



Appendix D

RF Test Data for 5.2G WIFI (Conducted Measurement)

Product Name: carplay box

Test Model: RK0232

Environmental Conditions

Temperature:	23.7° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Monkey Li
Supervised by:	Li Huan



D.1 26dB Bandwidth

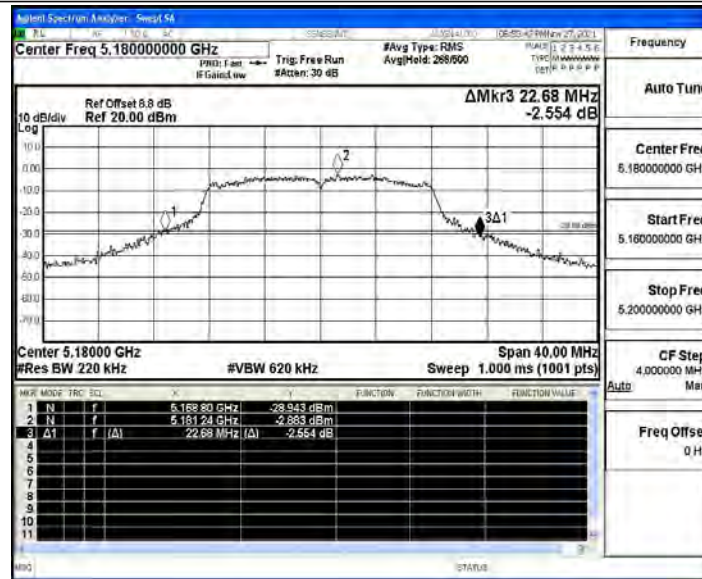
Test Result

TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	22.680	5168.800	5191.480	---	PASS
		5200	22.440	5188.800	5211.240	---	PASS
		5240	24.720	5227.480	5252.200	---	PASS
11N20SISO	Ant1	5180	23.480	5168.680	5192.160	---	PASS
		5200	23.080	5188.480	5211.560	---	PASS
		5240	23.000	5228.440	5251.440	---	PASS
11N40SISO	Ant1	5190	41.680	5169.280	5210.960	---	PASS
		5230	43.680	5208.080	5251.760	---	PASS
11AC20SISO	Ant1	5180	22.480	5168.720	5191.200	---	PASS
		5200	22.800	5188.360	5211.160	---	PASS
		5240	24.560	5227.720	5252.280	---	PASS
11AC40SISO	Ant1	5190	42.640	5168.640	5211.280	---	PASS
		5230	43.120	5207.840	5250.960	---	PASS
11AC80SISO	Ant1	5210	81.440	5169.360	5250.800	---	PASS

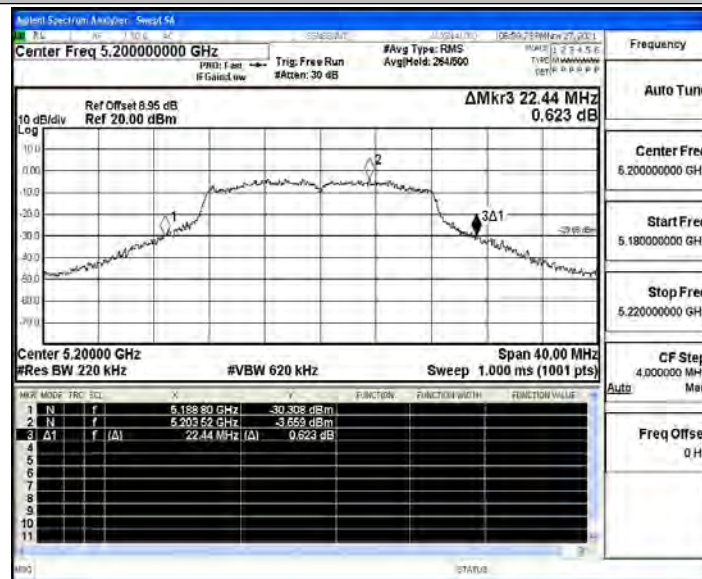


Test Graphs

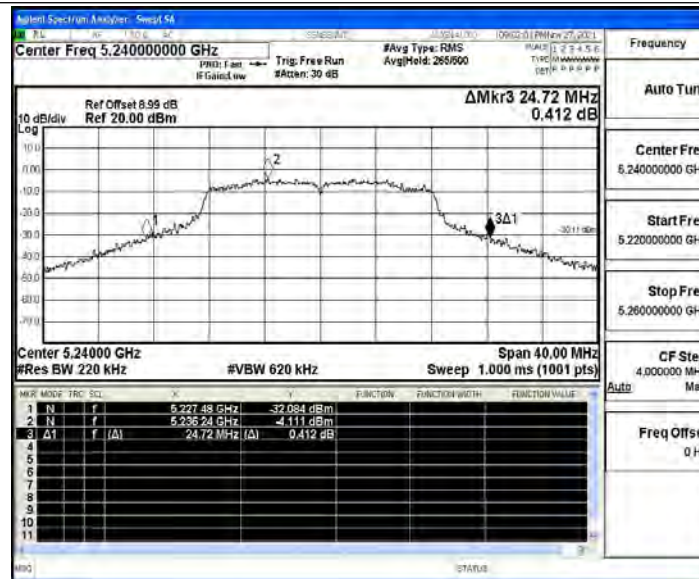
11A_Ant1_5180



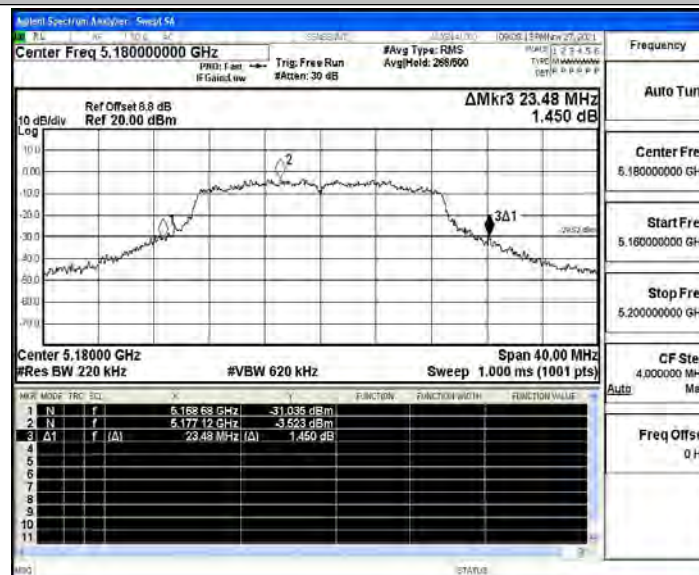
11A_Ant1_5200



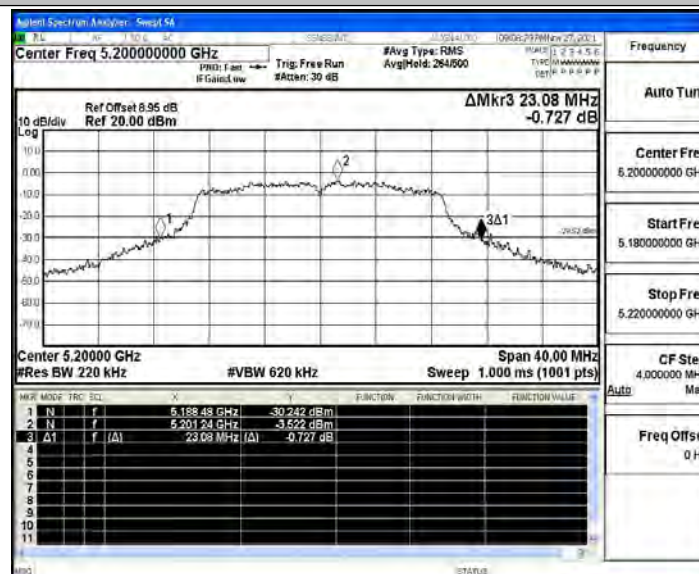
11A_Ant1_5240



11N20SISO_Ant1_5180

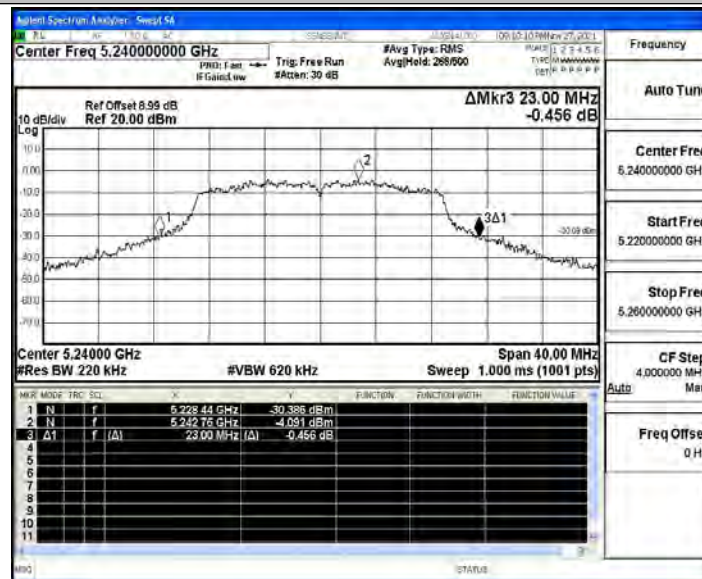


11N20SISO_Ant1_5200

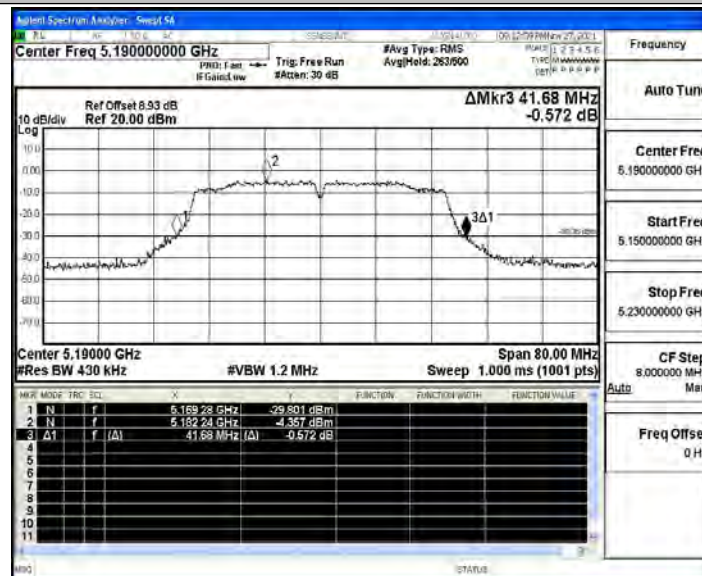




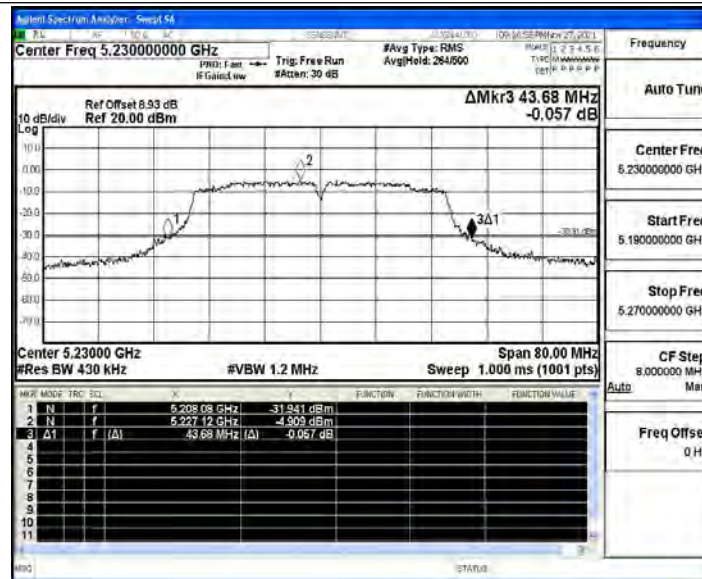
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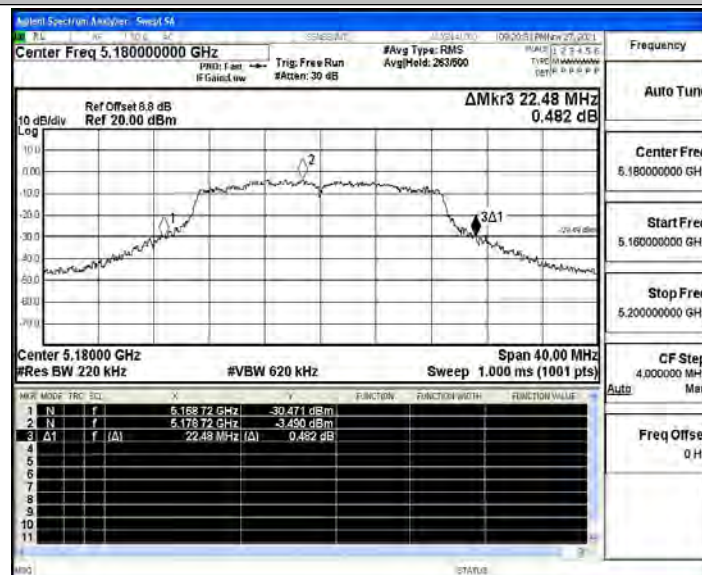
11N40SISO_Ant1_5190



