

Appendix B: Test Results of WI-FI 2.4GHz Band

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Appendix B.1: Test Results of Frequency Tolerance

Test Result

TestCondition	TestMode	Antenna	Frequency [MHz]	Result[ppm]	Limit[ppm]	Verdict
NTNV	11B	Ant1	2412	-0.74627	±50	PASS
			2442	-0.73710	±50	PASS
			2472	-0.72816	±50	PASS
	11N20SISO	Ant1	2412	-0.74627	±50	PASS
			2442	-0.73710	±50	PASS
			2472	-0.72816	±50	PASS
	11N40SISO	Ant1	2422	-0.74319	±50	PASS
			2442	-0.73710	±50	PASS
			2462	-0.73111	±50	PASS
	11G	Ant1	2412	-0.74627	±50	PASS
			2442	-0.73710	±50	PASS
			2472	-0.72816	±50	PASS

Appendix B.2: Test Results of Antenna Power

Test Result

Test Mode	Antenna	Frequency [MHz]	Result (dBm/MHz)	Result (mW/ MHz)	Limit (mW/ MHz)	Verdict
11B	Ant1	2412	2.73	1.8750	≤10	PASS
		2442	5.75	3.7584	≤10	PASS
		2472	2.20	1.6596	≤10	PASS
11G	Ant1	2412	0.91	1.2331	≤10	PASS
		2442	0.74	1.1858	≤10	PASS
		2472	0.99	1.2560	≤10	PASS
11N20SISO	Ant1	2412	0.67	1.1668	≤10	PASS
		2442	0.51	1.1246	≤10	PASS
		2472	0.56	1.1376	≤10	PASS
11N40SISO	Ant1	2422	0.89	1.2274	≤5	PASS
		2442	0.50	1.1220	≤5	PASS
		2462	0.34	1.0814	≤5	PASS

Test Mode	Antenna	Frequency [MHz]	Power (mW/MHz)	RatedPower (mW/ MHz)	Result (%)	Limit (%)	Verdict
11B	Ant1	2412	1.8750	7	-73.21	+20	PASS
		2442	3.7584	7	-46.31	+20	PASS
		2472	1.6596	7	-76.29	+20	PASS
11G	Ant1	2412	1.2331	5	-75.34	+20	PASS
		2442	1.1858	5	-76.28	+20	PASS
		2472	1.2560	5	-74.88	+20	PASS
11N20SISO	Ant1	2412	1.1668	5	-76.66	+20	PASS
		2442	1.1246	5	-77.51	+20	PASS
		2472	1.1376	5	-77.25	+20	PASS
11N40SISO	Ant1	2422	1.2274	5	-75.45	+20	PASS
		2442	1.1220	5	-77.56	+20	PASS
		2462	1.0814	5	-78.37	+20	PASS

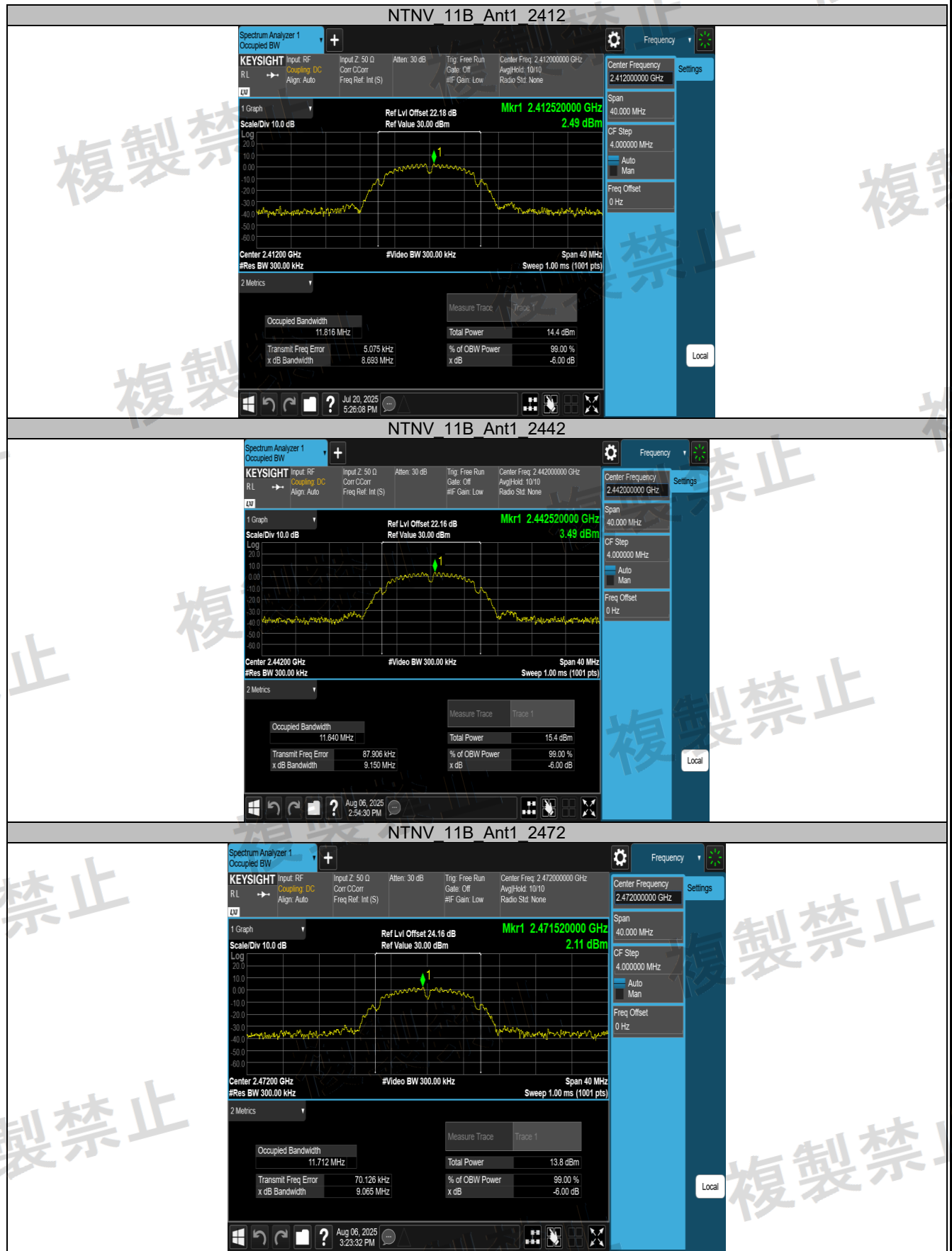
Test Mode	Antenna	Frequency [MHz]	Result (dBm/MHz)	EIRP (dBm/MHz)	Limit (dBm/MHz)	Verdict
11B	Ant1	2412	2.73	5.73	≤12.14	PASS
		2442	5.75	8.75	≤12.14	PASS
		2472	2.20	5.20	≤12.14	PASS
11G	Ant1	2412	0.91	3.91	≤12.14	PASS
		2442	0.74	3.74	≤12.14	PASS
		2472	0.99	3.99	≤12.14	PASS
11N20SISO	Ant1	2412	0.67	3.67	≤12.14	PASS
		2442	0.51	3.51	≤12.14	PASS
		2472	0.56	3.56	≤12.14	PASS
11N40SISO	Ant1	2422	0.89	3.89	≤9.13	PASS
		2442	0.50	3.50	≤9.13	PASS
		2462	0.34	3.34	≤9.13	PASS

