

RF Test Data for 2.4G WiFi (Conducted Measurements)

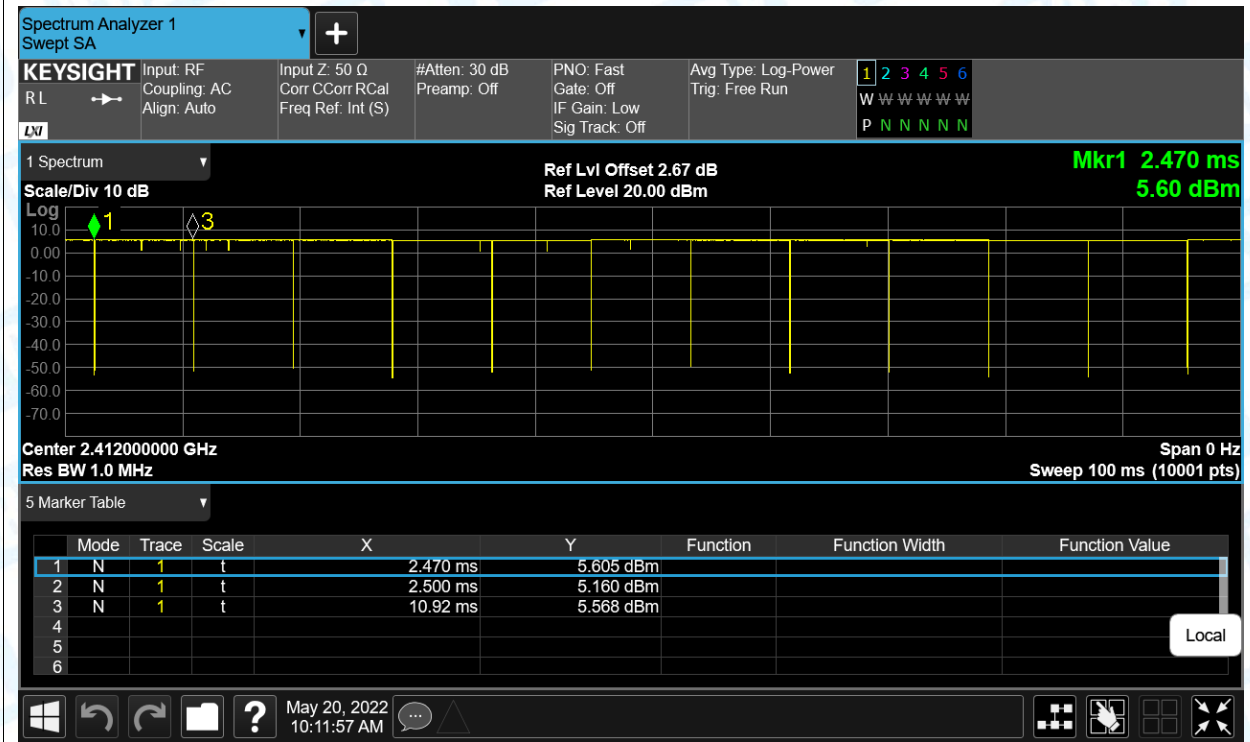
General Description of EUT	
Product Name:	Heltec Indoor Hotspot
Test Model:	HT-M2802
Sample ID:	RW-C-202205-0225-1-2#
Environmental Conditions	
Temperature:	23.8°C
Relative Humidity:	48%
Test Voltage:	DC 5V
Test Engineer:	Huang jian ping
Note: For a more detailed features description, please refer to the report TBR-C-202205-0225-11	

1. Duty Cycle

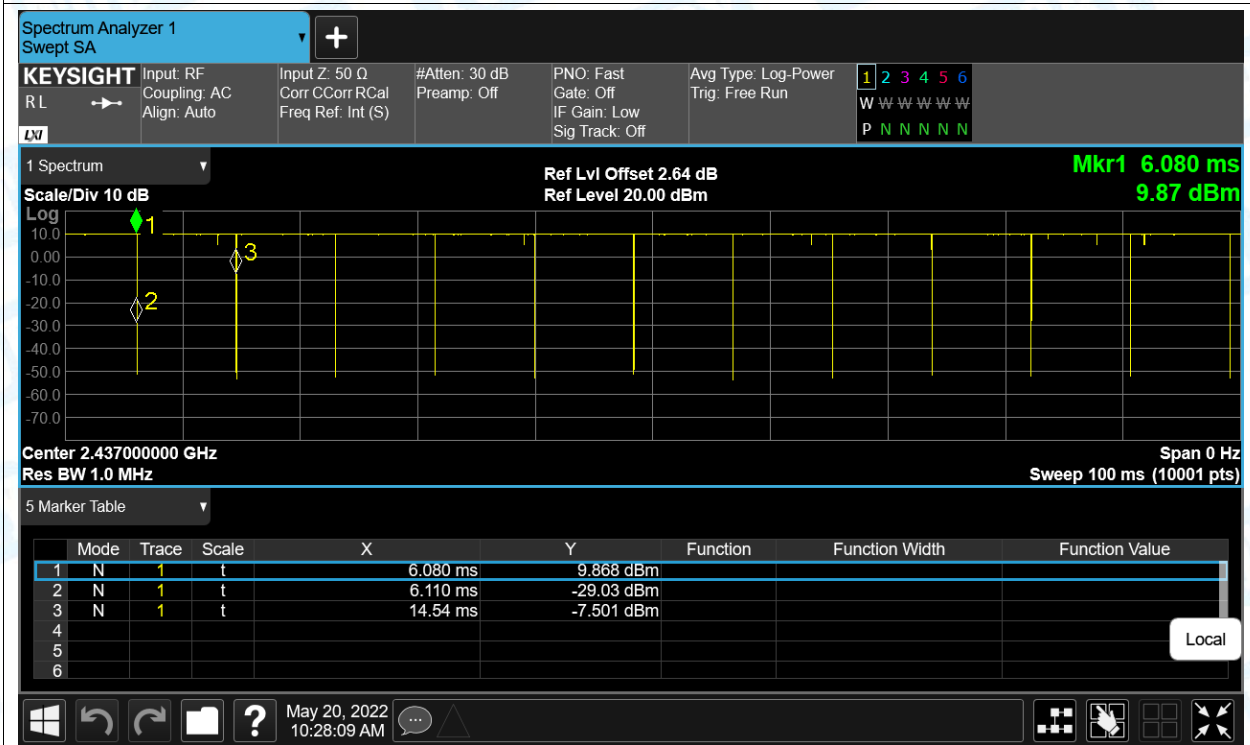
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Ant1	99.74	0.01	0.12
NVNT	b	2437	Ant1	99.75	0.01	0.12
NVNT	b	2462	Ant1	99.75	0.01	0.12
NVNT	g	2412	Ant1	98.02	0.09	0.71
NVNT	g	2437	Ant1	97.98	0.09	0.72
NVNT	g	2462	Ant1	98.02	0.09	0.71
NVNT	n(HT20)	2412	Ant1	97.95	0.09	0.76
NVNT	n(HT20)	2437	Ant1	97.86	0.09	0.76
NVNT	n(HT20)	2462	Ant1	97.85	0.09	0.76

Test Graphs

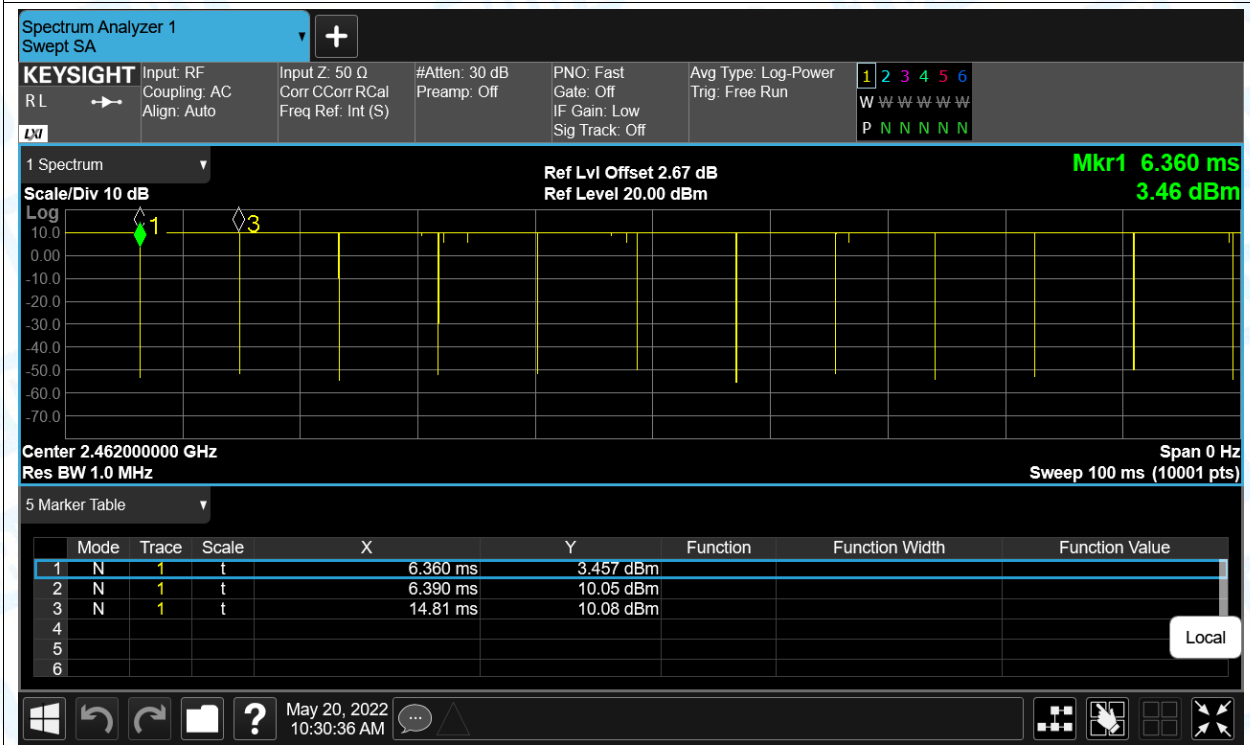
Duty Cycle NVNT b 2412MHz Ant1



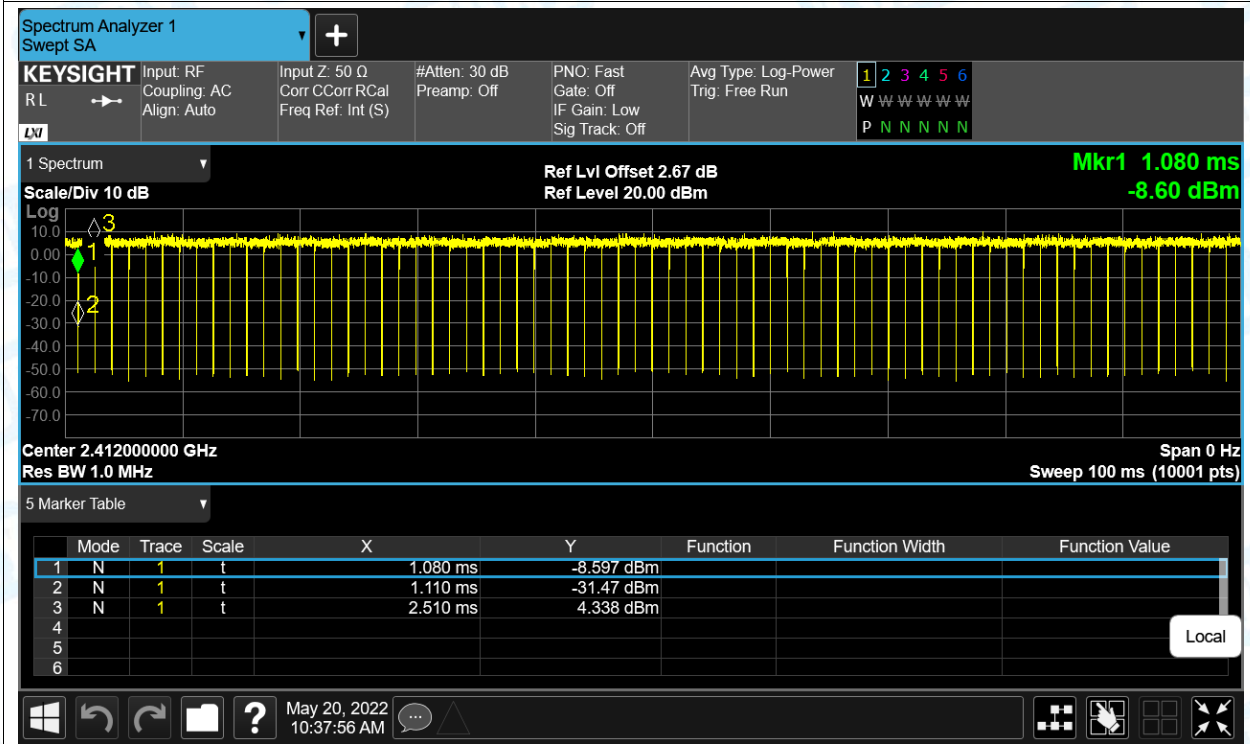
Duty Cycle NVNT b 2437MHz Ant1



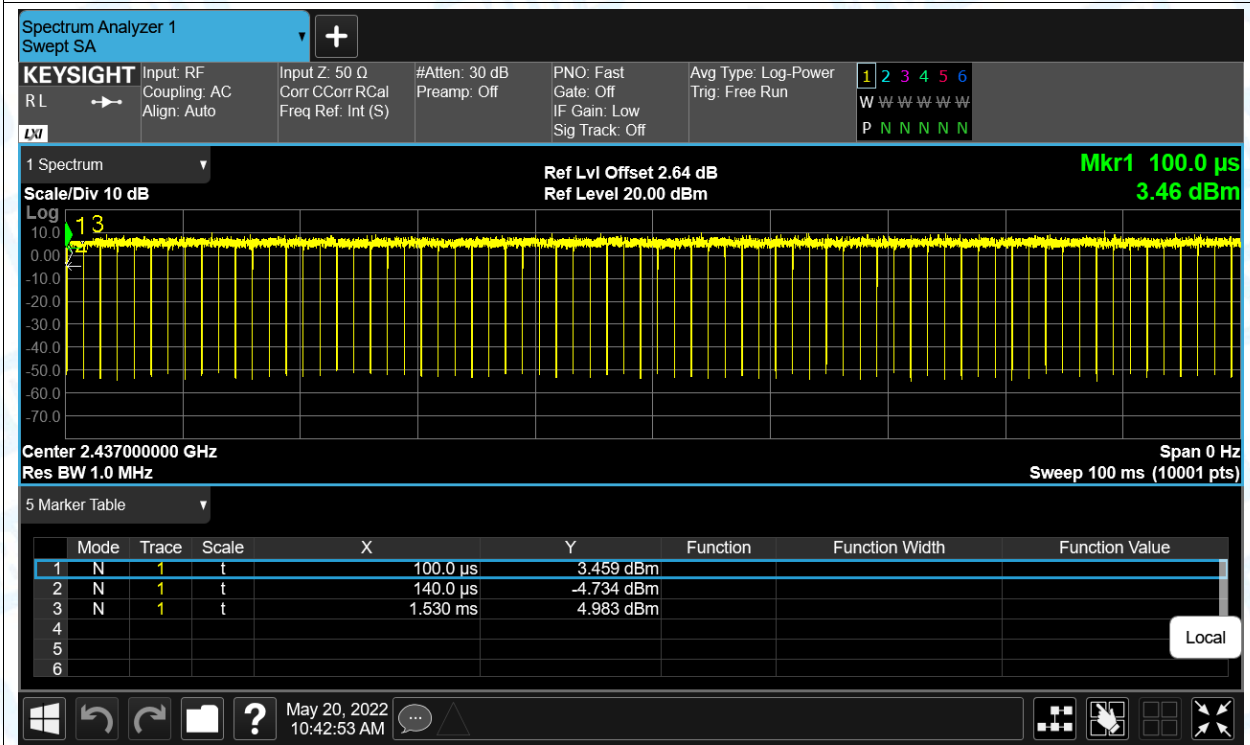
Duty Cycle NVNT b 2462MHz Ant1



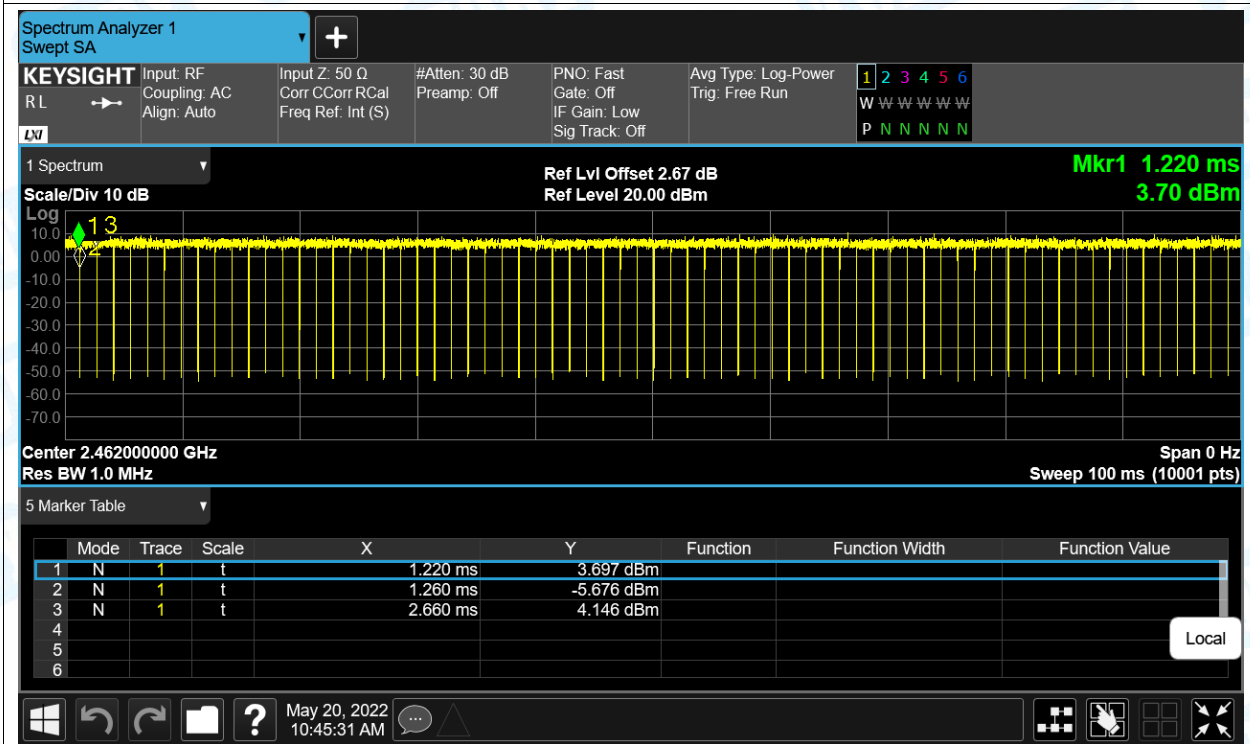
Duty Cycle NVNT g 2412MHz Ant1



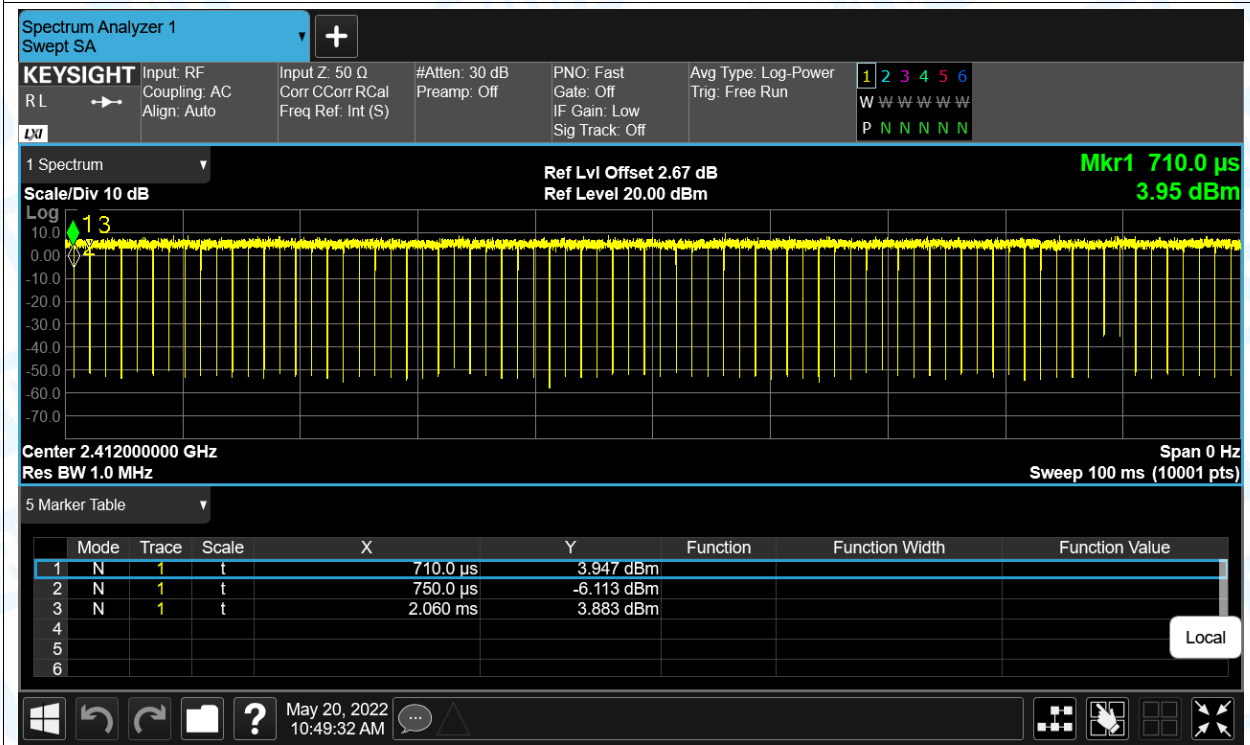
Duty Cycle NVNT g 2437MHz Ant1



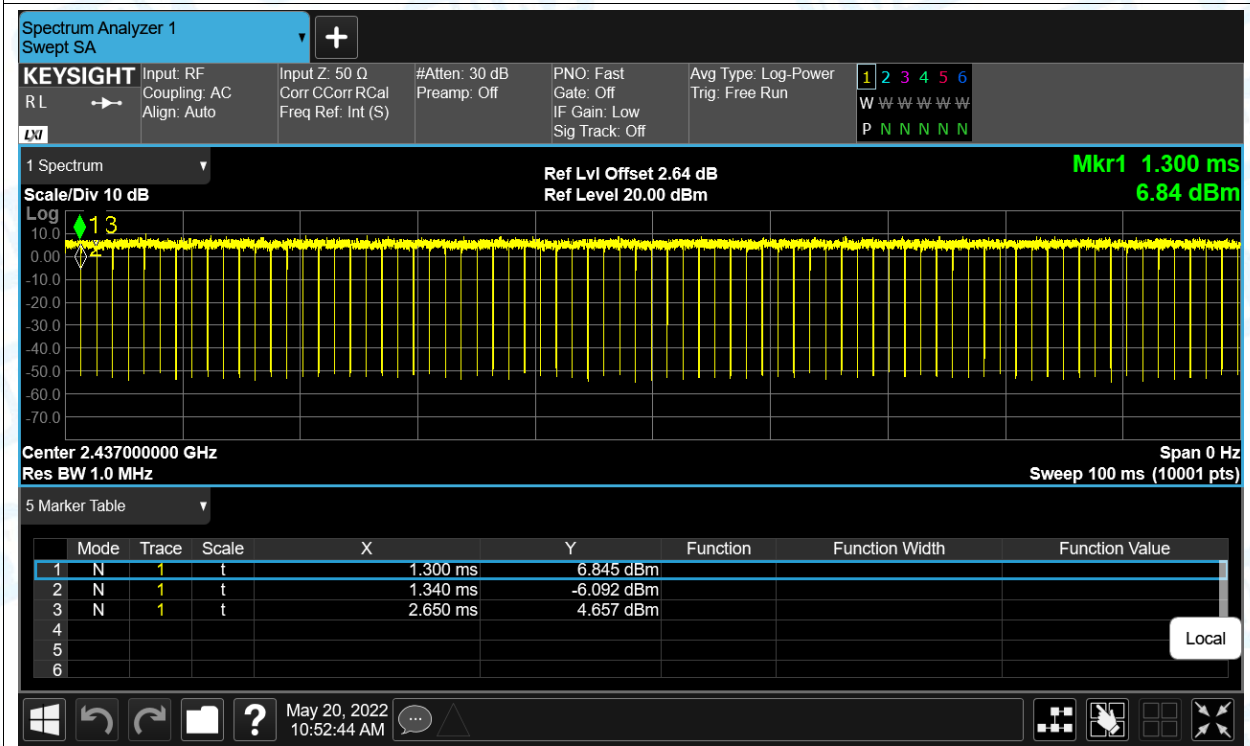
Duty Cycle NVNT g 2462MHz Ant1

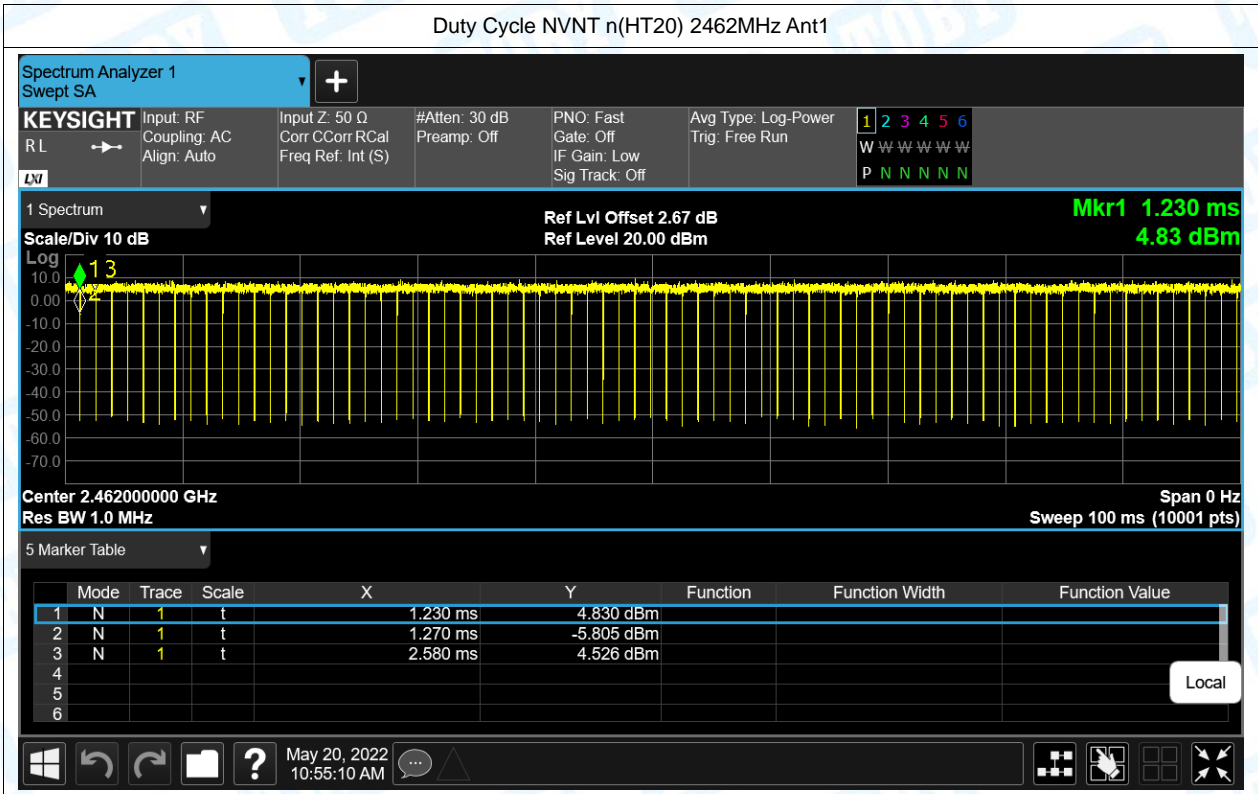


Duty Cycle NVNT n(HT20) 2412MHz Ant1



Duty Cycle NVNT n(HT20) 2437MHz Ant1





2. Maximum Conducted Output Power

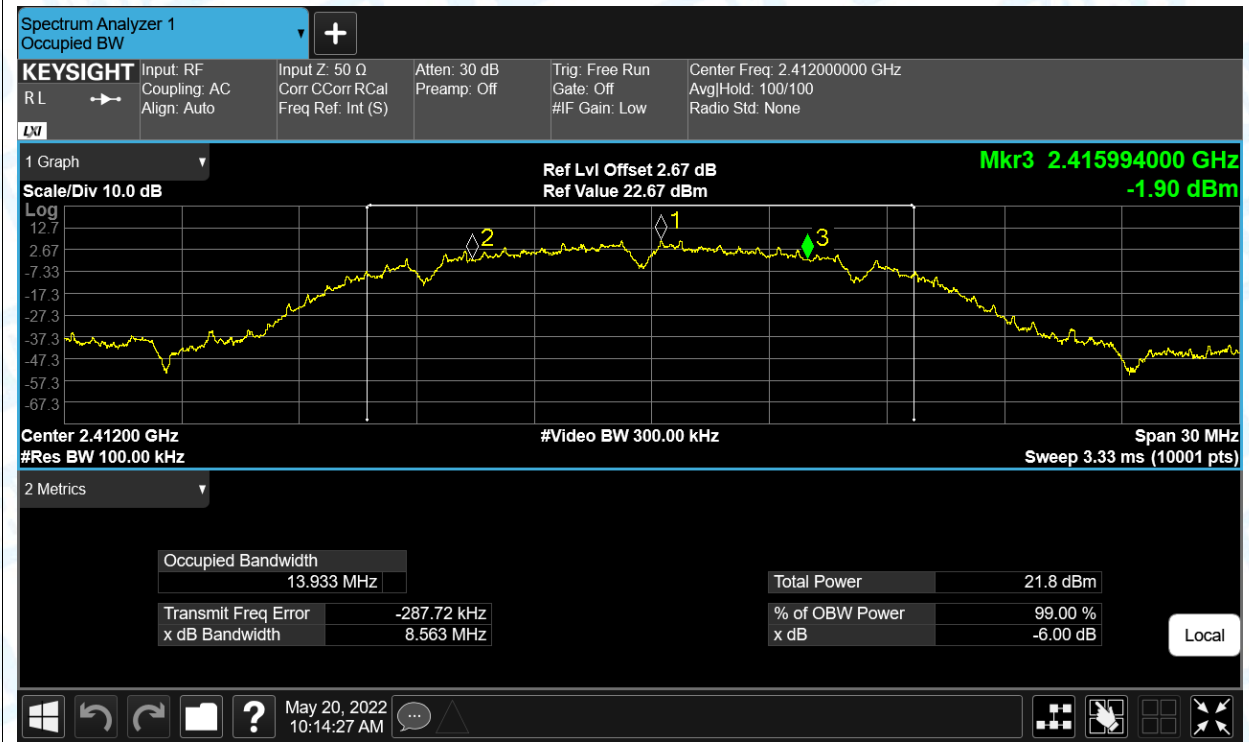
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	16.789	30	Pass
NVNT	b	2437	Ant1	16.907	30	Pass
NVNT	b	2462	Ant1	17.144	30	Pass
NVNT	g	2412	Ant1	16.387	30	Pass
NVNT	g	2437	Ant1	16.574	30	Pass
NVNT	g	2462	Ant1	16.671	30	Pass
NVNT	n(HT20)	2412	Ant1	16.041	30	Pass
NVNT	n(HT20)	2437	Ant1	16.411	30	Pass
NVNT	n(HT20)	2462	Ant1	16.454	30	Pass

