

RF Test Data for Bluetooth (Conducted Measurements)

General Description of EUT	
Product Name:	BE-Minibud XT 31 (wireless earphone)
Test Model:	HM-AU-BE-257
Sample ID:	HC-C-202504-0021-01-02#
Environmental Conditions	
Temperature:	25℃
Relative Humidity:	55%
Test Voltage:	DC 5V
Test Engineer:	Rick Chen
Note: For a more detailed features description, please refer to the report TBR-C-202504-0021-3 The report only show the worst case data.	

Contents

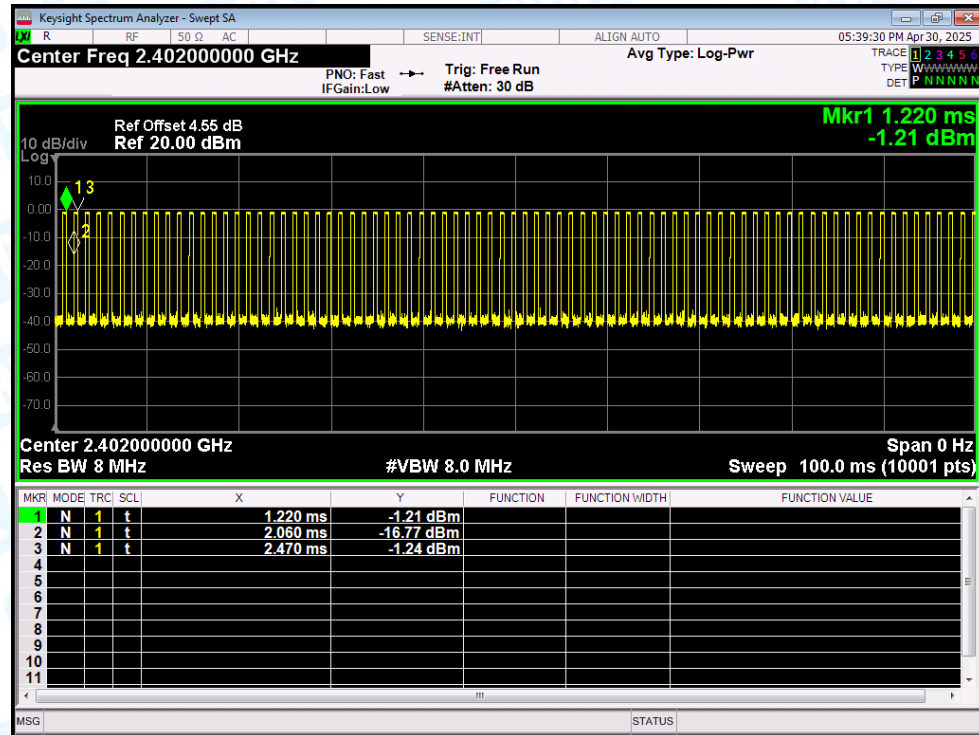
1.Duty Cycle.....	3
2.Maximum Conducted Output Power	9
3.-20dB Bandwidth	15
4.Occupied Channel Bandwidth	21
5.Band Edge	27
6.Band Edge(Hopping).....	34
7.Conducted RF Spurious Emission	41
8.Restrict Band	51
9.Carrier Frequencies Separation	58
10.Number of Hopping Channel	61
11.Dwell Time.....	64

1.Duty Cycle

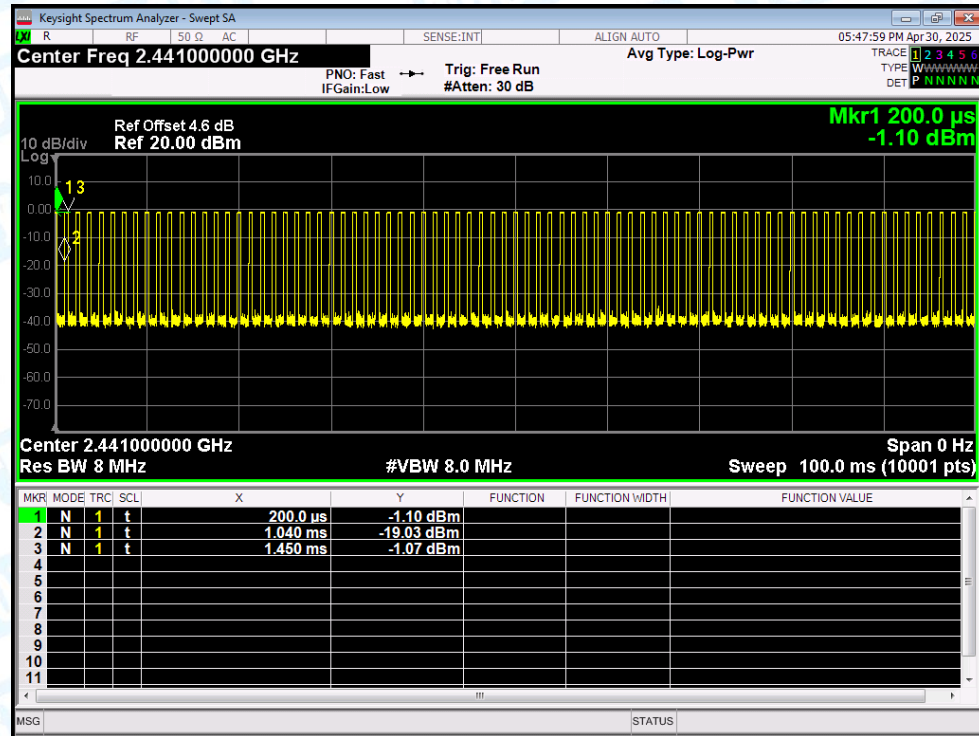
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	1-DH1	2402	Ant1	32.8	4.84	2.44
NVNT	1-DH1	2441	Ant1	32.8	4.84	2.44
NVNT	1-DH1	2480	Ant1	32.8	4.84	2.44
NVNT	2-DH1	2402	Ant1	33.6	4.74	2.38
NVNT	2-DH1	2441	Ant1	33.6	4.74	2.38
NVNT	2-DH1	2480	Ant1	32.8	4.84	2.44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

Test Graphs

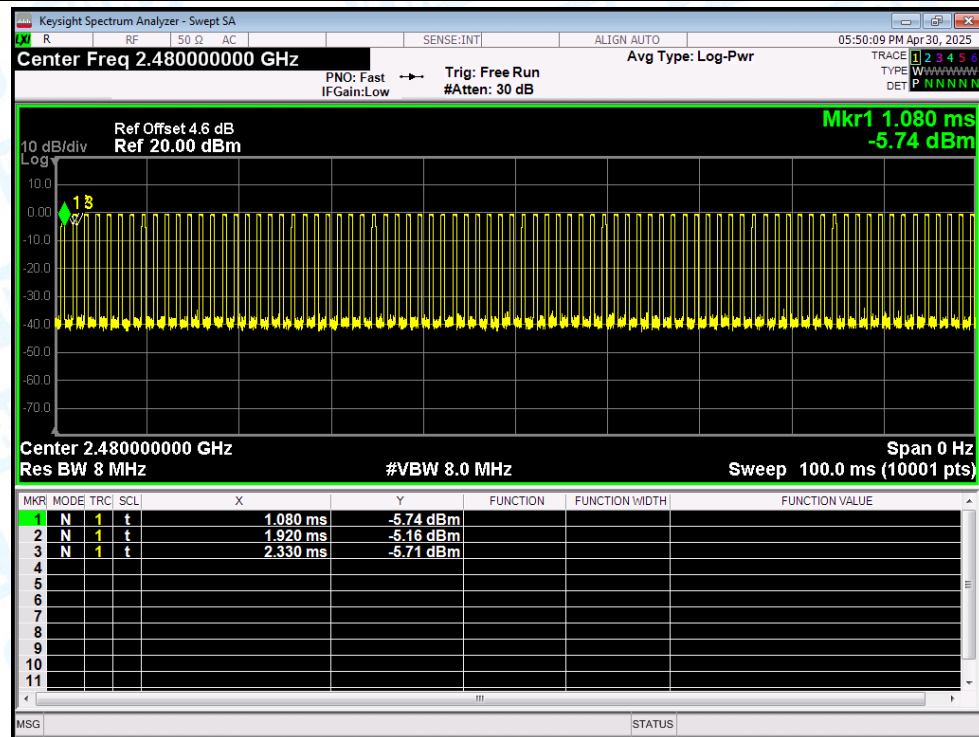
Duty Cycle NVNT 1-DH1 2402MHz Ant1



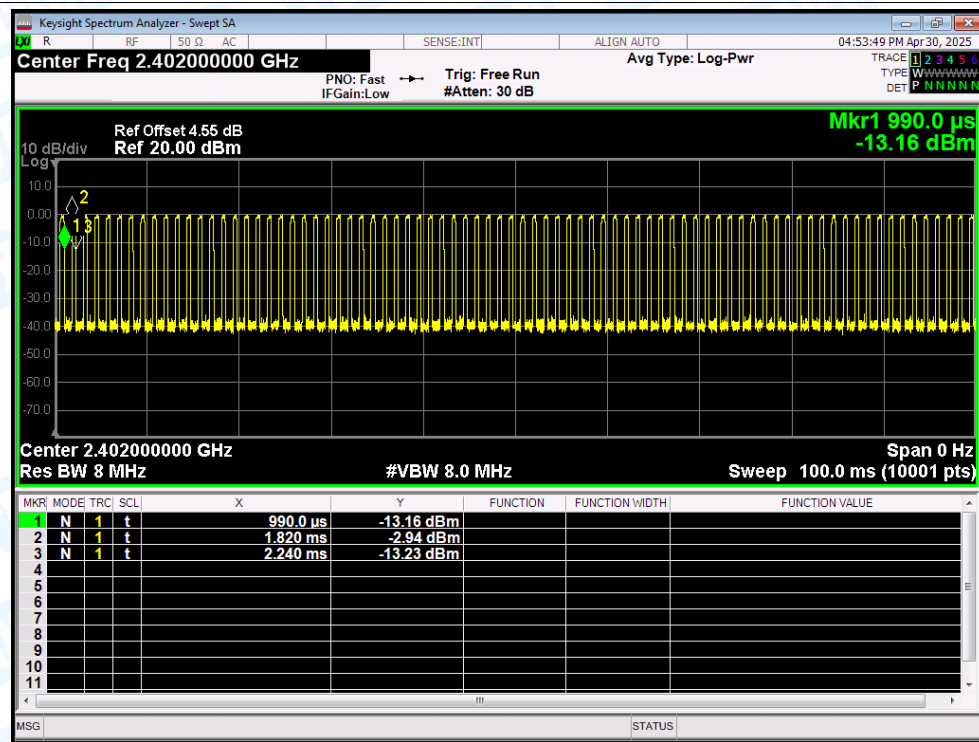
Duty Cycle NVNT 1-DH1 2441MHz Ant1



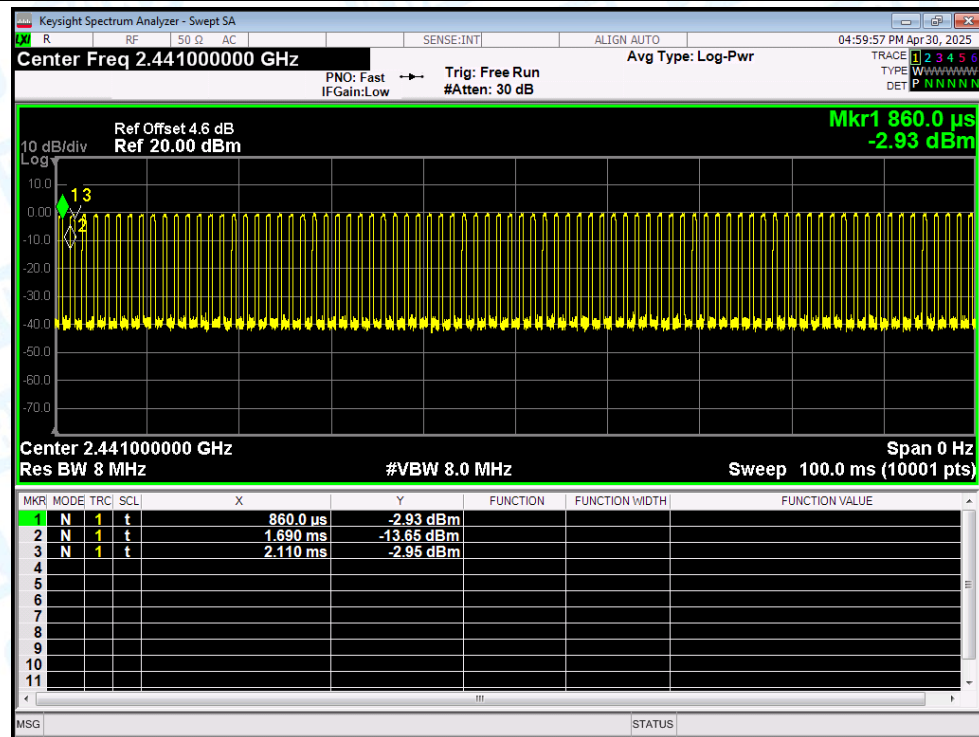
Duty Cycle NVNT 1-DH1 2480MHz Ant1



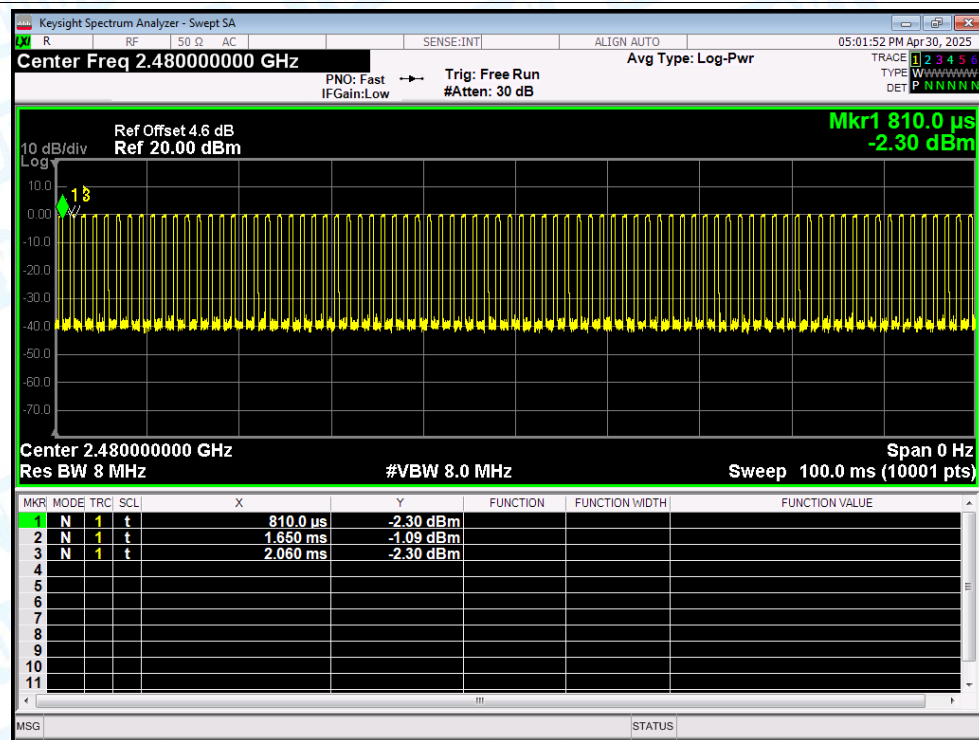
Duty Cycle NVNT 2-DH1 2402MHz Ant1



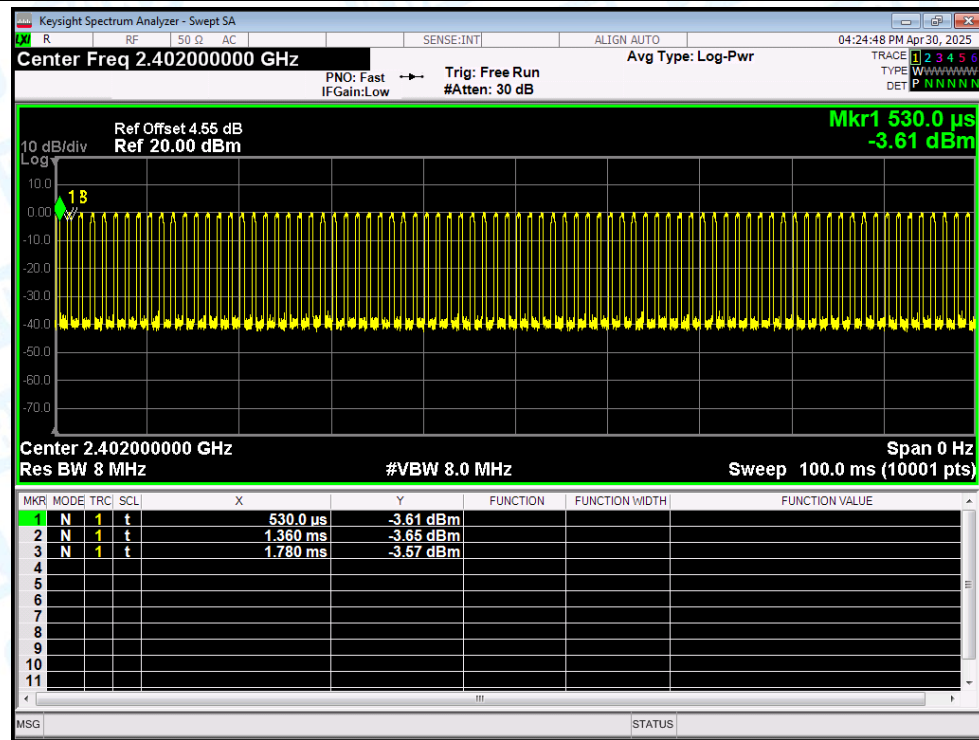
Duty Cycle NVNT 2-DH1 2441MHz Ant1



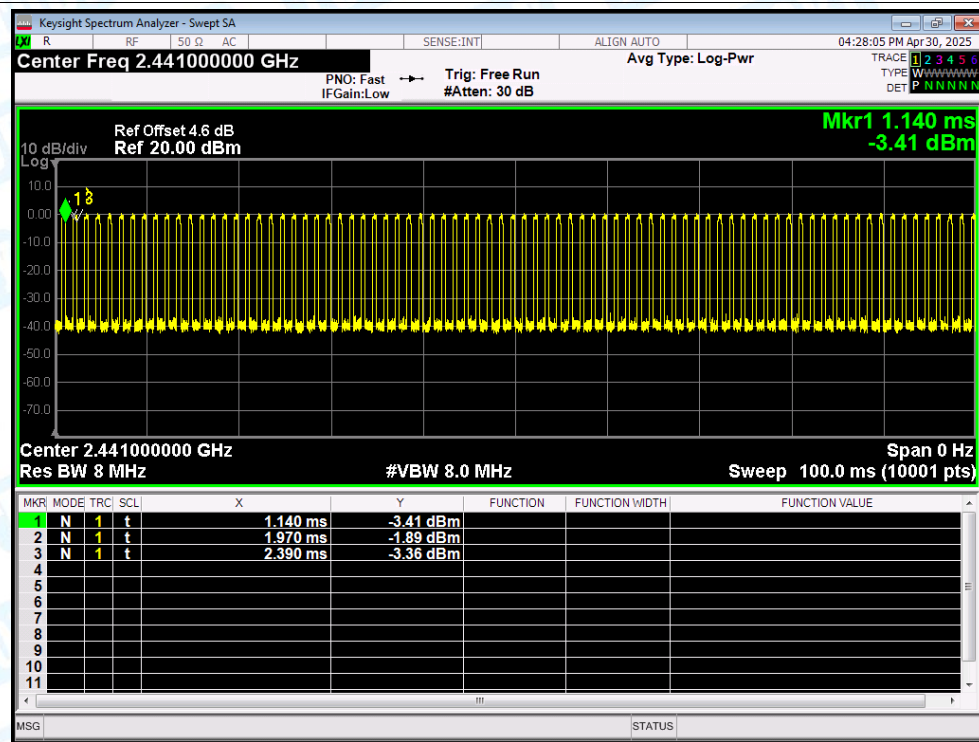
Duty Cycle NVNT 2-DH1 2480MHz Ant1

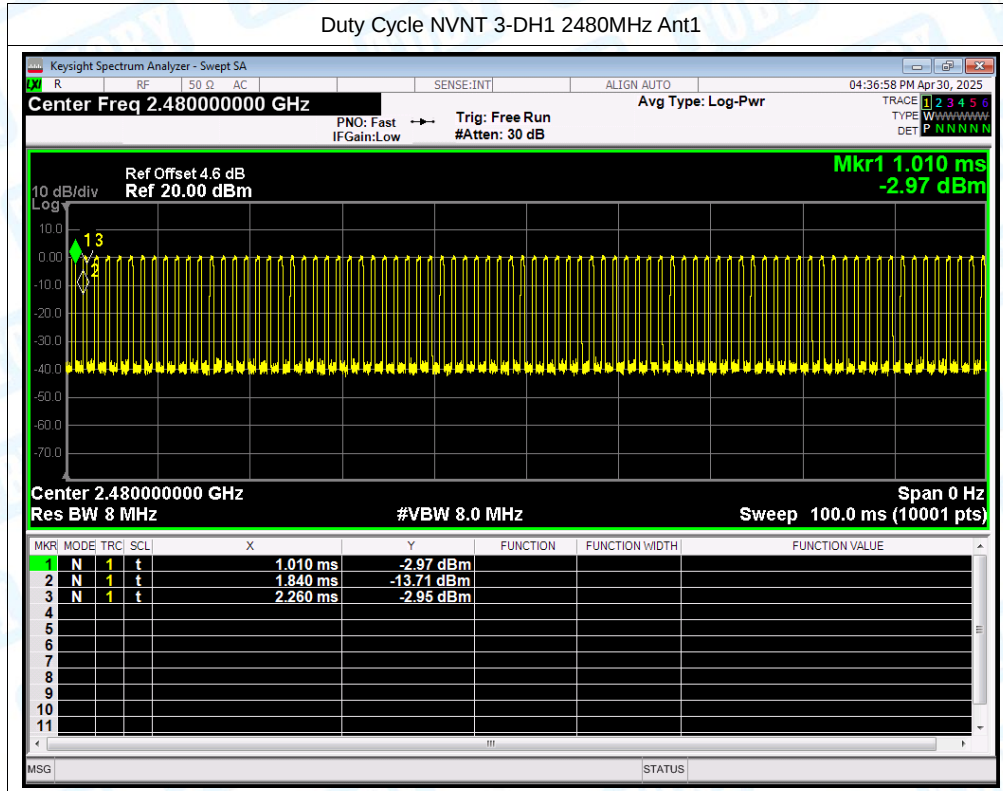


Duty Cycle NVNT 3-DH1 2402MHz Ant1



Duty Cycle NVNT 3-DH1 2441MHz Ant1



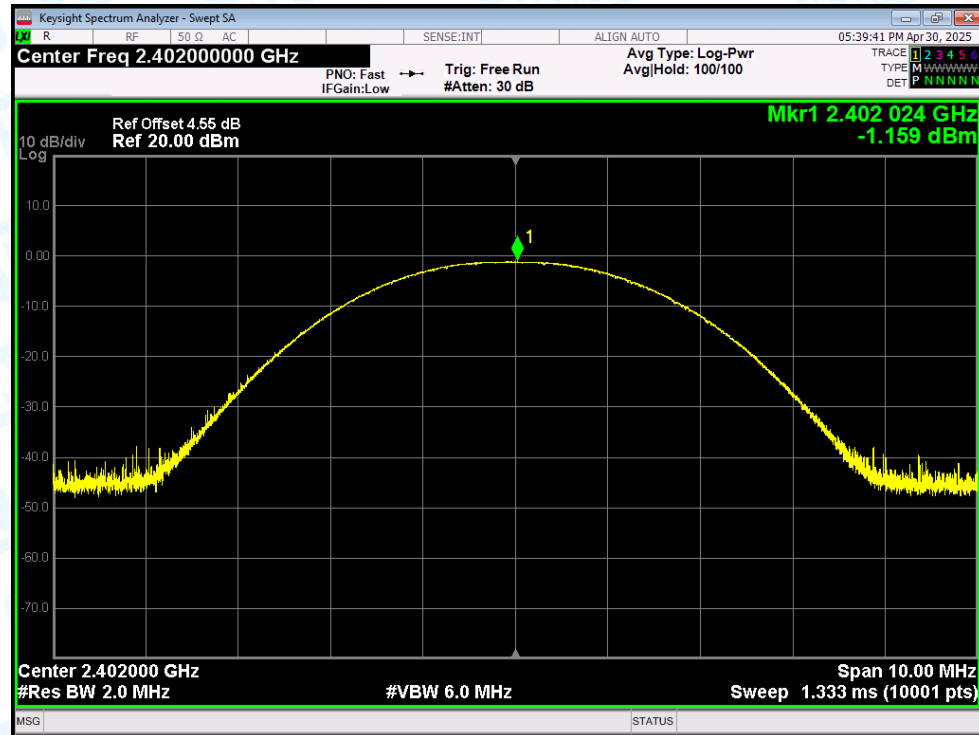


2.Maximum Conducted Output Power

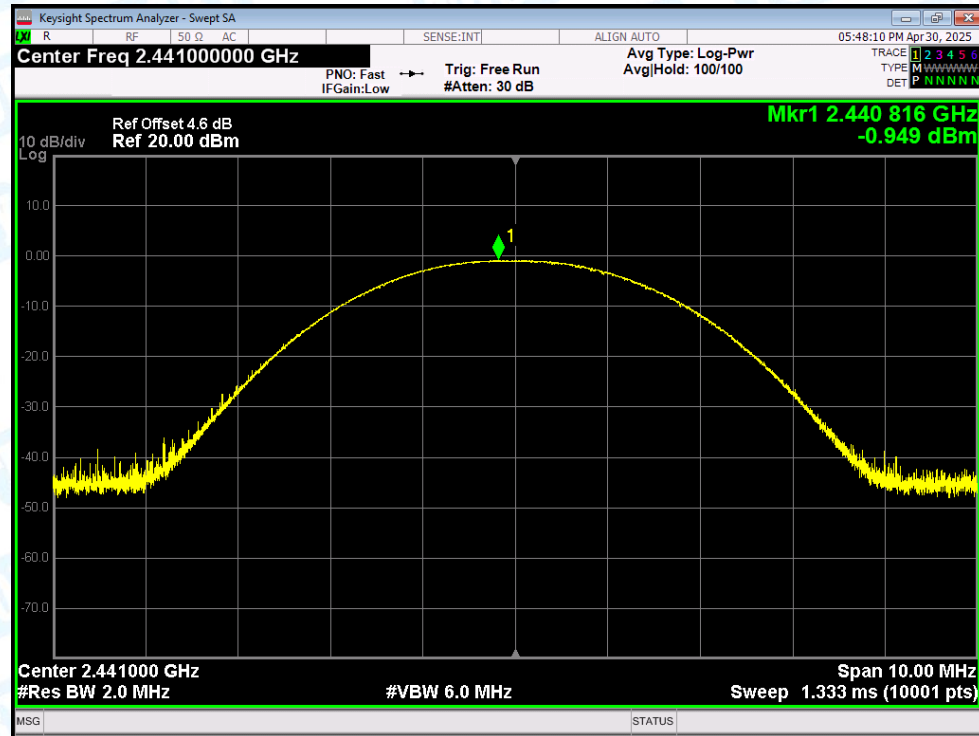
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	Ant1	-1.159	21	Pass
NVNT	1-DH1	2441	Ant1	-0.949	21	Pass
NVNT	1-DH1	2480	Ant1	-0.622	21	Pass
NVNT	2-DH1	2402	Ant1	-0.557	21	Pass
NVNT	2-DH1	2441	Ant1	-0.303	21	Pass
NVNT	2-DH1	2480	Ant1	0.076	21	Pass
NVNT	3-DH1	2402	Ant1	-0.104	21	Pass
NVNT	3-DH1	2441	Ant1	0.167	21	Pass
NVNT	3-DH1	2480	Ant1	0.511	21	Pass