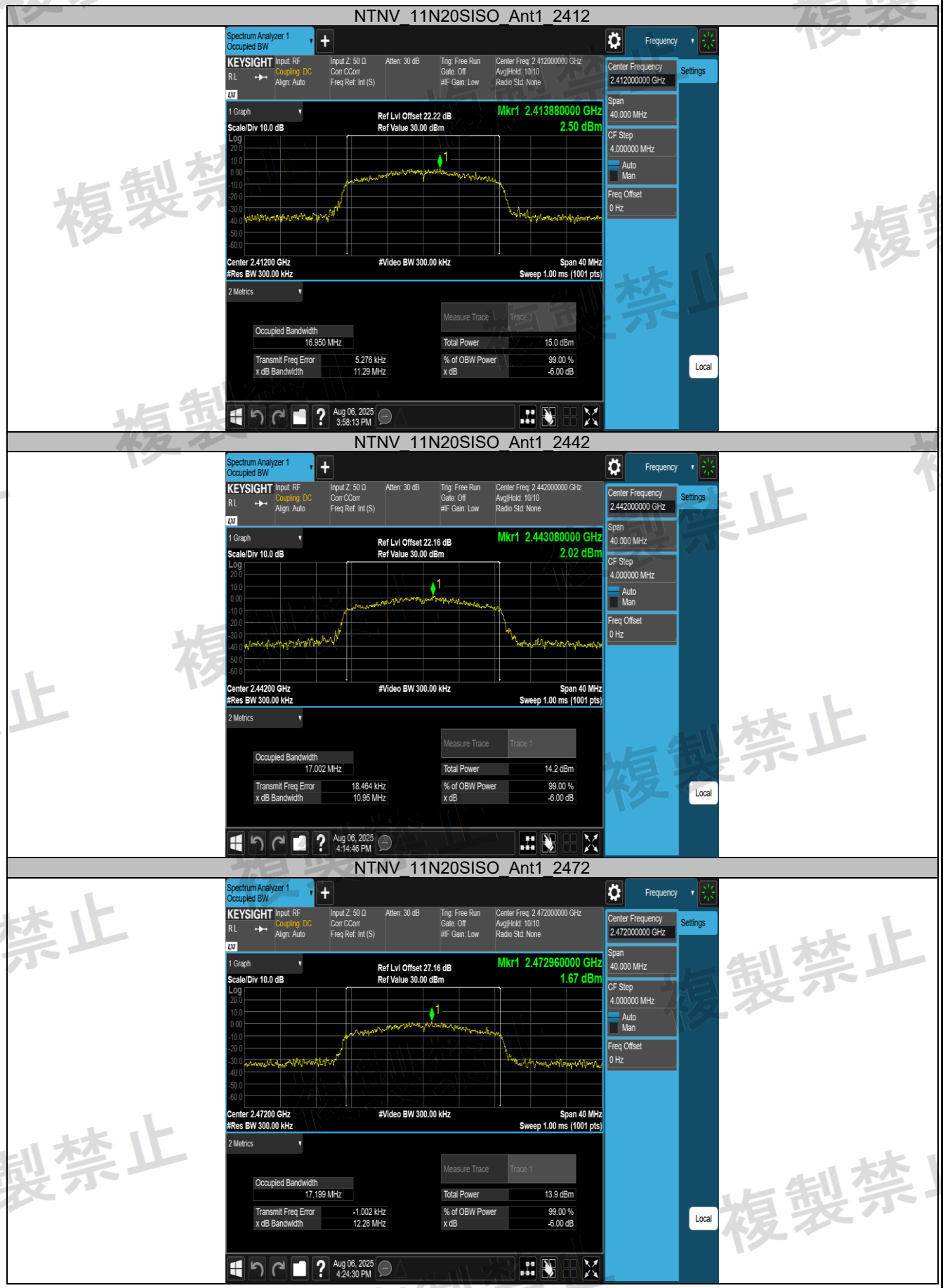
Appendix B.3: Test Results of Occupied Channel Bandwidth (99%)

