

RF Test Data for 2.4G

(Conducted Measurements)

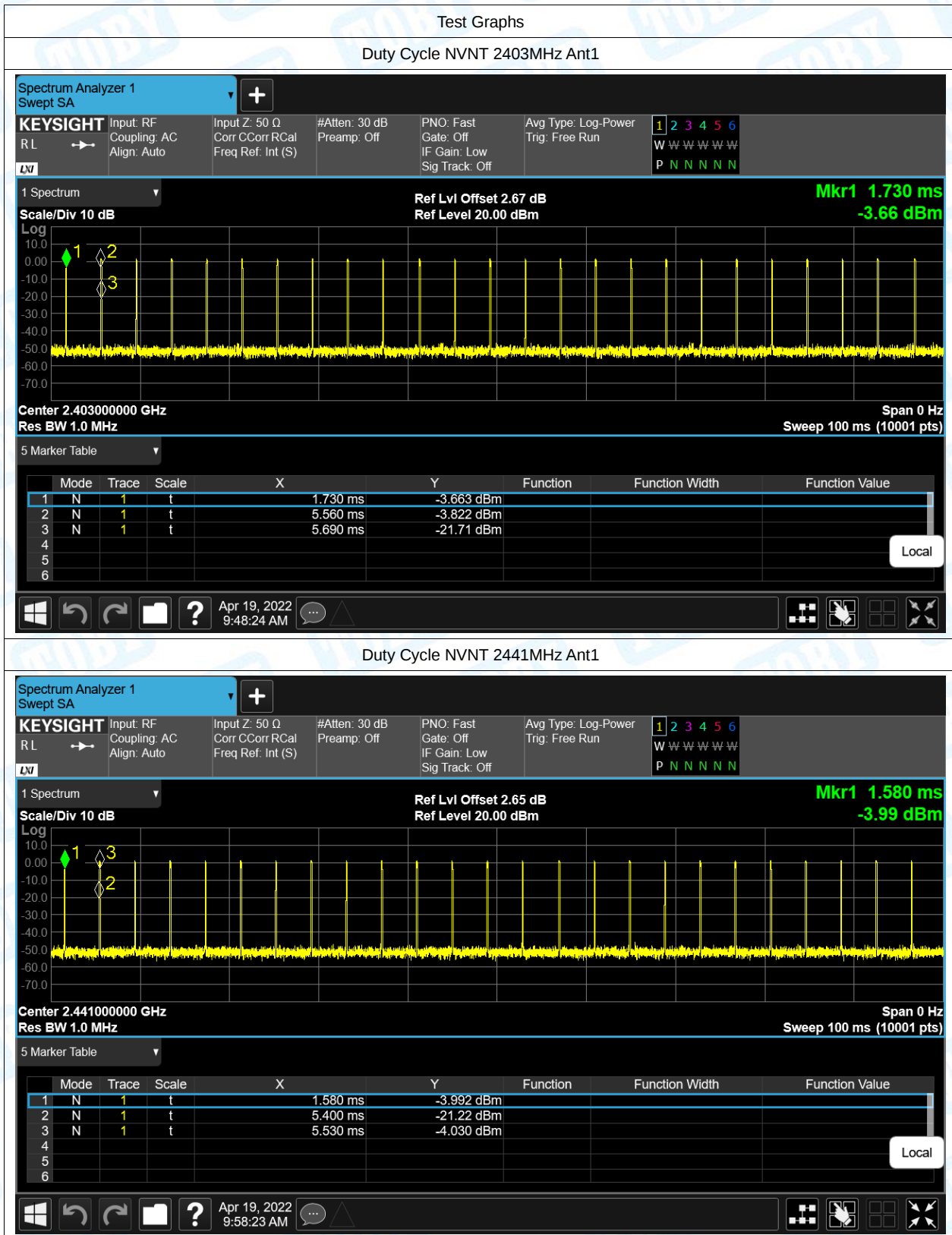
General Description of EUT	
Product Name:	M501 Trackball Mouse
Test Model:	M501
Sample ID:	202203-0205_01-02
Environmental Conditions	
Temperature:	25℃
Relative Humidity:	55%
Test Voltage:	DC 3.7V
Test Engineer:	Huangjianping
Note: For a more detailed features description, please refer to the report TBR-C-202203-0205-52	

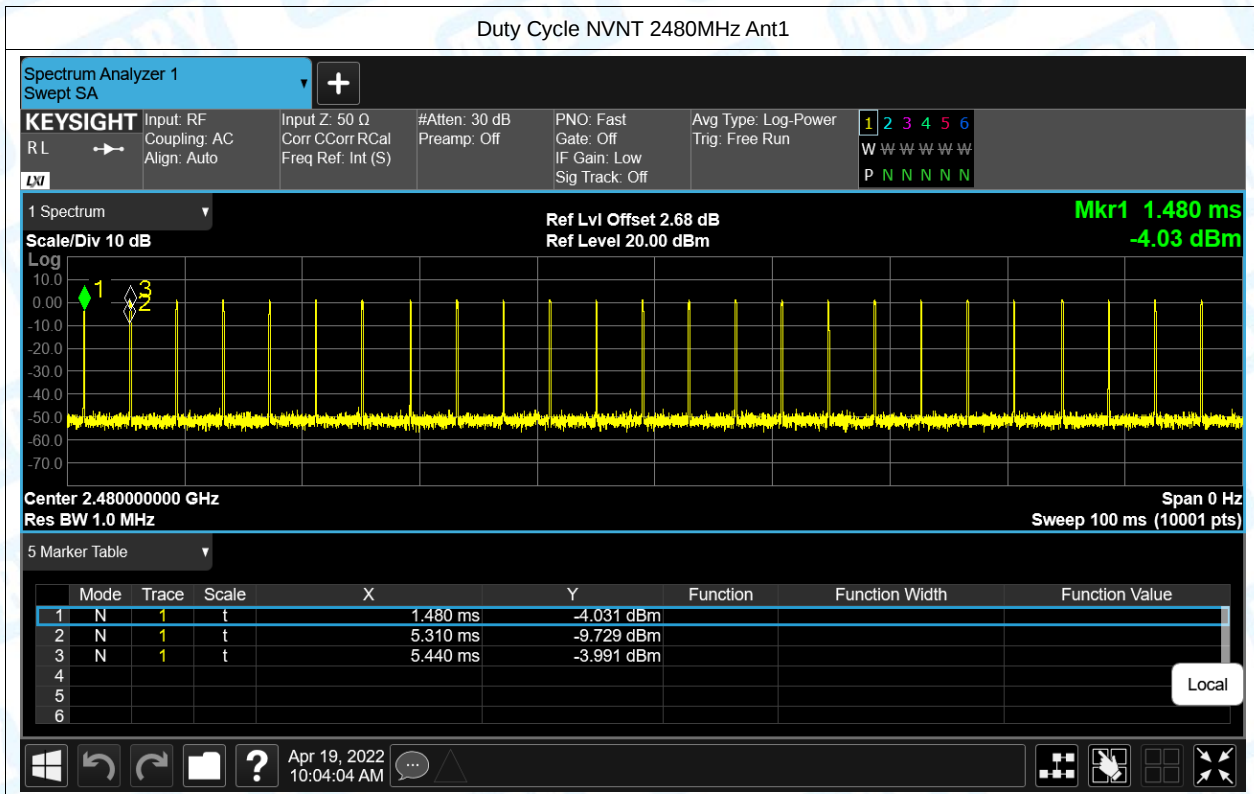
Contents

1.Duty Cycle.....	3
2.Maximum Conducted Output Power	6
3.-20dB Bandwidth	9
4.Occupied Channel Bandwidth	12
5.Band Edge	15
6.Band Edge(Hopping).....	18
7.Conducted RF Spurious Emission	21
8.Restrict Band	25
9.Carrier Frequencies Separation	28
10.Number of Hopping Channel	30
11.Dwell Time.....	32

1.Duty Cycle

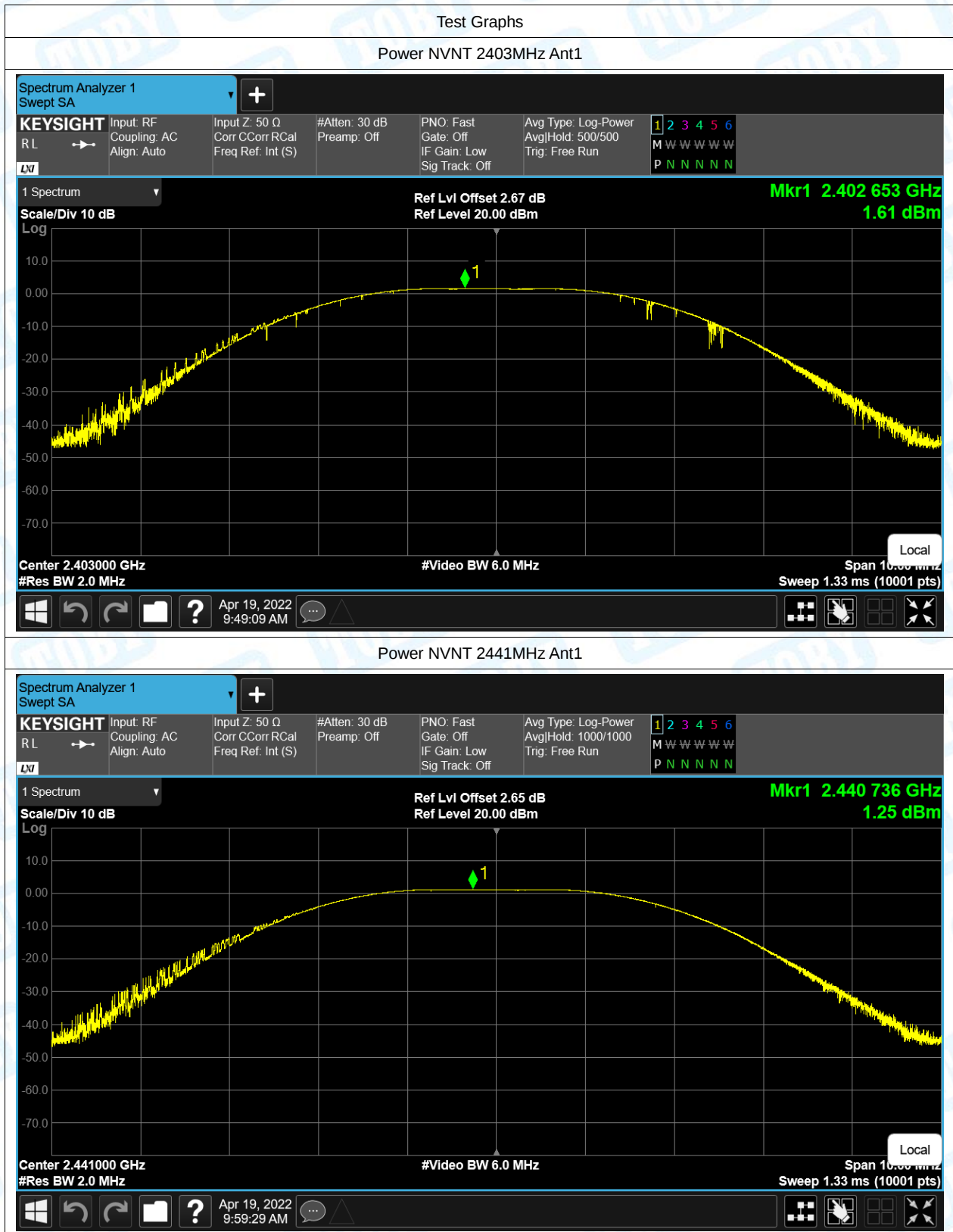
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	GFSK	2403	Ant1	3.38	14.71	7.69
NVNT	GFSK	2441	Ant1	3.41	14.67	7.69
NVNT	GFSK	2480	Ant1	3.39	14.7	7.69





