



Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Smart String Light

Test Model: LSC-030-W3-C4N-K1-ee-fff

Environmental Conditions

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



A.1 6dB Bandwidth

Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	8.040	2408.480	2416.520	0.5	PASS
		2437	8.040	2432.960	2441.000	0.5	PASS
		2462	8.040	2458.480	2466.520	0.5	PASS
11G	Ant1	2412	15.680	2404.480	2420.160	0.5	PASS
		2437	15.720	2428.840	2444.560	0.5	PASS
		2462	15.400	2454.480	2469.880	0.5	PASS
11N20SISO	Ant1	2412	16.280	2404.480	2420.760	0.5	PASS
		2437	16.280	2428.240	2444.520	0.5	PASS
		2462	15.280	2454.480	2469.760	0.5	PASS
11N40SISO	Ant1	2422	25.120	2409.440	2434.560	0.5	PASS
		2437	35.680	2418.840	2454.520	0.5	PASS
		2452	35.440	2434.480	2469.920	0.5	PASS

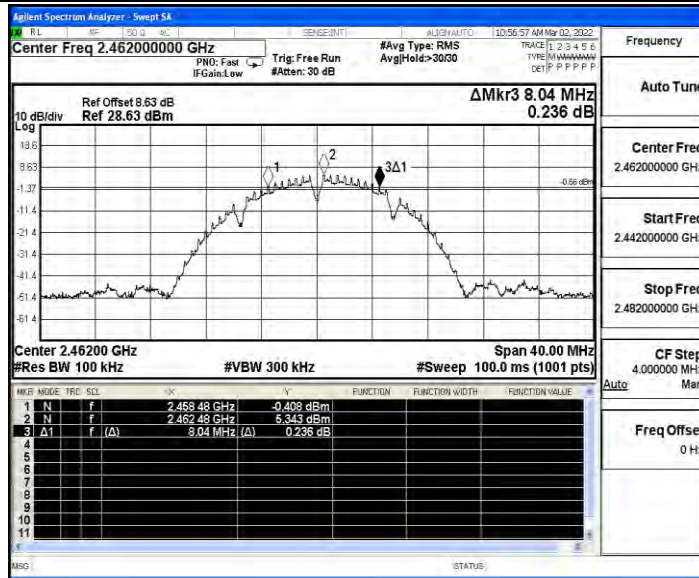


Test Graphs

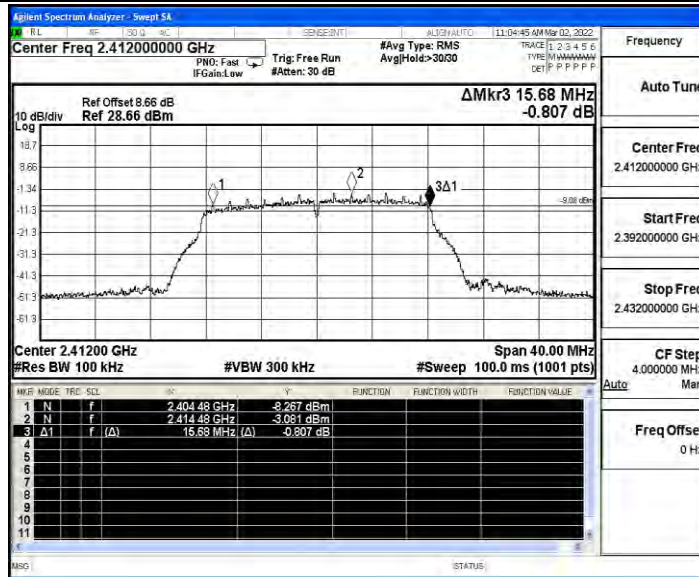




11B_Ant1_2462

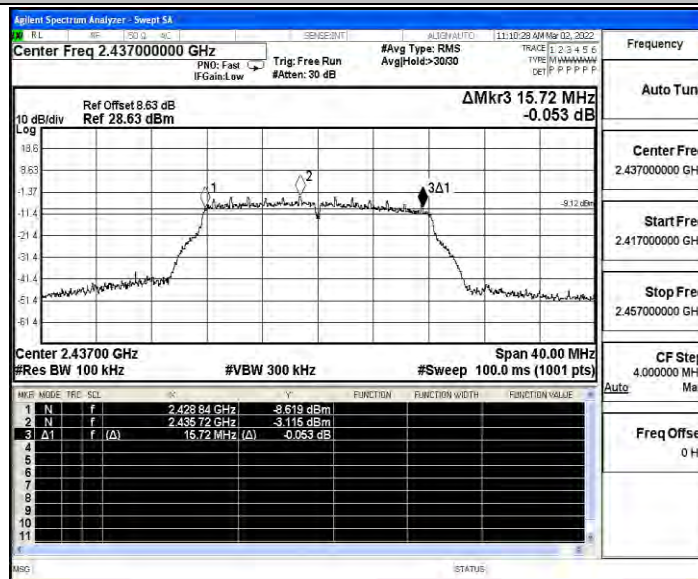


11G_Ant1_2412

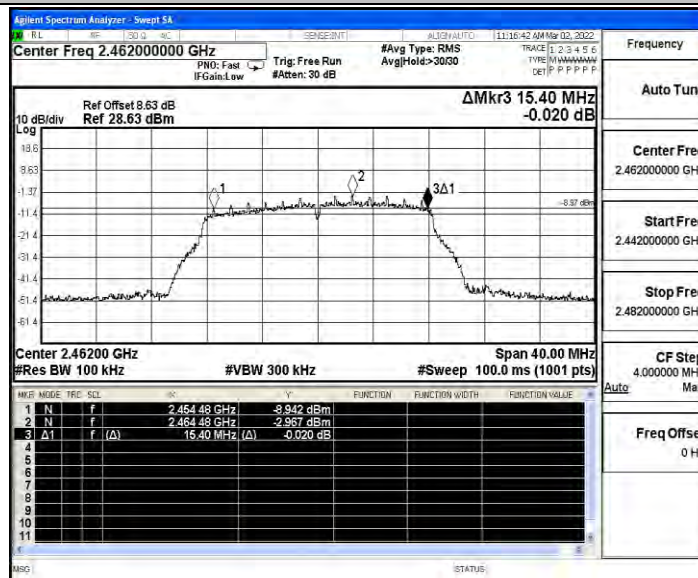




11G_Ant1_2437

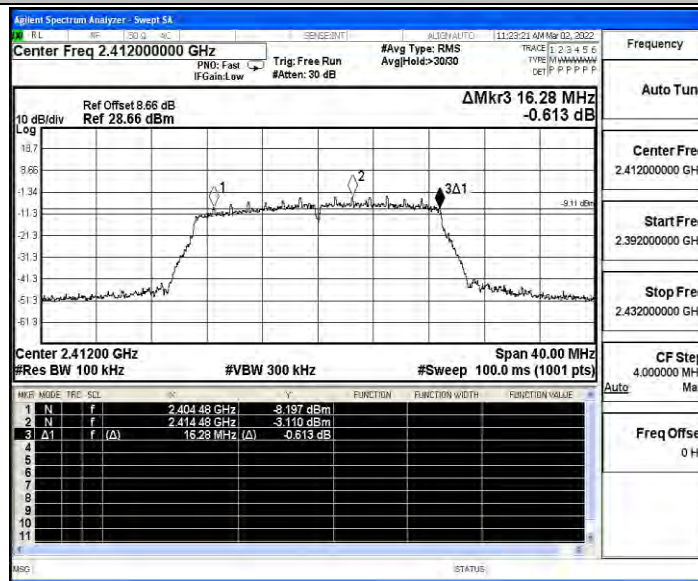


11G_Ant1_2462

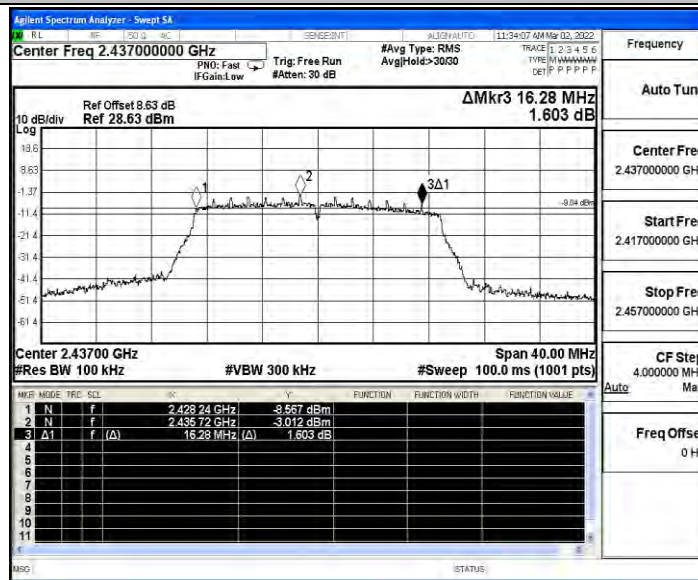




11N20SISO_Ant1_2412

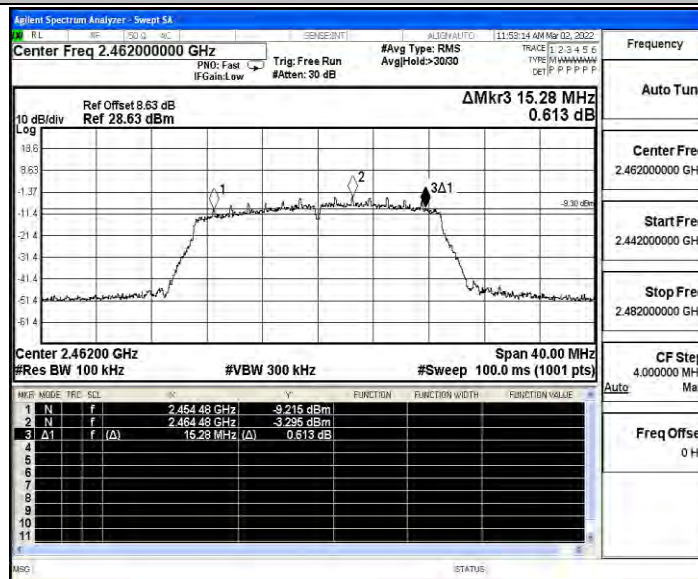


11N20SISO_Ant1_2437

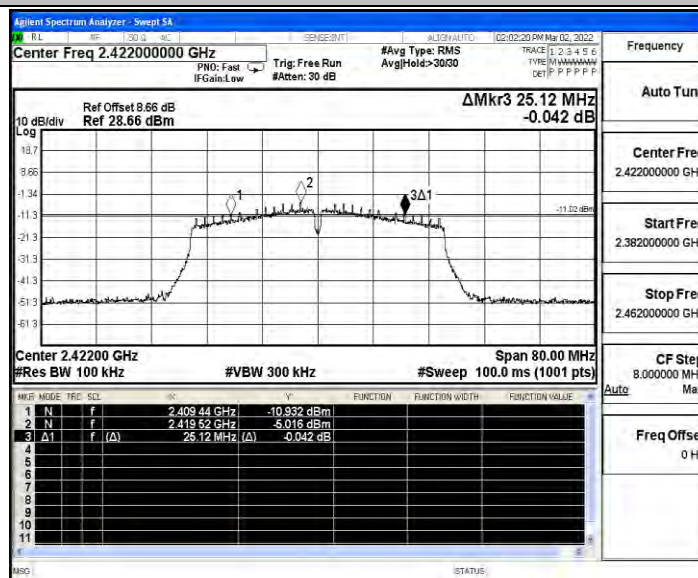




11N20SISO_Ant1_2462

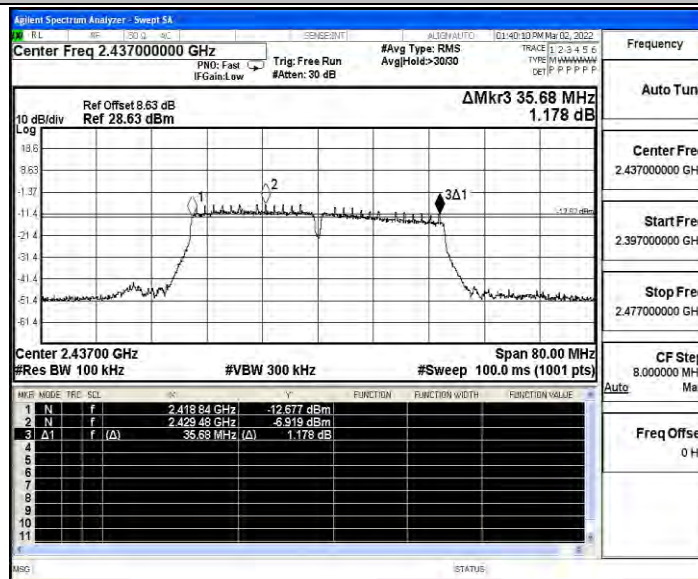


11N40SISO_Ant1_2422

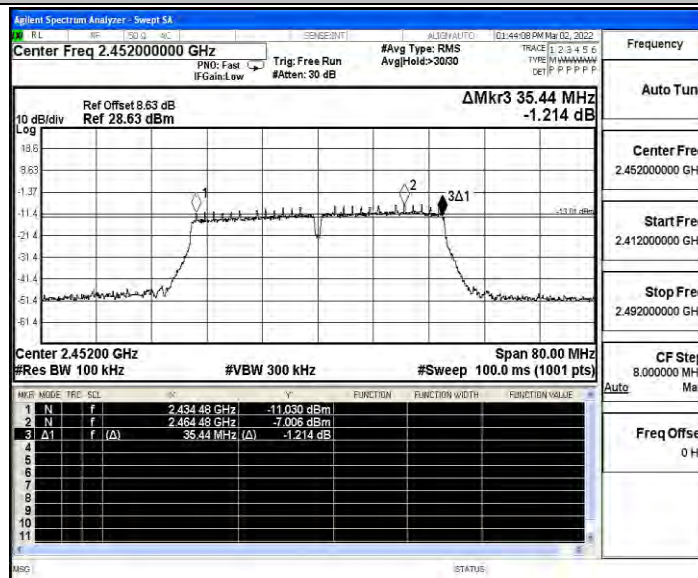




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





A.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	16.19	≤30.00	PASS
		2437	16.61	≤30.00	PASS
		2462	16.14	≤30.00	PASS
11G	Ant1	2412	15.40	≤30.00	PASS
		2437	15.69	≤30.00	PASS
		2462	15.13	≤30.00	PASS
11N20SISO	Ant1	2412	15.24	≤30.00	PASS
		2437	15.55	≤30.00	PASS
		2462	14.78	≤30.00	PASS
11N40SISO	Ant1	2422	14.85	≤30.00	PASS
		2437	14.61	≤30.00	PASS
		2452	14.45	≤30.00	PASS



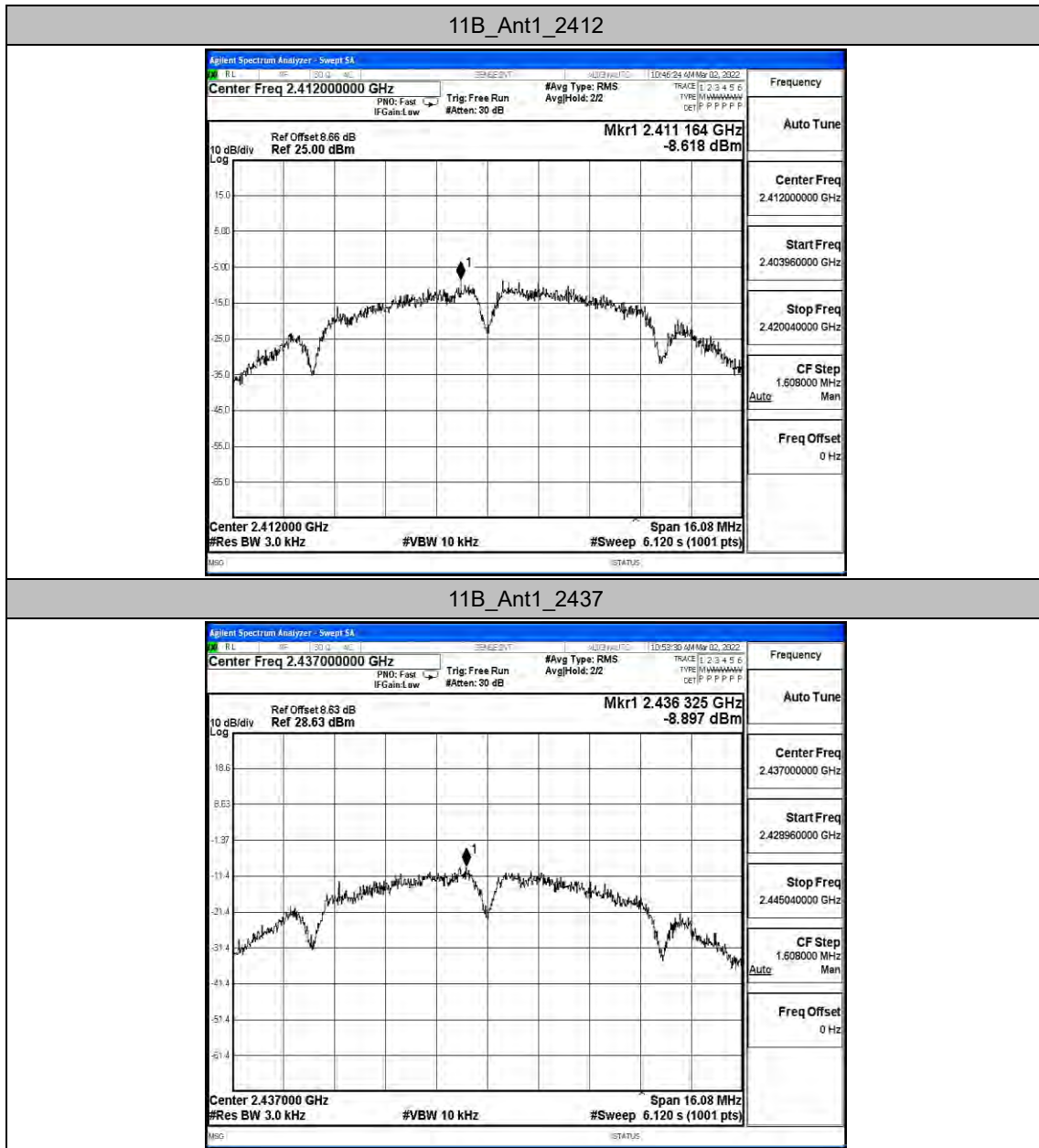
A.3 Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-8.62	≤8.00	PASS
		2437	-8.9	≤8.00	PASS
		2462	-9.34	≤8.00	PASS
11G	Ant1	2412	-17.47	≤8.00	PASS
		2437	-17.41	≤8.00	PASS
		2462	-16.81	≤8.00	PASS
11N20SISO	Ant1	2412	-17.22	≤8.00	PASS
		2437	-17.91	≤8.00	PASS
		2462	-16.98	≤8.00	PASS
11N40SISO	Ant1	2422	-19.34	≤8.00	PASS
		2437	-20.99	≤8.00	PASS
		2452	-22.07	≤8.00	PASS

