

Appendix: Bluetooth LE

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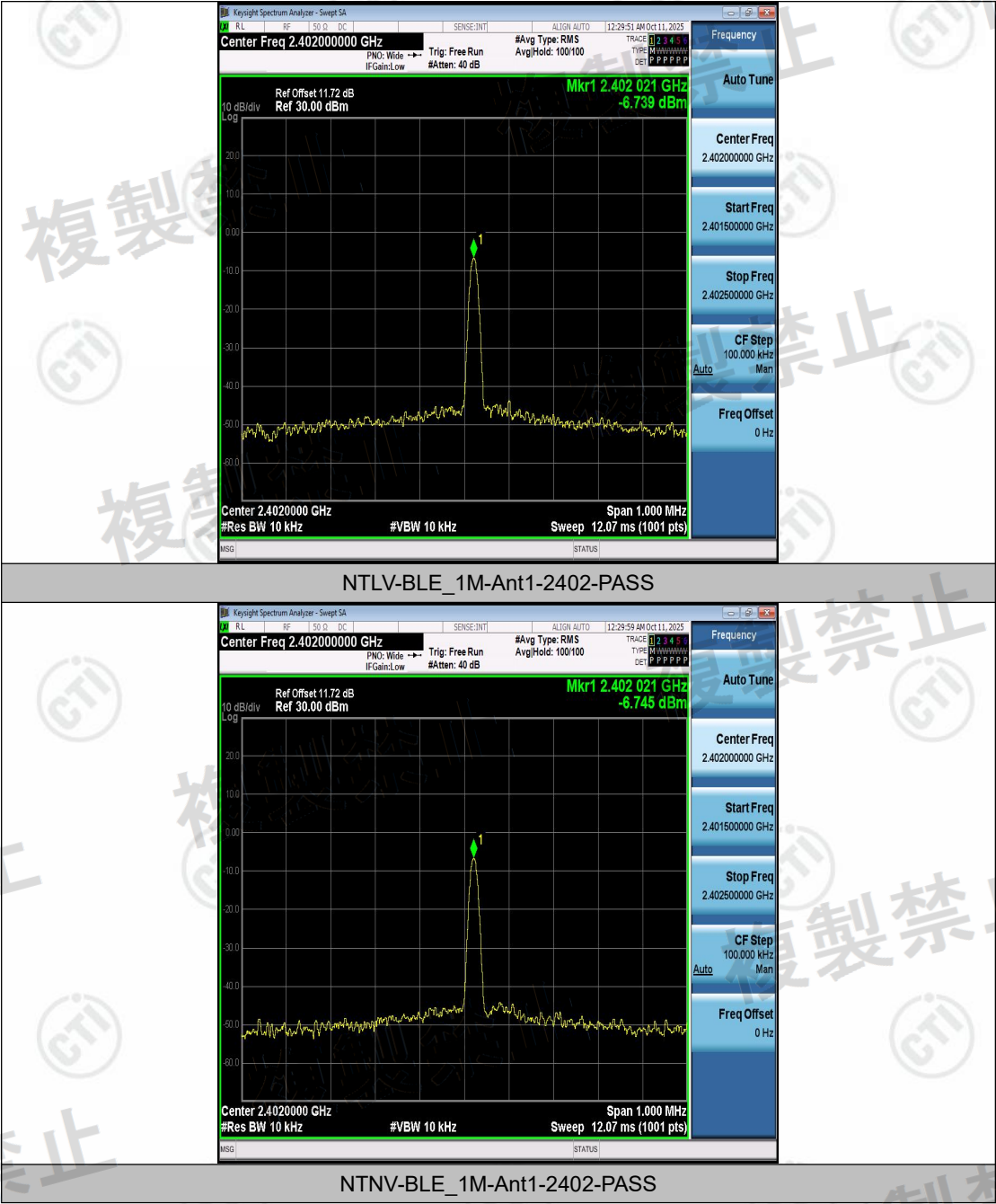
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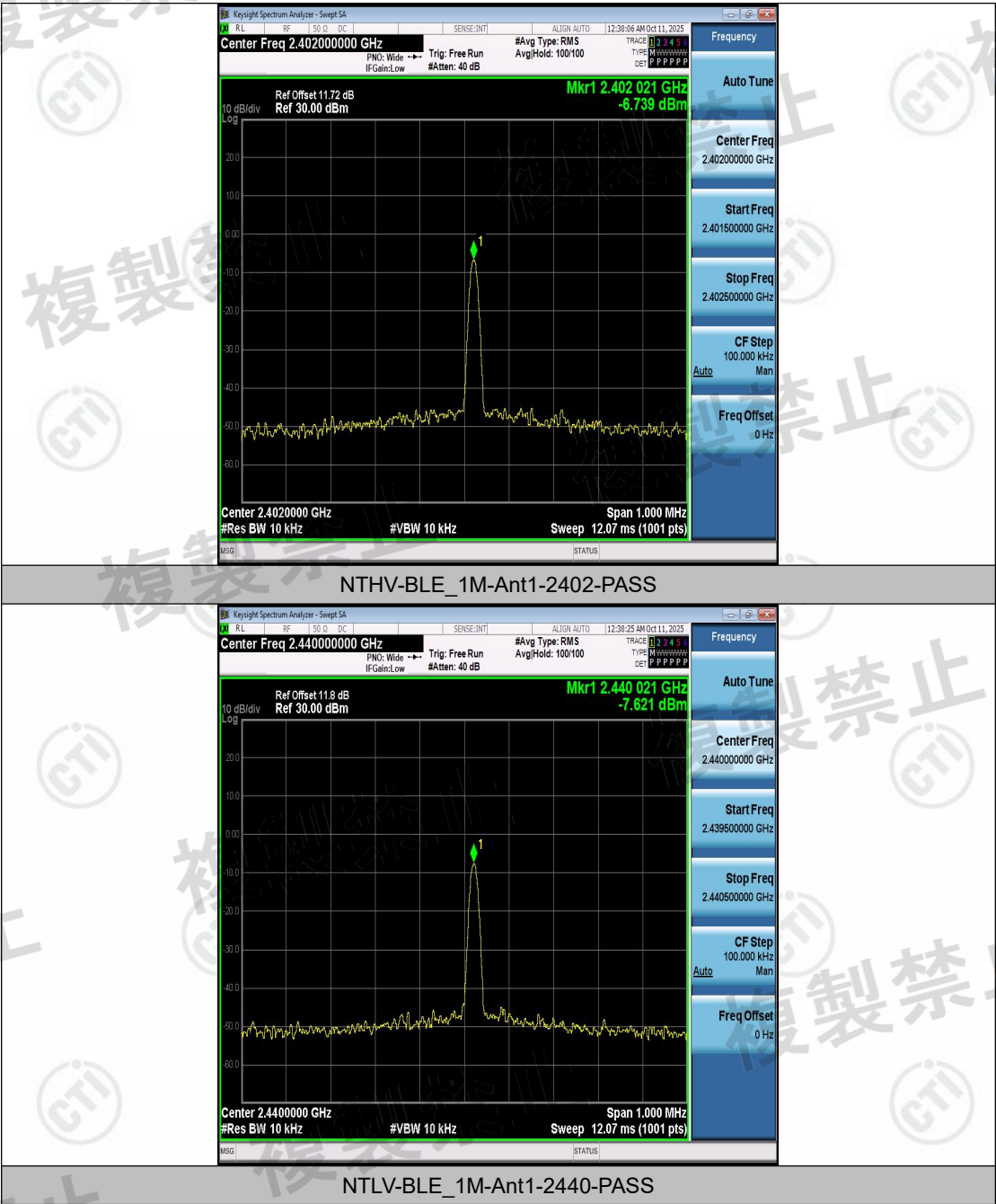
Appendix A: Frequency Error

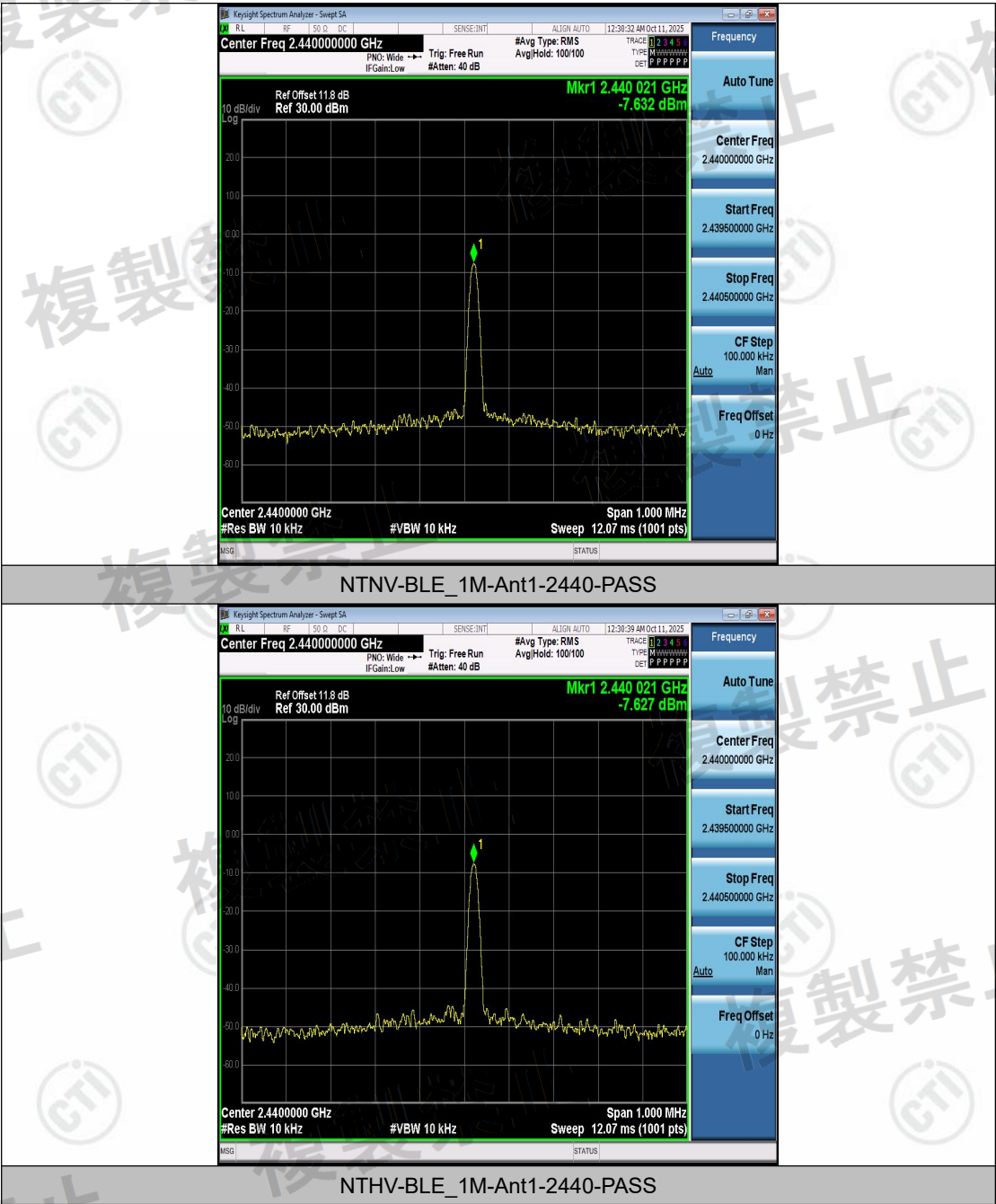
Test Result

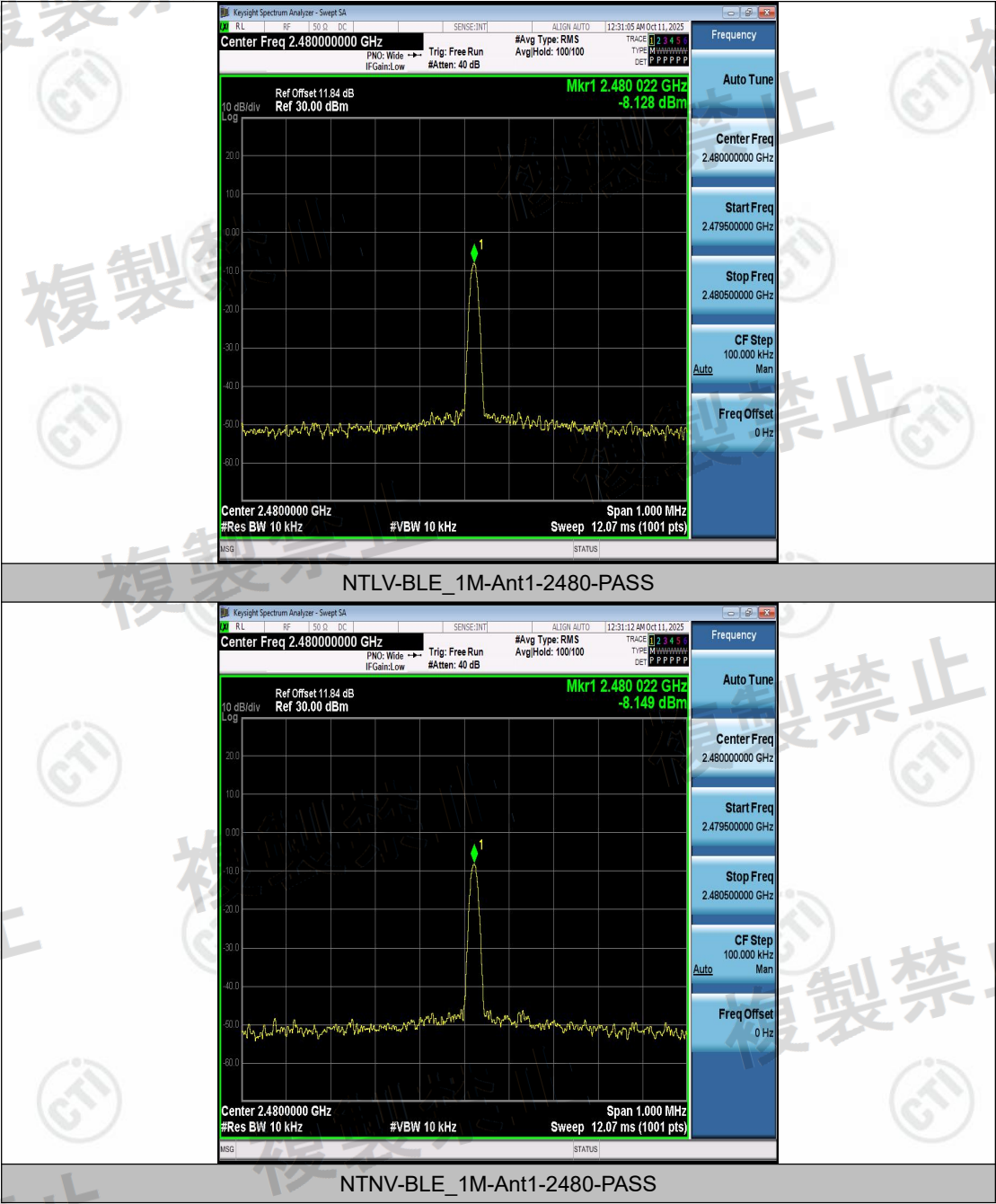