2.Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	GFSK	2403	Ant1	1.607	21	Pass
NVNT	GFSK	2441	Ant1	1.253	21	Pass
NVNT	GFSK	2480	Ant1	1.191	21	Pass



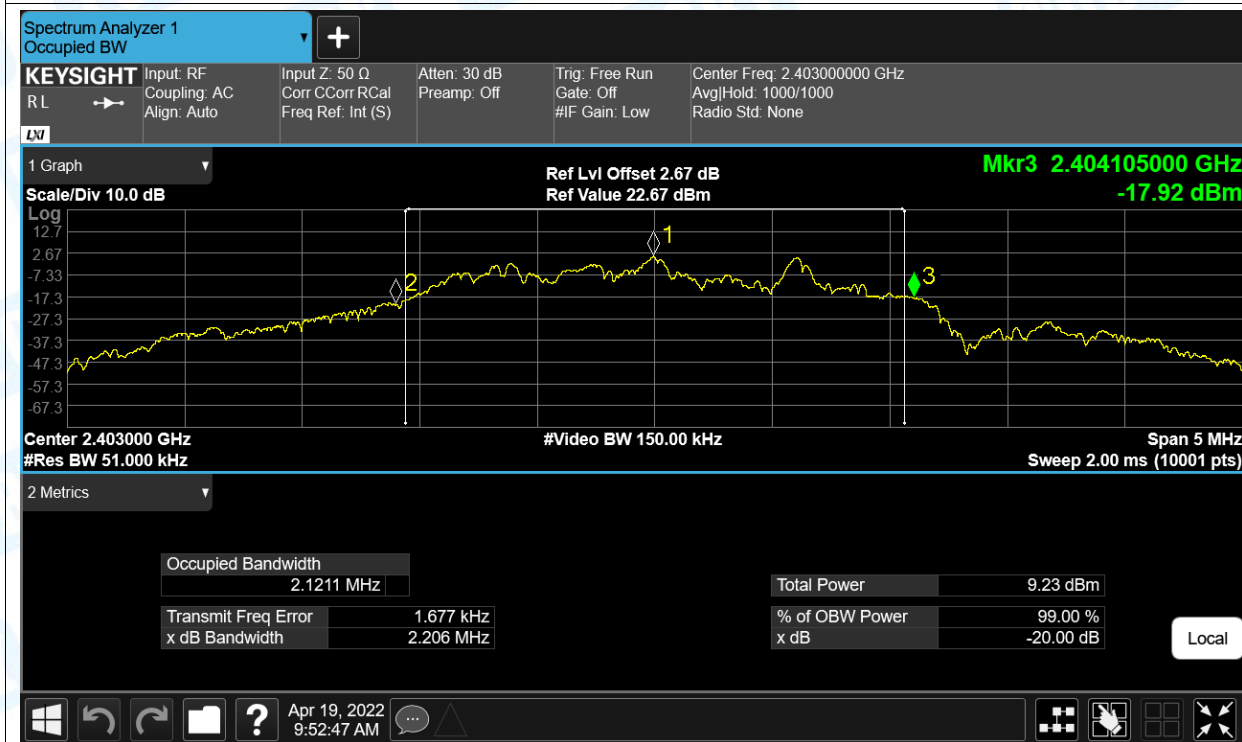


3.-20dB Bandwidth

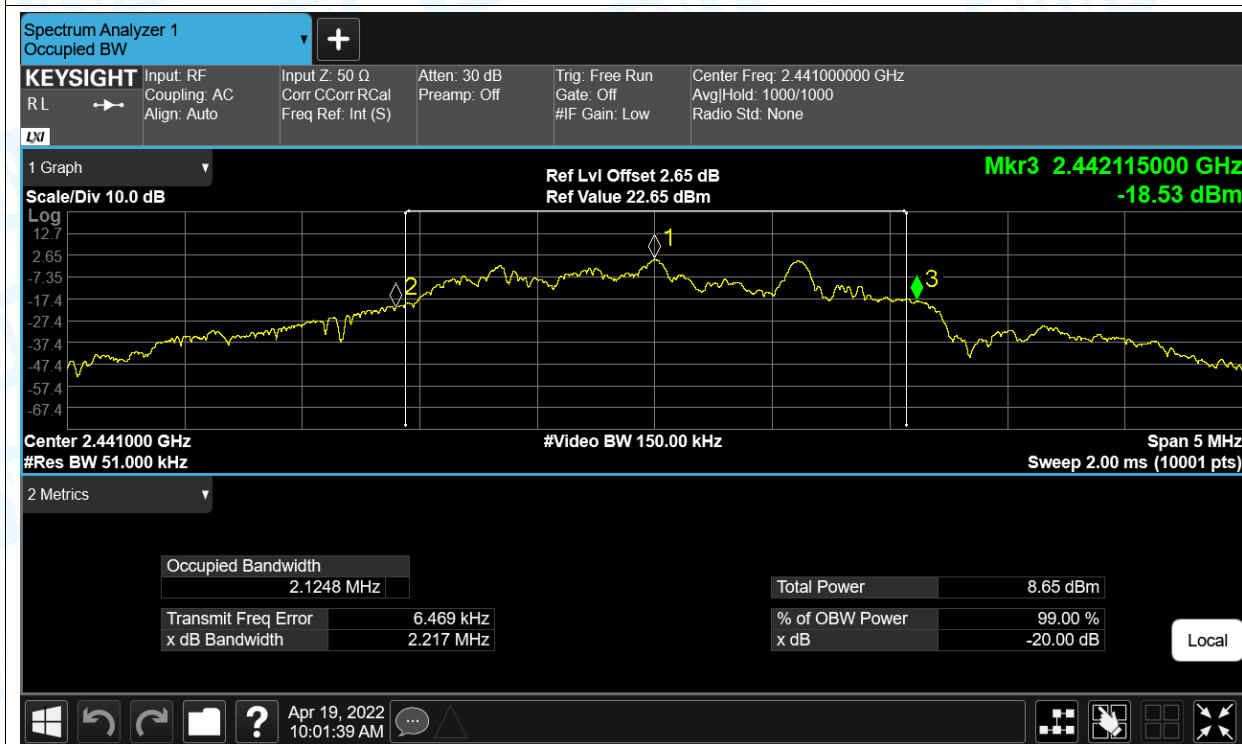
Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	GFSK	2403	Ant1	2.21	Not Specified	Pass
NVNT	GFSK	2441	Ant1	2.22	Not Specified	Pass
NVNT	GFSK	2480	Ant1	2.19	Not Specified	Pass

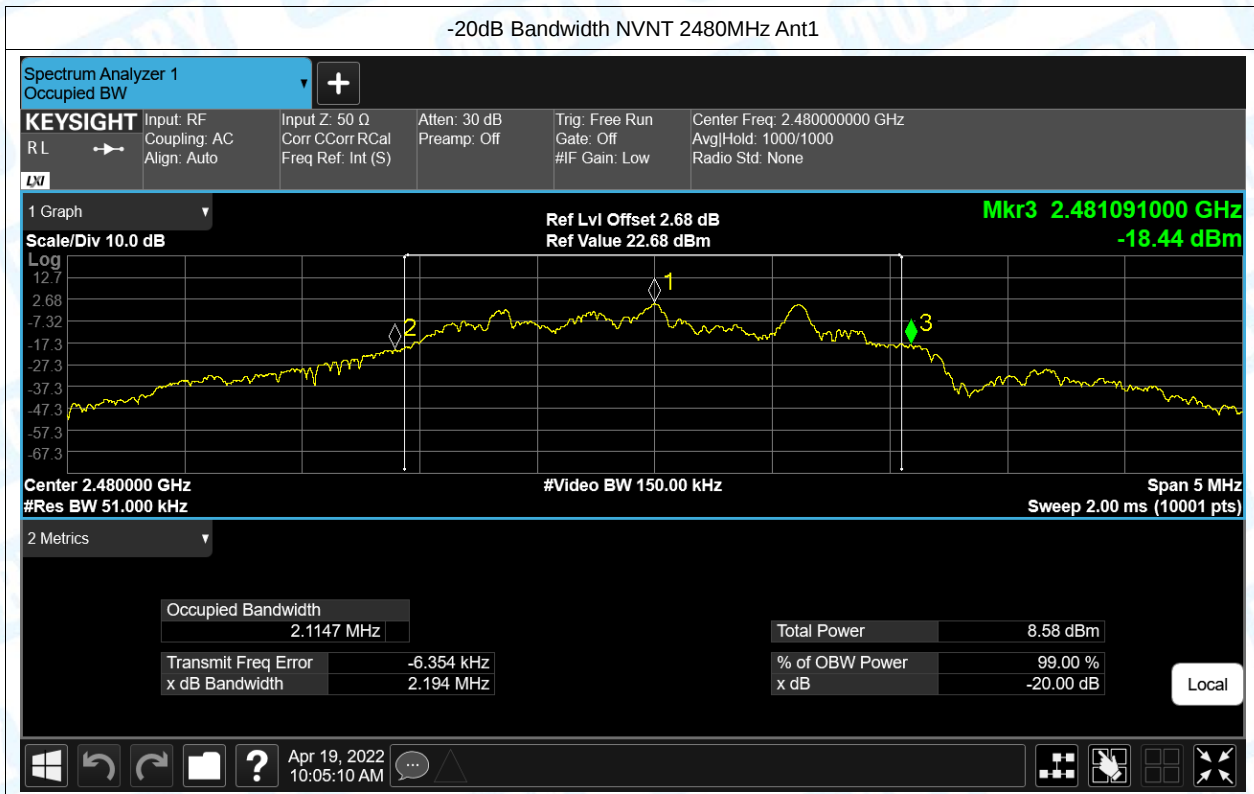
Test Graphs

-20dB Bandwidth NVNT 2403MHz Ant1



-20dB Bandwidth NVNT 2441MHz Ant1



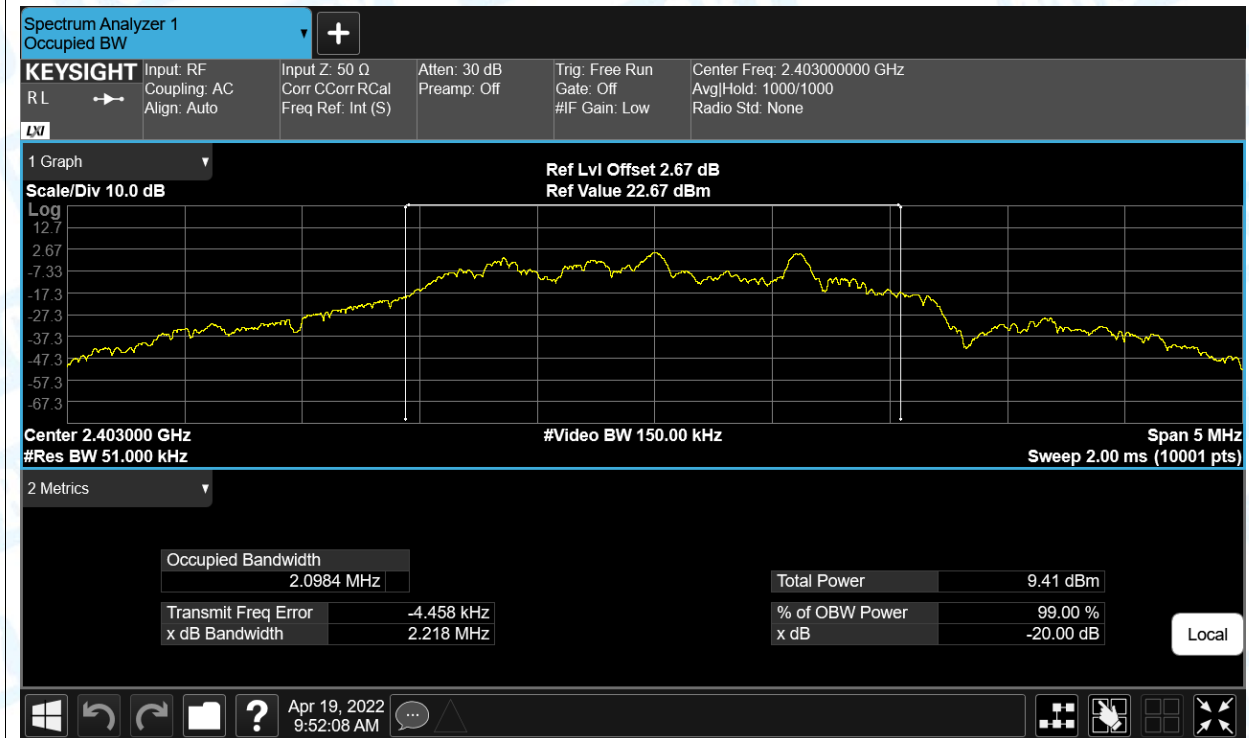


4.Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	GFSK	2403	Ant1	2.098
NVNT	GFSK	2441	Ant1	2.103
NVNT	GFSK	2480	Ant1	2.109

