



Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Wi-Fi Smart LED Filament Bulb

Test Model: B02-F-A19

Environmental Conditions

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



A.1 DTS Bandwidth

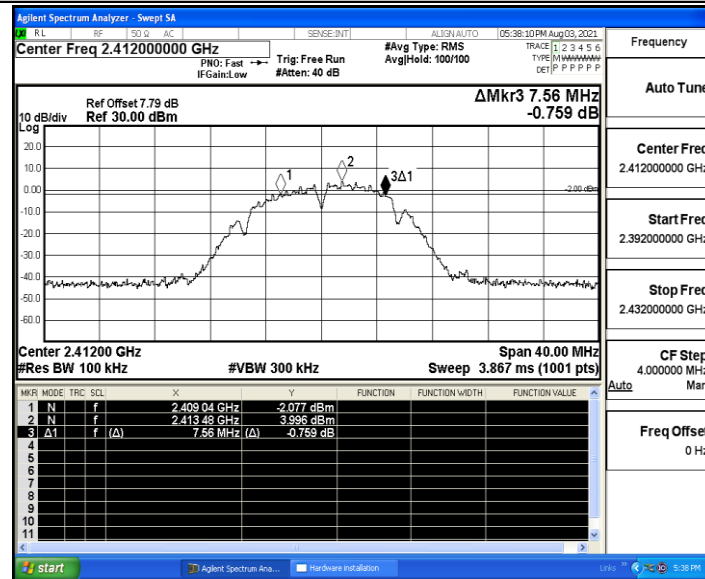
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	7.560	2409.040	2416.600	0.5	PASS
		2437	9.640	2432.400	2442.040	0.5	PASS
		2462	8.760	2456.840	2465.600	0.5	PASS
11G	Ant1	2412	11.800	2407.360	2419.160	0.5	PASS
		2437	16.600	2428.720	2445.320	0.5	PASS
		2462	10.280	2453.680	2463.960	0.5	PASS
11N20SISO	Ant1	2412	14.240	2406.560	2420.800	0.5	PASS
		2437	17.840	2428.120	2445.960	0.5	PASS
		2462	7.760	2453.040	2460.800	0.5	PASS

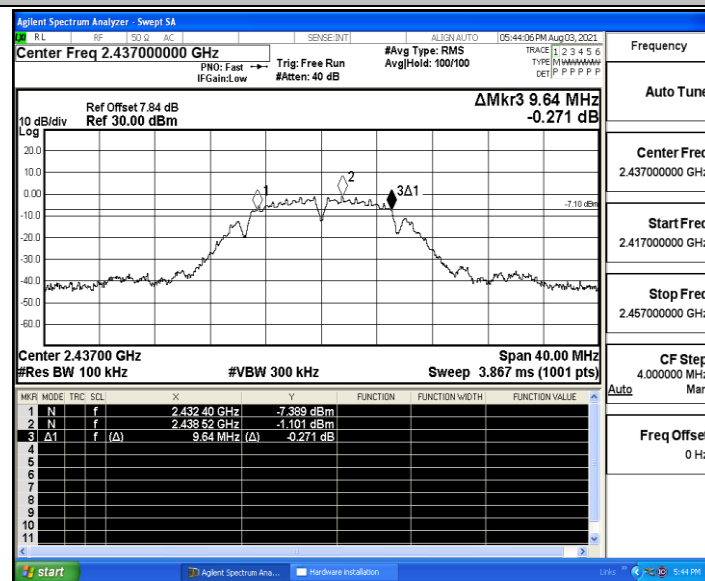


Test Graphs

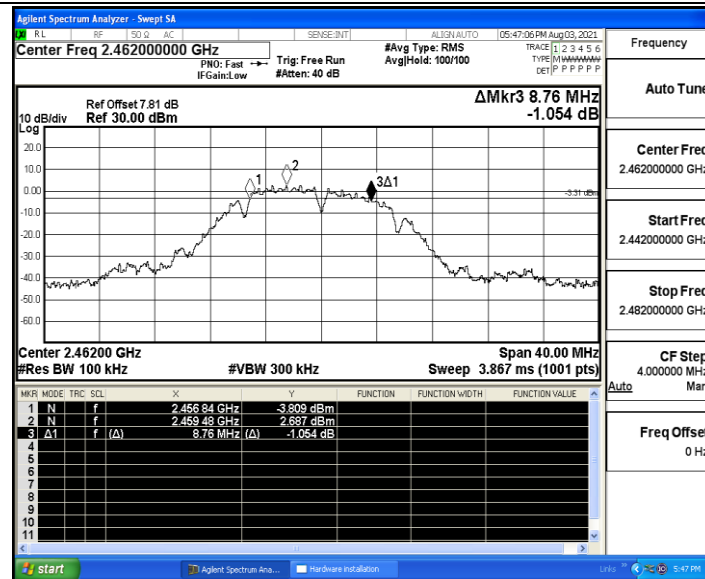
11B_Ant1_2412



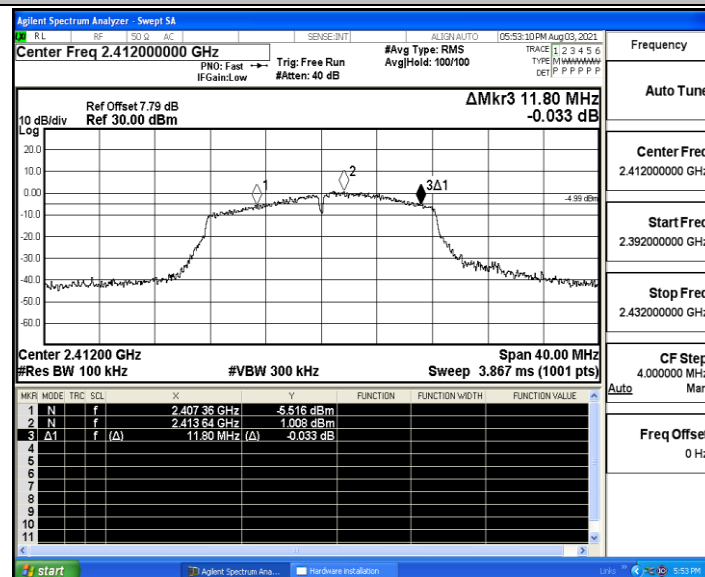
11B_Ant1_2437



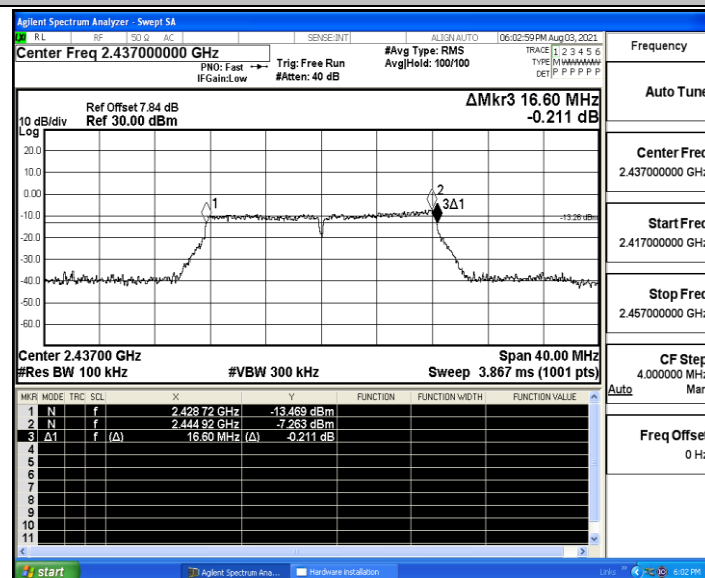
11B_Ant1_2462



11G_Ant1_2412

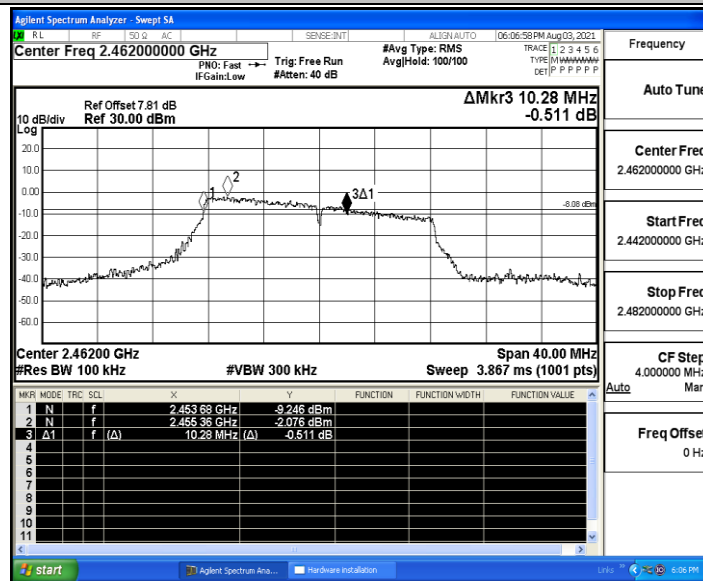


11G_Ant1_2437

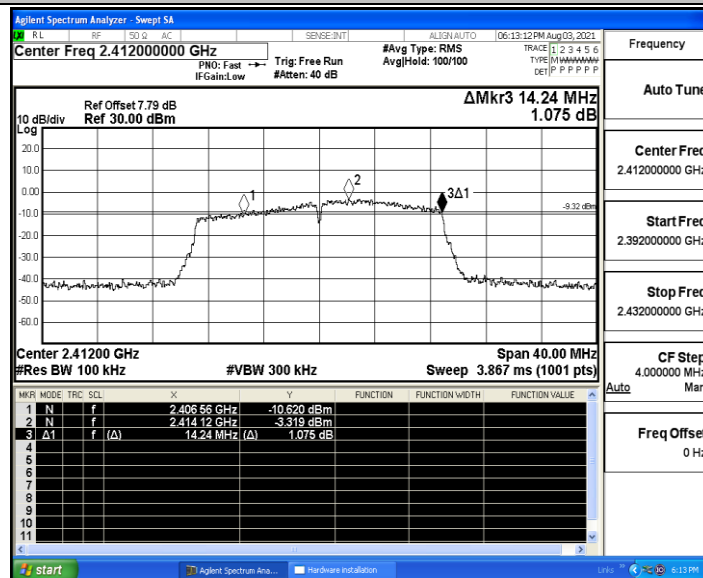




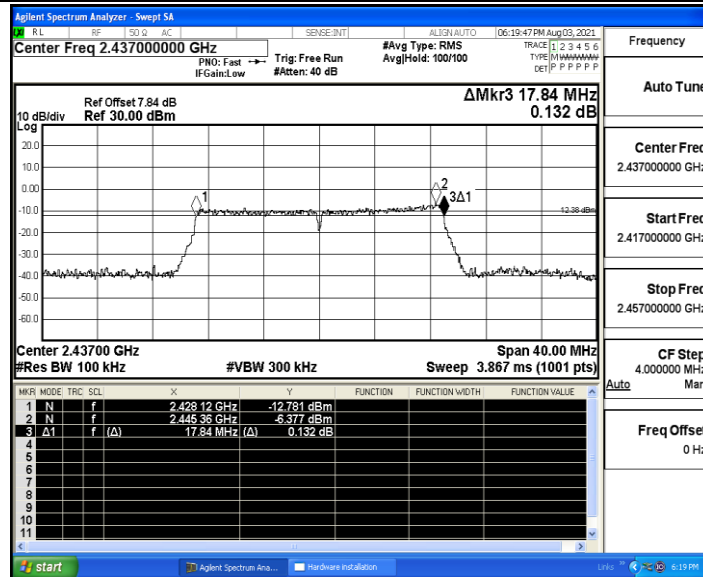
11G_Ant1_2462



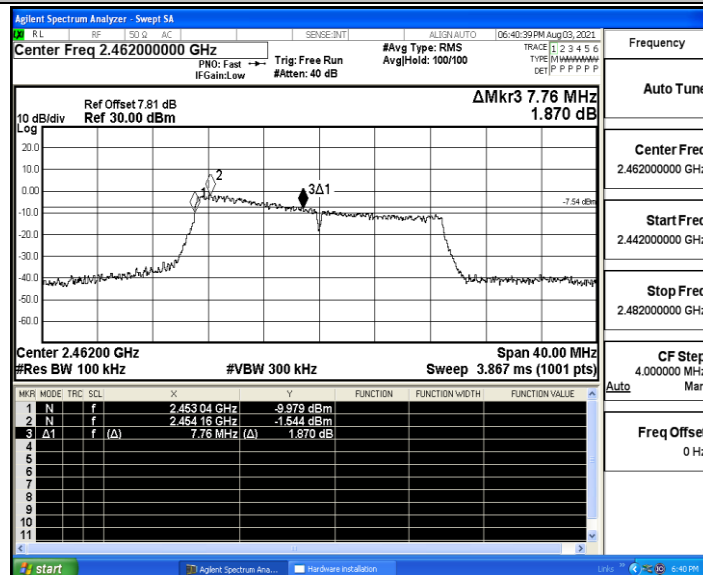
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462





