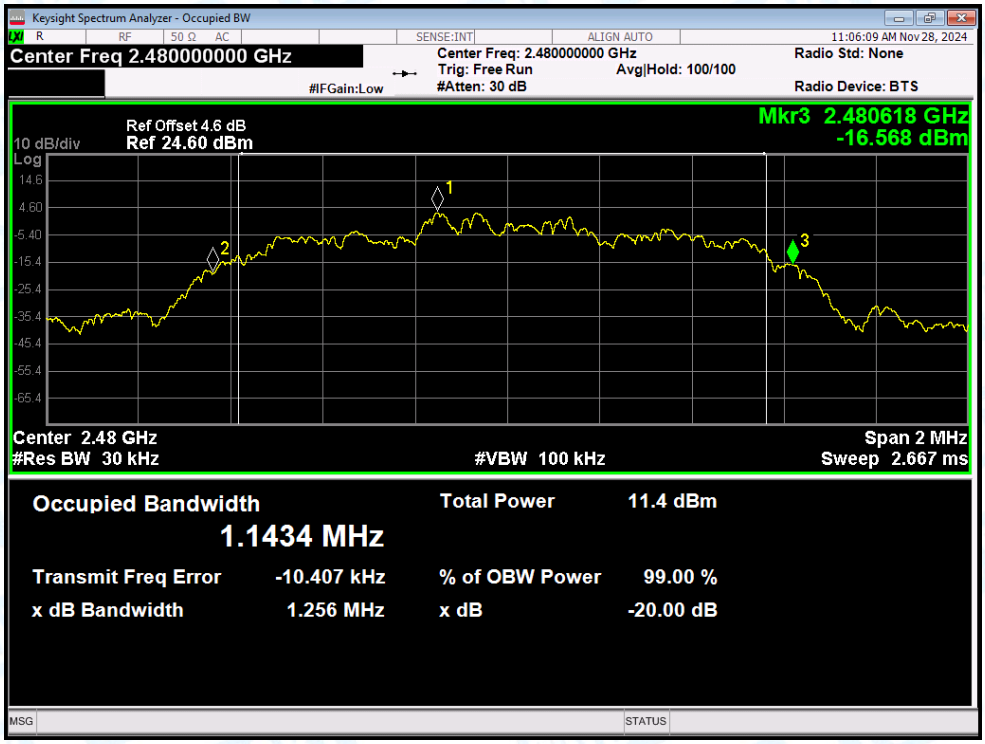
-20dB Bandwidth NVNT 2-DH1 2402MHz Ant1



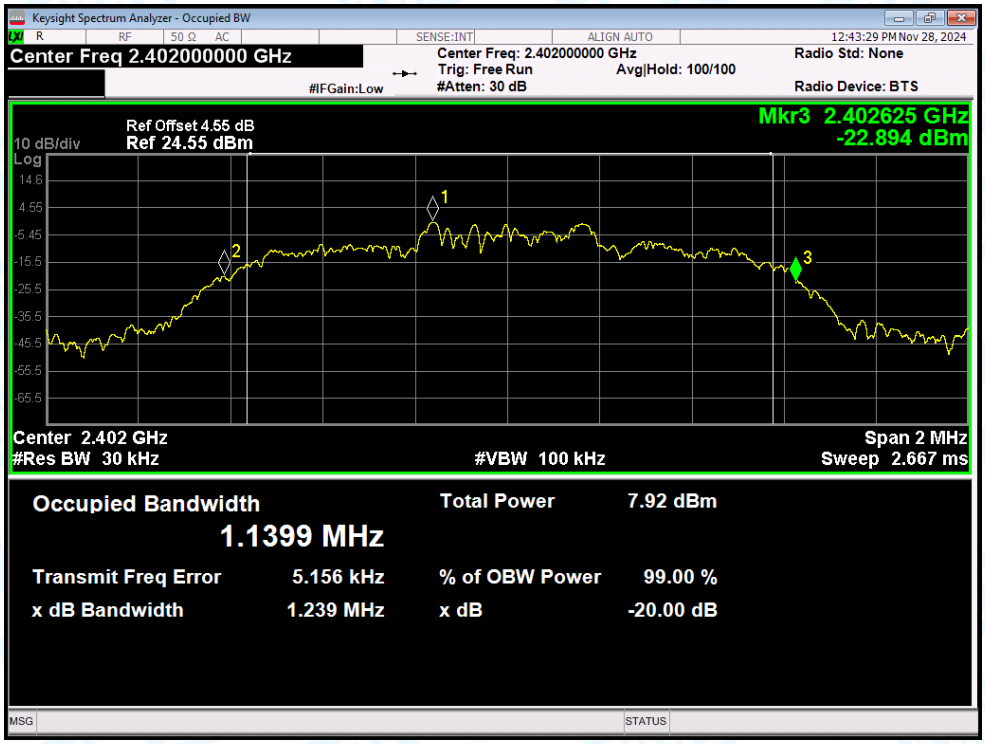
-20dB Bandwidth NVNT 2-DH1 2441MHz Ant1



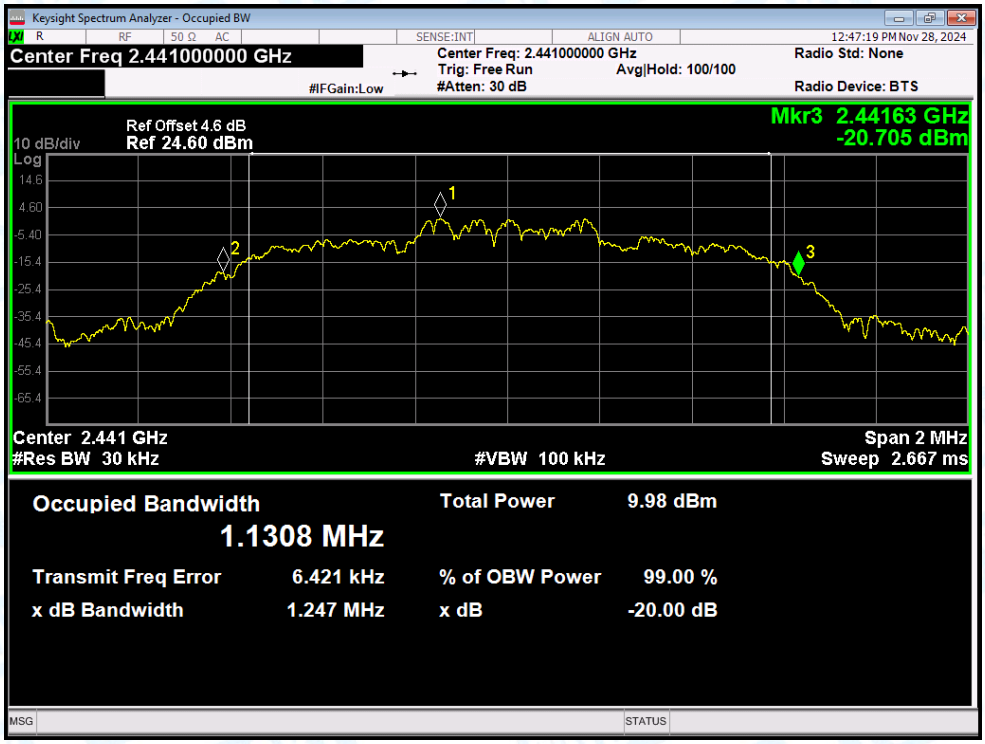
-20dB Bandwidth NVNT 2-DH1 2480MHz Ant1



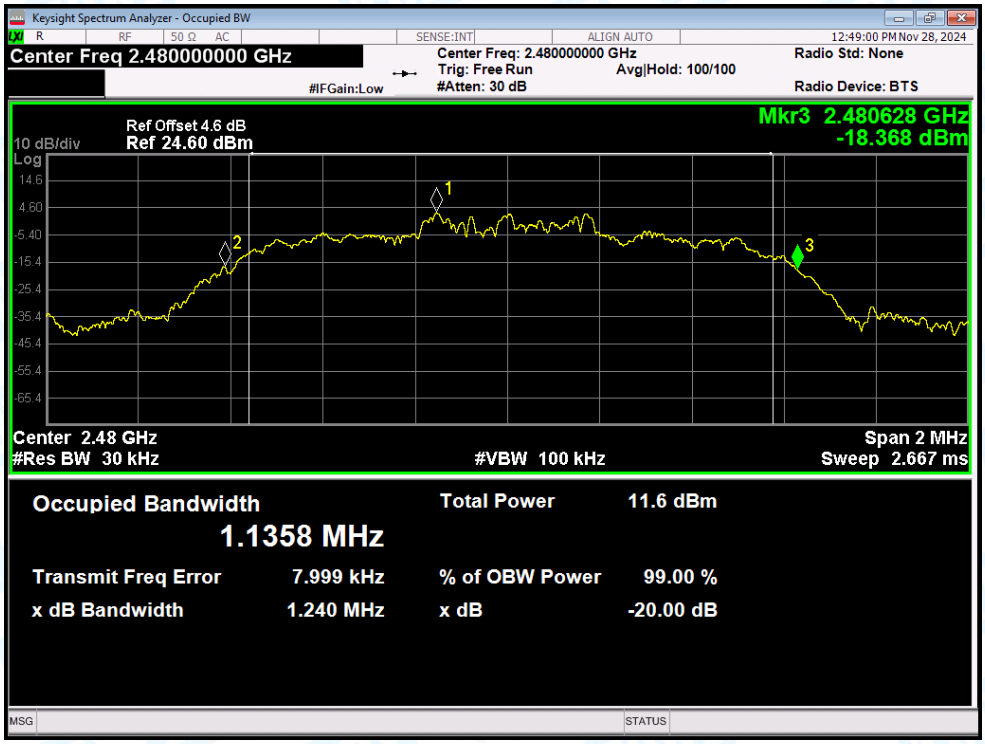
-20dB Bandwidth NVNT 3-DH1 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH1 2441MHz Ant1



-20dB Bandwidth NVNT 3-DH1 2480MHz Ant1

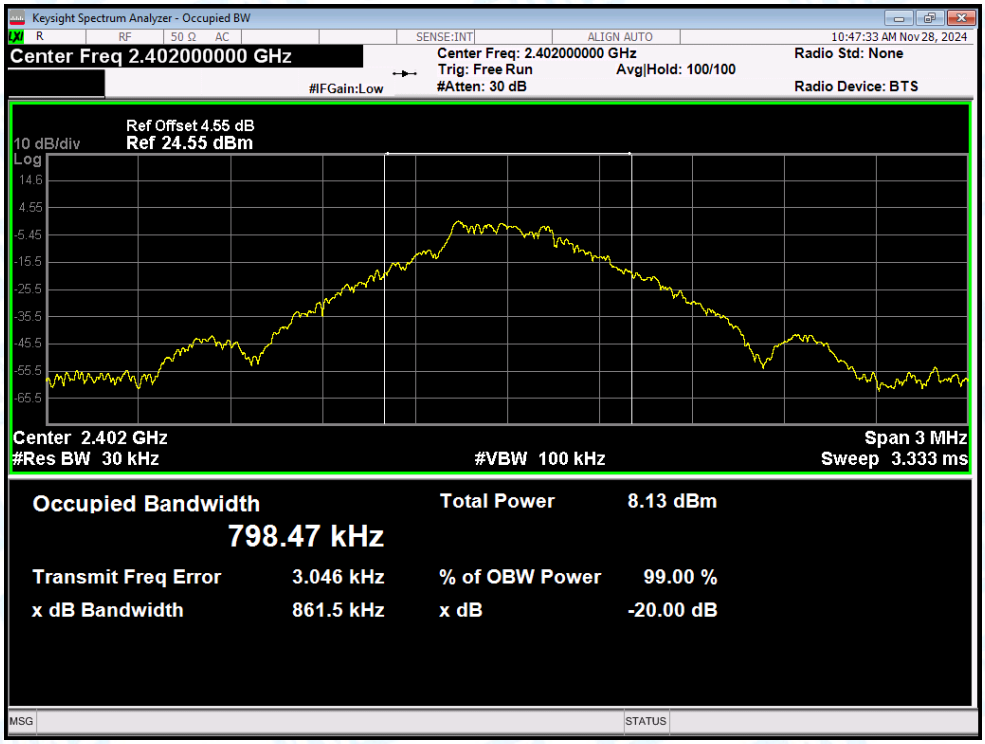


4. Occupied Channel Bandwidth

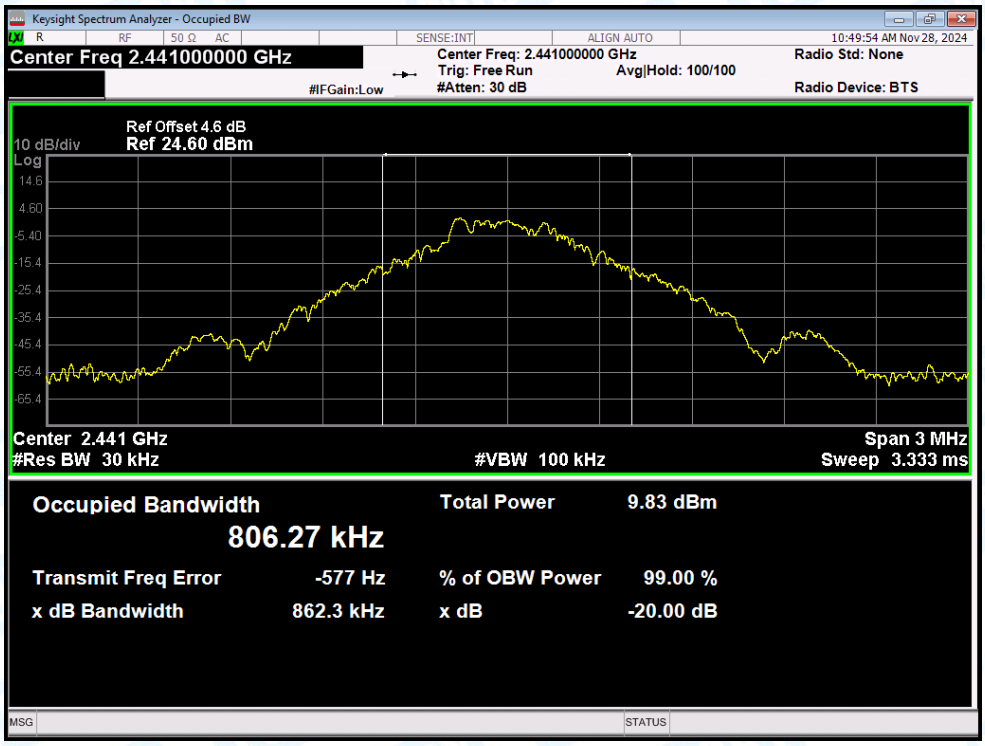
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	1-DH1	2402	Ant1	0.798
NVNT	1-DH1	2441	Ant1	0.806
NVNT	1-DH1	2480	Ant1	0.803
NVNT	2-DH1	2402	Ant1	1.149
NVNT	2-DH1	2441	Ant1	1.155
NVNT	2-DH1	2480	Ant1	1.155
NVNT	3-DH1	2402	Ant1	1.103
NVNT	3-DH1	2441	Ant1	1.134
NVNT	3-DH1	2480	Ant1	1.13