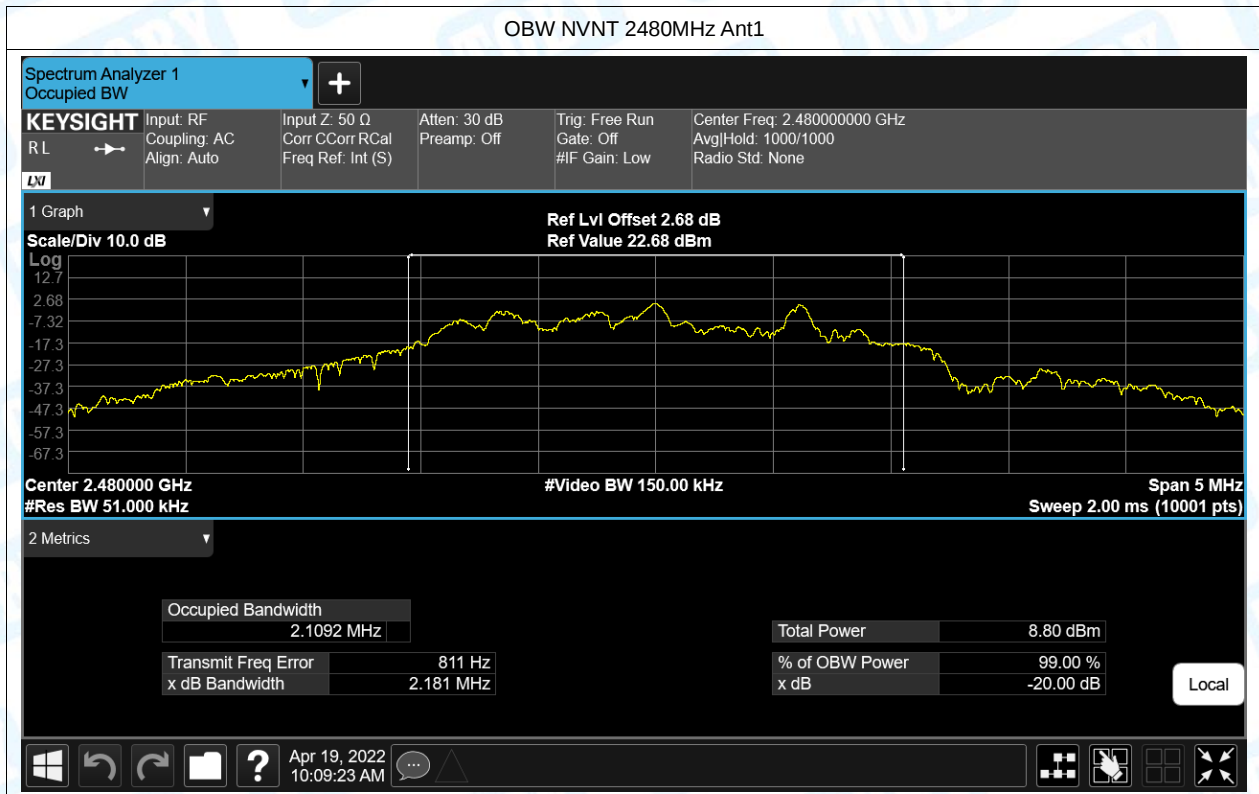
Test Graphs

OBW NVNT 2403MHz Ant1



OBW NVNT 2441MHz Ant1



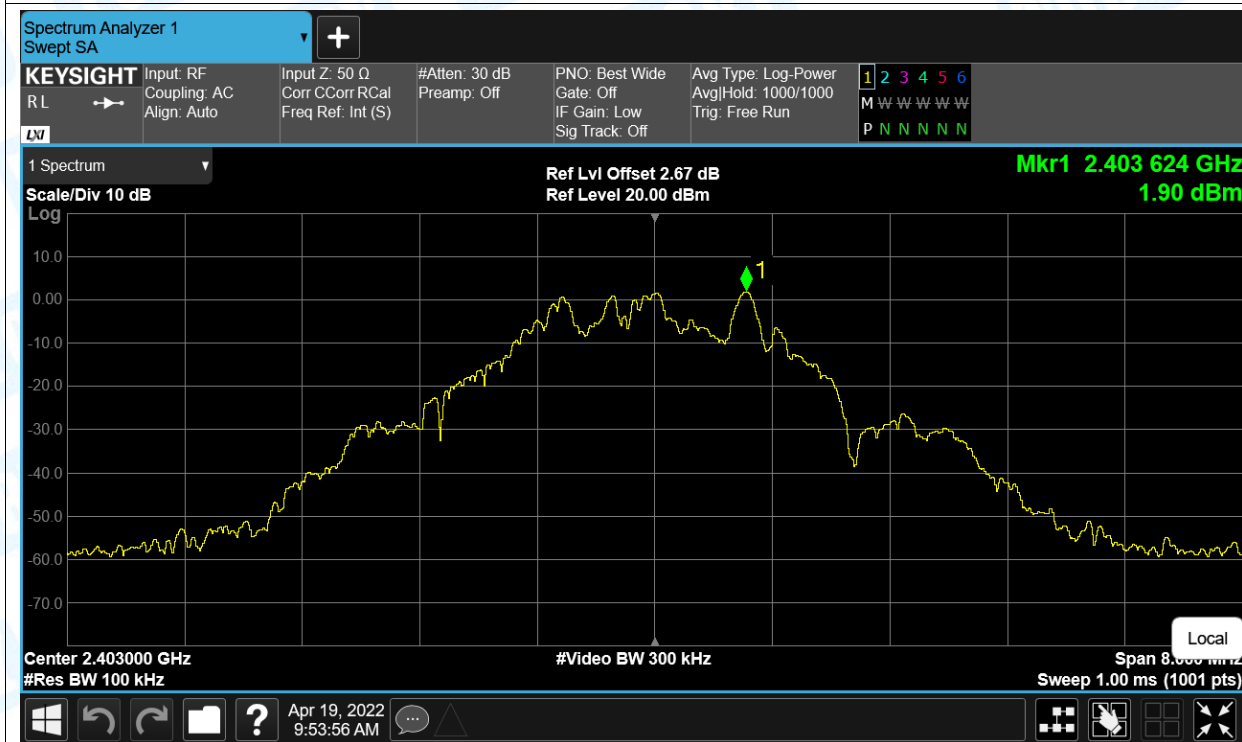


5.Band Edge

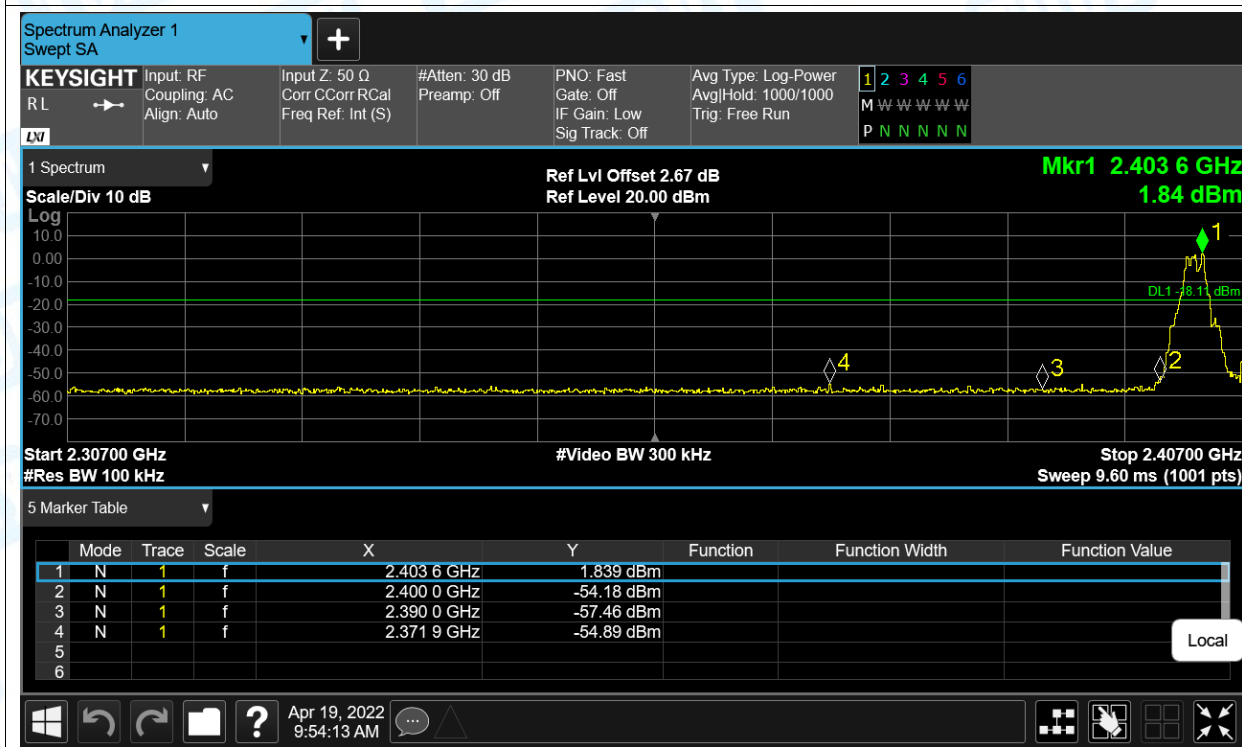
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	GFSK	2403	Ant1	No-Hopping	-56.79	-20	Pass
NVNT	GFSK	2480	Ant1	No-Hopping	-55.91	-20	Pass

