



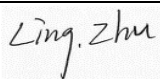
Appendix B

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Hub

Test Model: MCH100

Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	 Ling Zhu
Supervised by:	 Li Huan



B.1 DTS Bandwidth

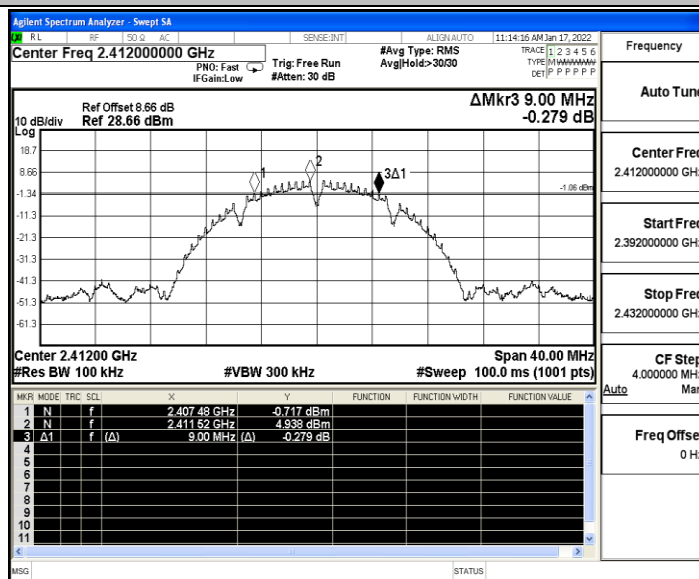
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant	2412	9.000	2407.480	2416.480	0.5	PASS
		2437	8.560	2432.960	2441.520	0.5	PASS
		2462	9.000	2457.480	2466.480	0.5	PASS
11G	Ant	2412	15.120	2404.440	2419.560	0.5	PASS
		2437	15.320	2429.440	2444.760	0.5	PASS
		2462	15.120	2454.440	2469.560	0.5	PASS
11N20SISO	Ant	2412	15.120	2404.440	2419.560	0.5	PASS
		2437	15.120	2429.440	2444.560	0.5	PASS
		2462	15.120	2454.440	2469.560	0.5	PASS

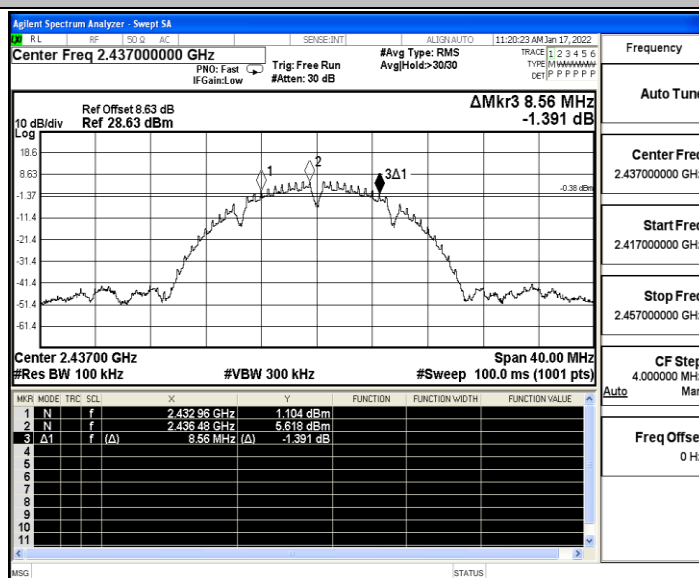


Test Graphs

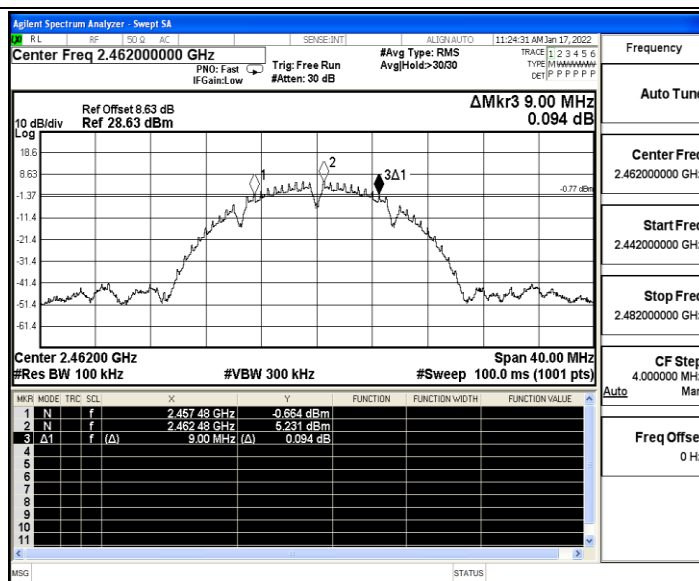
11B_Ant_2412



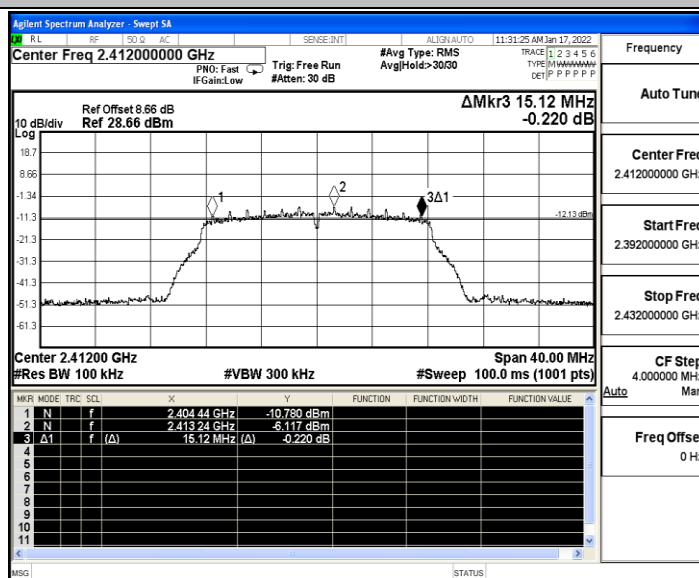
11B_Ant_2437



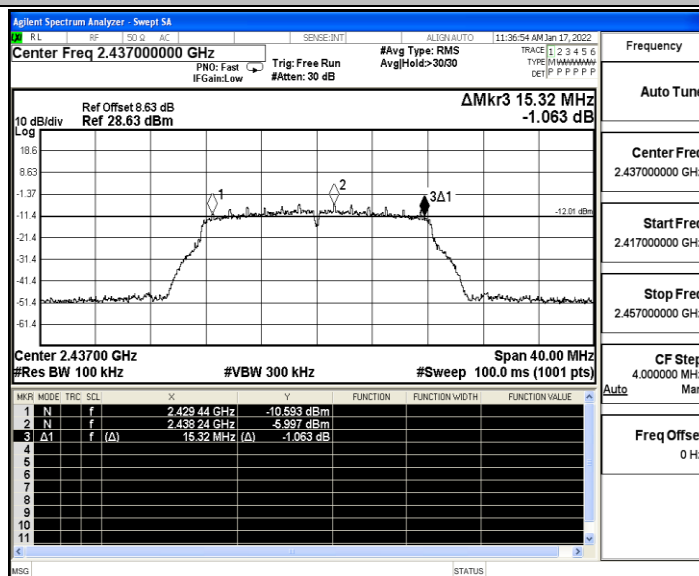
11B_Ant_2462



11G_Ant_2412

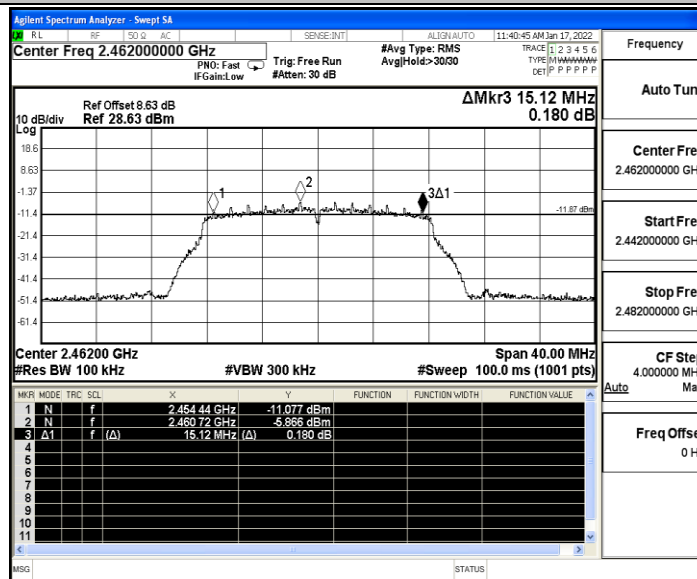


11G_Ant_2437

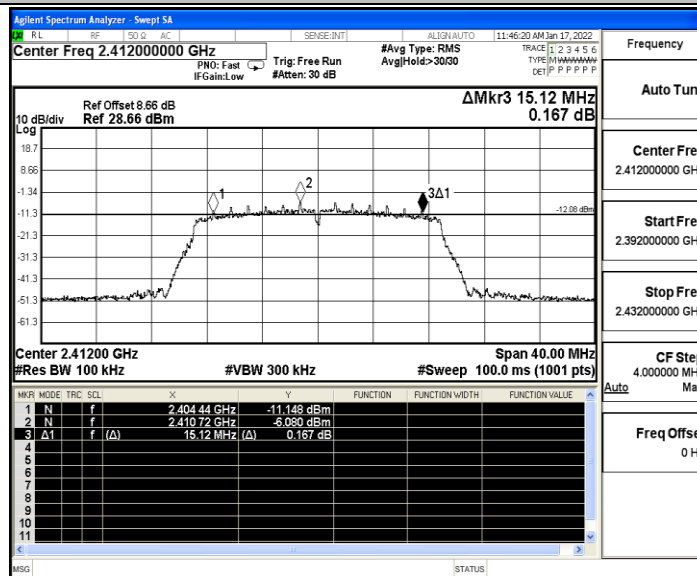




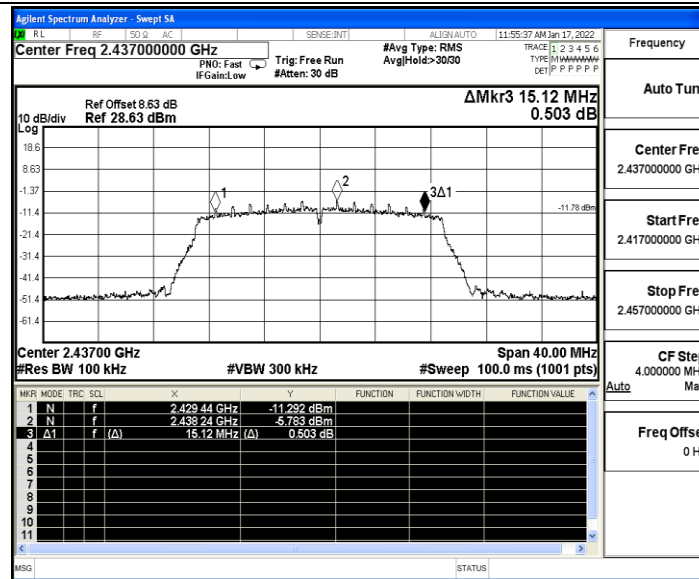
11G_Ant_2462



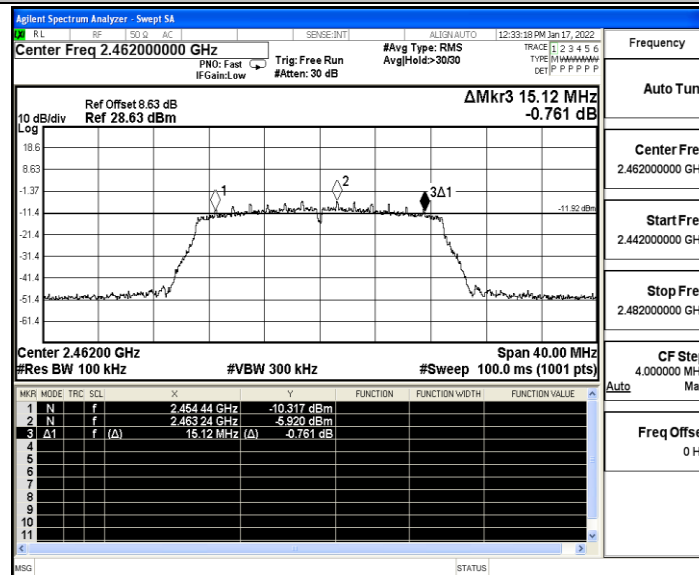
11N20SISO_Ant_2412



11N20SISO_Ant_2437



11N20SISO_Ant_2462





B.2 Maximum peak conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant	2412	16.24	≤ 30.00	PASS
		2437	16.79	≤ 30.00	PASS
		2462	16.61	≤ 30.00	PASS
11G	Ant	2412	12.52	≤ 30.00	PASS
		2437	12.72	≤ 30.00	PASS
		2462	12.74	≤ 30.00	PASS
11N20SISO	Ant	2412	12.37	≤ 30.00	PASS
		2437	12.63	≤ 30.00	PASS
		2462	12.67	≤ 30.00	PASS



