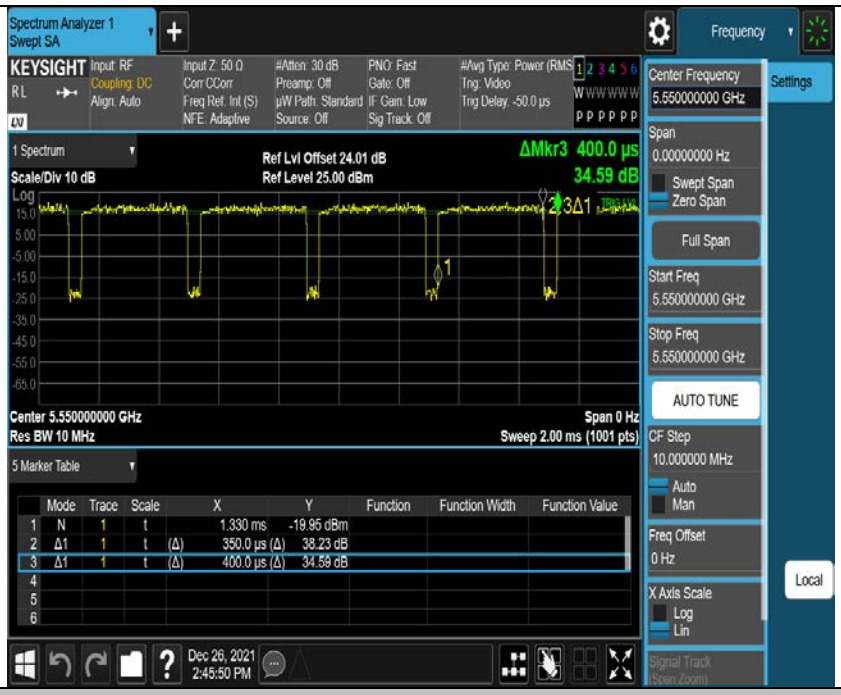
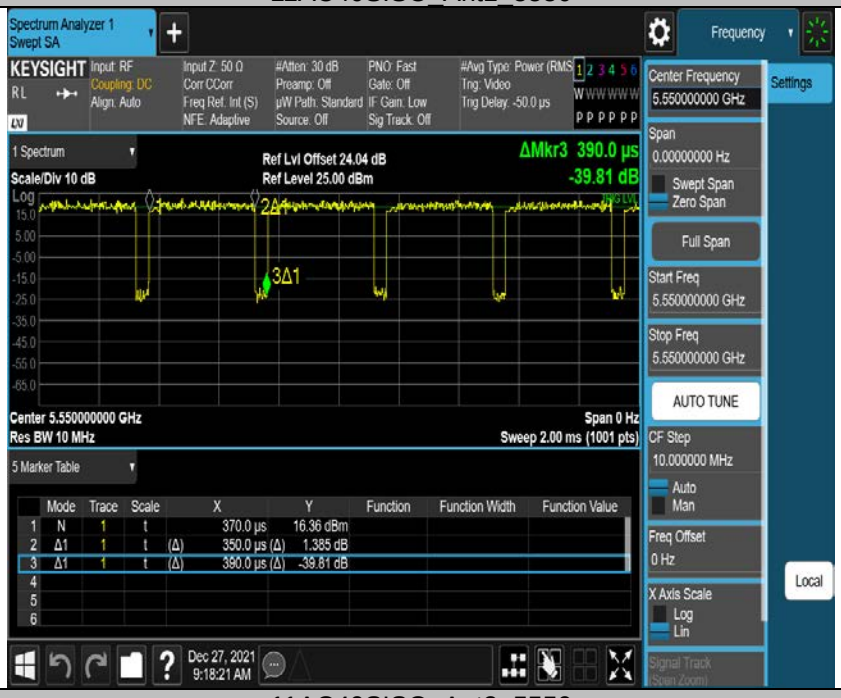
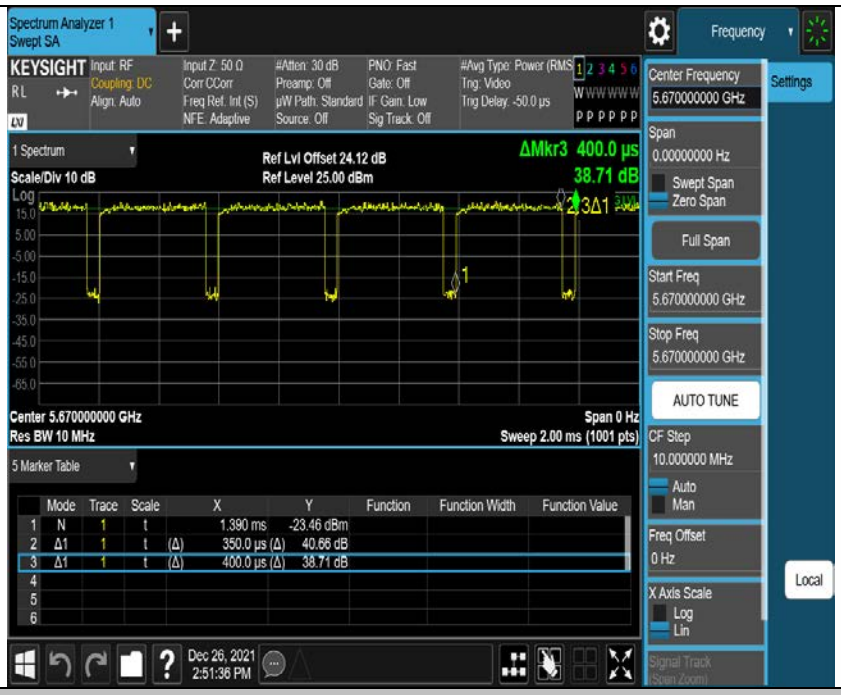


