



Appendix B

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Smart hexagon wall light panel

Test Model: FWWSB8-37-9

Environmental Conditions

Temperature:	23.5°C
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Nick Peng
	<i>Nick Peng</i>
Supervised by:	Ling Zhu
	<i>Ling.zhu</i>





B.1 DTS Bandwidth

Test Result

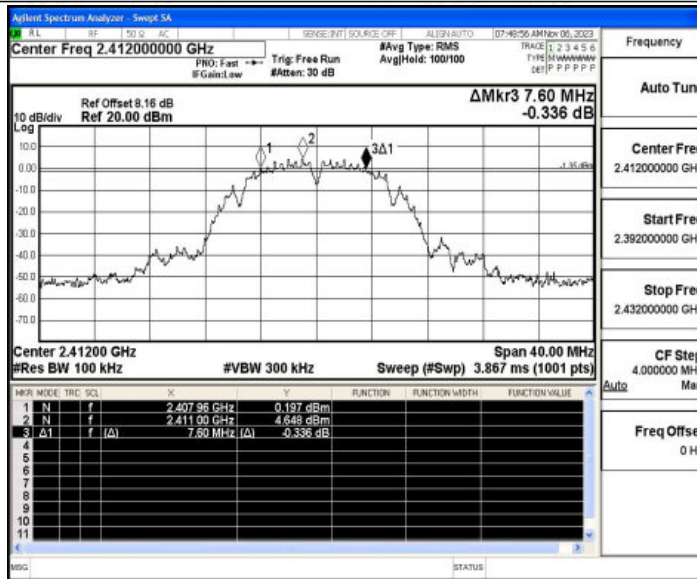
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	7.600	2407.960	2415.560	0.5	PASS
		2437	8.080	2432.960	2441.040	0.5	PASS
		2462	8.600	2457.920	2466.520	0.5	PASS
11G	Ant1	2412	15.680	2404.480	2420.160	0.5	PASS
		2437	16.320	2428.840	2445.160	0.5	PASS
		2462	16.320	2453.840	2470.160	0.5	PASS
11N20SISO	Ant1	2412	16.800	2403.960	2420.760	0.5	PASS
		2437	17.080	2428.400	2445.480	0.5	PASS
		2462	17.240	2453.400	2470.640	0.5	PASS
11N40SISO	Ant1	2422	35.600	2404.480	2440.080	0.5	PASS
		2437	35.280	2419.240	2454.520	0.5	PASS
		2452	33.200	2436.960	2470.160	0.5	PASS



