

## RF Test Data for Bluetooth(BDR+EDR) (Conducted Measurements)

General Description of EUT	
<b>Product Name:</b>	Illuminato Q4
<b>Test Model:</b>	Illuminato Q4
<b>Sample ID:</b>	RW-C-202209-0005-9-2#
Environmental Conditions	
<b>Temperature:</b>	25°C
<b>Relative Humidity:</b>	55%
<b>Test Voltage:</b>	DC 11.1V
<b>Test Engineer:</b>	Liu Ji Ming
Note: For a more detailed features description, please refer to the report TBR-C-202209-0005-14	

## 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	30.4	5.17	2.63
NVNT	1-DH1	2441	Ant1	30.4	5.17	2.63
NVNT	1-DH1	2480	Ant1	30.4	5.17	2.63
NVNT	2-DH1	2402	Ant1	31.2	5.06	2.56
NVNT	2-DH1	2441	Ant1	31.2	5.06	2.56
NVNT	2-DH1	2480	Ant1	31.2	5.06	2.56
NVNT	3-DH1	2402	Ant1	31.2	5.06	2.56
NVNT	3-DH1	2441	Ant1	31.2	5.06	2.56
NVNT	3-DH1	2480	Ant1	31.2	5.06	2.56

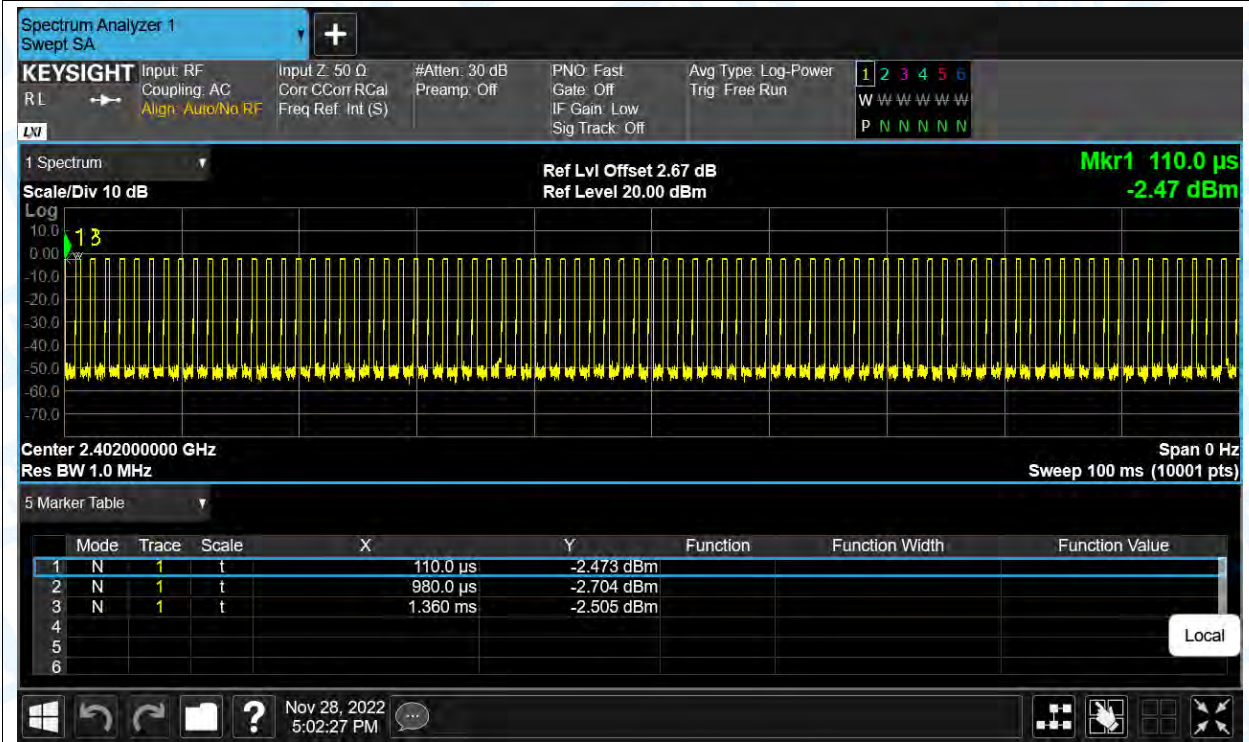
**Note:**  $Duty\ Cycle(\%) = \frac{ON(ms)}{ON(ms) + OFF(ms)}$

$ON(ms) = Maker3 - Maker2$

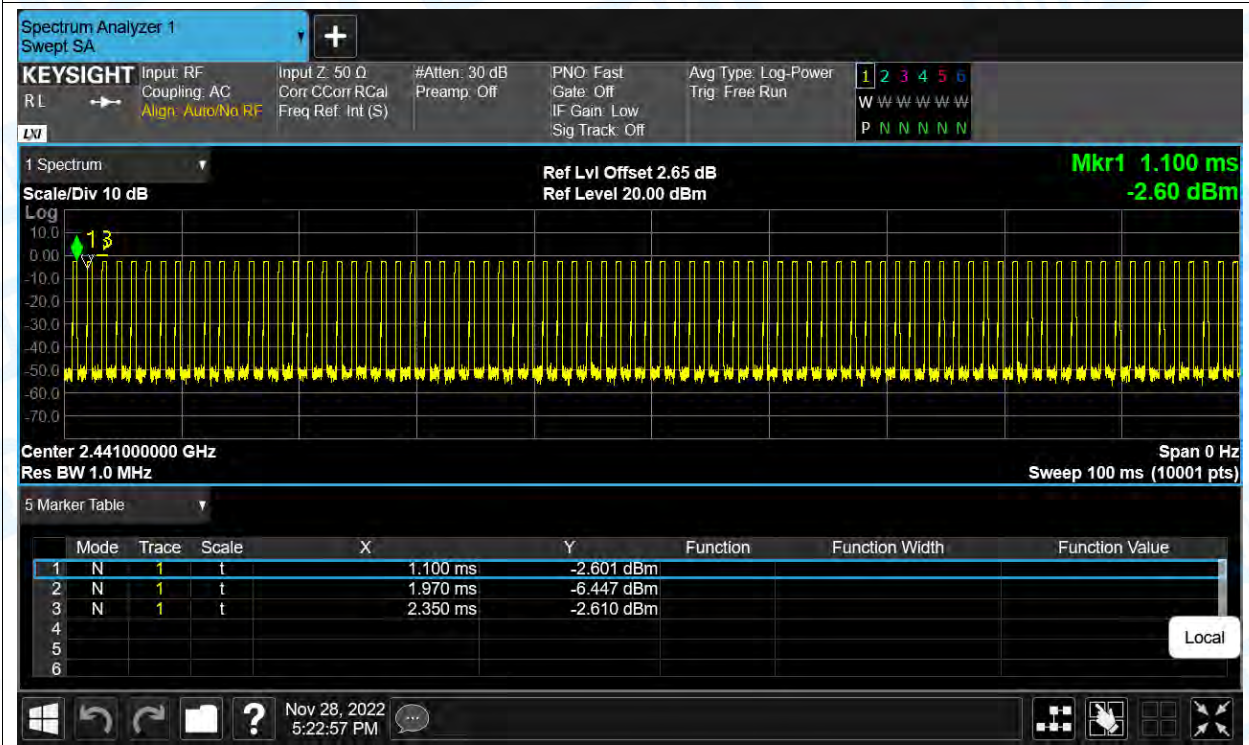
$(ON(ms) + OFF(ms)) = Maker3 - Maker1$

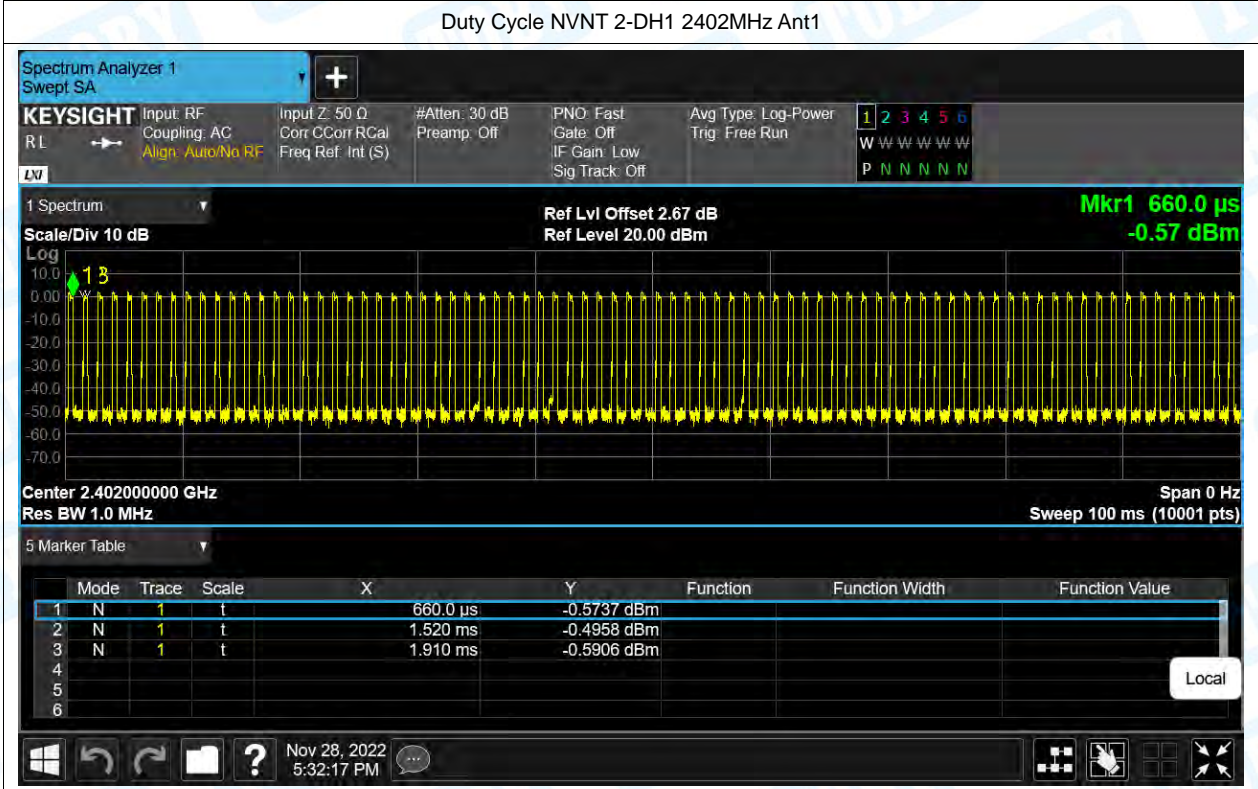
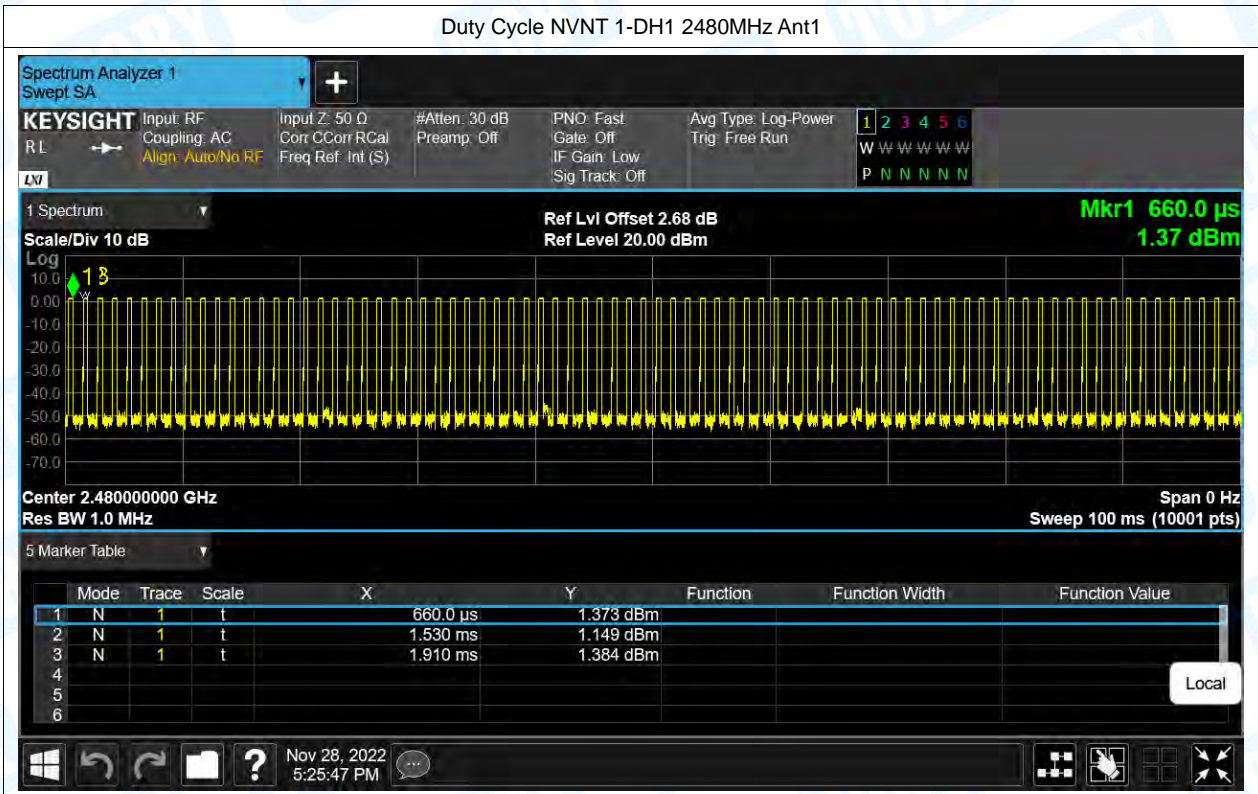
Test Graphs

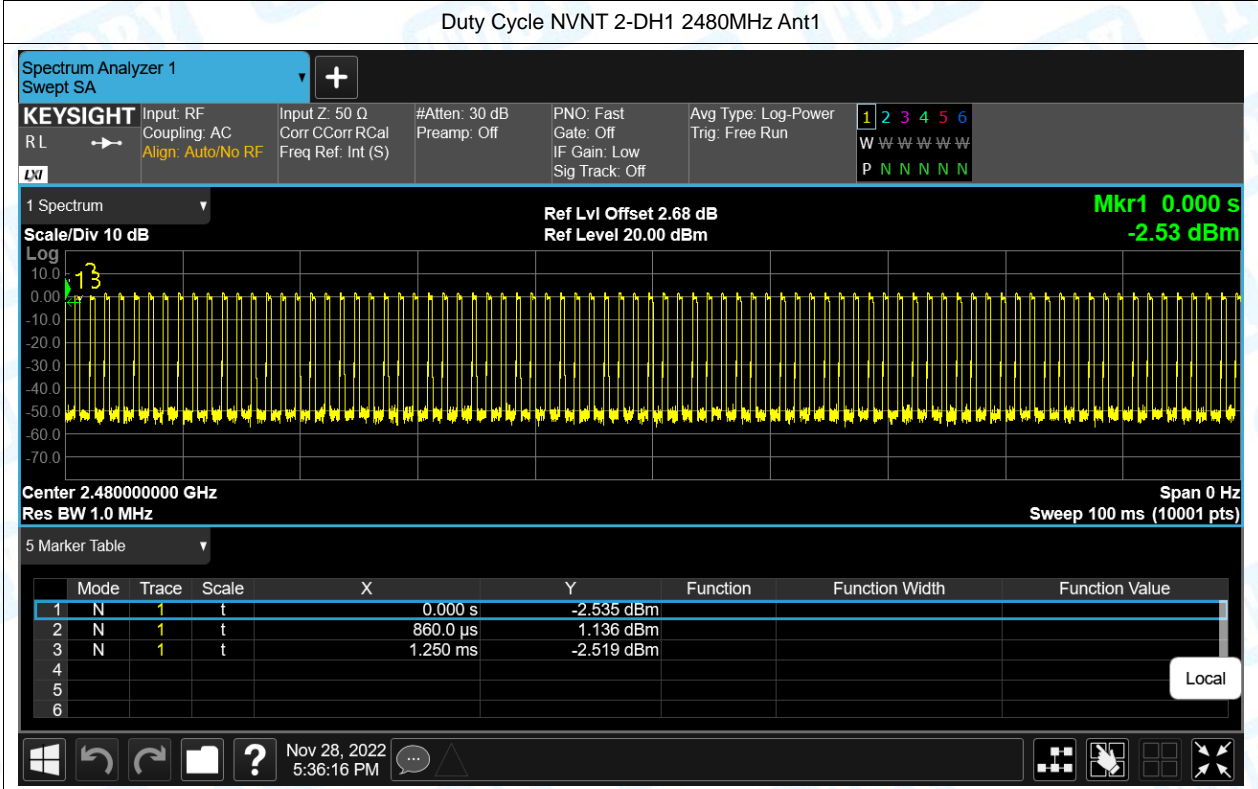
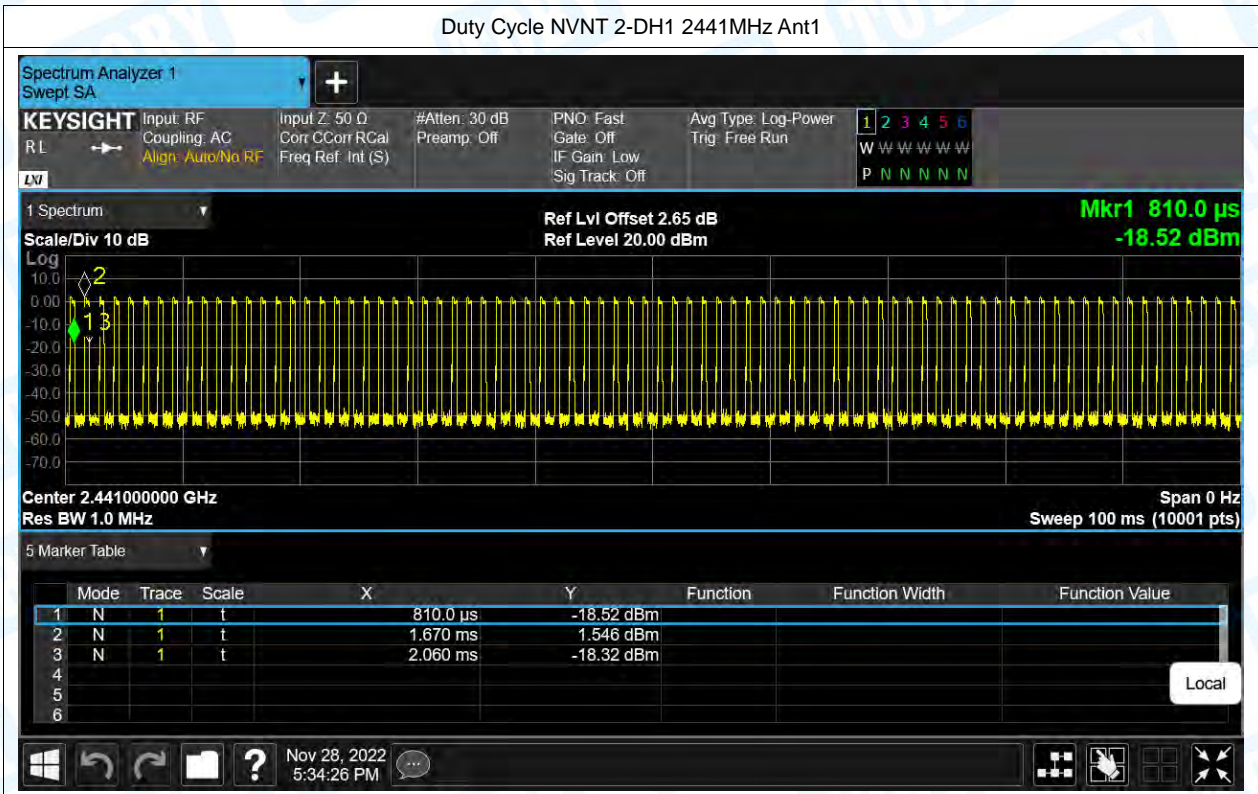
Duty Cycle NVNT 1-DH1 2402MHz Ant1

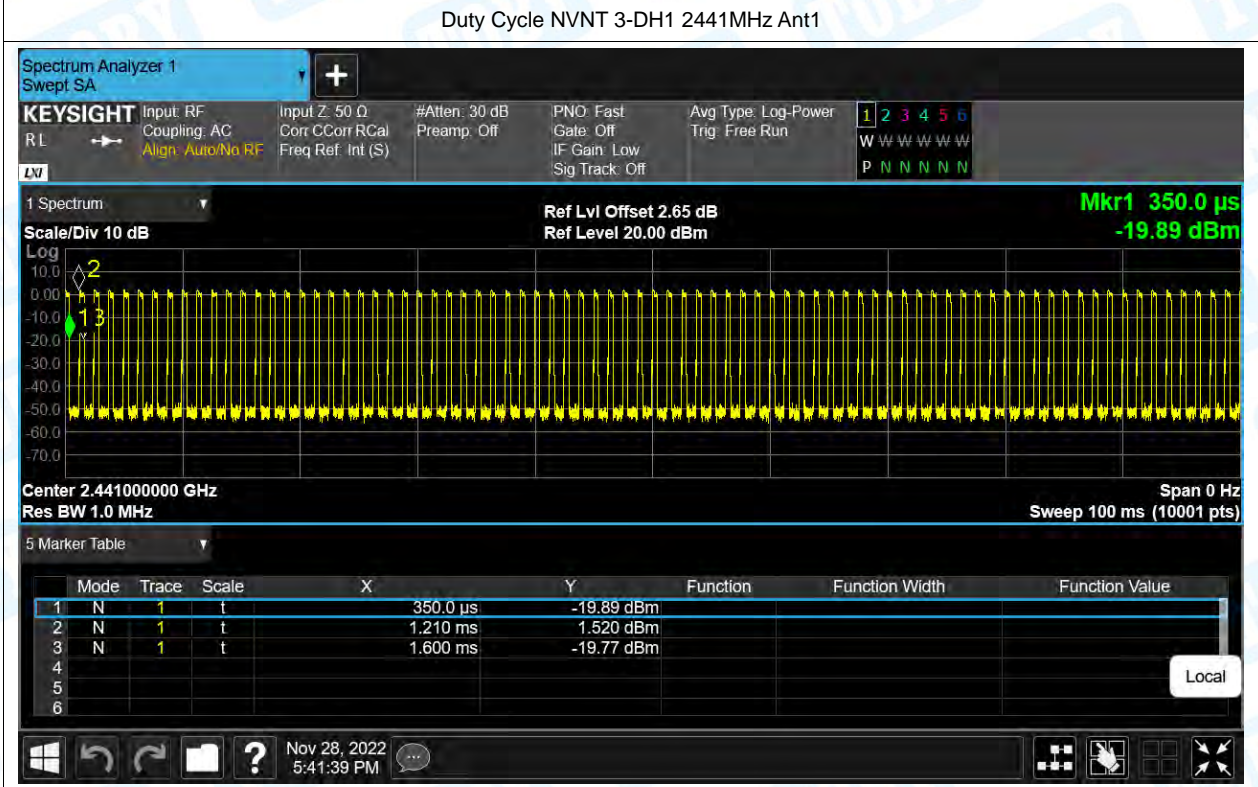
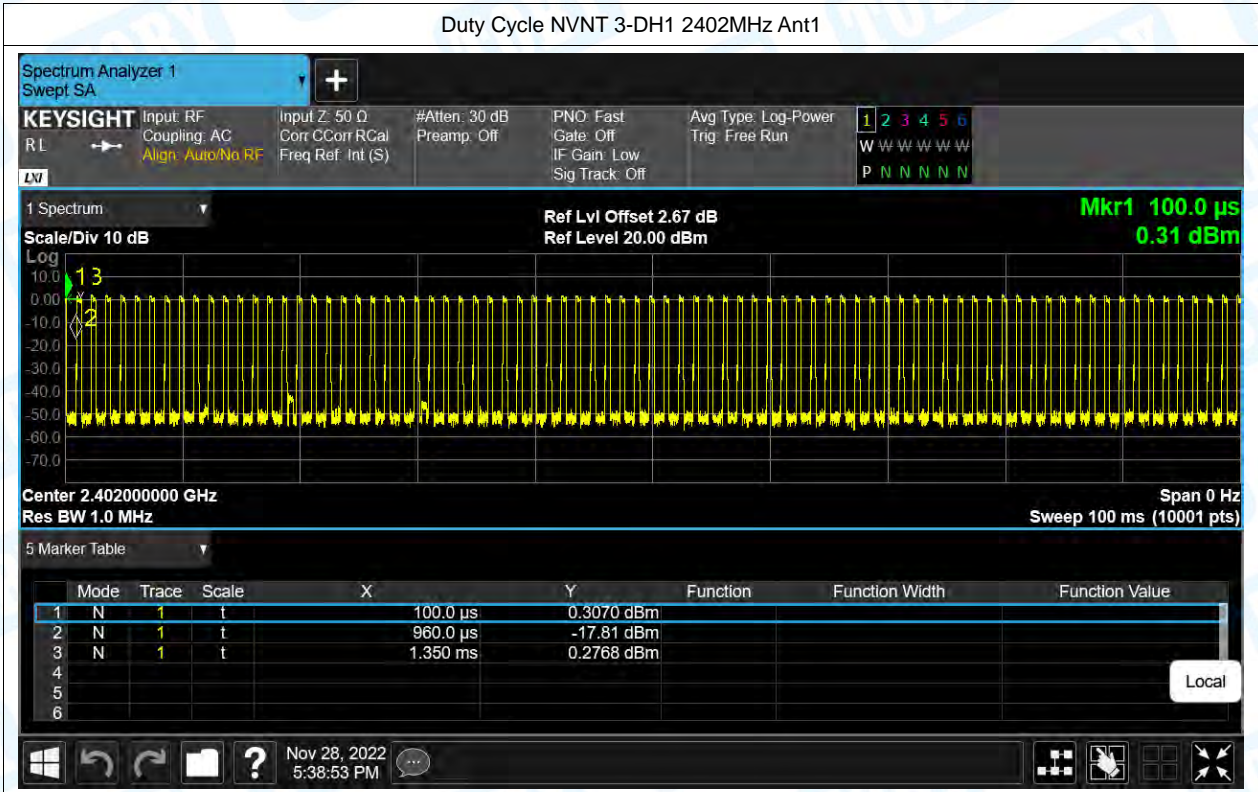


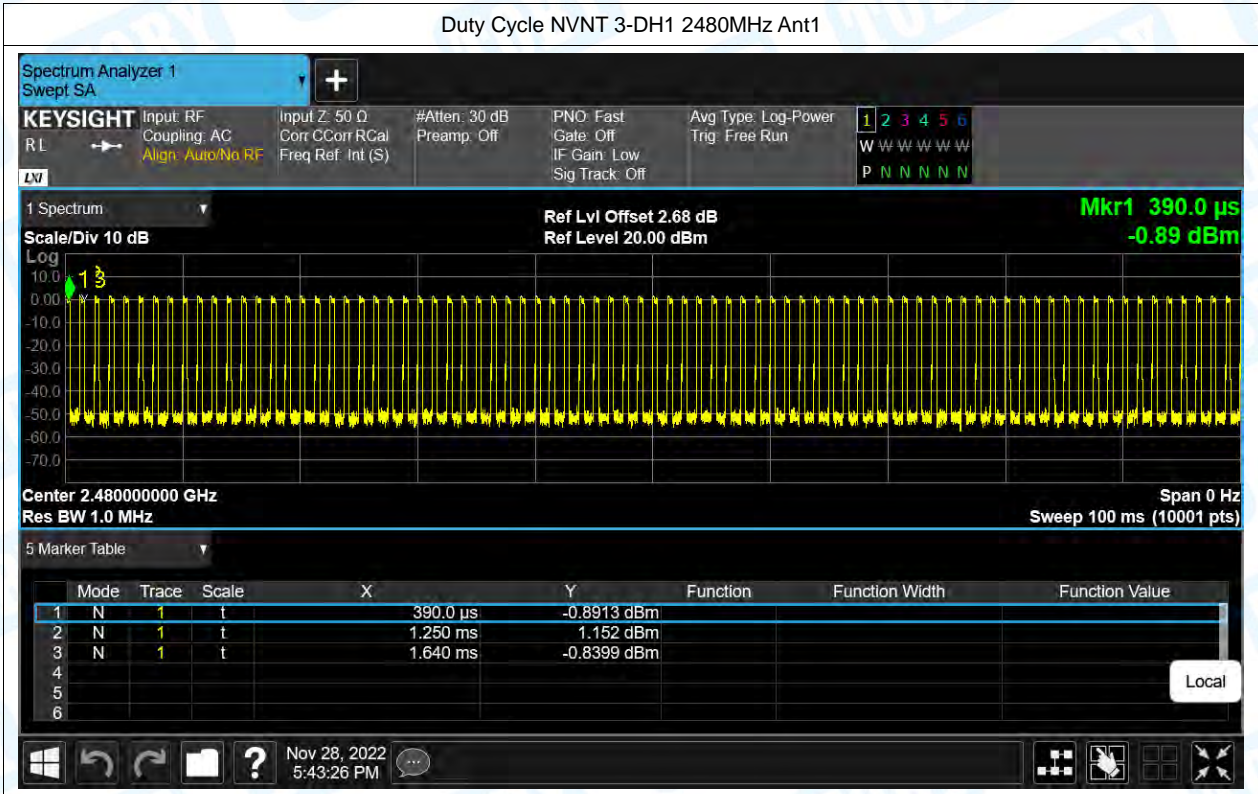
Duty Cycle NVNT 1-DH1 2441MHz Ant1













## 2. Maximum Conducted Output Power

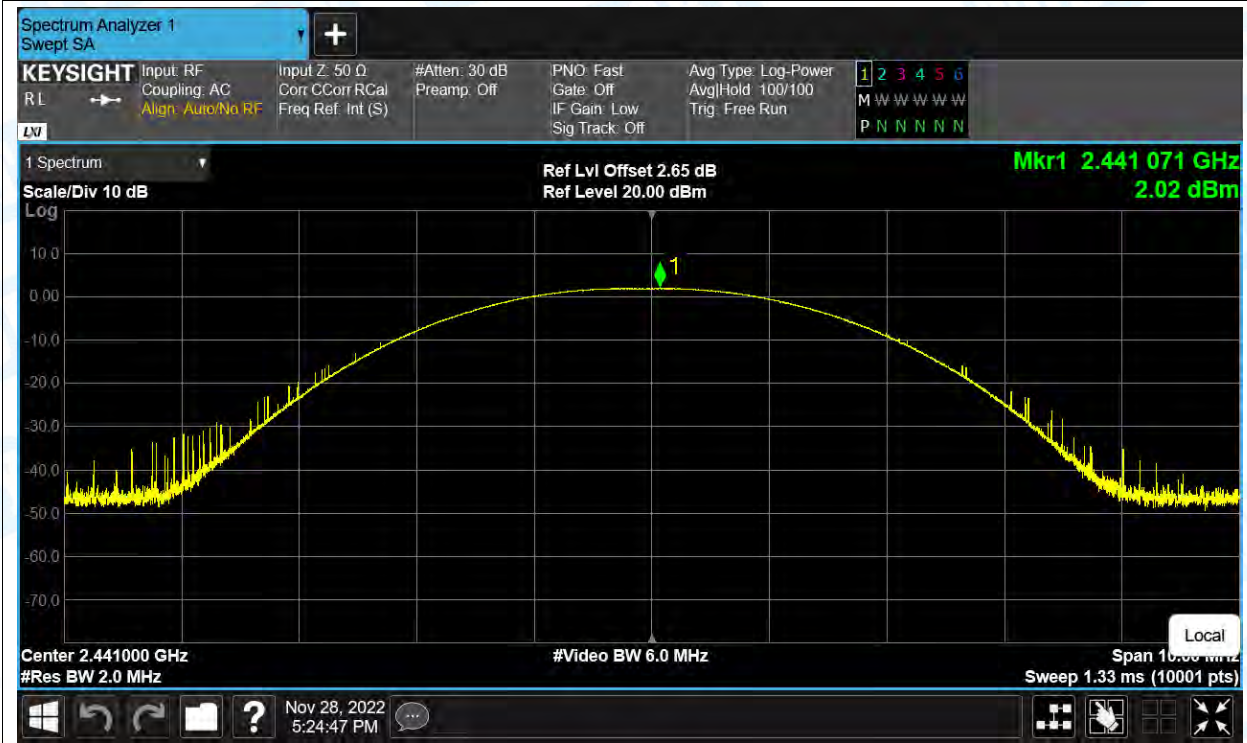
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH1	2402	Ant1	1.97	21	Pass
NVNT	1-DH1	2441	Ant1	2.02	21	Pass
NVNT	1-DH1	2480	Ant1	1.65	21	Pass
NVNT	2-DH1	2402	Ant1	1.94	21	Pass
NVNT	2-DH1	2441	Ant1	2.01	21	Pass
NVNT	2-DH1	2480	Ant1	1.63	21	Pass
NVNT	3-DH1	2402	Ant1	1.92	21	Pass
NVNT	3-DH1	2441	Ant1	2.02	21	Pass
NVNT	3-DH1	2480	Ant1	1.62	21	Pass