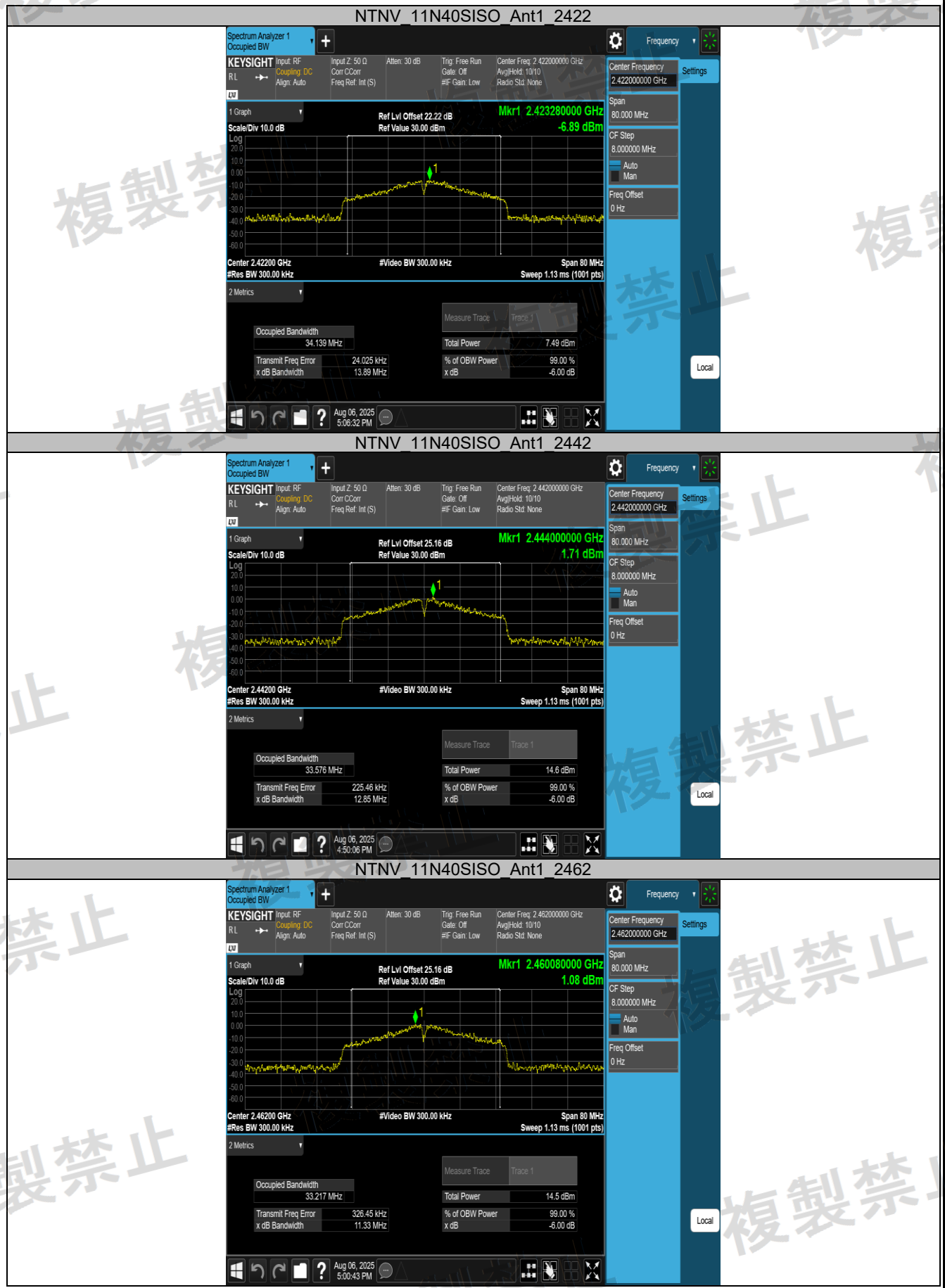
Test Result

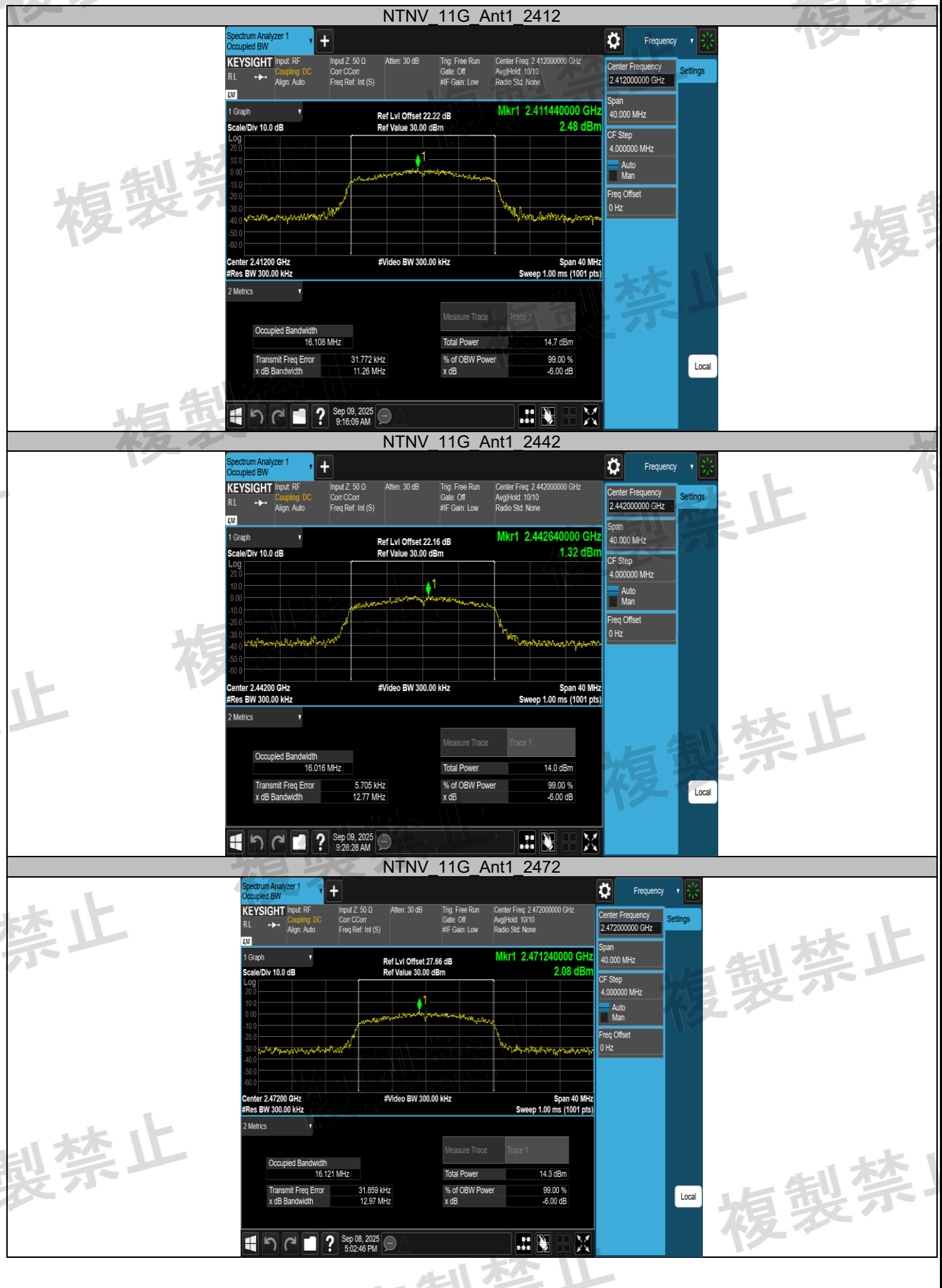
TestMode	Antenna	Frequency[MHz]	Result [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	11.816	≤26	PASS
		2442	11.640	≤26	PASS
		2472	11.712	≤26	PASS
11N20SISO	Ant1	2412	16.950	≤26	PASS
		2442	17.002	≤26	PASS
		2472	17.199	≤26	PASS
11N40SISO	Ant1	2422	34.139	26-40	PASS
		2442	33.576	26-40	PASS
		2462	33.217	26-40	PASS
11G	Ant1	2412	16.108	≤26	PASS
		2442	16.016	≤26	PASS
		2472	16.121	≤26	PASS

Test Graphs







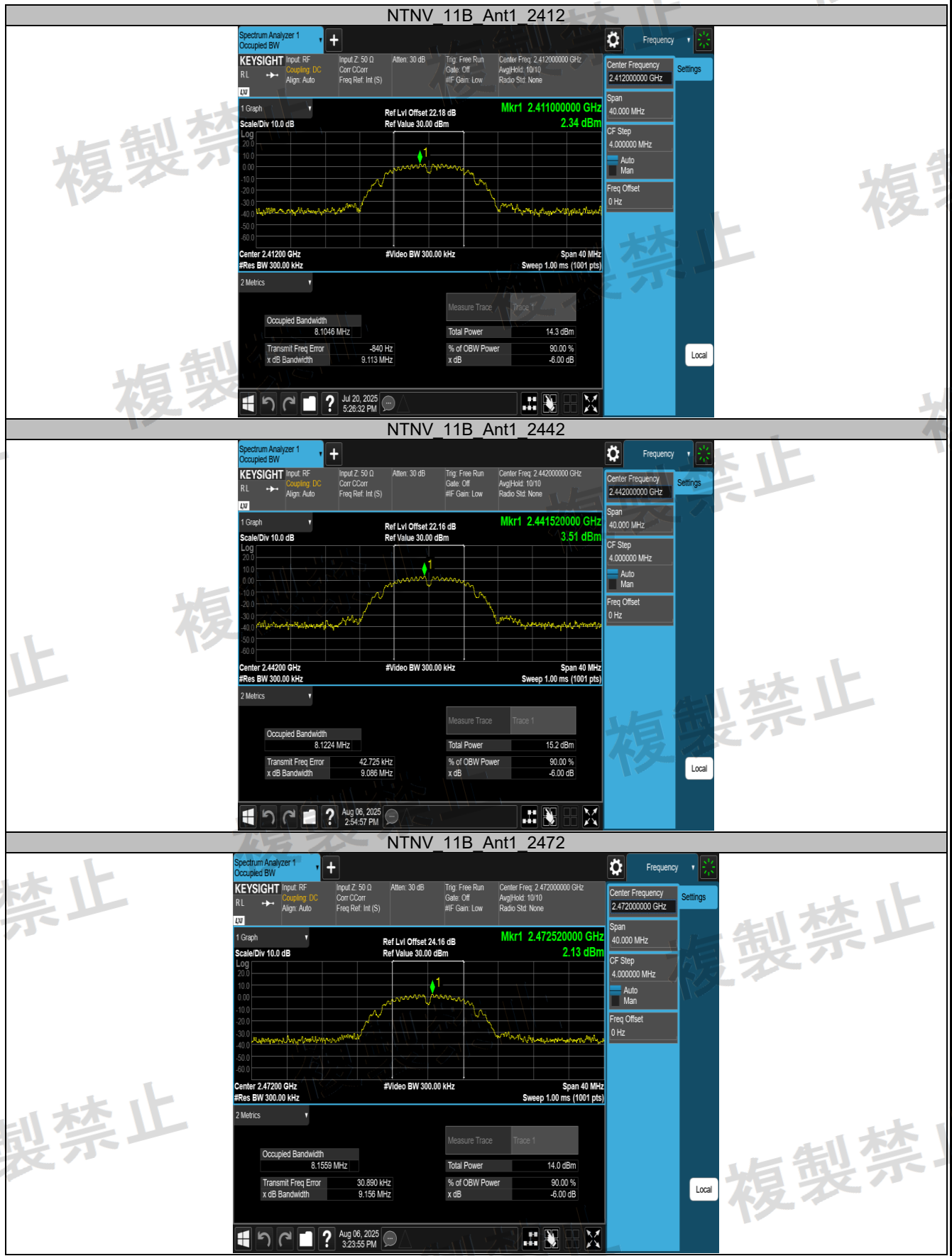


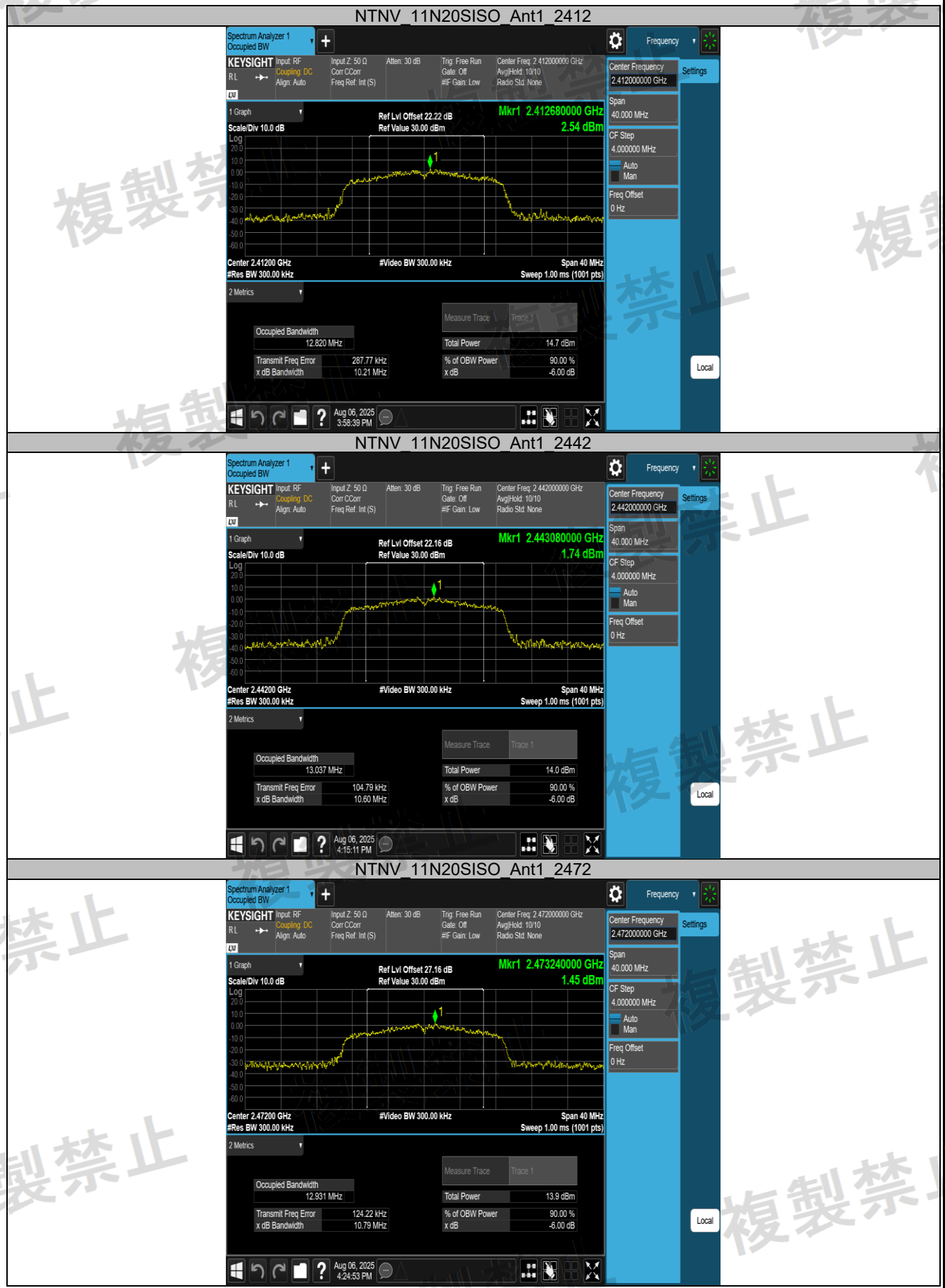
Appendix B.4: Test Results of Spread Bandwidth (90%)

