



Appendix B

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Smart Gateway

Test Model: GB03C

Environmental Conditions

Temperature:	22.3° C
Relative Humidity:	53.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li huan



B.1 6dB Bandwidth

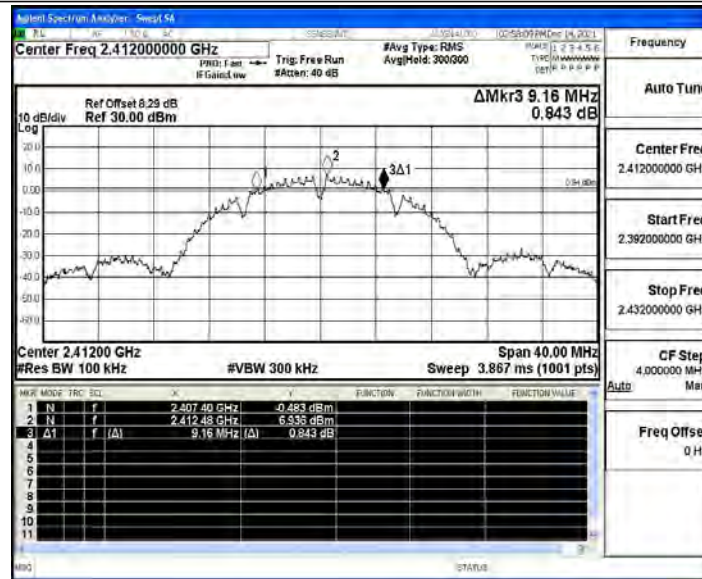
Test Result

Test Mode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.160	2407.400	2416.560	≥0.5	PASS
		2437	9.160	2432.400	2441.560	≥0.5	PASS
		2462	9.160	2457.400	2466.560	≥0.5	PASS
11G	Ant1	2412	12.640	2406.880	2419.520	≥0.5	PASS
		2437	10.120	2431.920	2442.040	≥0.5	PASS
		2462	11.400	2455.640	2467.040	≥0.5	PASS
11N20SISO	Ant1	2412	13.880	2405.640	2419.520	≥0.5	PASS
		2437	12.640	2431.880	2444.520	≥0.5	PASS
		2462	10.120	2456.920	2467.040	≥0.5	PASS
11N40SISO	Ant1	2422	31.440	2408.160	2439.600	≥0.5	PASS
		2437	30.240	2424.360	2454.600	≥0.5	PASS
		2452	31.440	2438.160	2469.600	≥0.5	PASS

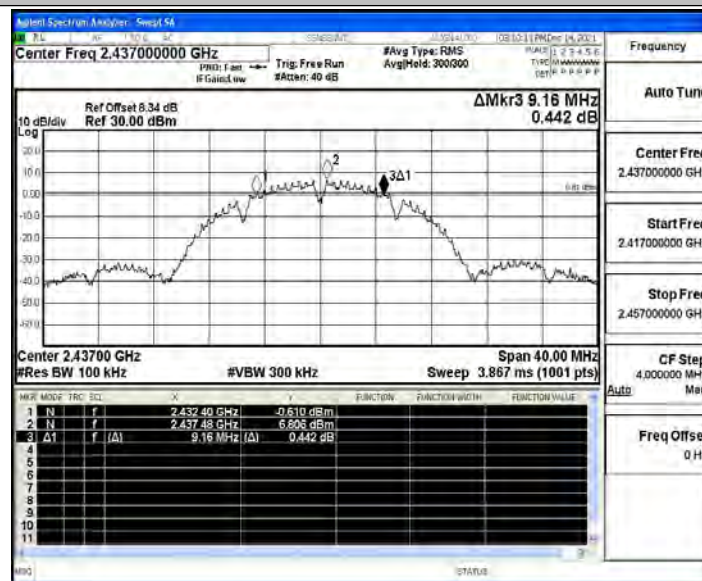


Test Graphs

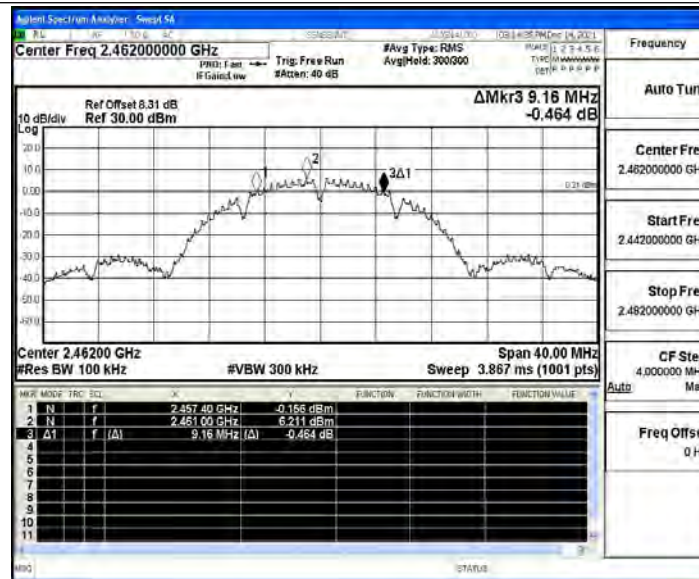
11B_Ant1_2412



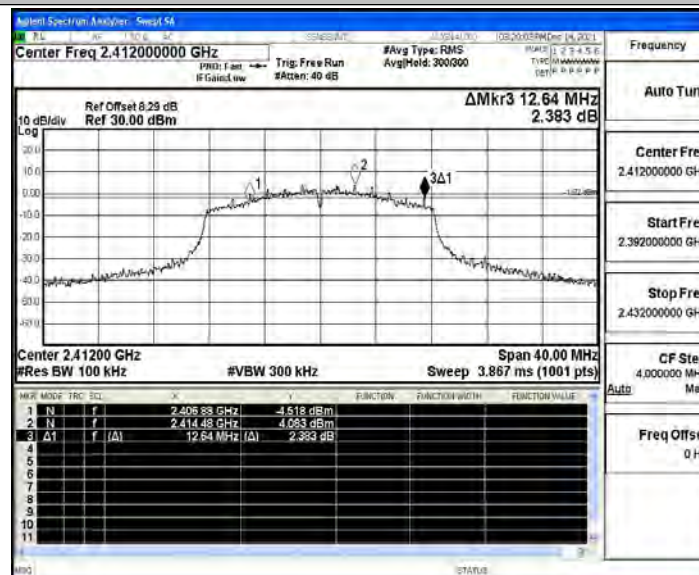
11B_Ant1_2437



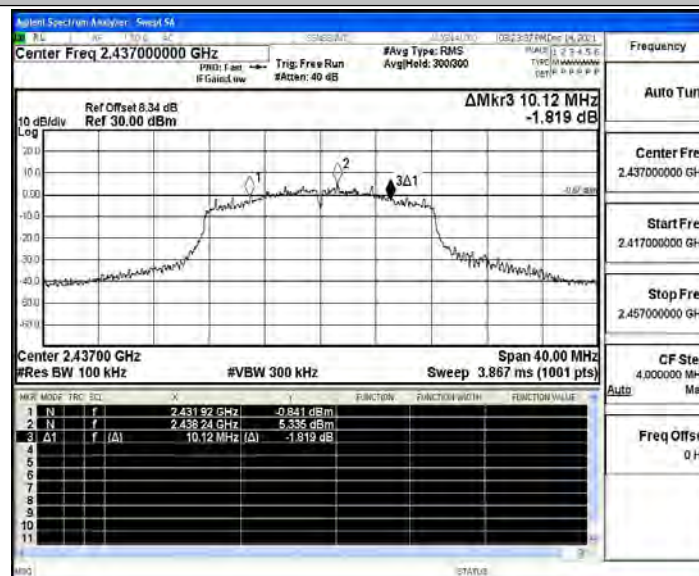
11B_Ant1_2462



11G_Ant1_2412

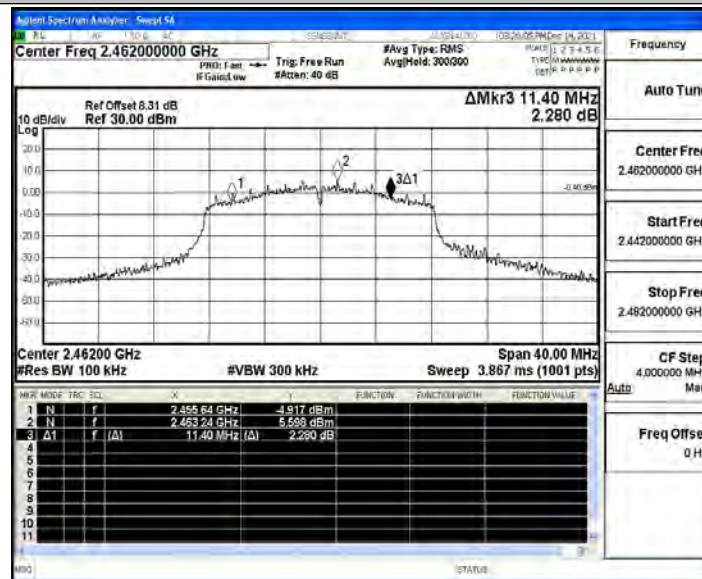


11G_Ant1_2437

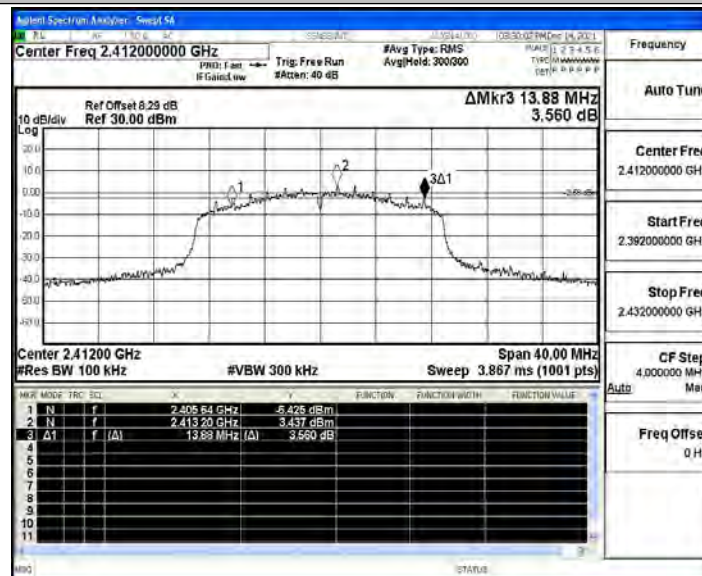




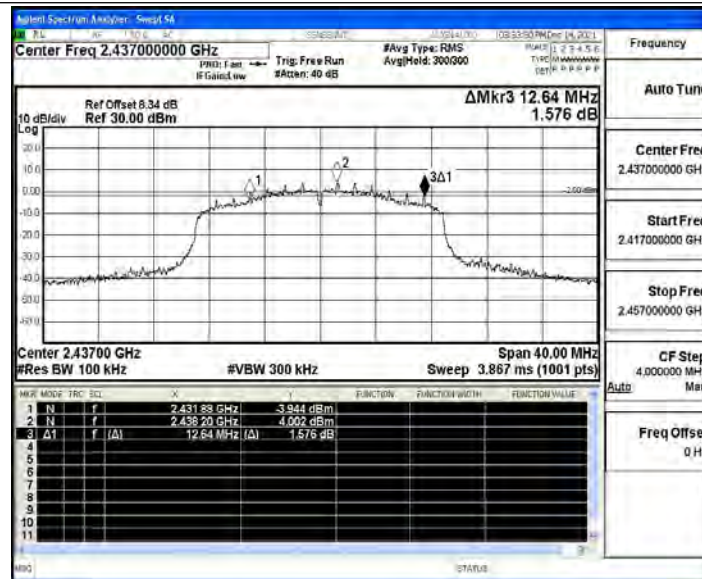
11G_Ant1_2462



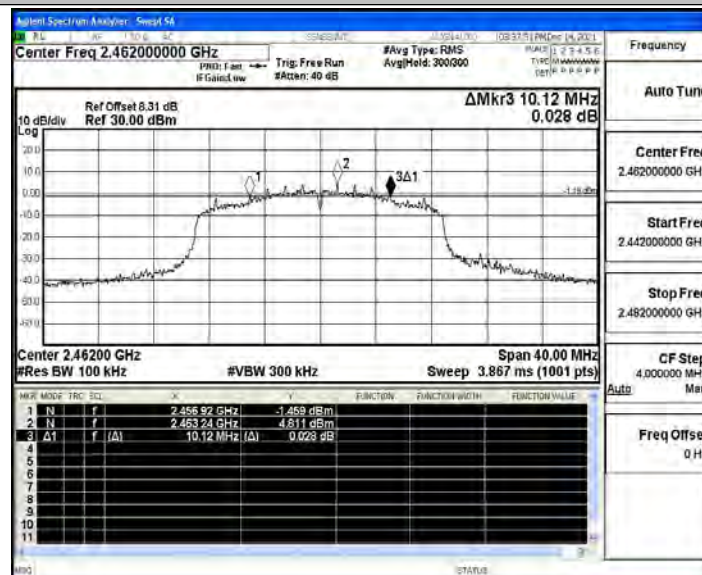
11N20SISO_Ant1_2412



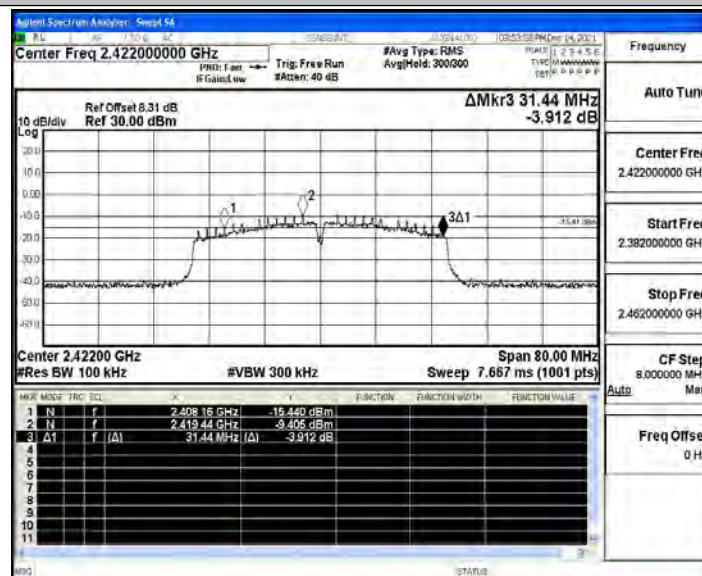
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

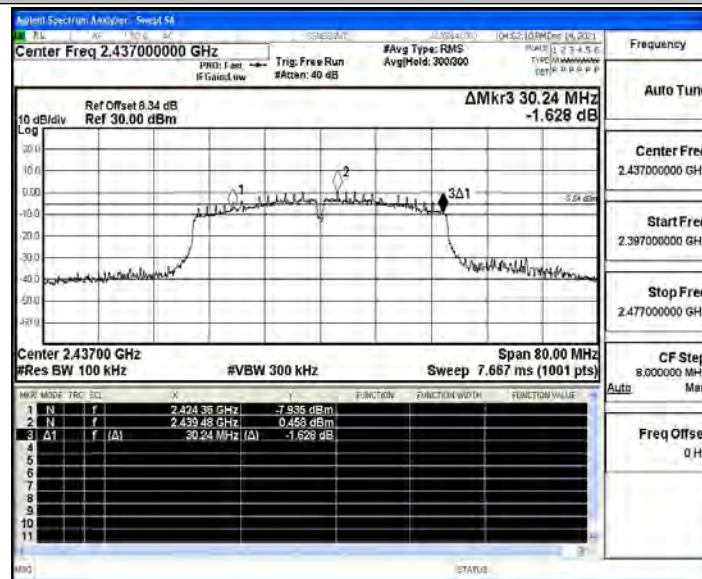


11N40SISO_Ant1_2422

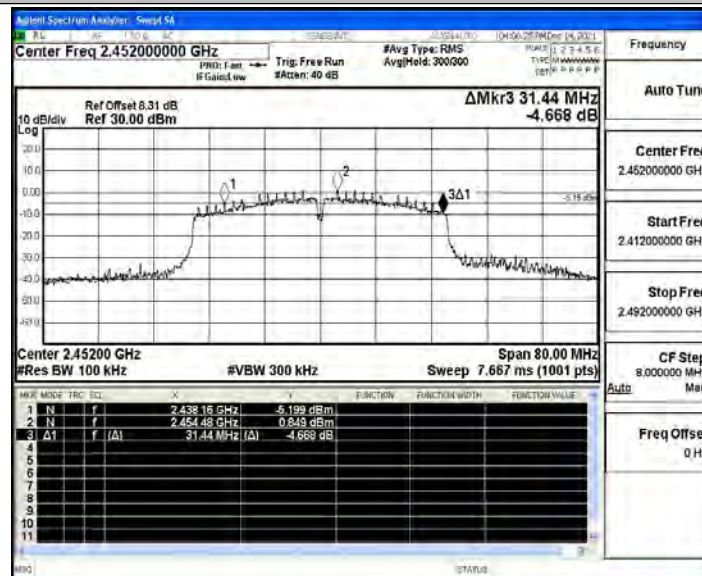




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





B.2 Maximum conducted output power

Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	15.53	≤30	PASS
		2437	15.52	≤30	PASS
		2462	15.13	≤30	PASS
11G	Ant1	2412	13.56	≤30	PASS
		2437	14.28	≤30	PASS
		2462	14.61	≤30	PASS
11N20SISO	Ant1	2412	12.47	≤30	PASS
		2437	13.14	≤30	PASS
		2462	13.51	≤30	PASS
11N40SISO	Ant1	2422	12.39	≤30	PASS
		2437	12.92	≤30	PASS
		2452	13.26	≤30	PASS

