

RF Test Data for 2.4G WiFi (Conducted Measurements)

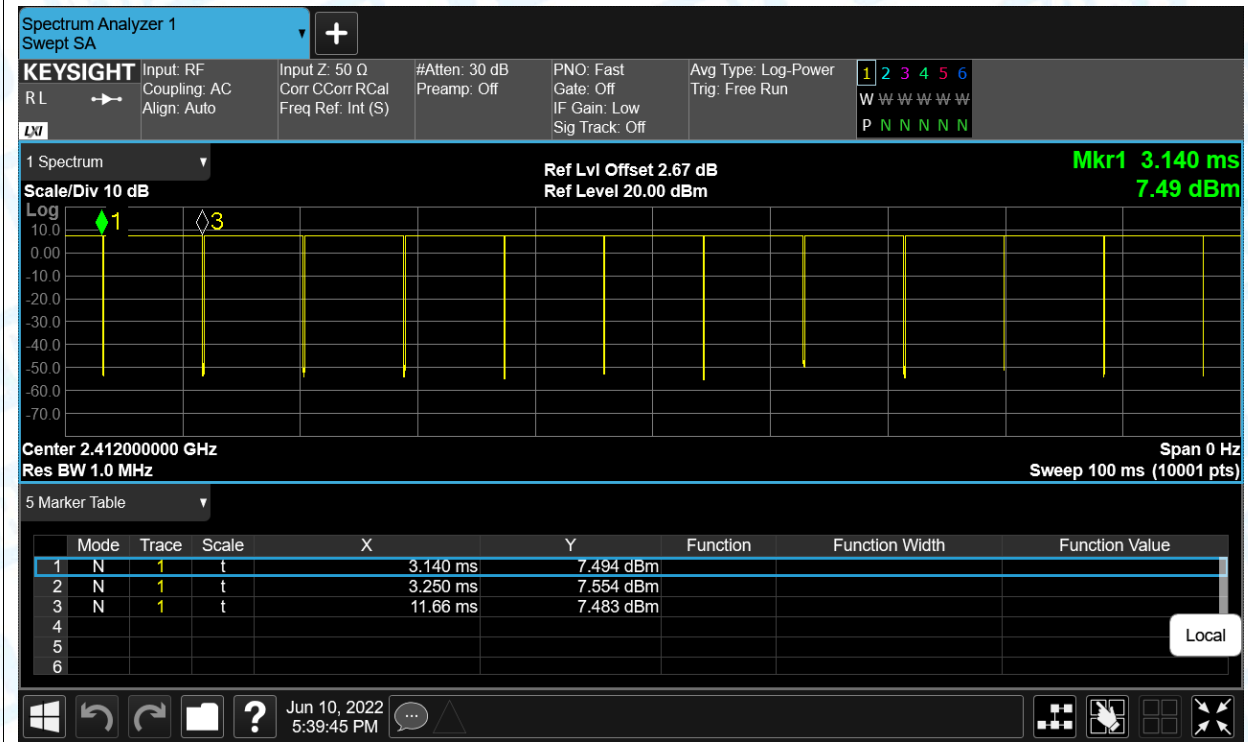
General Description of EUT	
Product Name:	Heltec Light Hotspot
Test Model:	HT-M7603
Sample ID:	RW-C-202205-0119-4-2#
Environmental Conditions	
Temperature:	23.8°C
Relative Humidity:	48%
Test Voltage:	DC 5V
Test Engineer:	Huang jian ping
Note: For a more detailed features description, please refer to the report TBR-C-202205-0119-4.	

1. Duty Cycle

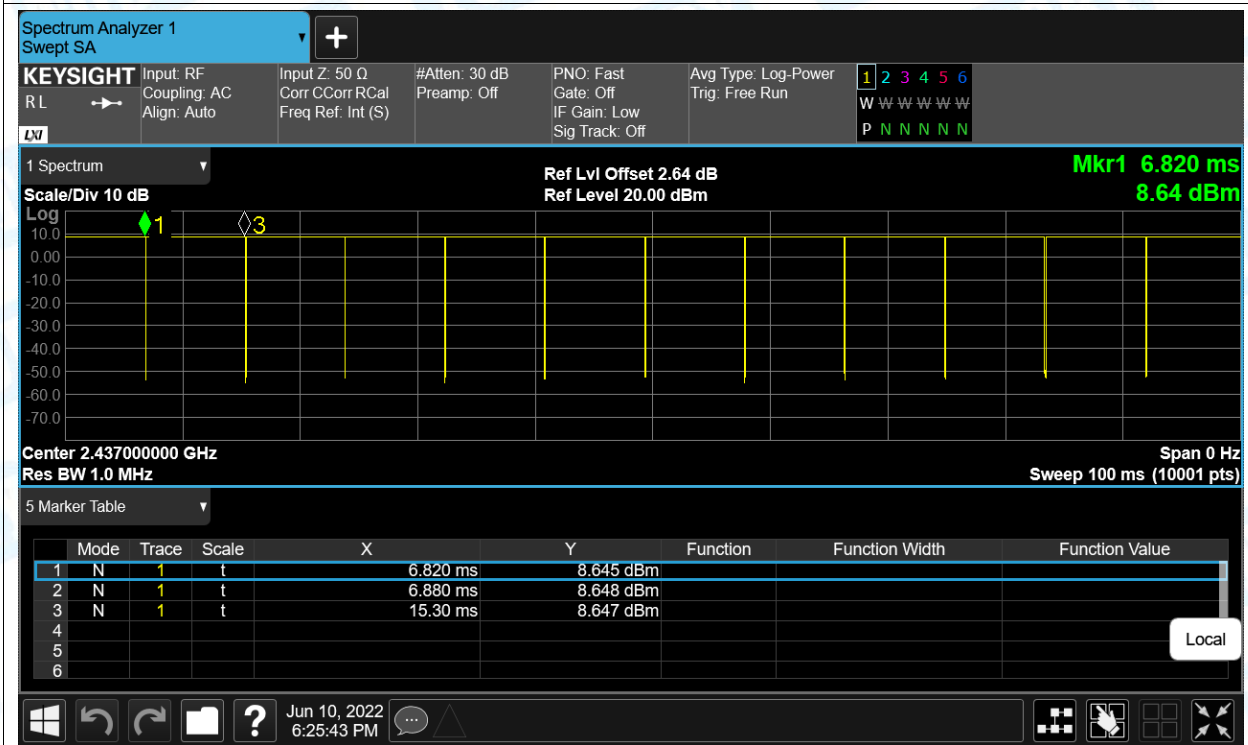
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	b	2412	Sum	98.99	0.04	0.12
NVNT	b	2437	Sum	99.13	0.04	0.12
NVNT	b	2462	Sum	99.27	0.03	0.12
NVNT	g	2412	Sum	94.83	0.23	0.71
NVNT	g	2437	Sum	95.06	0.22	0.72
NVNT	g	2462	Sum	95.12	0.22	0.71
NVNT	n(HT20)	2412	Sum	94.36	0.25	0.77
NVNT	n(HT20)	2437	Sum	94.98	0.22	0.76
NVNT	n(HT20)	2462	Sum	94.51	0.25	0.76
NVNT	n(HT40)	2422	Sum	88.82	0.51	1.54
NVNT	n(HT40)	2437	Sum	88.8	0.52	1.54
NVNT	n(HT40)	2452	Sum	88.87	0.51	1.54