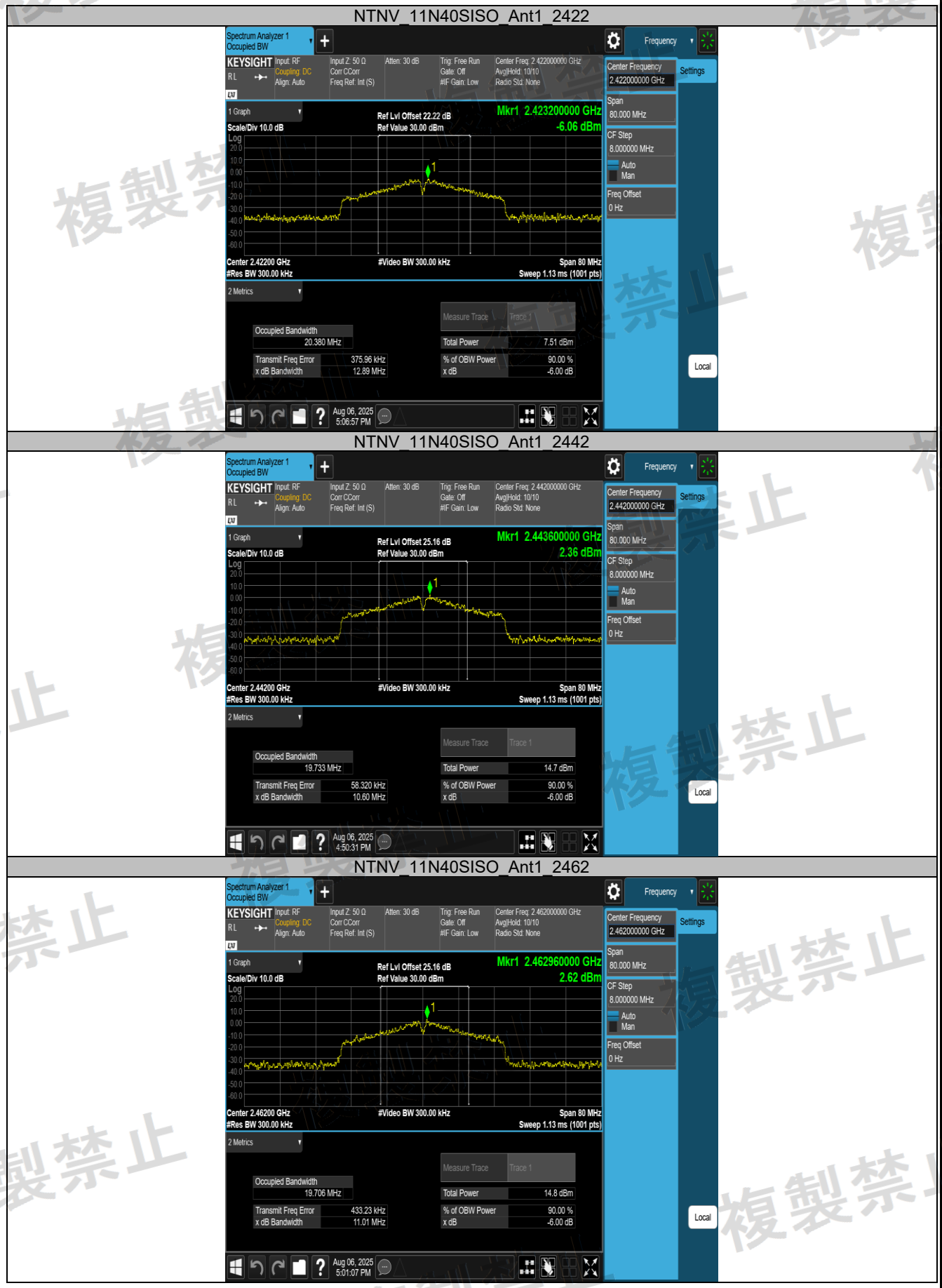
Test Result

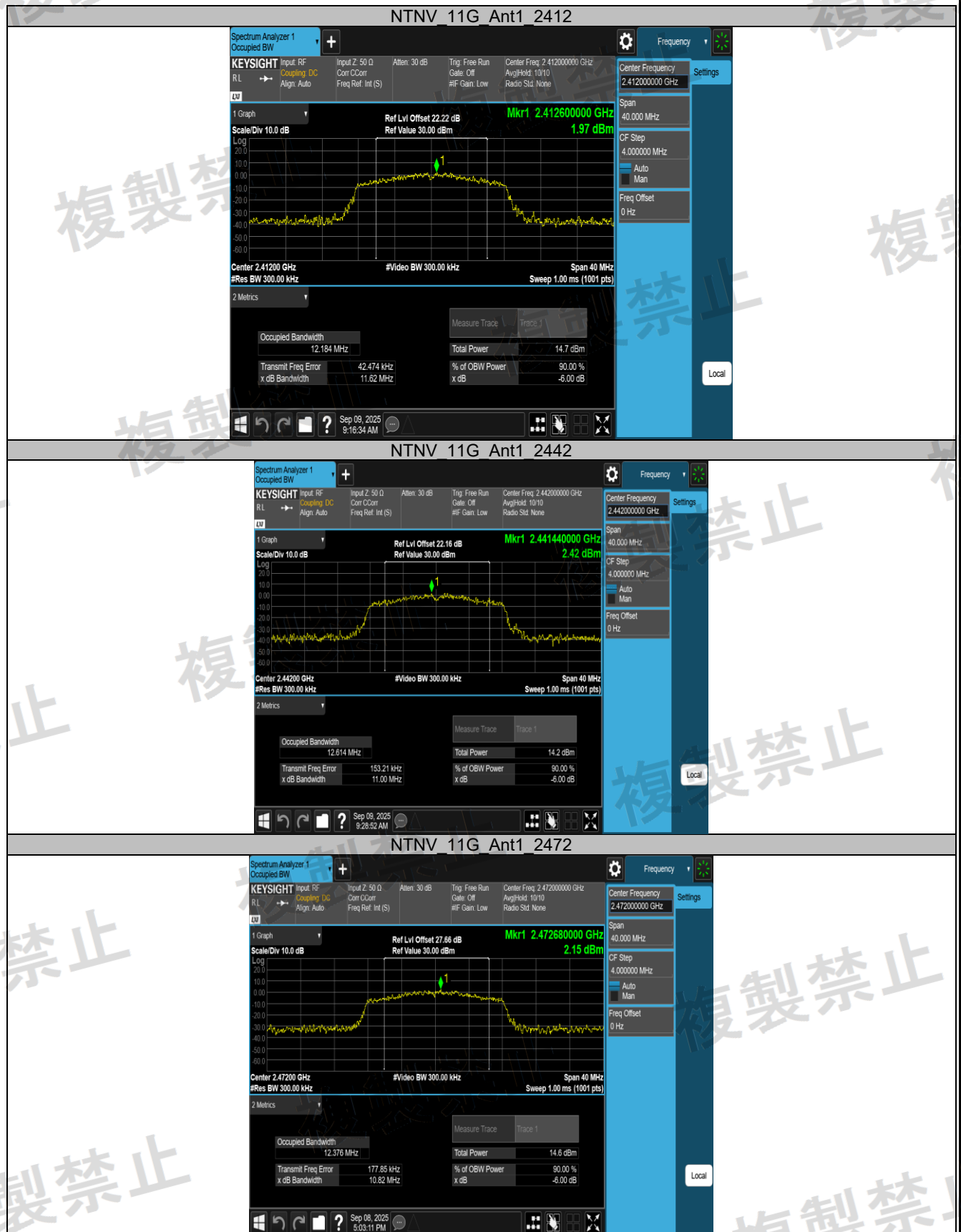
TestCondition	TestMode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Spread Factor	Limit	Verdict
NTNV	11B	Ant1	2412	8.105	≥0.5	5.895	>5	PASS
			2442	8.122	≥0.5	5.907	>5	PASS
			2472	8.156	≥0.5	5.932	>5	PASS
	11N20SISO	Ant1	2412	12.820	≥0.5	---	---	PASS
			2442	13.037	≥0.5	---	---	PASS
			2472	12.931	≥0.5	---	---	PASS
	11N40SISO	Ant1	2422	20.380	≥0.5	---	---	PASS
			2442	19.733	≥0.5	---	---	PASS
			2462	19.706	≥0.5	---	---	PASS
	11G	Ant1	2412	12.184	≥0.5	---	---	PASS
			2442	12.614	≥0.5	---	---	PASS
			2472	12.376	≥0.5	---	---	PASS

