



Appendix B

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: LED Controller

Trade Mark: SPERLL

Test Model: TrimlightV2

Environmental Conditions

Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Carl Fu
Supervised by:	Li Huan

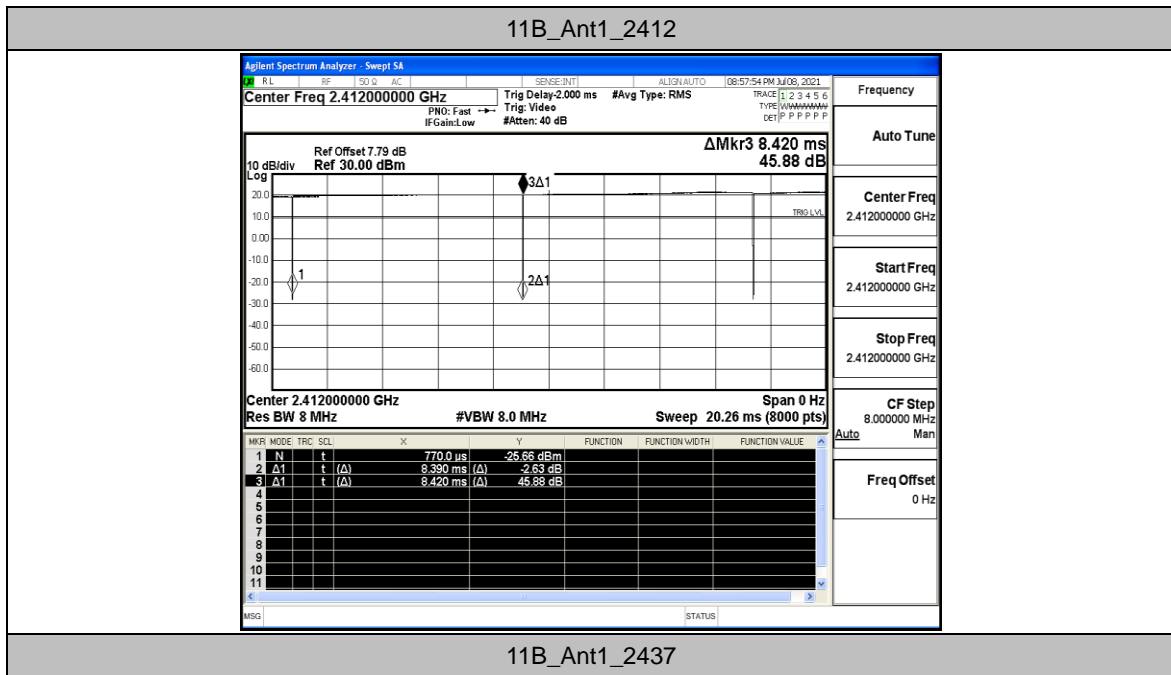


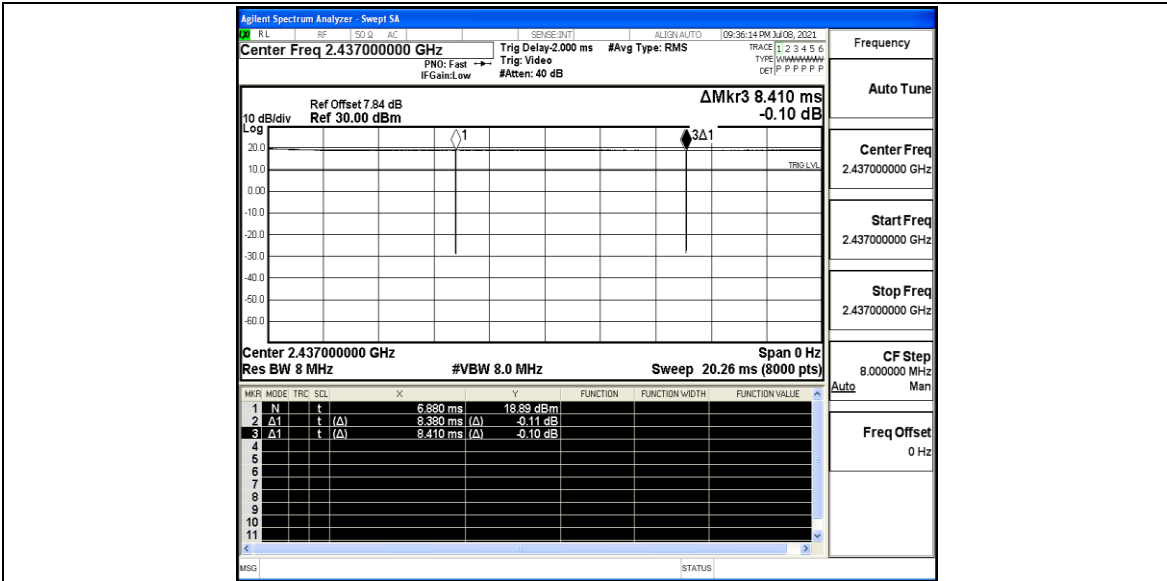
B.1 Duty Cycle

Test Result

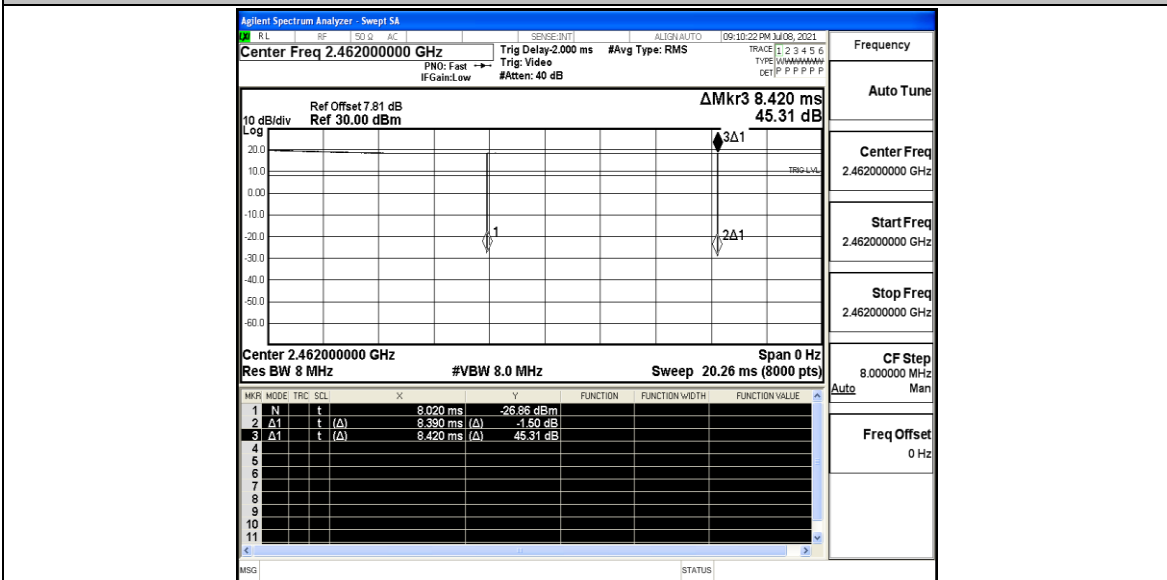
TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11B	Ant1	2412	8.39	8.42	99.64	---	PASS
		2437	8.38	8.41	99.64	---	PASS
		2462	8.39	8.42	99.64	---	PASS
11G	Ant1	2412	1.39	1.43	97.20	---	PASS
		2437	1.39	1.43	97.20	---	PASS
		2462	1.39	1.43	97.20	---	PASS
11N20SISO	Ant1	2412	1.30	1.34	97.01	---	PASS
		2437	1.30	1.34	97.01	---	PASS
		2462	1.30	1.34	97.01	---	PASS

Test Graphs

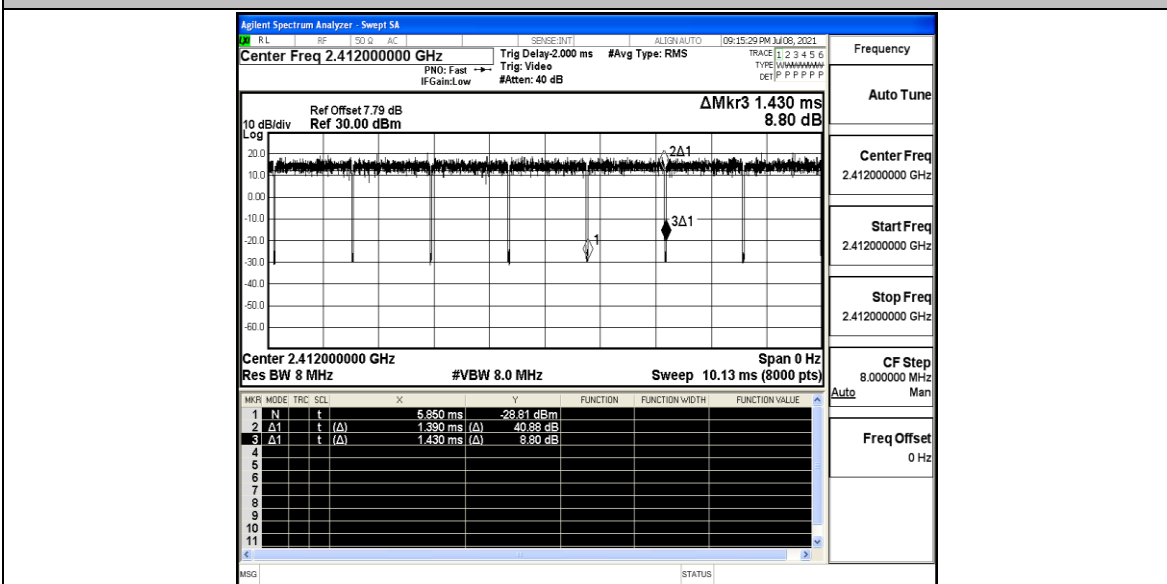




11B_Ant1_2462

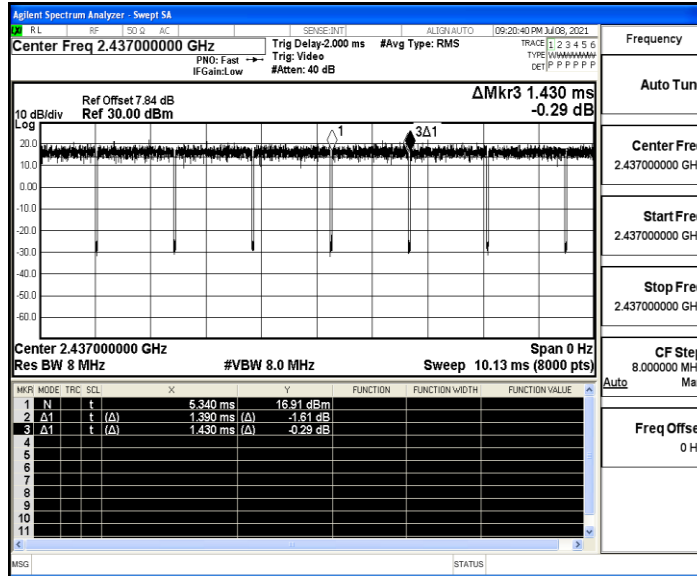


11G_Ant1_2412

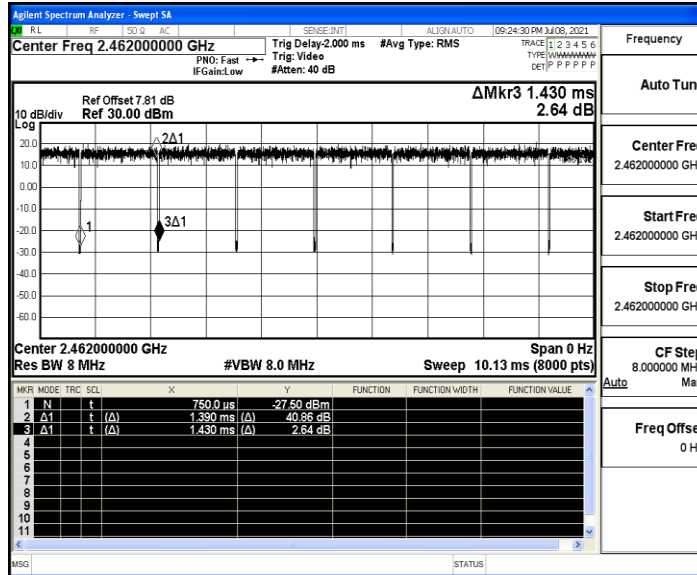




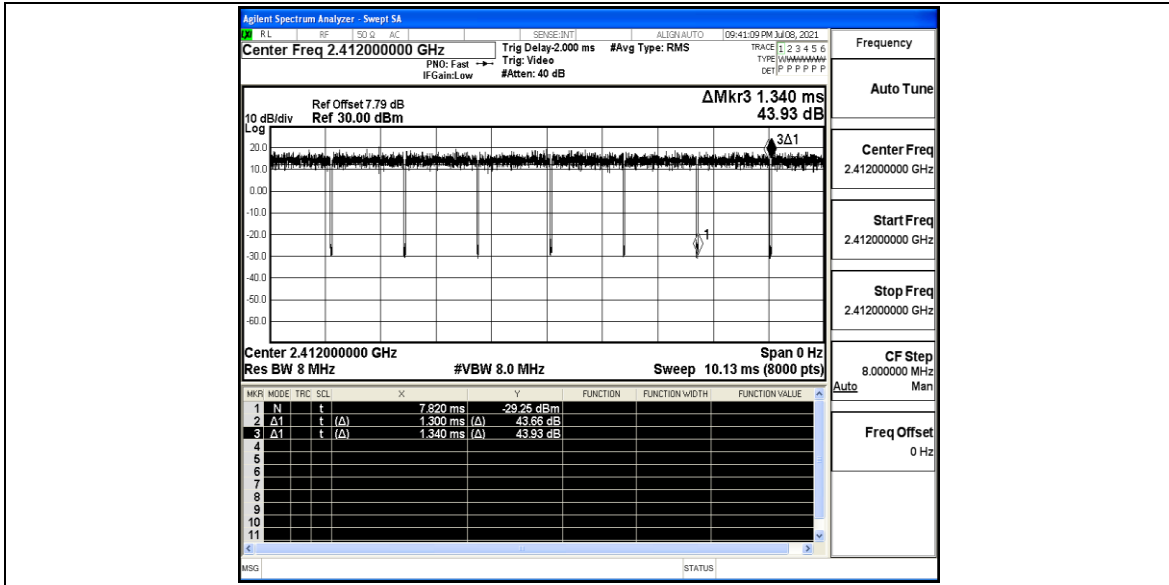
11G_Ant1_2437



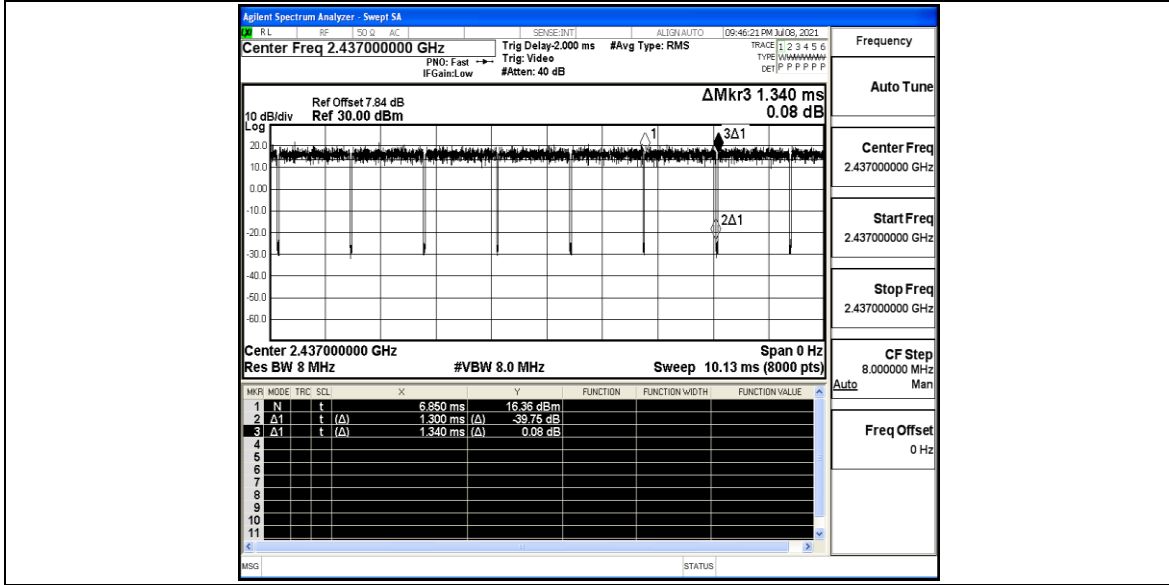
11G_Ant1_2462



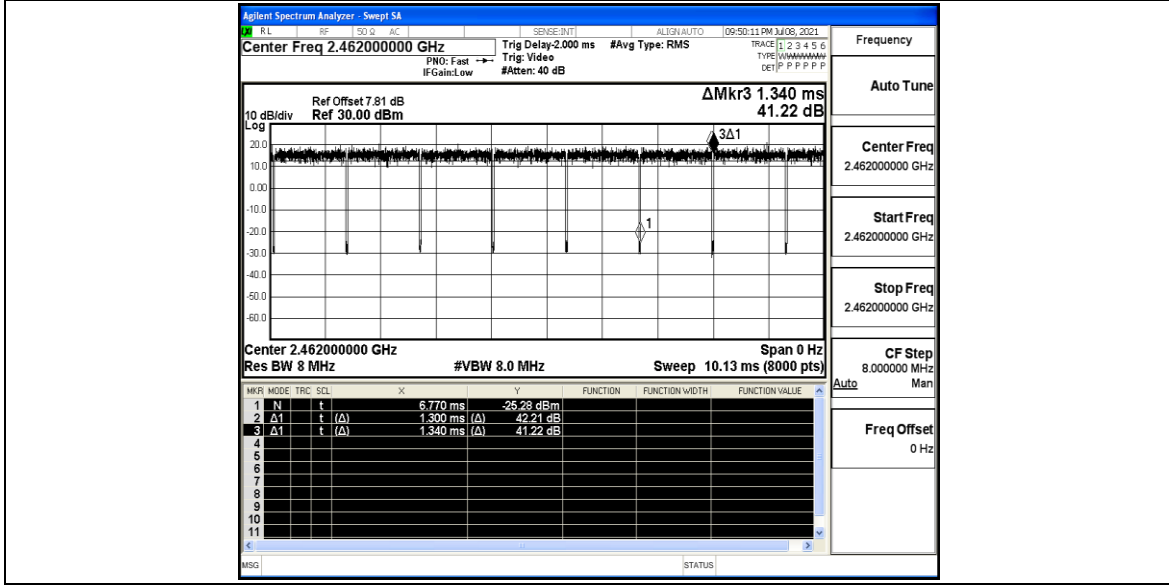
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462





