



Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Robot Vacuum Cleaner

Trade Mark: N/A

Test Model: V106

Environmental Conditions

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



A.1 DTS Bandwidth

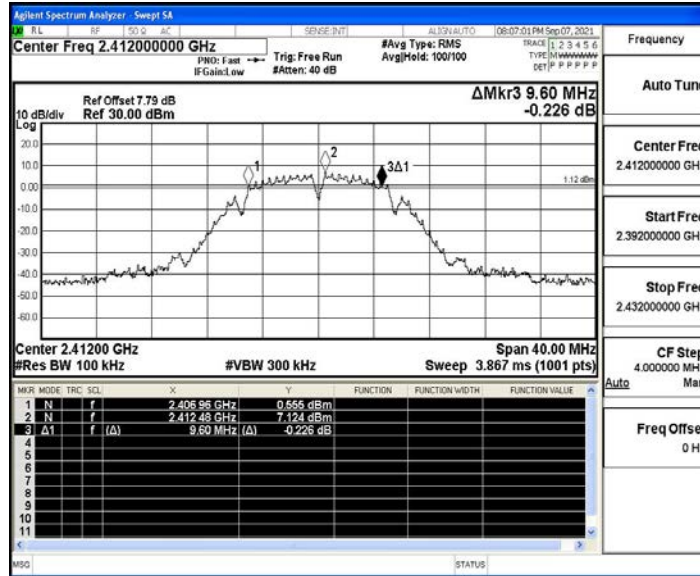
Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.600	2406.960	2416.560	0.5	PASS
		2437	9.640	2432.440	2442.080	0.5	PASS
		2462	9.640	2456.920	2466.560	0.5	PASS
11G	Ant1	2412	16.360	2403.800	2420.160	0.5	PASS
		2437	16.040	2429.200	2445.240	0.5	PASS
		2462	15.840	2453.760	2469.600	0.5	PASS
11N20SISO	Ant1	2412	17.680	2403.160	2420.840	0.5	PASS
		2437	17.440	2428.400	2445.840	0.5	PASS
		2462	13.880	2453.160	2467.040	0.5	PASS
11N40SISO	Ant1	2422	35.440	2404.400	2439.840	0.5	PASS
		2437	35.120	2419.480	2454.600	0.5	PASS
		2452	34.080	2434.320	2468.400	0.5	PASS

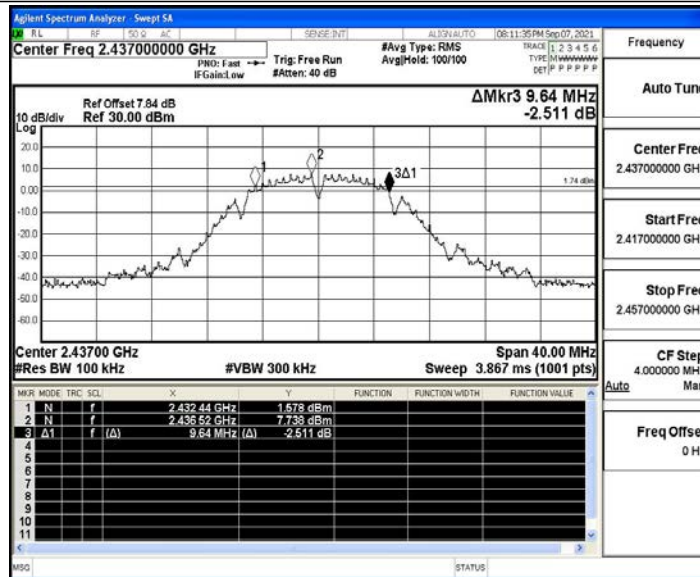


Test Graphs

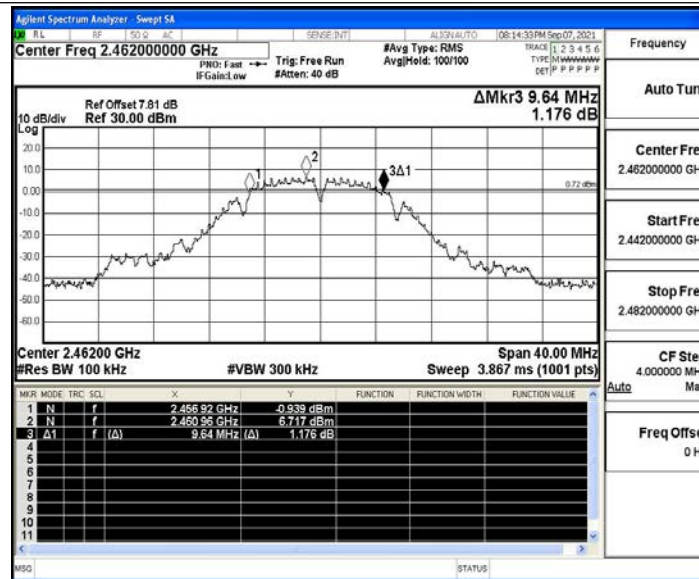
11B_Ant1_2412



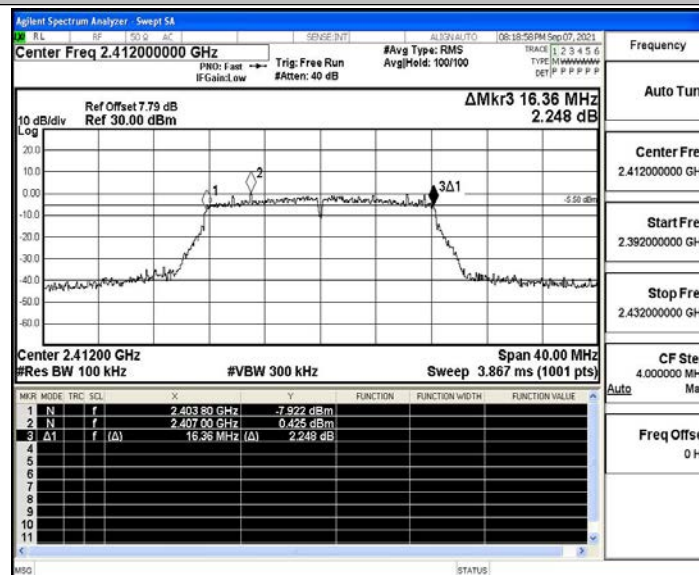
11B_Ant1_2437



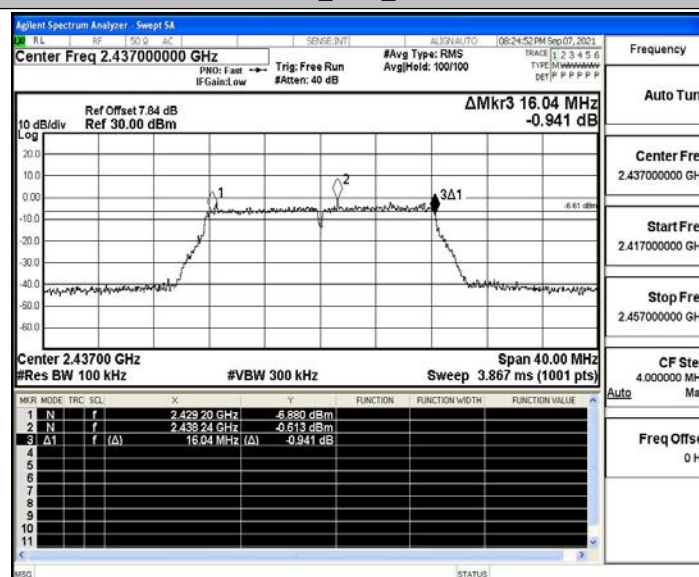
11B_Ant1_2462



11G_Ant1_2412

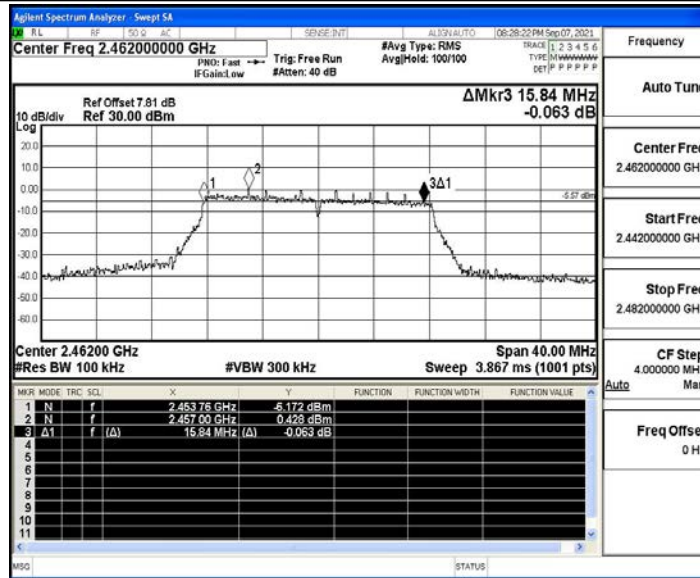


11G_Ant1_2437

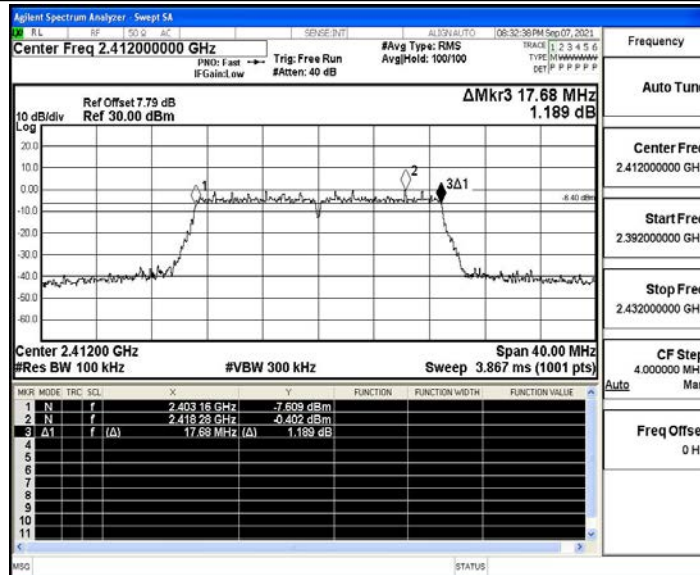




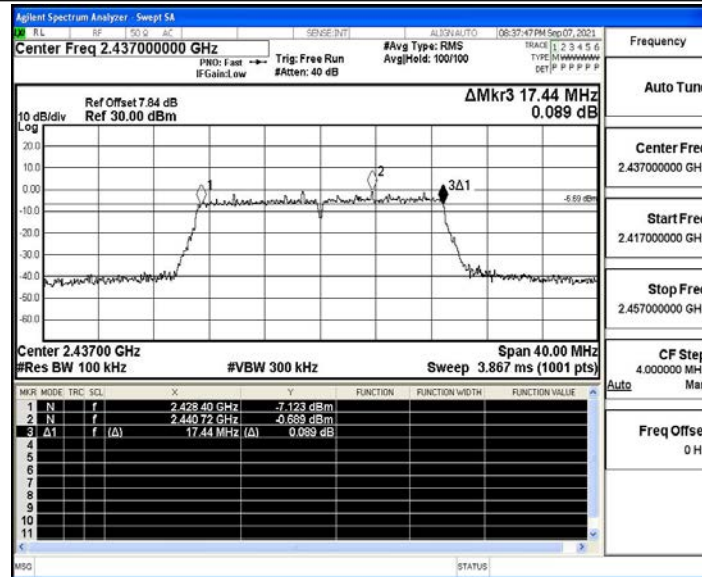
11G_Ant1_2462



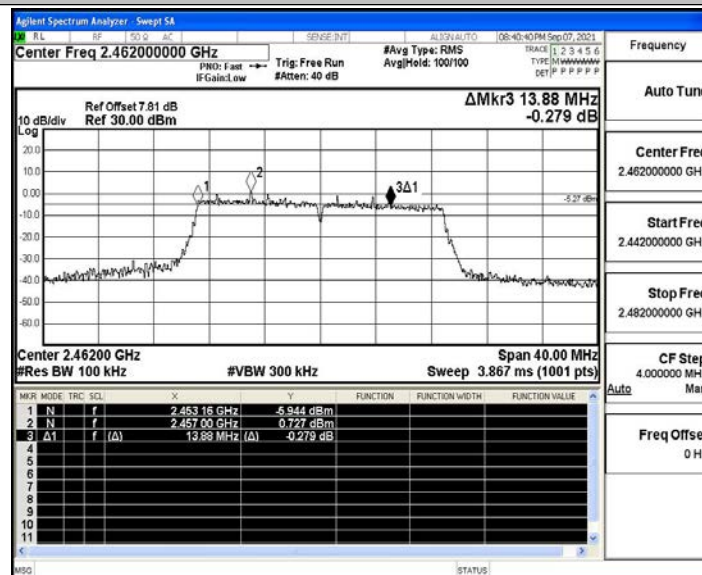
11N20SISO_Ant1_2412



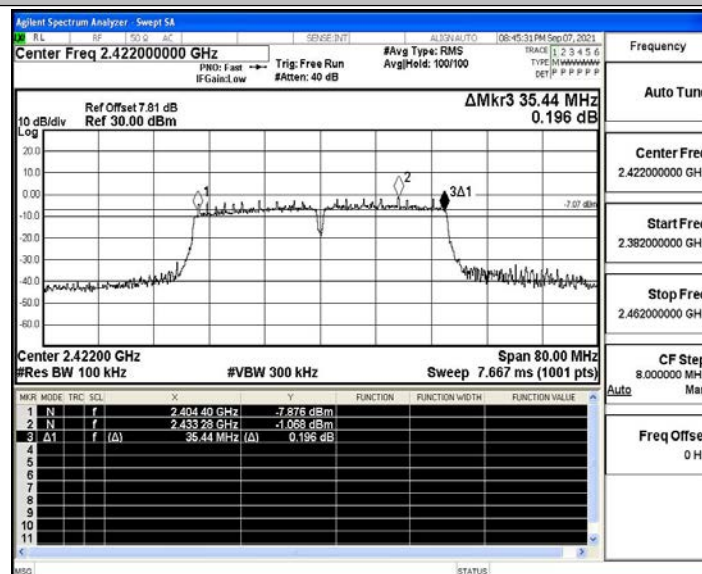
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

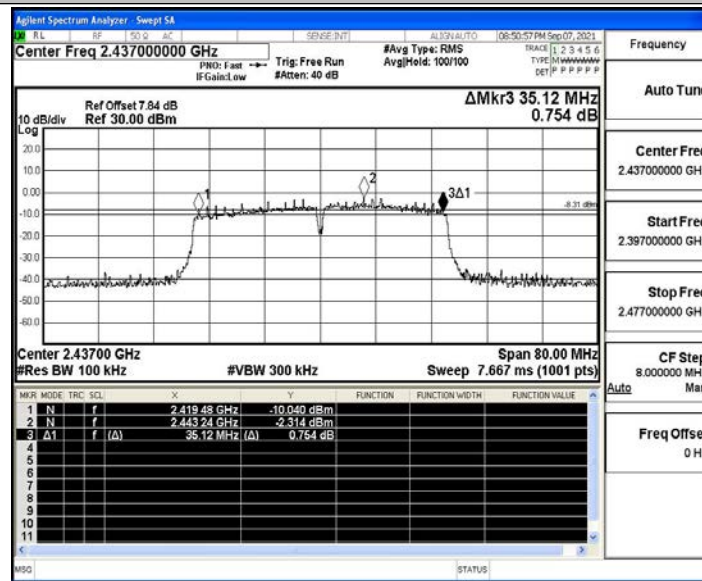


11N40SISO_Ant1_2422

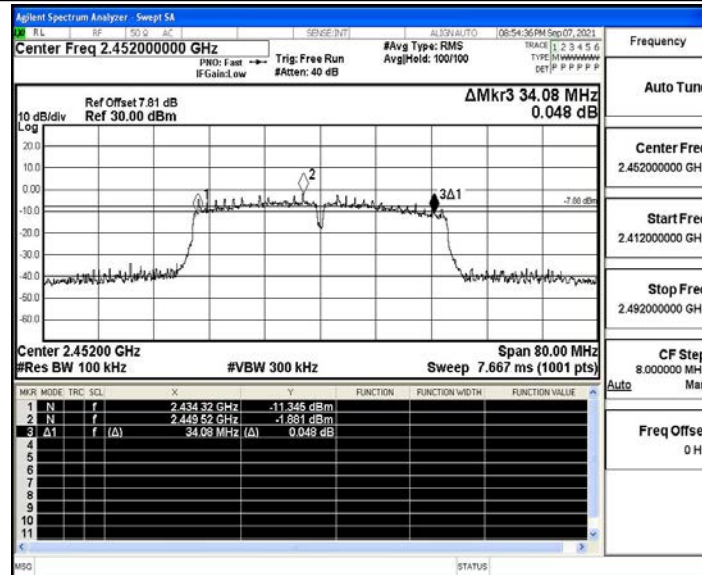




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





A.2 Occupied Channel Bandwidth

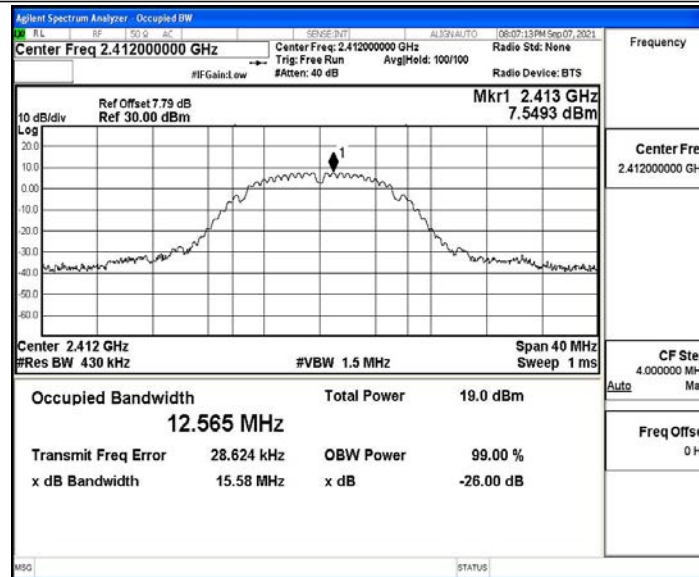
Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	12.565	2405.746	2418.311	---	PASS
		2437	12.633	2430.845	2443.478	---	PASS
		2462	13.042	2455.279	2468.321	---	PASS
11G	Ant1	2412	16.938	2403.544	2420.482	---	PASS
		2437	17.043	2428.559	2445.602	---	PASS
		2462	17.091	2453.264	2470.355	---	PASS
11N20SISO	Ant1	2412	18.047	2403.022	2421.069	---	PASS
		2437	17.962	2428.114	2446.076	---	PASS
		2462	17.986	2452.872	2470.858	---	PASS
11N40SISO	Ant1	2422	36.297	2404.064	2440.361	---	PASS
		2437	35.874	2419.217	2455.091	---	PASS
		2452	35.750	2434.013	2469.763	---	PASS