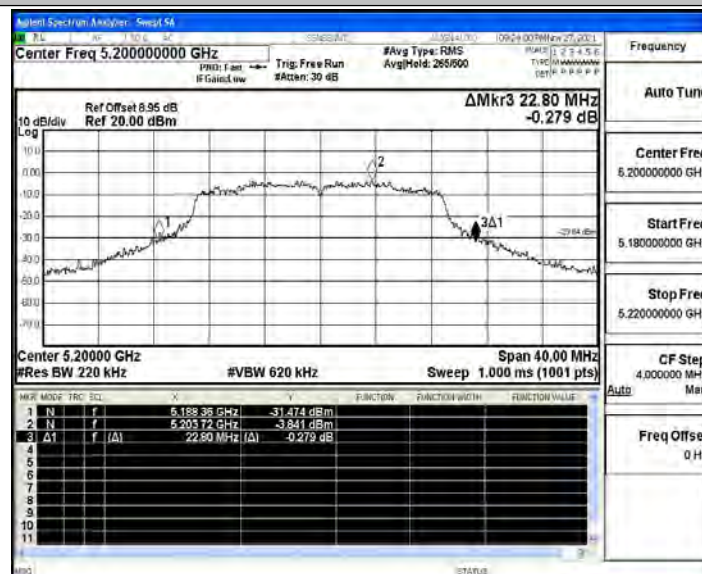
11N40SISO_Ant1_5230



11AC20SISO_Ant1_5180

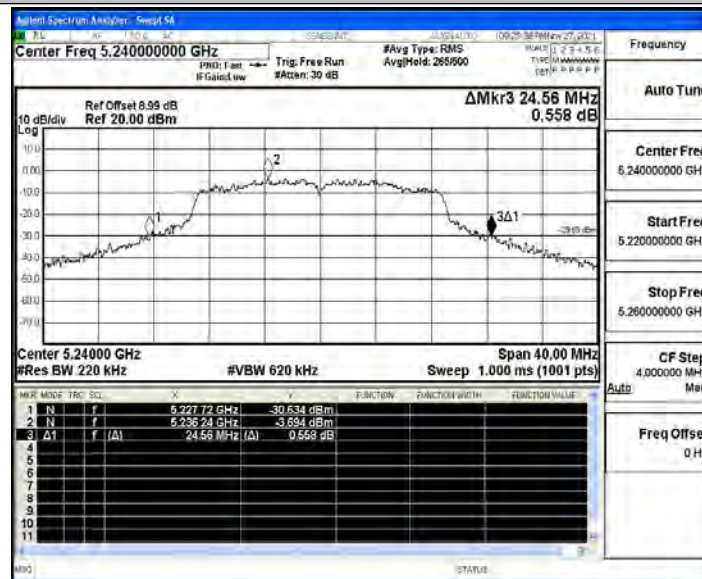


11AC20SISO_Ant1_5200

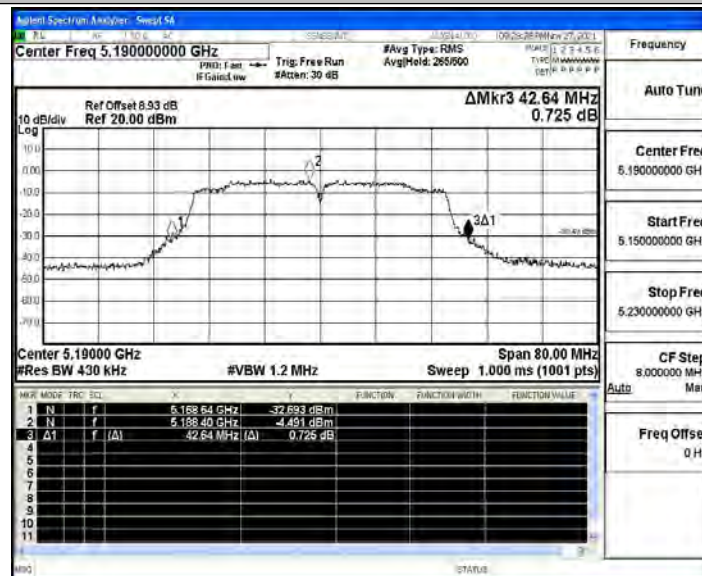




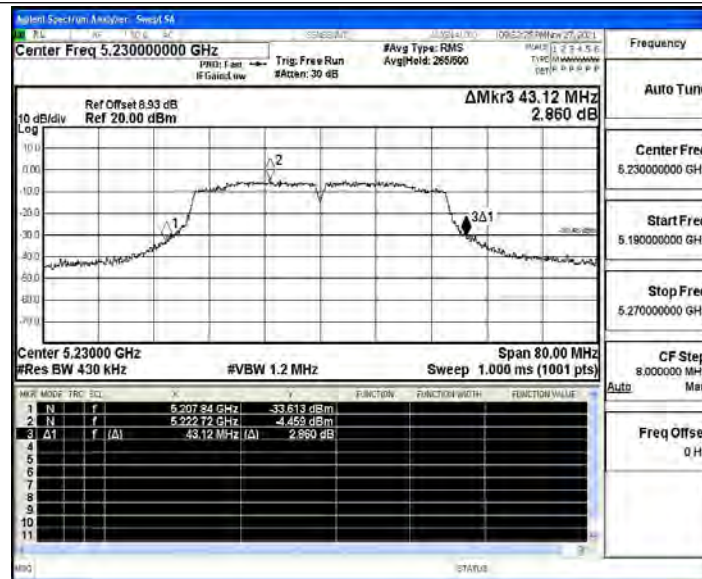
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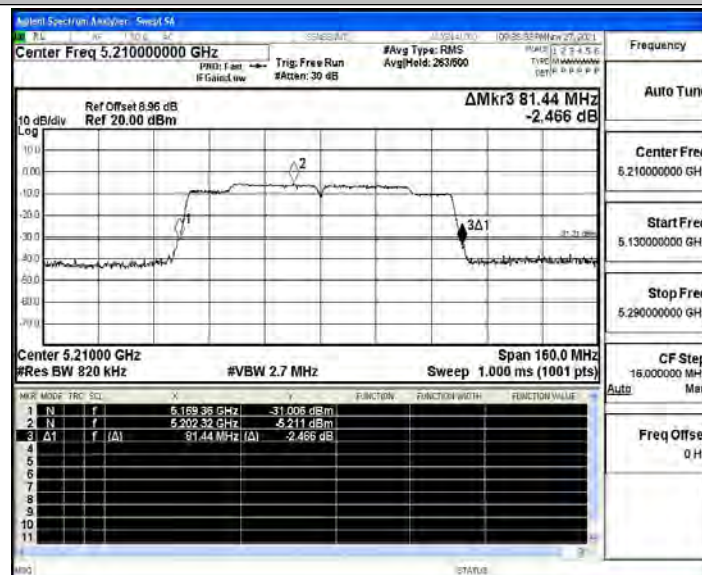
11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210





D.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	5180	6.56	≤ 23.98	PASS
		5200	6.30	≤ 23.98	PASS
		5240	6.07	≤ 23.98	PASS
11N20SISO	Ant1	5180	6.28	≤ 23.98	PASS
		5200	6.10	≤ 23.98	PASS
		5240	5.88	≤ 23.98	PASS
11N40SISO	Ant1	5190	6.31	≤ 23.98	PASS
		5230	6.12	≤ 23.98	PASS
11AC20SISO	Ant1	5180	6.16	≤ 23.98	PASS
		5200	6.46	≤ 23.98	PASS
		5240	5.83	≤ 23.98	PASS
11AC40SISO	Ant1	5190	6.23	≤ 23.98	PASS
		5230	6.06	≤ 23.98	PASS
11AC80SISO	Ant1	5210	6.44	≤ 23.98	PASS

Note: The Duty Cycle Factor is compensated in the graph.



D.3 Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	-3.88	≤11	PASS
		5200	-4.21	≤11	PASS
		5240	-4.25	≤11	PASS
11N20SISO	Ant1	5180	-4.29	≤11	PASS
		5200	-4.45	≤11	PASS
		5240	-4.81	≤11	PASS
11N40SISO	Ant1	5190	-7.49	≤11	PASS
		5230	-7.69	≤11	PASS
11AC20SISO	Ant1	5180	-4.41	≤11	PASS
		5200	-4.23	≤11	PASS
		5240	-4.98	≤11	PASS
11AC40SISO	Ant1	5190	-7.75	≤11	PASS
		5230	-7.87	≤11	PASS
11AC80SISO	Ant1	5210	-10.32	≤11	PASS

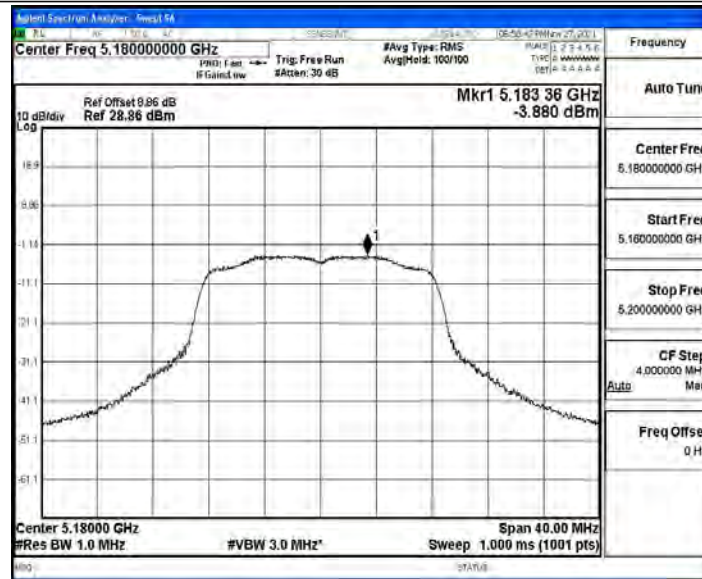
Note: 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.

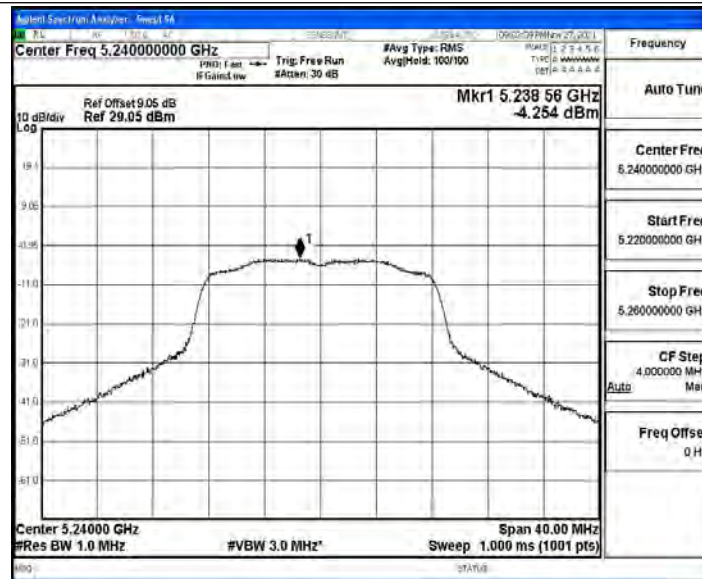
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.



