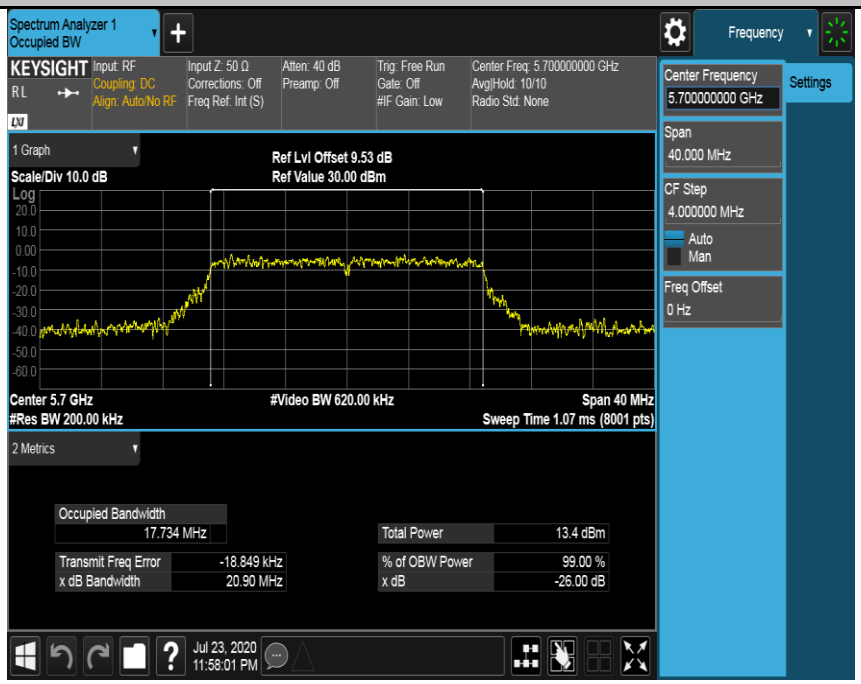
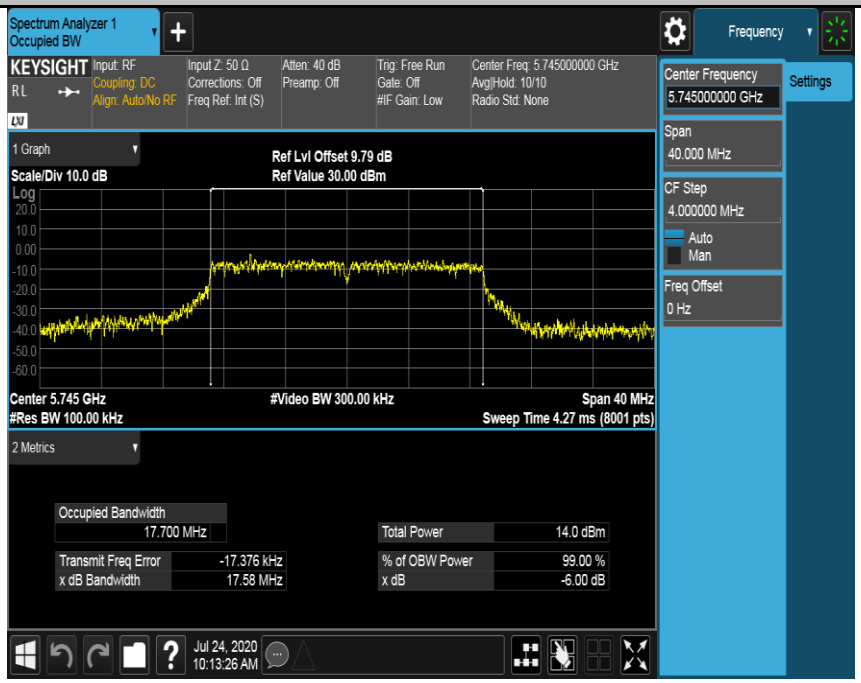
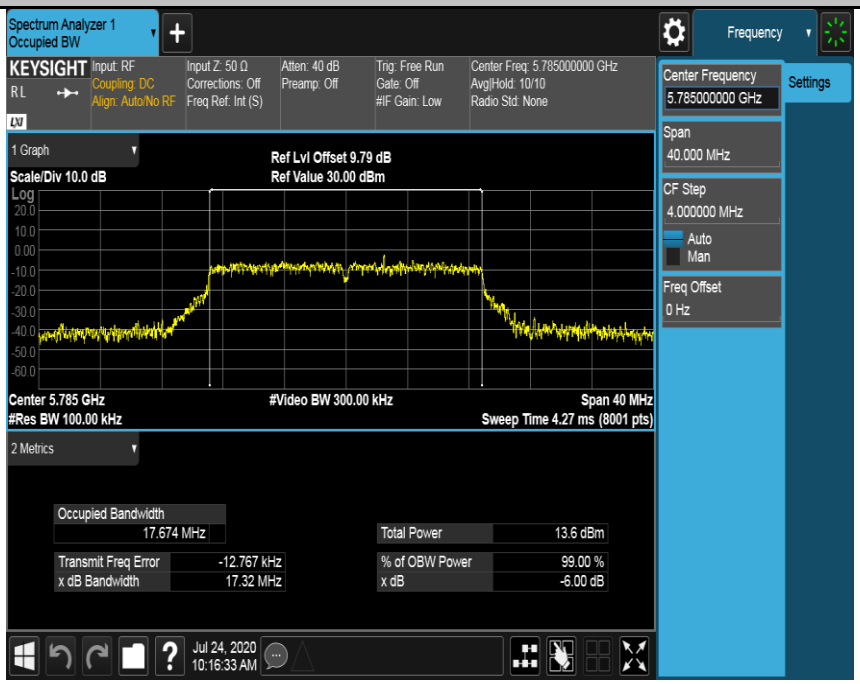
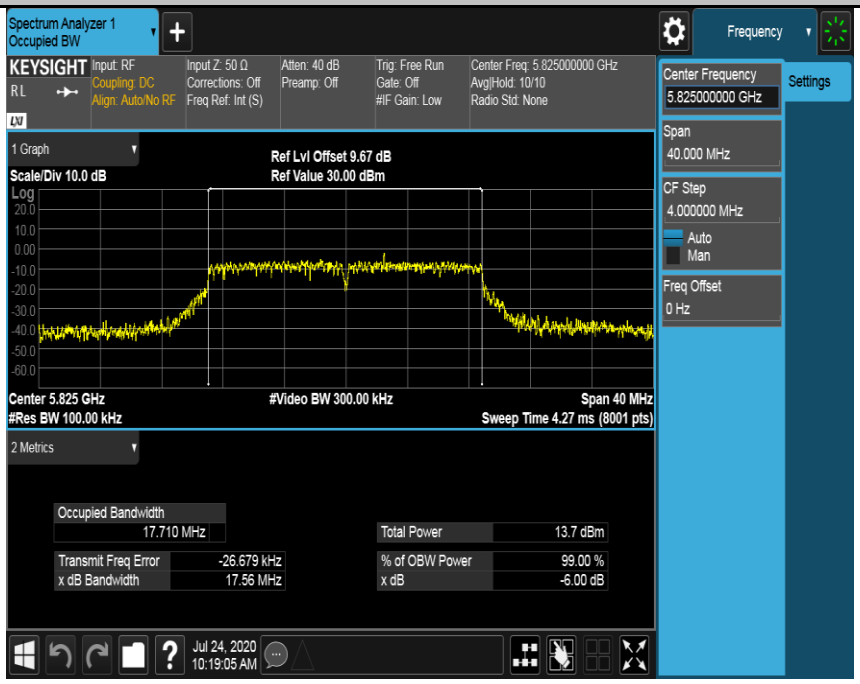
Emission Bandwidth Measurement_11N20_ CH140



Emission Bandwidth Measurement_11N20_ CH149



Emission Bandwidth Measurement_11N20_ CH157


Emission Bandwidth Measurement_11N20_ CH165


5.6. MAXIMUM AVERAGE CONDUCTED OUTPUT POWER

LIMITS

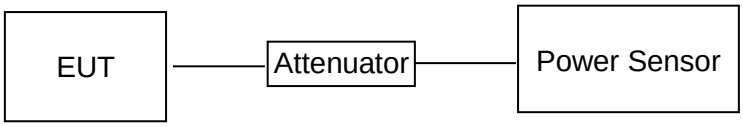
CFR 47 FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
Conducted Output Power	250mW (24dBm)	5150-5250
	250mW (24dBm)	5250-5350
	250mW (24dBm)	5470-5725
	1 Watt (30dBm)	5725-5850
Note: If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.		

TEST PROCEDURE

Refer to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Connect the EUT to the a broadband average(RMS) RF power meter, the power meter shall have a video bandwidth that is greater than or equal to the bandwidth and shall utilize a fast-responding diode detector.

TEST SETUP



TEST ENVIRONMENT

Temperature	22°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

RESULTS

Test Mode	Test Channel	Ant	Level [dBm]	10log(1/x) Factor [dB]	Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
11A	36	Ant1	15.40	0.08	15.48	19.06	24	PASS
		Ant2	14.66	0.08	14.74	18.32	24	PASS
11A	40	Ant1	14.97	0.08	15.05	18.63	24	PASS
		Ant2	14.54	0.08	14.62	18.2	24	PASS
11A	48	Ant1	15.02	0.08	15.1	18.68	24	PASS
		Ant2	14.58	0.08	14.66	18.24	24	PASS
11A	52	Ant1	15.26	0.08	15.34	18.92	24	PASS
		Ant2	15.02	0.08	15.1	18.68	24	PASS
11A	56	Ant1	15.33	0.08	15.41	18.99	24	PASS
		Ant2	15.52	0.08	15.6	19.18	24	PASS
11A	64	Ant1	15.63	0.08	15.71	19.29	24	PASS
		Ant2	15.79	0.08	15.87	19.45	24	PASS
11A	100	Ant1	14.68	0.08	14.76	18.34	24	PASS
		Ant2	14.69	0.08	14.77	18.35	24	PASS
11A	116	Ant1	14.26	0.08	14.34	17.92	24	PASS
		Ant2	14.05	0.08	14.13	17.71	24	PASS
11A	140	Ant1	14.19	0.08	14.27	17.85	24	PASS
		Ant2	14.19	0.08	14.27	17.85	24	PASS
11A	149	Ant1	14.52	0.08	14.6	18.18	30	PASS
		Ant2	14.43	0.08	14.51	18.09	30	PASS
11A	157	Ant1	14.16	0.08	14.24	17.82	30	PASS
		Ant2	13.91	0.08	13.99	17.57	30	PASS
11A	165	Ant1	14.63	0.08	14.71	18.29	30	PASS
		Ant2	14.09	0.08	14.17	17.75	30	PASS
11N20	36	Ant1	14.84	0.09	14.93	18.51	24	PASS
		Ant2	14.00	0.09	14.09	17.67	24	PASS
11N20	40	Ant1	14.32	0.09	14.41	17.99	24	PASS
		Ant2	14.30	0.09	14.39	17.97	24	PASS
11N20	48	Ant1	14.07	0.09	14.16	17.74	24	PASS
		Ant2	14.29	0.09	14.38	17.96	24	PASS
11N20	52	Ant1	14.85	0.09	14.94	18.52	24	PASS