B.2 Maximum Peak Conducted Output Power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	15.99	≤30	PASS
		2437	15.67	≤30	PASS
		2462	15.37	≤30	PASS
11G	Ant1	2412	12.04	≤30	PASS
		2437	13.72	≤30	PASS
		2462	13.35	≤30	PASS
11N20SISO	Ant1	2412	12.02	≤30	PASS
		2437	13.69	≤30	PASS
		2462	13.28	≤30	PASS



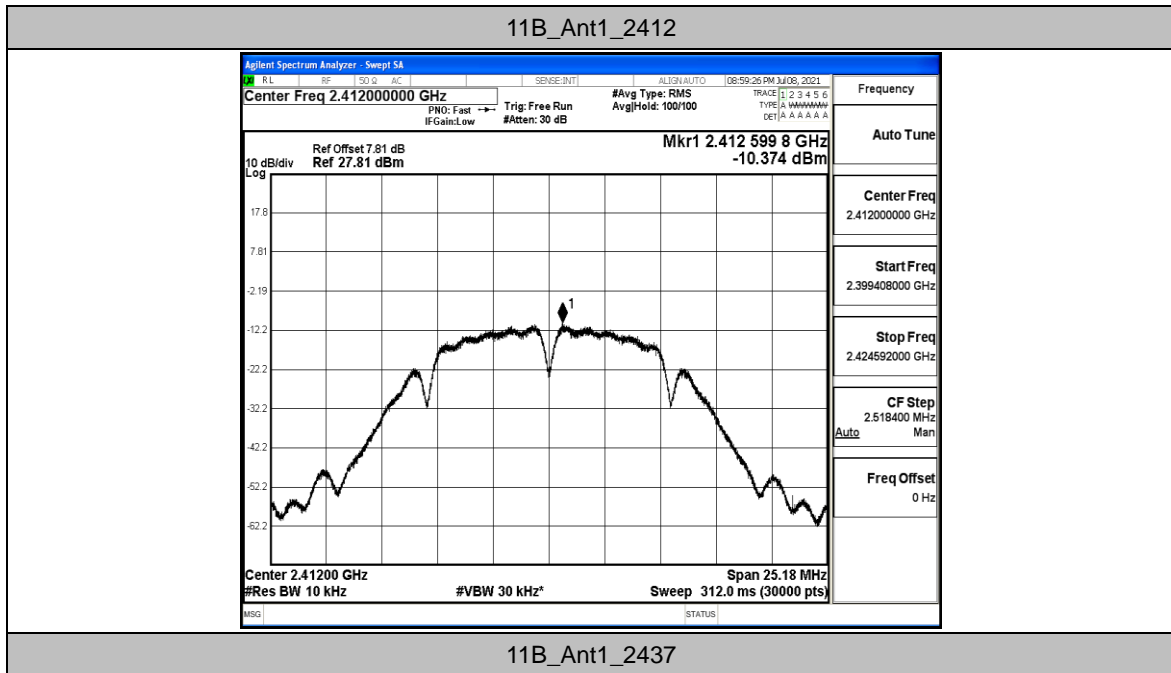
B.3 Maximum power spectral density

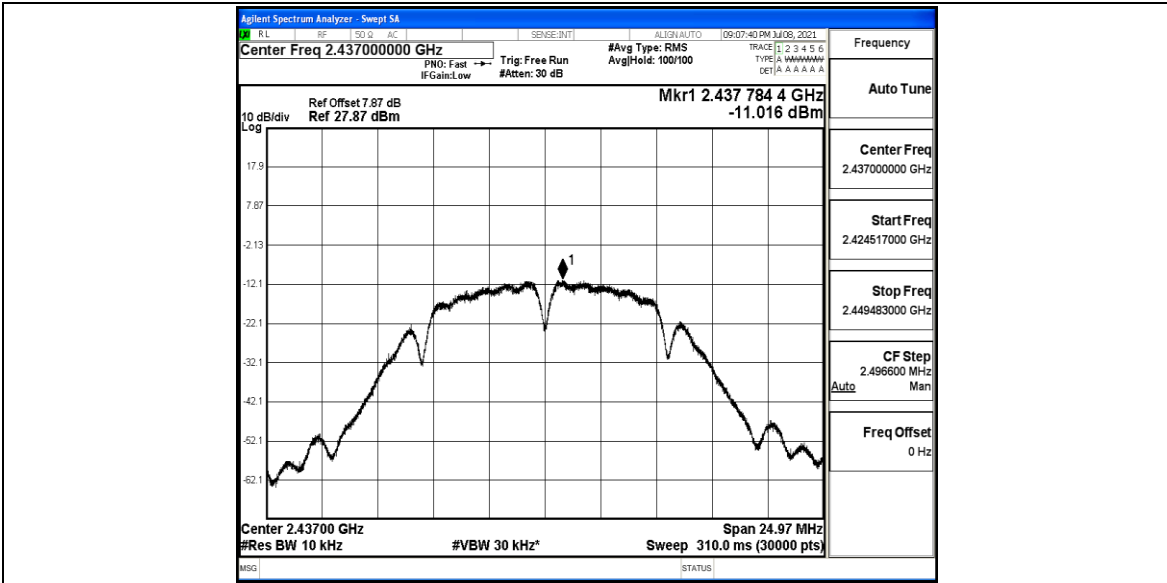
Test Result

Test Mode	Channel	Result [dBm/10kHz]	Convert Factor	Result [dBm/3KHz]	Limit [dBm/3kHz]	Verdict
11B	2412	-10.37	-5.23	-15.60	≤8	PASS
	2437	-11.02	-5.23	-16.25	≤8	PASS
	2462	-11.08	-5.23	-16.31	≤8	PASS
11G	2412	-15.94	-5.23	-21.17	≤8	PASS
	2437	-14.17	-5.23	-19.40	≤8	PASS
	2462	-14.53	-5.23	-19.76	≤8	PASS
11N20SISO	2412	-16.03	-5.23	-21.26	≤8	PASS
	2437	-14.17	-5.23	-19.40	≤8	PASS
	2462	-14.76	-5.23	-19.99	≤8	PASS

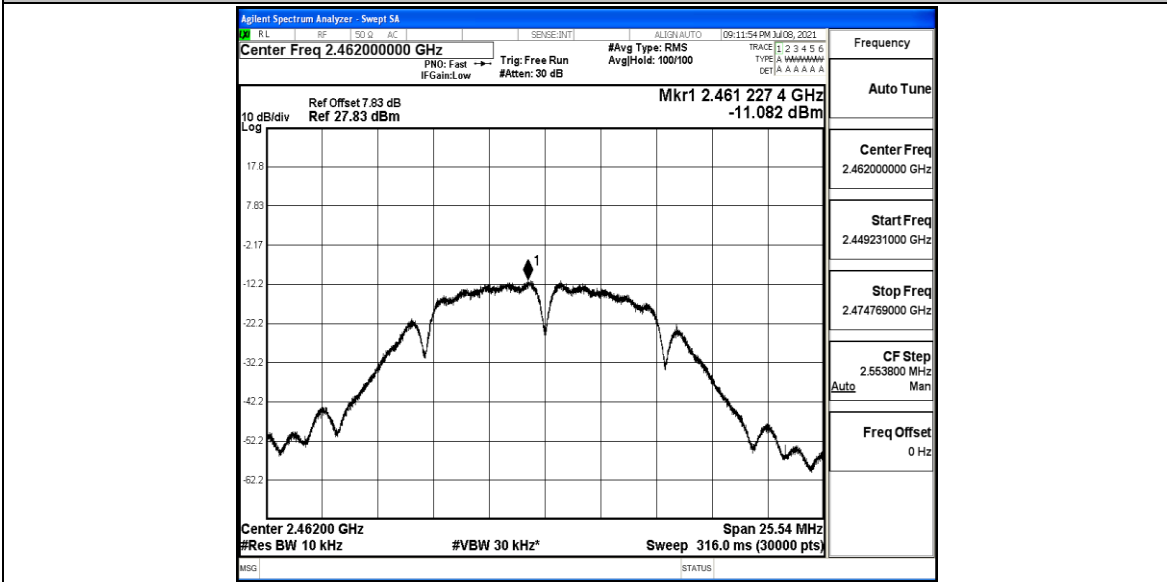
***Note: The Convert Factor = 10*log(3KHz/10KHz) = -5.23

Test Graphs

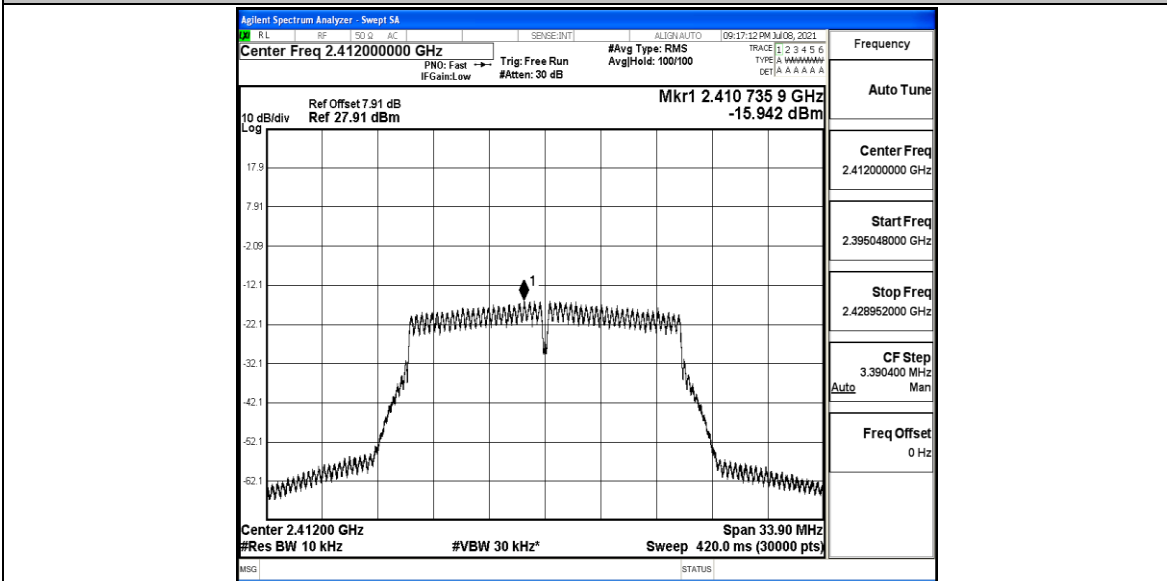




11B_Ant1_2462

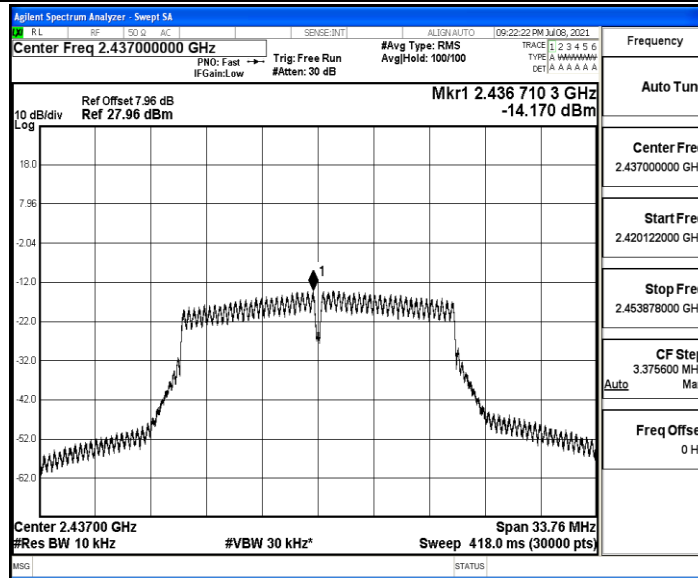


11G_Ant1_2412

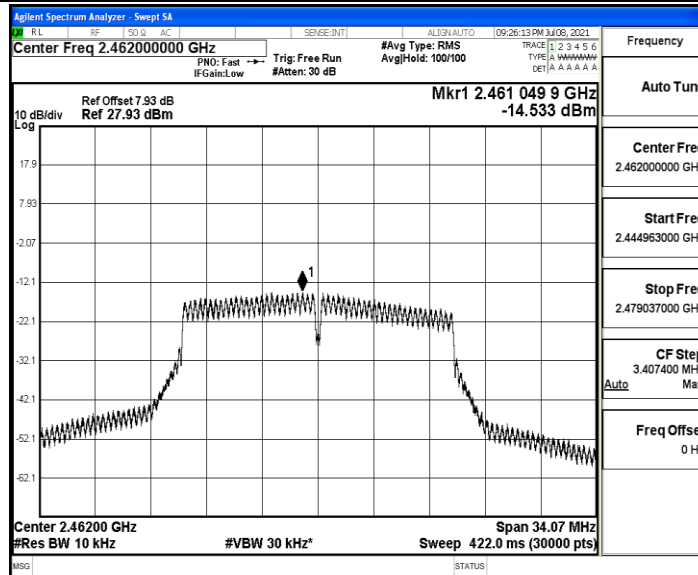




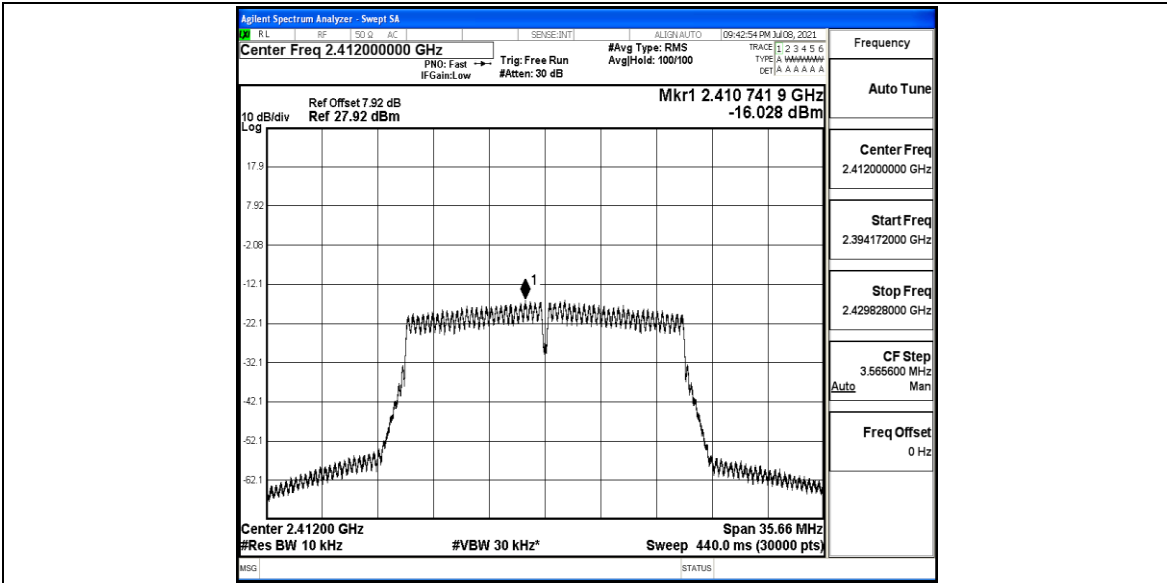
11G_Ant1_2437



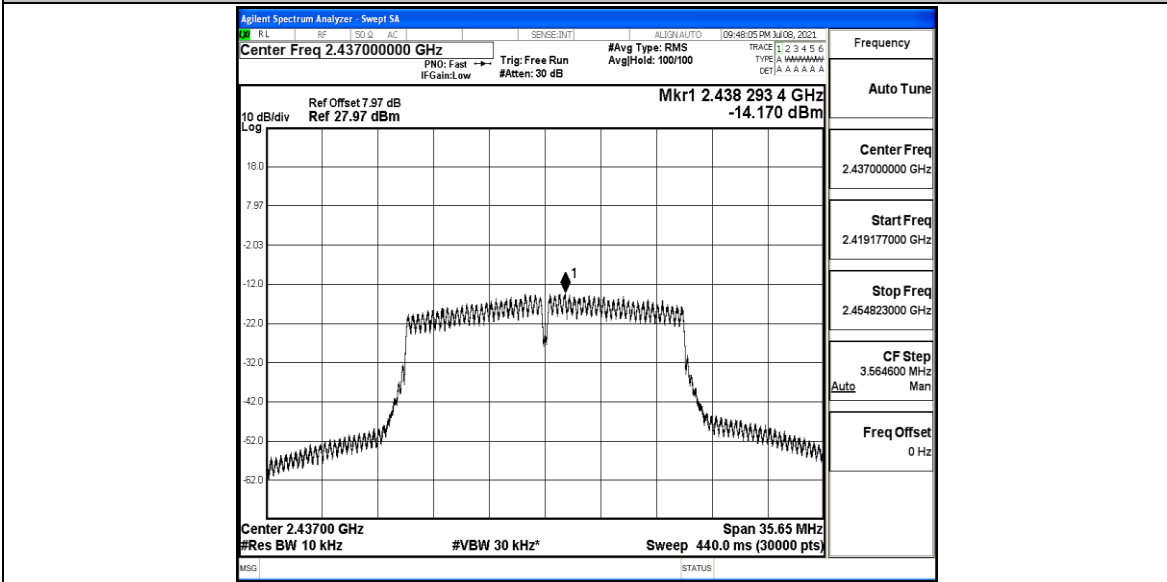
11G_Ant1_2462



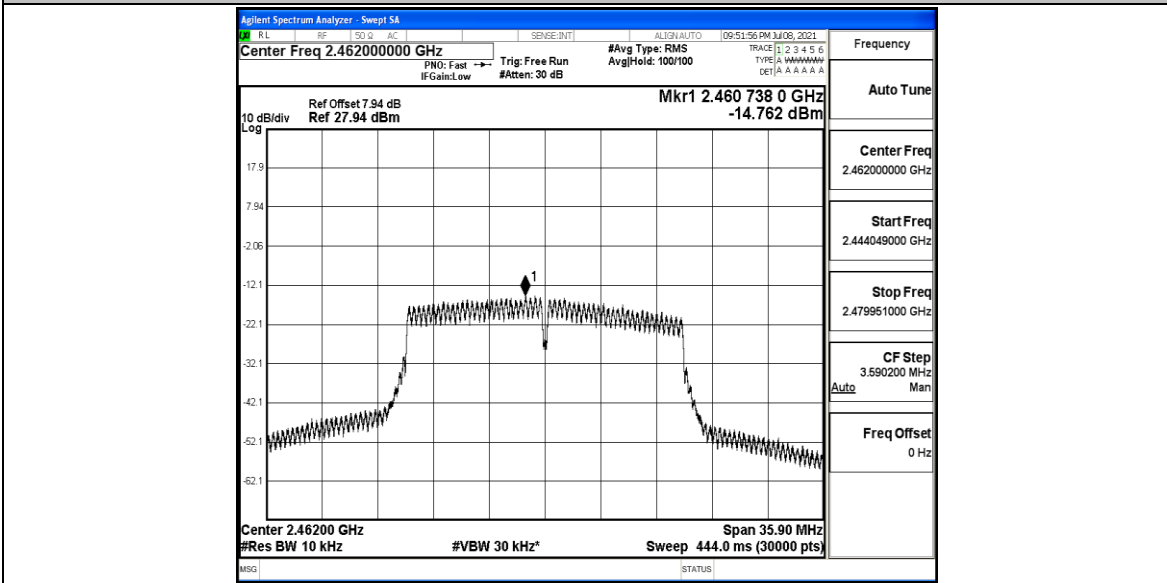
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462