B.3 Maximum power spectral density

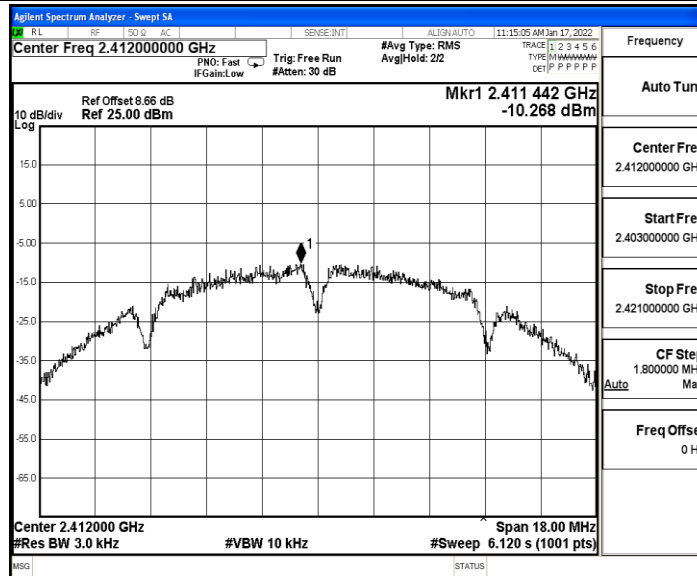
Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant	2412	-10.27	≤ 8.00	PASS
		2437	-8.60	≤ 8.00	PASS
		2462	-8.35	≤ 8.00	PASS
11G	Ant	2412	-19.31	≤ 8.00	PASS
		2437	-19.47	≤ 8.00	PASS
		2462	-20.52	≤ 8.00	PASS
11N20SISO	Ant	2412	-20.39	≤ 8.00	PASS
		2437	-20.57	≤ 8.00	PASS
		2462	-20.97	≤ 8.00	PASS