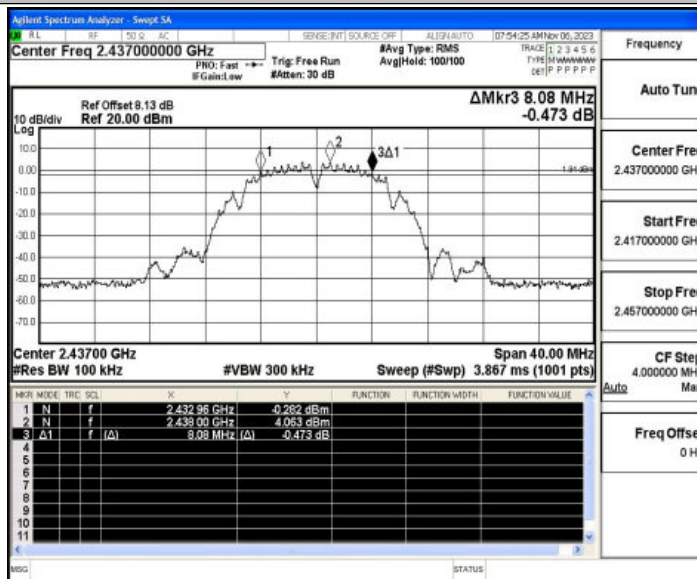


Test Graphs

11B_Ant1_2412

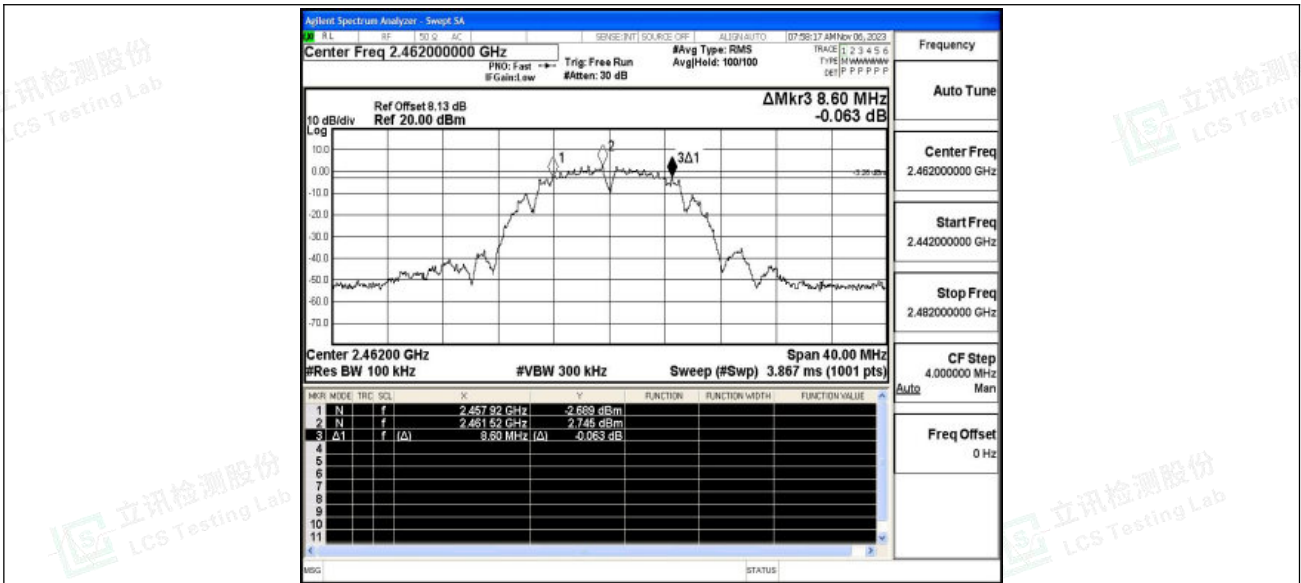


11B_Ant1_2437

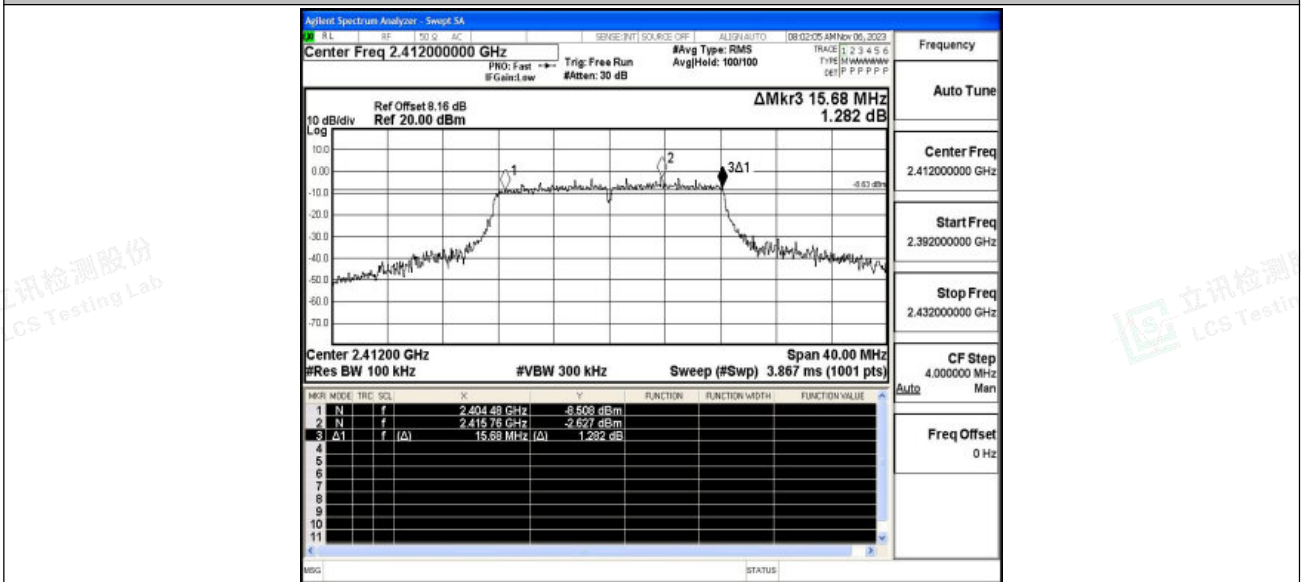


11B_Ant1_2462



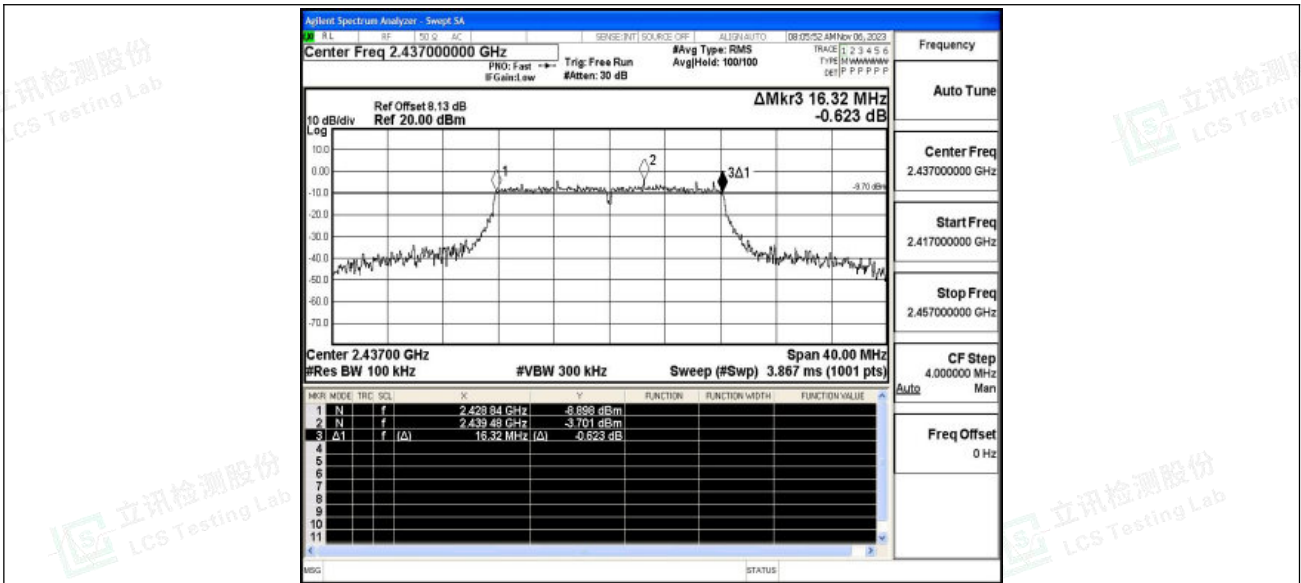


11G_Ant1_2412

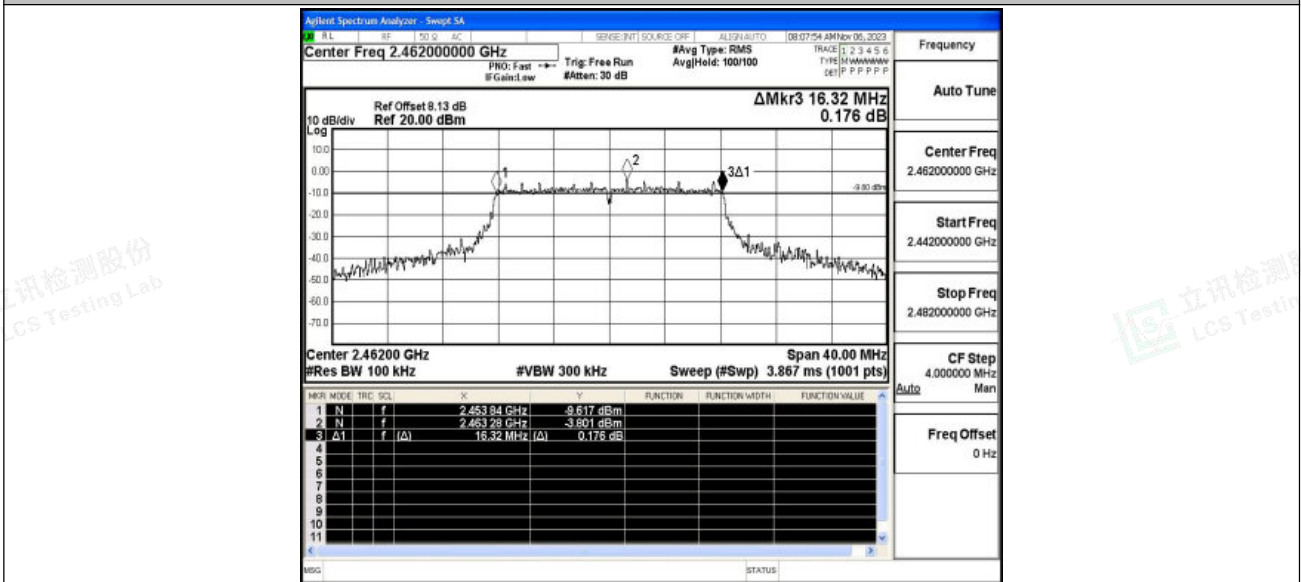


11G_Ant1_2437



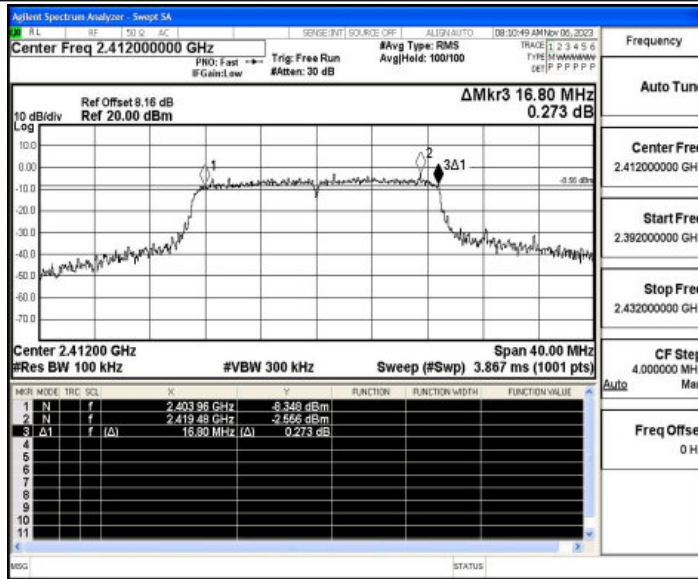


11G_Ant1_2462

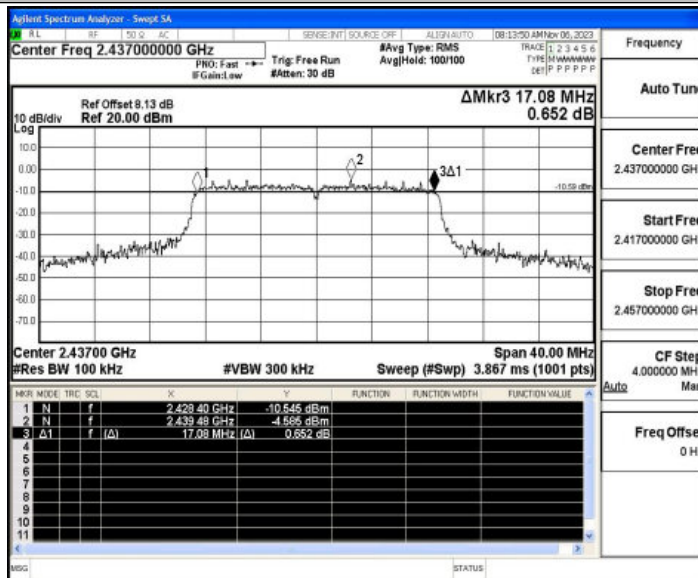


11N20SISO_Ant1_2412



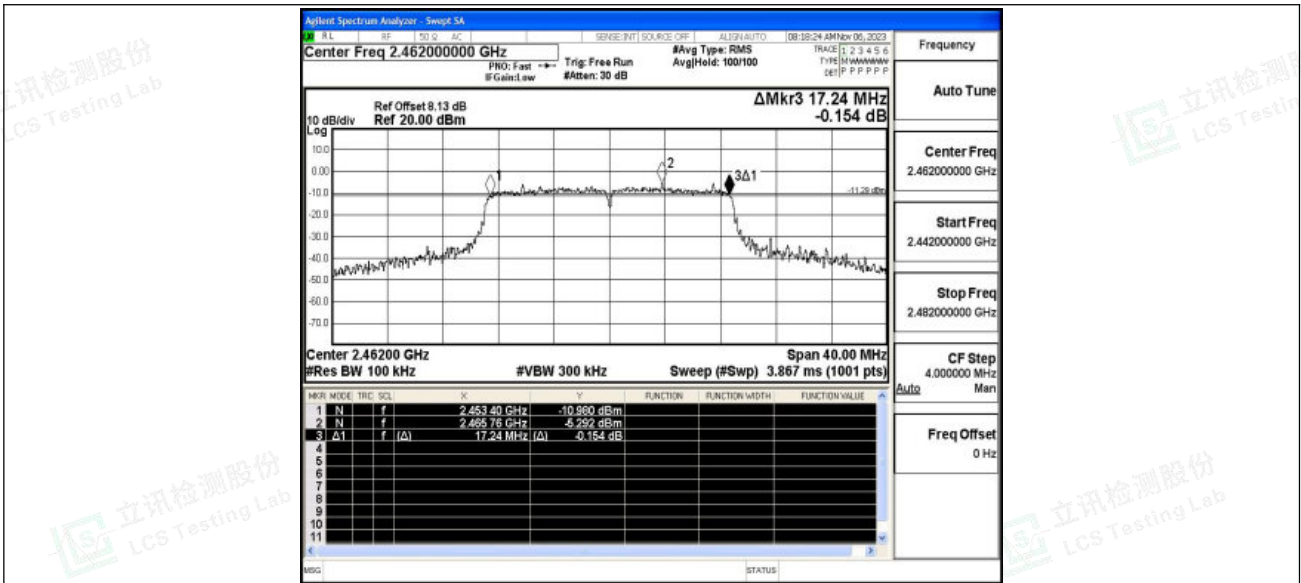


11N20SISO_Ant1_2437

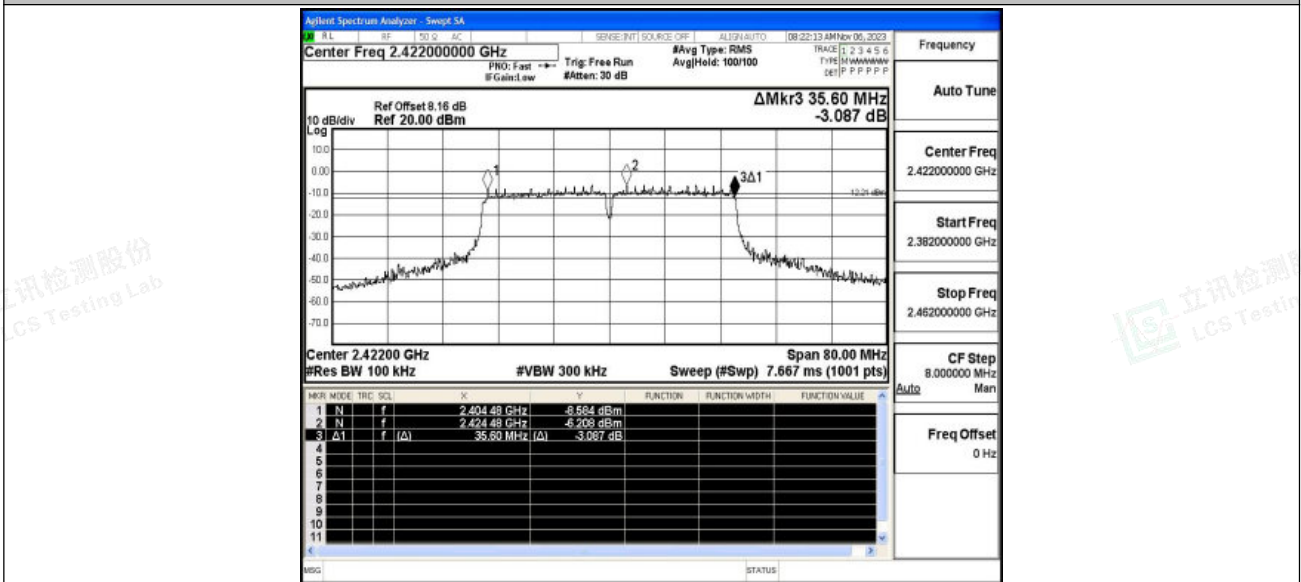


11N20SISO_Ant1_2462



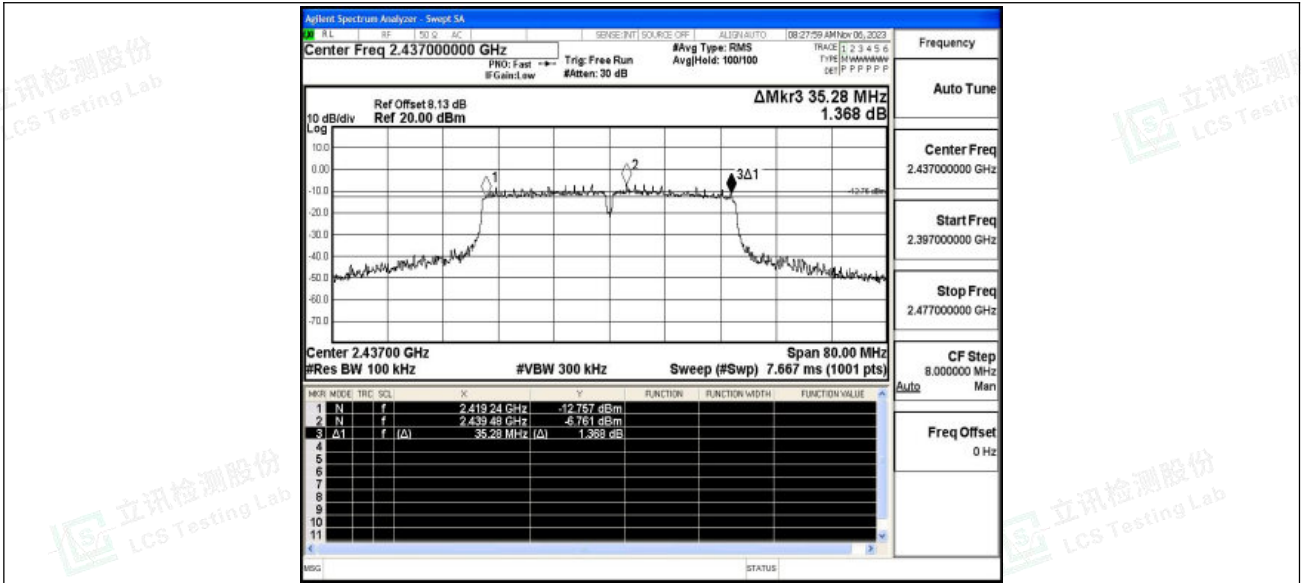


11N40SISO_Ant1_2422

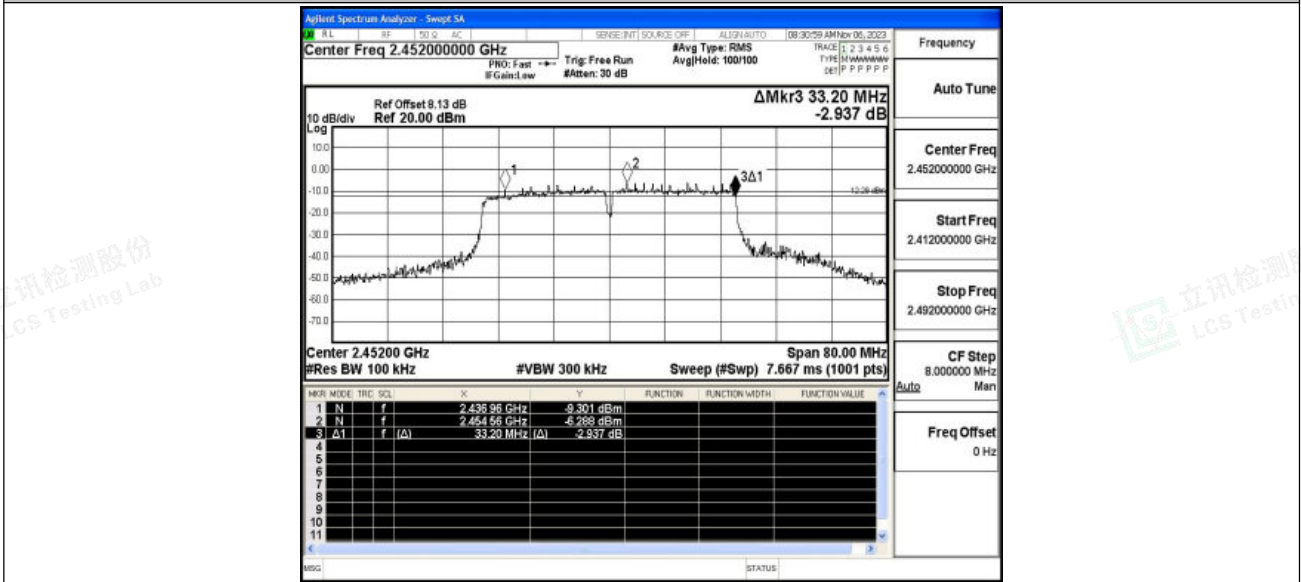


11N40SISO_Ant1_2437





11N40SISO_Ant1_2452





B.2 Maximum Peak Conducted Output Power

Test Result Peak

TestMode	Antenna	Freq(MHz)	Peak Power[dBm]	Conducted Limit[dBm]	Verdict
11B	Ant1	2412	15.91	≤30.00	PASS
		2437	15.38	≤30.00	PASS
		2462	14.68	≤30.00	PASS
11G	Ant1	2412	14.66	≤30.00	PASS
		2437	13.90	≤30.00	PASS
		2462	13.62	≤30.00	PASS
11N20SISO	Ant1	2412	14.95	≤30.00	PASS
		2437	13.47	≤30.00	PASS
		2462	13.09	≤30.00	PASS
11N40SISO	Ant1	2422	14.65	≤30.00	PASS
		2437	13.56	≤30.00	PASS
		2452	14.34	≤30.00	PASS





B.3 Maximum power spectral density

Test Result

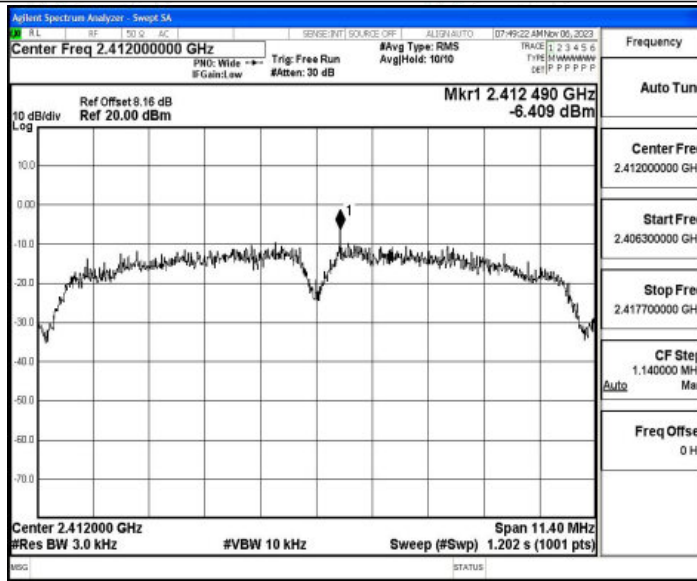
TestMode	Antenna	Freq(MHz)	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant1	2412	-6.41	≤8.00	PASS
		2437	-8.84	≤8.00	PASS
		2462	-9.56	≤8.00	PASS
11G	Ant1	2412	-17.16	≤8.00	PASS
		2437	-18.28	≤8.00	PASS
		2462	-18.66	≤8.00	PASS
11N20SISO	Ant1	2412	-15.57	≤8.00	PASS
		2437	-17.75	≤8.00	PASS
		2462	-18.92	≤8.00	PASS
11N40SISO	Ant1	2422	-20.23	≤8.00	PASS
		2437	-21	≤8.00	PASS
		2452	-20.98	≤8.00	PASS



