



Appendix B

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: LED Strip
Test Model: XDD005Y7D7001

Environmental Conditions

Temperature:	24.3° C
Relative Humidity:	51.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan



B.1 6dB Bandwidth

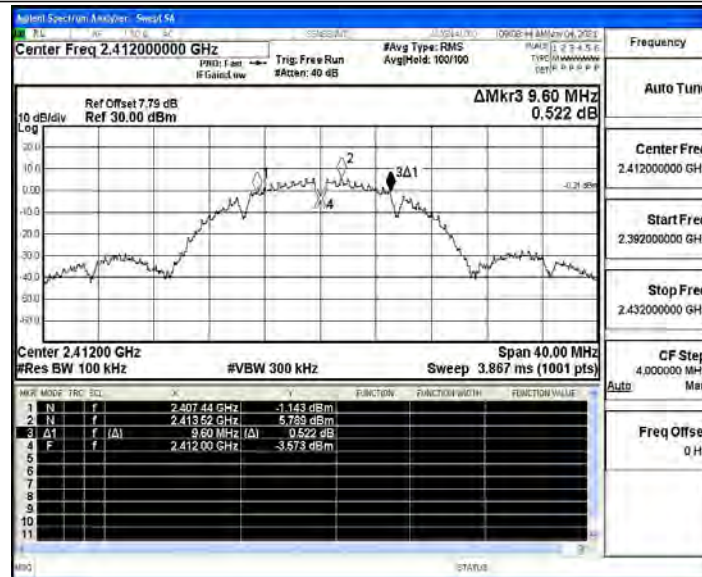
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.600	2407.440	2417.040	0.5	PASS
		2437	9.600	2432.400	2442.000	0.5	PASS
		2462	9.200	2457.400	2466.600	0.5	PASS
11G	Ant1	2412	15.120	2404.440	2419.560	0.5	PASS
		2437	10.160	2431.920	2442.080	0.5	PASS
		2462	11.400	2455.680	2467.080	0.5	PASS
11N20SISO	Ant1	2412	12.400	2407.200	2419.600	0.5	PASS
		2437	13.880	2430.720	2444.600	0.5	PASS
		2462	12.600	2454.480	2467.080	0.5	PASS
11N40SISO	Ant1	2422	33.920	2405.680	2439.600	0.5	PASS
		2437	33.920	2420.680	2454.600	0.5	PASS
		2452	31.440	2438.160	2469.600	0.5	PASS

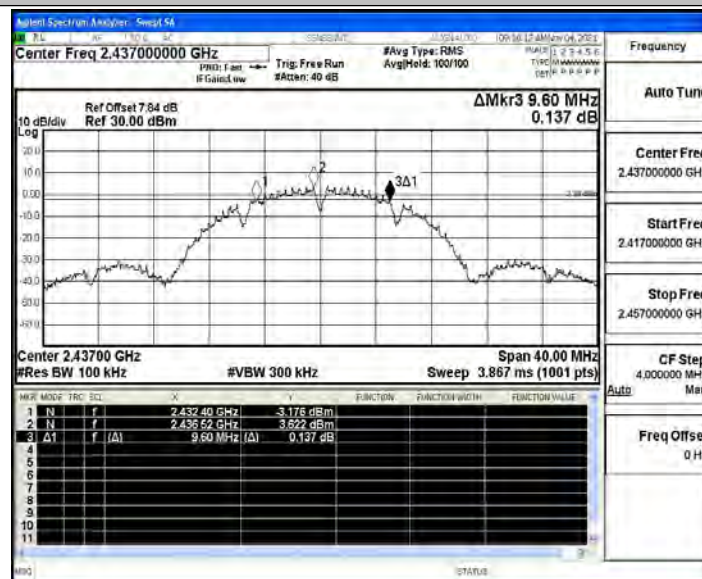


Test Graphs

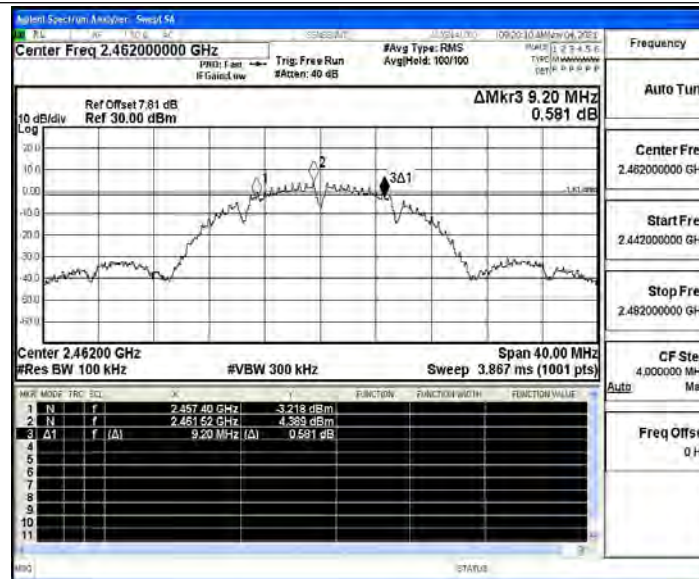
11B_Ant1_2412



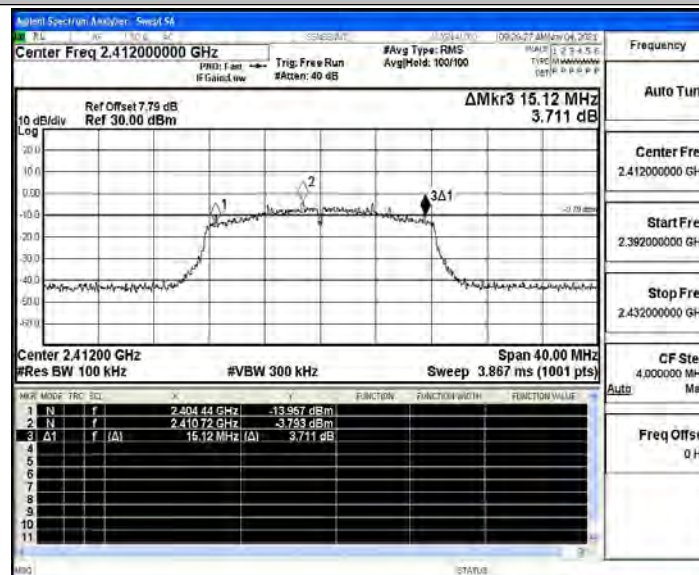
11B_Ant1_2437



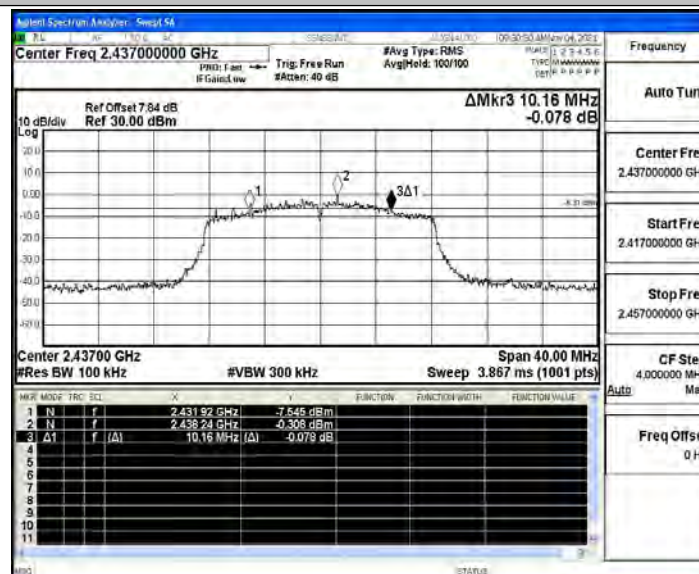
11B_Ant1_2462



11G_Ant1_2412

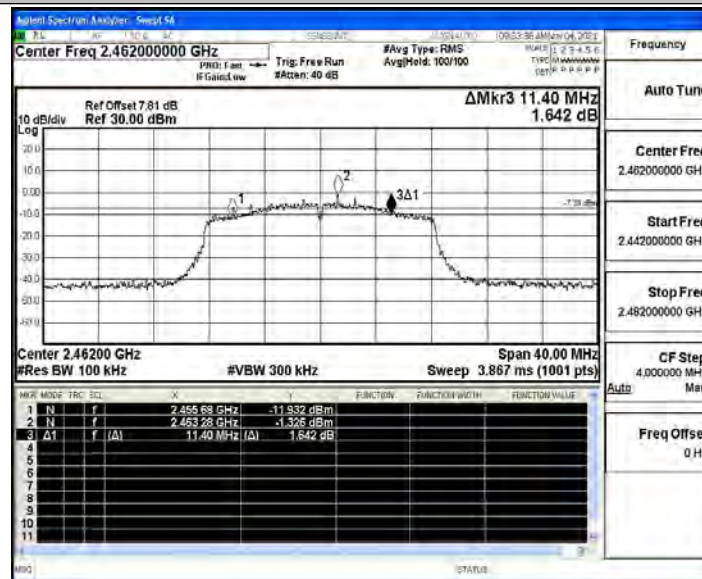


11G_Ant1_2437

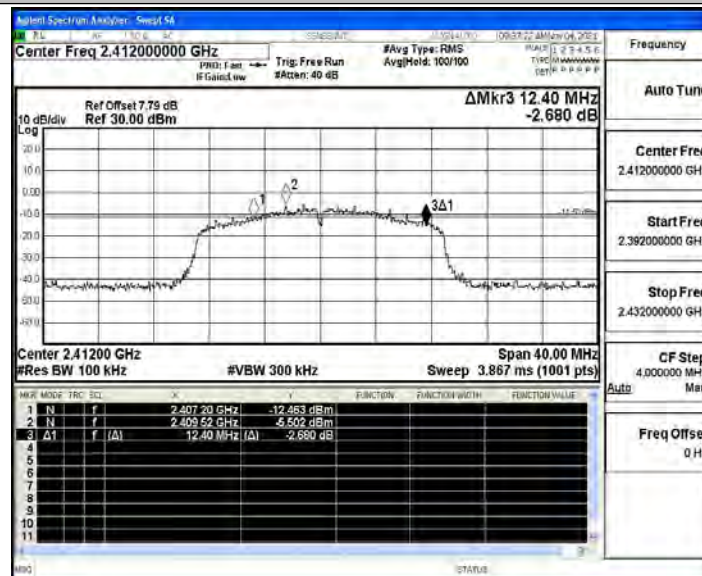




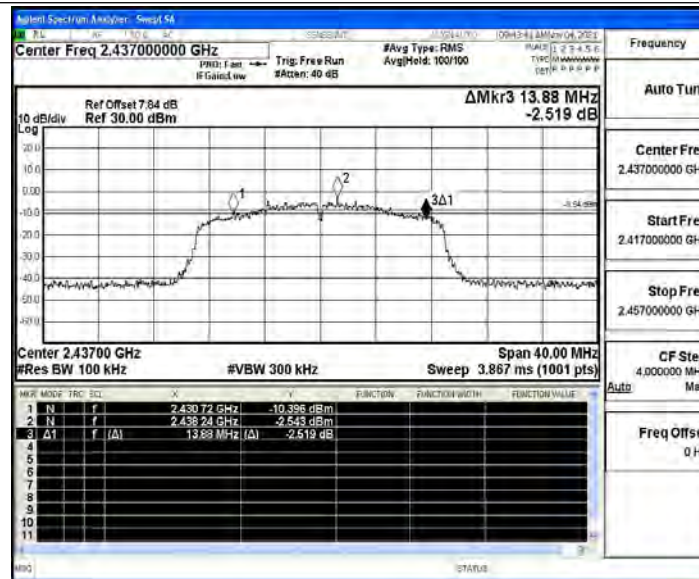
11G_Ant1_2462



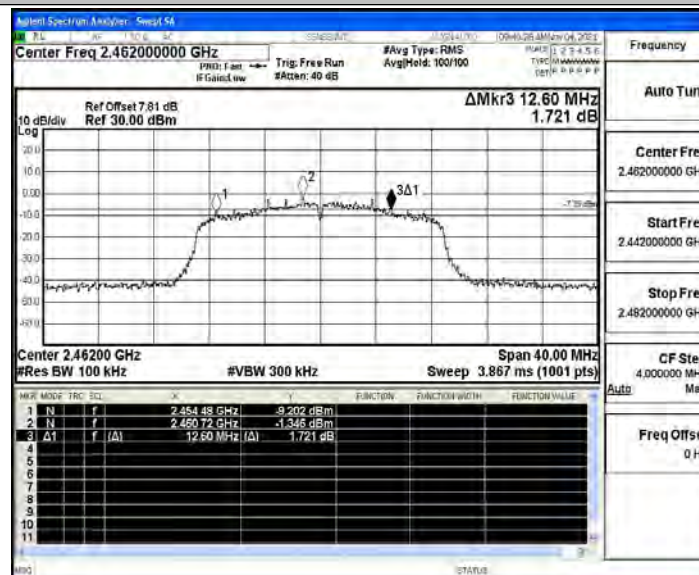
11N20SISO_Ant1_2412



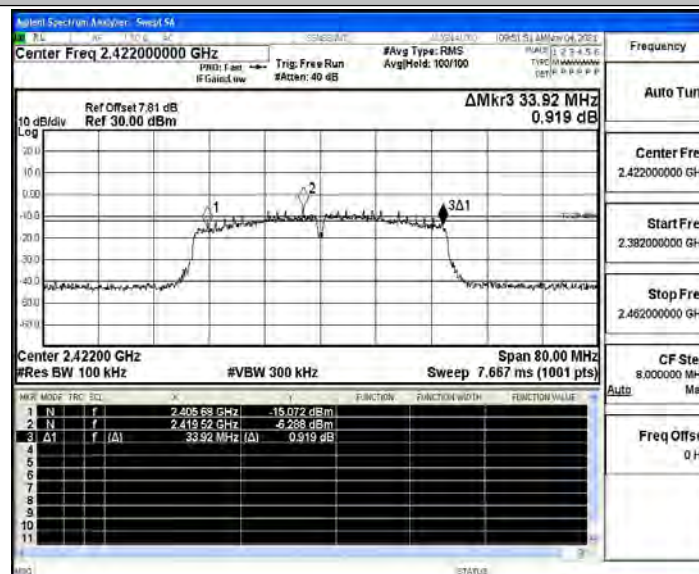
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

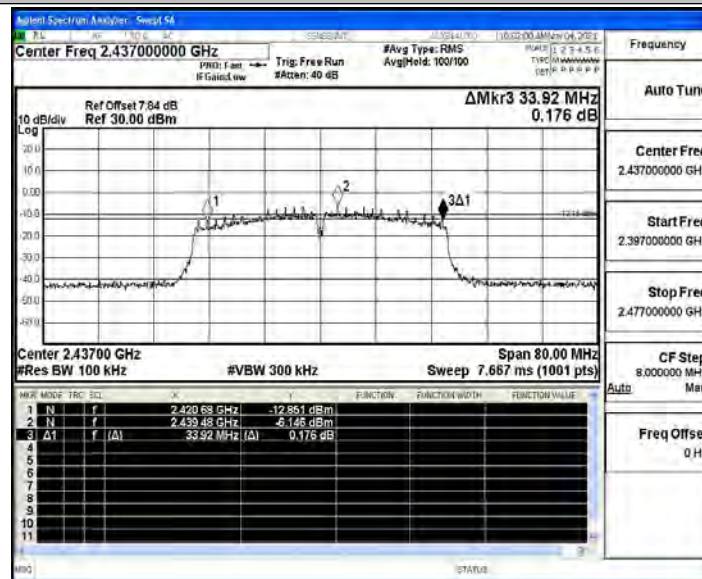


11N40SISO_Ant1_2422

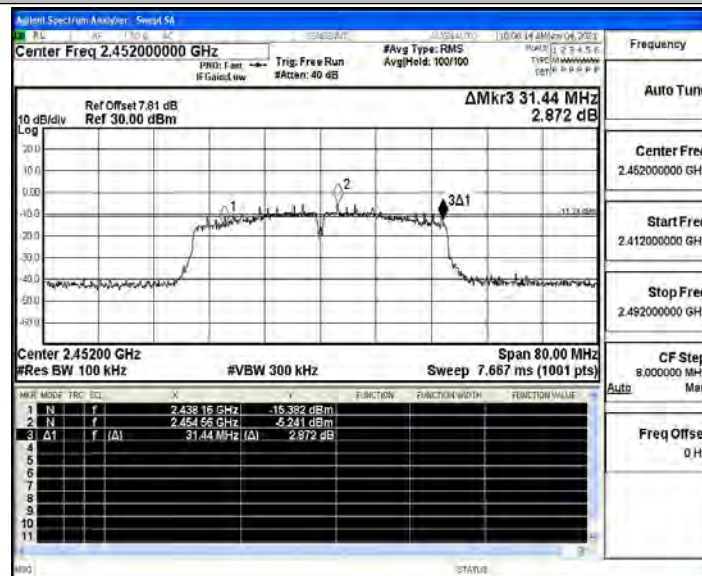




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





B.2 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	15.52	≤30	PASS
		2437	15.96	≤30	PASS
		2462	15.33	≤30	PASS
11G	Ant1	2412	15.02	≤30	PASS
		2437	14.15	≤30	PASS
		2462	15.15	≤30	PASS
11N20SISO	Ant1	2412	14.54	≤30	PASS
		2437	14.49	≤30	PASS
		2462	15.51	≤30	PASS
11N40SISO	Ant1	2422	13.80	≤30	PASS
		2437	13.87	≤30	PASS
		2452	14.61	≤30	PASS