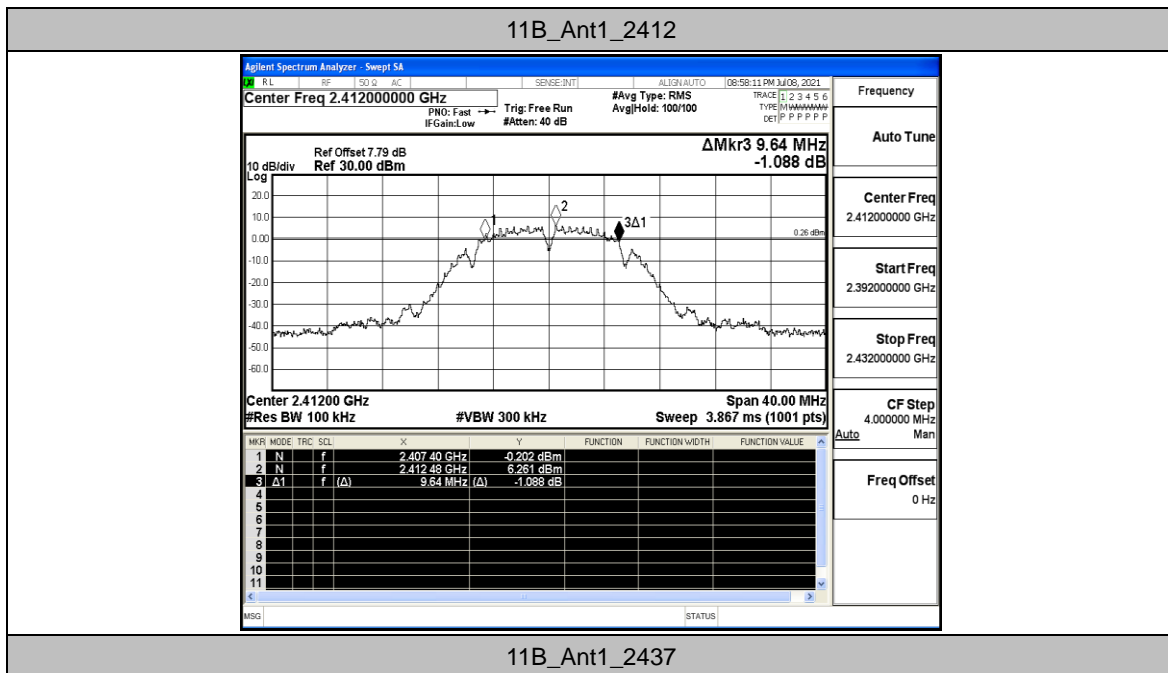


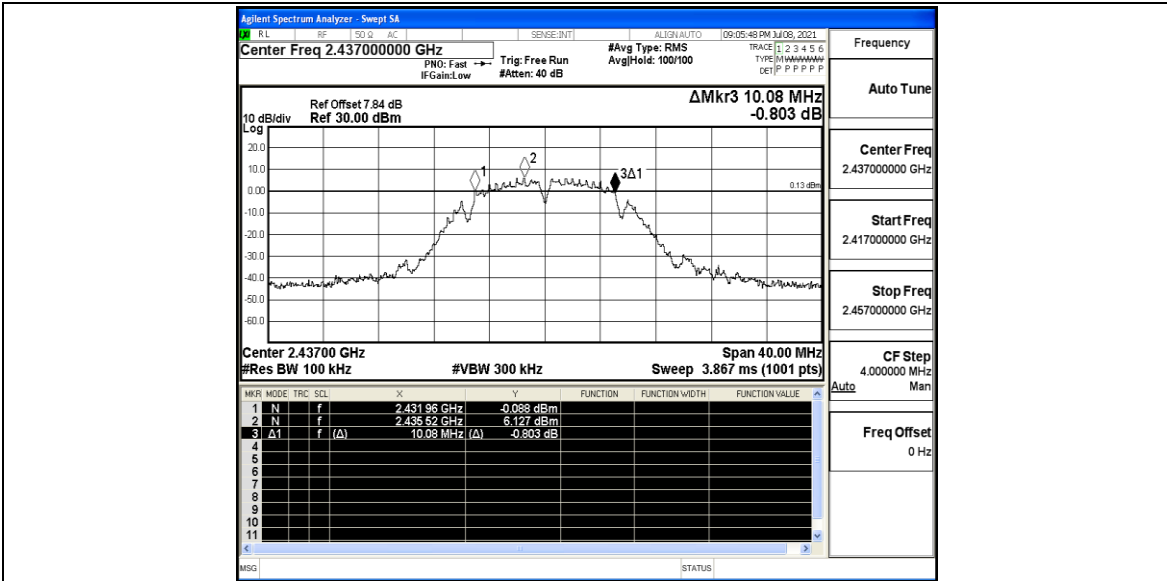
B.4 6dB Bandwidth

Test Result

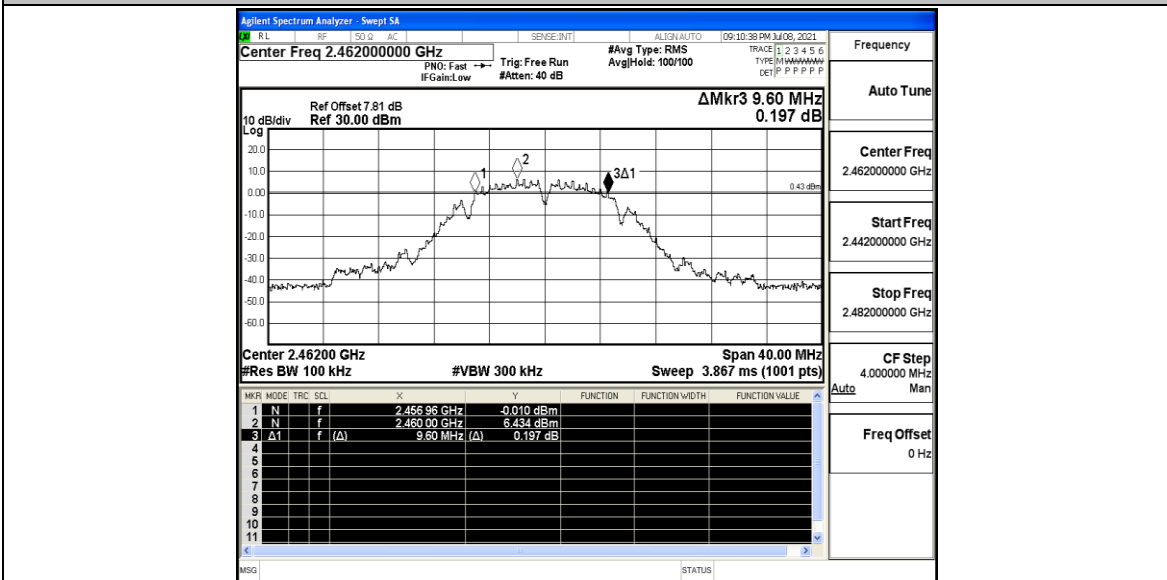
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.640	2407.400	2417.040	0.5	PASS
		2437	10.080	2431.960	2442.040	0.5	PASS
		2462	9.600	2456.960	2466.560	0.5	PASS
11G	Ant1	2412	15.480	2404.080	2419.560	0.5	PASS
		2437	15.720	2429.440	2445.160	0.5	PASS
		2462	13.240	2453.800	2467.040	0.5	PASS
11N20SISO	Ant1	2412	16.160	2404.400	2420.560	0.5	PASS
		2437	16.400	2429.440	2445.840	0.5	PASS
		2462	16.320	2453.200	2469.520	0.5	PASS