Test Graphs

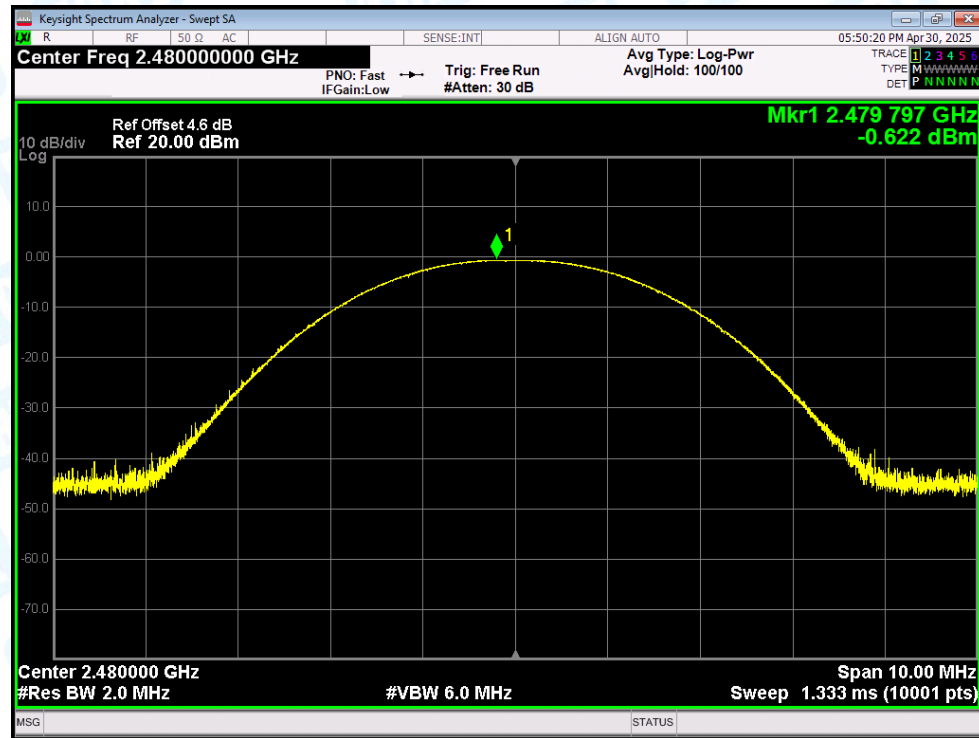
Power NVNT 1-DH1 2402MHz Ant1



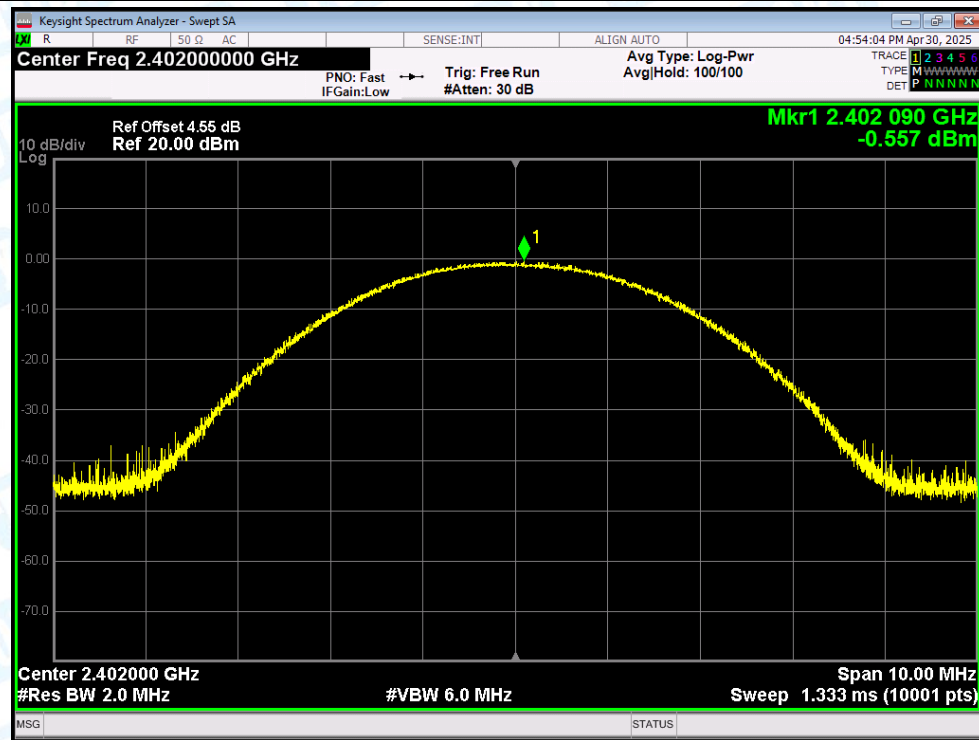
Power NVNT 1-DH1 2441MHz Ant1



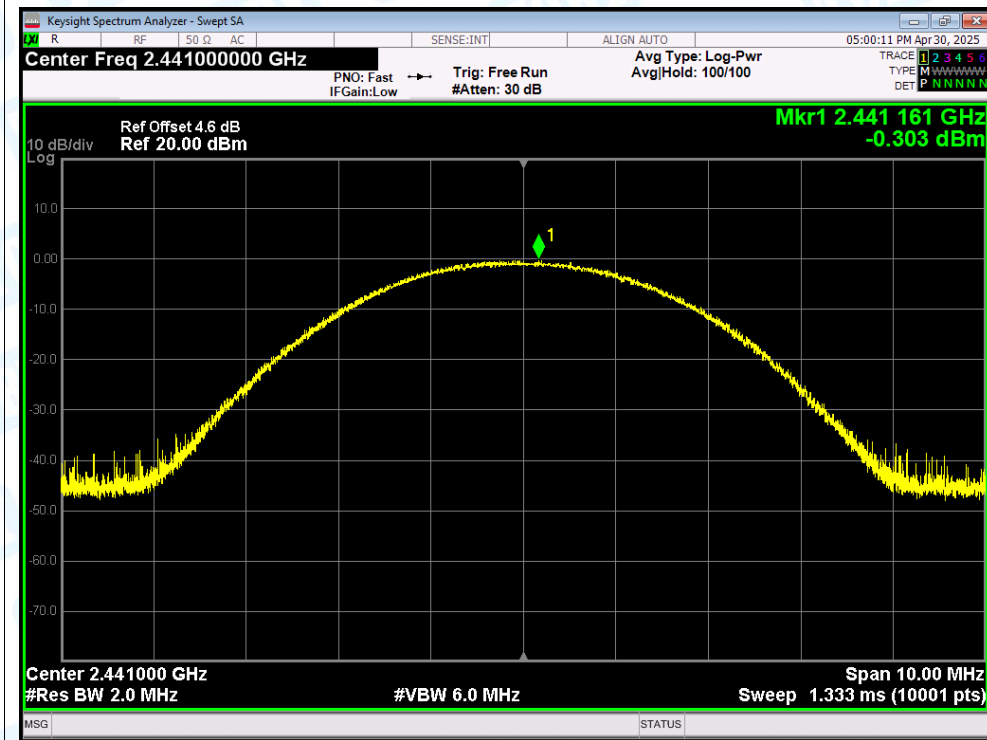
Power NVNT 1-DH1 2480MHz Ant1



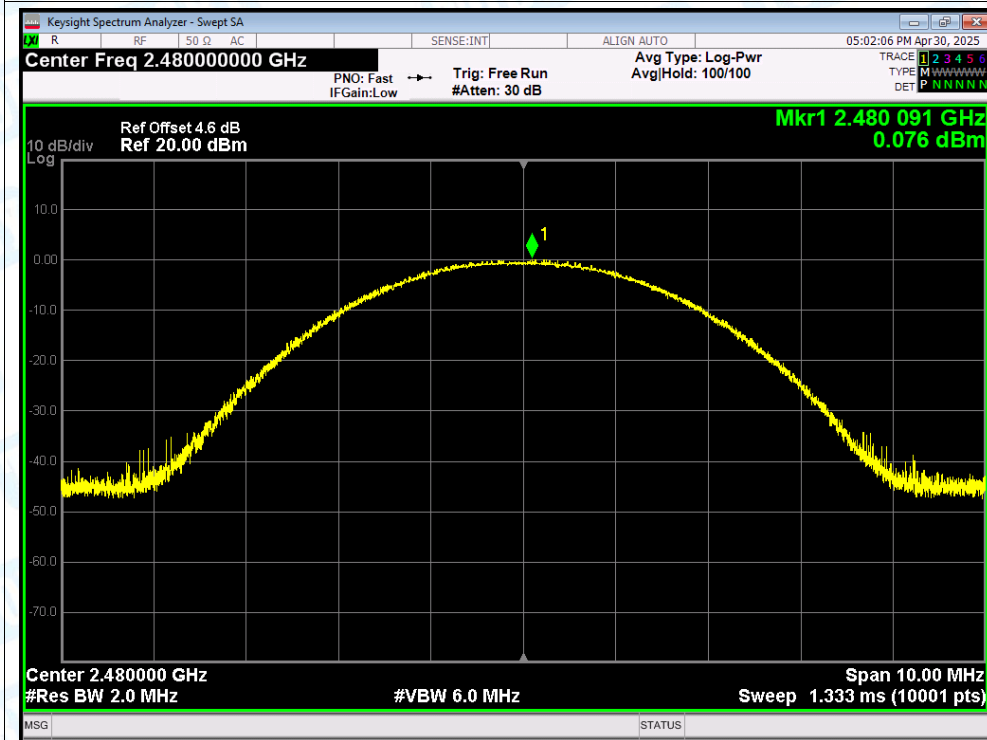
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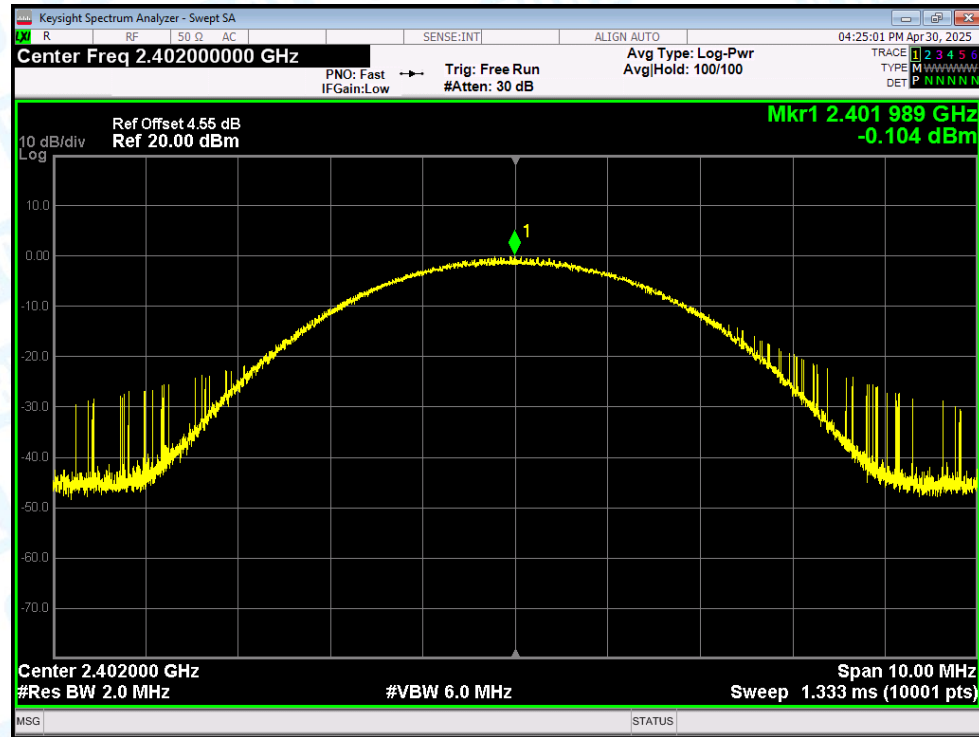
Power NVNT 2-DH1 2441MHz Ant1



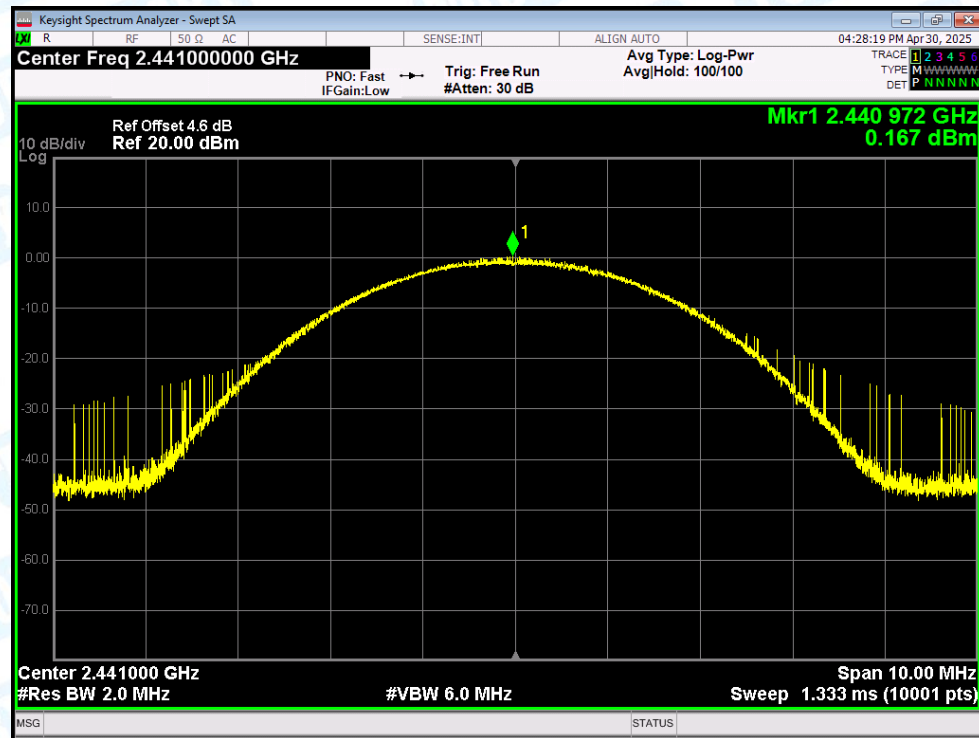
Power NVNT 2-DH1 2480MHz Ant1

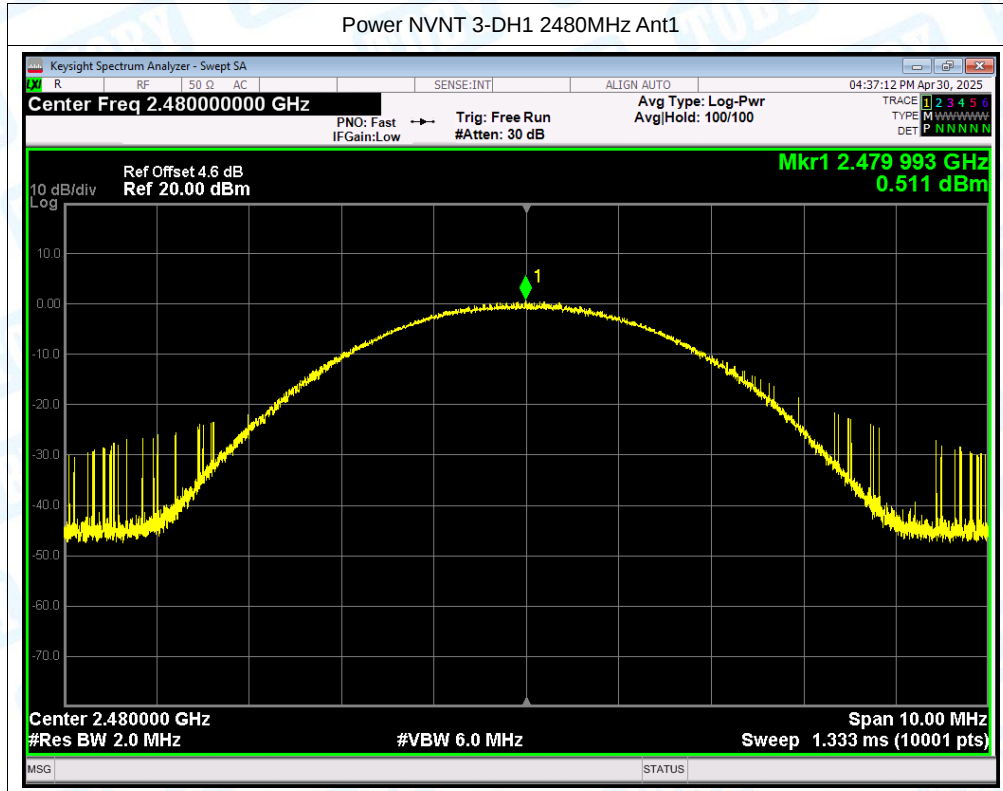


Power NVNT 3-DH1 2402MHz Ant1



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	0.84	0	Pass
NVNT	1-DH1	2441	Ant1	0.87	0	Pass
NVNT	1-DH1	2480	Ant1	0.88	0	Pass
NVNT	2-DH1	2402	Ant1	1.24	0	Pass
NVNT	2-DH1	2441	Ant1	1.24	0	Pass
NVNT	2-DH1	2480	Ant1	1.22	0	Pass
NVNT	3-DH1	2402	Ant1	1.21	0	Pass
NVNT	3-DH1	2441	Ant1	1.21	0	Pass
NVNT	3-DH1	2480	Ant1	1.21	0	Pass

Test Graphs

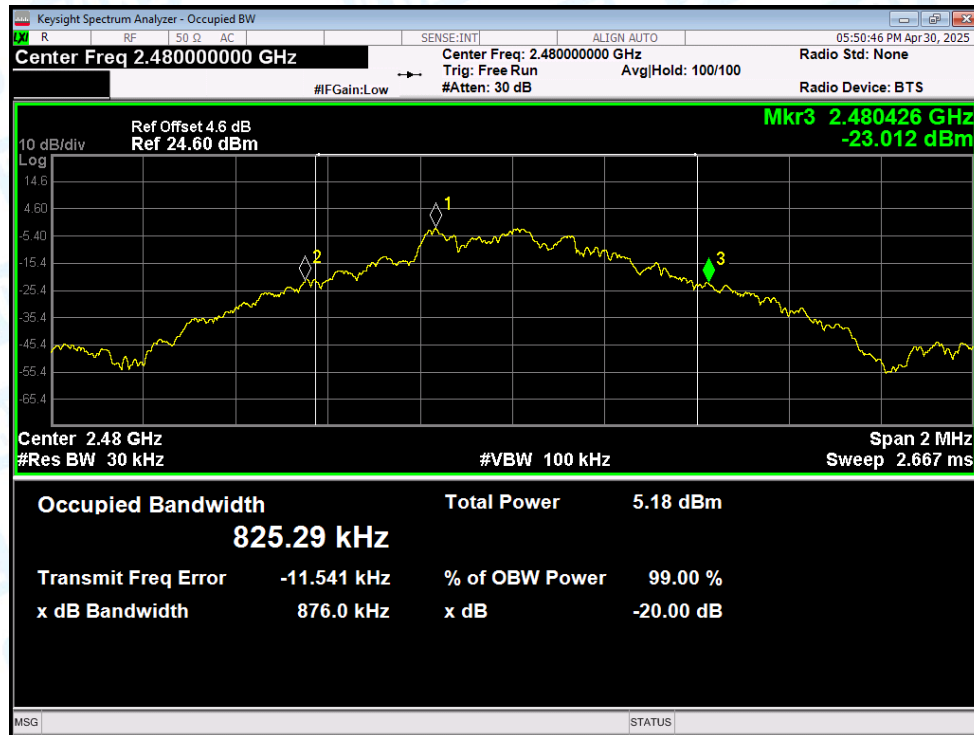
-20dB Bandwidth NVNT 1-DH1 2402MHz Ant1



-20dB Bandwidth NVNT 1-DH1 2441MHz Ant1



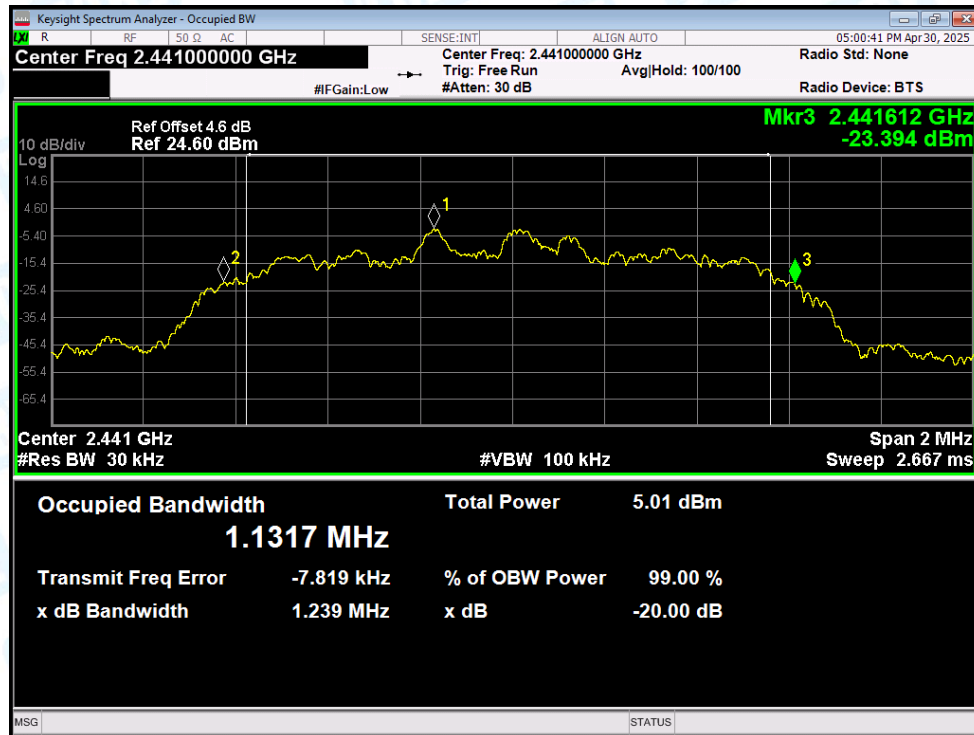
-20dB Bandwidth NVNT 1-DH1 2480MHz Ant1



-20dB Bandwidth NVNT 2-DH1 2402MHz Ant1



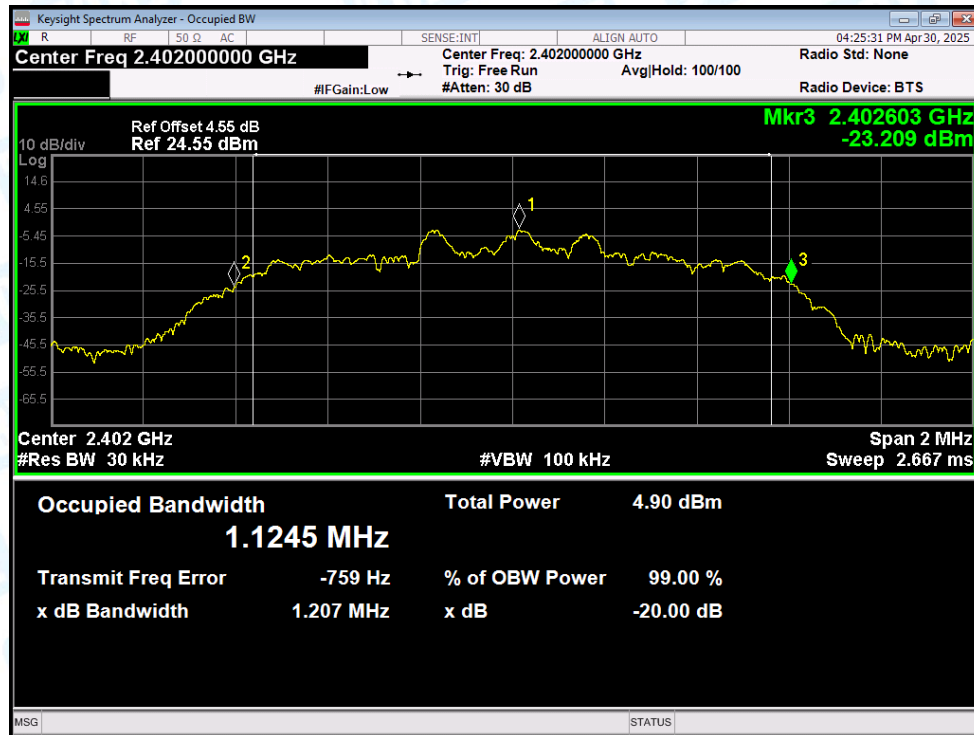
-20dB Bandwidth NVNT 2-DH1 2441MHz Ant1



-20dB Bandwidth NVNT 2-DH1 2480MHz Ant1

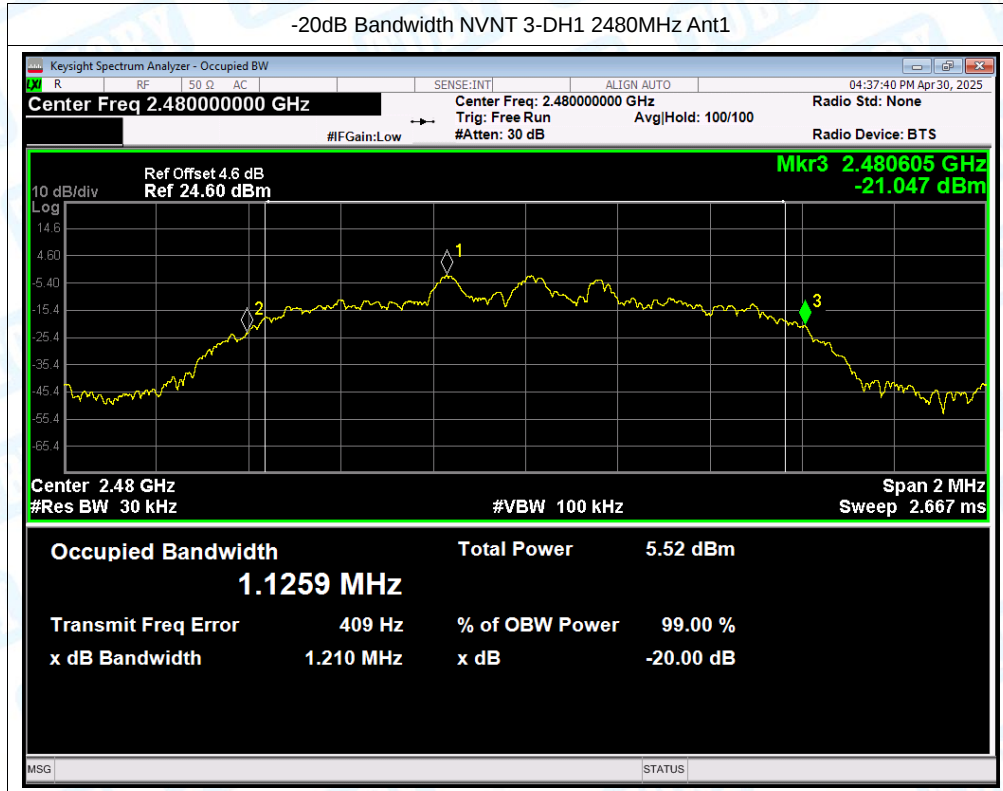


-20dB Bandwidth NVNT 3-DH1 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH1 2441MHz Ant1



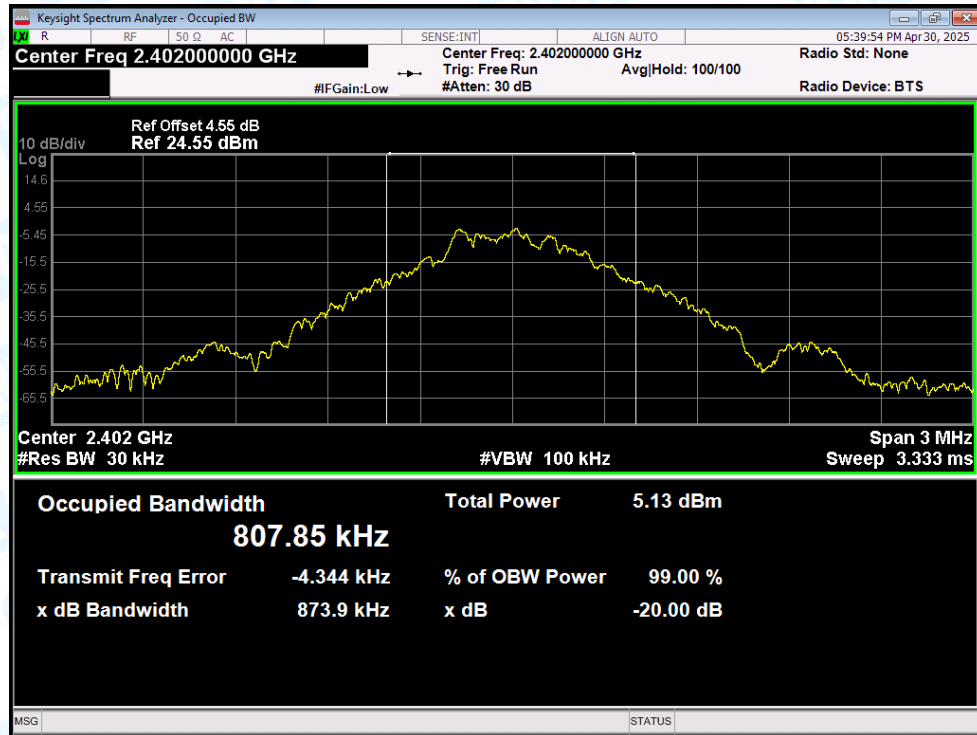


4.Occupied Channel Bandwidth

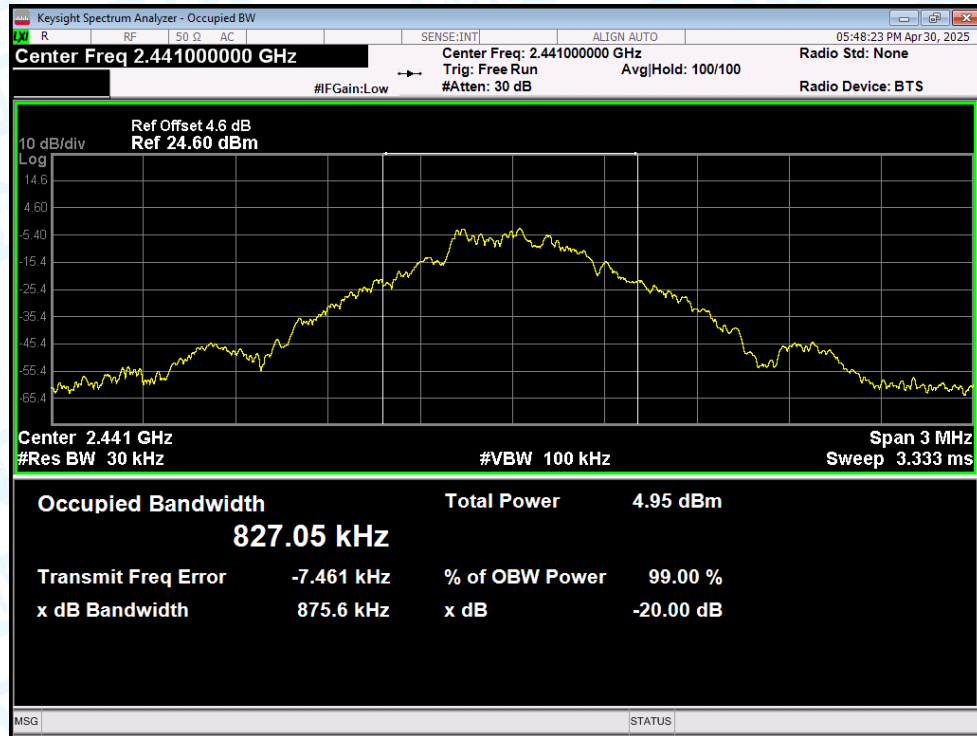
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	1-DH1	2402	Ant1	0.808
NVNT	1-DH1	2441	Ant1	0.827
NVNT	1-DH1	2480	Ant1	0.816
NVNT	2-DH1	2402	Ant1	1.133
NVNT	2-DH1	2441	Ant1	1.133
NVNT	2-DH1	2480	Ant1	1.151
NVNT	3-DH1	2402	Ant1	1.124
NVNT	3-DH1	2441	Ant1	1.125
NVNT	3-DH1	2480	Ant1	1.129