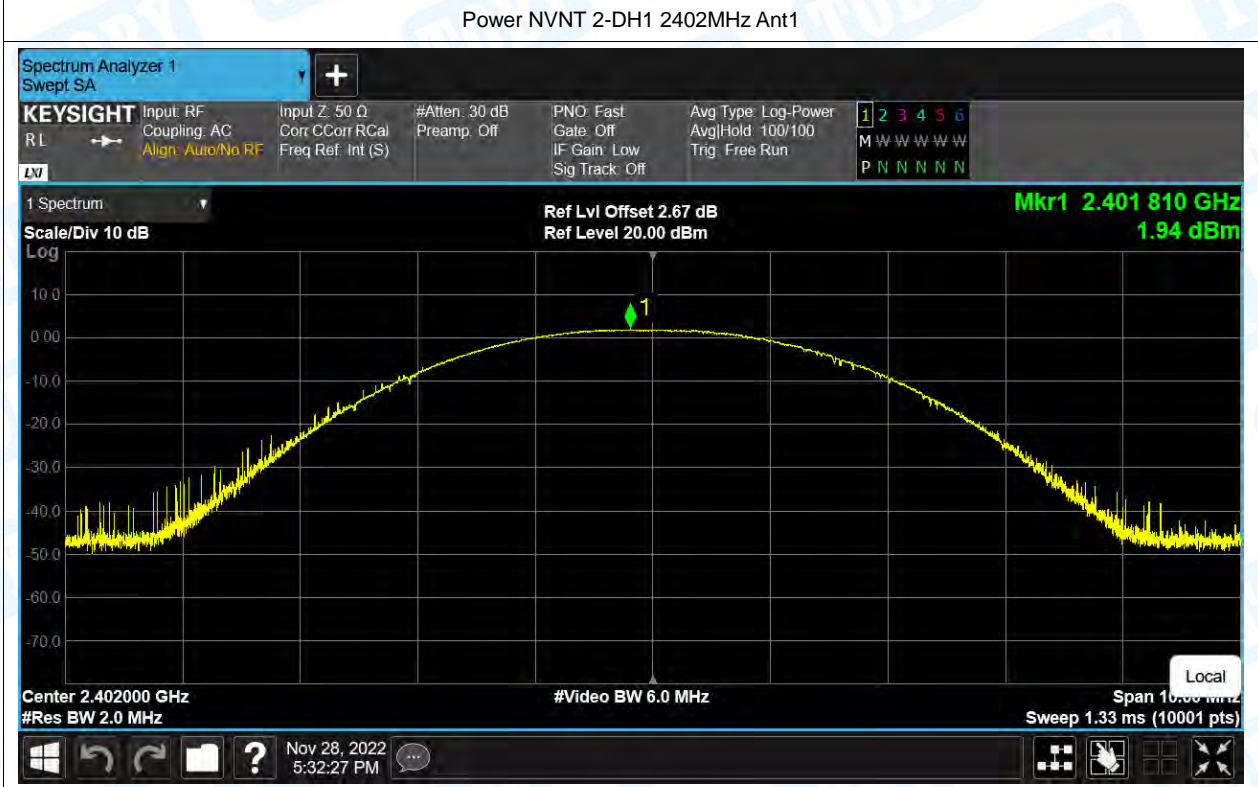
Test Graphs

Power NVNT 1-DH1 2402MHz Ant1



Power NVNT 1-DH1 2441MHz Ant1





Power NVNT 2-DH1 2441MHz Ant1



Power NVNT 2-DH1 2480MHz Ant1







### 3. -20dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-20 dB Bandwidth (MHz)	Limit -20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH1	2402	Ant1	0.96	----	Pass
NVNT	1-DH1	2441	Ant1	0.95	----	Pass
NVNT	1-DH1	2480	Ant1	1.00	----	Pass
NVNT	2-DH1	2402	Ant1	1.23	----	Pass
NVNT	2-DH1	2441	Ant1	1.28	----	Pass
NVNT	2-DH1	2480	Ant1	1.23	----	Pass
NVNT	3-DH1	2402	Ant1	1.25	----	Pass
NVNT	3-DH1	2441	Ant1	1.25	----	Pass
NVNT	3-DH1	2480	Ant1	1.26	----	Pass

Test Graphs

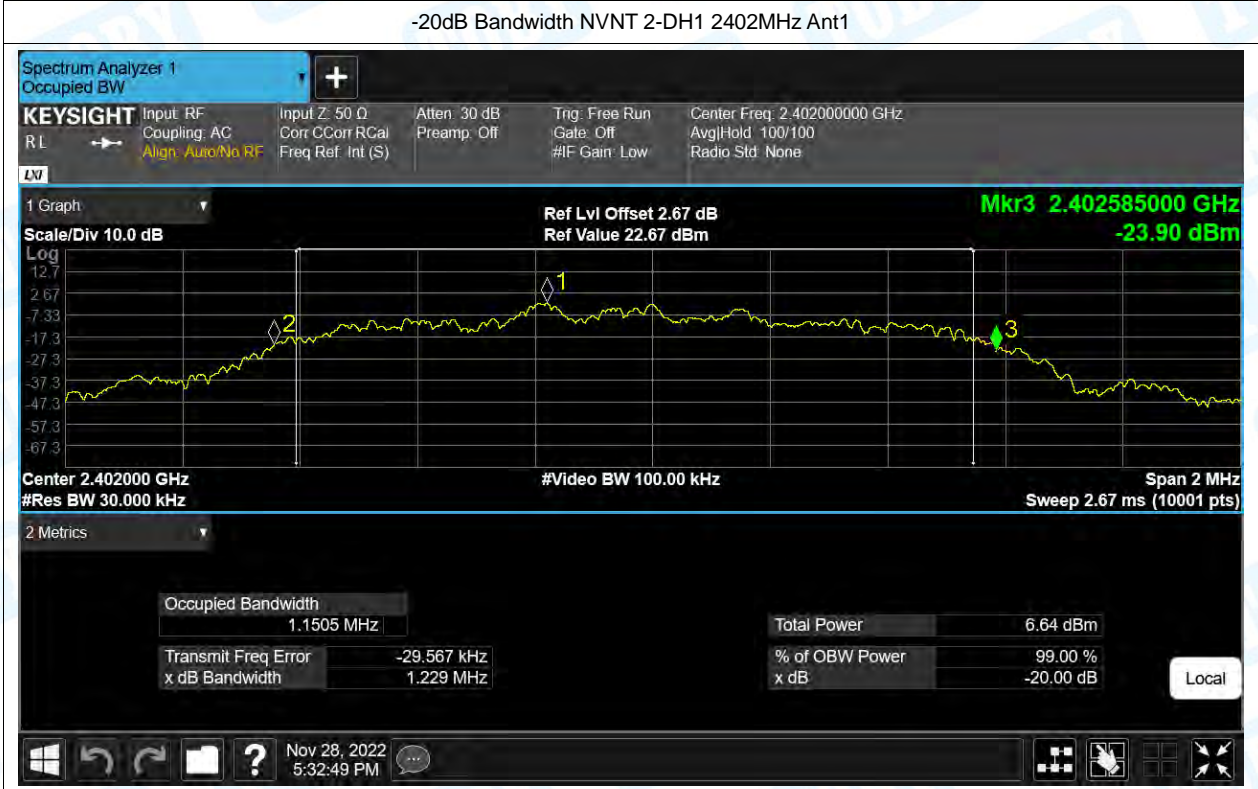
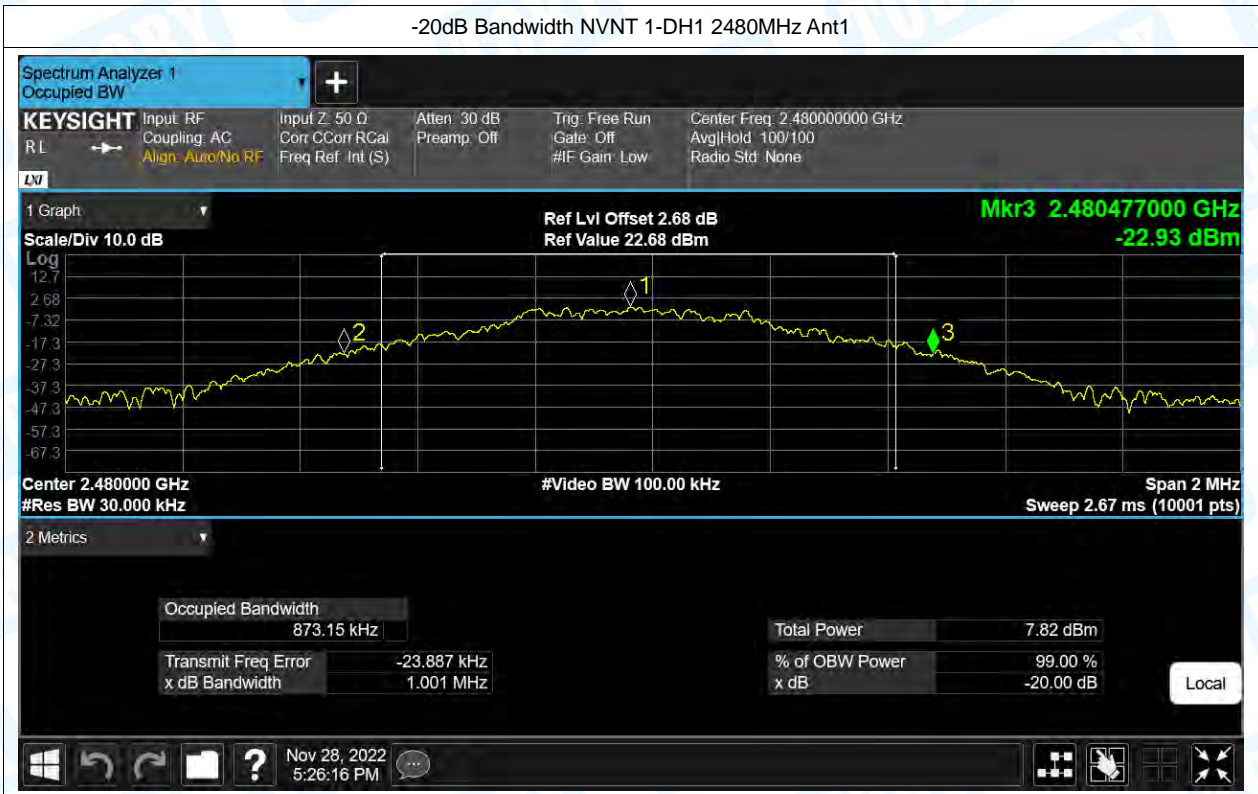
-20dB Bandwidth NVNT 1-DH1 2402MHz Ant1



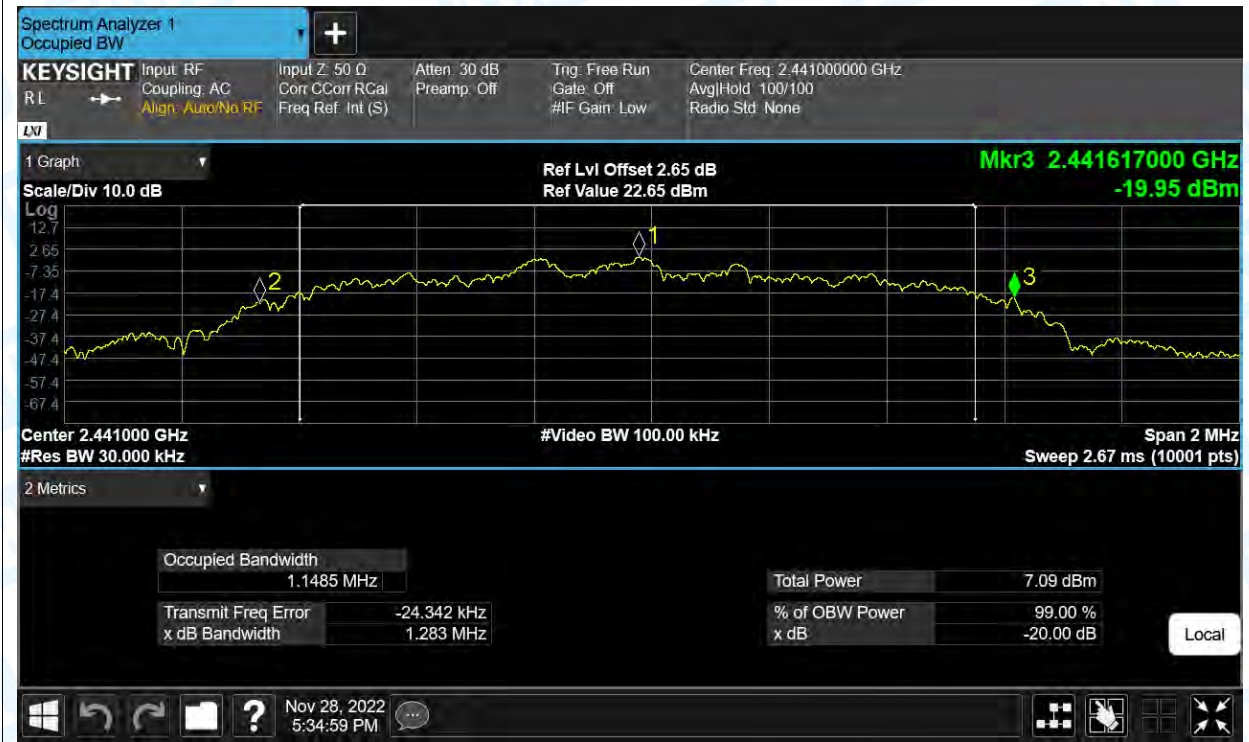
-20dB Bandwidth NVNT 1-DH1 2441MHz Ant1



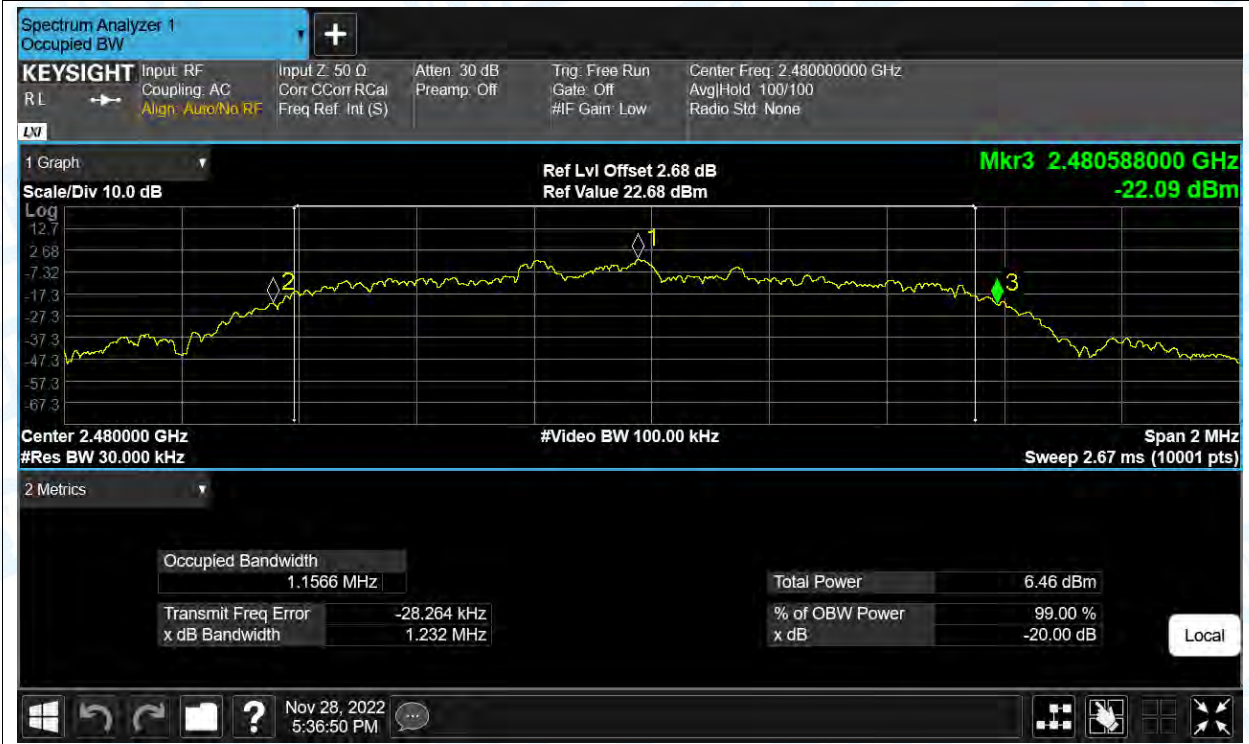




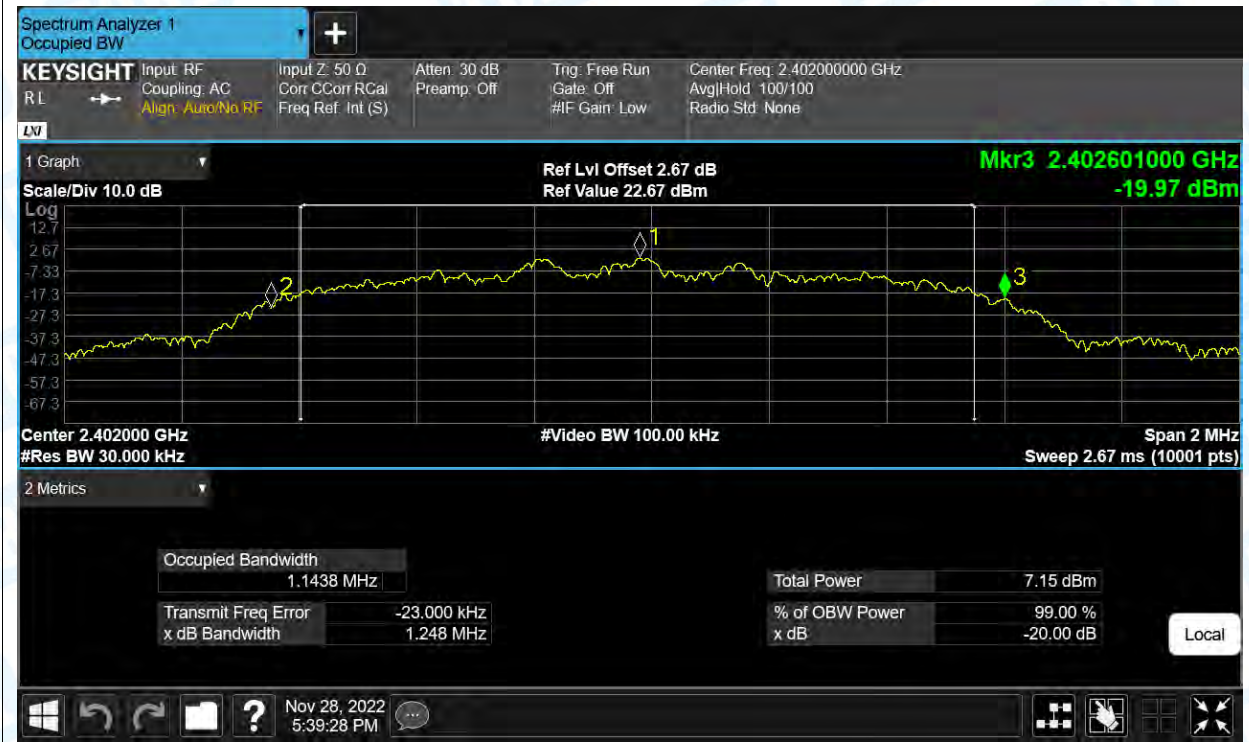
-20dB Bandwidth NVNT 2-DH1 2441MHz Ant1



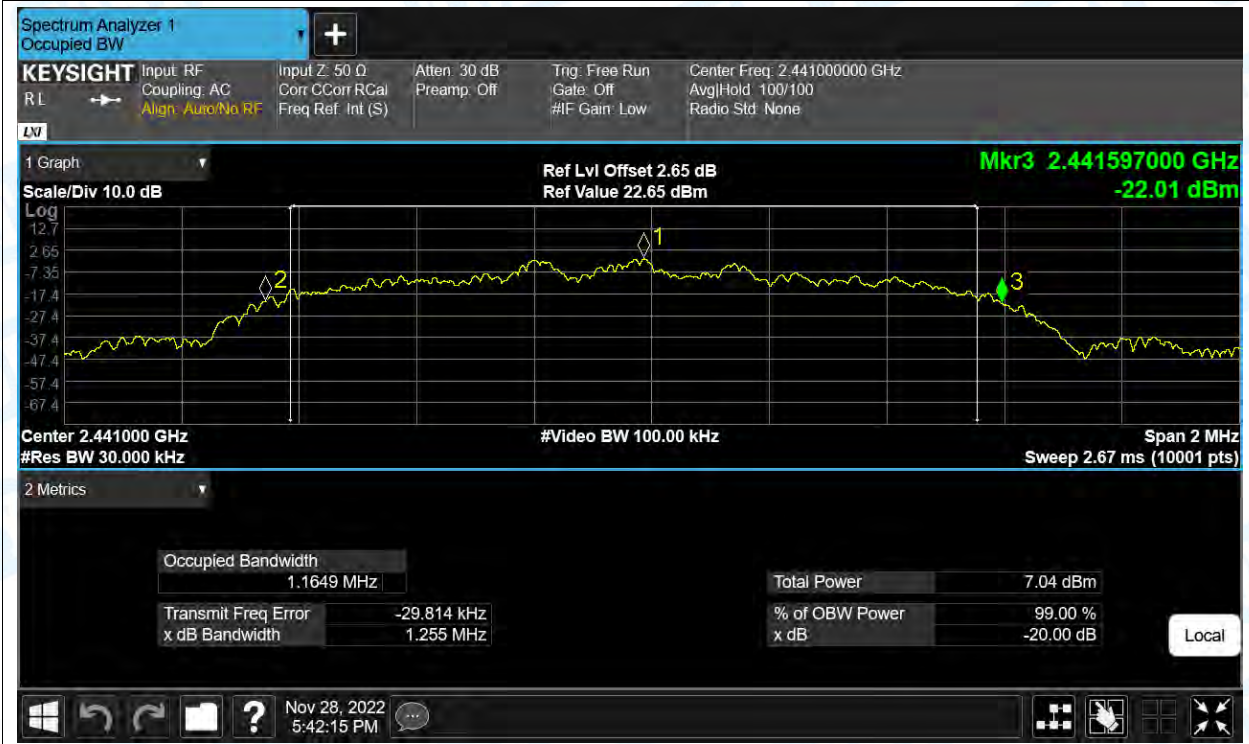
-20dB Bandwidth NVNT 2-DH1 2480MHz Ant1

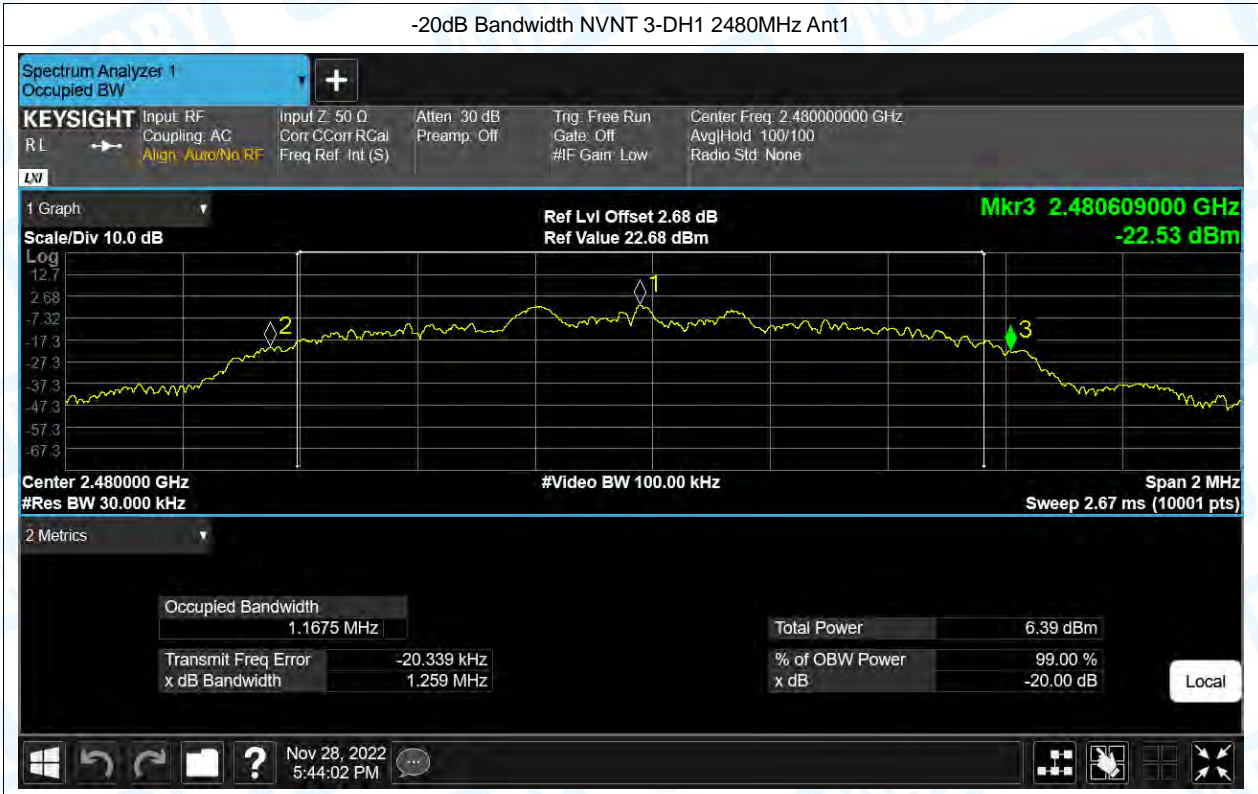


-20dB Bandwidth NVNT 3-DH1 2402MHz Ant1



-20dB Bandwidth NVNT 3-DH1 2441MHz Ant1



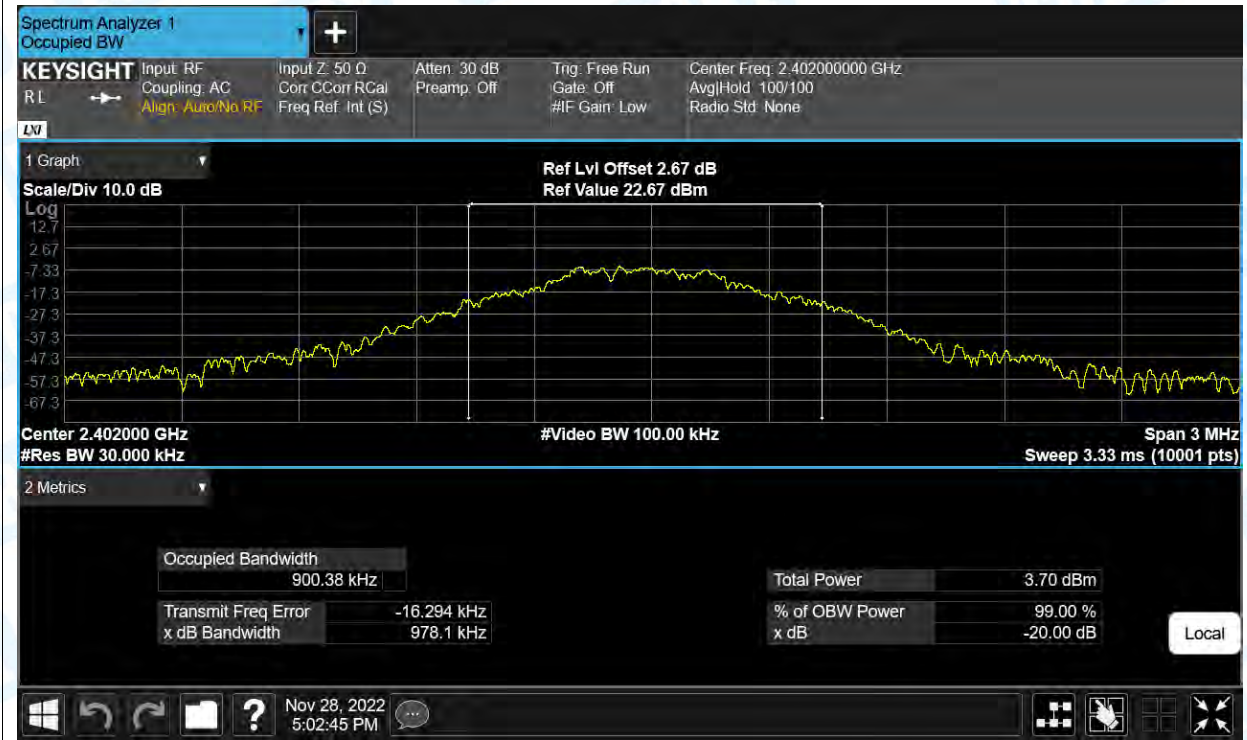


## 4. Occupied Channel Bandwidth

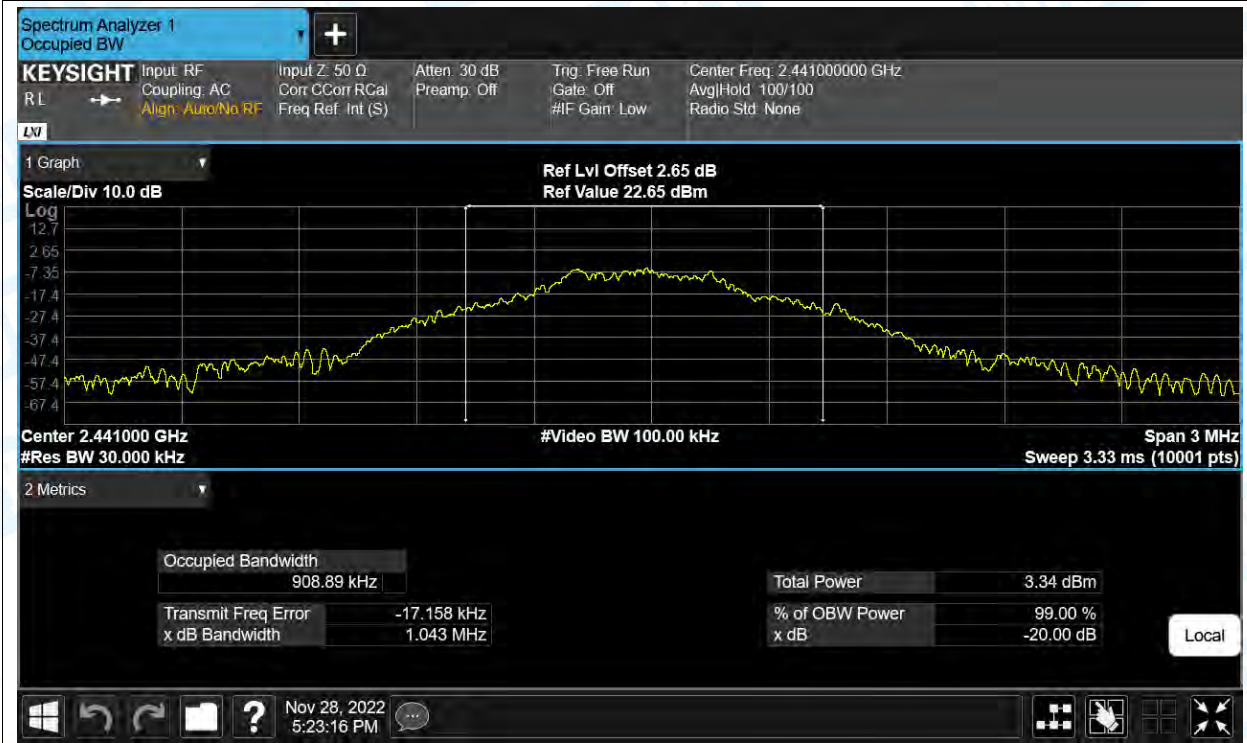
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	1-DH1	2402	Ant1	0.90
NVNT	1-DH1	2441	Ant1	0.909
NVNT	1-DH1	2480	Ant1	0.86
NVNT	2-DH1	2402	Ant1	1.13
NVNT	2-DH1	2441	Ant1	1.16
NVNT	2-DH1	2480	Ant1	1.159
NVNT	3-DH1	2402	Ant1	1.158
NVNT	3-DH1	2441	Ant1	1.161
NVNT	3-DH1	2480	Ant1	1.161