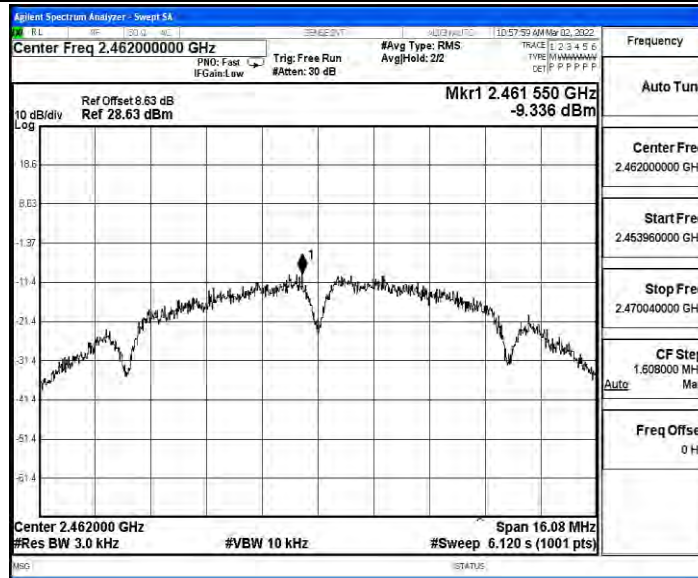


Test Graphs

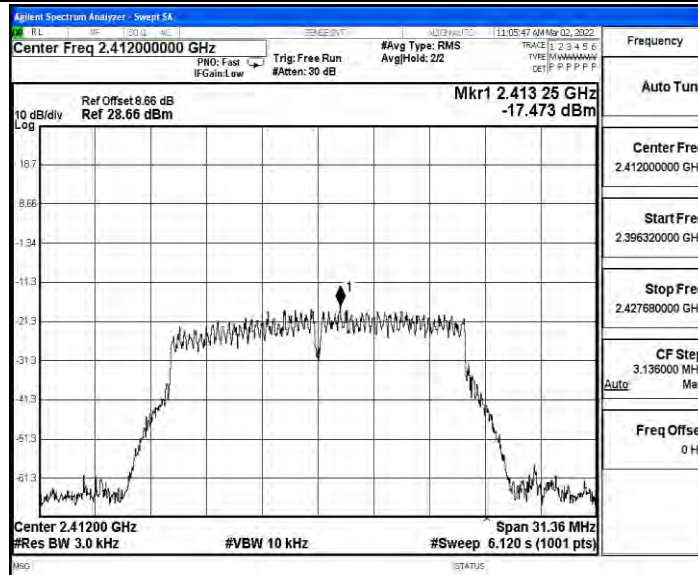




11B_Ant1_2462

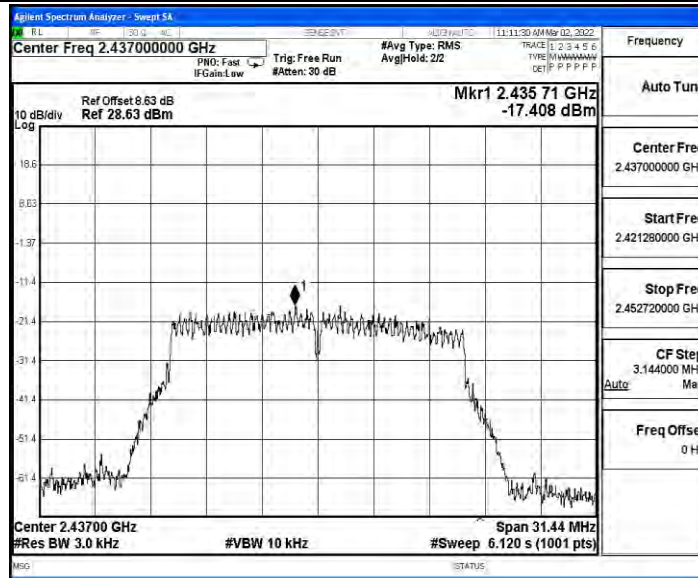


11G_Ant1_2412

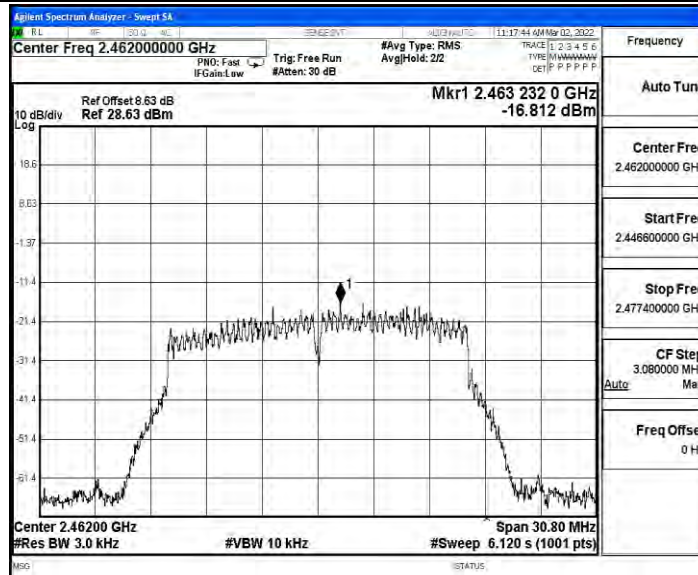




11G_Ant1_2437

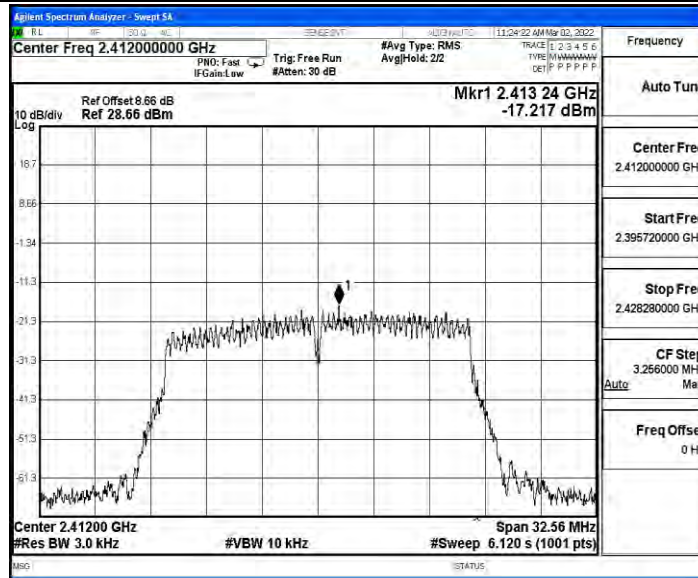


11G_Ant1_2462

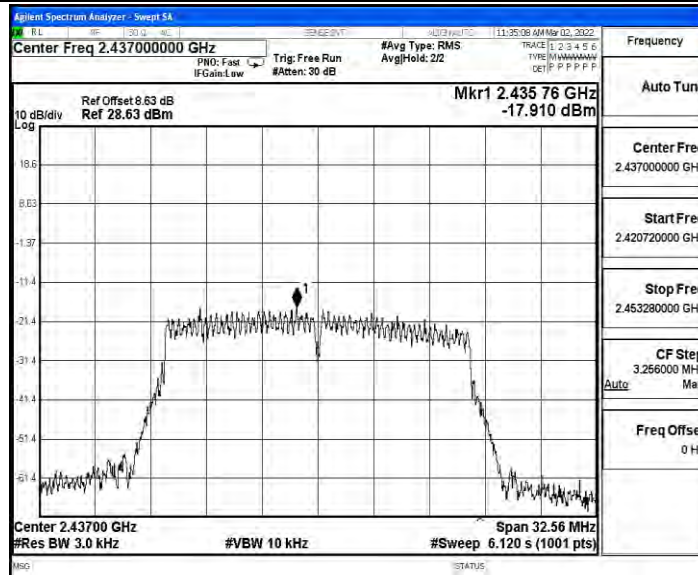




11N20SISO_Ant1_2412

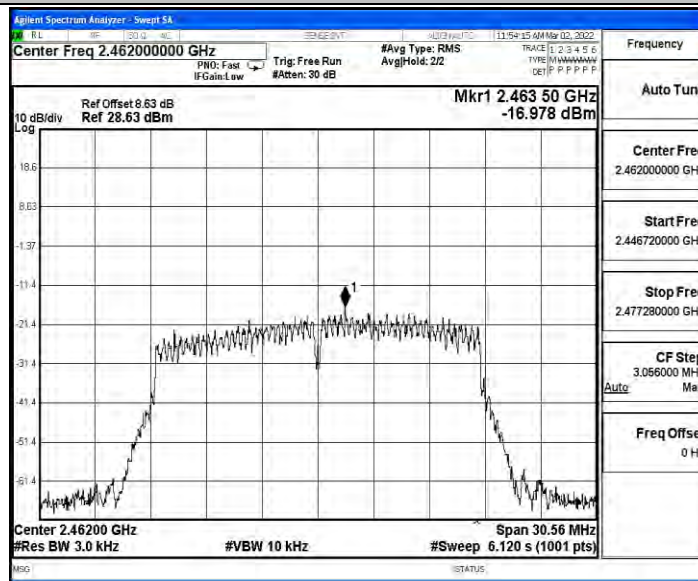


11N20SISO_Ant1_2437

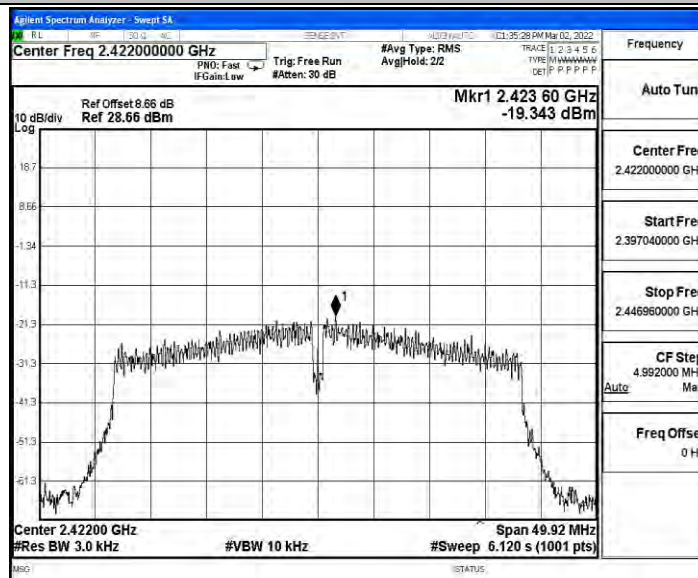




11N20SISO_Ant1_2462

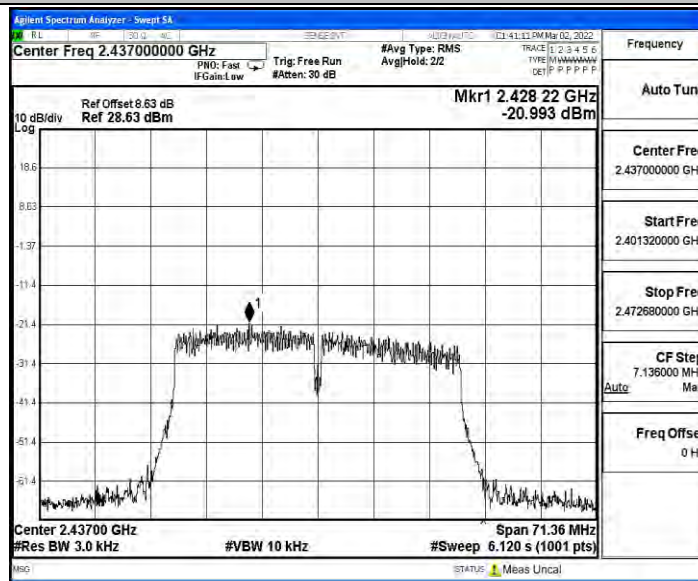


11N40SISO_Ant1_2422

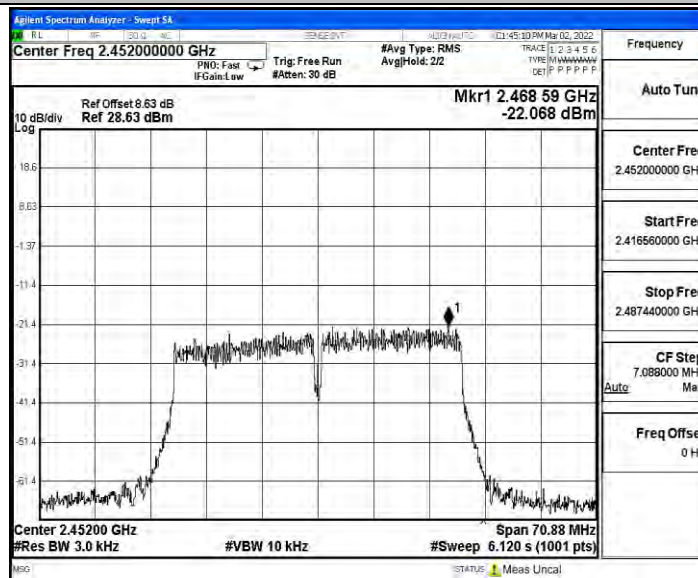




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





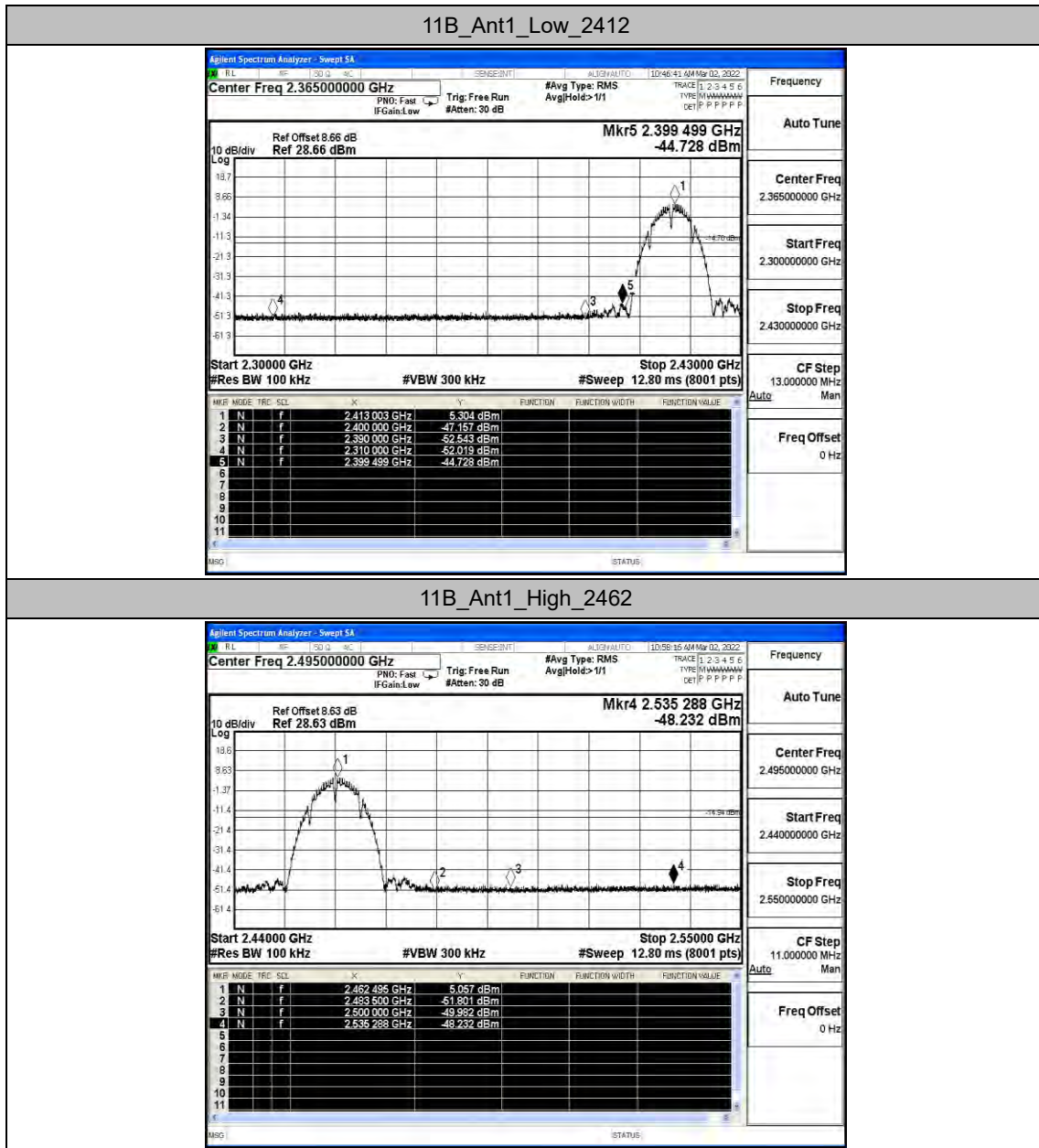
A.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	5.30	-44.73	≤-14.7	PASS
		High	2462	5.06	-48.23	≤-14.94	PASS
11G	Ant1	Low	2412	-2.86	-45.85	≤-22.86	PASS
		High	2462	-2.64	-46.84	≤-22.64	PASS
11N20SISO	Ant1	Low	2412	-2.71	-46.32	≤-22.71	PASS
		High	2462	-3.18	-48.07	≤-23.18	PASS
11N40SISO	Ant1	Low	2422	-5.24	-47.51	≤-25.24	PASS
		High	2452	-6.78	-47.18	≤-26.78	PASS