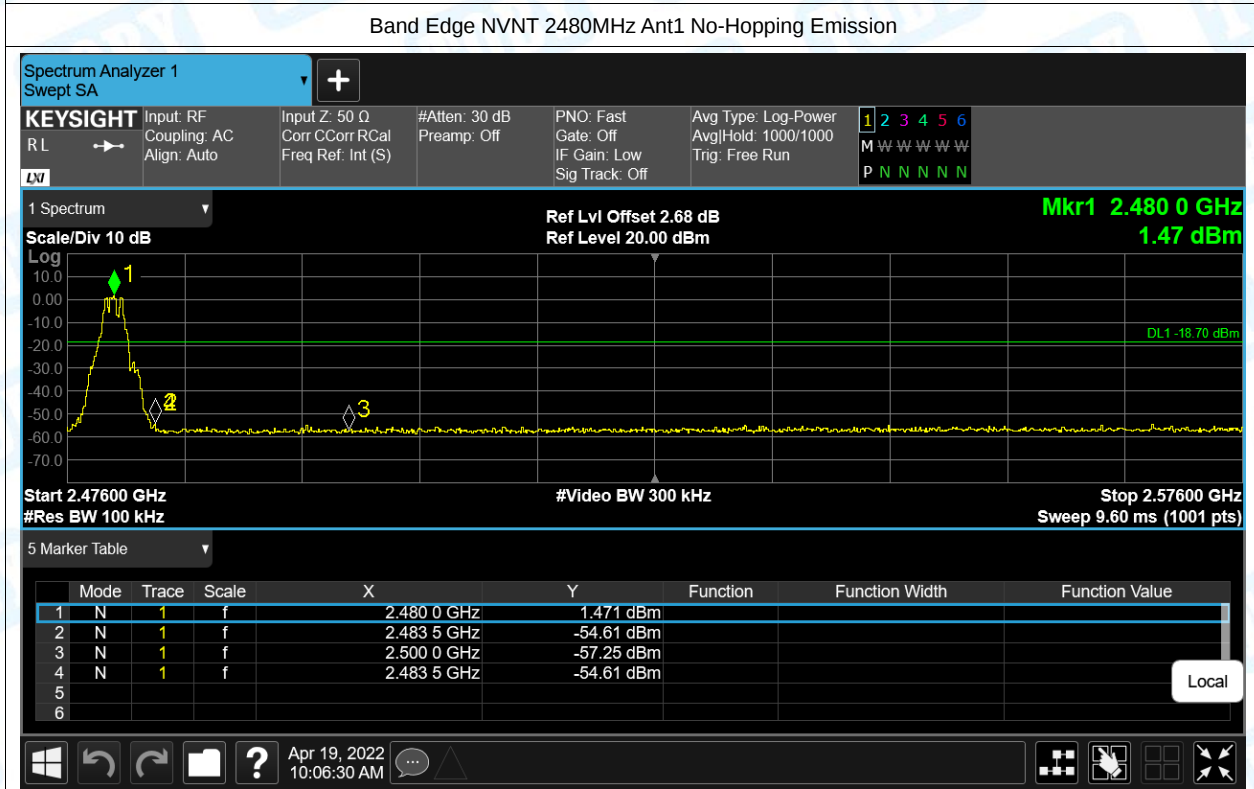
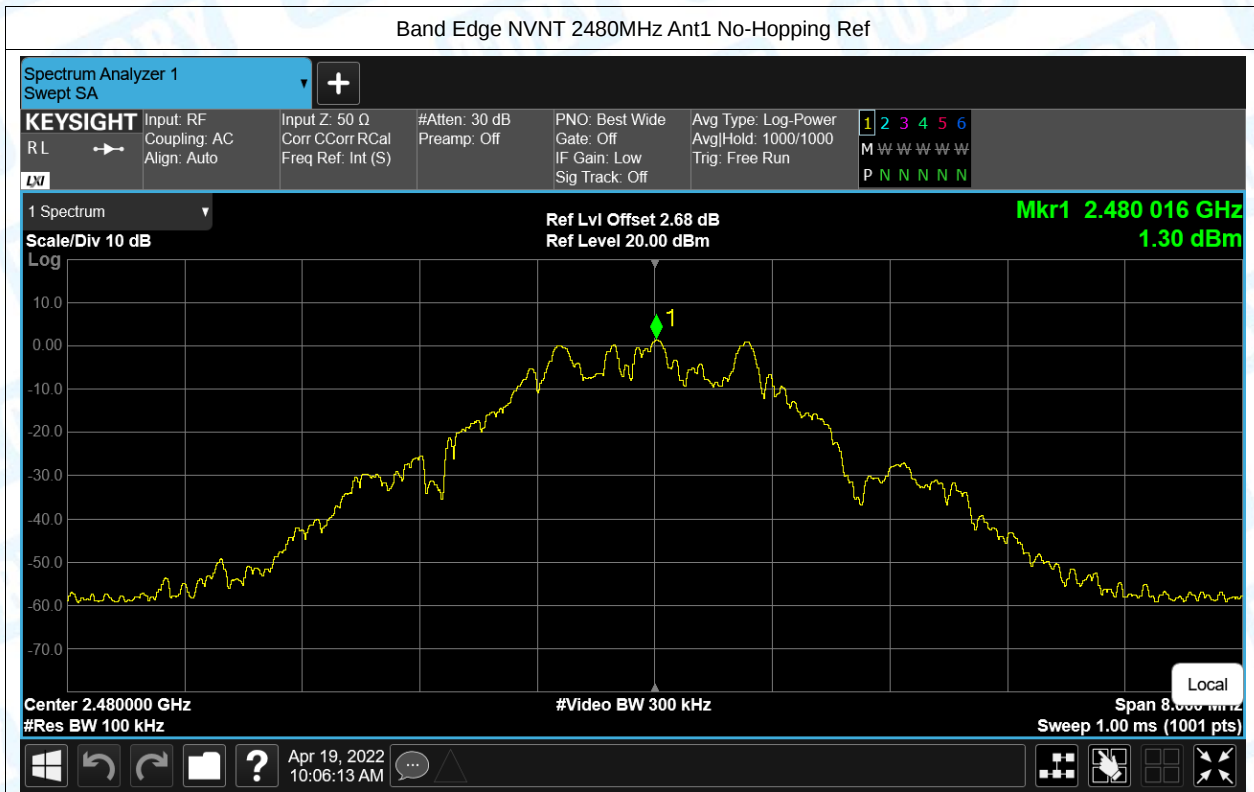
Test Graphs

Band Edge NVNT 2403MHz Ant1 No-Hopping Ref



Band Edge NVNT 2403MHz Ant1 No-Hopping Emission



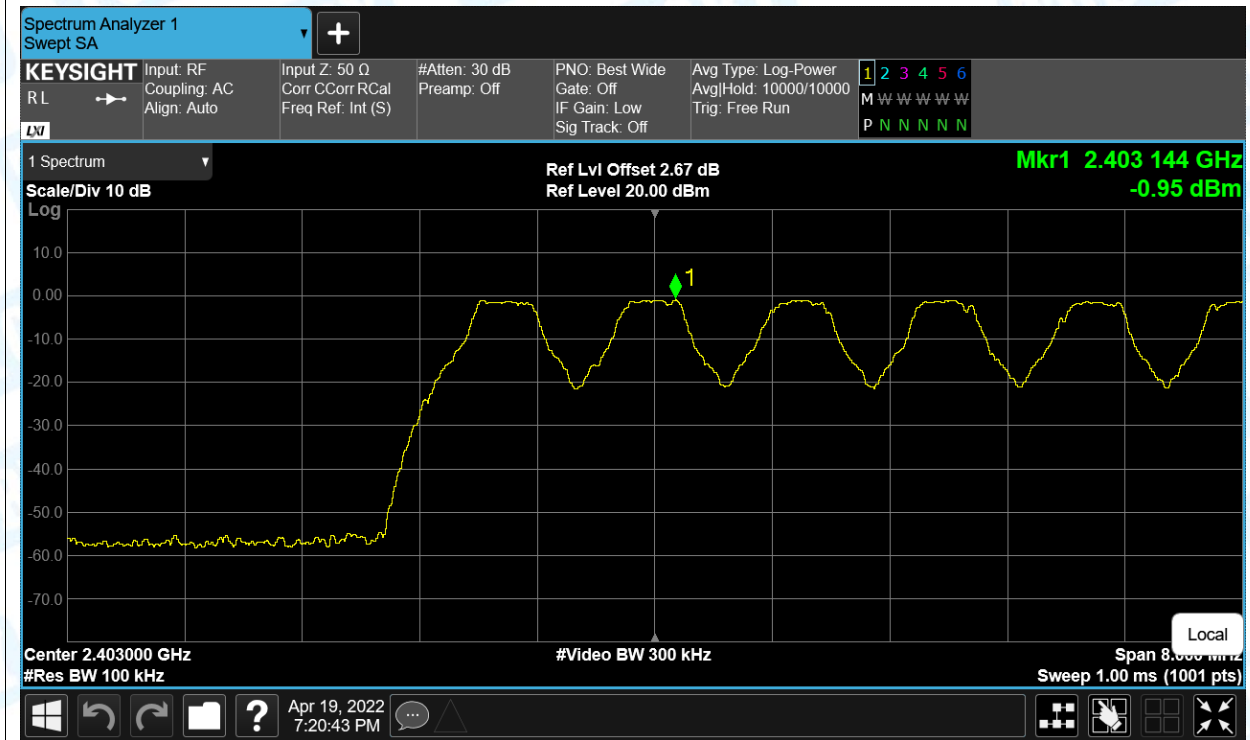


6.Band Edge(Hopping)

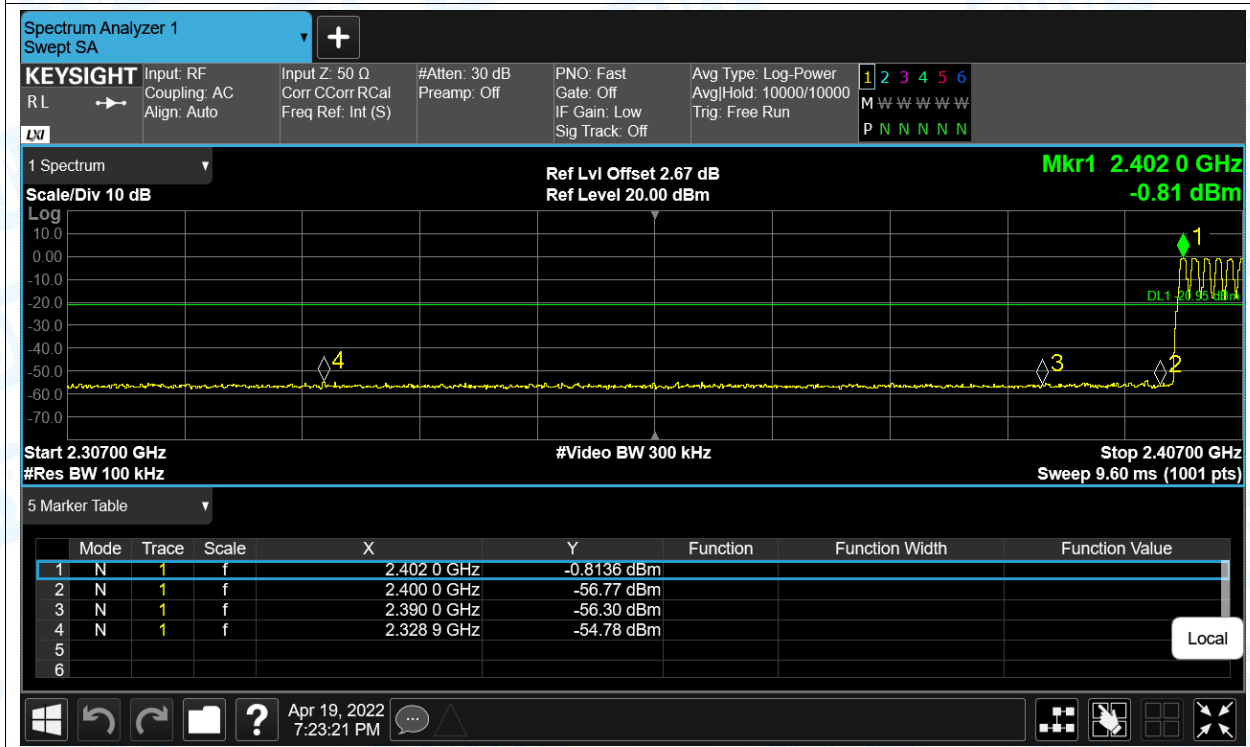
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	user	2403	Ant1	Hopping	-53.83	-20	Pass
NVNT	user	2480	Ant1	Hopping	-53.89	-20	Pass