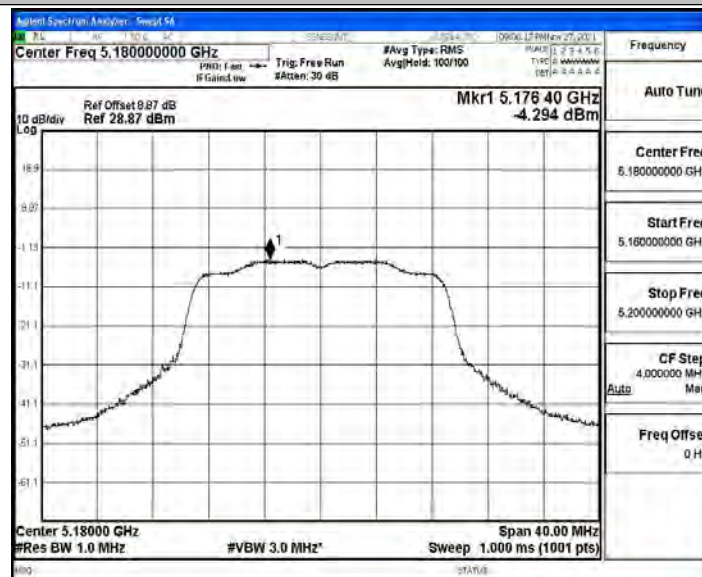
Test Graphs

11A_Ant1_5180

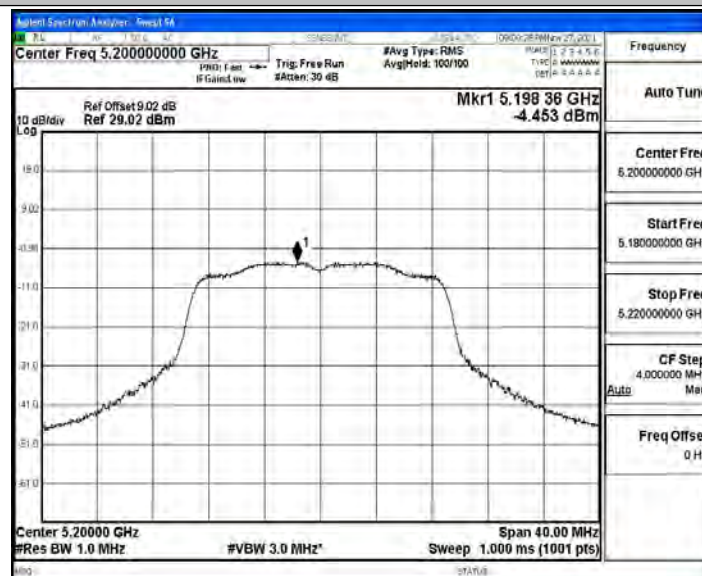




11N20SISO_Ant1_5180

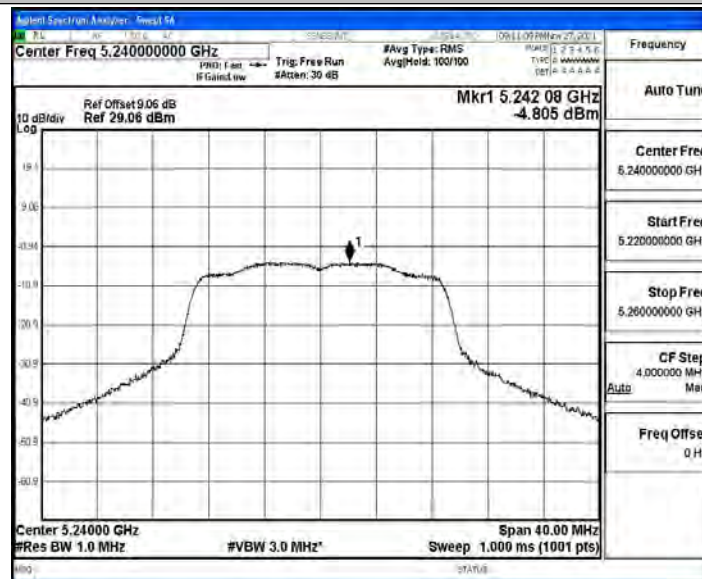


11N20SISO_Ant1_5200

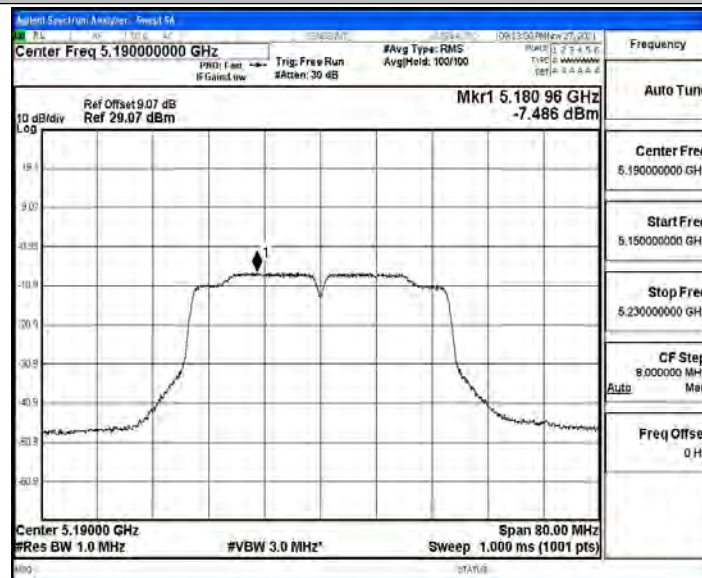




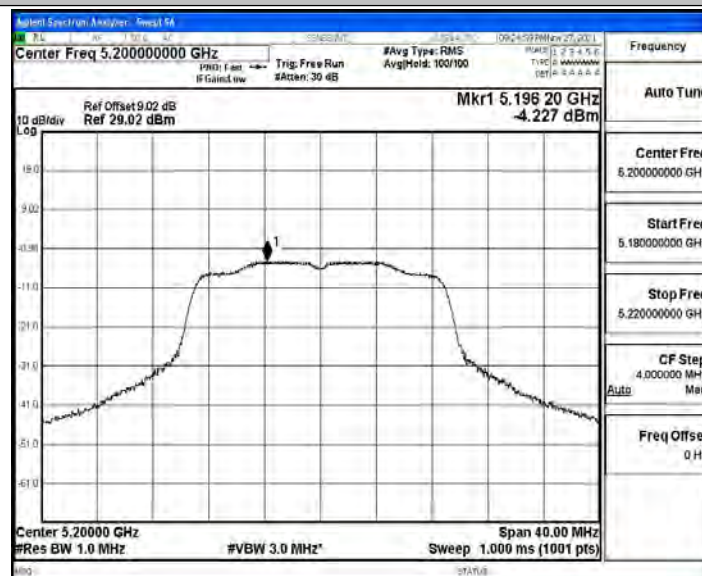
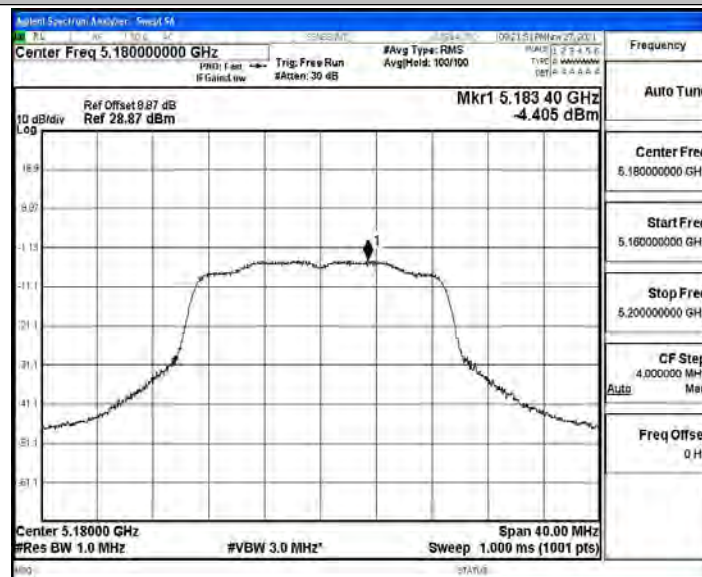
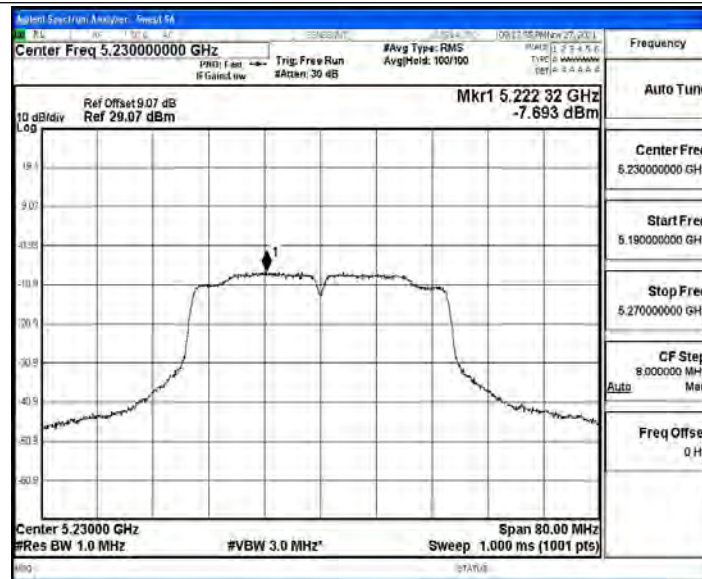
11N20SISO_Ant1_5240