		Ant2	14.84	0.09	14.93	18.51	24	PASS
11N20	56	Ant1	15.14	0.09	15.23	18.81	24	PASS
		Ant2	15.41	0.09	15.5	19.08	24	PASS
11N20	64	Ant1	15.32	0.09	15.41	18.99	24	PASS
		Ant2	15.81	0.09	15.9	19.48	24	PASS
11N20	100	Ant1	15.32	0.09	15.41	18.99	24	PASS
		Ant2	14.86	0.09	14.95	18.53	24	PASS
11N20	116	Ant1	15.14	0.09	15.23	18.81	24	PASS
		Ant2	14.74	0.09	14.83	18.41	24	PASS
11N20	140	Ant1	14.40	0.09	14.49	18.07	24	PASS
		Ant2	14.15	0.09	14.24	17.82	24	PASS
11N20	149	Ant1	14.61	0.09	14.70	18.28	30	PASS
		Ant2	13.76	0.09	13.85	17.43	30	PASS
11N20	157	Ant1	13.95	0.09	14.04	17.62	30	PASS
		Ant2	13.32	0.09	13.41	16.99	30	PASS
11N20	165	Ant1	14.24	0.09	14.33	17.91	30	PASS
		Ant2	13.38	0.09	13.47	17.05	30	PASS

NOTE: 1.EIRP= Maximum Conducted Output Power + ANT GAIN
2. Maximum Conducted Output Power= Conducted Output Power+ Correction Factor
3. About correction Factor please refer to section 6.1
4. Remark: For this product, it has two antennas, antenna1 and antenna2, but the ant1 and ant2 can't transmitter at the same time under all test modes. That's this product not support MIMO function, just support diversity function.

5.7. POWER SPECTRAL DENSITY

LIMITS

CFR 47 FCC Part15, Subpart E ISED RSS-247		
Test Item	Limit	Frequency Range (MHz)
Power Spectral Density	Other than Mobile and portable:17dBm/MHz Mobile and portable:11dBm/MHz	5150-5250
	11dBm/MHz	5250-5350
	11dBm/MHz	5470-5725
	30dBm/500kHz	5725-5850
Note: If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.		

TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

For U-NII-1,:

Center Frequency	The center frequency of the channel under test
Detector	RMS
RBW	1MHz
VBW	≥3 × RBW
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

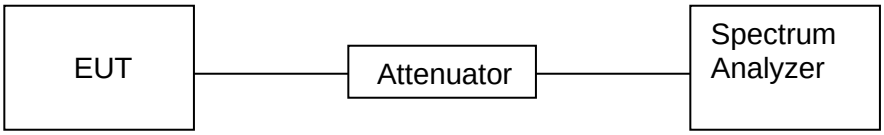
For U-NII-3:

Center Frequency	The center frequency of the channel under test
Detector	RMS
RBW	300KHz
VBW	≥3 × RBW
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold

Sweep time	Auto

Note:
1. For UNII-3, according to KDB publication 789033 D02 General UNII Test Procedures New Rules v01, section II.F.5., it is acceptable to set RBW at 1MHz and VBW at 3MHz if the spectrum analyzer does not have 500kHz RBW.
2. Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.

TEST SETUP



TEST RESULTS TABLE

Test Mode	Test Channel	Ant	Level [dBm]	10log(1/x) Factor [dB]	PSD [dBm/MHz]	Limit [dBm/MHz]	Verdict
11A	36	Ant1	6.94	0.08	7.02	17	PASS
		Ant2	6.44	0.08	6.52	17	PASS
11A	40	Ant1	6.86	0.08	6.94	17	PASS
		Ant2	6.37	0.08	6.45	17	PASS
11A	48	Ant1	6.84	0.08	6.92	17	PASS
		Ant2	6.44	0.08	6.52	17	PASS
11A	52	Ant1	7.05	0.08	7.13	11	PASS
		Ant2	6.88	0.08	6.96	11	PASS
11A	56	Ant1	7.37	0.08	7.45	11	PASS
		Ant2	7.42	0.08	7.50	11	PASS
11A	64	Ant1	7.70	0.08	7.78	11	PASS
		Ant2	7.81	0.08	7.89	11	PASS
11A	100	Ant1	6.92	0.08	7.00	11	PASS
		Ant2	6.16	0.08	6.24	11	PASS
11A	116	Ant1	6.82	0.08	6.9	11	PASS
		Ant2	6.23	0.08	6.31	11	PASS
11A	140	Ant1	6.07	0.08	6.15	11	PASS
		Ant2	5.94	0.08	6.02	11	PASS
11A	149	Ant1	2.91	0.08	2.99	30	PASS
		Ant2	2.64	0.08	2.72	30	PASS
11A	157	Ant1	2.48	0.08	2.56	30	PASS
		Ant2	2.42	0.08	2.50	30	PASS
11A	165	Ant1	3.03	0.08	3.11	30	PASS
		Ant2	2.45	0.08	2.53	30	PASS
11N20	36	Ant1	6.46	0.09	6.55	17	PASS
		Ant2	5.92	0.09	6.01	17	PASS
11N20	40	Ant1	6.46	0.09	6.55	17	PASS
		Ant2	6.11	0.09	6.20	17	PASS
11N20	48	Ant1	6.21	0.09	6.30	17	PASS
		Ant2	6.11	0.09	6.20	17	PASS
11N20	52	Ant1	6.50	0.09	6.59	11	PASS

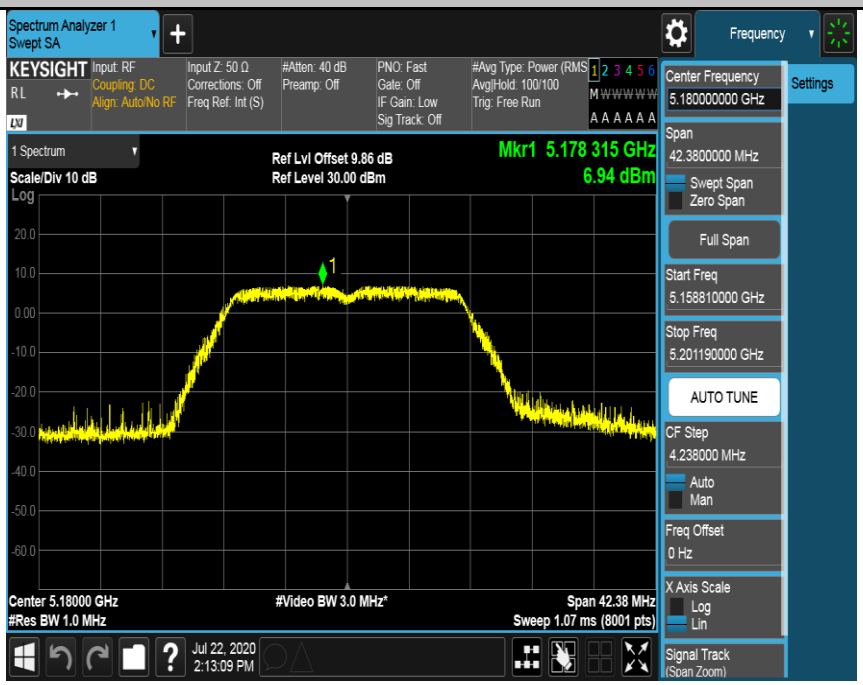
		Ant2	7.28	0.09	7.37	11	PASS
11N20	56	Ant1	7.27	0.09	7.36	11	PASS
		Ant2	7.77	0.09	7.86	11	PASS
11N20	64	Ant1	7.30	0.09	7.39	11	PASS
		Ant2	7.92	0.09	8.01	11	PASS
11N20	100	Ant1	7.79	0.09	7.88	11	PASS
		Ant2	6.64	0.09	6.73	11	PASS
11N20	116	Ant1	7.13	0.09	7.22	11	PASS
		Ant2	7.31	0.09	7.40	11	PASS
11N20	140	Ant1	6.82	0.09	6.91	11	PASS
		Ant2	6.02	0.09	6.11	11	PASS
11N20	149	Ant1	3.52	0.09	3.61	30	PASS
		Ant2	2.82	0.09	2.91	30	PASS
11N20	157	Ant1	2.66	0.09	2.75	30	PASS
		Ant2	2.25	0.09	2.34	30	PASS
11N20	165	Ant1	2.78	0.09	2.87	30	PASS
		Ant2	2.14	0.09	2.23	30	PASS

Remark:
1. About correction Factor please refer to section 6.1.
2. Remark: For this product, it has two antennas, antenna1 and antenna2, but the ant1 and ant2 can't transmitter at the same time under all test modes. That's this product not support MIMO function, just support diversity function.