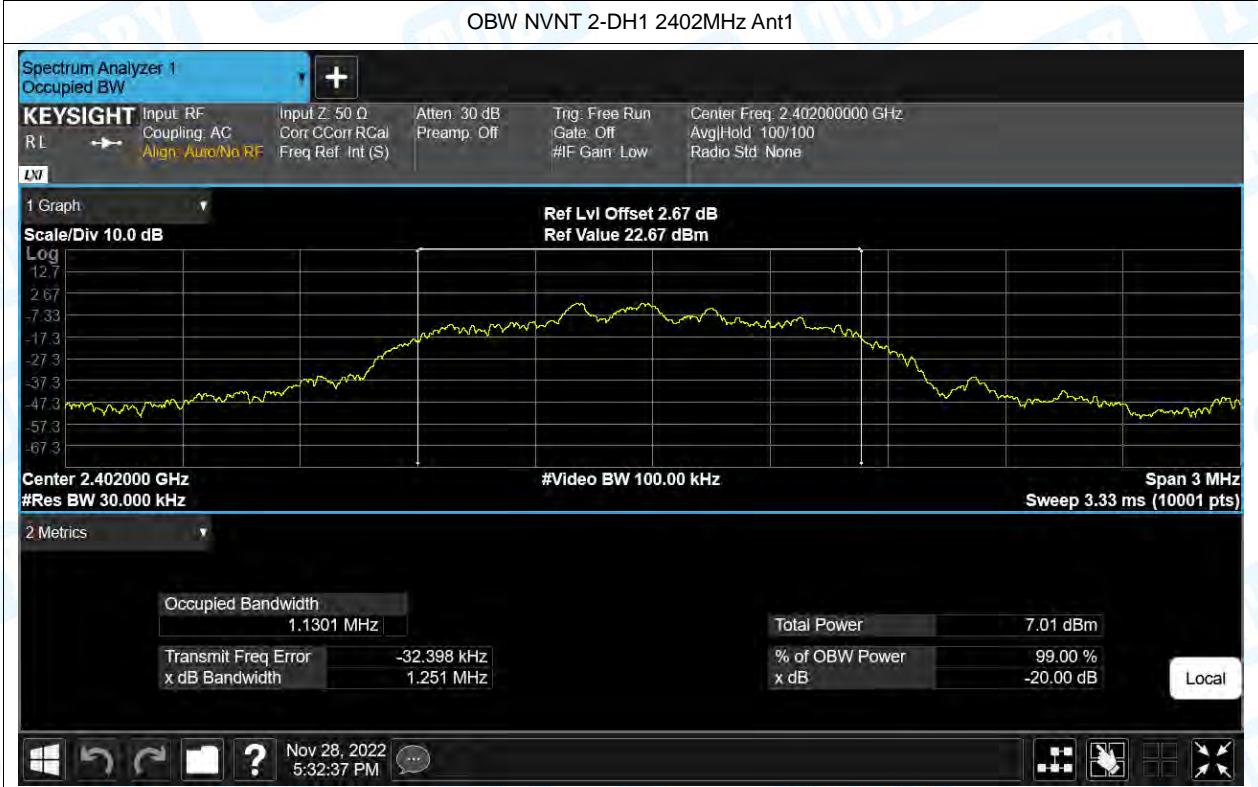
Test Graphs

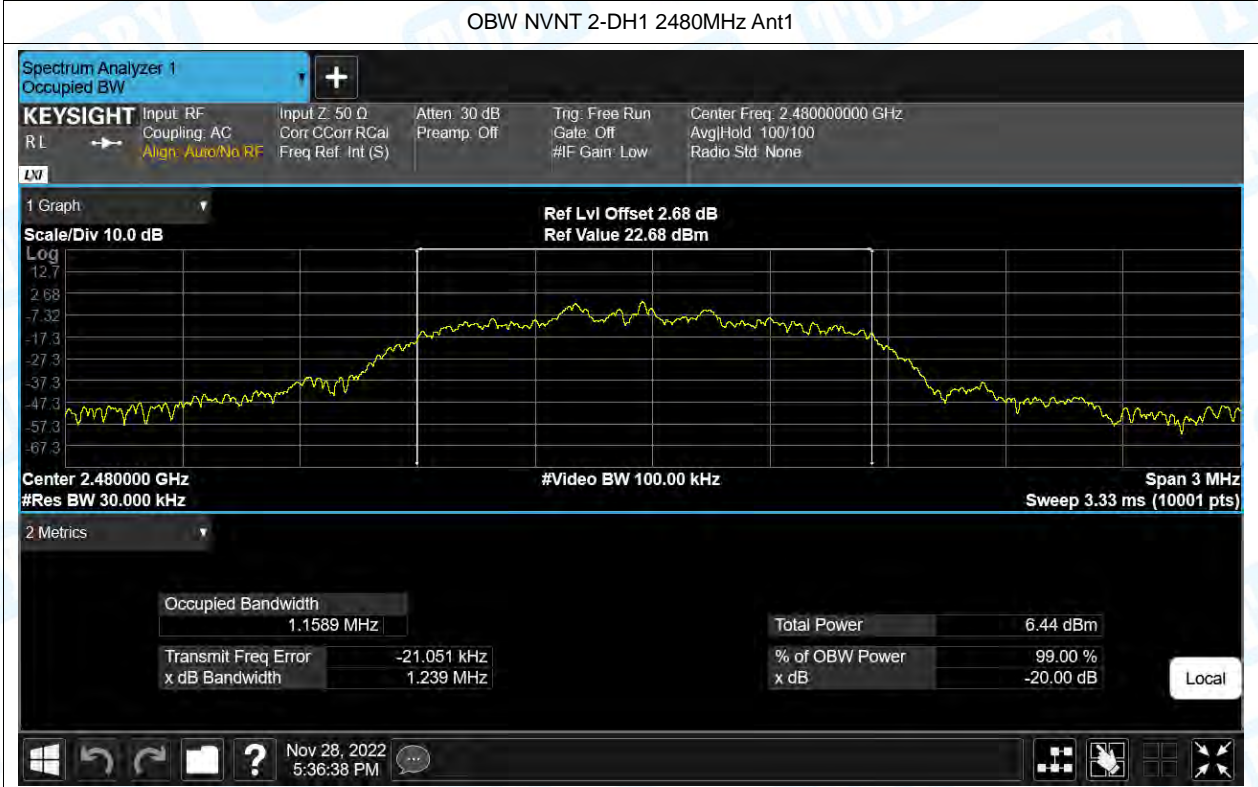
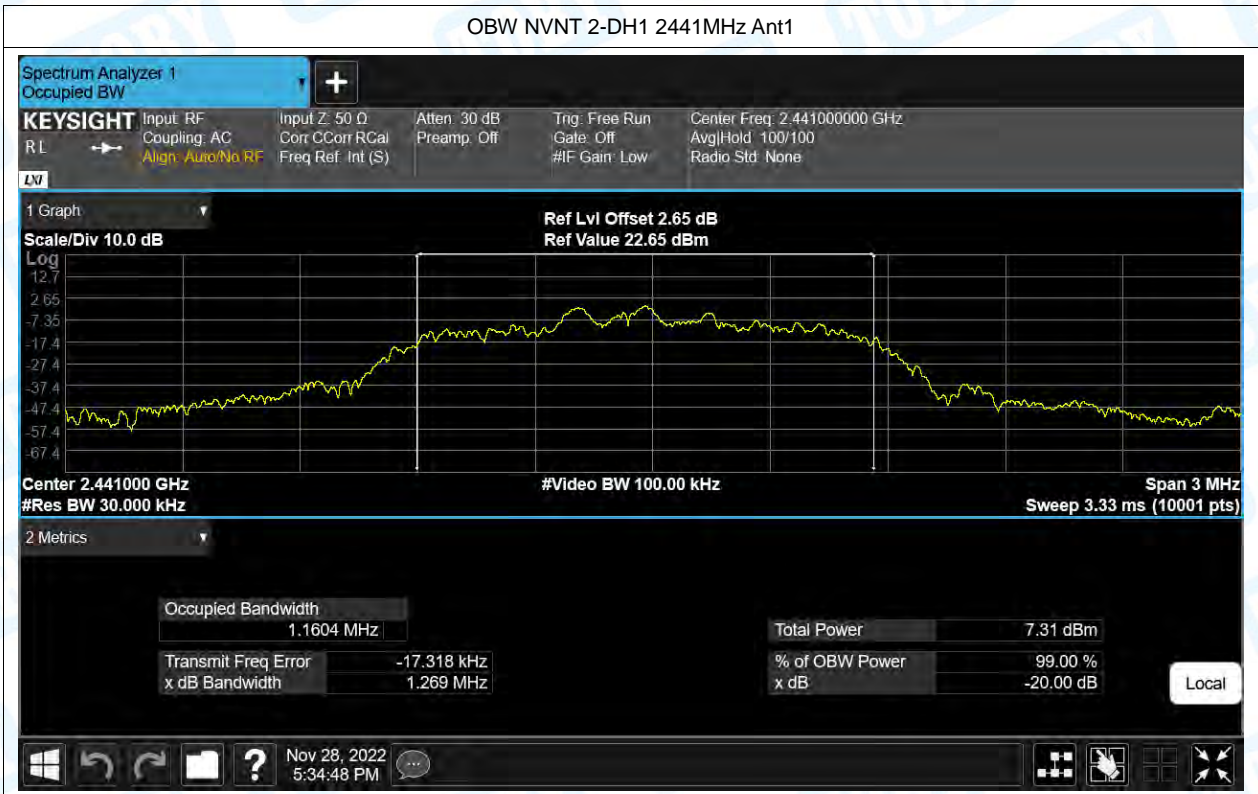
OBW NVNT 1-DH1 2402MHz Ant1



OBW NVNT 1-DH1 2441MHz Ant1

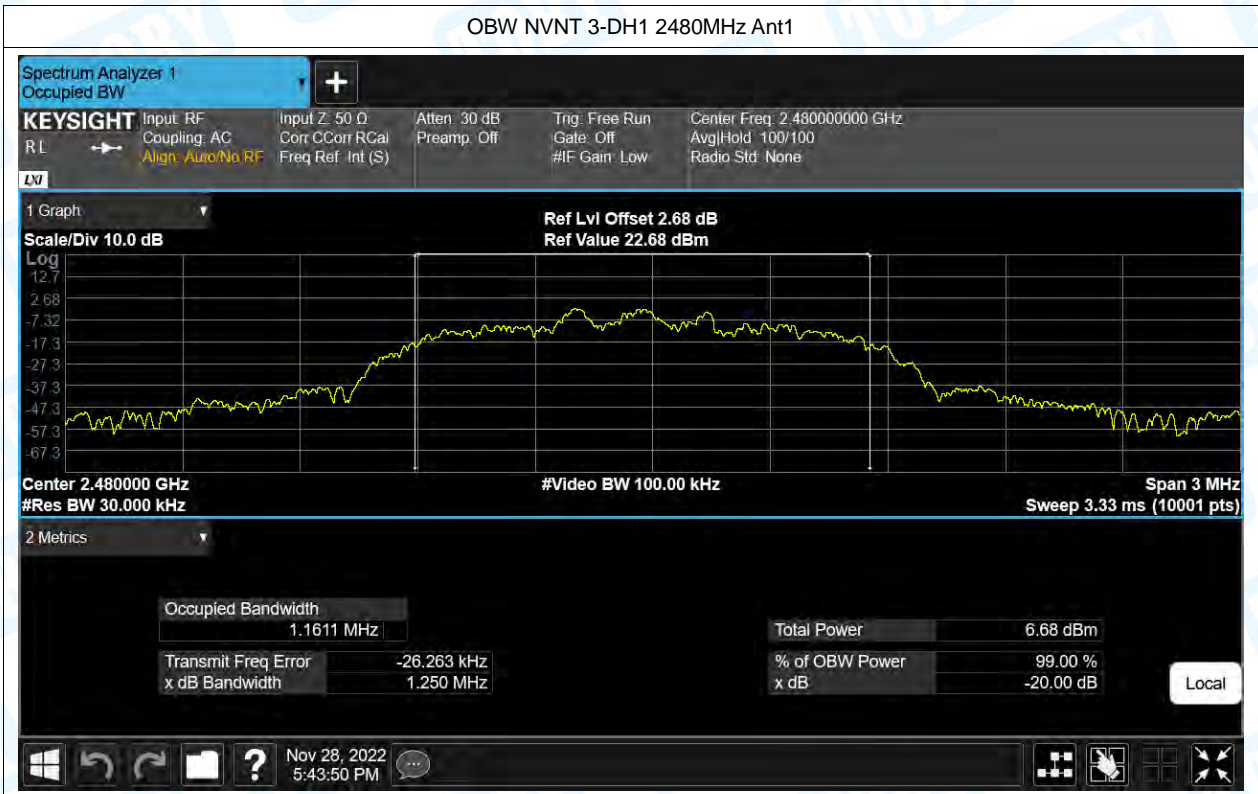










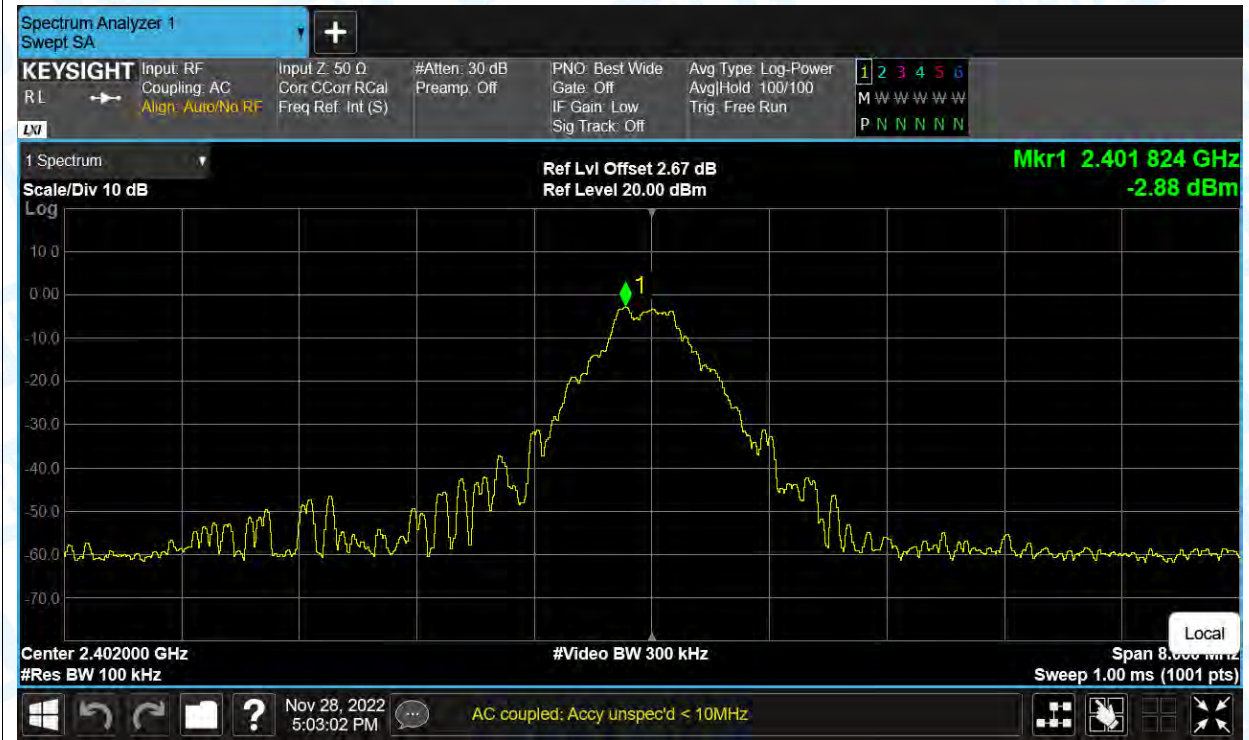


## 5. Band Edge

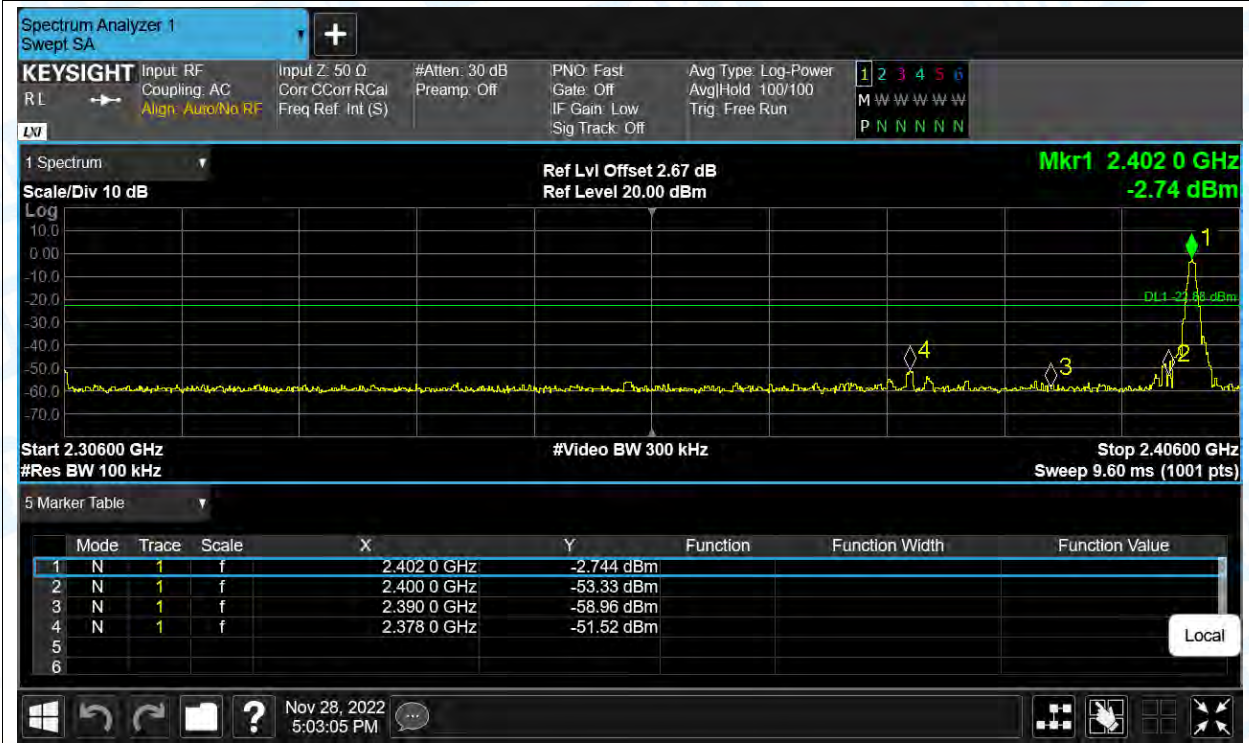
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	-48.64	-20	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	-55.68	-20	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	-51.35	-20	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	-57.03	-20	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	-49.07	-20	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	-56.97	-20	Pass

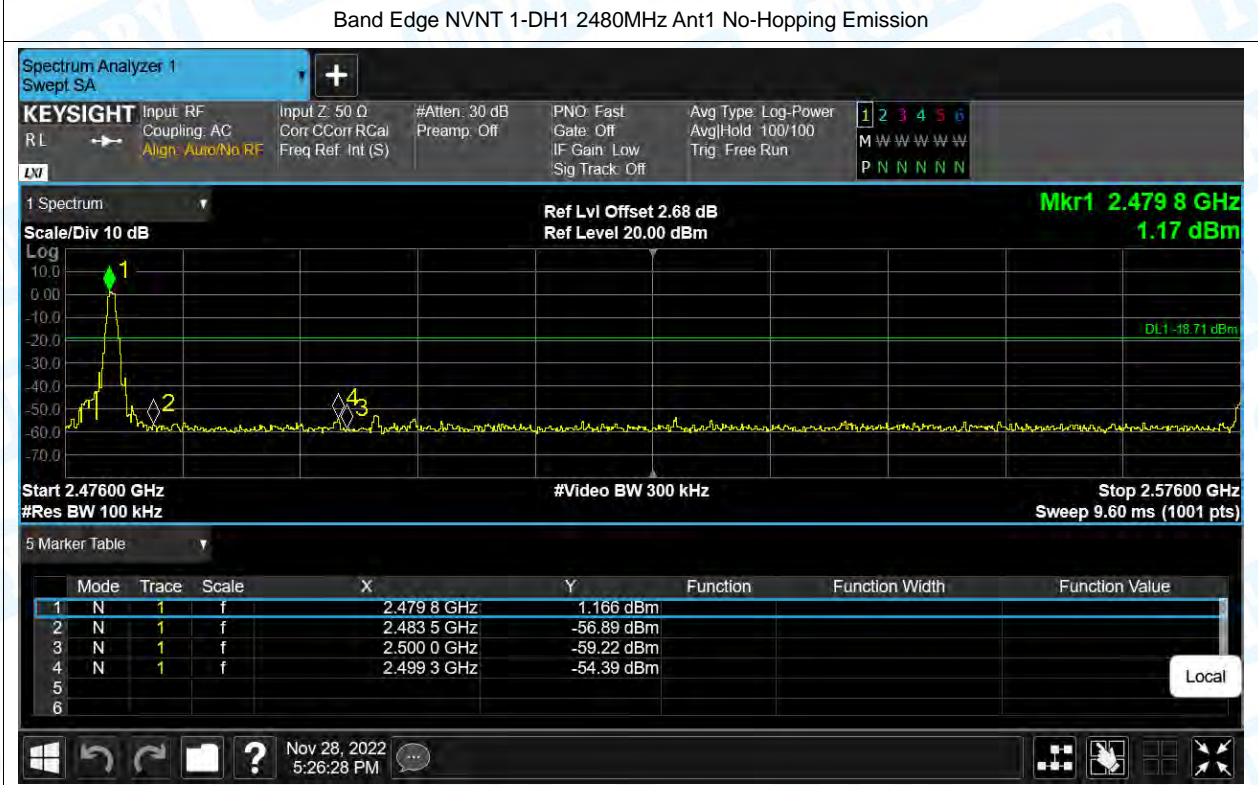
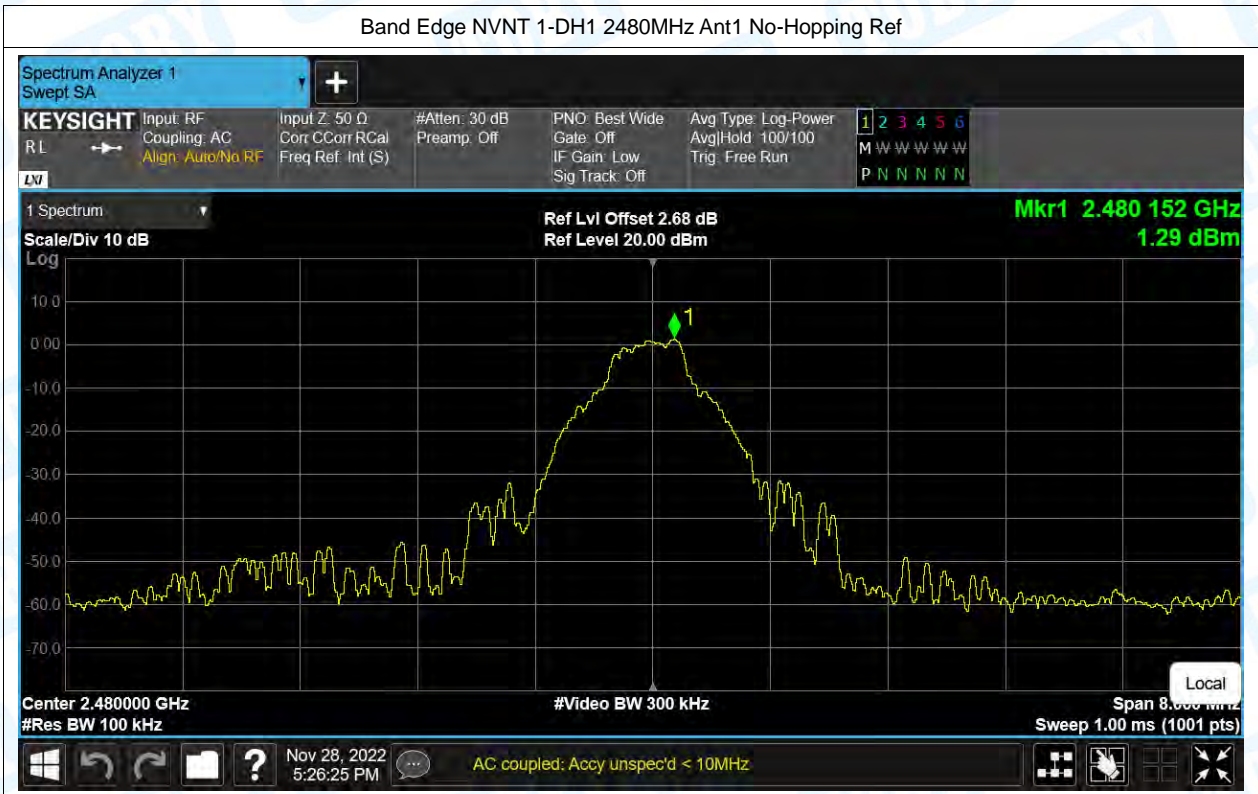
Test Graphs

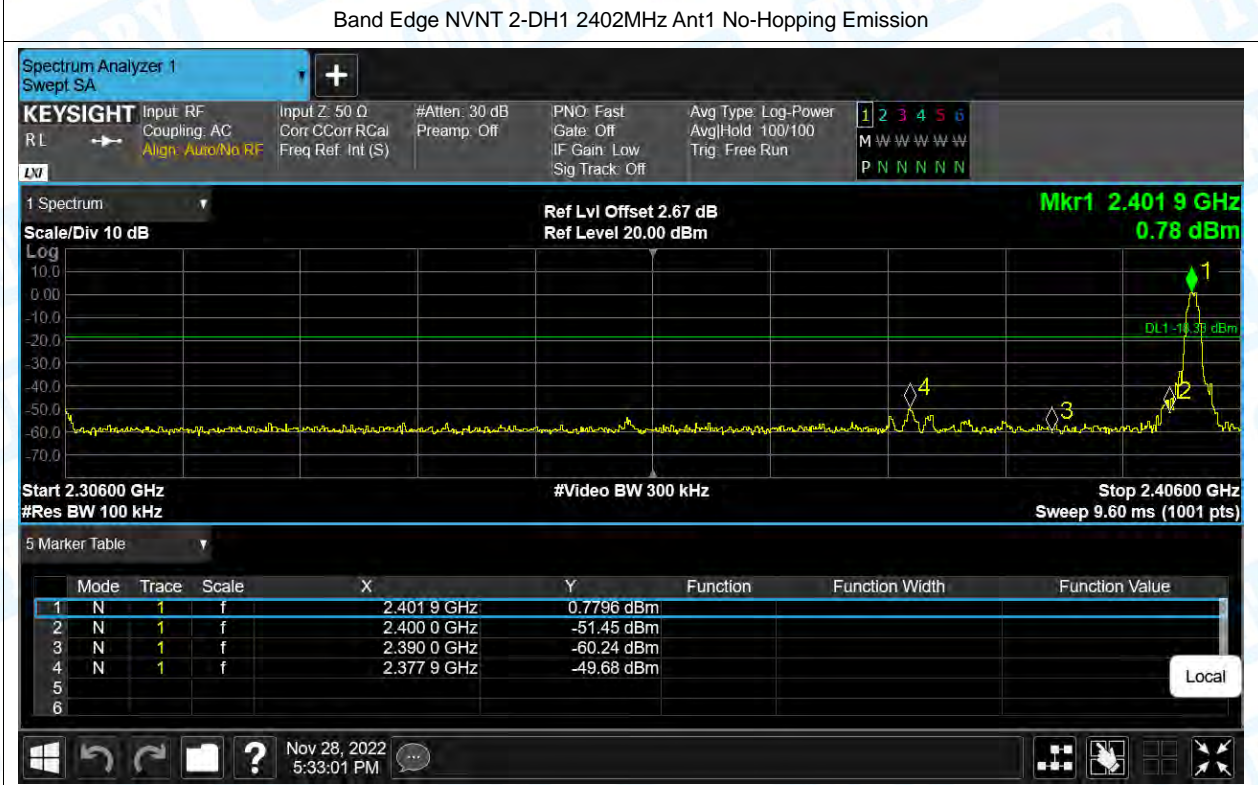
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Ref