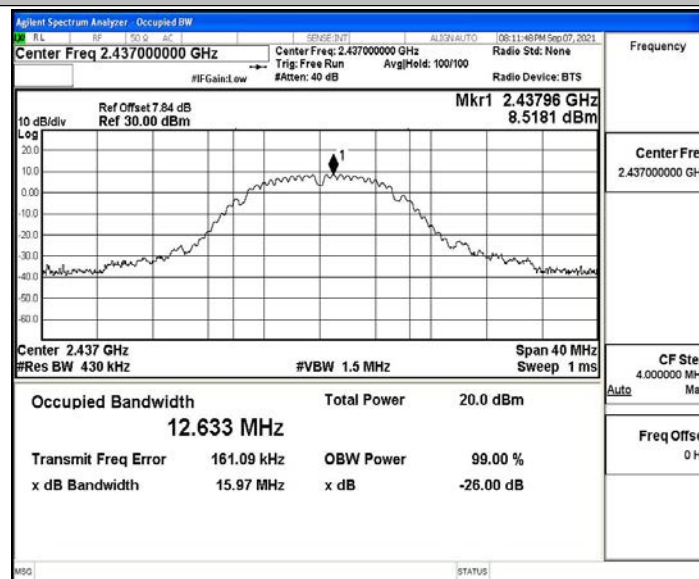


Test Graphs

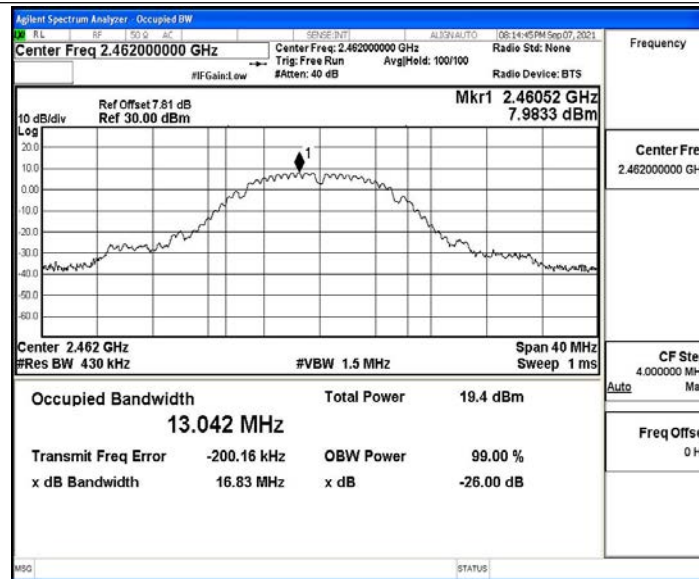
11B_Ant1_2412



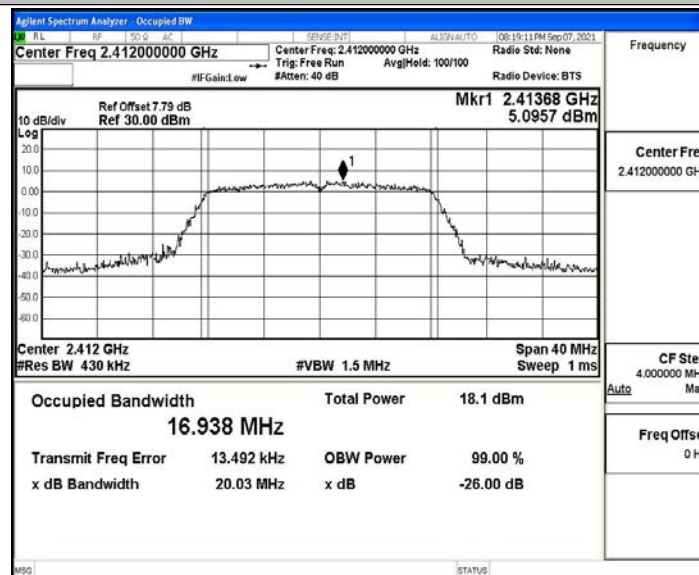
11B_Ant1_2437



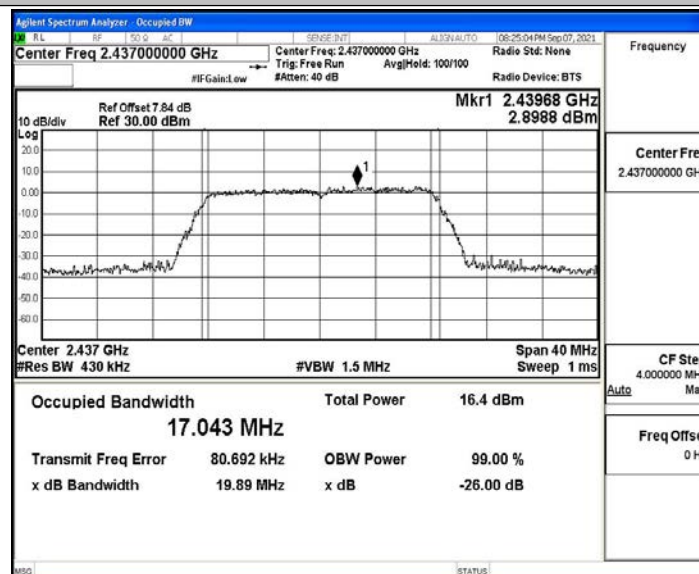
11B_Ant1_2462



11G_Ant1_2412

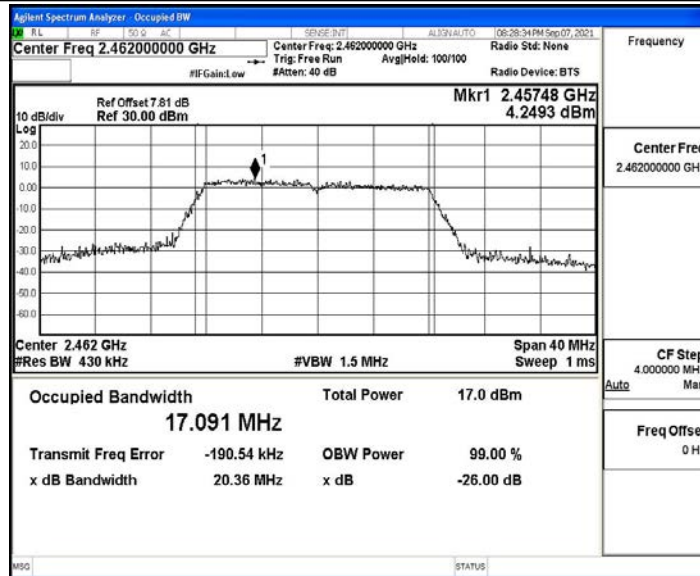


11G_Ant1_2437

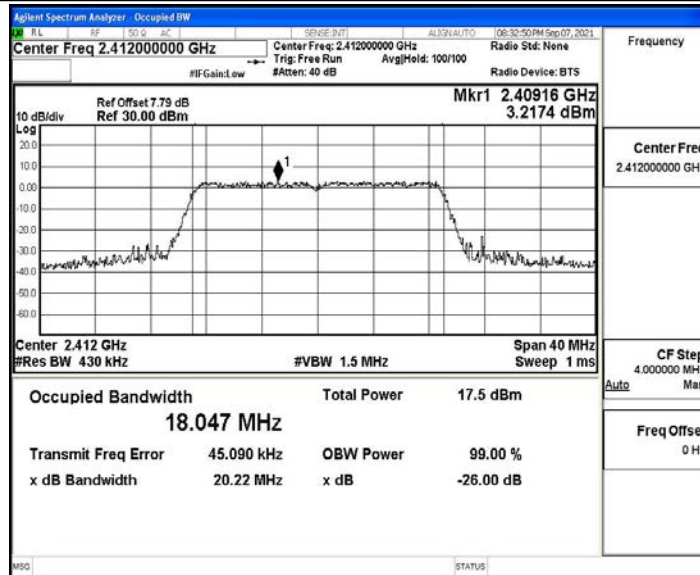




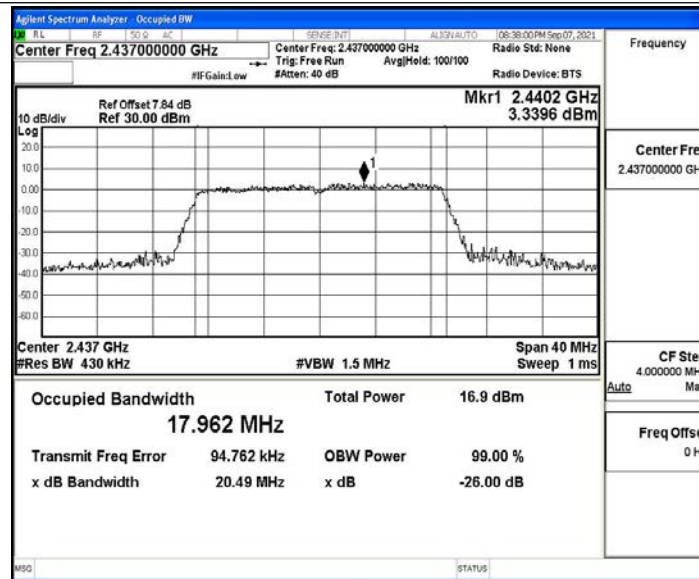
11G_Ant1_2462



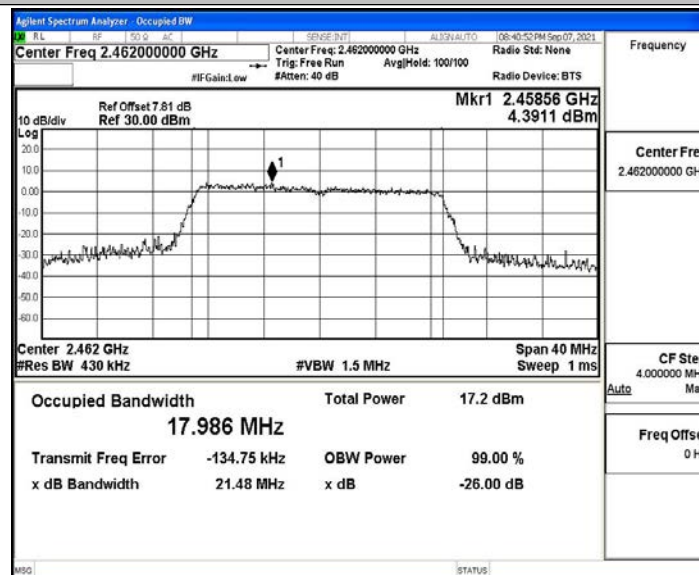
11N20SISO_Ant1_2412



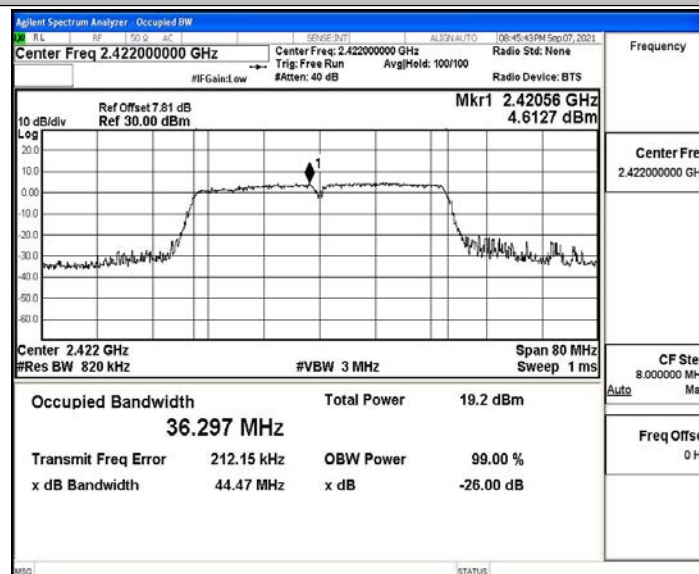
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

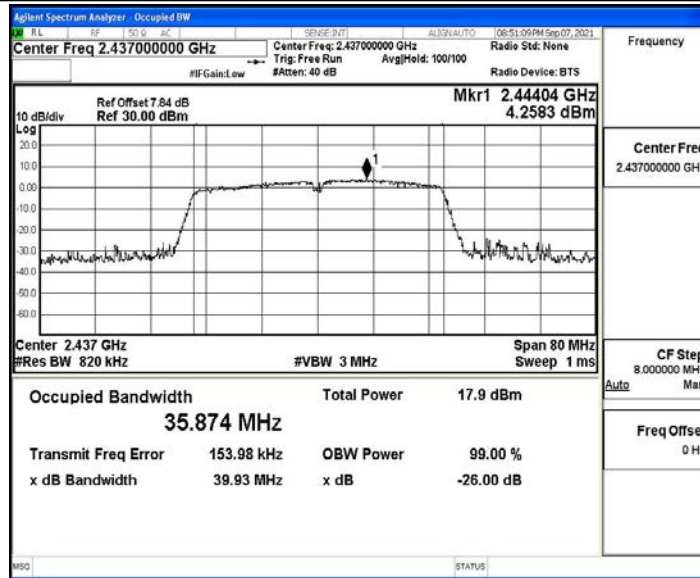


11N40SISO_Ant1_2422

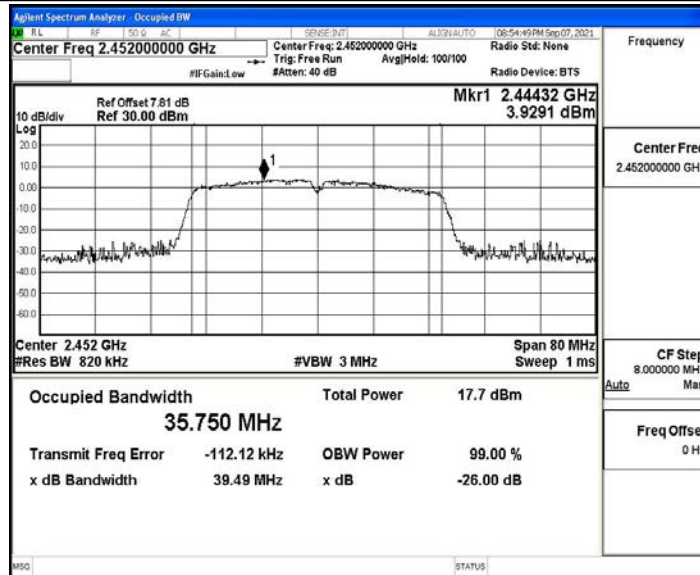




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





A.3 Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	16.93	≤30	PASS
		2437	17.62	≤30	PASS
		2462	17.10	≤30	PASS
11G	Ant1	2412	17.96	≤30	PASS
		2437	17.90	≤30	PASS
		2462	17.40	≤30	PASS
11N20SISO	Ant1	2412	16.95	≤30	PASS
		2437	18.24	≤30	PASS
		2462	17.44	≤30	PASS
11N40SISO	Ant1	2422	15.85	≤30	PASS
		2437	16.37	≤30	PASS
		2452	16.15	≤30	PASS



A.4 Maximum power spectral density

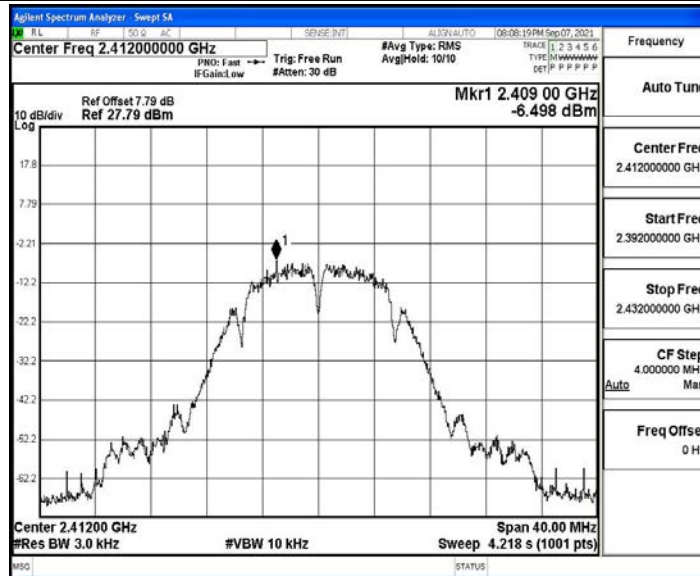
Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-6.5	≤8	PASS
		2437	-6.24	≤8	PASS
		2462	-6.45	≤8	PASS
11G	Ant1	2412	-13.1	≤8	PASS
		2437	-12.88	≤8	PASS
		2462	-13.29	≤8	PASS
11N20SISO	Ant1	2412	-14.61	≤8	PASS
		2437	-13.51	≤8	PASS
		2462	-13.68	≤8	PASS
11N40SISO	Ant1	2422	-16.78	≤8	PASS
		2437	-16.12	≤8	PASS
		2452	-16.22	≤8	PASS