3. -6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	8.56	0.5	Pass
NVNT	b	2437	Ant1	8.06	0.5	Pass
NVNT	b	2462	Ant1	9.03	0.5	Pass
NVNT	g	2412	Ant1	15.03	0.5	Pass
NVNT	g	2437	Ant1	15.11	0.5	Pass
NVNT	g	2462	Ant1	15.05	0.5	Pass
NVNT	n(HT20)	2412	Ant1	15.03	0.5	Pass
NVNT	n(HT20)	2437	Ant1	15.07	0.5	Pass
NVNT	n(HT20)	2462	Ant1	15.08	0.5	Pass

Test Graphs

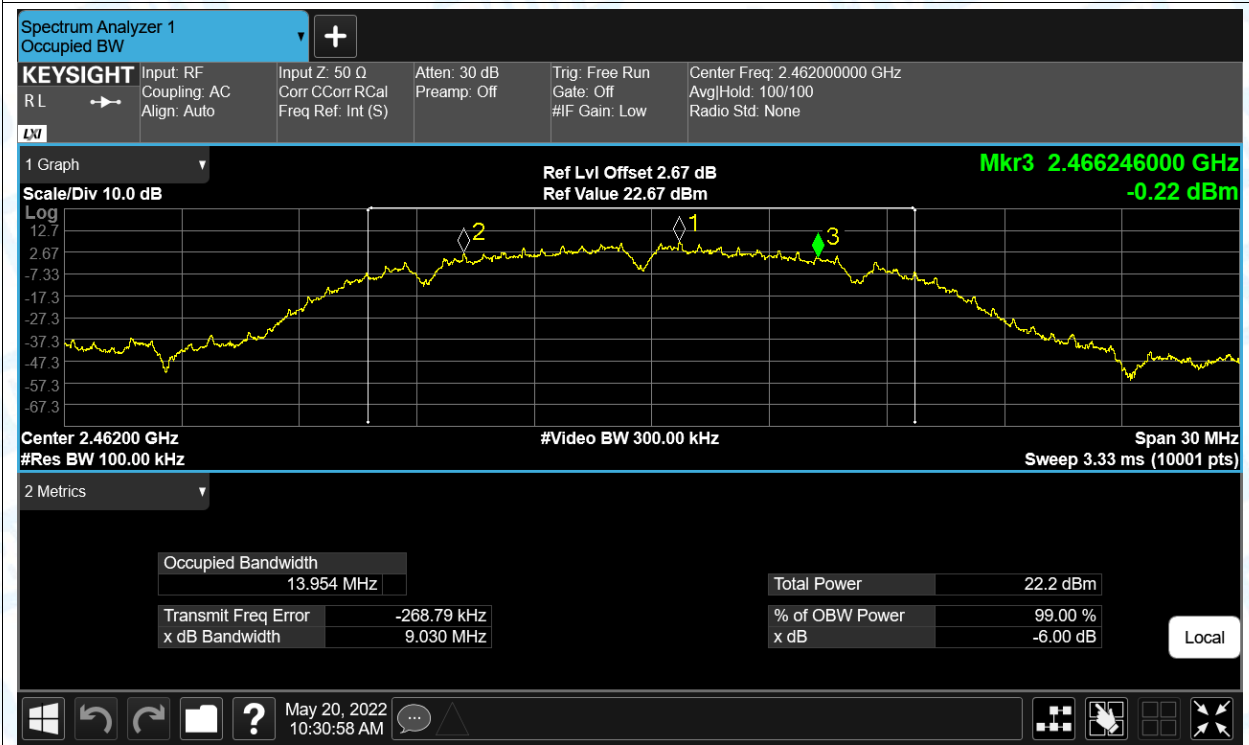
-6dB Bandwidth NVNT b 2412MHz Ant1



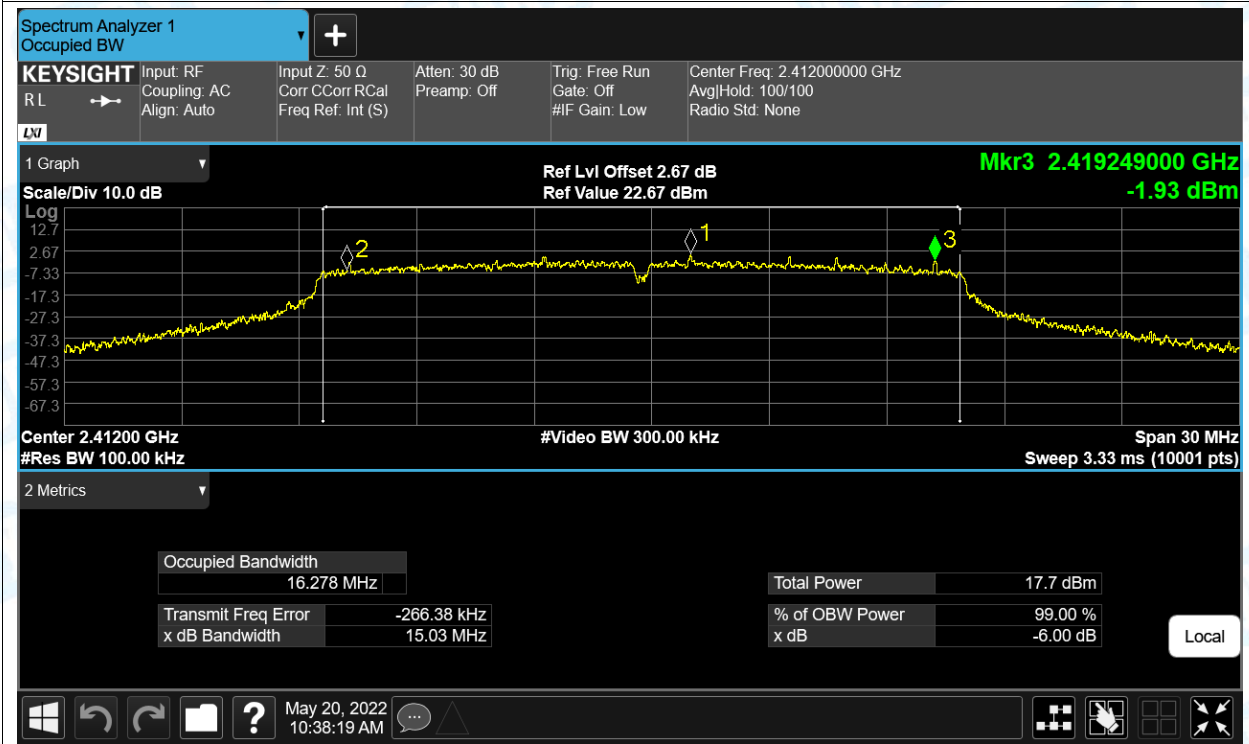
-6dB Bandwidth NVNT b 2437MHz Ant1



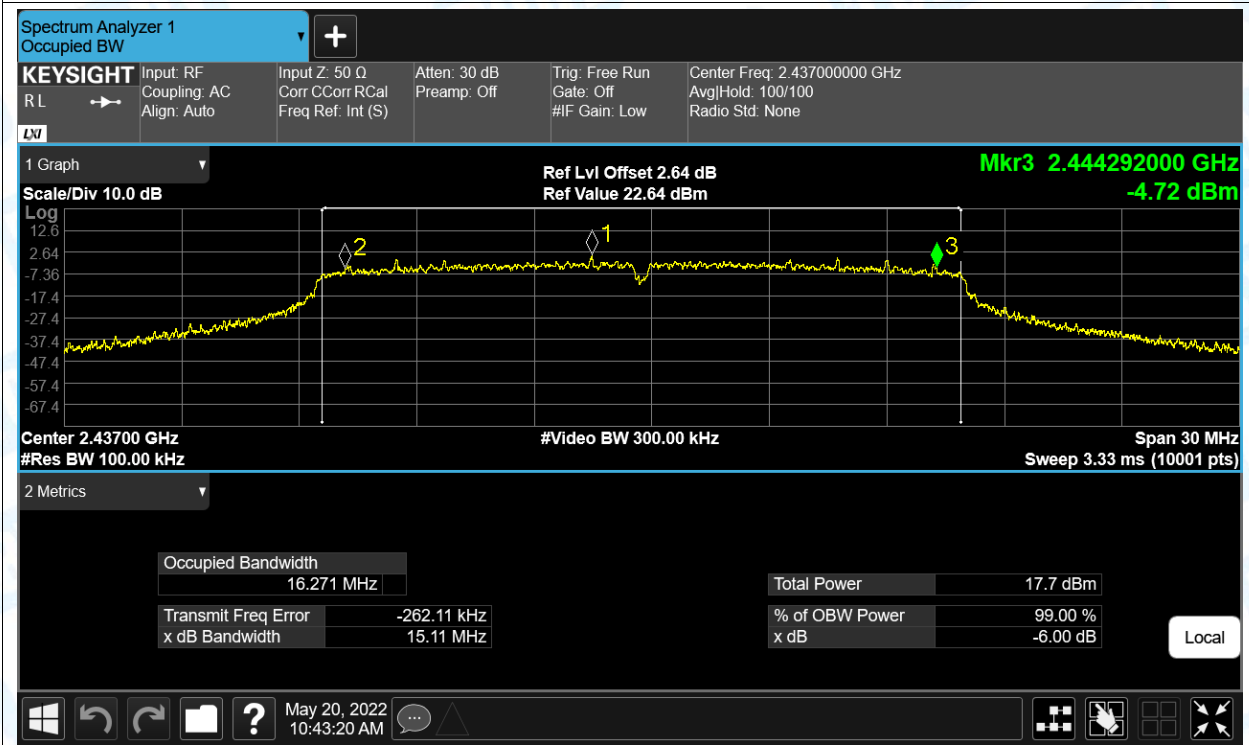
-6dB Bandwidth NVNT b 2462MHz Ant1



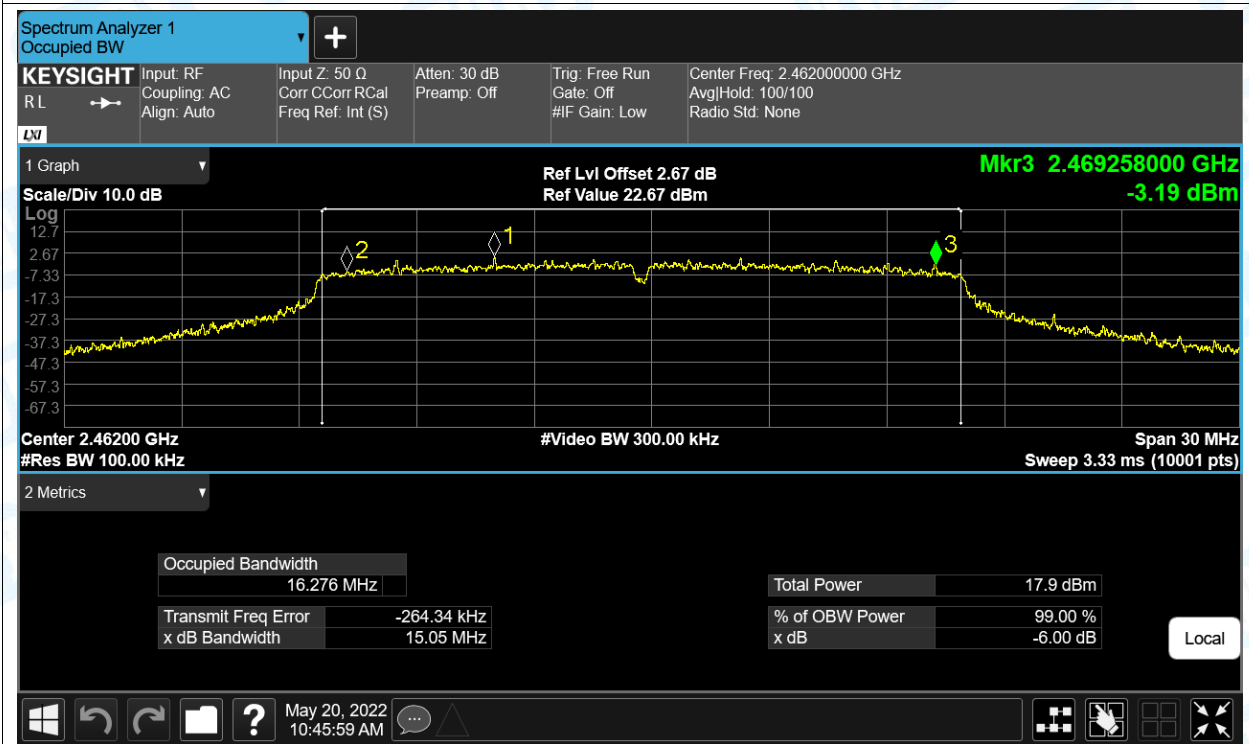
-6dB Bandwidth NVNT g 2412MHz Ant1



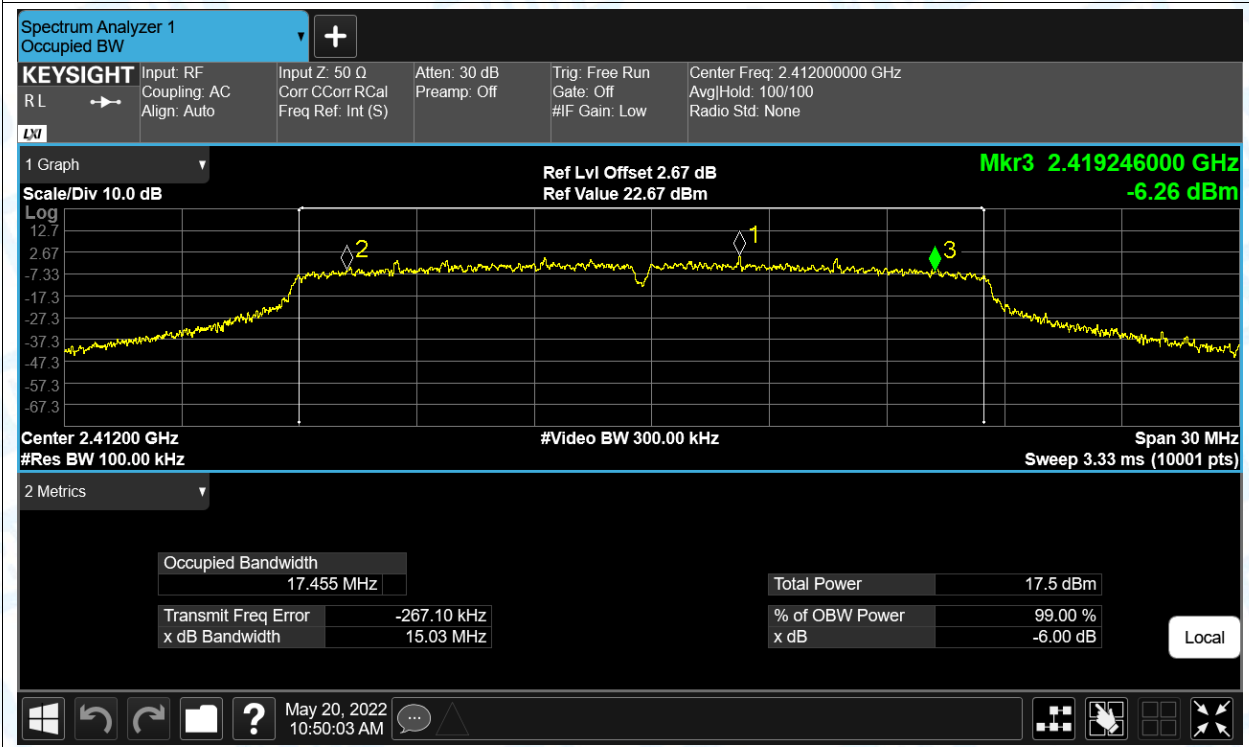
-6dB Bandwidth NVNT g 2437MHz Ant1



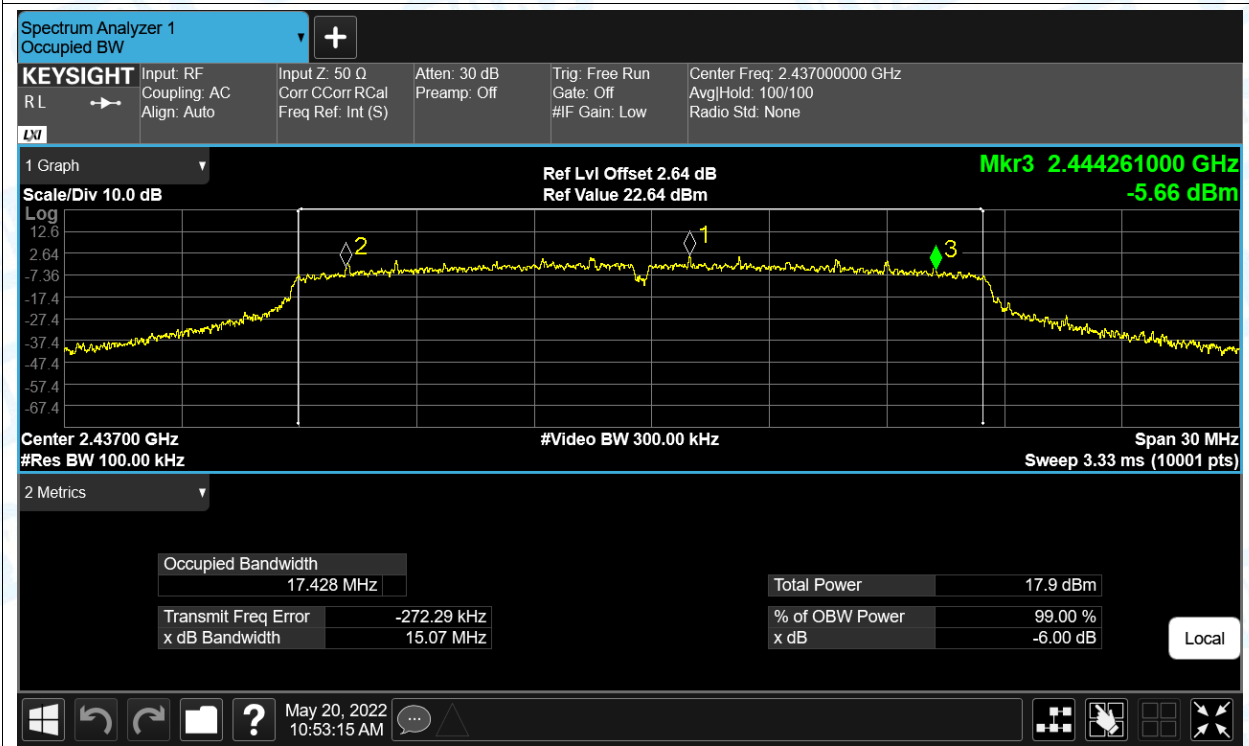
-6dB Bandwidth NVNT g 2462MHz Ant1

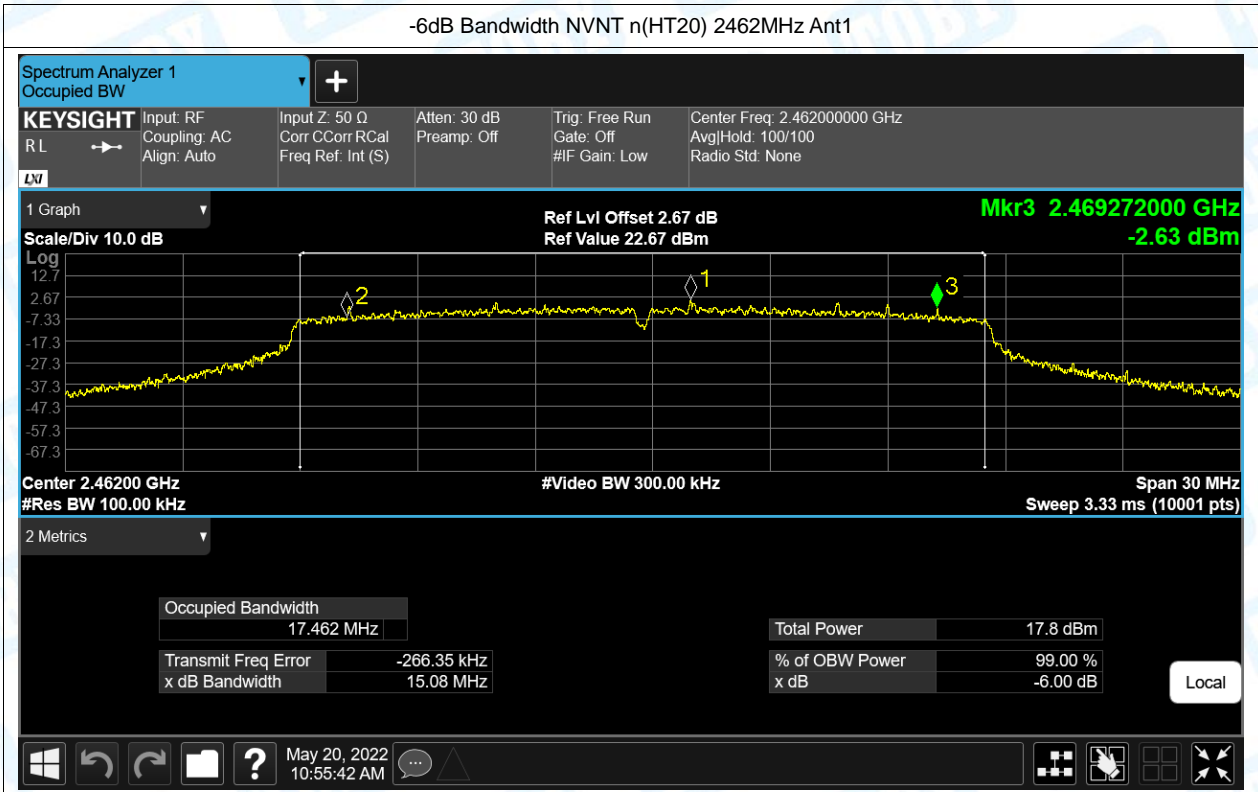


-6dB Bandwidth NVNT n(HT20) 2412MHz Ant1



-6dB Bandwidth NVNT n(HT20) 2437MHz Ant1



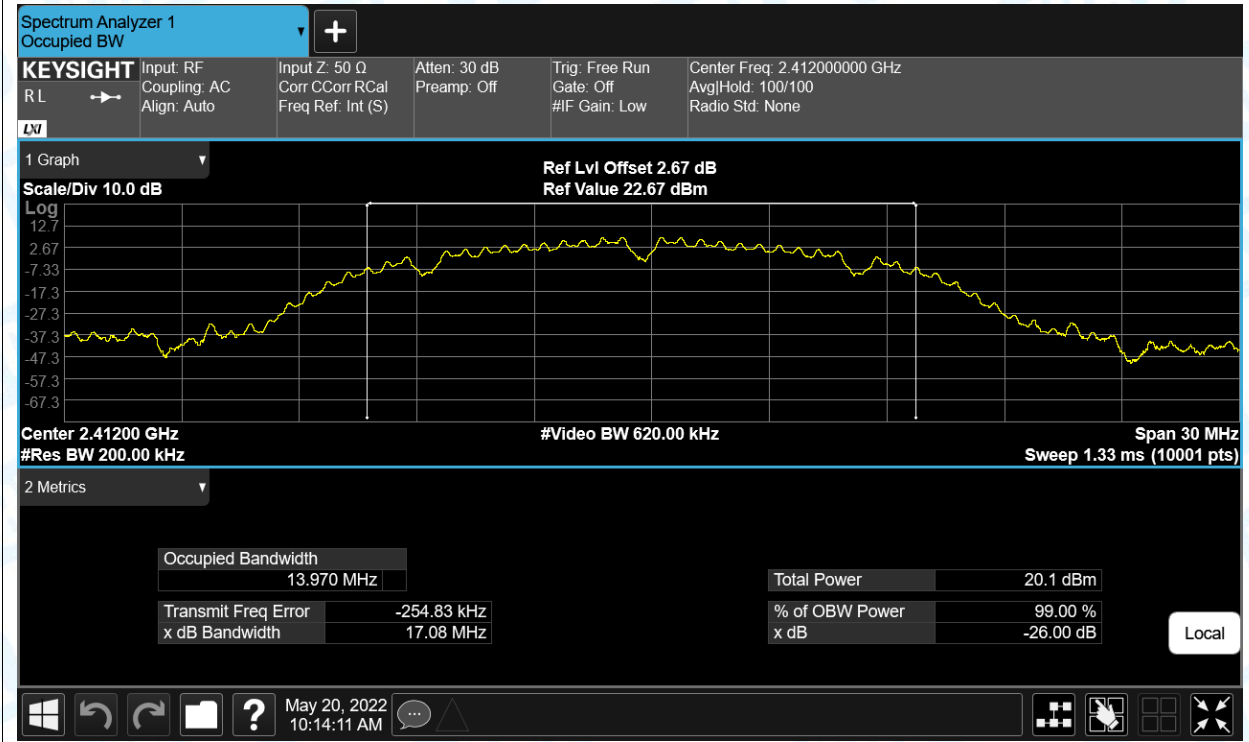


4. Occupied Channel Bandwidth

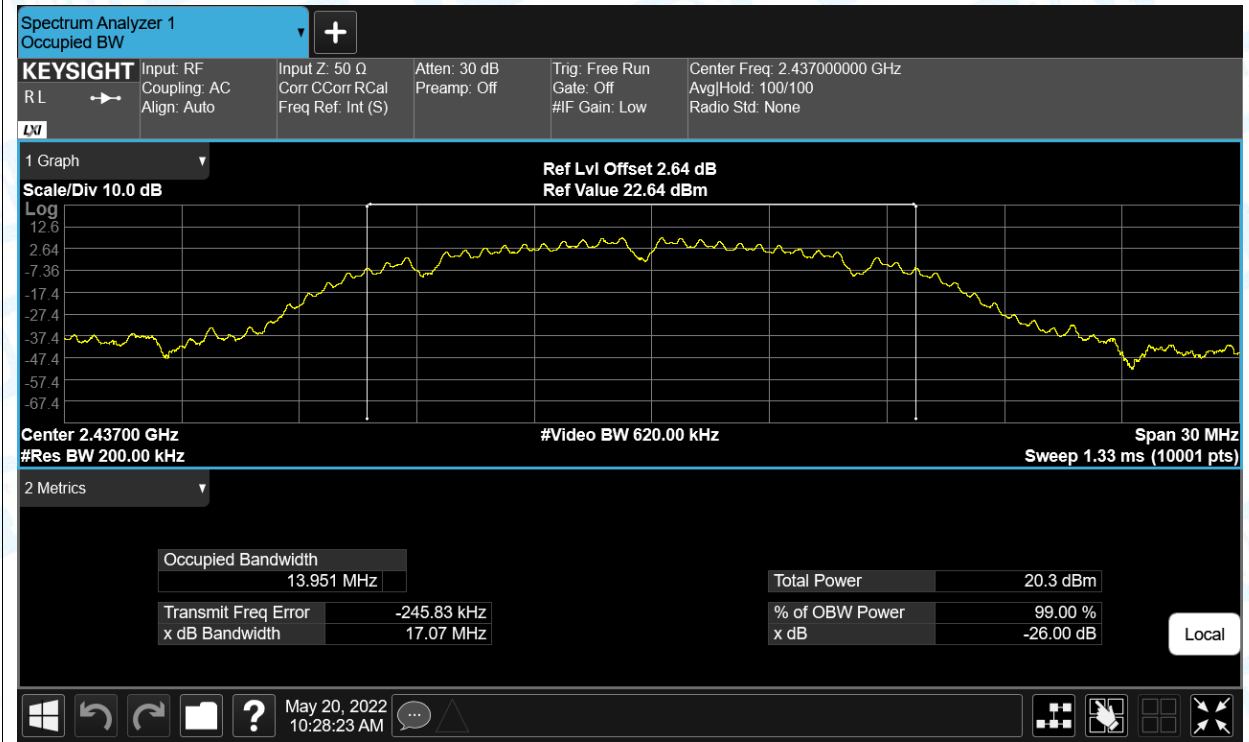
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	b	2412	Ant1	13.97
NVNT	b	2437	Ant1	13.951
NVNT	b	2462	Ant1	13.959
NVNT	g	2412	Ant1	16.316
NVNT	g	2437	Ant1	16.284
NVNT	g	2462	Ant1	16.275
NVNT	n(HT20)	2412	Ant1	17.46
NVNT	n(HT20)	2437	Ant1	17.429
NVNT	n(HT20)	2462	Ant1	17.442