Test Graphs

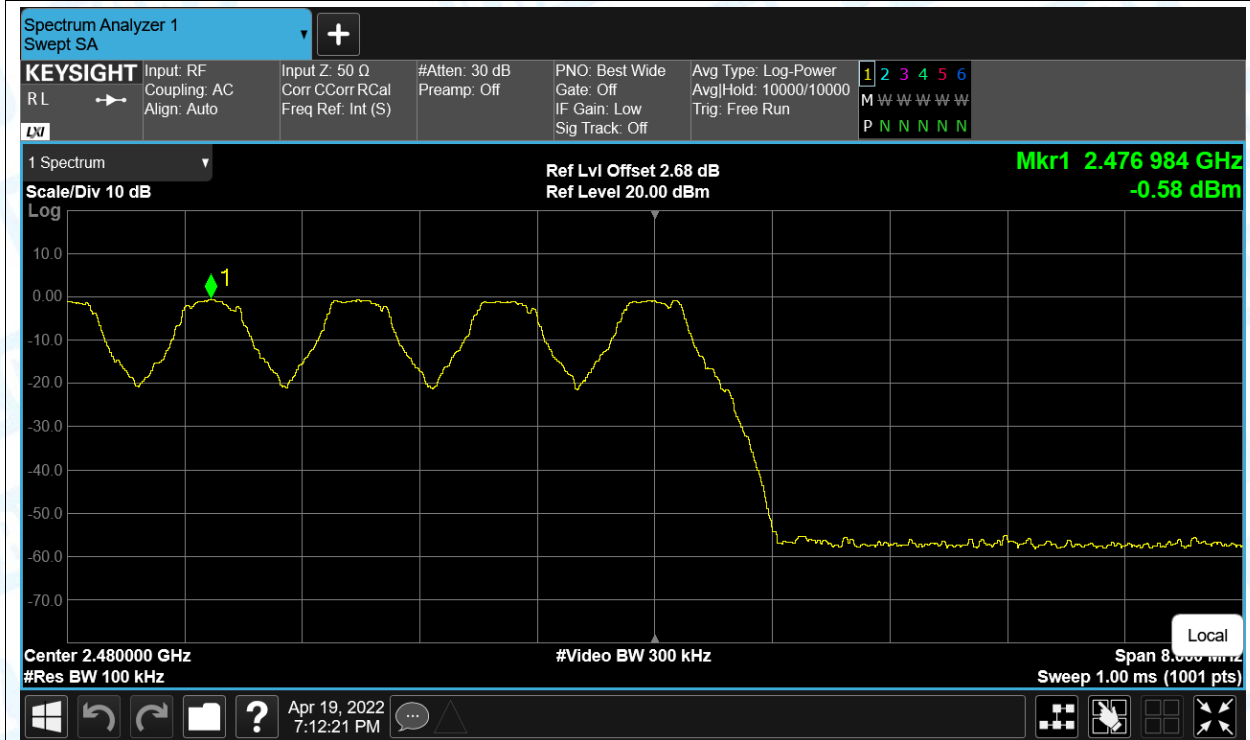
Band Edge(Hopping) NVNT user 2403MHz Ant1 Hopping Ref



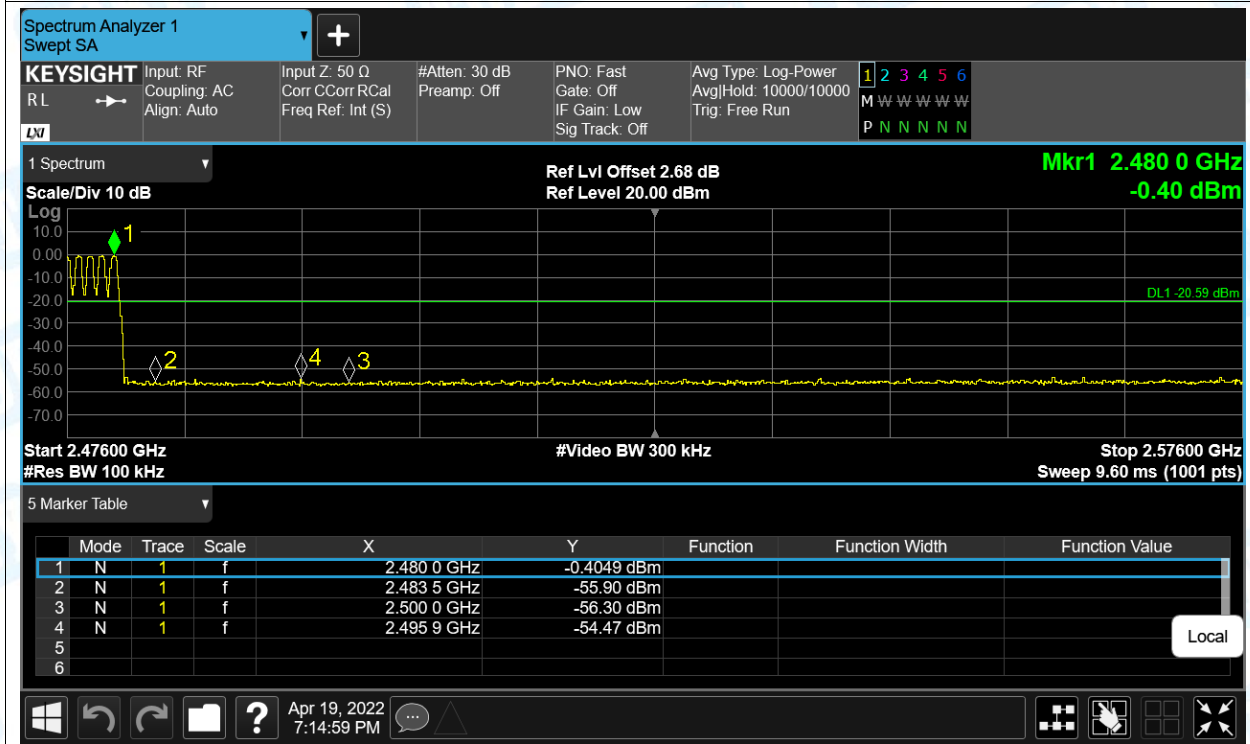
Band Edge(Hopping) NVNT user 2403MHz Ant1 Hopping Emission



Band Edge(Hopping) NVNT user 2480MHz Ant1 Hopping Ref



Band Edge(Hopping) NVNT user 2480MHz Ant1 Hopping Emission

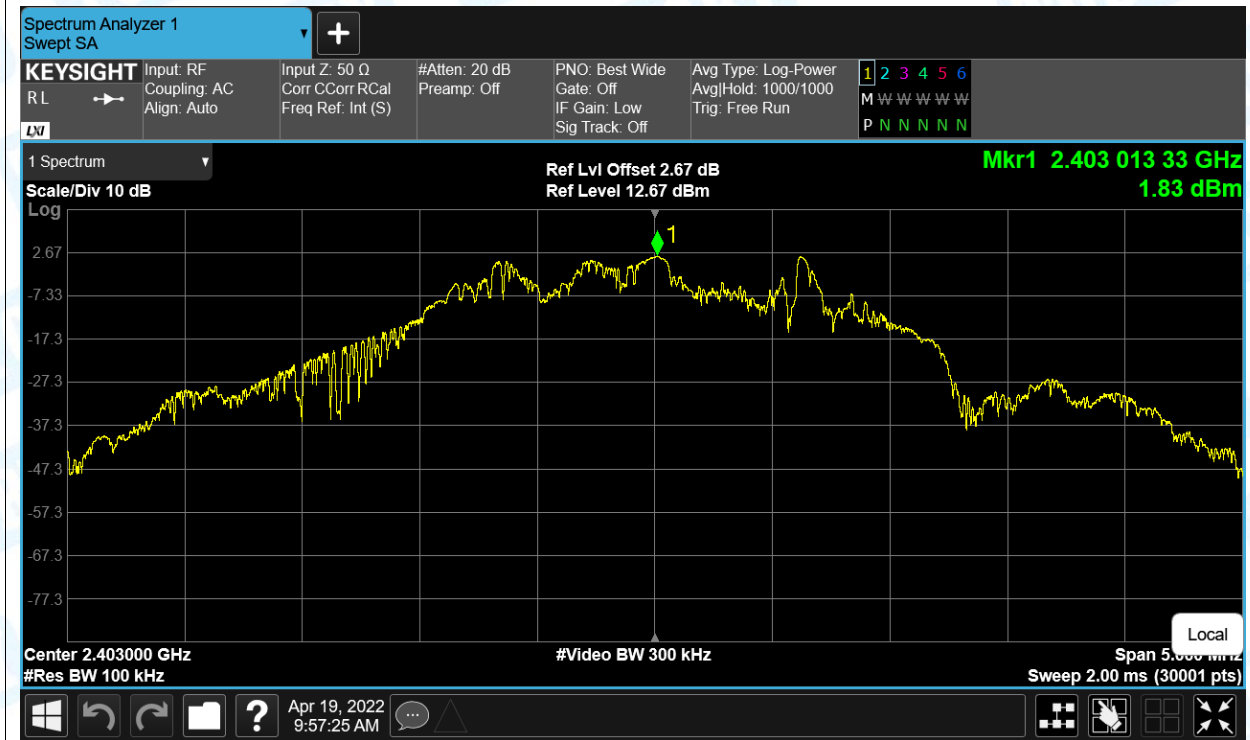


7. Conducted RF Spurious Emission

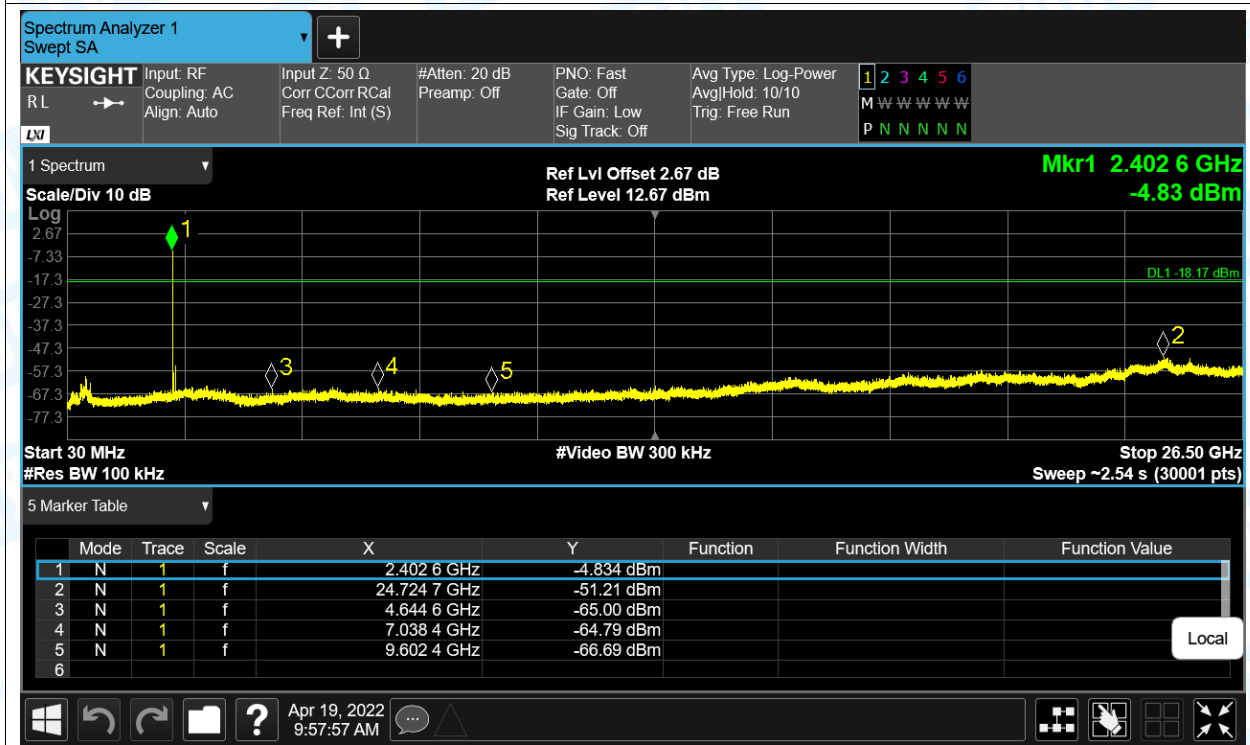
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	GFSK	2403	Ant1	-53.04	-20	Pass
NVNT	GFSK	2441	Ant1	-52.74	-20	Pass
NVNT	GFSK	2480	Ant1	-52.4	-20	Pass

