

Appendix: Bluetooth LE

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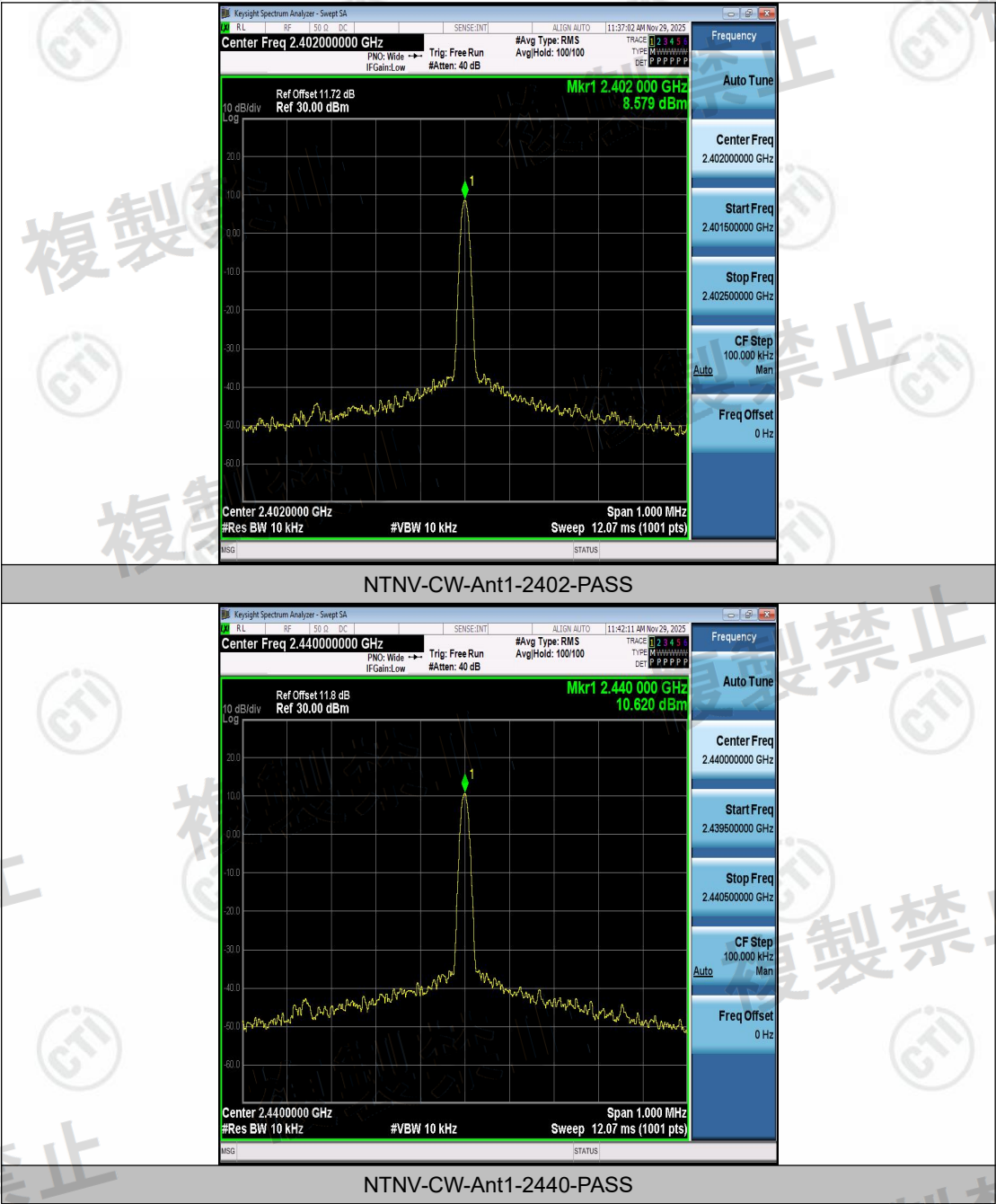
 Test Graphs.....40

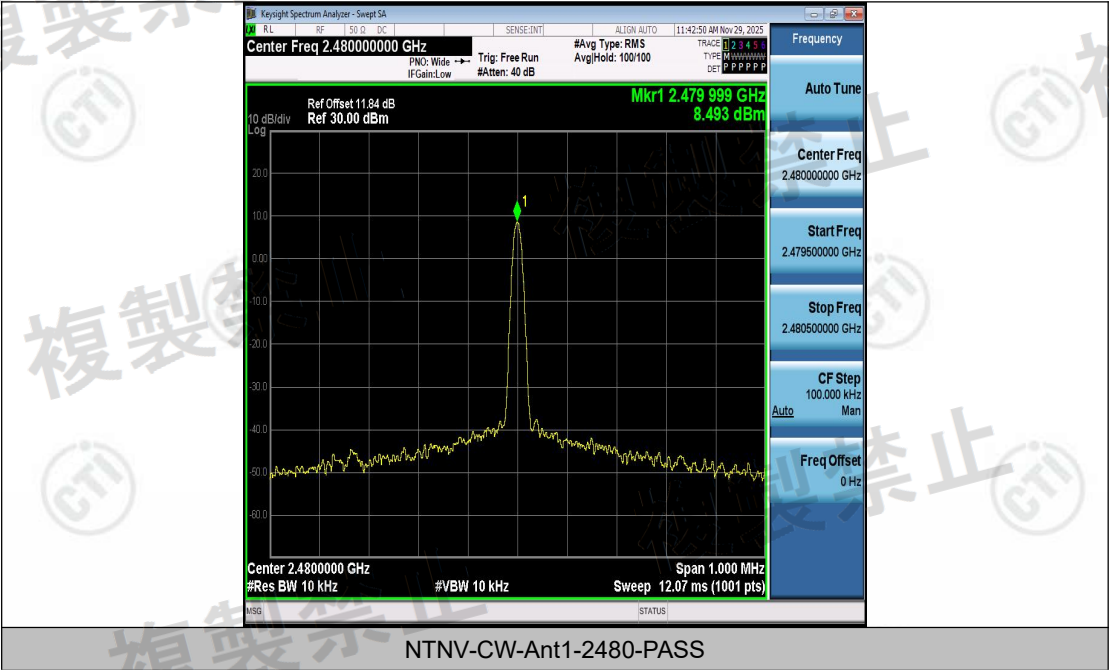
Appendix A: Frequency Error

Test Result

TestCondition	TestMode	Antenna	Freq(MHz)	CenterFreq [MHz]	Result[ppm]	Limit[ppm]	Verdict
NTNV	CW	Ant1	2402	2402	0.00000	±50	PASS
NTNV	CW	Ant1	2440	2440	0.00000	±50	PASS
NTNV	CW	Ant1	2480	2479.999	-0.40323	±50	PASS

Test Graphs





Appendix B: Antenna Power

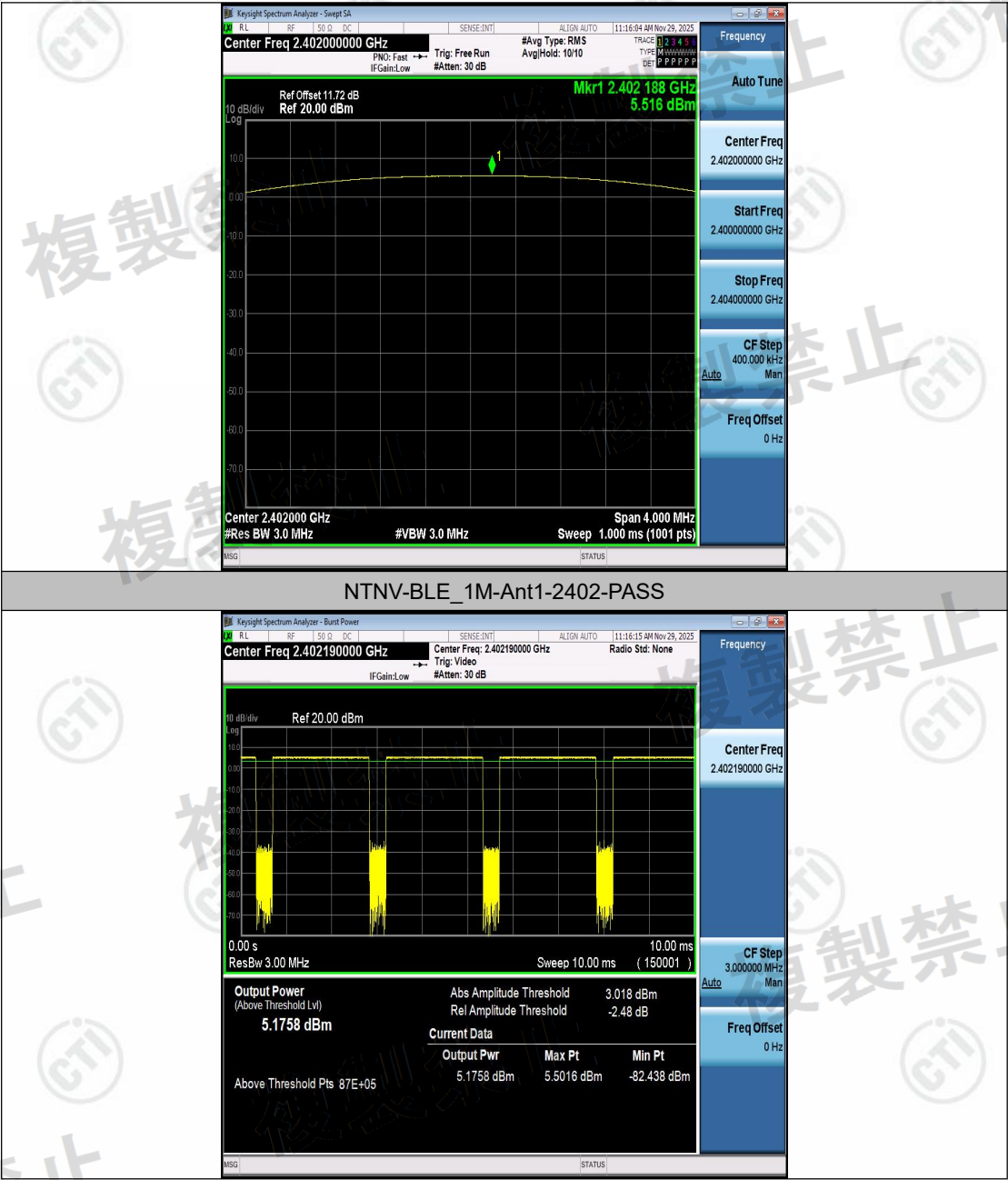
Test Result

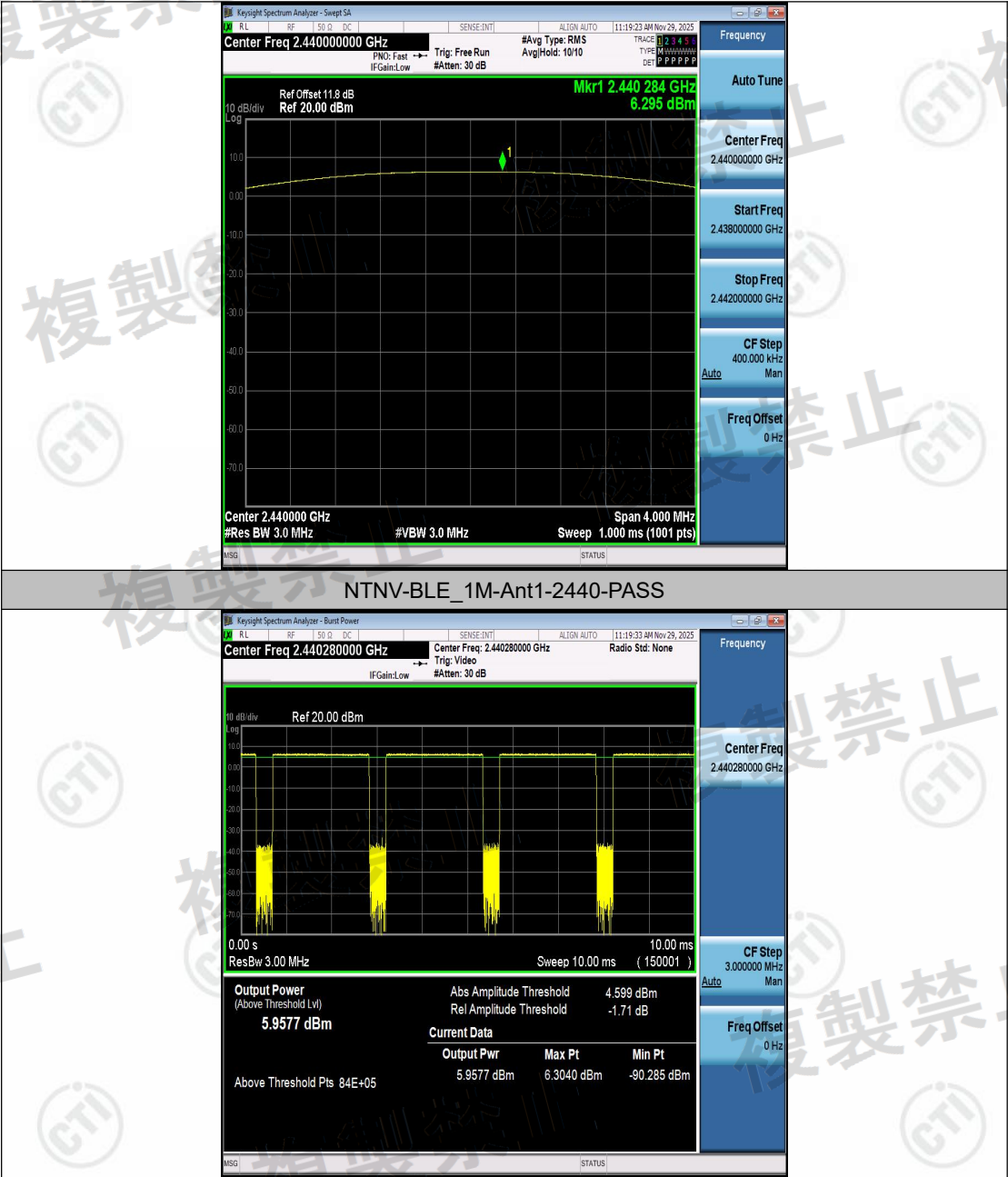
TestCondition	TestMode	Antenna	Freq(MHz)	Result(dBm)	Result(mW)	Limit(mW)	Verdict
NTNV	BLE_1M	Ant1	2402	5.18	3.2961	≤10	PASS
NTNV	BLE_1M	Ant1	2440	5.96	3.9446	≤10	PASS
NTNV	BLE_1M	Ant1	2480	4.92	3.1046	≤10	PASS
NTNV	BLE_2M	Ant1	2402	5.02	3.1769	≤10	PASS
NTNV	BLE_2M	Ant1	2440	5.85	3.8459	≤10	PASS
NTNV	BLE_2M	Ant1	2480	4.81	3.0269	≤10	PASS

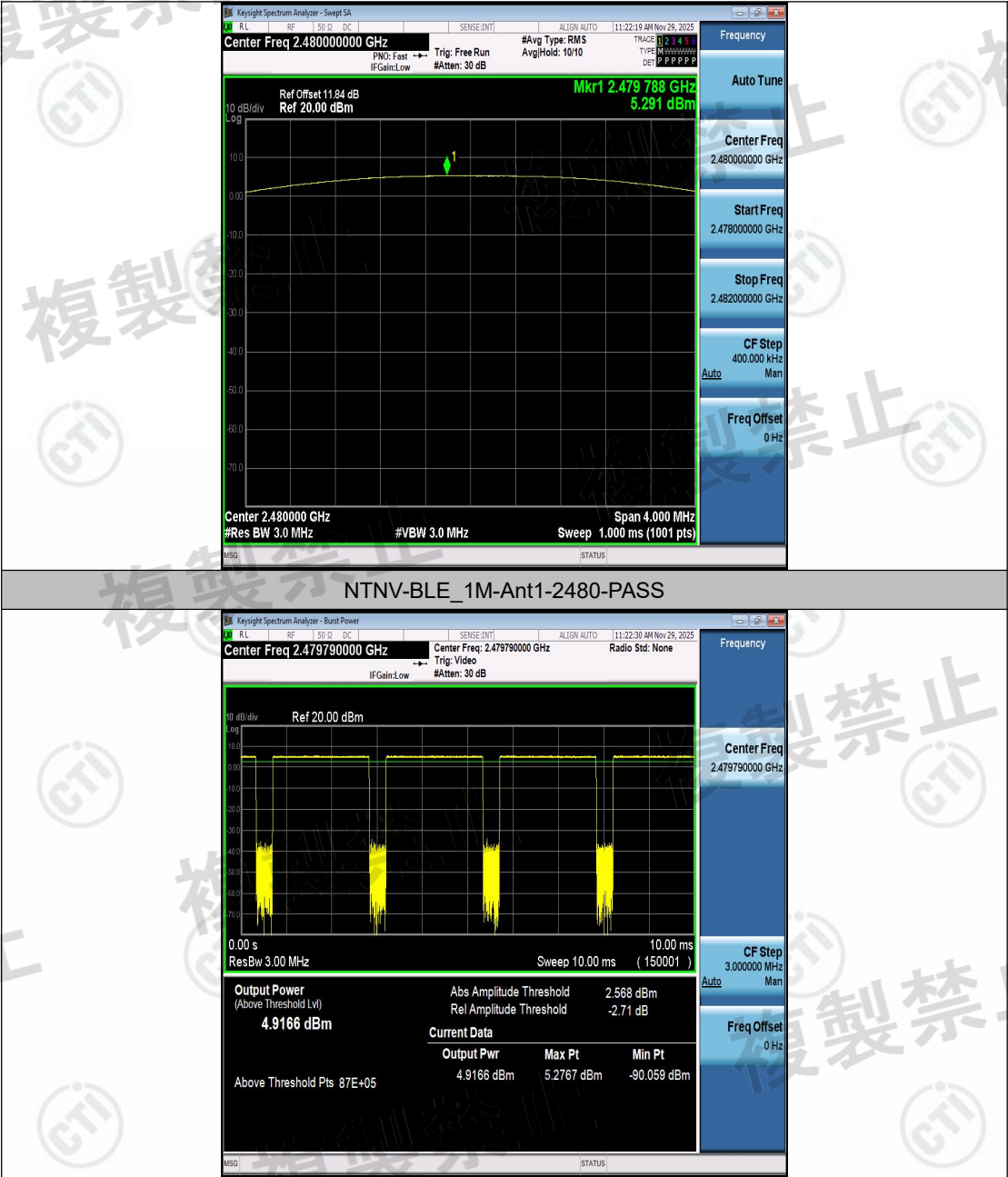
Test Condition	Test Mode	Antenna	Freq(MHz)	Power (mW)	RatedPower (mW)	Result (%)	Limit (%)	Verdict
NTNV	BLE_1M	Ant1	2402	3.2961	4	-17.60	NA to +20	PASS
NTNV	BLE_1M	Ant1	2440	3.9446	4	-1.39	NA to +20	PASS
NTNV	BLE_1M	Ant1	2480	3.1046	4	-22.39	NA to +20	PASS
NTNV	BLE_2M	Ant1	2402	3.1769	4	-20.58	NA to +20	PASS
NTNV	BLE_2M	Ant1	2440	3.8459	4	-3.85	NA to +20	PASS
NTNV	BLE_2M	Ant1	2480	3.0269	4	-24.33	NA to +20	PASS