Test Graphs

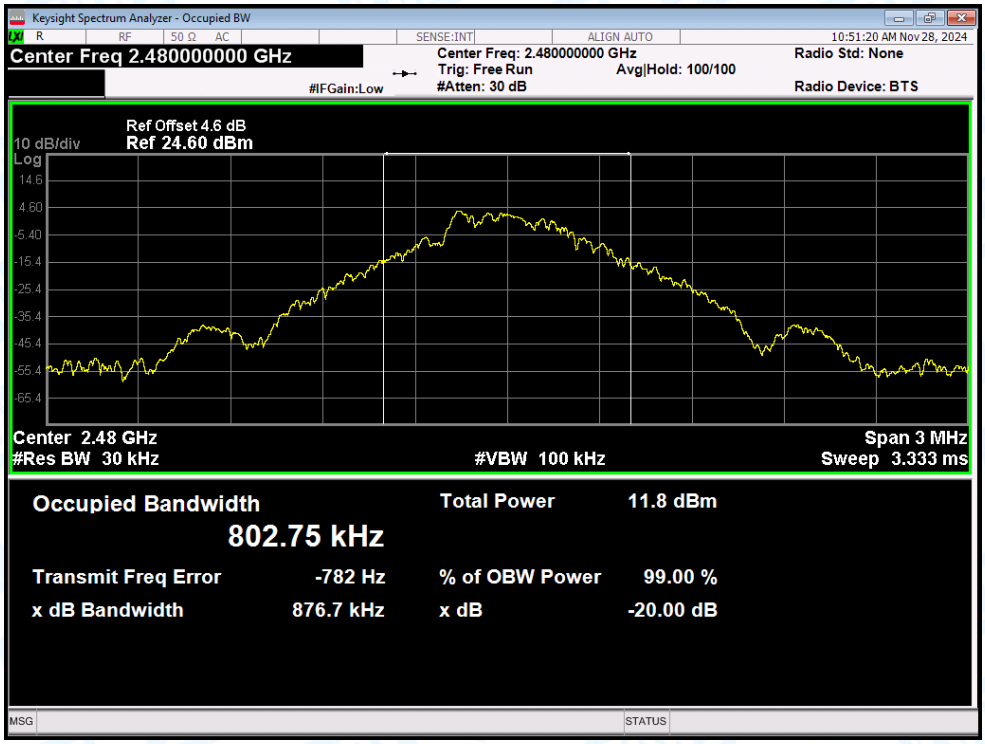
OBW NVNT 1-DH1 2402MHz Ant1



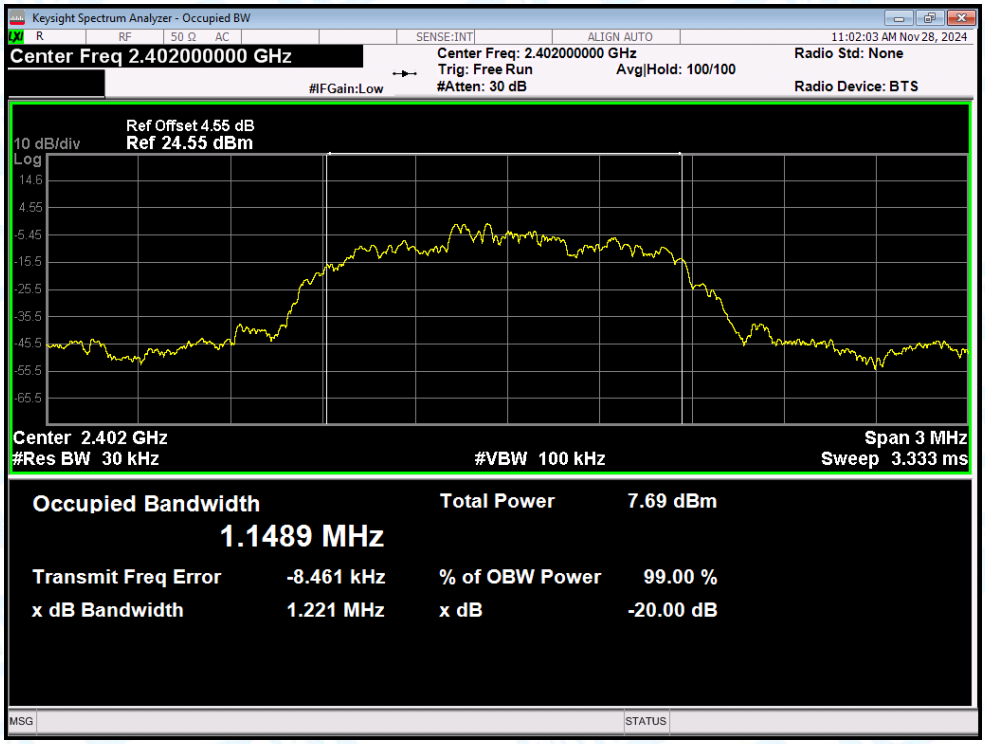
OBW NVNT 1-DH1 2441MHz Ant1



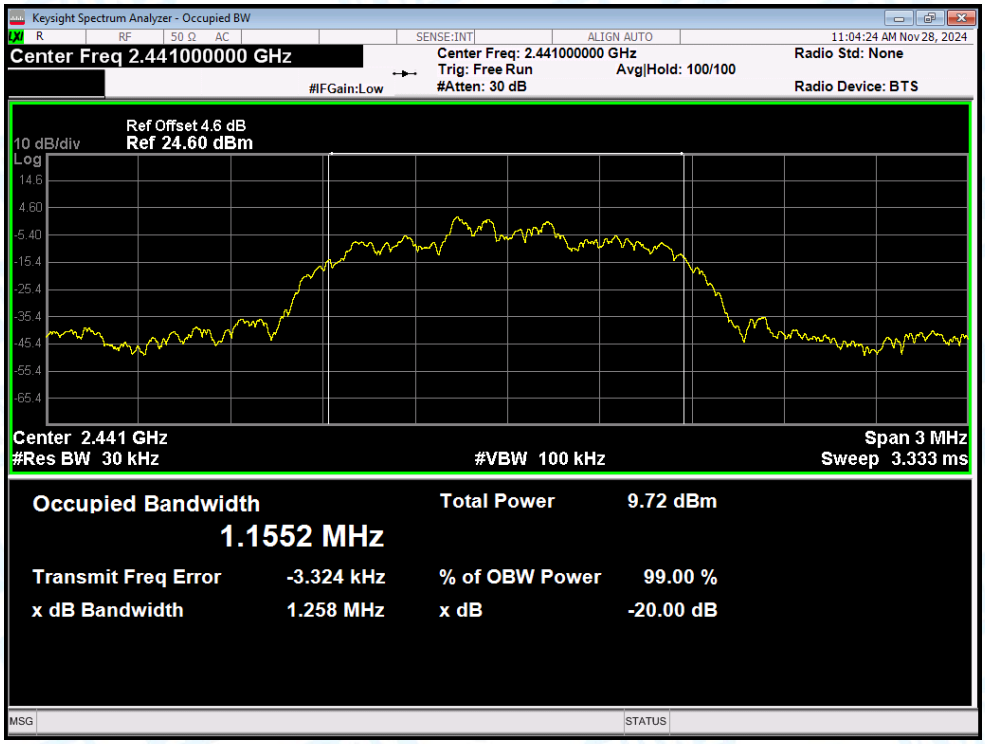
OBW NVNT 1-DH1 2480MHz Ant1



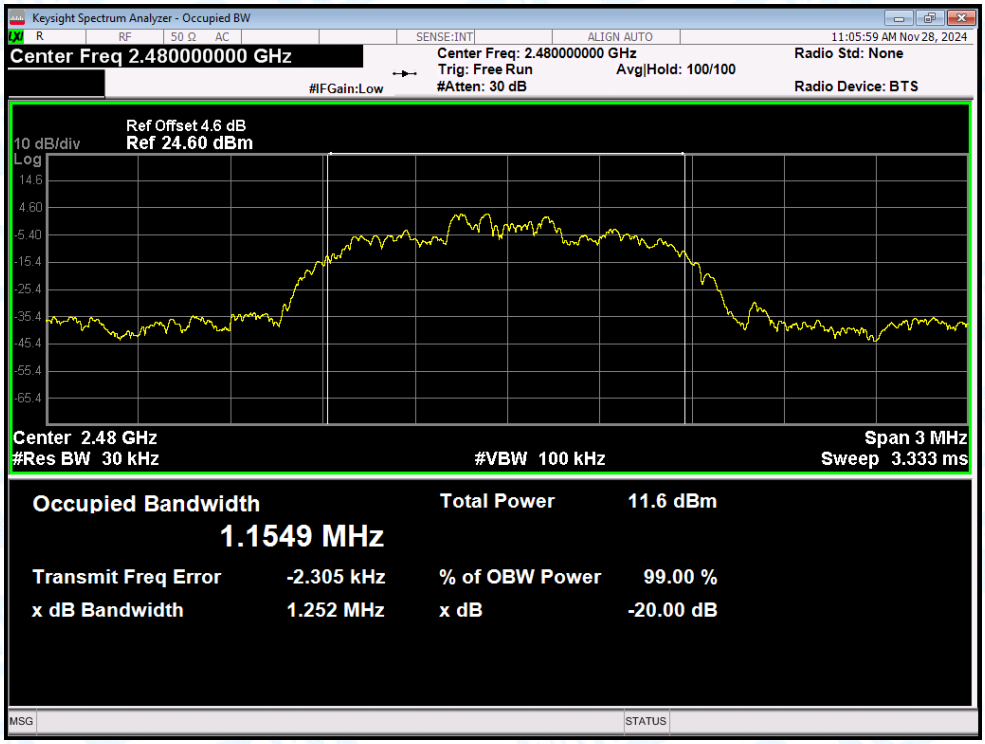
OBW NVNT 2-DH1 2402MHz Ant1



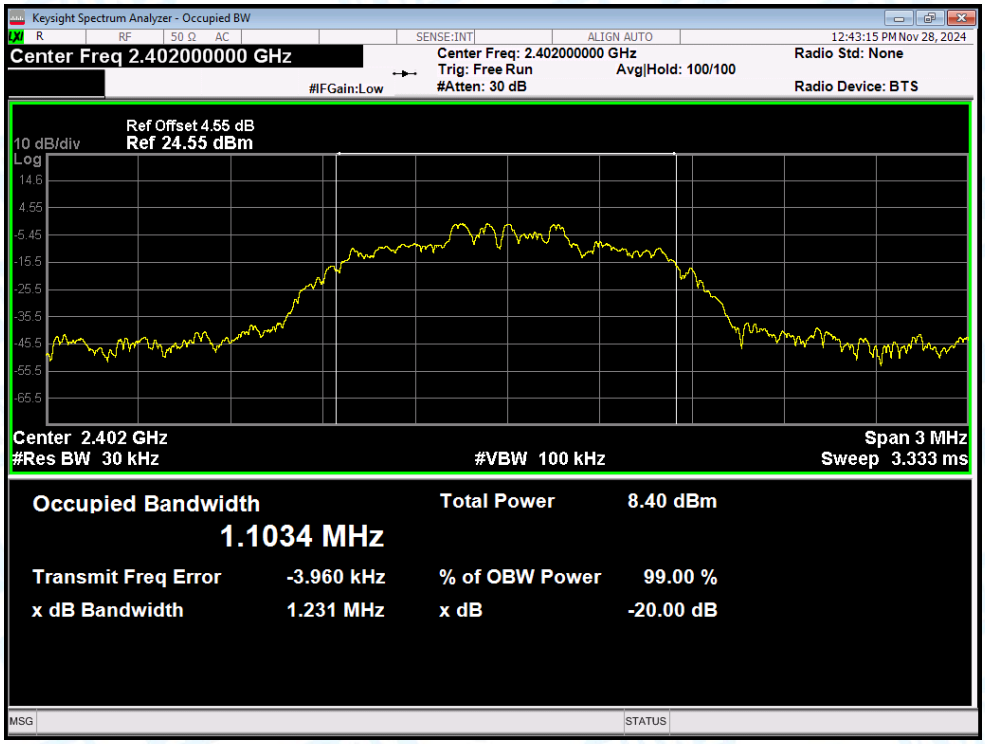
OBW NVNT 2-DH1 2441MHz Ant1



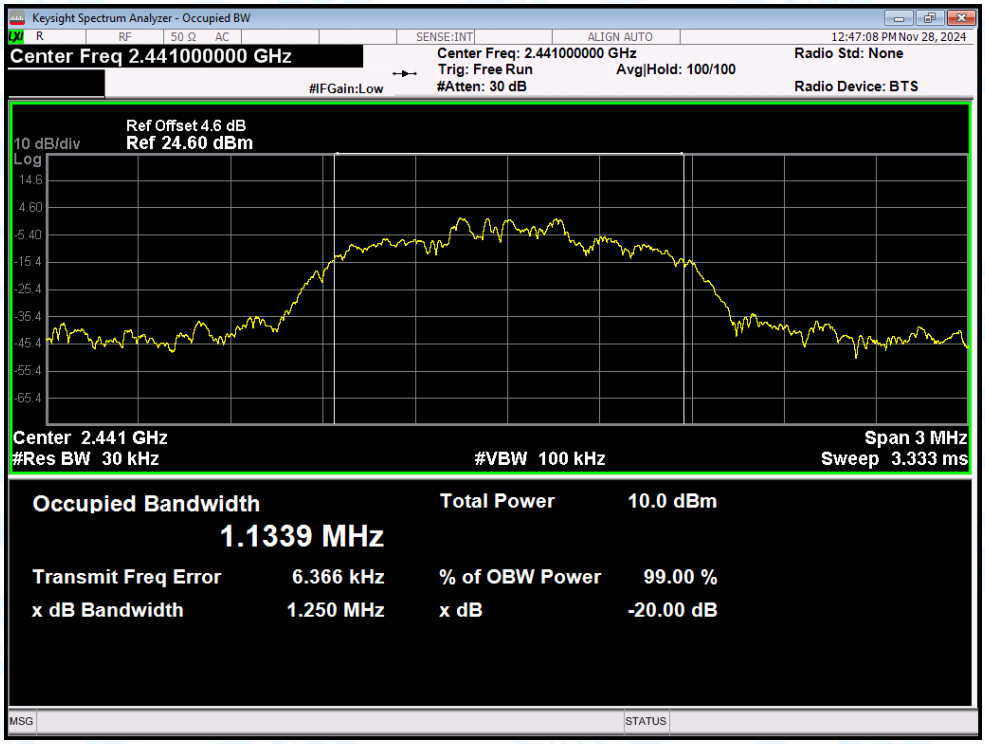
OBW NVNT 2-DH1 2480MHz Ant1



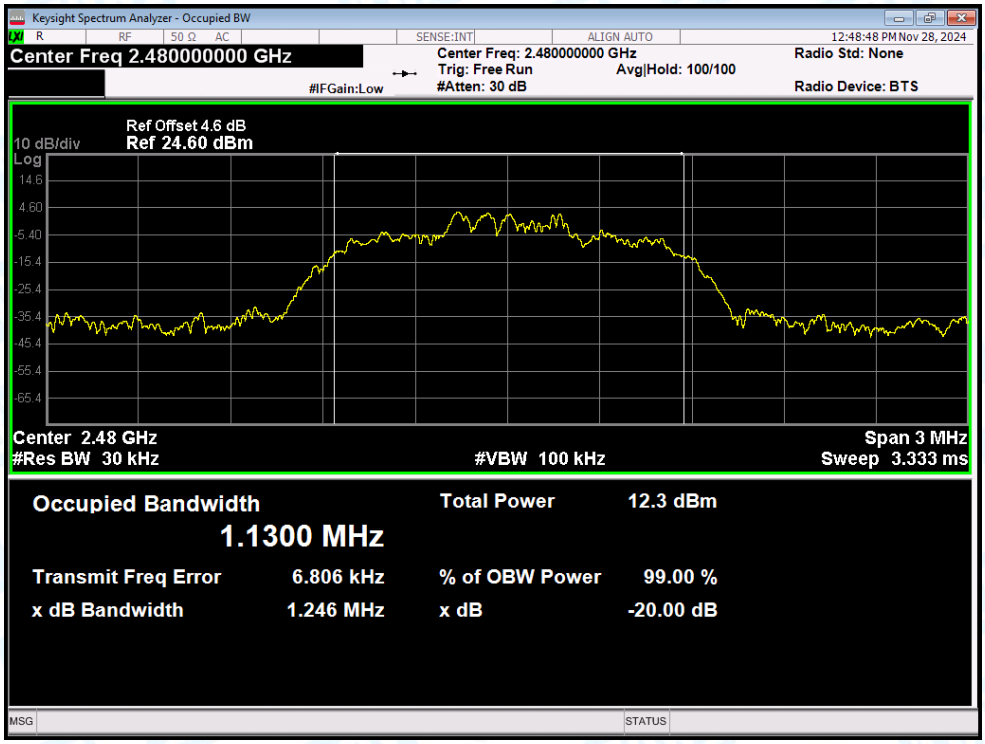
OBW NVNT 3-DH1 2402MHz Ant1



OBW NVNT 3-DH1 2441MHz Ant1



OBW NVNT 3-DH1 2480MHz Ant1

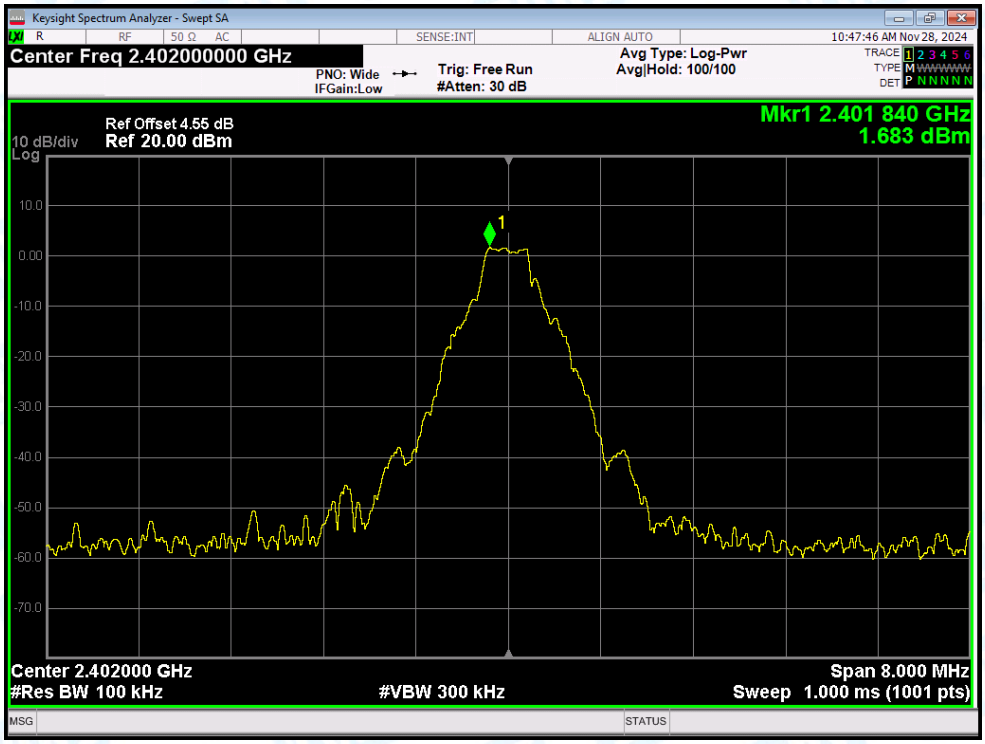


5. Band Edge

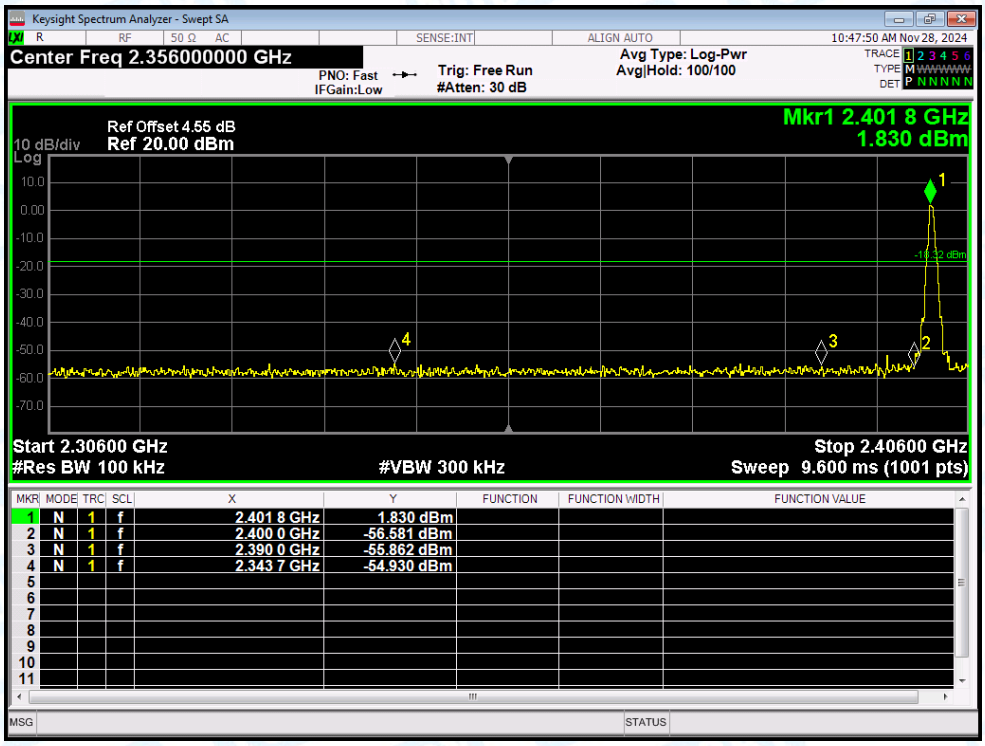
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	-56.61	-20	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	-58.01	-20	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	-56.35	-20	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	-56.16	-20	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	-57.03	-20	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	-49.04	-20	Pass

Test Graphs

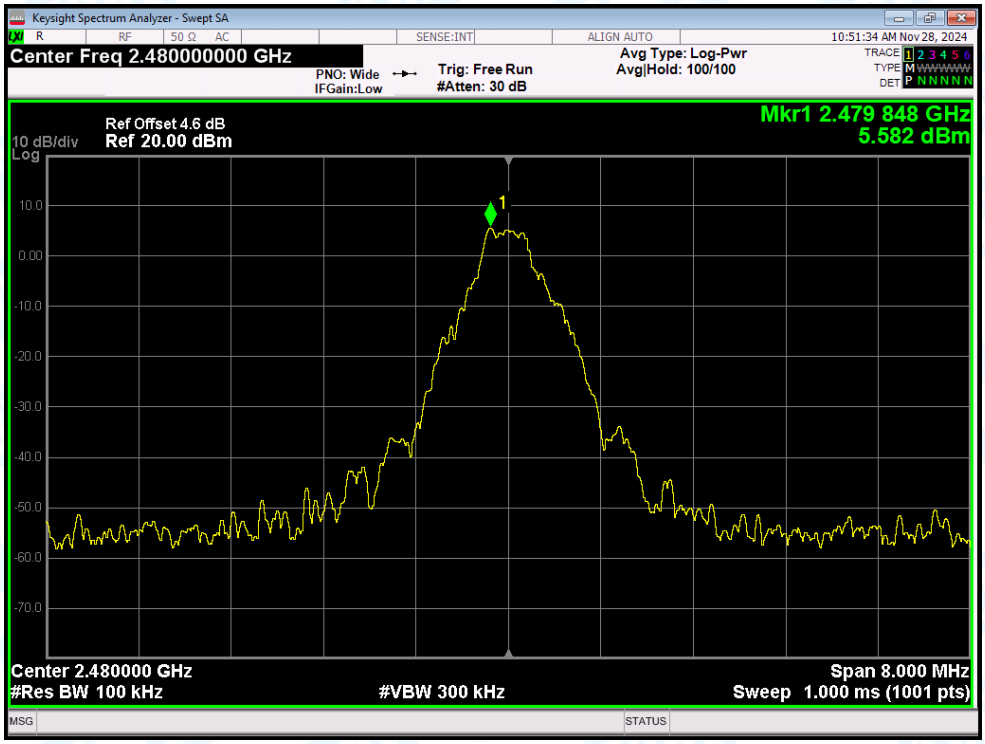
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Ref



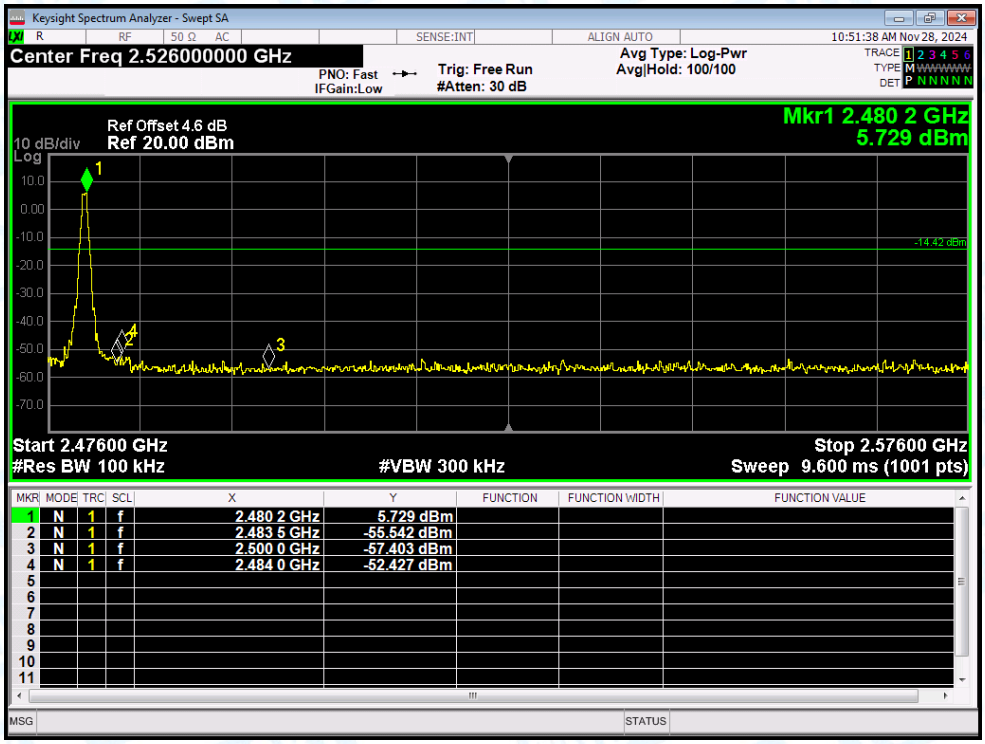
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Emission



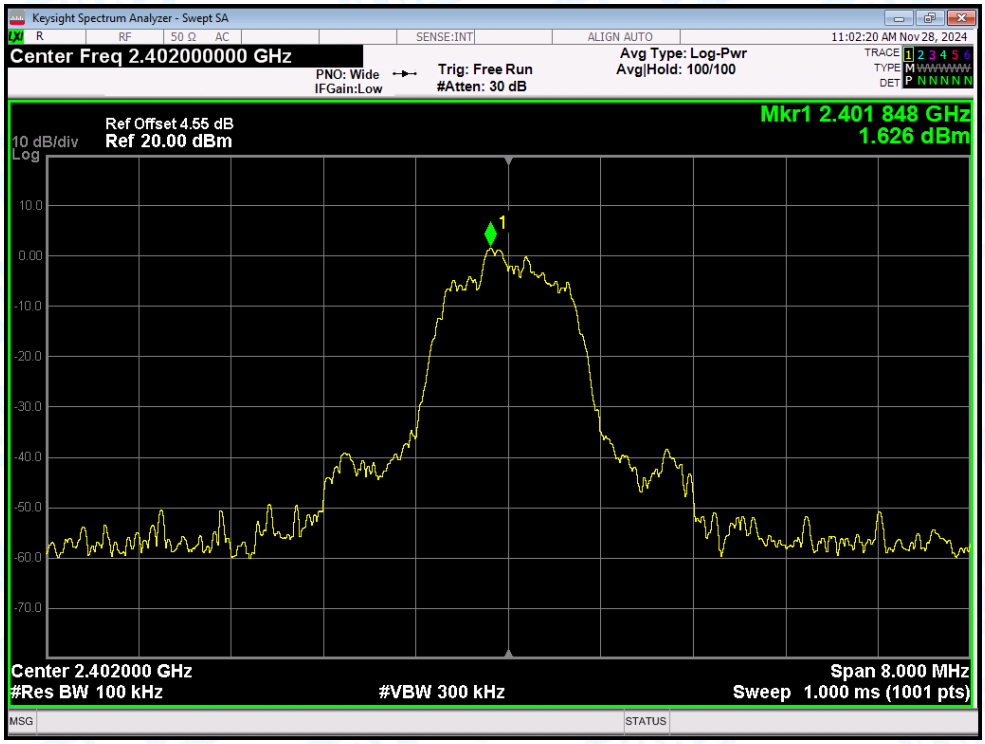
Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Ref



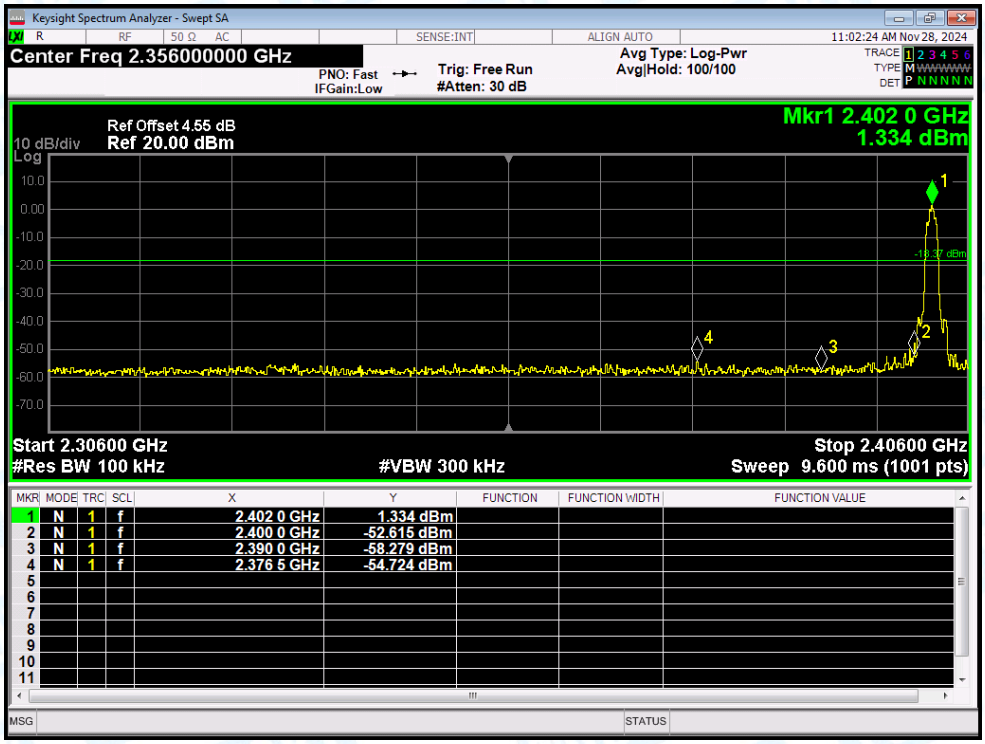
Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Emission