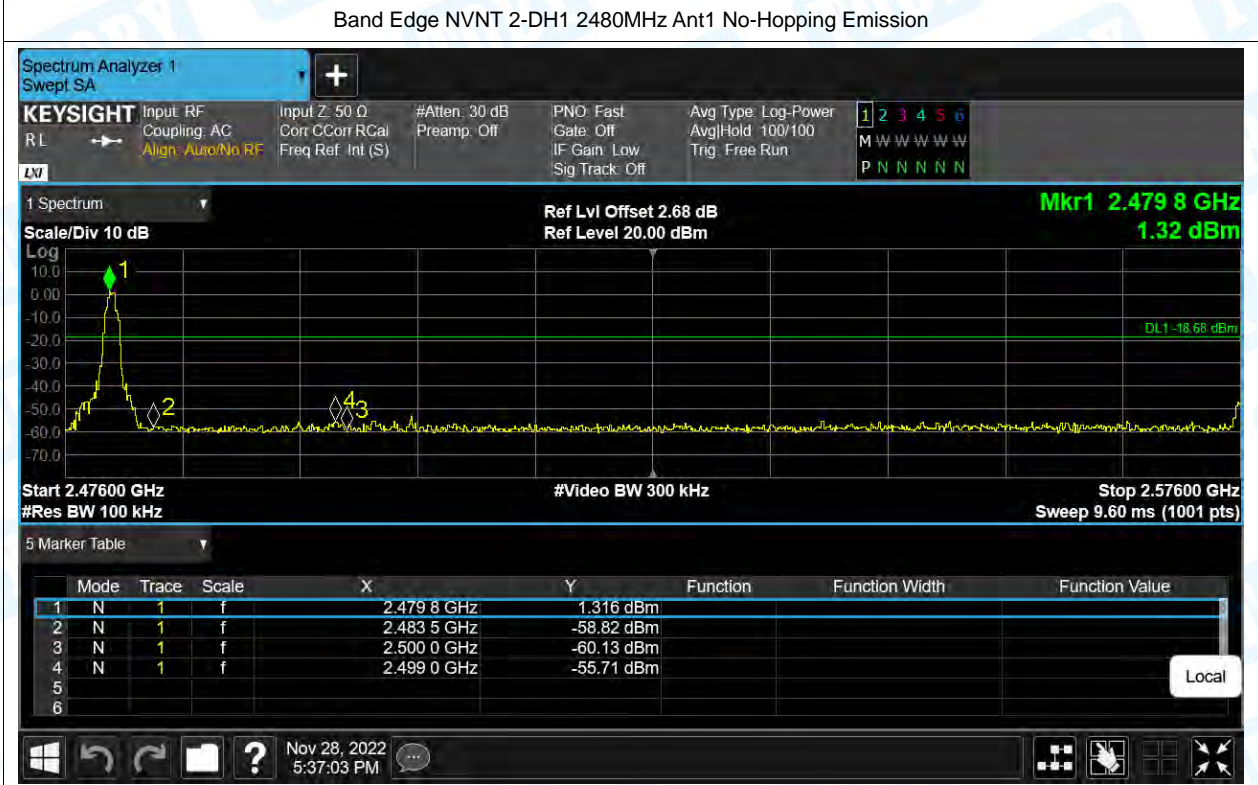
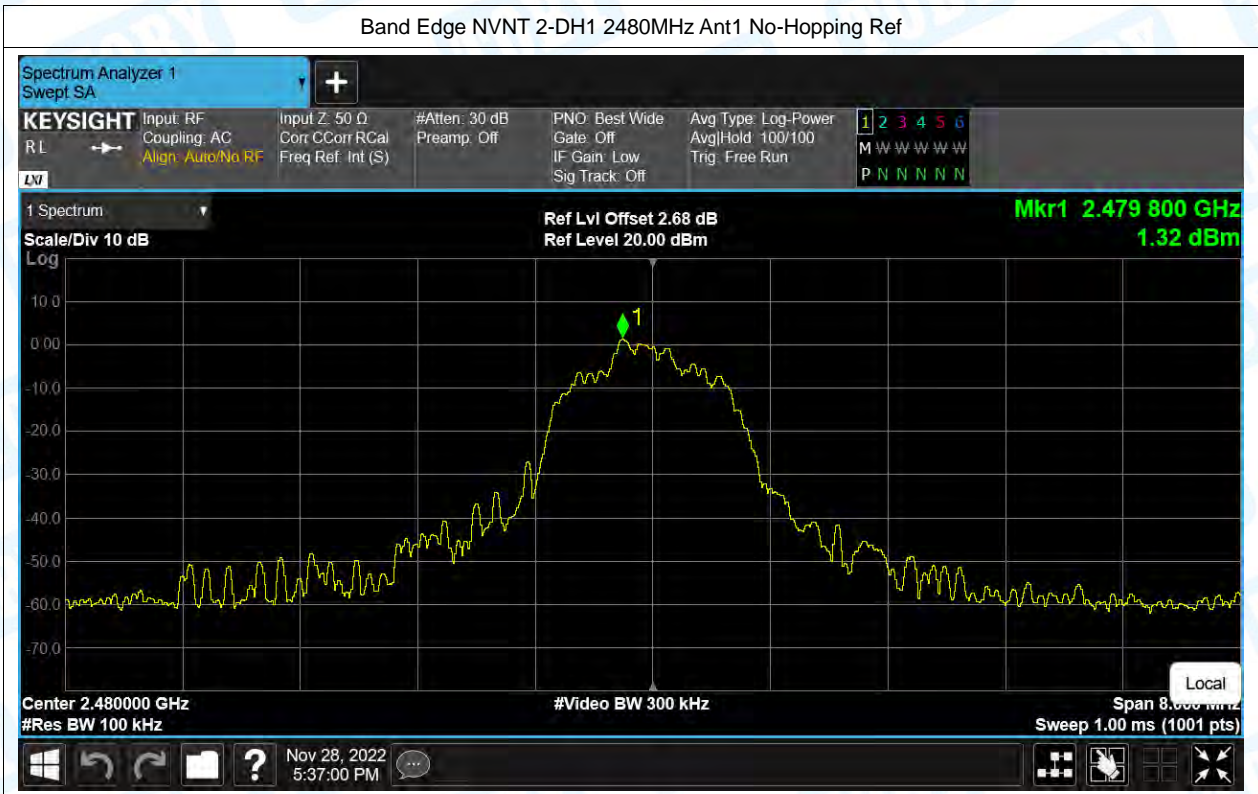


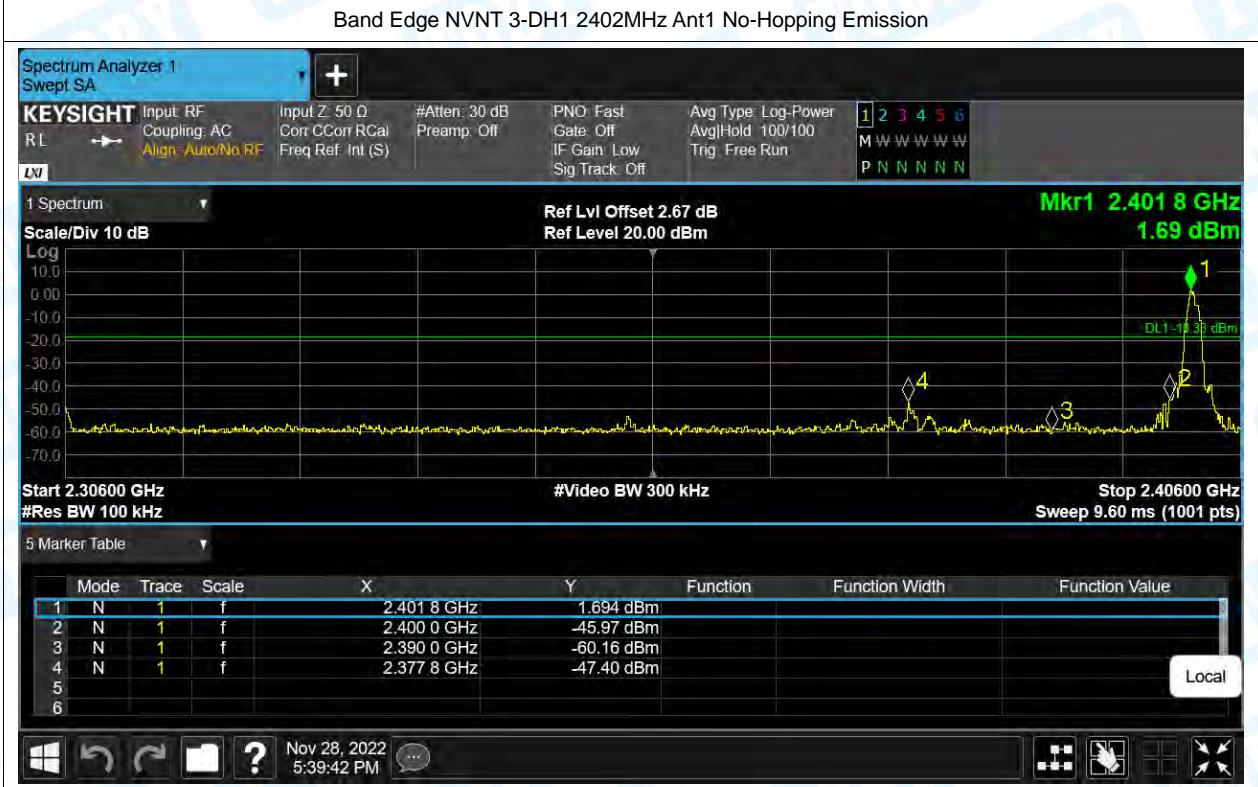
Band Edge NVNT 1-DH1 2402MHz Ant1 No-Hopping Emission



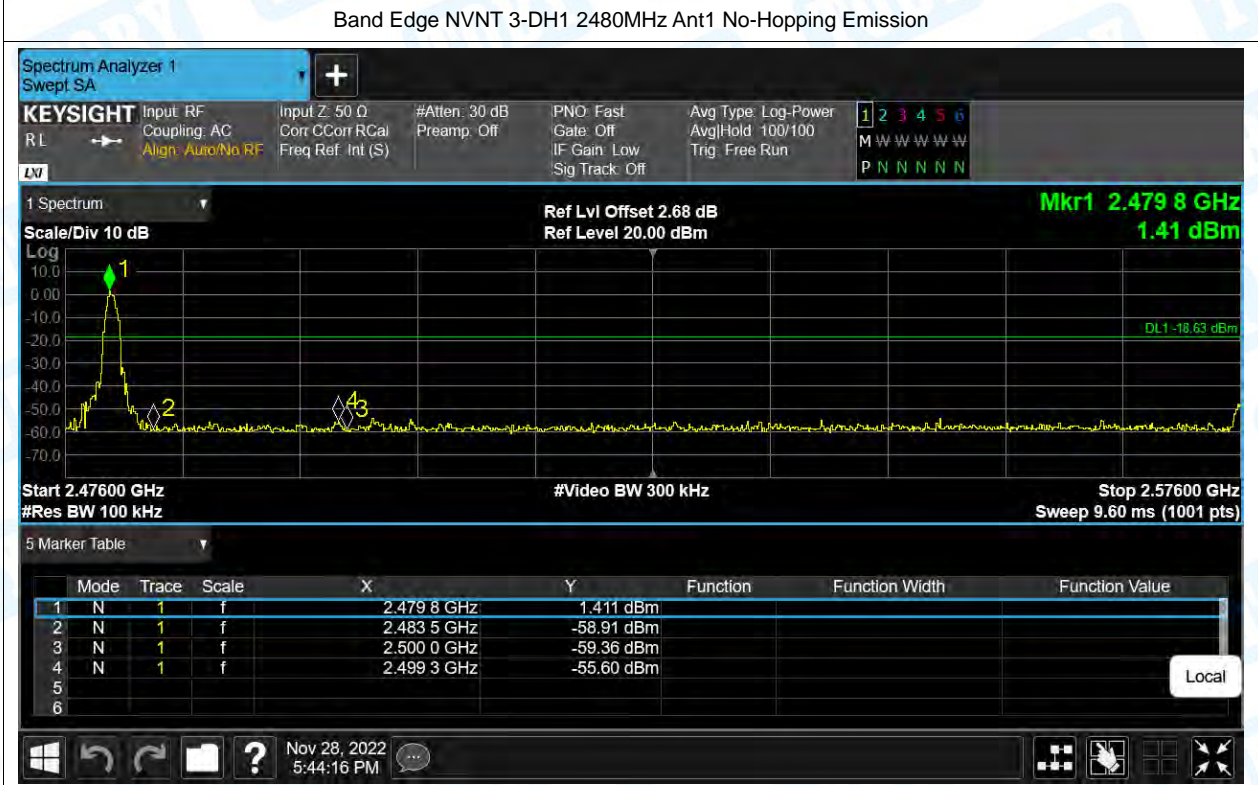












## 6. Band Edge(Hopping)

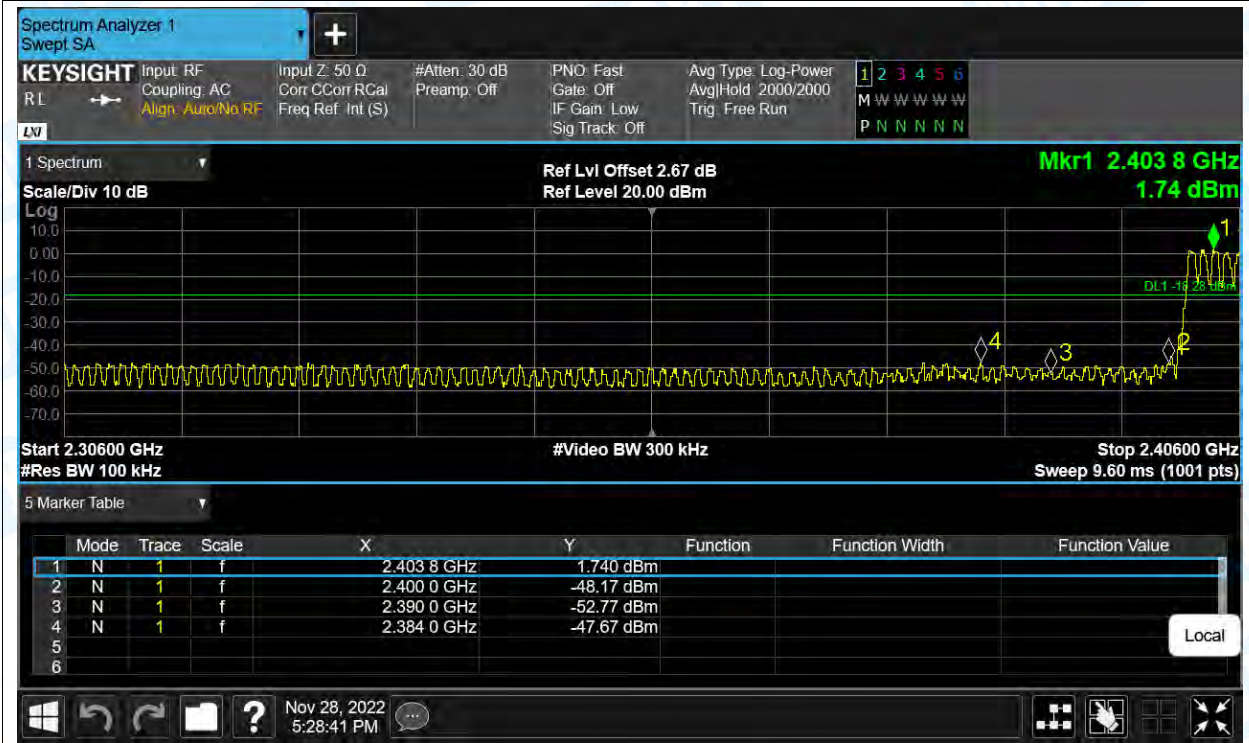
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	Hopping	-49.39	-20	Pass
NVNT	1-DH1	2480	Ant1	Hopping	-45.56	-20	Pass
NVNT	2-DH1	2402	Ant1	Hopping	-49.29	-20	Pass
NVNT	2-DH1	2480	Ant1	Hopping	-47.55	-20	Pass
NVNT	3-DH1	2402	Ant1	Hopping	-49	-20	Pass
NVNT	3-DH1	2480	Ant1	Hopping	-45.51	-20	Pass

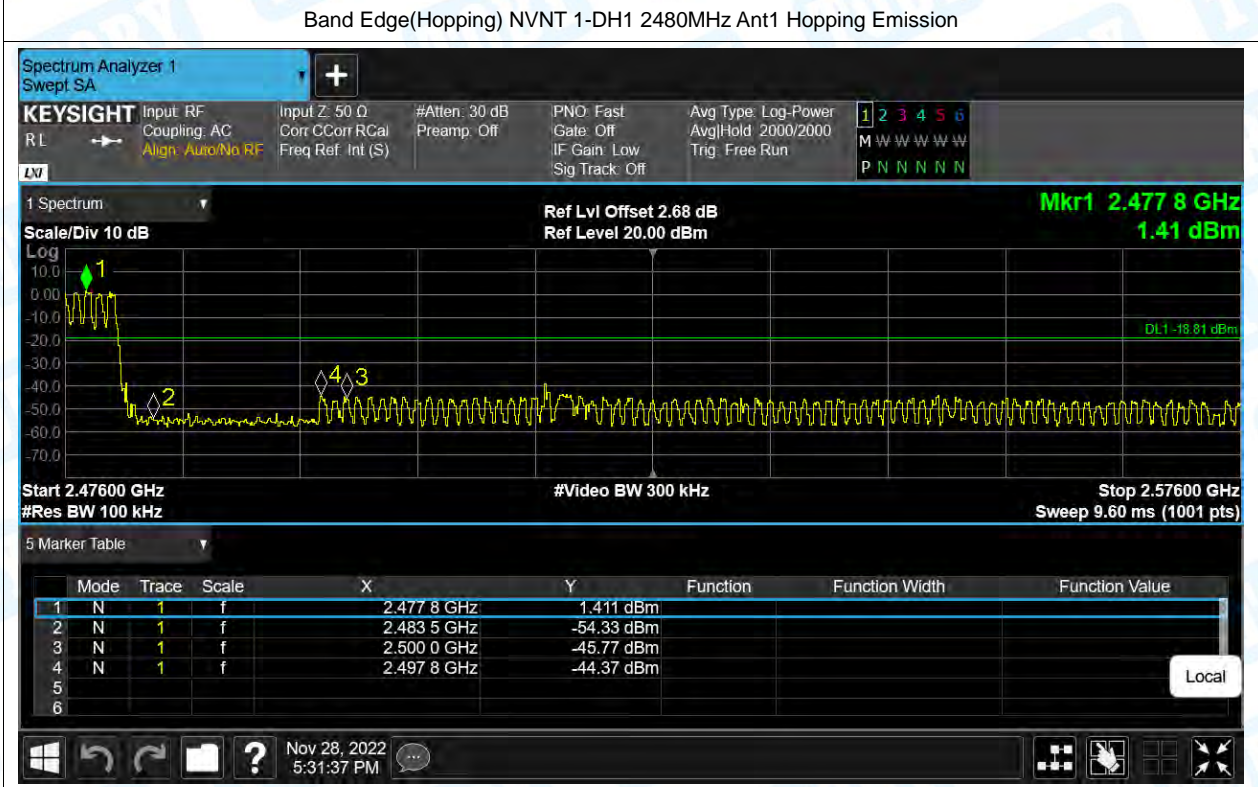
Test Graphs

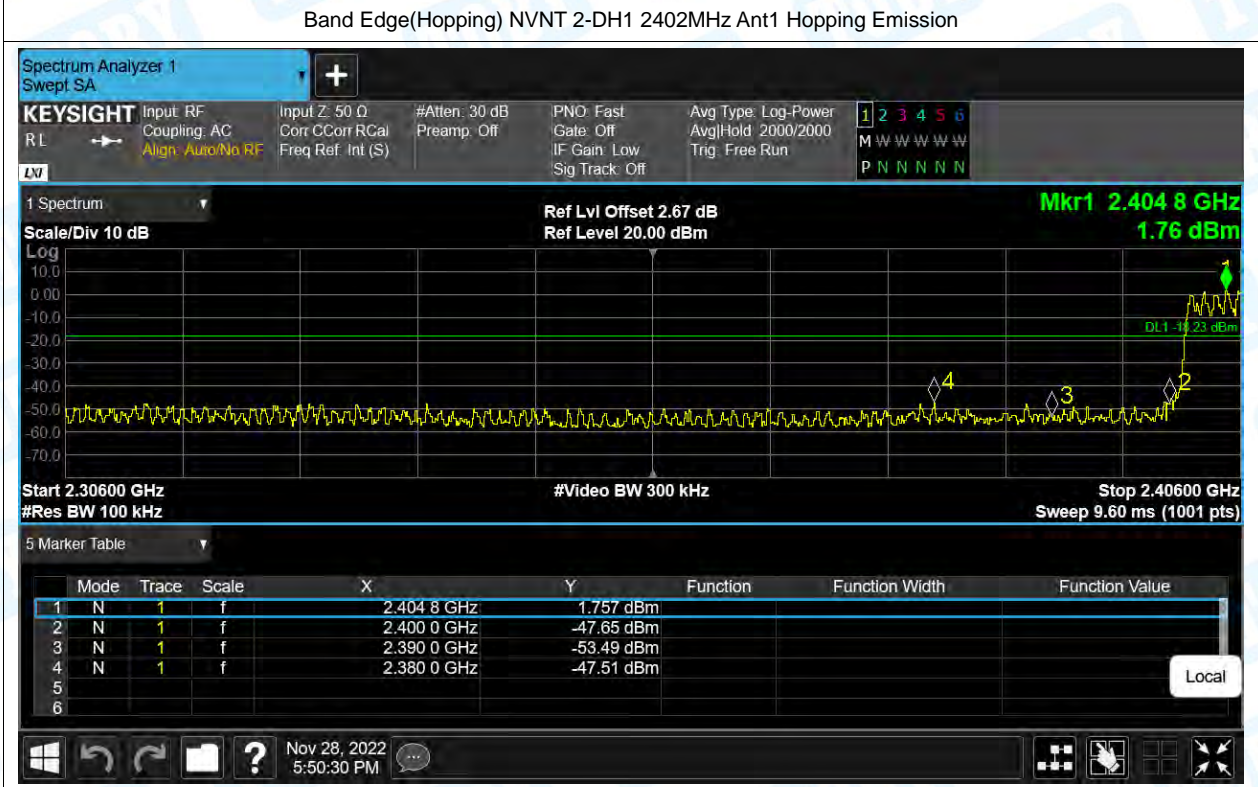
Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Ref

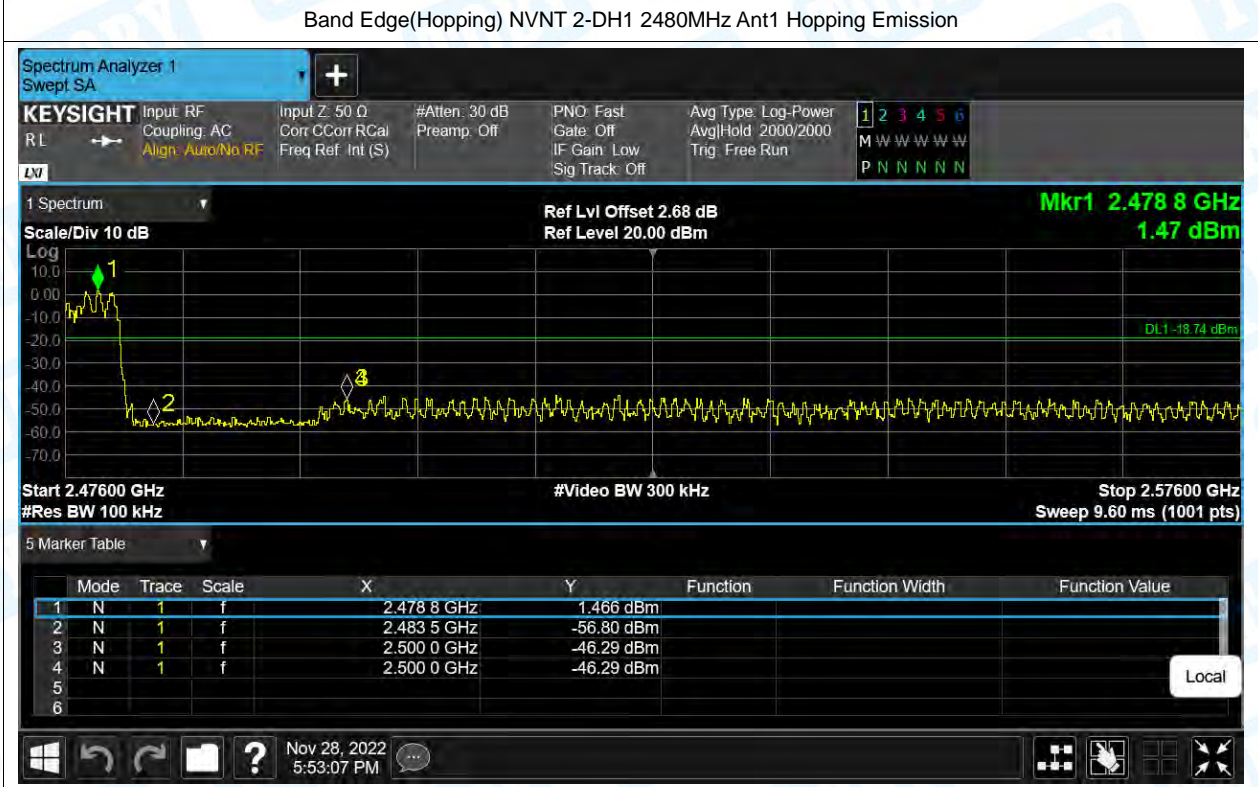


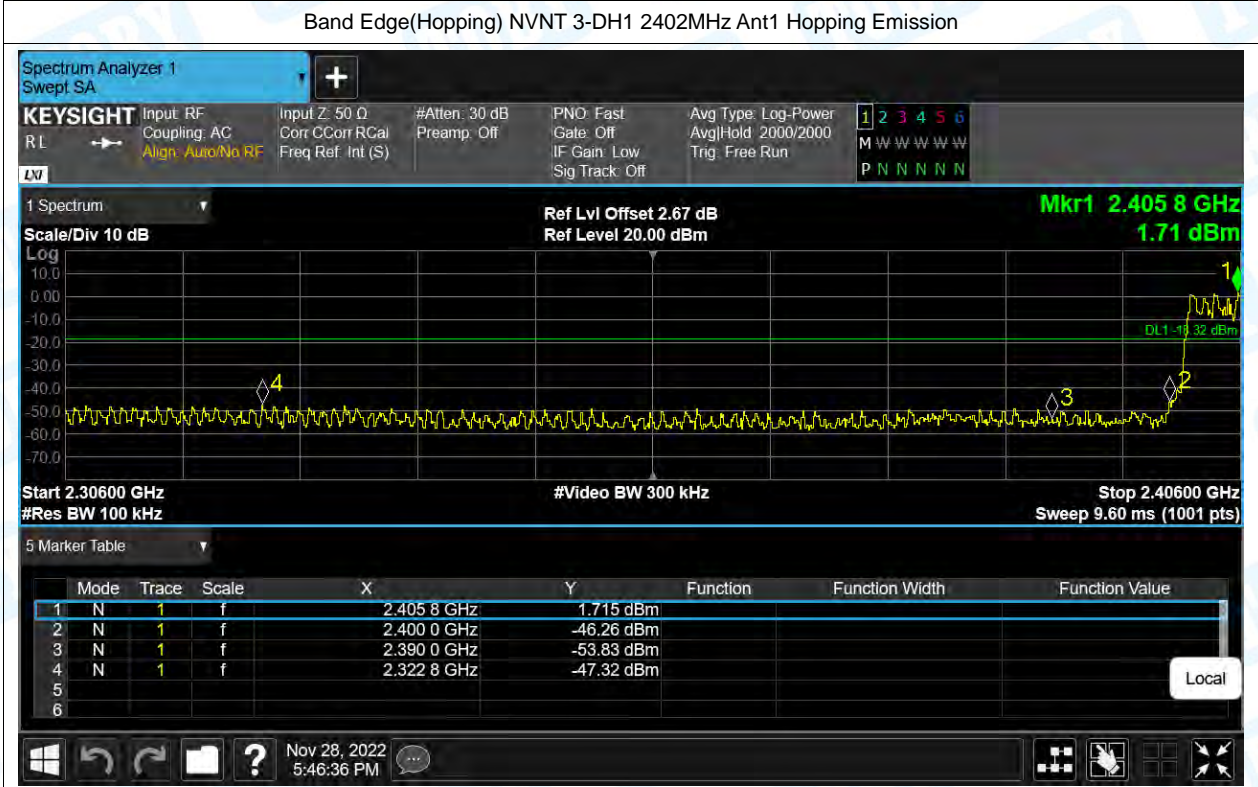
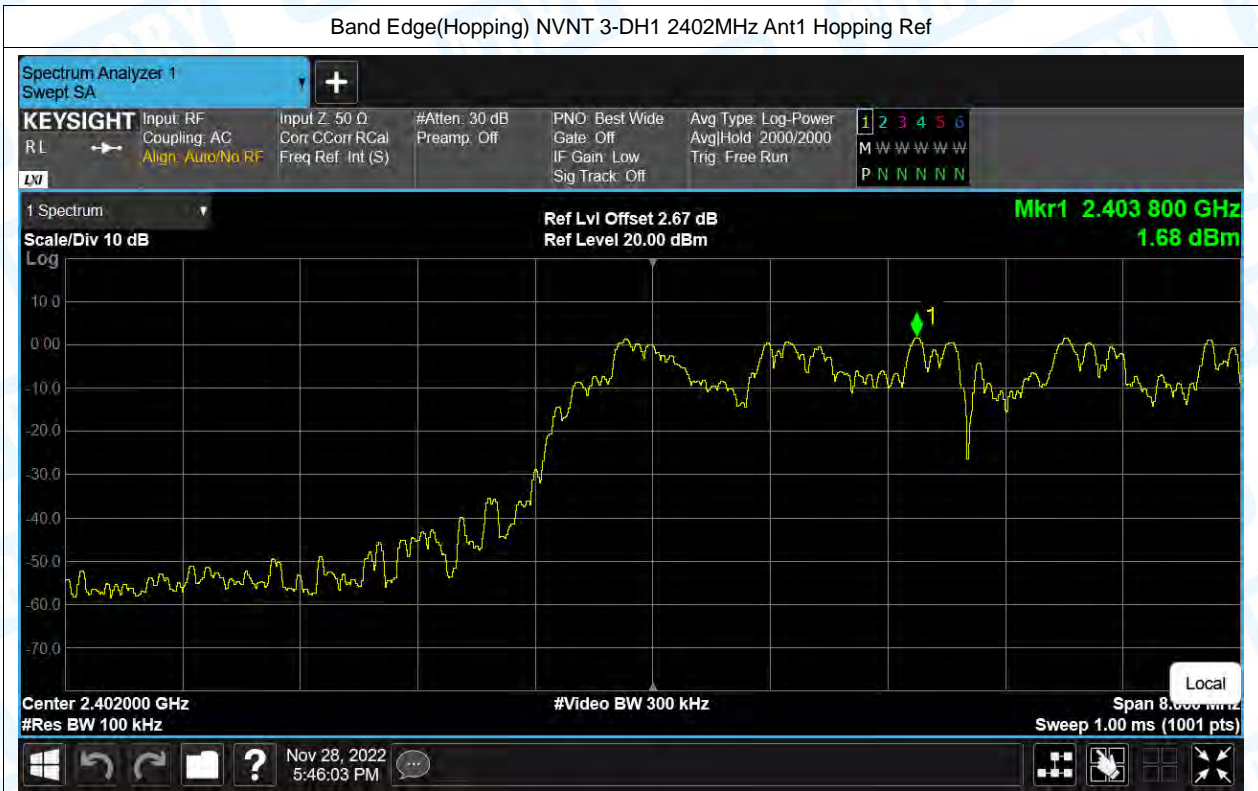
Band Edge(Hopping) NVNT 1-DH1 2402MHz Ant1 Hopping Emission