Test Graphs

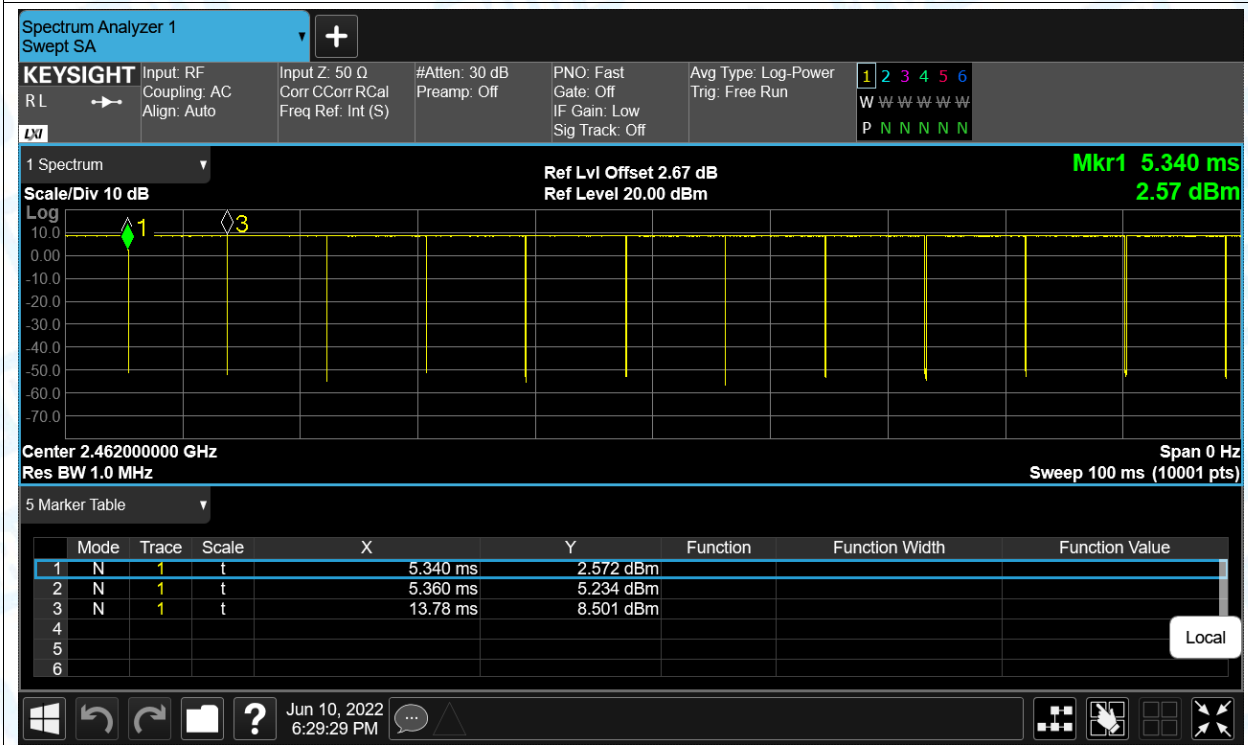
Duty Cycle NVNT b 2412MHz Sum



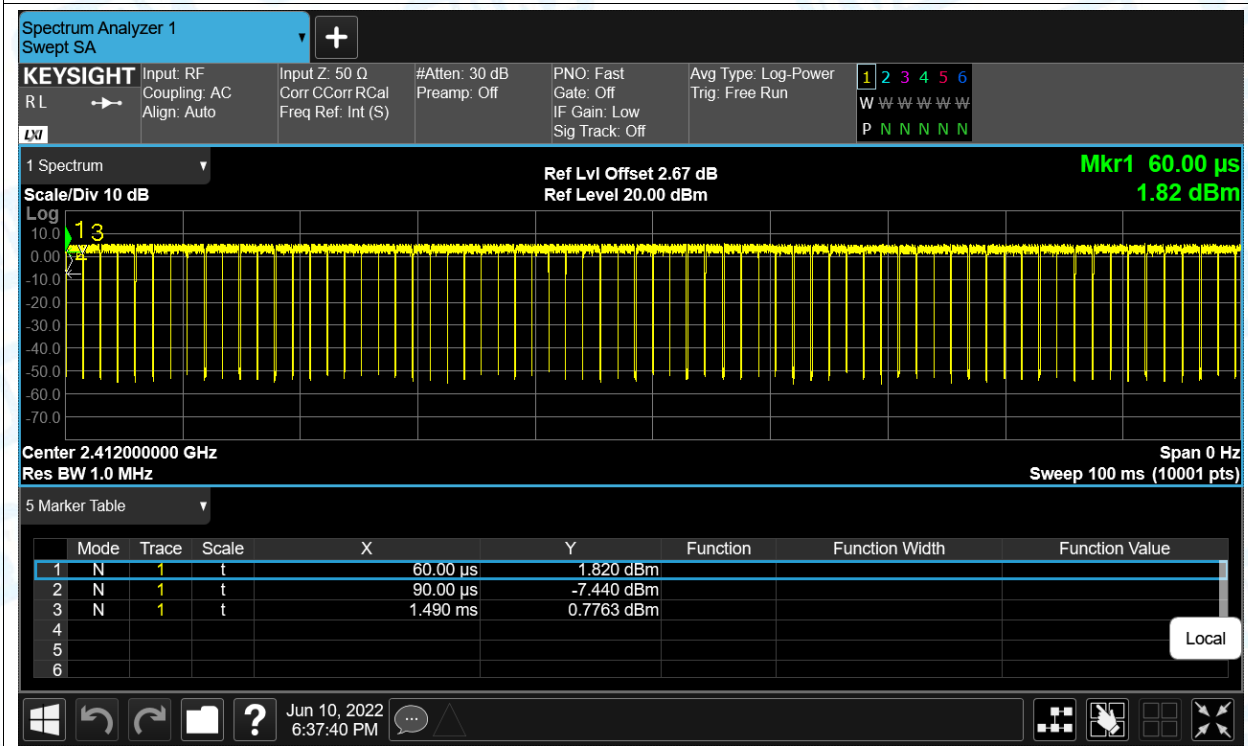
Duty Cycle NVNT b 2437MHz Sum



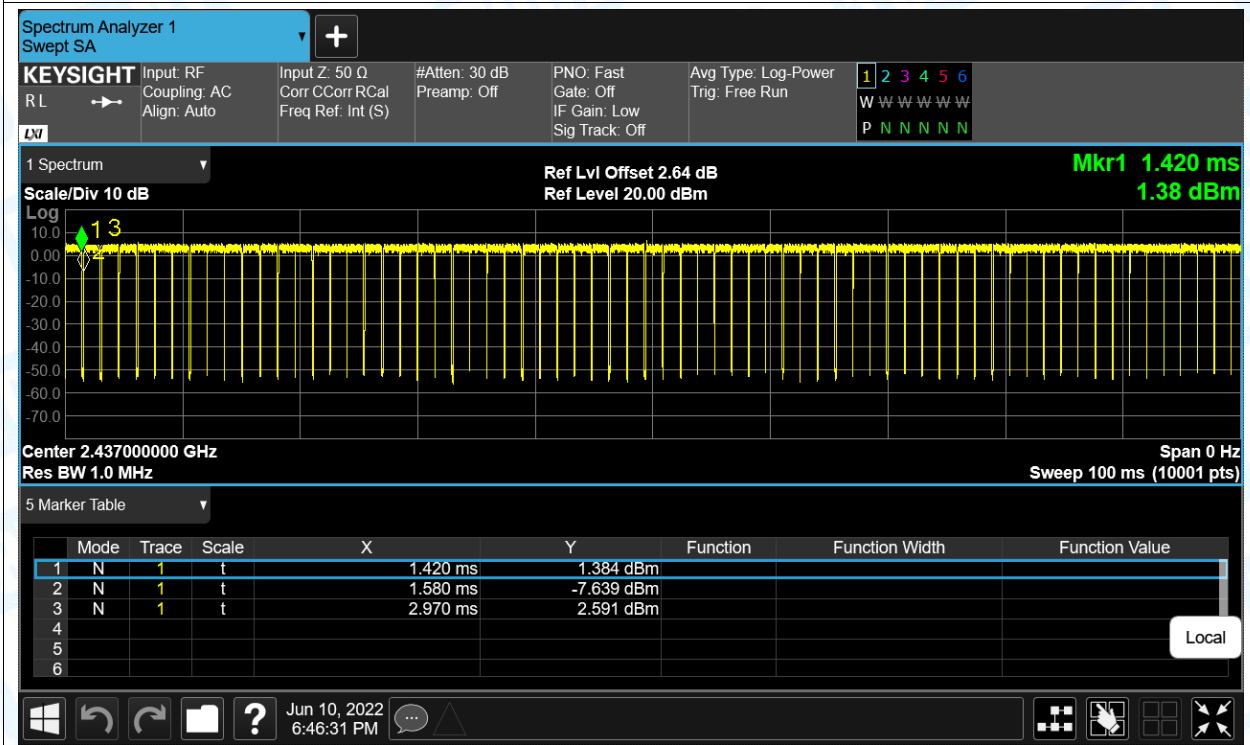
Duty Cycle NVNT b 2462MHz Sum



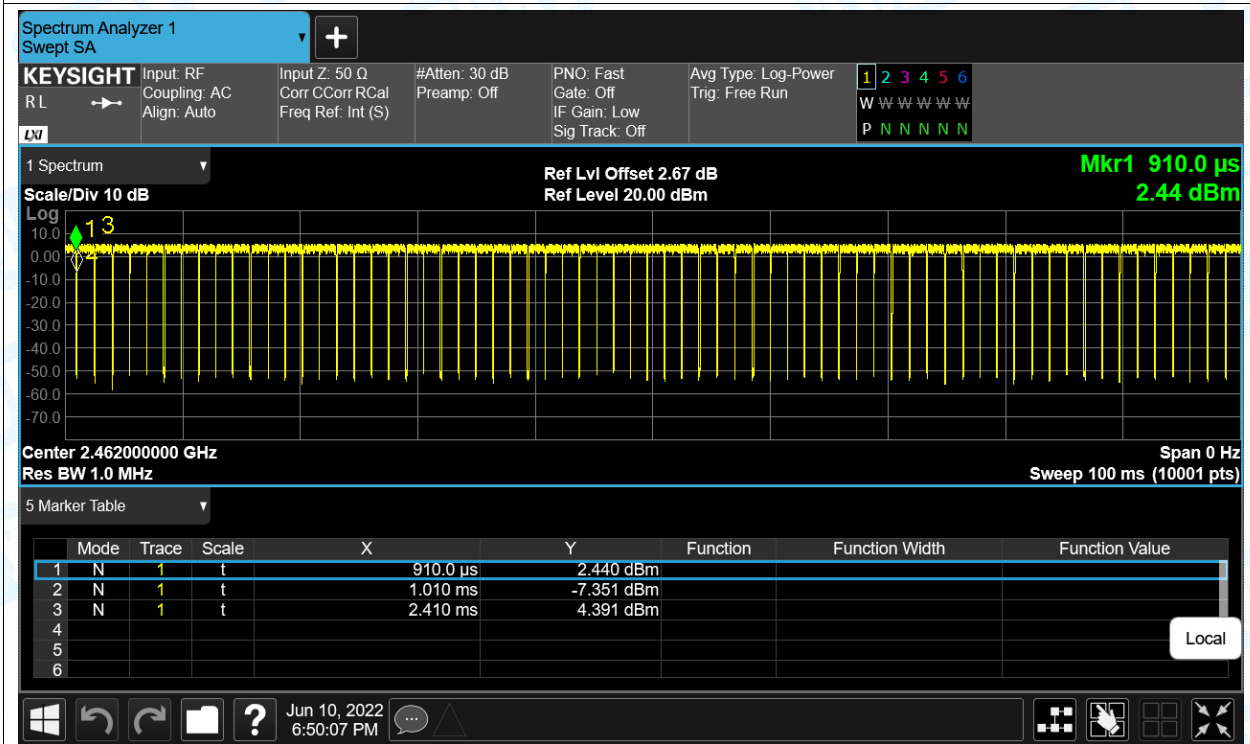
Duty Cycle NVNT g 2412MHz Sum



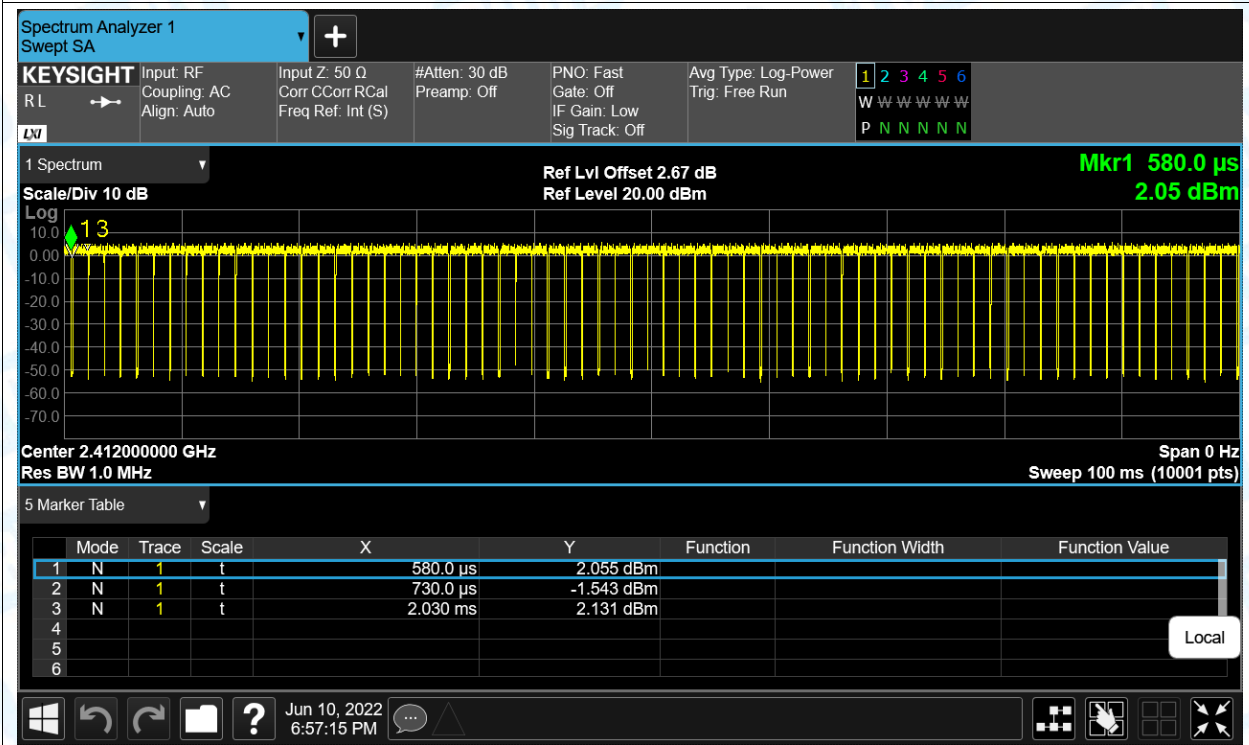
Duty Cycle NVNT g 2437MHz Sum



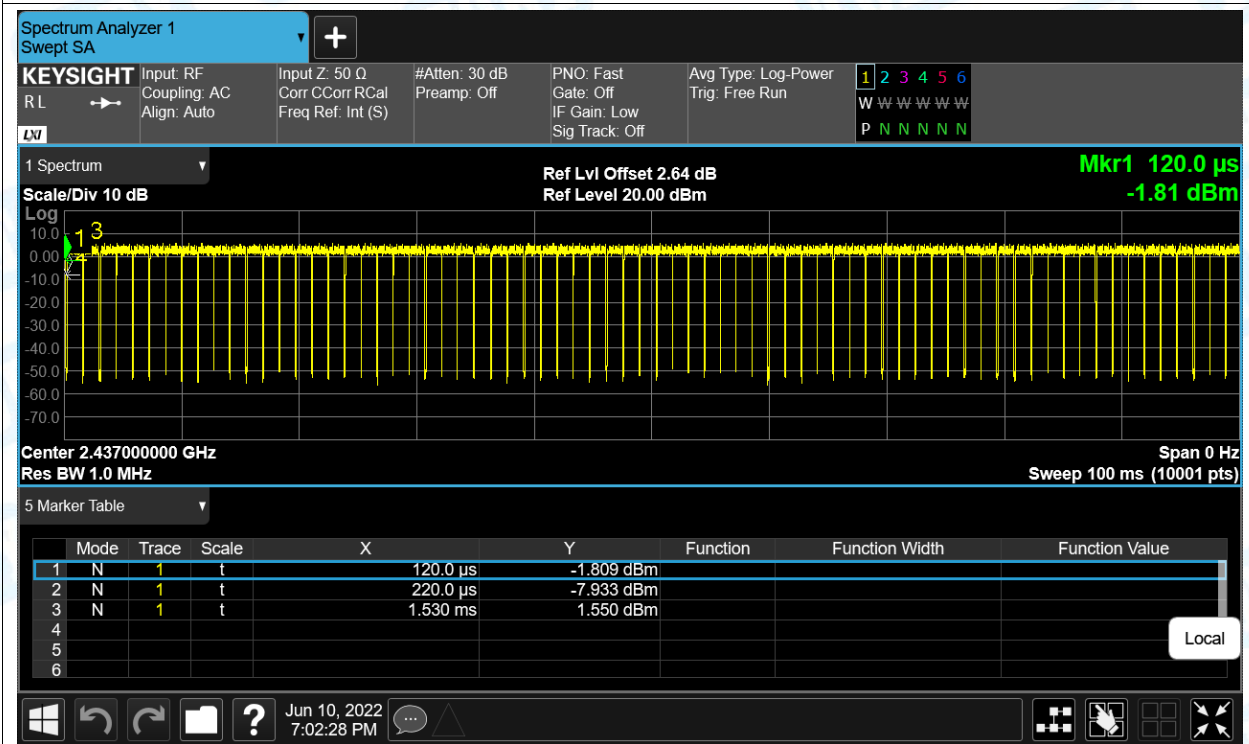
Duty Cycle NVNT g 2462MHz Sum



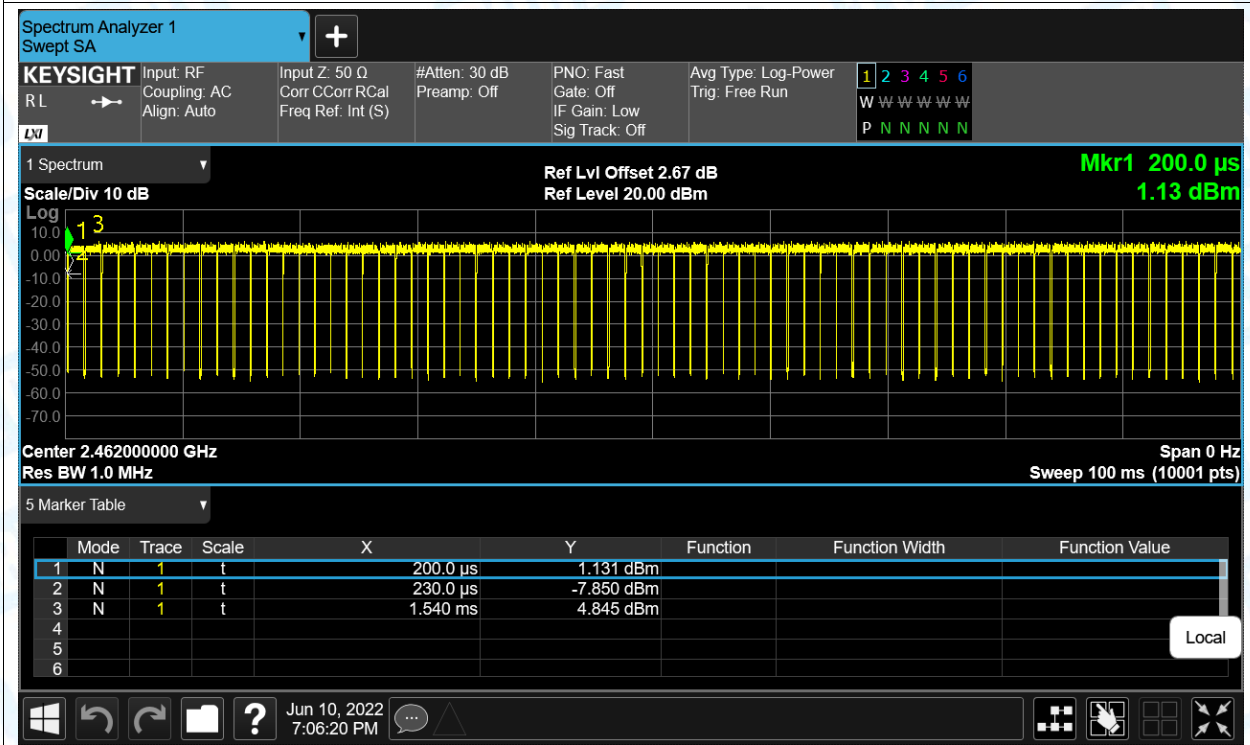
Duty Cycle NVNT n(HT20) 2412MHz Sum



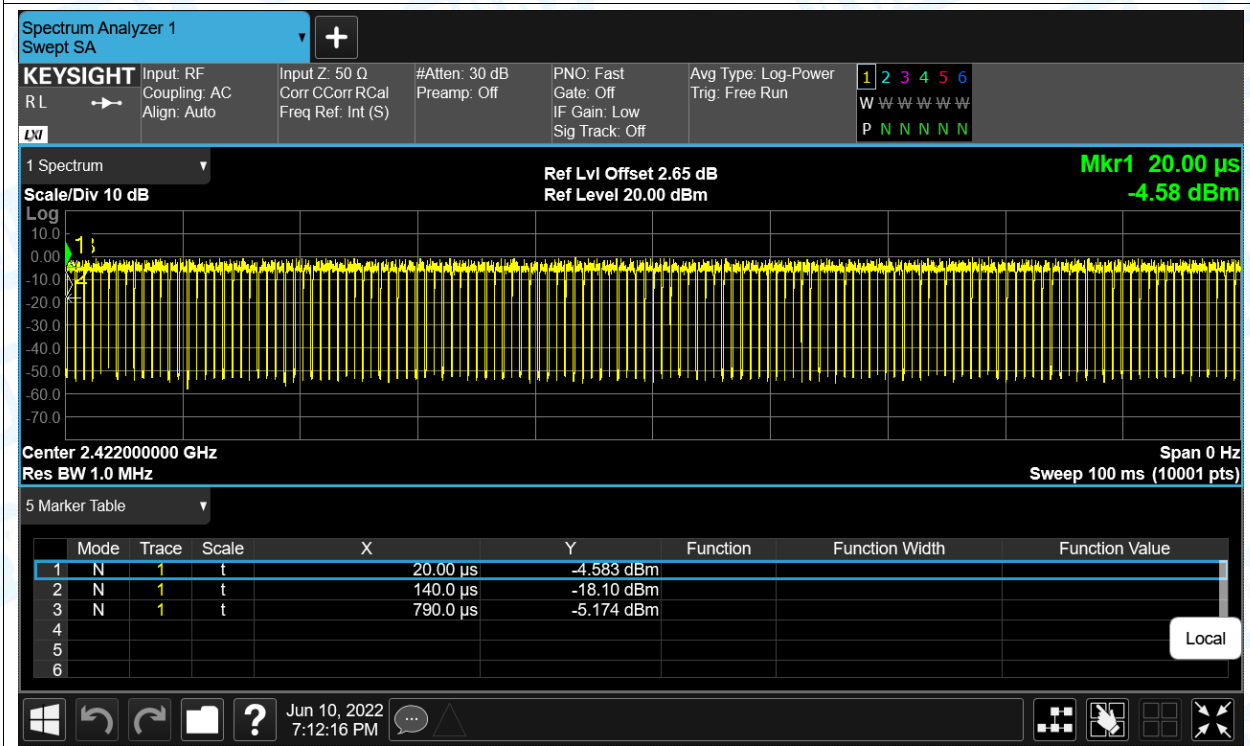
Duty Cycle NVNT n(HT20) 2437MHz Sum



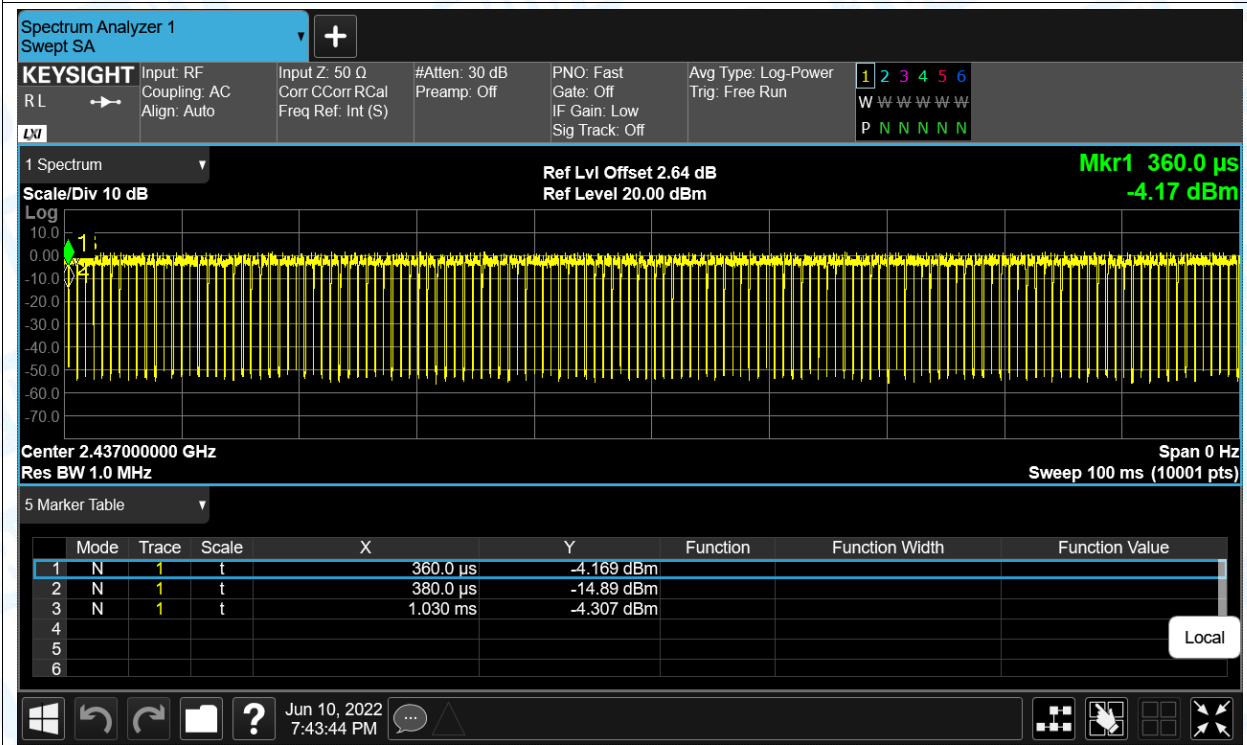
Duty Cycle NVNT n(HT20) 2462MHz Sum



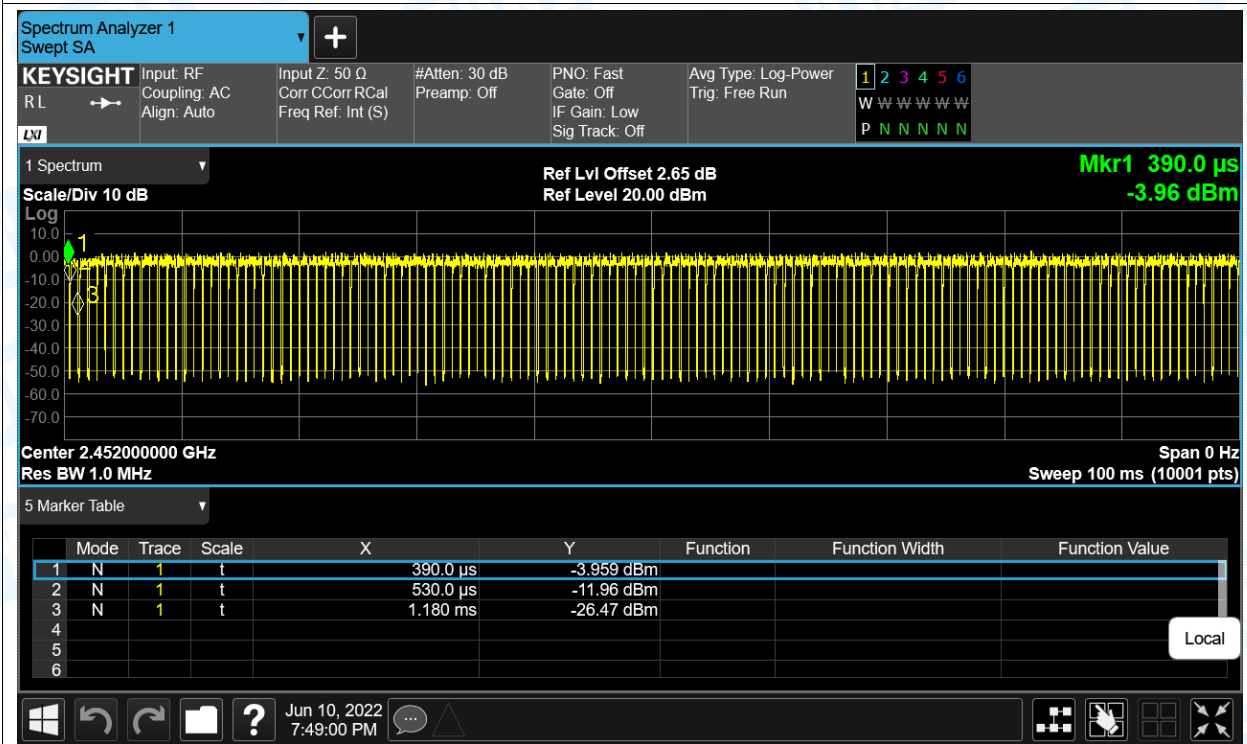
Duty Cycle NVNT n(HT40) 2422MHz Sum



Duty Cycle NVNT n(HT40) 2437MHz Sum



Duty Cycle NVNT n(HT40) 2452MHz Sum



2. Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	b	2412	Ant1	14.88	30	Pass
NVNT	b	2412	Ant2	16.33	30	Pass
NVNT	b	2412	Sum	18.68	29.99	Pass
NVNT	b	2437	Ant1	15.84	30	Pass
NVNT	b	2437	Ant2	16.38	30	Pass
NVNT	b	2437	Sum	19.13	29.99	Pass
NVNT	b	2462	Ant1	15.69	30	Pass
NVNT	b	2462	Ant2	16.25	30	Pass
NVNT	b	2462	Sum	18.99	29.99	Pass
NVNT	g	2412	Ant1	13.73	30	Pass
NVNT	g	2412	Ant2	15.28	30	Pass
NVNT	g	2412	Sum	17.58	29.99	Pass
NVNT	g	2437	Ant1	13.98	30	Pass
NVNT	g	2437	Ant2	15.37	30	Pass
NVNT	g	2437	Sum	17.74	29.99	Pass
NVNT	g	2462	Ant1	14.07	30	Pass
NVNT	g	2462	Ant2	15.09	30	Pass
NVNT	g	2462	Sum	17.62	29.99	Pass
NVNT	n(HT20)	2412	Ant1	13.36	30	Pass
NVNT	n(HT20)	2412	Ant2	15.47	30	Pass
NVNT	n(HT20)	2412	Sum	17.55	29.99	Pass
NVNT	n(HT20)	2437	Ant1	13.59	30	Pass
NVNT	n(HT20)	2437	Ant2	15.26	30	Pass
NVNT	n(HT20)	2437	Sum	17.52	29.99	Pass
NVNT	n(HT20)	2462	Ant1	13.77	30	Pass
NVNT	n(HT20)	2462	Ant2	14.98	30	Pass
NVNT	n(HT20)	2462	Sum	17.43	29.99	Pass
NVNT	n(HT40)	2422	Ant1	12.52	30	Pass
NVNT	n(HT40)	2422	Ant2	14.57	30	Pass
NVNT	n(HT40)	2422	Sum	16.67	29.99	Pass
NVNT	n(HT40)	2437	Ant1	14.71	30	Pass
NVNT	n(HT40)	2437	Ant2	16.07	30	Pass
NVNT	n(HT40)	2437	Sum	18.45	29.99	Pass
NVNT	n(HT40)	2452	Ant1	13.21	30	Pass
NVNT	n(HT40)	2452	Ant2	14.94	30	Pass
NVNT	n(HT40)	2452	Sum	17.17	29.99	Pass

Note:

The ANT. 1 and ANT. 2 will transmitting simultaneously for the 802.11b/g/n(HT20)/n(HT40) Mode, the T Directional Gain = Ant. Gain + 10*LOG(N_{ANT}) = 6.01dBi > 6dBi.