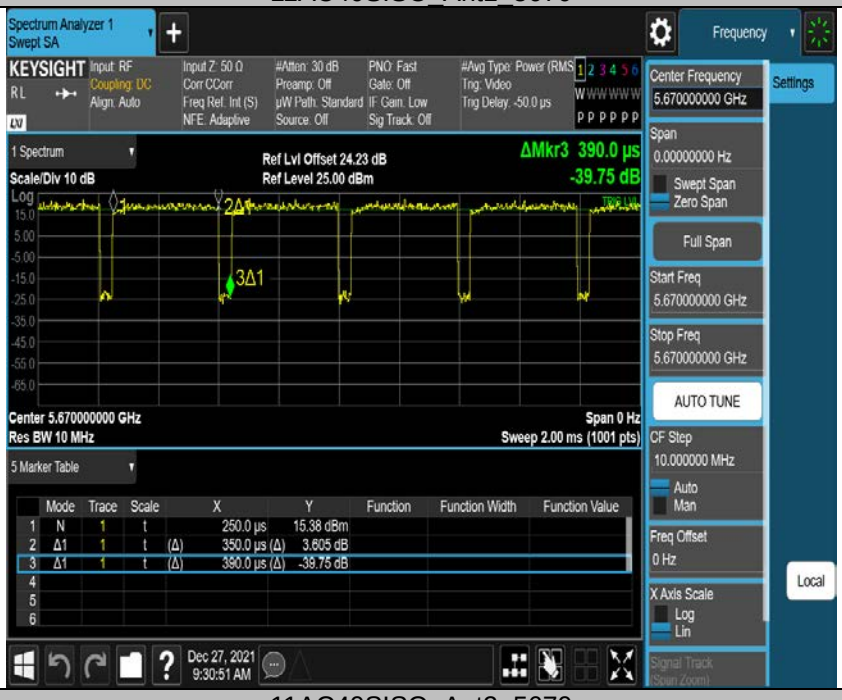
11AC40SISO_Ant1_5550



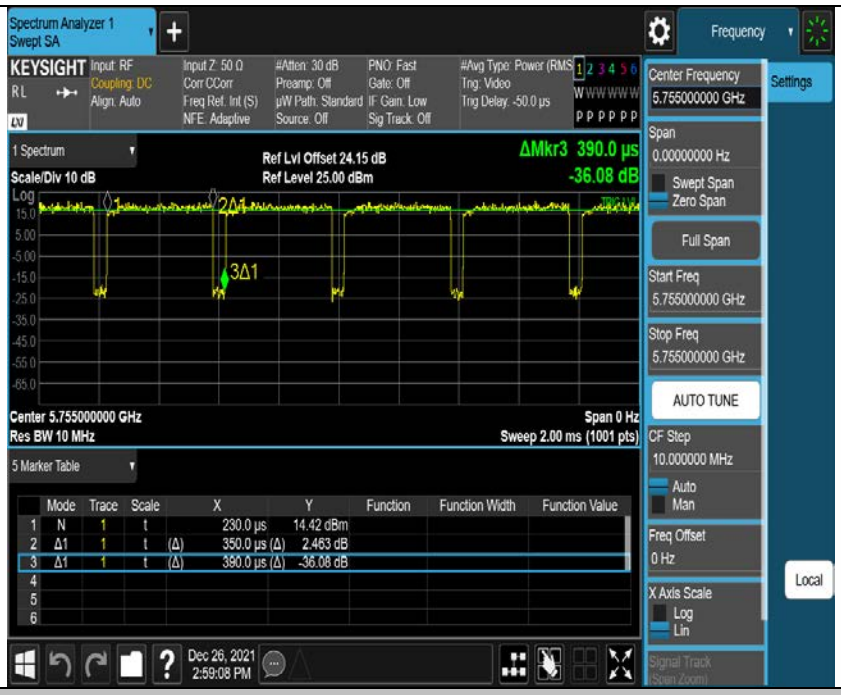
11AC40SISO_Ant2_5550



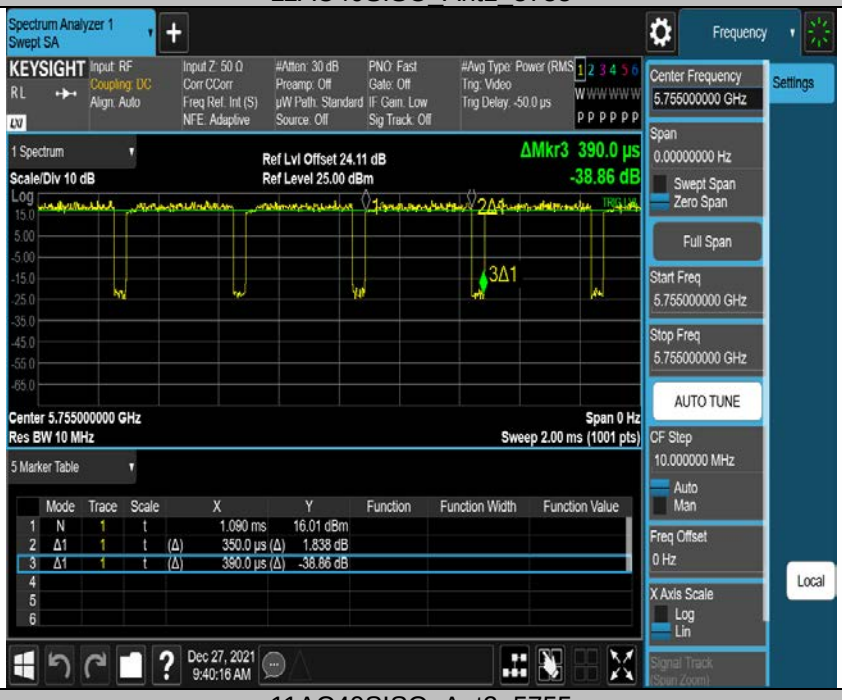
11AC40SISO_Ant1_5670



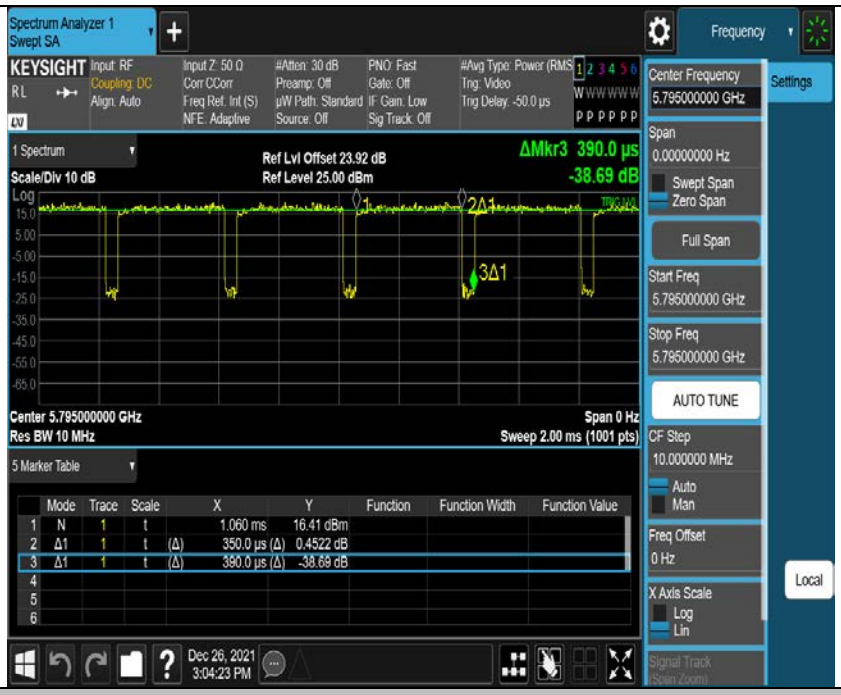
11AC40SISO_Ant2_5670



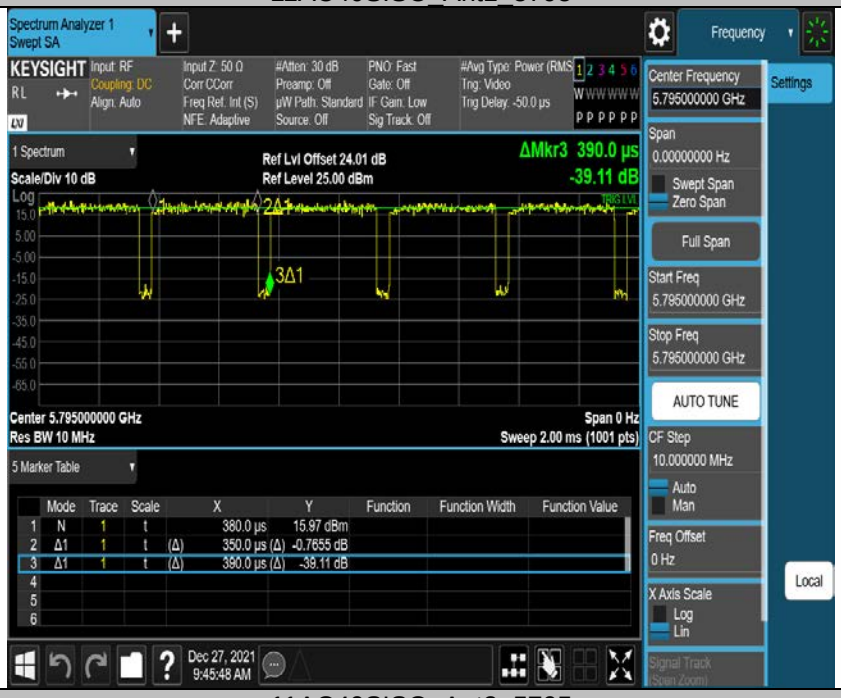
11AC40SISO_Ant1_5755



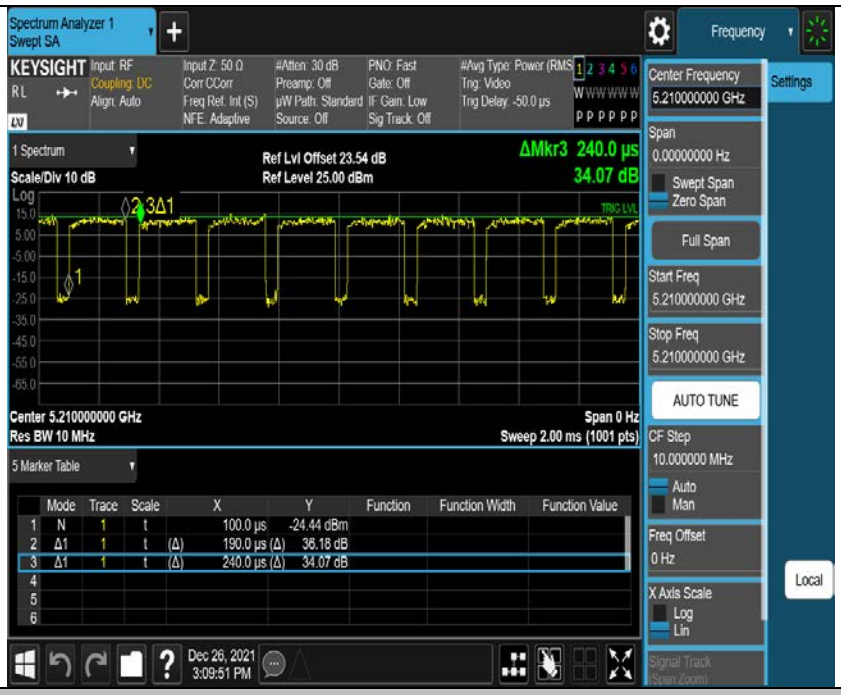
11AC40SISO_Ant2_5755



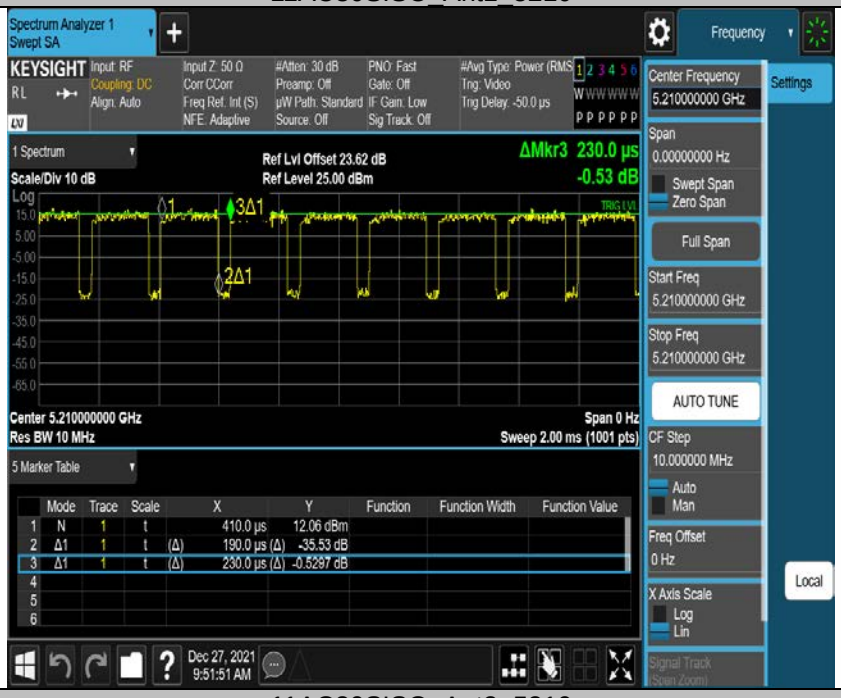
11AC40SISO_Ant1_5795



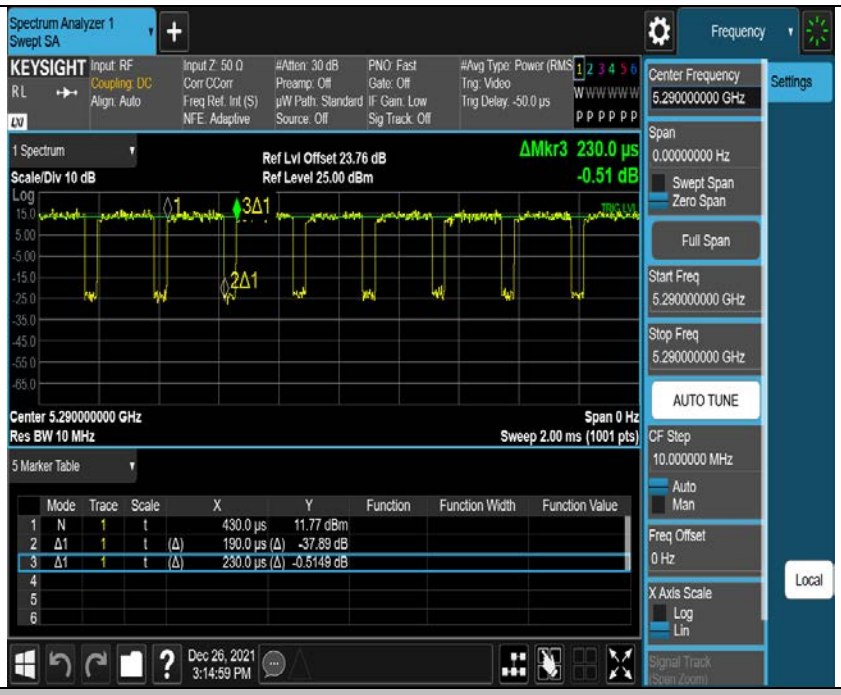
11AC40SISO_Ant2_5795



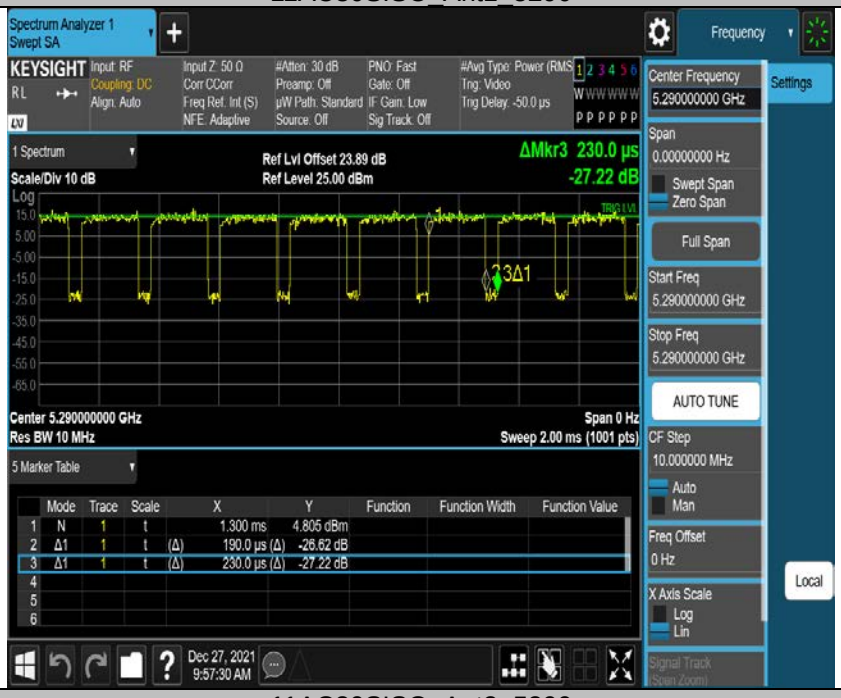
11AC80SISO_Ant1_5210



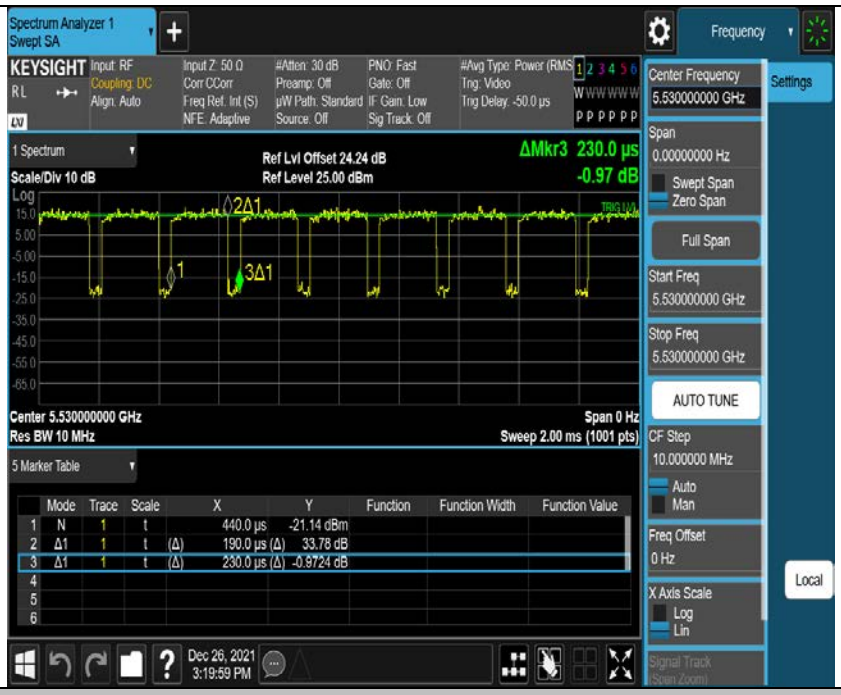
11AC80SISO_Ant2_5210



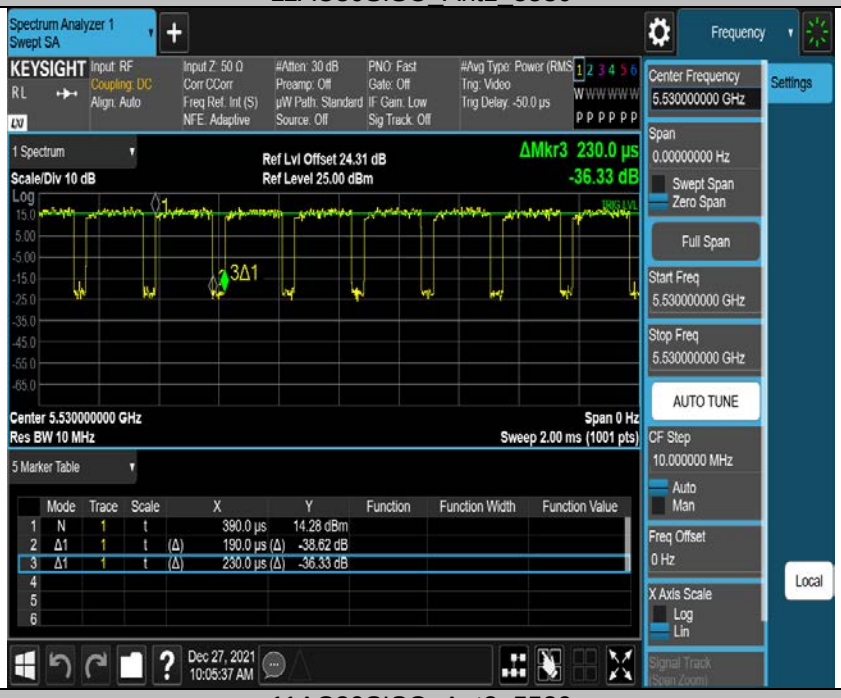
11AC80SISO_Ant1_5290



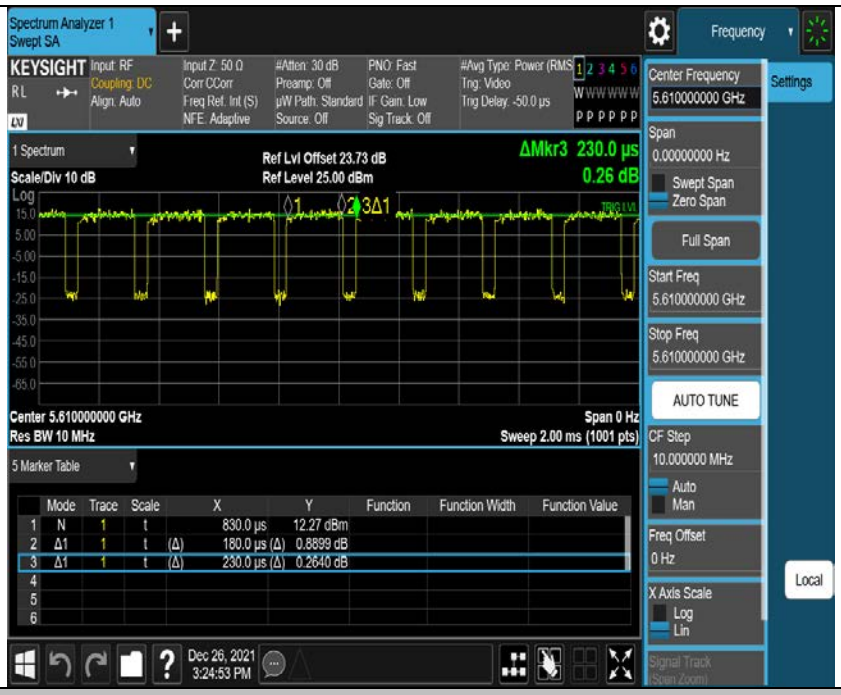
11AC80SISO_Ant2_5290



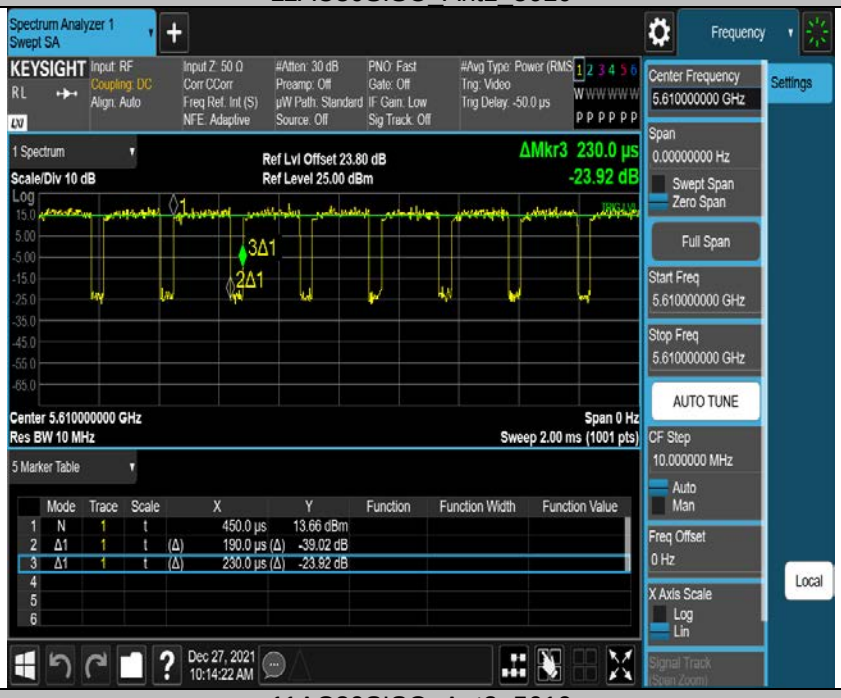
11AC80SISO_Ant1_5530



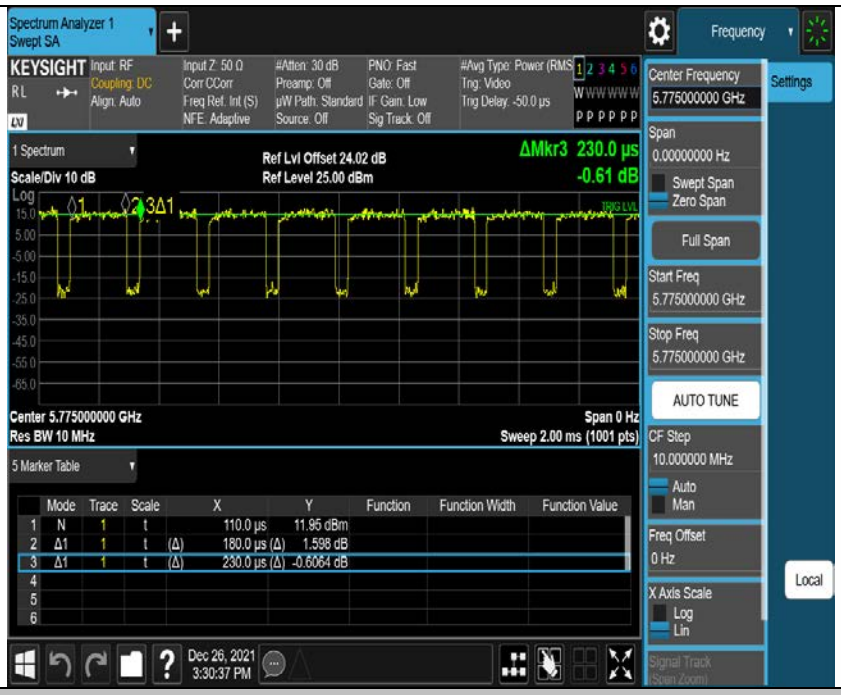
11AC80SISO_Ant2_5530



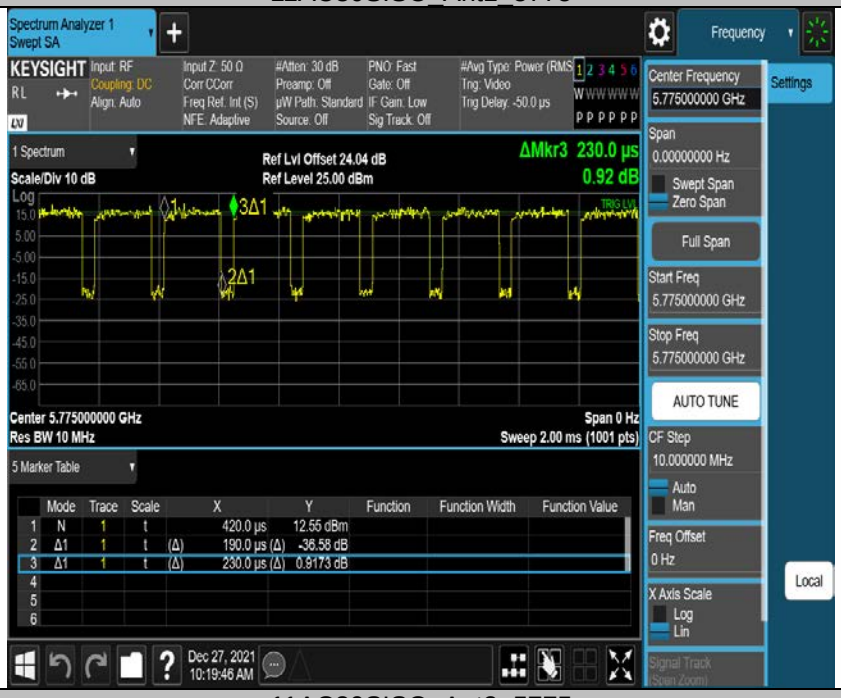
11AC80SISO_Ant1_5610



11AC80SISO_Ant2_5610



11AC80SISO_Ant1_5775



11AC80SISO_Ant2_5775

8.3 MAXIMUM PEAK POWER DENSITY

8.3.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I
According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C
According to FCC Part 15.407(a)(3) for UNII Band III
According to 789033 D02 Section II(F)

8.3.2 Conformance Limit

■ For the band 5.15-5.25 GHz,
(a) (1) (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(a) (1) (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(a) (1) (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(a) (1) (iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands
(b) (2) The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ For the band 5.725-5.85 GHz
(a) (3) for the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30

dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations

8.3.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.3.4 Test Procedure

Methods refer to FCC KDB 789033

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1/T, where T is defined in section II.B.l.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections

5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

8.3.5 Test Results

Temperature:	25° C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

Maximum power spectral denity

TestMode	Antenna	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A 802.11A	Ant1	5180	0.34	≤11	PASS
	Ant2	5180	2.56	≤11	PASS
	Ant1	5220	0.47	≤11	PASS
	Ant2	5220	2.65	≤11	PASS
	Ant1	5240	0.82	≤11	PASS
	Ant2	5240	2.49	≤11	PASS
	Ant1	5260	0.82	≤11	PASS
	Ant2	5260	2.18	≤11	PASS
	Ant1	5300	0.77	≤11	PASS
	Ant2	5300	1.49	≤11	PASS
	Ant1	5320	0.93	≤11	PASS
	Ant2	5320	1.26	≤11	PASS
	Ant1	5500	0.6	≤11	PASS
	Ant2	5500	2.81	≤11	PASS
	Ant1	5580	-0.01	≤11	PASS
	Ant2	5580	2.75	≤11	PASS
	Ant1	5700	-1.03	≤11	PASS
	Ant2	5700	2.6	≤11	PASS
	Ant1	5745	-3.67	≤30	PASS
	Ant2	5745	-0.2	≤30	PASS
	Ant1	5785	-4.02	≤30	PASS
	Ant2	5785	-0.31	≤30	PASS
	Ant1	5825	-3.65	≤30	PASS
	Ant2	5825	-0.56	≤30	PASS
11N20SISO 802.11N(HT20)	Ant1	5180	-0.37	≤11	PASS
	Ant2	5180	2.43	≤11	PASS
	Ant1	5220	-0.26	≤11	PASS
	Ant2	5220	2.38	≤11	PASS
	Ant1	5240	-0.18	≤11	PASS
	Ant2	5240	2.28	≤11	PASS
	Ant1	5260	0.06	≤11	PASS
	Ant2	5260	2.06	≤11	PASS
	Ant1	5300	-0.07	≤11	PASS
	Ant2	5300	1.55	≤11	PASS
	Ant1	5320	0.01	≤11	PASS
	Ant2	5320	1.22	≤11	PASS
	Ant1	5500	0.81	≤11	PASS
	Ant2	5500	2.6	≤11	PASS
	Ant1	5580	-0.4	≤11	PASS
	Ant2	5580	2.48	≤11	PASS
	Ant1	5700	-1.26	≤11	PASS
	Ant2	5700	2.33	≤11	PASS
	Ant1	5745	-3.99	≤30	PASS
	Ant2	5745	-0.38	≤30	PASS
	Ant1	5785	-4.4	≤30	PASS
	Ant2	5785	-0.62	≤30	PASS
