

RF Test Data for Bluetooth(BR+EDR) (Conducted Measurements)

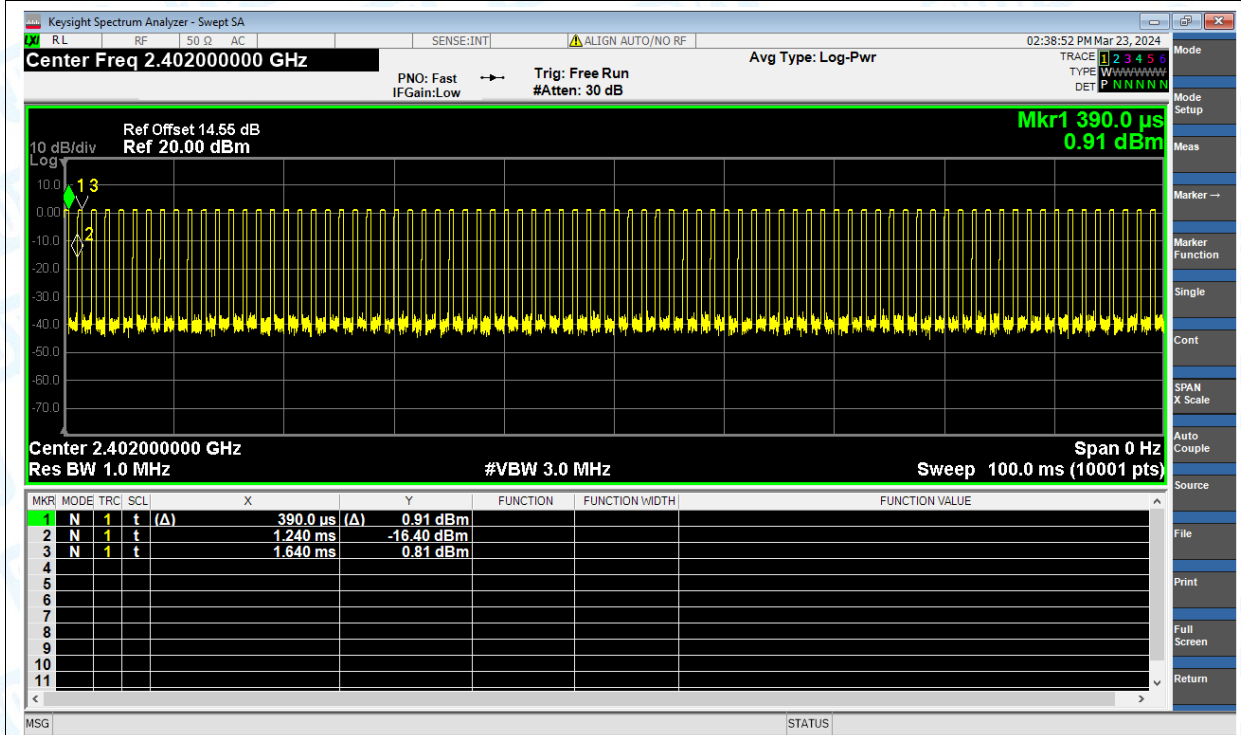
General Description of EUT	
Product Name:	Bluetooth Speaker
Test Model:	FM0222
Sample ID:	HC-C-202403-0170-01-01-2#
Environmental Conditions	
Temperature:	23.8°C
Relative Humidity:	48%
Test Voltage:	DC 3.7V
Test Engineer:	Mike Yan
Note: For a more detailed features description, please refer to the report TBR-C-202403-0170-6 The report only show the worst case data.	

1. Duty Cycle

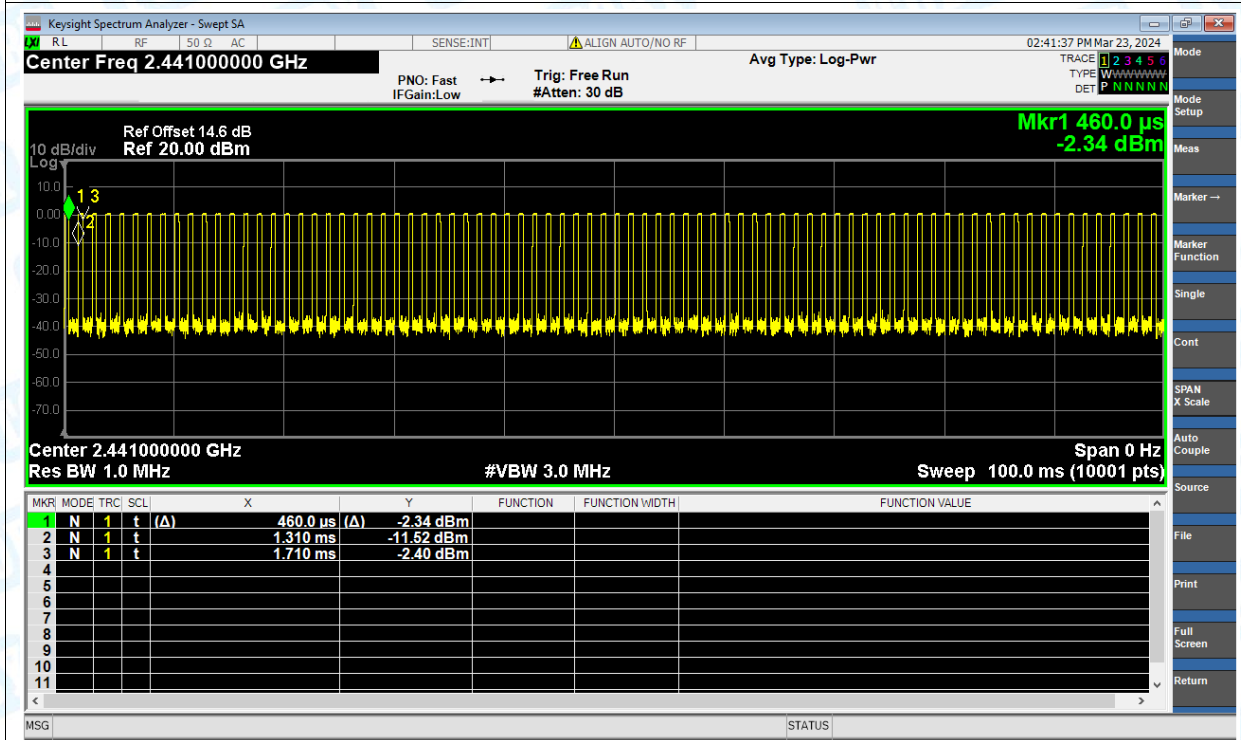
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH1	2402	Ant1	32	4.95	2.5
NVNT	1-DH1	2441	Ant1	32	4.95	2.5
NVNT	1-DH1	2480	Ant1	32	4.95	2.5
NVNT	2-DH1	2402	Ant1	32.8	4.84	2.44
NVNT	2-DH1	2441	Ant1	32.8	4.84	2.44
NVNT	2-DH1	2480	Ant1	32.8	4.84	2.44
NVNT	3-DH1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

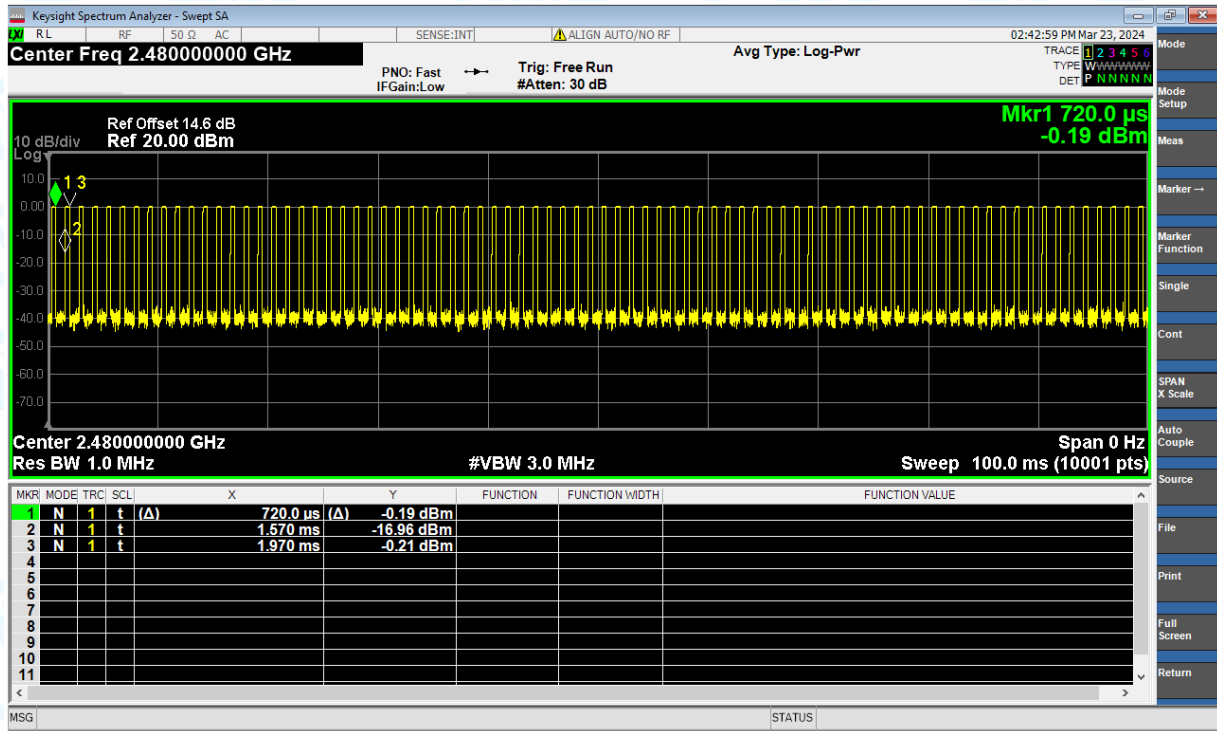
Duty Cycle NVNT 1-DH1 2402MHz Ant1



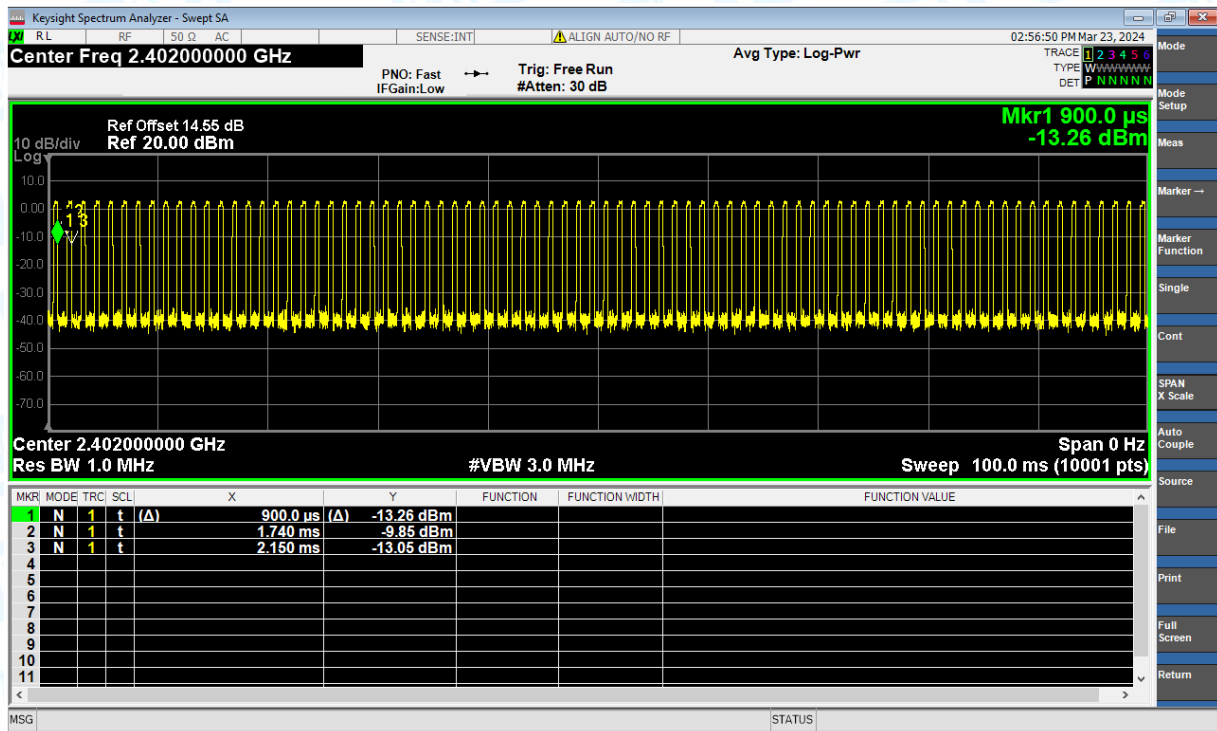
Duty Cycle NVNT 1-DH1 2441MHz Ant1



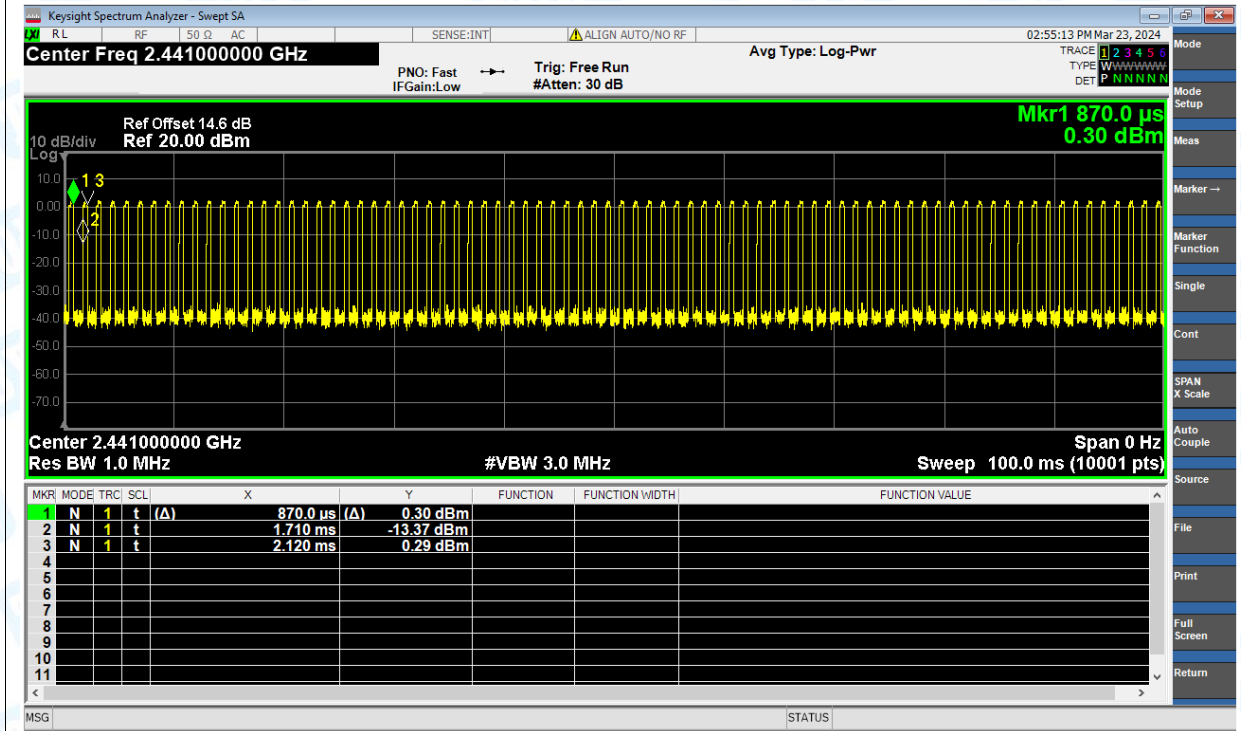
Duty Cycle NVNT 1-DH1 2480MHz Ant1



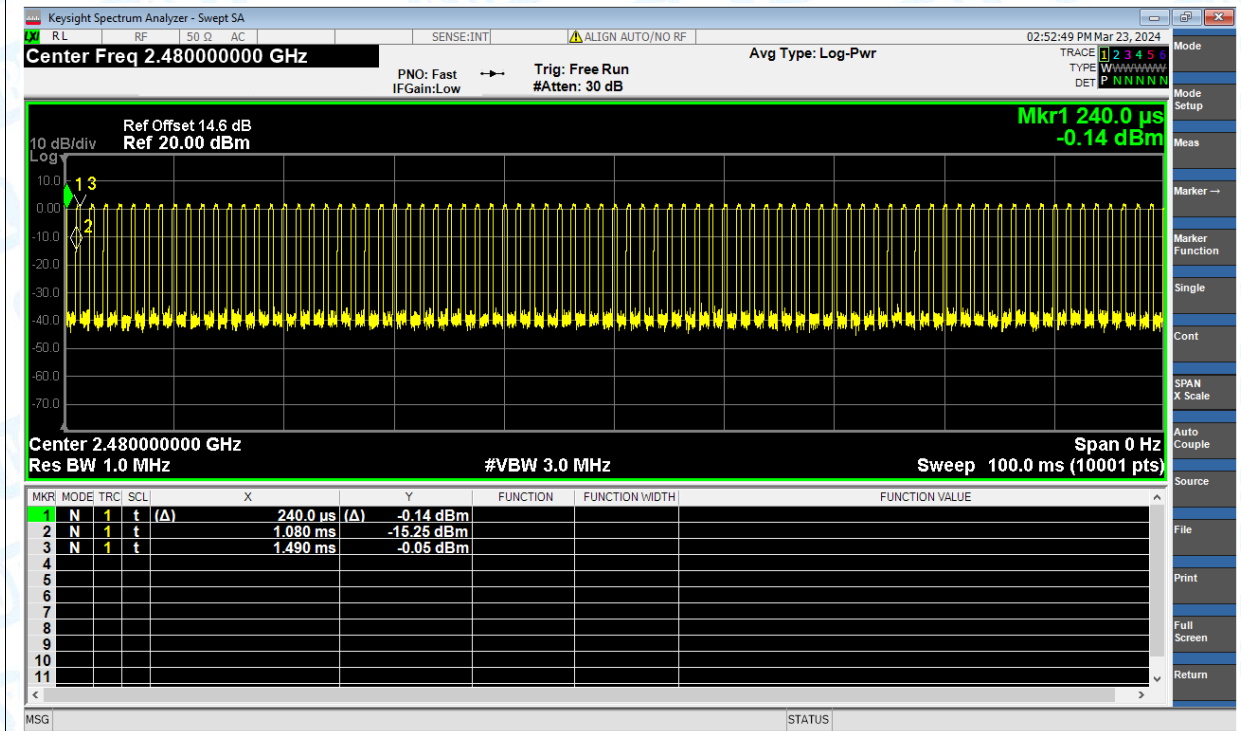
Duty Cycle NVNT 2-DH1 2402MHz Ant1



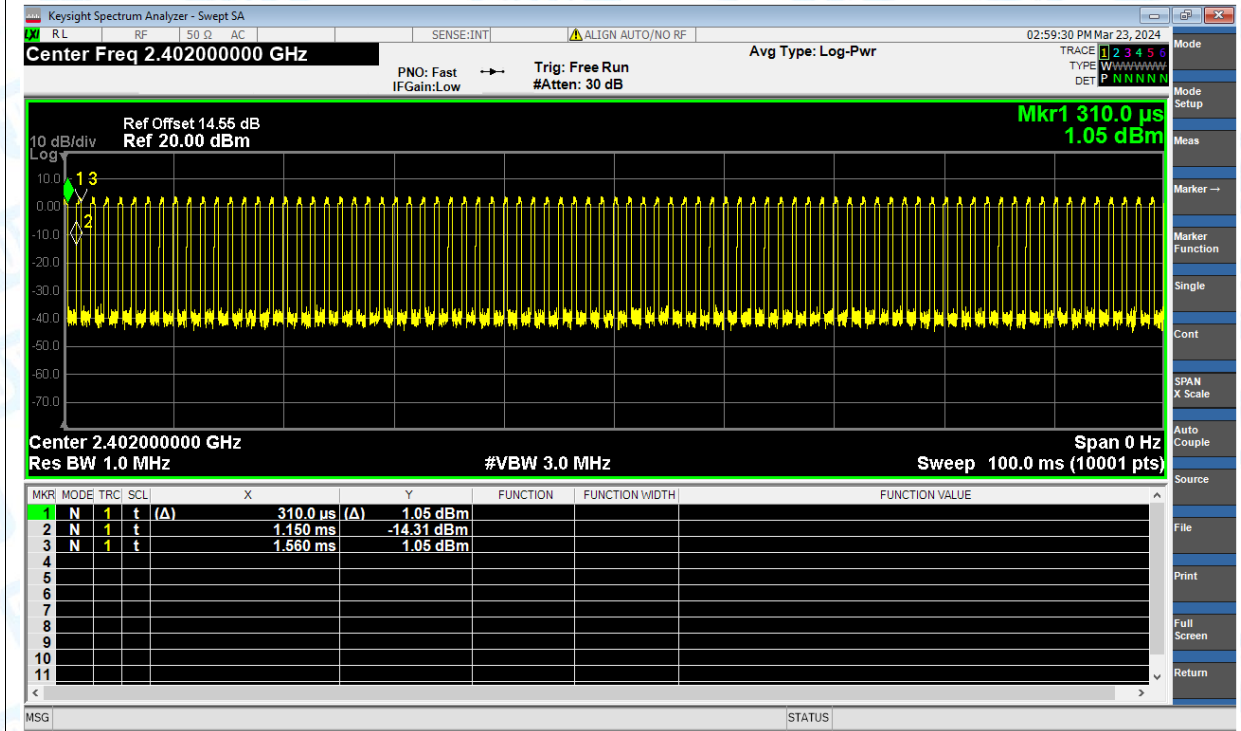
Duty Cycle NVNT 2-DH1 2441MHz Ant1



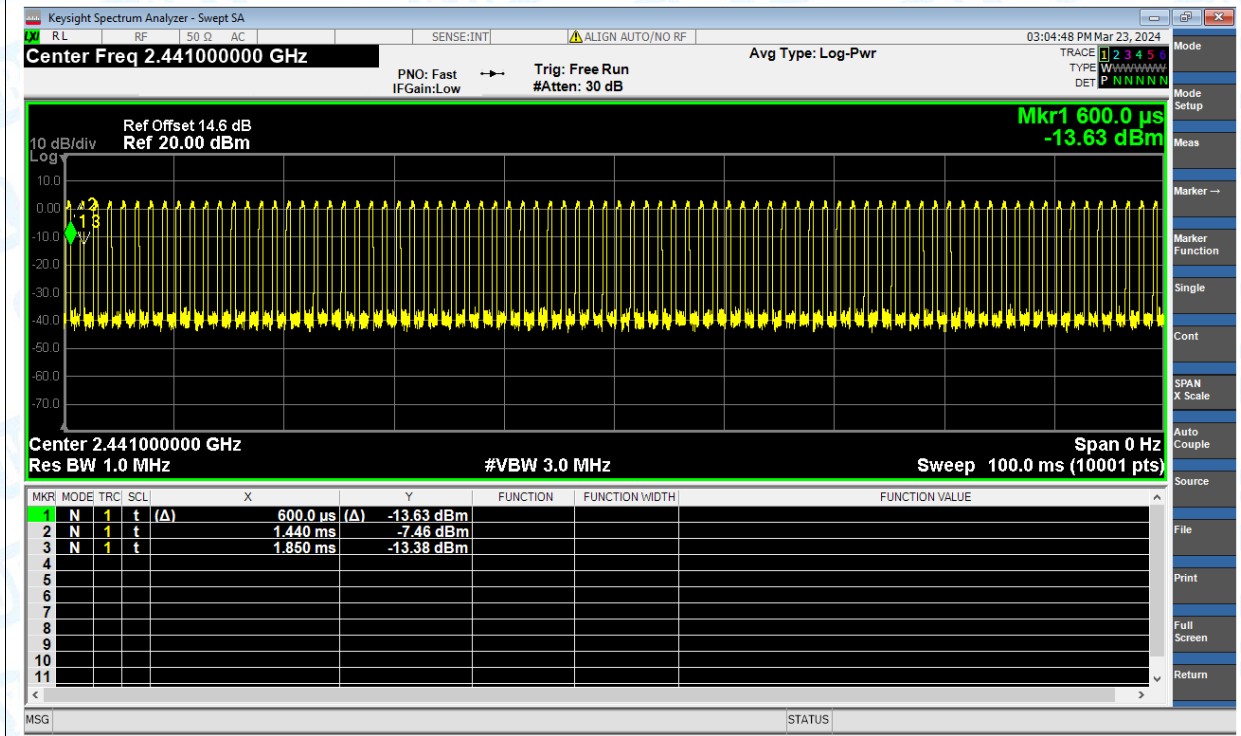
Duty Cycle NVNT 2-DH1 2480MHz Ant1

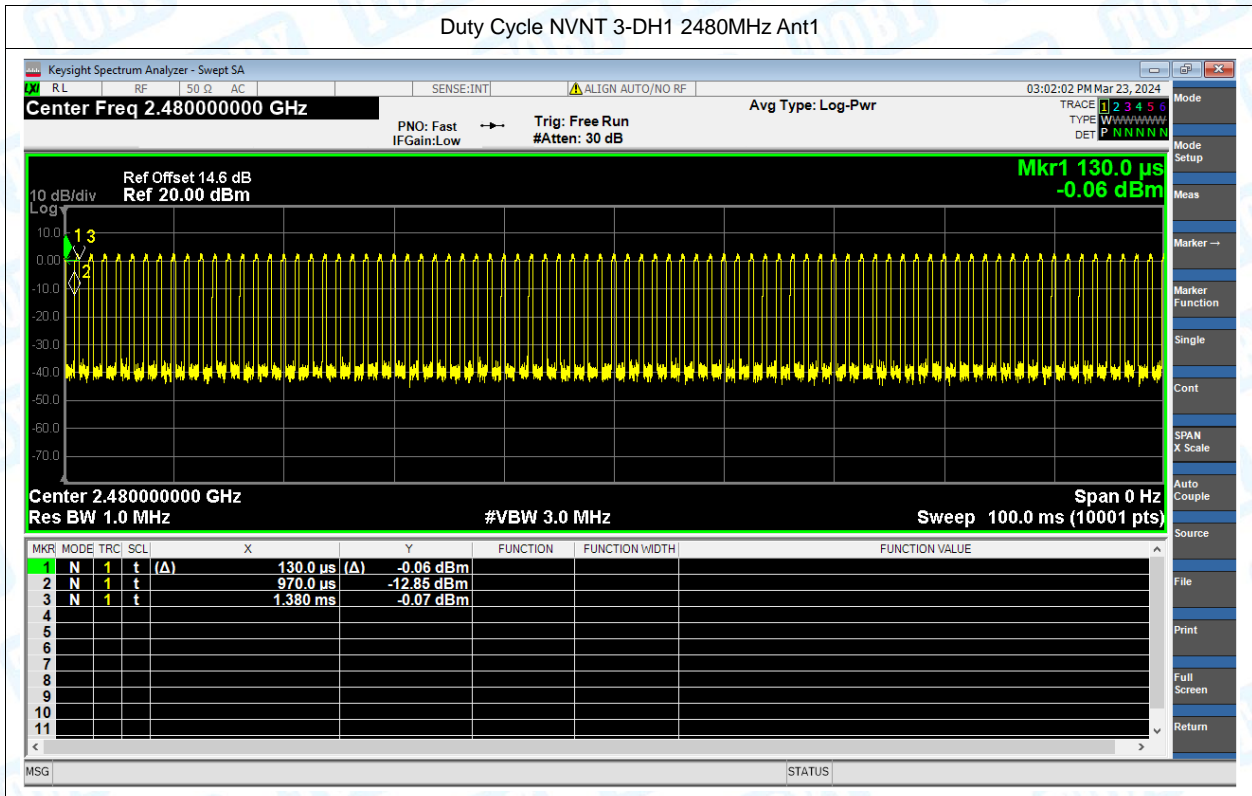


Duty Cycle NVNT 3-DH1 2402MHz Ant1



Duty Cycle NVNT 3-DH1 2441MHz Ant1



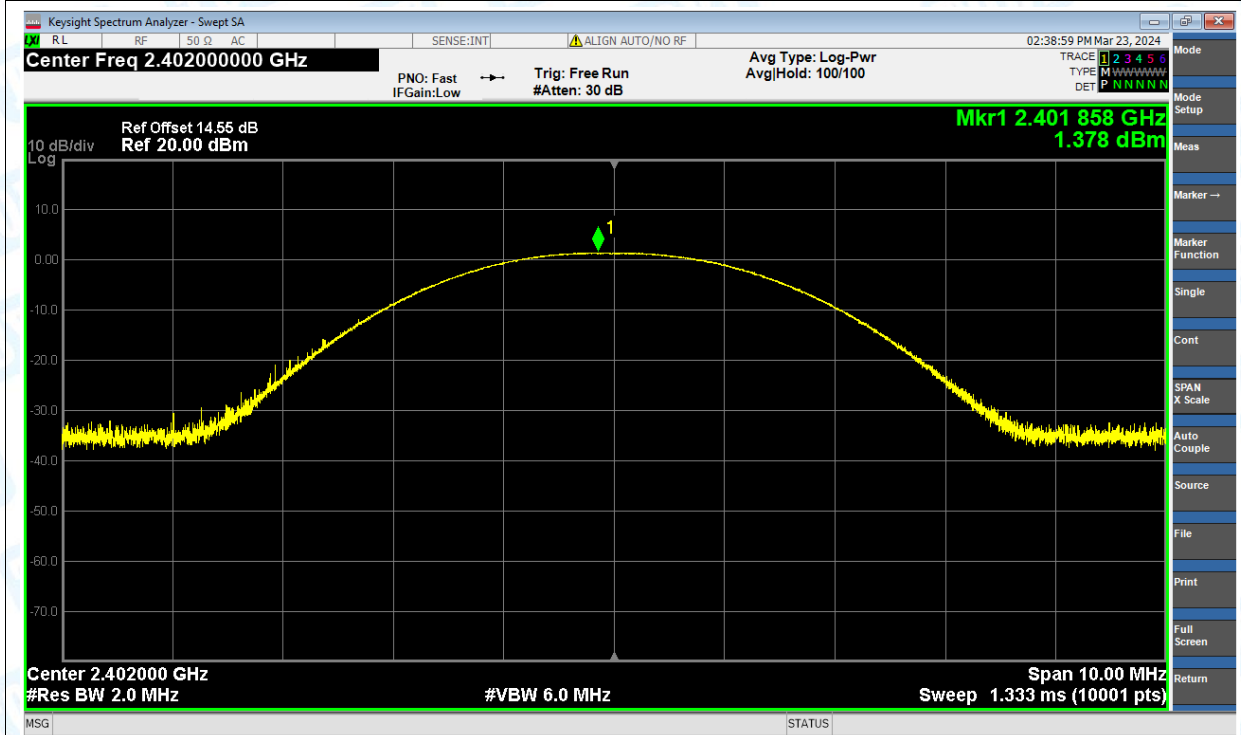


2. Maximum Conducted Output Power

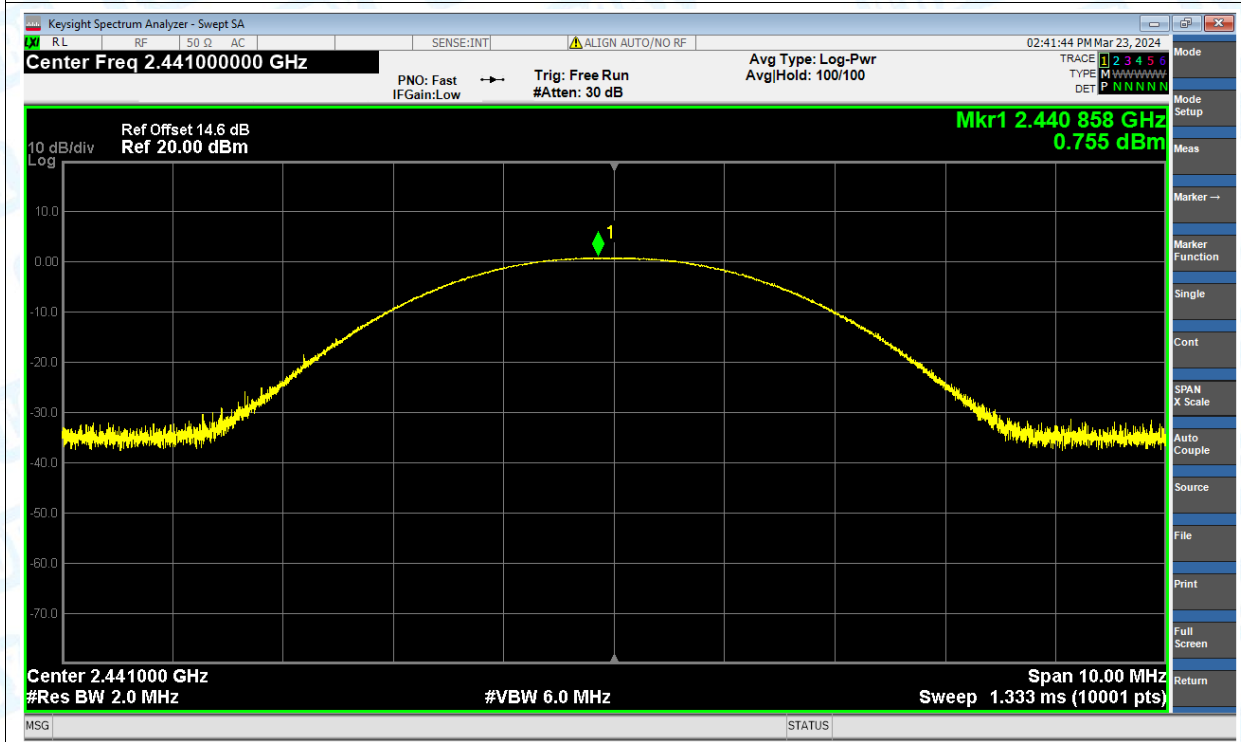
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	Ant1	1.378	21	Pass
NVNT	1-DH1	2441	Ant1	0.755	21	Pass
NVNT	1-DH1	2480	Ant1	0.322	21	Pass
NVNT	2-DH1	2402	Ant1	3.480	21	Pass
NVNT	2-DH1	2441	Ant1	2.824	21	Pass
NVNT	2-DH1	2480	Ant1	2.319	21	Pass
NVNT	3-DH1	2402	Ant1	4.270	21	Pass
NVNT	3-DH1	2441	Ant1	3.602	21	Pass
NVNT	3-DH1	2480	Ant1	3.137	21	Pass