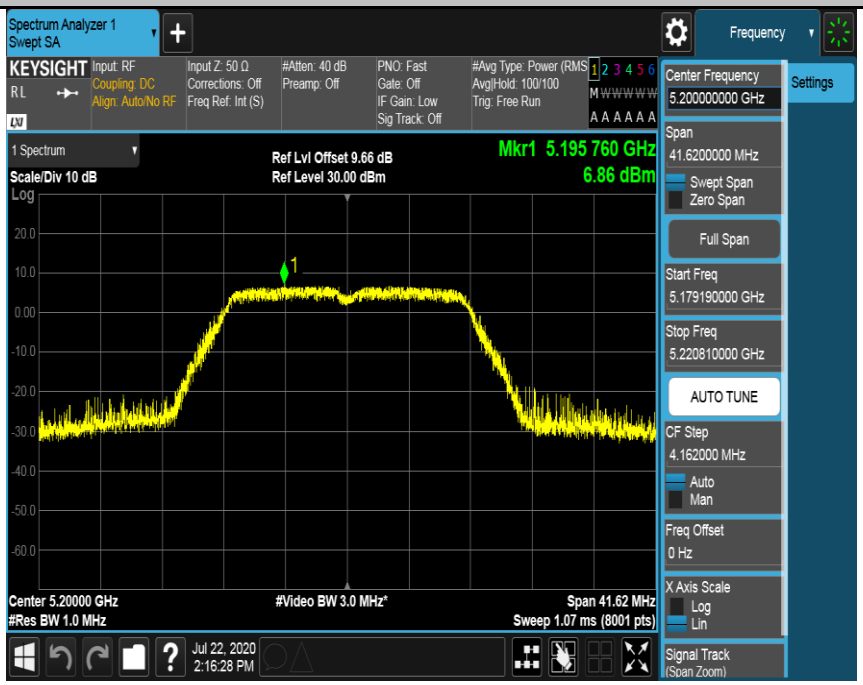
Test Graphs

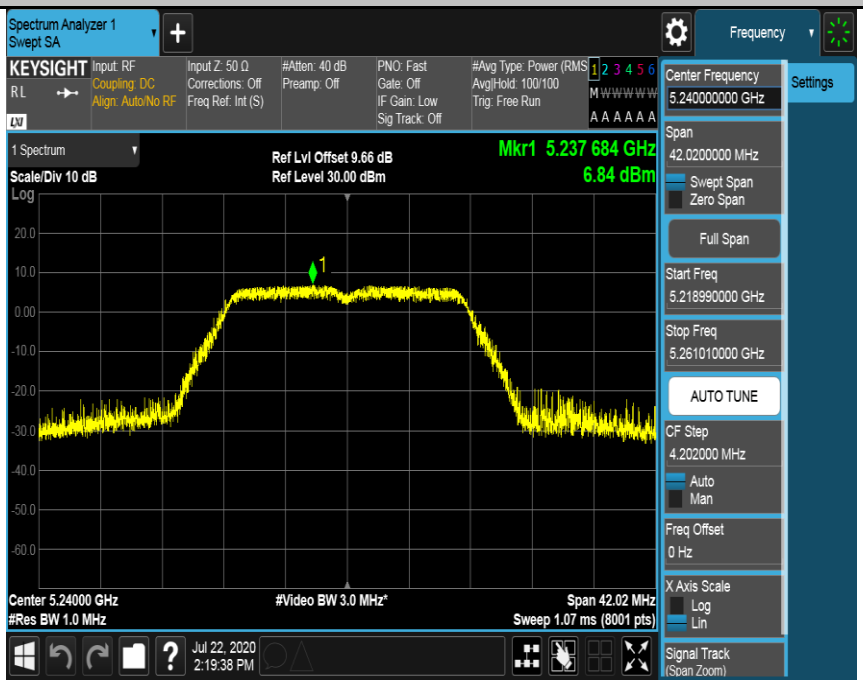
Antenna1

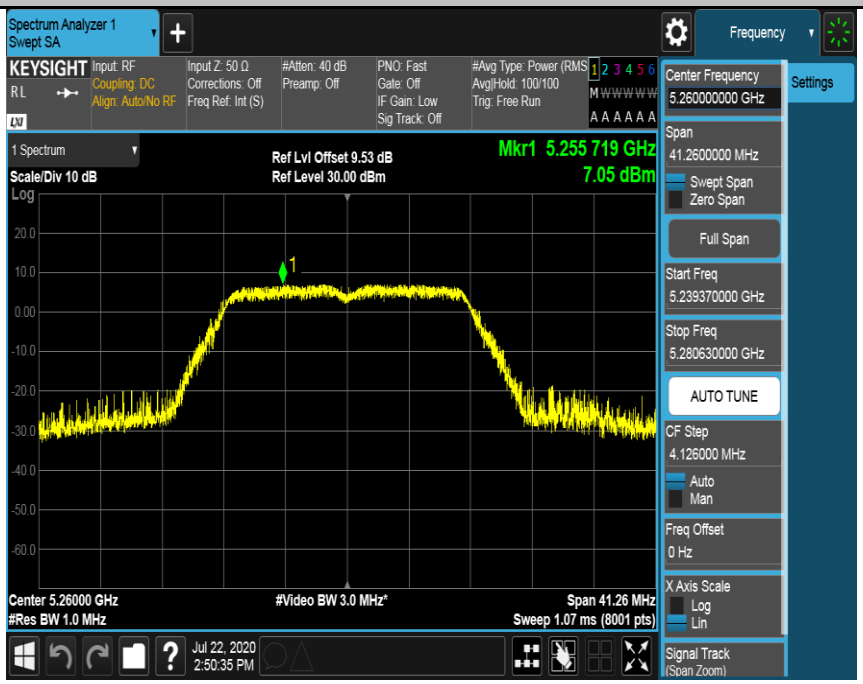
TEST PLOT
Emission Bandwidth Measurement_11A20_CH36



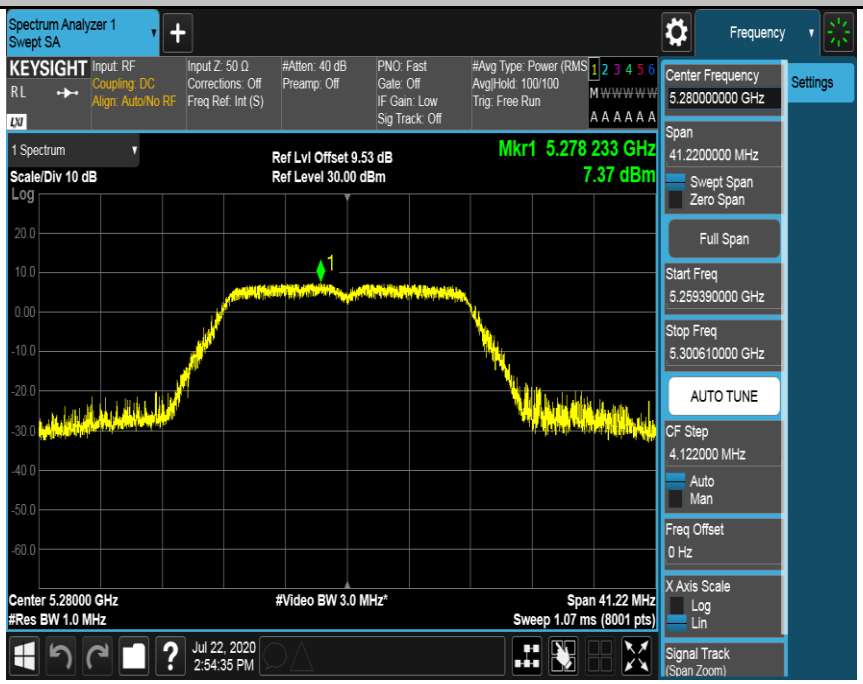
Emission Bandwidth Measurement_11A20_CH40



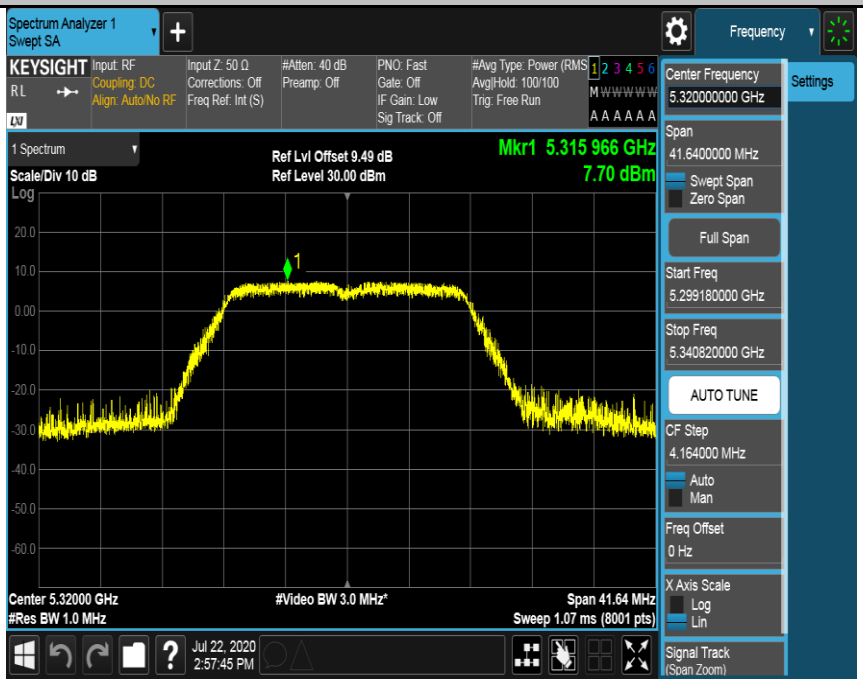
Emission Bandwidth Measurement_11A20_CH48


Emission Bandwidth Measurement_11A20_CH52


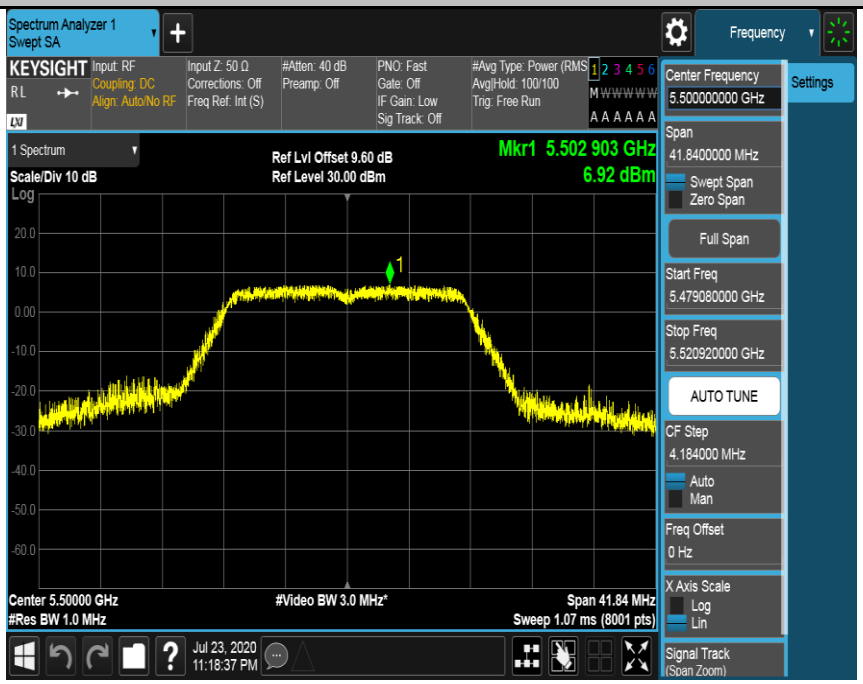
Emission Bandwidth Measurement_11A20_ CH56



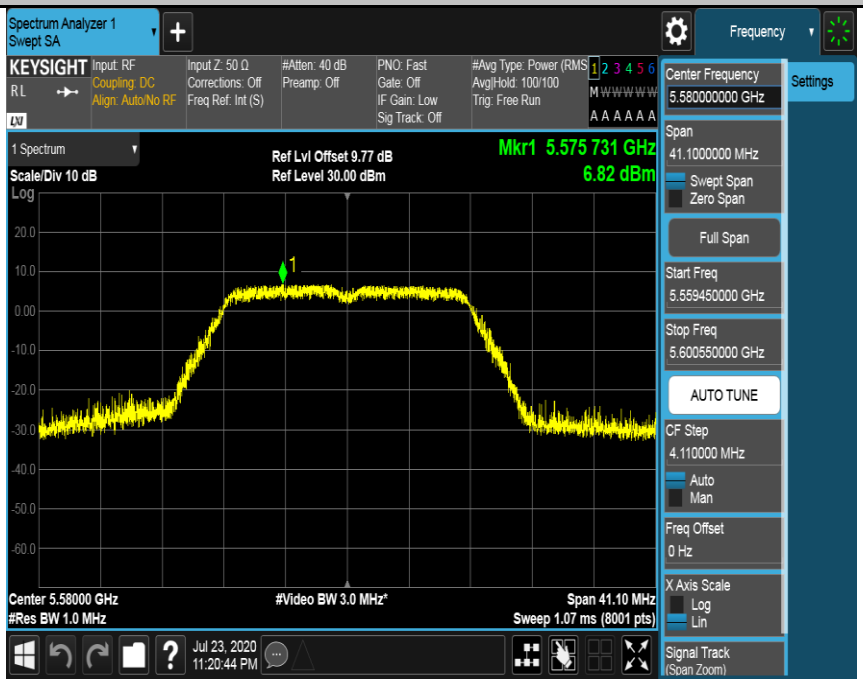
Emission Bandwidth Measurement_11A20_ CH64

