



Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: 3D Printer

Test Model: FOCUS 8.9

Environmental Conditions

Temperature:	21.6° C
Relative Humidity:	52.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Ken He
Supervised by:	Li Huan



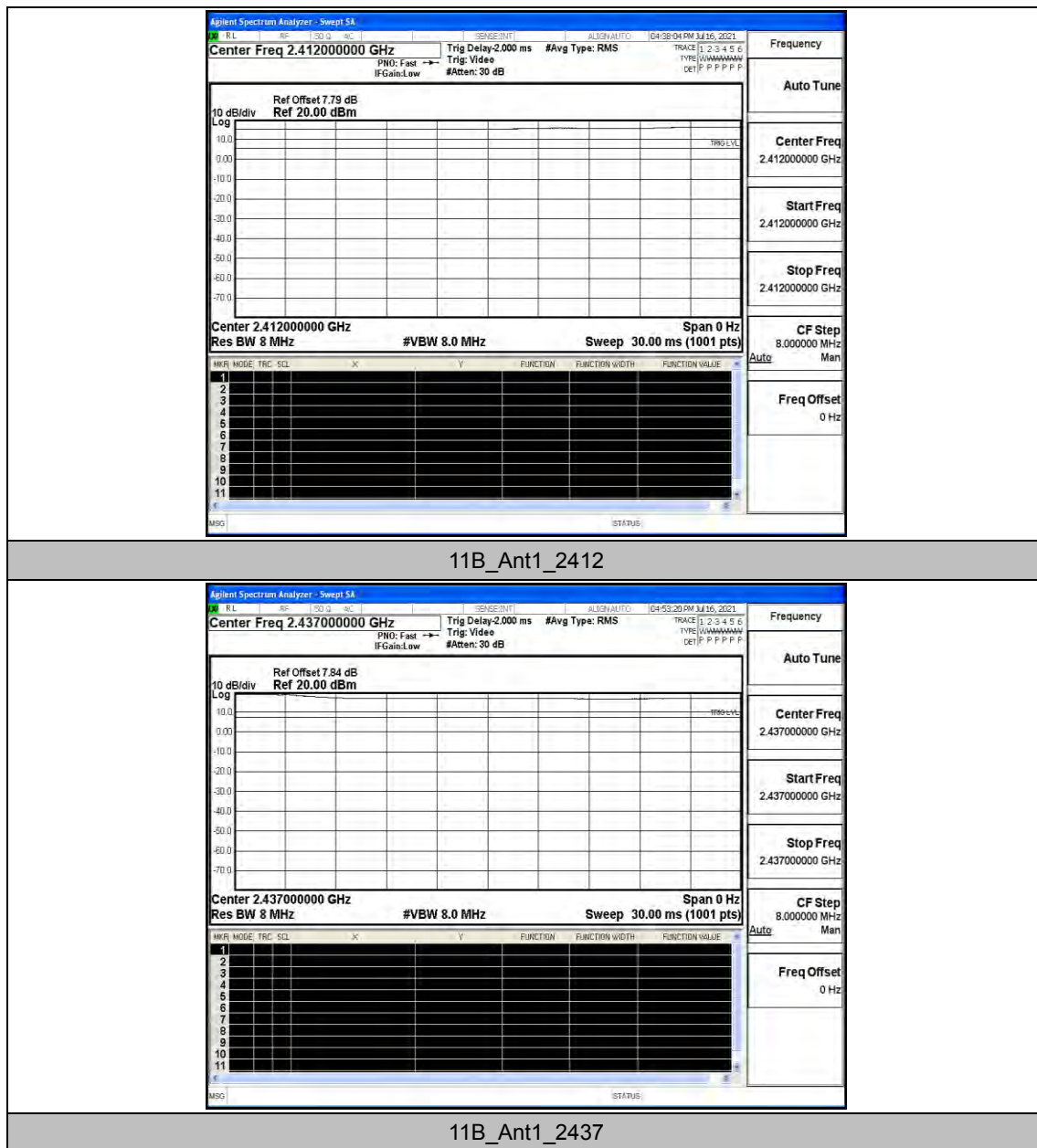
A.1 Duty Cycle

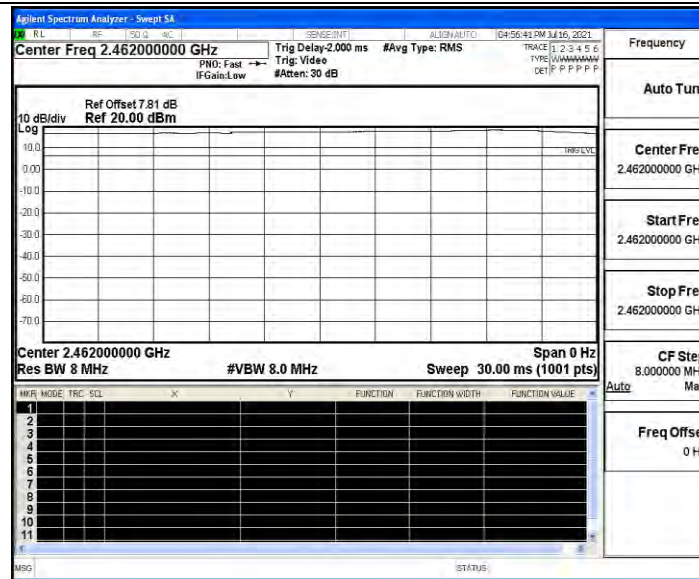
Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11B	Ant1	2412	30.00	30.00	100.00	---	PASS
		2437	30.00	30.00	100.00	---	PASS
		2462	30.00	30.00	100.00	---	PASS
11G	Ant1	2412	30.00	30.00	100.00	---	PASS
		2437	30.00	30.00	100.00	---	PASS
		2462	30.00	30.00	100.00	---	PASS
11N20SISO	Ant1	2412	30.00	30.00	100.00	---	PASS
		2437	30.00	30.00	100.00	---	PASS
		2462	30.00	30.00	100.00	---	PASS
11N40SISO	Ant1	2422	30.00	30.00	100.00	---	PASS
		2437	30.00	30.00	100.00	---	PASS
		2452	30.00	30.00	100.00	---	PASS

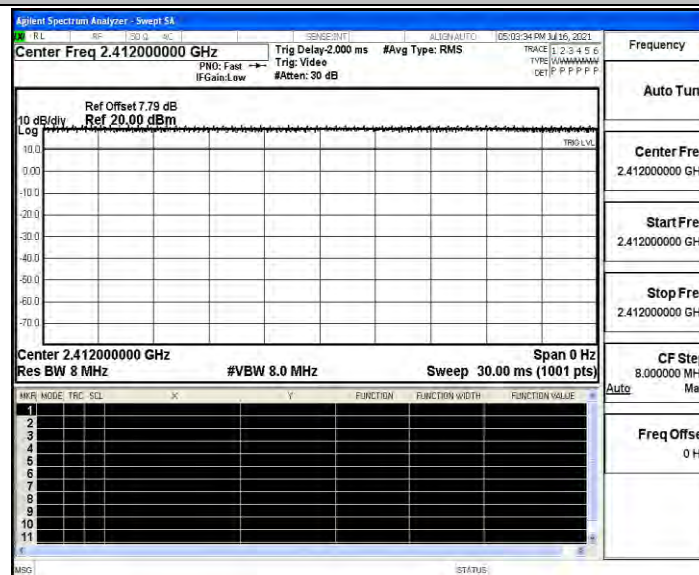


Test Graphs

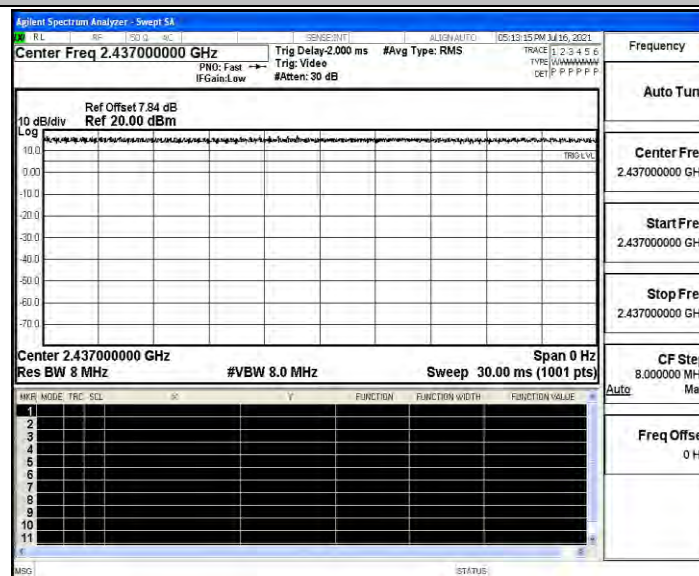




11B_Ant1_2462

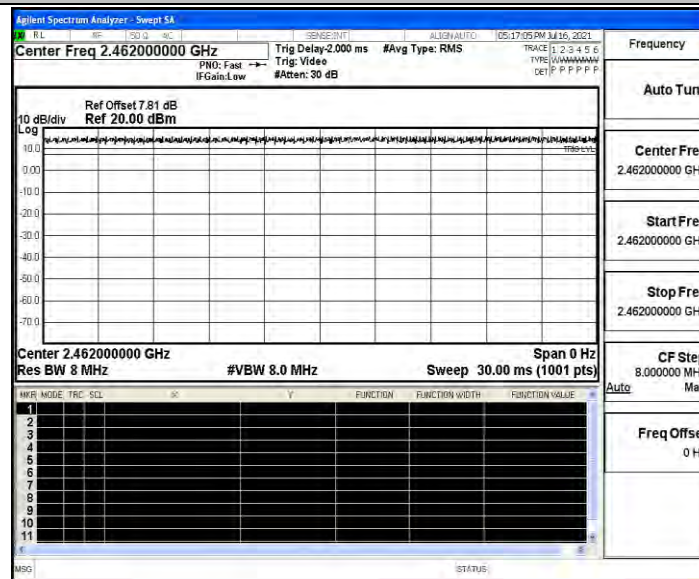


11G_Ant1_2412

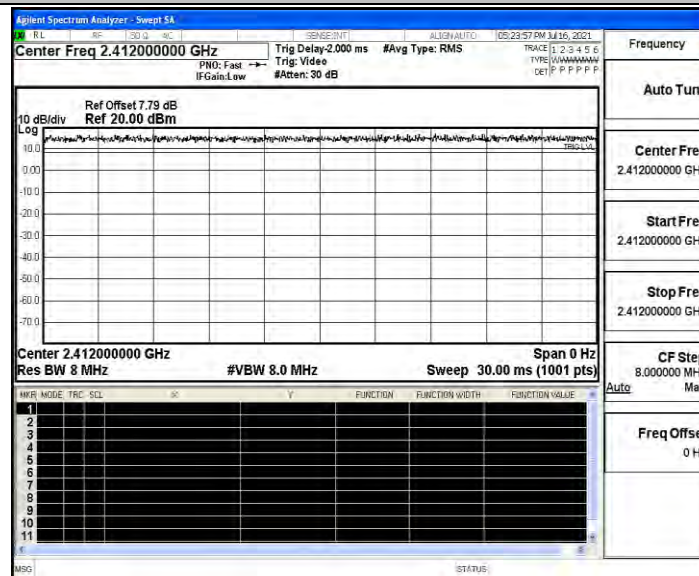




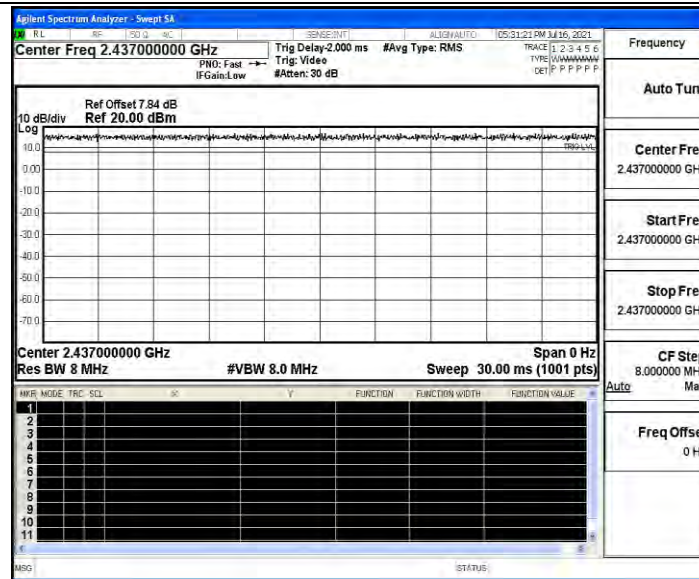
11G_Ant1_2437



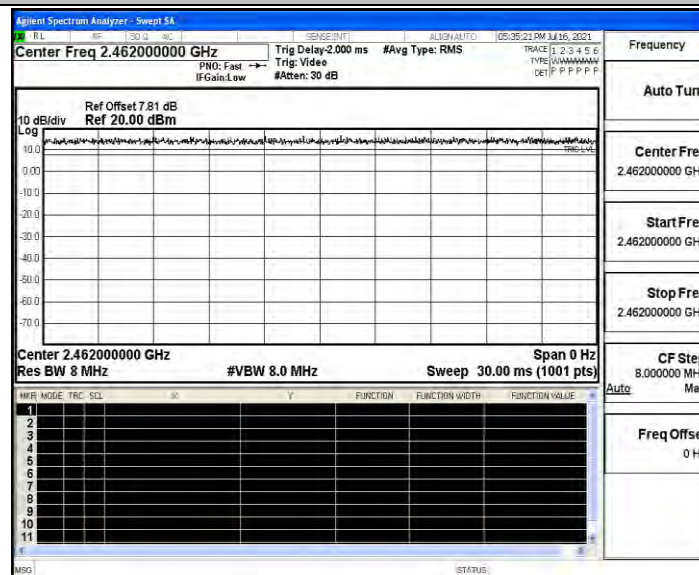
11G_Ant1_2462



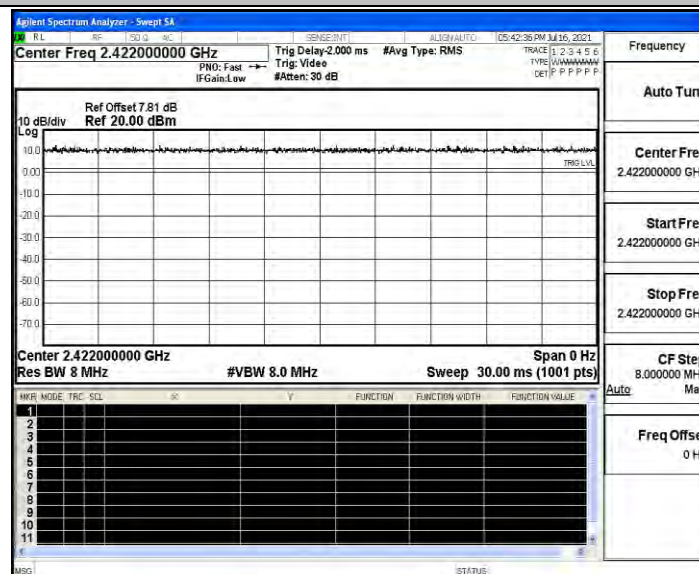
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437

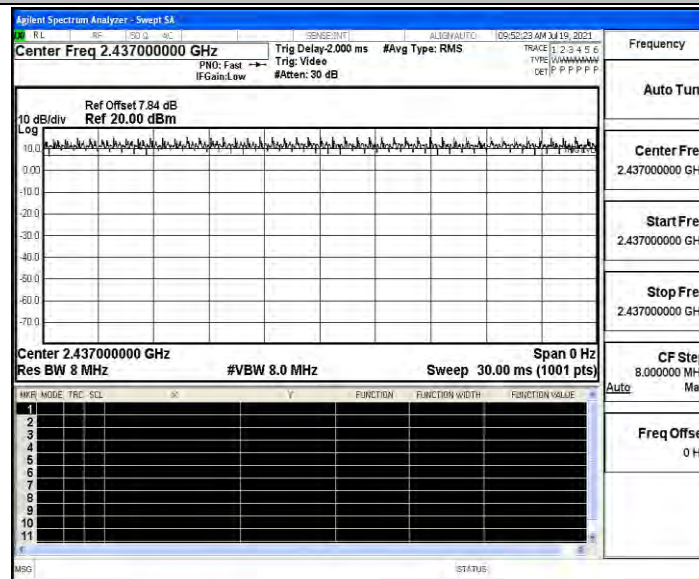


11N20SISO_Ant1_2462

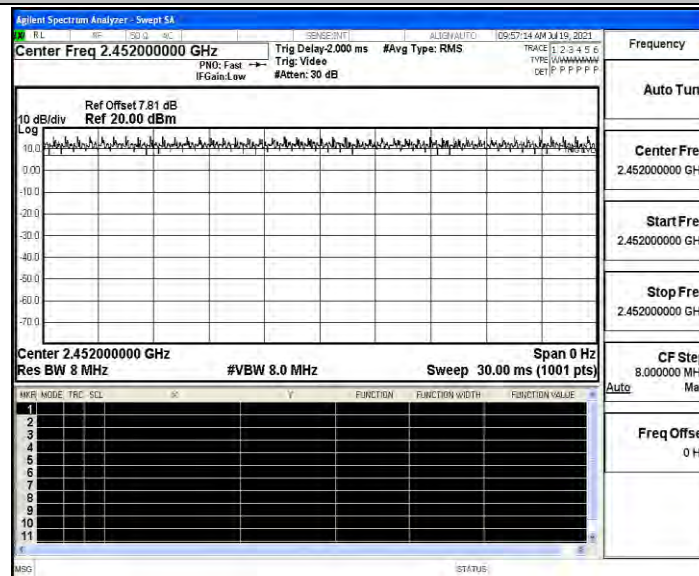




11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



A.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	16.67	≤30	PASS
		2437	16.23	≤30	PASS
		2462	16.09	≤30	PASS
11G	Ant1	2412	16.90	≤30	PASS
		2437	16.80	≤30	PASS
		2462	16.14	≤30	PASS
11N20SISO	Ant1	2412	16.90	≤30	PASS
		2437	16.95	≤30	PASS
		2462	16.31	≤30	PASS
11N40SISO	Ant1	2422	16.40	≤30	PASS
		2437	16.09	≤30	PASS
		2452	16.13	≤30	PASS



