



Appendix B

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: Nano Gateway

Test Model: SUBG100-L

Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Paddi Chen
Supervised by:	Nick Peng





B.1 DTS Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.480	2407.000	2416.480	0.5	PASS
		2437	10.040	2431.960	2442.000	0.5	PASS
		2462	10.040	2456.960	2467.000	0.5	PASS
11G	Ant1	2412	14.760	2404.440	2419.200	0.5	PASS
		2437	15.120	2429.400	2444.520	0.5	PASS
		2462	14.200	2455.320	2469.520	0.5	PASS
11N20SISO	Ant1	2412	16.280	2404.120	2420.400	0.5	PASS
		2437	16.840	2428.400	2445.240	0.5	PASS
		2462	15.040	2454.440	2469.480	0.5	PASS
11N40SISO	Ant1	2422	33.920	2405.680	2439.600	0.5	PASS
		2437	34.240	2420.360	2454.600	0.5	PASS
		2452	35.040	2434.480	2469.520	0.5	PASS

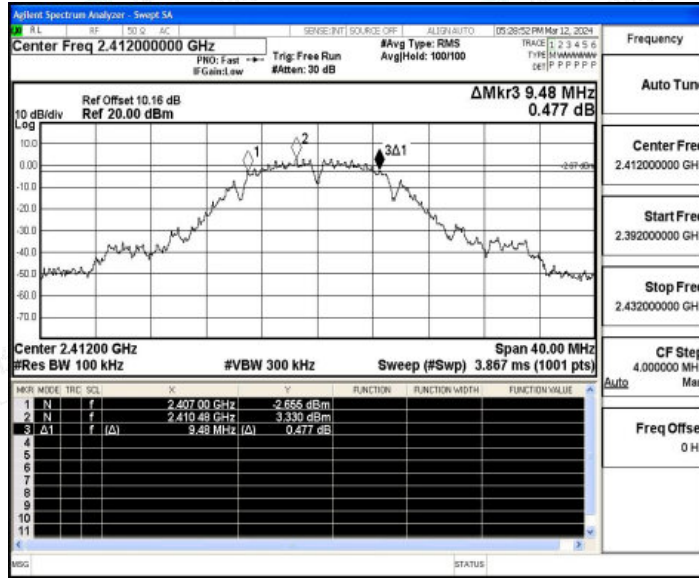


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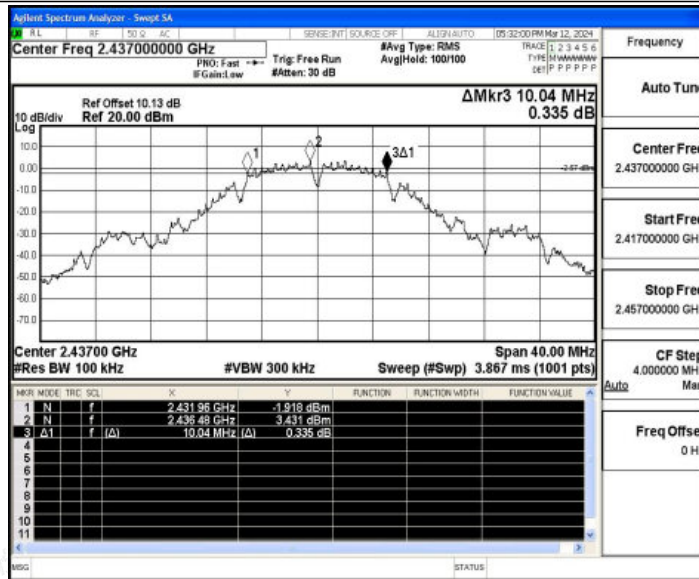


Test Graphs

11B_Ant1_2412

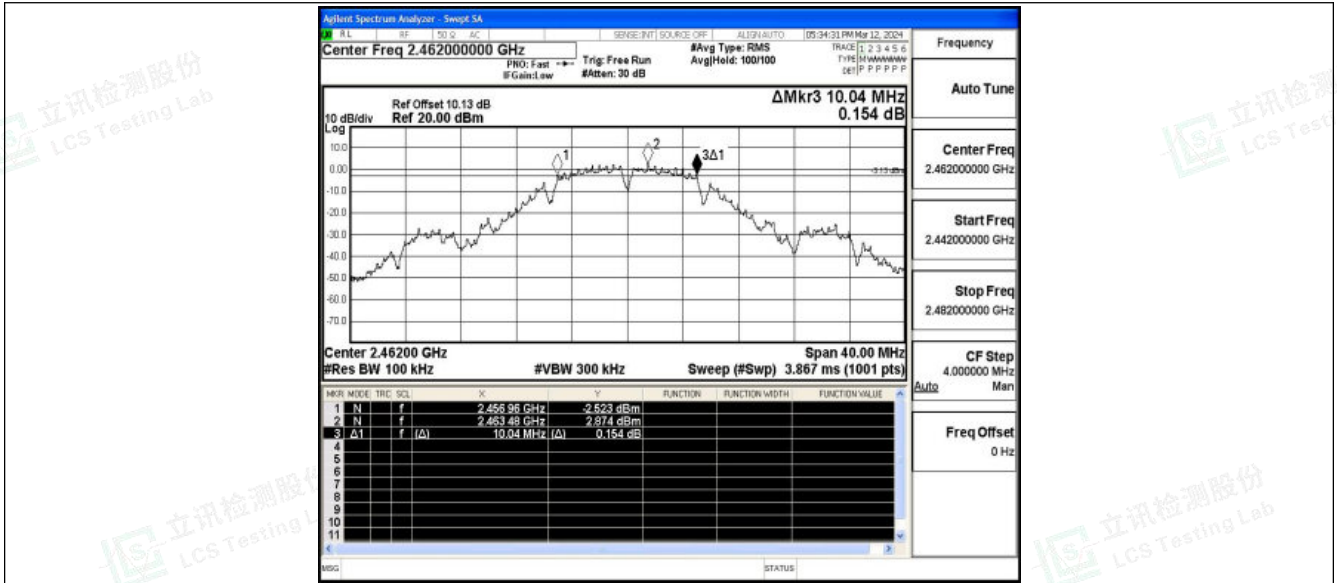


11B_Ant1_2437

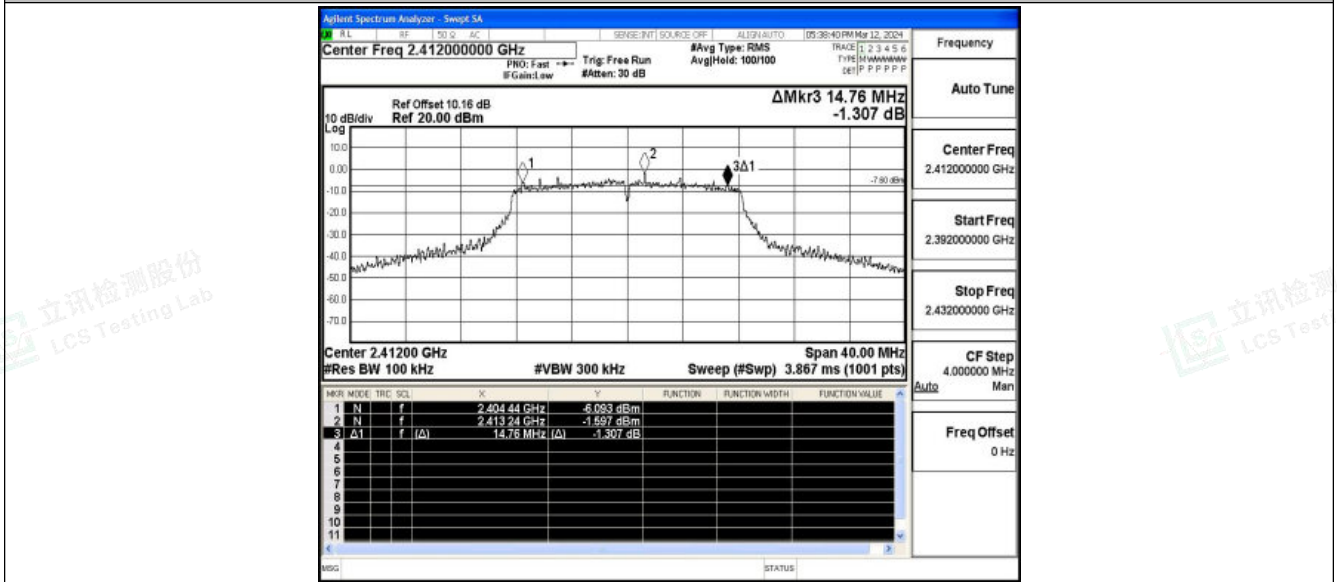


11B_Ant1_2462



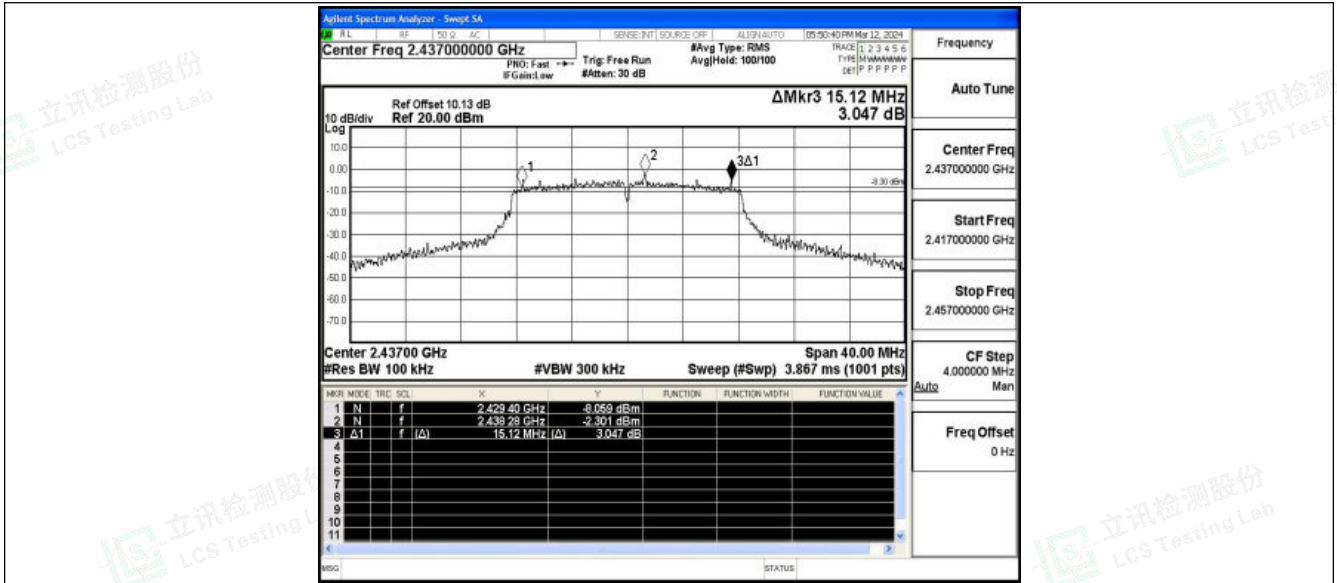


11G_Ant1_2412

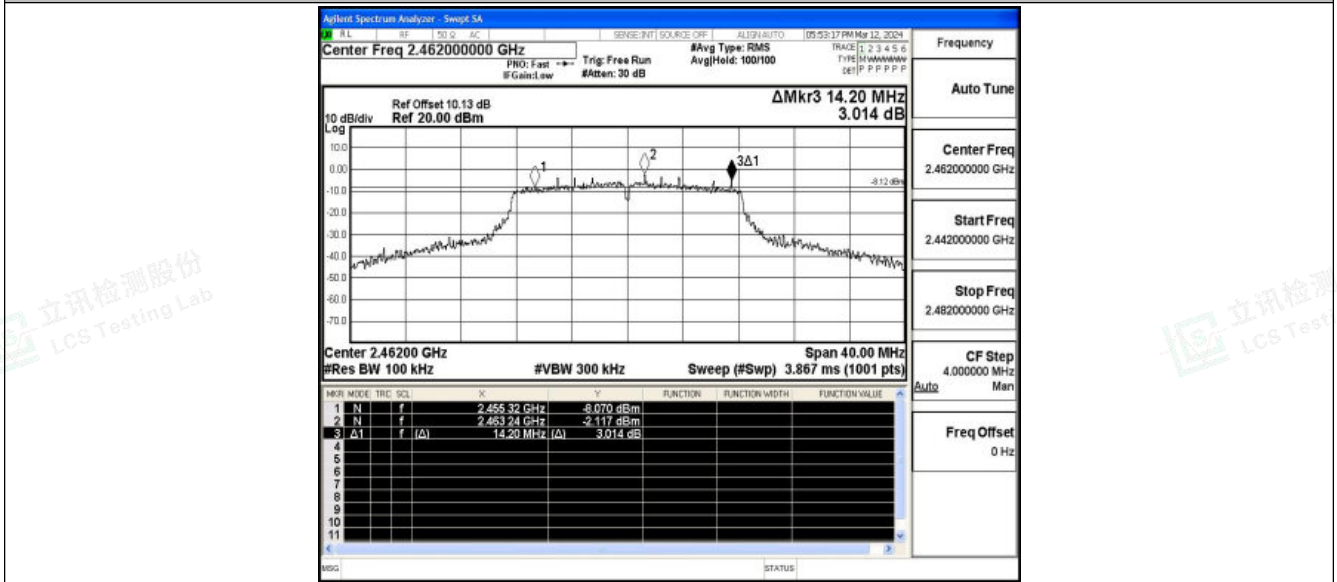


11G_Ant1_2437



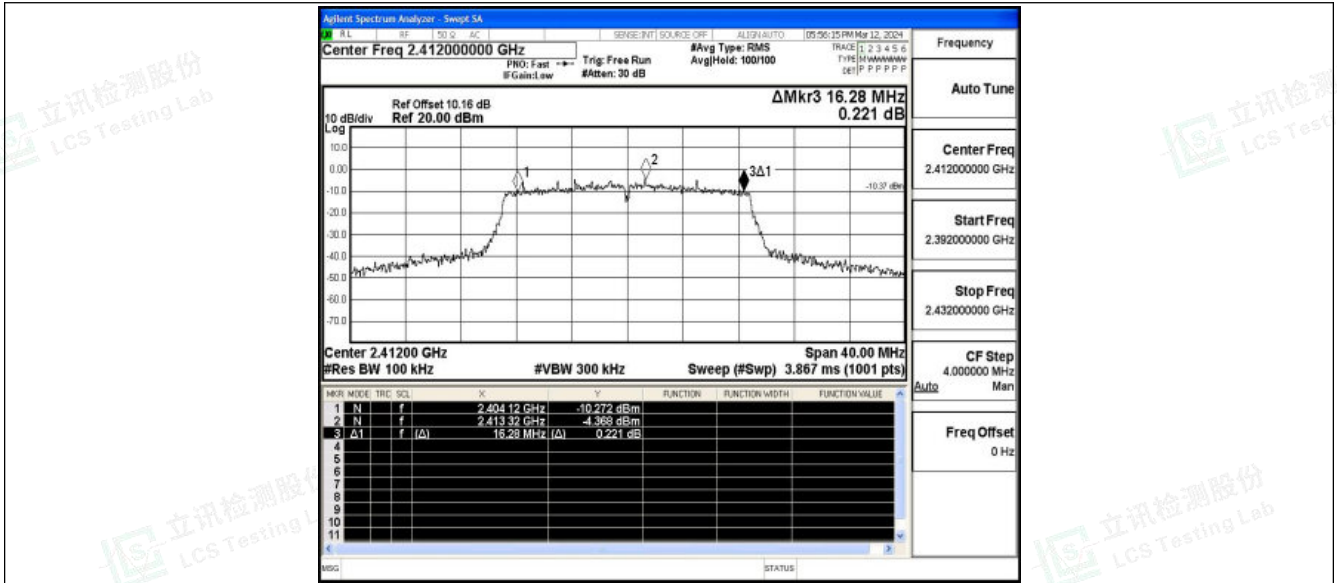


11G_Ant1_2462

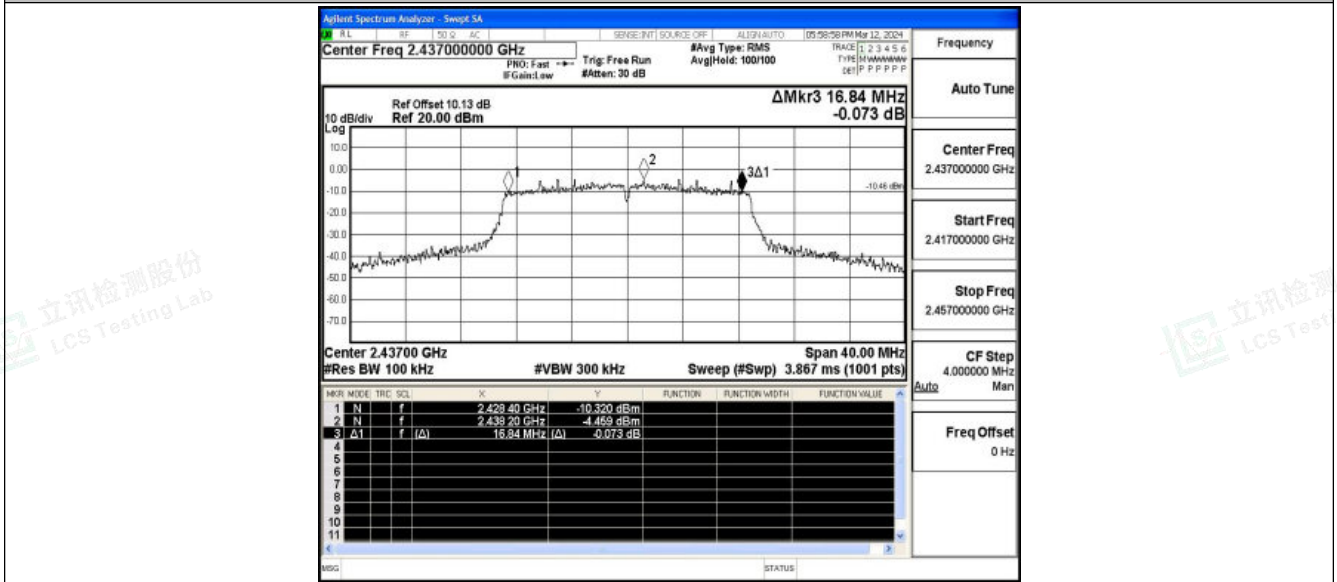


11N20SISO_Ant1_2412



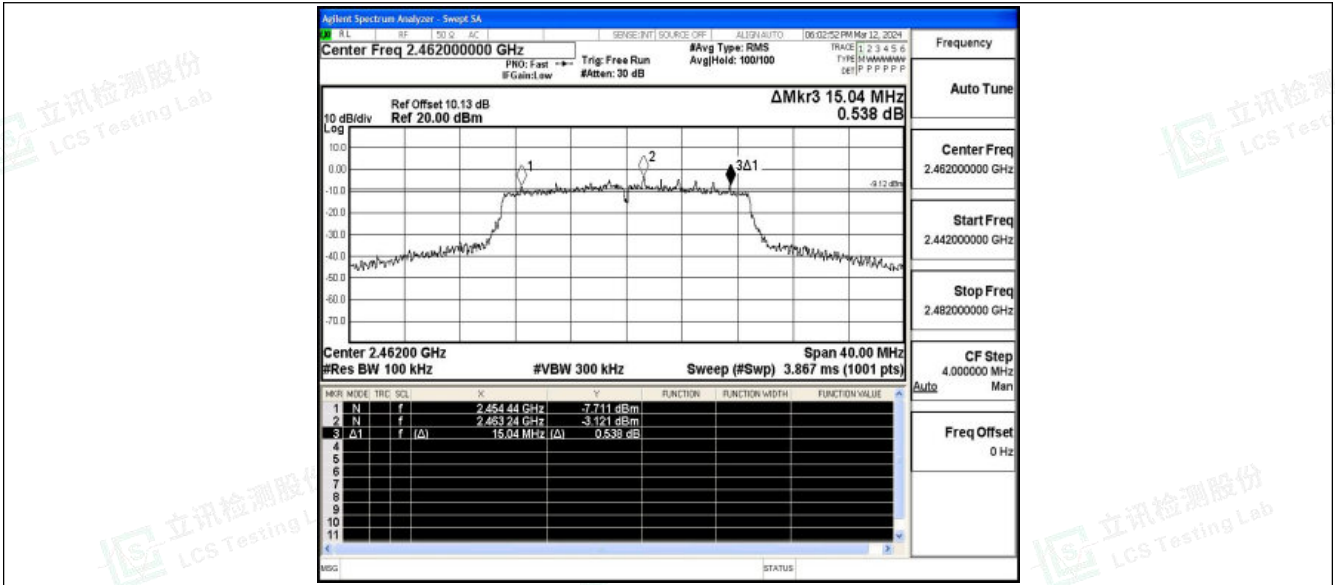


11N20SISO_Ant1_2437

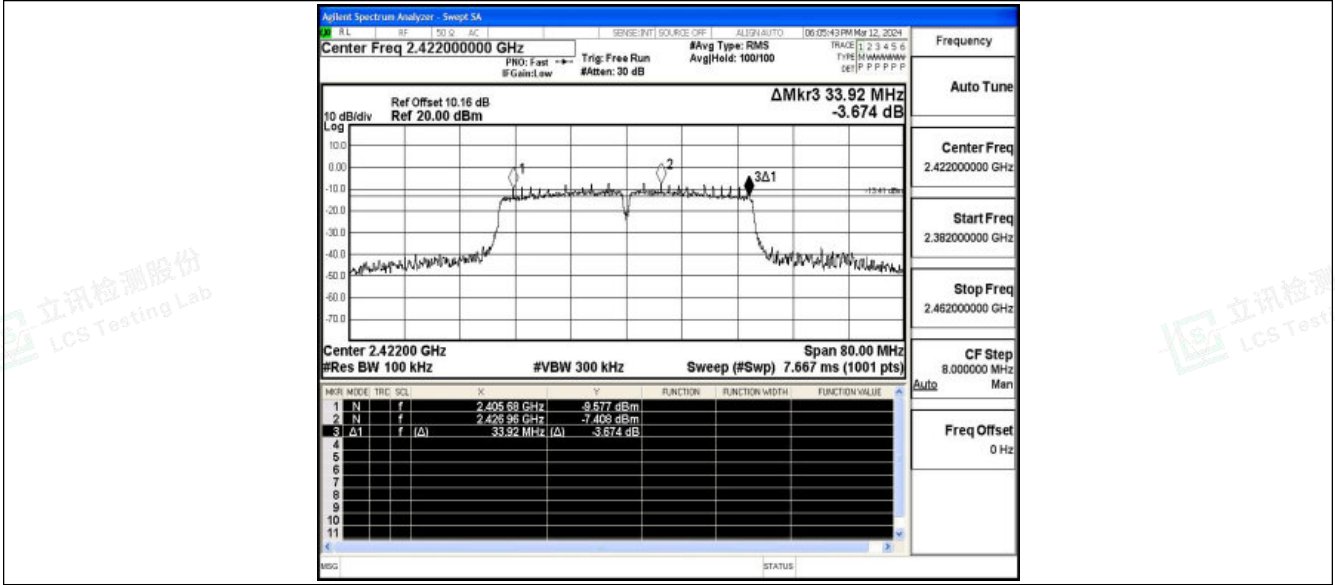


11N20SISO_Ant1_2462



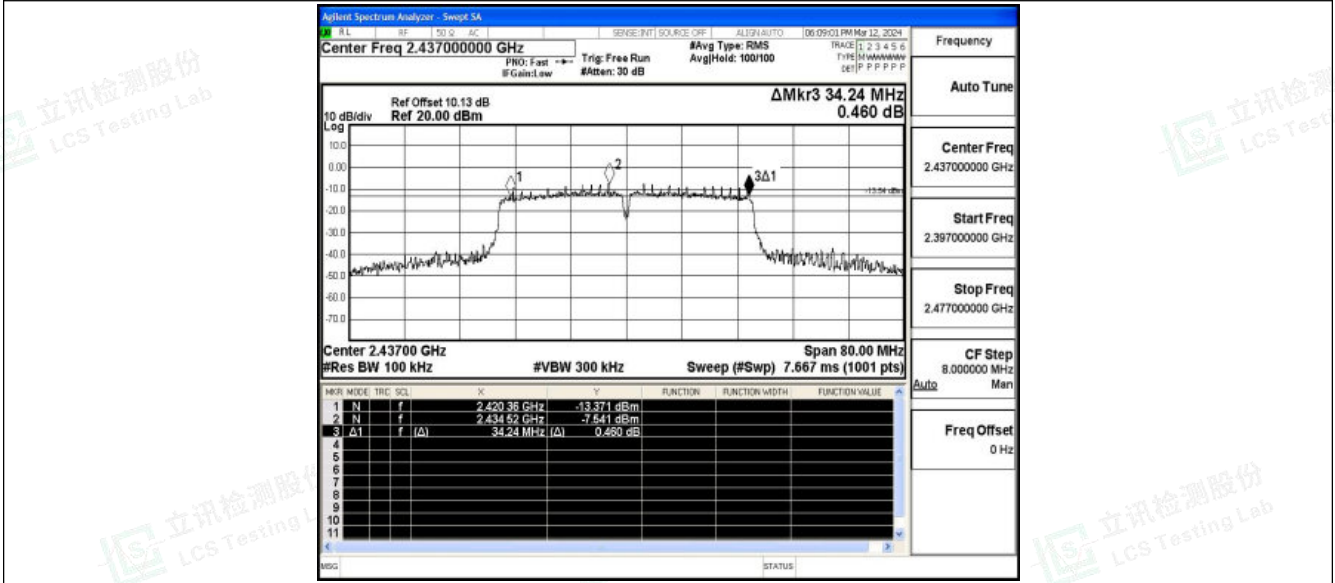


11N40SISO_Ant1_2422

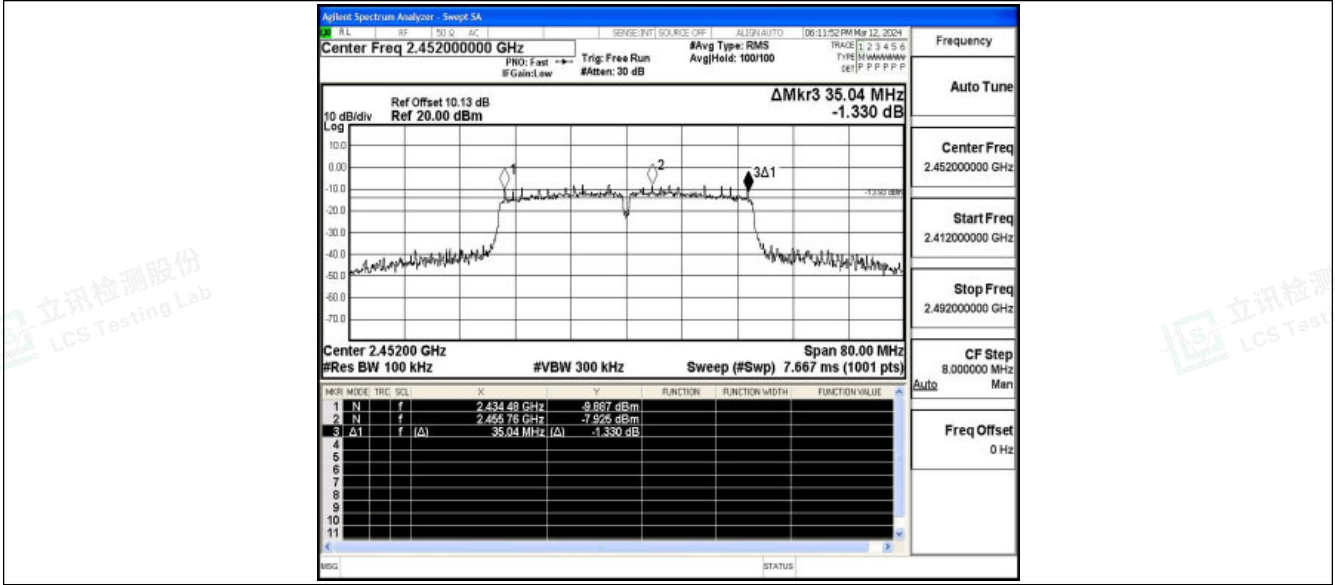


11N40SISO_Ant1_2437





11N40SISO_Ant1_2452





B.2 Maximum conducted output power

Test Result Peak

TestMode	Antenna	Freq(MHz)	Peak Power[dBm]	Conducted Limit[dBm]	Verdict
11B	Ant1	2412	15.37	≤30.00	PASS
		2437	15.64	≤30.00	PASS
		2462	14.98	≤30.00	PASS
11G	Ant1	2412	14.57	≤30.00	PASS
		2437	14.37	≤30.00	PASS
		2462	13.95	≤30.00	PASS
11N20SISO	Ant1	2412	13.51	≤30.00	PASS
		2437	13.50	≤30.00	PASS
		2462	13.07	≤30.00	PASS
11N40SISO	Ant1	2422	12.69	≤30.00	PASS
		2437	12.46	≤30.00	PASS
		2452	12.30	≤30.00	PASS