Test Graphs

Power NVNT 1-DH1 2402MHz Ant1



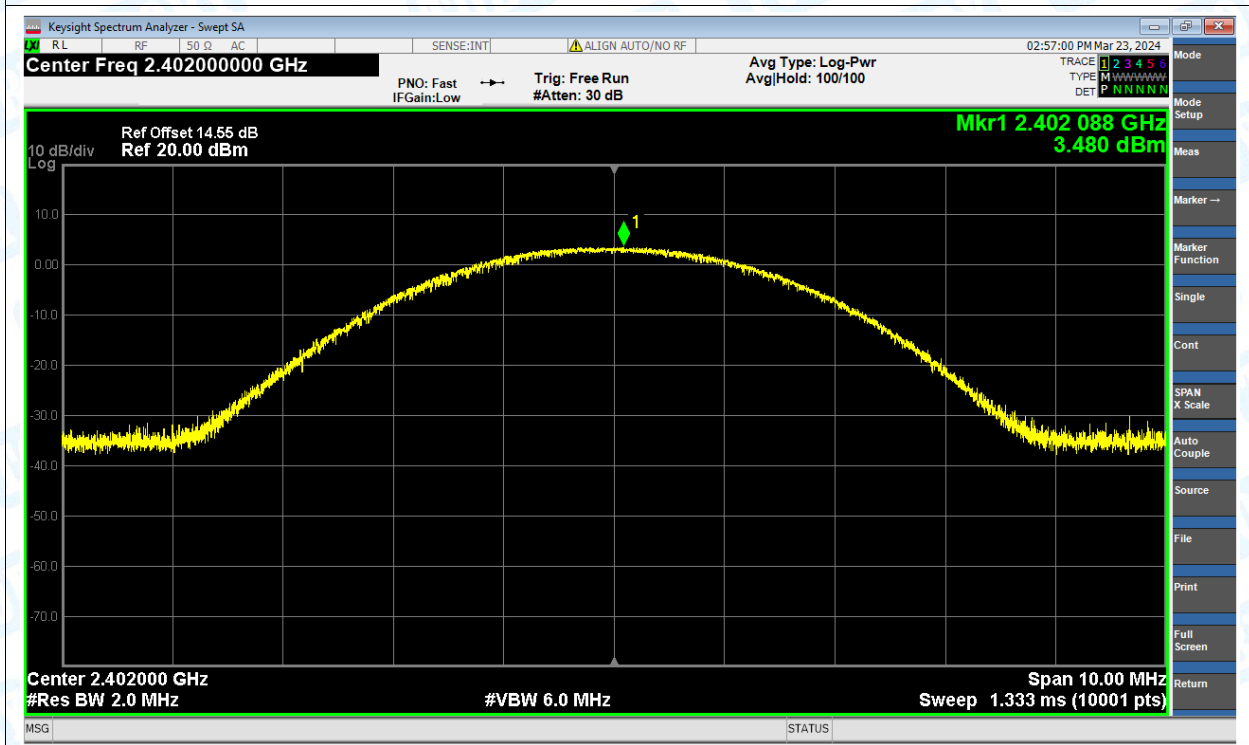
Power NVNT 1-DH1 2441MHz Ant1



Power NVNT 1-DH1 2480MHz Ant1



Power NVNT 2-DH1 2402MHz Ant1



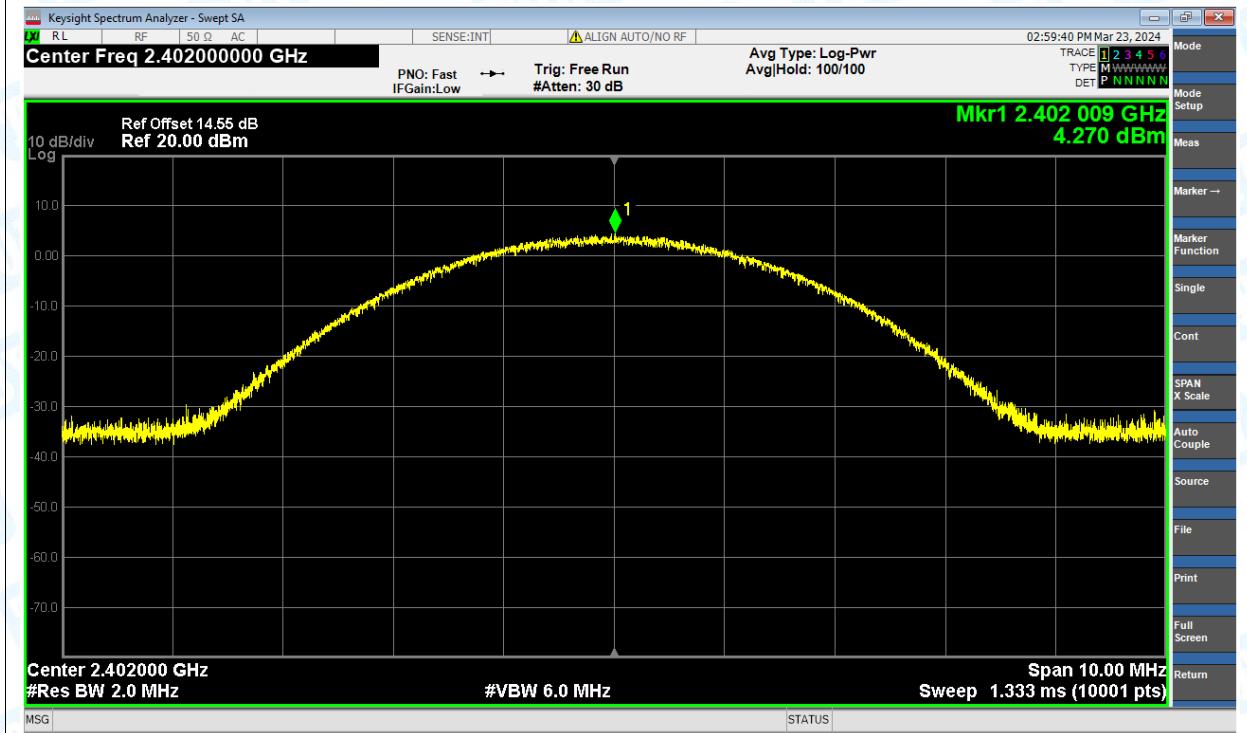
Power NVNT 2-DH1 2441MHz Ant1



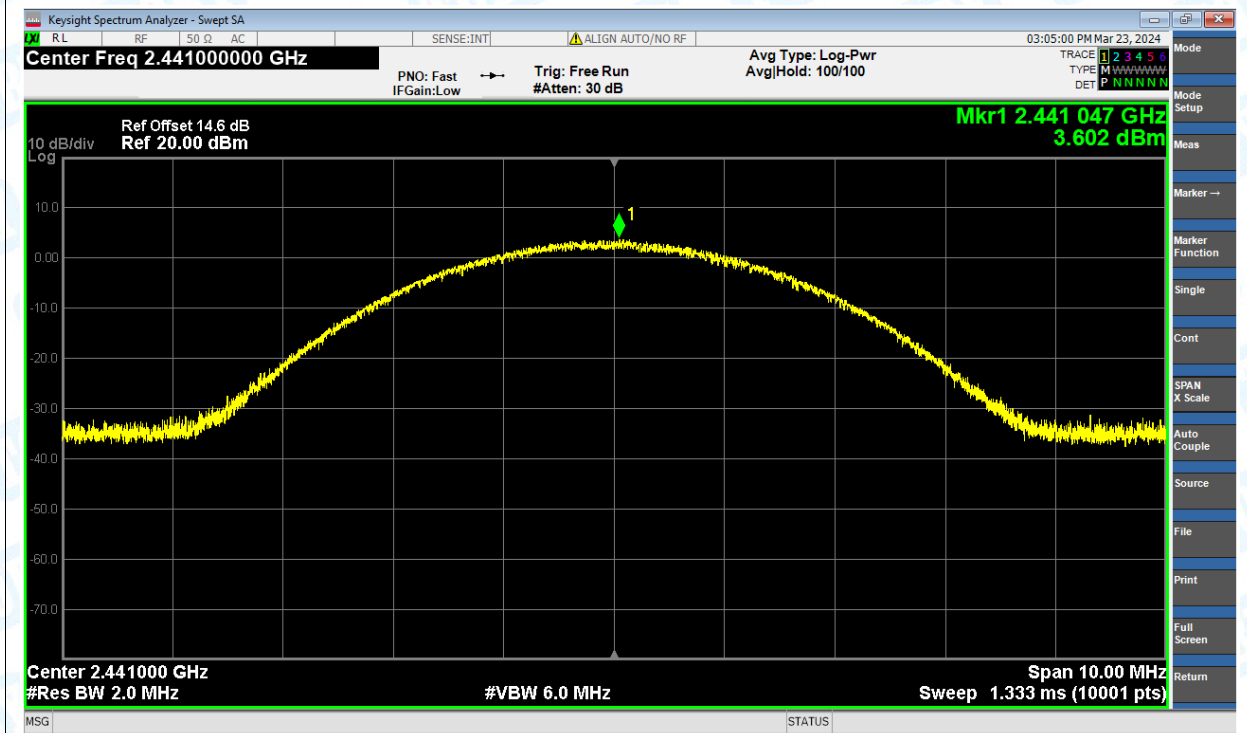
Power NVNT 2-DH1 2480MHz Ant1

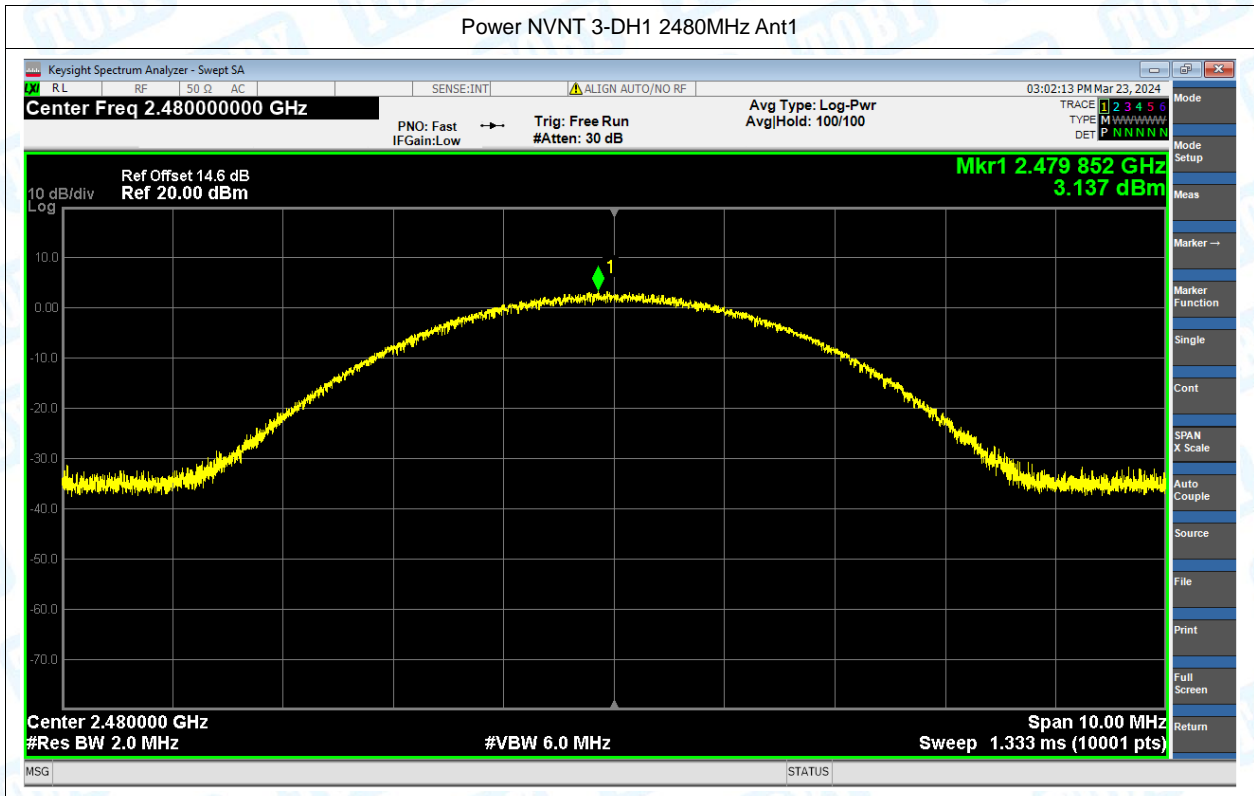


Power NVNT 3-DH1 2402MHz Ant1



Power NVNT 3-DH1 2441MHz Ant1



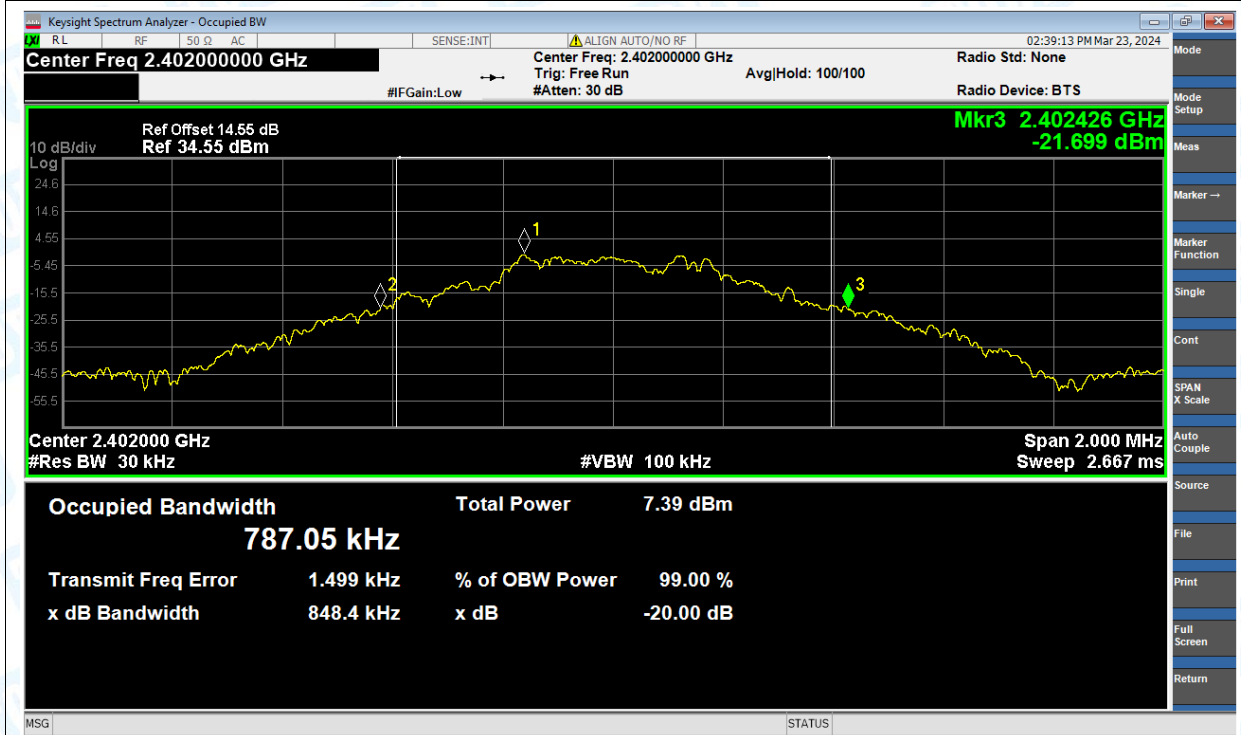


3. -20dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH1	2402	Ant1	0.85	----	Pass
NVNT	1-DH1	2441	Ant1	0.86	----	Pass
NVNT	1-DH1	2480	Ant1	0.88	----	Pass
NVNT	2-DH1	2402	Ant1	1.23	----	Pass
NVNT	2-DH1	2441	Ant1	1.27	----	Pass
NVNT	2-DH1	2480	Ant1	1.24	----	Pass
NVNT	3-DH1	2402	Ant1	1.24	----	Pass
NVNT	3-DH1	2441	Ant1	1.24	----	Pass
NVNT	3-DH1	2480	Ant1	1.25	----	Pass

Test Graphs

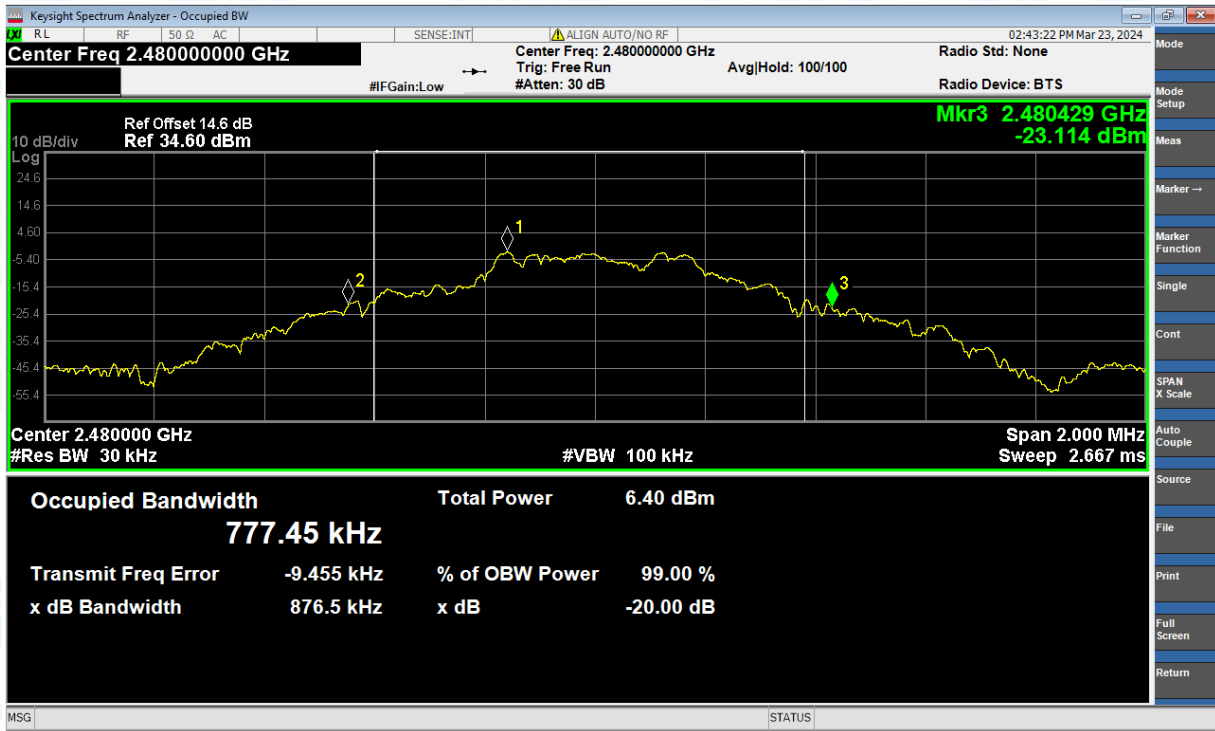
-20dB Bandwidth NVNT 1-DH1 2402MHz Ant1



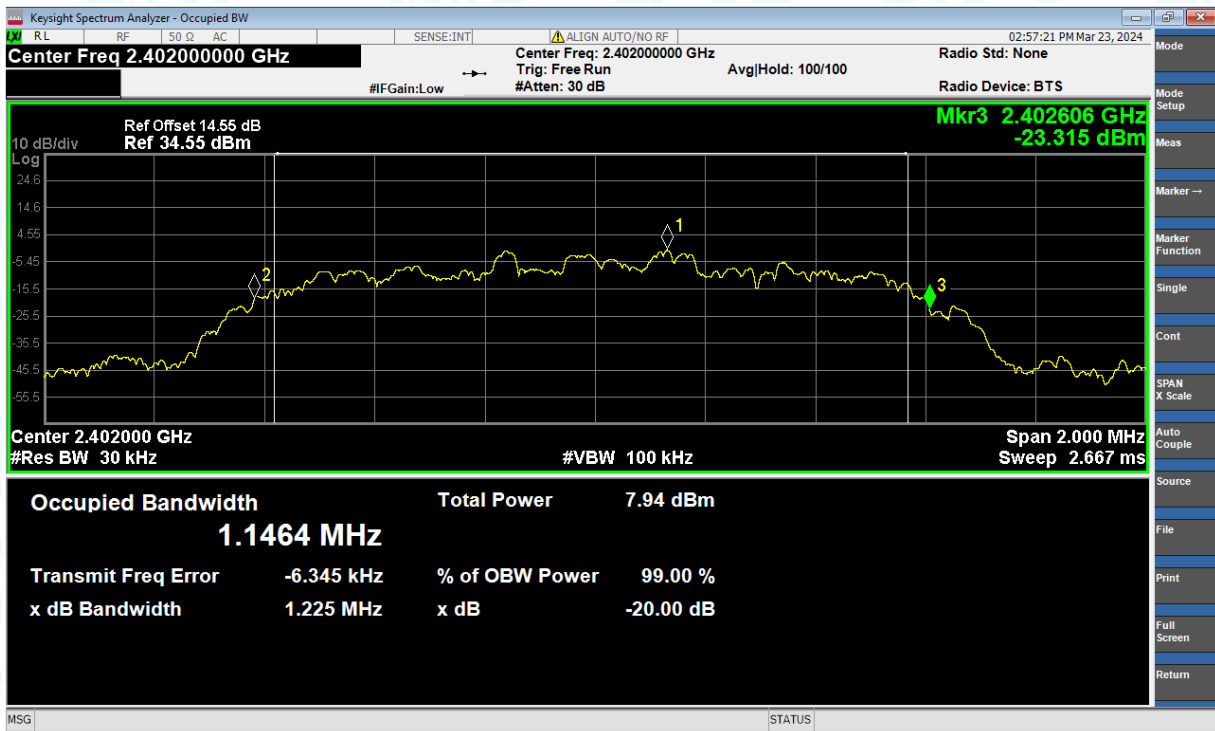
-20dB Bandwidth NVNT 1-DH1 2441MHz Ant1



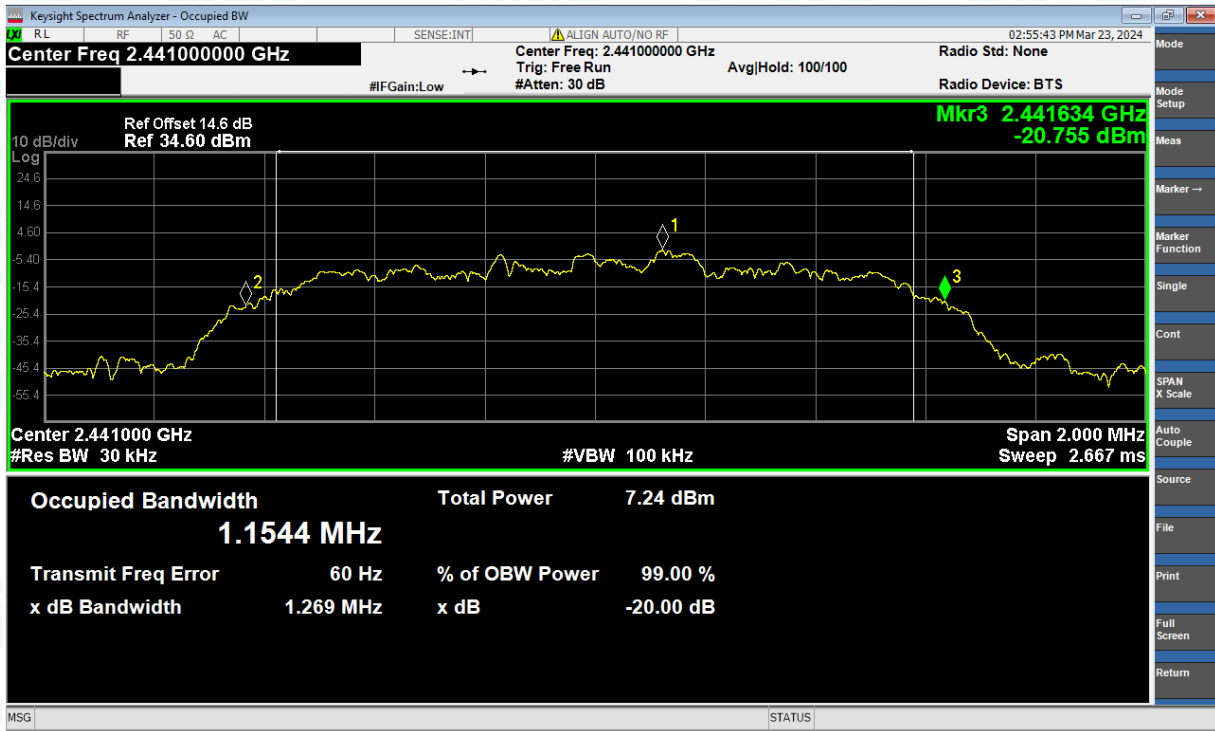
-20dB Bandwidth NVNT 1-DH1 2480MHz Ant1



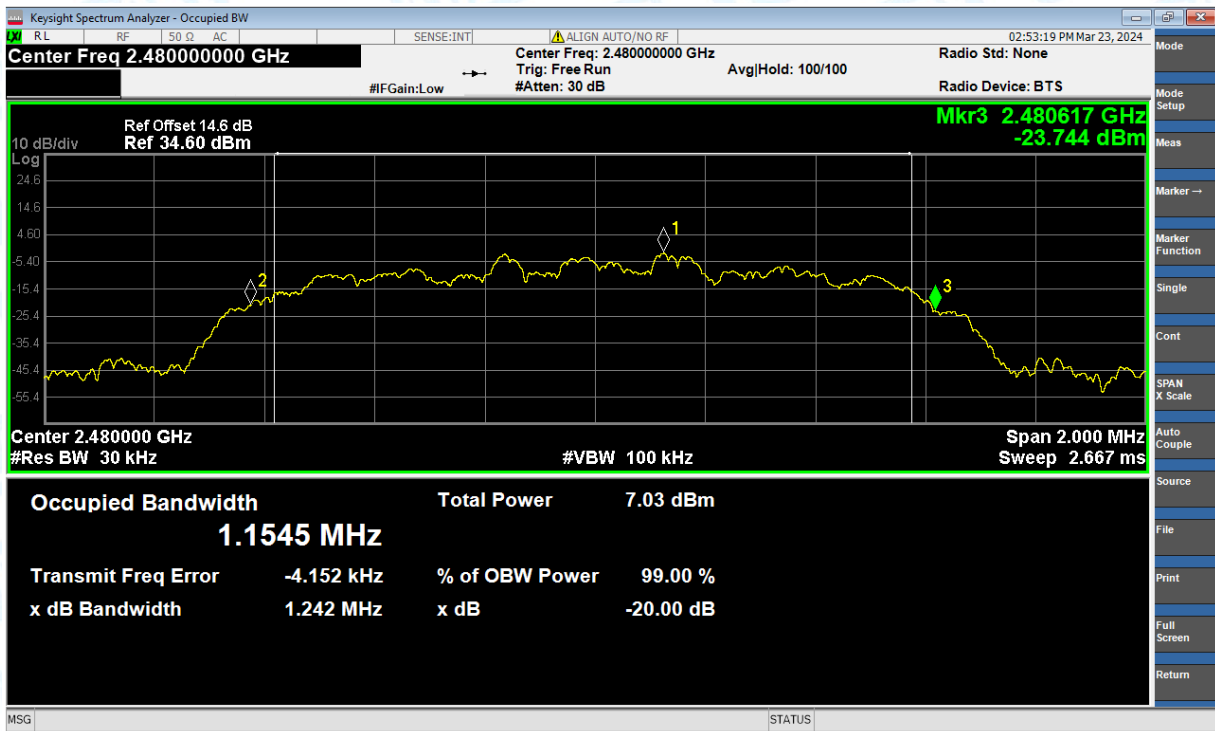
-20dB Bandwidth NVNT 2-DH1 2402MHz Ant1



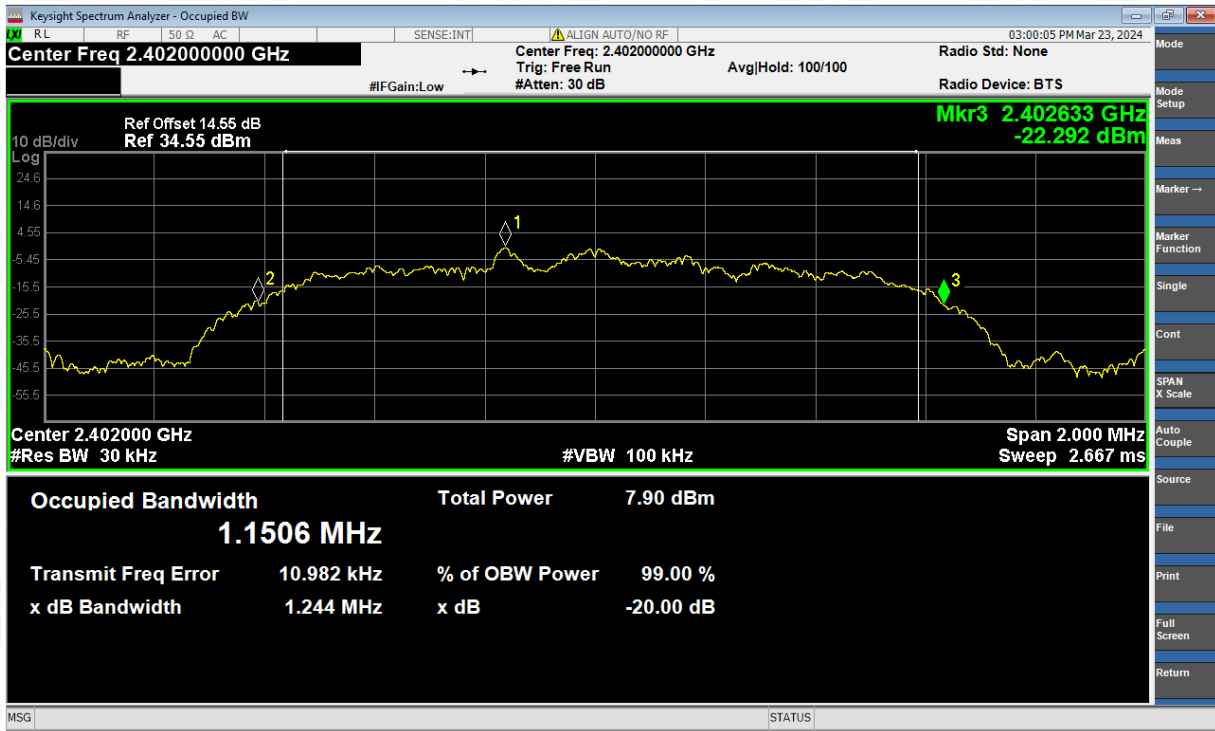
-20dB Bandwidth NVNT 2-DH1 2441MHz Ant1



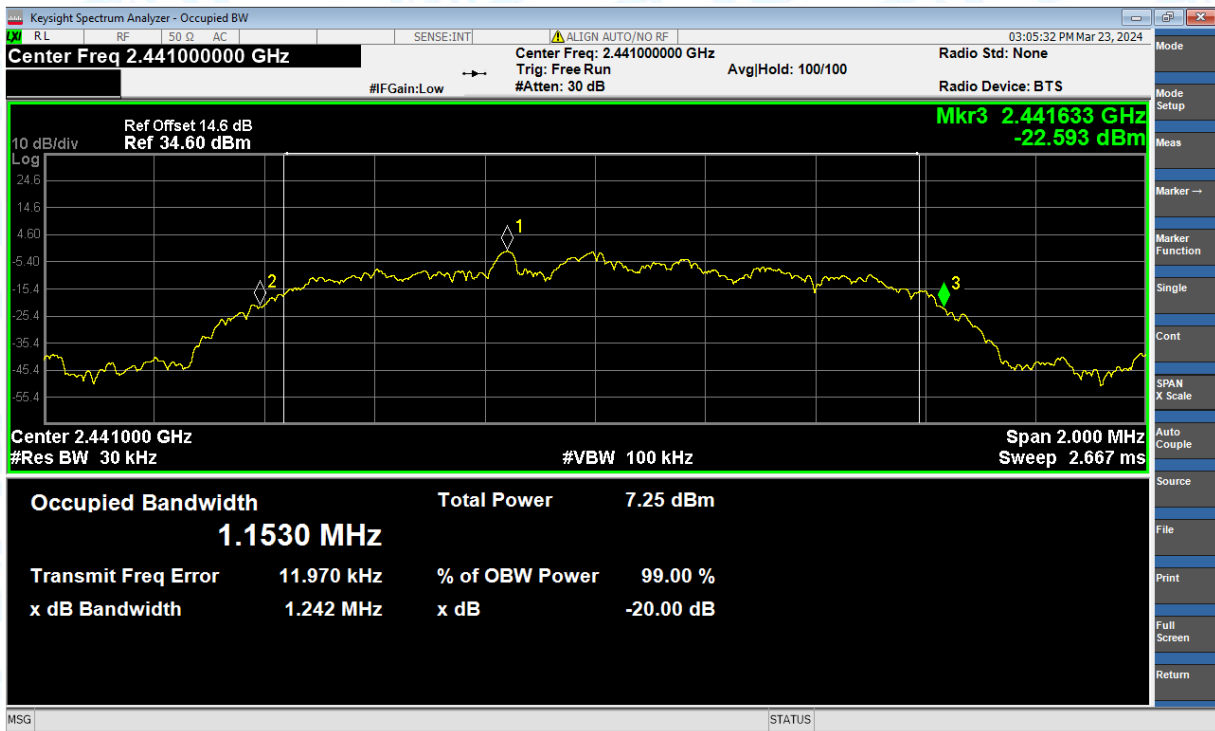
-20dB Bandwidth NVNT 2-DH1 2480MHz Ant1

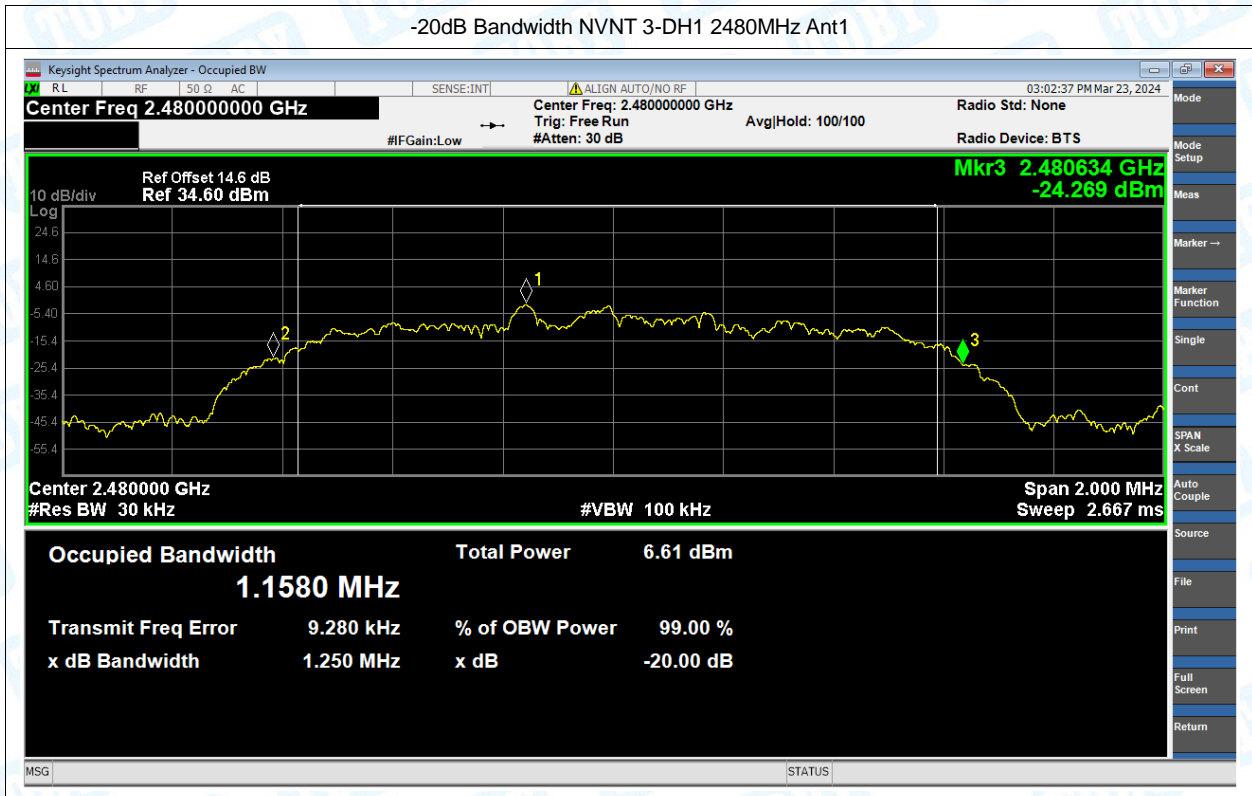


-20dB Bandwidth NVNT 3-DH1 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH1 2441MHz Ant1



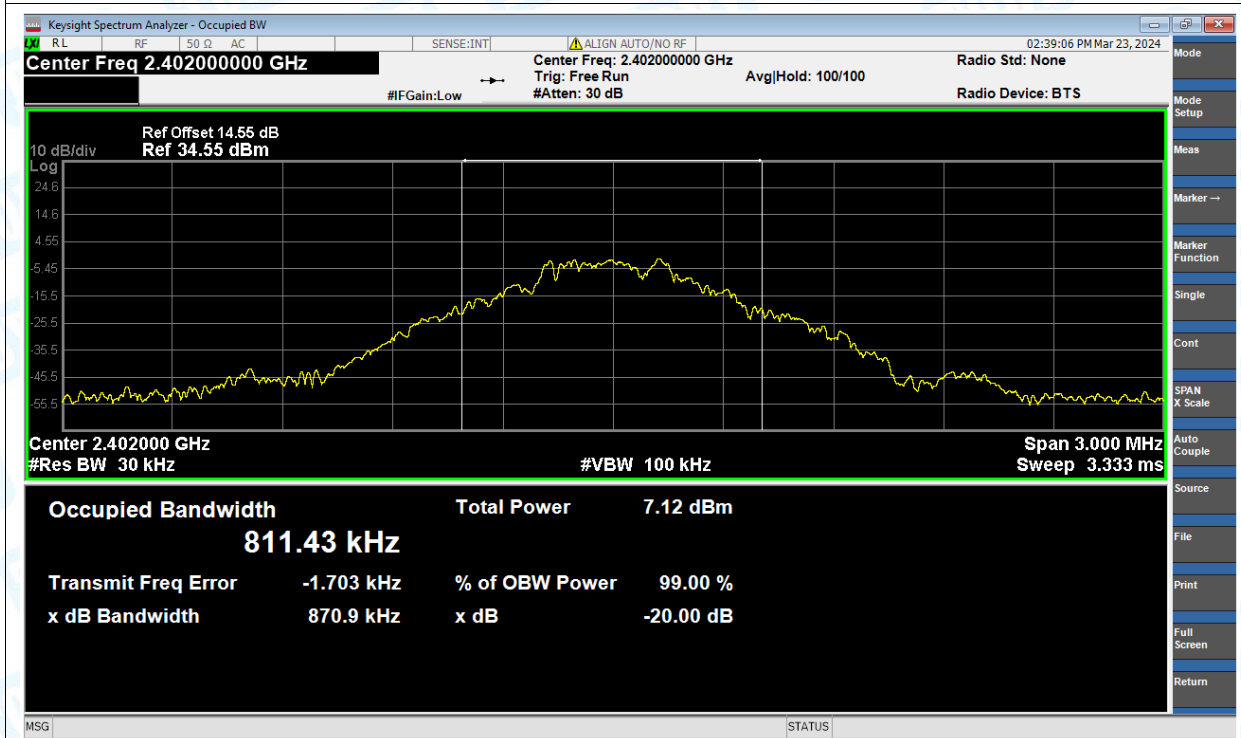


4. Occupied Channel Bandwidth

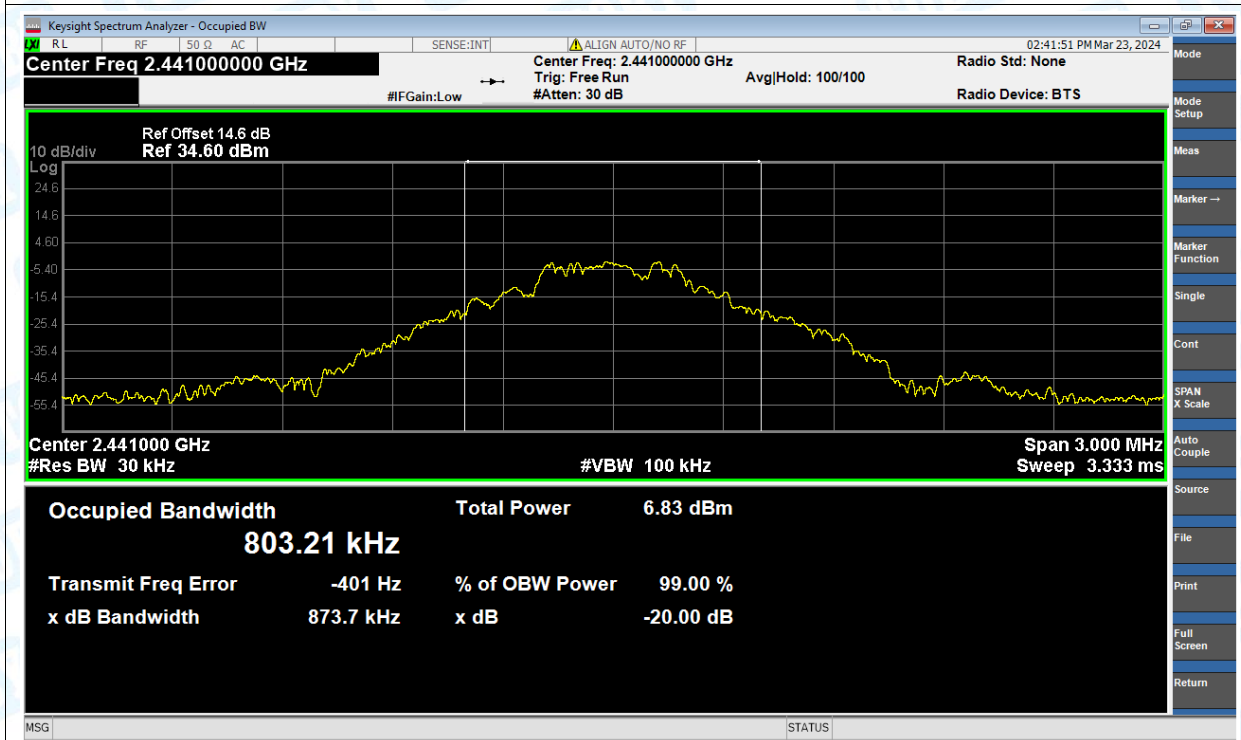
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	1-DH1	2402	Ant1	0.811
NVNT	1-DH1	2441	Ant1	0.803
NVNT	1-DH1	2480	Ant1	0.804
NVNT	2-DH1	2402	Ant1	1.166
NVNT	2-DH1	2441	Ant1	1.151
NVNT	2-DH1	2480	Ant1	1.150
NVNT	3-DH1	2402	Ant1	1.153
NVNT	3-DH1	2441	Ant1	1.156
NVNT	3-DH1	2480	Ant1	1.145