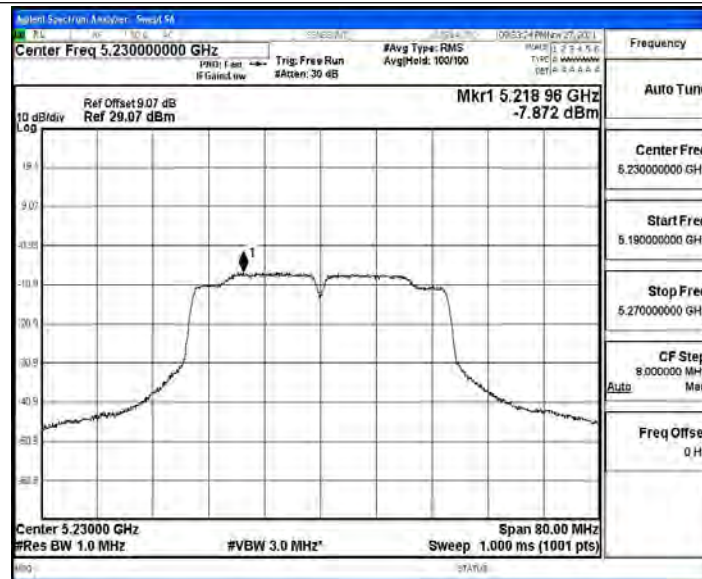


11N40SISO_Ant1_5190

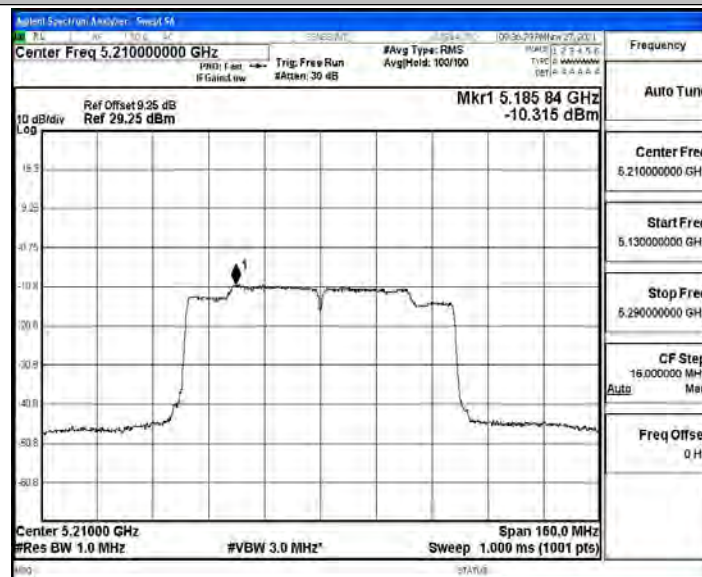


11N40SISO_Ant1_5230





11AC80SISO_Ant1_5210





D.4 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11A	Ant1	Low	5180	AV	4500.000	-47.77	≤-41.20	47.43	≤54	PASS
				AV	5149.600	-45.46	≤-41.20	49.74	≤54	PASS
				AV	5150.000	-45.5	≤-41.20	49.70	≤54	PASS
				Peak	4500.000	-44.72	≤-21.20	50.48	≤74	PASS
				Peak	5023.600	-38.29	≤-21.20	56.91	≤74	PASS
				Peak	5150.000	-41.26	≤-21.20	53.94	≤74	PASS
		High	5240	AV	5350.000	-46.74	≤-41.20	48.46	≤54	PASS
				AV	5374.320	-45.66	≤-41.20	49.54	≤54	PASS
				AV	5460.000	-47.68	≤-41.20	47.52	≤54	PASS
				Peak	5350.000	-41.33	≤-21.20	53.87	≤74	PASS
				Peak	5423.040	-38.54	≤-21.20	56.66	≤74	PASS
				Peak	5460.000	-39.98	≤-21.20	55.22	≤74	PASS
11N20SIS O	Ant1	Low	5180	AV	4500.000	-48.38	≤-41.20	46.82	≤54	PASS
				AV	5149.600	-45.02	≤-41.20	50.18	≤54	PASS
				AV	5150.000	-44.76	≤-41.20	50.44	≤54	PASS
				Peak	4500.000	-43.68	≤-21.20	51.52	≤74	PASS
				Peak	4752.700	-38.28	≤-21.20	56.92	≤74	PASS
				Peak	5150.000	-41.67	≤-21.20	53.53	≤74	PASS
		High	5240	AV	5350.000	-47.07	≤-41.20	48.13	≤54	PASS
				AV	5378.400	-46	≤-41.20	49.20	≤54	PASS
				AV	5460.000	-47.31	≤-41.20	47.89	≤54	PASS
				Peak	5350.000	-42.37	≤-21.20	52.83	≤74	PASS
				Peak	5412.000	-38.81	≤-21.20	56.39	≤74	PASS
				Peak	5460.000	-41.89	≤-21.20	53.31	≤74	PASS
11N40SIS O	Ant1	Low	5190	AV	4500.000	-49.01	≤-41.20	46.19	≤54	PASS
				AV	5149.600	-44.61	≤-41.20	50.59	≤54	PASS
				AV	5150.000	-44.86	≤-41.20	50.34	≤54	PASS
				Peak	4500.000	-42.04	≤-21.20	53.16	≤74	PASS
				Peak	5141.200	-36.76	≤-21.20	58.44	≤74	PASS
				Peak	5150.000	-38.24	≤-21.20	56.96	≤74	PASS
		High	5230	AV	5350.000	-47.67	≤-41.20	47.53	≤54	PASS
				AV	5425.940	-47.35	≤-41.20	47.85	≤54	PASS
				AV	5460.000	-47.68	≤-41.20	47.52	≤54	PASS
				Peak	5350.000	-40.81	≤-21.20	54.39	≤74	PASS
				Peak	5351.060	-37.53	≤-21.20	57.67	≤74	PASS
				Peak	5460.000	-41.69	≤-21.20	53.51	≤74	PASS
11AC20SI	Ant1	Low	5180	AV	4500.000	-48.01	≤-41.20	47.19	≤54	PASS



SO				AV	5148.200	-44.38	≤ -41.20	50.82	≤ 54	PASS
				AV	5150.000	-45.48	≤ -41.20	49.72	≤ 54	PASS
				Peak	4500.000	-44.92	≤ -21.20	50.28	≤ 74	PASS
				Peak	4864.000	-38.41	≤ -21.20	56.79	≤ 74	PASS
				Peak	5150.000	-39.96	≤ -21.20	55.24	≤ 74	PASS
				AV	5350.000	-47.18	≤ -41.20	48.02	≤ 54	PASS
		High	5240	AV	5404.320	-45.98	≤ -41.20	49.22	≤ 54	PASS
				AV	5460.000	-47.36	≤ -41.20	47.84	≤ 54	PASS
				Peak	5350.000	-41.57	≤ -21.20	53.63	≤ 74	PASS
				Peak	5355.360	-38.6	≤ -21.20	56.60	≤ 74	PASS
				Peak	5460.000	-41.06	≤ -21.20	54.14	≤ 74	PASS
11AC40SI SO	Ant1	Low	5190	AV	4500.000	-49.05	≤ -41.20	46.15	≤ 54	PASS
				AV	5149.600	-44.94	≤ -41.20	50.26	≤ 54	PASS
				AV	5150.000	-44.8	≤ -41.20	50.40	≤ 54	PASS
				Peak	4500.000	-41.75	≤ -21.20	53.45	≤ 74	PASS
				Peak	5139.100	-36.12	≤ -21.20	59.08	≤ 74	PASS
				Peak	5150.000	-37.89	≤ -21.20	57.31	≤ 74	PASS
		High	5230	AV	5350.000	-47.73	≤ -41.20	47.47	≤ 54	PASS
				AV	5398.640	-47.39	≤ -41.20	47.81	≤ 54	PASS
				AV	5460.000	-47.9	≤ -41.20	47.30	≤ 54	PASS
				Peak	5350.000	-40.51	≤ -21.20	54.69	≤ 74	PASS
				Peak	5362.760	-37.8	≤ -21.20	57.40	≤ 74	PASS
				Peak	5460.000	-40.34	≤ -21.20	54.86	≤ 74	PASS
11AC80SI SO	Ant1	Low	5210	AV	4500.000	-47.34	≤ -41.20	47.86	≤ 54	PASS
				AV	5142.750	-41.66	≤ -41.20	53.54	≤ 54	PASS
				AV	5150.000	-42.27	≤ -41.20	52.93	≤ 54	PASS
				Peak	4500.000	-40.02	≤ -21.20	55.18	≤ 74	PASS
				Peak	5138.250	-34.39	≤ -21.20	60.81	≤ 74	PASS
				Peak	5150.000	-35.28	≤ -21.20	59.92	≤ 74	PASS
		High	5210	AV	5350.000	-47.04	≤ -41.20	48.16	≤ 54	PASS
				AV	5439.560	-46.78	≤ -41.20	48.42	≤ 54	PASS
				AV	5460.000	-47.48	≤ -41.20	47.72	≤ 54	PASS
				Peak	5350.000	-40.51	≤ -21.20	54.69	≤ 74	PASS
				Peak	5379.920	-37.87	≤ -21.20	57.33	≤ 74	PASS
				Peak	5460.000	-39.45	≤ -21.20	55.75	≤ 74	PASS

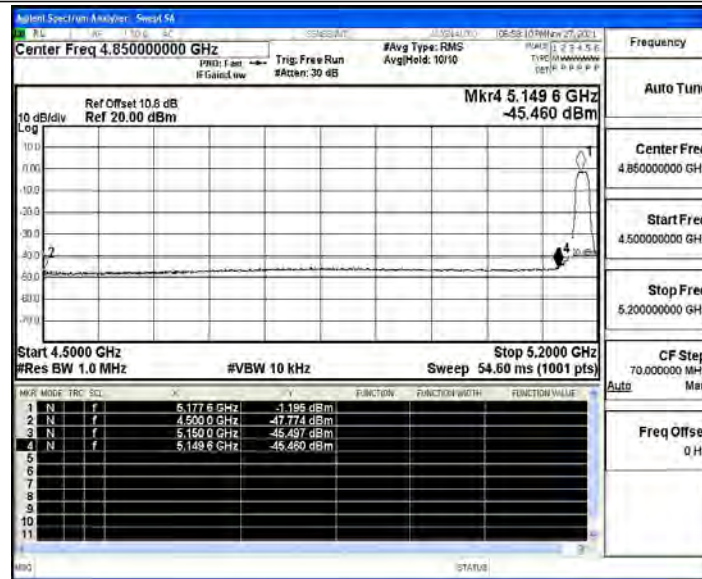
Note:

1. The Antenna Gain is compensated in the graph.
2. For transmitters operating in 5150-5350 GHz band and 5470-5725 GHz band: The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