Test Graphs









Appendix B.5: Test Results of Spurious Emissions for Transmitter

Test Result

Test Condition	Test Mode	Antenna	Frequency [MHz]	Freq. Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	11B	Ant1	2412	30~500	435.85	-45.45	≤-26	0.02851	≤2.5	PASS
				500~1000	866.50	-44.49	≤-26	0.03556	≤2.5	PASS
				1000~2387	2374.52	-41.78	≤-26	0.06637	≤2.5	PASS
				2387~2400	2399.28	-31.63	≤-16	0.68707	≤25	PASS
				2483.5~2496.5	2487.36	-31.65	≤-16	0.68391	≤25	PASS
				2496.5~13000	3850.40	-38.56	≤-26	0.13932	≤2.5	PASS
			2442	30~500	104.38	-45.21	≤-26	0.03013	≤2.5	PASS
				500~1000	809.00	-44.97	≤-26	0.03184	≤2.5	PASS
				1000~2387	2339.50	-41.91	≤-26	0.06442	≤2.5	PASS
				2387~2400	2392.54	-32.40	≤-16	0.57544	≤25	PASS
				2483.5~2496.5	2485.95	-32.52	≤-16	0.55976	≤25	PASS
				2496.5~13000	3760.07	-38.08	≤-26	0.15560	≤2.5	PASS
			2472	30~500	447.95	-43.68	≤-26	0.04285	≤2.5	PASS
				500~1000	970.75	-42.76	≤-26	0.05297	≤2.5	PASS
				1000~2387	2335.33	-39.77	≤-26	0.10544	≤2.5	PASS
				2387~2400	2393.00	-30.61	≤-16	0.86896	≤25	PASS
				2483.5~2496.5	2483.56	-29.69	≤-16	1.07399	≤25	PASS
				2496.5~13000	3789.48	-36.41	≤-26	0.22856	≤2.5	PASS
	11N20 SISO	Ant1	2412	30~500	441.49	-45.44	≤-26	0.02858	≤2.5	PASS
				500~1000	839.75	-45.03	≤-26	0.03141	≤2.5	PASS
				1000~2387	2013.20	-41.85	≤-26	0.06531	≤2.5	PASS
				2387~2400	2399.96	-16.83	≤-16	20.74914	≤25	PASS
				2483.5~2496.5	2491.74	-32.27	≤-16	0.59293	≤25	PASS
				2496.5~13000	3727.51	-38.39	≤-26	0.14488	≤2.5	PASS
			2442	30~500	461.58	-45.05	≤-26	0.03126	≤2.5	PASS
				500~1000	898.63	-44.60	≤-26	0.03467	≤2.5	PASS
				1000~2387	2283.67	-42.16	≤-26	0.06081	≤2.5	PASS
				2387~2400	2387.08	-32.72	≤-16	0.53456	≤25	PASS
				2483.5~2496.5	2493.89	-32.34	≤-16	0.58345	≤25	PASS
				2496.5~13000	3781.60	-39.55	≤-26	0.11092	≤2.5	PASS
			2472	30~500	441.72	-39.65	≤-26	0.10839	≤2.5	PASS
				500~1000	927.63	-39.92	≤-26	0.10186	≤2.5	PASS
				1000~2387	2340.54	-37.62	≤-26	0.17298	≤2.5	PASS
				2387~2400	2391.95	-27.59	≤-16	1.74181	≤25	PASS
				2483.5~2496.5	2483.58	-17.93	≤-16	16.10646	≤25	PASS
				2496.5~13000	3810.49	-33.72	≤-26	0.42462	≤2.5	PASS
	11N40 SISO	Ant1	2422	30~500	469.22	-42.58	≤-26	0.05521	≤2.5	PASS
				500~1000	894.00	-41.80	≤-26	0.06607	≤2.5	PASS
				1000~2387	2353.02	-39.31	≤-26	0.11722	≤2.5	PASS
				2387~2400	2399.66	-27.03	≤-16	1.98153	≤25	PASS
				2483.5~2496.5	2495.79	-29.44	≤-16	1.13763	≤25	PASS
				2496.5~13000	3740.11	-36.02	≤-26	0.25003	≤2.5	PASS
			2442	30~500	449.71	-42.03	≤-26	0.06266	≤2.5	PASS



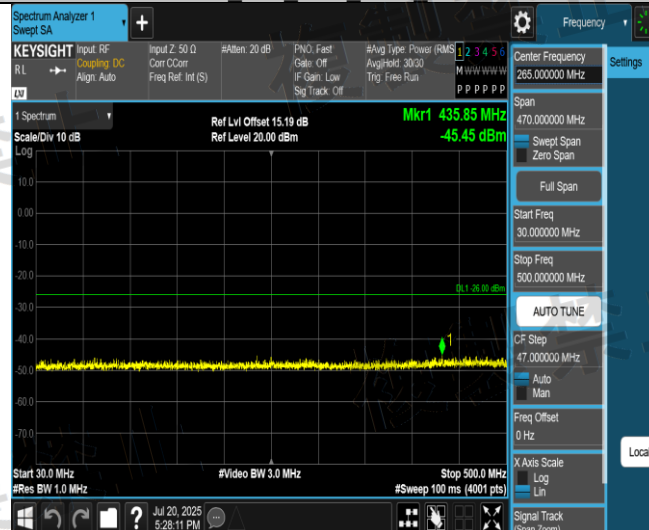
				500~1000	865.50	-41.68	≤-26	0.06792	≤2.5	PASS
				1000~2387	2279.85	-39.43	≤-26	0.11402	≤2.5	PASS
				2387~2400	2397.60	-29.48	≤-16	1.12720	≤25	PASS
				2483.5~2496.5	2492.05	-29.02	≤-16	1.25314	≤25	PASS
				2496.5~13000	3880.34	-35.30	≤-26	0.29512	≤2.5	PASS
			2462	30~500	468.28	-41.67	≤-26	0.06808	≤2.5	PASS
				500~1000	855.75	-41.71	≤-26	0.06745	≤2.5	PASS
				1000~2387	2367.58	-39.71	≤-26	0.10691	≤2.5	PASS
				2387~2400	2394.30	-29.70	≤-16	1.07152	≤25	PASS
				2483.5~2496.5	2484.49	-25.70	≤-16	2.69153	≤25	PASS
				2496.5~13000	3731.19	-35.15	≤-26	0.30549	≤2.5	PASS

TestCondi on	TestMode	Antenna	Frequency [MHz]	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	11G	Ant1	2412	30~500	458.99	-45.47	≤-26	0.02838	≤2.5	PASS
				500~1000	771.75	-45.17	≤-26	0.03041	≤2.5	PASS
				1000~2387	2366.54	-42.24	≤-26	0.05970	≤2.5	PASS
				2387~2400	2400.00	-19.39	≤-16	11.5080	≤25	PASS
				2483.5~2496.5	2488.15	-32.13	≤-16	0.61235	≤25	PASS
				2496.5~13000	3924.45	-39.02	≤-26	0.12531	≤2.5	PASS
			2442	30~500	498.12	-46.11	≤-26	0.02449	≤2.5	PASS
				500~1000	926.88	-45.38	≤-26	0.02897	≤2.5	PASS
				1000~2387	2369.66	-41.98	≤-26	0.06339	≤2.5	PASS
				2387~2400	2389.36	-32.17	≤-16	0.60674	≤25	PASS
				2483.5~2496.5	2488.82	-31.52	≤-16	0.70469	≤25	PASS
				2496.5~13000	3789.48	-39.40	≤-26	0.11482	≤2.5	PASS
			2472	30~500	476.50	-39.98	≤-26	0.10046	≤2.5	PASS
				500~1000	863.38	-38.71	≤-26	0.13459	≤2.5	PASS
				1000~2387	2344.70	-36.05	≤-26	0.24831	≤2.5	PASS
				2387~2400	2396.08	-26.31	≤-16	2.33884	≤25	PASS
				2483.5~2496.5	2483.62	-19.28	≤-16	11.80321	≤25	PASS
				2496.5~13000	3809.96	-33.46	≤-26	0.45082	≤2.5	PASS