Test Graphs

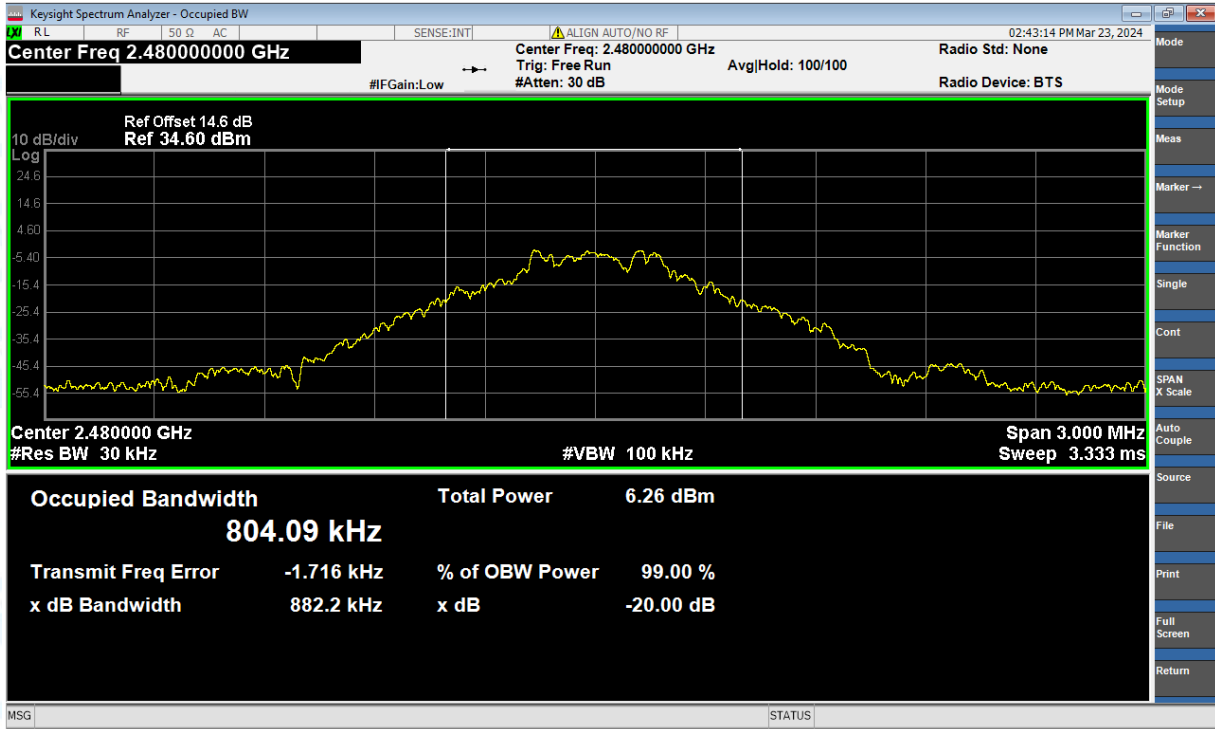
OBW NVNT 1-DH1 2402MHz Ant1



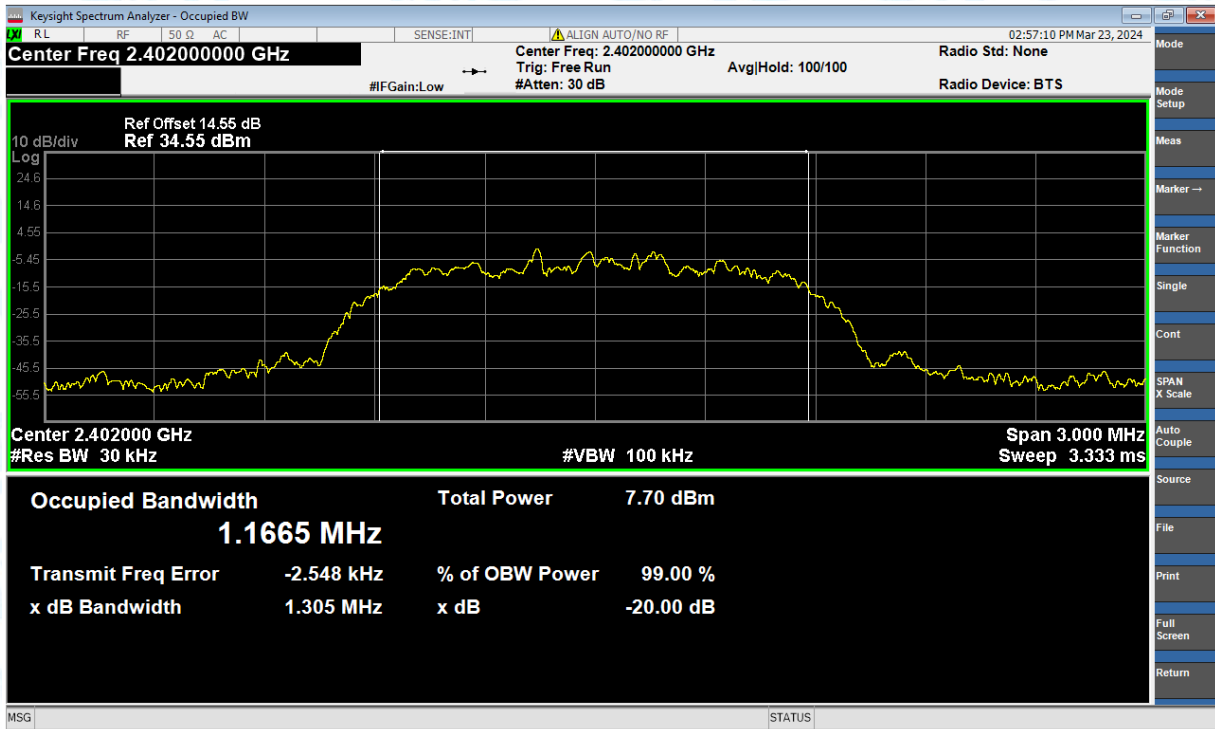
OBW NVNT 1-DH1 2441MHz Ant1



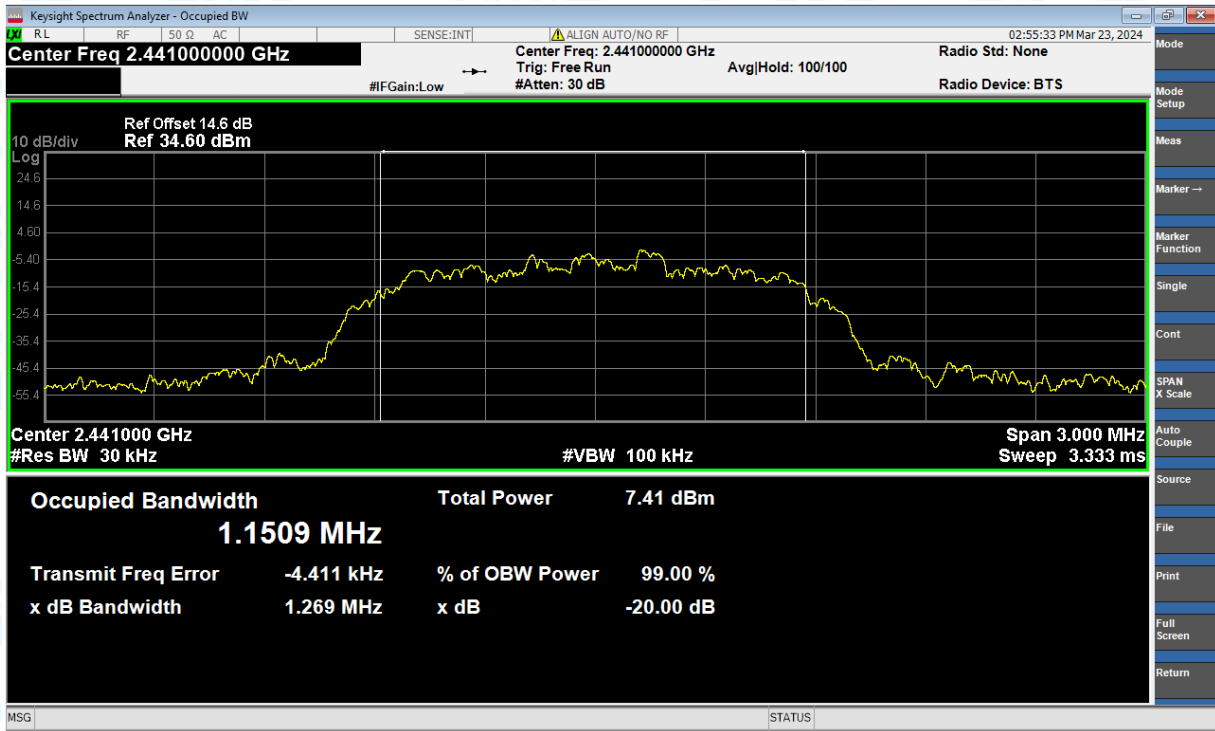
OBW NVNT 1-DH1 2480MHz Ant1



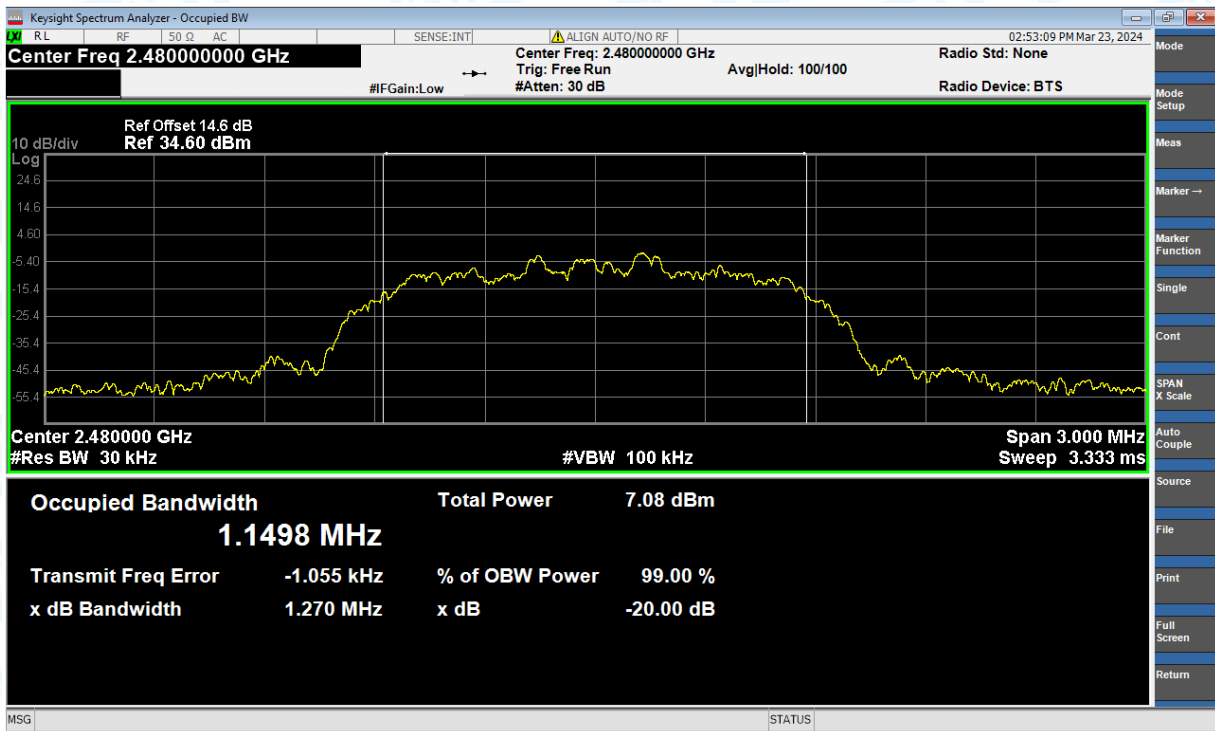
OBW NVNT 2-DH1 2402MHz Ant1



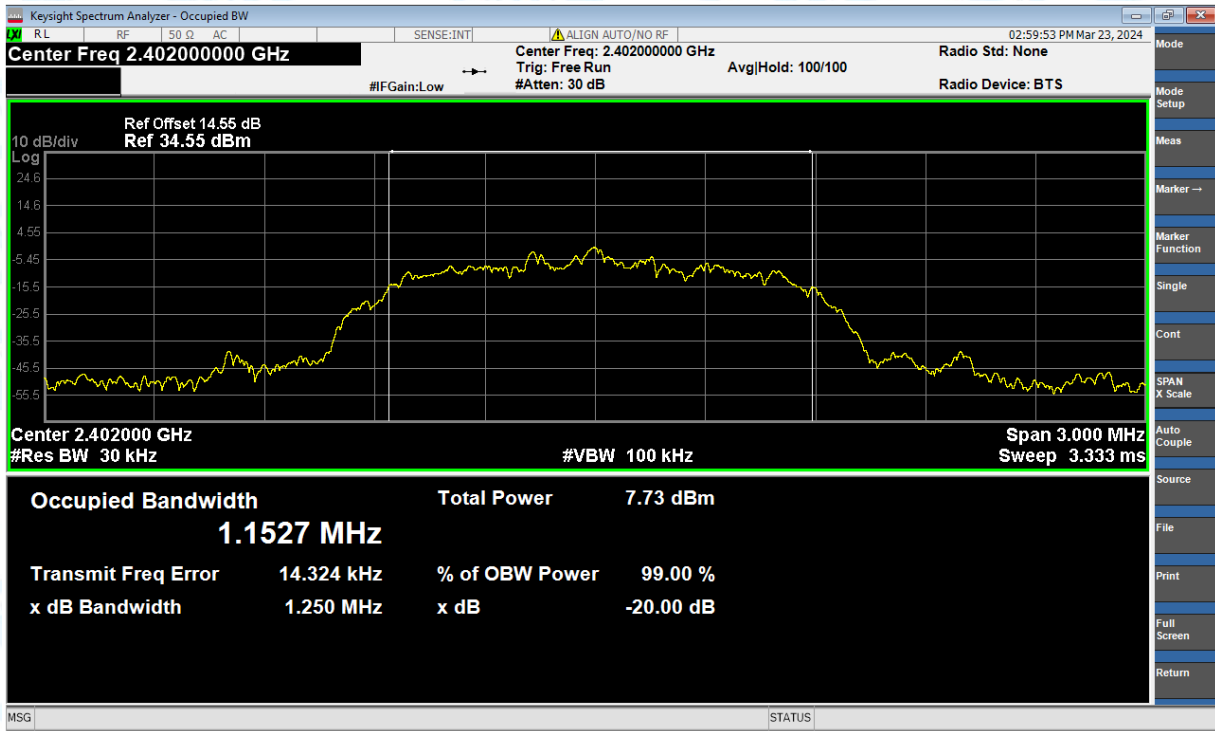
OBW NVNT 2-DH1 2441MHz Ant1



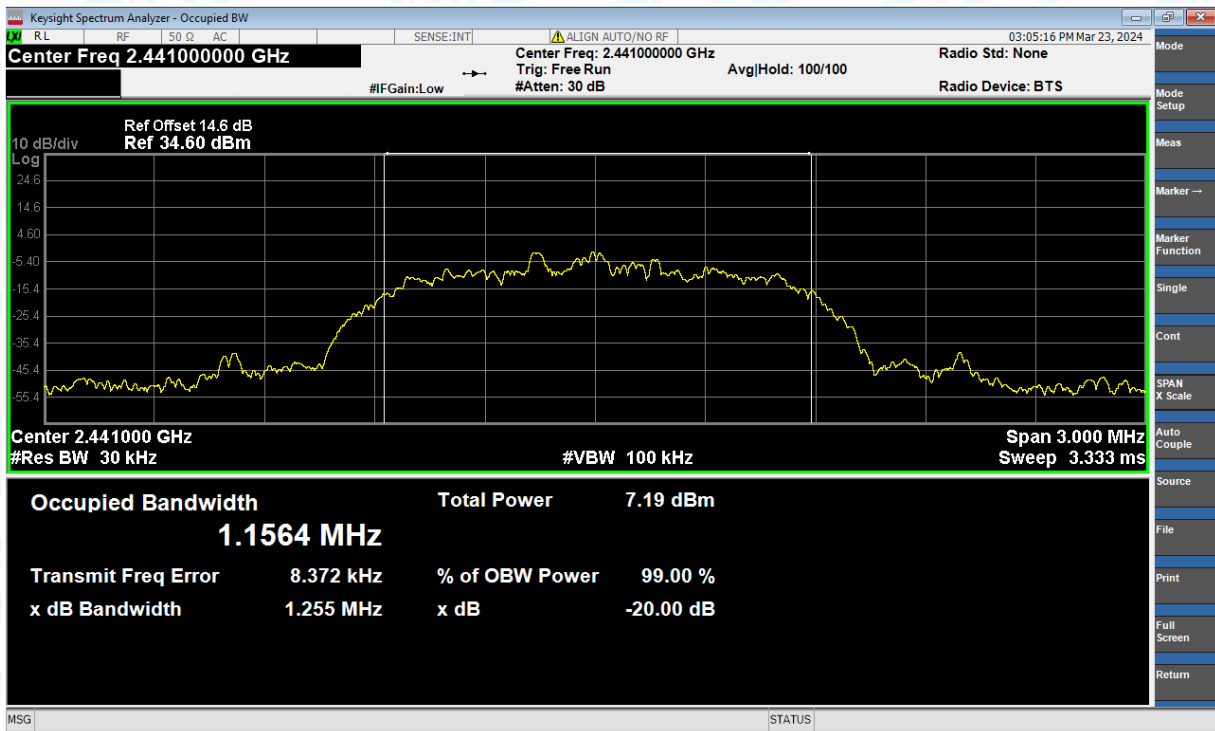
OBW NVNT 2-DH1 2480MHz Ant1

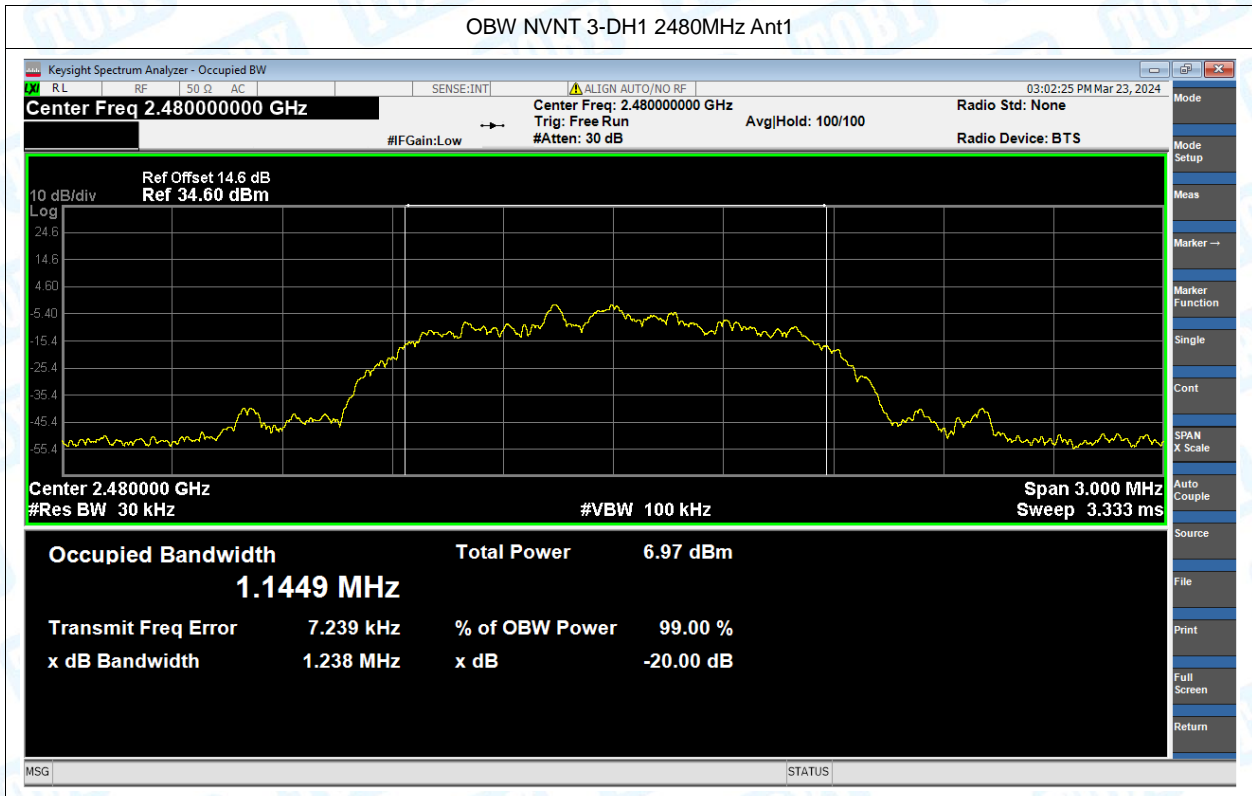


OBW NVNT 3-DH1 2402MHz Ant1



OBW NVNT 3-DH1 2441MHz Ant1



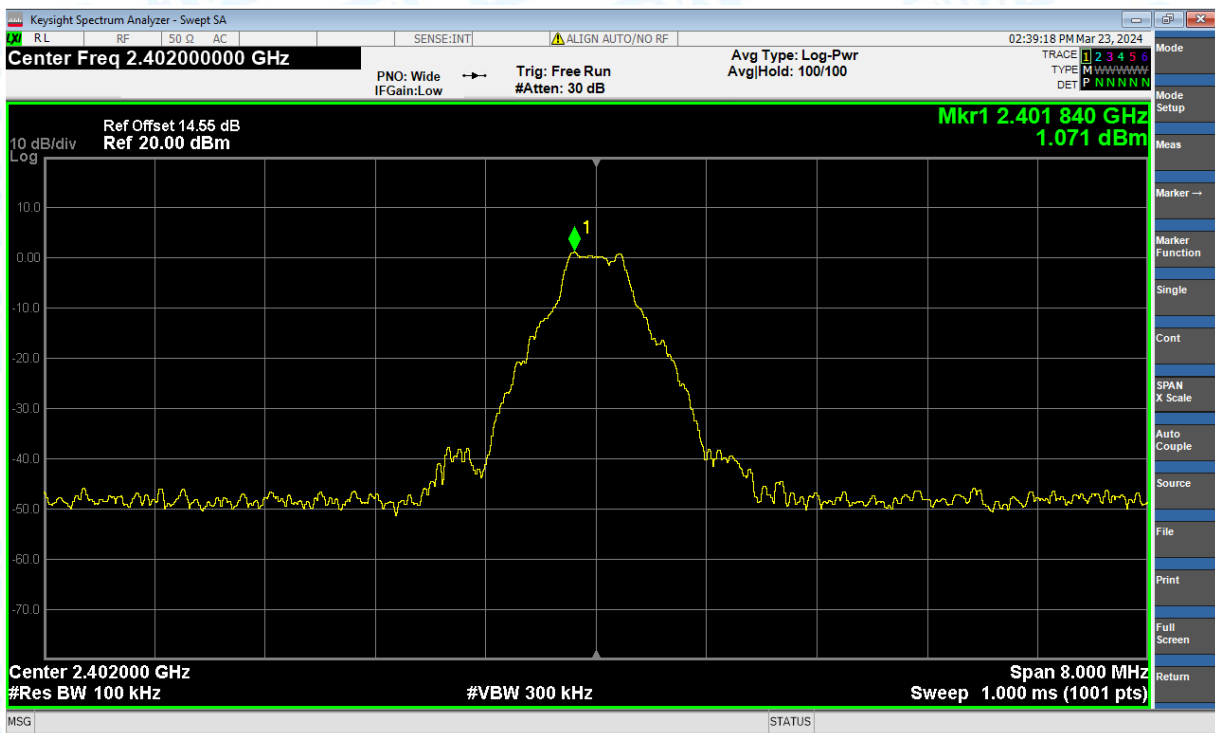


5. Band Edge

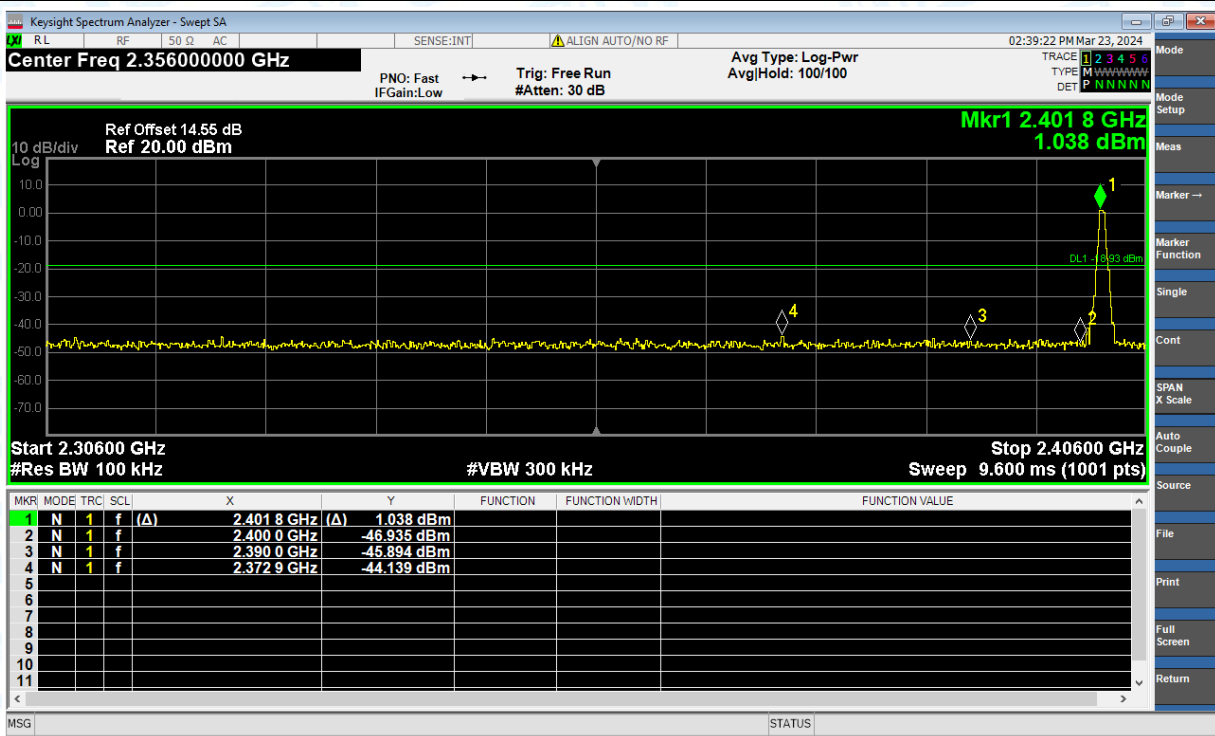
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	-45.21	-20	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	-44.37	-20	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	-44.30	-20	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	-42.96	-20	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	-45.41	-20	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	-43.87	-20	Pass

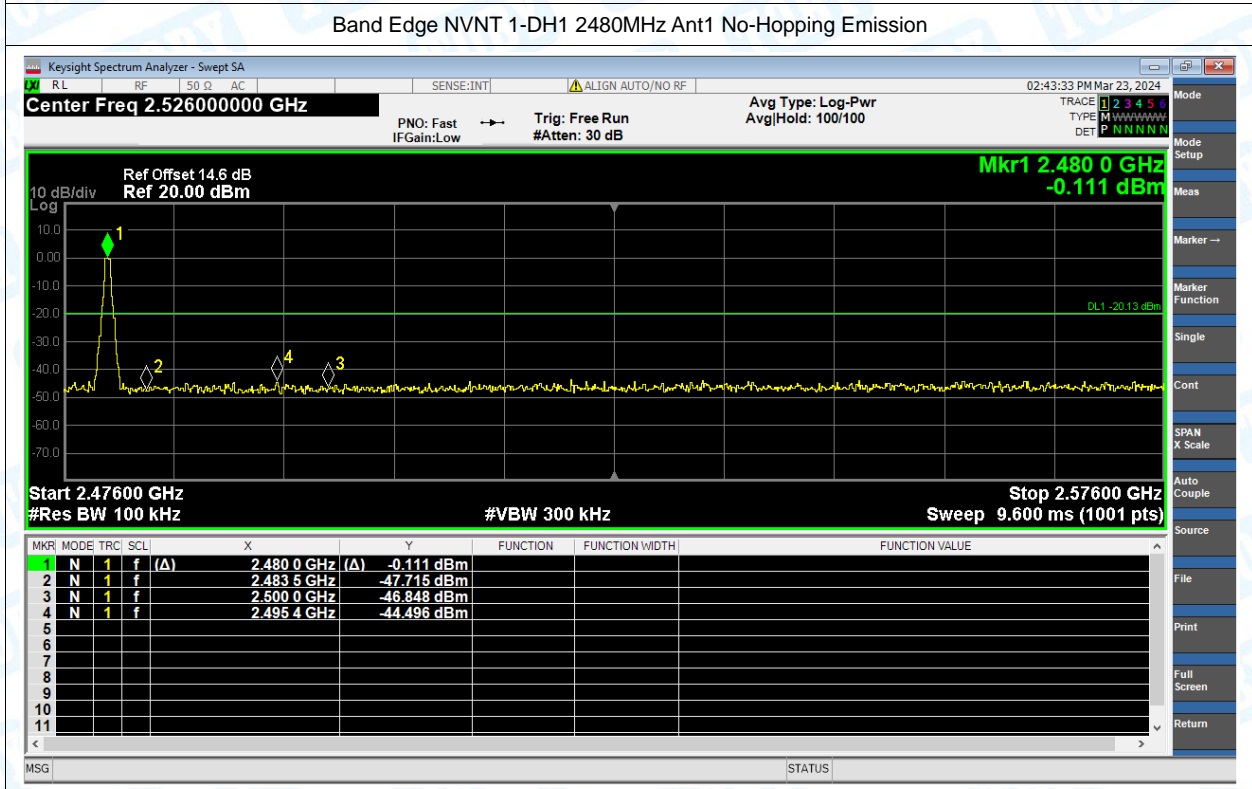
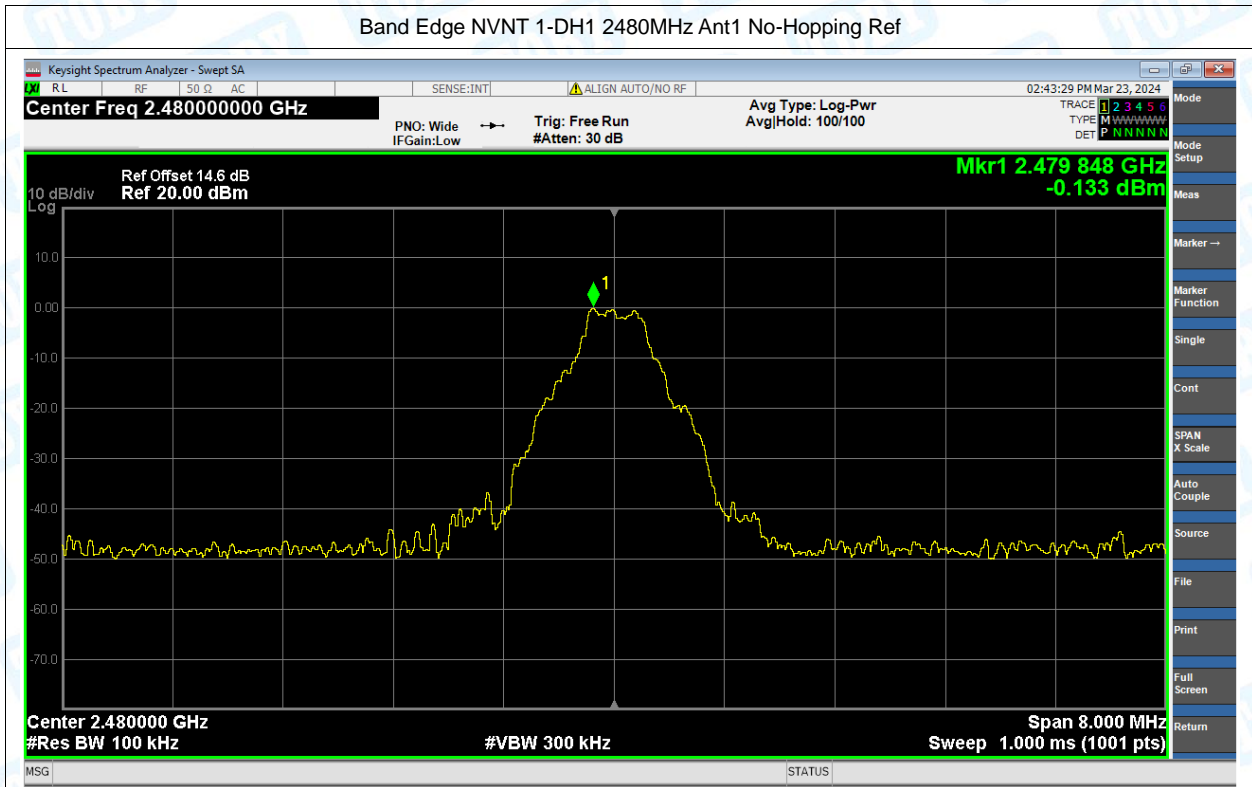
Test Graphs