A.3 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	14.92	≤30	PASS
		2437	13.59	≤30	PASS
		2462	14.93	≤30	PASS
11G	Ant1	2412	13.91	≤30	PASS
		2437	15.34	≤30	PASS
		2462	13.23	≤30	PASS
11N20SISO	Ant1	2412	14.41	≤30	PASS
		2437	14.80	≤30	PASS
		2462	12.16	≤30	PASS



A.4 Maximum power spectral density

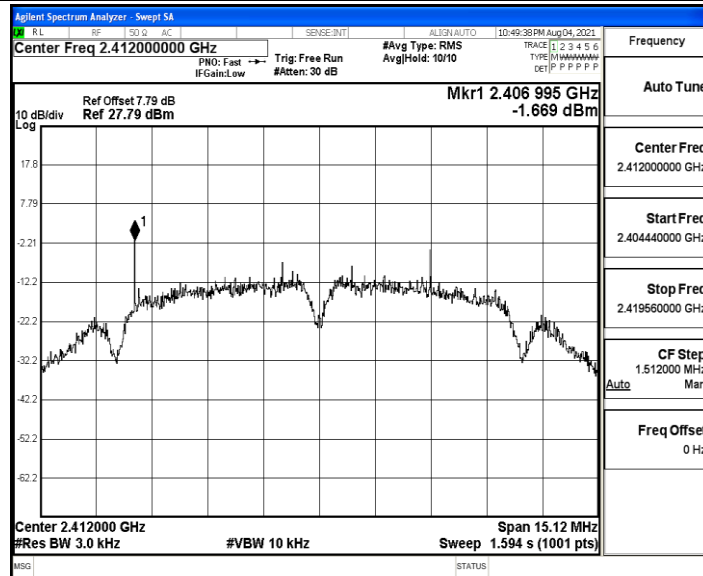
Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-1.67	≤8	PASS
		2437	-11.17	≤8	PASS
		2462	-2.53	≤8	PASS
11G	Ant1	2412	-16.09	≤8	PASS
		2437	-16.74	≤8	PASS
		2462	-16.15	≤8	PASS
11N20SISO	Ant1	2412	-16.38	≤8	PASS
		2437	-16.05	≤8	PASS
		2462	-15.07	≤8	PASS

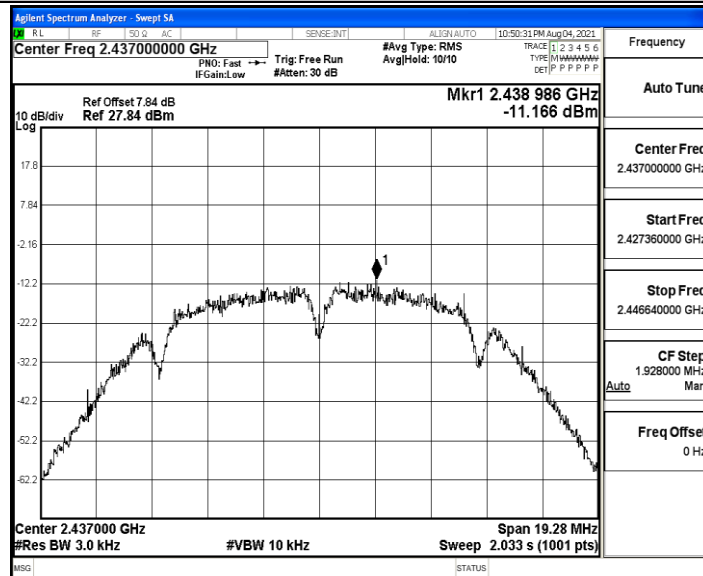


Test Graphs

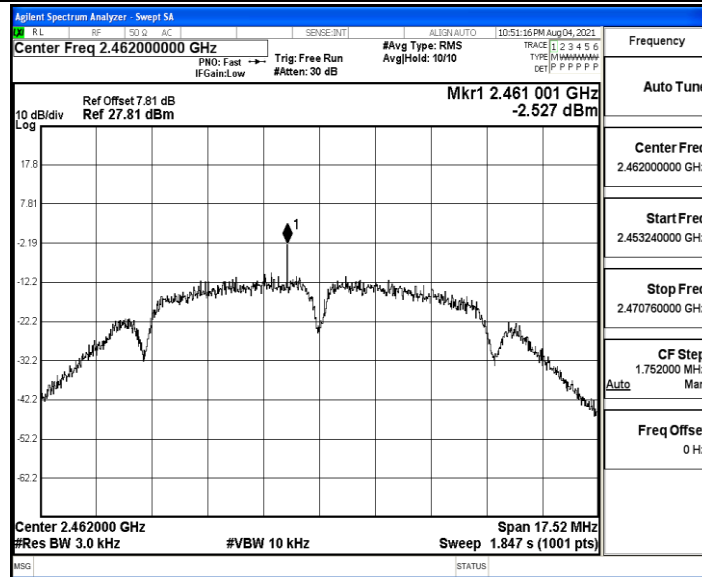
11B_Ant1_2412



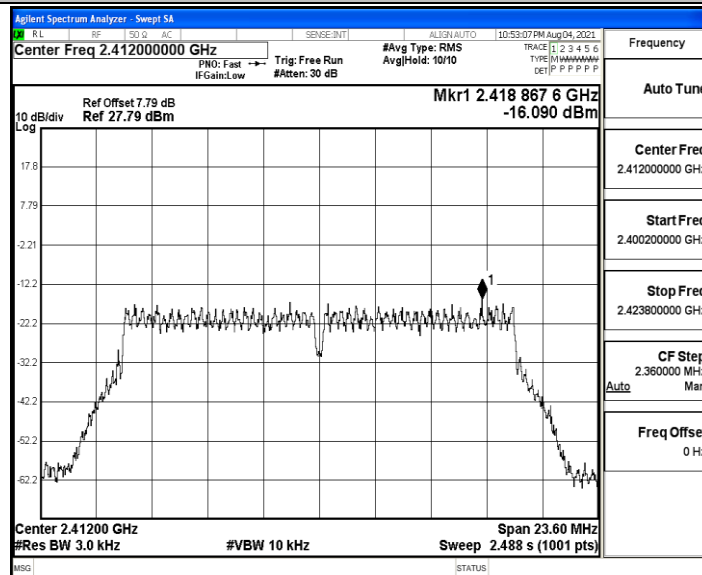
11B_Ant1_2437



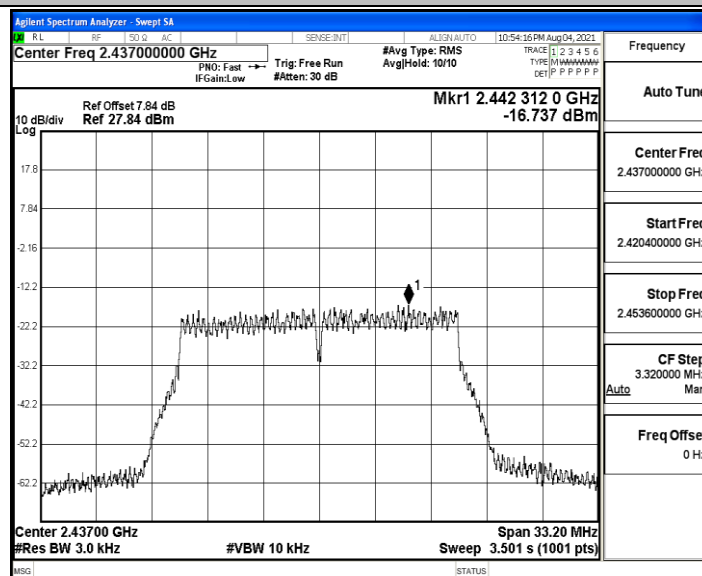
11B_Ant1_2462



11G_Ant1_2412

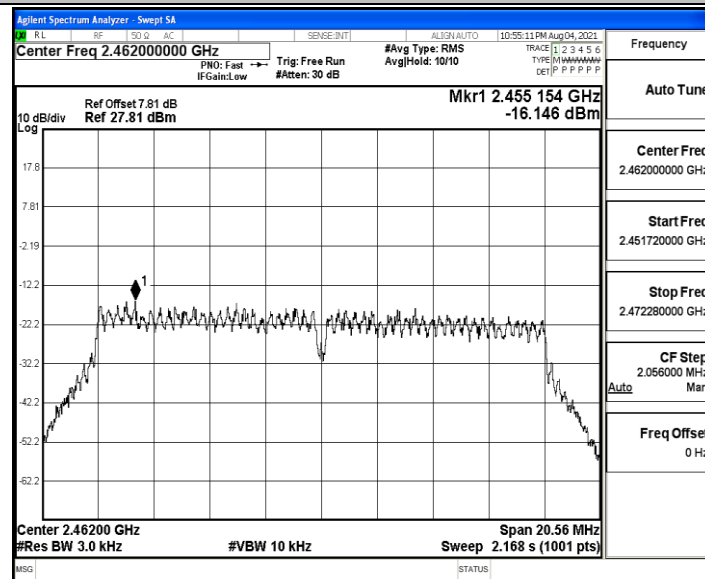


11G_Ant1_2437

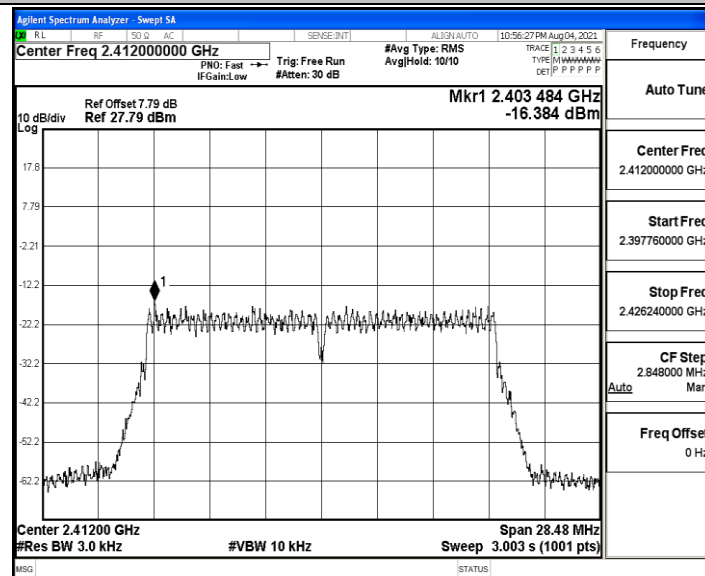




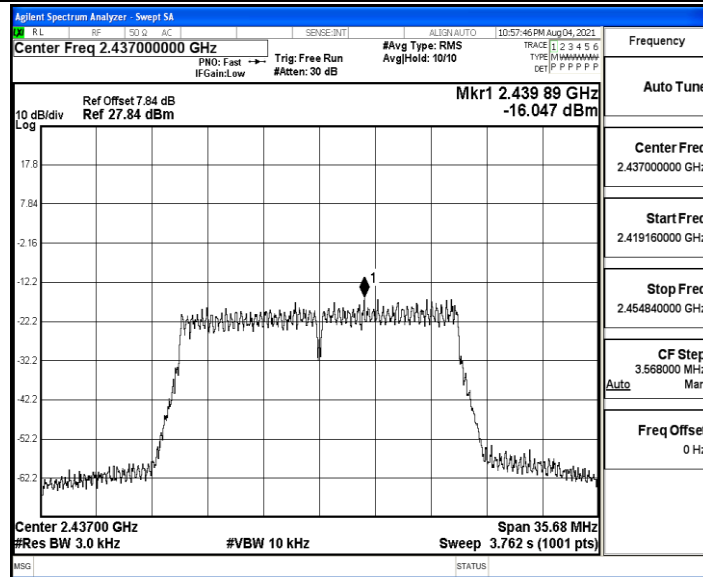
11G_Ant1_2462



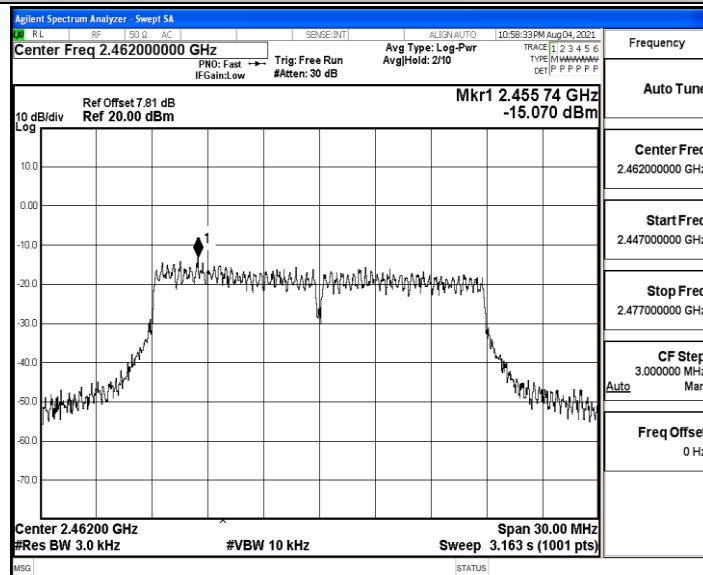
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462