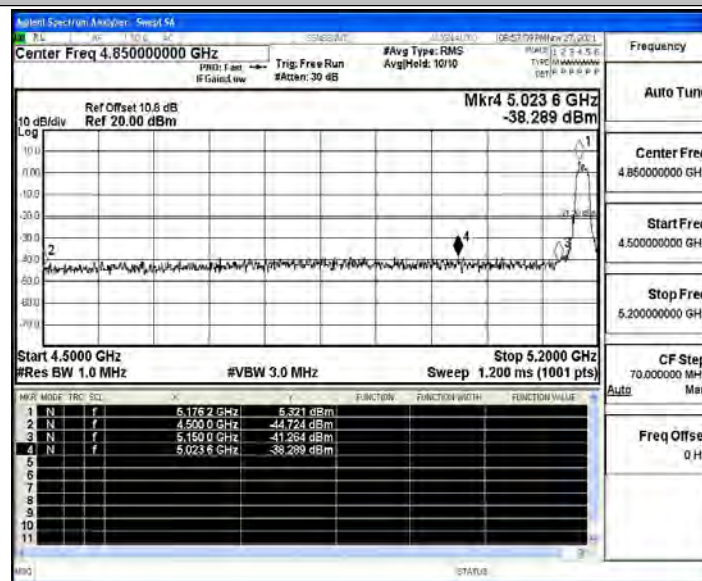


Test Graphs

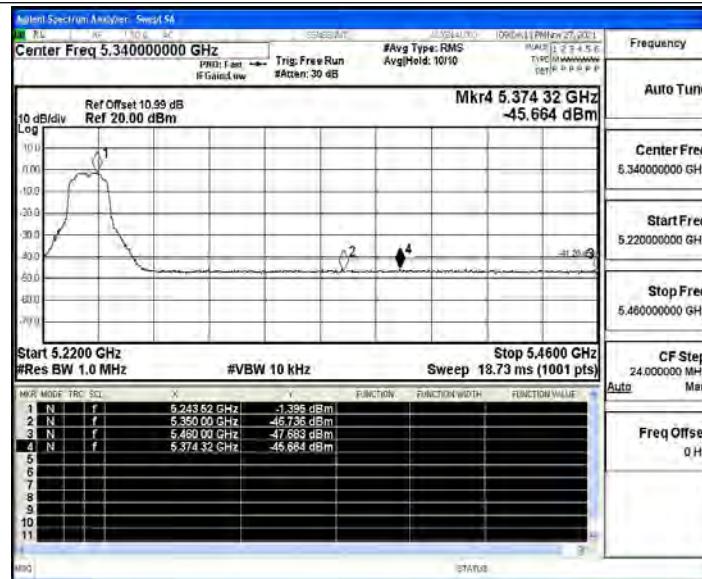
11A_Ant1_Low_5180_AV



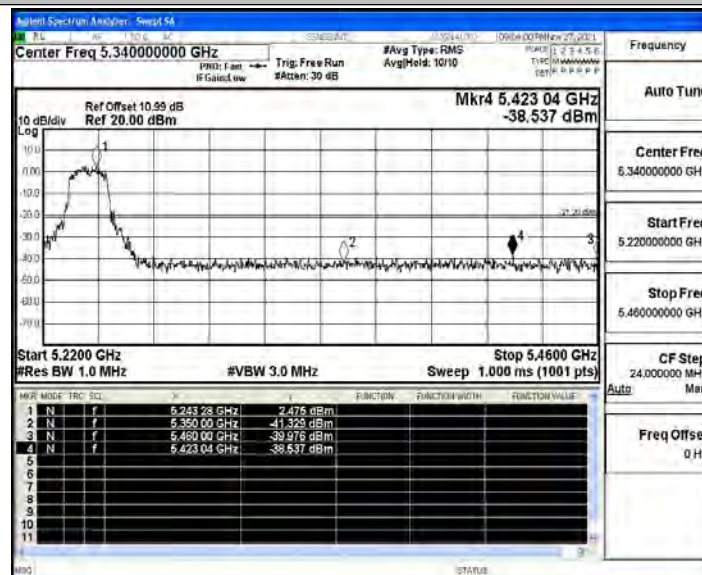
11A_Ant1_Low_5180_Peak



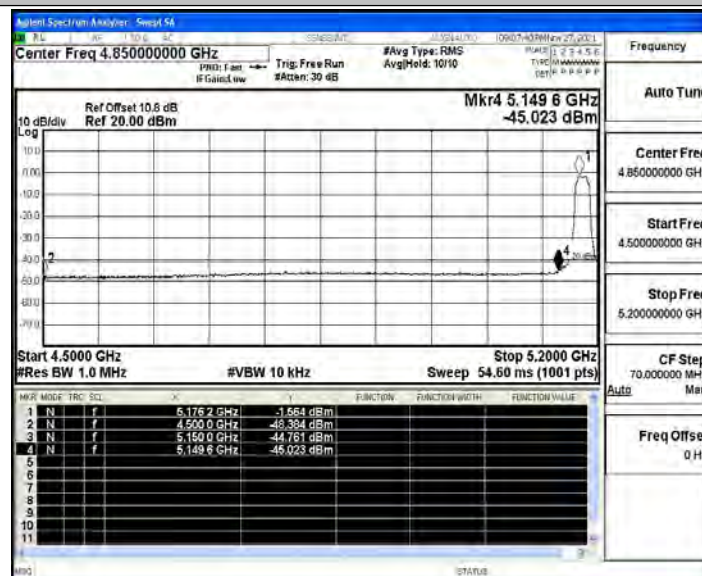
11A_Ant1_High_5240_AV



11A_Ant1_High_5240_Peak

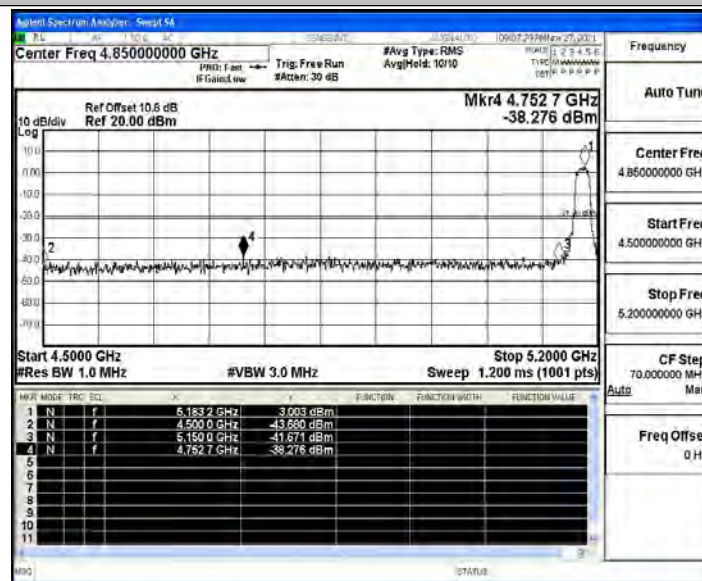


11N20SISO_Ant1_Low_5180_AV

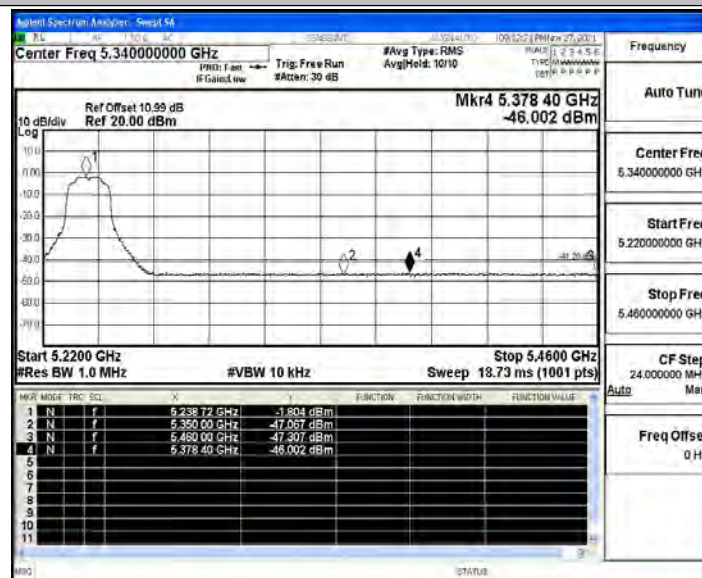




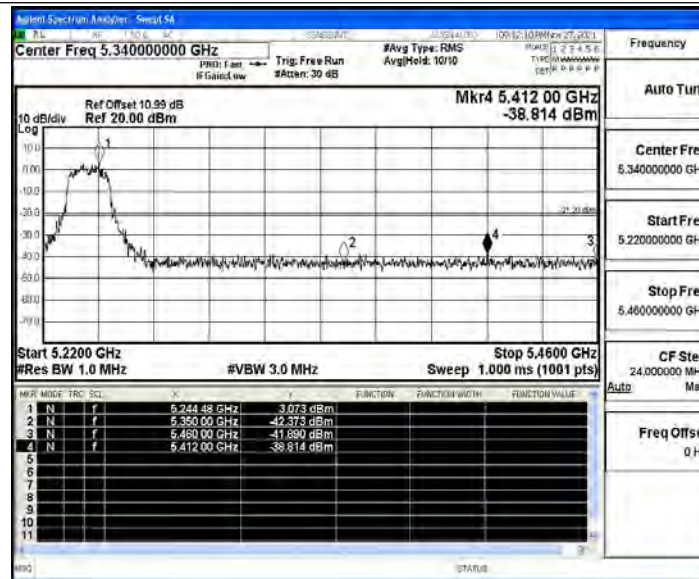
11N20SISO_Ant1_Low_5180_Peak



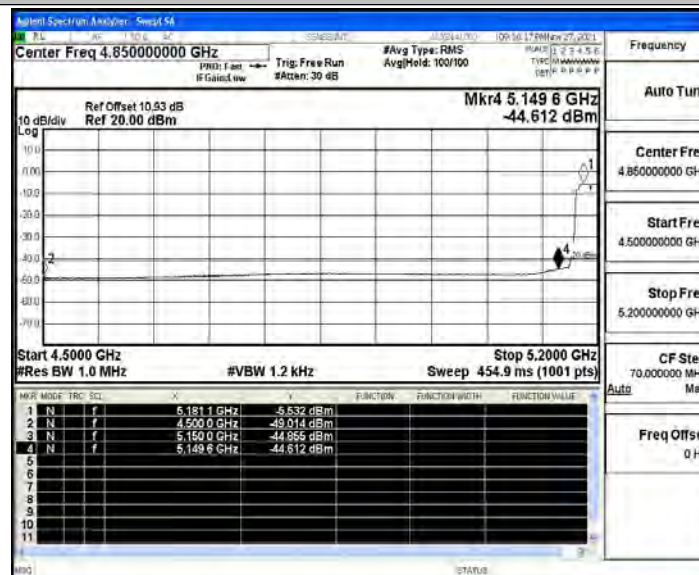
11N20SISO_Ant1_High_5240_AV



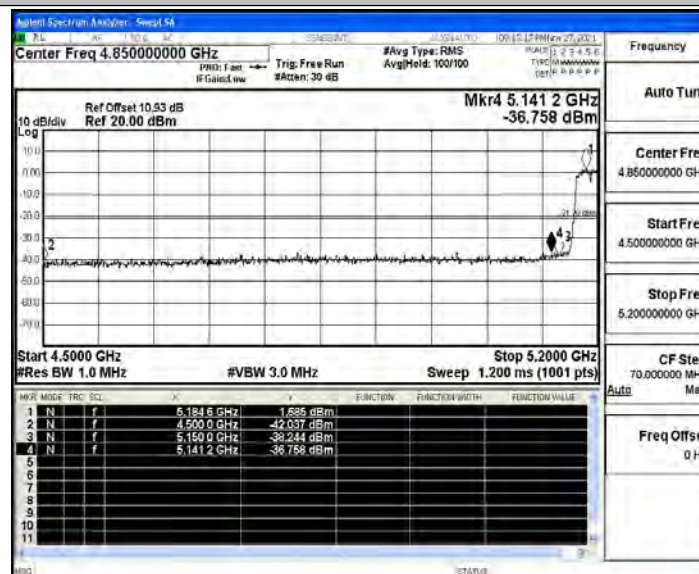
11N20SISO_Ant1_High_5240_Peak



11N40SISO_Ant1_Low_5190_AV

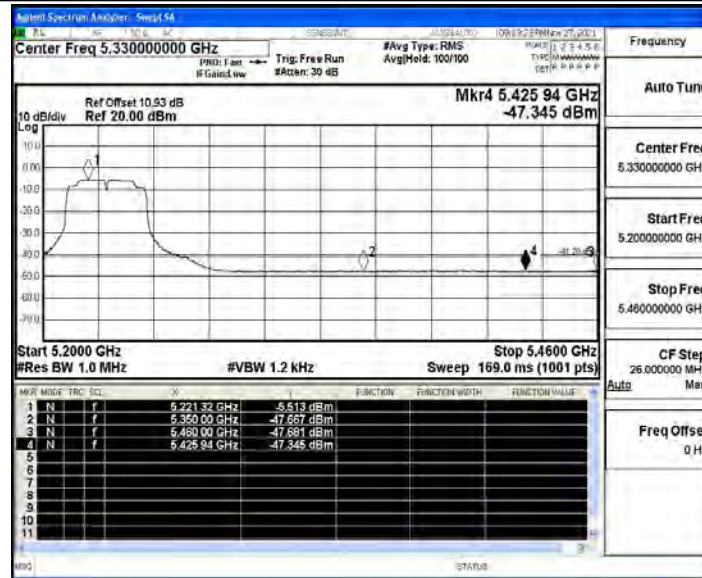


11N40SISO_Ant1_Low_5190_Peak

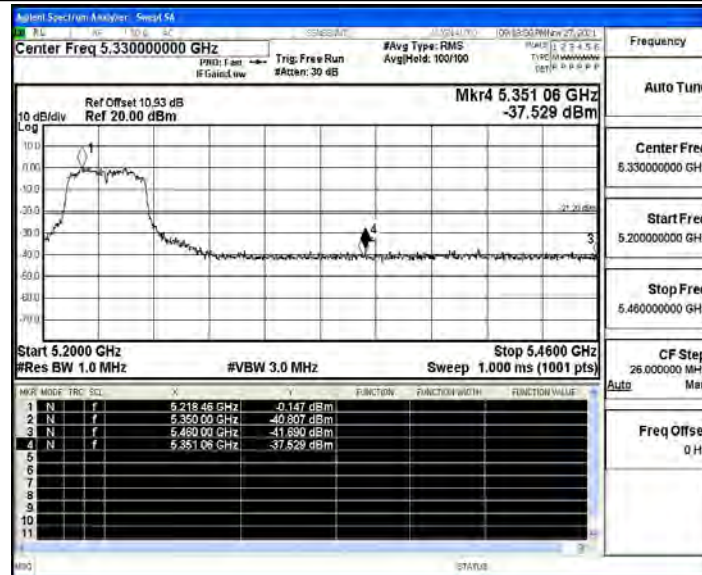




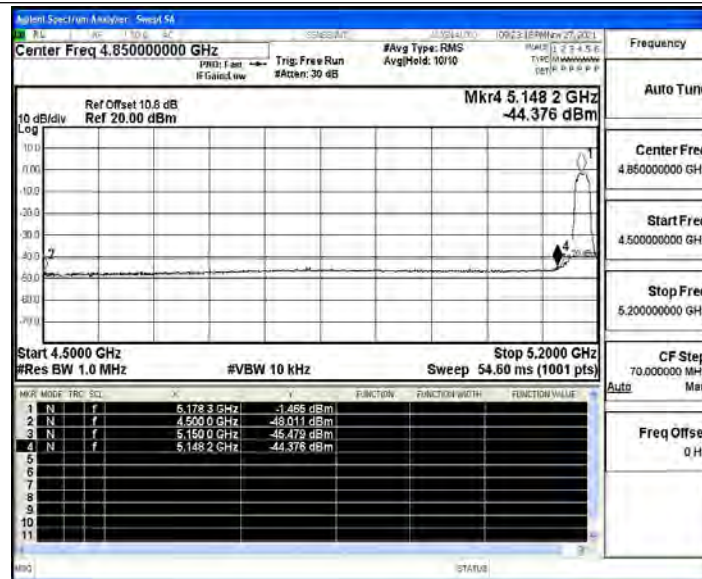
11N40SISO_Ant1_High_5230_AV



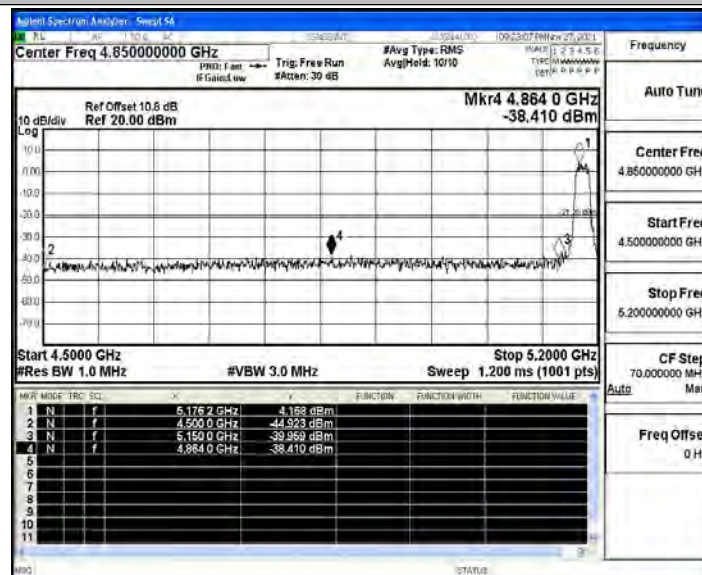
11N40SISO_Ant1_High_5230_Peak



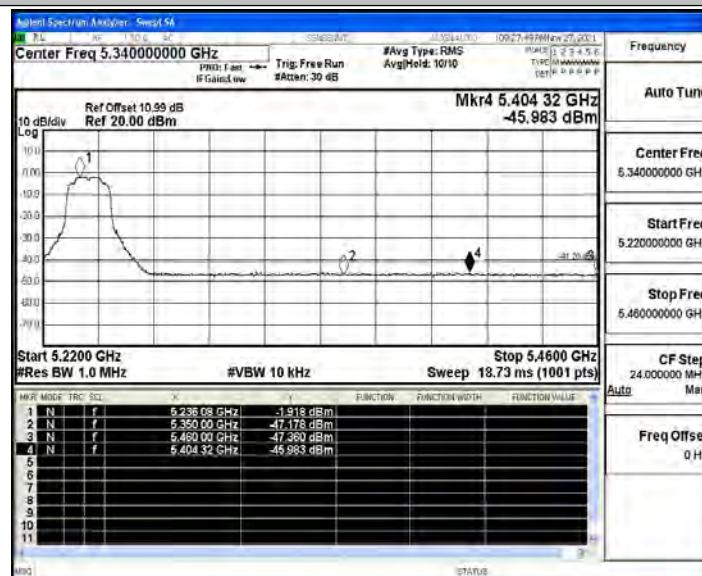
11AC20SISO_Ant1_Low_5180_AV



11AC20SISO_Ant1_Low_5180_Peak

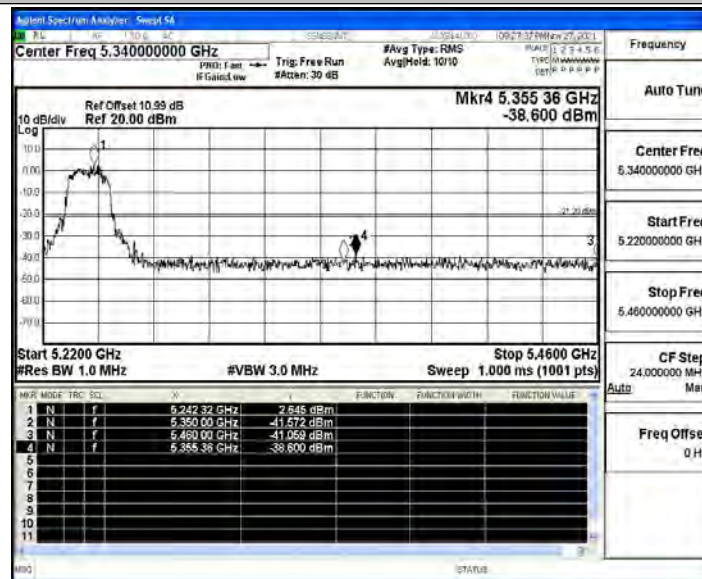


11AC20SISO_Ant1_High_5240_AV

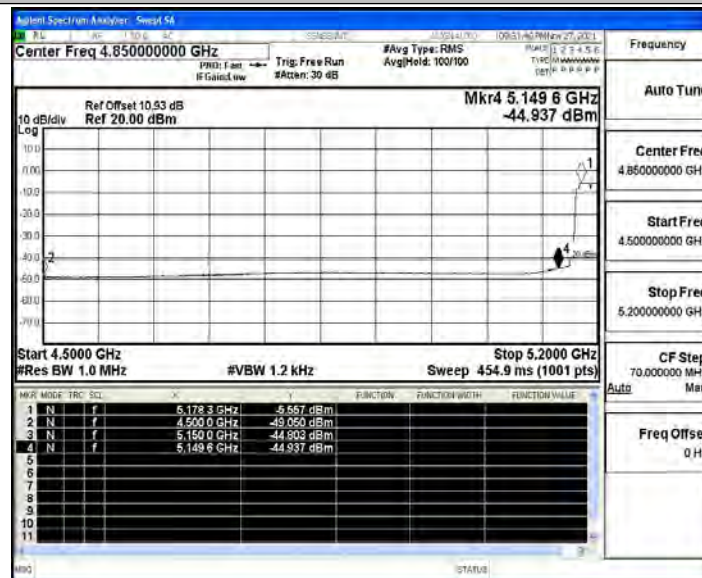




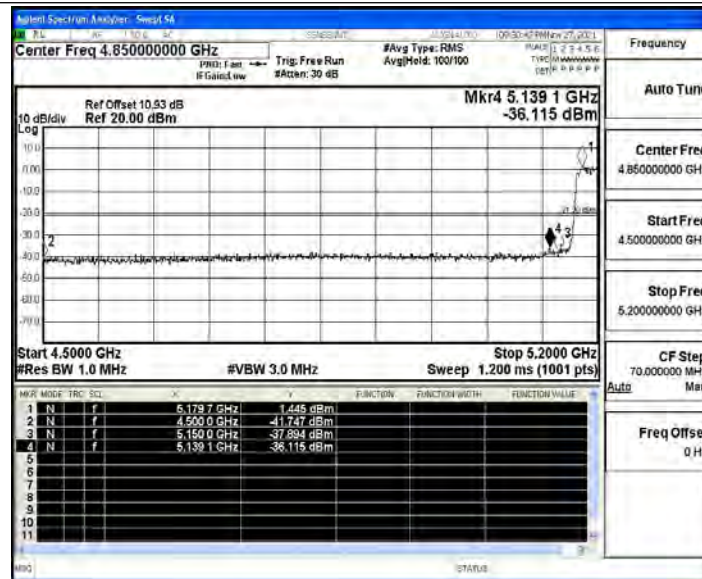
11AC20SISO_Ant1_High_5240_Peak



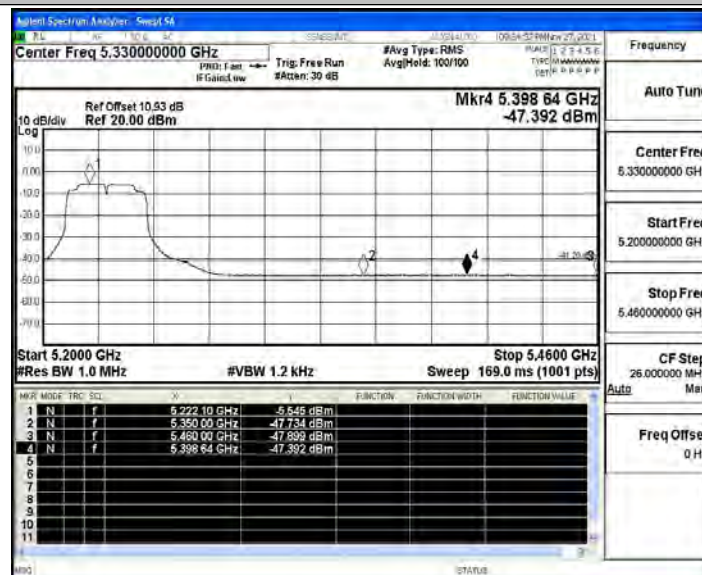
11AC40SISO_Ant1_Low_5190_AV



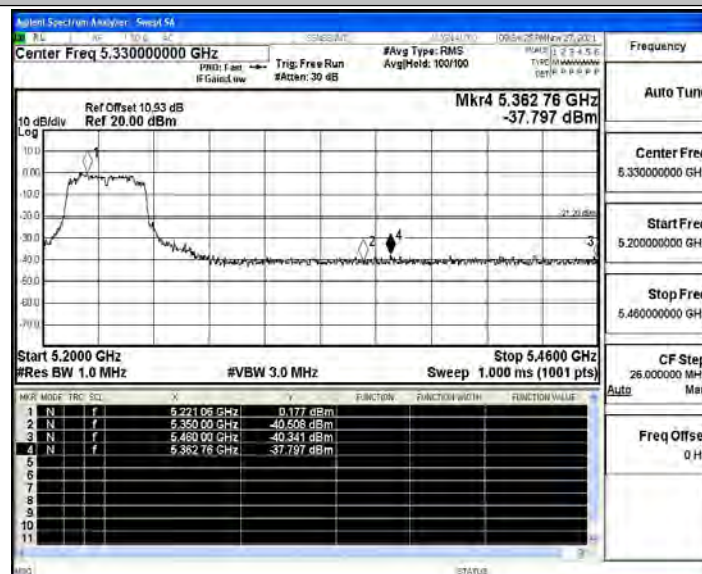
11AC40SISO_Ant1_Low_5190_Peak



11AC40SISO_Ant1_High_5230_AV

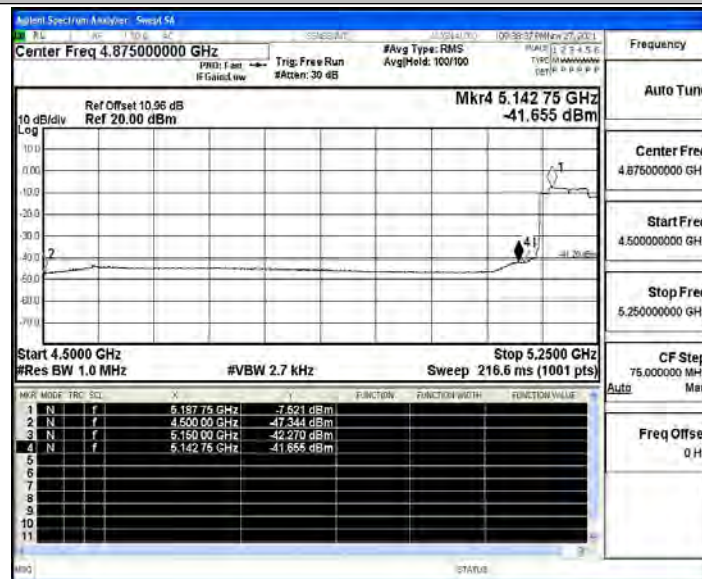


11AC40SISO_Ant1_High_5230_Peak

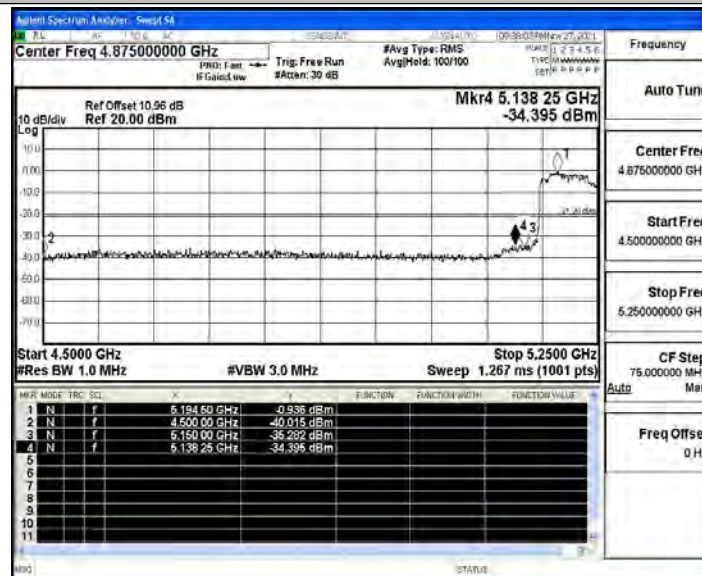




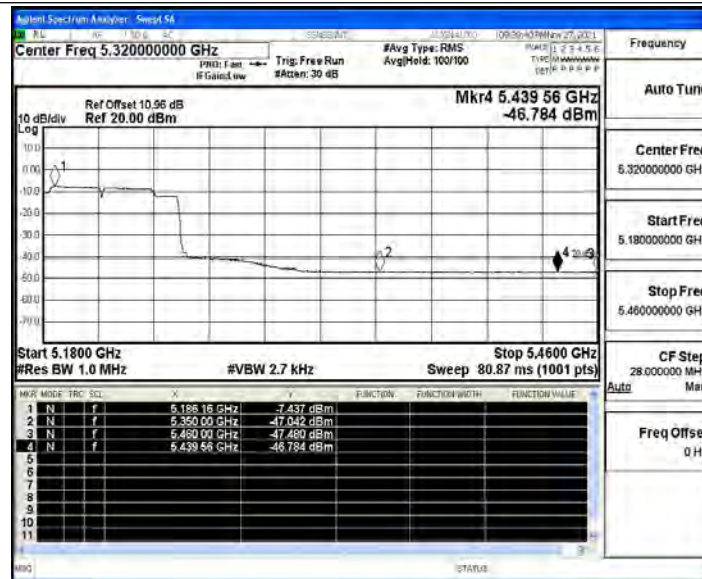
11AC80SISO_Ant1_Low_5210_AV



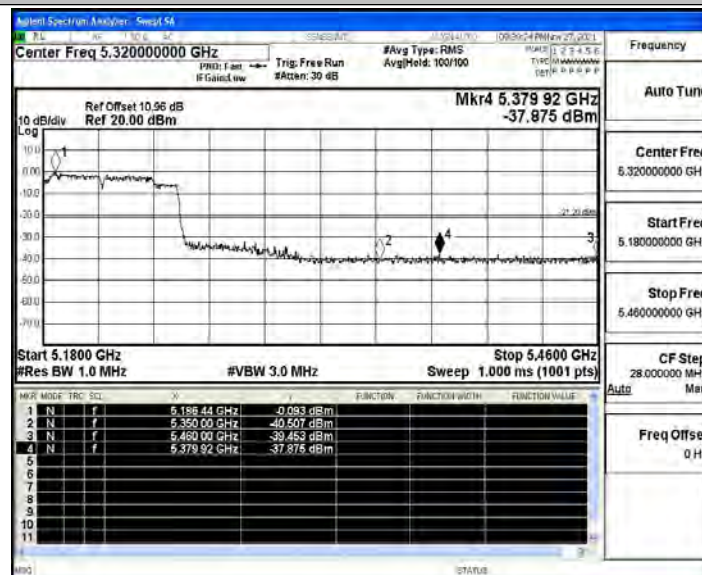
11AC80SISO_Ant1_Low_5210_Peak



11AC80SISO_Ant1_High_5210_AV



11AC80SISO_Ant1_High_5210_Peak





D.5 Frequency Stability