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

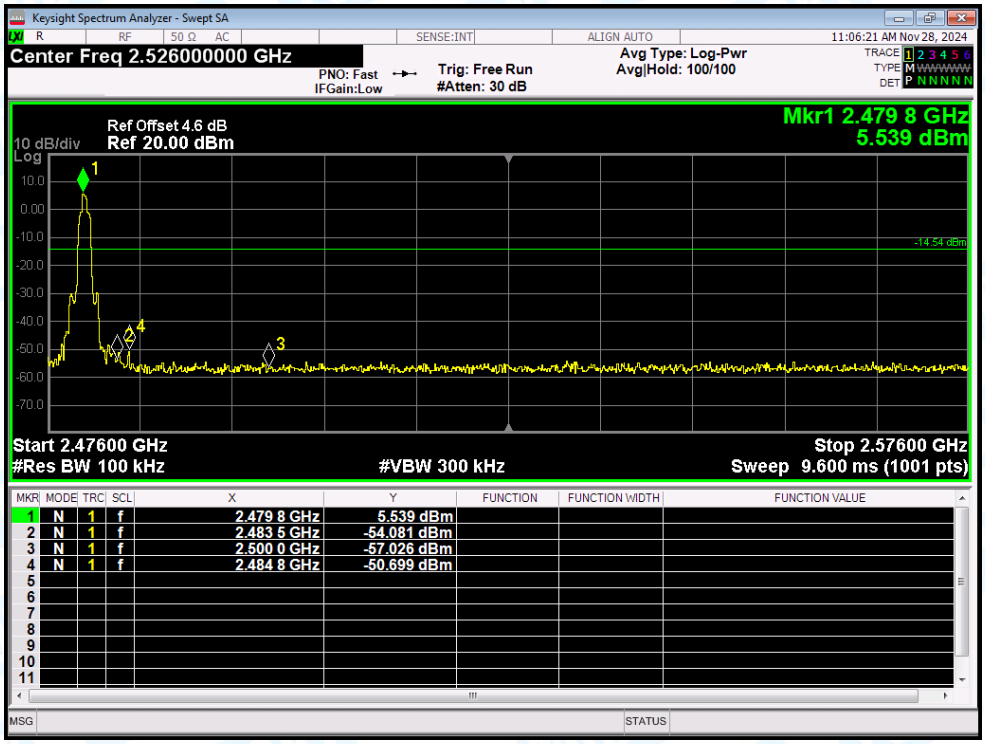


Band Edge NVNT 2-DH1 2402MHz Ant1 No-Hopping Emission

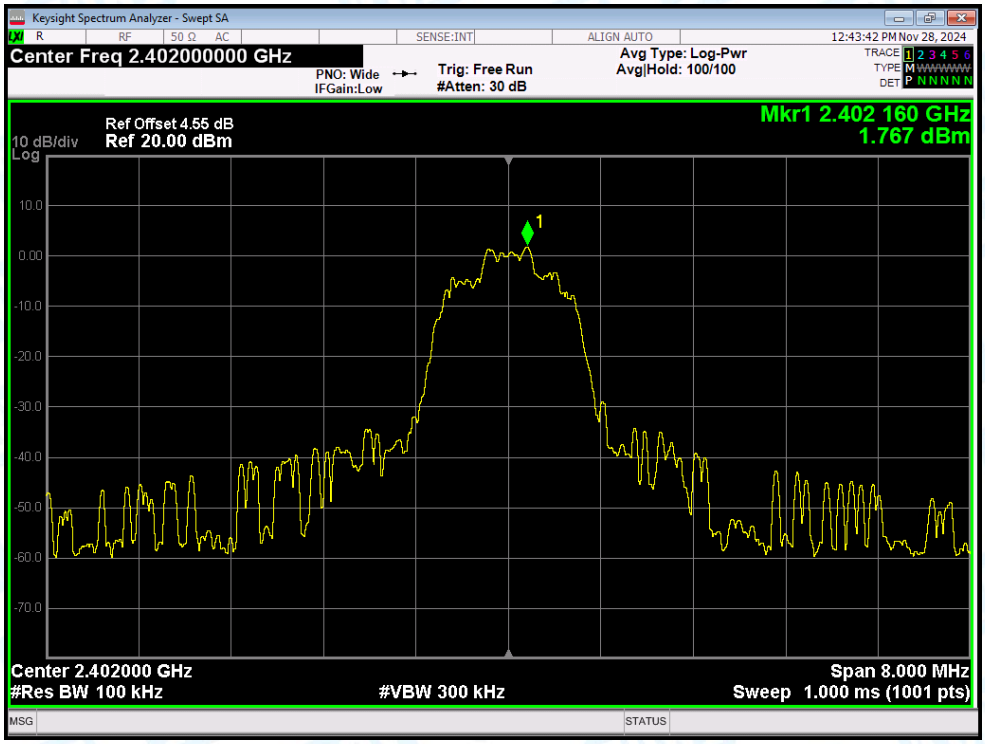


Band Edge NVNT 2-DH1 2480MHz Ant1 No-Hopping Ref

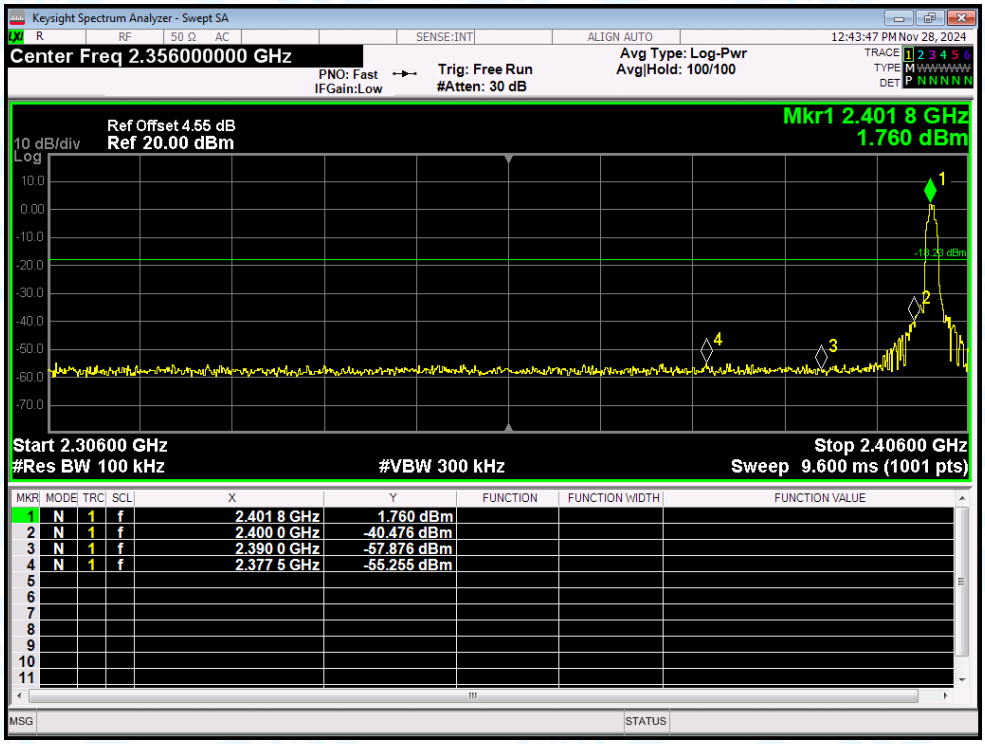
Band Edge NVNT 2-DH1 2480MHz Ant1 No-Hopping Emission



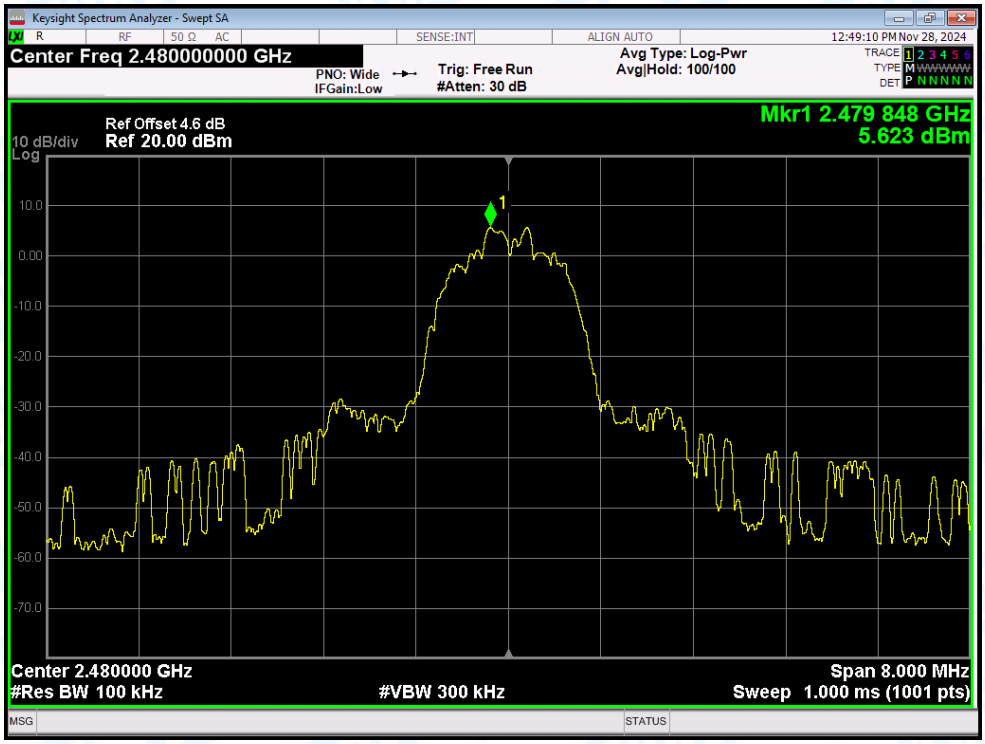
Band Edge NVNT 3-DH1 2402MHz Ant1 No-Hopping Ref



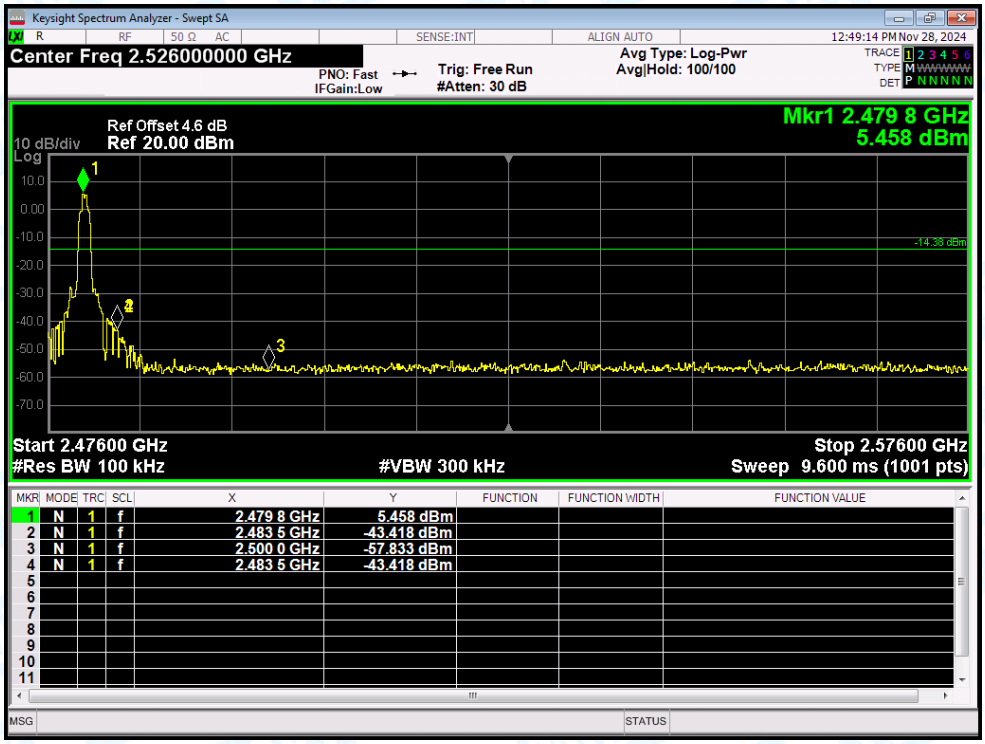
Band Edge NVNT 3-DH1 2402MHz Ant1 No-Hopping Emission



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



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

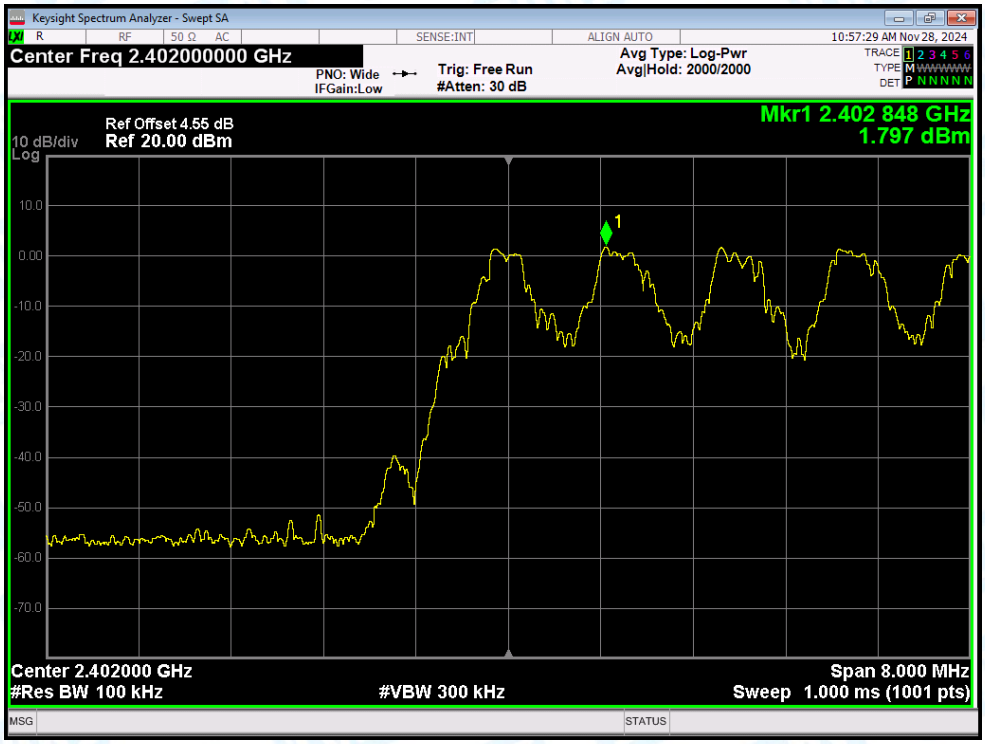


6. Band Edge(Hopping)

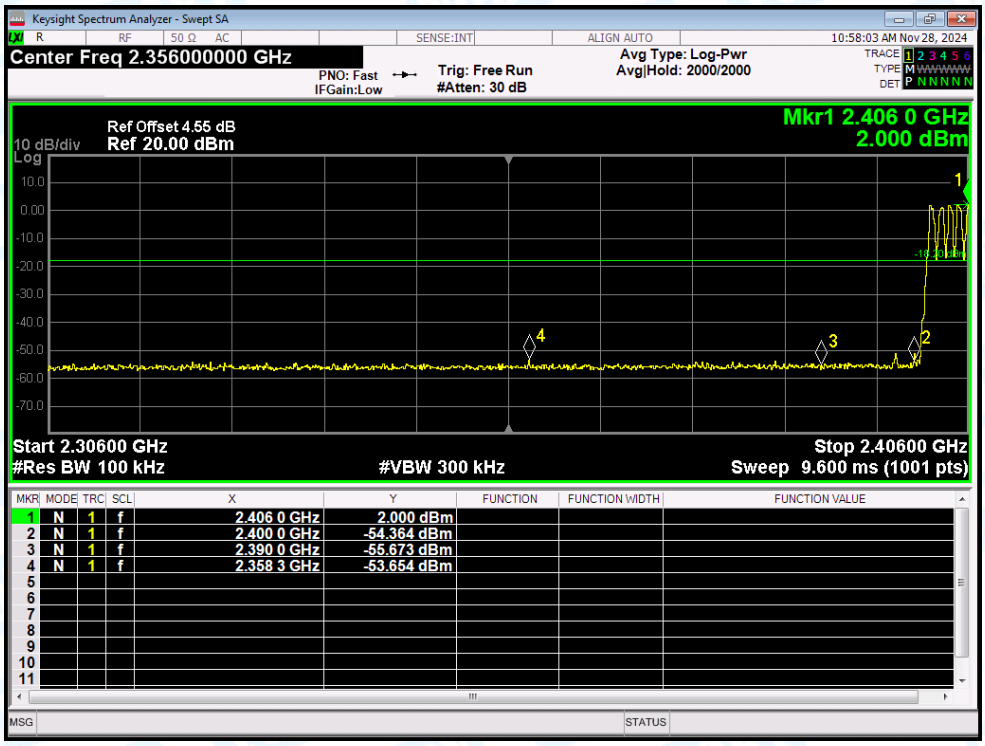
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	Hopping	-55.45	-20	Pass
NVNT	1-DH1	2480	Ant1	Hopping	-58.39	-20	Pass
NVNT	2-DH1	2402	Ant1	Hopping	-55.27	-20	Pass
NVNT	2-DH1	2480	Ant1	Hopping	-54.52	-20	Pass
NVNT	3-DH1	2402	Ant1	Hopping	-55.4	-20	Pass
NVNT	3-DH1	2480	Ant1	Hopping	-50.09	-20	Pass

Test Graphs

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

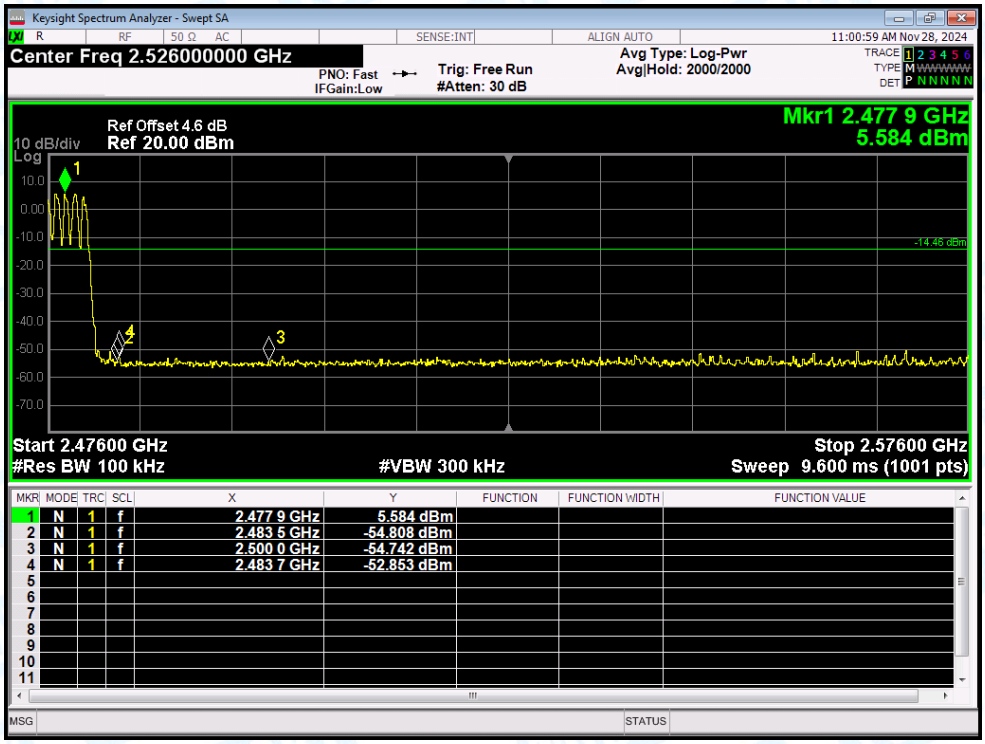


Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Emission



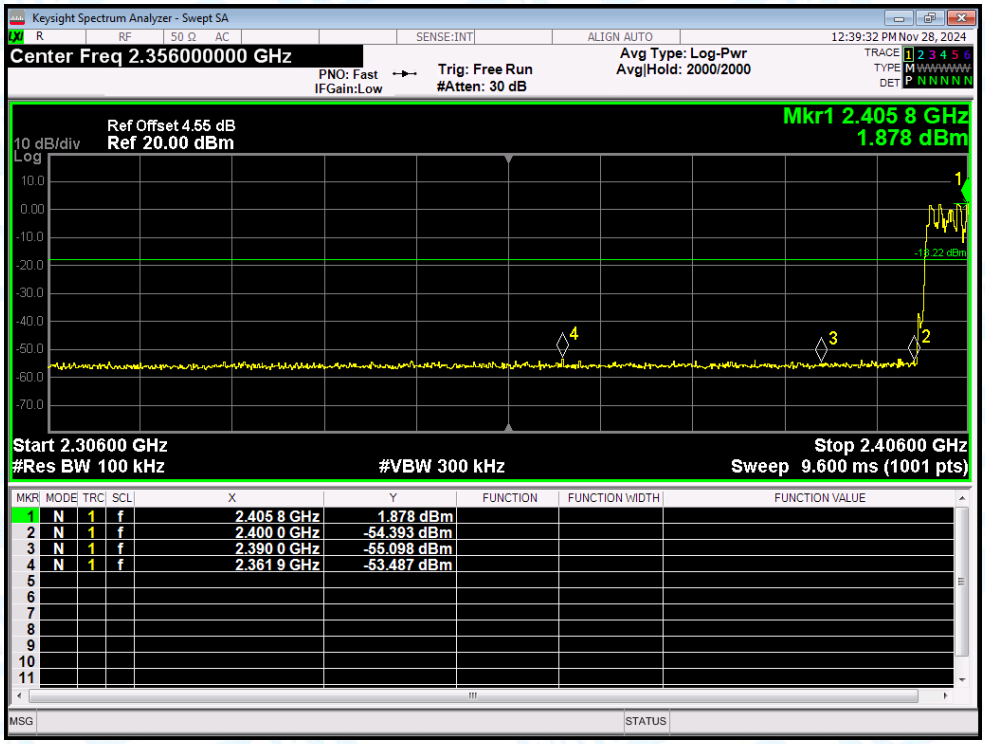
Band Edge(Hopping) NVNT 1-DH1 2480MHz Ant1 Hopping Ref

Band Edge(Hopping) NVNT 1-DH1 2480MHz Ant1 Hopping Emission



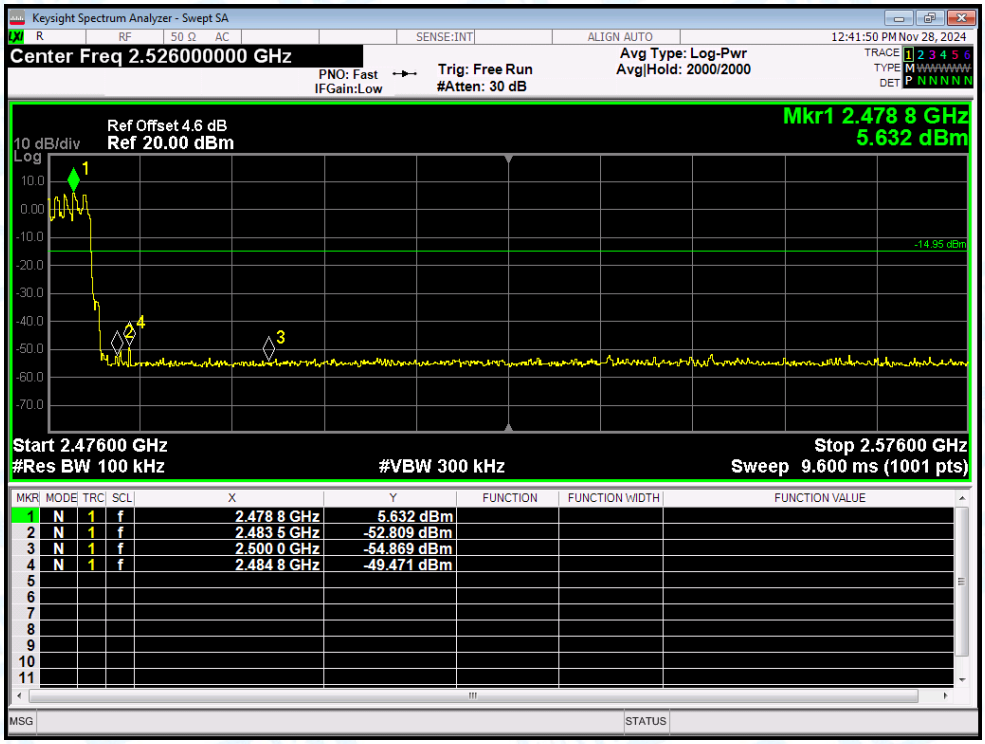
Band Edge(Hopping) NVNT 2-DH1 2402MHz Ant1 Hopping Ref