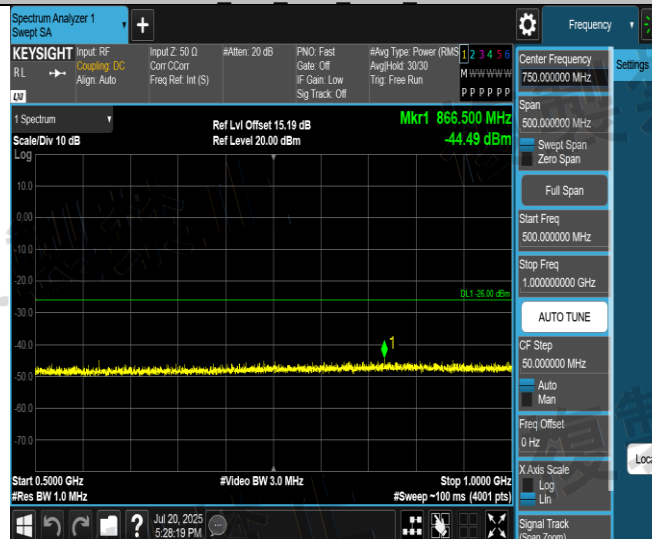


Test Graphs

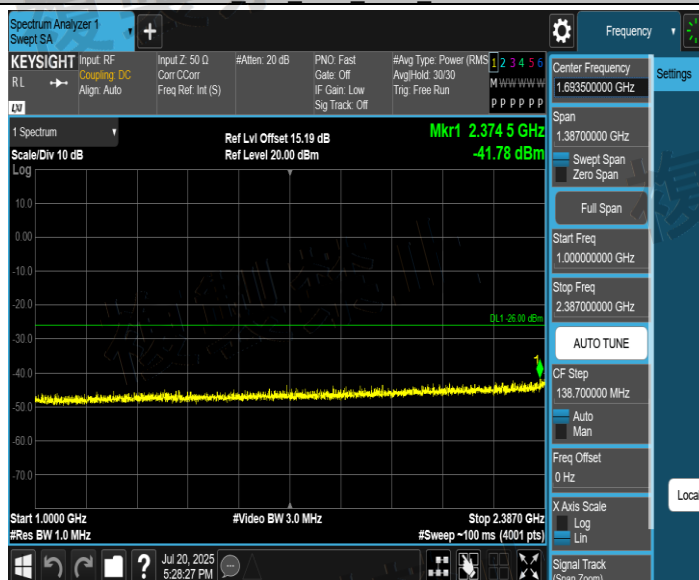
NTNV 11B Ant1 2412 30~500



NTNV 11B Ant1 2412 500~1000



NTNV 11B Ant1 2412 1000~2387

















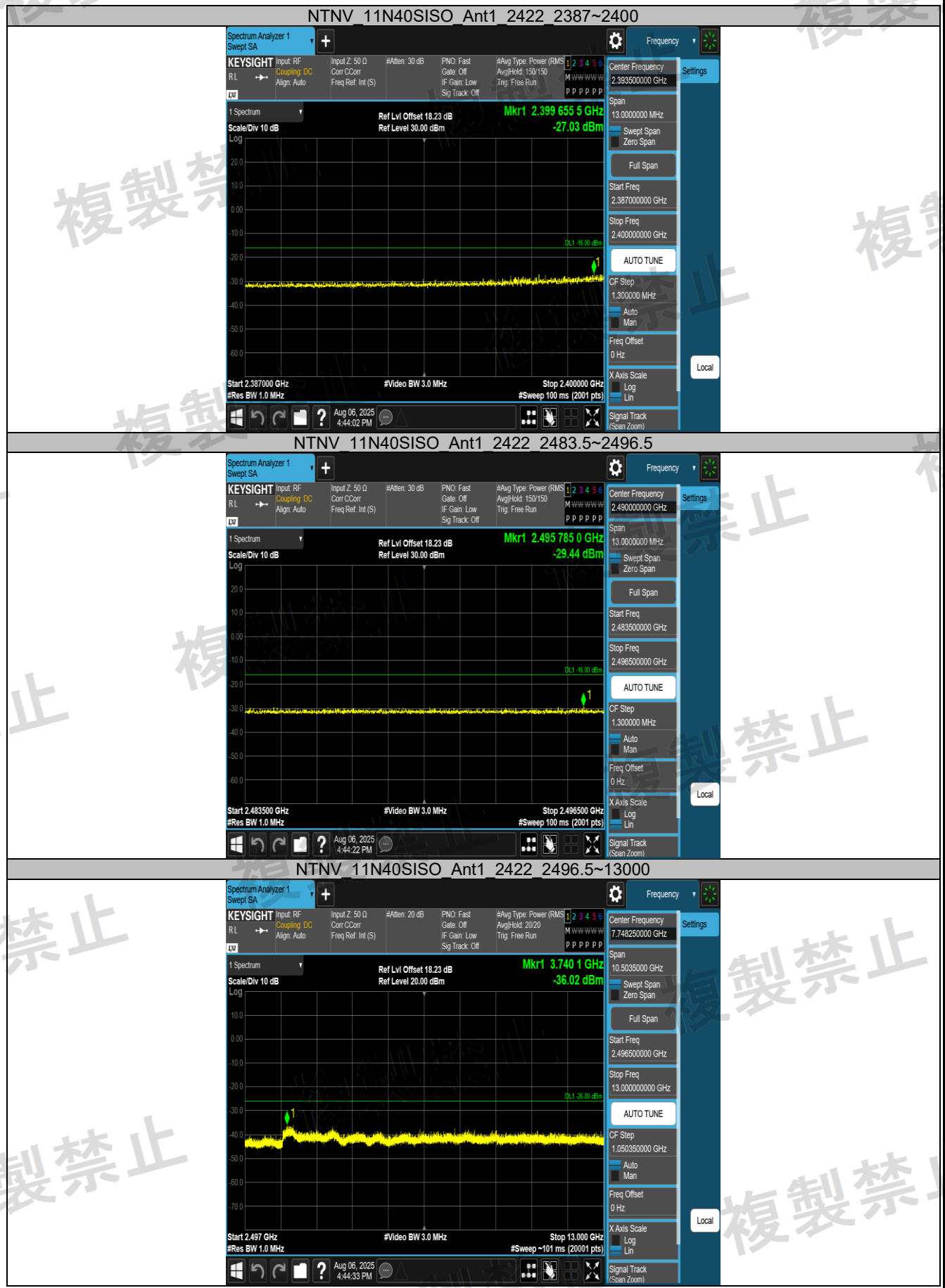












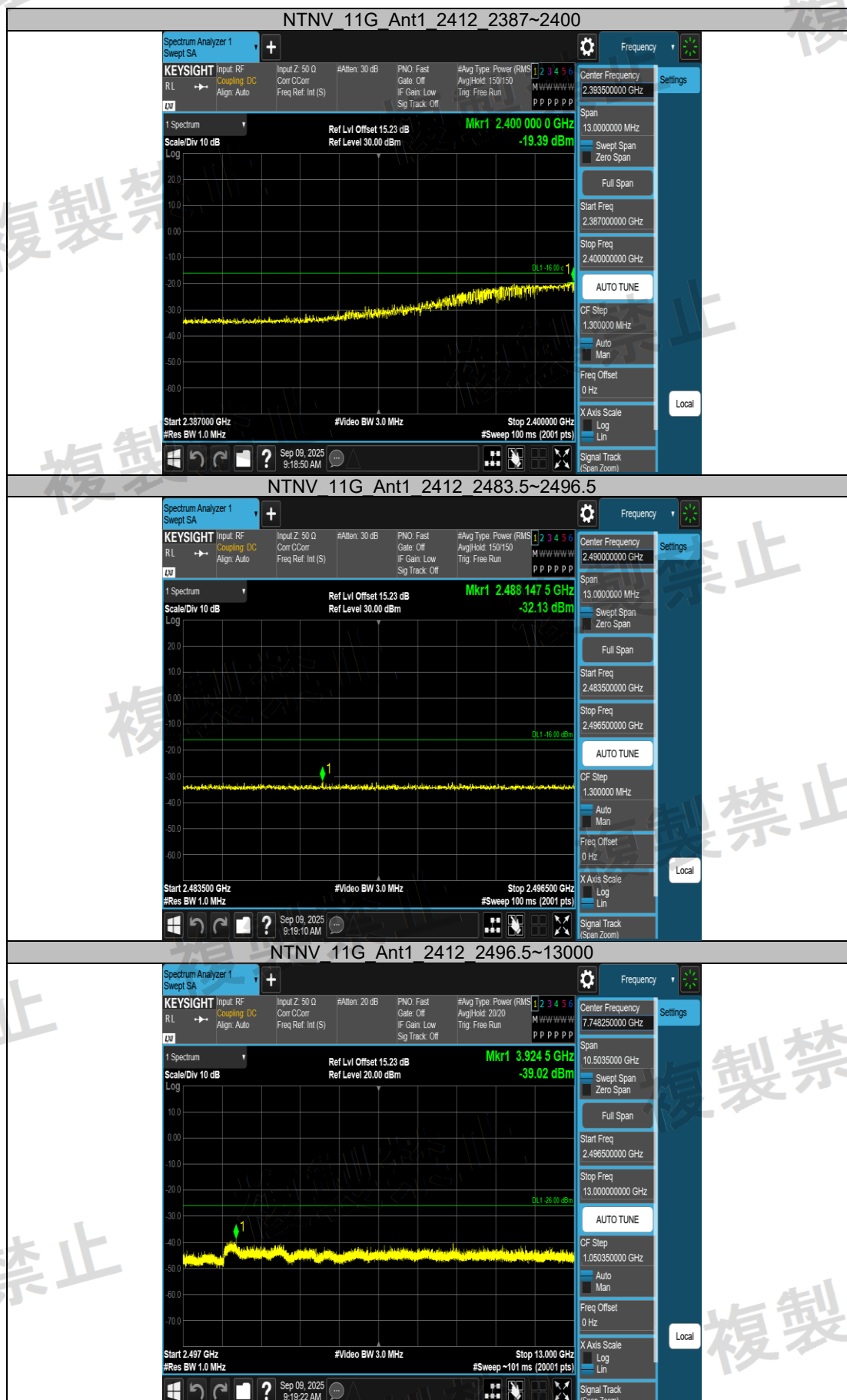








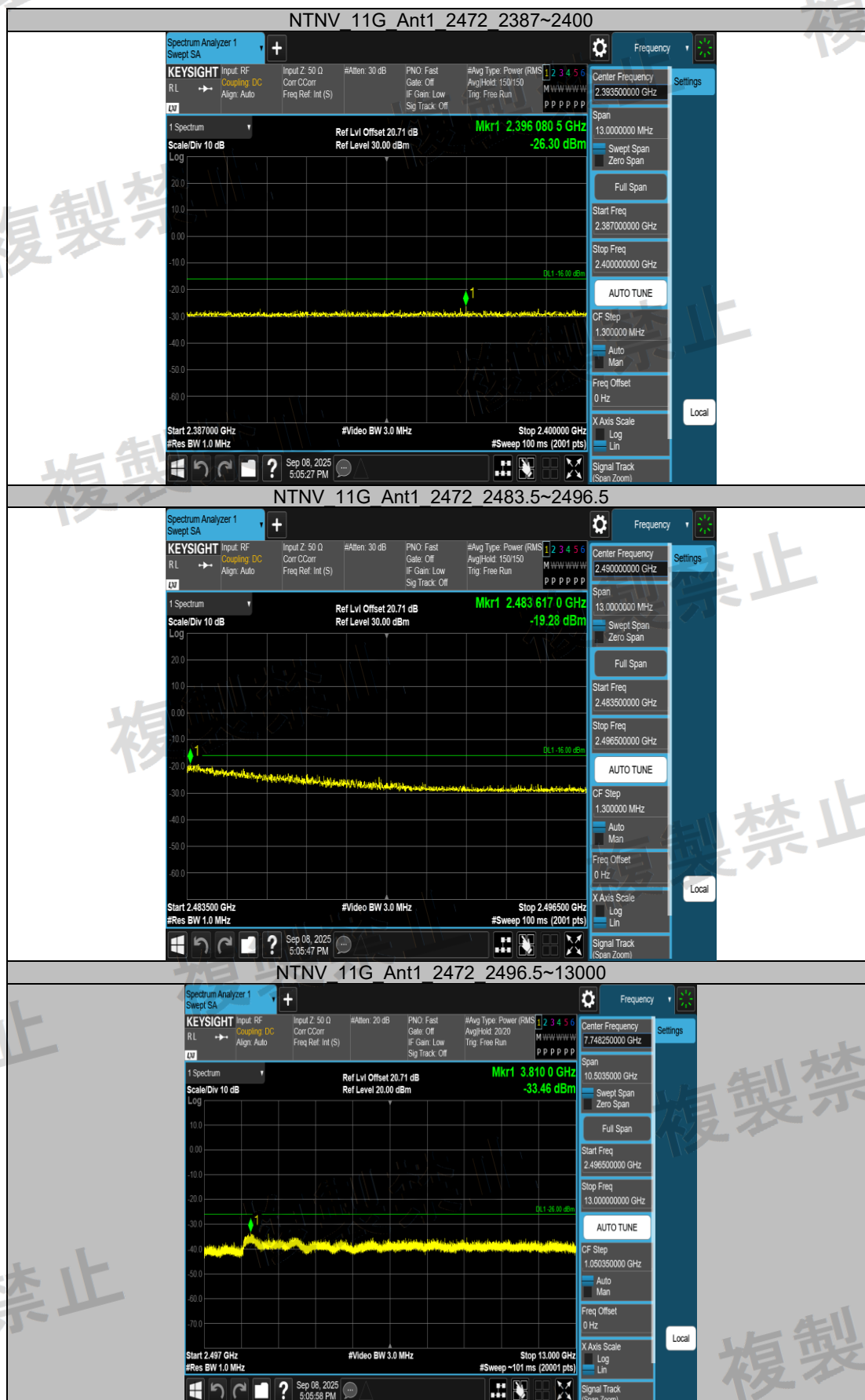












Appendix B.6: Test Results of Spurious Emissions for Receiver

Test Result

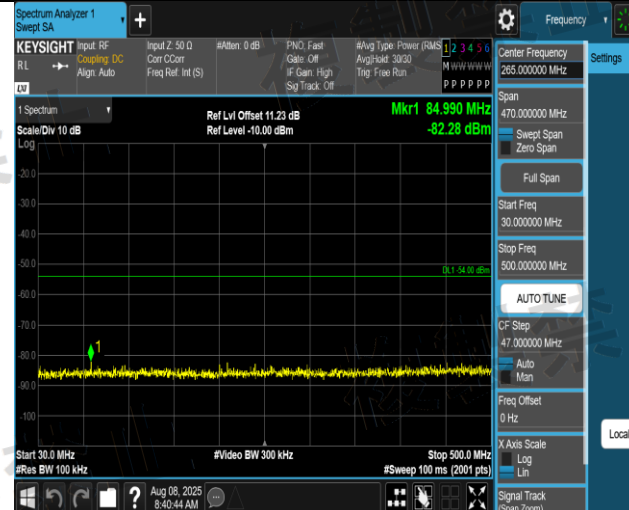
Test Condition	Test Mode	Antenna	Frequency [MHz]	Freq. Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	11B	Ant1	2412	30~500	84.99	-82.28	≤-54	0.00592	≤4	PASS
				500~1000	885.50	-81.40	≤-54	0.00724	≤4	PASS
				1000~12500	3892.25	-63.93	≤-47	0.40458	≤20	PASS
			2442	30~500	476.27	-82.41	≤-54	0.00574	≤4	PASS
				500~1000	746.75	-81.68	≤-54	0.00679	≤4	PASS
				1000~12500	3796.23	-63.64	≤-47	0.43251	≤20	PASS
			2472	30~500	242.68	-82.53	≤-54	0.00558	≤4	PASS
				500~1000	983.00	-81.82	≤-54	0.00658	≤4	PASS