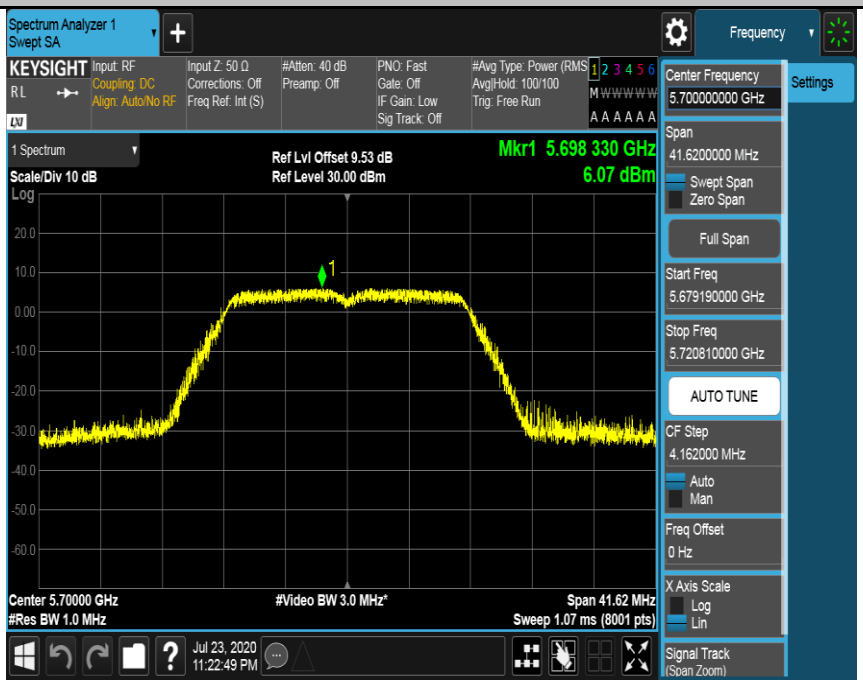


Emission Bandwidth Measurement_11A20_ CH100



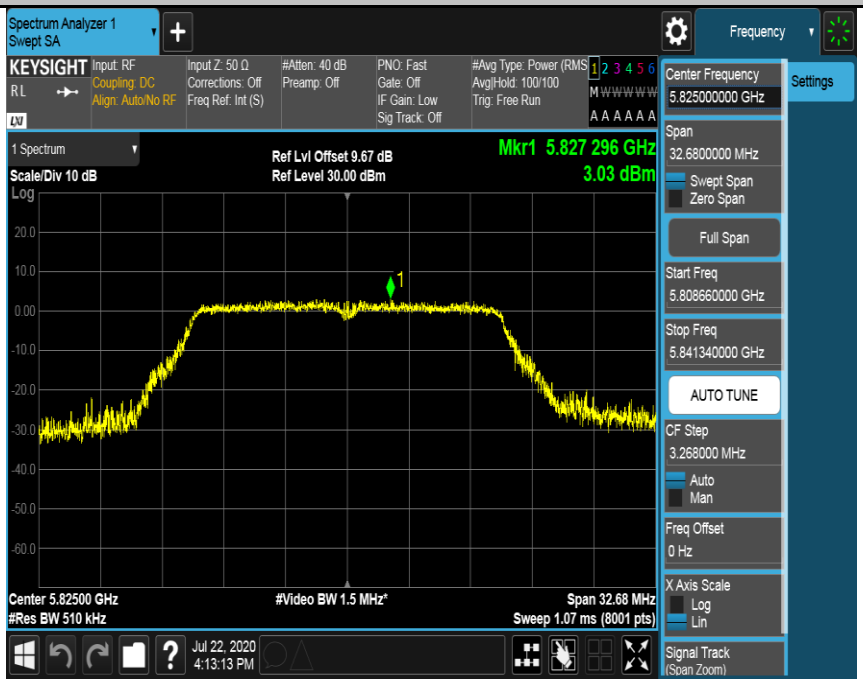
Emission Bandwidth Measurement_11A20_CH116



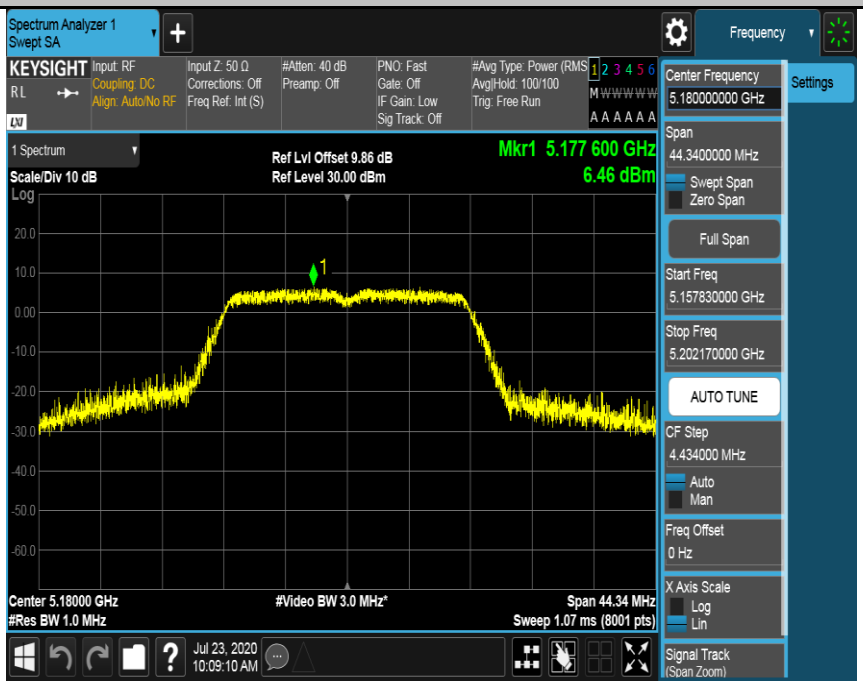
Emission Bandwidth Measurement_11A20_ CH140


Emission Bandwidth Measurement_11A20_ CH149

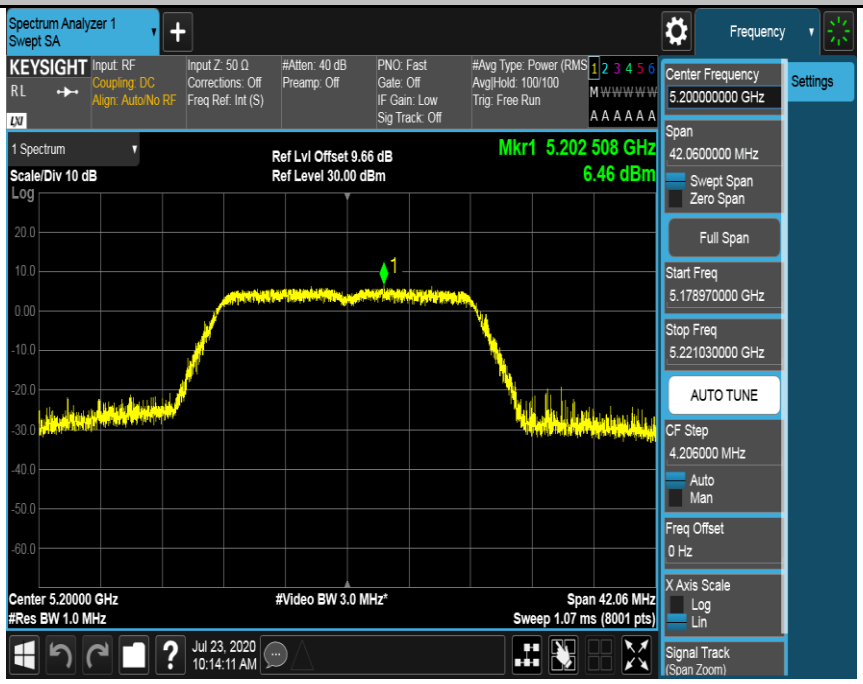

Emission Bandwidth Measurement_11A20_ CH157

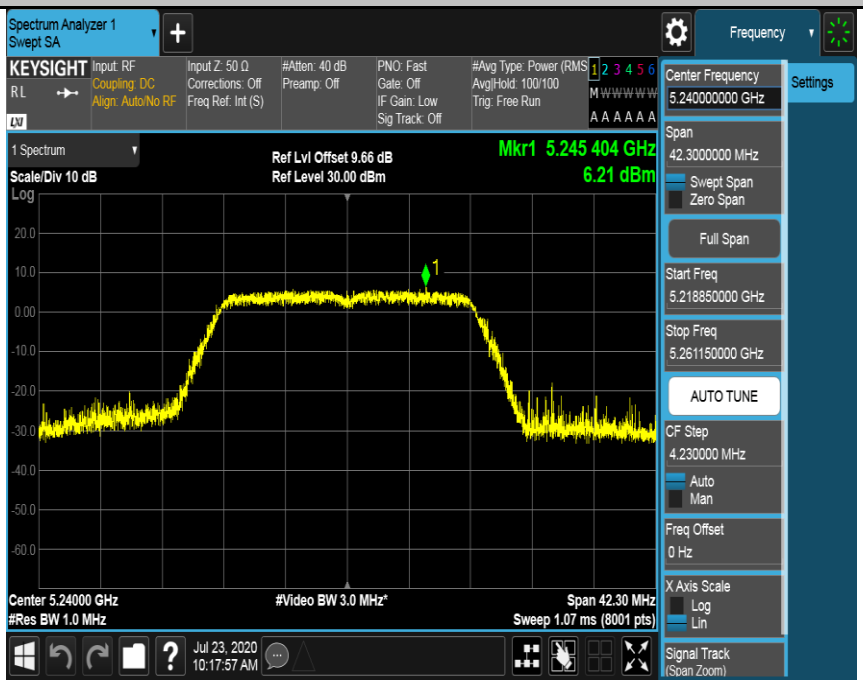

Emission Bandwidth Measurement_11A20_ CH165


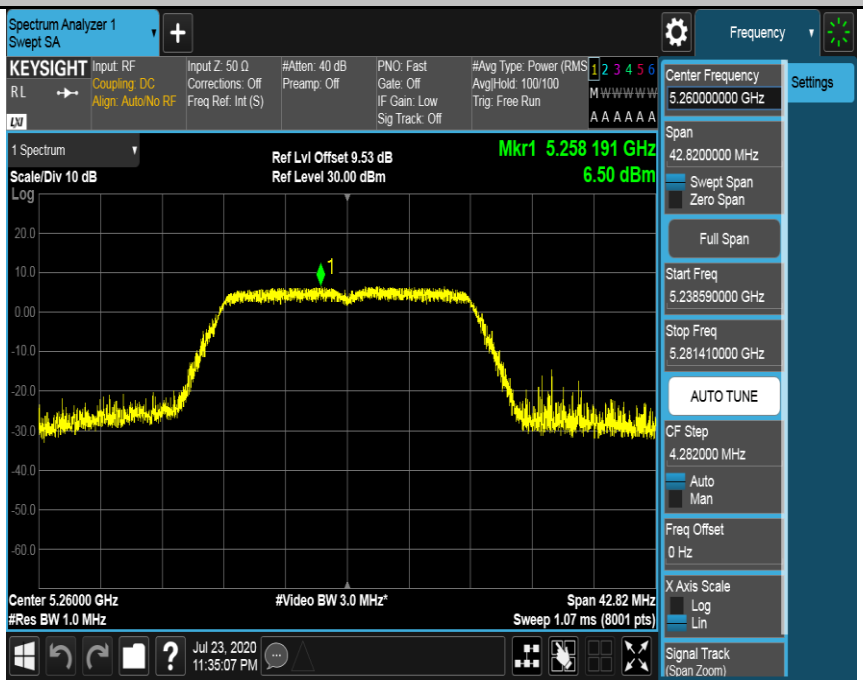
TEST PLOT
Emission Bandwidth Measurement_11N20_CH36