B.3 Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-10.94	≤8	PASS
		2437	-10.2	≤8	PASS
		2462	-10.85	≤8	PASS
11G	Ant1	2412	-17.04	≤8	PASS
		2437	-17.88	≤8	PASS
		2462	-17.26	≤8	PASS
11N20SISO	Ant1	2412	-16.28	≤8	PASS
		2437	-16.25	≤8	PASS
		2462	-15.5	≤8	PASS
11N40SISO	Ant1	2422	-19.2	≤8	PASS
		2437	-19.3	≤8	PASS
		2452	-18.23	≤8	PASS



11B_Ant1_2412

Agilent Spectrum Analyzer: Sweet 5A

Center Freq 2.41200000 GHz

Ref Offset 7.79 dB
Ref 27.79 dBm

Mkr1 2.412 556 8 GHz
-10.943 dBm

Frequency

Auto Tune

Center Freq
2.41200000 GHz

Start Freq
2.402400000 GHz

Stop Freq
2.421600000 GHz

CF Step
1.920000 MHz
Auto

Freq Offset
0 Hz

Center 2.412000 GHz

#Res BW 3.0 kHz

#VBW 10 kHz

Span 19.20 MHz

Sweep 2.024 s (1001 pts)

11B_Ant1_2437

Agilent Spectrum Analyzer: Sweet 5A

Center Freq 2.437000000 GHz

Ref Offset 7.84 dB
Ref 27.84 dBm

Mkr1 2.437 864 0 GHz
-10.202 dBm

Frequency

Auto Tune

Center Freq
2.437000000 GHz

Start Freq
2.427400000 GHz

Stop Freq
2.446600000 GHz

CF Step
1.920000 MHz
Auto

Freq Offset
0 Hz

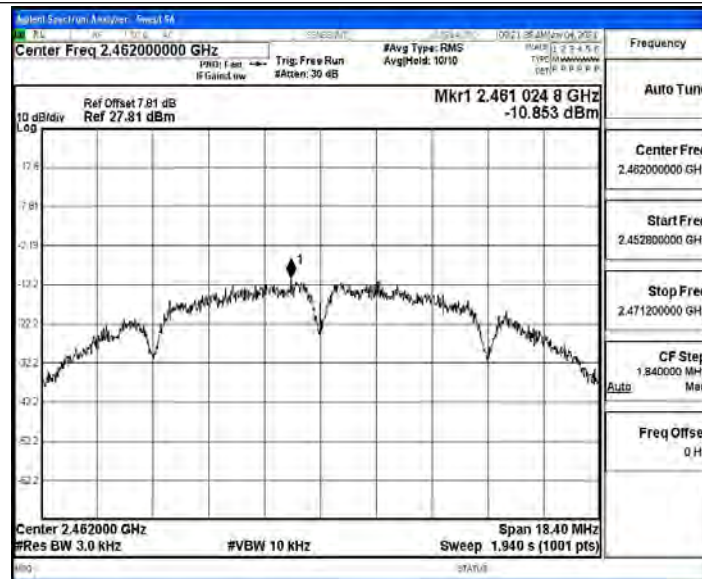
Center 2.437000 GHz

#Res BW 3.0 kHz

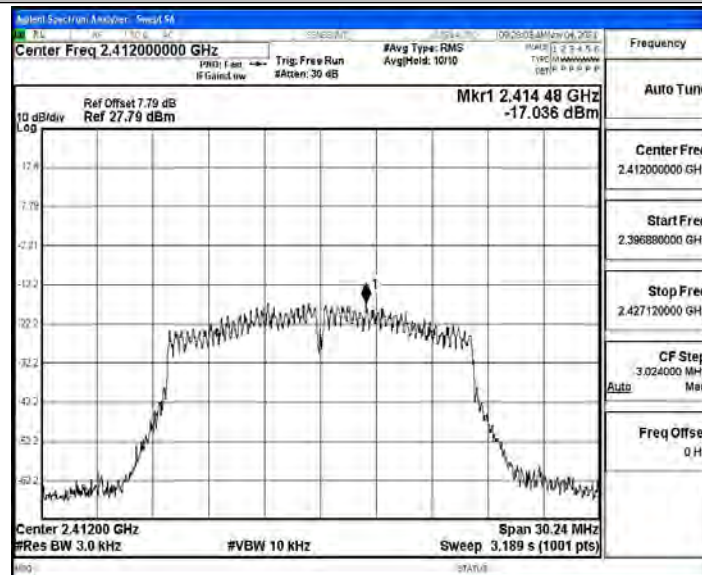
#VBW 10 kHz

Span 19.20 MHz

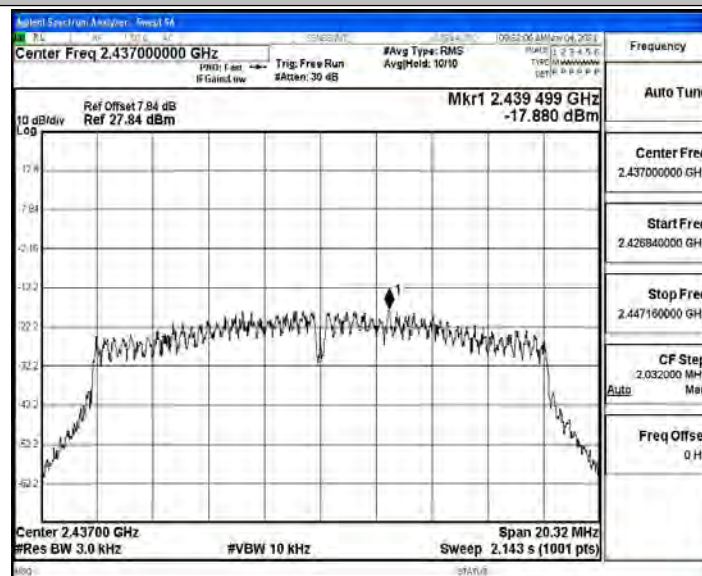
Sweep 2.024 s (1001 pts)



11G_Ant1_2412

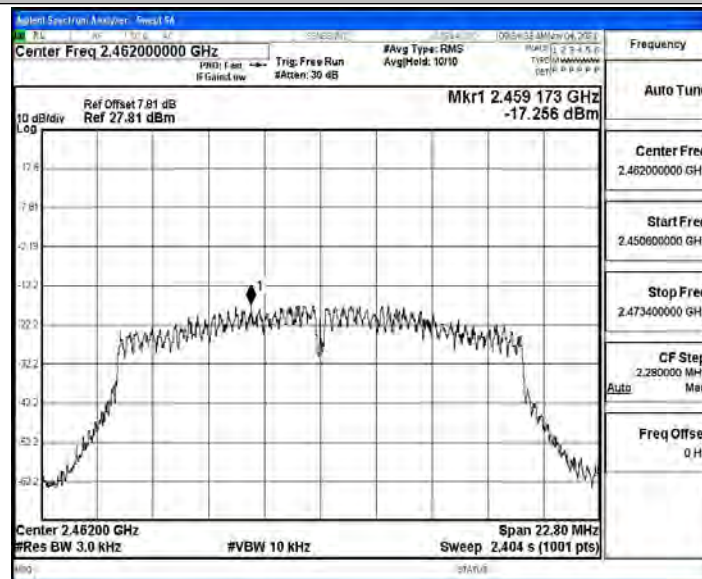


11G_Ant1_2437

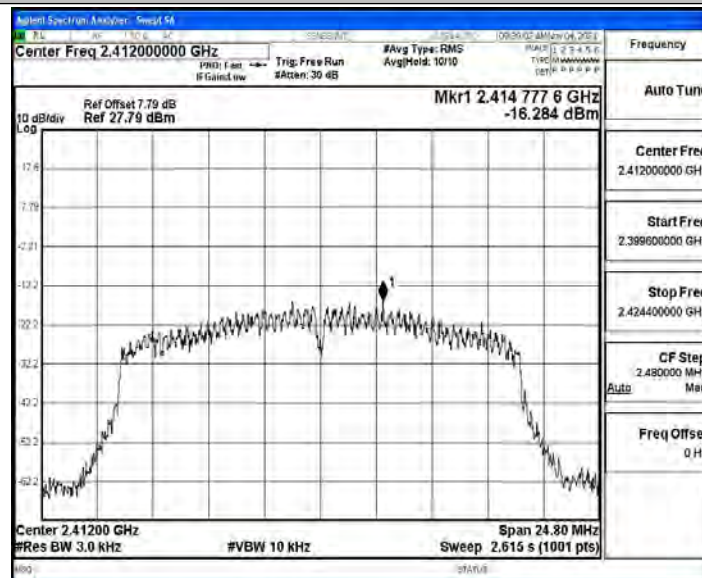




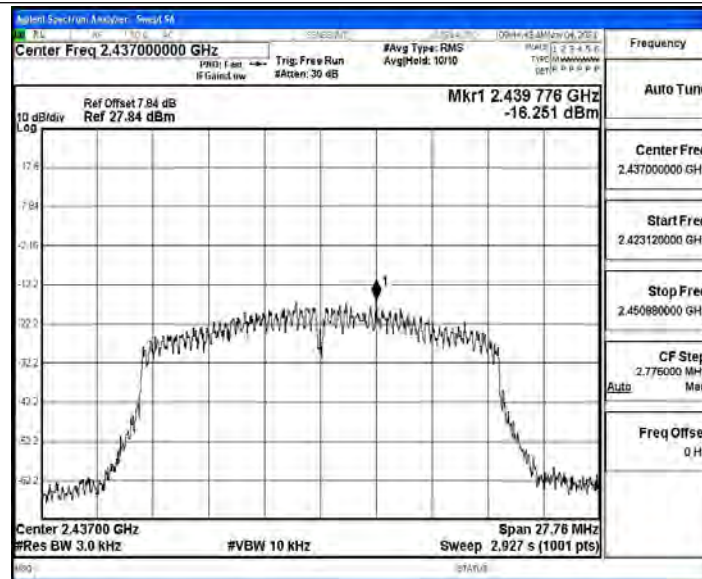
11G_Ant1_2462



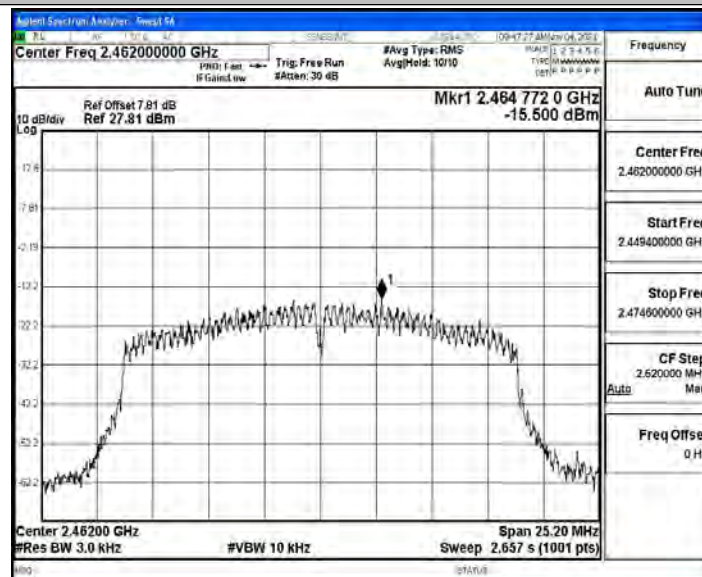
11N20SISO_Ant1_2412



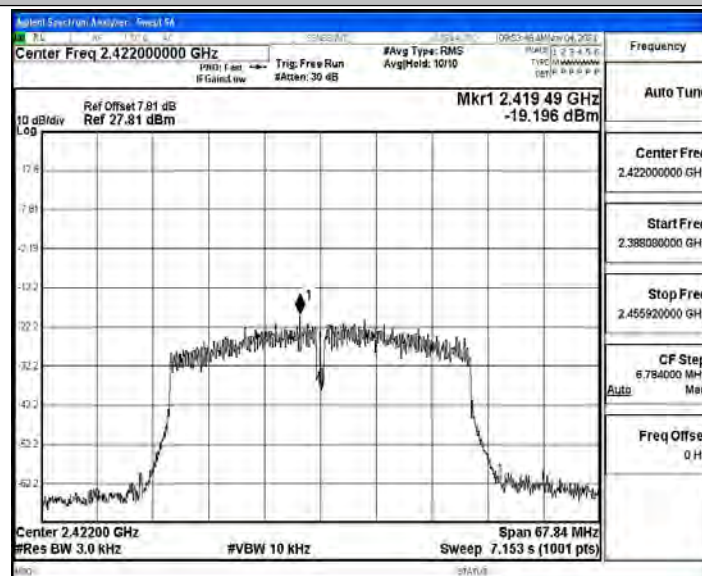
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

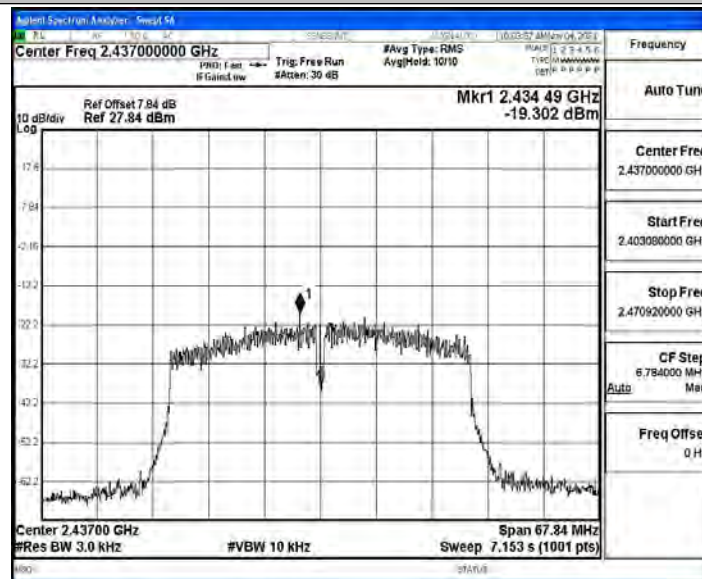


11N40SISO_Ant1_2422

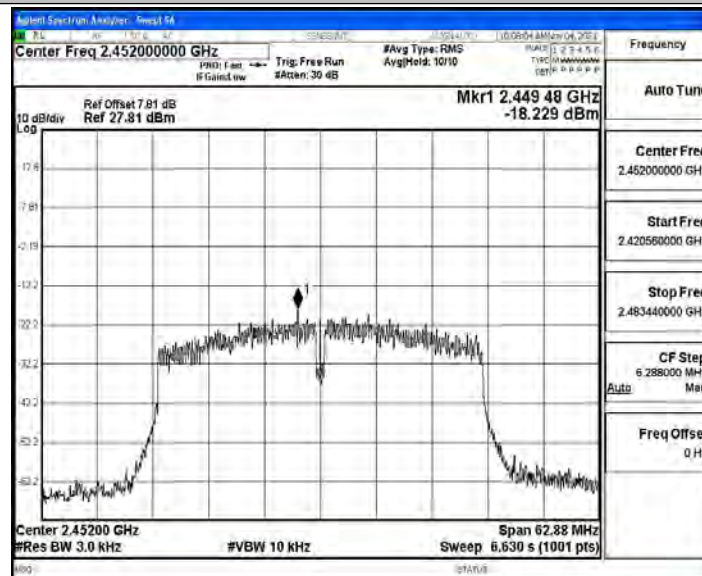




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





B.4 Band edge measurements

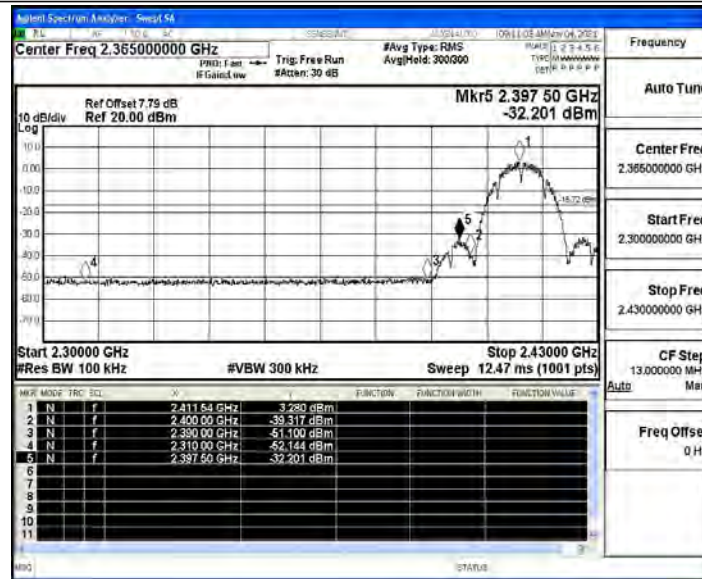
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	3.28	-32.2	≤ -16.72	PASS
		High	2462	3.23	-43.06	≤ -16.77	PASS
11G	Ant1	Low	2412	-1.81	-47.77	≤ -21.81	PASS
		High	2462	-2.24	-46.67	≤ -22.24	PASS
11N20SISO	Ant1	Low	2412	-1.54	-47.38	≤ -21.54	PASS
		High	2462	-0.62	-48.28	≤ -20.62	PASS
11N40SISO	Ant1	Low	2422	-6.17	-46.07	≤ -26.17	PASS
		High	2452	-5.44	-43.12	≤ -25.44	PASS