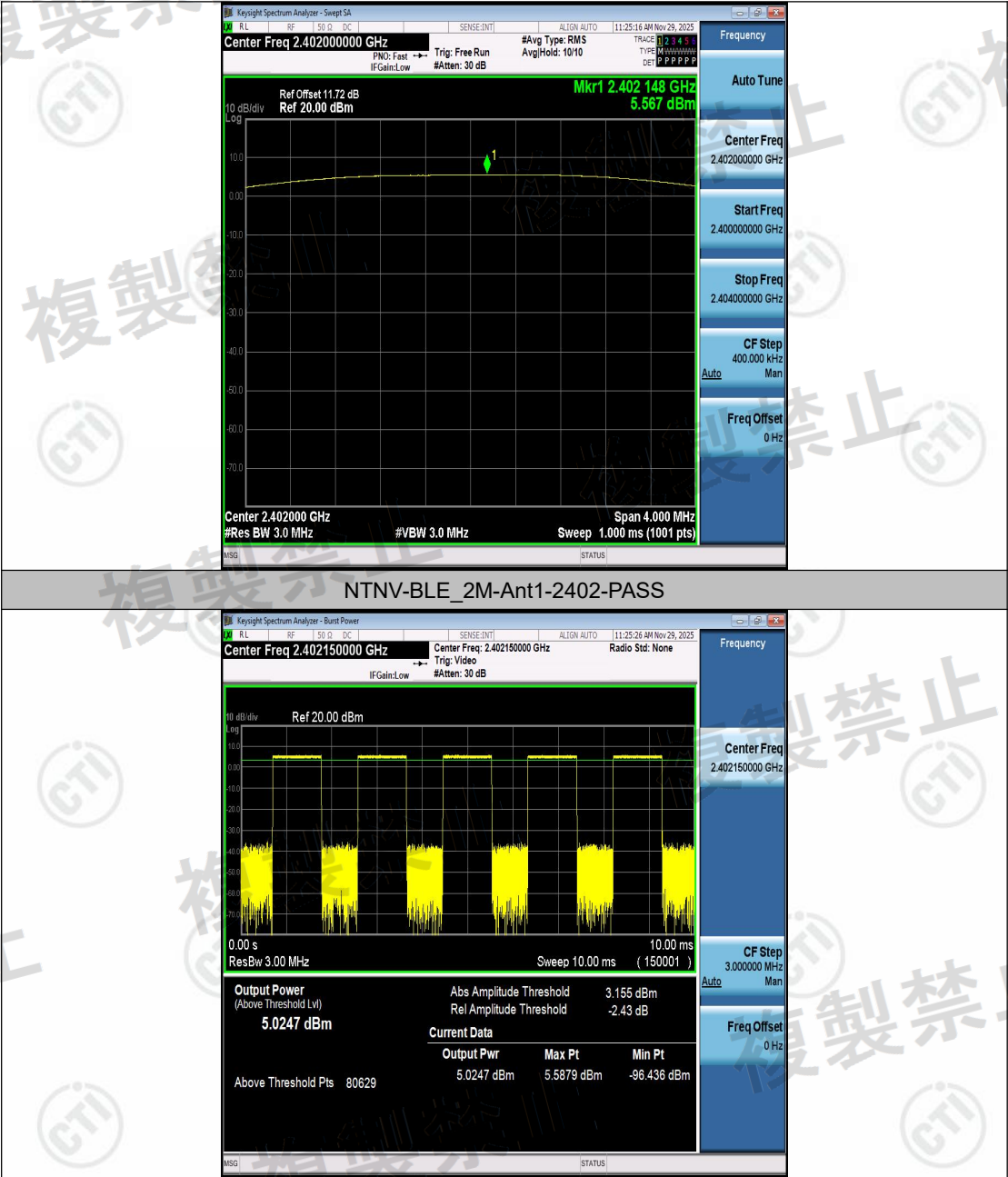
TestCondition	TestMode	Antenna	Freq(MHz)	Result(dBm)	EIRP(dBm)	Limit(dBm)	Verdict
NTNV	BLE_1M	Ant1	2402	5.18	8.53	≤12.14	PASS
NTNV	BLE_1M	Ant1	2440	5.96	9.31	≤12.14	PASS
NTNV	BLE_1M	Ant1	2480	4.92	8.27	≤12.14	PASS
NTNV	BLE_2M	Ant1	2402	5.02	8.37	≤12.14	PASS
NTNV	BLE_2M	Ant1	2440	5.85	9.20	≤12.14	PASS
NTNV	BLE_2M	Ant1	2480	4.81	8.16	≤12.14	PASS