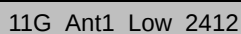
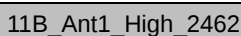


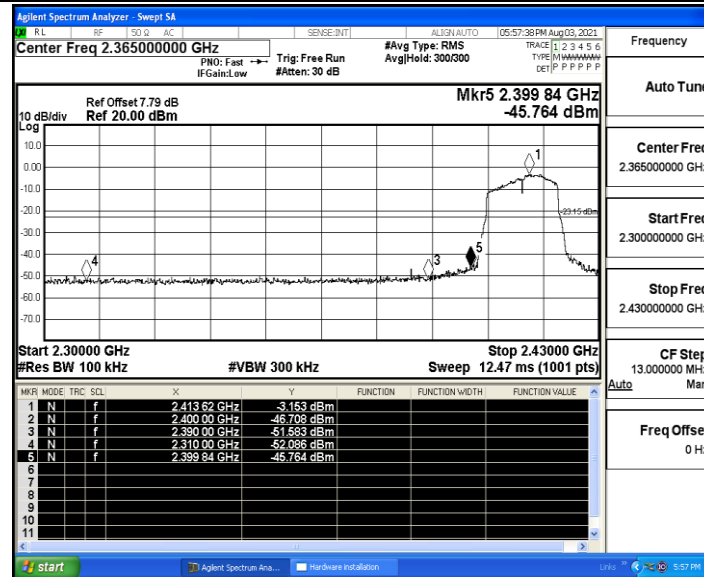
A.5 Band edge measurements

Test Result

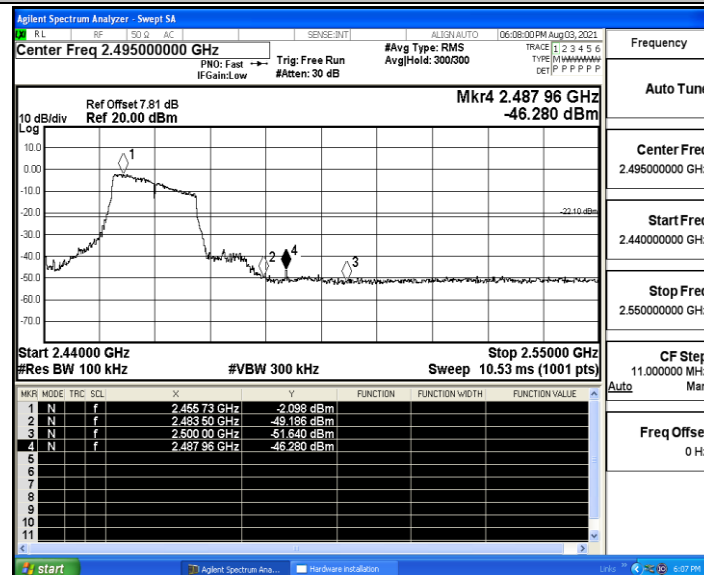
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	4.00	-47.9	≤ -16	PASS
		High	2462	2.67	-48.04	≤ -17.33	PASS
11G	Ant1	Low	2412	-3.15	-45.76	≤ -23.15	PASS
		High	2462	-2.10	-46.28	≤ -22.1	PASS
11N20SISO	Ant1	Low	2412	-2.79	-46.12	≤ -22.79	PASS
		High	2462	-1.52	-47.85	≤ -21.52	PASS

11B Ant1 Low 2412

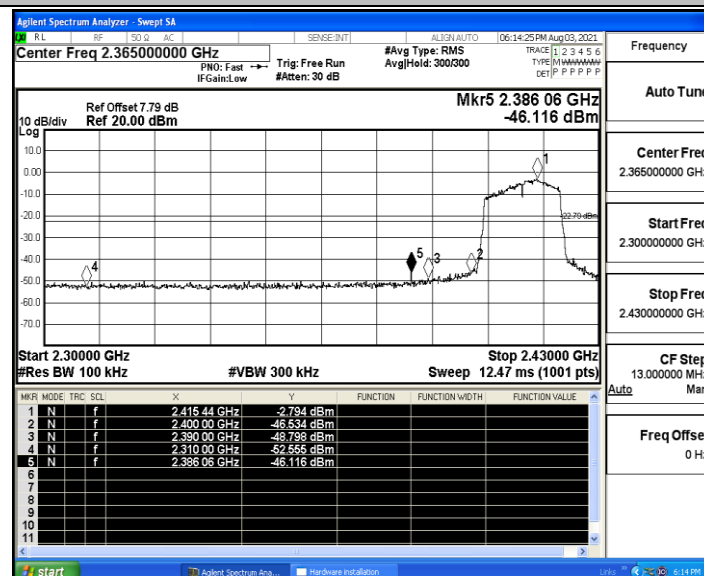




11G_Ant1_High_2462

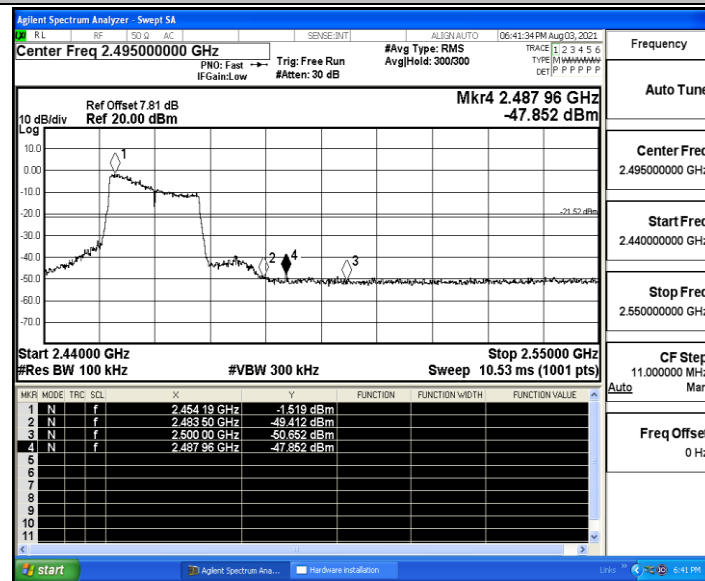


11N20SISO_Ant1_Low_2412





11N20SISO_Ant1_High_2462





A.6 Conducted Spurious Emission

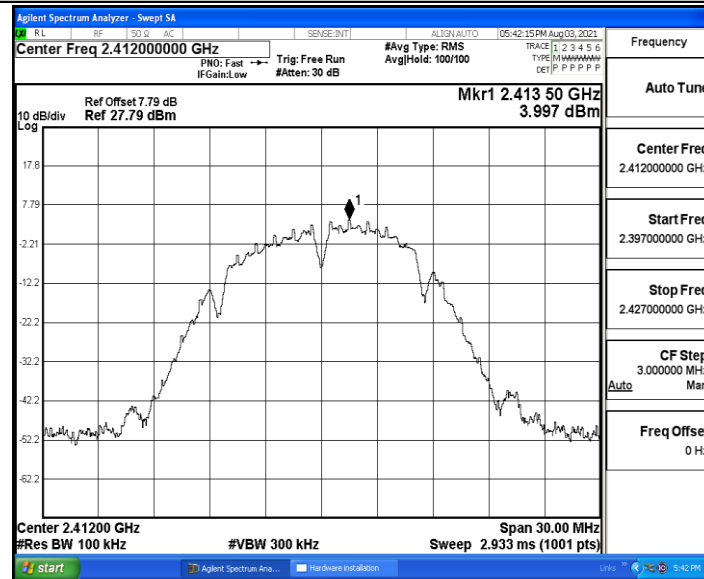
Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	4.00	4.00	---	PASS
			30~1000	4.00	-61.16	≤-16	PASS
			1000~26500	4.00	-47.82	≤-16	PASS
		2437	Reference	-1.16	-1.16	---	PASS
			30~1000	-1.16	-61.2	≤-21.16	PASS
			1000~26500	-1.16	-40.81	≤-21.16	PASS
		2462	Reference	2.57	2.57	---	PASS
			30~1000	2.57	-61.45	≤-17.43	PASS
			1000~26500	2.57	-41.09	≤-17.43	PASS
11G	Ant1	2412	Reference	-3.14	-3.14	---	PASS
			30~1000	-3.14	-61.63	≤-23.14	PASS
			1000~26500	-3.14	-47.44	≤-23.14	PASS
		2437	Reference	-7.30	-7.30	---	PASS
			30~1000	-7.30	-61.64	≤-27.3	PASS
			1000~26500	-7.30	-46.88	≤-27.3	PASS
		2462	Reference	-2.02	-2.02	---	PASS
			30~1000	-2.02	-61.8	≤-22.02	PASS
			1000~26500	-2.02	-47.57	≤-22.02	PASS
11N20SISO	Ant1	2412	Reference	-3.03	-3.03	---	PASS
			30~1000	-3.03	-60.87	≤-23.03	PASS
			1000~26500	-3.03	-47.02	≤-23.03	PASS
		2437	Reference	-6.37	-6.37	---	PASS
			30~1000	-6.37	-61.19	≤-26.37	PASS
			1000~26500	-6.37	-47.41	≤-26.37	PASS
		2462	Reference	-1.72	-1.72	---	PASS
			30~1000	-1.72	-61.85	≤-21.72	PASS
			1000~26500	-1.72	-46.91	≤-21.72	PASS