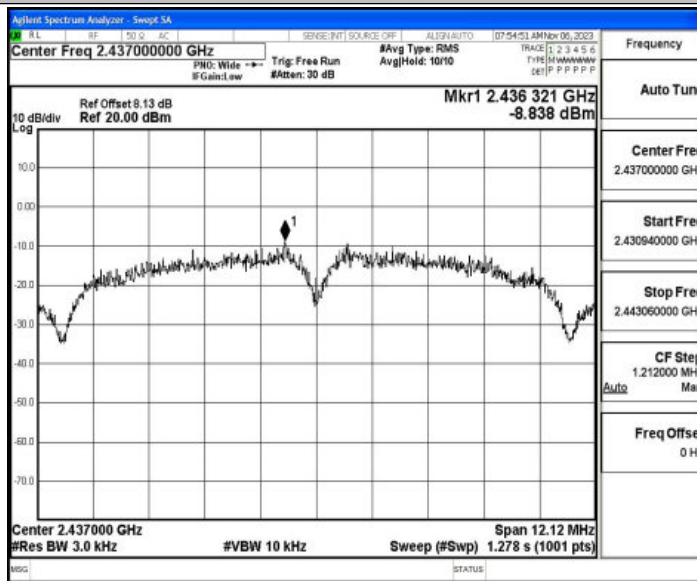


Test Graphs

11B_Ant1_2412

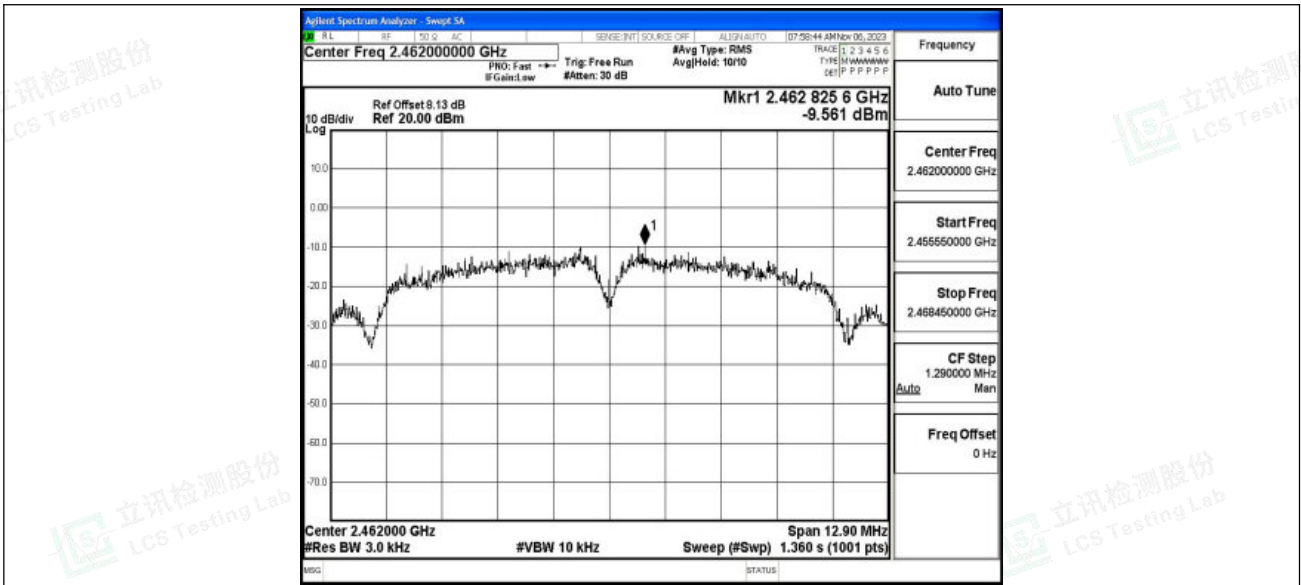


11B_Ant1_2437

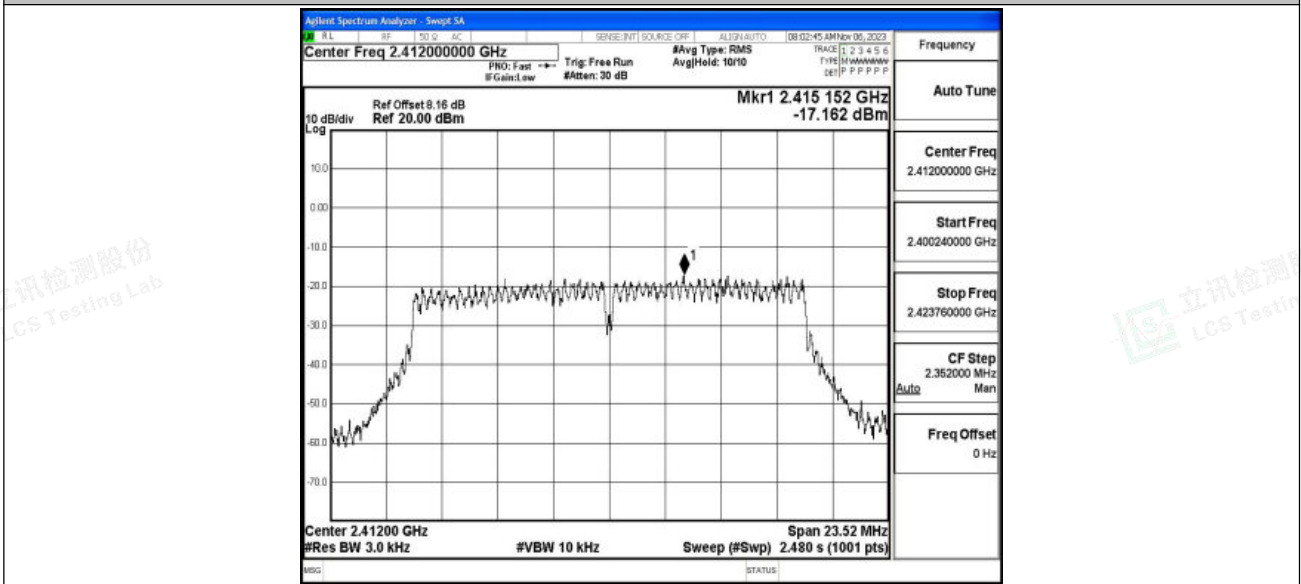


11B_Ant1_2462



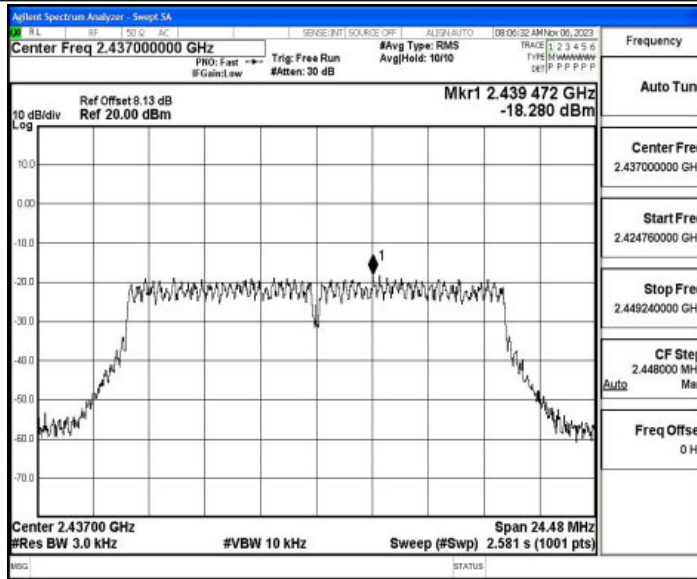


11G_Ant1_2412

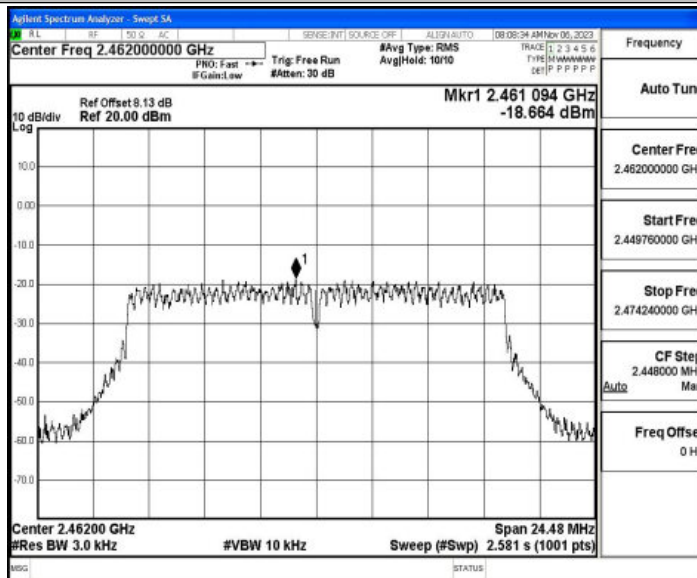


11G_Ant1_2437



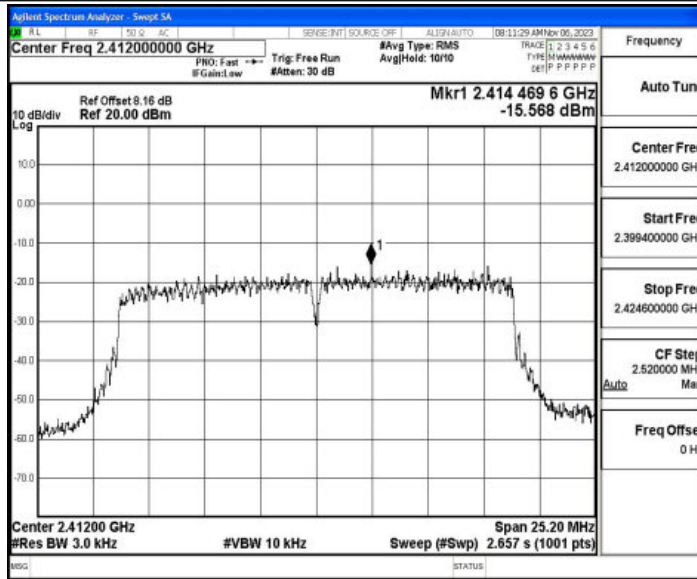


11G_Ant1_2462

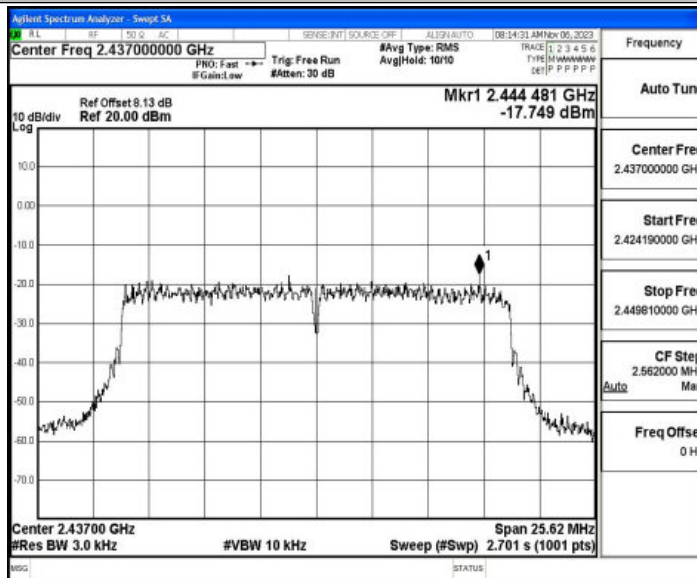


11N20SISO_Ant1_2412



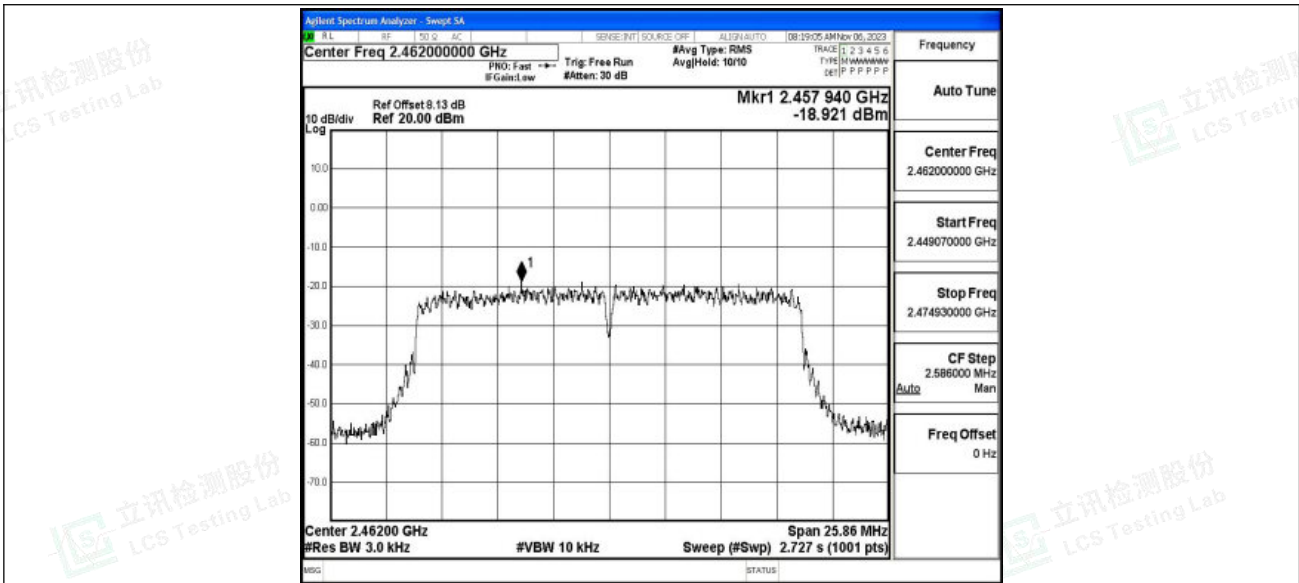


11N20SISO_Ant1_2437

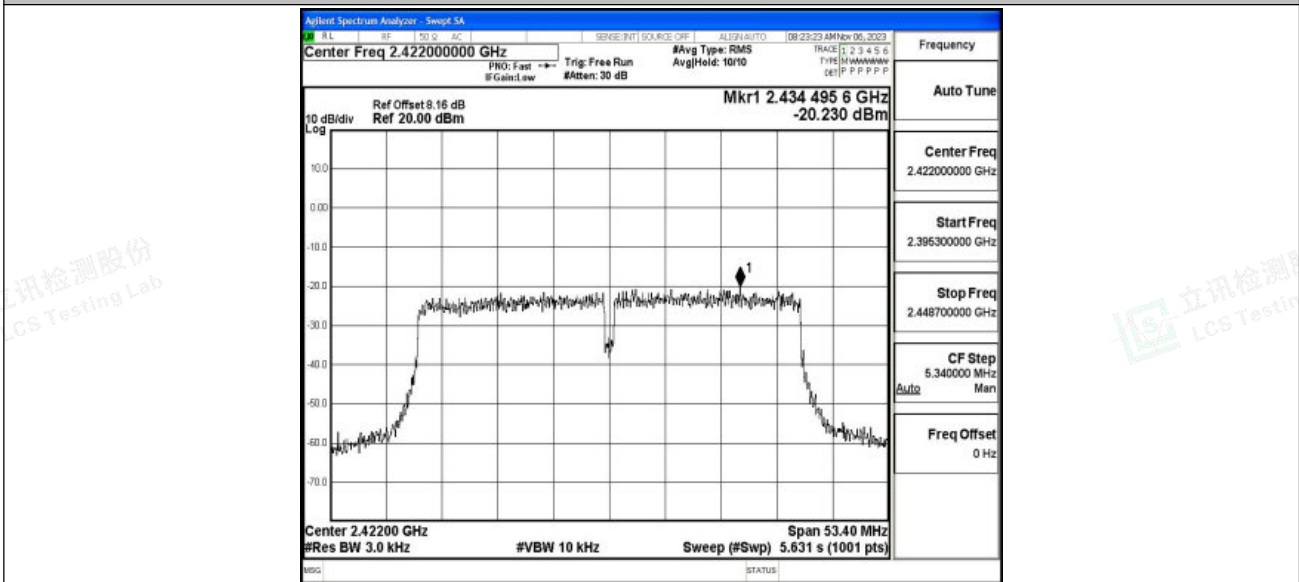


11N20SISO_Ant1_2462



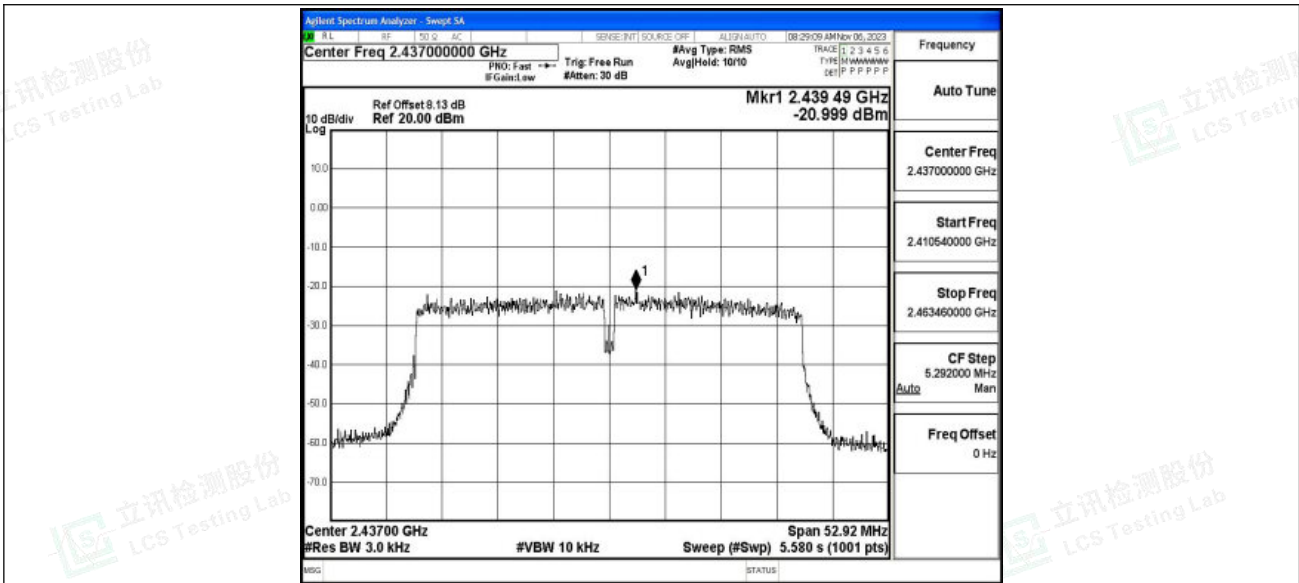


11N40SISO_Ant1_2422

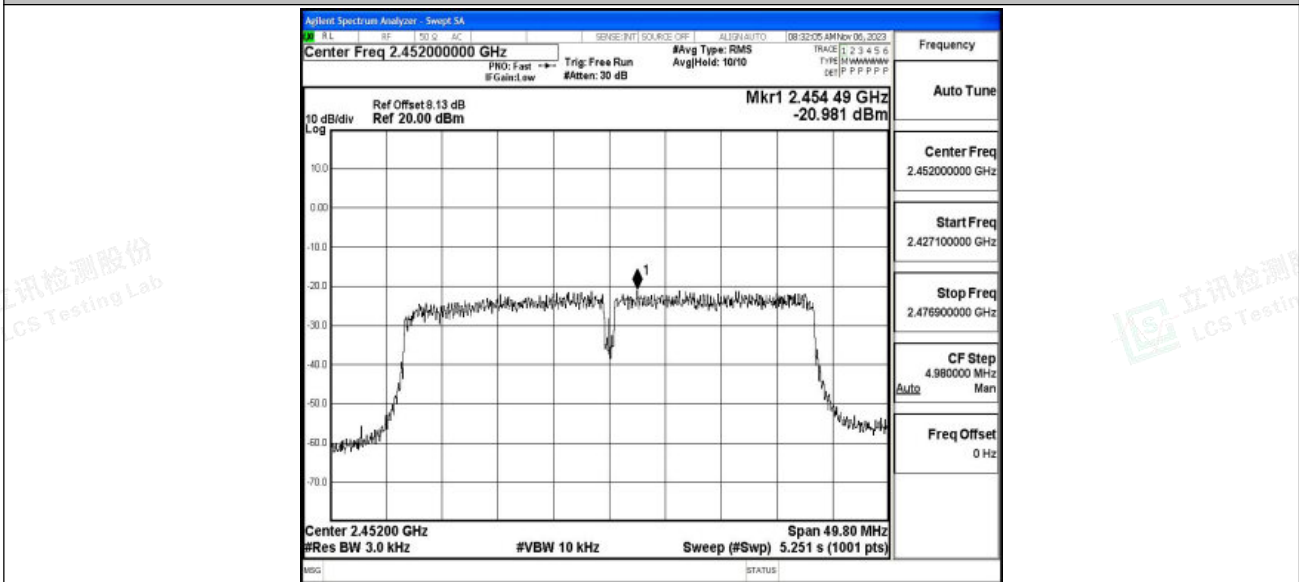


11N40SISO_Ant1_2437





11N40SISO_Ant1_2452





B.4 Band edge measurements

Test Result

TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	3.96	-42.38	≤-16.04	PASS
		High	2462	3.04	-49.82	≤-16.96	PASS
11G	Ant1	Low	2412	-2.65	-37.32	≤-22.65	PASS
		High	2462	-4.01	-47.54	≤-24.01	PASS
11N20SISO	Ant1	Low	2412	-3.22	-36.75	≤-23.22	PASS
		High	2462	-5.34	-47.37	≤-25.34	PASS
11N40SISO	Ant1	Low	2422	-6.34	-37.17	≤-26.34	PASS
		High	2452	-6.21	-41.49	≤-26.21	PASS



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Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

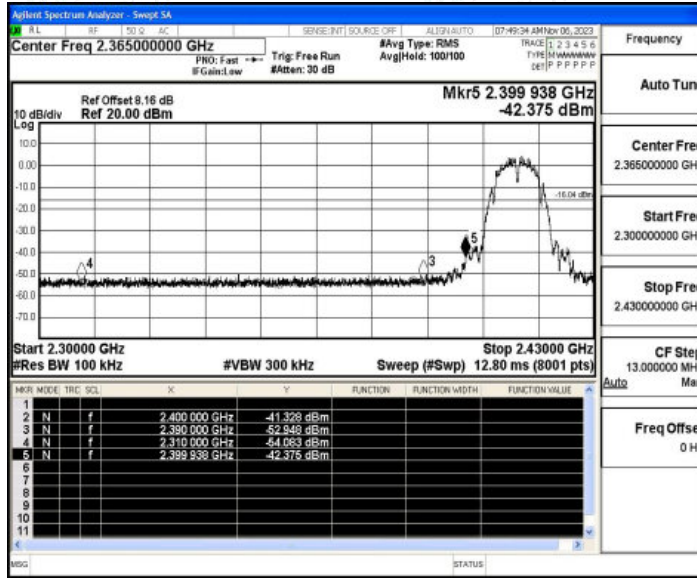
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity

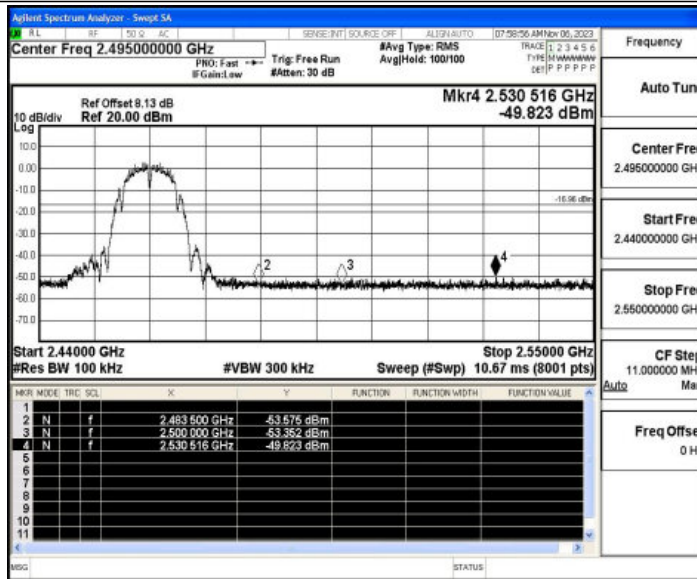


Test Graphs

11B_Ant1_Low_2412

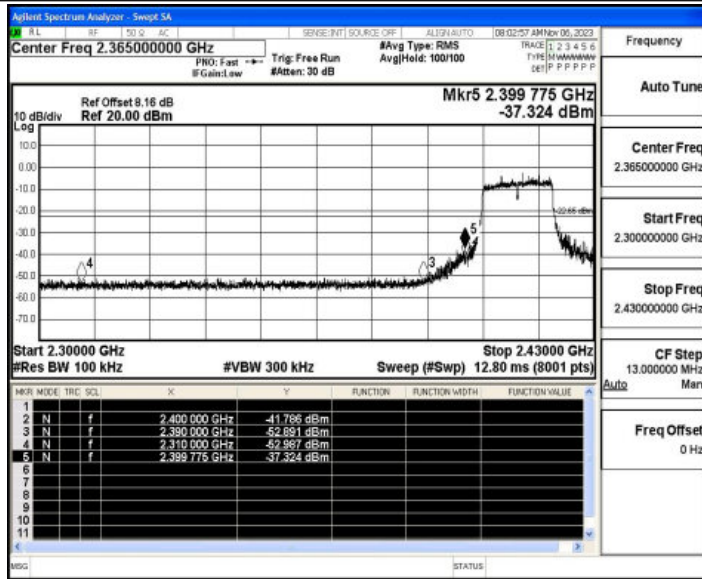


11B_Ant1_High_2462

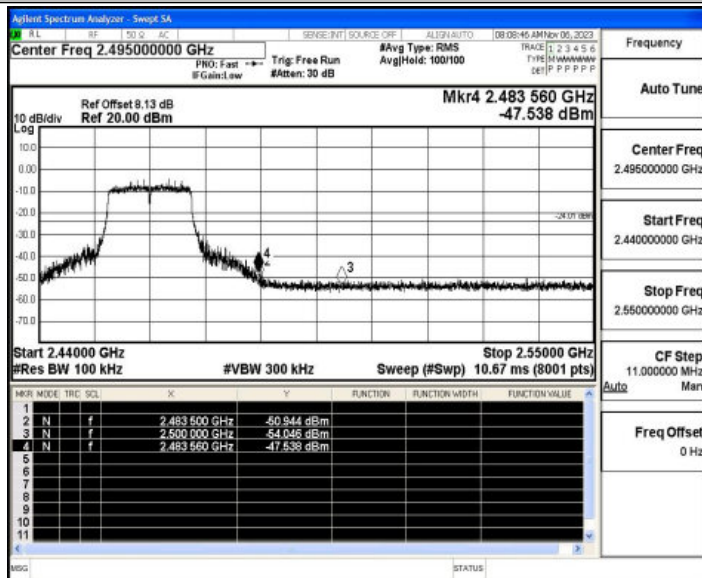


11G_Ant1_Low_2412



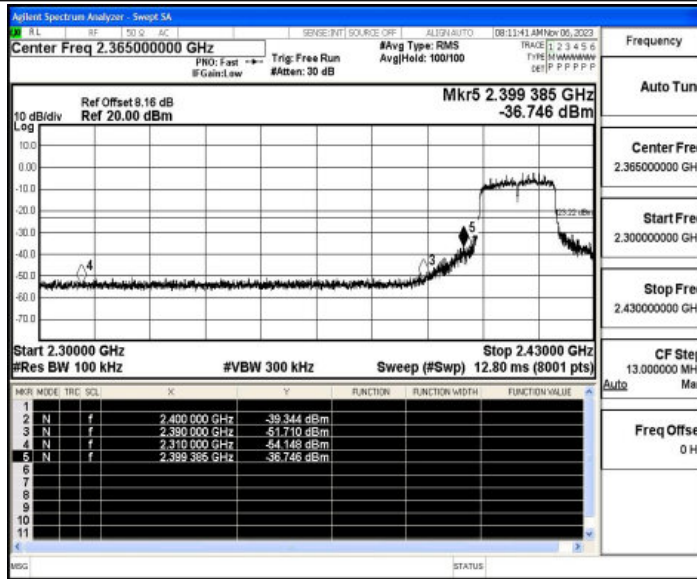


11G_Ant1_High_2462

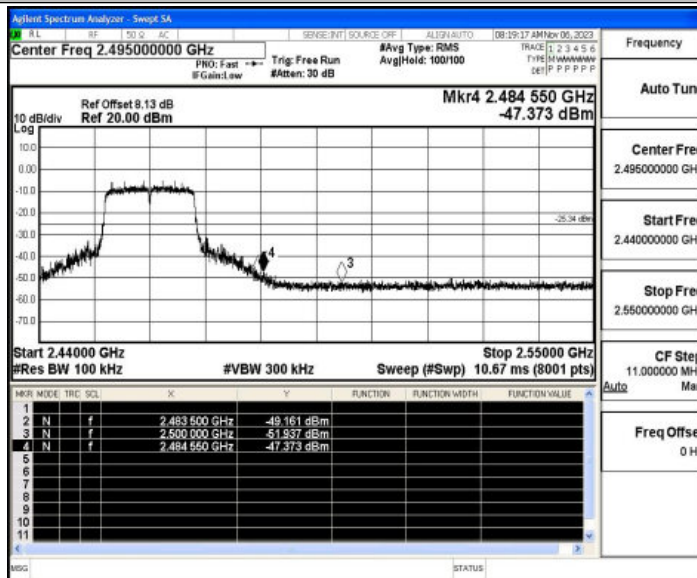


11N20SISO_Ant1_Low_2412



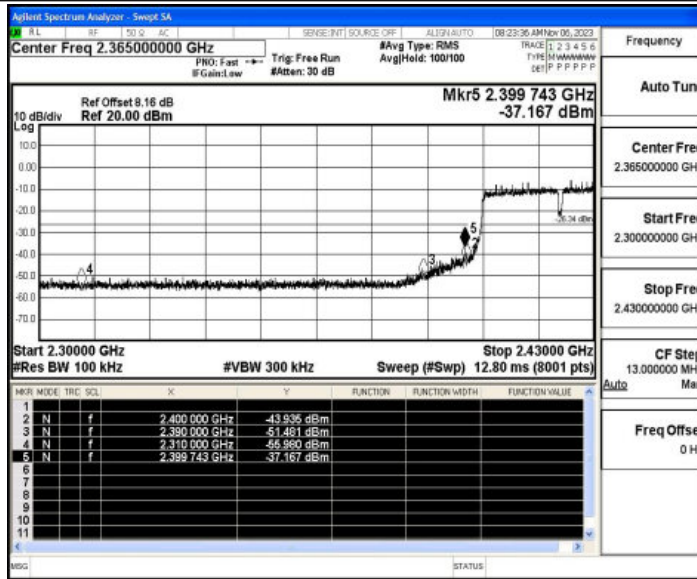


11N20SISO_Ant1_High_2462

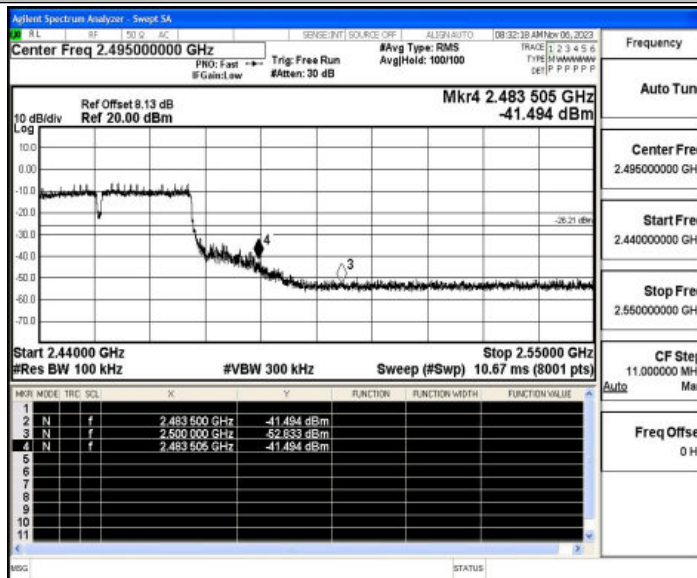


11N40SISO_Ant1_Low_2422





11N40SISO_Ant1_High_2452





B.5 Conducted Spurious Emission

Test Result

TestMode	Antenna	Freq(MHz)	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	30~1000	3.96	-60.95	≤-16.04	PASS
			1000~26500	3.96	-49.13	≤-16.04	PASS
		2437	30~1000	4.11	-61.39	≤-15.89	PASS
			1000~26500	4.11	-48.86	≤-15.89	PASS
		2462	30~1000	3.04	-60.6	≤-16.96	PASS
			1000~26500	3.04	-48.72	≤-16.96	PASS
11G	Ant1	2412	30~1000	-2.65	-60.71	≤-22.65	PASS
			1000~26500	-2.65	-49.14	≤-22.65	PASS
		2437	30~1000	-3.54	-61.6	≤-23.54	PASS
			1000~26500	-3.54	-49	≤-23.54	PASS
		2462	30~1000	-4.01	-61.5	≤-24.01	PASS
			1000~26500	-4.01	-49.16	≤-24.01	PASS
11N20SISO	Ant1	2412	30~1000	-3.22	-60.91	≤-23.22	PASS
			1000~26500	-3.22	-49.55	≤-23.22	PASS
		2437	30~1000	-4.61	-61.48	≤-24.61	PASS
			1000~26500	-4.61	-49.24	≤-24.61	PASS
		2462	30~1000	-5.34	-61.9	≤-25.34	PASS
			1000~26500	-5.34	-49.5	≤-25.34	PASS
11N40SISO	Ant1	2422	30~1000	-6.34	-61.46	≤-26.34	PASS
			1000~26500	-6.34	-49.26	≤-26.34	PASS
		2437	30~1000	-6.81	-61.64	≤-26.81	PASS
			1000~26500	-6.81	-49.24	≤-26.81	PASS
		2452	30~1000	-6.21	-61.78	≤-26.21	PASS
			1000~26500	-6.21	-48.93	≤-26.21	PASS



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Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

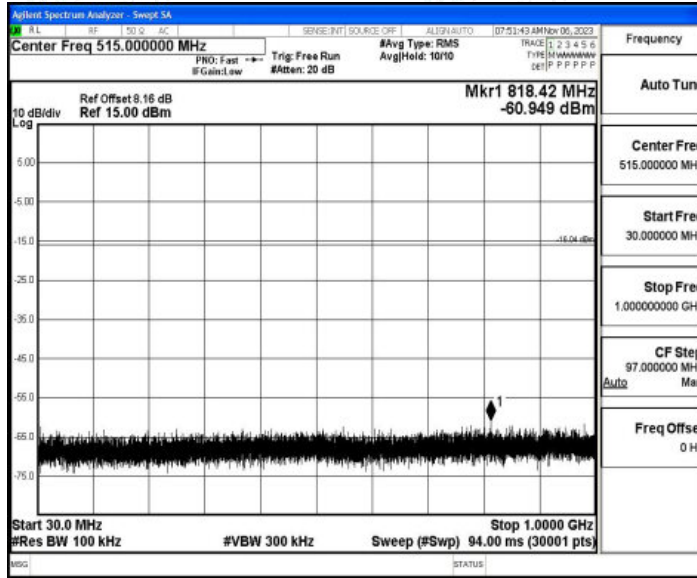
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity

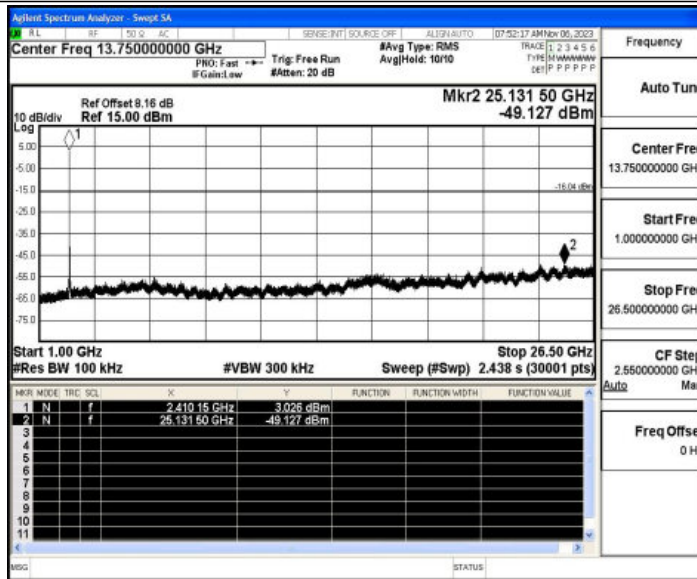


Test Graphs

11B_Ant1_2412_30~1000

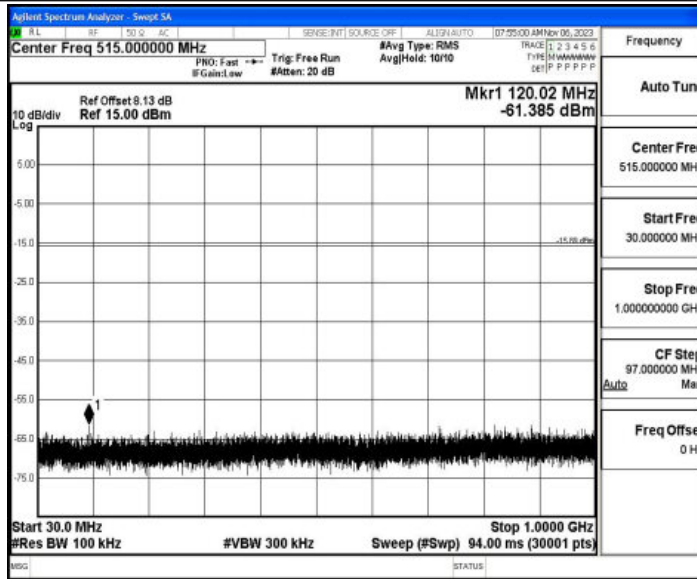


11B_Ant1_2412_1000~26500

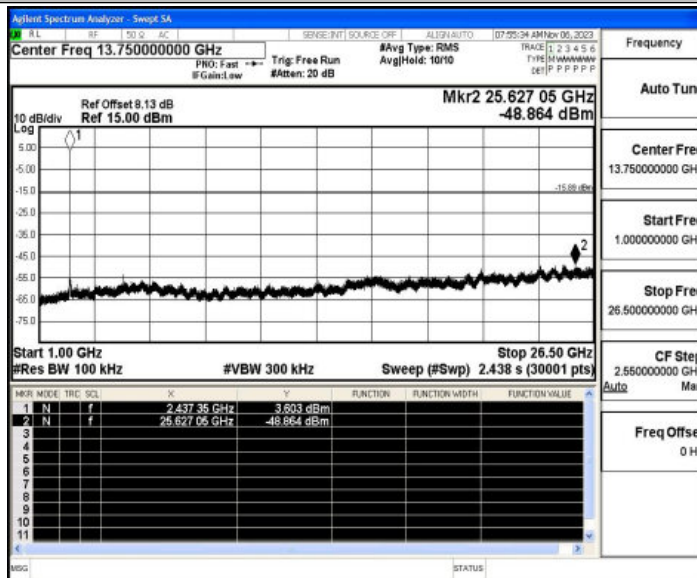


11B_Ant1_2437_30~1000



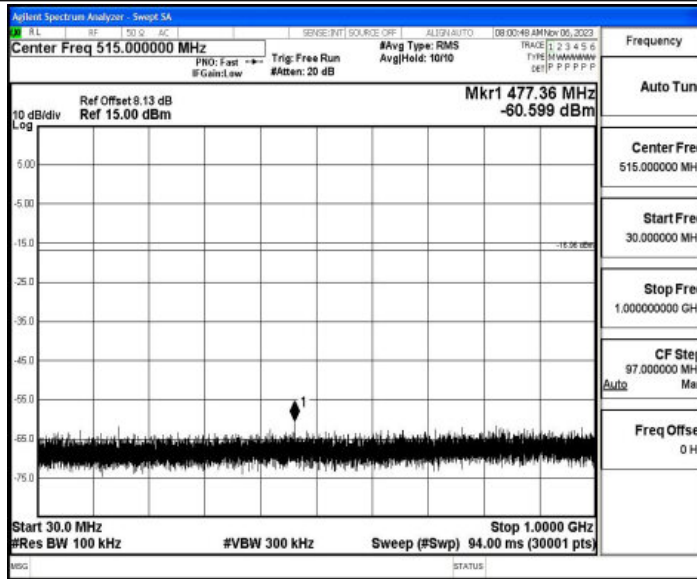


11B_Ant1_2437_1000~26500

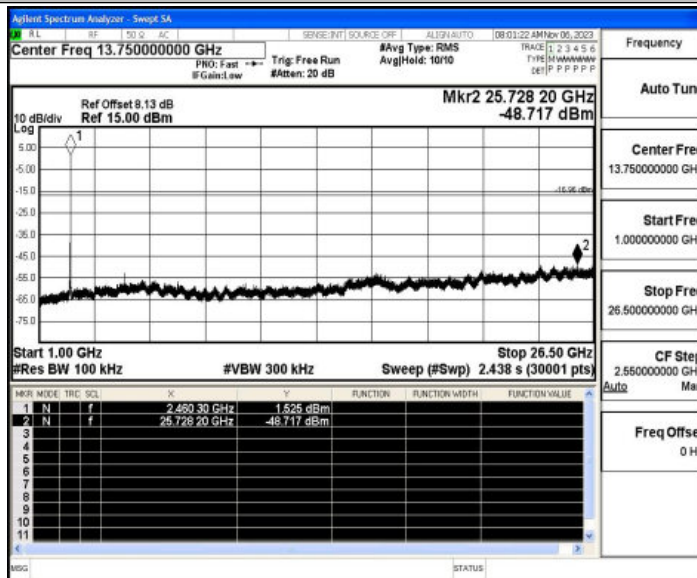


11B_Ant1_2462_30~1000



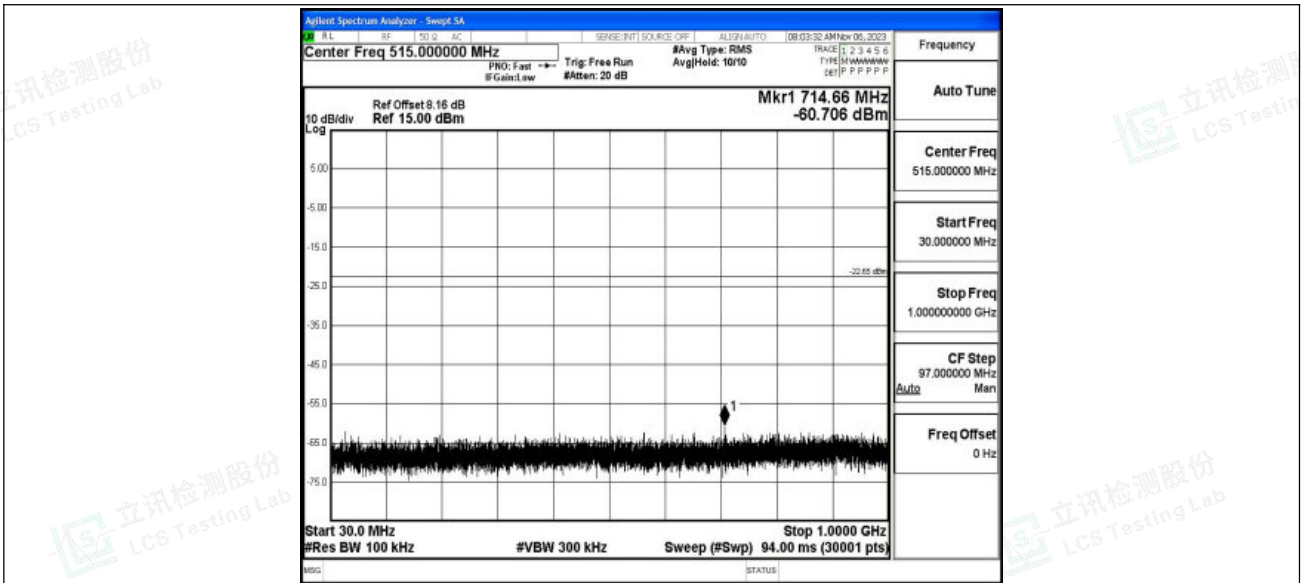


11B_Ant1_2462_1000~26500

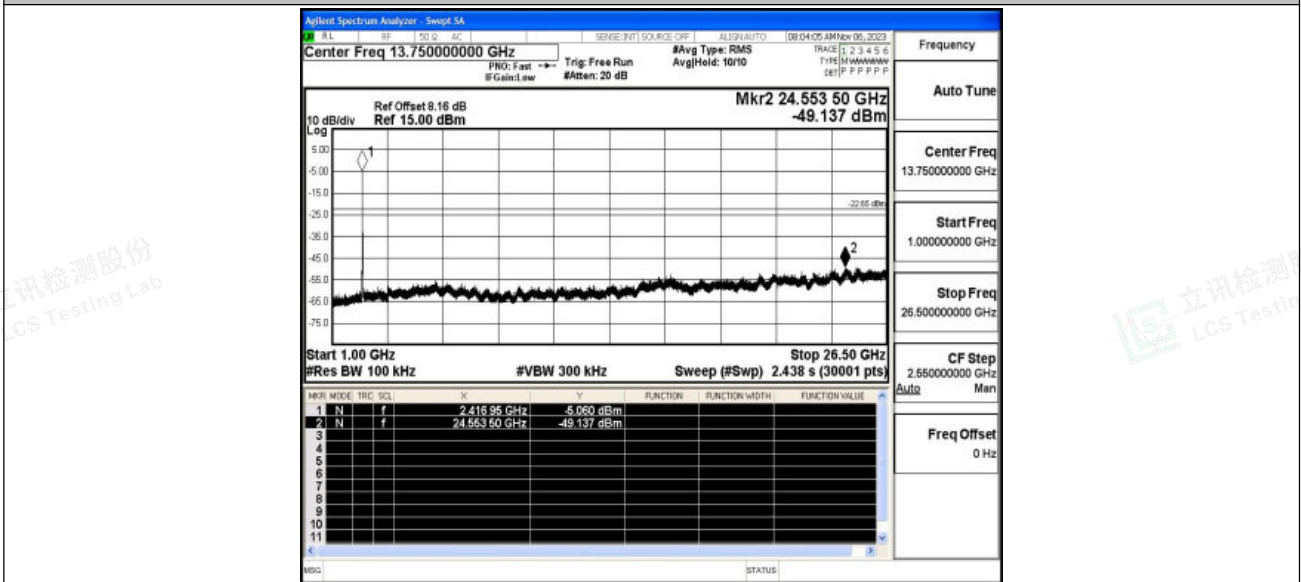


11G_Ant1_2412_30~1000



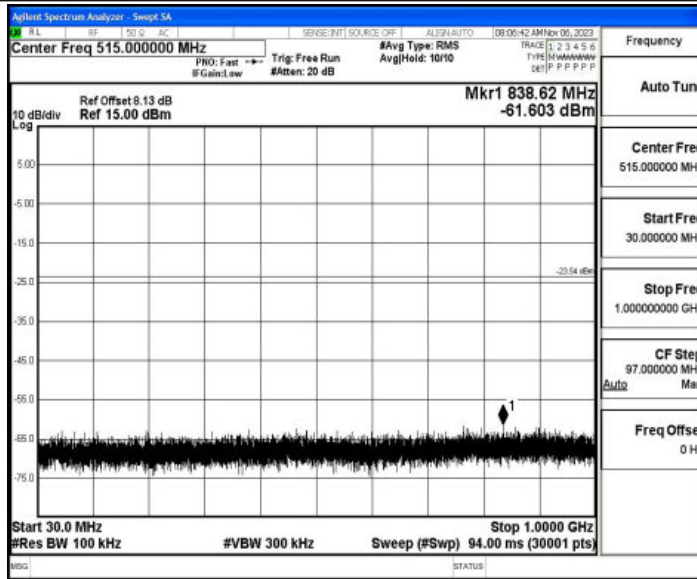


11G_Ant1_2412_1000~26500

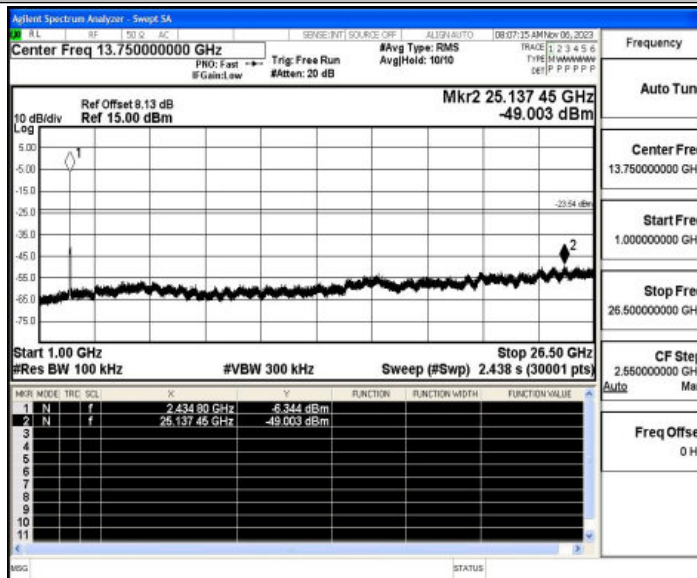


11G_Ant1_2437_30~1000



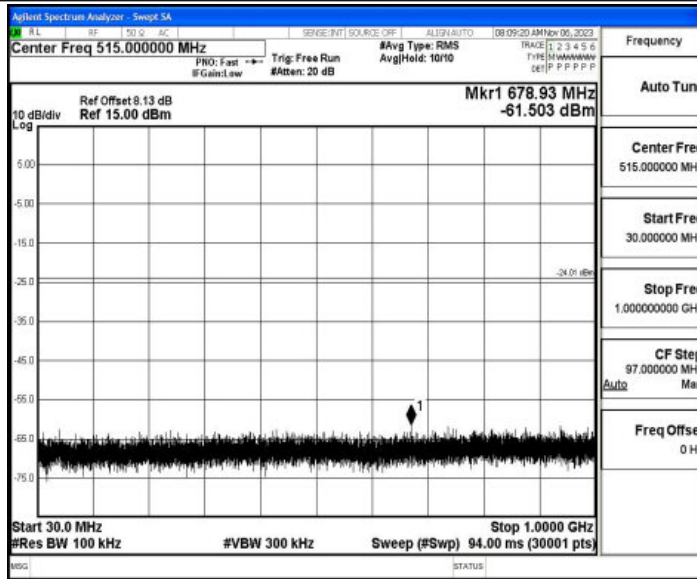


11G_Ant1_2437_1000~26500

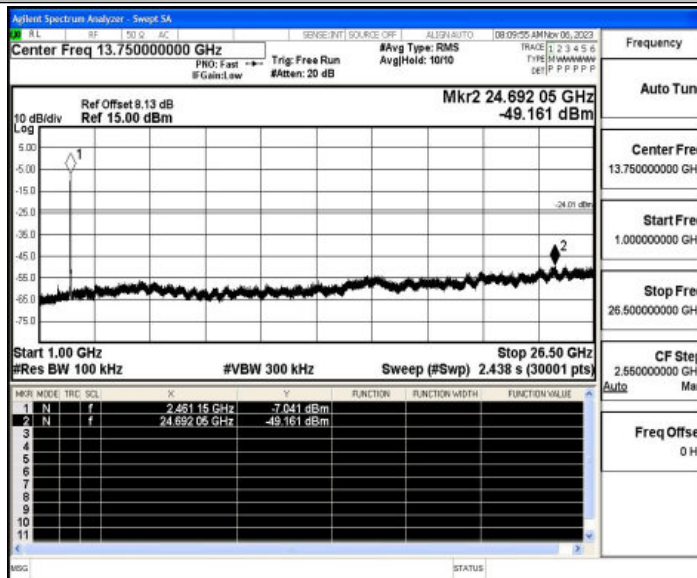


11G_Ant1_2462_30~1000



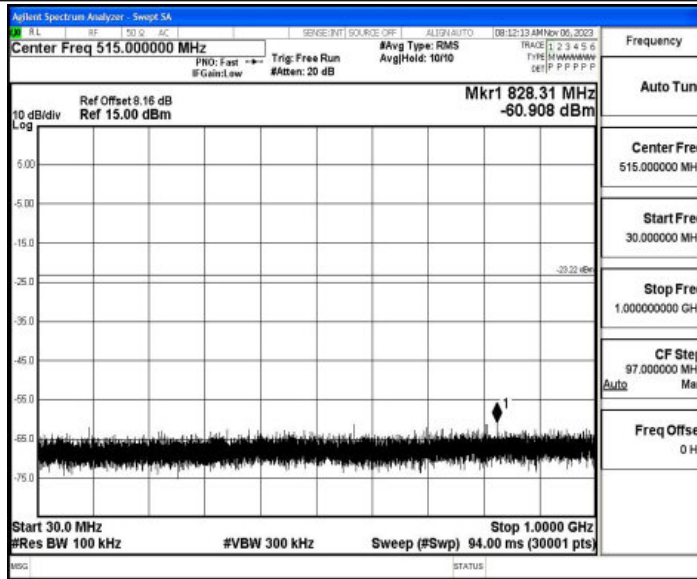


11G_Ant1_2462_1000~26500

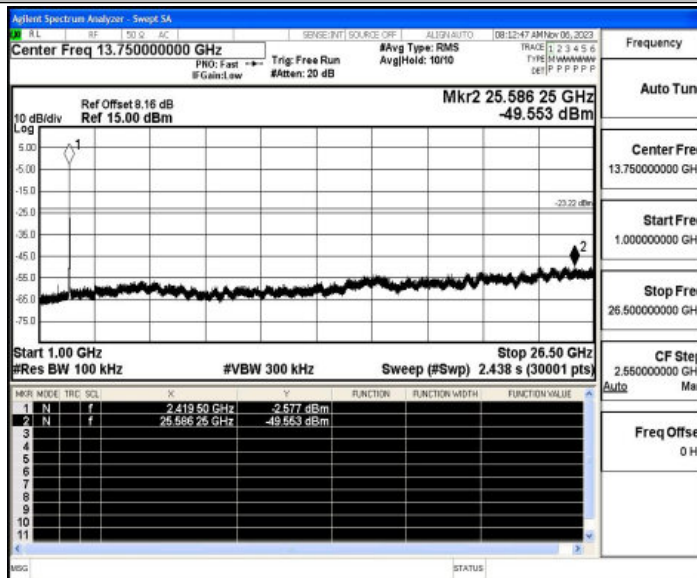


11N20SISO_Ant1_2412_30~1000



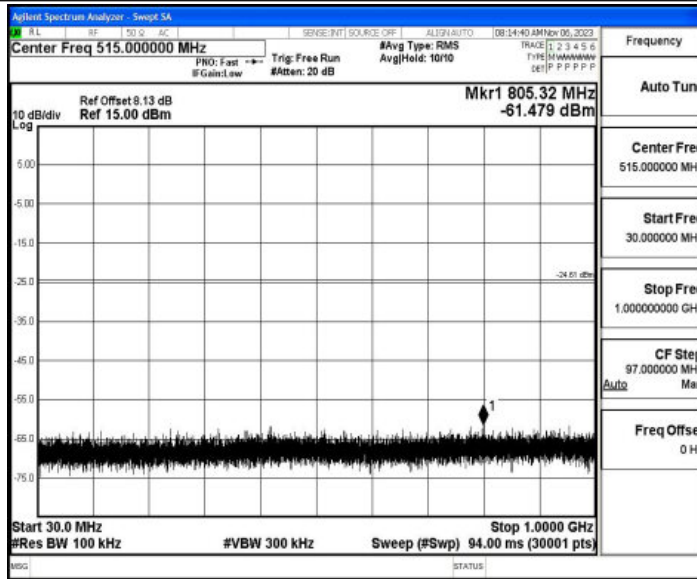


11N20SISO_Ant1_2412_1000~26500

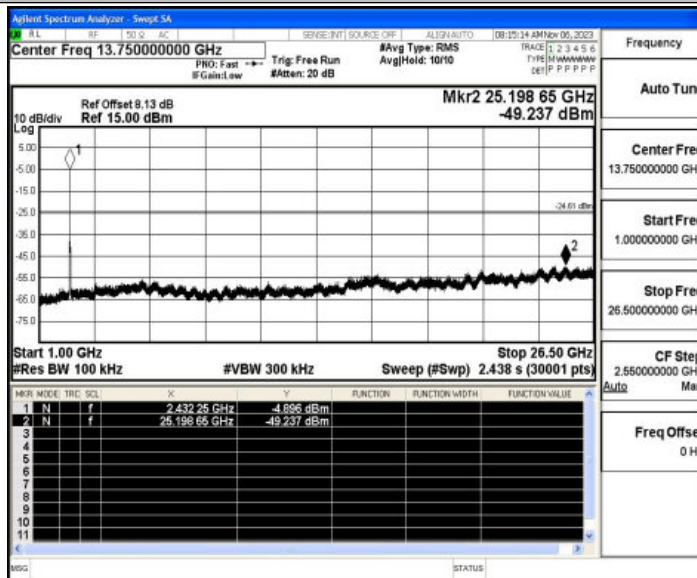


11N20SISO_Ant1_2437_30~1000



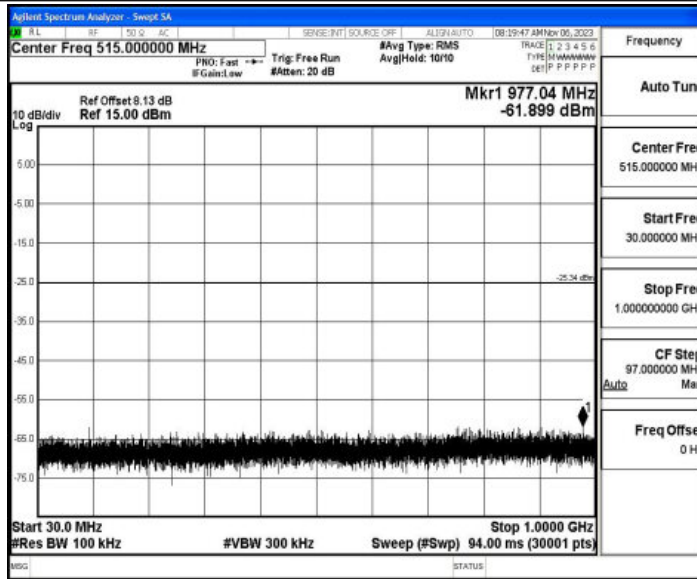


11N20SISO_Ant1_2437_1000~26500

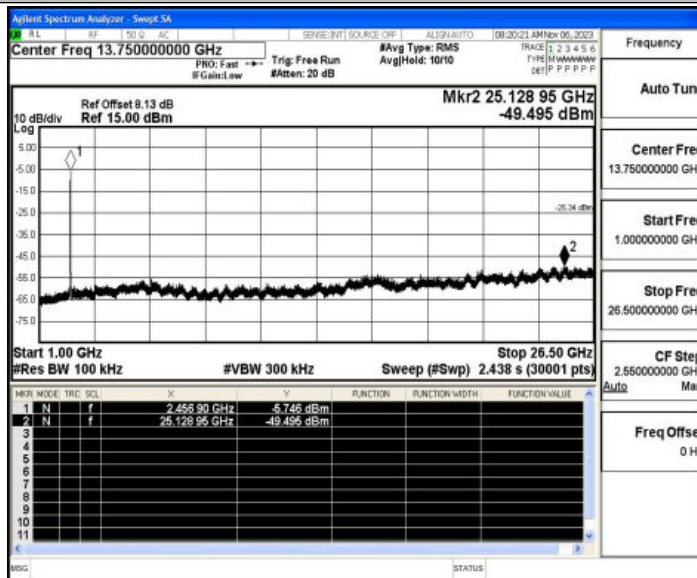


11N20SISO_Ant1_2462_30~1000