Test Graphs

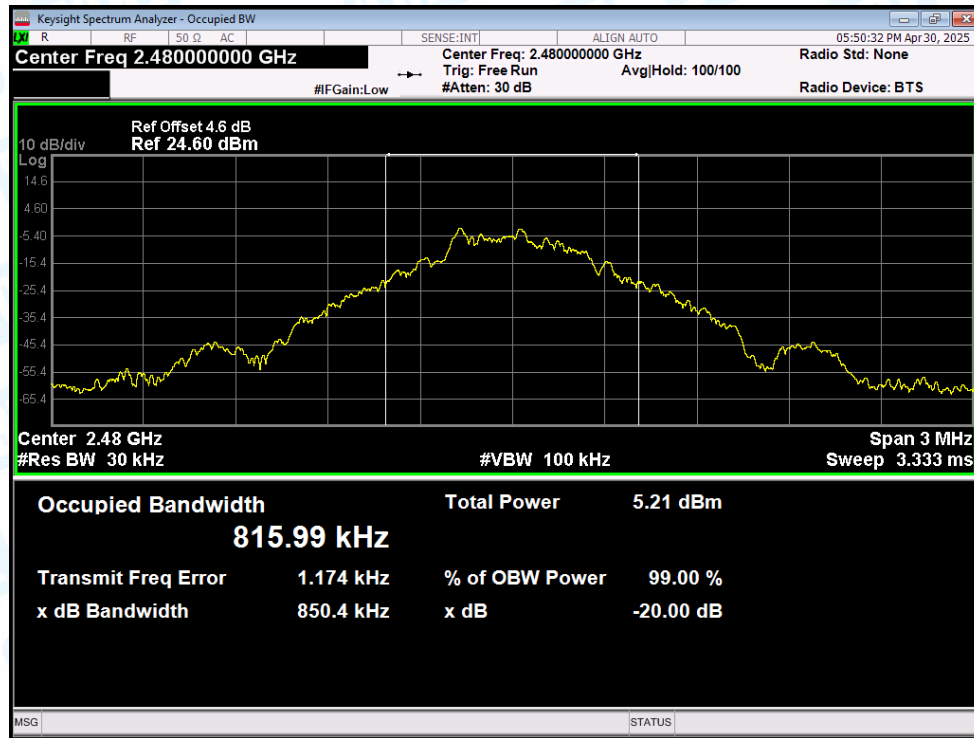
OBW NVNT 1-DH1 2402MHz Ant1



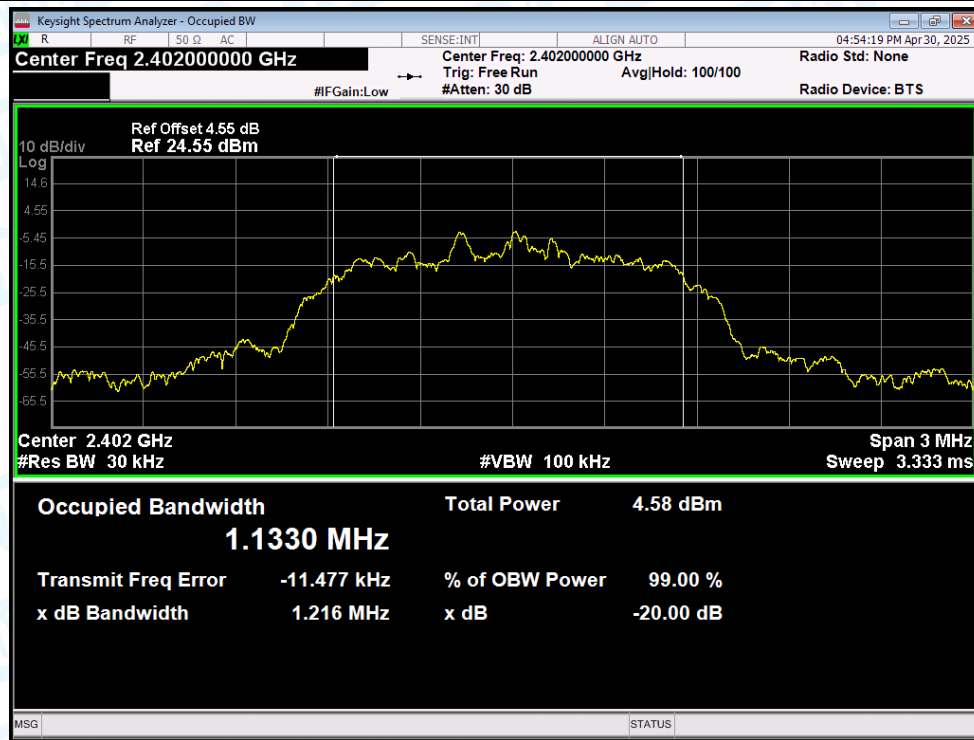
OBW NVNT 1-DH1 2441MHz Ant1



OBW NVNT 1-DH1 2480MHz Ant1



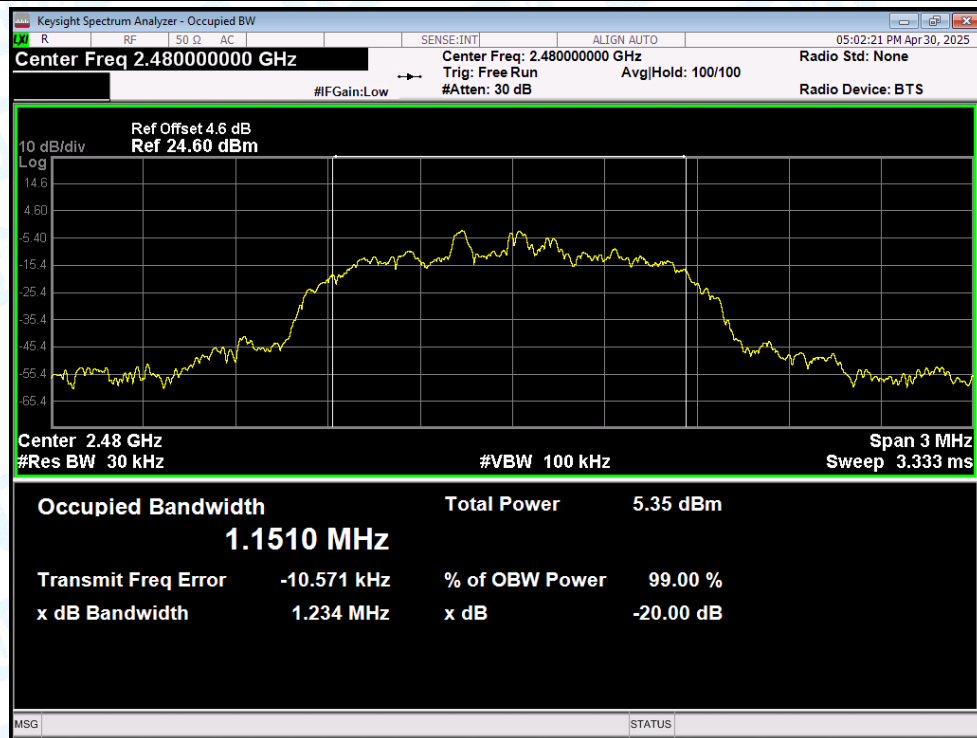
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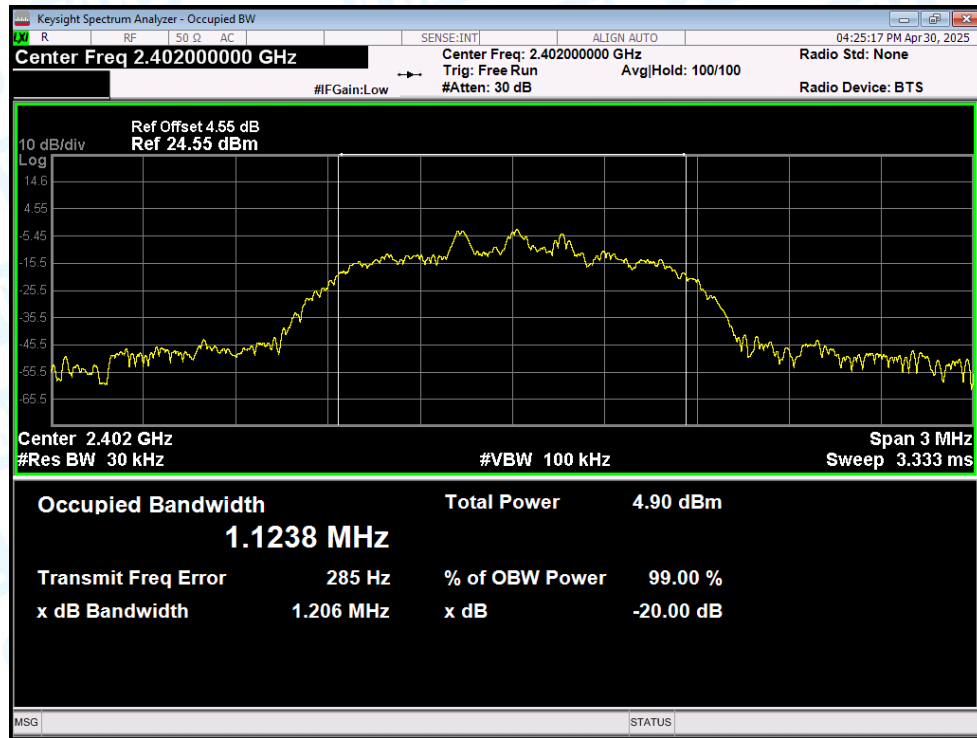
OBW NVNT 2-DH1 2441MHz Ant1



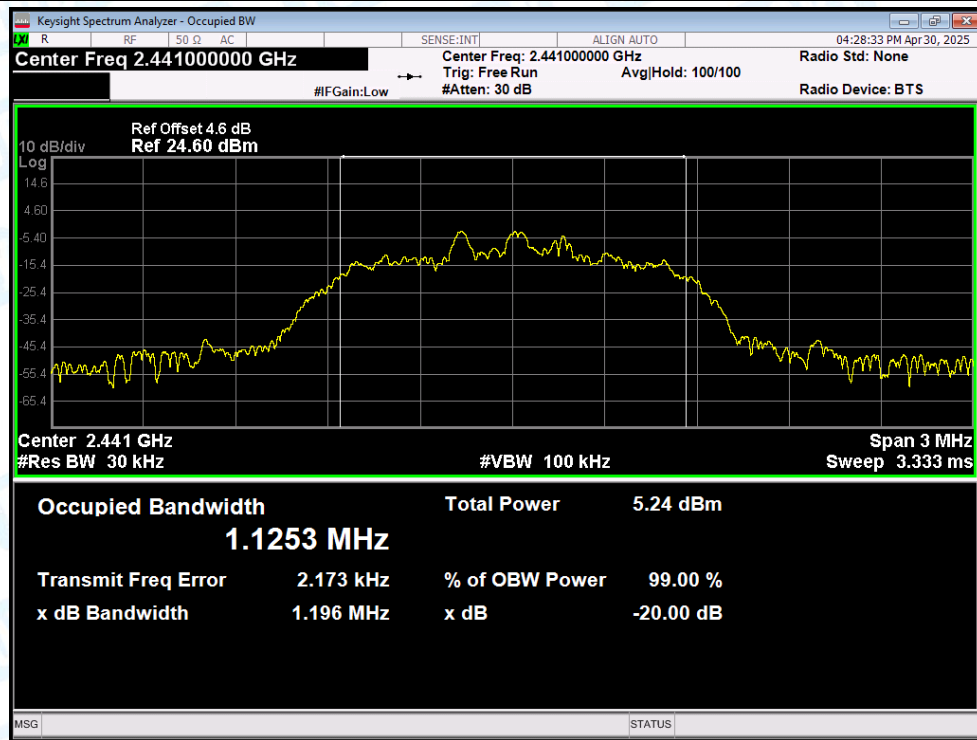
OBW NVNT 2-DH1 2480MHz Ant1

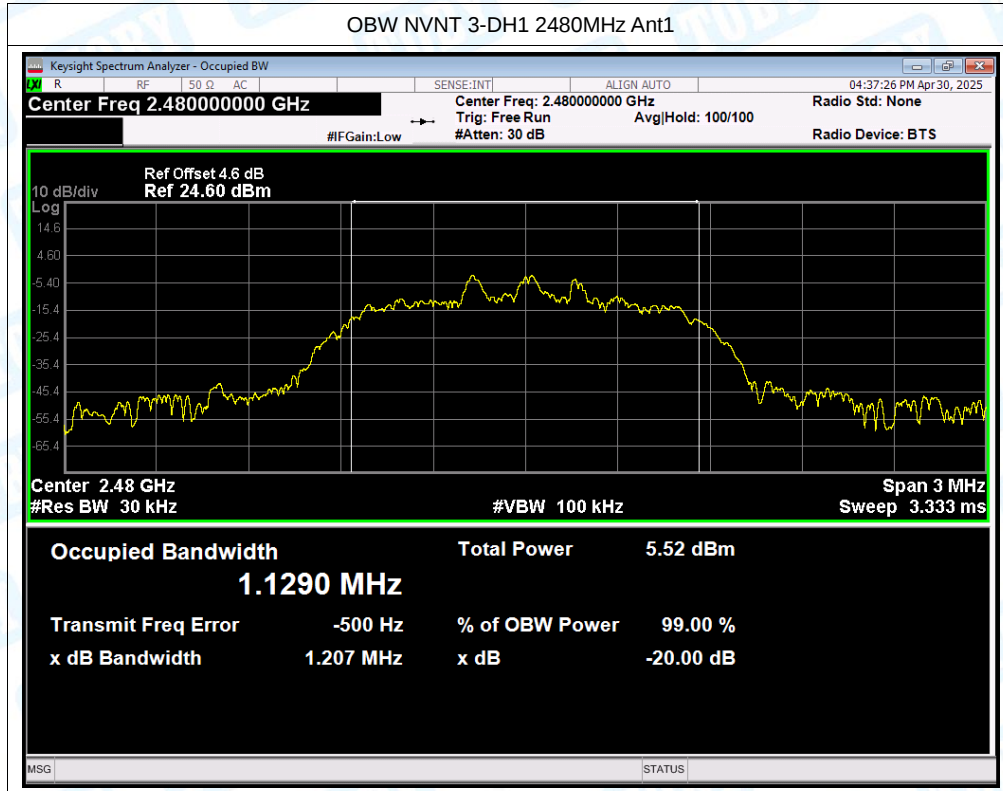


OBW NVNT 3-DH1 2402MHz Ant1



OBW NVNT 3-DH1 2441MHz Ant1



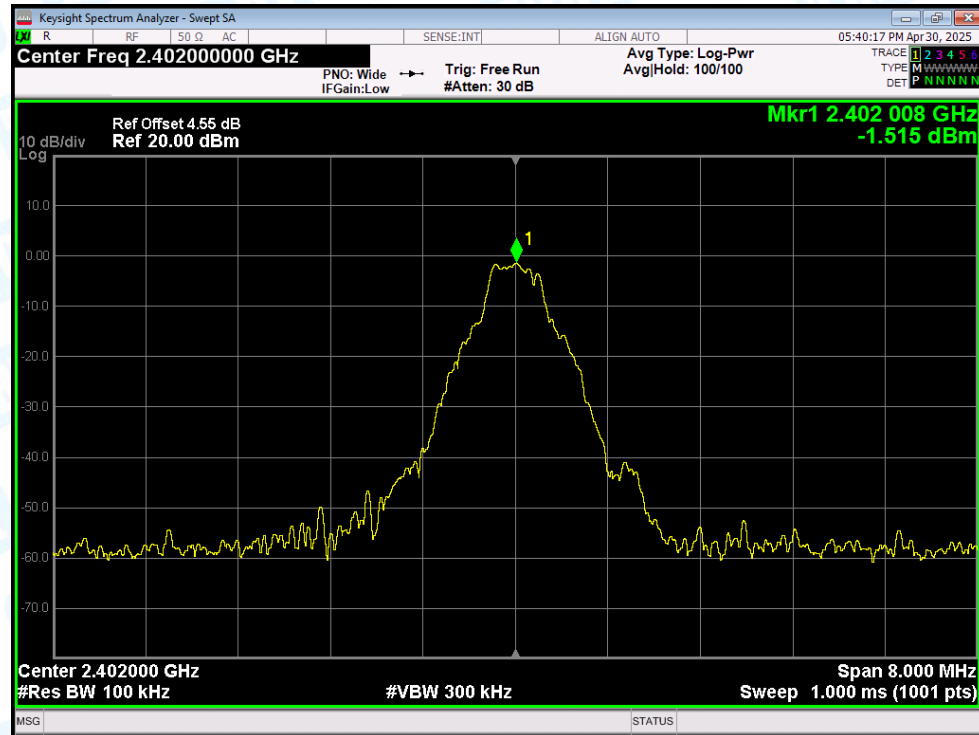


5.Band Edge

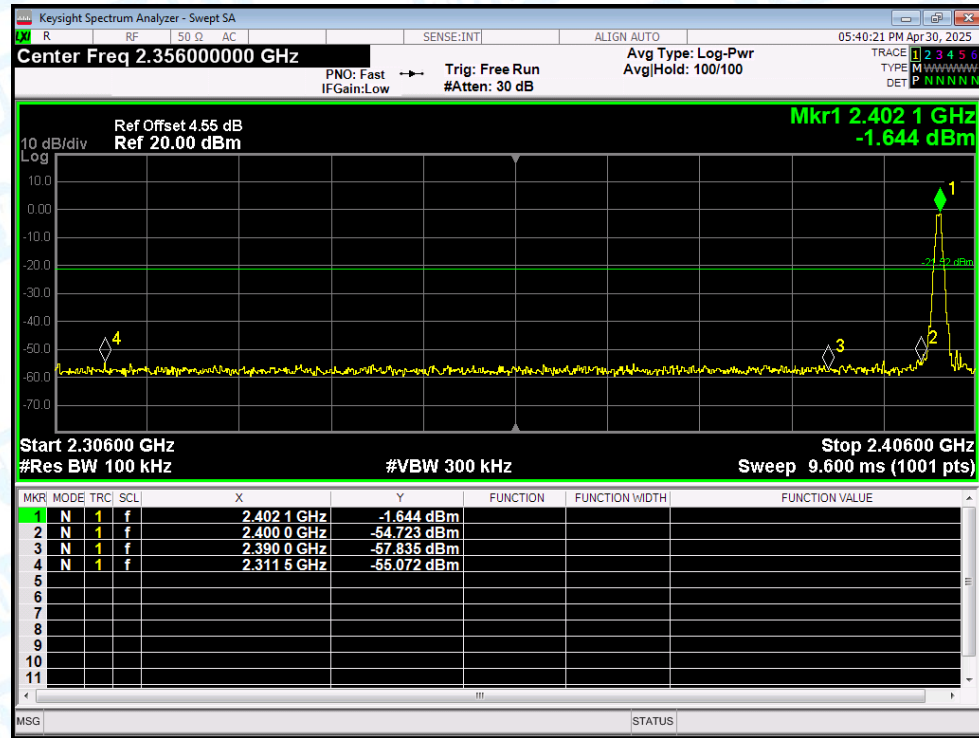
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	-53.56	-20	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	-53.62	-20	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	-52.47	-20	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	-52.25	-20	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	-53.14	-20	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	-52.14	-20	Pass

Test Graphs

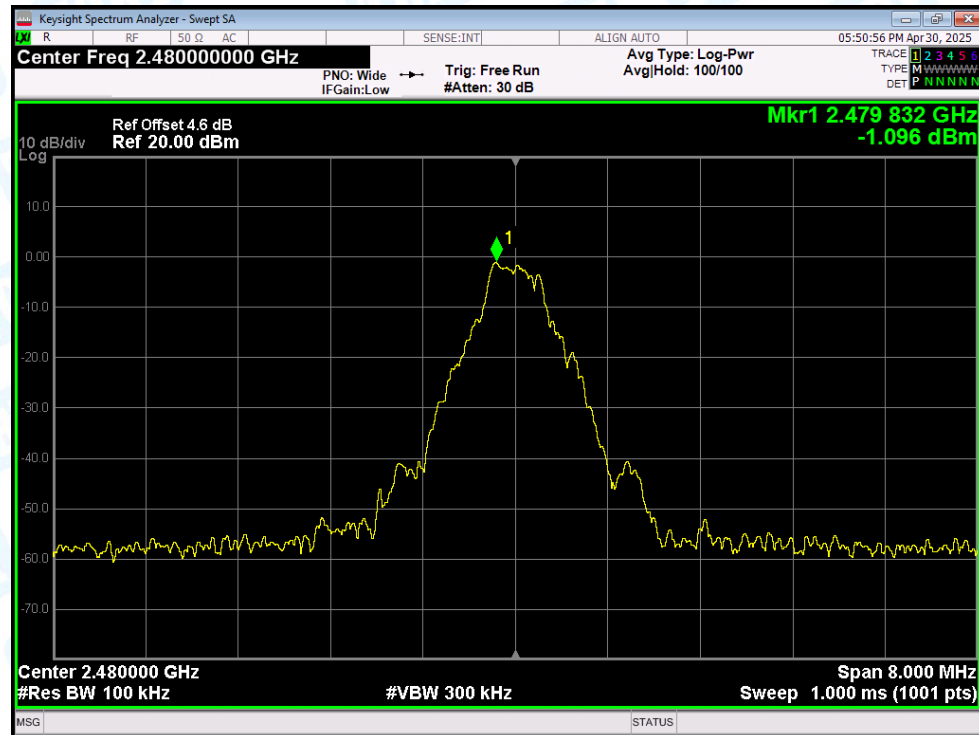
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Ref



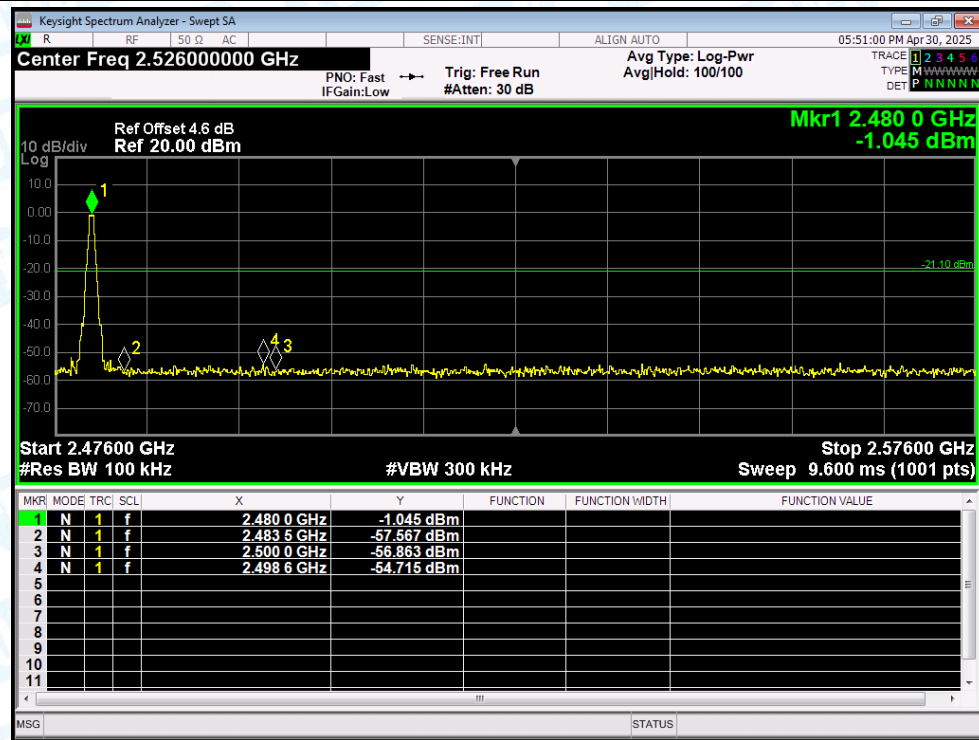
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Emission

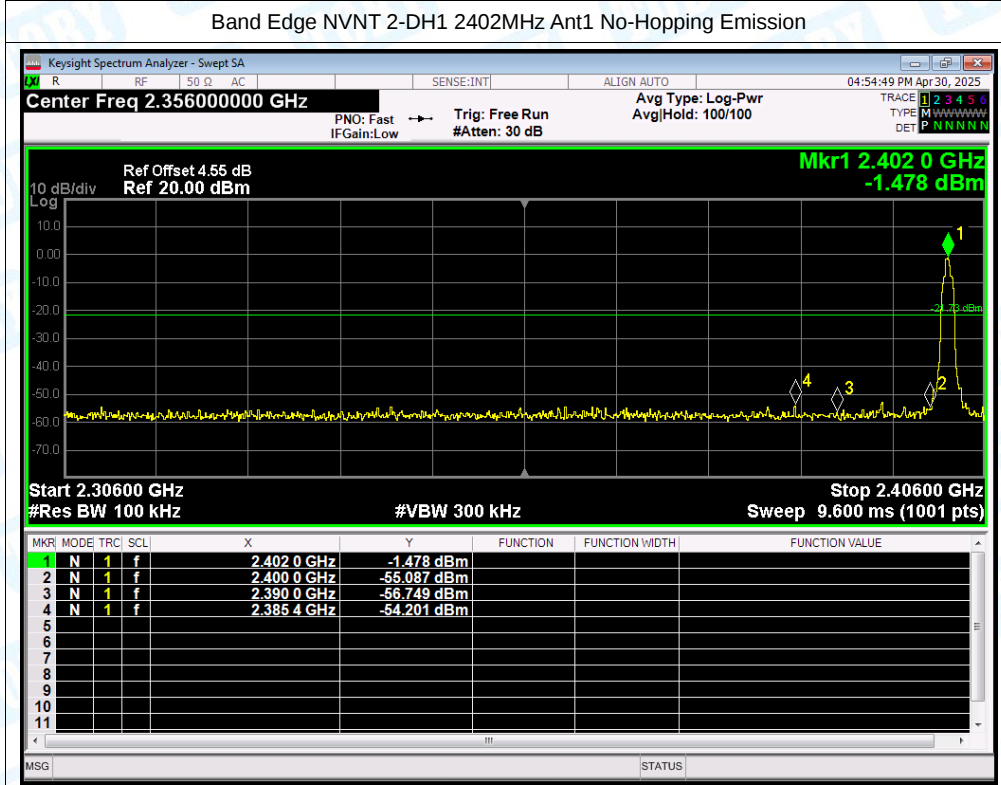
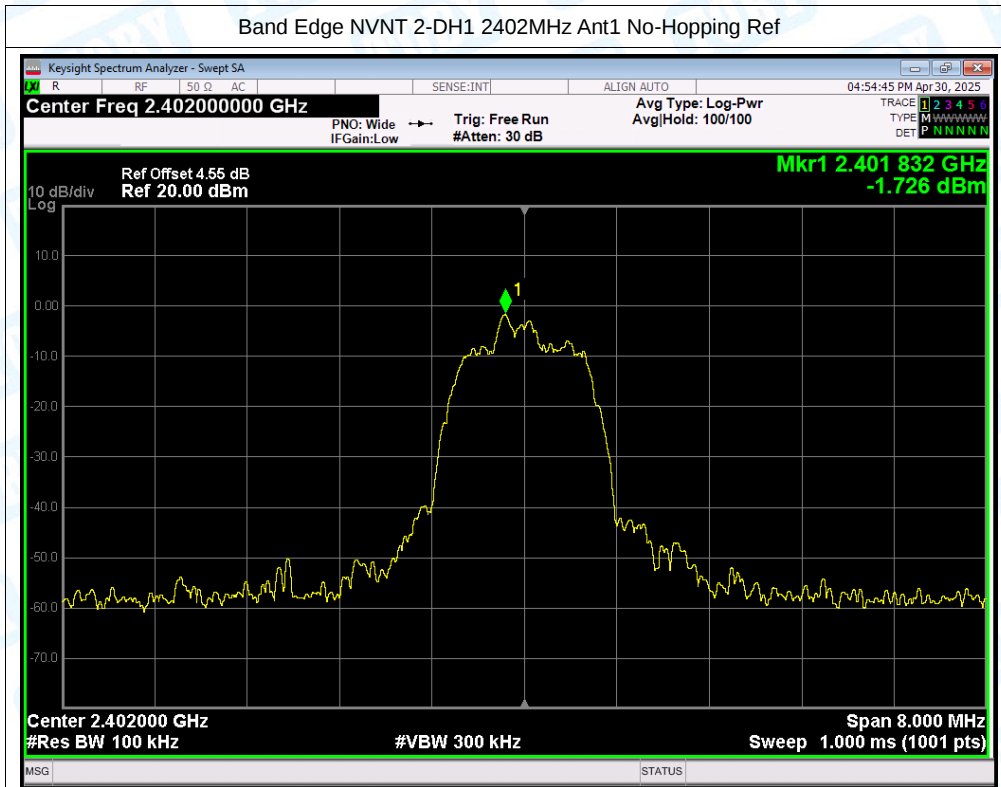