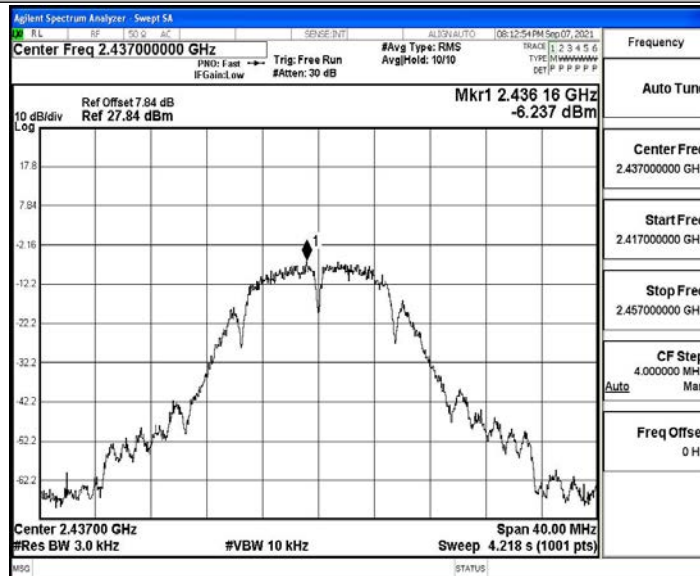


Test Graphs

11B_Ant1_2412



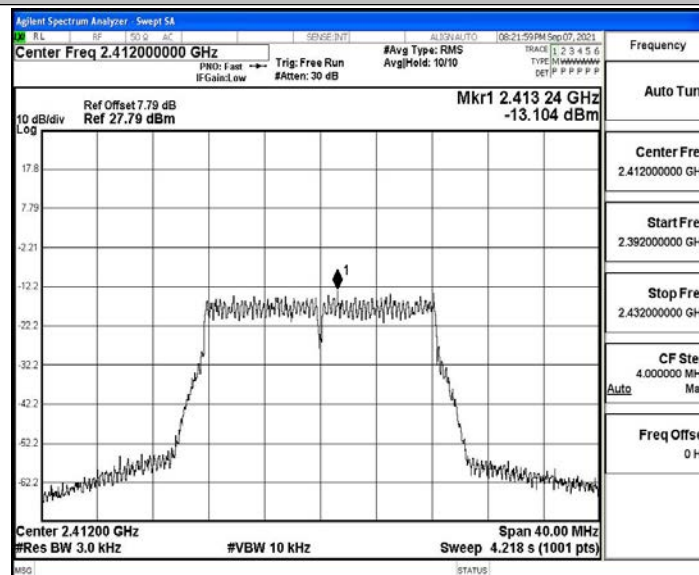
11B_Ant1_2437



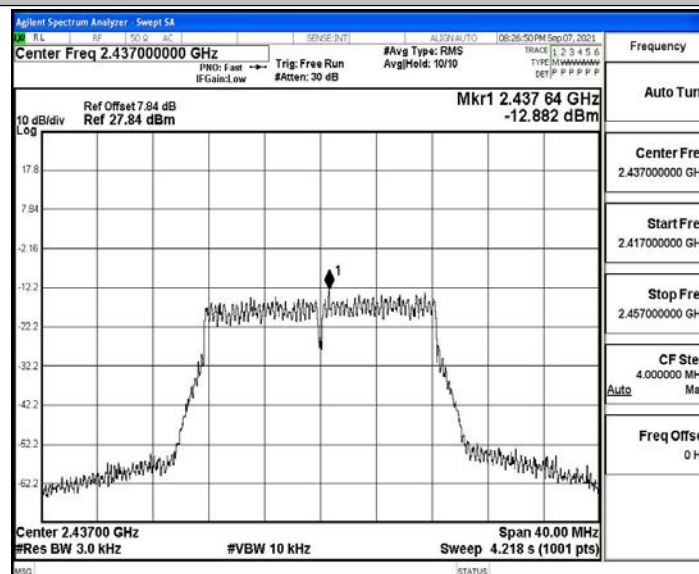
11B_Ant1_2462



11G_Ant1_2412

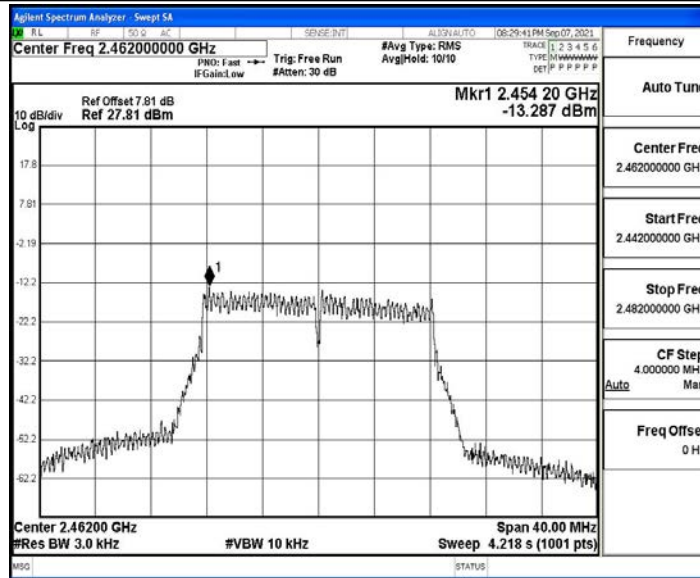


11G_Ant1_2437

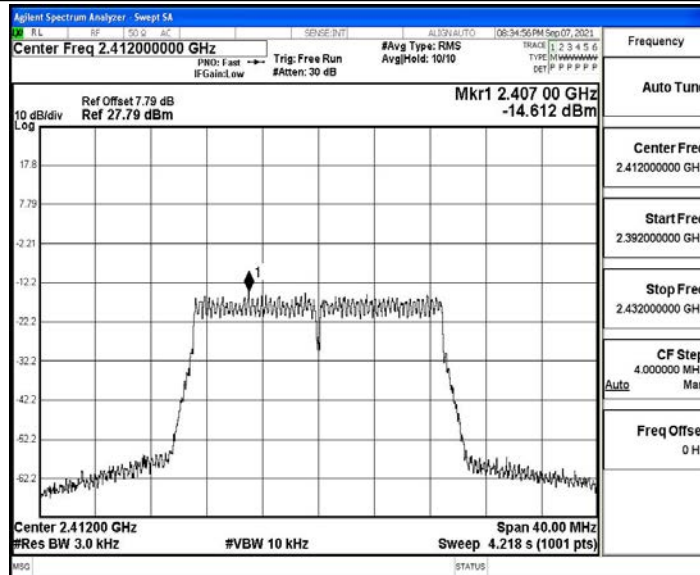




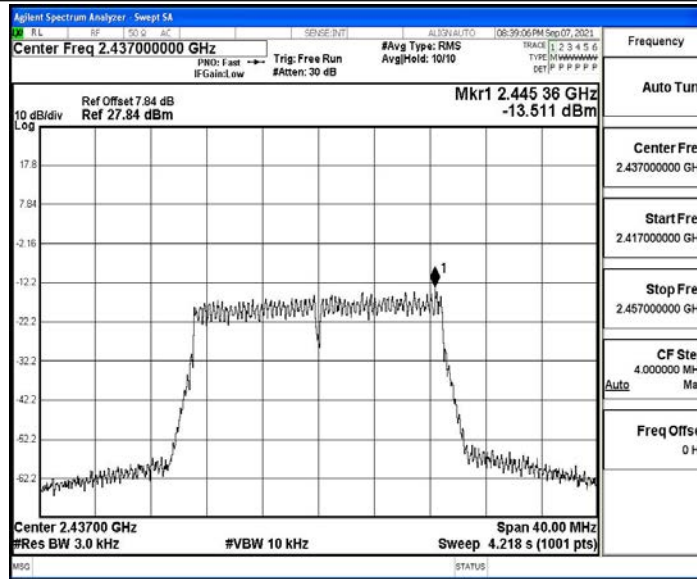
11G_Ant1_2462



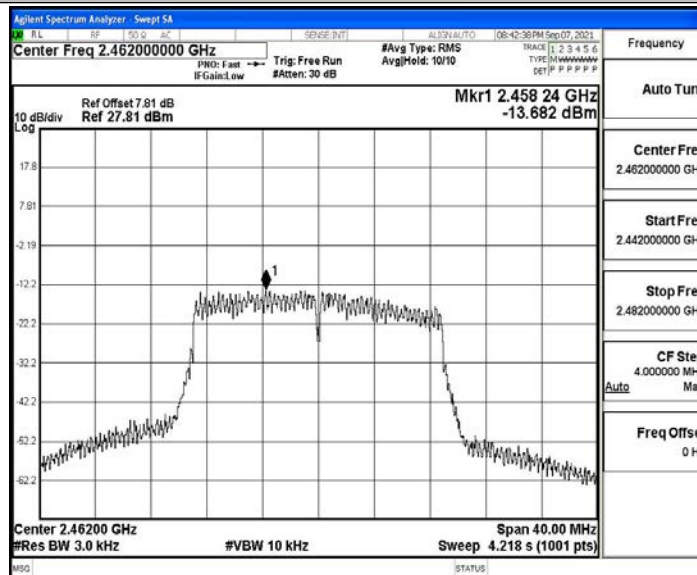
11N20SISO_Ant1_2412



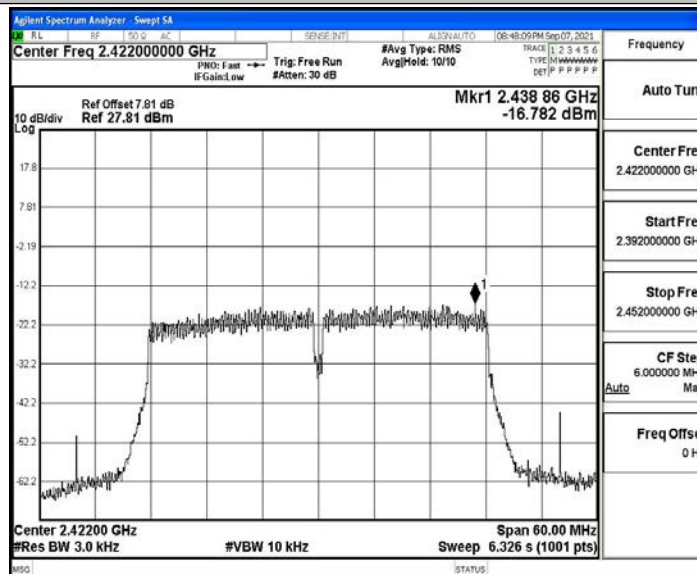
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

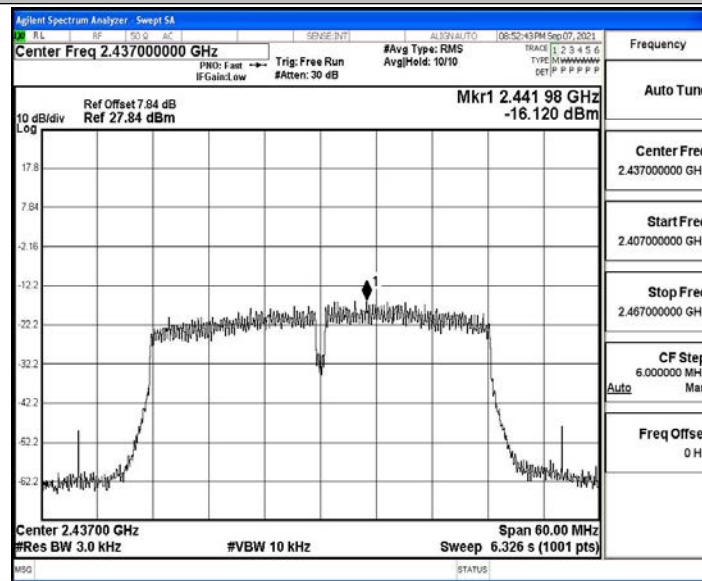


11N40SISO_Ant1_2422

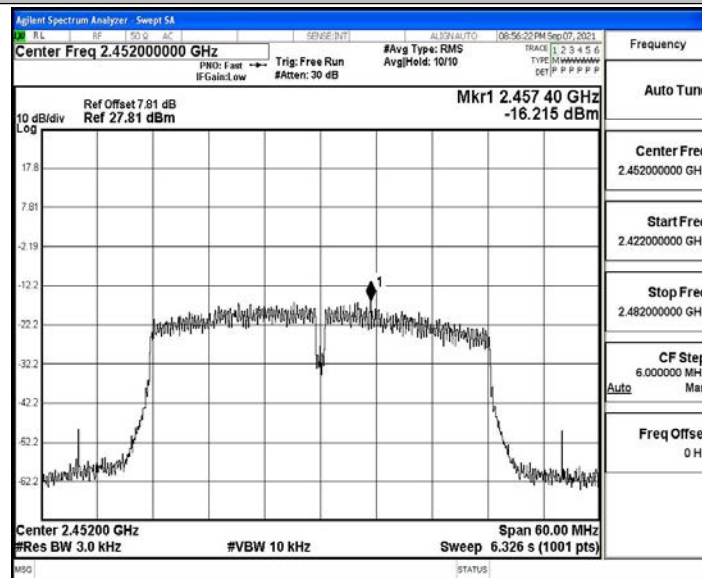




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





A.5 Band edge measurements

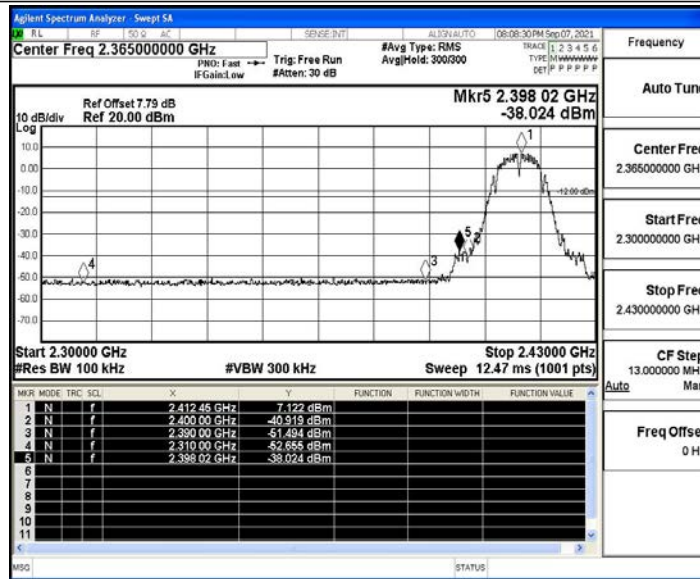
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	7.12	-38.02	≤ -12.88	PASS
		High	2462	8.09	-43.46	≤ -11.91	PASS
11G	Ant1	Low	2412	0.38	-38.13	≤ -19.62	PASS
		High	2462	0.58	-43.18	≤ -19.42	PASS
11N20SISO	Ant1	Low	2412	-0.40	-39.22	≤ -20.4	PASS
		High	2462	1.13	-42.58	≤ -18.87	PASS
11N40SISO	Ant1	Low	2422	-3.08	-39.13	≤ -23.08	PASS
		High	2452	-2.01	-38.02	≤ -22.01	PASS