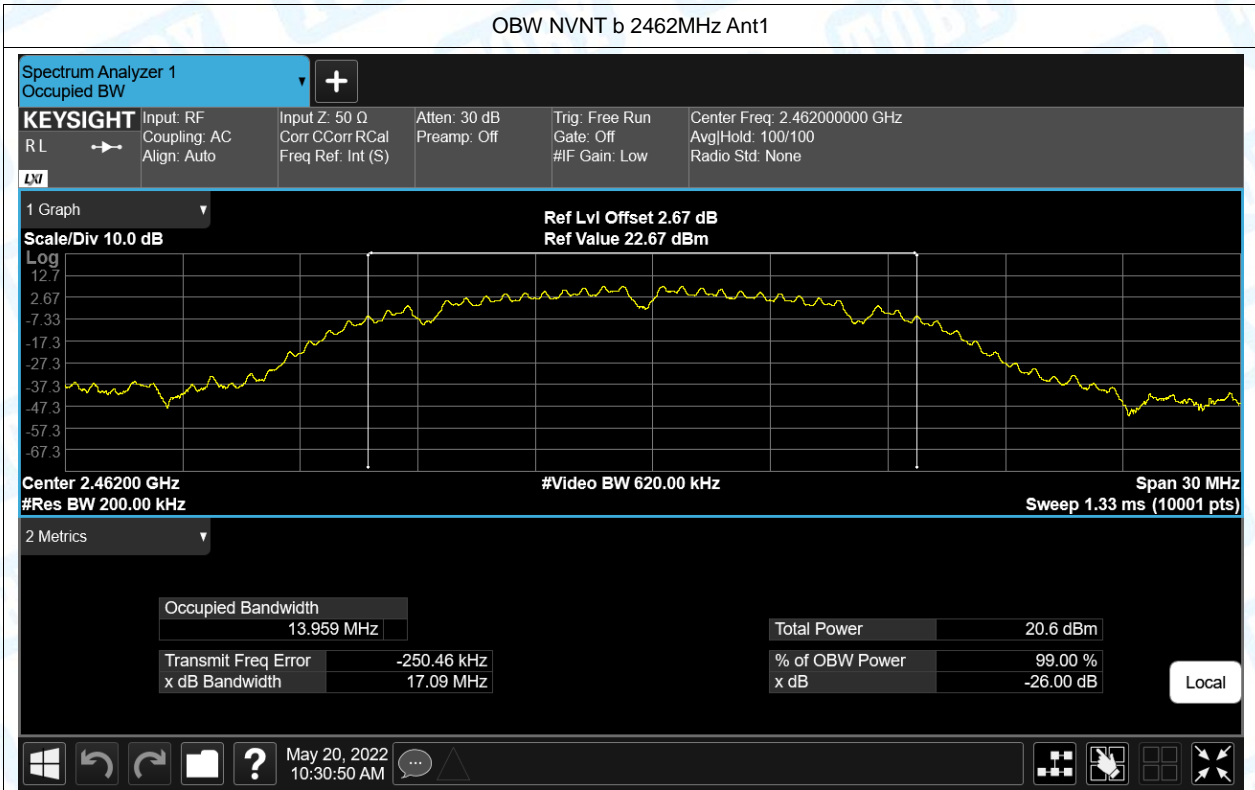
Test Graphs

OBW NVNT b 2412MHz Ant1

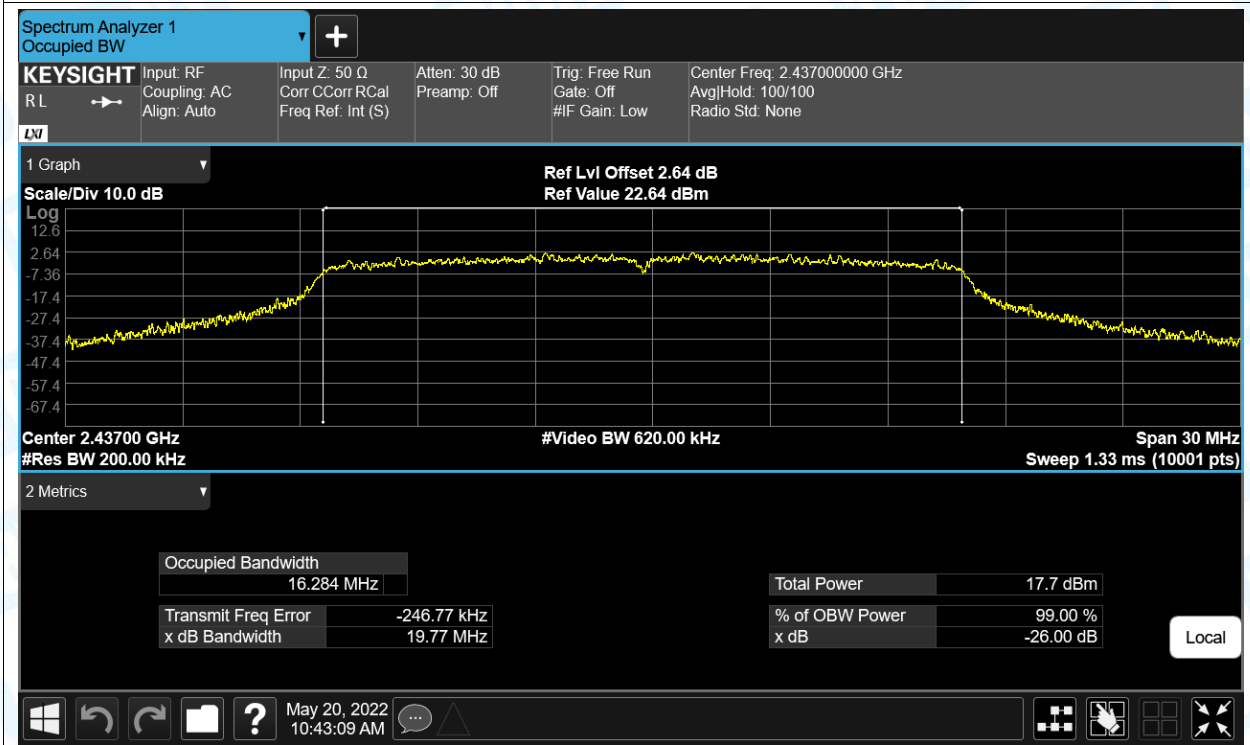


OBW NVNT b 2437MHz Ant1

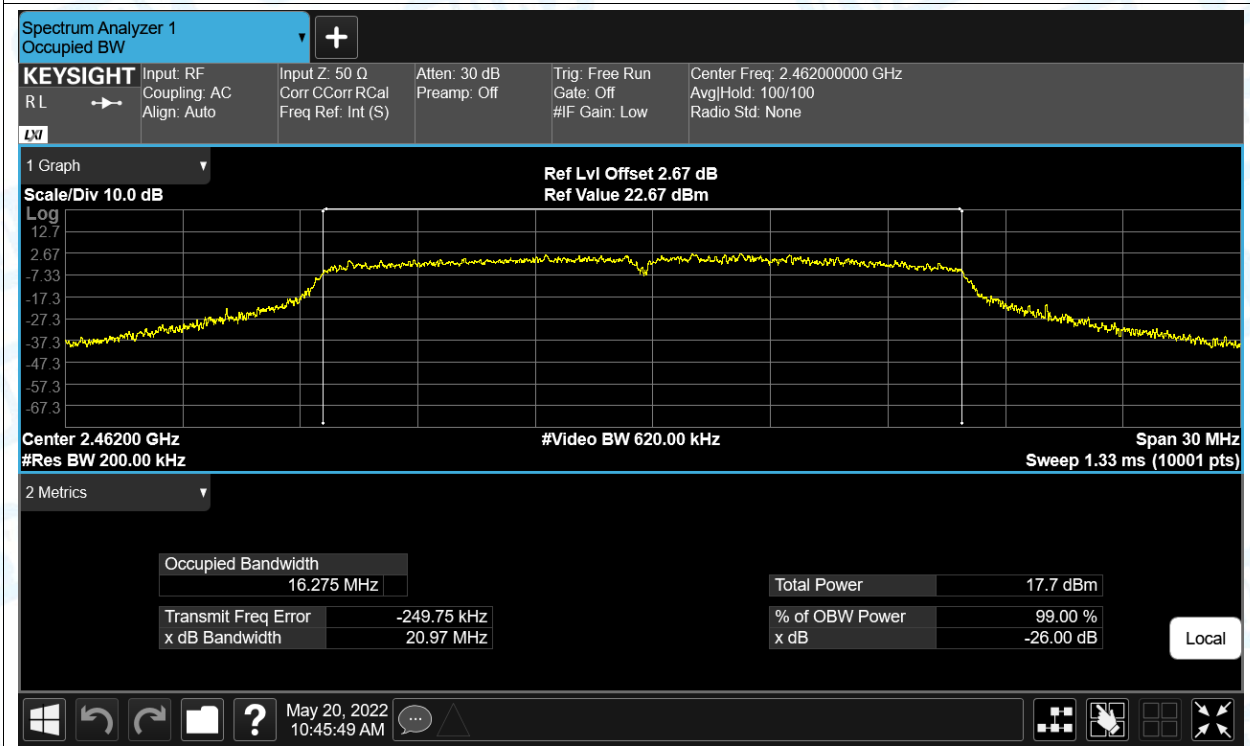


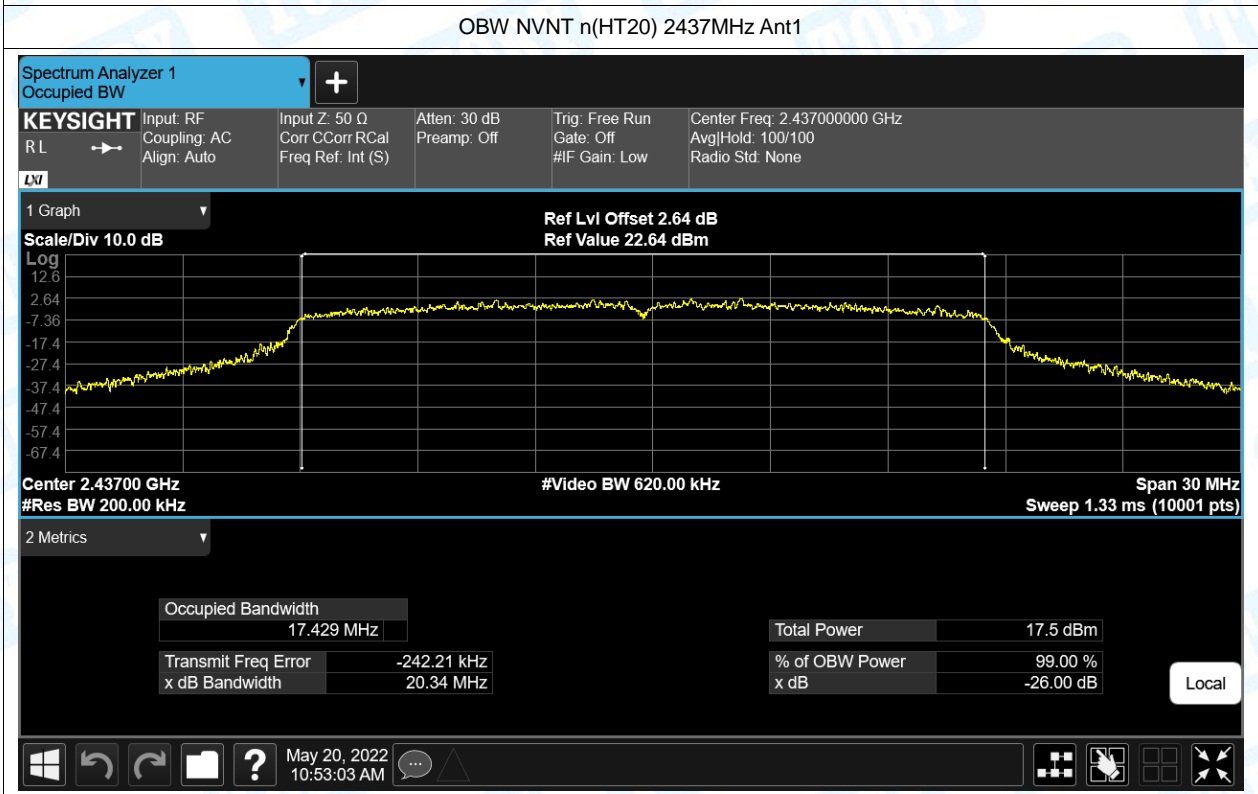
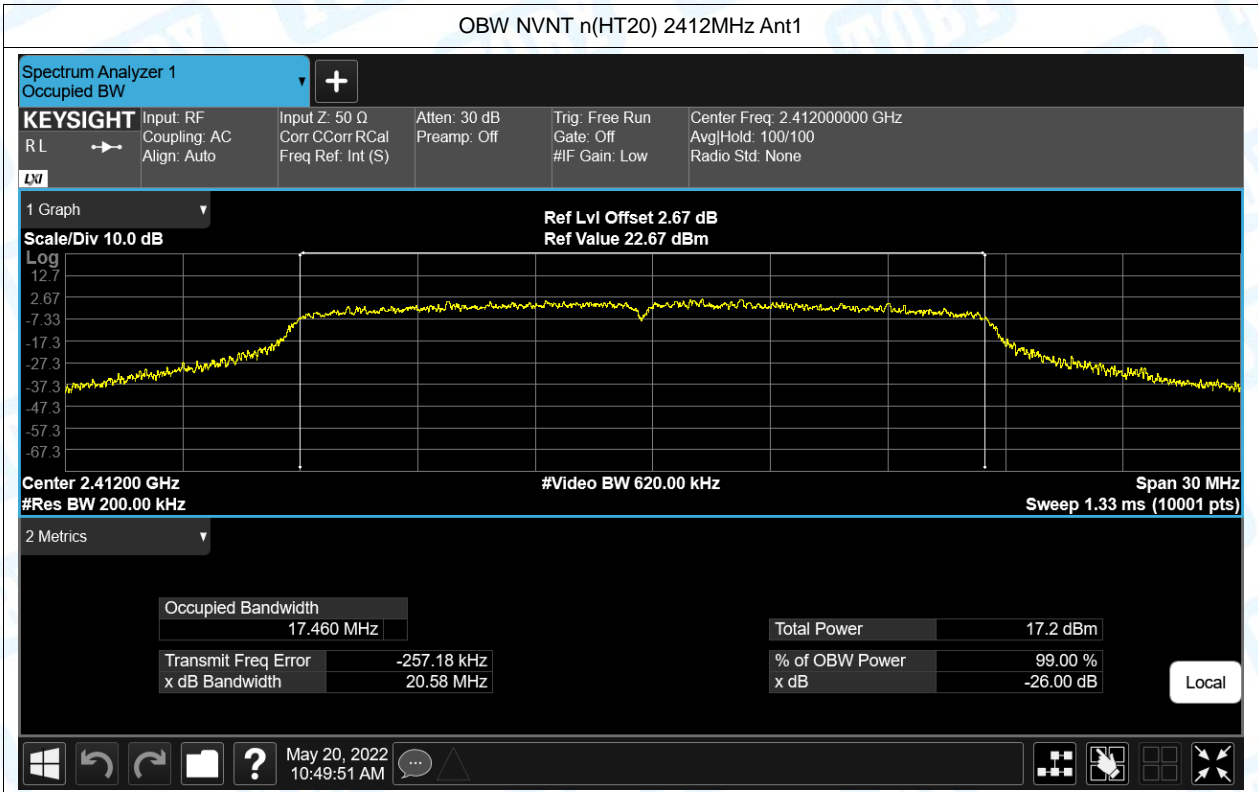


OBW NVNT g 2437MHz Ant1



OBW NVNT g 2462MHz Ant1





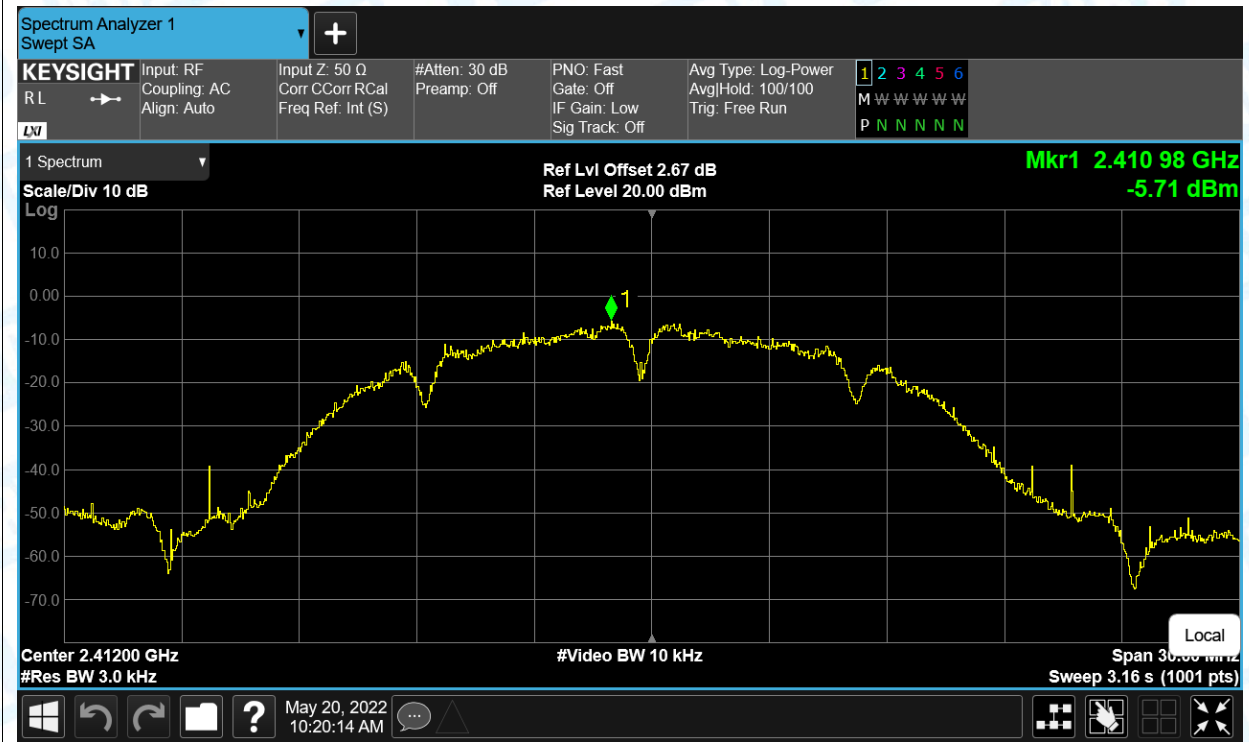


5. Maximum Power Spectral Density Level

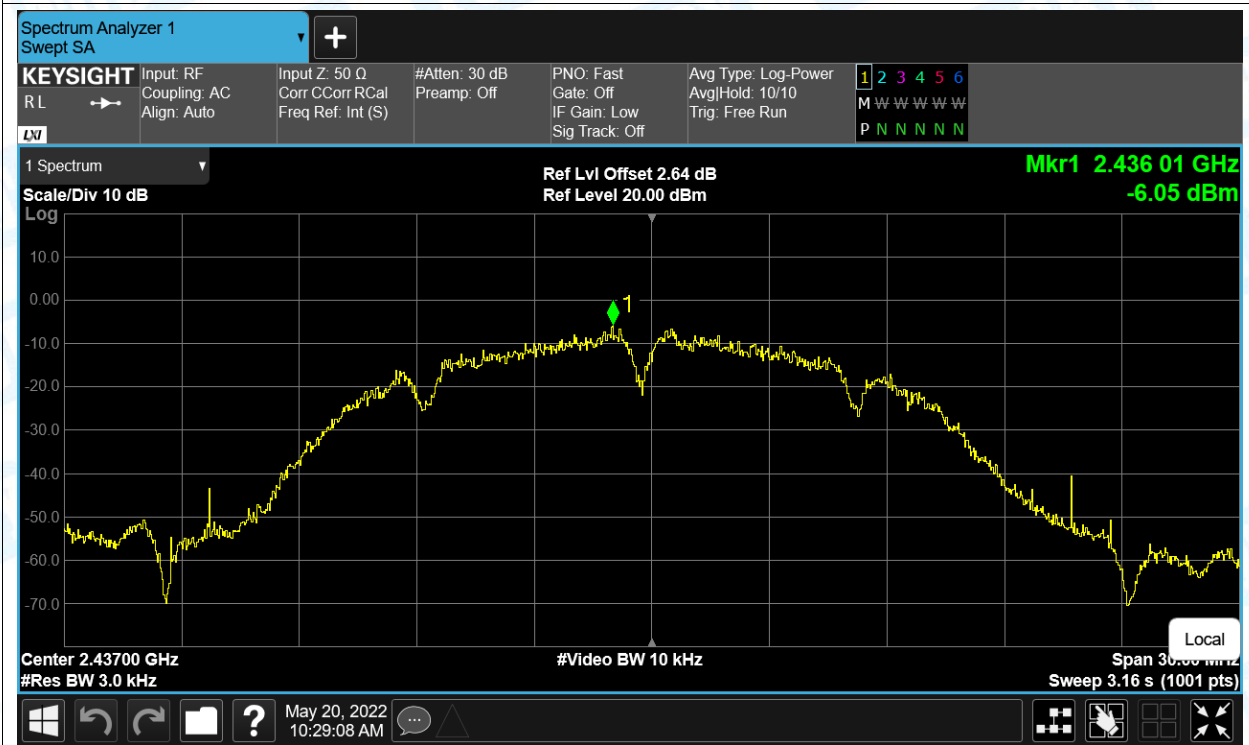
Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	-5.711	8	Pass
NVNT	b	2437	Ant1	-6.046	8	Pass
NVNT	b	2462	Ant1	-5.978	8	Pass
NVNT	g	2412	Ant1	-12.906	8	Pass
NVNT	g	2437	Ant1	-11.809	8	Pass
NVNT	g	2462	Ant1	-12.824	8	Pass
NVNT	n(HT20)	2412	Ant1	-13.098	8	Pass
NVNT	n(HT20)	2437	Ant1	-12.095	8	Pass
NVNT	n(HT20)	2462	Ant1	-12.793	8	Pass

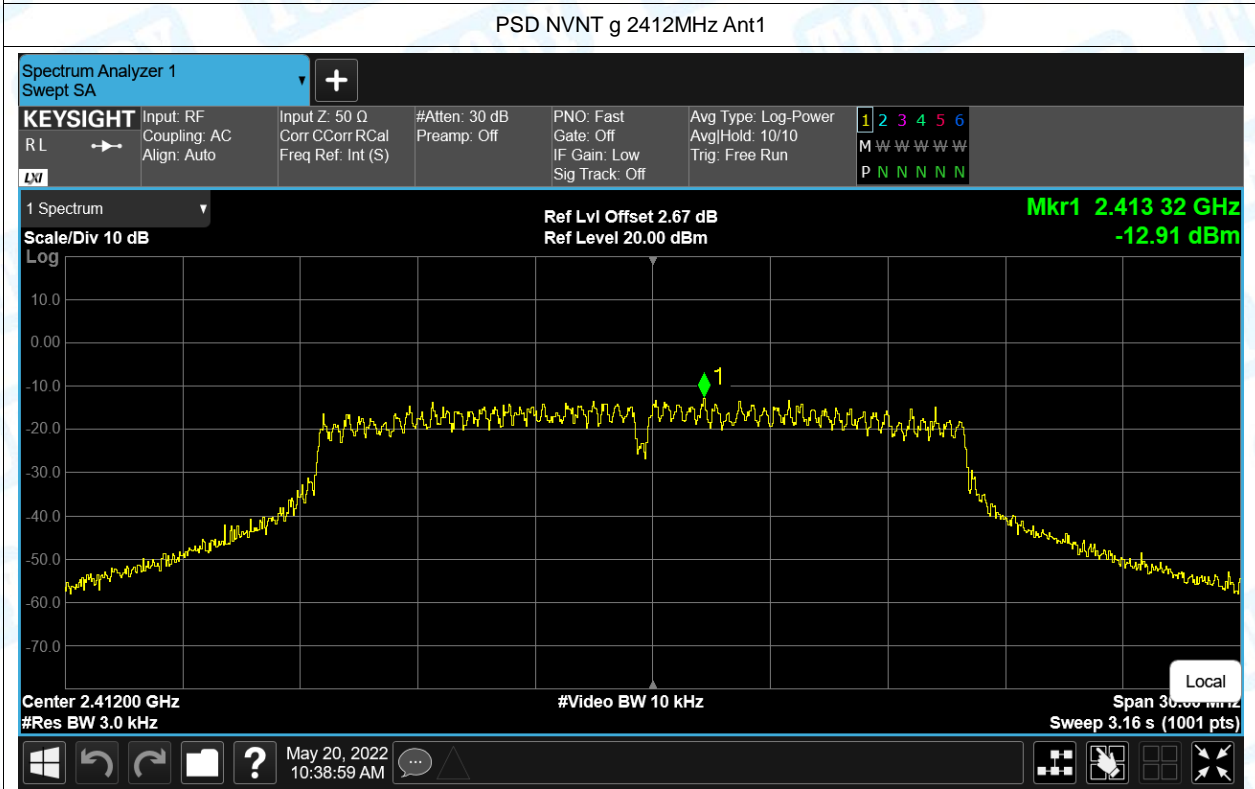
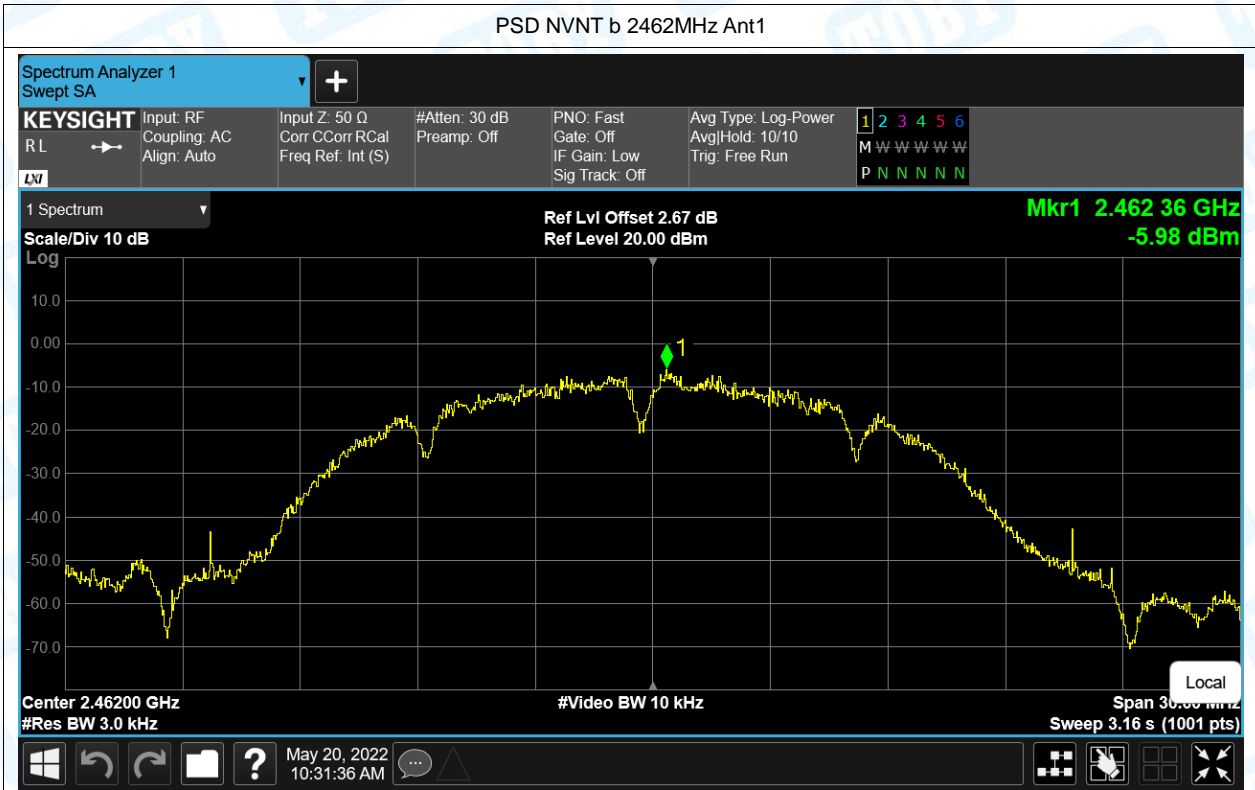
Test Graphs