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B.3 Maximum power spectral density

Test Result

TestMode	Antenna	Freq(MHz)	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant1	2412	-10.25	≤8.00	PASS
		2437	-10.61	≤8.00	PASS
		2462	-11.04	≤8.00	PASS
11G	Ant1	2412	-16.65	≤8.00	PASS
		2437	-15.86	≤8.00	PASS
		2462	-16.78	≤8.00	PASS
11N20SISO	Ant1	2412	-17.67	≤8.00	PASS
		2437	-17.66	≤8.00	PASS
		2462	-17.30	≤8.00	PASS
11N40SISO	Ant1	2422	-21.20	≤8.00	PASS
		2437	-20.96	≤8.00	PASS
		2452	-22.02	≤8.00	PASS

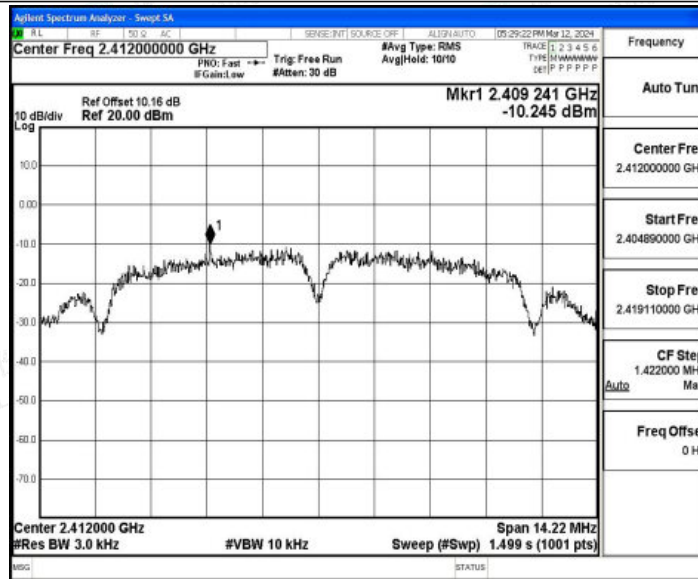


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 Scan code to check authenticity

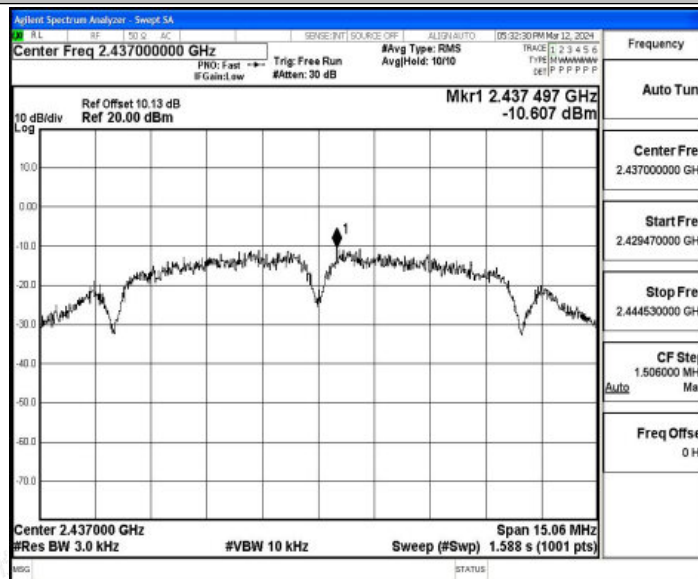


Test Graphs

11B_Ant1_2412

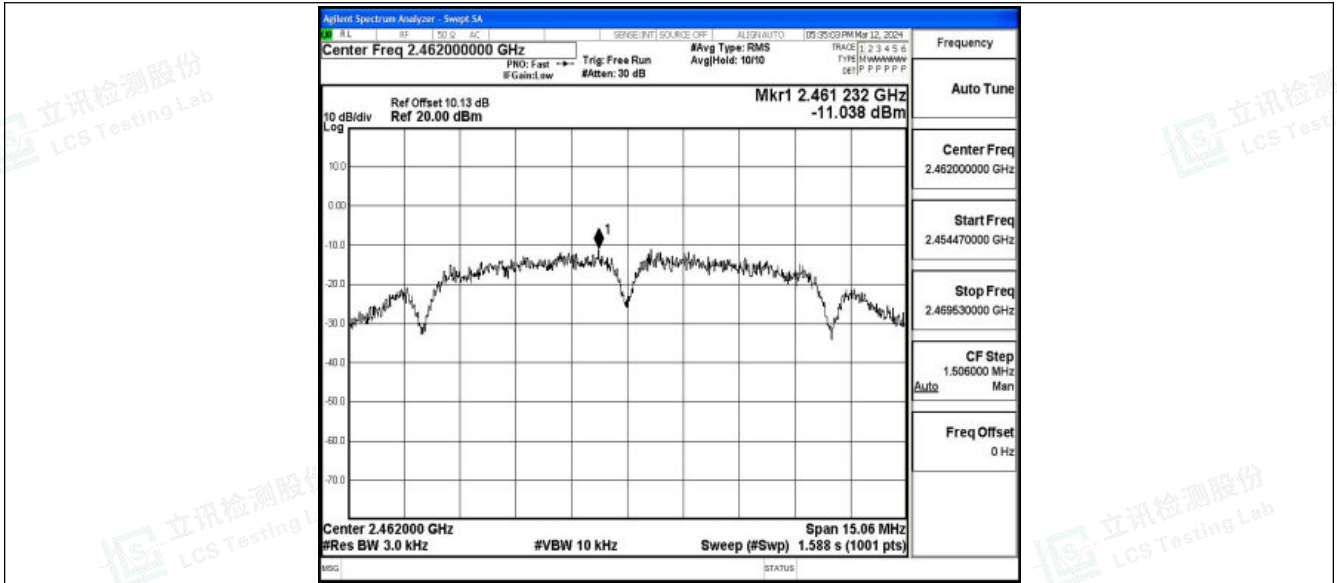


11B_Ant1_2437

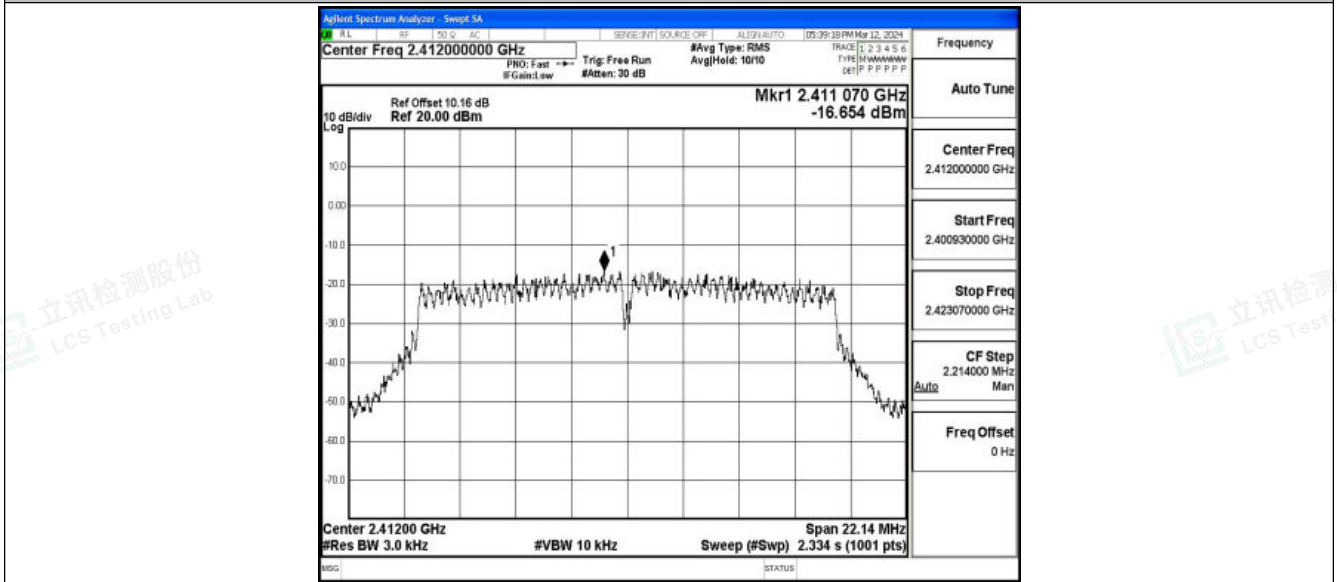


11B_Ant1_2462



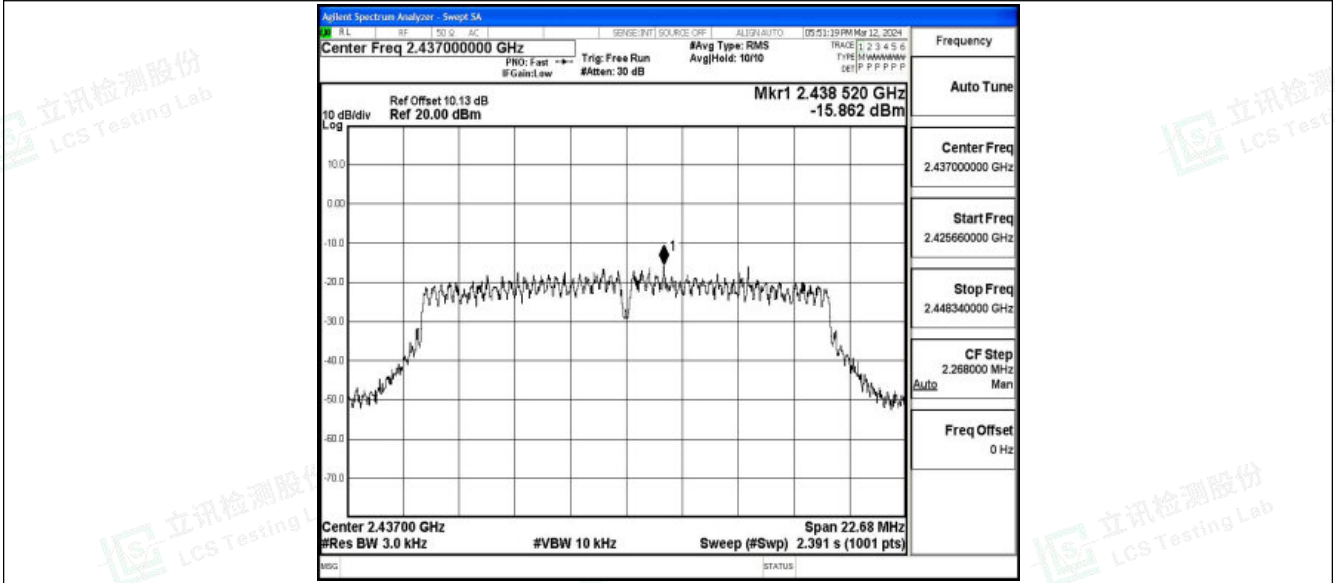


11G_Ant1_2412

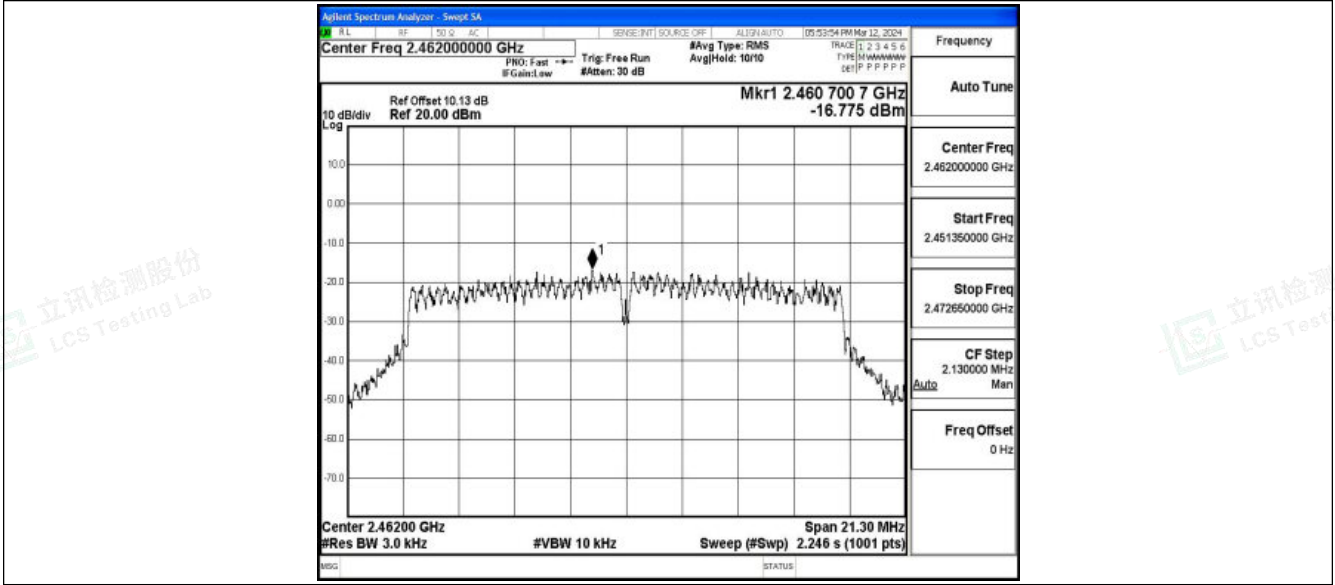


11G_Ant1_2437



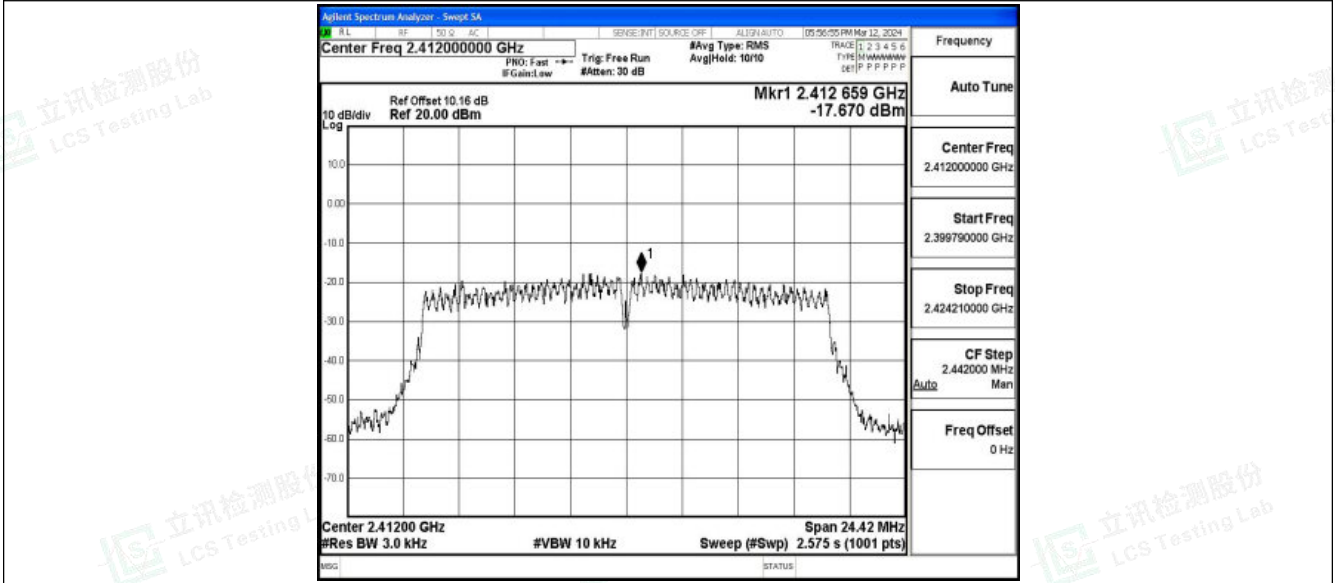


11G_Ant1_2462

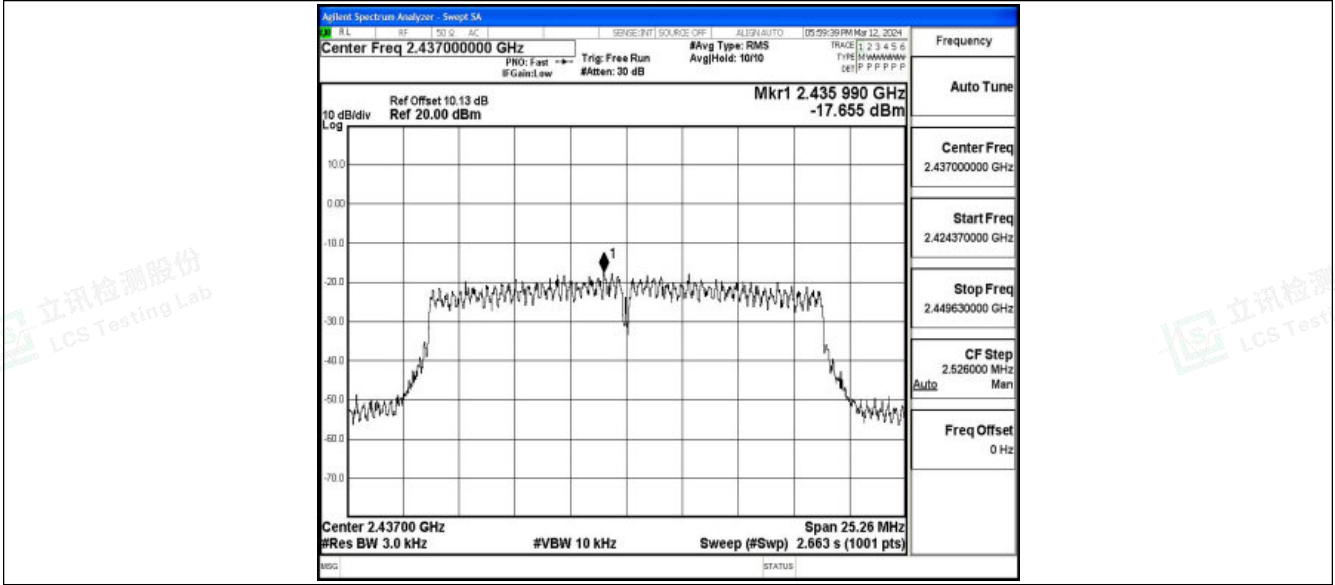


11N20SISO_Ant1_2412



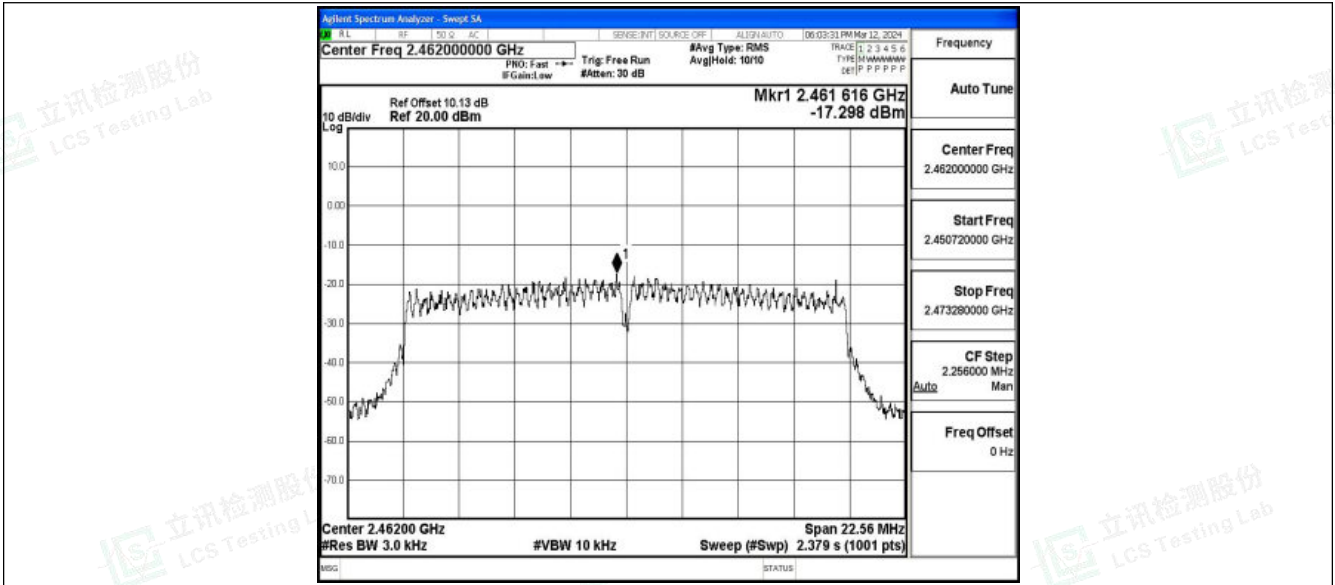


11N20SISO_Ant1_2437

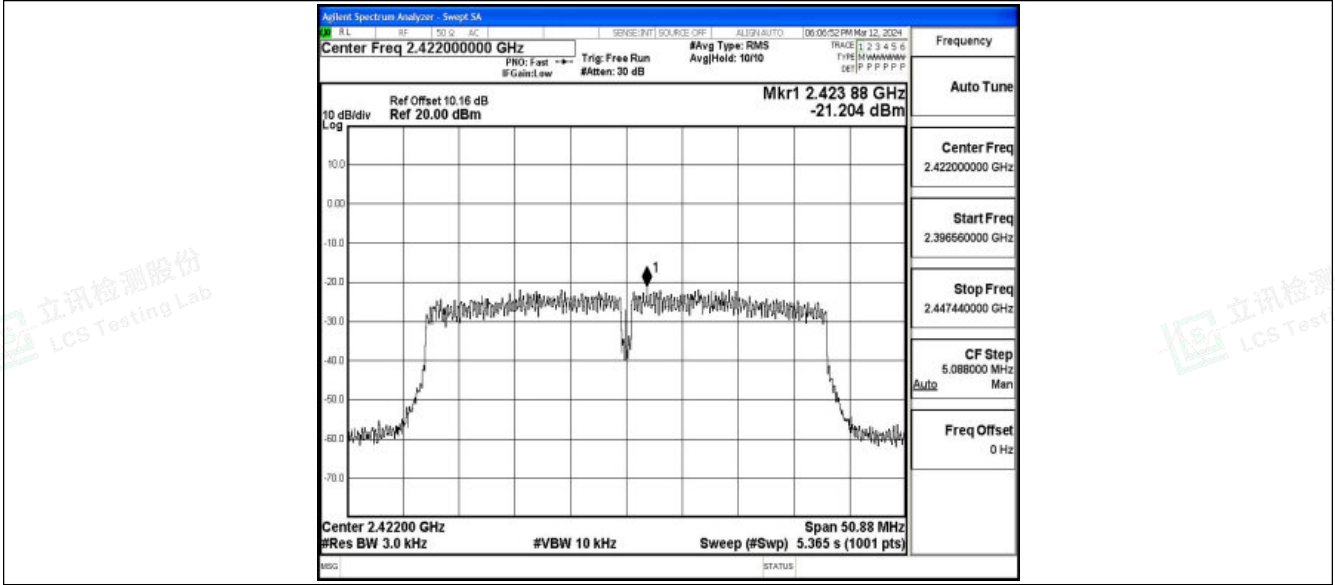


11N20SISO_Ant1_2462



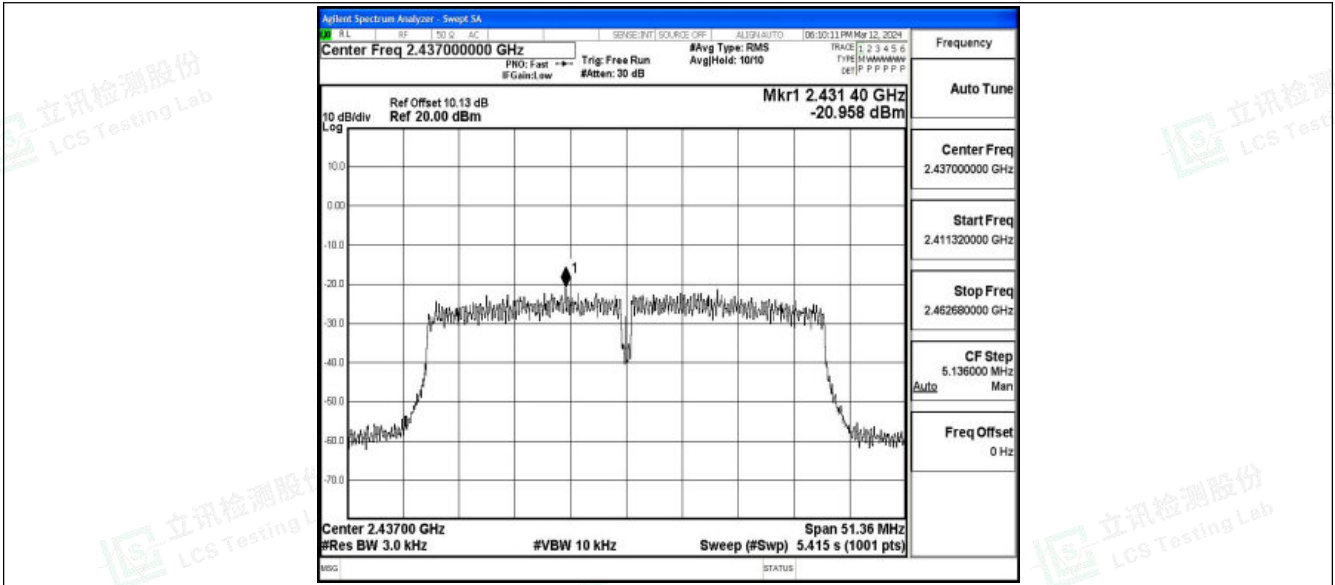


11N40SISO_Ant1_2422

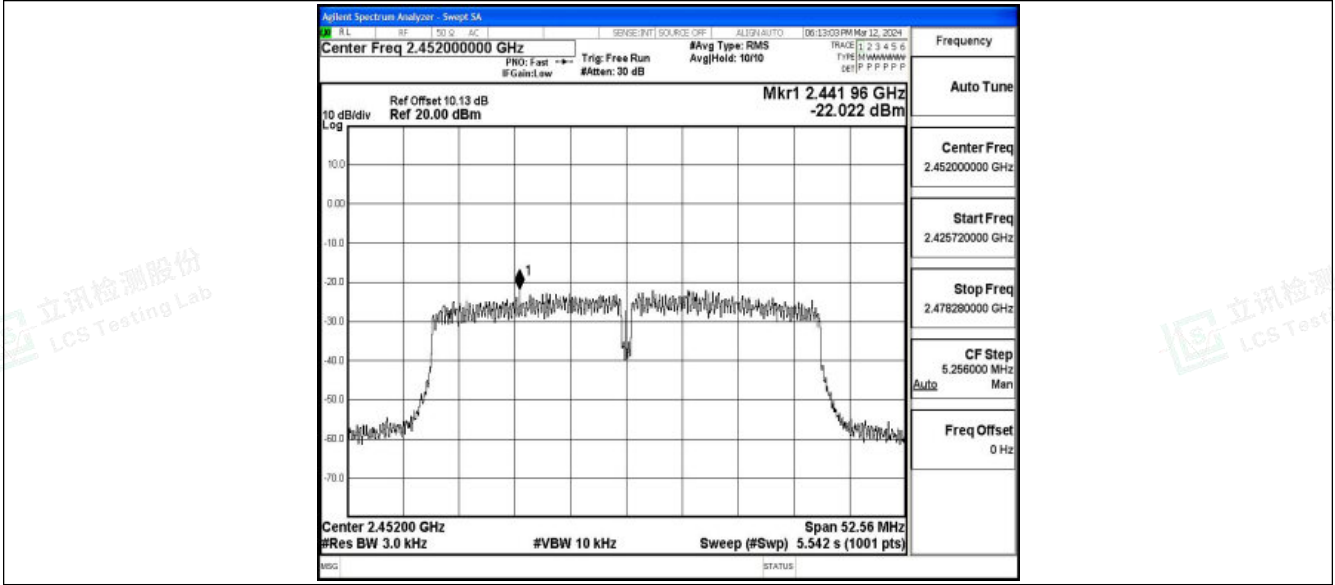


11N40SISO_Ant1_2437





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	3.39	-35.33	≤-16.61	PASS
		High	2462	2.21	-40.98	≤-17.79	PASS
11G	Ant1	Low	2412	-2.62	-35.23	≤-22.62	PASS
		High	2462	-3.03	-45.38	≤-23.03	PASS
11N20SISO	Ant1	Low	2412	-4.38	-38.51	≤-24.38	PASS
		High	2462	-4.50	-45.58	≤-24.5	PASS
11N40SISO	Ant1	Low	2422	-7.00	-38.86	≤-27	PASS
		High	2452	-7.68	-40.36	≤-27.68	PASS