Test Graphs

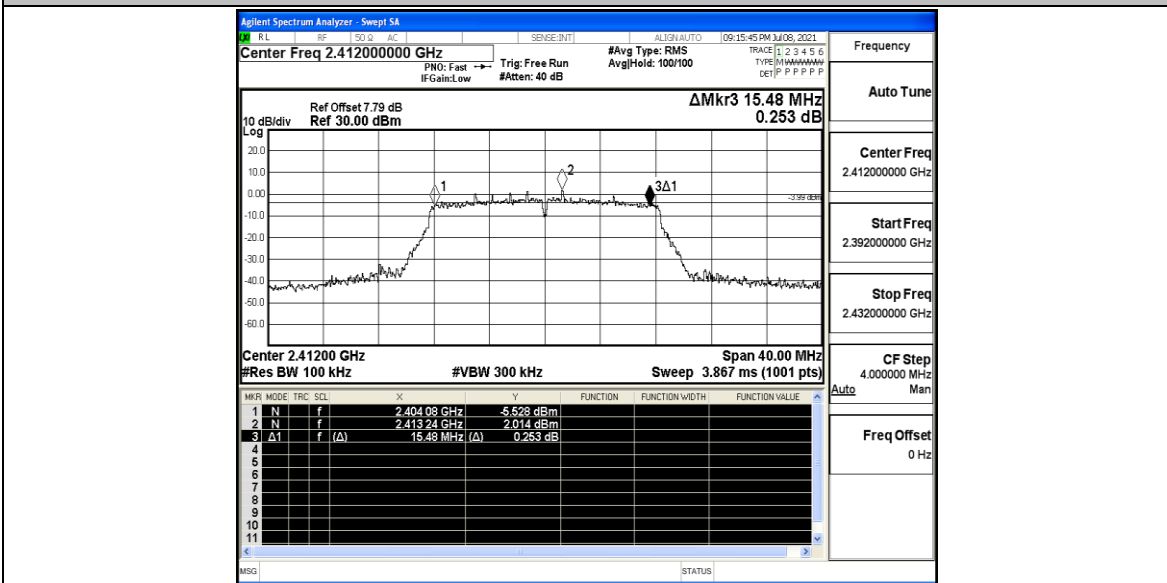




11B_Ant1_2462

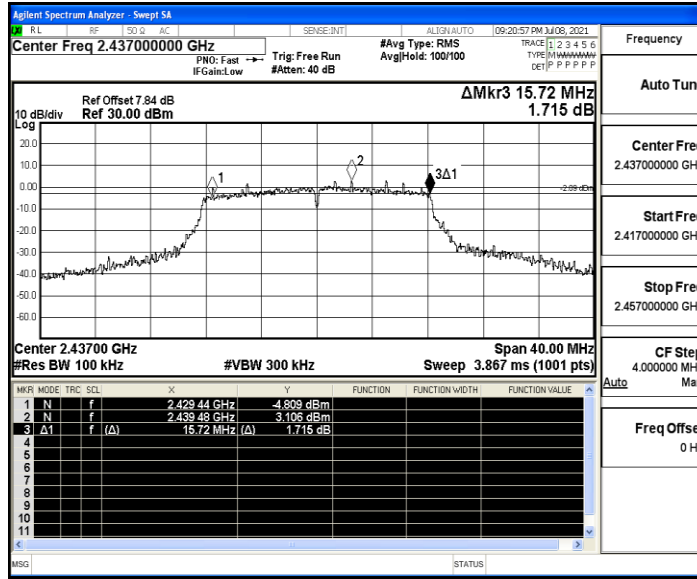


11G_Ant1_2412

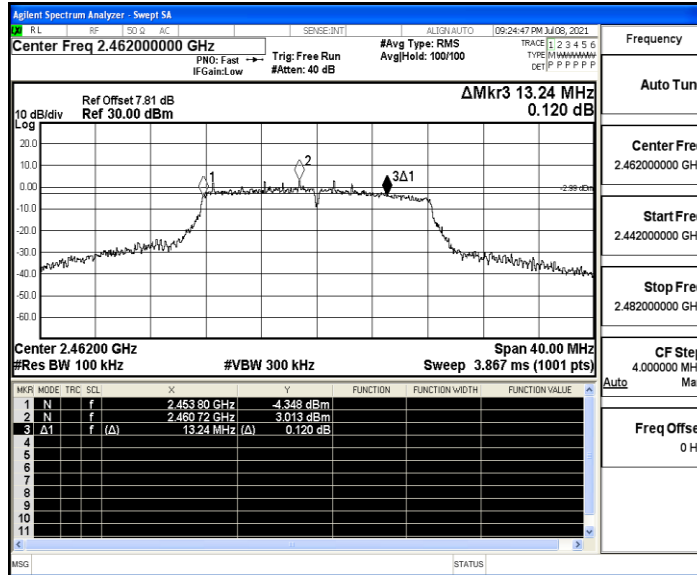




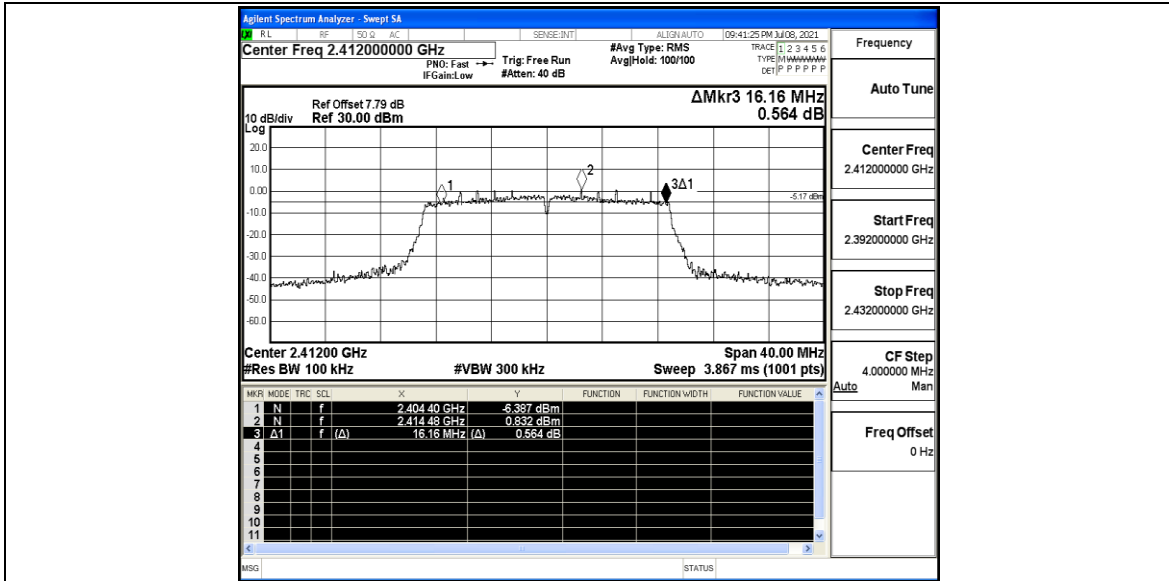
11G_Ant1_2437



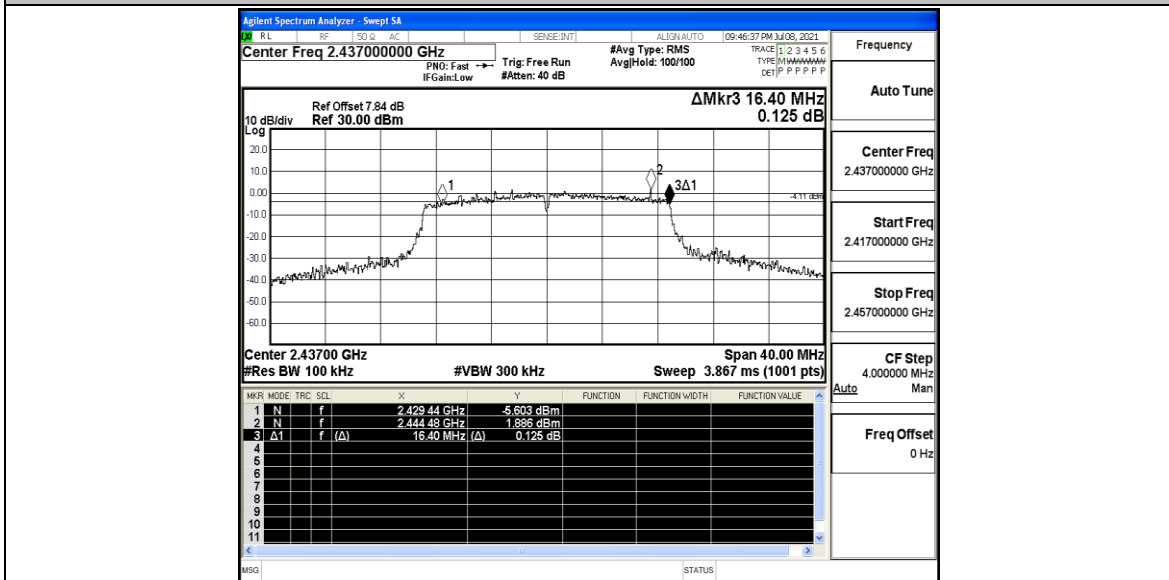
11G_Ant1_2462



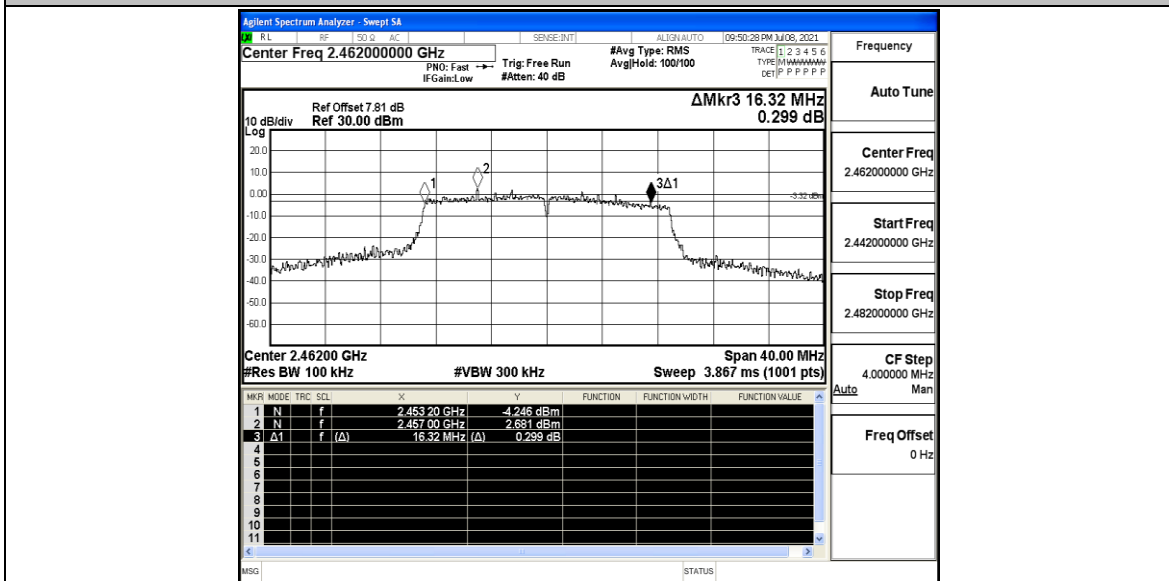
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462





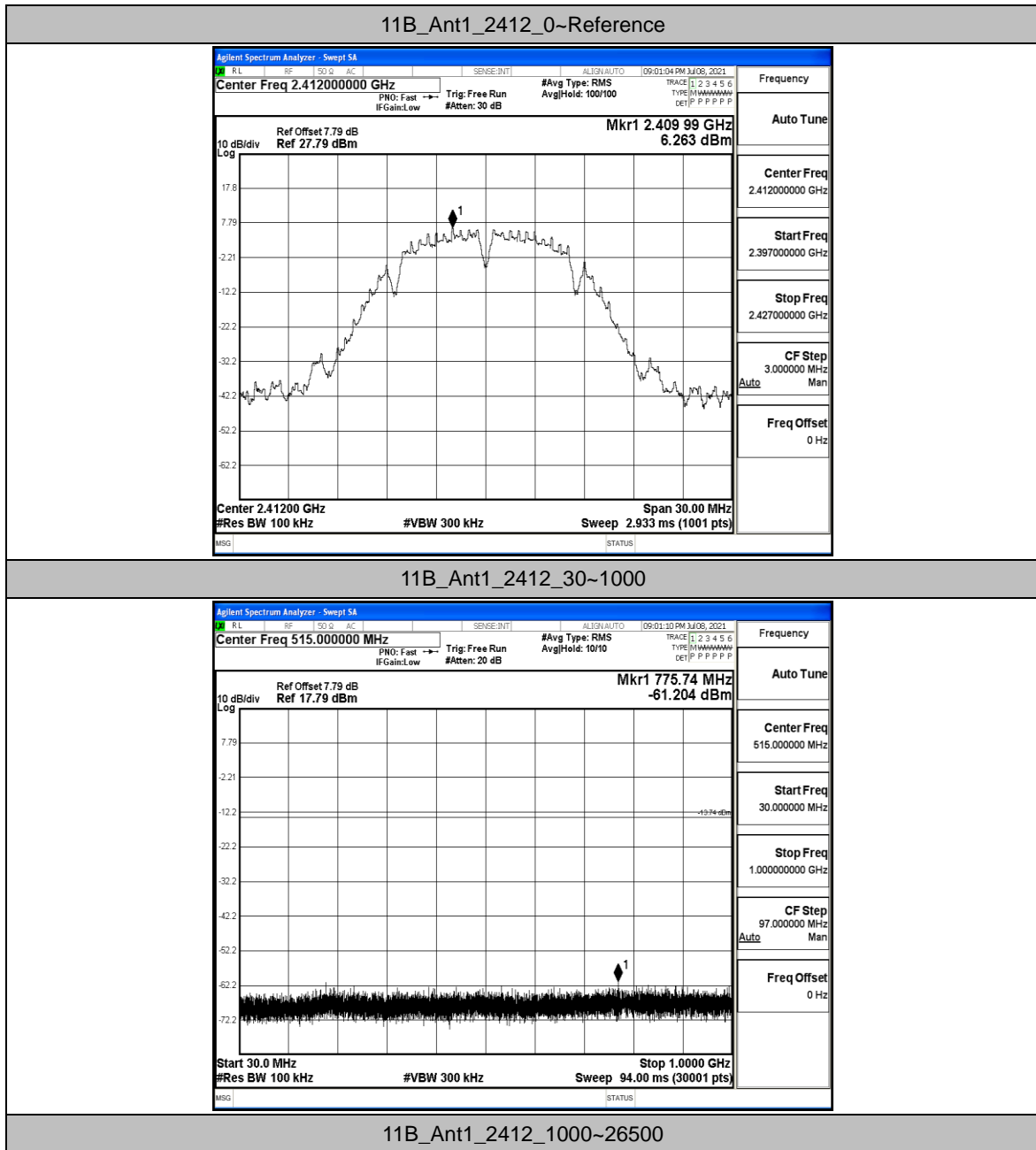
B.5 Conducted Spurious Emission

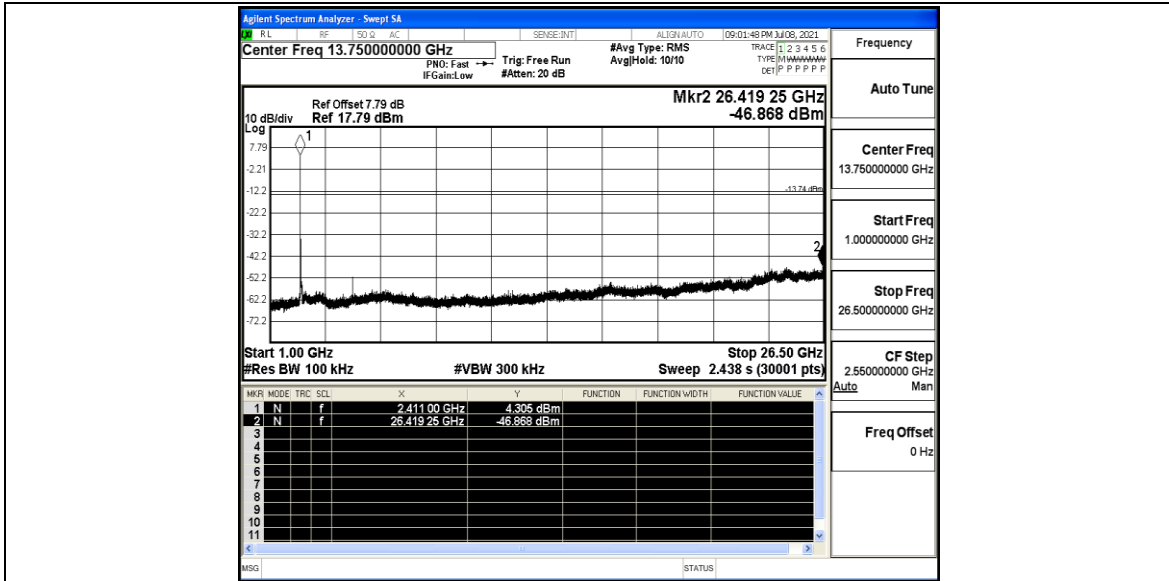
Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	6.26	6.26	---	PASS
			30~1000	6.26	-61.2	≤ -13.74	PASS
			1000~26500	6.26	-46.87	≤ -13.74	PASS
		2437	Reference	6.78	6.78	---	PASS
			30~1000	6.78	-61.97	≤ -13.22	PASS
			1000~26500	6.78	-47.65	≤ -13.22	PASS
		2462	Reference	6.18	6.18	---	PASS
			30~1000	6.18	-61.39	≤ -13.82	PASS
			1000~26500	6.18	-47.61	≤ -13.82	PASS
11G	Ant1	2412	Reference	0.25	0.25	---	PASS
			30~1000	0.25	-61.72	≤ -19.75	PASS
			1000~26500	0.25	-46.68	≤ -19.75	PASS
		2437	Reference	4.25	4.25	---	PASS
			30~1000	4.25	-61.3	≤ -15.75	PASS
			1000~26500	4.25	-46.93	≤ -15.75	PASS
		2462	Reference	2.58	2.58	---	PASS
			30~1000	2.58	-61.55	≤ -17.42	PASS
			1000~26500	2.58	-47.63	≤ -17.42	PASS
11N20SISO	Ant1	2412	Reference	2.03	2.03	---	PASS
			30~1000	2.03	-62.01	≤ -17.97	PASS
			1000~26500	2.03	-46.54	≤ -17.97	PASS
		2437	Reference	3.03	3.03	---	PASS
			30~1000	3.03	-61.6	≤ -16.97	PASS
			1000~26500	3.03	-47.07	≤ -16.97	PASS
		2462	Reference	3.20	3.20	---	PASS
			30~1000	3.20	-61.22	≤ -16.8	PASS
			1000~26500	3.20	-47.44	≤ -16.8	PASS

