



Appendix A

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: S1500 paperless recorder

Test Model: S1500

Environmental Conditions

Temperature:	23.8° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Jack Cheng
Supervised by:	Li huan





A.1 DTS Bandwidth

Test Result

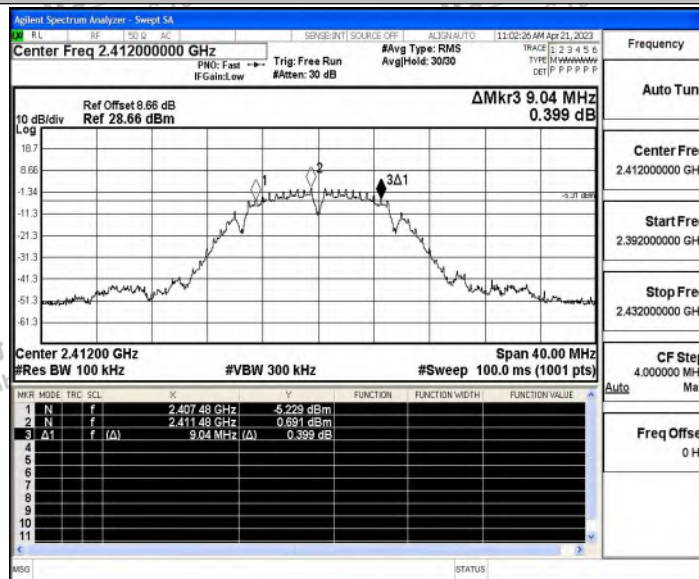
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.040	2407.480	2416.520	0.5	PASS
		2437	9.080	2432.440	2441.520	0.5	PASS
		2462	10.000	2457.000	2467.000	0.5	PASS
11G	Ant1	2412	15.400	2404.440	2419.840	0.5	PASS
		2437	15.280	2429.240	2444.520	0.5	PASS
		2462	15.080	2454.440	2469.520	0.5	PASS
11N20SISO	Ant1	2412	15.920	2404.440	2420.360	0.5	PASS
		2437	15.280	2429.440	2444.720	0.5	PASS
		2462	15.080	2454.440	2469.520	0.5	PASS
11N40SISO	Ant1	2422	35.120	2404.400	2439.520	0.5	PASS
		2437	35.040	2419.480	2454.520	0.5	PASS
		2452	35.120	2434.400	2469.520	0.5	PASS



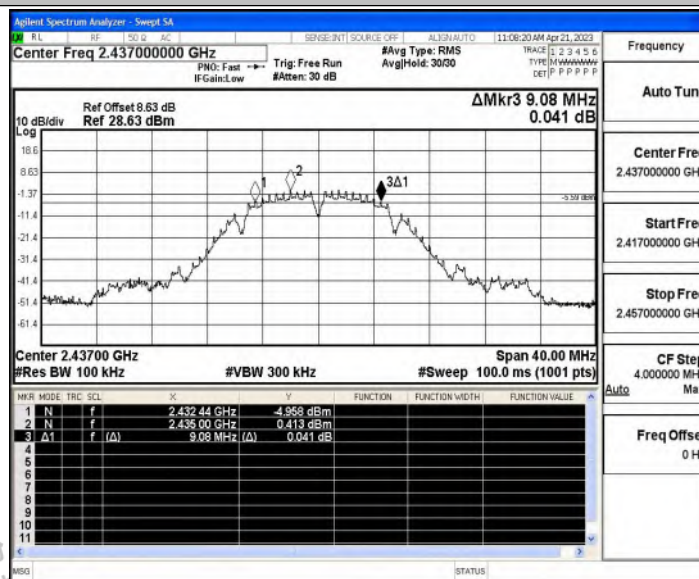


Test Graphs

11B_Ant1_2412

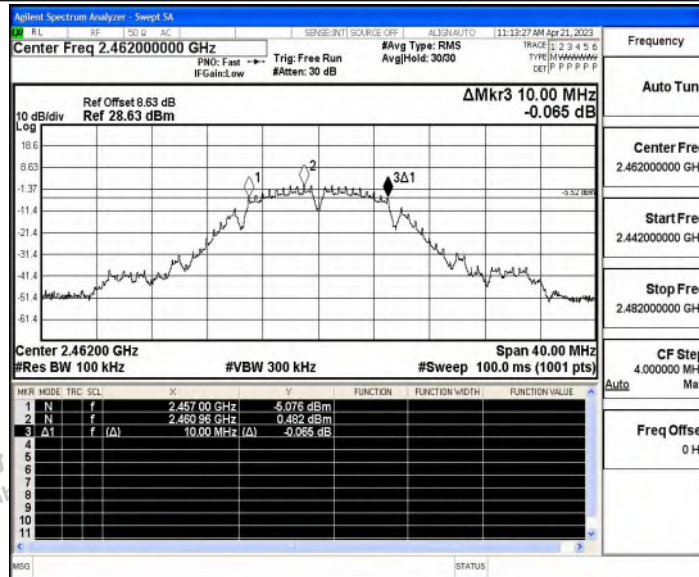


11B_Ant1_2437

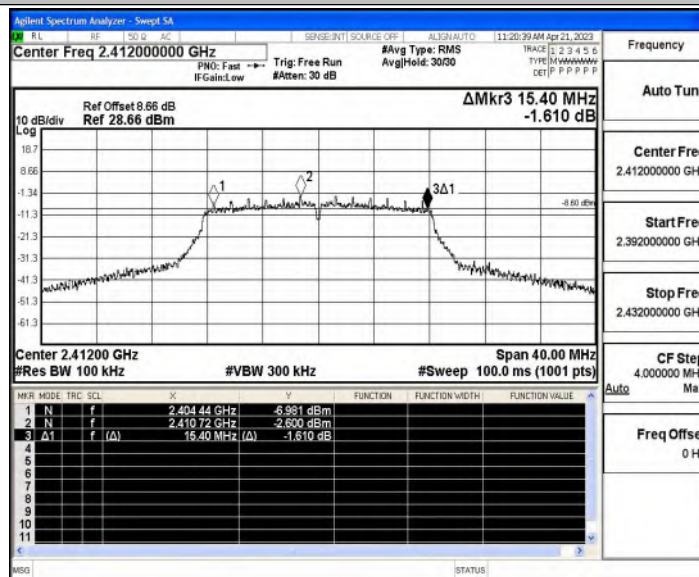


11B_Ant1_2462

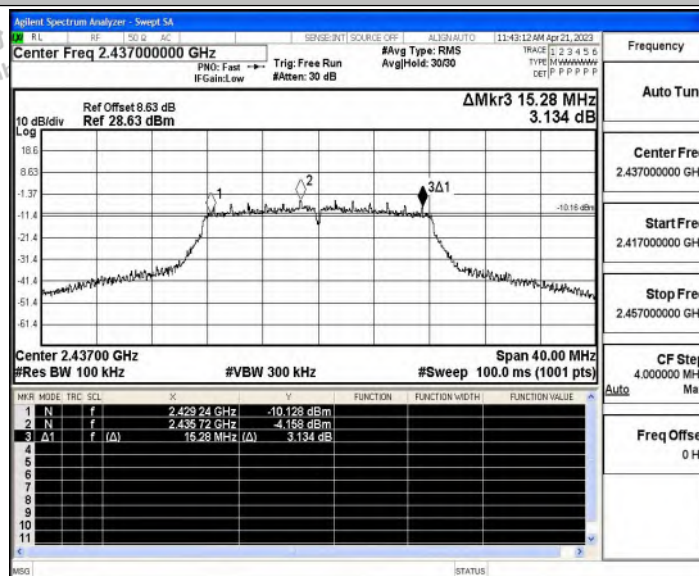




11G_Ant1_2412

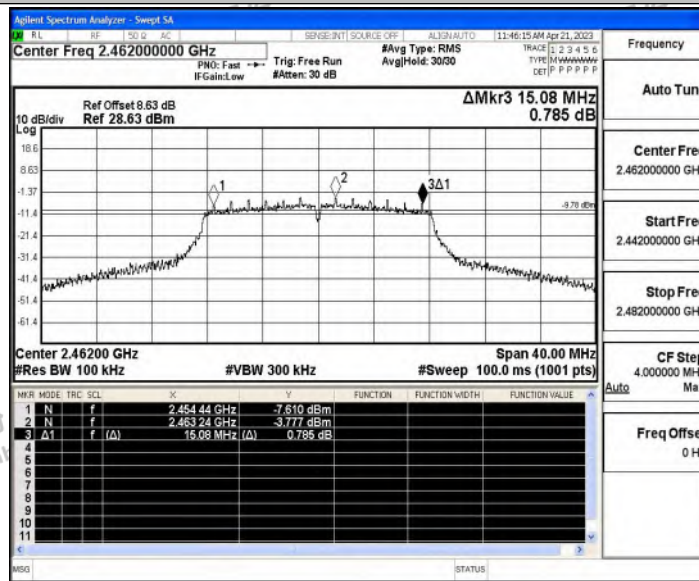


11G_Ant1_2437

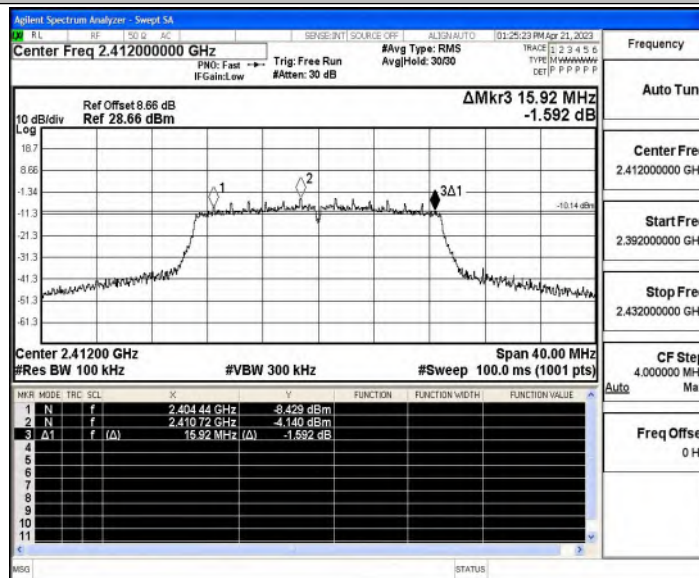




11G_Ant1_2462



11N20SISO_Ant1_2412



11N20SISO_Ant1_2437

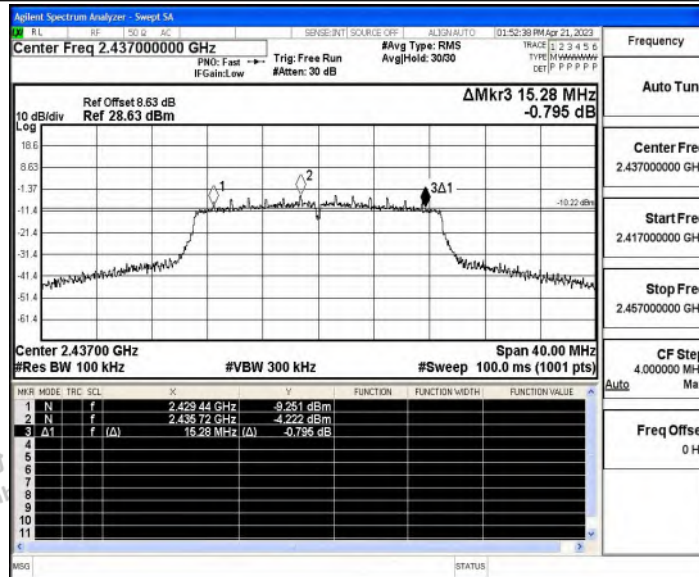


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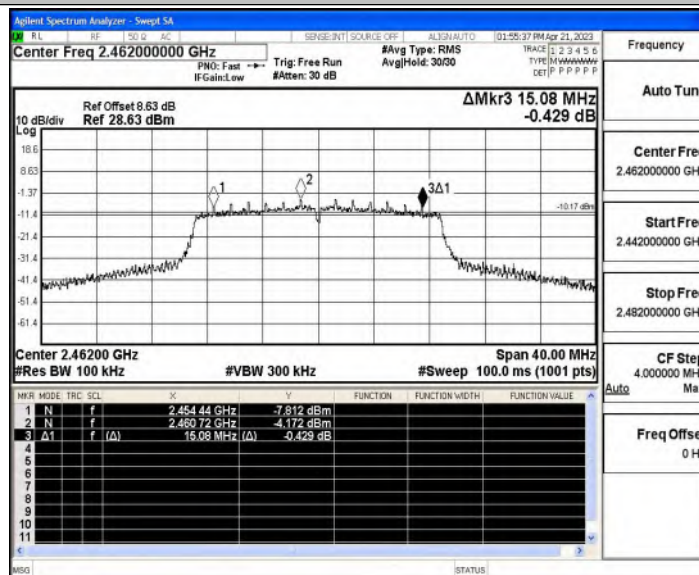
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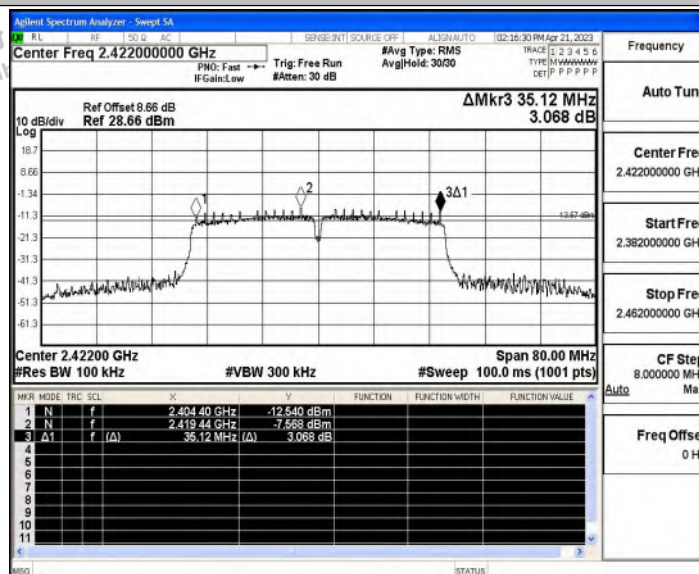
Scan code to check authenticity



11N20SISO_Ant1_2462

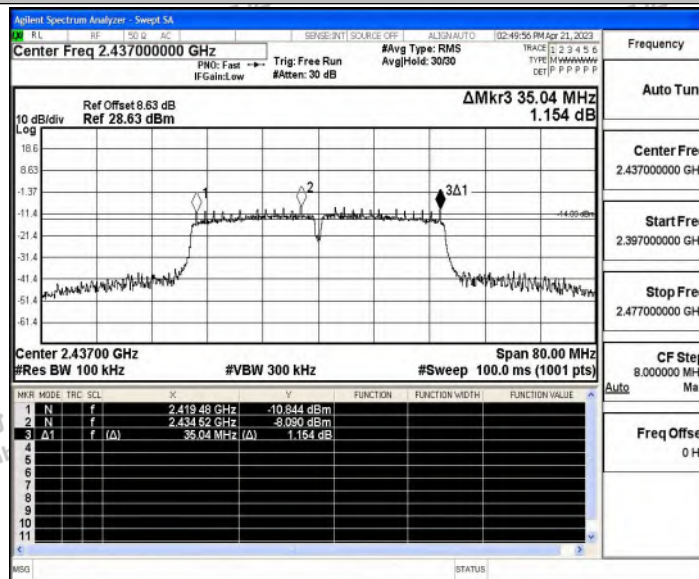


11N40SISO_Ant1_2422

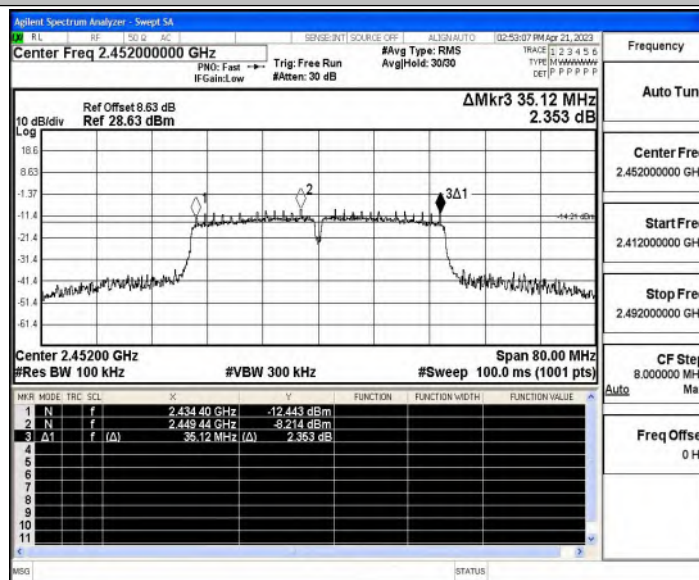




11N40SISO_Ant1_2437



11N40SISO_Ant1_2452



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A.2 Maximum conducted output power