So $P_{out} = P_{limit} - (G_{TX} - 6) = 30 - 0.01 = 29.99 \text{ dBm}$

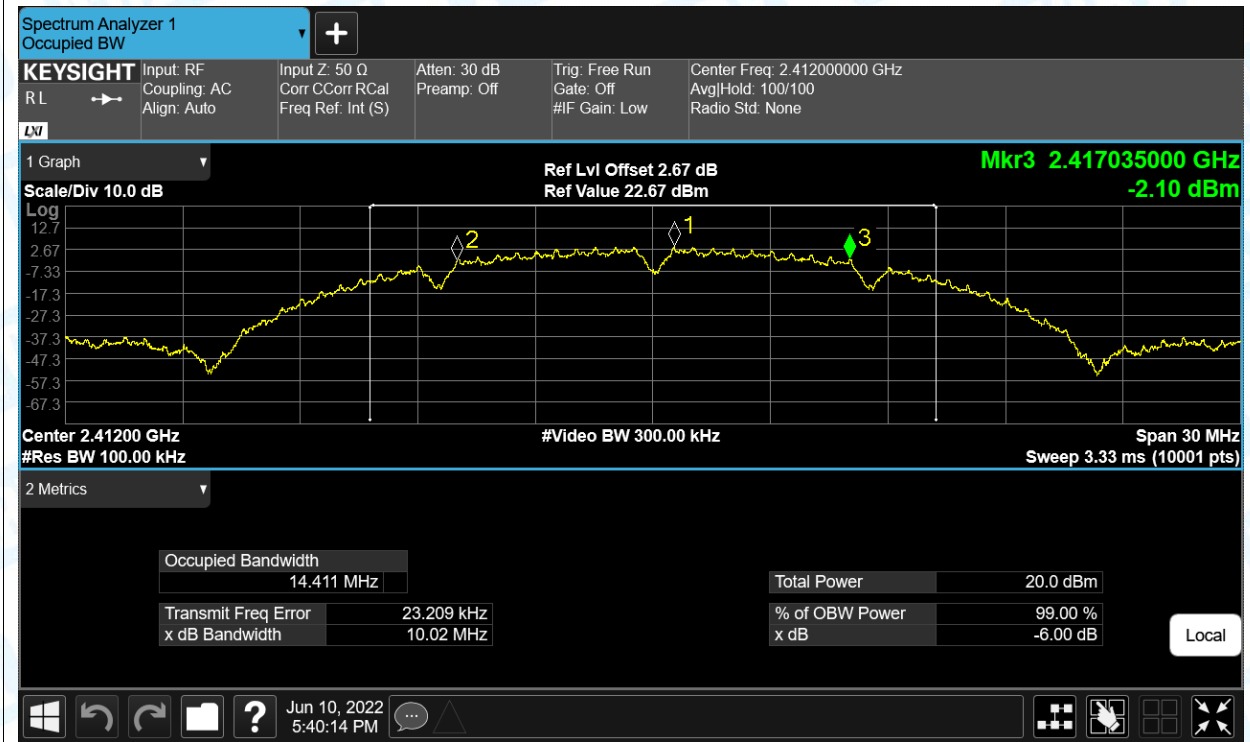
$P_{SUM} = 10 * \text{LOG}[10^{(P_{Ant.1}/10)} + 10^{(P_{Ant.2}/10)}]$

3. -6dB Bandwidth

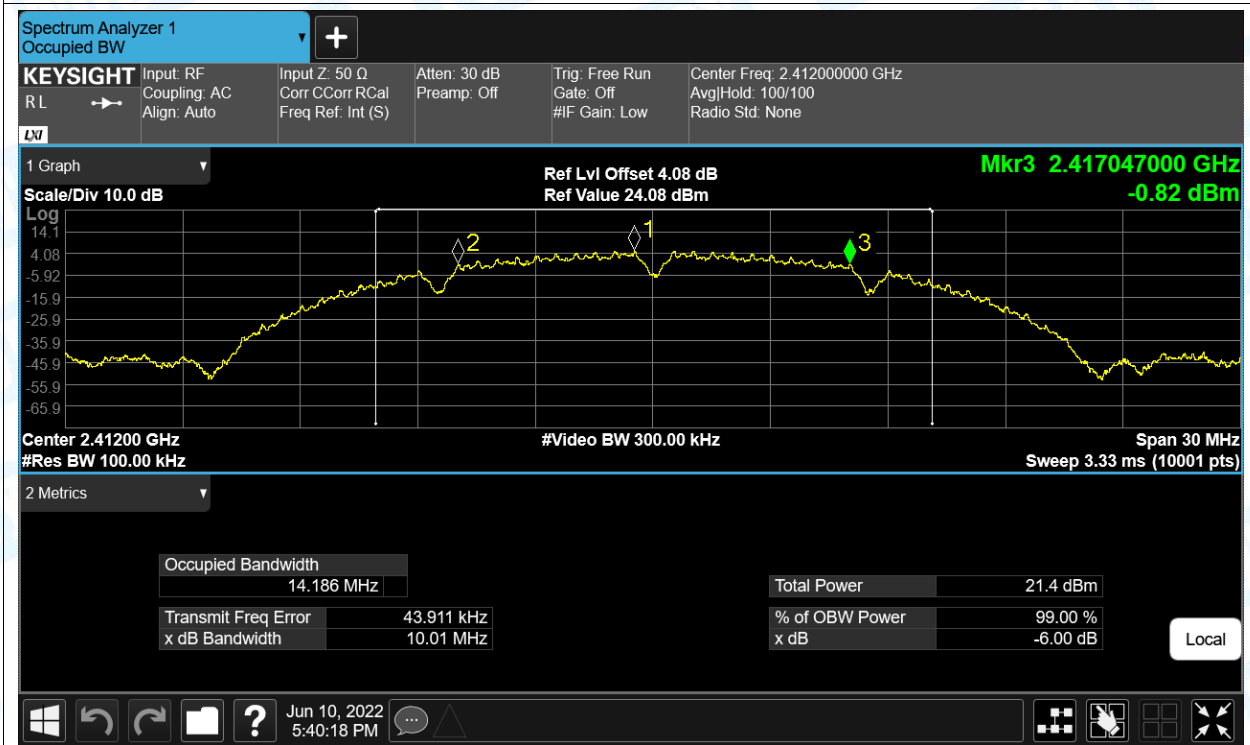
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	b	2412	Ant1	10.02	0.5	Pass
NVNT	b	2412	Ant2	10.01	0.5	Pass
NVNT	b	2437	Ant1	9.57	0.5	Pass
NVNT	b	2437	Ant2	9.99	0.5	Pass
NVNT	b	2462	Ant1	9.57	0.5	Pass
NVNT	b	2462	Ant2	10	0.5	Pass
NVNT	g	2412	Ant1	13.78	0.5	Pass
NVNT	g	2412	Ant2	14.99	0.5	Pass
NVNT	g	2437	Ant1	15.11	0.5	Pass
NVNT	g	2437	Ant2	13.8	0.5	Pass
NVNT	g	2462	Ant1	15.06	0.5	Pass
NVNT	g	2462	Ant2	16.01	0.5	Pass
NVNT	n(HT20)	2412	Ant1	14.95	0.5	Pass
NVNT	n(HT20)	2412	Ant2	14.43	0.5	Pass
NVNT	n(HT20)	2437	Ant1	13.83	0.5	Pass
NVNT	n(HT20)	2437	Ant2	15.04	0.5	Pass
NVNT	n(HT20)	2462	Ant1	15.12	0.5	Pass
NVNT	n(HT20)	2462	Ant2	15.04	0.5	Pass
NVNT	n(HT40)	2422	Ant1	35.06	0.5	Pass
NVNT	n(HT40)	2422	Ant2	33.84	0.5	Pass
NVNT	n(HT40)	2437	Ant1	33.8	0.5	Pass
NVNT	n(HT40)	2437	Ant2	35.08	0.5	Pass
NVNT	n(HT40)	2452	Ant1	33.86	0.5	Pass
NVNT	n(HT40)	2452	Ant2	31.34	0.5	Pass

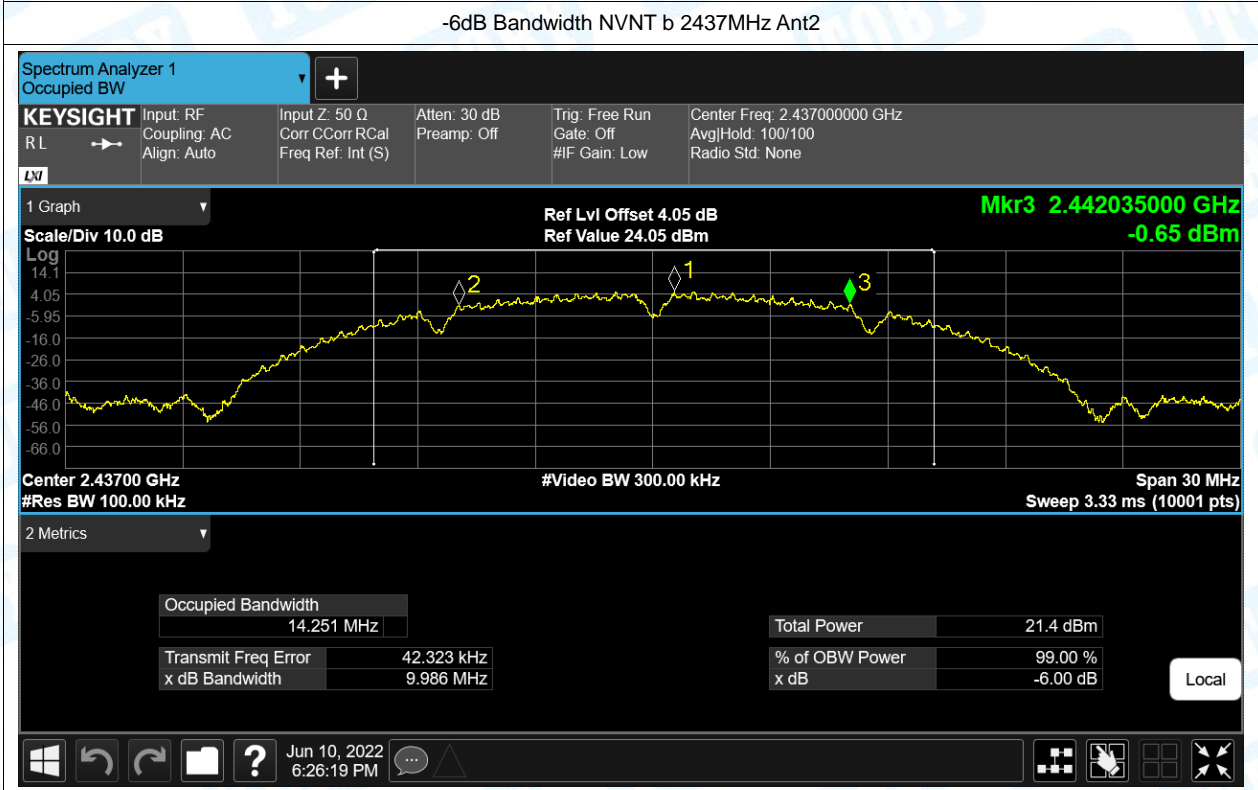
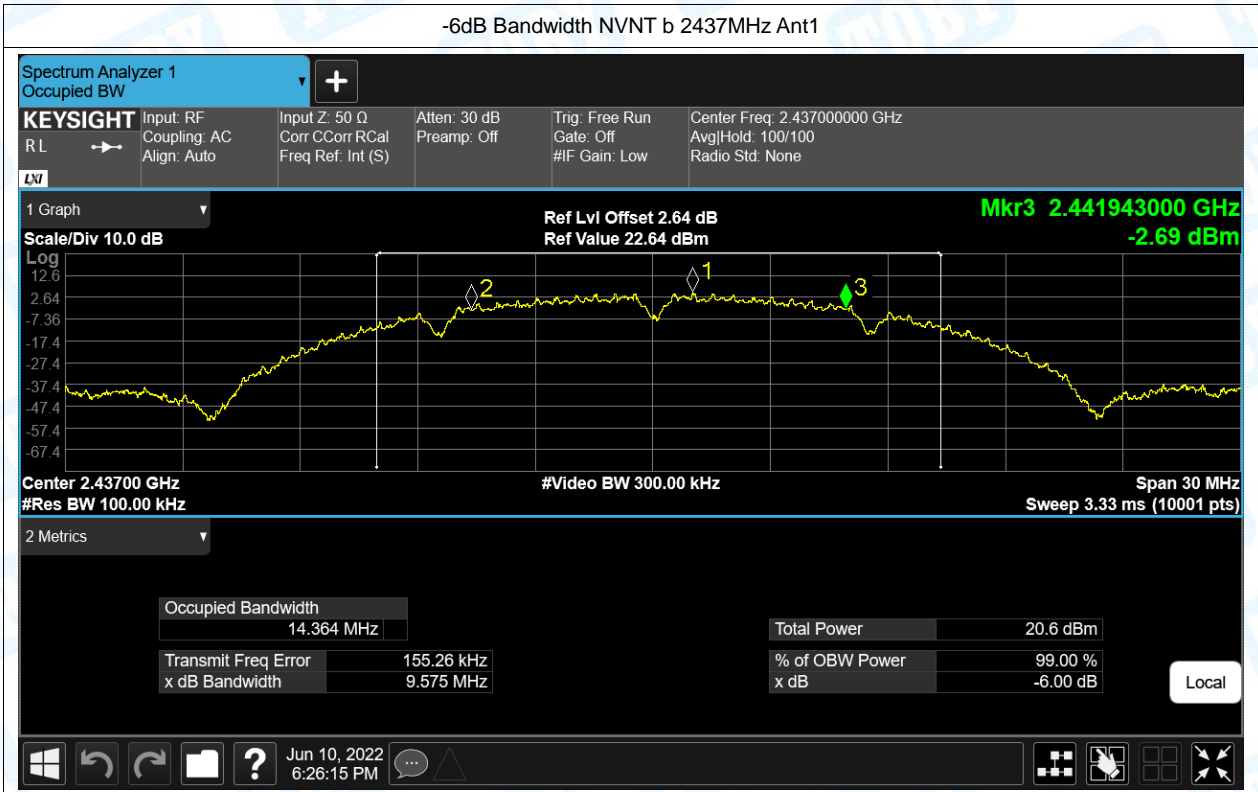
Test Graphs

-6dB Bandwidth NVNT b 2412MHz Ant1

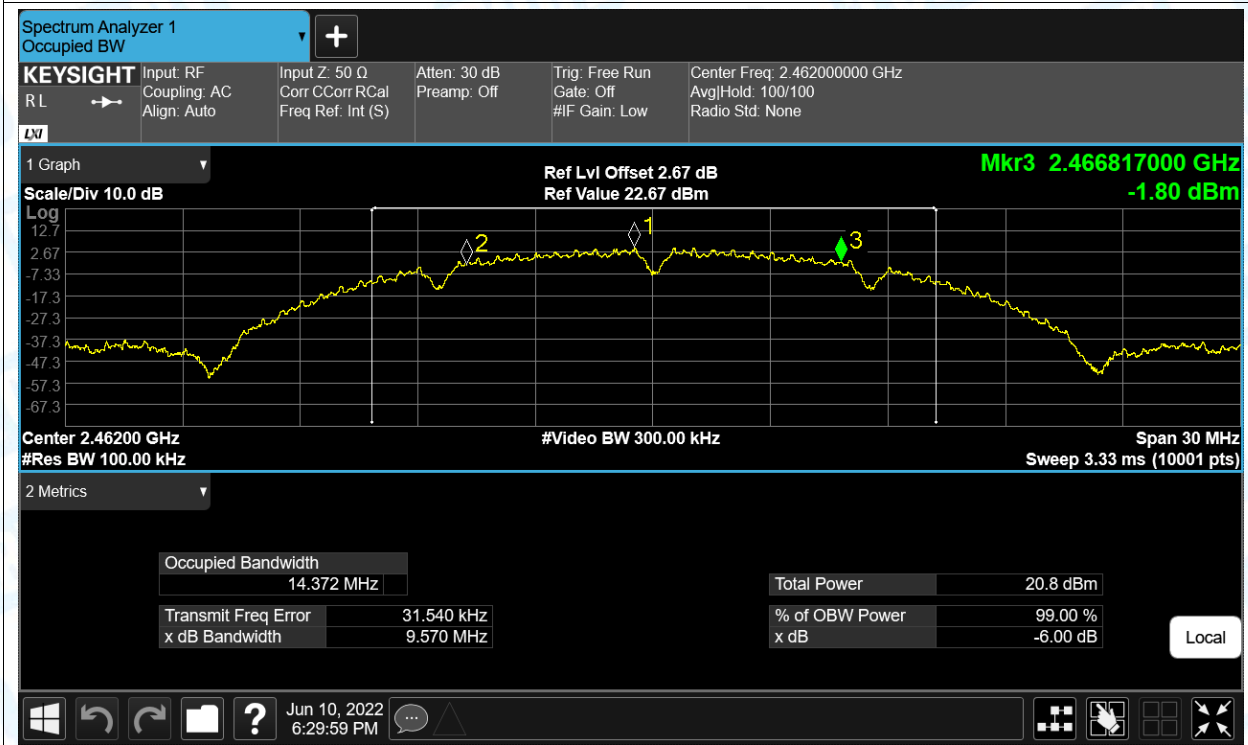


-6dB Bandwidth NVNT b 2412MHz Ant2

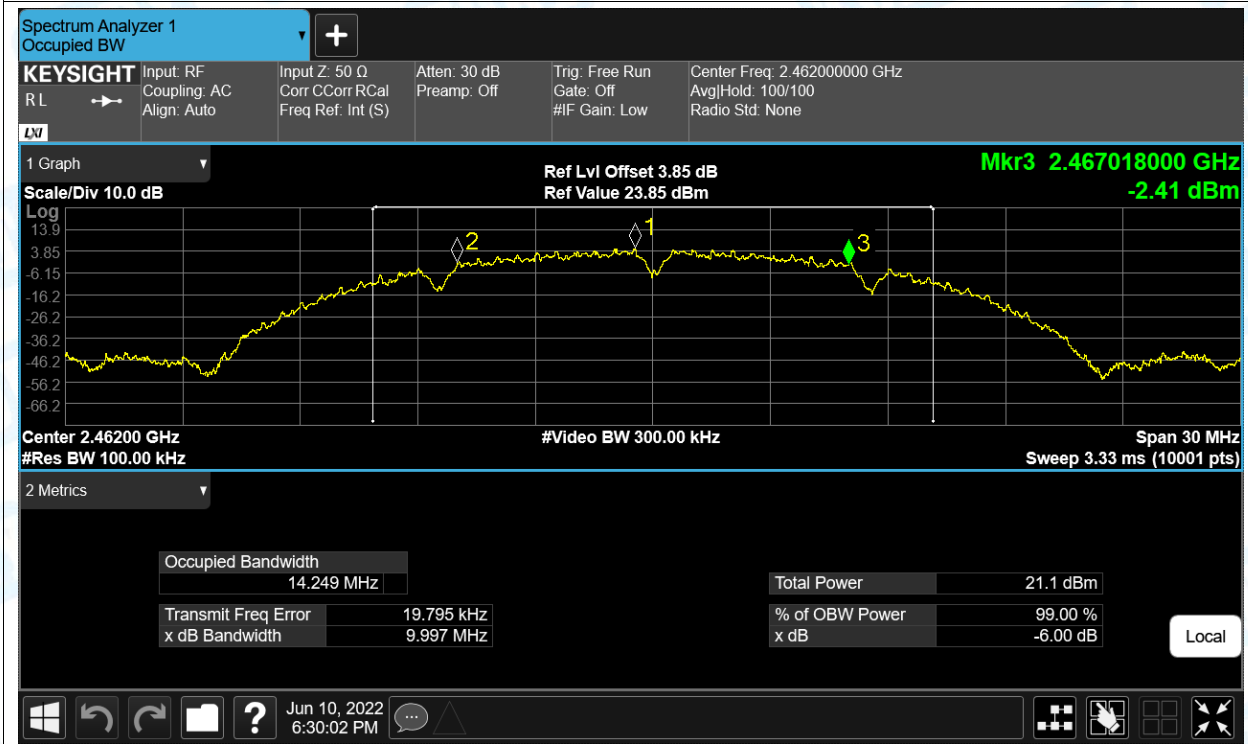


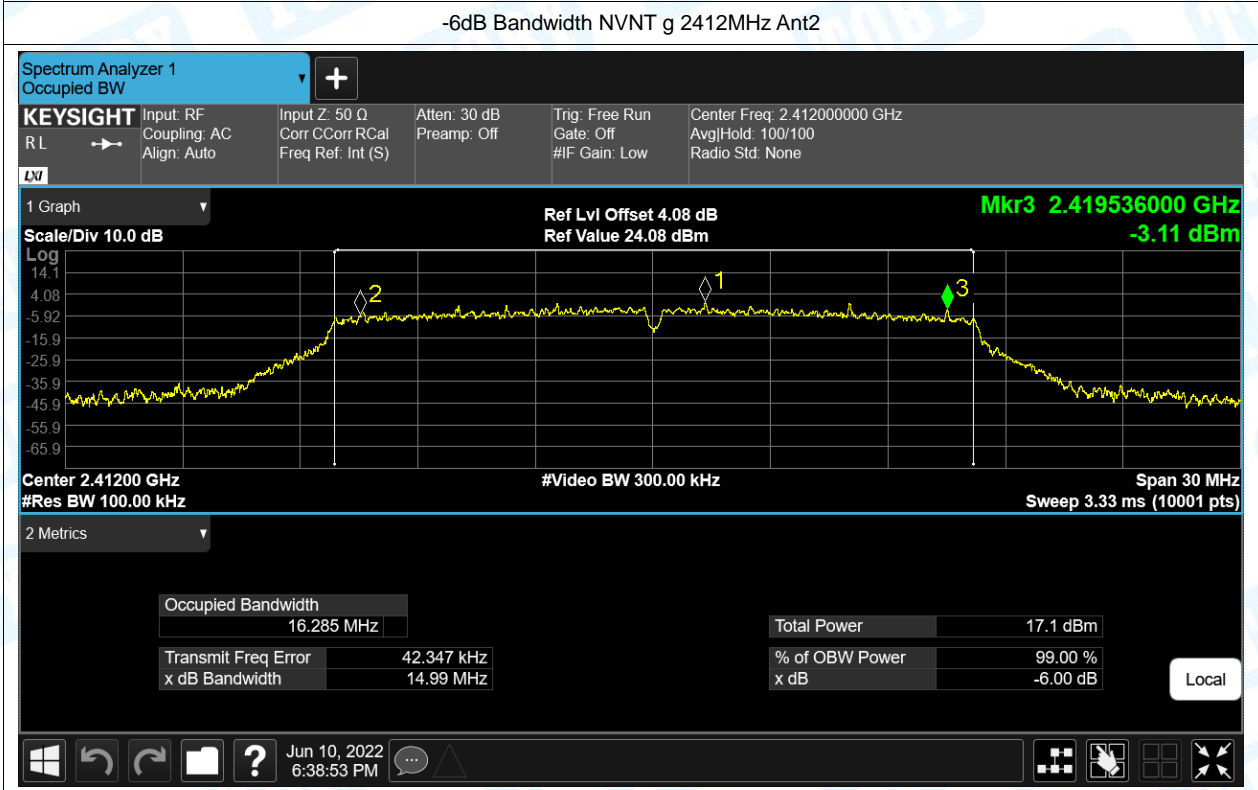
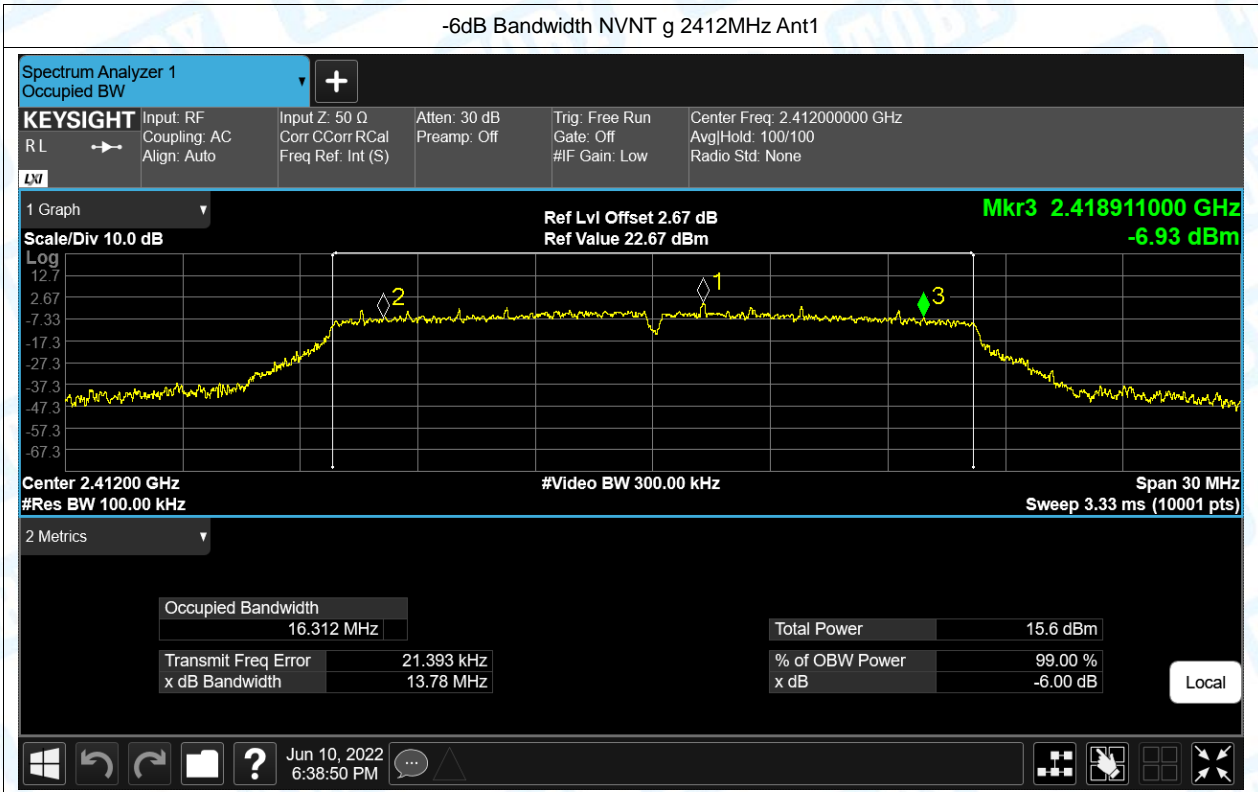