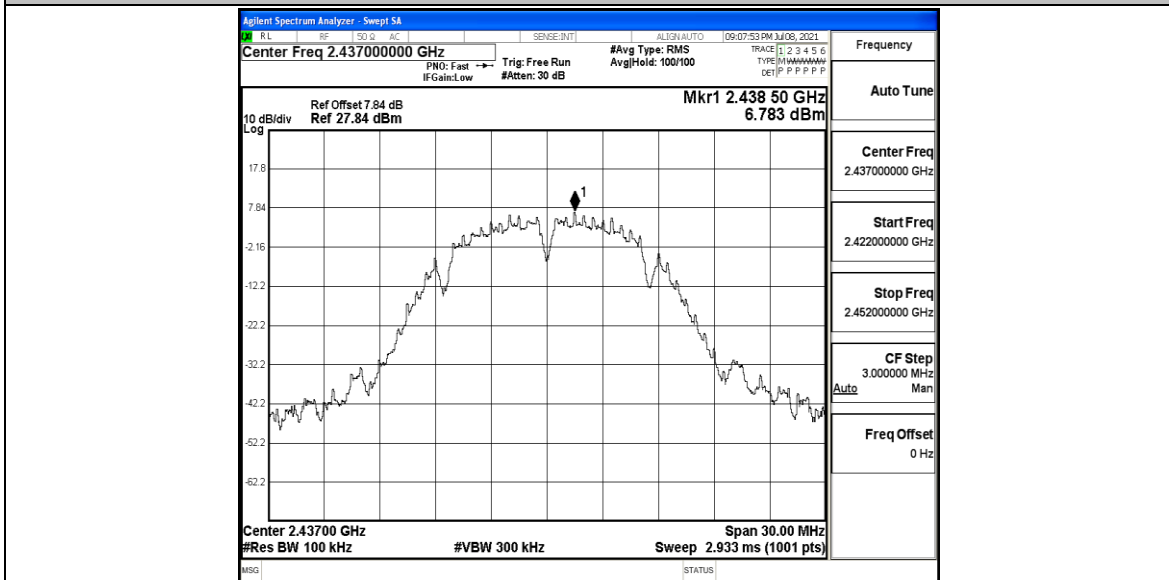


Test Graphs

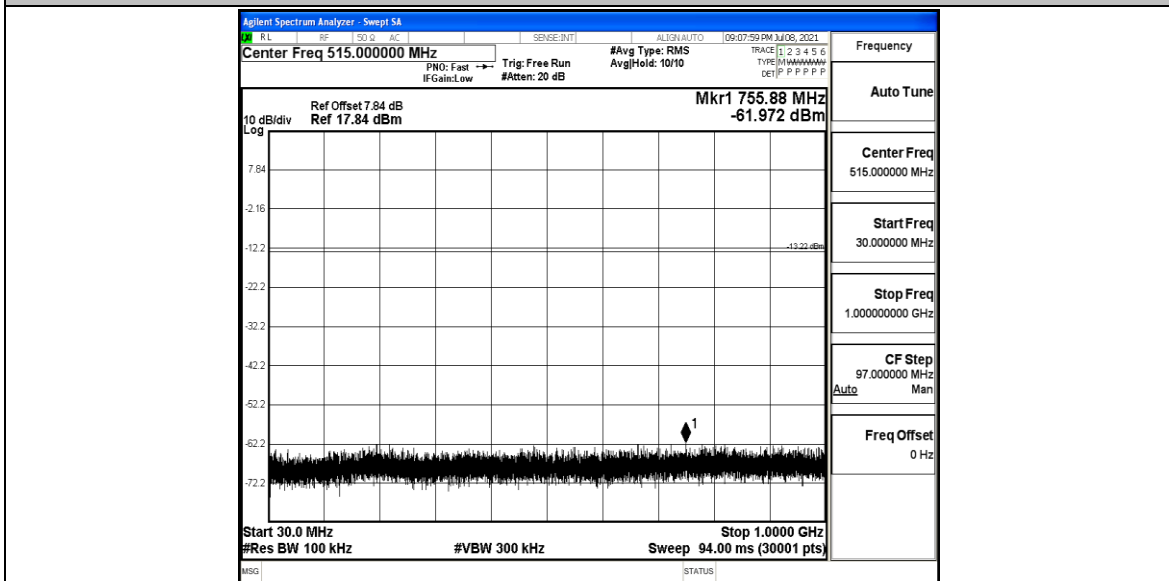




11B_Ant1_2437_0-Reference

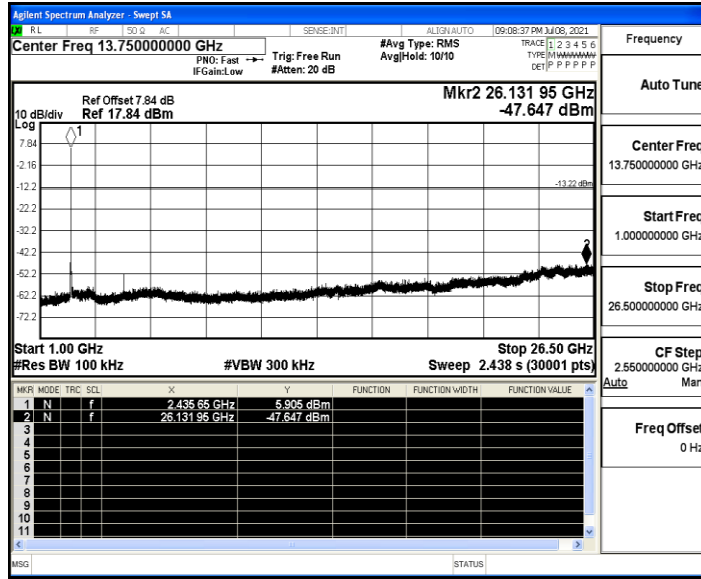


11B_Ant1_2437_30-1000

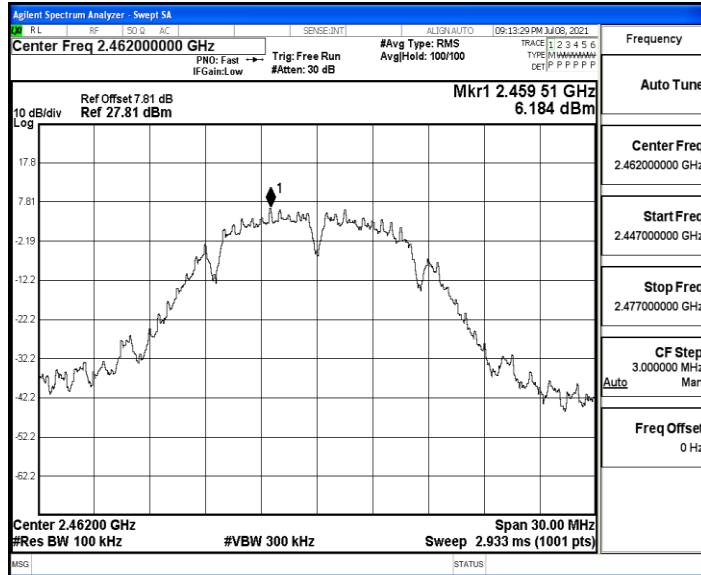




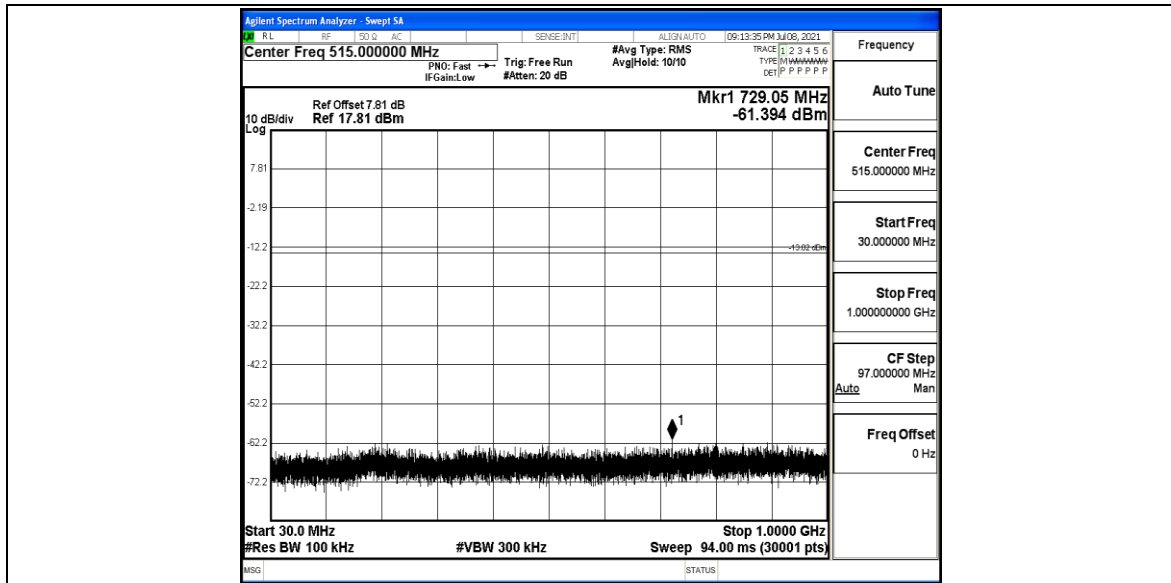
11B_Ant1_2437_1000~26500



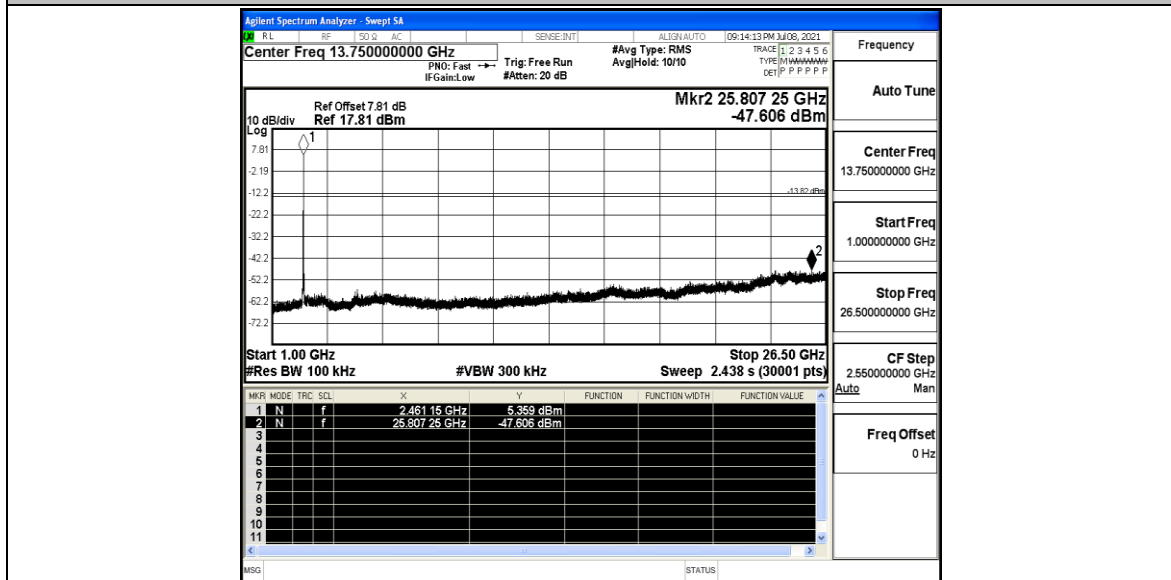
11B_Ant1_2462_0~Reference



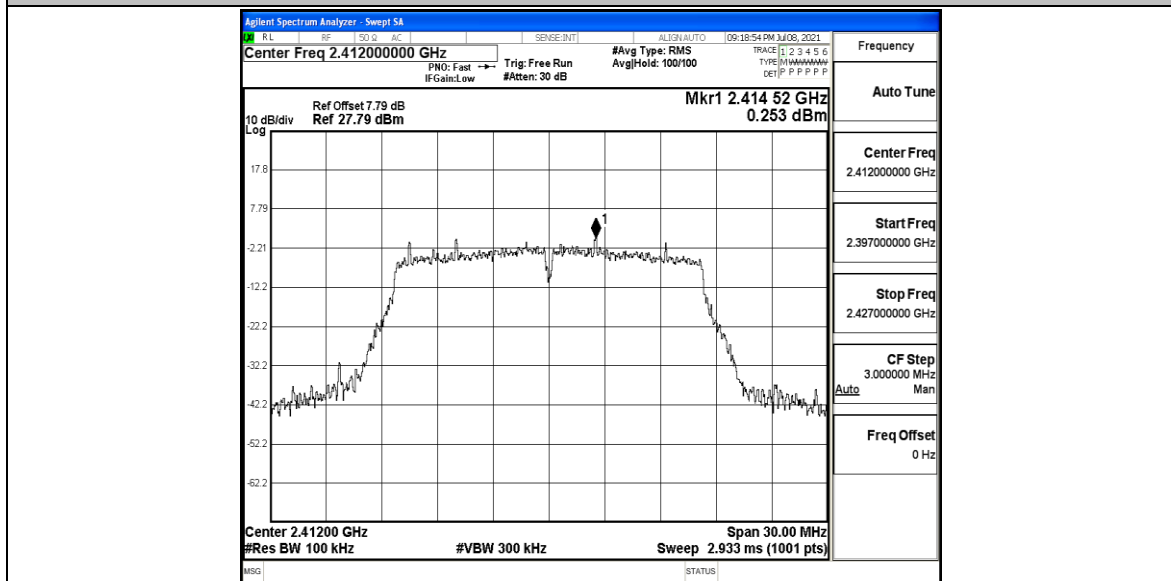
11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500