Test Result Peak

TestMode	Antenna	Frequency[MHz]	Set Power	Peak Power[dBm]	Conducted Limit[dBm]	EIRP [dBm]	EIRP Limit[dBm]	Verdict
11B	Ant1	2412	---	8.28	≤30.00	---	---	PASS
		2437	---	8.42	≤30.00	---	---	PASS
		2462	---	8.41	≤30.00	---	---	PASS
11G	Ant1	2412	---	8.09	≤30.00	---	---	PASS
		2437	---	8.23	≤30.00	---	---	PASS
		2462	---	8.03	≤30.00	---	---	PASS
11N20SISO	Ant1	2412	---	8.58	≤30.00	---	---	PASS
		2437	---	8.23	≤30.00	---	---	PASS
		2462	---	8.01	≤30.00	---	---	PASS
11N40SISO	Ant1	2422	---	8.17	≤30.00	---	---	PASS
		2437	---	8.72	≤30.00	---	---	PASS
		2452	---	8.62	≤30.00	---	---	PASS





A.3 Maximum power spectral density

Test Result

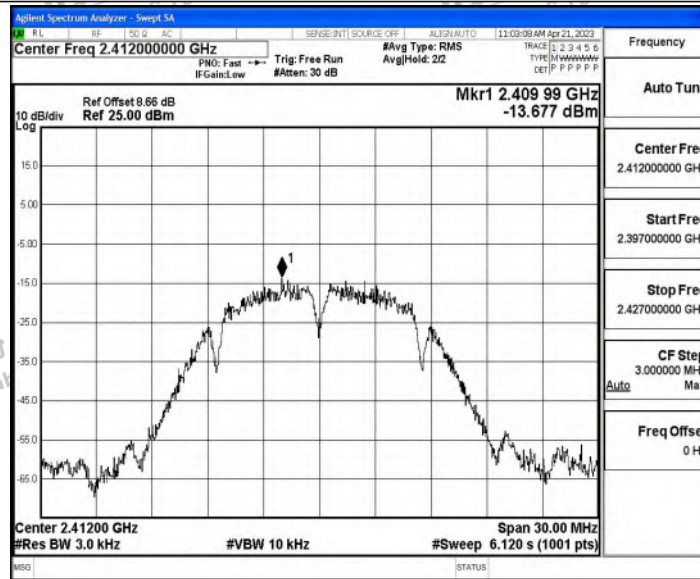
TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-13.68	≤8.00	PASS
		2437	-14.25	≤8.00	PASS
		2462	-5.08	≤8.00	PASS
11G	Ant1	2412	-17.01	≤8.00	PASS
		2437	-18.86	≤8.00	PASS
		2462	-18.68	≤8.00	PASS
11N20SISO	Ant1	2412	-18.32	≤8.00	PASS
		2437	-18.51	≤8.00	PASS
		2462	-18.68	≤8.00	PASS
11N40SISO	Ant1	2422	-21.51	≤8.00	PASS
		2437	-23.07	≤8.00	PASS
		2452	-22.23	≤8.00	PASS



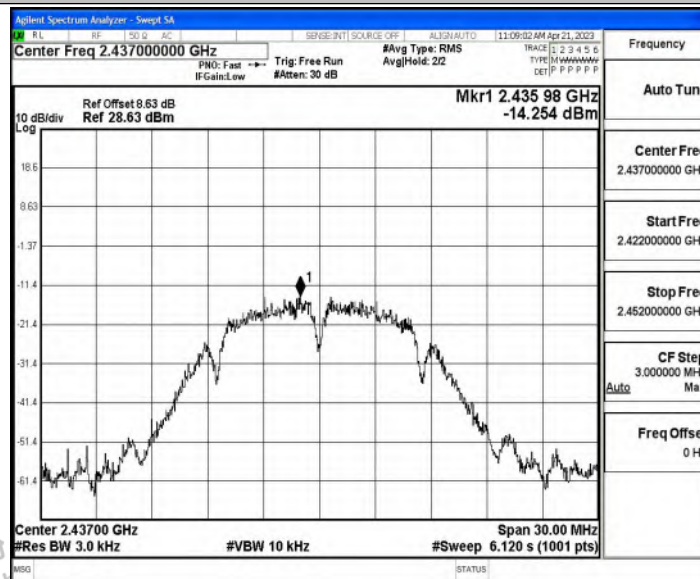


Test Graphs

11B_Ant1_2412

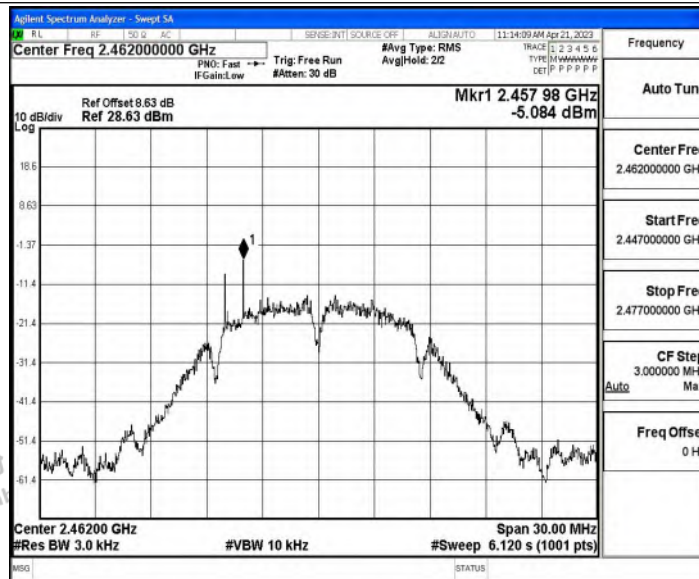


11B_Ant1_2437

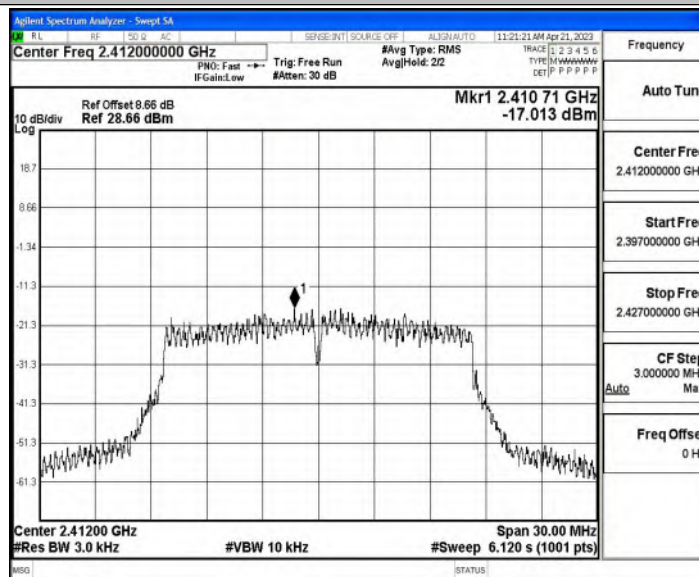


11B_Ant1_2462

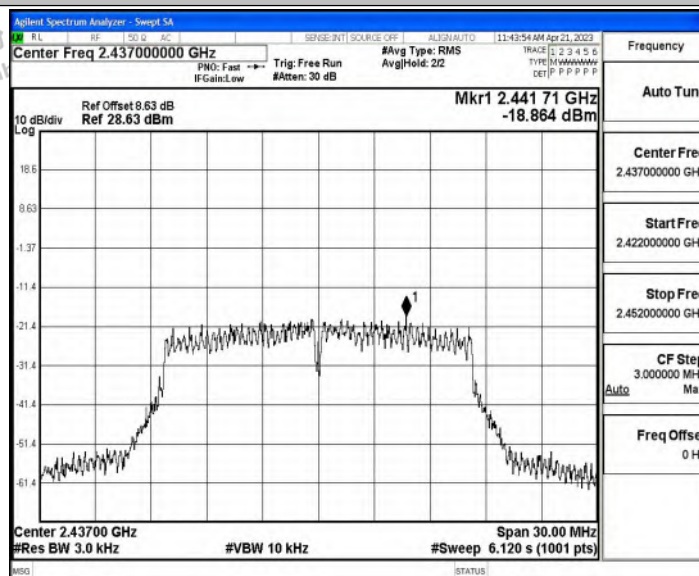




11G_Ant1_2412

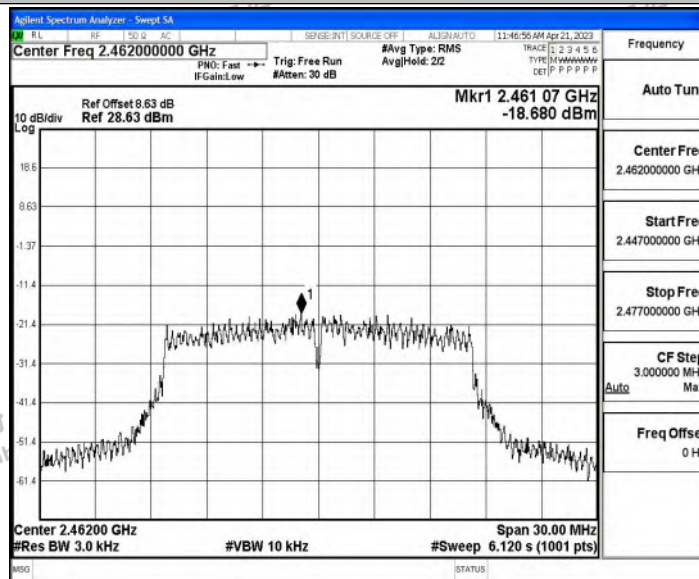


11G_Ant1_2437

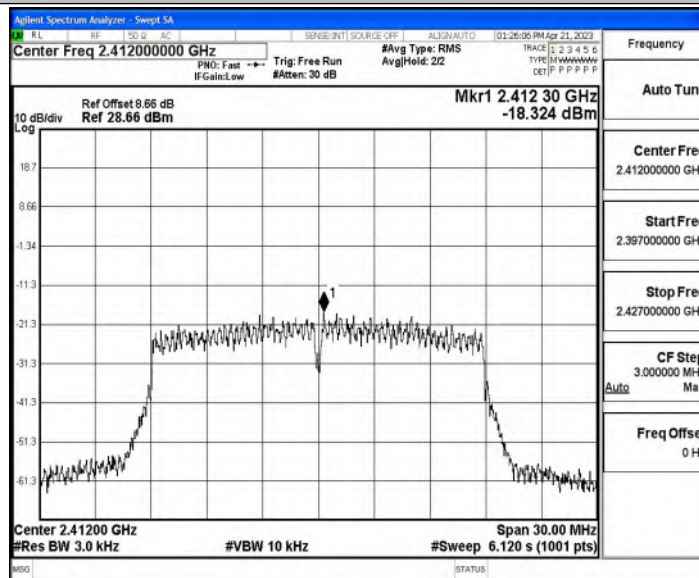




11G_Ant1_2462

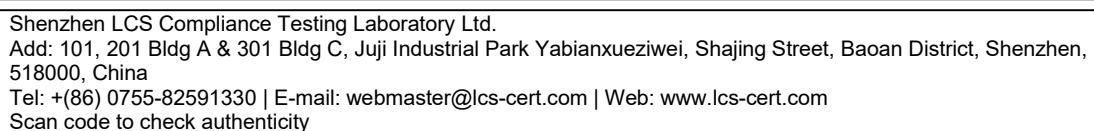
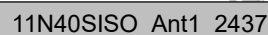
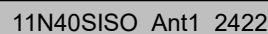


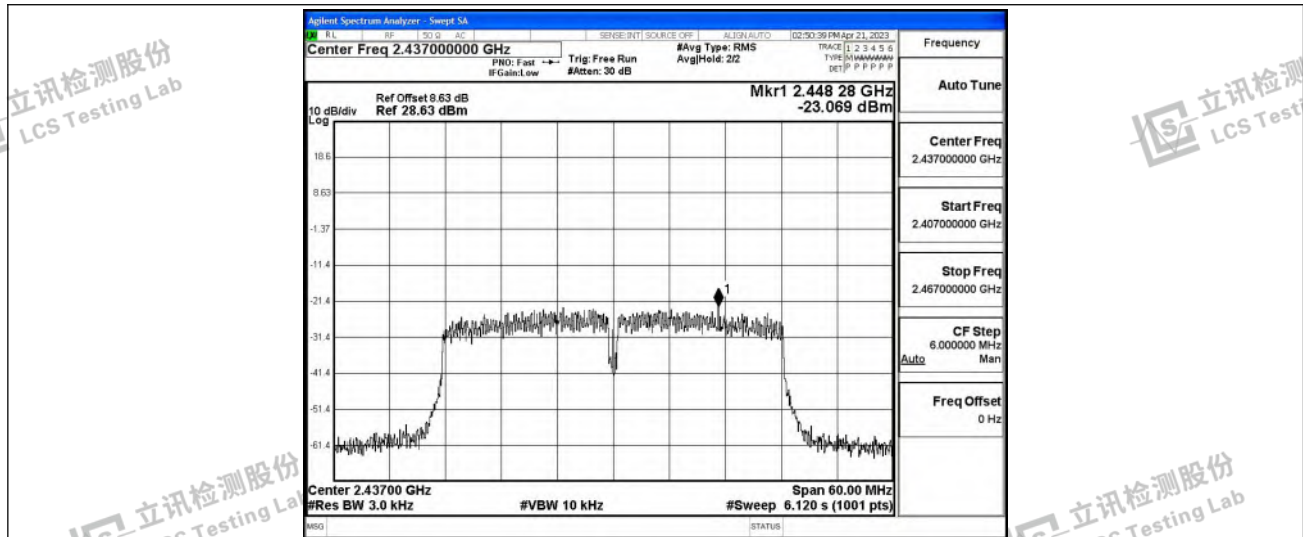
11N20SISO_Ant1_2412



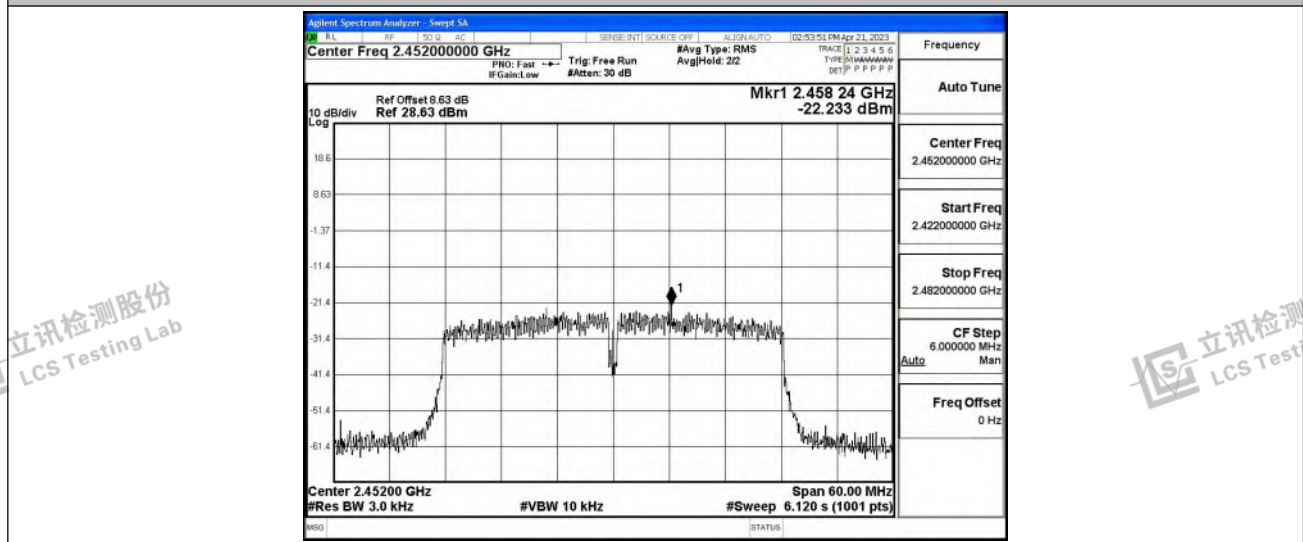
11N20SISO_Ant1_2437







11N40SISO_Ant1_2452





A.4 Band edge measurements

Test Result

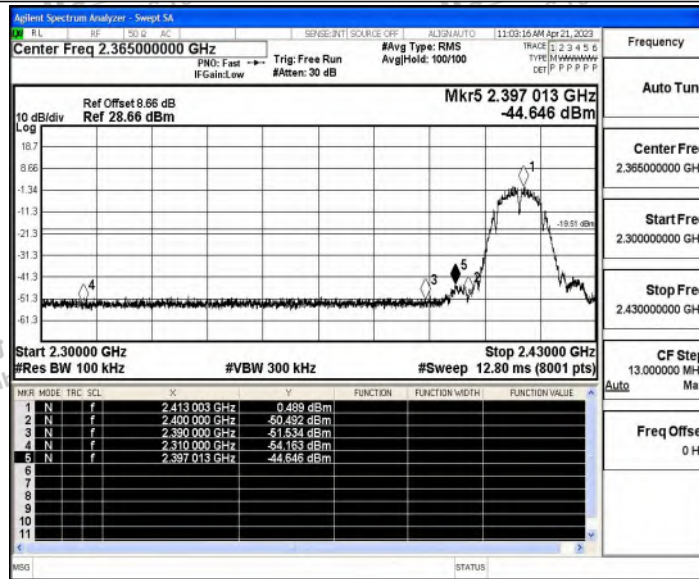
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	0.49	-44.65	≤ -19.51	PASS
		High	2462	0.51	-49.29	≤ -19.49	PASS
11G	Ant1	Low	2412	-3.65	-36.33	≤ -23.65	PASS
		High	2462	-4.27	-47.05	≤ -24.27	PASS
11N20SISO	Ant1	Low	2412	-3.37	-39.37	≤ -23.37	PASS
		High	2462	-3.65	-46.53	≤ -23.65	PASS
11N40SISO	Ant1	Low	2422	-7.57	-39.81	≤ -27.57	PASS
		High	2452	-8.07	-40.61	≤ -28.07	PASS