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

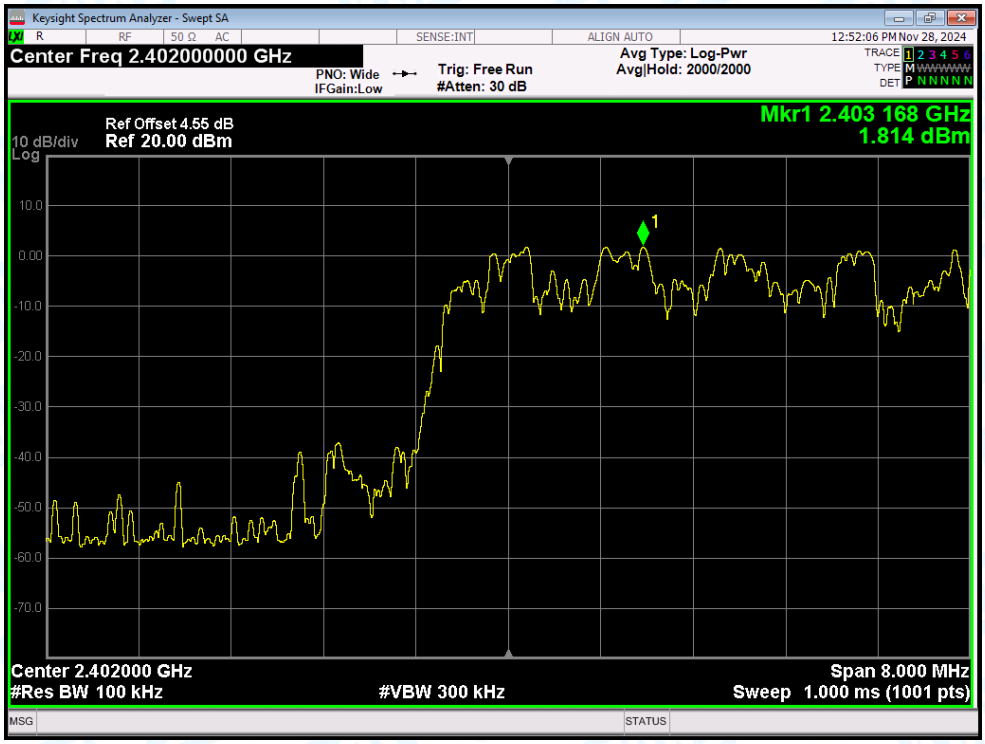


Band Edge(Hopping) NVNT 2-DH1 2480MHz Ant1 Hopping Ref

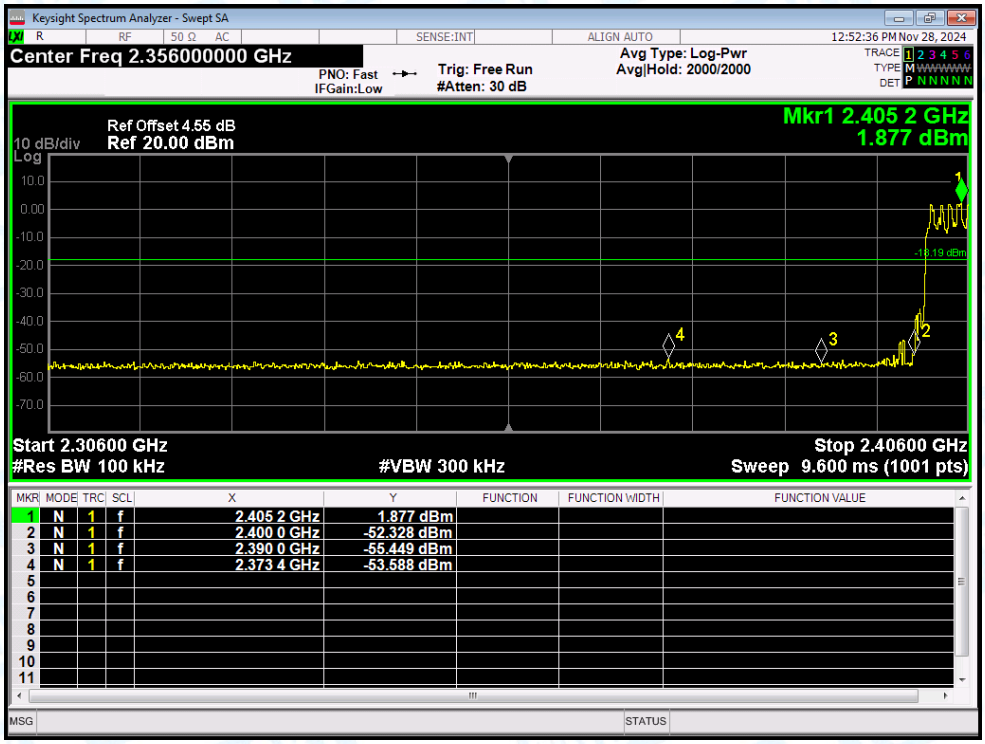
Band Edge(Hopping) NVNT 2-DH1 2480MHz Ant1 Hopping Emission



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

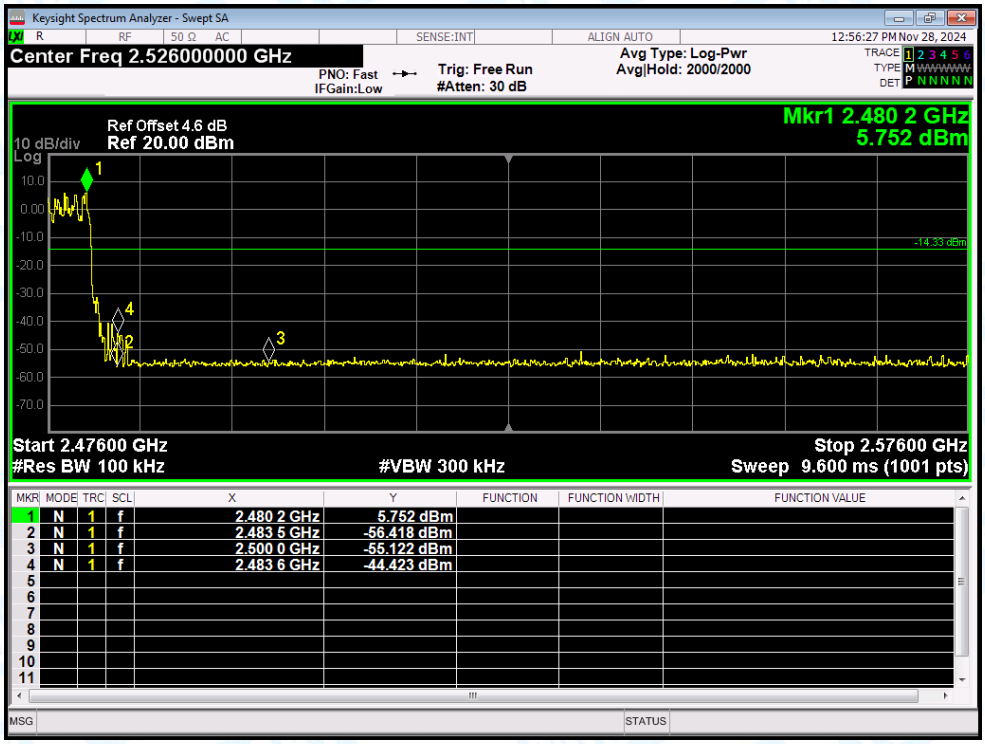


Band Edge(Hopping) NVNT 3-DH1 2402MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT 3-DH1 2480MHz Ant1 Hopping Ref

Band Edge(Hopping) NVNT 3-DH1 2480MHz Ant1 Hopping Emission

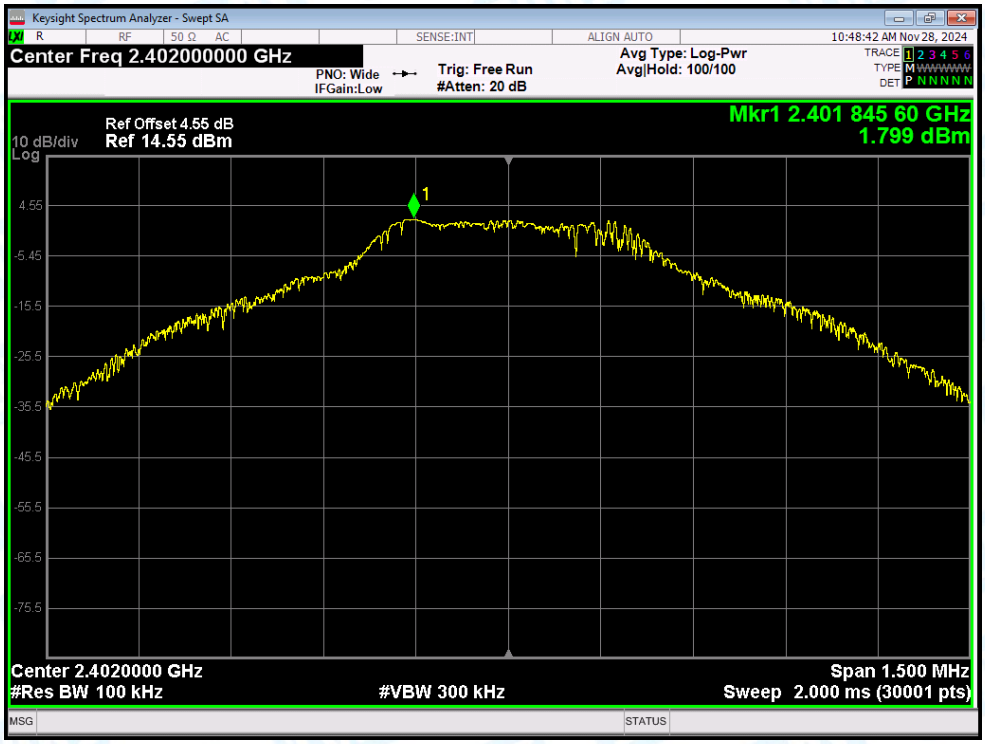


7. Conducted RF Spurious Emission

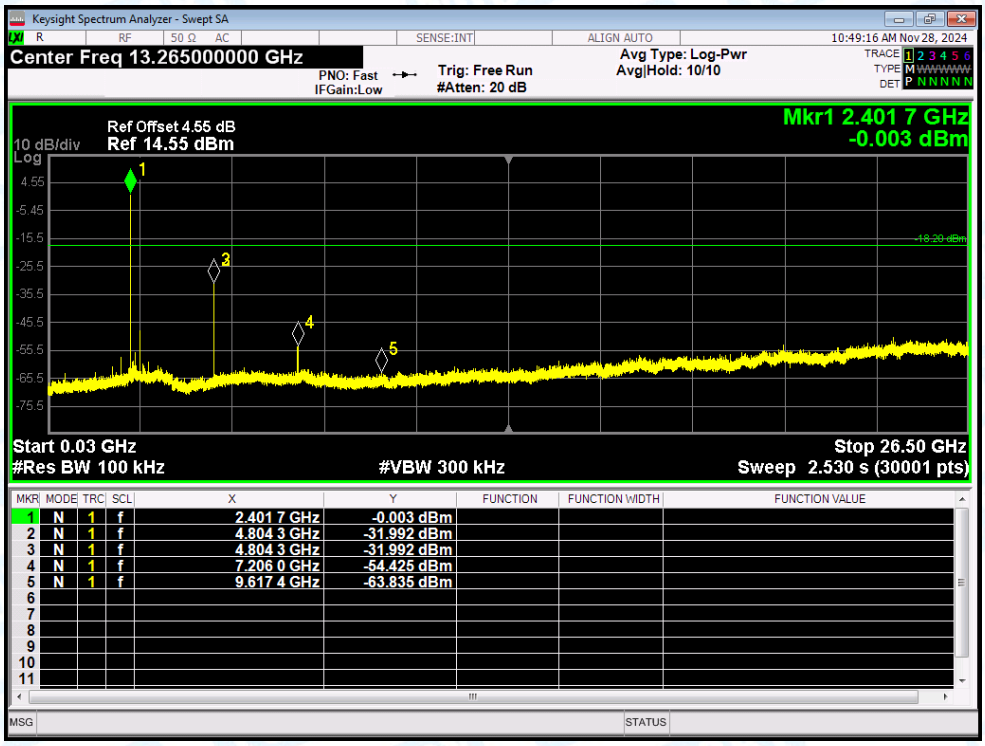
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	-33.79	-20	Pass
NVNT	1-DH1	2441	Ant1	-31.63	-20	Pass
NVNT	1-DH1	2480	Ant1	-35.33	-20	Pass
NVNT	2-DH1	2402	Ant1	-38.82	-20	Pass
NVNT	2-DH1	2441	Ant1	-33.75	-20	Pass
NVNT	2-DH1	2480	Ant1	-41	-20	Pass
NVNT	3-DH1	2402	Ant1	-32.32	-20	Pass
NVNT	3-DH1	2441	Ant1	-36.07	-20	Pass
NVNT	3-DH1	2480	Ant1	-39.02	-20	Pass

Test Graphs

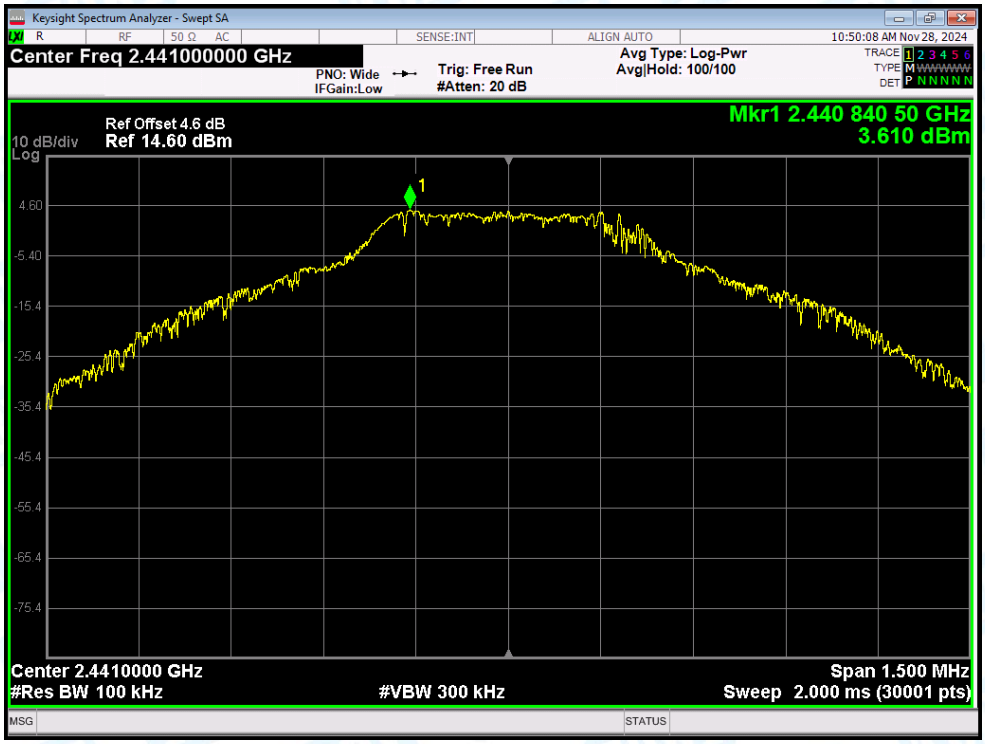
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Ref



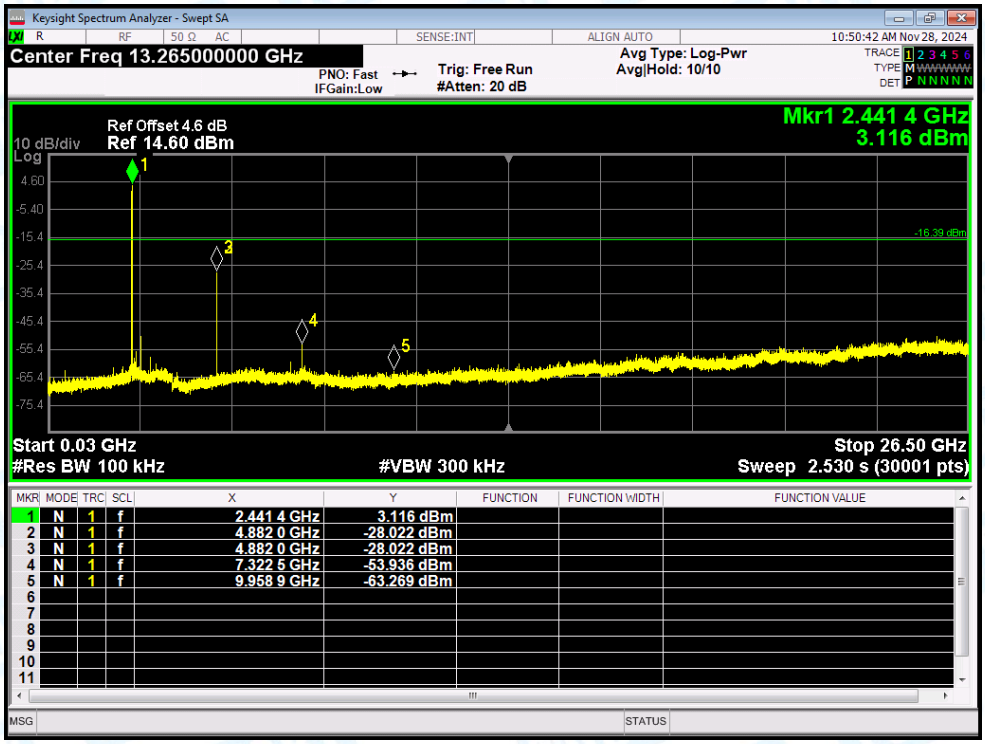
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Emission



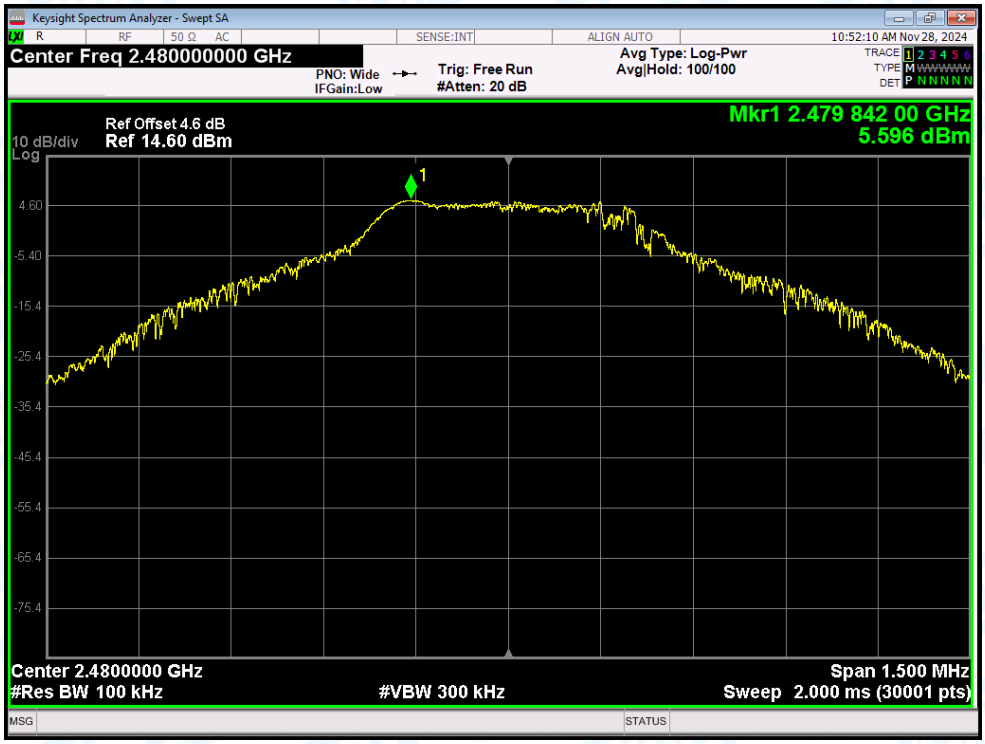
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Ref



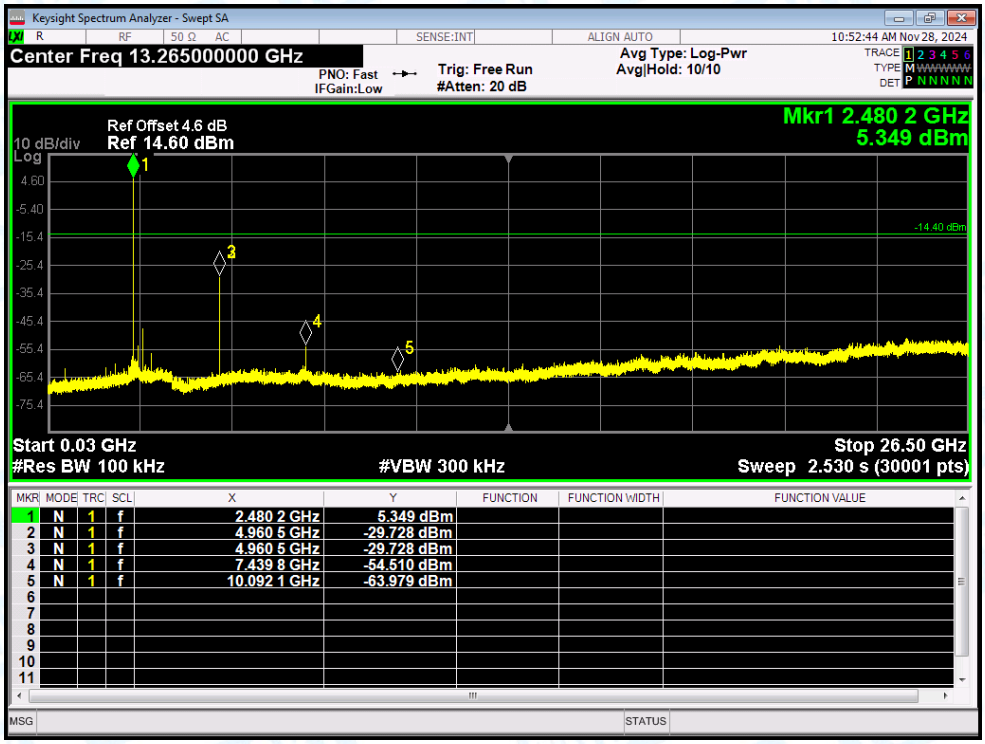
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Emission



Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Ref



Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Emission



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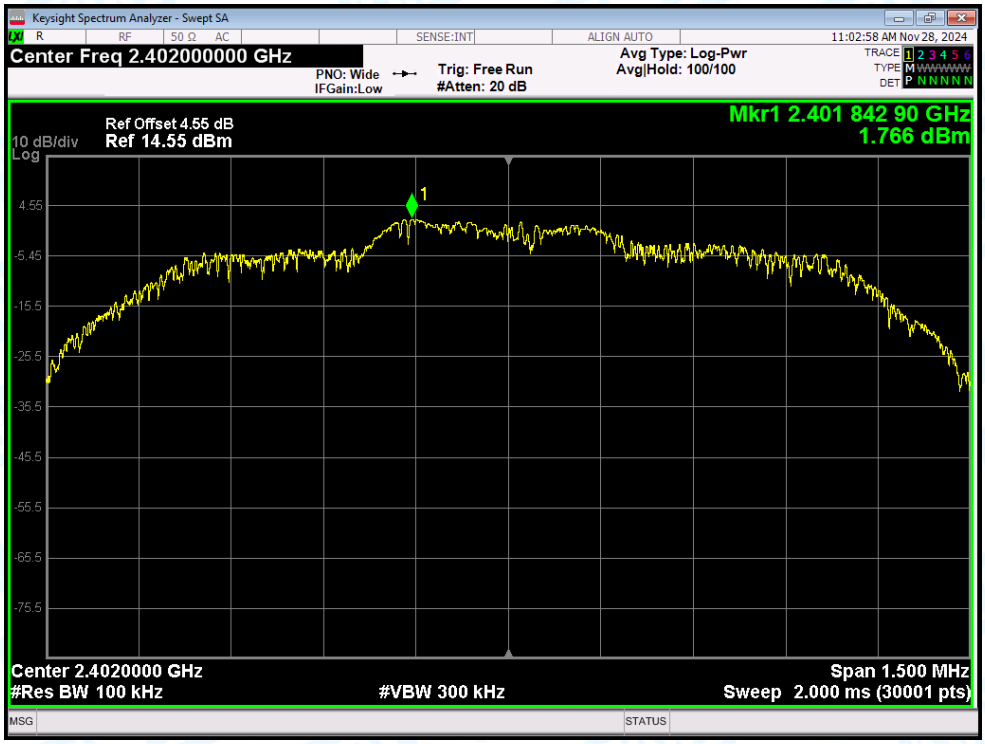
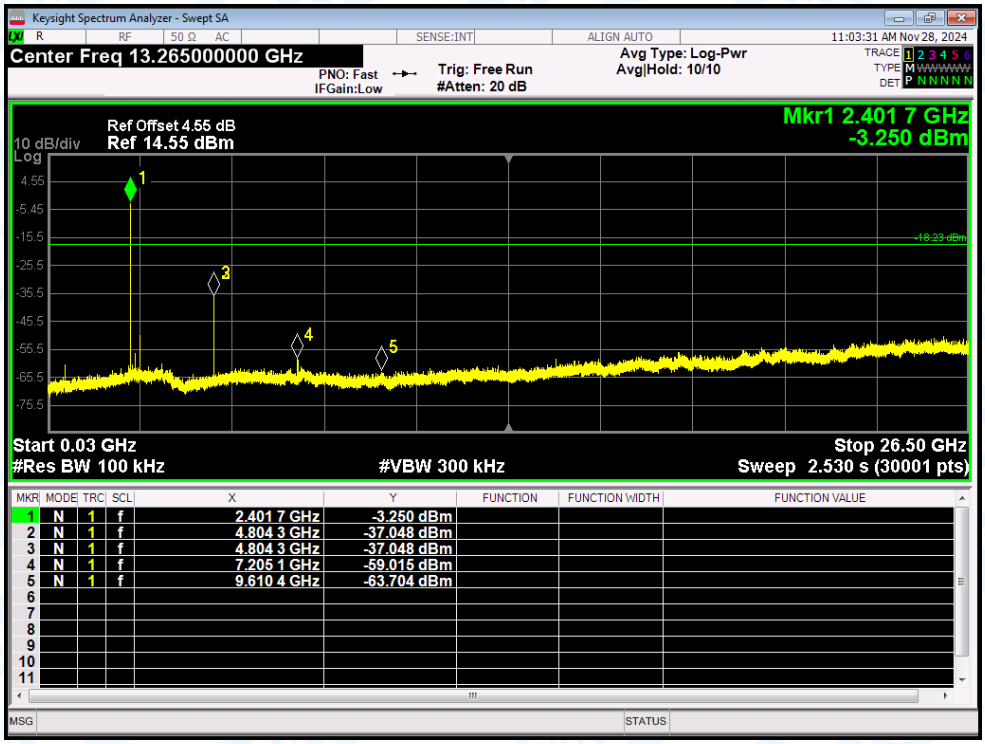
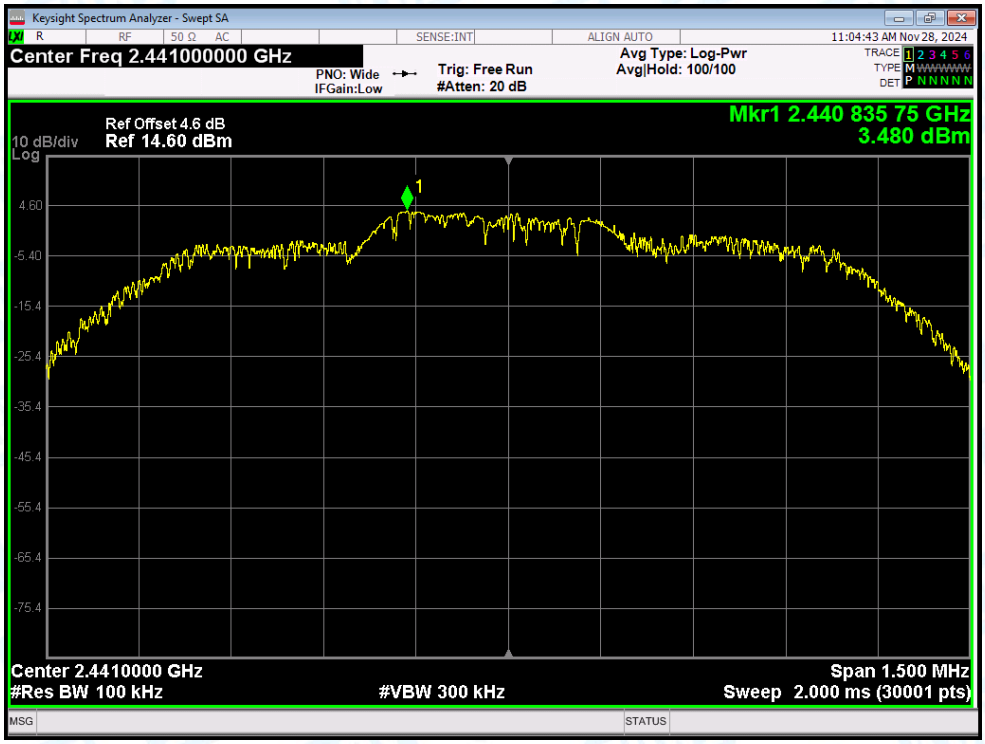


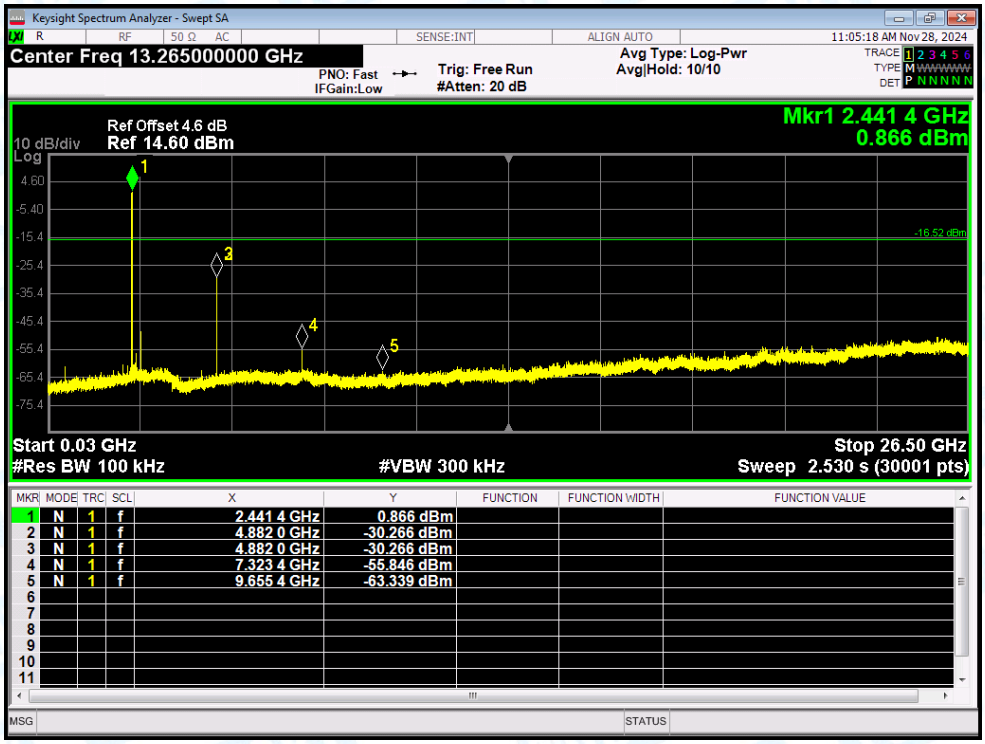
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Emission



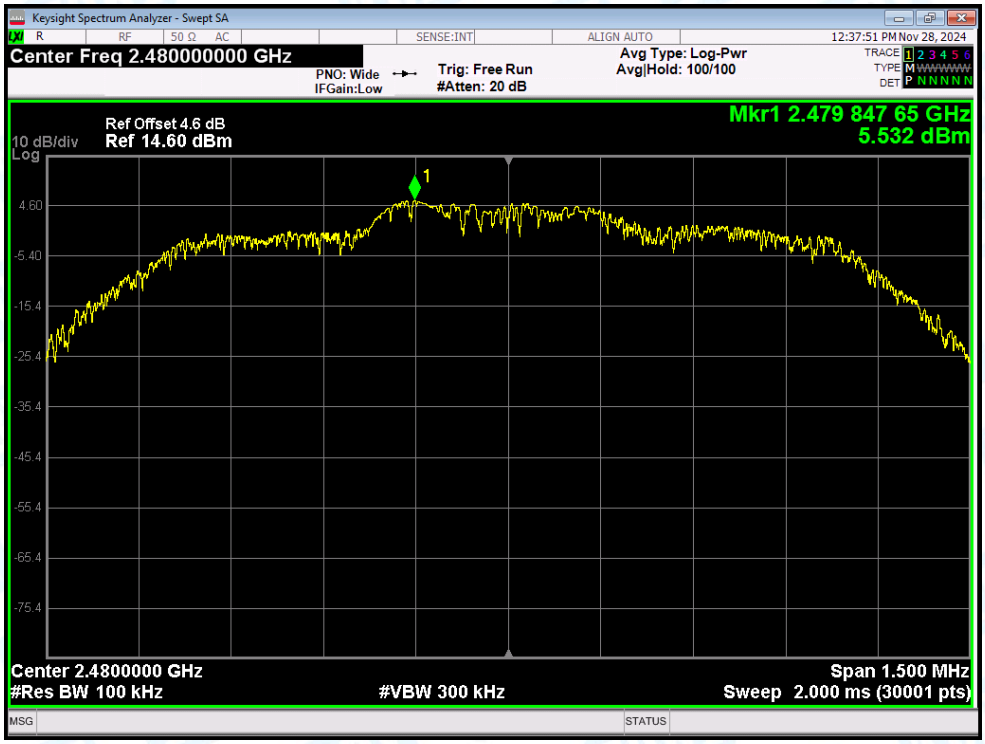
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Ref



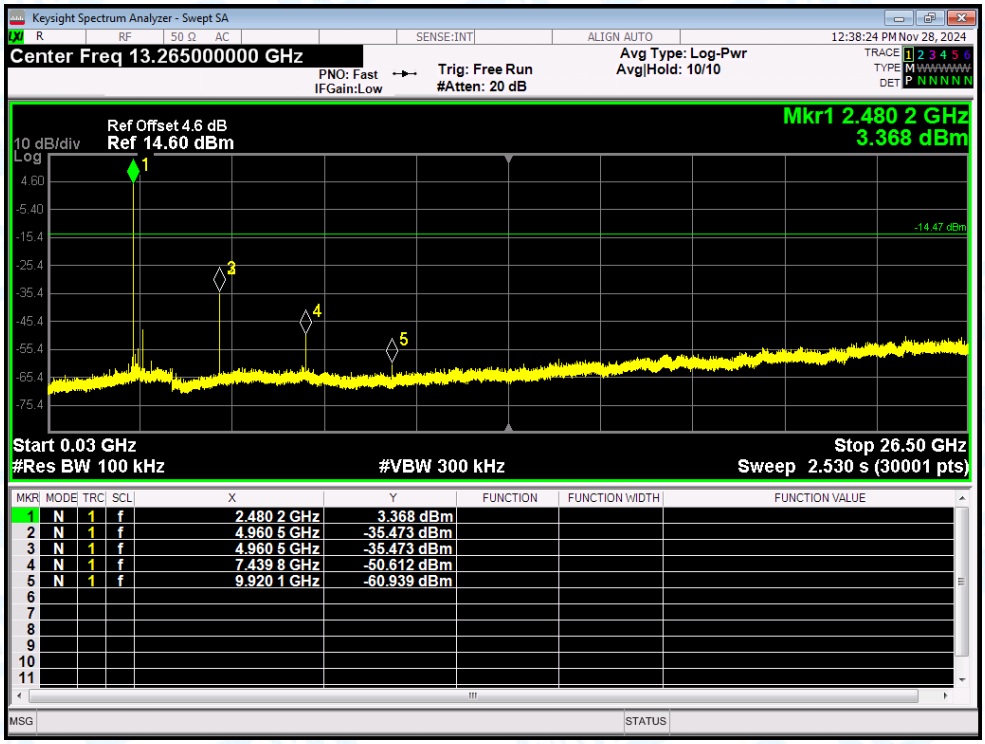
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Emission



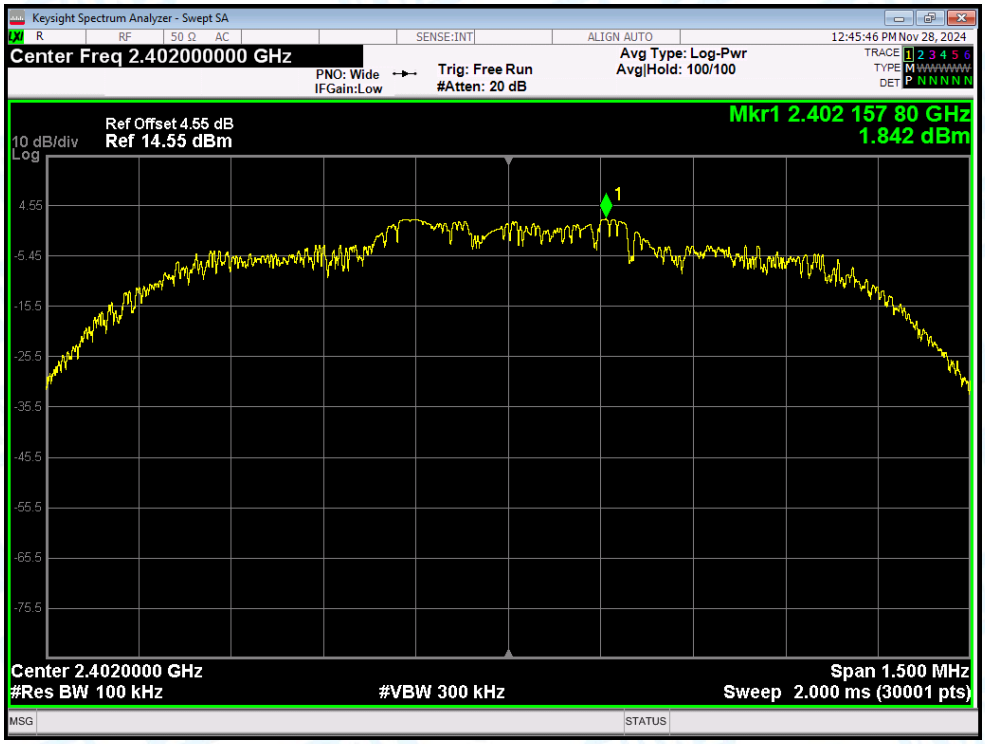
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Ref



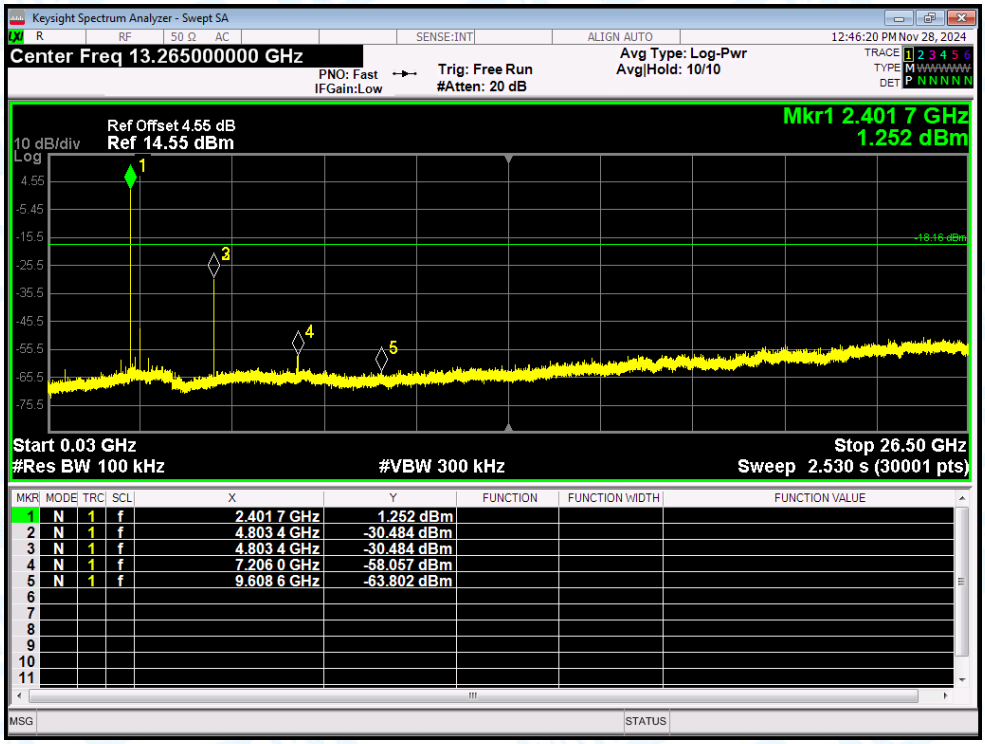
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Emission



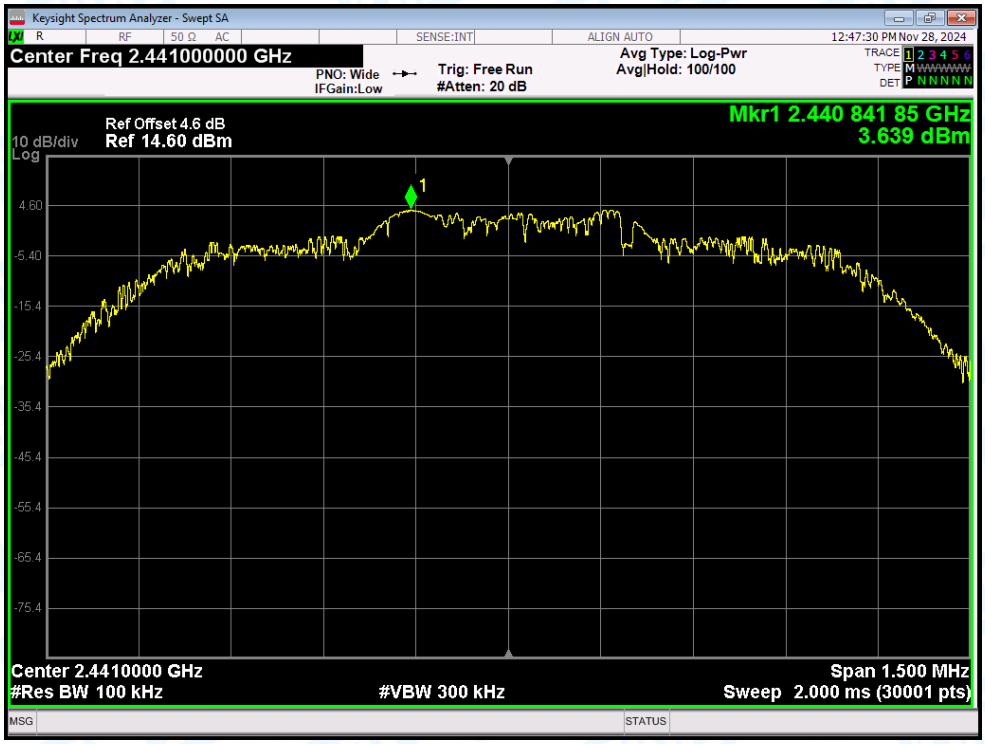
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Ref



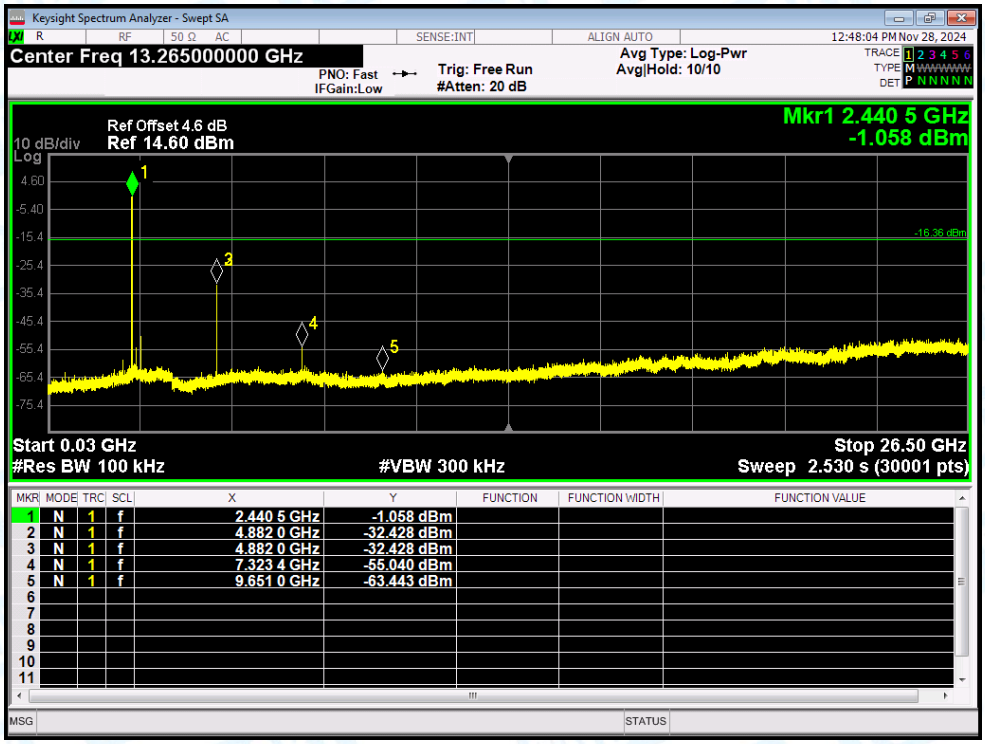
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Emission