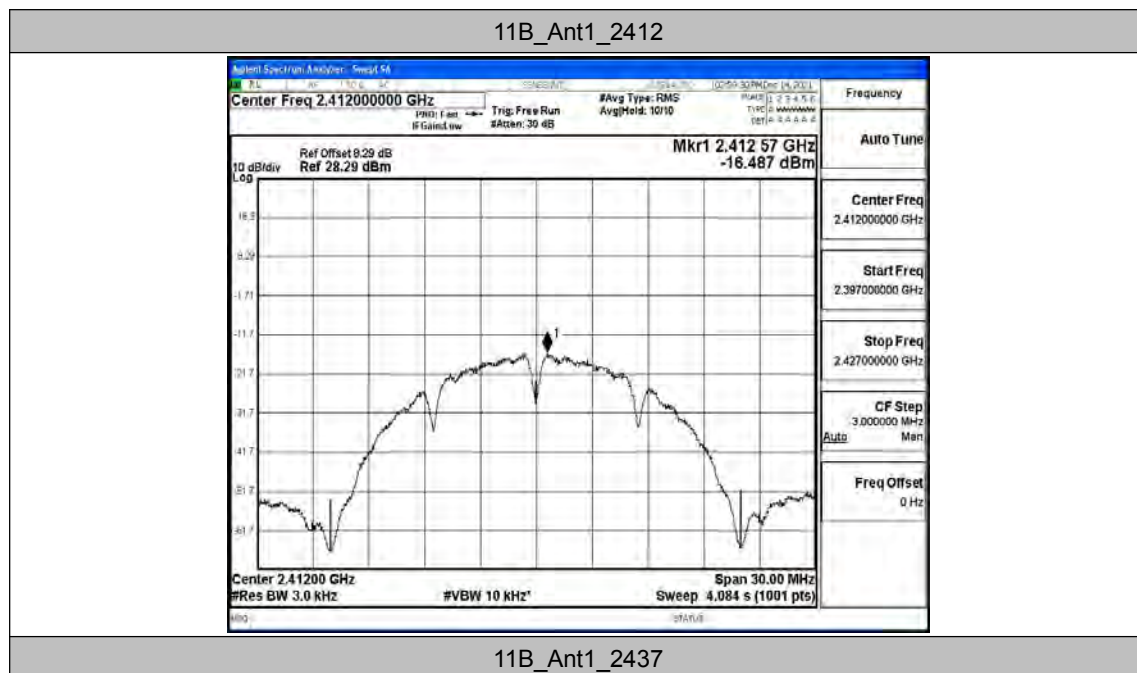


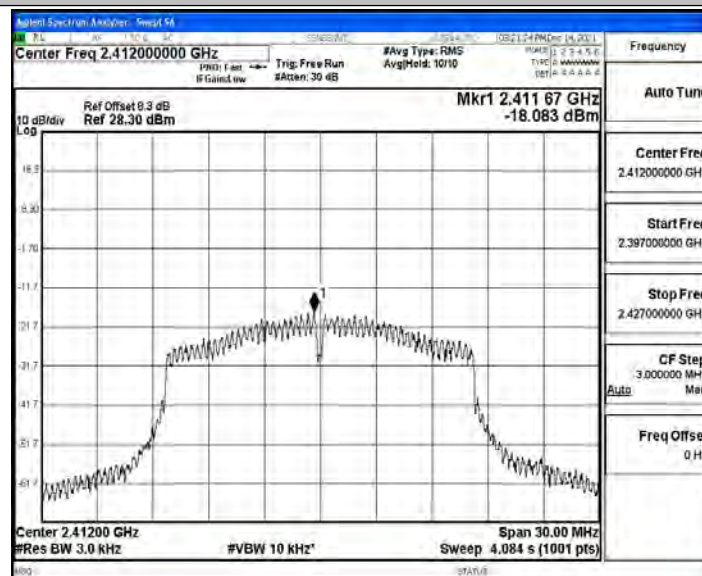
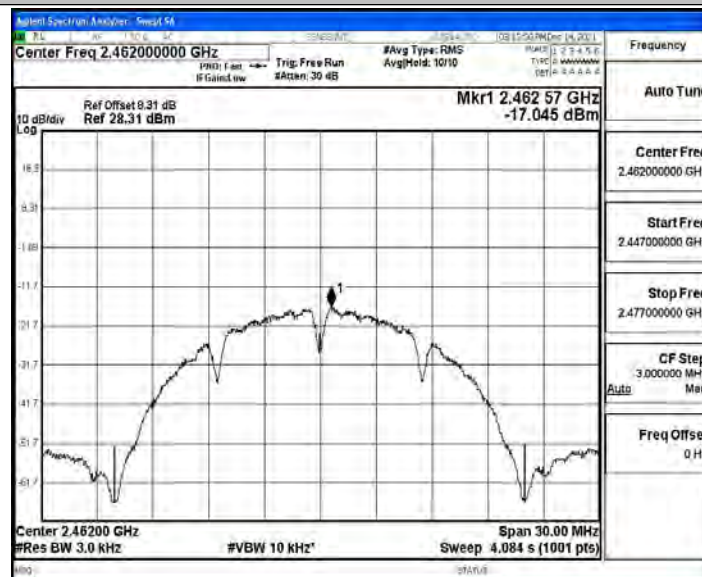
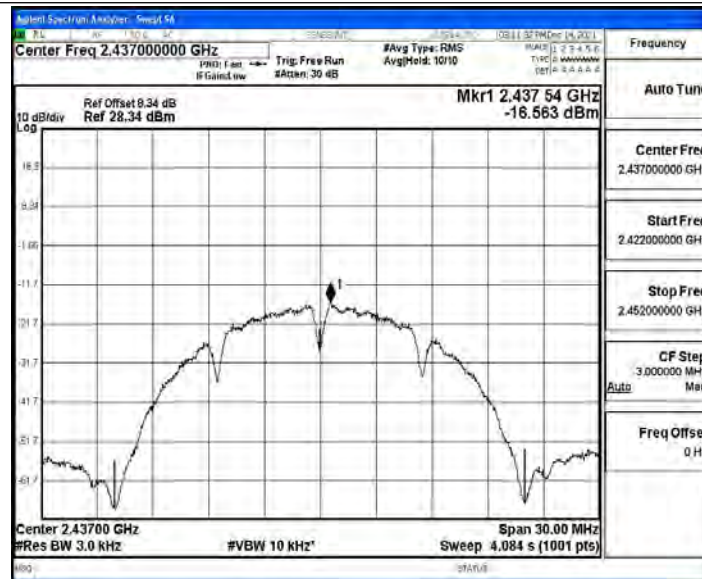
B.3 Maximum power spectral density

Test Result

Test Mode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-16.49	≤8	PASS
		2437	-16.56	≤8	PASS
		2462	-17.05	≤8	PASS
11G	Ant1	2412	-18.08	≤8	PASS
		2437	-17.53	≤8	PASS
		2462	-16.97	≤8	PASS
11N20SISO	Ant1	2412	-19.68	≤8	PASS
		2437	-18.97	≤8	PASS
		2462	-18.71	≤8	PASS
11N40SISO	Ant1	2422	-24.75	≤8	PASS
		2437	-21.64	≤8	PASS
		2452	-21.46	≤8	PASS