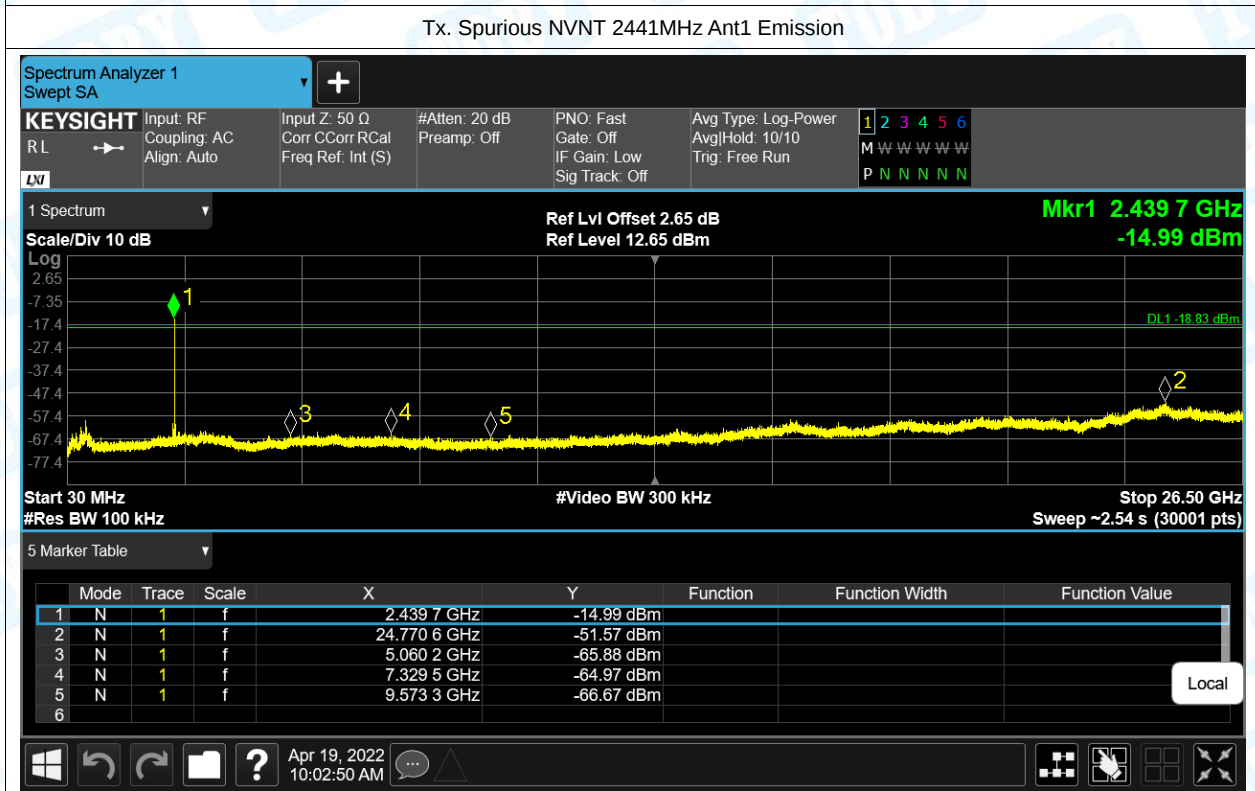
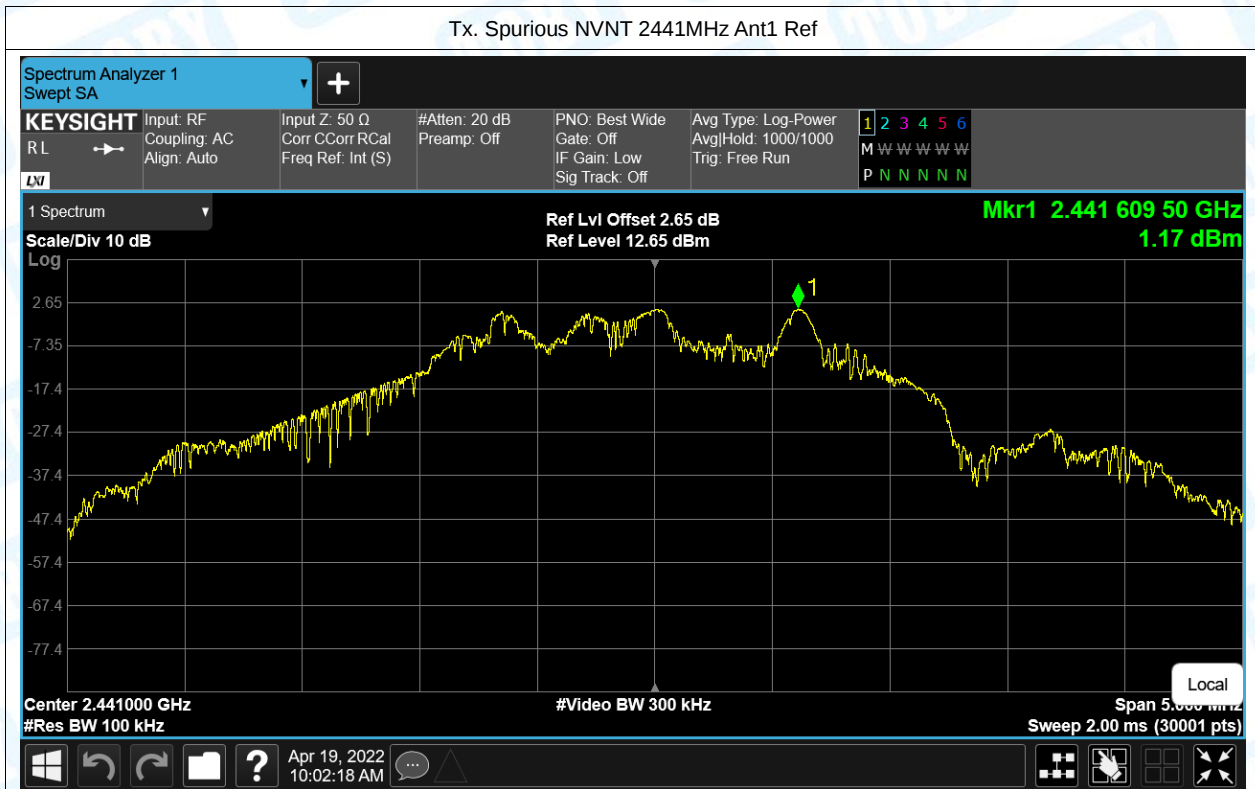
Test Graphs