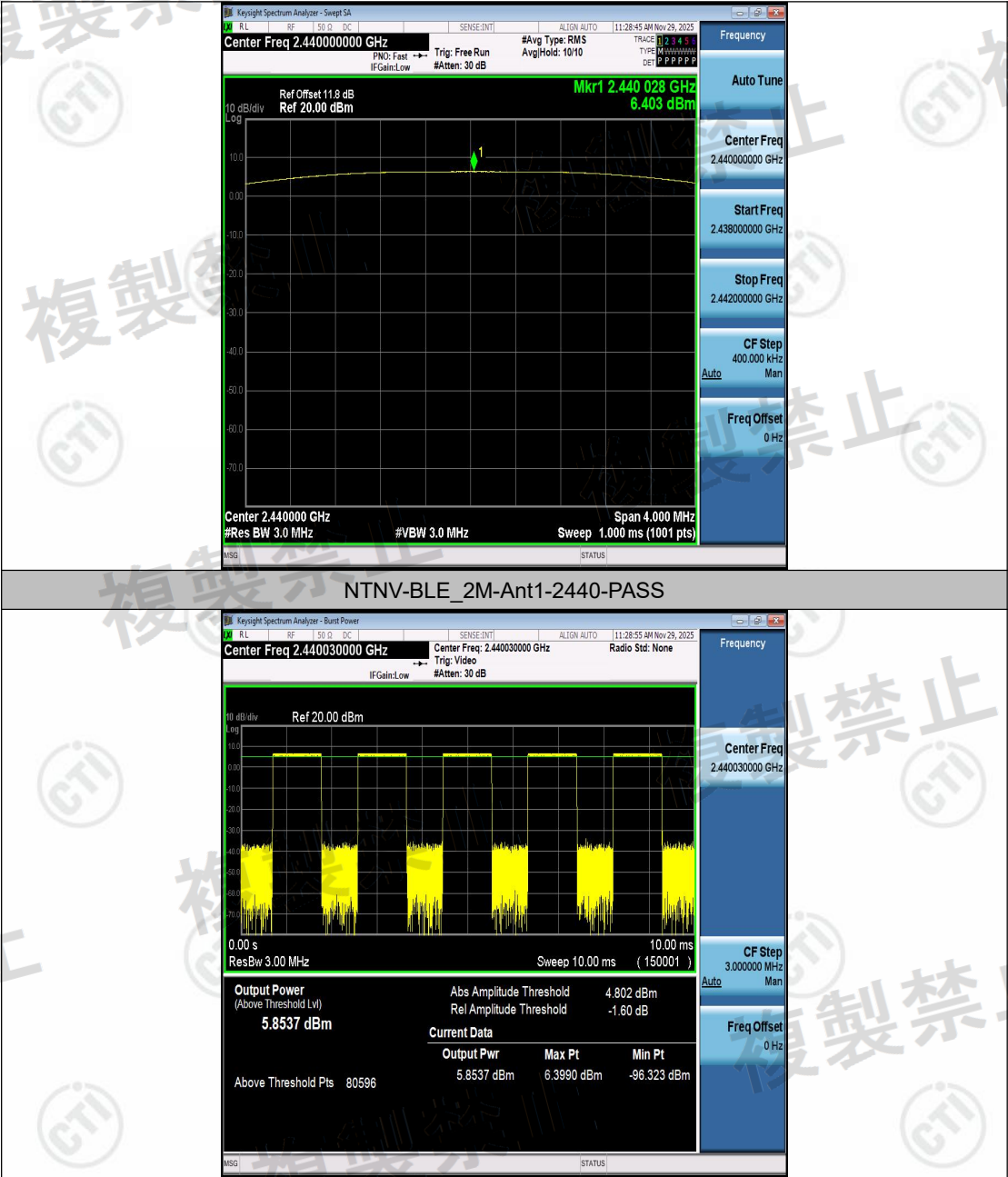
Test Graphs

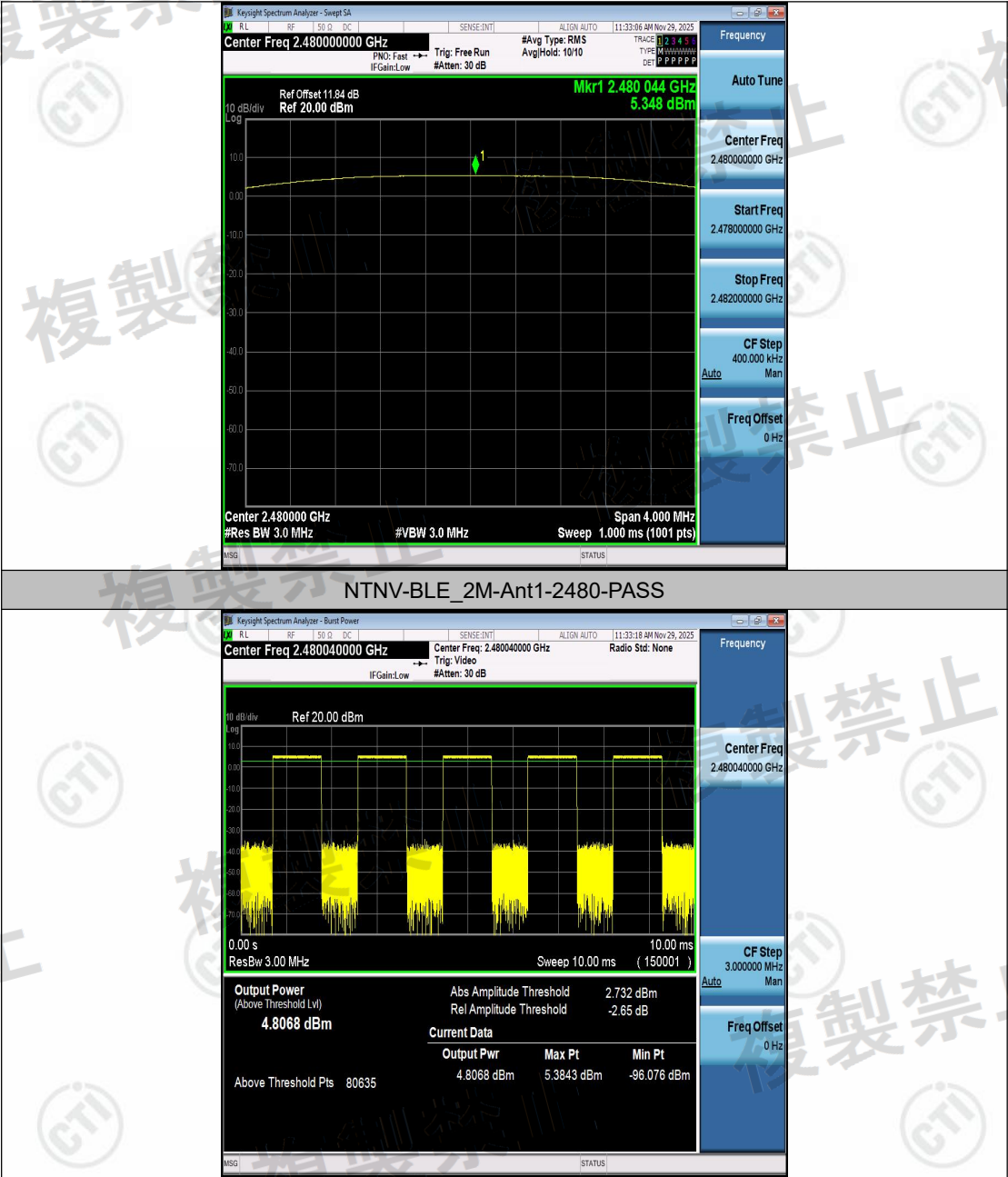










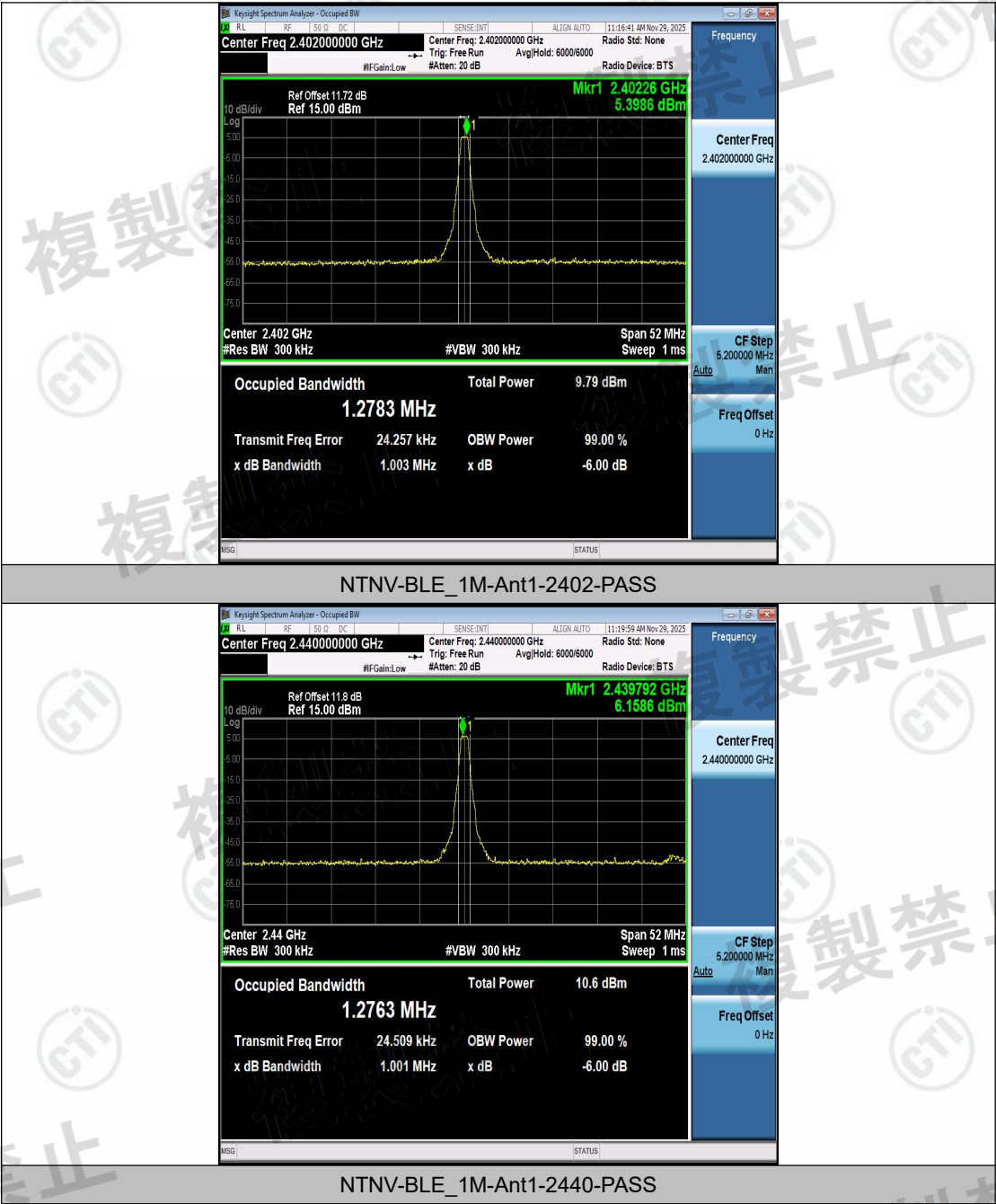


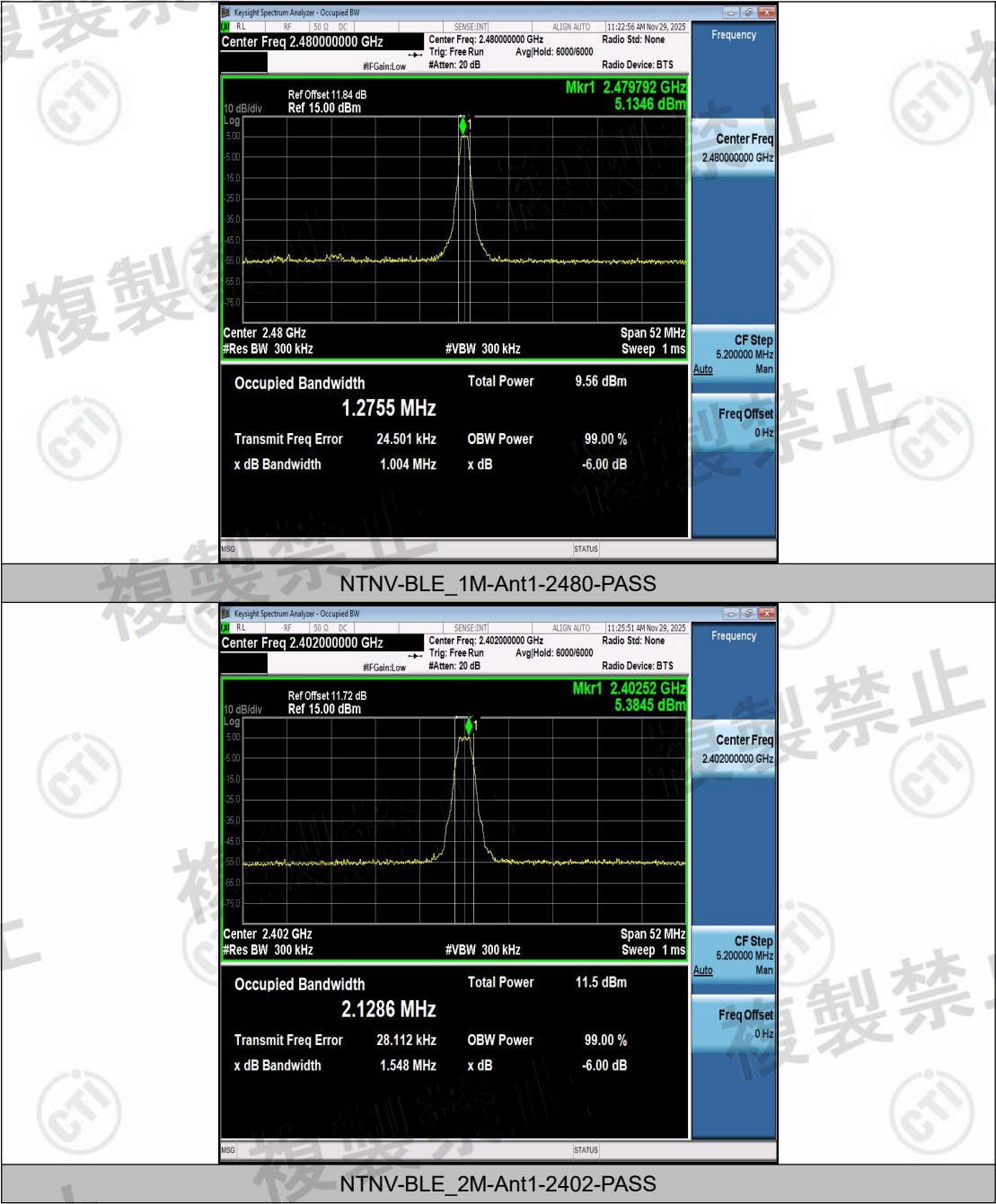
Appendix C: Occupied Bandwidth

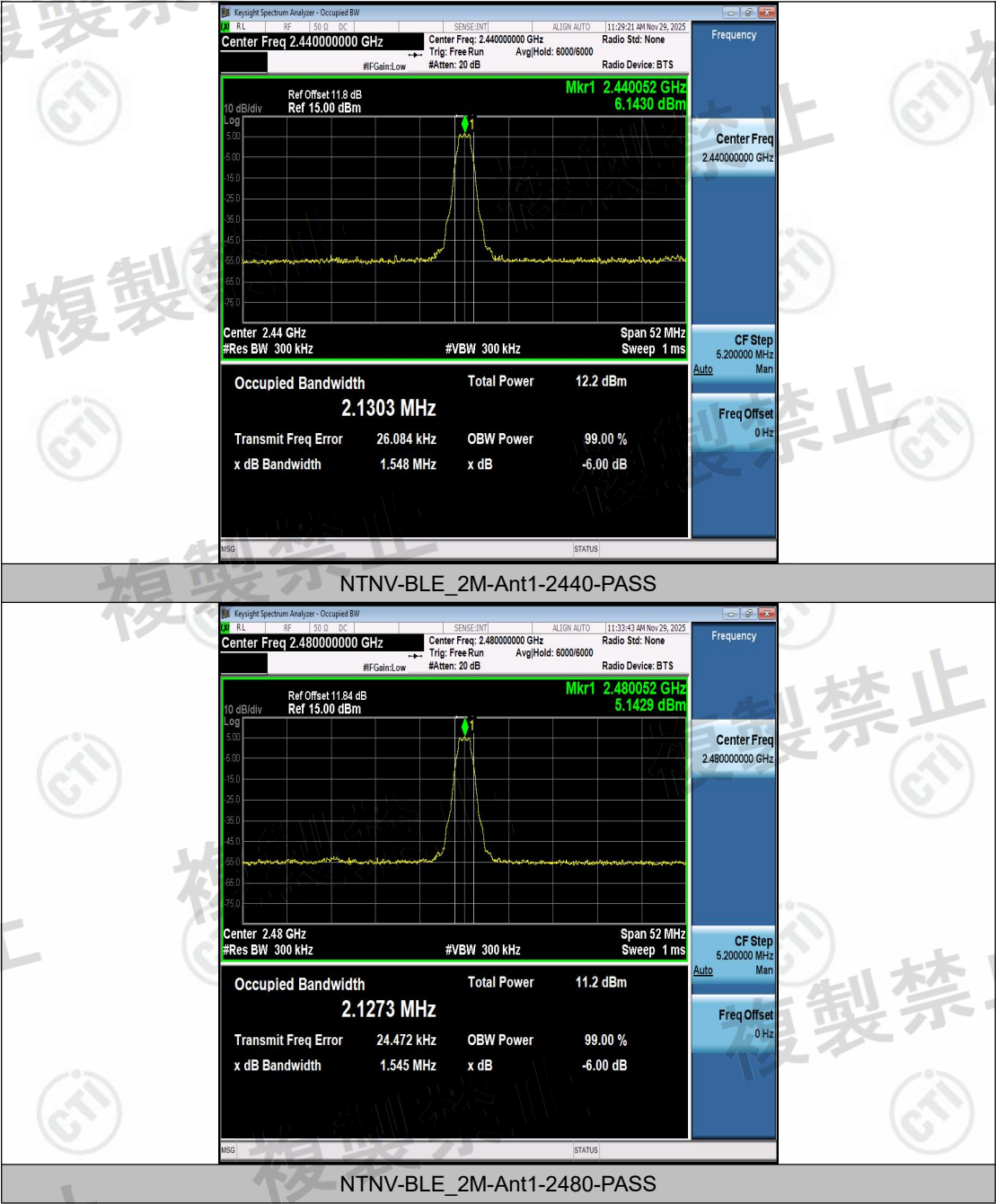
Test Result

TestCondition	TestMode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	BLE_1M	Ant1	2402	1.278	≤26	PASS
NTNV	BLE_1M	Ant1	2440	1.276	≤26	PASS
NTNV	BLE_1M	Ant1	2480	1.276	≤26	PASS
NTNV	BLE_2M	Ant1	2402	2.129	≤26	PASS
NTNV	BLE_2M	Ant1	2440	2.130	≤26	PASS
NTNV	BLE_2M	Ant1	2480	2.127	≤26	PASS

Test Graphs





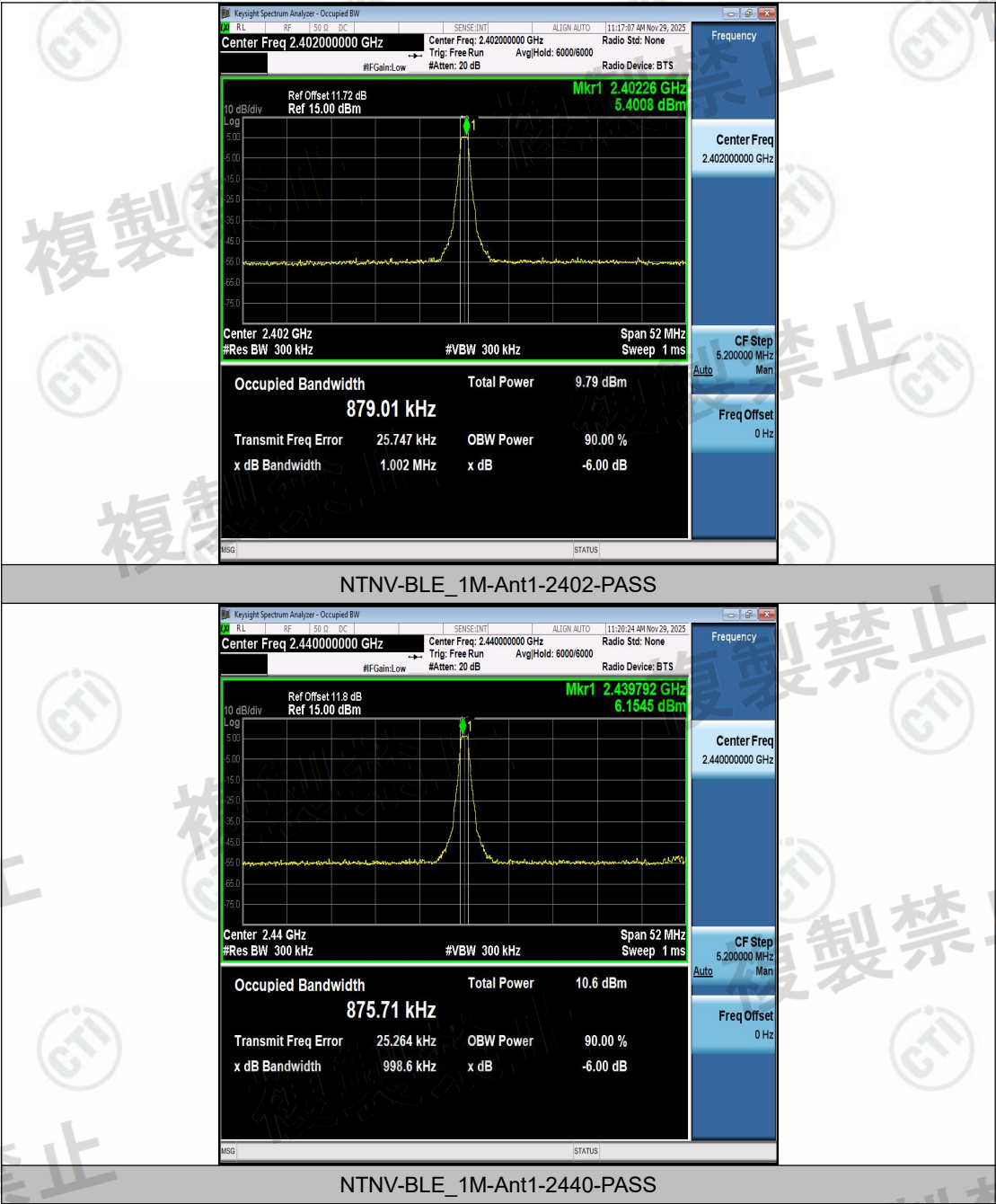


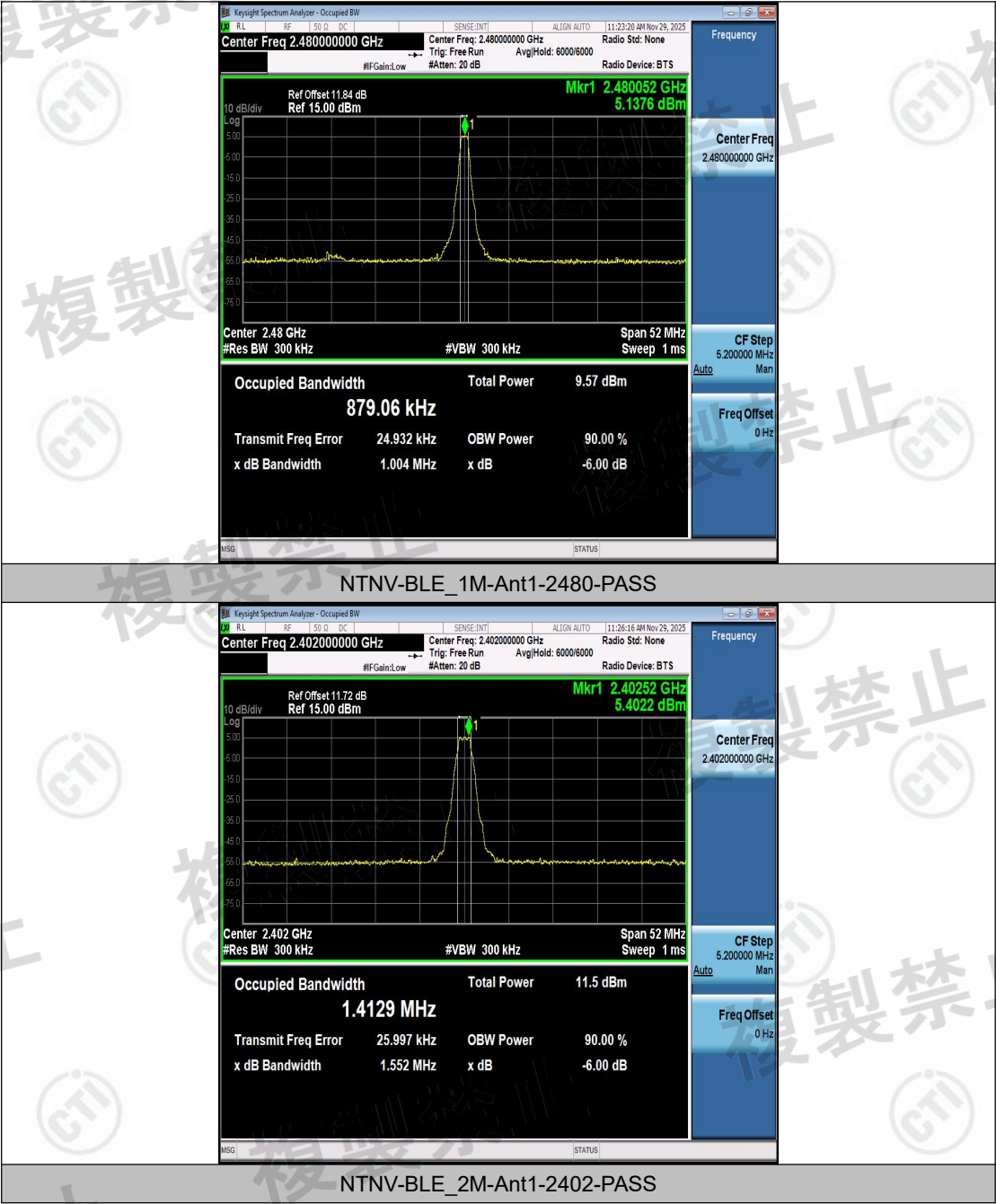
Appendix D: Spread Bandwidth

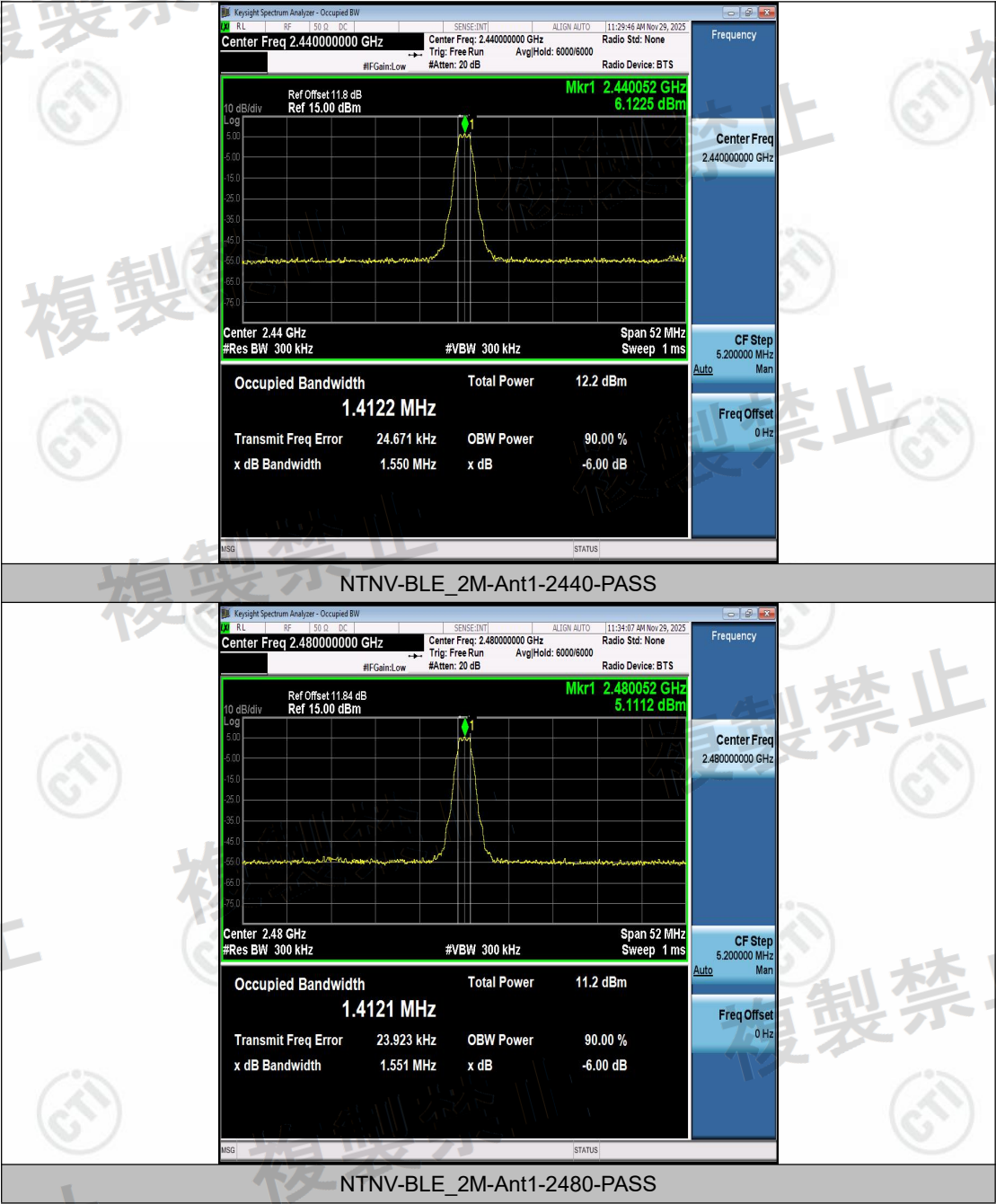
Test Result

TestCondition	TestMode	Antenna	Freq(MHz)	Result [MHz]
NTNV	BLE_1M	Ant1	2402	0.879
NTNV	BLE_1M	Ant1	2440	0.876
NTNV	BLE_1M	Ant1	2480	0.879
NTNV	BLE_2M	Ant1	2402	1.413
NTNV	BLE_2M	Ant1	2440	1.412
NTNV	BLE_2M	Ant1	2480	1.412