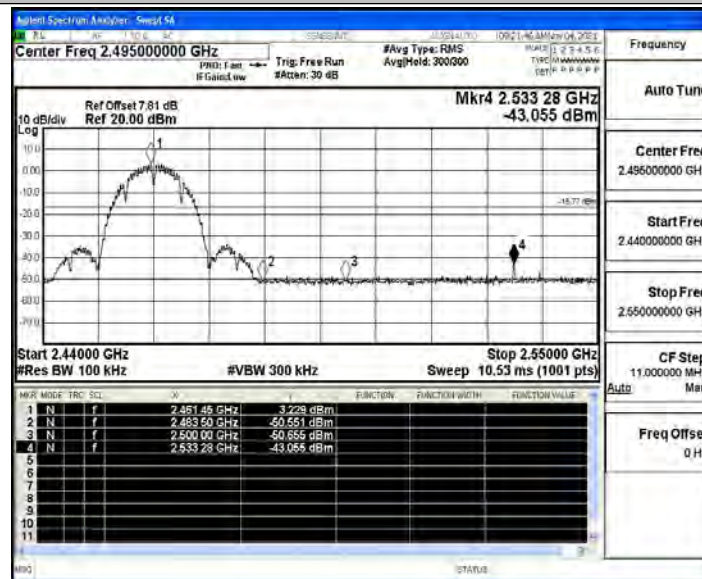


Test Graphs

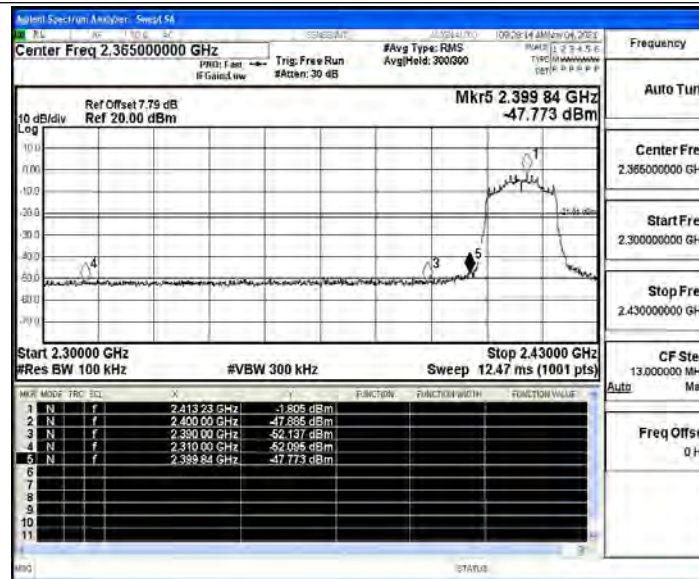
11B_Ant1_Low_2412



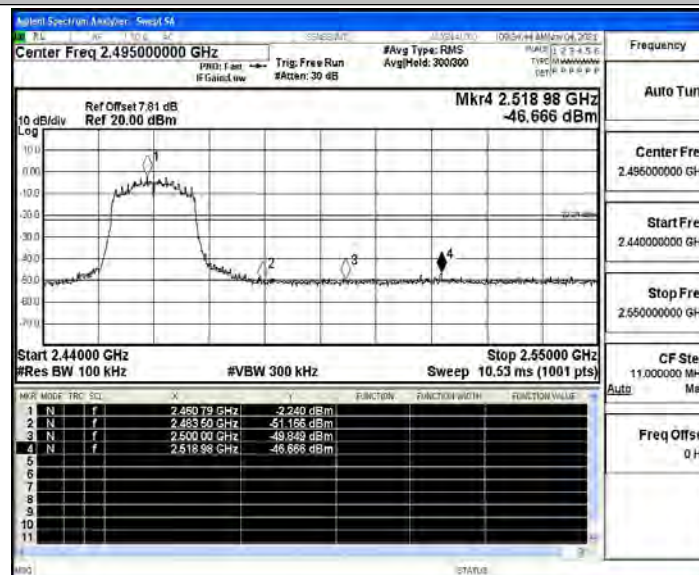
11B_Ant1_High_2462



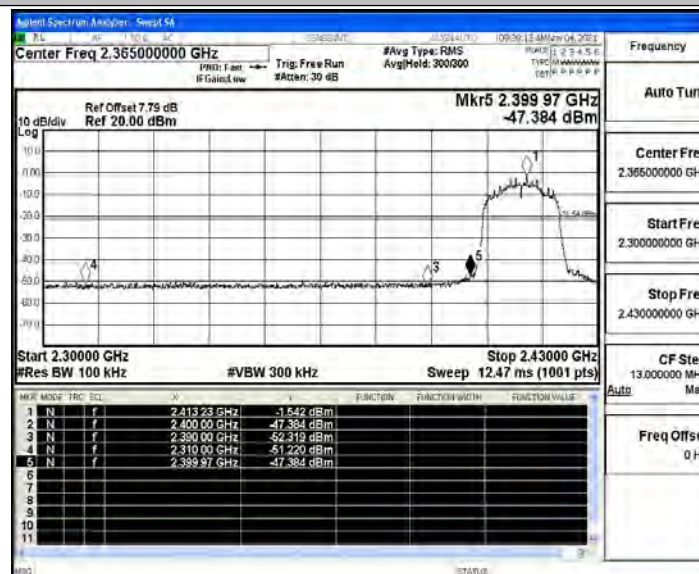
11G_Ant1_Low_2412



11G_Ant1_High_2462

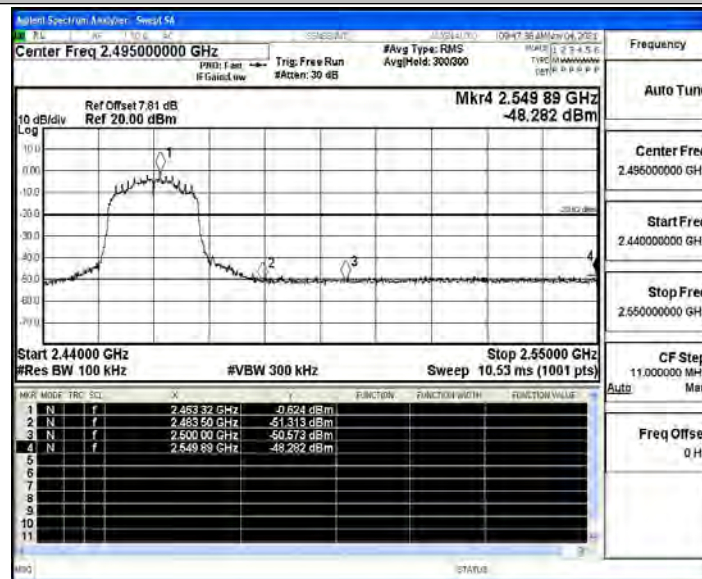


11N20SISO_Ant1_Low_2412

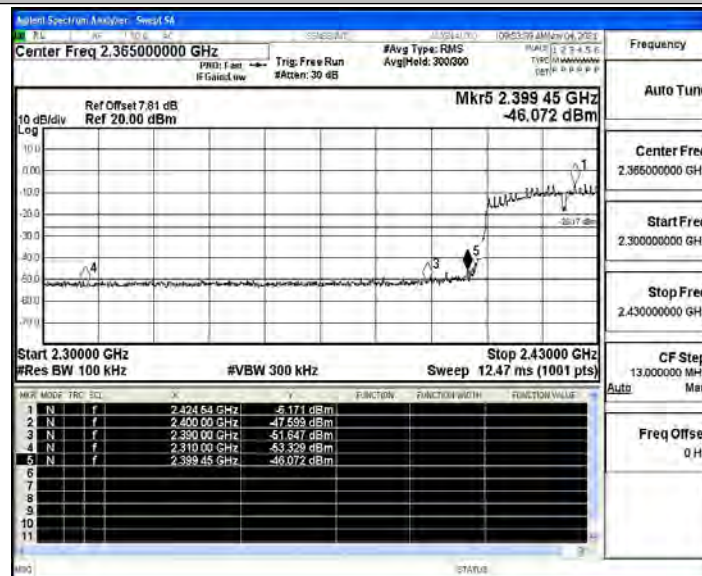




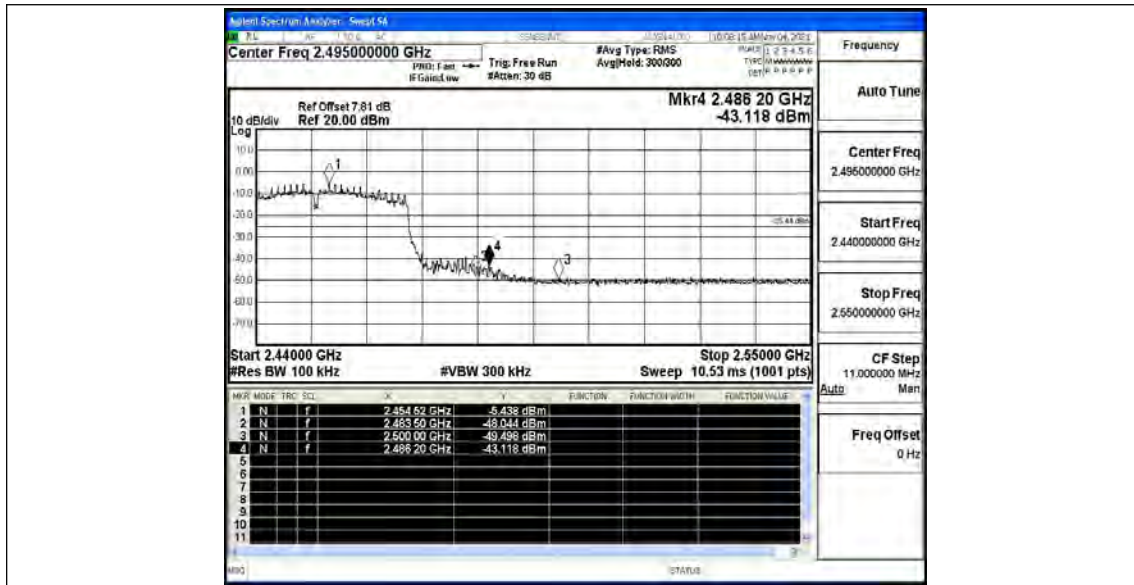
11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452





B.5 Conducted Spurious Emission

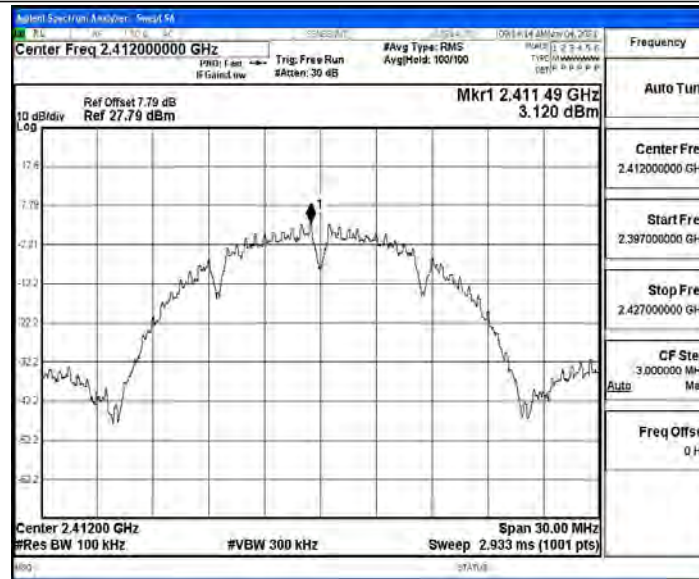
Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	3.12	3.12	---	PASS
			30~1000	3.12	-61.34	≤-16.88	PASS
			1000~26500	3.12	-47.48	≤-16.88	PASS
		2437	Reference	3.24	3.24	---	PASS
			30~1000	3.24	-61.14	≤-16.77	PASS
			1000~26500	3.24	-47.39	≤-16.77	PASS
		2462	Reference	2.35	2.35	---	PASS
			30~1000	2.35	-61.32	≤-17.65	PASS
			1000~26500	2.35	-46.75	≤-17.65	PASS
11G	Ant1	2412	Reference	-2.58	-2.58	---	PASS
			30~1000	-2.58	-61.8	≤-22.58	PASS
			1000~26500	-2.58	-47.59	≤-22.58	PASS
		2437	Reference	-3.85	-3.85	---	PASS
			30~1000	-3.85	-60.45	≤-23.85	PASS
			1000~26500	-3.85	-47	≤-23.85	PASS
		2462	Reference	-2.24	-2.24	---	PASS
			30~1000	-2.24	-62.05	≤-22.24	PASS
			1000~26500	-2.24	-47.55	≤-22.24	PASS
11N20SISO	Ant1	2412	Reference	-3.12	-3.12	---	PASS
			30~1000	-3.12	-61.17	≤-23.12	PASS
			1000~26500	-3.12	-46.71	≤-23.12	PASS
		2437	Reference	-1.66	-1.66	---	PASS
			30~1000	-1.66	-60.63	≤-21.66	PASS
			1000~26500	-1.66	-46.02	≤-21.66	PASS
		2462	Reference	-1.48	-1.48	---	PASS
			30~1000	-1.48	-61.45	≤-21.48	PASS
			1000~26500	-1.48	-47.41	≤-21.48	PASS
11N40SISO	Ant1	2422	Reference	-6.45	-6.45	---	PASS
			30~1000	-6.45	-61.78	≤-26.45	PASS
			1000~26500	-6.45	-46.91	≤-26.45	PASS
		2437	Reference	-6.03	-6.03	---	PASS
			30~1000	-6.03	-61.56	≤-26.03	PASS
			1000~26500	-6.03	-47.48	≤-26.03	PASS
		2452	Reference	-5.81	-5.81	---	PASS
			30~1000	-5.81	-61.03	≤-25.81	PASS
			1000~26500	-5.81	-47.22	≤-25.81	PASS