	Ant1	5825	-3.94	≤30	PASS
	Ant2	5825	-0.63	≤30	PASS
	Ant1	5190	-3.29	≤11	PASS
	Ant2	5190	-0.33	≤11	PASS
	Ant1	5230	-2.89	≤11	PASS
	Ant2	5230	-0.29	≤11	PASS

11N40SISO 802.11N(HT40)	Ant1	5270	-2.94	≤11	PASS
	Ant2	5270	-0.97	≤11	PASS
	Ant1	5310	-2.99	≤11	PASS
	Ant2	5310	-1.56	≤11	PASS
	Ant1	5510	-1.69	≤11	PASS
	Ant2	5510	0.1	≤11	PASS
	Ant1	5550	-2.15	≤11	PASS
	Ant2	5550	0.23	≤11	PASS
	Ant1	5670	-4.36	≤11	PASS
	Ant2	5670	-0.3	≤11	PASS
	Ant1	5755	-7.11	≤30	PASS
	Ant2	5755	-3.24	≤30	PASS
	Ant1	5795	-7.01	≤30	PASS
	Ant2	5795	-3.41	≤30	PASS
11AC20SISO 802.11ac(HT20)	Ant1	5180	-0.56	≤11	PASS
	Ant2	5180	2.43	≤11	PASS
	Ant1	5220	-0.08	≤11	PASS
	Ant2	5220	2.59	≤11	PASS
	Ant1	5240	0.12	≤11	PASS
	Ant2	5240	2.19	≤11	PASS
	Ant1	5260	-0.15	≤11	PASS
	Ant2	5260	-2.65	≤11	PASS
	Ant1	5300	0.12	≤11	PASS
	Ant2	5300	1.35	≤11	PASS
	Ant1	5320	0.09	≤11	PASS
	Ant2	5320	1.43	≤11	PASS
	Ant1	5500	1.22	≤11	PASS
	Ant2	5500	2.72	≤11	PASS
	Ant1	5580	-0.02	≤11	PASS
	Ant2	5580	2.6	≤11	PASS
	Ant1	5700	-1.23	≤11	PASS
	Ant2	5700	2.52	≤11	PASS
	Ant1	5745	-6.89	≤30	PASS
	Ant2	5745	-0.31	≤30	PASS
	Ant1	5785	-3.79	≤30	PASS
	Ant2	5785	-0.42	≤30	PASS
	Ant1	5825	-3.48	≤30	PASS
	Ant2	5825	-0.17	≤30	PASS
11AC40SISO 802.11ac(HT40)	Ant1	5190	-2.78	≤11	PASS
	Ant2	5190	0.04	≤11	PASS
	Ant1	5230	-2.4	≤11	PASS
	Ant2	5230	-0.19	≤11	PASS
	Ant1	5270	-2.43	≤11	PASS
	Ant2	5270	-0.49	≤11	PASS
	Ant1	5310	-2.62	≤11	PASS
	Ant2	5310	-1.34	≤11	PASS
	Ant1	5510	-1.28	≤11	PASS
	Ant2	5510	0.12	≤11	PASS
	Ant1	5550	-1.6	≤11	PASS
	Ant2	5550	0.33	≤11	PASS
	Ant1	5670	-4.28	≤11	PASS
	Ant2	5670	-0.26	≤11	PASS
	Ant1	5755	-6.73	≤30	PASS
	Ant2	5755	-2.83	≤30	PASS
	Ant1	5795	-6.65	≤30	PASS

	Ant2	5795	-2.64	≤30	PASS
11AC80SISO 802.11ac(HT80)	Ant1	5210	-5.37	≤11	PASS
	Ant2	5210	-4.16	≤11	PASS
	Ant1	5290	-6.83	≤11	PASS
	Ant2	5290	-4.28	≤11	PASS
	Ant1	5530	-4.29	≤11	PASS
	Ant2	5530	-2.22	≤11	PASS
	Ant1	5610	-6.11	≤11	PASS
	Ant2	5610	-3.26	≤11	PASS
	Ant1	5775	-9.11	≤30	PASS
	Ant2	5775	-5.77	≤30	PASS
Note:1.TheResult and LimitUnit is dBm/500 kHz in the band 5.725–5.85 GHz. 2.The Duty Cycle Factorand RBW Factoriscompensatedinthegraph.					

For 2T2R

5150-5250MHz

Operating mode	Test Channel	Power Spectral Density dBm/MHz			Limit (dBm/MHz)
		Antenna 1	Antenna 2	Total	
802.11n-HT20	5180	-0.37	2.43	4.26	11
	5220	-0.26	2.38	4.27	11
	5240	-0.18	2.28	4.23	11
802.11ac(HT20)	5180	-0.56	2.43	4.20	11
	5220	-0.08	2.59	4.47	11
	5240	0.12	2.19	4.29	11
802.11n-HT40	5190	-3.29	-0.33	1.45	11
	5230	-2.89	-0.29	1.61	11
802.11ac(HT40)	5190	-2.78	0.04	1.87	11
	5230	-2.4	-0.19	1.85	11
802.11ac(HT80)	5210	-5.37	-4.16	-1.71	11

5250-5250MHz

Operating mode	Test Channel	Power Spectral Density dBm/MHz			Limit (dBm/MHz)
		Antenna 1	Antenna 2	Total	
802.11n-HT20	5260	0.06	2.06	4.18	11
	5300	-0.07	1.55	3.83	11
	5320	0.01	1.22	3.67	11
802.11ac(HT20)	5260	-0.15	-2.65	1.79	11
	5300	0.12	1.35	3.79	11
	5320	0.09	1.43	3.82	11
802.11n-HT40	5270	-2.94	-0.97	1.17	11
	5310	-2.99	-1.56	0.79	11
802.11ac(HT40)	5270	-2.43	-0.49	1.66	11
	5310	-2.62	-1.34	1.08	11
802.11ac(HT80)	5290	-6.83	-4.28	-2.36	11

5470-5725MHz

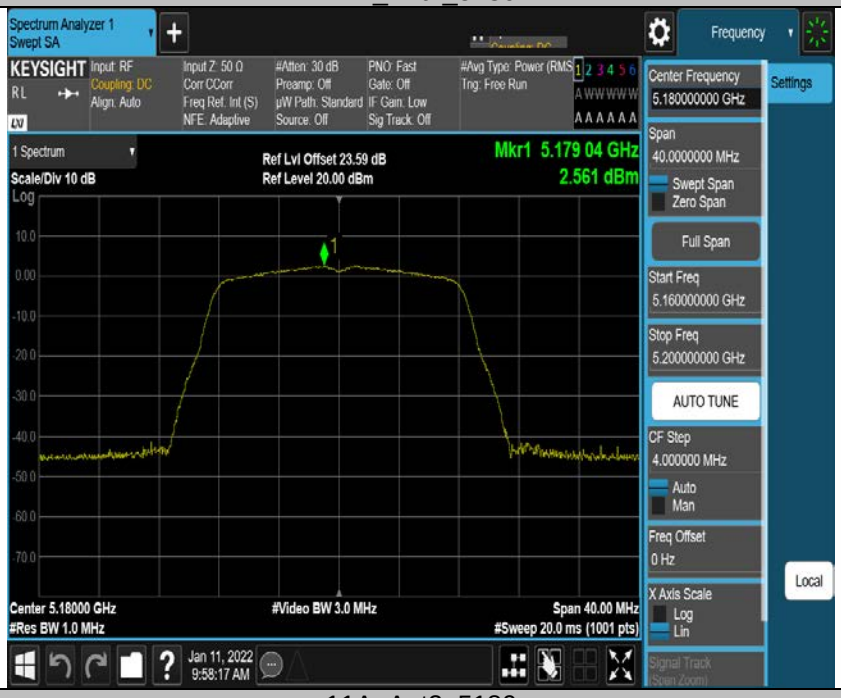
Operating mode	Test Channel	Power Spectral Density dBm/MHz			Limit (dBm/MHz)
		Antenna 1	Antenna 2	Total	
802.11n-HT20	5500	0.81	2.6	4.81	11
	5580	-0.4	2.48	4.28	11
	5700	-1.26	2.33	3.91	11
802.11ac(HT20)	5500	1.22	2.72	5.04	11
	5580	-0.02	2.6	4.49	11
	5700	-1.23	2.52	4.05	11
802.11n-HT40	5510	-1.69	0.1	2.31	11
	5670	-4.36	-0.3	1.14	11
802.11ac(HT40)	5510	-1.28	0.12	2.49	11
	5670	-4.28	-0.26	1.19	11
802.11ac(HT80)	5530	-4.29	-2.22	-0.12	11