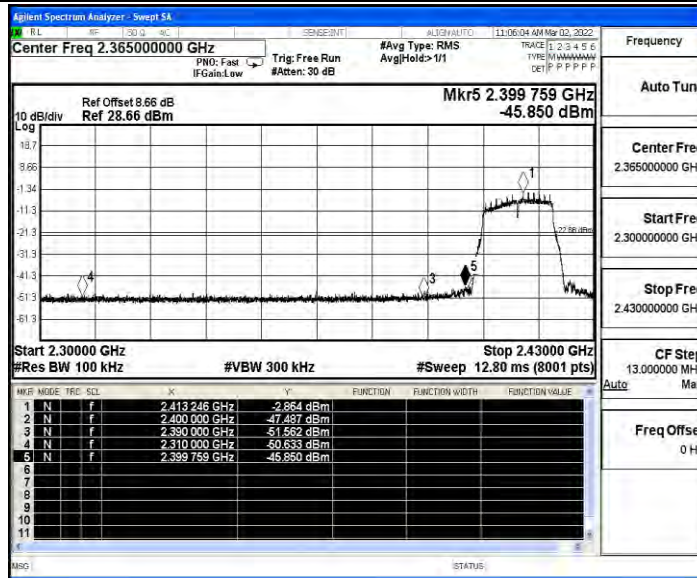


Test Graphs

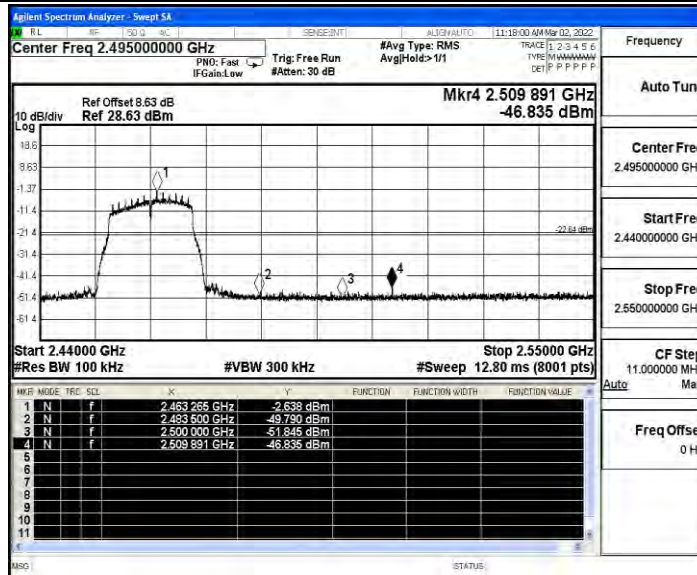




11G_Ant1_Low_2412

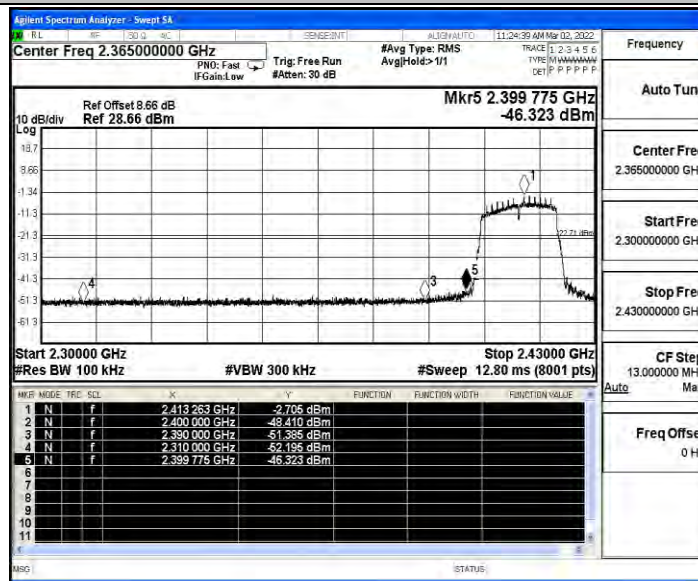


11G_Ant1_High_2462

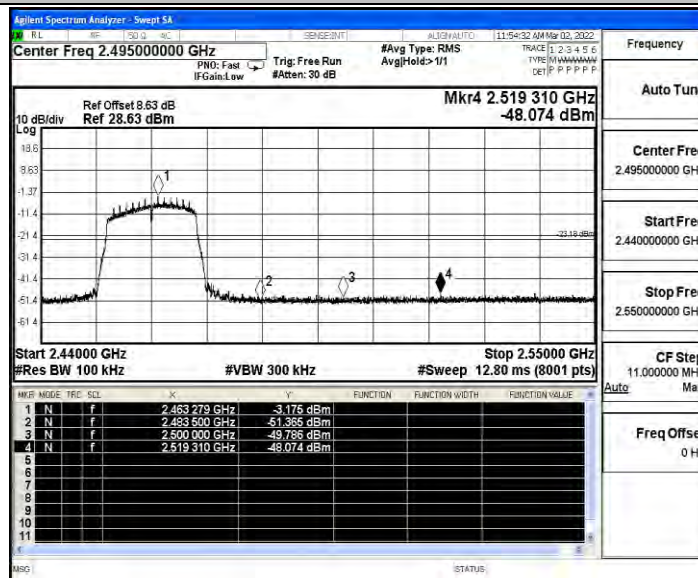




11N20SISO_Ant1_Low_2412

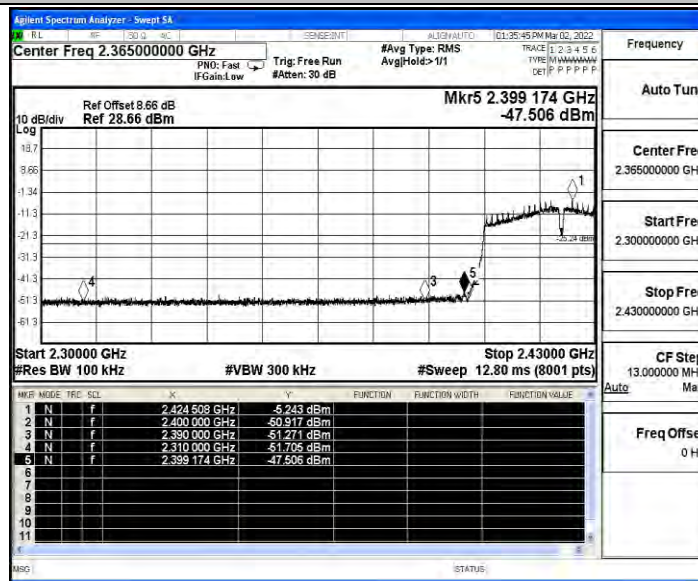


11N20SISO_Ant1_High_2462

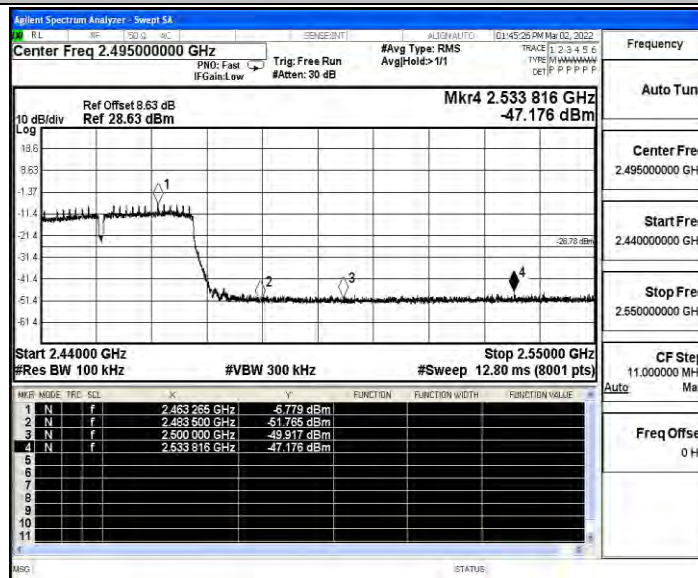




11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452





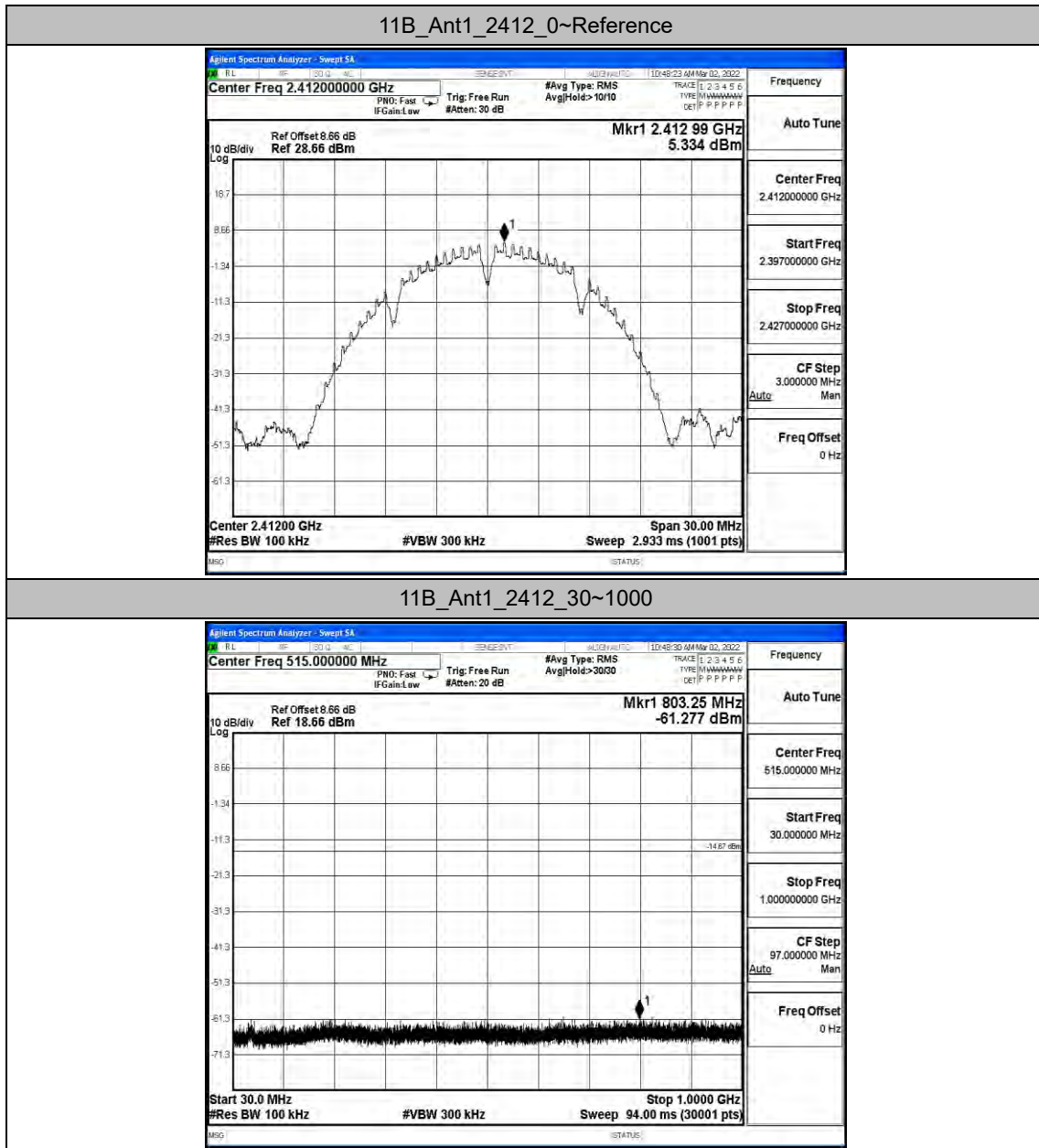
A.5 Conducted Spurious Emission

Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	5.33	5.33	---	PASS
			30~1000	5.33	-61.28	≤-14.67	PASS
			1000~26500	5.33	-45.51	≤-14.67	PASS
		2437	Reference	5.55	5.55	---	PASS
			30~1000	5.55	-59.59	≤-14.45	PASS
			1000~26500	5.55	-44.13	≤-14.45	PASS
		2462	Reference	4.81	4.81	---	PASS
			30~1000	4.81	-60.84	≤-15.19	PASS
			1000~26500	4.81	-46.14	≤-15.19	PASS
11G	Ant1	2412	Reference	-2.70	-2.70	---	PASS
			30~1000	-2.70	-60.27	≤-22.7	PASS
			1000~26500	-2.70	-45.02	≤-22.7	PASS
		2437	Reference	-2.96	-2.96	---	PASS
			30~1000	-2.96	-60.9	≤-22.96	PASS
			1000~26500	-2.96	-45.49	≤-22.96	PASS
		2462	Reference	-2.87	-2.87	---	PASS
			30~1000	-2.87	-60.96	≤-22.87	PASS
			1000~26500	-2.87	-46.01	≤-22.87	PASS
11N20SISO	Ant1	2412	Reference	-2.98	-2.98	---	PASS
			30~1000	-2.98	-61.25	≤-22.98	PASS
			1000~26500	-2.98	-45.85	≤-22.98	PASS
		2437	Reference	-2.98	-2.98	---	PASS
			30~1000	-2.98	-60.59	≤-22.98	PASS
			1000~26500	-2.98	-45.46	≤-22.98	PASS
		2462	Reference	-2.82	-2.82	---	PASS
			30~1000	-2.82	-60.37	≤-22.82	PASS
			1000~26500	-2.82	-46.07	≤-22.82	PASS
11N40SISO	Ant1	2422	Reference	-5.18	-5.18	---	PASS
			30~1000	-5.18	-60.49	≤-25.18	PASS
			1000~26500	-5.18	-46.42	≤-25.18	PASS
		2437	Reference	-6.63	-6.63	---	PASS
			30~1000	-6.63	-57.27	≤-26.63	PASS
			1000~26500	-6.63	-46.23	≤-26.63	PASS
		2452	Reference	-6.67	-6.67	---	PASS
			30~1000	-6.67	-47.84	≤-26.67	PASS
			1000~26500	-6.67	-45.84	≤-26.67	PASS