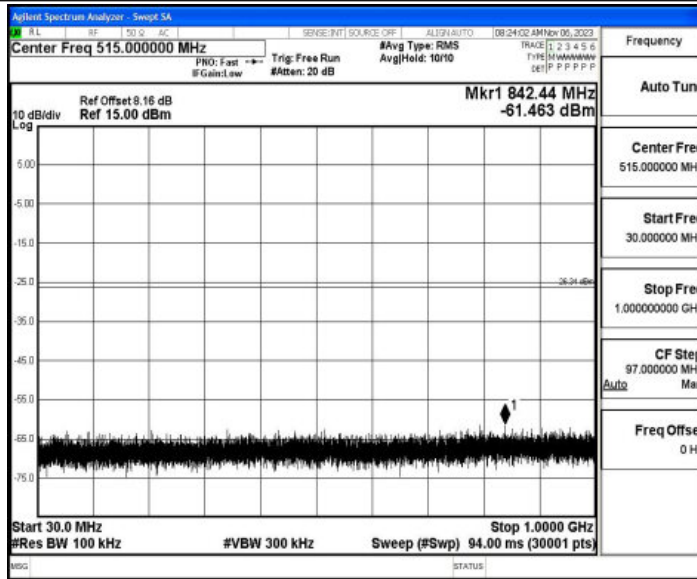


11N20SISO_Ant1_2462_1000~26500

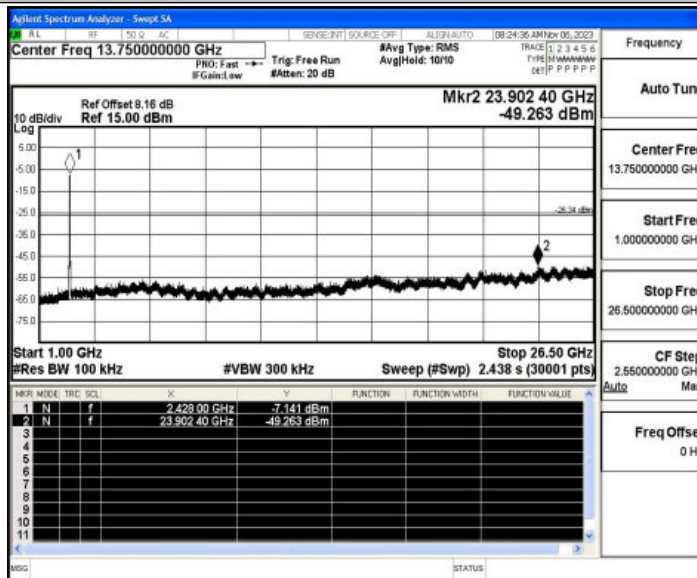


11N40SISO_Ant1_2422_30~1000



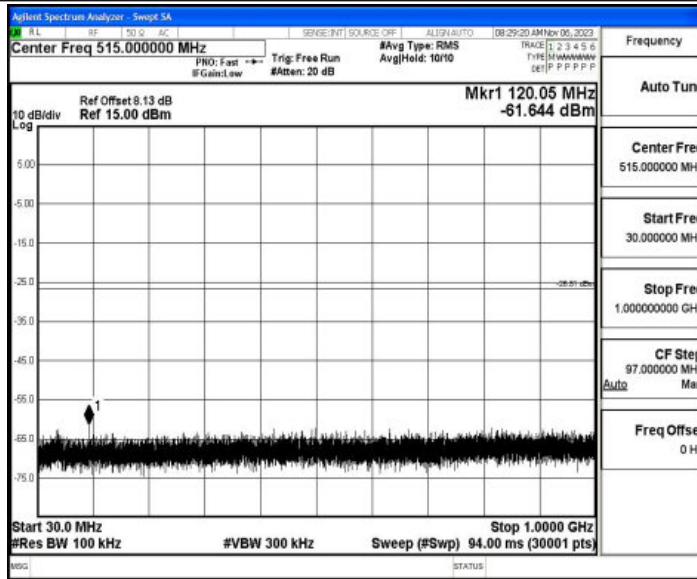


11N40SISO_Ant1_2422_1000~26500

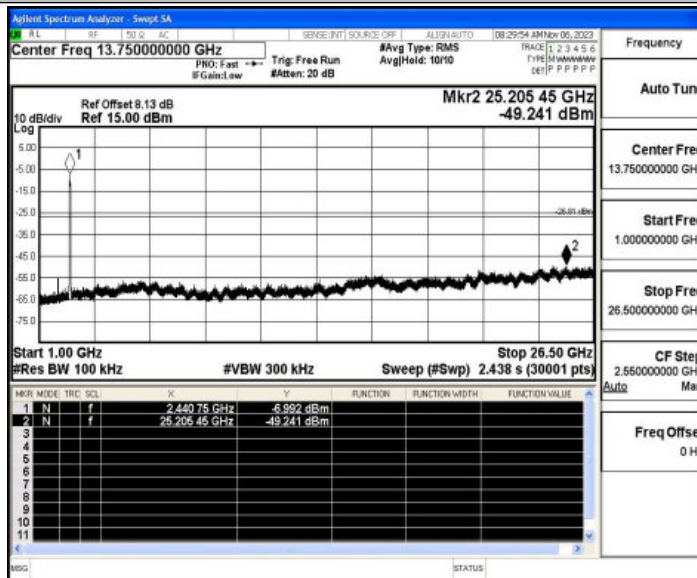


11N40SISO_Ant1_2437_30~1000



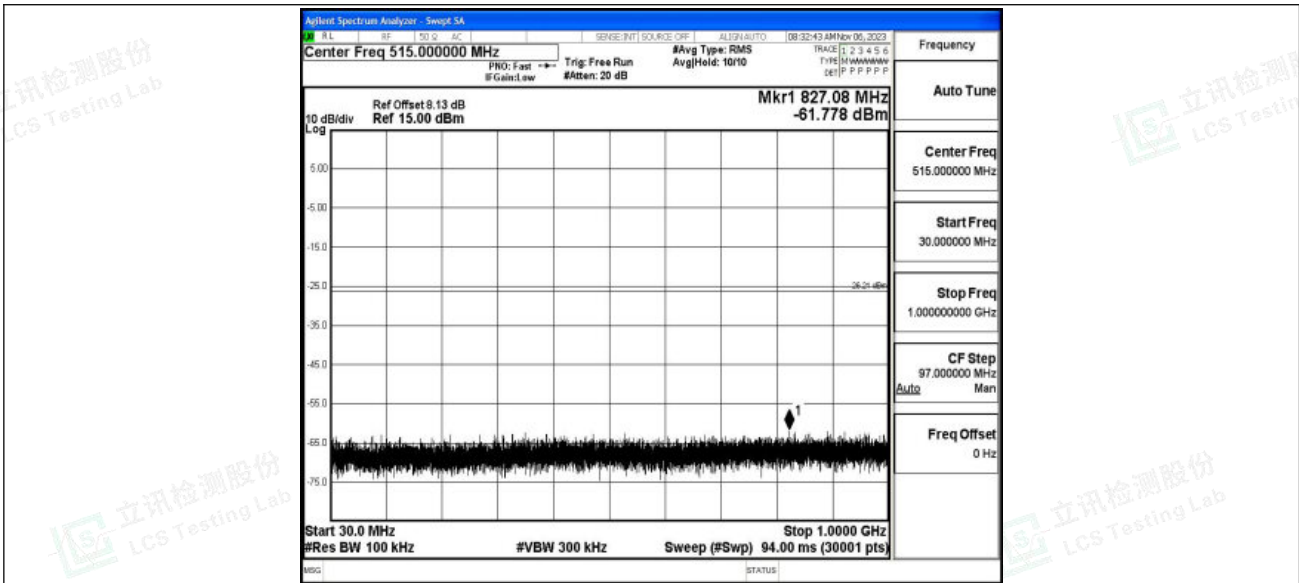


11N40SISO_Ant1_2437_1000~26500

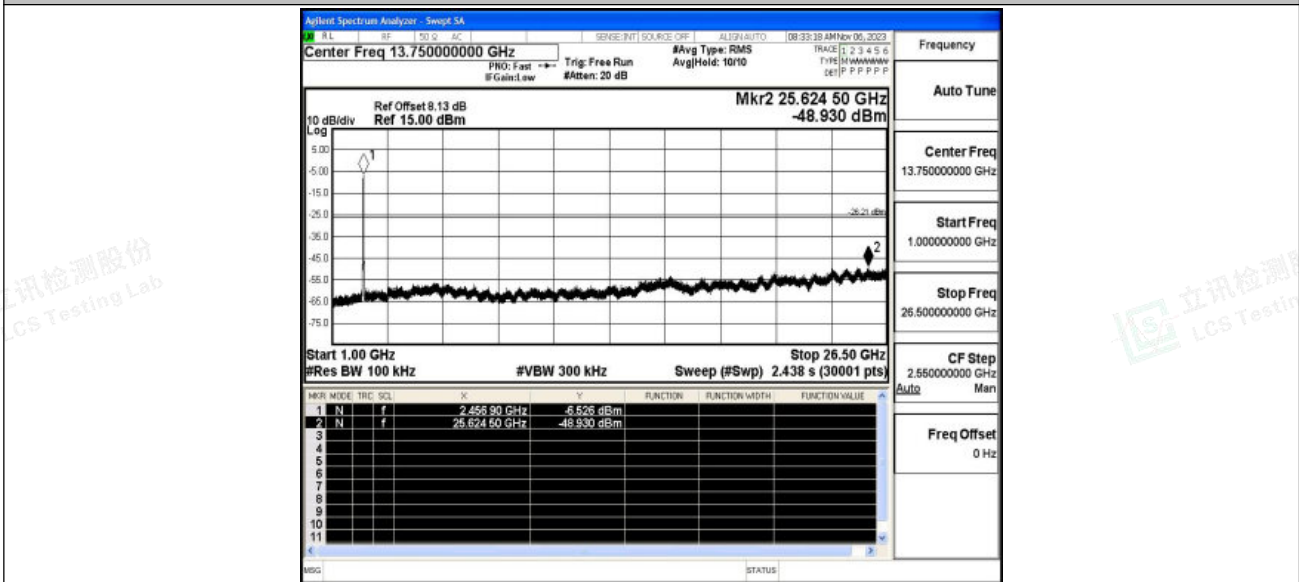


11N40SISO_Ant1_2452_30~1000





11N40SISO_Ant1_2452_1000~26500





B.6 Duty Cycle

Test Result

TestMode	Antenna	Freq(MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Factor	Verdict
11B	Ant1	2412	8.42	8.48	99.29	0.03	---
		2437	8.42	8.48	99.29	0.03	---
		2462	8.42	8.48	99.29	0.03	---
11G	Ant1	2412	1.40	1.46	95.89	0.18	---
		2437	1.40	1.46	95.89	0.18	---
		2462	1.40	1.46	95.89	0.18	---
11N20SISO	Ant1	2412	1.18	1.24	95.16	0.22	---
		2437	1.18	1.24	95.16	0.22	---
		2462	1.18	1.25	94.40	0.25	---
11N40SISO	Ant1	2422	0.58	0.65	89.23	0.49	---
		2437	0.59	0.65	90.77	0.42	---
		2452	0.58	0.65	89.23	0.49	---



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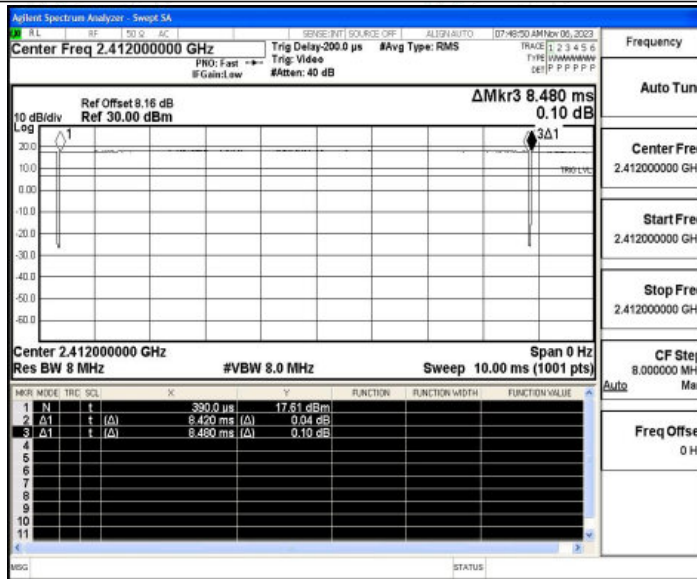
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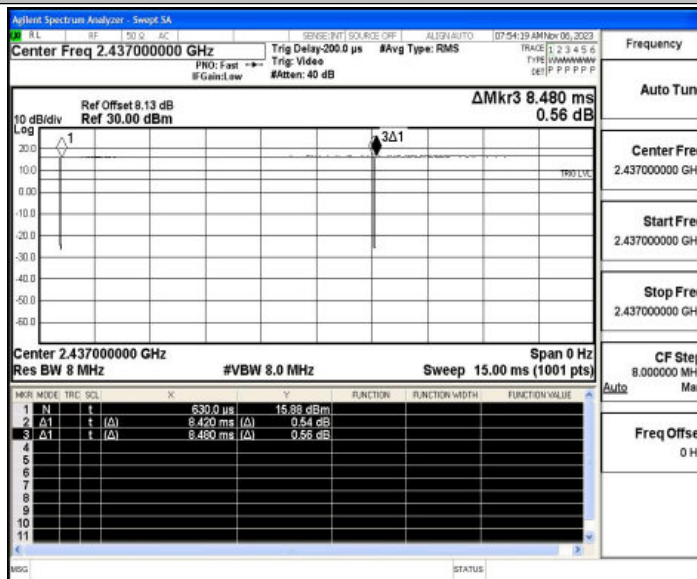