5725-5850MHz

Operating mode	Test Channel	Power Spectral Density dBm/500kHz			Limit (dBm/500kHz)
		Antenna 1	Antenna 2	Total	
802.11n-HT20	5745	-3.99	-0.38	1.19	30
	5785	-4.4	-0.62	0.90	30
	5825	-3.94	-0.63	1.03	30
802.11ac(HT20)	5745	-6.89	-0.31	0.55	30
	5785	-3.79	--0.42	1.82	30
	5825	-3.48	-0.17	1.49	30
802.11n-HT40	5755	-7.11	-3.24	-1.75	30
	5795	-7.01	-3.41	-1.84	30
802.11ac(HT40)	5755	-6.73	-2.83	-1.35	30
	5795	-6.65	-2.64	-1.19	30
802.11ac(HT80)	5775	-9.11	-5.77	-4.12	30

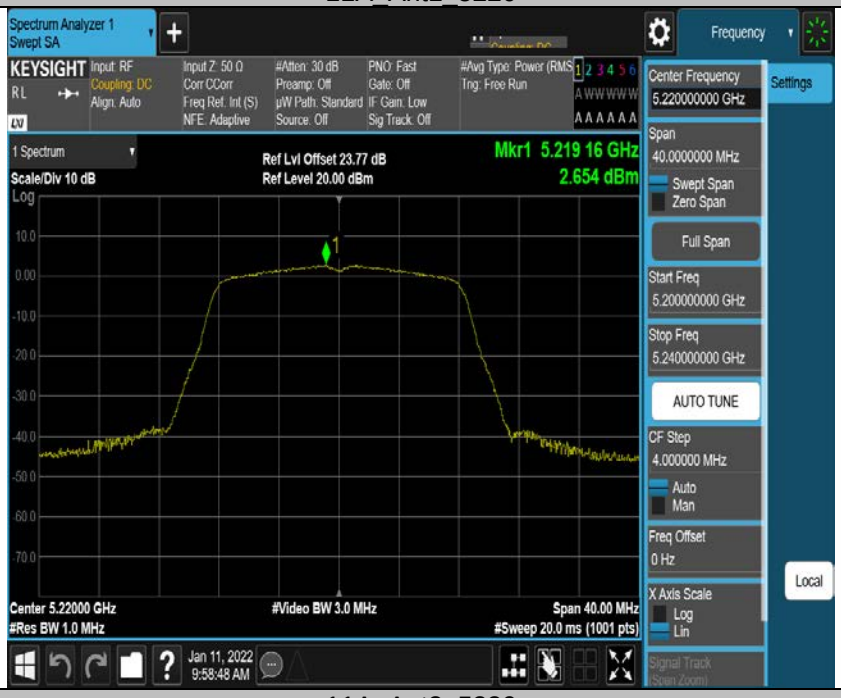
Test Graphs

11A_Ant1_5180



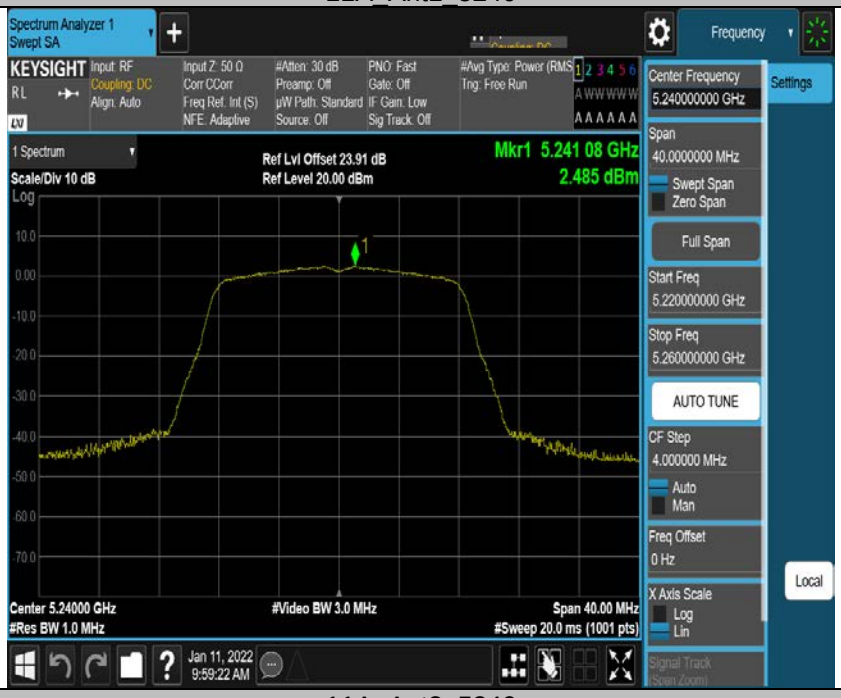
11A_Ant2_5180

11A_Ant1_5220



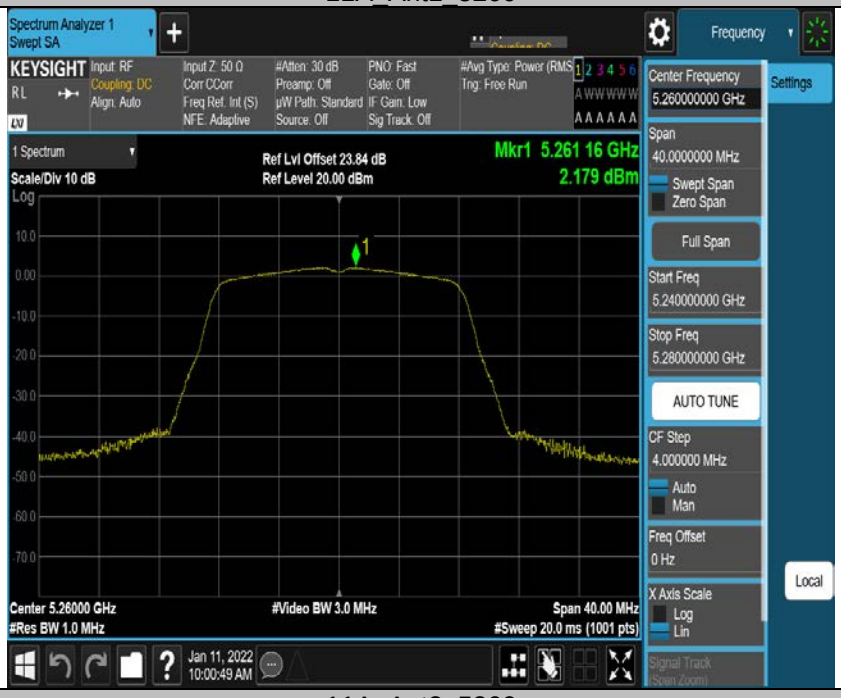