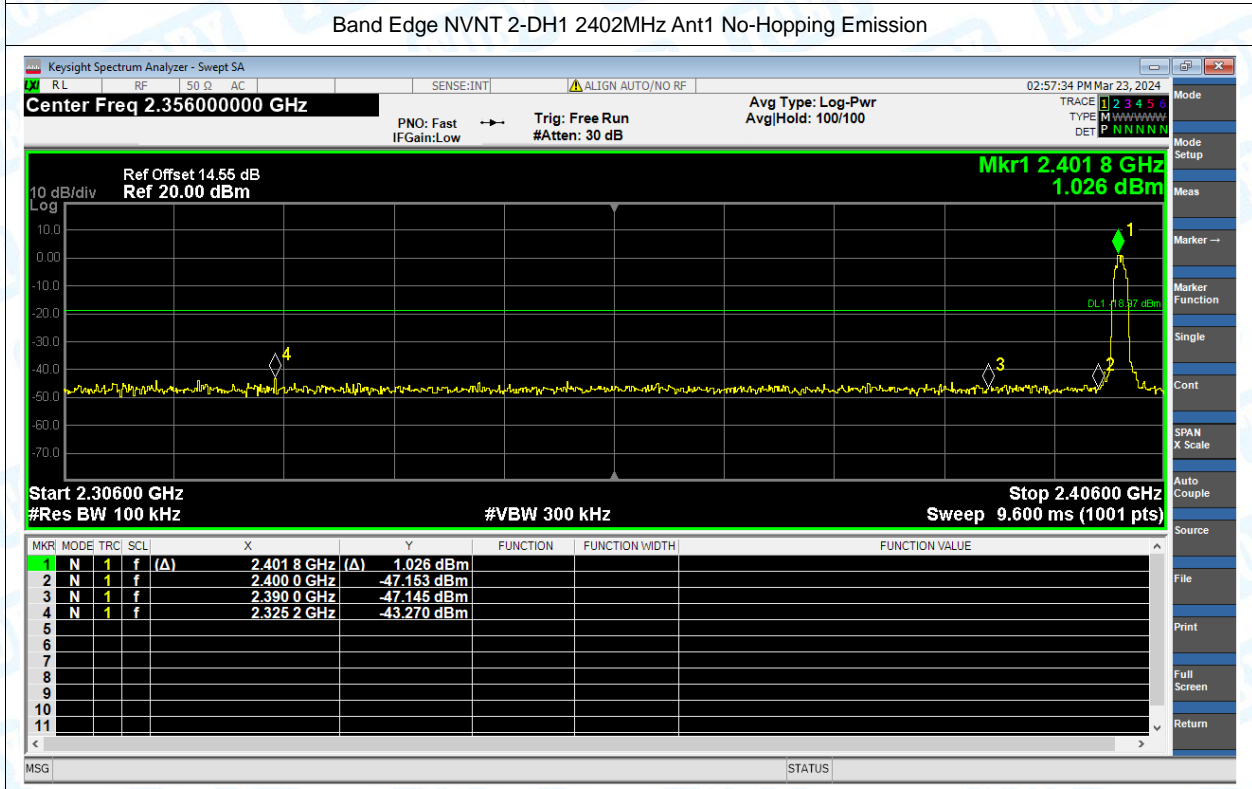
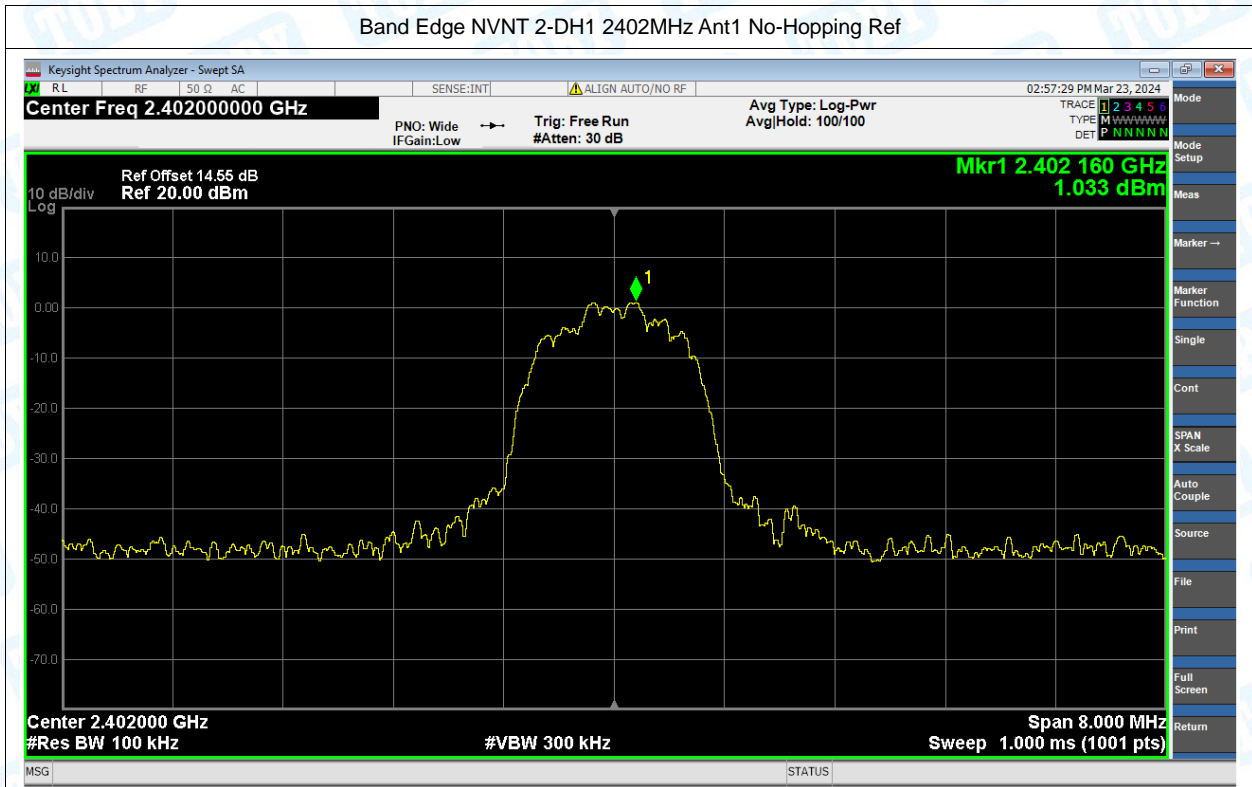
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Ref

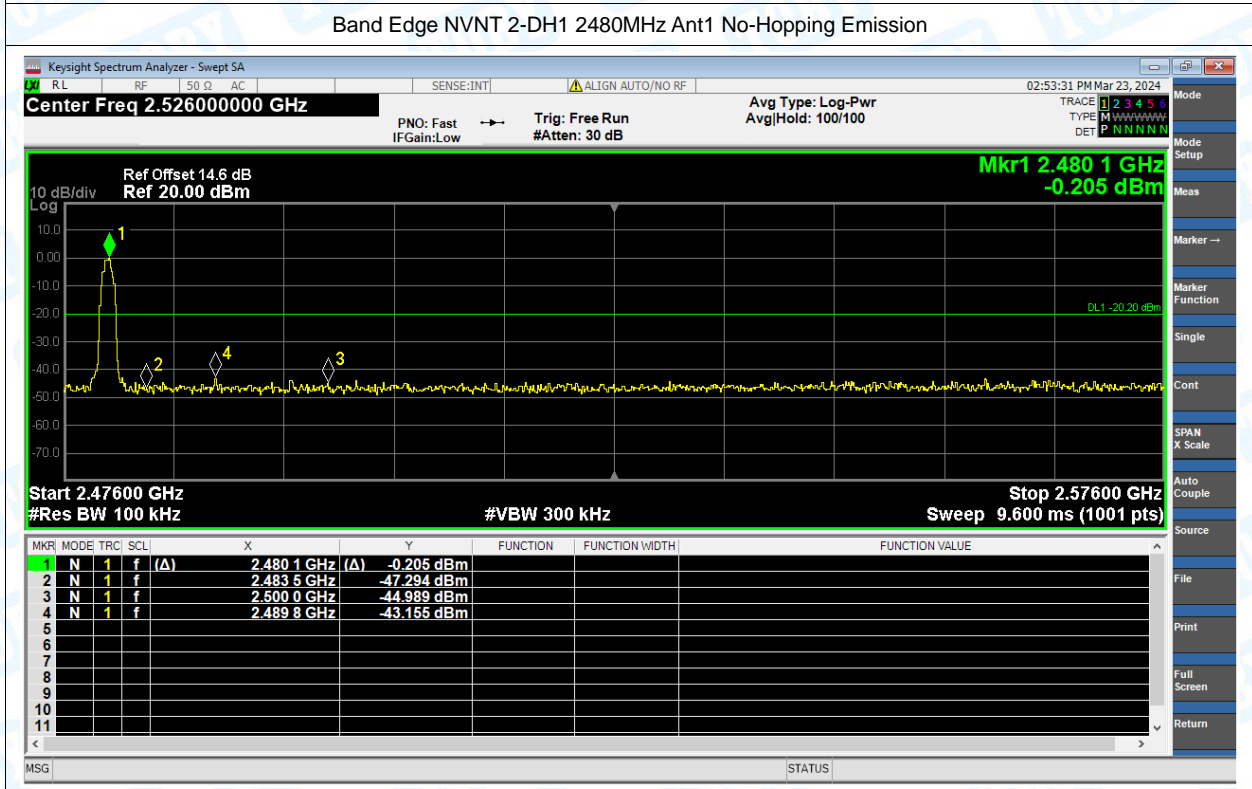
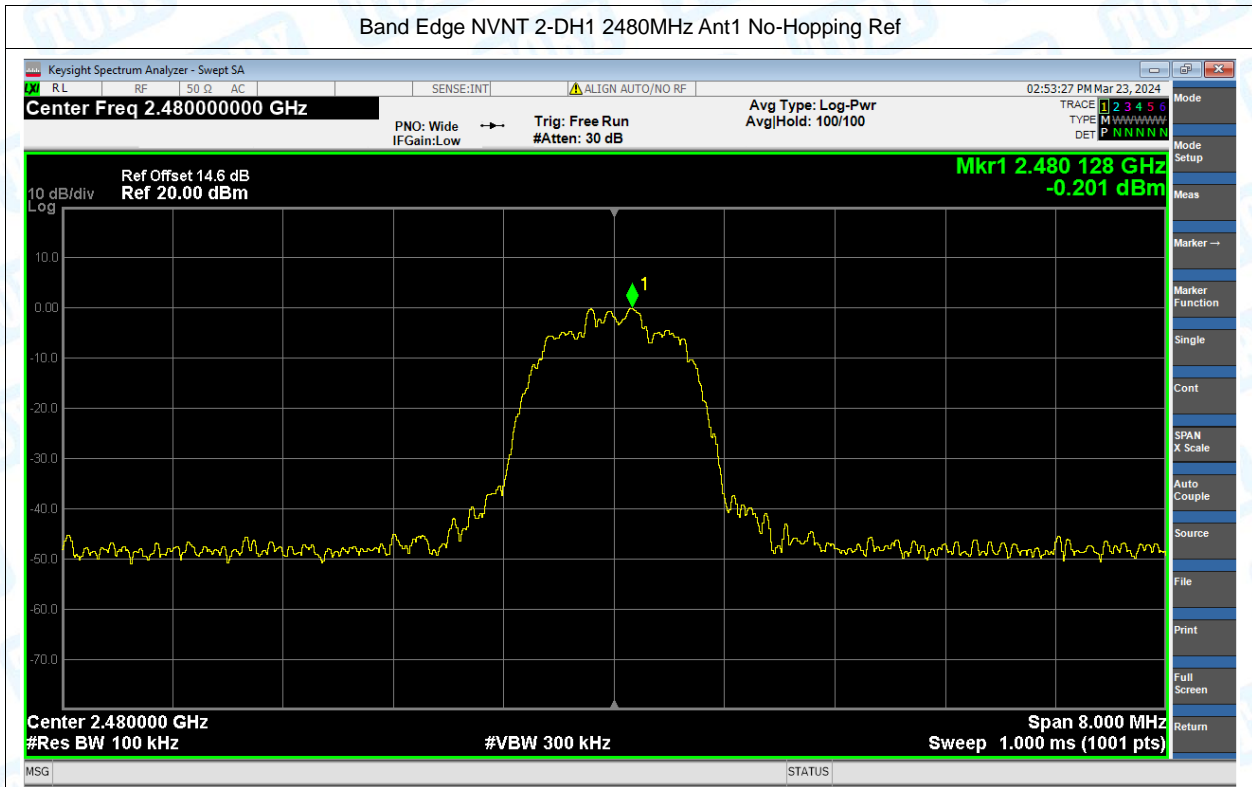


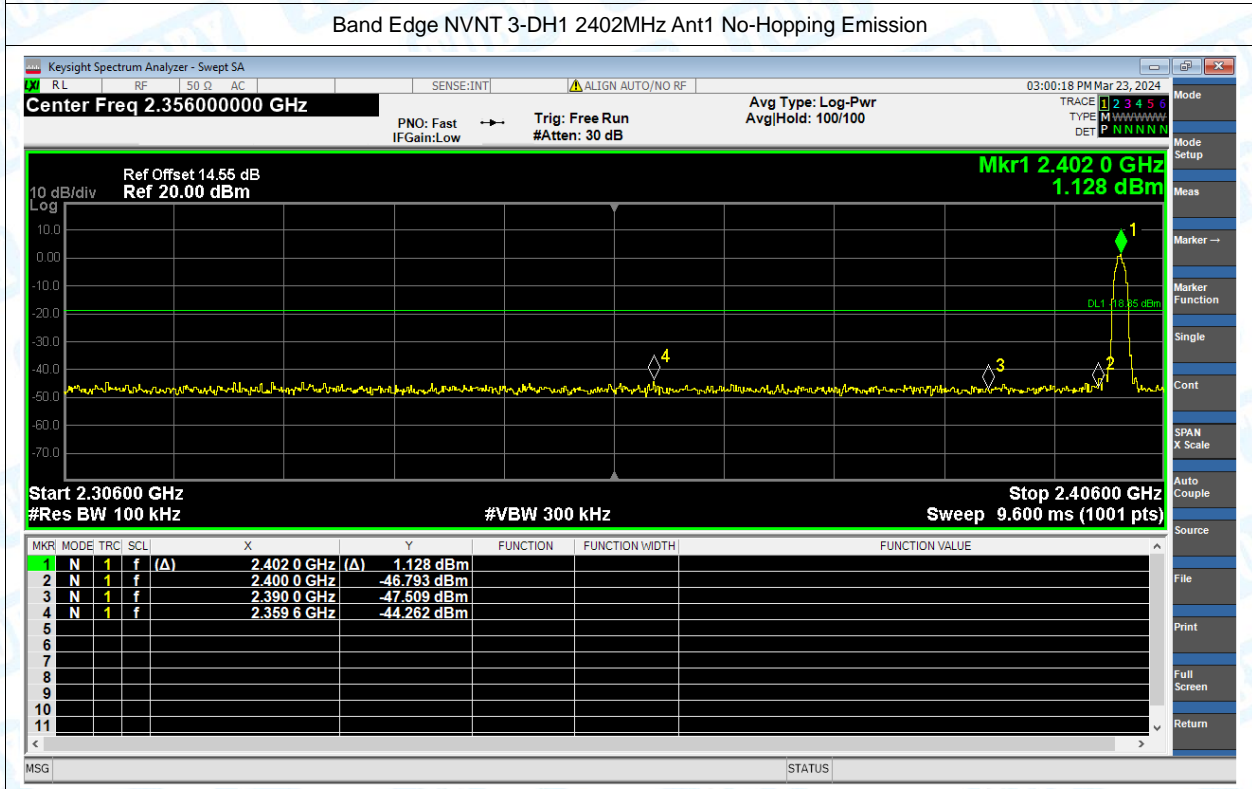
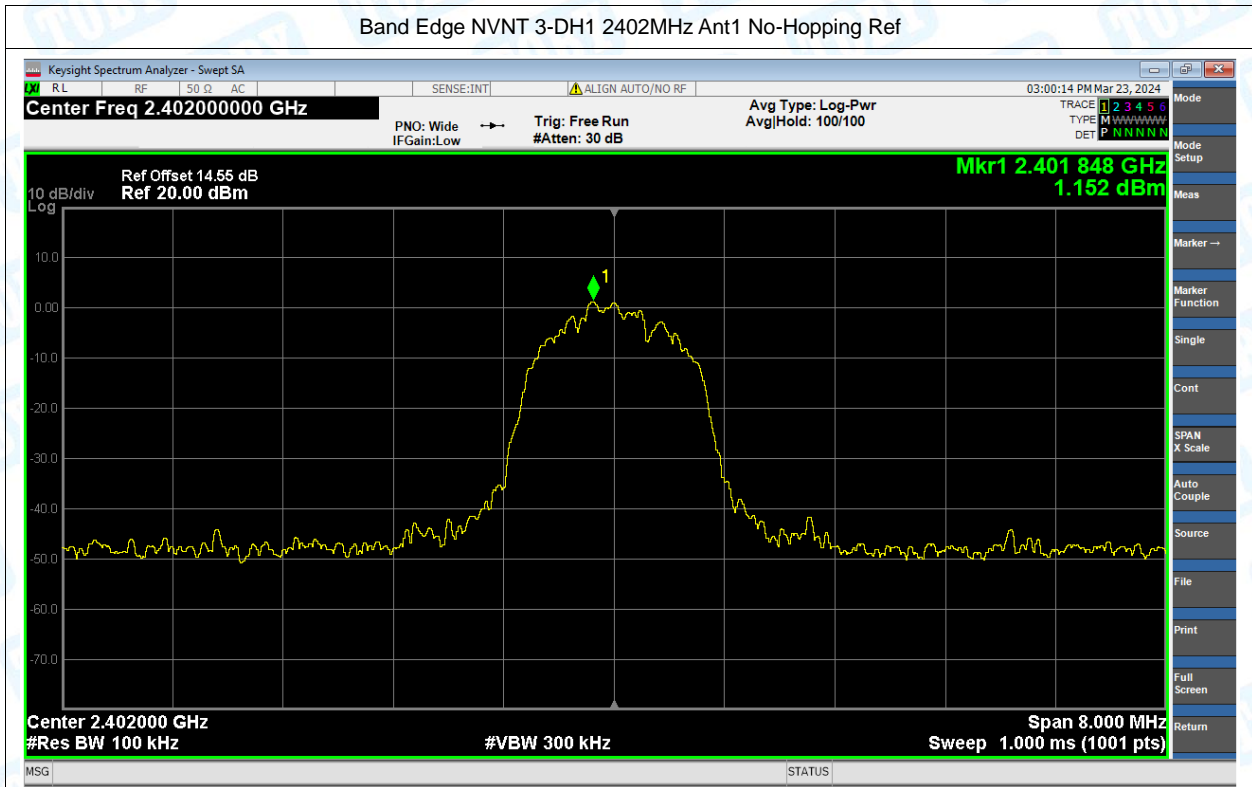
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Emission

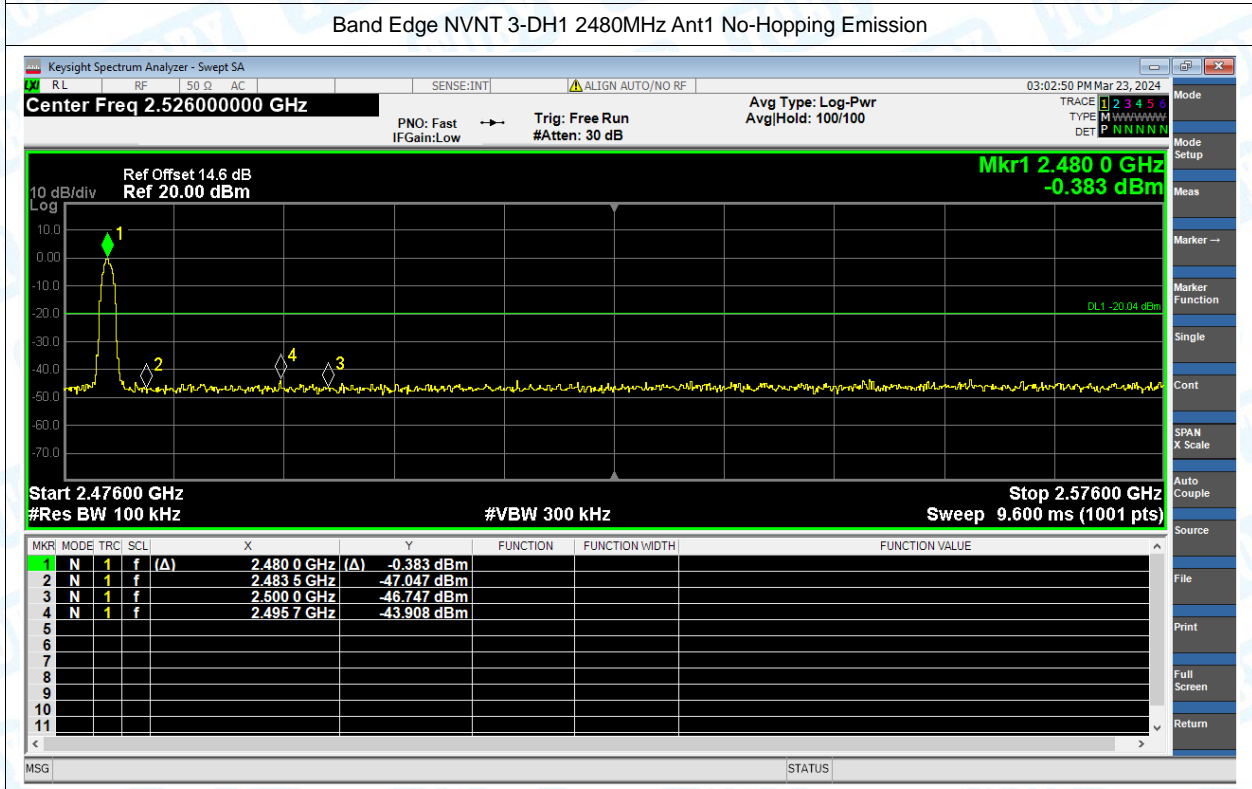
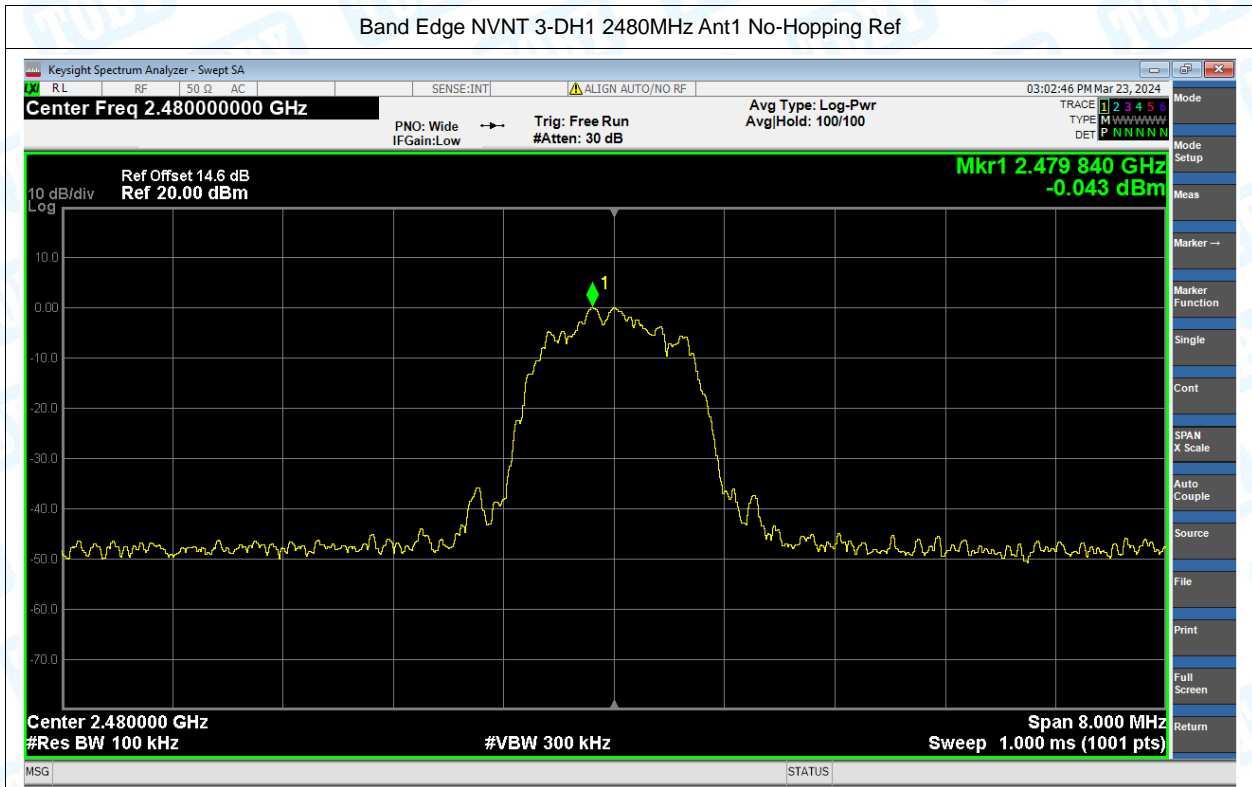










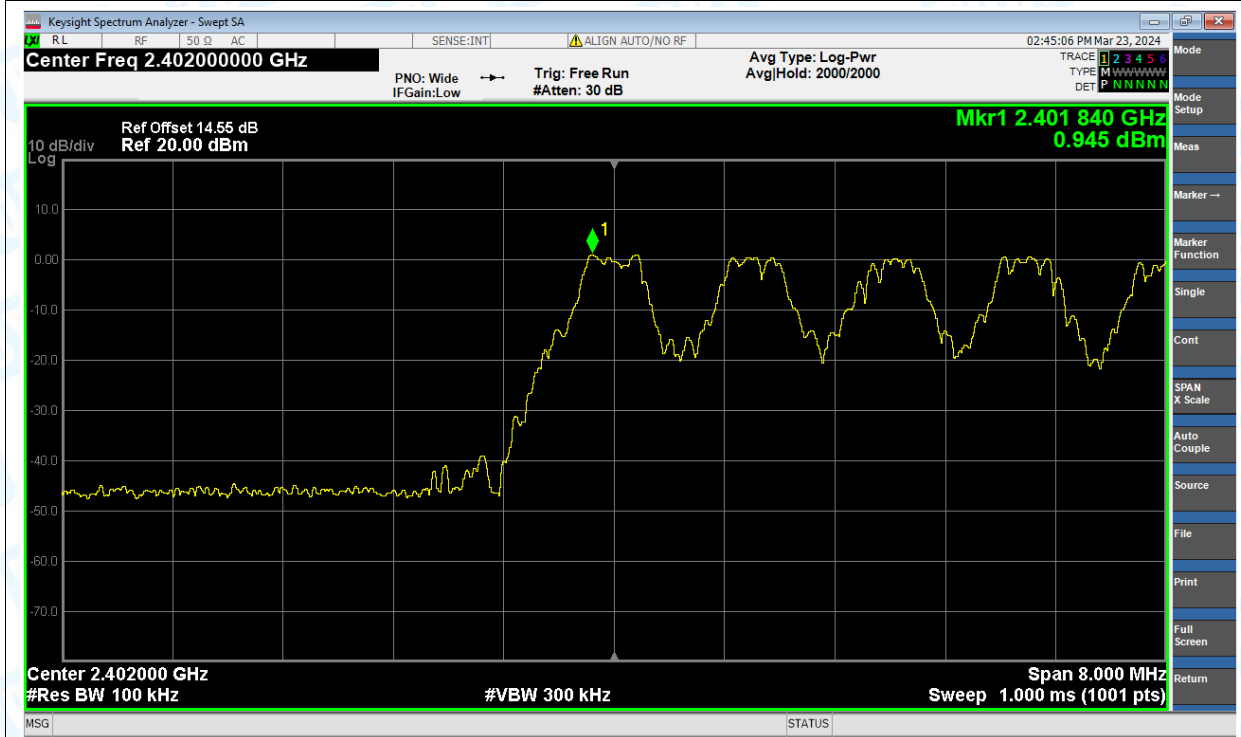


6. Band Edge(Hopping)

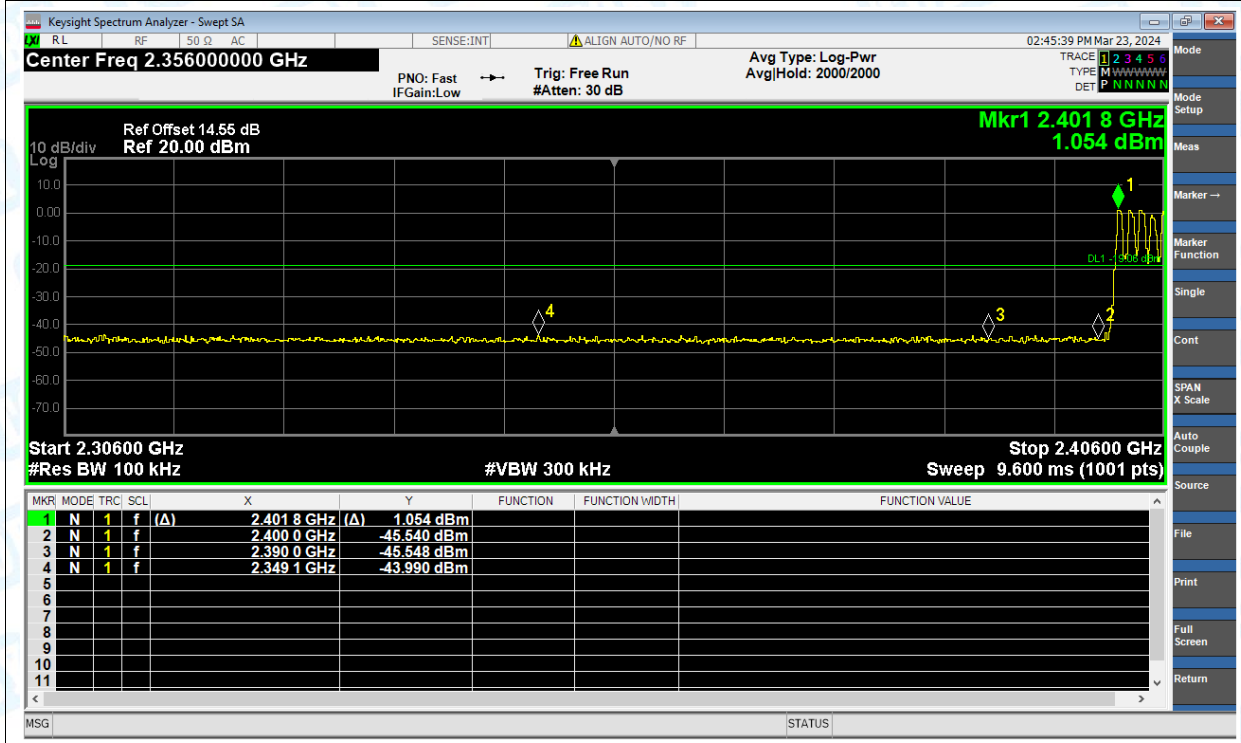
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	Hopping	-44.94	-20	Pass
NVNT	1-DH1	2480	Ant1	Hopping	-43.36	-20	Pass
NVNT	2-DH1	2402	Ant1	Hopping	-44.06	-20	Pass
NVNT	2-DH1	2480	Ant1	Hopping	-42.89	-20	Pass
NVNT	3-DH1	2402	Ant1	Hopping	-44.54	-20	Pass
NVNT	3-DH1	2480	Ant1	Hopping	-42.57	-20	Pass

Test Graphs

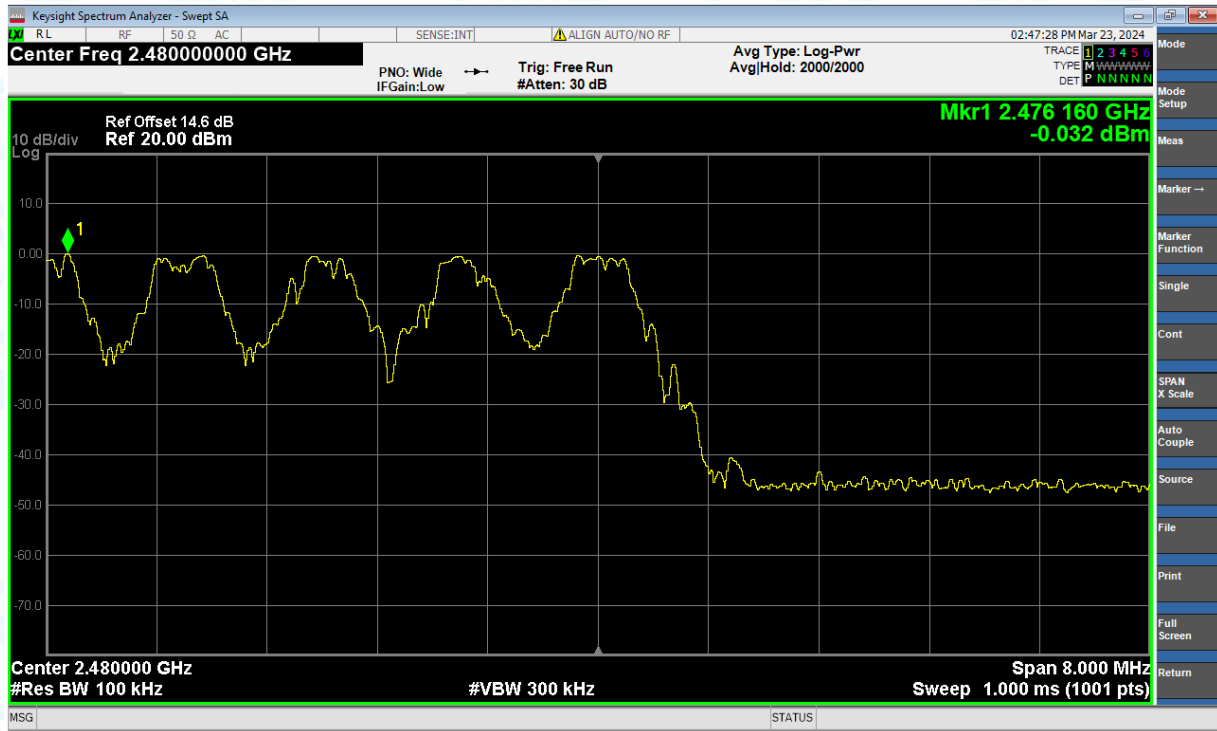
Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Ref



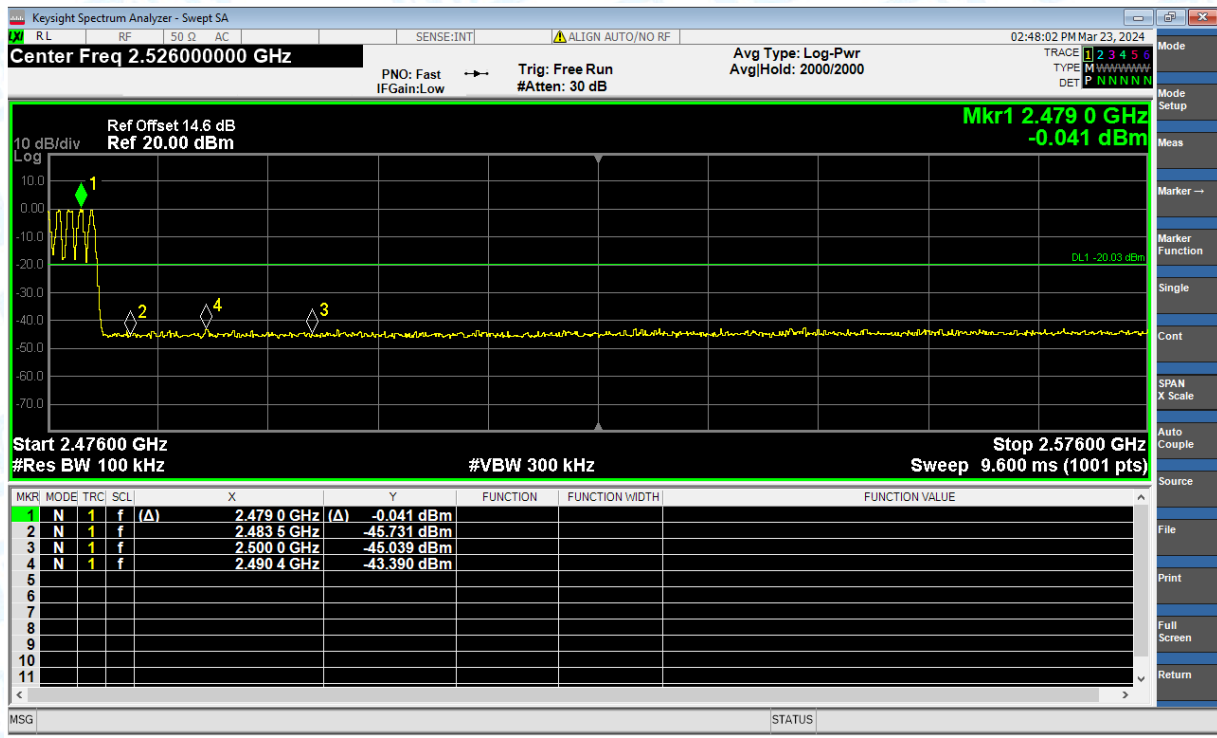
Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Emission