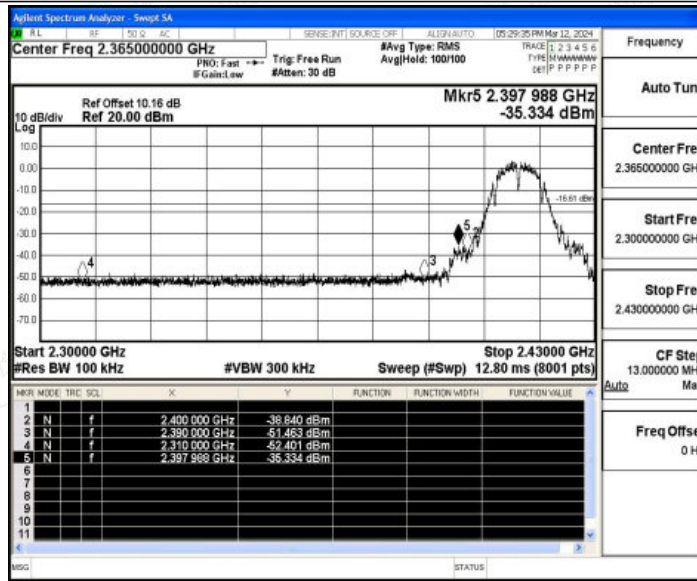


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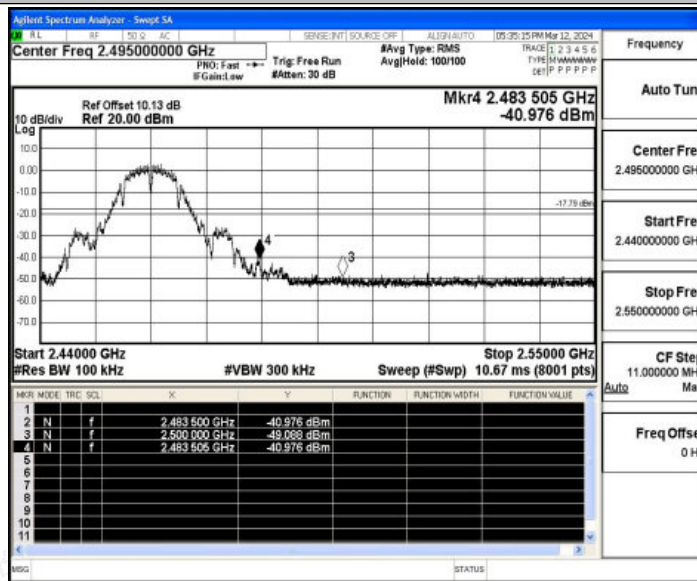


Test Graphs

11B_Ant1_Low_2412

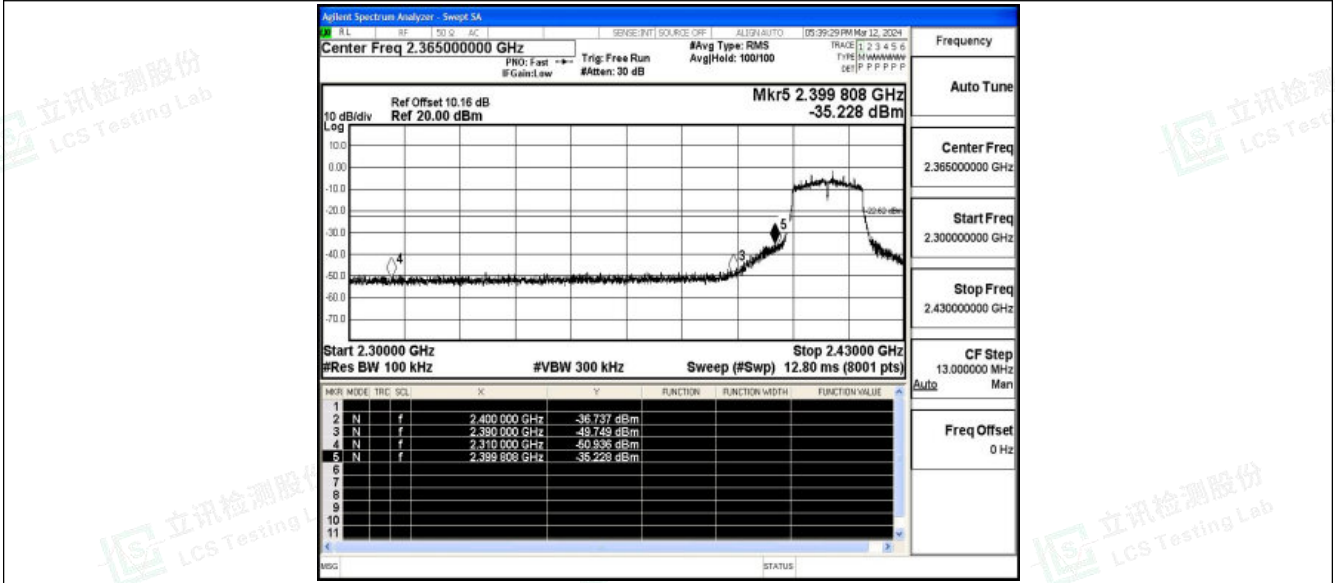


11B_Ant1_High_2462

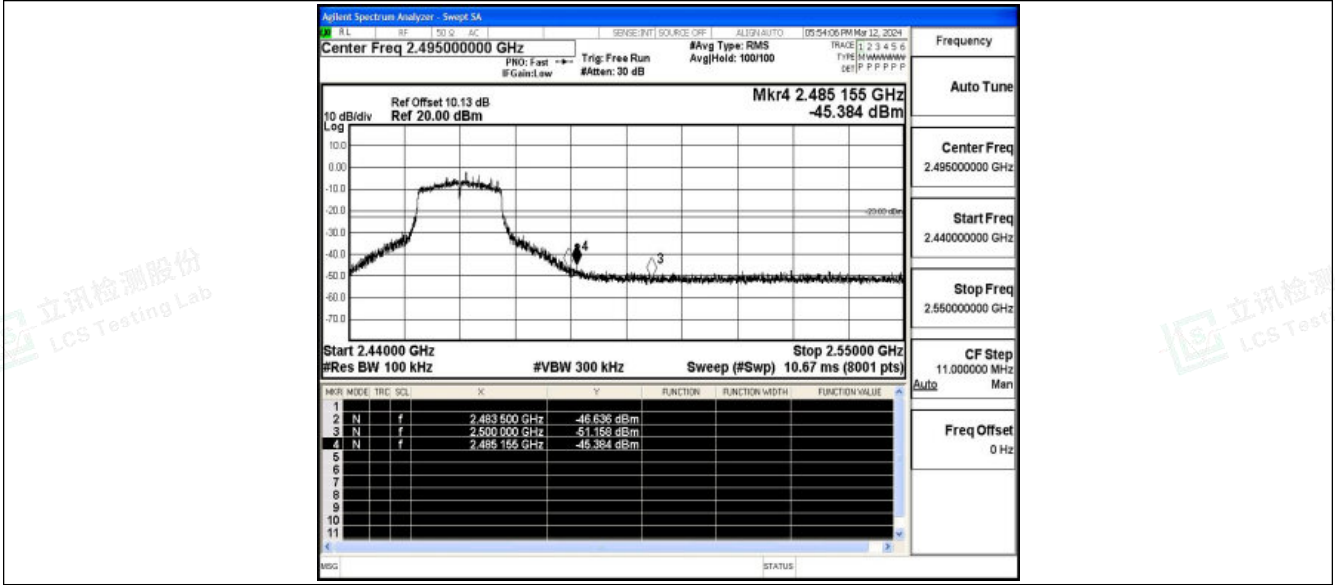


11G_Ant1_Low_2412



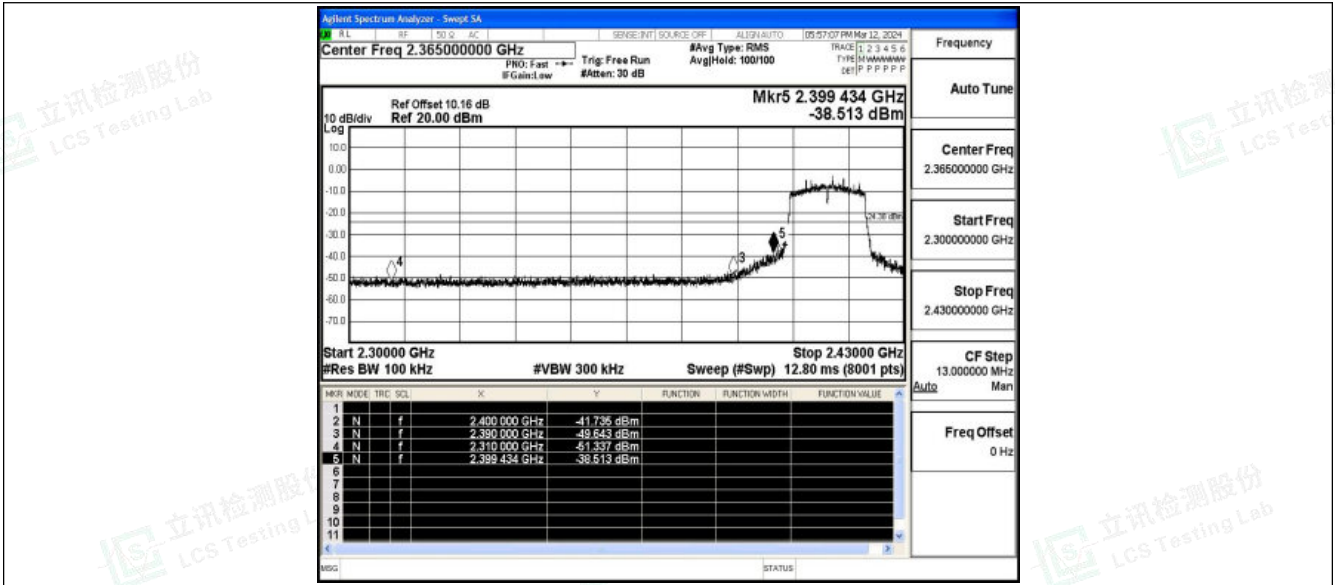


11G_Ant1_High_2462

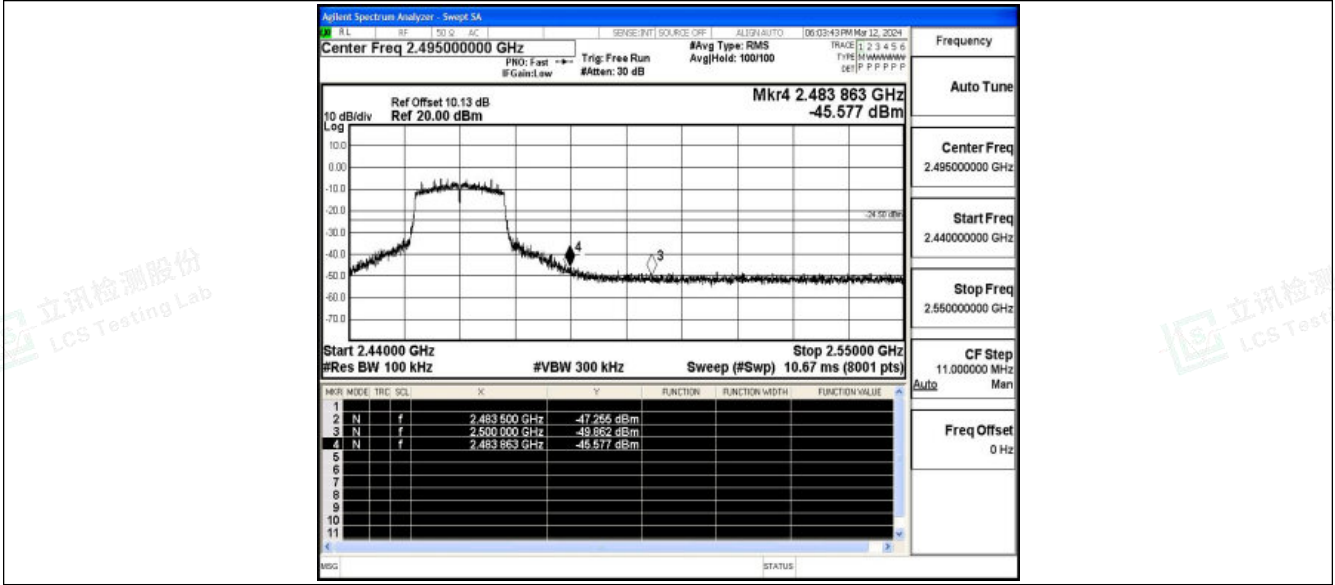


11N20SISO_Ant1_Low_2412



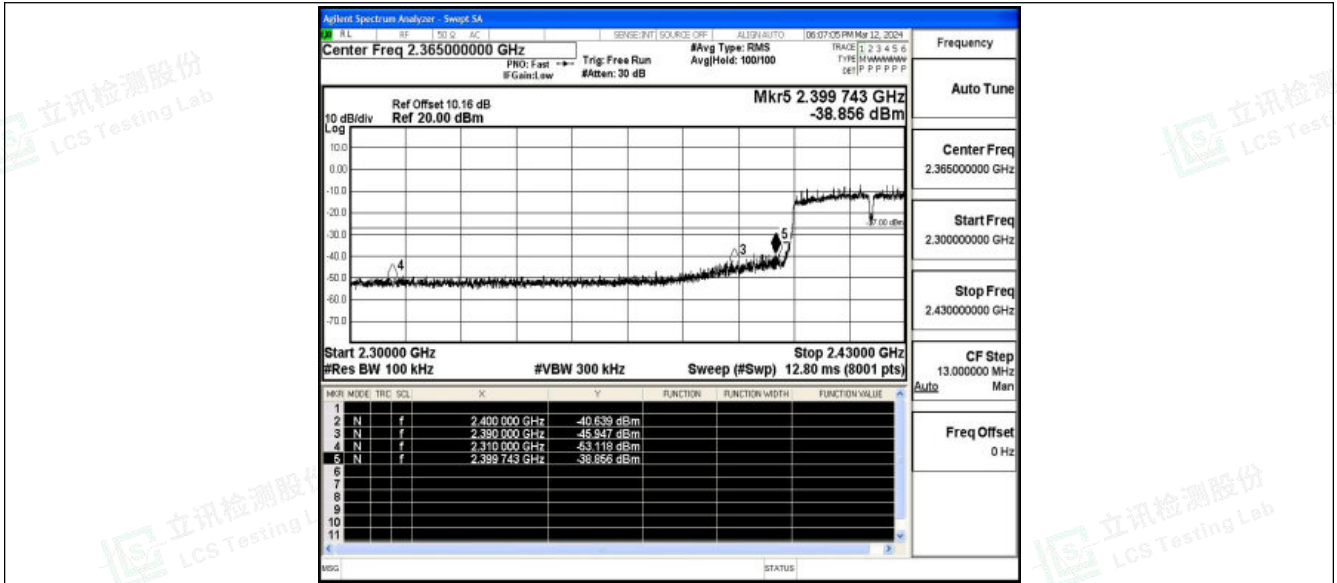


11N20SISO_Ant1_High_2462

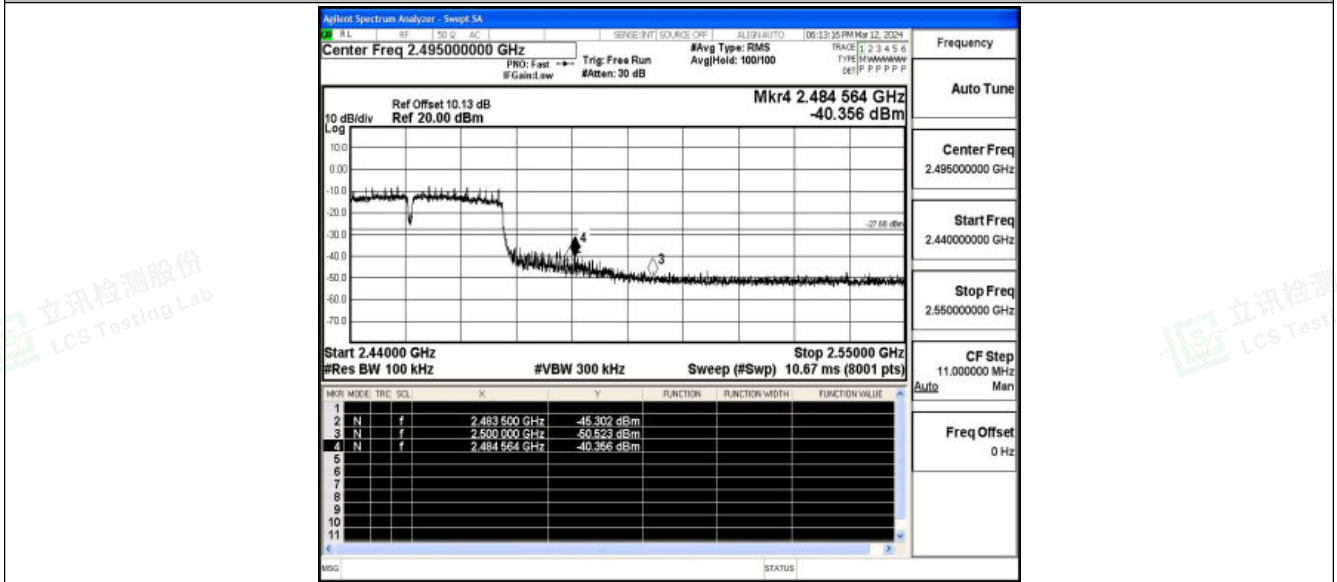


11N40SISO_Ant1_Low_2422





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	3.39	-49.3	≤-16.61	PASS
			1000~26500	3.39	-47.26	≤-16.61	PASS
		2437	30~1000	3.35	-59	≤-16.65	PASS
			1000~26500	3.35	-46.83	≤-16.65	PASS
		2462	30~1000	2.21	-59.66	≤-17.79	PASS
			1000~26500	2.21	-46.58	≤-17.79	PASS
11G	Ant1	2412	30~1000	-2.62	-60.18	≤-22.62	PASS
			1000~26500	-2.62	-46.45	≤-22.62	PASS
		2437	30~1000	-2.03	-59.53	≤-22.03	PASS
			1000~26500	-2.03	-47.05	≤-22.03	PASS
		2462	30~1000	-3.03	-58.97	≤-23.03	PASS
			1000~26500	-3.03	-47.36	≤-23.03	PASS
11N20SISO	Ant1	2412	30~1000	-4.38	-59.47	≤-24.38	PASS
			1000~26500	-4.38	-47.13	≤-24.38	PASS
		2437	30~1000	-2.81	-59.41	≤-22.81	PASS
			1000~26500	-2.81	-46.07	≤-22.81	PASS
		2462	30~1000	-4.50	-58.98	≤-24.5	PASS
			1000~26500	-4.50	-47.32	≤-24.5	PASS
11N40SISO	Ant1	2422	30~1000	-7.00	-59.71	≤-27	PASS
			1000~26500	-7.00	-47.26	≤-27	PASS
		2437	30~1000	-7.93	-58.97	≤-27.93	PASS
			1000~26500	-7.93	-47.15	≤-27.93	PASS
		2452	30~1000	-7.68	-59.92	≤-27.68	PASS
			1000~26500	-7.68	-46.55	≤-27.68	PASS



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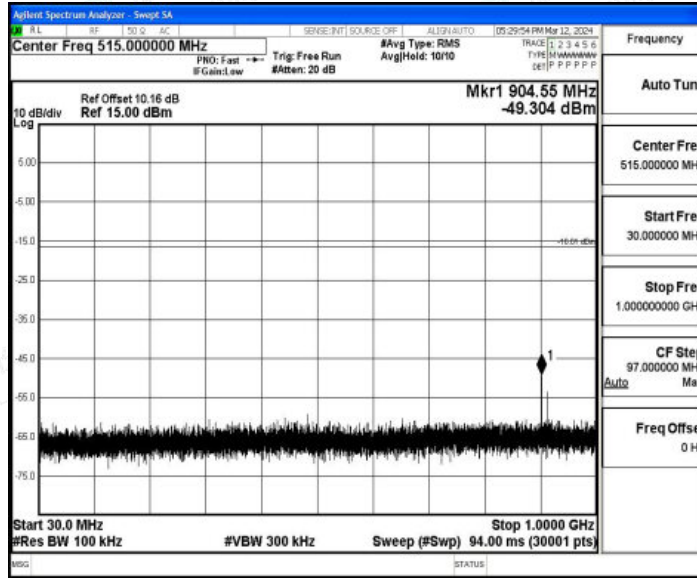
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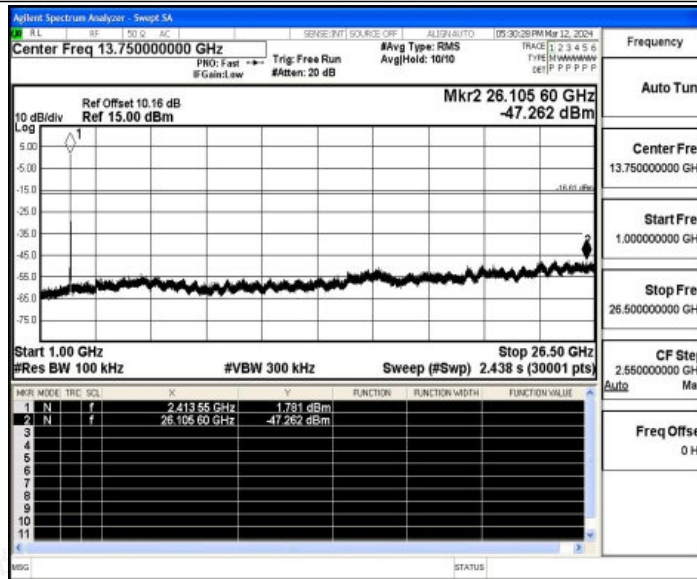