11A_Ant2_5220

11A_Ant1_5240



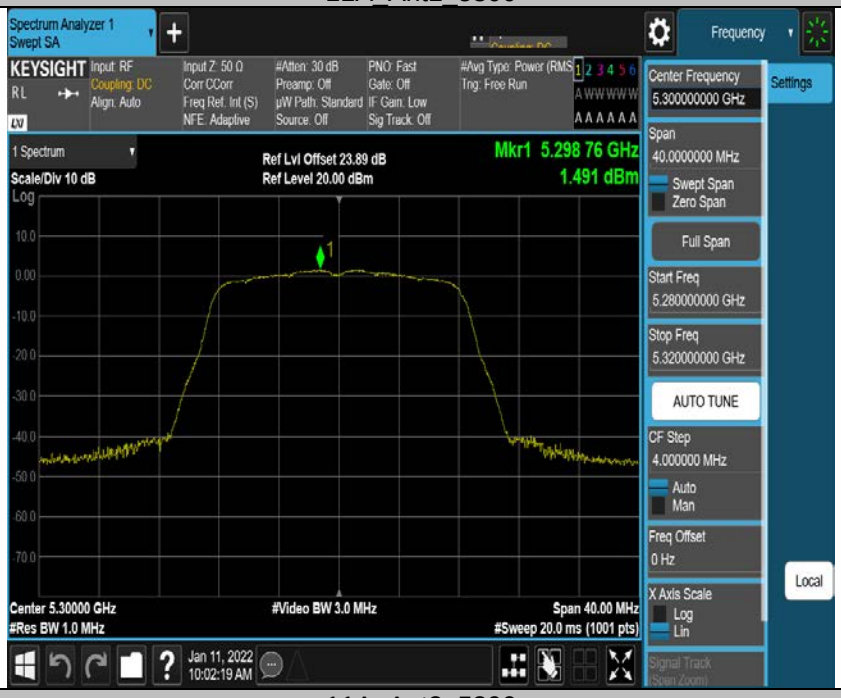
11A_Ant2_5240

11A_Ant1_5260



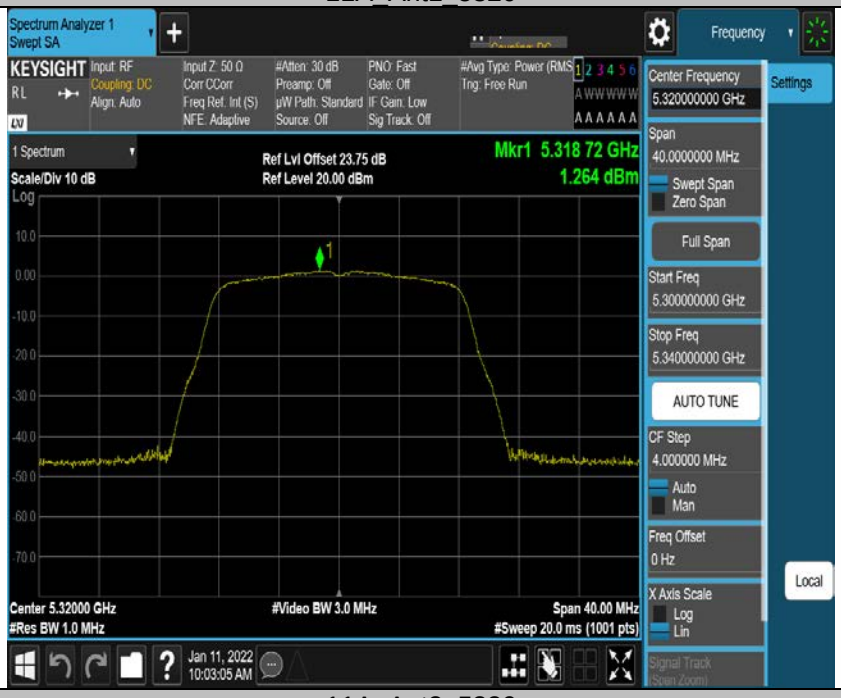
11A_Ant2_5260

11A_Ant1_5300



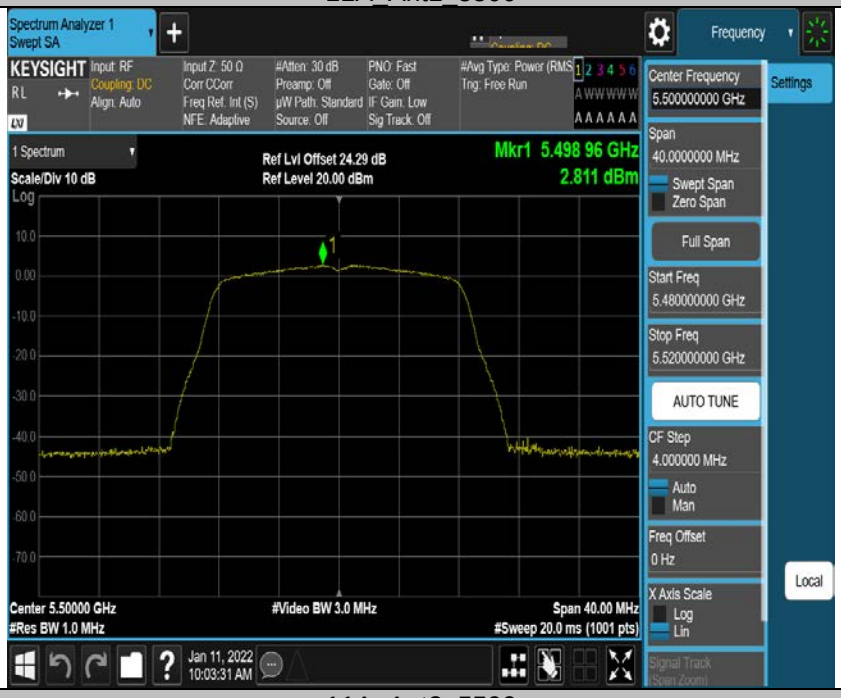
11A_Ant2_5300

11A_Ant1_5320



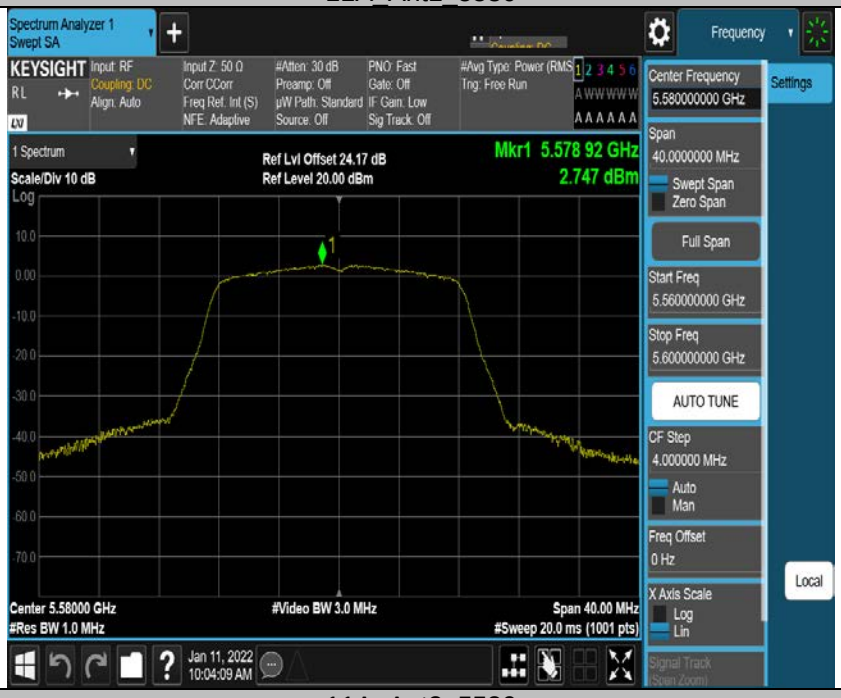
11A_Ant2_5320

11A_Ant1_5500



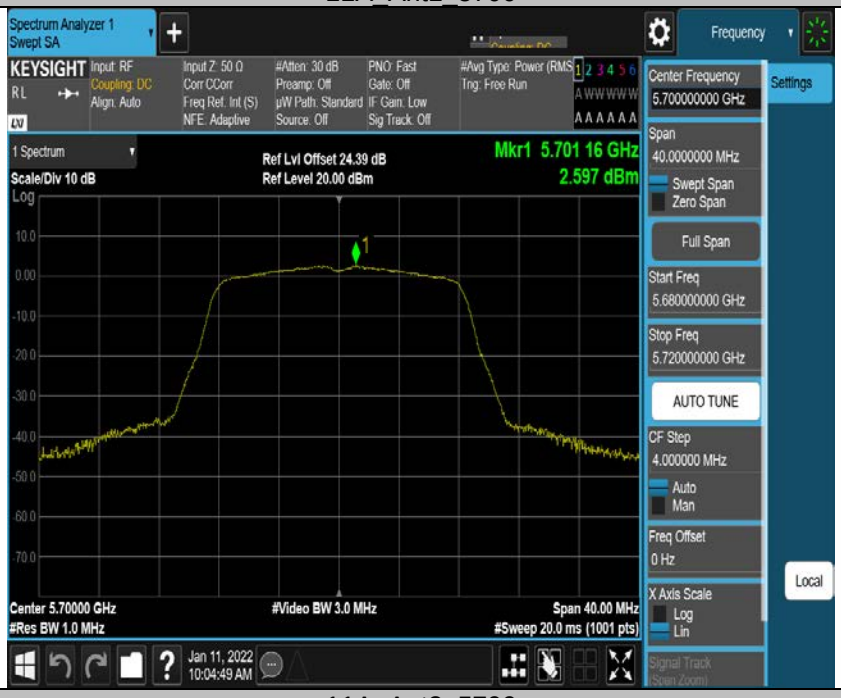
11A_Ant2_5500

11A_Ant1_5580



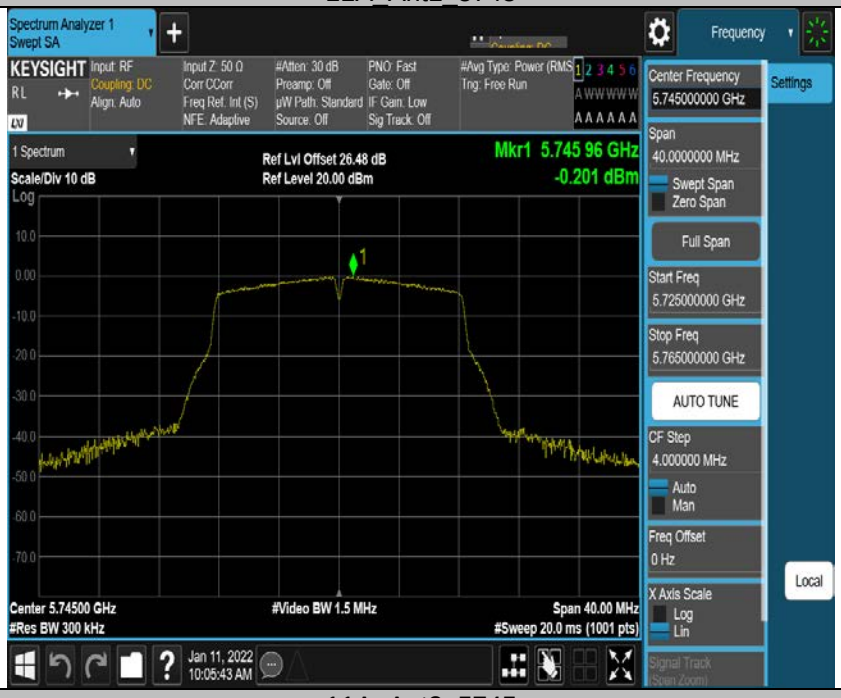
11A_Ant2_5580

11A_Ant1_5700



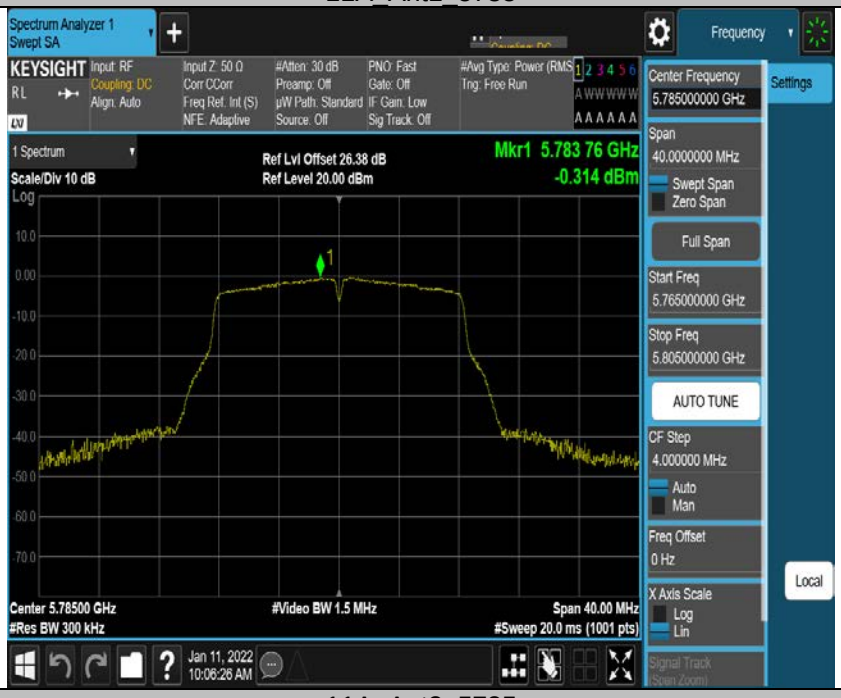
11A_Ant2_5700

11A_Ant1_5745

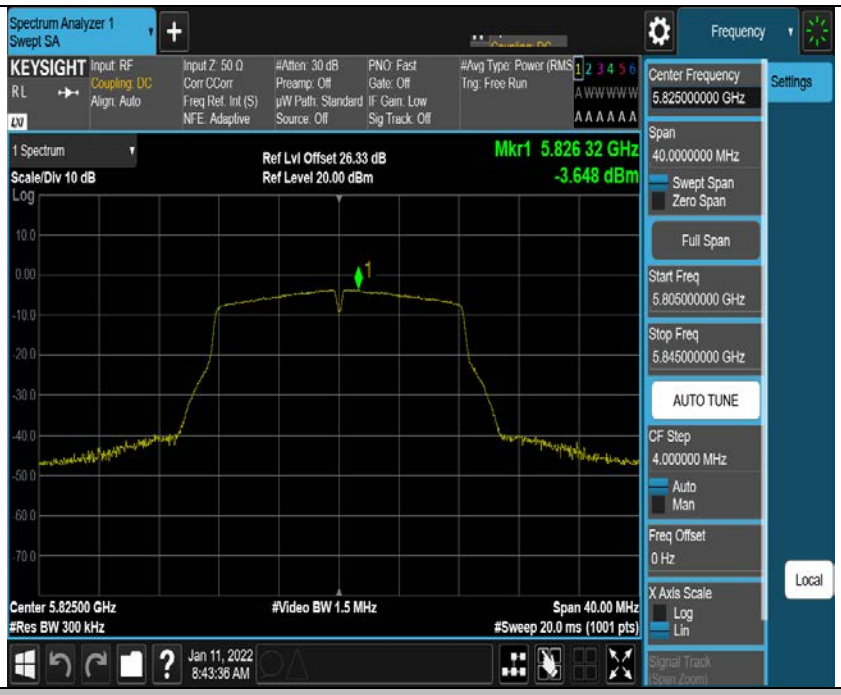


11A_Ant2_5745

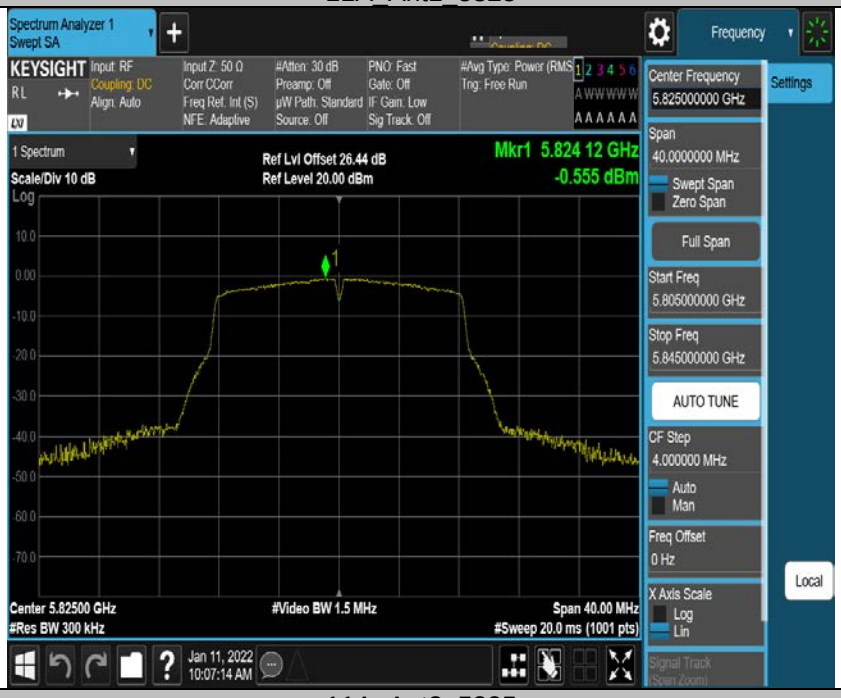
11A_Ant1_5785