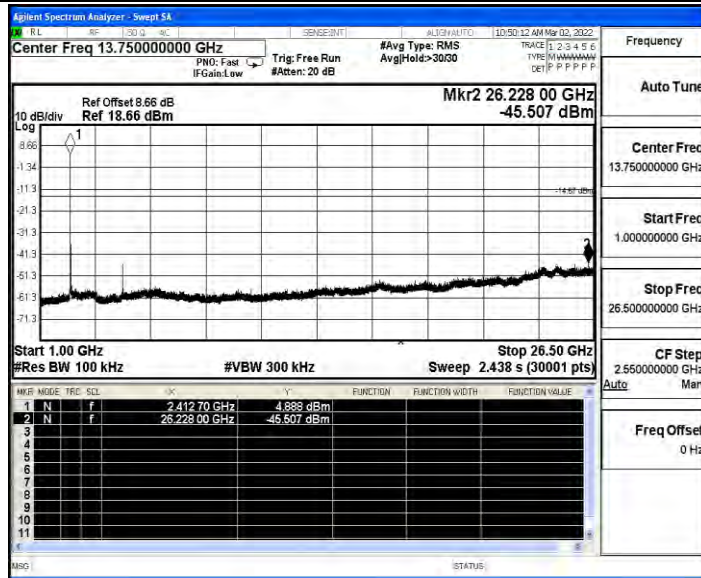


Test Graphs

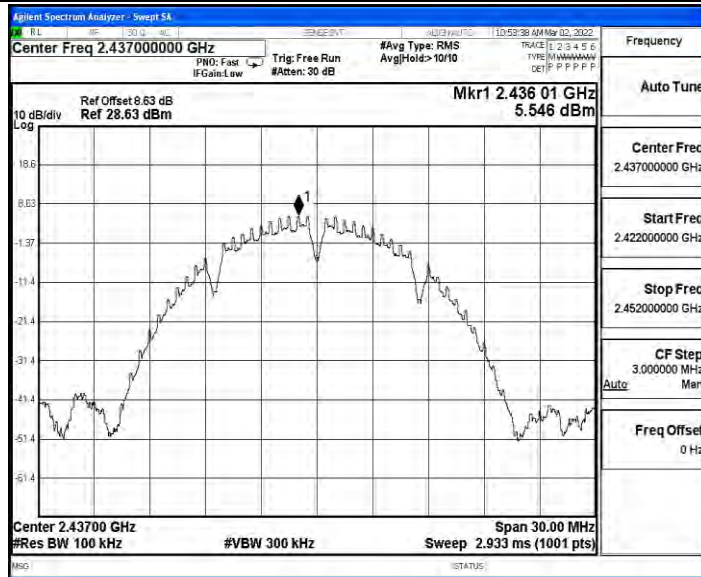




11B_Ant1_2412_1000~26500

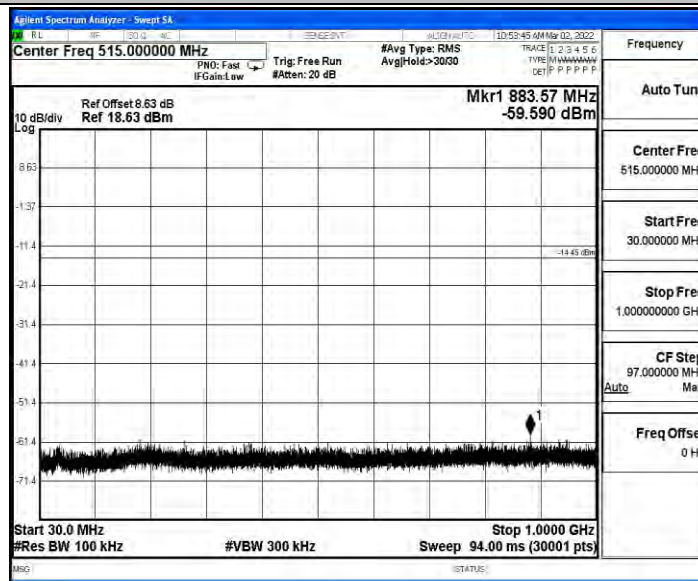


11B_Ant1_2437_0~Reference

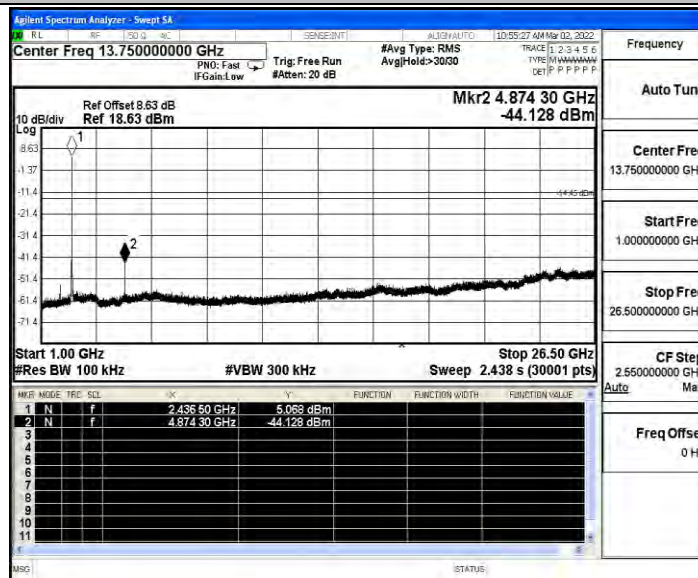




11B_Ant1_2437_30~1000

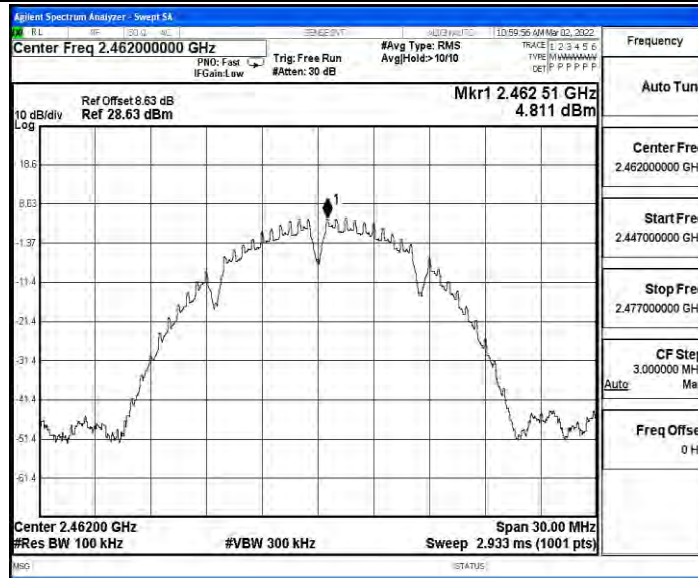


11B_Ant1_2437_1000~26500

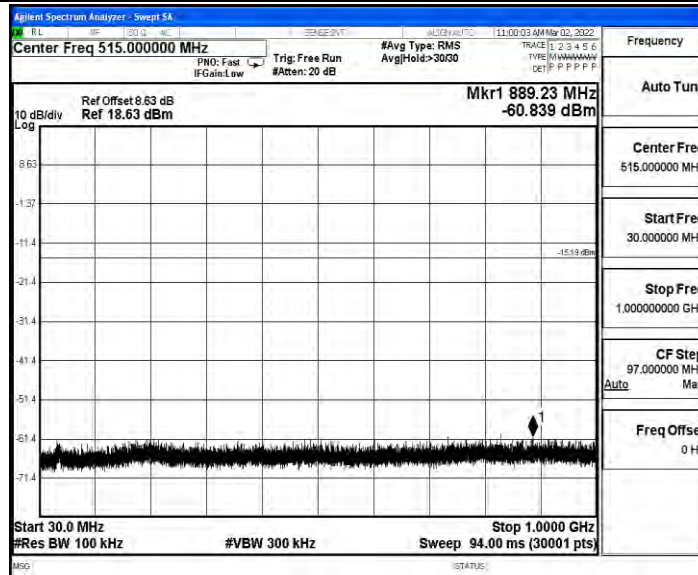




11B_Ant1_2462_0~Reference

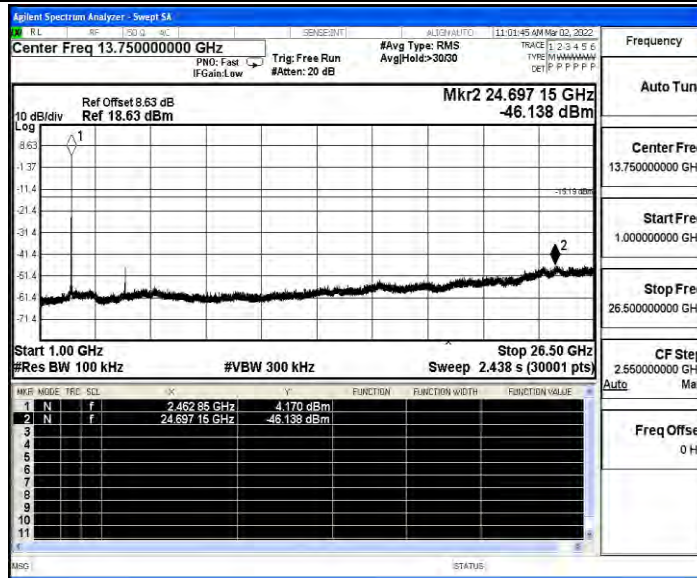


11B_Ant1_2462_30~1000

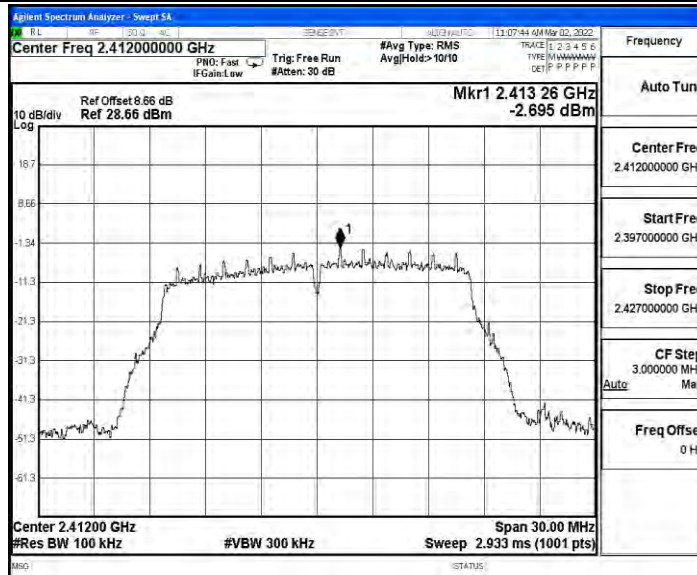




11B_Ant1_2462_1000~26500

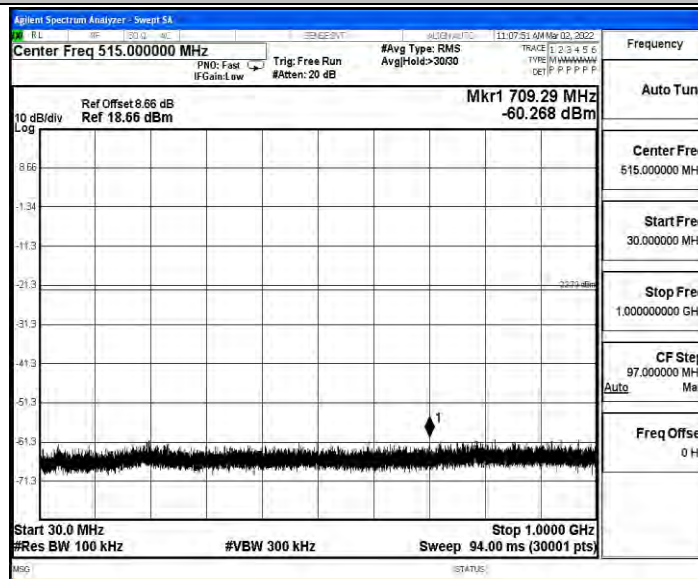


11G_Ant1_2412_0~Reference

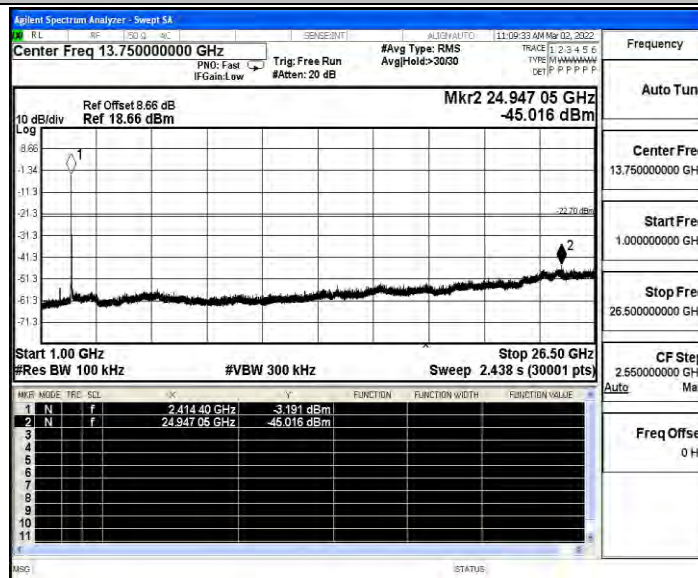




11G_Ant1_2412_30~1000

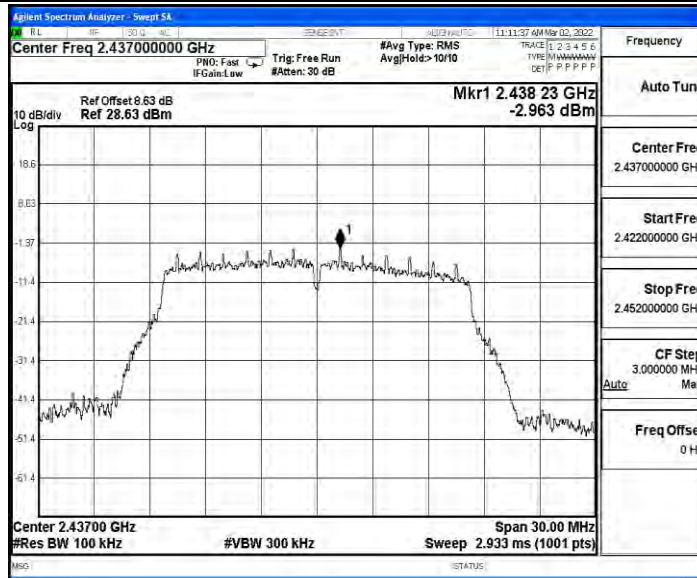


11G_Ant1_2412_1000~26500

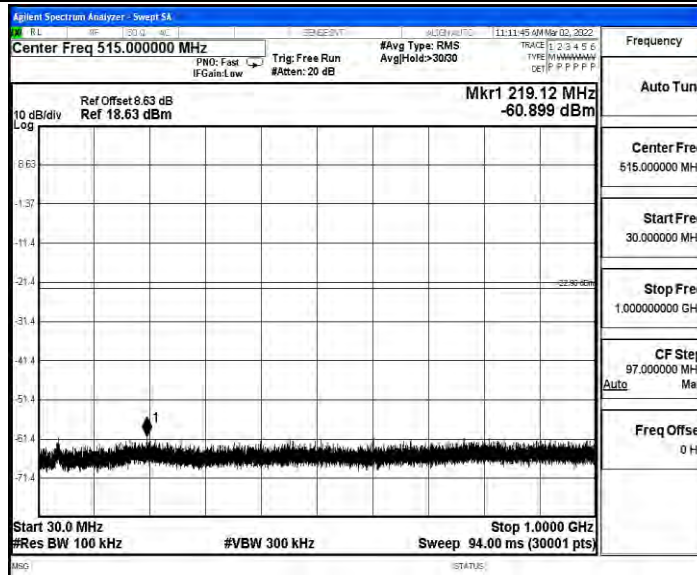




11G_Ant1_2437_0~Reference

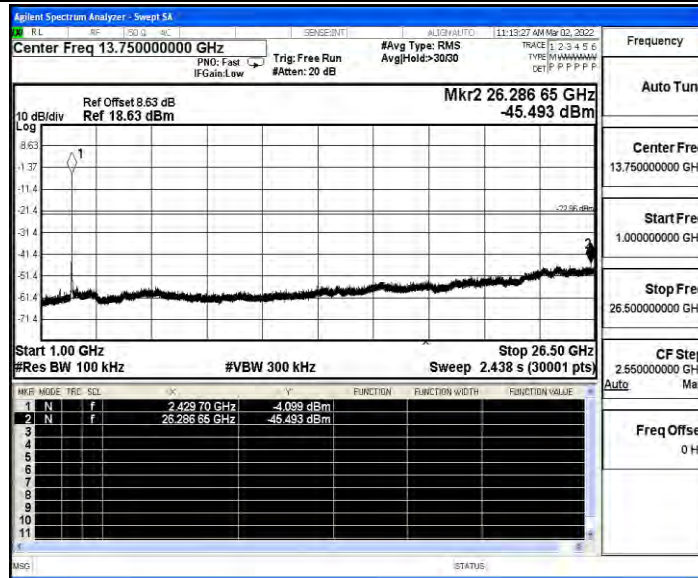


11G_Ant1_2437_30~1000

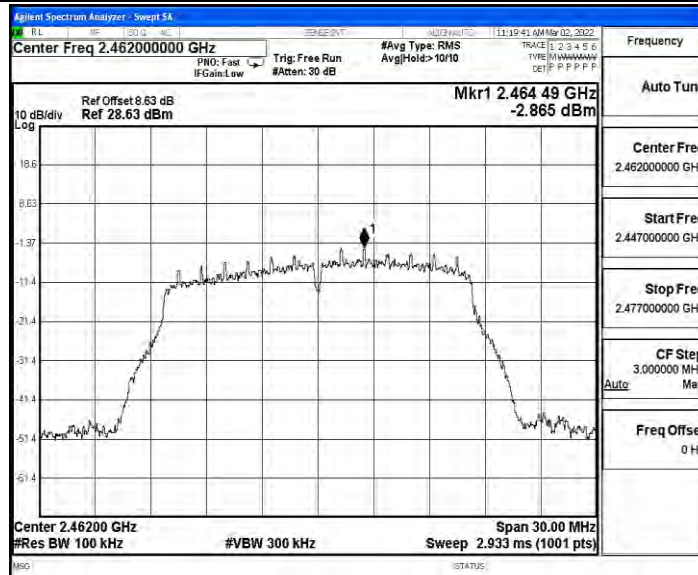




11G_Ant1_2437_1000~26500

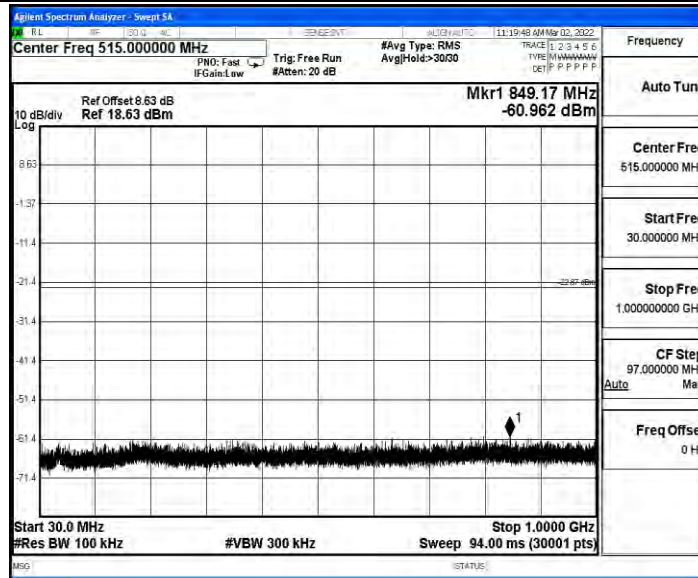