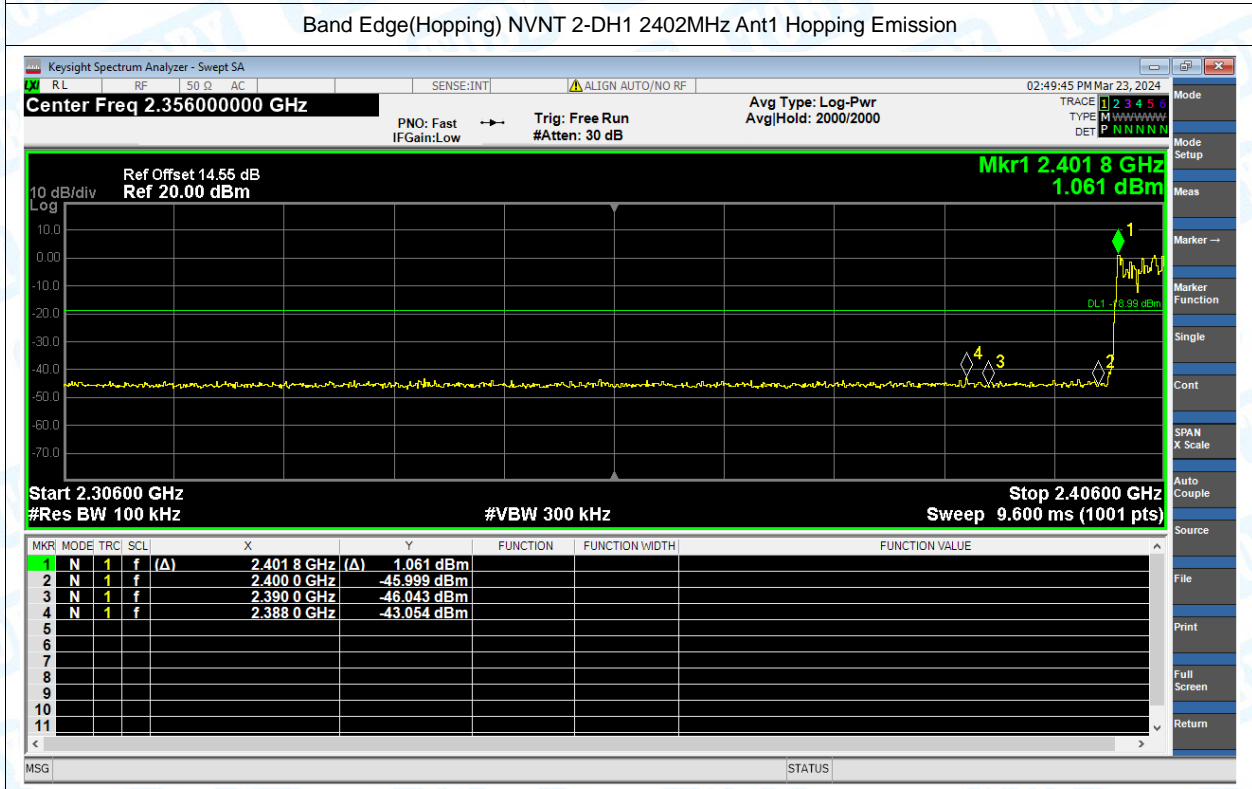
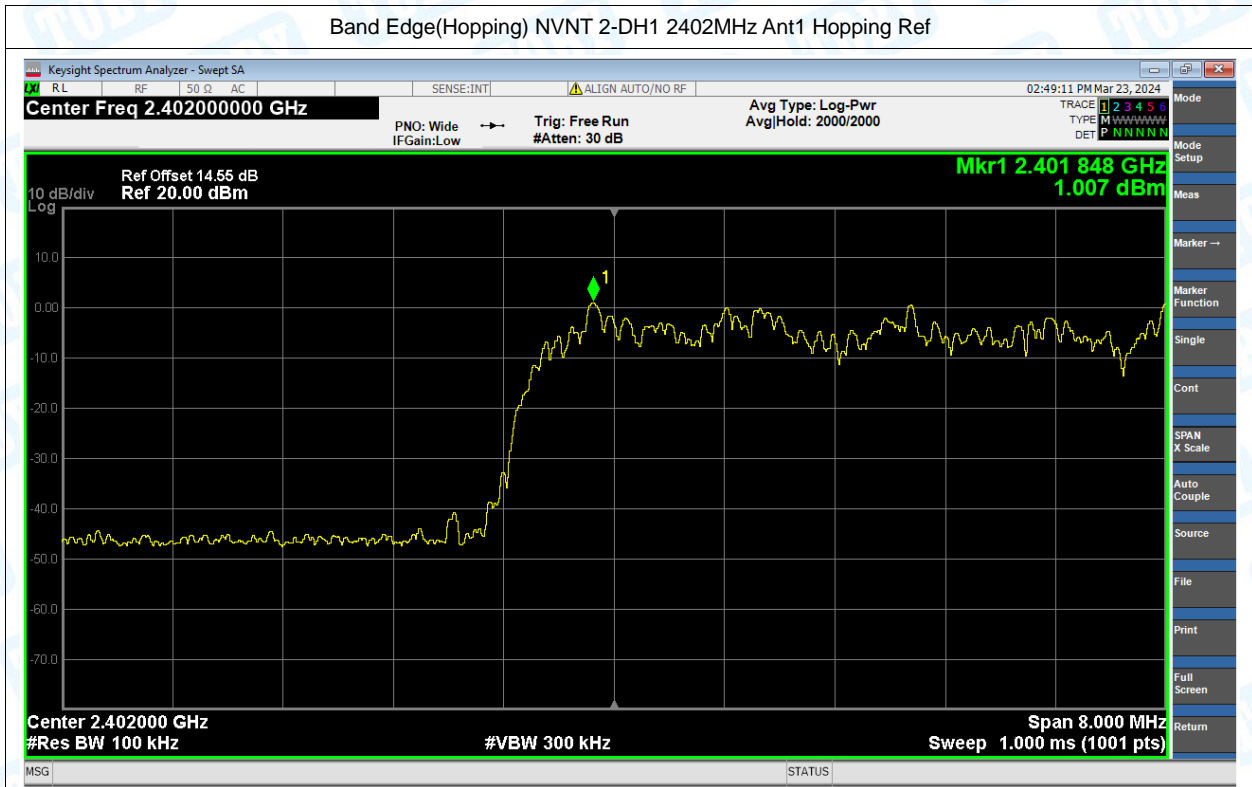


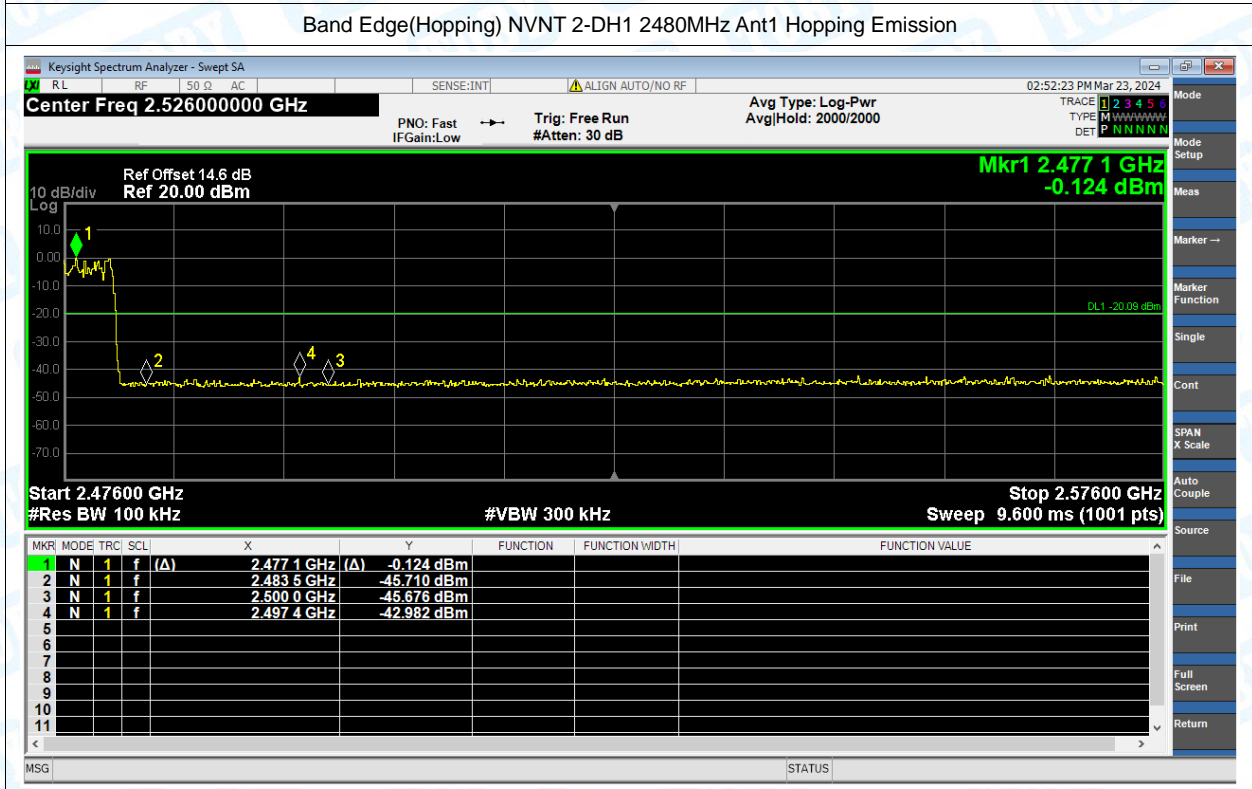
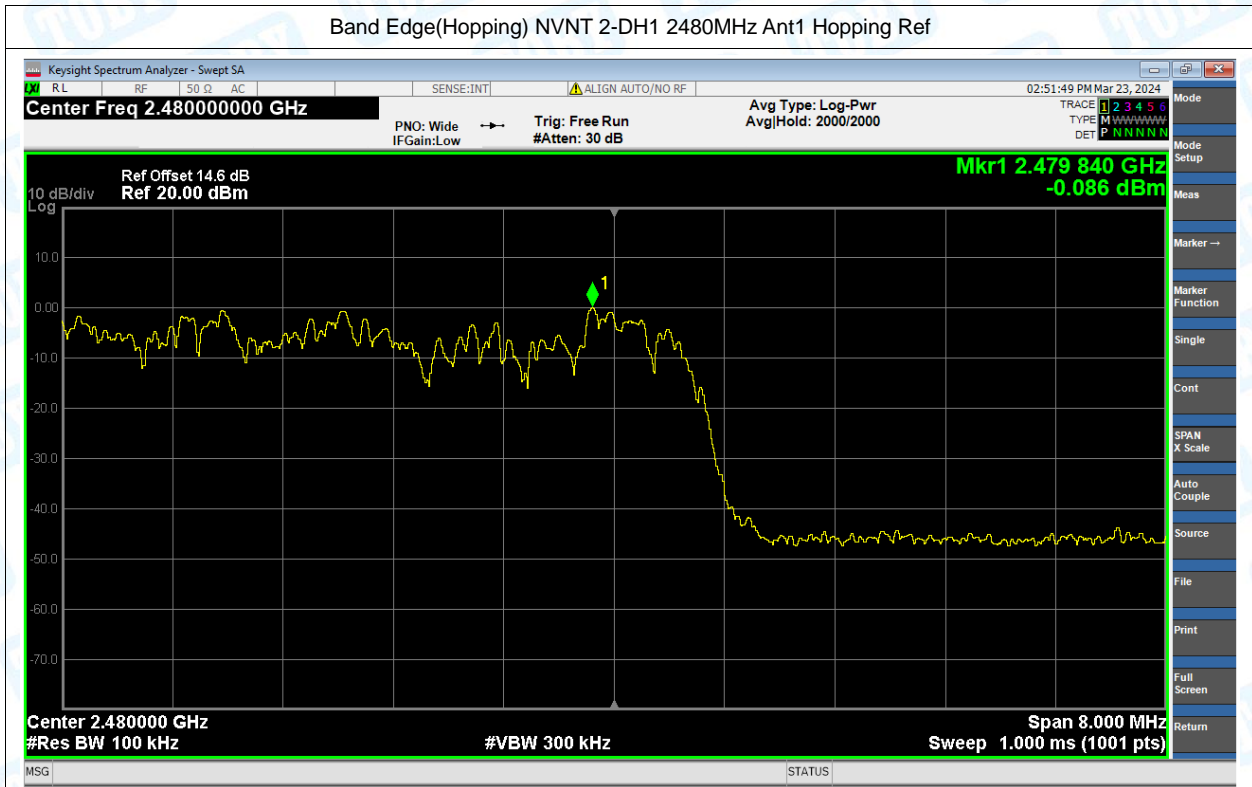
Band Edge(Hopping) NVNT 1-DH1 2480MHz Ant1 Hopping Ref



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



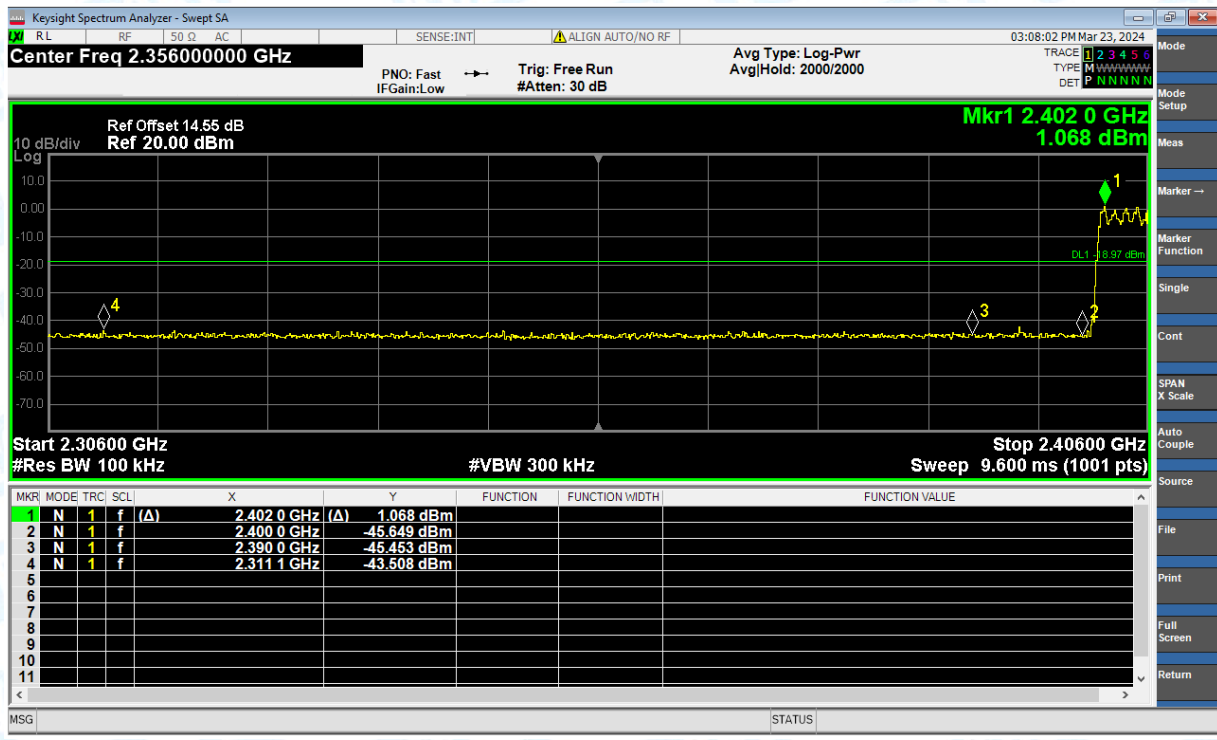


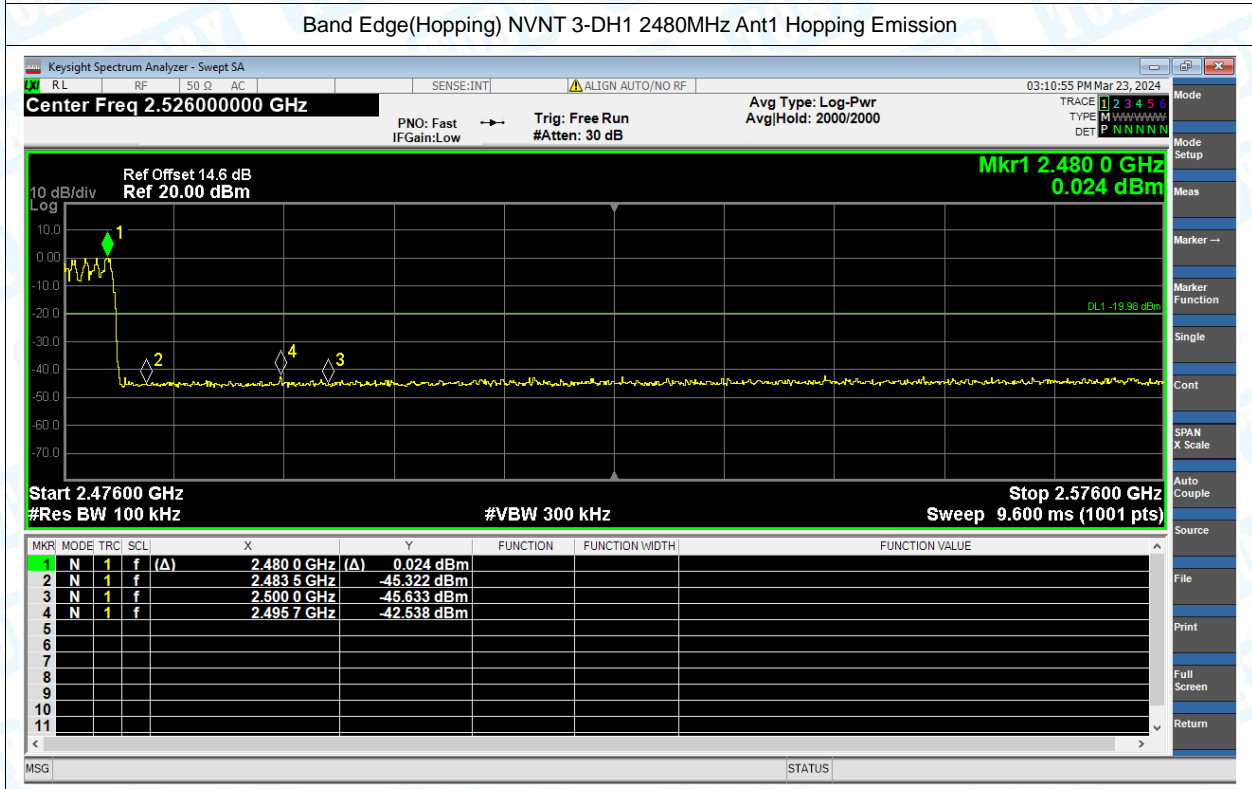


Band Edge(Hopping) NVNT 3-DH1 2402MHz Ant1 Hopping Ref



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



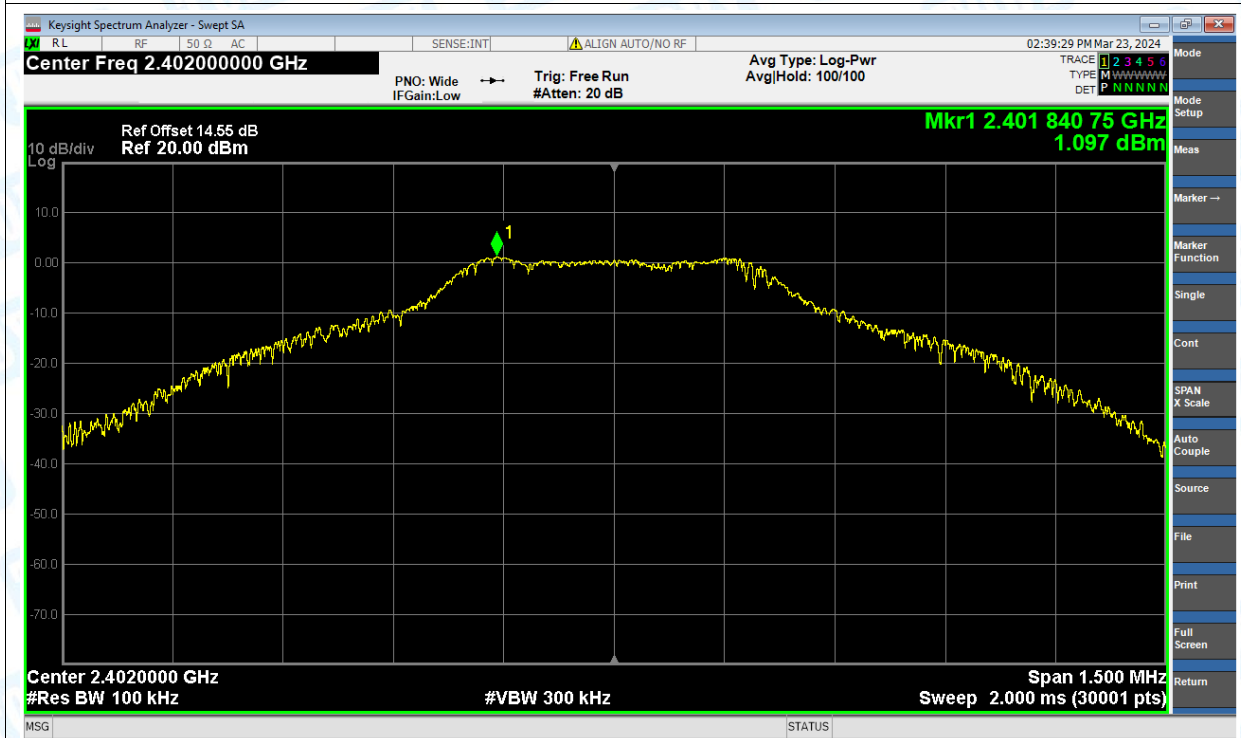


7. Conducted RF Spurious Emission

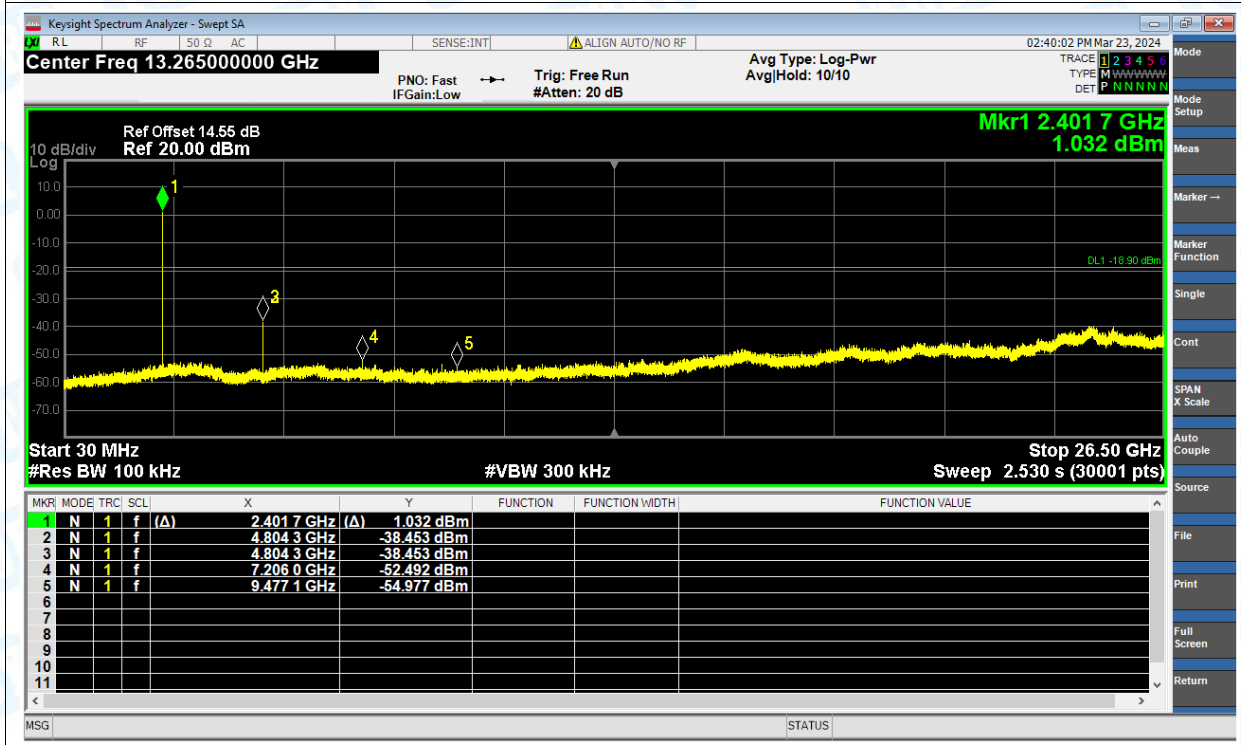
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	-39.55	-20	Pass
NVNT	1-DH1	2441	Ant1	-38.28	-20	Pass
NVNT	1-DH1	2480	Ant1	-39.50	-20	Pass
NVNT	2-DH1	2402	Ant1	-38.22	-20	Pass
NVNT	2-DH1	2441	Ant1	-39.92	-20	Pass
NVNT	2-DH1	2480	Ant1	-39.25	-20	Pass
NVNT	3-DH1	2402	Ant1	-38.71	-20	Pass
NVNT	3-DH1	2441	Ant1	-39.99	-20	Pass
NVNT	3-DH1	2480	Ant1	-40.13	-20	Pass

Test Graphs

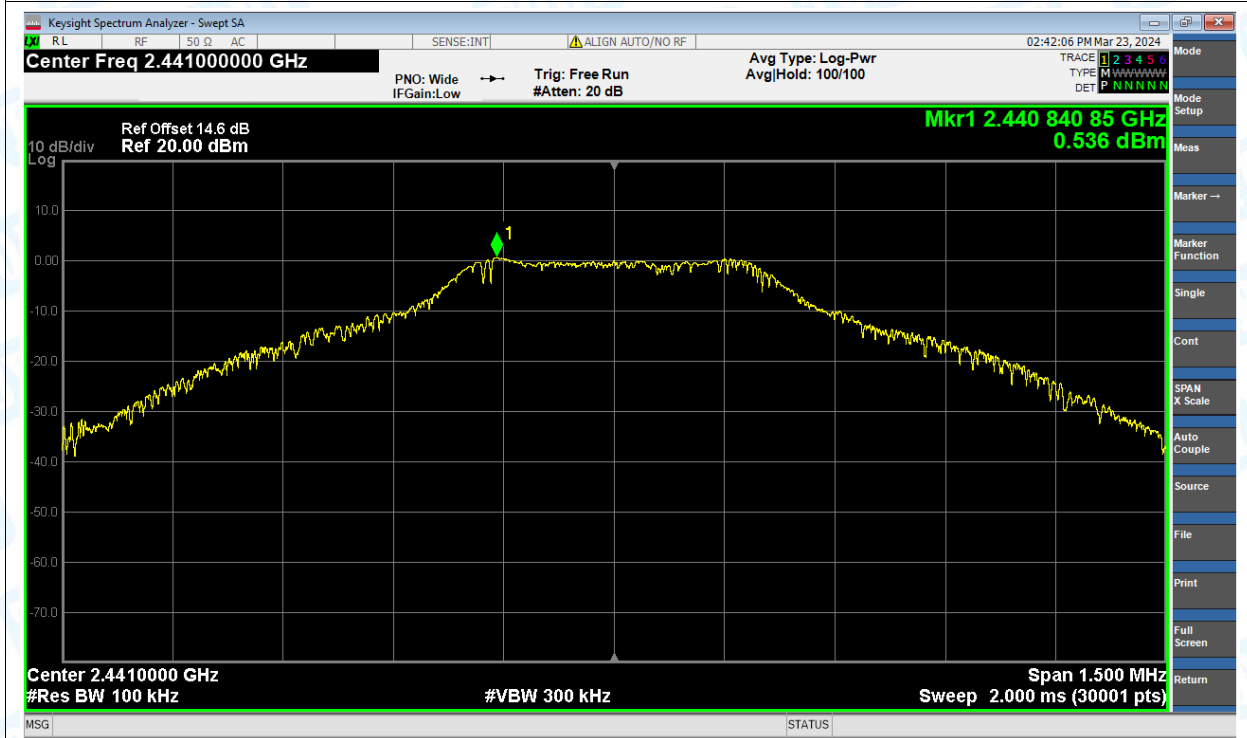
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Ref



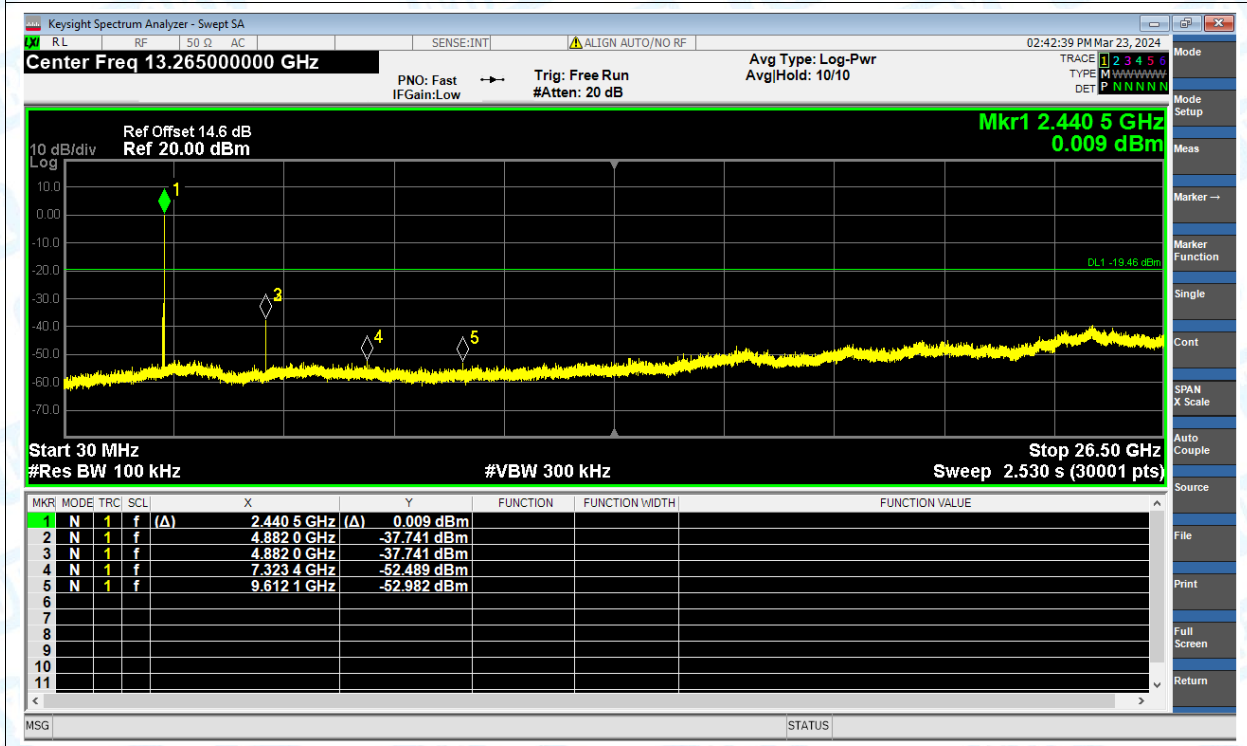
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Emission



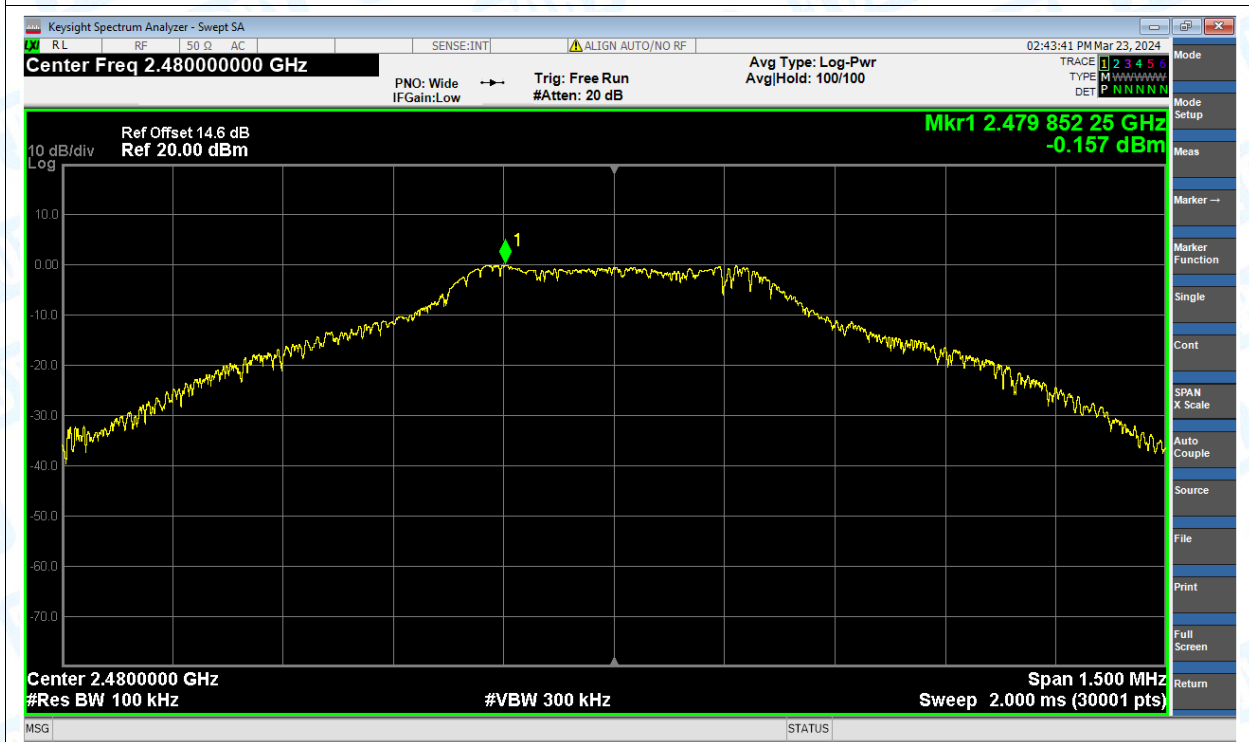
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Ref



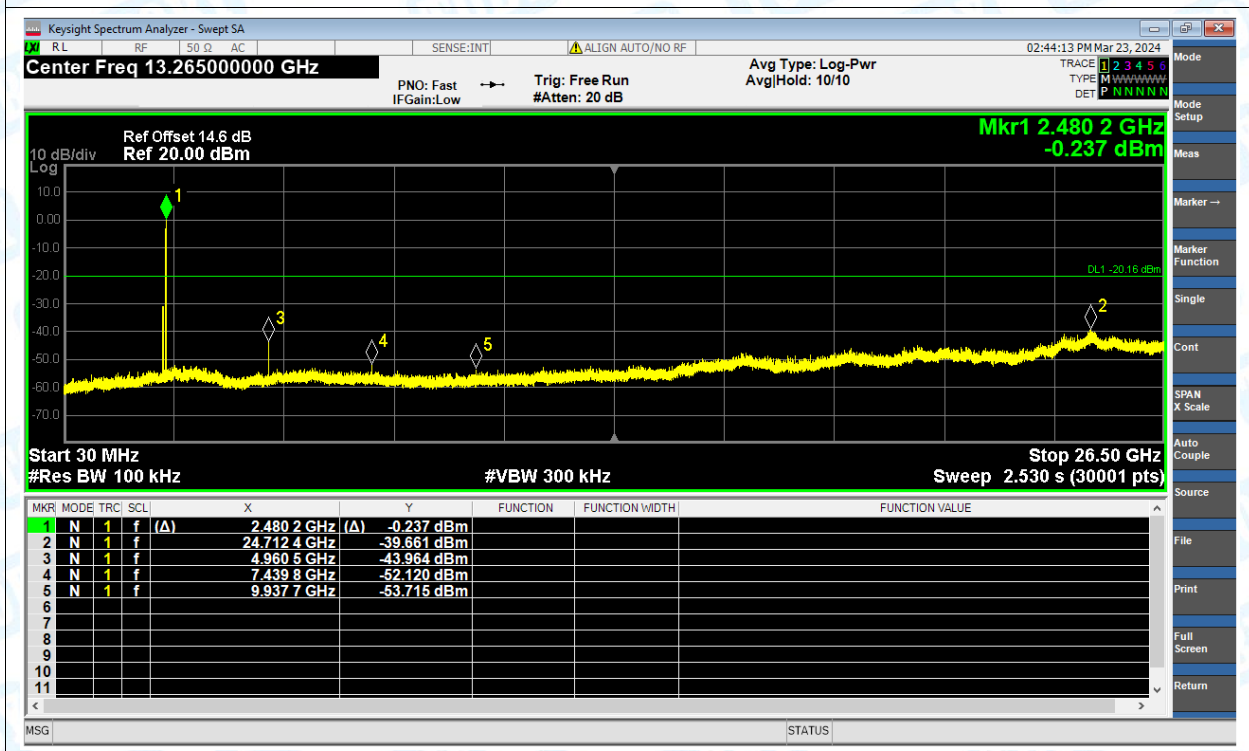
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Emission



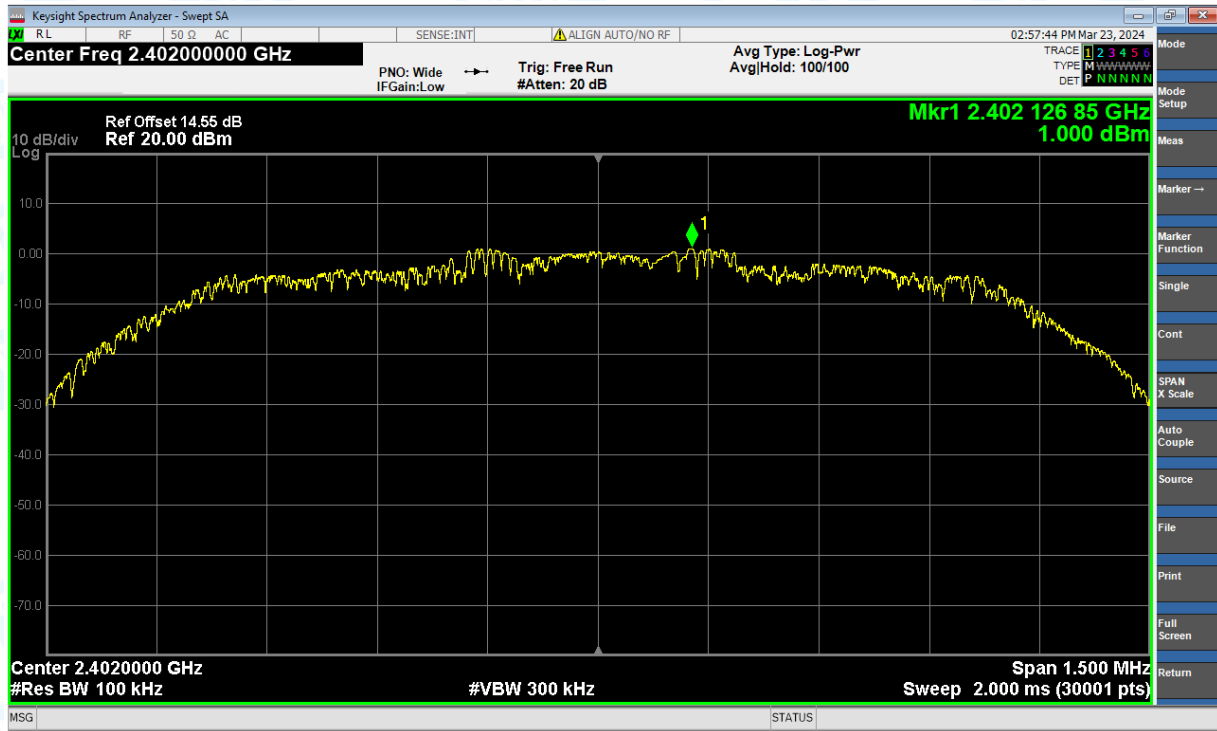
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Ref