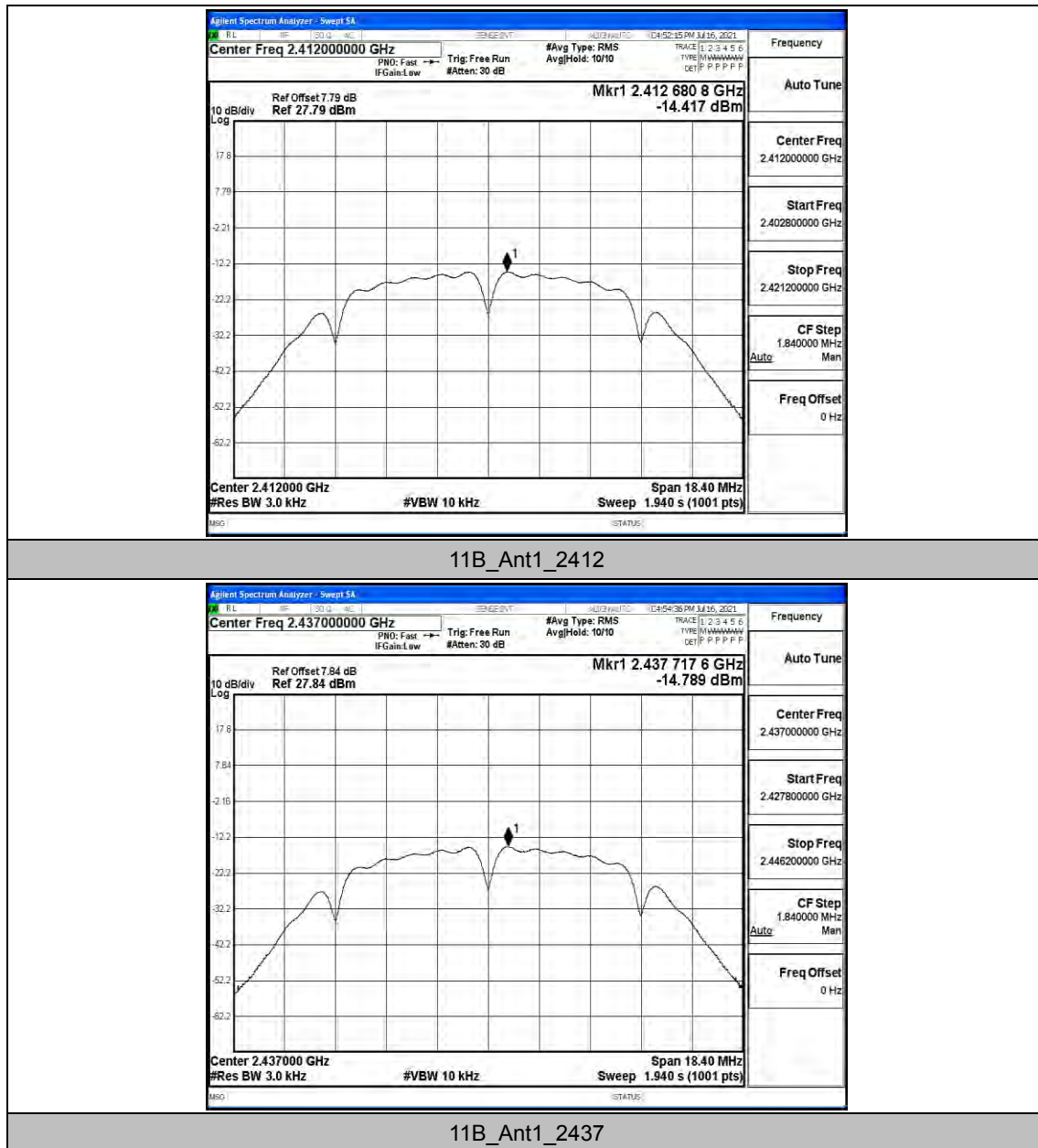
A.3 Maximum power spectral density

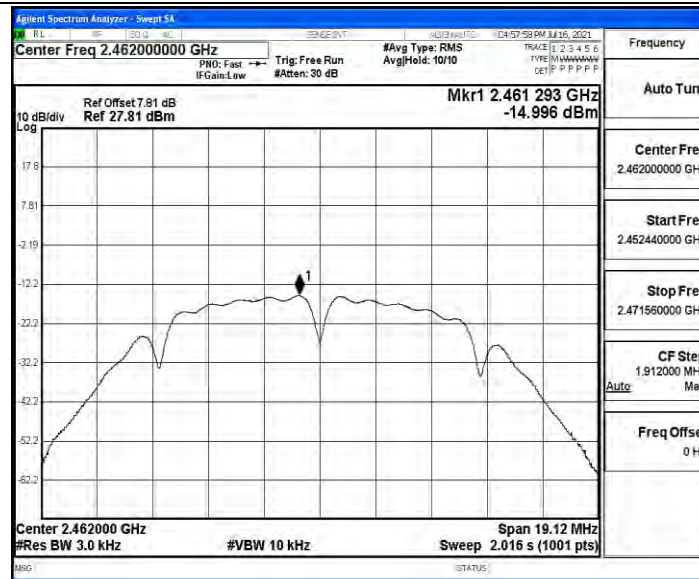
Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-14.42	≤8	PASS
		2437	-14.79	≤8	PASS
		2462	-15	≤8	PASS
11G	Ant1	2412	-17.25	≤8	PASS
		2437	-17.35	≤8	PASS
		2462	-18.17	≤8	PASS
11N20SISO	Ant1	2412	-17.77	≤8	PASS
		2437	-17.37	≤8	PASS
		2462	-17.87	≤8	PASS
11N40SISO	Ant1	2422	-18.13	≤8	PASS
		2437	-16.87	≤8	PASS
		2452	-16.54	≤8	PASS

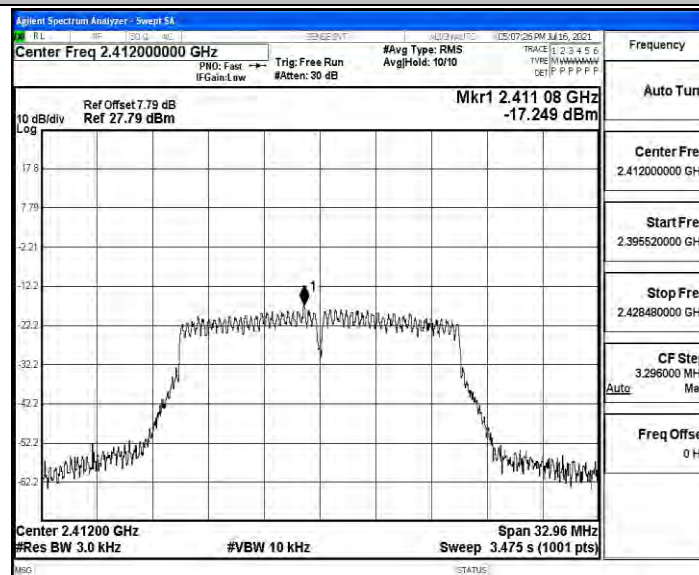


Test Graphs

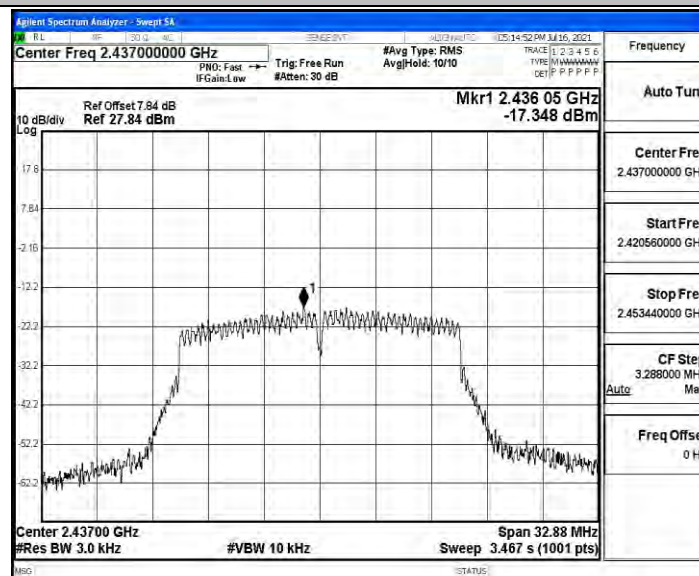




11B_Ant1_2462

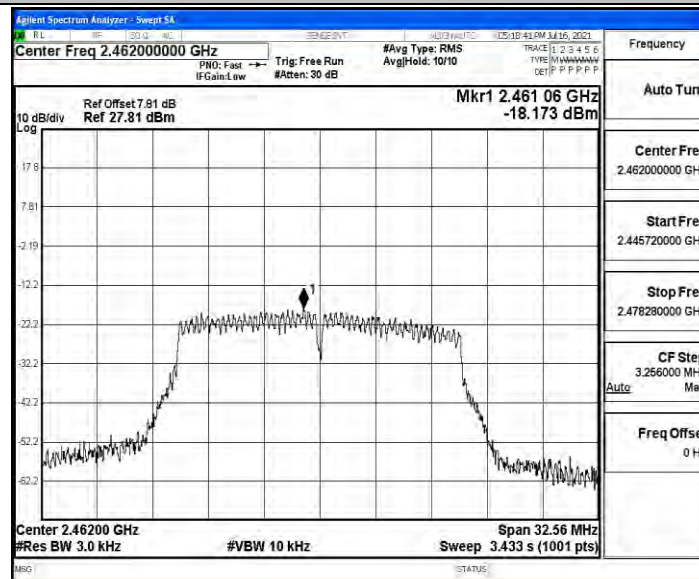


11G_Ant1_2412

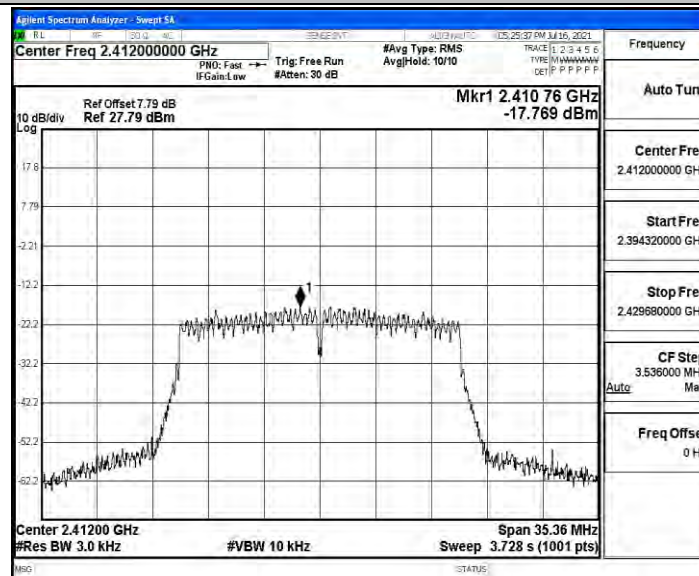




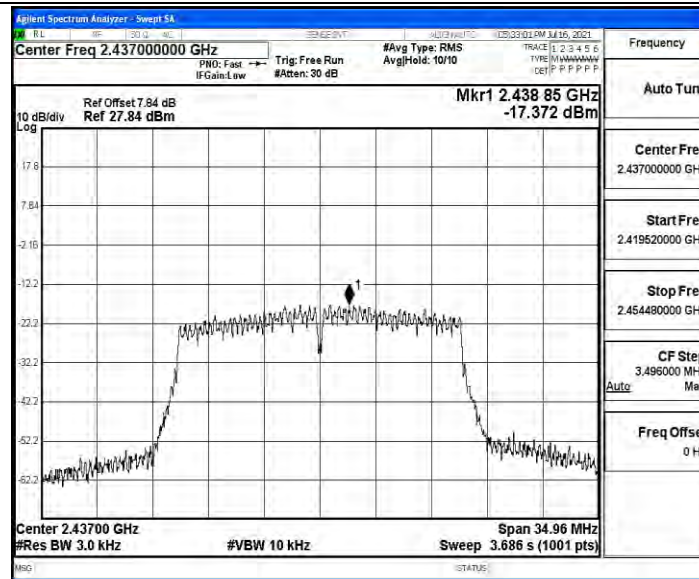
11G_Ant1_2437



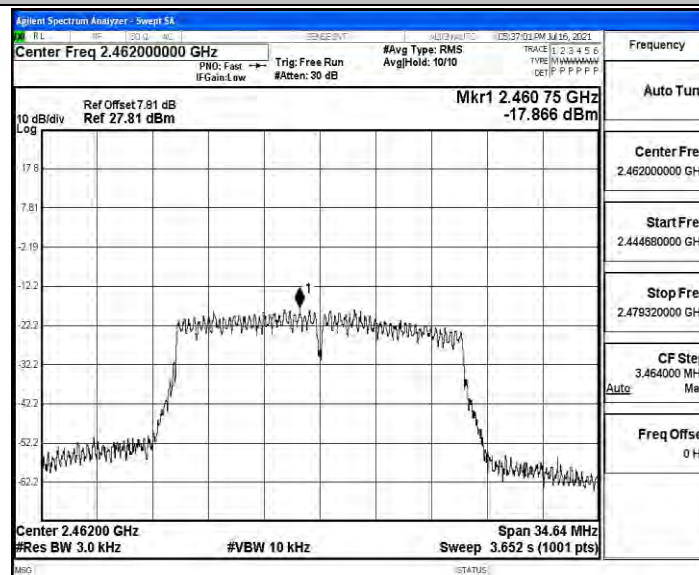
11G_Ant1_2462



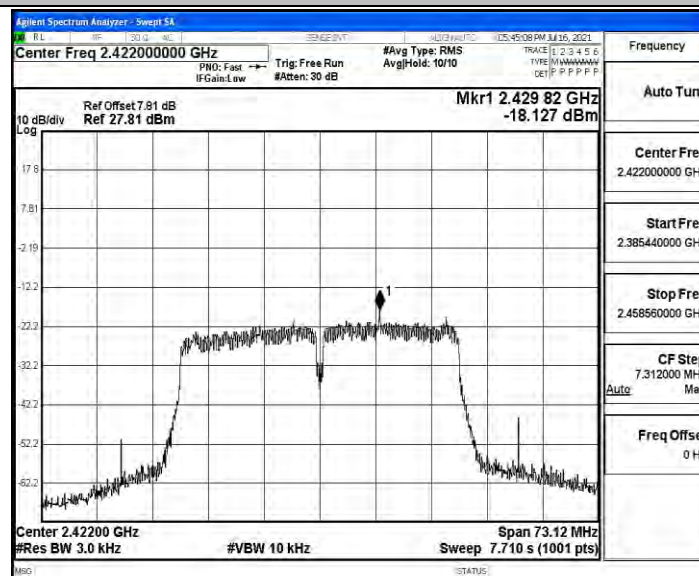
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437