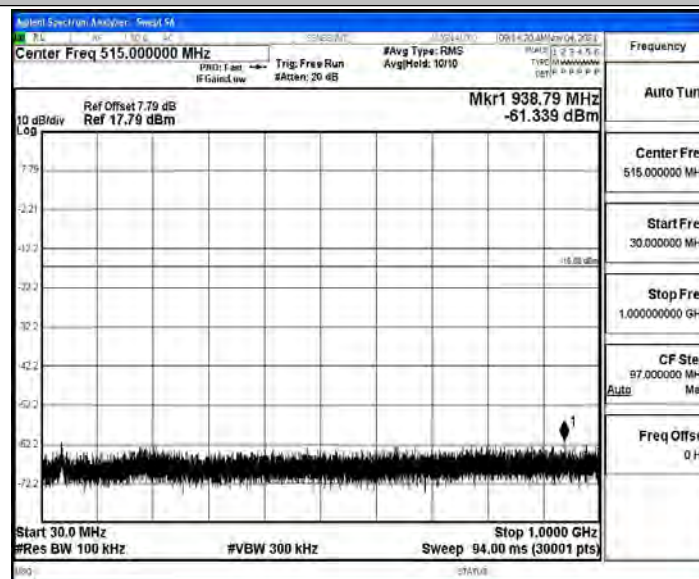


Test Graphs

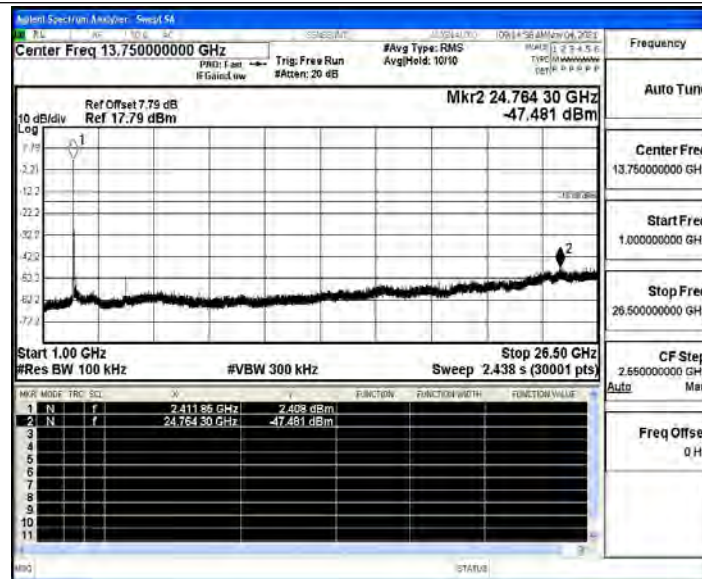
11B_Ant1_2412_0~Reference



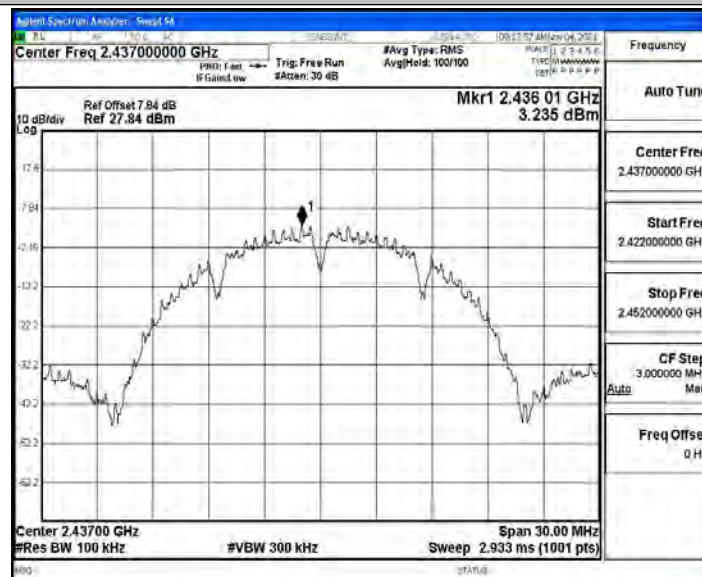
11B_Ant1_2412_30~1000



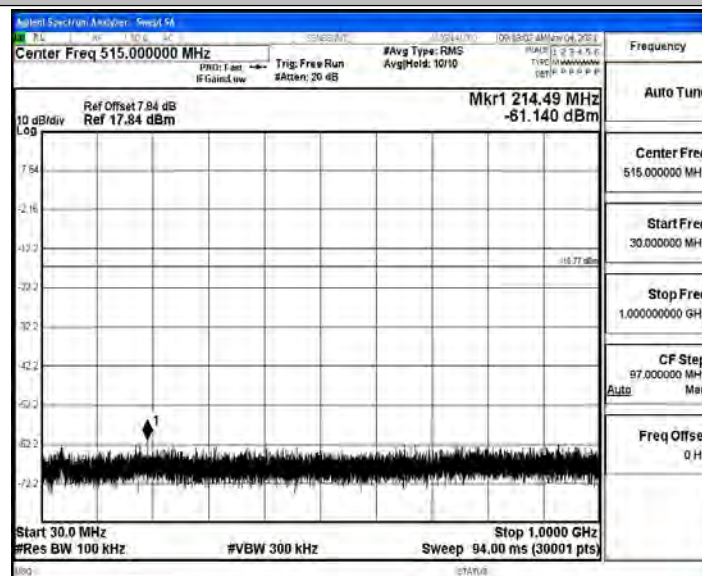
11B_Ant1_2412_1000~26500



11B_Ant1_2437_0~Reference

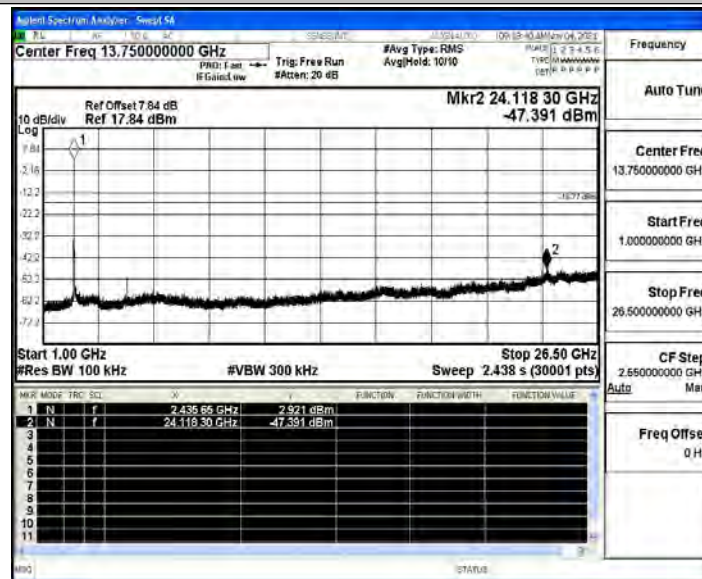


11B_Ant1_2437_30~1000

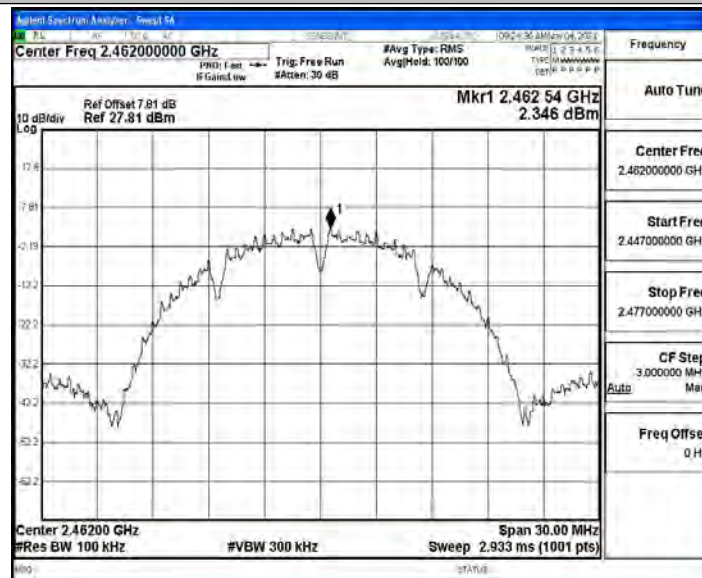




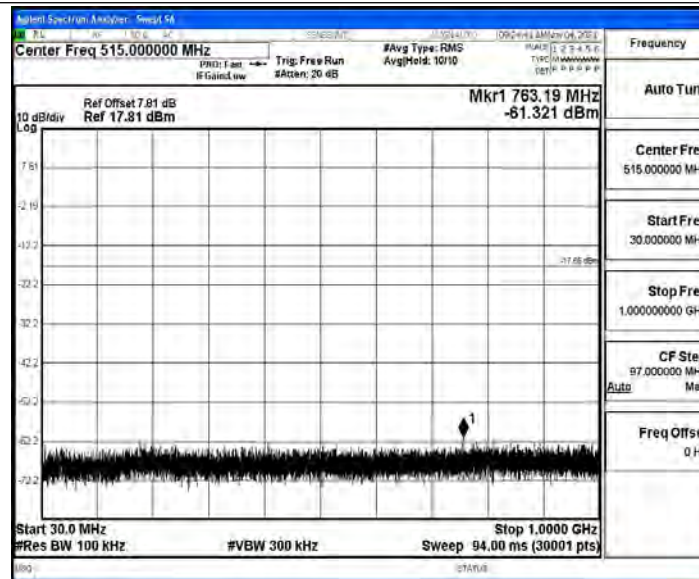
11B_Ant1_2437_1000~26500



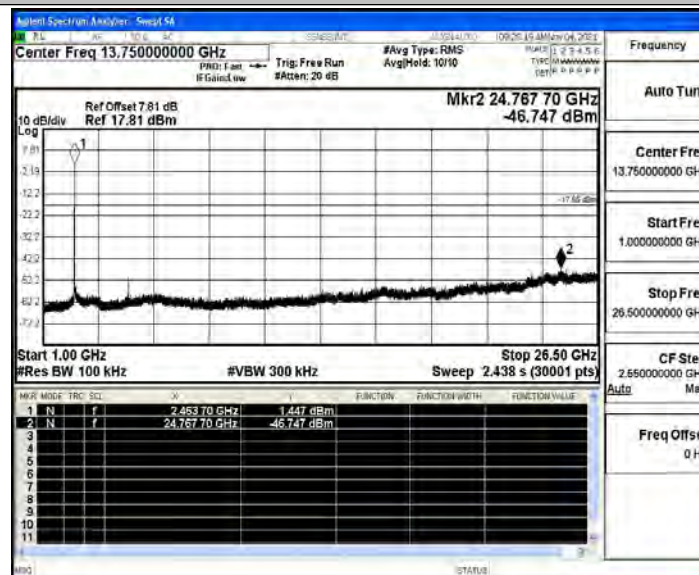
11B_Ant1_2462_0~Reference



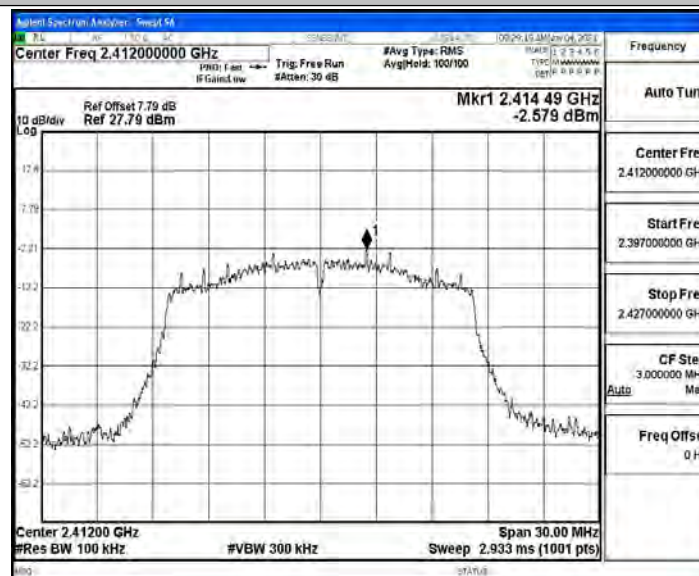
11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500