Test Graphs

11B_Ant1_2412

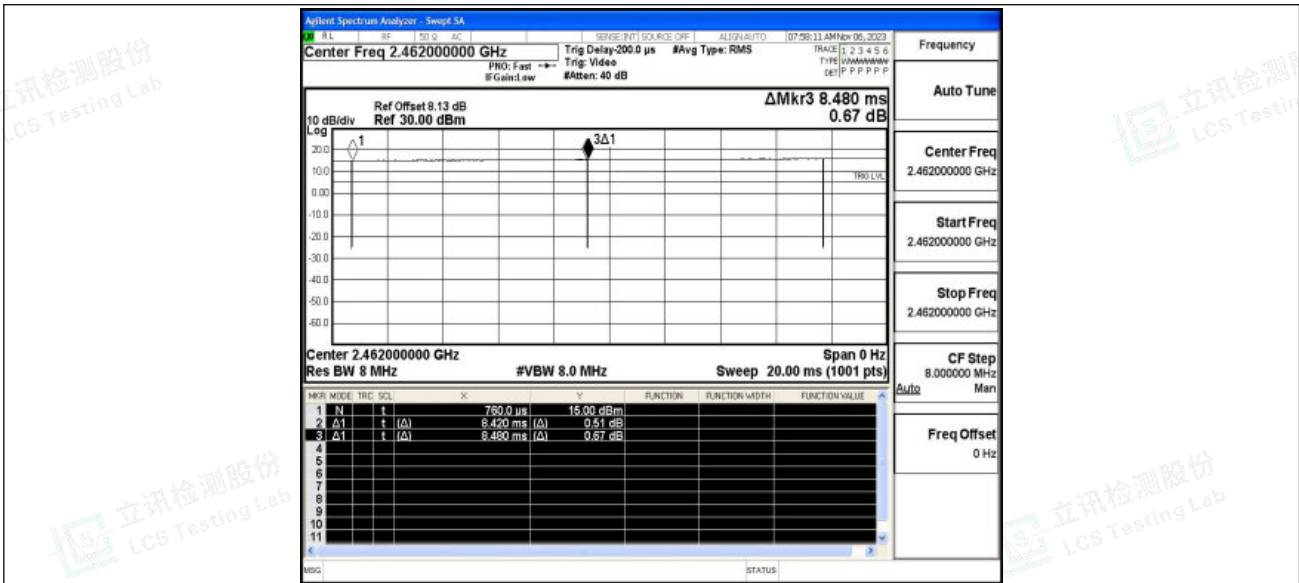


11B_Ant1_2437

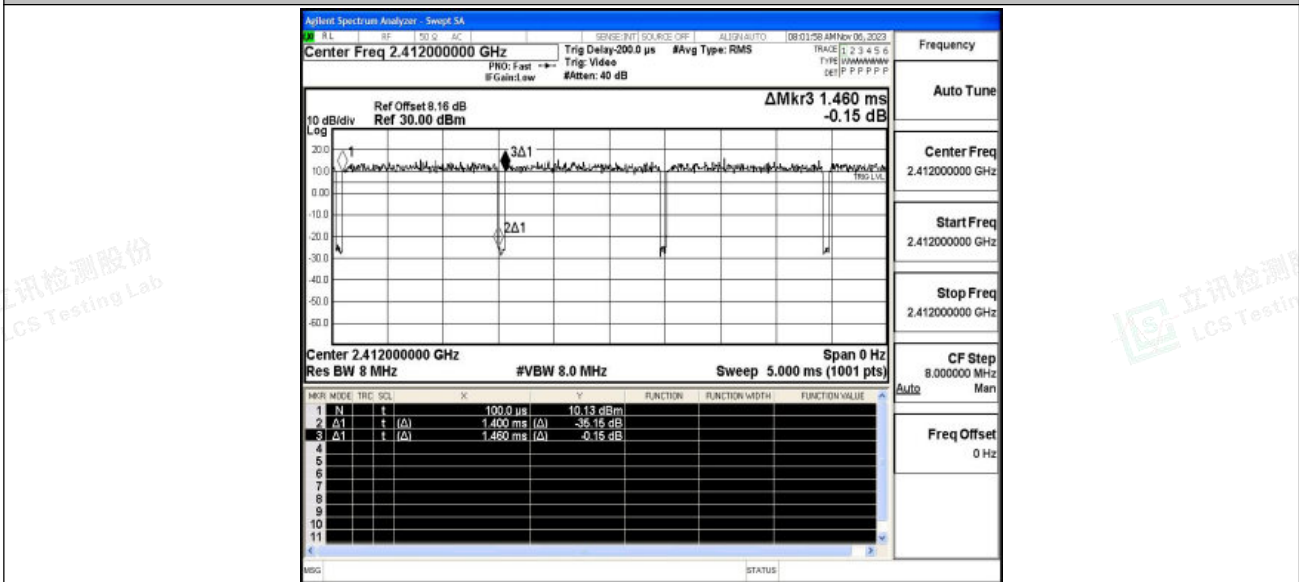


11B_Ant1_2462



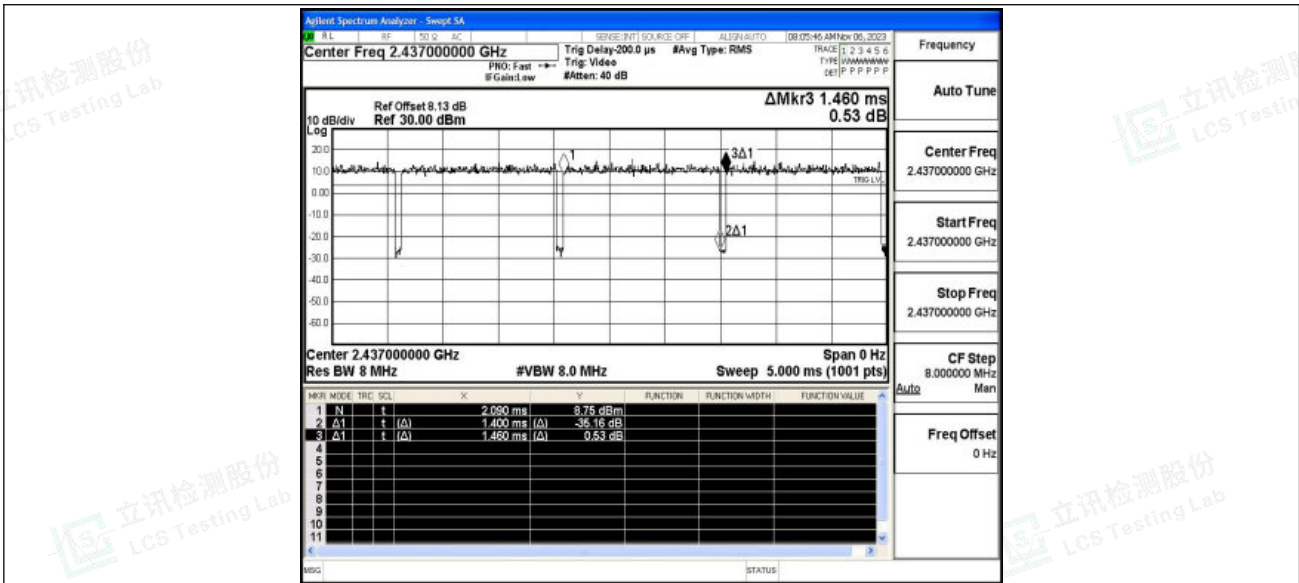


11G_Ant1_2412

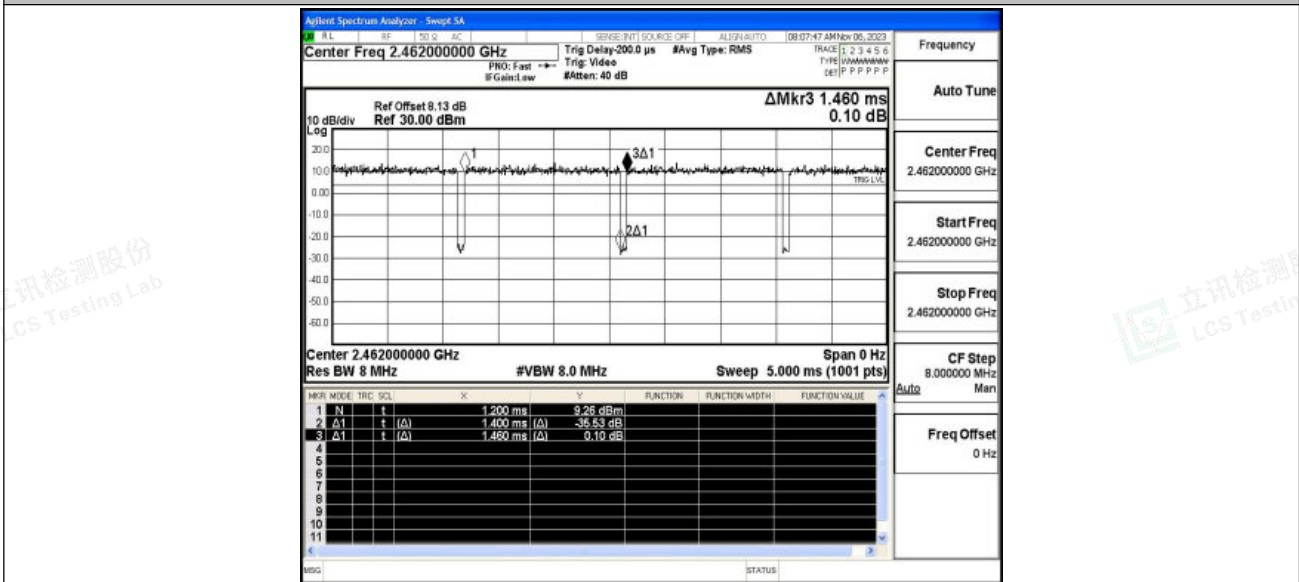


11G_Ant1_2437



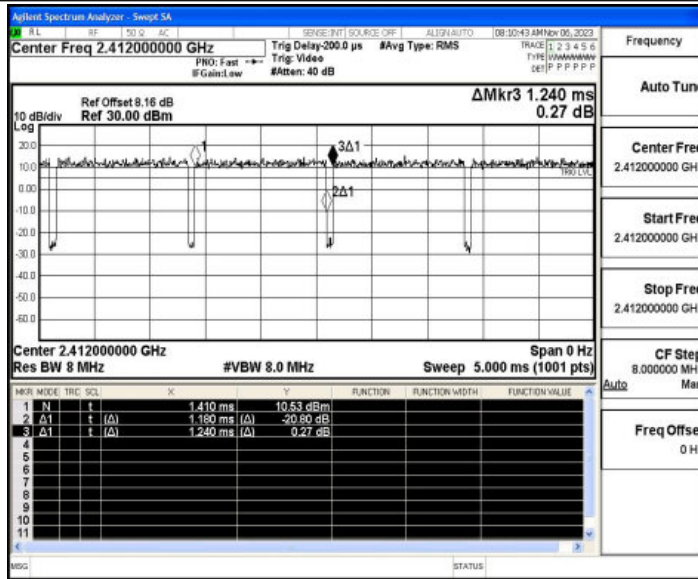


11G_Ant1_2462

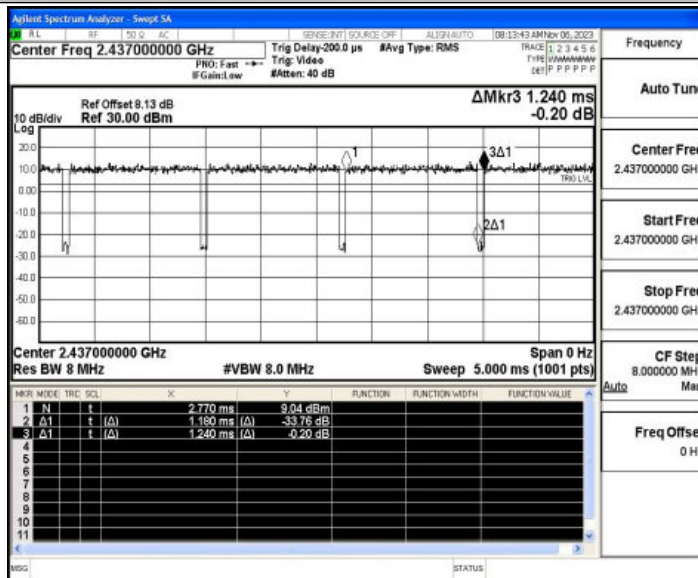


11N20SISO_Ant1_2412



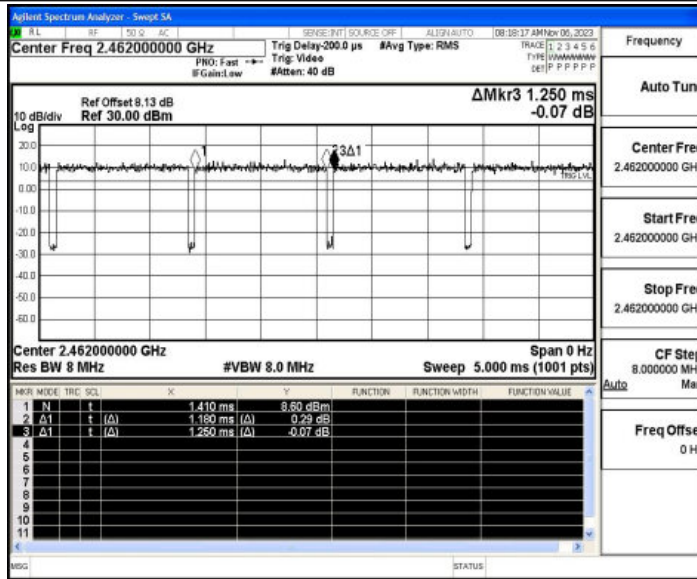


11N20SISO_Ant1_2437

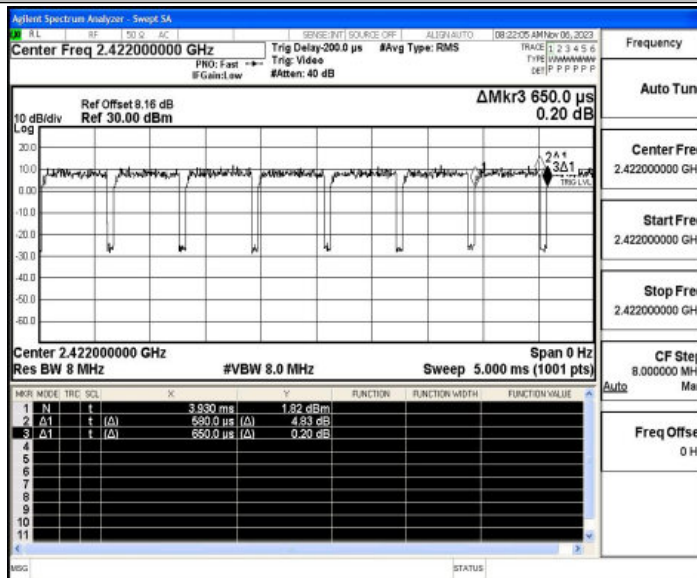


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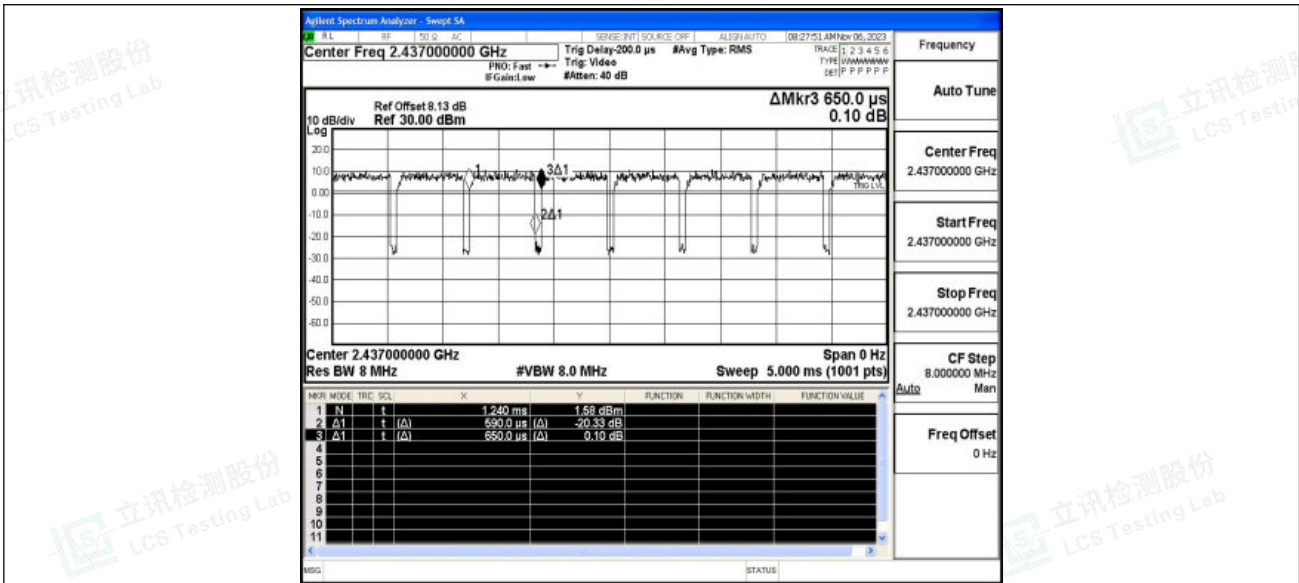


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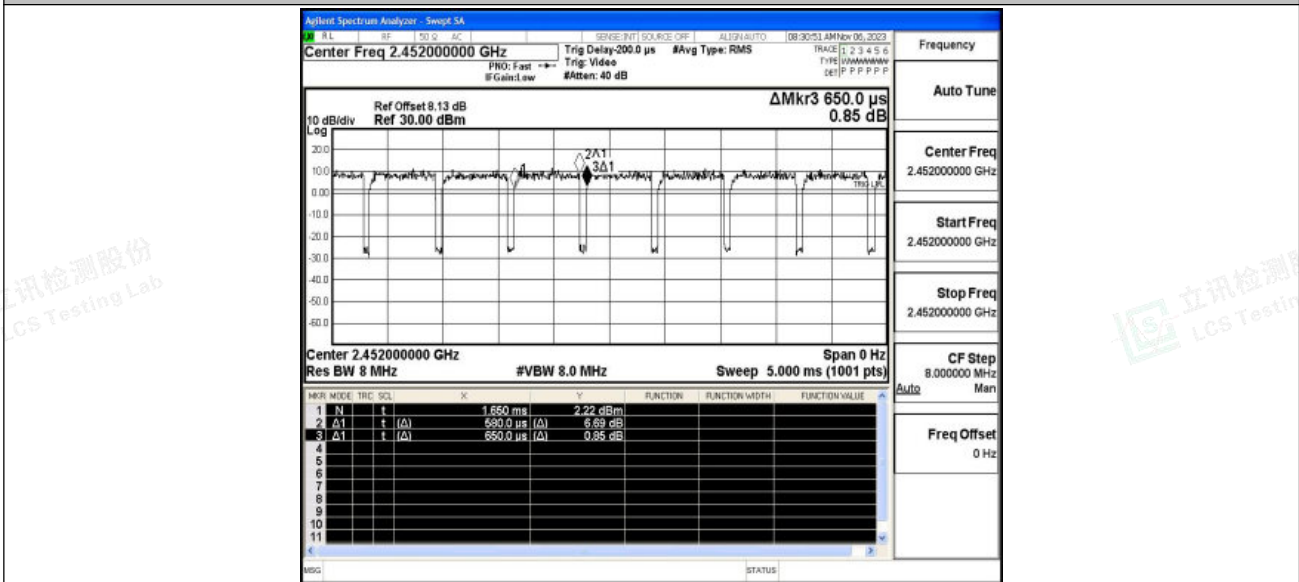


11N40SISO_Ant1_2437





11N40SISO_Ant1_2452





B.7 Emissions in Restricted Bands

Test Result

TestMode	Antenna	Channel Name	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11B	Ant1	Low	2412	AV	2310.000	-49.45	≤-41.20	45.75	≤54	PASS
				AV	2389.960	-48.48	≤-41.20	46.72	≤54	PASS
				AV	2390.000	-48.48	≤-41.20	46.72	≤54	PASS
				Peak	2310.000	-43.18	≤-21.20	52.02	≤74	PASS
				Peak	2321.970	-39.06	≤-21.20	56.14	≤74	PASS
				Peak	2390.000	-42.02	≤-21.20	53.18	≤74	PASS
		High	2462	AV	2483.500	-48.43	≤-41.20	46.77	≤54	PASS
				AV	2483.670	-48.43	≤-41.20	46.77	≤54	PASS
				AV	2500.000	-48.97	≤-41.20	46.23	≤54	PASS
				Peak	2483.500	-40.66	≤-21.20	54.54	≤74	PASS
				Peak	2492.470	-38.99	≤-21.20	56.21	≤74	PASS
				Peak	2500.000	-42.44	≤-21.20	52.76	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-48.88	≤-41.20	46.32	≤54	PASS
				AV	2389.960	-47.28	≤-41.20	47.92	≤54	PASS
				AV	2390.000	-47.28	≤-41.20	47.92	≤54	PASS
				Peak	2310.000	-41.5	≤-21.20	53.70	≤74	PASS
				Peak	2358.240	-38.78	≤-21.20	56.42	≤74	PASS
				Peak	2390.000	-41.5	≤-21.20	53.70	≤74	PASS
		High	2462	AV	2483.500	-45.87	≤-41.20	49.33	≤54	PASS
				AV	2483.670	-45.62	≤-41.20	49.58	≤54	PASS
				AV	2500.000	-48.38	≤-41.20	46.82	≤54	PASS
				Peak	2483.500	-32.27	≤-21.20	62.93	≤74	PASS
				Peak	2484.440	-33.83	≤-21.20	61.37	≤74	PASS
				Peak	2500.000	-43.09	≤-21.20	52.11	≤74	PASS
11N20SI SO	Ant1	Low	2412	AV	2310.000	-48.99	≤-41.20	46.21	≤54	PASS
				AV	2389.960	-46.3	≤-41.20	48.90	≤54	PASS
				AV	2390.000	-46.3	≤-41.20	48.90	≤54	PASS
				Peak	2310.000	-43.32	≤-21.20	51.88	≤74	PASS
				Peak	2389.700	-38.25	≤-21.20	56.95	≤74	PASS
				Peak	2390.000	-38.91	≤-21.20	56.29	≤74	PASS
		High	2462	AV	2483.500	-44.08	≤-41.20	51.12	≤54	PASS
				AV	2483.560	-43.73	≤-41.20	51.47	≤54	PASS
				AV	2500.000	-48.45	≤-41.20	46.75	≤54	PASS
				Peak	2483.500	-36.36	≤-21.20	58.84	≤74	PASS
				Peak	2483.780	-34.5	≤-21.20	60.70	≤74	PASS
				Peak	2483.780	-34.5	≤-21.20	60.70	≤74	PASS



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11N40SI SO	Ant1	Low	2422	Peak	2500.000	-42.81	≤-21.20	52.39	≤74	PASS
				AV	2310.000	-48.53	≤-41.20	46.67	≤54	PASS
				AV	2389.960	-44.23	≤-41.20	50.97	≤54	PASS
				AV	2390.000	-44.23	≤-41.20	50.97	≤54	PASS
				Peak	2310.000	-43.83	≤-21.20	51.37	≤74	PASS
				Peak	2389.700	-34.05	≤-21.20	61.15	≤74	PASS
		High	2452	AV	2483.500	-46.29	≤-41.20	48.91	≤54	PASS
				AV	2484.330	-46.48	≤-41.20	48.72	≤54	PASS
				AV	2500.000	-48	≤-41.20	47.20	≤54	PASS
				Peak	2483.500	-37.68	≤-21.20	57.52	≤74	PASS
				Peak	2486.090	-36.9	≤-21.20	58.30	≤74	PASS
				Peak	2500.000	-42.39	≤-21.20	52.81	≤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.