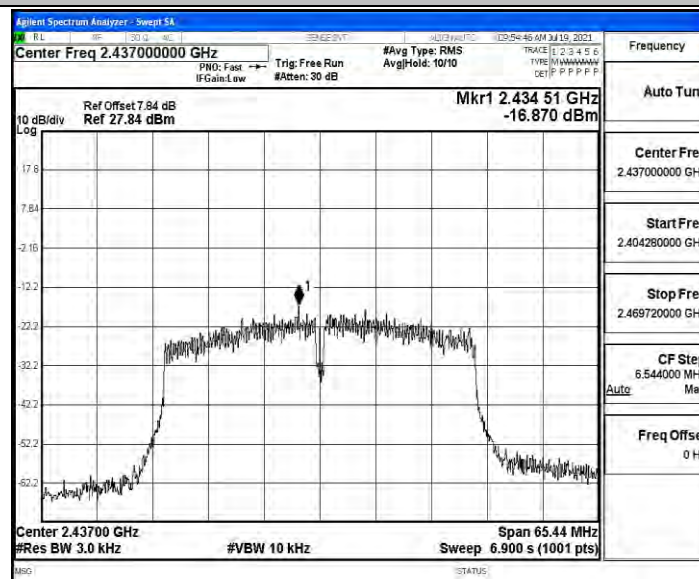


11N20SISO_Ant1_2462

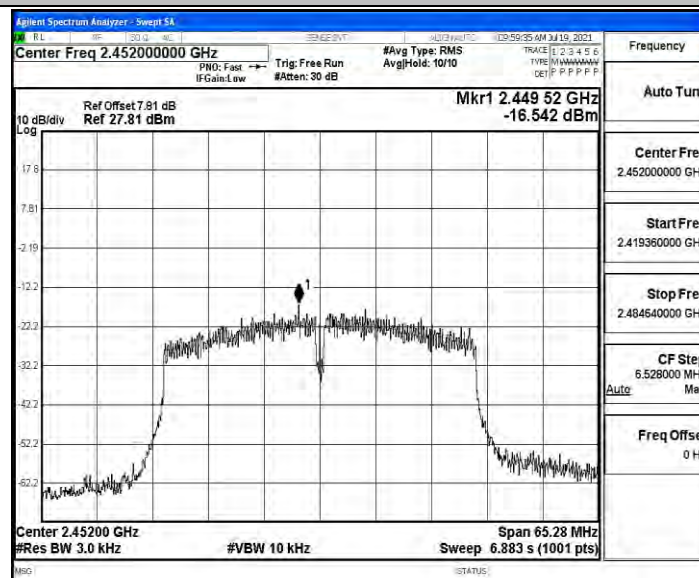




11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



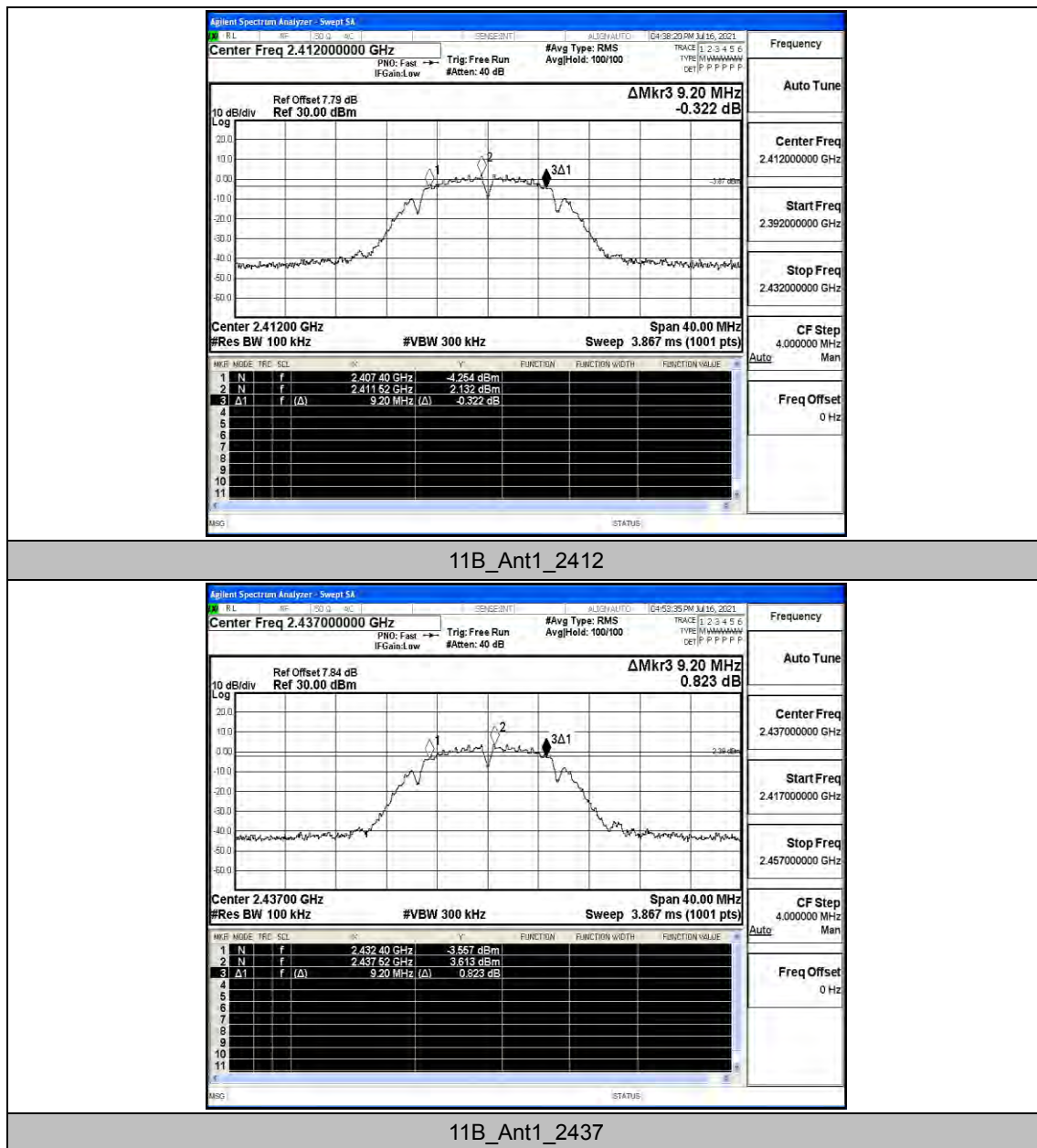
A.4 6dB Bandwidth

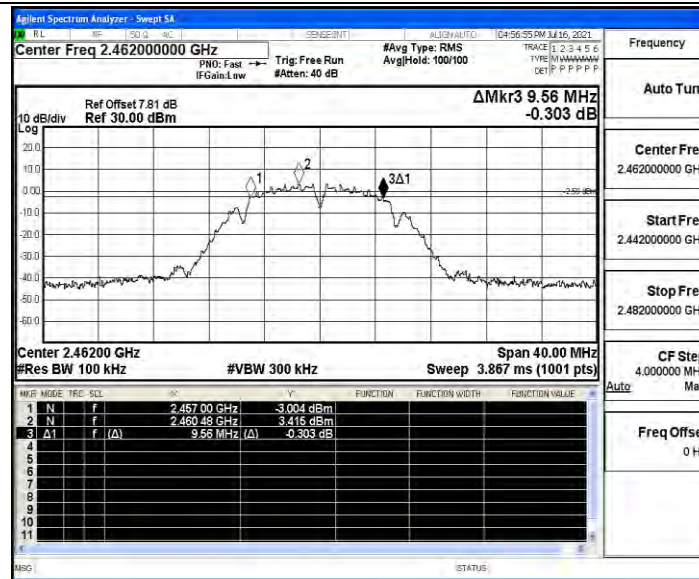
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.200	2407.400	2416.600	0.5	PASS
		2437	9.200	2432.400	2441.600	0.5	PASS
		2462	9.560	2457.000	2466.560	0.5	PASS
11G	Ant1	2412	16.480	2403.760	2420.240	0.5	PASS
		2437	16.440	2428.840	2445.280	0.5	PASS
		2462	16.280	2453.680	2469.960	0.5	PASS
11N20SISO	Ant1	2412	17.680	2403.160	2420.840	0.5	PASS
		2437	17.480	2428.360	2445.840	0.5	PASS
		2462	17.320	2453.120	2470.440	0.5	PASS
11N40SISO	Ant1	2422	36.560	2403.760	2440.320	0.5	PASS
		2437	32.720	2420.680	2453.400	0.5	PASS
		2452	32.640	2435.680	2468.320	0.5	PASS

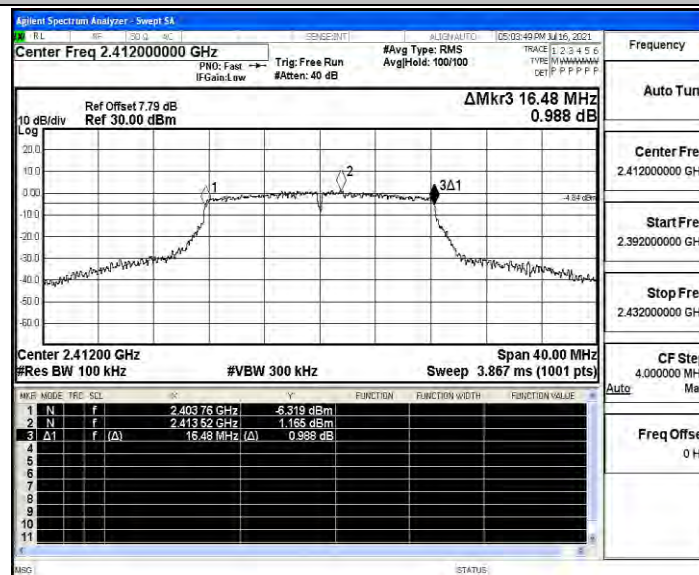


Test Graphs

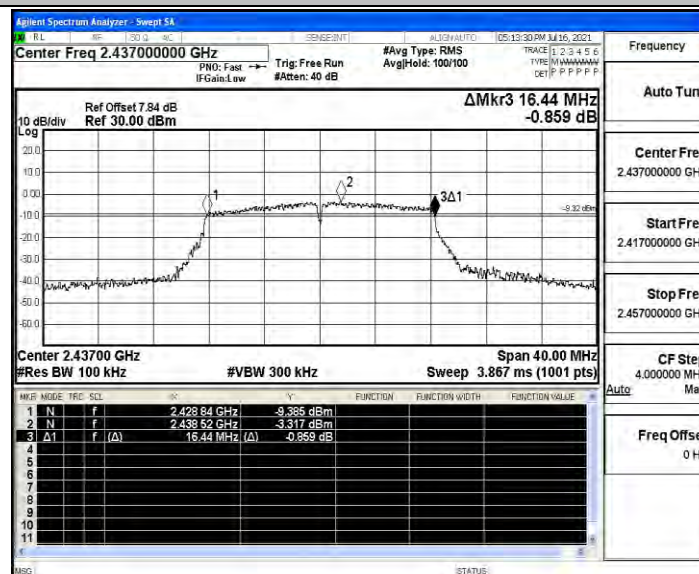




11B_Ant1_2462

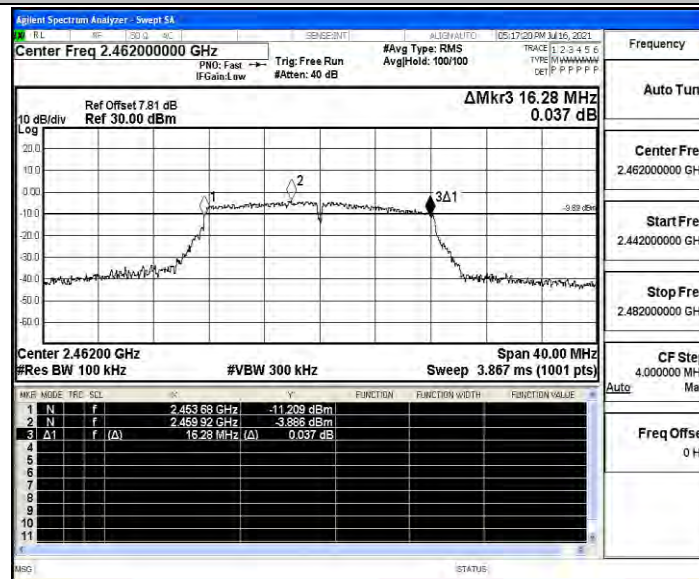


11G_Ant1_2412

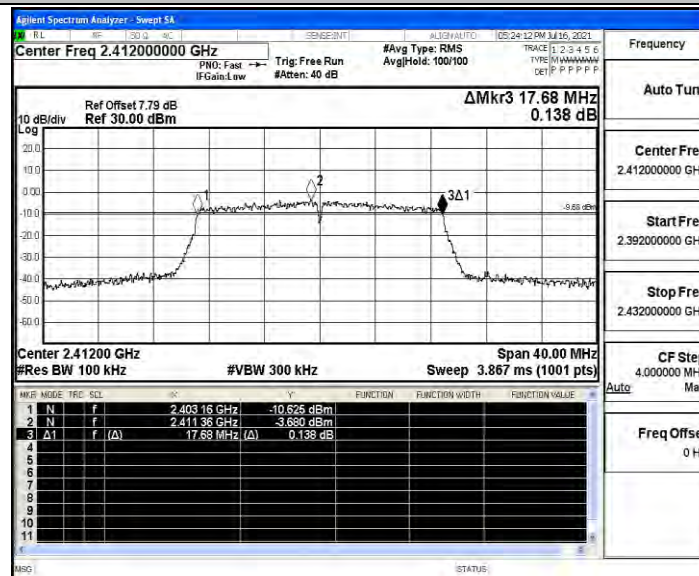




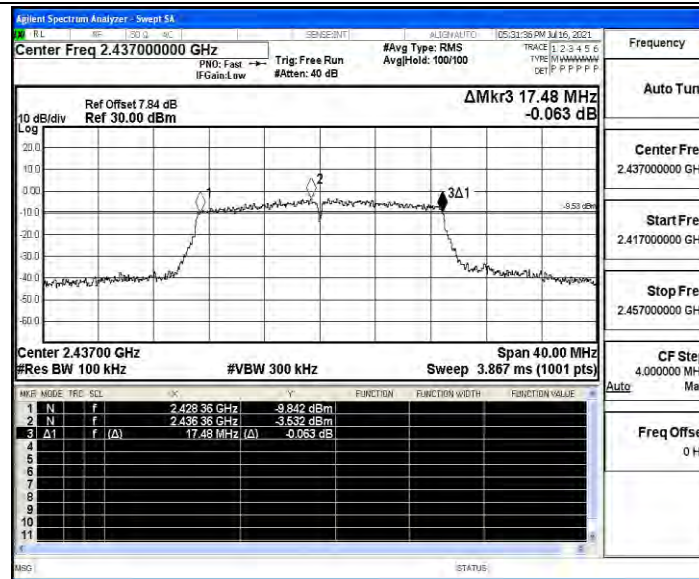
11G_Ant1_2437



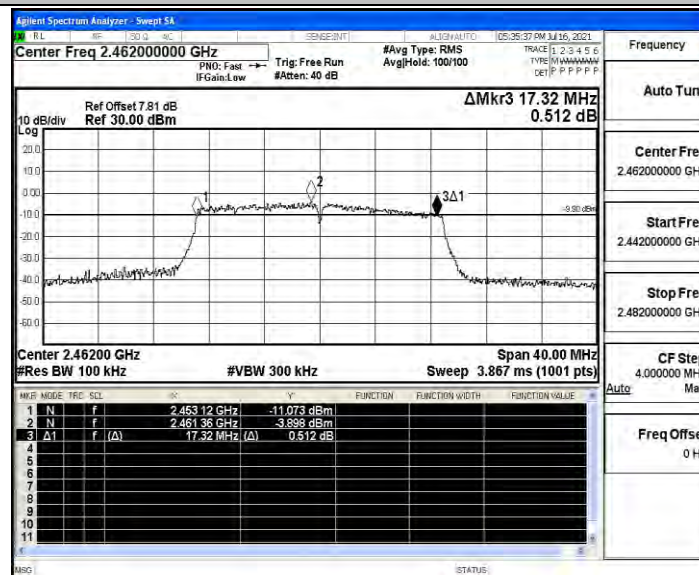
11G_Ant1_2462



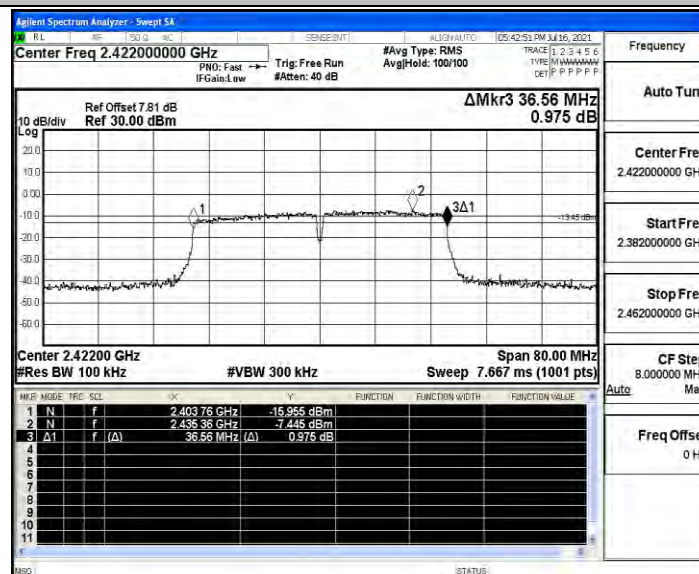
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437