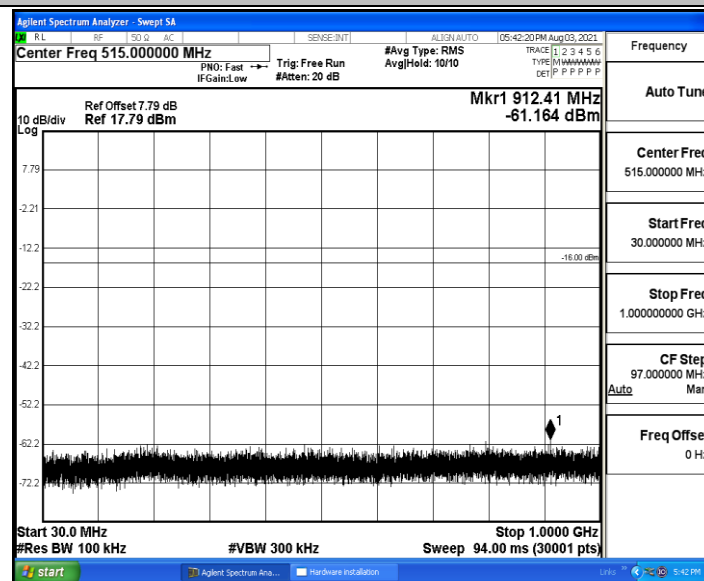


Test Graphs

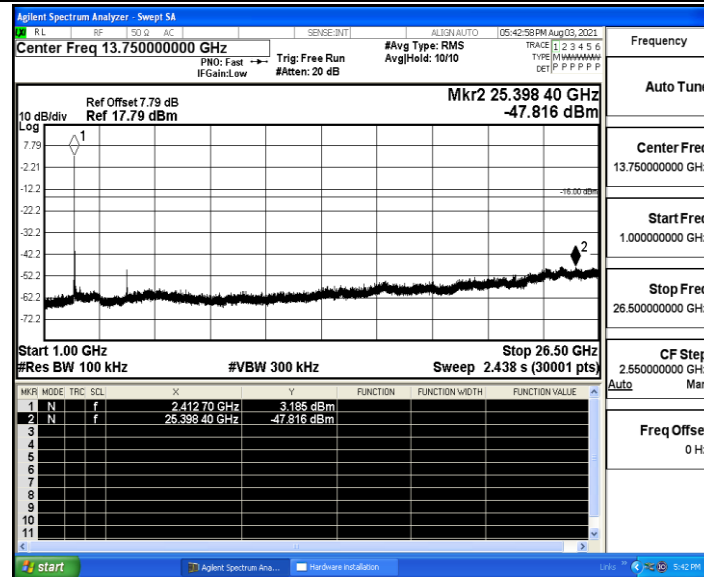
11B_Ant1_2412_0~Reference



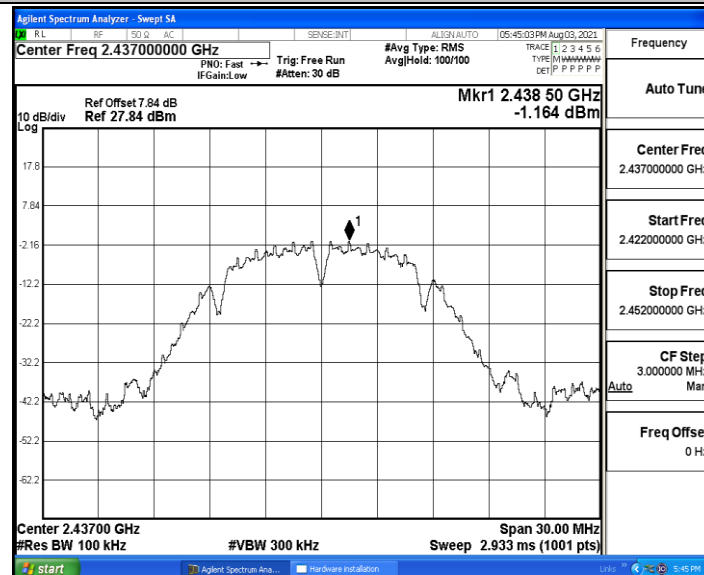
11B_Ant1_2412_30~1000



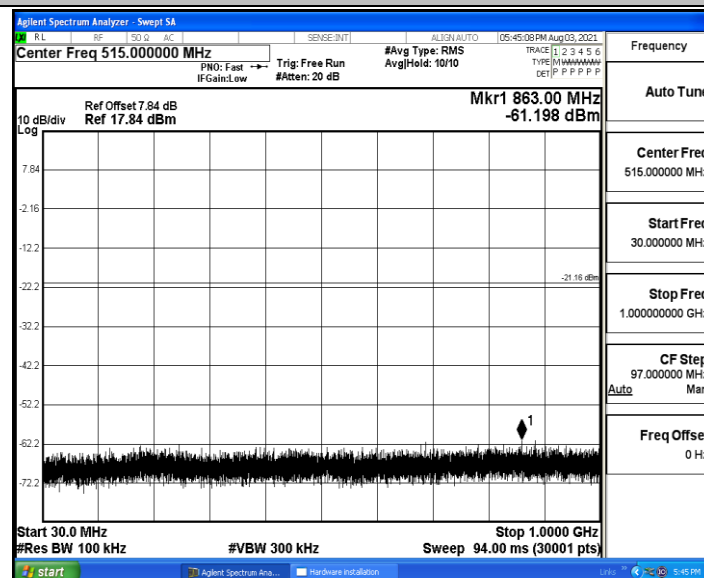
11B_Ant1_2412_1000~26500



11B_Ant1_2437_0-Reference

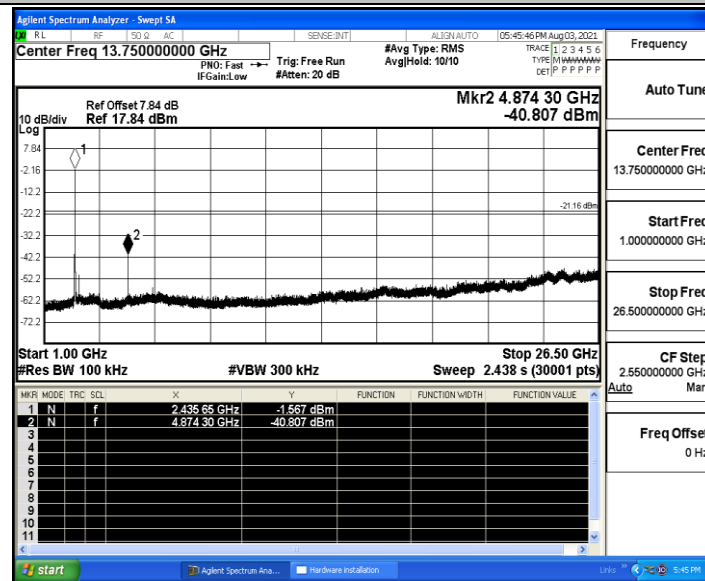


11B_Ant1_2437_30-1000

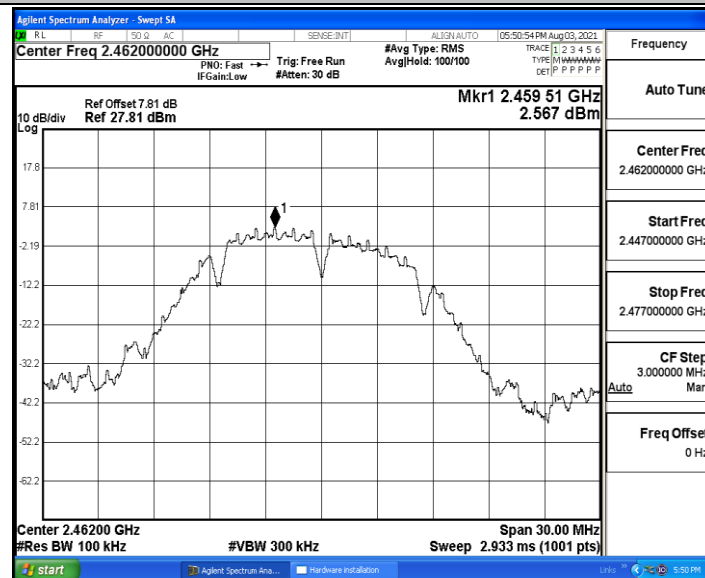




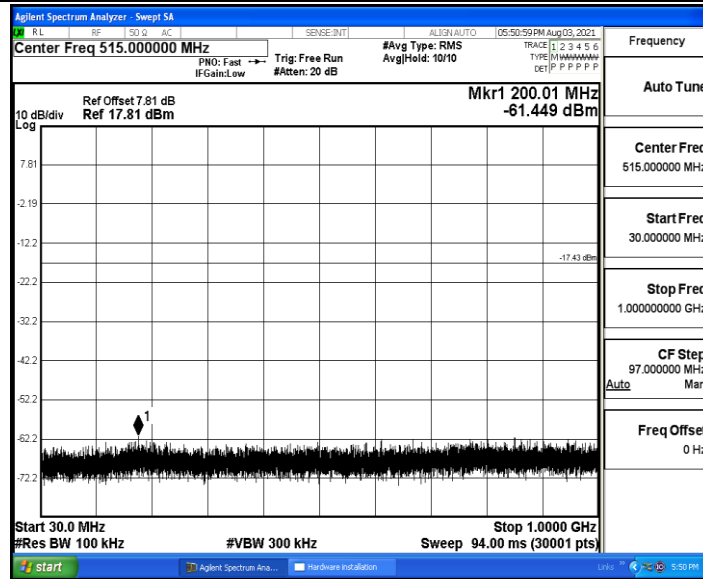
11B_Ant1_2437_1000-26500



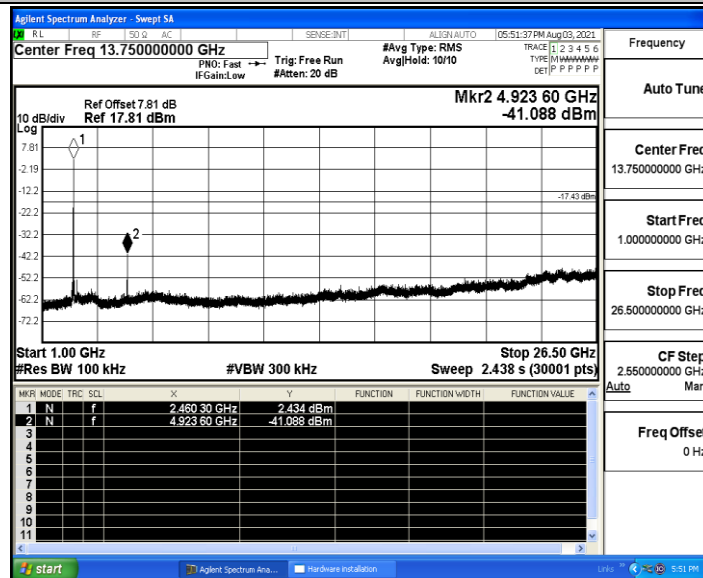
11B_Ant1_2462_0~Reference



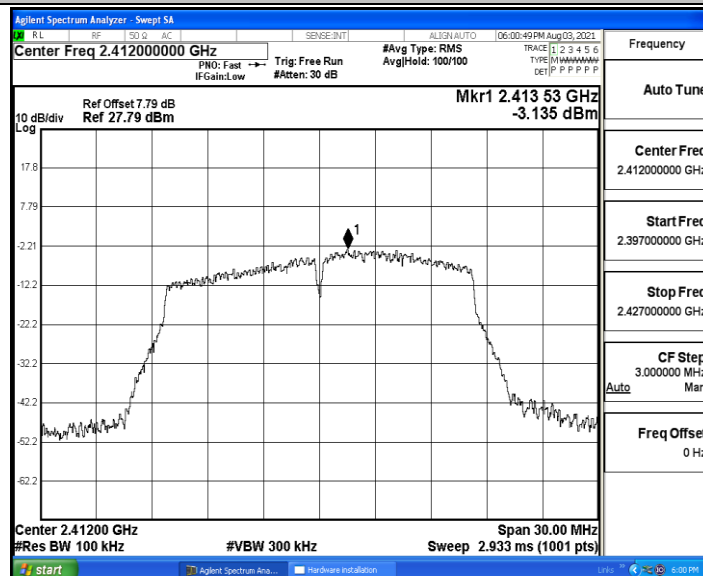
11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500