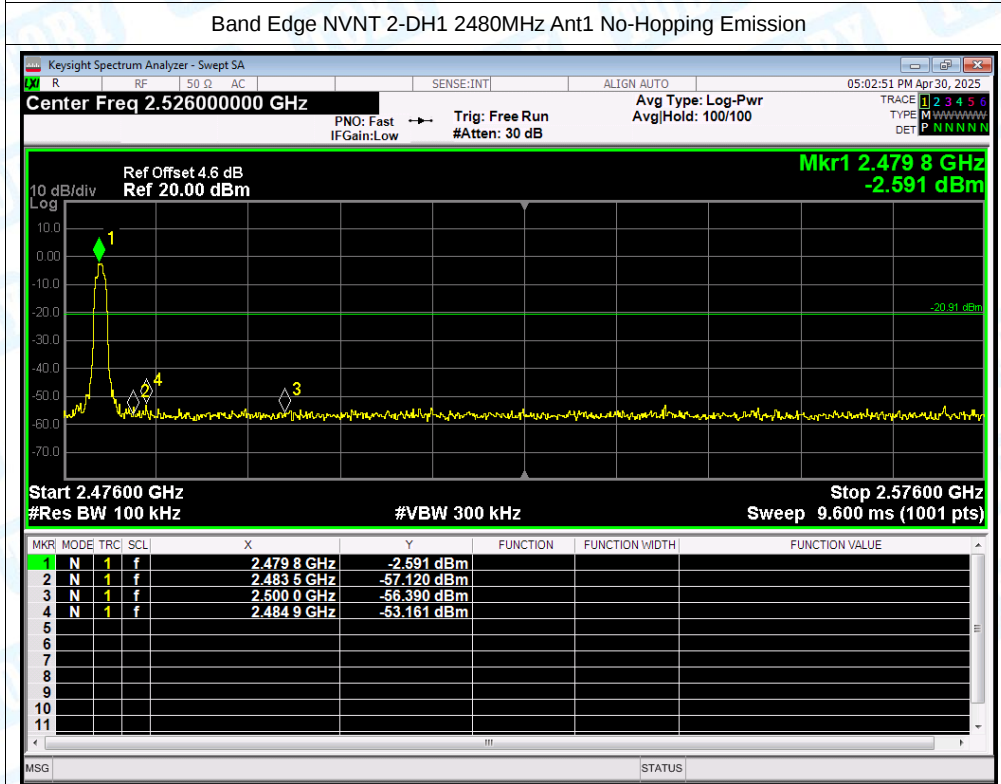
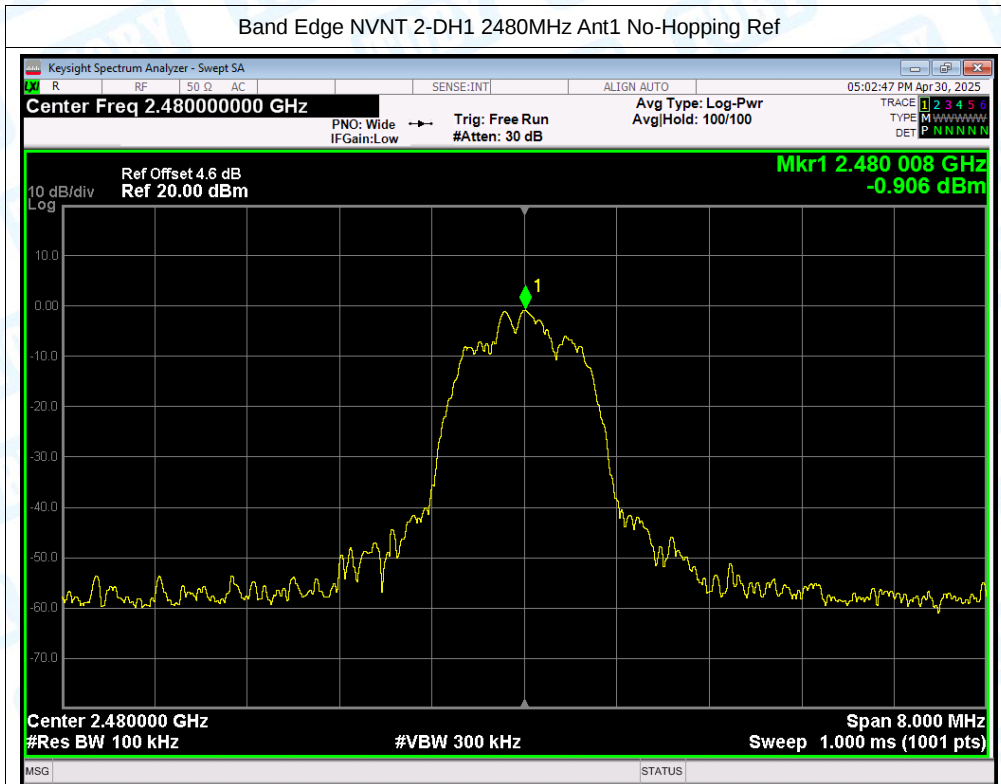
Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Ref

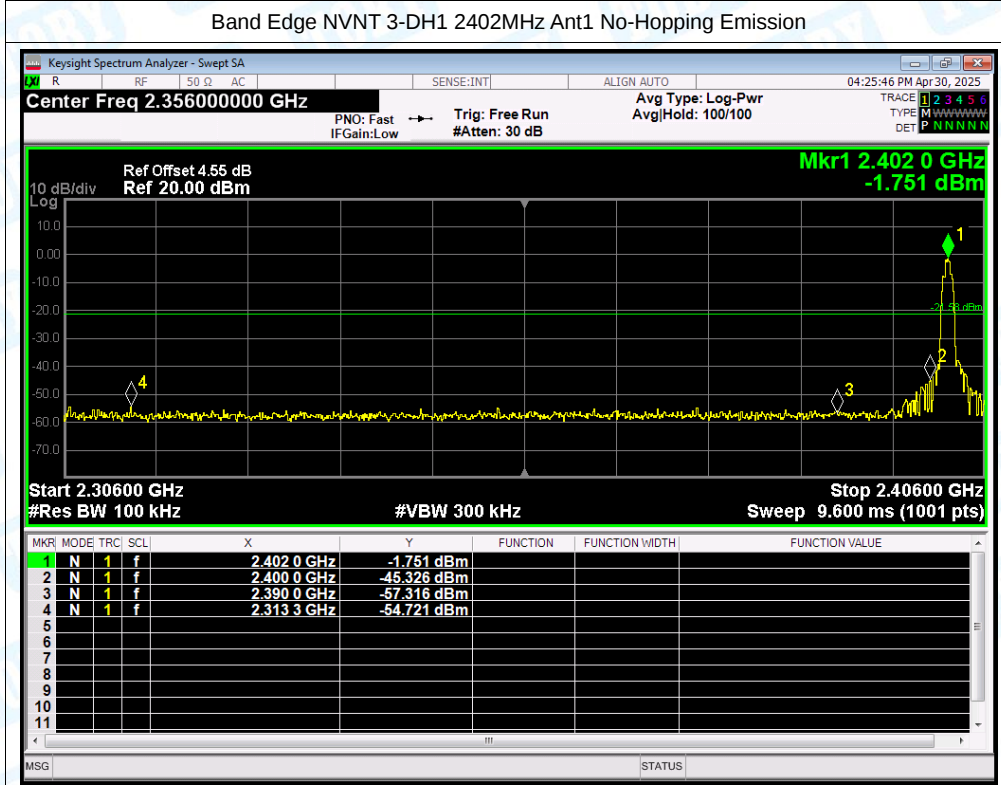
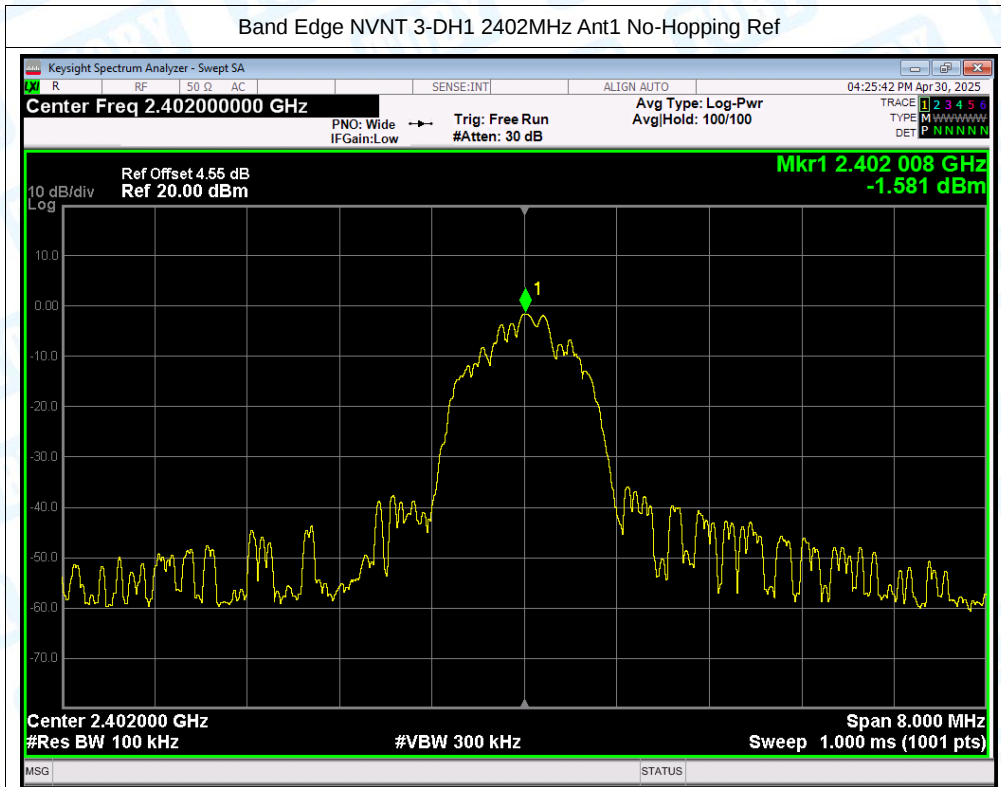


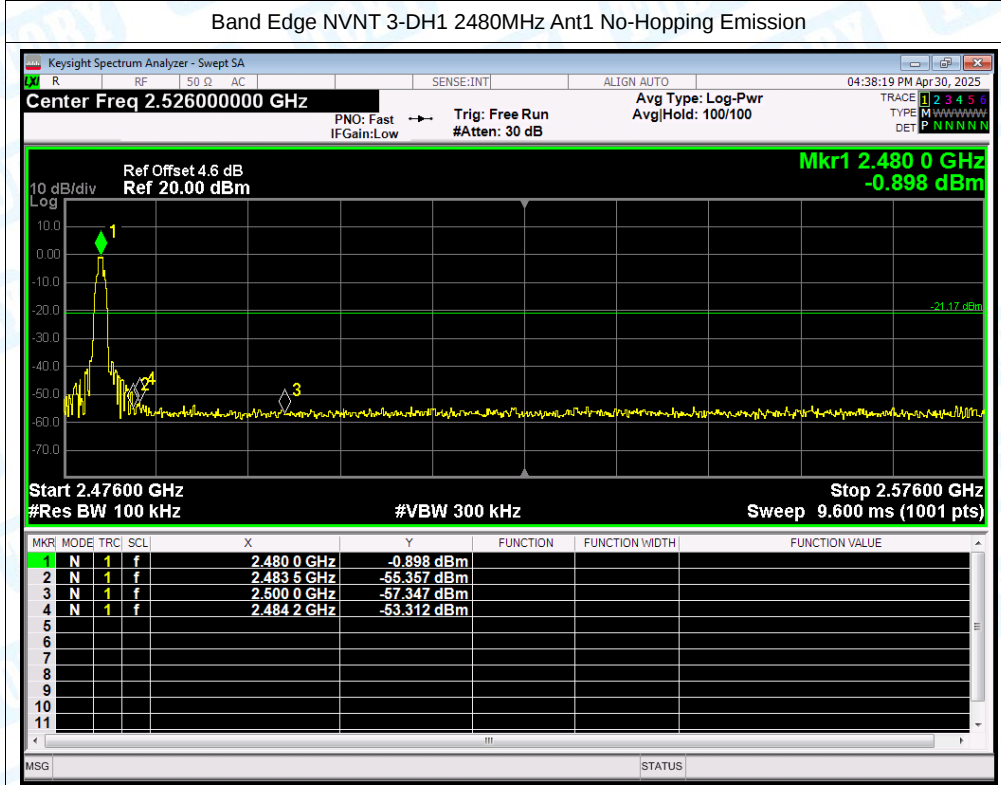
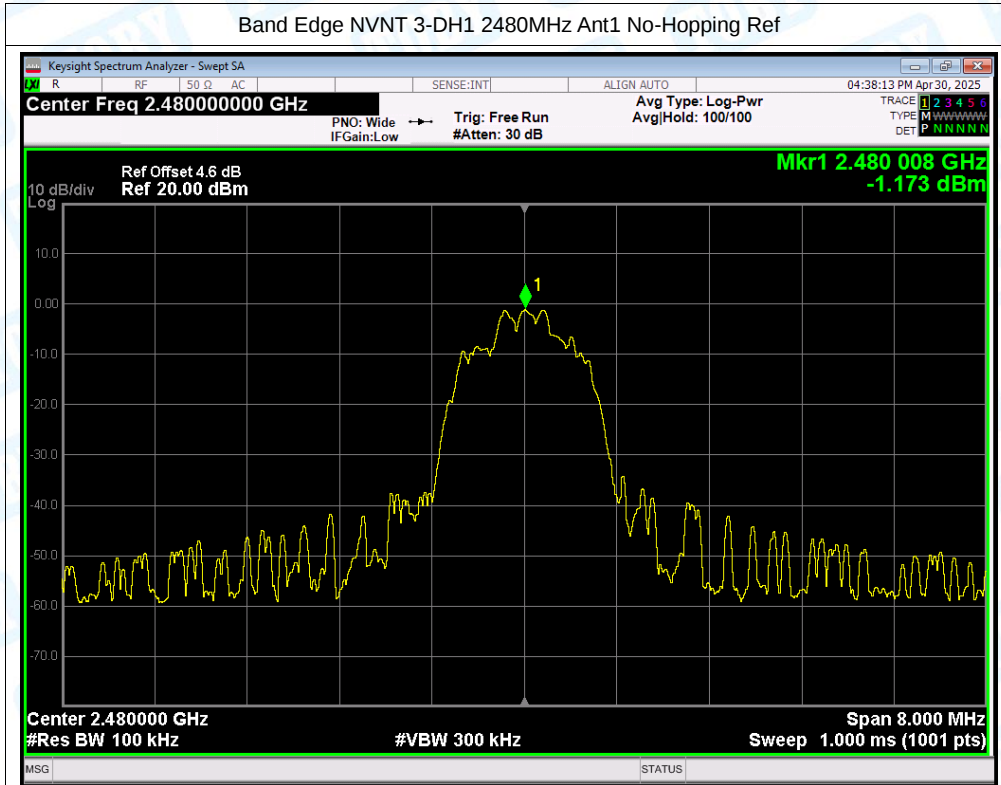
Band Edge NVNT 1-DH1 2480MHz Ant1 No-Hopping Emission









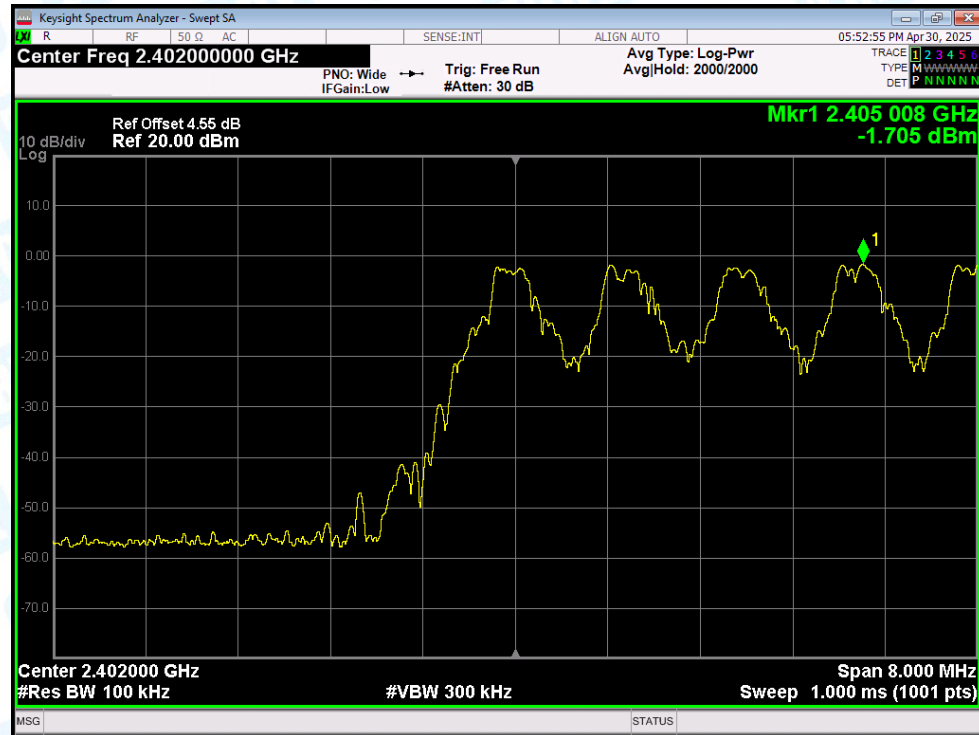


6. Band Edge(Hopping)

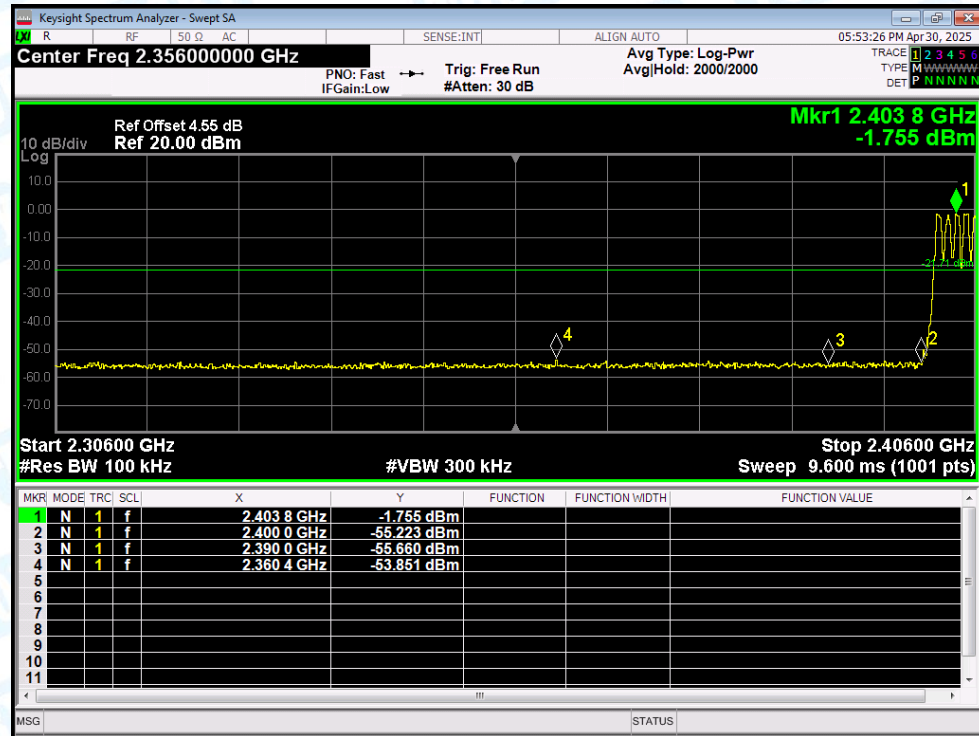
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	Hopping	-52.15	-20	Pass
NVNT	1-DH1	2480	Ant1	Hopping	-52.35	-20	Pass
NVNT	2-DH1	2402	Ant1	Hopping	-51.88	-20	Pass
NVNT	2-DH1	2480	Ant1	Hopping	-52.18	-20	Pass
NVNT	3-DH1	2402	Ant1	Hopping	-52.06	-20	Pass
NVNT	3-DH1	2480	Ant1	Hopping	-51.01	-20	Pass

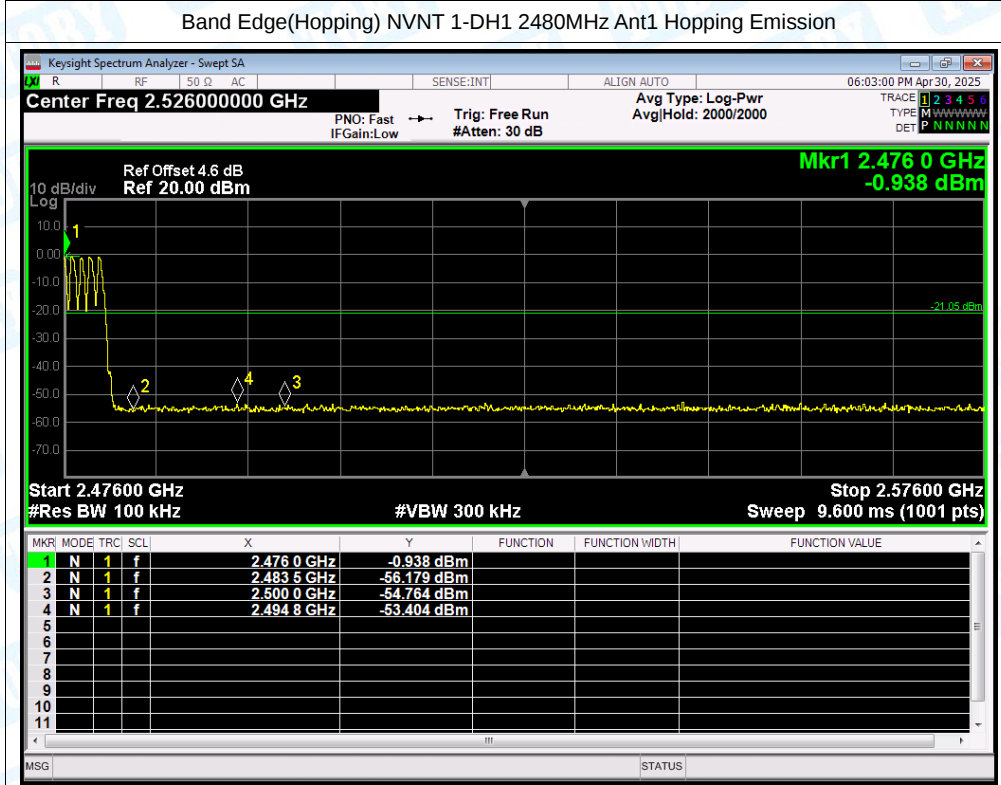
Test Graphs

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



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

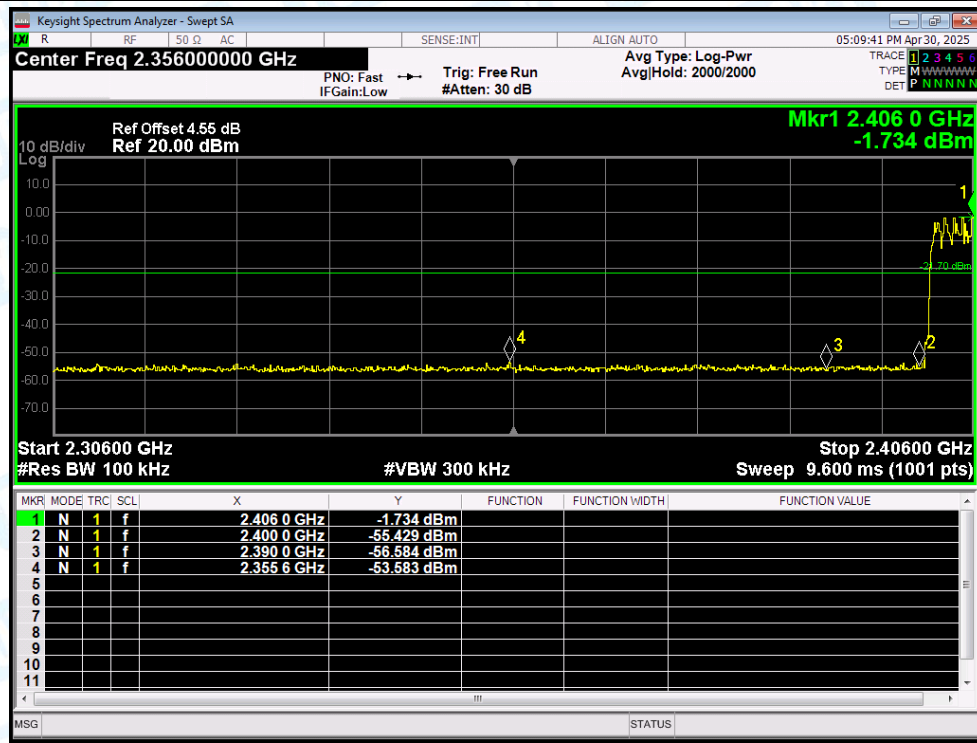


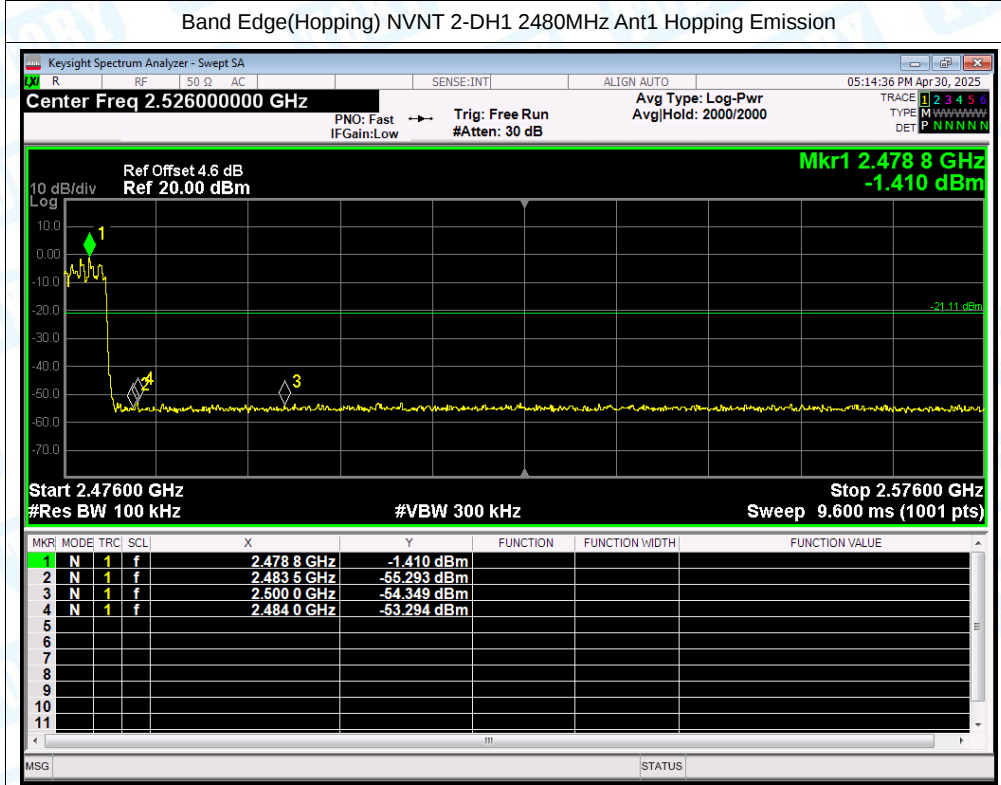
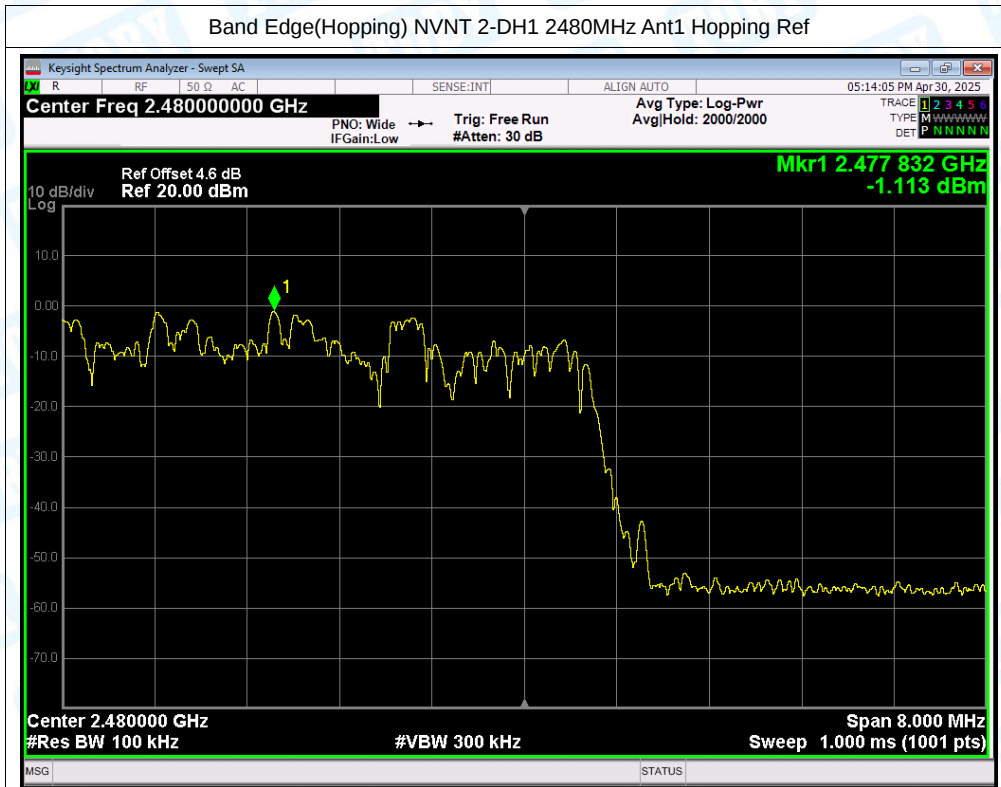