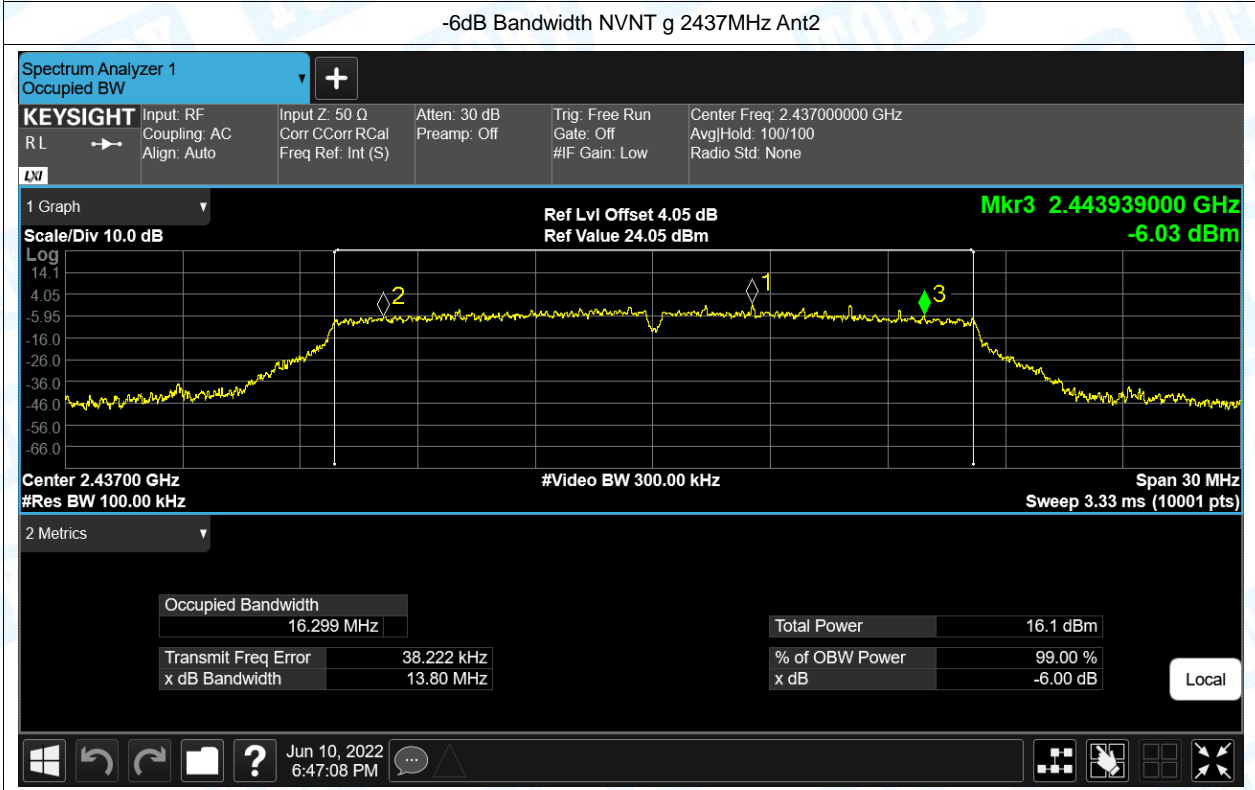
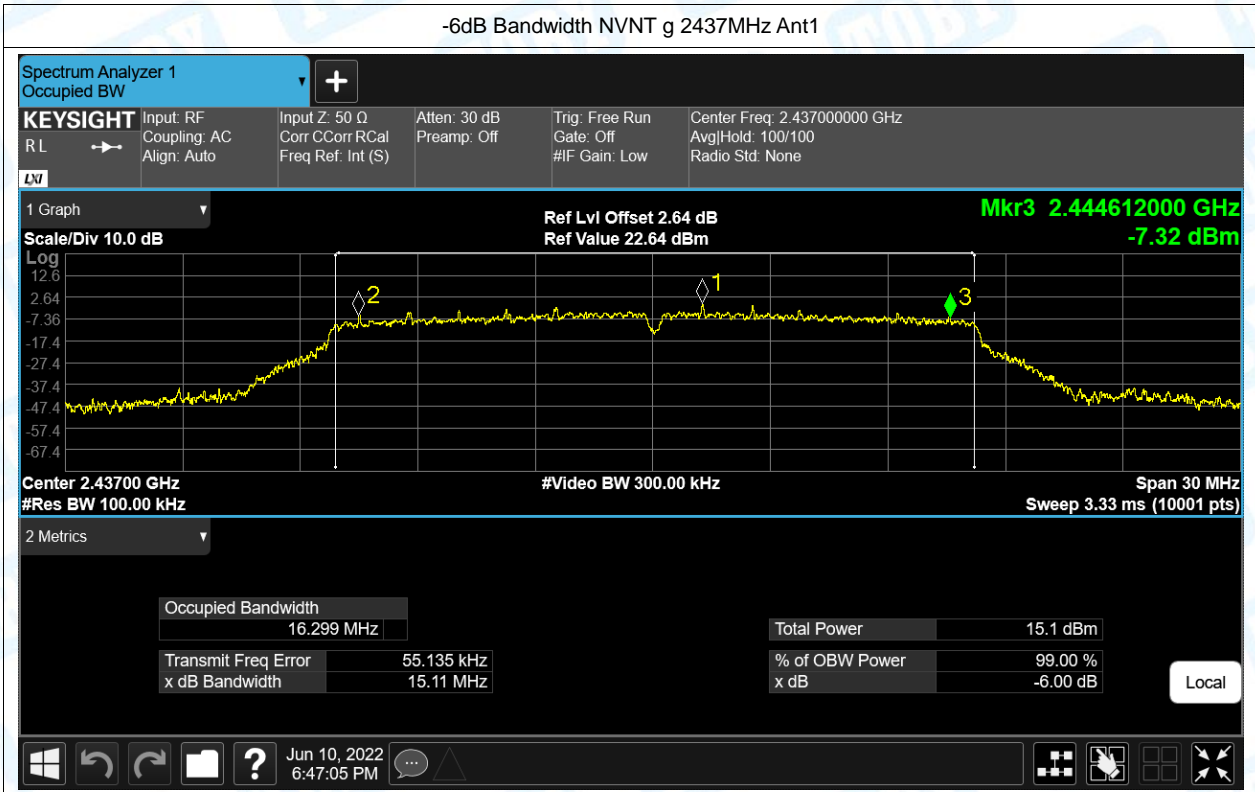
-6dB Bandwidth NVNT b 2462MHz Ant1

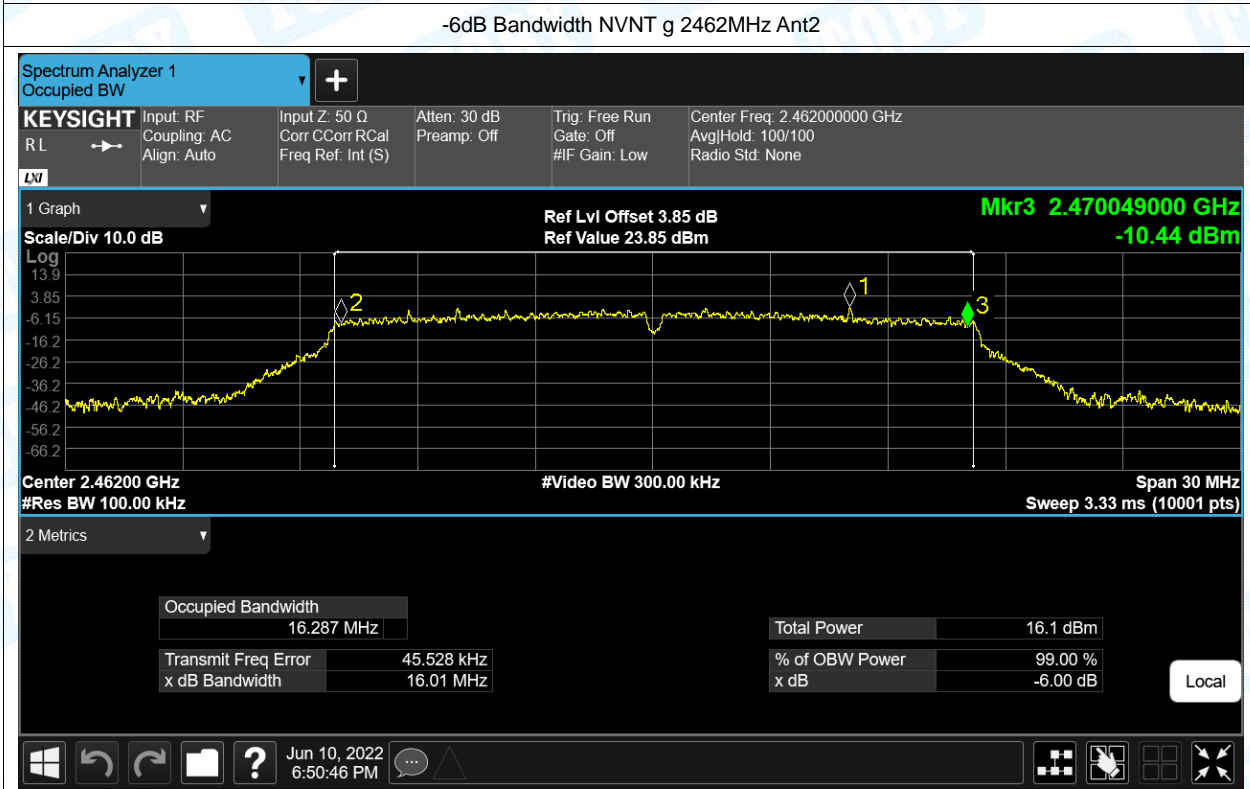
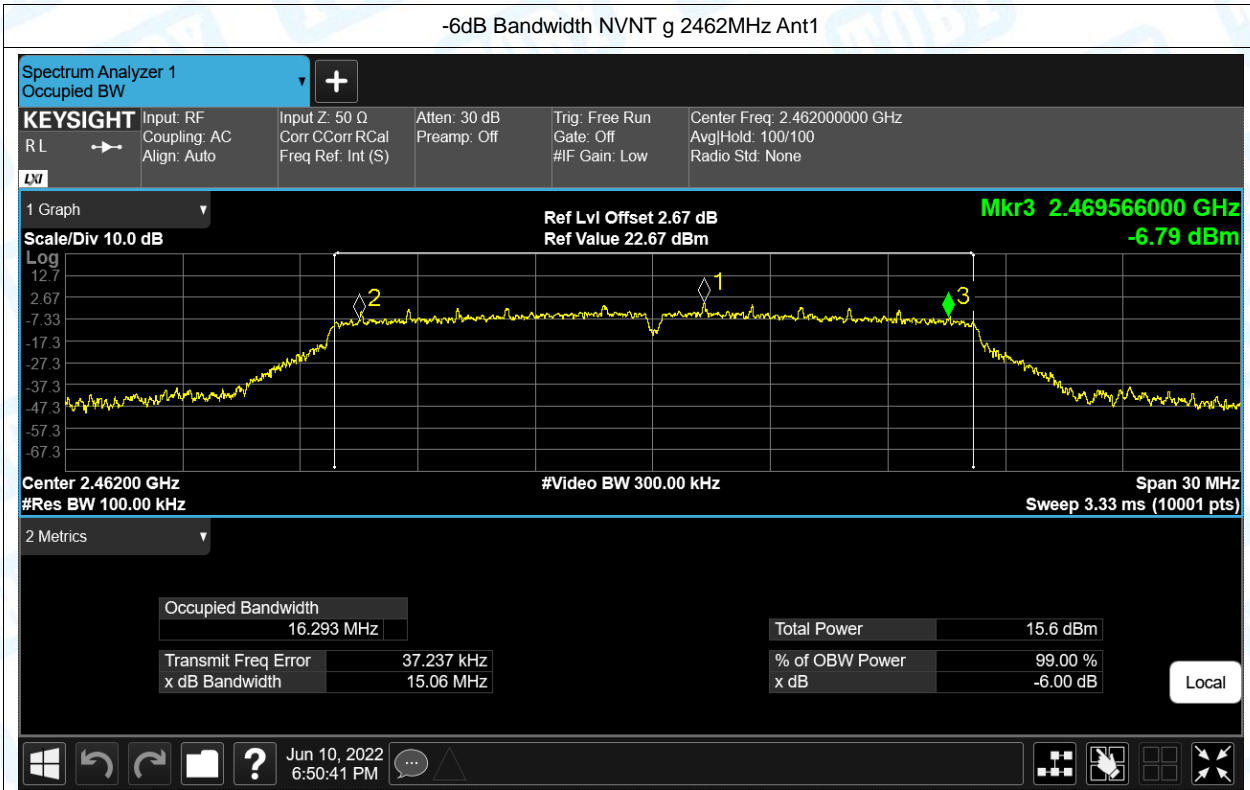


-6dB Bandwidth NVNT b 2462MHz Ant2

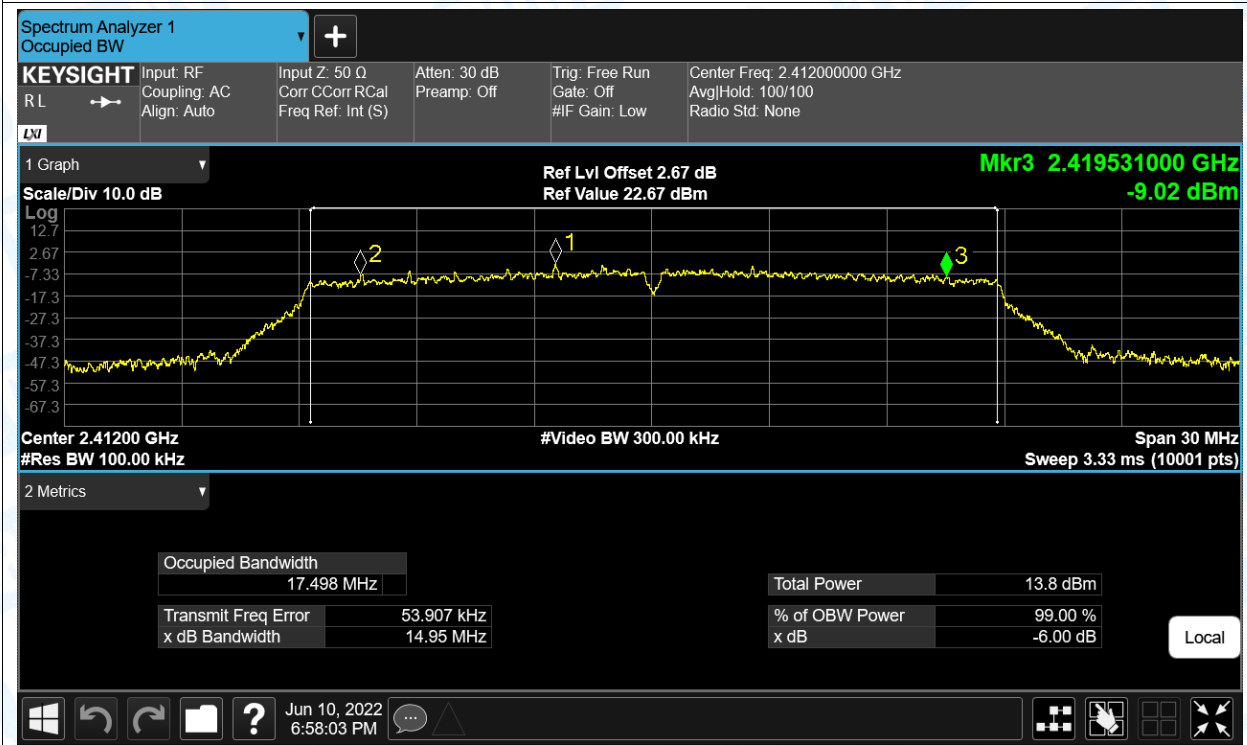




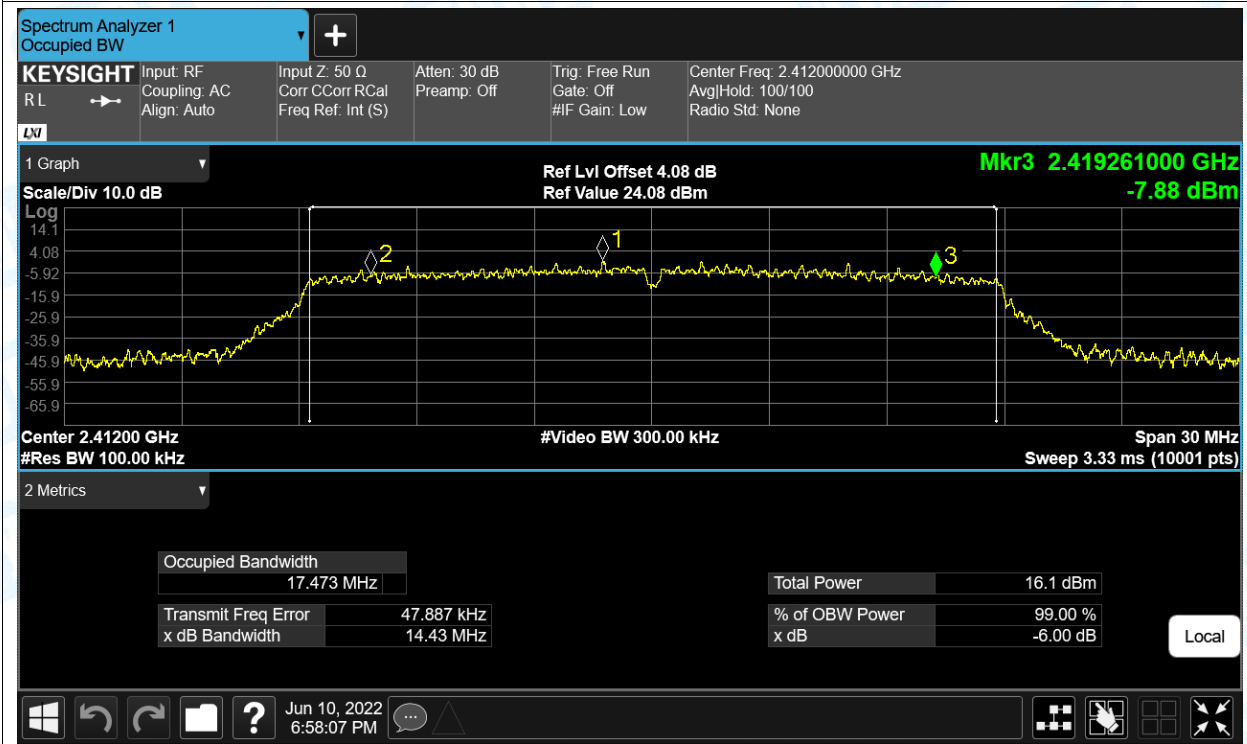




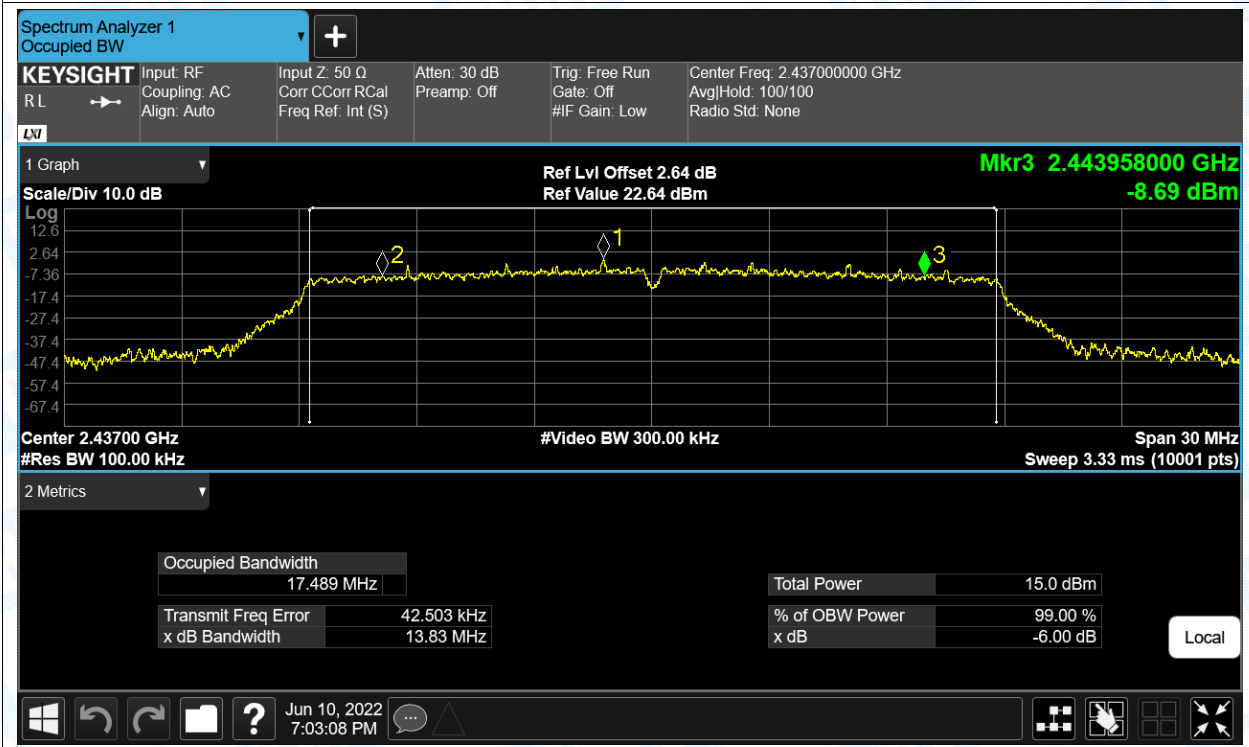
-6dB Bandwidth NVNT n(HT20) 2412MHz Ant1