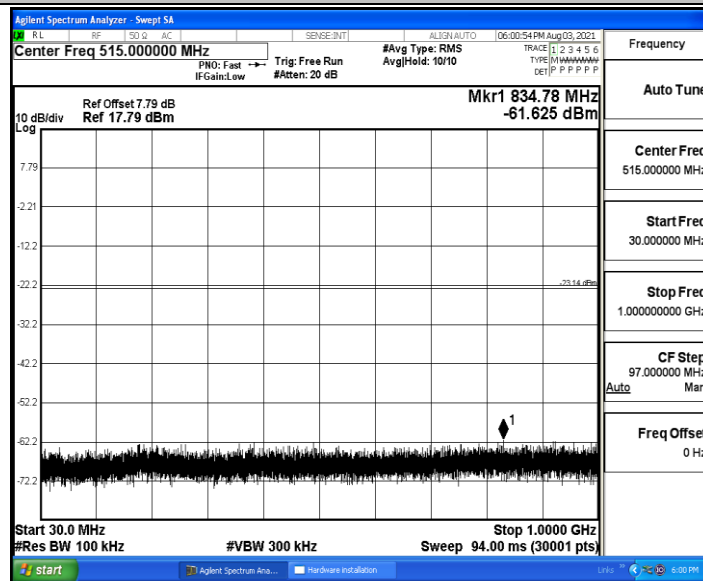


11G_Ant1_2412_0~Reference

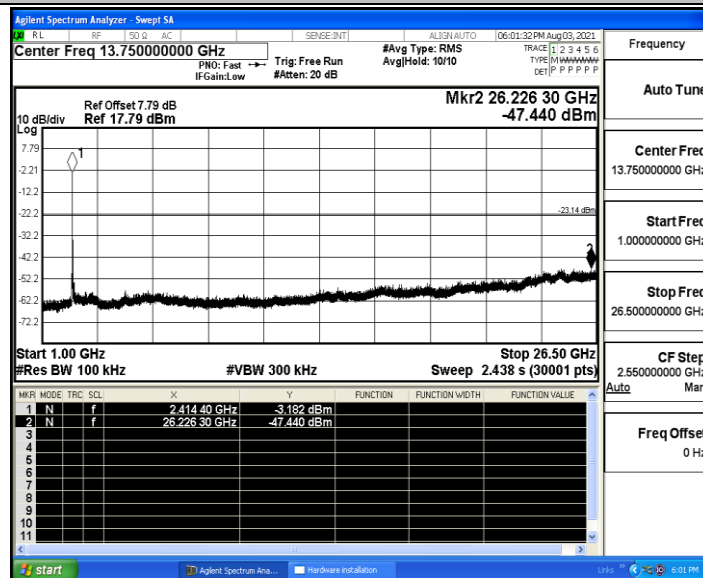




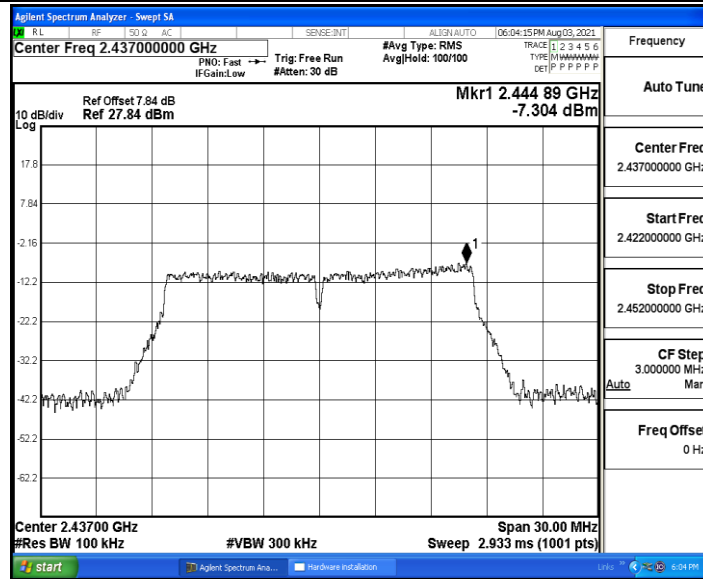
11G_Ant1_2412_30~1000



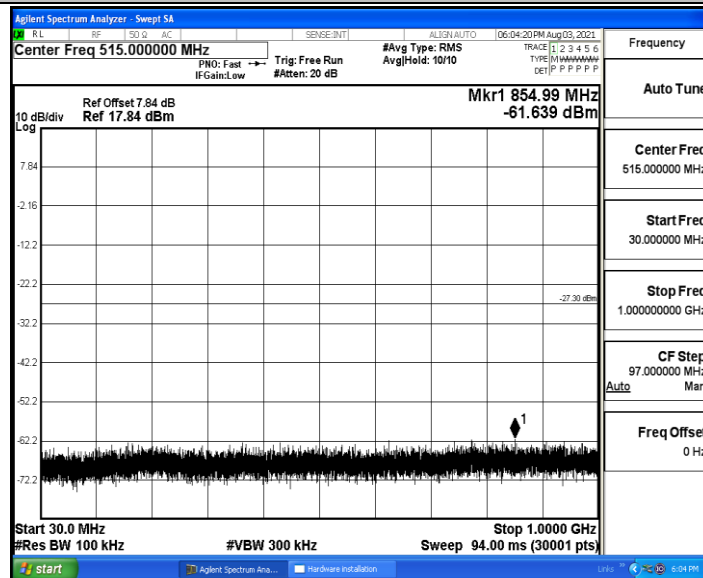
11G_Ant1_2412_1000~26500



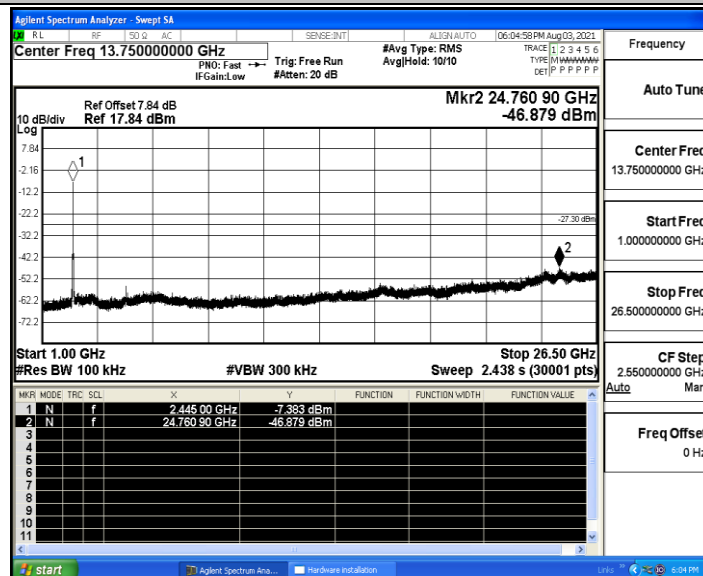
11G_Ant1_2437_0~Reference



11G_Ant1_2437_30~1000

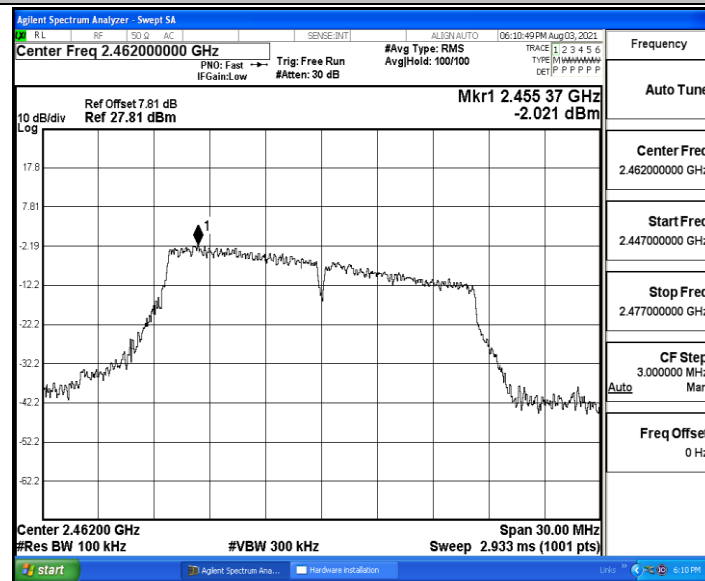


11G_Ant1_2437_1000~26500

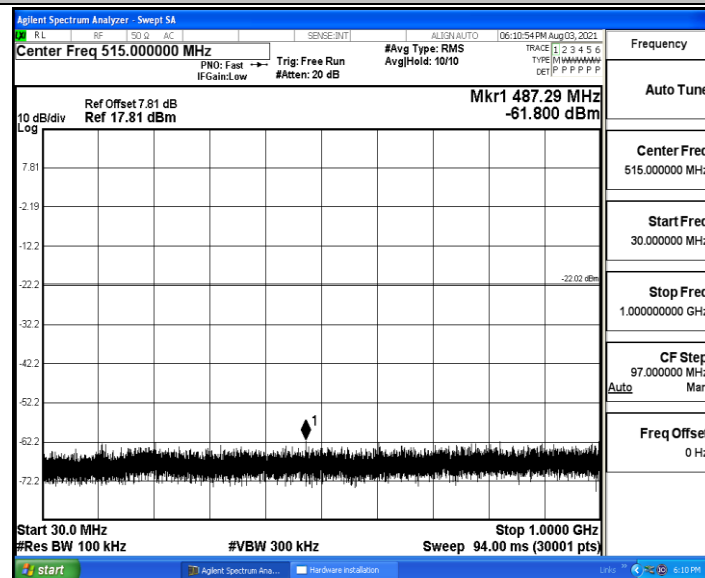




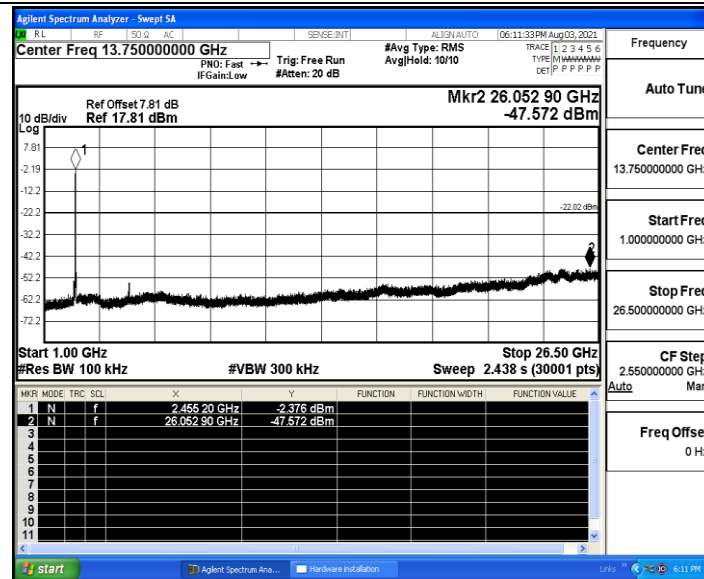
11G_Ant1_2462_0~Reference



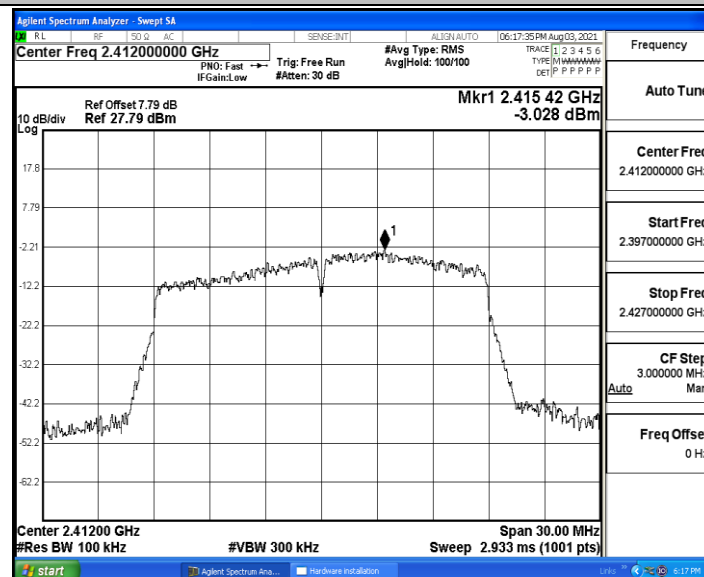
11G_Ant1_2462_30~1000



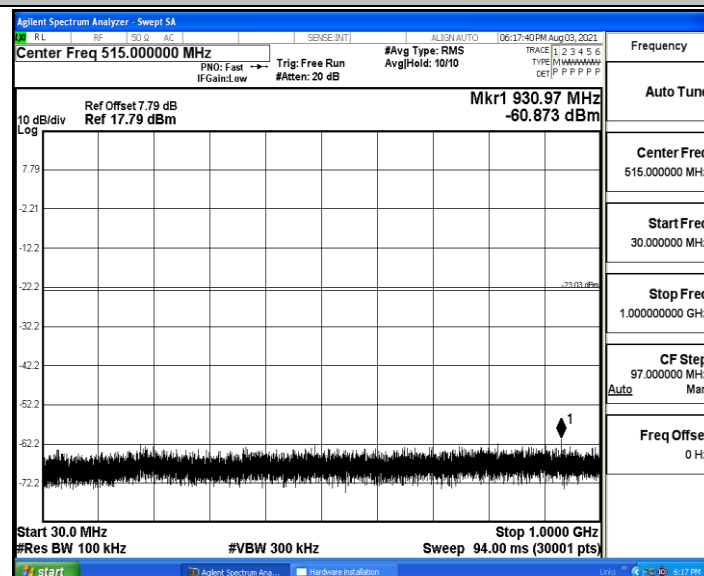
11G_Ant1_2462_1000~26500



11N20SISO_Ant1_2412_0-Reference

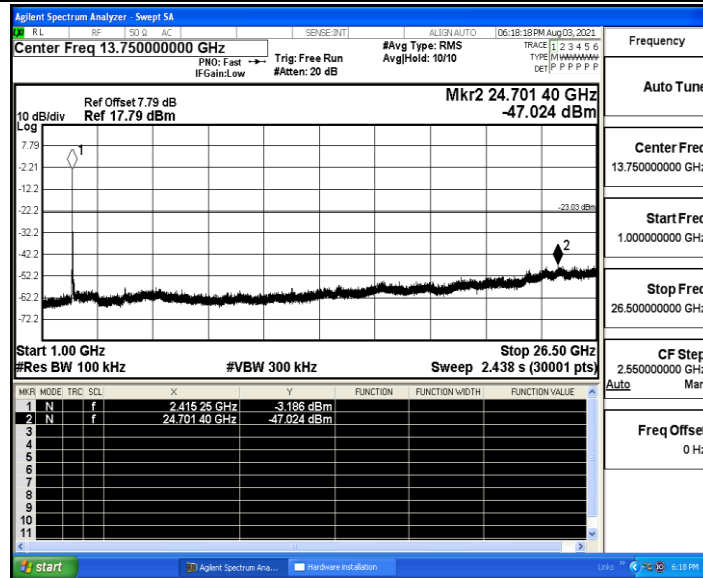


11N20SISO_Ant1_2412_30-1000

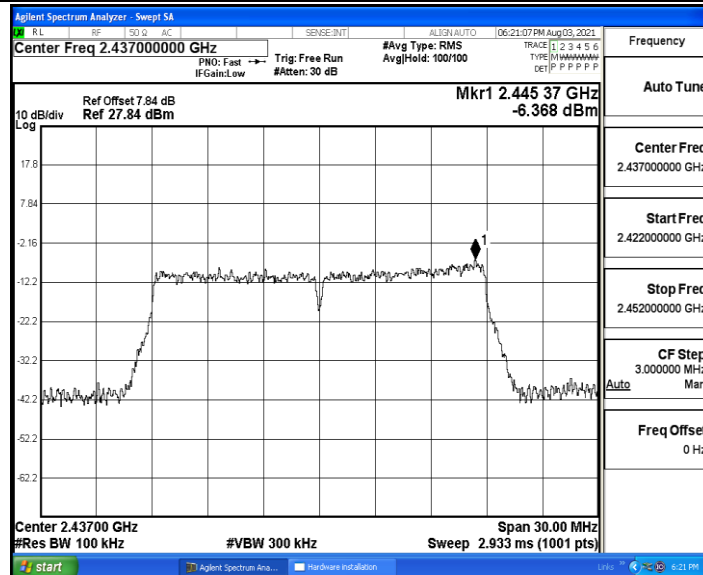




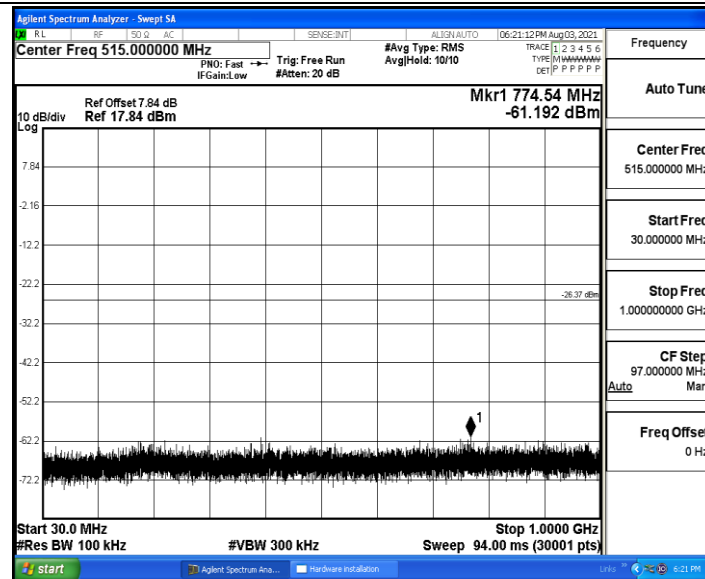
11N20SISO_Ant1_2412_1000~26500



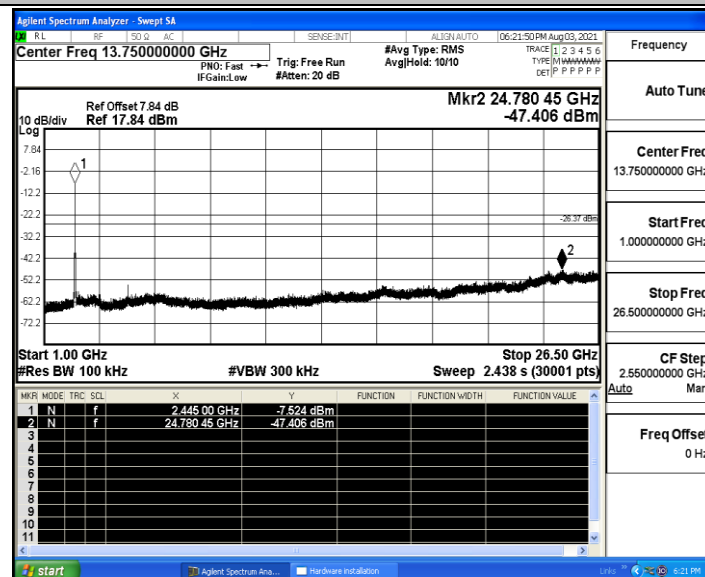
11N20SISO_Ant1_2437_0-Reference



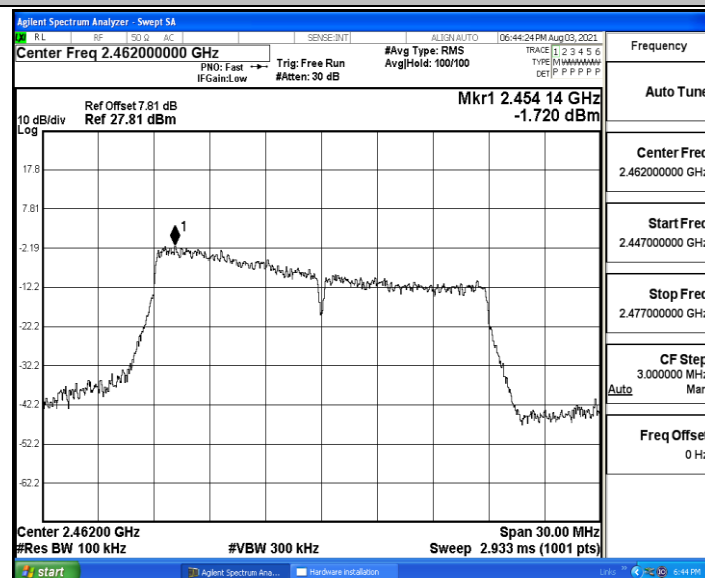
11N20SISO_Ant1_2437_30~1000



11N20SISO_Ant1_2437_1000~26500

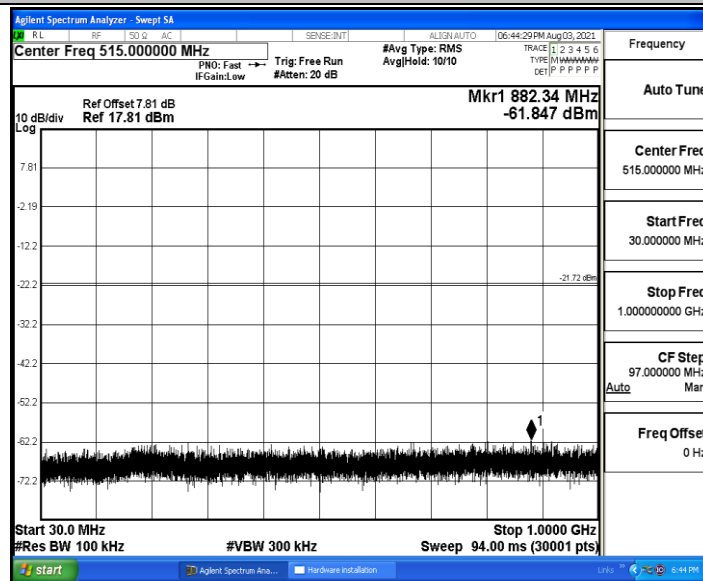


11N20SISO_Ant1_2462_0-Reference

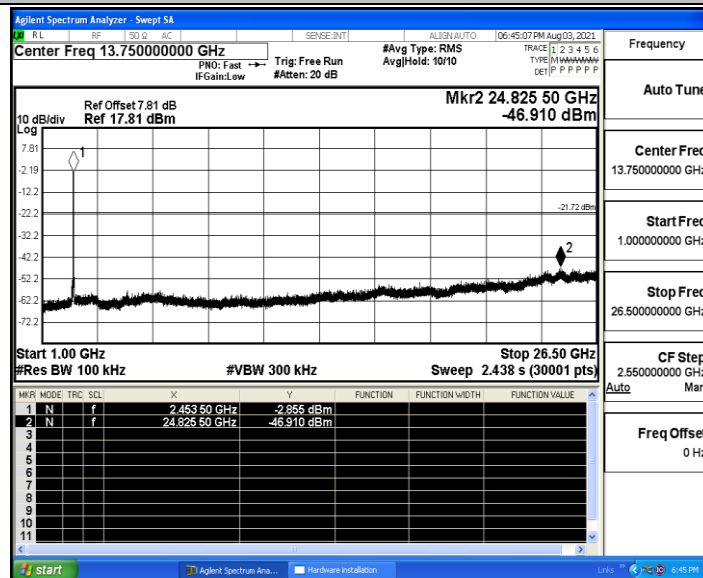




11N20SISO_Ant1_2462_30~1000



11N20SISO_Ant1_2462_1000~26500