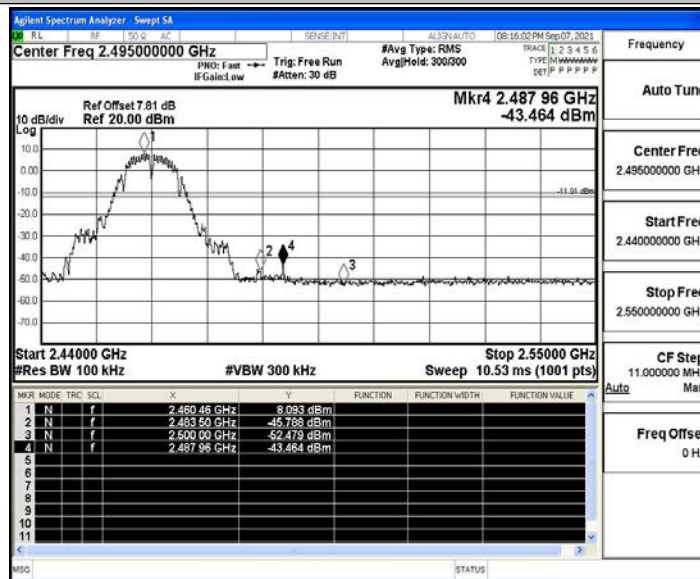


Test Graphs

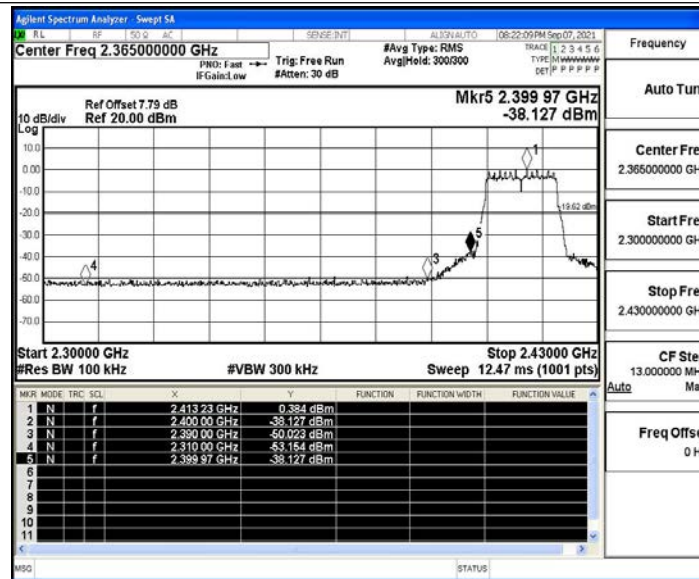
11B_Ant1_Low_2412



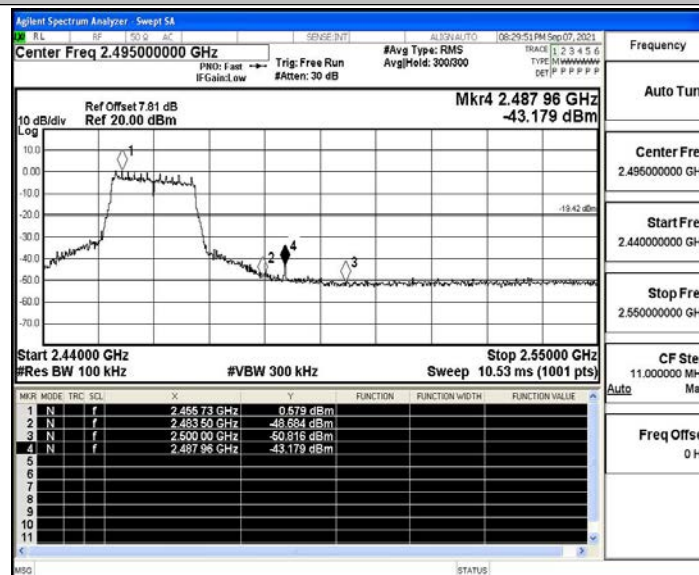
11B_Ant1_High_2462



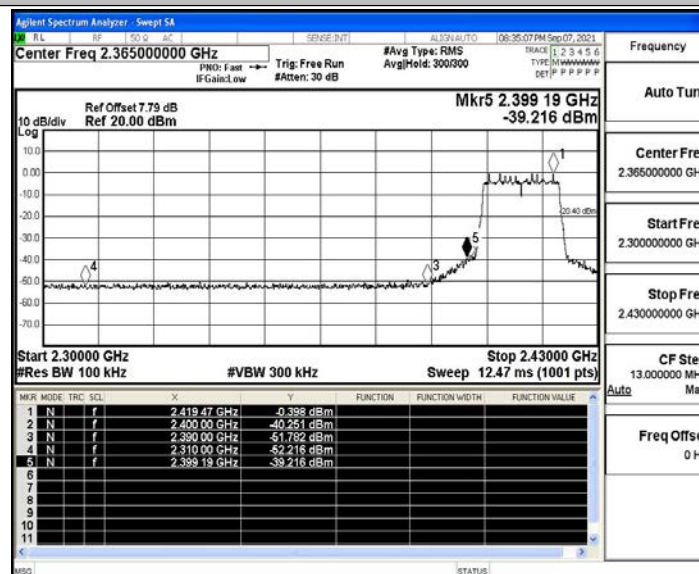
11G_Ant1_Low_2412



11G_Ant1_High_2462

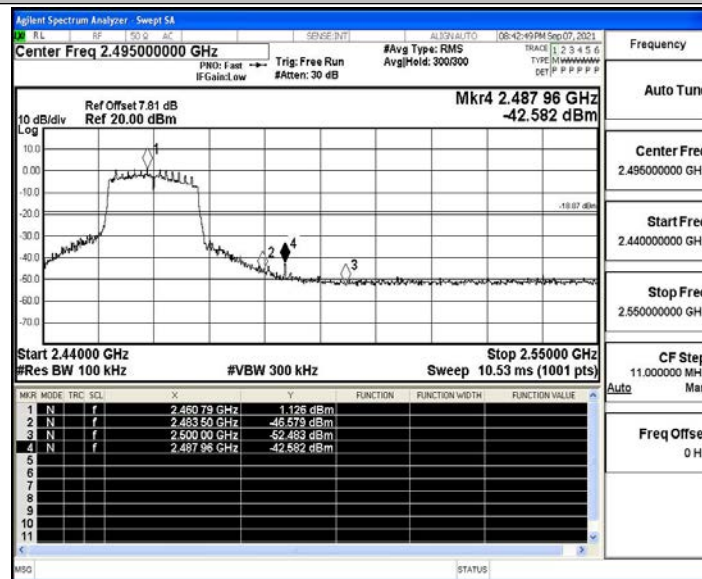


11N20SISO_Ant1_Low_2412

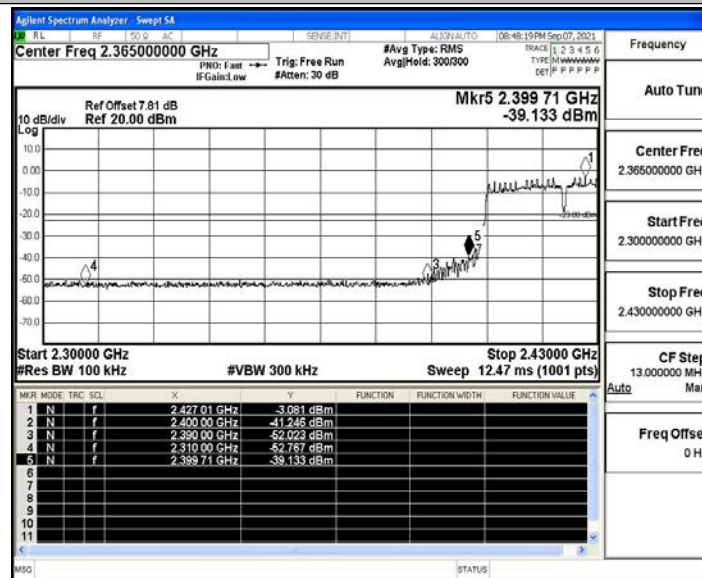




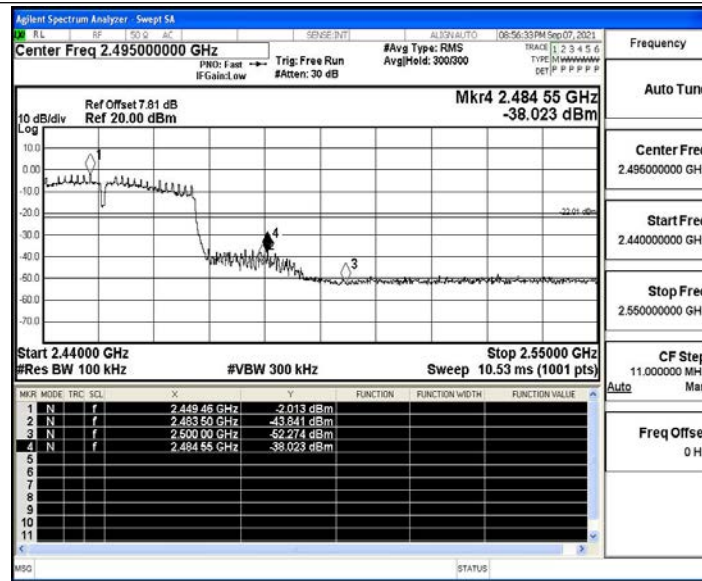
11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452





A.6 Conducted Spurious Emission

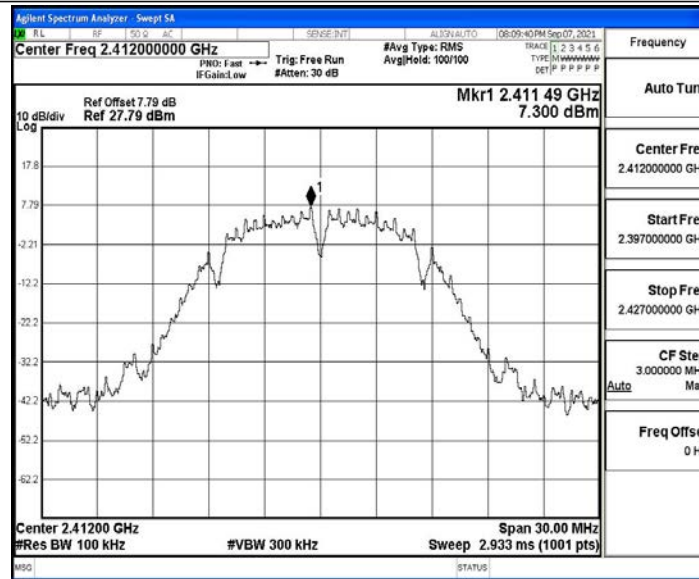
Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	7.30	7.30	---	PASS
			30~1000	7.30	-61.44	≤-12.7	PASS
			1000~26500	7.30	-47.73	≤-12.7	PASS
		2437	Reference	7.95	7.95	---	PASS
			30~1000	7.95	-61.55	≤-12.05	PASS
			1000~26500	7.95	-47.94	≤-12.05	PASS
		2462	Reference	7.73	7.73	---	PASS
			30~1000	7.73	-61.11	≤-12.27	PASS
			1000~26500	7.73	-47.12	≤-12.27	PASS
11G	Ant1	2412	Reference	-0.07	-0.07	---	PASS
			30~1000	-0.07	-62.14	≤-20.07	PASS
			1000~26500	-0.07	-46.41	≤-20.07	PASS
		2437	Reference	0.44	0.44	---	PASS
			30~1000	0.44	-62.25	≤-19.56	PASS
			1000~26500	0.44	-47.76	≤-19.56	PASS
		2462	Reference	0.62	0.62	---	PASS
			30~1000	0.62	-61.69	≤-19.38	PASS
			1000~26500	0.62	-47.57	≤-19.38	PASS
11N20SISO	Ant1	2412	Reference	-0.58	-0.58	---	PASS
			30~1000	-0.58	-62.18	≤-20.58	PASS
			1000~26500	-0.58	-47.81	≤-20.58	PASS
		2437	Reference	-0.38	-0.38	---	PASS
			30~1000	-0.38	-62.03	≤-20.38	PASS
			1000~26500	-0.38	-46.37	≤-20.38	PASS
		2462	Reference	1.30	1.30	---	PASS
			30~1000	1.30	-61.33	≤-18.7	PASS
			1000~26500	1.30	-47.57	≤-18.7	PASS
11N40SISO	Ant1	2422	Reference	-2.58	-2.58	---	PASS
			30~1000	-2.58	-60.9	≤-22.58	PASS
			1000~26500	-2.58	-47.64	≤-22.58	PASS
		2437	Reference	-2.09	-2.09	---	PASS
			30~1000	-2.09	-61.34	≤-22.09	PASS
			1000~26500	-2.09	-47.7	≤-22.09	PASS
		2452	Reference	-1.94	-1.94	---	PASS
			30~1000	-1.94	-61.49	≤-21.94	PASS
			1000~26500	-1.94	-47.41	≤-21.94	PASS

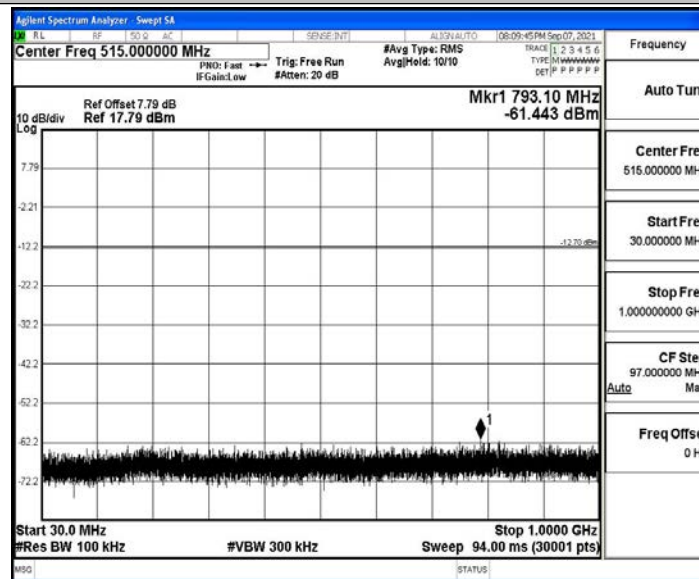


Test Graphs

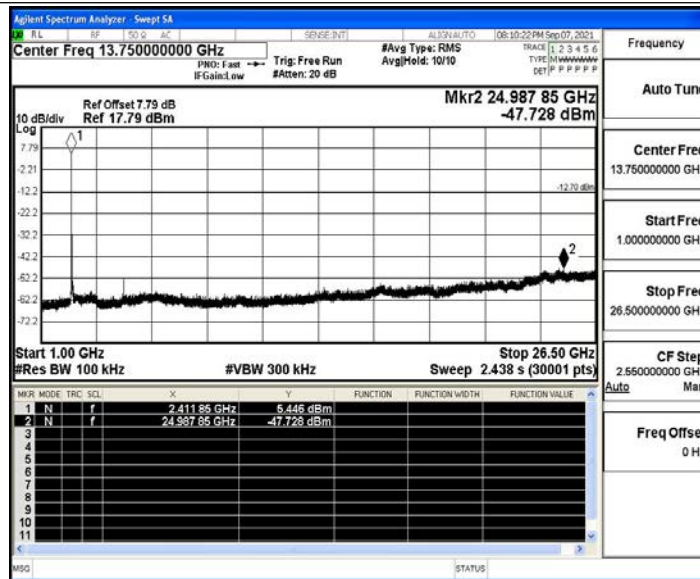
11B_Ant1_2412_0~Reference



11B_Ant1_2412_30~1000



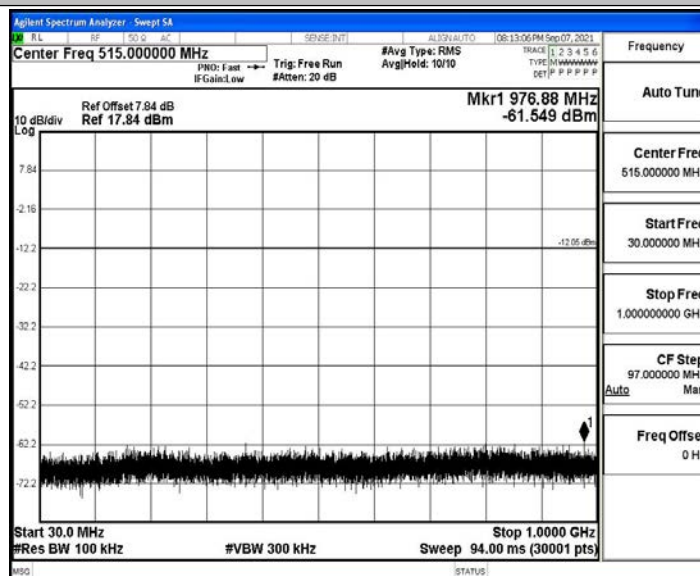
11B_Ant1_2412_1000~26500



11B_Ant1_2437_0~Reference

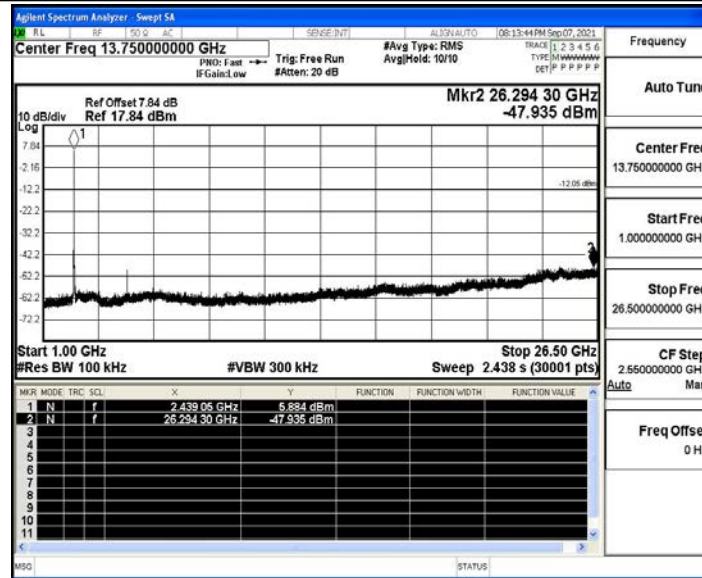


11B_Ant1_2437_30~1000

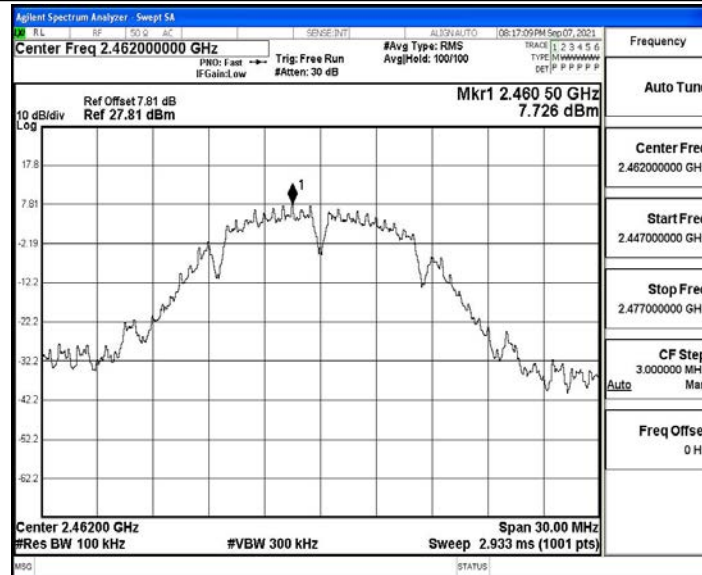




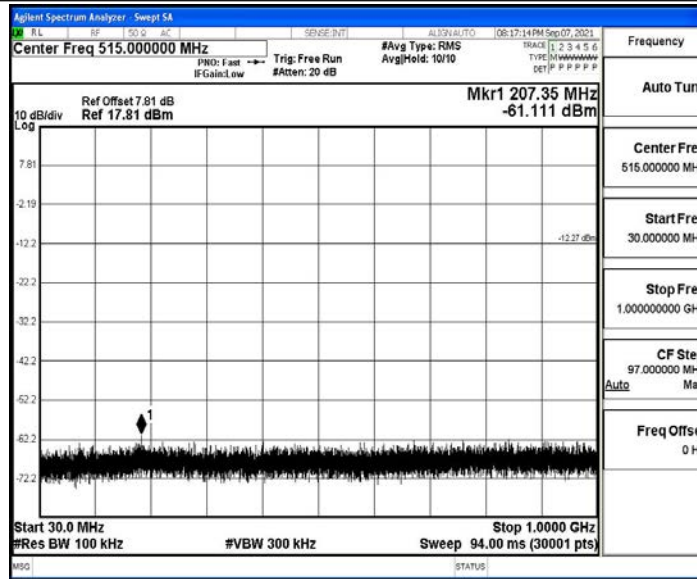
11B_Ant1_2437_1000~26500



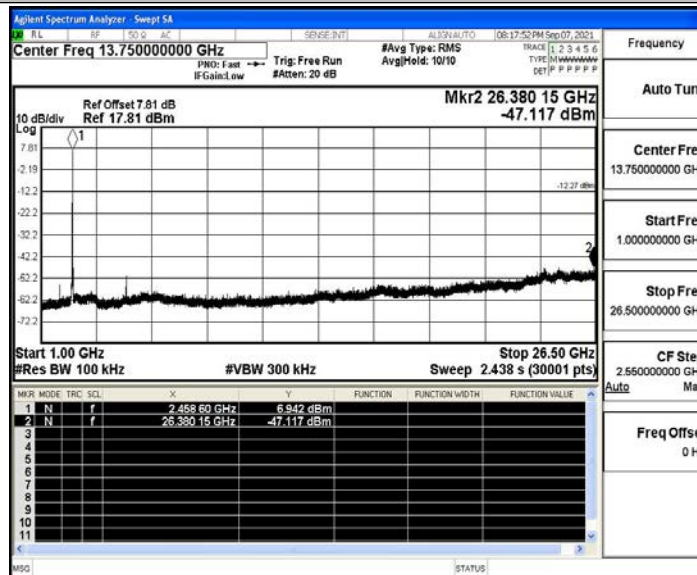
11B_Ant1_2462_0~Reference



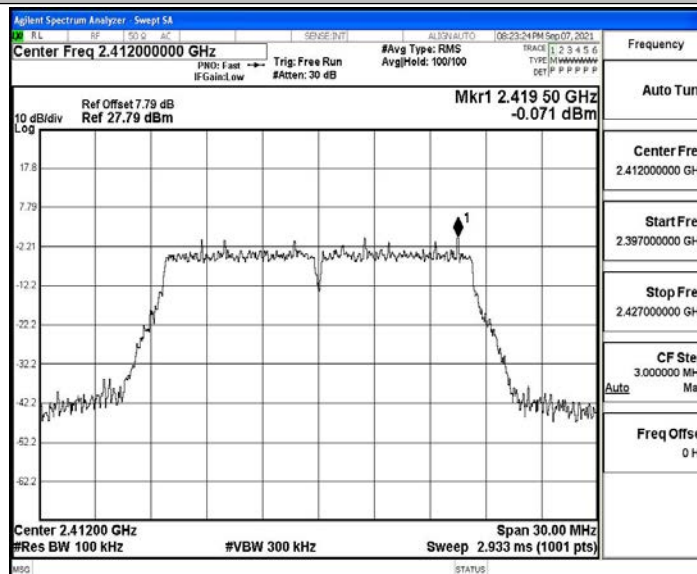
11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500