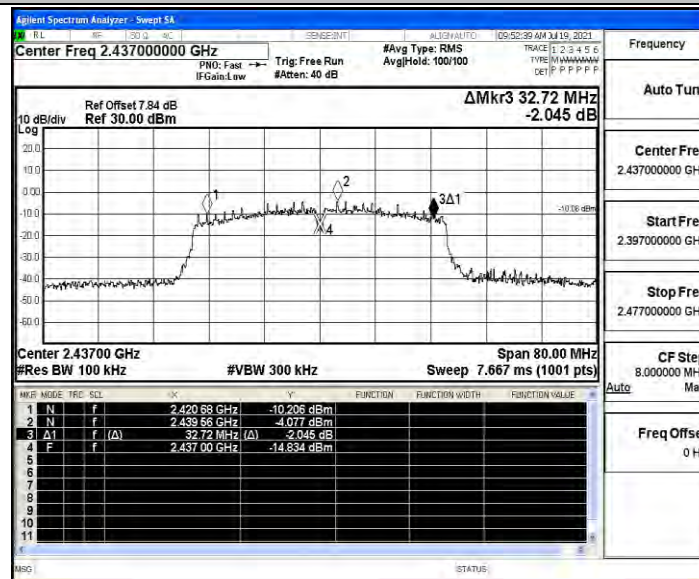


11N20SISO_Ant1_2462

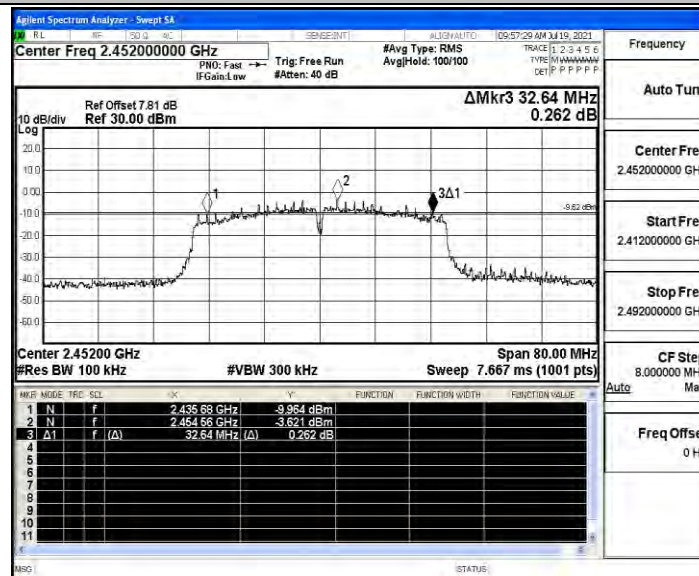




11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



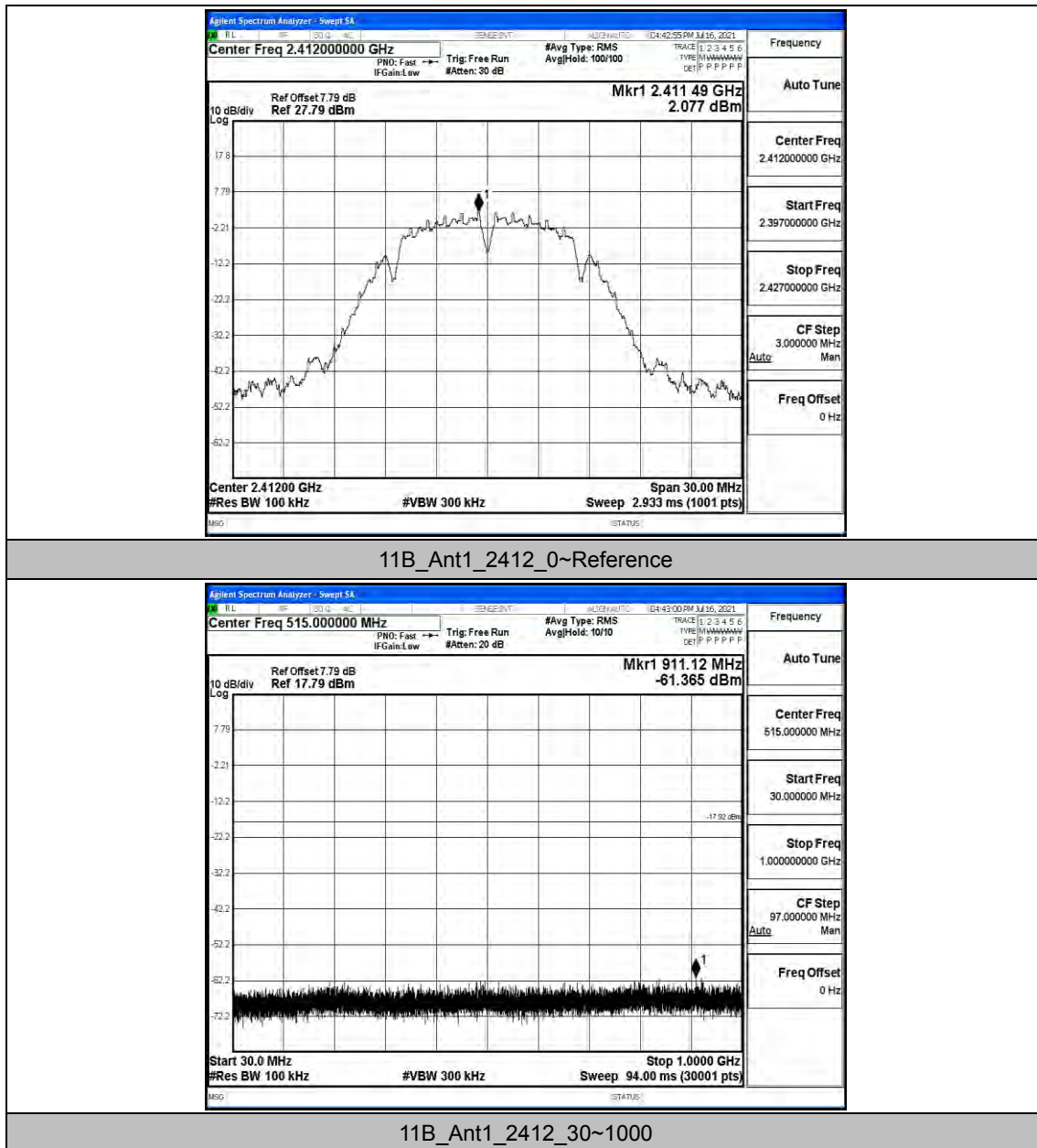
A.5 Conducted Spurious Emission

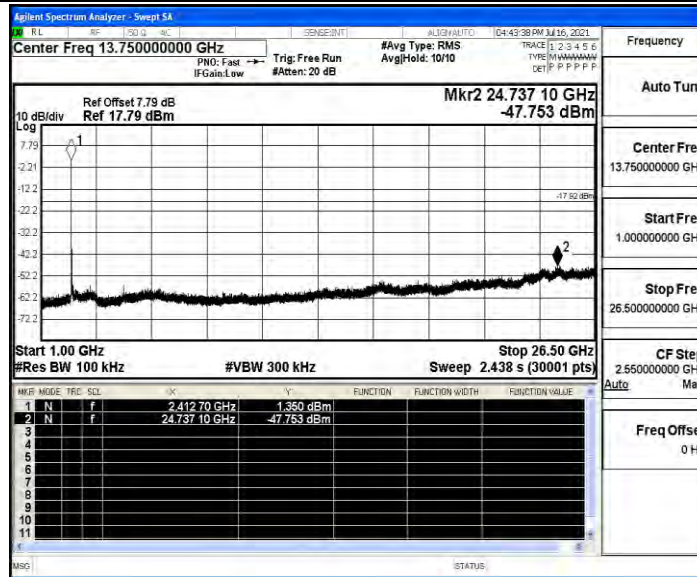
Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	2.08	2.08	---	PASS
			30~1000	2.08	-61.37	≤ -17.92	PASS
			1000~26500	2.08	-47.75	≤ -17.92	PASS
		2437	Reference	3.59	3.59	---	PASS
			30~1000	3.59	-61.35	≤ -16.41	PASS
			1000~26500	3.59	-47.75	≤ -16.41	PASS
		2462	Reference	3.48	3.48	---	PASS
			30~1000	3.48	-61.36	≤ -16.52	PASS
			1000~26500	3.48	-47.32	≤ -16.52	PASS
11G	Ant1	2412	Reference	-3.61	-3.61	---	PASS
			30~1000	-3.61	-57.56	≤ -23.61	PASS
			1000~26500	-3.61	-47.3	≤ -23.61	PASS
		2437	Reference	-3.29	-3.29	---	PASS
			30~1000	-3.29	-58.42	≤ -23.29	PASS
			1000~26500	-3.29	-47.74	≤ -23.29	PASS
		2462	Reference	-4.21	-4.21	---	PASS
			30~1000	-4.21	-57.79	≤ -24.21	PASS
			1000~26500	-4.21	-47.46	≤ -24.21	PASS
11N20SISO	Ant1	2412	Reference	-3.73	-3.73	---	PASS
			30~1000	-3.73	-59.47	≤ -23.73	PASS
			1000~26500	-3.73	-47.66	≤ -23.73	PASS
		2437	Reference	-3.52	-3.52	---	PASS
			30~1000	-3.52	-56.78	≤ -23.52	PASS
			1000~26500	-3.52	-47.01	≤ -23.52	PASS
		2462	Reference	-4.11	-4.11	---	PASS
			30~1000	-4.11	-58.03	≤ -24.11	PASS
			1000~26500	-4.11	-47.54	≤ -24.11	PASS
11N40SISO	Ant1	2422	Reference	-7.31	-7.31	---	PASS
			30~1000	-7.31	-57.85	≤ -27.31	PASS
			1000~26500	-7.31	-47.44	≤ -27.31	PASS
		2437	Reference	-3.90	-3.90	---	PASS
			30~1000	-3.90	-61.2	≤ -23.9	PASS
			1000~26500	-3.90	-46.73	≤ -23.9	PASS
		2452	Reference	-3.64	-3.64	---	PASS
			30~1000	-3.64	-61.86	≤ -23.64	PASS
			1000~26500	-3.64	-47.21	≤ -23.64	PASS