A.7 Duty Cycle

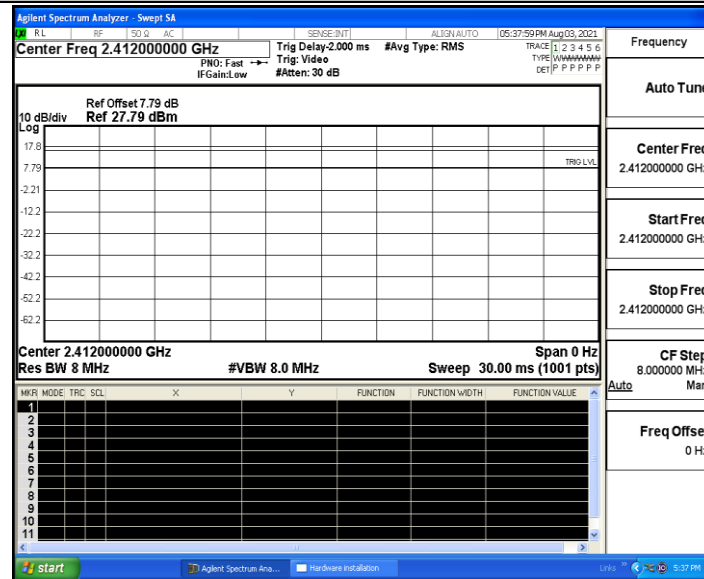
Test Result

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

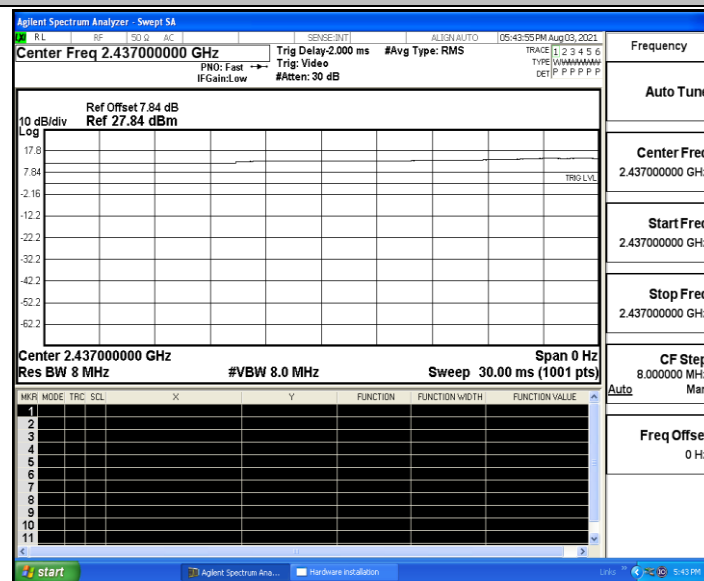


Test Graphs

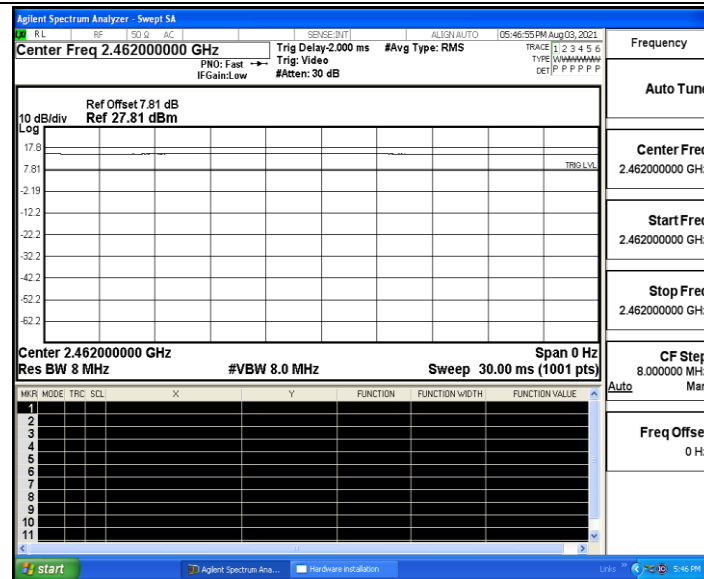
11B_Ant1_2412



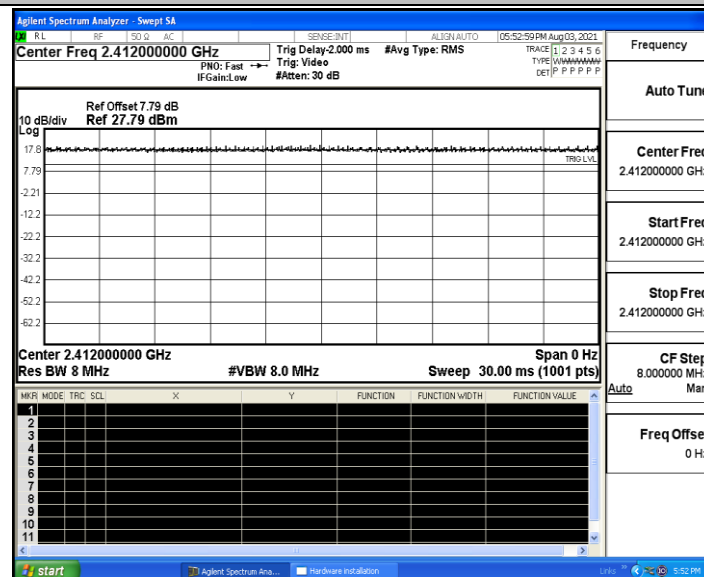
11B_Ant1_2437



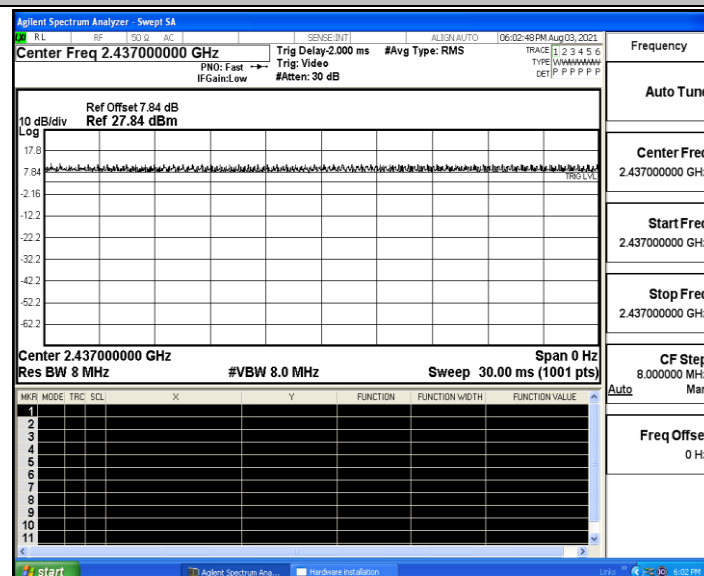
11B_Ant1_2462



11G_Ant1_2412

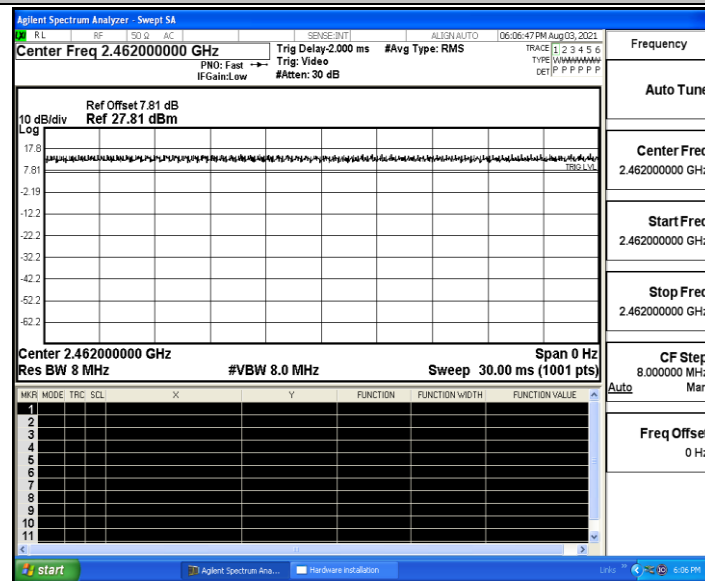


11G_Ant1_2437

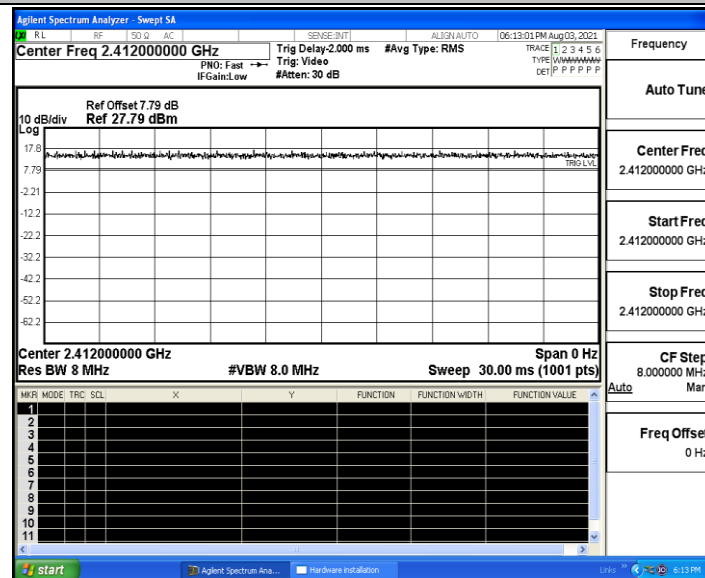




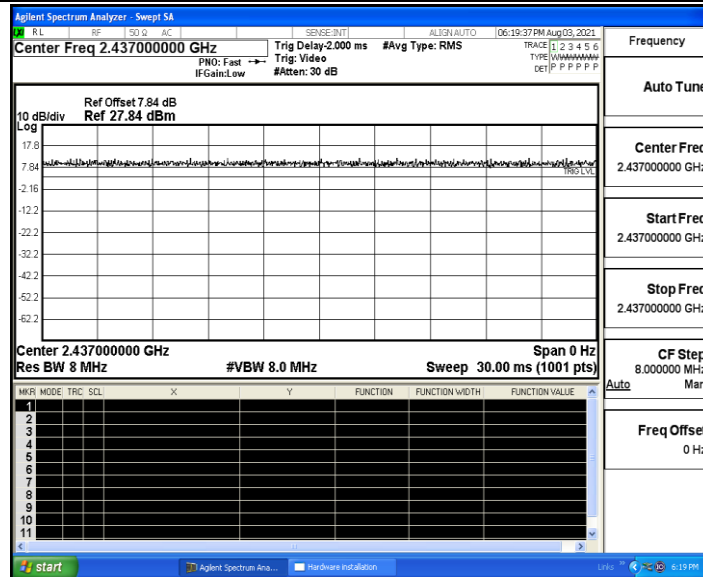
11G_Ant1_2462



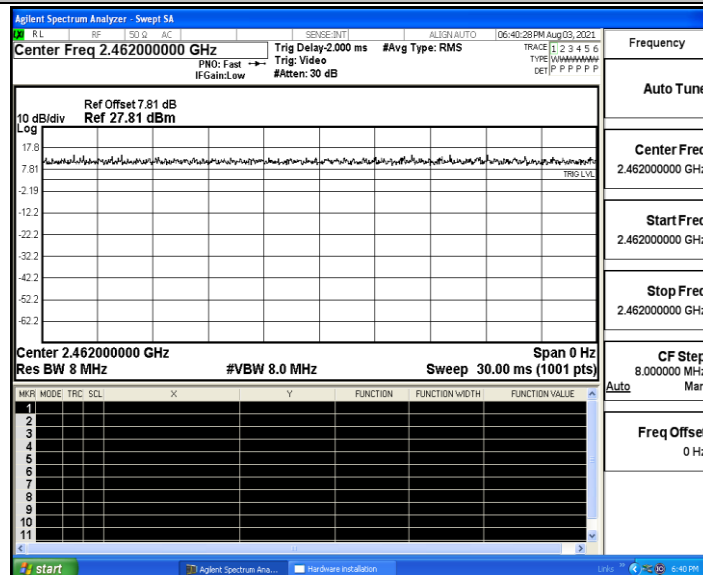
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462





A.8 Emissions in Restricted Bands

Test Result

Test Mode	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11B	2412	AV	2310.000	-49.29	≤-41.20	45.91	≤54	PASS
		AV	2386.060	-47.36	≤-41.20	47.84	≤54	PASS
		AV	2390.000	-48.57	≤-41.20	46.63	≤54	PASS
		Peak	2310.000	-41.62	≤-21.20	53.58	≤74	PASS
		Peak	2385.540	-39.52	≤-21.20	55.68	≤74	PASS
		Peak	2390.000	-42.67	≤-21.20	52.53	≤74	PASS
	2462	AV	2483.500	-48.04	≤-41.20	47.16	≤54	PASS
		AV	2487.960	-47.07	≤-41.20	48.13	≤54	PASS
		AV	2500.000	-48.33	≤-41.20	46.87	≤54	PASS
		Peak	2483.500	-44.32	≤-21.20	50.88	≤74	PASS
		Peak	2493.790	-39.25	≤-21.20	55.95	≤74	PASS