11G_Ant1_2462_0~Reference

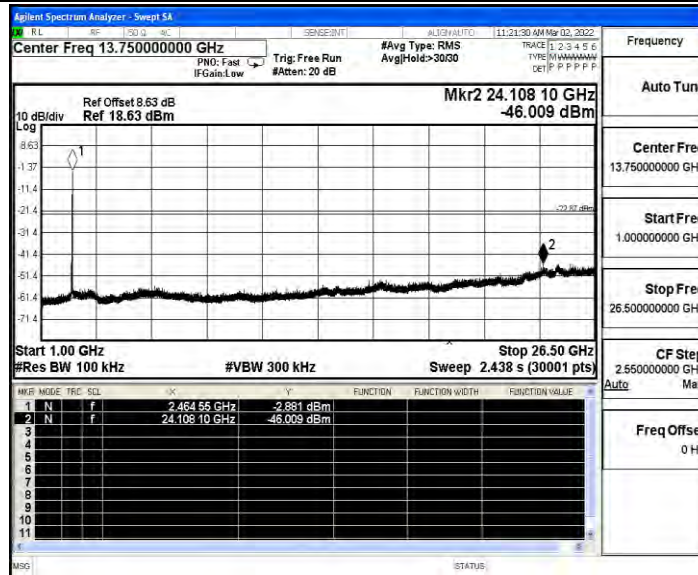




11G_Ant1_2462_30~1000

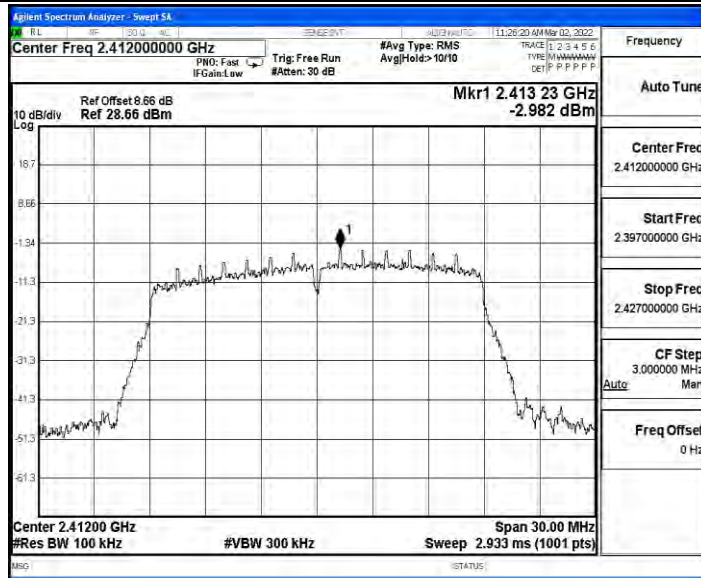


11G_Ant1_2462_1000~26500

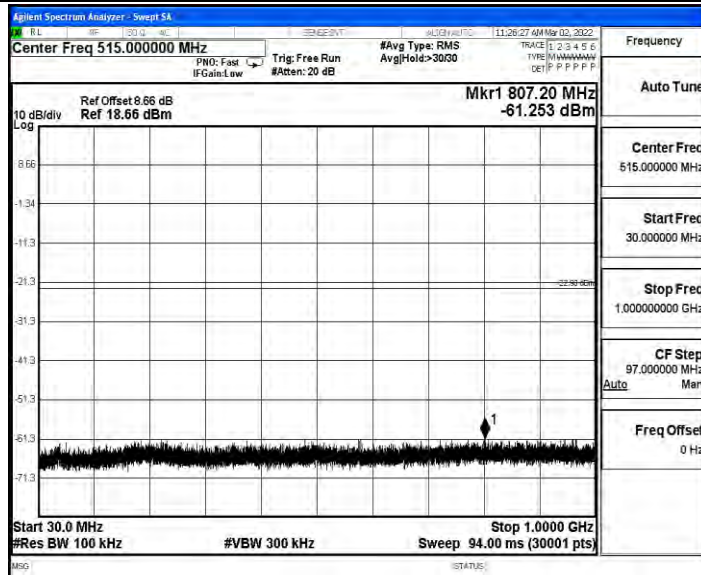




11N20SISO_Ant1_2412_0~Reference

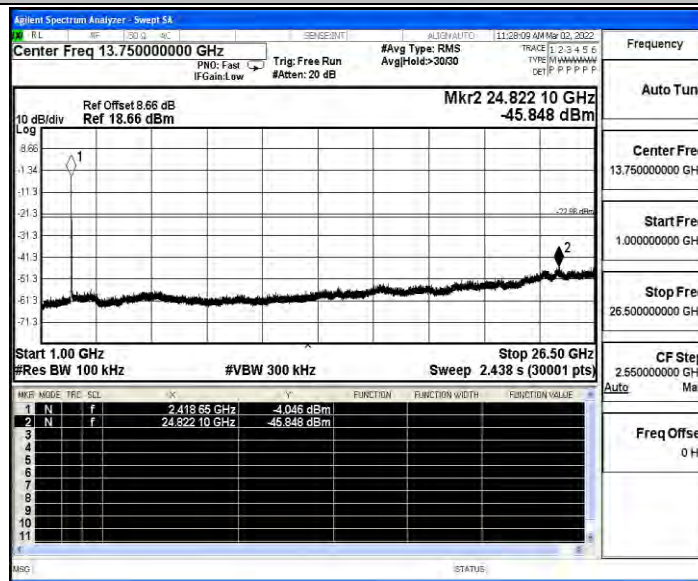


11N20SISO_Ant1_2412_30~1000

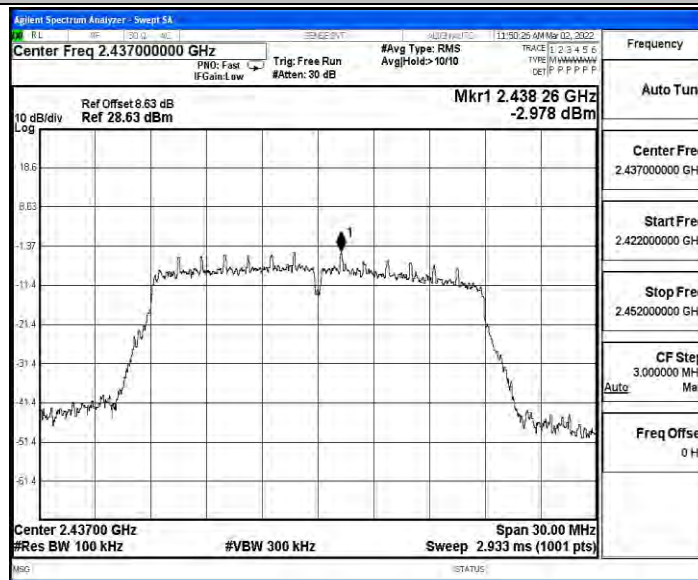




11N20SISO_Ant1_2412_1000~26500

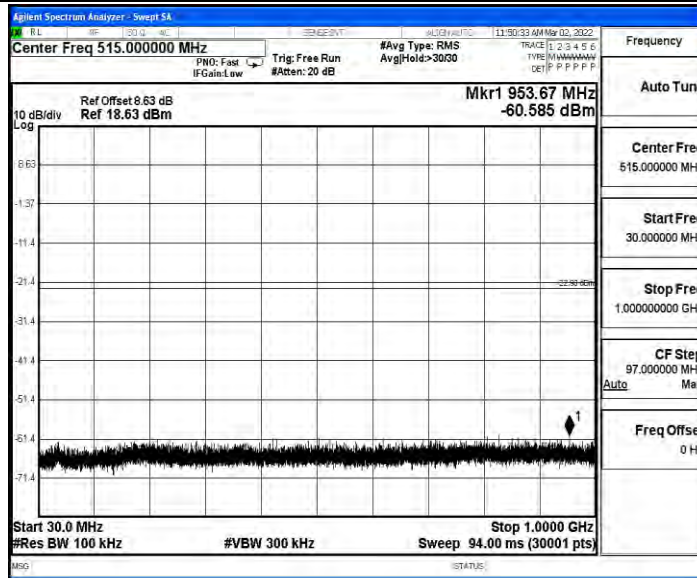


11N20SISO_Ant1_2437_0~Reference

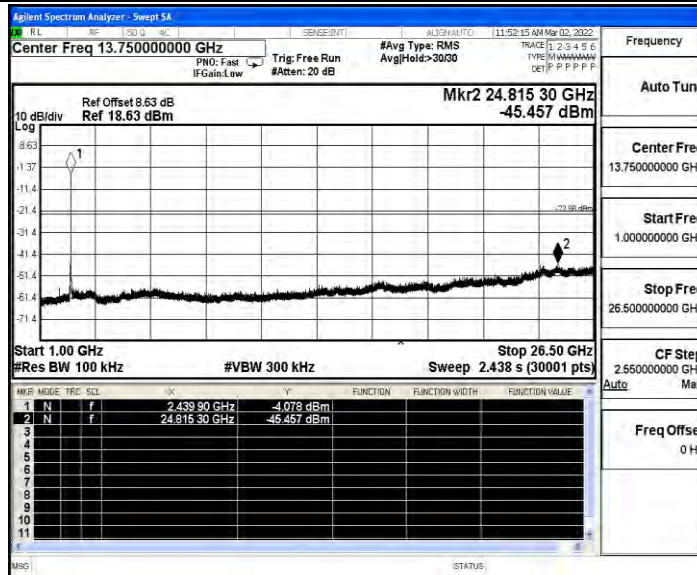




11N20SISO_Ant1_2437_30~1000

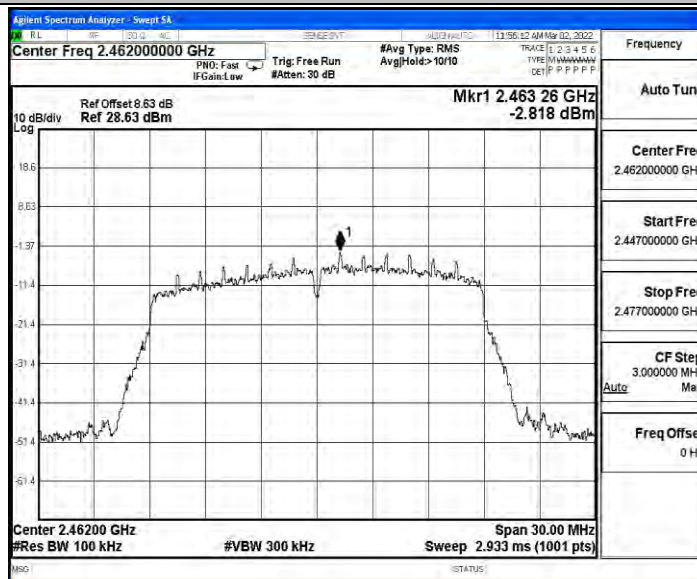


11N20SISO_Ant1_2437_1000~26500

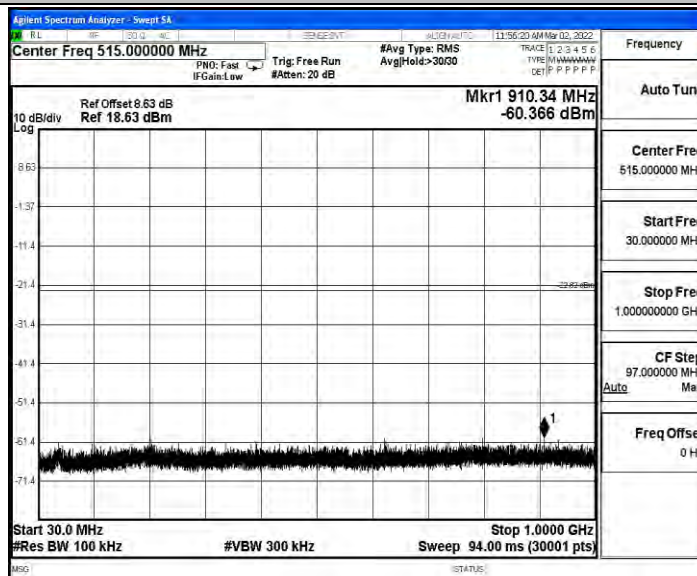




11N20SISO_Ant1_2462_0~Reference

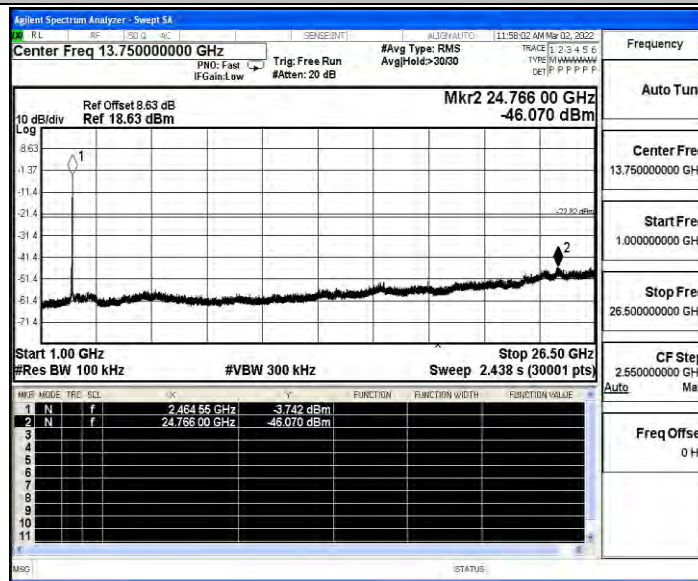


11N20SISO_Ant1_2462_30~1000

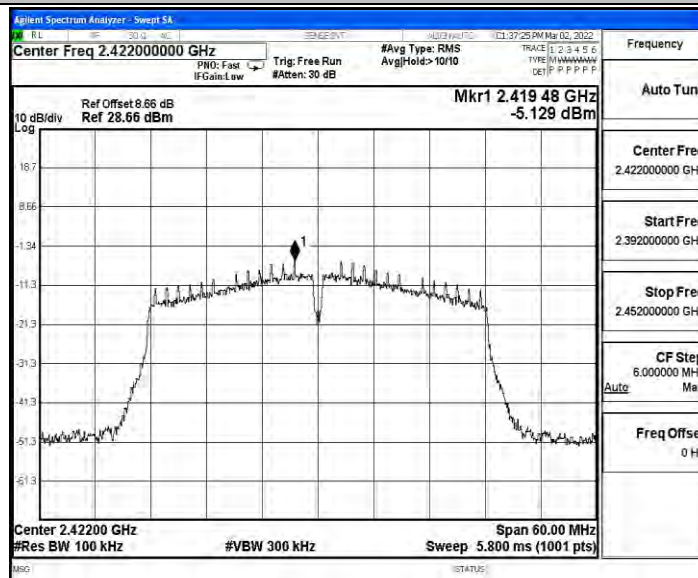




11N20SISO_Ant1_2462_1000~26500

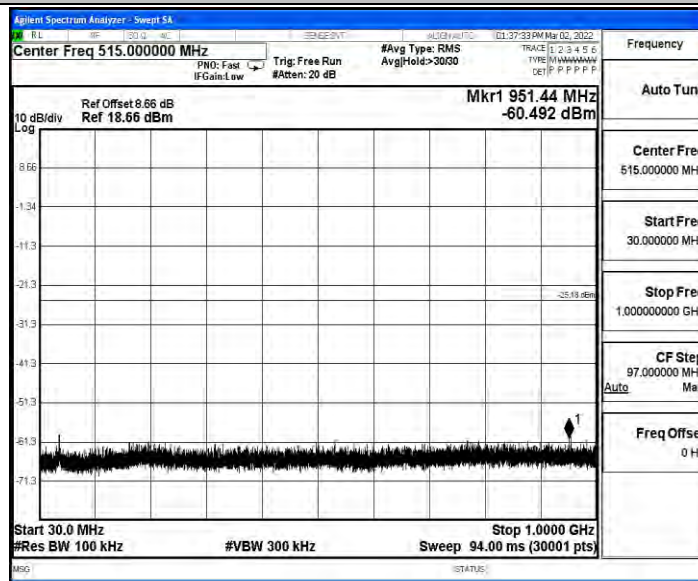


11N40SISO_Ant1_2422_0~Reference

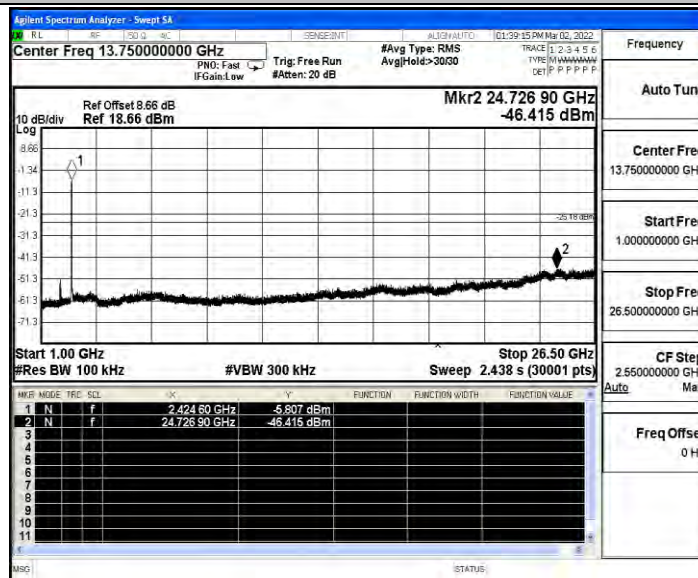




11N40SISO_Ant1_2422_30~1000