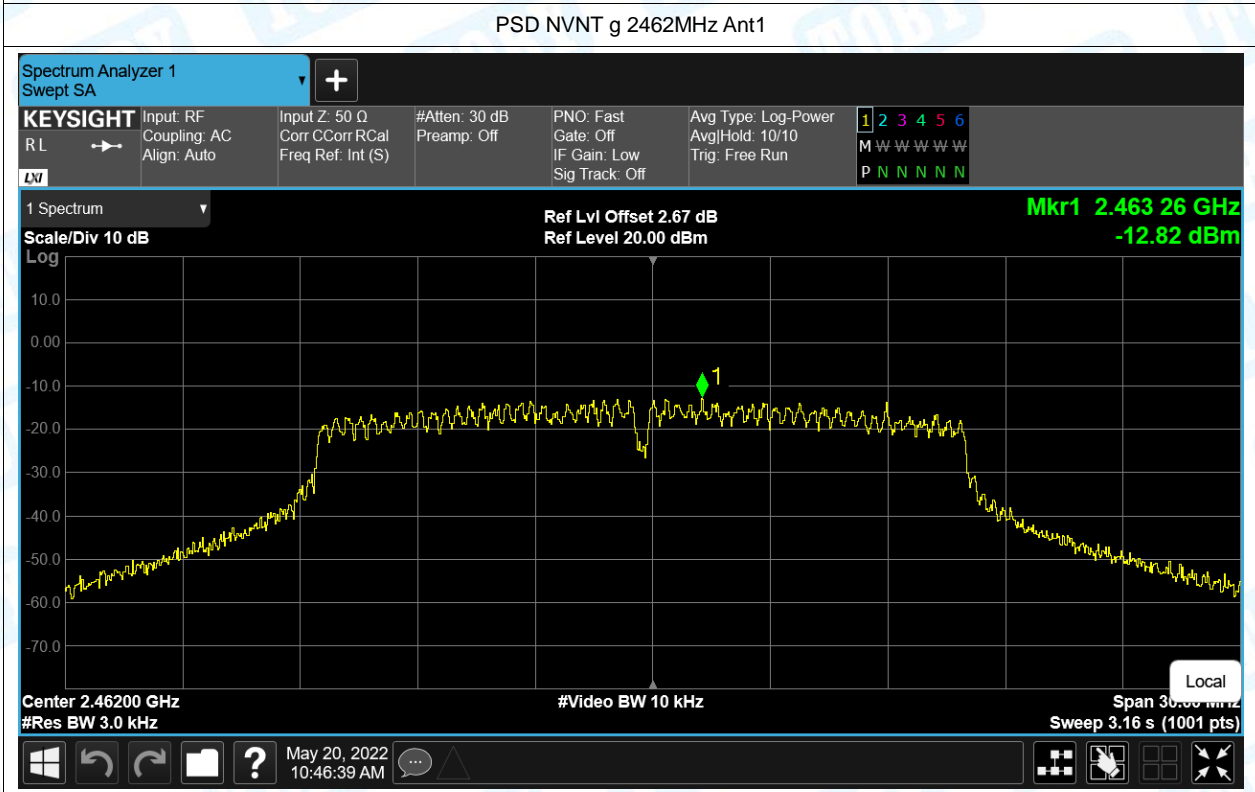
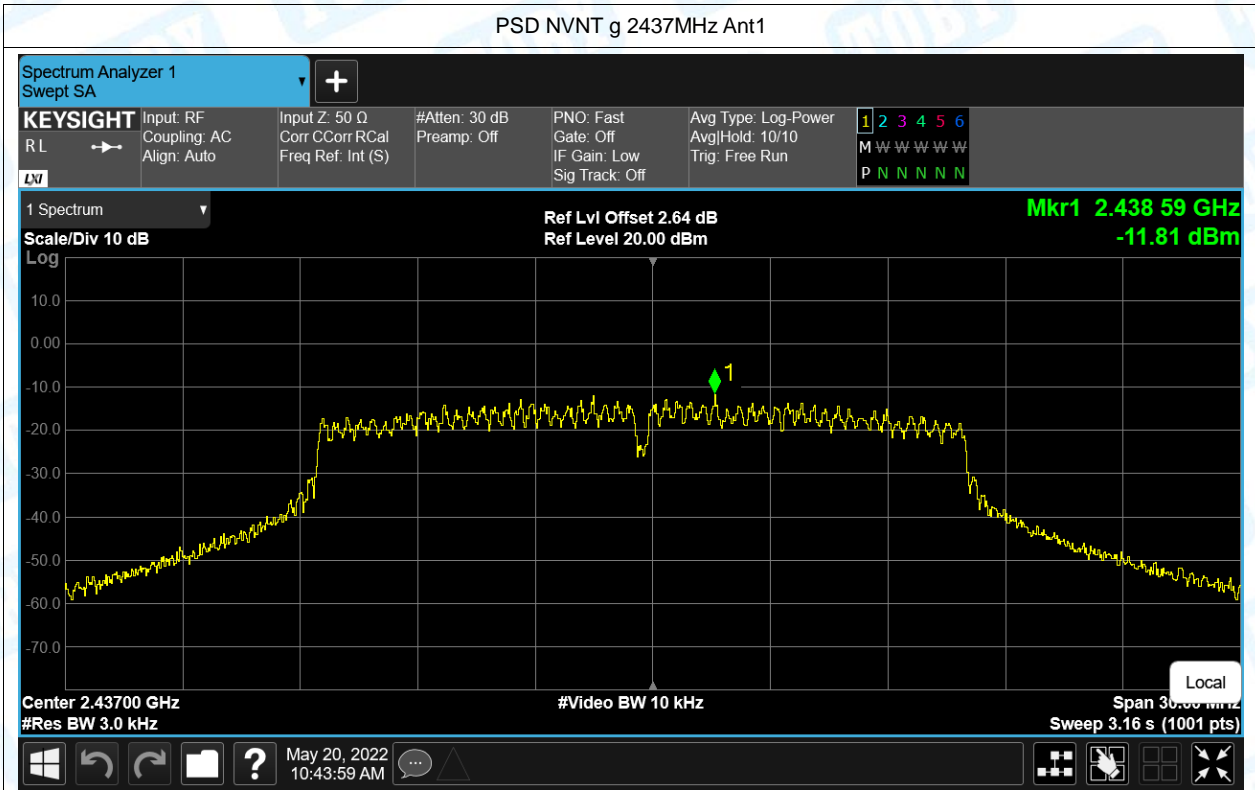
PSD NVNT b 2412MHz Ant1

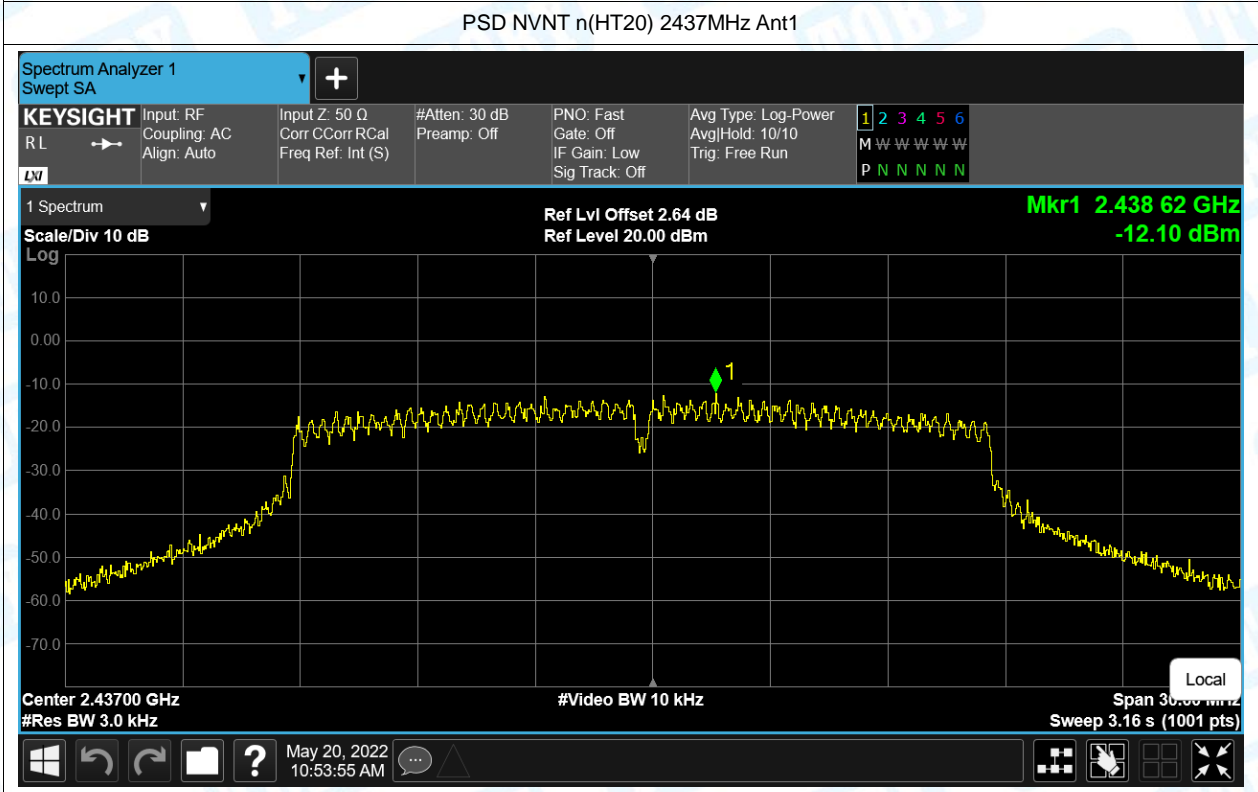
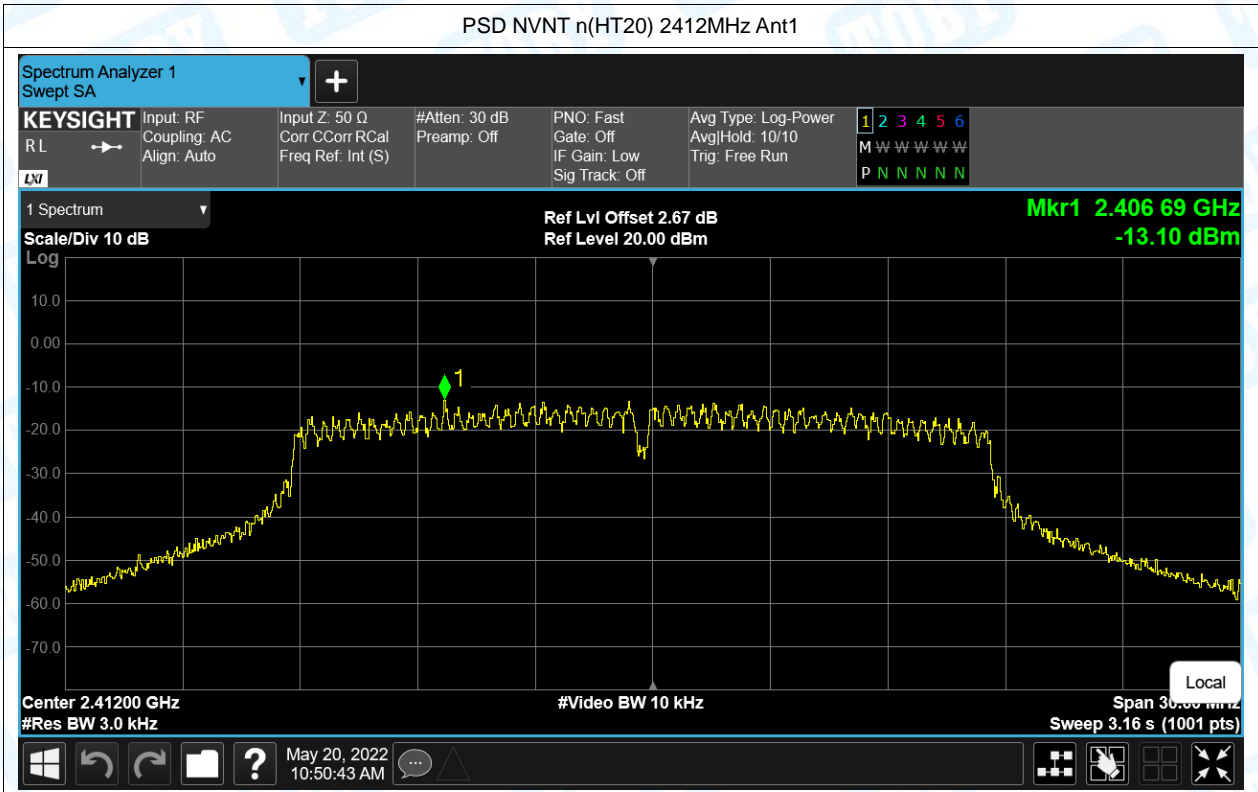


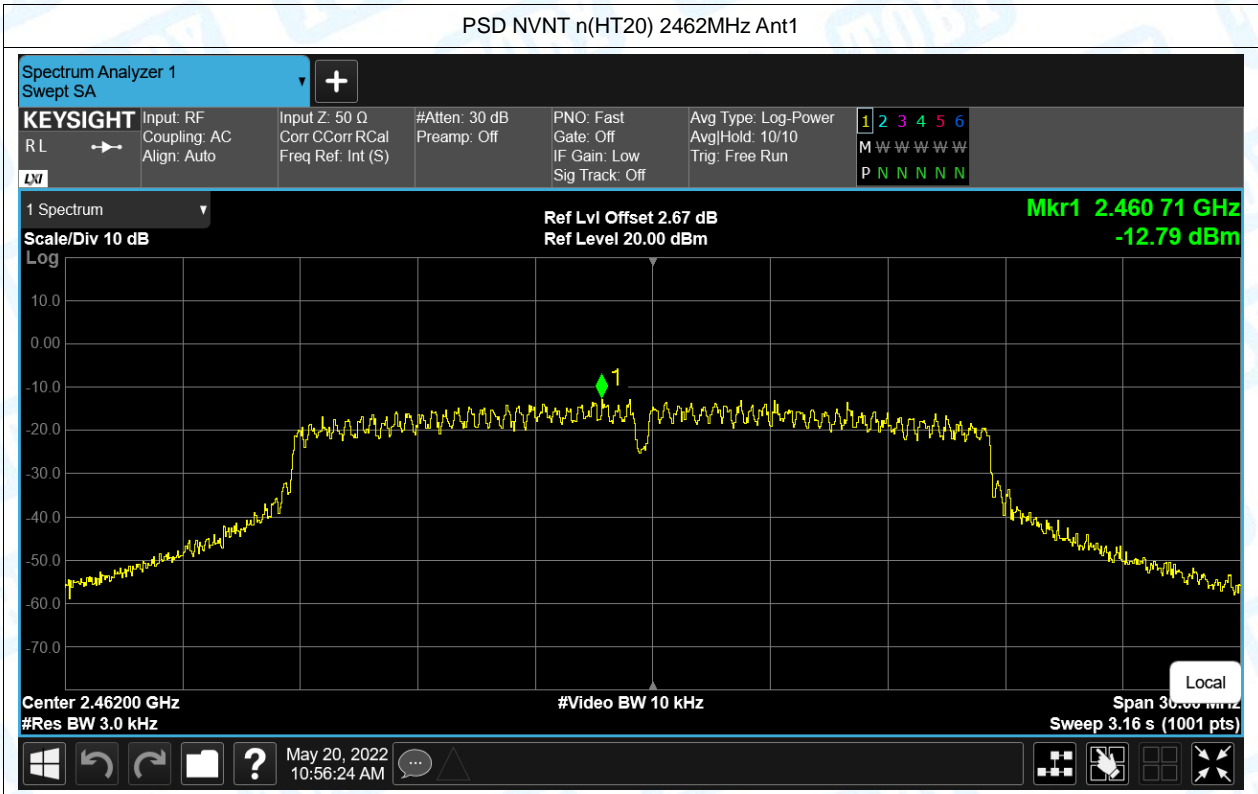
PSD NVNT b 2437MHz Ant1









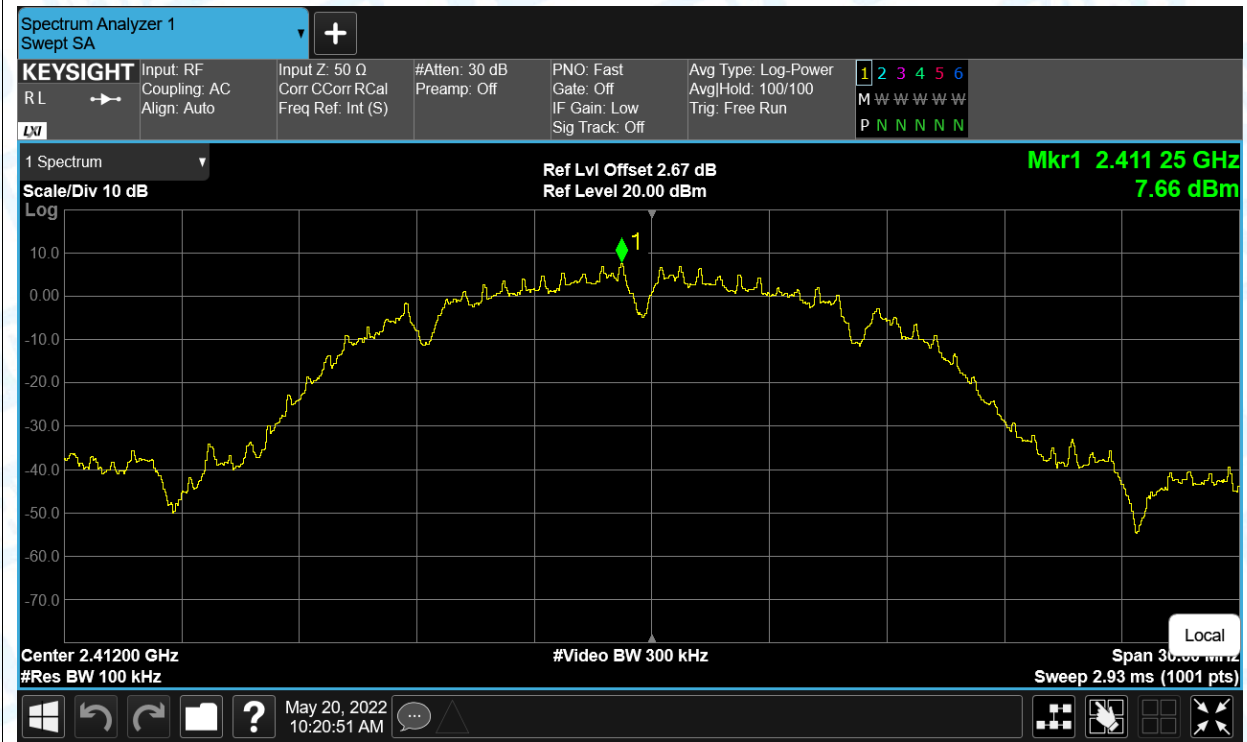


6. Band Edge

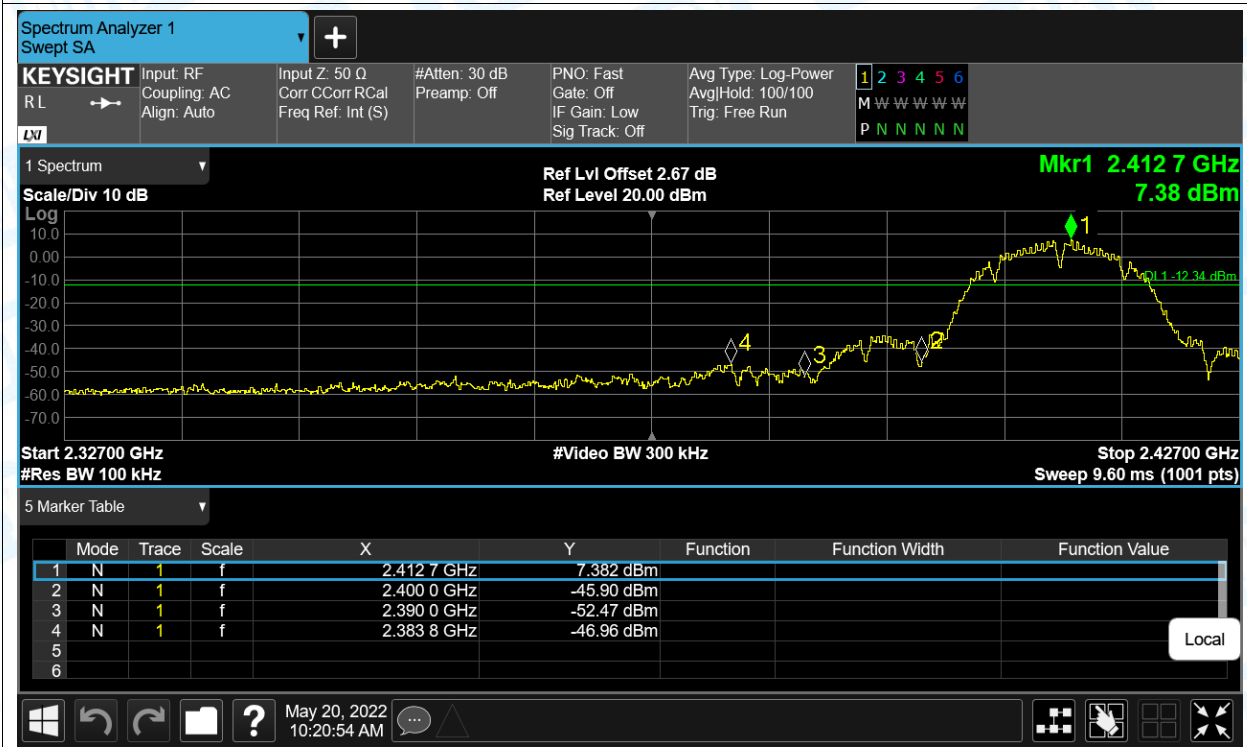
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-54.62	-20	Pass
NVNT	b	2462	Ant1	-52.68	-20	Pass
NVNT	g	2412	Ant1	-47.44	-20	Pass
NVNT	g	2462	Ant1	-49.49	-20	Pass
NVNT	n(HT20)	2412	Ant1	-47.26	-20	Pass
NVNT	n(HT20)	2462	Ant1	-47.08	-20	Pass

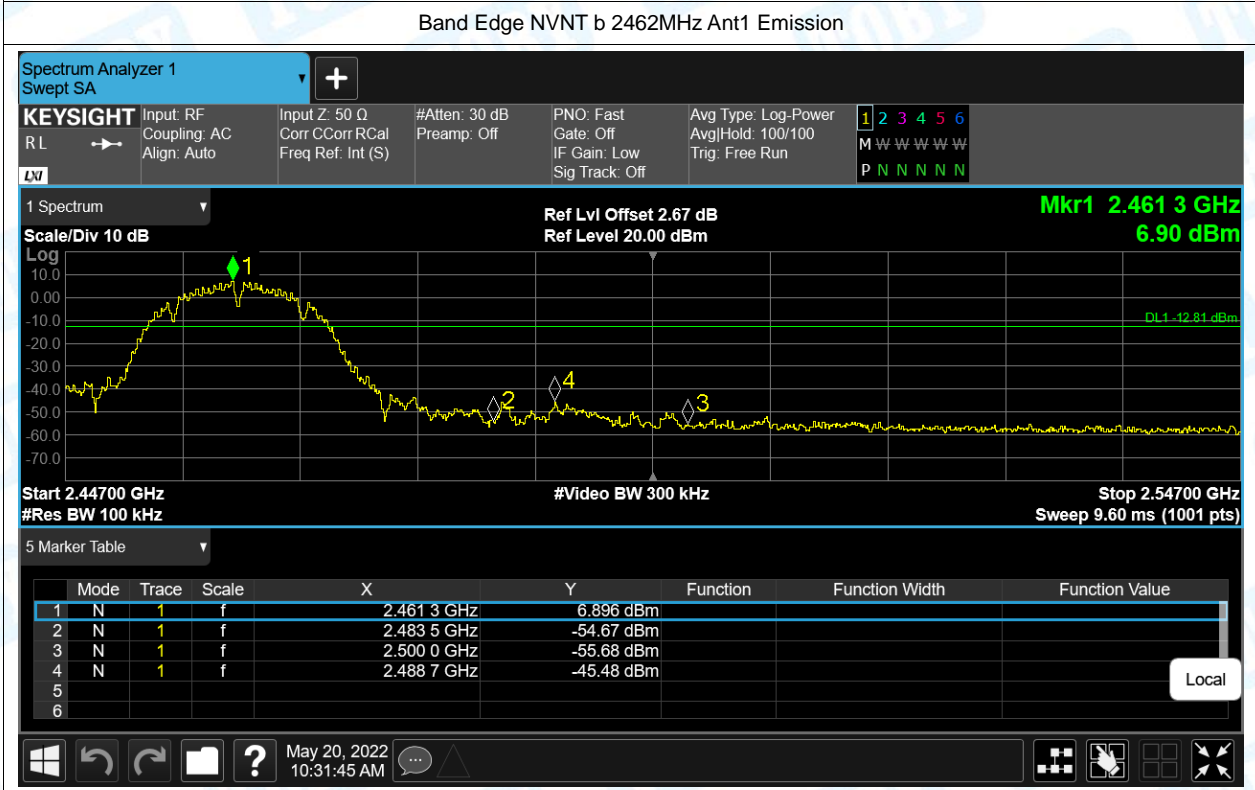
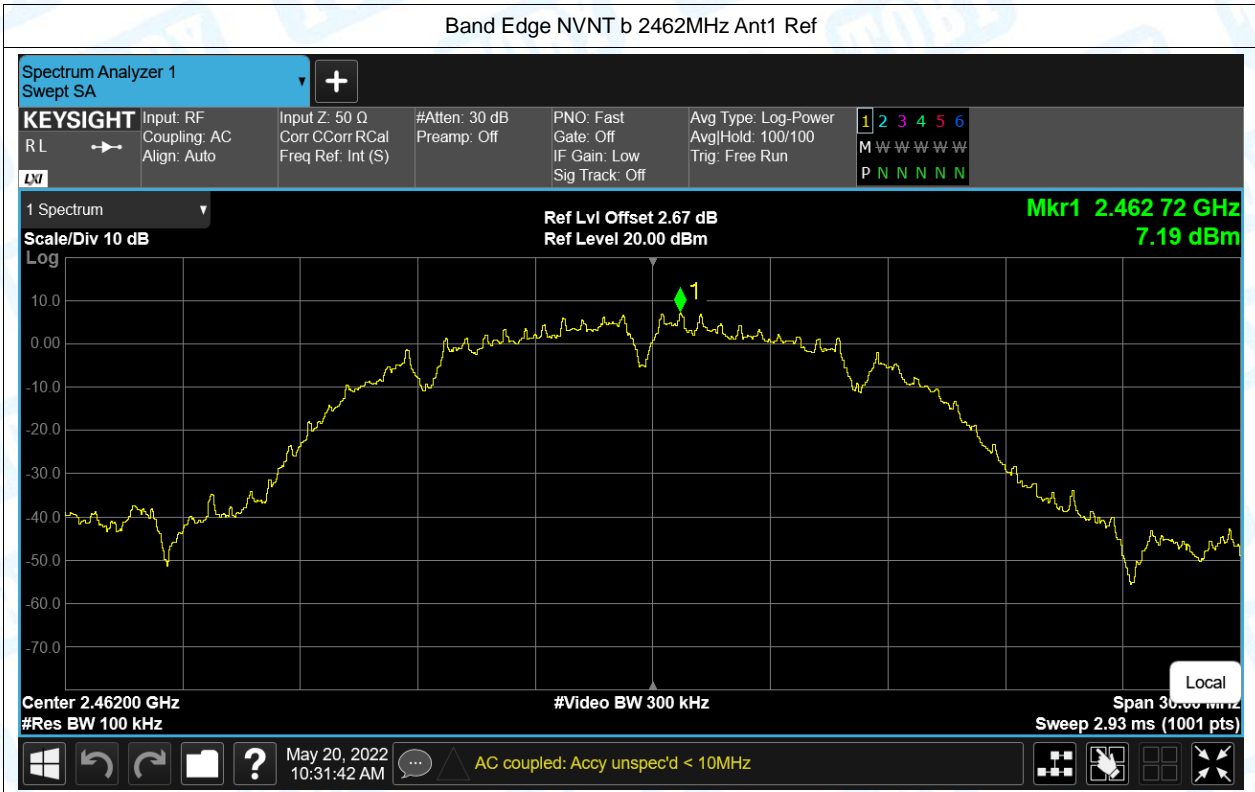
Test Graphs