11A_Ant2_5785

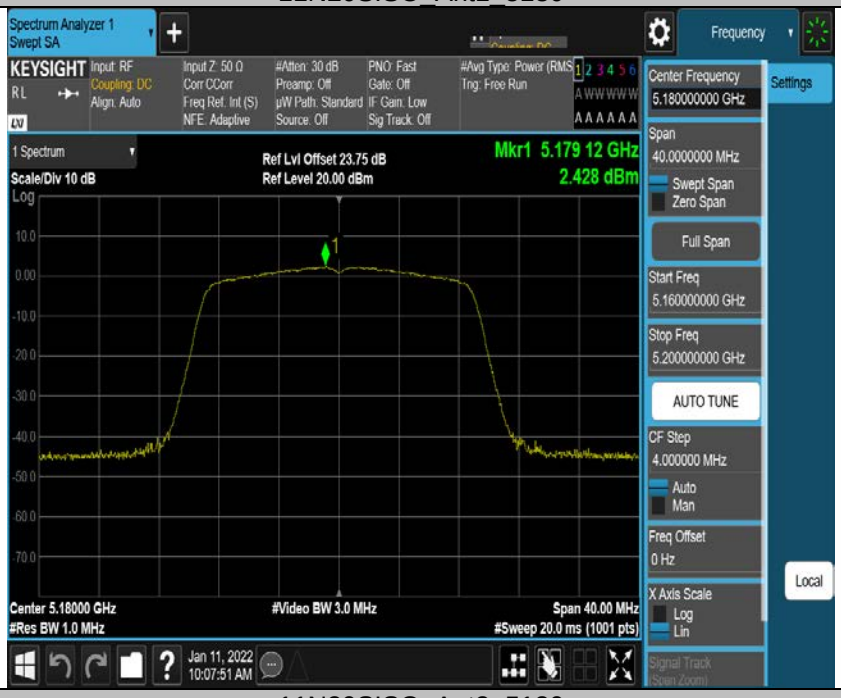


11A_Ant1_5825



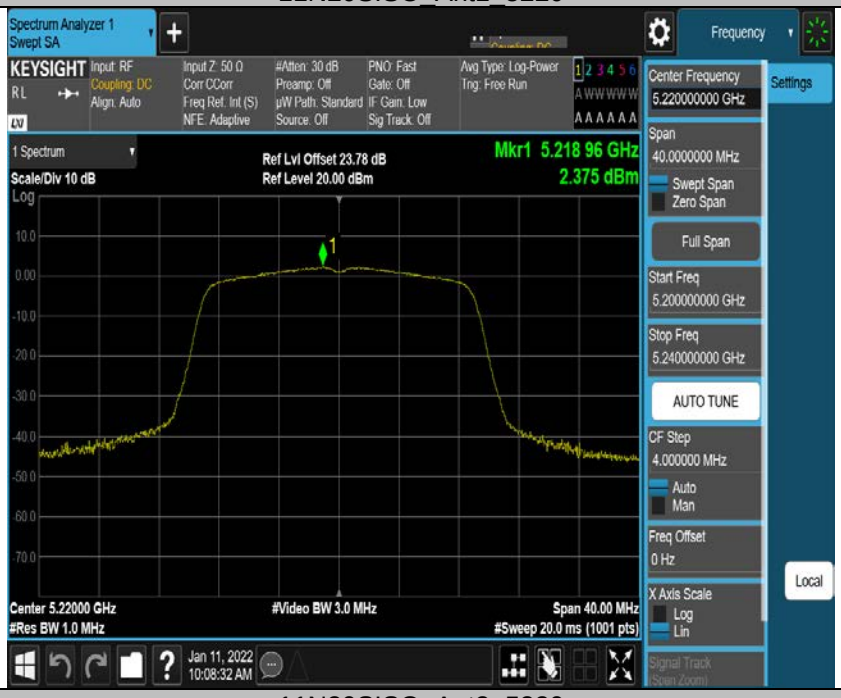
11A_Ant2_5825

11N20SISO_Ant1_5180

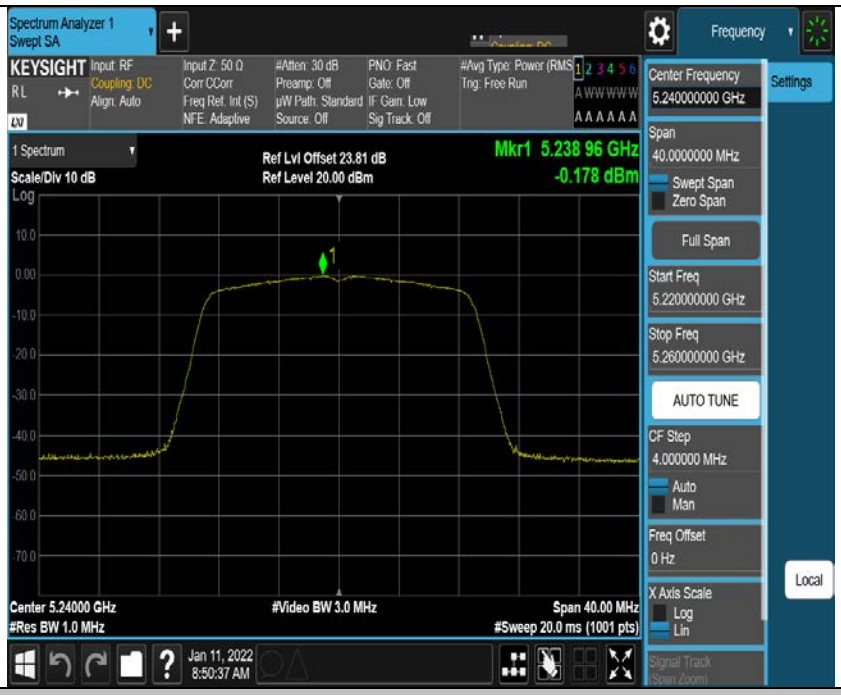


11N20SISO_Ant2_5180

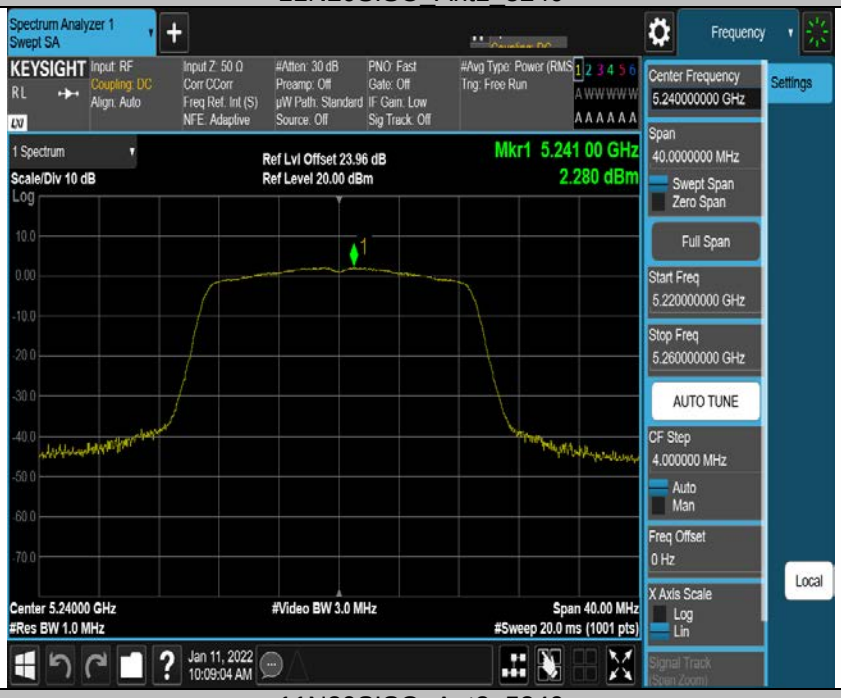
11N20SISO_Ant1_5220



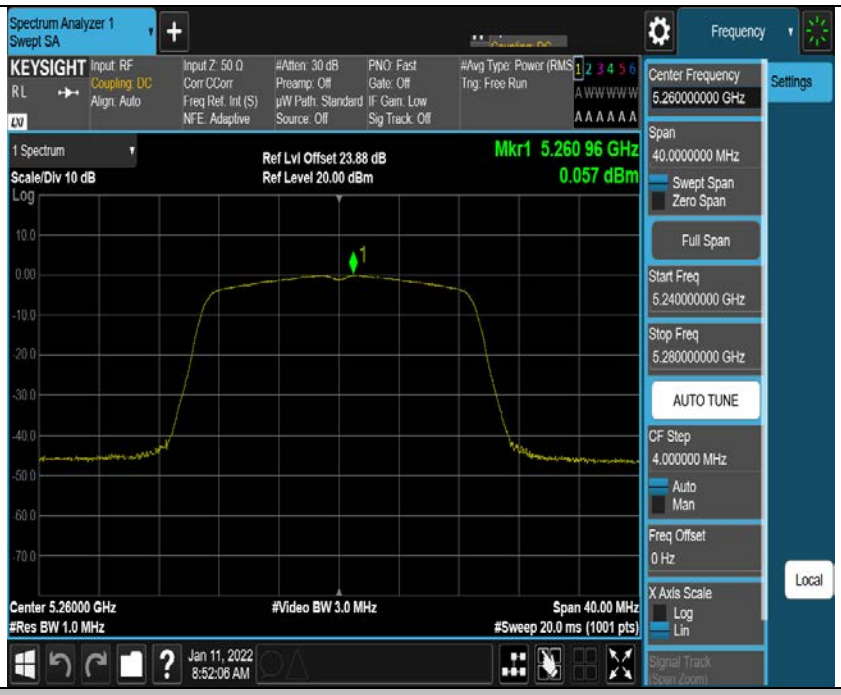
11N20SISO_Ant2_5220



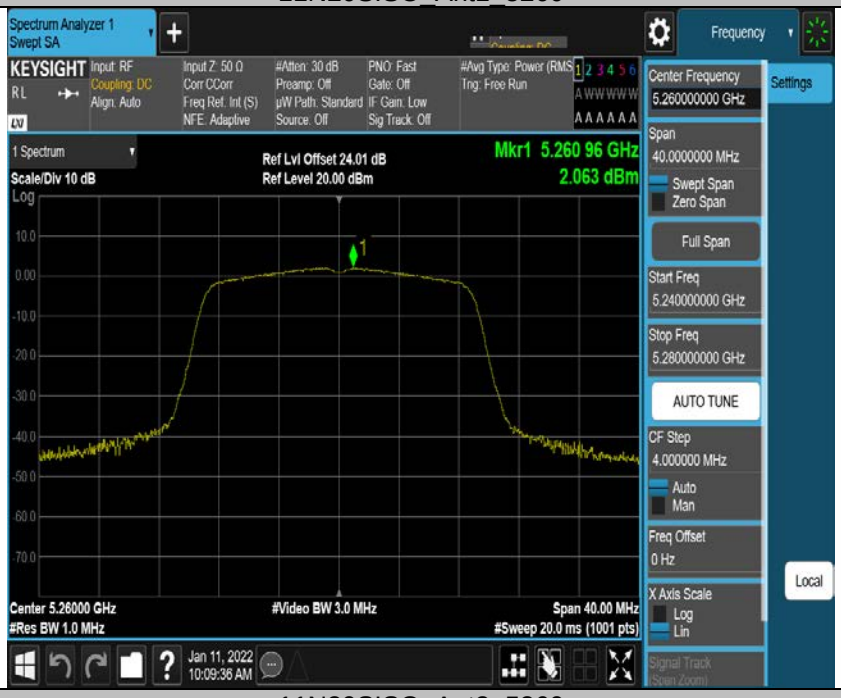
11N20SISO_Ant1_5240



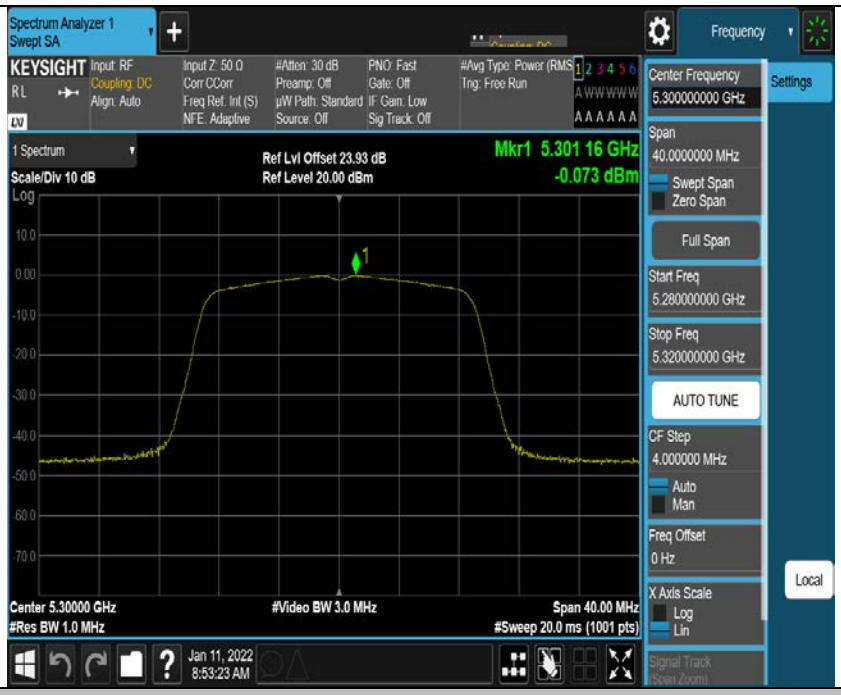
11N20SISO_Ant2_5240



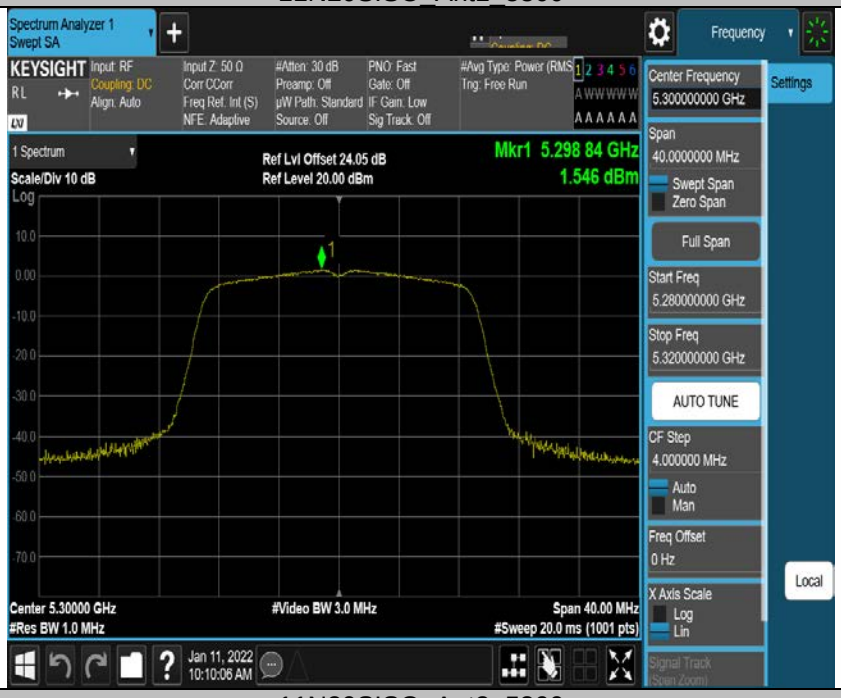
11N20SISO_Ant1_5260



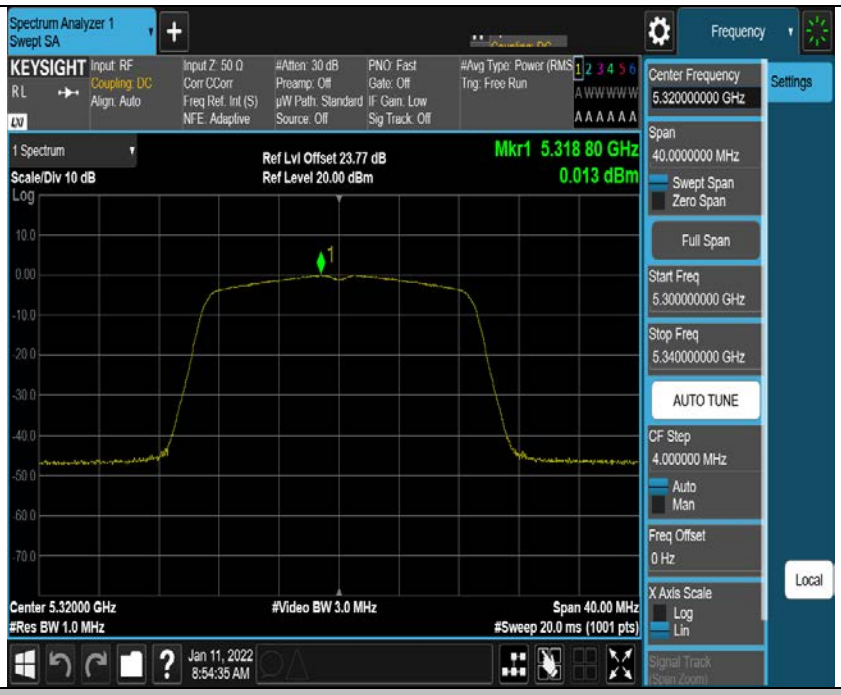
11N20SISO_Ant2_5260



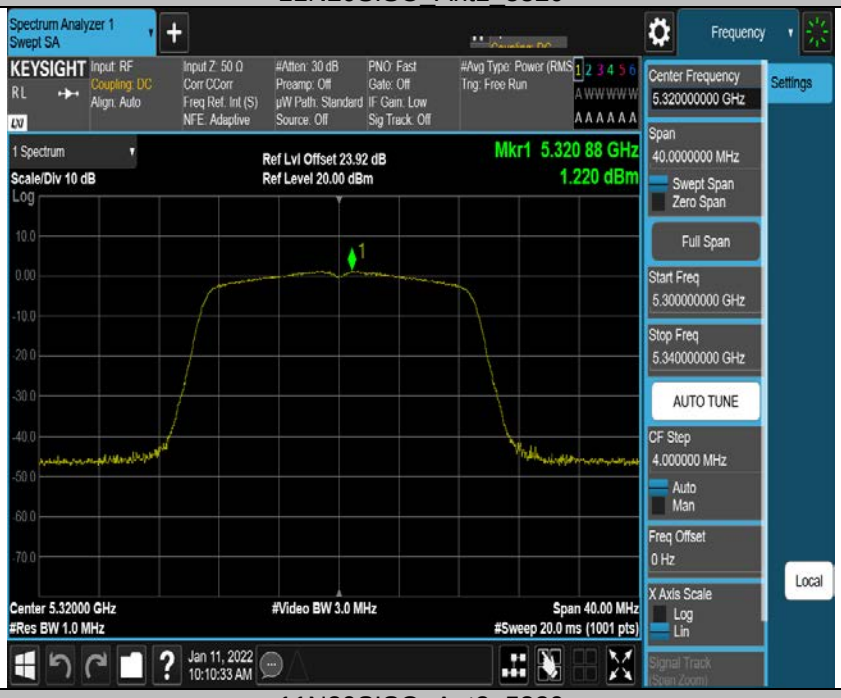
11N20SISO_Ant1_5300