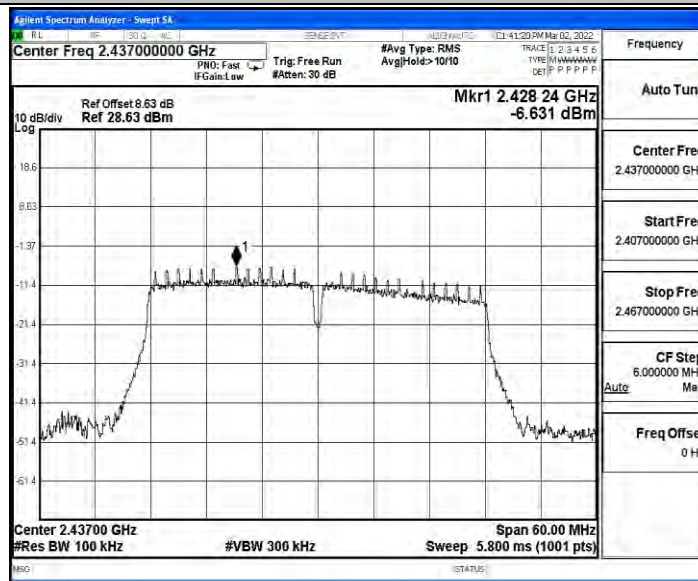


11N40SISO_Ant1_2422_1000~26500

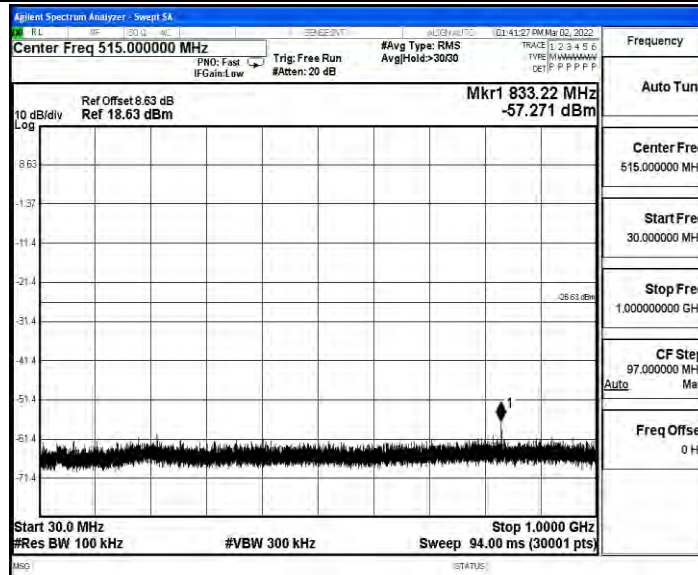




11N40SISO_Ant1_2437_0~Reference

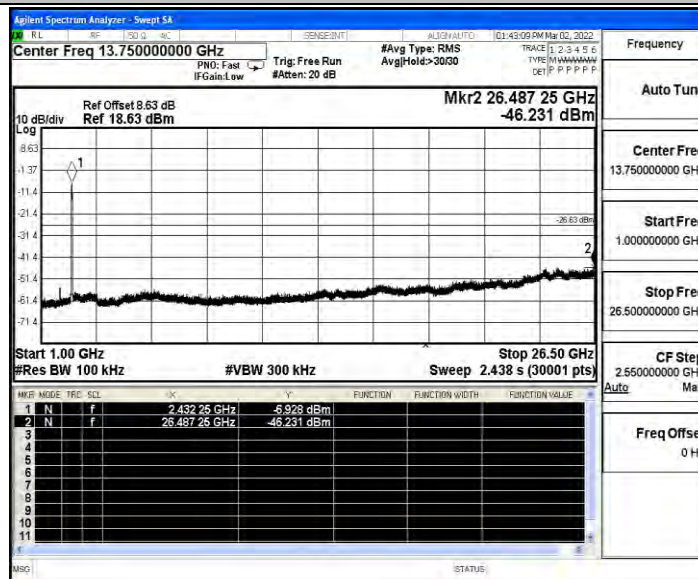


11N40SISO_Ant1_2437_30~1000

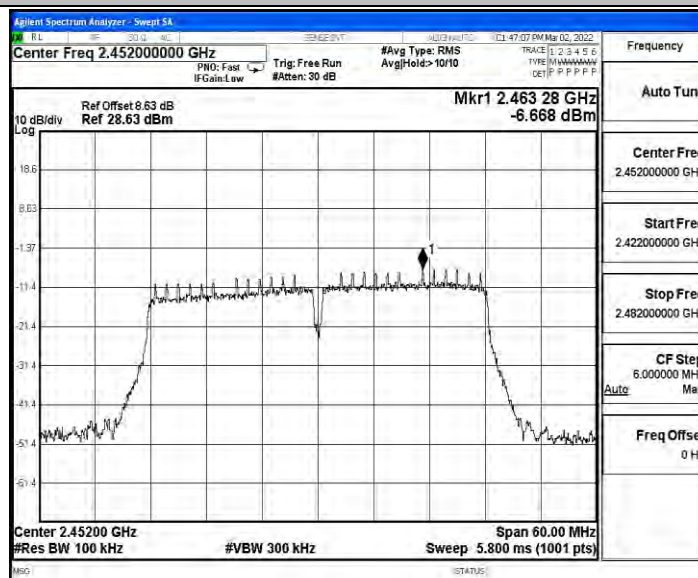




11N40SISO_Ant1_2437_1000~26500

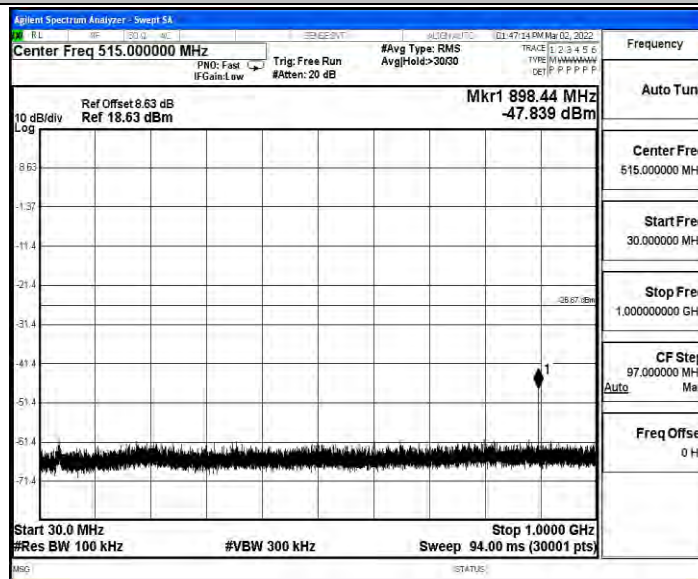


11N40SISO_Ant1_2452_0~Reference

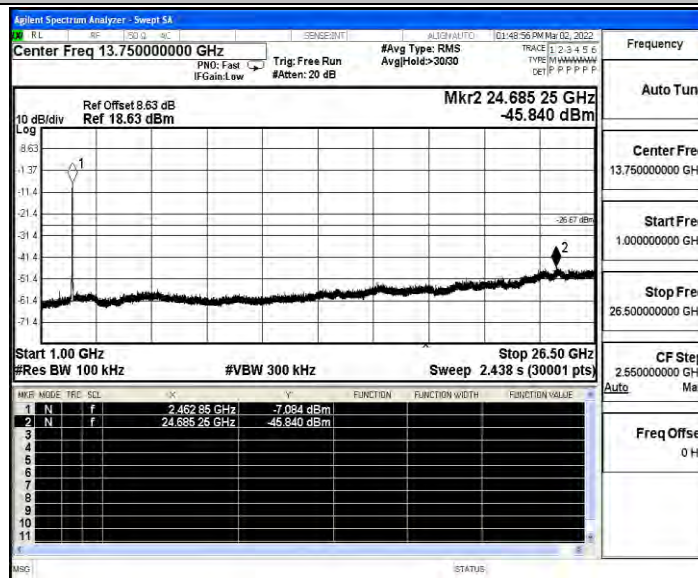




11N40SISO_Ant1_2452_30~1000



11N40SISO_Ant1_2452_1000~26500





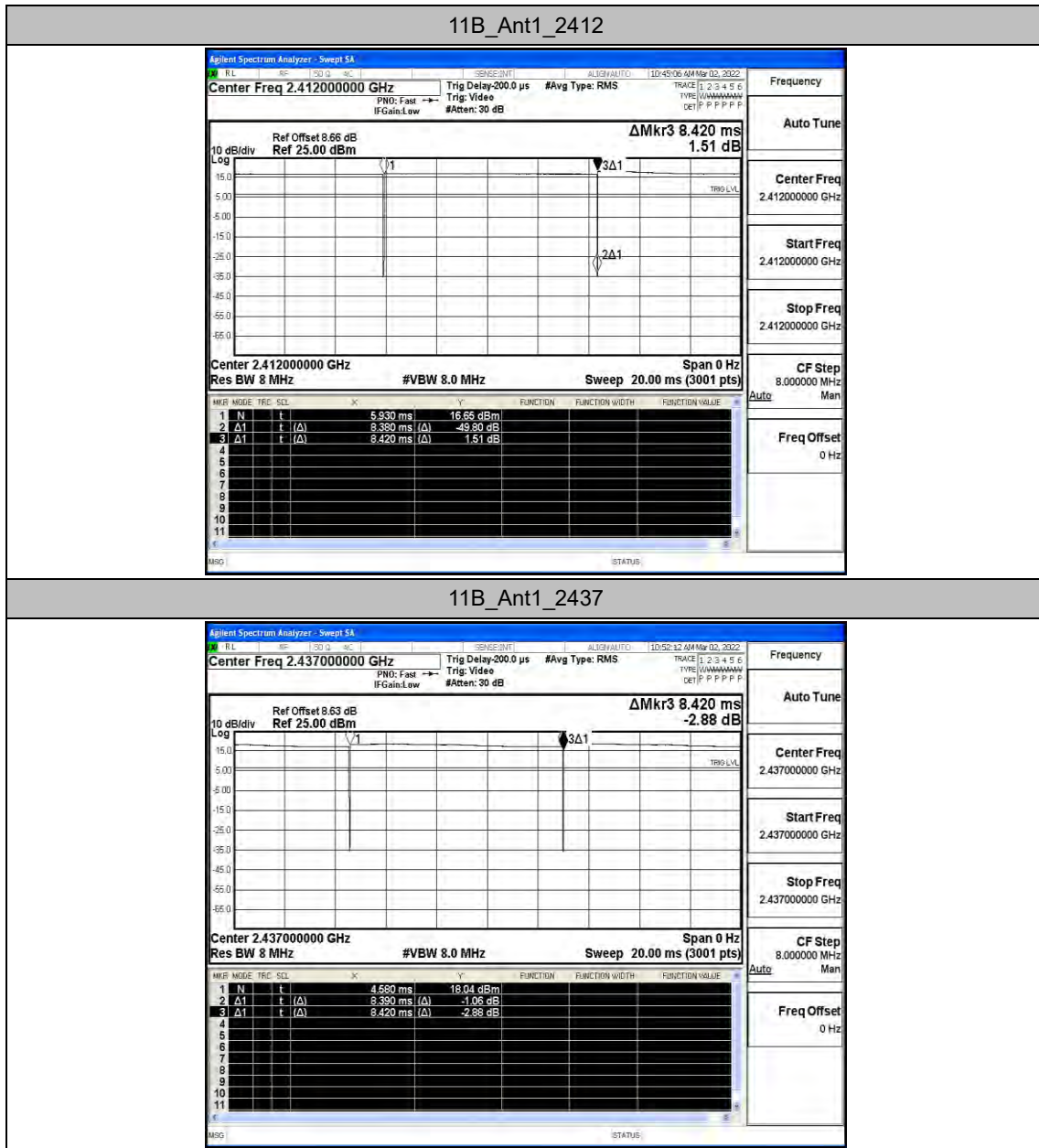
A.6 Duty Cycle

Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11B	Ant1	2412	8.38	8.42	99.52	---	---
		2437	8.39	8.42	99.64	---	---
		2462	8.38	8.42	99.52	---	---
11G	Ant1	2412	1.39	1.44	96.53	---	---
		2437	1.39	1.43	97.20	---	---
		2462	1.39	1.43	97.20	---	---
11N20SISO	Ant1	2412	1.30	1.34	97.01	---	---
		2437	1.30	1.34	97.01	---	---
		2462	1.30	1.35	96.30	---	---
11N40SISO	Ant1	2422	0.65	0.70	92.86	---	---
		2437	0.65	0.69	94.20	---	---
		2452	0.65	0.70	92.86	---	---