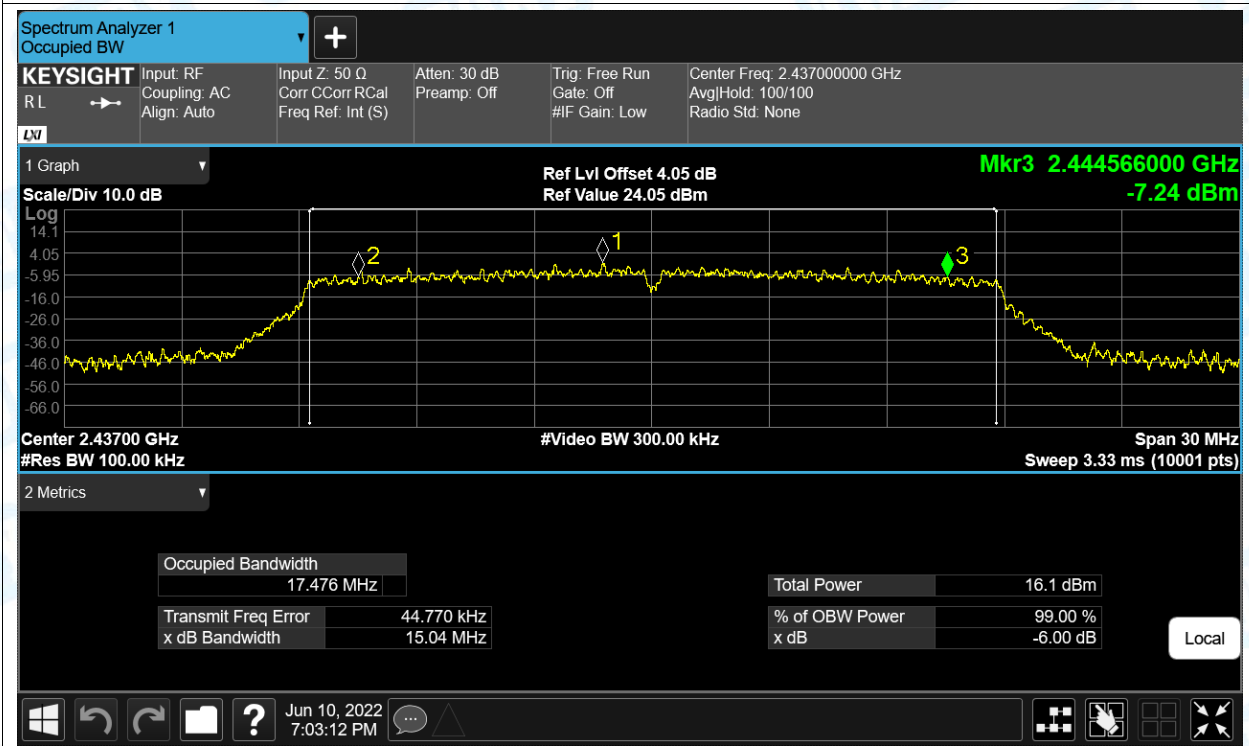
-6dB Bandwidth NVNT n(HT20) 2412MHz Ant2



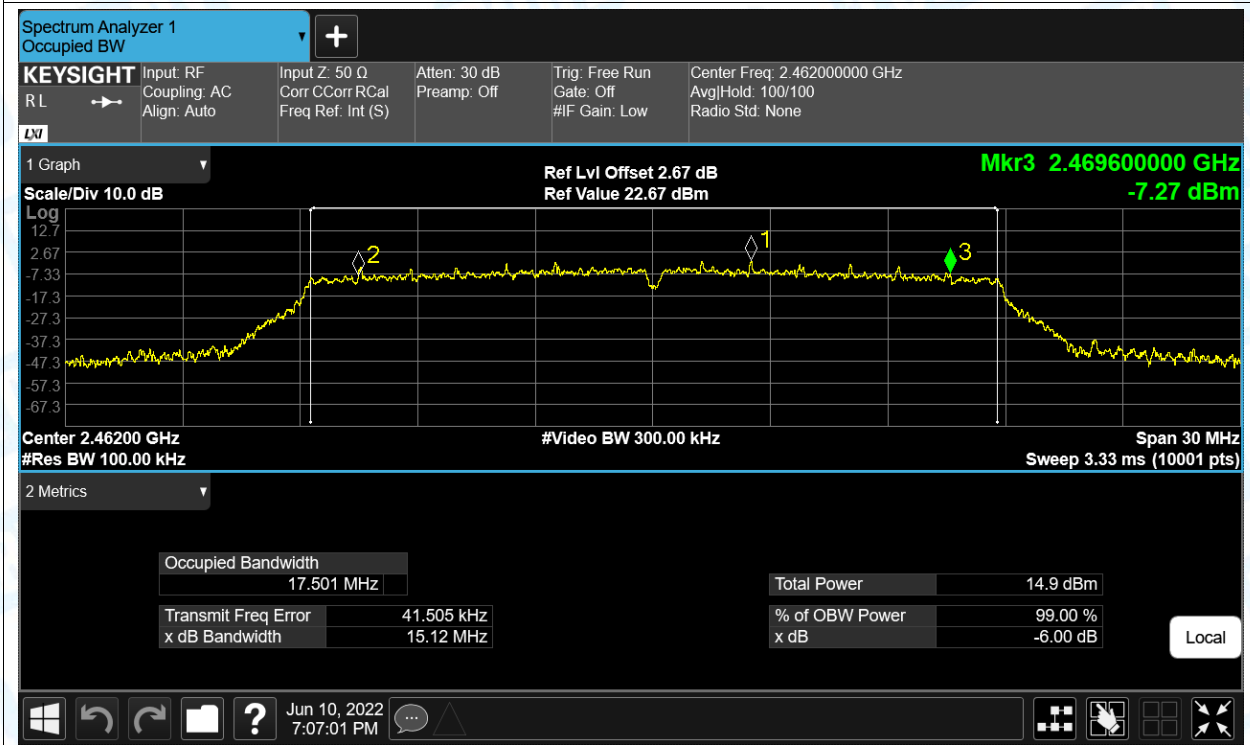
-6dB Bandwidth NVNT n(HT20) 2437MHz Ant1



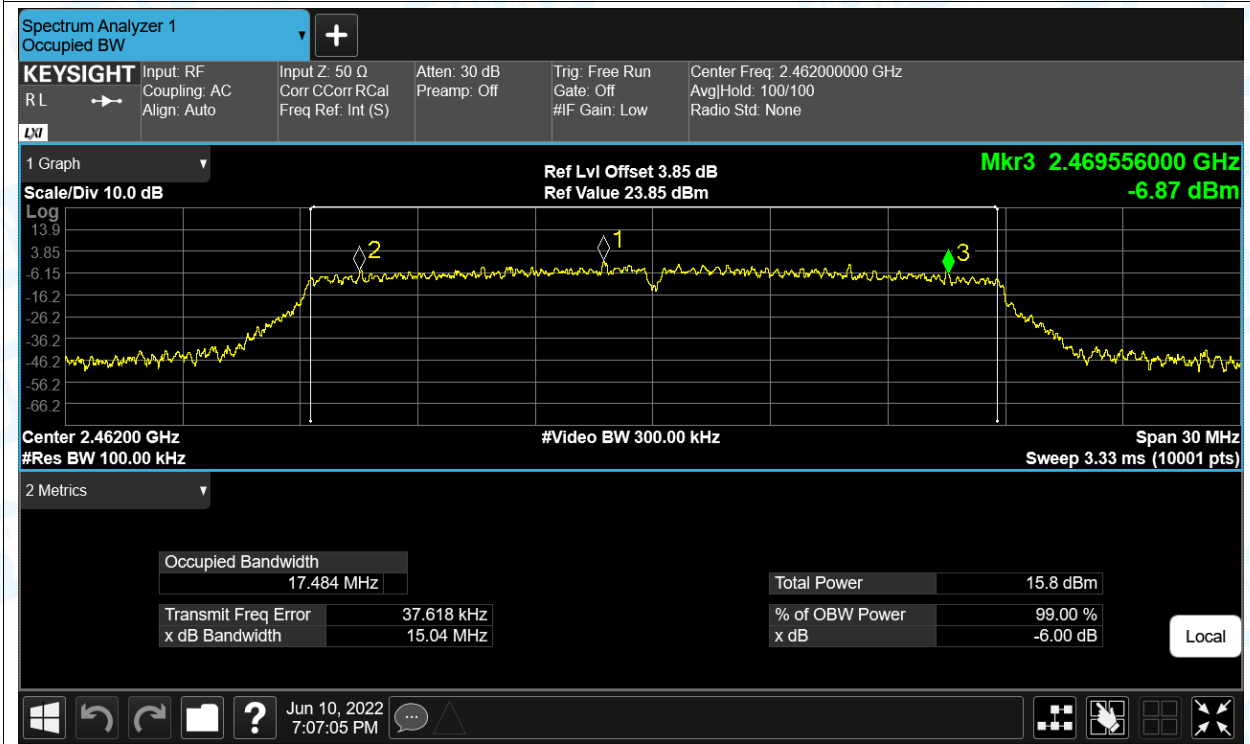
-6dB Bandwidth NVNT n(HT20) 2437MHz Ant2



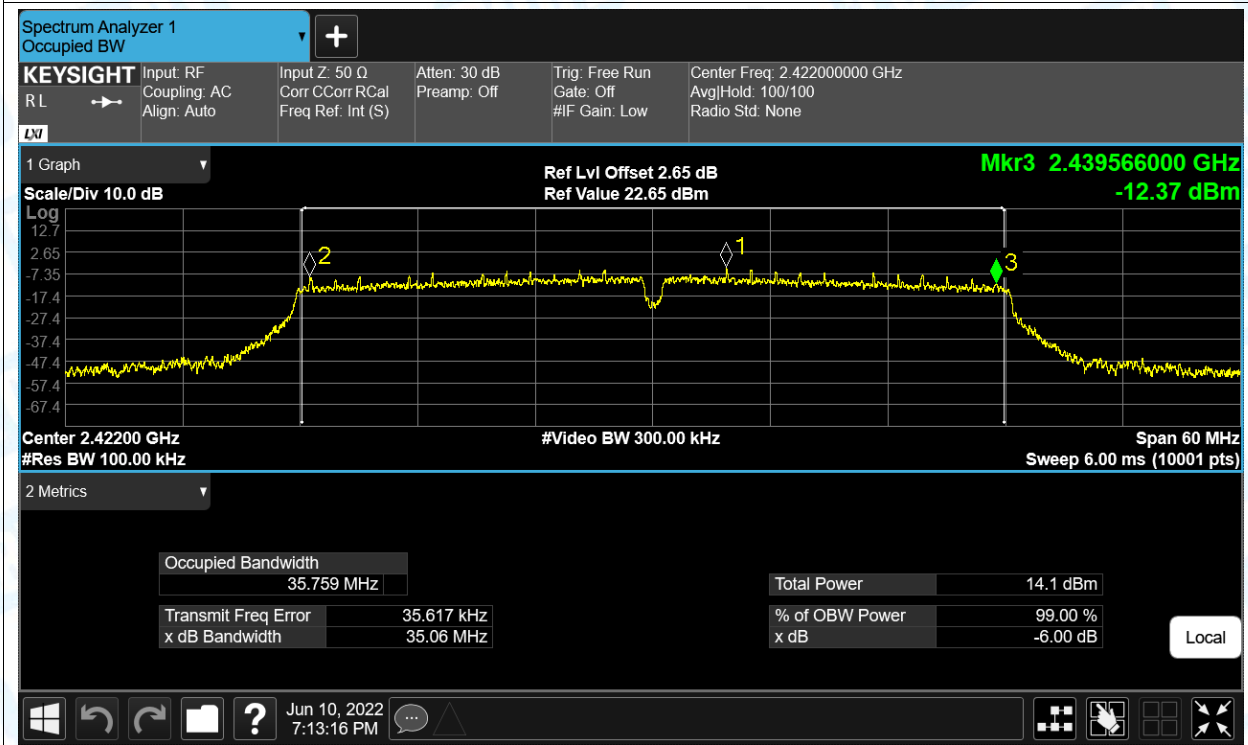
-6dB Bandwidth NVNT n(HT20) 2462MHz Ant1



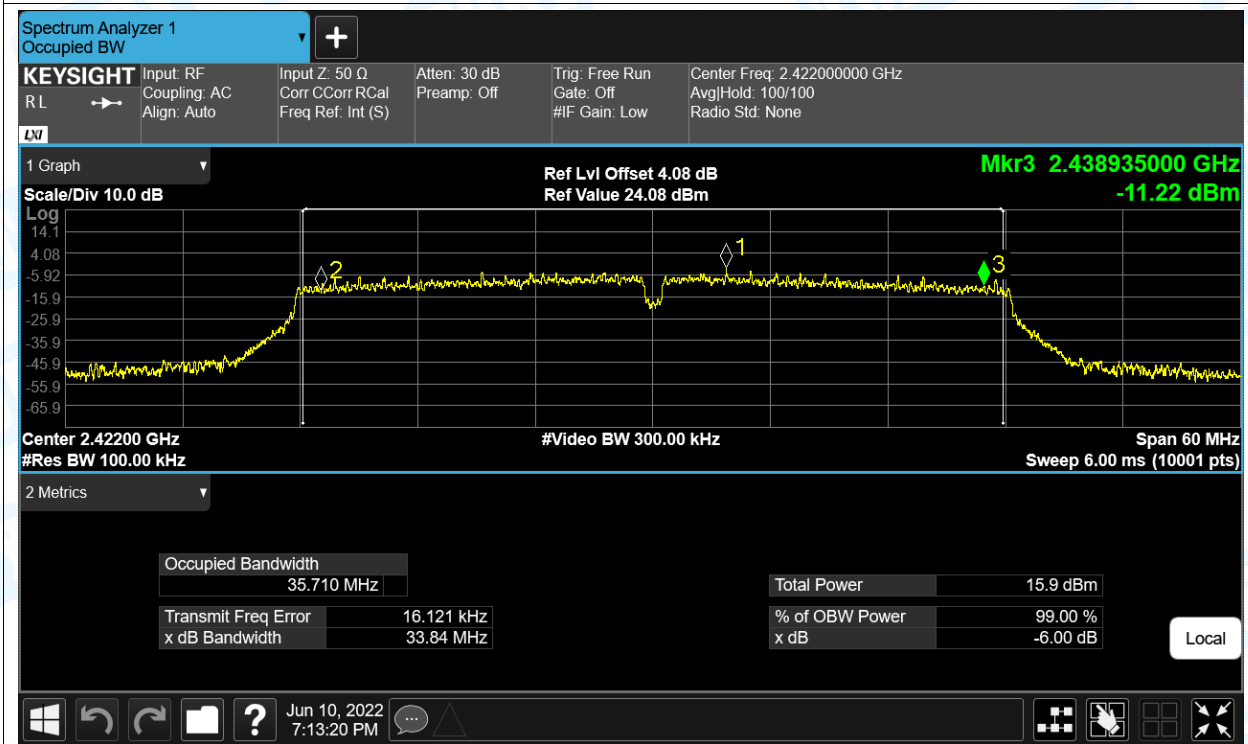
-6dB Bandwidth NVNT n(HT20) 2462MHz Ant2