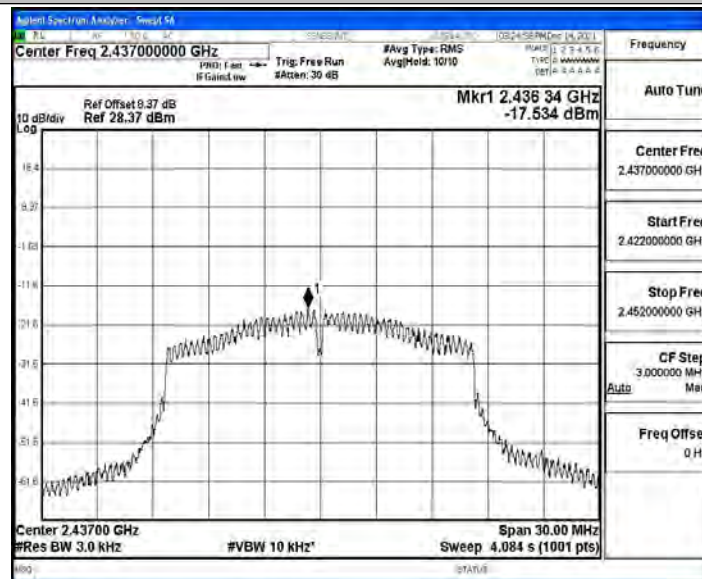
Test Graphs



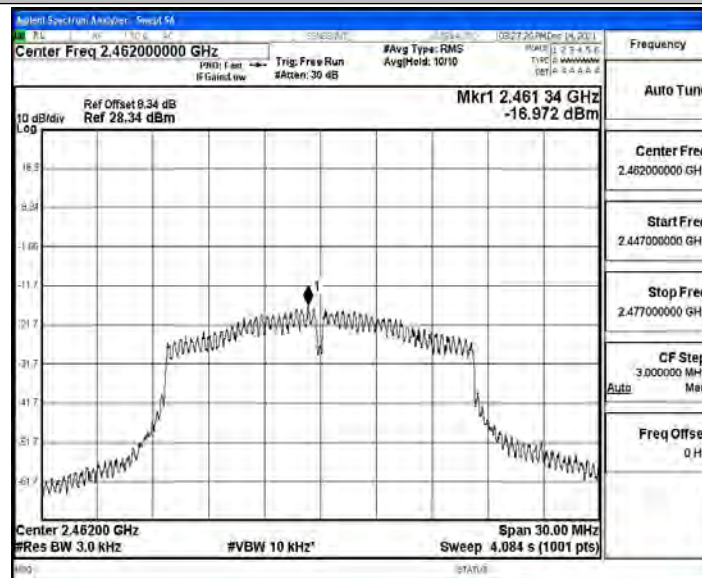




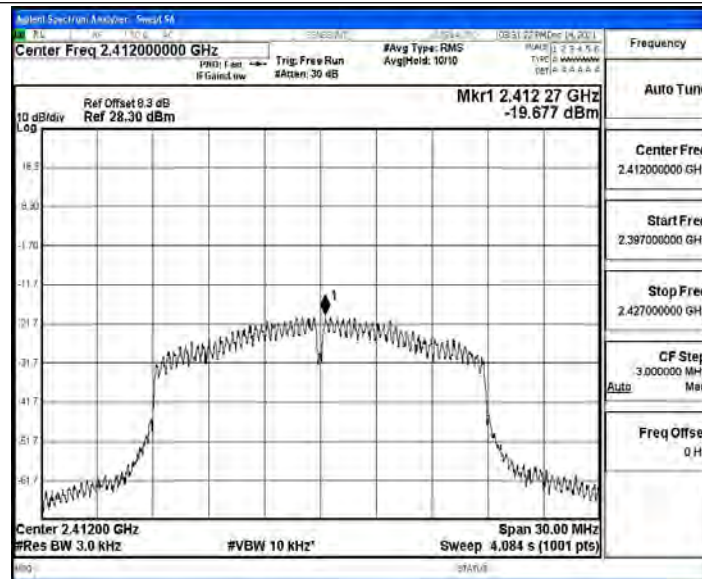
11G_Ant1_2437



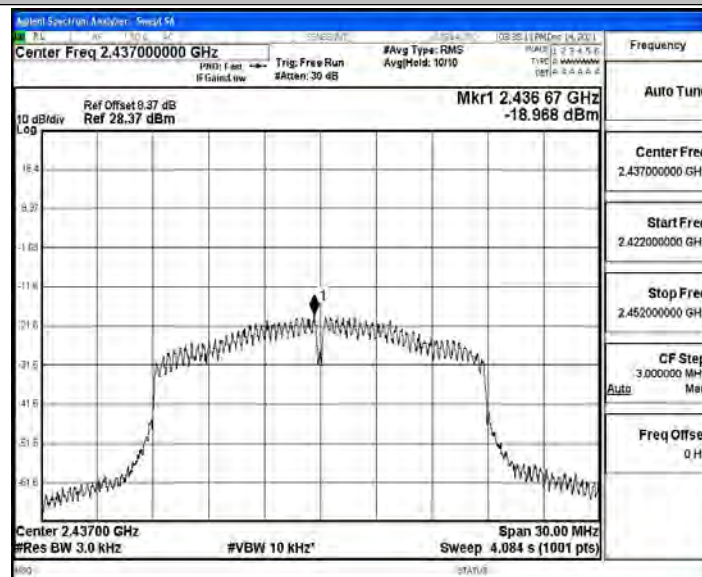
11G_Ant1_2462



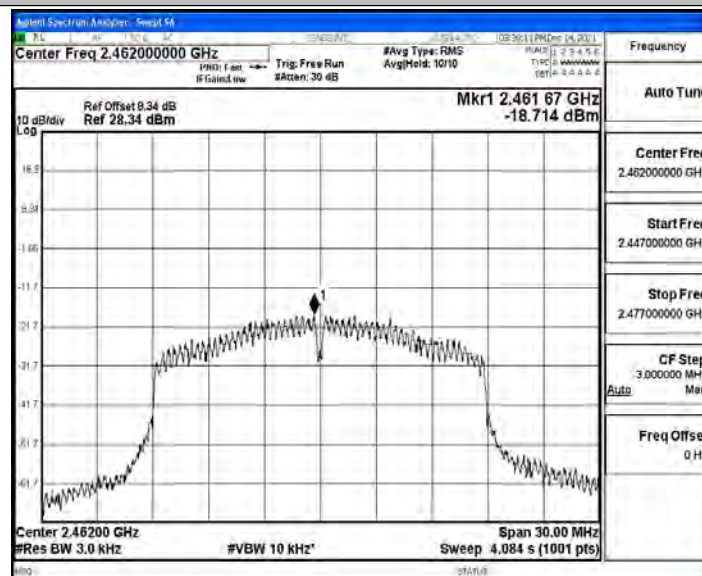
11N20SISO_Ant1_2412



11N20SISO_Ant1_2437

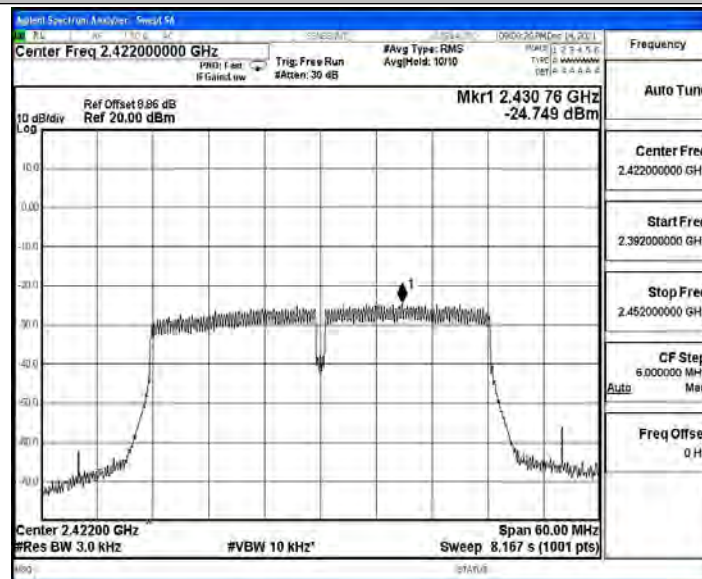


11N20SISO_Ant1_2462

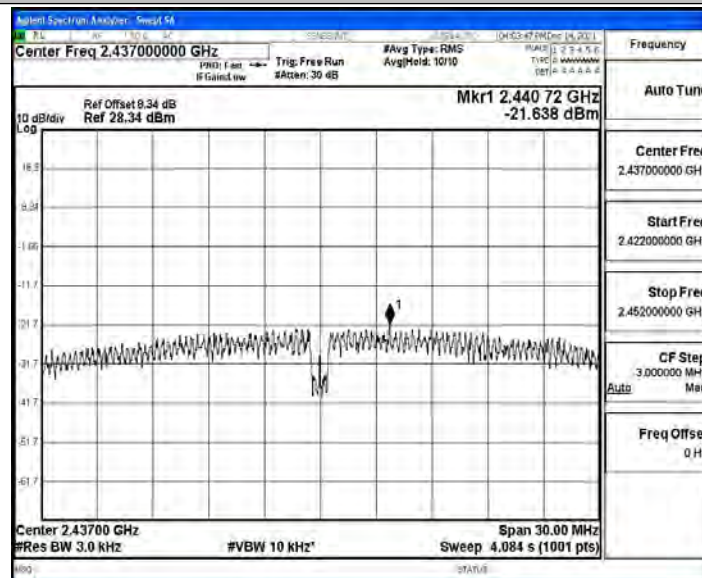




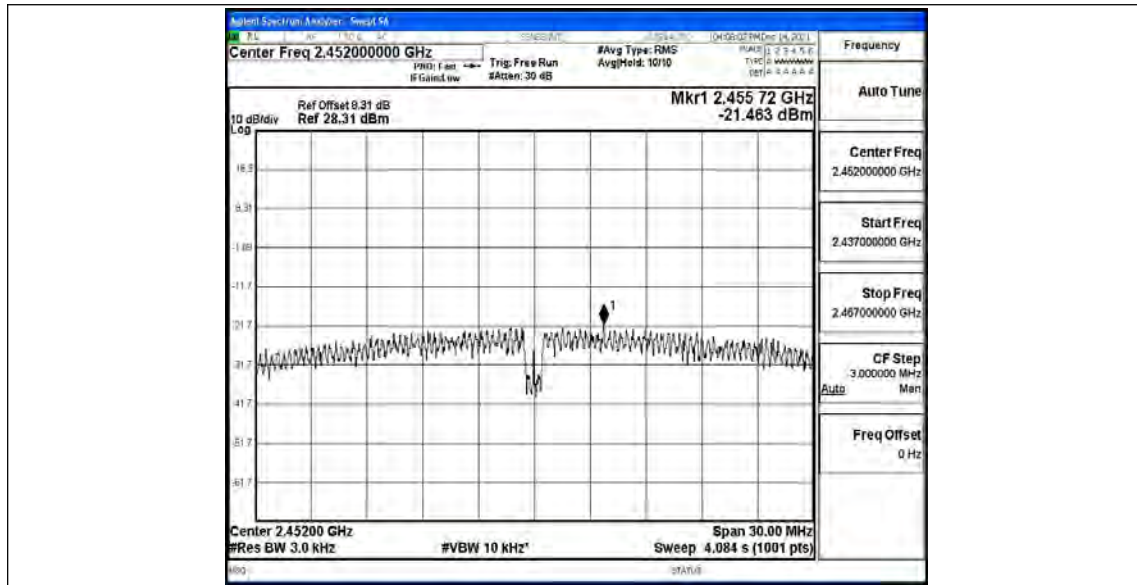
11N40SISO_Ant1_2422



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



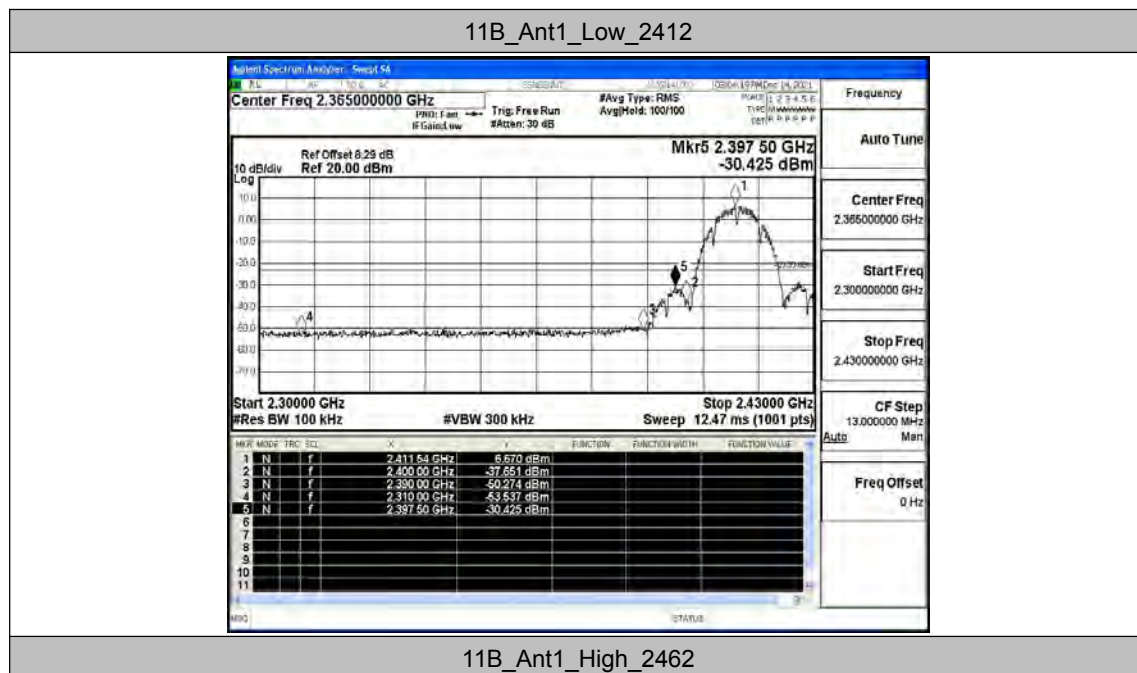


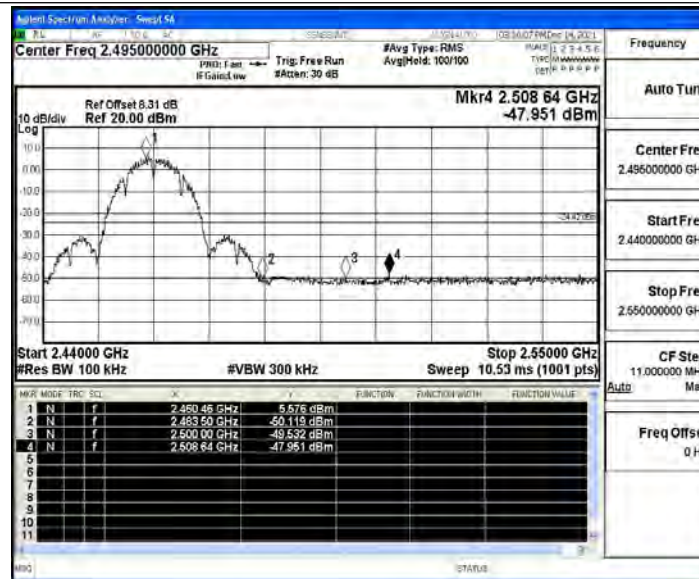
B.4 Band edge measurements

Test Result

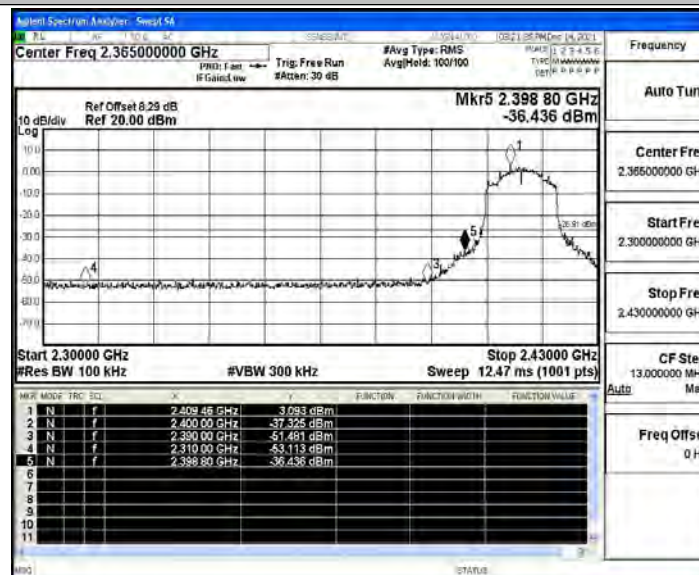
Test Mode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	6.67	-30.43	≤-23.33	PASS
		High	2462	5.58	-47.95	≤-24.42	PASS
11G	Ant1	Low	2412	3.09	-36.44	≤-26.91	PASS
		High	2462	3.84	-44.11	≤-26.16	PASS
11N20SISO	Ant1	Low	2412	3.03	-37.13	≤-26.97	PASS
		High	2462	4.12	-46.62	≤-25.89	PASS
11N40SISO	Ant1	Low	2422	-0.91	-35.41	≤-30.91	PASS
		High	2452	0.60	-34.81	≤-29.4	PASS

Test Graphs

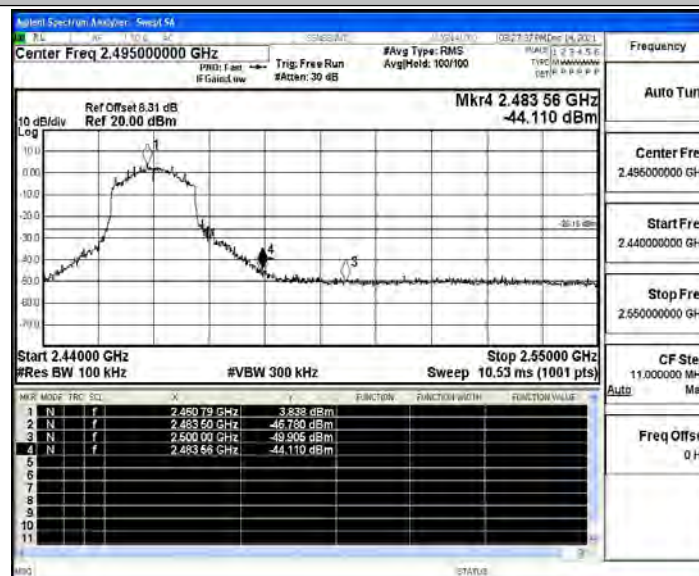




11G_Ant1_Low_2412

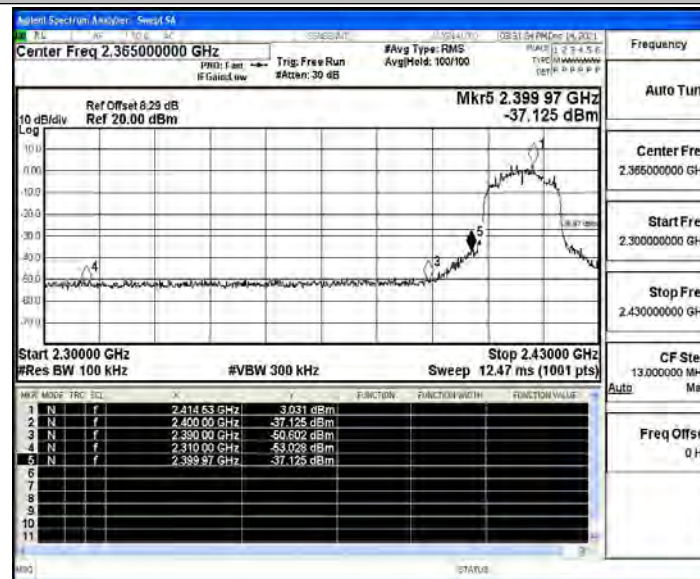


11G_Ant1_High_2462

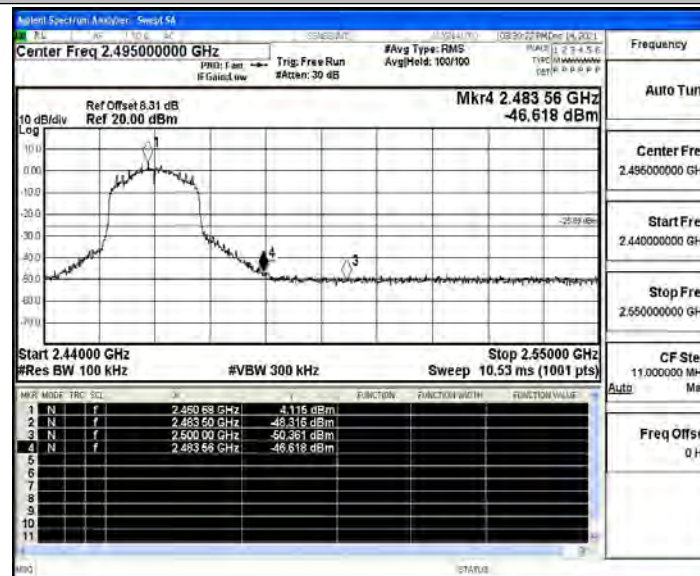




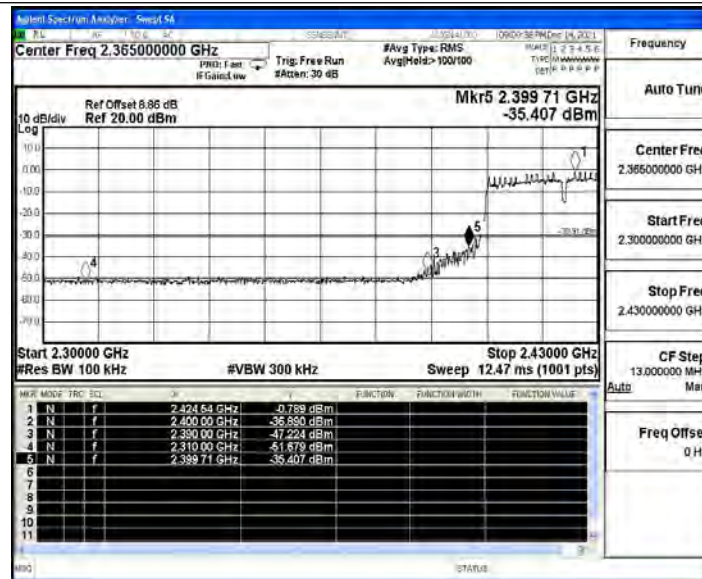
11N20SISO_Ant1_Low_2412



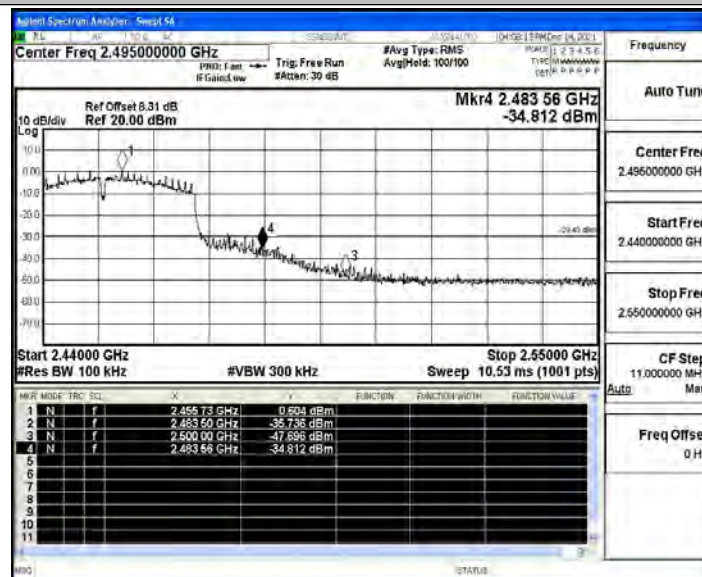
11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452





B.5 Conducted Spurious Emission

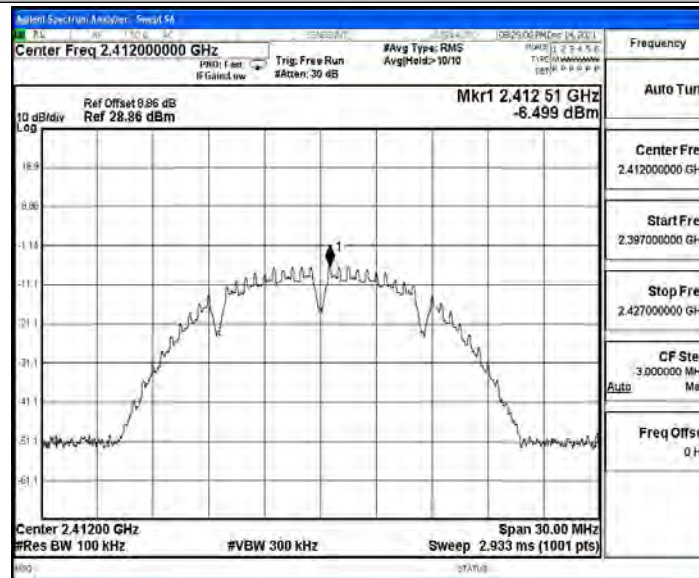
Test Result

Test Mode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	-6.50	-6.50	---	PASS
			30~1000	-6.50	-60.19	≤-36.5	PASS
			1000~26500	-6.50	-45.81	≤-36.5	PASS
		2437	Reference	-4.13	-4.13	---	PASS
			30~1000	-4.13	-60.71	≤-34.13	PASS
			1000~26500	-4.13	-46.02	≤-34.13	PASS
		2462	Reference	-5.28	-5.28	---	PASS
			30~1000	-5.28	-60.42	≤-35.28	PASS
			1000~26500	-5.28	-46.26	≤-35.28	PASS
11G	Ant1	2412	Reference	-11.05	-11.05	---	PASS
			30~1000	-11.05	-60.1	≤-41.05	PASS
			1000~26500	-11.05	-45.78	≤-41.05	PASS
		2437	Reference	-8.86	-8.86	---	PASS
			30~1000	-8.86	-59.41	≤-38.86	PASS
			1000~26500	-8.86	-45.66	≤-38.86	PASS
		2462	Reference	-9.32	-9.32	---	PASS
			30~1000	-9.32	-60.14	≤-39.32	PASS
			1000~26500	-9.32	-45.63	≤-39.32	PASS
11N20SISO	Ant1	2412	Reference	-11.21	-11.21	---	PASS
			30~1000	-11.21	-60.95	≤-41.21	PASS
			1000~26500	-11.21	-46.09	≤-41.21	PASS
		2437	Reference	-8.66	-8.66	---	PASS
			30~1000	-8.66	-59.29	≤-38.66	PASS
			1000~26500	-8.66	-45.71	≤-38.66	PASS
		2462	Reference	-9.35	-9.35	---	PASS
			30~1000	-9.35	-60.57	≤-39.35	PASS
			1000~26500	-9.35	-45.91	≤-39.35	PASS
11N40SISO	Ant1	2422	Reference	-12.32	-12.32	---	PASS
			30~1000	-12.32	-60.06	≤-42.32	PASS
			1000~26500	-12.32	-45.57	≤-42.32	PASS
		2437	Reference	-11.38	-11.38	---	PASS
			30~1000	-11.38	-60.45	≤-41.38	PASS
			1000~26500	-11.38	-46.36	≤-41.38	PASS
		2452	Reference	-11.05	-11.05	---	PASS
			30~1000	-11.05	-60.11	≤-41.05	PASS
			1000~26500	-11.05	-46.22	≤-41.05	PASS