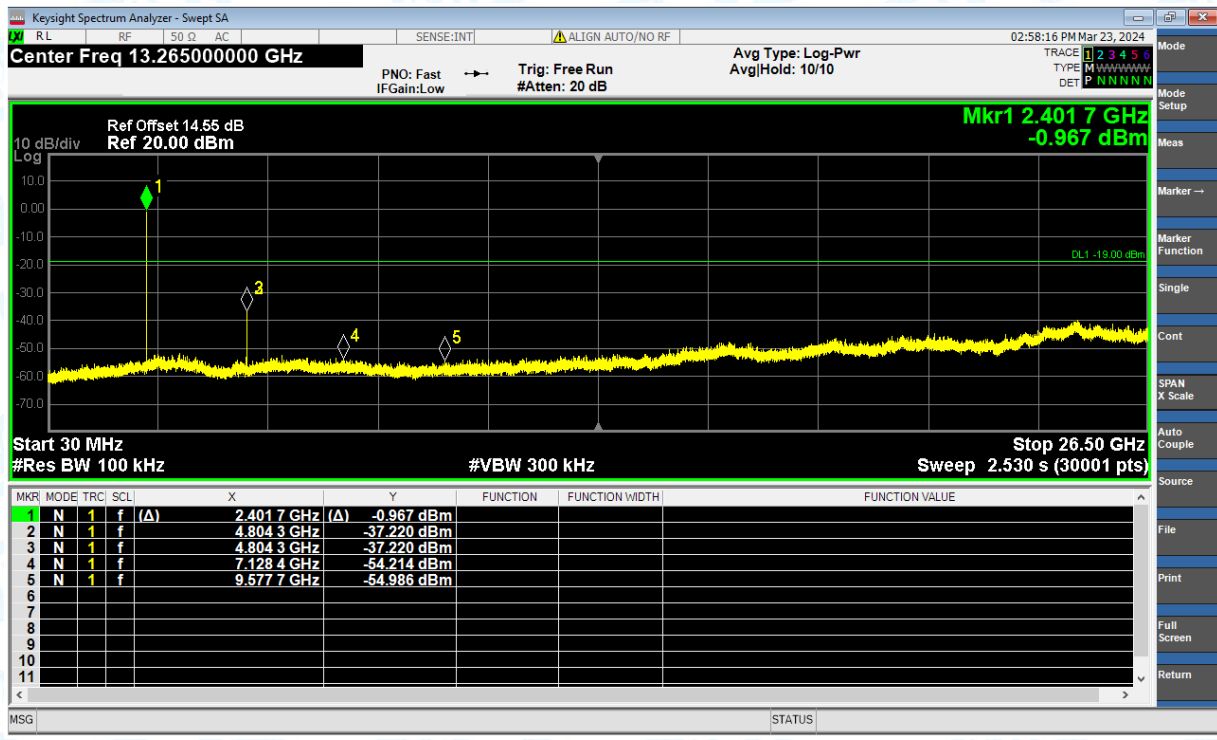
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Emission



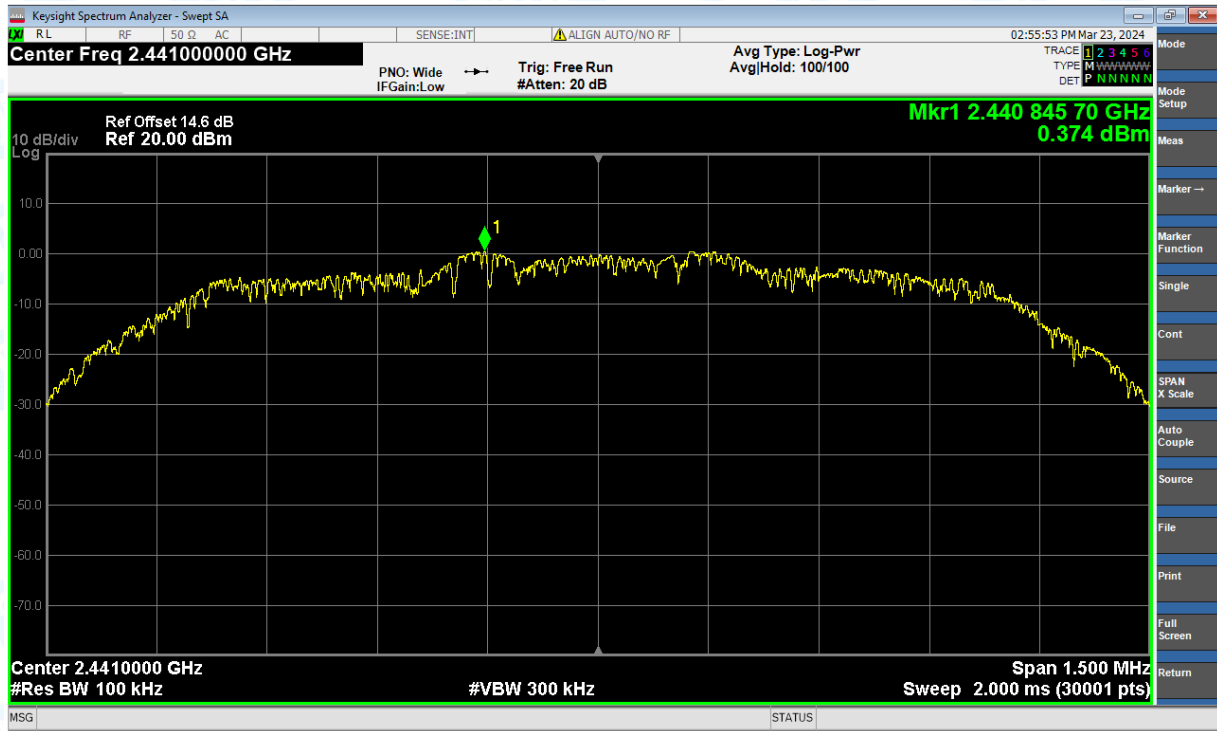
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Ref



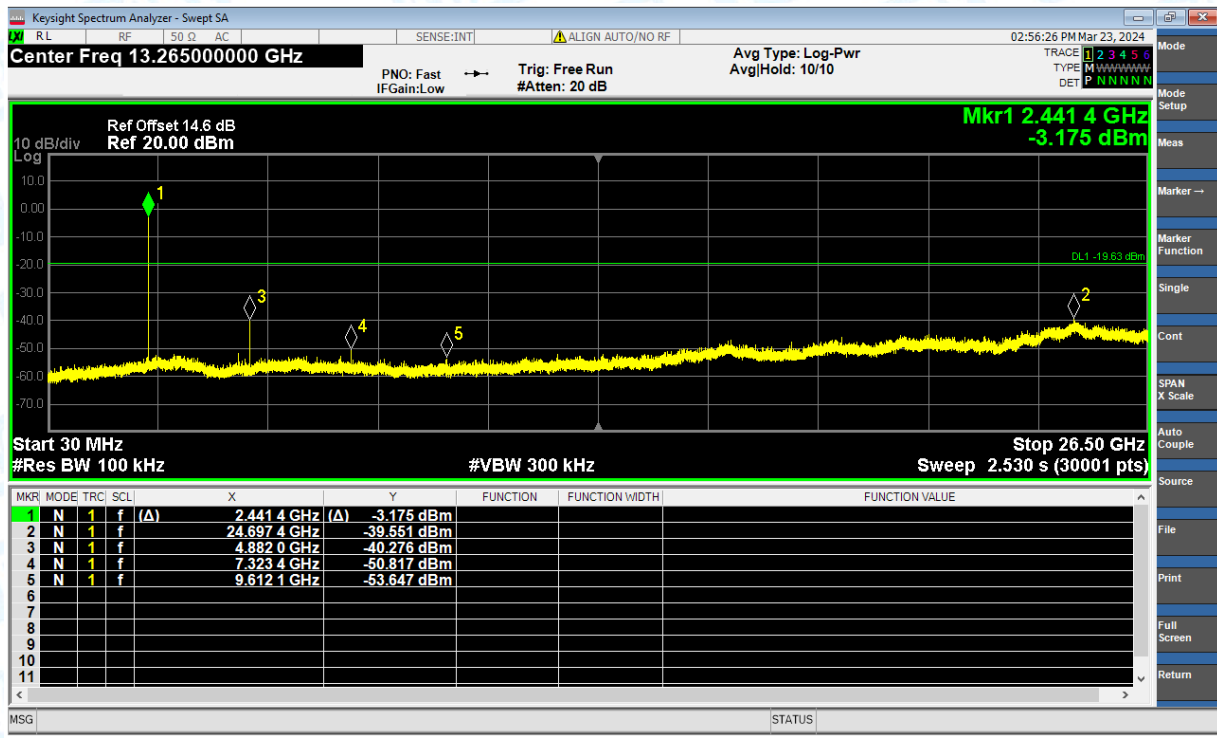
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Emission



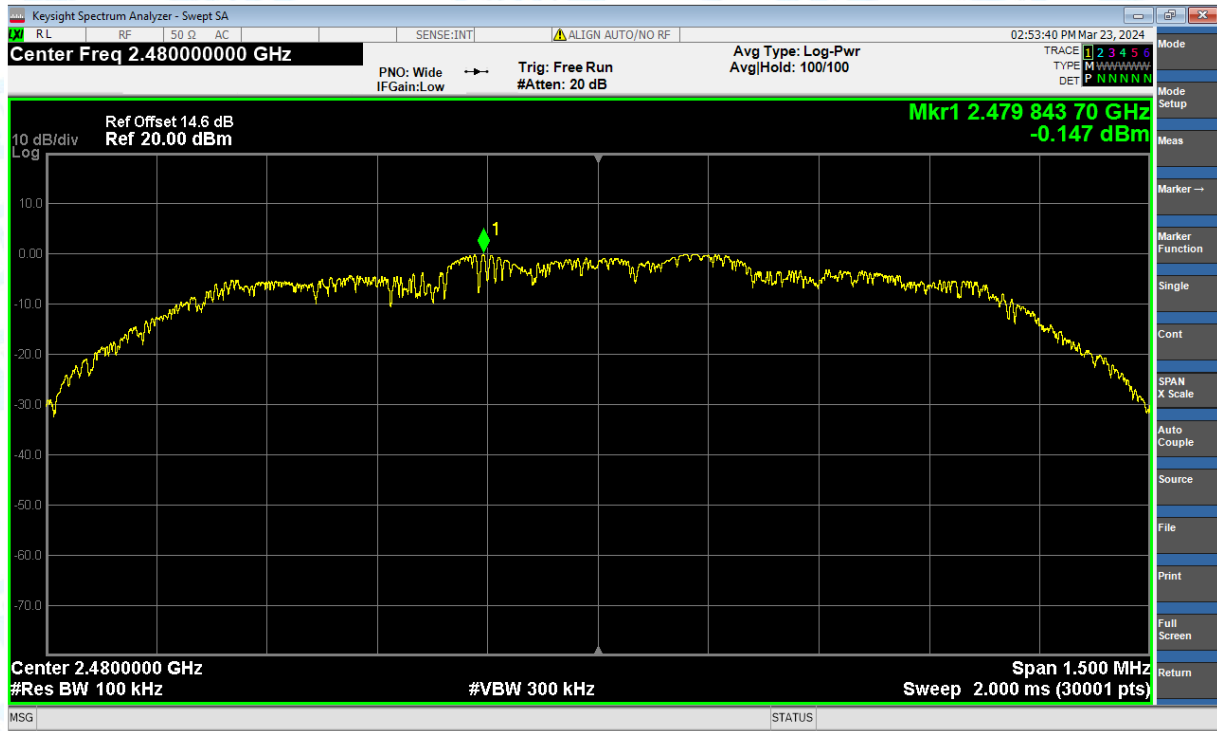
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Ref



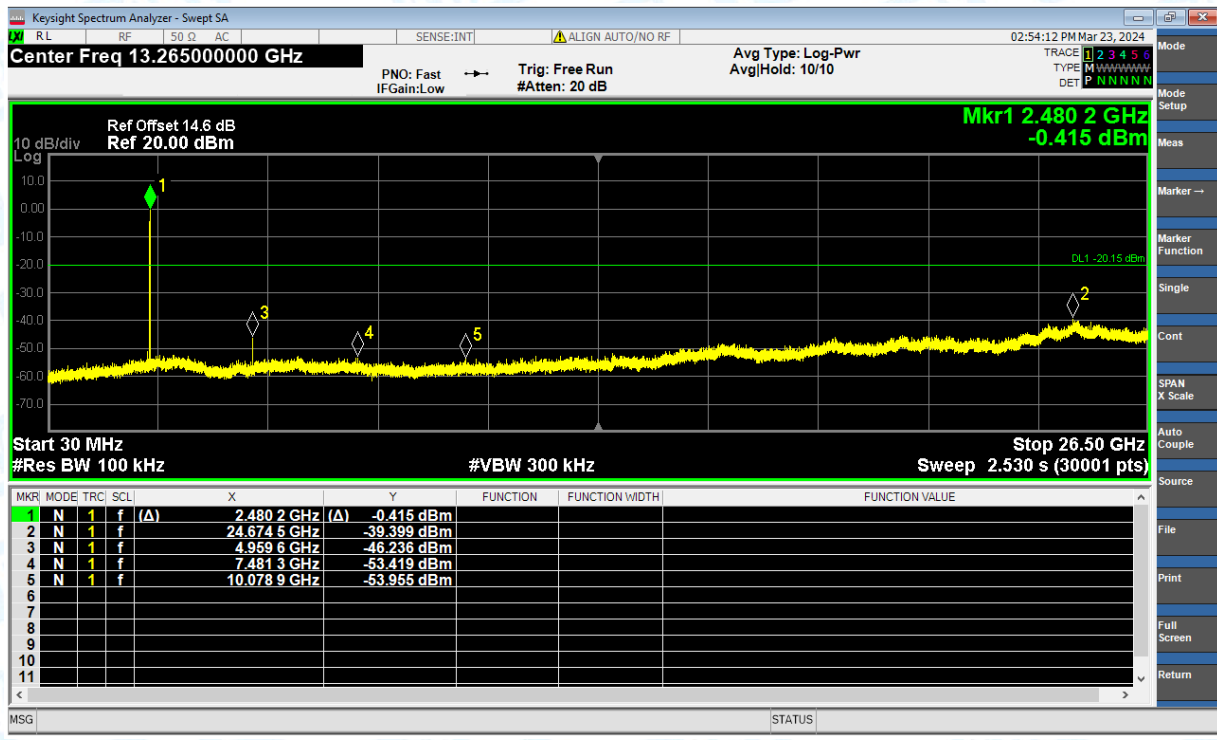
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Emission



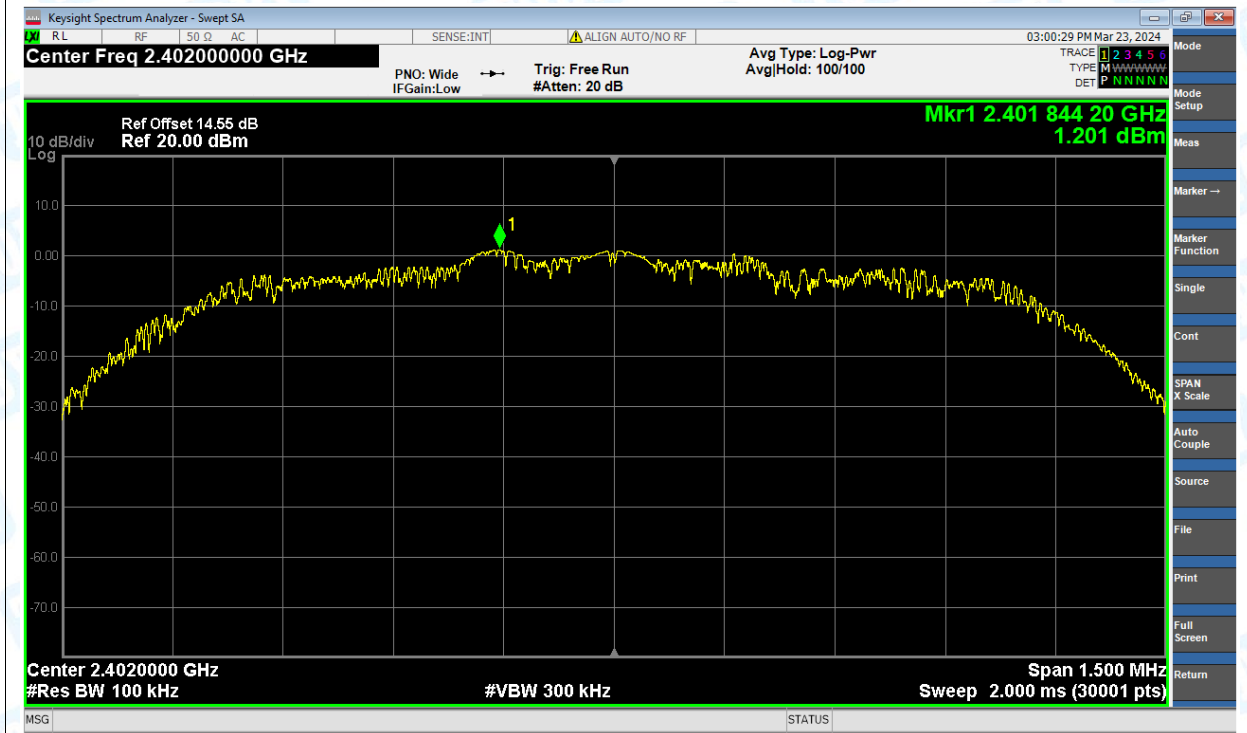
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Ref



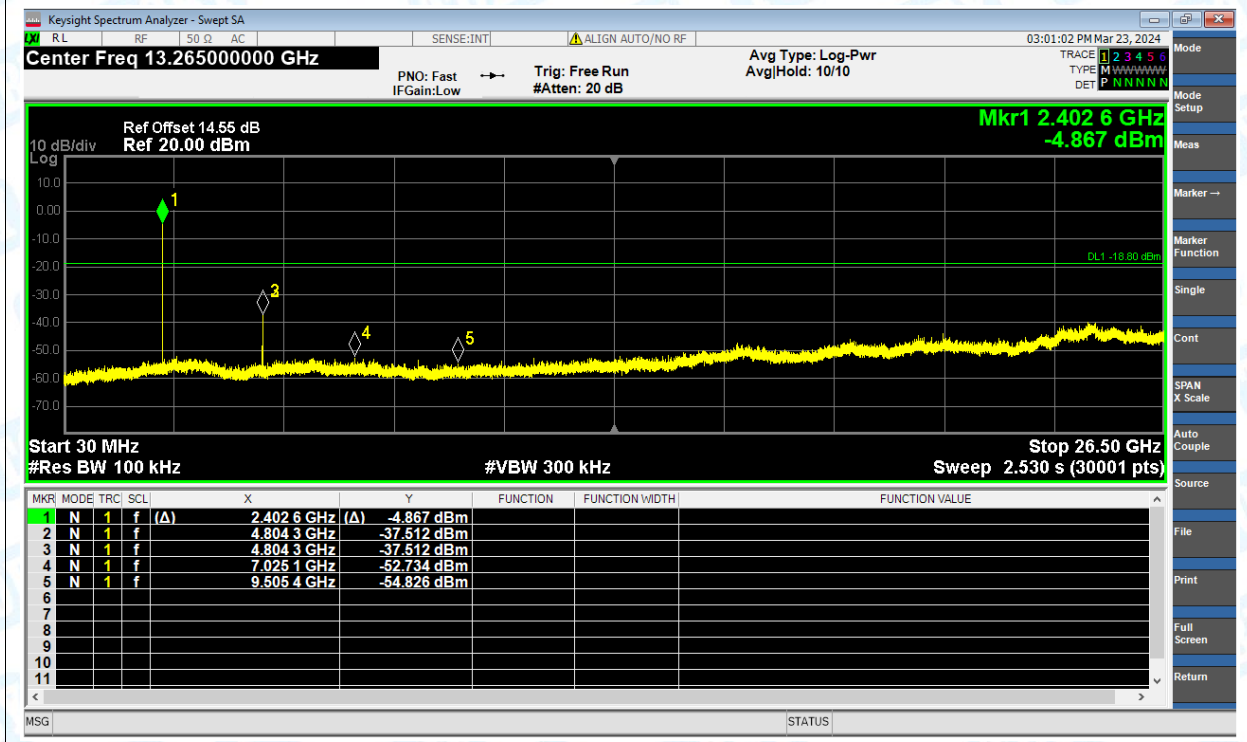
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Emission



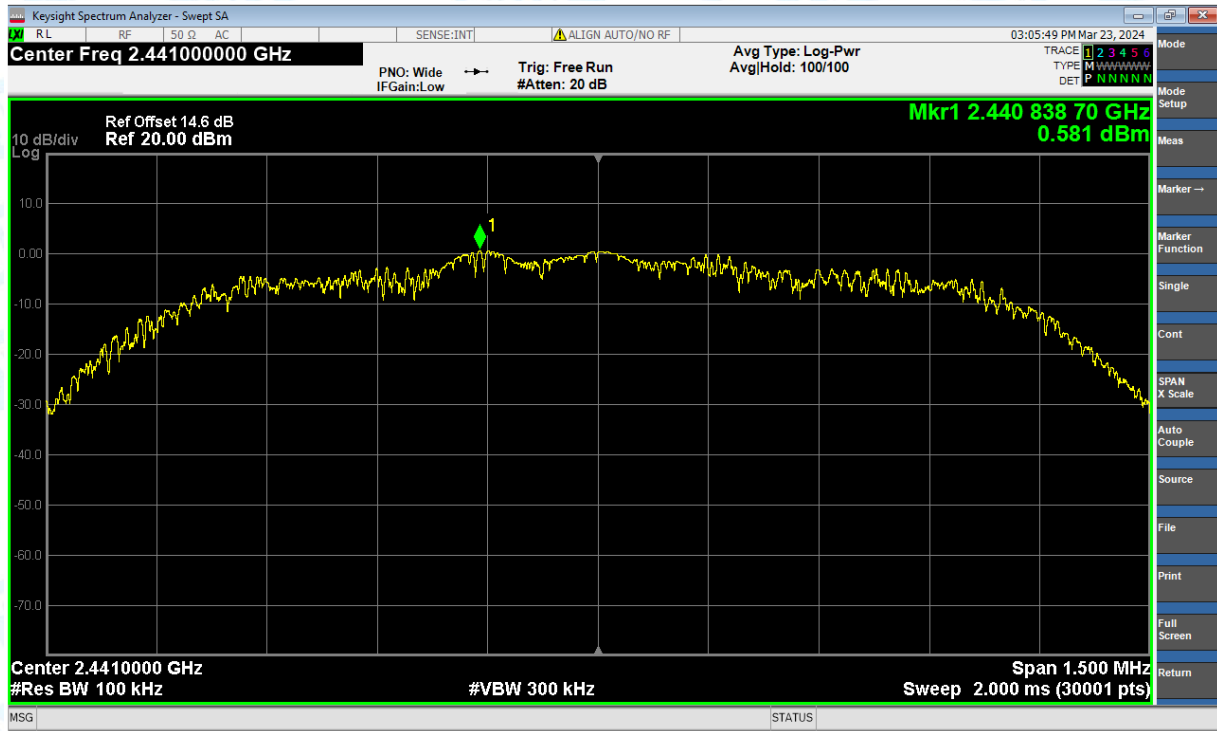
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Ref



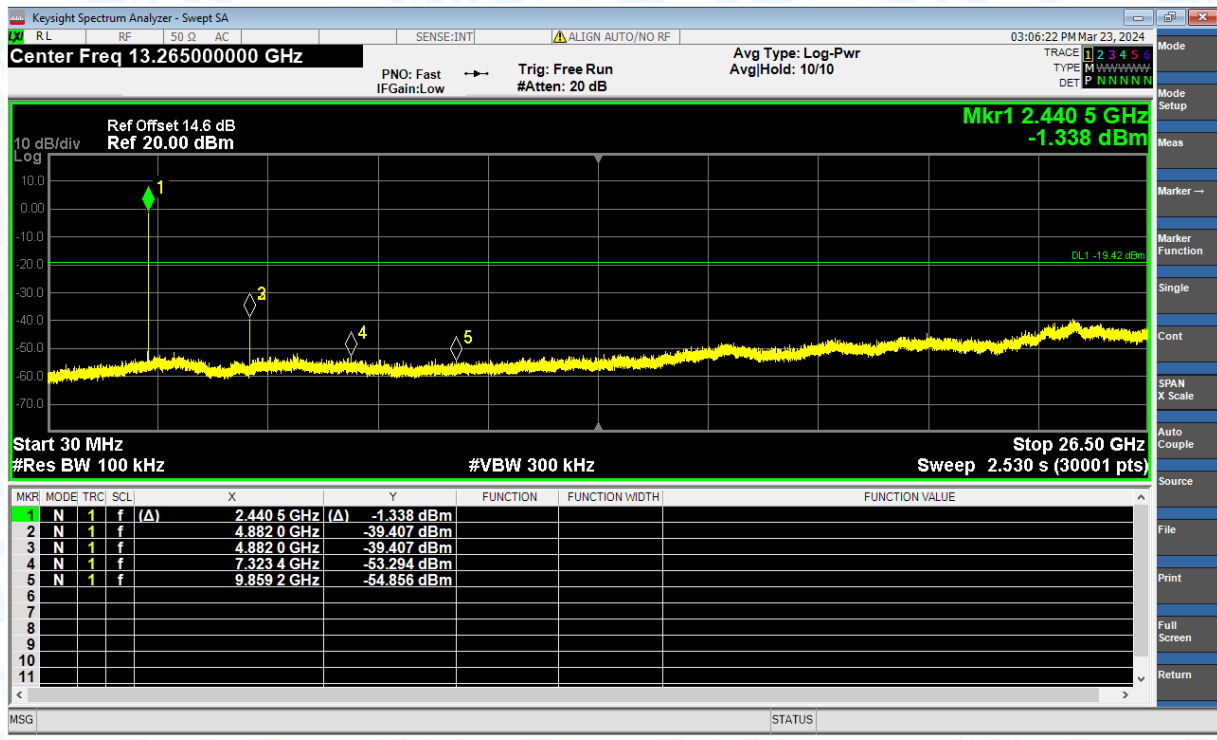
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Emission



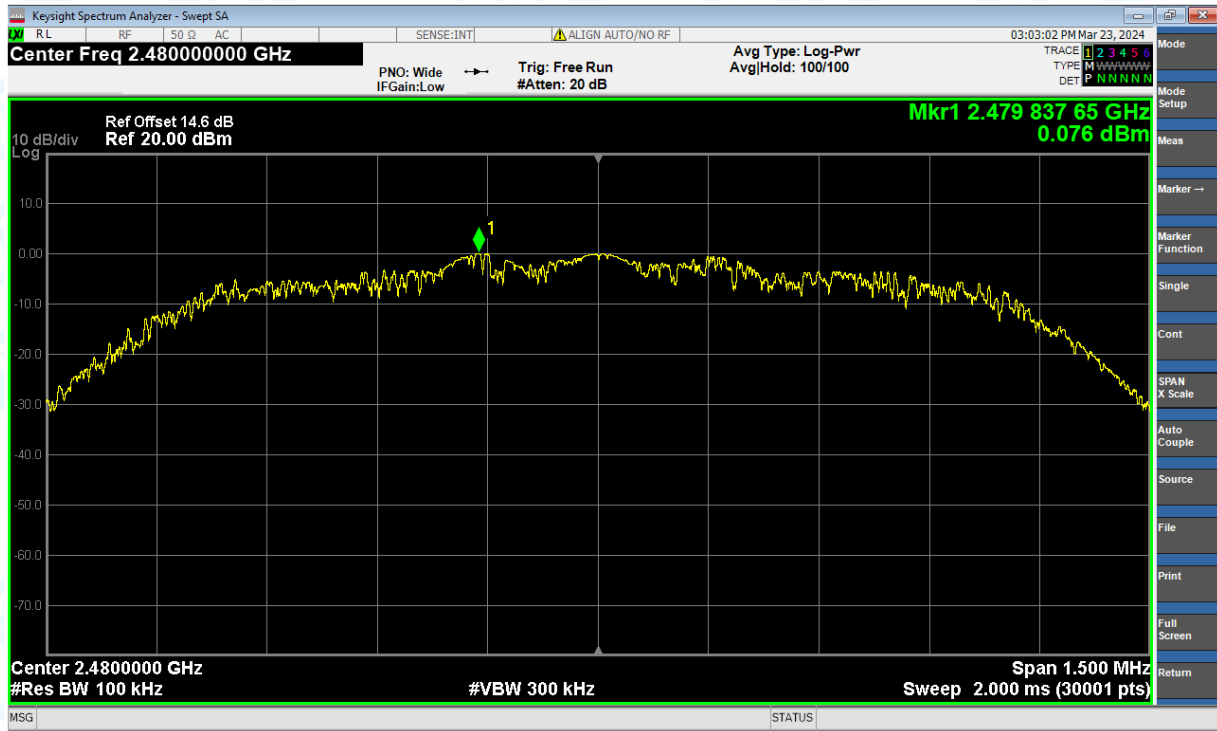
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Ref



Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Emission

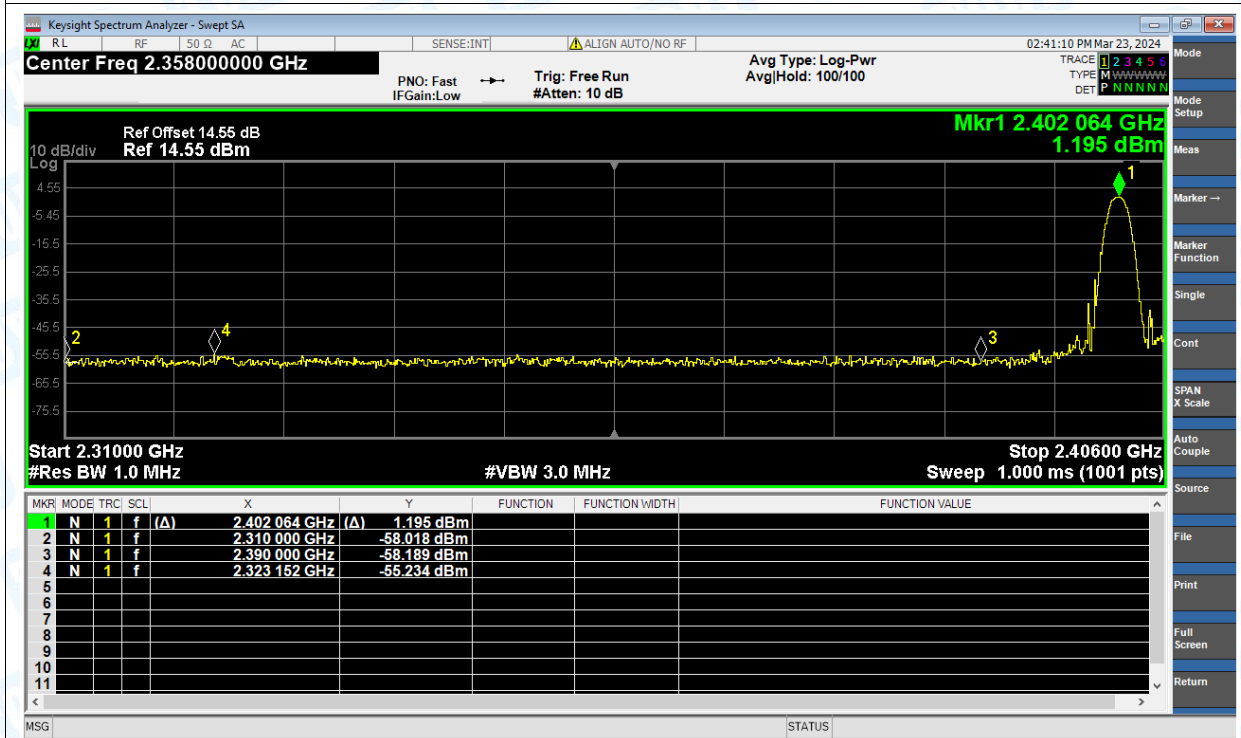


8. Restrict Band

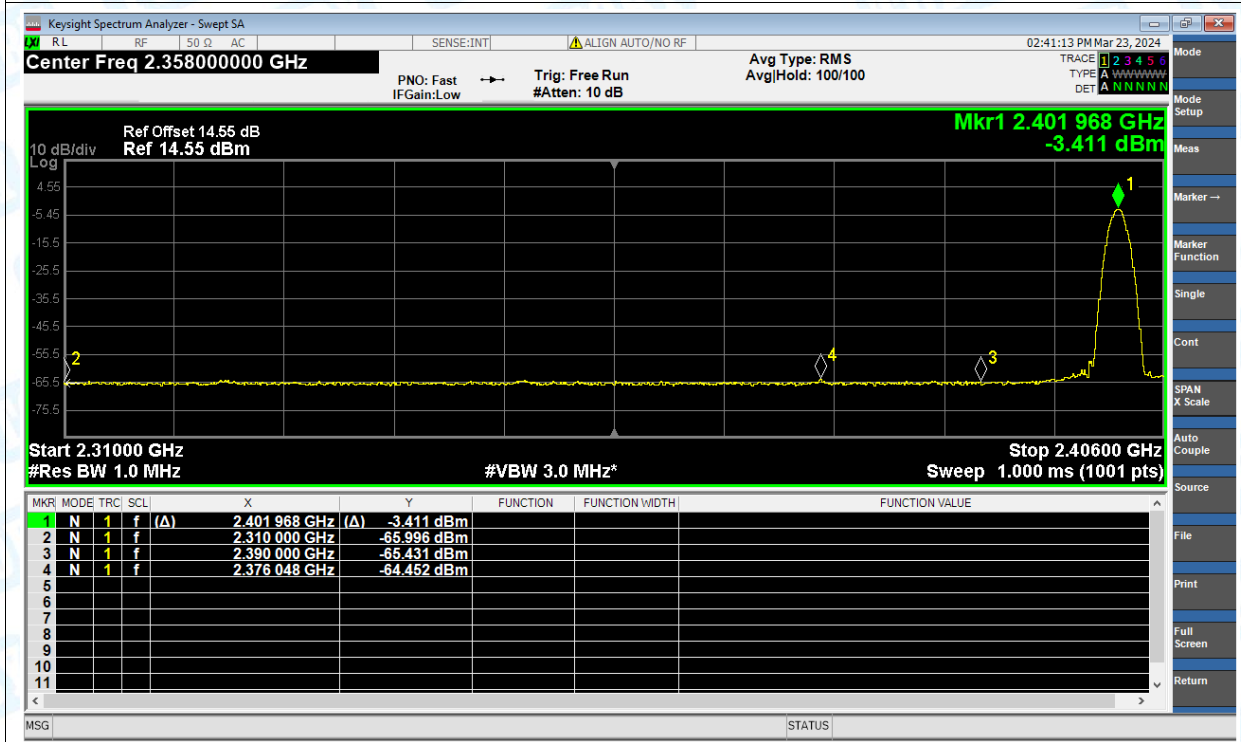
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-58.02	2	-	39.24	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-66	2	4.95	36.21	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2323.152	-55.23	2	-	42.03	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2376.048	-64.45	2	4.95	37.76	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-58.19	2	-	39.07	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-65.43	2	4.95	36.78	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-54.23	2	-	43.03	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-62.82	2	4.95	39.39	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.848	-47.86	2	-	49.4	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.512	-62.82	2	4.95	39.39	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-58.77	2	-	38.49	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-65.84	2	4.95	36.37	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-56.83	2	-	40.43	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-65.39	2	4.84	36.71	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2324.208	-54.5	2	-	42.76	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2323.824	-64.07	2	4.84	38.03	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-57.29	2	-	39.97	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-65.57	2	4.84	36.53	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-54.53	2	-	42.73	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-64.56	2	4.84	37.54	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.872	-46.77	2	-	50.49	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.56	-62.7	2	4.84	39.4	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-57.89	2	-	39.37	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-65.52	2	4.84	36.58	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-58.54	2	-	38.72	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-65.1	2	4.84	37	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2323.92	-54.3	2	-	42.96	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2324.304	-64.15	2	4.84	37.95	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-59.27	2	-	37.99	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-65.84	2	4.84	36.26	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-55.61	2	-	41.65	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-64.56	2	4.84	37.54	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.632	-47.13	2	-	50.13	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.848	-63.29	2	4.84	38.81	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-57.78	2	-	39.48	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-65.22	2	4.84	36.88	Average	54	Pass