Test Graphs







Appendix E: Unwanted Emission Strength

Test Result

TestCondition	TestMode	Antenna	Freq (MHz)	Freq.Range [MHz]	ResultFreq (MHz)	Result [dBm/MHz]	Result [μW/MHz]	Limit [μW/MHz]	Verdict
NTNV	BLE_1M	Ant1	2402	30~1000	837.28	-59.33	0.00117	≤2.5	PASS
NTNV	BLE_1M	Ant1	2402	1000~2387	2308.98	-47.20	0.01905	≤2.5	PASS
NTNV	BLE_1M	Ant1	2402	2387~2400	2400.00	-31.40	0.72444	≤25	PASS
NTNV	BLE_1M	Ant1	2402	2483.5~2496.5	2496.39	-37.02	0.19861	≤25	PASS
NTNV	BLE_1M	Ant1	2402	2496.5~13000	3766.37	-43.95	0.04027	≤2.5	PASS
NTNV	BLE_1M	Ant1	2440	30~1000	851.59	-59.49	0.00112	≤2.5	PASS
NTNV	BLE_1M	Ant1	2440	1000~2387	2336.72	-47.24	0.01888	≤2.5	PASS
NTNV	BLE_1M	Ant1	2440	2387~2400	2397.51	-37.60	0.17378	≤25	PASS
NTNV	BLE_1M	Ant1	2440	2483.5~2496.5	2487.80	-37.46	0.17947	≤25	PASS
NTNV	BLE_1M	Ant1	2440	2496.5~13000	3790.01	-44.63	0.03443	≤2.5	PASS
NTNV	BLE_1M	Ant1	2480	30~1000	938.16	-59.24	0.00119	≤2.5	PASS
NTNV	BLE_1M	Ant1	2480	1000~2387	2005.23	-47.39	0.01824	≤2.5	PASS
NTNV	BLE_1M	Ant1	2480	2387~2400	2392.41	-37.36	0.18365	≤25	PASS
NTNV	BLE_1M	Ant1	2480	2483.5~2496.5	2492.67	-37.36	0.18365	≤25	PASS
NTNV	BLE_1M	Ant1	2480	2496.5~13000	3743.27	-44.96	0.03192	≤2.5	PASS
NTNV	BLE_2M	Ant1	2402	30~1000	865.90	-59.11	0.00123	≤2.5	PASS
NTNV	BLE_2M	Ant1	2402	1000~2387	2245.87	-47.71	0.01694	≤2.5	PASS
NTNV	BLE_2M	Ant1	2402	2387~2400	2400	-19.58	11.0154	≤25	See table below
NTNV	BLE_2M	Ant1	2402	2483.5~2496.5	2489.68	-37.63	0.17258	≤25	PASS
NTNV	BLE_2M	Ant1	2402	2496.5~13000	3868.78	-43.48	0.04487	≤2.5	PASS
NTNV	BLE_2M	Ant1	2440	30~1000	798.73	-59.61	0.00109	≤2.5	PASS
NTNV	BLE_2M	Ant1	2440	1000~2387	2347.12	-47.46	0.01795	≤2.5	PASS
NTNV	BLE_2M	Ant1	2440	2387~2400	2388.83	-37.36	0.18365	≤25	PASS
NTNV	BLE_2M	Ant1	2440	2483.5~2496.5	2493.31	-36.99	0.19999	≤25	PASS
NTNV	BLE_2M	Ant1	2440	2496.5~13000	3902.39	-44.96	0.03192	≤2.5	PASS
NTNV	BLE_2M	Ant1	2480	30~1000	867.11	-59.87	0.00103	≤2.5	PASS
NTNV	BLE_2M	Ant1	2480	1000~2387	2314.18	-46.81	0.02084	≤2.5	PASS
NTNV	BLE_2M	Ant1	2480	2387~2400	2398.17	-37.57	0.17498	≤25	PASS
NTNV	BLE_2M	Ant1	2480	2483.5~2496.5	2495.69	-37.17	0.19187	≤25	PASS
NTNV	BLE_2M	Ant1	2480	2496.5~13000	3784.23	-44.87	0.03258	≤2.5	PASS

Test Result_Step2

TestCondition	TestMode	Antenna	Freq(MHz)	Freq.[MHz]	Result[dBm/MHz]	Limit[dBm/MHz]	Result[μW/MHz]	Limit[μW/MHz]	Verdict
NTNV	BLE_2M	Ant1	2402	2400.00	-23.16	≤-16	4.83059	≤25	PASS

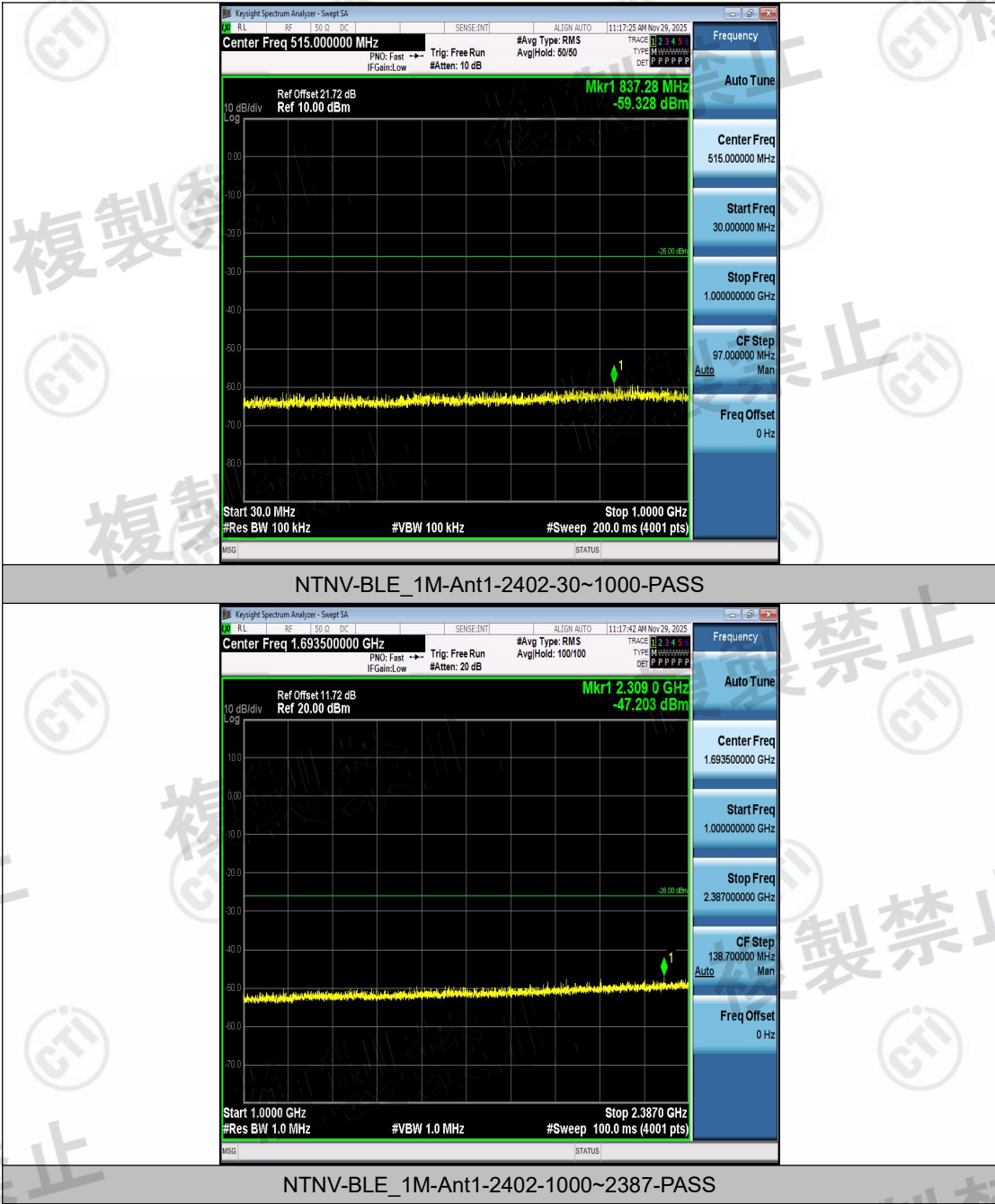
Note:

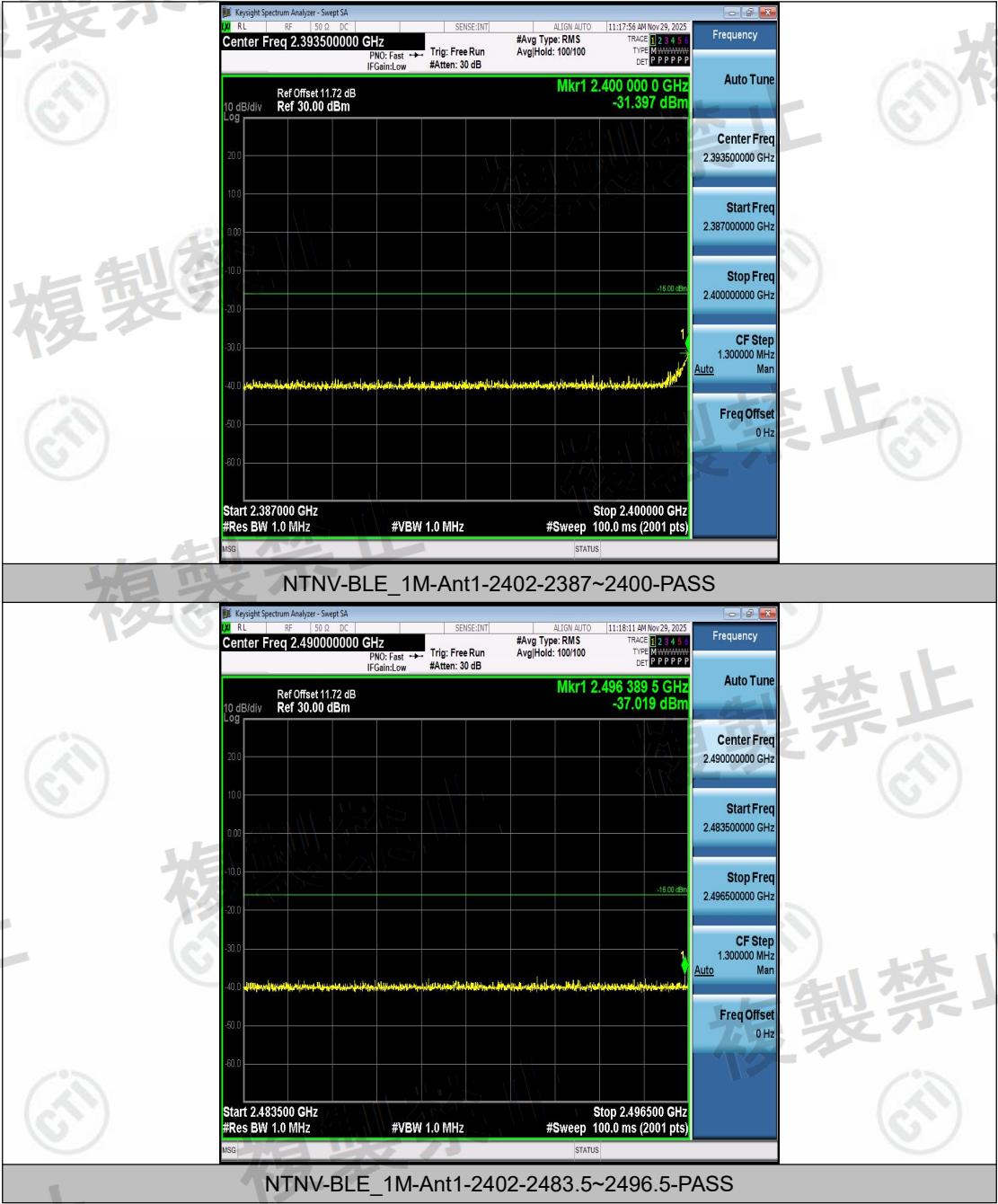
$\text{dBm/1MHz} = \text{dBm/100kHz} + 10 \times \log_{10} (1\text{MHz}/100\text{KHz})$

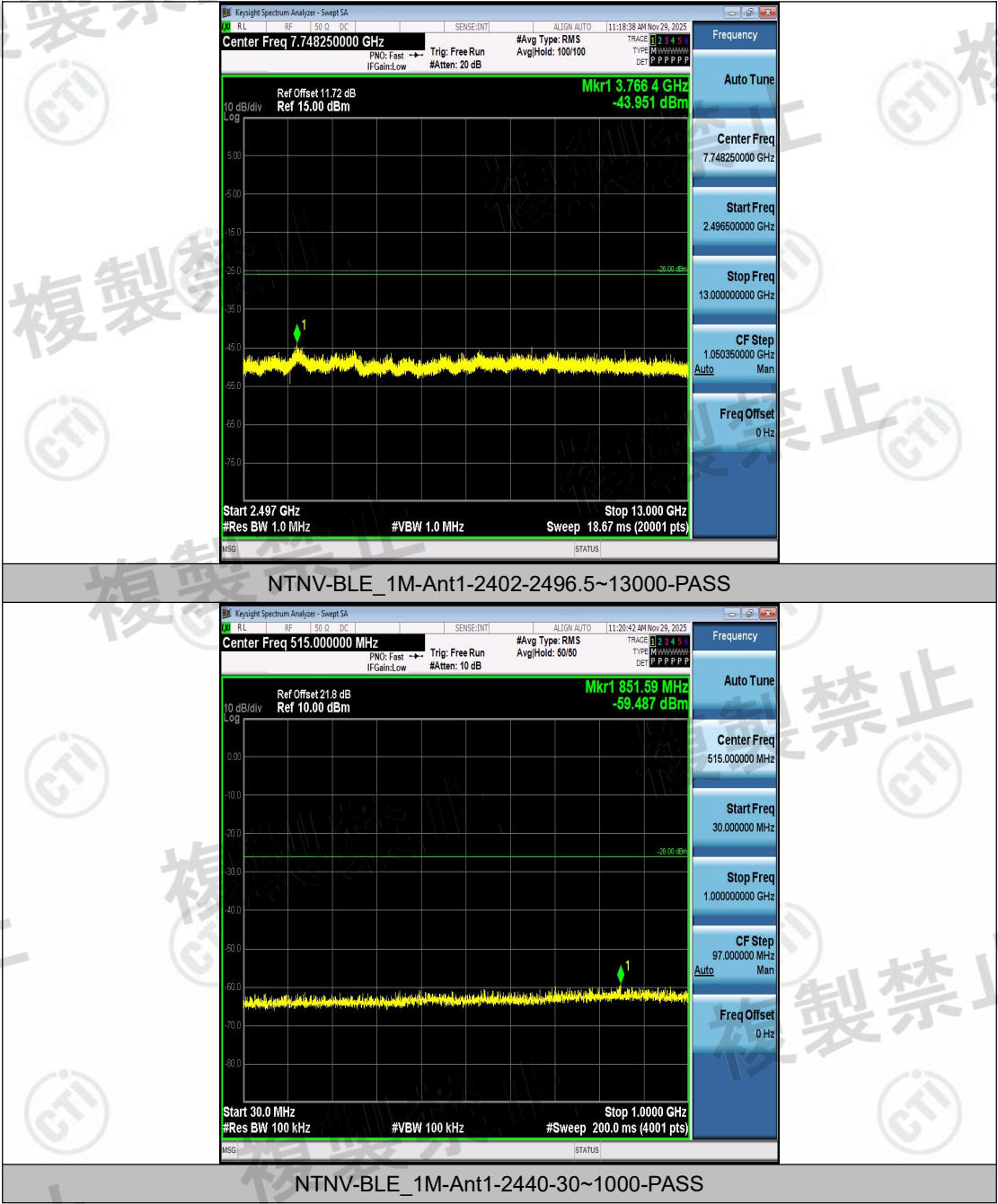
$\text{dBm/1MHz} = \text{dBm/100kHz} + 10$

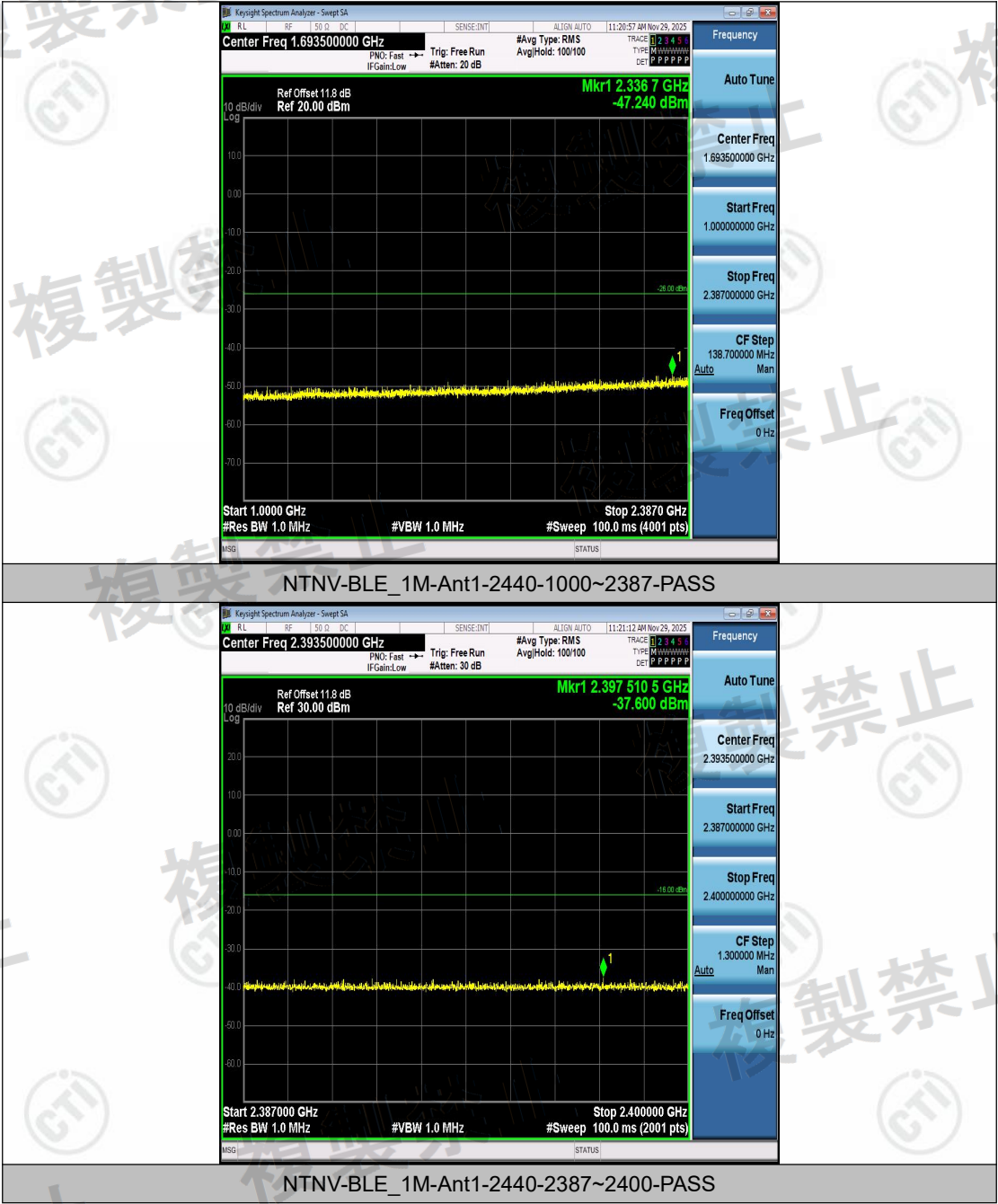
During the 30M-1000M testing process, a 10 dB factor was added for the test.