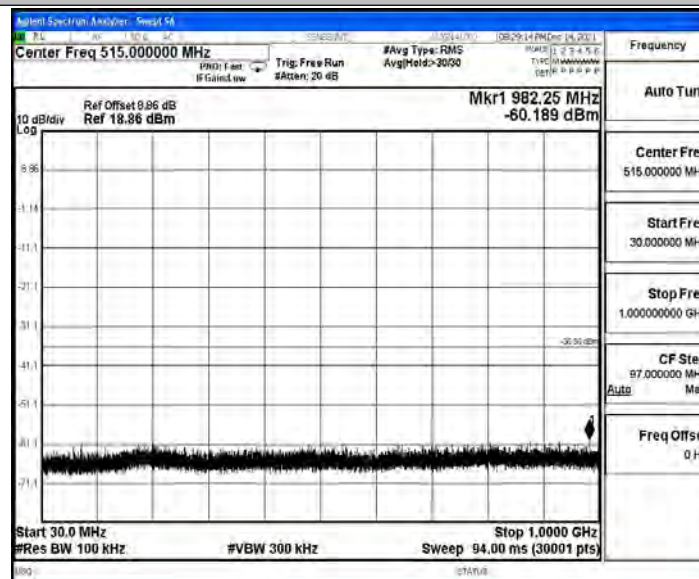


Test Graphs

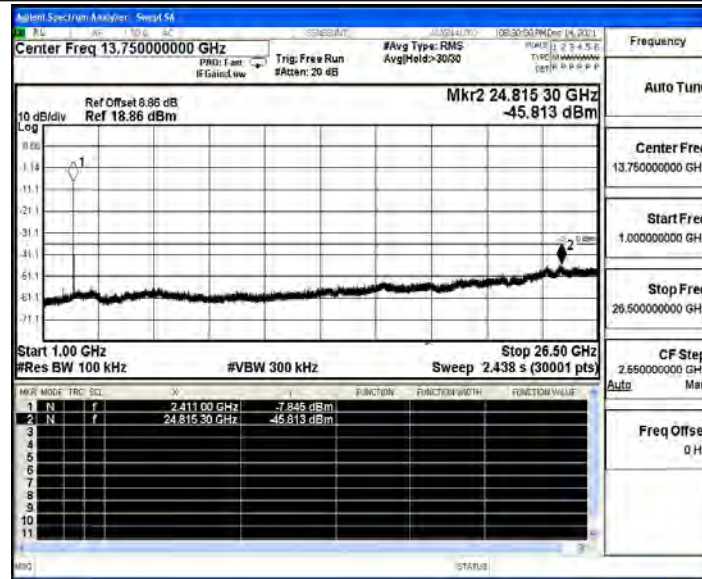
11B_Ant1_2412_0~Reference



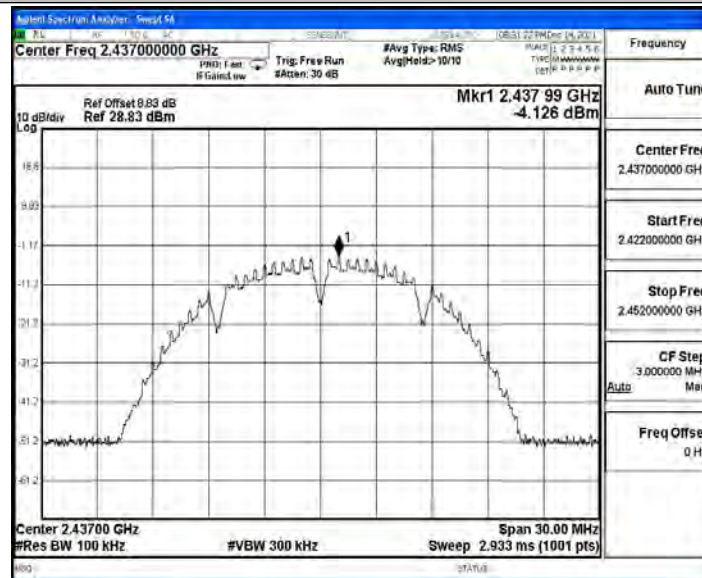
11B_Ant1_2412_30~1000



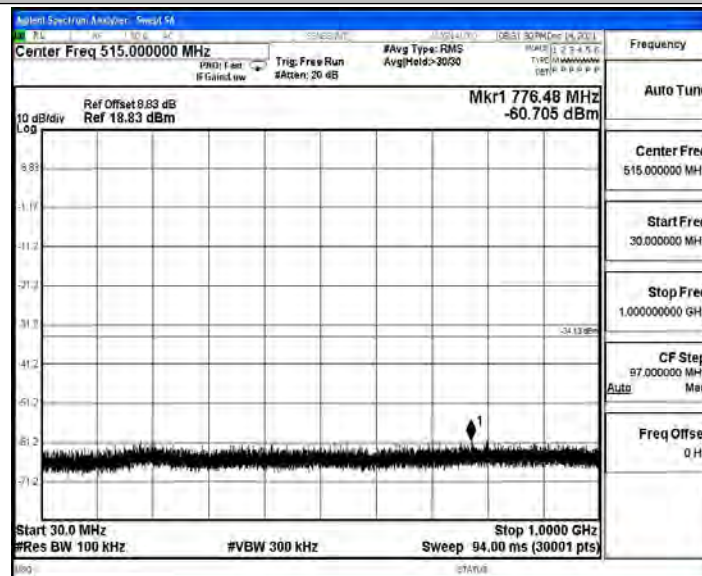
11B_Ant1_2412_1000~26500



11B_Ant1_2437_0~Reference

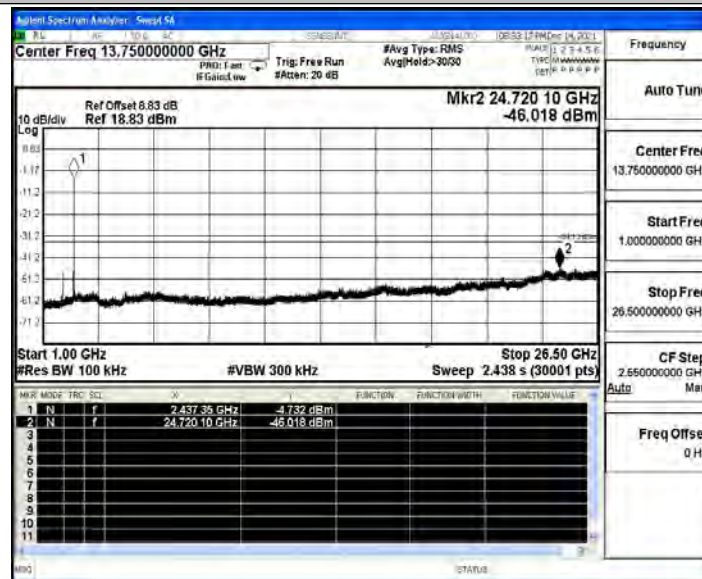


11B_Ant1_2437_30~1000

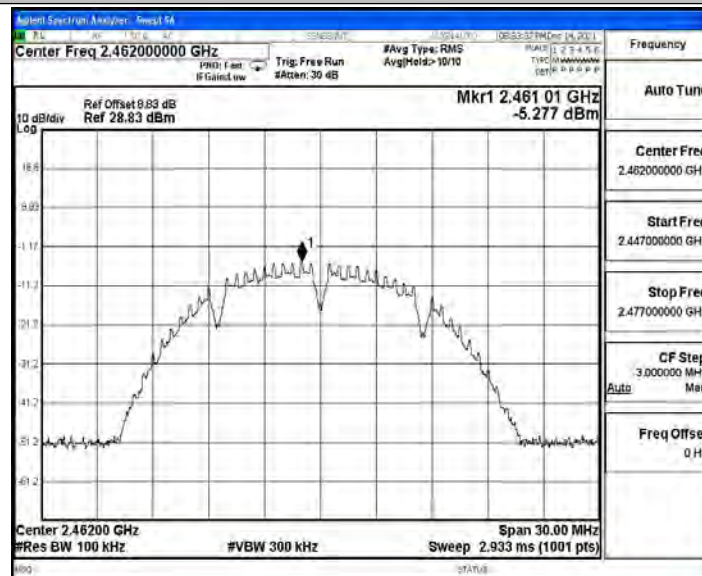




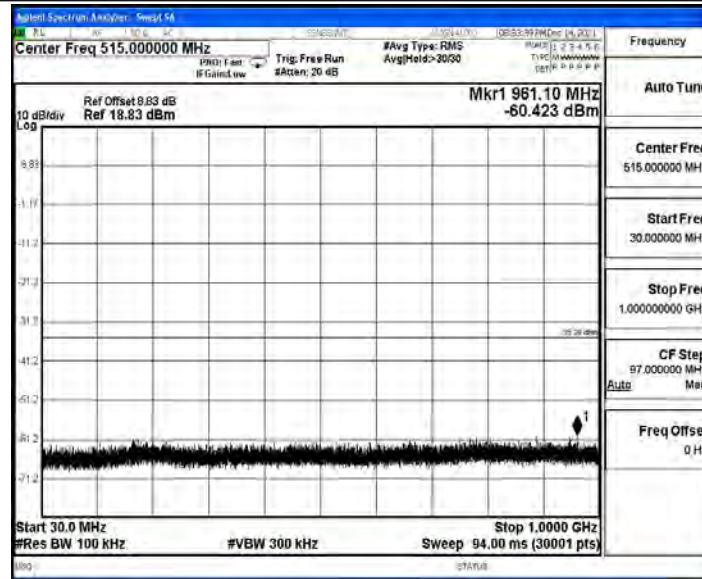
11B_Ant1_2437_1000~26500



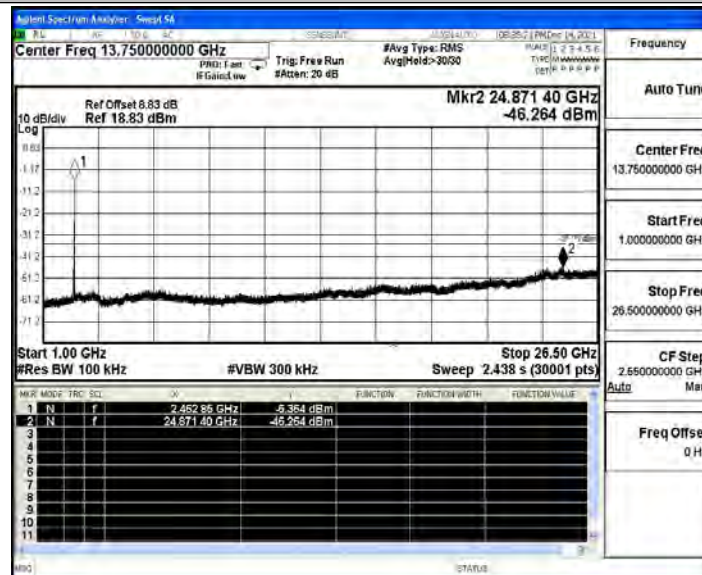
11B_Ant1_2462_0~Reference



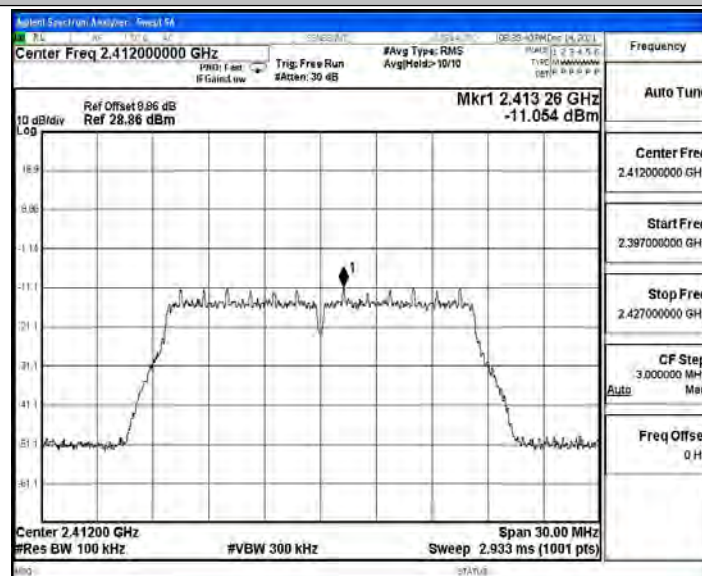
11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500