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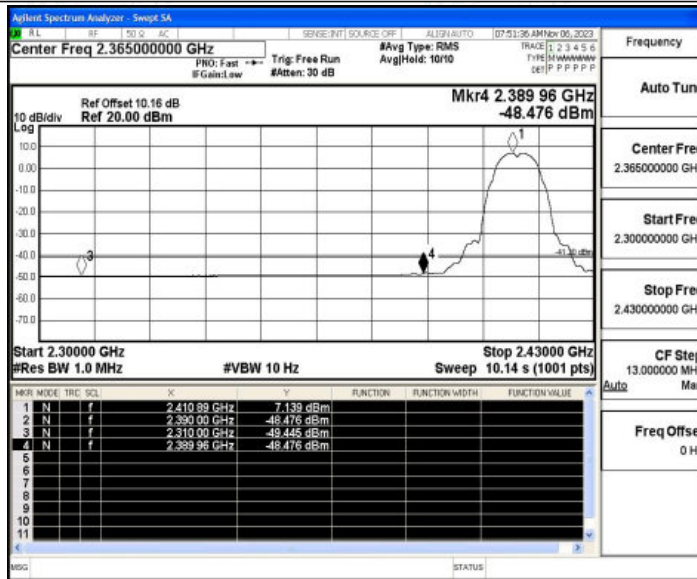
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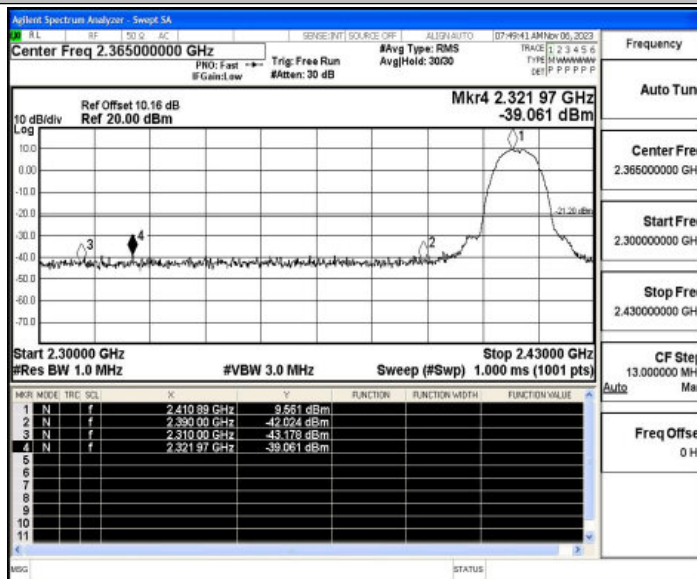


Test Graphs

11B_Ant1_Low_2412_AV

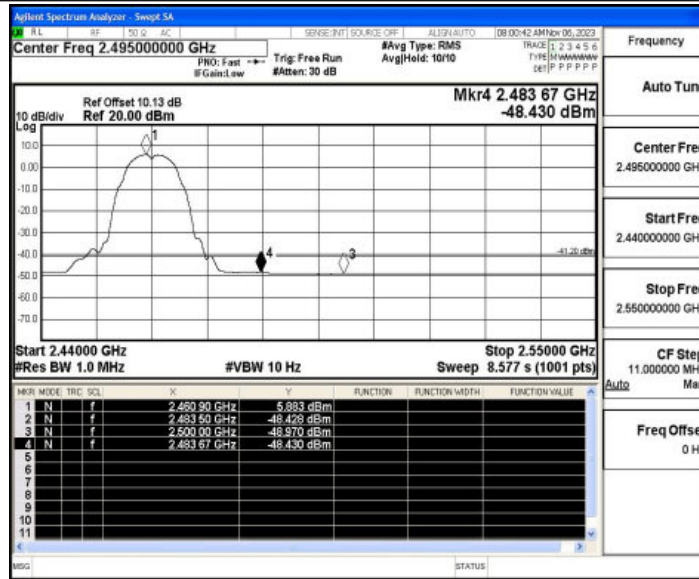


11B_Ant1_Low_2412_Peak

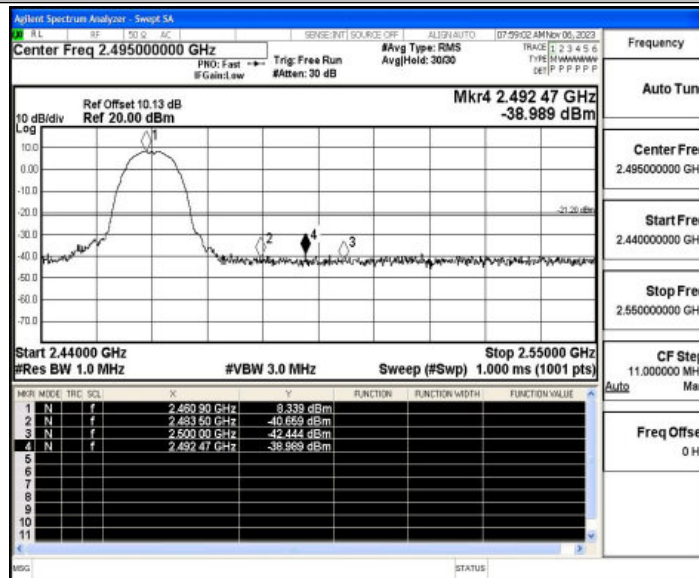


11B_Ant1_High_2462_AV



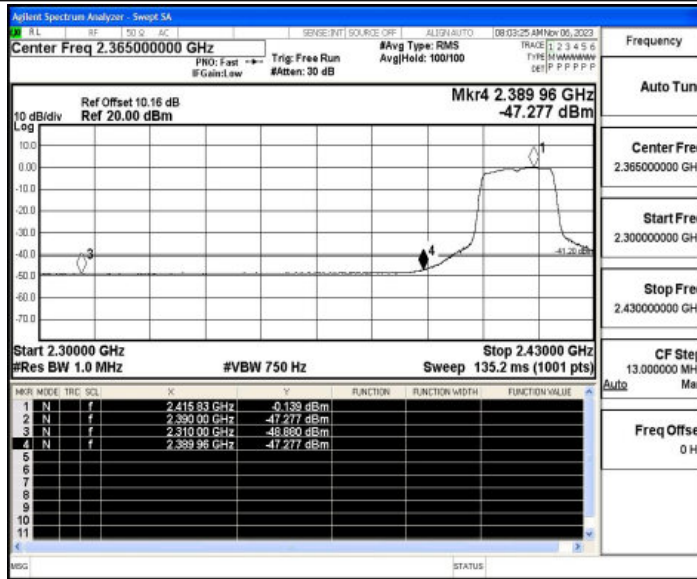


11B_Ant1_High_2462_Peak

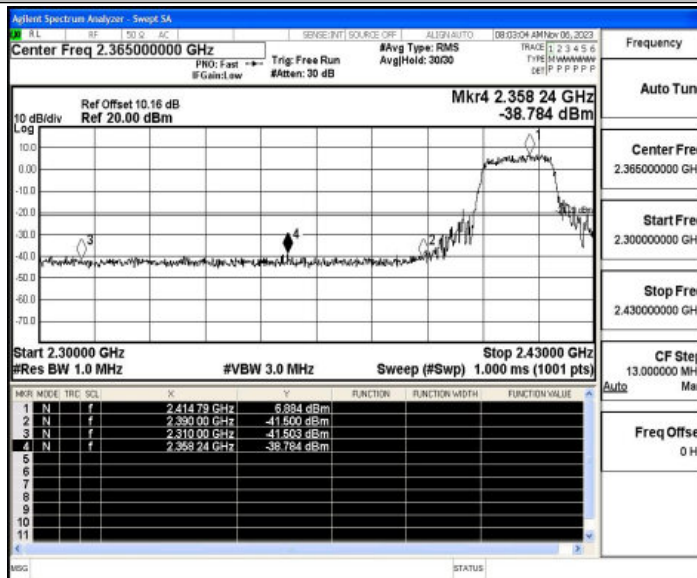


11G_Ant1_Low_2412_AV



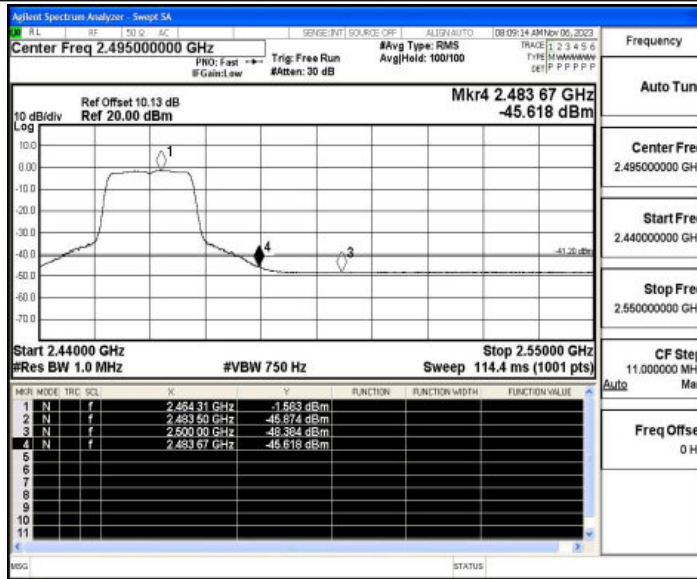


11G_Ant1_Low_2412_Peak



11G_Ant1_High_2462_AV



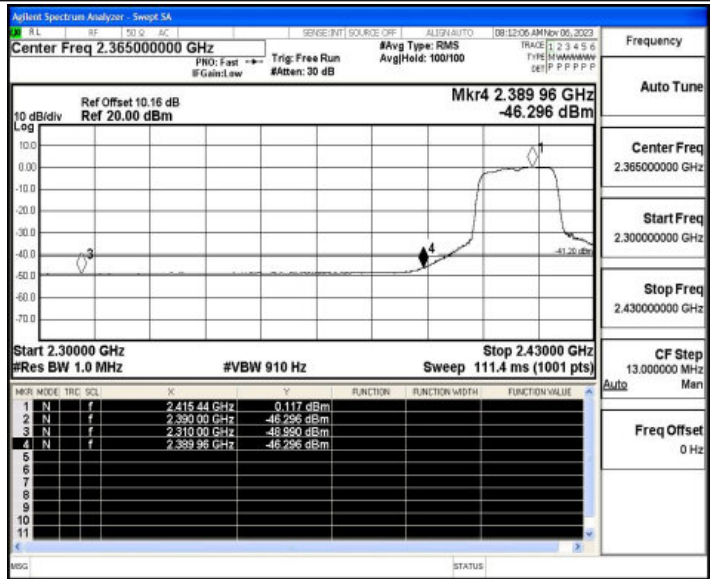


11G_Ant1_High_2462_Peak

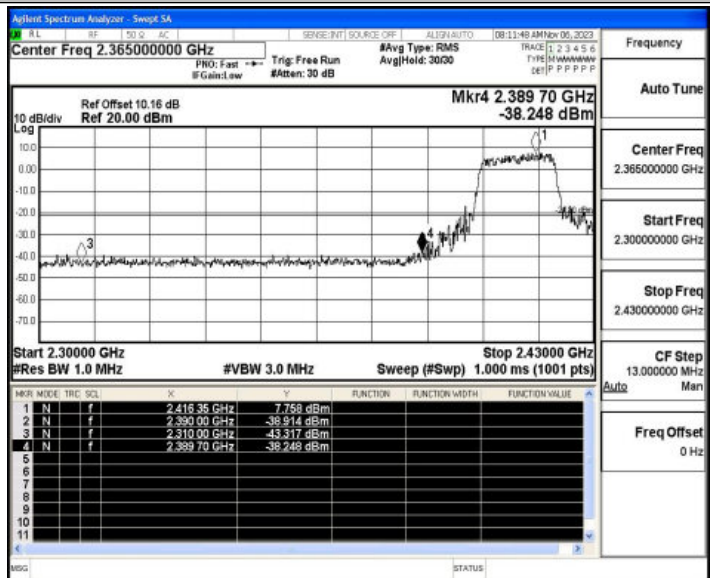


11N20SISO_Ant1_Low_2412_AV



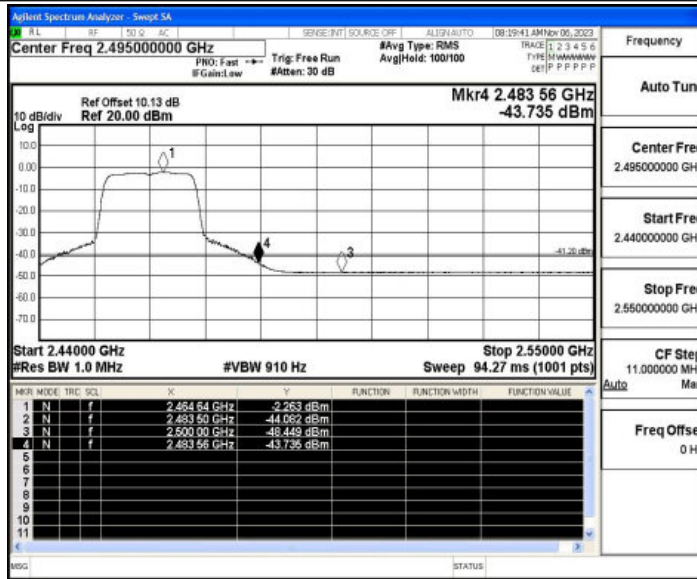


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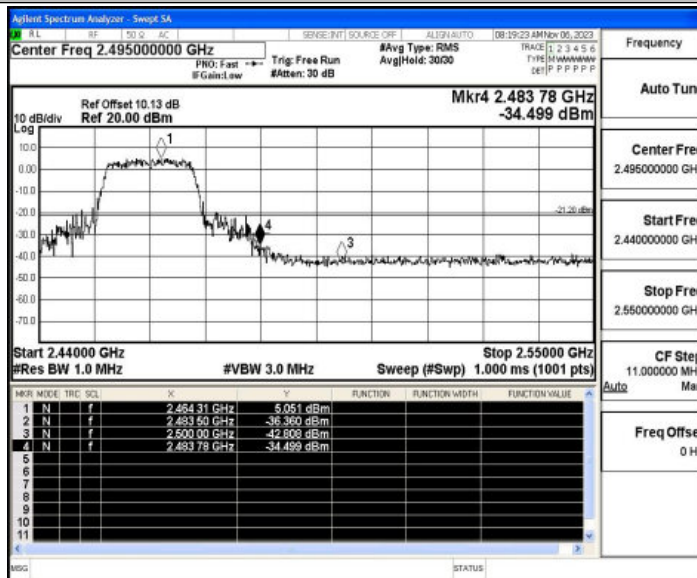


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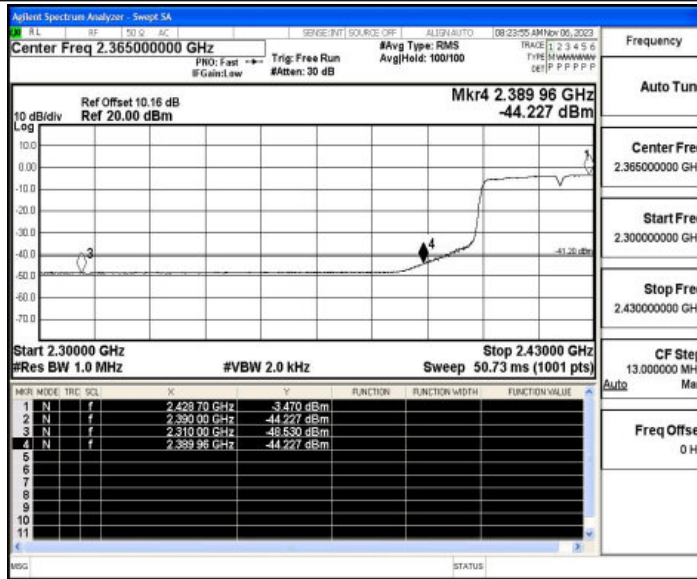


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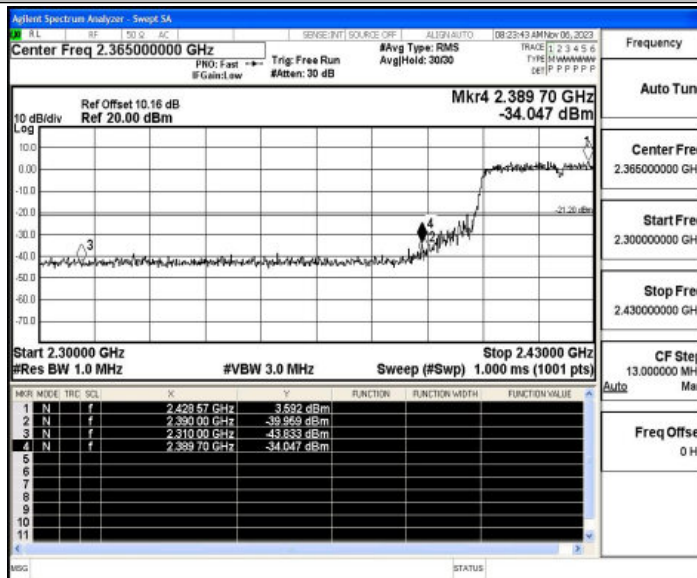


11N40ISO_Ant1_Low_2422_AV



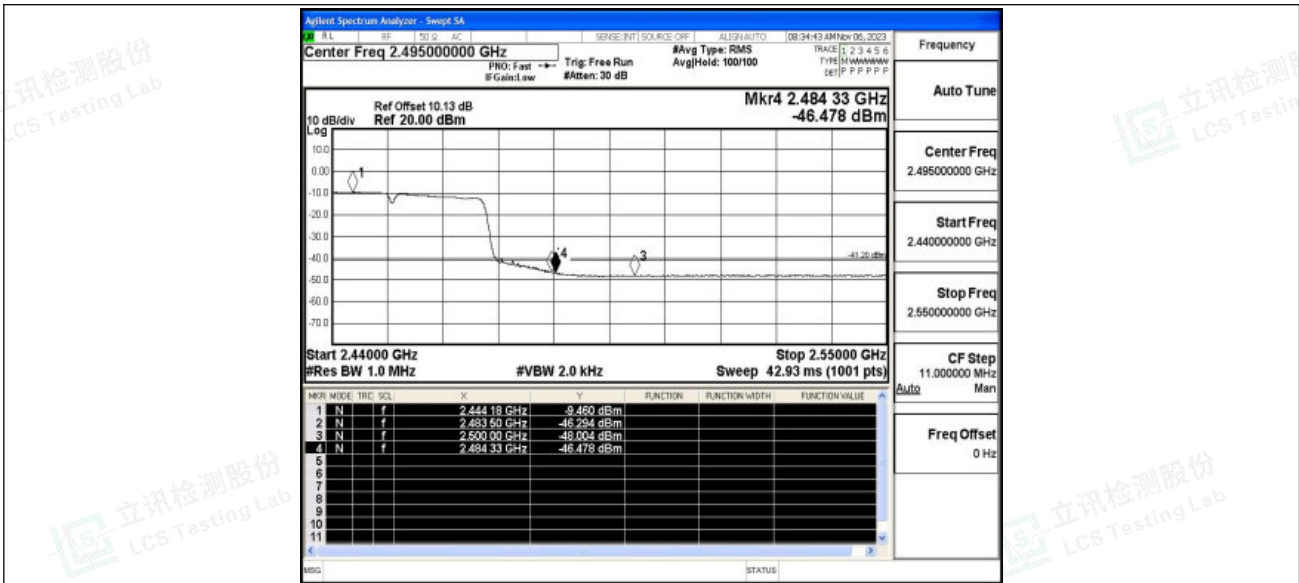


11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV





11N40ISO_Ant1_High_2452_Peak