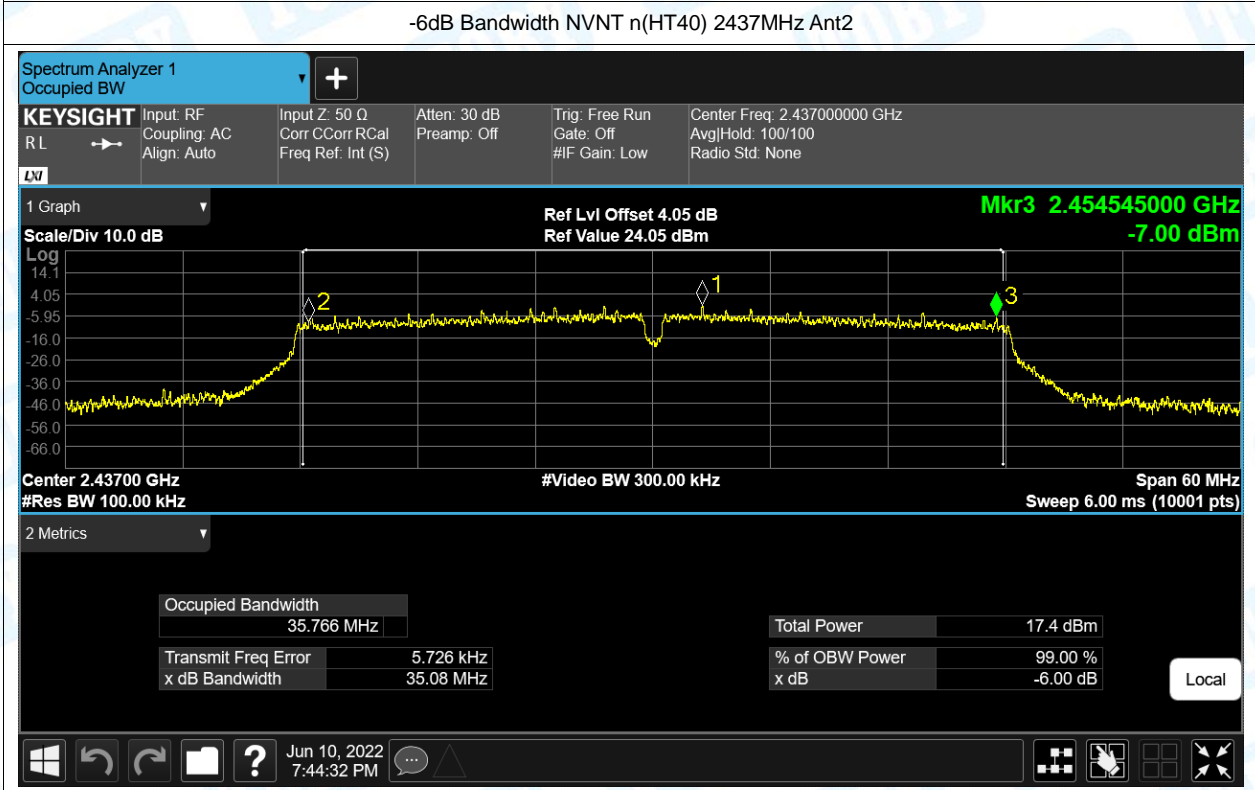


-6dB Bandwidth NVNT n(HT40) 2422MHz Ant1

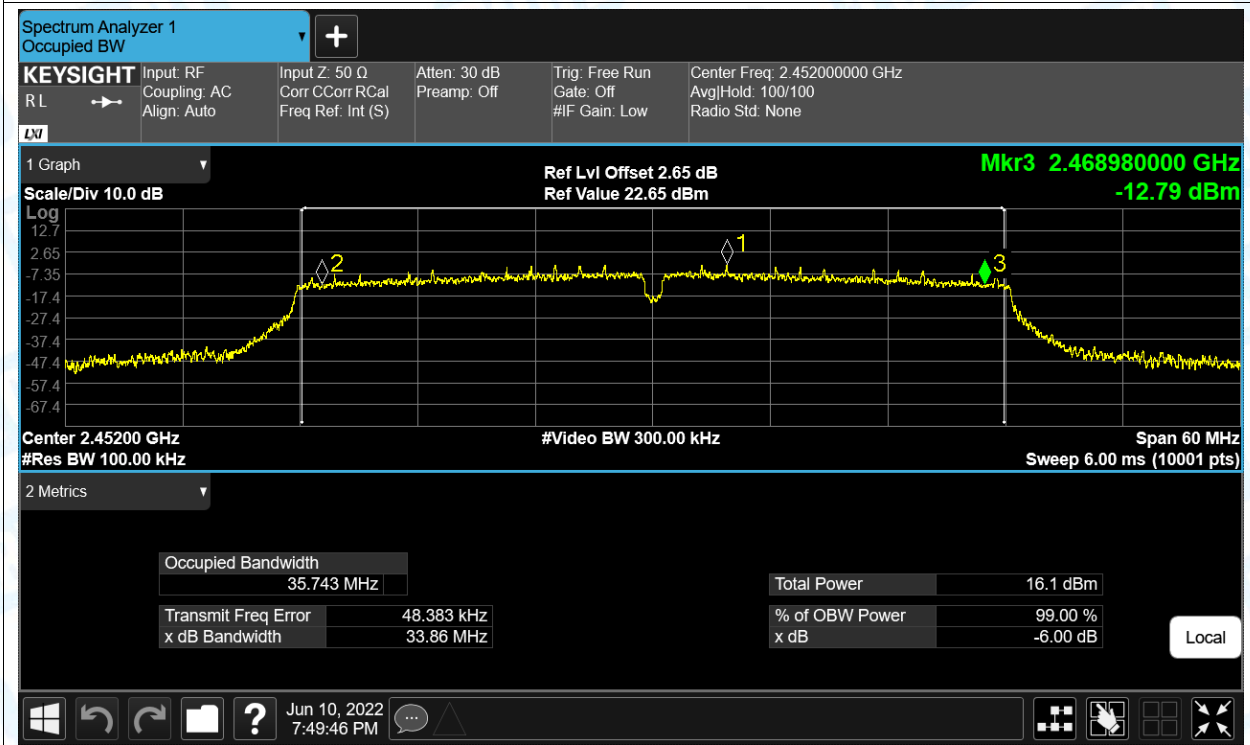


-6dB Bandwidth NVNT n(HT40) 2422MHz Ant2

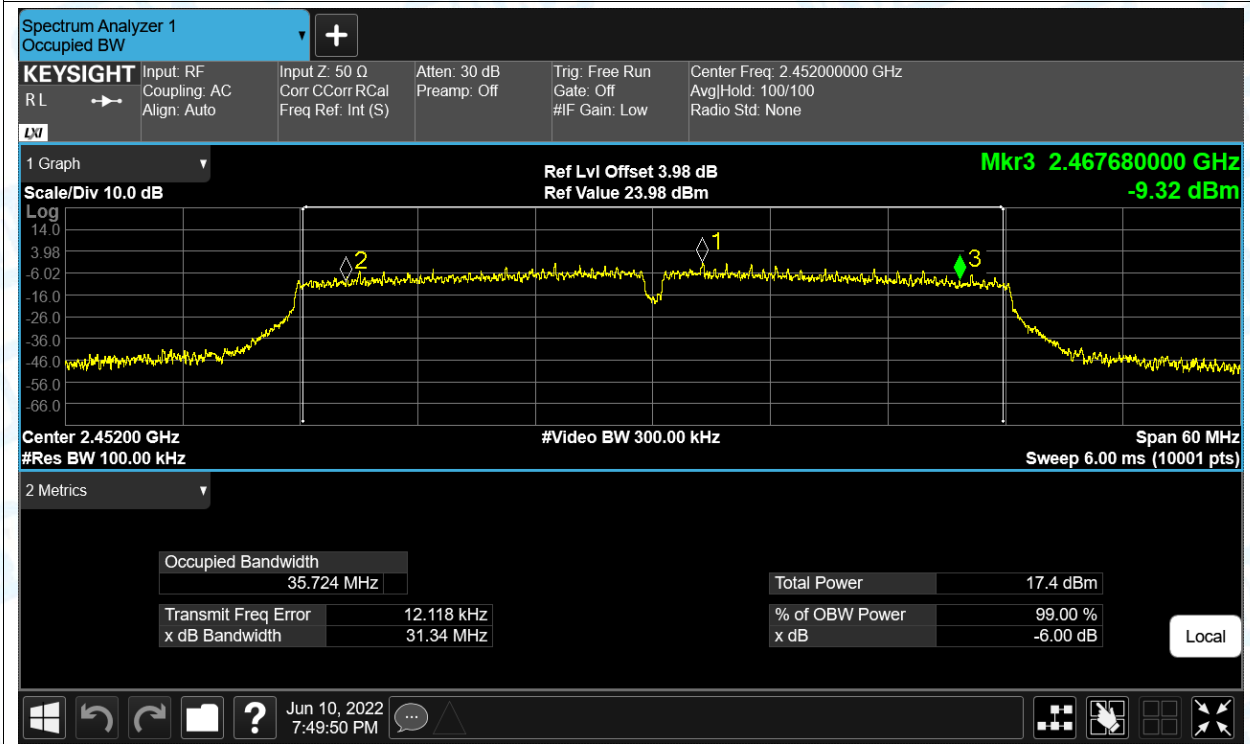




-6dB Bandwidth NVNT n(HT40) 2452MHz Ant1



-6dB Bandwidth NVNT n(HT40) 2452MHz Ant2

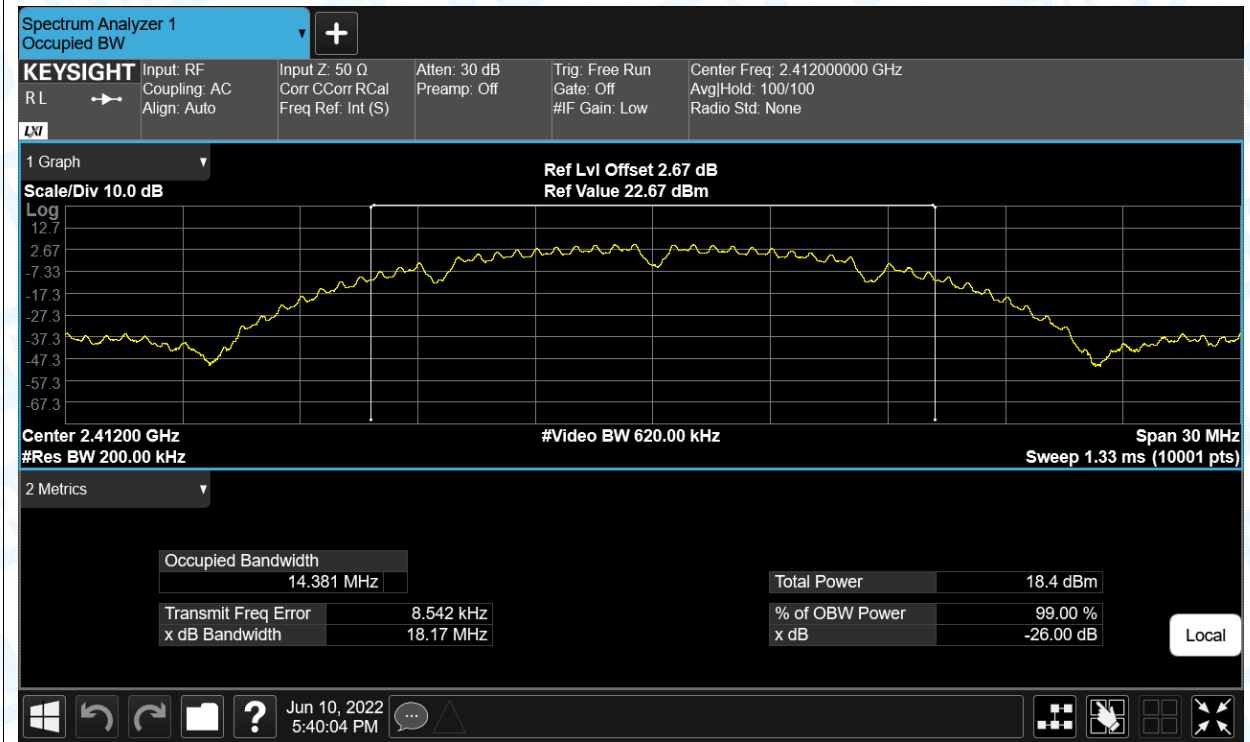


4. Occupied Channel Bandwidth

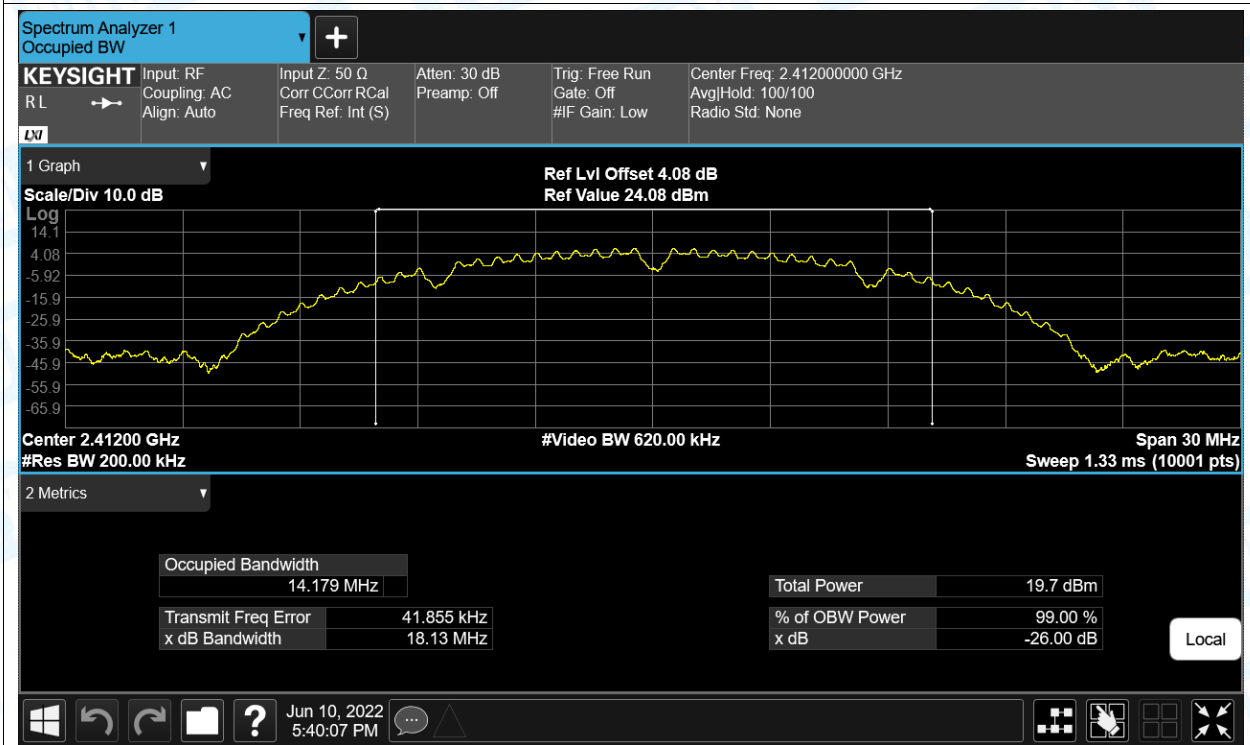
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	b	2412	Ant1	14.381
NVNT	b	2412	Ant2	14.179
NVNT	b	2437	Ant1	14.362
NVNT	b	2437	Ant2	14.178
NVNT	b	2462	Ant1	14.327
NVNT	b	2462	Ant2	14.178
NVNT	g	2412	Ant1	16.38
NVNT	g	2412	Ant2	16.295
NVNT	g	2437	Ant1	16.364
NVNT	g	2437	Ant2	16.309
NVNT	g	2462	Ant1	16.356
NVNT	g	2462	Ant2	16.33
NVNT	n(HT20)	2412	Ant1	17.529
NVNT	n(HT20)	2412	Ant2	17.471
NVNT	n(HT20)	2437	Ant1	17.503
NVNT	n(HT20)	2437	Ant2	17.473
NVNT	n(HT20)	2462	Ant1	17.519
NVNT	n(HT20)	2462	Ant2	17.467
NVNT	n(HT40)	2422	Ant1	35.956
NVNT	n(HT40)	2422	Ant2	35.905
NVNT	n(HT40)	2437	Ant1	35.898
NVNT	n(HT40)	2437	Ant2	35.929
NVNT	n(HT40)	2452	Ant1	35.88
NVNT	n(HT40)	2452	Ant2	35.837