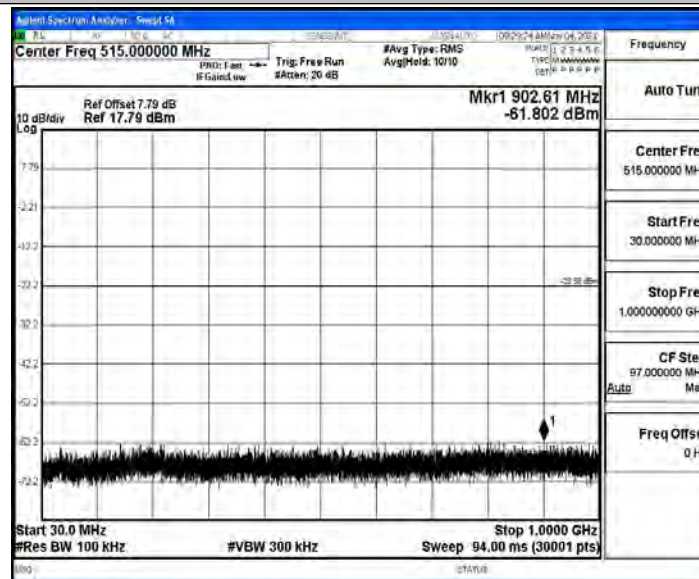


11G_Ant1_2412_0~Reference

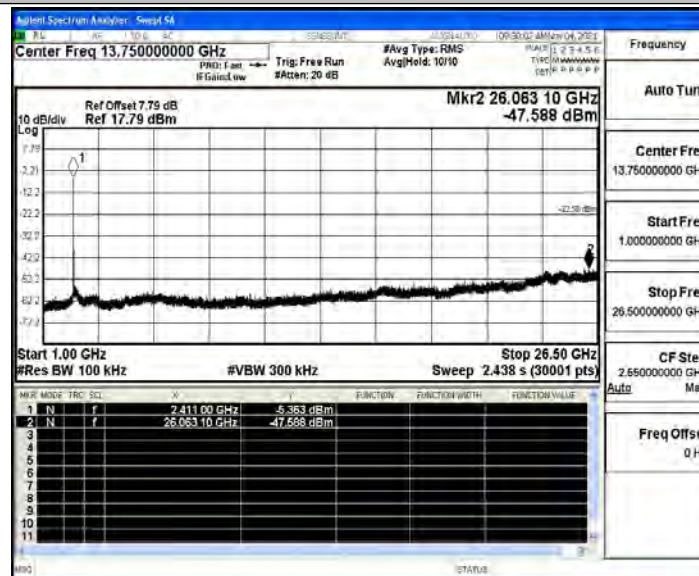




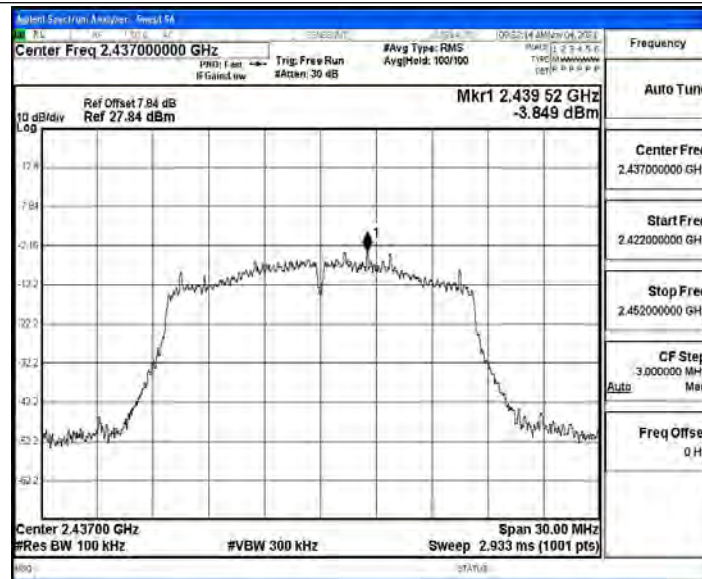
11G_Ant1_2412_30~1000



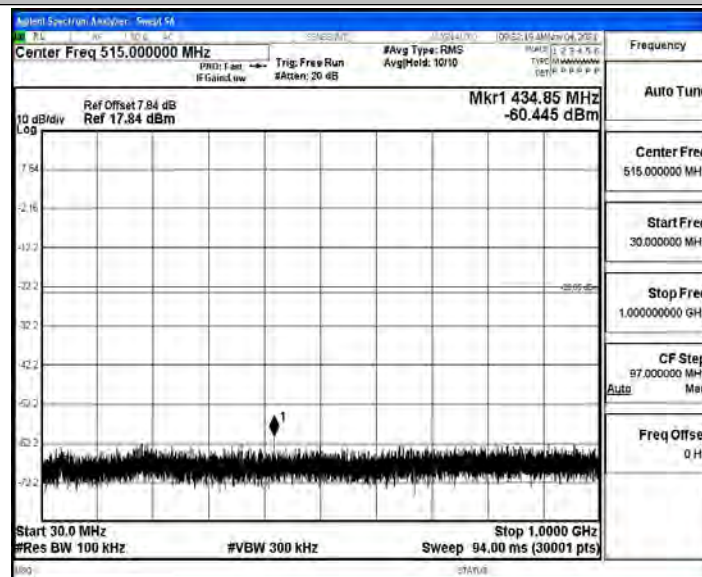
11G_Ant1_2412_1000~26500



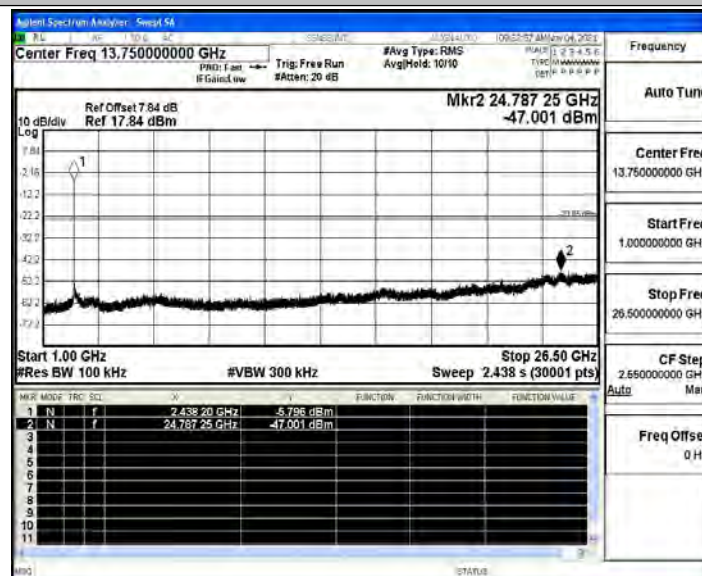
11G_Ant1_2437_0~Reference



11G_Ant1_2437_30~1000

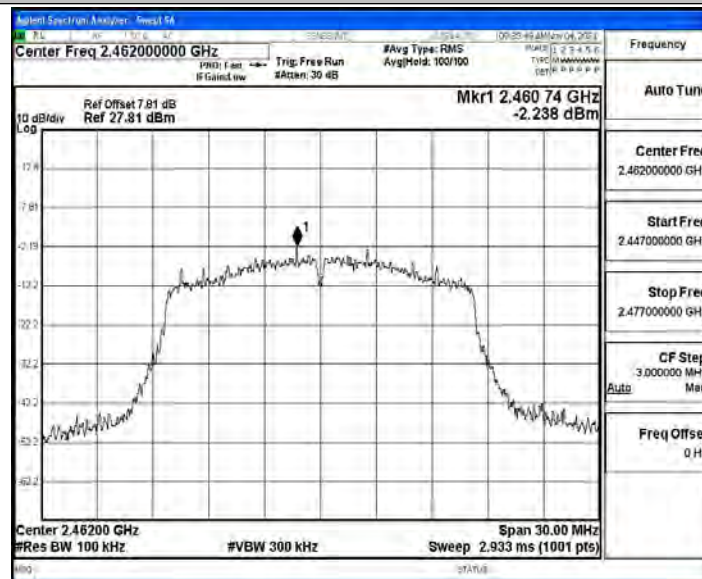


11G_Ant1_2437_1000~26500

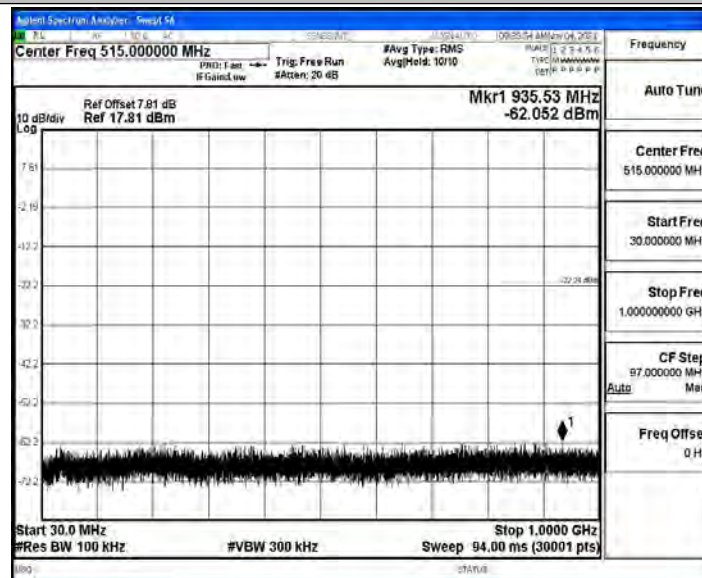




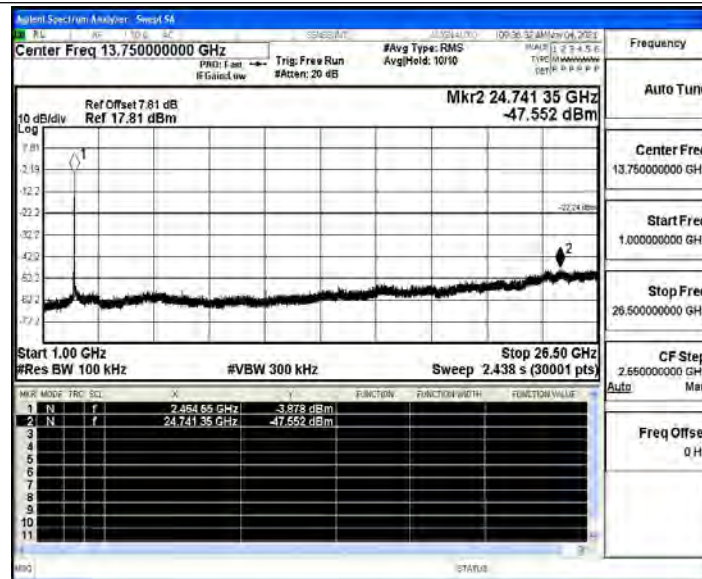
11G_Ant1_2462_0~Reference



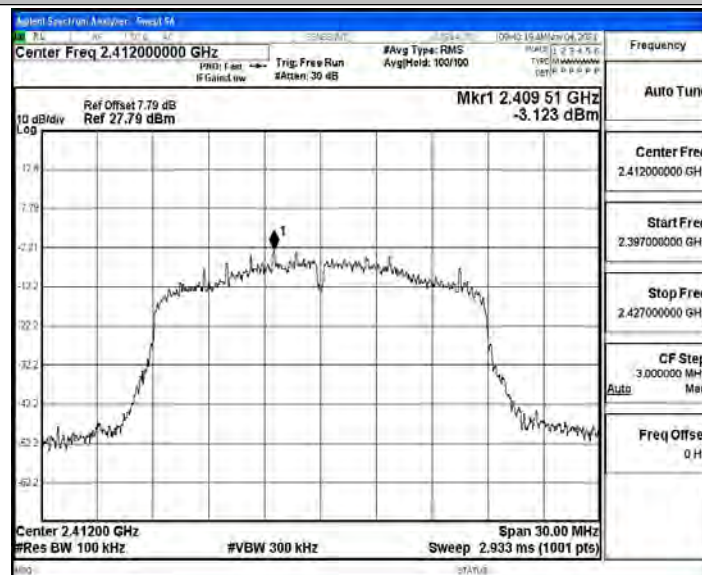
11G_Ant1_2462_30~1000



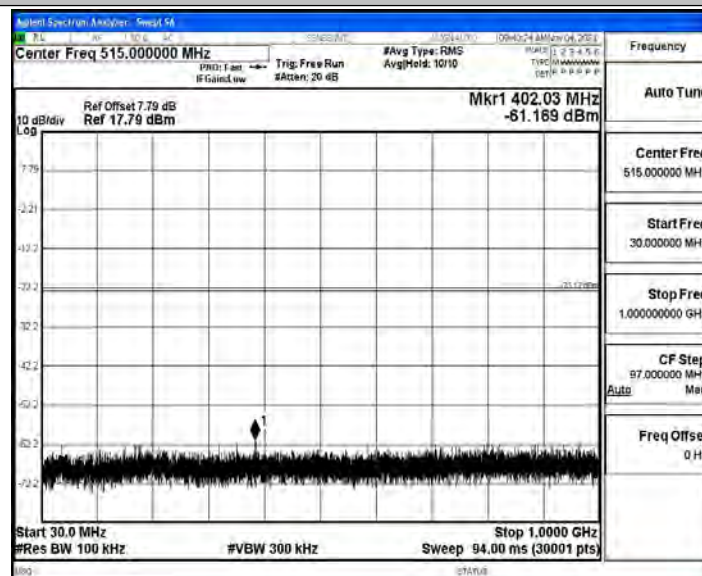
11G_Ant1_2462_1000~26500



11N20SISO_Ant1_2412_0~Reference

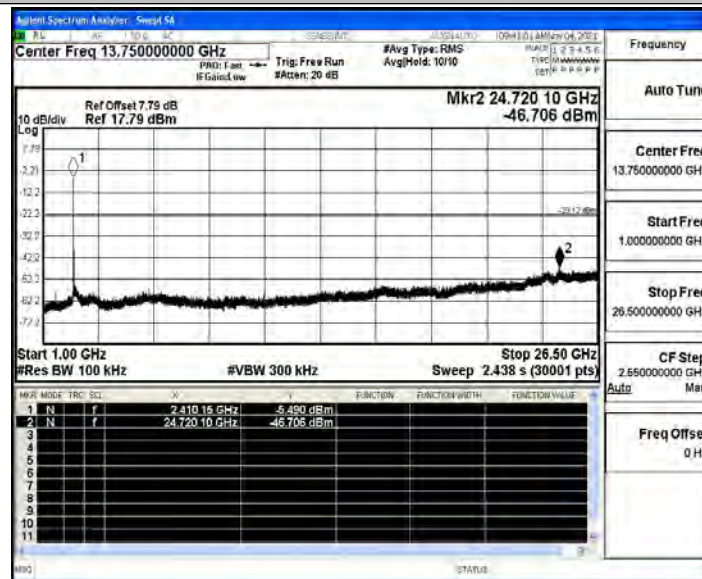


11N20SISO_Ant1_2412_30~1000

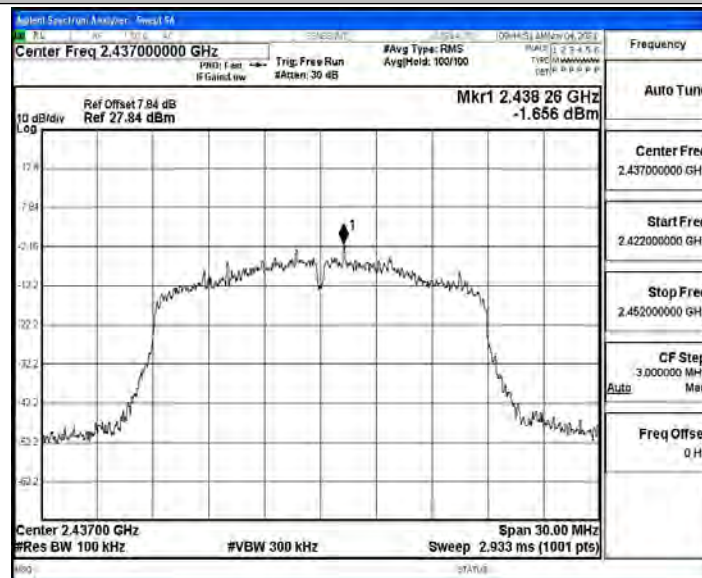




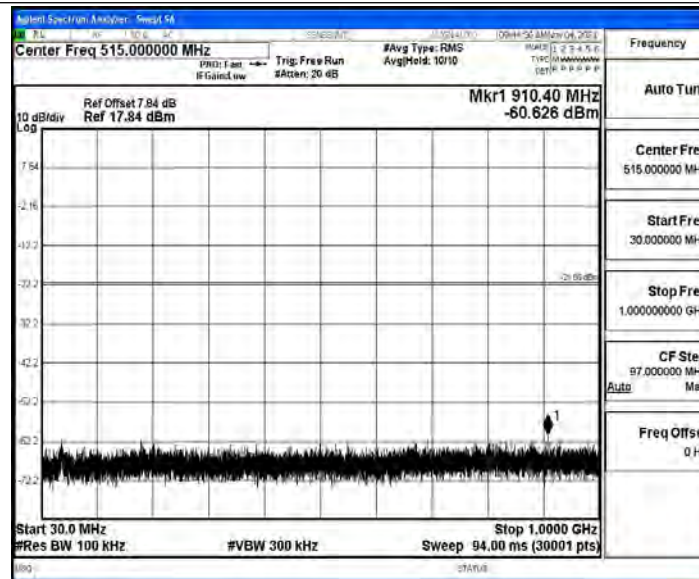
11N20SISO_Ant1_2412_1000~26500



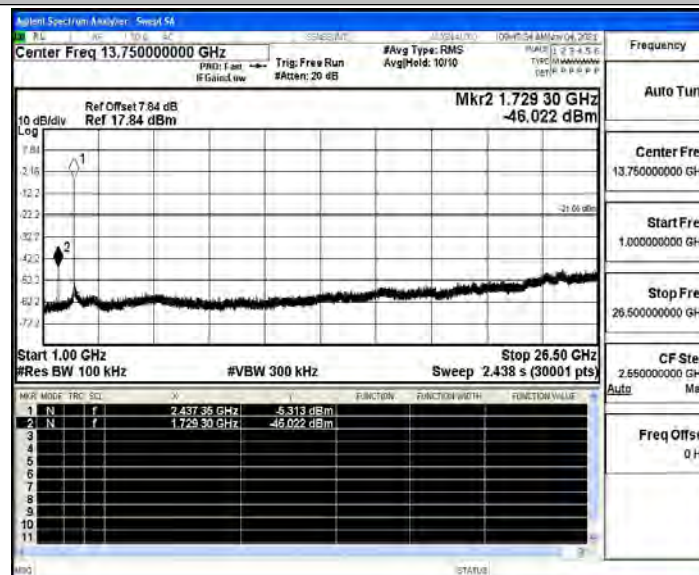
11N20SISO_Ant1_2437_0~Reference



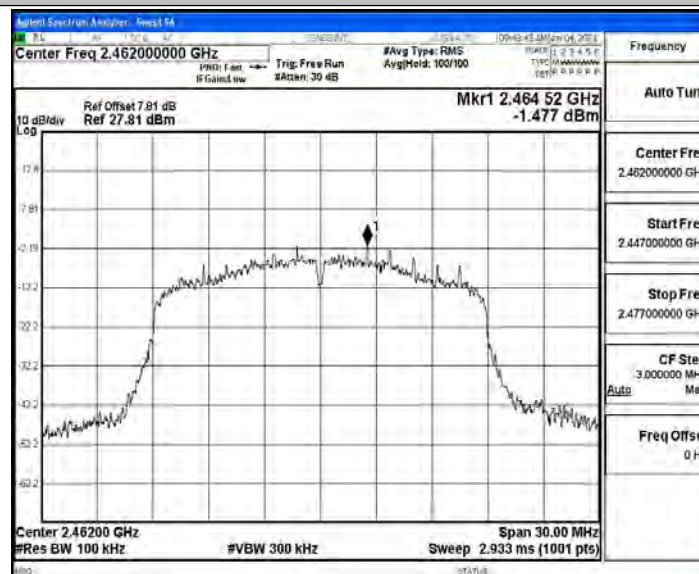
11N20SISO_Ant1_2437_30~1000



11N20SISO_Ant1_2437_1000~26500

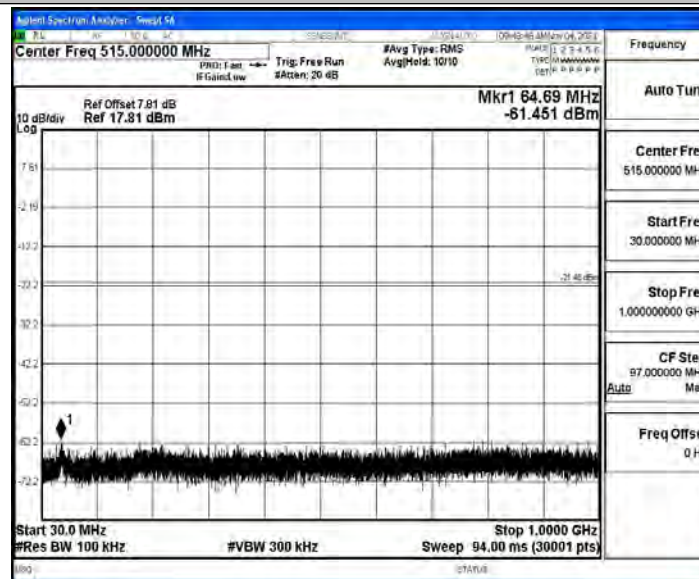


11N20SISO_Ant1_2462_0~Reference

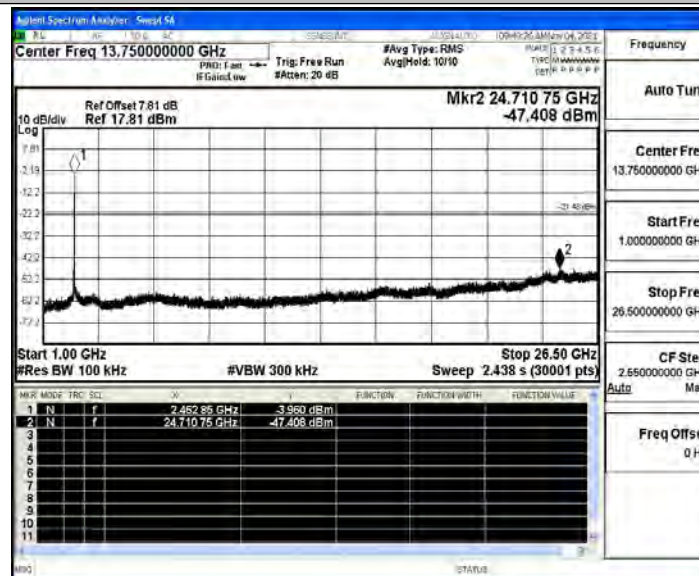




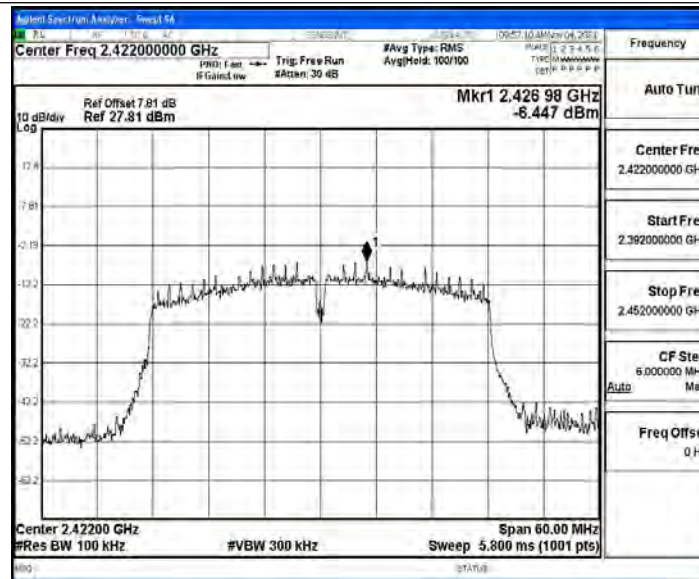