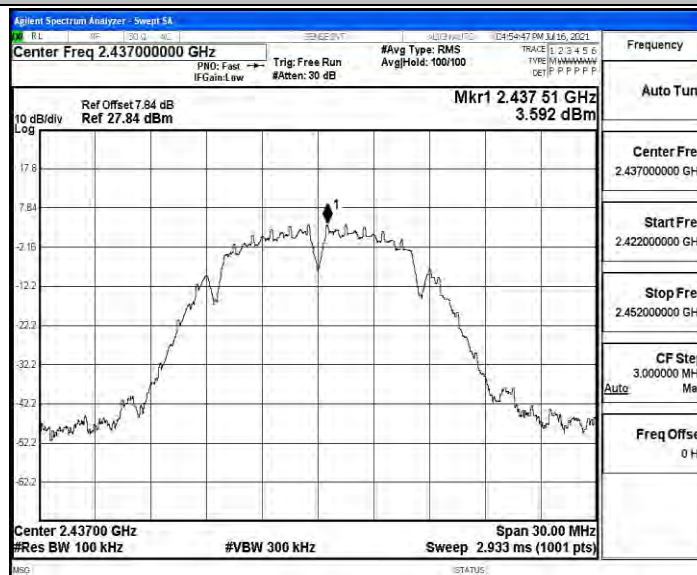


Test Graphs

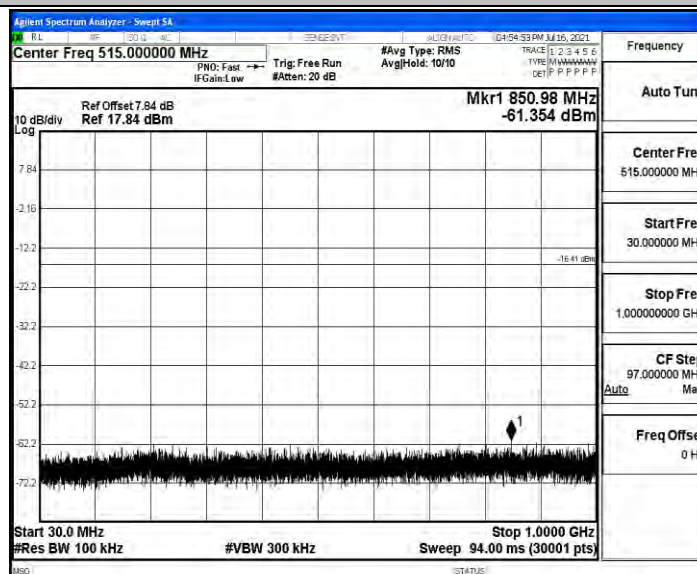




11B_Ant1_2412_1000~26500

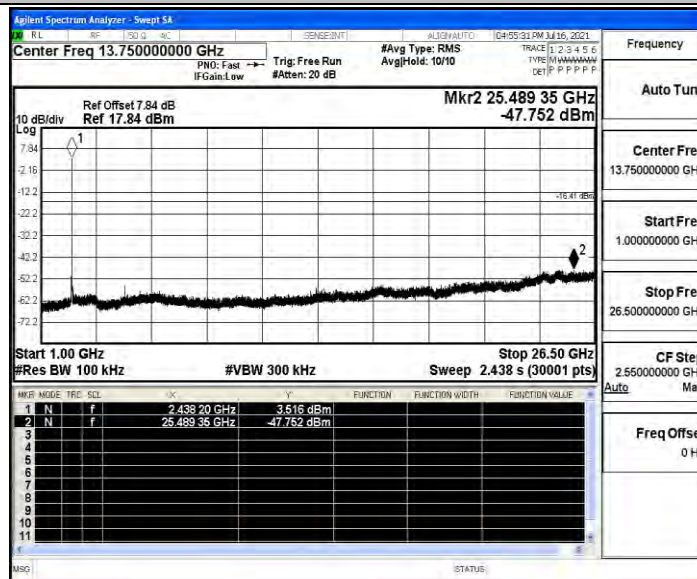


11B_Ant1_2437_0~Reference

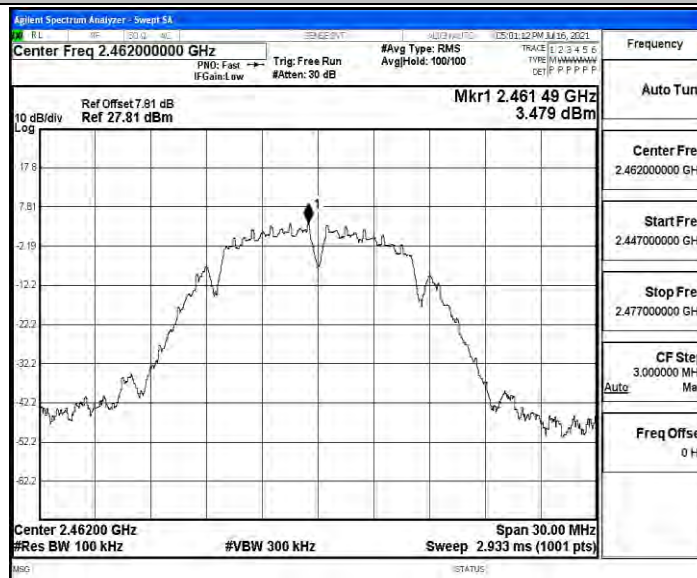




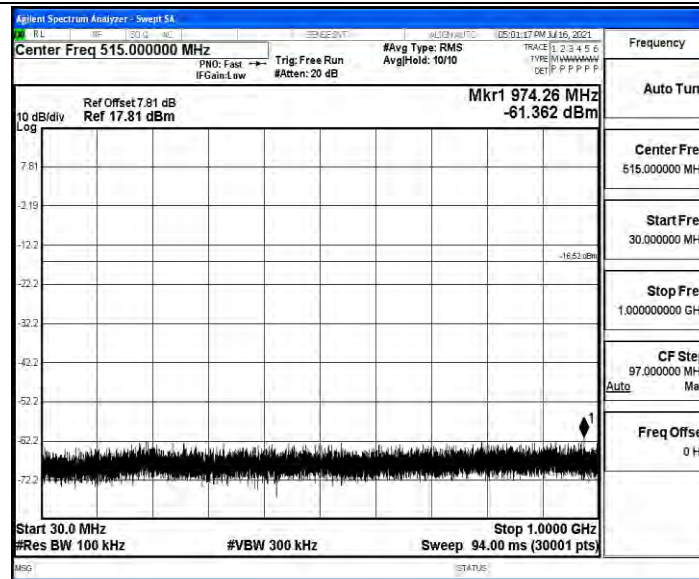
11B_Ant1_2437_30~1000



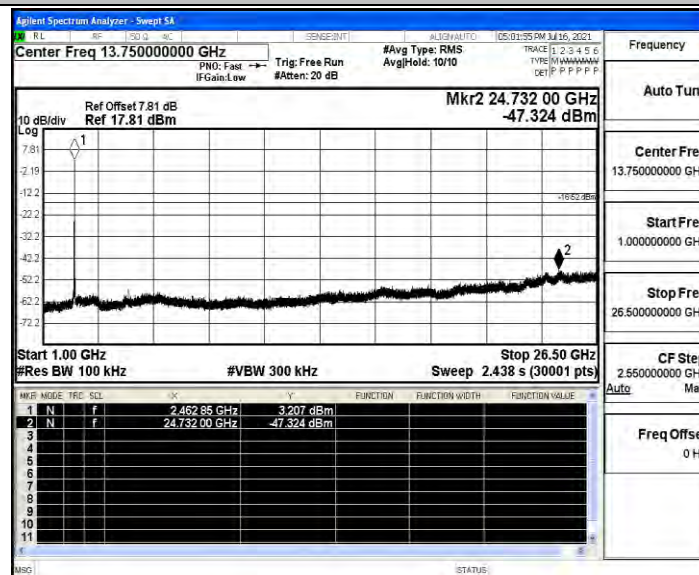
11B_Ant1_2437_1000~26500



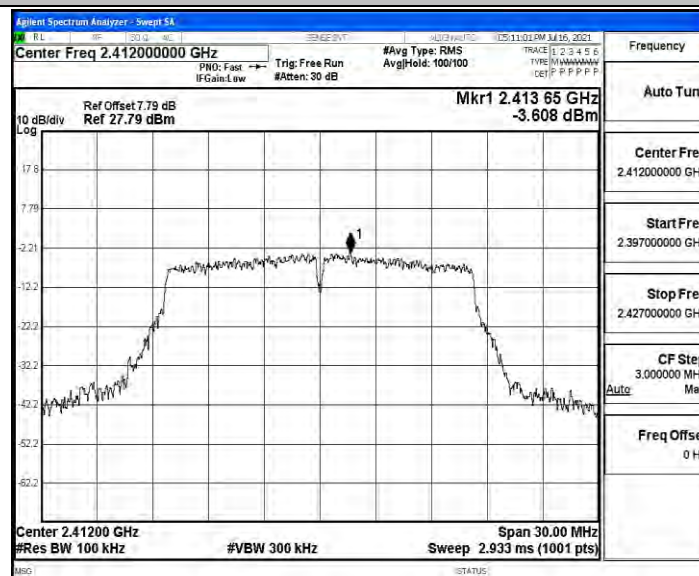
11B_Ant1_2462_0~Reference



11B_Ant1_2462_30~1000

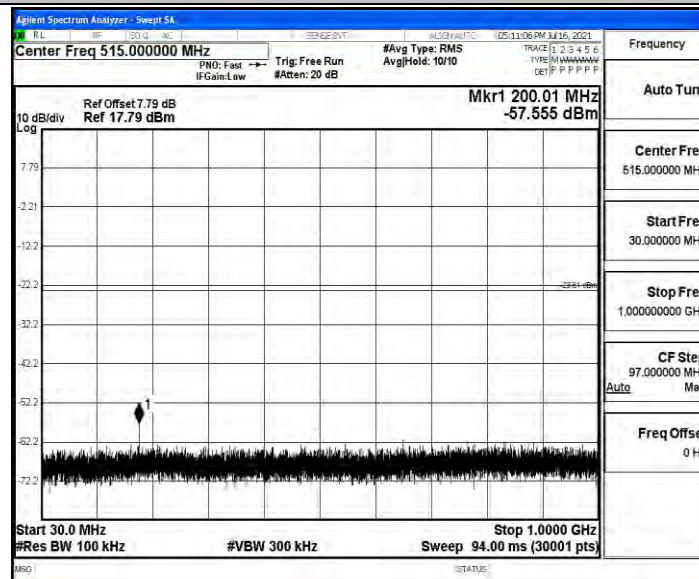


11B_Ant1_2462_1000~26500

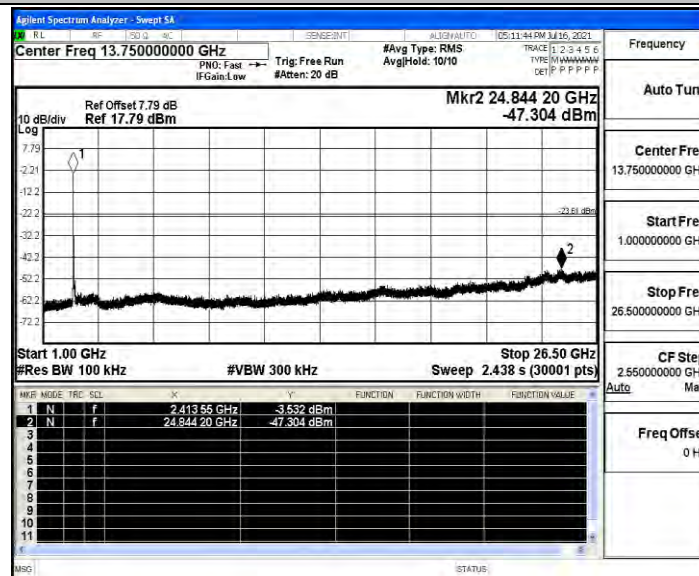




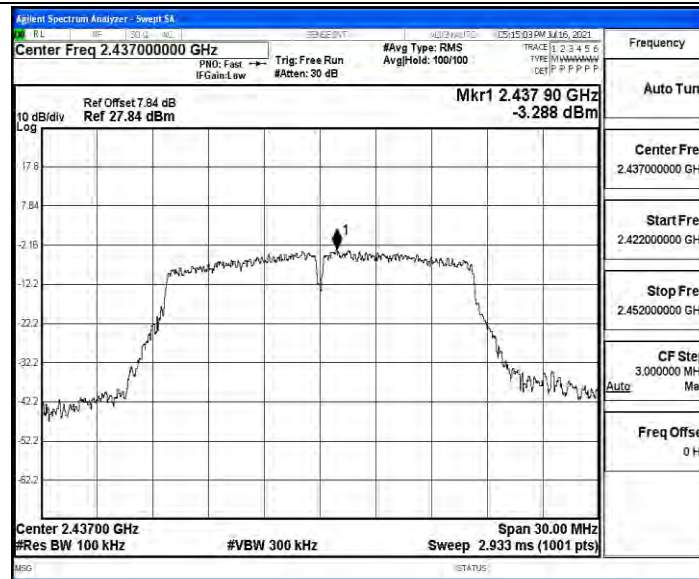
11G_Ant1_2412_0~Reference



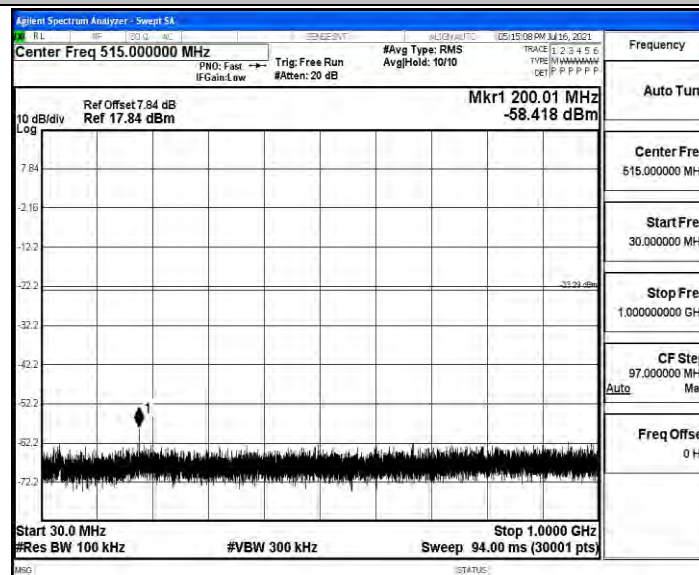
11G_Ant1_2412_30~1000



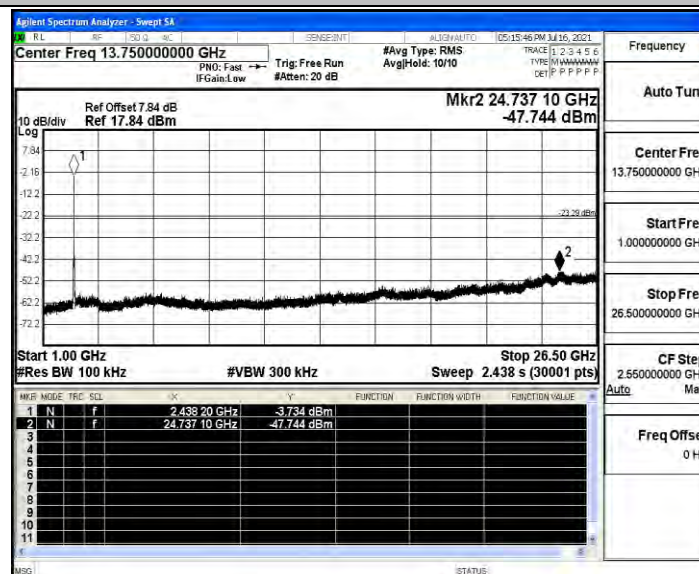
11G_Ant1_2412_1000~26500



11G_Ant1_2437_0~Reference

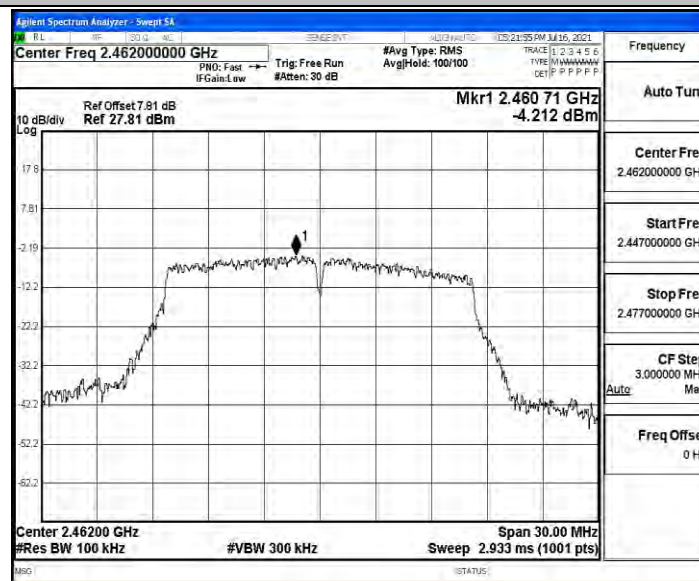


11G_Ant1_2437_30~1000

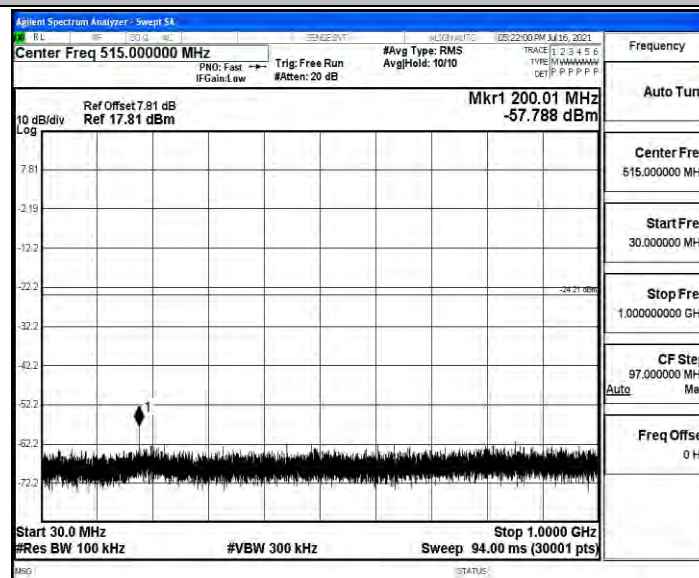




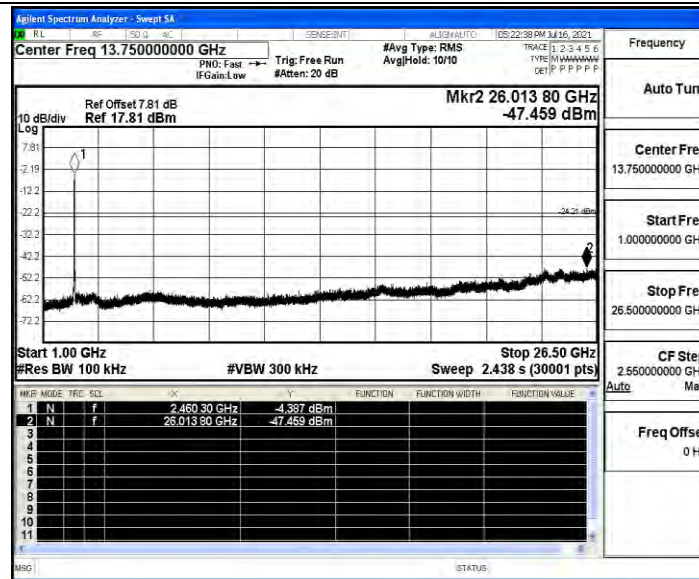
11G_Ant1_2437_1000~26500



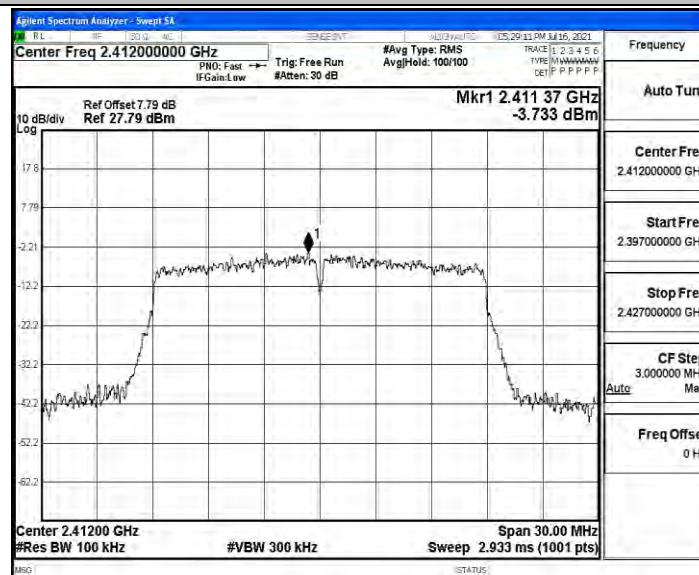
11G_Ant1_2462_0~Reference



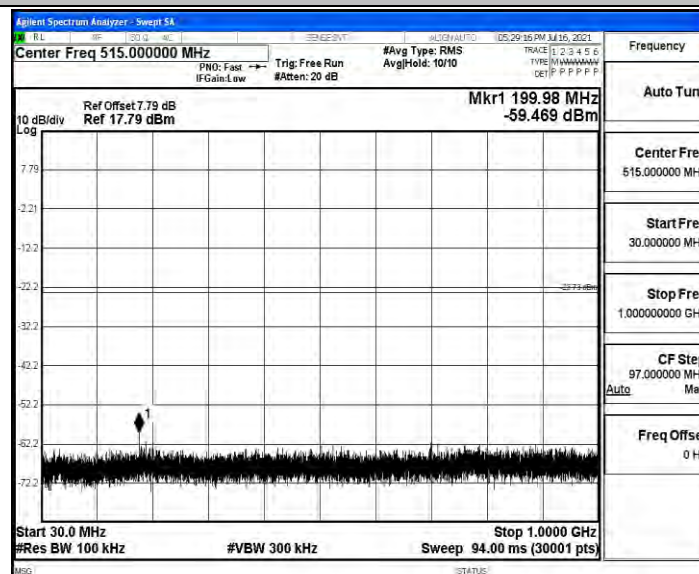
11G_Ant1_2462_30~1000



11G_Ant1_2462_1000~26500

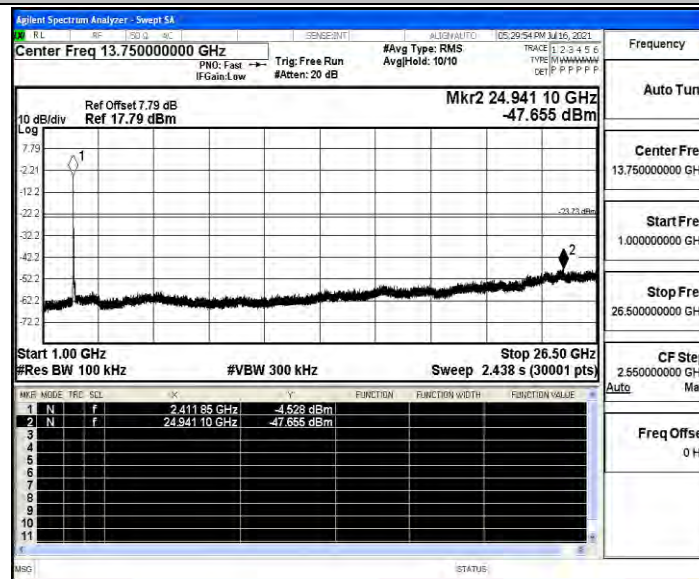


11N20SISO_Ant1_2412_0~Reference

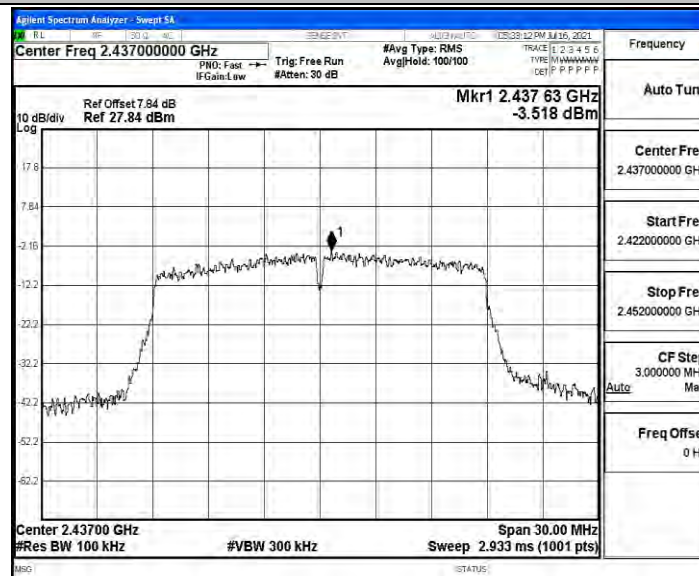




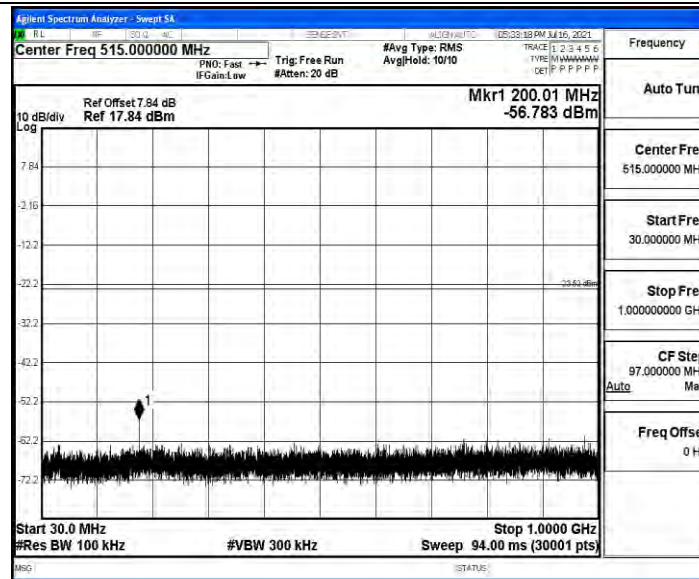
11N20SISO_Ant1_2412_30~1000



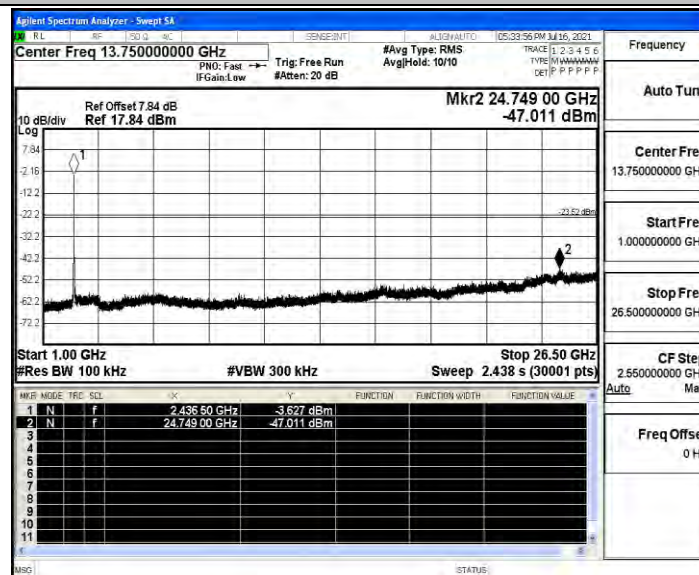
11N20SISO_Ant1_2412_1000~26500



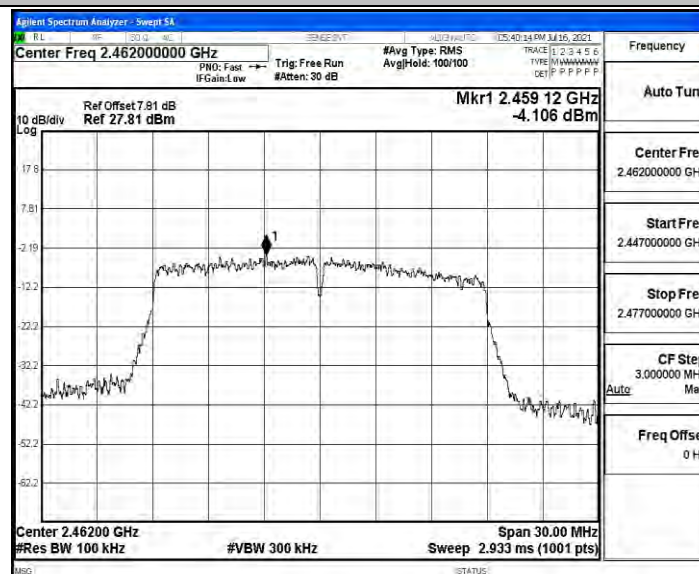
11N20SISO_Ant1_2437_0~Reference



11N20SISO_Ant1_2437_30~1000

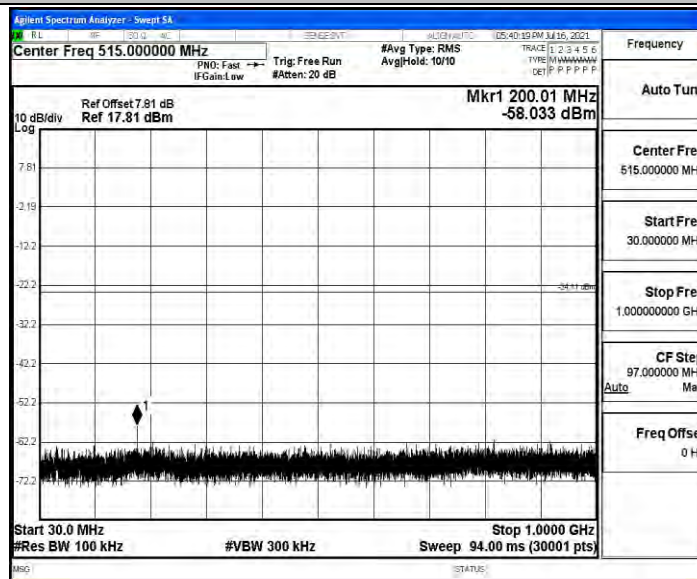


11N20SISO_Ant1_2437_1000~26500

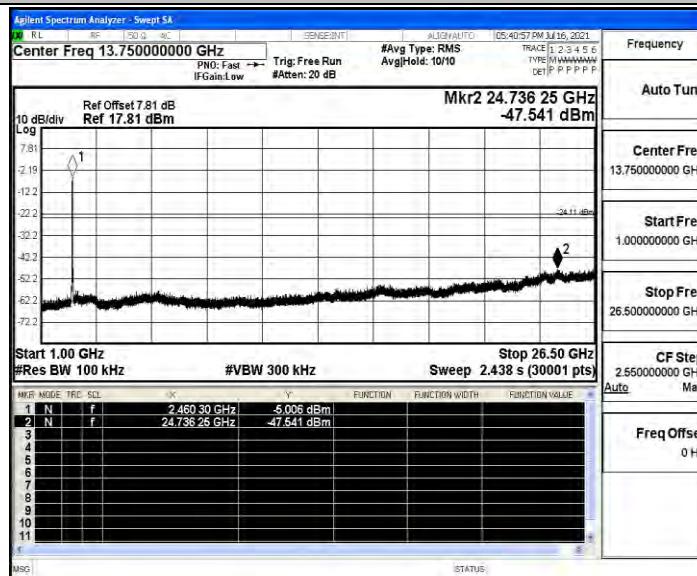




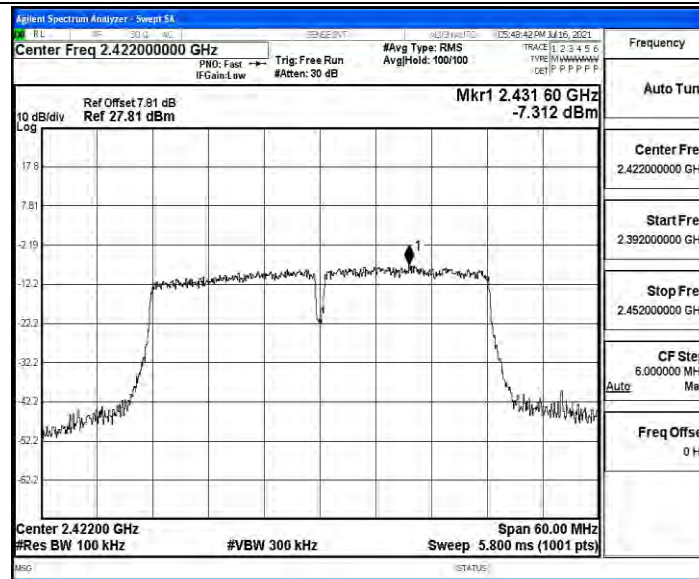
11N20SISO_Ant1_2462_0~Reference



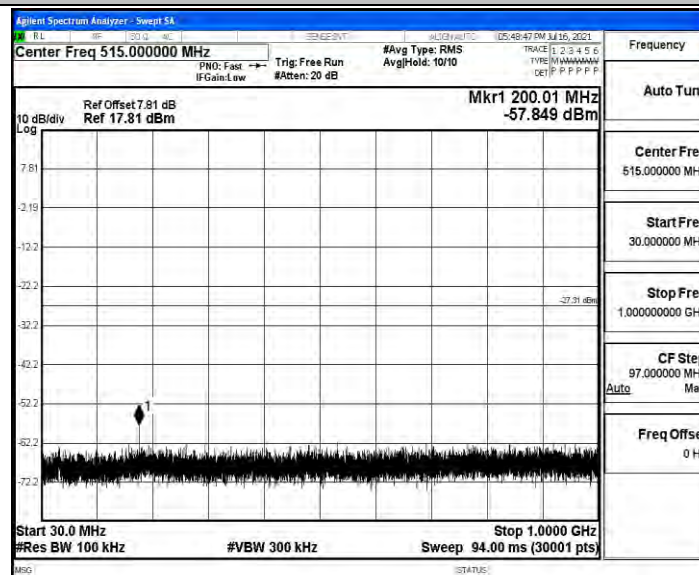
11N20SISO_Ant1_2462_30~1000



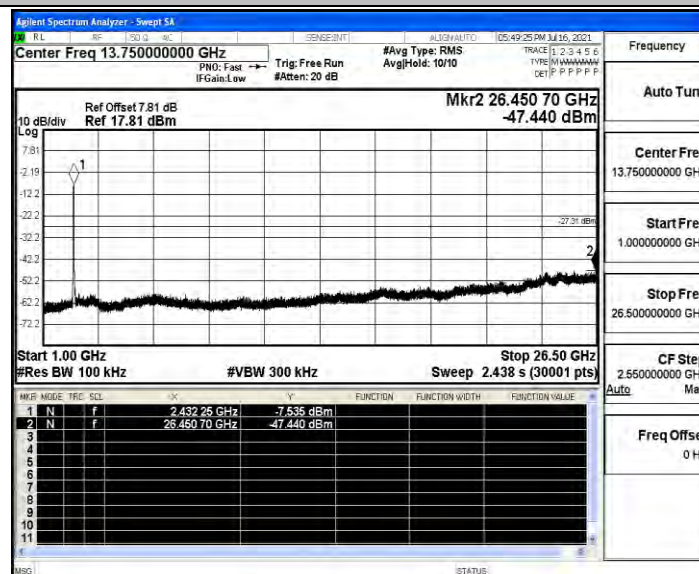
11N20SISO_Ant1_2462_1000~26500



11N40SISO_Ant1_2422_0~Reference

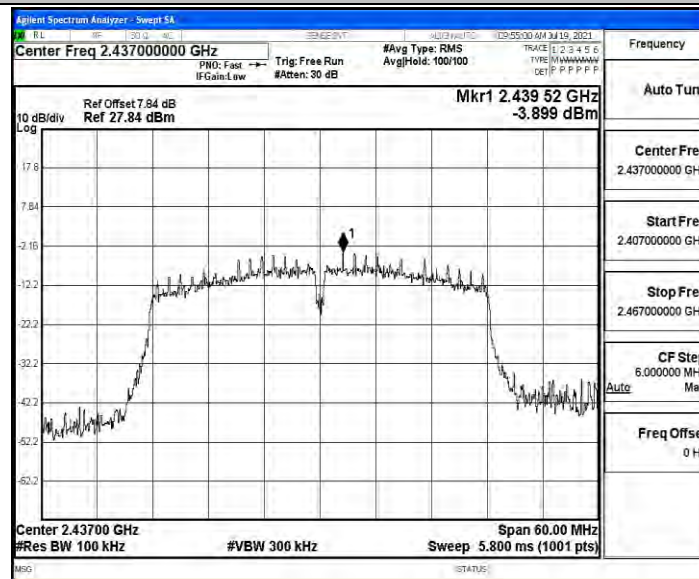