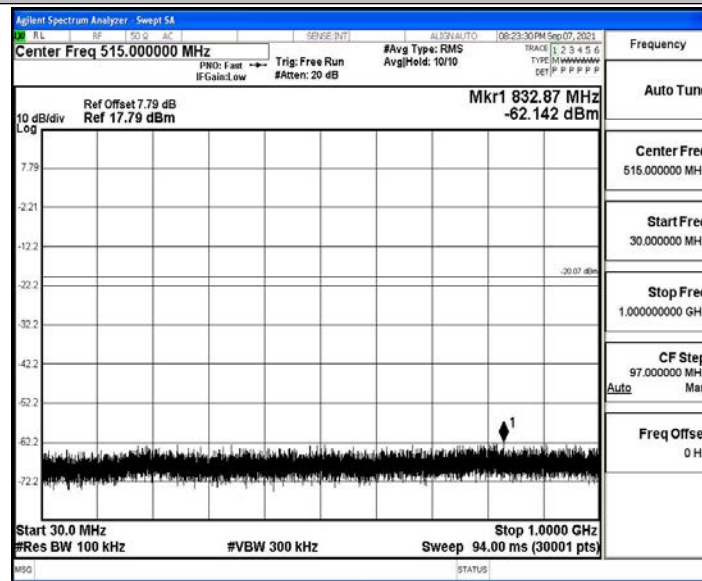


11G_Ant1_2412_0~Reference

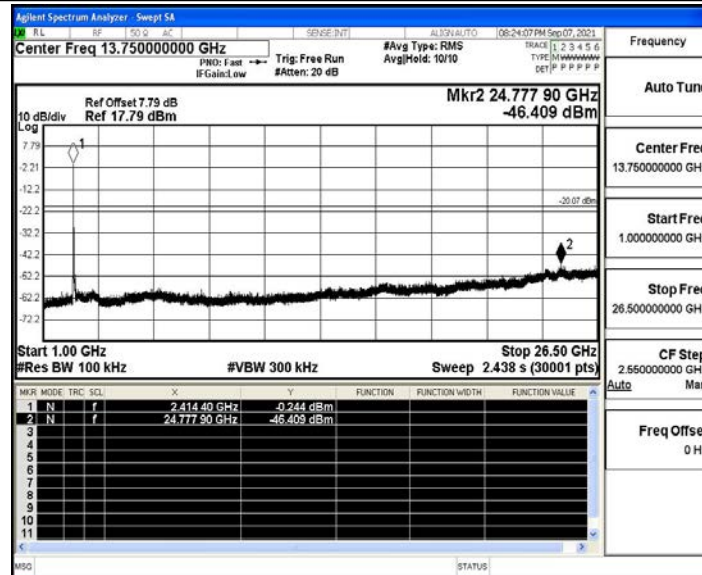




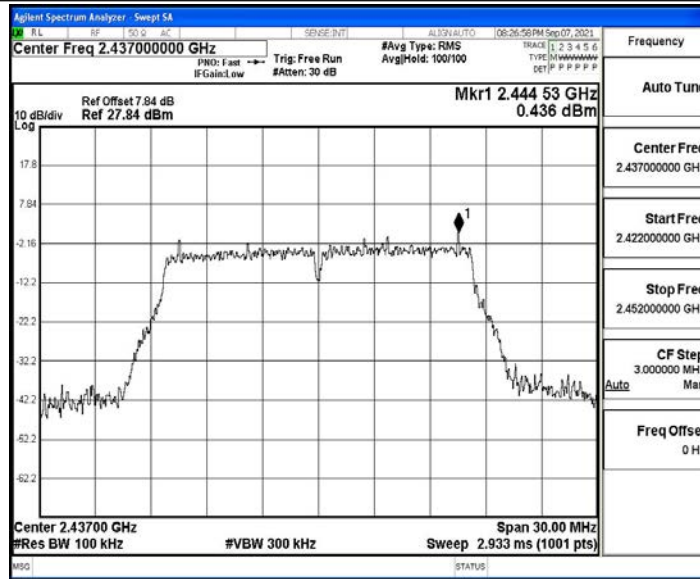
11G_Ant1_2412_30~1000



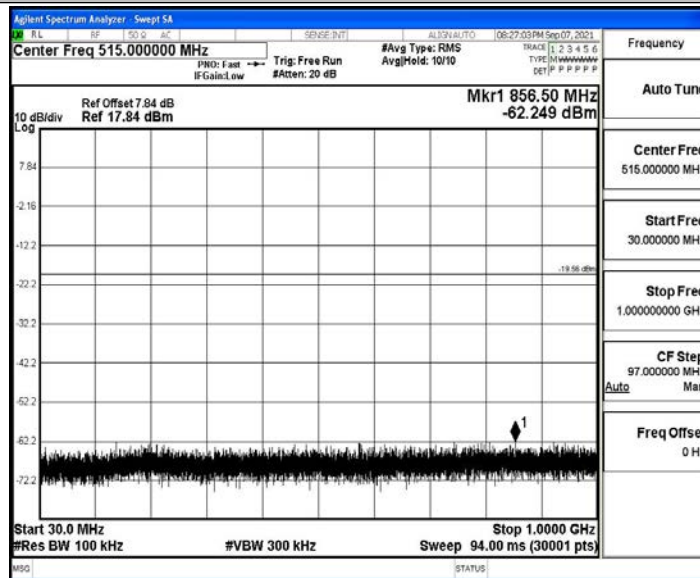
11G_Ant1_2412_1000~26500



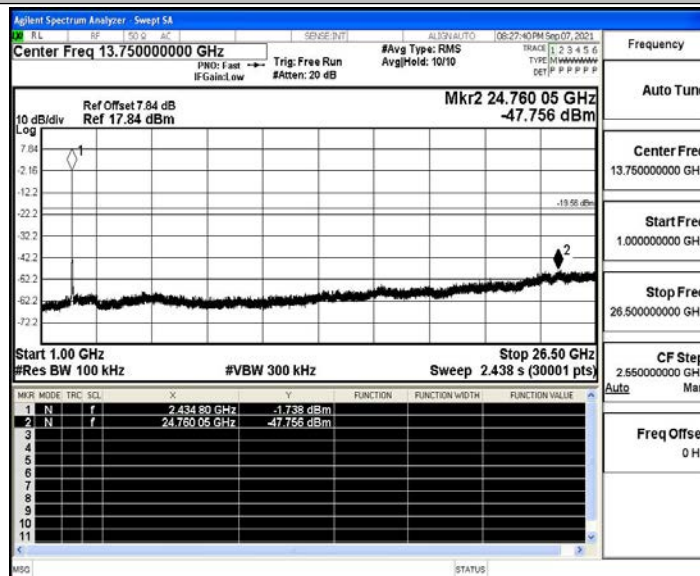
11G_Ant1_2437_0~Reference

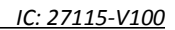


11G_Ant1_2437_30~1000



11G_Ant1_2437_1000~26500





Agilent Spectrum Analyzer Sweep SA

Center Freq 2.46200000 GHz

Ref Offset 7.81 dB
Ref 27.81 dBm

Mkr1 2.456 99 GHz
0.624 dBm

Center 2.46200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 30.00 MHz
Sweep 2.933 ms (1001 pts)

Agilent Spectrum Analyzer - Sweep SA

Center Freq 515.000000 MHz

Ref Offset 7.81 dB
Ref 17.81 dBm

Mkr1 241.69 MHz
-61.692 dBm

Start 30.0 MHz
#Res BW 100 kHz

#VBW 300 kHz

Stop 1.0000 GHz
Sweep 94.00 ms (30001 pts)