				1000~12500	3701.35	-64.07	≤-47	0.39174	≤20	PASS
	11N20 SISO	Ant1	2412	30~500	281.45	-82.01	≤-54	0.00630	≤4	PASS
				500~1000	935.25	-81.94	≤-54	0.00640	≤4	PASS
				1000~12500	3842.23	-64.28	≤-47	0.37325	≤20	PASS
			2442	30~500	461.93	-82.82	≤-54	0.00522	≤4	PASS
				500~1000	723.75	-80.85	≤-54	0.00822	≤4	PASS
				1000~12500	3847.40	-62.88	≤-47	0.51523	≤20	PASS
			2472	30~500	202.26	-82.66	≤-54	0.00542	≤4	PASS
				500~1000	911.00	-81.45	≤-54	0.00716	≤4	PASS
				1000~12500	3811.75	-64.19	≤-47	0.38107	≤20	PASS
	11N40 SISO	Ant1	2422	30~500	450.42	-82.80	≤-54	0.00525	≤4	PASS
				500~1000	829.25	-80.41	≤-54	0.00910	≤4	PASS
				1000~12500	3743.90	-64.03	≤-47	0.39537	≤20	PASS
			2442	30~500	450.89	-82.66	≤-54	0.00542	≤4	PASS
				500~1000	881.50	-81.57	≤-54	0.00697	≤4	PASS
				1000~12500	3796.23	-63.60	≤-47	0.43652	≤20	PASS
			2462	30~500	218.24	-82.44	≤-54	0.00570	≤4	PASS
				500~1000	935.25	-81.17	≤-54	0.00764	≤4	PASS
				1000~12500	3868.10	-64.29	≤-47	0.37239	≤20	PASS