Tx. Spurious NVNT 2403MHz Ant1 Ref

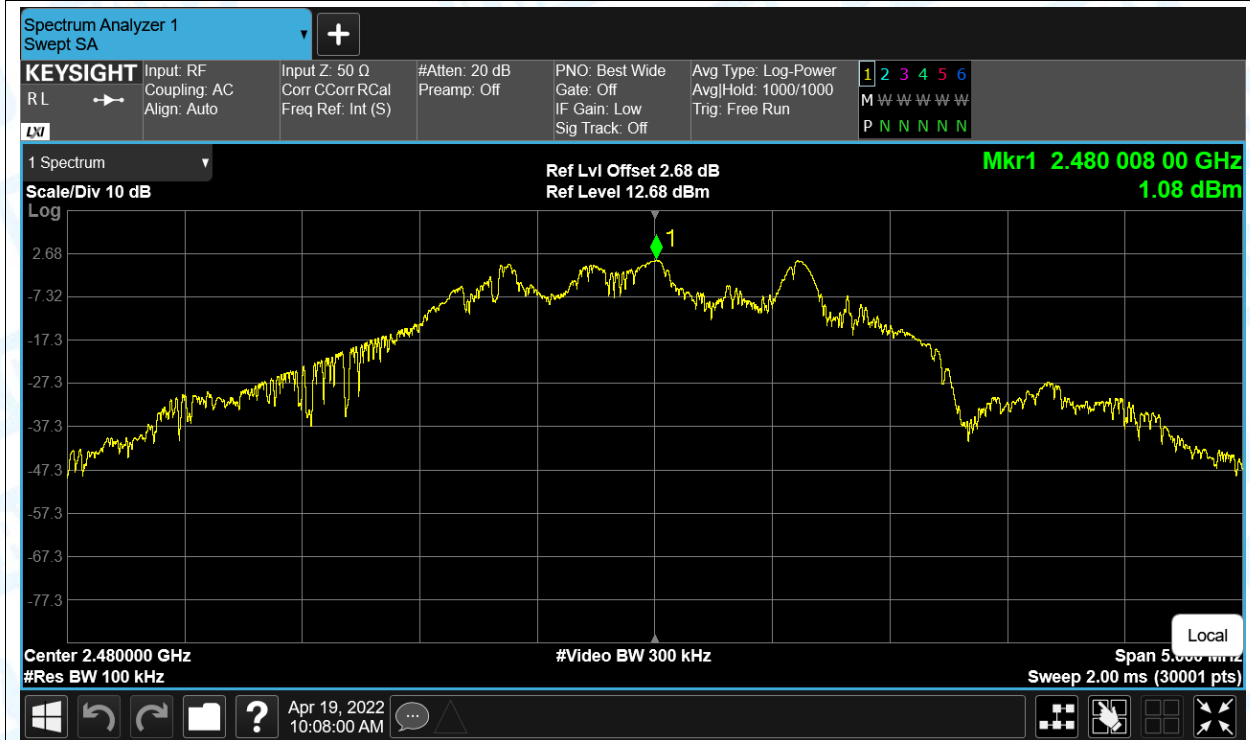


Tx. Spurious NVNT 2403MHz Ant1 Emission

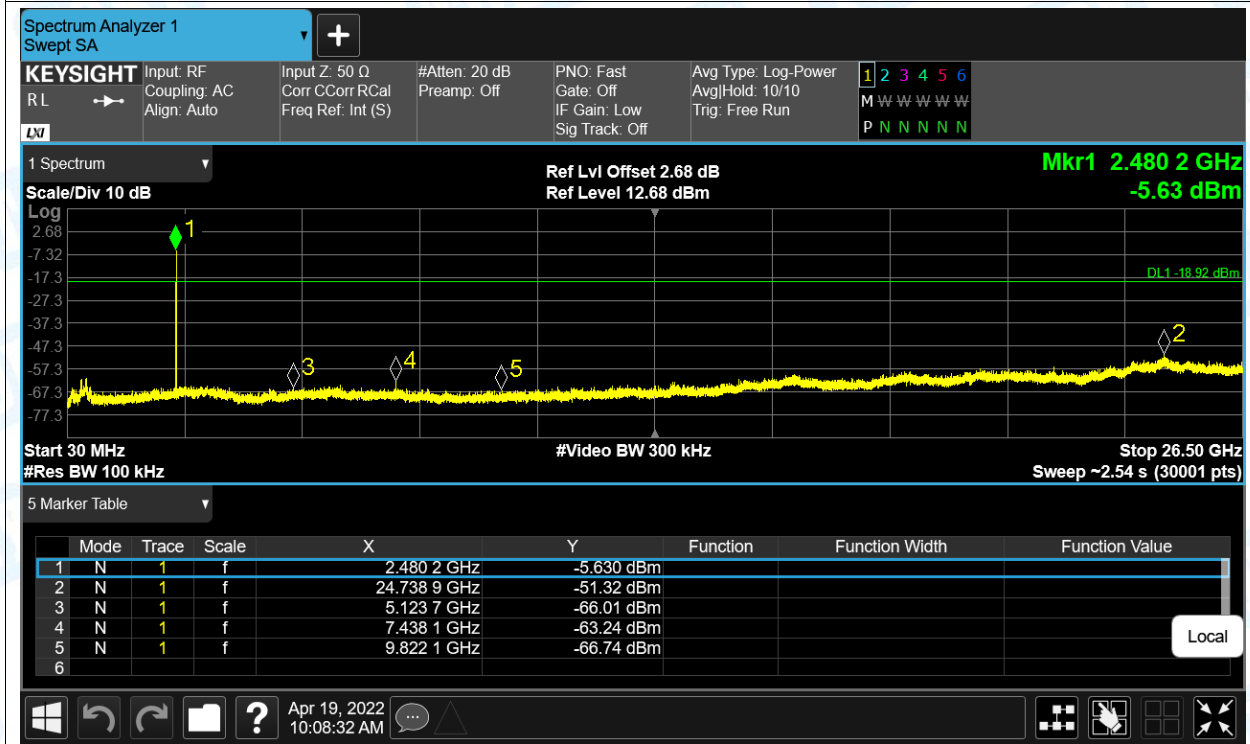




Tx. Spurious NVNT 2480MHz Ant1 Ref



Tx. Spurious NVNT 2480MHz Ant1 Emission

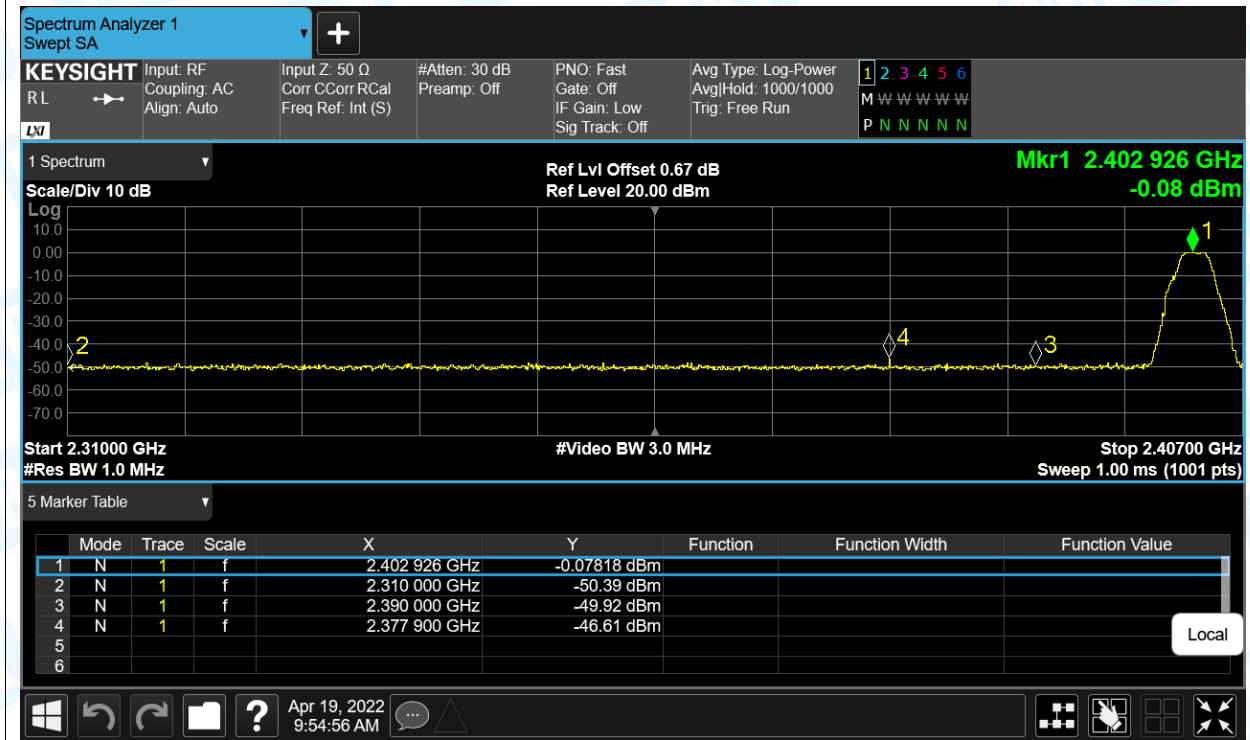


8.Restrict Band

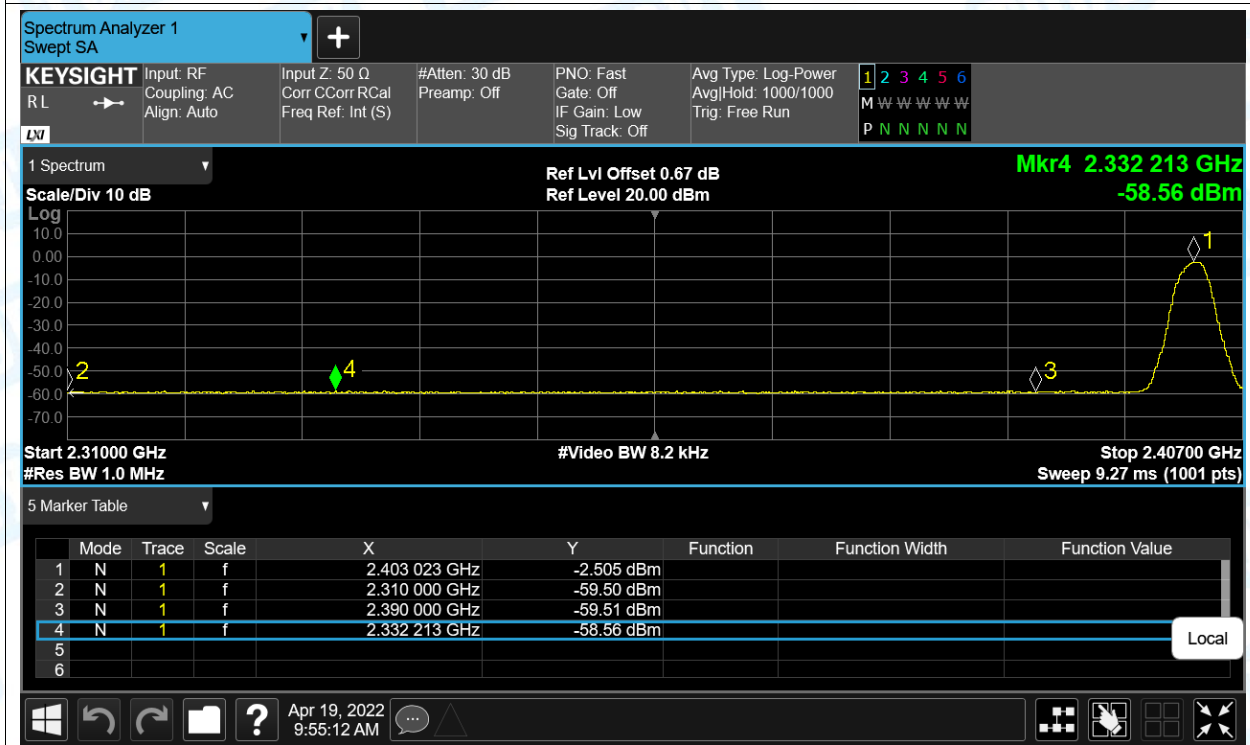
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	GFSK	2403	Ant1	No-Hopping	2310	-50.39	2	46.87	Peak	74	Pass
NVNT	GFSK	2403	Ant1	No-Hopping	2310	-59.5	2	37.76	Average	54	Pass
NVNT	GFSK	2403	Ant1	No-Hopping	2377.9	-46.61	2	50.65	Peak	74	Pass
NVNT	GFSK	2403	Ant1	No-Hopping	2332.213	-58.56	2	38.7	Average	54	Pass
NVNT	GFSK	2403	Ant1	No-Hopping	2390	-49.92	2	47.34	Peak	74	Pass
NVNT	GFSK	2403	Ant1	No-Hopping	2390	-59.51	2	37.75	Average	54	Pass
NVNT	GFSK	2480	Ant1	No-Hopping	2483.5	-50.48	2	46.78	Peak	74	Pass
NVNT	GFSK	2480	Ant1	No-Hopping	2483.5	-54.83	2	42.43	Average	54	Pass
NVNT	GFSK	2480	Ant1	No-Hopping	2490.952	-47.97	2	49.29	Peak	74	Pass
NVNT	GFSK	2480	Ant1	No-Hopping	2483.536	-54.58	2	42.68	Average	54	Pass
NVNT	GFSK	2480	Ant1	No-Hopping	2500	-49.92	2	47.34	Peak	74	Pass
NVNT	GFSK	2480	Ant1	No-Hopping	2500	-58.85	2	38.41	Average	54	Pass

Test Graphs

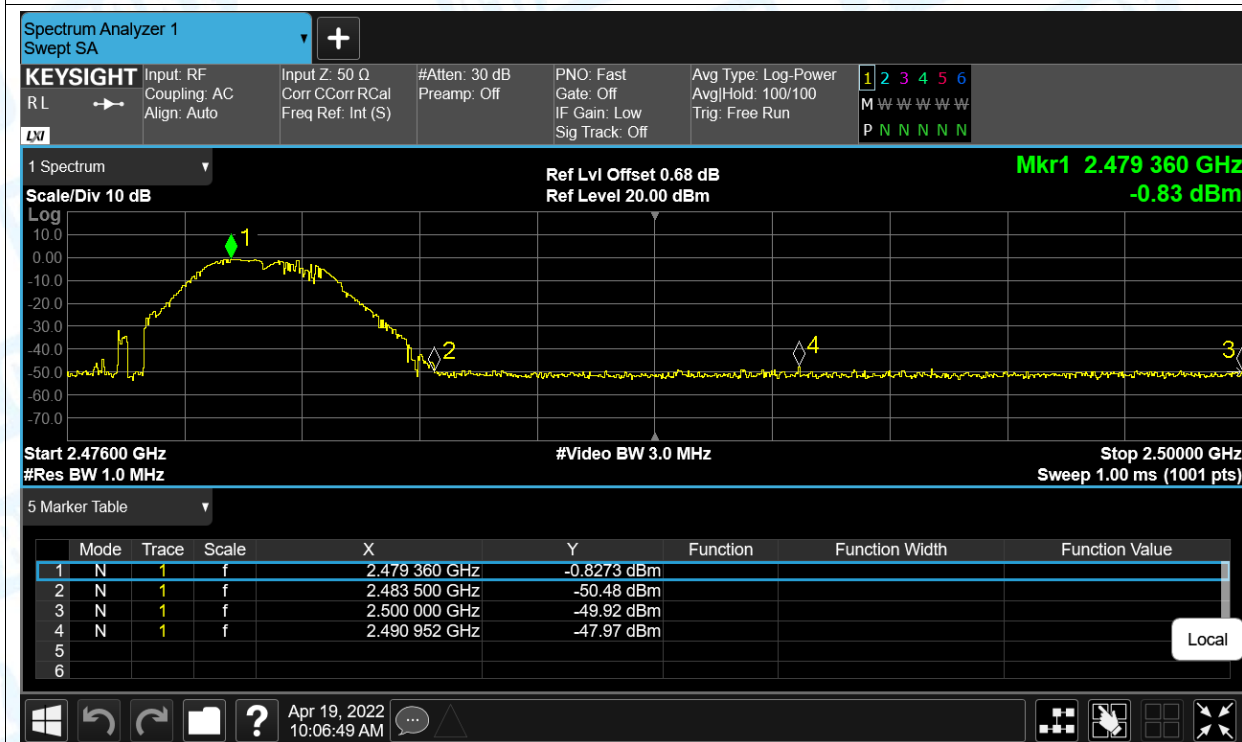
Restrict Band NVNT 2403MHz Ant1 No-Hopping Peak