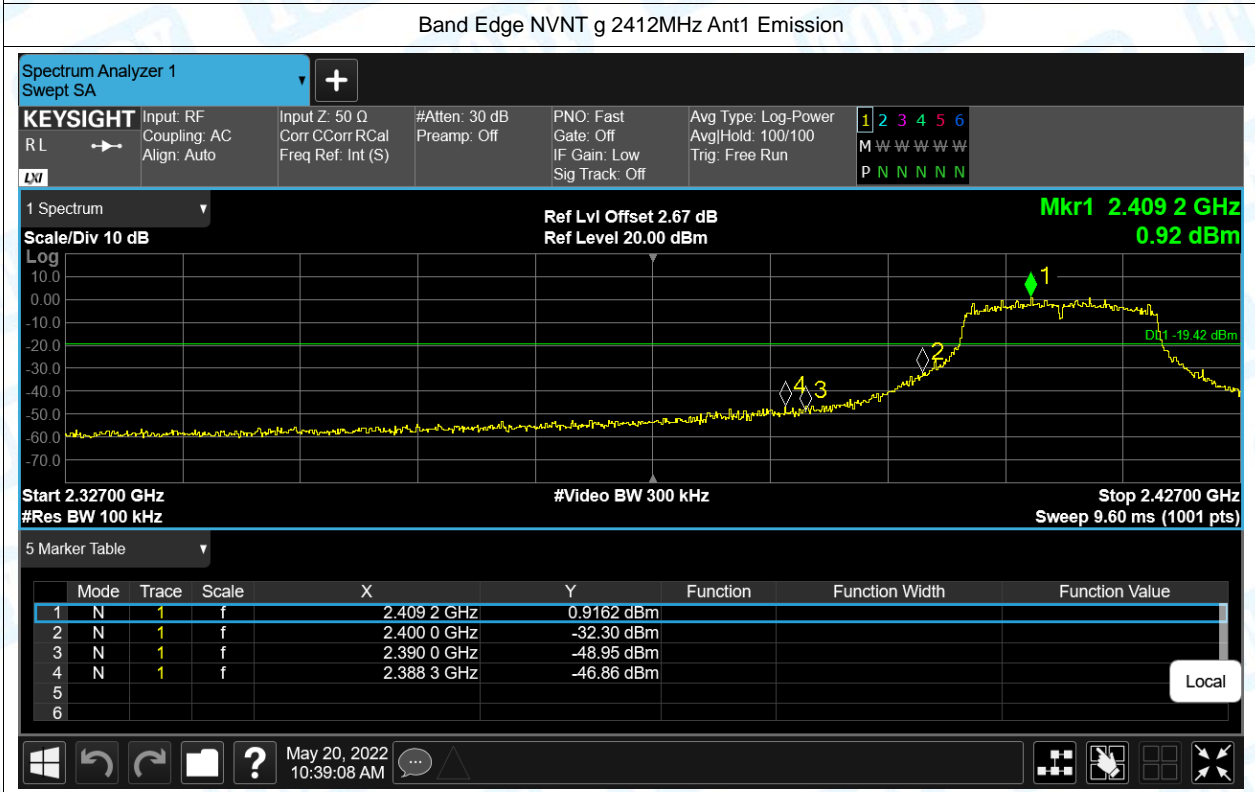
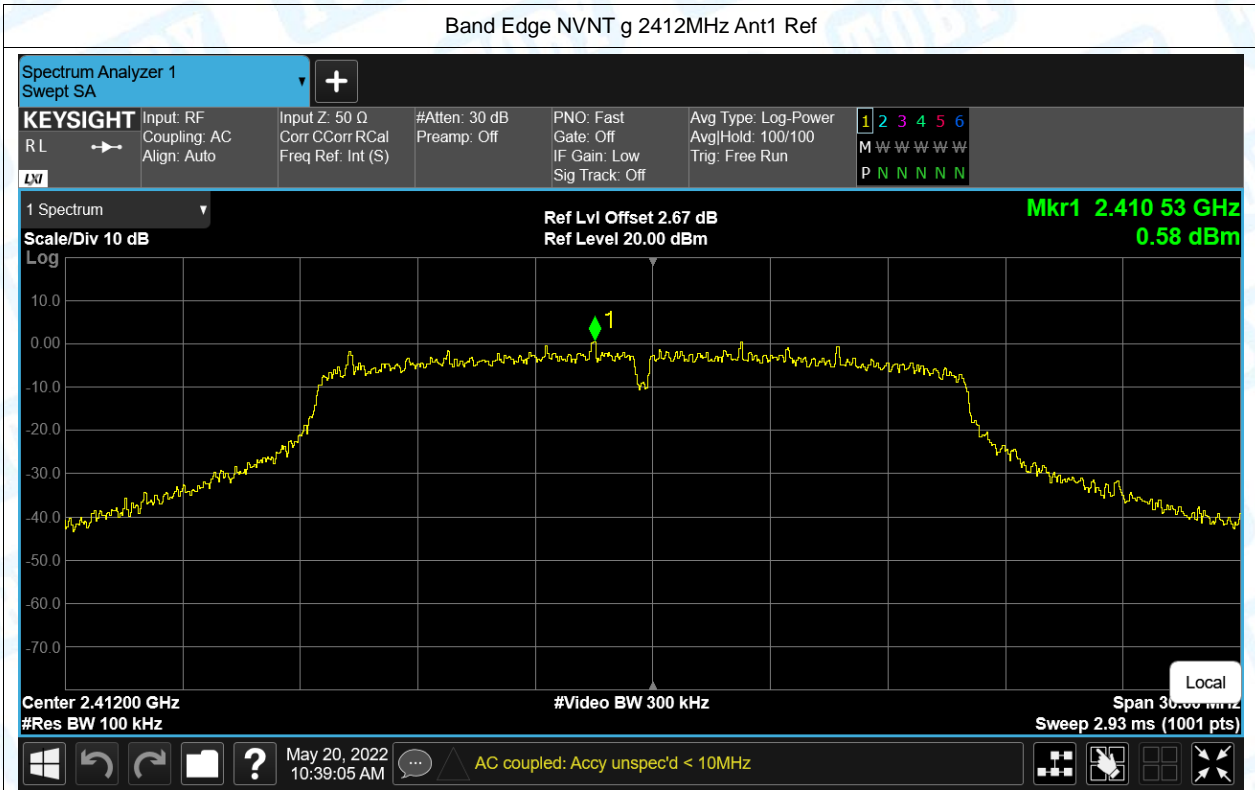
Band Edge NVNT b 2412MHz Ant1 Ref

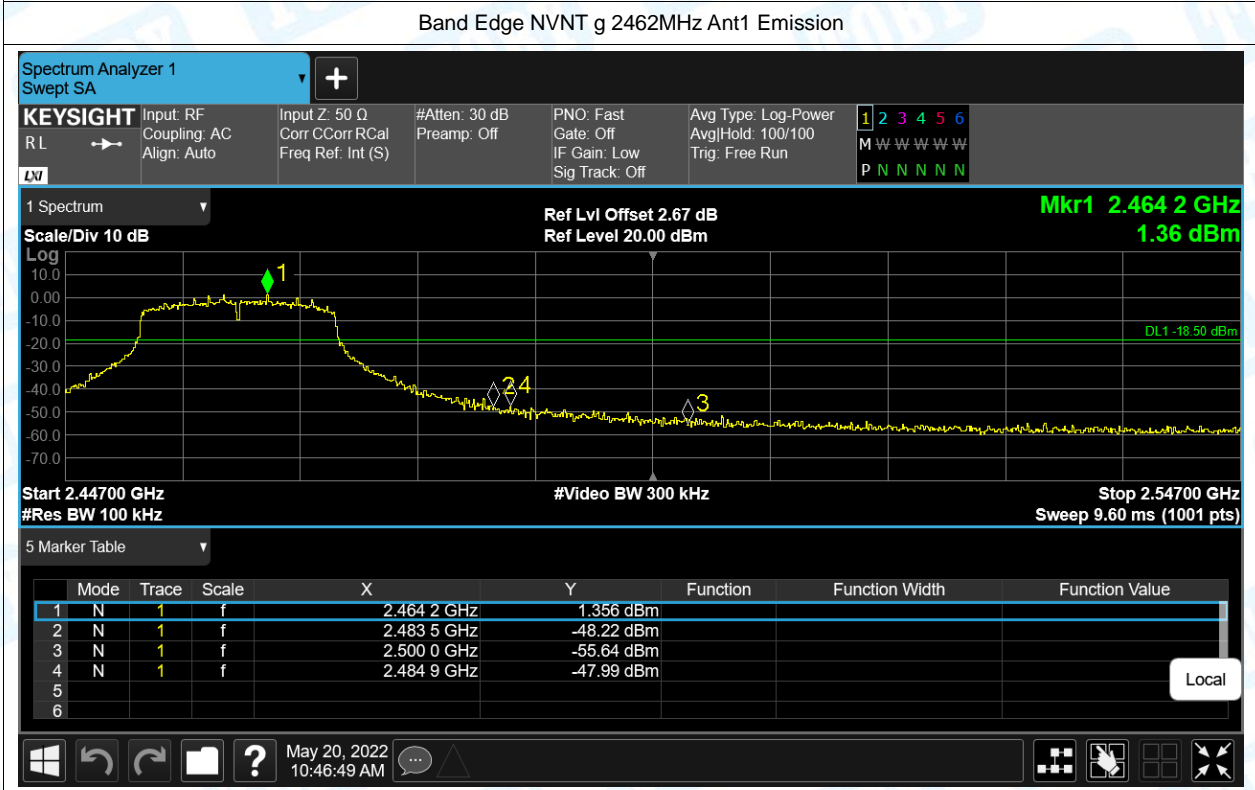
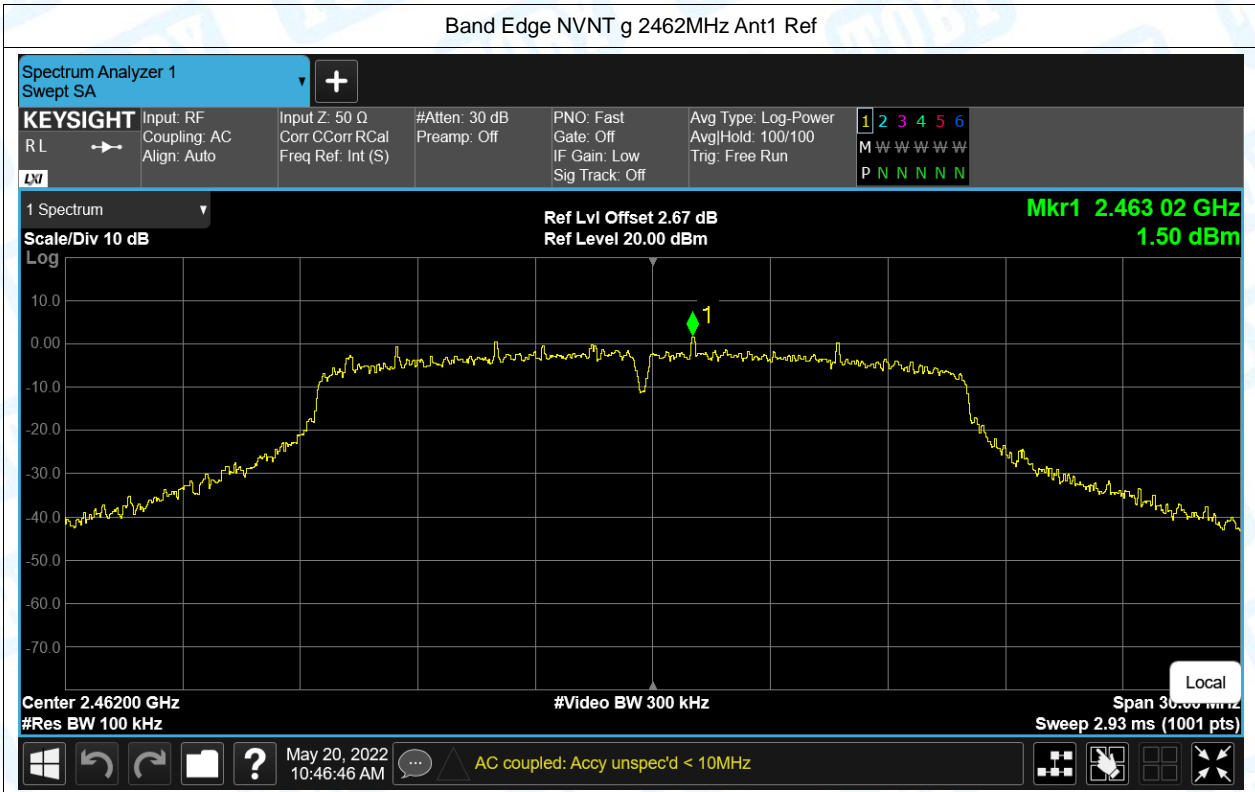


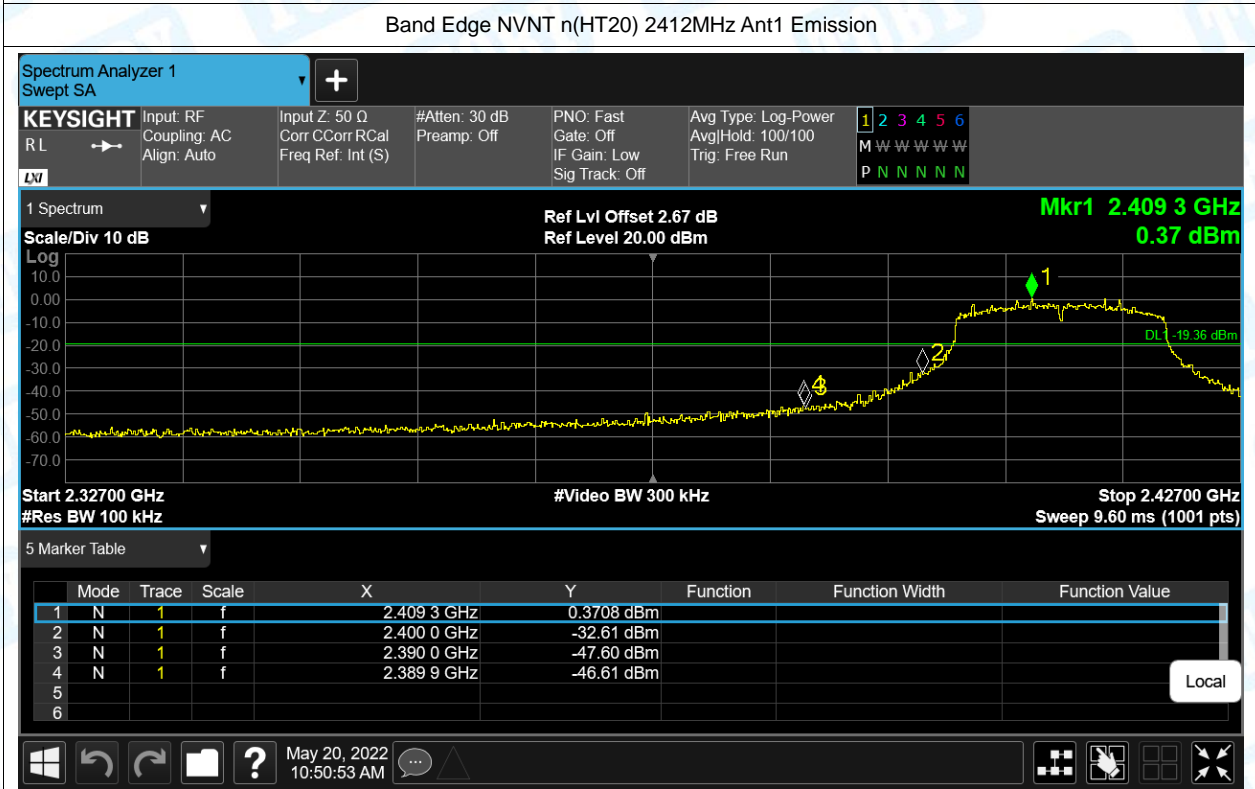
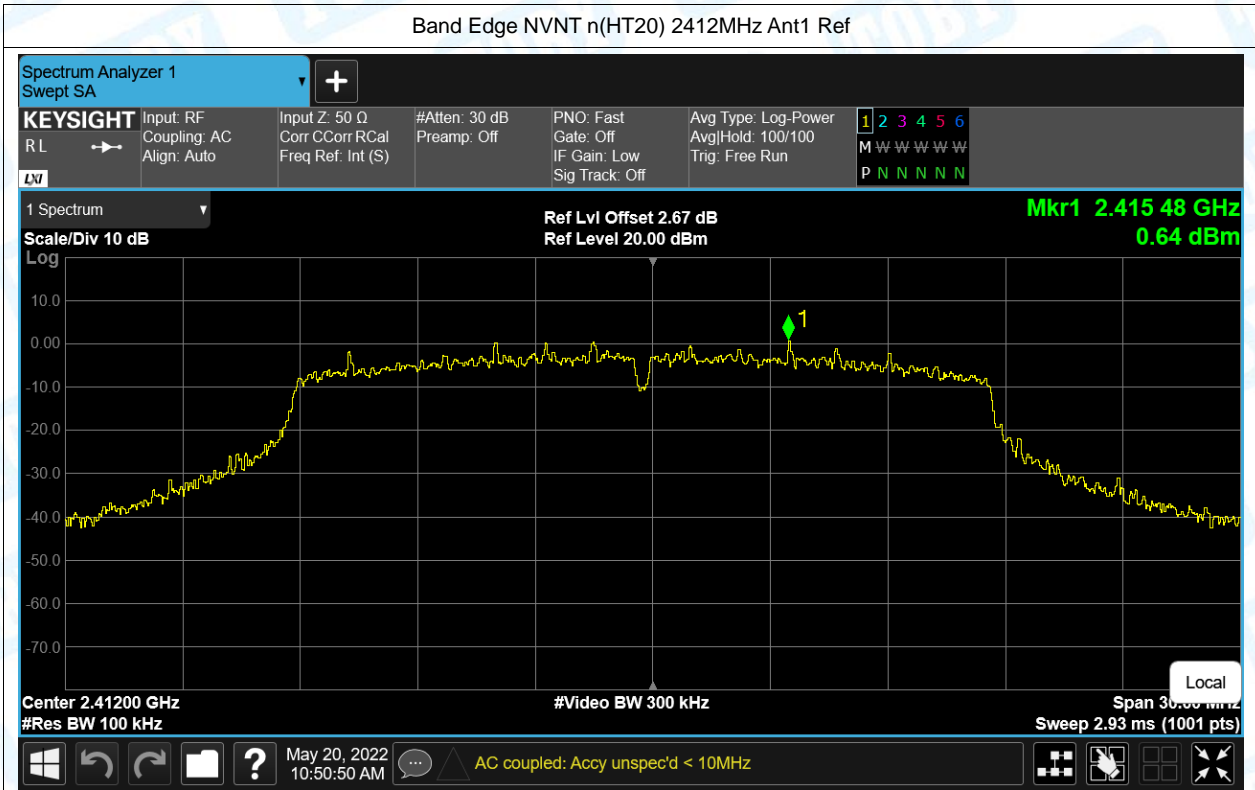
Band Edge NVNT b 2412MHz Ant1 Emission

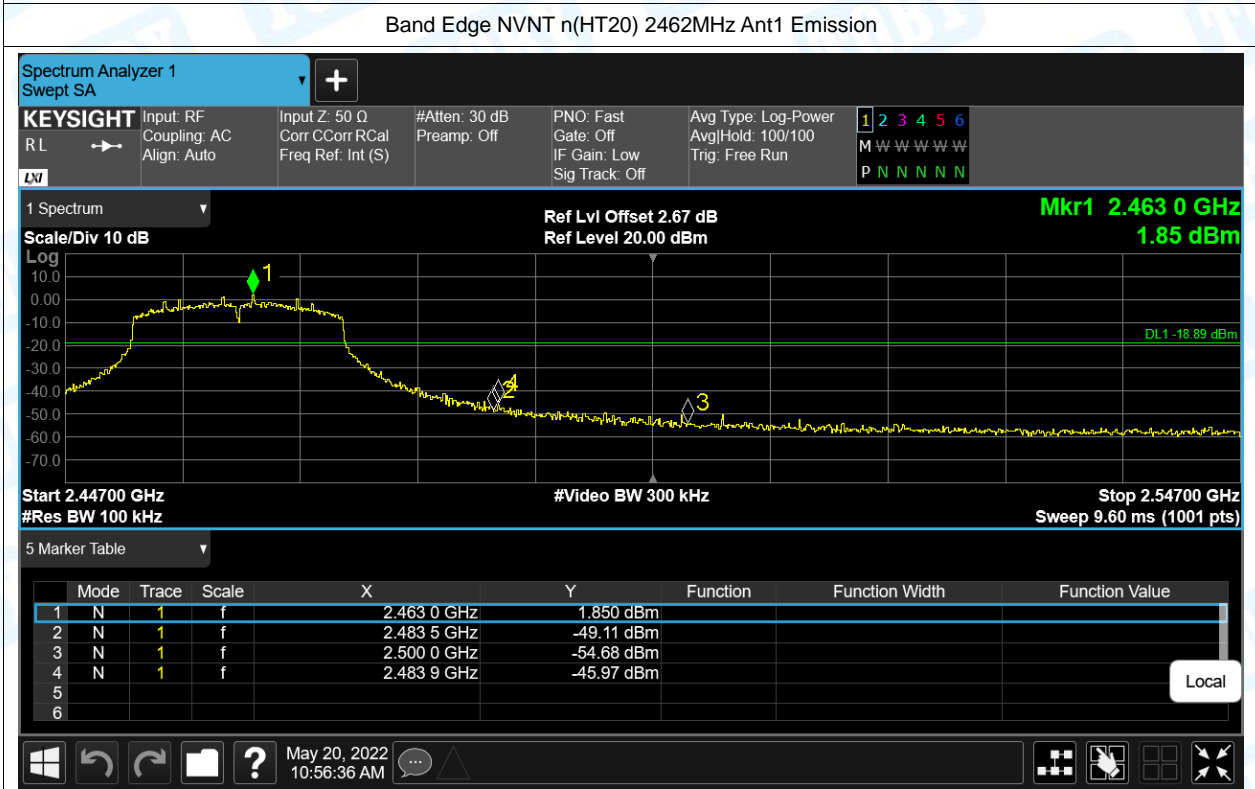
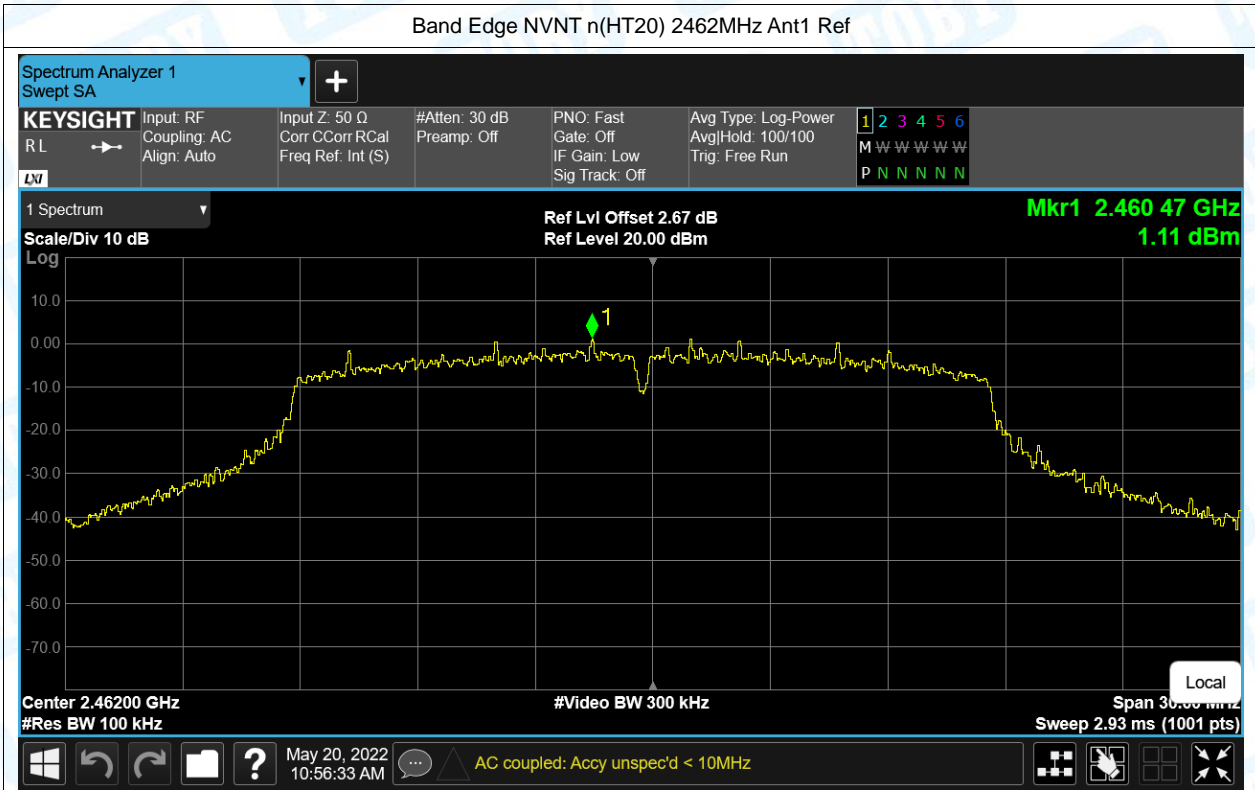










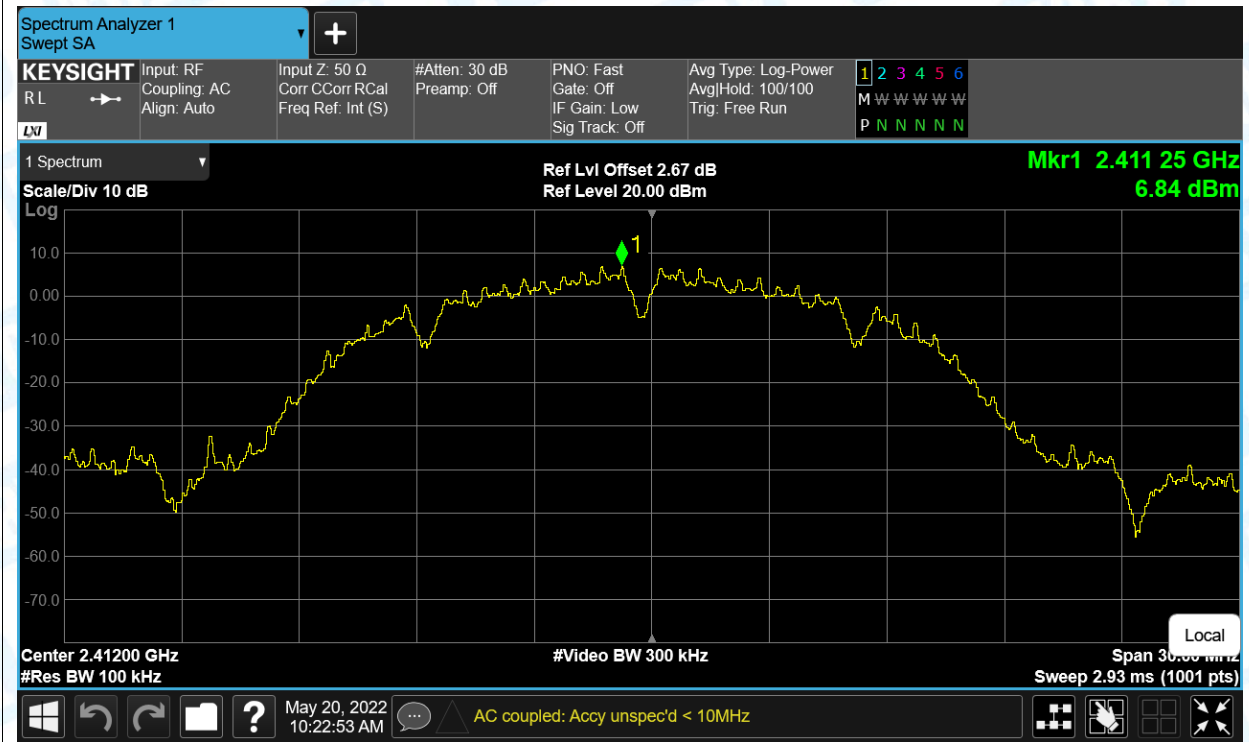


7. Conducted RF Spurious Emission

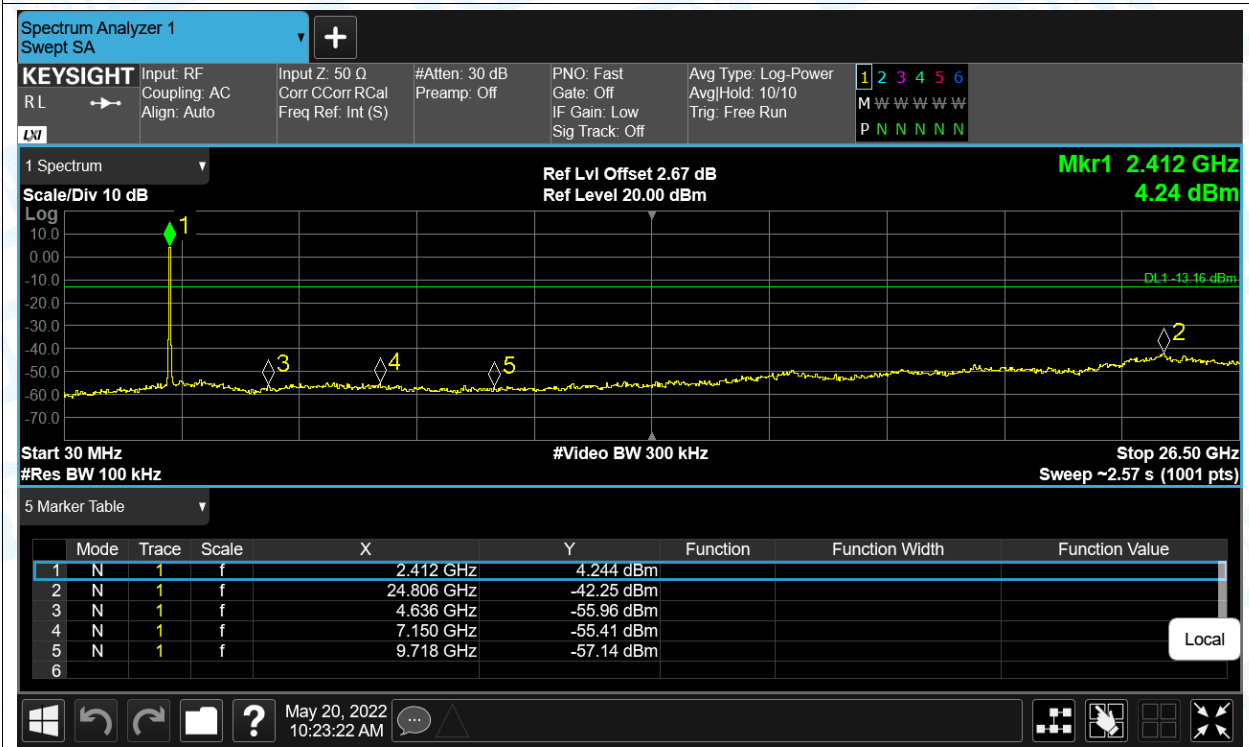
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-49.1	-20	Pass
NVNT	b	2437	Ant1	-48.36	-20	Pass
NVNT	b	2462	Ant1	-48.86	-20	Pass
NVNT	g	2412	Ant1	-42.06	-20	Pass
NVNT	g	2437	Ant1	-44.21	-20	Pass
NVNT	g	2462	Ant1	-42.2	-20	Pass
NVNT	n(HT20)	2412	Ant1	-42.64	-20	Pass
NVNT	n(HT20)	2437	Ant1	-43.65	-20	Pass
NVNT	n(HT20)	2462	Ant1	-44.84	-20	Pass