Test Graphs

11B_Ant1_2412_30~1000

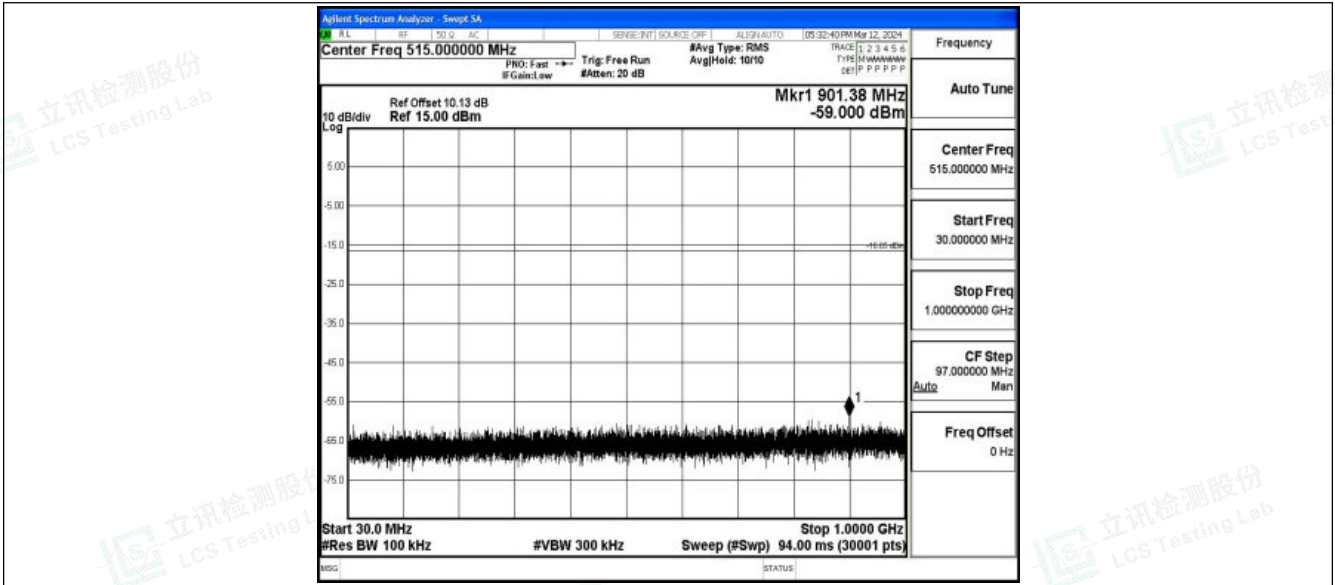


11B_Ant1_2412_1000~26500

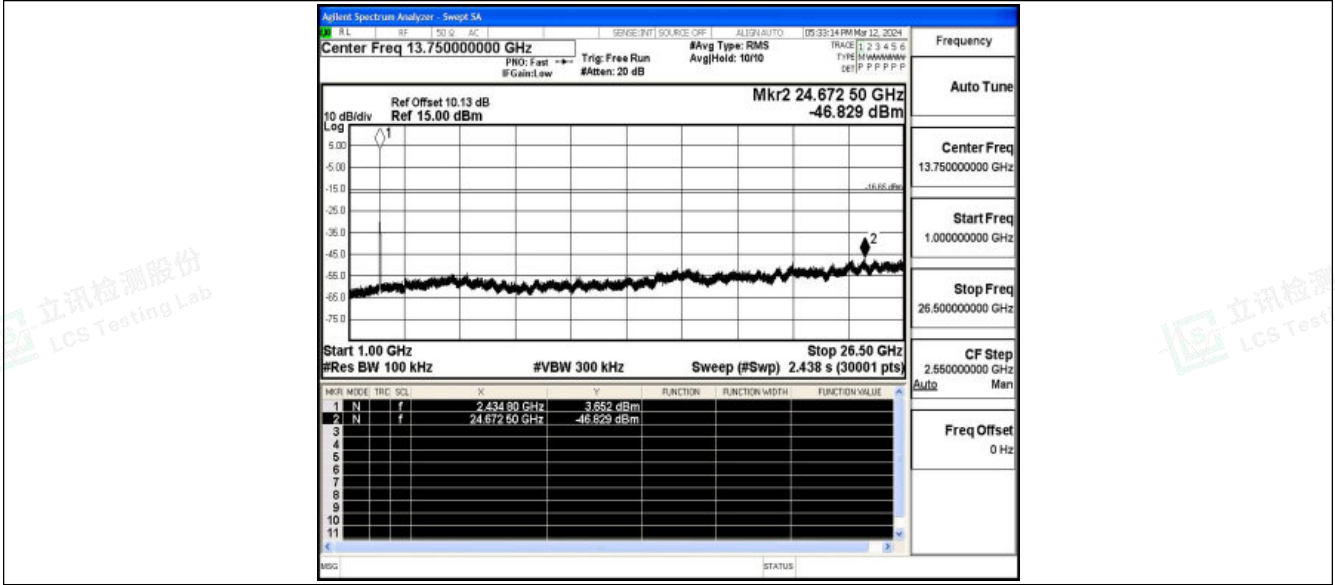


11B_Ant1_2437_30~1000



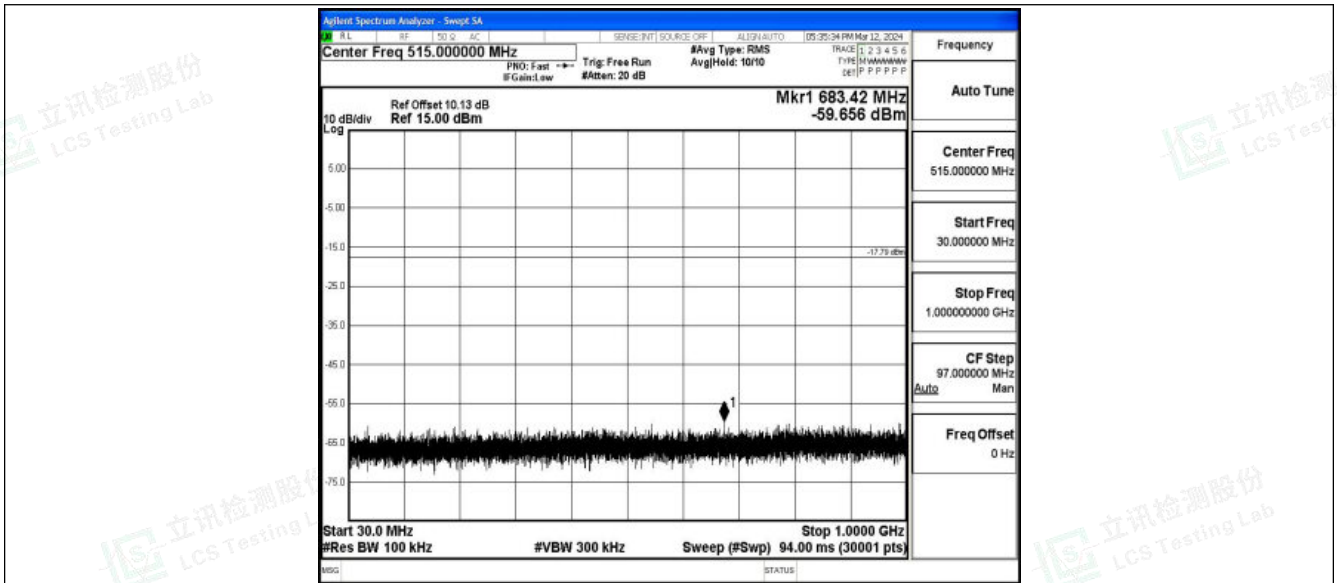


11B_Ant1_2437_1000~26500

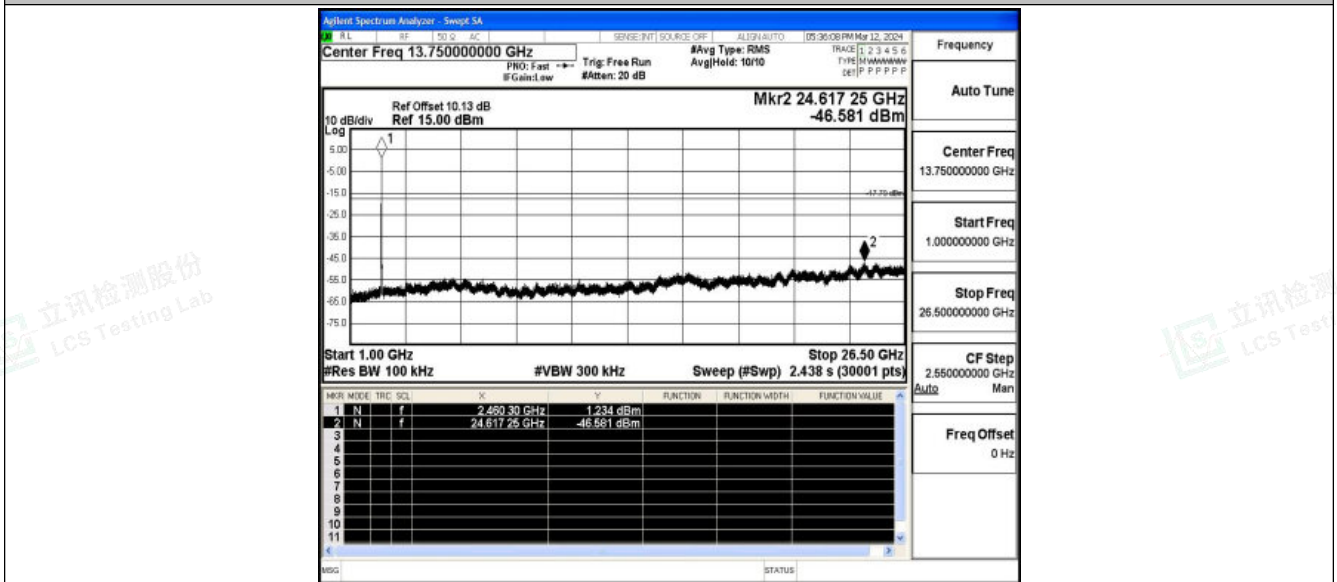


11B_Ant1_2462_30~1000



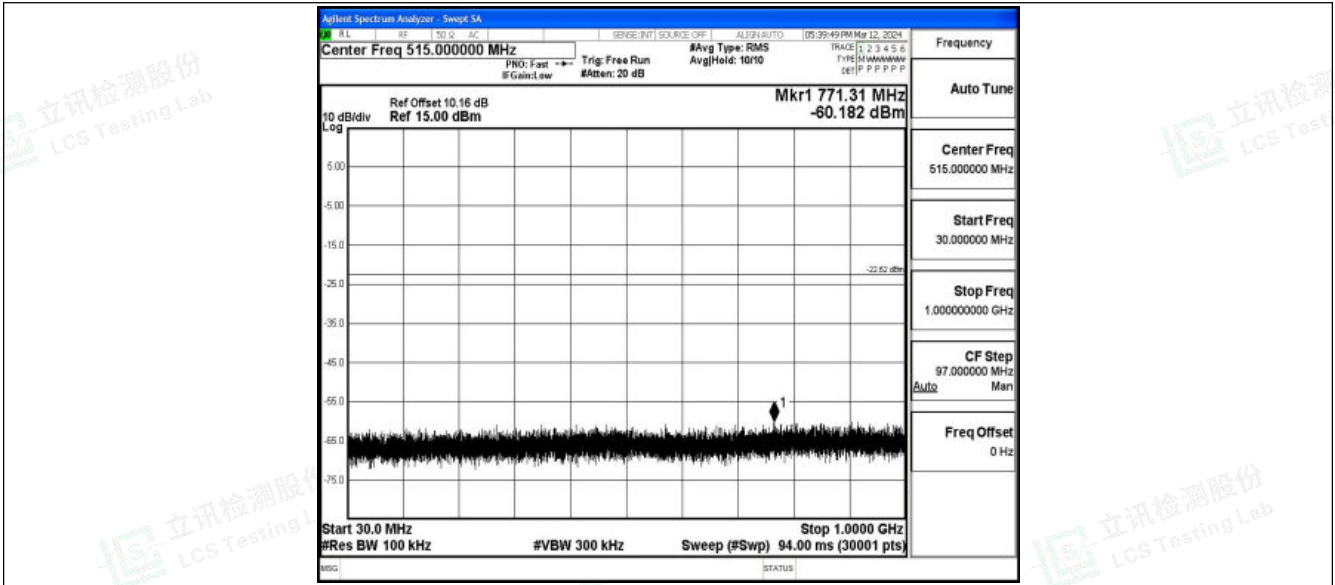


11B_Ant1_2462_1000~26500

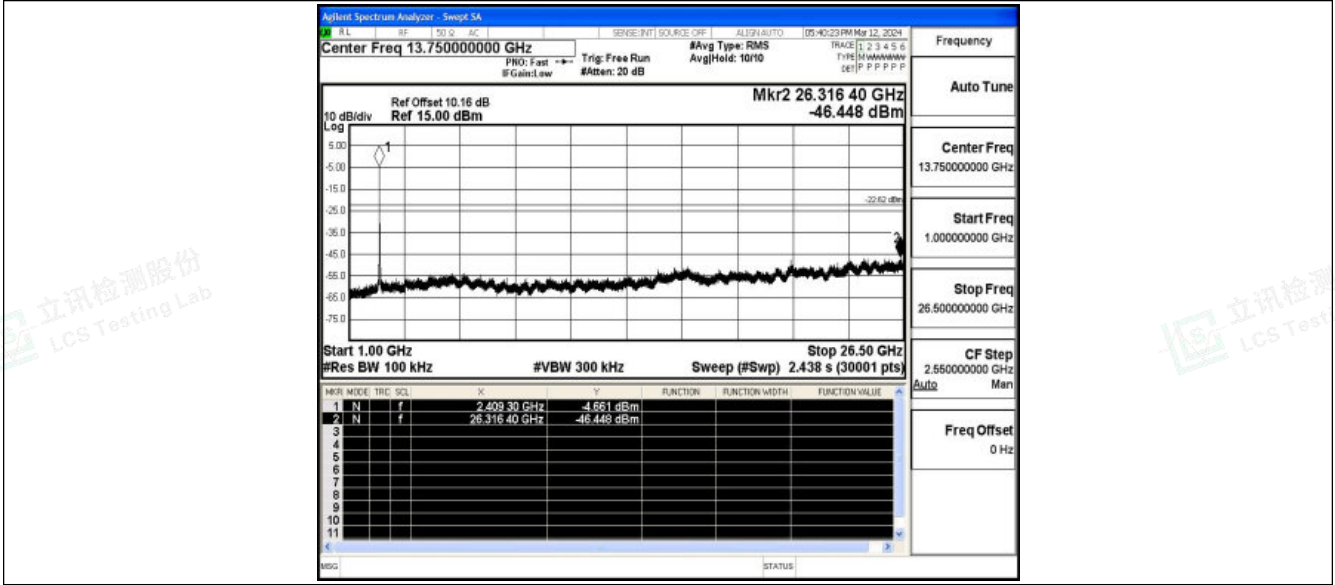


11G_Ant1_2412_30~1000



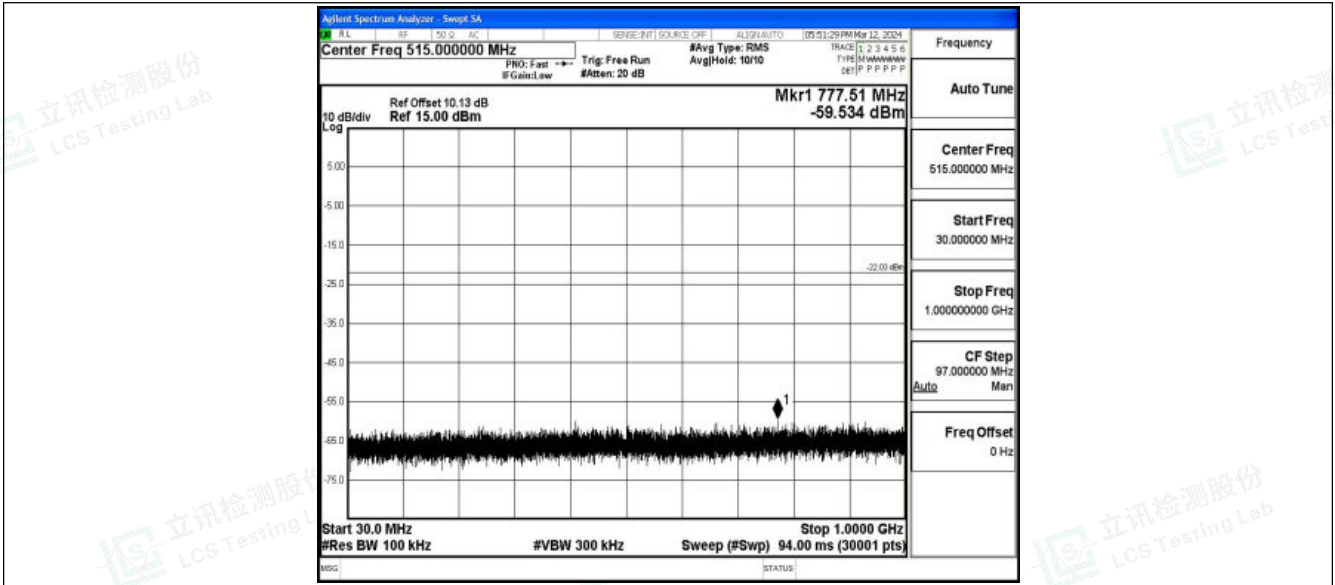


11G_Ant1_2412_1000~26500

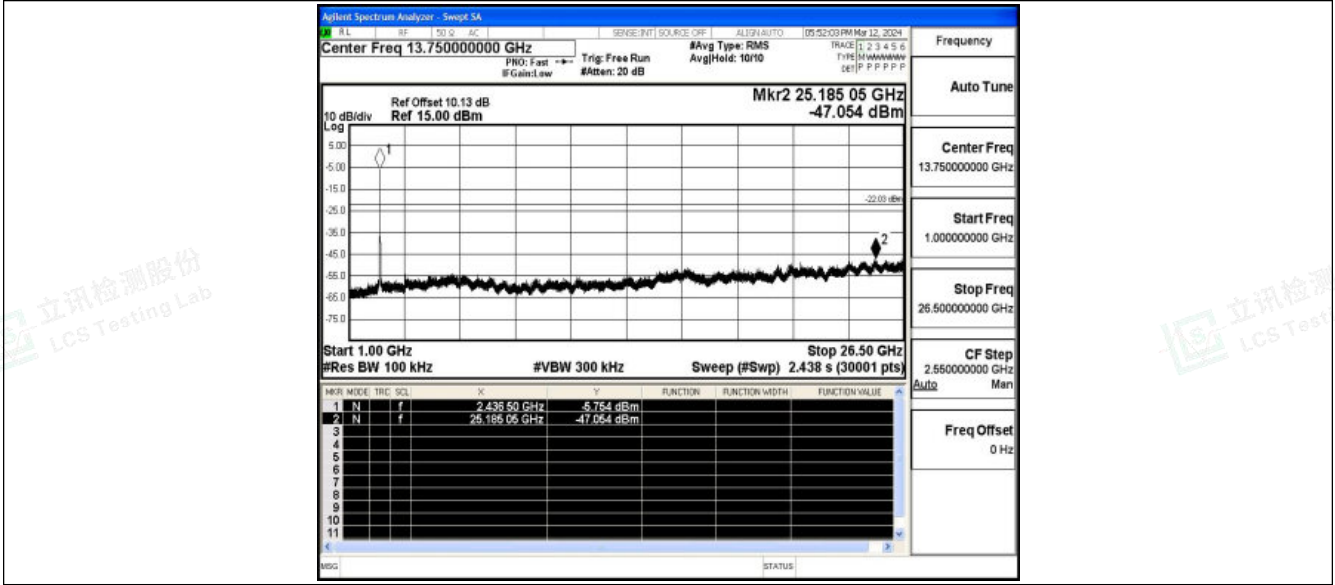


11G_Ant1_2437_30~1000



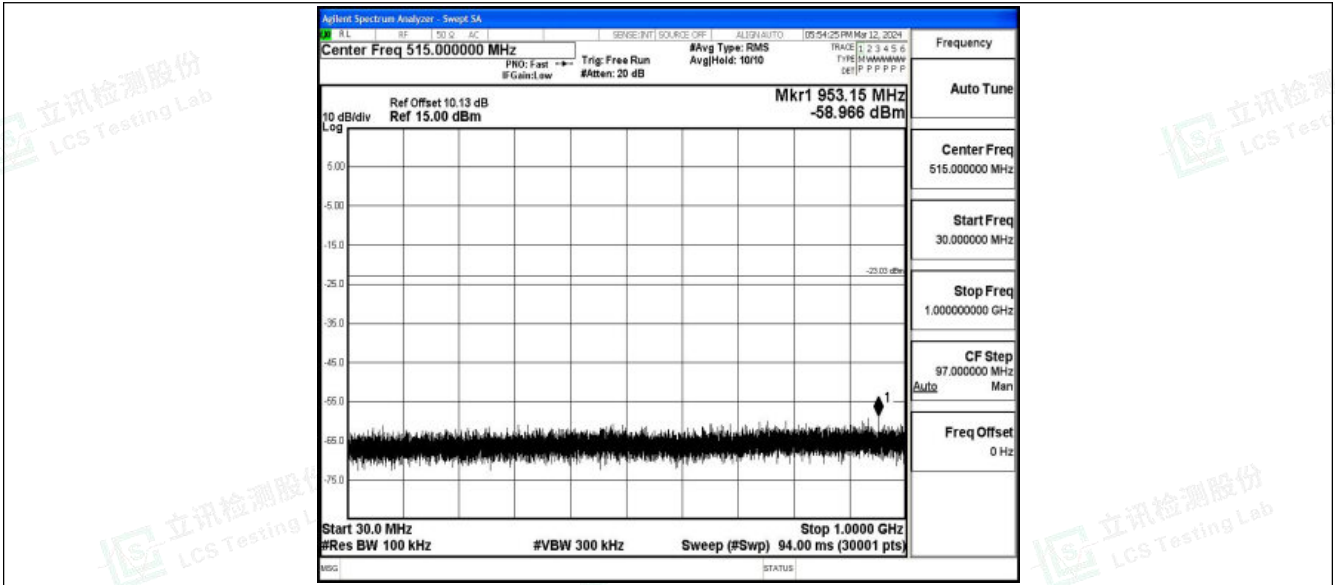


11G_Ant1_2437_1000~26500

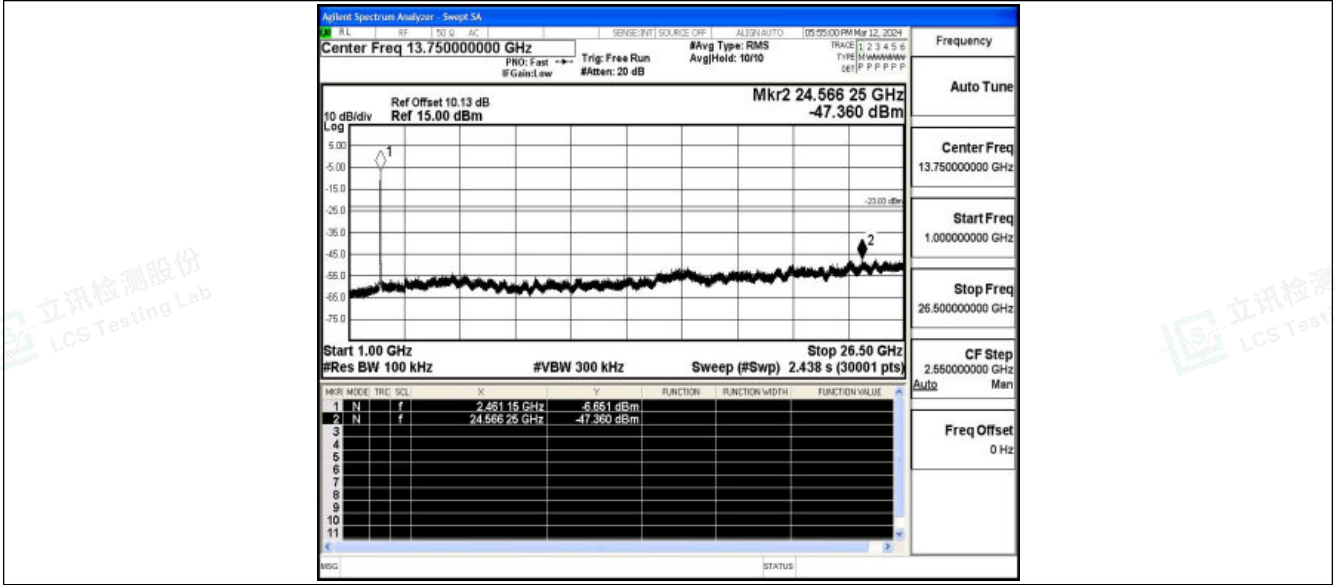


11G_Ant1_2462_30~1000



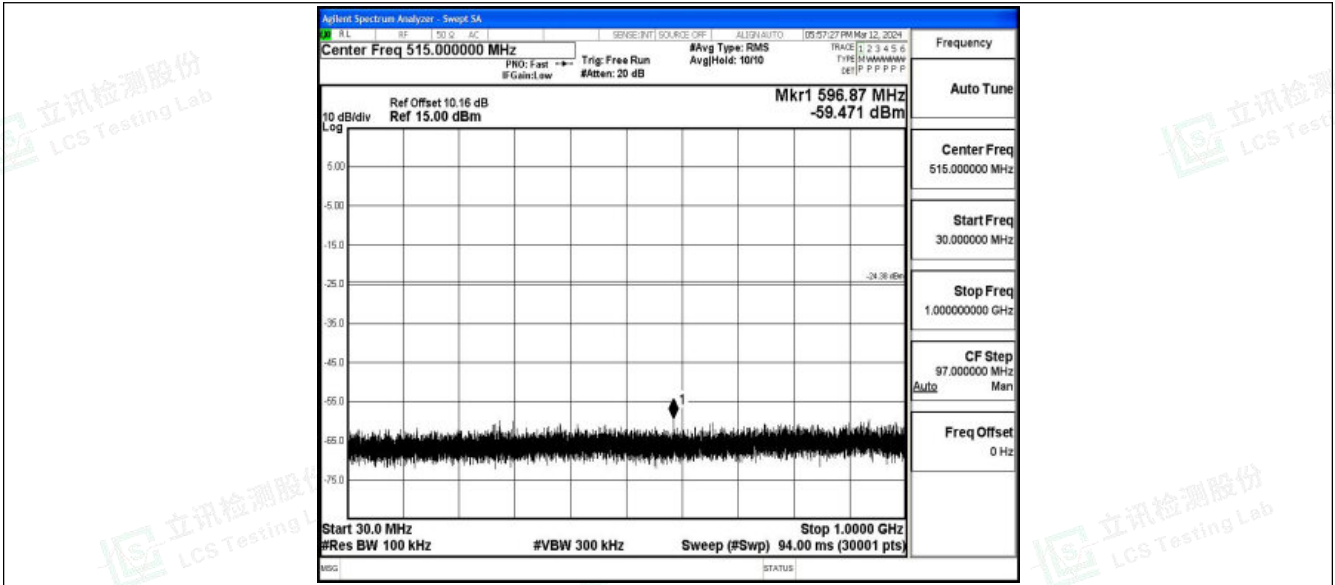


11G_Ant1_2462_1000~26500

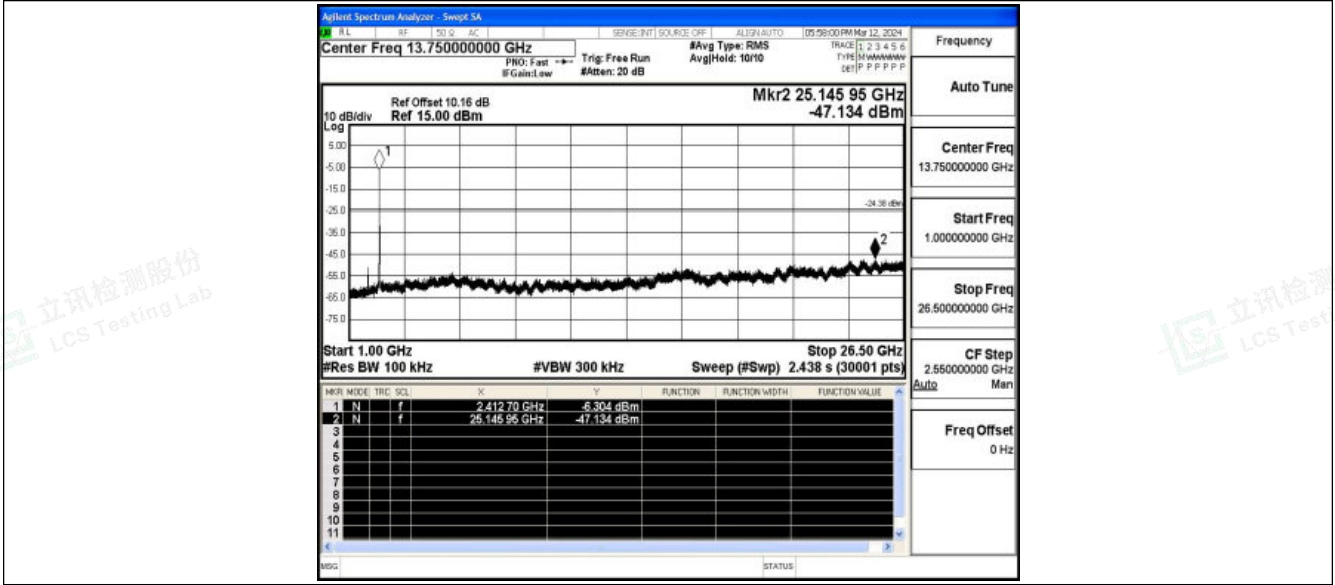


11N20SISO_Ant1_2412_30~1000



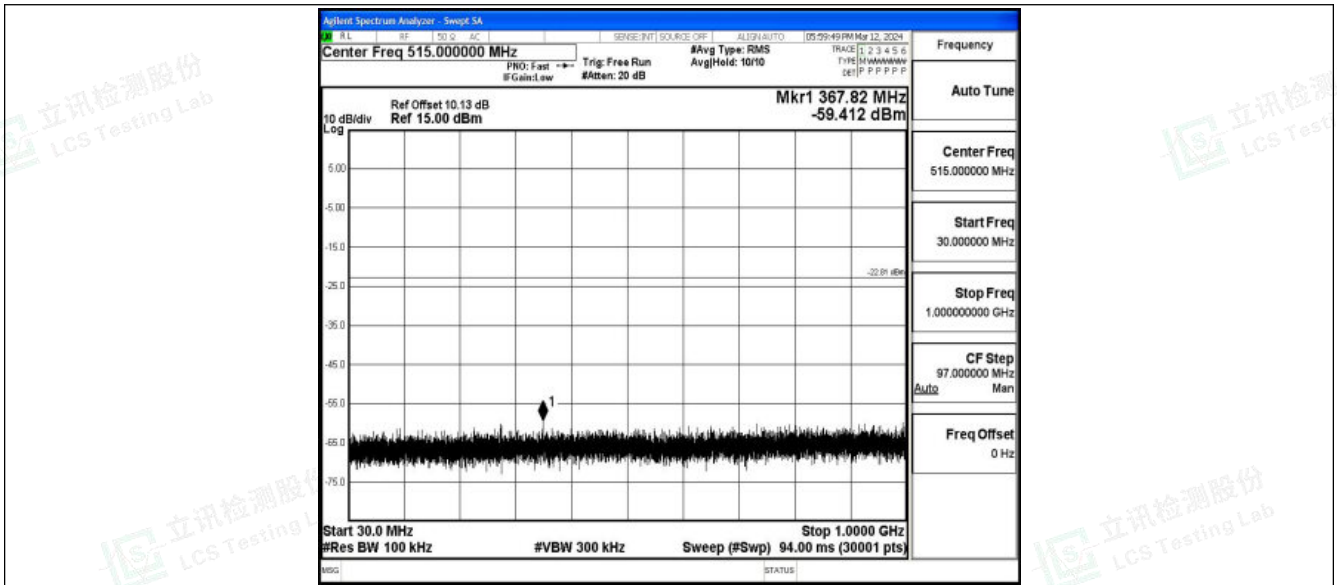


11N20SISO_Ant1_2412_1000~26500

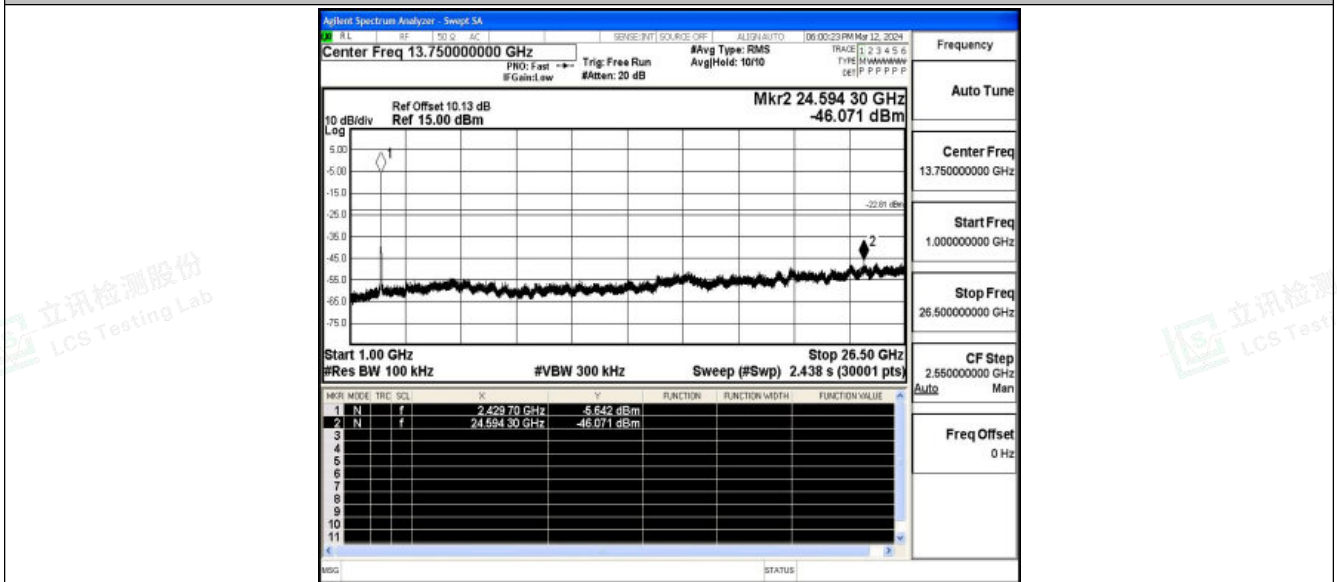


11N20SISO_Ant1_2437_30~1000



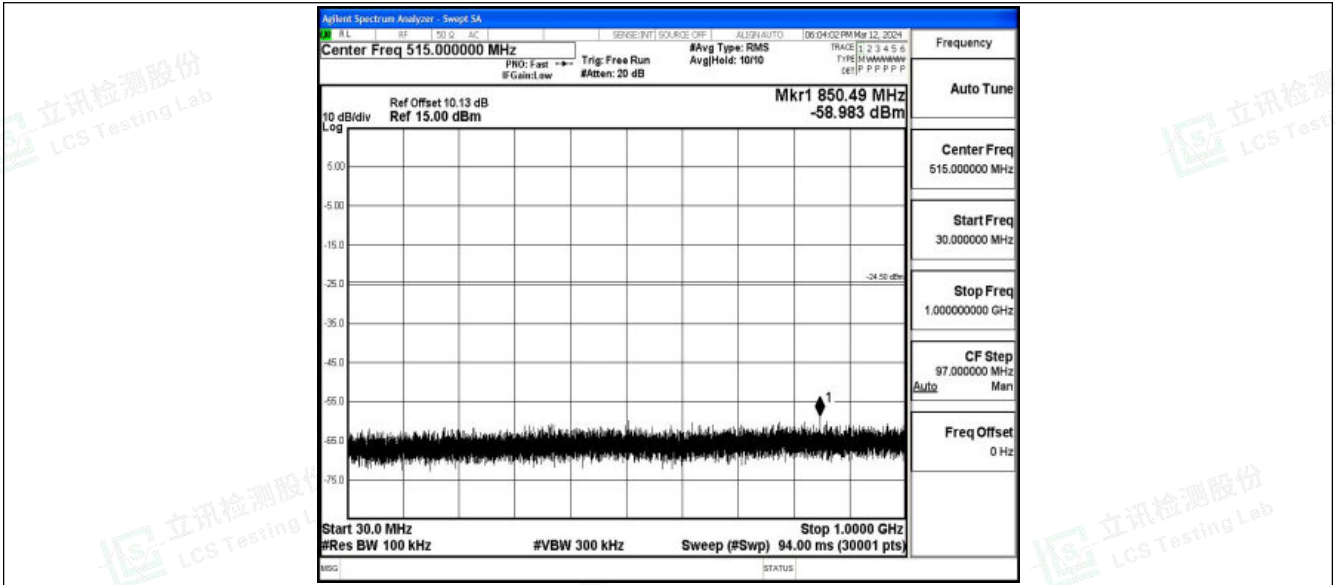


11N20SISO_Ant1_2437_1000~26500

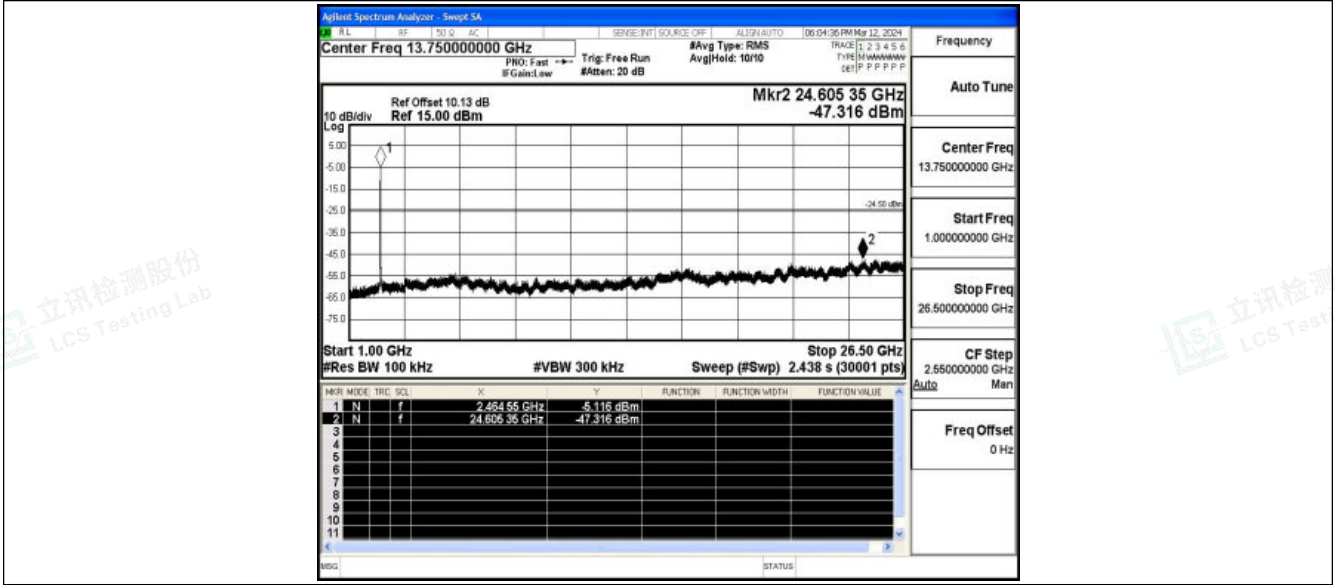