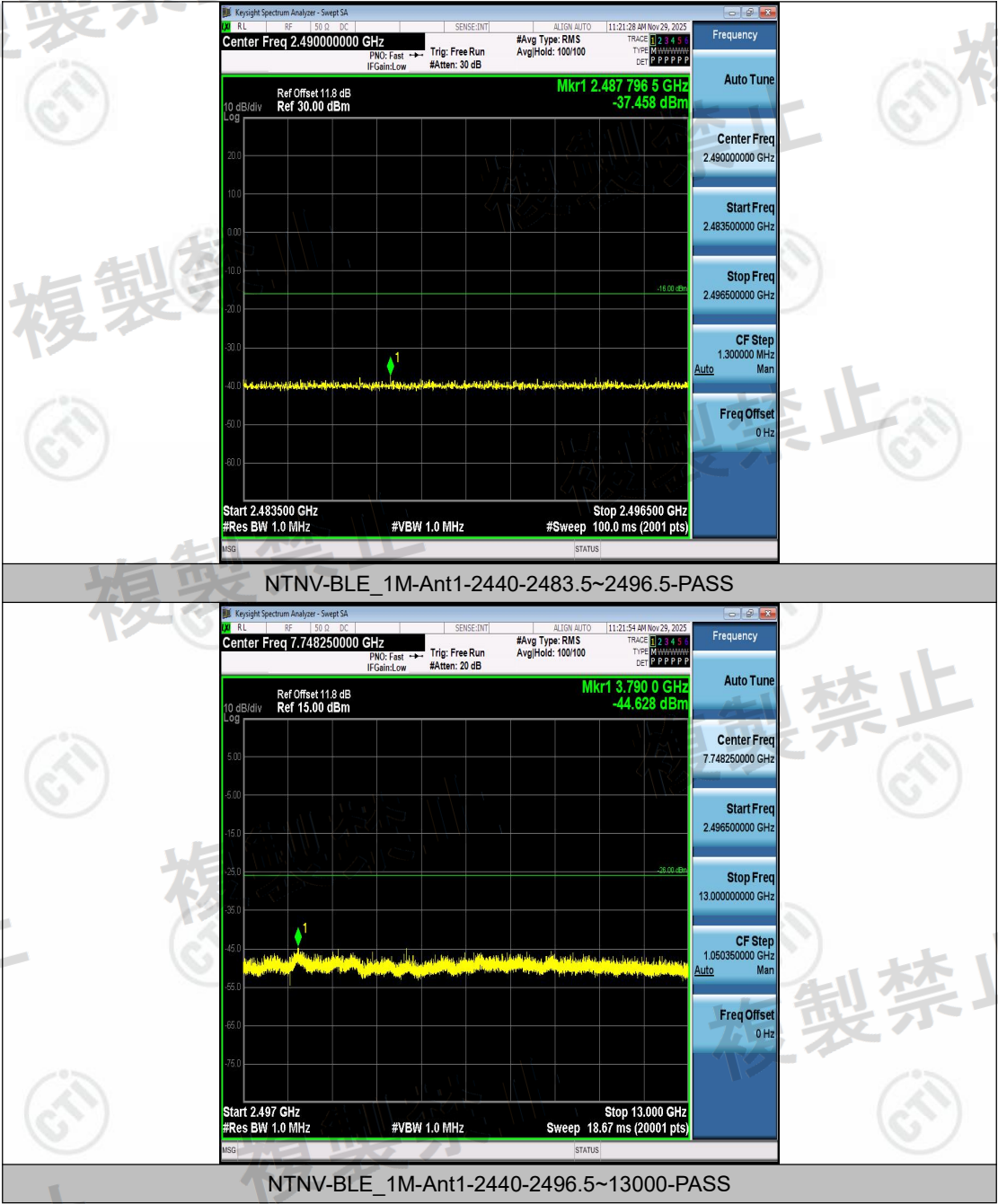
Test Graphs

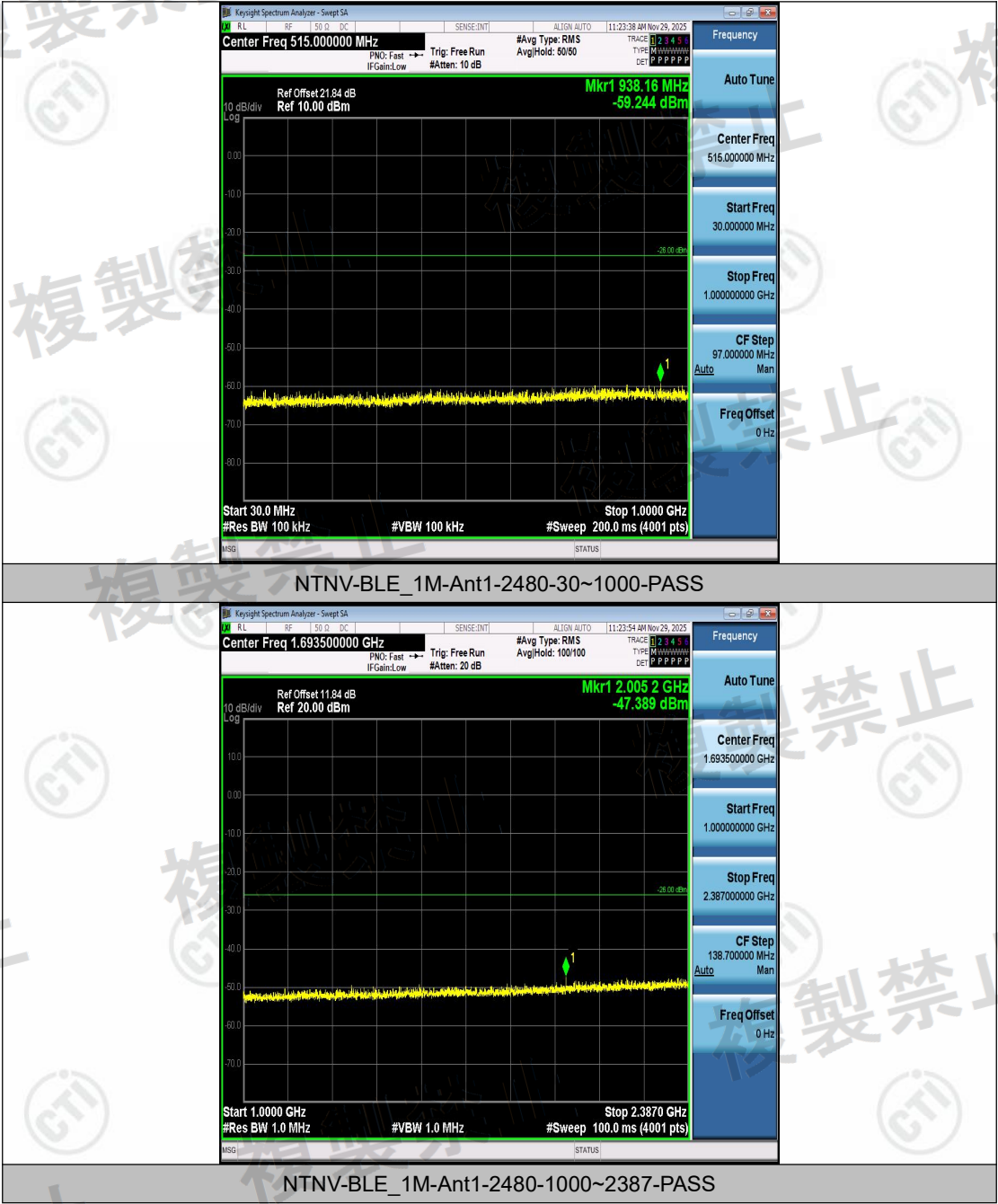


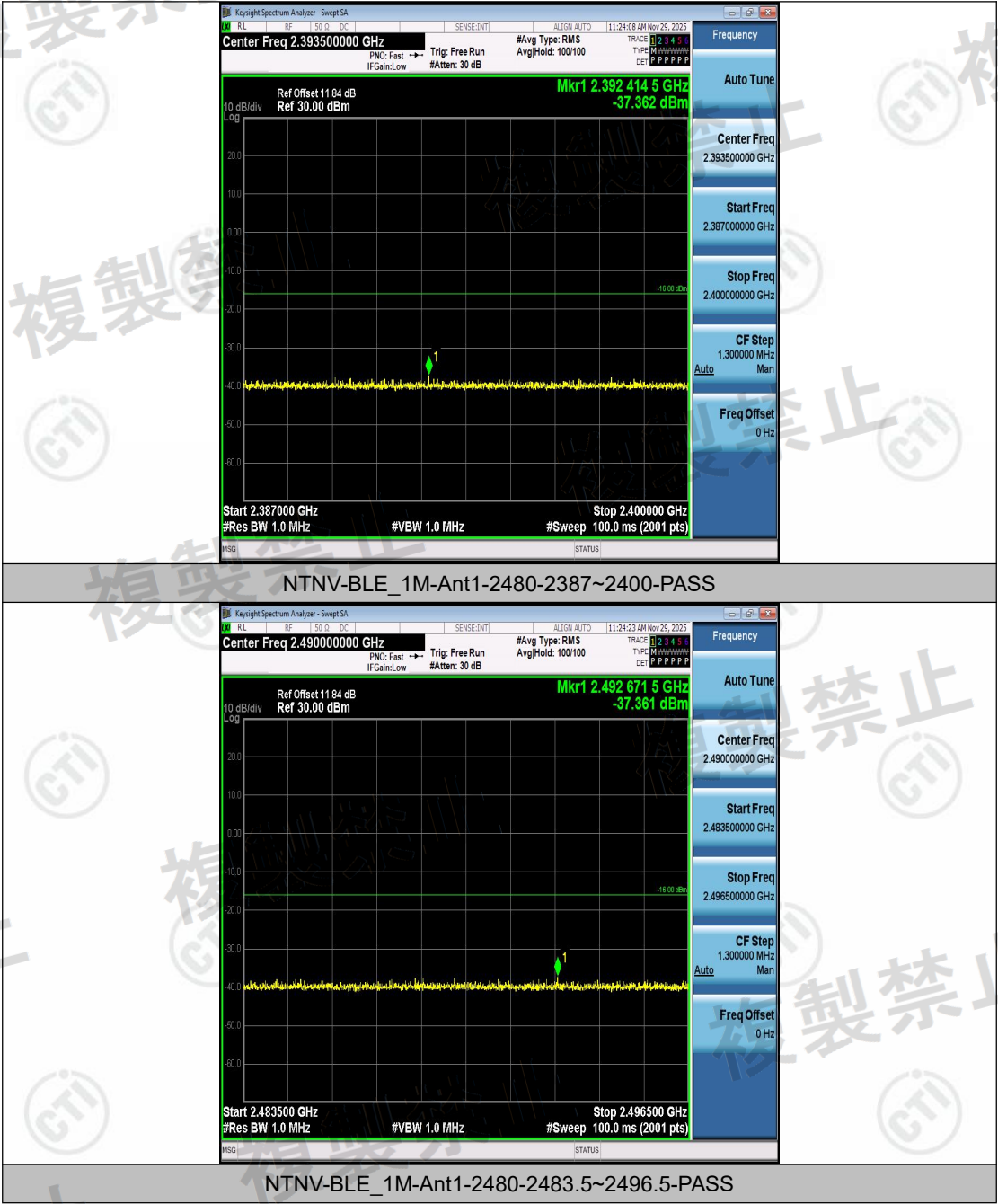


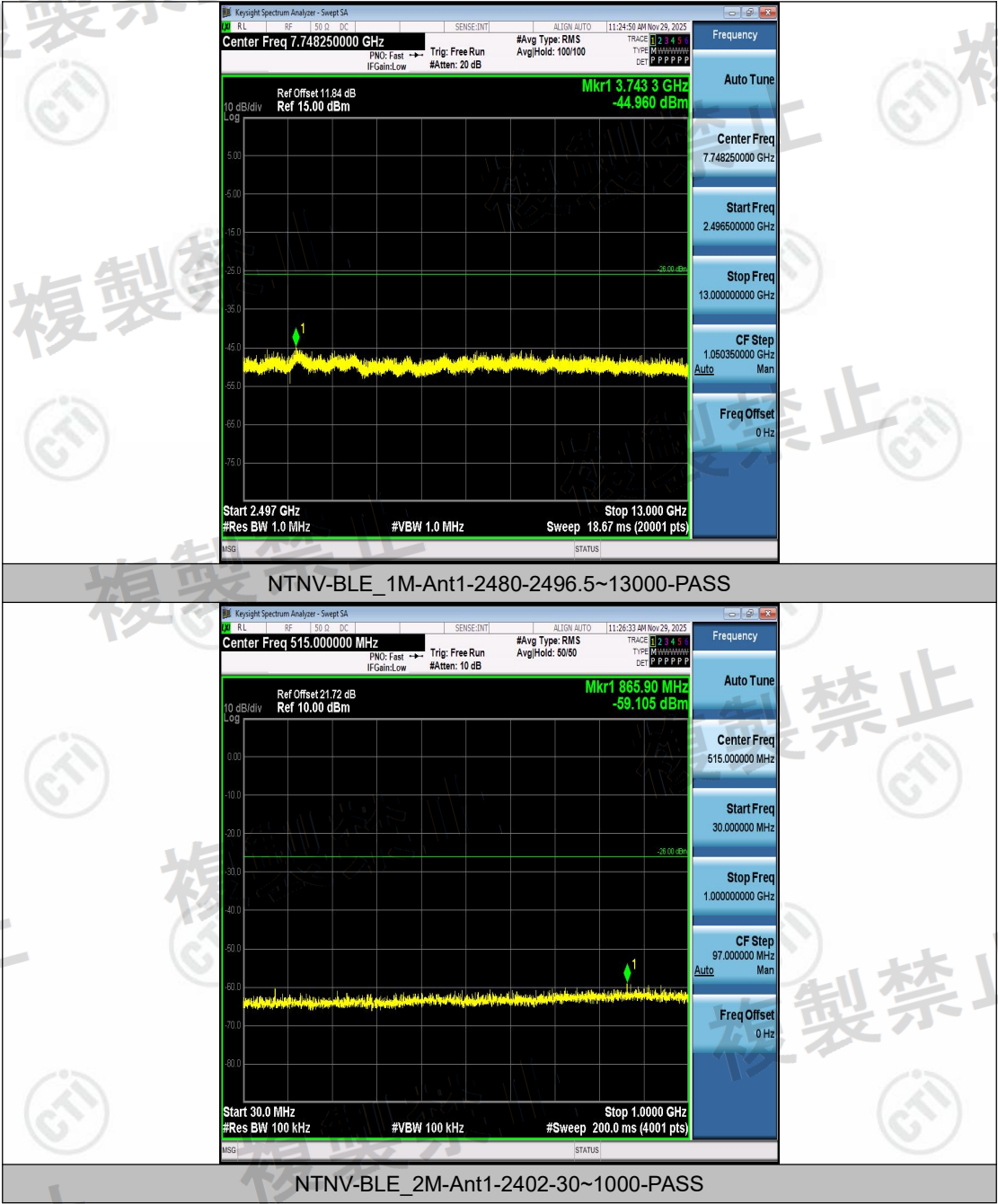


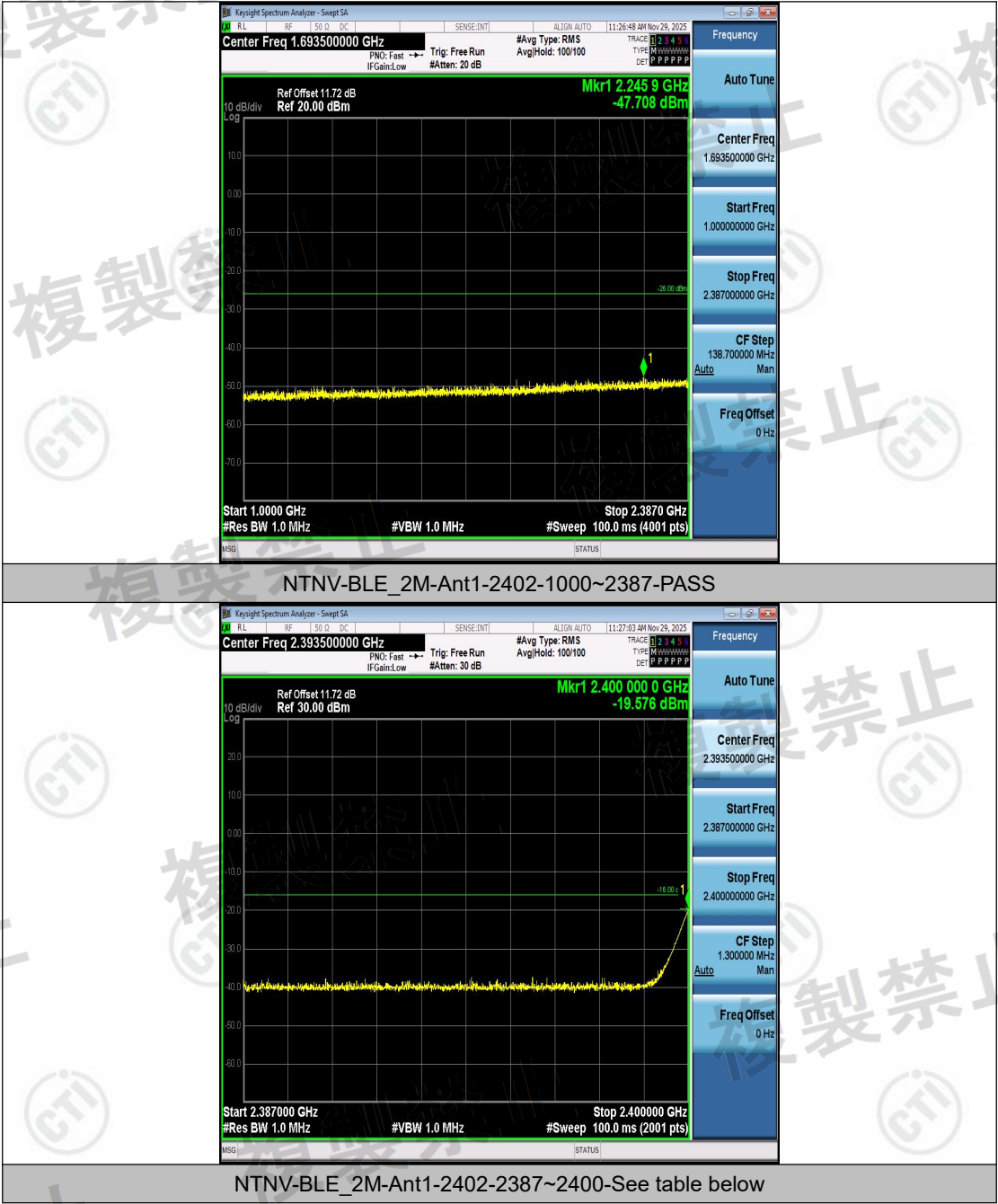