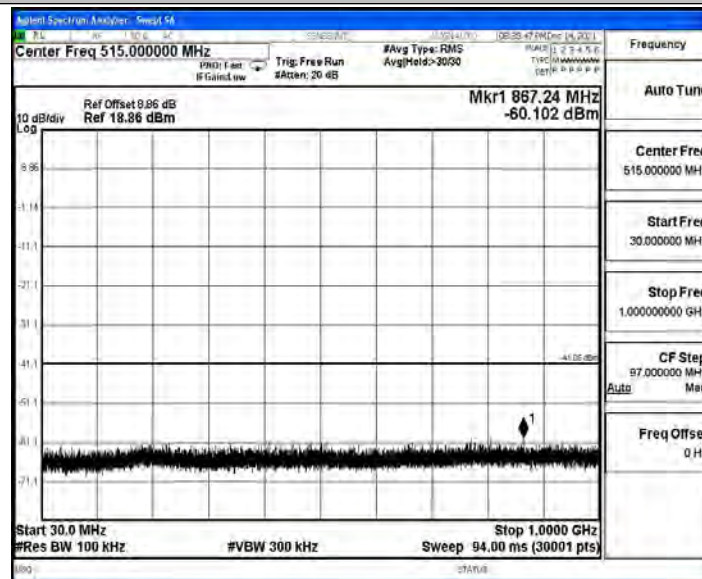


11G_Ant1_2412_0~Reference

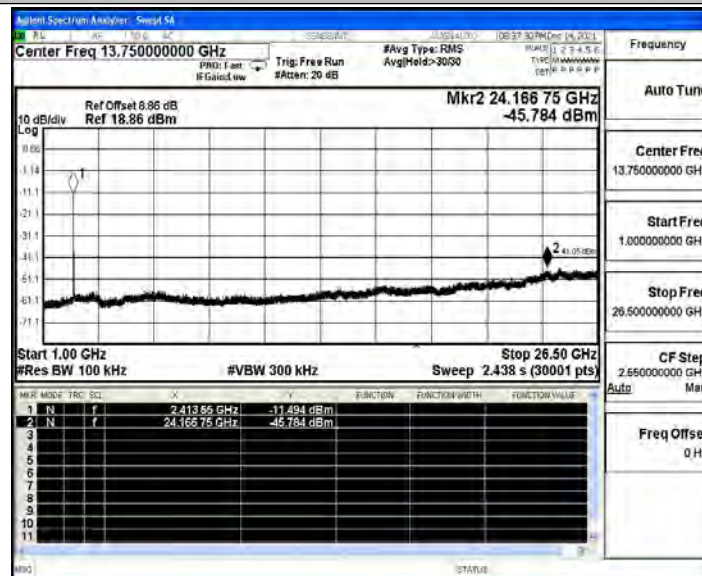




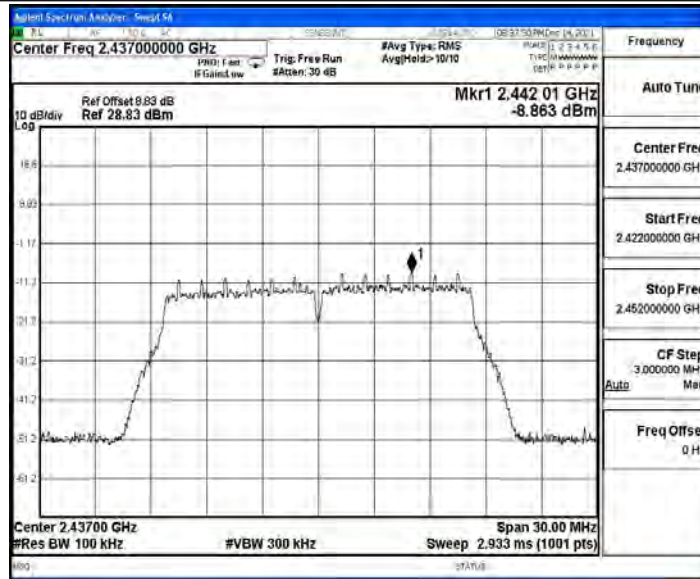
11G_Ant1_2412_30~1000



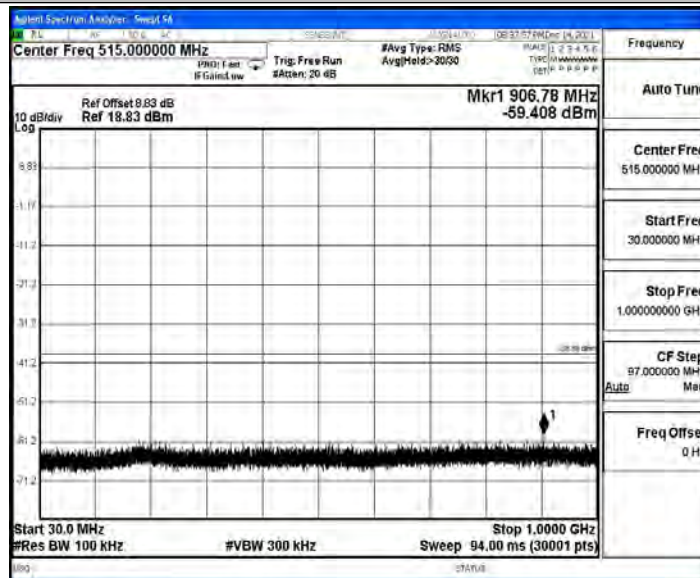
11G_Ant1_2412_1000~26500



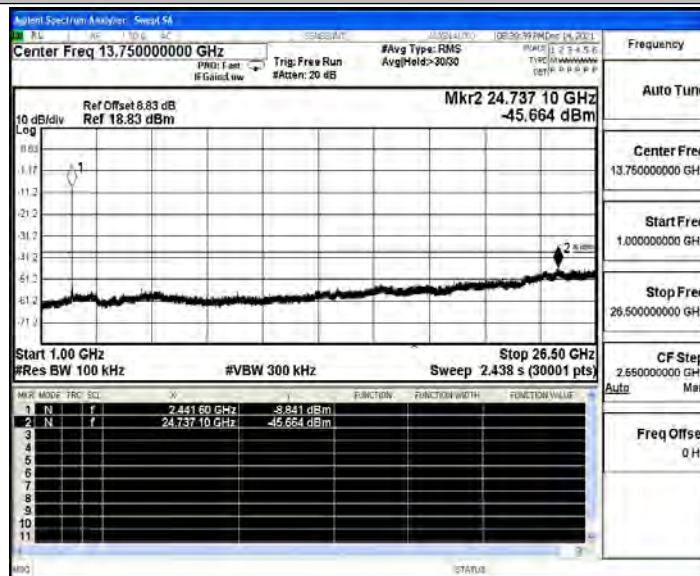
11G_Ant1_2437_0~Reference



11G_Ant1_2437_30~1000

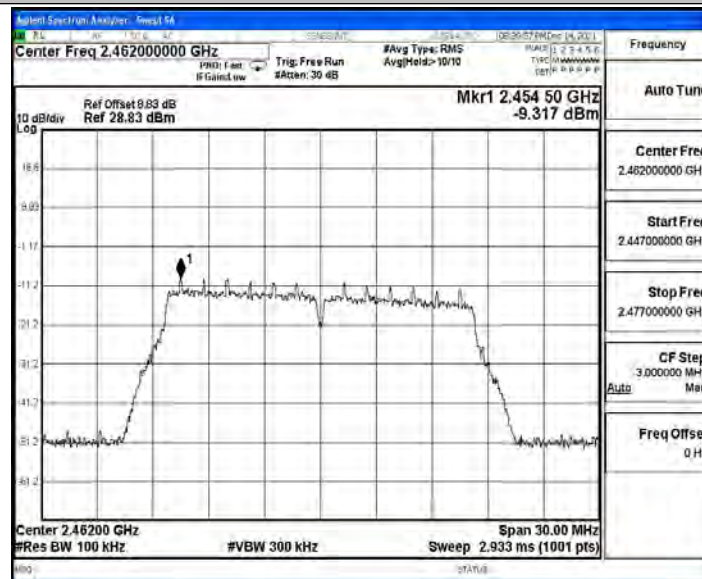


11G_Ant1_2437_1000~26500

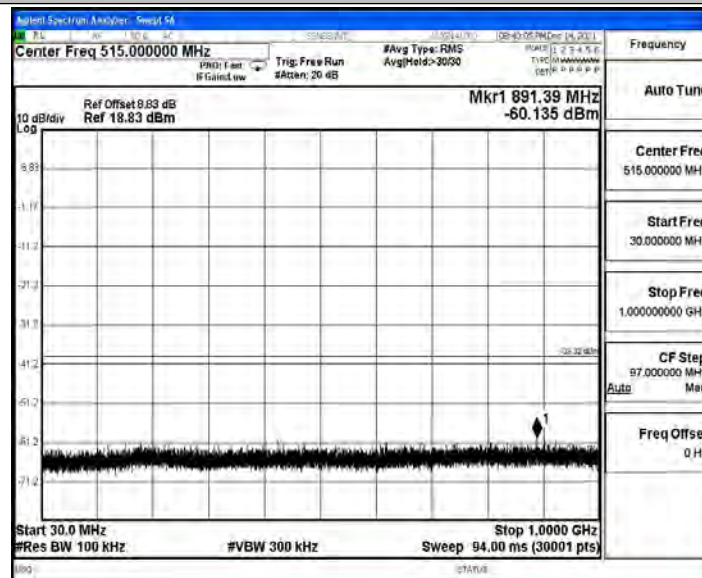




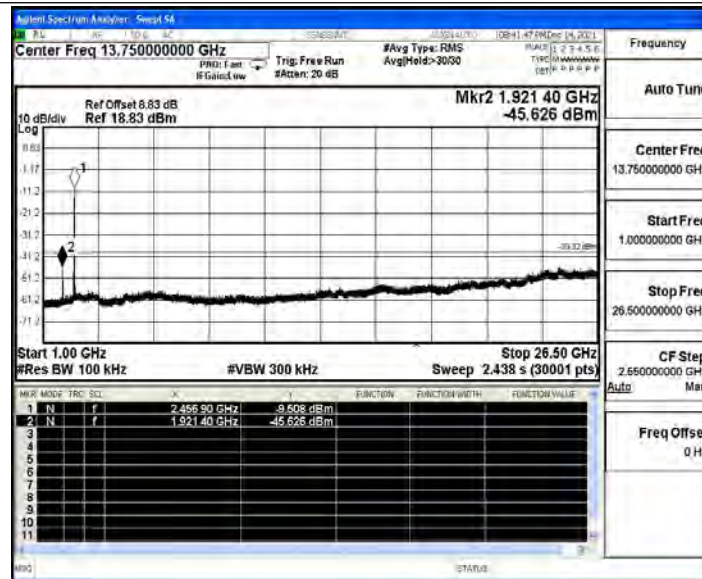
11G_Ant1_2462_0~Reference



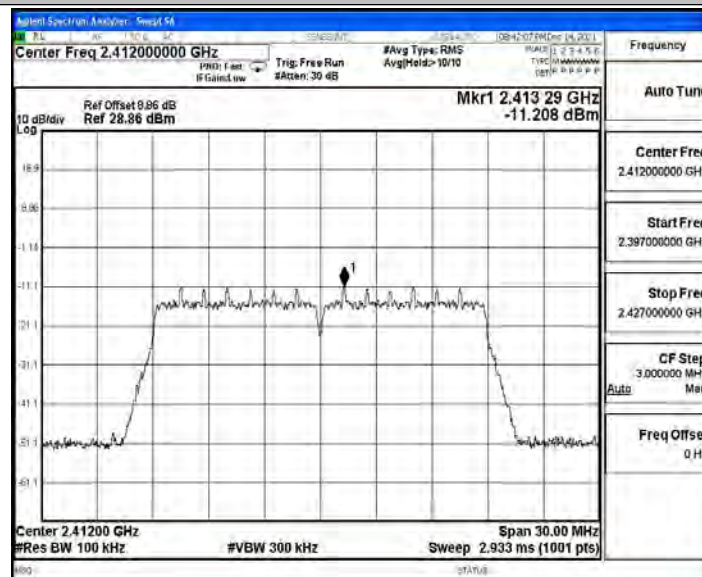
11G_Ant1_2462_30~1000



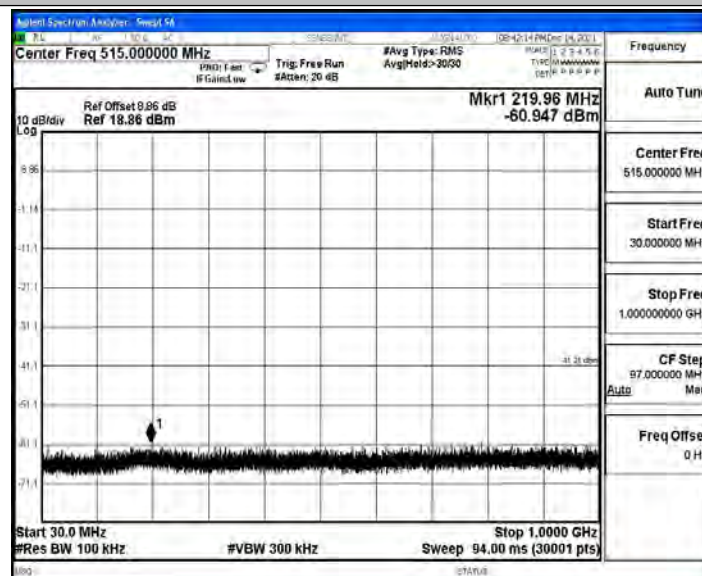
11G_Ant1_2462_1000~26500



11N20SISO_Ant1_2412_0~Reference

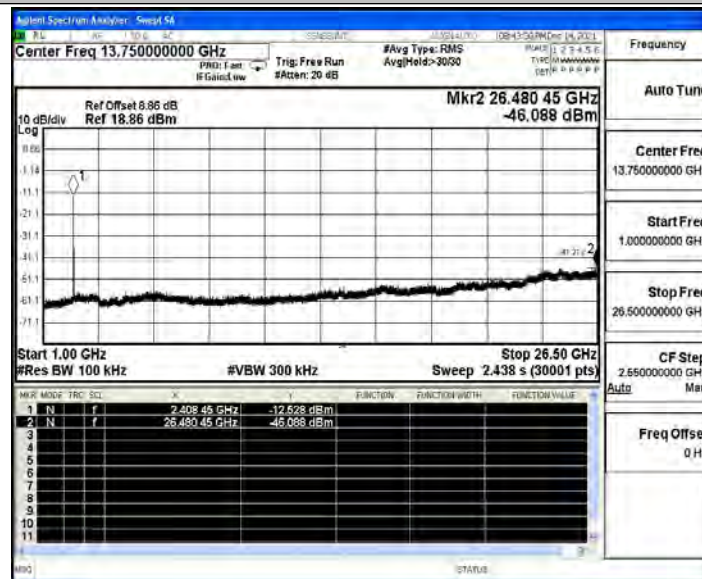


11N20SISO_Ant1_2412_30~1000

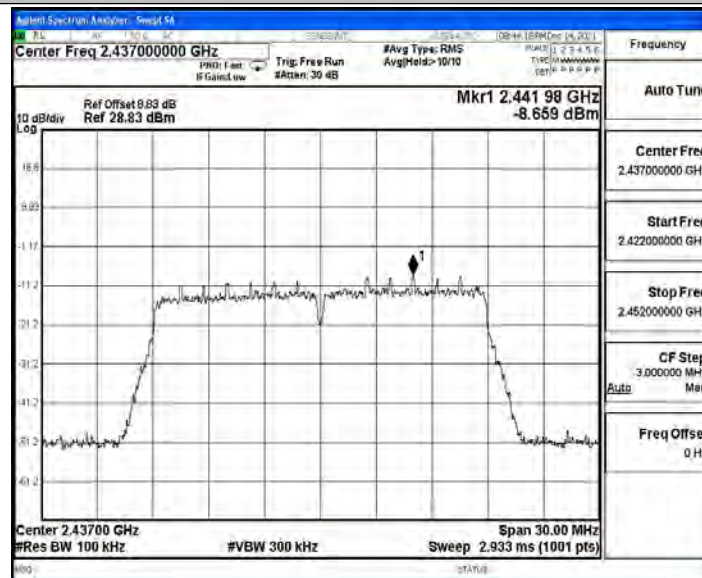




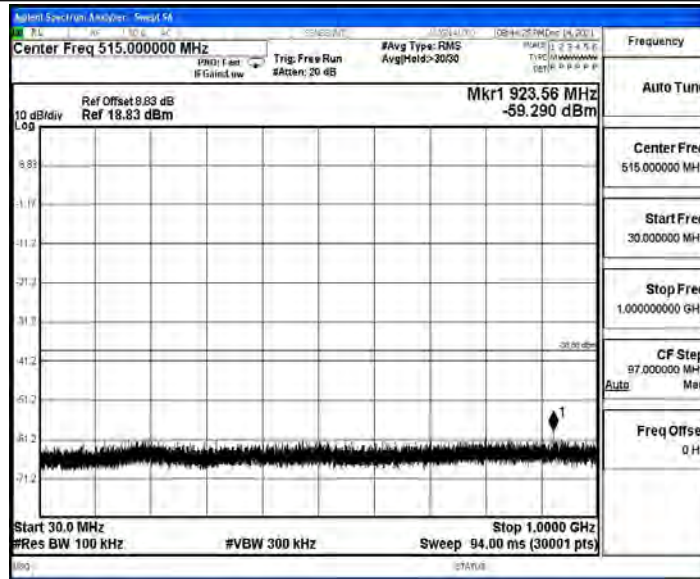
11N20SISO_Ant1_2412_1000~26500



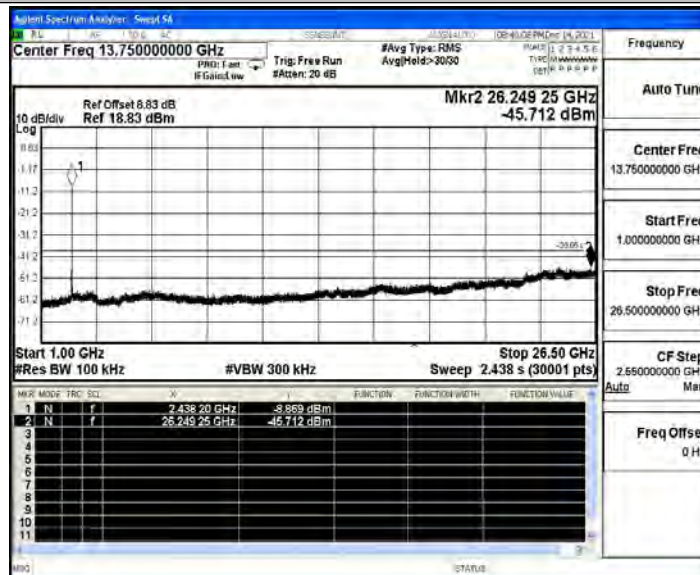
11N20SISO_Ant1_2437_0~Reference



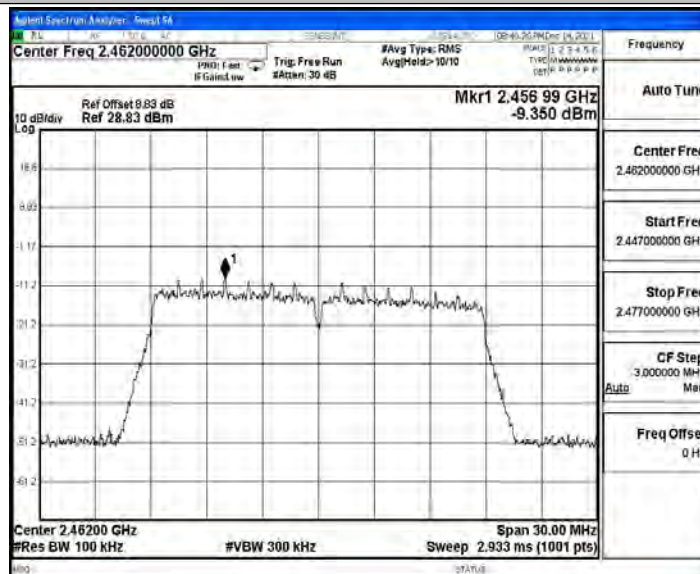
11N20SISO_Ant1_2437_30~1000



11N20SISO_Ant1_2437_1000~26500

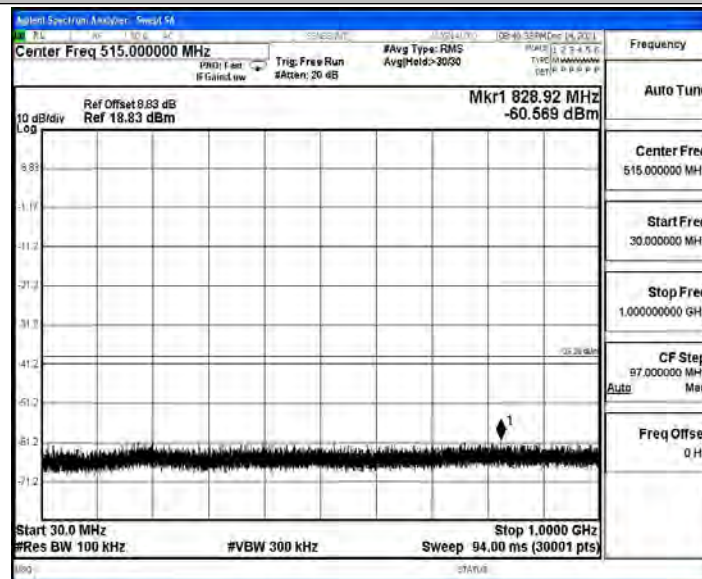


11N20SISO_Ant1_2462_0~Reference

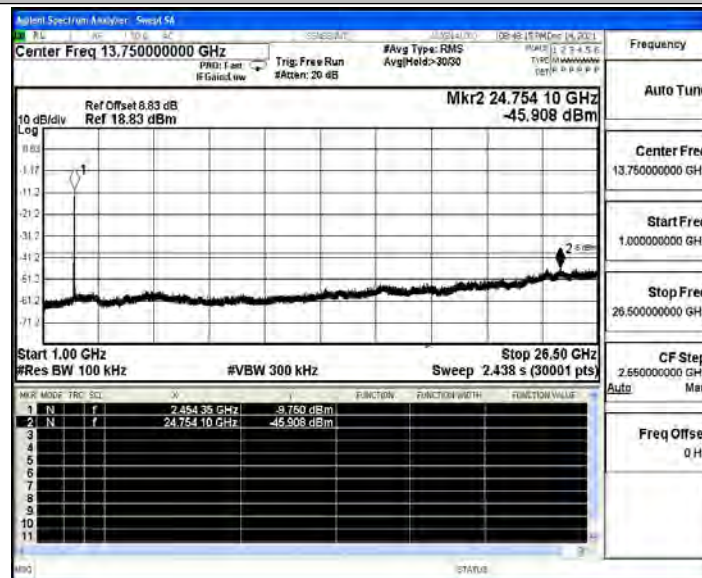




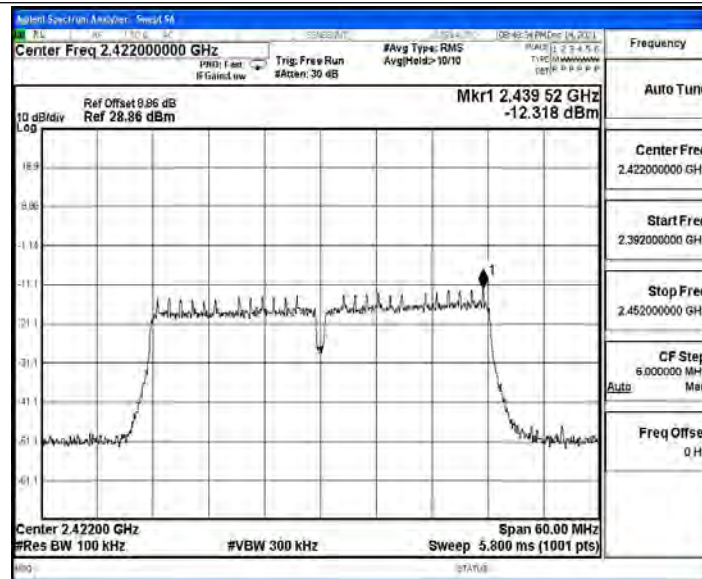
11N20SISO_Ant1_2462_30~1000