Test Result

Voltage								
TestMode	Antenna	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11AC20S ISO	Ant1	5180	NV	NT	-36000	-6.949807	20	PASS
			LV	NT	-36000	-6.949807	20	PASS
			HV	NT	-36000	-6.949807	20	PASS
		5200	NV	NT	-36000	-6.923077	20	PASS
			LV	NT	-36000	-6.923077	20	PASS
			HV	NT	-36000	-6.923077	20	PASS
		5240	NV	NT	-36000	-6.870229	20	PASS
			LV	NT	-36000	-6.870229	20	PASS
			HV	NT	-36000	-6.870229	20	PASS
11AC40S ISO	Ant1	5190	NV	NT	-36000	-6.936416	20	PASS
			LV	NT	-36000	-6.936416	20	PASS
			HV	NT	-36000	-6.936416	20	PASS
		5230	NV	NT	-36000	-6.883365	20	PASS
			LV	NT	-36000	-6.883365	20	PASS
			HV	NT	-36000	-6.883365	20	PASS
11AC80S ISO	Ant1	5210	NV	NT	-36000	-6.909789	20	PASS
			LV	NT	-36000	-6.909789	20	PASS
			HV	NT	-36000	-6.909789	20	PASS

Temperature								
TestMode	Antenna	Channel	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11AC20S ISO	Ant1	5180	NV	-30	-36000	-6.949807	20	PASS
			NV	-20	-36000	-6.949807	20	PASS
			NV	-10	-36000	-6.949807	20	PASS
			NV	0	-36000	-6.949807	20	PASS
			NV	10	-36000	-6.949807	20	PASS
			NV	20	-36000	-6.949807	20	PASS
			NV	30	-36000	-6.949807	20	PASS
			NV	40	-36000	-6.949807	20	PASS
			NV	50	-36000	-6.949807	20	PASS
		5200	NV	-30	-36000	-6.923077	20	PASS
			NV	-20	-36000	-6.923077	20	PASS
			NV	-10	-36000	-6.923077	20	PASS
			NV	0	-36000	-6.923077	20	PASS
			NV	0	-36000	-6.923077	20	PASS



			NV	10	-36000	-6.923077	20	PASS
			NV	20	-36000	-6.923077	20	PASS
			NV	30	-36000	-6.923077	20	PASS
			NV	40	-36000	-6.923077	20	PASS
			NV	50	-36000	-6.923077	20	PASS
		5240	NV	-30	-36000	-6.870229	20	PASS
			NV	-20	-36000	-6.870229	20	PASS
			NV	-10	-36000	-6.870229	20	PASS
			NV	0	-36000	-6.870229	20	PASS
			NV	10	-36000	-6.870229	20	PASS