Test Graphs

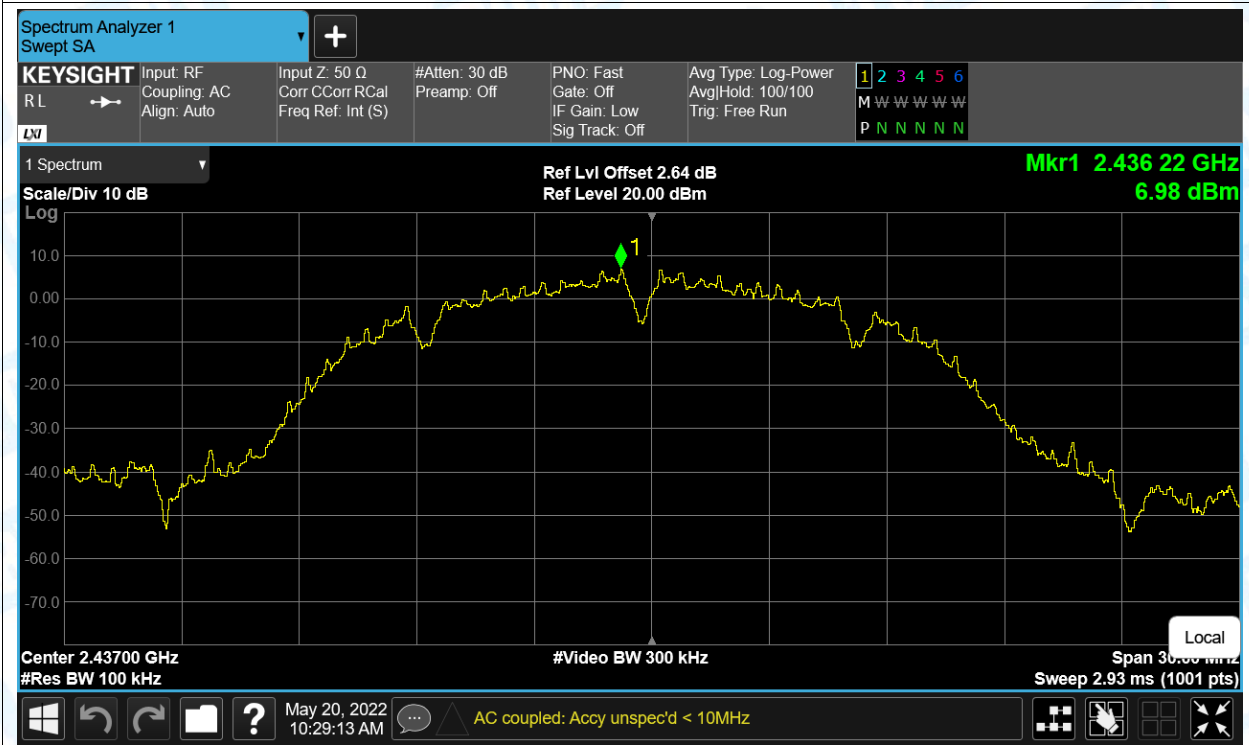
Tx. Spurious NVNT b 2412MHz Ant1 Ref



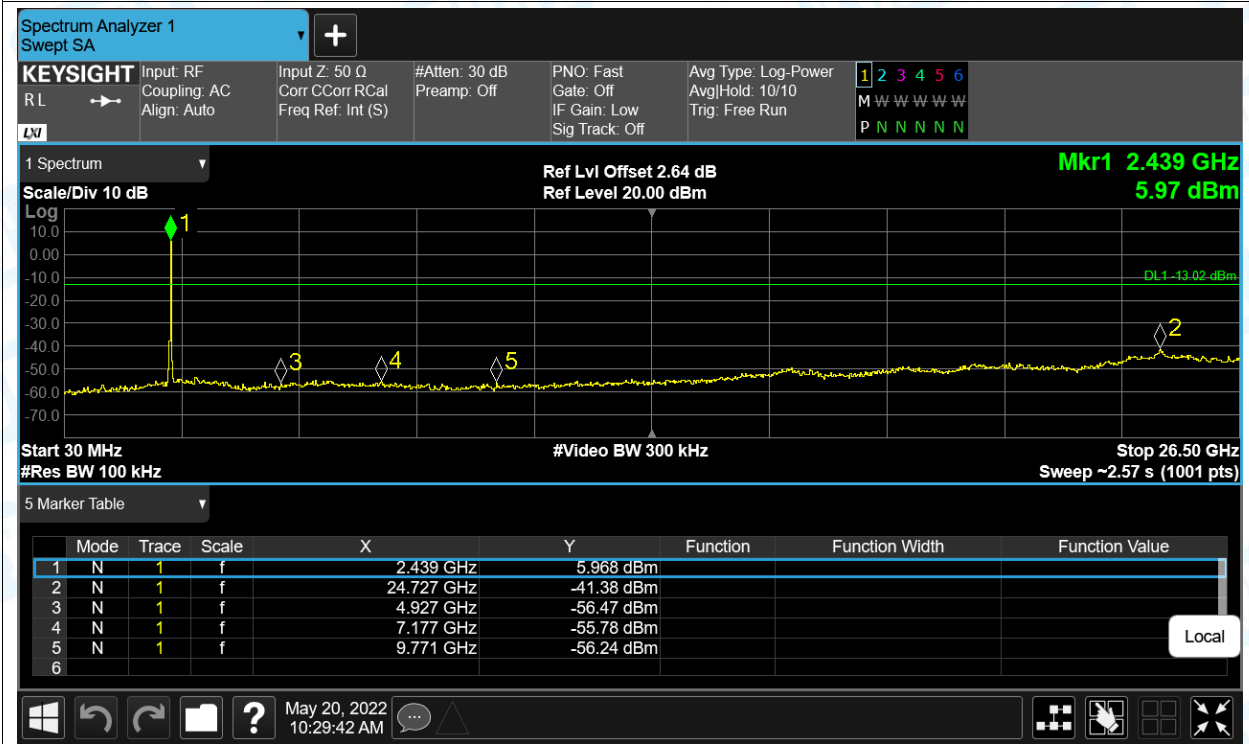
Tx. Spurious NVNT b 2412MHz Ant1 Emission



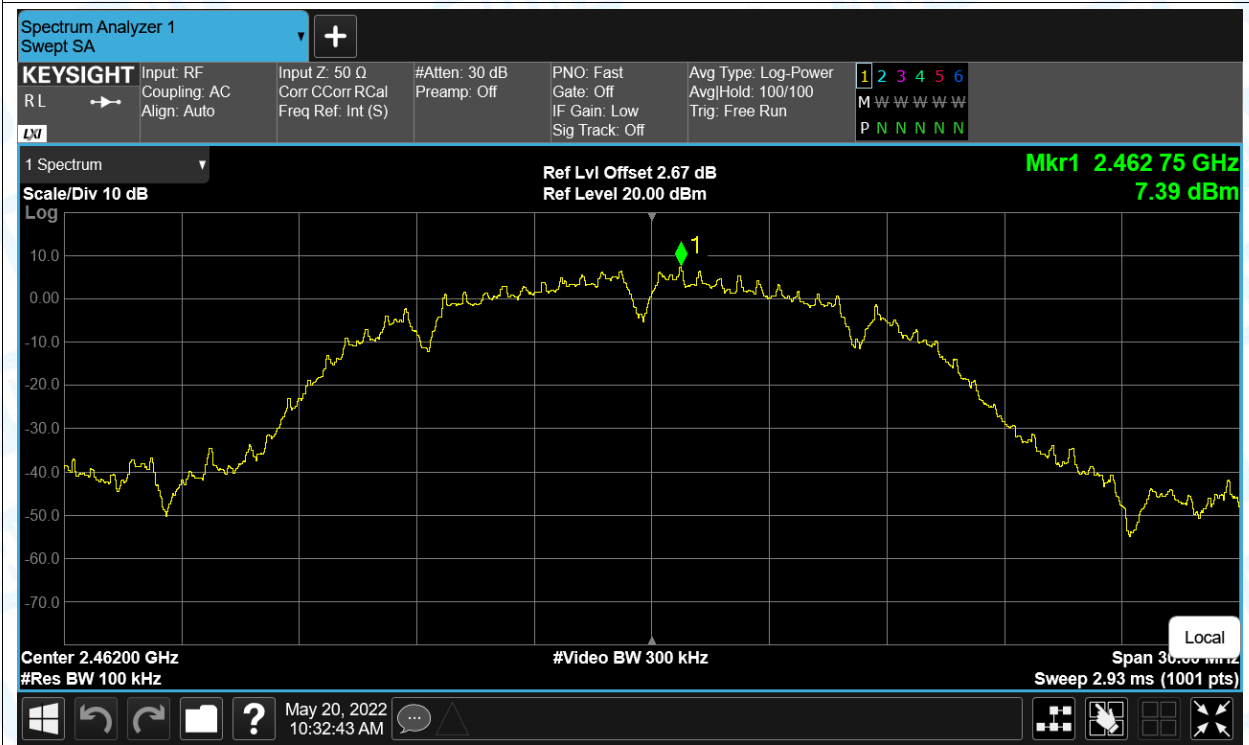
Tx. Spurious NVNT b 2437MHz Ant1 Ref



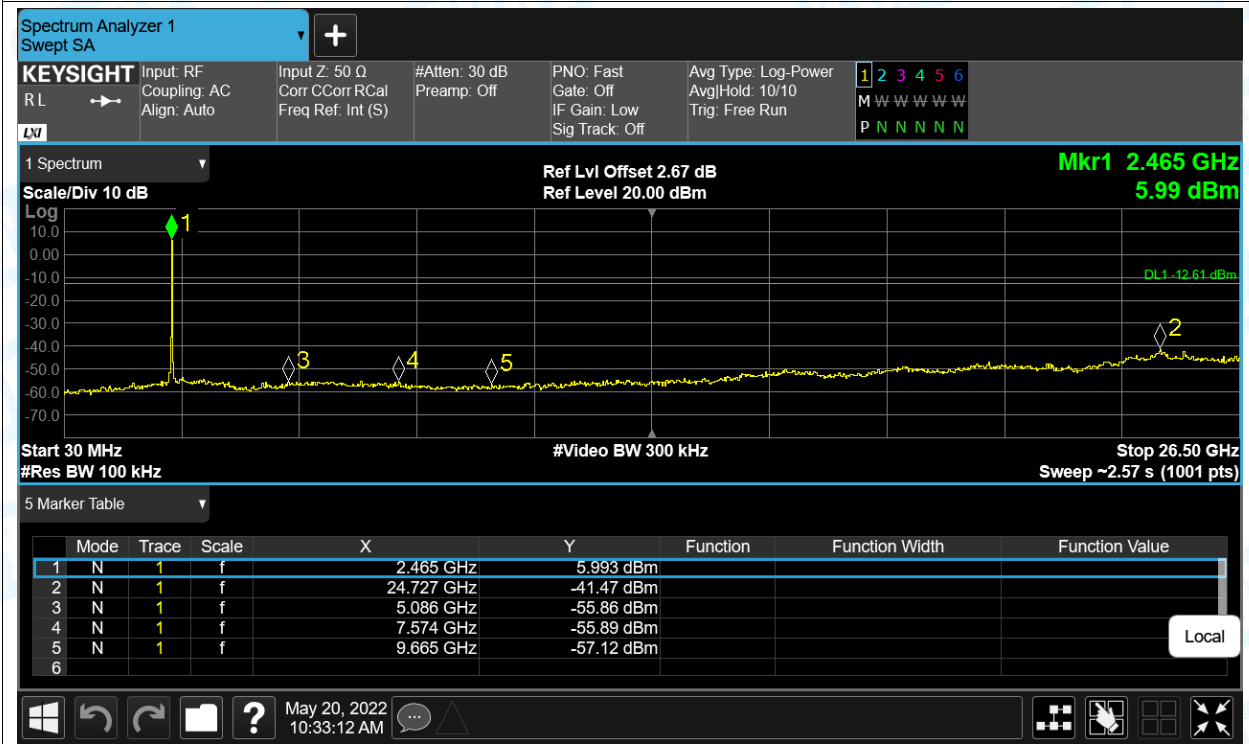
Tx. Spurious NVNT b 2437MHz Ant1 Emission



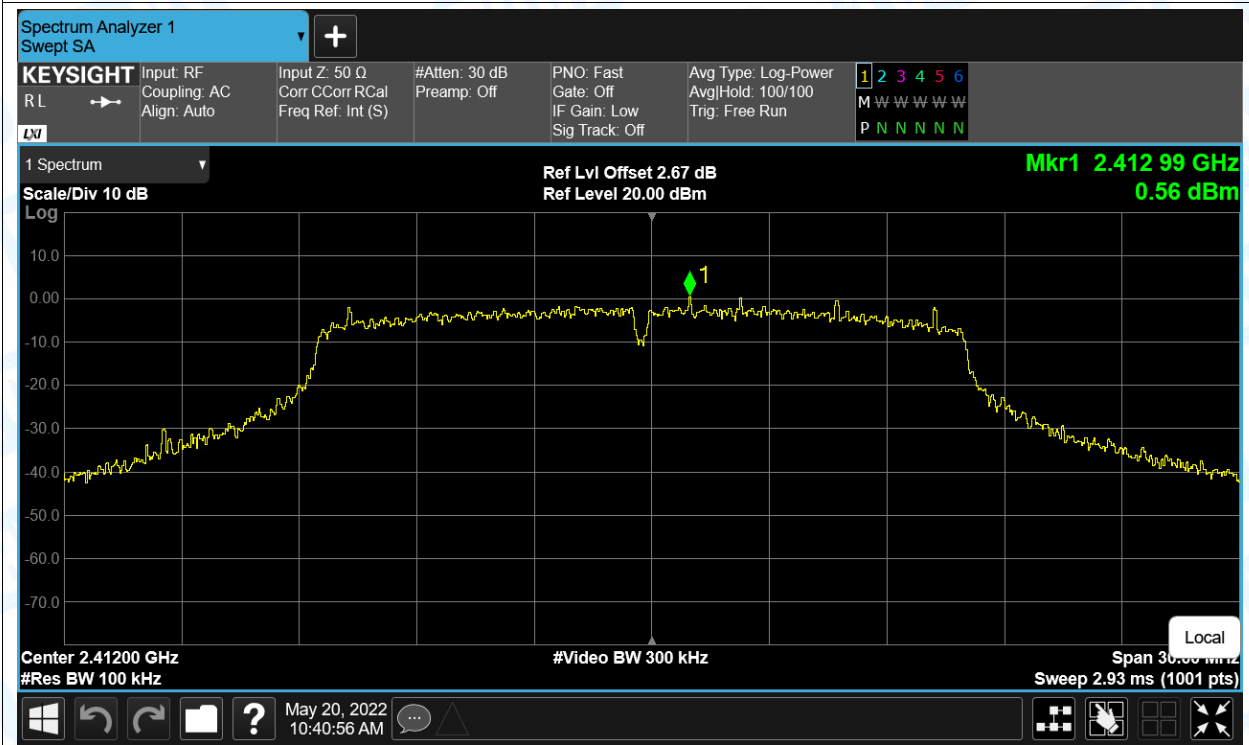
Tx. Spurious NVNT b 2462MHz Ant1 Ref



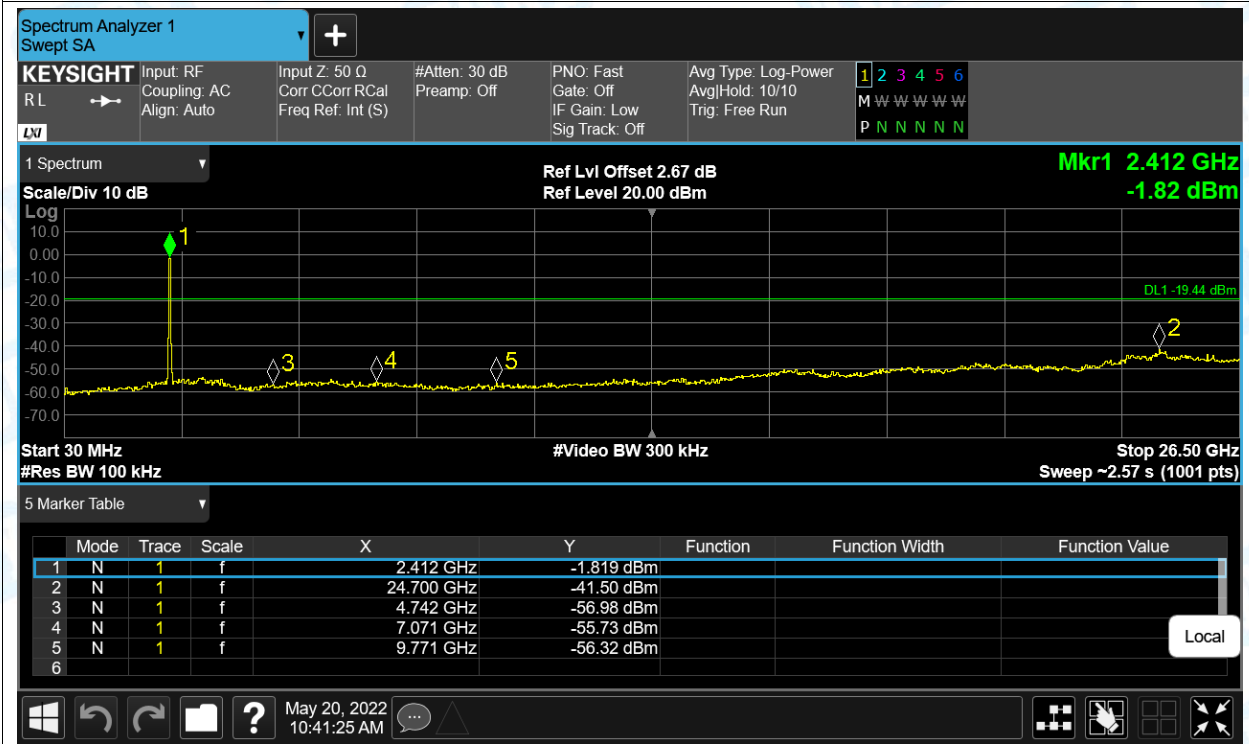
Tx. Spurious NVNT b 2462MHz Ant1 Emission



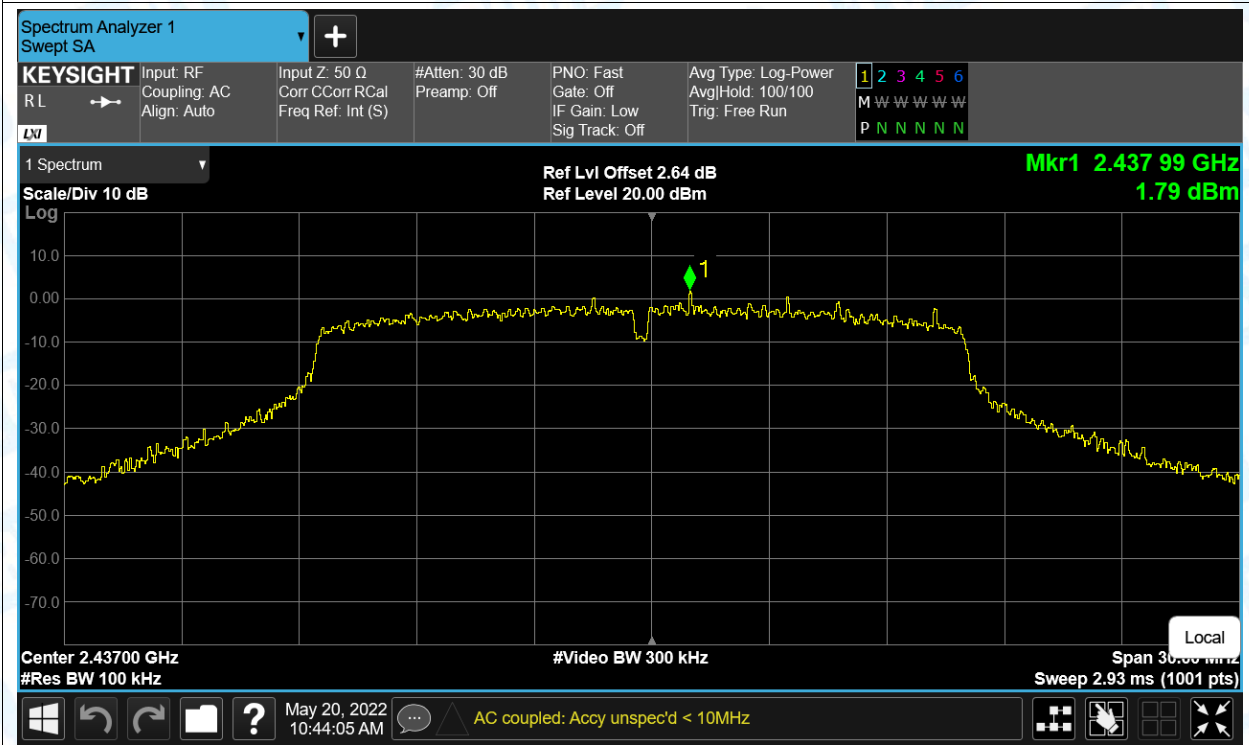
Tx. Spurious NVNT g 2412MHz Ant1 Ref



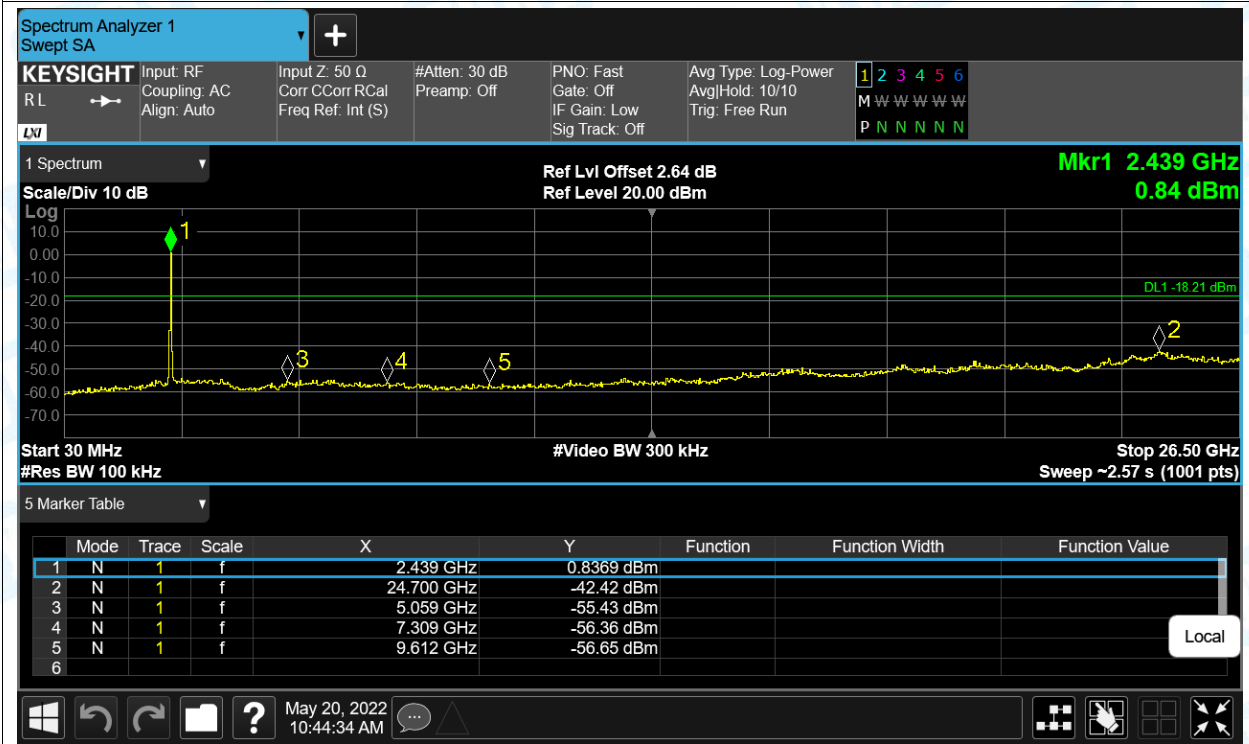
Tx. Spurious NVNT g 2412MHz Ant1 Emission



Tx. Spurious NVNT g 2437MHz Ant1 Ref



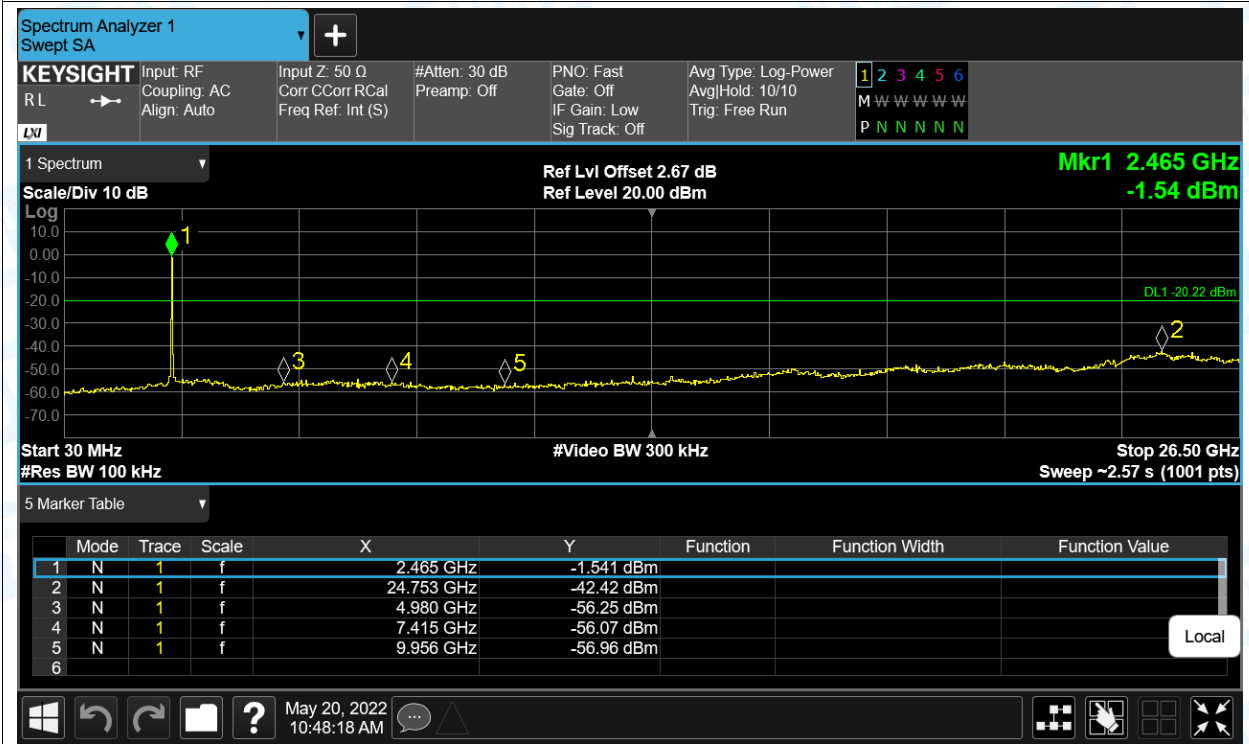
Tx. Spurious NVNT g 2437MHz Ant1 Emission