TestCondition	TestMode	Antenna	Freq(MHz)	CenterFreq [MHz]	Result[ppm]	Limit[ppm]	Verdict
NTLV	BLE_1M	Ant1	2402	2402.021	+8.74271	±50	PASS
NTNV	BLE_1M	Ant1	2402	2402.021	+8.74271	±50	PASS
NTHV	BLE_1M	Ant1	2402	2402.021	+8.74271	±50	PASS
NTLV	BLE_1M	Ant1	2440	2440.021	+8.60656	±50	PASS
NTNV	BLE_1M	Ant1	2440	2440.021	+8.60656	±50	PASS
NTHV	BLE_1M	Ant1	2440	2440.021	+8.60656	±50	PASS
NTLV	BLE_1M	Ant1	2480	2480.022	+8.87097	±50	PASS
NTNV	BLE_1M	Ant1	2480	2480.022	+8.87097	±50	PASS
NTHV	BLE_1M	Ant1	2480	2480.022	+8.87097	±50	PASS

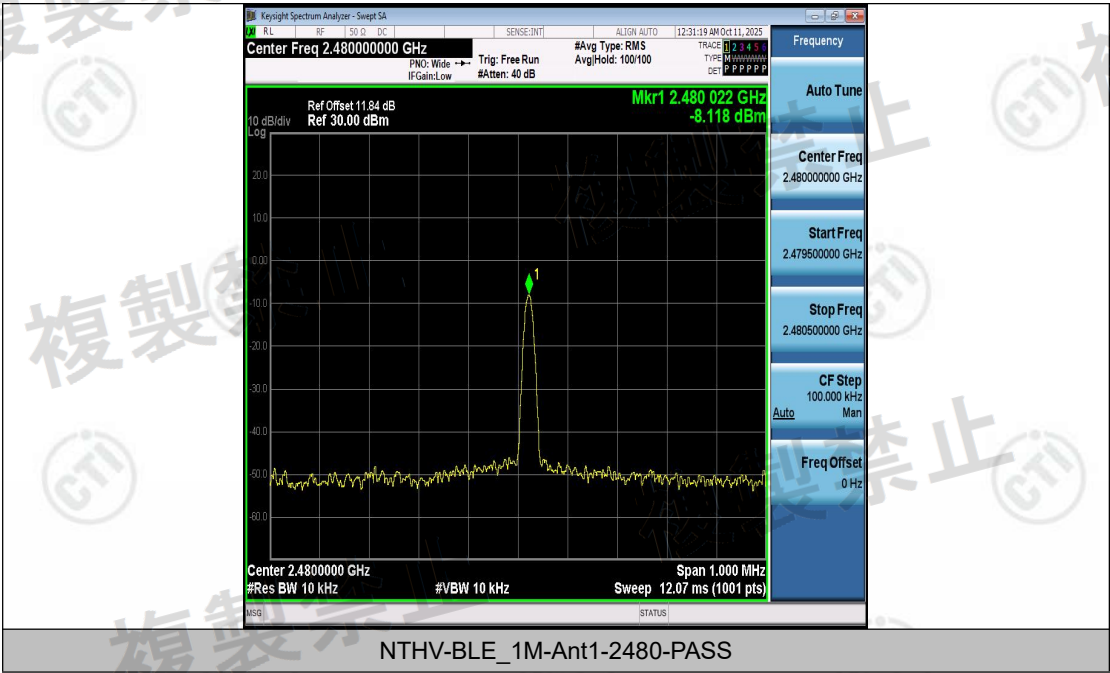
Test Graphs











Appendix B: Antenna Power

Test Result

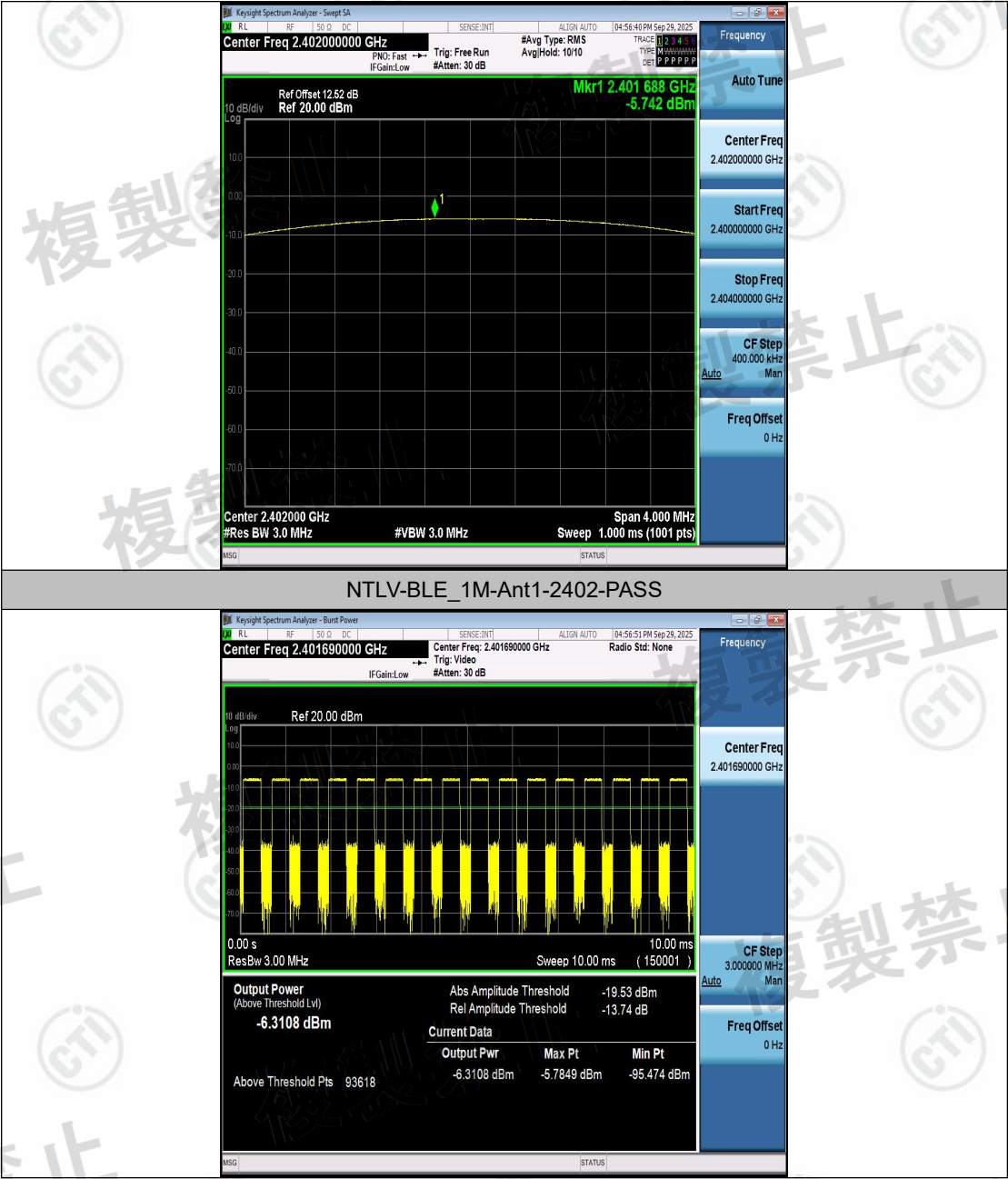
TestCondition	TestMode	Antenna	Freq(M Hz)	Result(dBm)	Result(mW)	Limit(mW)	Verdict
NTLV	BLE_1M	Ant1	2402	-6.31	0.2339	≤10	PASS