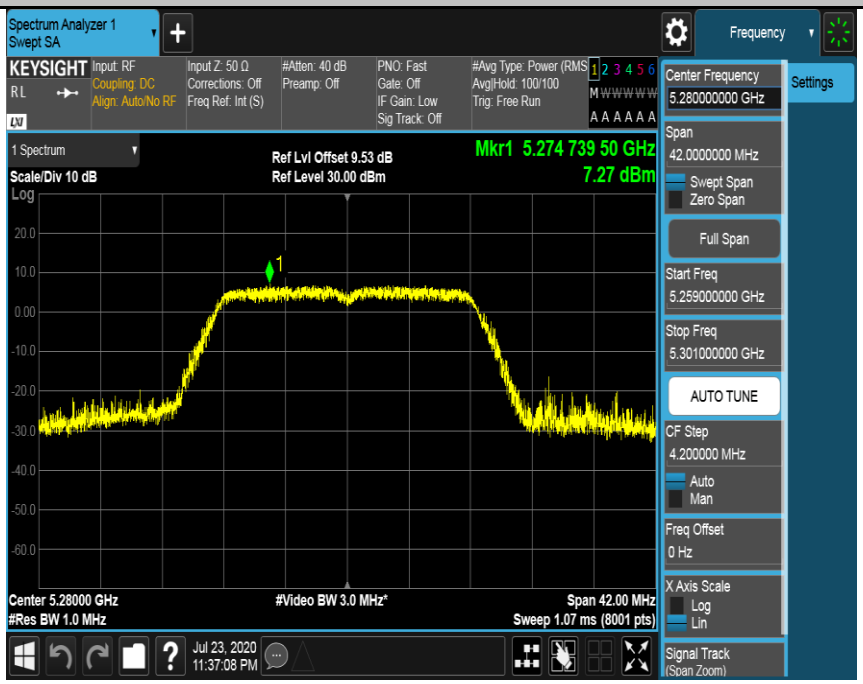


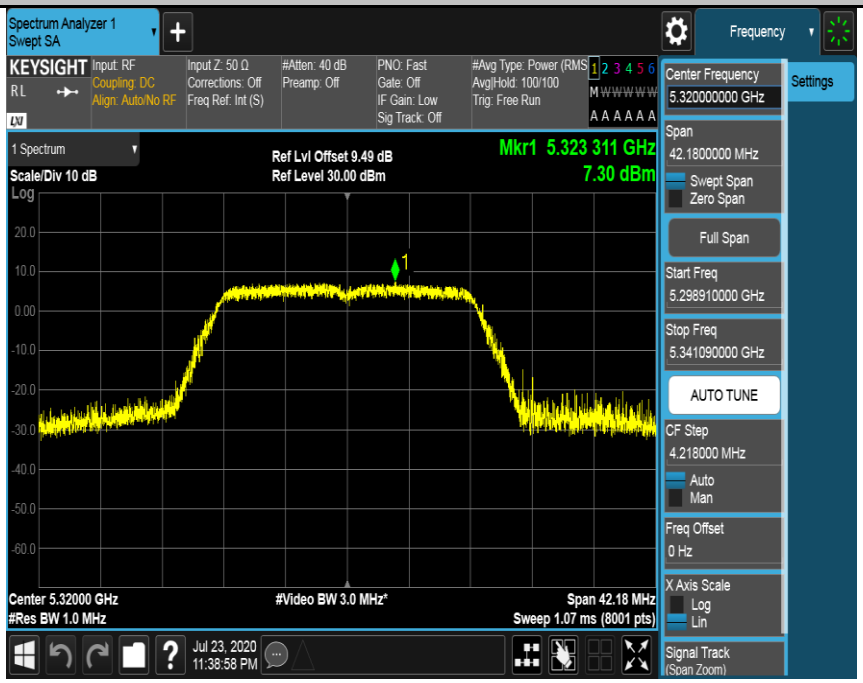
Emission Bandwidth Measurement_11N20_CH40



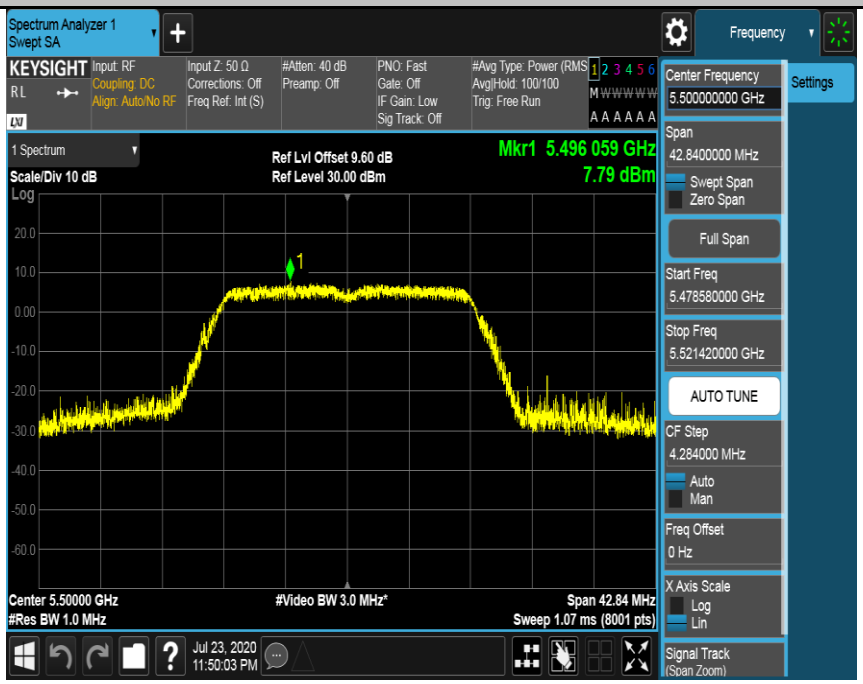
Emission Bandwidth Measurement_11N20_CH48


Emission Bandwidth Measurement_11N20_CH52


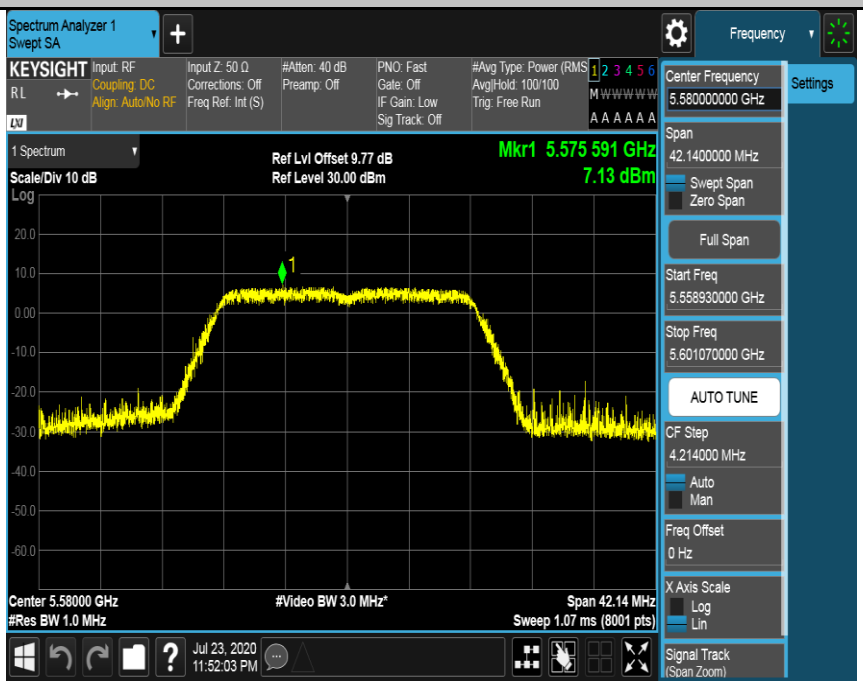
Emission Bandwidth Measurement_11N20_ CH56


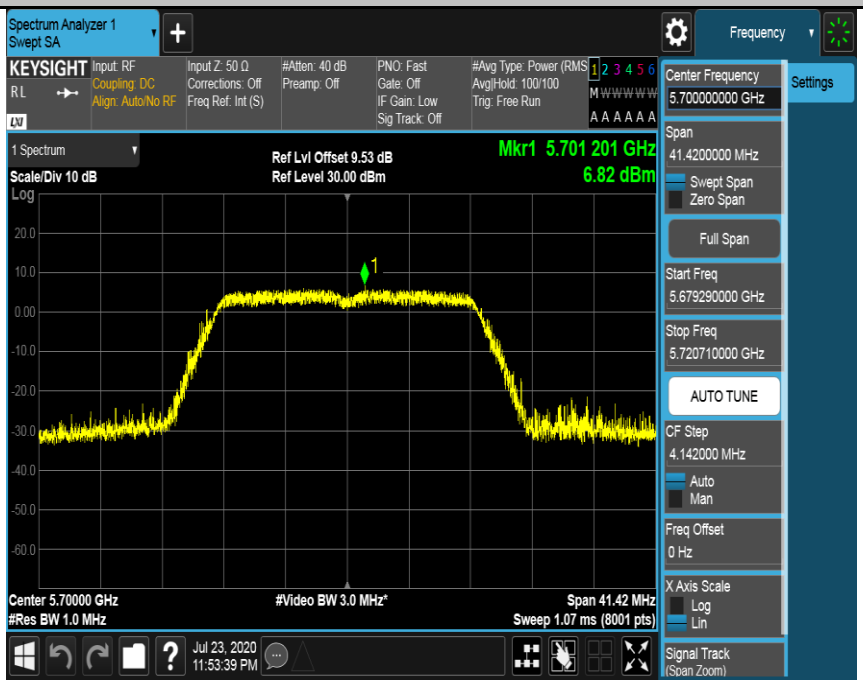
Emission Bandwidth Measurement_11N20_ CH64