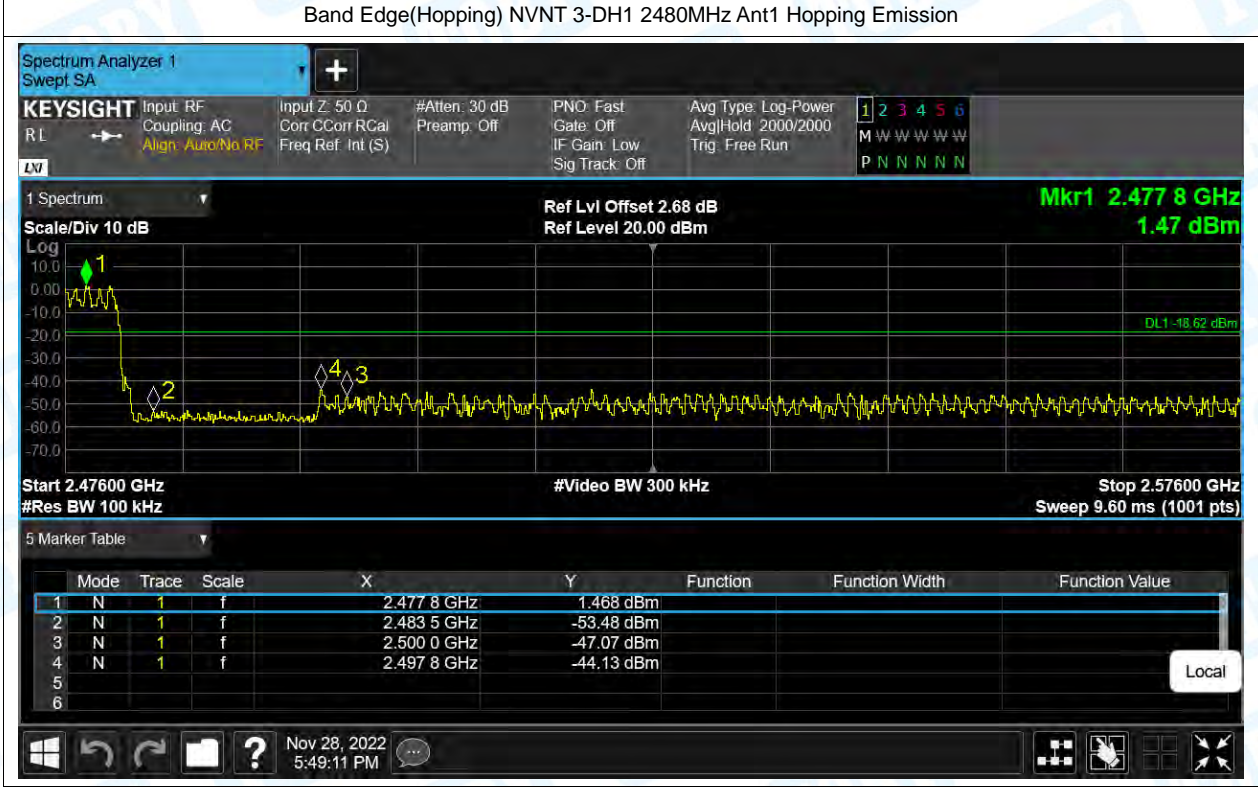












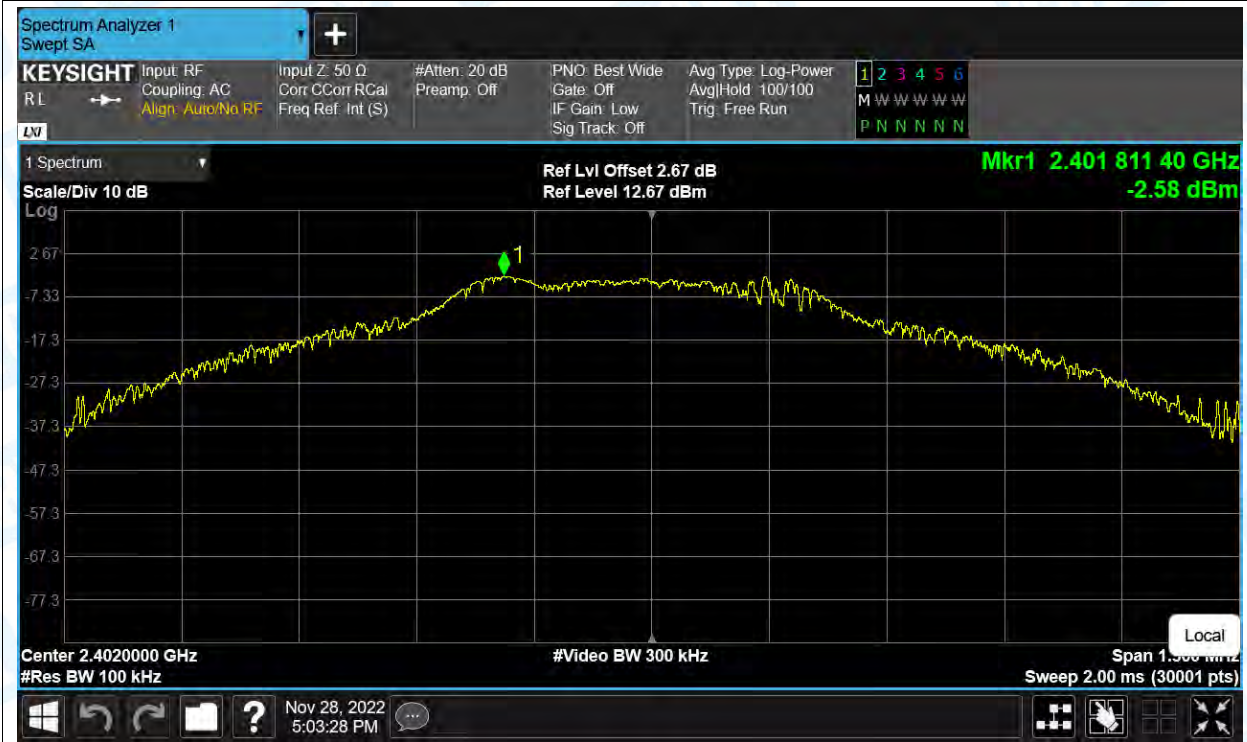


## 7. Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	1-DH1	2402	Ant1	-47.74	-20	Pass
NVNT	1-DH1	2441	Ant1	-47.68	-20	Pass
NVNT	1-DH1	2480	Ant1	-49.36	-20	Pass
NVNT	2-DH1	2402	Ant1	-49.69	-20	Pass
NVNT	2-DH1	2441	Ant1	-48.92	-20	Pass
NVNT	2-DH1	2480	Ant1	-51.09	-20	Pass
NVNT	3-DH1	2402	Ant1	-48.86	-20	Pass
NVNT	3-DH1	2441	Ant1	-48.38	-20	Pass
NVNT	3-DH1	2480	Ant1	-50.93	-20	Pass

Test Graphs

Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Ref



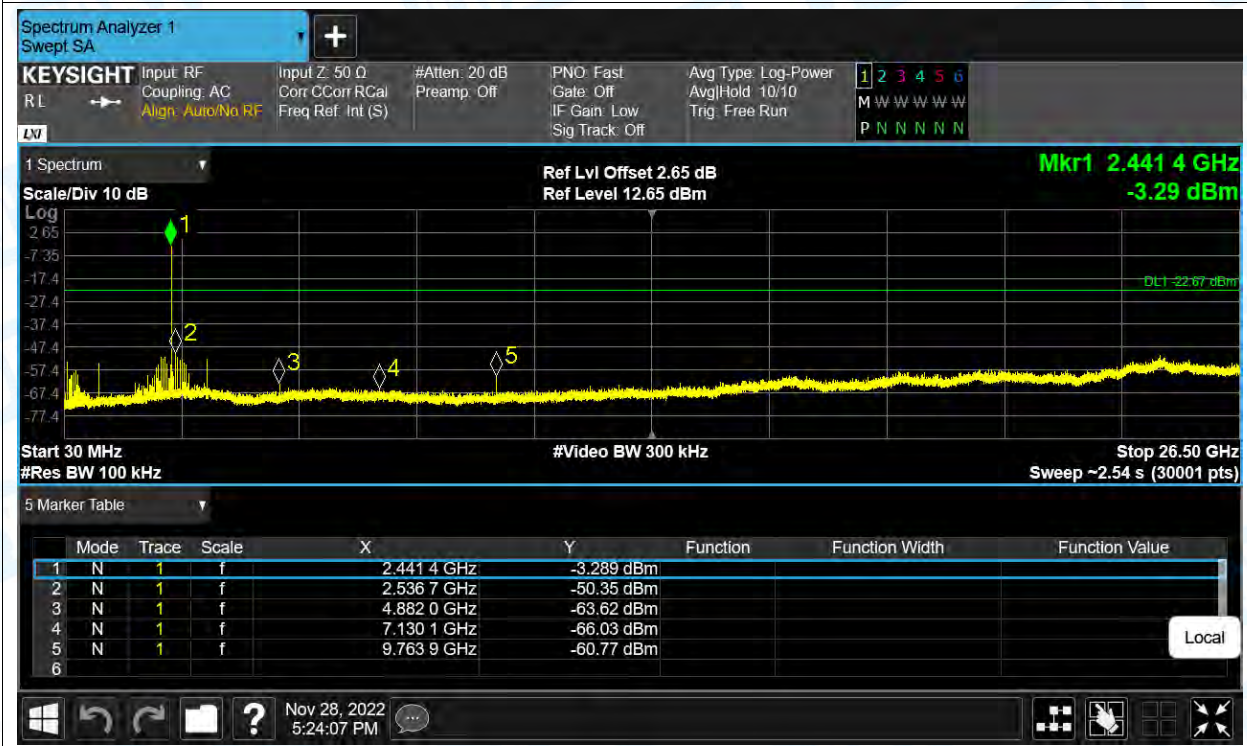
Tx. Spurious NVNT 1-DH1 2402MHz Ant1 Emission

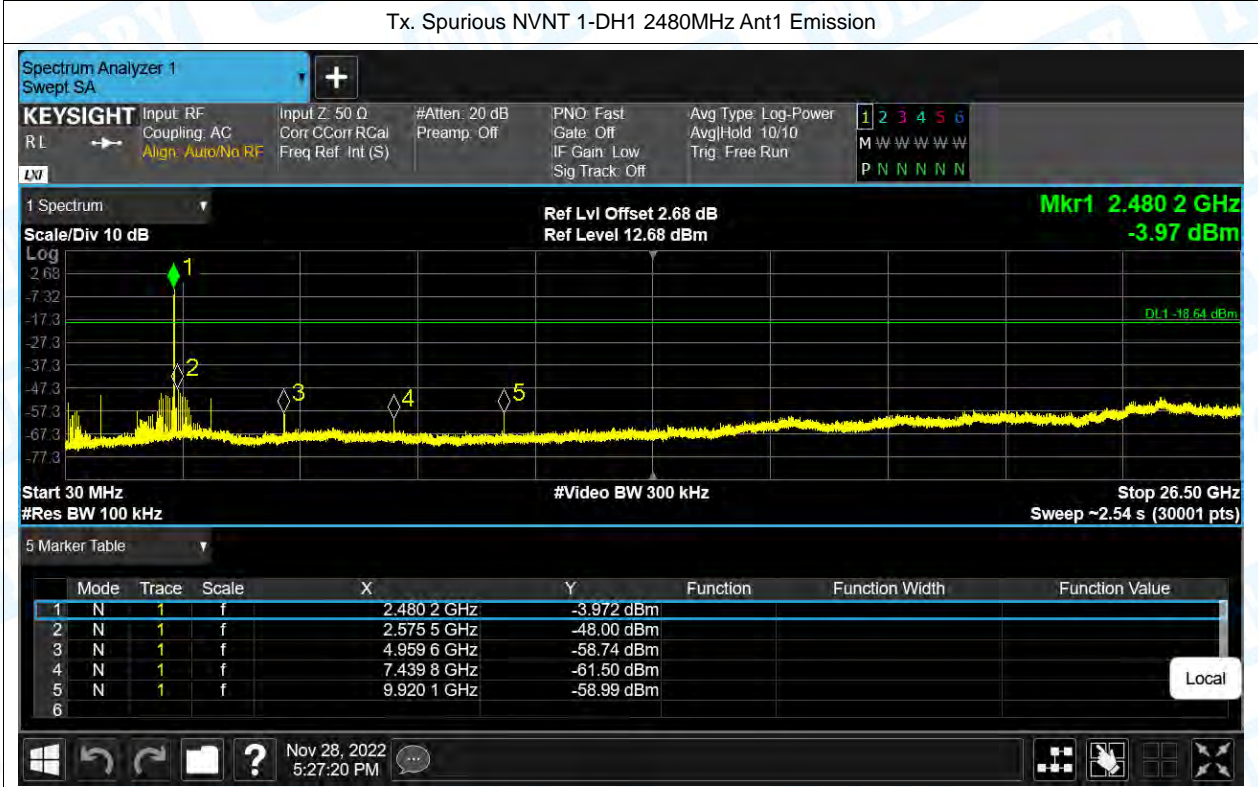
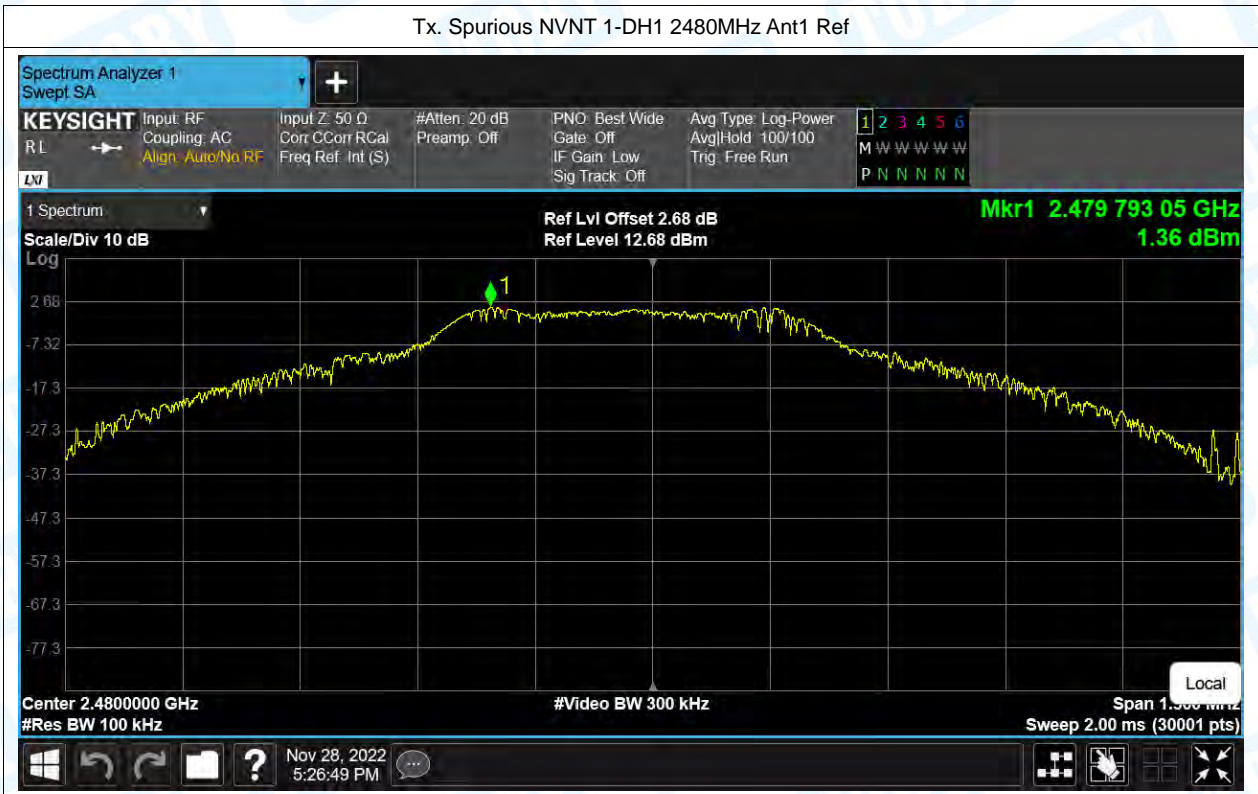


Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Ref

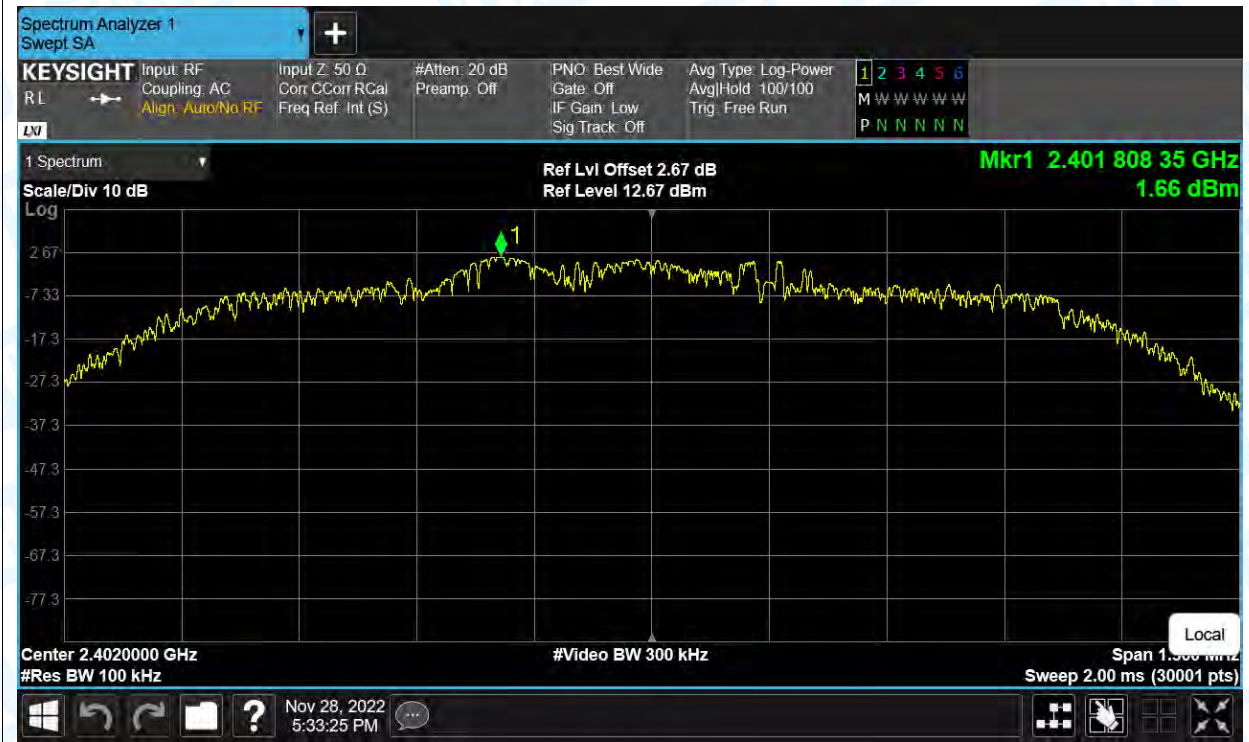


Tx. Spurious NVNT 1-DH1 2441MHz Ant1 Emission



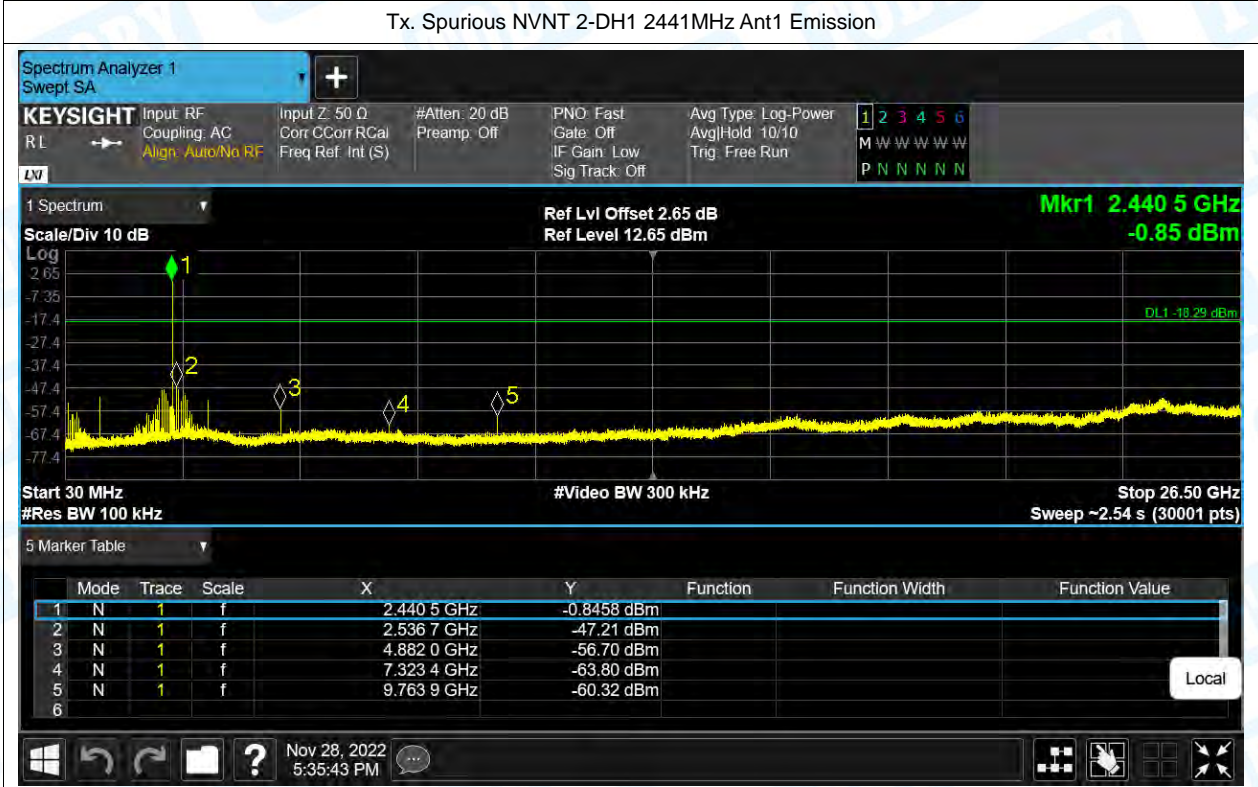
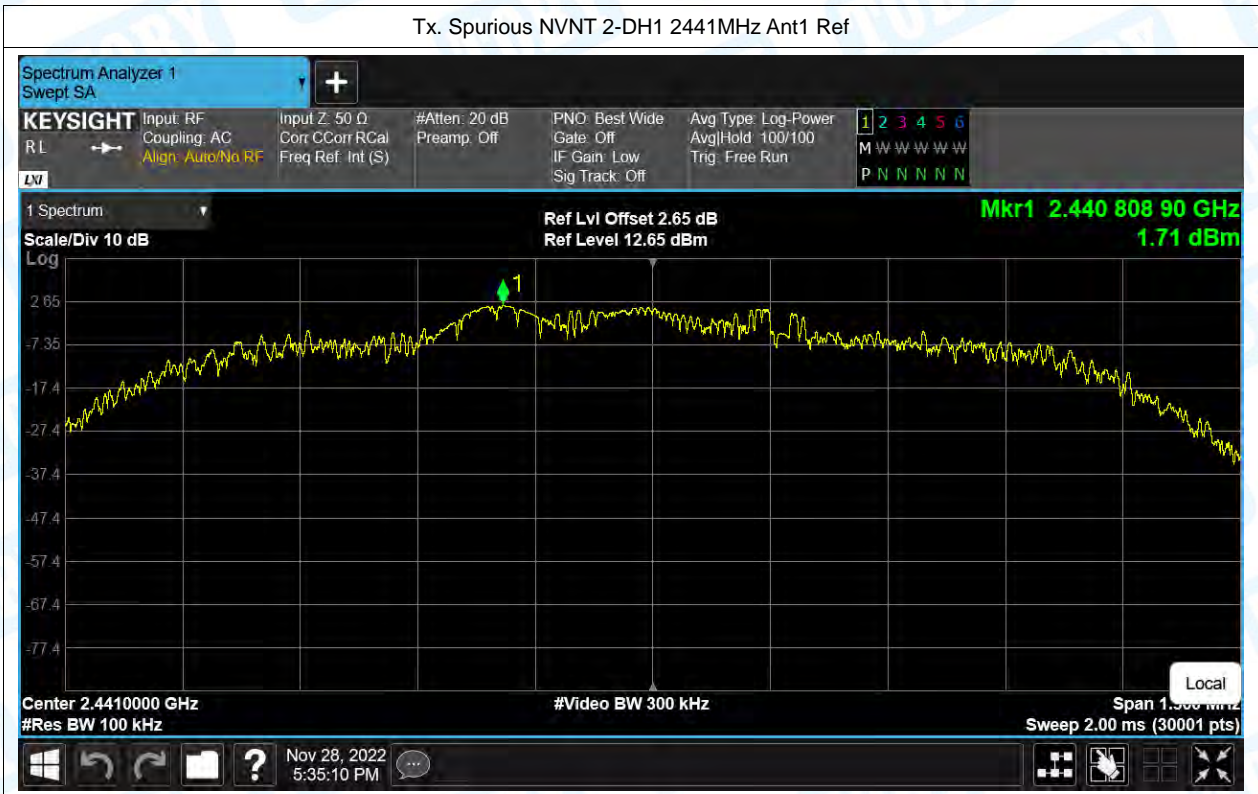


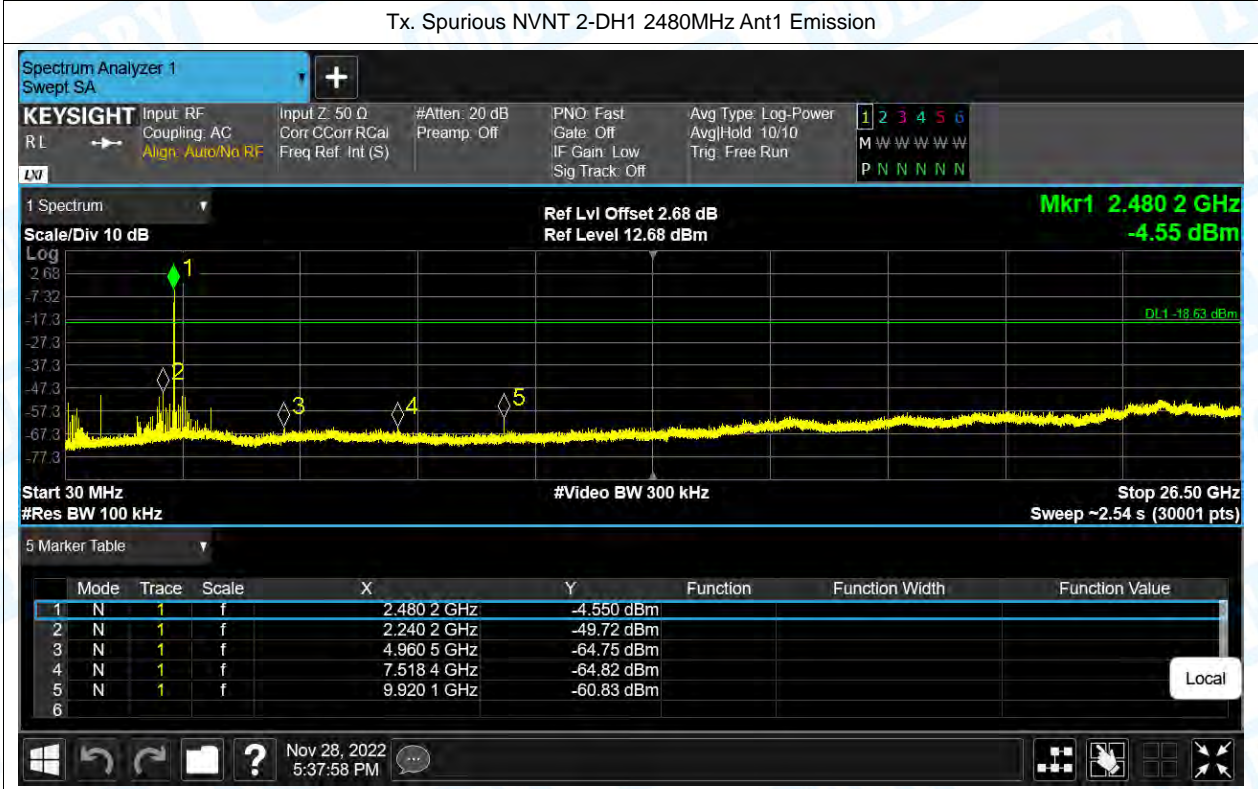
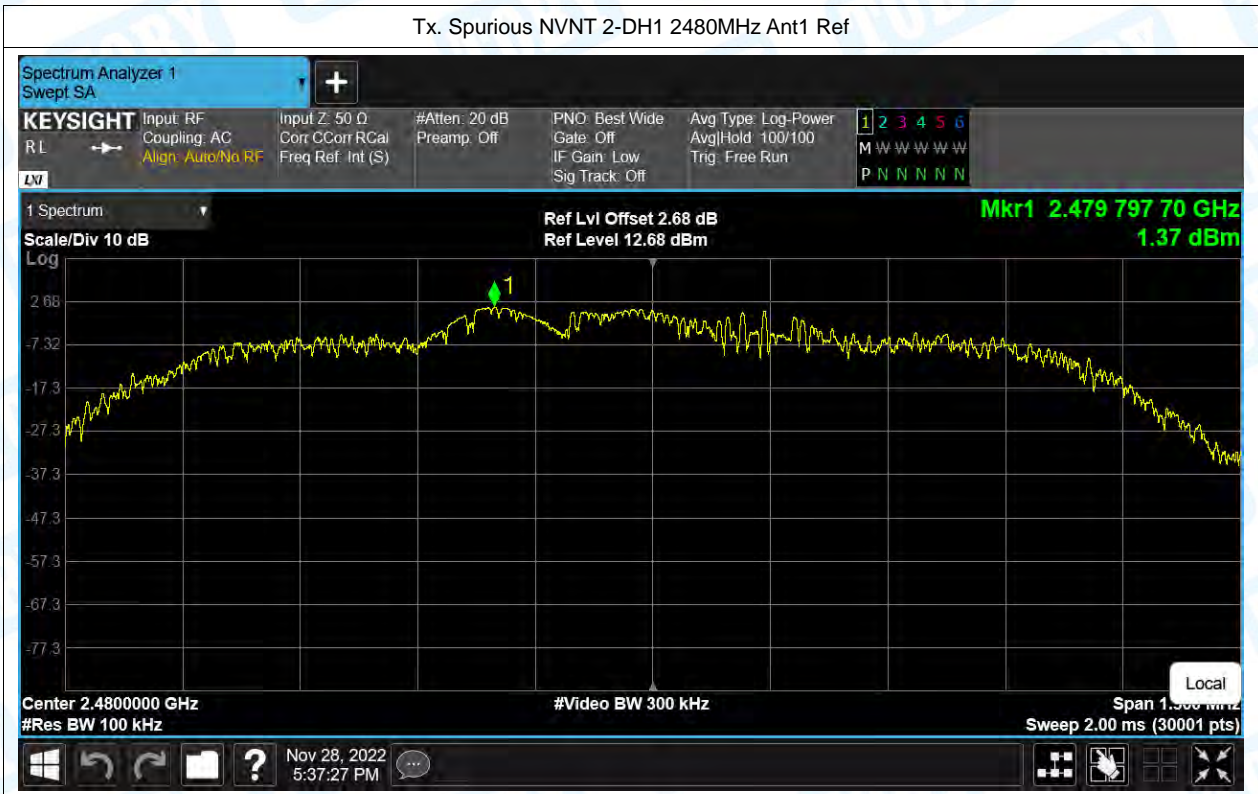
Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Ref



Tx. Spurious NVNT 2-DH1 2402MHz Ant1 Emission







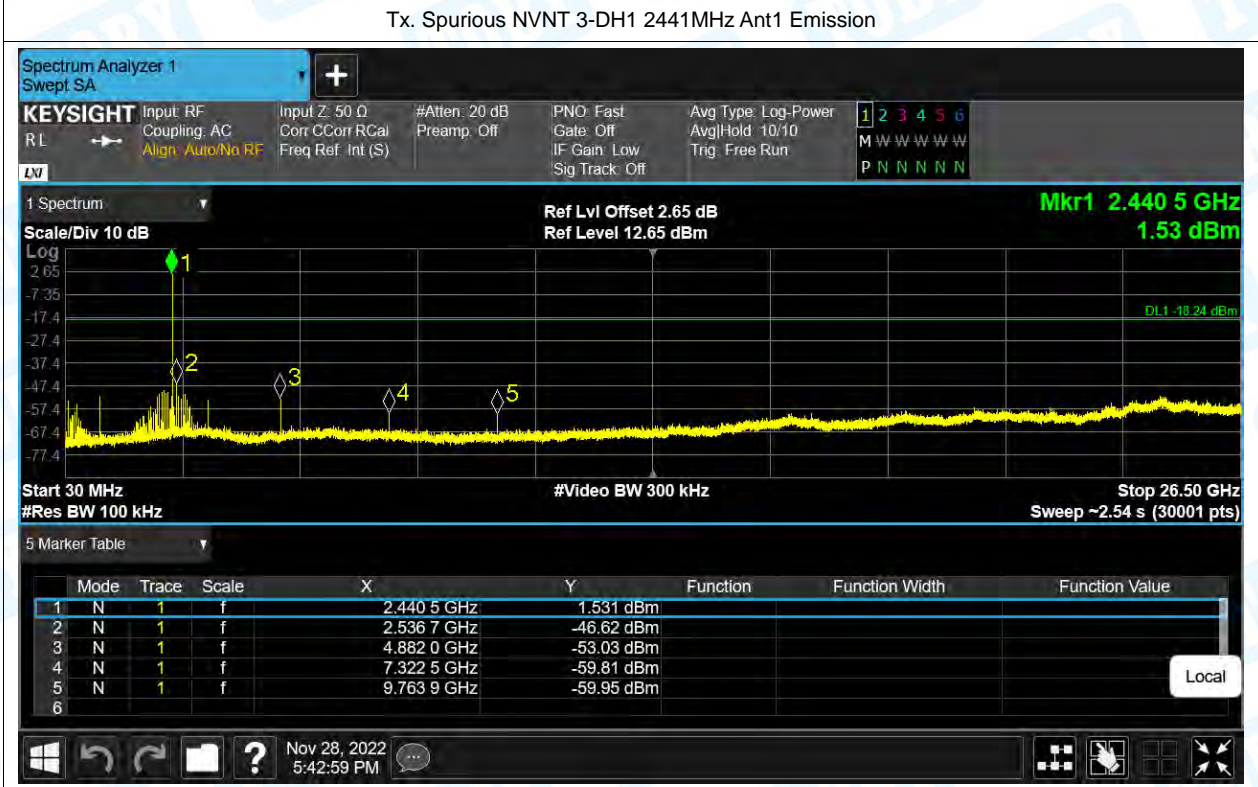
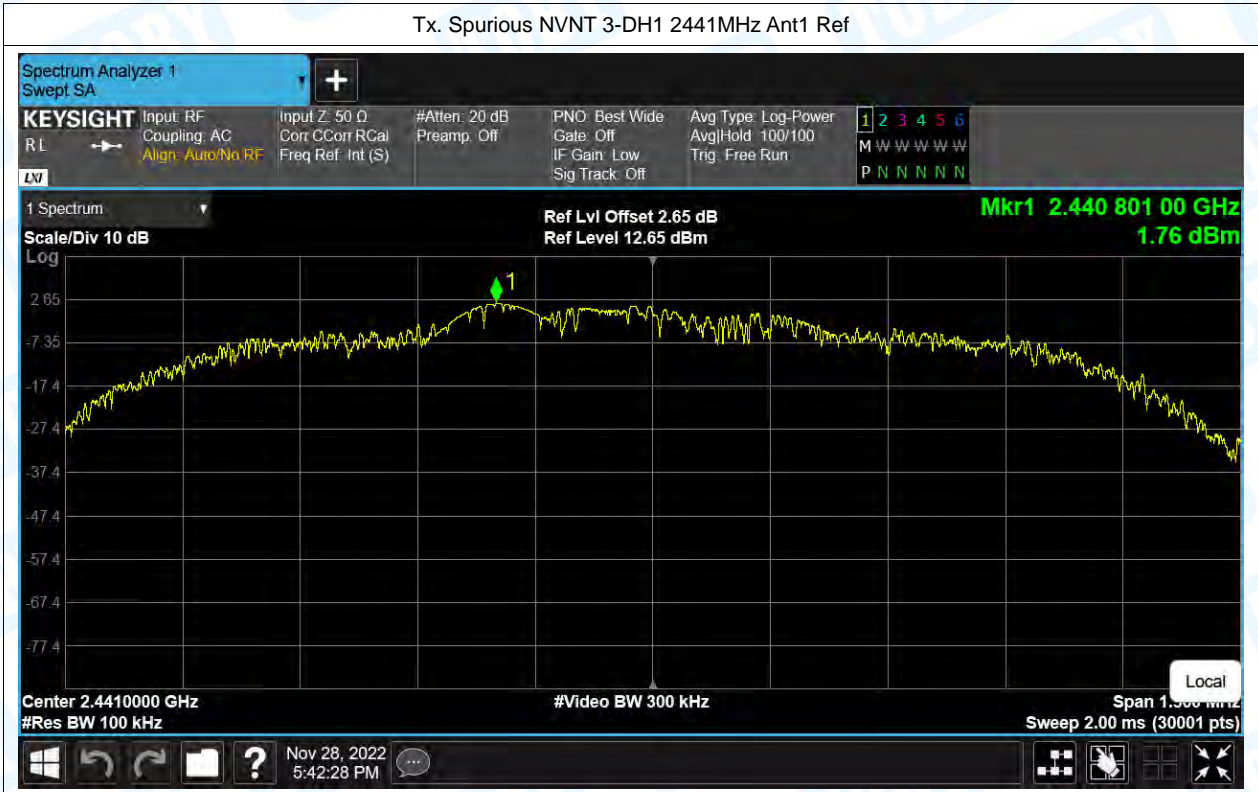
Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Ref