			NV	20	-36000	-6.870229	20	PASS
			NV	30	-36000	-6.870229	20	PASS
			NV	40	-36000	-6.870229	20	PASS
			NV	50	-36000	-6.870229	20	PASS
11AC40S ISO	Ant1	5190	NV	-30	-36000	-6.936416	20	PASS
			NV	-20	-36000	-6.936416	20	PASS
			NV	-10	-36000	-6.936416	20	PASS
			NV	0	-36000	-6.936416	20	PASS
			NV	10	-36000	-6.936416	20	PASS
			NV	20	-36000	-6.936416	20	PASS
			NV	30	-36000	-6.936416	20	PASS
			NV	40	-36000	-6.936416	20	PASS
			NV	50	-36000	-6.936416	20	PASS
		5230	NV	-30	-36000	-6.883365	20	PASS
			NV	-20	-36000	-6.883365	20	PASS
			NV	-10	-36000	-6.883365	20	PASS
			NV	0	-36000	-6.883365	20	PASS
			NV	10	-36000	-6.883365	20	PASS
			NV	20	-36000	-6.883365	20	PASS
			NV	30	-36000	-6.883365	20	PASS
			NV	40	-36000	-6.883365	20	PASS
			NV	50	-36000	-6.883365	20	PASS
11AC80S ISO	Ant1	5210	NV	-30	-36000	-6.909789	20	PASS
			NV	-20	-36000	-6.909789	20	PASS
			NV	-10	-36000	-6.909789	20	PASS
			NV	0	-36000	-6.909789	20	PASS
			NV	10	-36000	-6.909789	20	PASS
			NV	20	-36000	-6.909789	20	PASS
			NV	30	-36000	-6.909789	20	PASS
			NV	40	-36000	-6.909789	20	PASS
			NV	50	-36000	-6.909789	20	PASS



D.6 Duty Cycle

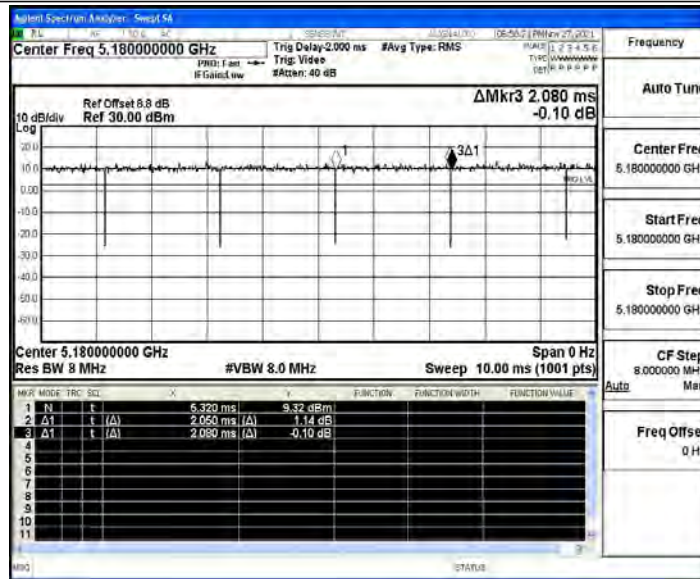
Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11A	Ant1	5180	2.05	2.08	98.56	---	PASS
		5200	2.04	2.07	98.55	---	PASS
		5240	2.05	2.08	98.56	---	PASS
11N20SISO	Ant1	5180	1.90	1.93	98.45	---	PASS
		5200	1.90	1.93	98.45	---	PASS
		5240	1.90	1.93	98.45	---	PASS
11N40SISO	Ant1	5190	0.93	0.96	96.88	---	PASS
		5230	0.93	0.96	96.88	---	PASS
11AC20SISO	Ant1	5180	1.91	1.94	98.45	---	PASS
		5200	1.91	1.94	98.45	---	PASS
		5240	1.91	1.94	98.45	---	PASS
11AC40SISO	Ant1	5190	0.94	0.97	96.91	---	PASS
		5230	0.94	0.97	96.91	---	PASS
11AC80SISO	Ant1	5210	0.43	0.46	93.48	---	PASS