Test Graphs

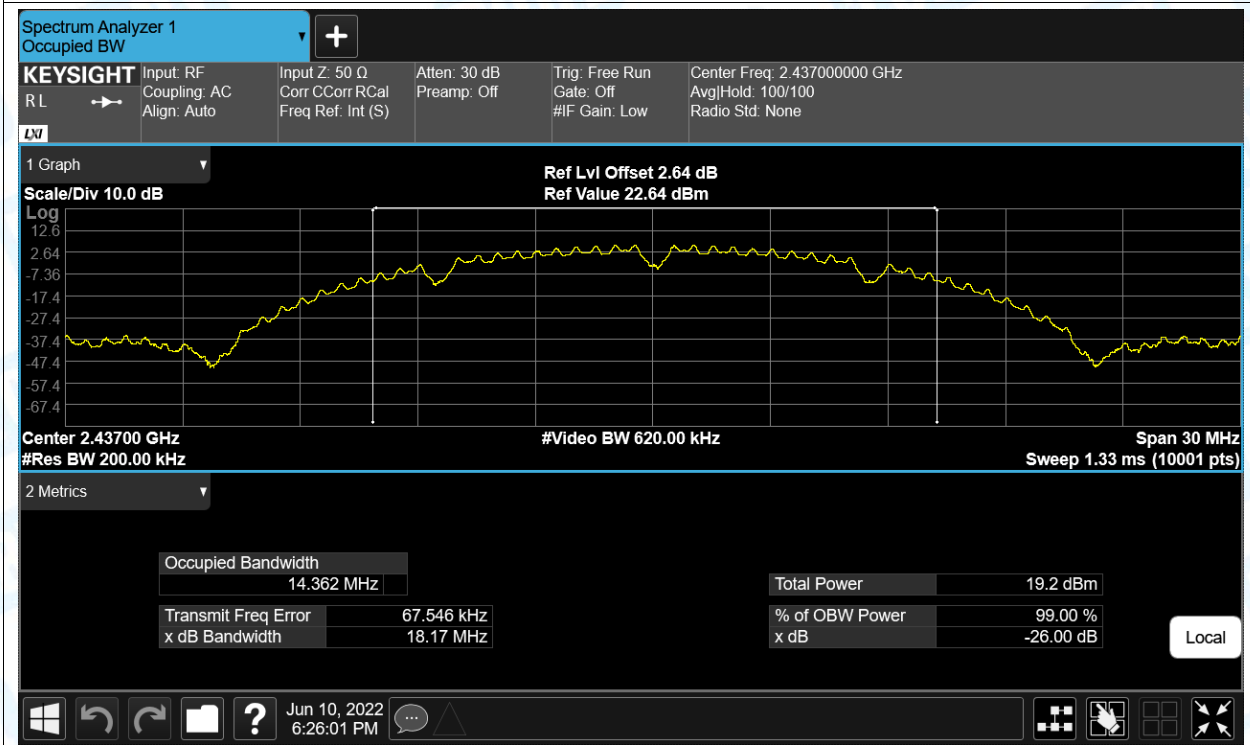
OBW NVNT b 2412MHz Ant1



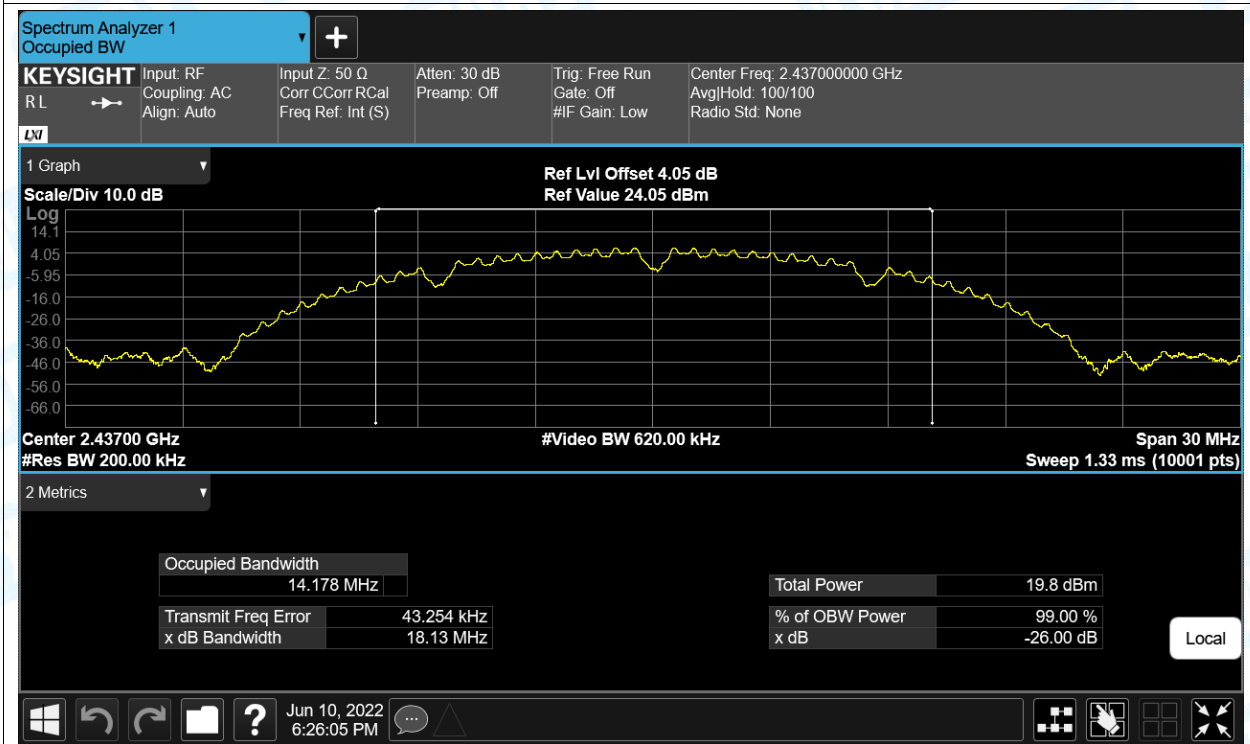
OBW NVNT b 2412MHz Ant2



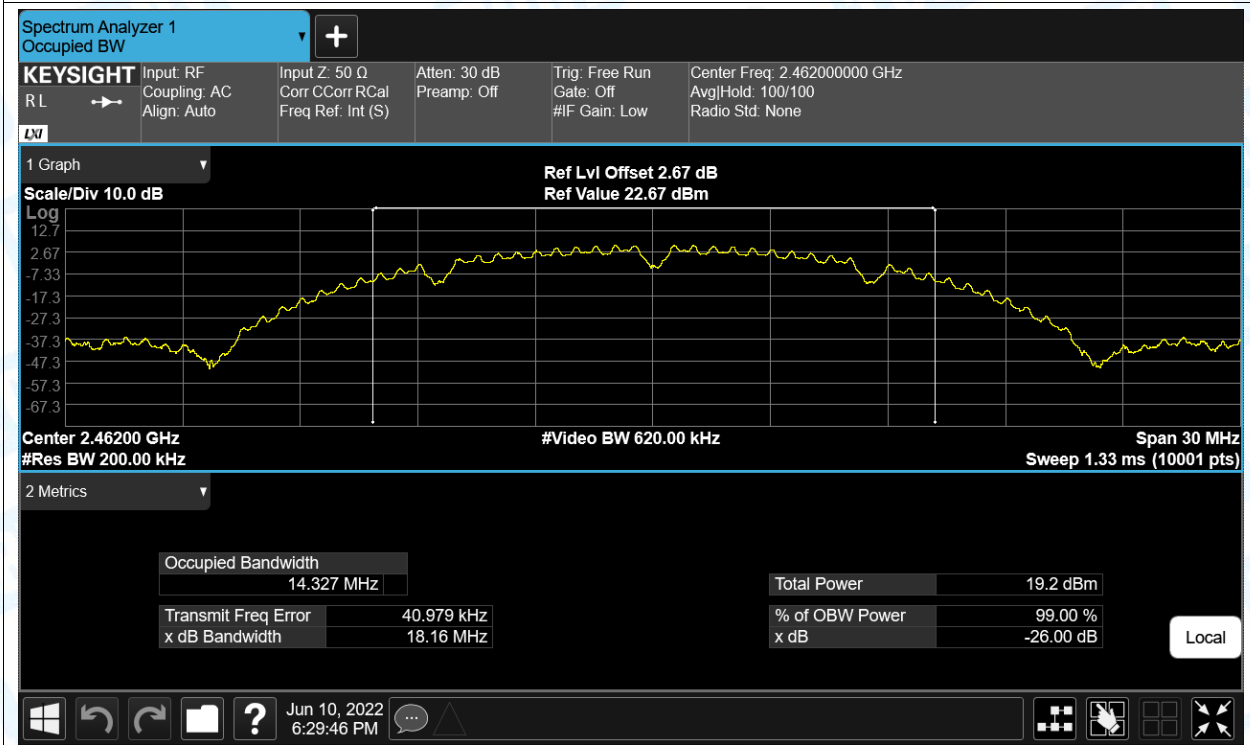
OBW NVNT b 2437MHz Ant1



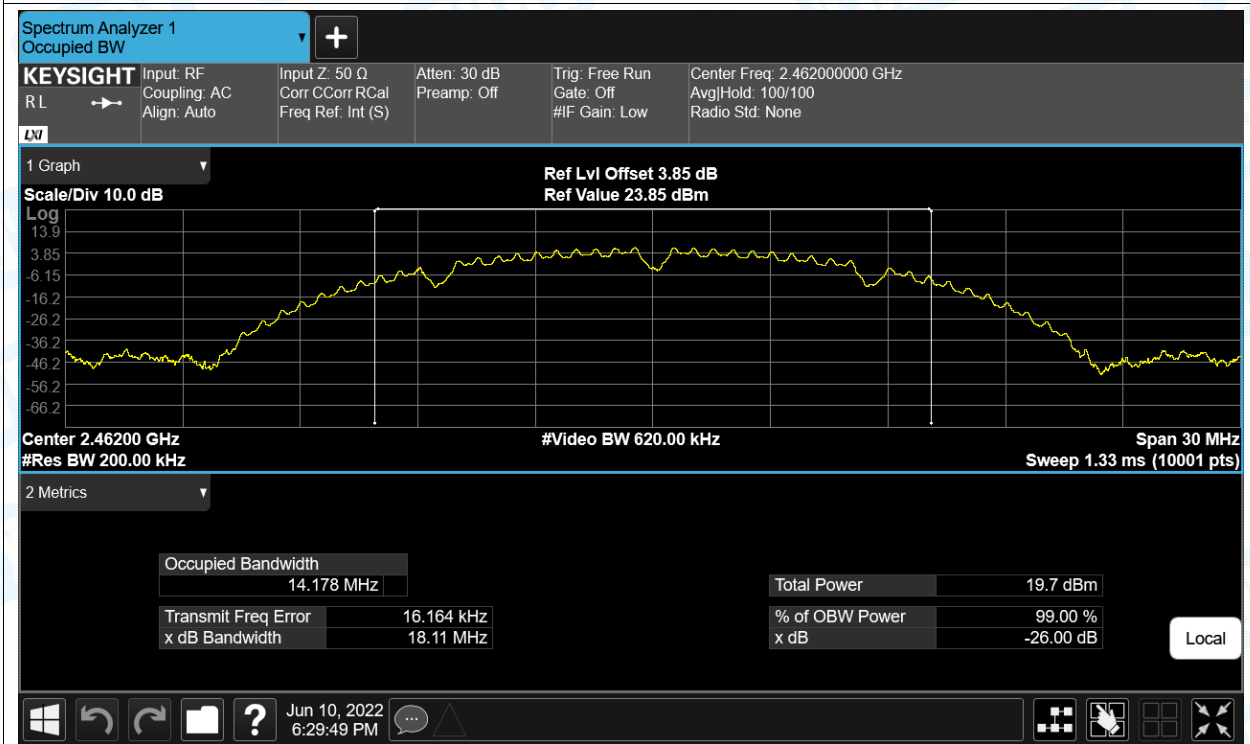
OBW NVNT b 2437MHz Ant2



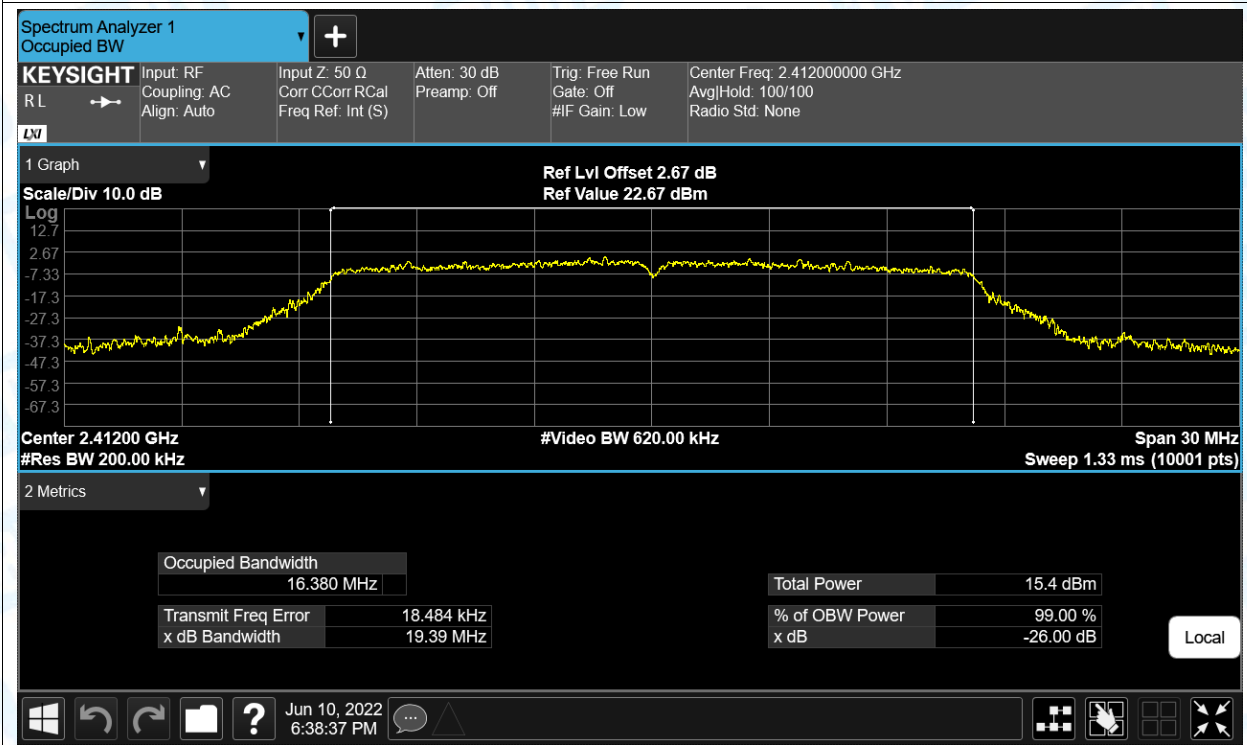
OBW NVNT b 2462MHz Ant1



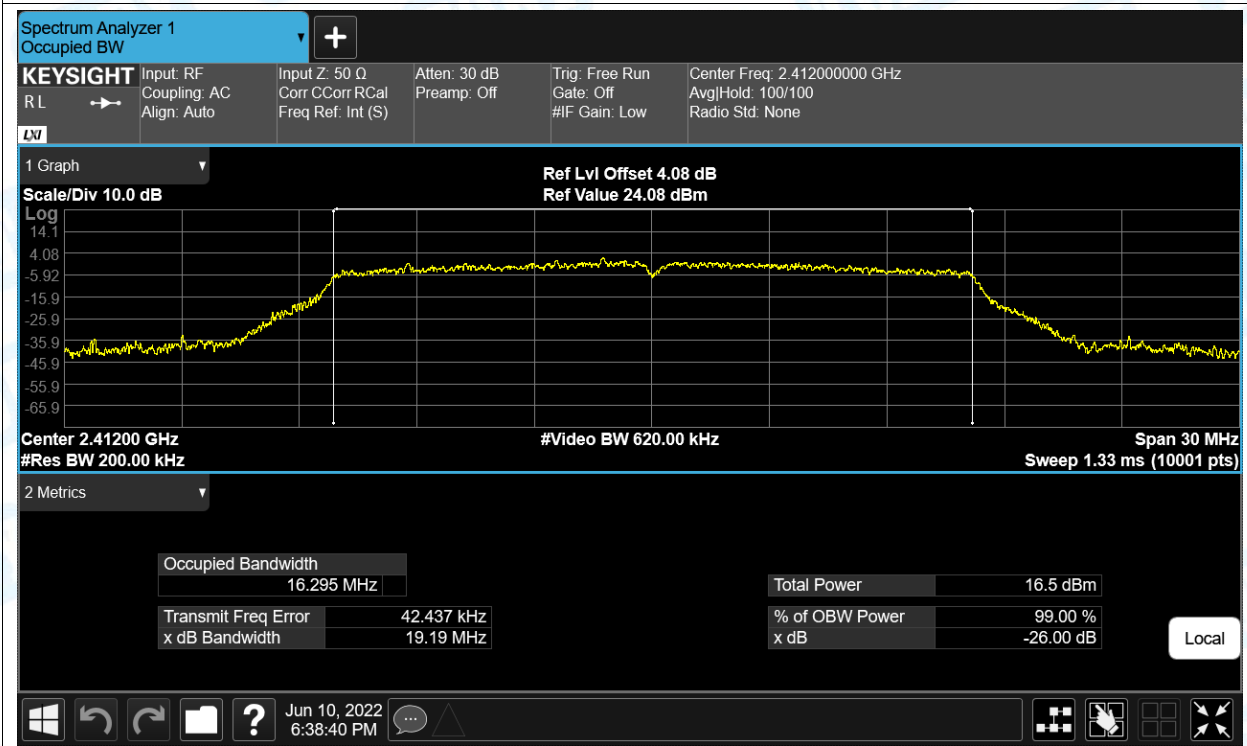
OBW NVNT b 2462MHz Ant2



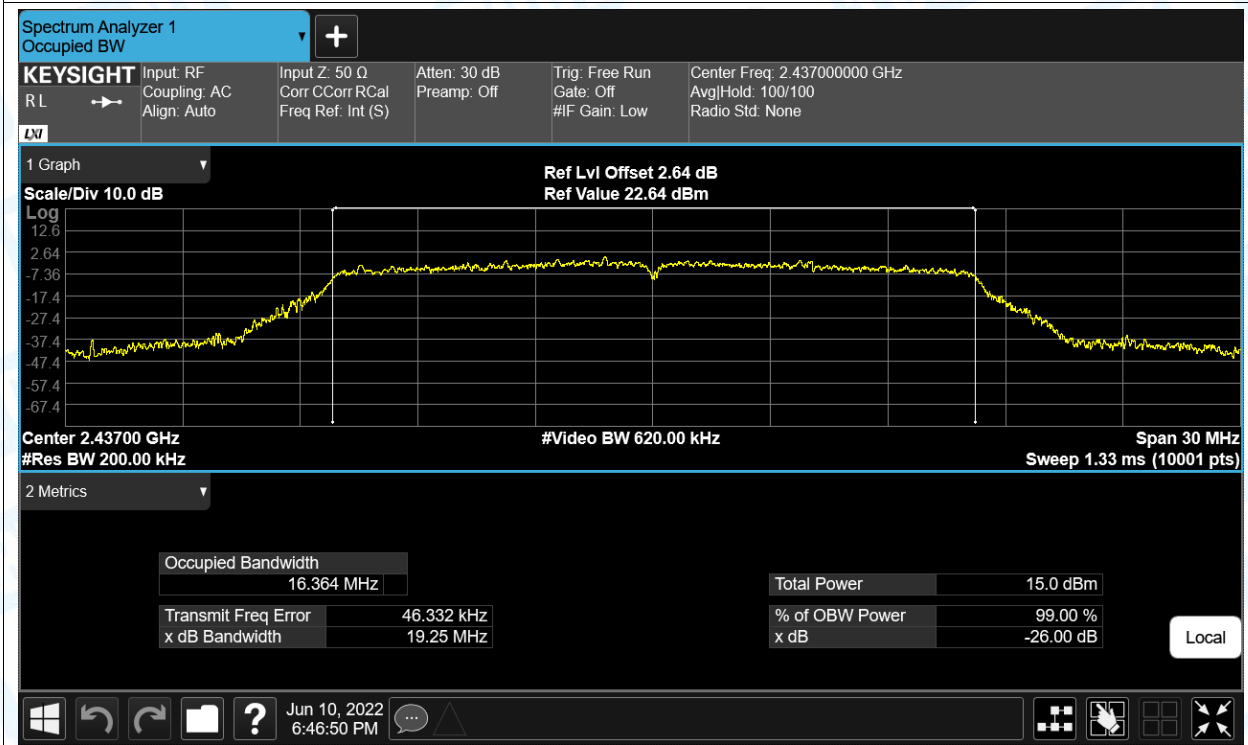
OBW NVNT g 2412MHz Ant1



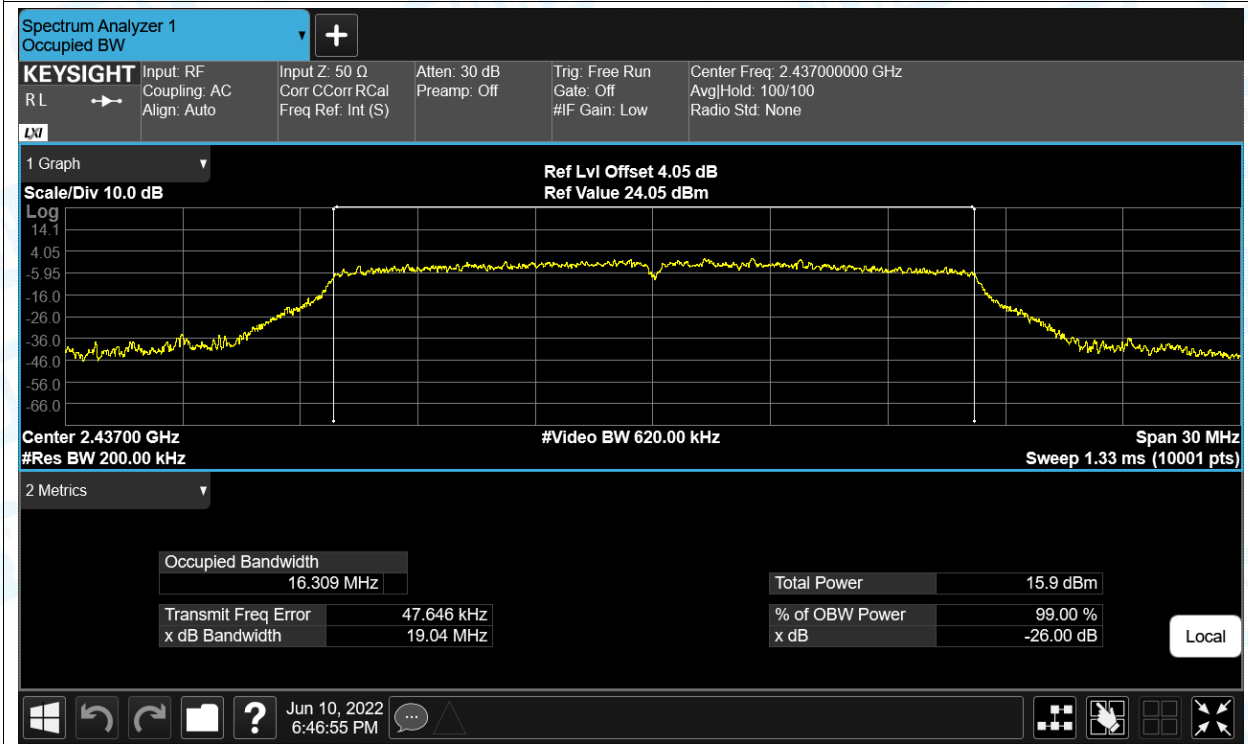
OBW NVNT g 2412MHz Ant2