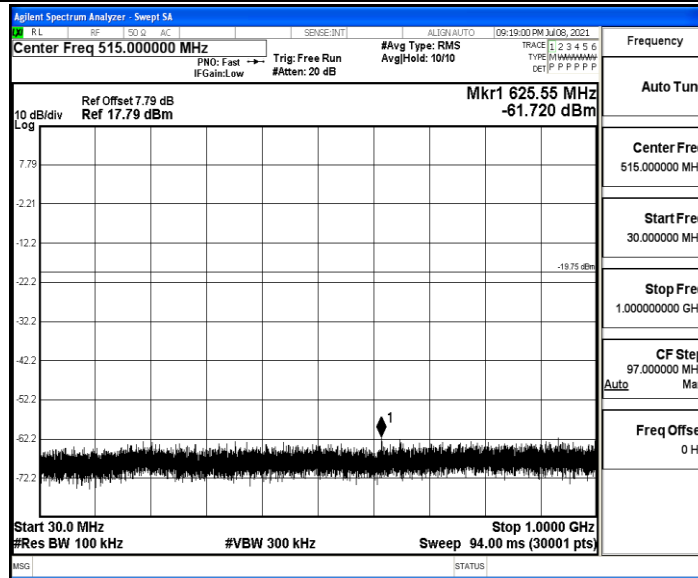


11G_Ant1_2412_0~Reference

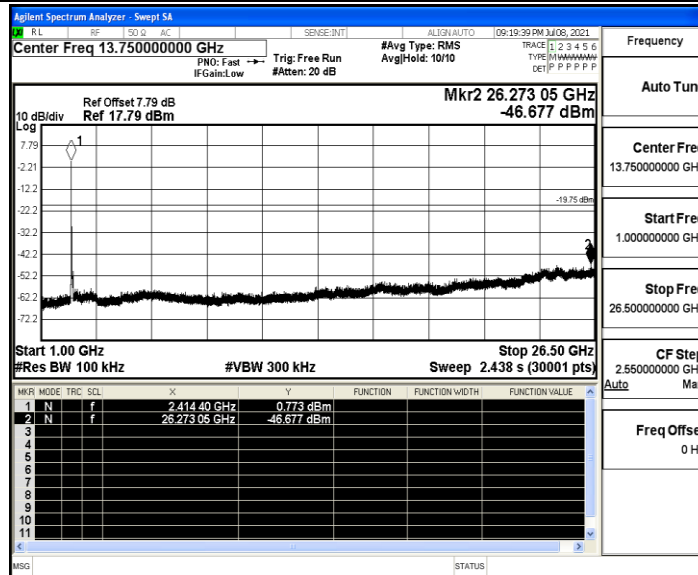




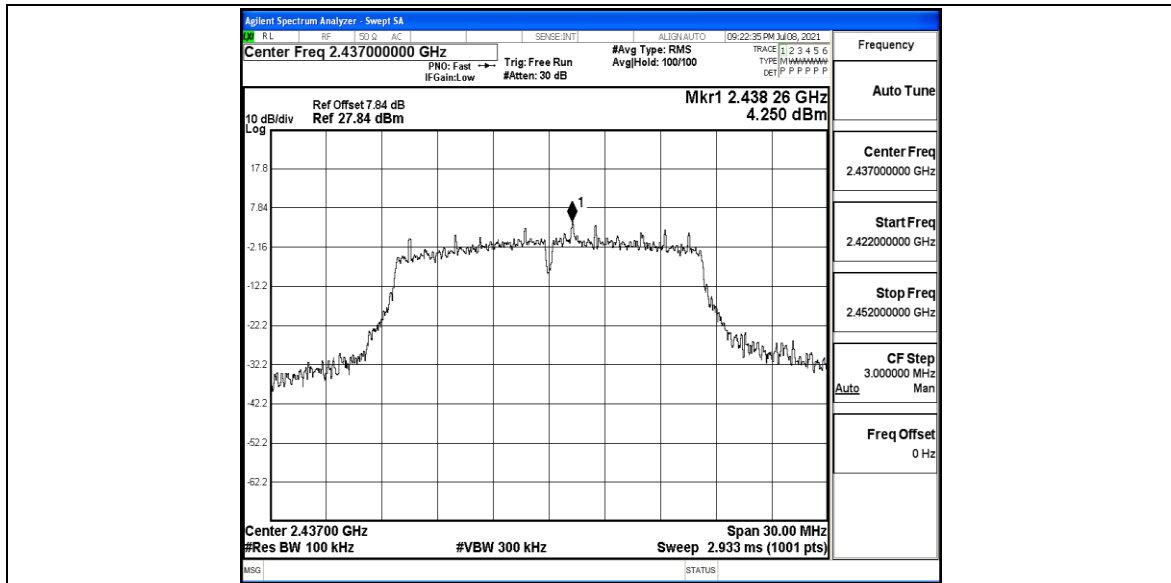
11G_Ant1_2412_30~1000



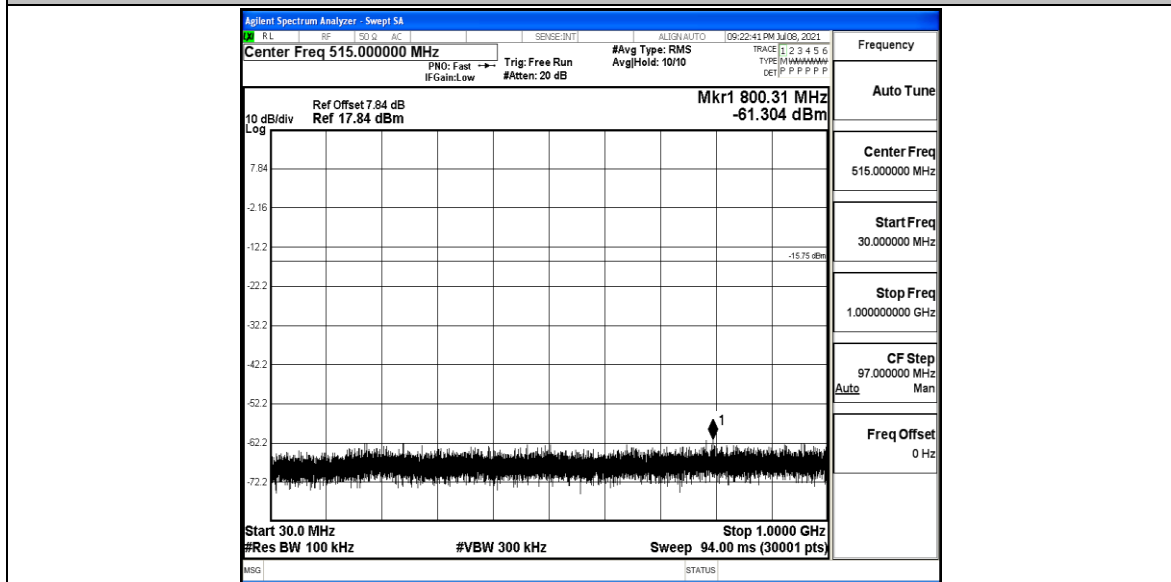
11G_Ant1_2412_1000~26500



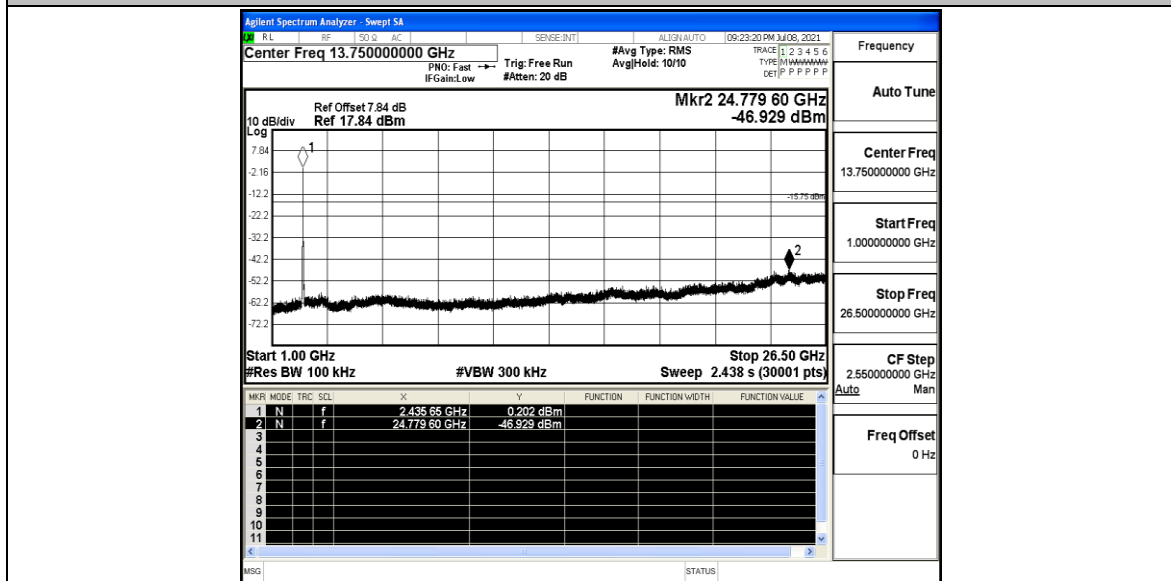
11G_Ant1_2437_0~Reference



11G_Ant1_2437_30~1000

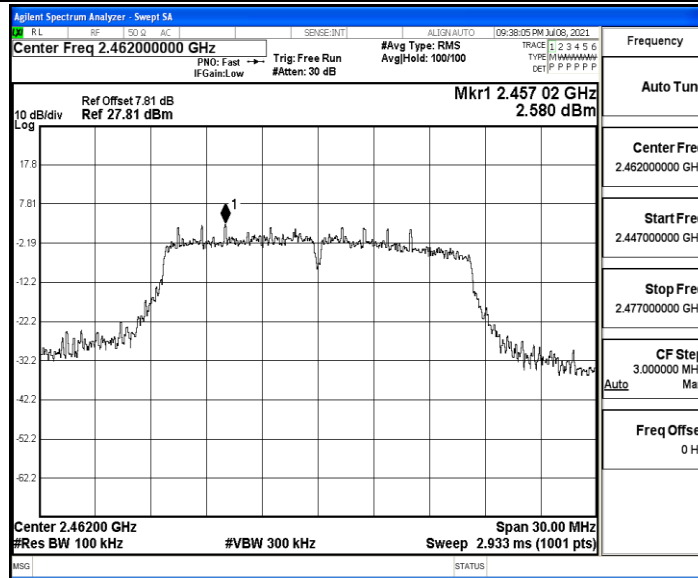


11G_Ant1_2437_1000~26500

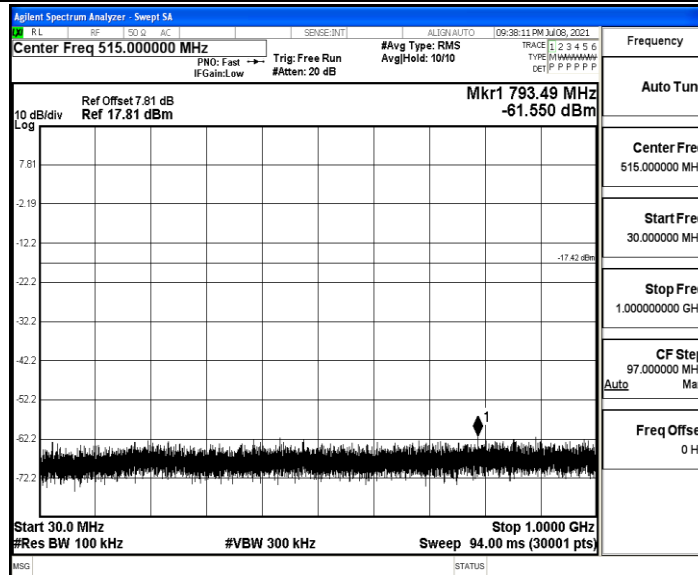




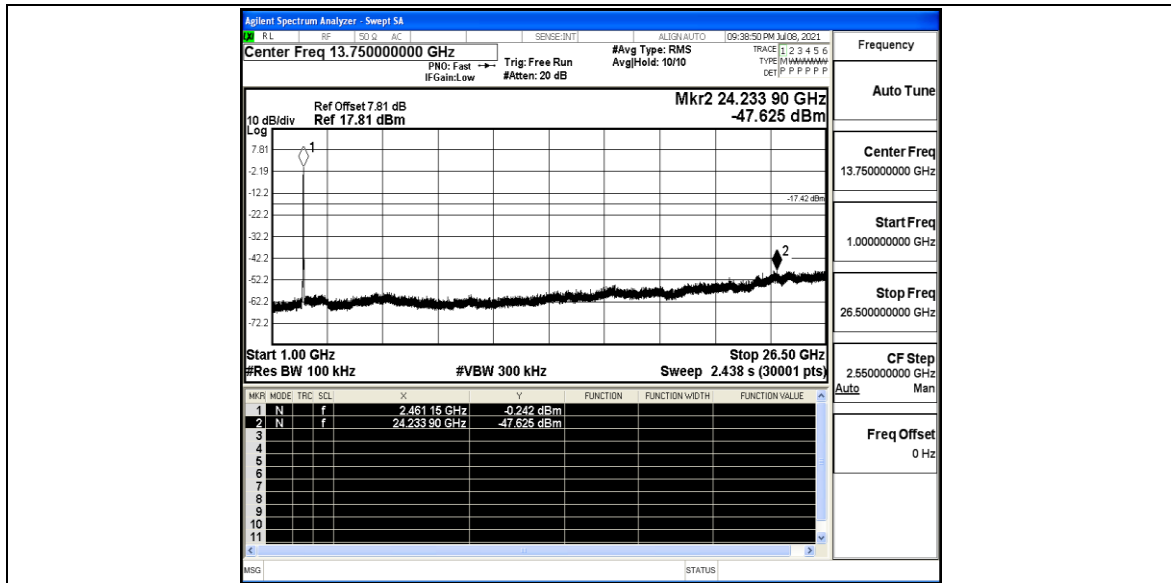
11G_Ant1_2462_0~Reference



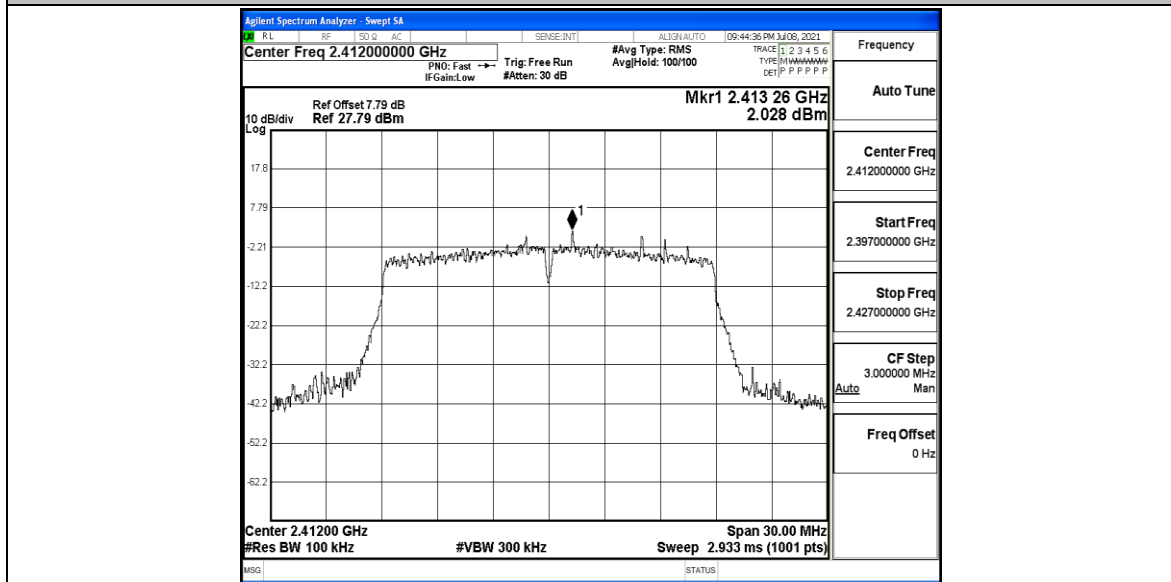
11G_Ant1_2462_30~1000



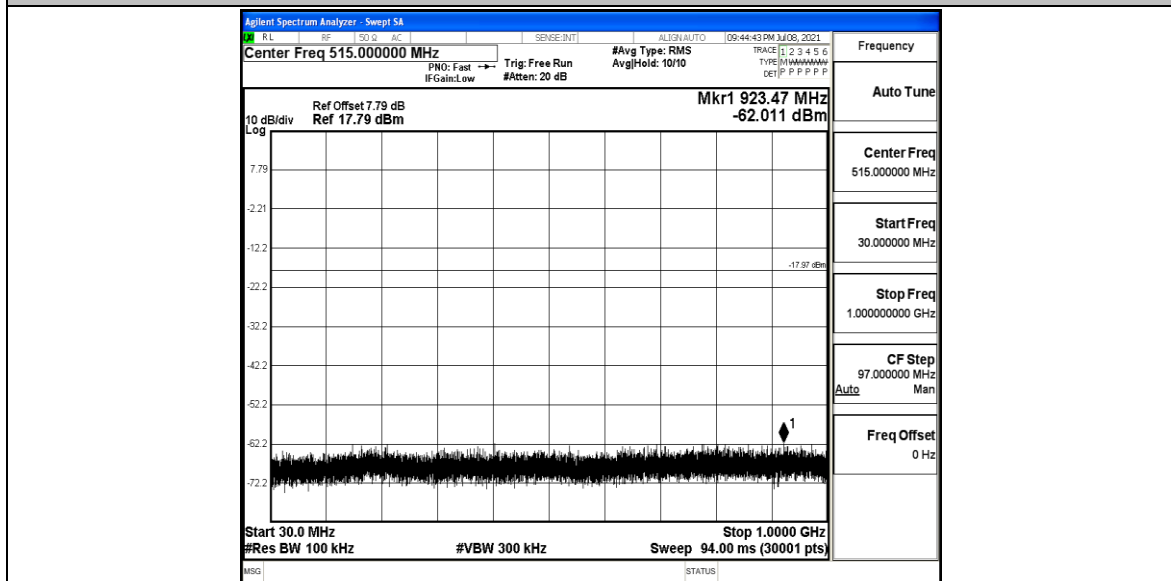
11G_Ant1_2462_1000~26500



11N20SISO_Ant1_2412_0~Reference

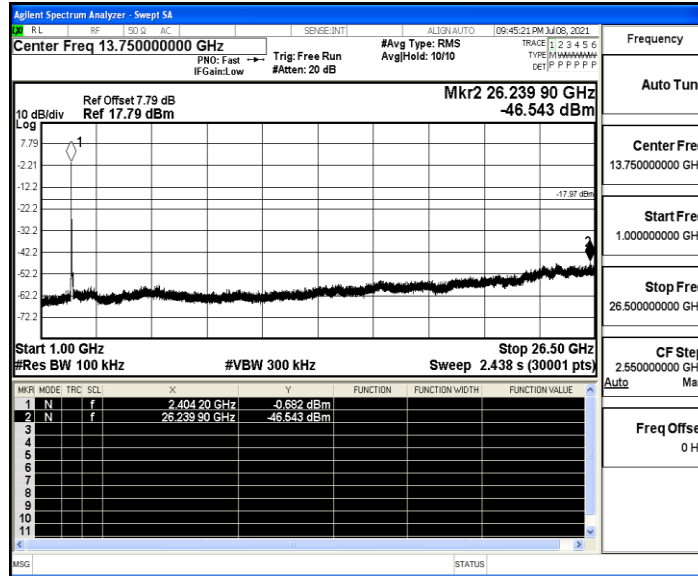


11N20SISO_Ant1_2412_30~1000

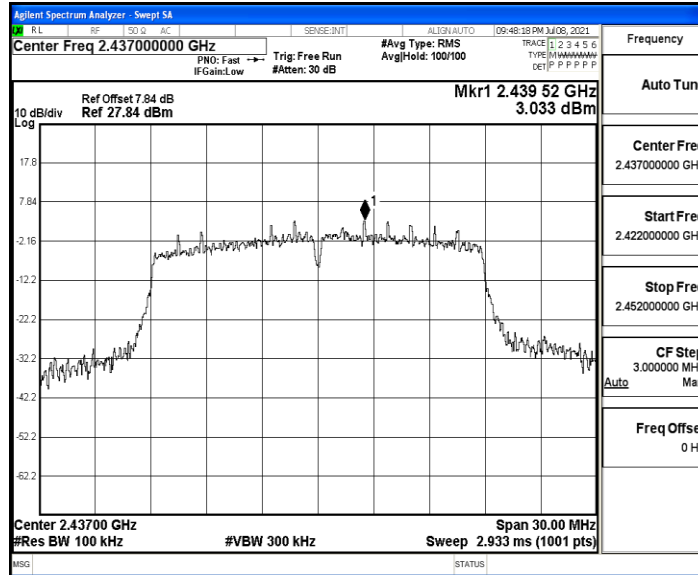




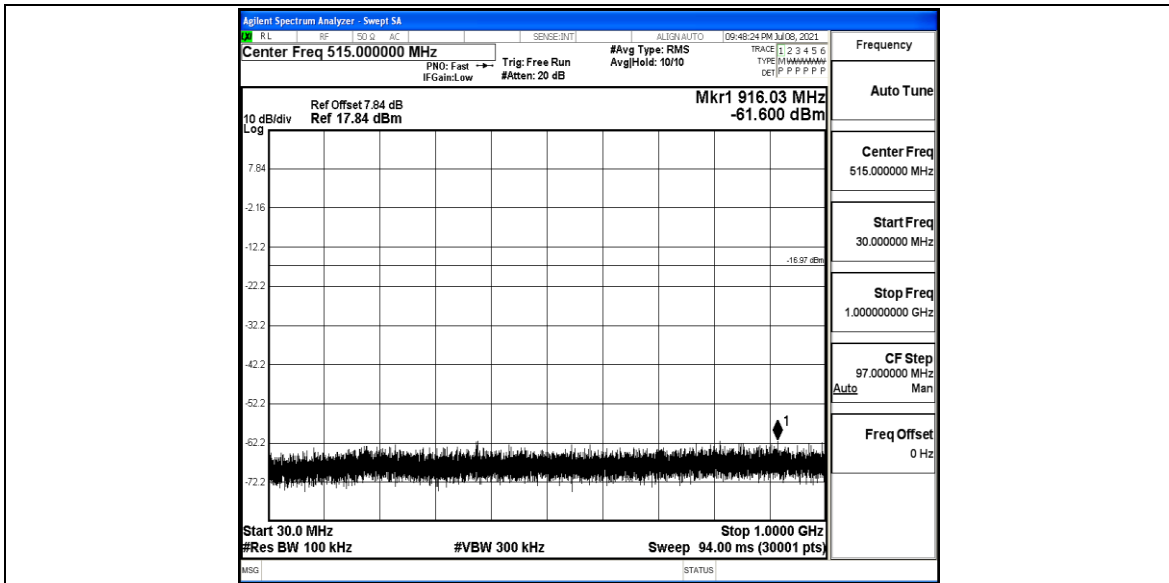
11N20SISO_Ant1_2412_1000~26500



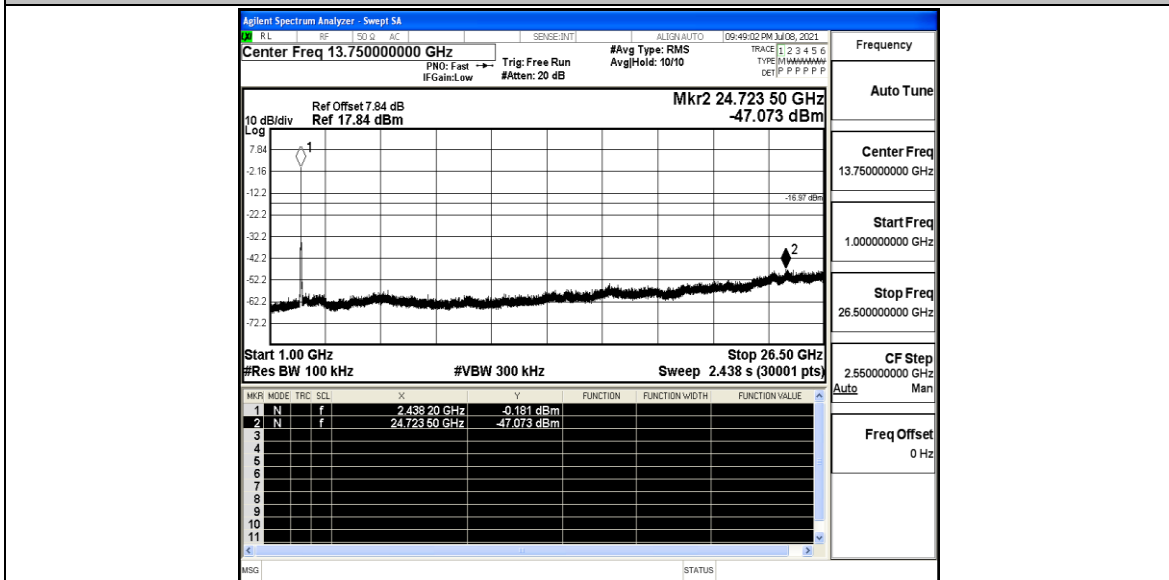
11N20SISO_Ant1_2437_0~Reference



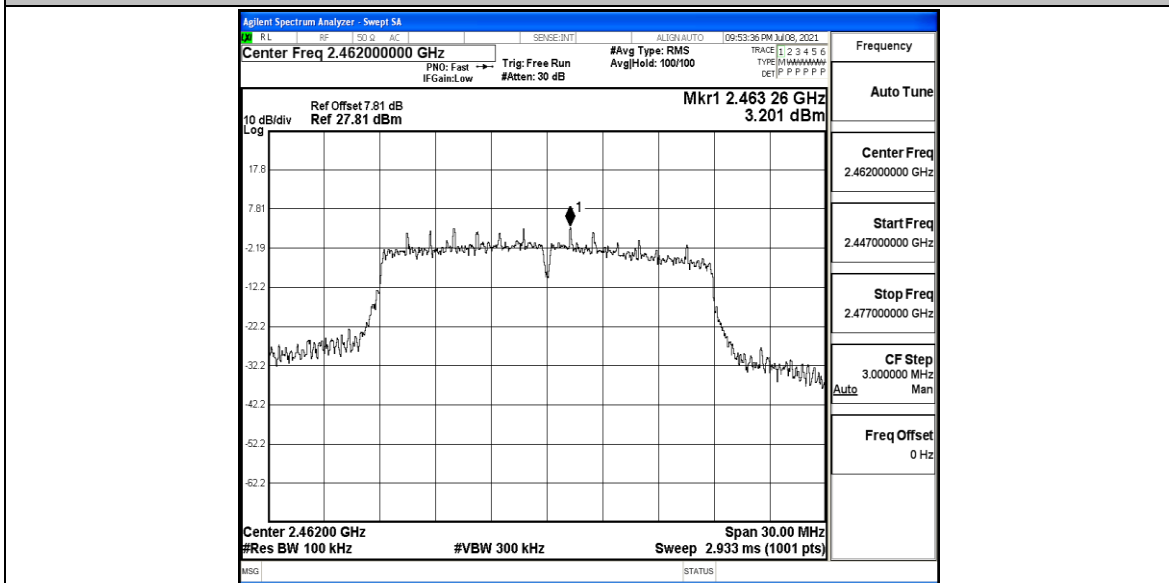
11N20SISO_Ant1_2437_30~1000



11N20SISO_Ant1_2437_1000~26500

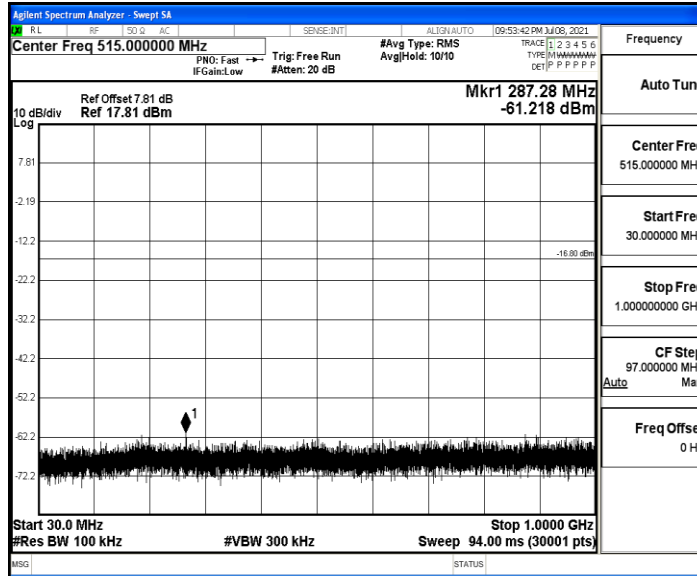


11N20SISO_Ant1_2462_0~Reference

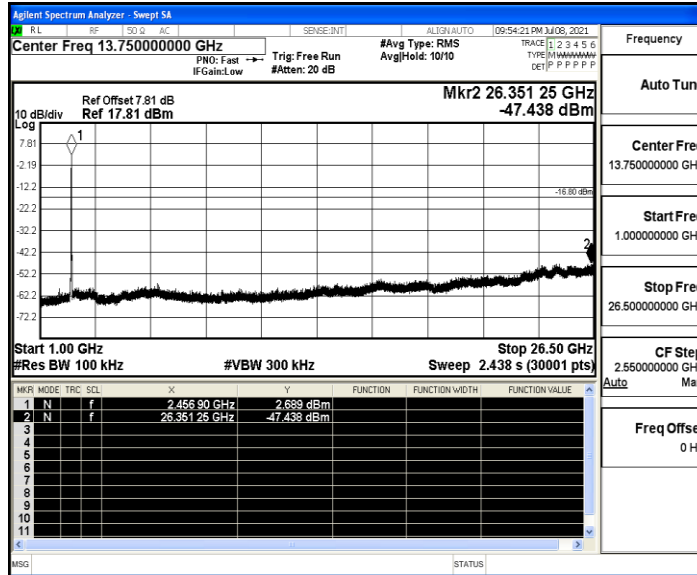




11N20SISO_Ant1_2462_30~1000



11N20SISO_Ant1_2462_1000~26500



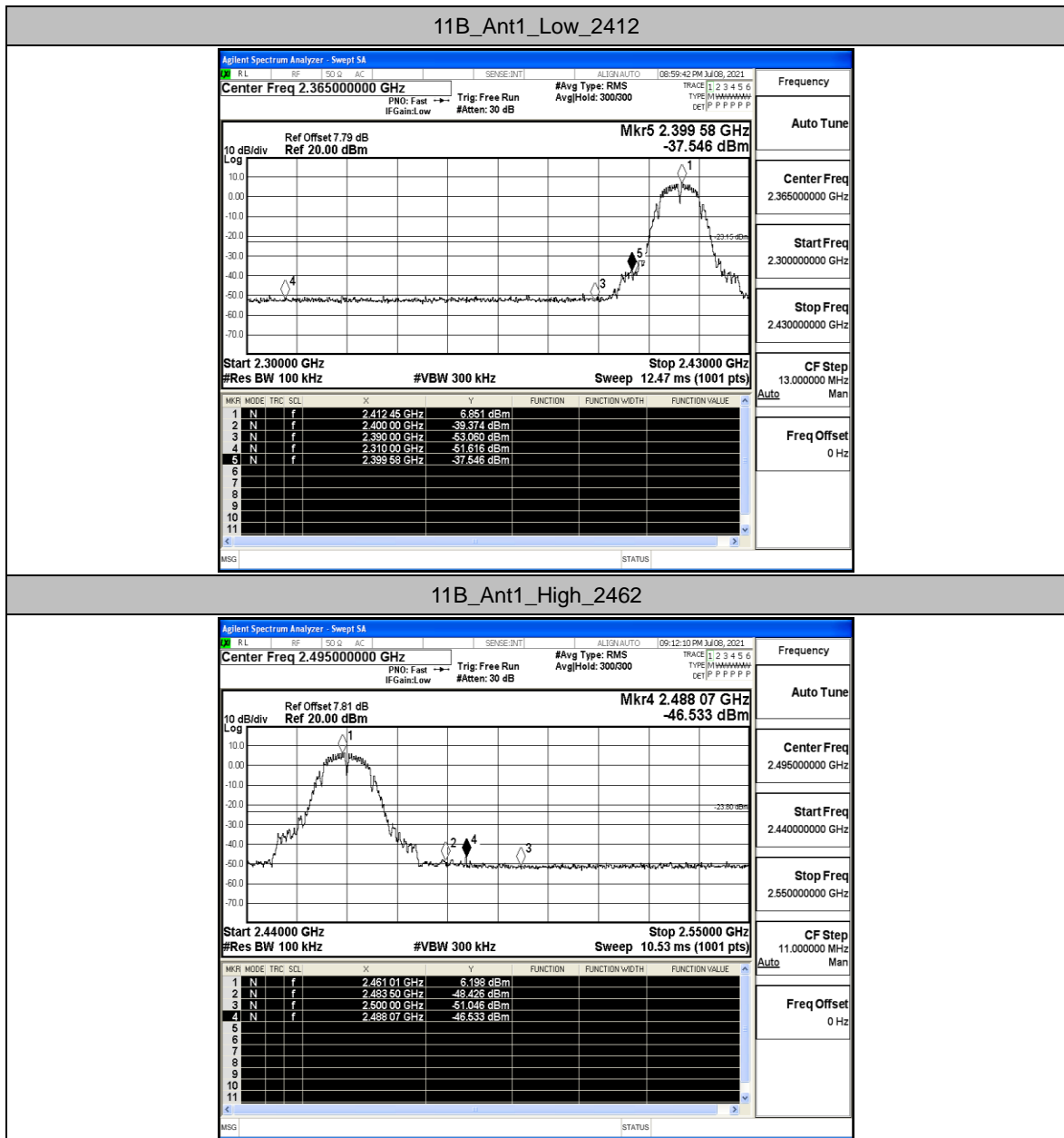


B.6 Band edge measurements

Test Result

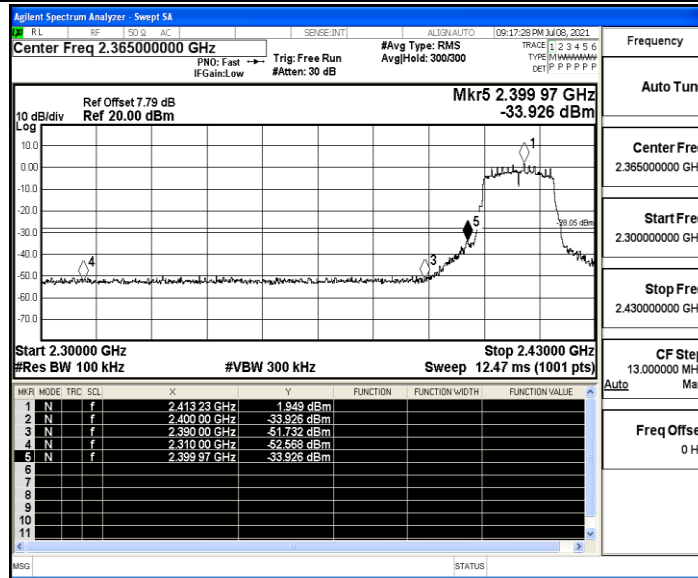
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	6.85	-37.55	≤-23.15	PASS
		High	2462	6.20	-46.53	≤-23.8	PASS
11G	Ant1	Low	2412	1.95	-33.93	≤-28.05	PASS
		High	2462	3.23	-41.2	≤-26.77	PASS
11N20SISO	Ant1	Low	2412	2.03	-32.99	≤-27.97	PASS
		High	2462	3.19	-40.48	≤-26.81	PASS

Test Graphs