TestCondition	TestMode	Antenna	Frequency [MHz]	Freq. Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	11G	Ant1	2412	30~500	279.34	-78.37	≤-54	0.01455	≤4	PASS
				500~1000	632.00	-77.38	≤-54	0.01828	≤4	PASS
				1000~12500	3814.63	-59.36	≤-47	1.15878	≤20	PASS
			2442	30~500	462.64	-78.37	≤-54	0.01455	≤4	PASS
				500~1000	807.50	-77.69	≤-54	0.01702	≤4	PASS
				1000~12500	3763.45	-59.84	≤-47	1.03753	≤20	PASS
			2472	30~500	122.36	-77.70	≤-54	0.01698	≤4	PASS
				500~1000	839.75	-76.88	≤-54	0.02051	≤4	PASS
				1000~12500	3809.45	-58.83	≤-47	1.30918	≤20	PASS



Test Graphs

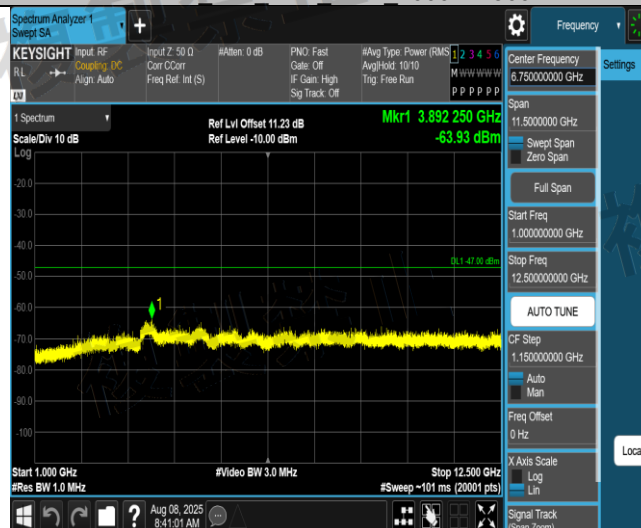
NTNV 11B Ant1 2412 30~500



NTNV 11B Ant1 2412 500~1000



NTNV 11B Ant1 2412 1000~12500

















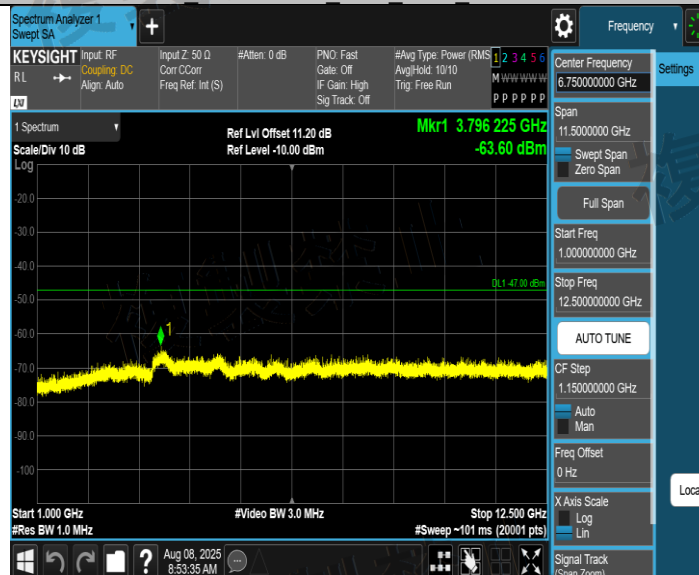
NTNV 11N40SISO Ant1 2442 30~500



NTNV 11N40SISO Ant1 2442 500~1000



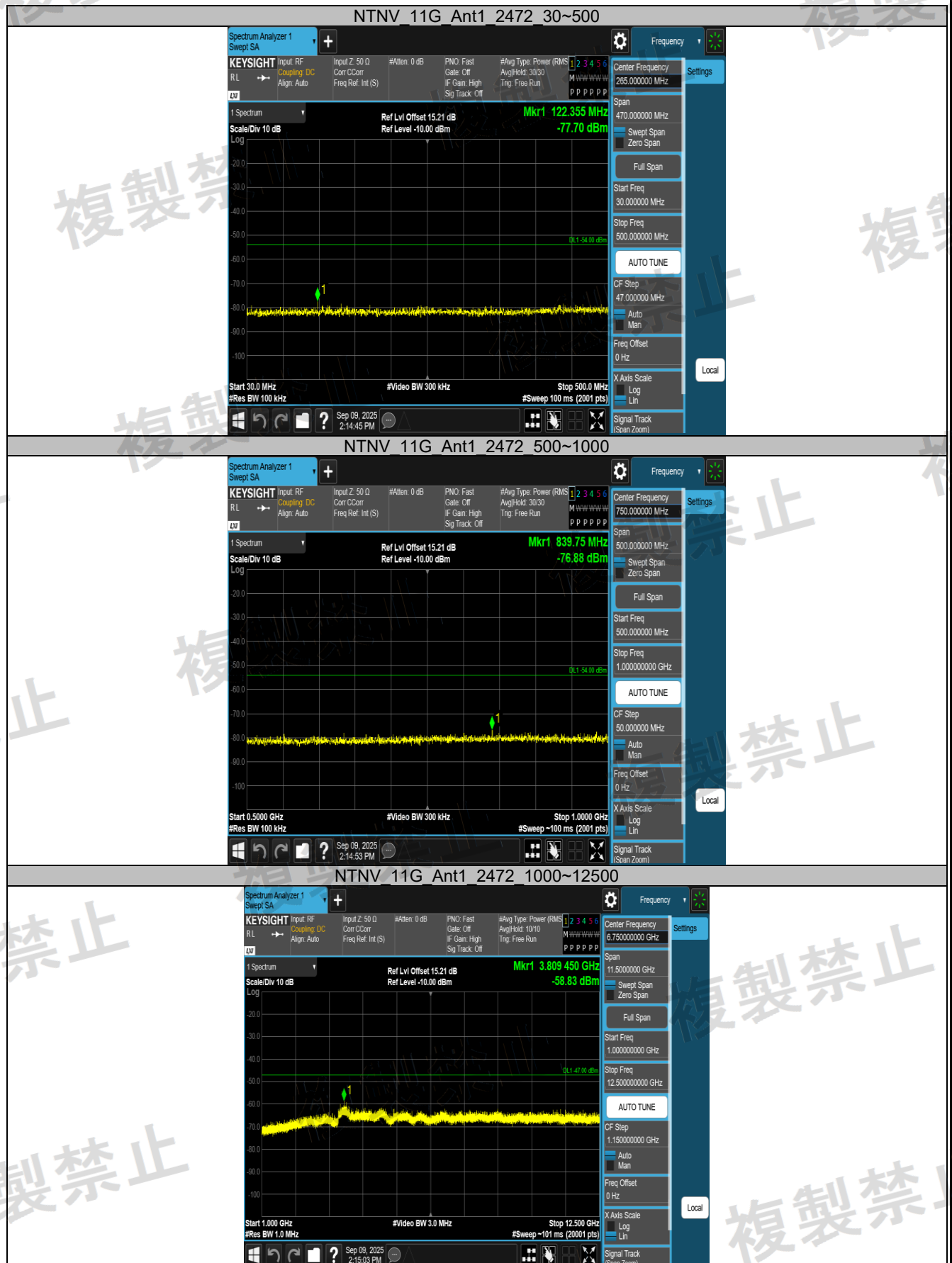
NTNV 11N40SISO Ant1 2442 1000~12500











Appendix B.7: Test Results of Carrier Sensing

Type	Test channel~	Result
802.11 b/g/n(HT20)/ n(HT40)	CHL, CHM, CHH	Acceptance