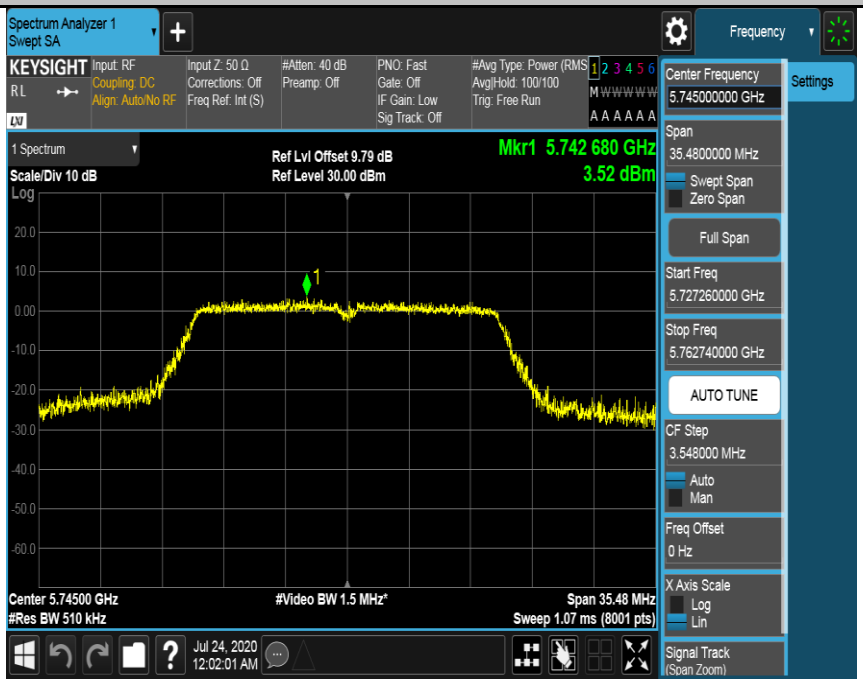
Emission Bandwidth Measurement_11N20_ CH100

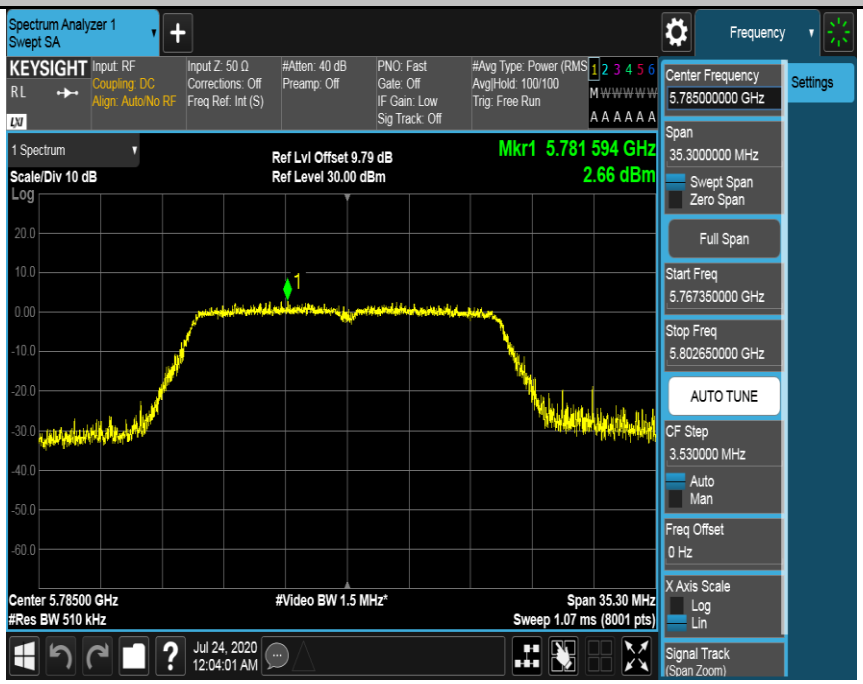


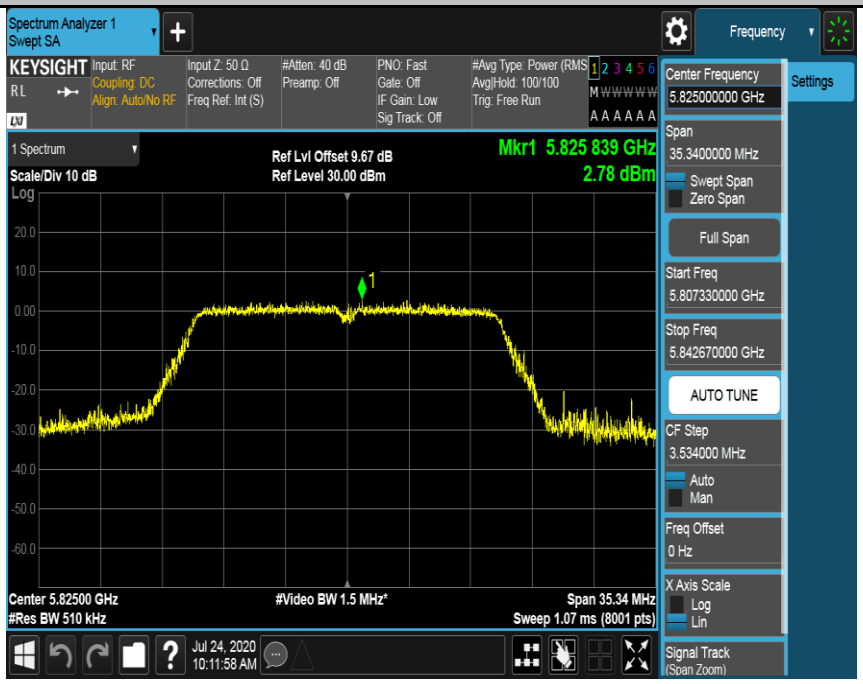
Emission Bandwidth Measurement_11N20_ CH116



Emission Bandwidth Measurement_11N20_ CH140


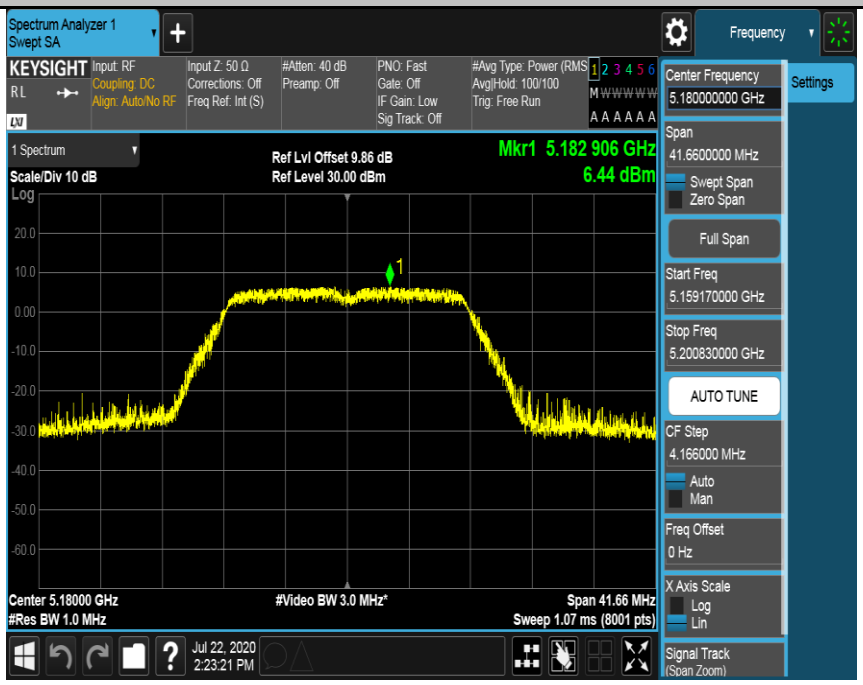
Emission Bandwidth Measurement_11N20_ CH149


Emission Bandwidth Measurement_11N20_ CH157


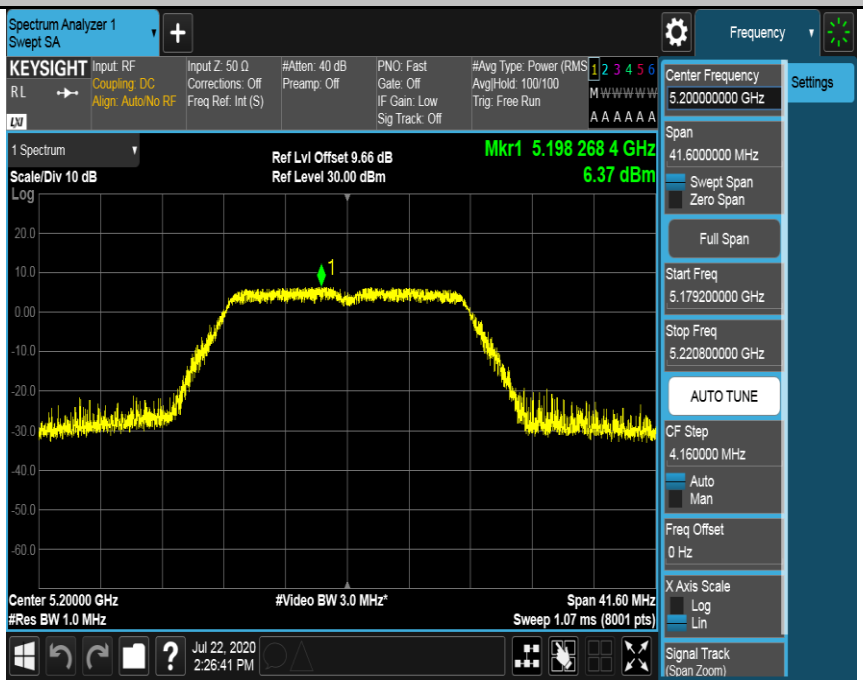
Emission Bandwidth Measurement_11N20_ CH165


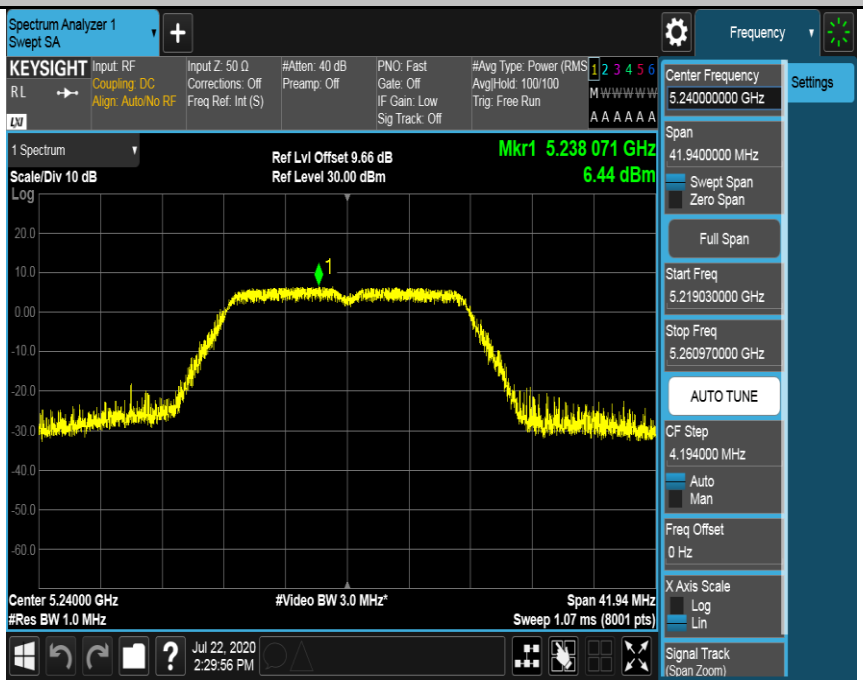
Antenna2:

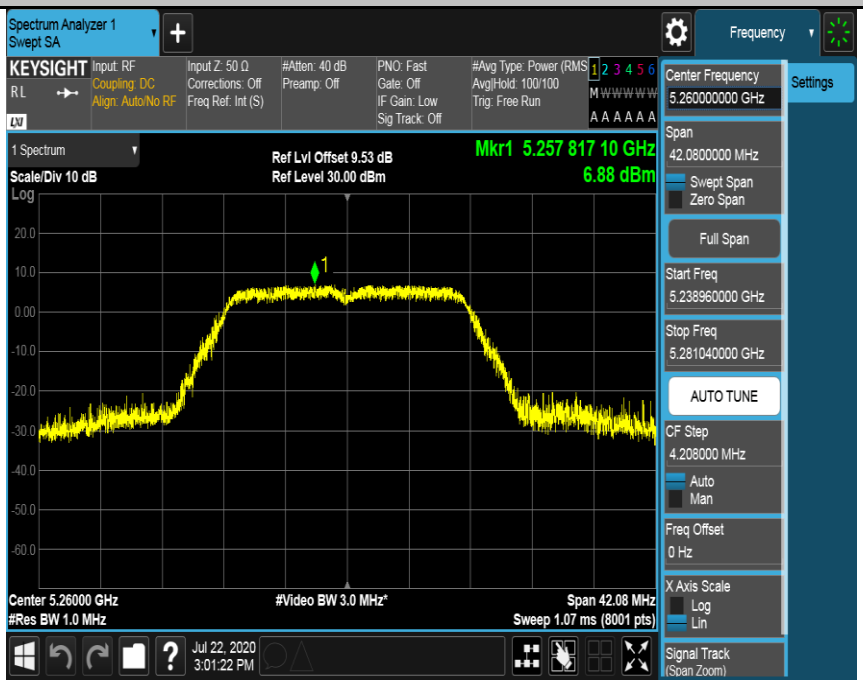
TEST PLOT
Emission Bandwidth Measurement_11A20_CH36

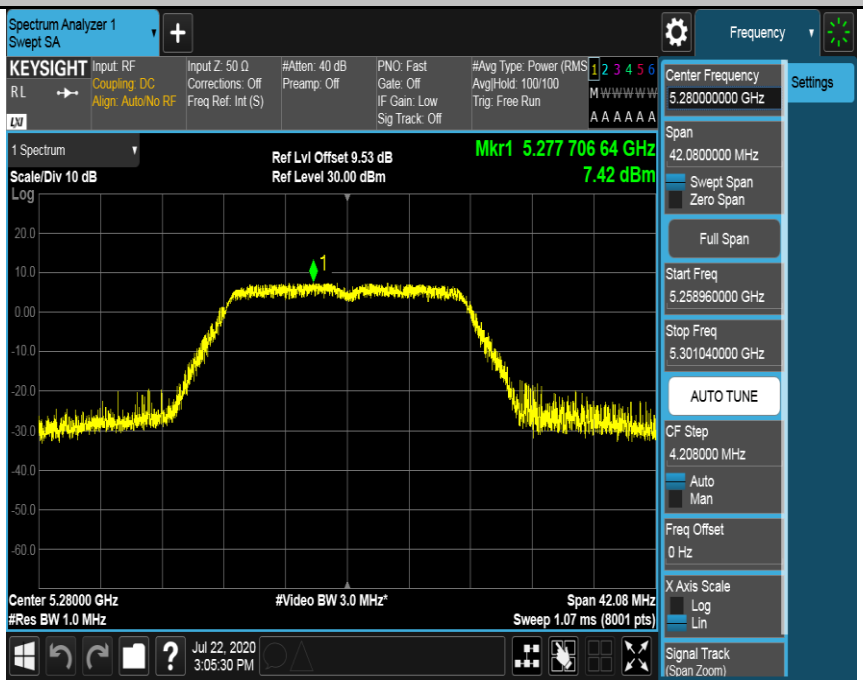


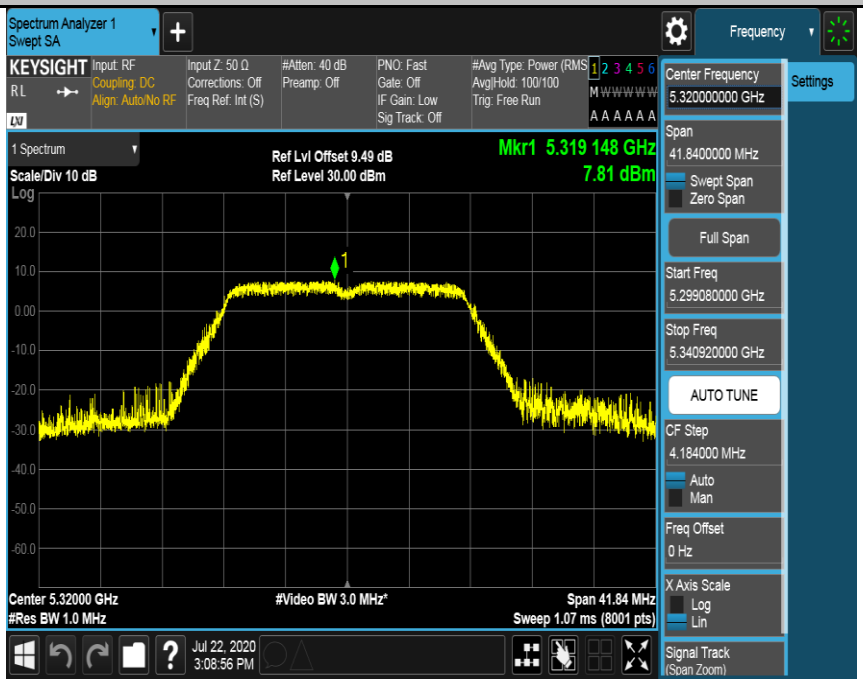
Emission Bandwidth Measurement_11A20_CH40

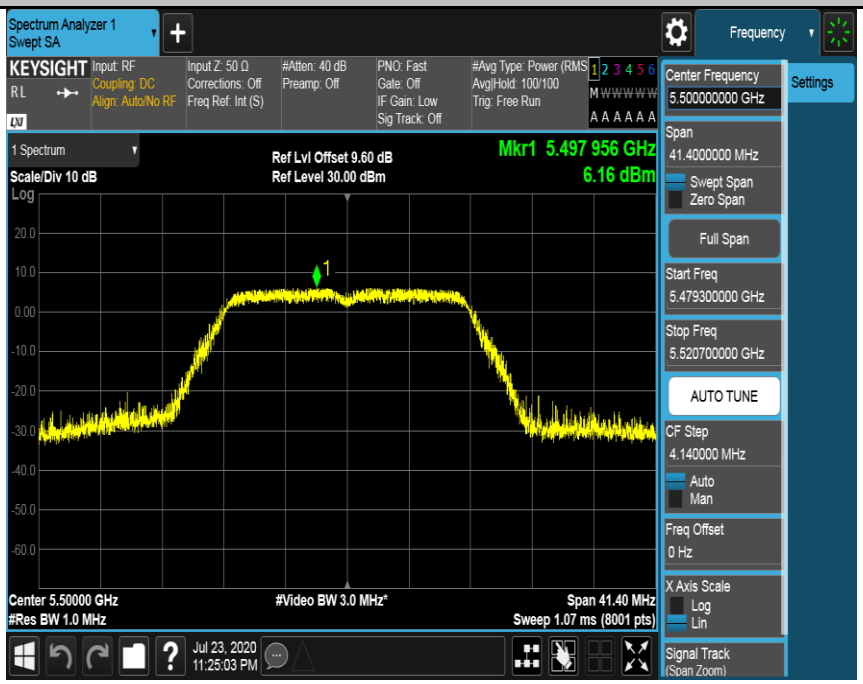
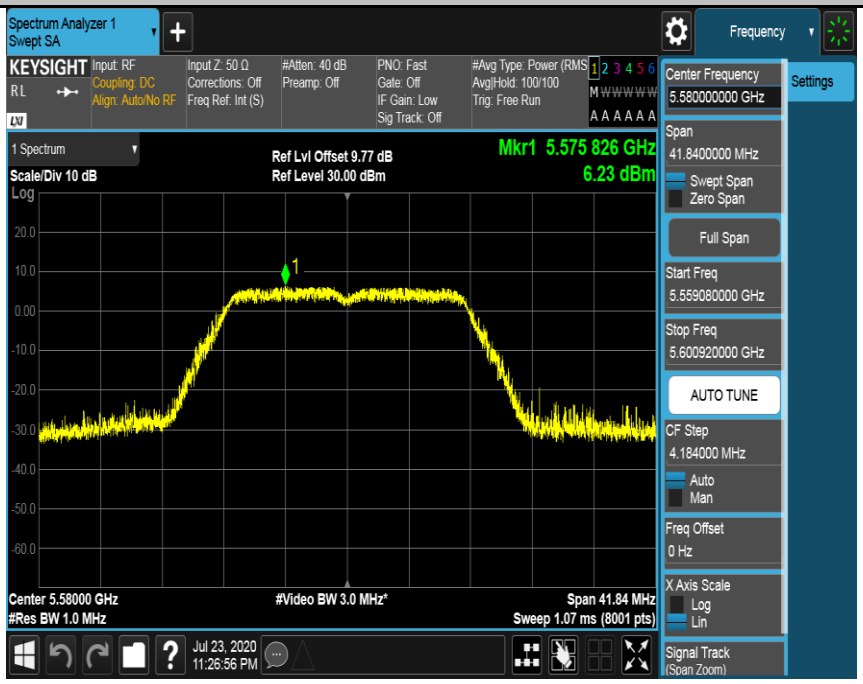


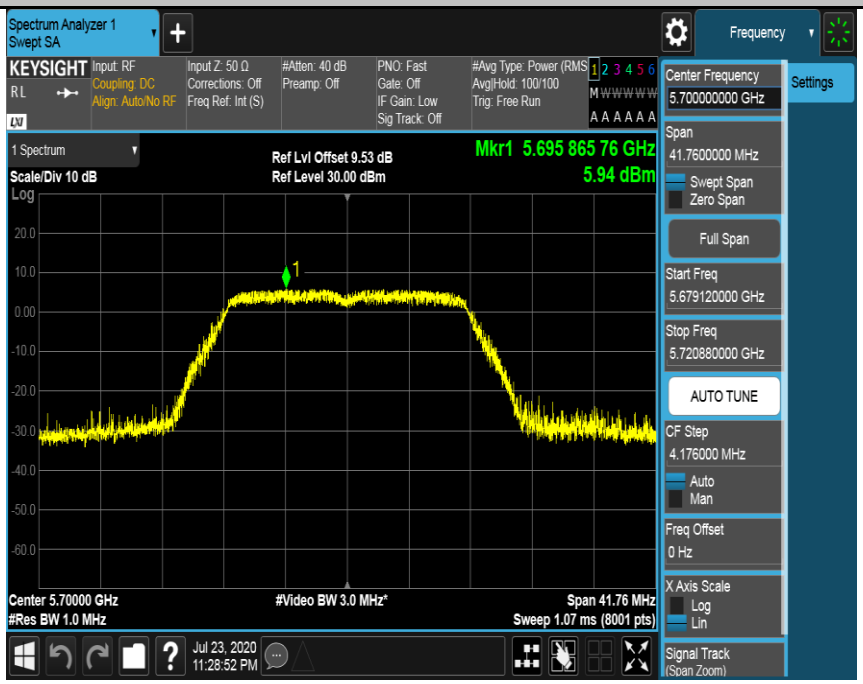
Emission Bandwidth Measurement_11A20_CH48