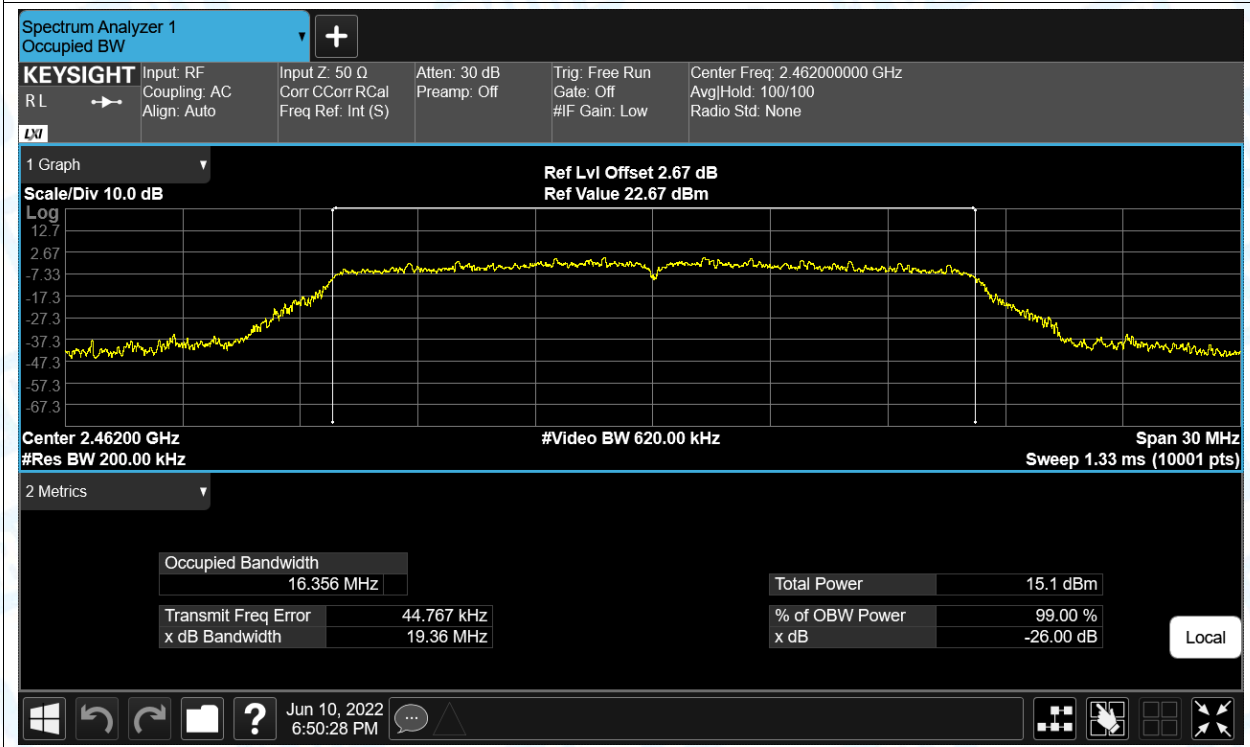
OBW NVNT g 2437MHz Ant1



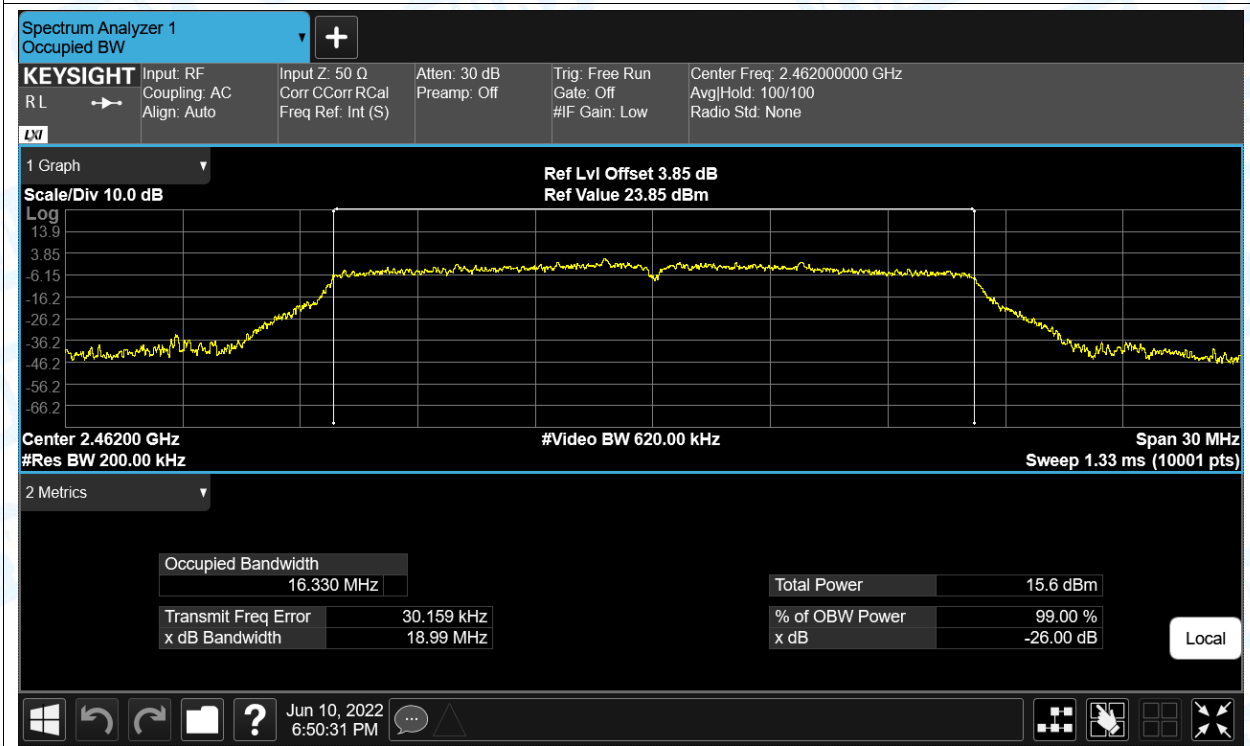
OBW NVNT g 2437MHz Ant2

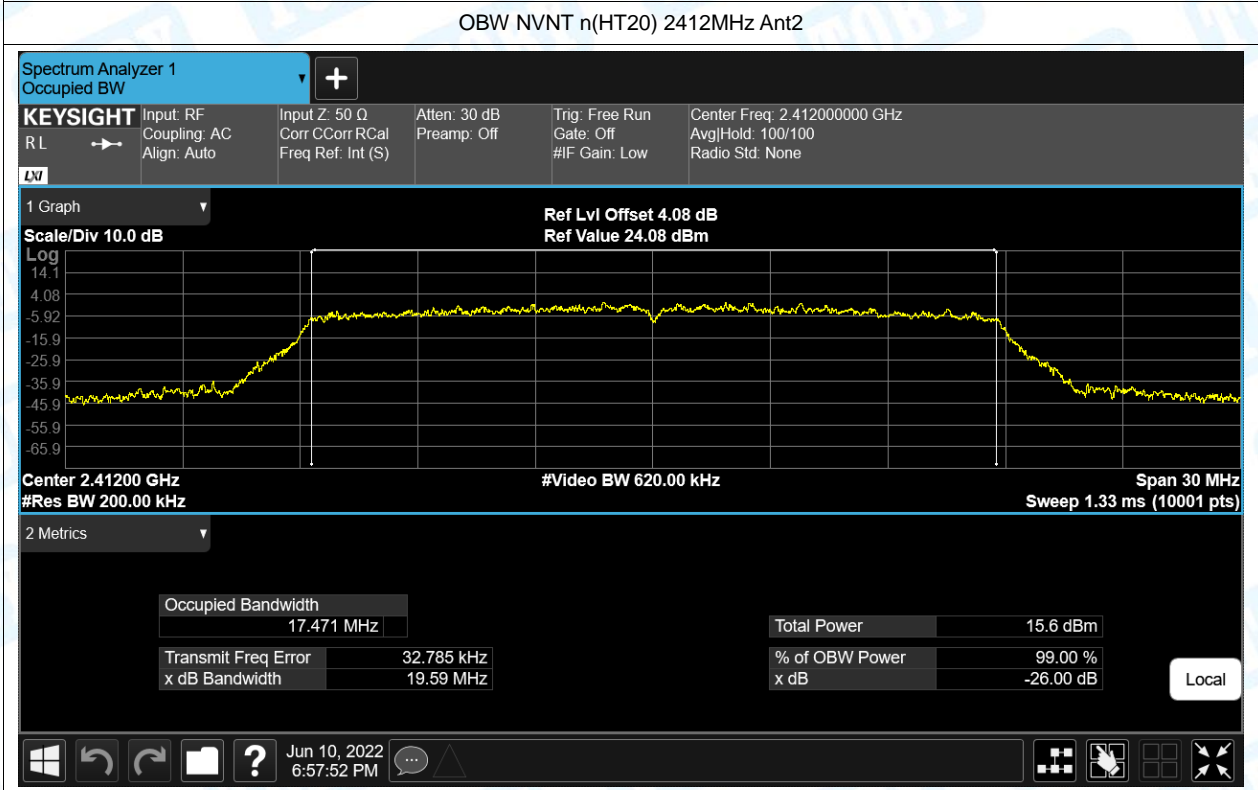


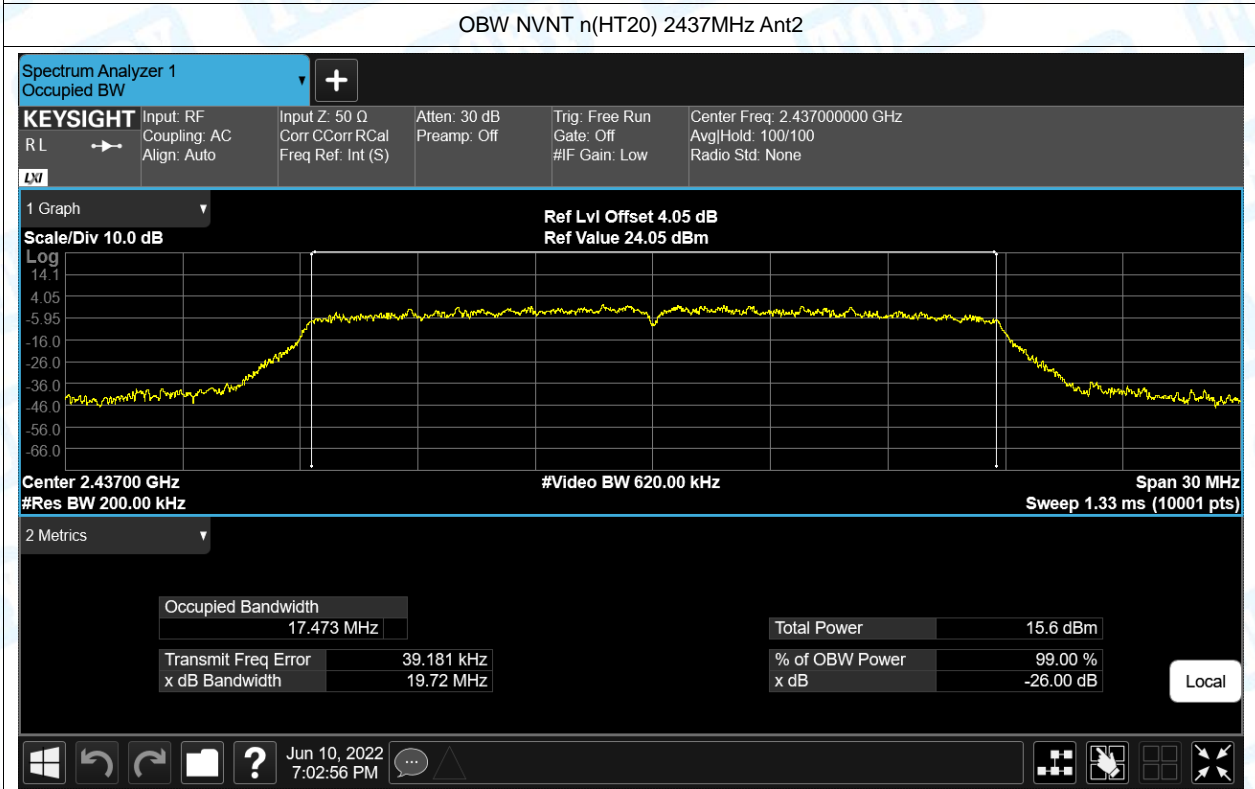
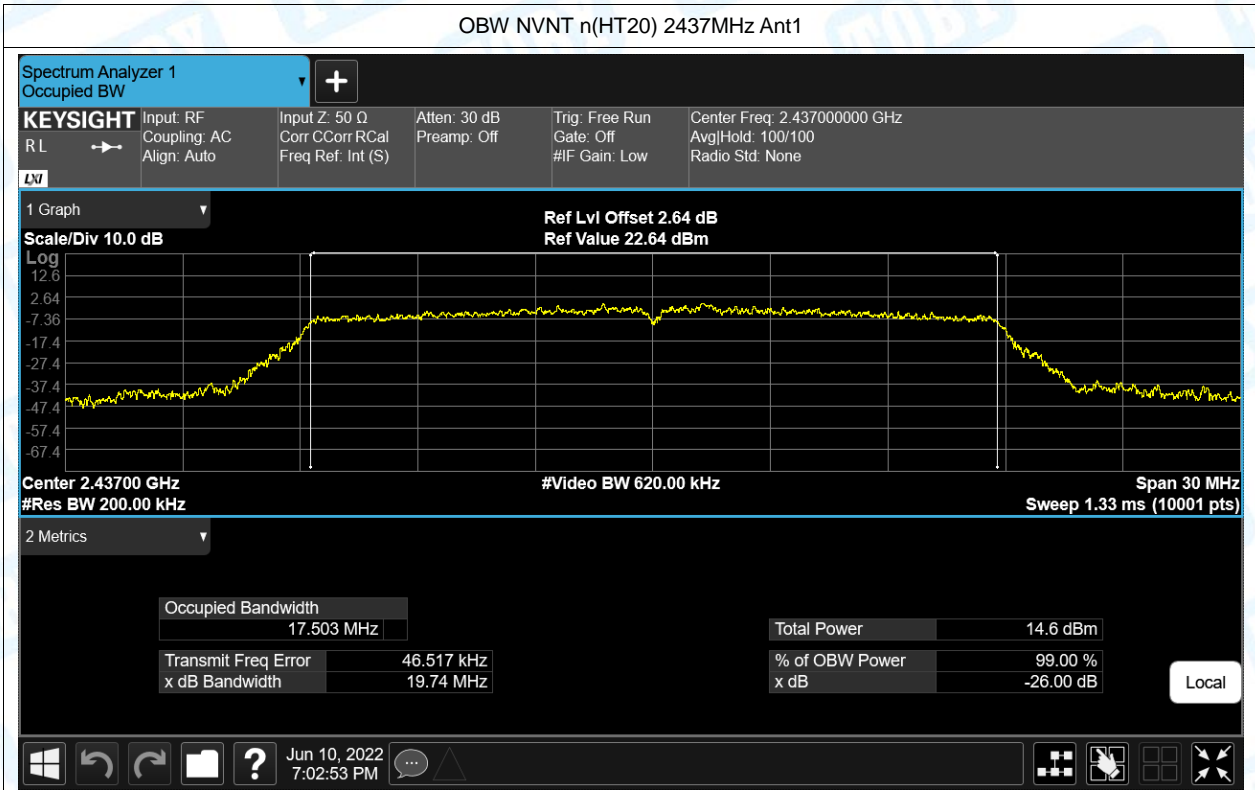
OBW NVNT g 2462MHz Ant1

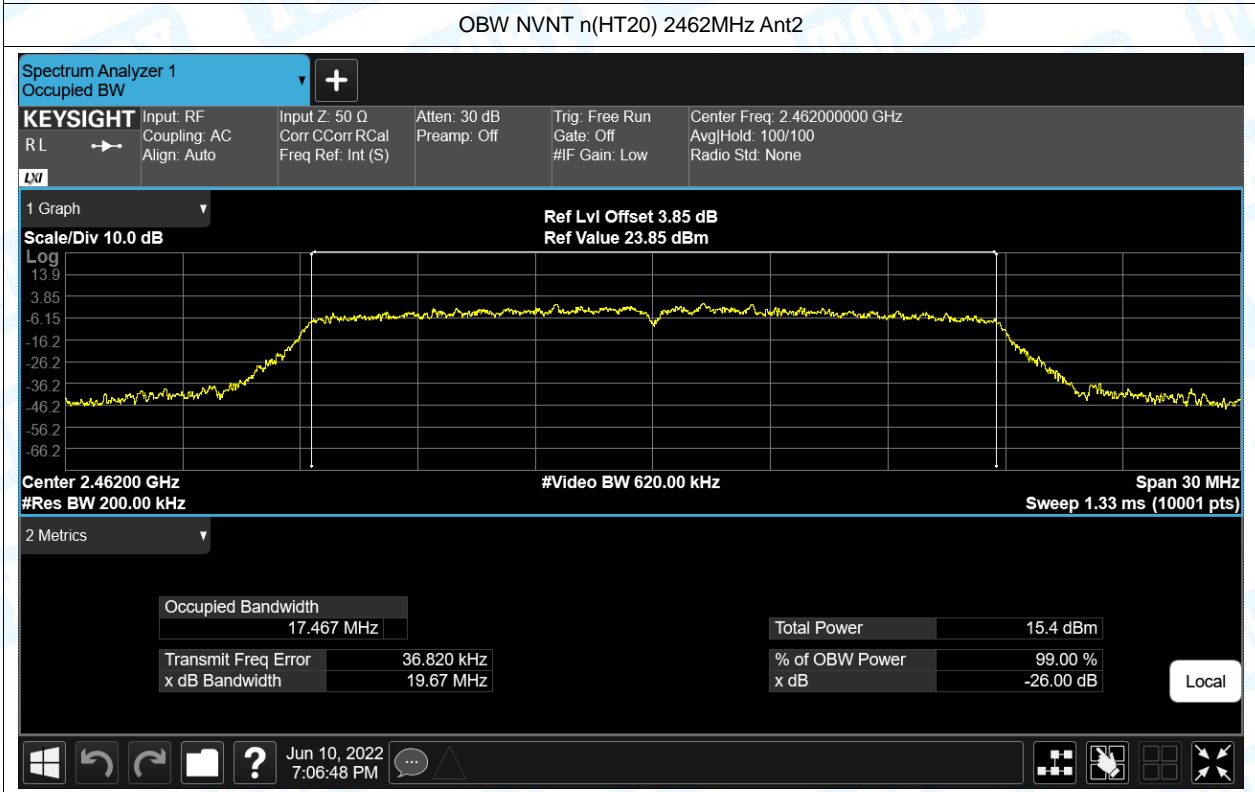
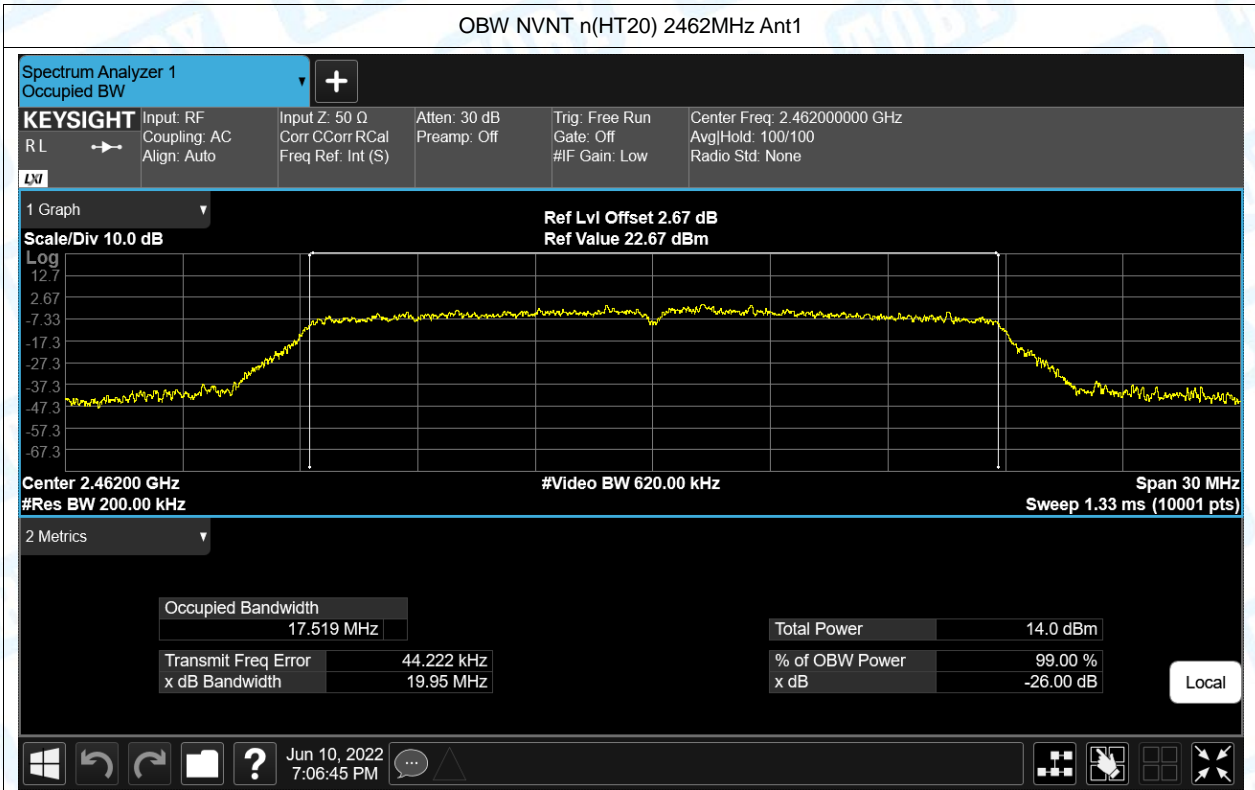


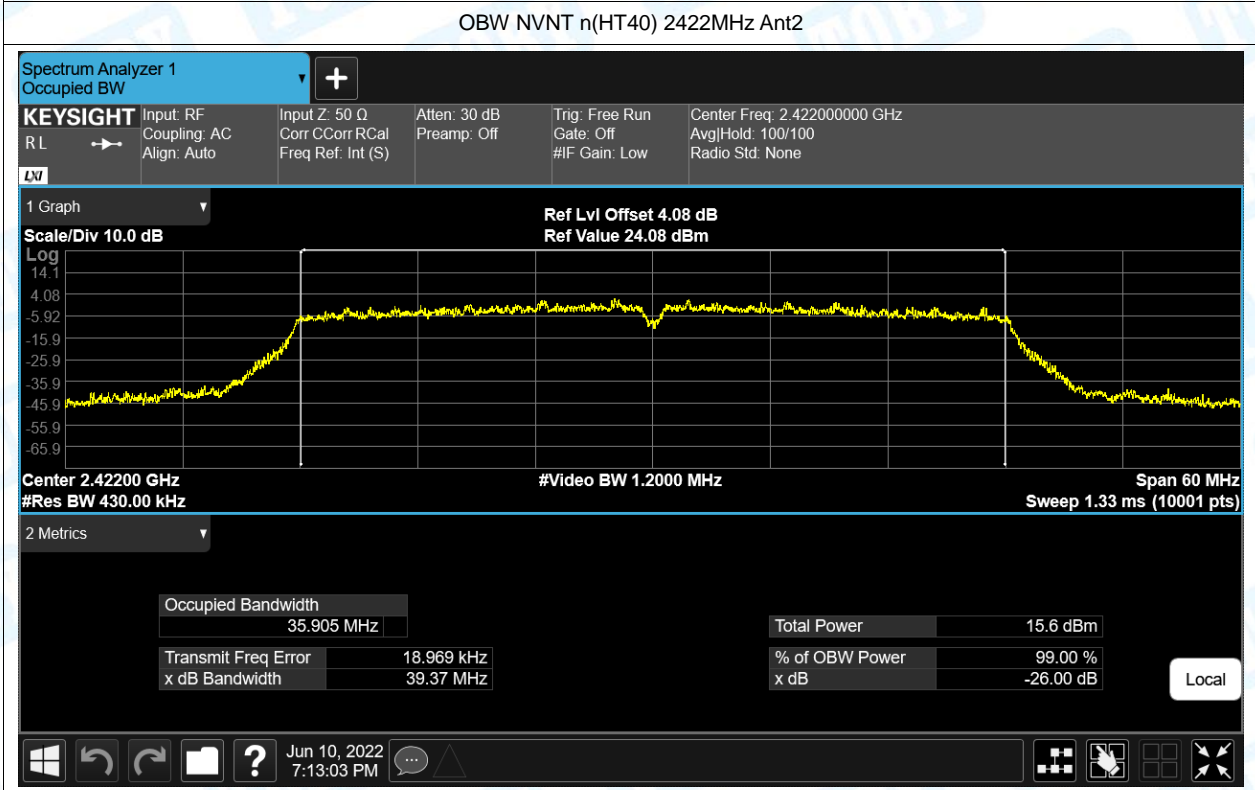
OBW NVNT g 2462MHz Ant2



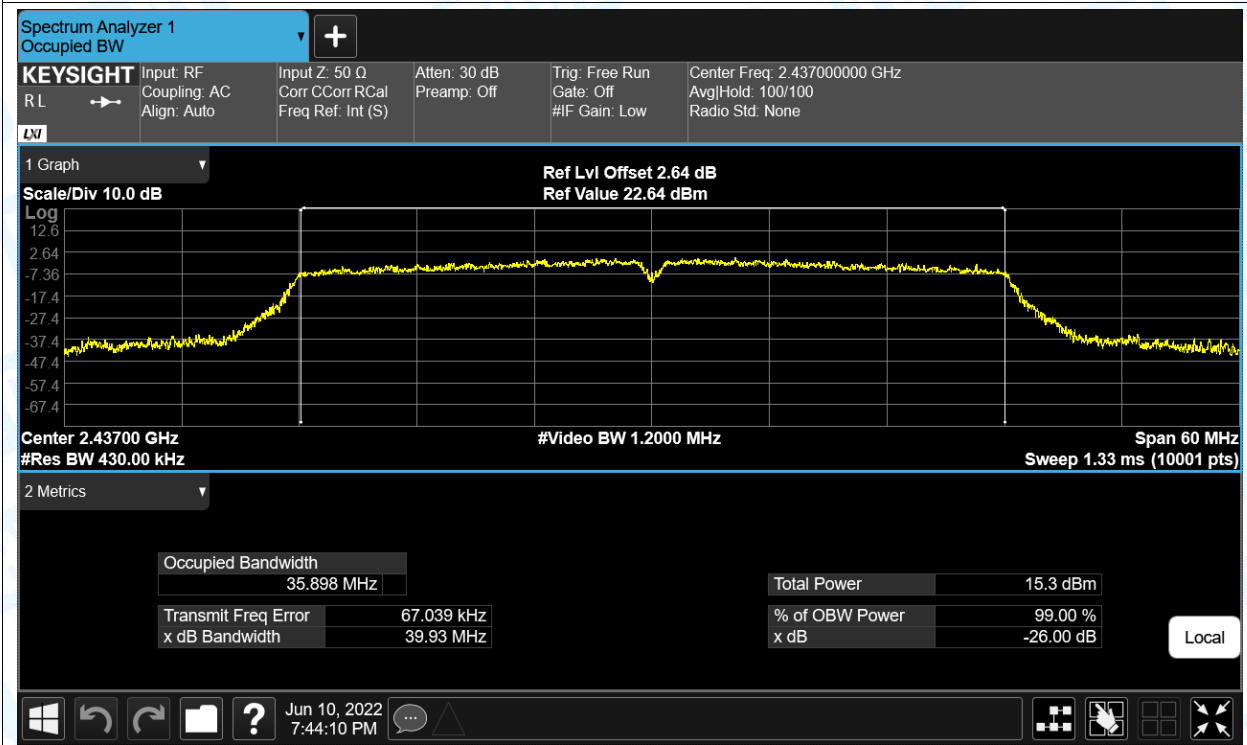








OBW NVNT n(HT40) 2437MHz Ant1



OBW NVNT n(HT40) 2437MHz Ant2