11N20SISO_Ant1_2462_30~1000



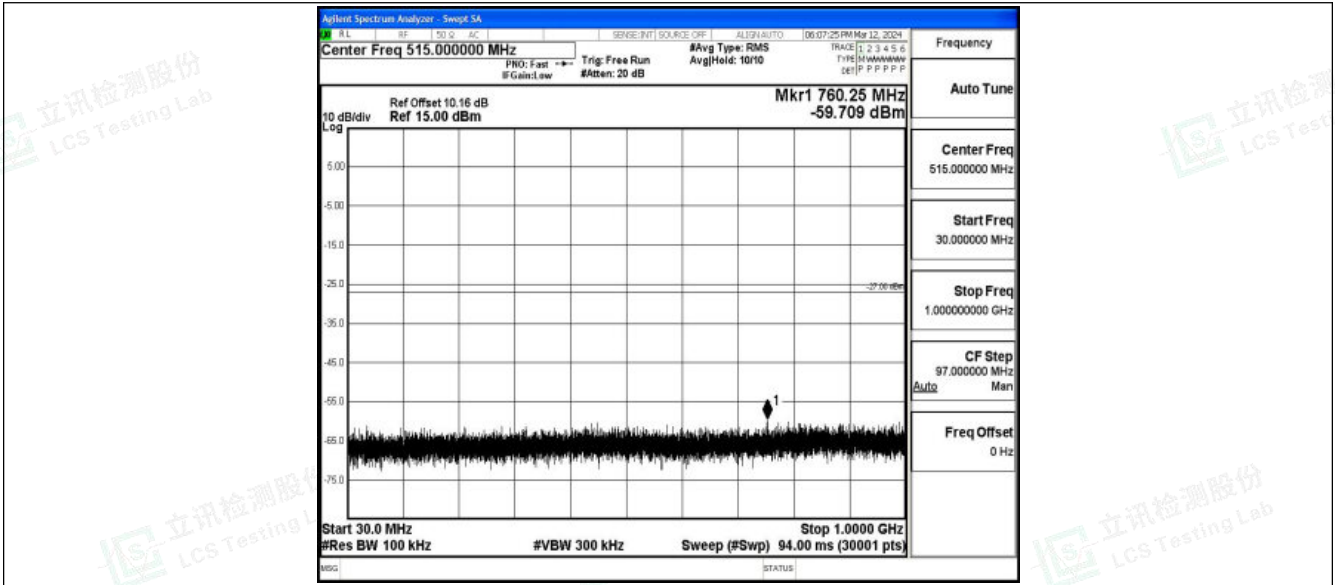


11N20SISO_Ant1_2462_1000~26500

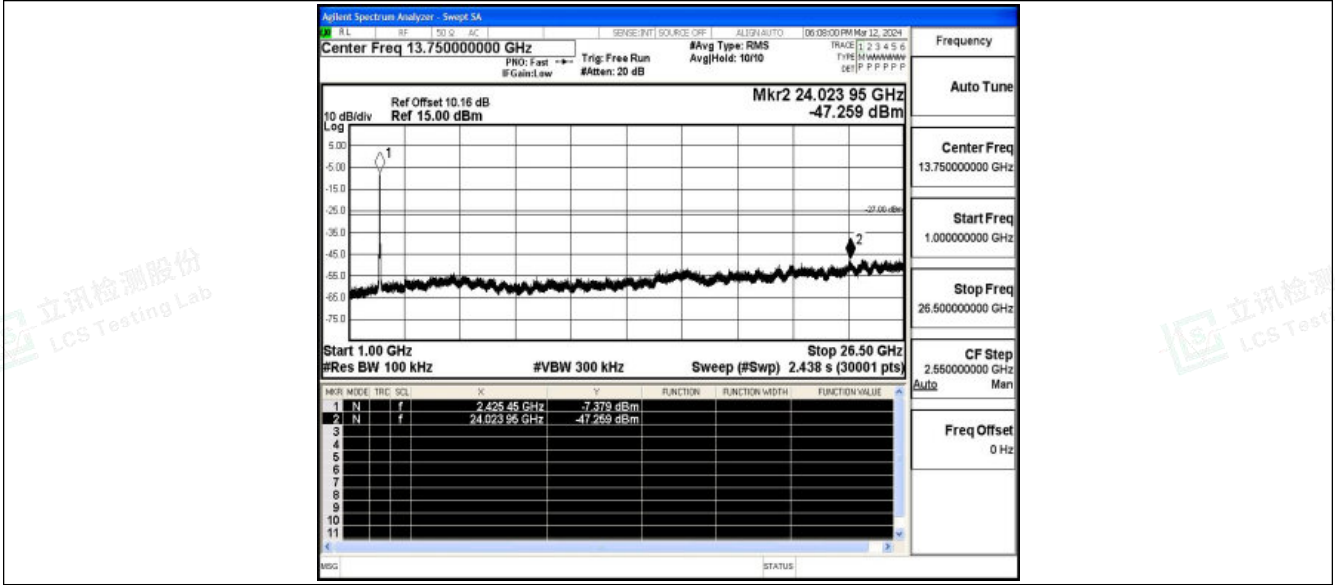


11N40SISO_Ant1_2422_30~1000



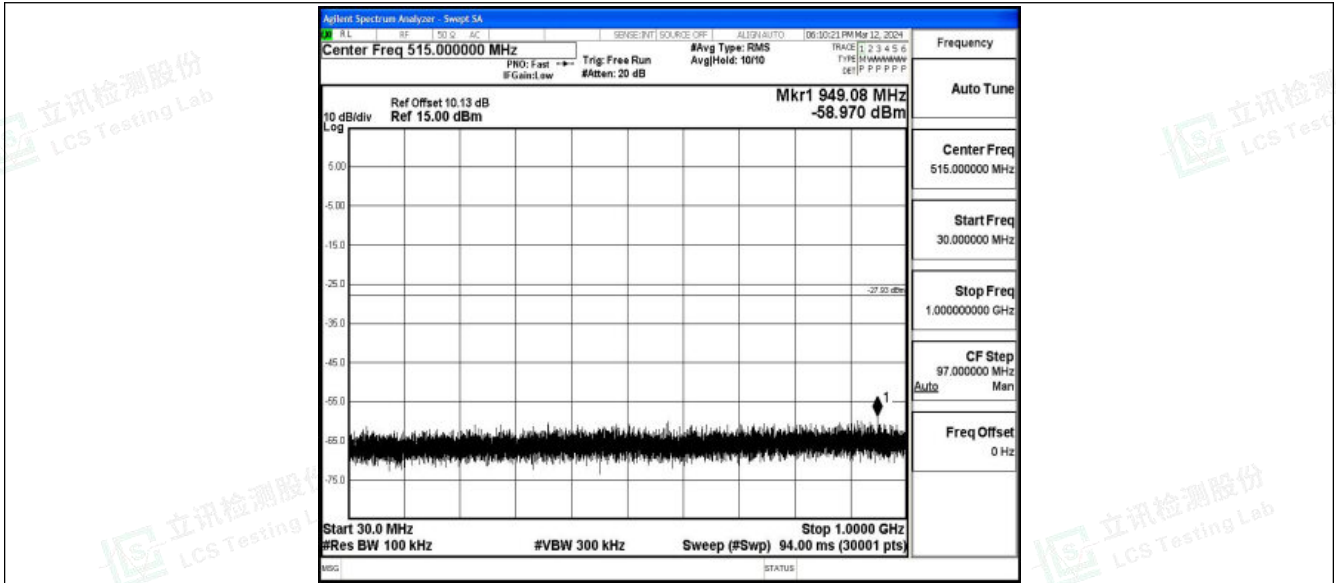


11N40SISO_Ant1_2422_1000~26500

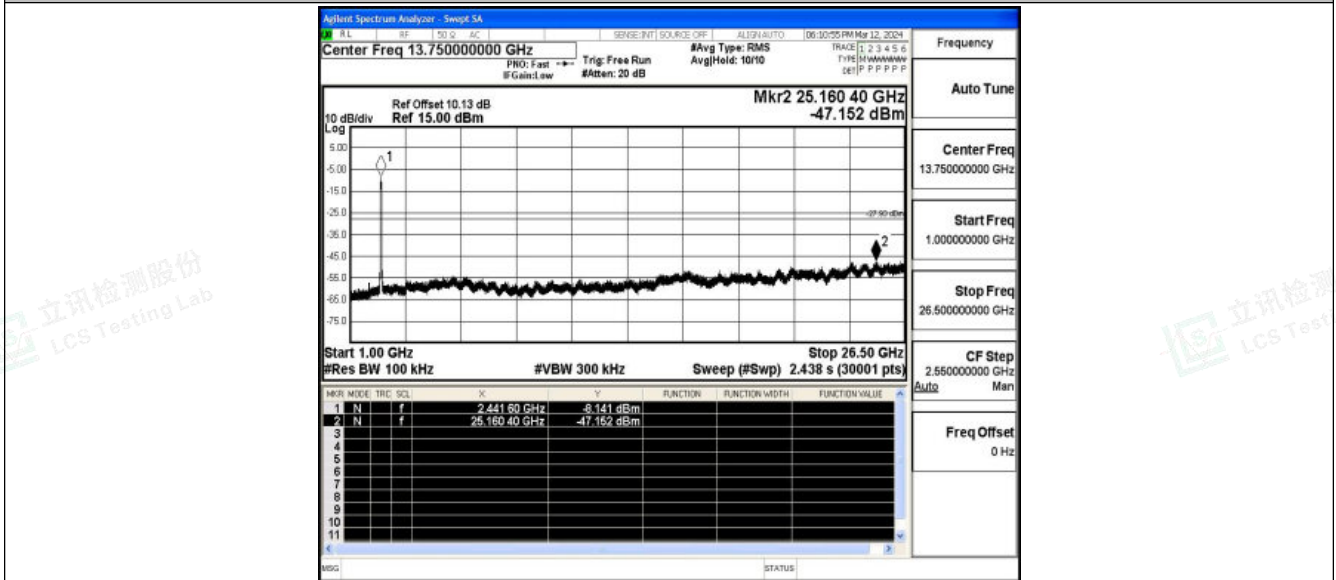


11N40SISO_Ant1_2437_30~1000



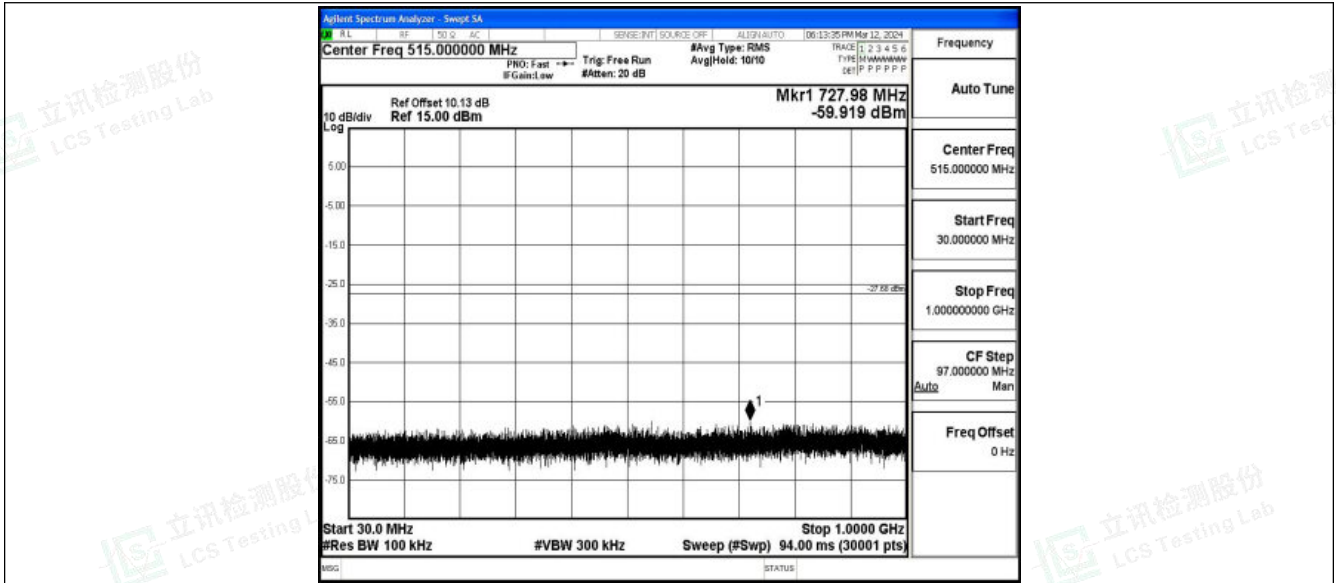


11N40SISO_Ant1_2437_1000~26500

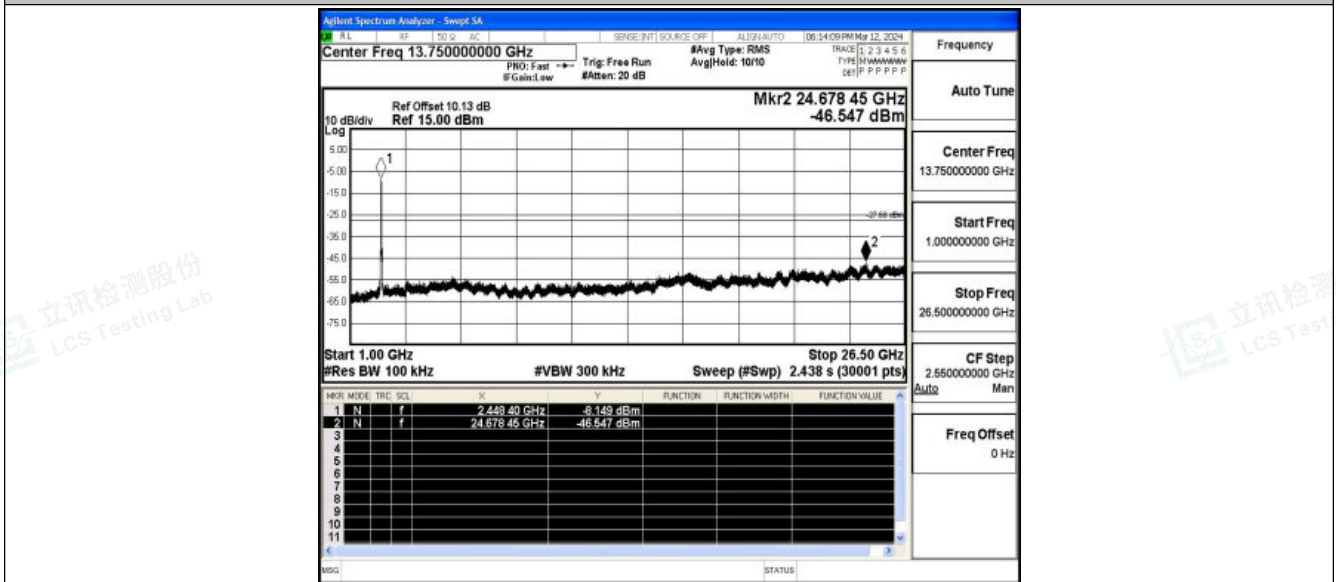


11N40SISO_Ant1_2452_30~1000





11N40SISO_Ant1_2452_1000~26500





Reference level measurement

Test Result

TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
11B	Ant1	2412	2413.00	3.39
		2437	2435.99	3.35
		2462	2463.49	2.21
11G	Ant1	2412	2414.48	-2.62
		2437	2438.27	-2.03
		2462	2463.21	-3.03
11N20SISO	Ant1	2412	2414.47	-4.38
		2437	2438.26	-2.81
		2462	2460.69	-4.50
11N40SISO	Ant1	2422	2419.51	-7.00
		2437	2441.98	-7.93
		2452	2449.48	-7.68

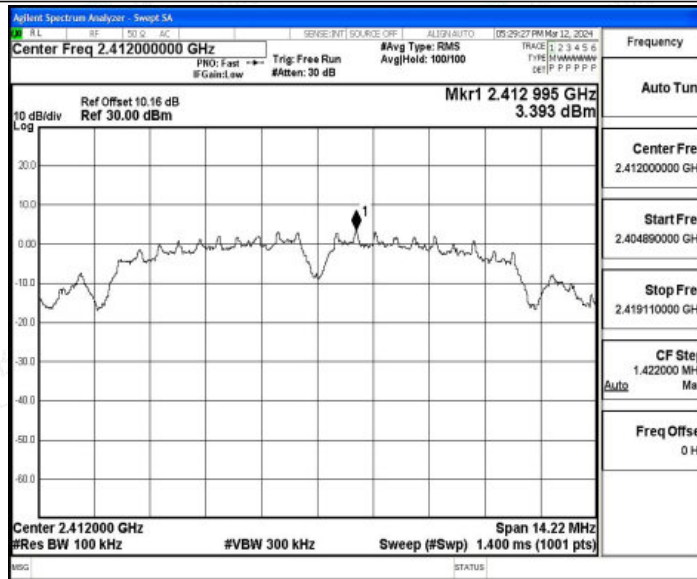


Shenzhen LCS Compliance Testing Laboratory Ltd.
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 Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
 Scan code to check authenticity