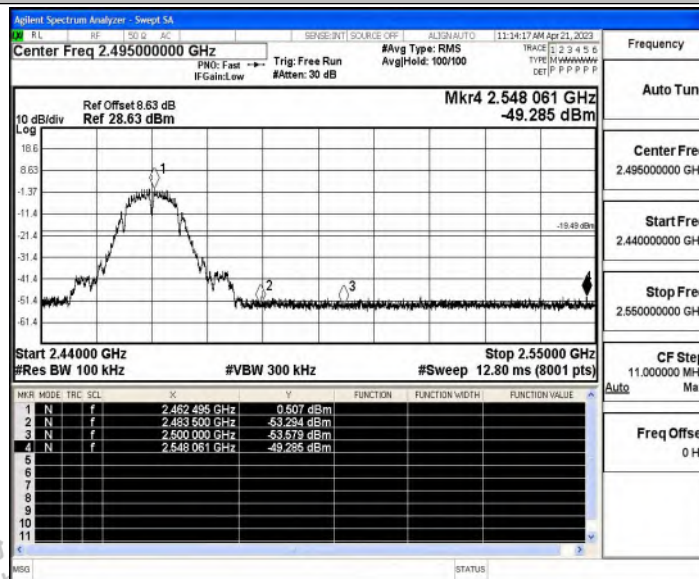


Test Graphs

11B_Ant1_Low_2412

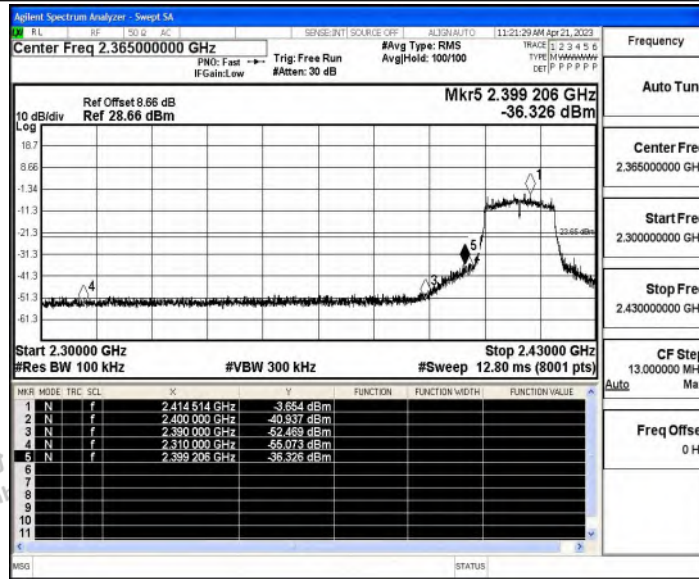


11B_Ant1_High_2462

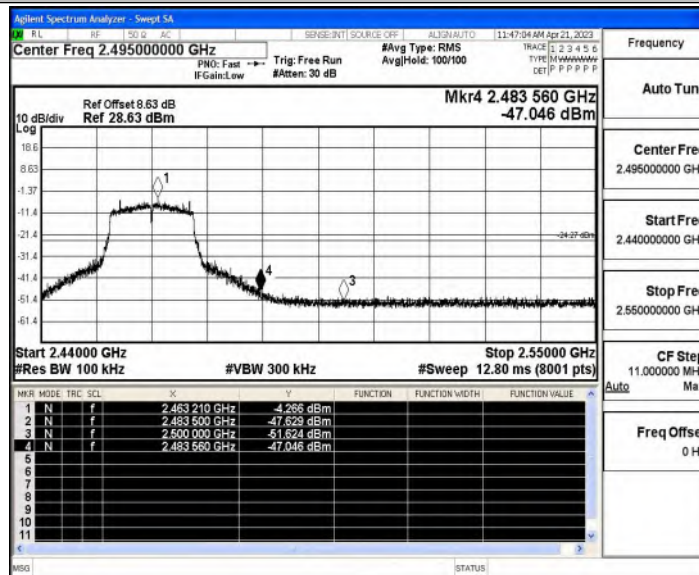


11G_Ant1_Low_2412

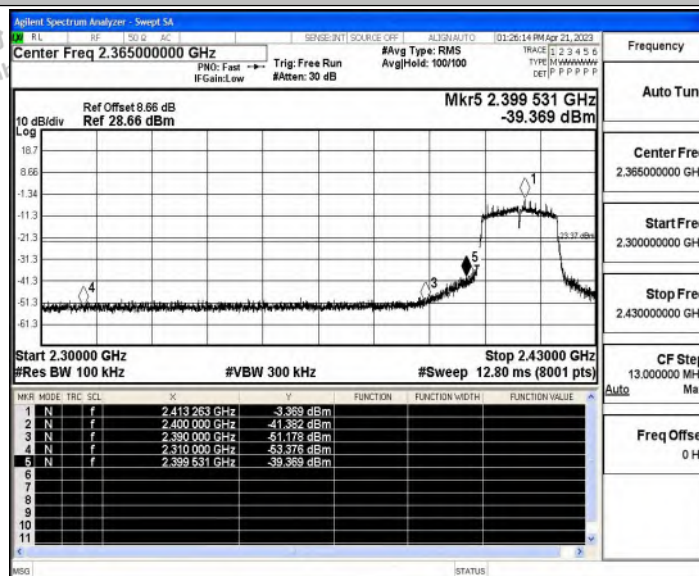




11G_Ant1_High_2462

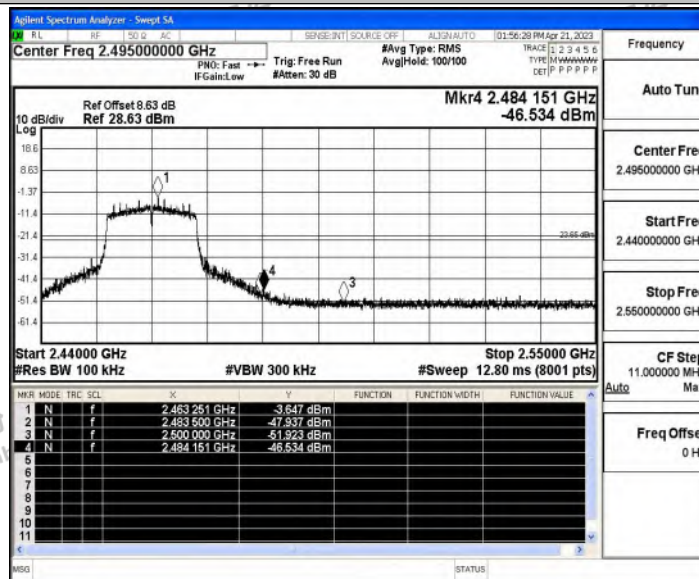


11N20SISO_Ant1_Low_2412

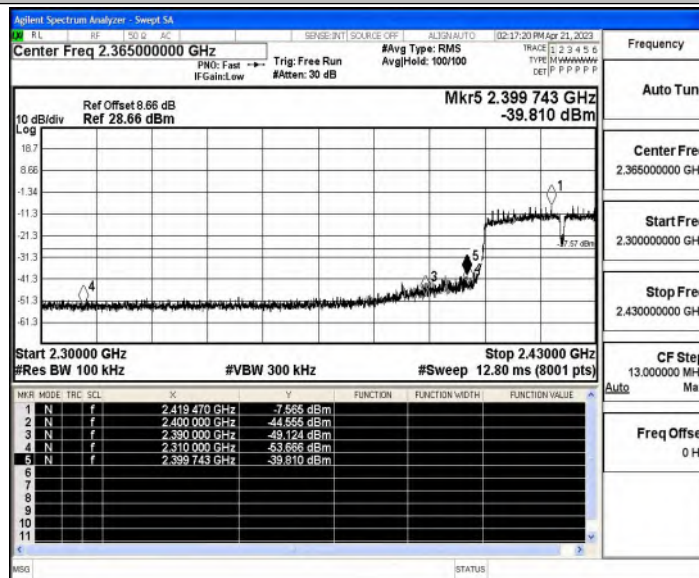




11N20SISO_Ant1_High_2462



11N40SISO_Ant1_Low_2422



11N40SISO_Ant1_High_2452

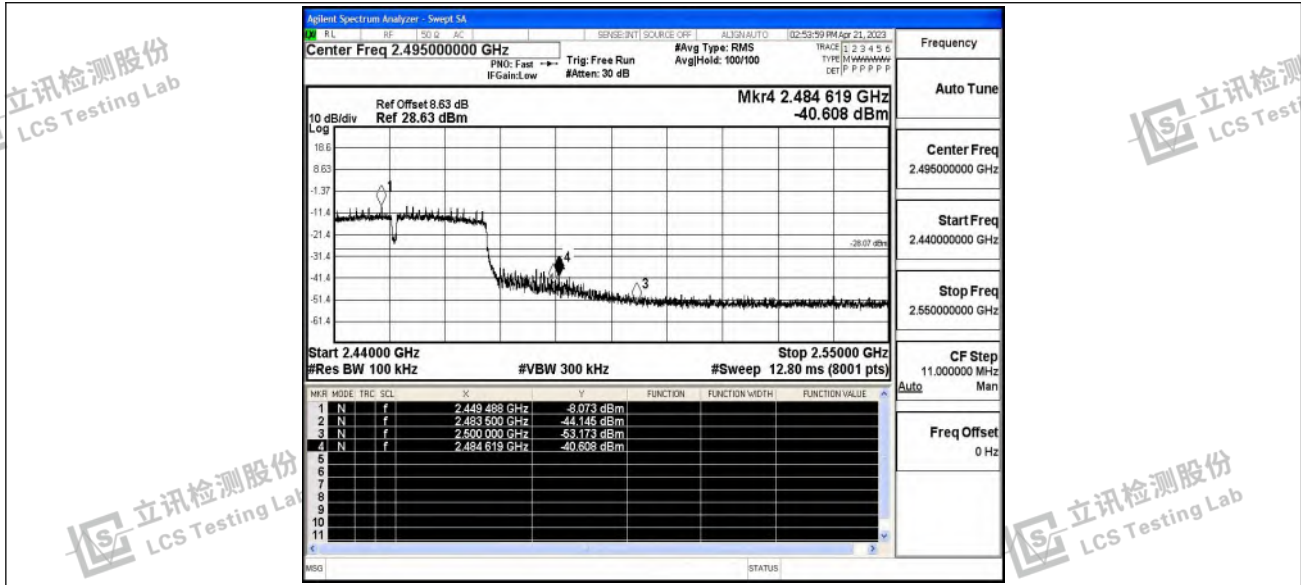


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A.5 Conducted Spurious Emission

Test Result

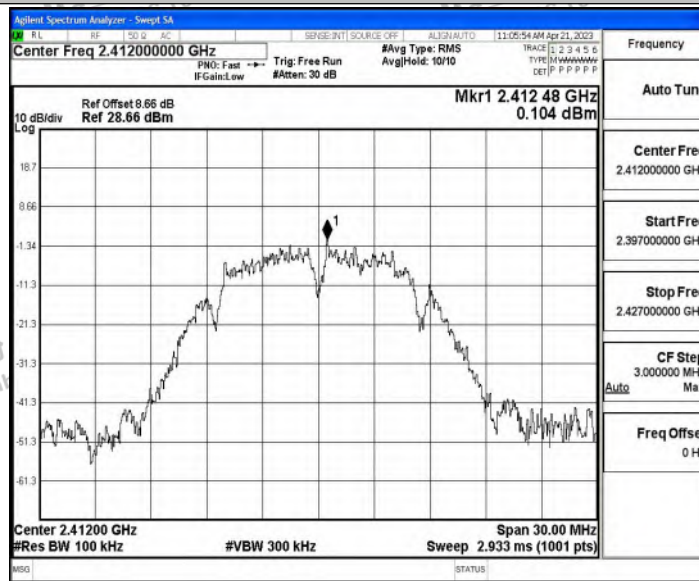
TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	0.10	0.10	---	PASS
			30~1000	0.10	-51.53	≤-19.9	PASS
			1000~26500	0.10	-48.12	≤-19.9	PASS
		2437	Reference	-1.46	-1.46	---	PASS
			30~1000	-1.46	-60.96	≤-21.46	PASS
			1000~26500	-1.46	-48.53	≤-21.46	PASS
		2462	Reference	-0.42	-0.42	---	PASS
			30~1000	-0.42	-60.45	≤-20.42	PASS
			1000~26500	-0.42	-47.91	≤-20.42	PASS
11G	Ant1	2412	Reference	-5.47	-5.47	---	PASS
			30~1000	-5.47	-60.92	≤-25.47	PASS
			1000~26500	-5.47	-43.46	≤-25.47	PASS
		2437	Reference	-6.17	-6.17	---	PASS
			30~1000	-6.17	-59.84	≤-26.17	PASS
			1000~26500	-6.17	-48.13	≤-26.17	PASS
		2462	Reference	-4.93	-4.93	---	PASS
			30~1000	-4.93	-60.58	≤-24.93	PASS
			1000~26500	-4.93	-48.19	≤-24.93	PASS
11N20SISO	Ant1	2412	Reference	-7.74	-7.74	---	PASS
			30~1000	-7.74	-60.4	≤-27.74	PASS
			1000~26500	-7.74	-48.37	≤-27.74	PASS
		2437	Reference	-4.39	-4.39	---	PASS
			30~1000	-4.39	-52.92	≤-24.39	PASS
			1000~26500	-4.39	-48.38	≤-24.39	PASS
		2462	Reference	-4.21	-4.21	---	PASS
			30~1000	-4.21	-60.99	≤-24.21	PASS
			1000~26500	-4.21	-48.02	≤-24.21	PASS
11N40SISO	Ant1	2422	Reference	-8.53	-8.53	---	PASS
			30~1000	-8.53	-61.38	≤-28.53	PASS
			1000~26500	-8.53	-48.85	≤-28.53	PASS
		2437	Reference	-8.62	-8.62	---	PASS
			30~1000	-8.62	-59.76	≤-28.62	PASS
			1000~26500	-8.62	-48.14	≤-28.62	PASS
		2452	Reference	-8.03	-8.03	---	PASS
			30~1000	-8.03	-60.7	≤-28.03	PASS
			1000~26500	-8.03	-48.01	≤-28.03	PASS