Test Graphs

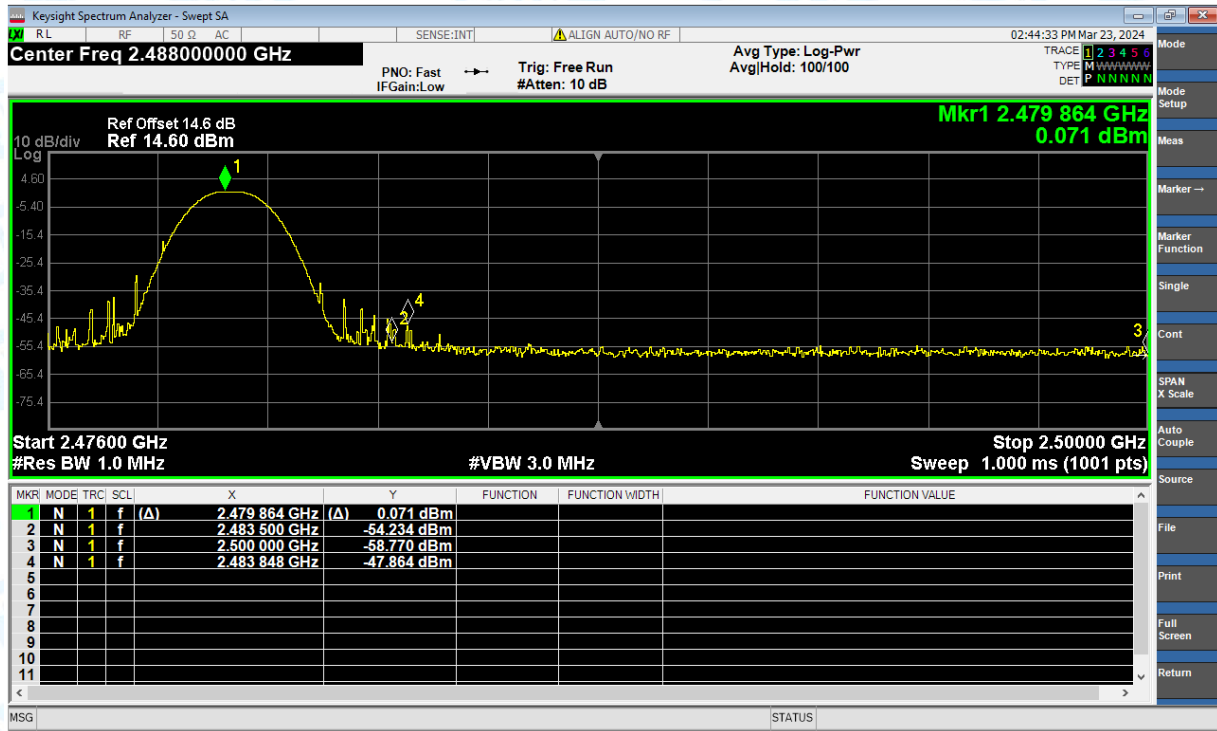
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Peak



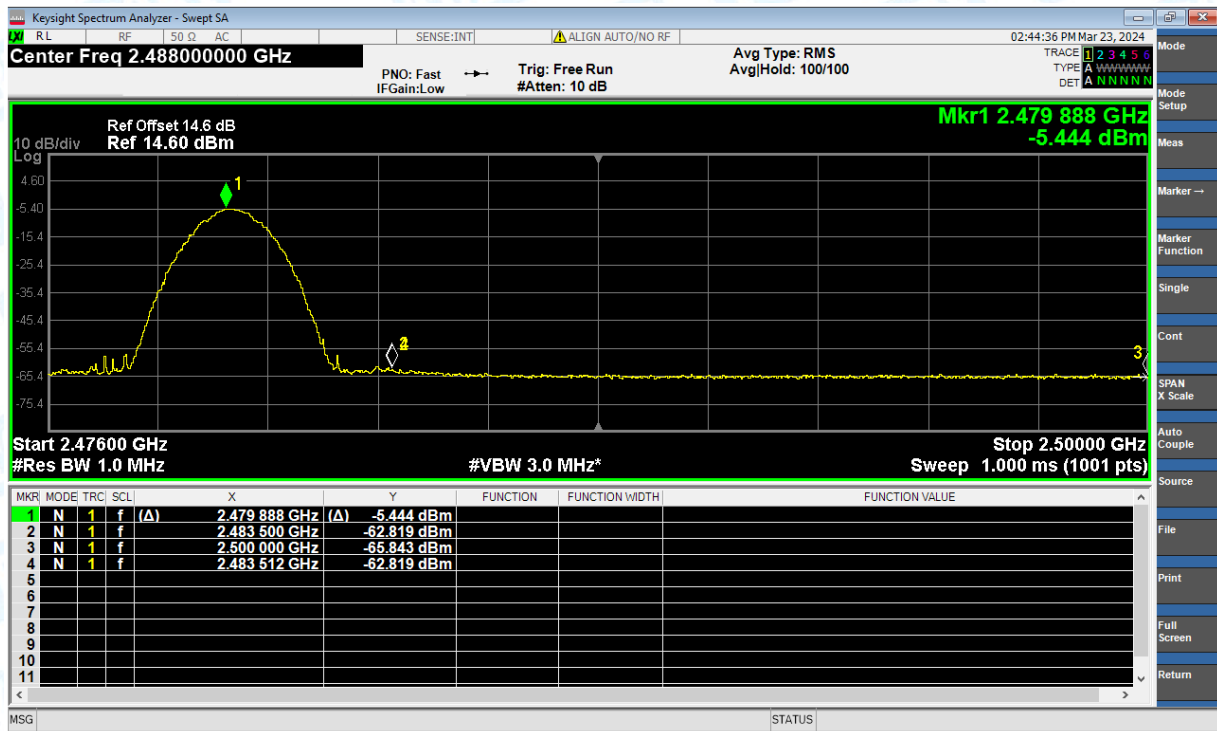
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Average



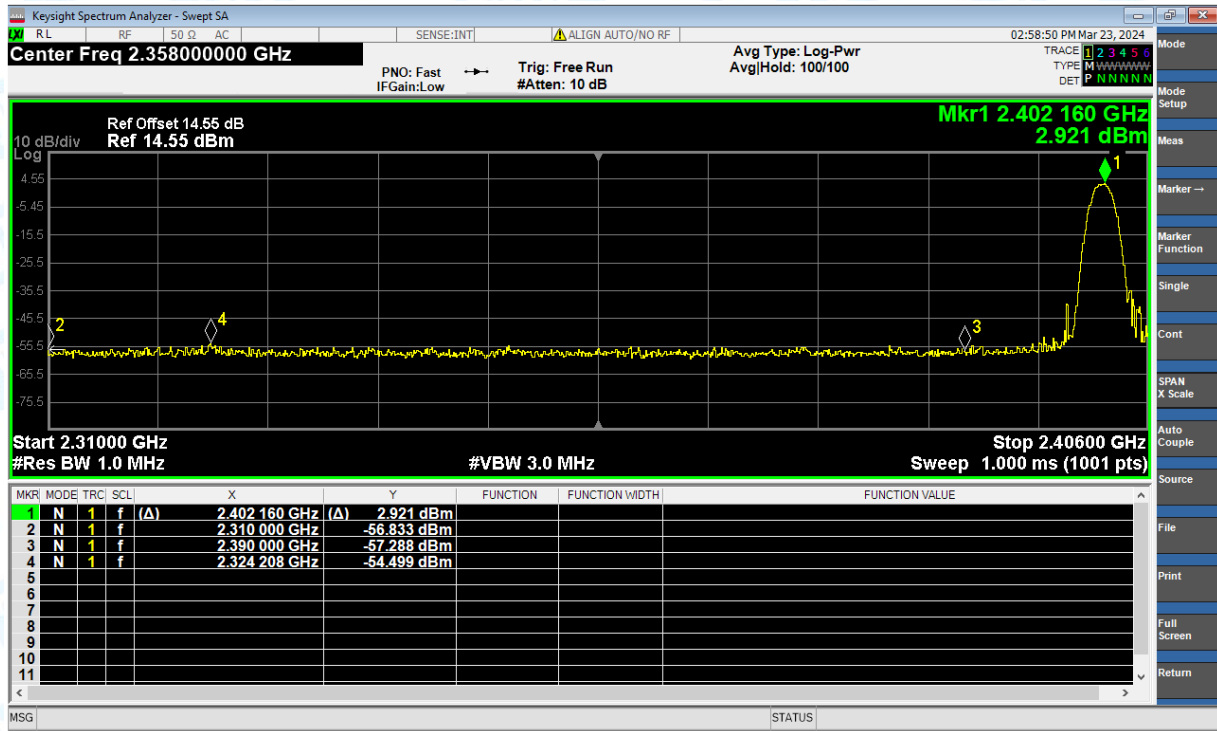
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Peak



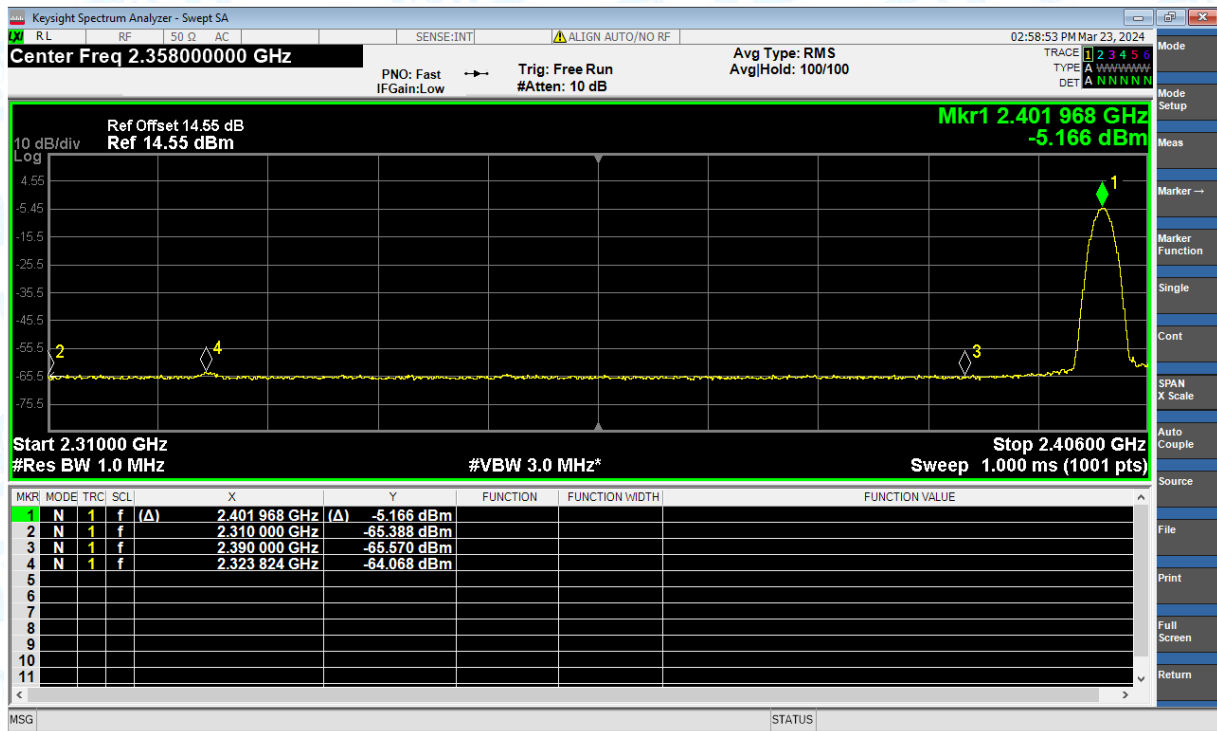
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Average



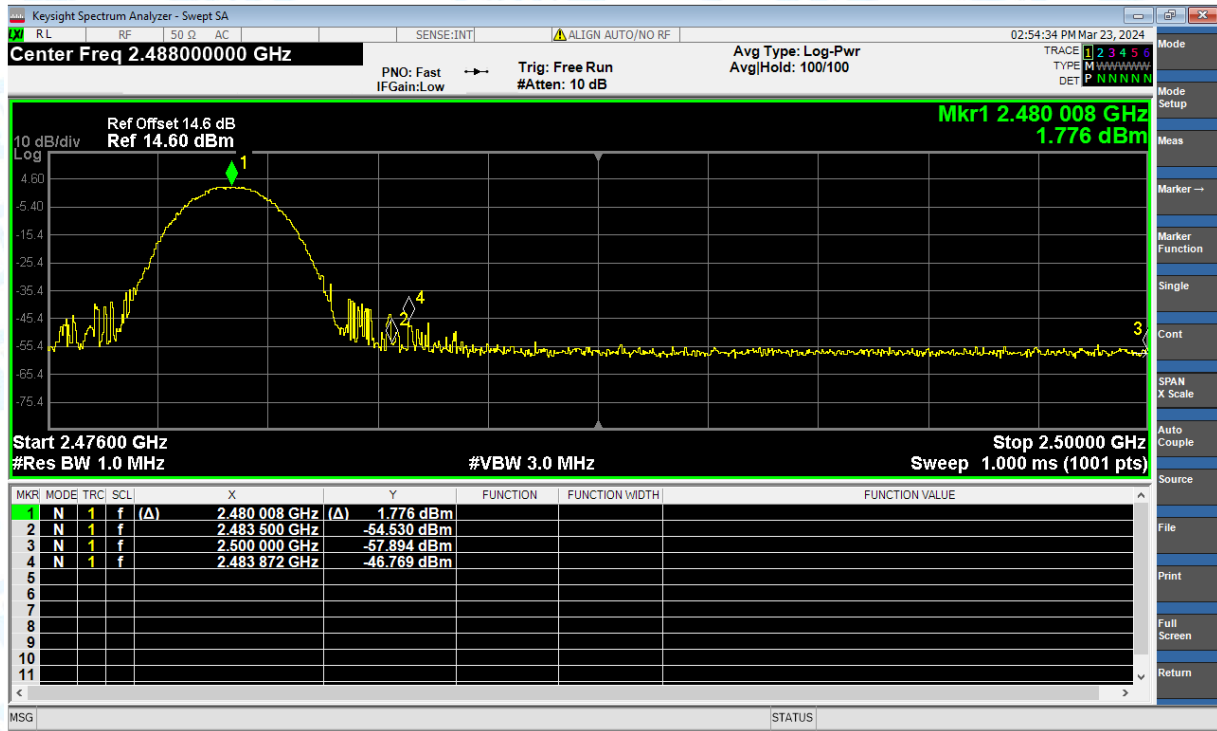
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Peak



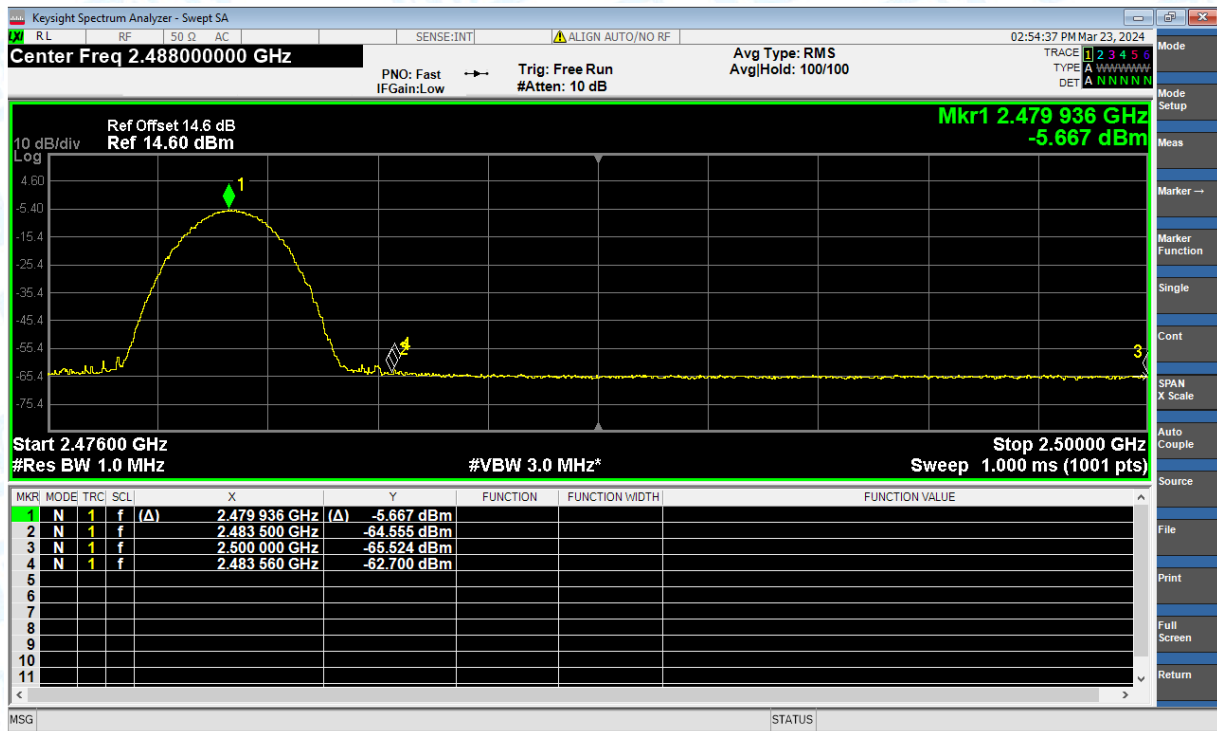
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Average

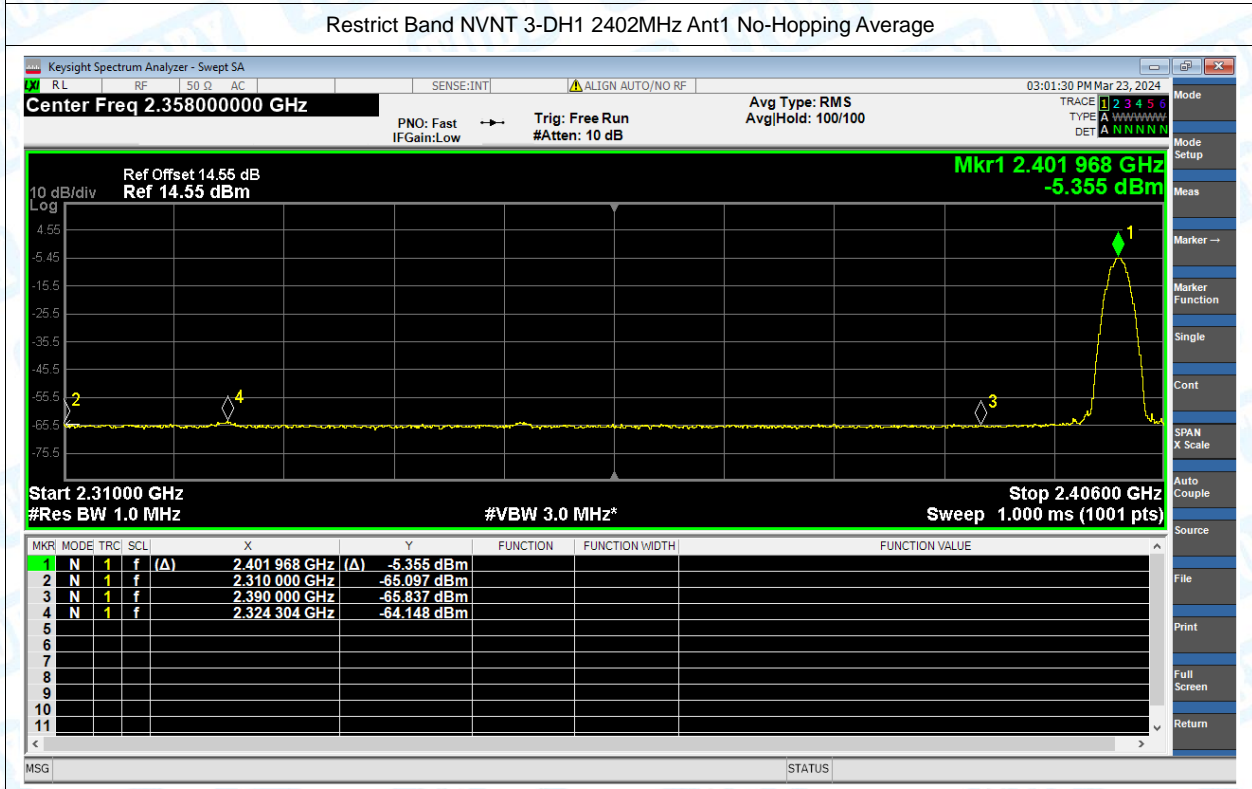
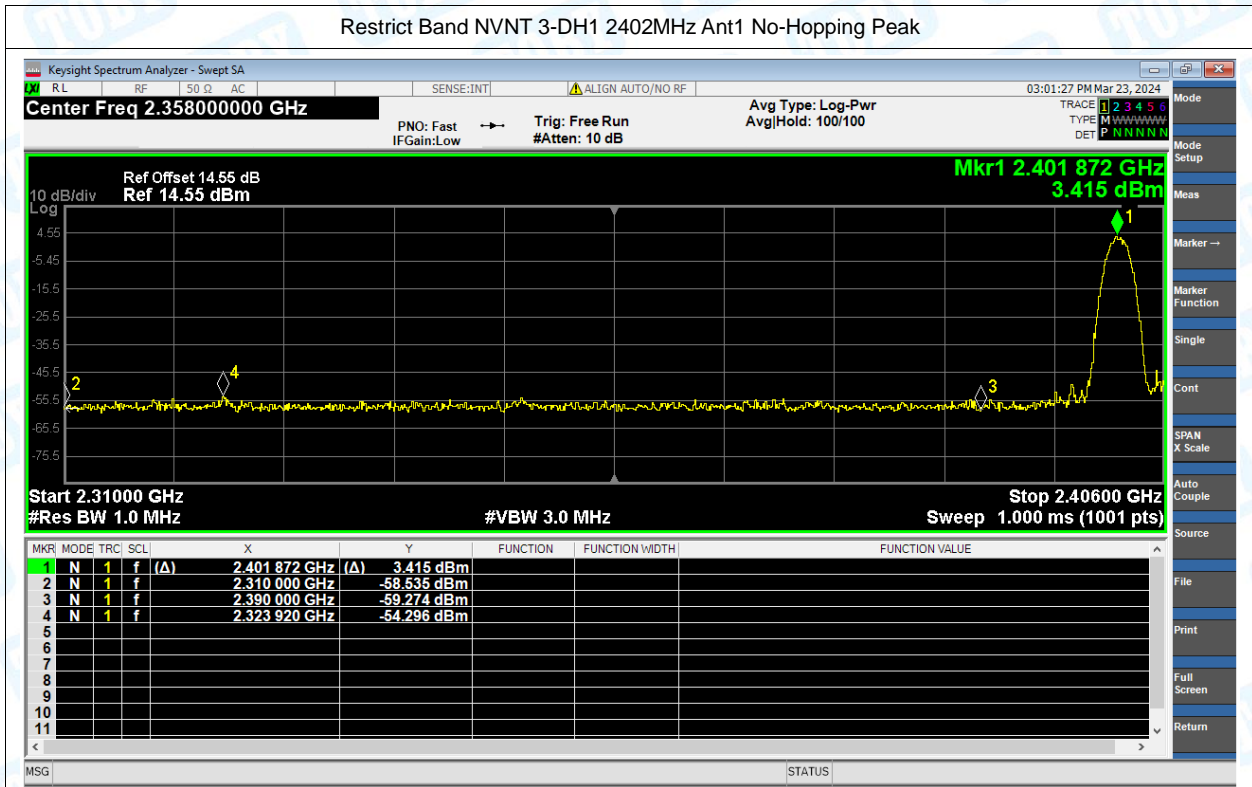


Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Peak

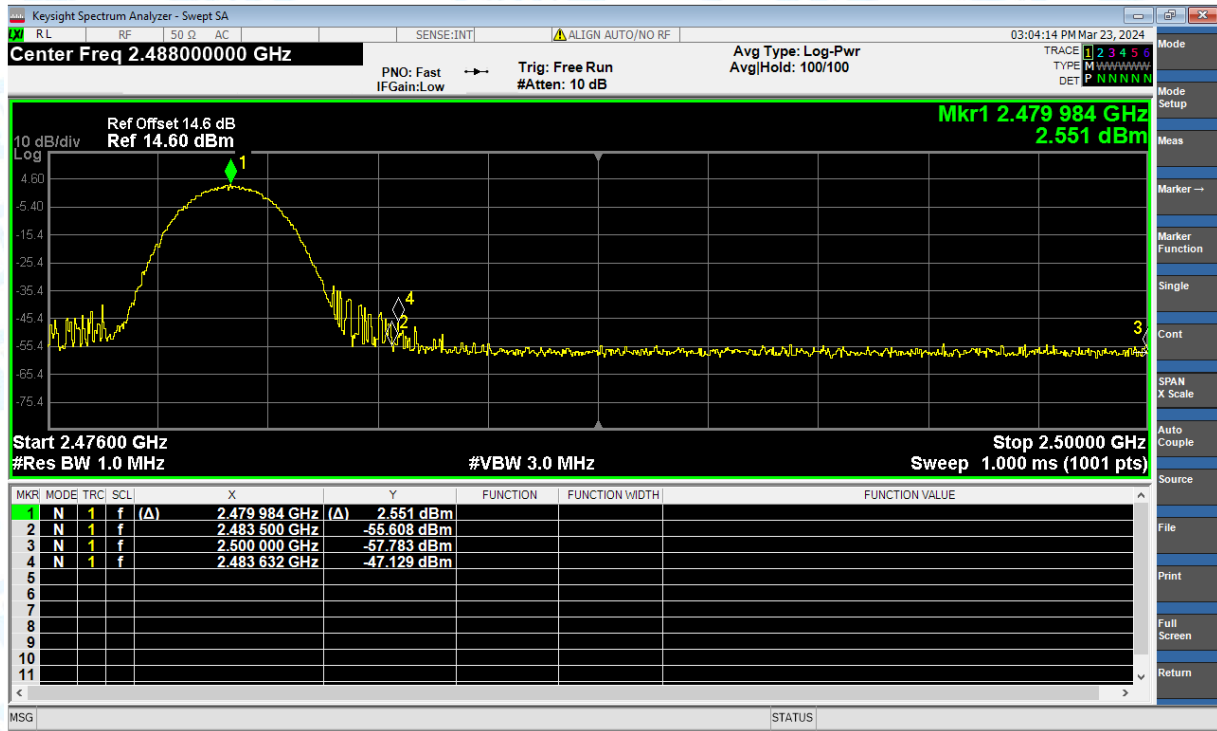


Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Average

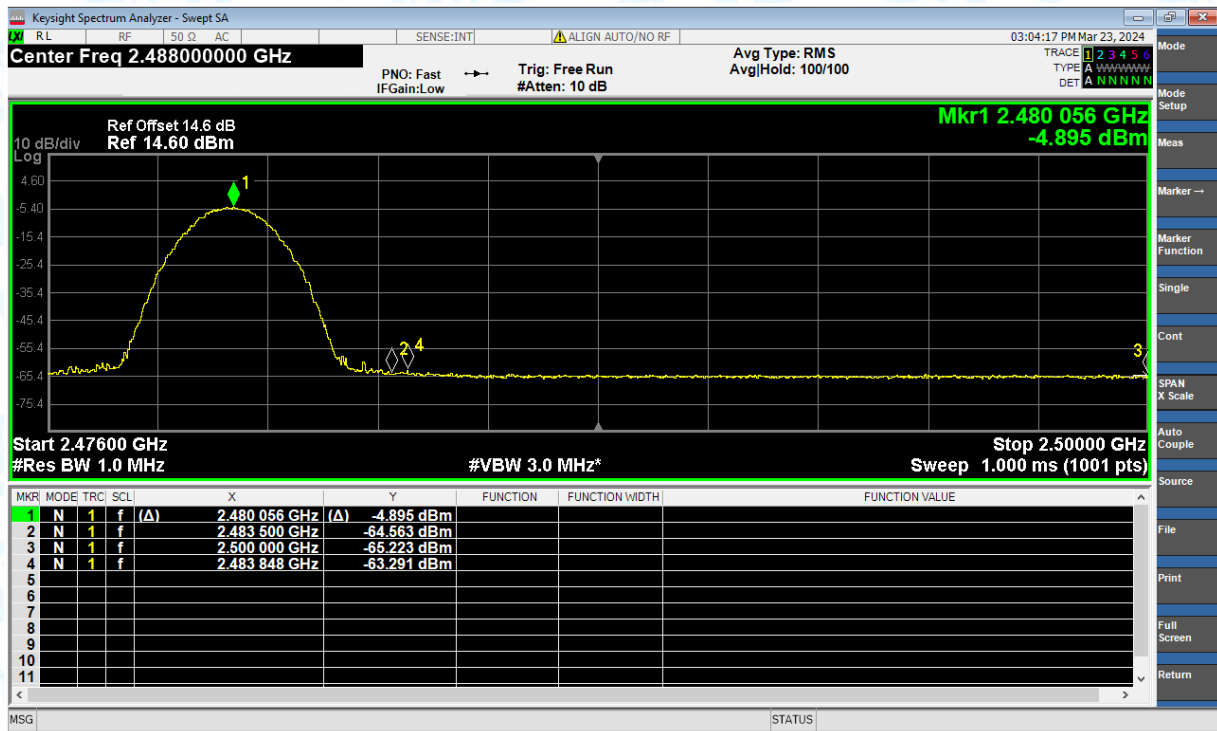




Restrict Band NVNT 3-DH1 2480MHz Ant1 No-Hopping Peak



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

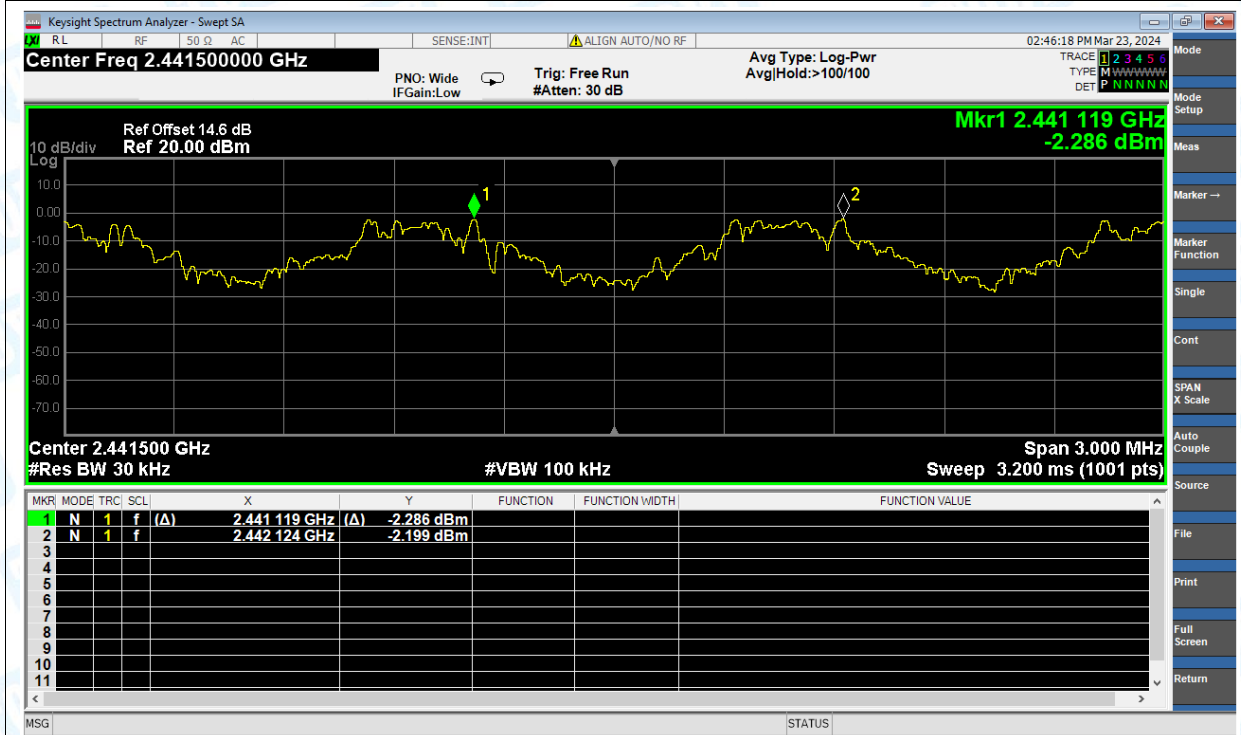


9. Carrier Frequencies Separation

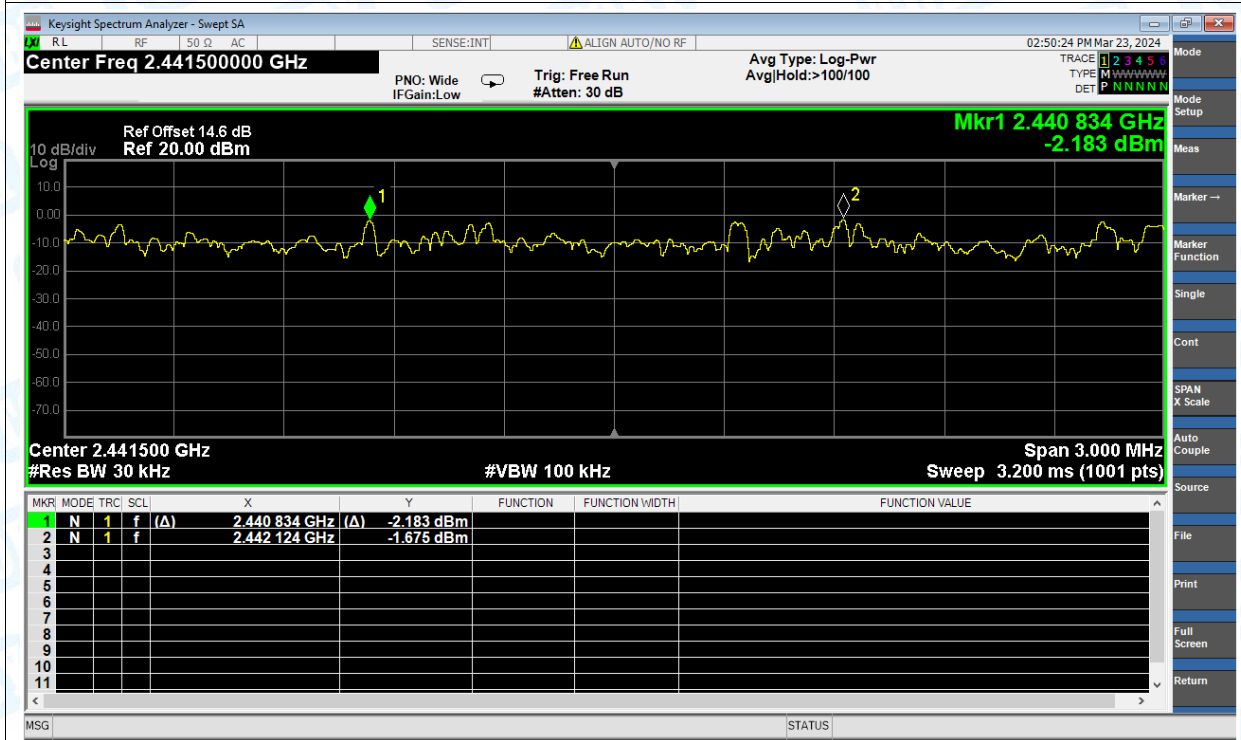
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	Ant1	2441.119	2442.124	1.005	0.587	Pass
NVNT	2-DH1	Ant1	2440.834	2442.124	1.290	0.847	Pass
NVNT	3-DH1	Ant1	2440.831	2441.839	1.008	0.833	Pass