11N20SISO_Ant1_2462_30~1000



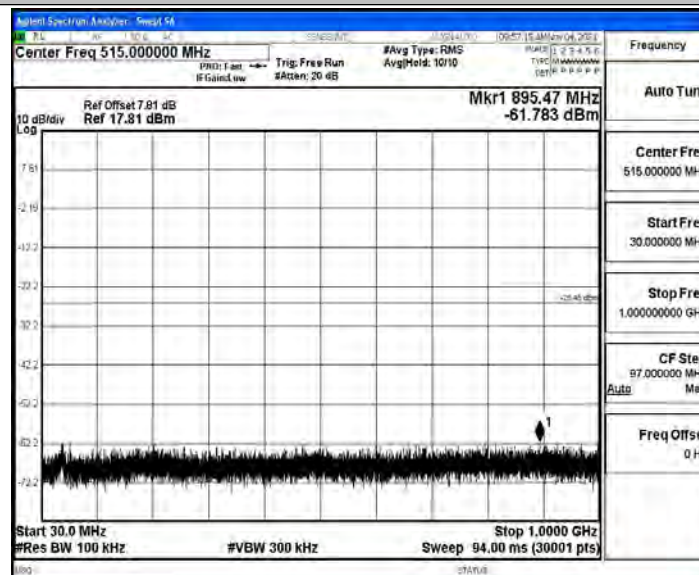
11N20SISO_Ant1_2462_1000~26500



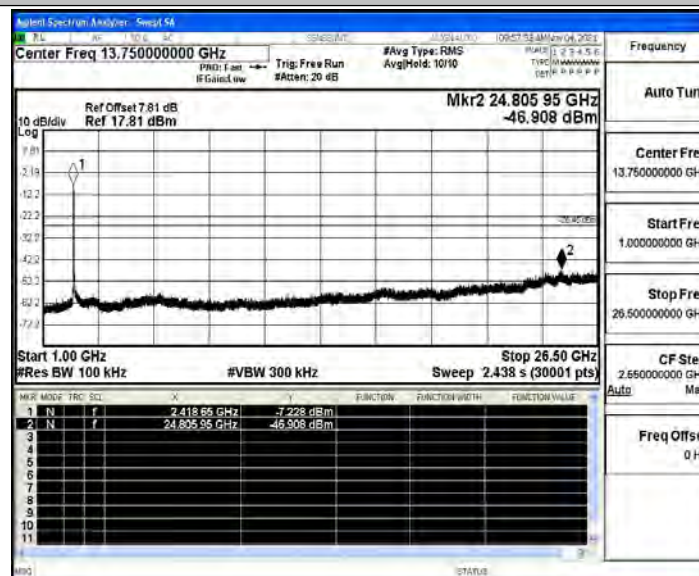
11N40SISO_Ant1_2422_0~Reference



11N40SISO_Ant1_2422_30~1000

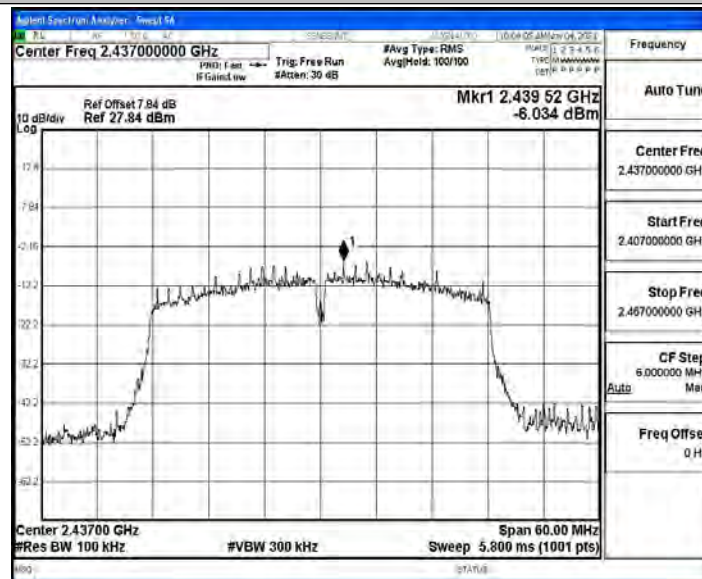


11N40SISO_Ant1_2422_1000~26500

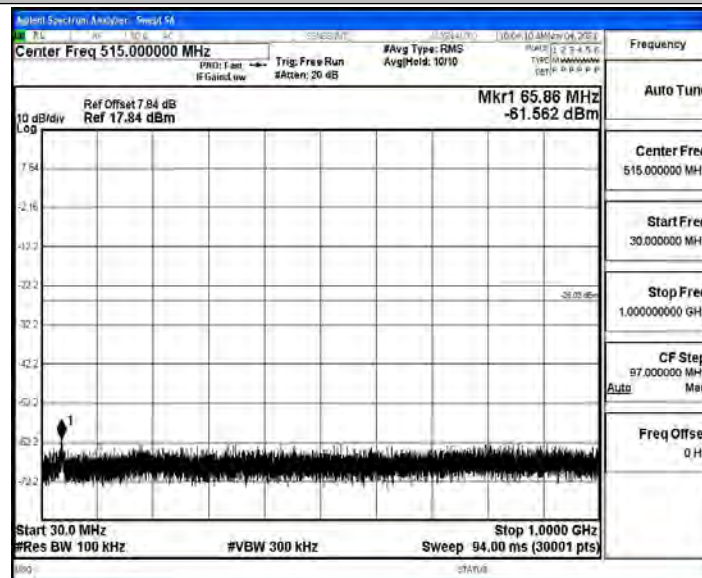




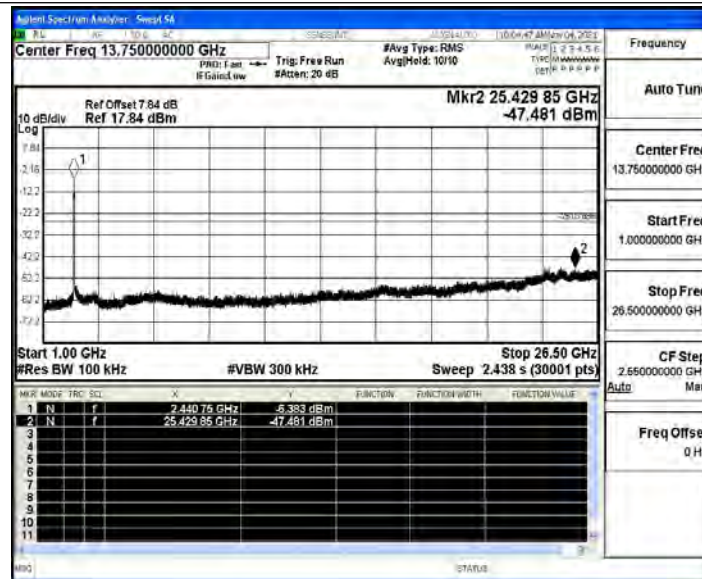
11N40SISO_Ant1_2437_0~Reference



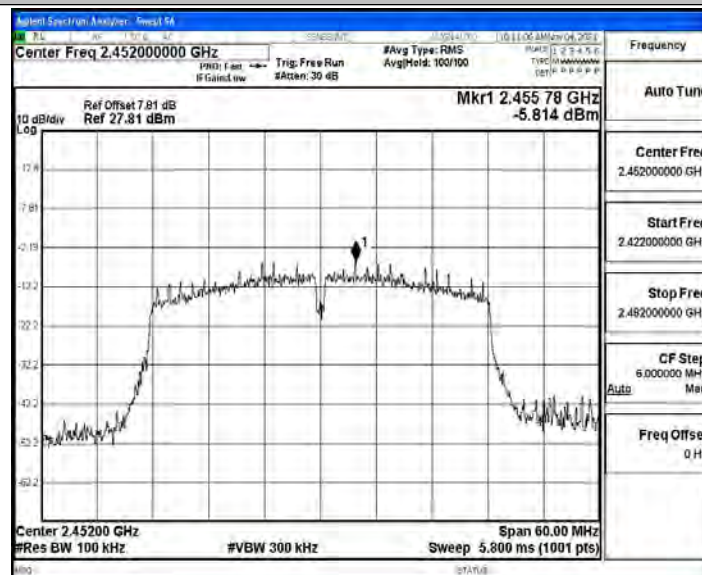
11N40SISO_Ant1_2437_30~1000



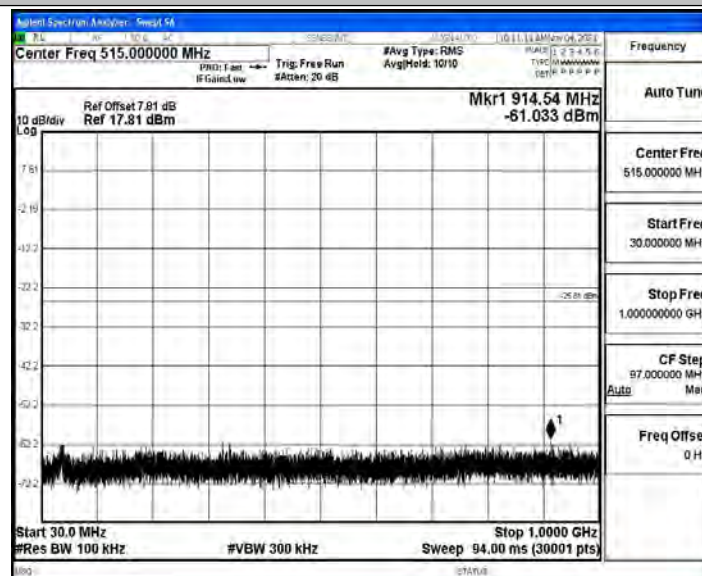
11N40SISO_Ant1_2437_1000~26500



11N40SISO_Ant1_2452_0~Reference

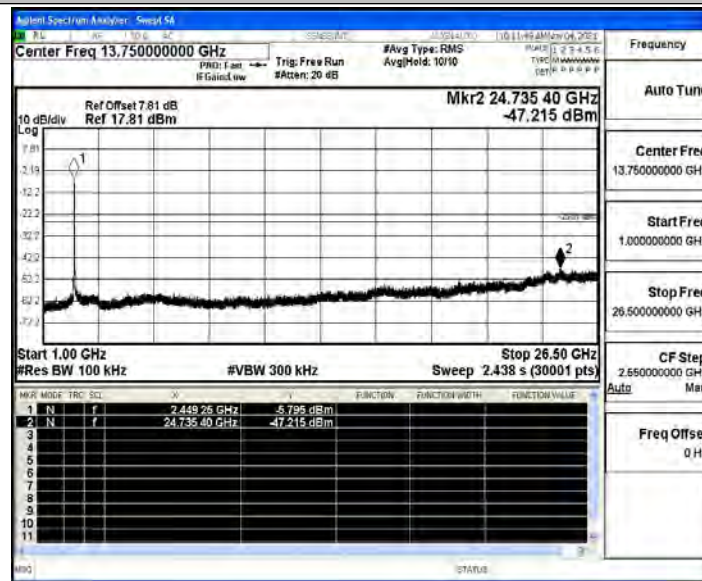


11N40SISO_Ant1_2452_30~1000





11N40SISO_Ant1_2452_1000~26500





B.6 Duty Cycle

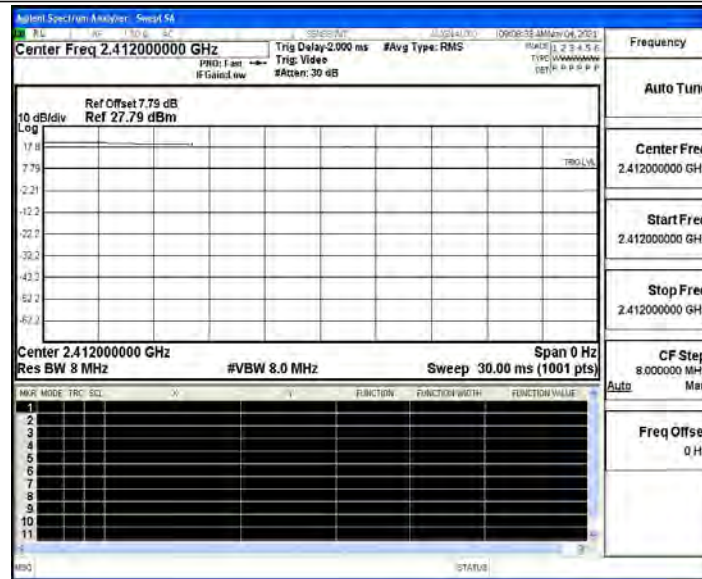
Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11B	Ant1	2412	30.00	30.00	100.00	---	PASS
		2437	30.00	30.00	100.00	---	PASS
		2462	30.00	30.00	100.00	---	PASS
11G	Ant1	2412	2.79	2.81	99.29	---	PASS
		2437	2.79	2.81	99.29	---	PASS
		2462	2.79	2.81	99.29	---	PASS
11N20SISO	Ant1	2412	2.61	2.63	99.24	---	PASS
		2437	3.92	3.94	99.49	---	PASS
		2462	2.61	2.63	99.24	---	PASS
11N40SISO	Ant1	2422	30.00	30.00	100.00	---	PASS
		2437	30.00	30.00	100.00	---	PASS
		2452	30.00	30.00	100.00	---	PASS