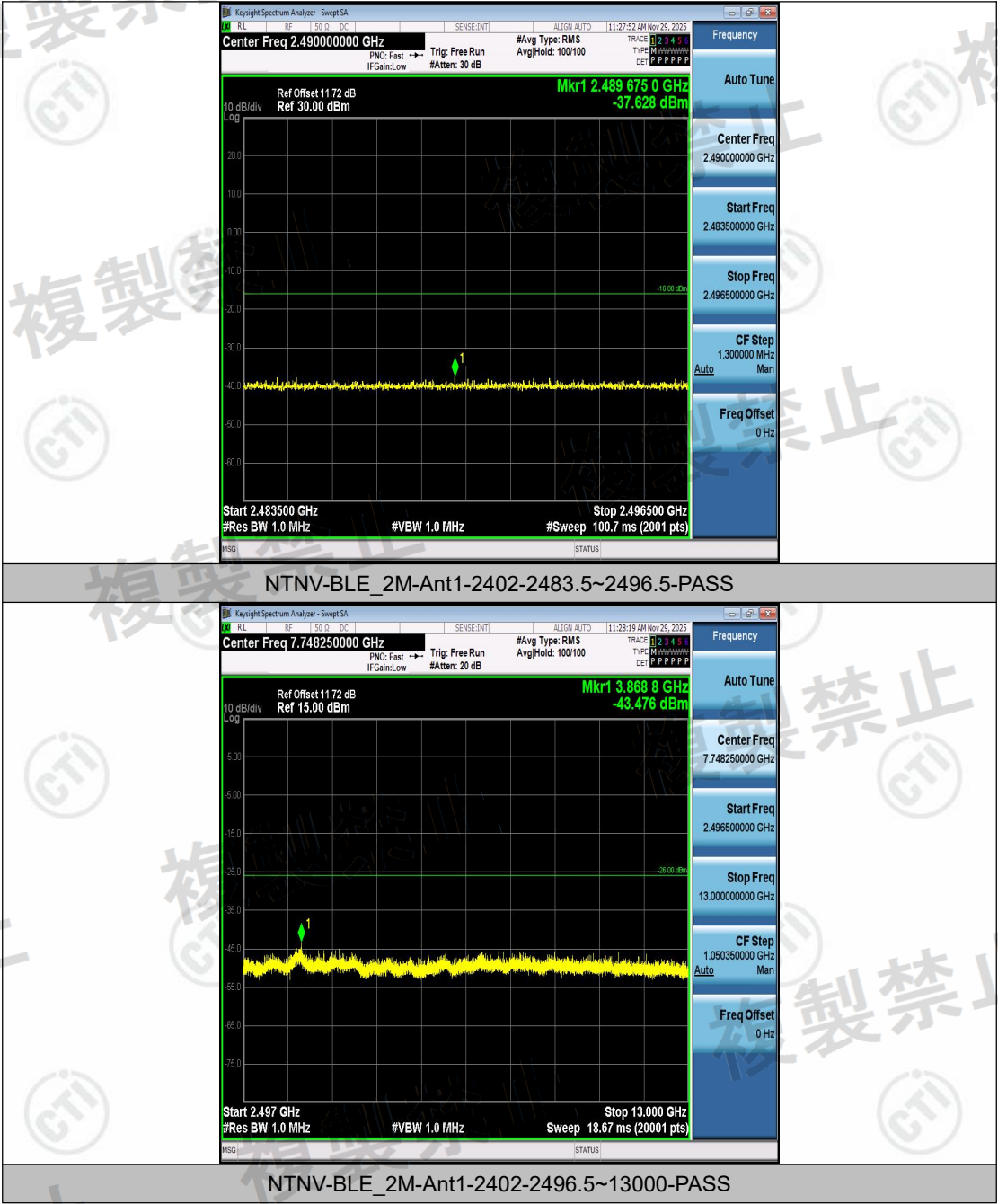


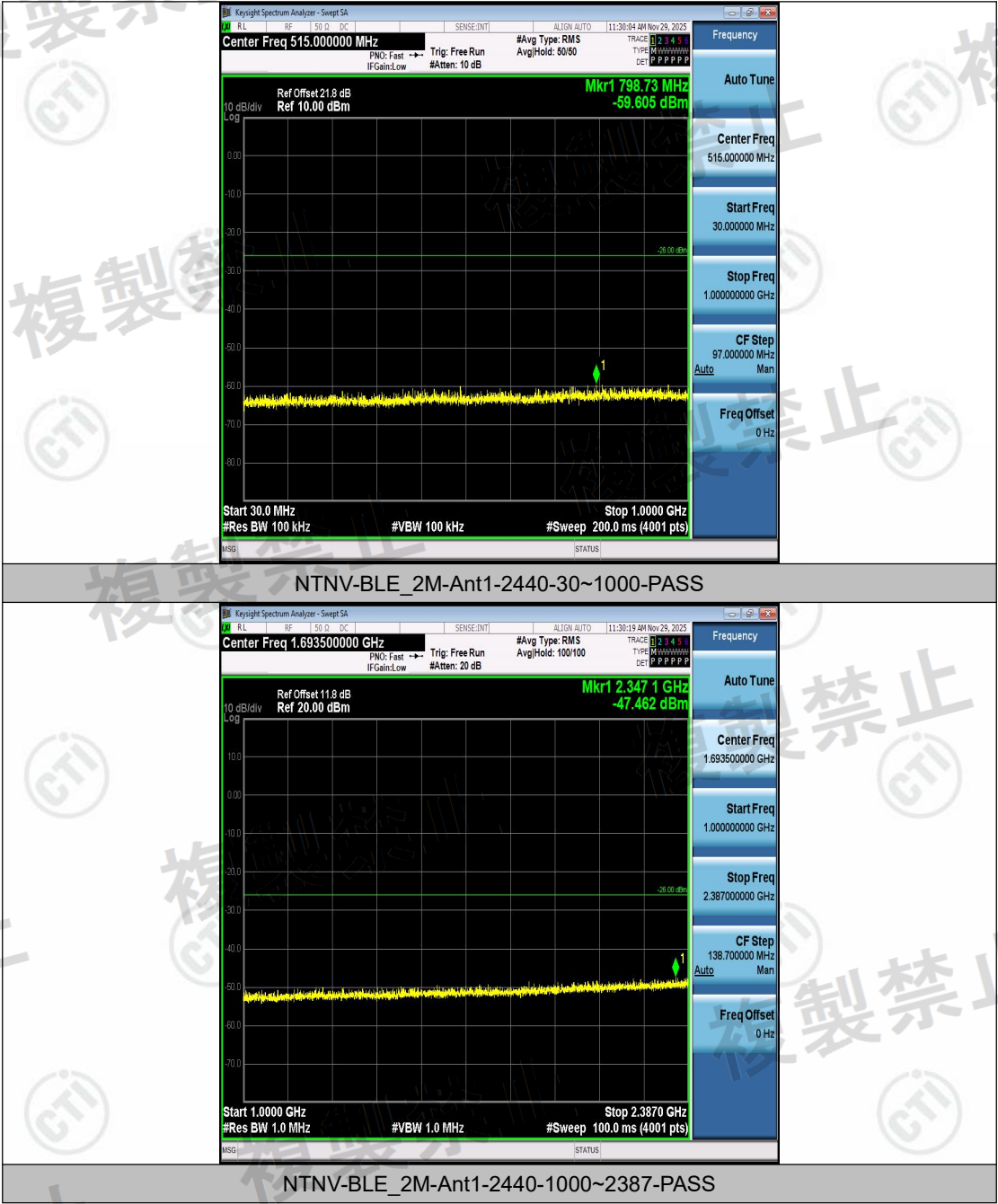


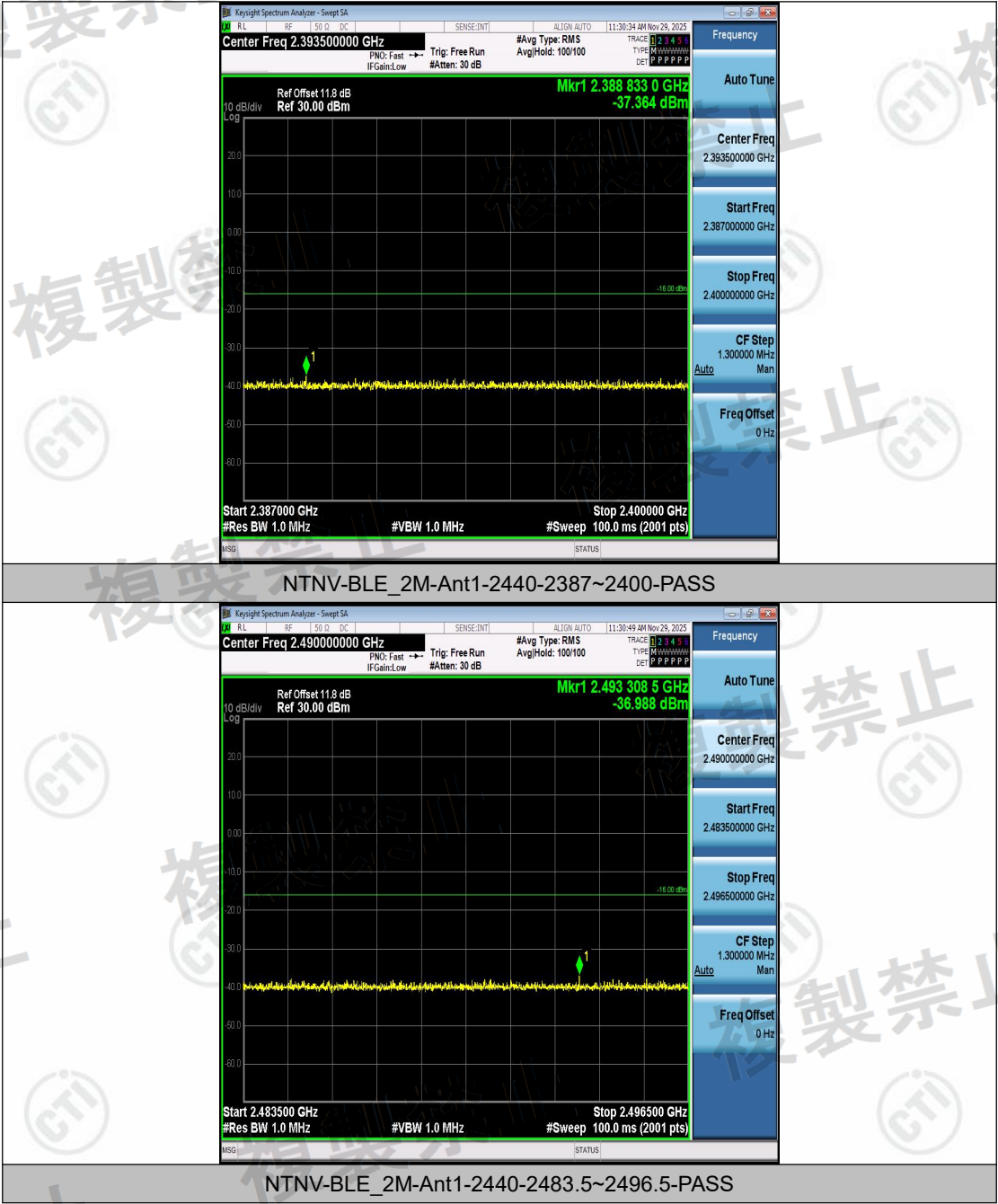


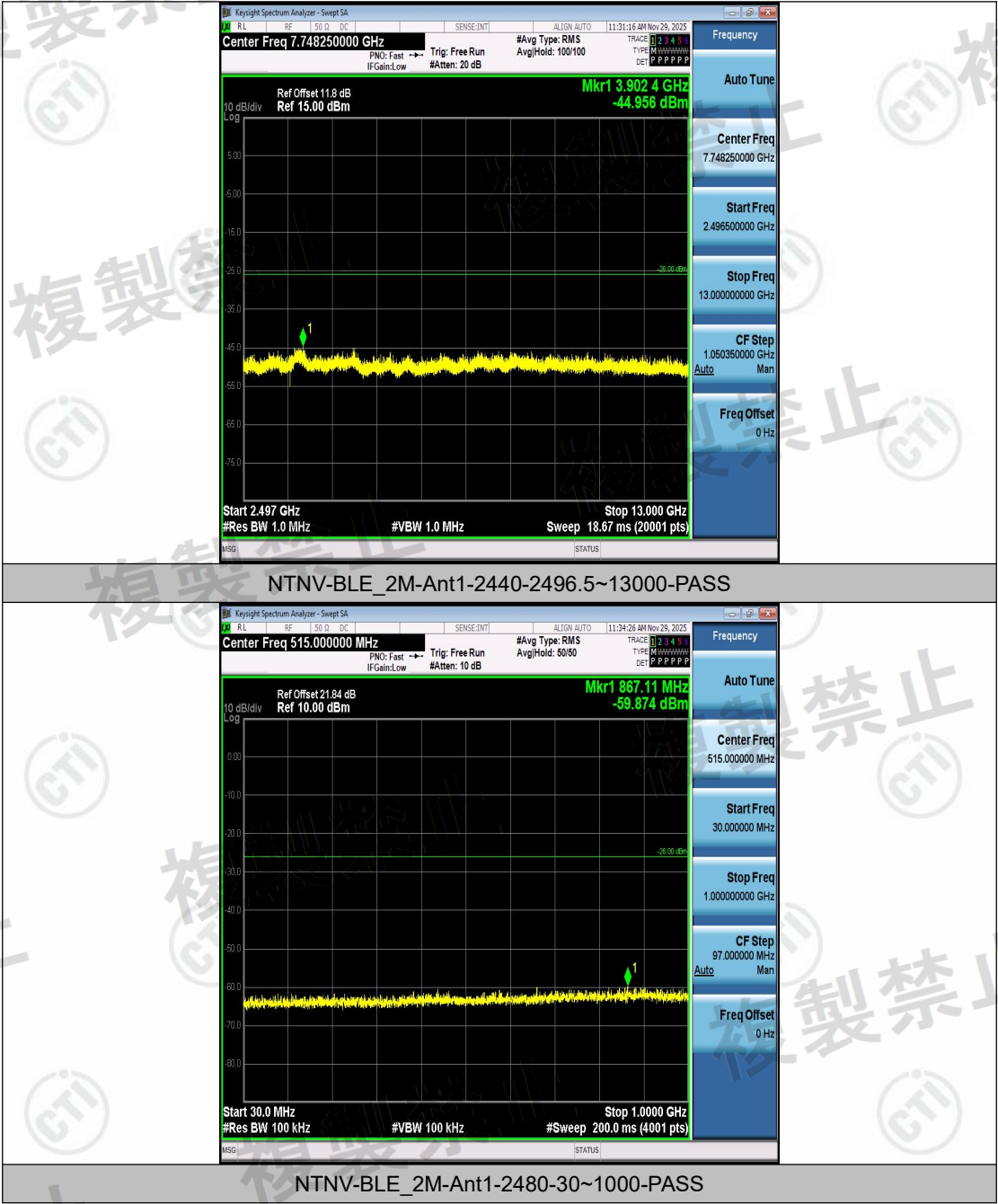


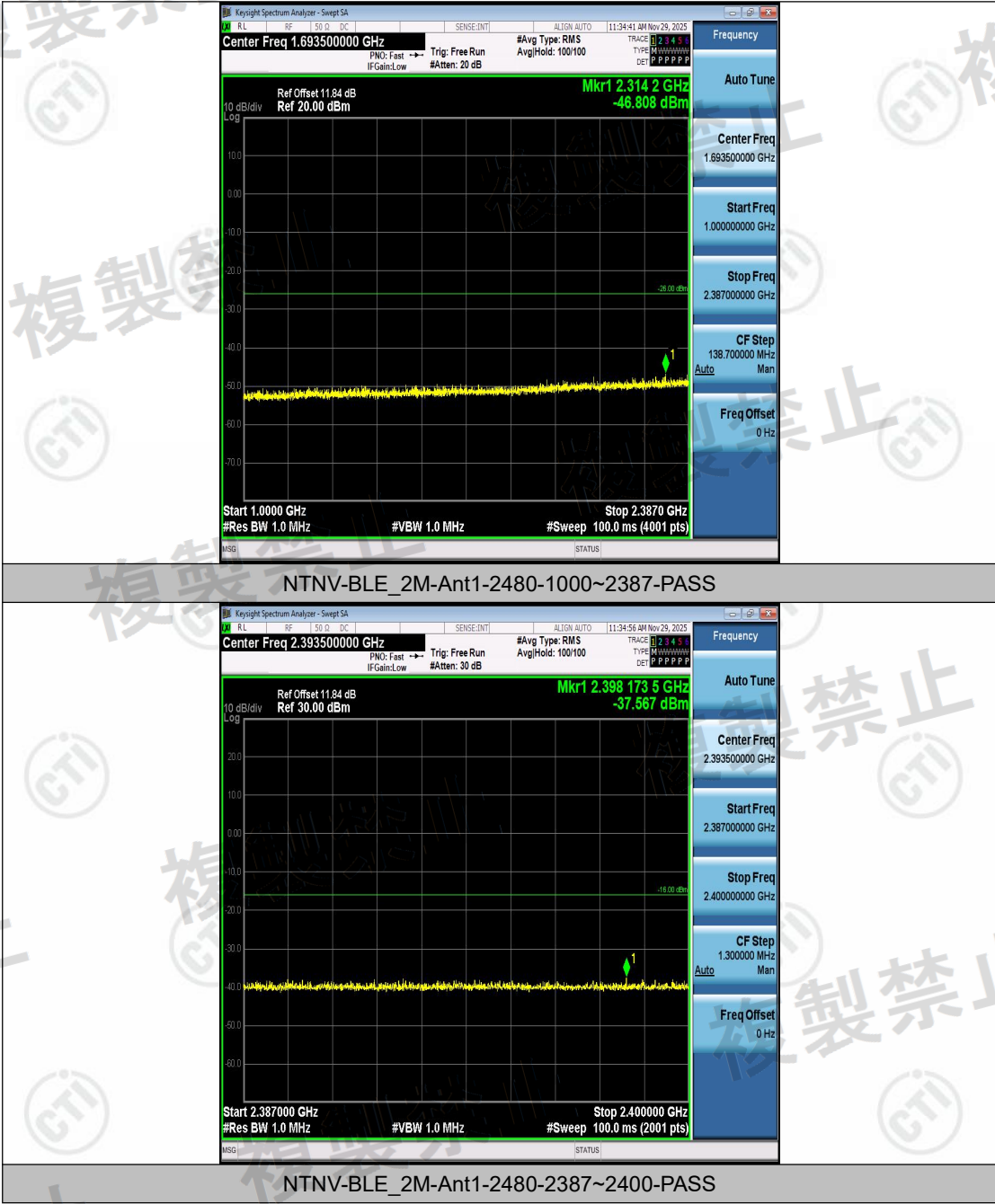