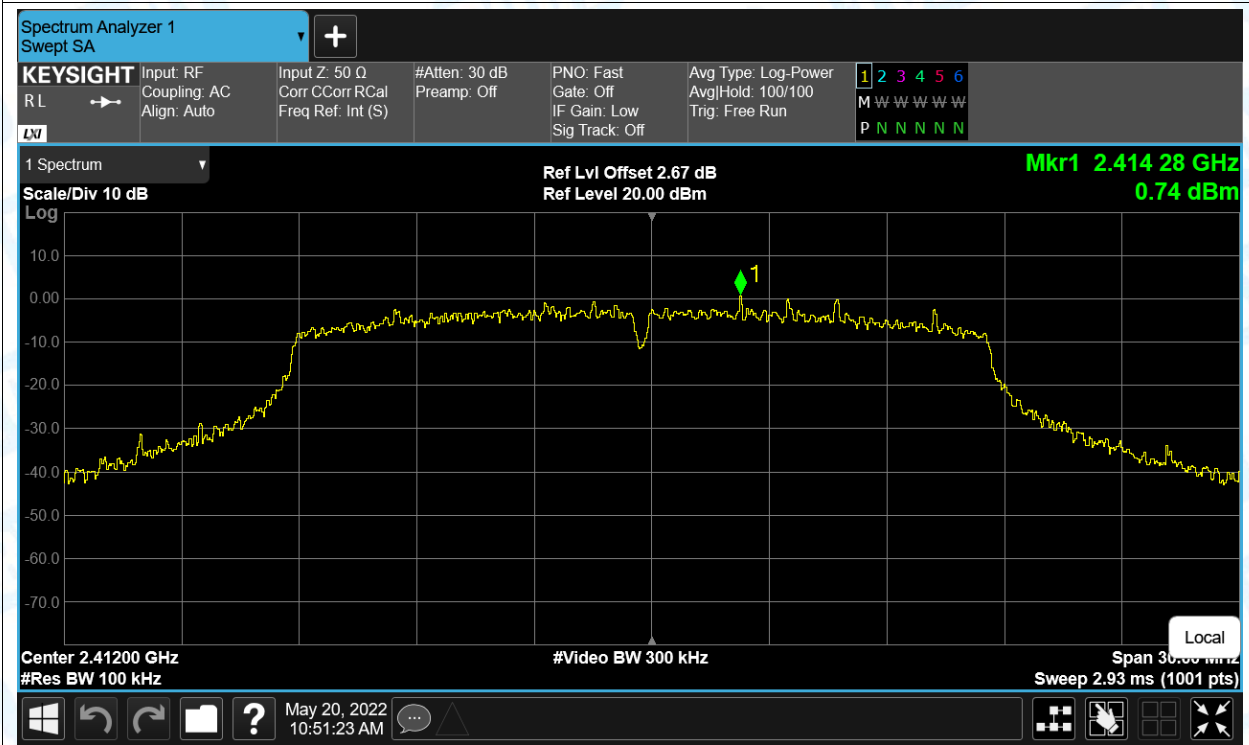
Tx. Spurious NVNT g 2462MHz Ant1 Ref



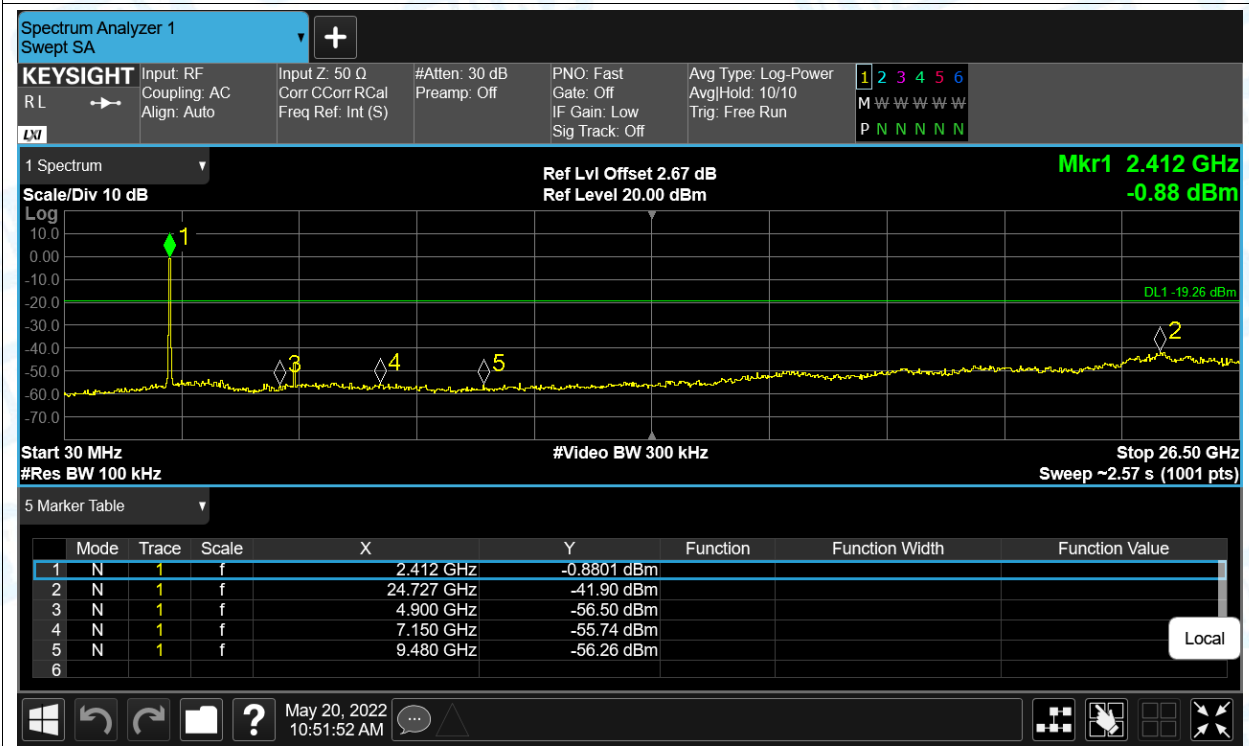
Tx. Spurious NVNT g 2462MHz Ant1 Emission



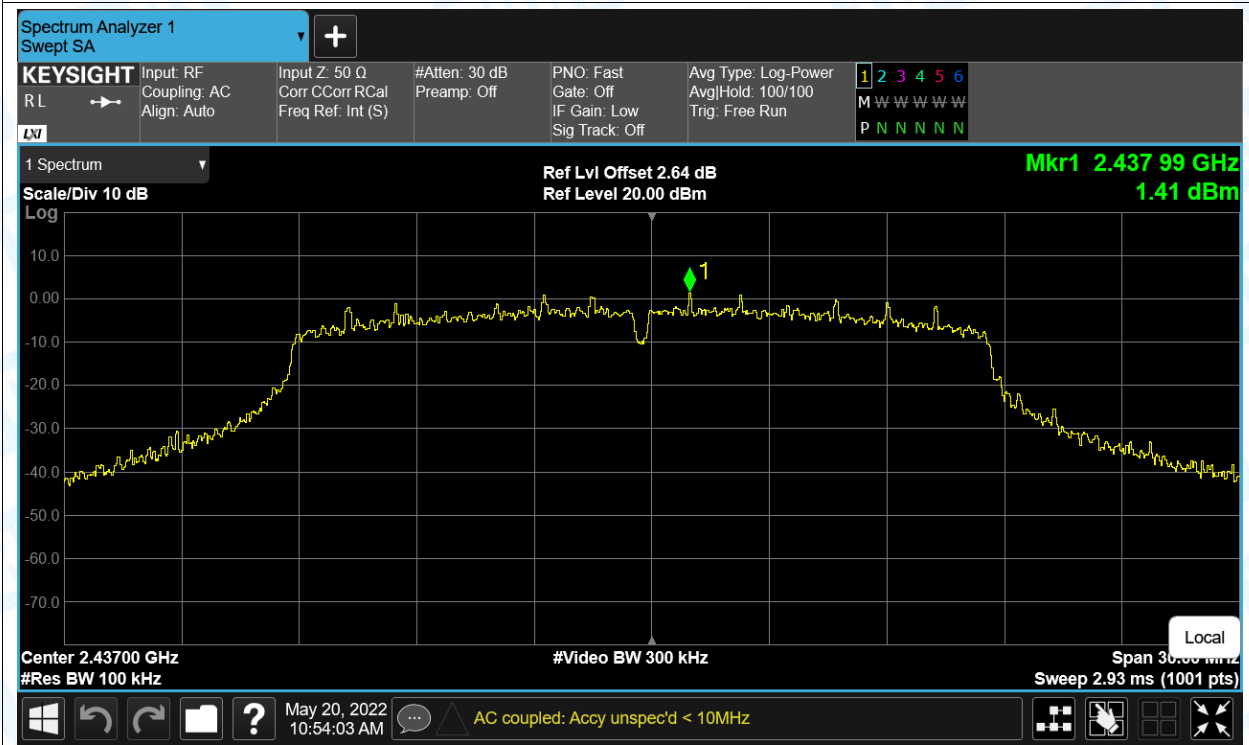
Tx. Spurious NVNT n(HT20) 2412MHz Ant1 Ref



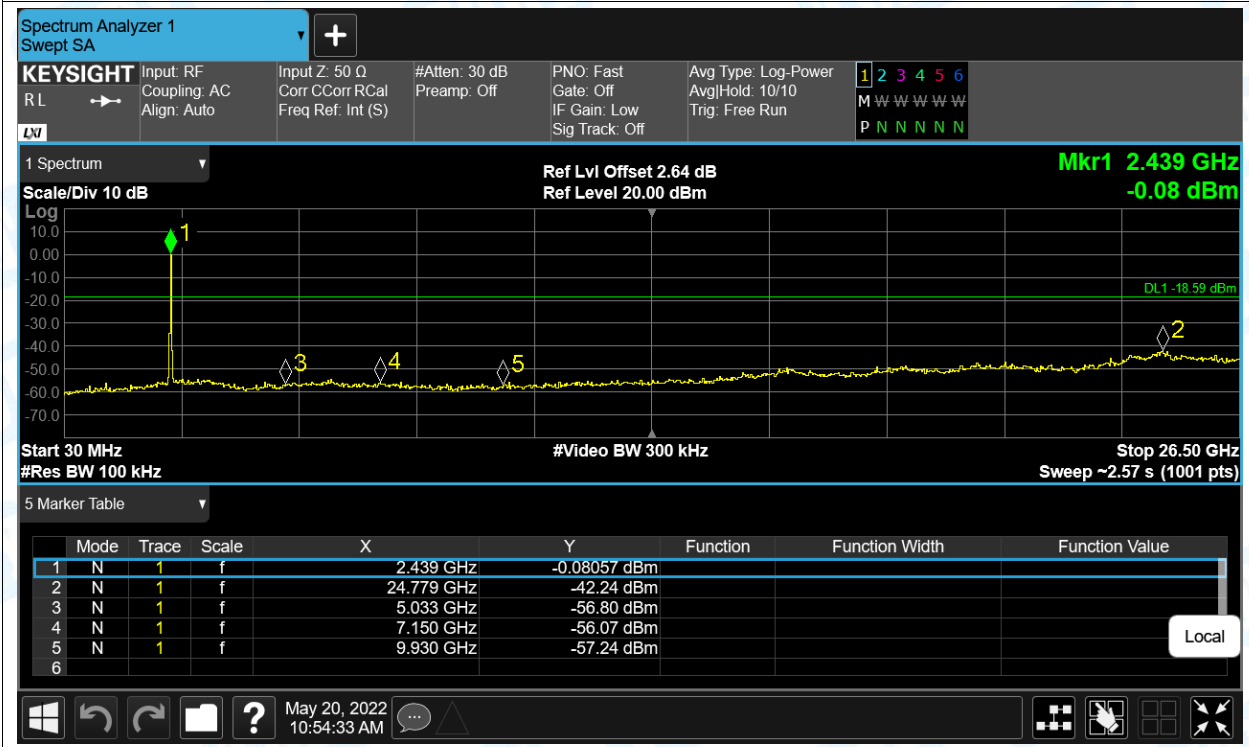
Tx. Spurious NVNT n(HT20) 2412MHz Ant1 Emission



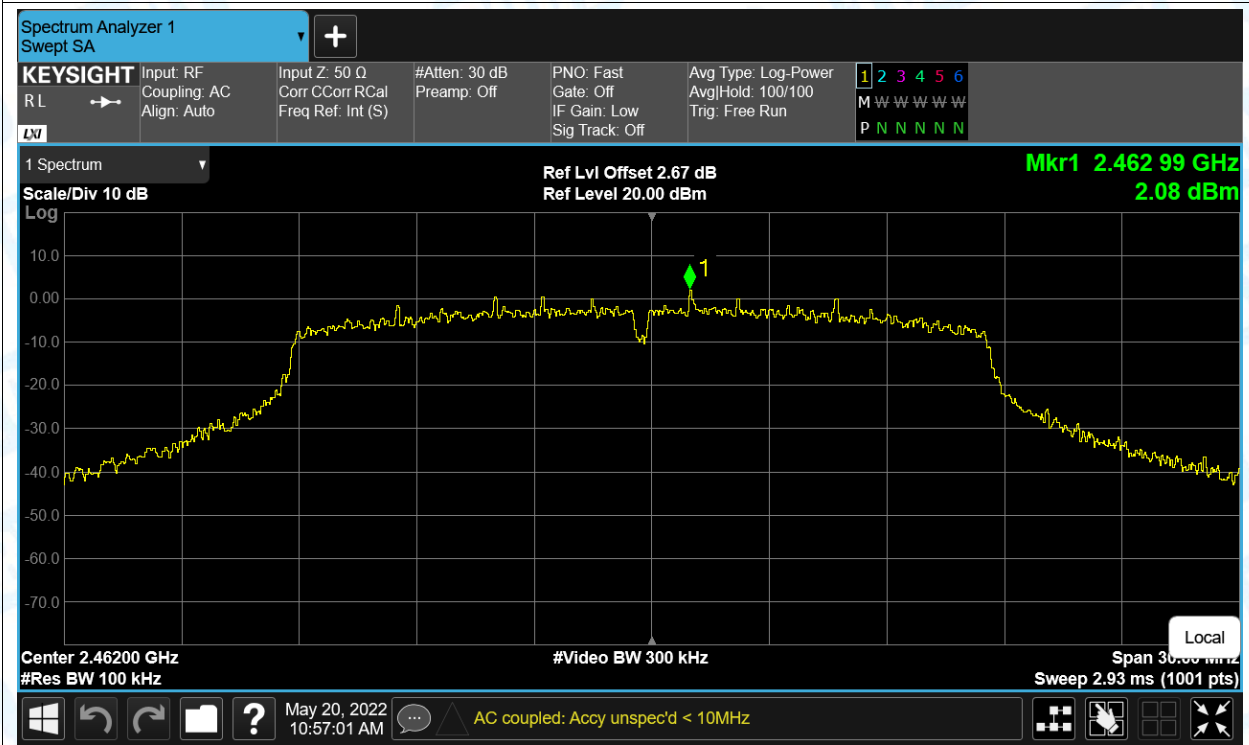
Tx. Spurious NVNT n(HT20) 2437MHz Ant1 Ref



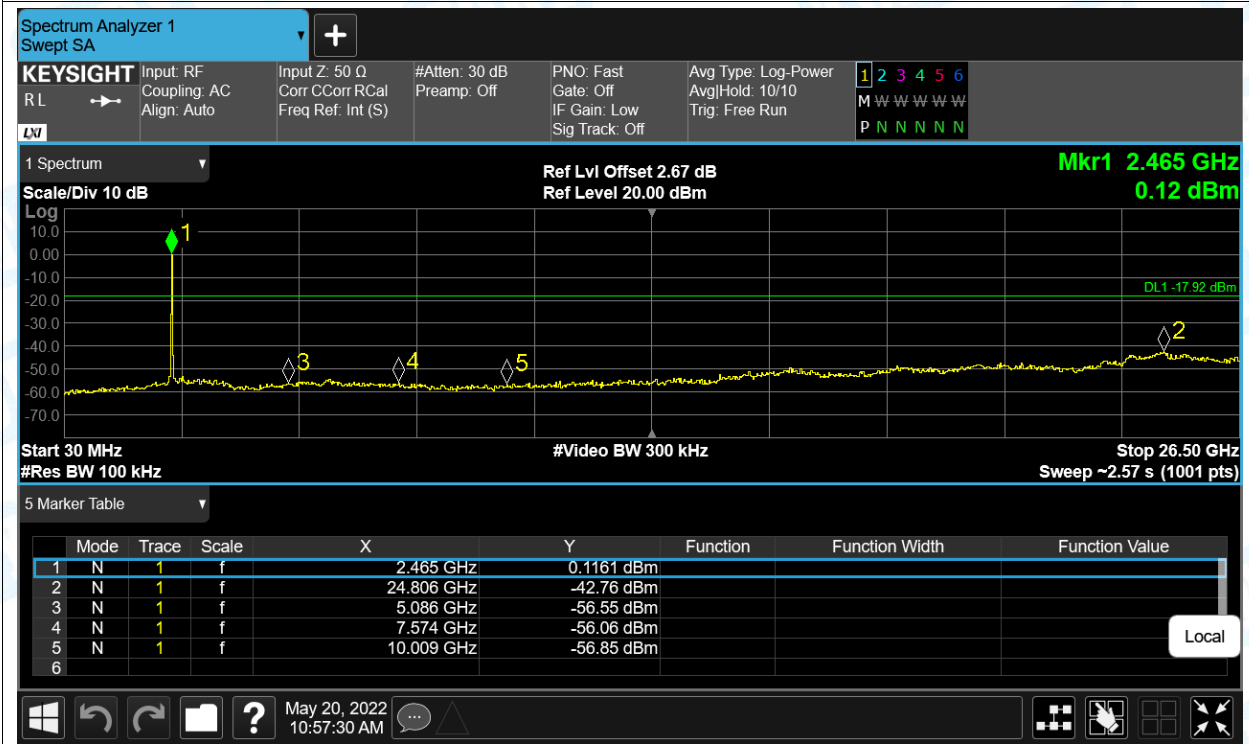
Tx. Spurious NVNT n(HT20) 2437MHz Ant1 Emission



Tx. Spurious NVNT n(HT20) 2462MHz Ant1 Ref



Tx. Spurious NVNT n(HT20) 2462MHz Ant1 Emission

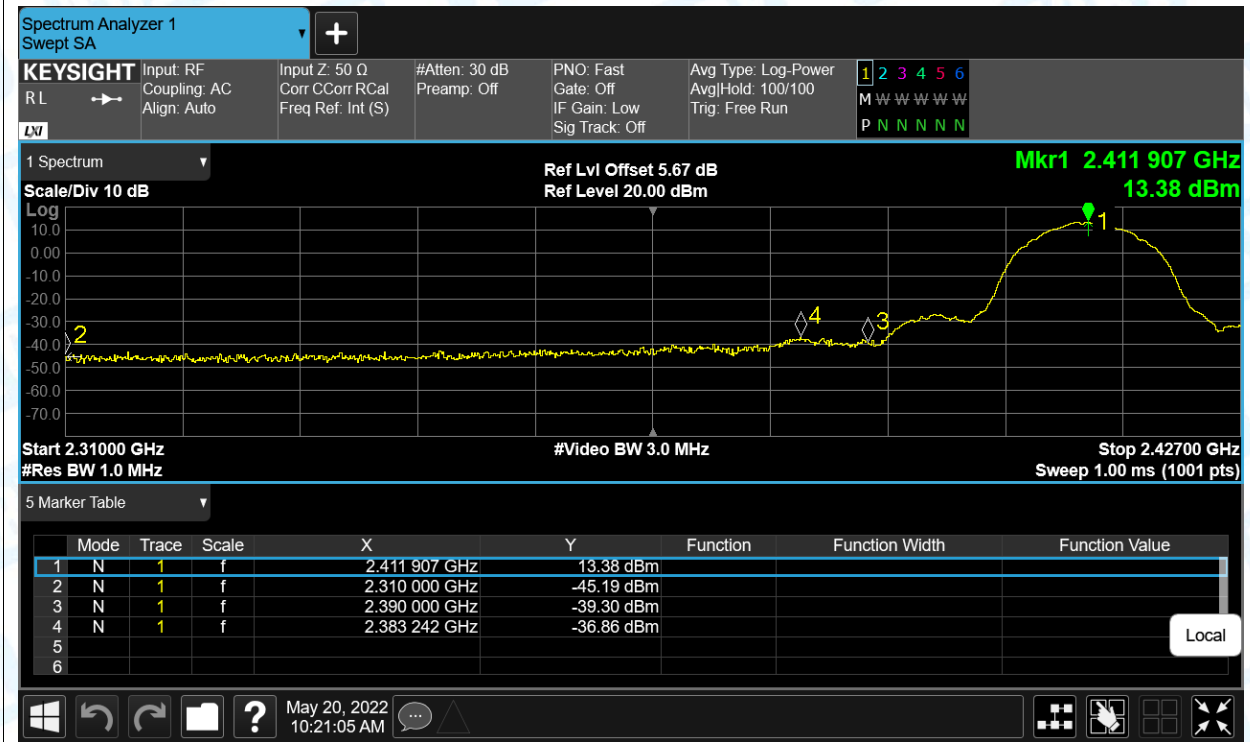


8. Restrict Band

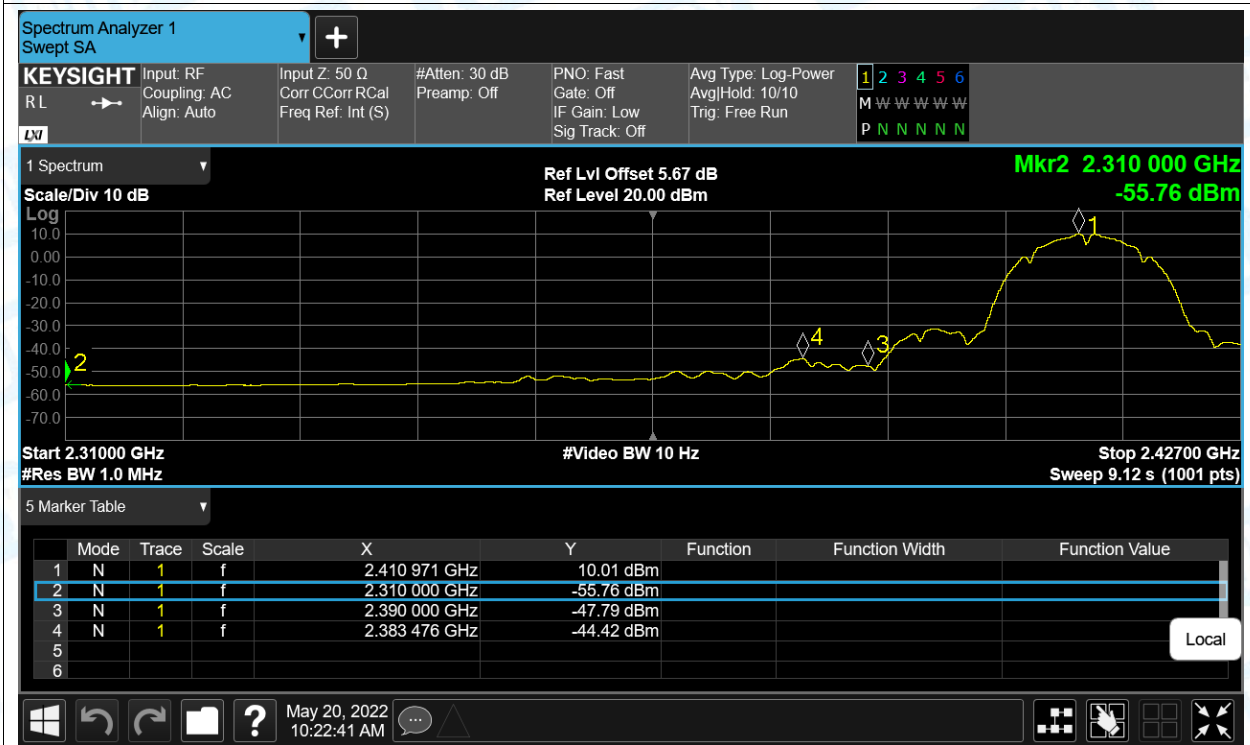
Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	b	2412	Ant1	2310	-45.19	3	53.07	Peak	74	Pass
NVNT	b	2412	Ant1	2310	-55.76	3	42.5	Average	54	Pass
NVNT	b	2412	Ant1	2383.242	-36.86	3	61.4	Peak	74	Pass
NVNT	b	2412	Ant1	2383.476	-44.42	3	53.84	Average	54	Pass
NVNT	b	2412	Ant1	2390	-39.3	3	58.96	Peak	74	Pass
NVNT	b	2412	Ant1	2390	-47.79	3	50.47	Average	54	Pass
NVNT	b	2462	Ant1	2483.5	-42.42	3	55.84	Peak	74	Pass
NVNT	b	2462	Ant1	2483.5	-51.78	3	46.48	Average	54	Pass
NVNT	b	2462	Ant1	2484.895	-37.77	3	60.49	Peak	74	Pass
NVNT	b	2462	Ant1	2489.93	-47.29	3	50.97	Average	54	Pass
NVNT	b	2462	Ant1	2500	-43	3	55.26	Peak	74	Pass
NVNT	b	2462	Ant1	2500	-52.33	3	45.93	Average	54	Pass
NVNT	g	2412	Ant1	2310	-46.28	3	51.98	Peak	74	Pass
NVNT	g	2412	Ant1	2310	-56.25	3	42.01	Average	54	Pass
NVNT	g	2412	Ant1	2388.975	-33.9	3	64.36	Peak	74	Pass
NVNT	g	2412	Ant1	2389.911	-46.73	3	51.53	Average	54	Pass
NVNT	g	2412	Ant1	2390	-35.37	3	62.89	Peak	74	Pass
NVNT	g	2412	Ant1	2390	-46.67	3	51.59	Average	54	Pass
NVNT	g	2462	Ant1	2483.5	-36.85	3	61.41	Peak	74	Pass
NVNT	g	2462	Ant1	2483.5	-46.83	3	51.43	Average	54	Pass
NVNT	g	2462	Ant1	2483.676	-33.3	3	64.96	Peak	74	Pass
NVNT	g	2462	Ant1	2483.517	-46.83	3	51.43	Average	54	Pass
NVNT	g	2462	Ant1	2500	-41.61	3	56.65	Peak	74	Pass
NVNT	g	2462	Ant1	2500	-52.27	3	45.99	Average	54	Pass
NVNT	n(HT20)	2412	Ant1	2310	-46.49	3	51.77	Peak	74	Pass
NVNT	n(HT20)	2412	Ant1	2310	-55.62	3	42.64	Average	54	Pass
NVNT	n(HT20)	2412	Ant1	2389.443	-32.9	3	65.36	Peak	74	Pass
NVNT	n(HT20)	2412	Ant1	2389.794	-45.42	3	52.84	Average	54	Pass
NVNT	n(HT20)	2412	Ant1	2390	-34.88	3	63.38	Peak	74	Pass
NVNT	n(HT20)	2412	Ant1	2390	-45.48	3	52.78	Average	54	Pass
NVNT	n(HT20)	2462	Ant1	2483.5	-34.89	3	63.37	Peak	74	Pass
NVNT	n(HT20)	2462	Ant1	2483.5	-45.42	3	52.84	Average	54	Pass
NVNT	n(HT20)	2462	Ant1	2484.842	-31.49	3	66.77	Peak	74	Pass
NVNT	n(HT20)	2462	Ant1	2483.729	-45.3	3	52.96	Average	54	Pass
NVNT	n(HT20)	2462	Ant1	2500	-42.11	3	56.15	Peak	74	Pass
NVNT	n(HT20)	2462	Ant1	2500	-51.55	3	46.71	Average	54	Pass