Frequency

Auto Tun

Center Freq 515.000000 MHz

Start Freq 30.000000 MHz

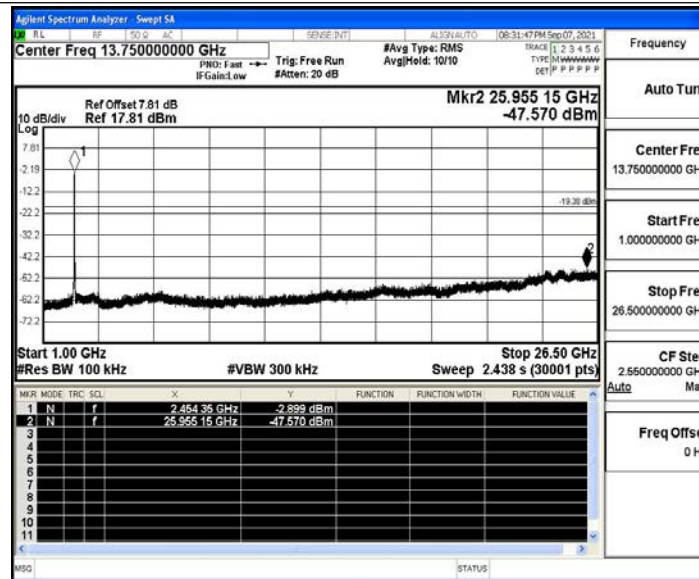
Stop Freq 1.00000000 GHz

CF Ste 97.000000 MHz

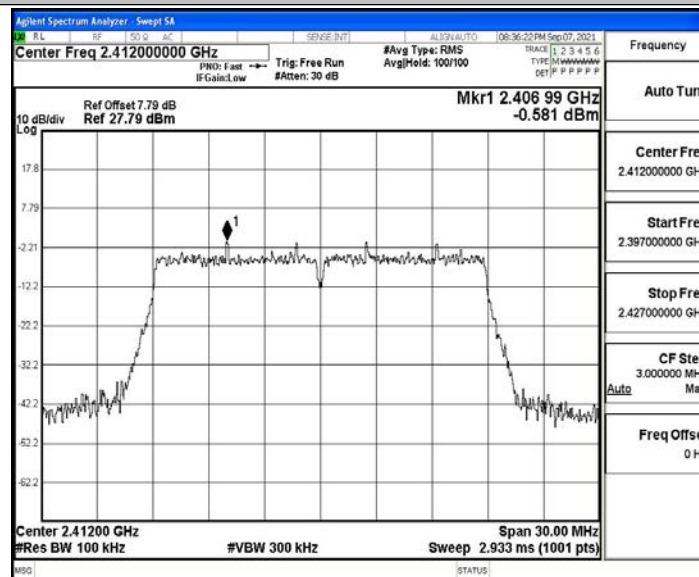
Auto

Freq Offs 0 Hz

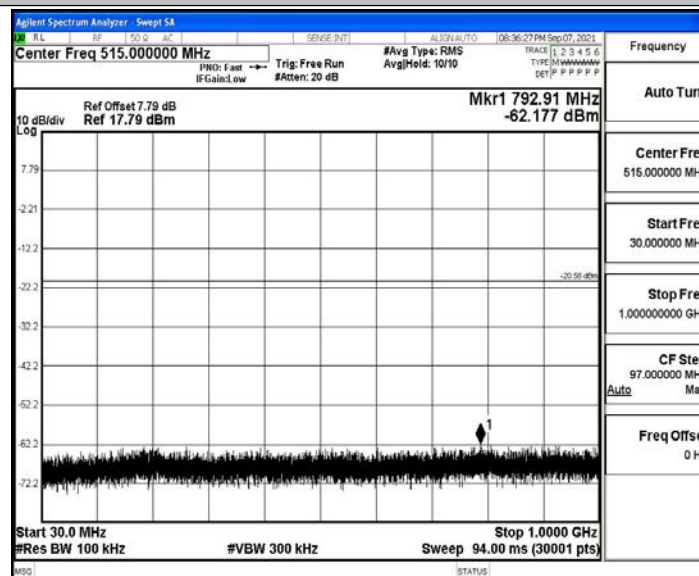
33 / 56



11N20SISO_Ant1_2412_0~Reference

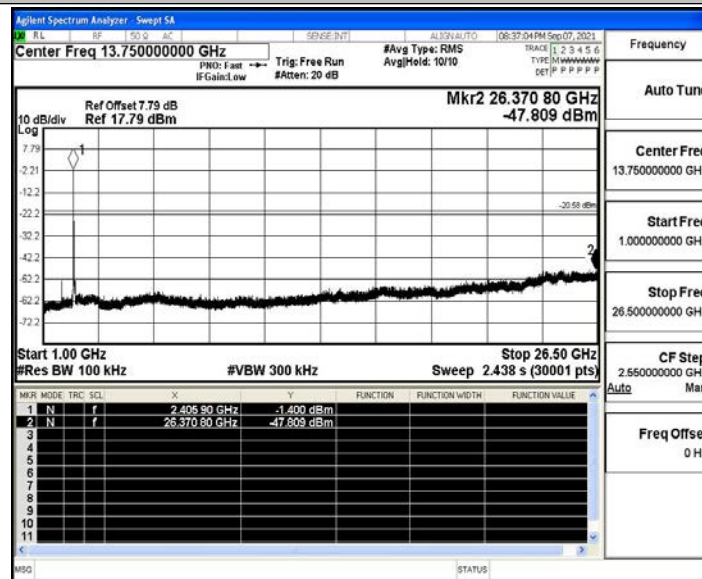


11N20SISO_Ant1_2412_30~1000

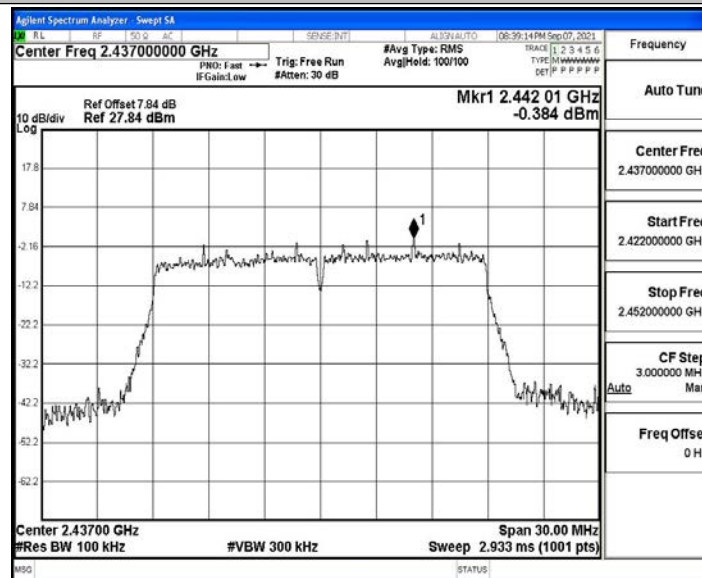




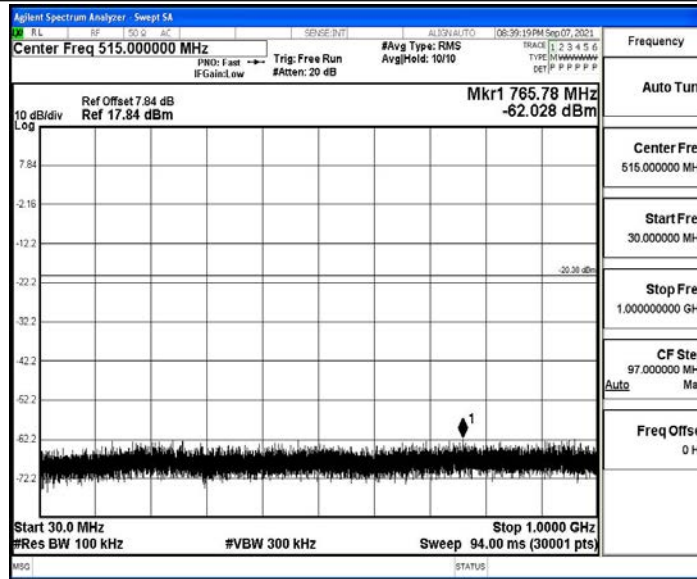
11N20SISO_Ant1_2412_1000~26500



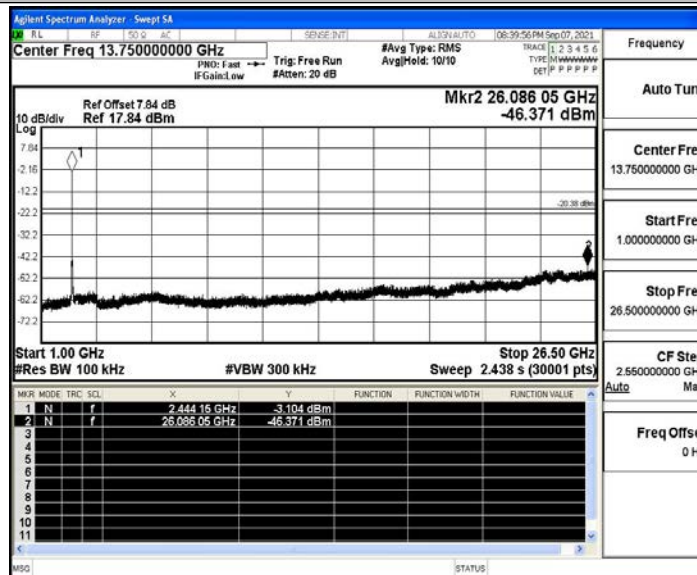
11N20SISO_Ant1_2437_0~Reference



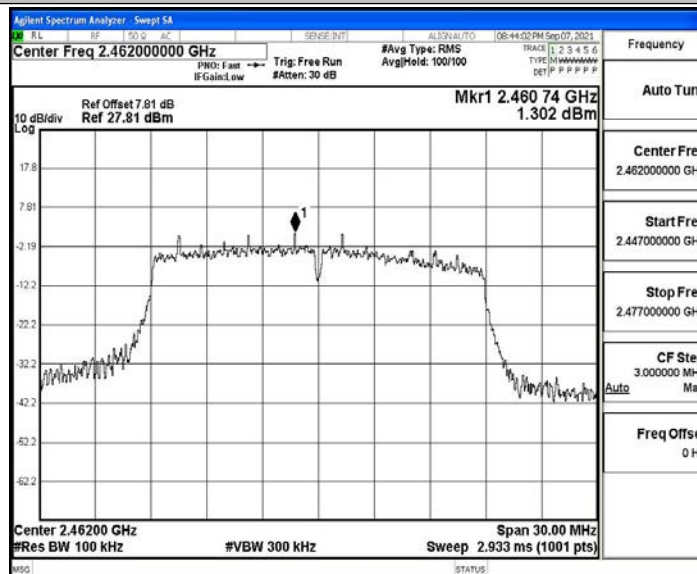
11N20SISO_Ant1_2437_30~1000



11N20SISO_Ant1_2437_1000~26500

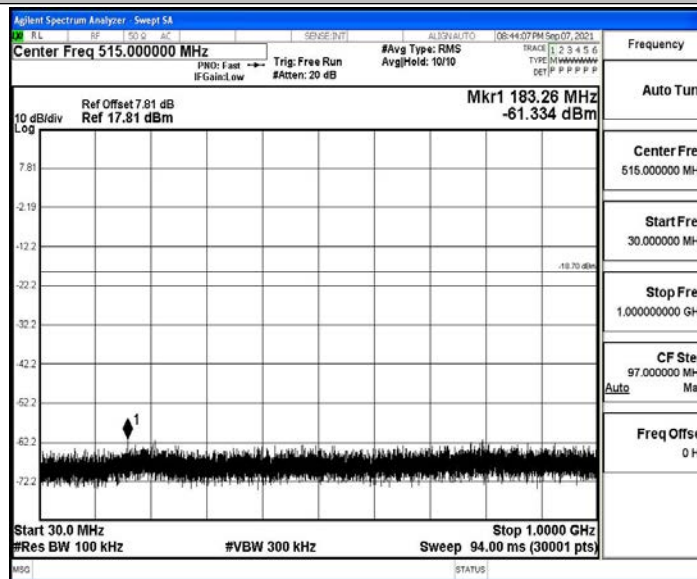


11N20SISO_Ant1_2462_0~Reference

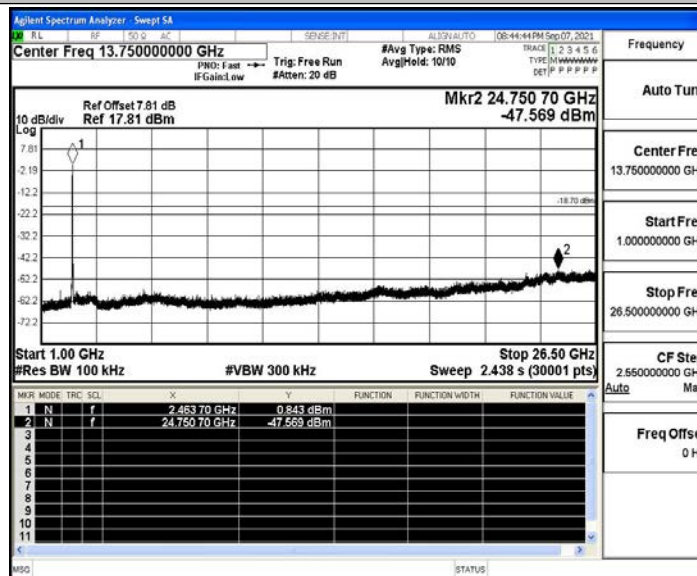




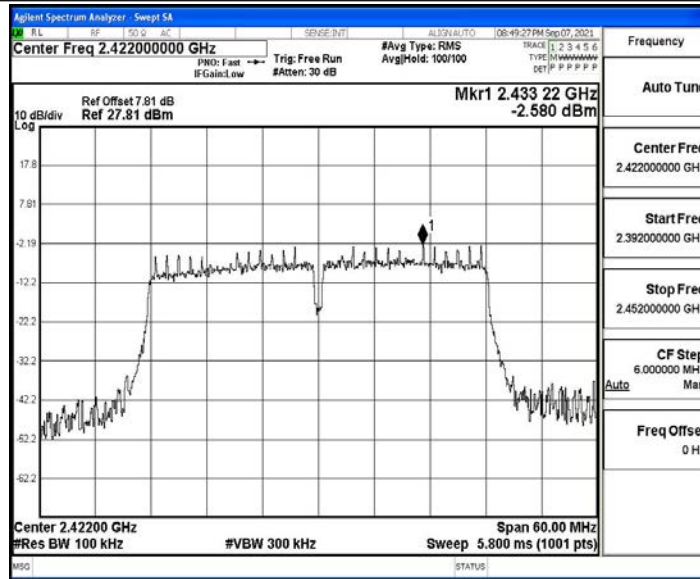
11N20SISO_Ant1_2462_30~1000



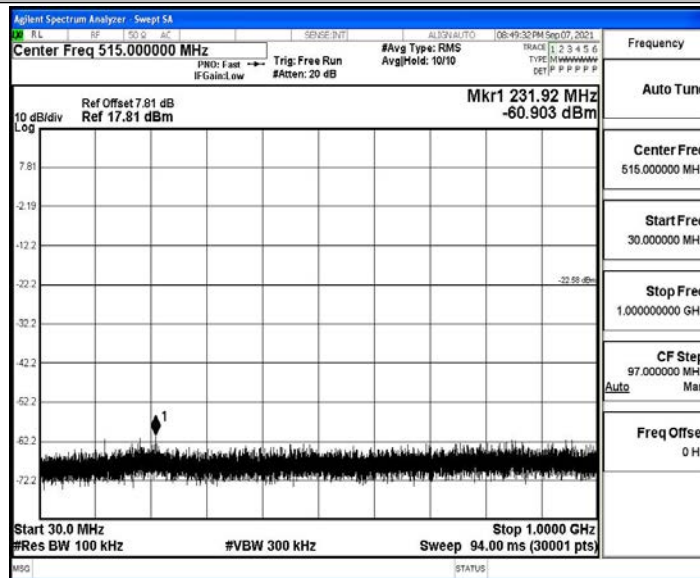
11N20SISO_Ant1_2462_1000~26500



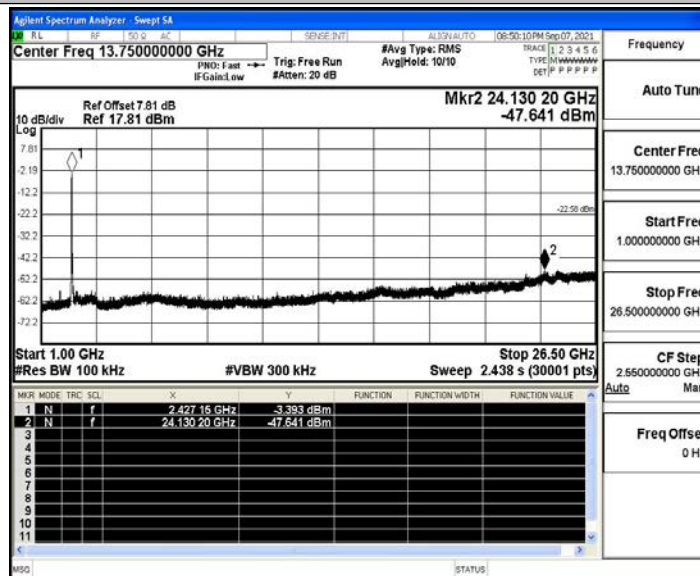
11N40SISO_Ant1_2422_0~Reference



11N40SISO_Ant1_2422_30~1000

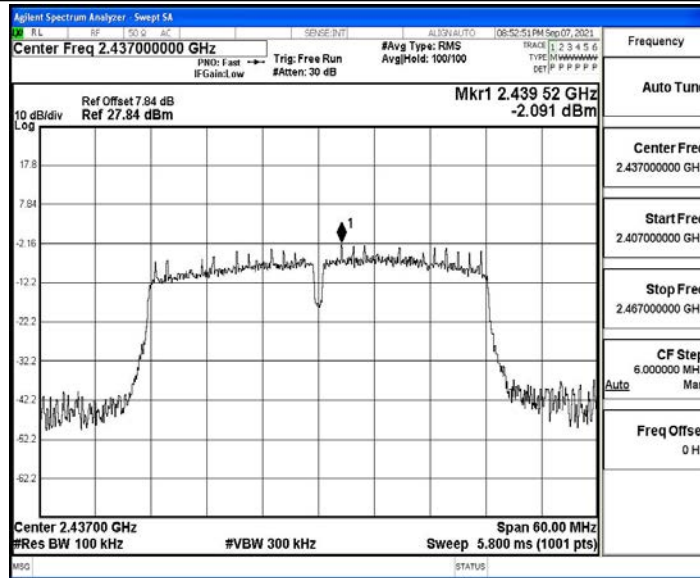


11N40SISO_Ant1_2422_1000~26500

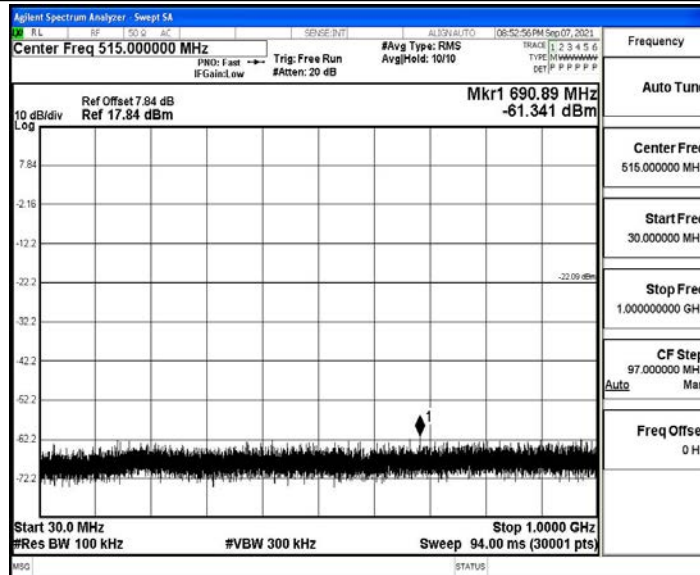




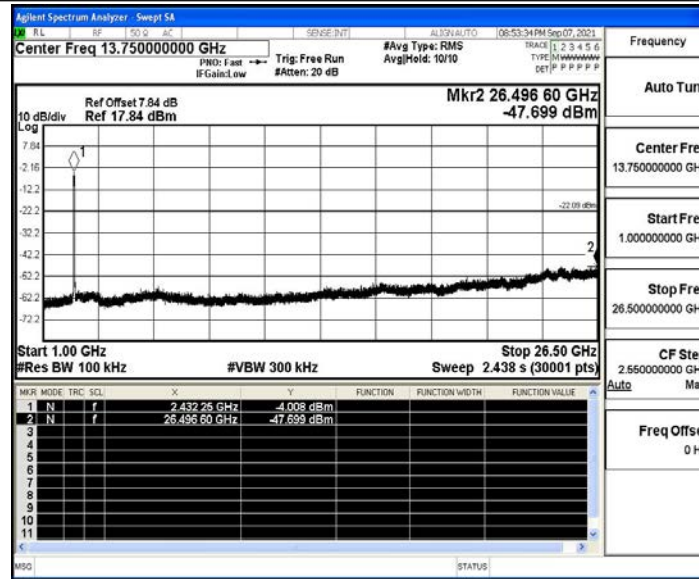
11N40SISO_Ant1_2437_0~Reference



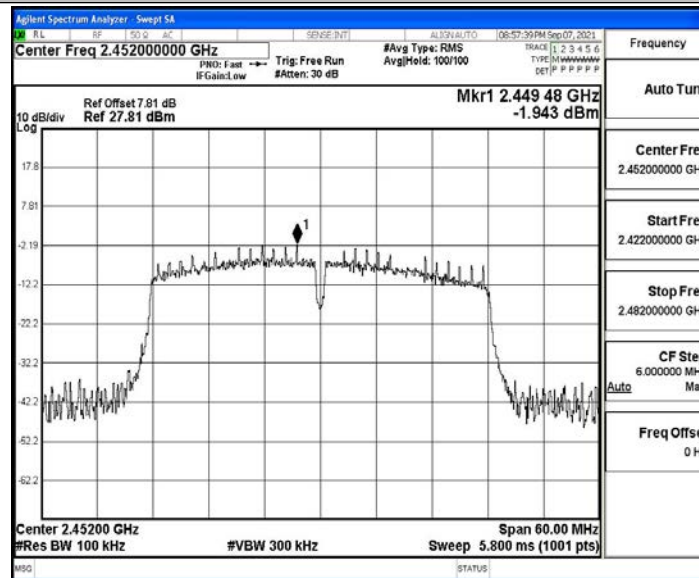
11N40SISO_Ant1_2437_30~1000



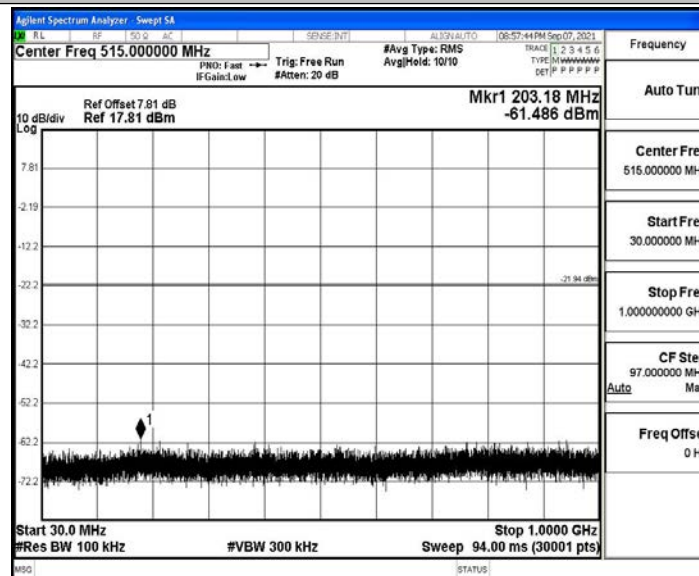
11N40SISO_Ant1_2437_1000~26500



11N40ISO_Ant1_2452_0~Reference

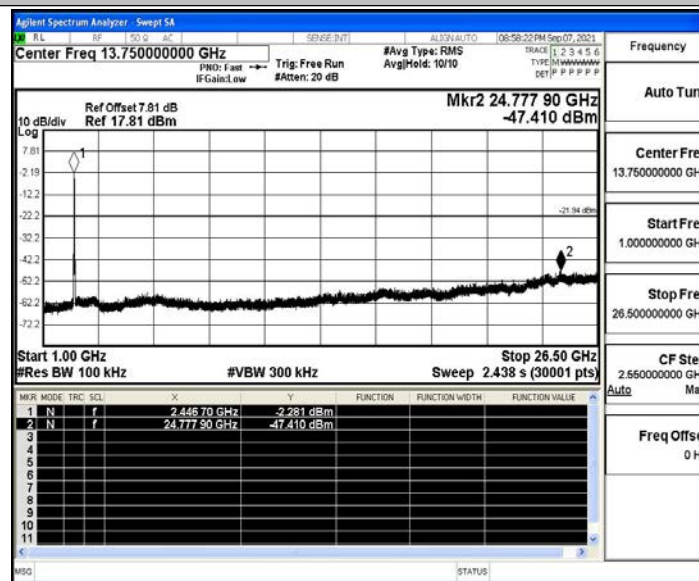


11N40ISO_Ant1_2452_30~1000





11N40SISO_Ant1_2452_1000~26500





A.7 Duty Cycle

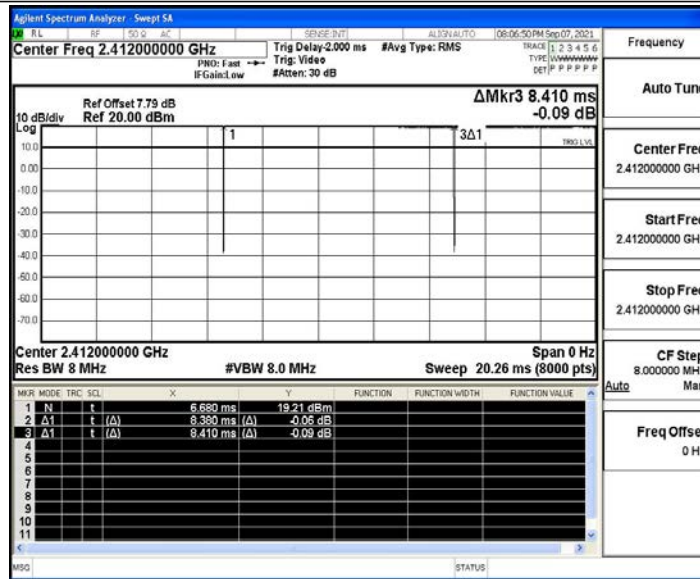
Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Minimum VBW(KHz)	Limit	Verdict
11B	Ant1	2412	8.38	8.41	0.9964	99.64	0.02	0.12	---	PASS
		2437	8.39	8.41	0.9976	99.76	0.01	0.12	---	PASS
		2462	8.38	8.41	0.9964	99.64	0.02	0.12	---	PASS
11G	Ant1	2412	1.39	1.43	0.9720	97.20	0.12	0.72	---	PASS
		2437	1.39	1.43	0.9720	97.20	0.12	0.72	---	PASS
		2462	1.39	1.42	0.9789	97.89	0.09	0.72	---	PASS
11N20SISO	Ant1	2412	1.30	1.34	0.9701	97.01	0.13	0.77	---	PASS
		2437	1.30	1.34	0.9701	97.01	0.13	0.77	---	PASS
		2462	1.30	1.33	0.9774	97.74	0.10	0.77	---	PASS
11N40SISO	Ant1	2422	0.65	0.68	0.9559	95.59	0.20	1.54	---	PASS
		2437	0.65	0.69	0.9420	94.20	0.26	1.54	---	PASS
		2452	0.65	0.68	0.9559	95.59	0.20	1.54	---	PASS