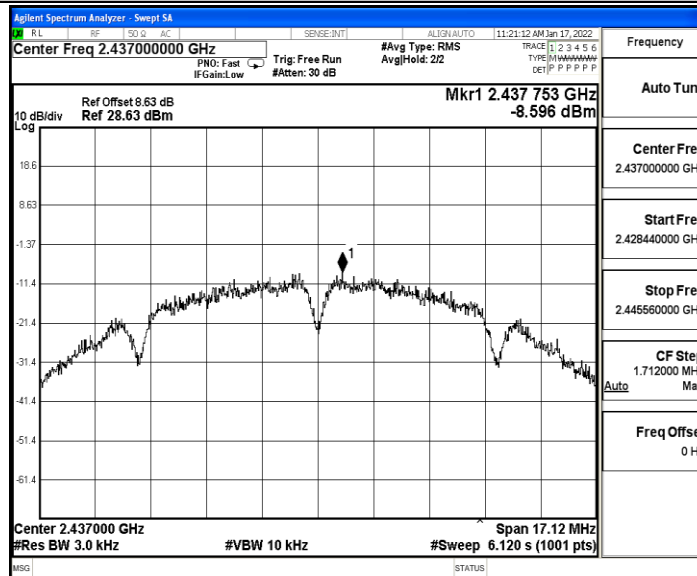


Test Graphs

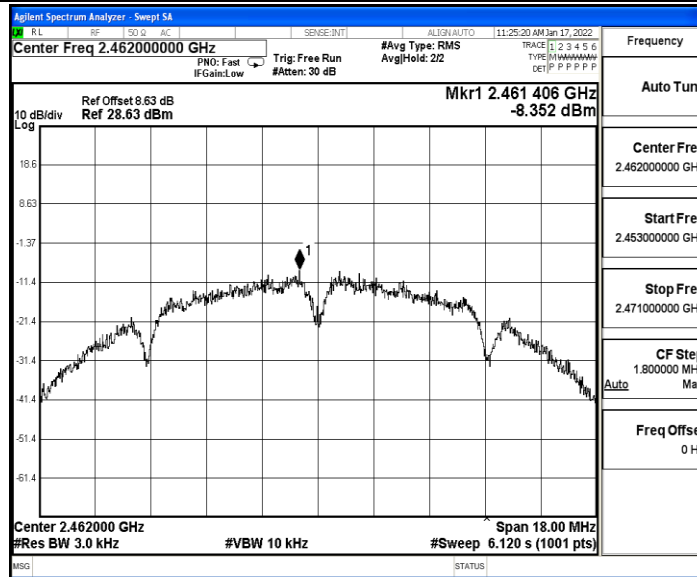
11B_Ant_2412



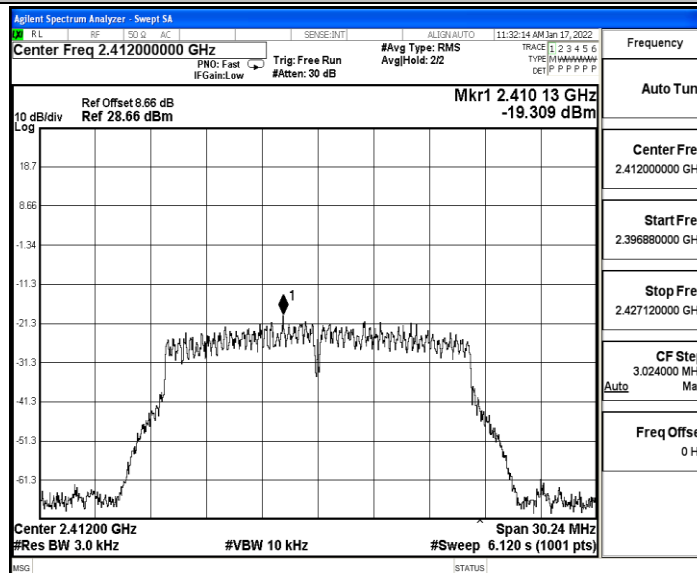
11B_Ant_2437



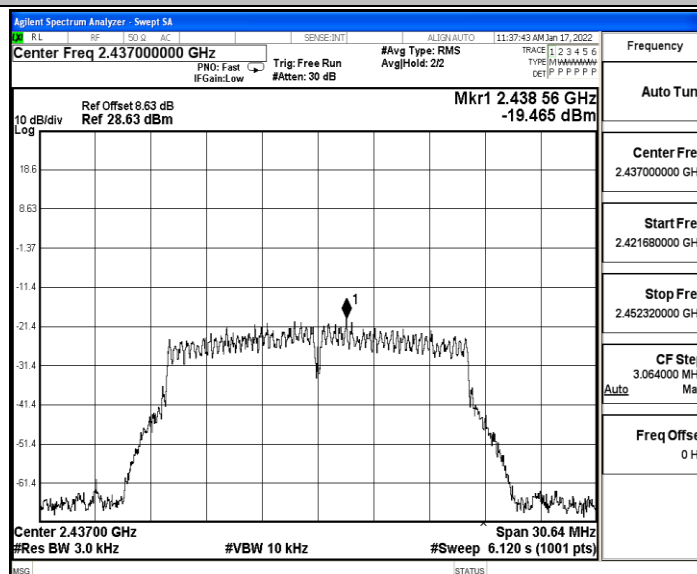
11B_Ant_2462



11G_Ant_2412

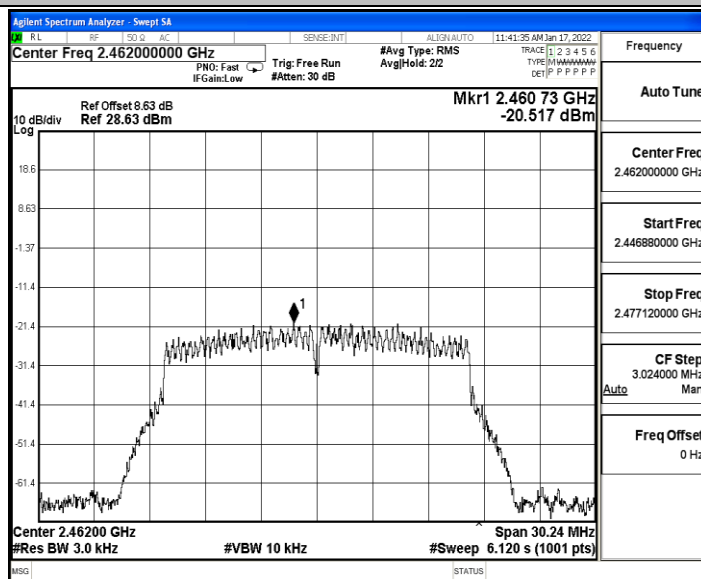


11G_Ant_2437

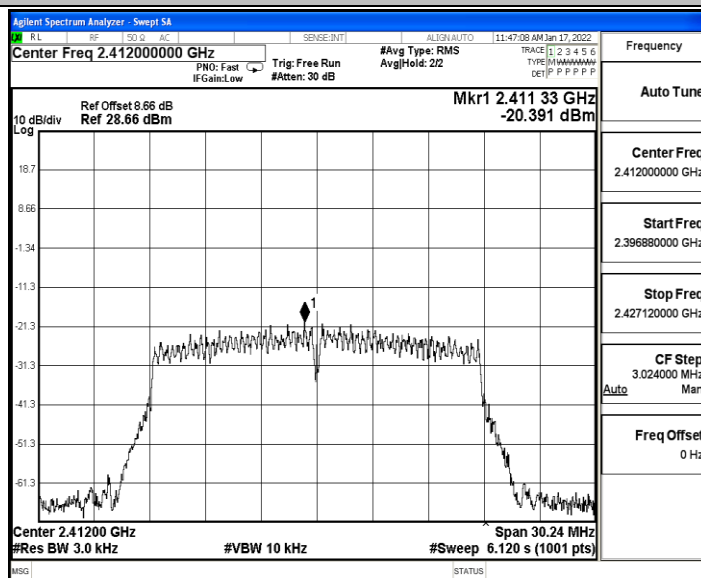




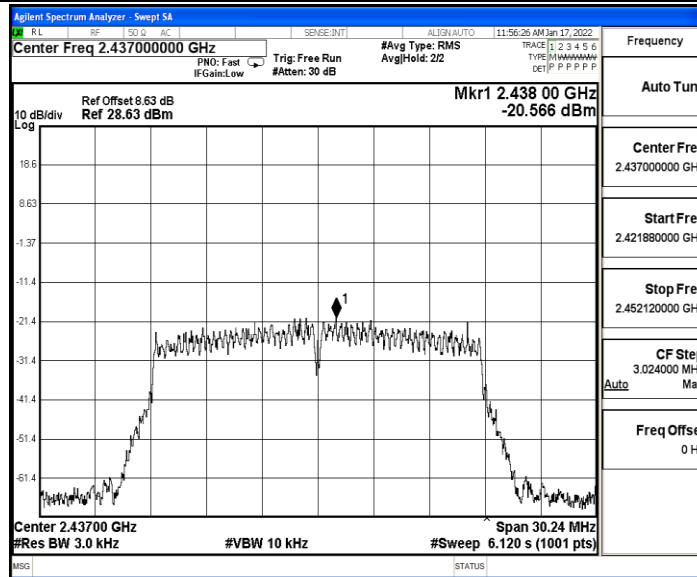
11G_Ant_2462



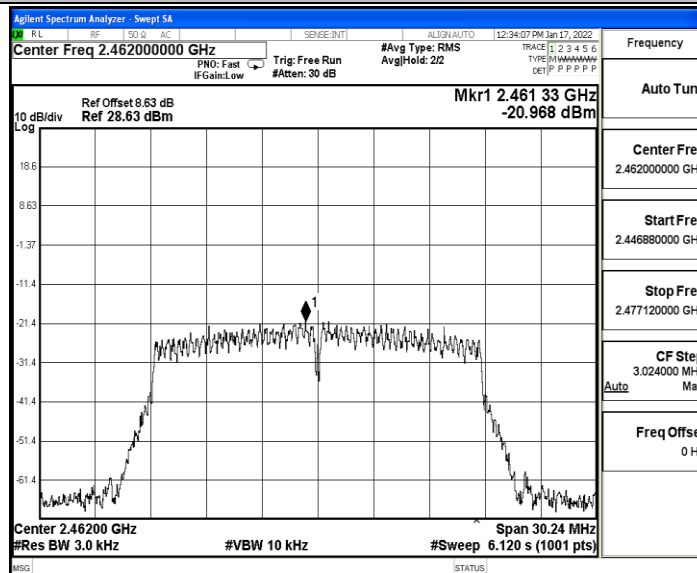
11N20SISO_Ant_2412



11N20SISO_Ant_2437



11N20SISO_Ant_2462





B.4 Band edge measurements

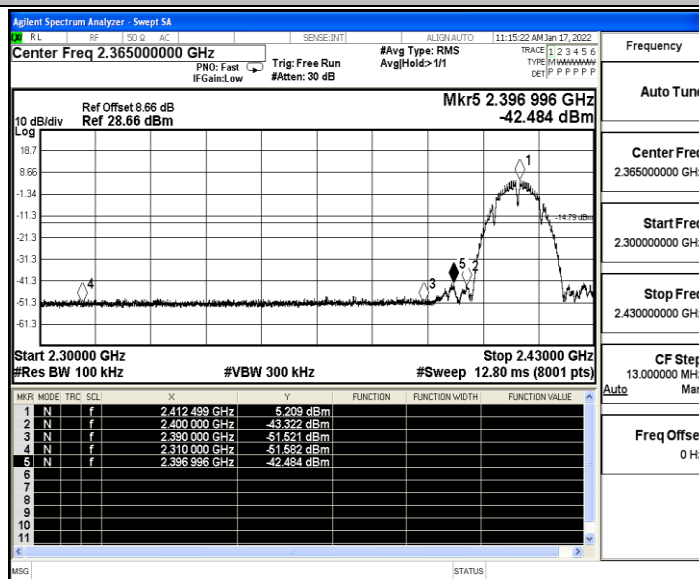
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant	Low	2412	5.21	-42.48	≤ -14.79	PASS
		High	2462	5.09	-47.83	≤ -14.91	PASS
11G	Ant	Low	2412	-5.77	-47.33	≤ -25.77	PASS
		High	2462	-5.39	-48.09	≤ -25.39	PASS
11N20SISO	Ant	Low	2412	-6.30	-46.75	≤ -26.3	PASS
		High	2462	-5.38	-47.95	≤ -25.38	PASS

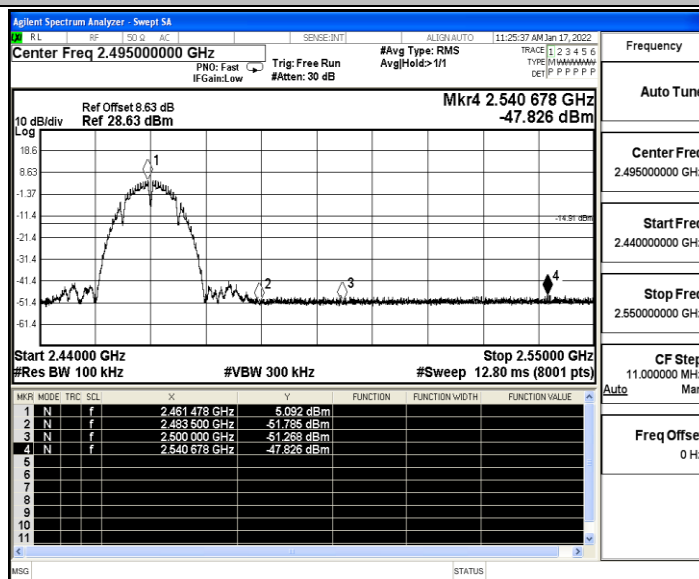


Test Graphs

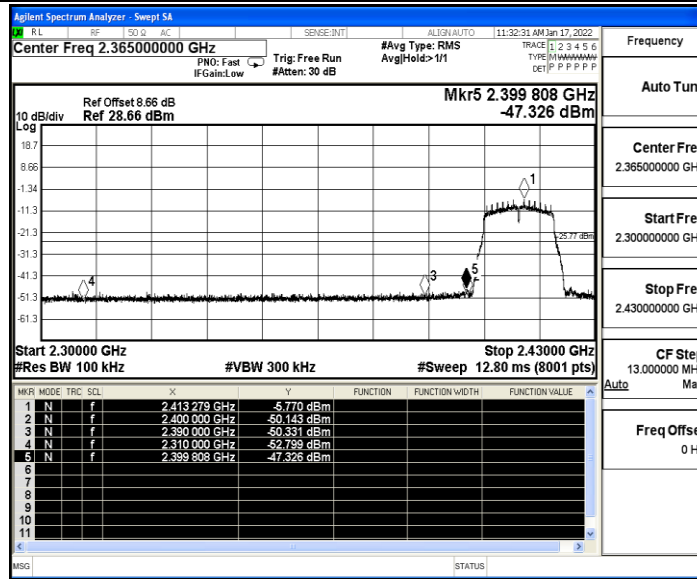
11B_Ant_Low_2412



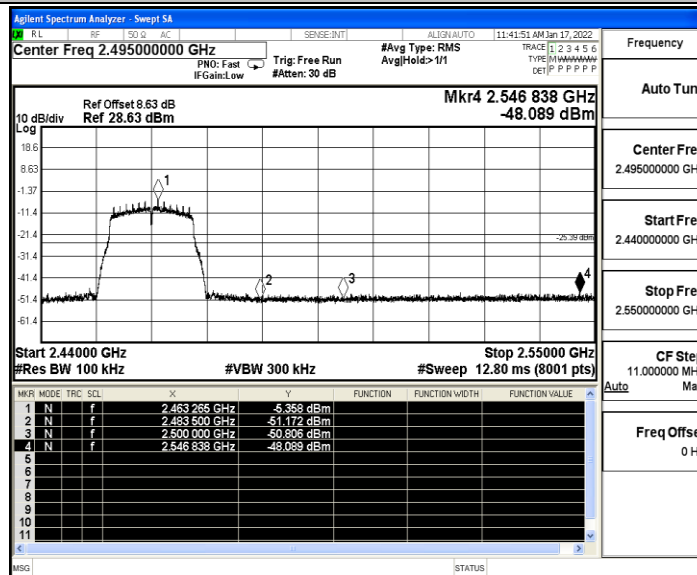
11B_Ant_High_2462



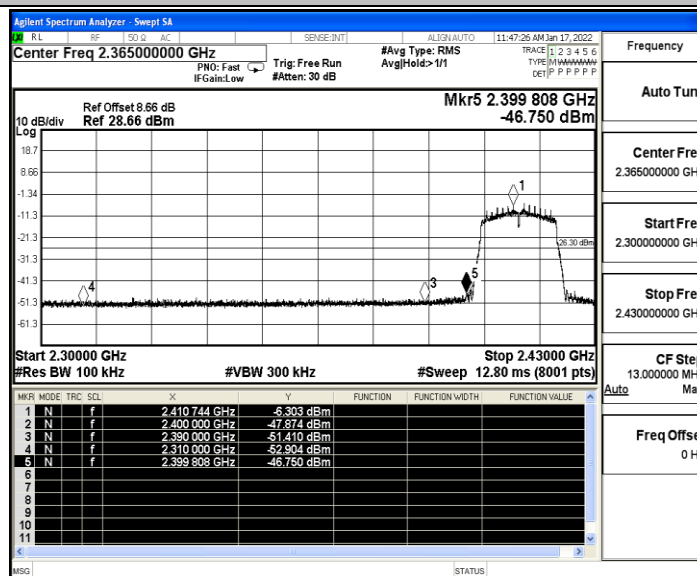
11G_Ant_Low_2412



11G_Ant_High_2462

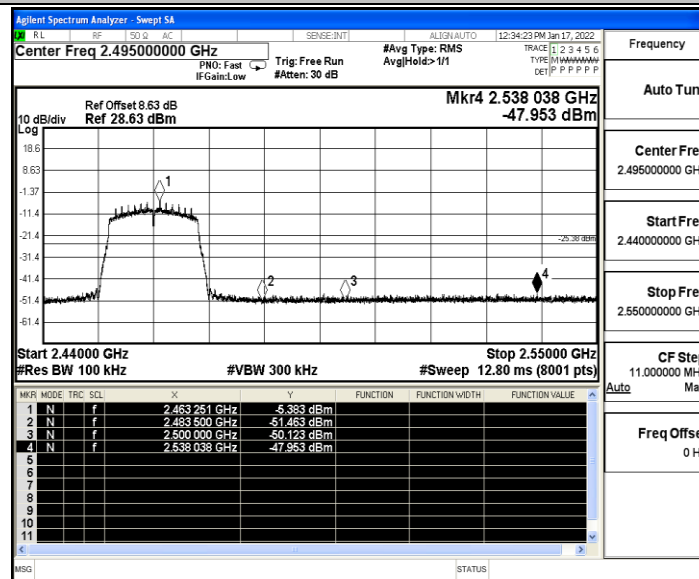


11N20SISO_Ant_Low_2412





11N20SISO_Ant_High_2462





B.5 Conducted Spurious Emission

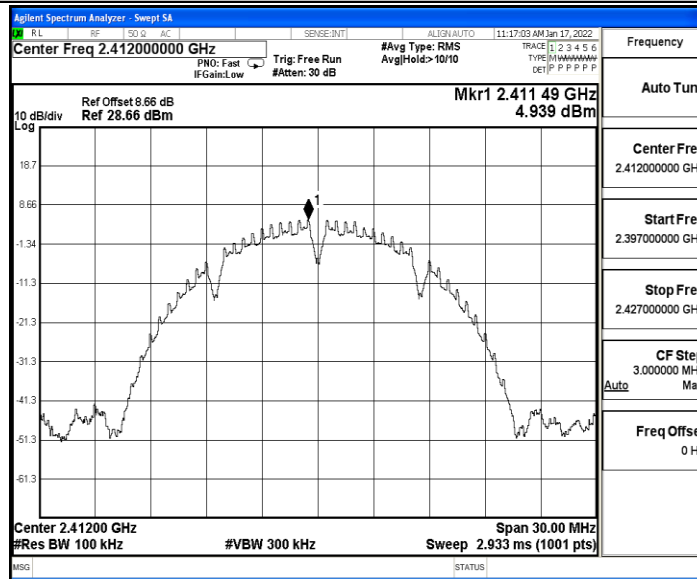
Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant	2412	Reference	4.94	4.94	---	PASS
			30~1000	4.94	-60.96	≤ -15.06	PASS
			1000~26500	4.94	-46.14	≤ -15.06	PASS
		2437	Reference	5.45	5.45	---	PASS
			30~1000	5.45	-60.22	≤ -14.55	PASS
			1000~26500	5.45	-46.31	≤ -14.55	PASS
		2462	Reference	5.09	5.09	---	PASS
			30~1000	5.09	-60.28	≤ -14.91	PASS
			1000~26500	5.09	-46.32	≤ -14.91	PASS
11G	Ant	2412	Reference	-5.54	-5.54	---	PASS
			30~1000	-5.54	-60.78	≤ -25.54	PASS
			1000~26500	-5.54	-46.42	≤ -25.54	PASS
		2437	Reference	-5.29	-5.29	---	PASS
			30~1000	-5.29	-60.26	≤ -25.29	PASS
			1000~26500	-5.29	-46.27	≤ -25.29	PASS
		2462	Reference	-5.26	-5.26	---	PASS
			30~1000	-5.26	-60.74	≤ -25.26	PASS
			1000~26500	-5.26	-46.23	≤ -25.26	PASS
11N20SISO	Ant	2412	Reference	-5.89	-5.89	---	PASS
			30~1000	-5.89	-60.08	≤ -25.89	PASS
			1000~26500	-5.89	-46.15	≤ -25.89	PASS
		2437	Reference	-5.24	-5.24	---	PASS
			30~1000	-5.24	-59.75	≤ -25.24	PASS
			1000~26500	-5.24	-46.3	≤ -25.24	PASS
		2462	Reference	-5.26	-5.26	---	PASS
			30~1000	-5.26	-60.81	≤ -25.26	PASS
			1000~26500	-5.26	-45.51	≤ -25.26	PASS