		Peak	2500.000	-42.01	≤-21.20	53.19	≤74	PASS
11G	2412	AV	2310.000	-49.32	≤-41.20	45.88	≤54	PASS
		AV	2385.930	-45.51	≤-41.20	49.69	≤54	PASS
		AV	2390.000	-47.73	≤-41.20	47.47	≤54	PASS
		Peak	2310.000	-47.01	≤-21.20	48.19	≤74	PASS
		Peak	2339.130	-38.96	≤-21.20	56.24	≤74	PASS
		Peak	2390.000	-42.49	≤-21.20	52.71	≤74	PASS
	2462	AV	2483.500	-46.39	≤-41.20	48.81	≤54	PASS
		AV	2487.960	-45.54	≤-41.20	49.66	≤54	PASS
		AV	2500.000	-48.3	≤-41.20	46.90	≤54	PASS
		Peak	2483.500	-41.42	≤-21.20	53.78	≤74	PASS
		Peak	2488.400	-39.05	≤-21.20	56.15	≤74	PASS
		Peak	2500.000	-43.66	≤-21.20	51.54	≤74	PASS
11N20S ISO	2412	AV	2310.000	-49.3	≤-41.20	45.90	≤54	PASS
		AV	2386.060	-45.41	≤-41.20	49.79	≤54	PASS
		AV	2390.000	-47.19	≤-41.20	48.01	≤54	PASS
		Peak	2310.000	-44.15	≤-21.20	51.05	≤74	PASS
		Peak	2386.710	-37.55	≤-21.20	57.65	≤74	PASS
		Peak	2390.000	-41.38	≤-21.20	53.82	≤74	PASS
	2462	AV	2483.500	-45.96	≤-41.20	49.24	≤54	PASS
		AV	2483.560	-46.08	≤-41.20	49.12	≤54	PASS
		AV	2500.000	-48.32	≤-41.20	46.88	≤54	PASS
		Peak	2483.500	-41.62	≤-21.20	53.58	≤74	PASS
		Peak	2483.560	-37.59	≤-21.20	57.61	≤74	PASS
		Peak	2500.000	-42.86	≤-21.20	52.34	≤74	PASS



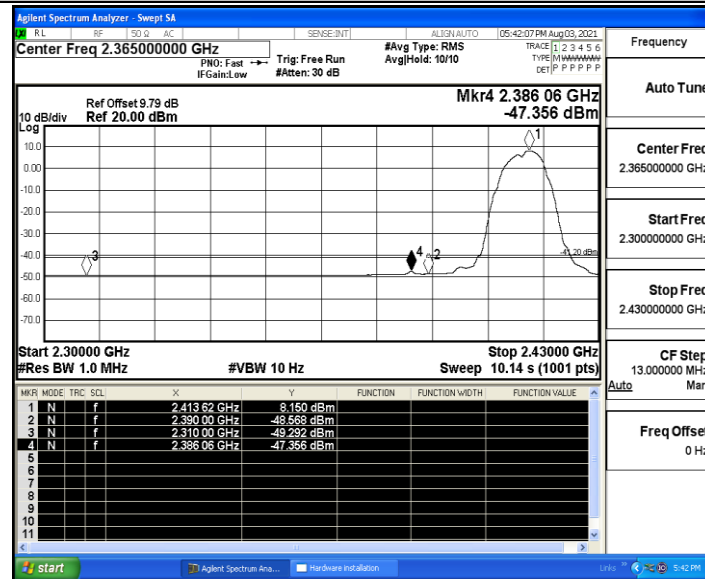
Note:

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.