11N20SISO_Ant2_5300

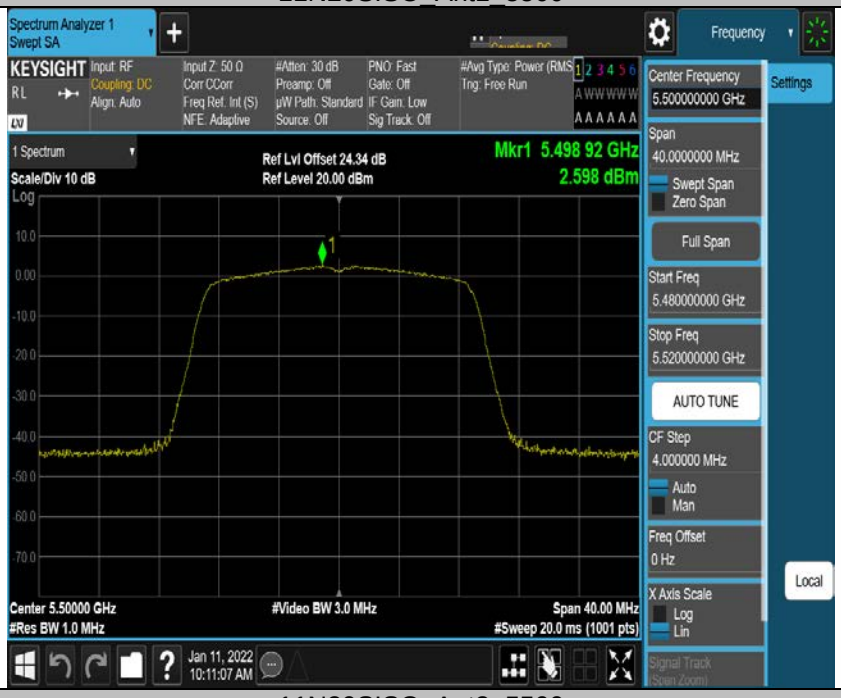


11N20SISO_Ant1_5320

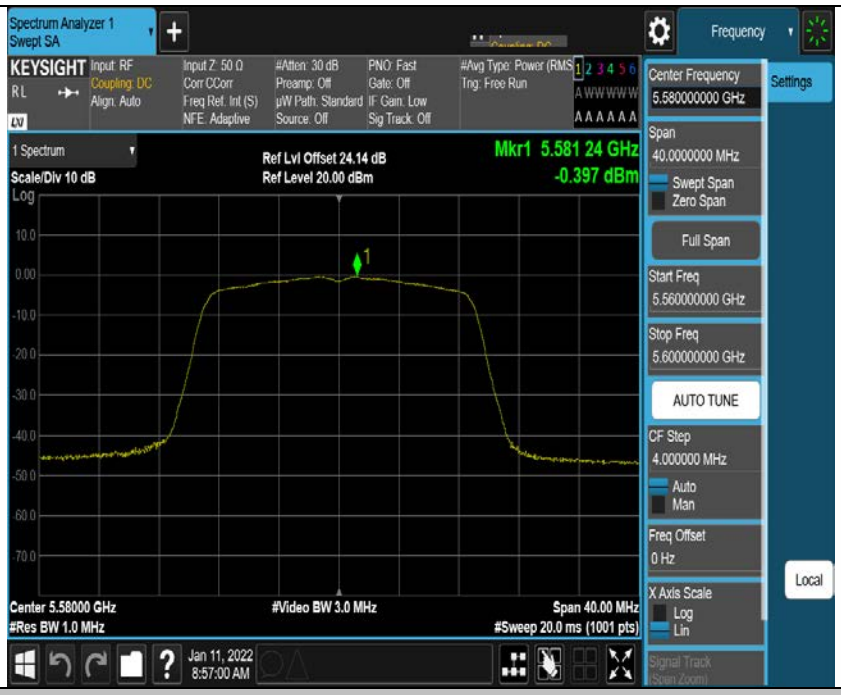


11N20SISO_Ant2_5320

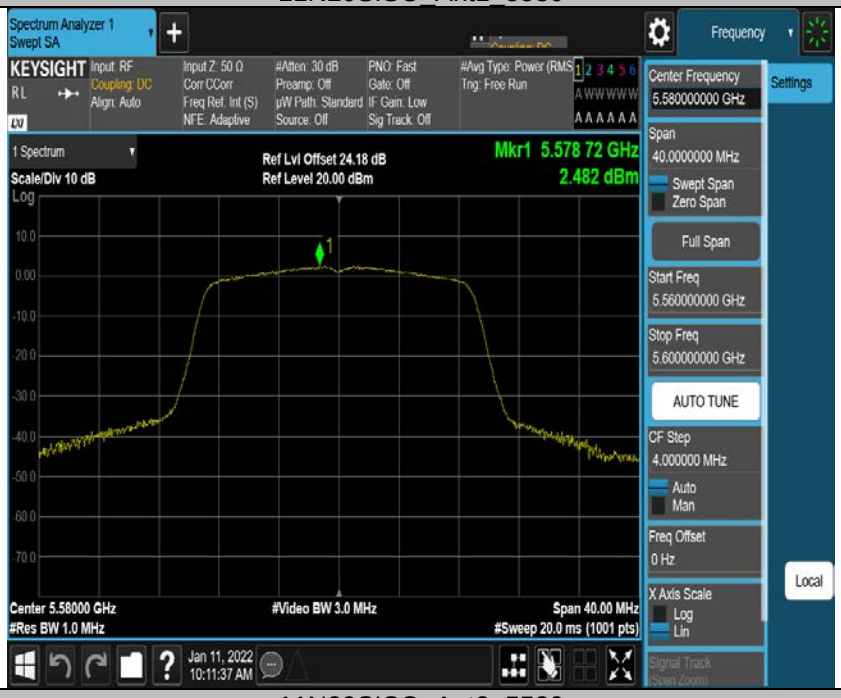
11N20SISO_Ant1_5500



11N20SISO_Ant2_5500

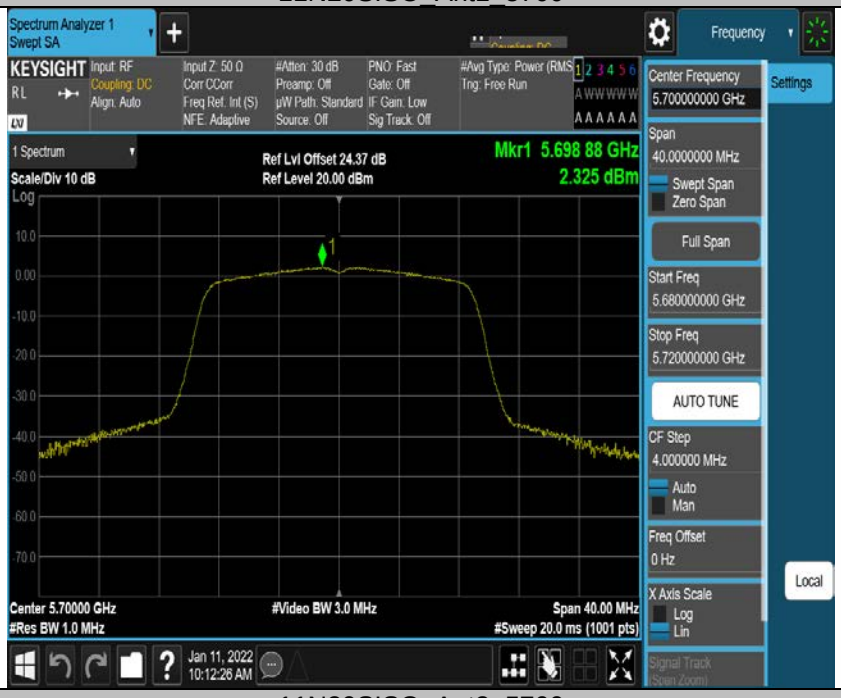


11N20SISO_Ant1_5580



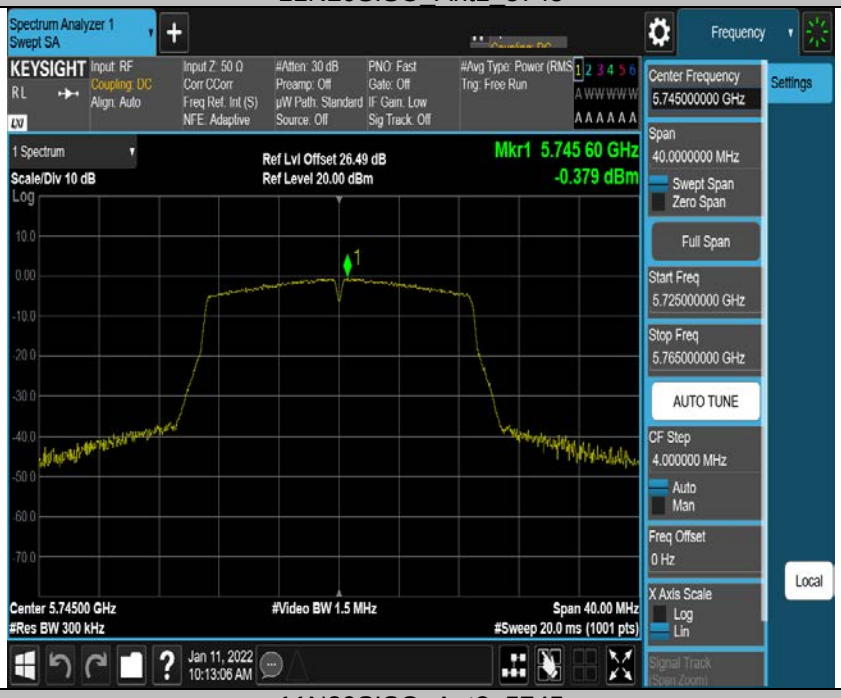
11N20SISO_Ant2_5580

11N20SISO_Ant1_5700

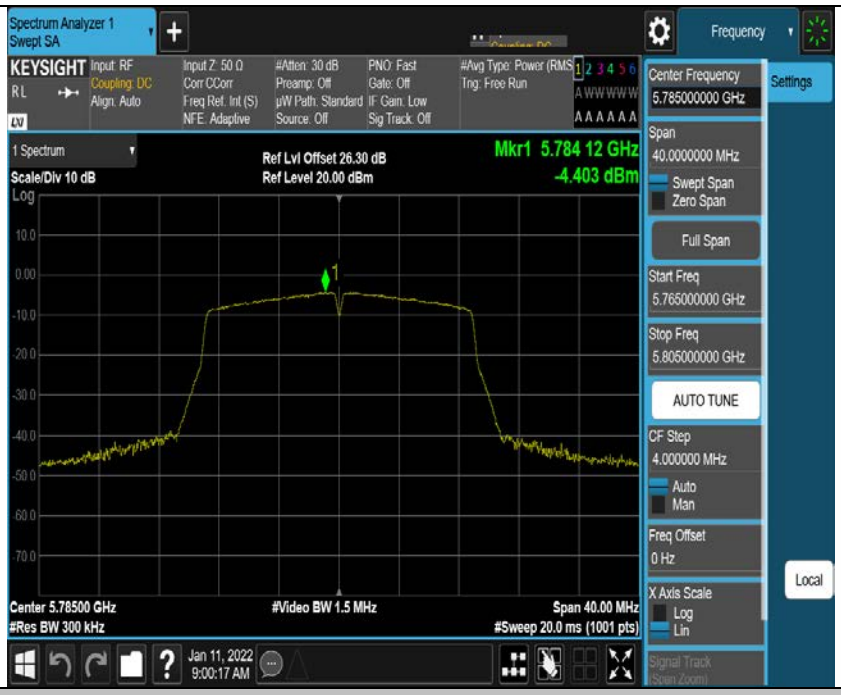


11N20SISO_Ant2_5700

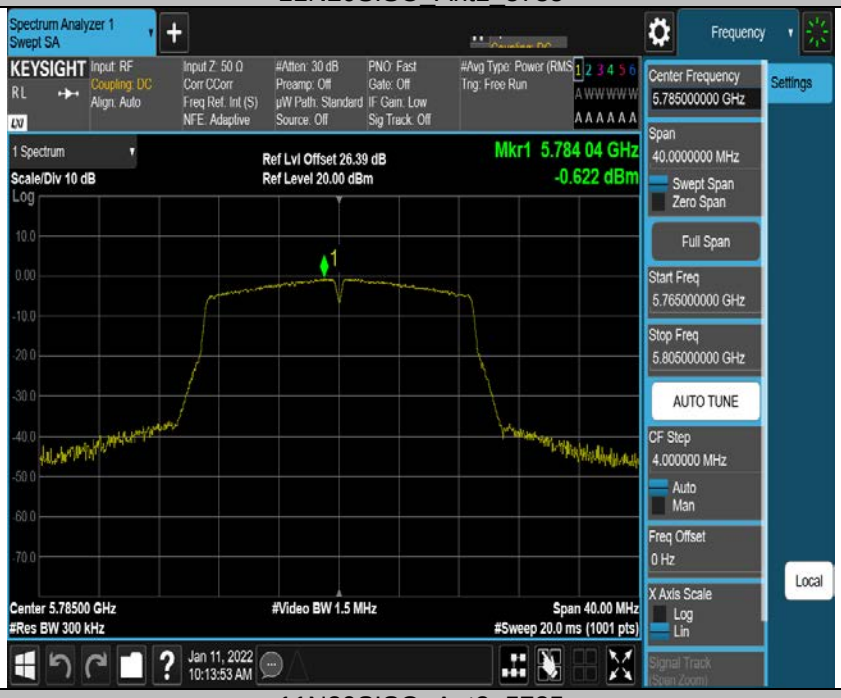
11N20SISO_Ant1_5745



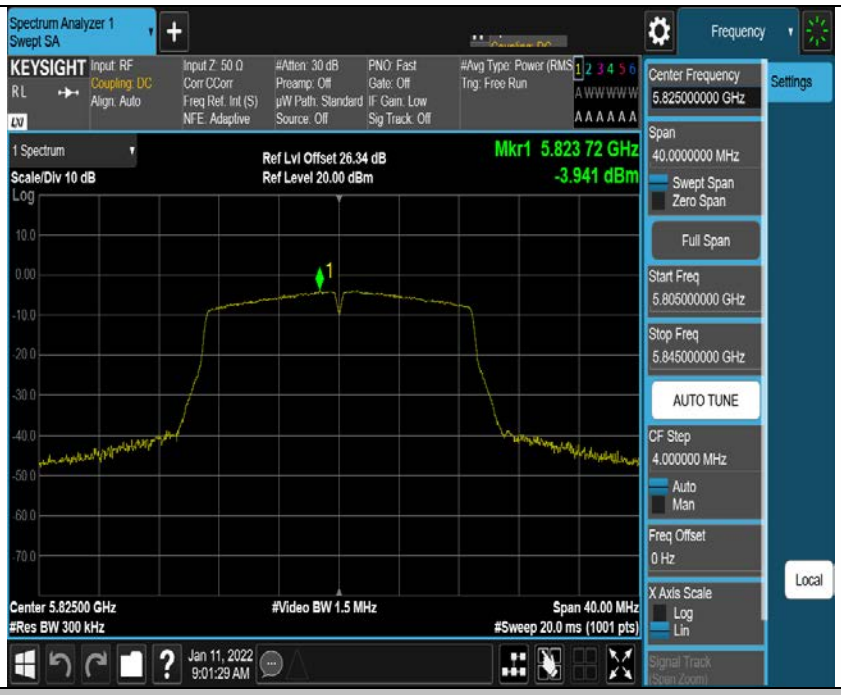
11N20SISO_Ant2_5745



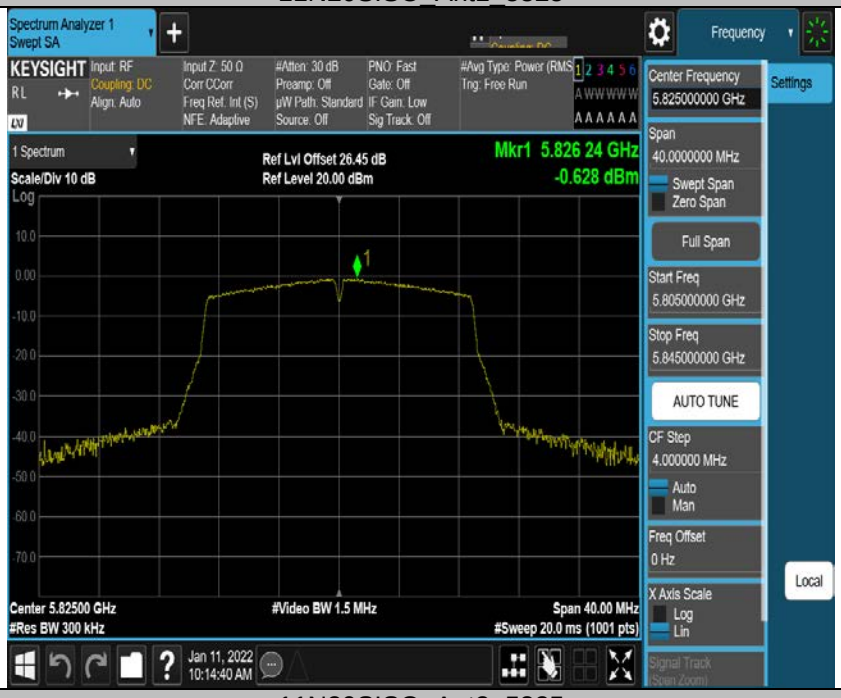
11N20SISO_Ant1_5785



11N20SISO_Ant2_5785