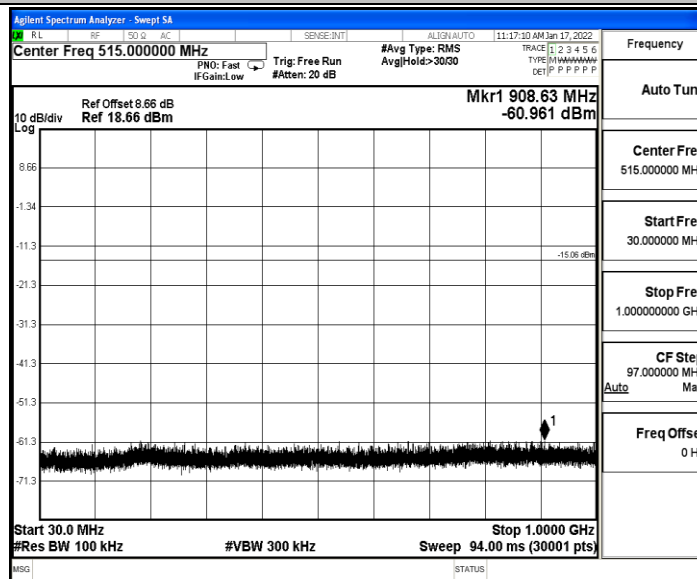


Test Graphs

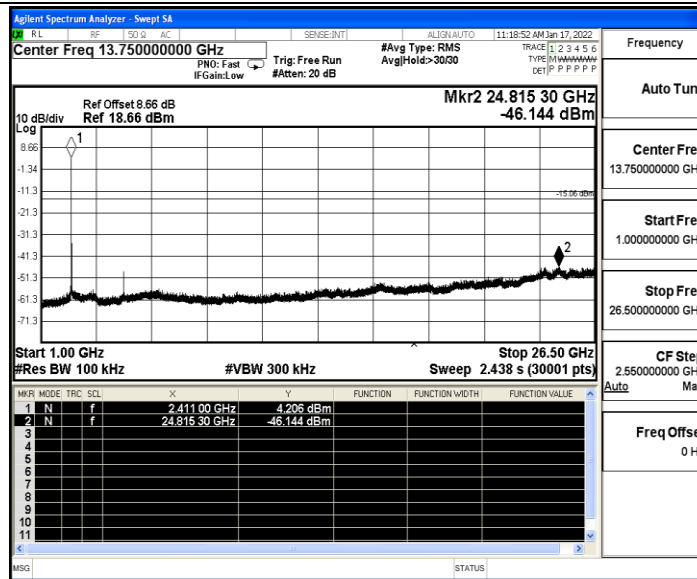
11B_Ant_2412_0~Reference



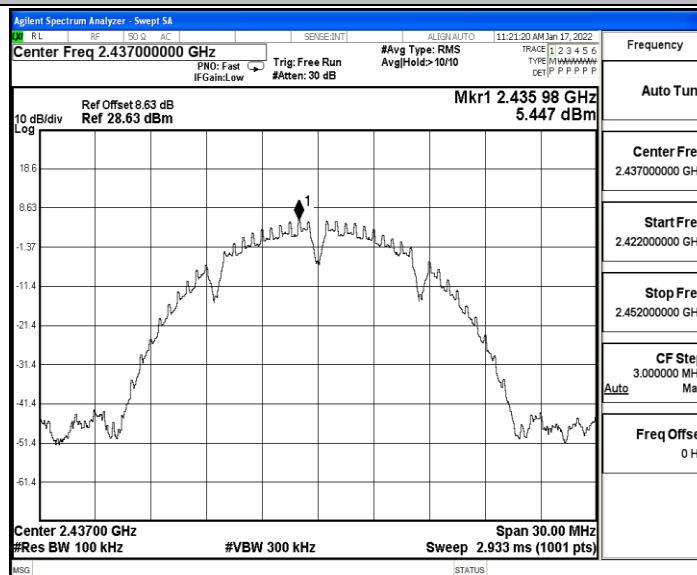
11B_Ant_2412_30~1000



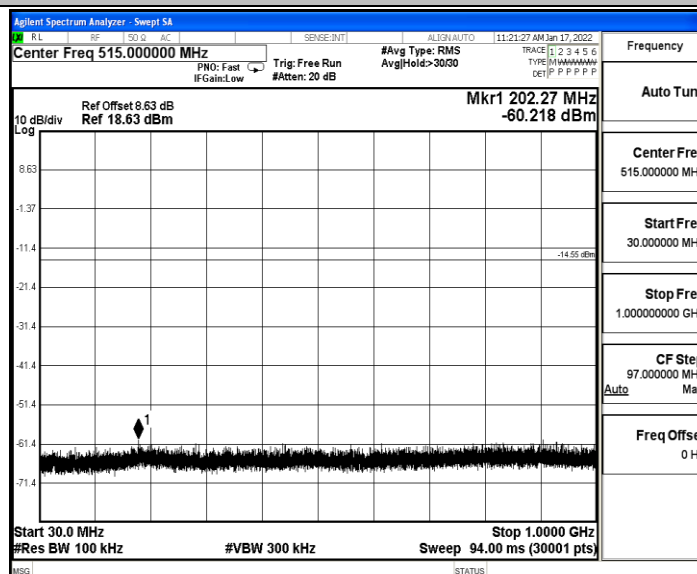
11B_Ant_2412_1000~26500



11B_Ant_2437_0~Reference

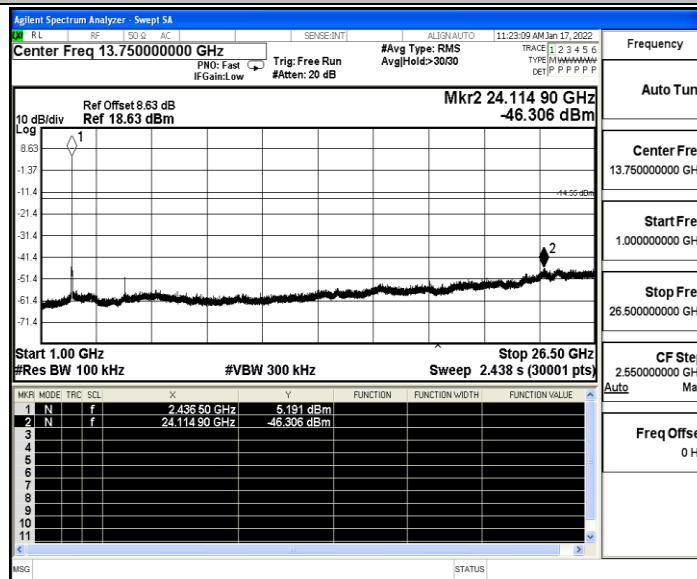


11B_Ant_2437_30~1000

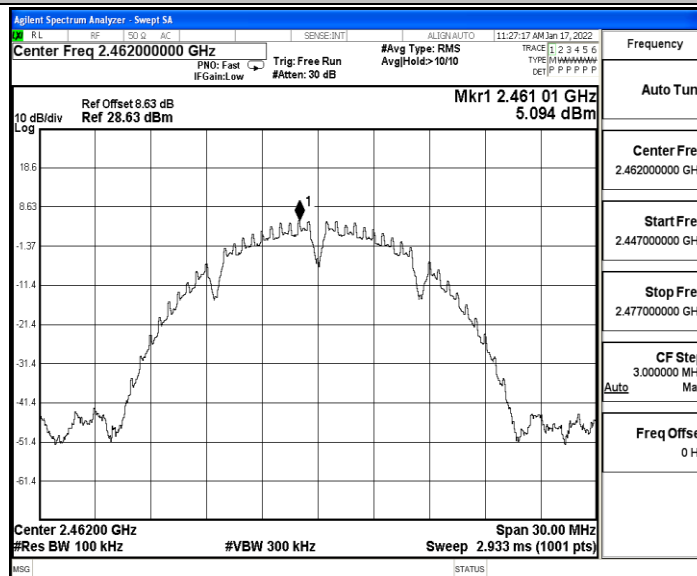




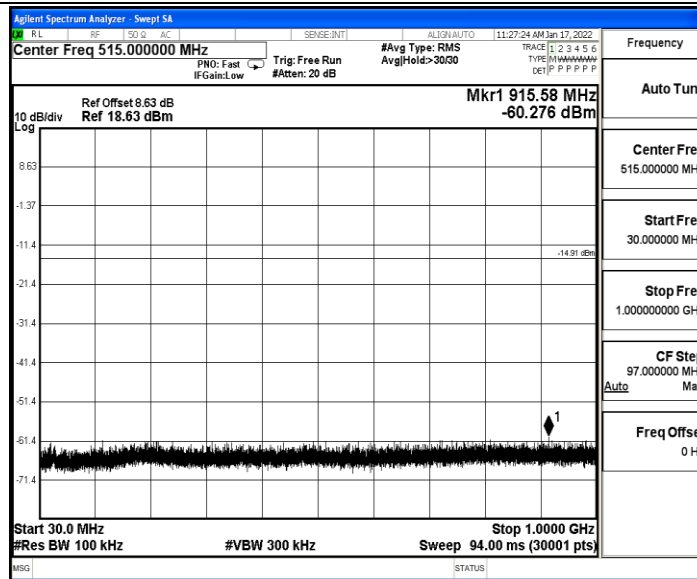
11B_Ant_2437_1000~26500



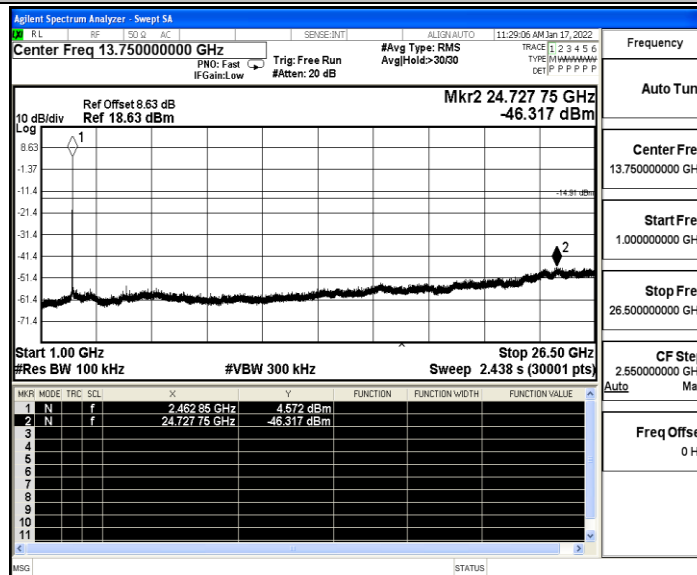
11B_Ant_2462_0~Reference



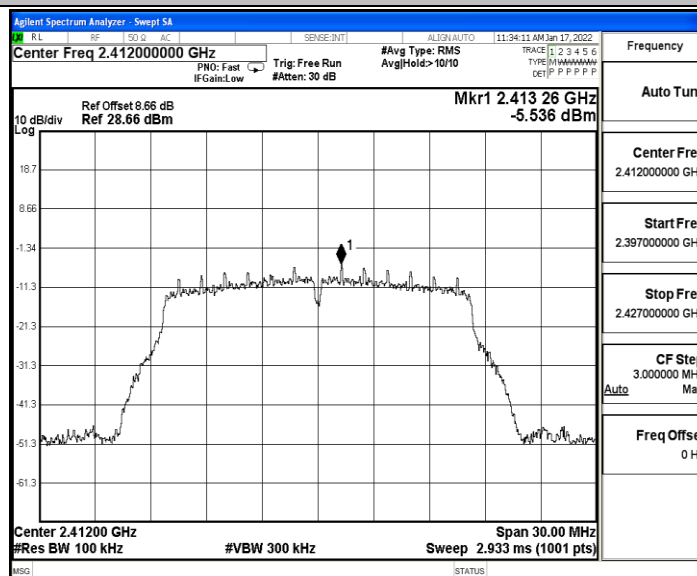
11B_Ant_2462_30~1000



11B_Ant_2462_1000~26500

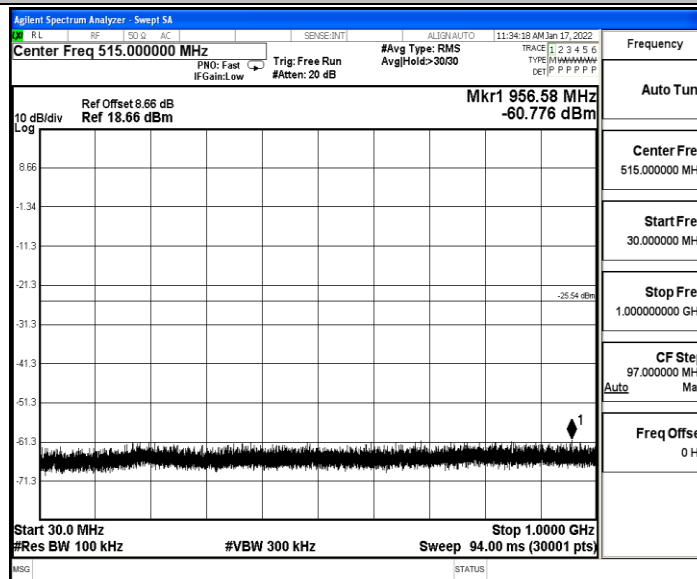


11G_Ant_2412_0~Reference

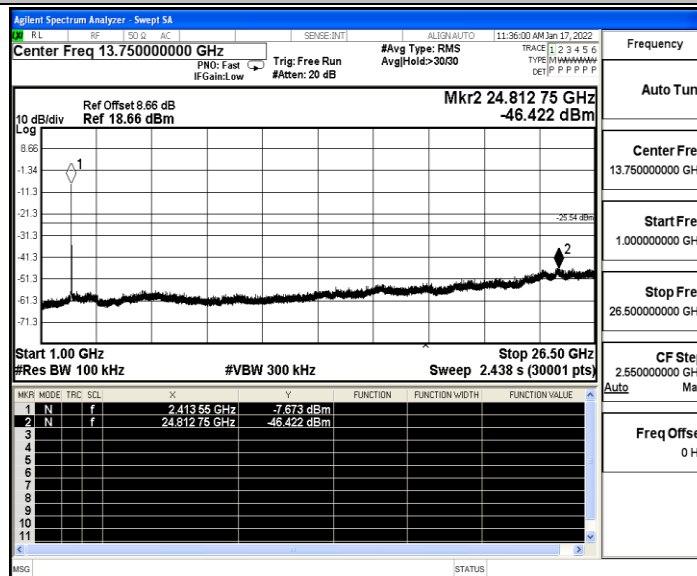




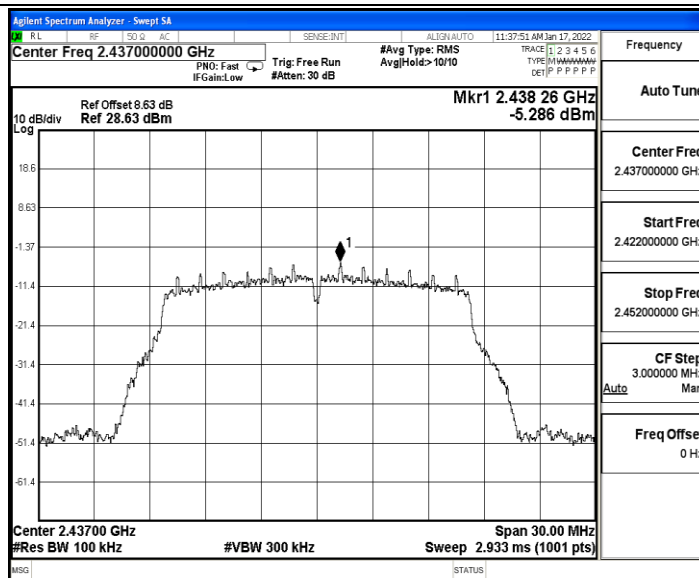