NTNV	BLE_1M	Ant1	2402	-6.29	0.2350	≤10	PASS
NTHV	BLE_1M	Ant1	2402	-6.27	0.2360	≤10	PASS
NTLV	BLE_1M	Ant1	2440	-6.97	0.2009	≤10	PASS
NTNV	BLE_1M	Ant1	2440	-6.99	0.2000	≤10	PASS
NTHV	BLE_1M	Ant1	2440	-7.05	0.1972	≤10	PASS
NTLV	BLE_1M	Ant1	2480	-7.70	0.1698	≤10	PASS
NTNV	BLE_1M	Ant1	2480	-7.46	0.1795	≤10	PASS
NTHV	BLE_1M	Ant1	2480	-7.52	0.1770	≤10	PASS
NTLV	BLE_2M	Ant1	2402	-6.65	0.2163	≤10	PASS
NTNV	BLE_2M	Ant1	2402	-6.60	0.2188	≤10	PASS
NTHV	BLE_2M	Ant1	2402	-6.52	0.2228	≤10	PASS
NTLV	BLE_2M	Ant1	2440	-7.22	0.1897	≤10	PASS
NTNV	BLE_2M	Ant1	2440	-7.35	0.1841	≤10	PASS
NTHV	BLE_2M	Ant1	2440	-7.14	0.1932	≤10	PASS
NTLV	BLE_2M	Ant1	2480	-7.83	0.1648	≤10	PASS
NTNV	BLE_2M	Ant1	2480	-7.80	0.1660	≤10	PASS
NTHV	BLE_2M	Ant1	2480	-7.87	0.1633	≤10	PASS