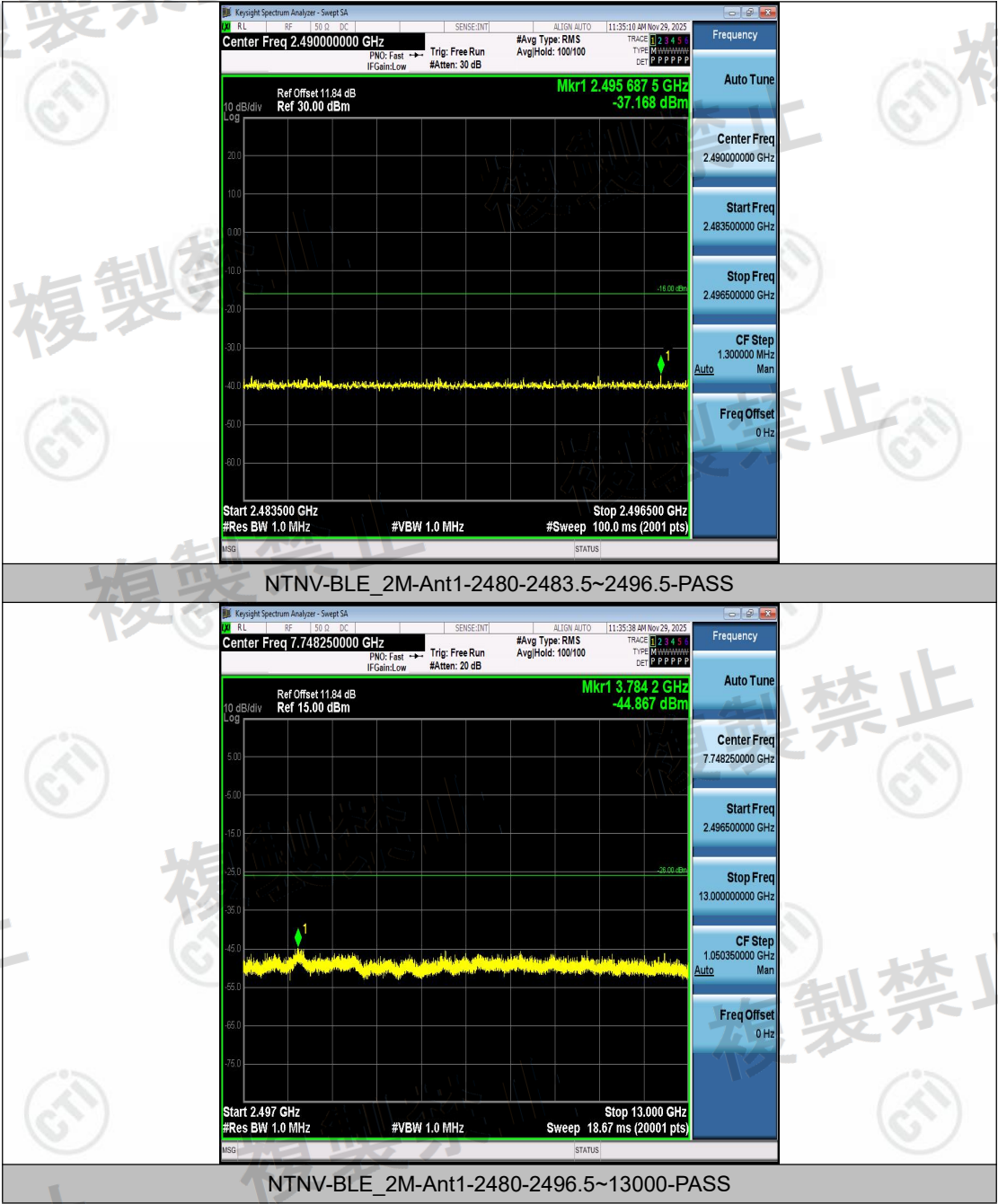




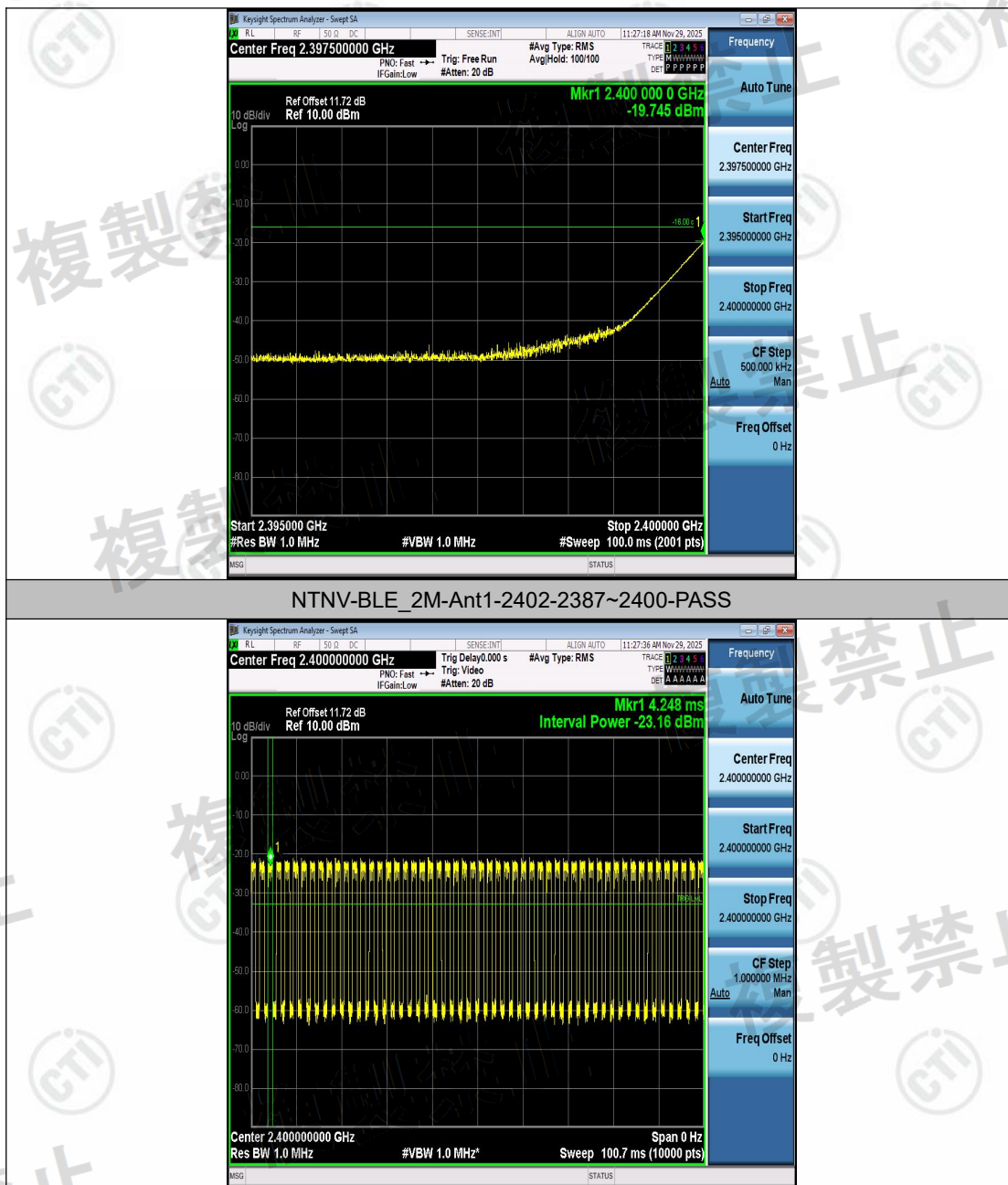








Test Graphs_Step2

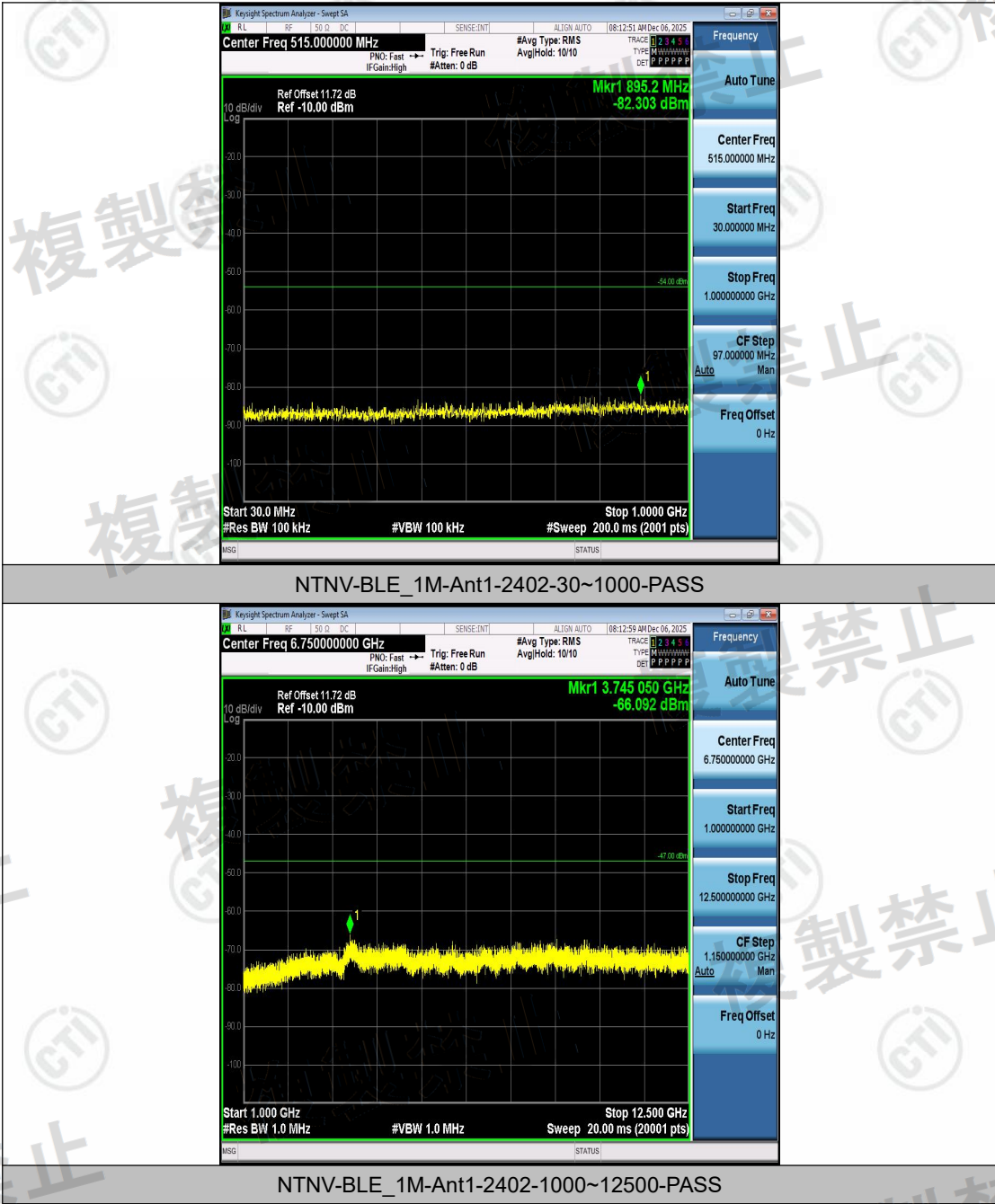


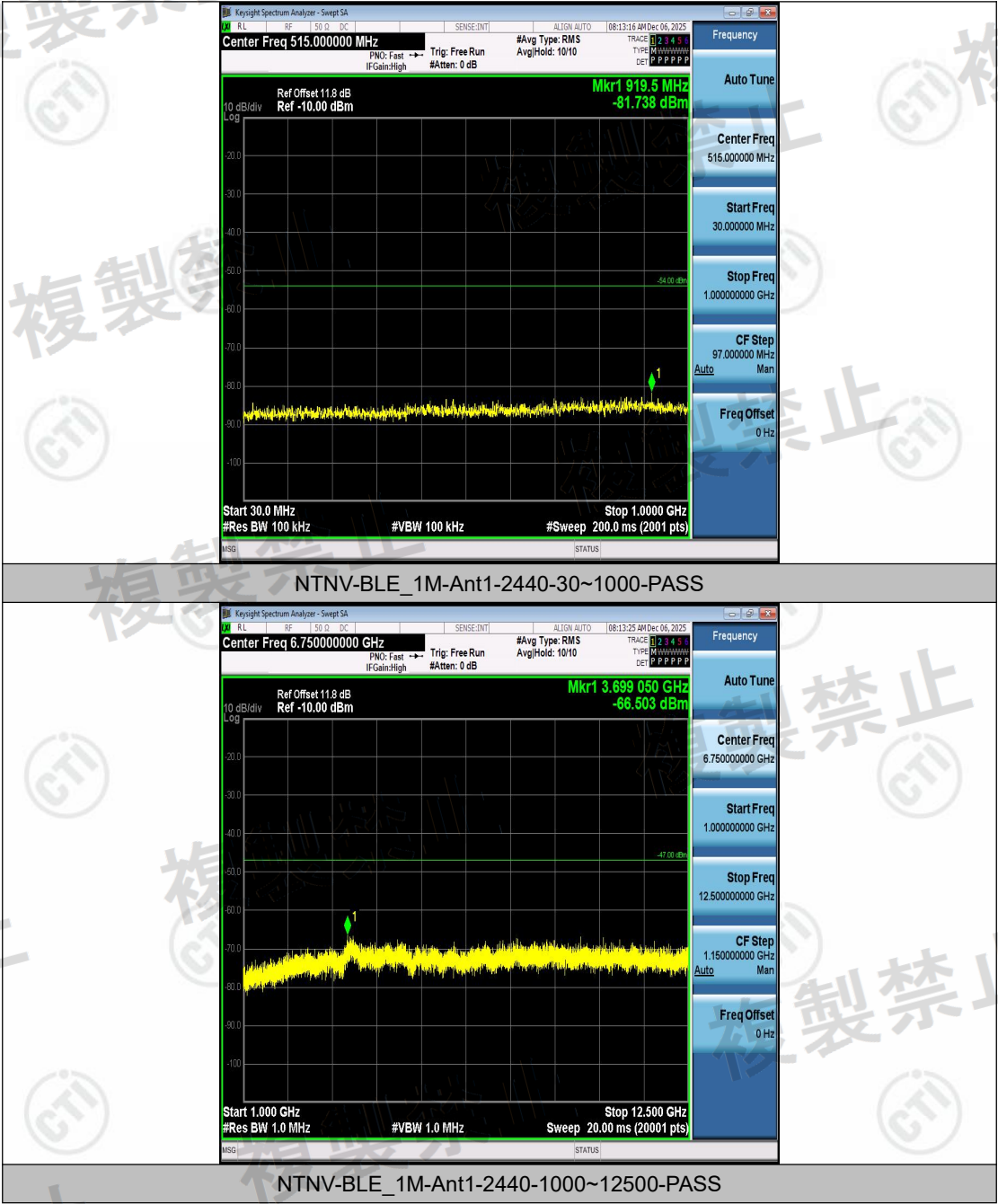
Appendix F: Secondary Radiated Emission Strength