11G_Ant_2412_30~1000



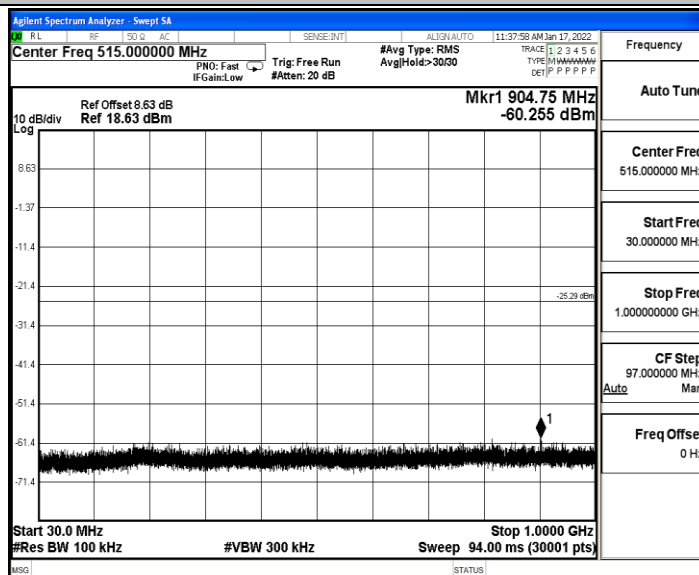
11G_Ant_2412_1000~26500



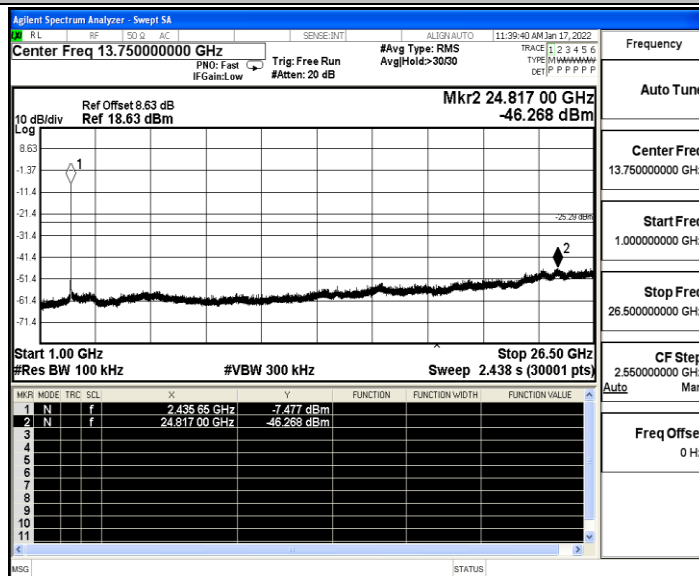
11G_Ant_2437_0~Reference



11G_Ant_2437_30~1000

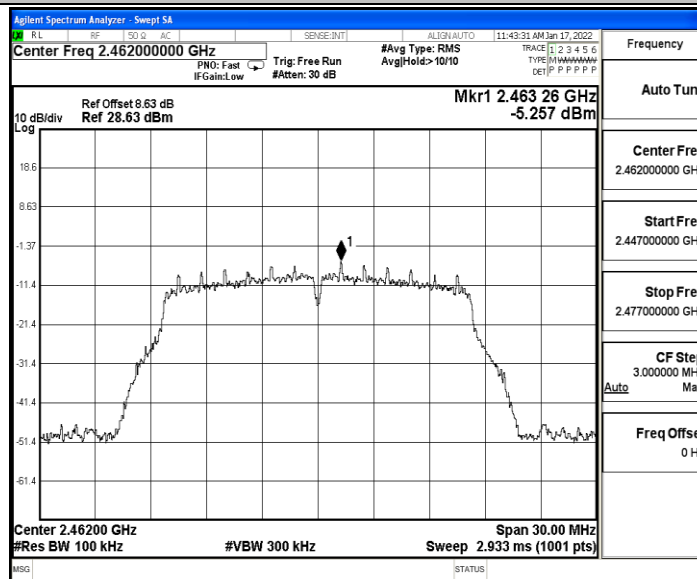


11G_Ant_2437_1000~26500

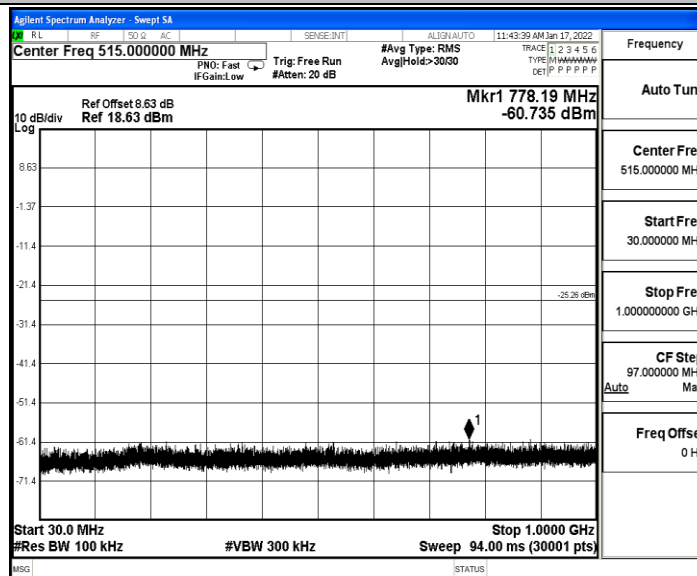




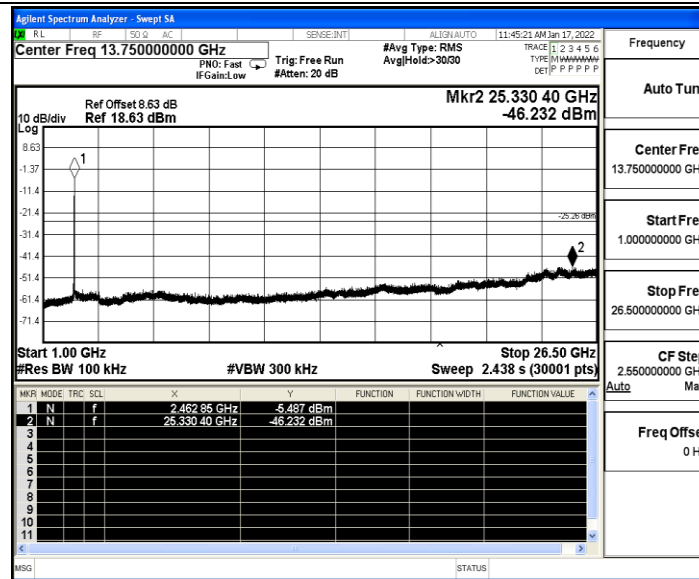
11G_Ant_2462_0~Reference



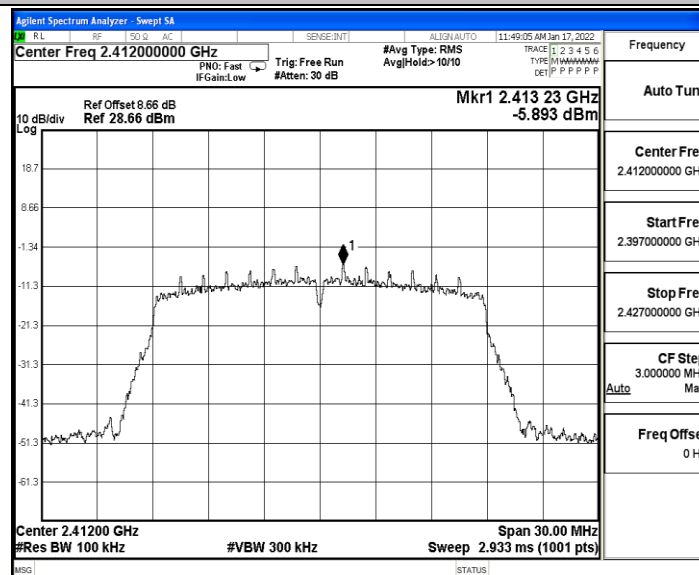
11G_Ant_2462_30~1000



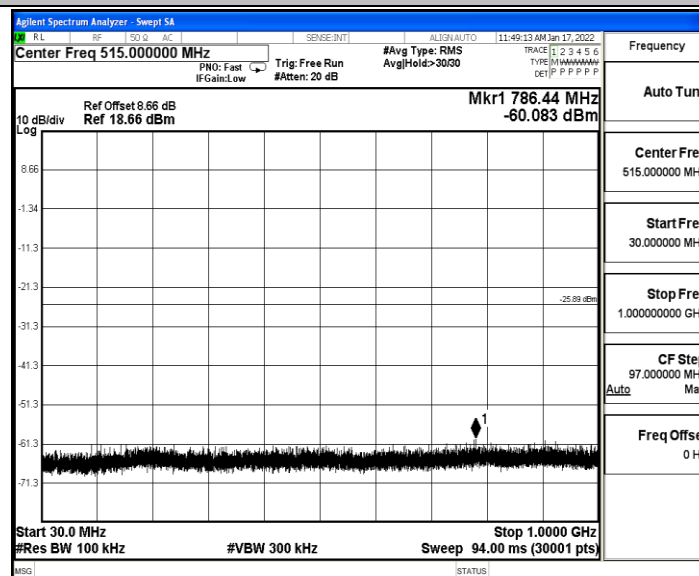
11G_Ant_2462_1000~26500



11N20SISO_Ant_2412_0~Reference

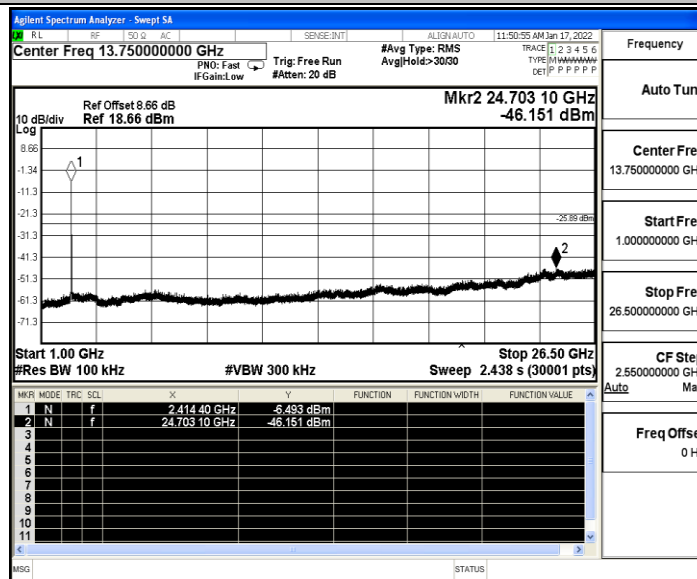


11N20SISO_Ant_2412_30~1000

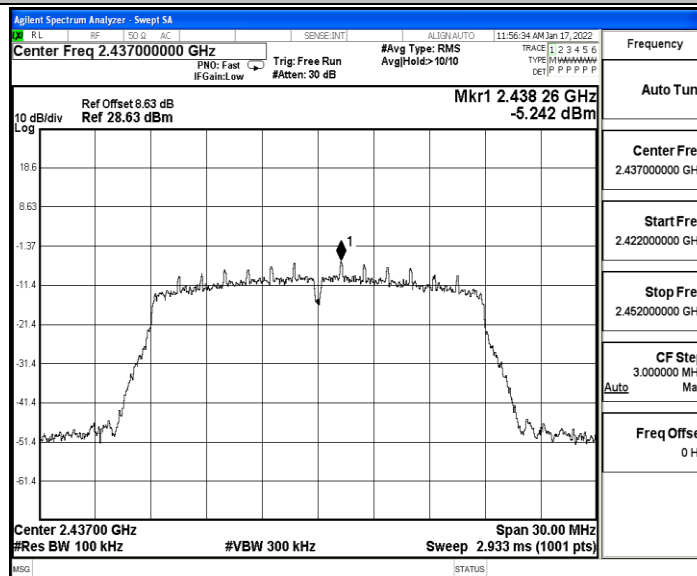




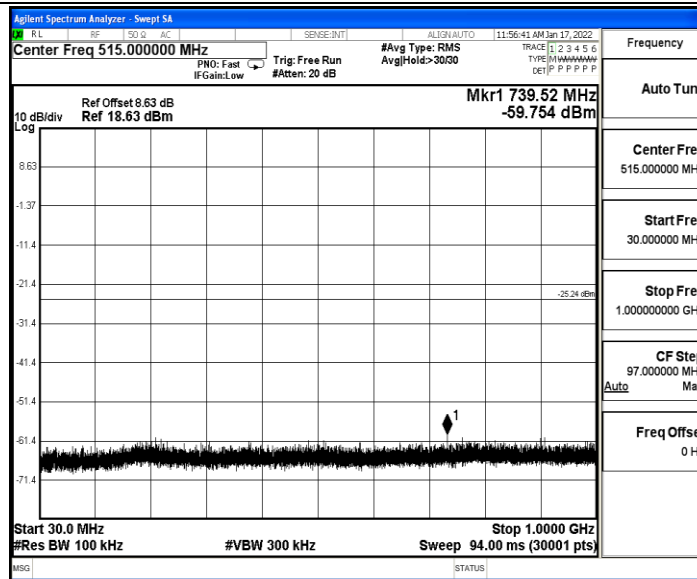
11N20SISO_Ant_2412_1000~26500