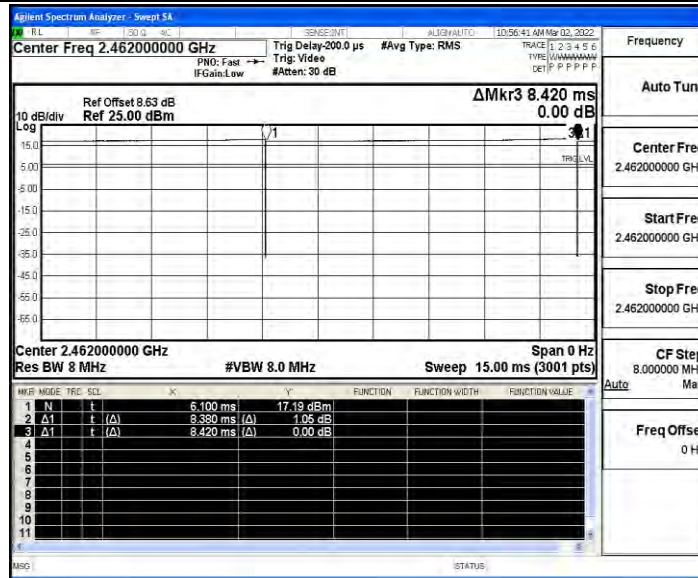


Test Graphs

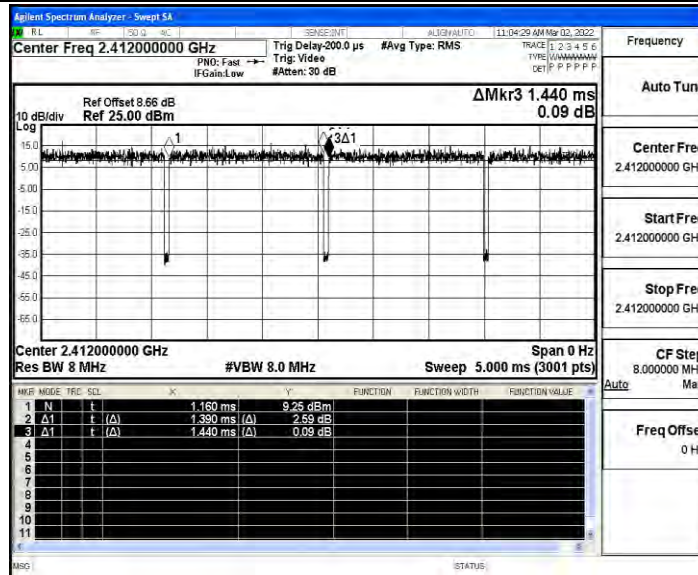




11B_Ant1_2462

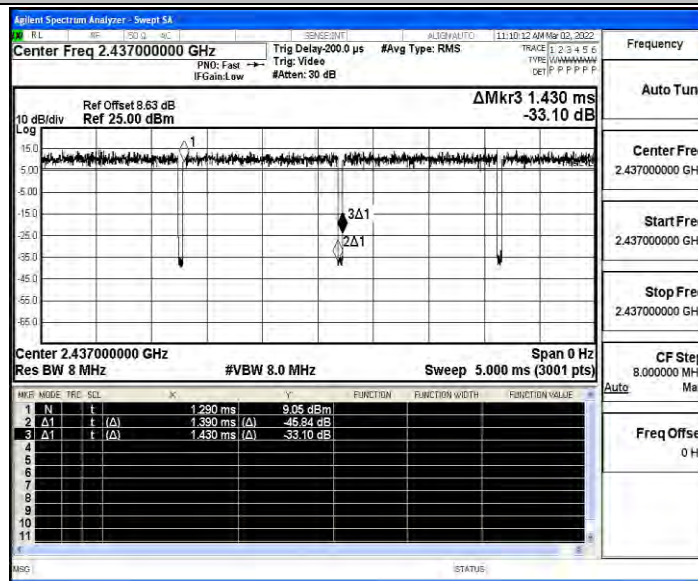


11G_Ant1_2412

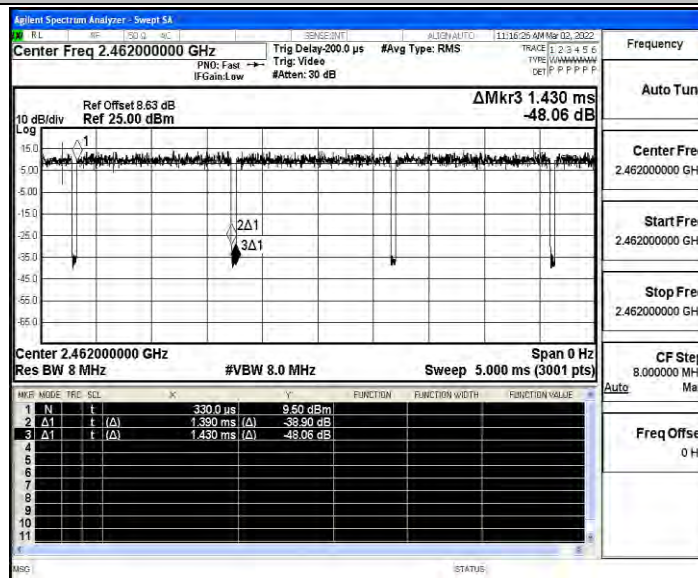




11G_Ant1_2437

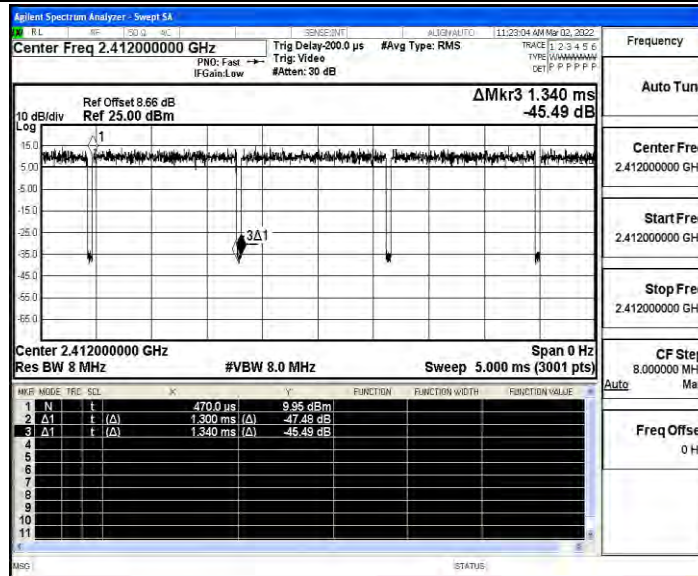


11G_Ant1_2462

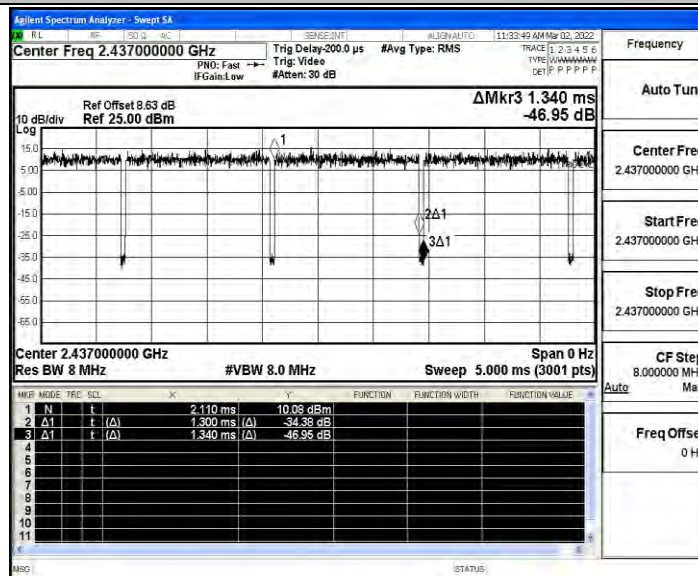




11N20SISO_Ant1_2412

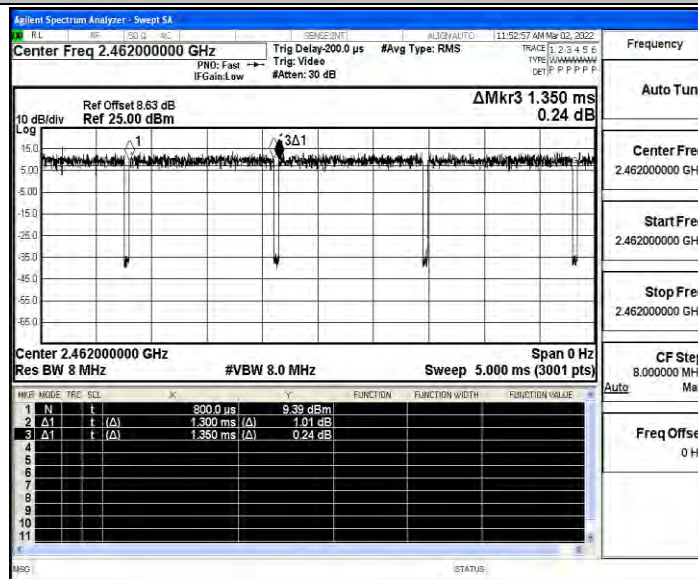


11N20SISO_Ant1_2437

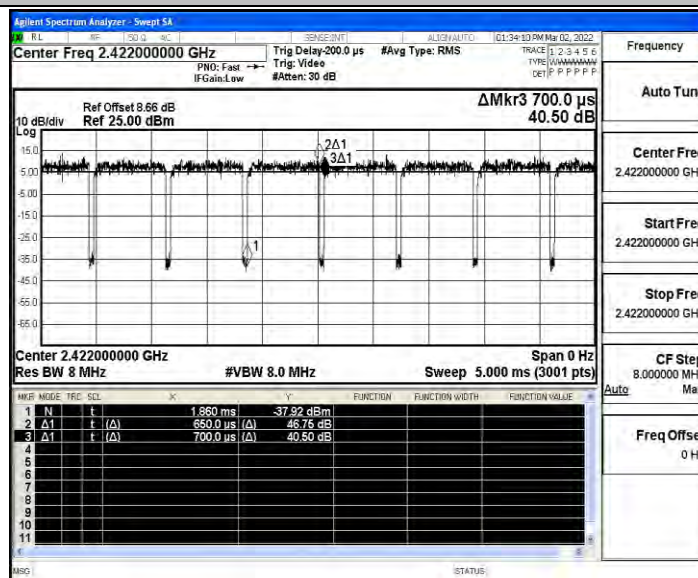




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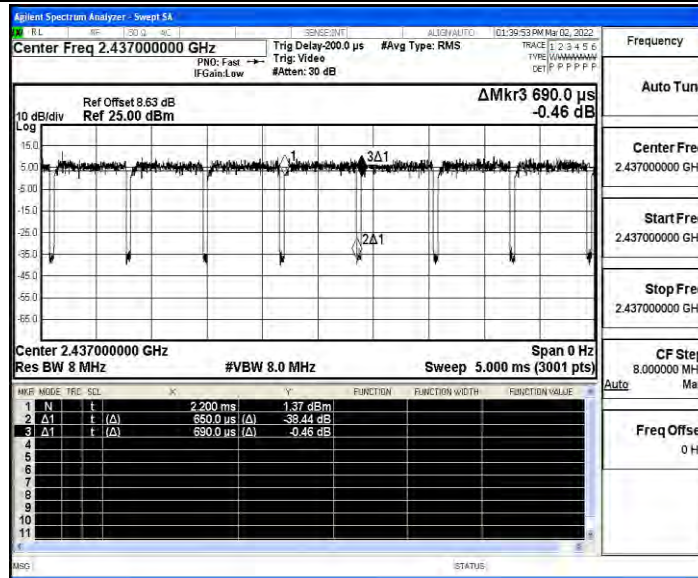


11N40SISO_Ant1_2422

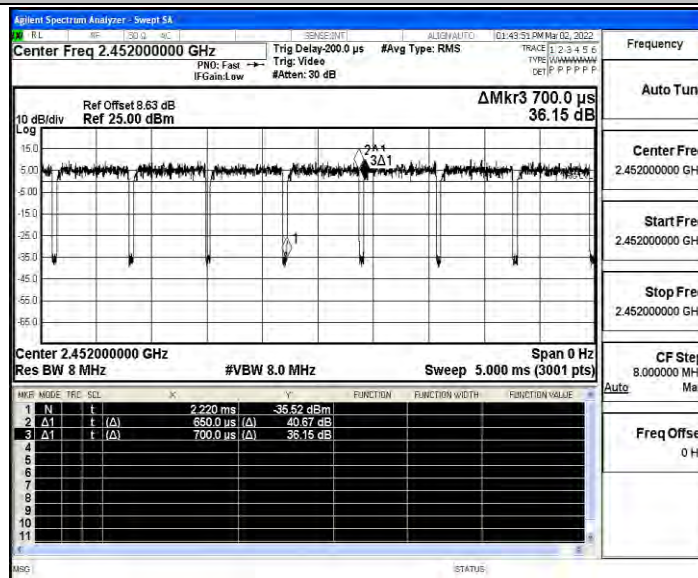




11N40SISO_Ant1_2437



11N40SISO_Ant1_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	-49.02	≤-41.20	46.18	≤54	PASS
				AV	2389.960	-48.14	≤-41.20	47.06	≤54	PASS
				AV	2390.000	-48.14	≤-41.20	47.06	≤54	PASS
				Peak	2310.000	-38.45	≤-21.20	56.75	≤74	PASS
				Peak	2386.710	-35.86	≤-21.20	59.34	≤74	PASS
				Peak	2390.000	-37.19	≤-21.20	58.01	≤74	PASS
		High	2462	AV	2483.500	-48.06	≤-41.20	47.14	≤54	PASS
				AV	2486.860	-47.74	≤-41.20	47.46	≤54	PASS
				AV	2500.000	-48.04	≤-41.20	47.16	≤54	PASS
				Peak	2483.500	-37.84	≤-21.20	57.36	≤74	PASS
				Peak	2498.300	-35.1	≤-21.20	60.10	≤74	PASS
				Peak	2500.000	-37.2	≤-21.20	58.00	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-48.65	≤-41.20	46.55	≤54	PASS
				AV	2388.530	-47.65	≤-41.20	47.55	≤54	PASS
				AV	2390.000	-47.76	≤-41.20	47.44	≤54	PASS
				Peak	2310.000	-38.51	≤-21.20	56.69	≤74	PASS
				Peak	2389.180	-35.14	≤-21.20	60.06	≤74	PASS
				Peak	2390.000	-37.6	≤-21.20	57.60	≤74	PASS
		High	2462	AV	2483.500	-47.6	≤-41.20	47.60	≤54	PASS
				AV	2491.480	-47.27	≤-41.20	47.93	≤54	PASS
				AV	2500.000	-47.6	≤-41.20	47.60	≤54	PASS
				Peak	2483.500	-38.26	≤-21.20	56.94	≤74	PASS
				Peak	2495.440	-35.75	≤-21.20	59.45	≤74	PASS
				Peak	2500.000	-38.04	≤-21.20	57.16	≤74	PASS
11N20SISO	Ant1	Low	2412	AV	2310.000	-48.6	≤-41.20	46.60	≤54	PASS
				AV	2388.920	-47.61	≤-41.20	47.59	≤54	PASS
				AV	2390.000	-47.71	≤-41.20	47.49	≤54	PASS
				Peak	2310.000	-38.47	≤-21.20	56.73	≤74	PASS
				Peak	2387.230	-36.55	≤-21.20	58.65	≤74	PASS
				Peak	2390.000	-37.29	≤-21.20	57.91	≤74	PASS
		High	2462	AV	2483.500	-47.46	≤-41.20	47.74	≤54	PASS
				AV	2490.380	-47.31	≤-41.20	47.89	≤54	PASS
				AV	2500.000	-47.62	≤-41.20	47.58	≤54	PASS
				Peak	2483.500	-36.94	≤-21.20	58.26	≤74	PASS
				Peak	2497.640	-36.1	≤-21.20	59.10	≤74	PASS
				Peak	2500.000	-36.93	≤-21.20	58.27	≤74	PASS
11N40SISO	Ant1	Low	2422	AV	2310.000	-48.17	≤-41.20	47.03	≤54	PASS



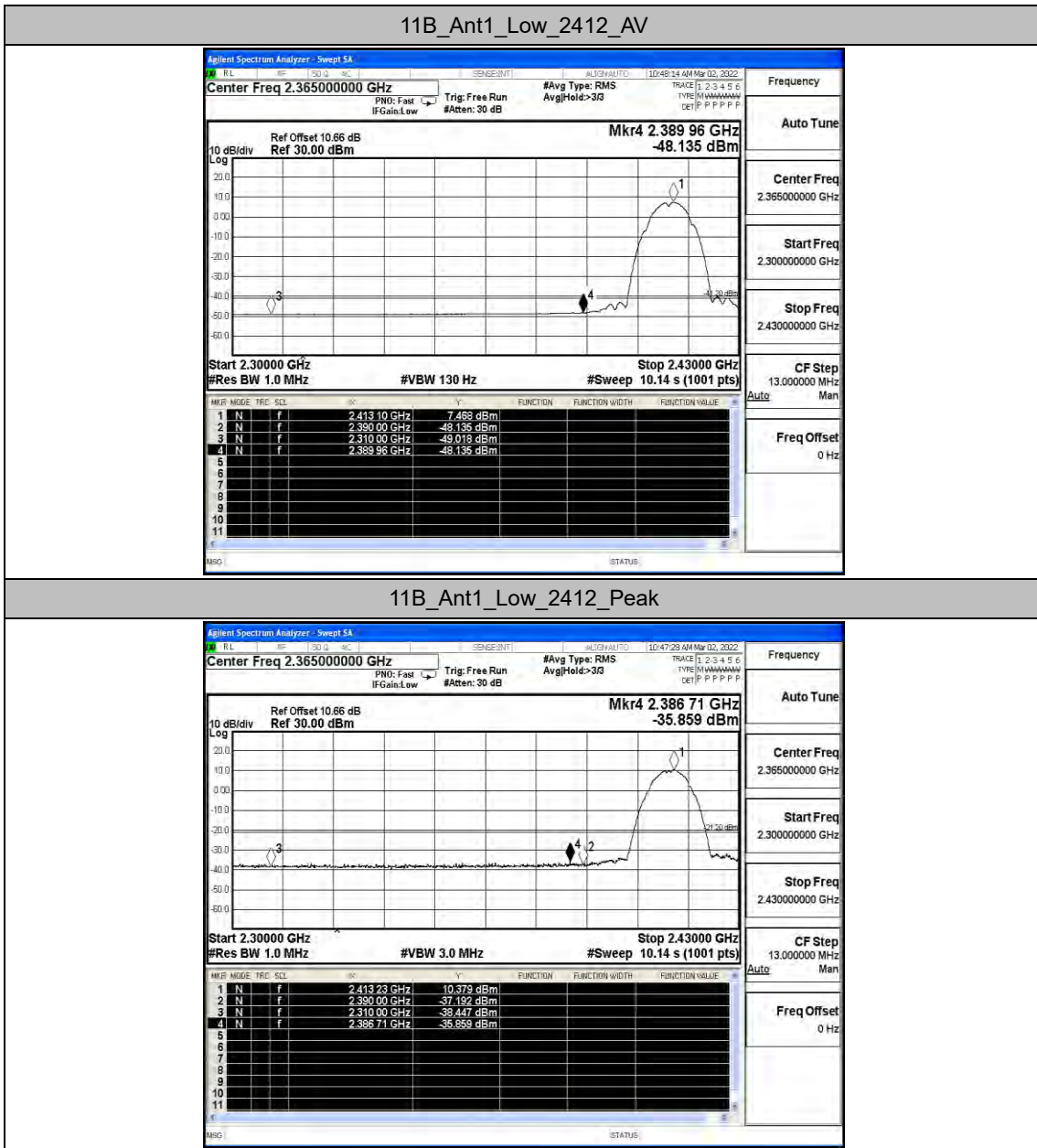
				AV	2389.830	-46.94	≤-41.20	48.26	≤54	PASS
				AV	2390.000	-47.17	≤-41.20	48.03	≤54	PASS
				Peak	2310.000	-38.55	≤-21.20	56.65	≤74	PASS
				Peak	2389.570	-35.42	≤-21.20	59.78	≤74	PASS
				Peak	2390.000	-35.64	≤-21.20	59.56	≤74	PASS
				AV	2483.500	-46.76	≤-41.20	48.44	≤54	PASS
		High	2452	AV	2483.890	-46.67	≤-41.20	48.53	≤54	PASS
				AV	2500.000	-47.2	≤-41.20	48.00	≤54	PASS
				Peak	2483.500	-35.08	≤-21.20	60.12	≤74	PASS
				Peak	2485.320	-32.95	≤-21.20	62.25	≤74	PASS
				Peak	2500.000	-36.73	≤-21.20	58.47	≤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.