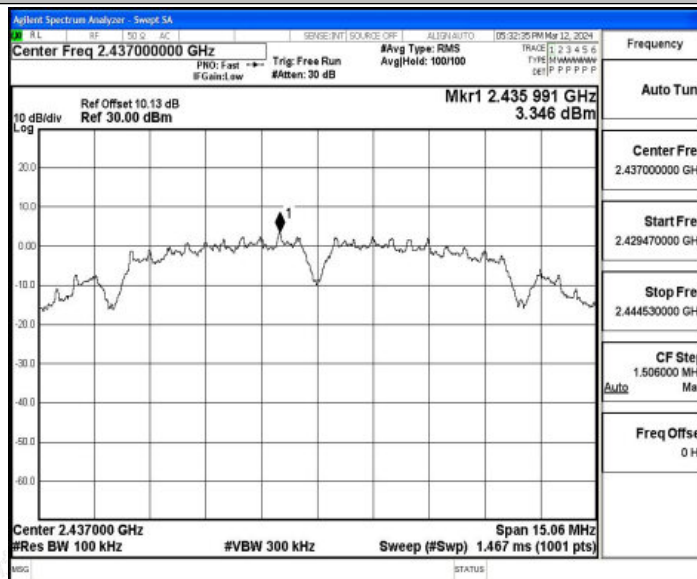


Test Graphs

11B_Ant1_2412

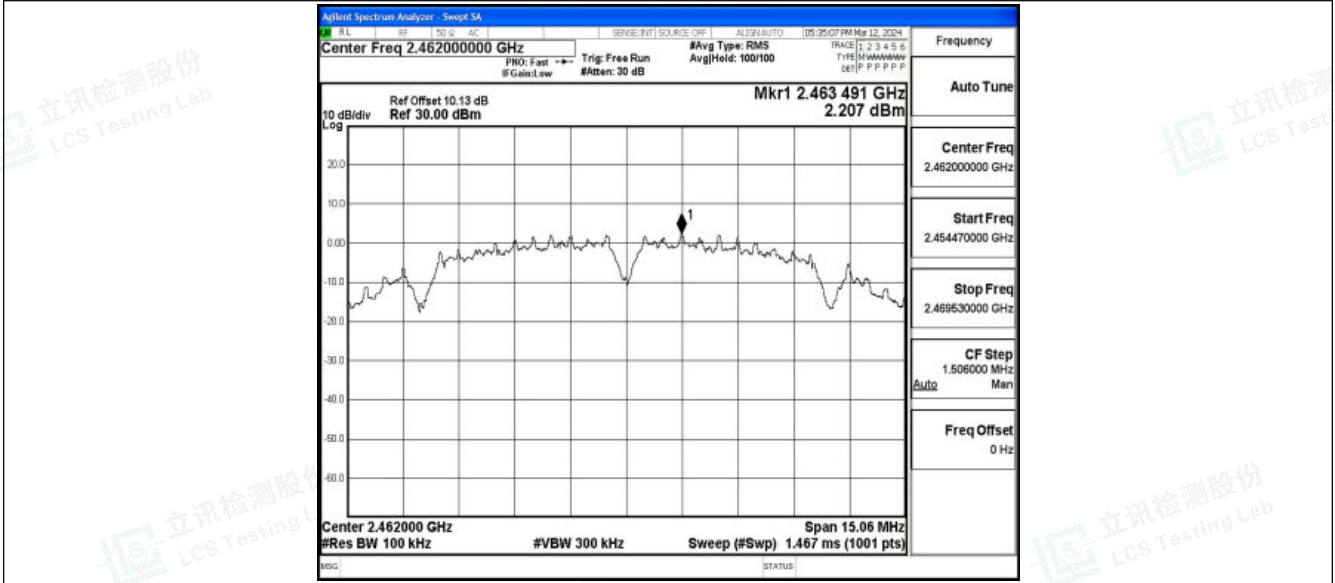


11B_Ant1_2437

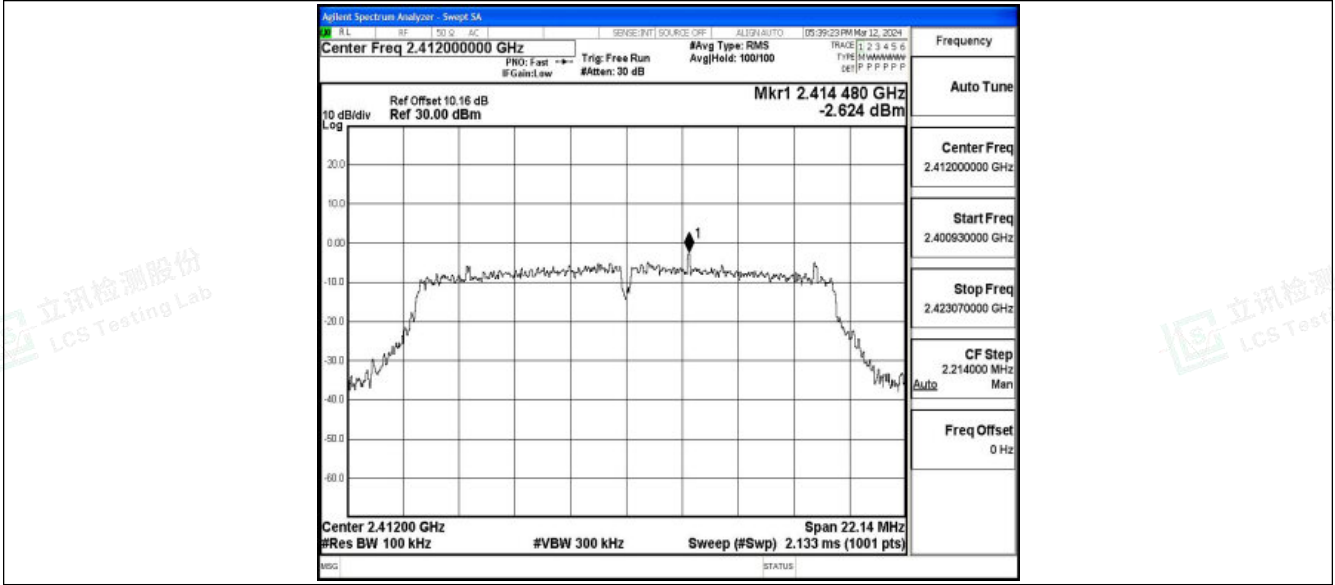


11B_Ant1_2462



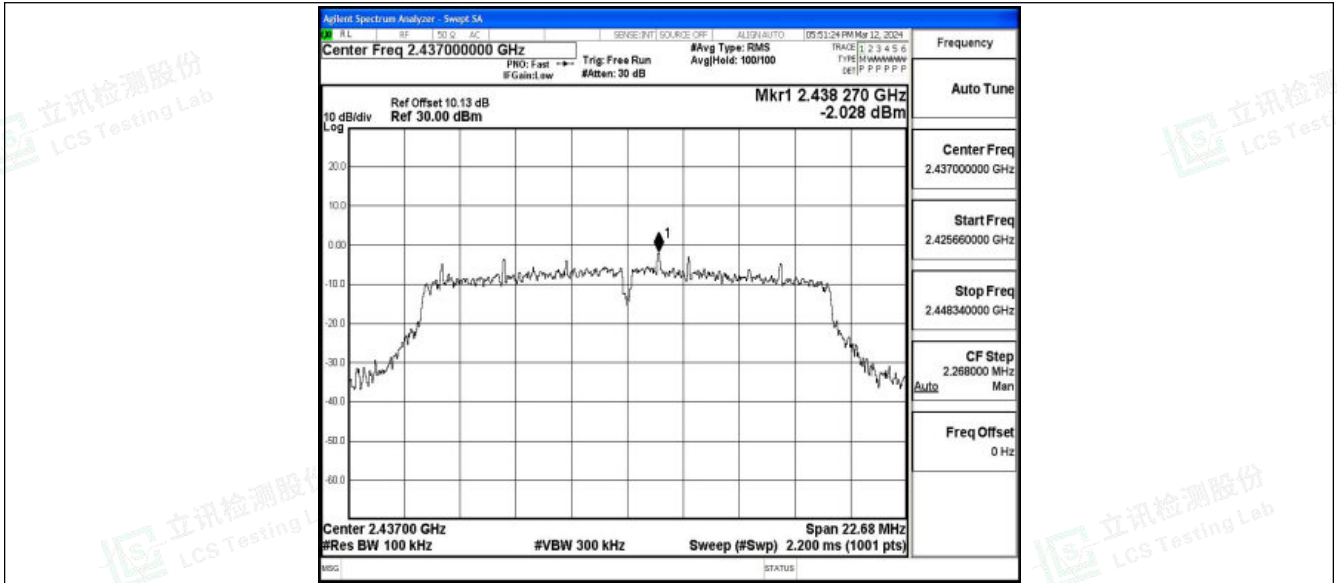


11G_Ant1_2412

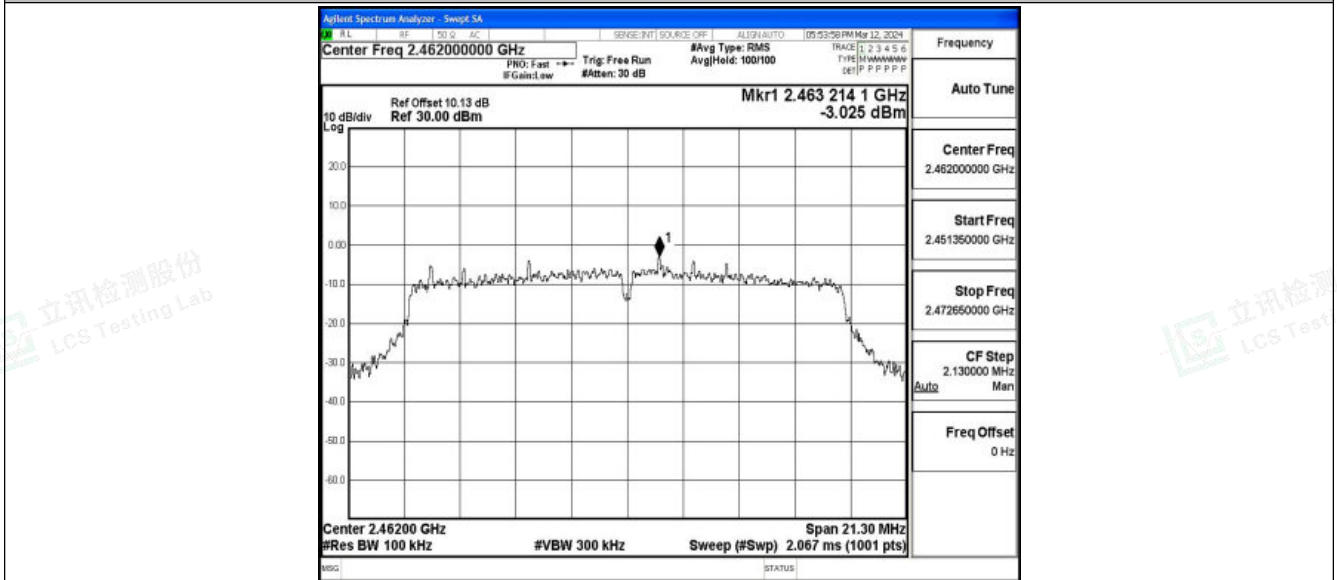


11G_Ant1_2437



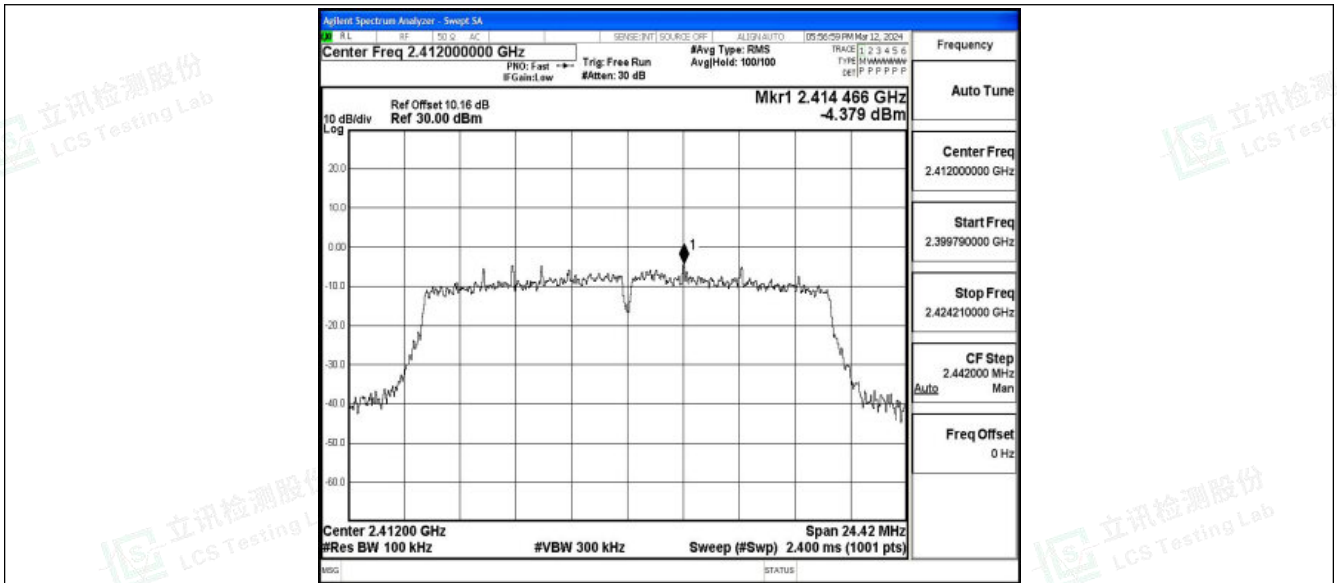


11G_Ant1_2462

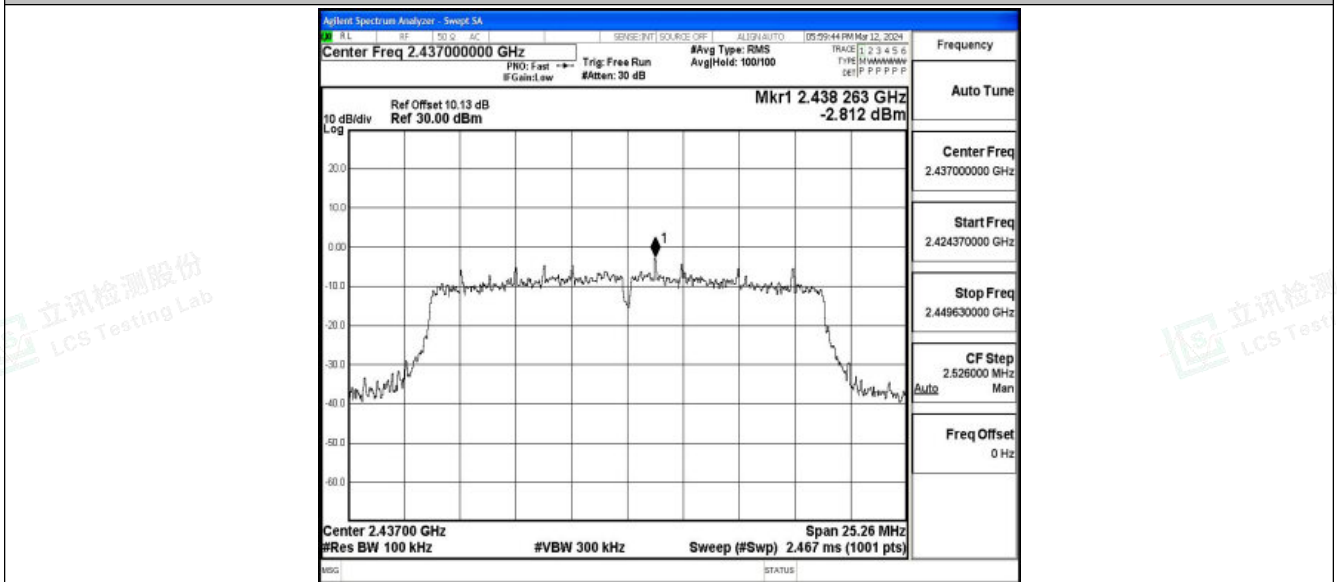


11N20SISO_Ant1_2412



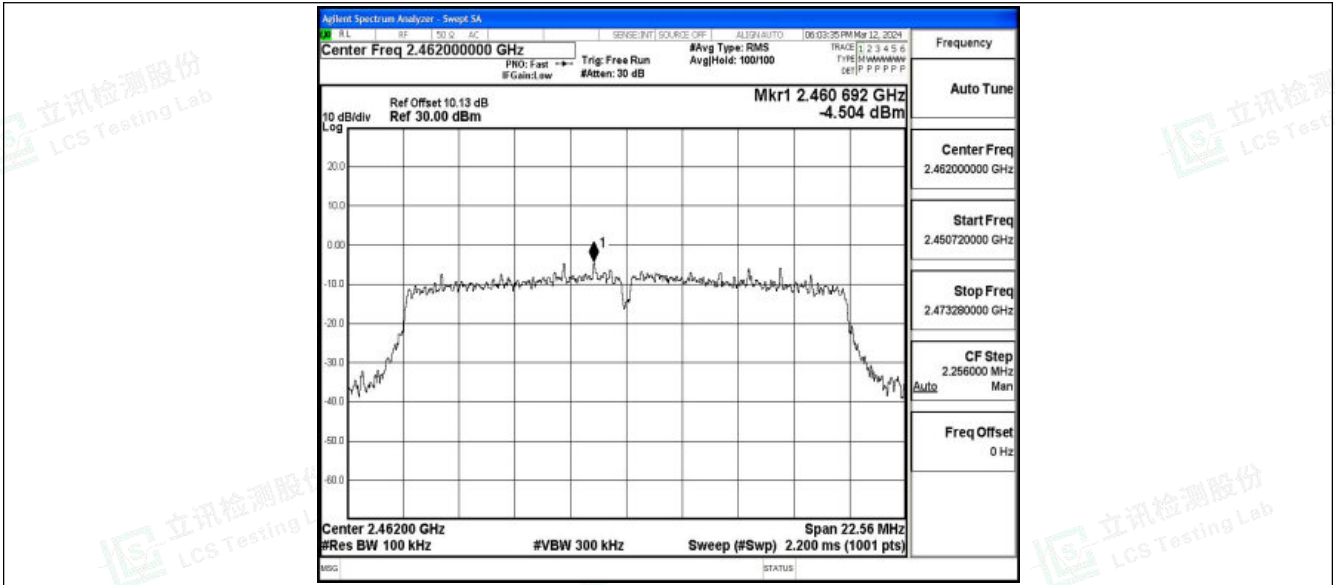


11N20SISO_Ant1_2437

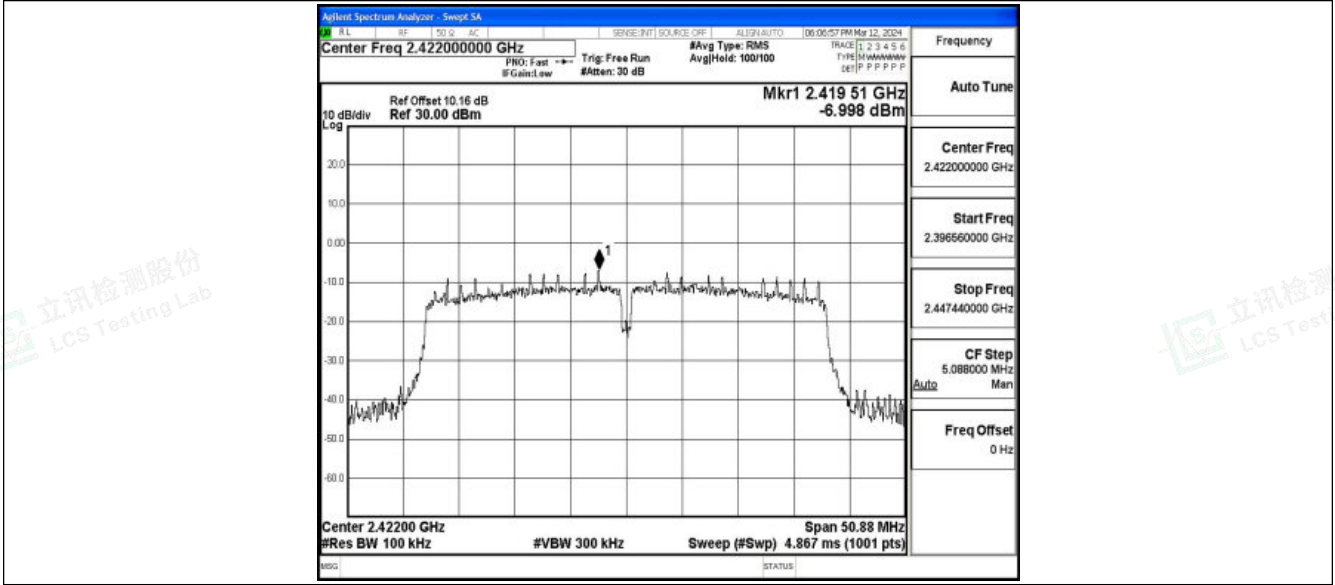


11N20SISO_Ant1_2462



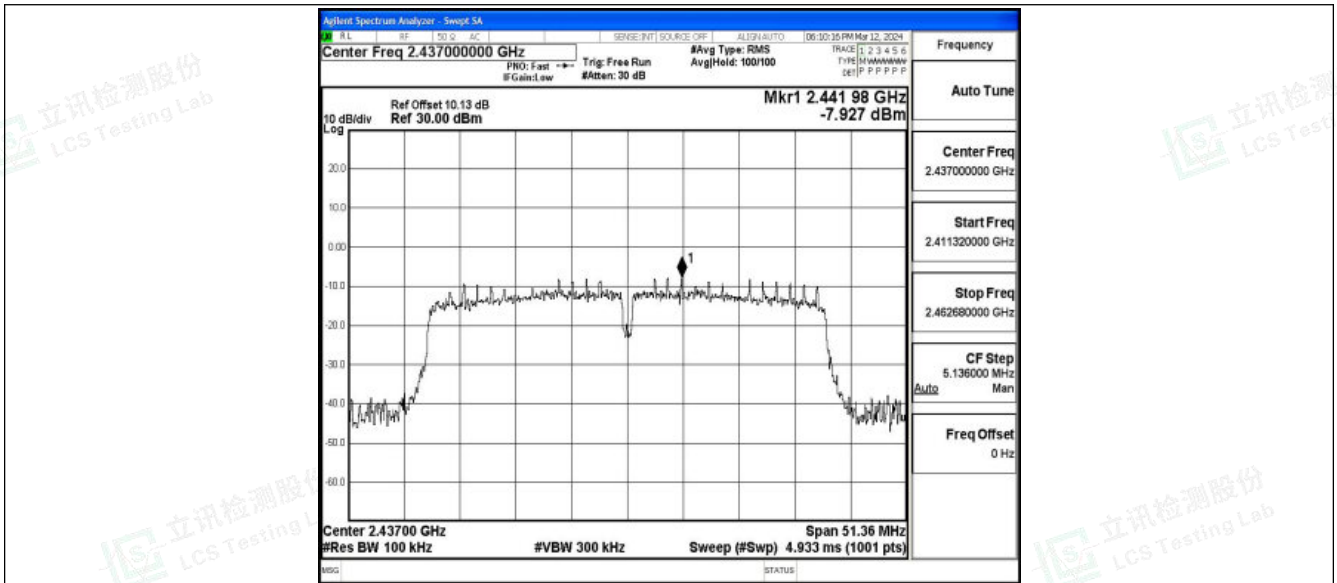


11N40SISO_Ant1_2422

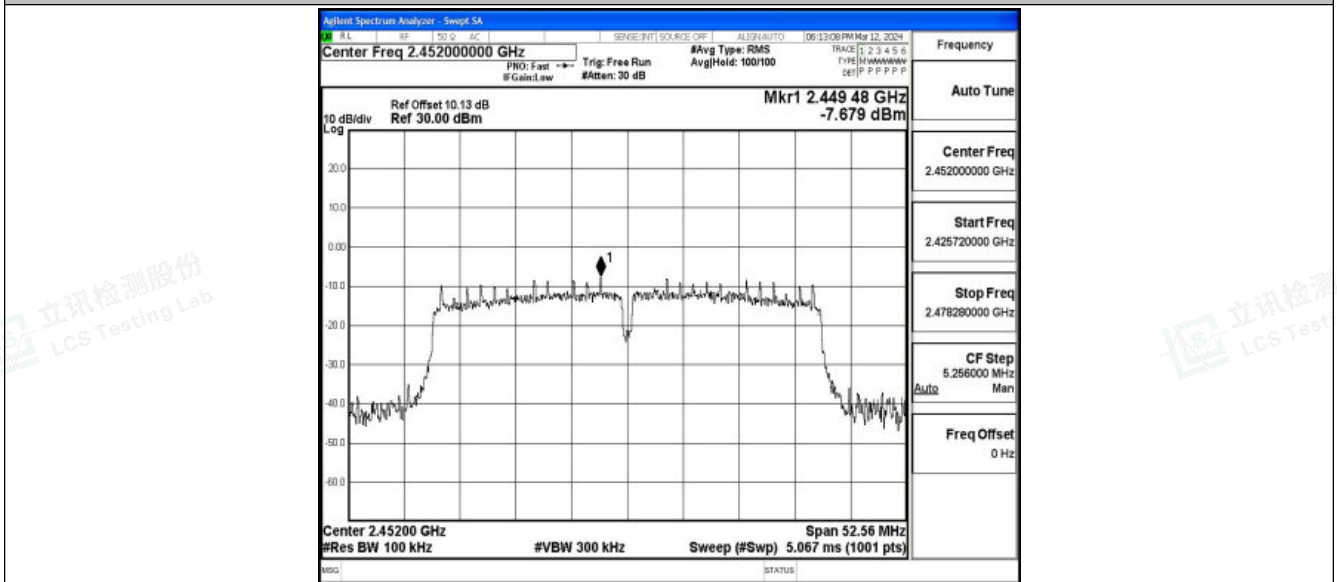


11N40SISO_Ant1_2437





11N40SISO_Ant1_2452





B.6 Duty Cycle

Test Result

TestMode	Antenna	Freq(MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Factor	1/T Factor[kHz]	Verdict
11B	Ant1	2412	8.38	8.41	99.64	0.02	0.12	---
		2437	16.78	16.82	99.76	0.01	0.06	---
		2462	8.38	8.41	99.64	0.02	0.12	---
11G	Ant1	2412	1.39	1.42	97.89	0.09	0.72	---
		2437	1.39	1.43	97.20	0.12	0.72	---
		2462	1.39	1.43	97.20	0.12	0.72	---
11N20SISO	Ant1	2412	1.30	1.34	97.01	0.13	0.77	---
		2437	1.30	1.33	97.74	0.10	0.77	---
		2462	1.30	1.34	97.01	0.13	0.77	---
11N40SISO	Ant1	2422	0.65	0.68	95.59	0.20	1.54	---
		2437	0.64	0.68	94.12	0.26	1.56	---
		2452	0.65	0.68	95.59	0.20	1.54	---

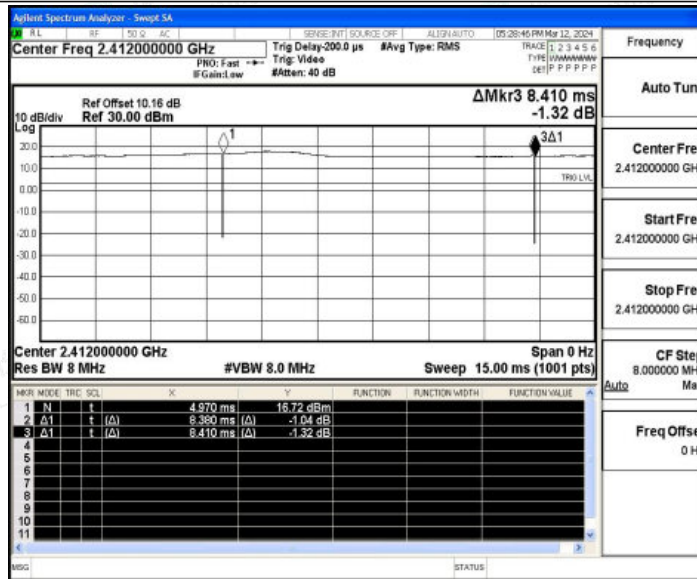


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 Scan code to check authenticity