Emission Bandwidth Measurement_11A20_CH52


Emission Bandwidth Measurement_11A20_ CH56


Emission Bandwidth Measurement_11A20_ CH64


Emission Bandwidth Measurement_11A20_ CH100

Emission Bandwidth Measurement_11A20_CH116


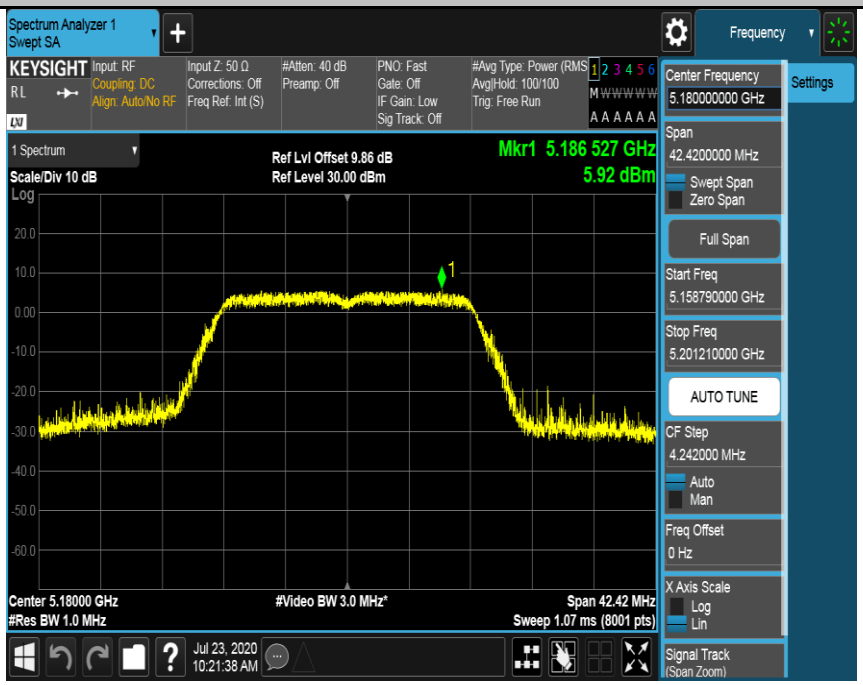
Emission Bandwidth Measurement_11A20_ CH140


Emission Bandwidth Measurement_11A20_ CH149

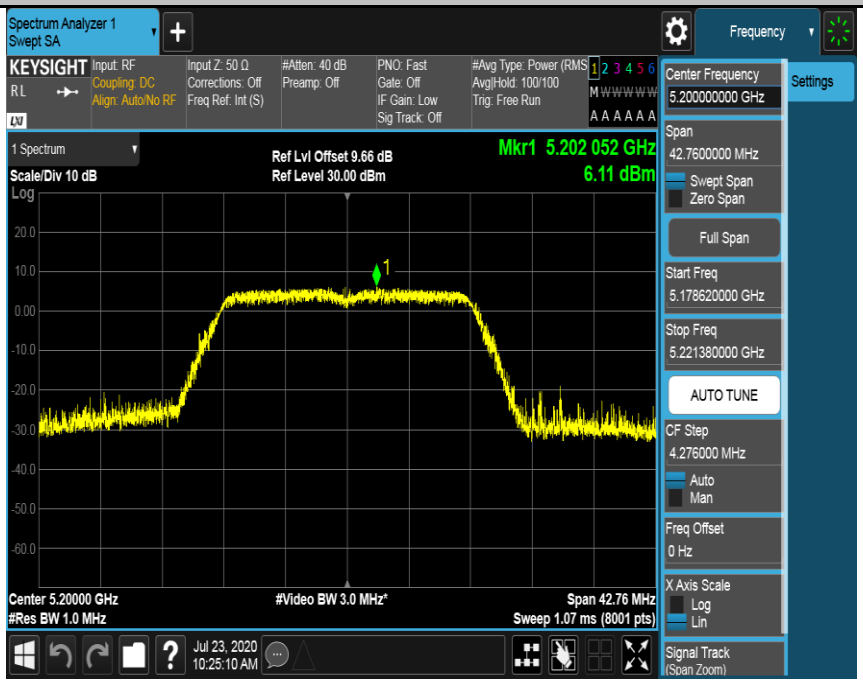

Emission Bandwidth Measurement_11A20_ CH157

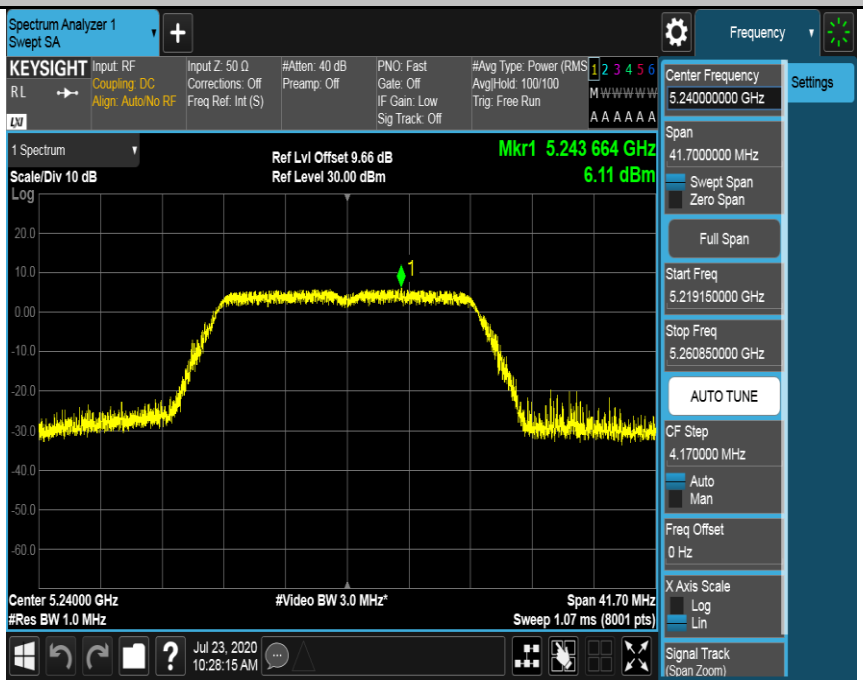

Emission Bandwidth Measurement_11A20_ CH165

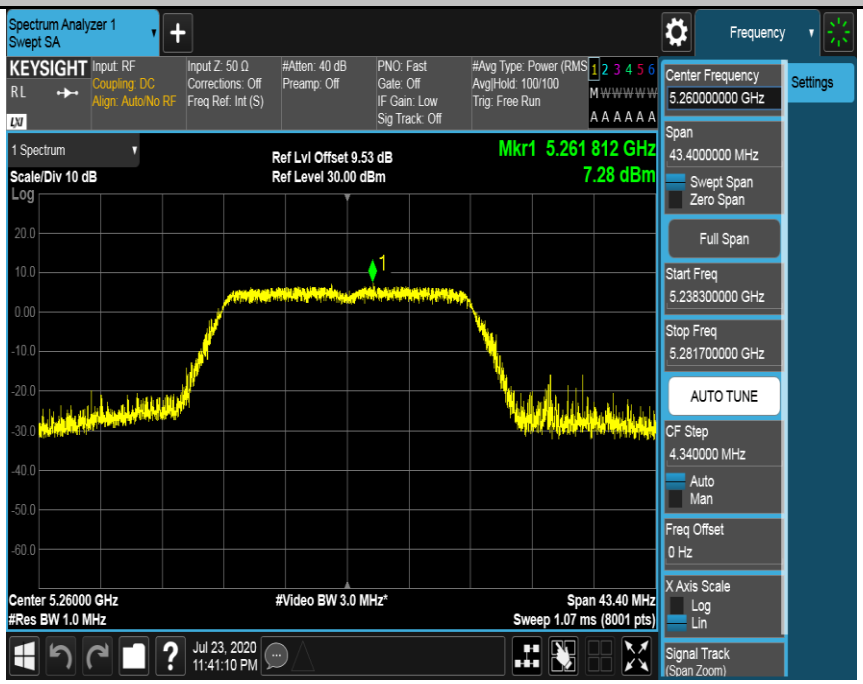

TEST PLOT
Emission Bandwidth Measurement_11N20_CH36



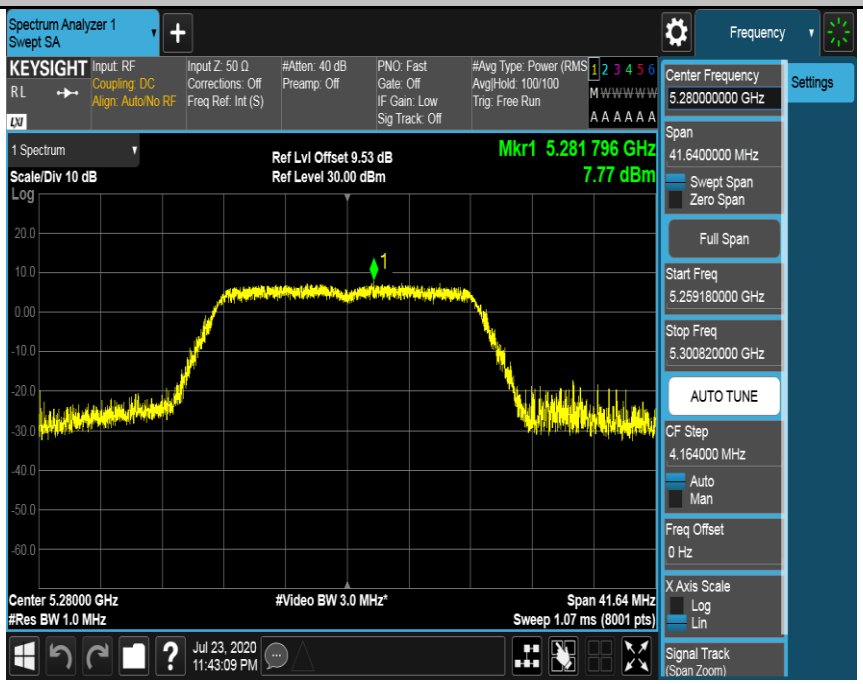
Emission Bandwidth Measurement_11N20_CH40



Emission Bandwidth Measurement_11N20_CH48


Emission Bandwidth Measurement_11N20_CH52


Emission Bandwidth Measurement_11N20_ CH56



Emission Bandwidth Measurement_11N20_ CH64