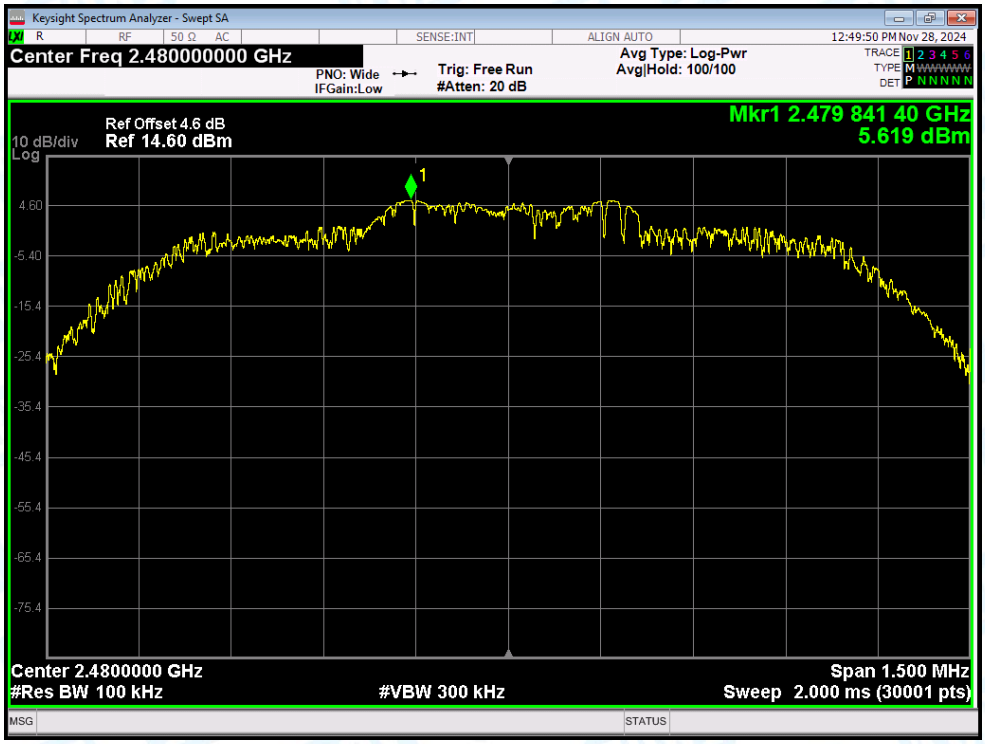
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Ref



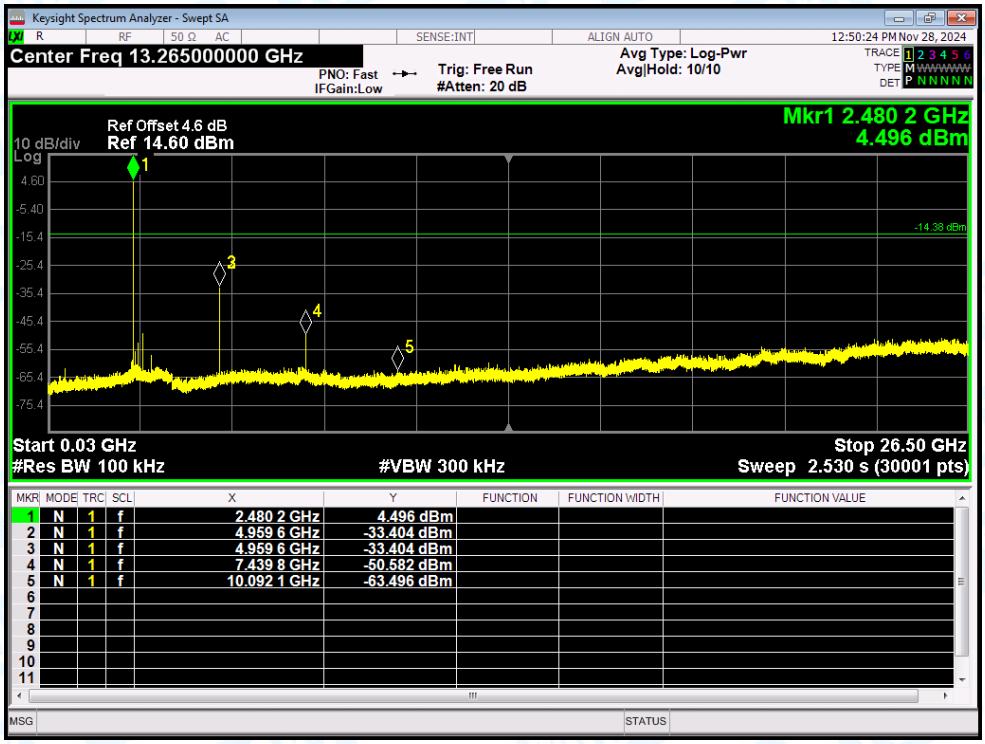
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Emission

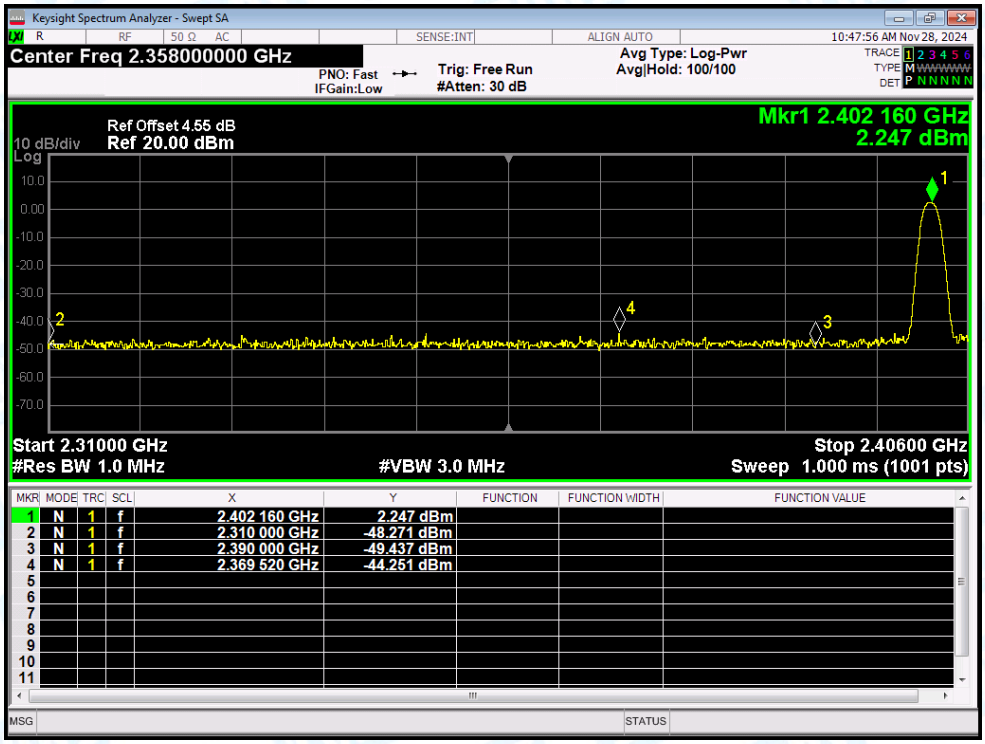


8. Restrict Band

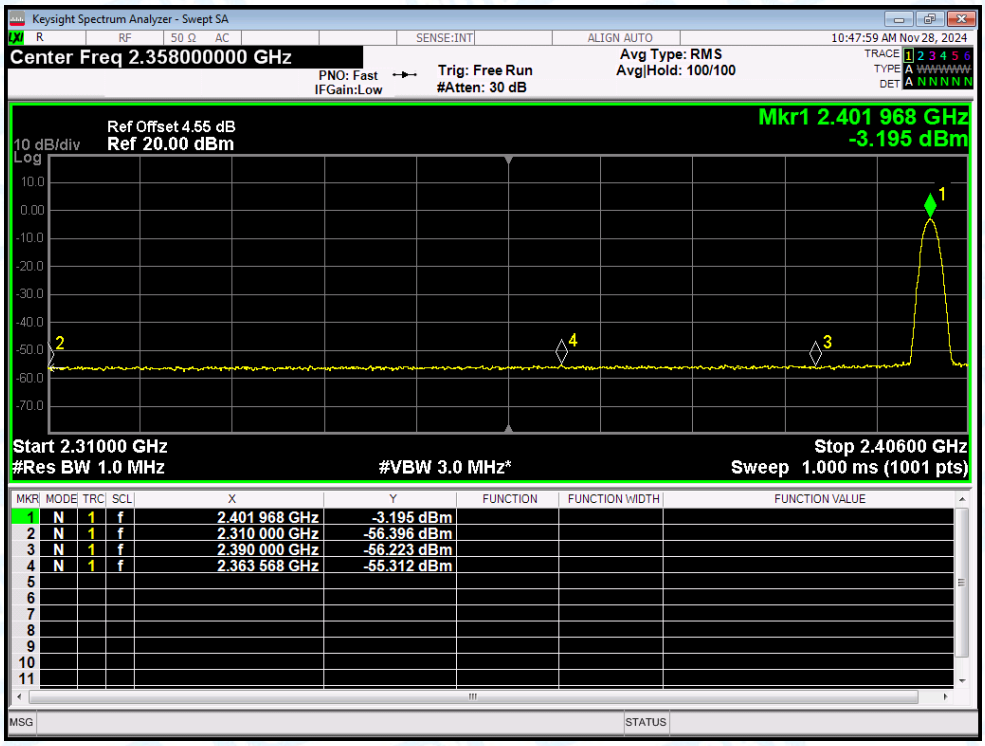
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-48.27	2	-	48.99	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-56.4	2	5.06	45.92	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2369.52	-44.25	2	-	53.01	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2363.568	-55.31	2	5.06	47.01	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-49.44	2	-	47.82	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-56.22	2	5.06	46.1	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-45.18	2	-	52.08	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-53.97	2	4.95	48.24	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.8	-42.29	2	-	54.97	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.944	-53.32	2	4.95	48.89	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-46.96	2	-	50.3	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-55.98	2	4.95	46.23	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-48.63	2	-	48.63	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-57.33	2	4.84	44.77	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2349.456	-44.99	2	-	52.27	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2381.04	-55.24	2	4.84	46.86	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-48.03	2	-	49.23	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-56.31	2	4.84	45.79	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-42.02	2	-	55.24	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-54.33	2	4.84	47.77	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2484.016	-36.49	2	-	60.77	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.584	-53.69	2	4.84	48.41	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-46.22	2	-	51.04	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-55.87	2	4.84	46.23	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-48.63	2	-	48.63	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-57.36	2	4.84	44.74	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2341.776	-44.57	2	-	52.69	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2387.664	-55.29	2	4.84	46.81	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-47.68	2	-	49.58	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-55.62	2	4.84	46.48	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-45.98	2	-	51.28	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-54.46	2	4.84	47.64	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2484.064	-26.04	2	-	71.22	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2484.04	-49.18	2	4.84	52.92	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-48.43	2	-	48.83	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-55.48	2	4.84	46.62	Average	54	Pass

Test Graphs

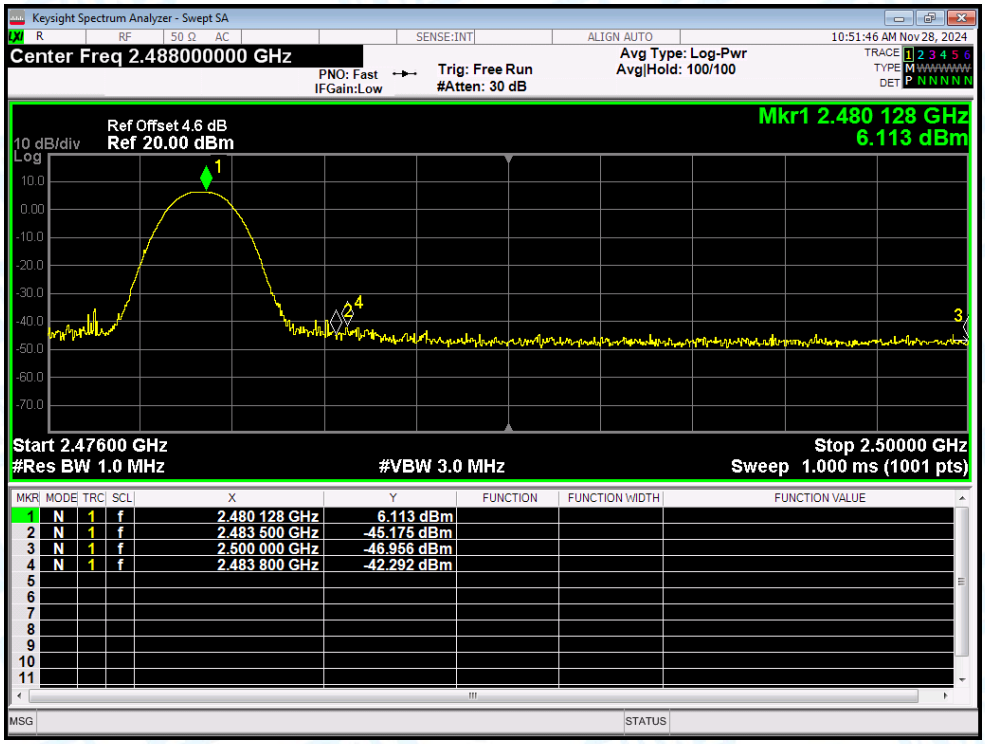
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Peak



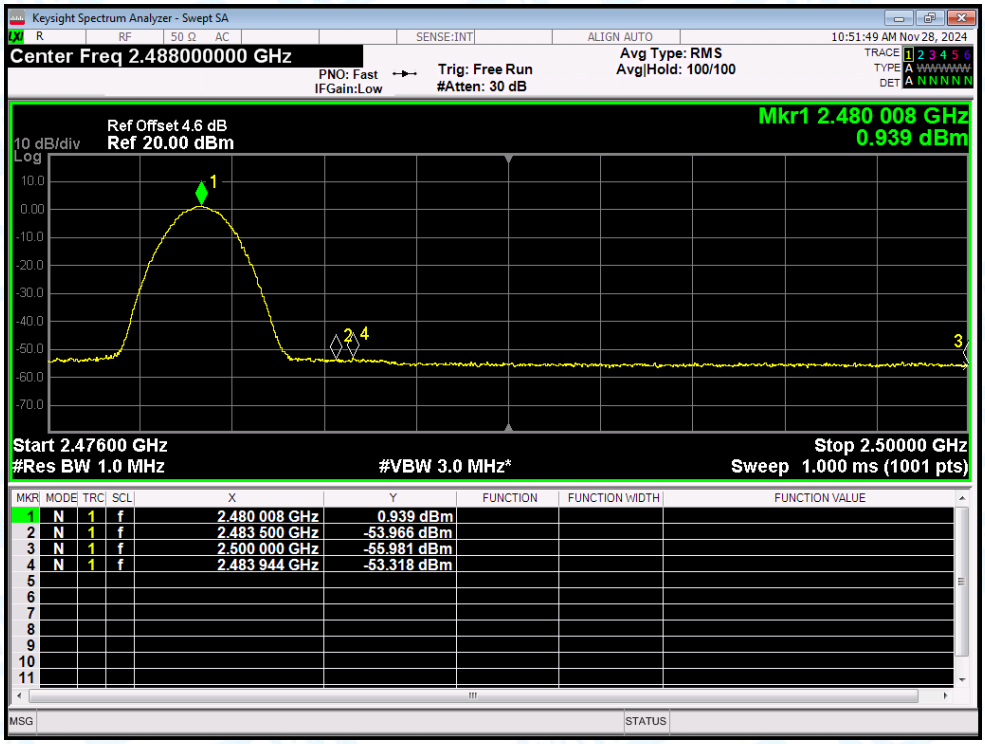
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Average



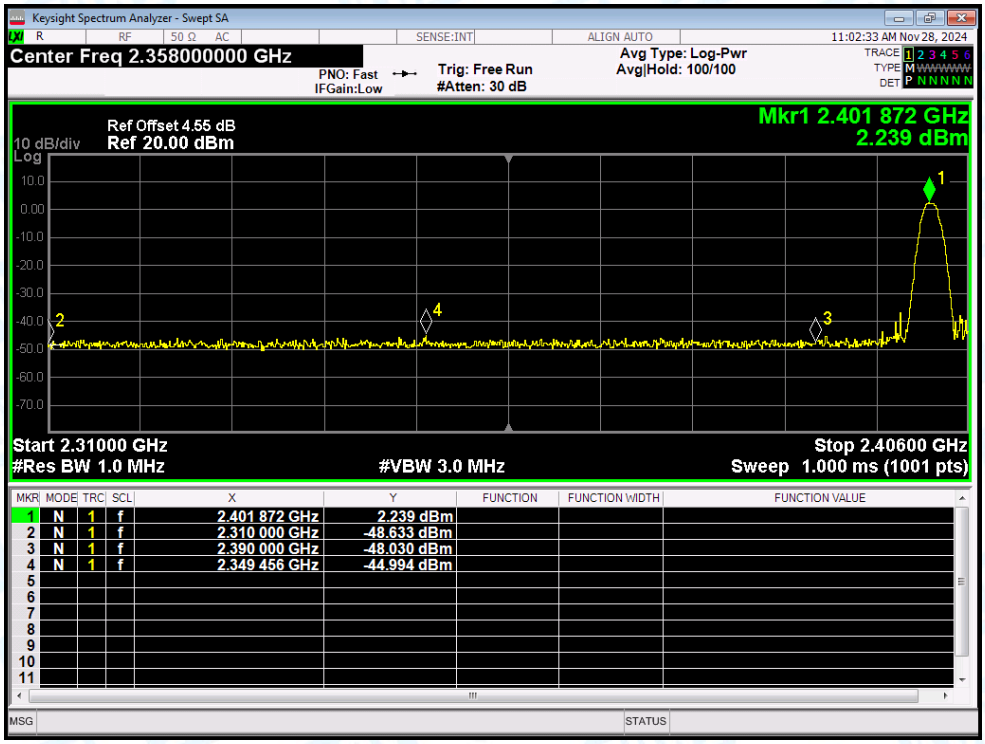
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Peak



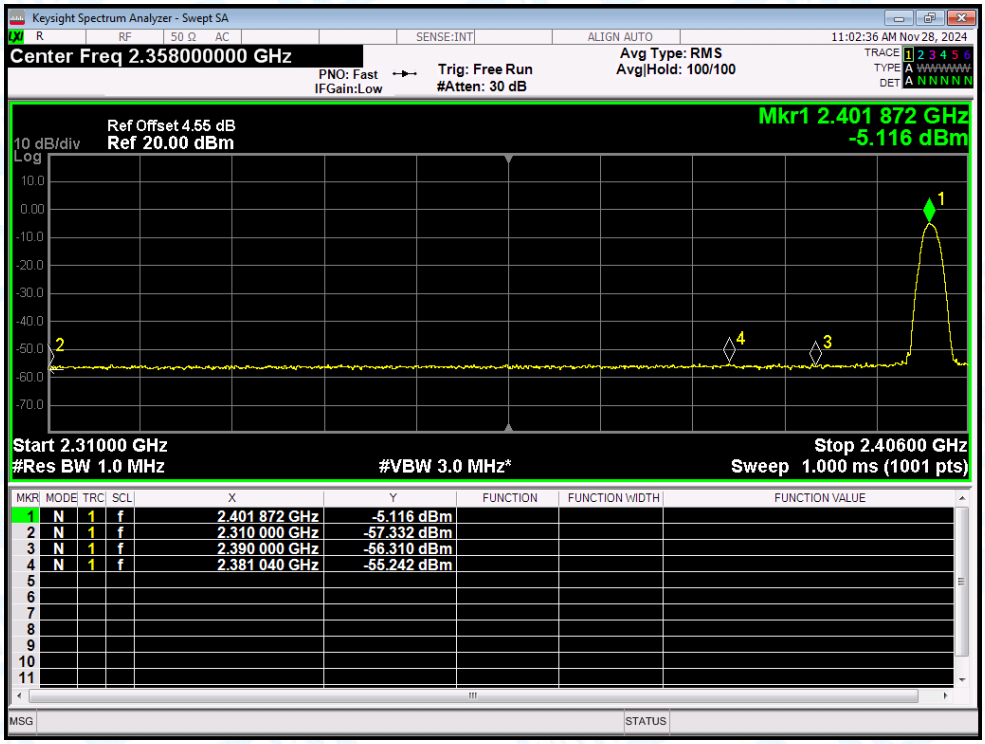
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Average



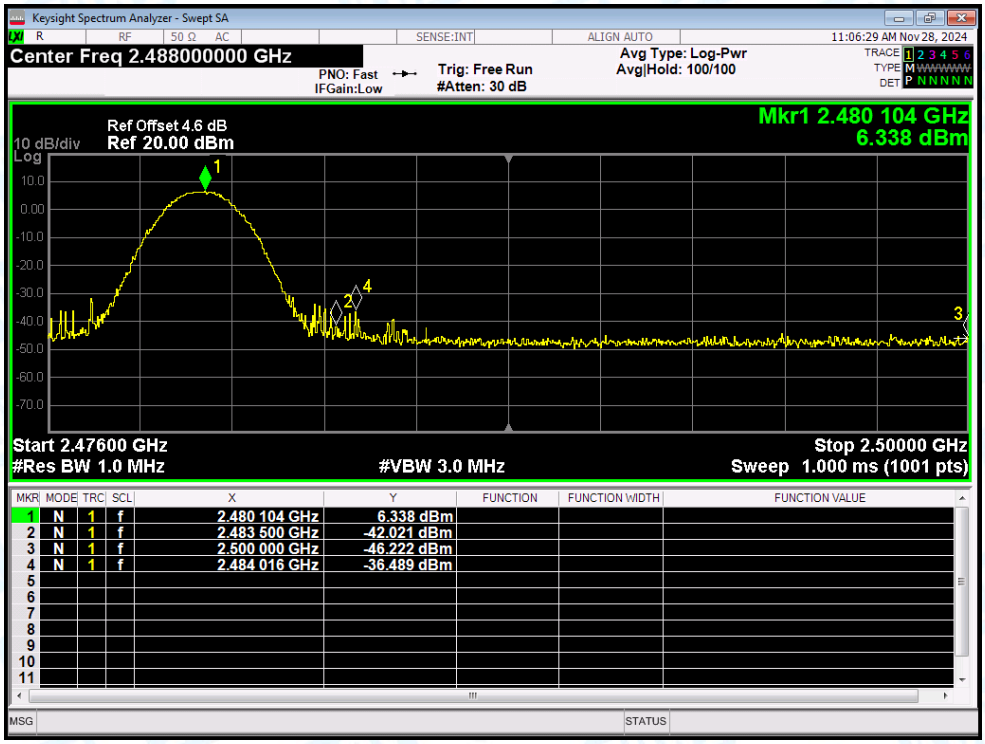
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Peak



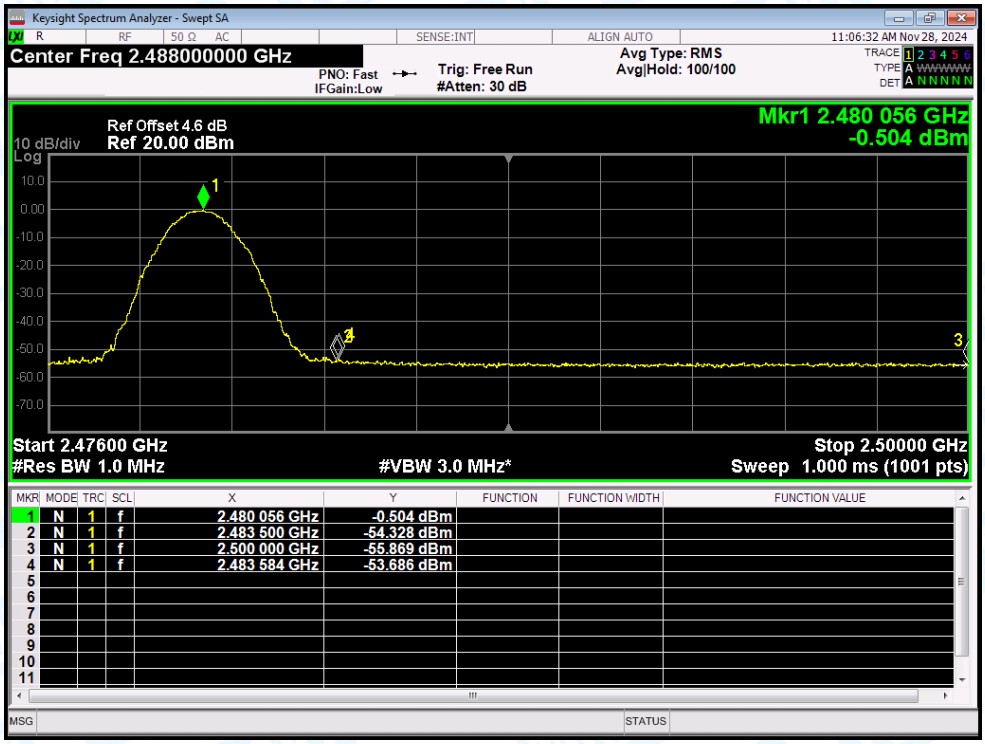
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Average