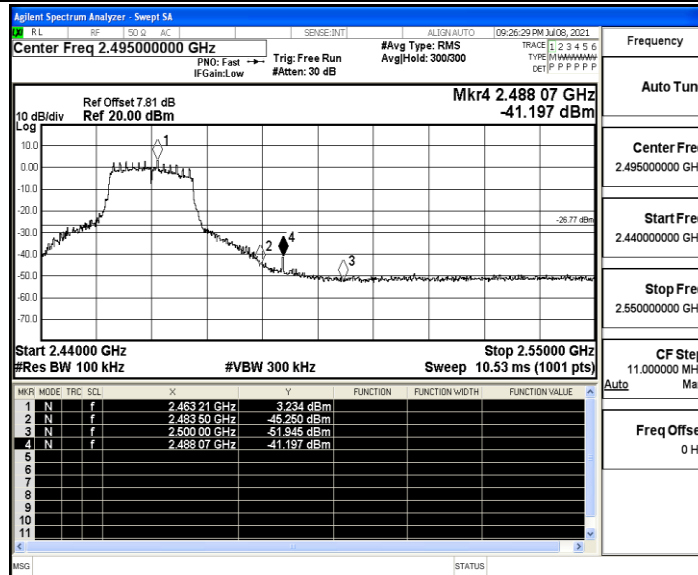




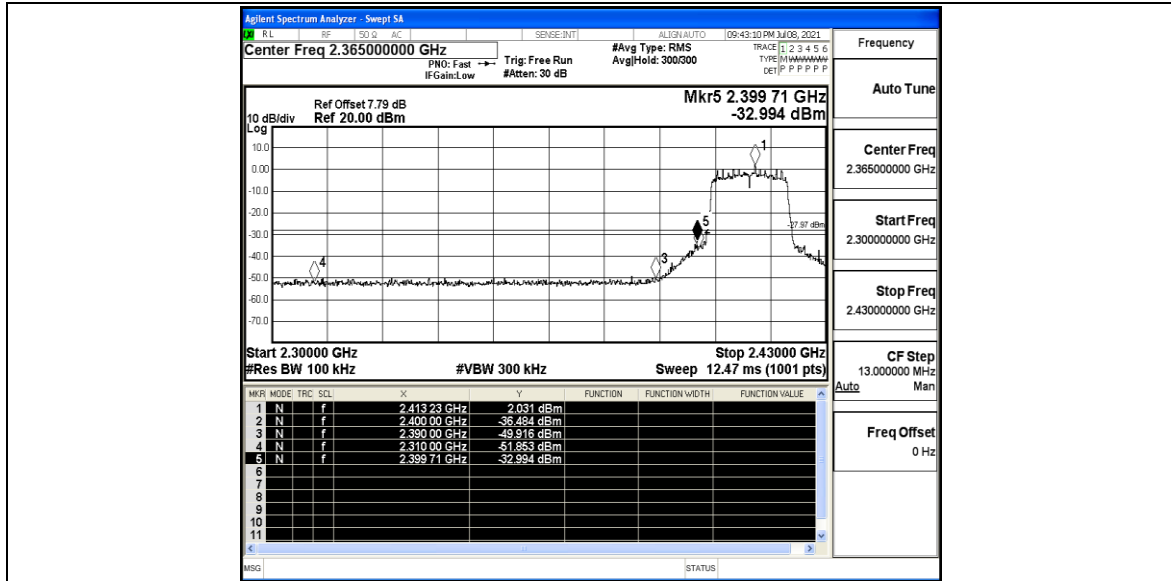
11G_Ant1_Low_2412



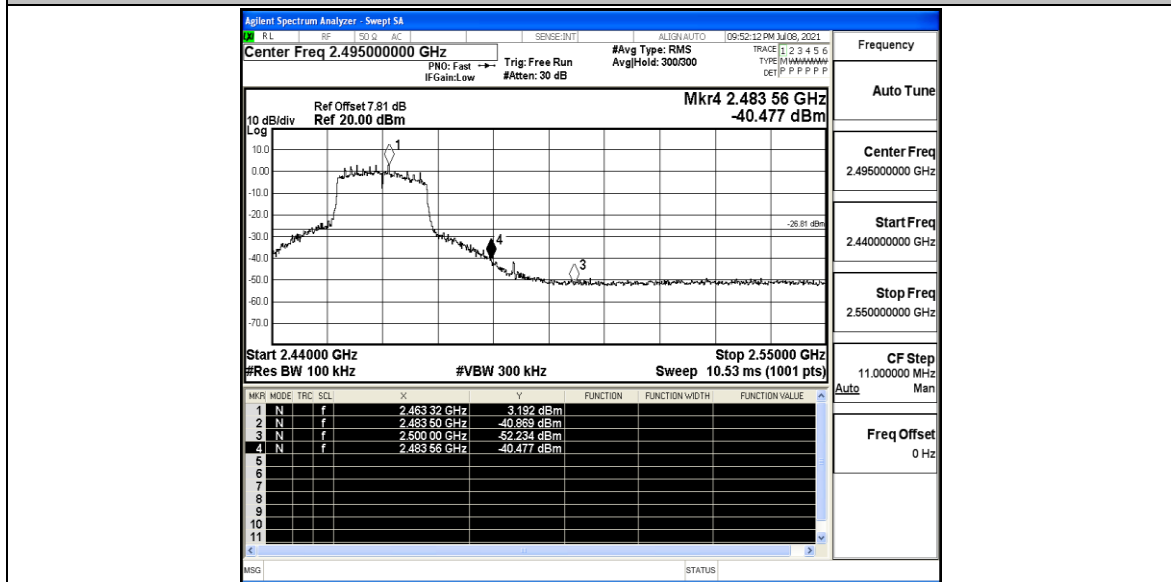
11G_Ant1_High_2462



11N20SISO_Ant1_Low_2412



11N20ISO_Ant1_High_2462





B.7 Emissions in Restricted Bands

Test Result

TestMode	ChName	Channel	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Verdict
11B	Low	2412	AV	2310.000	-49.13	≤-41.20	PASS
			AV	2389.830	-48.5	≤-41.20	PASS
			AV	2390.000	-48.51	≤-41.20	PASS
			Peak	2310.000	-45.56	≤-21.20	PASS
			Peak	2315.210	-39.84	≤-21.20	PASS
			Peak	2390.000	-44.26	≤-21.20	PASS
	High	2462	AV	2483.500	-46.16	≤-41.20	PASS
			AV	2487.850	-44.97	≤-41.20	PASS
			AV	2500.000	-48.12	≤-41.20	PASS
			Peak	2483.500	-42.11	≤-21.20	PASS
			Peak	2488.400	-38.06	≤-21.20	PASS
			Peak	2500.000	-40.58	≤-21.20	PASS
11G	Low	2412	AV	2310.000	-48.77	≤-41.20	PASS
			AV	2389.960	-47.83	≤-41.20	PASS
			AV	2390.000	-47.83	≤-41.20	PASS
			Peak	2310.000	-42	≤-21.20	PASS
			Peak	2373.320	-38.54	≤-21.20	PASS
			Peak	2390.000	-40.1	≤-21.20	PASS
	High	2462	AV	2483.500	-44.68	≤-41.20	PASS
			AV	2487.850	-43.49	≤-41.20	PASS
			AV	2500.000	-47.77	≤-41.20	PASS
			Peak	2483.500	-36.82	≤-21.20	PASS
			Peak	2487.850	-35.94	≤-21.20	PASS
			Peak	2500.000	-41.33	≤-21.20	PASS
11N20 SISO	Low	2412	AV	2310.000	-48.73	≤-41.20	PASS
			AV	2389.960	-47.31	≤-41.20	PASS
			AV	2390.000	-47.31	≤-41.20	PASS
			Peak	2310.000	-41.21	≤-21.20	PASS
			Peak	2389.180	-37.58	≤-21.20	PASS
			Peak	2390.000	-40.09	≤-21.20	PASS
	High	2462	AV	2483.500	-43.08	≤-41.20	PASS
			AV	2488.070	-43.4	≤-41.20	PASS
			AV	2500.000	-47.67	≤-41.20	PASS
			Peak	2483.500	-34.31	≤-21.20	PASS
			Peak	2484.330	-33.15	≤-21.20	PASS
			Peak	2500.000	-40.32	≤-21.20	PASS