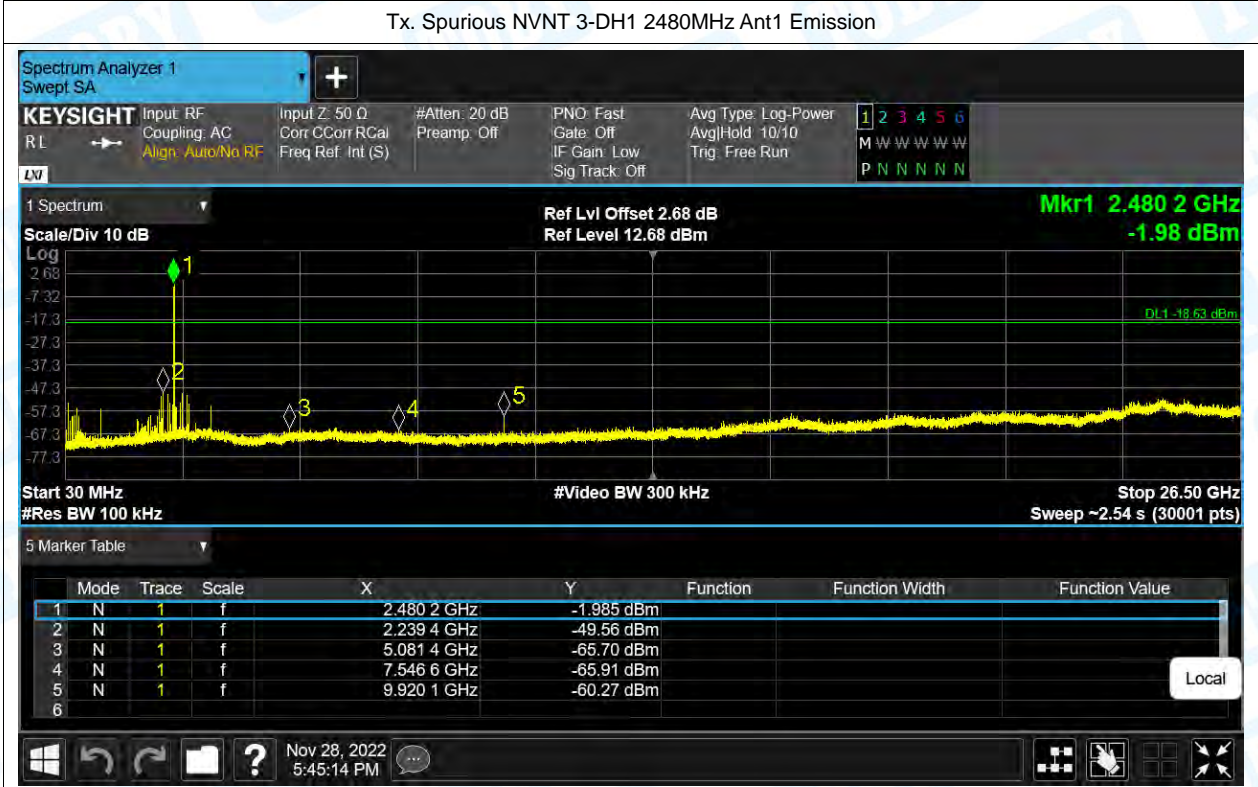
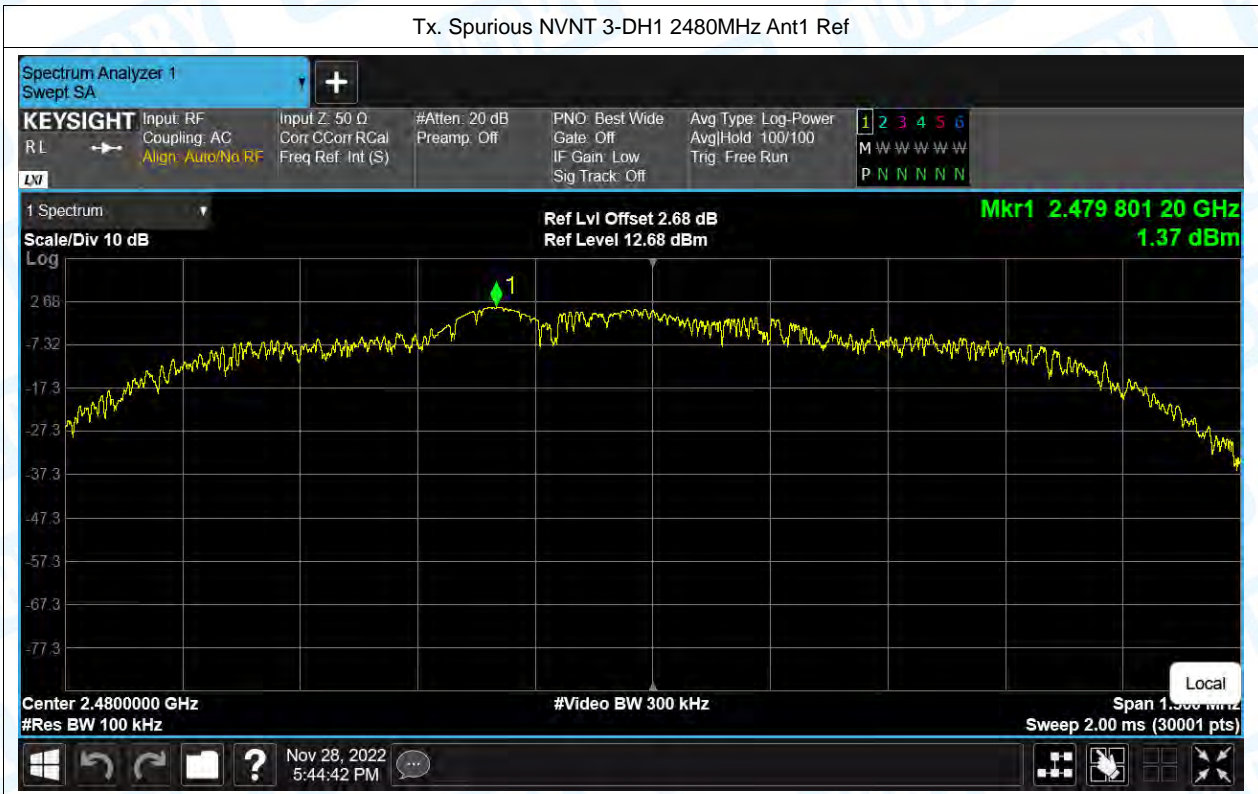


Tx. Spurious NVNT 3-DH1 2402MHz Ant1 Emission







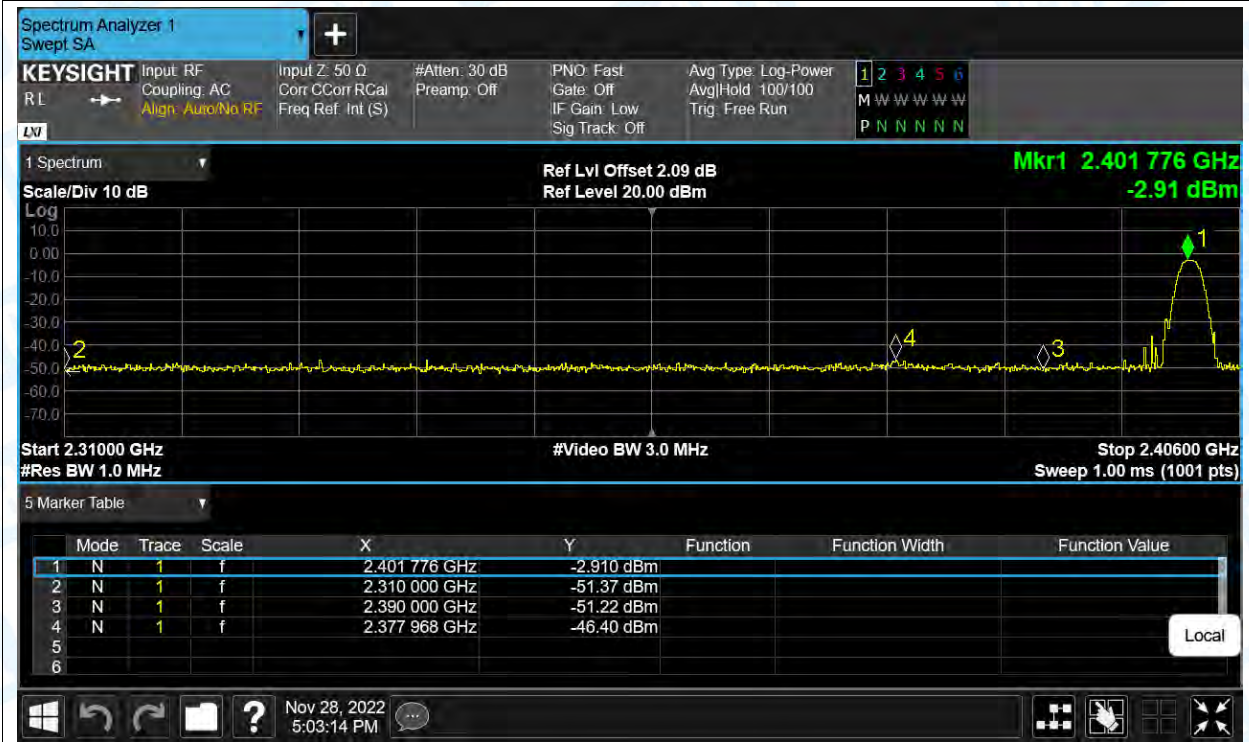


### 8. Restrict Band

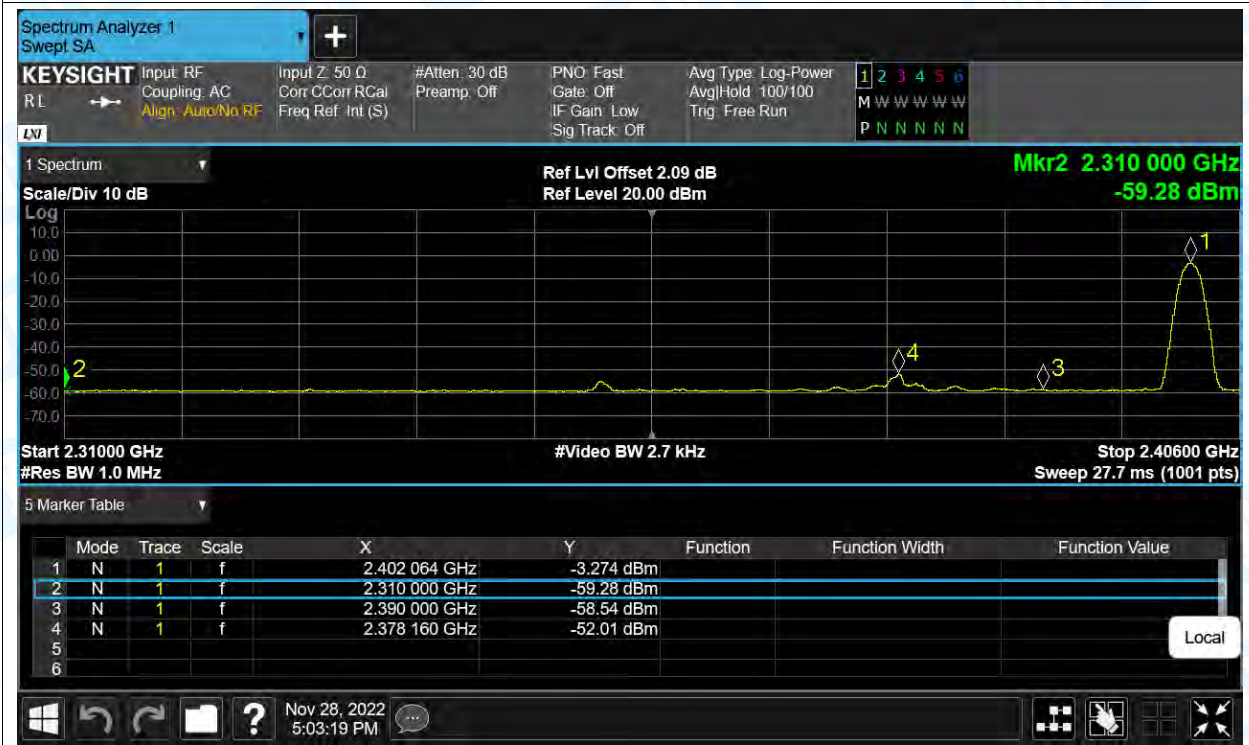
Condition	Mode	Frequency (MHz)	Antenna	Hopping Mode	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-51.37	2	45.89	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2310	-59.28	2	37.98	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2377.968	-46.4	2	50.86	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2378.16	-52.01	2	45.25	Average	54	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-49.6	2	47.66	Peak	74	Pass
NVNT	1-DH1	2402	Ant1	No-Hopping	2390	-58.76	2	38.5	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-48.07	2	49.19	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2483.5	-58.18	2	39.08	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2499.28	-46.52	2	50.74	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2499.088	-55.94	2	41.32	Average	54	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-49.32	2	47.94	Peak	74	Pass
NVNT	1-DH1	2480	Ant1	No-Hopping	2500	-58.54	2	38.72	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-50.36	2	46.9	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2310	-59.22	2	38.04	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2377.872	-45.7	2	51.56	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2377.968	-50.46	2	46.8	Average	54	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-50.85	2	46.41	Peak	74	Pass
NVNT	2-DH1	2402	Ant1	No-Hopping	2390	-58.66	2	38.6	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-46.99	2	50.27	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.5	-58.63	2	38.63	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2483.872	-45.9	2	51.36	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2499.208	-56.83	2	40.43	Average	54	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-49.61	2	47.65	Peak	74	Pass
NVNT	2-DH1	2480	Ant1	No-Hopping	2500	-58.15	2	39.11	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-48.68	2	48.58	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2310	-59.22	2	38.04	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2378.16	-44.59	2	52.67	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2378.064	-51.06	2	46.2	Average	54	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-50.19	2	47.07	Peak	74	Pass
NVNT	3-DH1	2402	Ant1	No-Hopping	2390	-58.66	2	38.6	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-48.69	2	48.57	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.5	-58.47	2	38.79	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2483.608	-44.4	2	52.86	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2498.968	-56.53	2	40.73	Average	54	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-50.86	2	46.4	Peak	74	Pass
NVNT	3-DH1	2480	Ant1	No-Hopping	2500	-58.16	2	39.1	Average	54	Pass

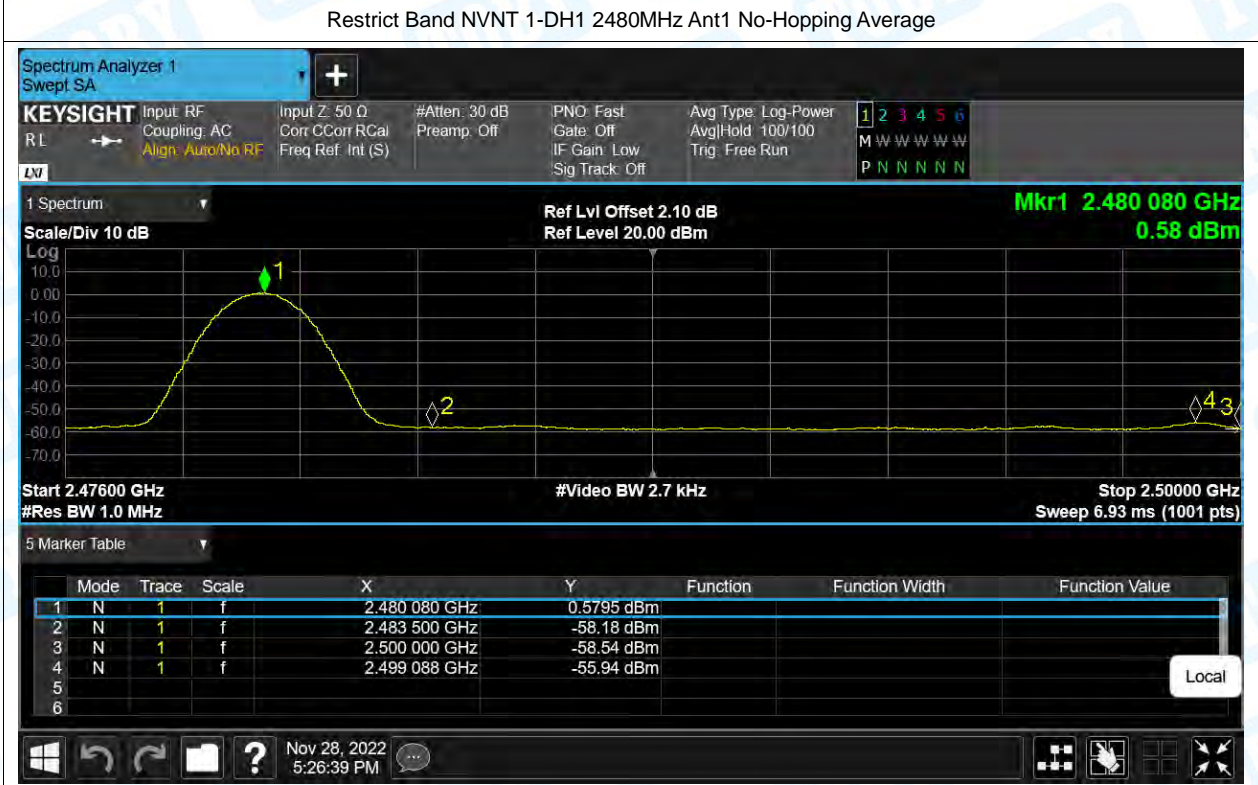
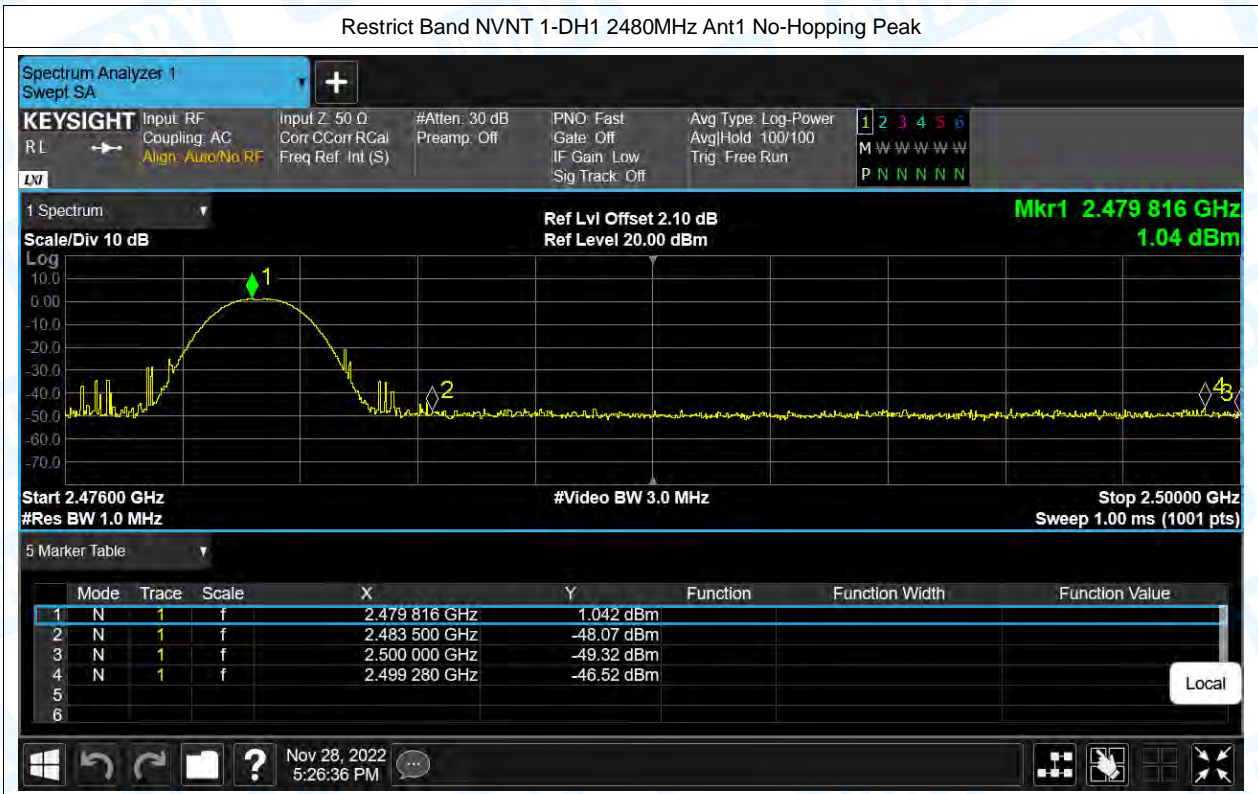
Test Graphs

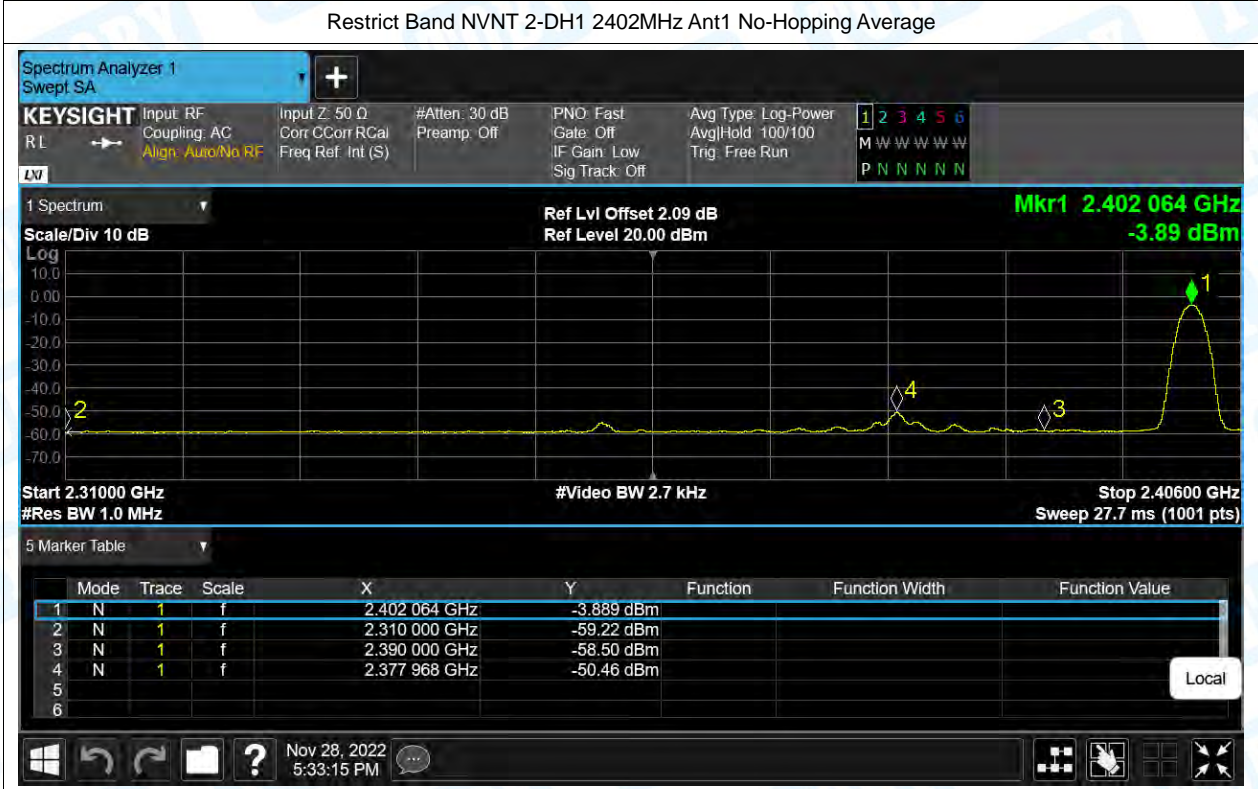
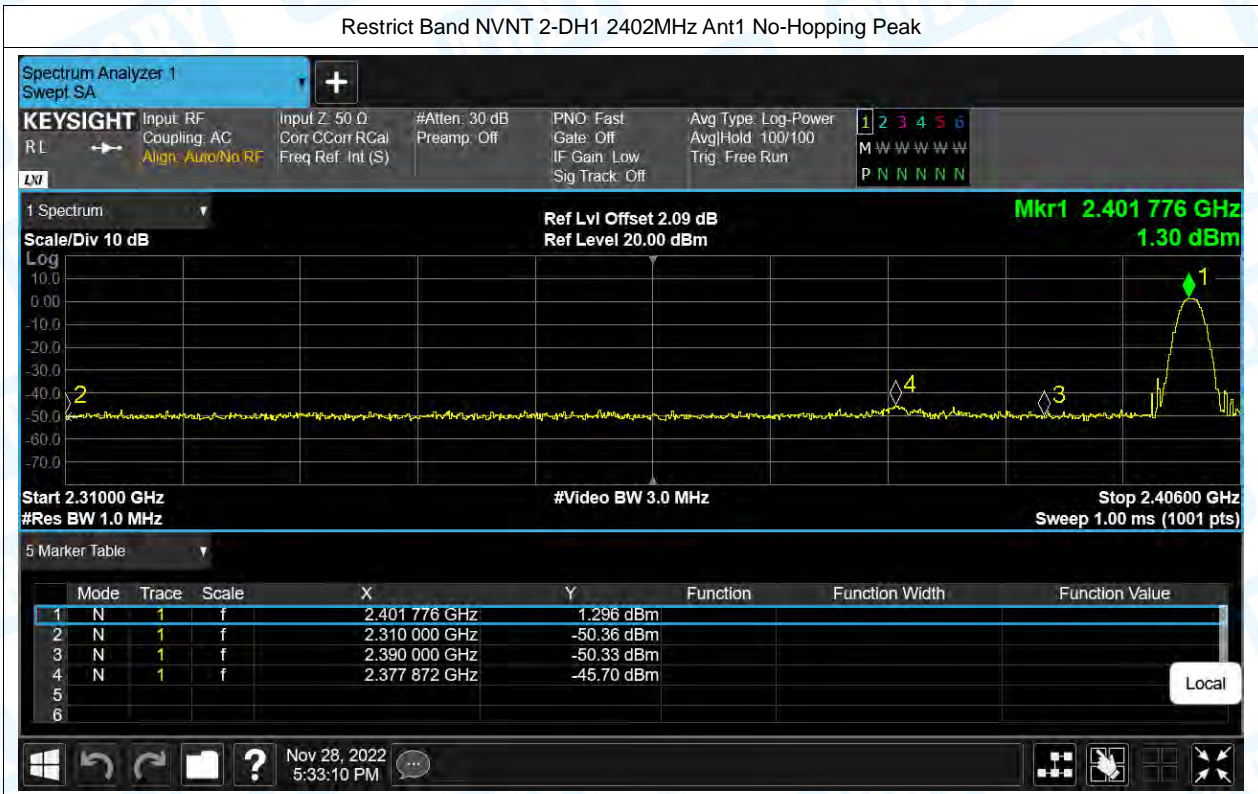
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Peak