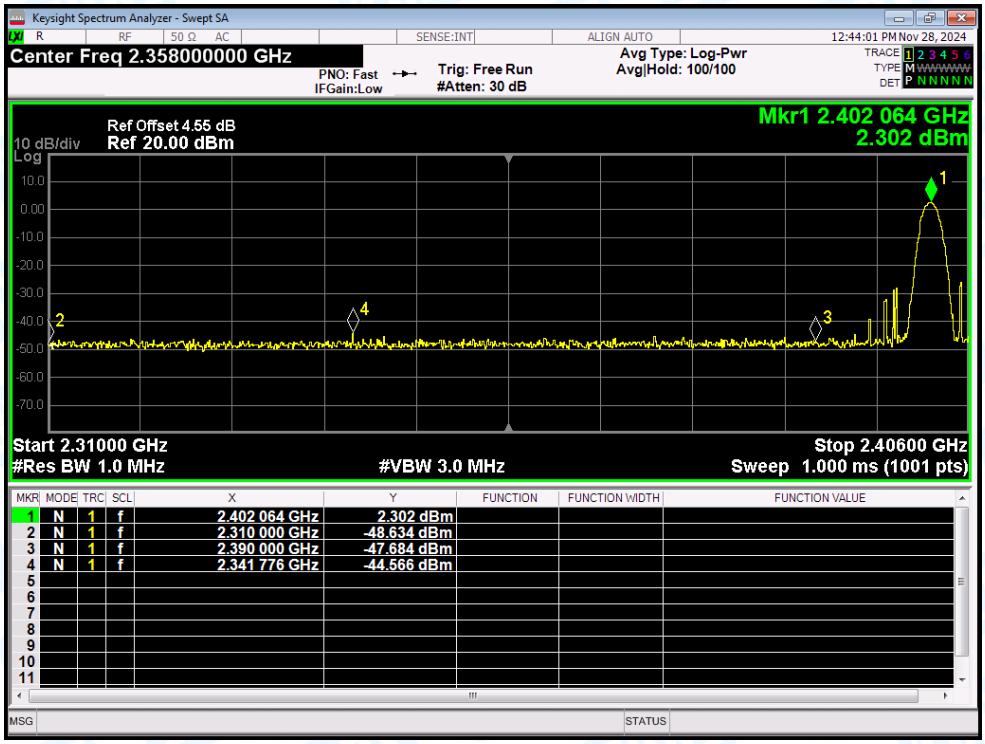
Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Peak



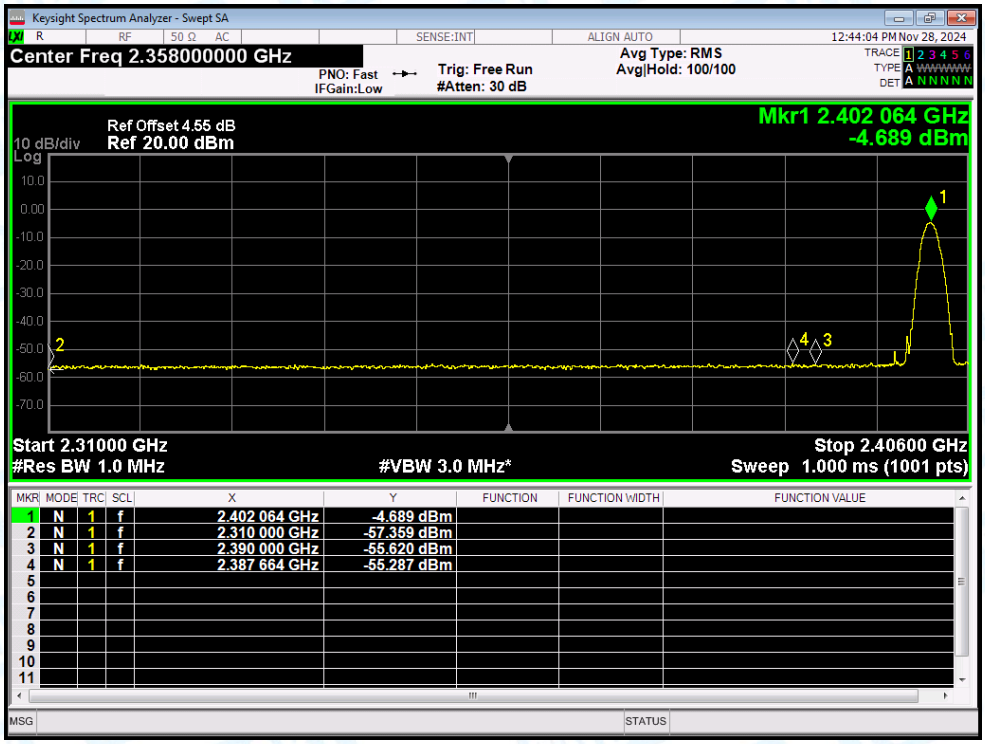
Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Average



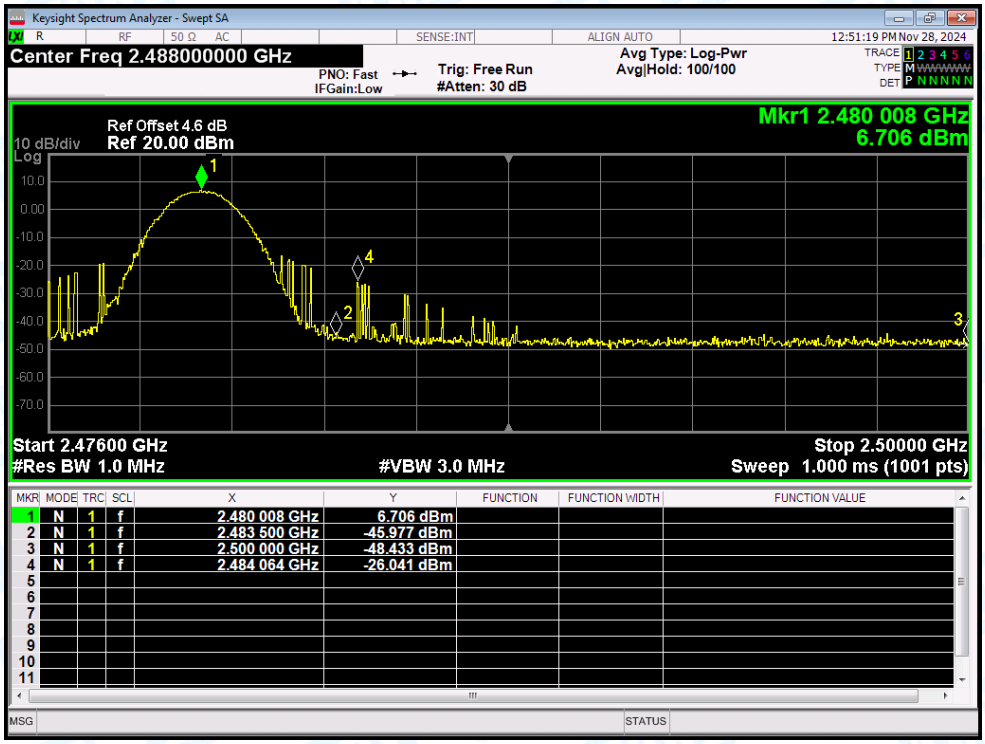
Restrict Band NVNT 3-DH1 2402MHz Ant1 No-Hopping Peak



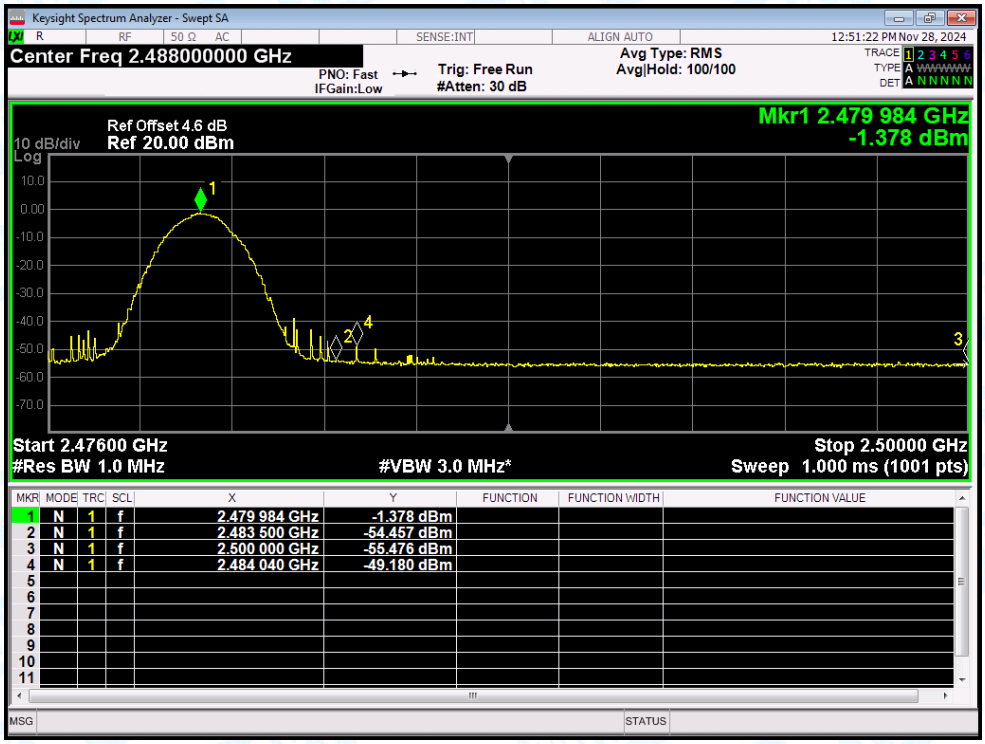
Restrict Band NVNT 3-DH1 2402MHz Ant1 No-Hopping Average



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



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

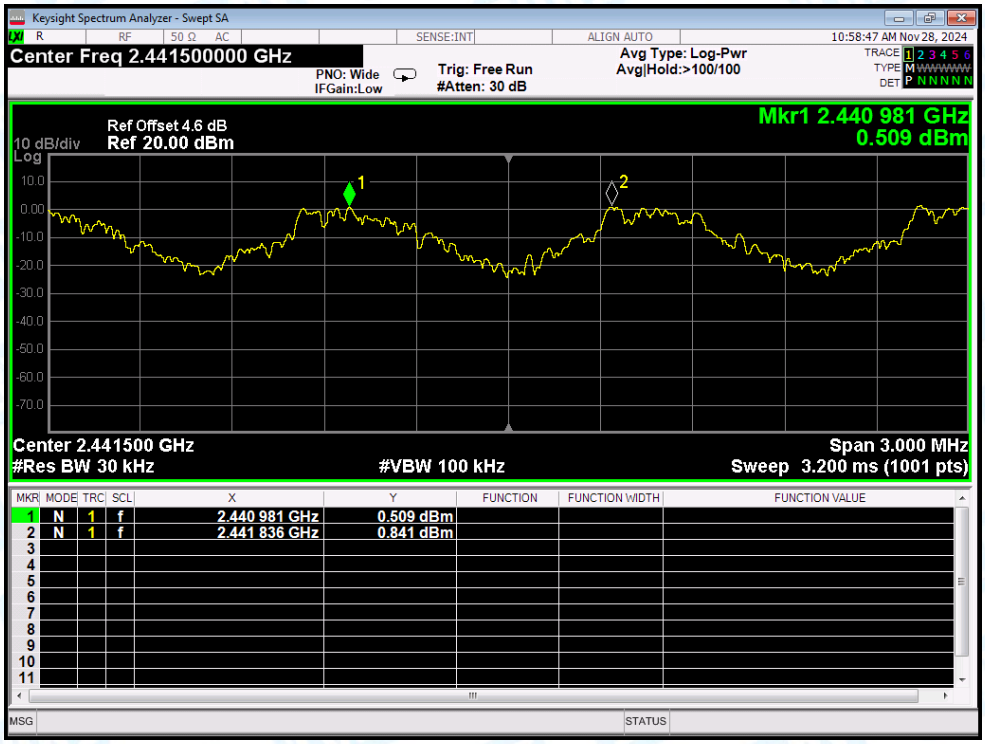


9. Carrier Frequencies Separation

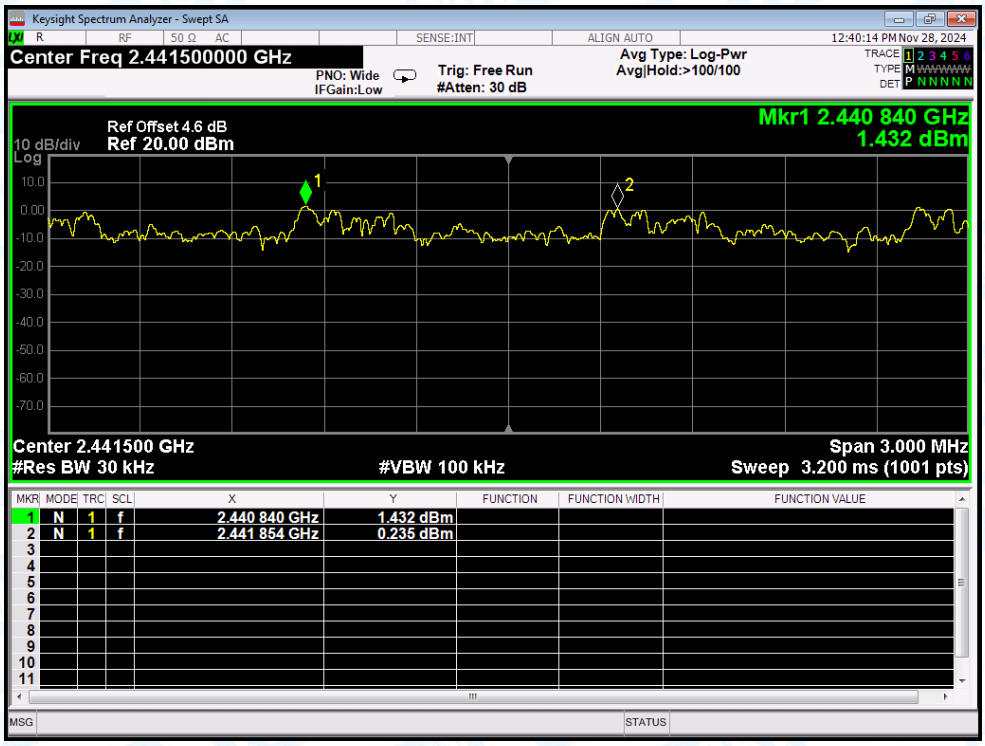
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	Ant1	2440.981	2441.836	0.855	0.587	Pass
NVNT	2-DH1	Ant1	2440.84	2441.854	1.014	0.833	Pass
NVNT	3-DH1	Ant1	2440.849	2442.166	1.317	0.833	Pass

Test Graphs

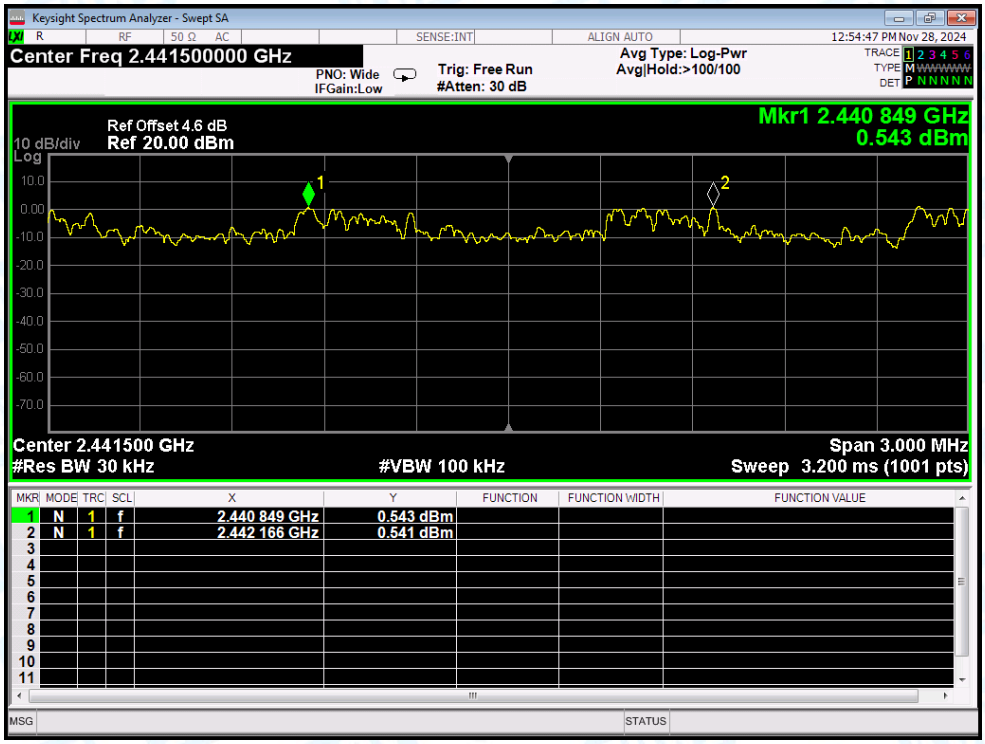
CFS NVNT 1-DH1 2441MHz Ant1



CFS NVNT 2-DH1 2441MHz Ant1



CFS NVNT 3-DH1 2441MHz Ant1

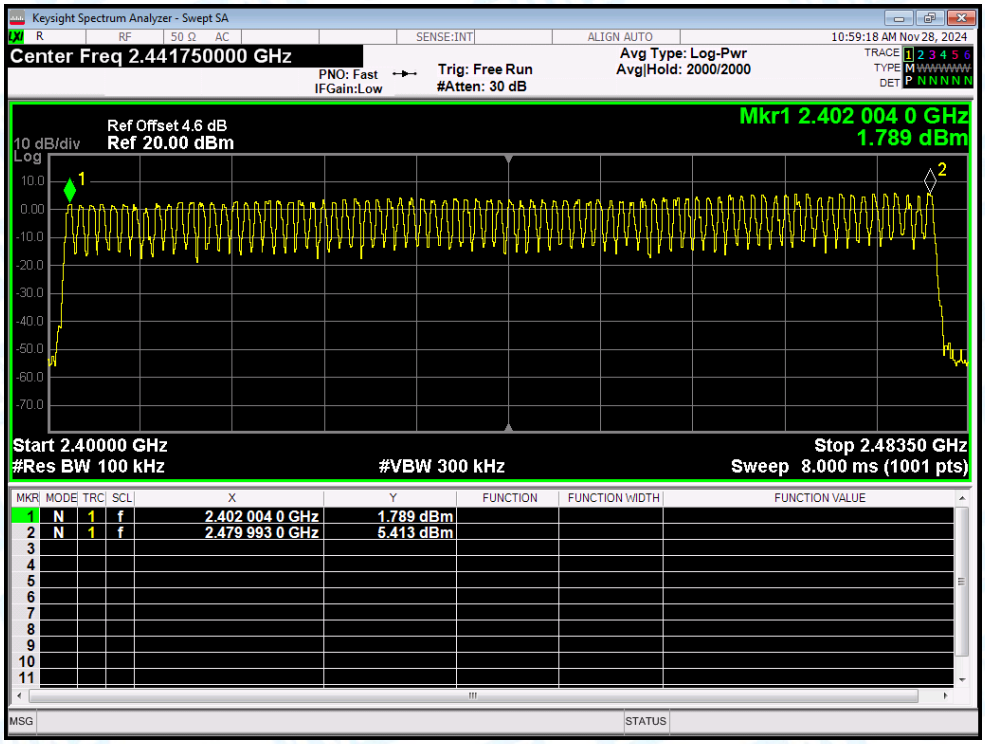


10. Number of Hopping Channel

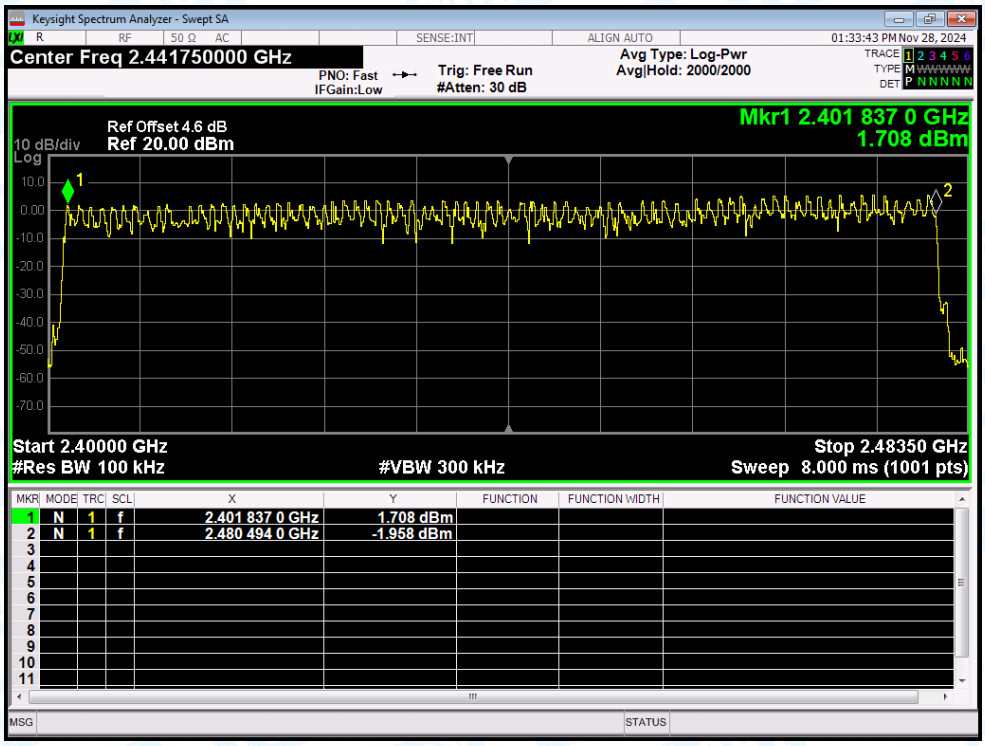
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH1	Ant1	79	15	Pass
NVNT	2-DH1	Ant1	79	15	Pass
NVNT	3-DH1	Ant1	79	15	Pass