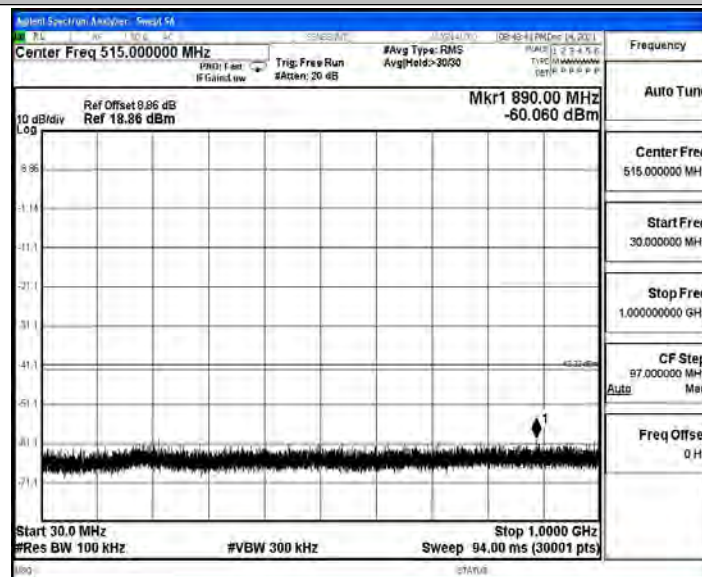
11N20SISO_Ant1_2462_1000~26500



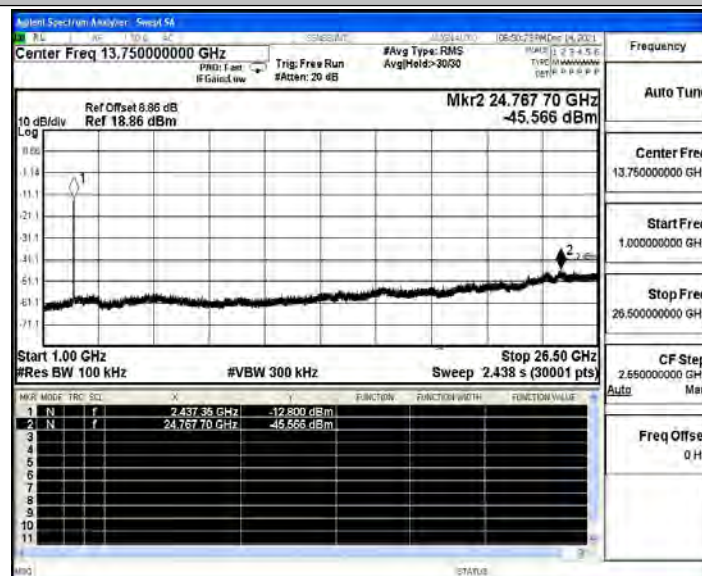
11N40SISO_Ant1_2422_0~Reference



11N40SISO_Ant1_2422_30~1000

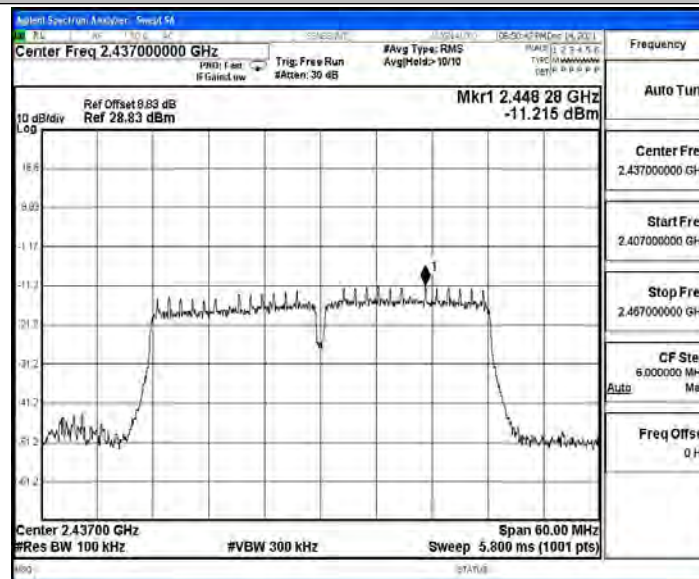


11N40SISO_Ant1_2422_1000~26500

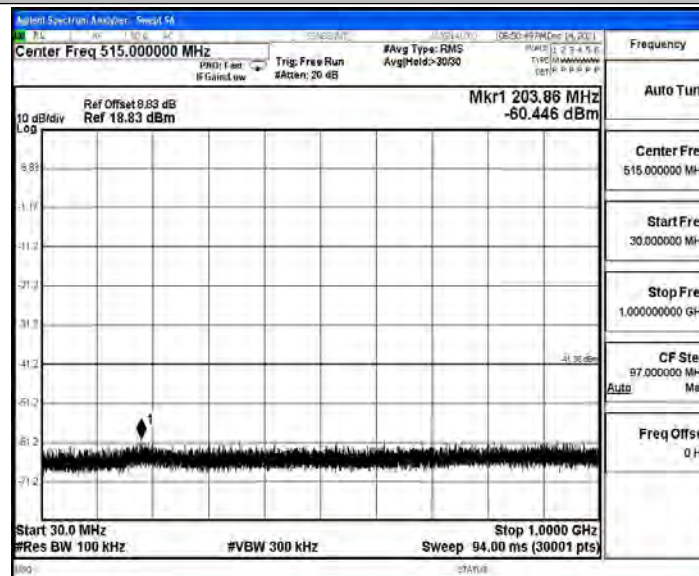




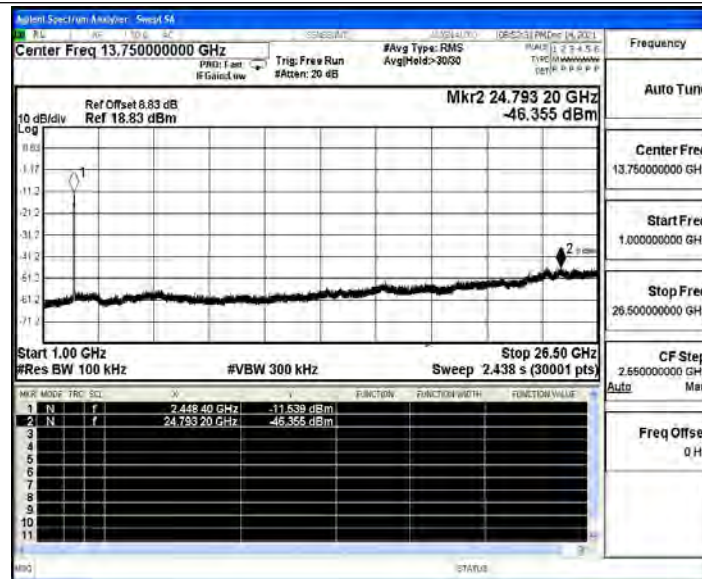
11N40SISO_Ant1_2437_0~Reference



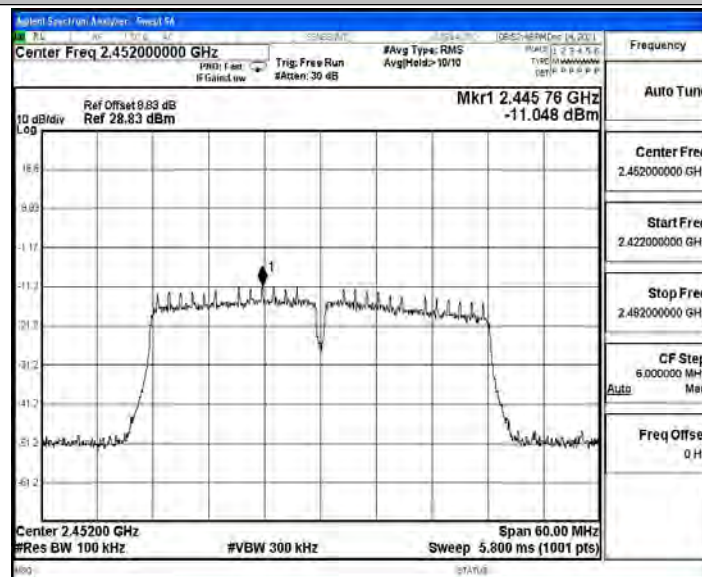
11N40SISO_Ant1_2437_30~1000



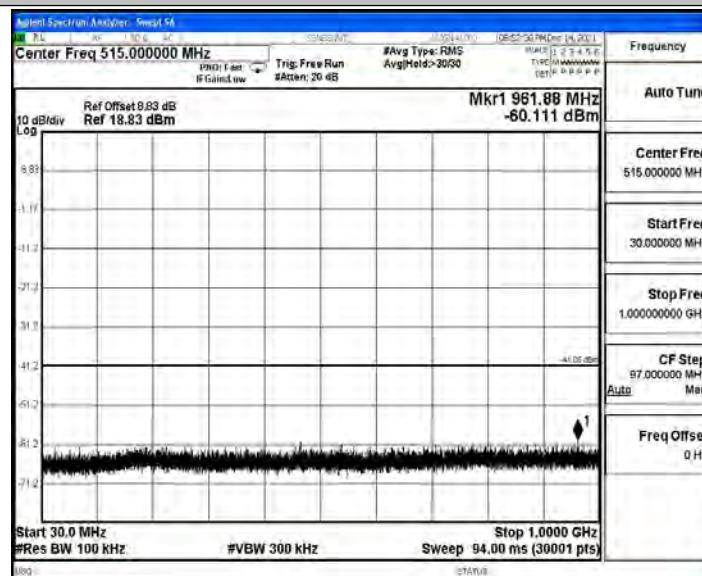
11N40SISO_Ant1_2437_1000~26500



11N40SISO_Ant1_2452_0~Reference

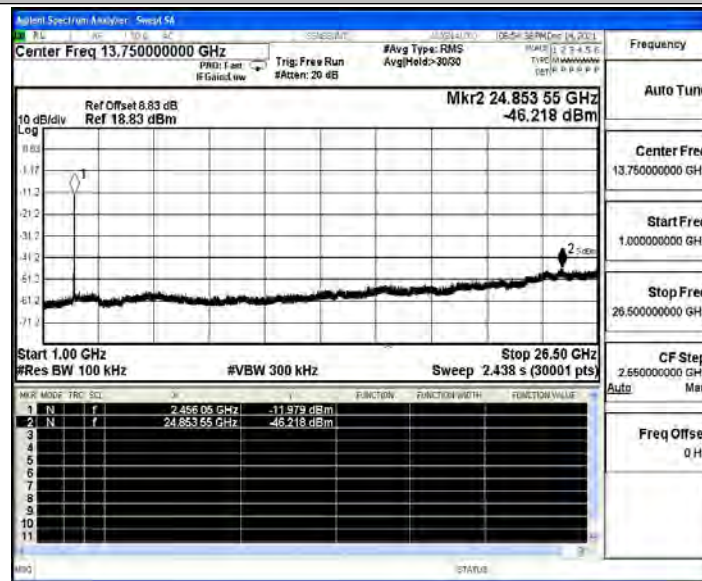


11N40SISO_Ant1_2452_30~1000





11N40SISO_Ant1_2452_1000~26500





B.6 Duty Cycle

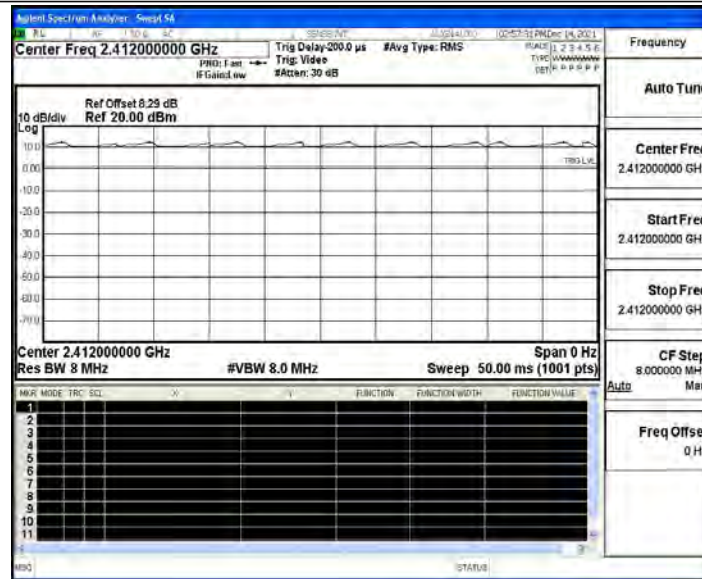
Test Result

Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11B	Ant1	2412	50.00	50.00	100.00	---	PASS
		2437	50.00	50.00	100.00	---	PASS
		2462	50.00	50.00	100.00	---	PASS
11G	Ant1	2412	7.01	7.03	99.72	---	PASS
		2437	2.79	2.81	99.29	---	PASS
		2462	2.79	2.81	99.29	---	PASS
11N20SISO	Ant1	2412	6.55	6.57	99.70	---	PASS
		2437	2.61	2.63	99.24	---	PASS
		2462	2.61	2.63	99.24	---	PASS
11N40SISO	Ant1	2422	50.00	50.00	100.00	---	PASS
		2437	50.00	50.00	100.00	---	PASS
		2452	50.00	50.00	100.00	---	PASS