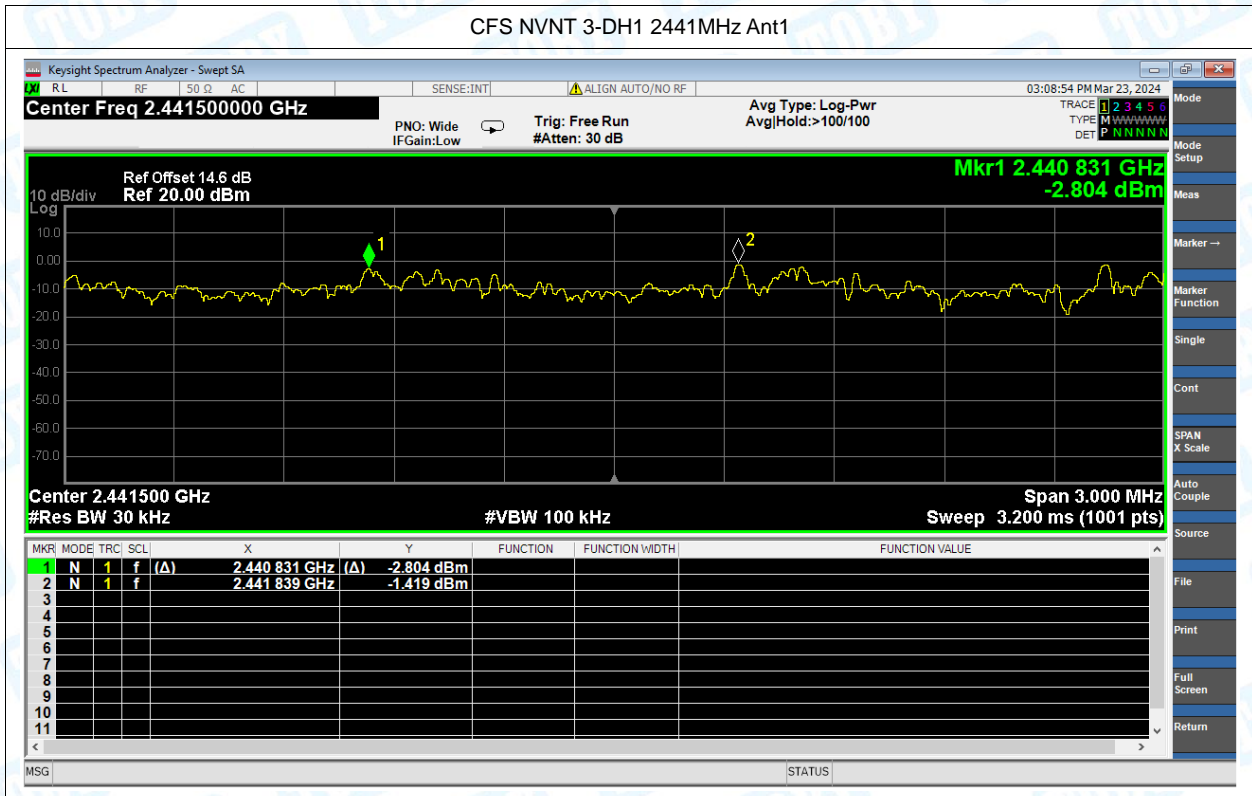
Test Graphs

CFS NVNT 1-DH1 2441MHz Ant1



CFS NVNT 2-DH1 2441MHz Ant1



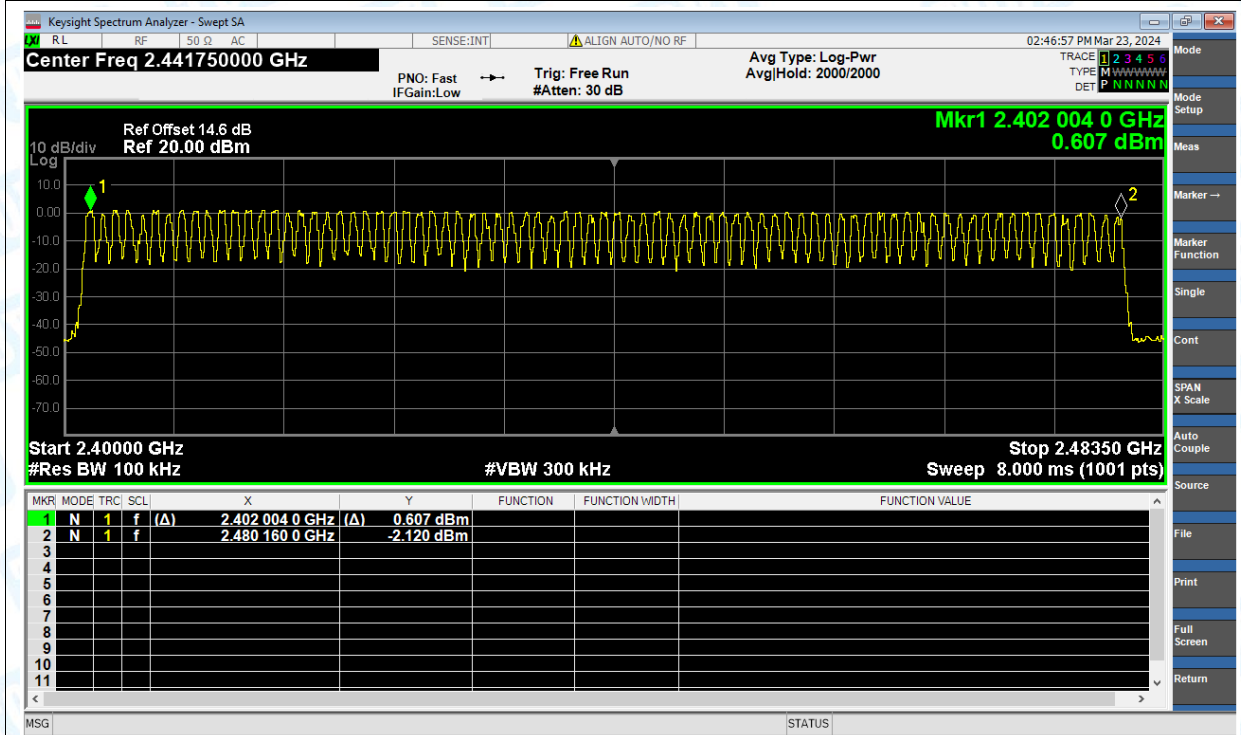


10. Number of Hopping Channel

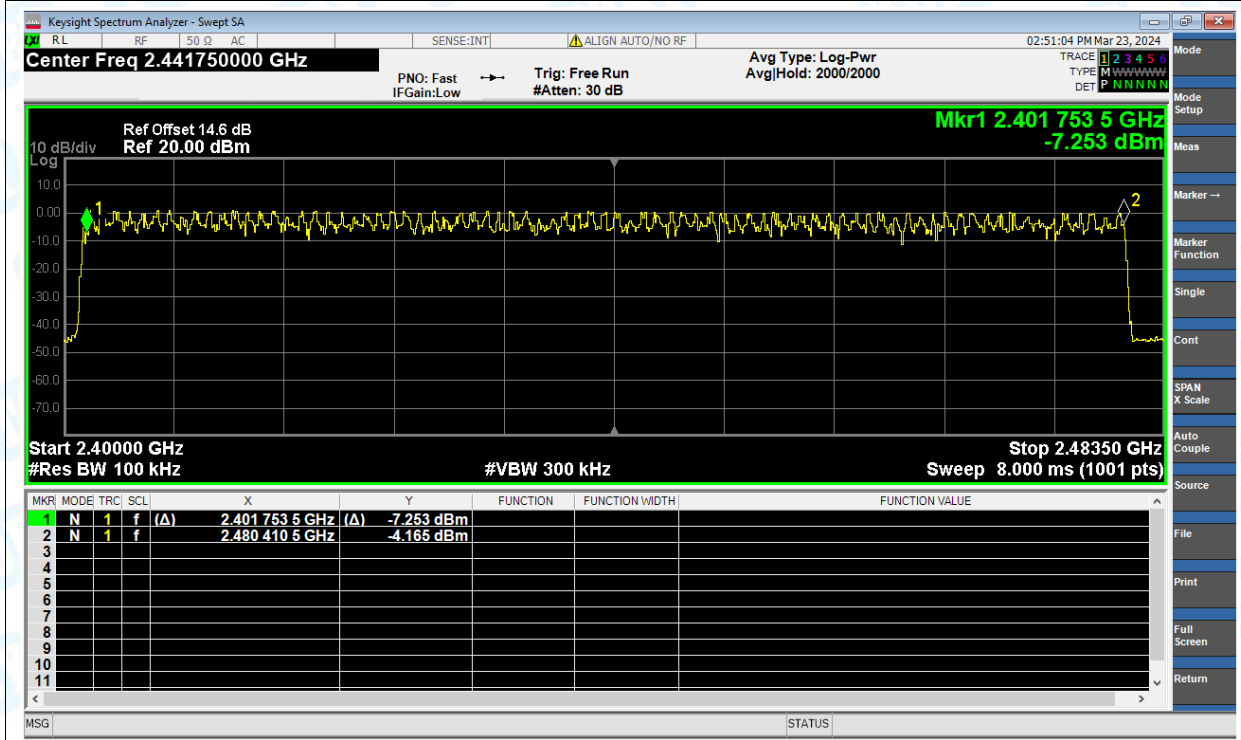
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH1	Ant1	79	15	Pass
NVNT	2-DH1	Ant1	79	15	Pass
NVNT	3-DH1	Ant1	79	15	Pass

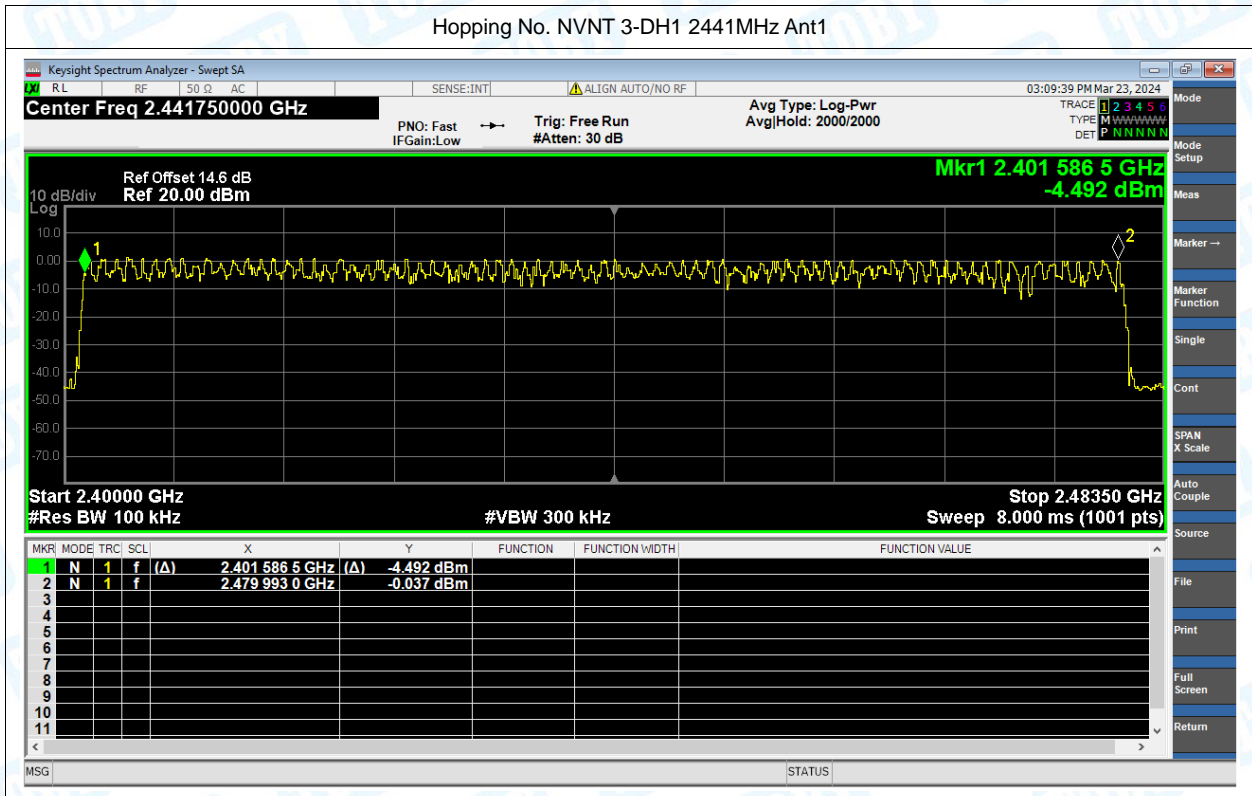
Test Graphs

Hopping No. NVNT 1-DH1 2441MHz Ant1



Hopping No. NVNT 2-DH1 2441MHz Ant1



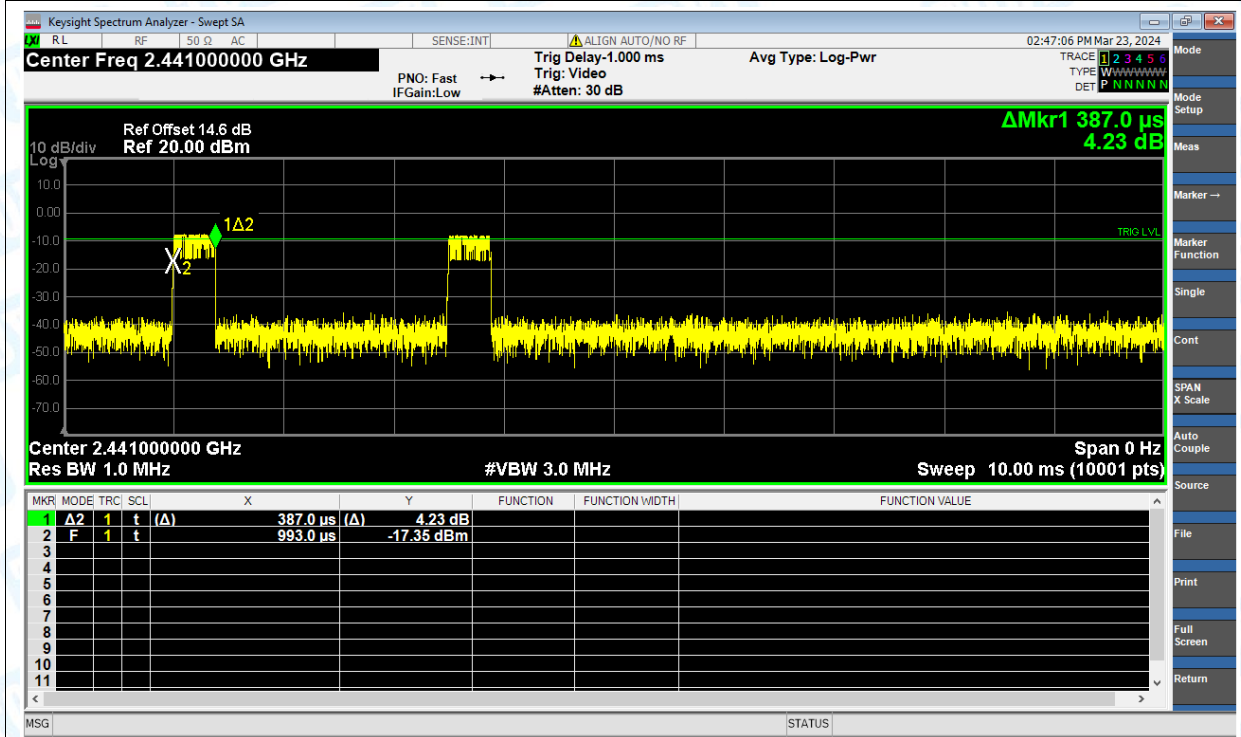


11. Dwell Time

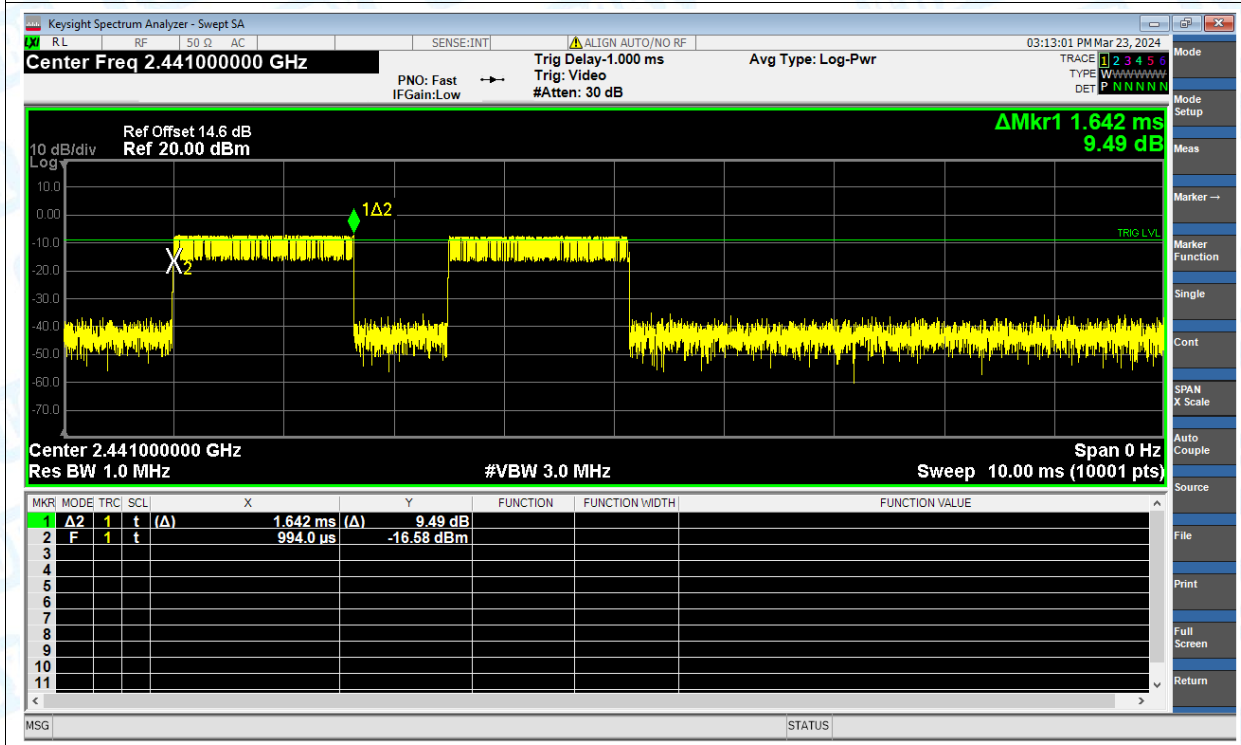
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	Ant1	0.387	123.84	31600	400	Pass
NVNT	1-DH3	2441	Ant1	1.642	262.72	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.893	308.587	31600	400	Pass
NVNT	2-DH1	2441	Ant1	0.394	126.08	31600	400	Pass
NVNT	2-DH3	2441	Ant1	1.646	263.36	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.894	308.693	31600	400	Pass
NVNT	3-DH1	2441	Ant1	0.399	127.68	31600	400	Pass
NVNT	3-DH3	2441	Ant1	1.649	263.84	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.897	309.013	31600	400	Pass

Test Graphs

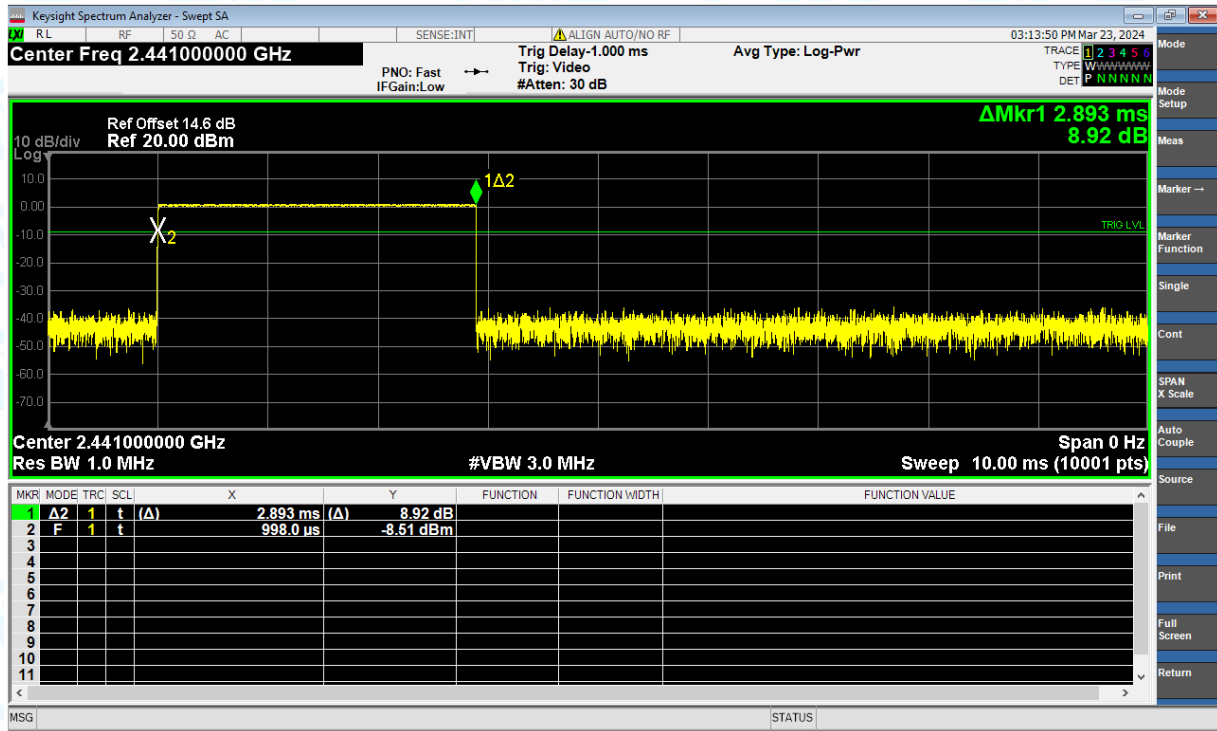
Dwell NVNT 1-DH1 2441MHz Ant1



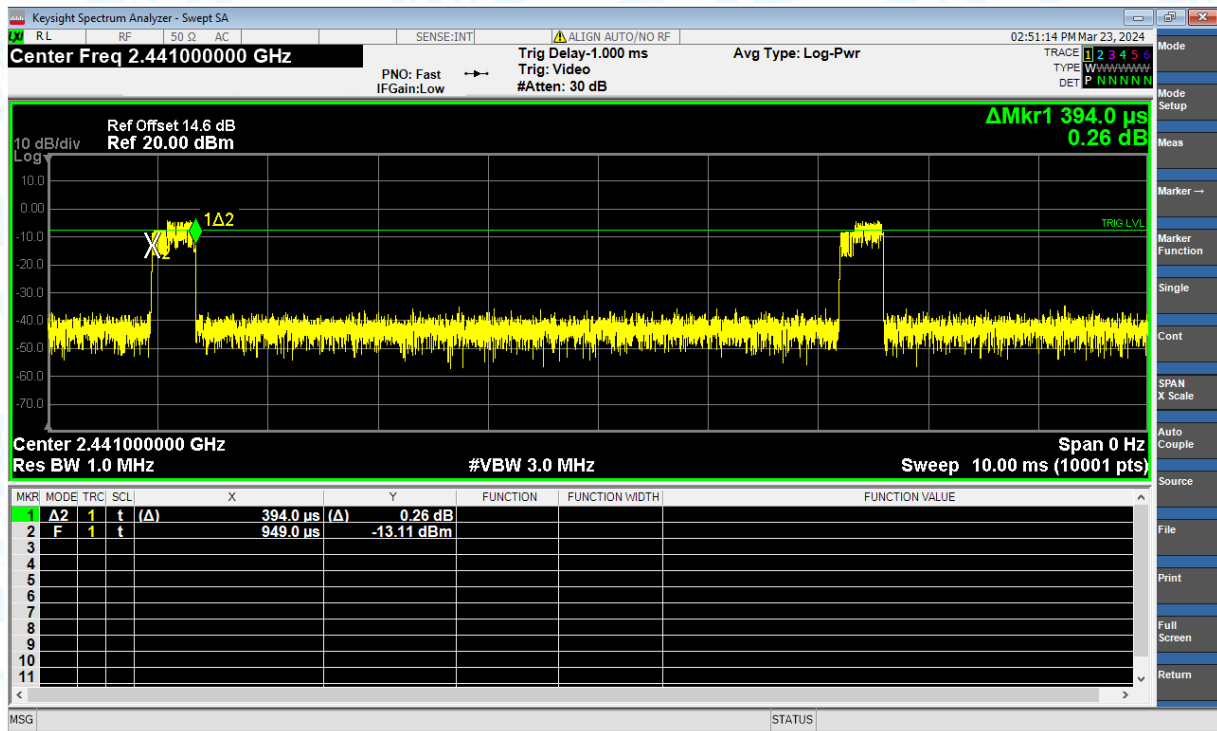
Dwell NVNT 1-DH3 2441MHz Ant1



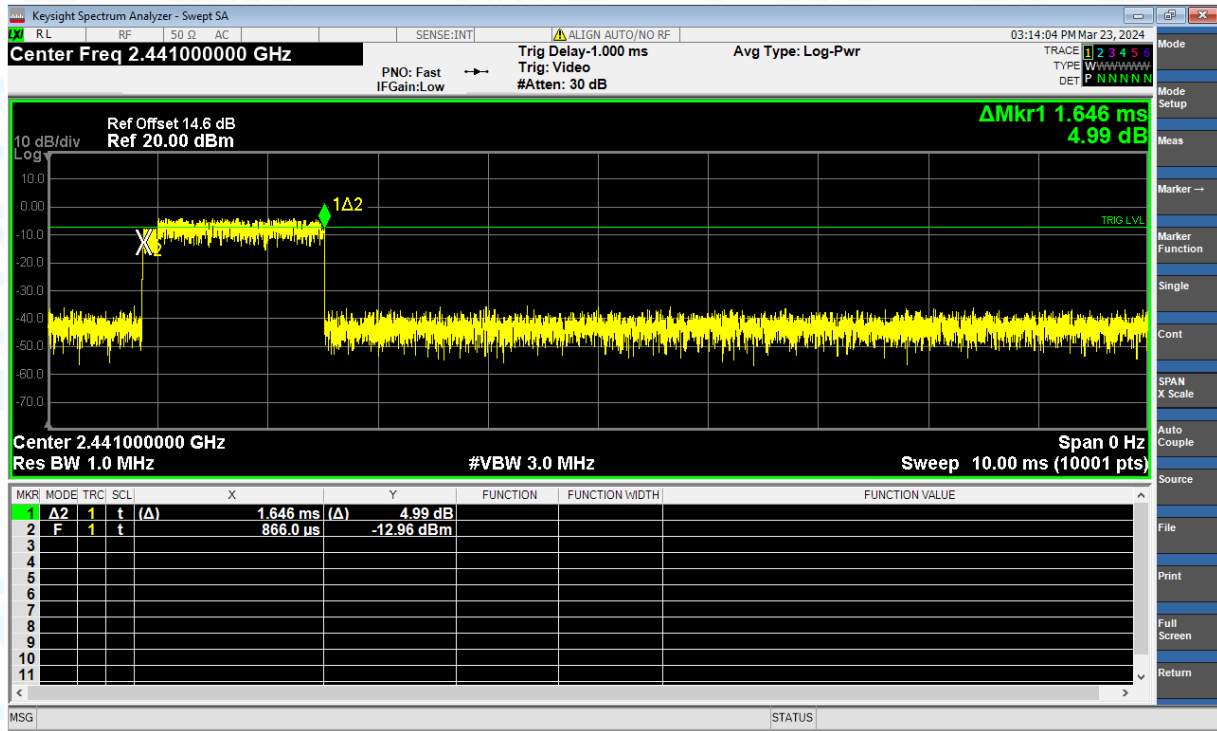
Dwell NVNT 1-DH5 2441MHz Ant1



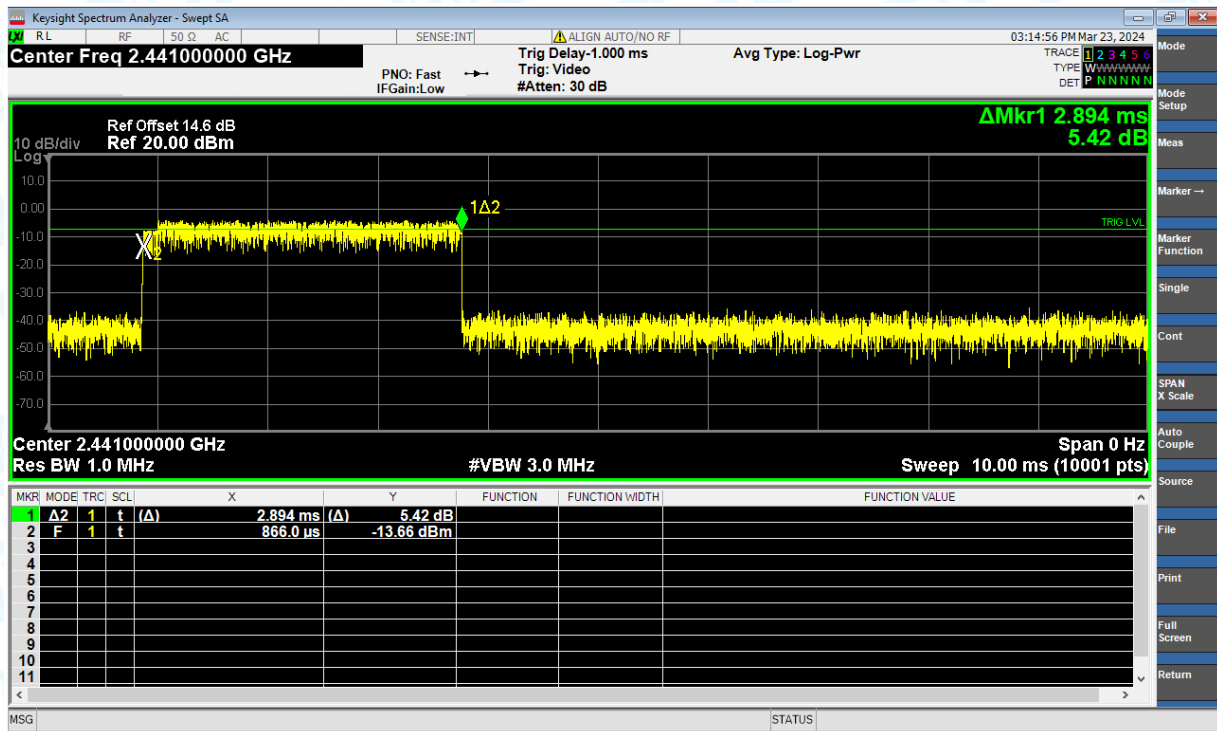
Dwell NVNT 2-DH1 2441MHz Ant1



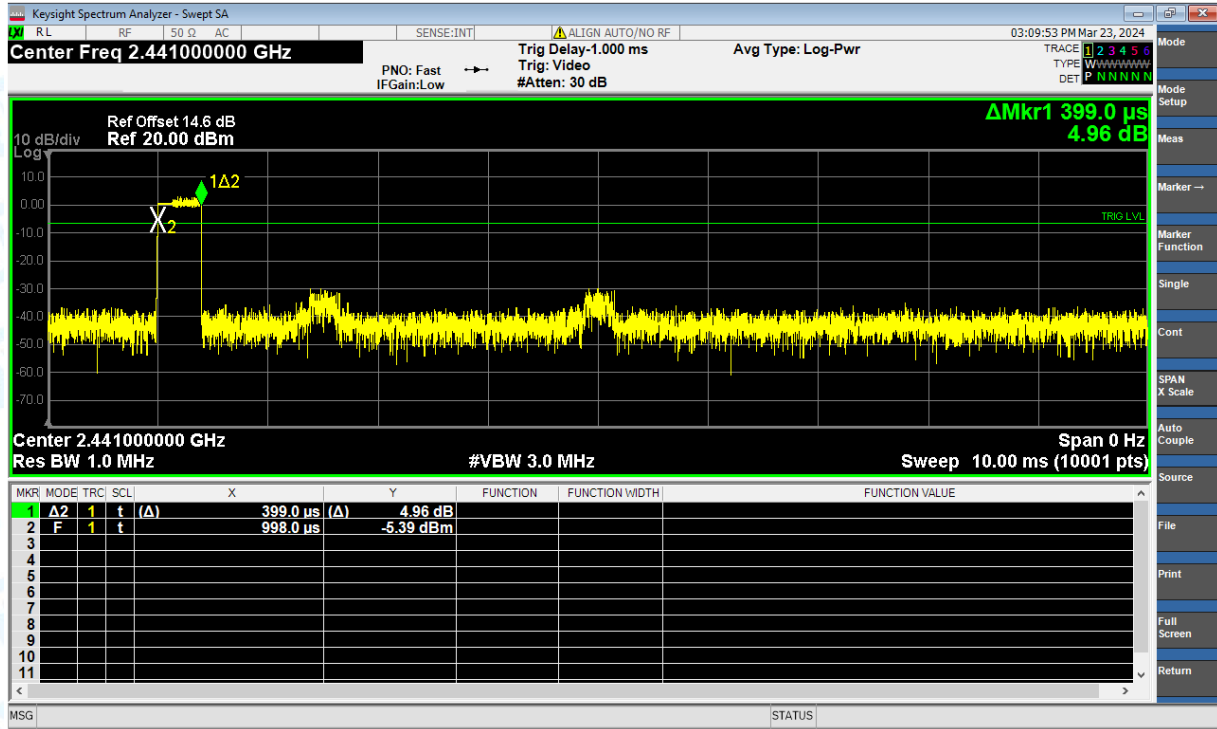
Dwell NVNT 2-DH3 2441MHz Ant1



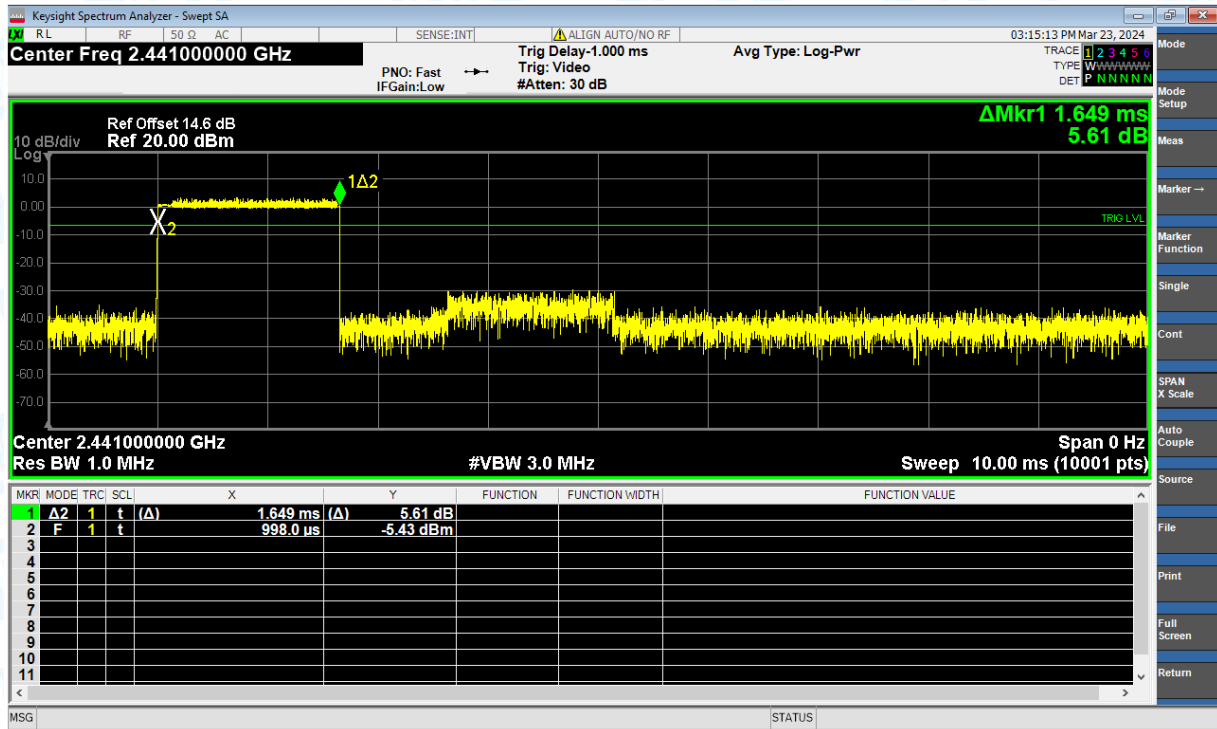
Dwell NVNT 2-DH5 2441MHz Ant1

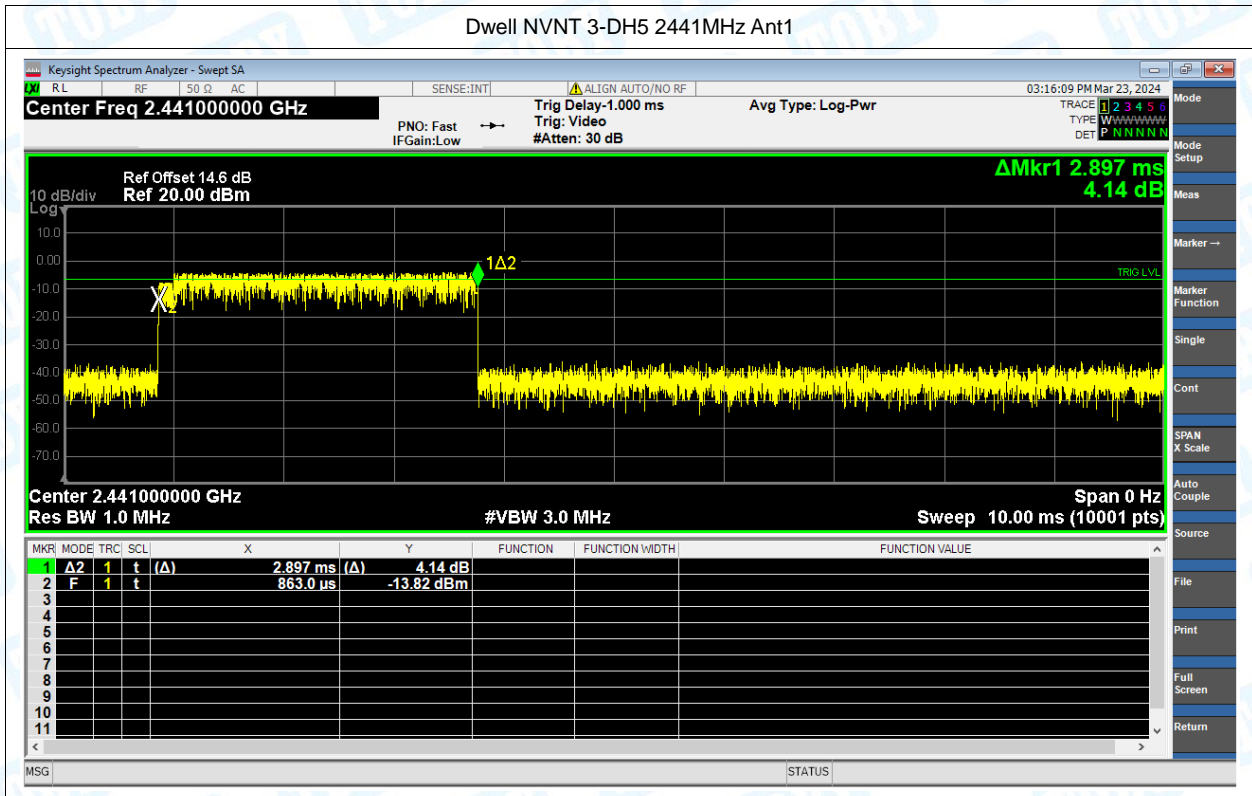


Dwell NVNT 3-DH1 2441MHz Ant1



Dwell NVNT 3-DH3 2441MHz Ant1





-----END OF THE REPORT-----