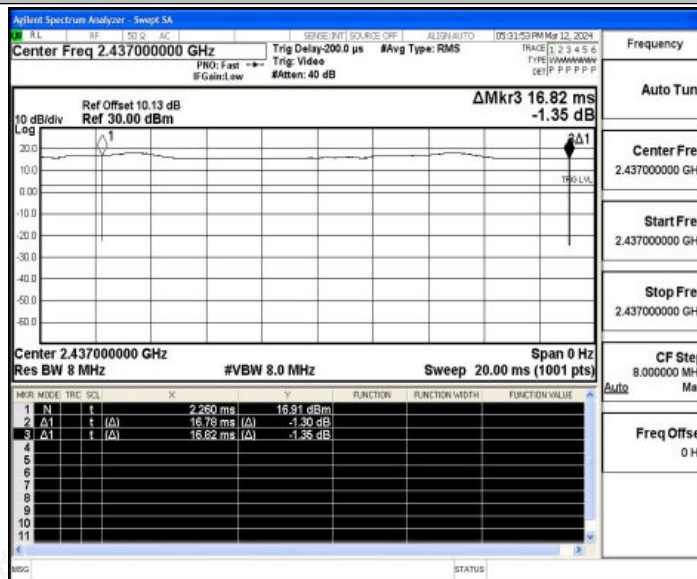


Test Graphs

11B_Ant1_2412

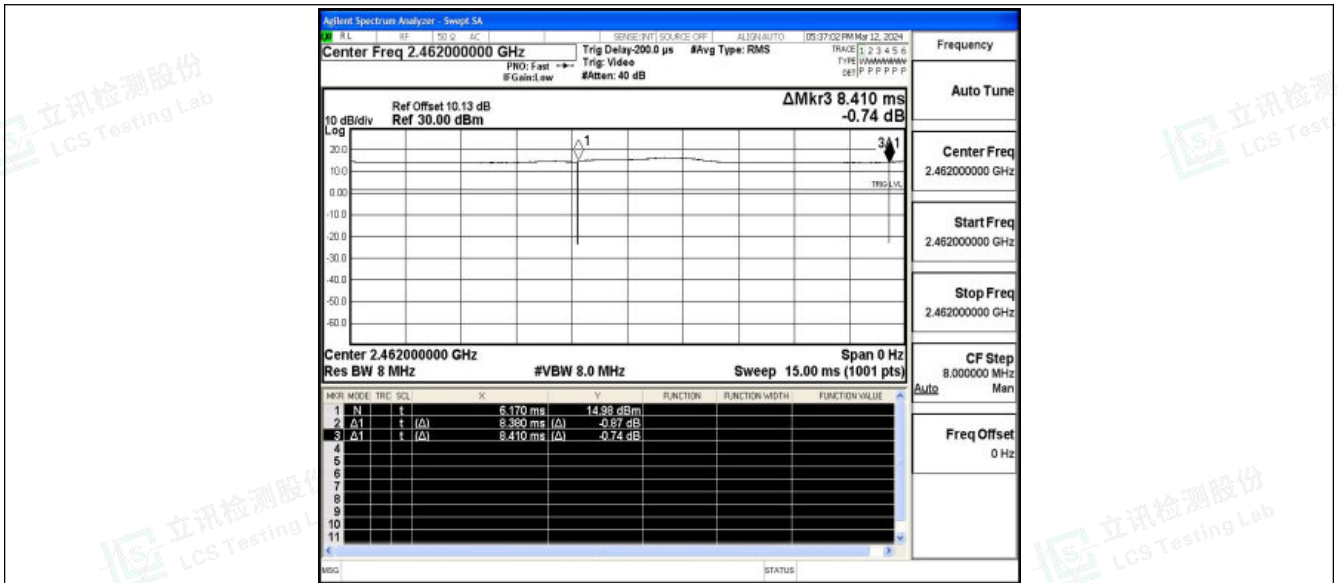


11B_Ant1_2437

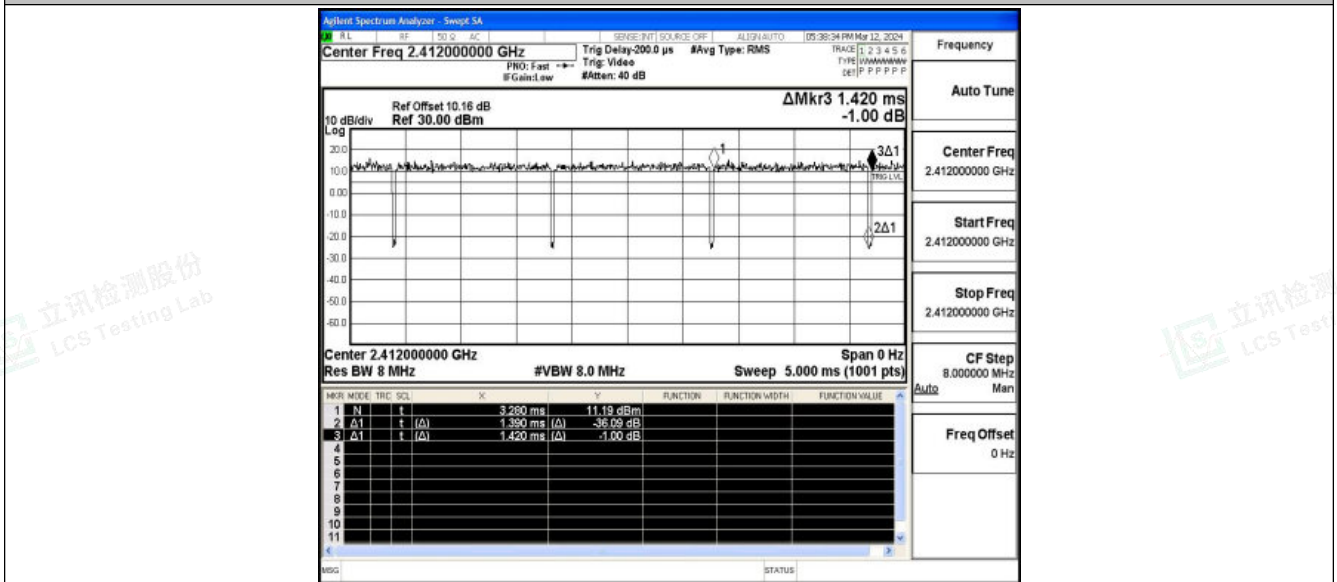


11B_Ant1_2462



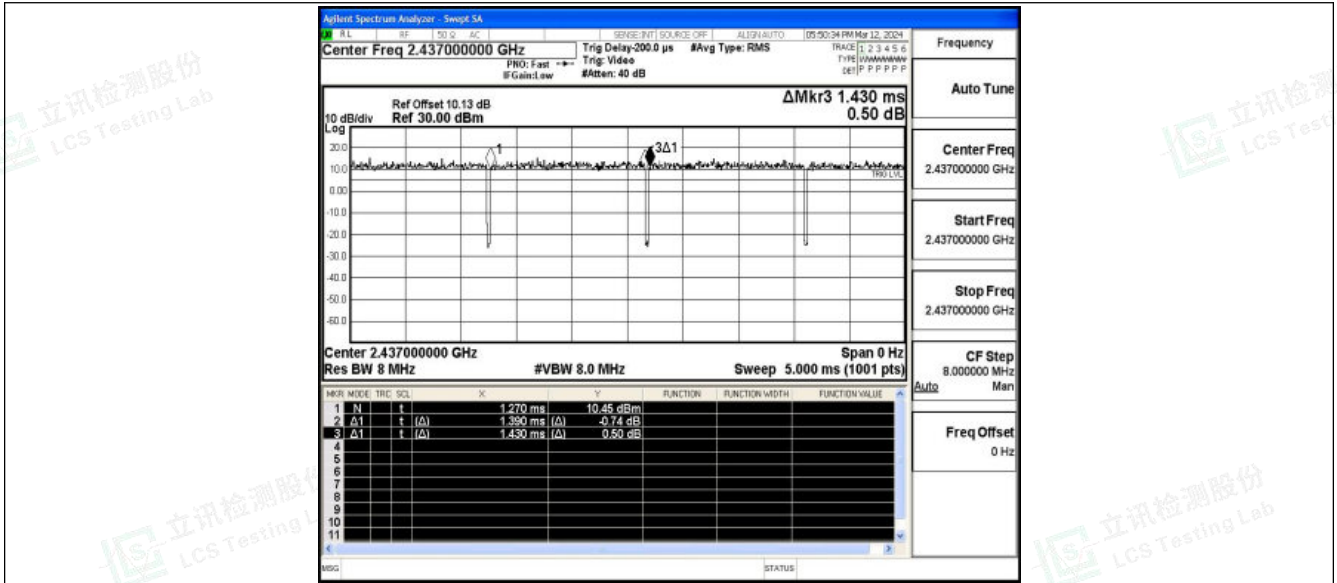


11G_Ant1_2412

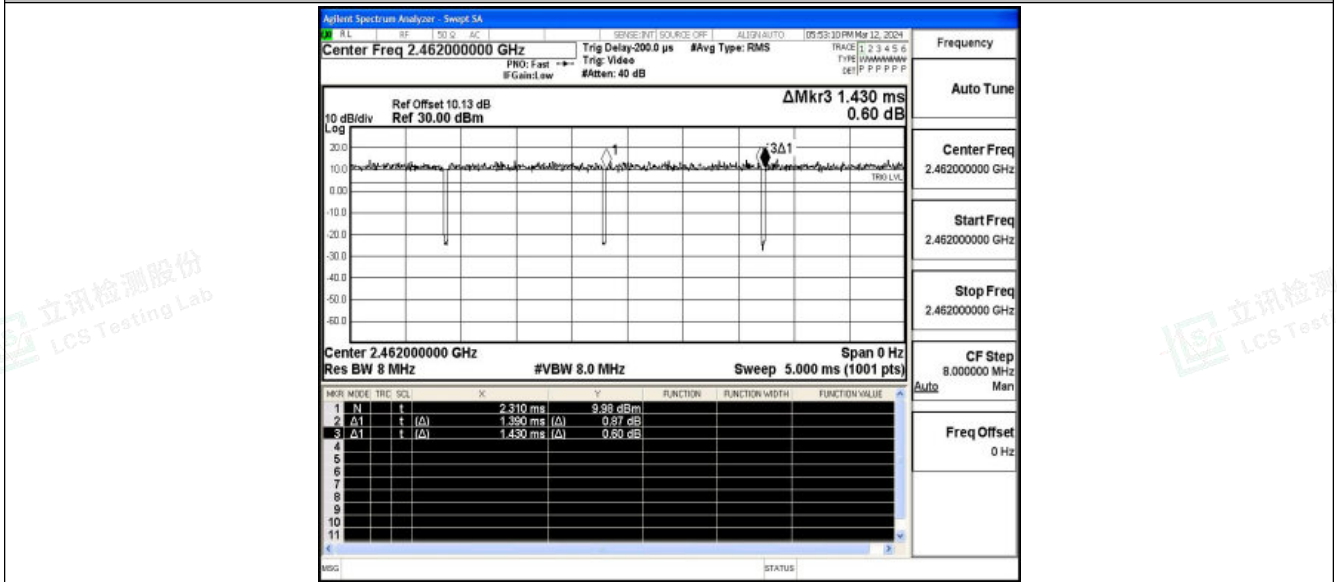


11G_Ant1_2437



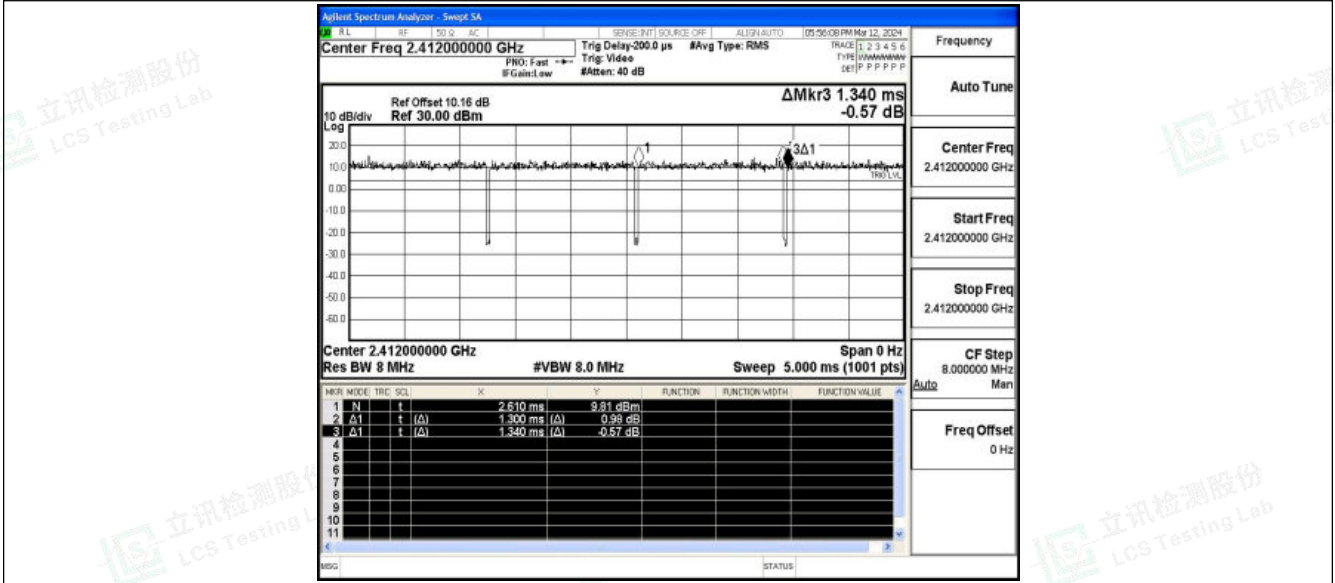


11G_Ant1_2462

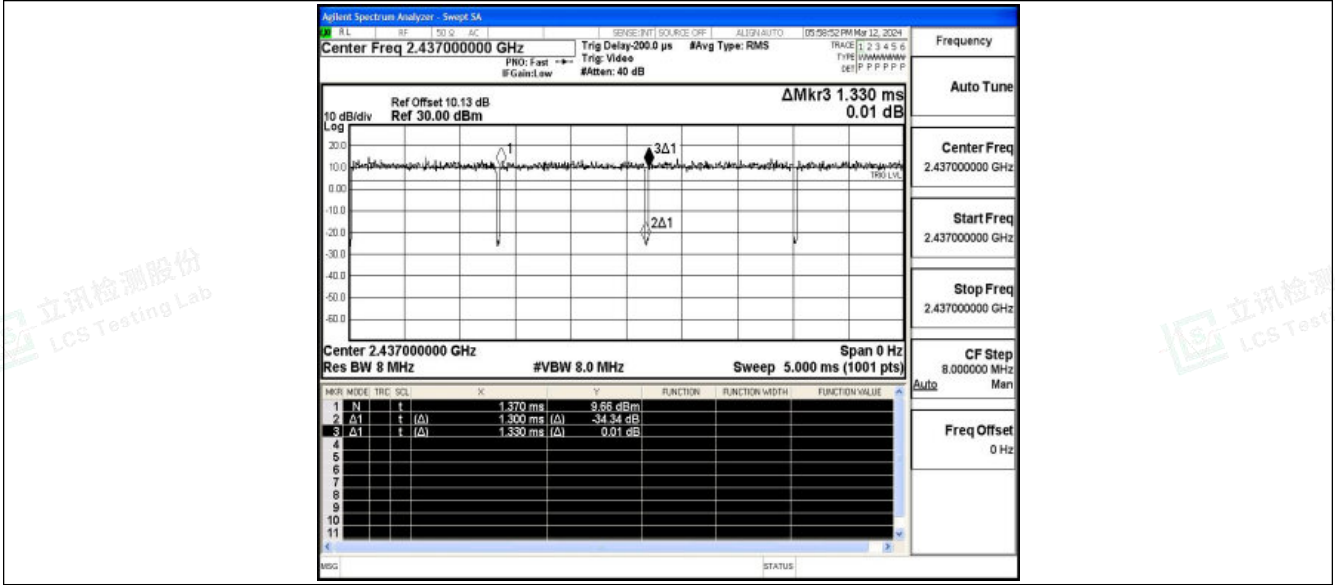


11N20SISO_Ant1_2412



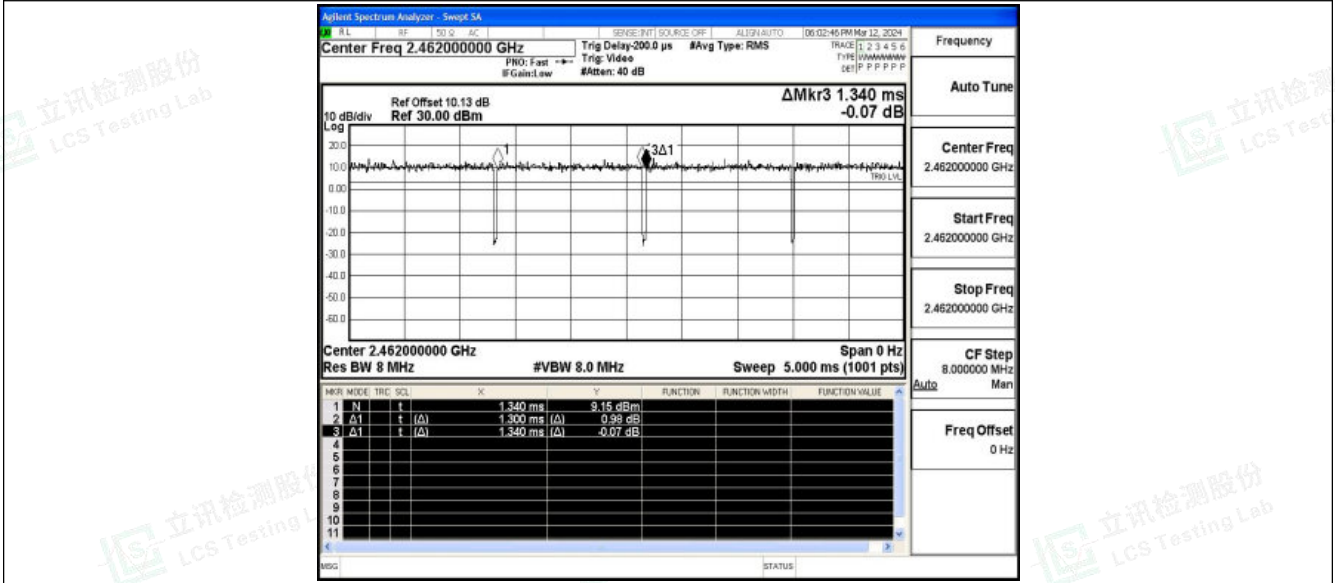


11N20SISO_Ant1_2437

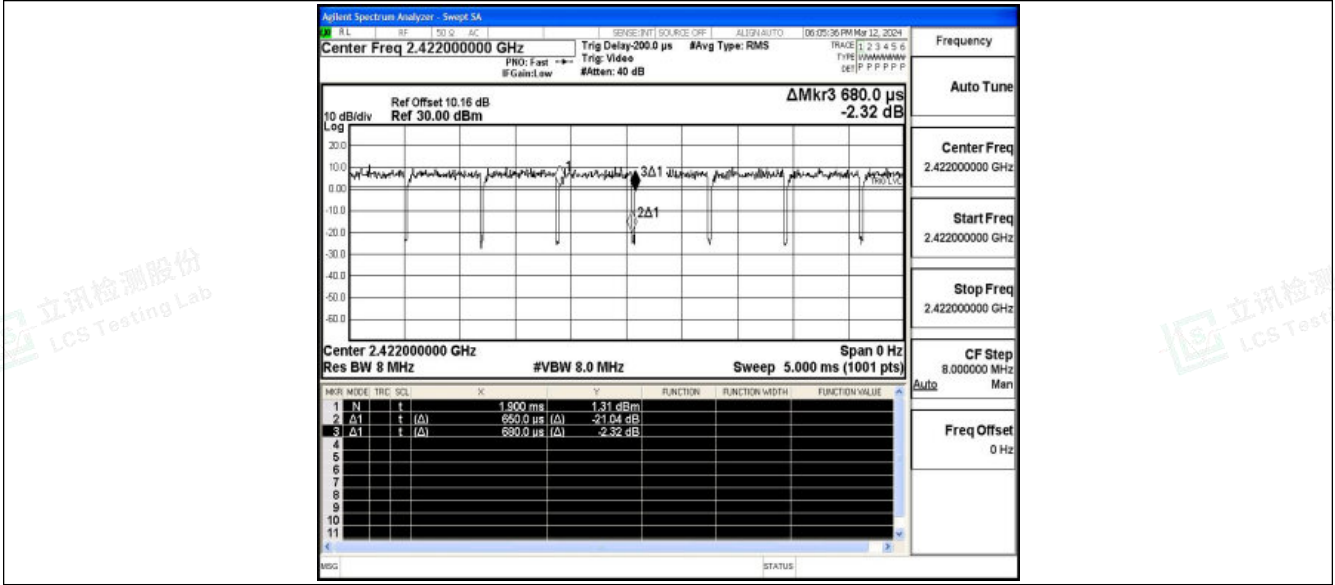


11N20SISO_Ant1_2462



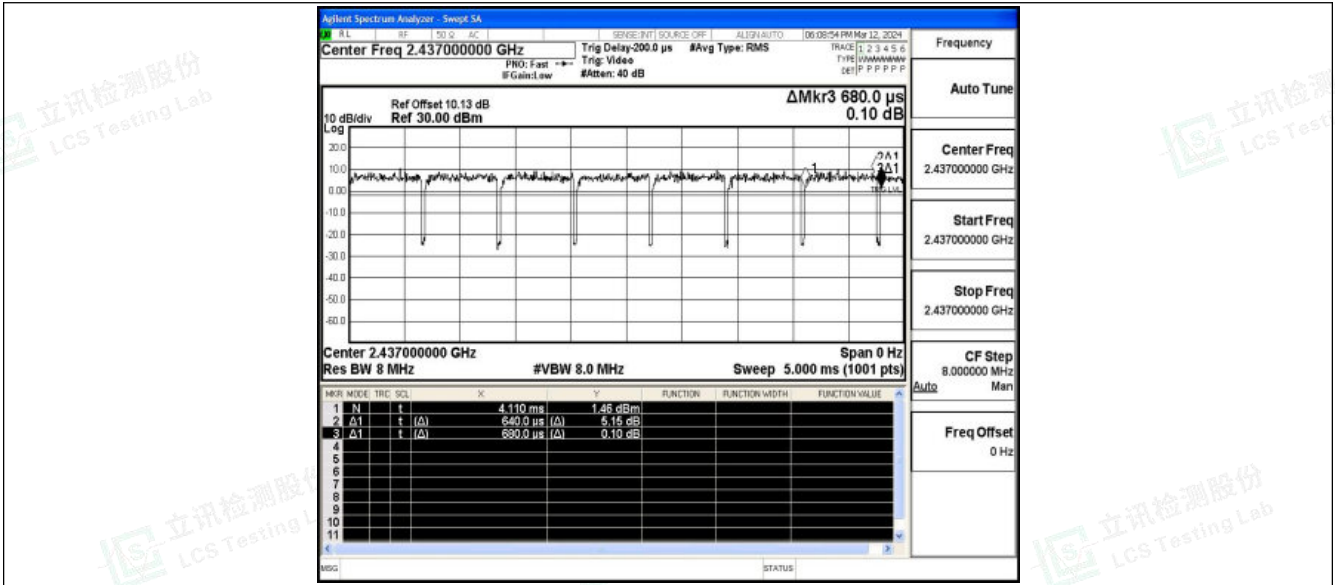


11N40SISO_Ant1_2422

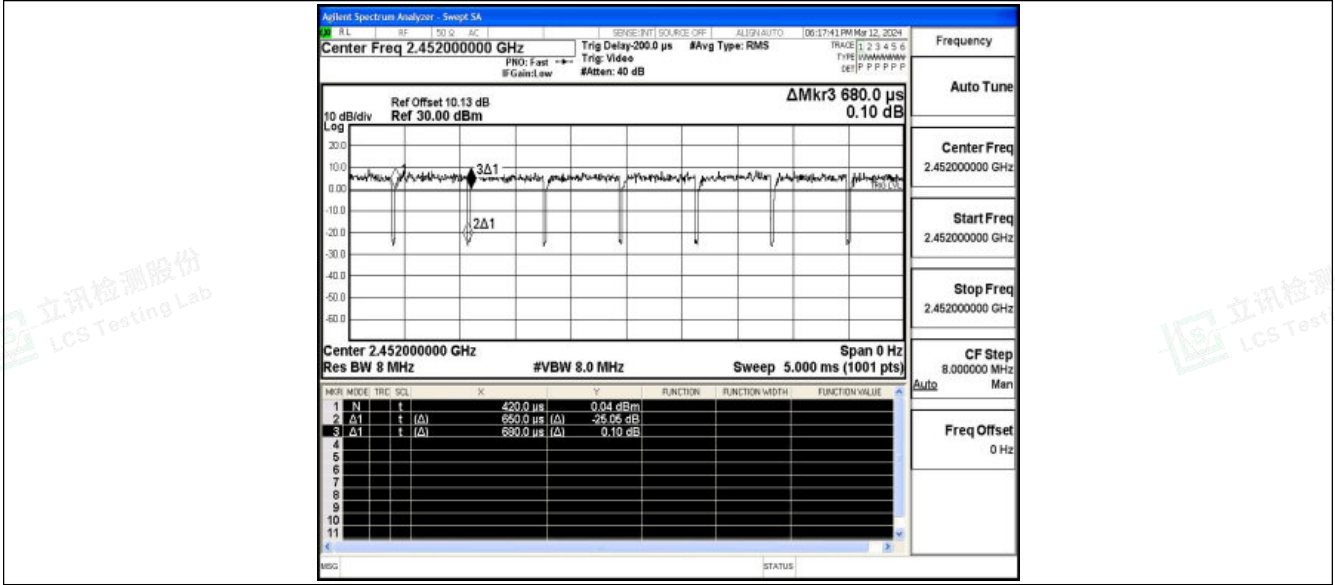


11N40SISO_Ant1_2437





11N40SISO_Ant1_2452





B.7 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Freq(MHz)	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11B	Ant1	Low	2412	AV	2310.000	-48.42	≤-41.20	46.78	≤54	PASS
				AV	2386.060	-44.68	≤-41.20	50.52	≤54	PASS
				AV	2390.000	-46.83	≤-41.20	48.37	≤54	PASS
				Peak	2310.000	-39.07	≤-21.20	56.13	≤74	PASS
				Peak	2340.820	-36.05	≤-21.20	59.15	≤74	PASS
				Peak	2390.000	-37.03	≤-21.20	58.17	≤74	PASS
		High	2462	AV	2483.500	-42.56	≤-41.20	52.64	≤54	PASS
				AV	2483.560	-42.8	≤-41.20	52.40	≤54	PASS
				AV	2500.000	-47.02	≤-41.20	48.18	≤54	PASS
				Peak	2483.500	-35.57	≤-21.20	59.63	≤74	PASS
				Peak	2483.670	-35.01	≤-21.20	60.19	≤74	PASS
				Peak	2500.000	-39.02	≤-21.20	56.18	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-47.9	≤-41.20	47.30	≤54	PASS
				AV	2389.960	-43.82	≤-41.20	51.38	≤54	PASS
				AV	2390.000	-43.82	≤-41.20	51.38	≤54	PASS
				Peak	2310.000	-38.58	≤-21.20	56.62	≤74	PASS
				Peak	2389.830	-33.28	≤-21.20	61.92	≤74	PASS
				Peak	2390.000	-35.36	≤-21.20	59.84	≤74	PASS
		High	2462	AV	2483.500	-43.28	≤-41.20	51.92	≤54	PASS
				AV	2484.000	-42.86	≤-41.20	52.34	≤54	PASS
				AV	2500.000	-46.8	≤-41.20	48.40	≤54	PASS
				Peak	2483.500	-33.59	≤-21.20	61.61	≤74	PASS
				Peak	2484.220	-31.8	≤-21.20	63.40	≤74	PASS
				Peak	2500.000	-37.83	≤-21.20	57.37	≤74	PASS
11N20SI SO	Ant1	Low	2412	AV	2310.000	-47.96	≤-41.20	47.24	≤54	PASS
				AV	2389.310	-45.38	≤-41.20	49.82	≤54	PASS
				AV	2390.000	-45.72	≤-41.20	49.48	≤54	PASS
				Peak	2310.000	-39.73	≤-21.20	55.47	≤74	PASS
				Peak	2388.790	-31.83	≤-21.20	63.37	≤74	PASS
				Peak	2390.000	-32.19	≤-21.20	63.01	≤74	PASS
		High	2462	AV	2483.500	-43.62	≤-41.20	51.58	≤54	PASS
				AV	2483.560	-42.65	≤-41.20	52.55	≤54	PASS
				AV	2500.000	-46.65	≤-41.20	48.55	≤54	PASS
				Peak	2483.500	-32.29	≤-21.20	62.91	≤74	PASS
Peak	2483.780	-31.11	≤-21.20	64.09	≤74	PASS				





				Peak	2500.000	-39.77	≤-21.20	55.43	≤74	PASS
11N40SI SO	Ant1	Low	2422	AV	2310.000	-48.19	≤-41.20	47.01	≤54	PASS
				AV	2388.790	-42.04	≤-41.20	53.16	≤54	PASS
				AV	2390.000	-42.43	≤-41.20	52.77	≤54	PASS
				Peak	2310.000	-39.65	≤-21.20	55.55	≤74	PASS
				Peak	2388.140	-25.93	≤-21.20	69.27	≤74	PASS
				Peak	2390.000	-33.16	≤-21.20	62.04	≤74	PASS
	High	2452	AV	2483.500	-42.03	≤-41.20	53.17	≤54	PASS	
			AV	2483.560	-41.77	≤-41.20	53.43	≤54	PASS	
			AV	2500.000	-46.92	≤-41.20	48.28	≤54	PASS	
			Peak	2483.500	-30.14	≤-21.20	65.06	≤74	PASS	
			Peak	2484.110	-25.81	≤-21.20	69.39	≤74	PASS	
			Peak	2500.000	-38.05	≤-21.20	57.15	≤74	PASS	

Note:

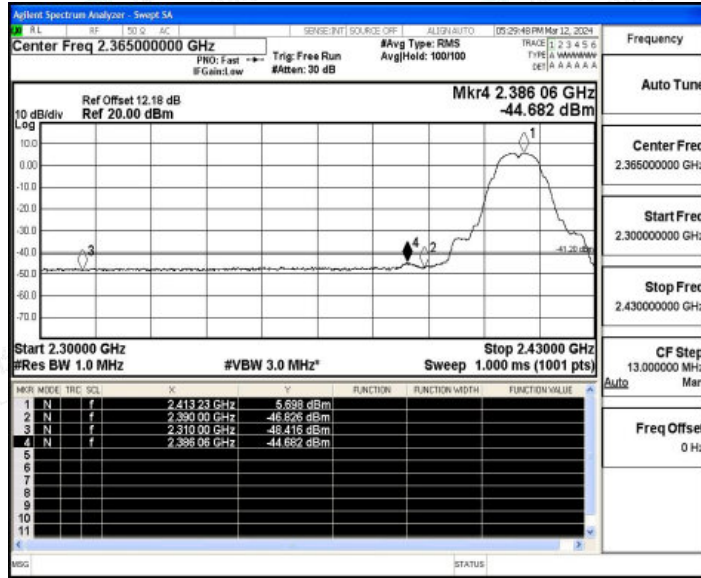
1. The Antenna Gain is compensated in the graph. The Correction Factor is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.