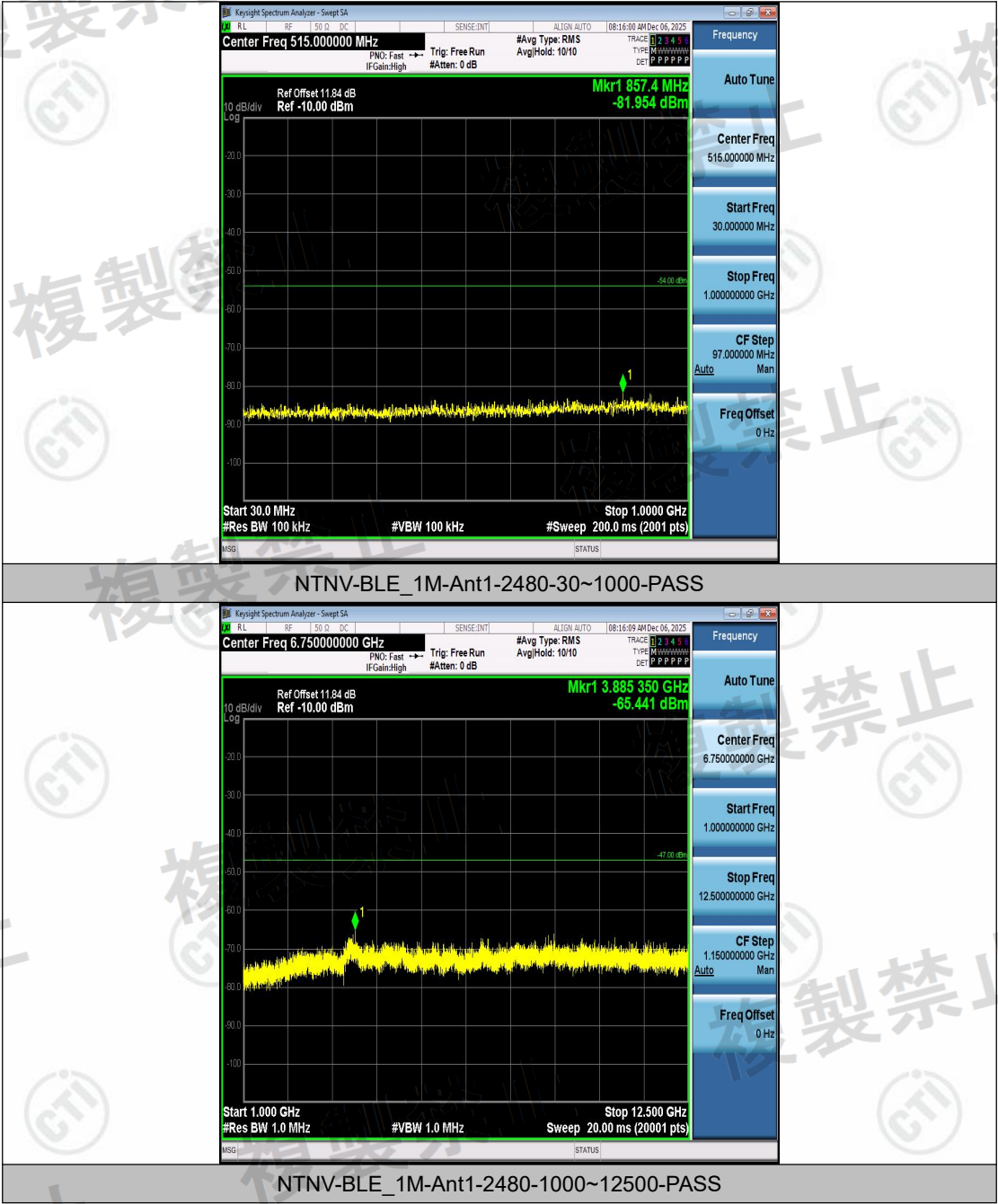
Test Result

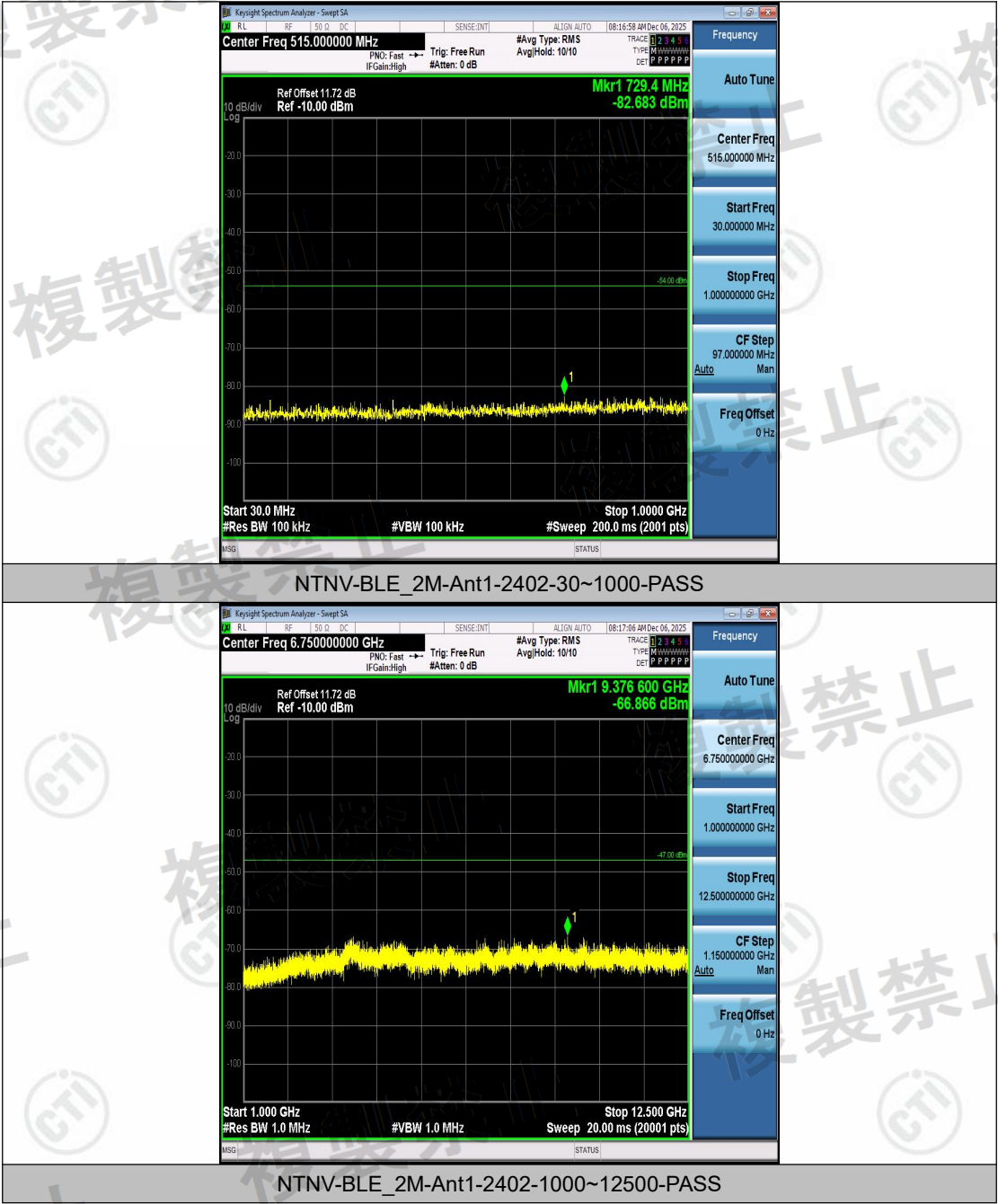
TestCondition	TestMode	Antenna	Freq(MHz)	Freq.Range [MHz]	ResultFrequency (MHz)	Result [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	BLE_1M	Ant1	2402	30~1000	895.24	-82.30	0.00589	≤4	PASS
NTNV	BLE_1M	Ant1	2402	1000~12500	3745.05	-66.09	0.24604	≤20	PASS
NTNV	BLE_1M	Ant1	2440	30~1000	919.49	-81.74	0.00670	≤4	PASS
NTNV	BLE_1M	Ant1	2440	1000~12500	3699.05	-66.50	0.22387	≤20	PASS
NTNV	BLE_1M	Ant1	2480	30~1000	857.41	-81.95	0.00638	≤4	PASS
NTNV	BLE_1M	Ant1	2480	1000~12500	3885.35	-65.44	0.28576	≤20	PASS
NTNV	BLE_2M	Ant1	2402	30~1000	729.37	-82.68	0.00540	≤4	PASS
NTNV	BLE_2M	Ant1	2402	1000~12500	9376.60	-66.87	0.20559	≤20	PASS
NTNV	BLE_2M	Ant1	2440	30~1000	904.94	-82.30	0.00589	≤4	PASS
NTNV	BLE_2M	Ant1	2440	1000~12500	3730.10	-66.53	0.22233	≤20	PASS
NTNV	BLE_2M	Ant1	2480	30~1000	906.88	-81.50	0.00708	≤4	PASS
NTNV	BLE_2M	Ant1	2480	1000~12500	3867.53	-65.89	0.25763	≤20	PASS

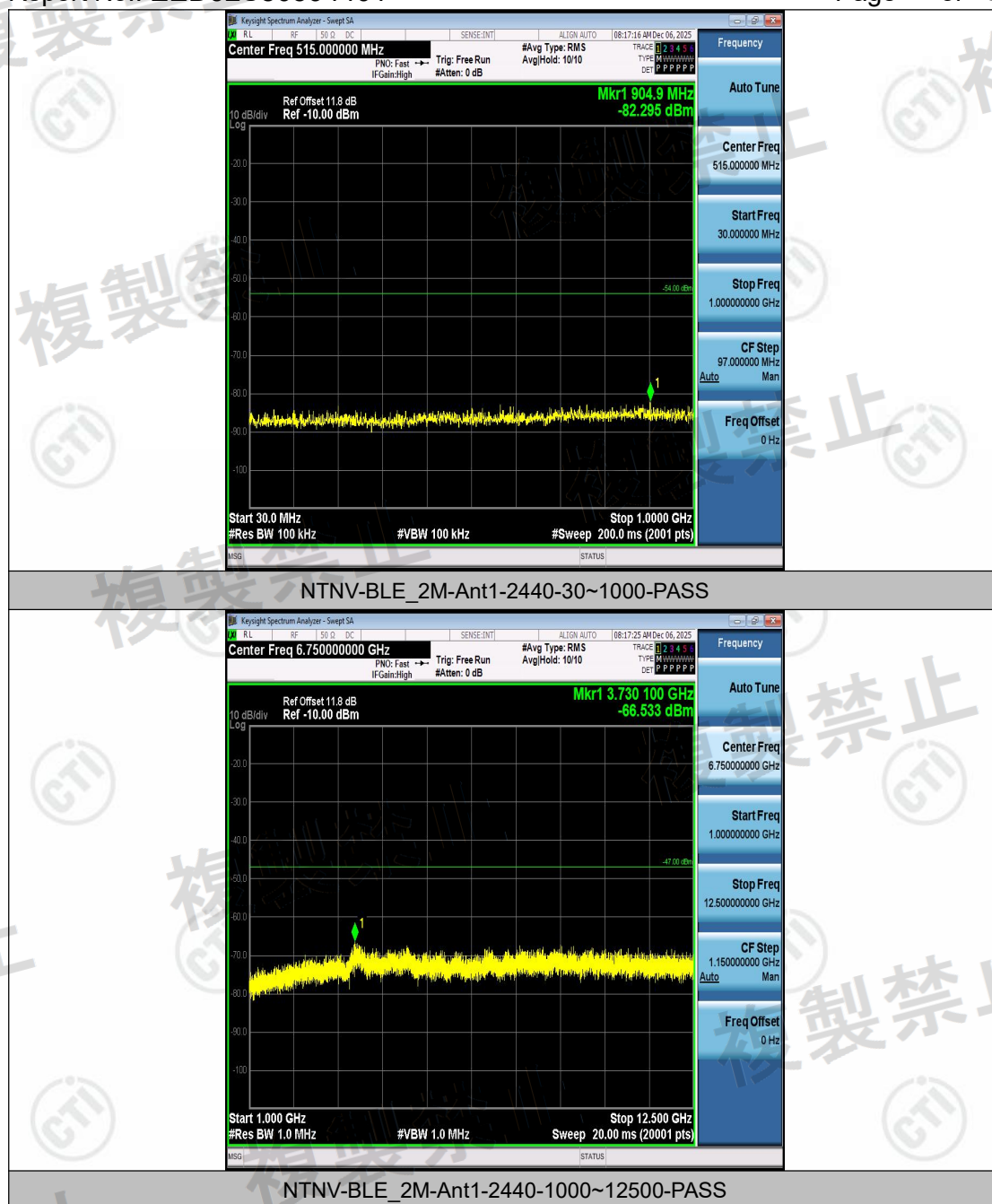
Test Graphs

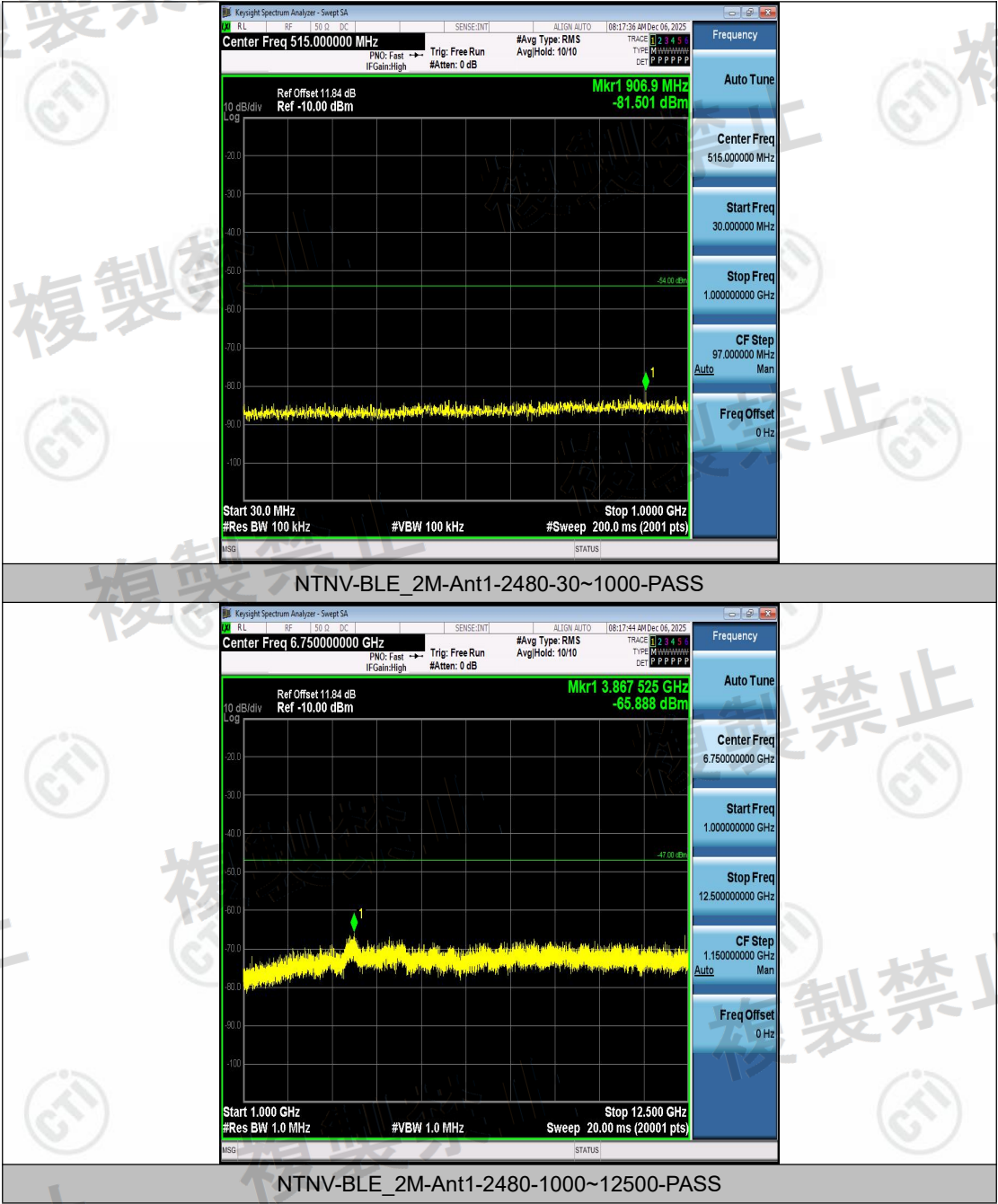












*** End of Report ***