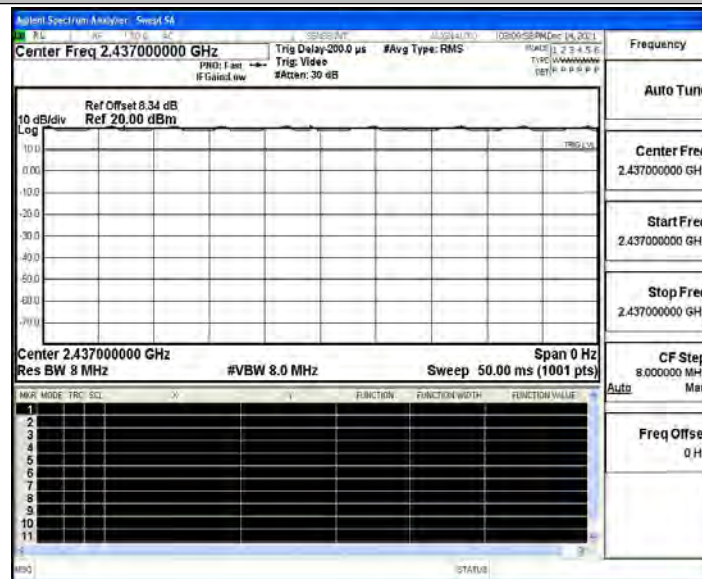


Test Graphs

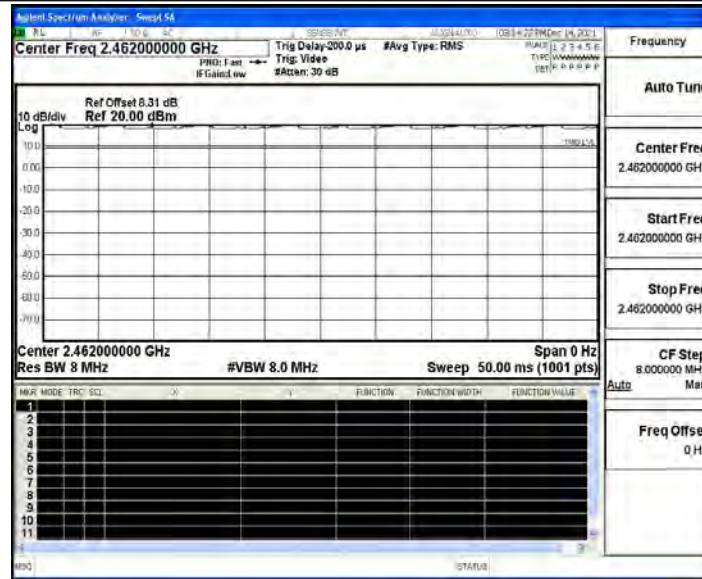
11B_Ant1_2412



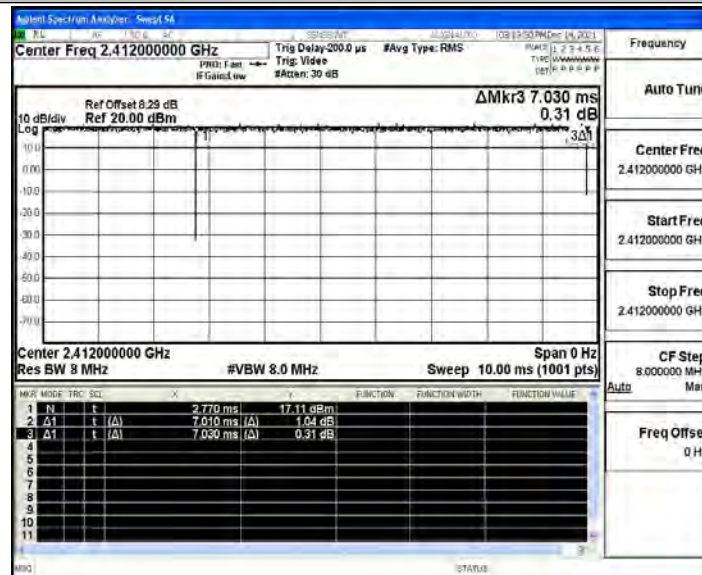
11B_Ant1_2437



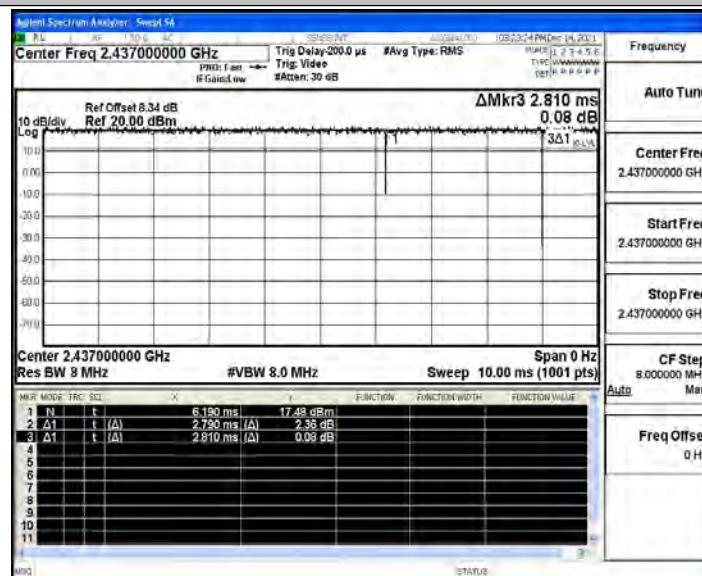
11B_Ant1_2462



11G_Ant1_2412

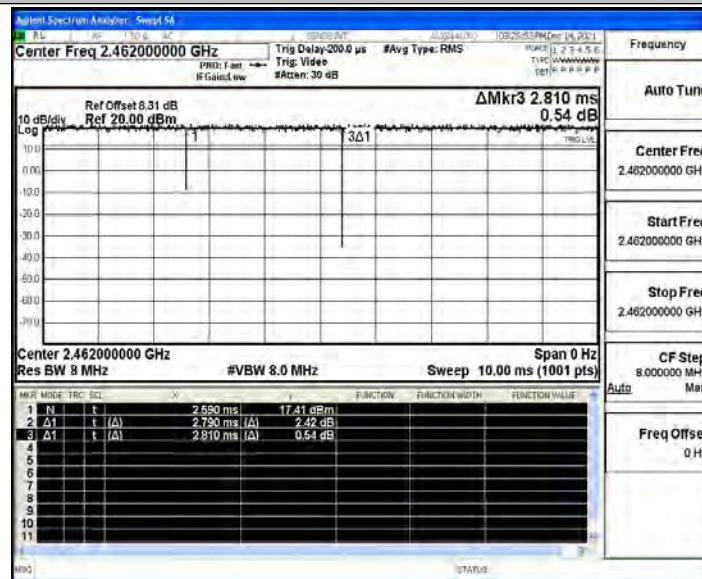


11G_Ant1_2437

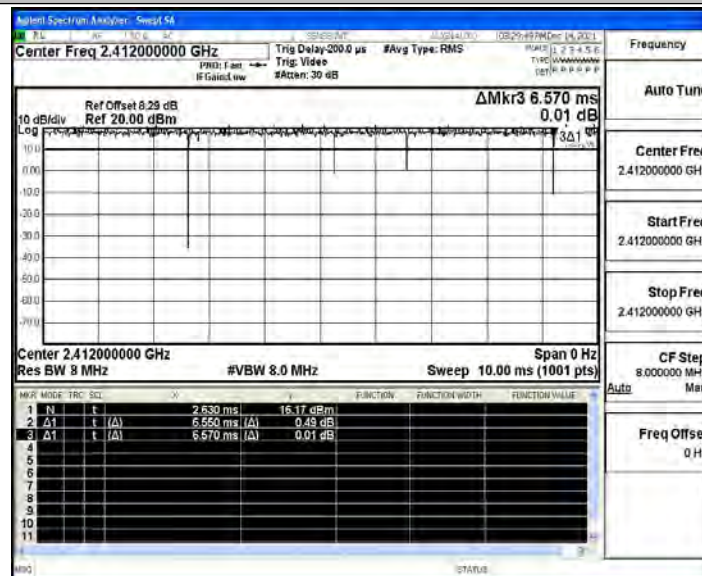




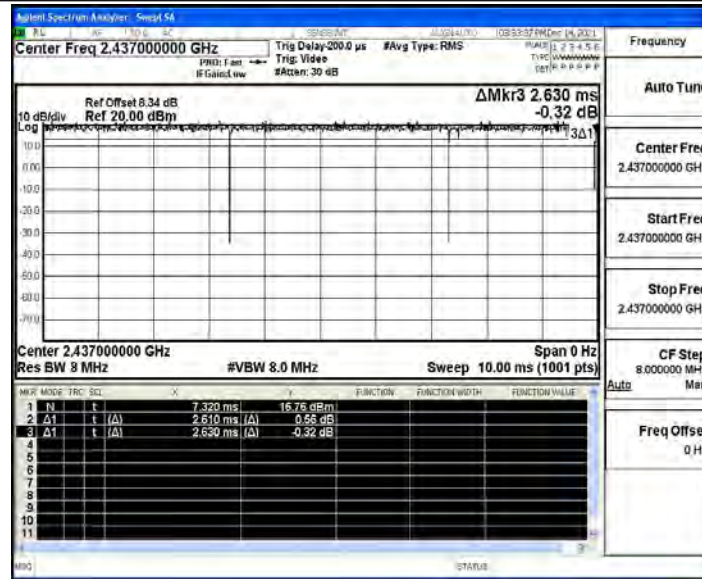
11G_Ant1_2462



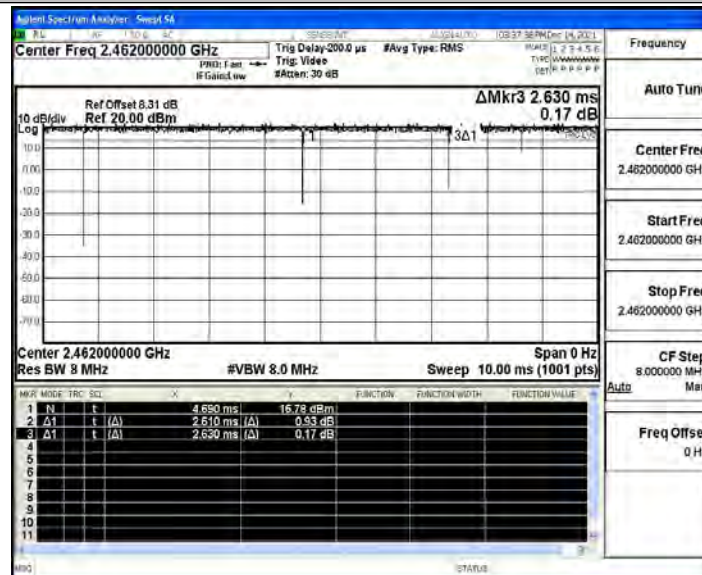
11N20SISO_Ant1_2412



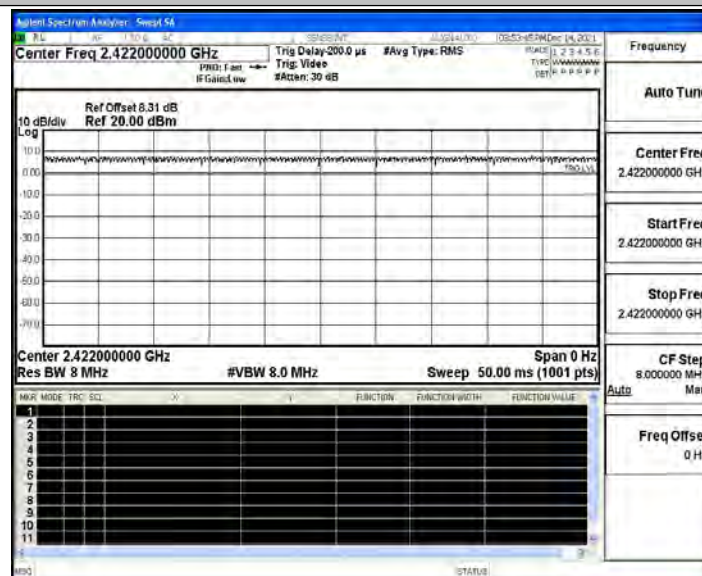
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

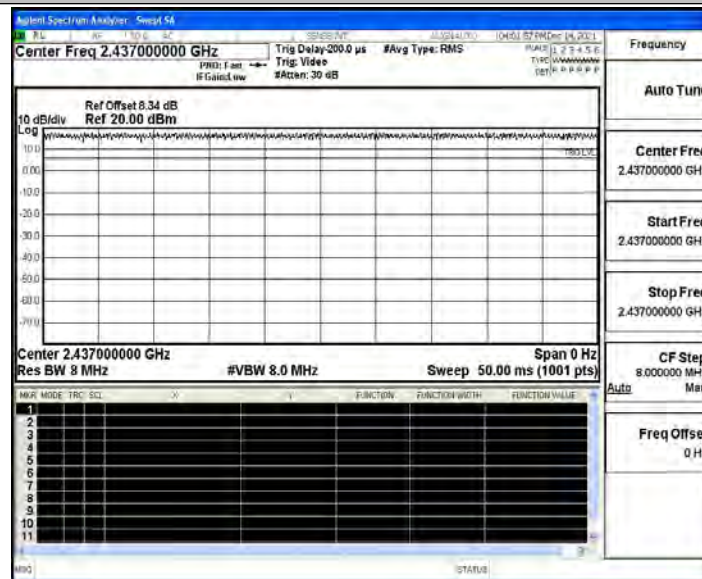


11N40SISO_Ant1_2422

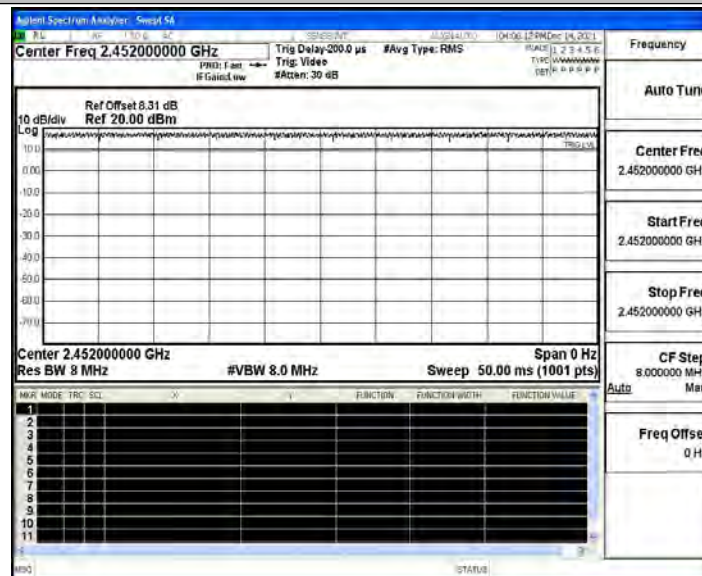




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





B.7 Emissions in Restricted Bands

Test Result

Test Mode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11B	Ant1	Low	2412	AV	2310.000	-48.82	≤-41.20	46.38	≤54	PASS
				AV	2387.100	-46.55	≤-41.20	48.65	≤54	PASS
				AV	2390.000	-46.83	≤-41.20	48.37	≤54	PASS
				Peak	2310.000	-43.82	≤-21.20	51.38	≤74	PASS
				Peak	2334.190	-38.33	≤-21.20	56.87	≤74	PASS
				Peak	2390.000	-43.65	≤-21.20	51.55	≤74	PASS
		High	2462	AV	2483.500	-46.55	≤-41.20	48.65	≤54	PASS
				AV	2487.190	-45.22	≤-41.20	49.98	≤54	PASS
				AV	2500.000	-47.45	≤-41.20	47.75	≤54	PASS
				Peak	2483.500	-41.93	≤-21.20	53.27	≤74	PASS
				Peak	2486.090	-37.21	≤-21.20	57.99	≤74	PASS
				Peak	2500.000	-41.97	≤-21.20	53.23	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-48.57	≤-41.20	46.63	≤54	PASS
				AV	2389.960	-46.43	≤-41.20	48.77	≤54	PASS
				AV	2390.000	-46.43	≤-41.20	48.77	≤54	PASS
				Peak	2310.000	-45.89	≤-21.20	49.31	≤74	PASS
				Peak	2380.990	-38.31	≤-21.20	56.89	≤74	PASS
				Peak	2390.000	-41.79	≤-21.20	53.41	≤74	PASS
		High	2462	AV	2483.500	-41.94	≤-41.20	53.26	≤54	PASS
				AV	2483.560	-42.18	≤-41.20	53.02	≤54	PASS
				AV	2500.000	-46.04	≤-41.20	49.16	≤54	PASS
				Peak	2483.500	-33.24	≤-21.20	61.96	≤74	PASS
				Peak	2483.560	-33.16	≤-21.20	62.04	≤74	PASS
				Peak	2500.000	-39.58	≤-21.20	55.62	≤74	PASS
11N20SIS O	Ant1	Low	2412	AV	2310.000	-48.66	≤-41.20	46.54	≤54	PASS
				AV	2389.830	-47.01	≤-41.20	48.19	≤54	PASS
				AV	2390.000	-47.05	≤-41.20	48.15	≤54	PASS
				Peak	2310.000	-44.09	≤-21.20	51.11	≤74	PASS
				Peak	2376.050	-38.76	≤-21.20	56.44	≤74	PASS
				Peak	2390.000	-41.89	≤-21.20	53.31	≤74	PASS
		High	2462	AV	2483.500	-43.53	≤-41.20	51.67	≤54	PASS
				AV	2483.560	-43.56	≤-41.20	51.64	≤54	PASS
				AV	2500.000	-46.19	≤-41.20	49.01	≤54	PASS
				Peak	2483.500	-39.57	≤-21.20	55.63	≤74	PASS
				Peak	2485.210	-35.09	≤-21.20	60.11	≤74	PASS
				Peak	2500.000	-39.85	≤-21.20	55.35	≤74	PASS
11N40SIS	Ant1	Low	2422	AV	2310.000	-48.88	≤-41.20	46.32	≤54	PASS



O				AV	2389.830	-47.95	≤ -41.20	47.25	≤ 54	PASS
				AV	2390.000	-47.95	≤ -41.20	47.25	≤ 54	PASS
				Peak	2310.000	-42.31	≤ -21.20	52.89	≤ 74	PASS
				Peak	2369.160	-39.27	≤ -21.20	55.93	≤ 74	PASS
				Peak	2390.000	-40.26	≤ -21.20	54.94	≤ 74	PASS
		High	2452	AV	2483.500	-45.57	≤ -41.20	49.63	≤ 54	PASS
				AV	2484.000	-45.53	≤ -41.20	49.67	≤ 54	PASS
				AV	2500.000	-47.33	≤ -41.20	47.87	≤ 54	PASS
				Peak	2483.500	-33.79	≤ -21.20	61.41	≤ 74	PASS
				Peak	2487.300	-37.29	≤ -21.20	57.91	≤ 74	PASS
				Peak	2500.000	-40.29	≤ -21.20	54.91	≤ 74	PASS

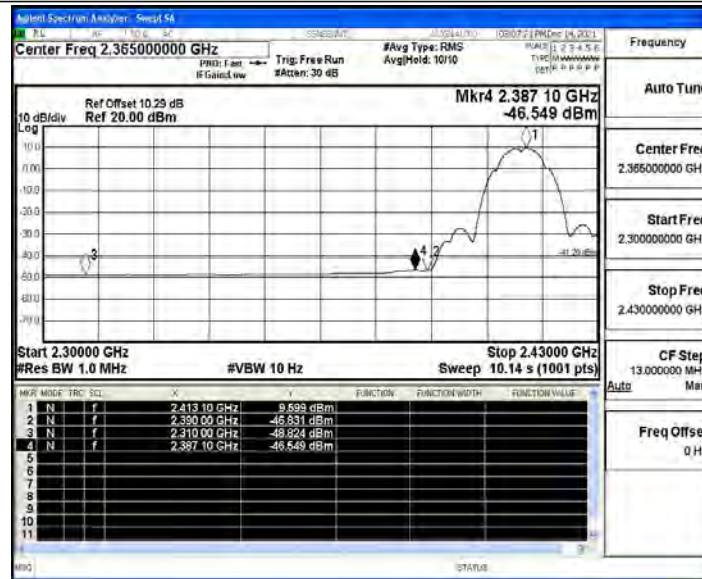
Note:

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.