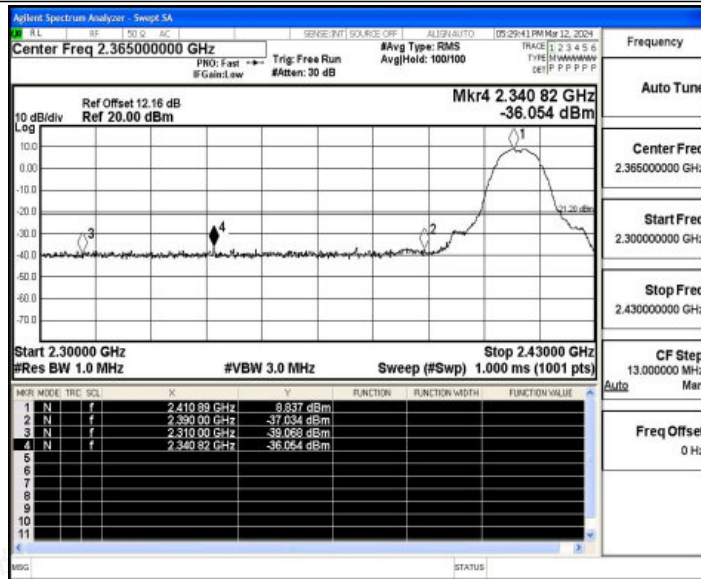


Test Graphs

11B_Ant1_Low_2412_AV

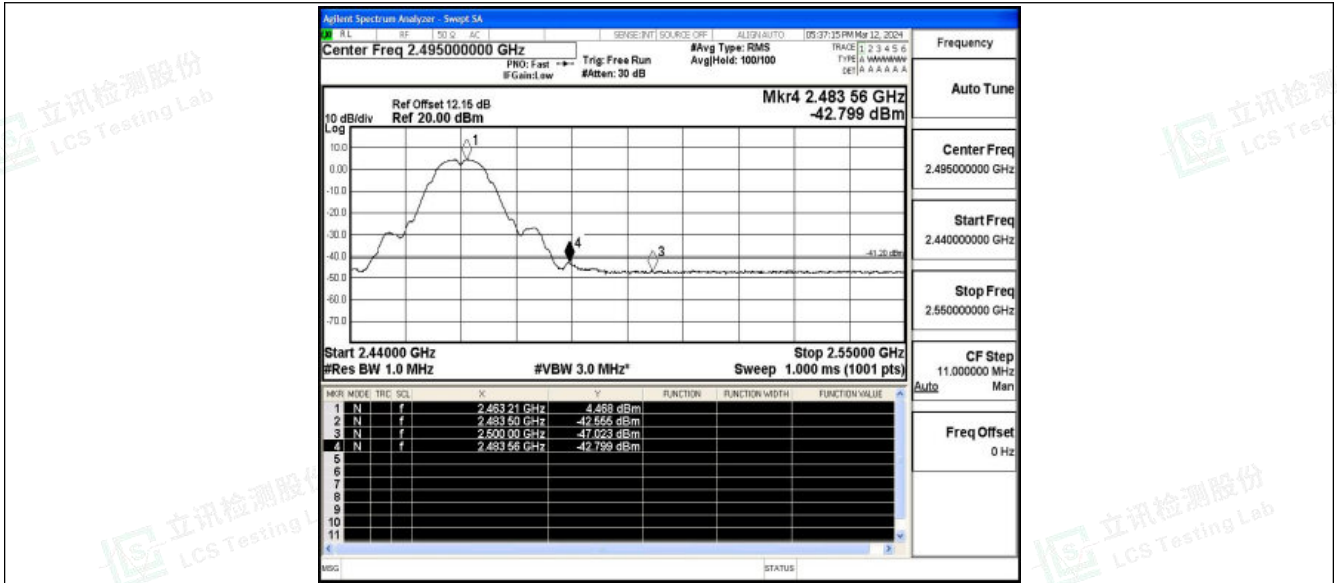


11B_Ant1_Low_2412_Peak

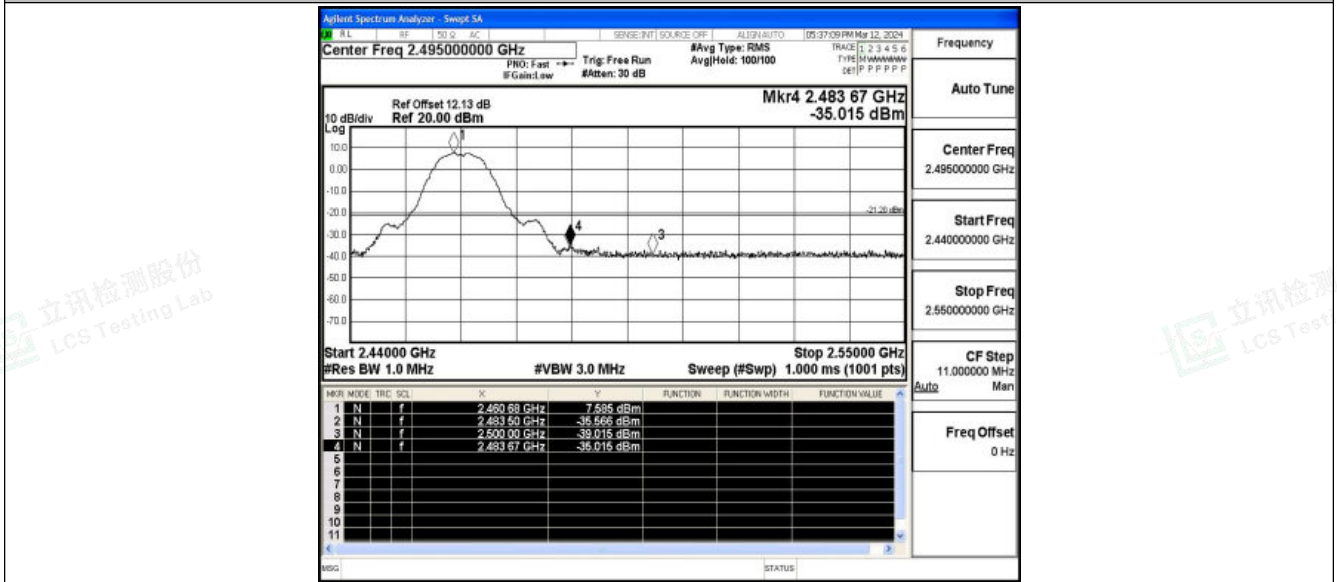


11B_Ant1_High_2462_AV



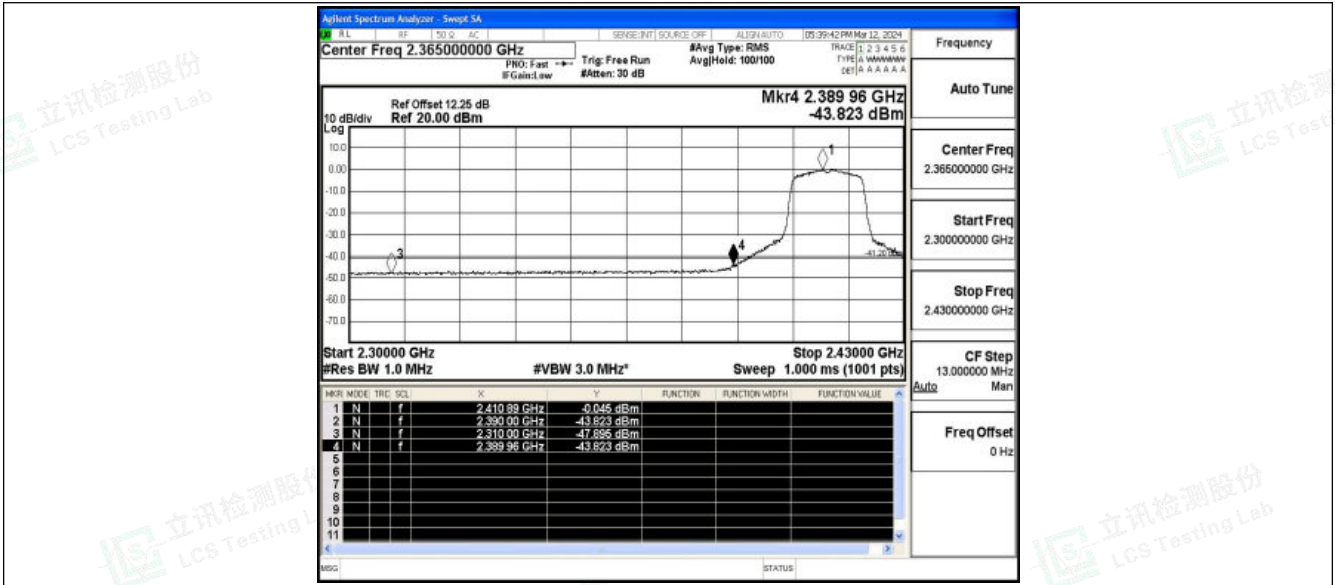


11B_Ant1_High_2462_Peak

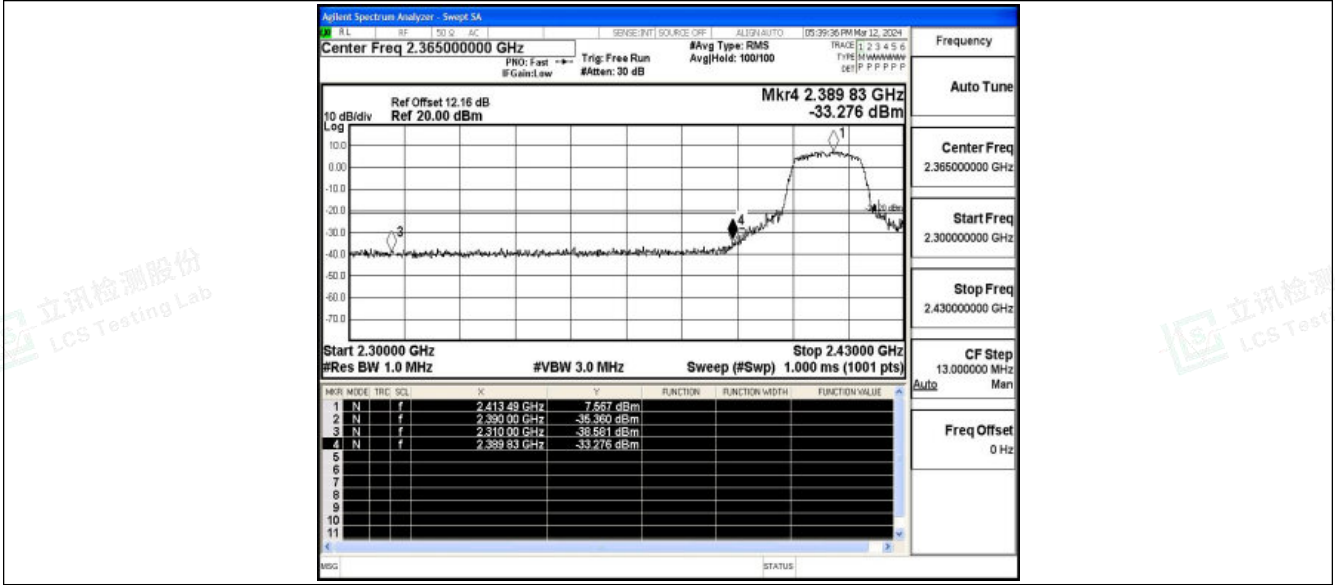


11G_Ant1_Low_2412_AV



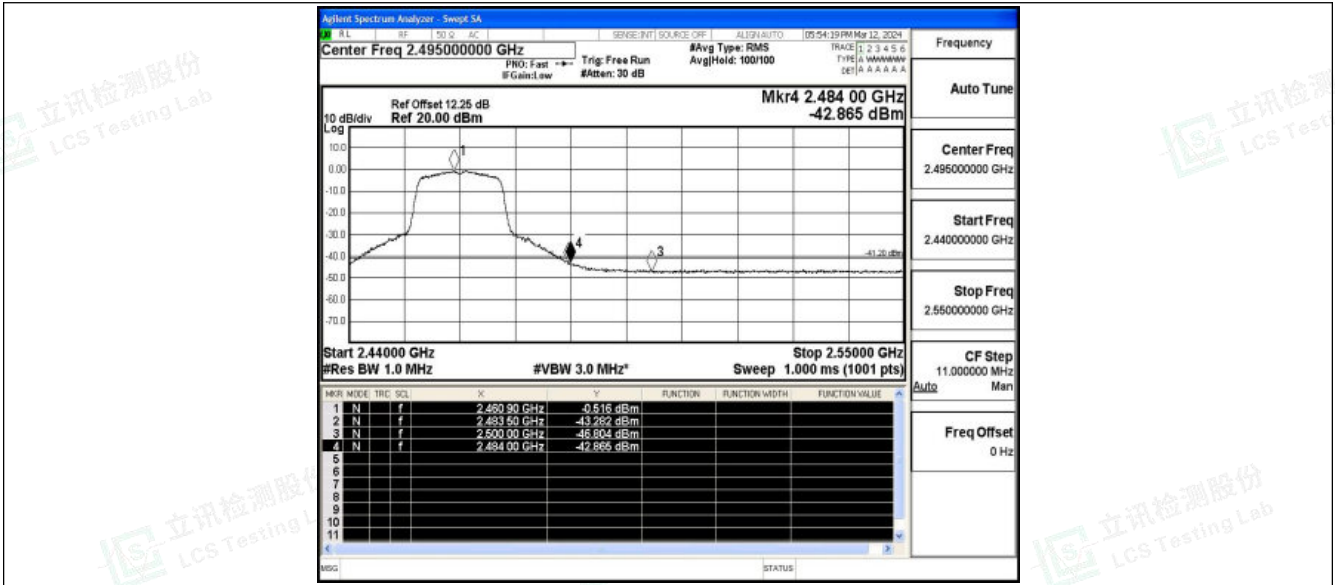


11G_Ant1_Low_2412_Peak

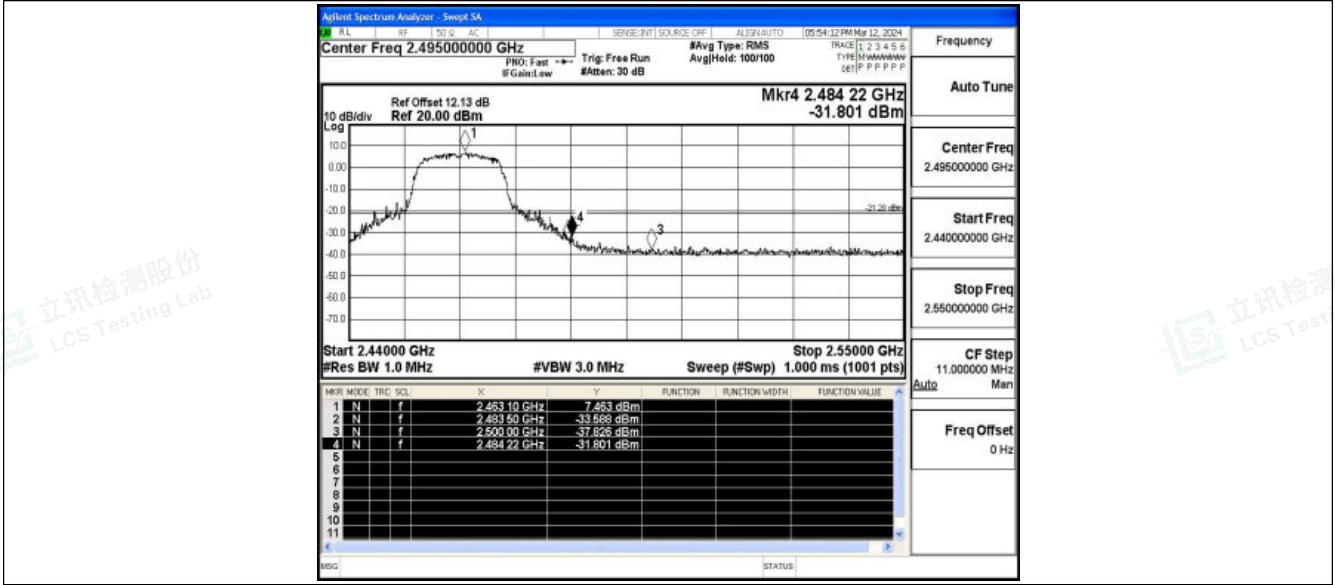


11G_Ant1_High_2462_AV



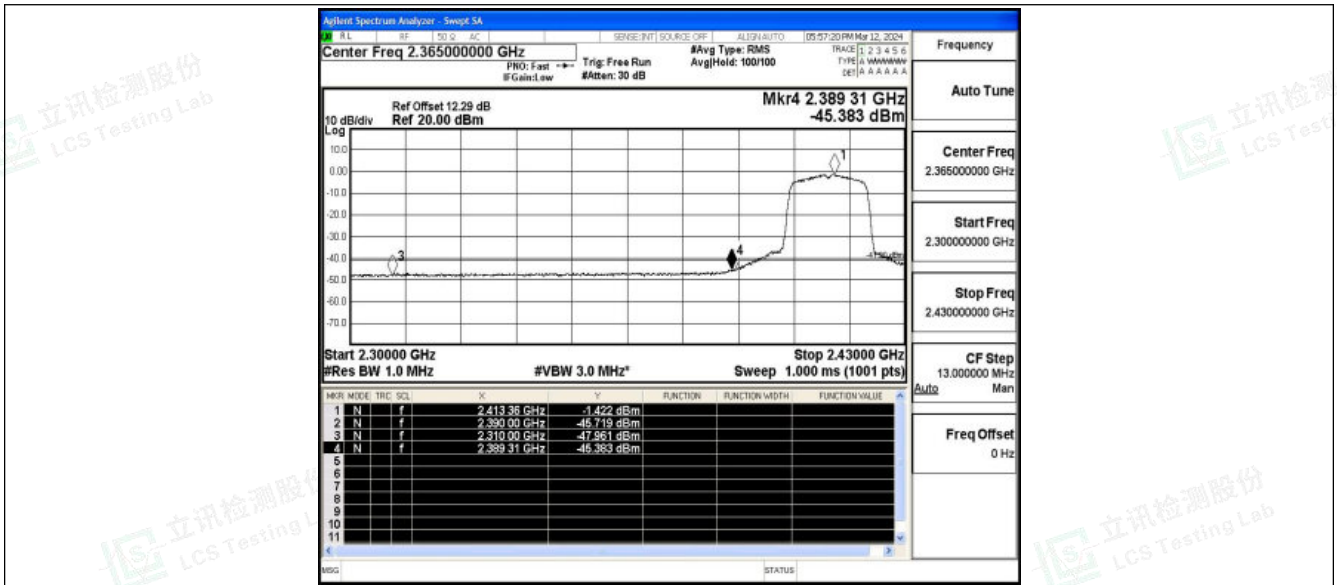


11G_Ant1_High_2462_Peak

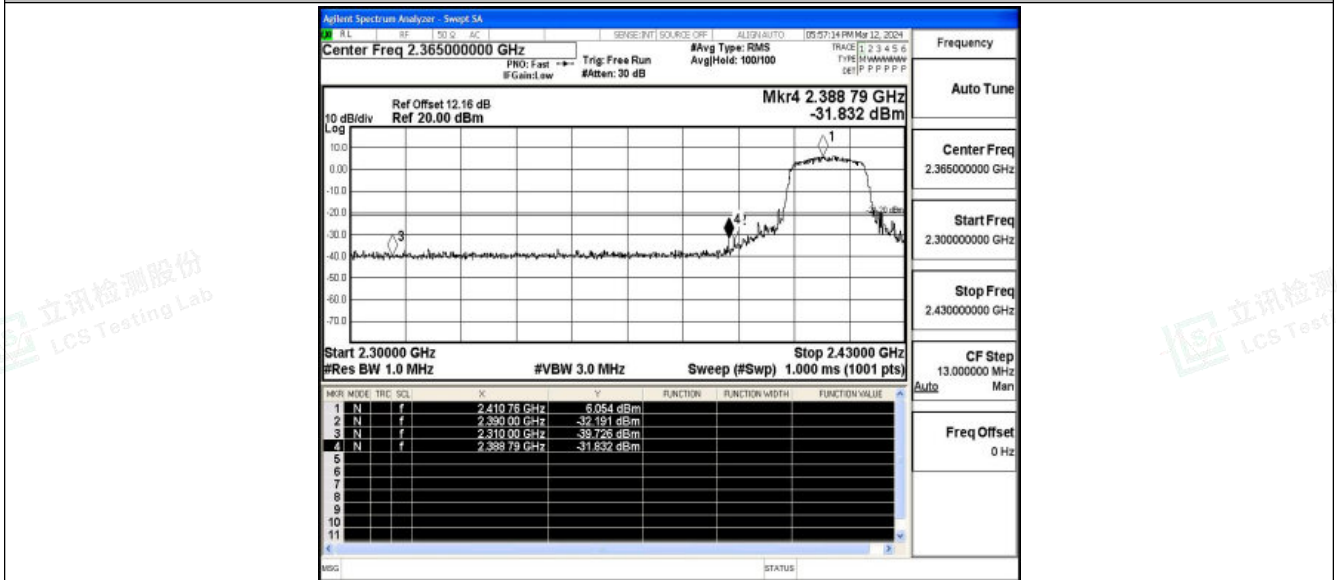


11N20SISO_Ant1_Low_2412_AV



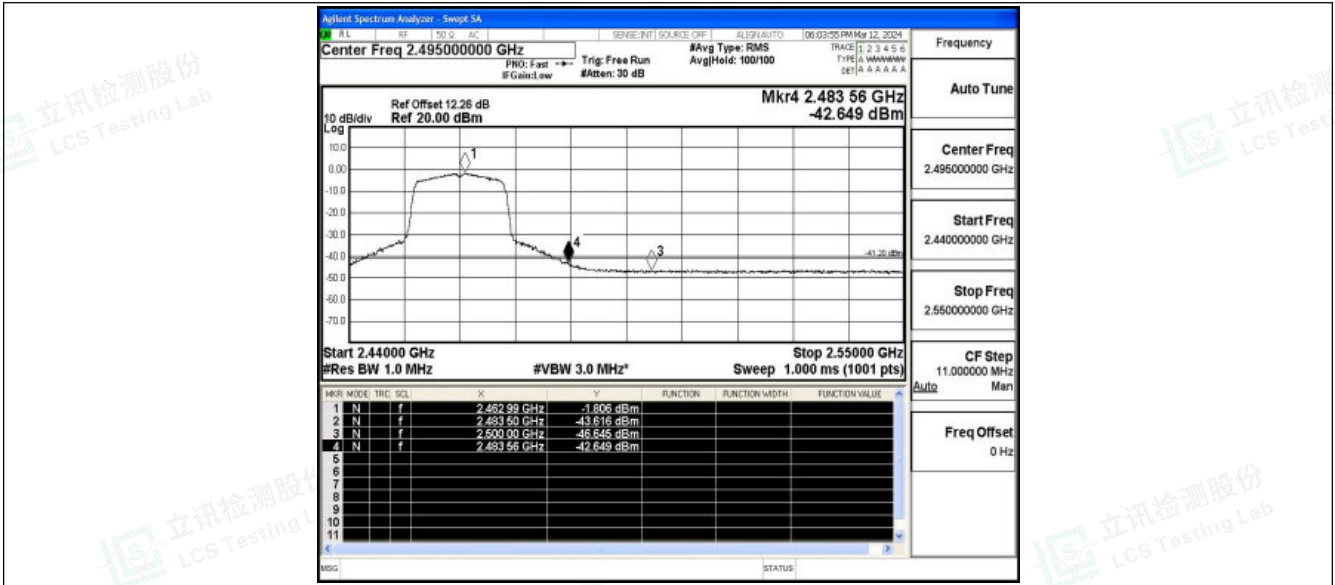


11N20SISO_Ant1_Low_2412_Peak

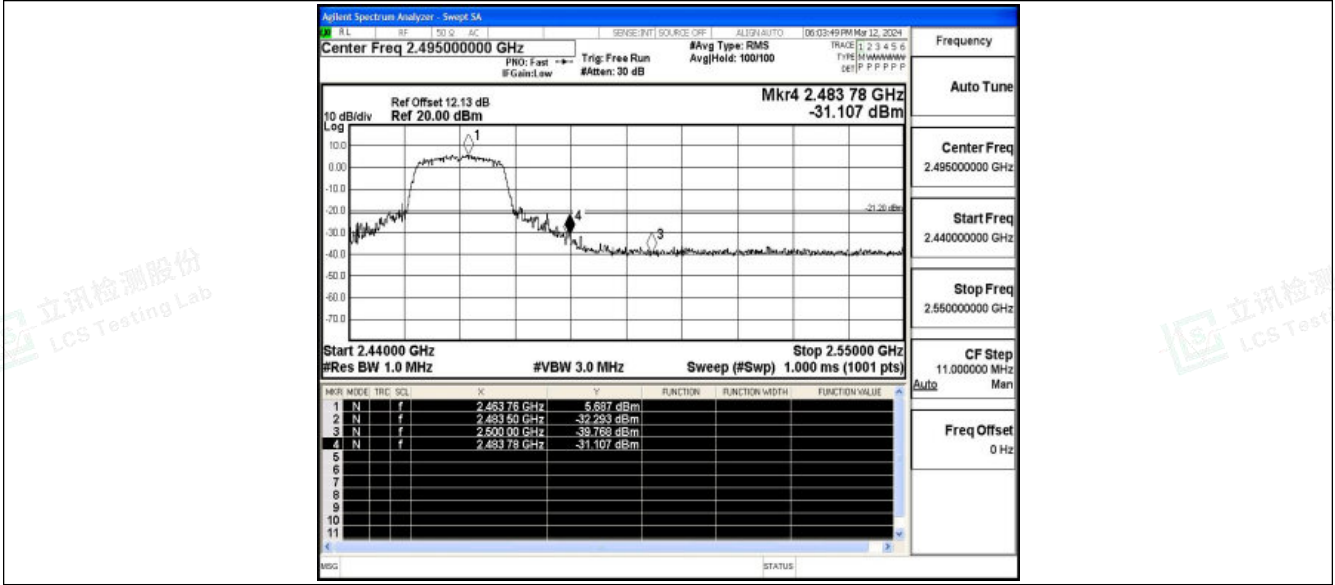


11N20SISO_Ant1_High_2462_AV



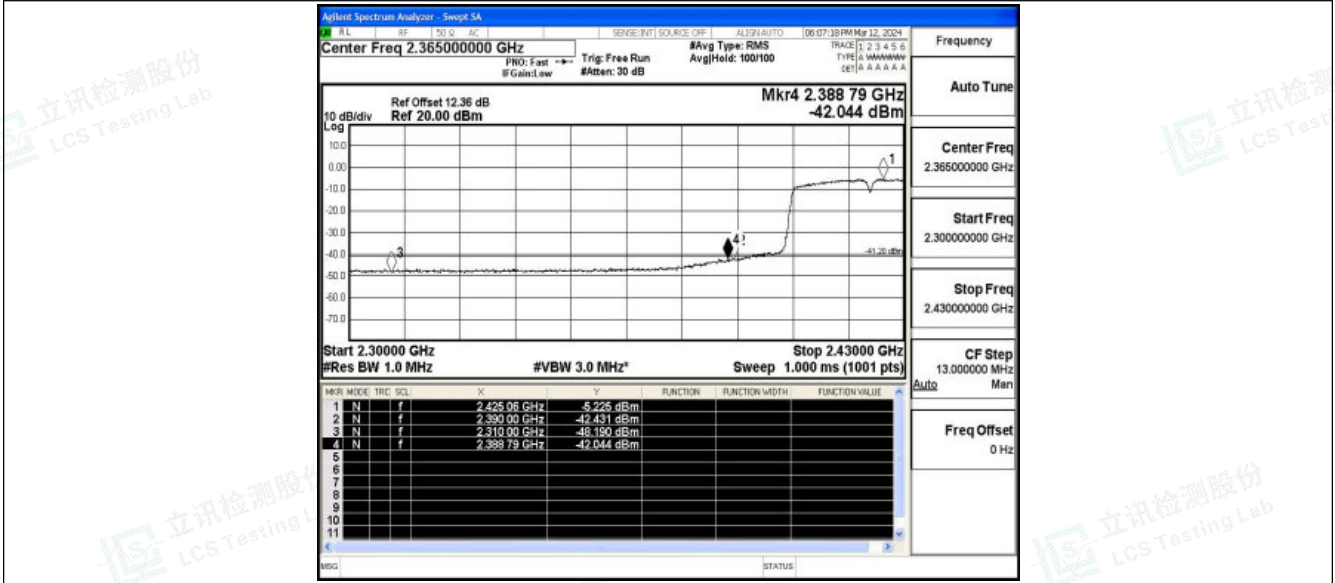


11N20SISO_Ant1_High_2462_Peak

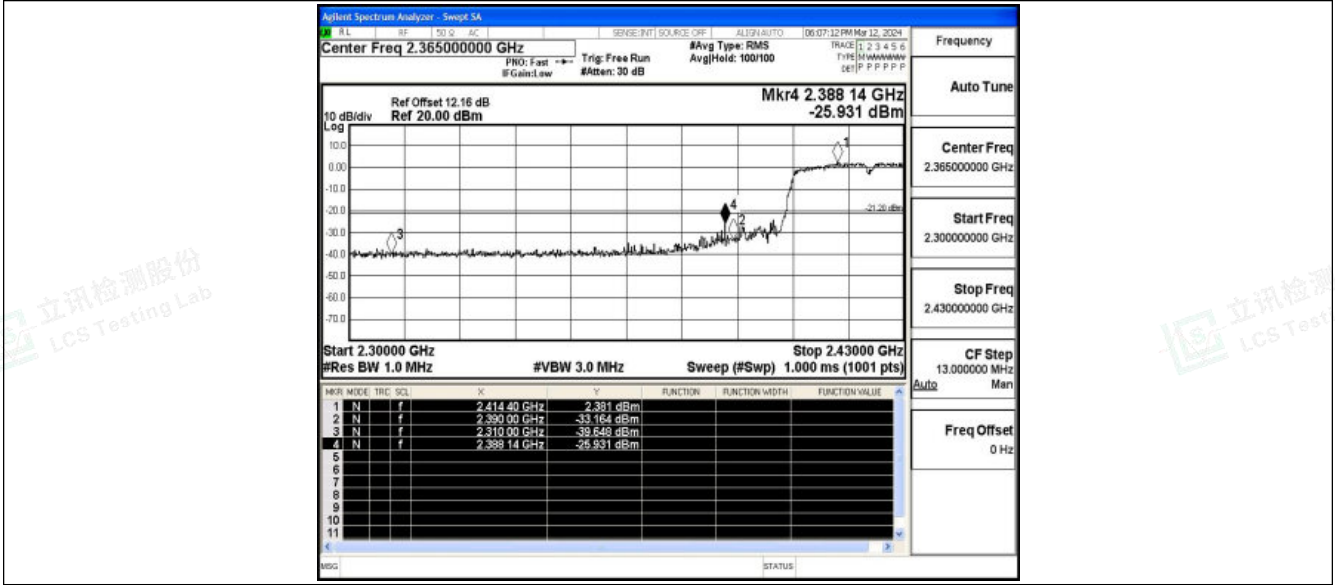


11N40SISO_Ant1_Low_2422_AV



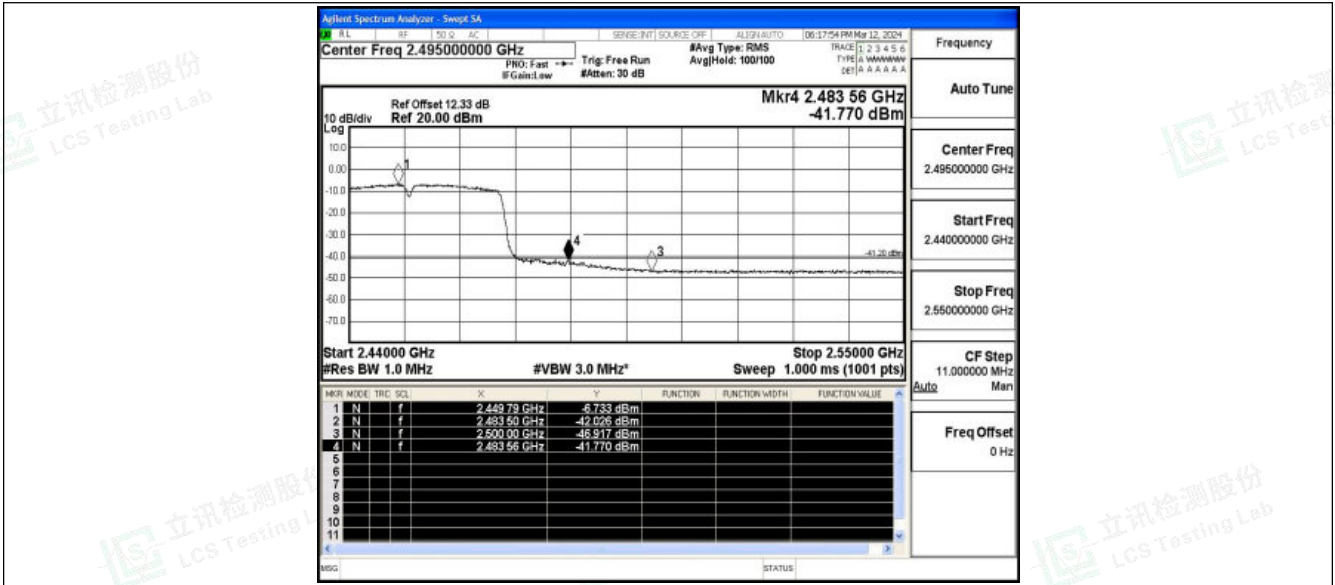


11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV





11N40SISO_Ant1_High_2452_Peak