Test Graphs

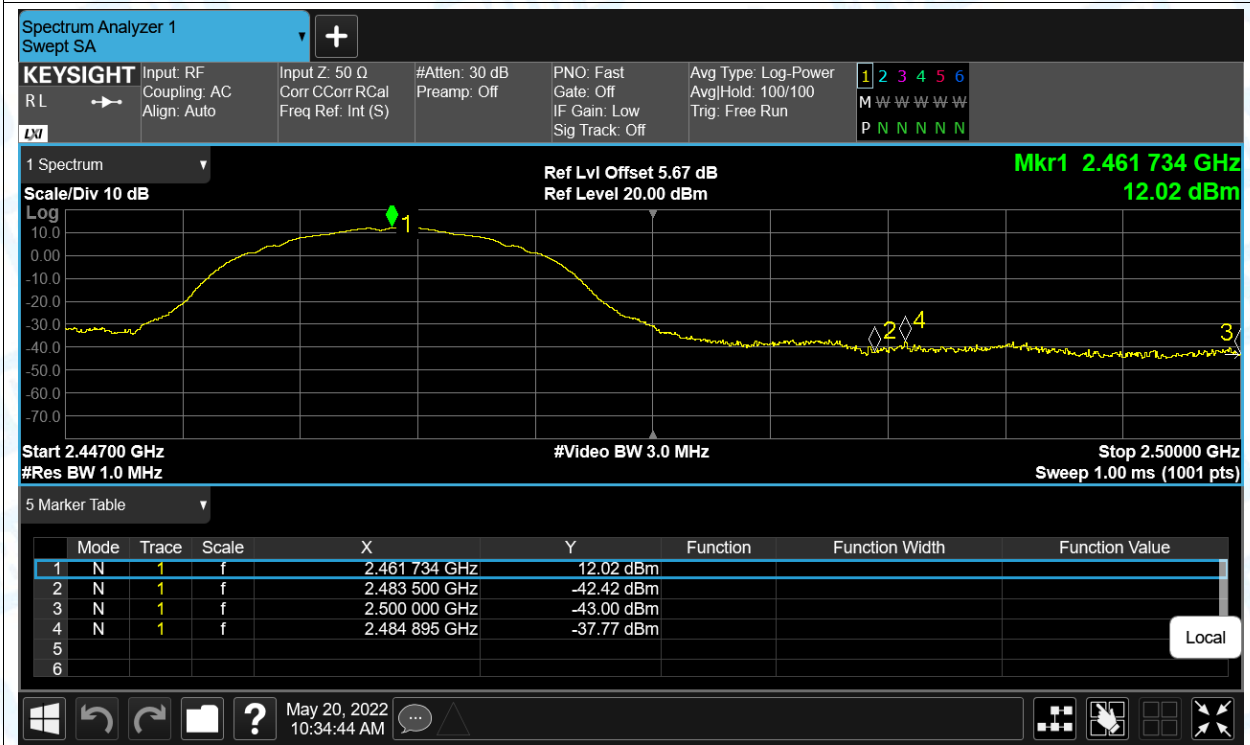
Restrict Band NVNT b 2412MHz Ant1 Peak



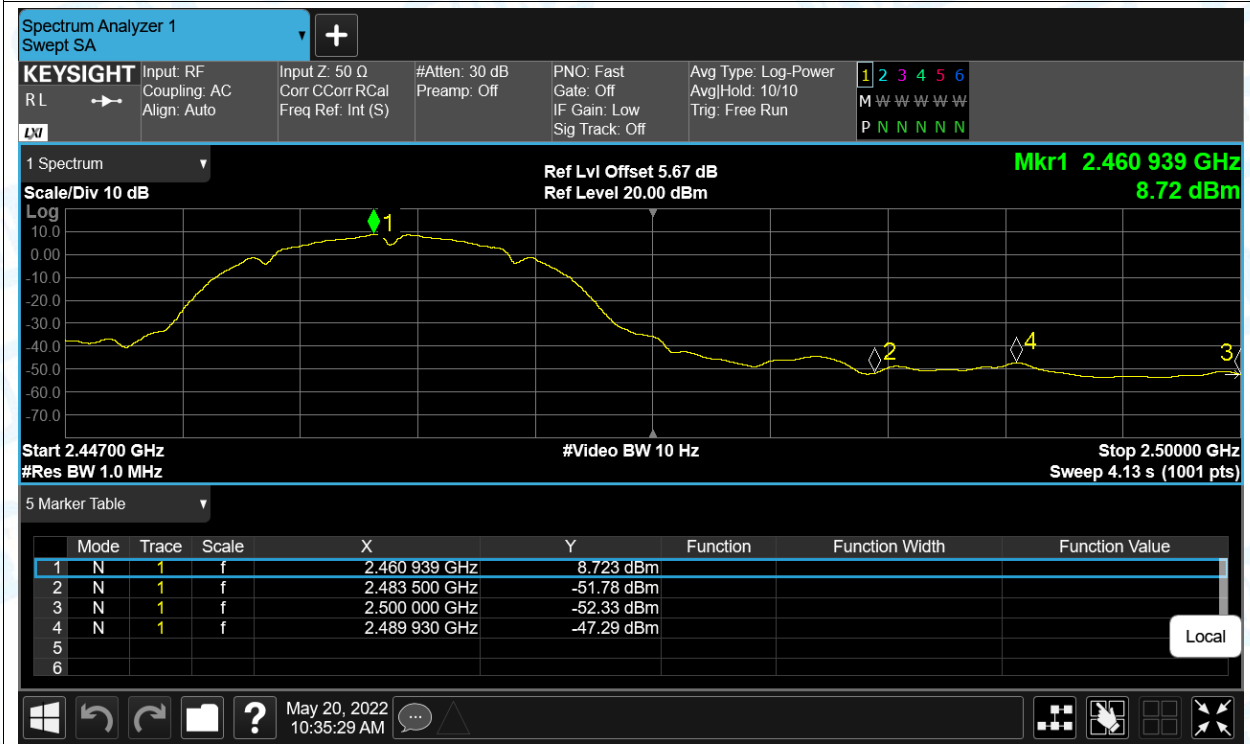
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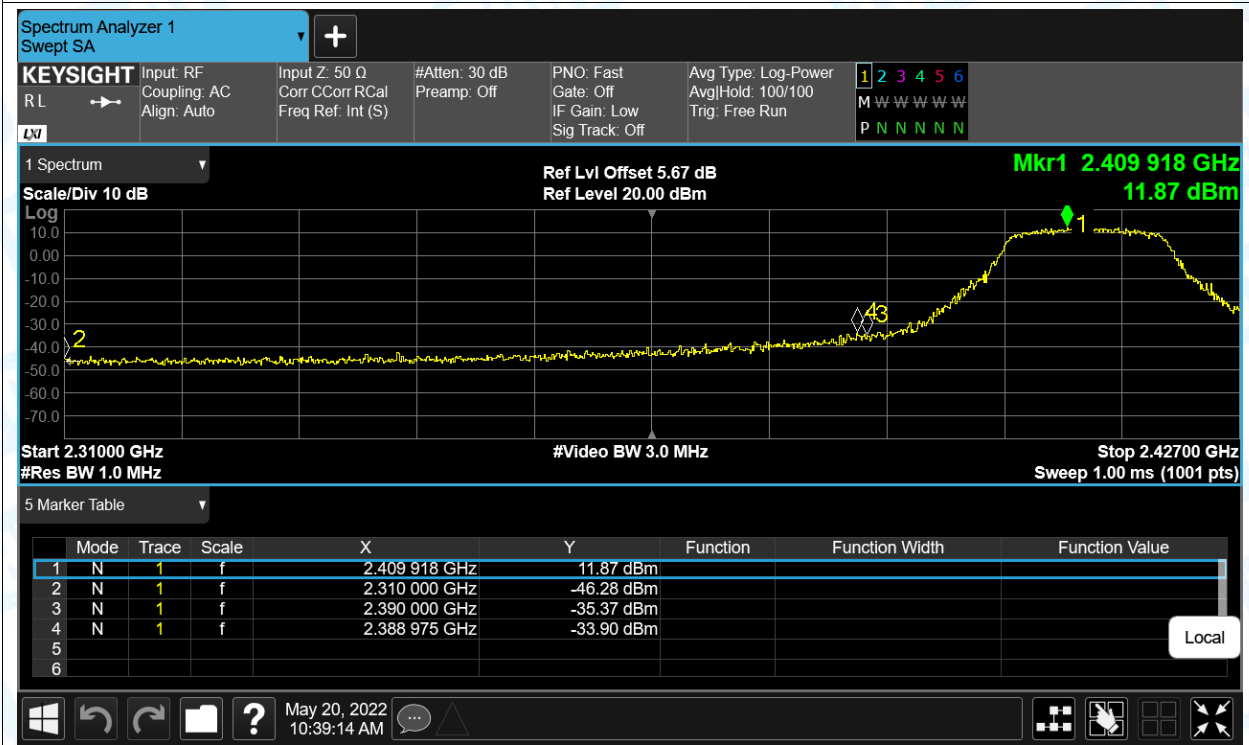
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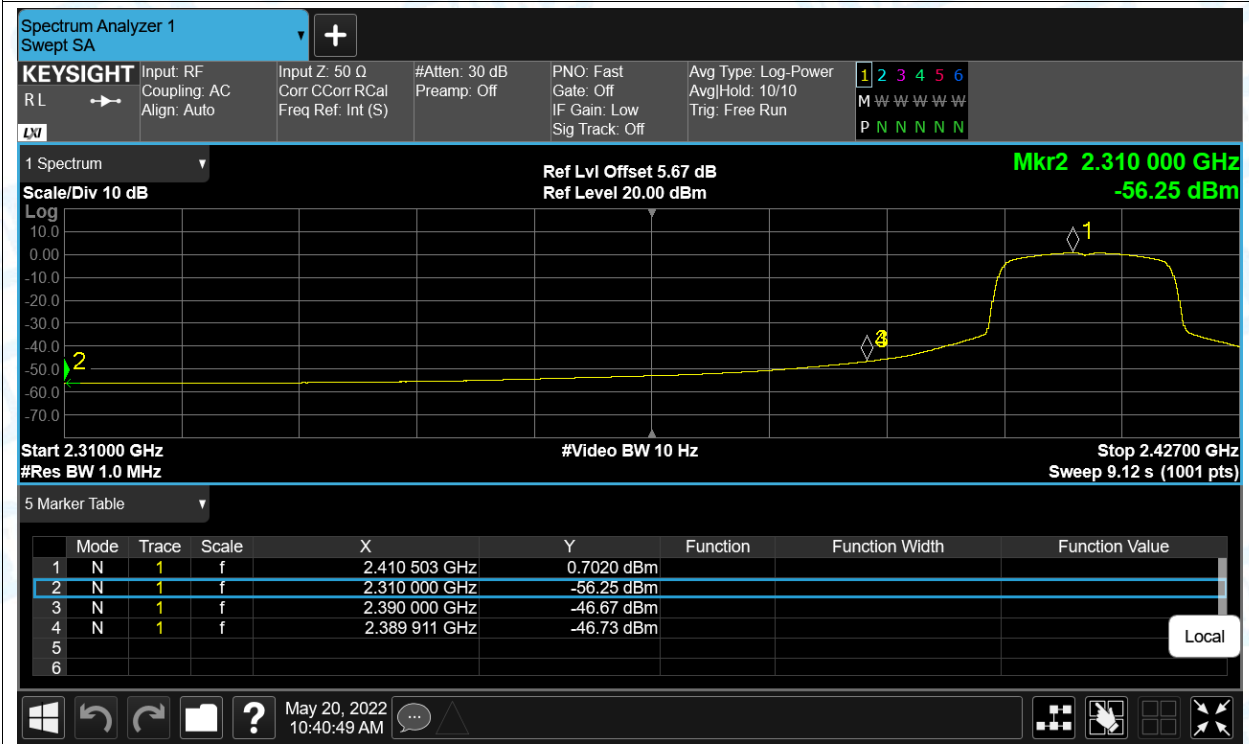
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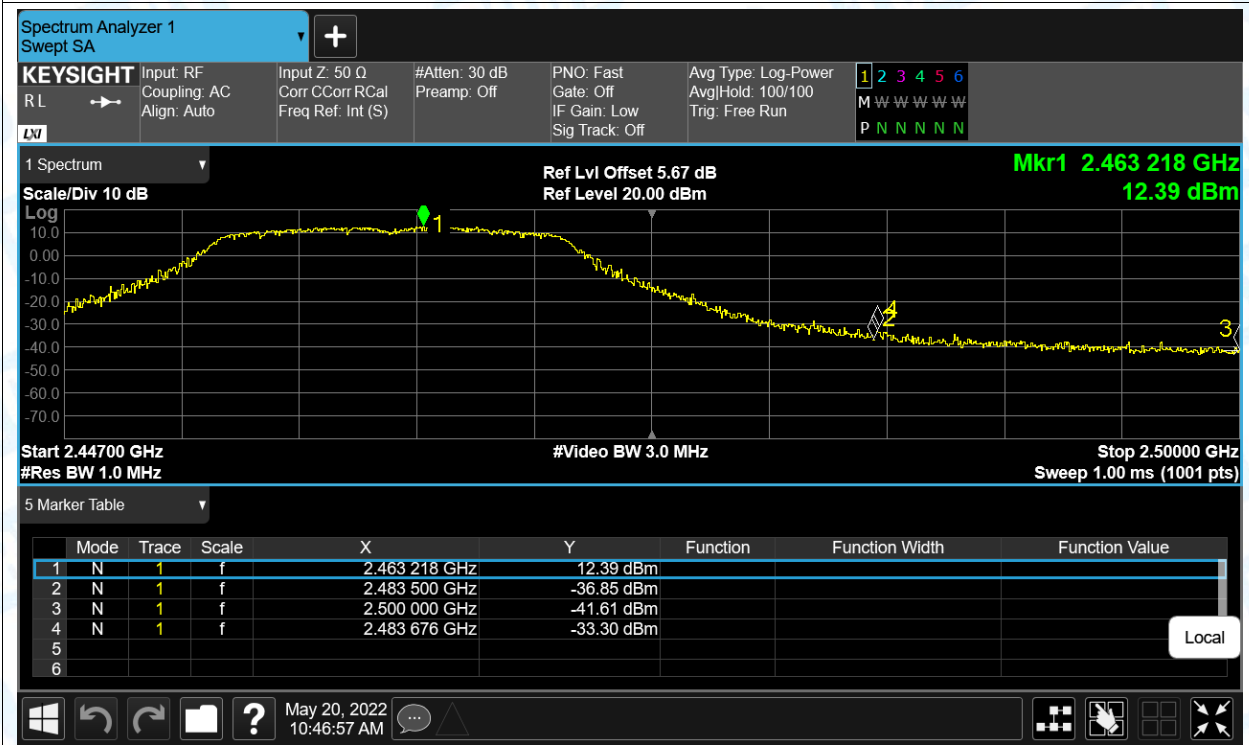
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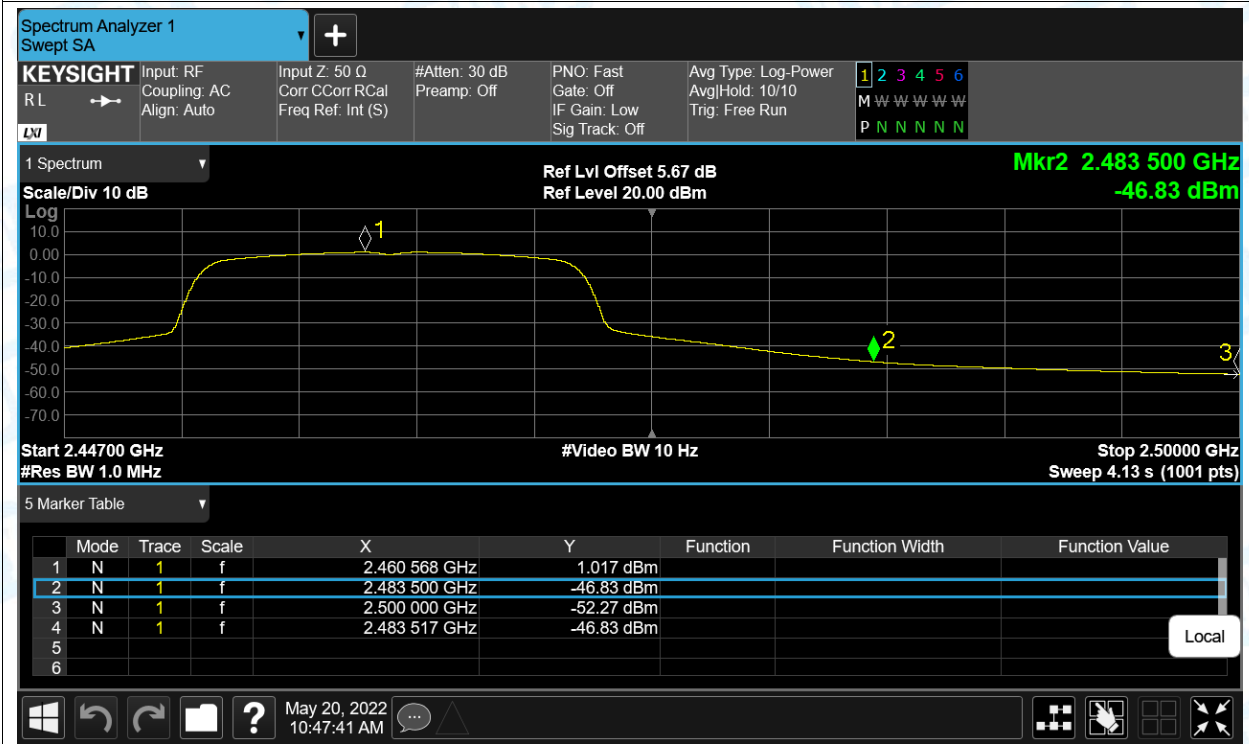
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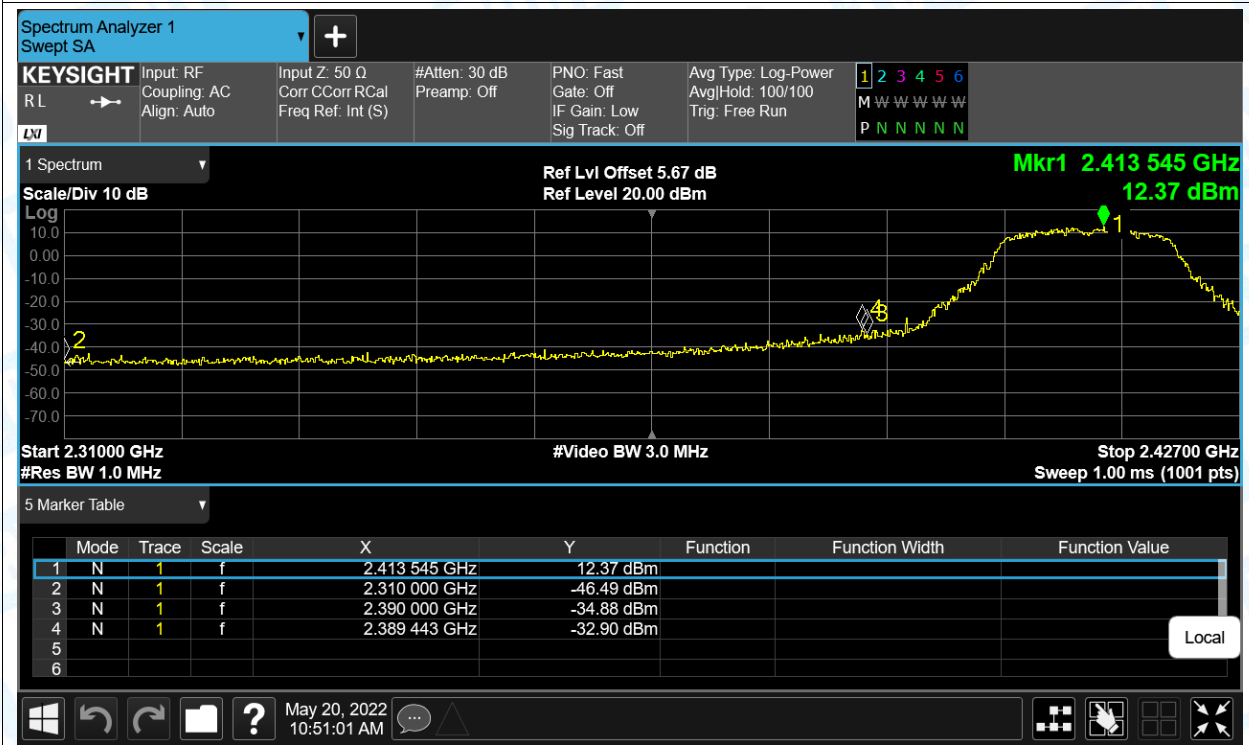
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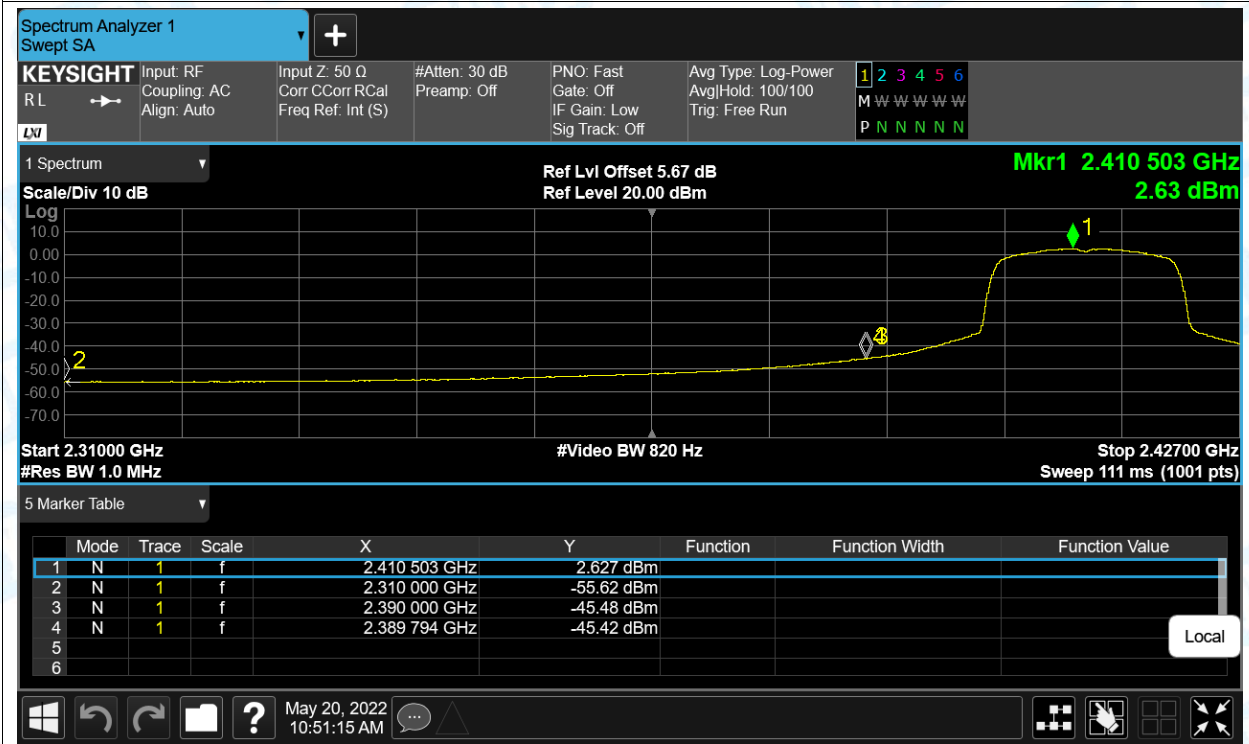
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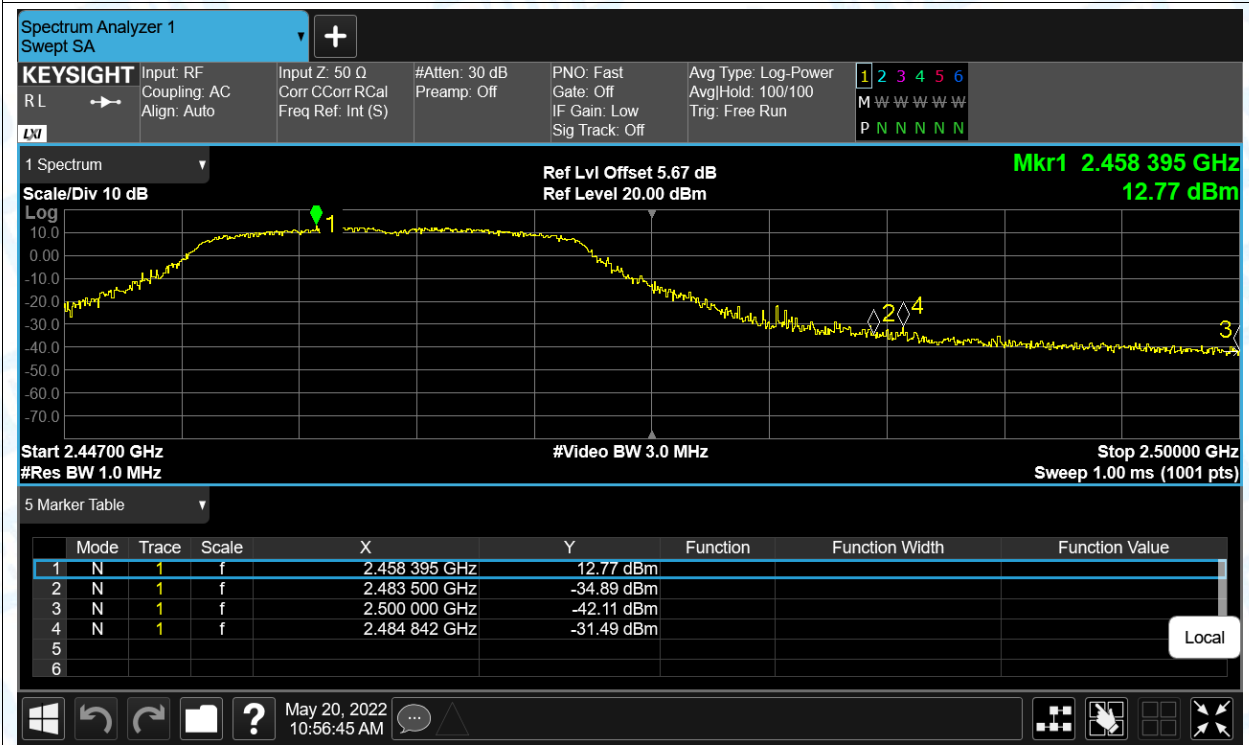
Restrict Band NVNT n(HT20) 2412MHz Ant1 Peak



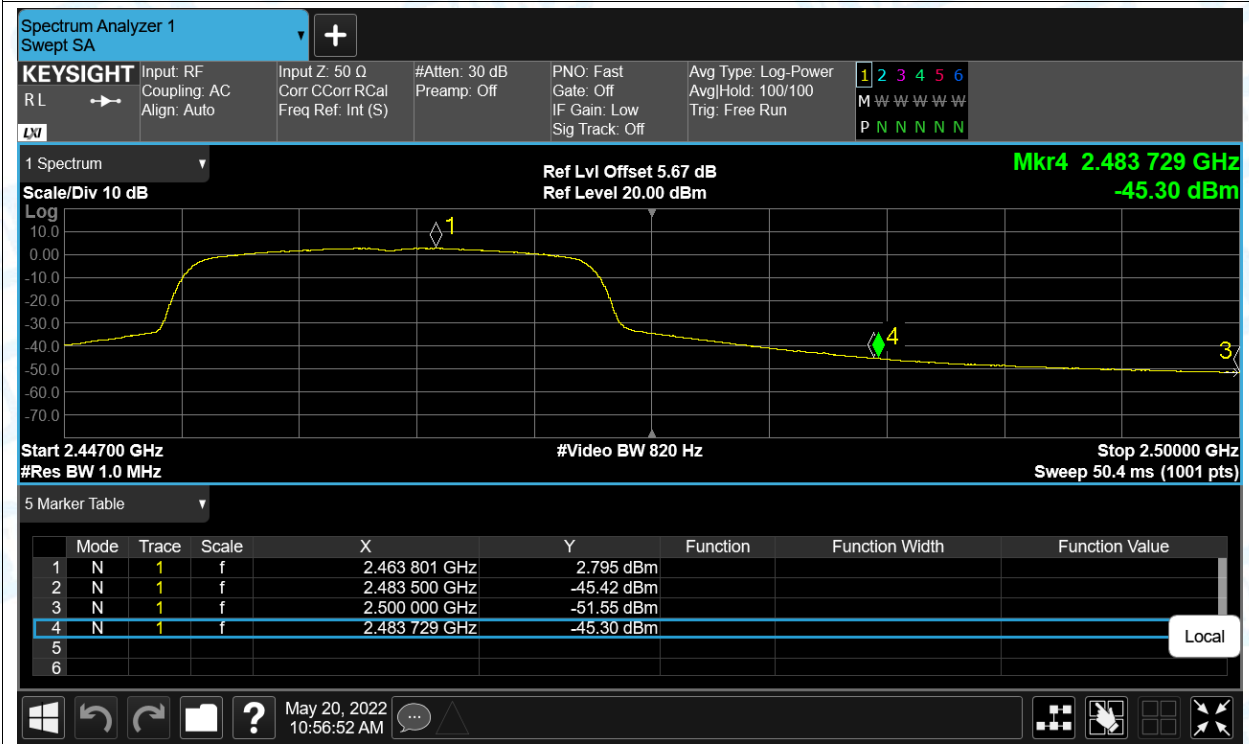
Restrict Band NVNT n(HT20) 2412MHz Ant1 Average



Restrict Band NVNT n(HT20) 2462MHz Ant1 Peak



Restrict Band NVNT n(HT20) 2462MHz Ant1 Average



-----End of the report-----