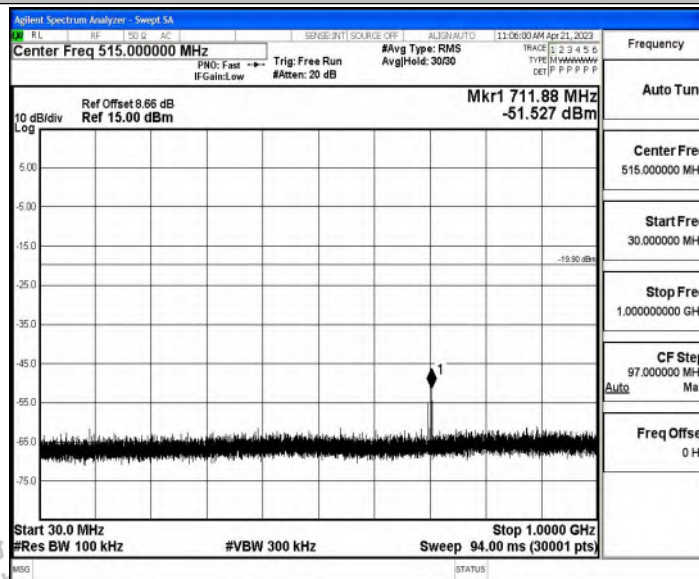


Test Graphs

11B_Ant1_2412_0~Reference

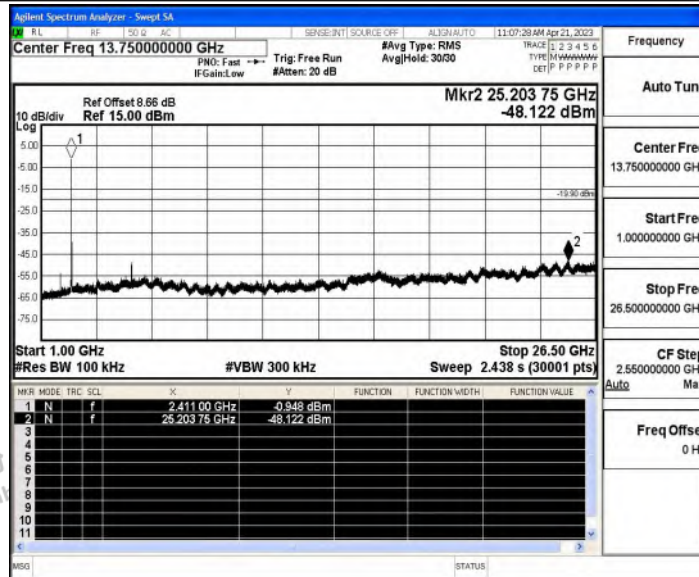


11B_Ant1_2412_30~1000

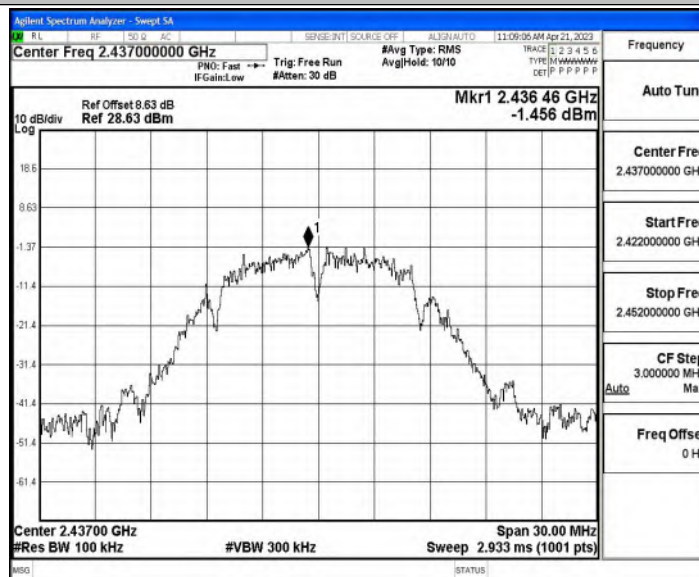


11B_Ant1_2412_1000~26500

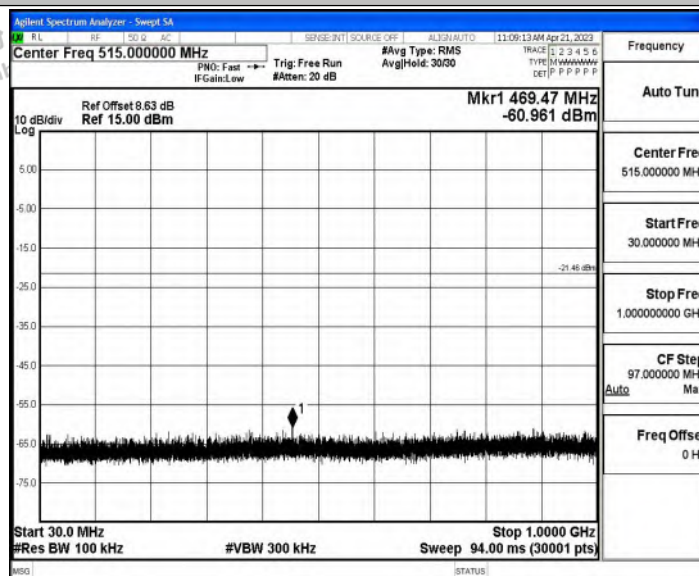




11B_Ant1_2437_0~Reference

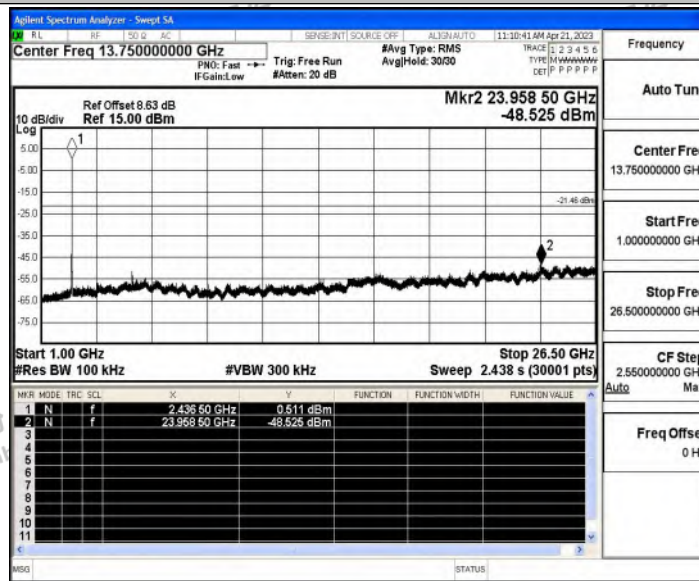


11B_Ant1_2437_30~1000

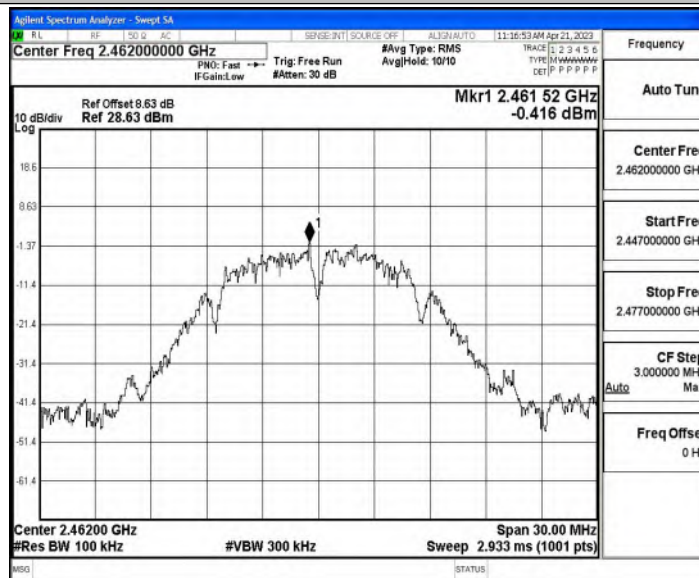




11B_Ant1_2437_1000~26500



11B_Ant1_2462_0~Reference



11B_Ant1_2462_30~1000

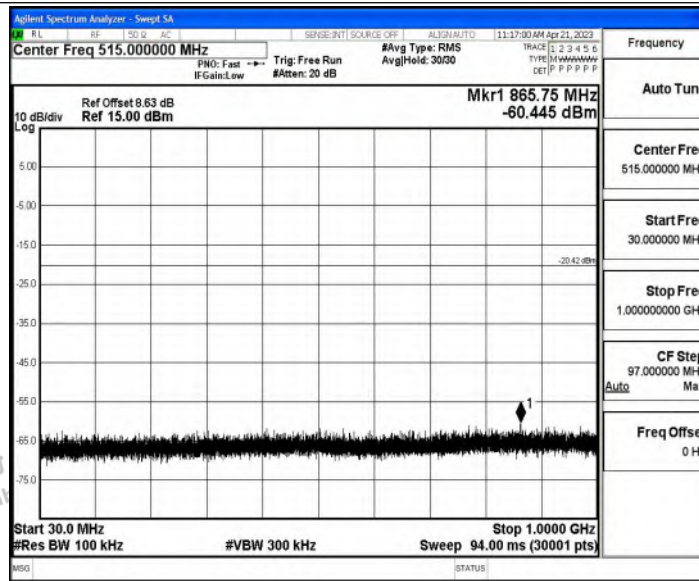


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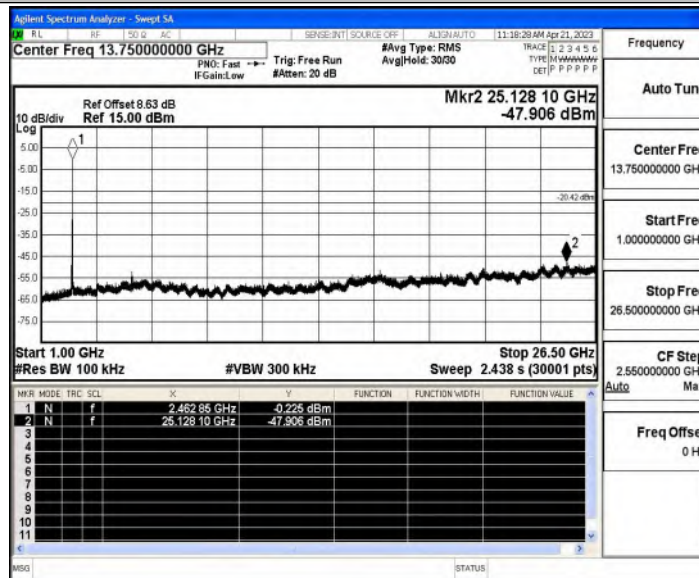
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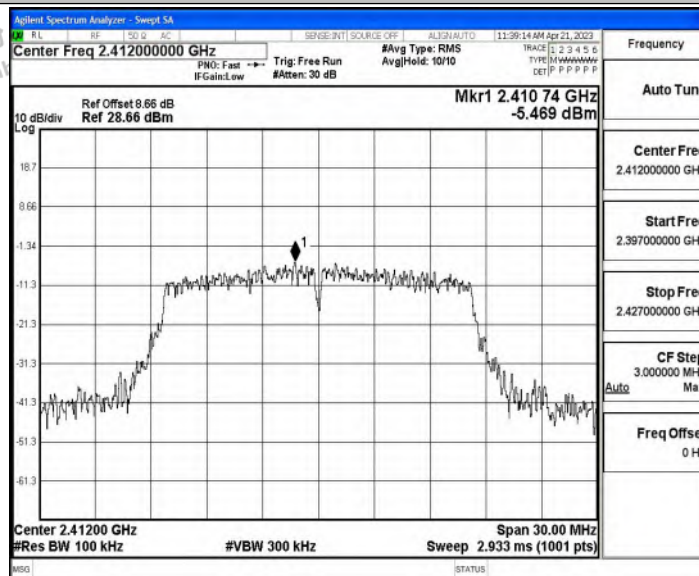
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11B_Ant1_2462_1000~26500

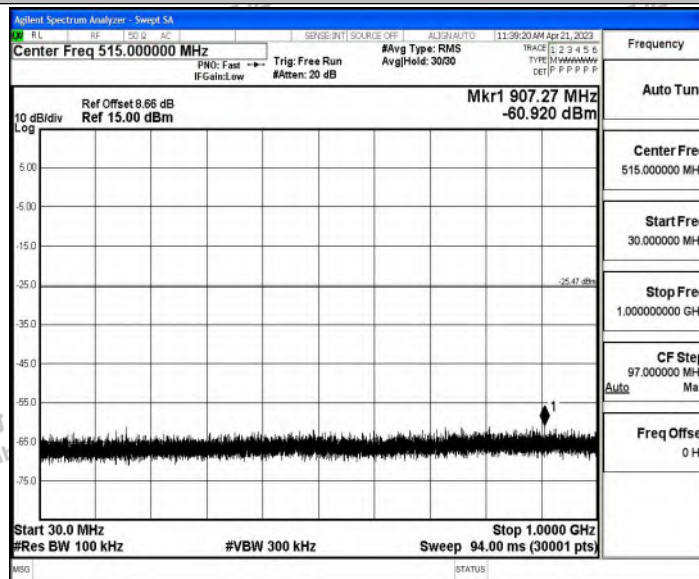


11G_Ant1_2412_0~Reference

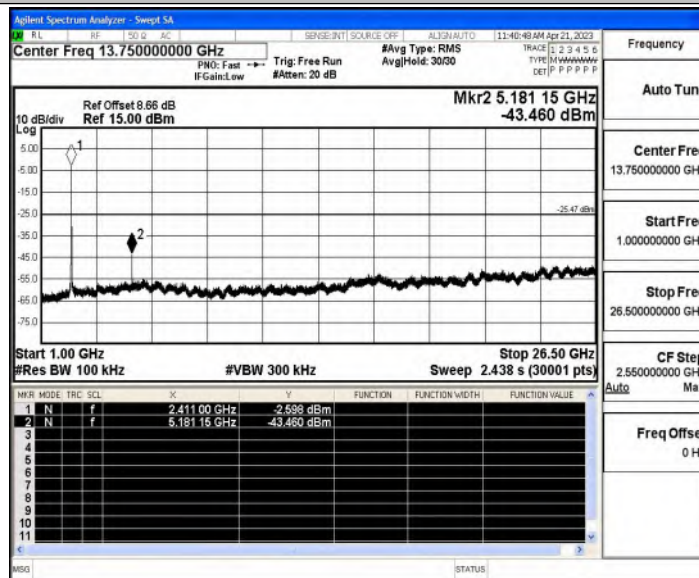




11G_Ant1_2412_30~1000



11G_Ant1_2412_1000~26500



11G_Ant1_2437_0~Reference

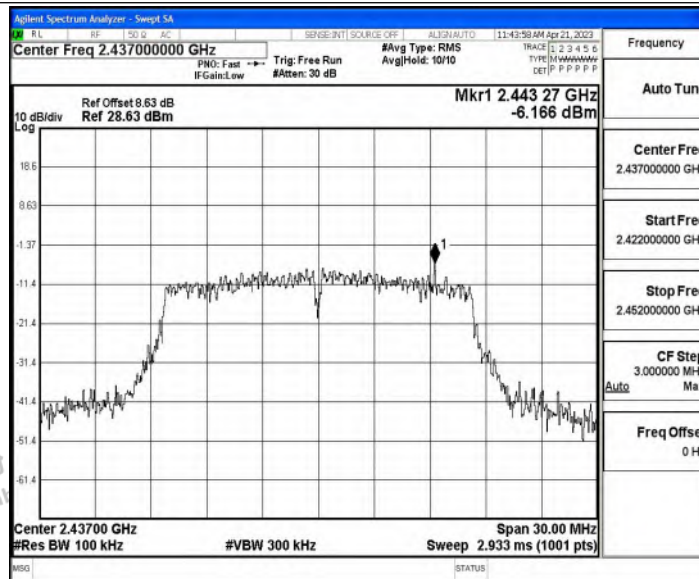


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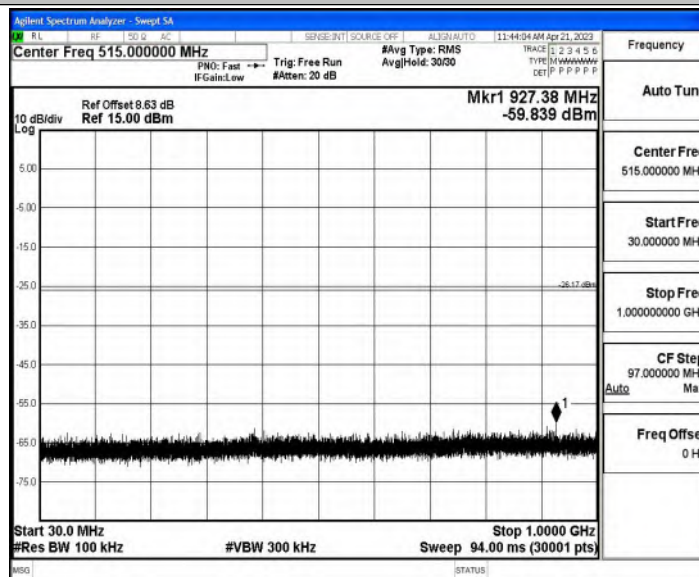
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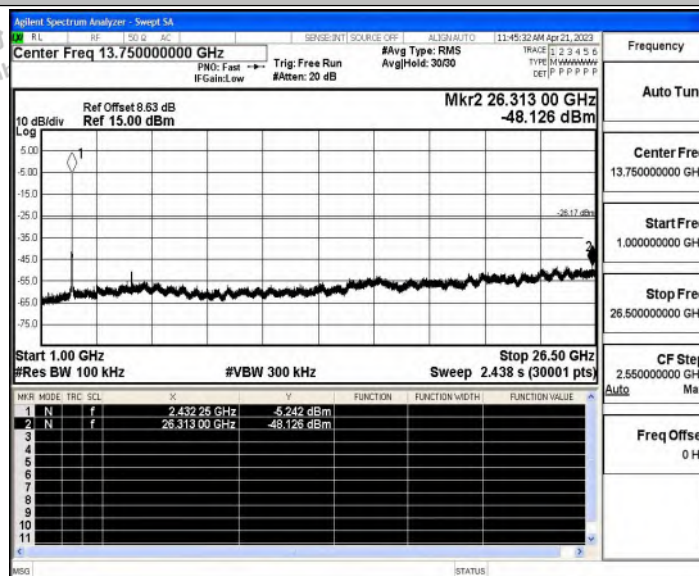
Scan code to check authenticity