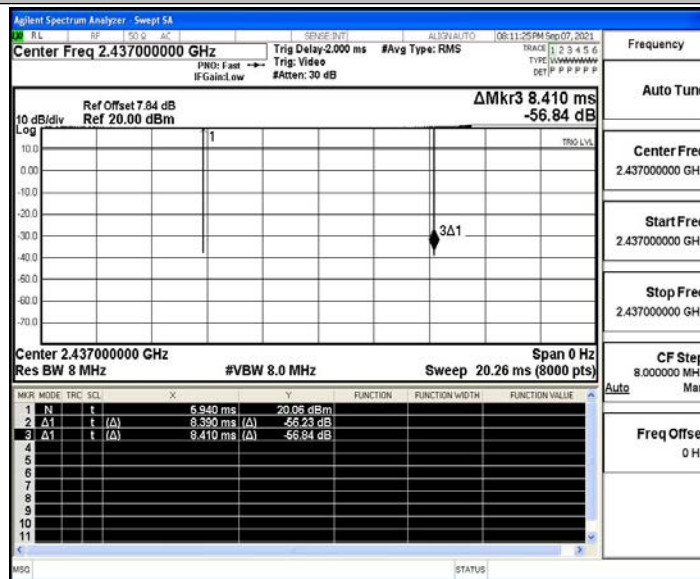


Test Graphs

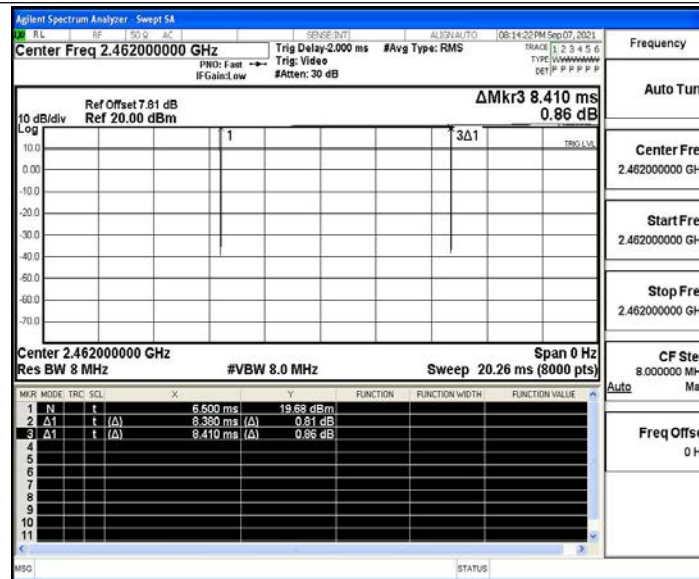
11B_Ant1_2412



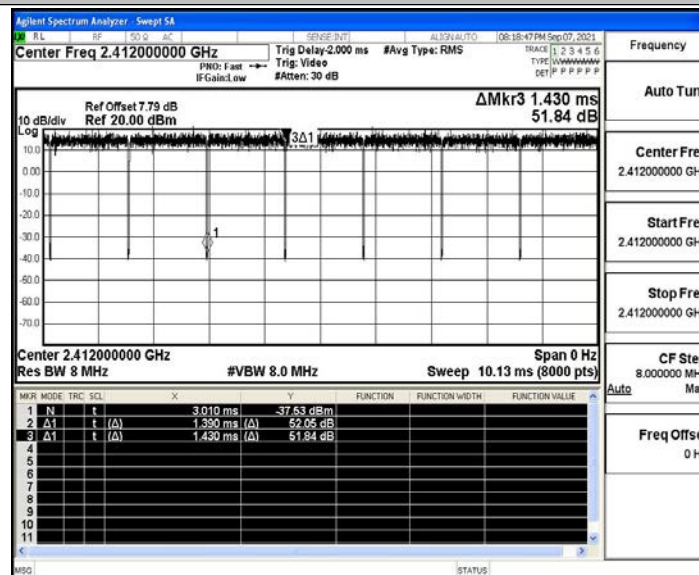
11B_Ant1_2437



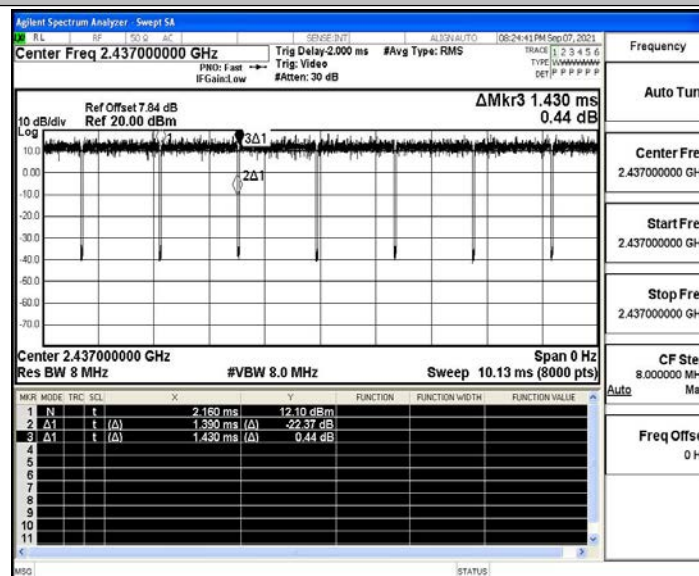
11B_Ant1_2462



11G_Ant1_2412

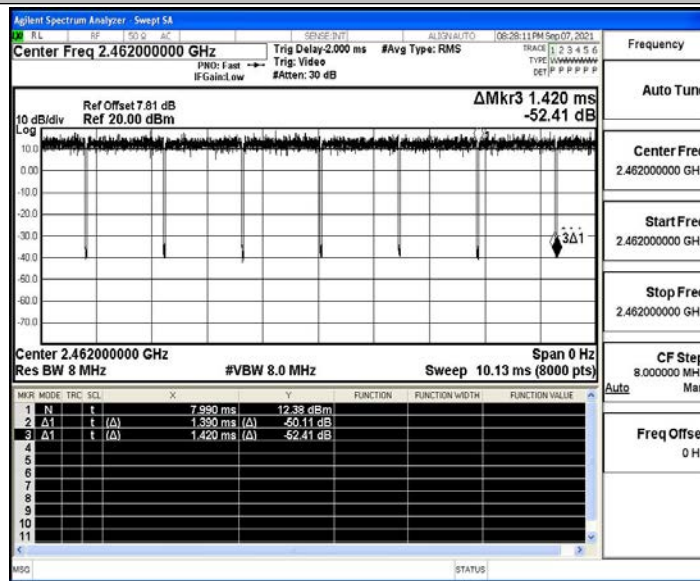


11G_Ant1_2437

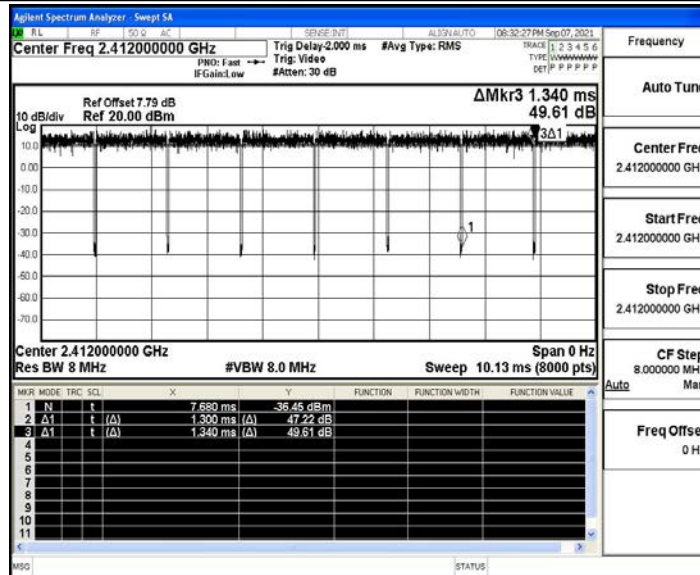




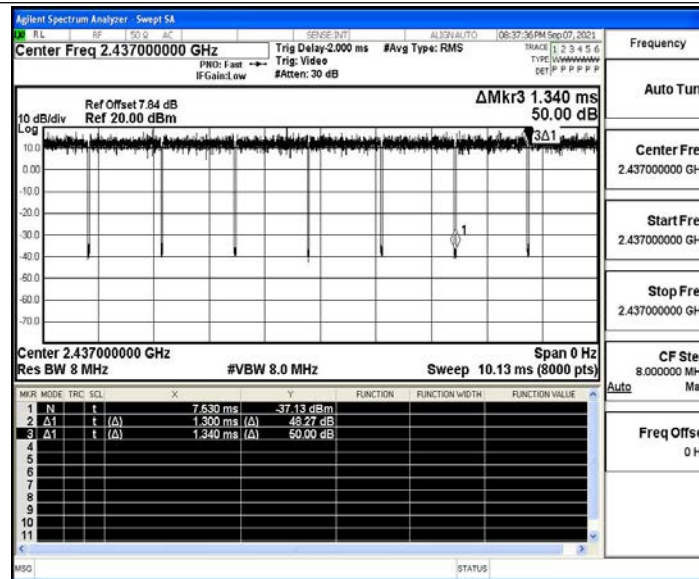
11G_Ant1_2462



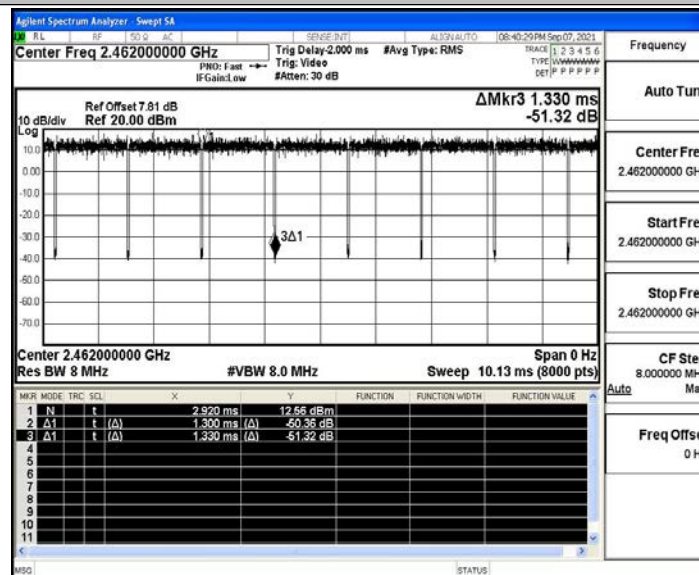
11N20SISO_Ant1_2412



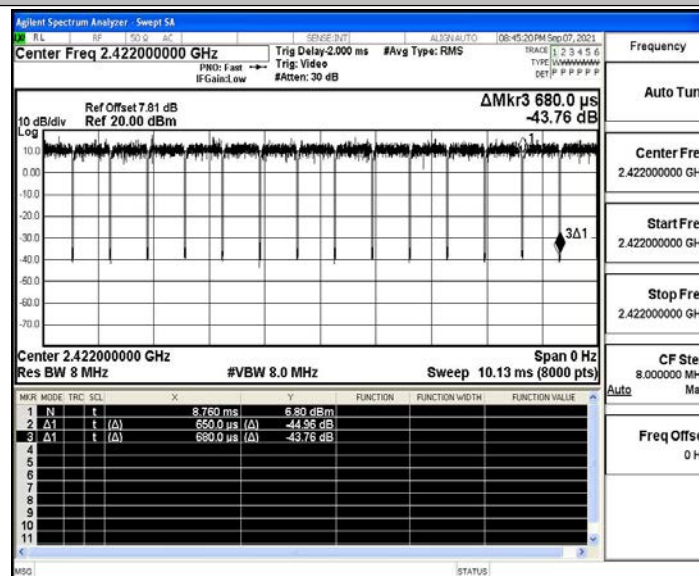
11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

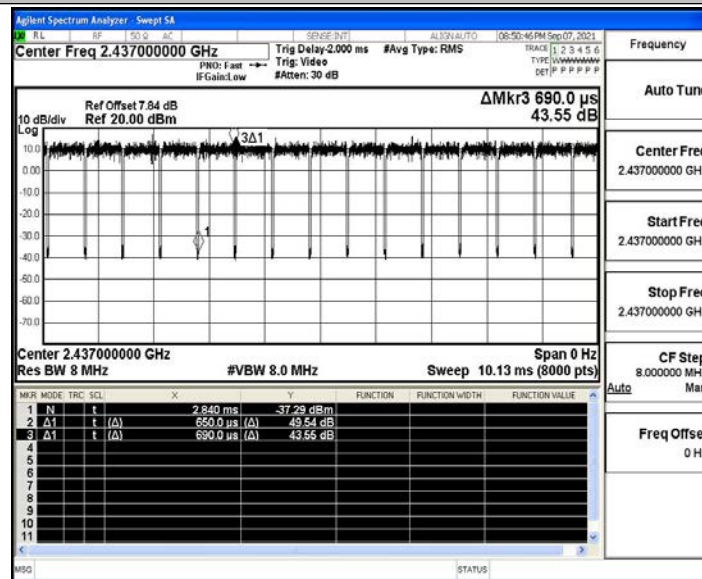


11N40SISO_Ant1_2422

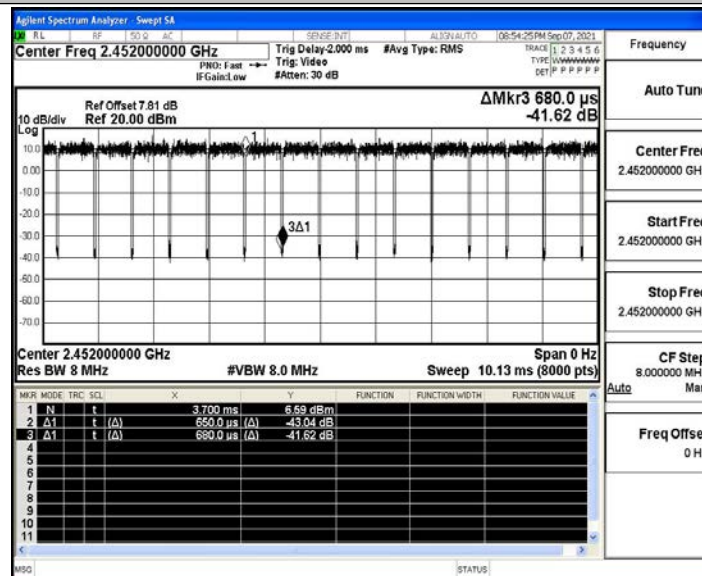




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





A.8 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Channel	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	Low	2412	AV	2310.000	-49.32	≤-41.20	PASS
				AV	2389.180	-48.57	≤-41.20	PASS
				AV	2390.000	-48.63	≤-41.20	PASS
				Peak	2310.000	-43.64	≤-21.20	PASS
				Peak	2370.330	-39.68	≤-21.20	PASS
				Peak	2390.000	-44.2	≤-21.20	PASS
		High	2462	AV	2483.500	-43.81	≤-41.20	PASS
				AV	2487.850	-43.31	≤-41.20	PASS
				AV	2500.000	-48.23	≤-41.20	PASS
				Peak	2483.500	-39.59	≤-21.20	PASS
				Peak	2487.960	-35.8	≤-21.20	PASS
				Peak	2500.000	-44.82	≤-21.20	PASS
11G	Ant1	Low	2412	AV	2310.000	-48.93	≤-41.20	PASS
				AV	2389.700	-47.91	≤-41.20	PASS
				AV	2390.000	-47.96	≤-41.20	PASS
				Peak	2310.000	-42.08	≤-21.20	PASS
				Peak	2362.660	-38.31	≤-21.20	PASS
				Peak	2390.000	-40.44	≤-21.20	PASS
		High	2462	AV	2483.500	-43.95	≤-41.20	PASS
				AV	2487.960	-41.96	≤-41.20	PASS
				AV	2500.000	-47.73	≤-41.20	PASS
				Peak	2483.500	-36.97	≤-21.20	PASS
				Peak	2483.560	-32.68	≤-21.20	PASS
				Peak	2500.000	-40.19	≤-21.20	PASS
11N20SISO	Ant1	Low	2412	AV	2310.000	-48.85	≤-41.20	PASS
				AV	2389.960	-47.82	≤-41.20	PASS
				AV	2390.000	-47.82	≤-41.20	PASS
				Peak	2310.000	-42.47	≤-21.20	PASS
				Peak	2385.150	-38.18	≤-21.20	PASS
				Peak	2390.000	-41.22	≤-21.20	PASS
		High	2462	AV	2483.500	-43.07	≤-41.20	PASS
				AV	2487.960	-41.87	≤-41.20	PASS
				AV	2500.000	-47.82	≤-41.20	PASS
				Peak	2483.500	-35.64	≤-21.20	PASS
				Peak	2483.890	-28.43	≤-21.20	PASS
				Peak	2500.000	-40.4	≤-21.20	PASS
11N40SISO	Ant1	Low	2422	AV	2310.000	-48.63	≤-41.20	PASS