Test Graphs

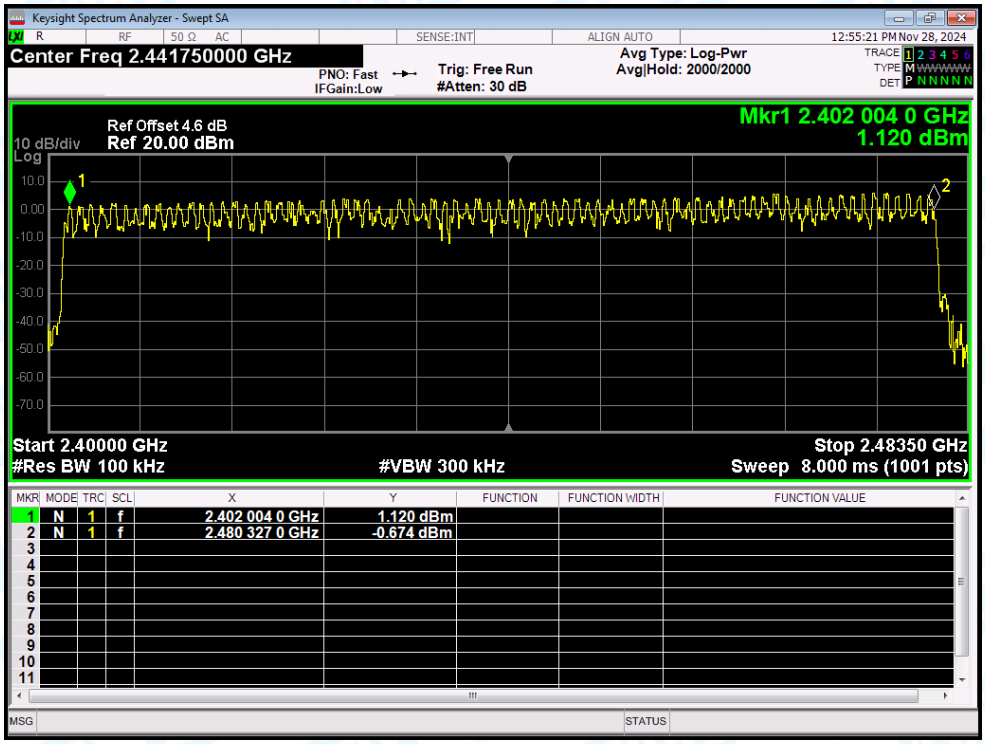
Hopping No. NVNT 1-DH1 2441MHz Ant1



Hopping No. NVNT 2-DH1 2441MHz Ant1



Hopping No. NVNT 3-DH1 2441MHz Ant1

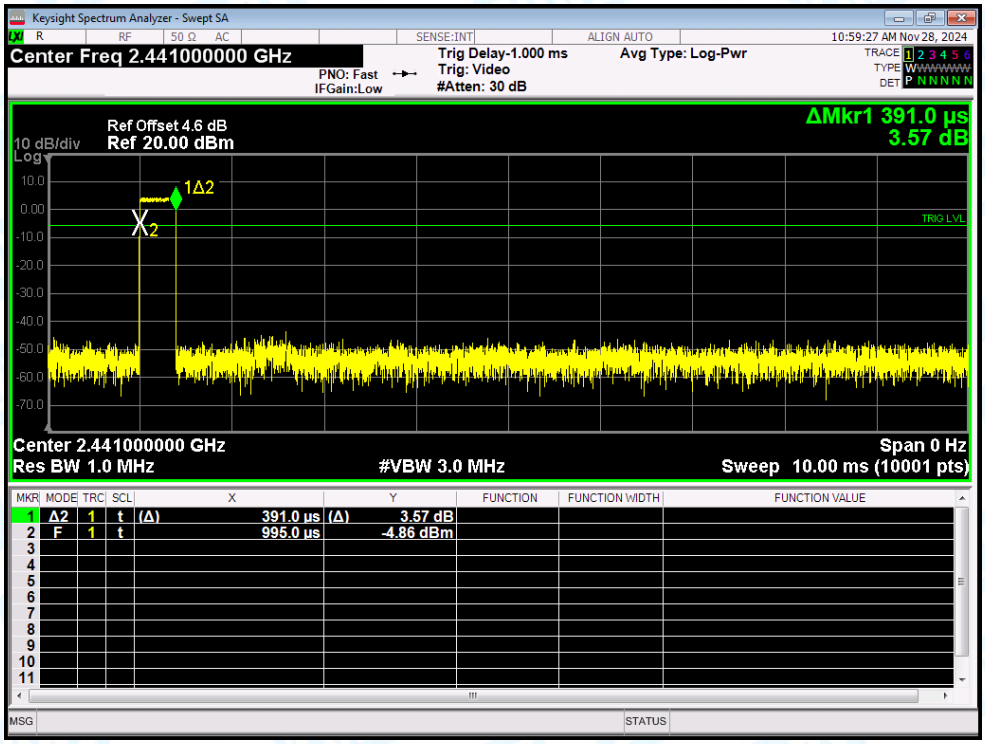


11. Dwell Time

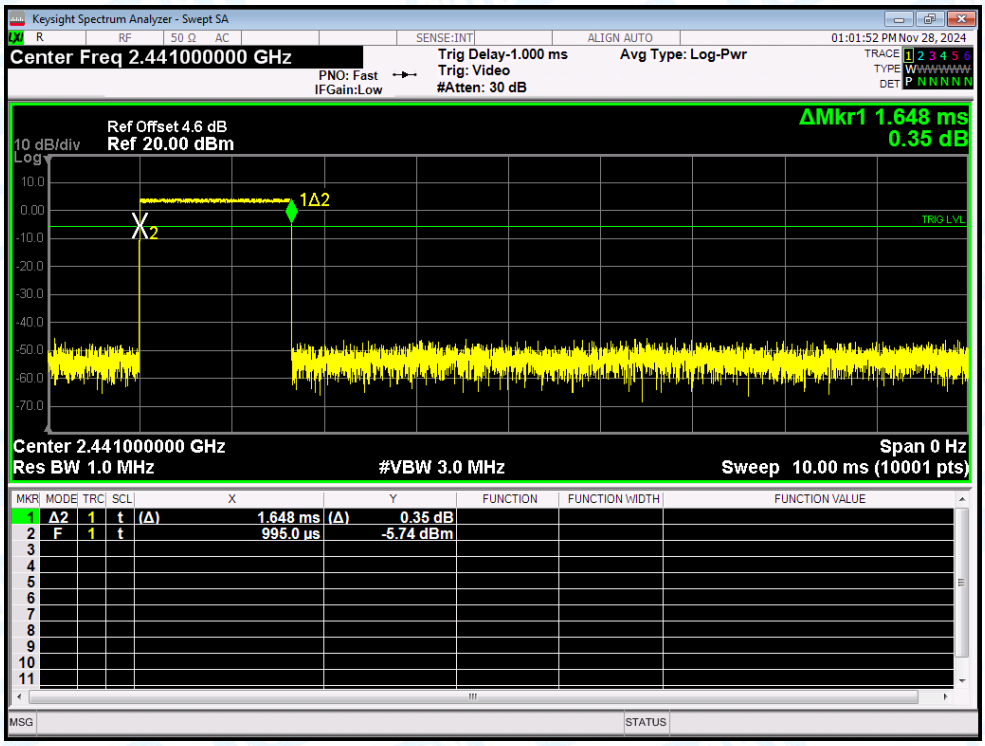
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	Ant1	0.391	125.12	31600	400	Pass
NVNT	1-DH3	2441	Ant1	1.648	263.68	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.895	308.8	31600	400	Pass
NVNT	2-DH1	2441	Ant1	0.401	128.32	31600	400	Pass
NVNT	2-DH3	2441	Ant1	1.653	264.48	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.901	309.44	31600	400	Pass
NVNT	3-DH1	2441	Ant1	0.402	128.64	31600	400	Pass
NVNT	3-DH3	2441	Ant1	1.652	264.32	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.903	309.653	31600	400	Pass

Test Graphs

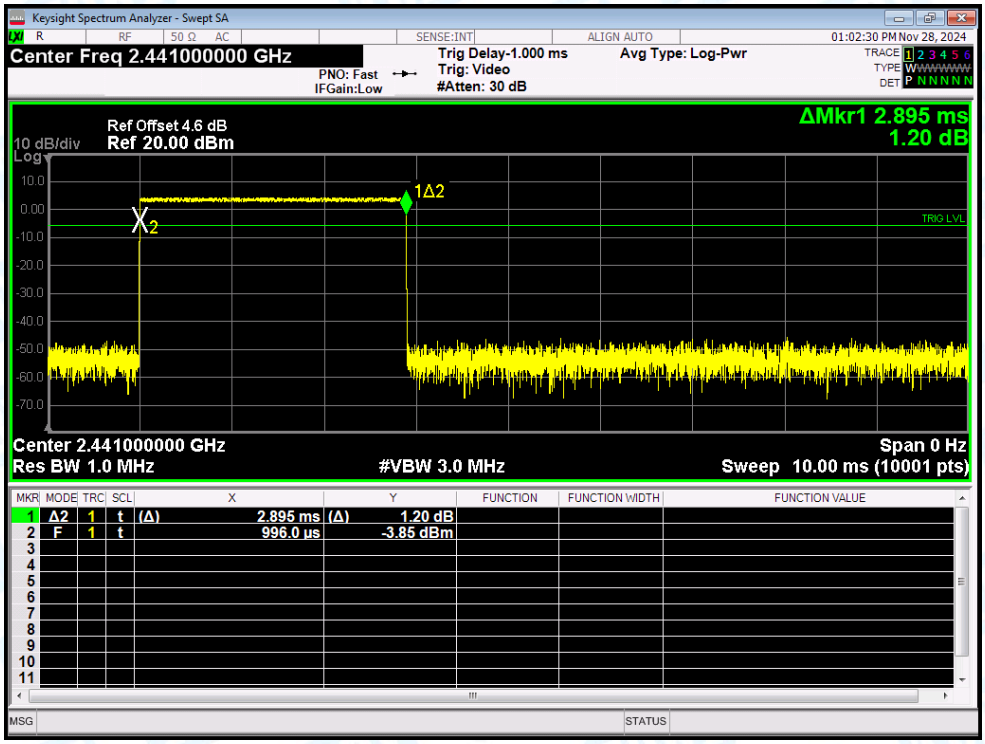
Dwell NVNT 1-DH1 2441MHz Ant1



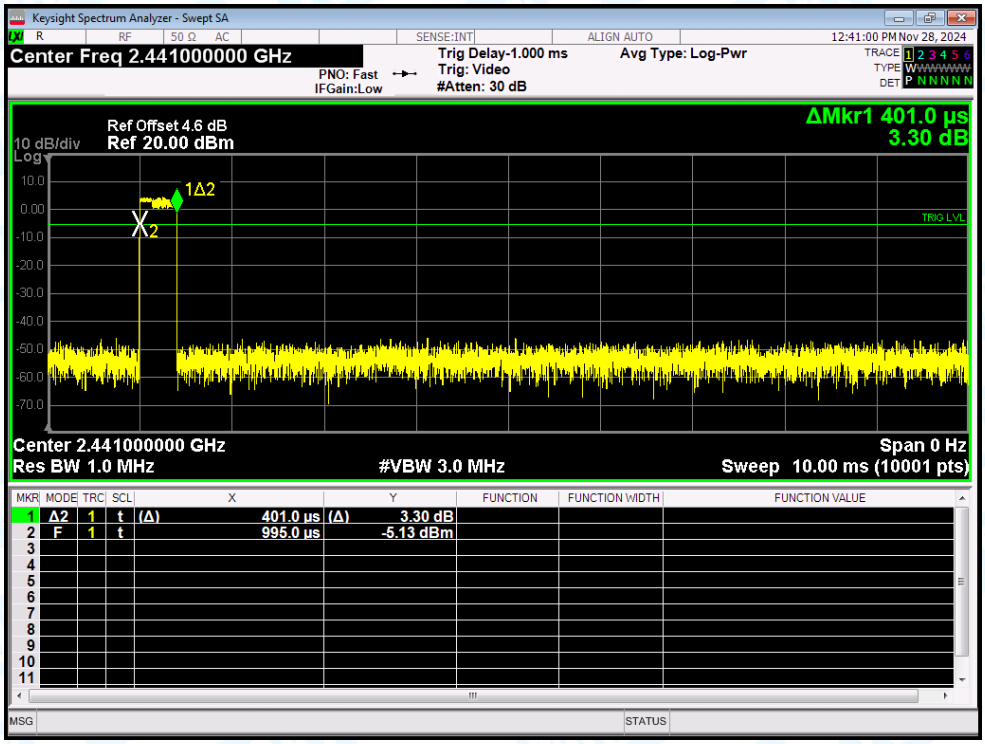
Dwell NVNT 1-DH3 2441MHz Ant1



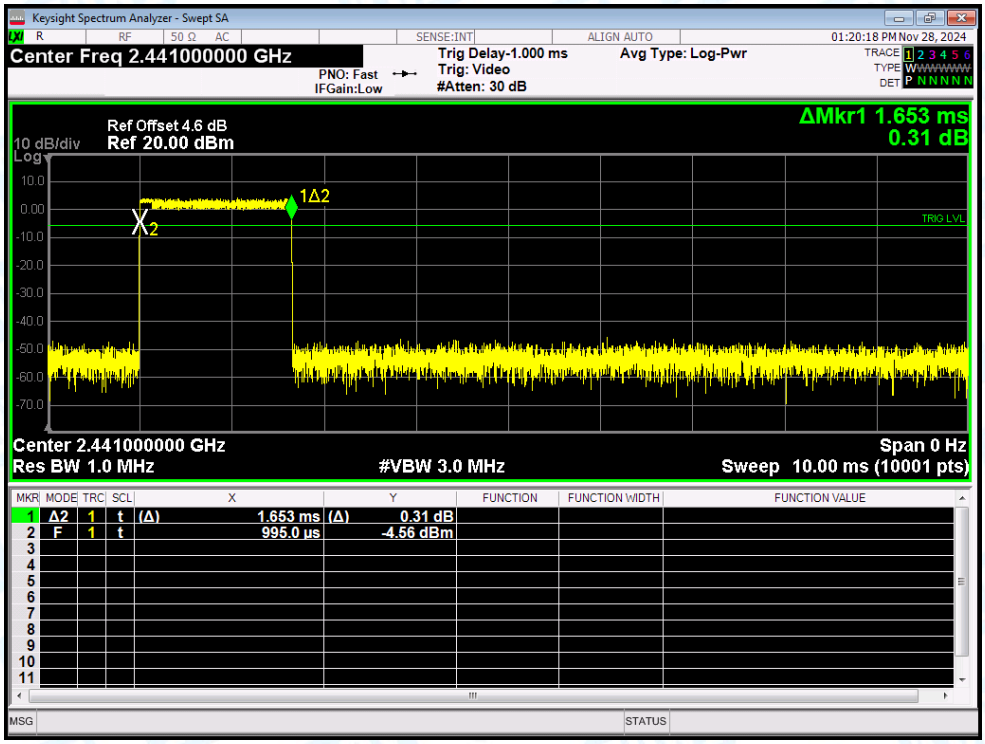
Dwell NVNT 1-DH5 2441MHz Ant1



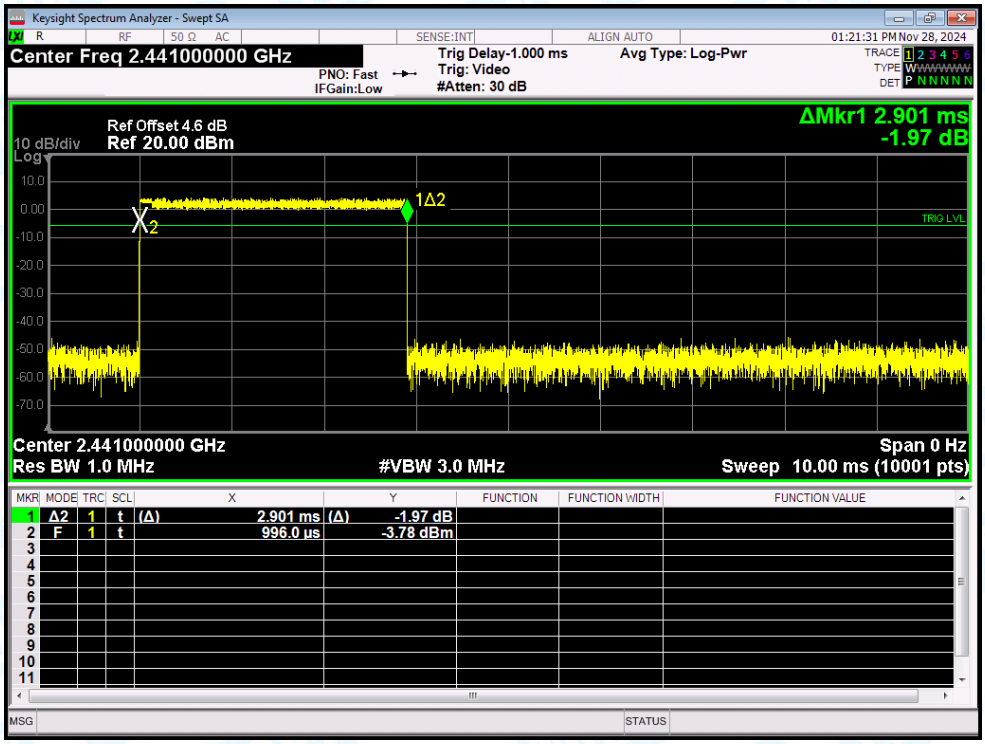
Dwell NVNT 2-DH1 2441MHz Ant1



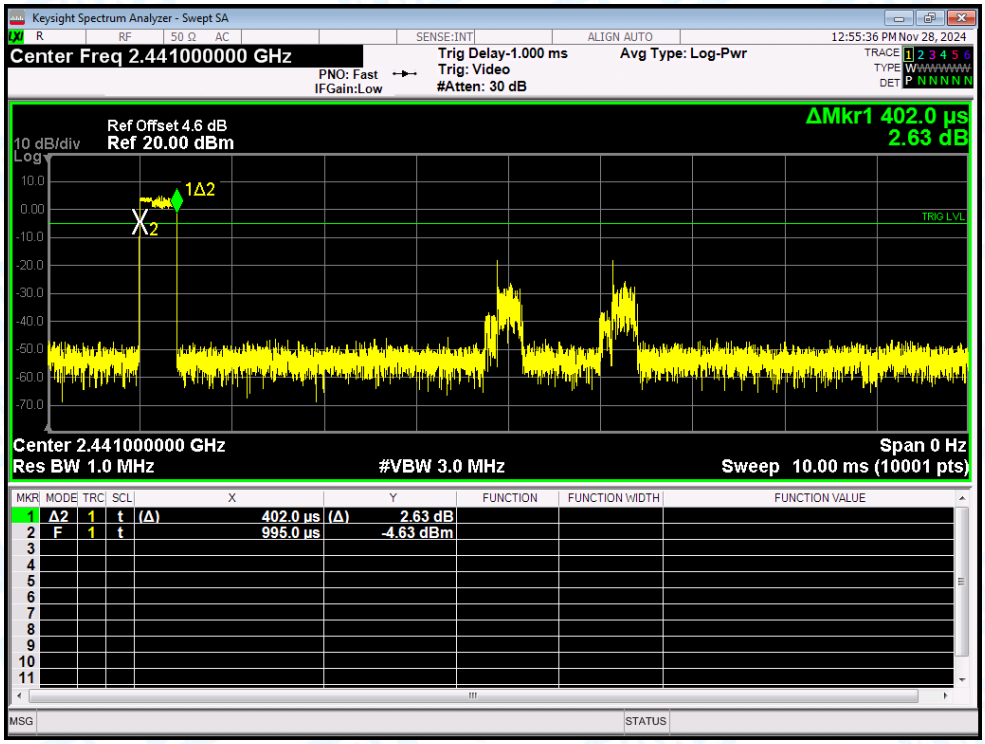
Dwell NVNT 2-DH3 2441MHz Ant1



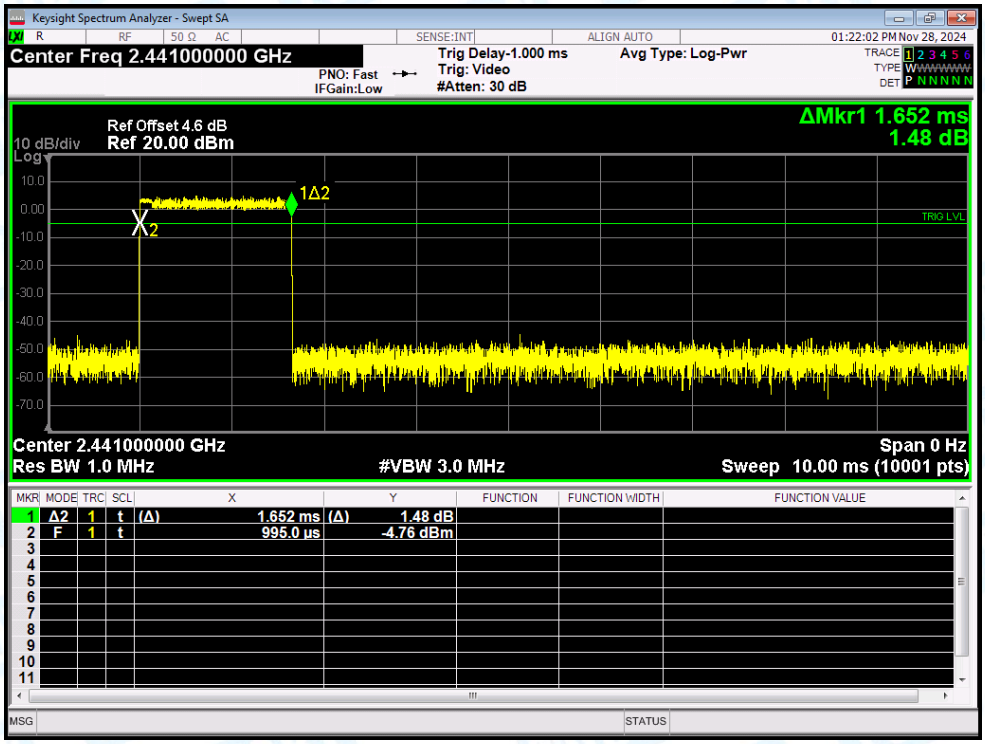
Dwell NVNT 2-DH5 2441MHz Ant1



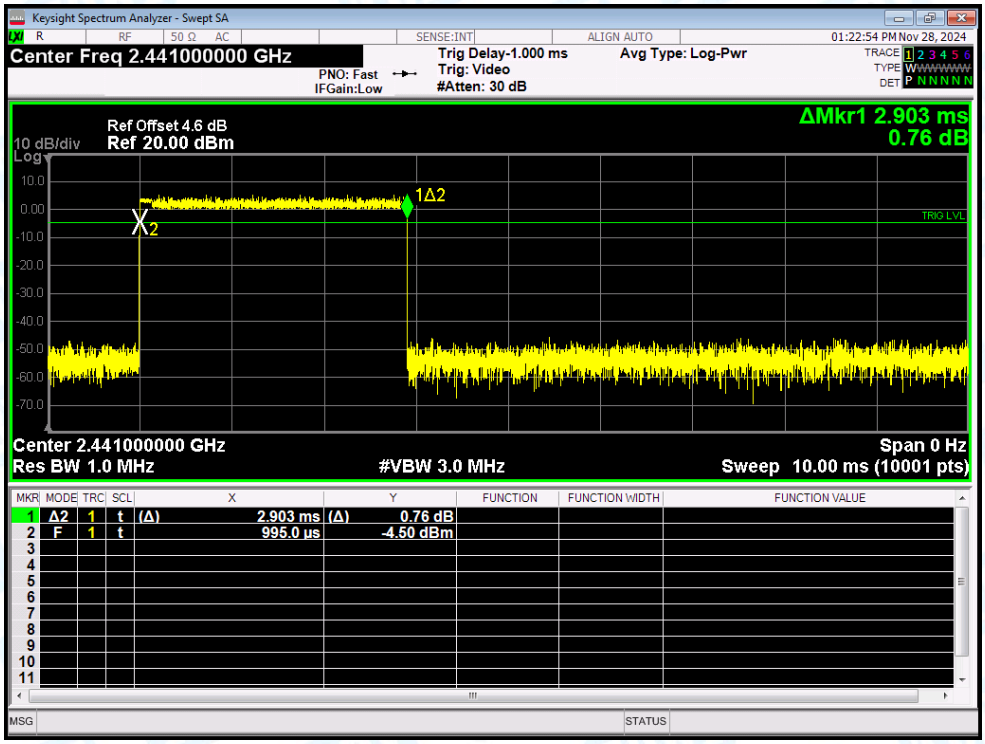
Dwell NVNT 3-DH1 2441MHz Ant1



Dwell NVNT 3-DH3 2441MHz Ant1



Dwell NVNT 3-DH5 2441MHz Ant1



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