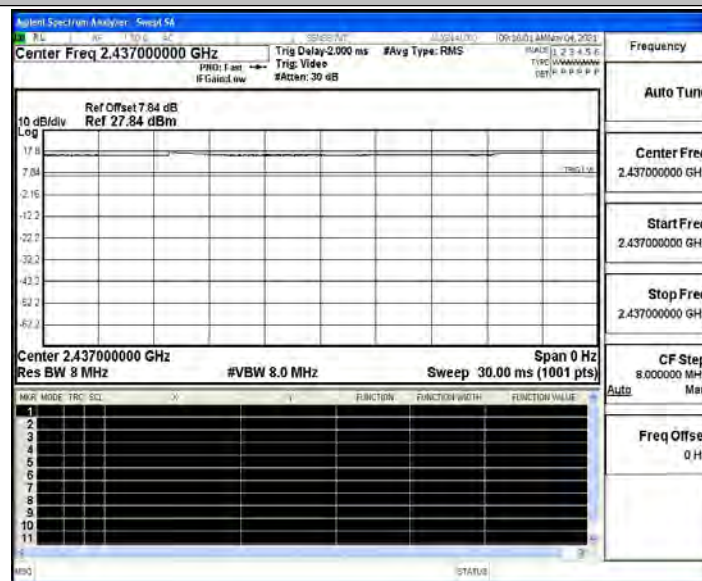


Test Graphs

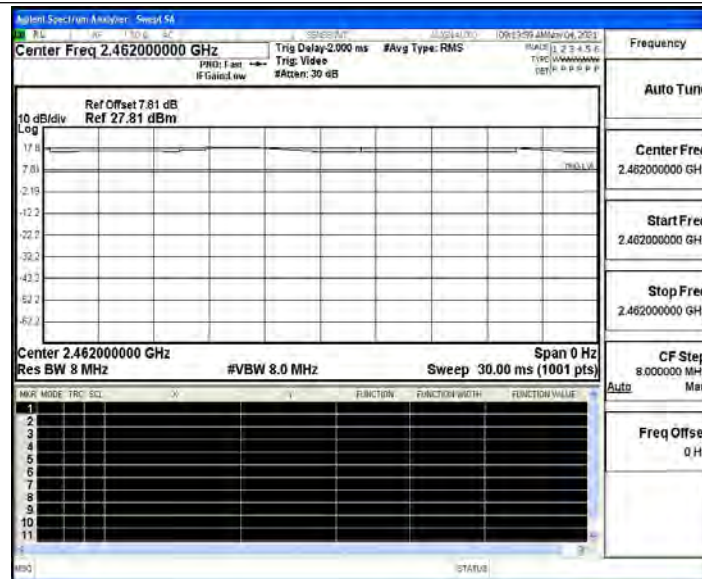
11B_Ant1_2412



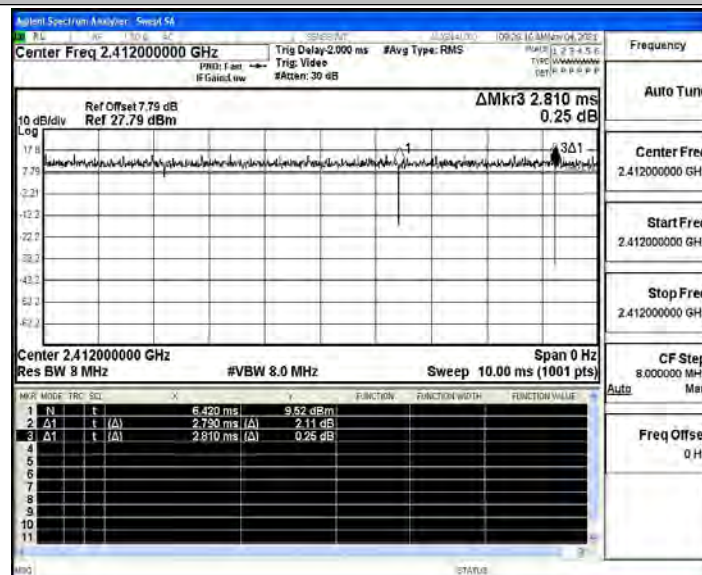
11B_Ant1_2437



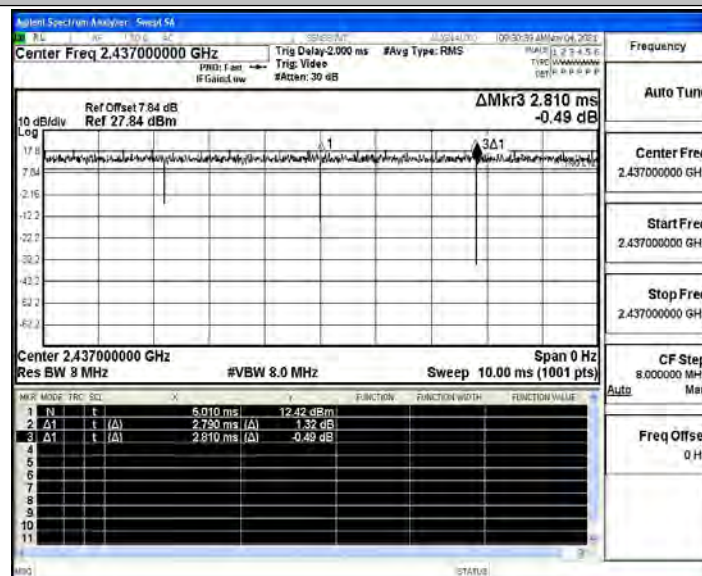
11B_Ant1_2462



11G_Ant1_2412

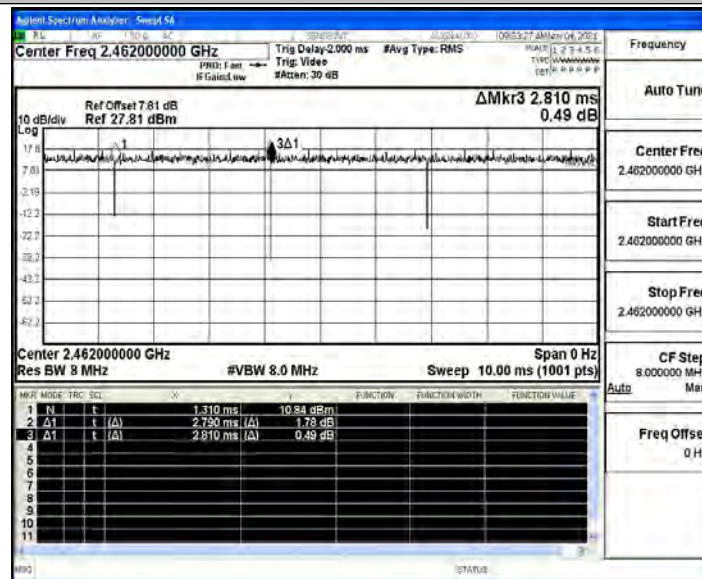


11G_Ant1_2437

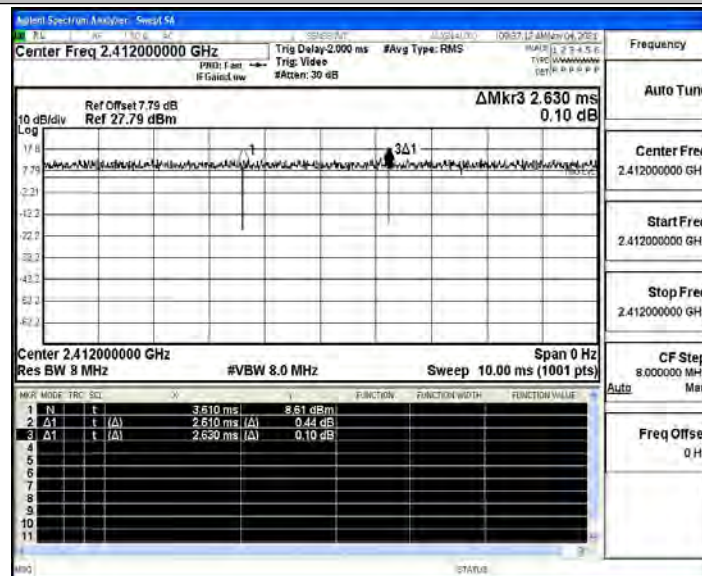




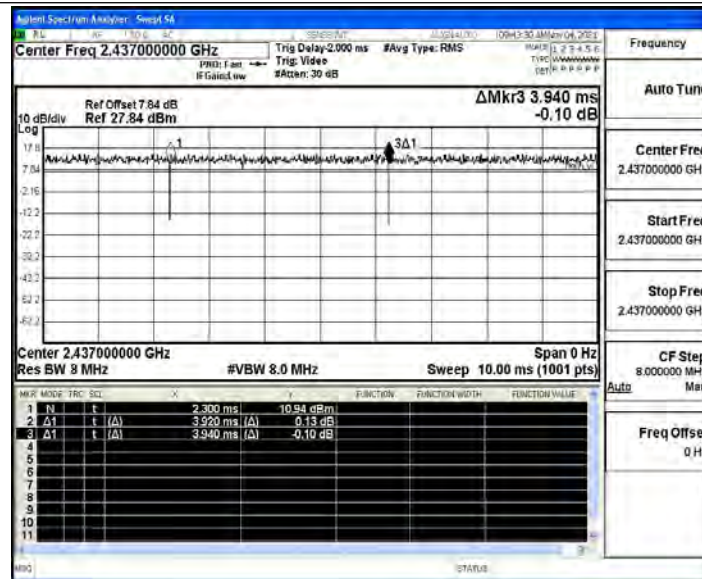
11G_Ant1_2462



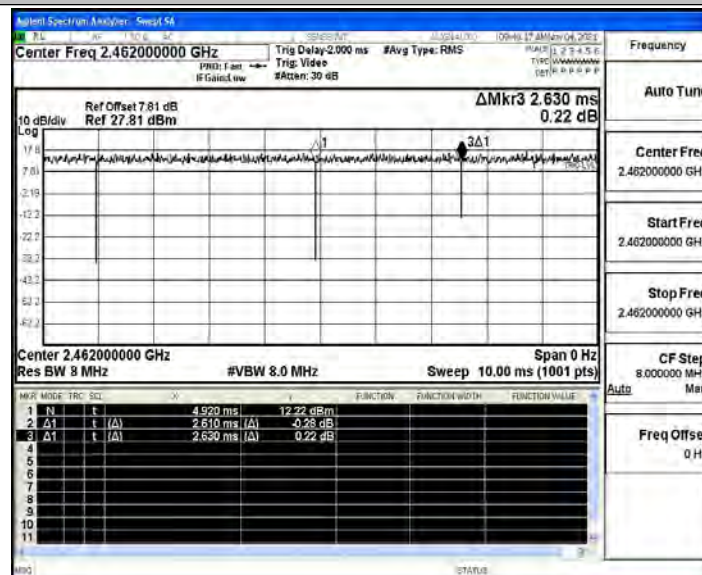
11N20SISO_Ant1_2412



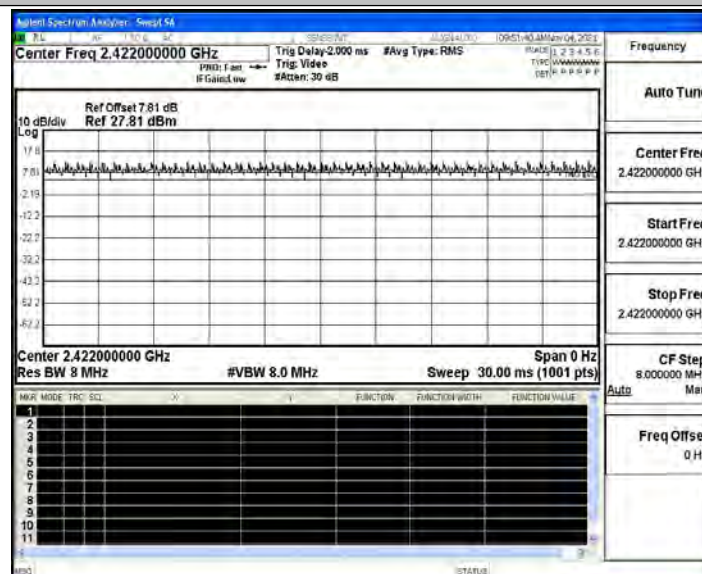
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

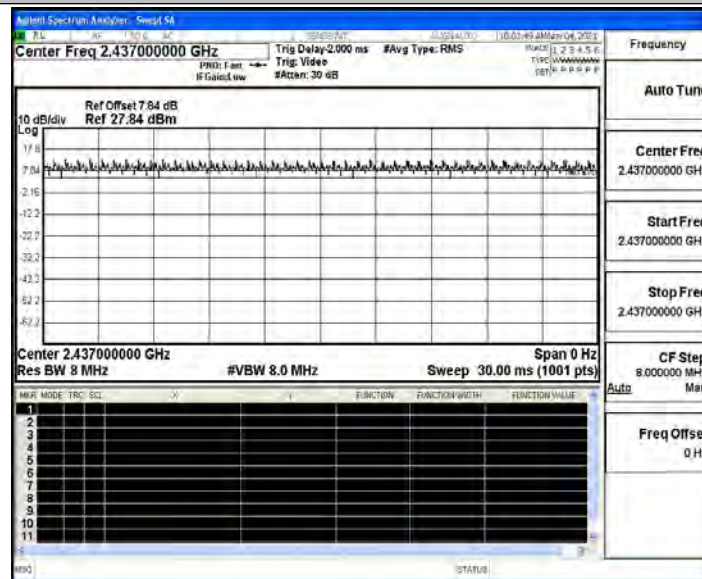


11N40SISO_Ant1_2422





11N40SISO_Ant1_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	Ant1	Low	2412	AV	2310.000	-49.24	≤-41.20	45.96	≤54	PASS
				AV	2386.840	-47.76	≤-41.20	47.44	≤54	PASS
				AV	2390.000	-48.17	≤-41.20	47.03	≤54	PASS
				Peak	2310.000	-42.14	≤-21.20	53.06	≤74	PASS
				Peak	2388.400	-39.32	≤-21.20	55.88	≤74	PASS
				Peak	2390.000	-43.75	≤-21.20	51.45	≤74	PASS
		High	2462	AV	2483.500	-47.74	≤-41.20	47.46	≤54	PASS
				AV	2487.080	-47.25	≤-41.20	47.95	≤54	PASS
				AV	2500.000	-47.71	≤-41.20	47.49	≤54	PASS
				Peak	2483.500	-43.31	≤-21.20	51.89	≤74	PASS
				Peak	2489.500	-38.51	≤-21.20	56.69	≤74	PASS
				Peak	2500.000	-42.48	≤-21.20	52.72	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-49.06	≤-41.20	46.14	≤54	PASS
				AV	2389.180	-48.23	≤-41.20	46.97	≤54	PASS
				AV	2390.000	-48.24	≤-41.20	46.96	≤54	PASS
				Peak	2310.000	-42.39	≤-21.20	52.81	≤74	PASS
				Peak	2387.620	-38.72	≤-21.20	56.48	≤74	PASS
				Peak	2390.000	-43.09	≤-21.20	52.11	≤74	PASS
		High	2462	AV	2483.500	-47.34	≤-41.20	47.86	≤54	PASS
				AV	2496.980	-47.29	≤-41.20	47.91	≤54	PASS
				AV	2500.000	-47.3	≤-41.20	47.90	≤54	PASS
				Peak	2483.500	-41.47	≤-21.20	53.73	≤74	PASS
				Peak	2487.630	-39.03	≤-21.20	56.17	≤74	PASS
				Peak	2500.000	-43.18	≤-21.20	52.02	≤74	PASS
11N20SIS O	Ant1	Low	2412	AV	2310.000	-48.96	≤-41.20	46.24	≤54	PASS
				AV	2389.570	-48.2	≤-41.20	47.00	≤54	PASS
				AV	2390.000	-48.32	≤-41.20	46.88	≤54	PASS
				Peak	2310.000	-42.59	≤-21.20	52.61	≤74	PASS
				Peak	2314.430	-38	≤-21.20	57.20	≤74	PASS
				Peak	2390.000	-40.02	≤-21.20	55.18	≤74	PASS
		High	2462	AV	2483.500	-47	≤-41.20	48.20	≤54	PASS
				AV	2483.670	-47.04	≤-41.20	48.16	≤54	PASS
				AV	2500.000	-47.27	≤-41.20	47.93	≤54	PASS
				Peak	2483.500	-41.76	≤-21.20	53.44	≤74	PASS
				Peak	2483.560	-38.41	≤-21.20	56.79	≤74	PASS
				Peak	2500.000	-41.82	≤-21.20	53.38	≤74	PASS
11N40SIS	Ant1	Low	2422	AV	2310.000	-49.16	≤-41.20	46.04	≤54	PASS



O				AV	2389.830	-47.66	≤-41.20	47.54	≤54	PASS
				AV	2390.000	-47.67	≤-41.20	47.53	≤54	PASS
				Peak	2310.000	-42.2	≤-21.20	53.00	≤74	PASS
				Peak	2375.920	-38.44	≤-21.20	56.76	≤74	PASS
				Peak	2390.000	-45.8	≤-21.20	49.40	≤74	PASS
		High	2452	AV	2483.500	-43.94	≤-41.20	51.26	≤54	PASS
				AV	2483.890	-43.86	≤-41.20	51.34	≤54	PASS
				AV	2500.000	-47.4	≤-41.20	47.80	≤54	PASS
				Peak	2483.500	-39.98	≤-21.20	55.22	≤74	PASS
				Peak	2486.640	-29.91	≤-21.20	65.29	≤74	PASS
				Peak	2500.000	-40.09	≤-21.20	55.11	≤74	PASS

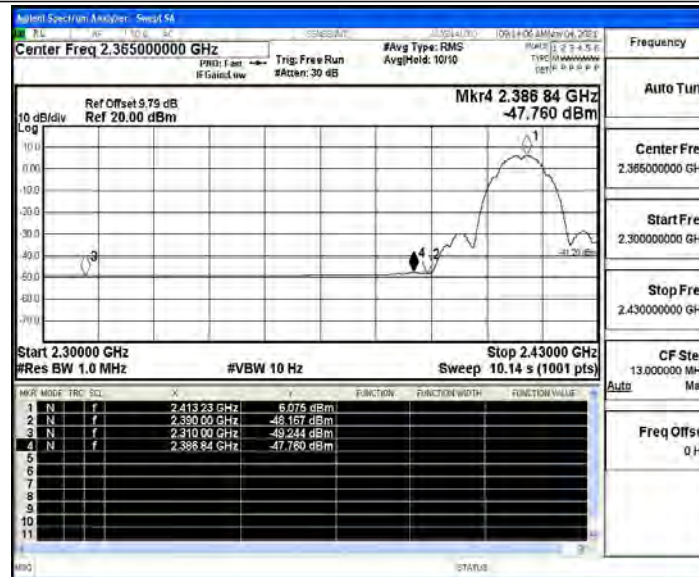
Note:

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.