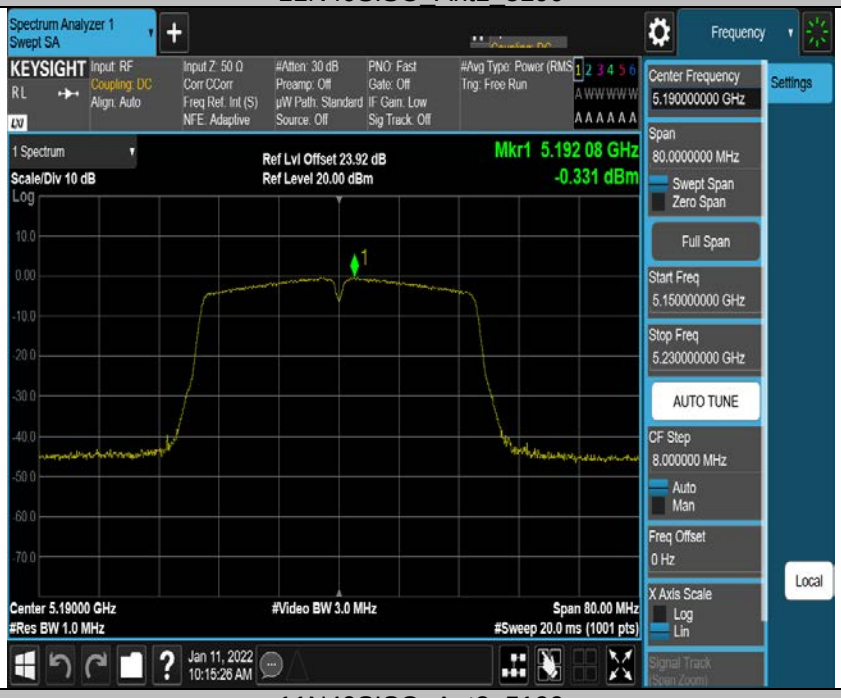


11N20SISO_Ant1_5825



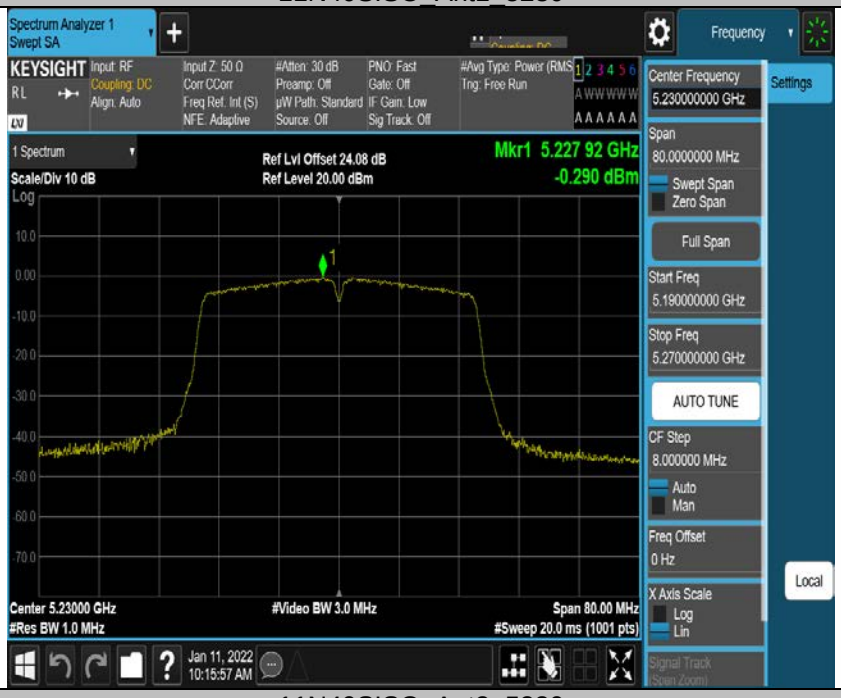
11N20SISO_Ant2_5825

11N40SISO_Ant1_5190



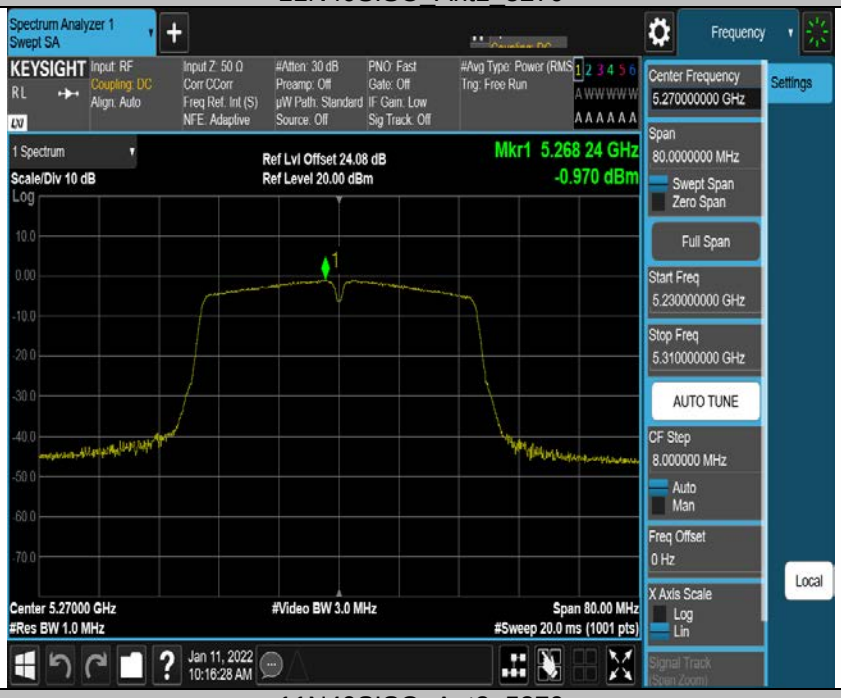
11N40SISO_Ant2_5190

11N40SISO_Ant1_5230



11N40SISO_Ant2_5230

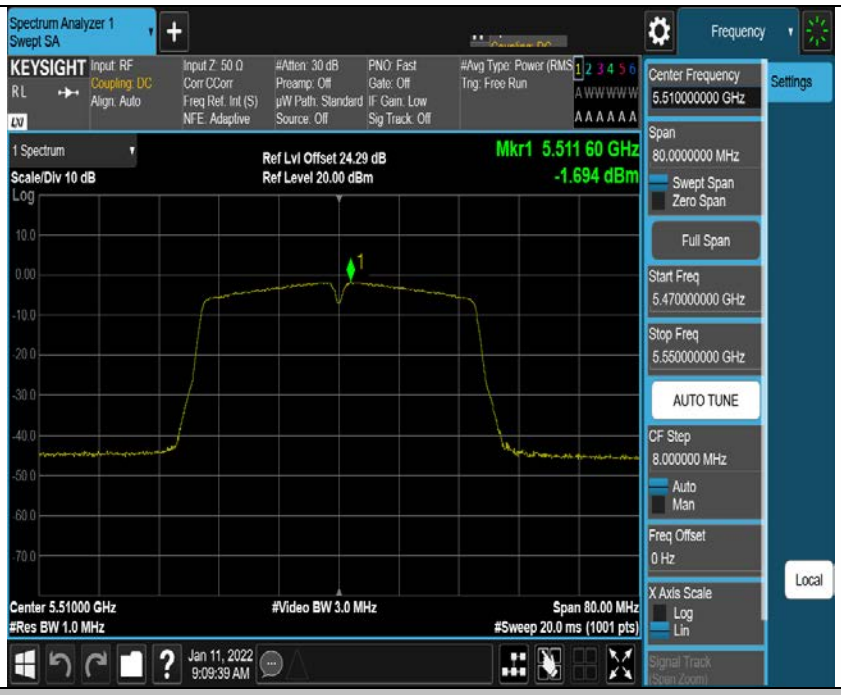
11N40SISO_Ant1_5270



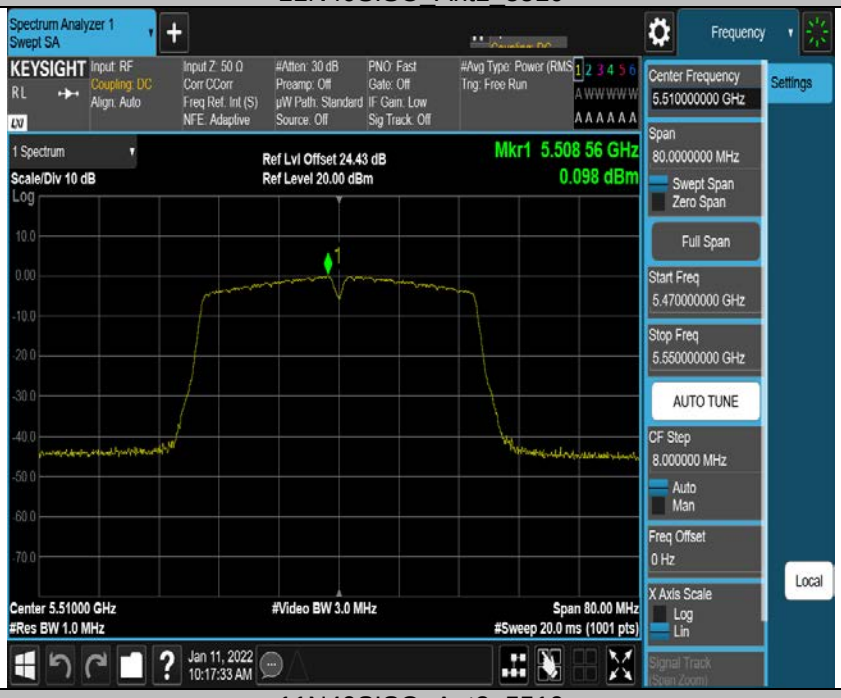
11N40SISO_Ant2_5270

11N40SISO_Ant1_5310

11N40SISO_Ant2_5310

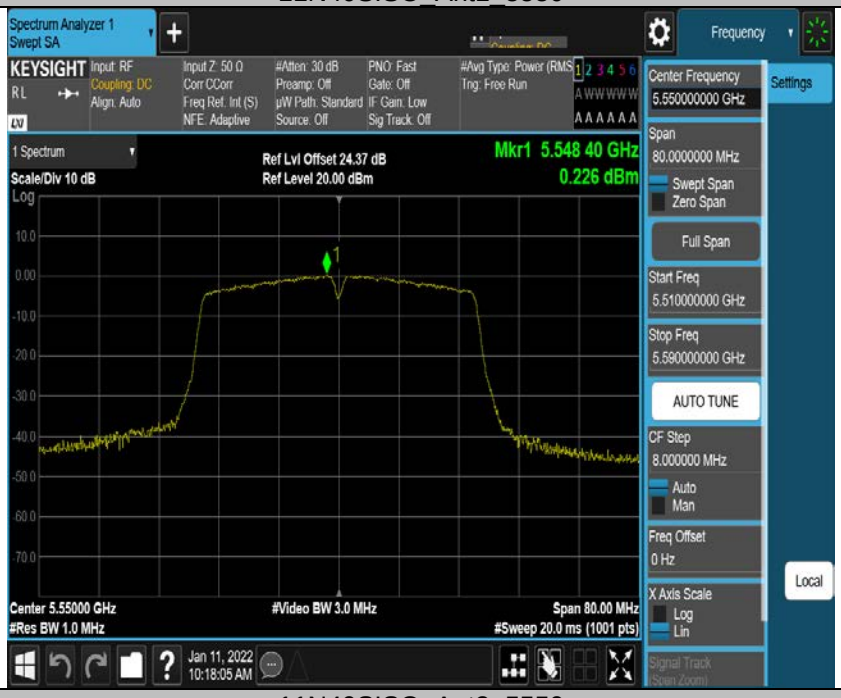


11N40SISO_Ant1_5510

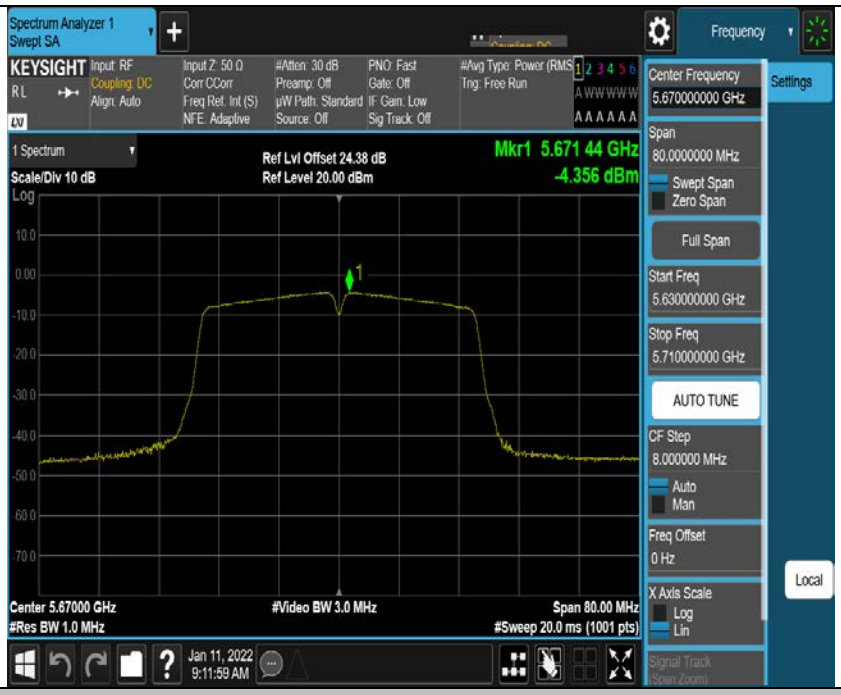


11N40SISO_Ant2_5510

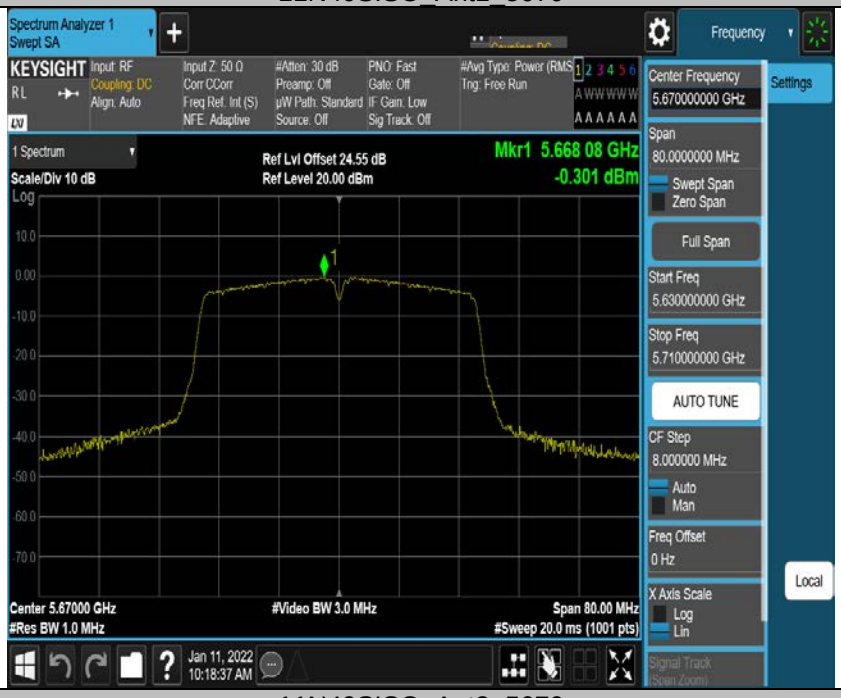
11N40SISO_Ant1_5550



11N40SISO_Ant2_5550



11N40SISO_Ant1_5670



11N40SISO_Ant2_5670