11G_Ant1_2437_30~1000

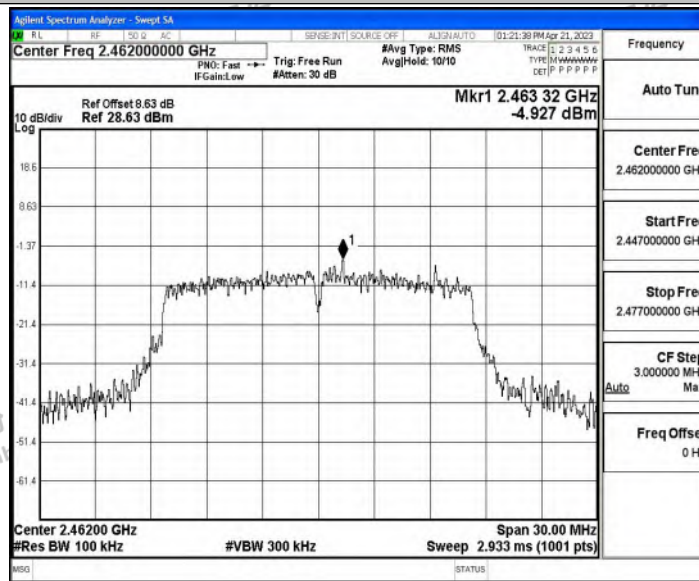


11G_Ant1_2437_1000~26500

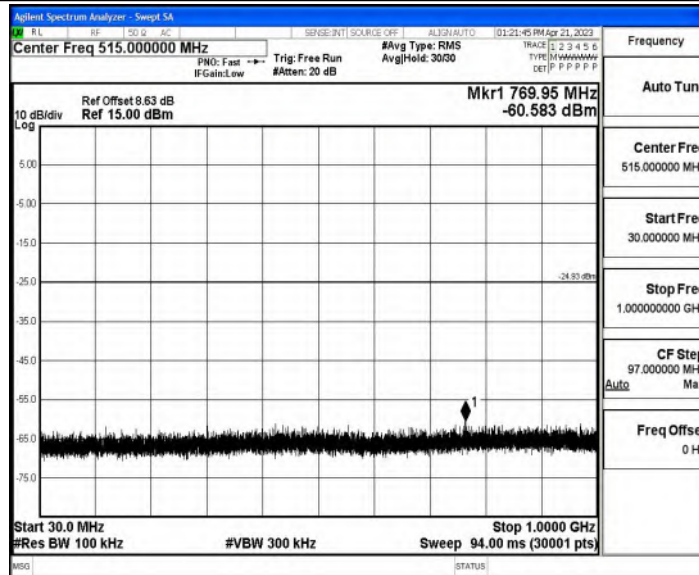




11G_Ant1_2462_0~Reference



11G_Ant1_2462_30~1000



11G_Ant1_2462_1000~26500

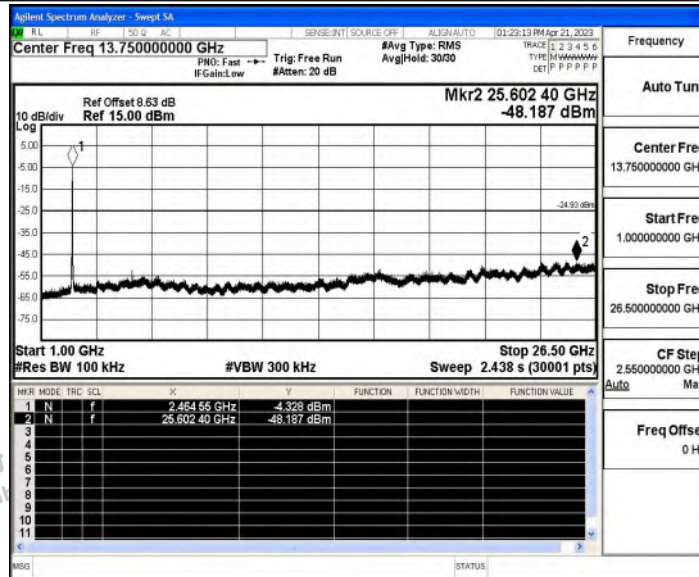


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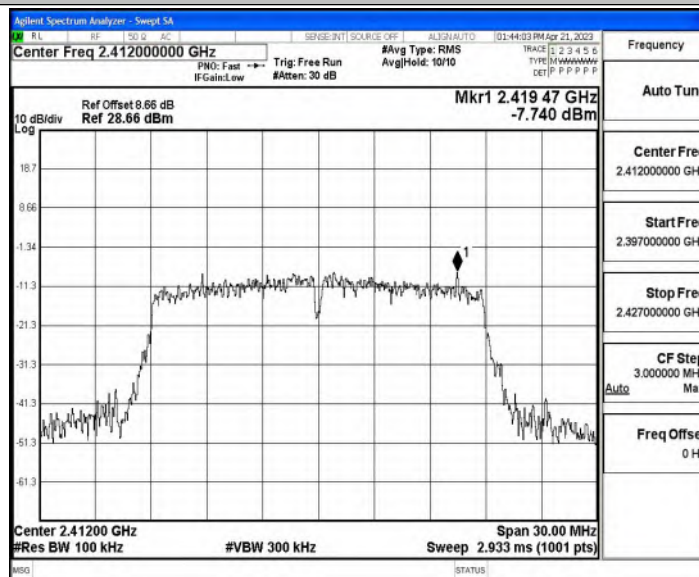
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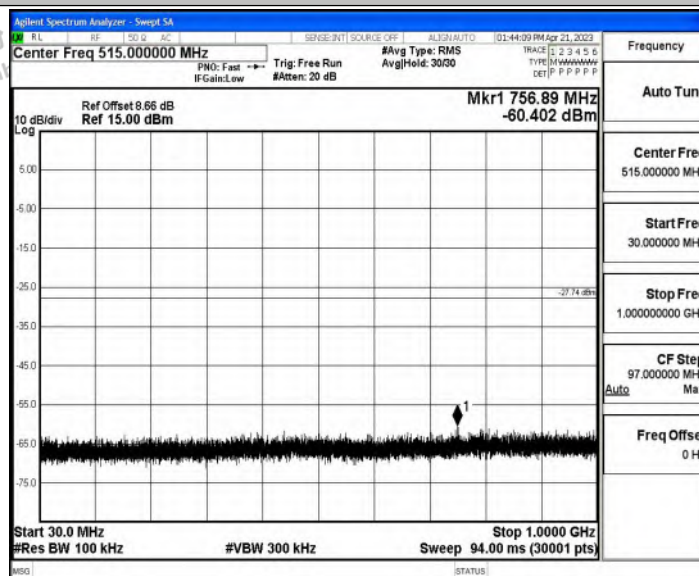
Scan code to check authenticity



11N20SISO_Ant1_2412_0~Reference

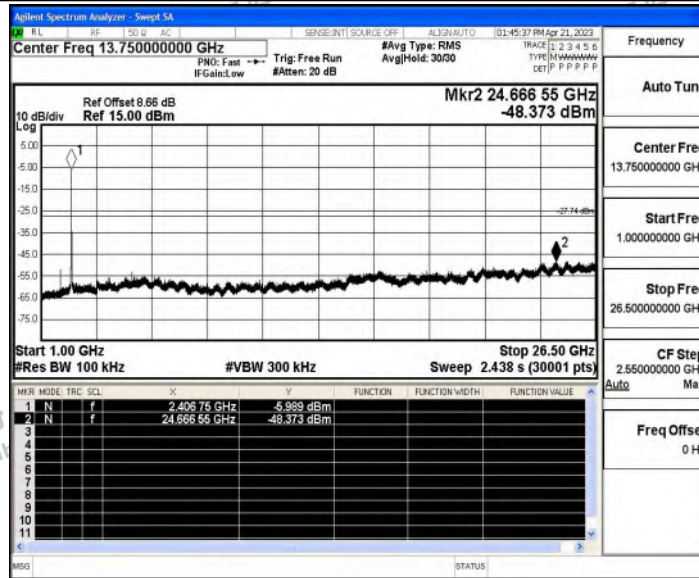


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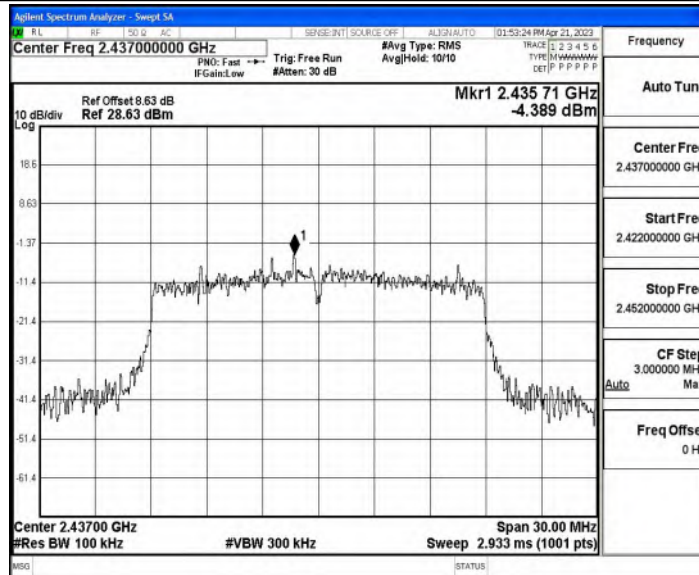




11N20SISO_Ant1_2412_1000~26500

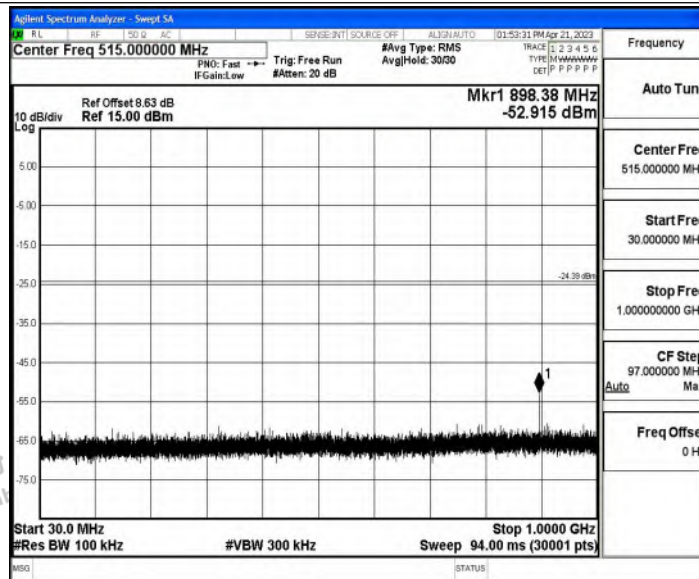


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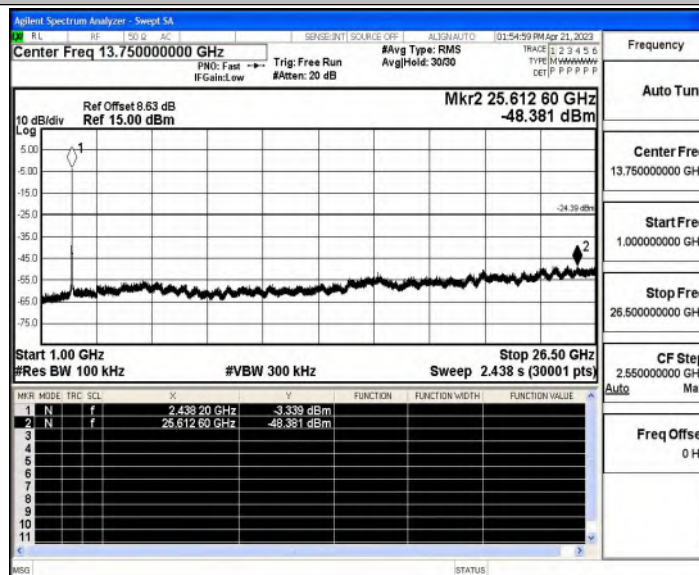


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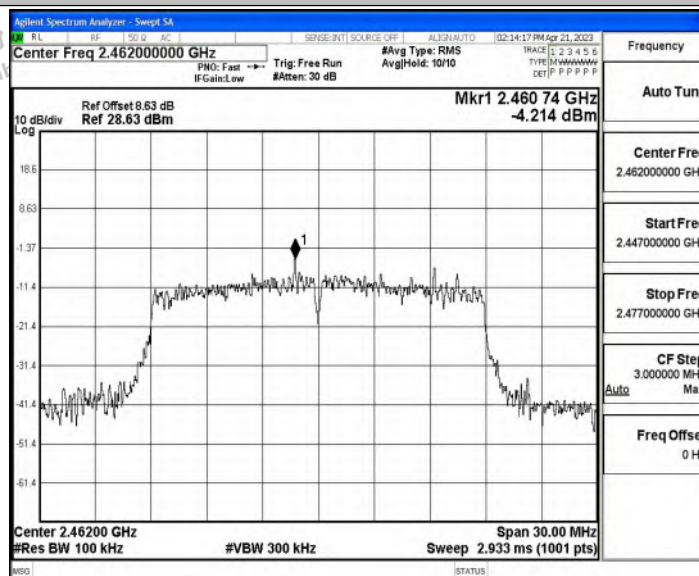




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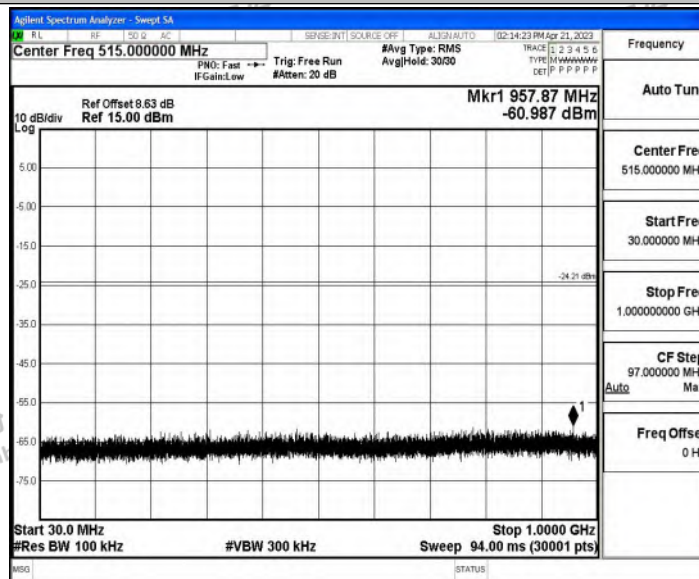


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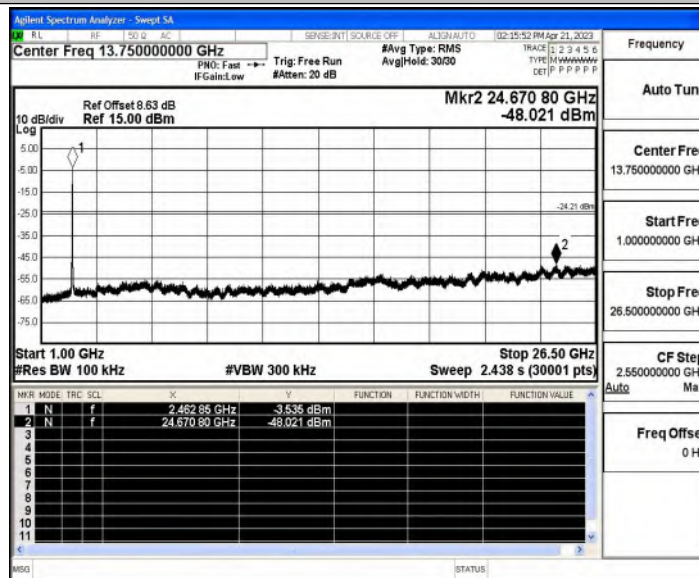




11N20SISO_Ant1_2462_30~1000



11N20SISO_Ant1_2462_1000~26500



11N40SISO_Ant1_2422_0~Reference

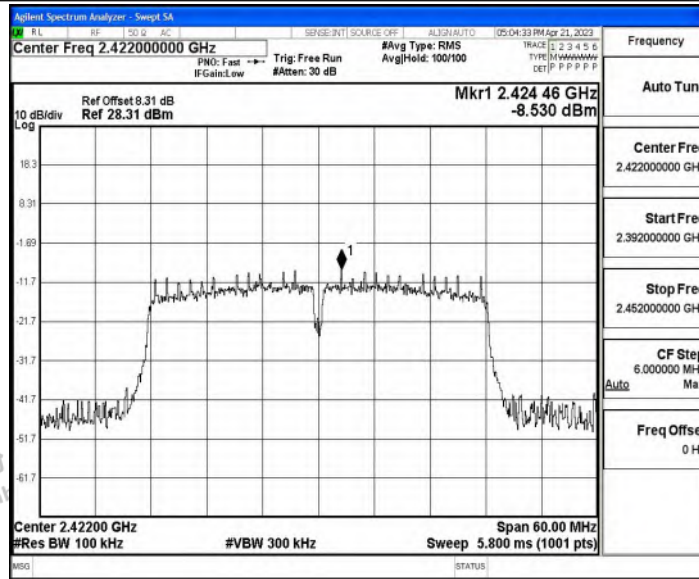


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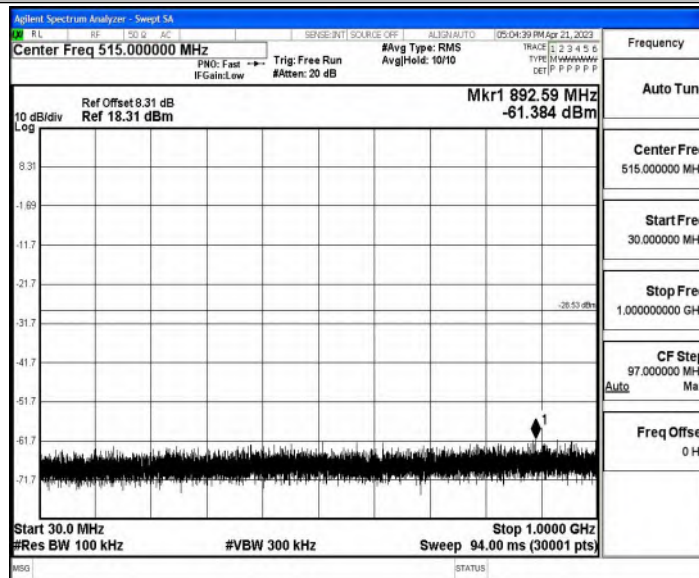
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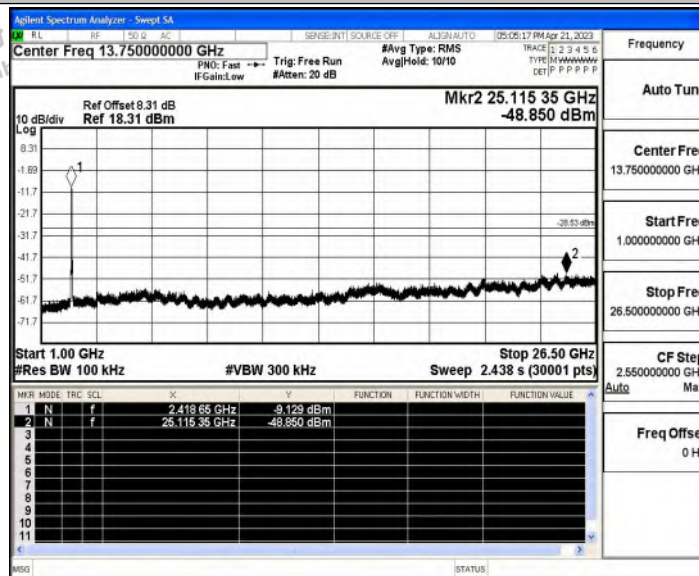
Scan code to check authenticity



11N40SISO_Ant1_2422_30~1000



11N40SISO_Ant1_2422_1000~26500



Shenzhen LCS Compliance Testing Laboratory Ltd.