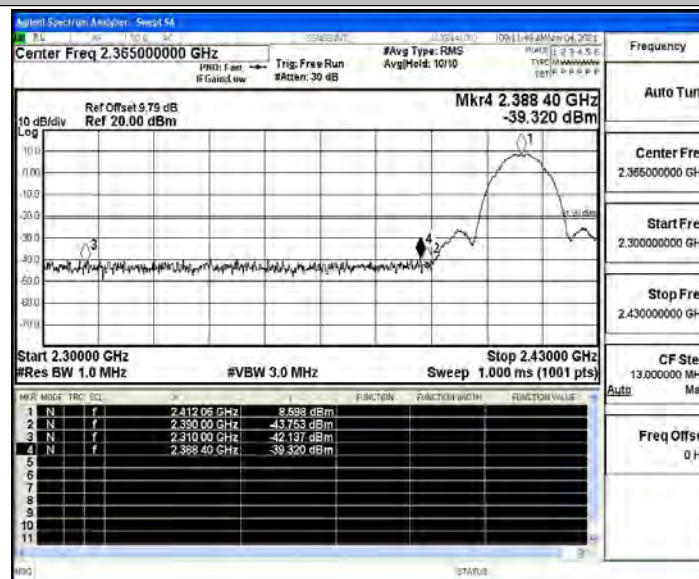


Test Graphs

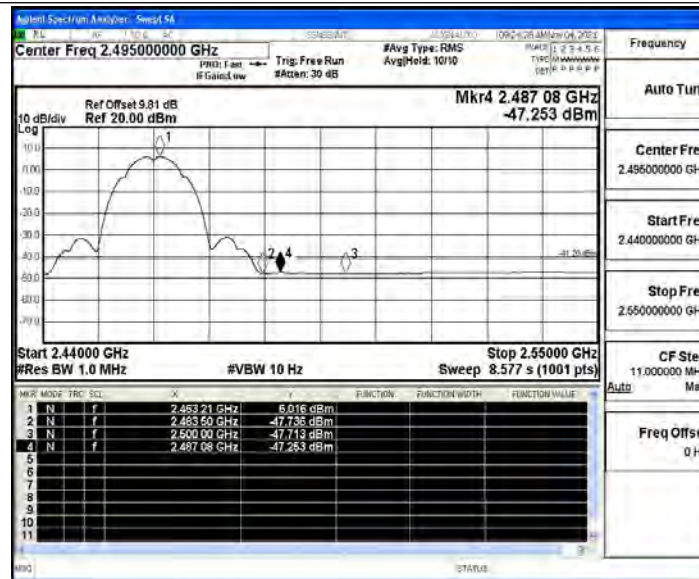
11B_Ant1_Low_2412_AV



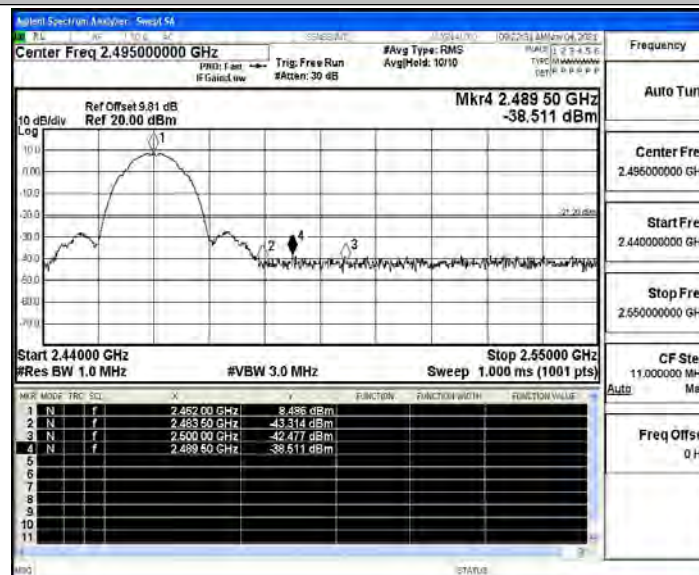
11B_Ant1_Low_2412_Peak



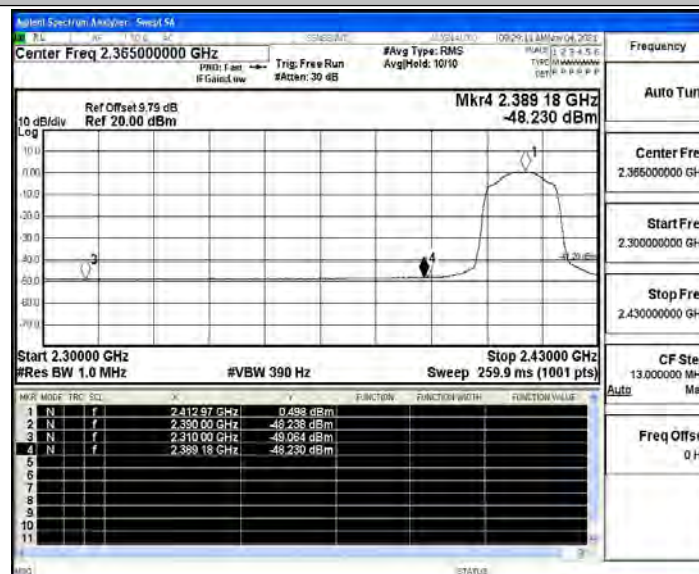
11B_Ant1_High_2462_AV



11B_Ant1_High_2462_Peak

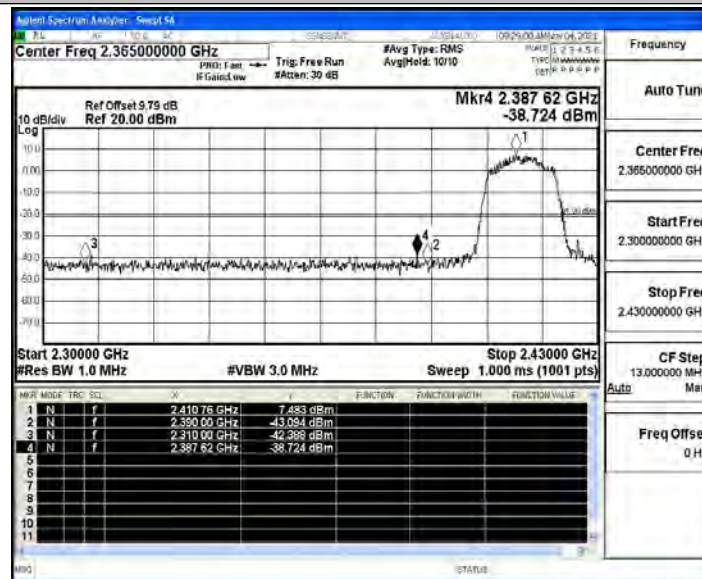


11G_Ant1_Low_2412_AV

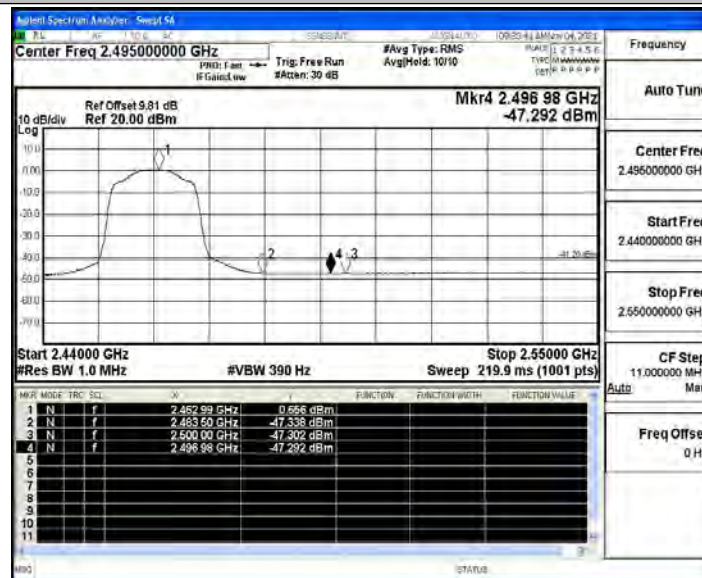




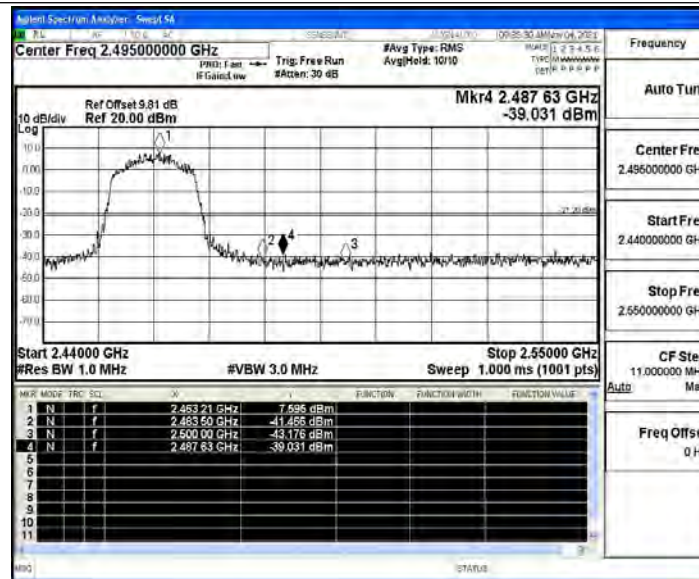
11G_Ant1_Low_2412_Peak



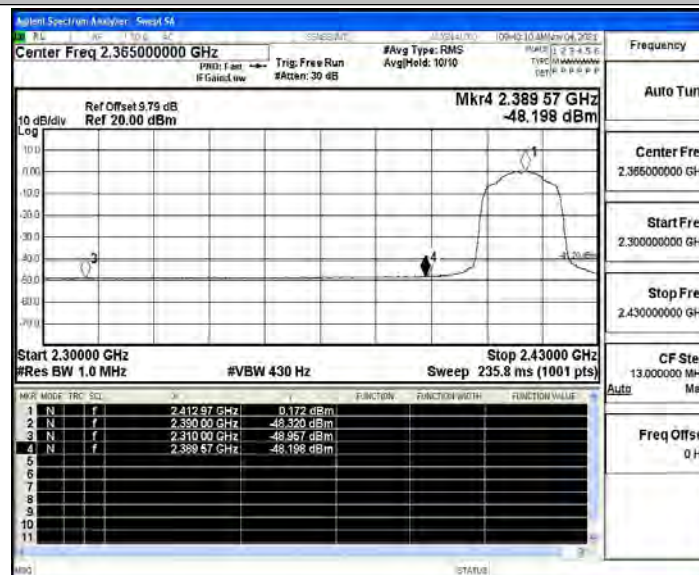
11G_Ant1_High_2462_AV



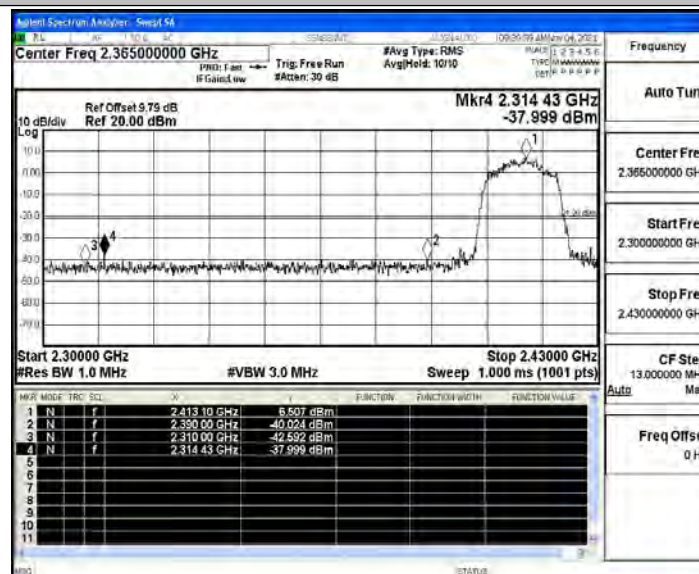
11G_Ant1_High_2462_Peak



11N20SISO_Ant1_Low_2412_AV

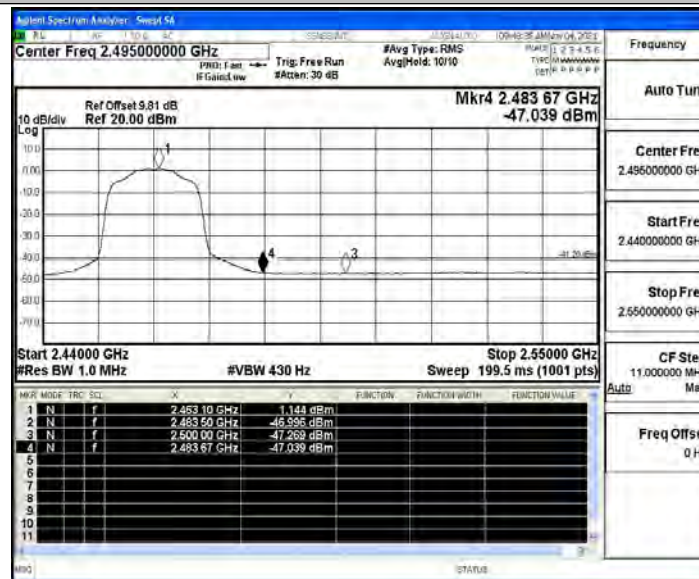


11N20SISO_Ant1_Low_2412_Peak

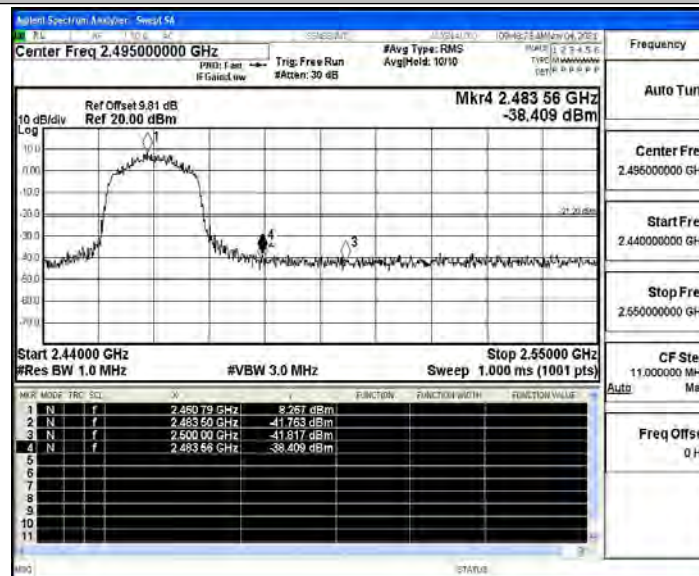




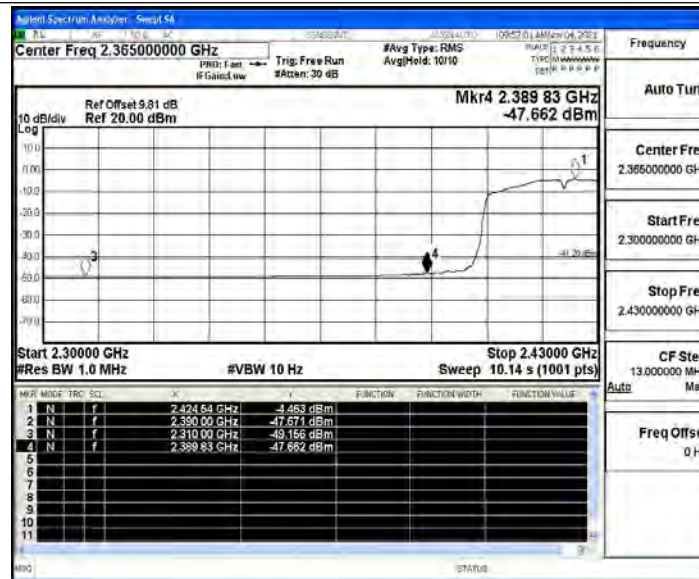
11N20SISO_Ant1_High_2462_AV



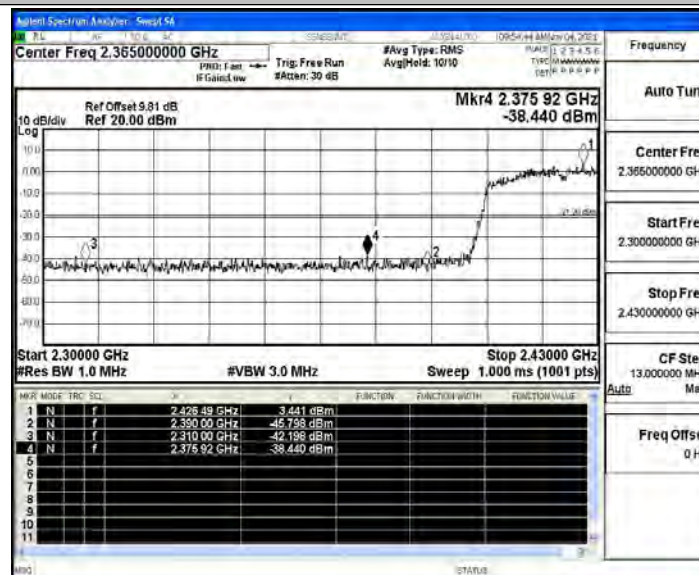
11N20SISO_Ant1_High_2462_Peak



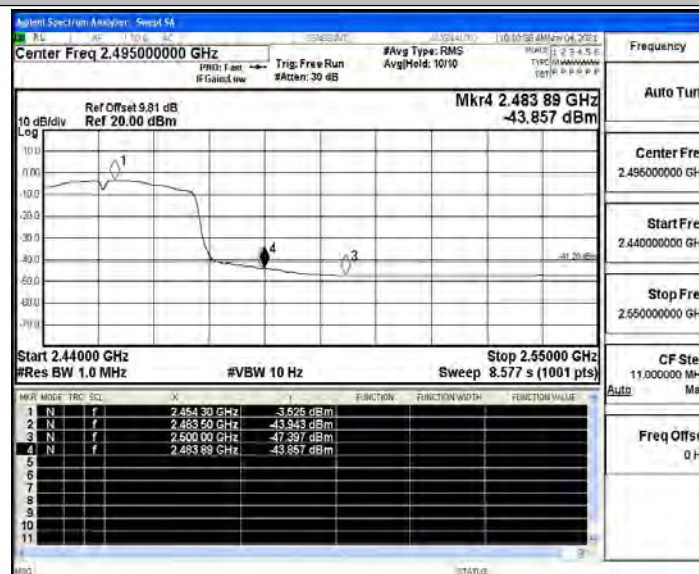
11N40SISO_Ant1_Low_2422_AV



11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV





11N40SISO_Ant1_High_2452_Peak