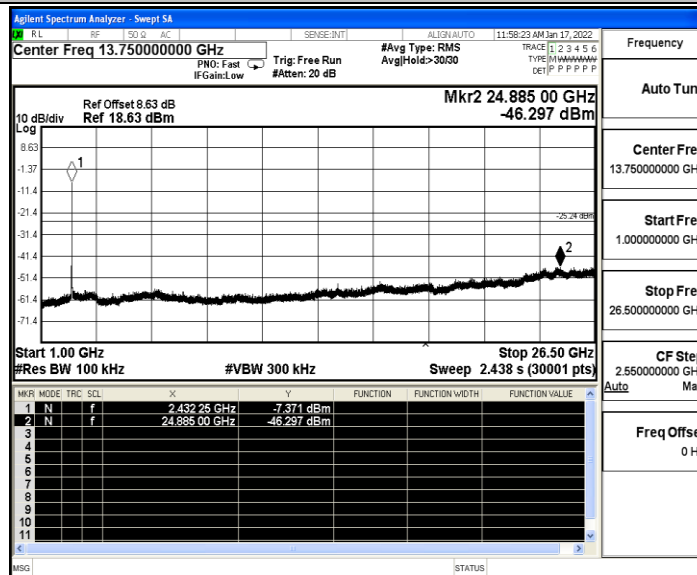
11N20SISO_Ant_2437_0~Reference



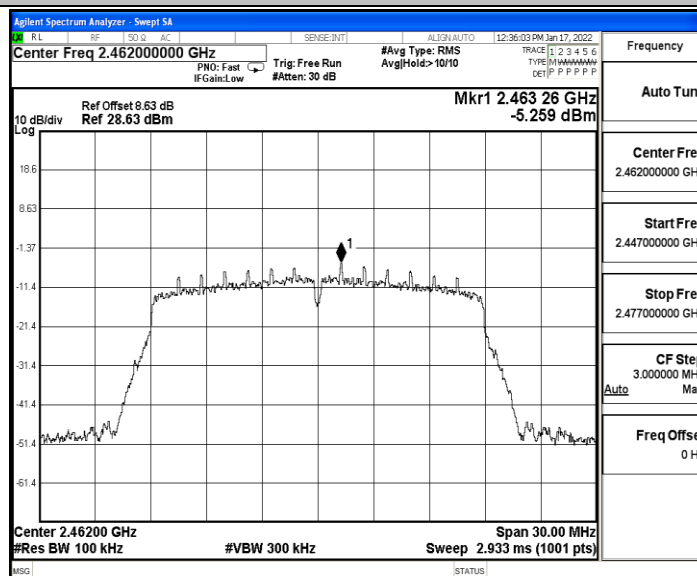
11N20SISO_Ant_2437_30~1000



11N20SISO_Ant_2437_1000~26500

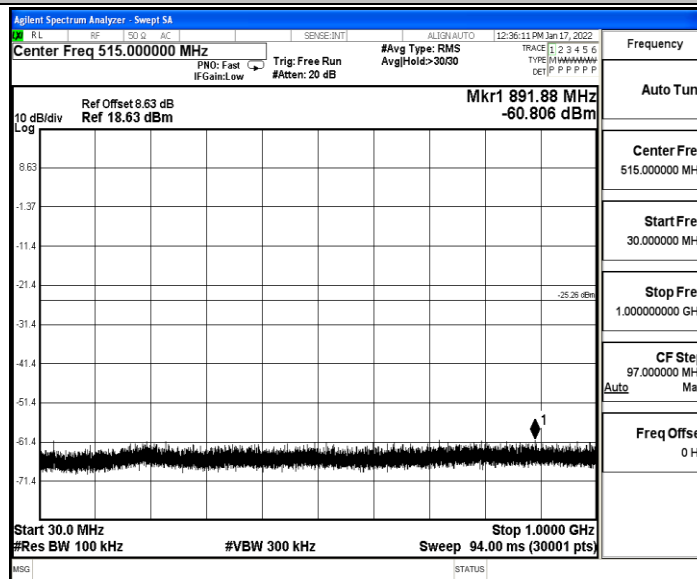


11N20SISO_Ant_2462_0~Reference

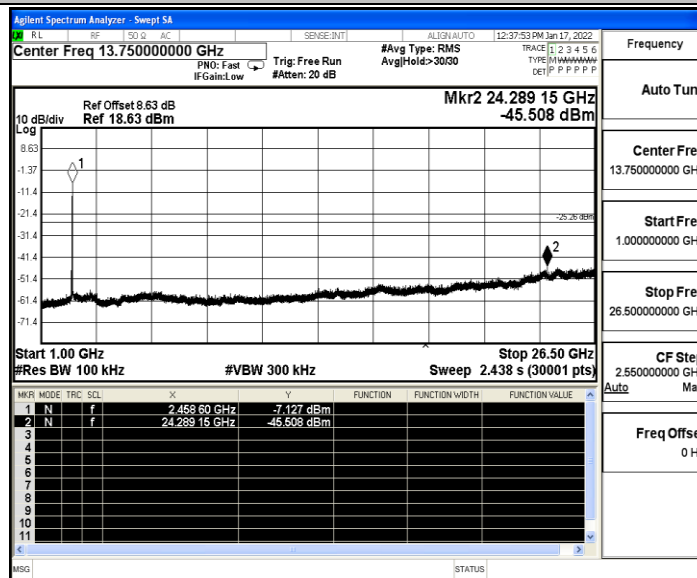




11N20SISO_Ant_2462_30~1000



11N20SISO_Ant_2462_1000~26500





B.6 Duty Cycle

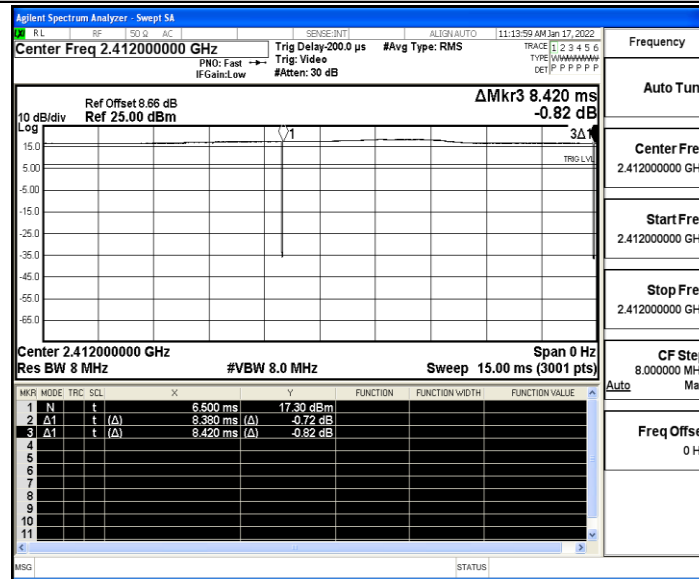
Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11B	Ant	2412	8.38	8.42	99.52	---	---
		2437	8.38	8.42	99.52	---	---
		2462	8.38	8.42	99.52	---	---
11G	Ant	2412	1.39	1.44	96.53	---	---
		2437	1.39	1.44	96.53	---	---
		2462	1.39	1.44	96.53	---	---
11N20SISO	Ant	2412	1.30	1.35	96.30	---	---
		2437	1.30	1.34	97.01	---	---
		2462	1.30	1.35	96.30	---	---