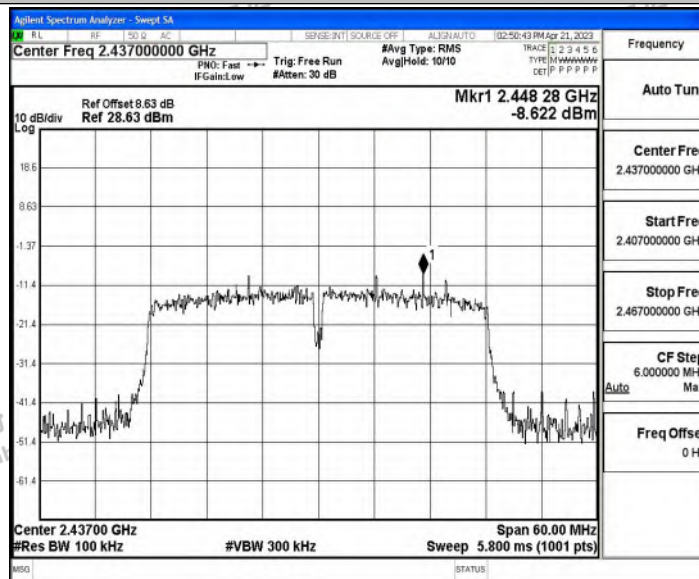
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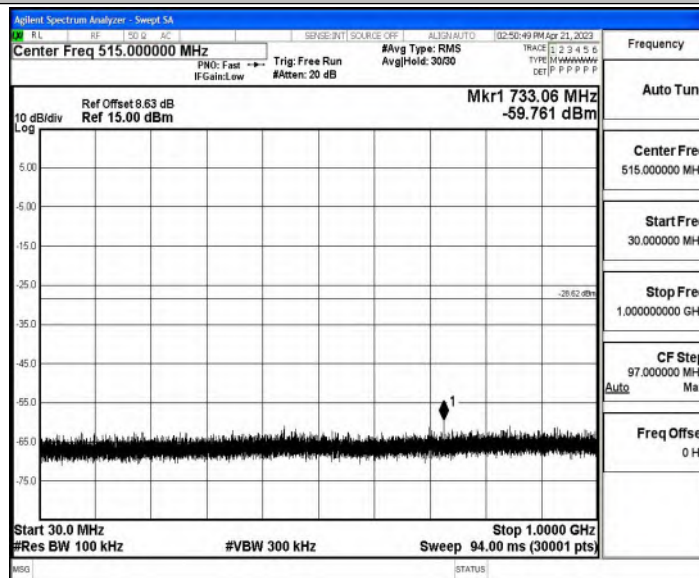
Scan code to check authenticity



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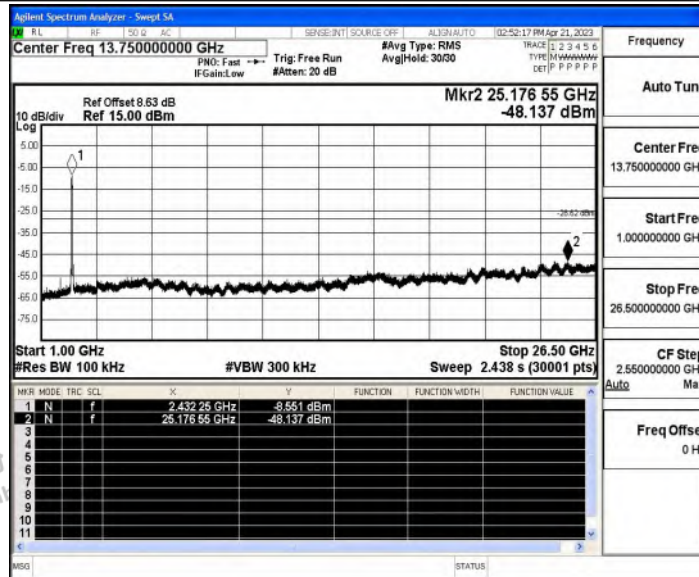


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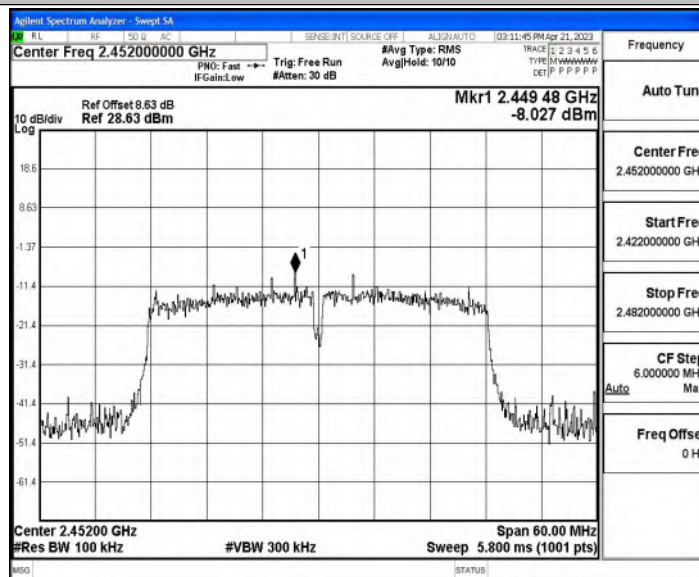


11N40SISO_Ant1_2437_1000~26500

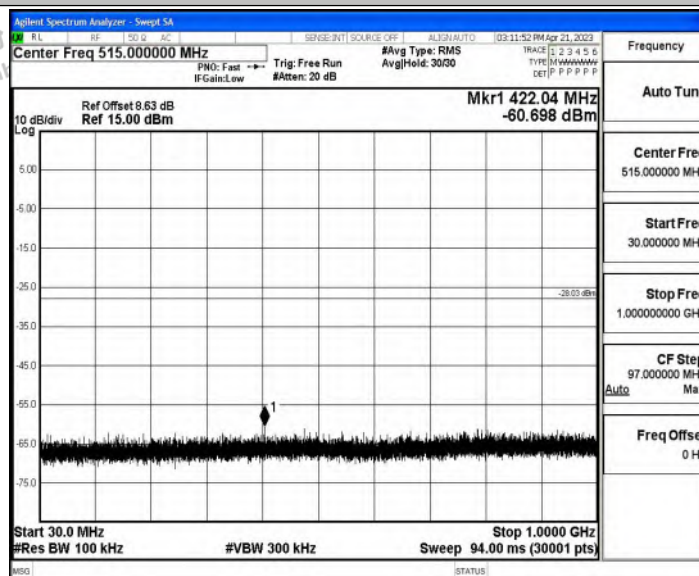




11N40SISO_Ant1_2452_0~Reference

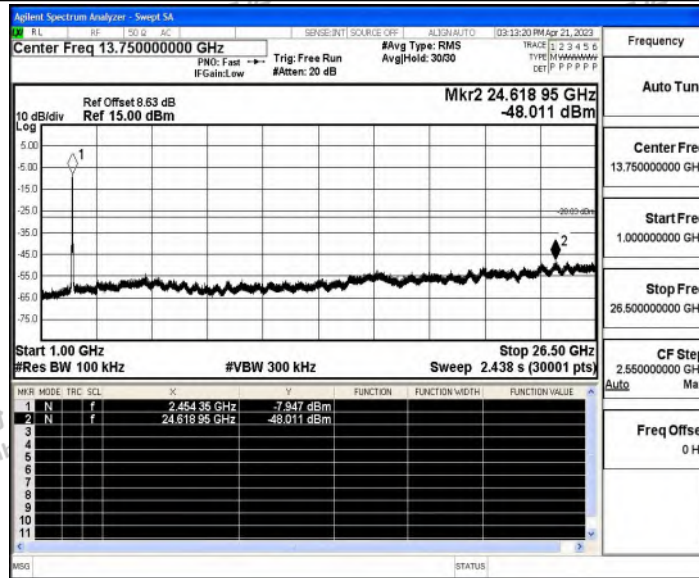


11N40SISO_Ant1_2452_30~1000





11N40SISO_Ant1_2452_1000~26500





A.6 Duty Cycle

Test Result

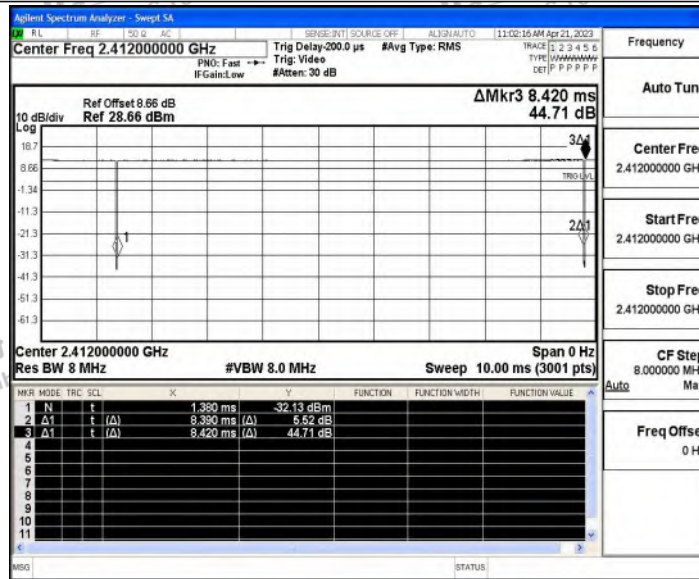
TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T
11B	Ant1	2412	8.39	8.42	99.64	0.01
		2437	8.39	8.42	99.64	0.01
		2462	8.39	8.42	99.64	0.01
11G	Ant1	2412	1.40	1.43	97.90	0.70
		2437	1.39	1.43	97.20	0.70
		2462	1.39	1.43	97.20	0.70
11N20SISO	Ant1	2412	1.30	1.34	97.01	0.75
		2437	1.30	1.33	97.74	0.75
		2462	1.30	1.34	97.01	0.75
11N40SISO	Ant1	2422	0.65	0.69	94.20	1.45
		2437	0.64	0.68	94.12	1.47
		2452	0.64	0.68	94.12	1.47



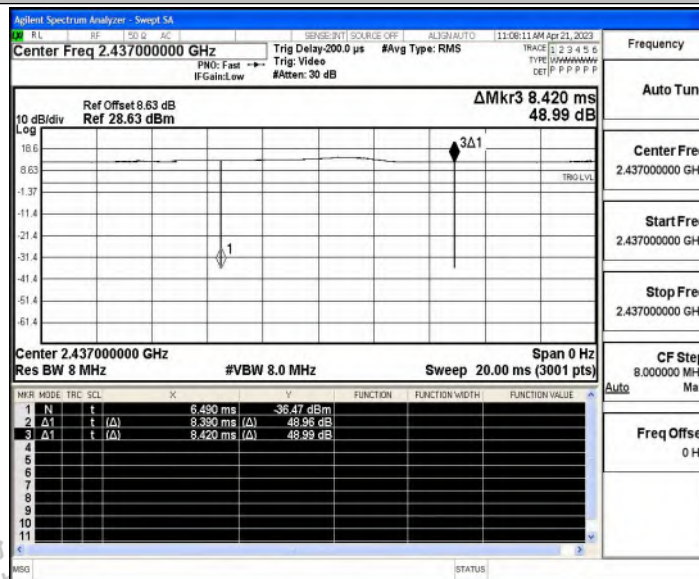


Test Graphs

11B_Ant1_2412



11B_Ant1_2437



11B_Ant1_2462

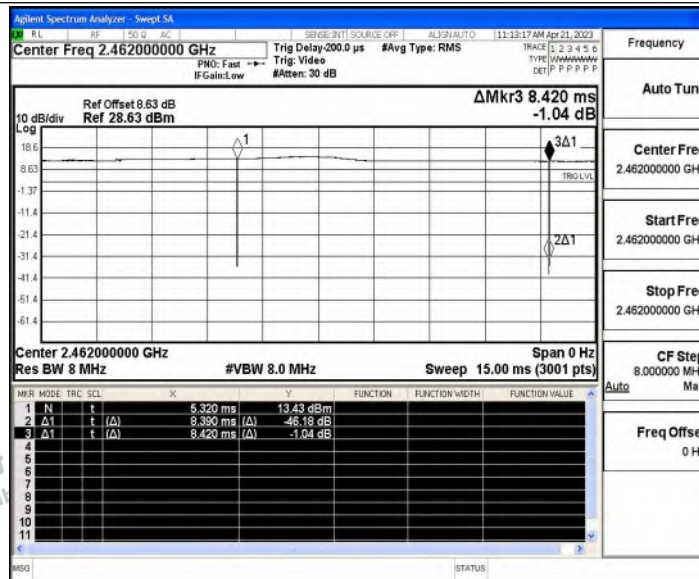


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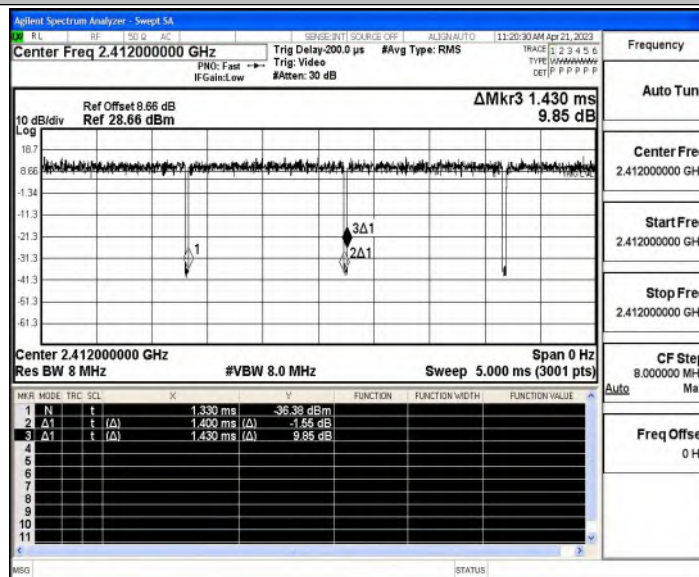
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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

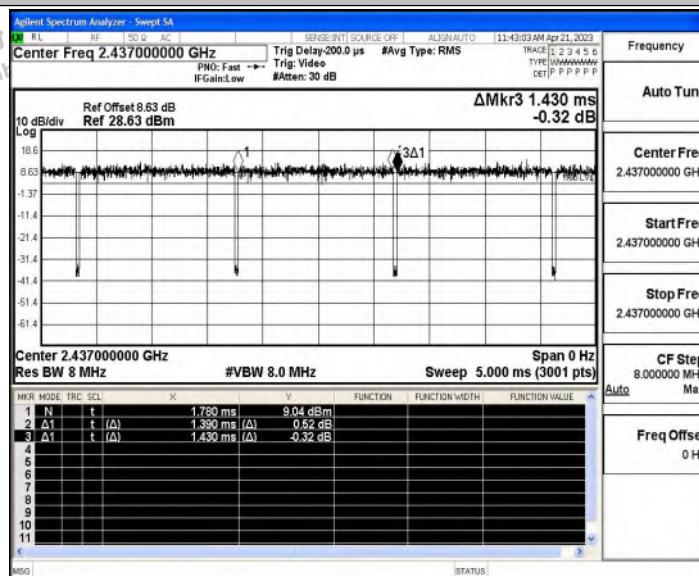
Scan code to check authenticity



11G_Ant1_2412



11G_Ant1_2437



Shenzhen LCS Compliance Testing Laboratory Ltd.