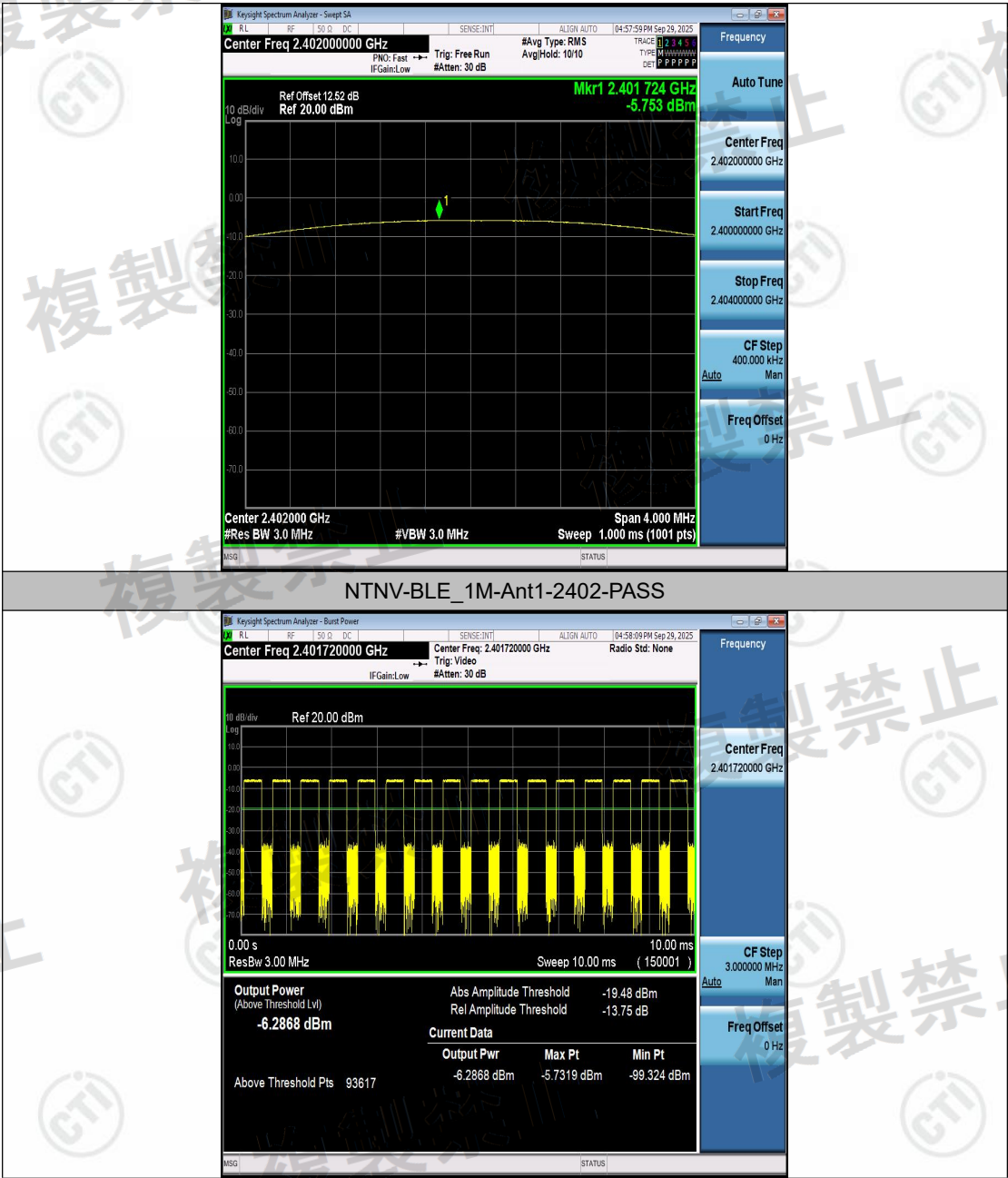
Test Condition	Test Mode	Antenna	Freq(MHz)	Power (mW)	RatedPower (mW)	Result (%)	Limit (%)	Verdict
NTLV	BLE_1M	Ant1	2402	0.2339	0.25	-6.44	N/A, +20	PASS
NTNV	BLE_1M	Ant1	2402	0.2350	0.25	-6.00	N/A, +20	PASS
NTHV	BLE_1M	Ant1	2402	0.2360	0.25	-5.60	N/A, +20	PASS
NTLV	BLE_1M	Ant1	2440	0.2009	0.25	-19.64	N/A, +20	PASS
NTNV	BLE_1M	Ant1	2440	0.2000	0.25	-20.00	N/A, +20	PASS