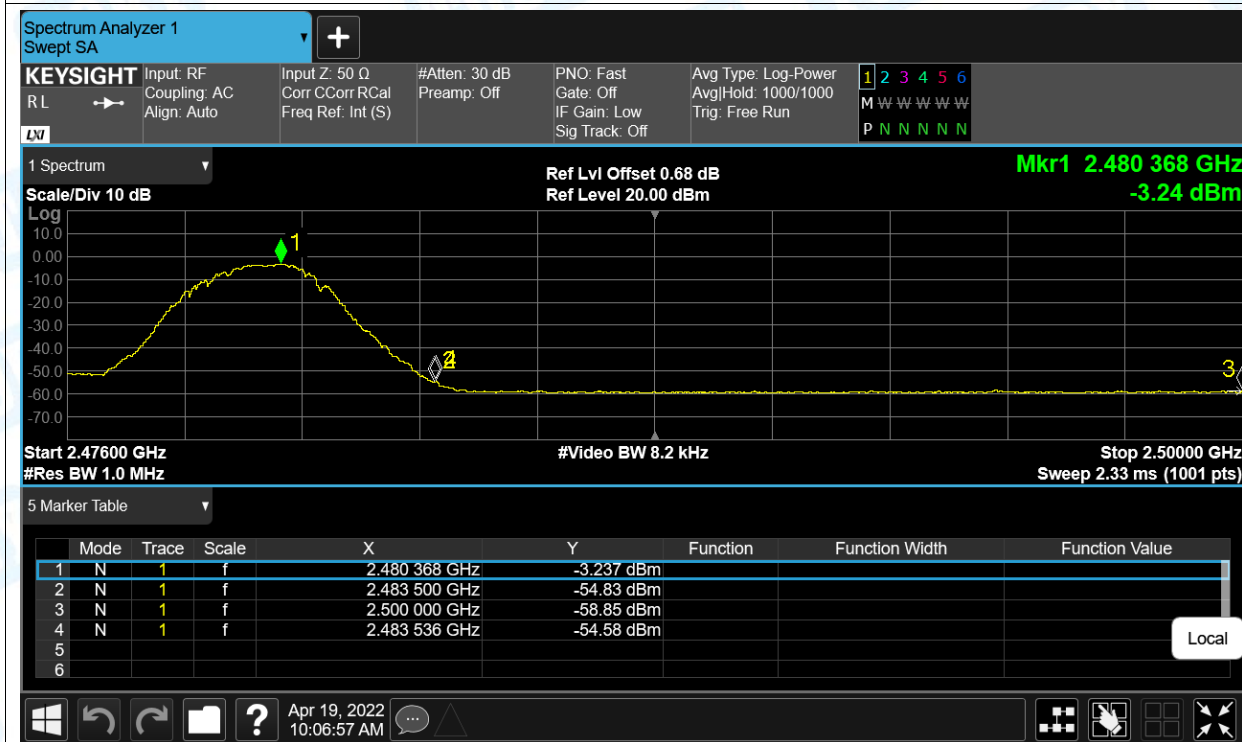
Restrict Band NVNT 2403MHz Ant1 No-Hopping Average



Restrict Band NVNT 2480MHz Ant1 No-Hopping Peak

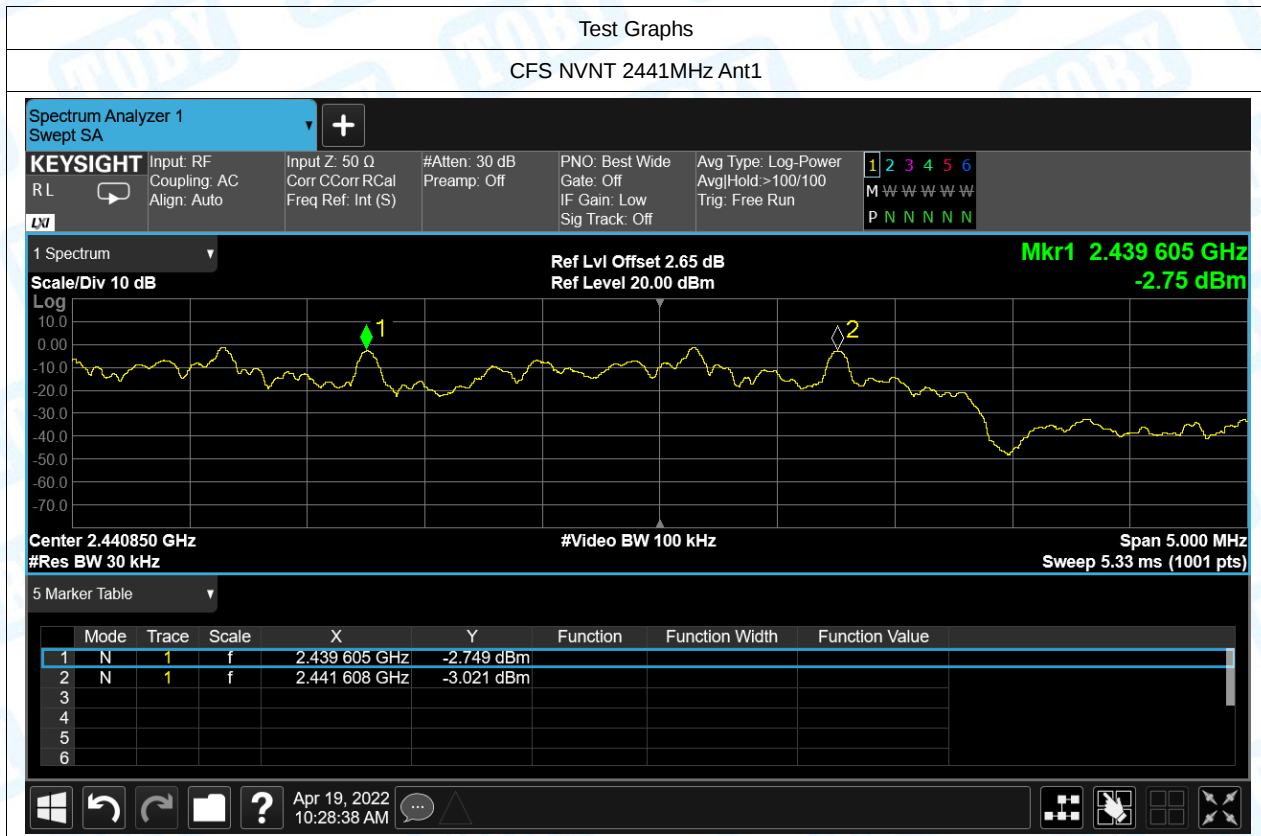


Restrict Band NVNT 2480MHz Ant1 No-Hopping Average



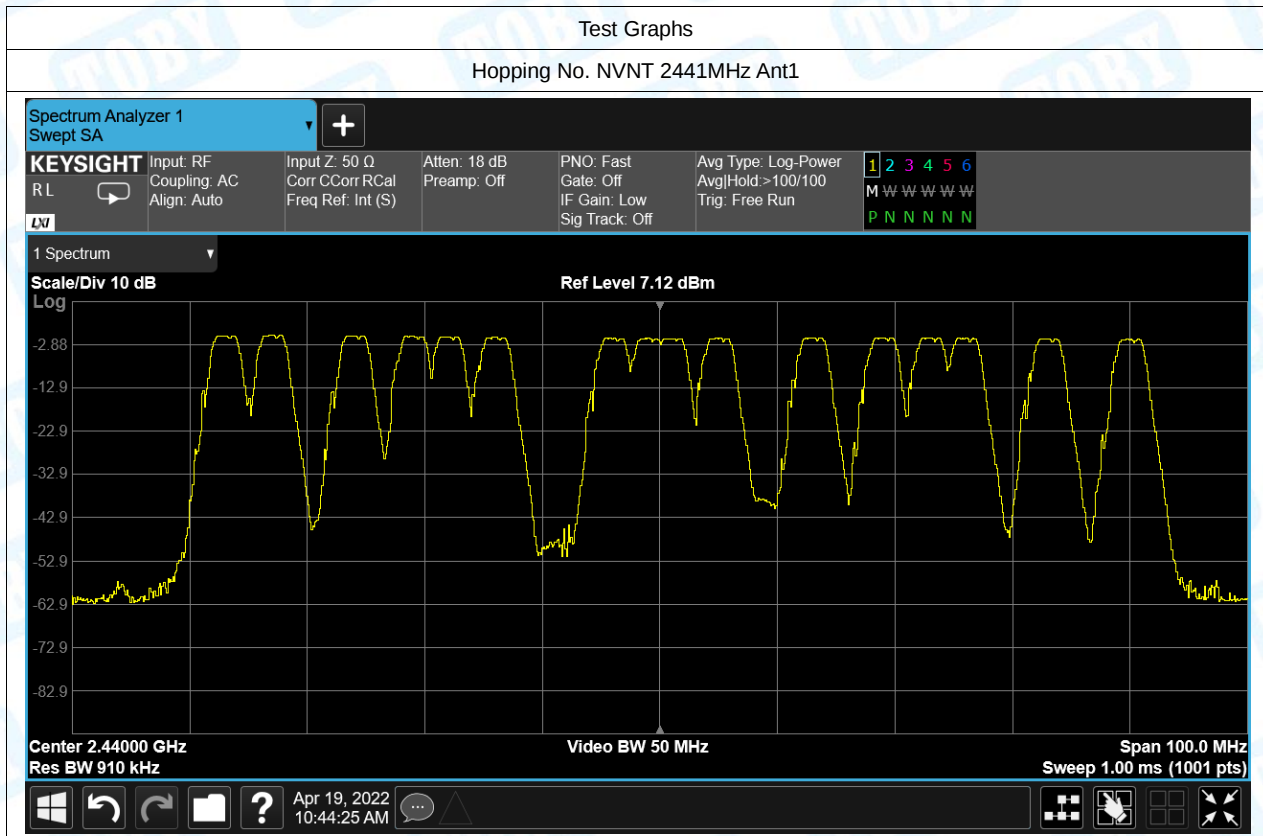
9.Carrier Frequencies Separation

Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	GFSK	Ant1	2439.605	2441.608	2.003	1.48	Pass



10.Number of Hopping Channel

Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	GFSK	Ant1	16	15	Pass



11.Dwell Time

Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total hops (N)	Test Result (ms)	Limit (ms)	Verdict
NVNT	GFSK	2441	Ant1	0.220	11*10	24.2	400	Pass

The Dwell Time = Burst Width * Total Hops. The detailed calculations are showed as follows:

The duration for dwell time calculation: 0.4 [s] * hopping number = 0.4 [s] * 16 [ch] =6.4[s*ch];

The burst width, which is directly measured, refers to the duration on one channel hop.

The maximum number of hopping channels in 6.4s is 110.

Reading Time=0.220ms*110=24.2