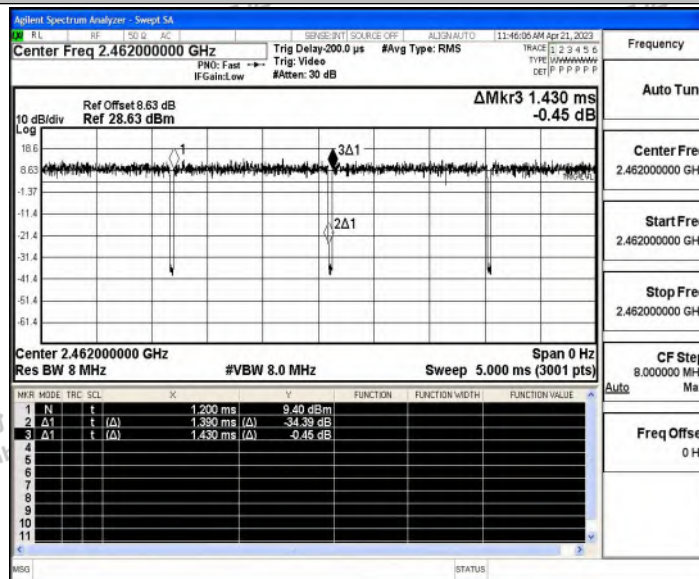
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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

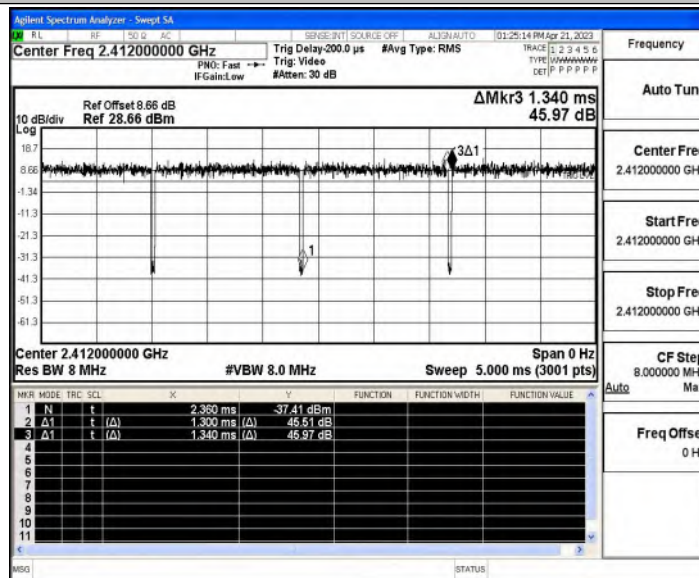
Scan code to check authenticity



11G_Ant1_2462



11N20SISO_Ant1_2412



11N20SISO_Ant1_2437

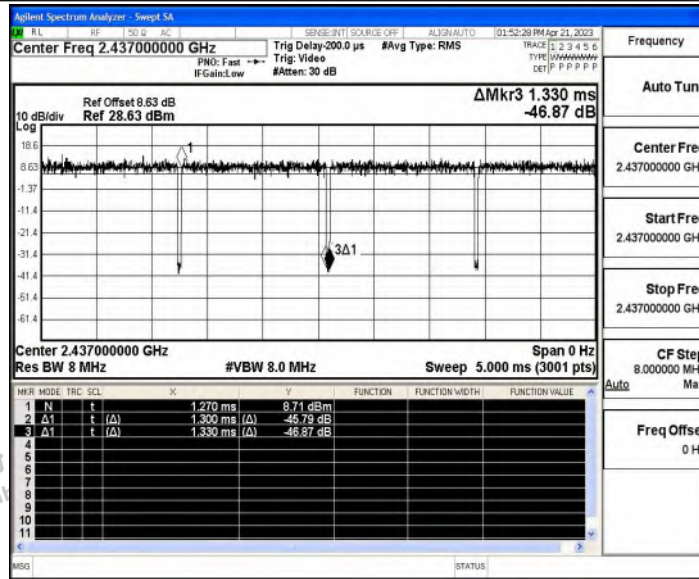


Shenzhen LCS Compliance Testing Laboratory Ltd.

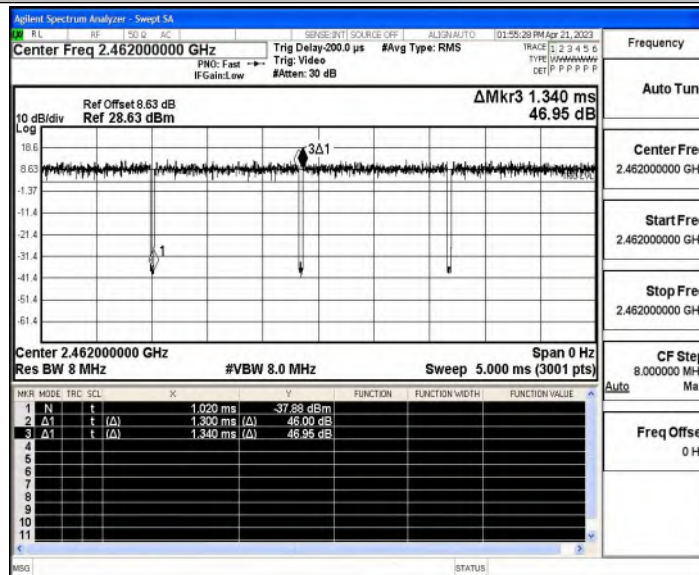
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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

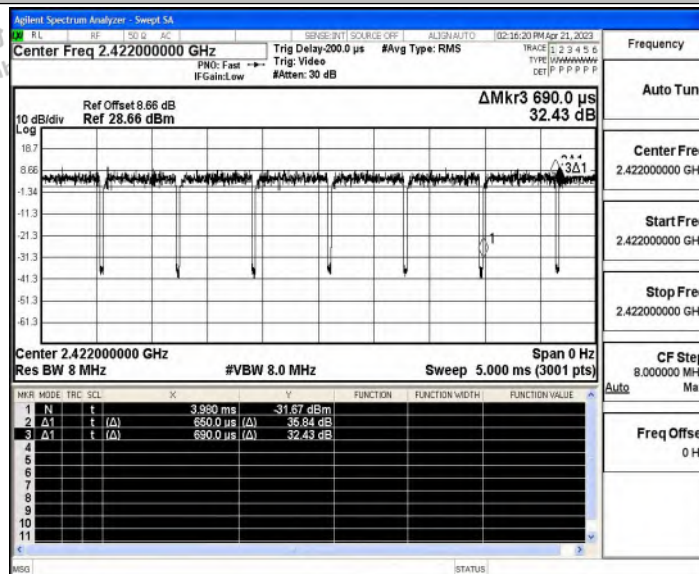
Scan code to check authenticity



11N20SISO_Ant1_2462



11N40SISO_Ant1_2422



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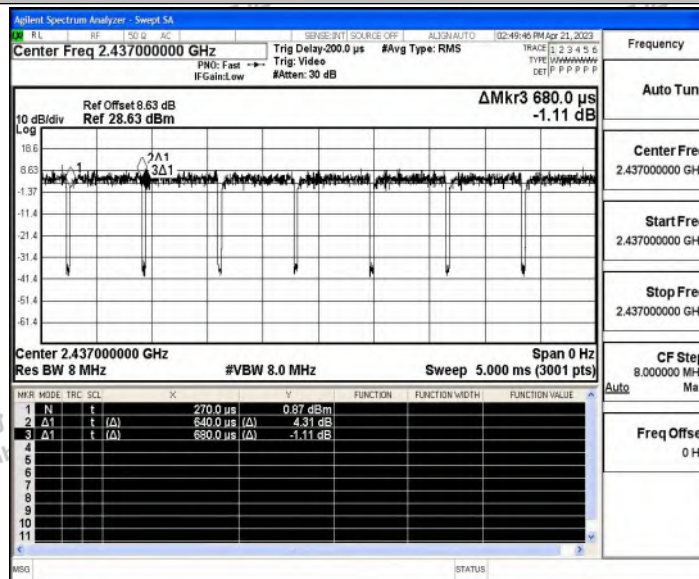
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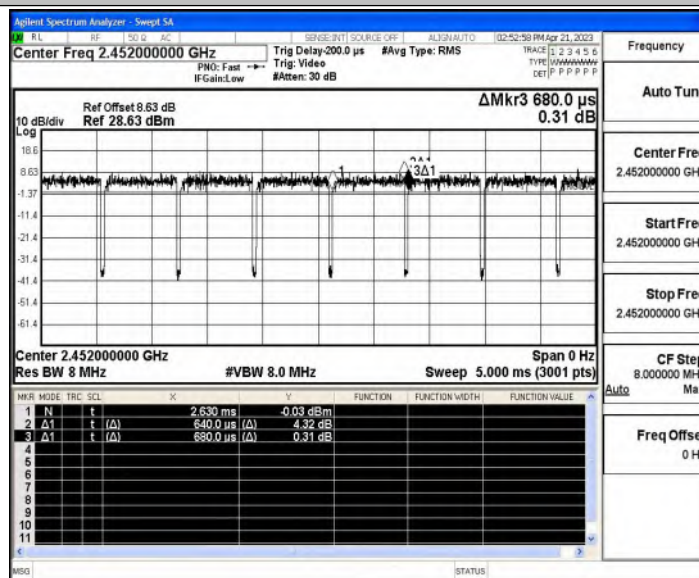
Scan code to check authenticity



11N40SISO_Ant1_2437



11N40SISO_Ant1_2452





A.7 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
11B	Ant1	Low	2412	AV	2310.000	-58.79	≤-41.20	36.41	≤54	PASS
				AV	2389.960	-56.16	≤-41.20	39.04	≤54	PASS
				AV	2390.000	-56.16	≤-41.20	39.04	≤54	PASS
				Peak	2310.000	-48.32	≤-21.20	46.88	≤74	PASS
				Peak	2389.570	-45.05	≤-21.20	50.15	≤74	PASS
				Peak	2390.000	-46.12	≤-21.20	49.08	≤74	PASS
		High	2462	AV	2483.500	-54.82	≤-41.20	40.38	≤54	PASS
				AV	2488.510	-54.18	≤-41.20	41.02	≤54	PASS
				AV	2500.000	-57.59	≤-41.20	37.61	≤54	PASS
				Peak	2483.500	-45.29	≤-21.20	49.91	≤74	PASS
				Peak	2488.070	-43.8	≤-21.20	51.40	≤74	PASS
				Peak	2500.000	-46.83	≤-21.20	48.37	≤74	PASS
11G	Ant1	Low	2412	AV	2310.000	-58.02	≤-41.20	37.18	≤54	PASS
				AV	2389.960	-47.43	≤-41.20	47.77	≤54	PASS
				AV	2390.000	-47.43	≤-41.20	47.77	≤54	PASS
				Peak	2310.000	-48.13	≤-21.20	47.07	≤74	PASS
				Peak	2384.370	-31.61	≤-21.20	63.59	≤74	PASS
				Peak	2390.000	-32.56	≤-21.20	62.64	≤74	PASS
		High	2462	AV	2483.500	-45.12	≤-41.20	50.08	≤54	PASS
				AV	2483.560	-45.39	≤-41.20	49.81	≤54	PASS
				AV	2500.000	-54.45	≤-41.20	40.75	≤54	PASS
				Peak	2483.500	-28.66	≤-21.20	66.54	≤74	PASS
				Peak	2483.560	-29.16	≤-21.20	66.04	≤74	PASS
				Peak	2500.000	-43.22	≤-21.20	51.98	≤74	PASS
11N20SI SO	Ant1	Low	2412	AV	2310.000	-58.13	≤-41.20	37.07	≤54	PASS
				AV	2389.960	-48.93	≤-41.20	46.27	≤54	PASS
				AV	2390.000	-48.93	≤-41.20	46.27	≤54	PASS
				Peak	2310.000	-48.25	≤-21.20	46.95	≤74	PASS
				Peak	2389.960	-32.61	≤-21.20	62.59	≤74	PASS
				Peak	2390.000	-32.61	≤-21.20	62.59	≤74	PASS
		High	2462	AV	2483.500	-44.13	≤-41.20	51.07	≤54	PASS
				AV	2483.560	-44.37	≤-41.20	50.83	≤54	PASS
				AV	2500.000	-54.51	≤-41.20	40.69	≤54	PASS
				Peak	2483.500	-27.98	≤-21.20	67.22	≤74	PASS
				Peak	2483.780	-27.52	≤-21.20	67.68	≤74	PASS
				Peak	2500.000	-42.85	≤-21.20	52.35	≤74	PASS
11N40SI	Ant1	Low	2422	AV	2310.000	-58.09	≤-41.20	37.11	≤54	PASS





SO				AV	2389.830	-42.53	≤-41.20	52.67	≤54	PASS
				AV	2390.000	-42.61	≤-41.20	52.59	≤54	PASS
				Peak	2310.000	-48.54	≤-21.20	46.66	≤74	PASS
				Peak	2388.790	-26.77	≤-21.20	68.43	≤74	PASS
				Peak	2390.000	-28.07	≤-21.20	67.13	≤74	PASS
		High	2452	AV	2483.500	-43.4	≤-41.20	51.80	≤54	PASS
				AV	2484.330	-43.23	≤-41.20	51.97	≤54	PASS
				AV	2500.000	-51.82	≤-41.20	43.38	≤54	PASS
				Peak	2483.500	-26.27	≤-21.20	68.93	≤74	PASS
				Peak	2484.770	-26.32	≤-21.20	68.88	≤74	PASS
				Peak	2500.000	-37.49	≤-21.20	57.71	≤74	PASS

Note:

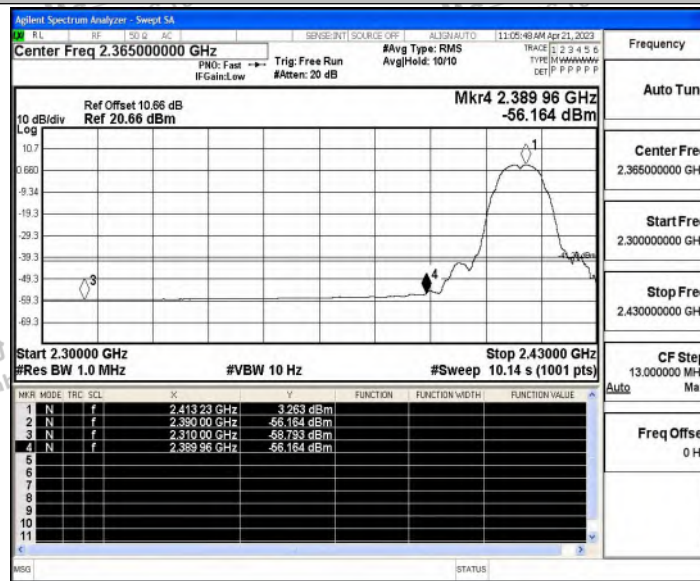
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.