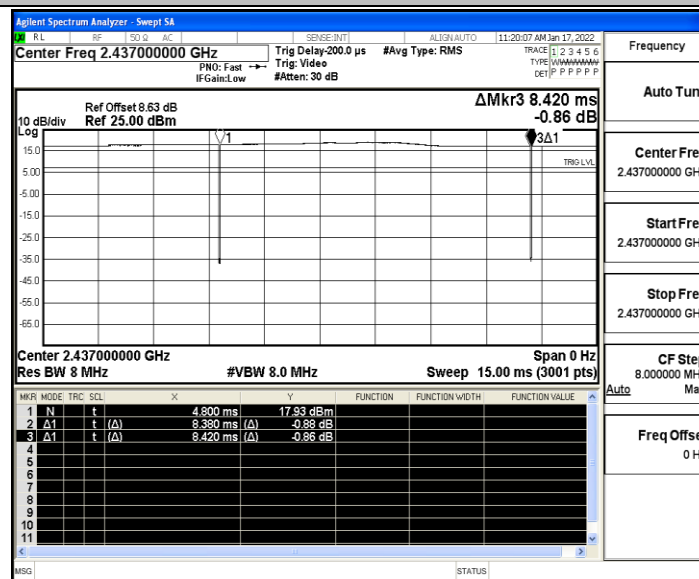


Test Graphs

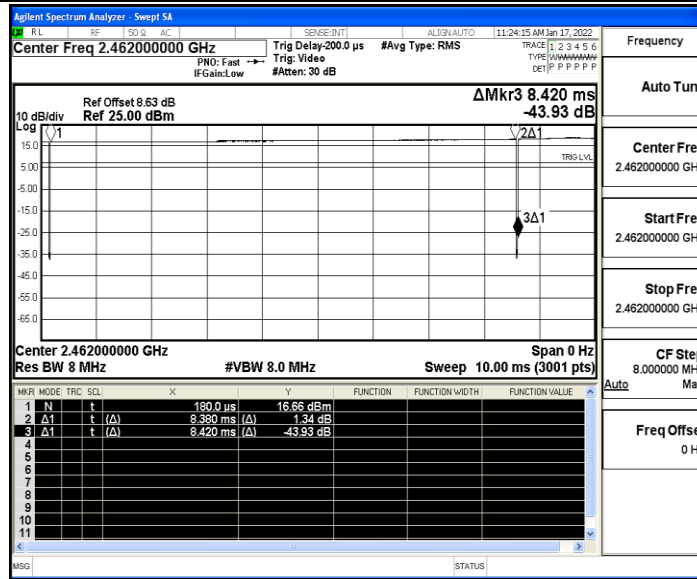
11B_Ant_2412



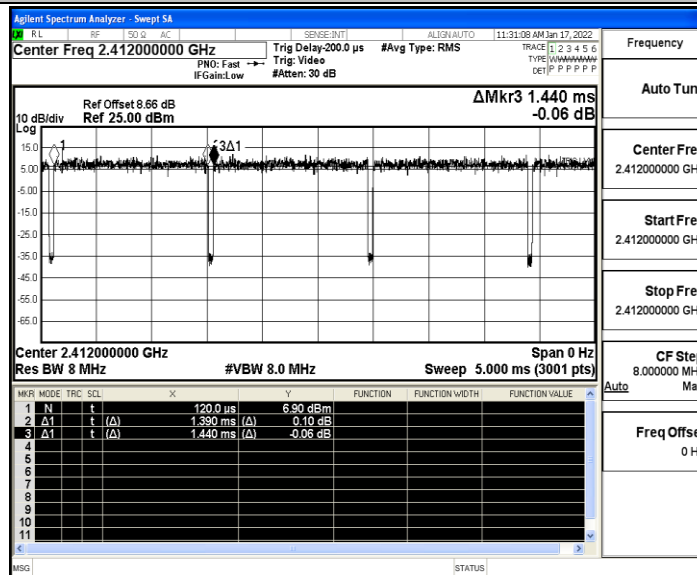
11B_Ant_2437



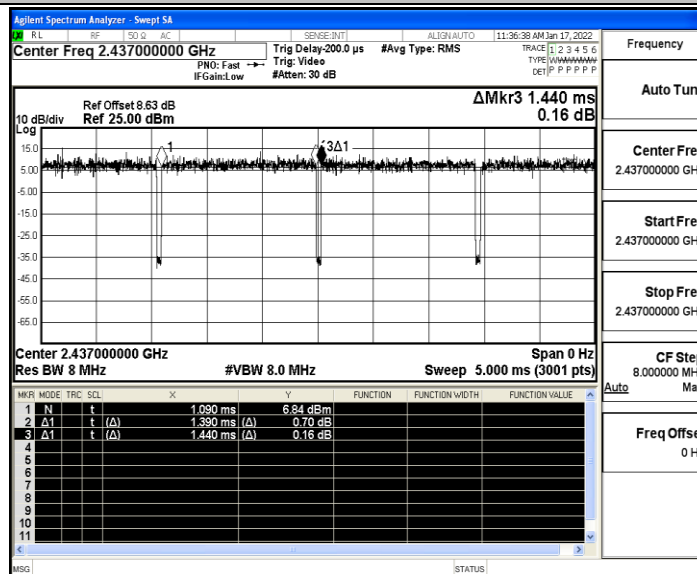
11B_Ant_2462



11G_Ant_2412

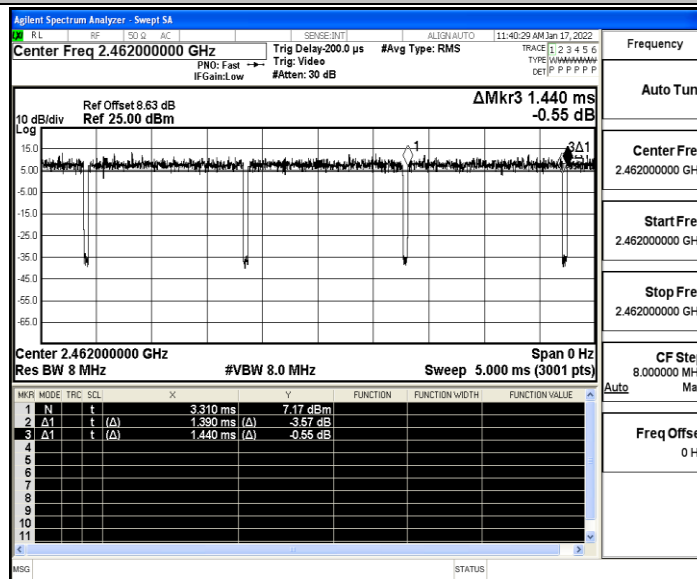


11G_Ant_2437

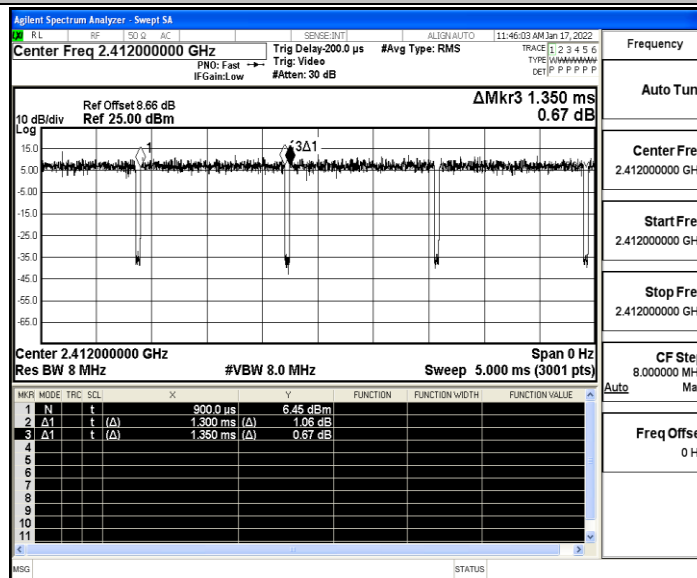




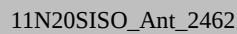
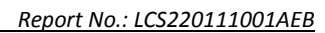
11G_Ant_2462



11N20SISO_Ant_2412



11N20SISO_Ant_2437





B.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	Ant	Low	2412	AV	2310.000	-48.72	≤-41.20	46.48	≤54	PASS
				AV	2386.320	-47.37	≤-41.20	47.83	≤54	PASS
				AV	2390.000	-48.03	≤-41.20	47.17	≤54	PASS
				Peak	2310.000	-38.47	≤-21.20	56.73	≤74	PASS
				Peak	2387.360	-36.17	≤-21.20	59.03	≤74	PASS
				Peak	2390.000	-37.16	≤-21.20	58.04	≤74	PASS
		High	2462	AV	2483.500	-47.57	≤-41.20	47.63	≤54	PASS
				AV	2490.270	-47.35	≤-41.20	47.85	≤54	PASS
				AV	2500.000	-47.64	≤-41.20	47.56	≤54	PASS
				Peak	2483.500	-36.3	≤-21.20	58.90	≤74	PASS
				Peak	2484.330	-35.36	≤-21.20	59.84	≤74	PASS
				Peak	2500.000	-36.3	≤-21.20	58.90	≤74	PASS
11G	Ant	Low	2412	AV	2310.000	-48.31	≤-41.20	46.89	≤54	PASS
				AV	2389.050	-47.64	≤-41.20	47.56	≤54	PASS
				AV	2390.000	-47.69	≤-41.20	47.51	≤54	PASS
				Peak	2310.000	-38.27	≤-21.20	56.93	≤74	PASS
				Peak	2354.860	-35.89	≤-21.20	59.31	≤74	PASS
				Peak	2390.000	-37.98	≤-21.20	57.22	≤74	PASS
		High	2462	AV	2483.500	-47.43	≤-41.20	47.77	≤54	PASS
				AV	2499.070	-47.06	≤-41.20	48.14	≤54	PASS
				AV	2500.000	-47.33	≤-41.20	47.87	≤54	PASS
				Peak	2483.500	-36.05	≤-21.20	59.15	≤74	PASS
				Peak	2487.740	-35.37	≤-21.20	59.83	≤74	PASS
				Peak	2500.000	-36.47	≤-21.20	58.73	≤74	PASS
11N20SIS O	Ant	Low	2412	AV	2310.000	-48.34	≤-41.20	46.86	≤54	PASS
				AV	2368.900	-47.66	≤-41.20	47.54	≤54	PASS
				AV	2390.000	-47.73	≤-41.20	47.47	≤54	PASS
				Peak	2310.000	-38.04	≤-21.20	57.16	≤74	PASS
				Peak	2352.520	-36.4	≤-21.20	58.80	≤74	PASS
				Peak	2390.000	-37.25	≤-21.20	57.95	≤74	PASS
		High	2462	AV	2483.500	-47.22	≤-41.20	47.98	≤54	PASS
				AV	2490.160	-47.14	≤-41.20	48.06	≤54	PASS
				AV	2500.000	-47.4	≤-41.20	47.80	≤54	PASS
				Peak	2483.500	-36.68	≤-21.20	58.52	≤74	PASS
				Peak	2499.840	-35.52	≤-21.20	59.68	≤74	PASS
				Peak	2500.000	-36.46	≤-21.20	58.74	≤74	PASS



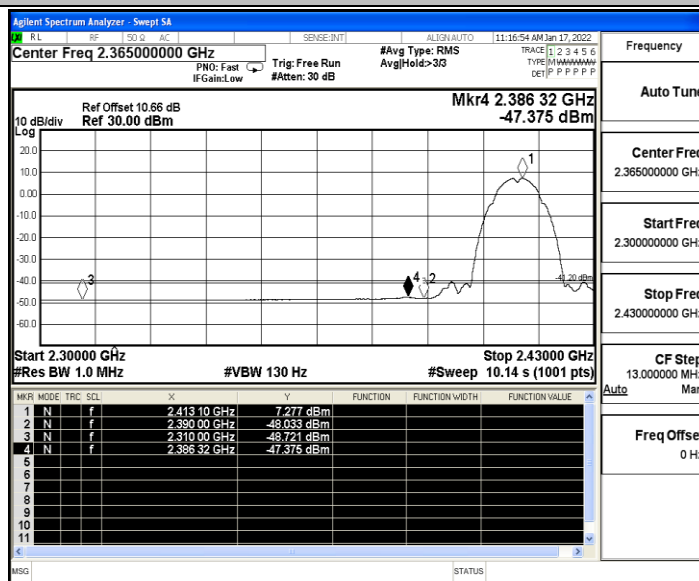
Note:

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.