				AV	2389.830	-46.91	≤ -41.20	PASS
				AV	2390.000	-47.01	≤ -41.20	PASS
				Peak	2310.000	-41.32	≤ -21.20	PASS
				Peak	2389.440	-33.78	≤ -21.20	PASS
				Peak	2390.000	-38.69	≤ -21.20	PASS
		High	2452	AV	2483.500	-44.08	≤ -41.20	PASS
				AV	2484.550	-43.71	≤ -41.20	PASS
				AV	2500.000	-47.68	≤ -41.20	PASS
				Peak	2483.500	-28.93	≤ -21.20	PASS
				Peak	2484.880	-26.59	≤ -21.20	PASS
				Peak	2500.000	-41.31	≤ -21.20	PASS

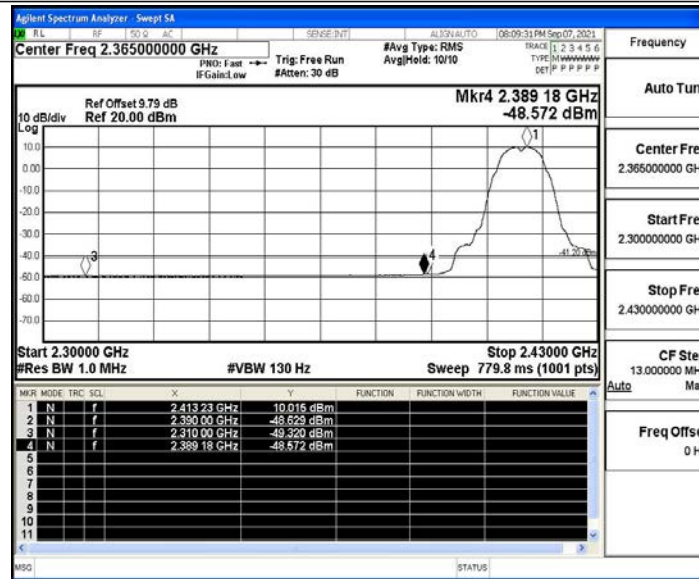
Note:

1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

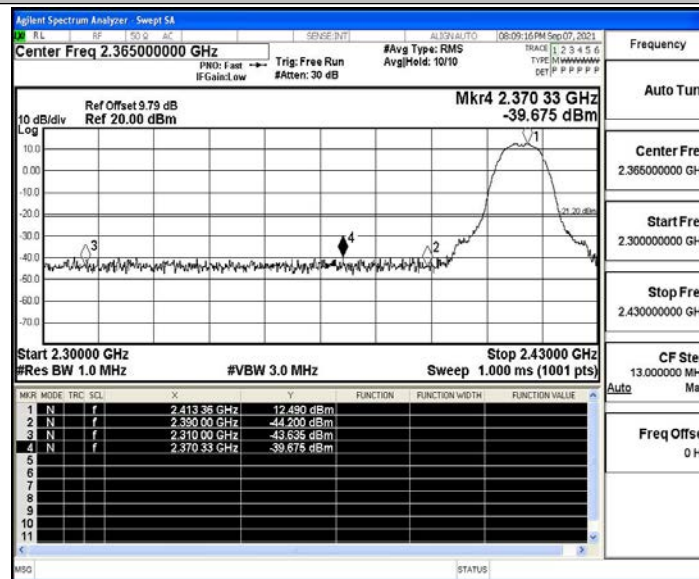


Test Graphs

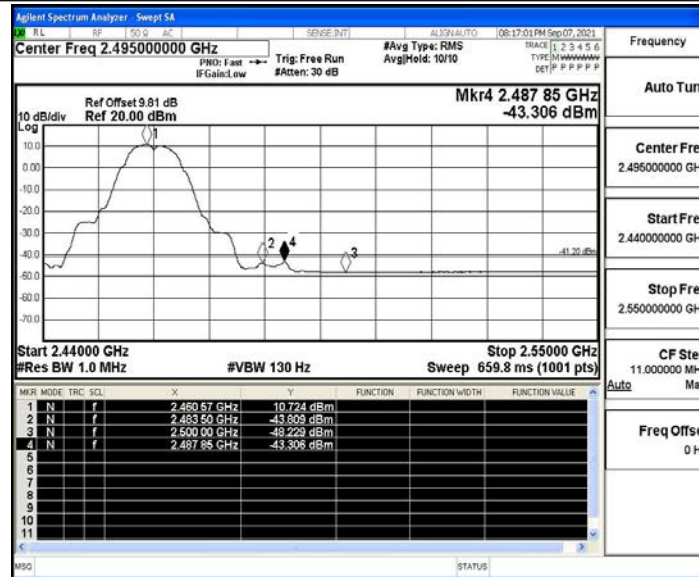
11B_Ant1_Low_2412_AV



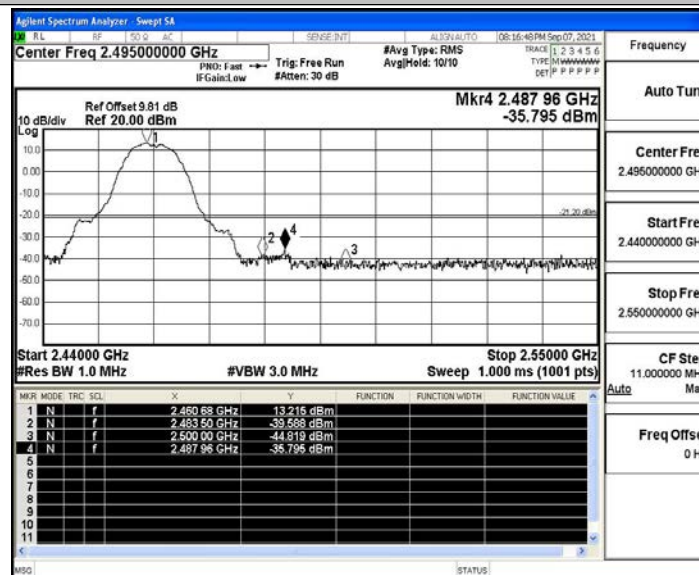
11B_Ant1_Low_2412_Peak



11B_Ant1_High_2462_AV



11B_Ant1_High_2462_Peak

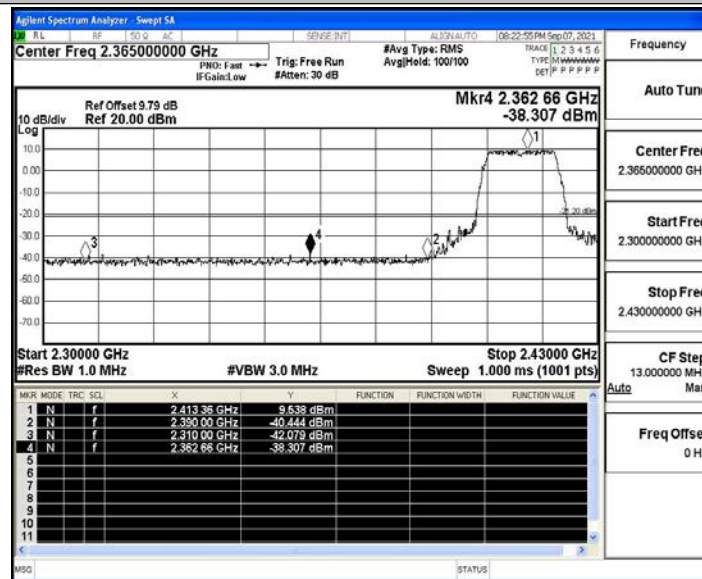


11G_Ant1_Low_2412_AV

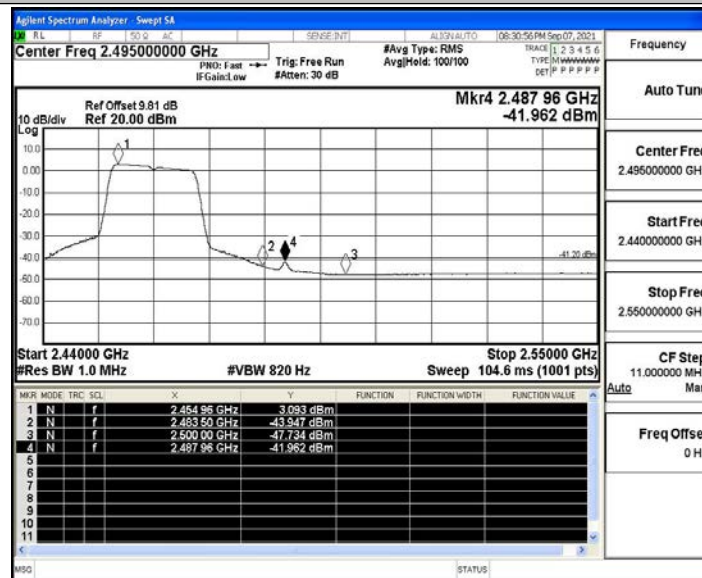




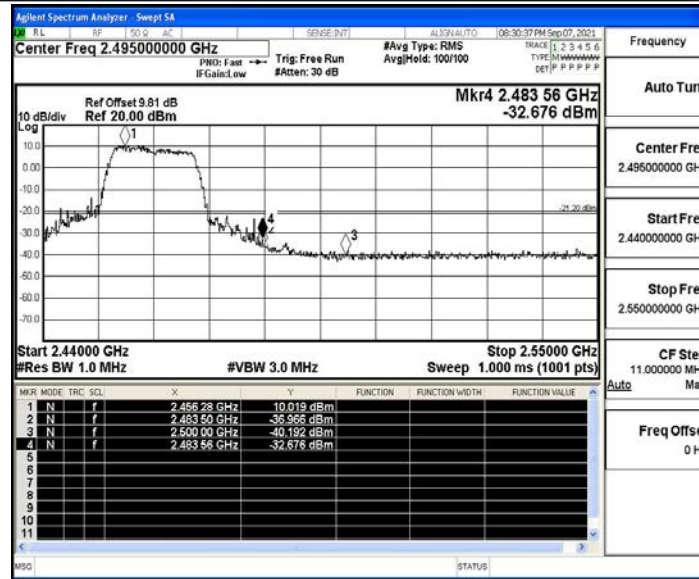
11G_Ant1_Low_2412_Peak



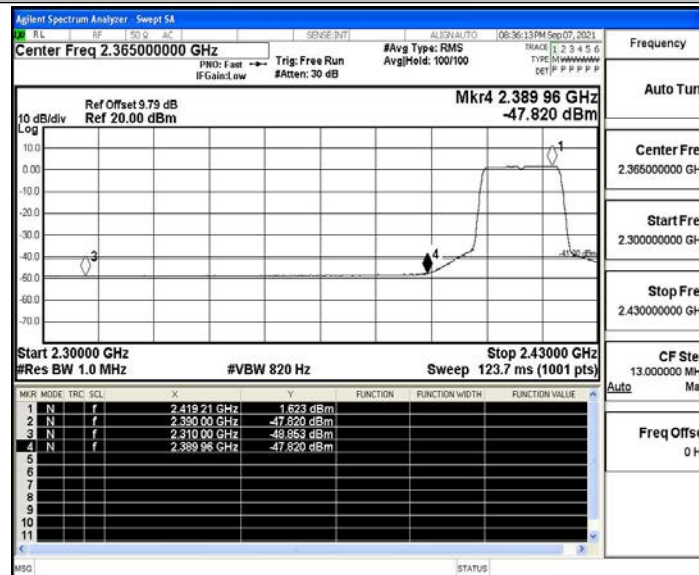
11G_Ant1_High_2462_AV



11G_Ant1_High_2462_Peak



11N20SISO_Ant1_Low_2412_AV

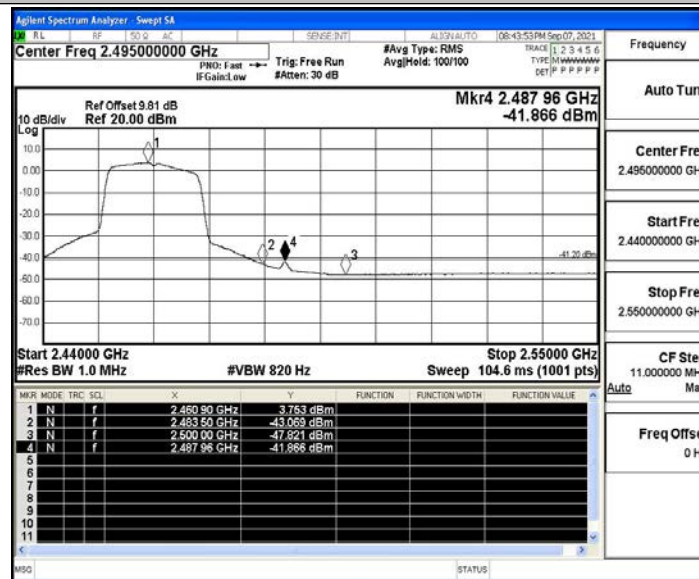


11N20SISO_Ant1_Low_2412_Peak

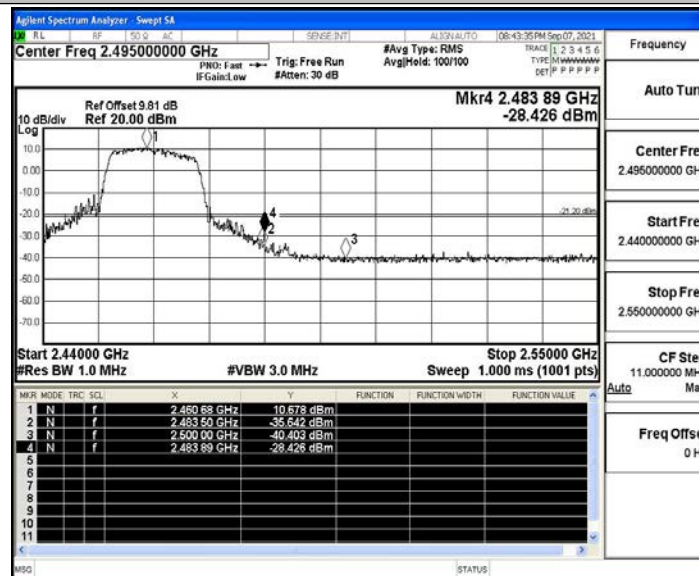




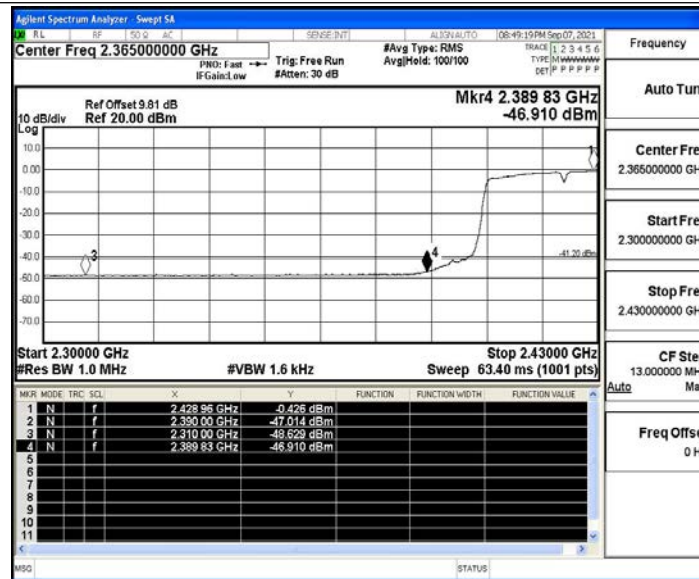
11N20SISO_Ant1_High_2462_AV



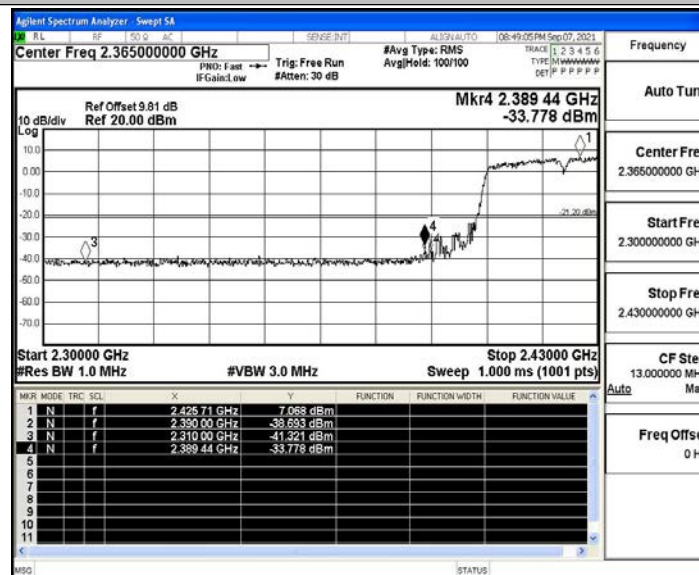
11N20SISO_Ant1_High_2462_Peak



11N40SISO_Ant1_Low_2422_AV



11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV





11N40SISO_Ant1_High_2452_Peak