11N40SISO_Ant1_2422_30~1000

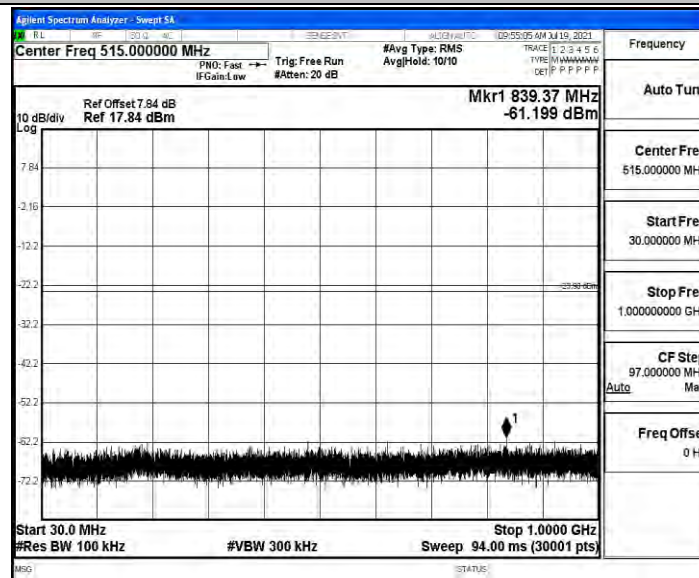




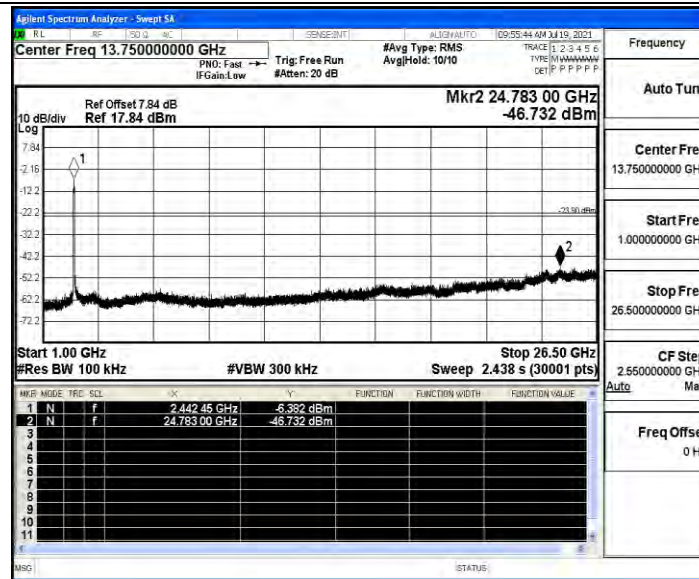
11N40SISO_Ant1_2422_1000~26500



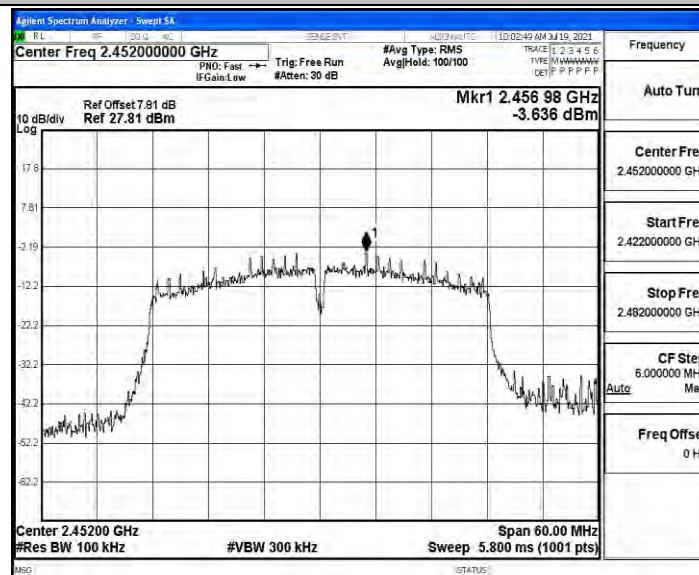
11N40SISO_Ant1_2437_0~Reference



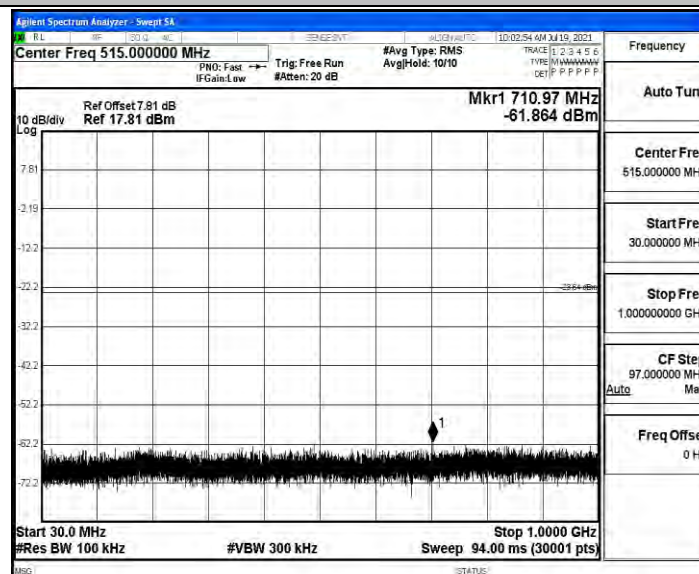
11N40SISO_Ant1_2437_30~1000



11N40SISO_Ant1_2437_1000~26500

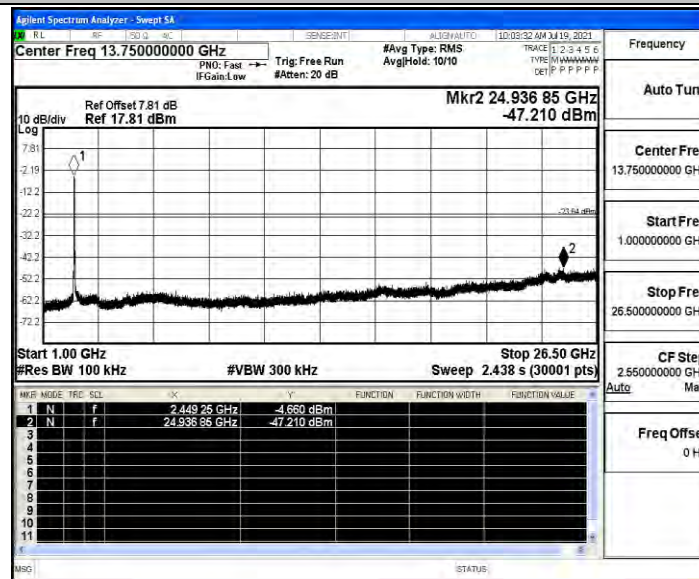


11N40SISO_Ant1_2452_0~Reference





11N40SISO_Ant1_2452_30~1000



11N40SISO_Ant1_2452_1000~26500



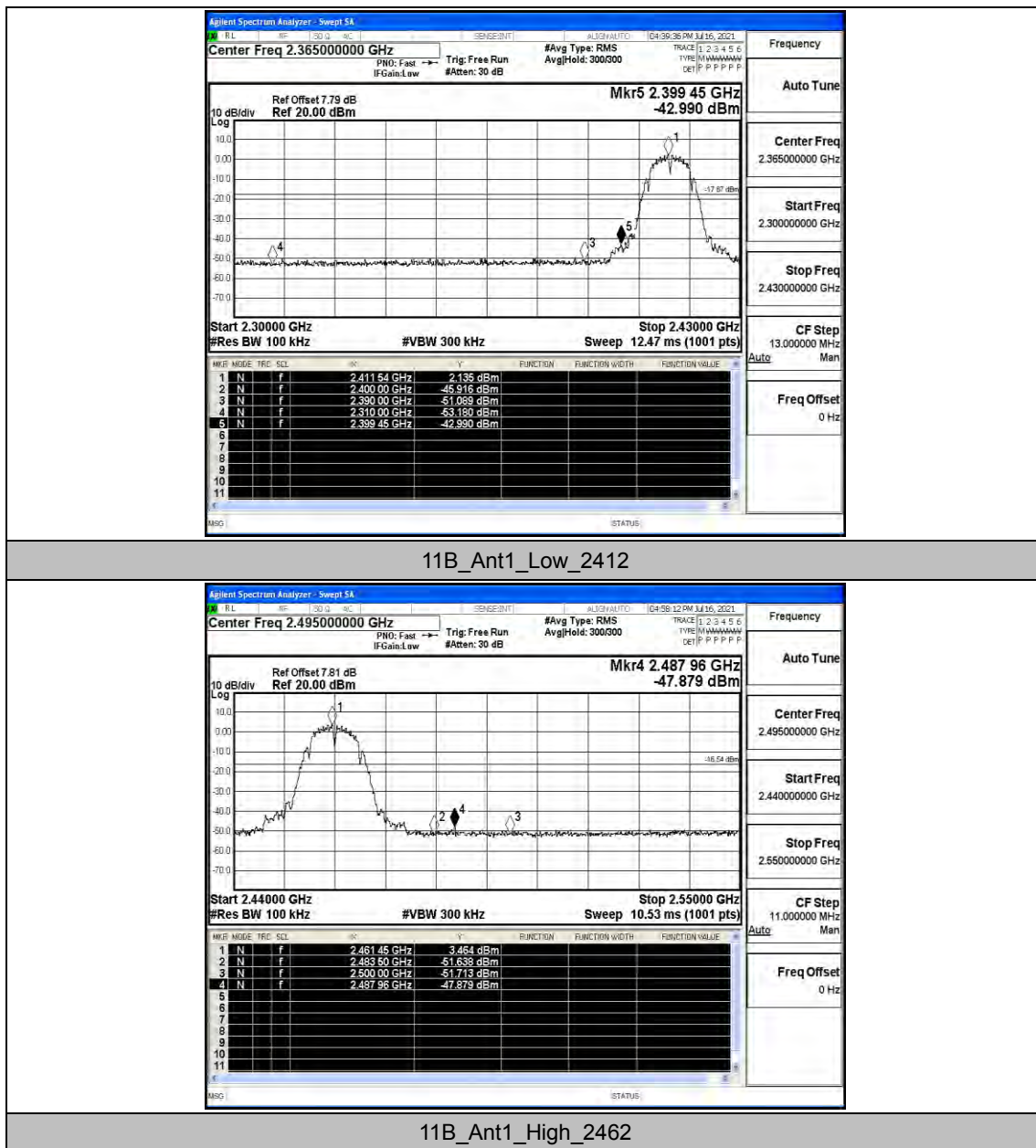
A.6 Band edge measurements

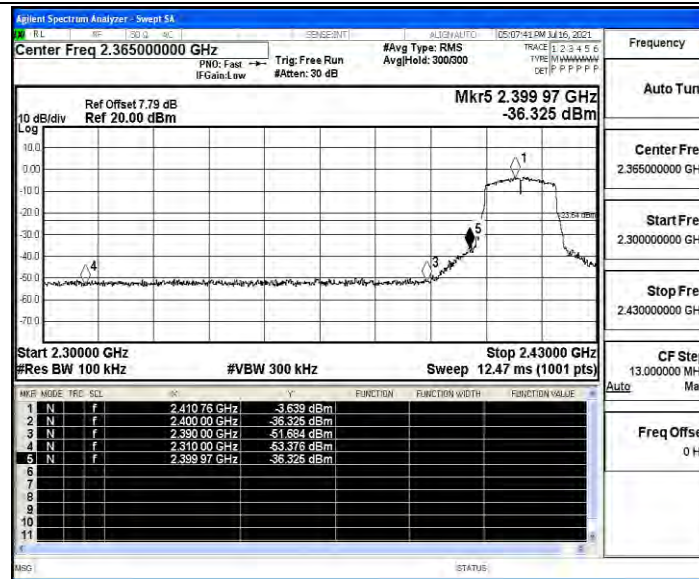
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	2.14	-42.99	≤ -17.87	PASS
		High	2462	3.46	-47.88	≤ -16.54	PASS
11G	Ant1	Low	2412	-3.64	-36.33	≤ -23.64	PASS
		High	2462	-3.90	-44.6	≤ -23.9	PASS
11N20SISO	Ant1	Low	2412	-3.77	-37.11	≤ -23.77	PASS
		High	2462	-4.10	-45.33	≤ -24.1	PASS
11N40SISO	Ant1	Low	2422	-7.17	-42.7	≤ -27.17	PASS
		High	2452	-3.71	-37.42	≤ -23.71	PASS

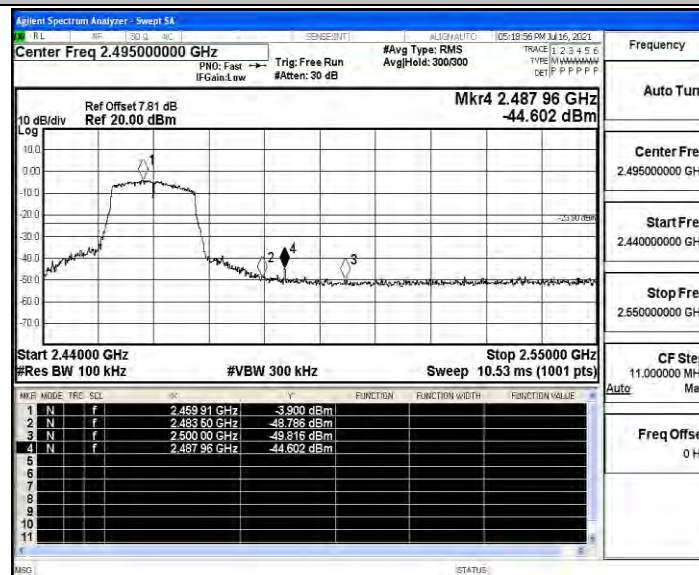


Test Graphs

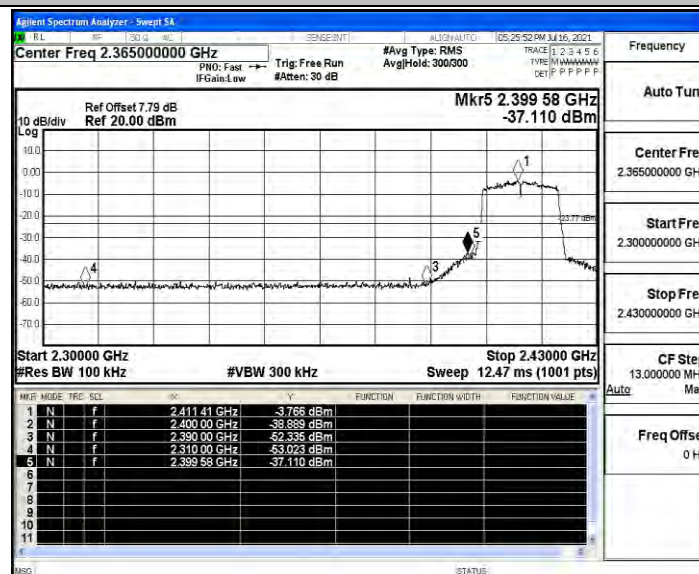




11G_Ant1_Low_2412

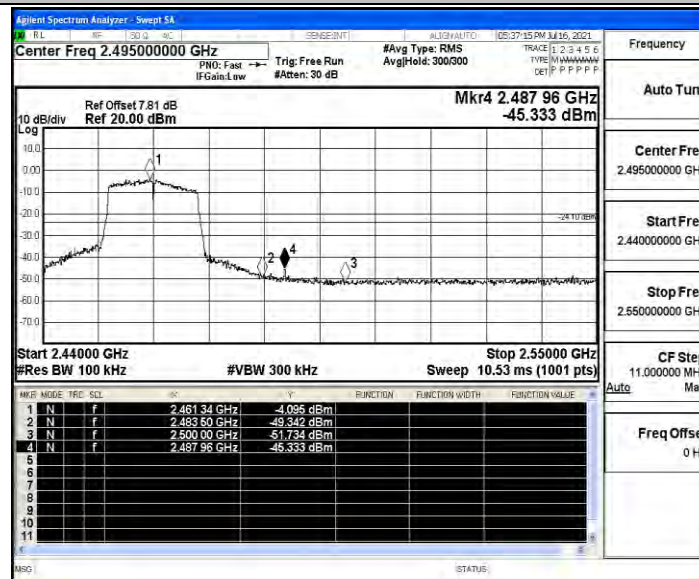


11G_Ant1_High_2462

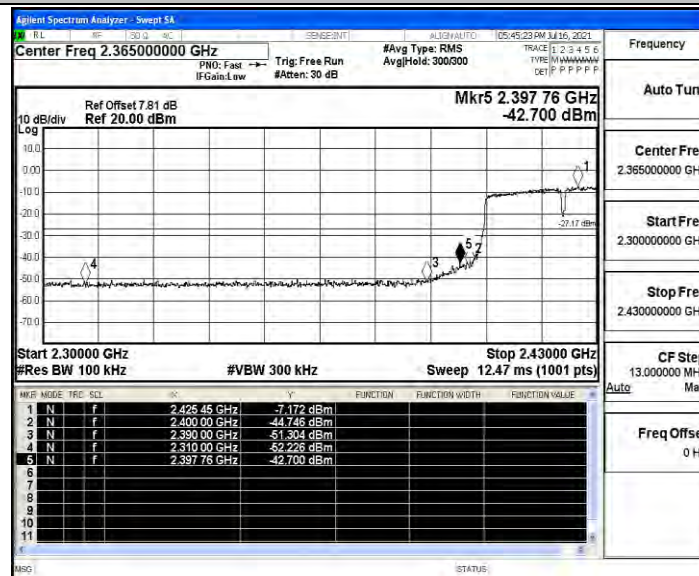




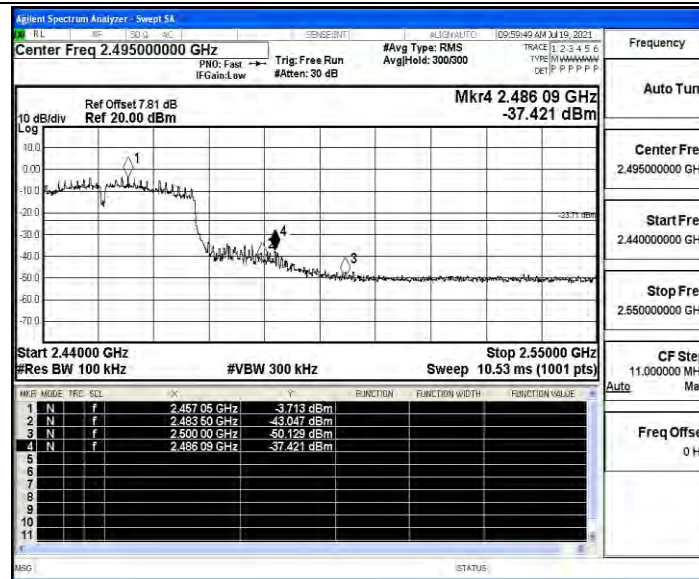
11N20SISO_Ant1_Low_2412



11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452



A.7 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11B	Ant1	Low	2412	AV	2310.000	-49.4	≤-41.20	45.80	≤54	PASS
				AV	2389.050	-48.99	≤-41.20	46.21	≤54	PASS
				AV	2390.000	-48.99	≤-41.20	46.21	≤54	PASS
				Peak	2310.000	-45.08	≤-21.20	50.12	≤74	PASS
				Peak	2374.620	-40.59	≤-21.20	54.61	≤74	PASS
				Peak	2390.000	-42.76	≤-21.20	52.44	≤74	PASS
		High	2462	AV	2483.500	-47.86	≤-41.20	47.34	≤54	PASS
				AV	2487.960	-46.28	≤-41.20	48.92	≤54	PASS
				AV	2500.000	-48.38	≤-41.20	46.82	≤54	PASS
				Peak	2483.500	-42.93	≤-21.20	52.27	≤74	PASS
				Peak	2484.110	-38.41	≤-21.20	56.79	≤74	PASS