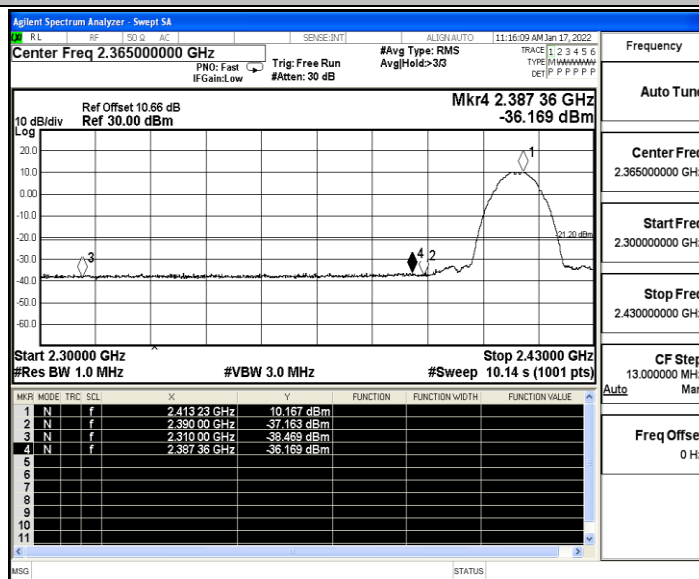


Test Graphs

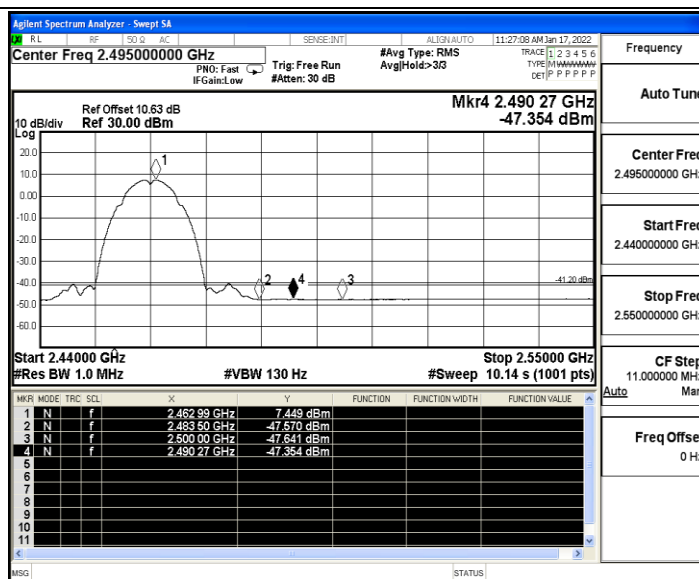
11B_Ant_Low_2412_AV



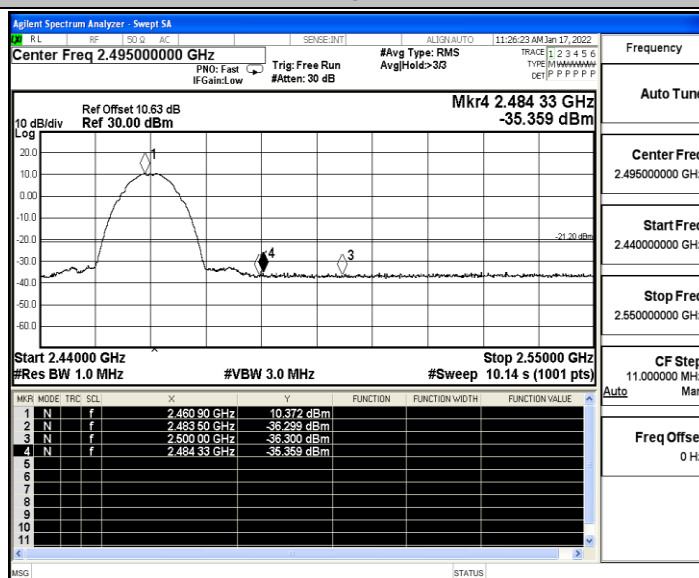
11B_Ant_Low_2412_Peak



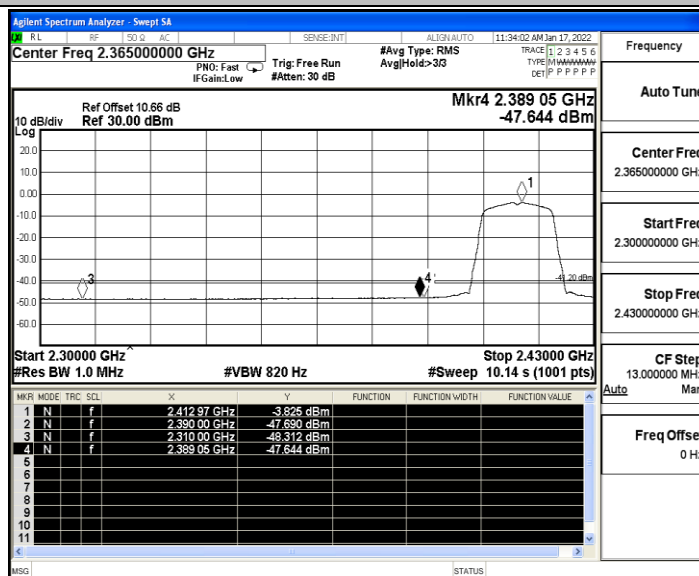
11B_Ant_High_2462_AV



11B_Ant_High_2462_Peak

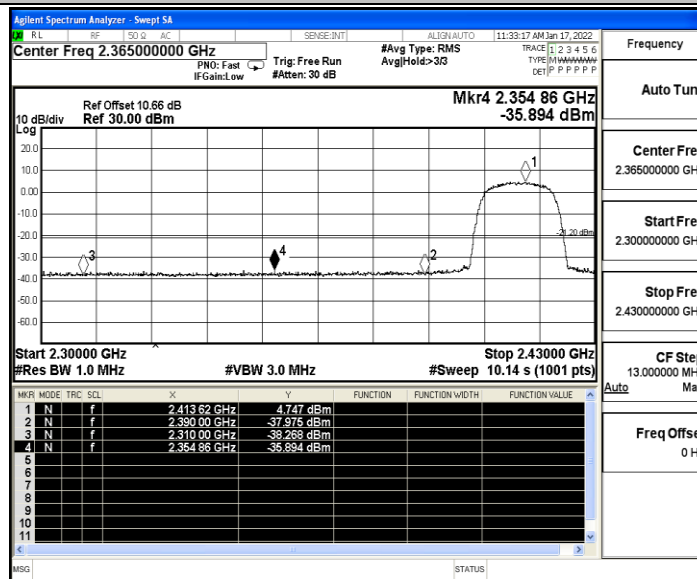


11G_Ant_Low_2412_AV

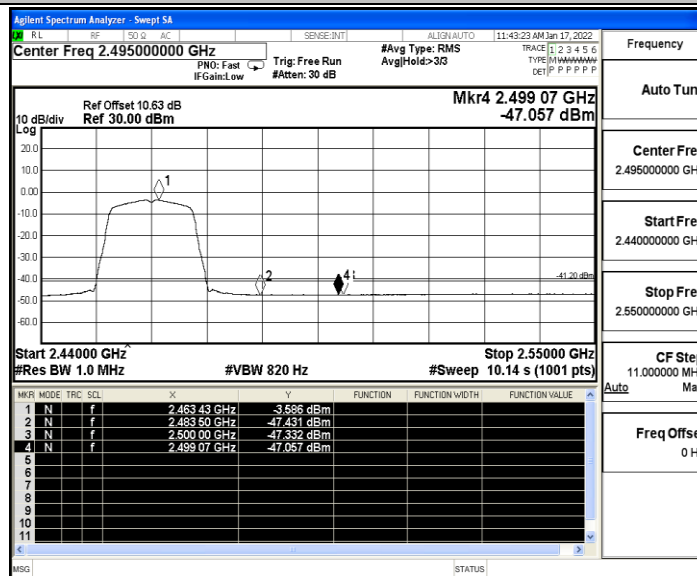




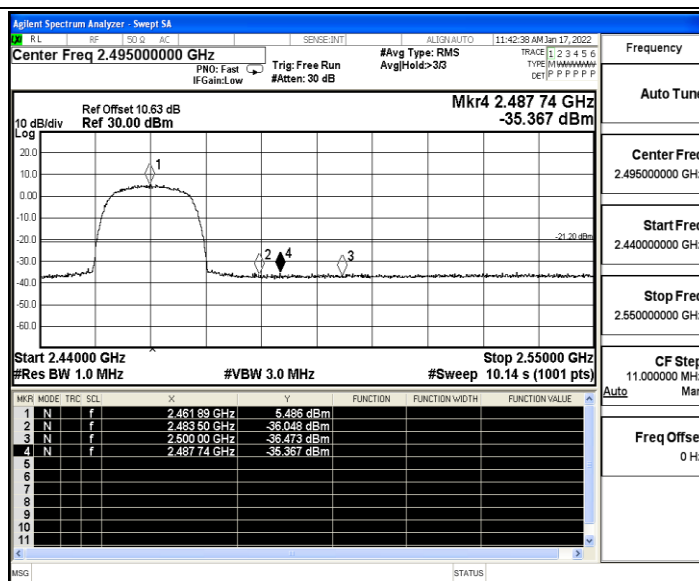
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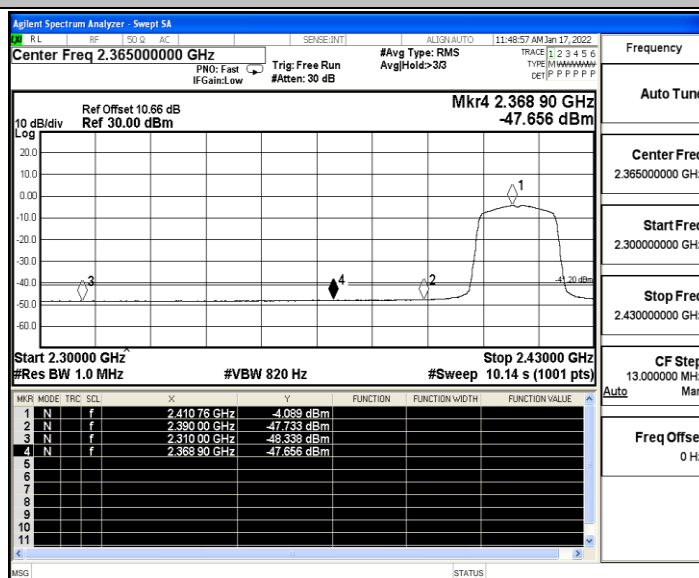
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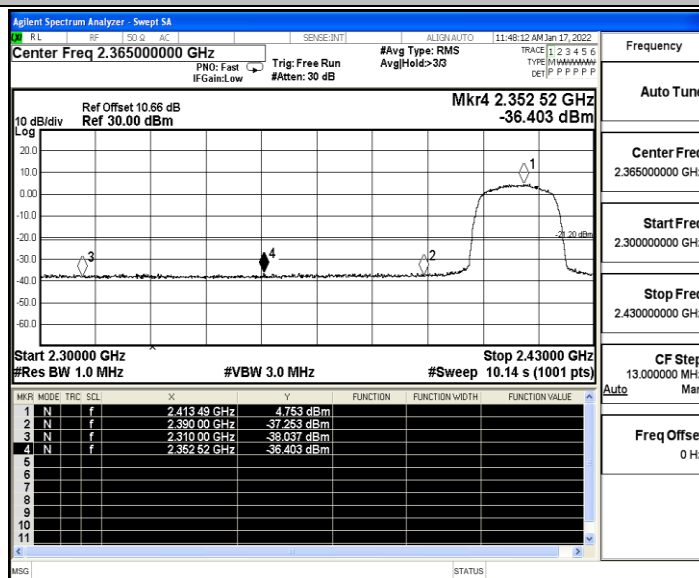
11G_Ant_High_2462_Peak



11N20SISO_Ant_Low_2412_AV

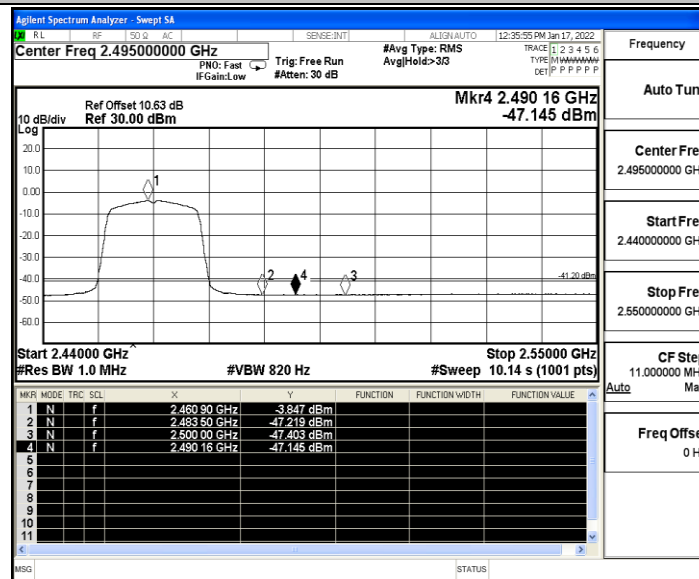


11N20SISO_Ant_Low_2412_Peak





11N20SISO_Ant_High_2462_AV



11N20SISO_Ant_High_2462_Peak