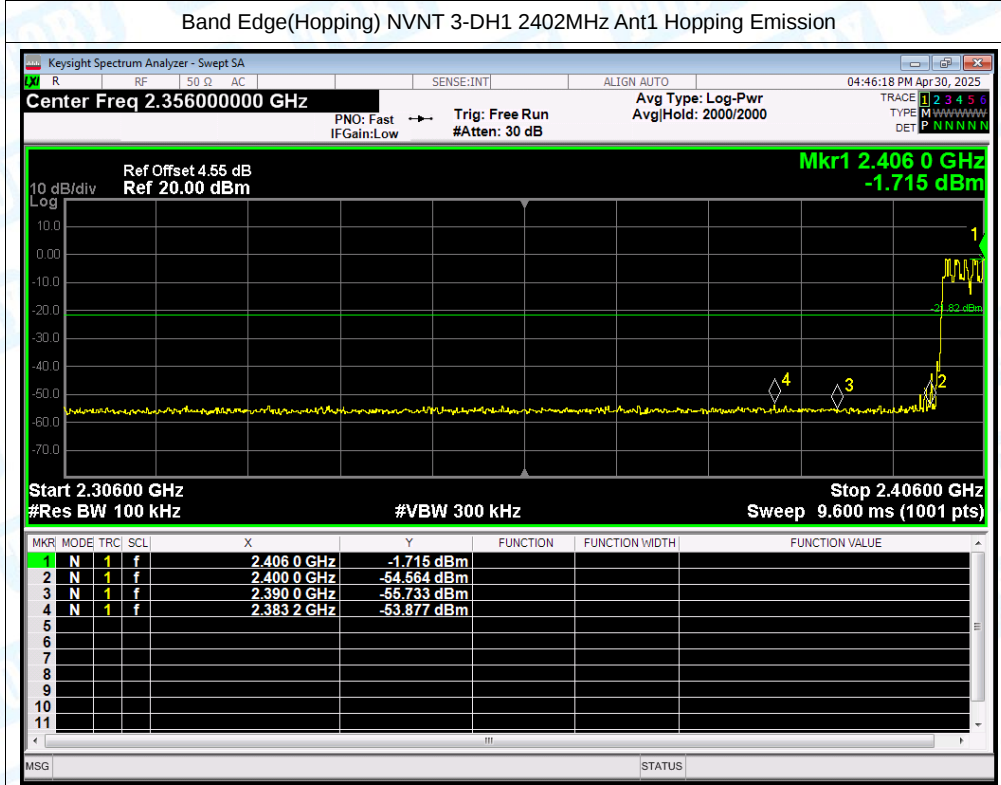
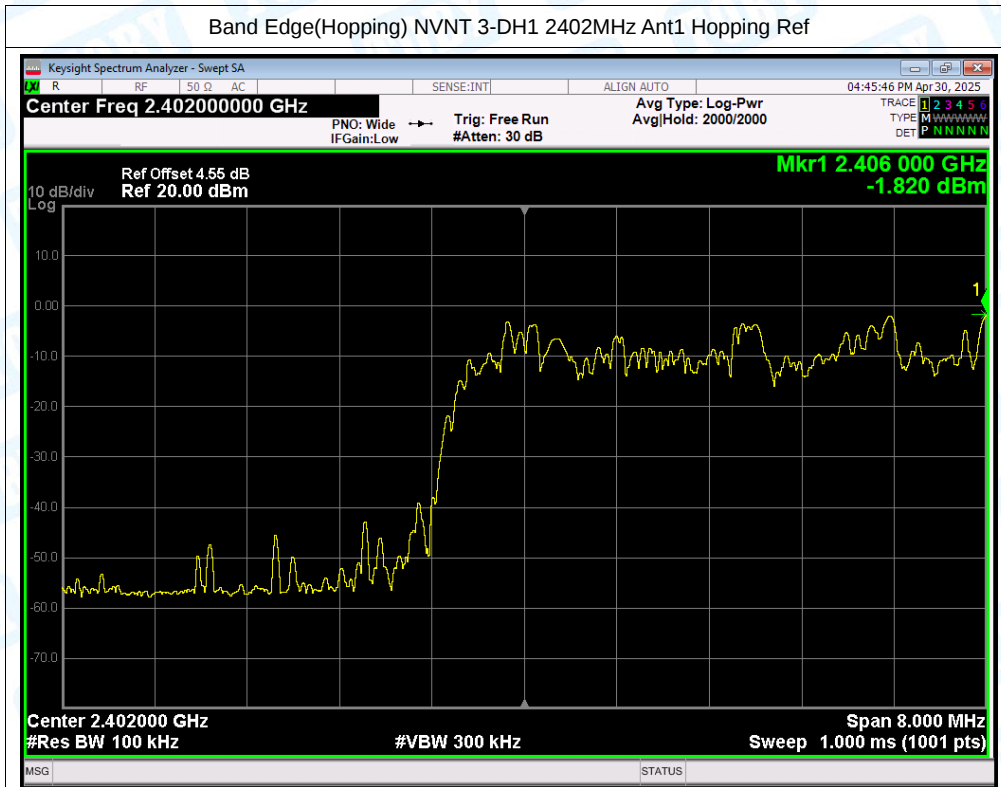
Band Edge(Hopping) NVNT 2-DH1 2402MHz Ant1 Hopping Ref

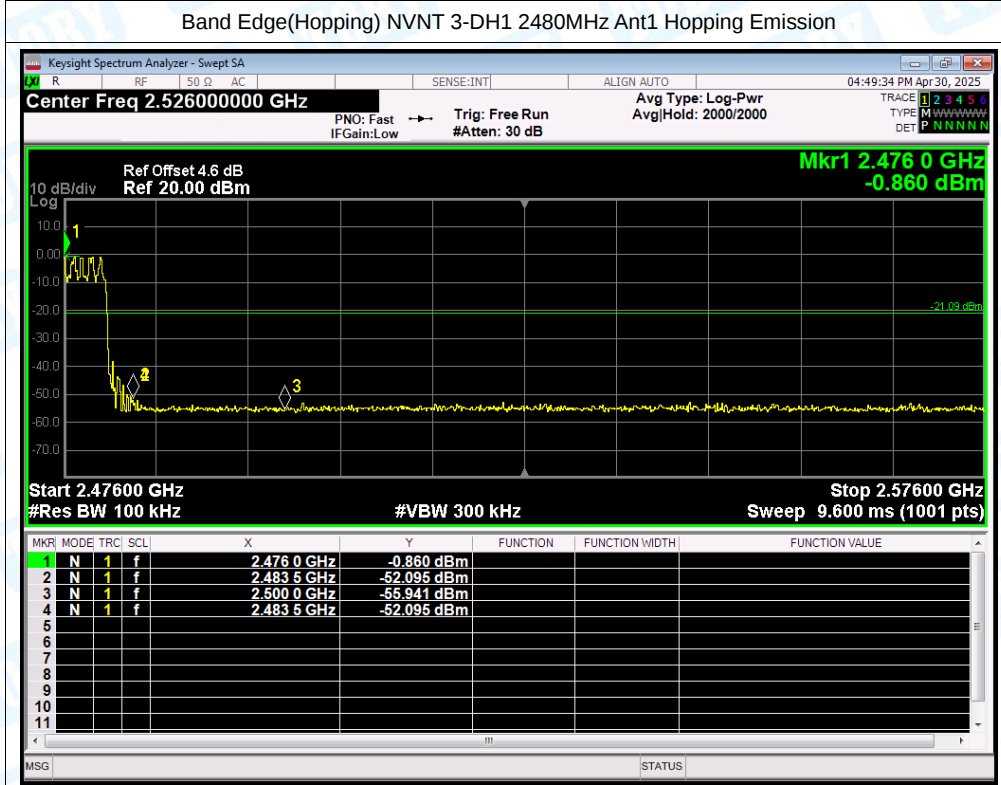
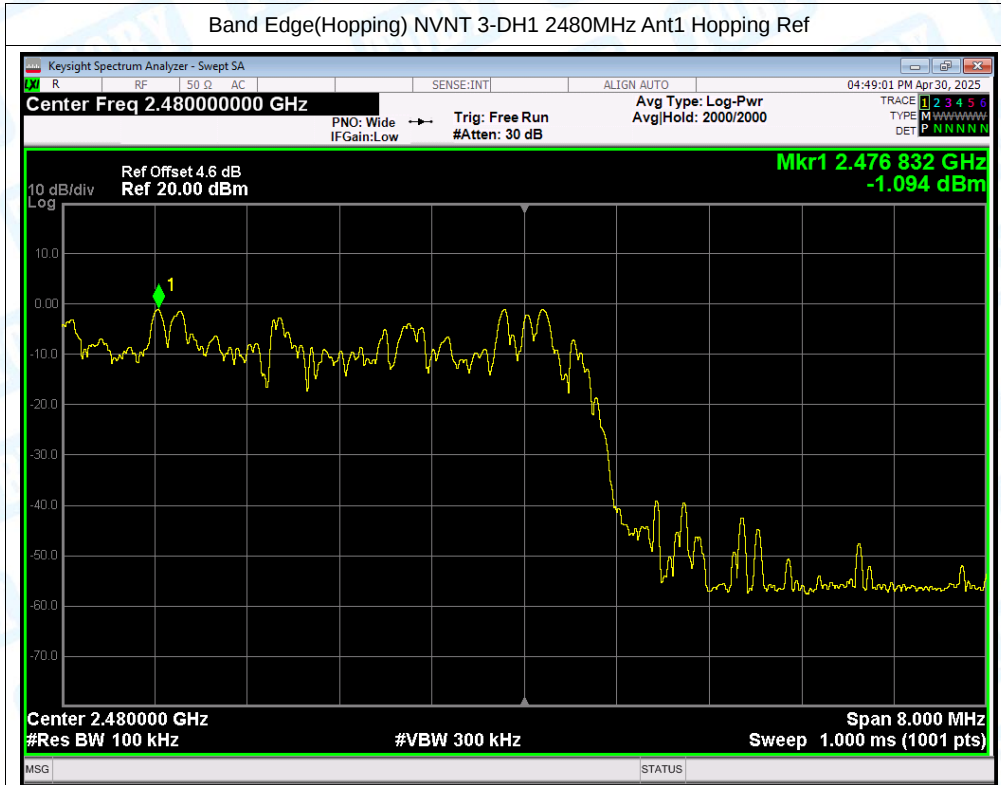


Band Edge(Hopping) NVNT 2-DH1 2402MHz Ant1 Hopping Emission







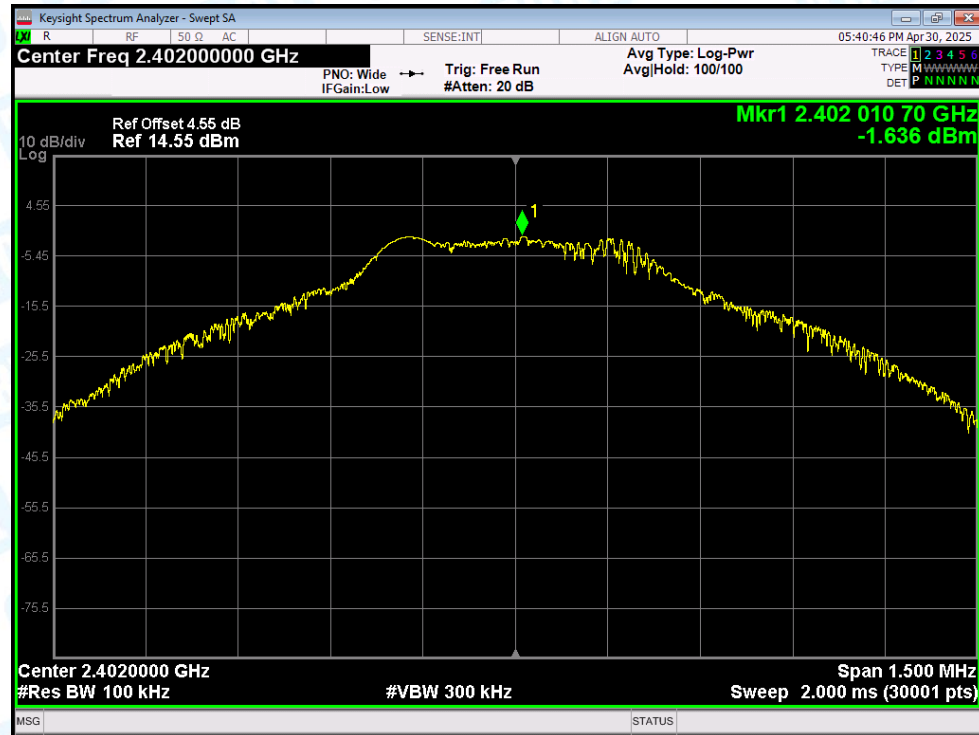


7. Conducted RF Spurious Emission

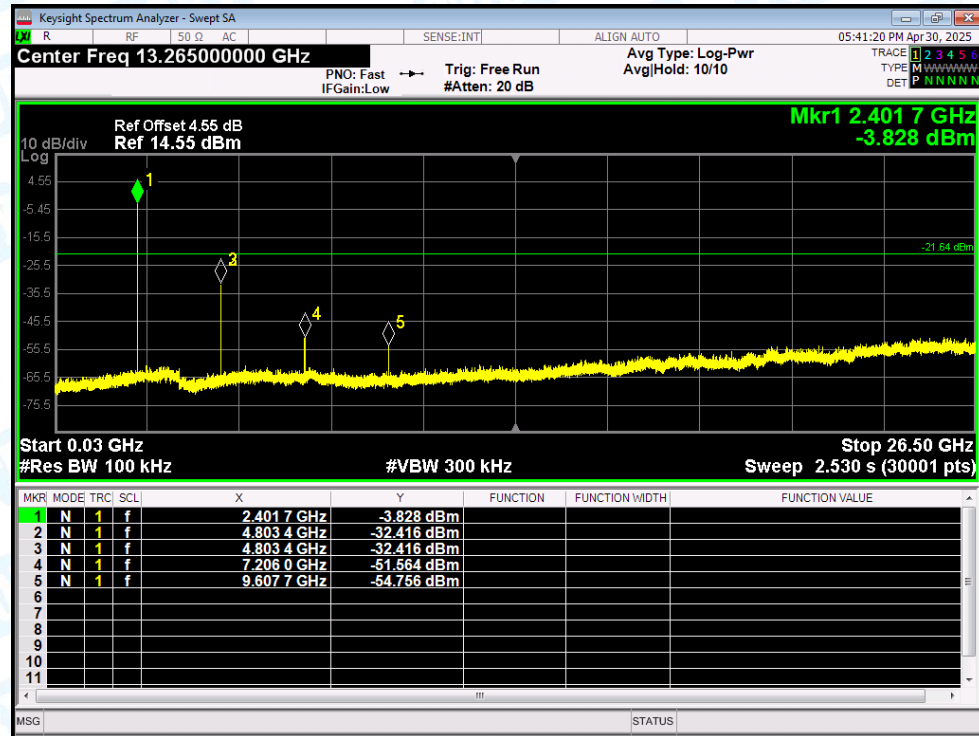
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	-30.78	-20	Pass
NVNT	1-DH1	2441	Ant1	-35.26	-20	Pass
NVNT	1-DH1	2480	Ant1	-28.95	-20	Pass
NVNT	2-DH1	2402	Ant1	-35.39	-20	Pass
NVNT	2-DH1	2441	Ant1	-31.23	-20	Pass
NVNT	2-DH1	2480	Ant1	-34.58	-20	Pass
NVNT	3-DH1	2402	Ant1	-34.71	-20	Pass
NVNT	3-DH1	2441	Ant1	-28.62	-20	Pass
NVNT	3-DH1	2480	Ant1	-29.63	-20	Pass

Test Graphs

Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Ref



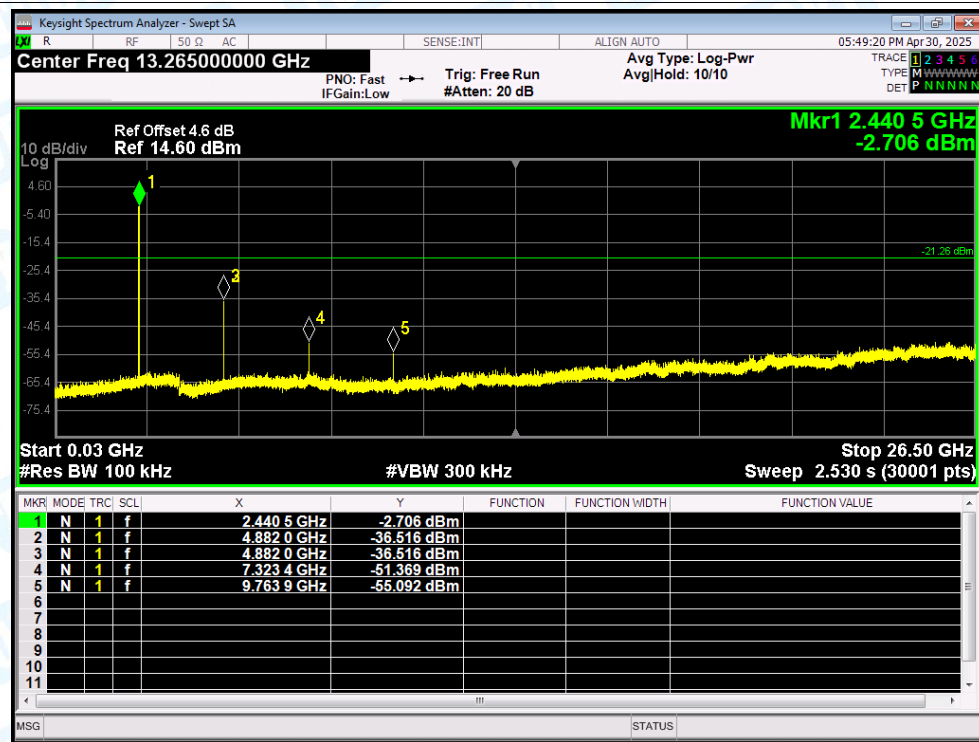
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Emission



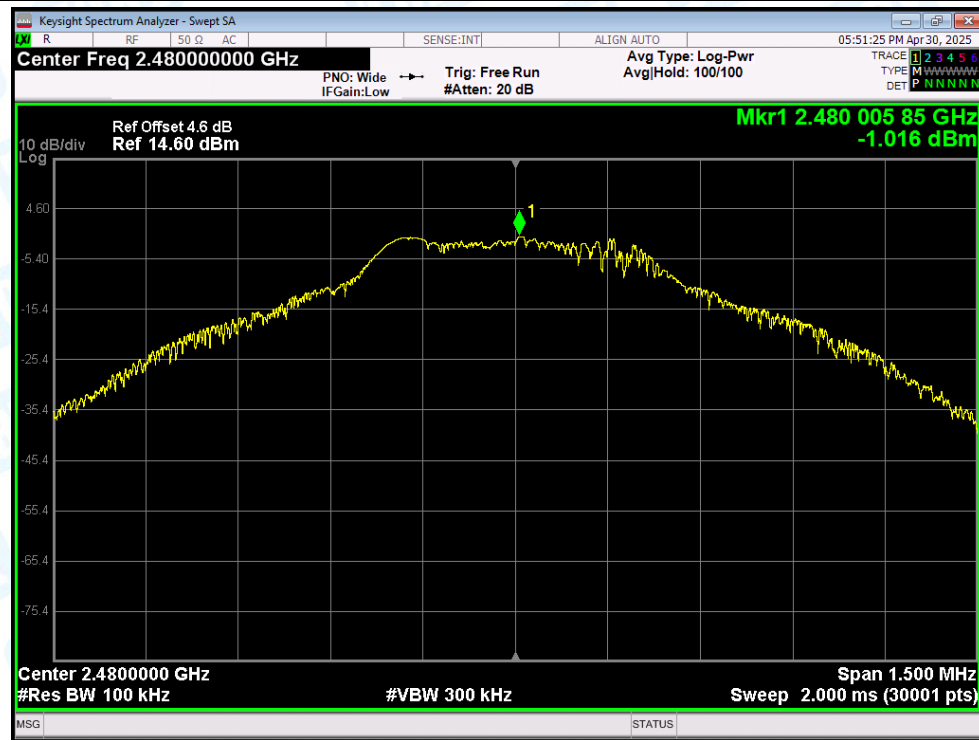
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Ref



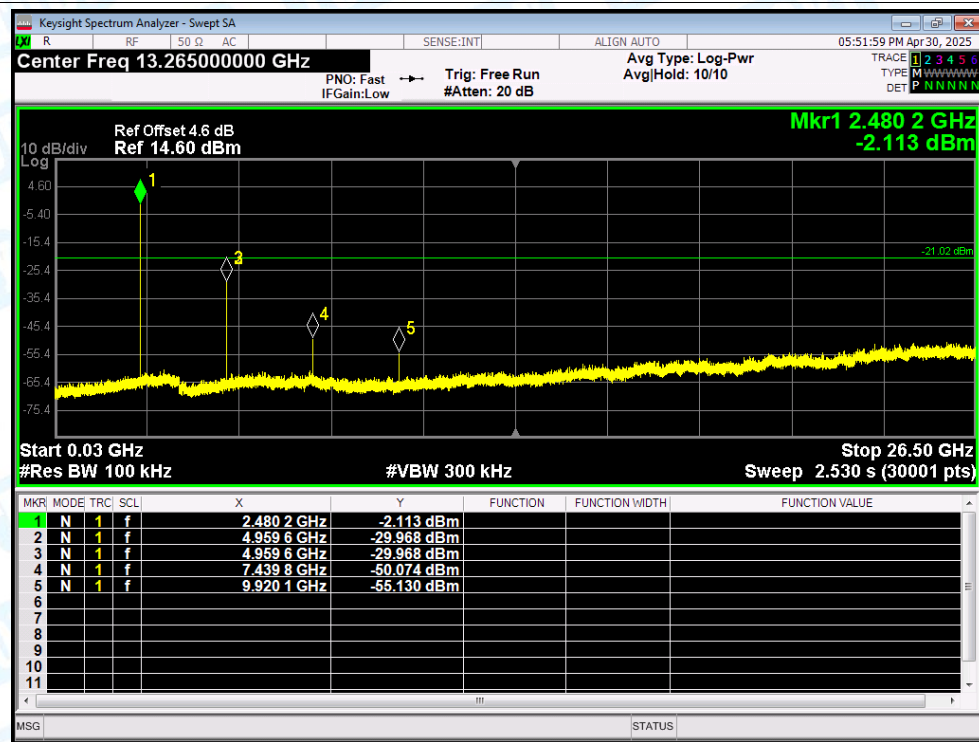
Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Emission



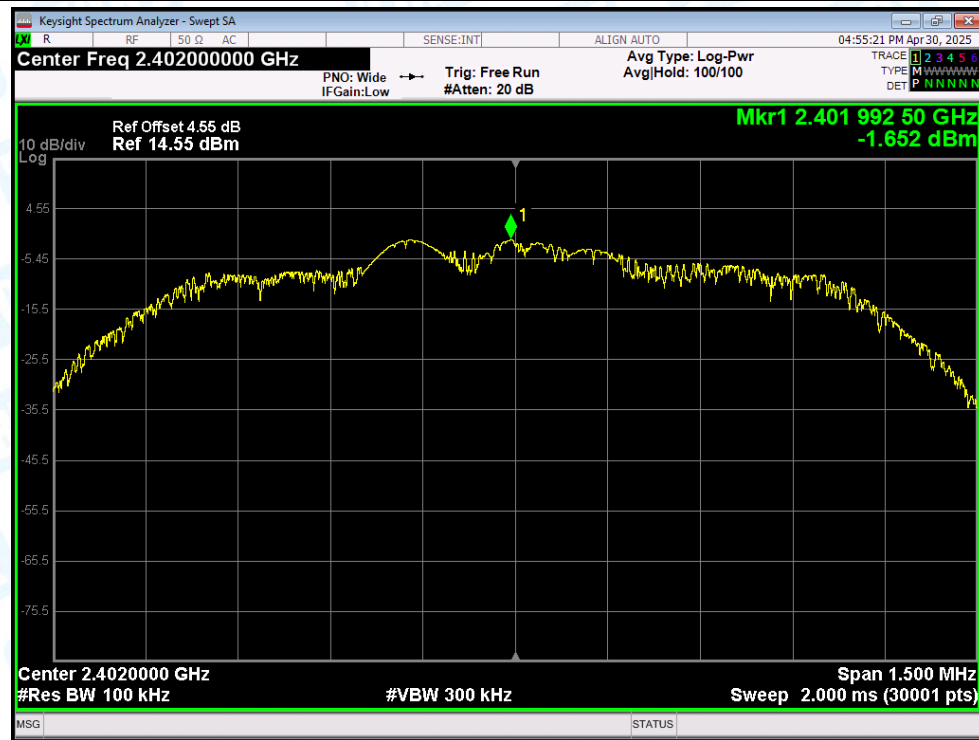
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Ref



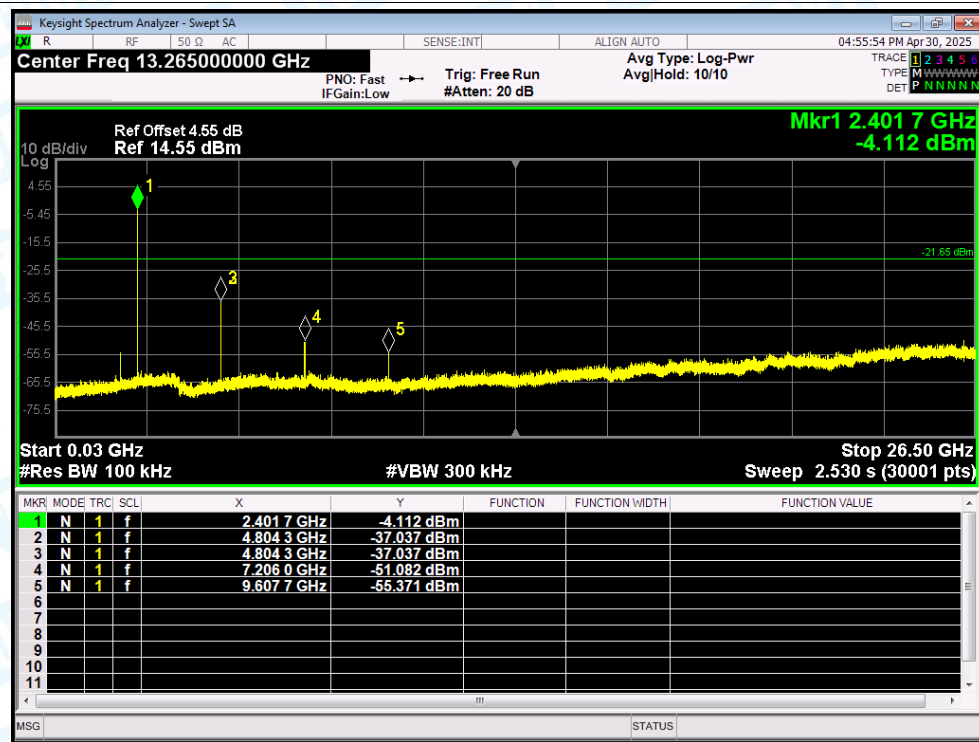
Tx. Spurious NVNT 1-DH1 2480MHz Ant1 Emission



Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Ref



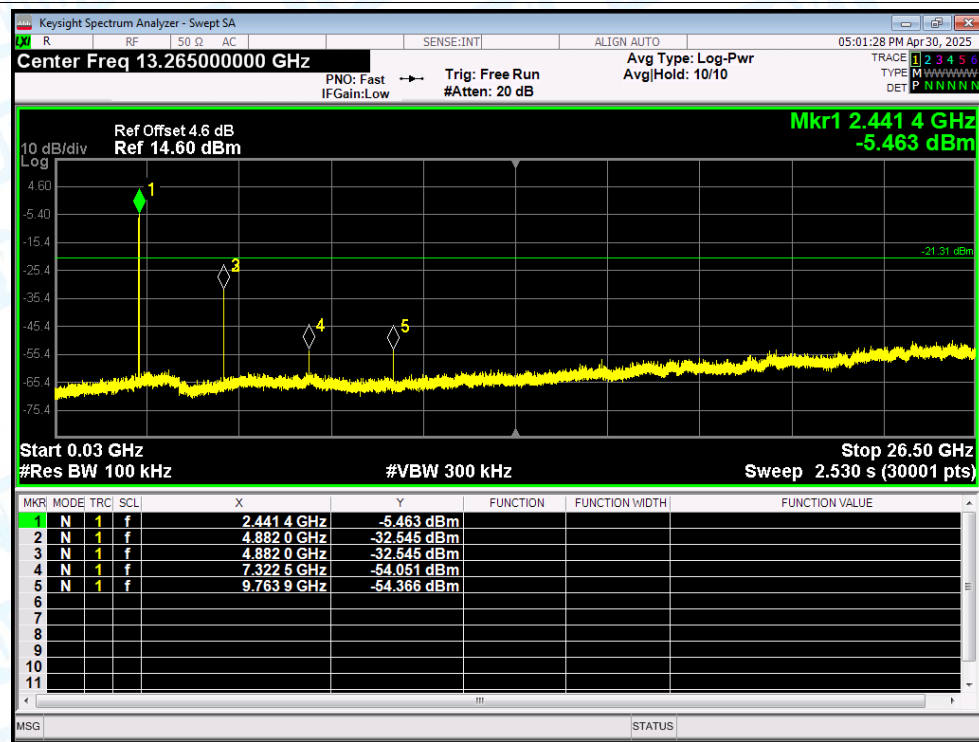
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Emission



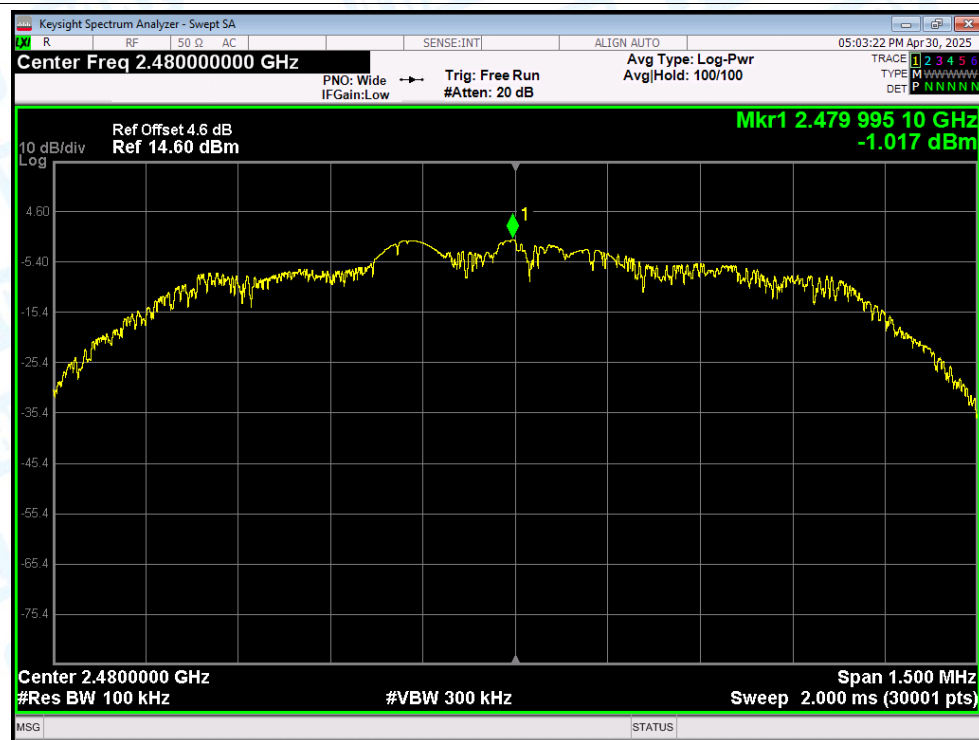
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Ref



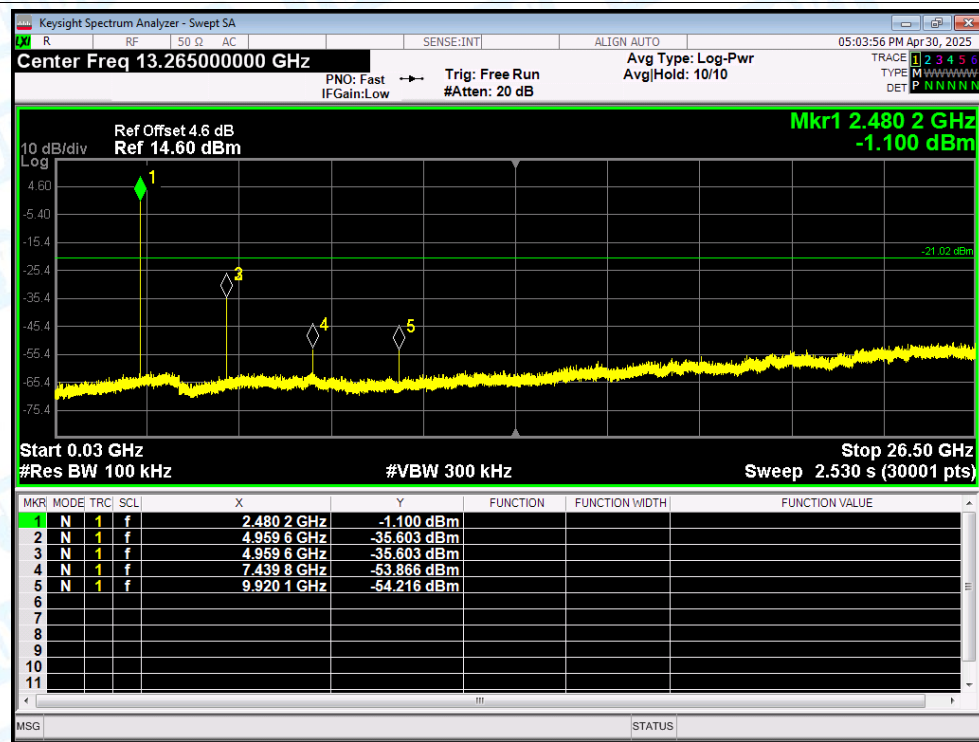
Tx. Spurious NVNT 2-DH1 2441MHz Ant1 Emission



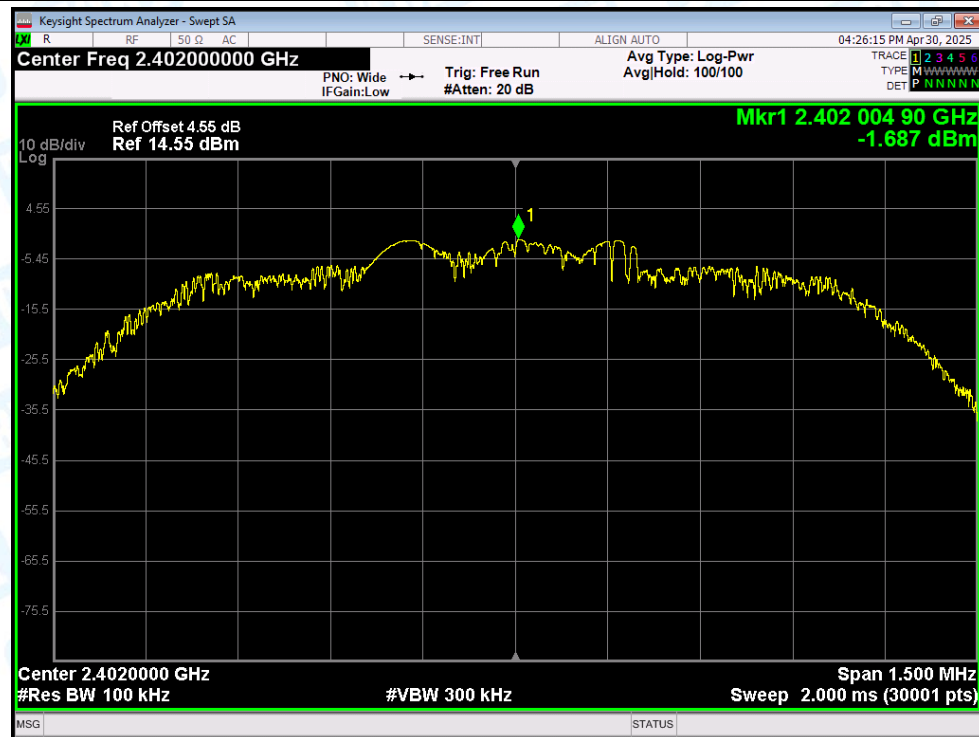
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Ref



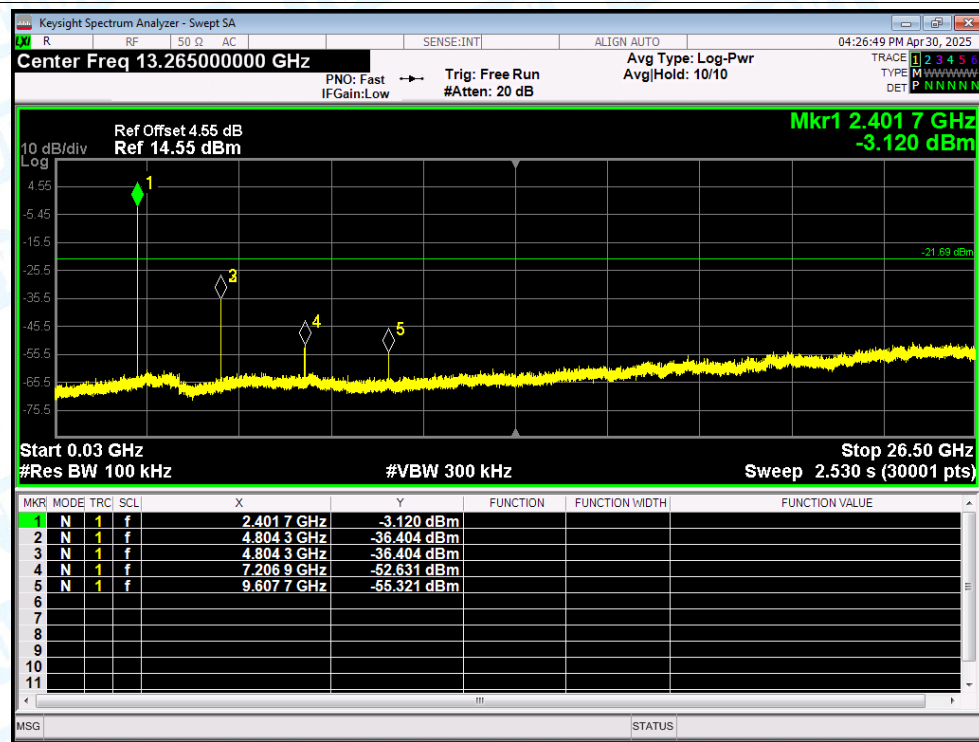
Tx. Spurious NVNT 2-DH1 2480MHz Ant1 Emission



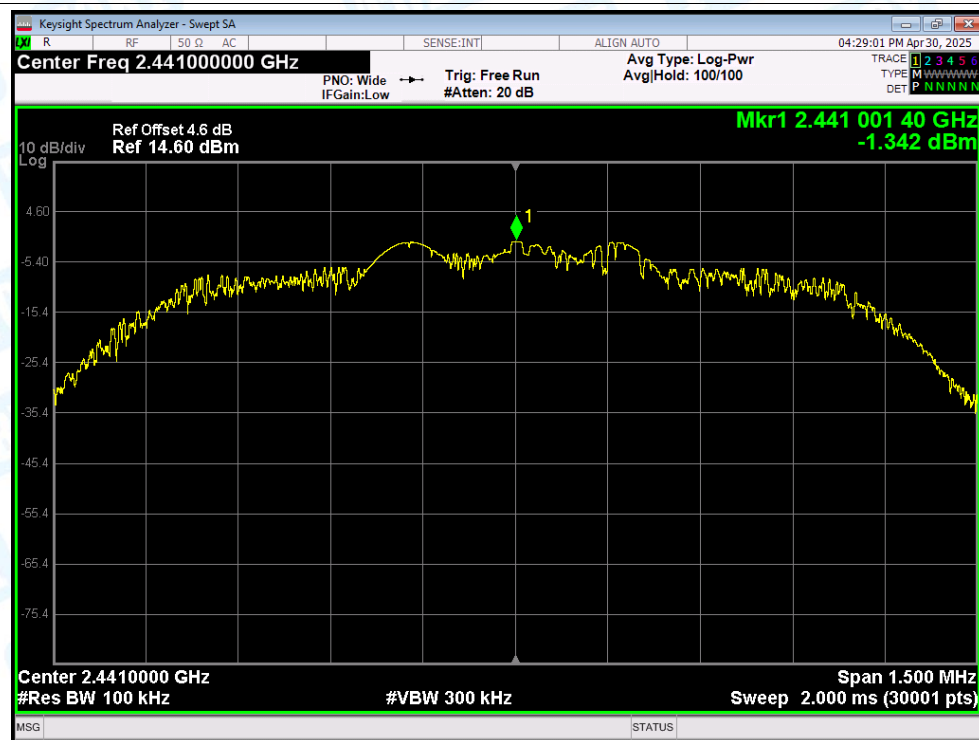
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Ref



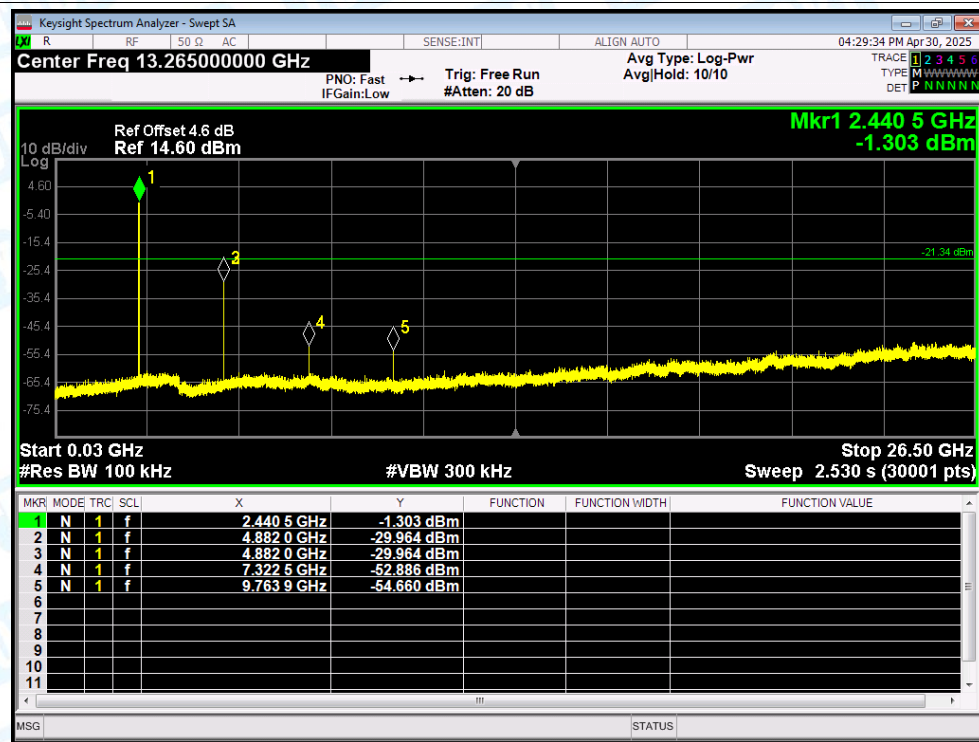
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Emission



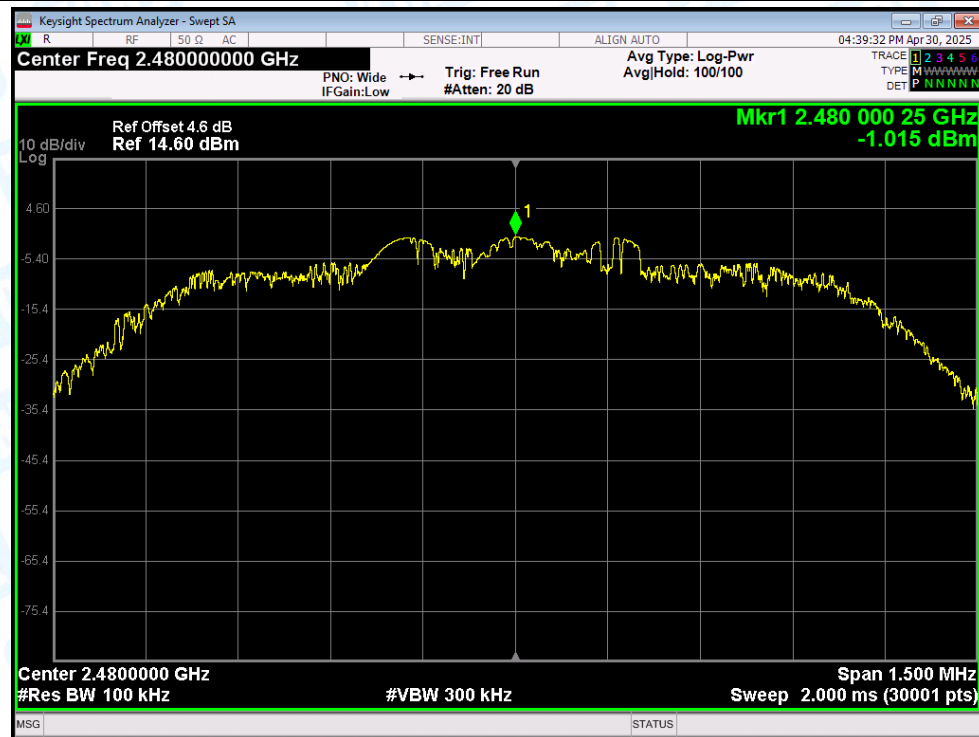
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Ref



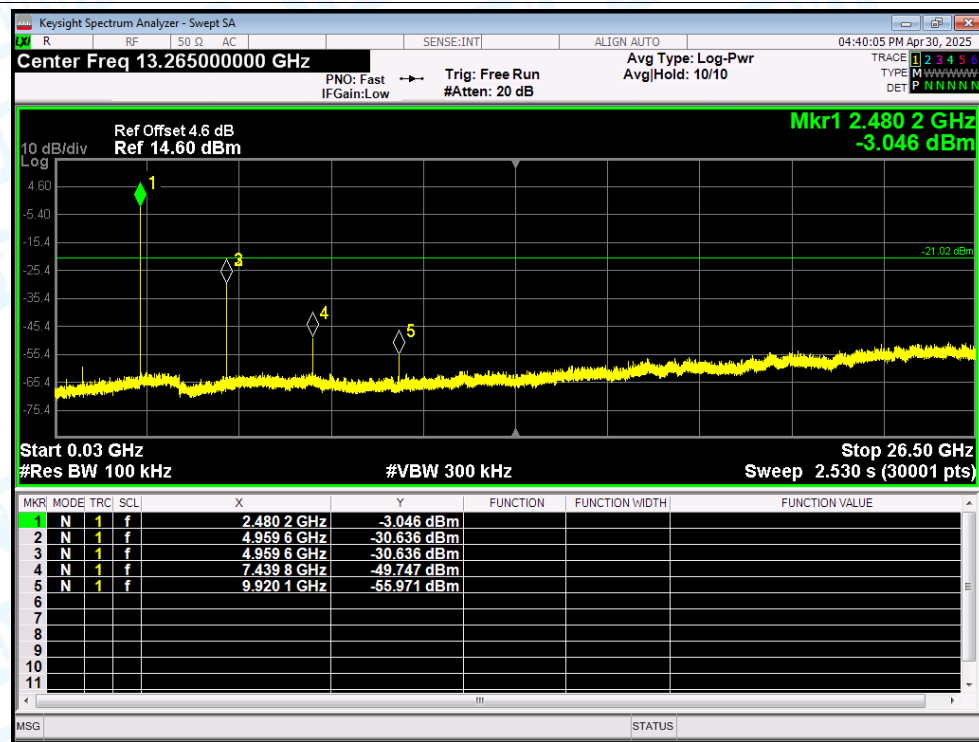
Tx. Spurious NVNT 3-DH1 2441MHz Ant1 Emission



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Ref



Tx. Spurious NVNT 3-DH1 2480MHz Ant1 Emission

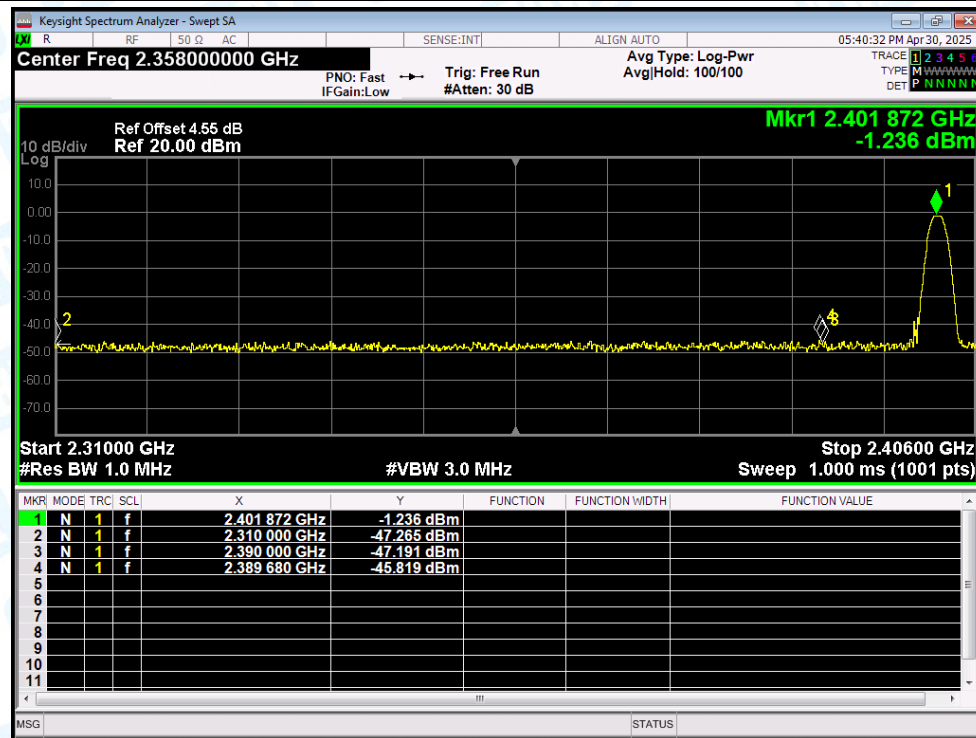


8.Restrict Band

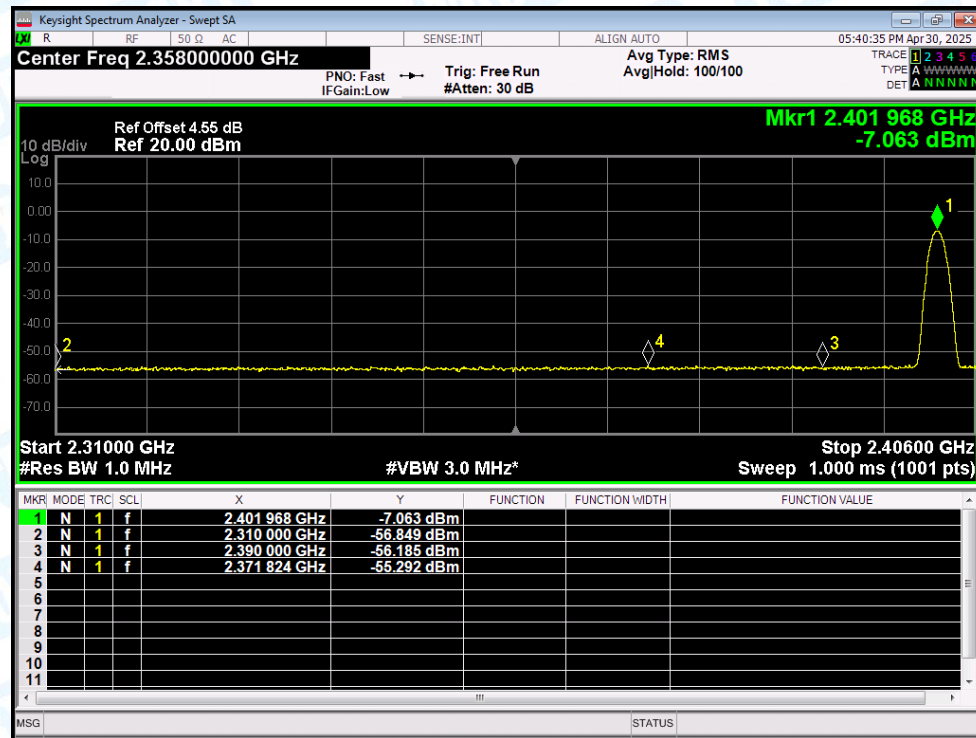
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-47.27	2	-	49.99	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-56.85	2	4.84	45.25	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2389.68	-45.82	2	-	51.44	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2371.824	-55.29	2	4.84	46.81	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-47.19	2	-	50.07	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-56.19	2	4.84	45.91	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-47.51	2	-	49.75	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-55.37	2	4.84	46.73	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2492.656	-44.86	2	-	52.4	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2493.016	-54.57	2	4.84	47.53	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-47.55	2	-	49.71	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-55.33	2	4.84	46.77	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-47.96	2	-	49.3	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-55.92	2	4.74	46.08	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2336.688	-45.26	2	-	52	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2378.16	-55.43	2	4.74	46.57	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-46.73	2	-	50.53	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-56.1	2	4.74	45.9	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-46.47	2	-	50.79	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-55.32	2	4.84	46.78	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2484.328	-43.61	2	-	53.65	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2484.616	-54.8	2	4.84	47.3	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-47.66	2	-	49.6	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-55.96	2	4.84	46.14	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-48.39	2	-	48.87	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-56.85	2	4.74	45.15	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2378.736	-45.48	2	-	51.78	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2372.304	-55.39	2	4.74	46.61	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-47.87	2	-	49.39	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-55.97	2	4.74	46.03	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-46.89	2	-	50.37	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-54.51	2	4.74	47.49	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2485.144	-37.28	2	-	59.98	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2484.184	-52.56	2	4.74	49.44	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-47.79	2	-	49.47	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-55.64	2	4.74	46.36	Average	54	Pass

Test Graphs

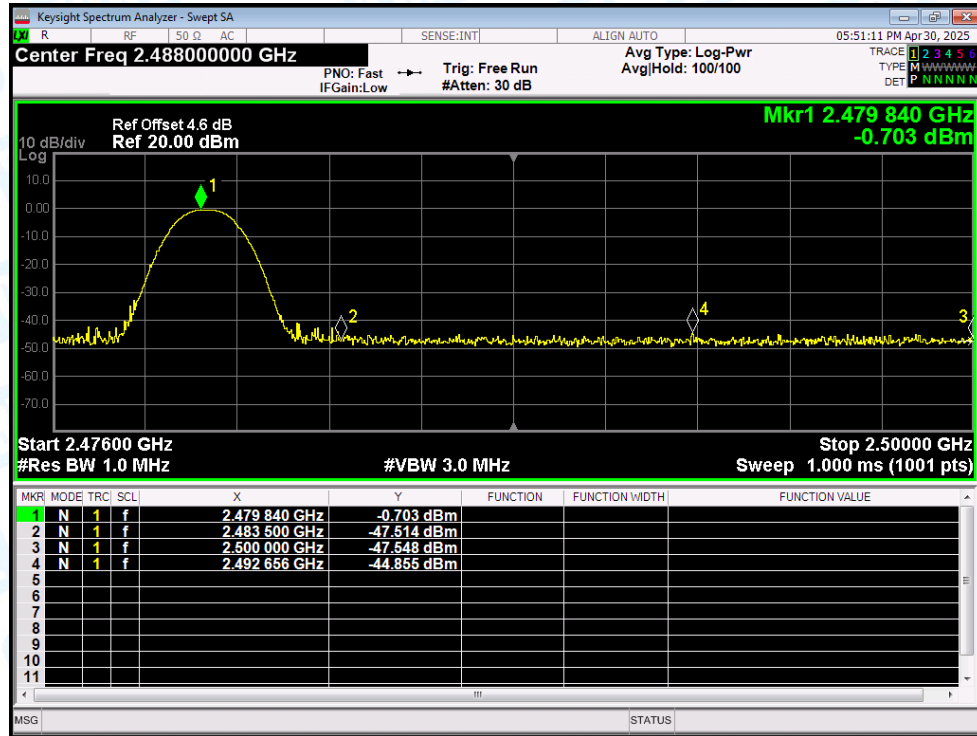
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Peak