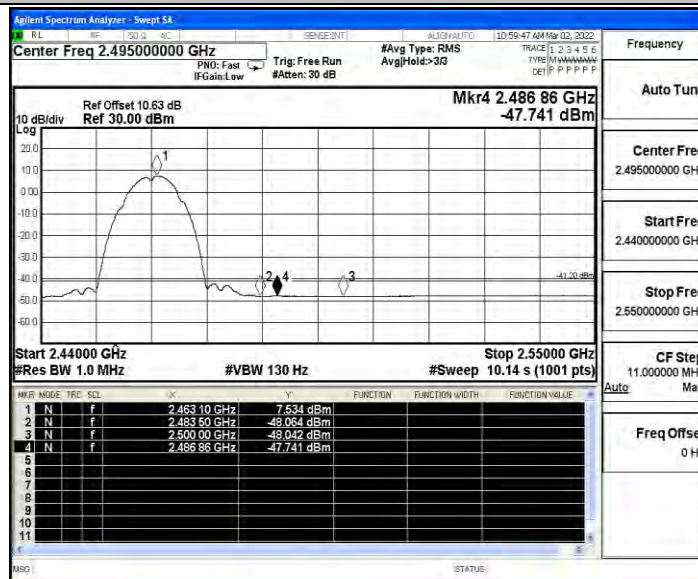


Test Graphs

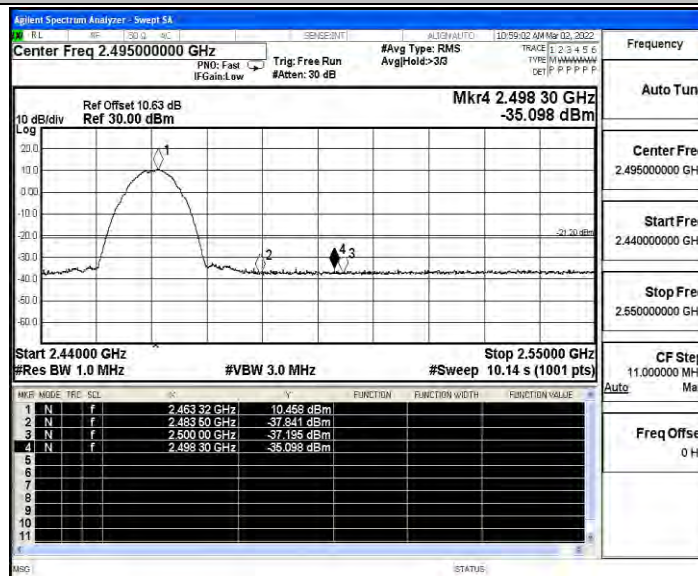




11B_Ant1_High_2462_AV

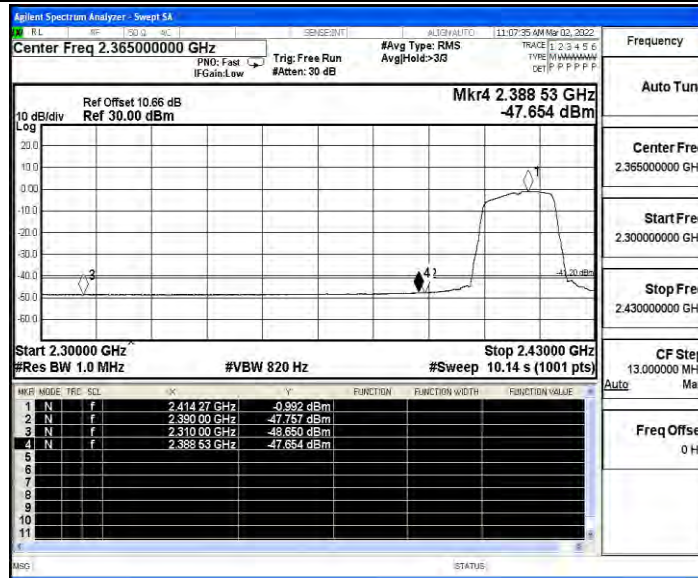


11B_Ant1_High_2462_Peak

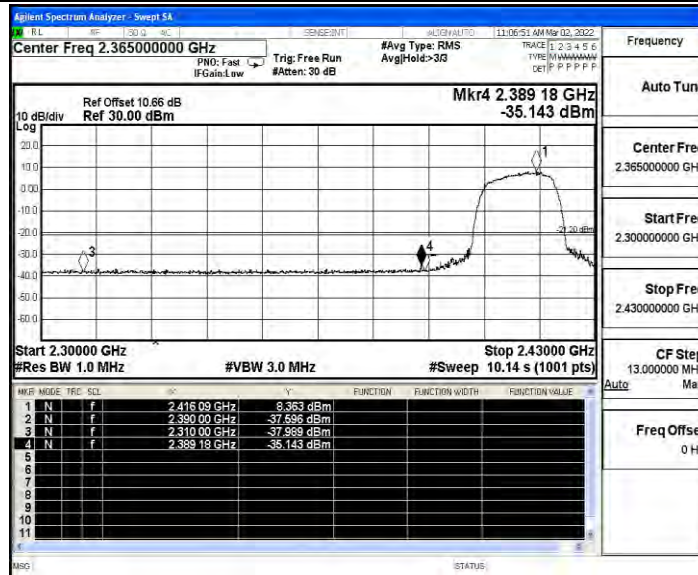




11G_Ant1_Low_2412_AV

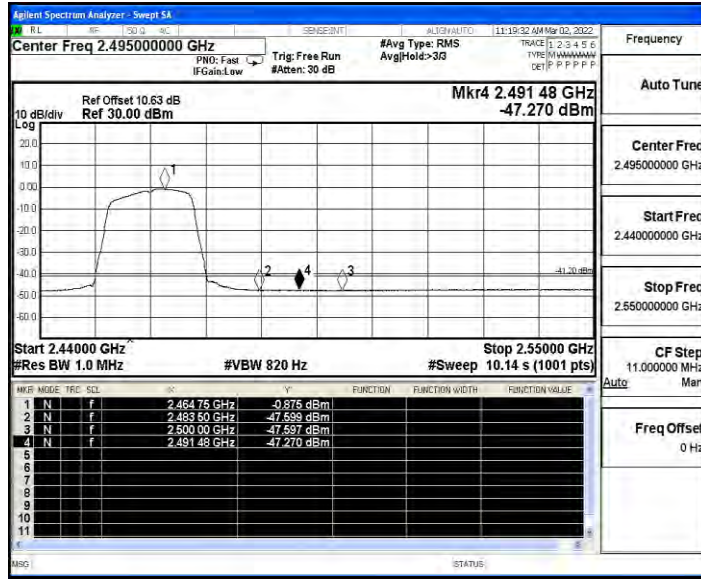


11G_Ant1_Low_2412_Peak

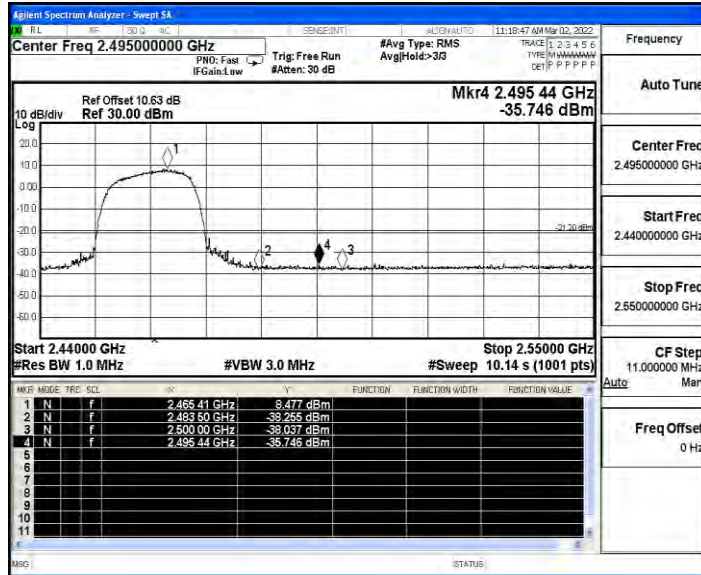




11G_Ant1_High_2462_AV

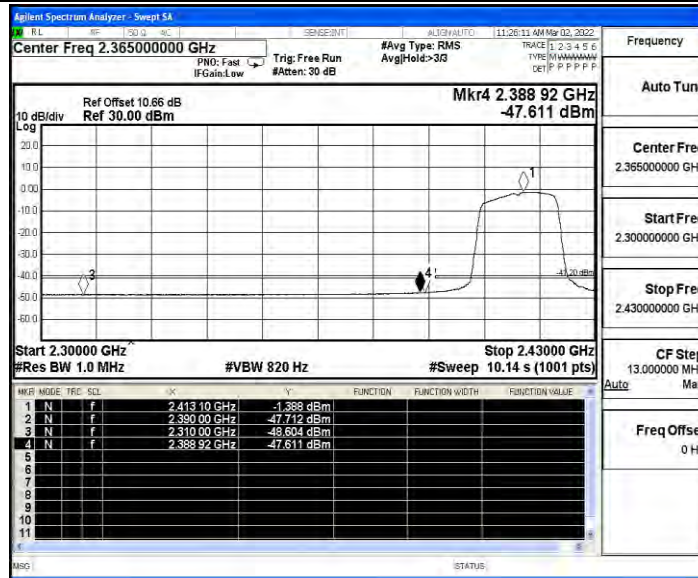


11G_Ant1_High_2462_Peak

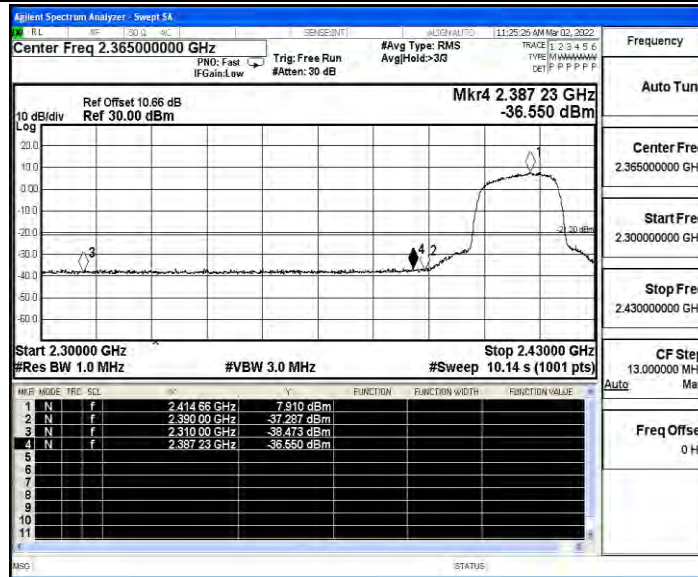




11N20SISO_Ant1_Low_2412_AV

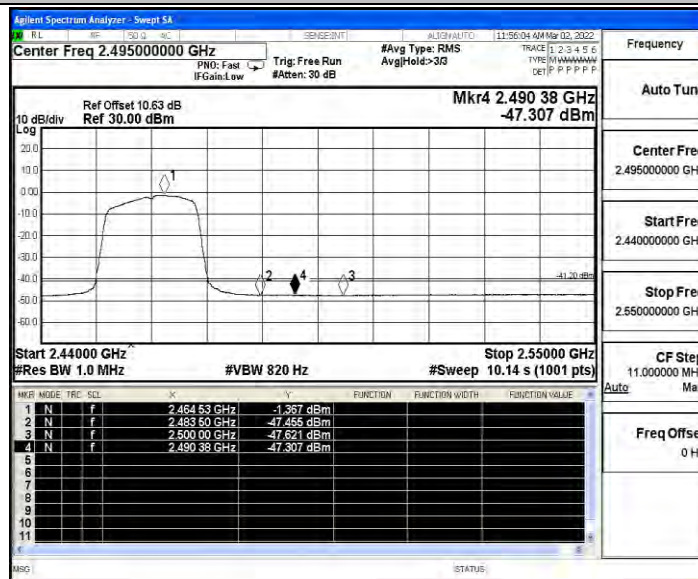


11N20SISO_Ant1_Low_2412_Peak

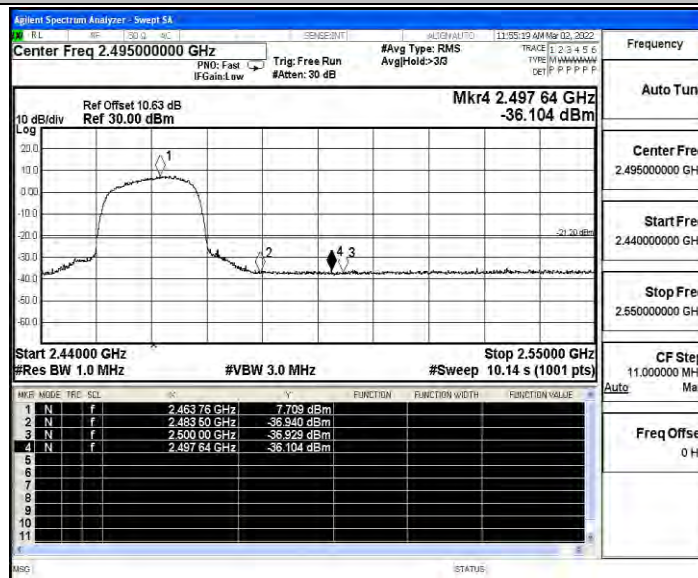




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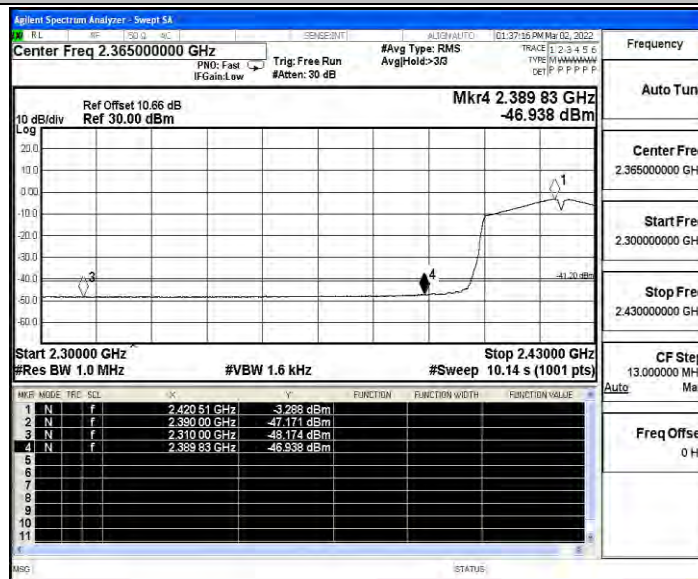


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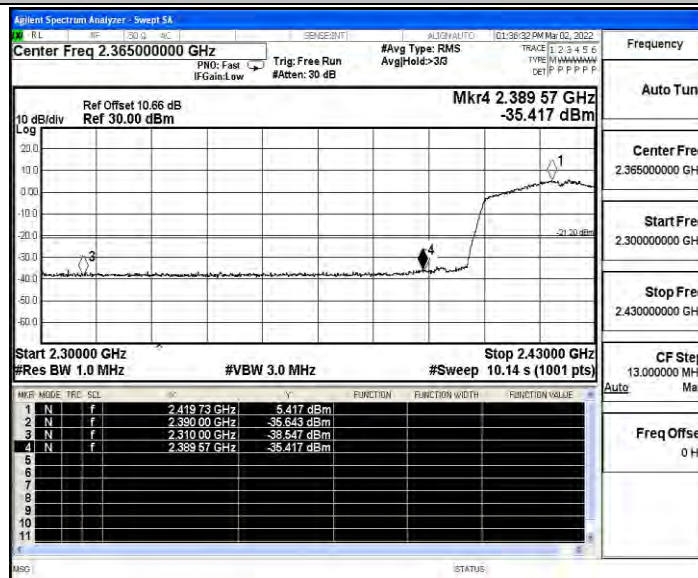




11N40SISO_Ant1_Low_2422_AV

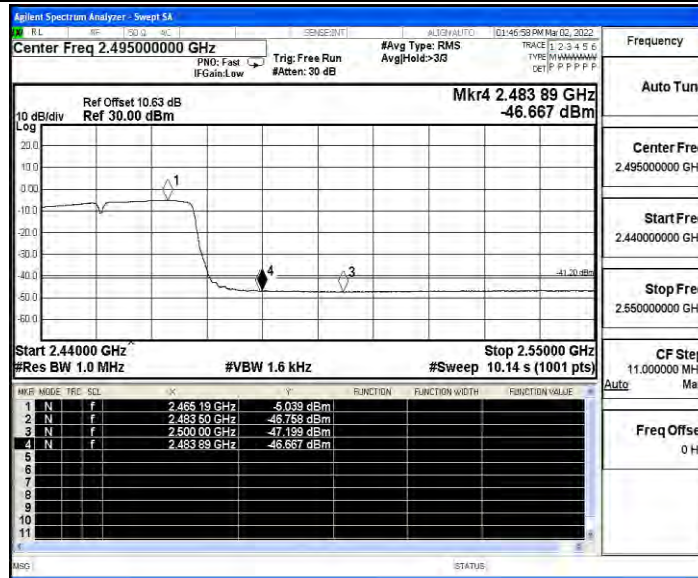


11N40SISO_Ant1_Low_2422_Peak





11N40SISO_Ant1_High_2452_AV



11N40SISO_Ant1_High_2452_Peak