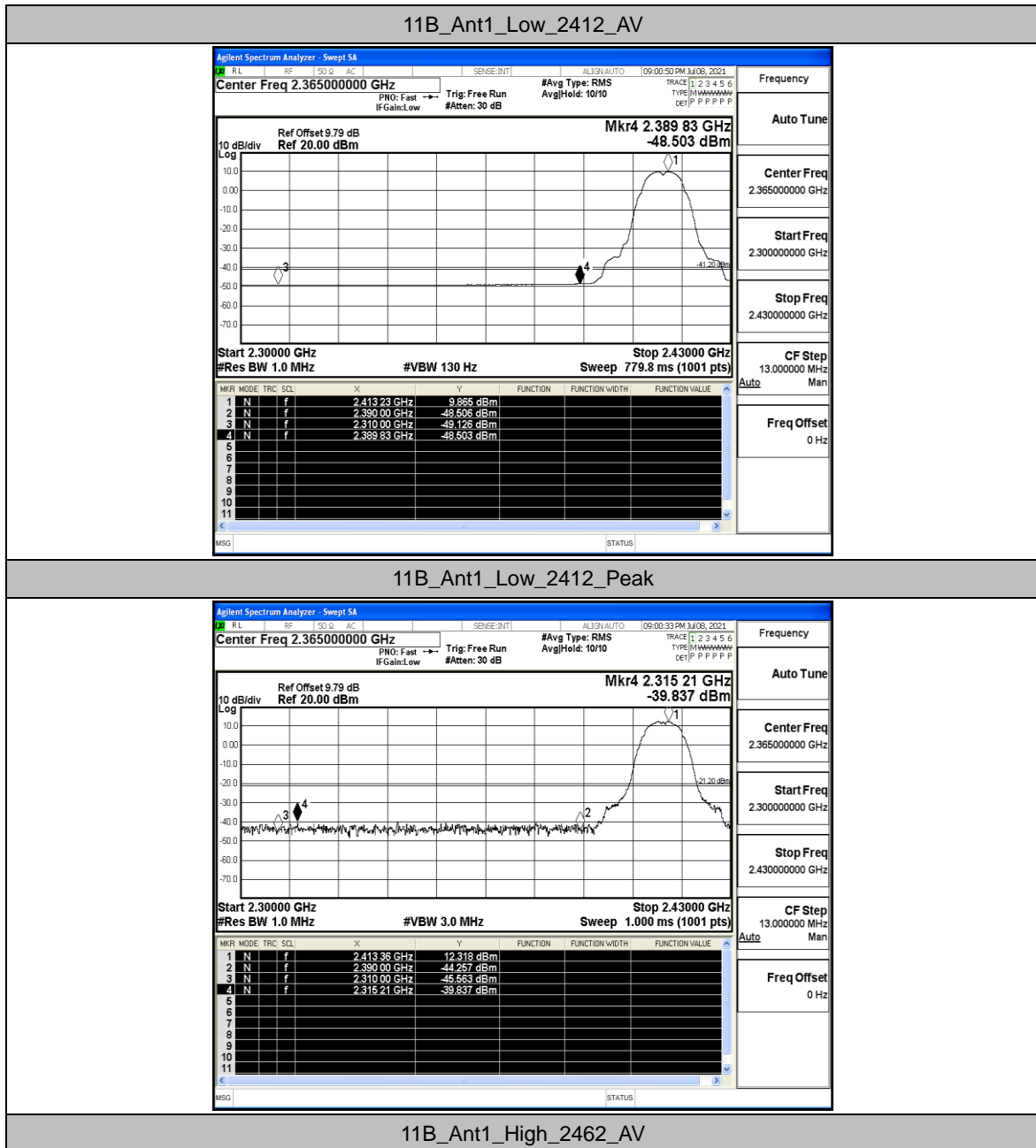


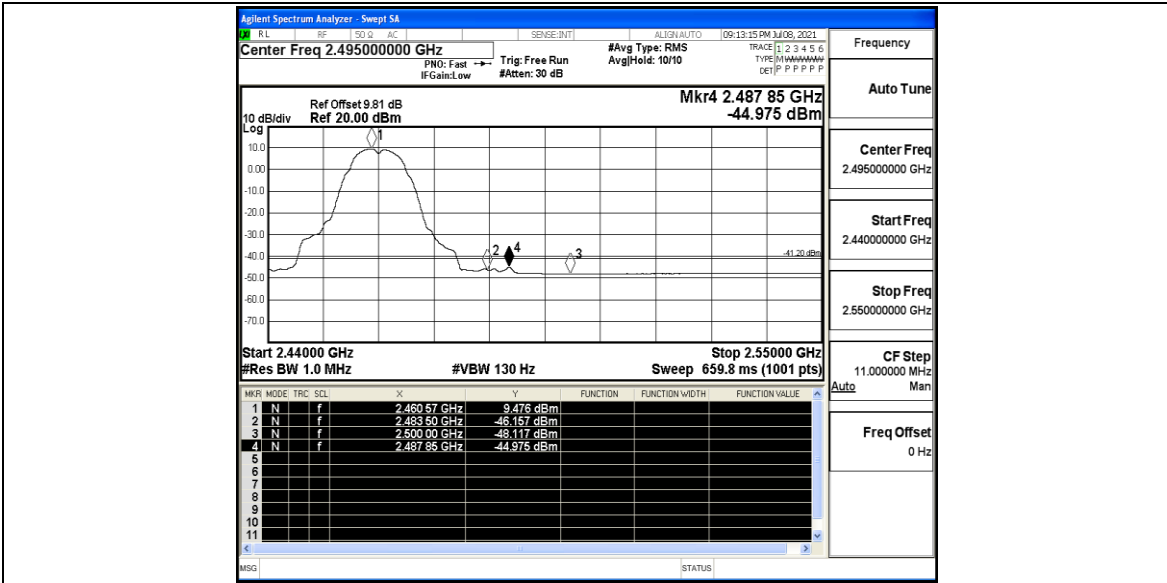
Note:

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.

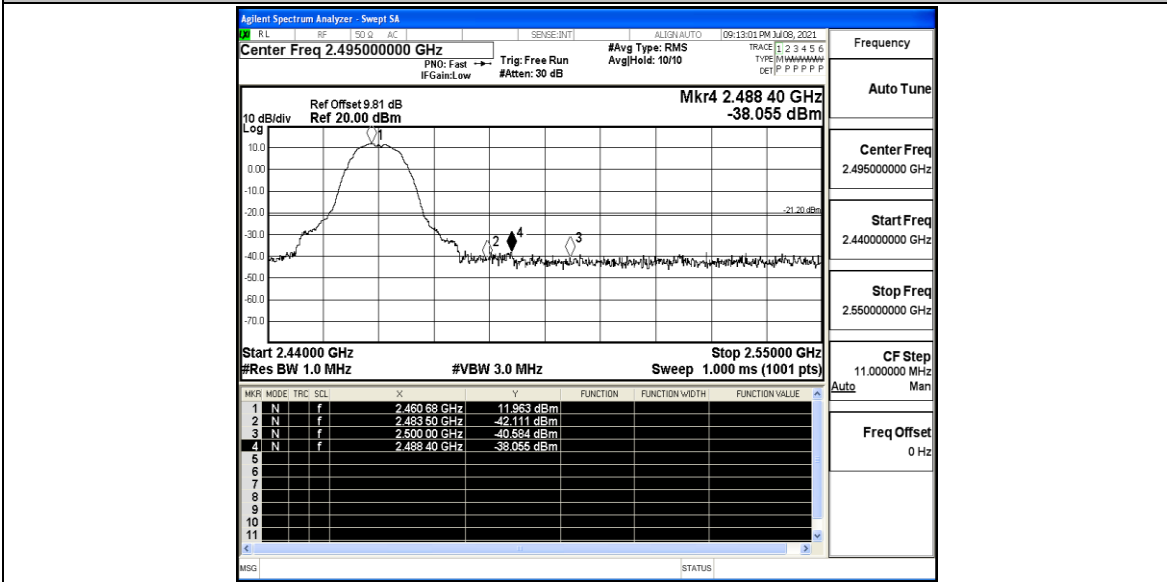


Test Graphs

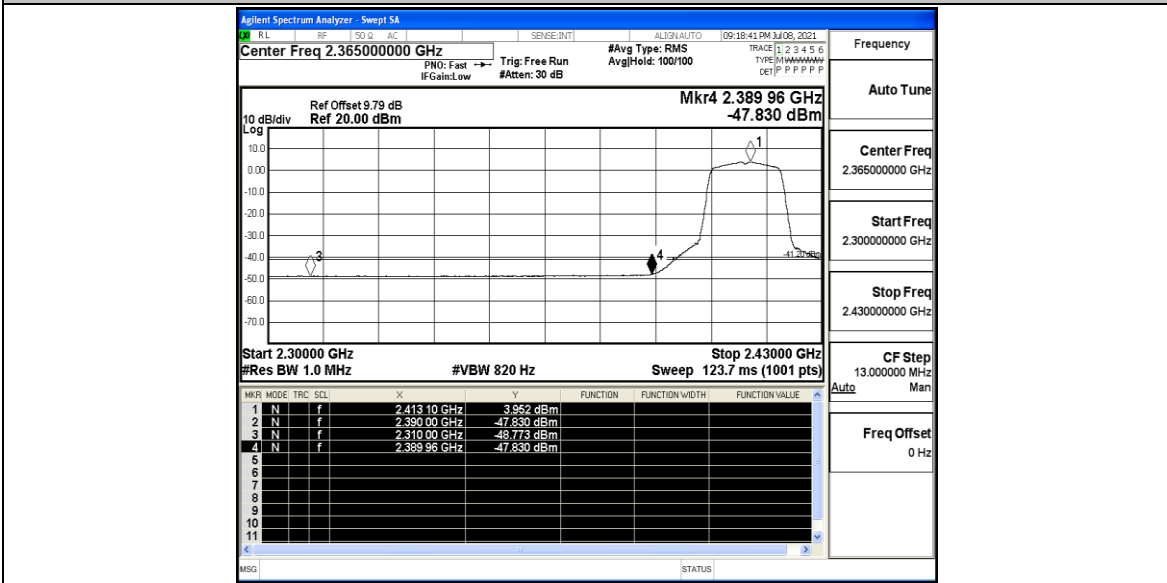




11B_Ant1_High_2462_Peak

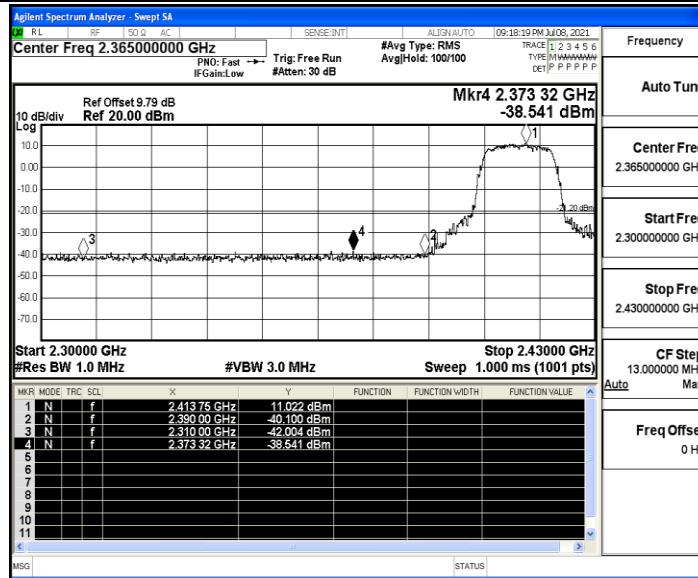


11G_Ant1_Low_2412_AV

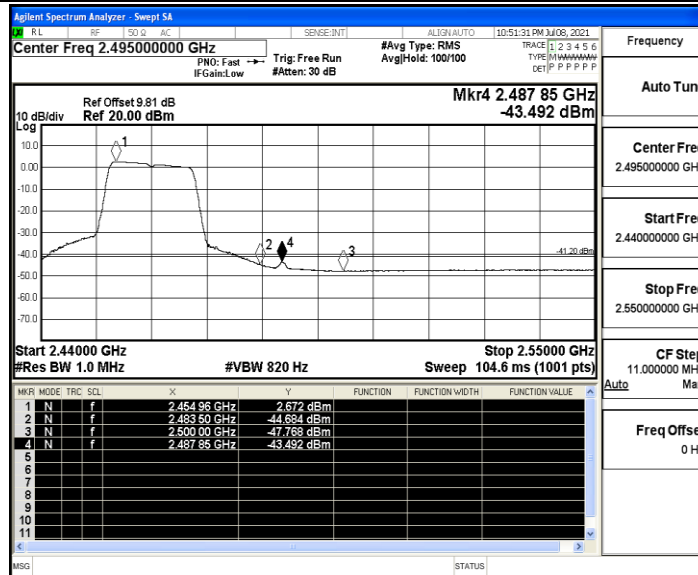




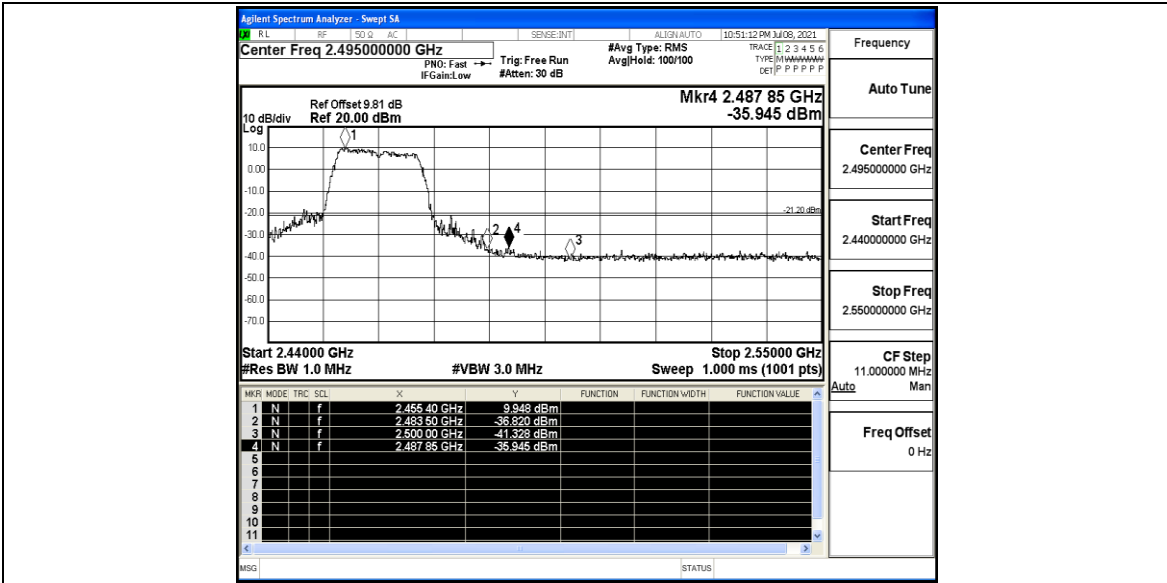
11G_Ant1_Low_2412_Peak



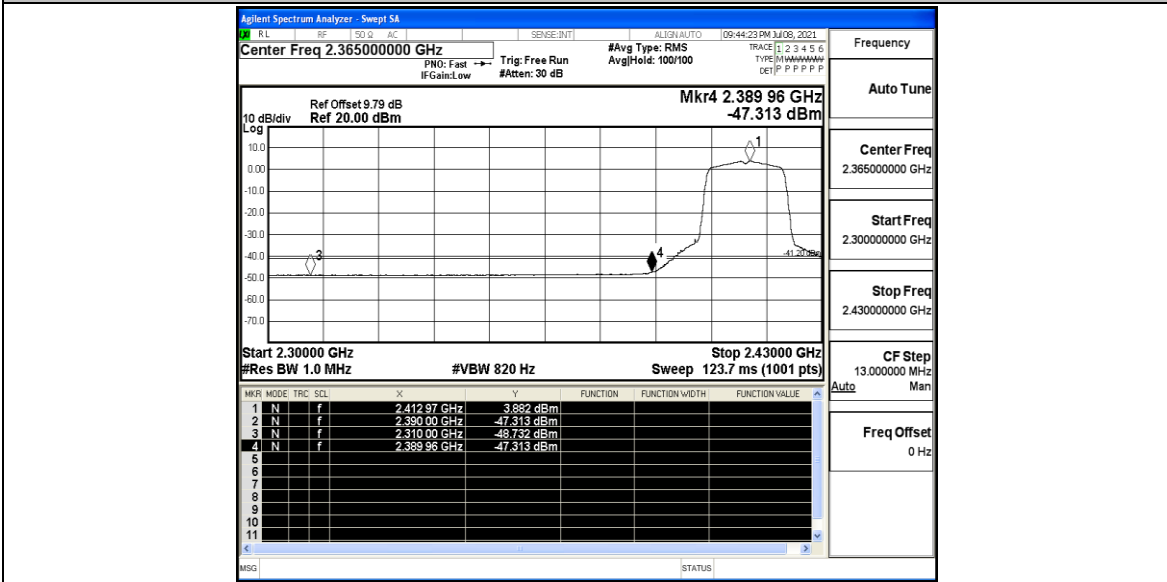
11G_Ant1_High_2462_AV



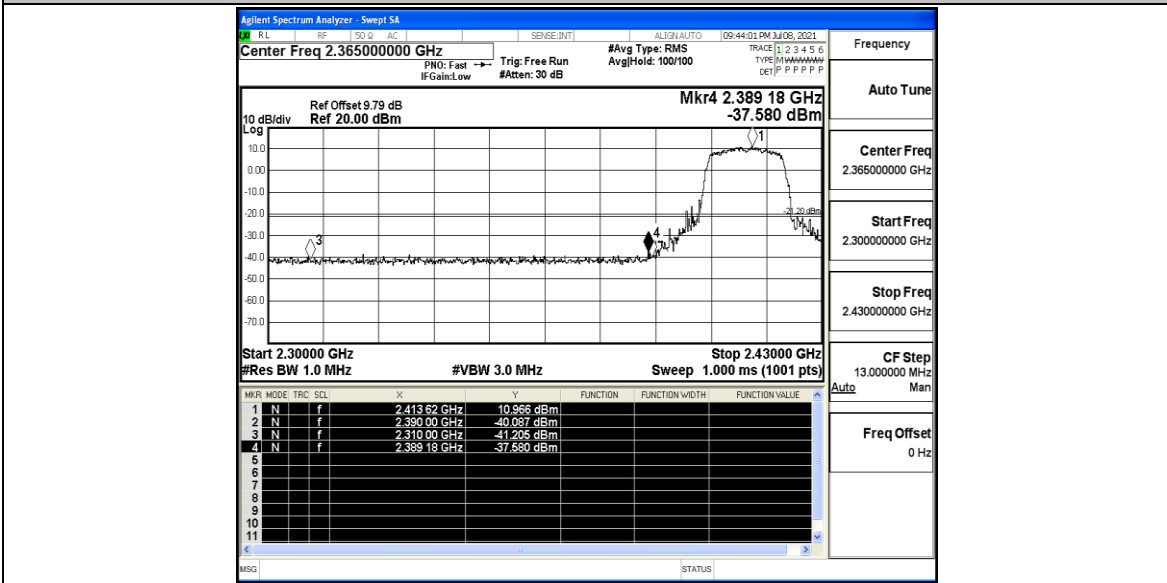
11G_Ant1_High_2462_Peak



11N20SISO_Ant1_Low_2412_AV

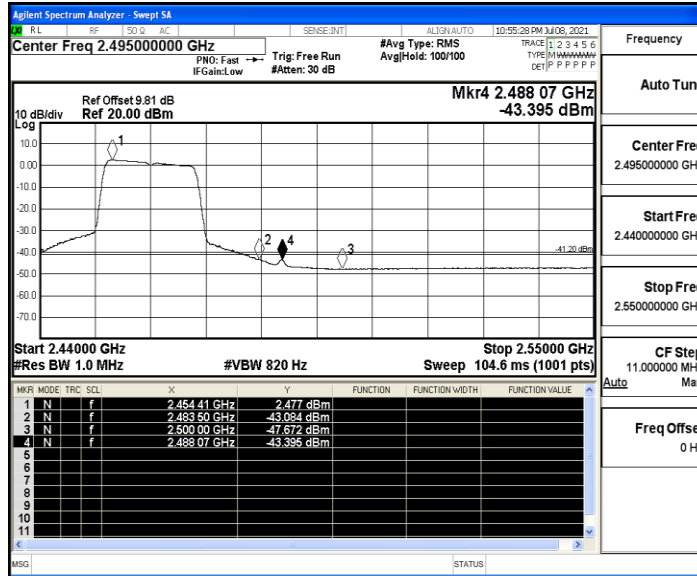


11N20SISO_Ant1_Low_2412_Peak





11N20SISO_Ant1_High_2462_AV



11N20SISO_Ant1_High_2462_Peak