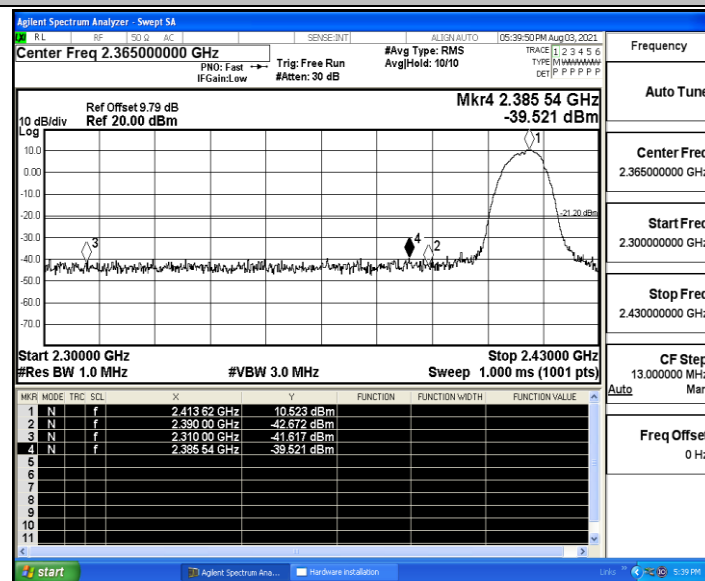


Test Graphs

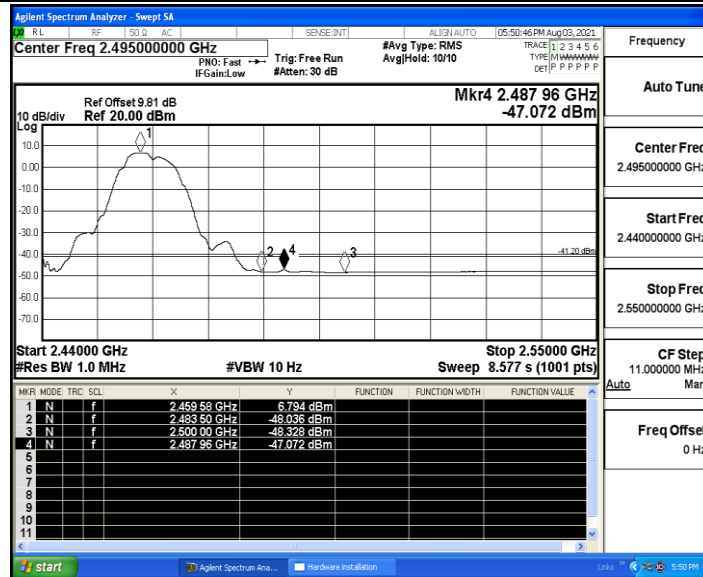
11B_Ant1_Low_2412_AV



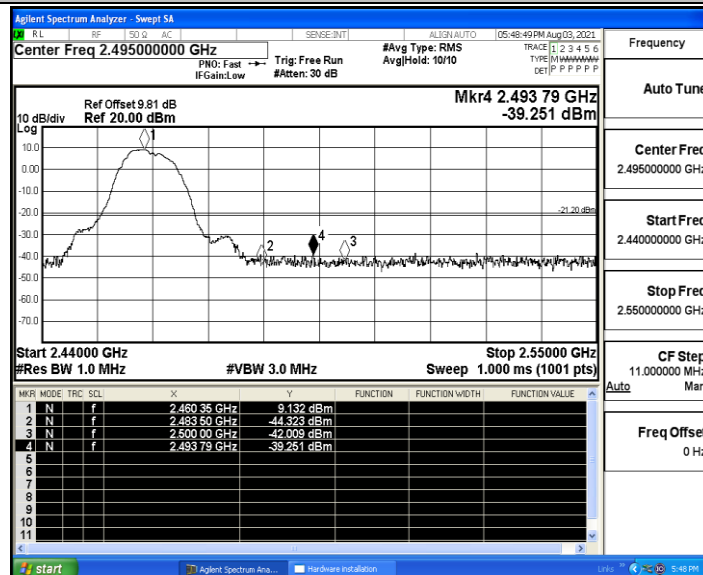
11B_Ant1_Low_2412_Peak



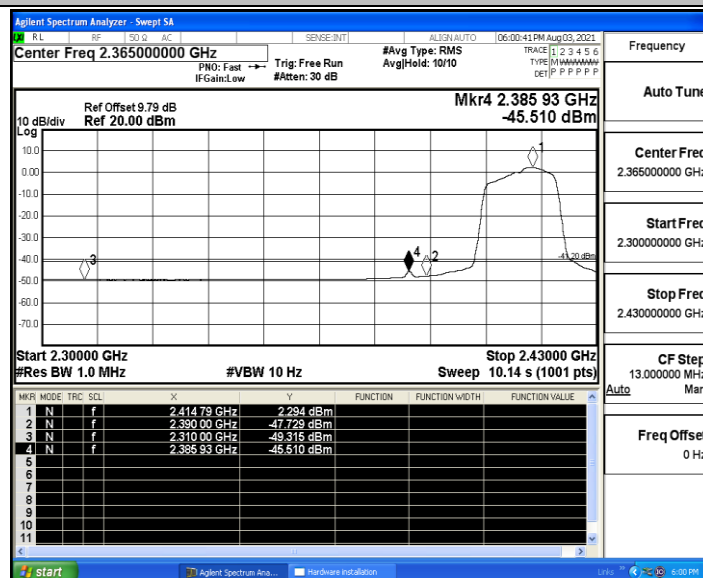
11B_Ant1_High_2462_AV



11B_Ant1_High_2462_Peak

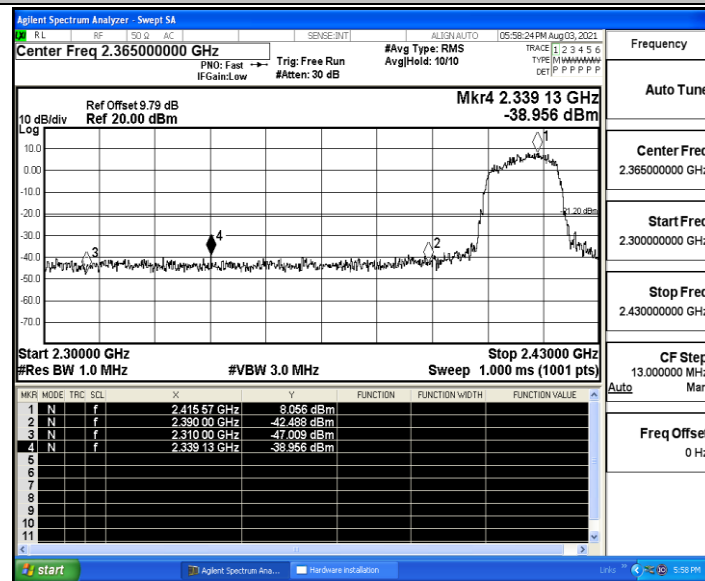


11G_Ant1_Low_2412_AV

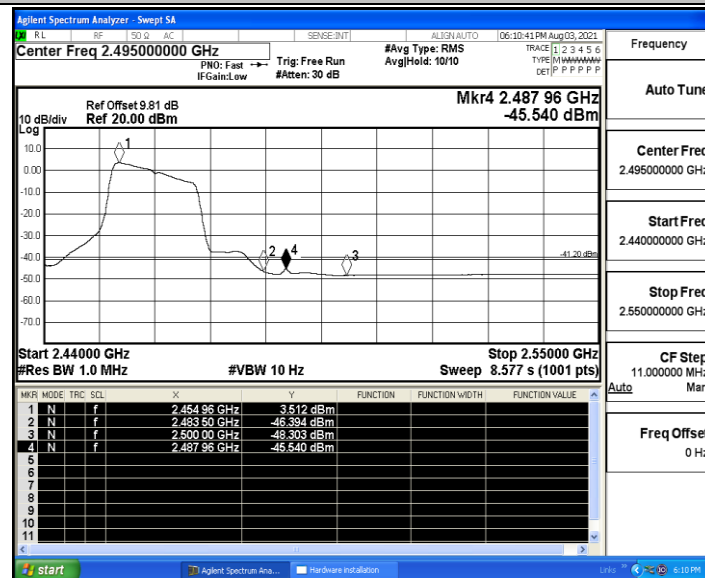




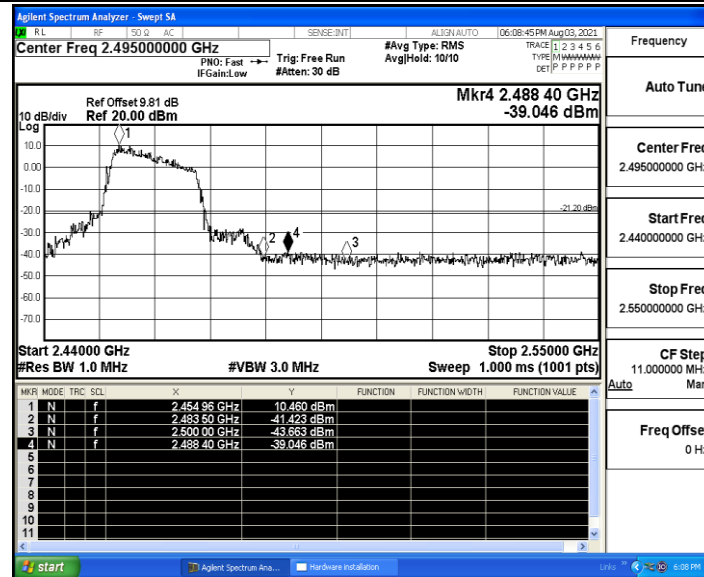
11G_Ant1_Low_2412_Peak



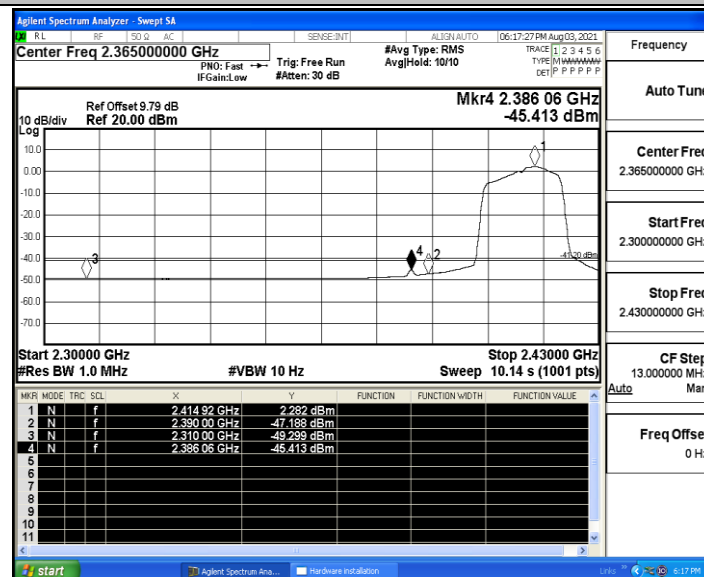
11G_Ant1_High_2462_AV



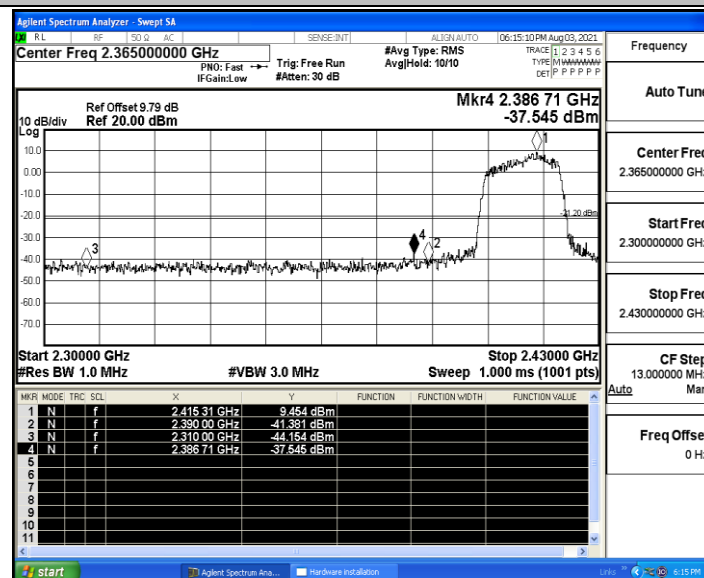
11G_Ant1_High_2462_Peak



11N20SISO_Ant1_Low_2412_AV

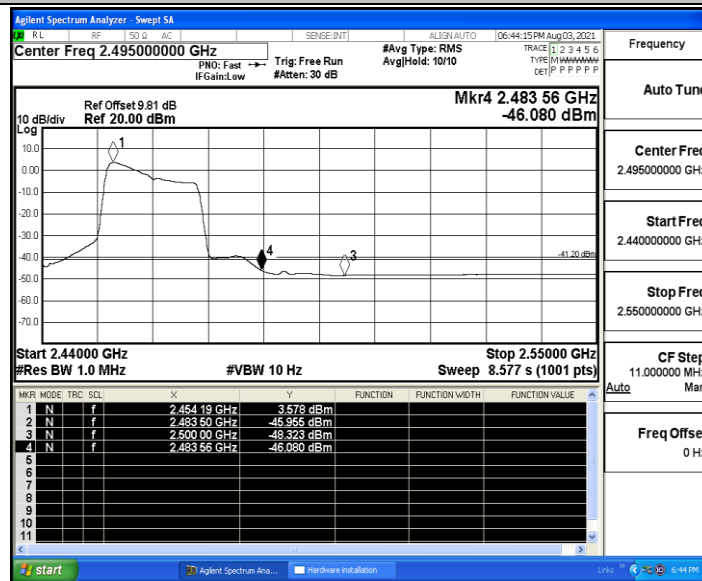


11N20SISO_Ant1_Low_2412_Peak





11N20SISO_Ant1_High_2462_AV



11N20SISO_Ant1_High_2462_Peak