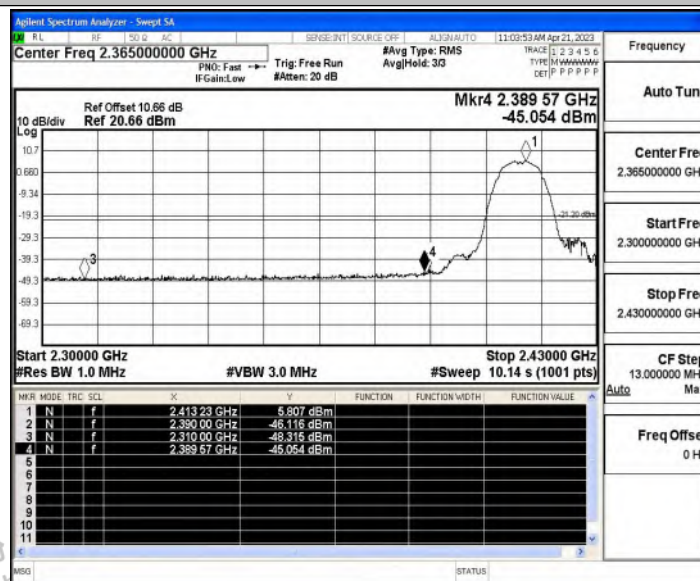


Test Graphs

11B_Ant1_Low_2412_AV

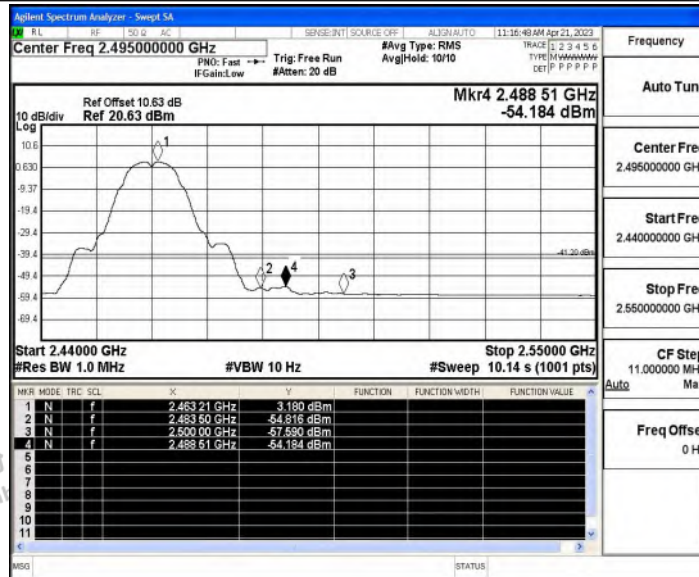


11B_Ant1_Low_2412_Peak

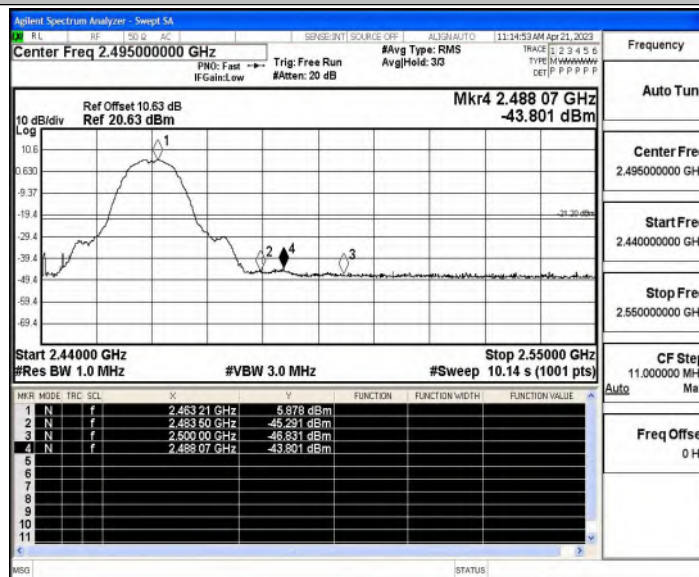


11B_Ant1_High_2462_AV

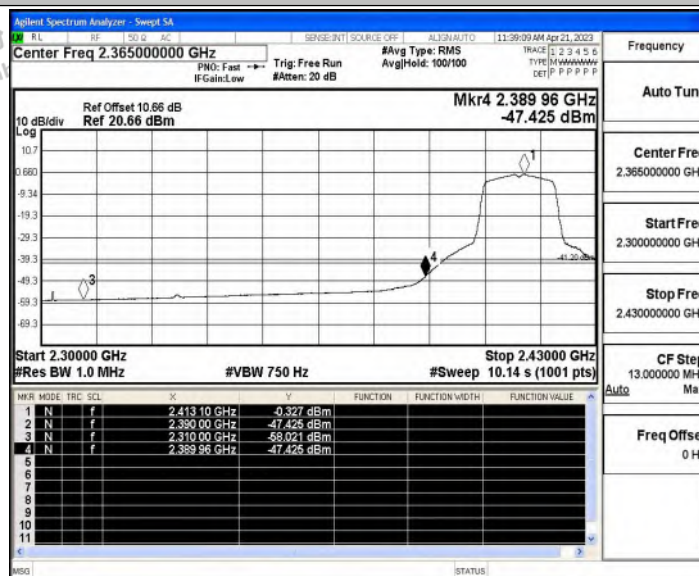




11B_Ant1_High_2462_Peak

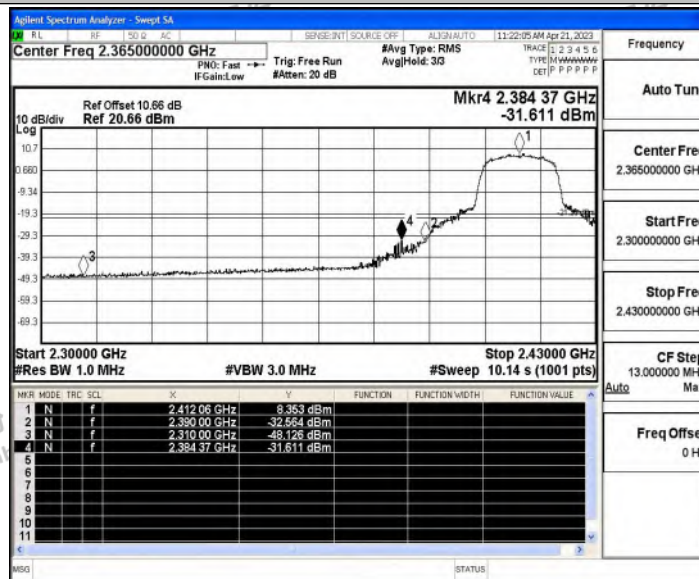


11G_Ant1_Low_2412_AV

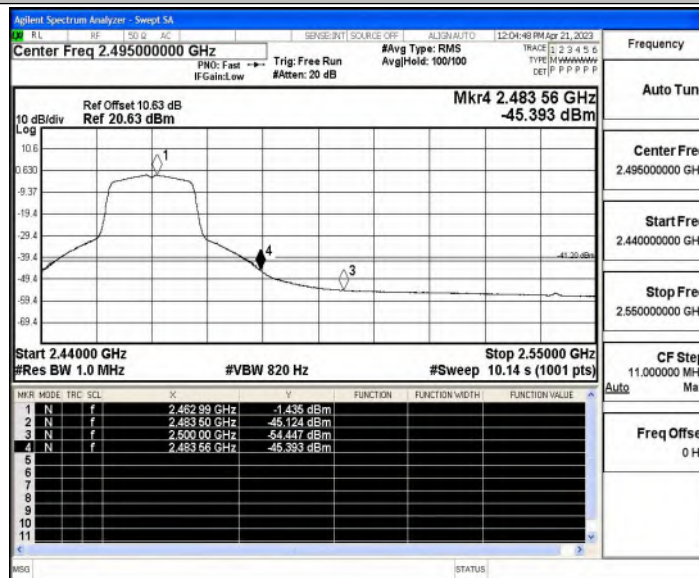




11G_Ant1_Low_2412_Peak



11G_Ant1_High_2462_AV



11G_Ant1_High_2462_Peak

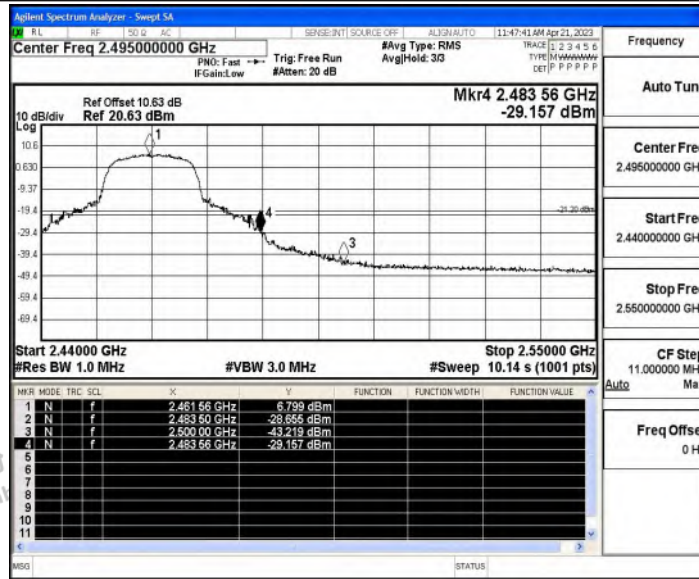


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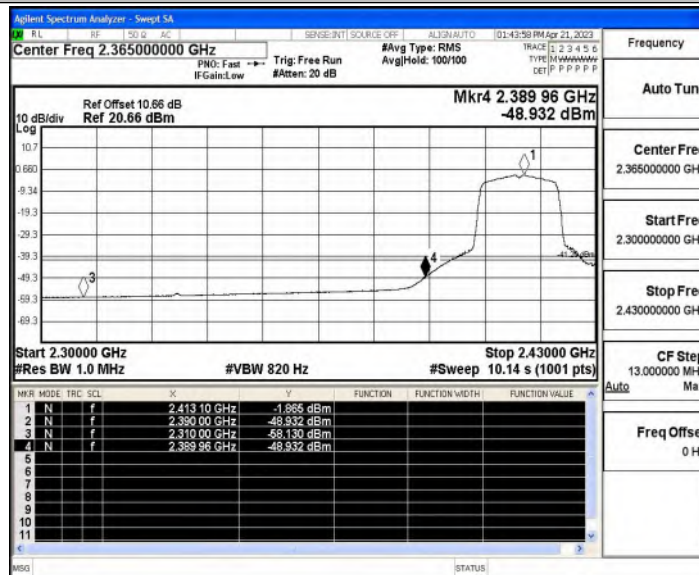
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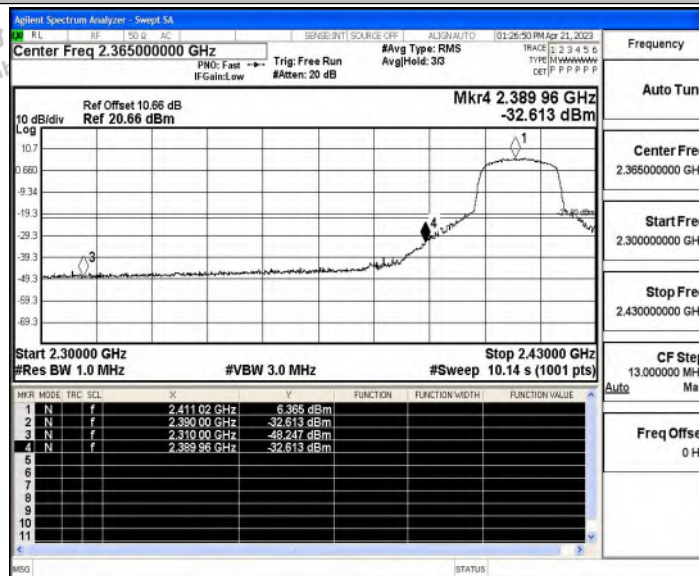
Scan code to check authenticity



11N20SISO_Ant1_Low_2412_AV

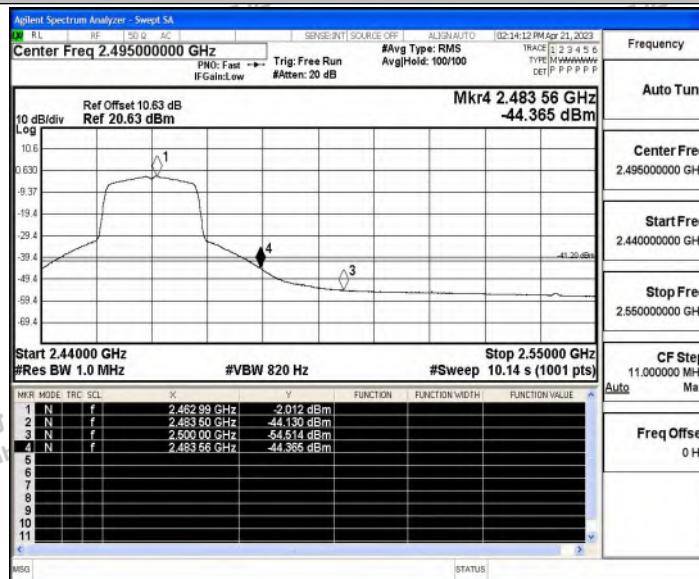


11N20SISO_Ant1_Low_2412_Peak

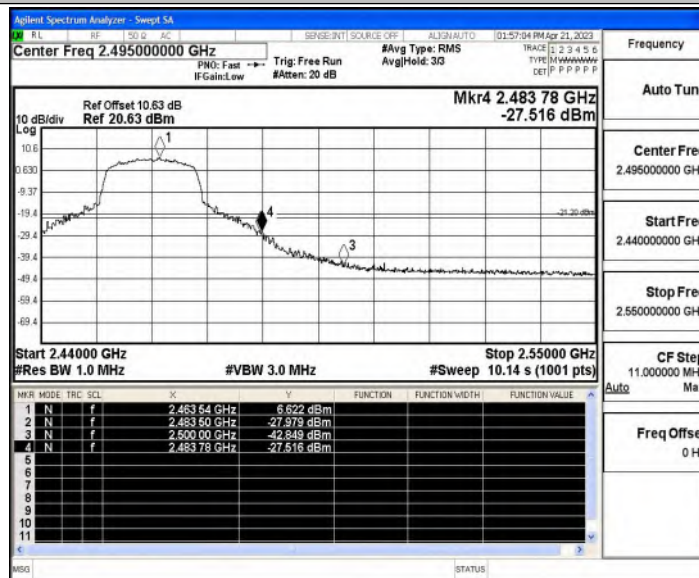




11N20SISO_Ant1_High_2462_AV



11N20SISO_Ant1_High_2462_Peak



11N40SISO_Ant1_Low_2422_AV

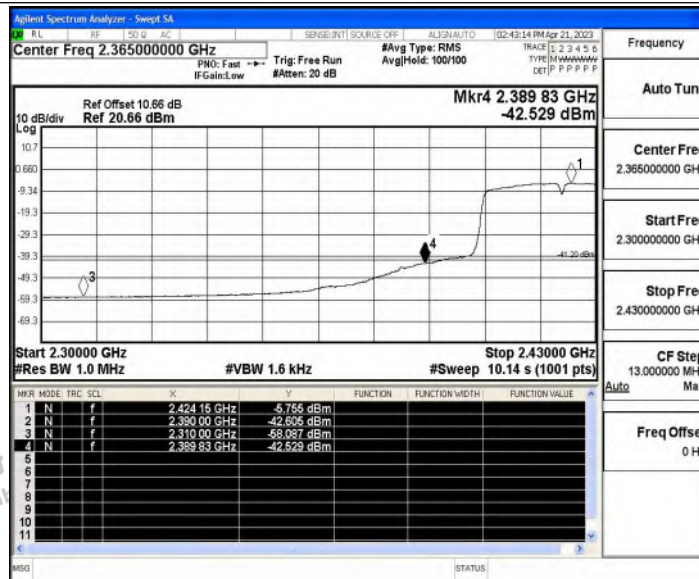


Shenzhen LCS Compliance Testing Laboratory Ltd.

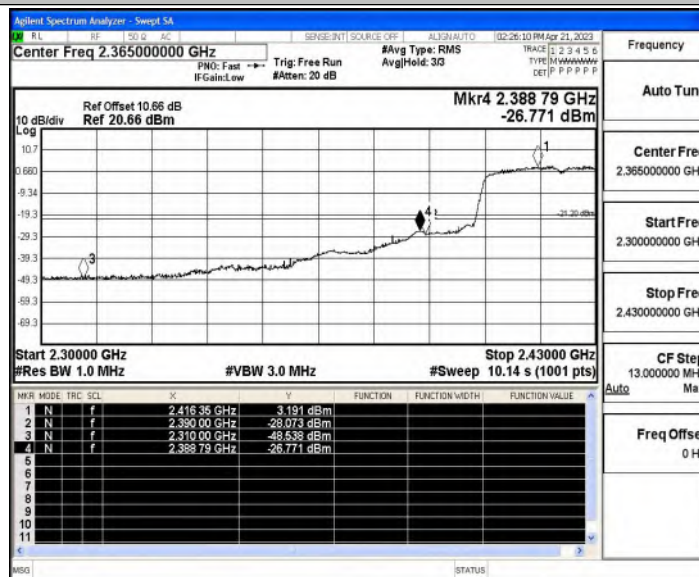
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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

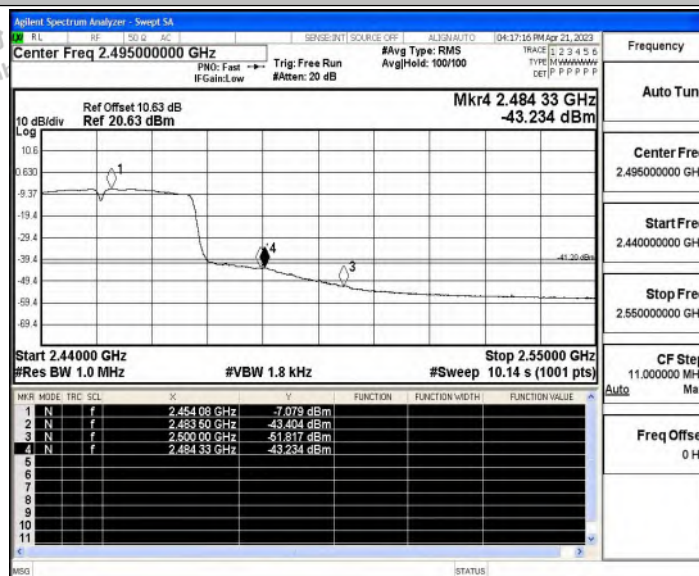
Scan code to check authenticity



11N40SISO_Ant1_Low_2422_Peak



11N40SISO_Ant1_High_2452_AV





11N40SISO_Ant1_High_2452_Peak