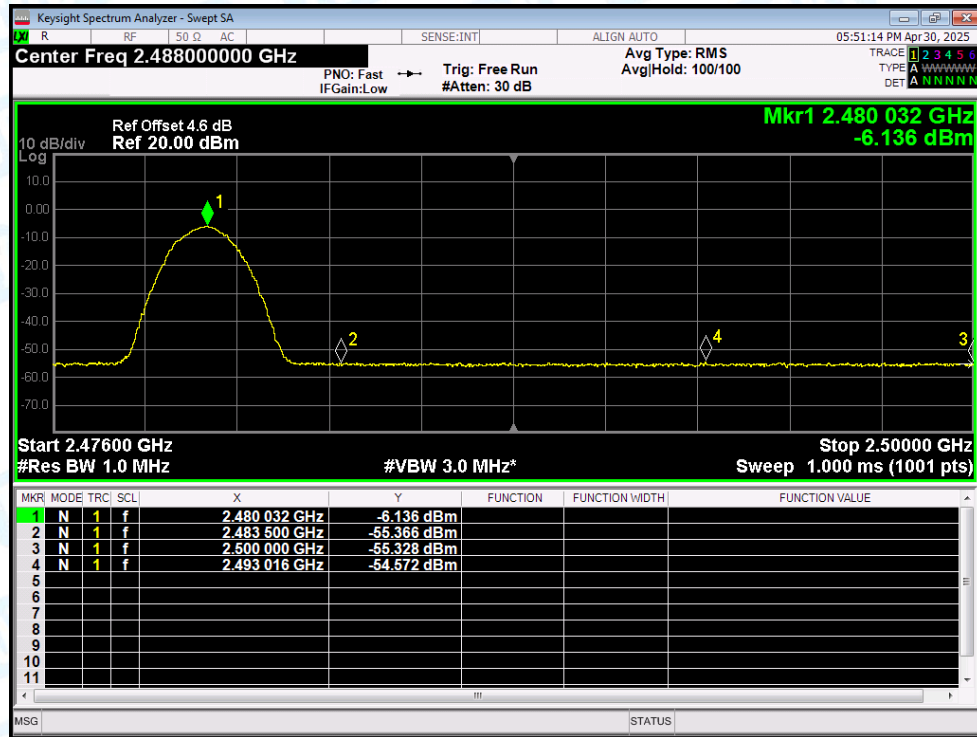
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Average



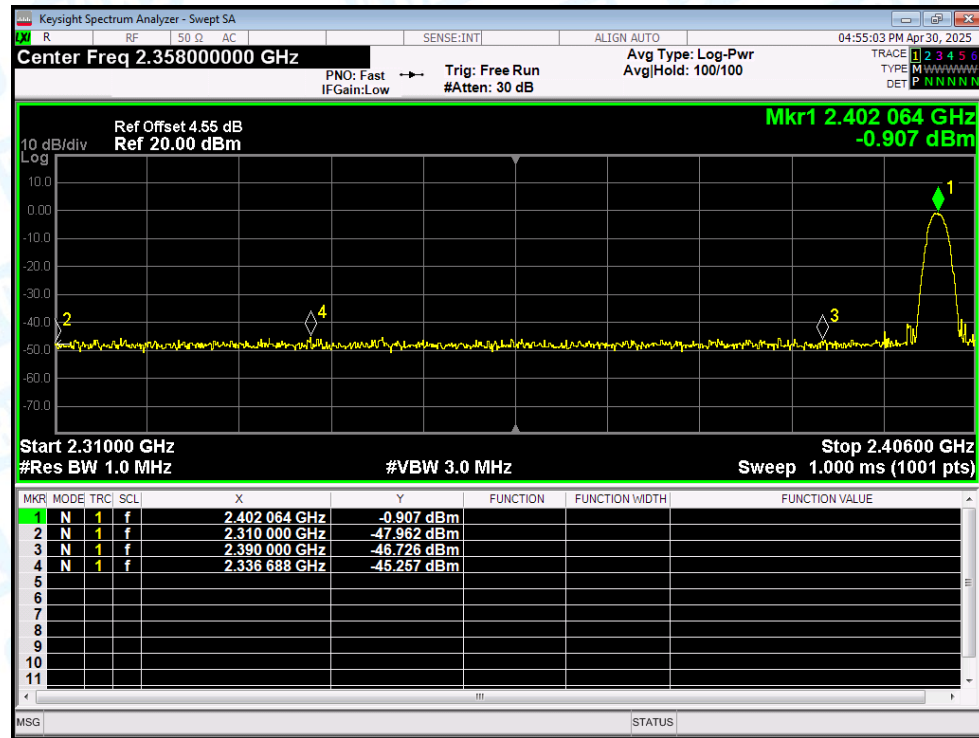
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Peak



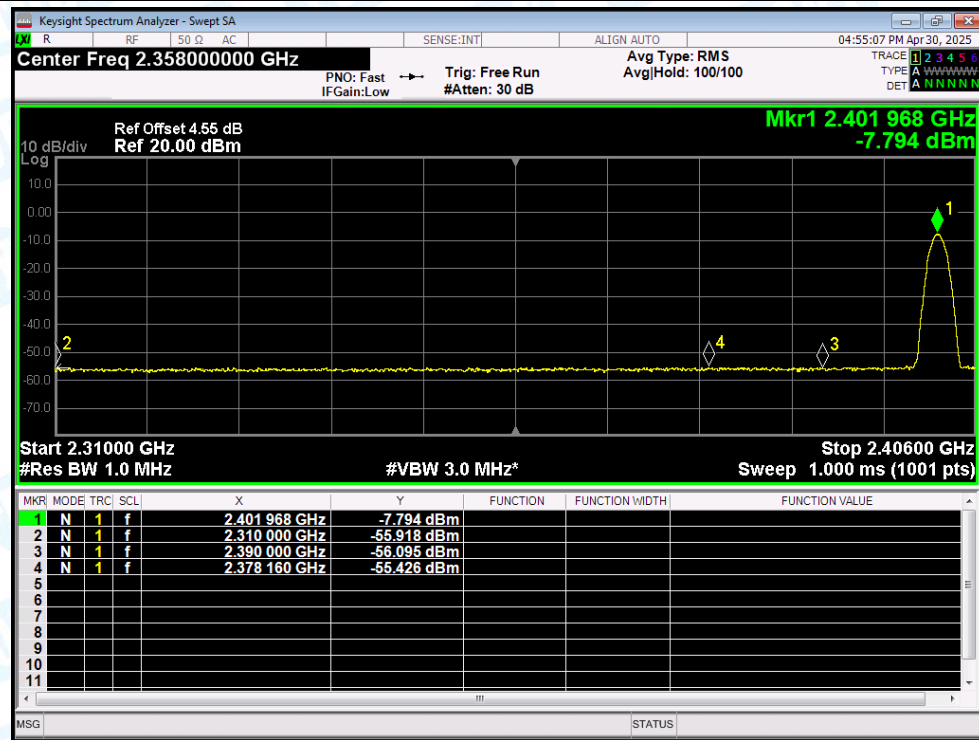
Restrict Band NVNT 1-DH1 2480MHz Ant1 No-Hopping Average



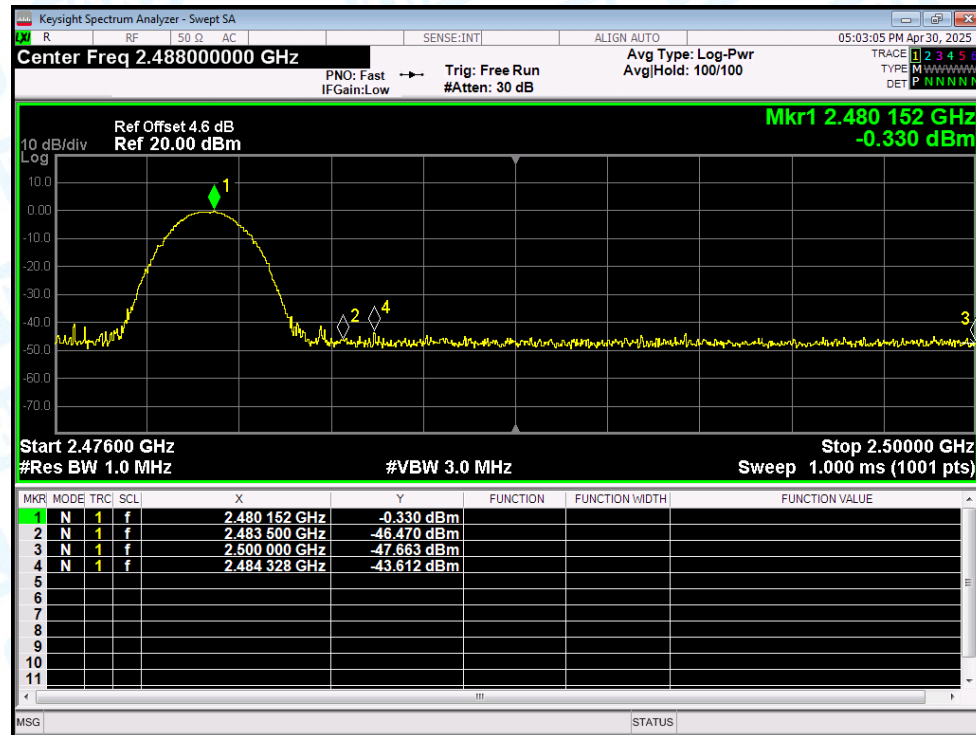
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Peak



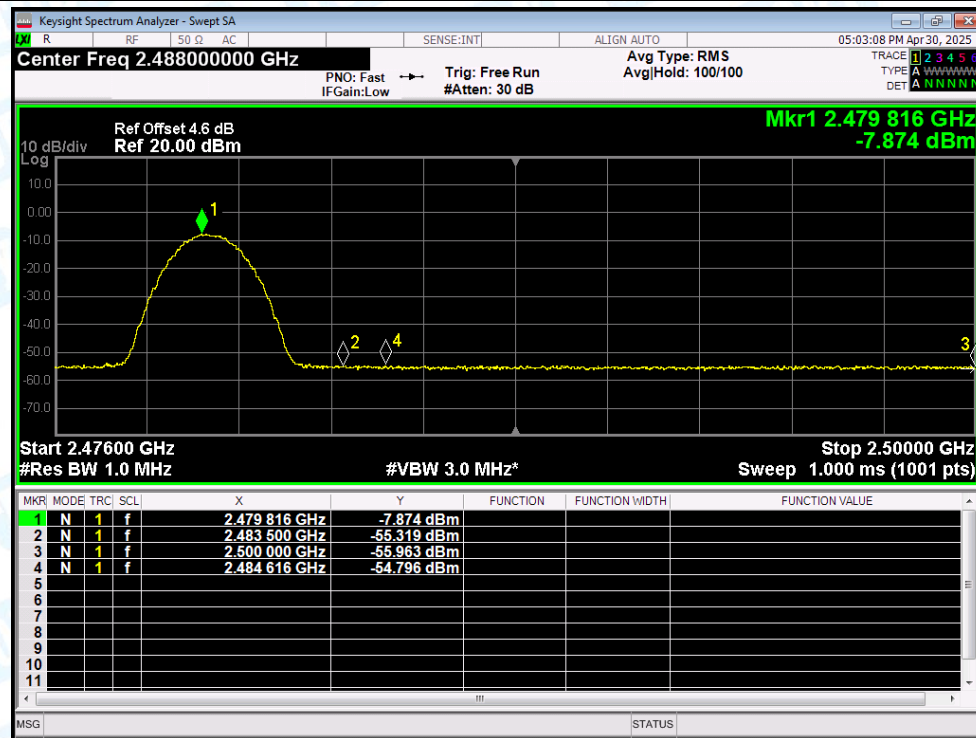
Restrict Band NVNT 2-DH1 2402MHz Ant1 No-Hopping Average



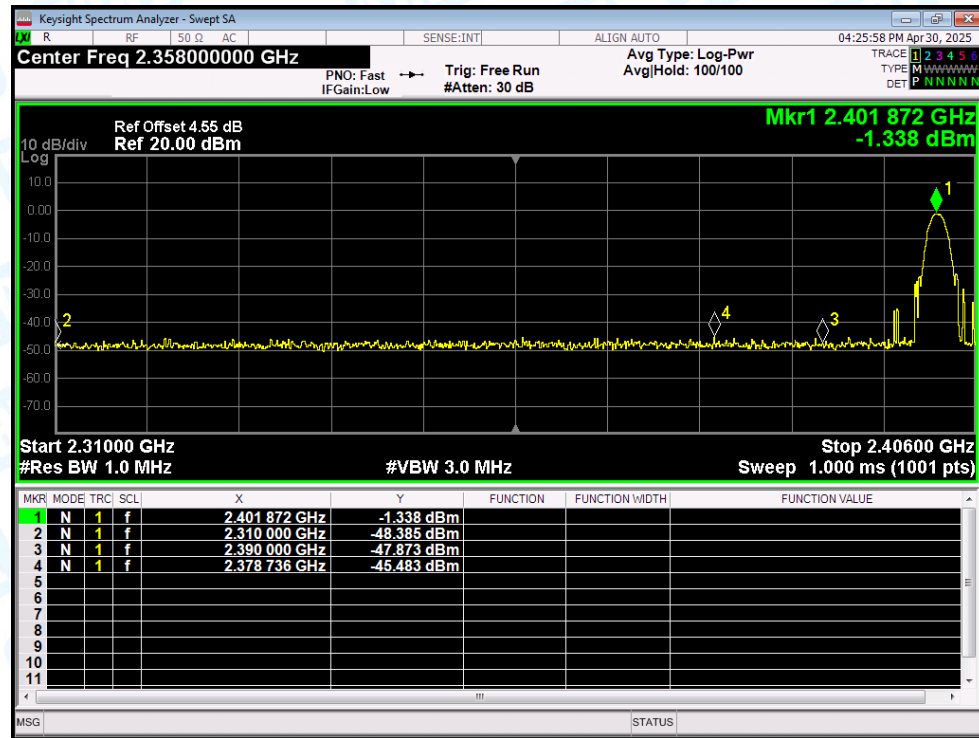
Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Peak



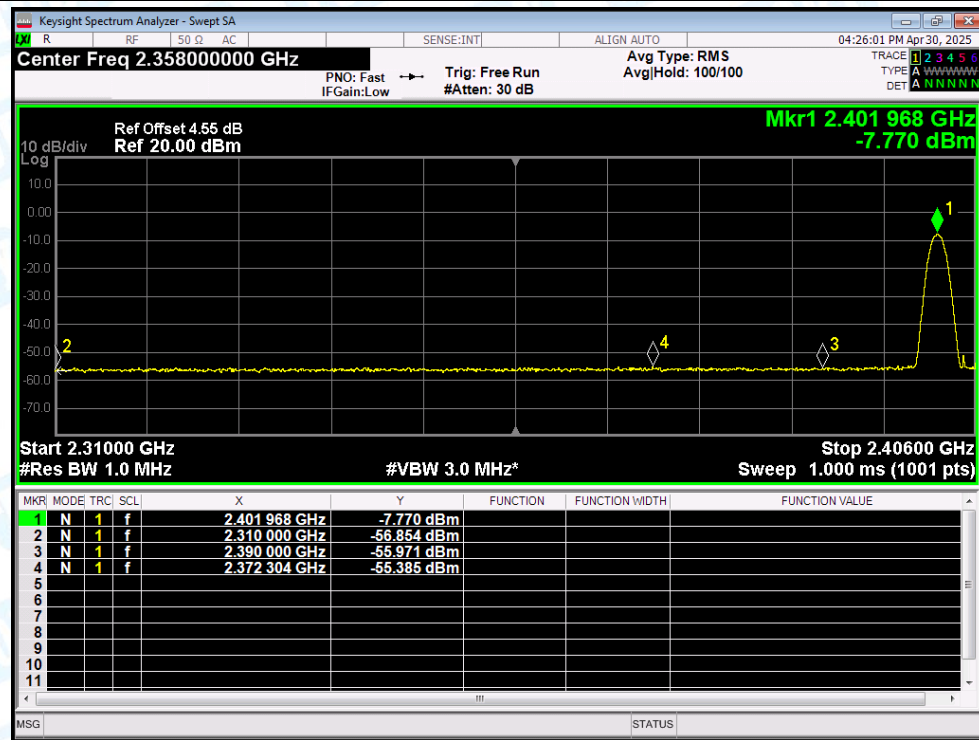
Restrict Band NVNT 2-DH1 2480MHz Ant1 No-Hopping Average



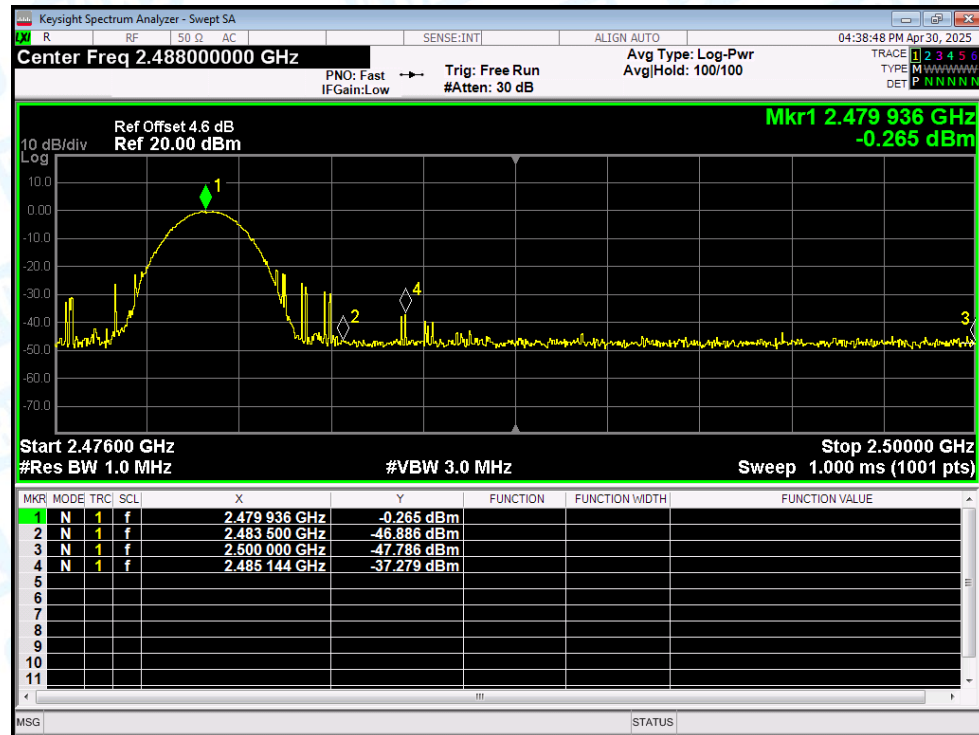
Restrict Band NVNT 3-DH1 2402MHz Ant1 No-Hopping Peak



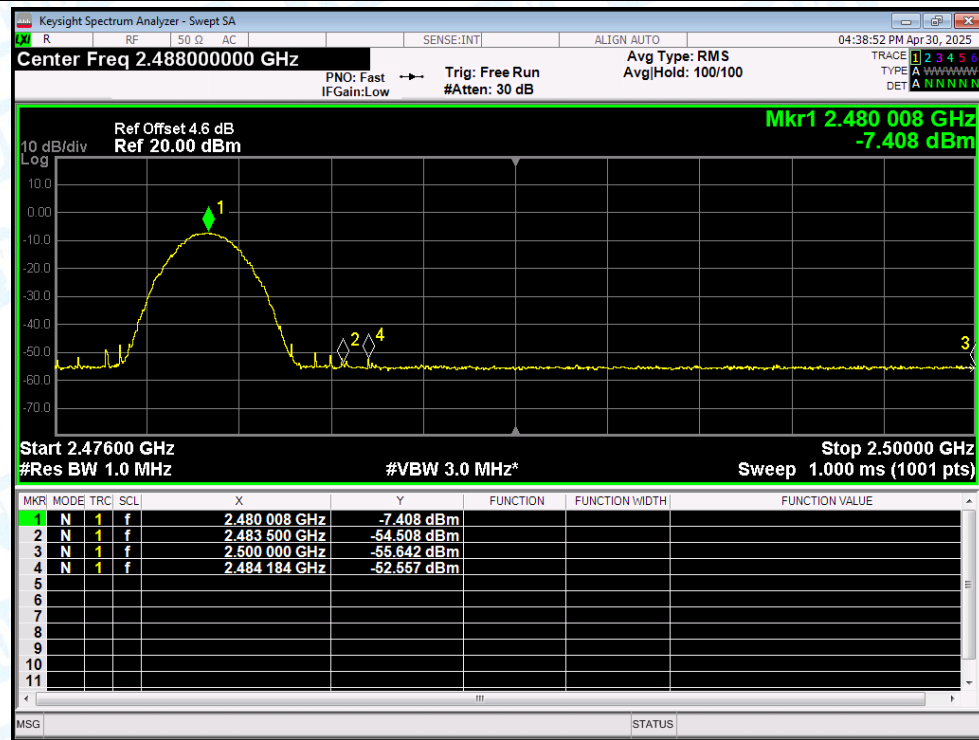
Restrict Band NVNT 3-DH1 2402MHz Ant1 No-Hopping Average



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



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

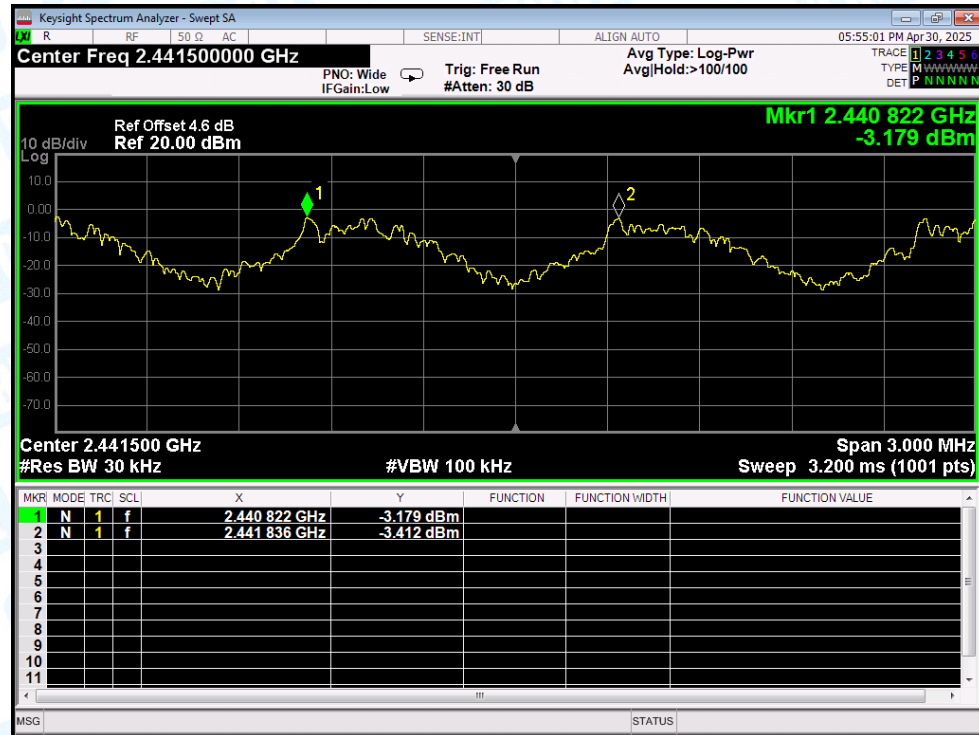


9.Carrier Frequencies Separation

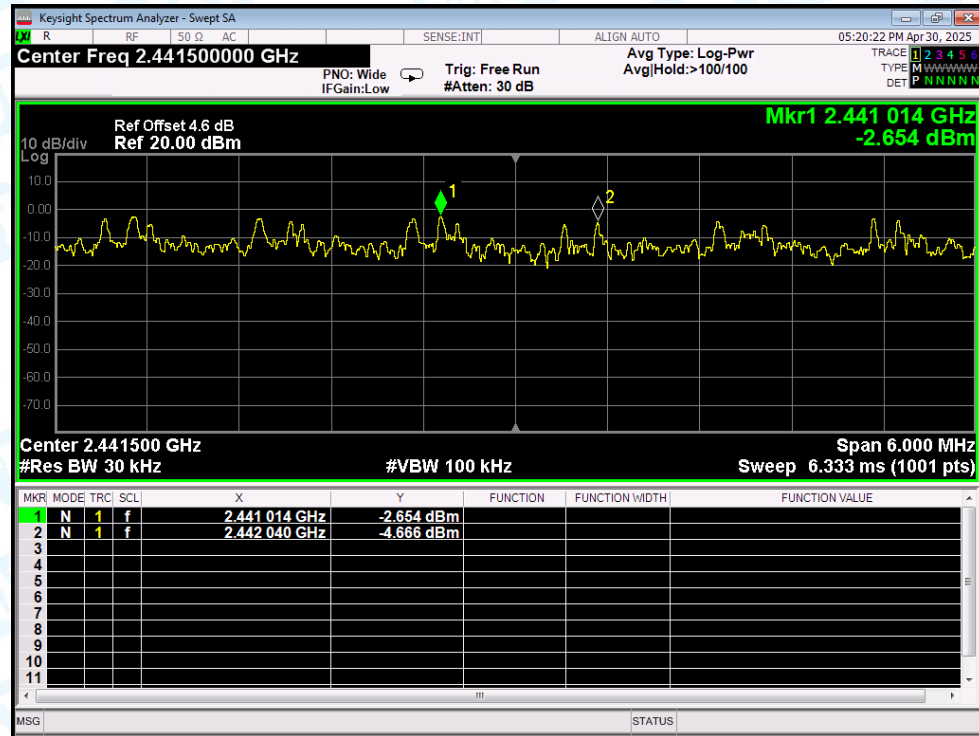
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	Ant1	2440.822	2441.836	1.014	0.58	Pass
NVNT	2-DH1	Ant1	2441.014	2442.04	1.026	0.827	Pass
NVNT	3-DH1	Ant1	2441.014	2442.16	1.146	0.025	Pass