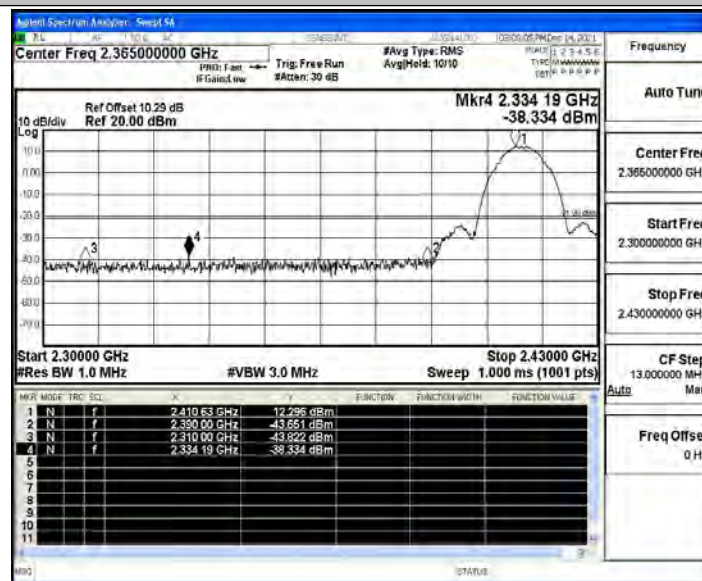


Test Graphs

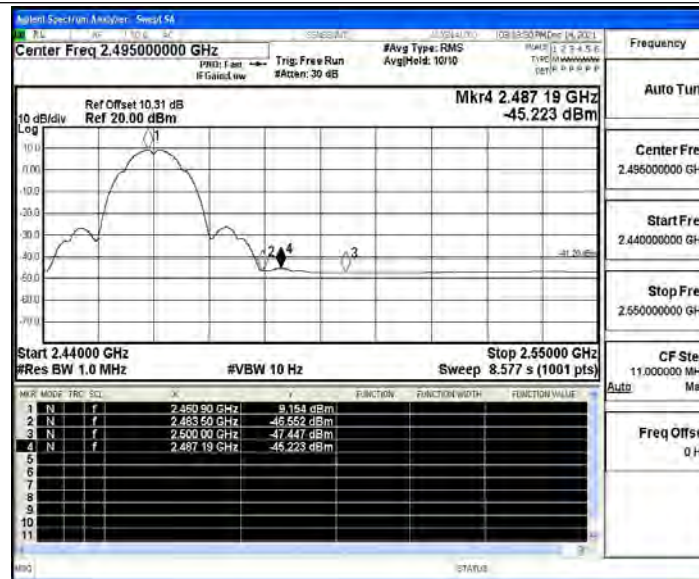
11B_Ant1_Low_2412_AV



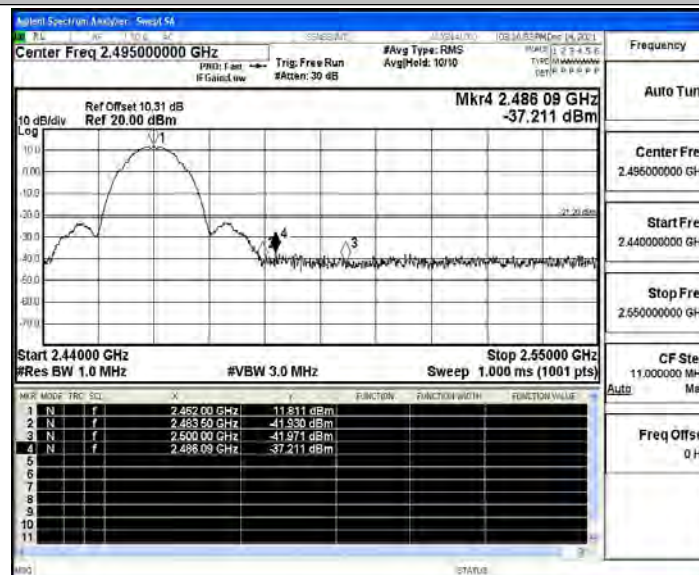
11B_Ant1_Low_2412_Peak



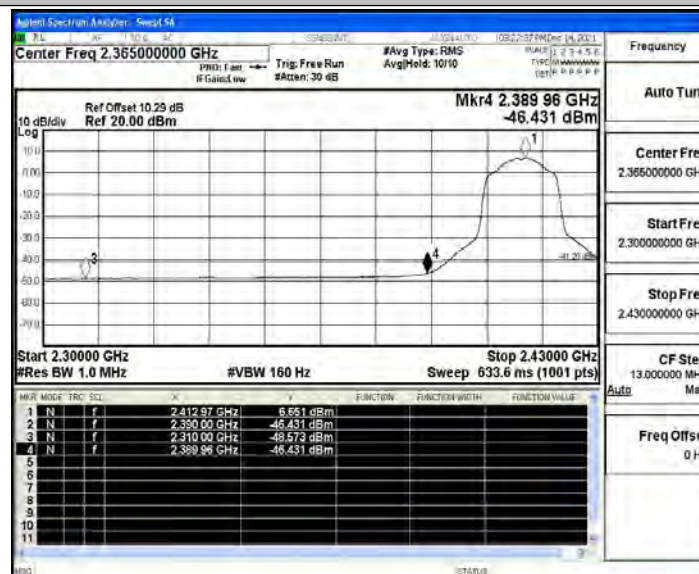
11B_Ant1_High_2462_AV



11B_Ant1_High_2462_Peak

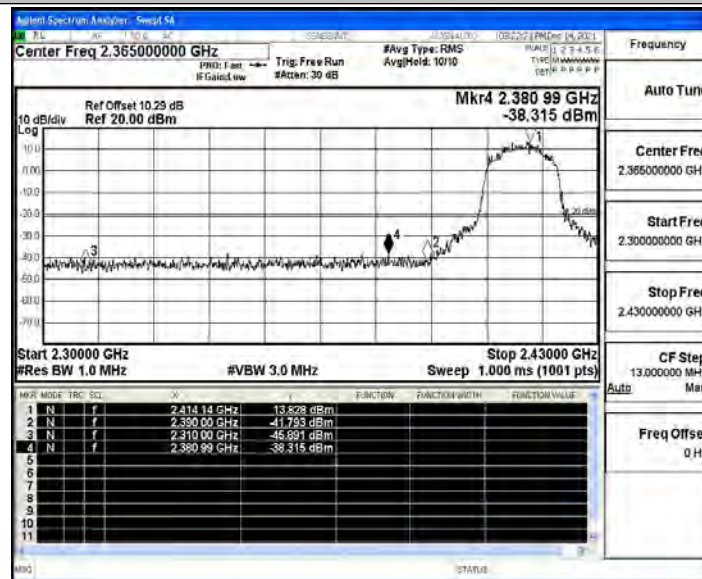


11G_Ant1_Low_2412_AV

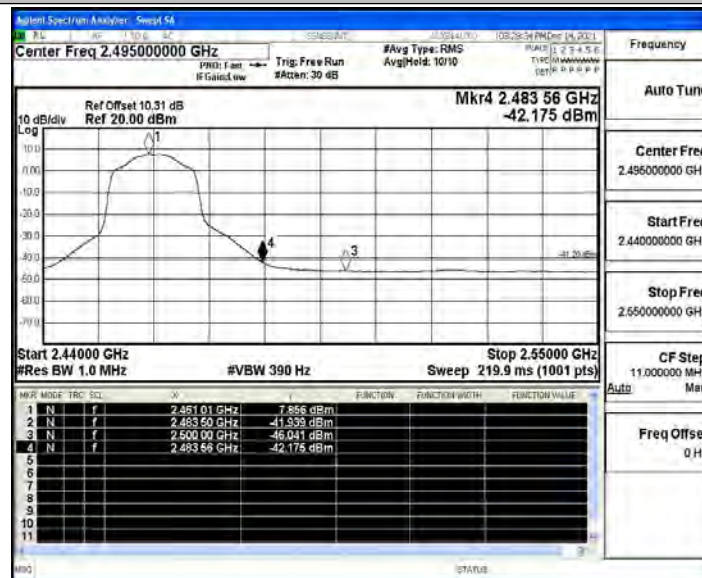




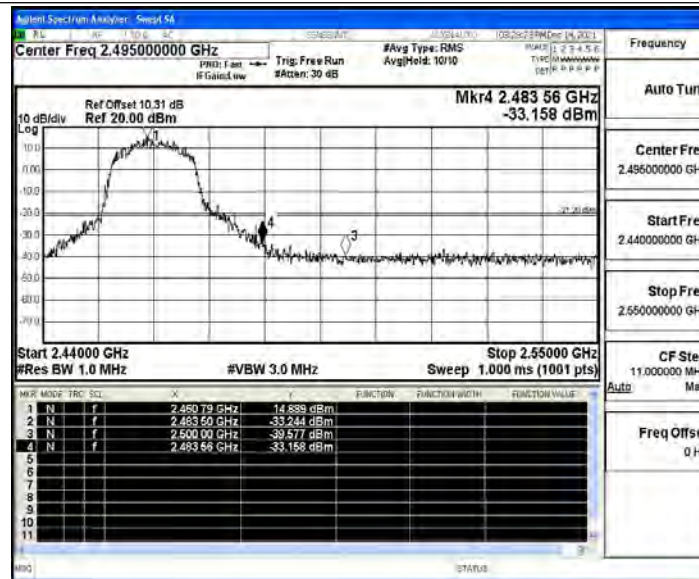
11G_Ant1_Low_2412_Peak



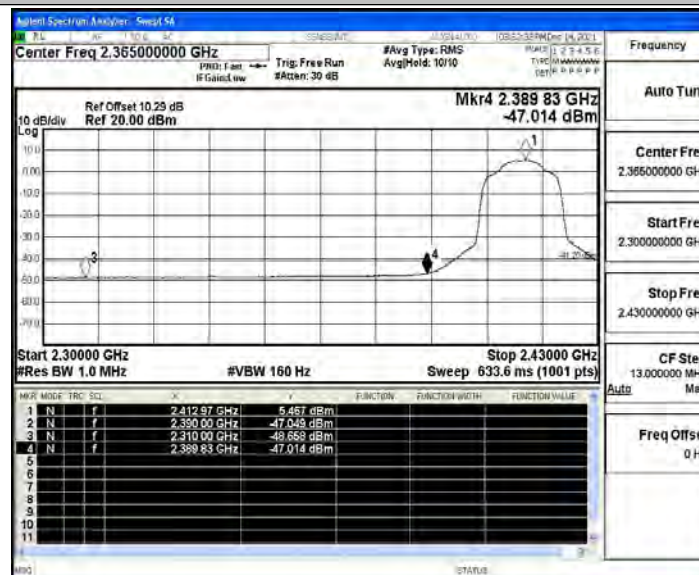
11G_Ant1_High_2462_AV



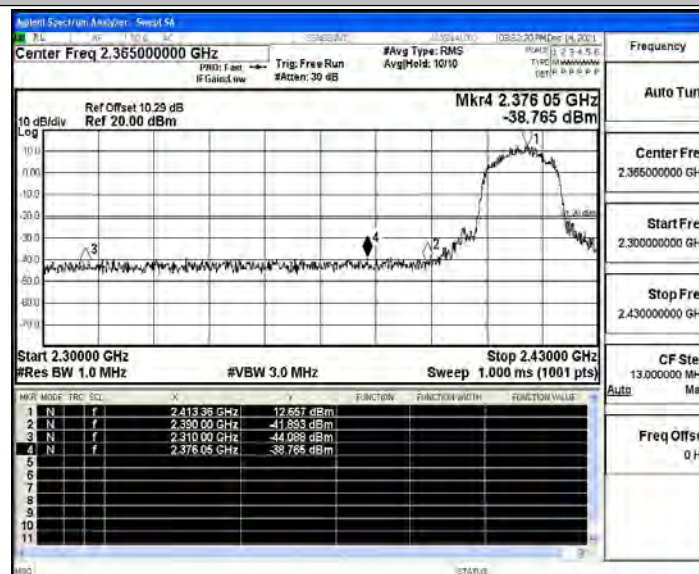
11G_Ant1_High_2462_Peak



11N20SISO_Ant1_Low_2412_AV

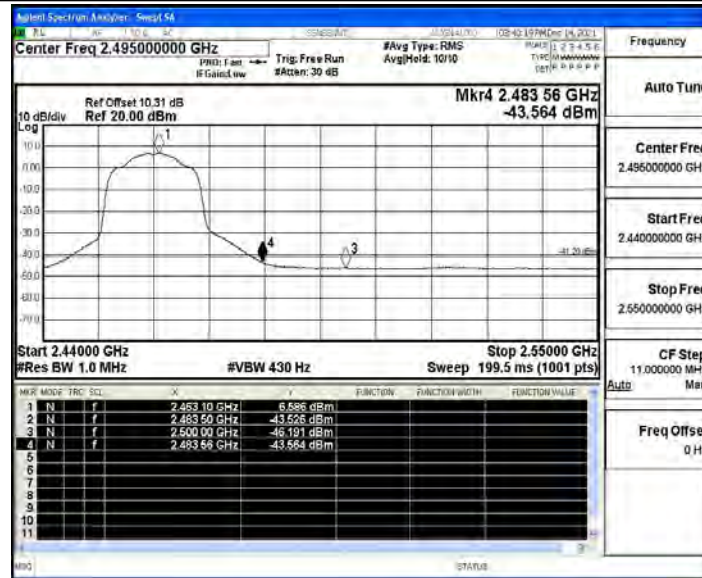


11N20SISO_Ant1_Low_2412_Peak

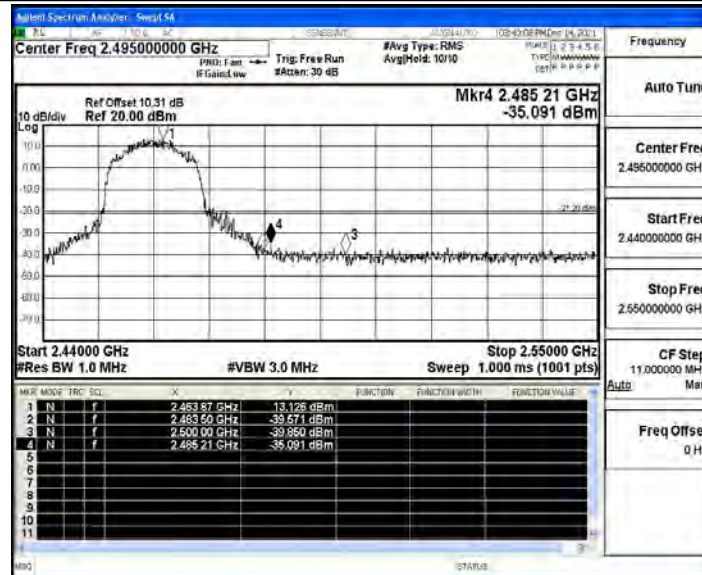




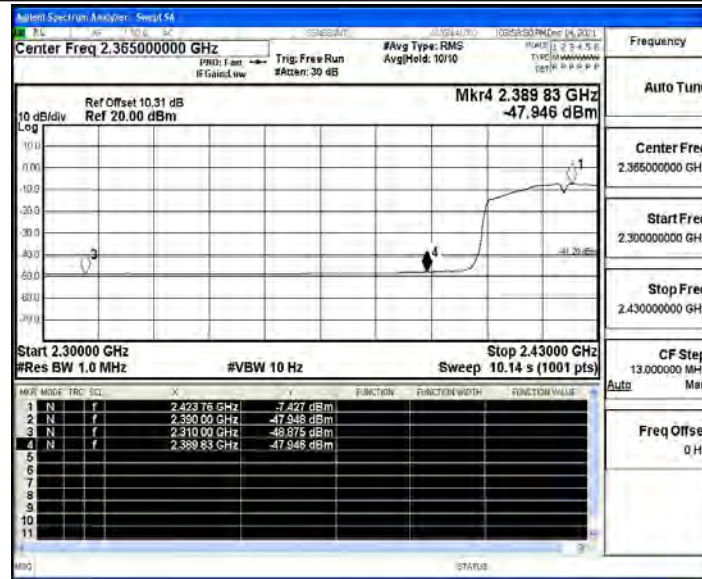
11N20SISO_Ant1_High_2462_AV



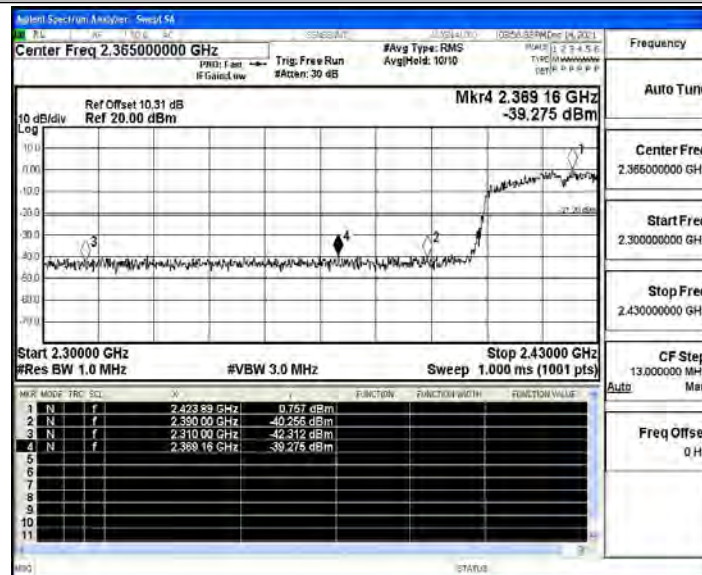
11N20SISO_Ant1_High_2462_Peak



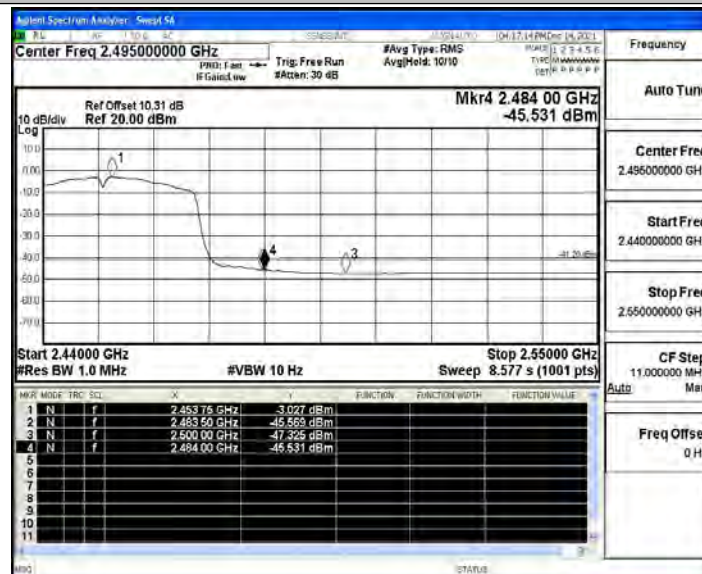
11N40SISO_Ant1_Low_2422_AV



11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV





11N40SISO_Ant1_High_2452_Peak