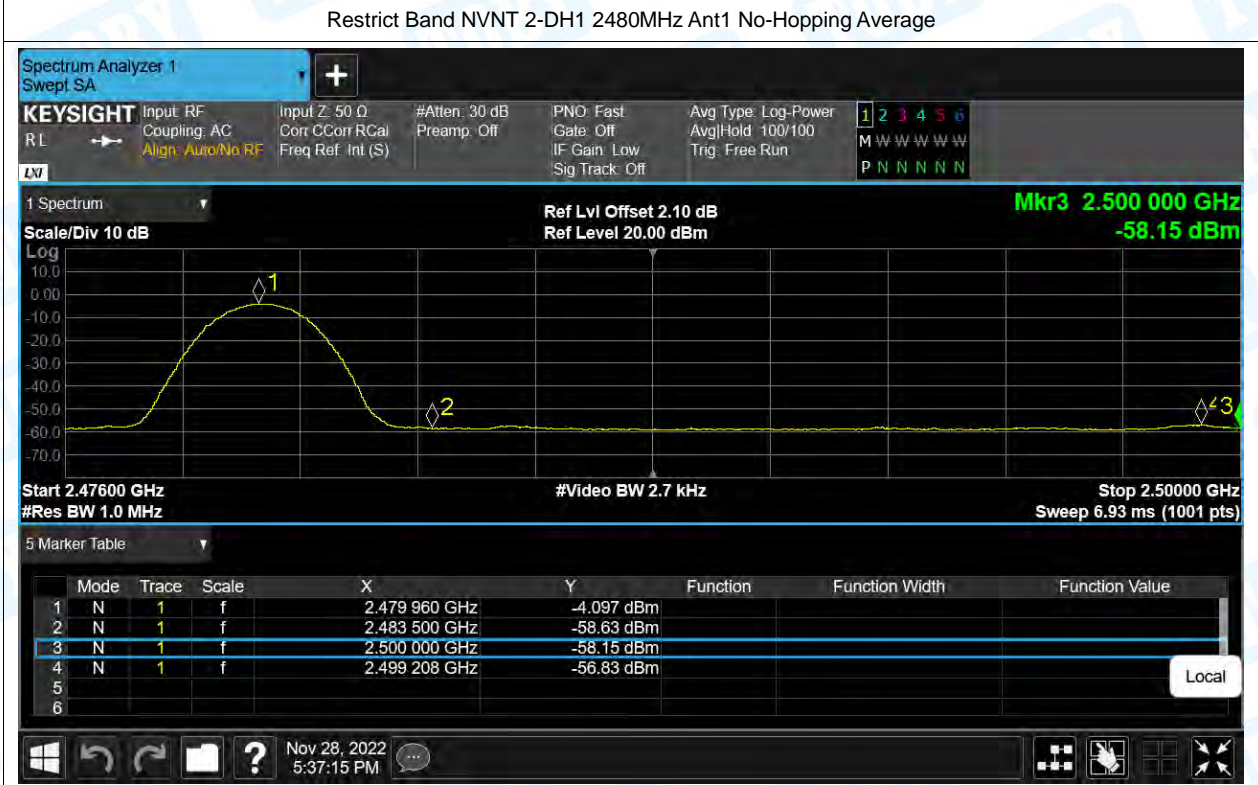
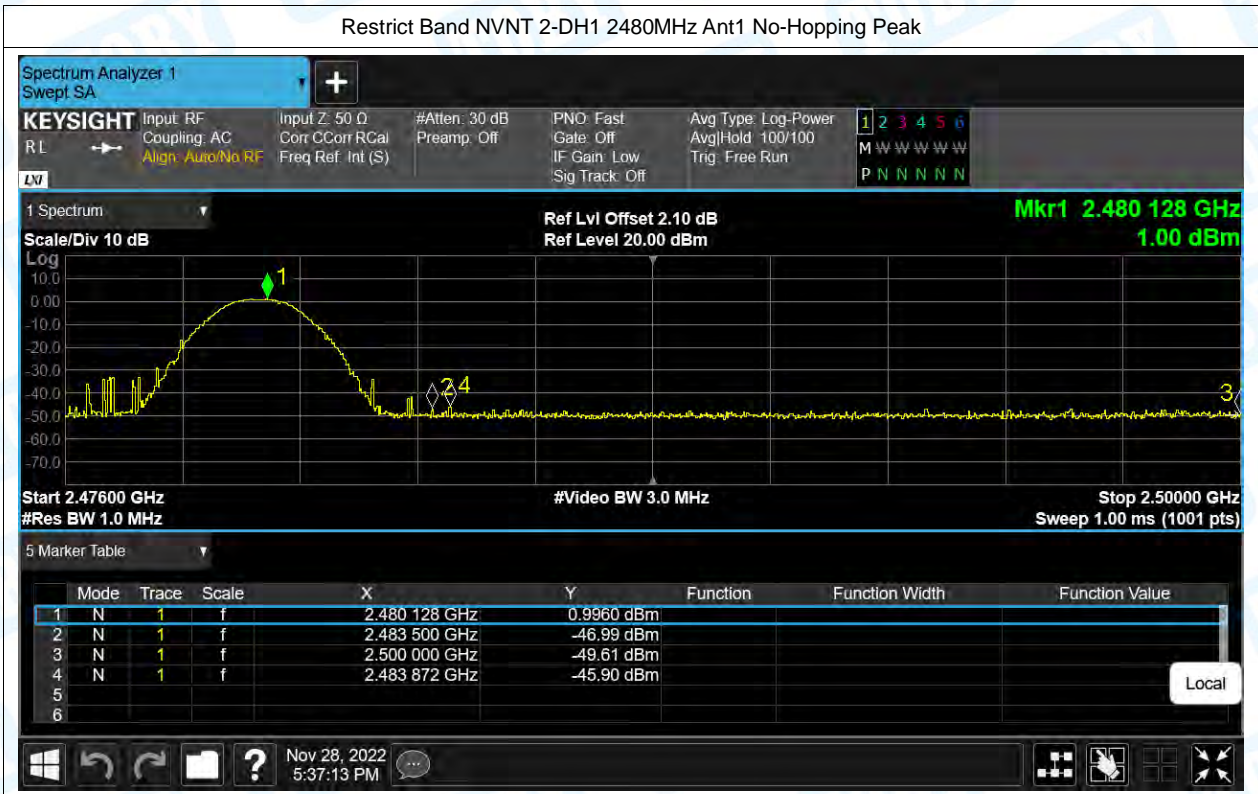


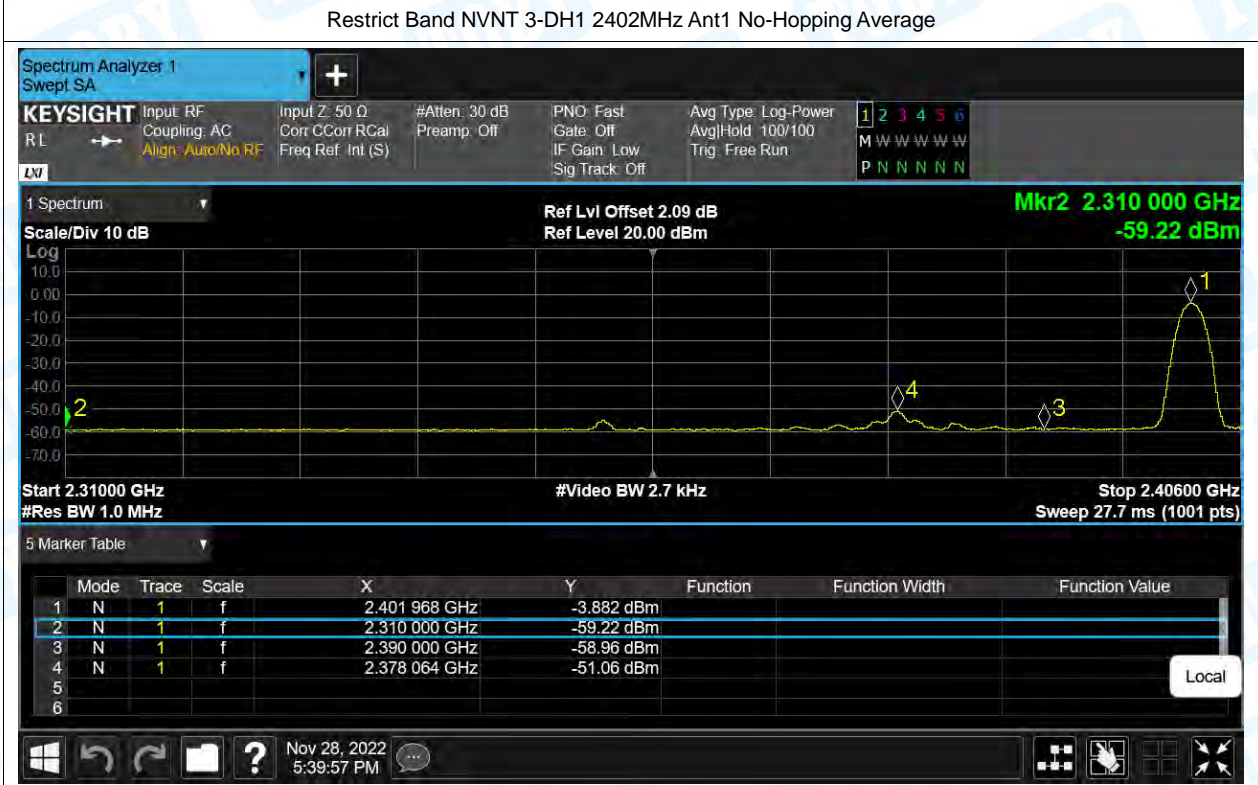
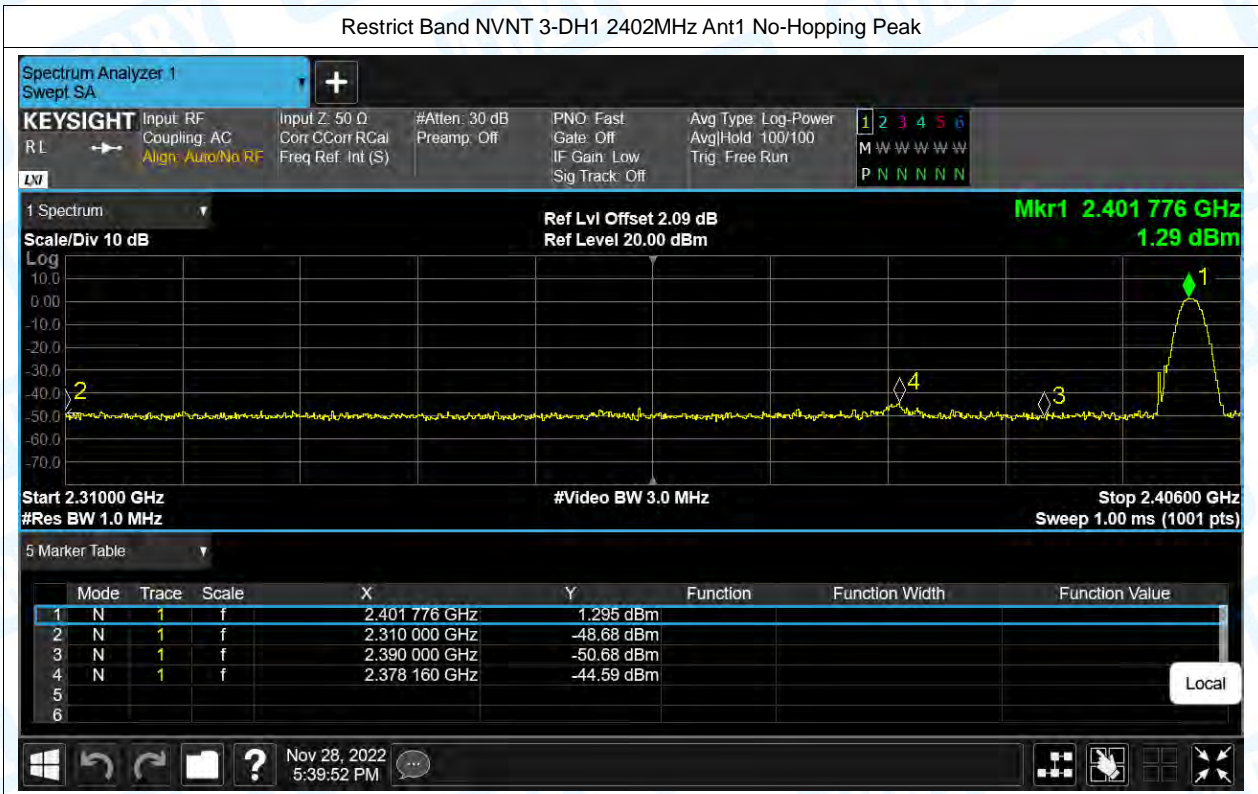
Restrict Band NVNT 1-DH1 2402MHz Ant1 No-Hopping Average



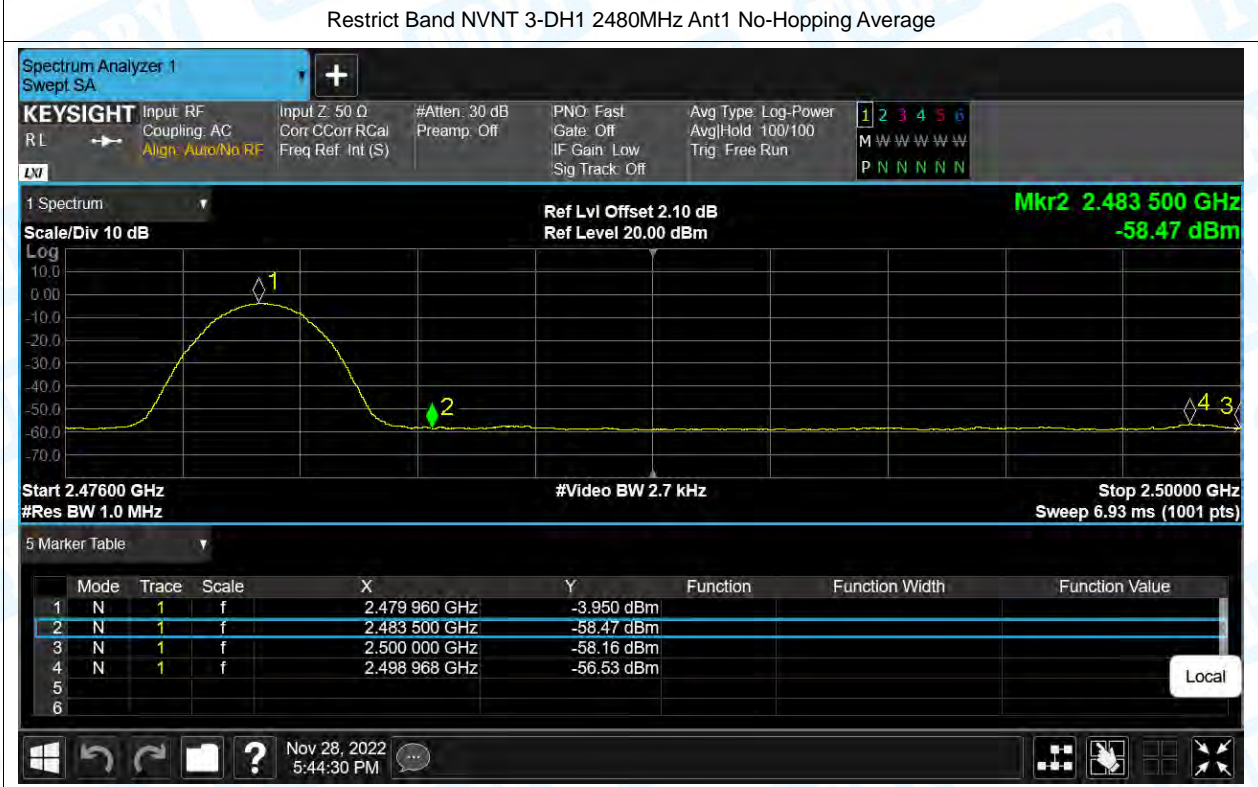
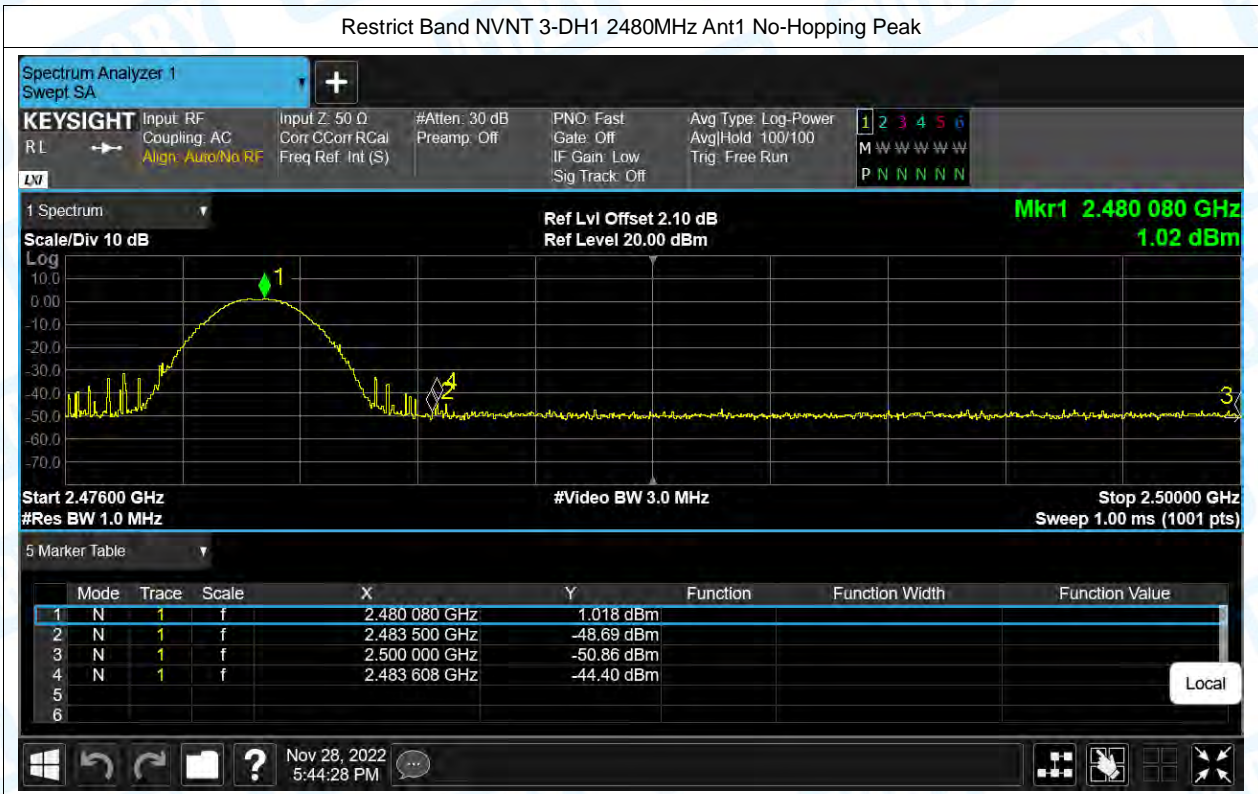










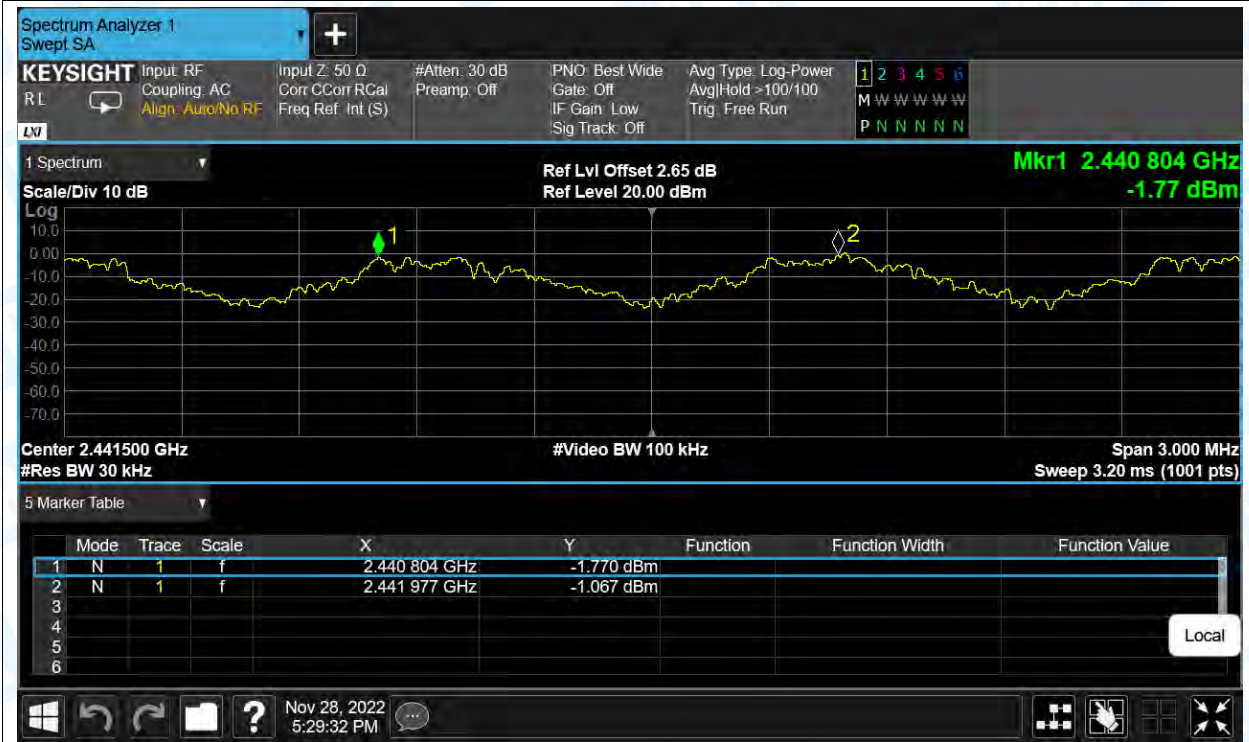


## 9. Carrier Frequencies Separation

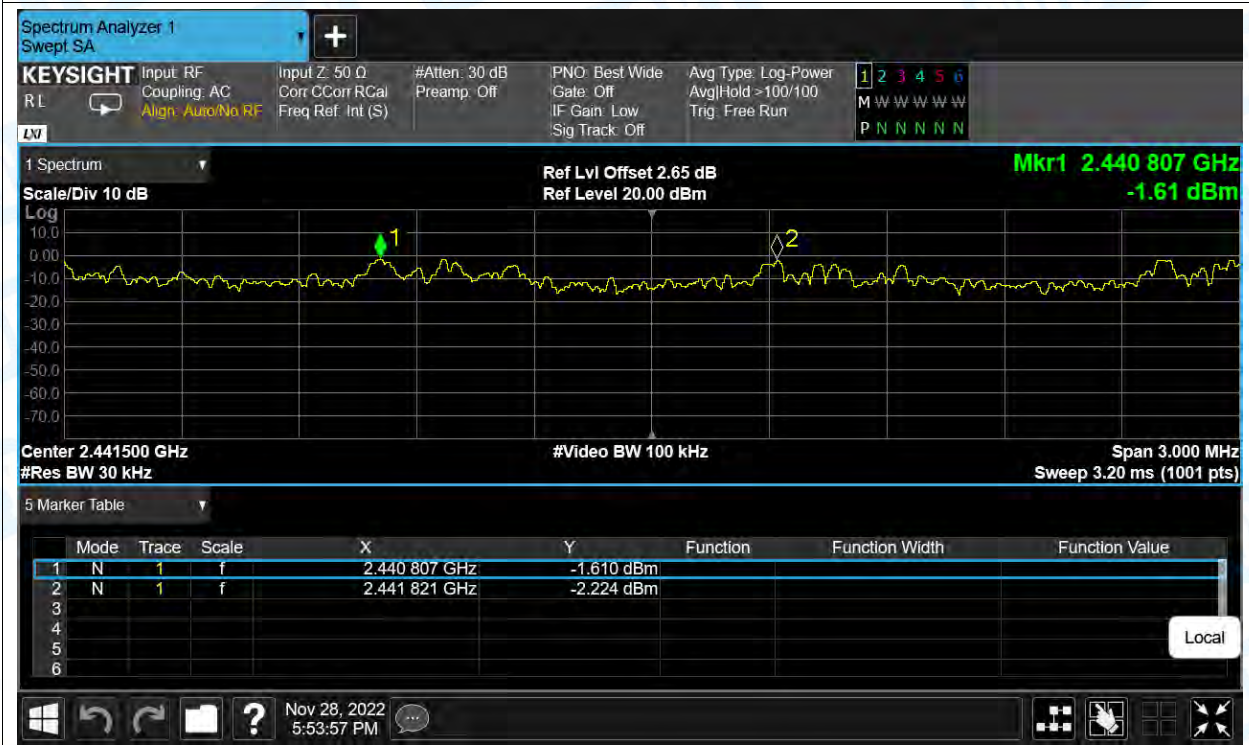
Condition	Mode	Antenna	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH1	Ant1	2440.804	2441.977	1.173	0.633	Pass
NVNT	2-DH1	Ant1	2440.807	2441.821	1.014	0.853	Pass
NVNT	3-DH1	Ant1	2440.987	2441.98	0.993	0.833	Pass

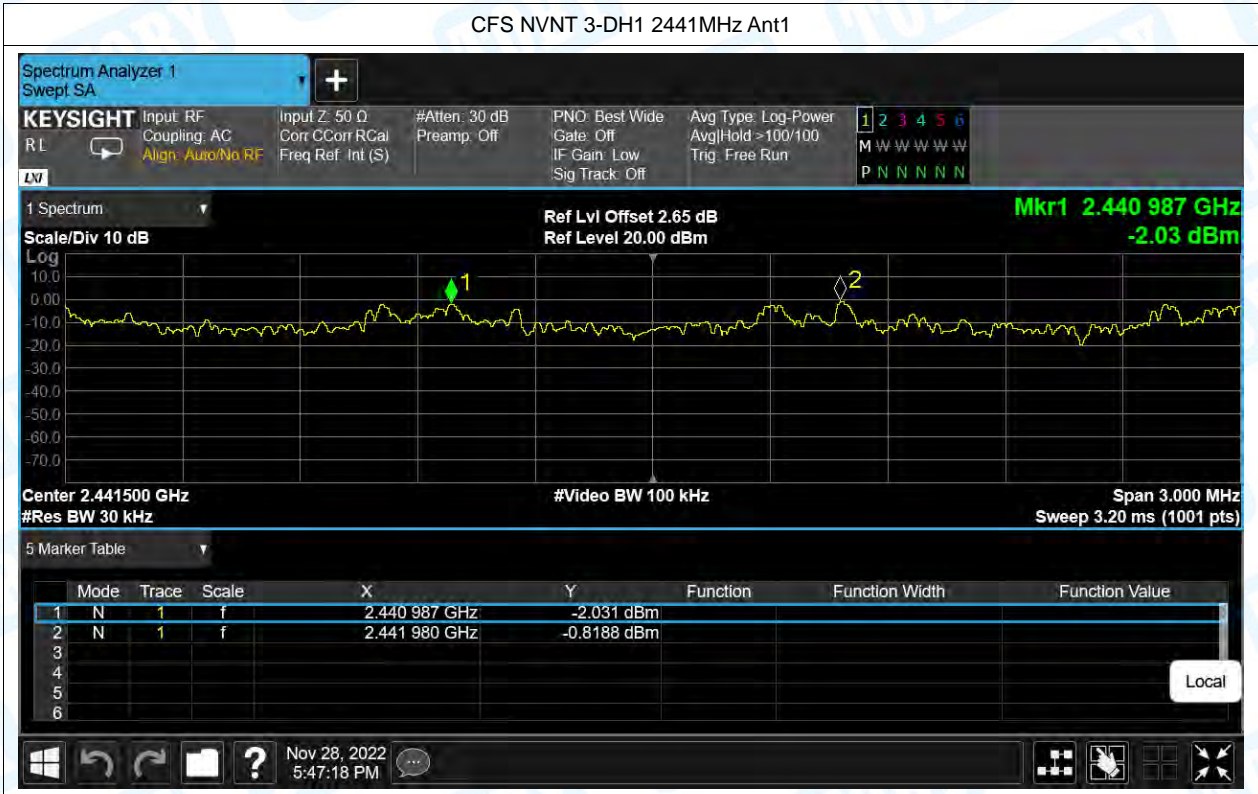
Test Graphs

CFS NVNT 1-DH1 2441MHz Ant1



CFS NVNT 2-DH1 2441MHz Ant1



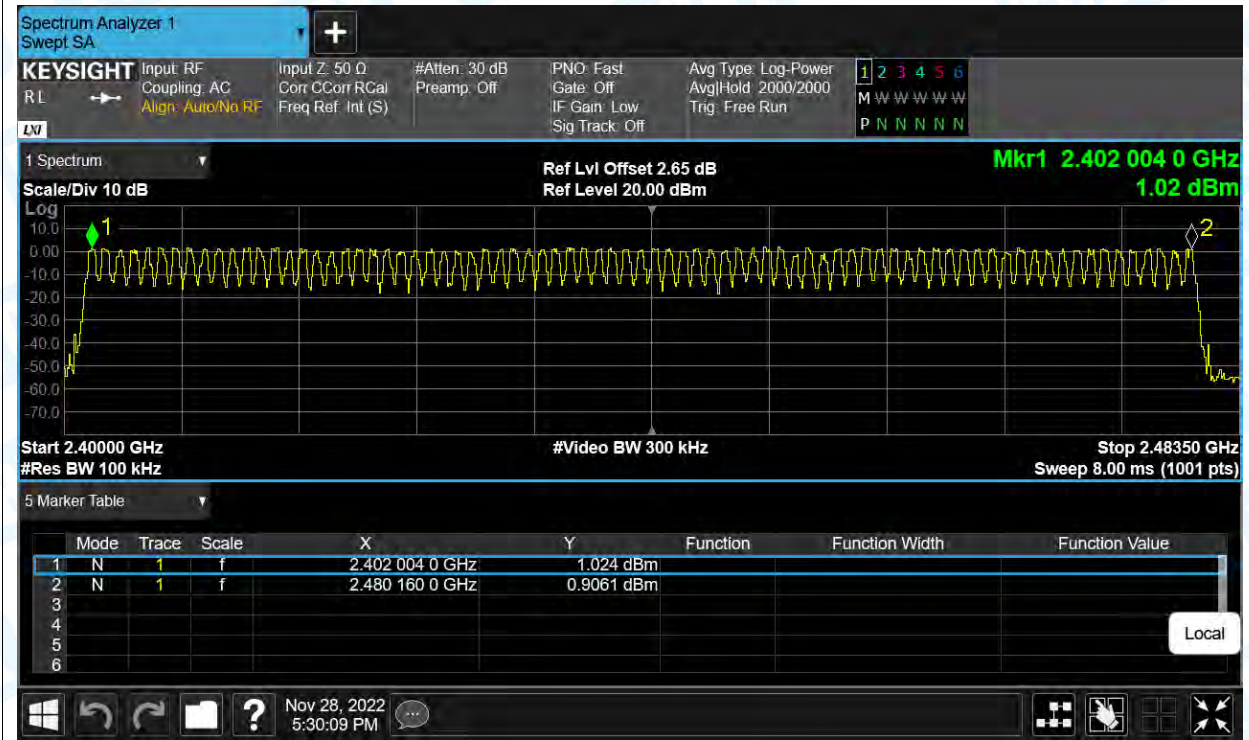


## 10. Number of Hopping Channel

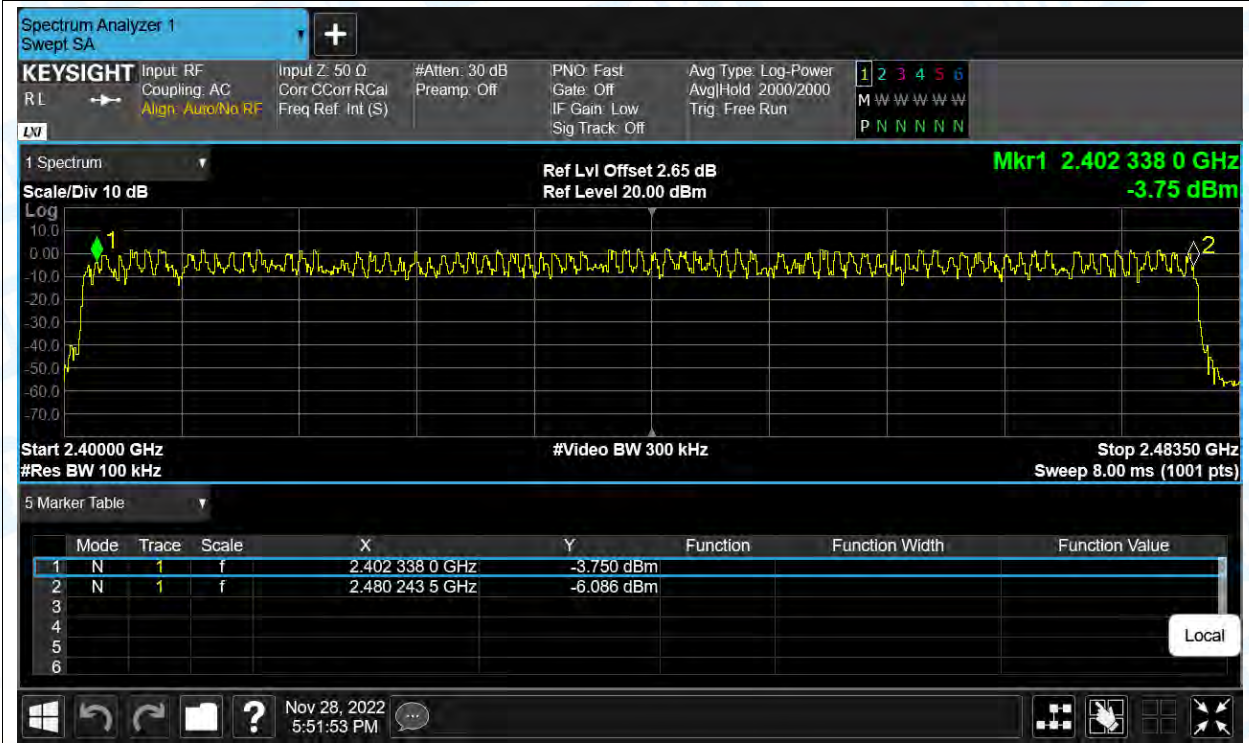
Condition	Mode	Antenna	Hopping Number	Limit	Verdict
NVNT	1-DH1	Ant1	79	15	Pass
NVNT	2-DH1	Ant1	79	15	Pass
NVNT	3-DH1	Ant1	79	15	Pass