				Peak	2500.000	-43.19	≤-21.20	52.01	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-49.37	≤-41.20	45.83	≤54	PASS
				AV	2389.960	-48.43	≤-41.20	46.77	≤54	PASS
				AV	2390.000	-48.43	≤-41.20	46.77	≤54	PASS
				Peak	2310.000	-45.59	≤-21.20	49.61	≤74	PASS
				Peak	2384.760	-39.26	≤-21.20	55.94	≤74	PASS
				Peak	2390.000	-44.32	≤-21.20	50.88	≤74	PASS
		High	2462	AV	2483.500	-45.88	≤-41.20	49.32	≤54	PASS
				AV	2488.070	-44.45	≤-41.20	50.75	≤54	PASS
				AV	2500.000	-48.37	≤-41.20	46.83	≤54	PASS
				Peak	2483.500	-41.39	≤-21.20	53.81	≤74	PASS
				Peak	2484.440	-37.07	≤-21.20	58.13	≤74	PASS
				Peak	2500.000	-41.75	≤-21.20	53.45	≤74	PASS
11N20SIS O	Ant1	Low	2412	AV	2310.000	-49.39	≤-41.20	45.81	≤54	PASS
				AV	2389.960	-48.24	≤-41.20	46.96	≤54	PASS
				AV	2390.000	-48.24	≤-41.20	46.96	≤54	PASS
				Peak	2310.000	-42.11	≤-21.20	53.09	≤74	PASS
				Peak	2362.660	-39.87	≤-21.20	55.33	≤74	PASS
				Peak	2390.000	-42.42	≤-21.20	52.78	≤74	PASS
		High	2462	AV	2483.500	-45.42	≤-41.20	49.78	≤54	PASS
				AV	2487.960	-44.45	≤-41.20	50.75	≤54	PASS
				AV	2500.000	-48.37	≤-41.20	46.83	≤54	PASS
				Peak	2483.500	-40.65	≤-21.20	54.55	≤74	PASS
				Peak	2485.320	-36.71	≤-21.20	58.49	≤74	PASS
				Peak	2500.000	-42.19	≤-21.20	53.01	≤74	PASS
11N40SIS	Ant1	Low	2422	AV	2310.000	-49.33	≤-41.20	45.87	≤54	PASS



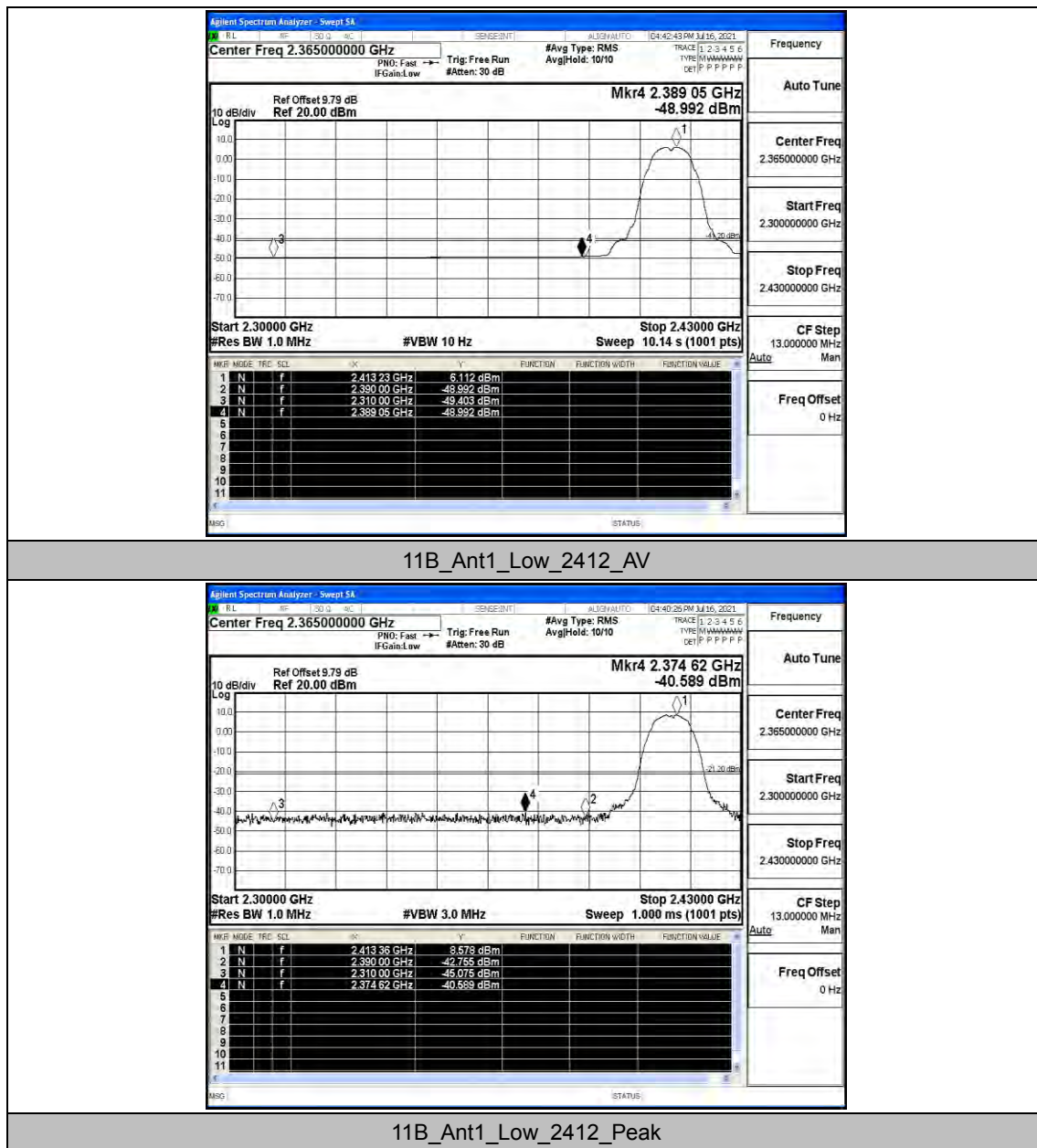
O				AV	2389.960	-47.86	≤ -41.20	47.34	≤ 54	PASS
				AV	2390.000	-47.86	≤ -41.20	47.34	≤ 54	PASS
				Peak	2310.000	-45.37	≤ -21.20	49.83	≤ 74	PASS
				Peak	2356.680	-39.86	≤ -21.20	55.34	≤ 74	PASS
				Peak	2390.000	-42.76	≤ -21.20	52.44	≤ 74	PASS
		High	2452	AV	2483.500	-44.01	≤ -41.20	51.19	≤ 54	PASS
				AV	2483.560	-44.03	≤ -41.20	51.17	≤ 54	PASS
				AV	2500.000	-48.38	≤ -41.20	46.82	≤ 54	PASS
				Peak	2483.500	-39.63	≤ -21.20	55.57	≤ 74	PASS
				Peak	2483.560	-35.83	≤ -21.20	59.37	≤ 74	PASS
				Peak	2500.000	-42.51	≤ -21.20	52.69	≤ 74	PASS

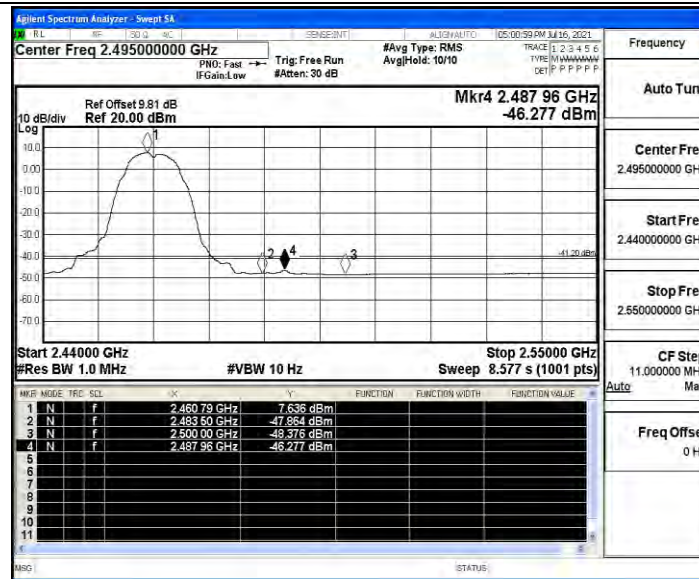
Note:

1. The Antenna Gain is compensated in the graph.
2. 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.

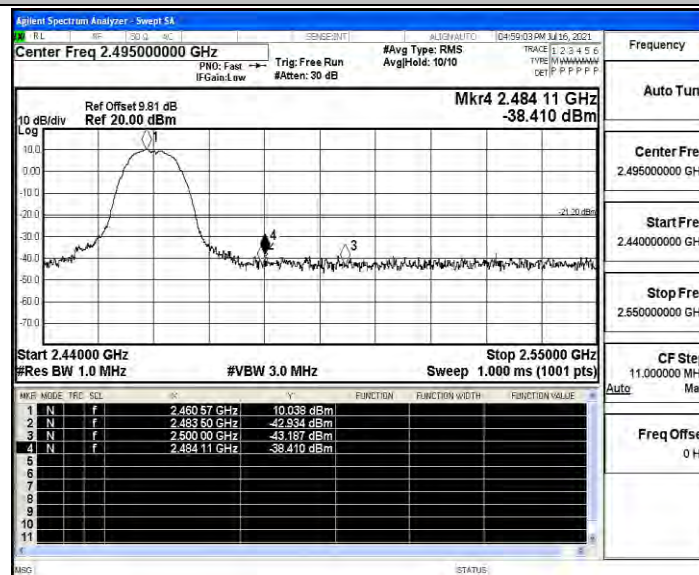


Test Graphs

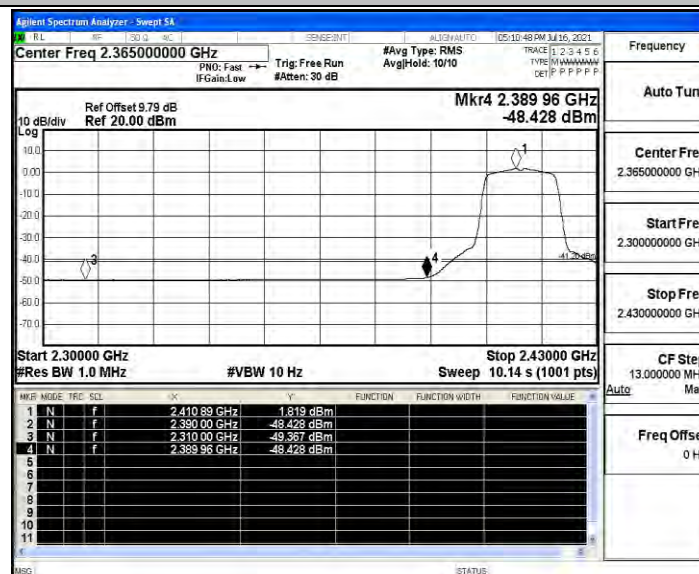




11B_Ant1_High_2462_AV

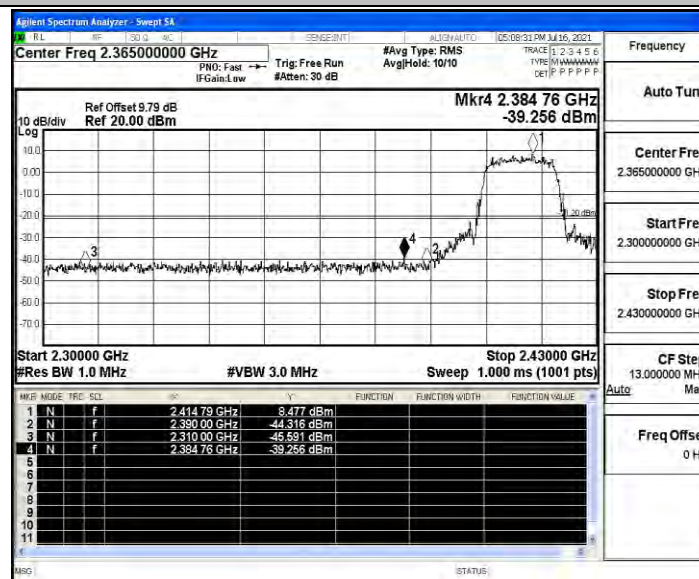


11B_Ant1_High_2462_Peak

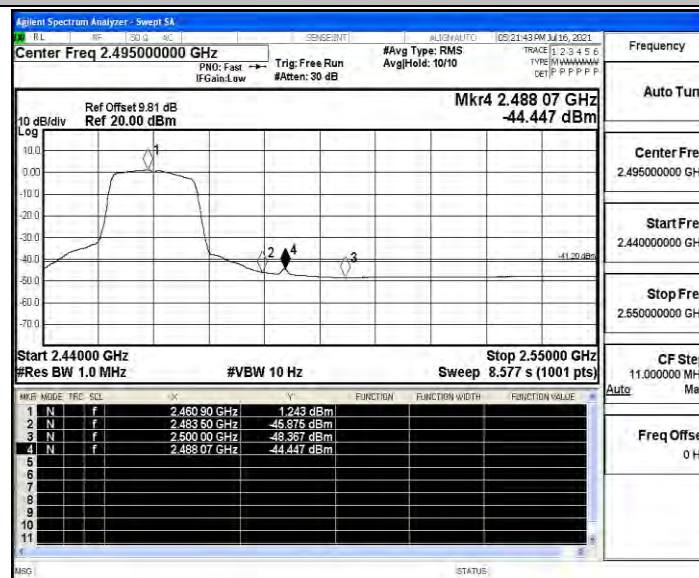




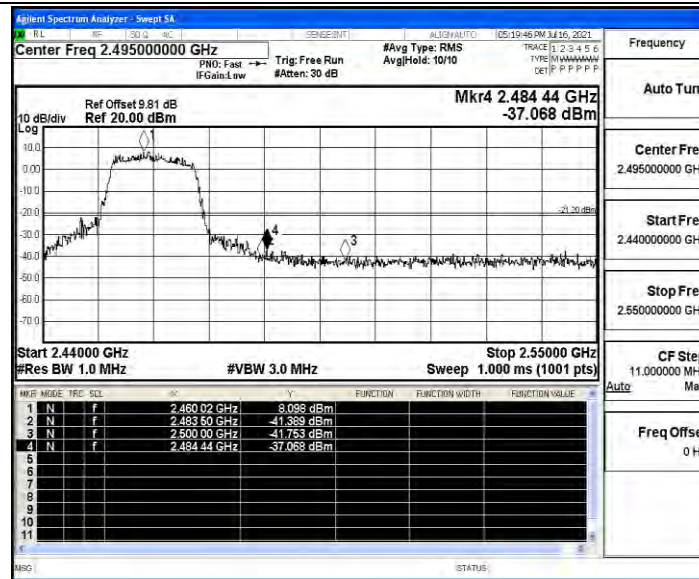
11G_Ant1_Low_2412_AV



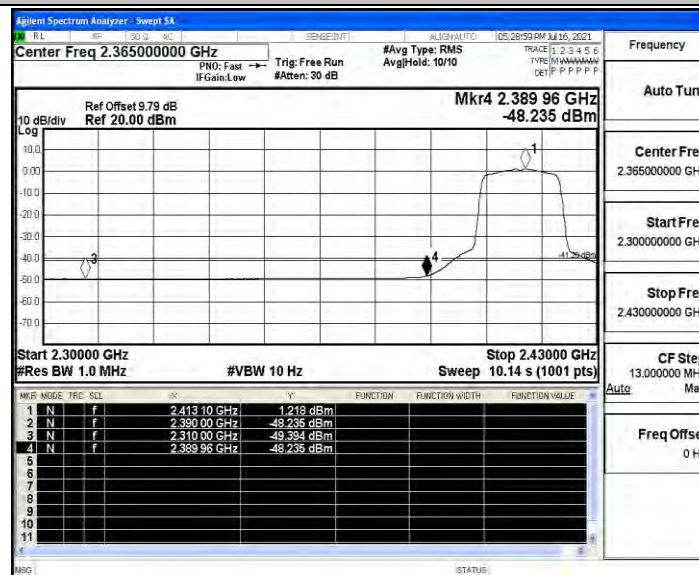
11G_Ant1_Low_2412_Peak



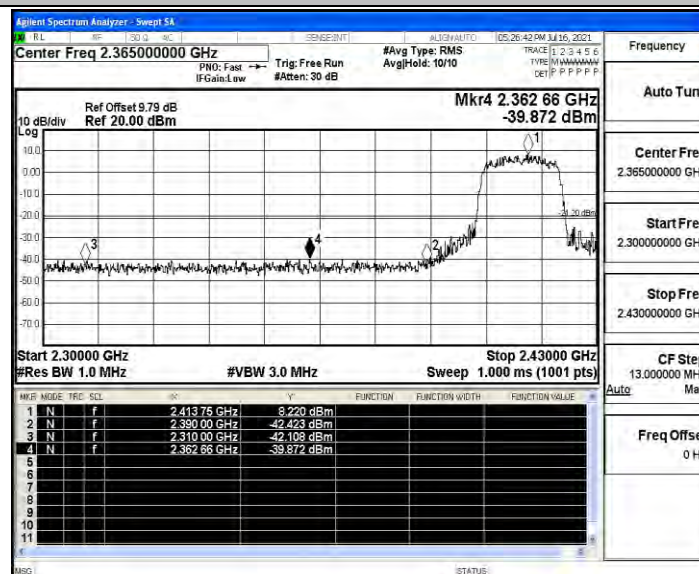
11G_Ant1_High_2462_AV



11G_Ant1_High_2462_Peak

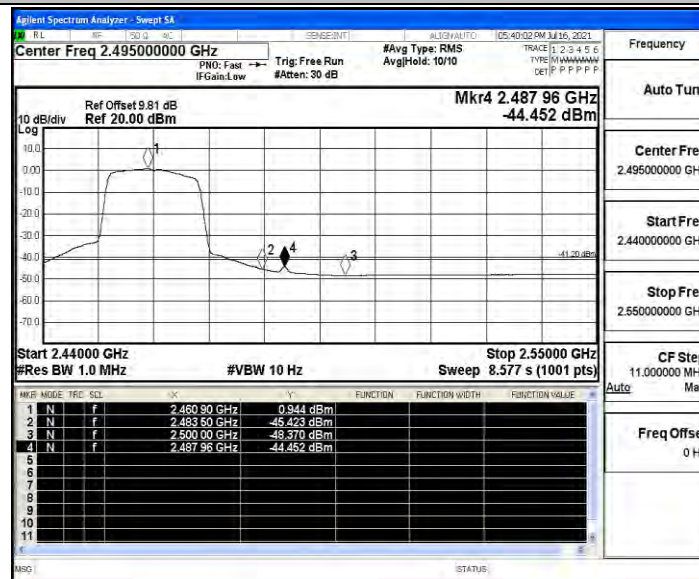


11N20SISO_Ant1_Low_2412_AV

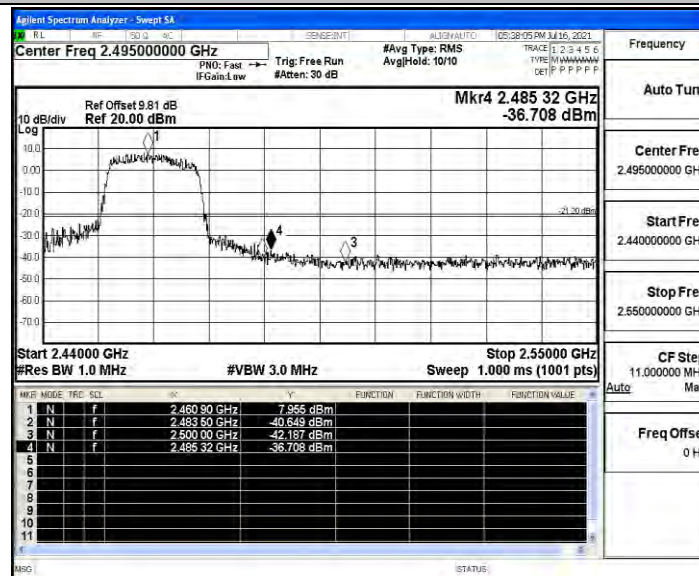




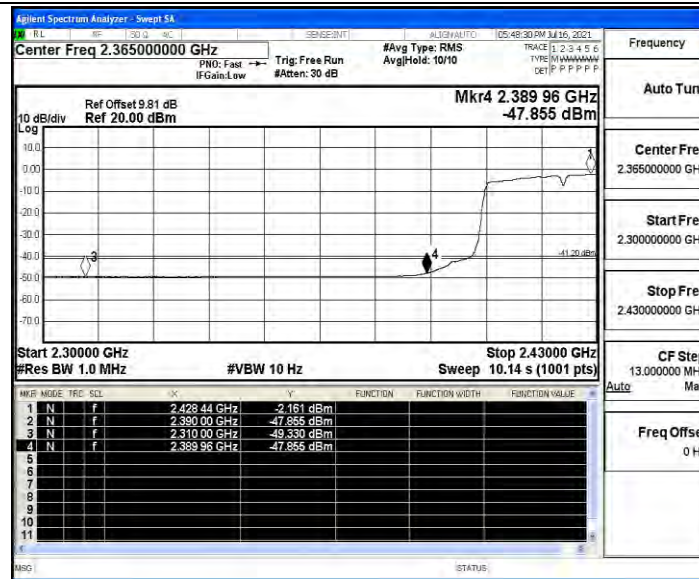
11N20SISO_Ant1_Low_2412_Peak



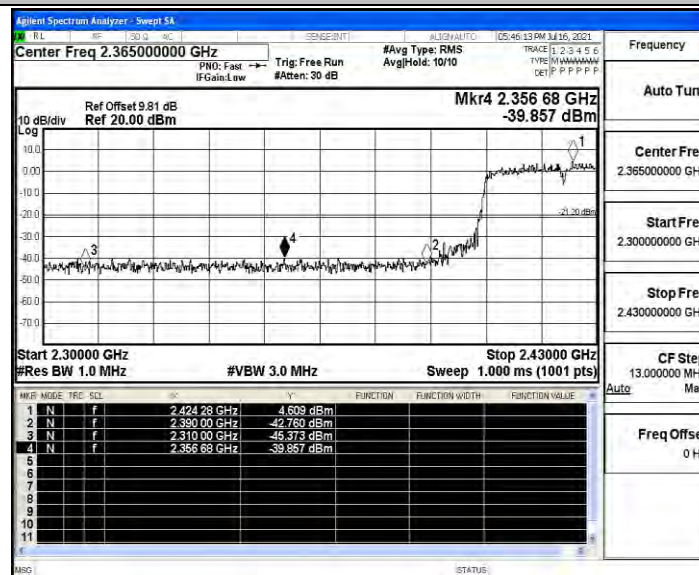
11N20SISO_Ant1_High_2462_AV



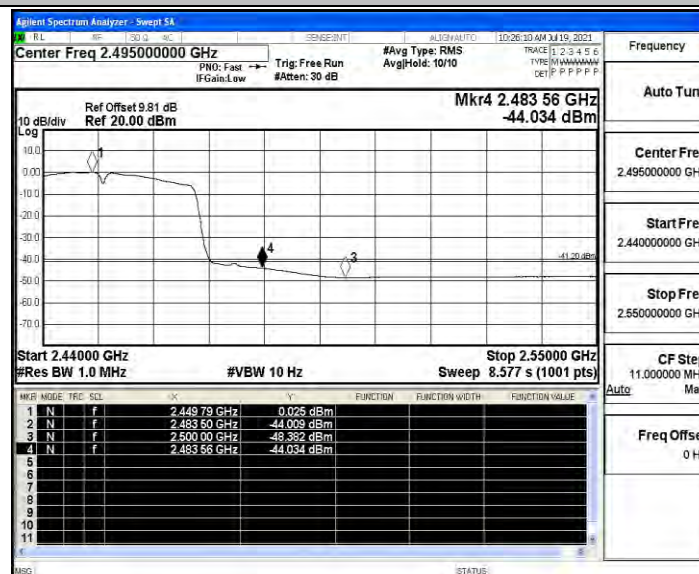
11N20SISO_Ant1_High_2462_Peak



11N40SISO_Ant1_Low_2422_AV

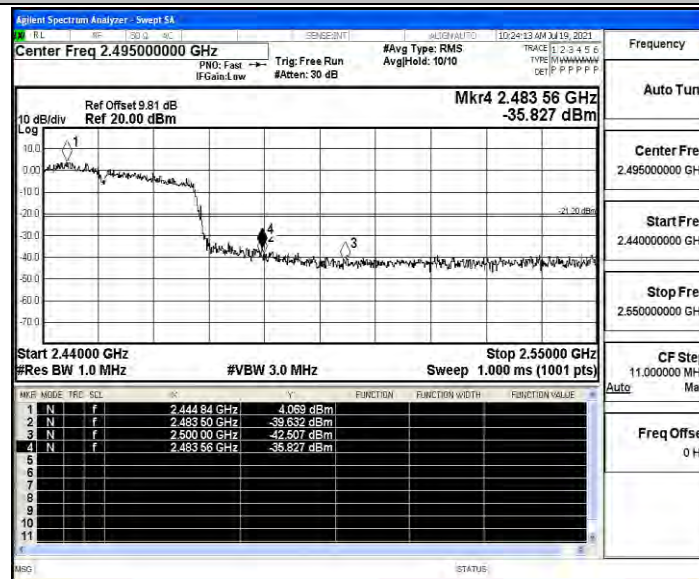


11N40SISO_Ant1_Low_2422_Peak





11N40SISO_Ant1_High_2452_AV



11N40SISO_Ant1_High_2452_Peak