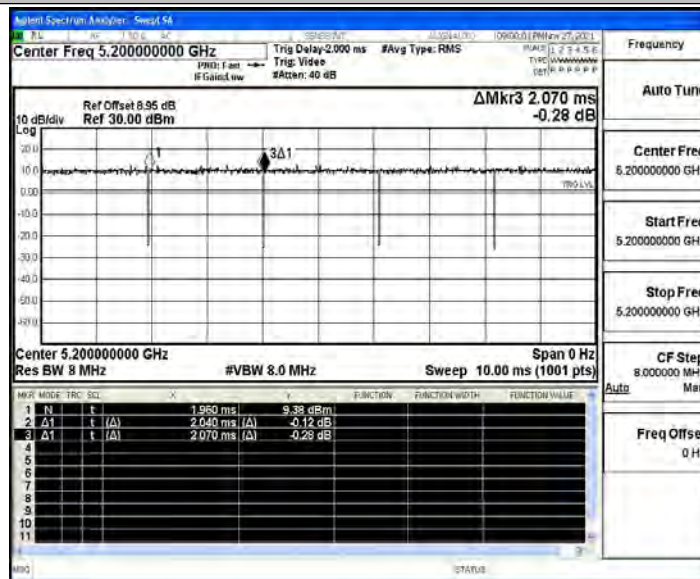


Test Graphs

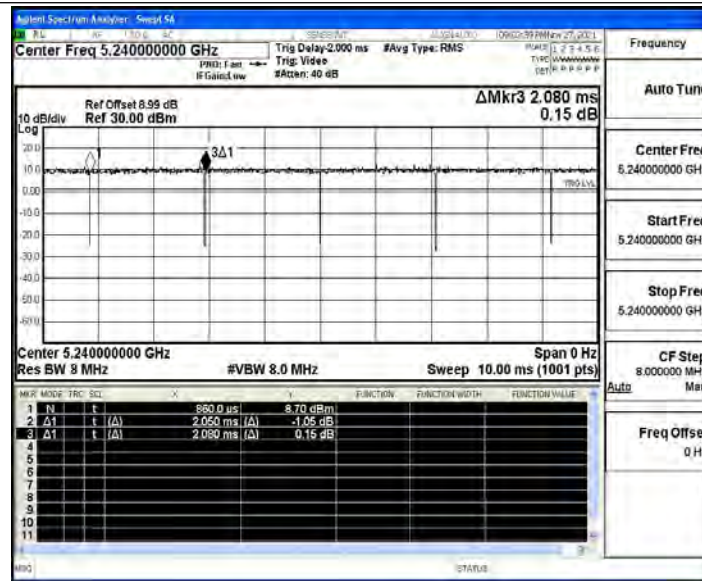
11A_Ant1_5180



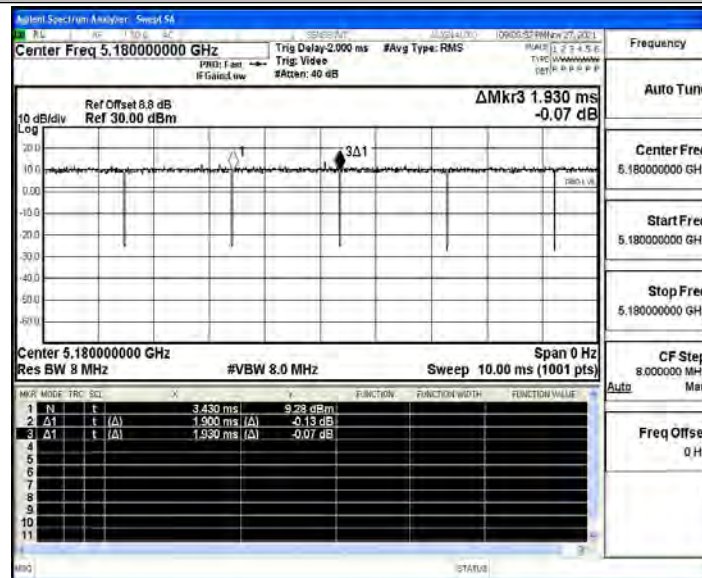
11A_Ant1_5200



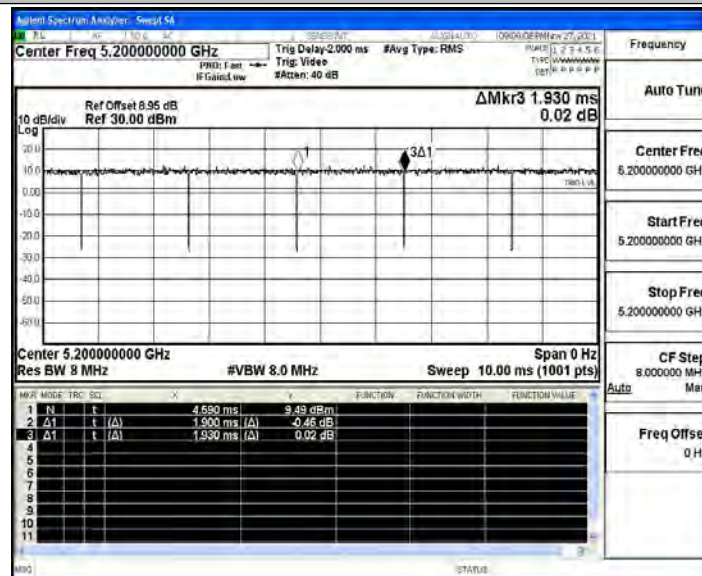
11A_Ant1_5240



11N20SISO_Ant1_5180

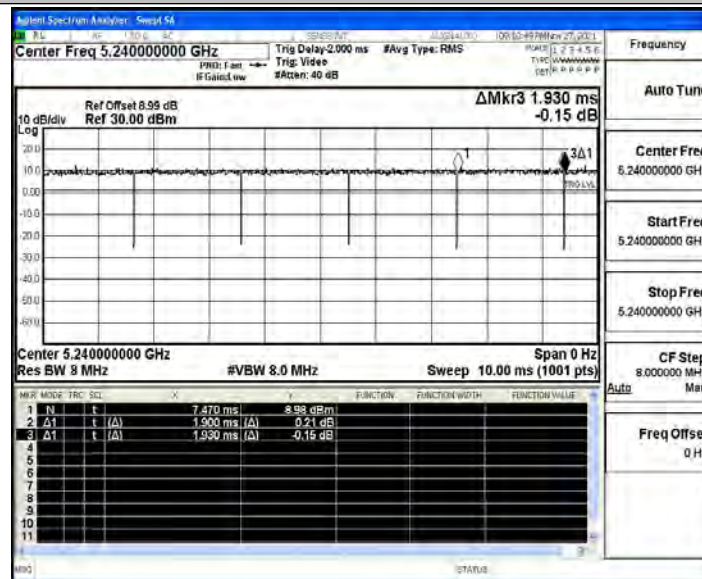


11N20SISO_Ant1_5200

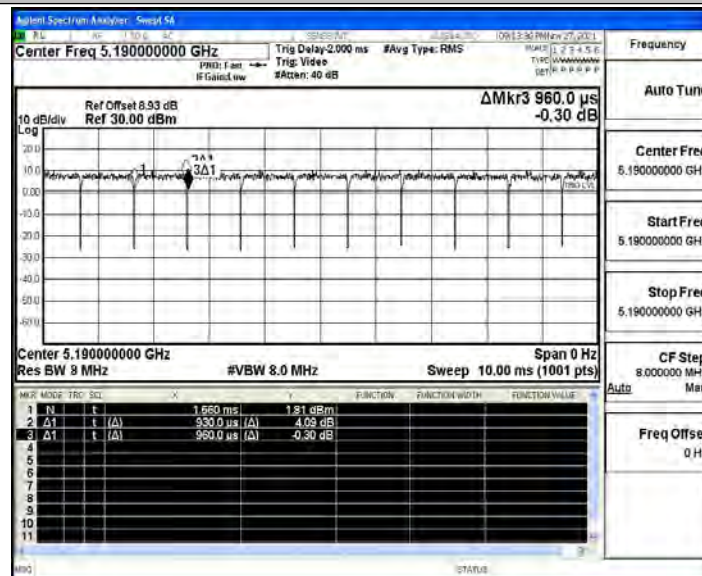




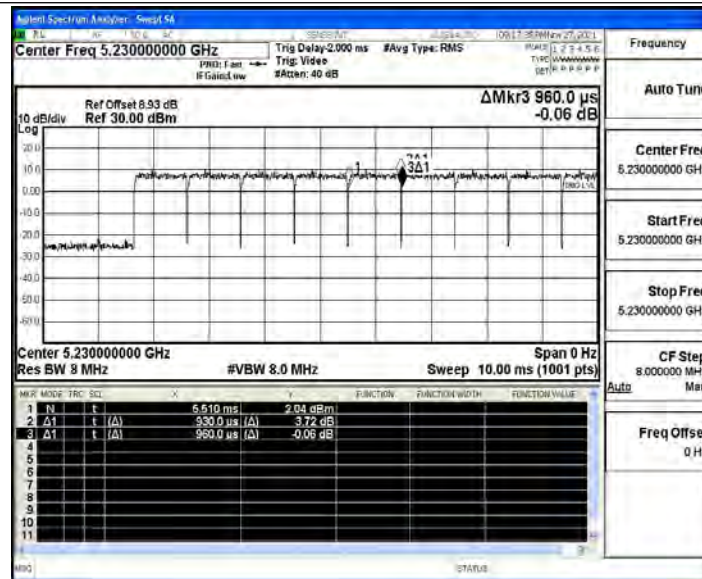
11N20SISO_Ant1_5240



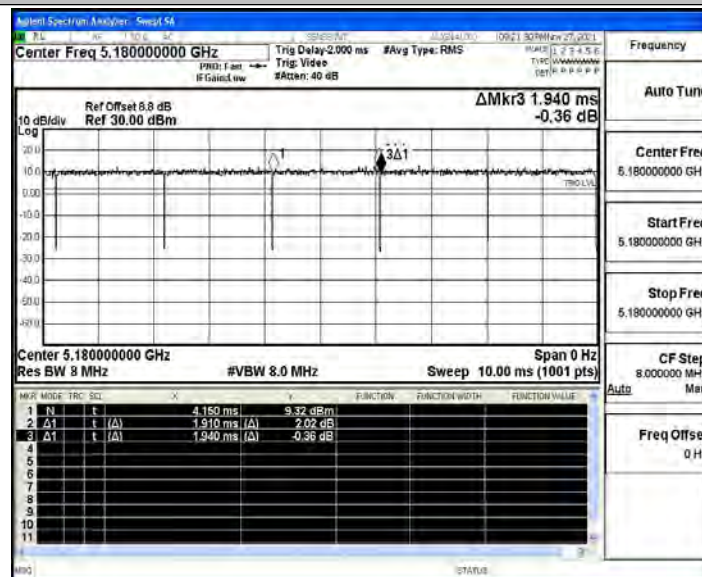
11N40SISO_Ant1_5190



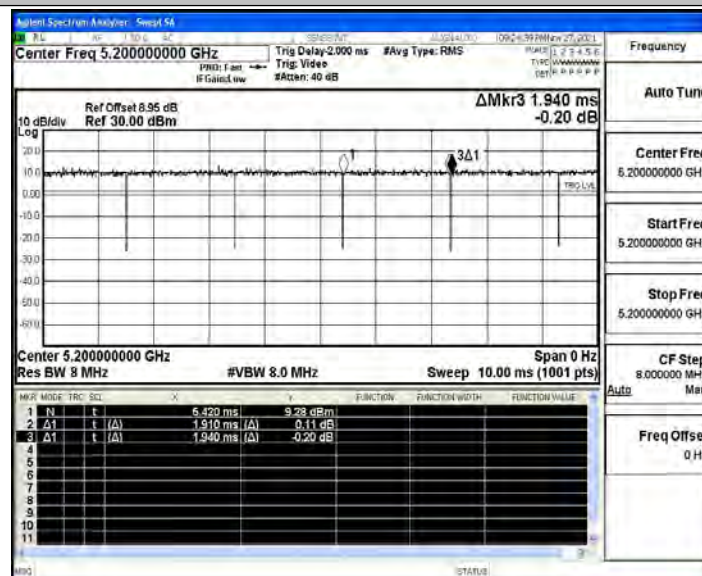
11N40SISO_Ant1_5230



11AC20SISO_Ant1_5180

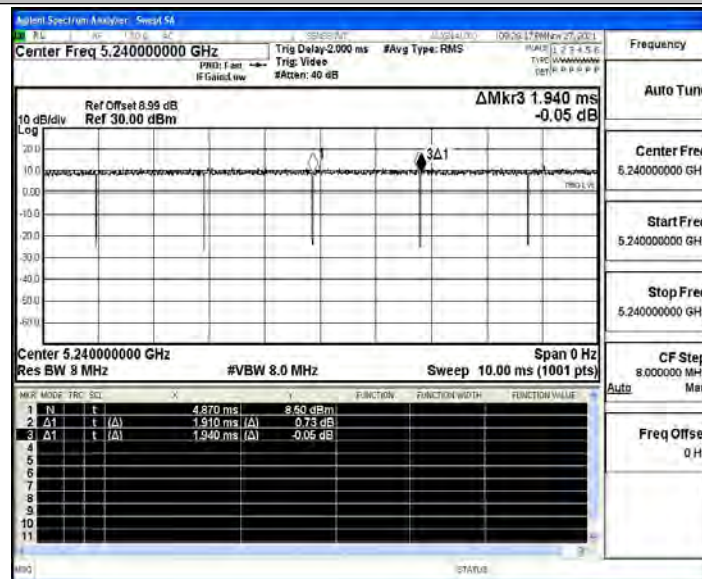


11AC20SISO_Ant1_5200

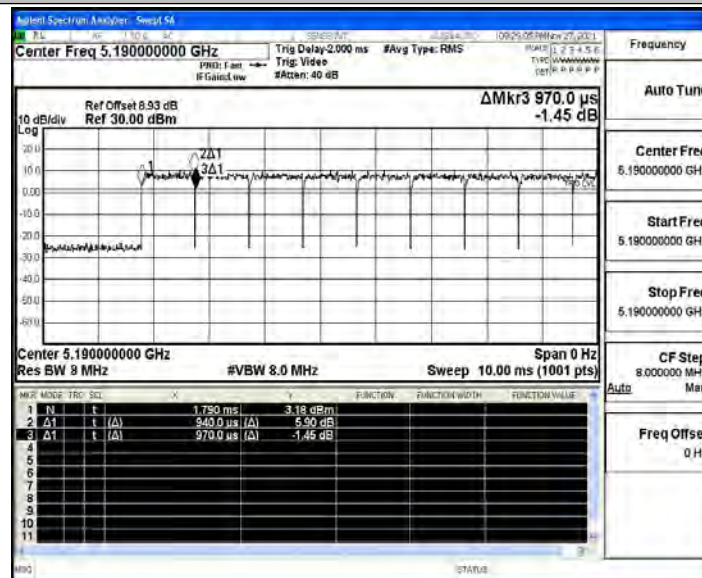




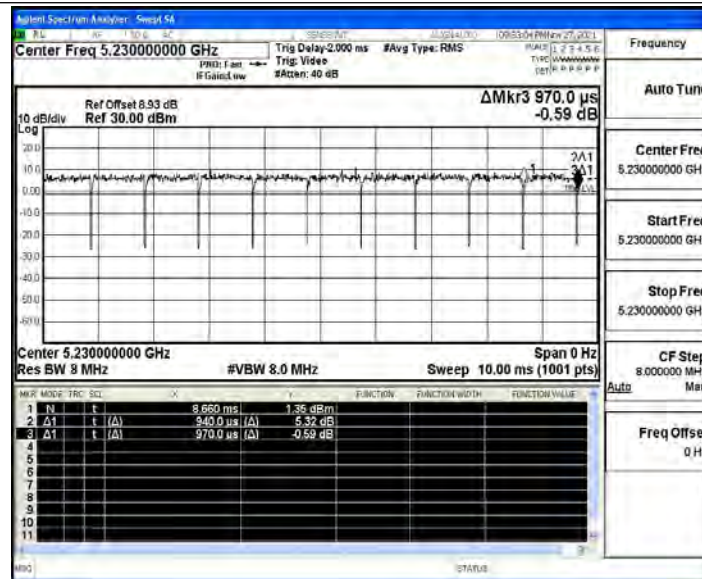
11AC20SISO_Ant1_5240



11AC40SISO_Ant1_5190



11AC40SISO_Ant1_5230



11AC80SISO_Ant1_5210