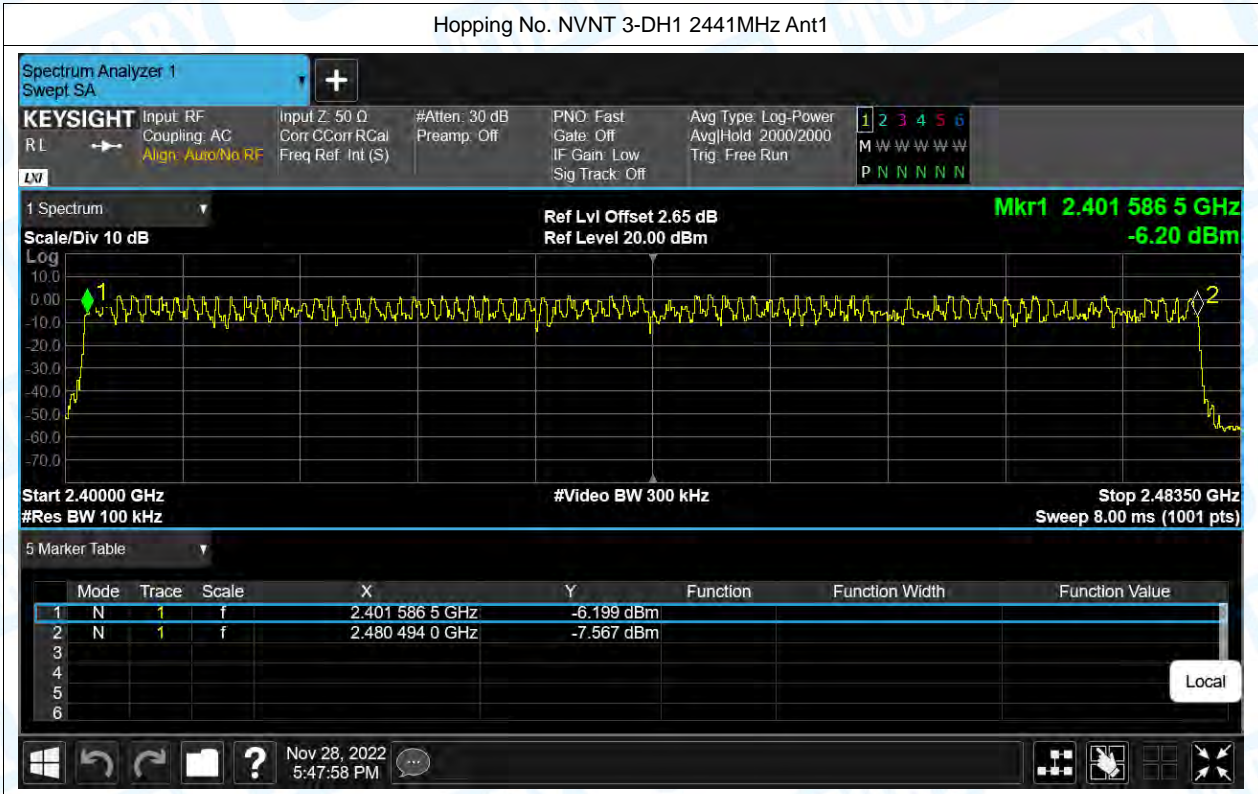
Test Graphs

Hopping No. NVNT 1-DH1 2441MHz Ant1



Hopping No. NVNT 2-DH1 2441MHz Ant1





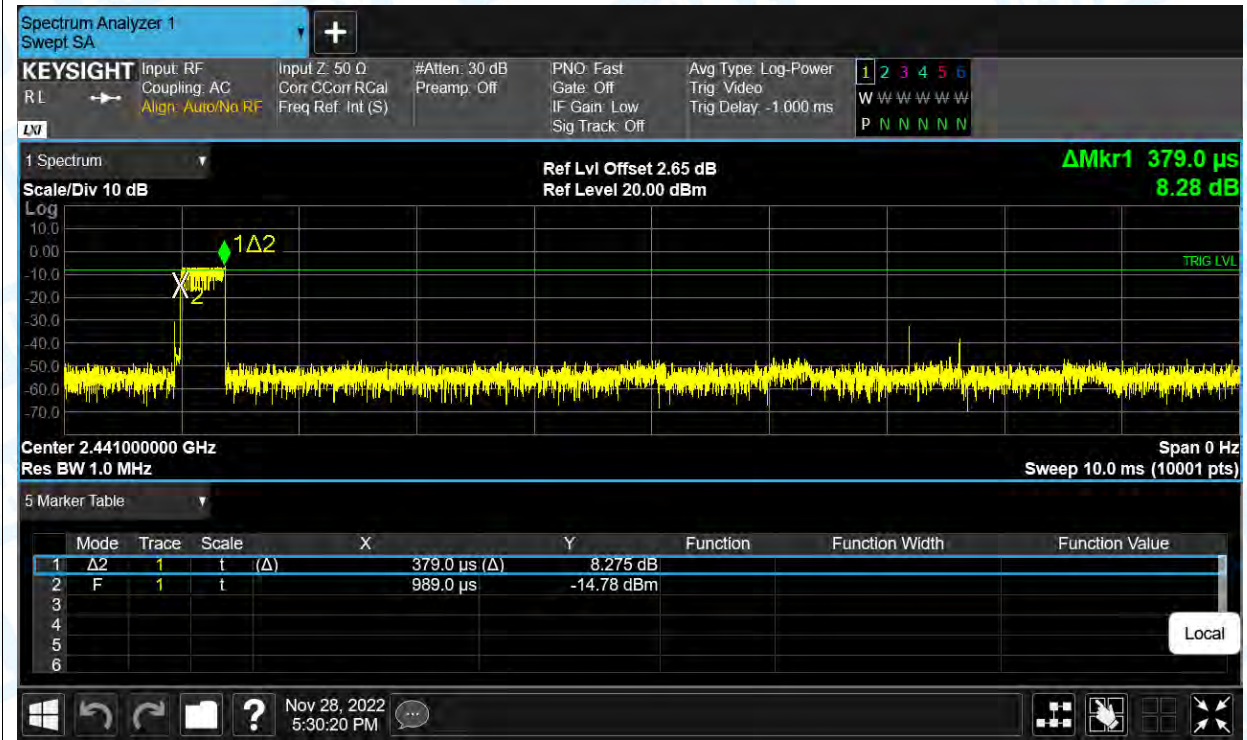
## 11. Dwell Time

Condition	Mode	Frequency (MHz)	Antenna	Pulse Time (ms)	Total Dwell Time (ms)	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	Ant1	0.379	121.28	31600	400	Pass
NVNT	1-DH3	2441	Ant1	1.644	263.04	31600	400	Pass
NVNT	1-DH5	2441	Ant1	2.891	308.373	31600	400	Pass
NVNT	2-DH1	2441	Ant1	0.386	123.52	31600	400	Pass
NVNT	2-DH3	2441	Ant1	1.638	262.08	31600	400	Pass
NVNT	2-DH5	2441	Ant1	2.887	307.947	31600	400	Pass
NVNT	3-DH1	2441	Ant1	0.386	123.52	31600	400	Pass
NVNT	3-DH3	2441	Ant1	1.636	261.76	31600	400	Pass
NVNT	3-DH5	2441	Ant1	2.887	307.947	31600	400	Pass

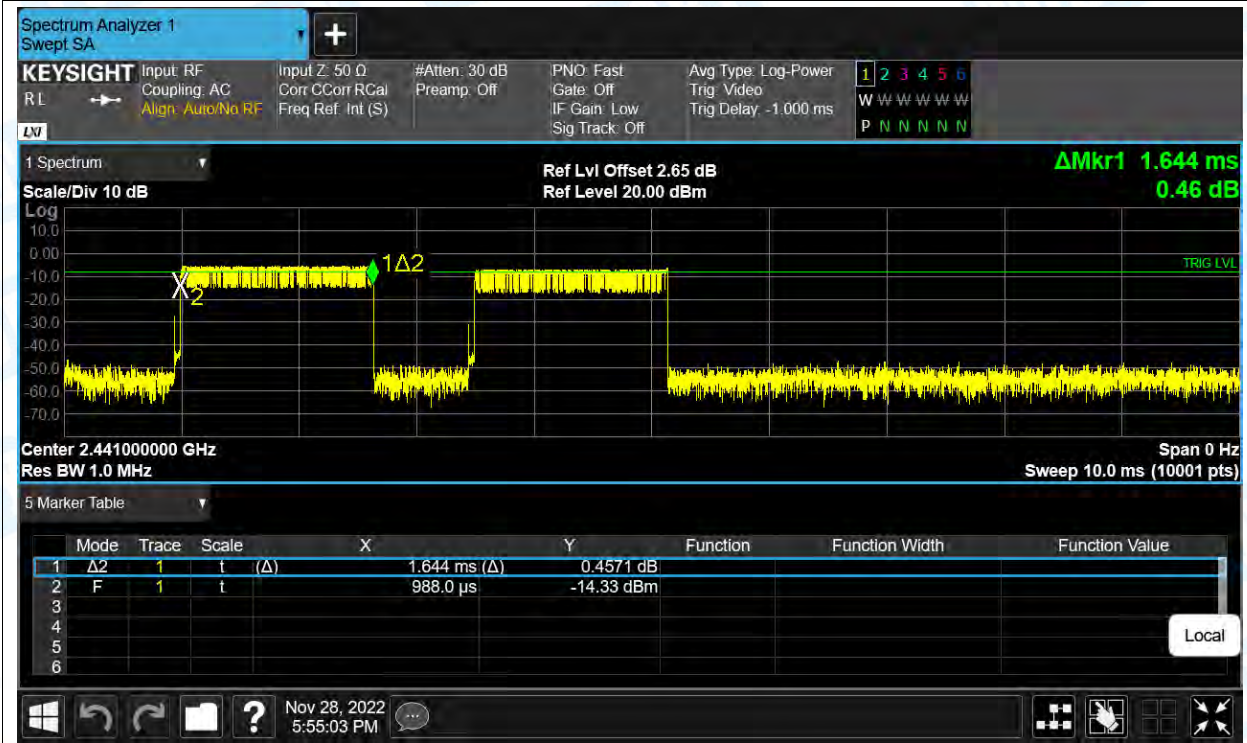


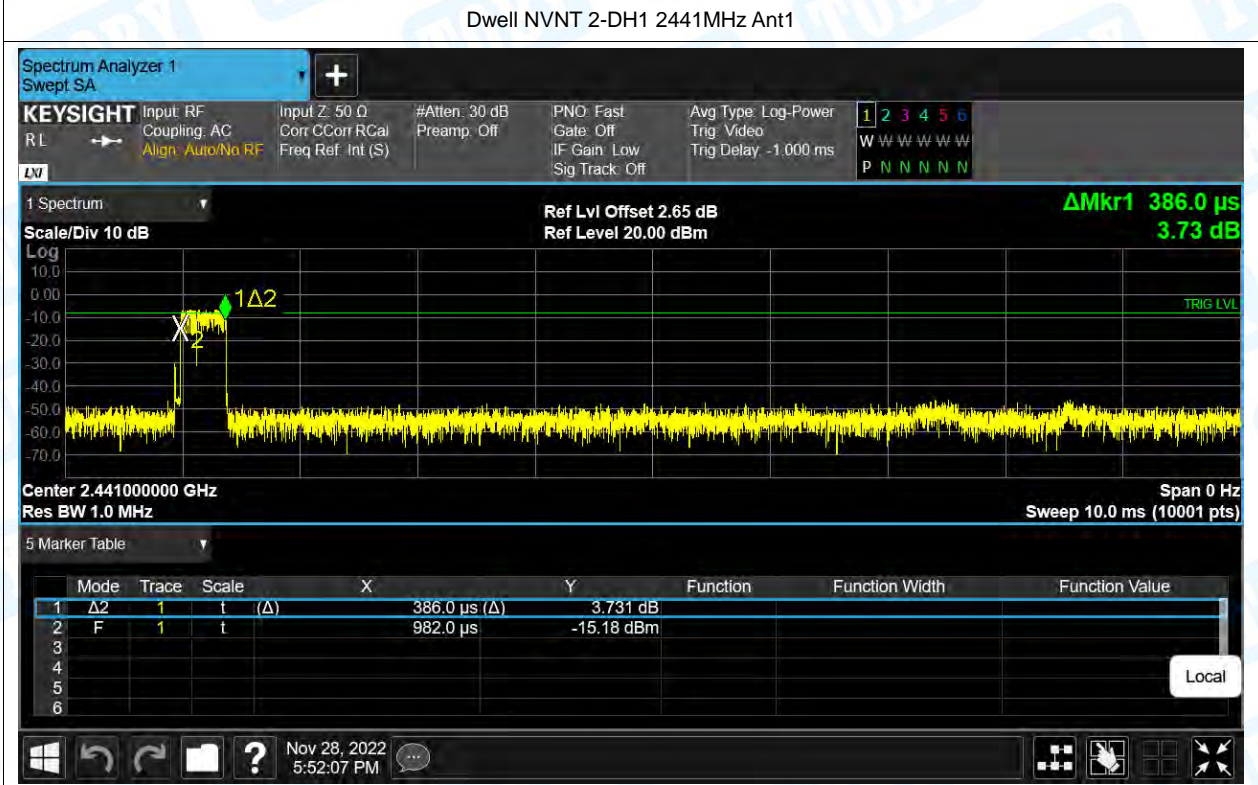
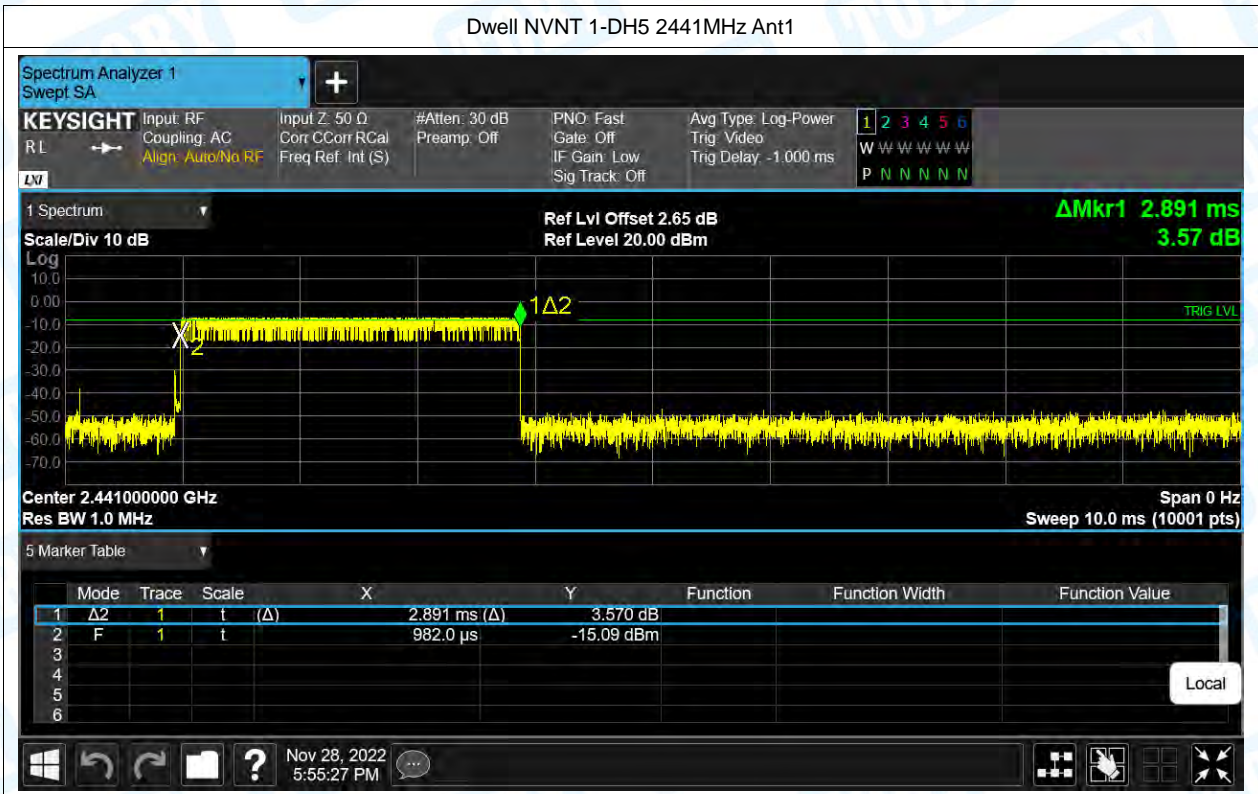
Test Graphs

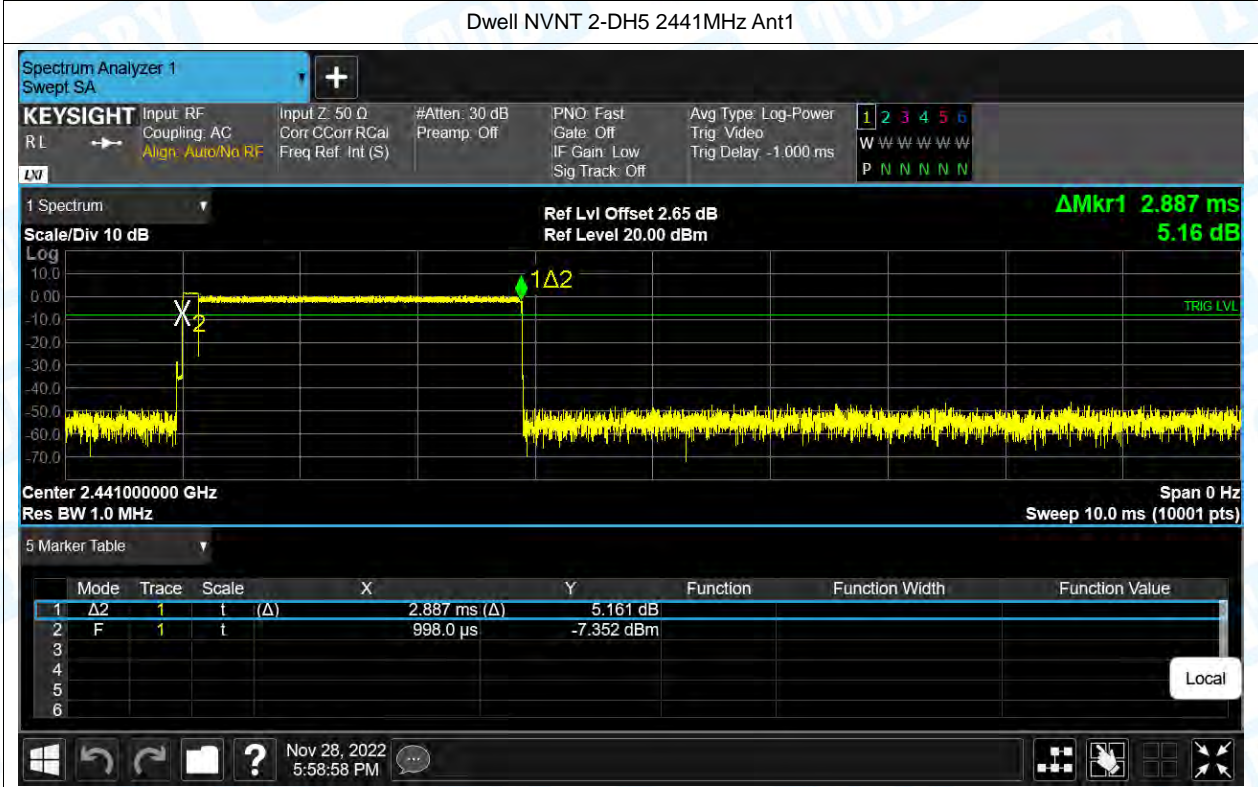
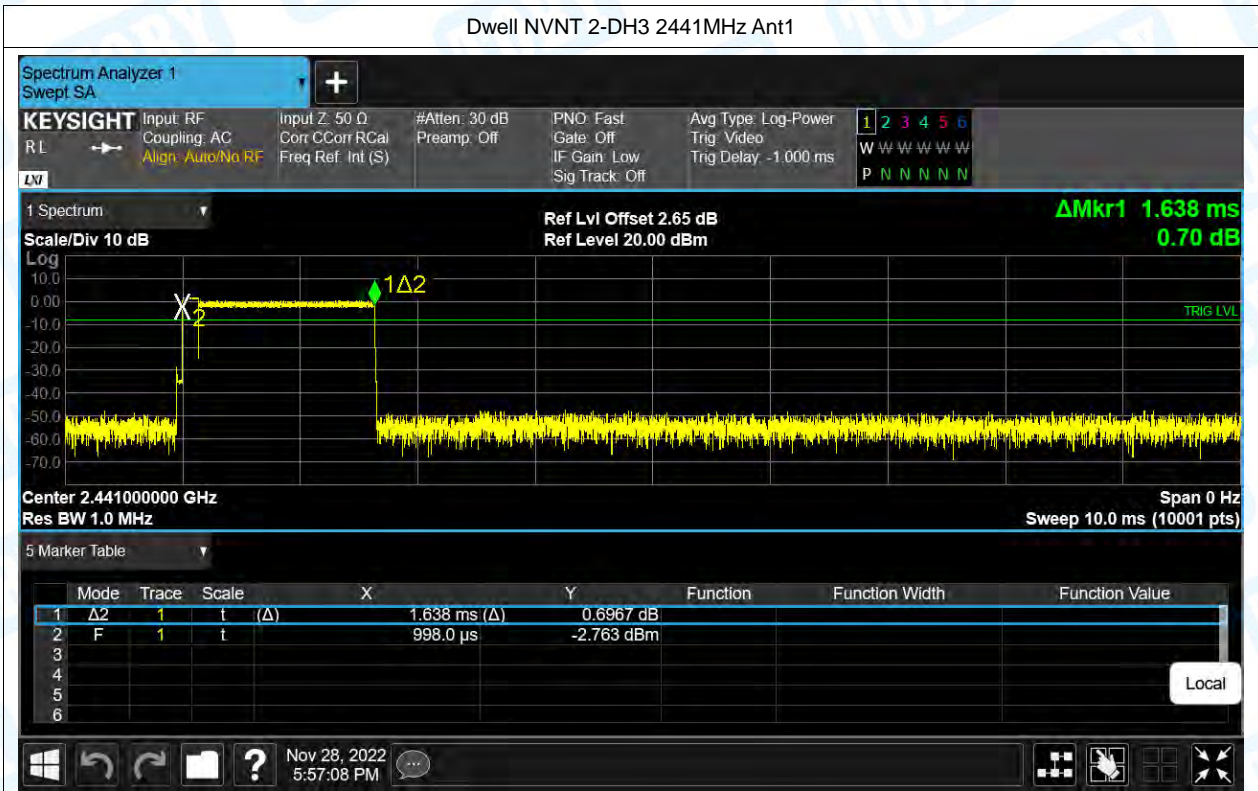
Dwell NVNT 1-DH1 2441MHz Ant1

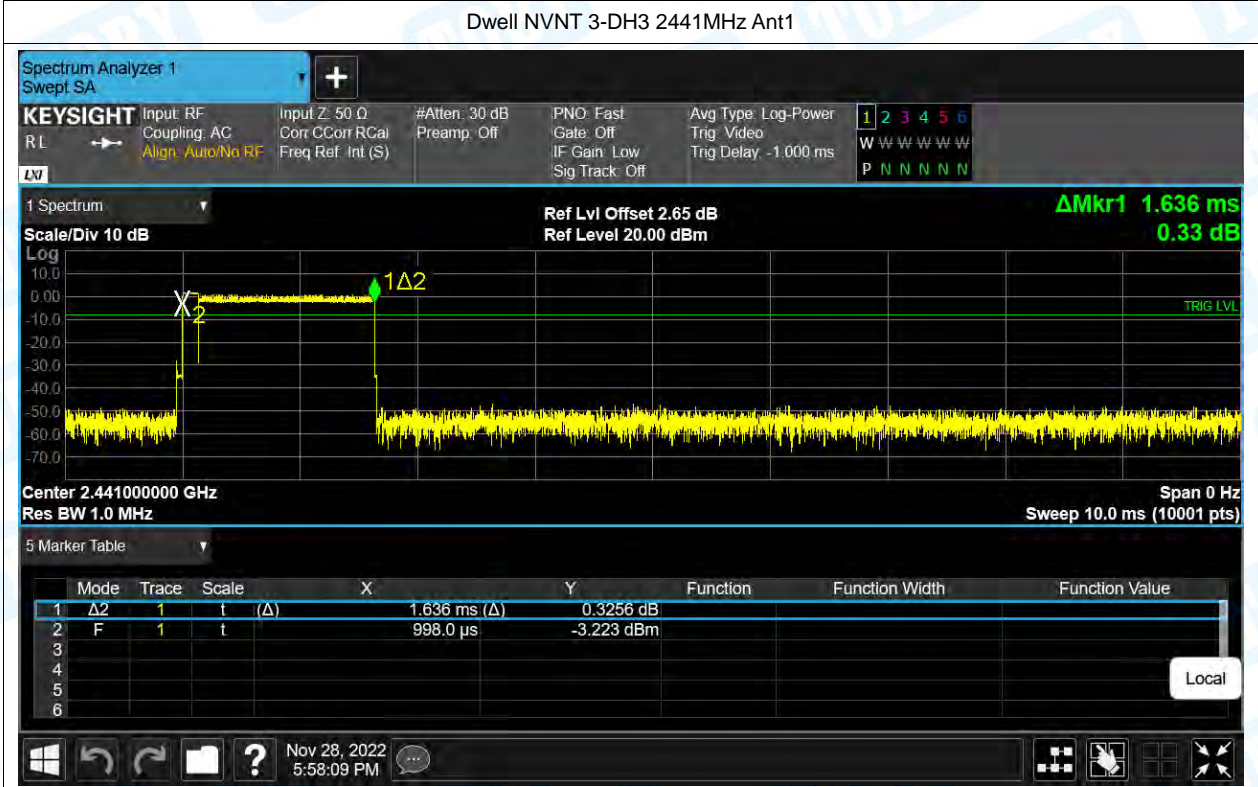
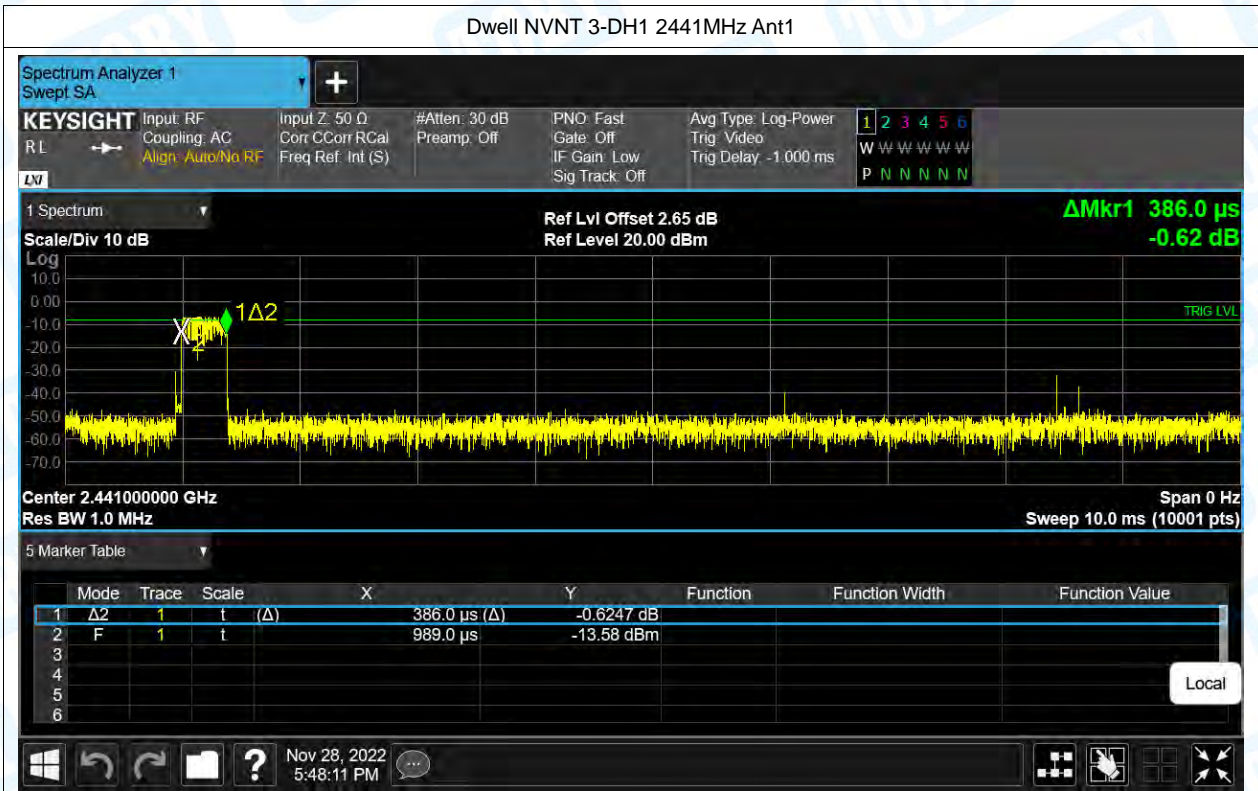


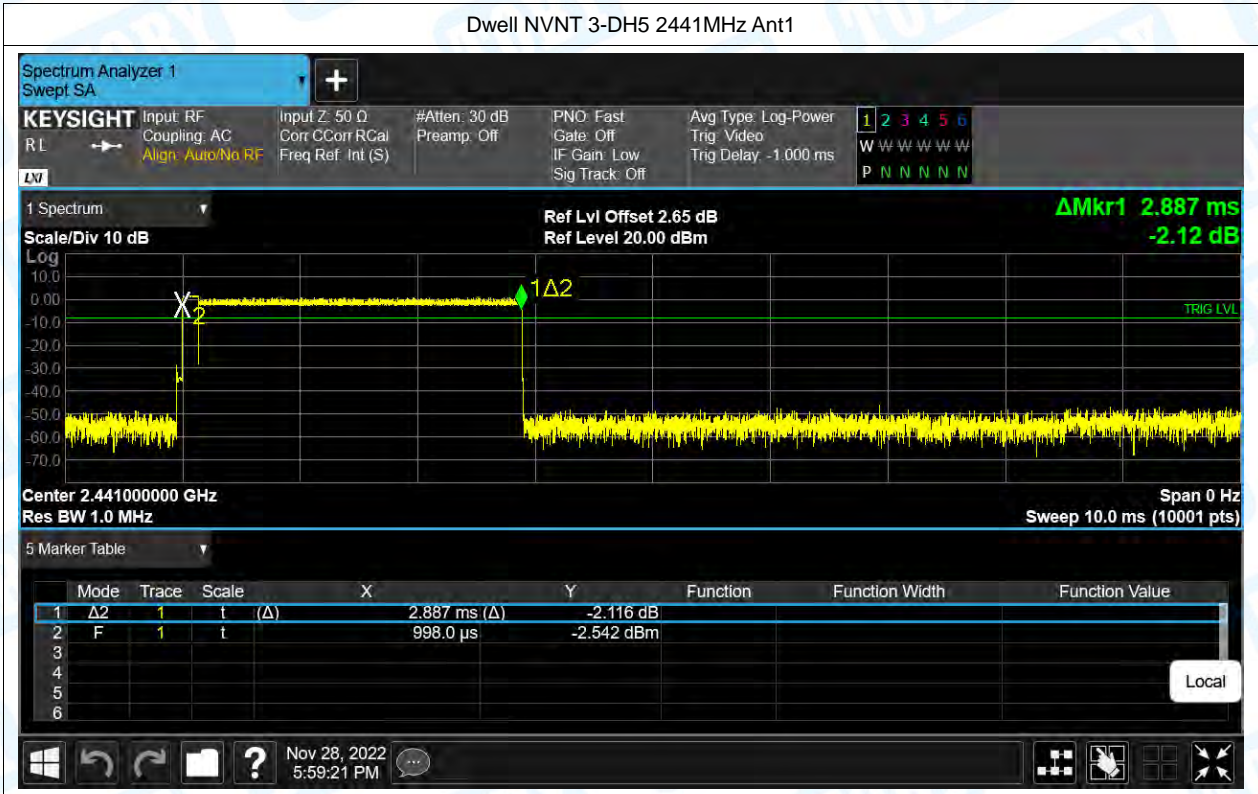
Dwell NVNT 1-DH3 2441MHz Ant1











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