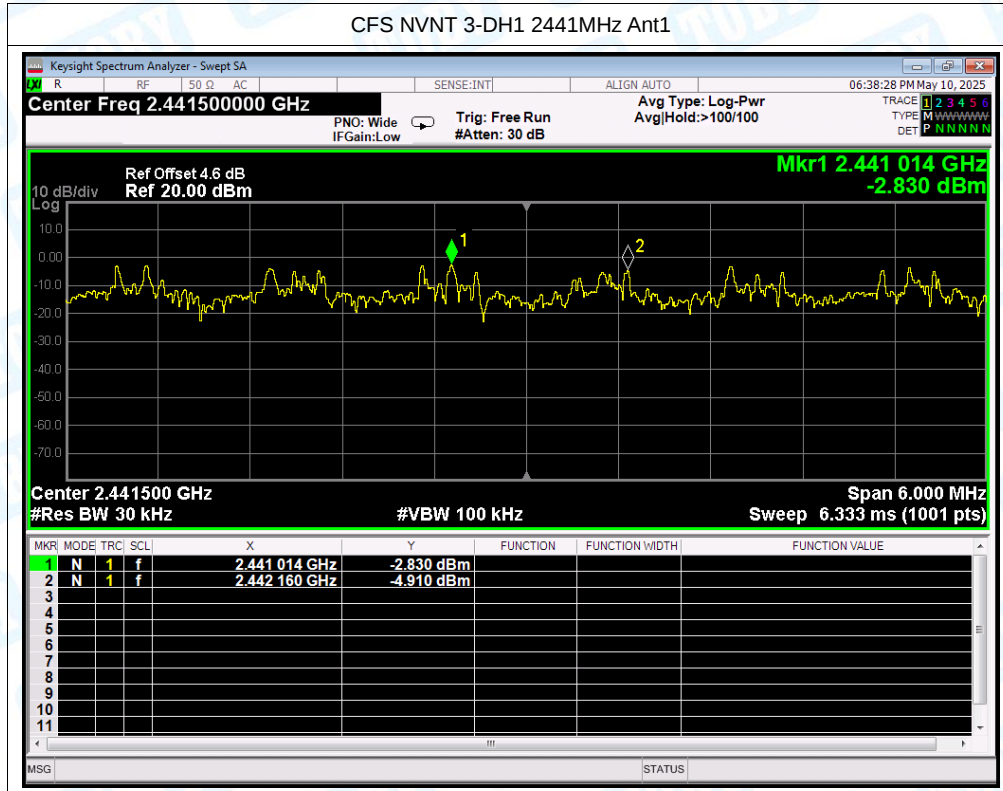
Test Graphs

CFS NVNT 1-DH1 2441MHz Ant1



CFS NVNT 2-DH1 2441MHz Ant1



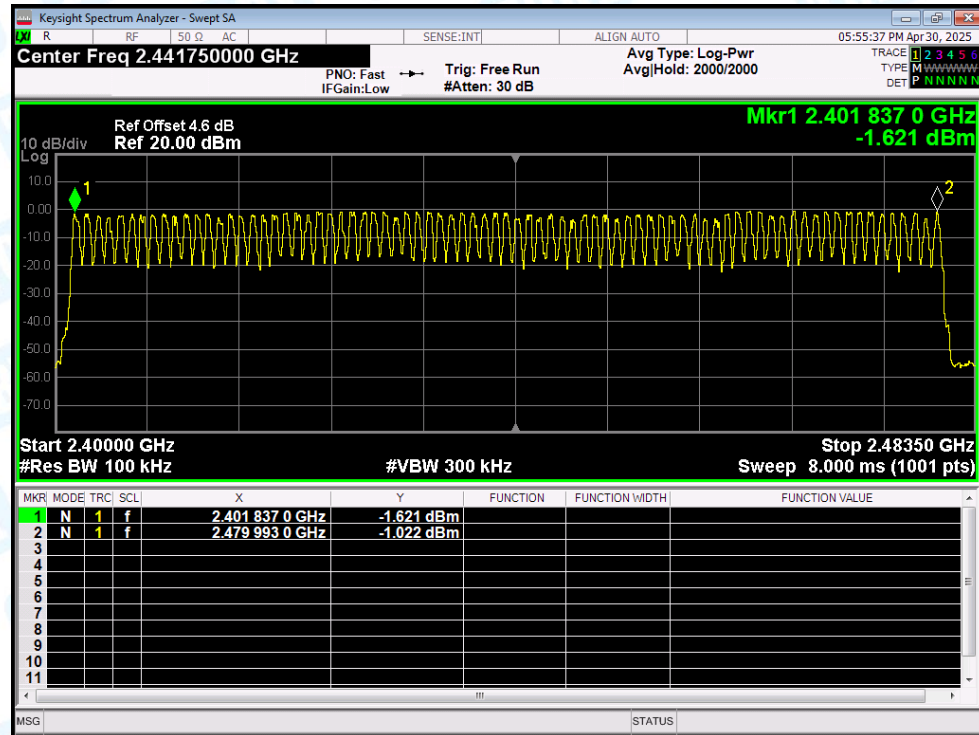


10.Number of Hopping Channel

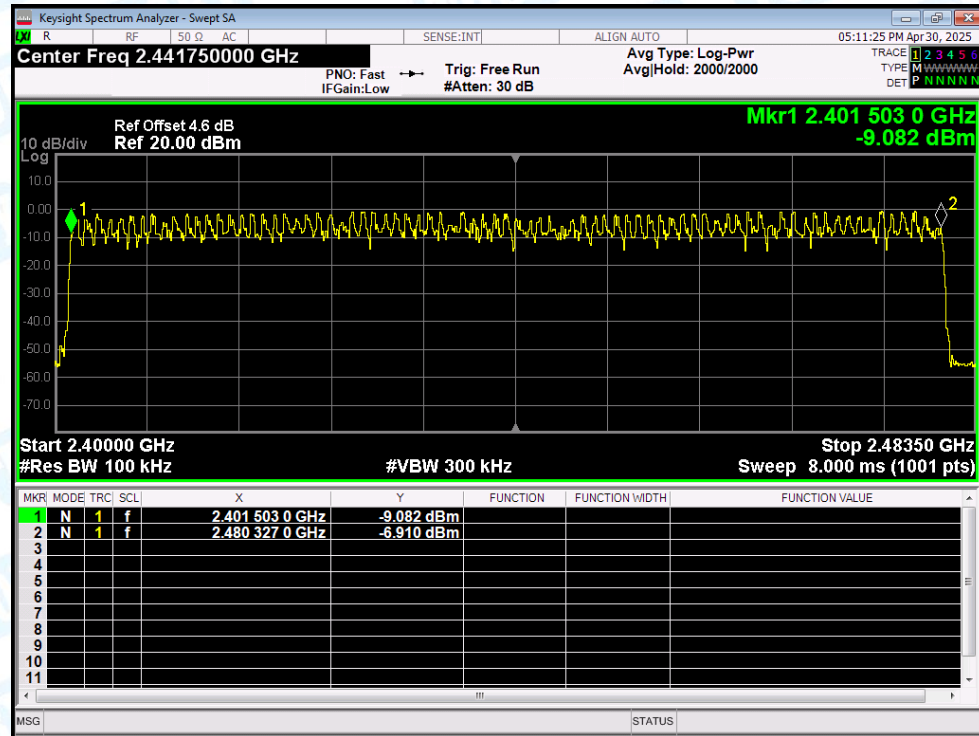
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH1	Ant1	79	15	Pass
NVNT	2-DH1	Ant1	79	15	Pass
NVNT	3-DH1	Ant1	79	15	Pass

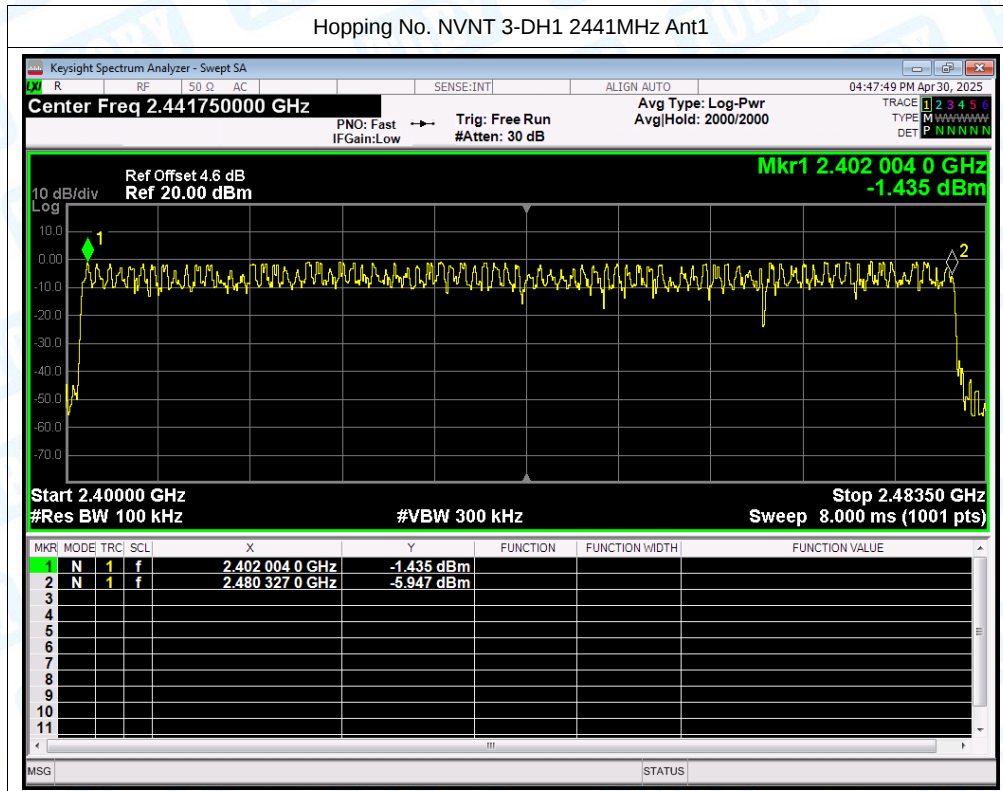
Test Graphs

Hopping No. NVNT 1-DH1 2441MHz Ant1



Hopping No. NVNT 2-DH1 2441MHz Ant1



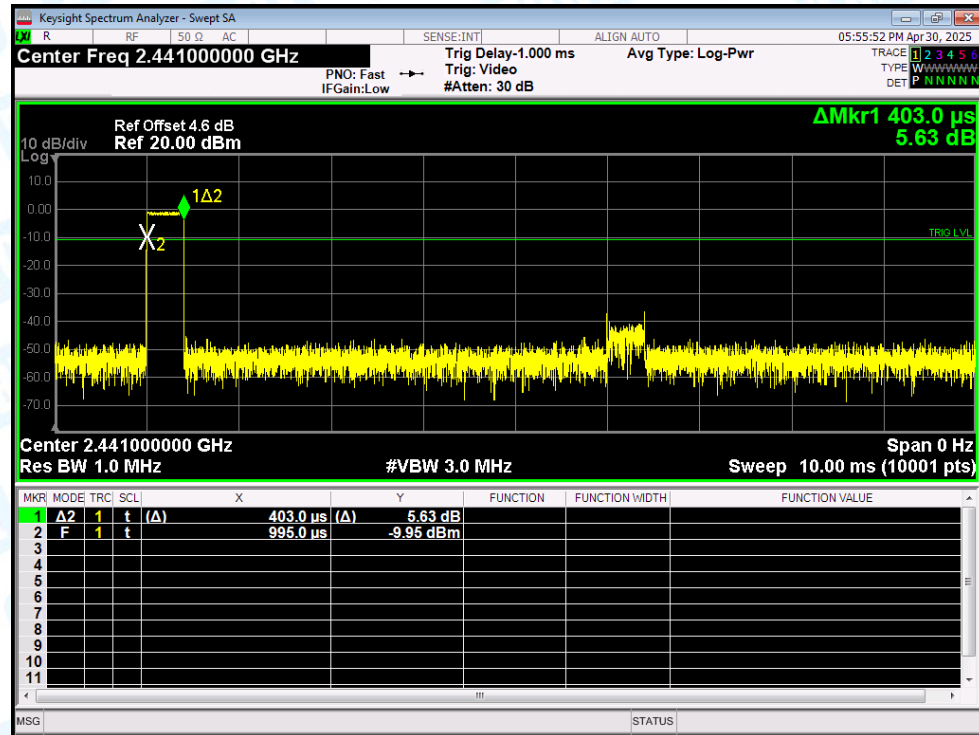


11.Dwell Time

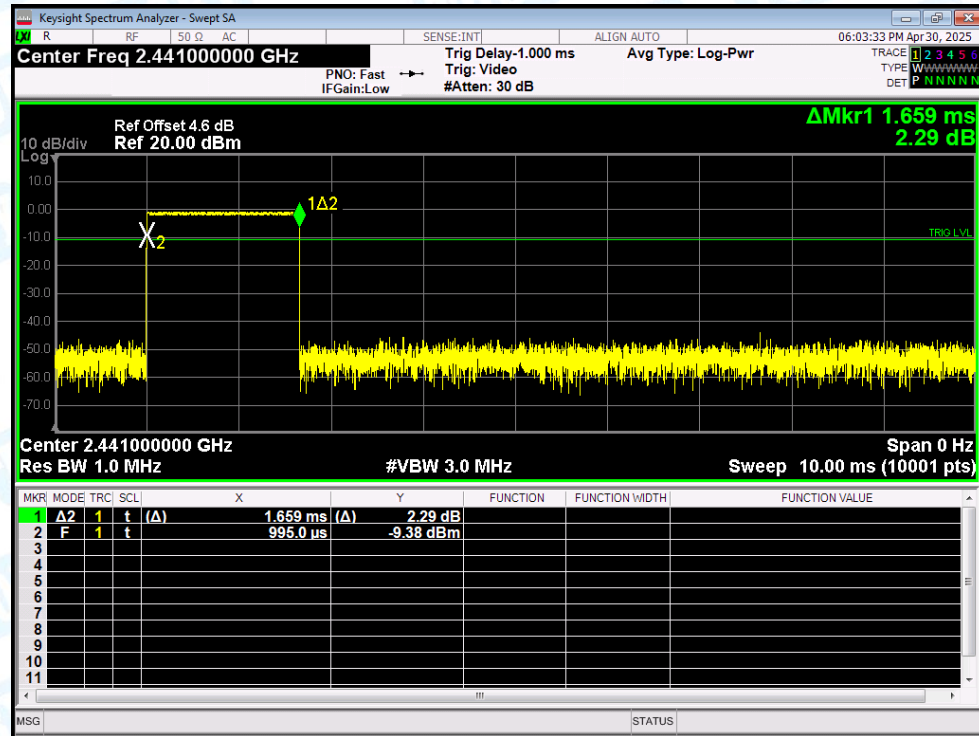
Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	Ant1	0.403	128.96	31600	400	Pass
NVNT	1-DH3	2441	Ant1	1.659	265.44	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.907	310.08	31600	400	Pass
NVNT	2-DH1	2441	Ant1	0.413	132.16	31600	400	Pass
NVNT	2-DH3	2441	Ant1	1.665	266.4	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.913	310.72	31600	400	Pass
NVNT	3-DH1	2441	Ant1	0.415	132.8	31600	400	Pass
NVNT	3-DH3	2441	Ant1	1.665	266.4	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.915	310.933	31600	400	Pass

Test Graphs

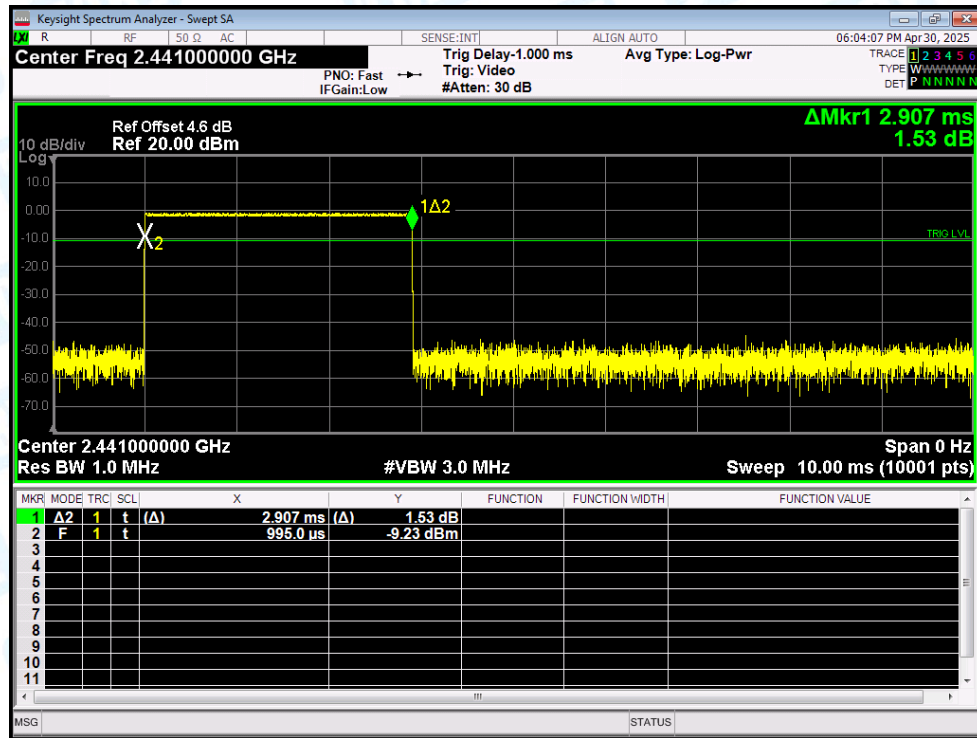
Dwell NVNT 1-DH1 2441MHz Ant1



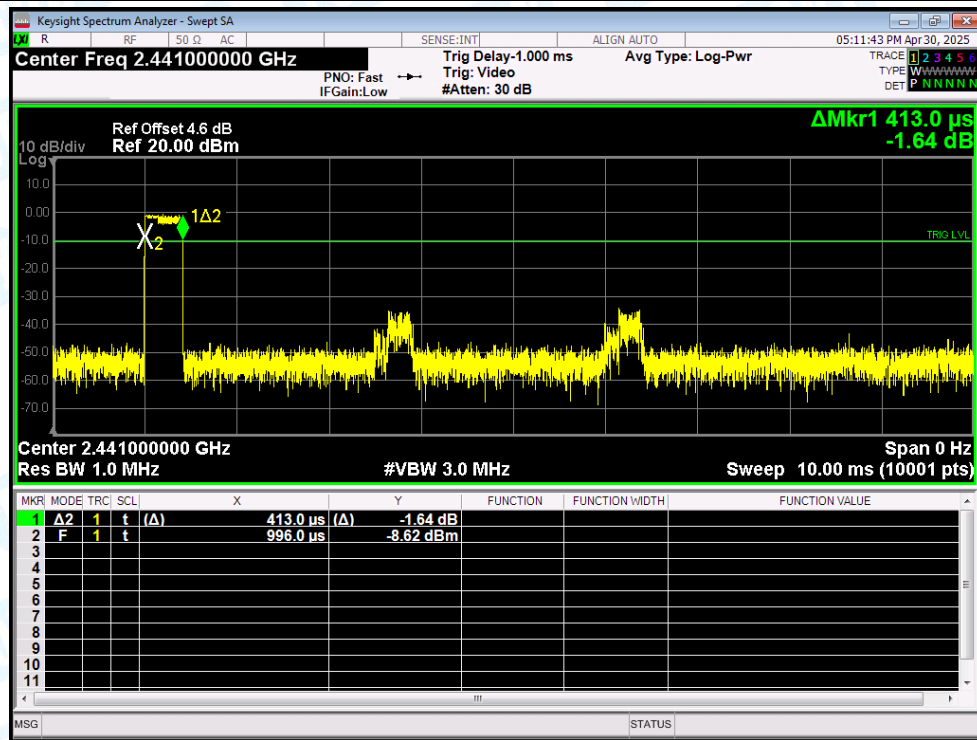
Dwell NVNT 1-DH3 2441MHz Ant1



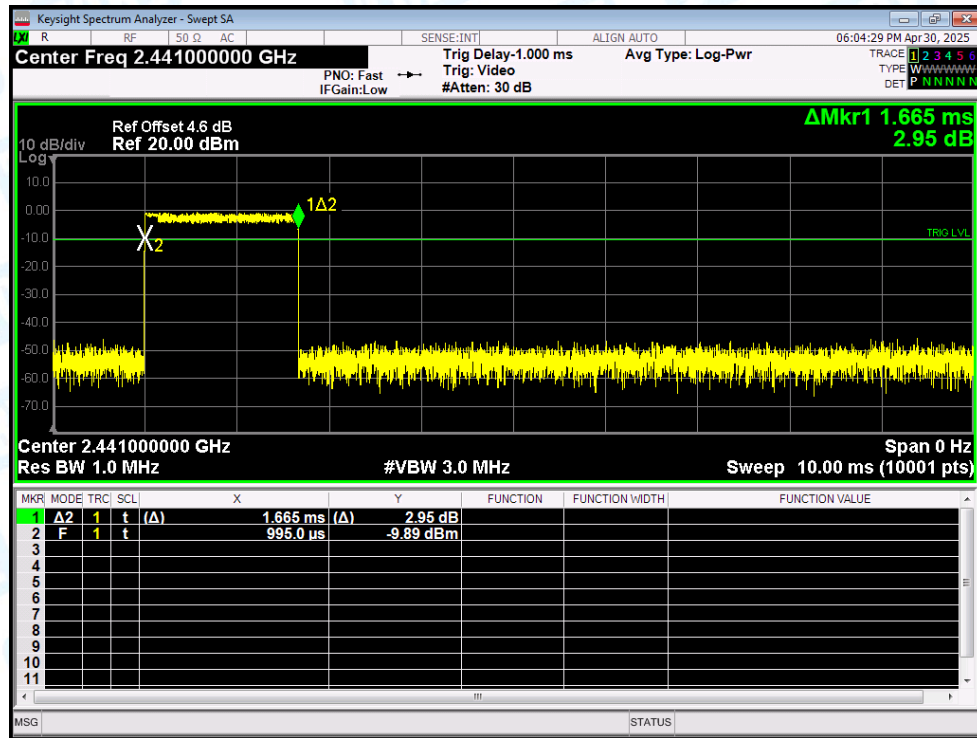
Dwell NVNT 1-DH5 2441MHz Ant1



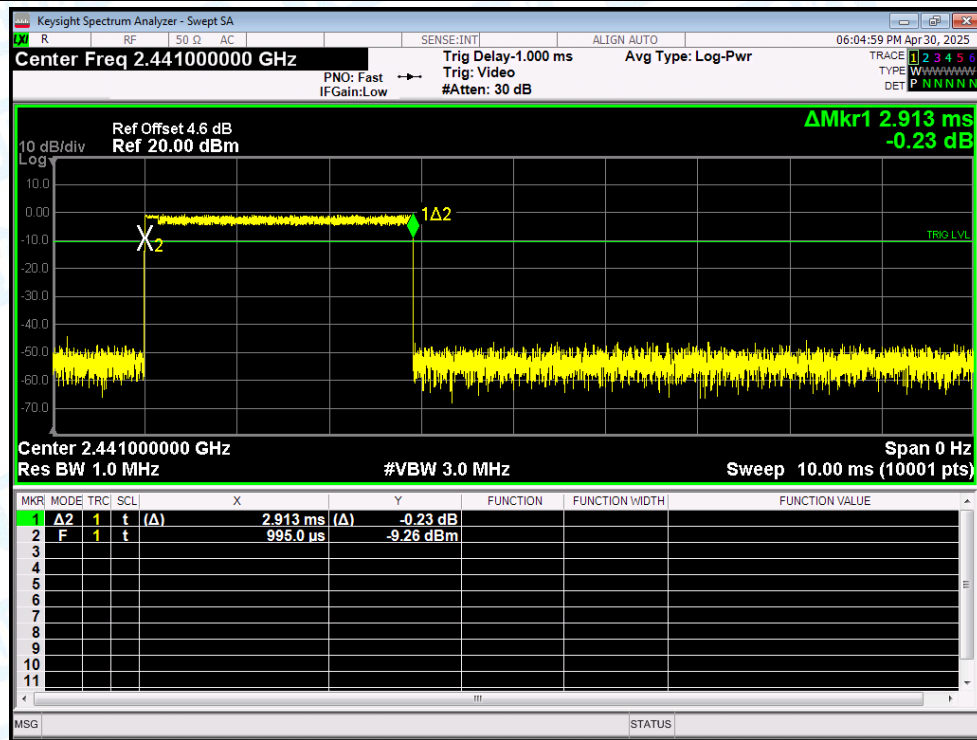
Dwell NVNT 2-DH1 2441MHz Ant1



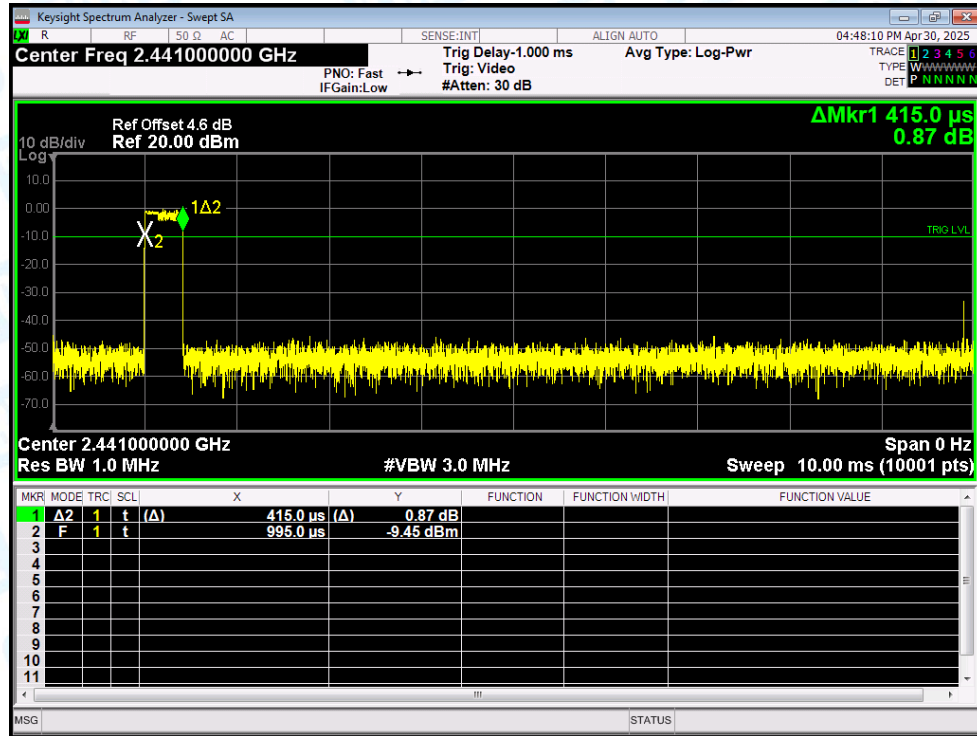
Dwell NVNT 2-DH3 2441MHz Ant1



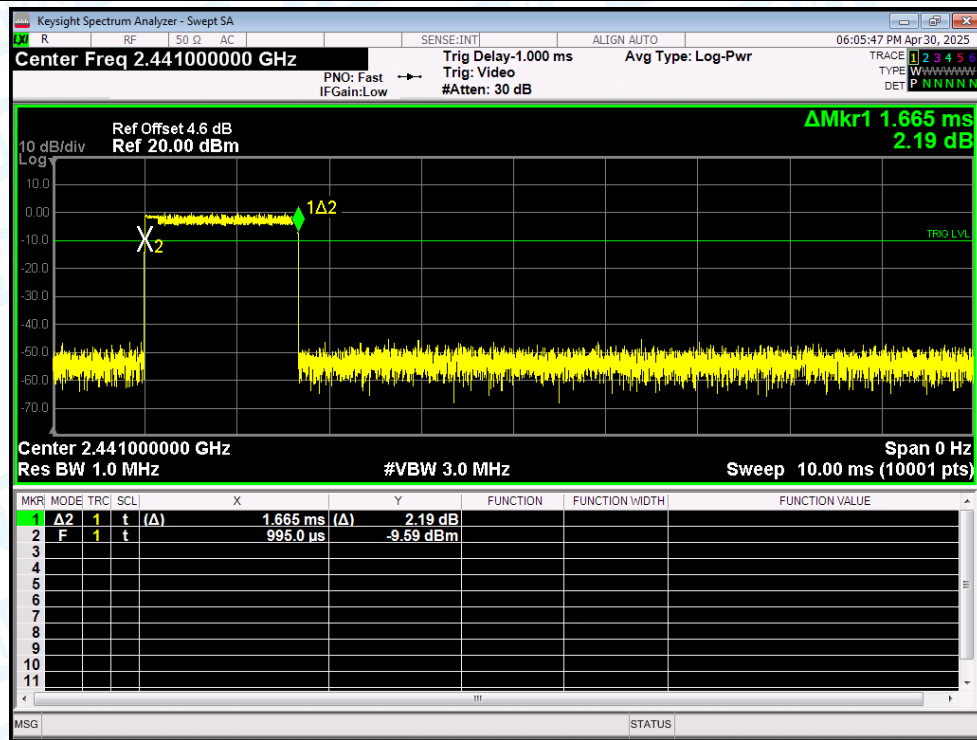
Dwell NVNT 2-DH5 2441MHz Ant1

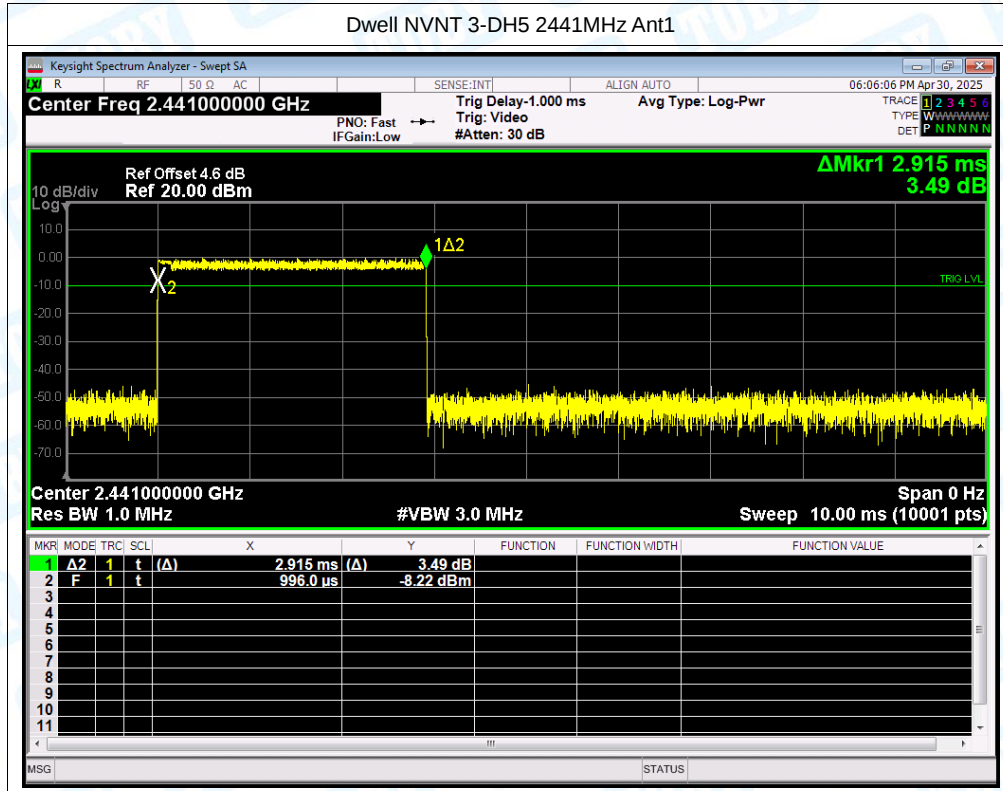


Dwell NVNT 3-DH1 2441MHz Ant1



Dwell NVNT 3-DH3 2441MHz Ant1





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