NTHV	BLE_1M	Ant1	2440	0.1972	0.25	-21.12	N/A, +20	PASS
NTLV	BLE_1M	Ant1	2480	0.1698	0.25	-32.08	N/A, +20	PASS
NTNV	BLE_1M	Ant1	2480	0.1795	0.25	-28.20	N/A, +20	PASS
NTHV	BLE_1M	Ant1	2480	0.1770	0.25	-29.20	N/A, +20	PASS
NTLV	BLE_2M	Ant1	2402	0.2163	0.2	8.15	N/A, +20	PASS
NTNV	BLE_2M	Ant1	2402	0.2188	0.2	9.40	N/A, +20	PASS
NTHV	BLE_2M	Ant1	2402	0.2228	0.2	11.40	N/A, +20	PASS
NTLV	BLE_2M	Ant1	2440	0.1897	0.2	-5.15	N/A, +20	PASS
NTNV	BLE_2M	Ant1	2440	0.1841	0.2	-7.95	N/A, +20	PASS

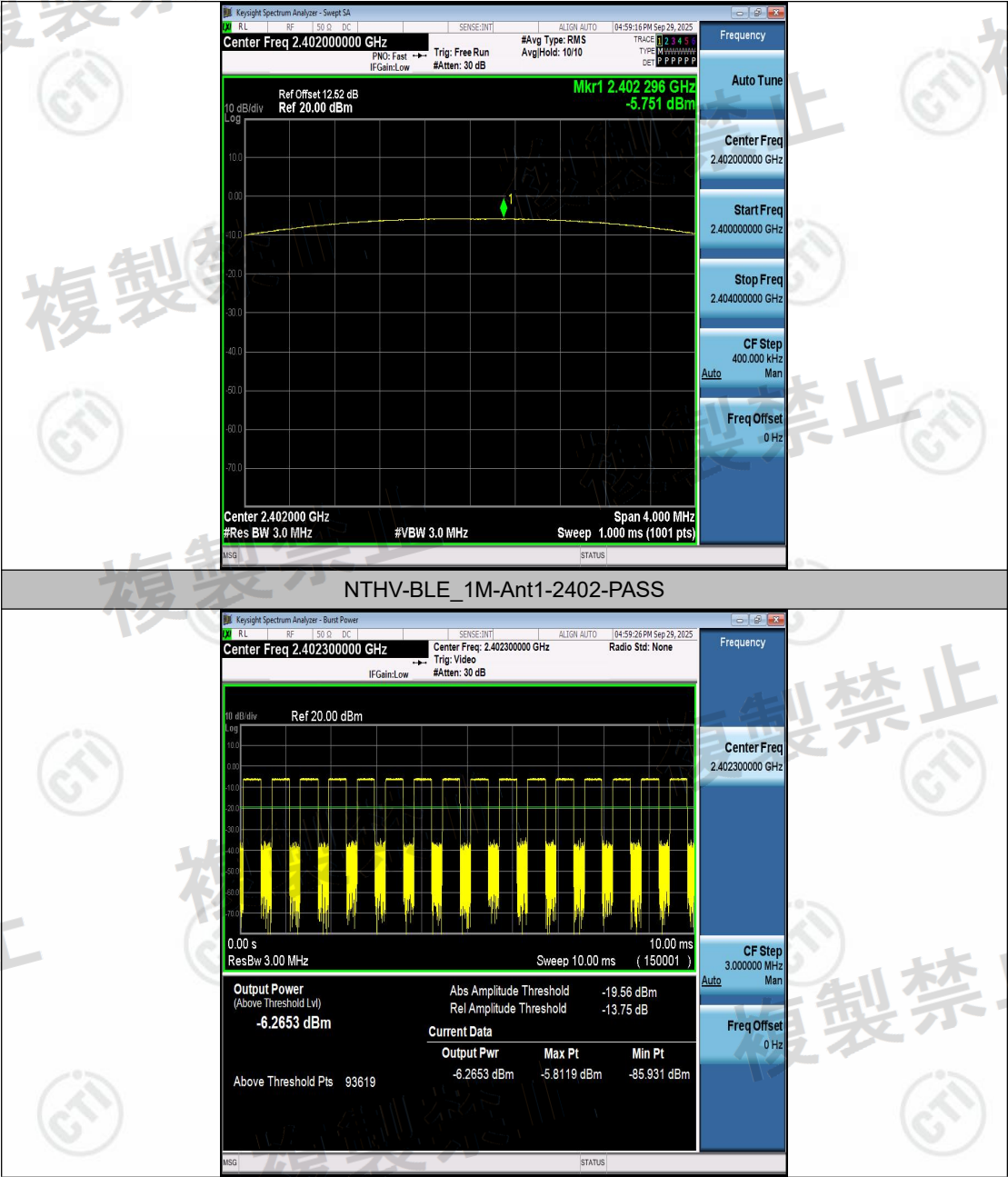
NTHV	BLE_2M	Ant1	2440	0.1932	0.2	-3.40	N/A, +20	PASS
NTLV	BLE_2M	Ant1	2480	0.1648	0.2	-17.60	N/A, +20	PASS
NTNV	BLE_2M	Ant1	2480	0.1660	0.2	-17.00	N/A, +20	PASS
NTHV	BLE_2M	Ant1	2480	0.1633	0.2	-18.35	N/A, +20	PASS

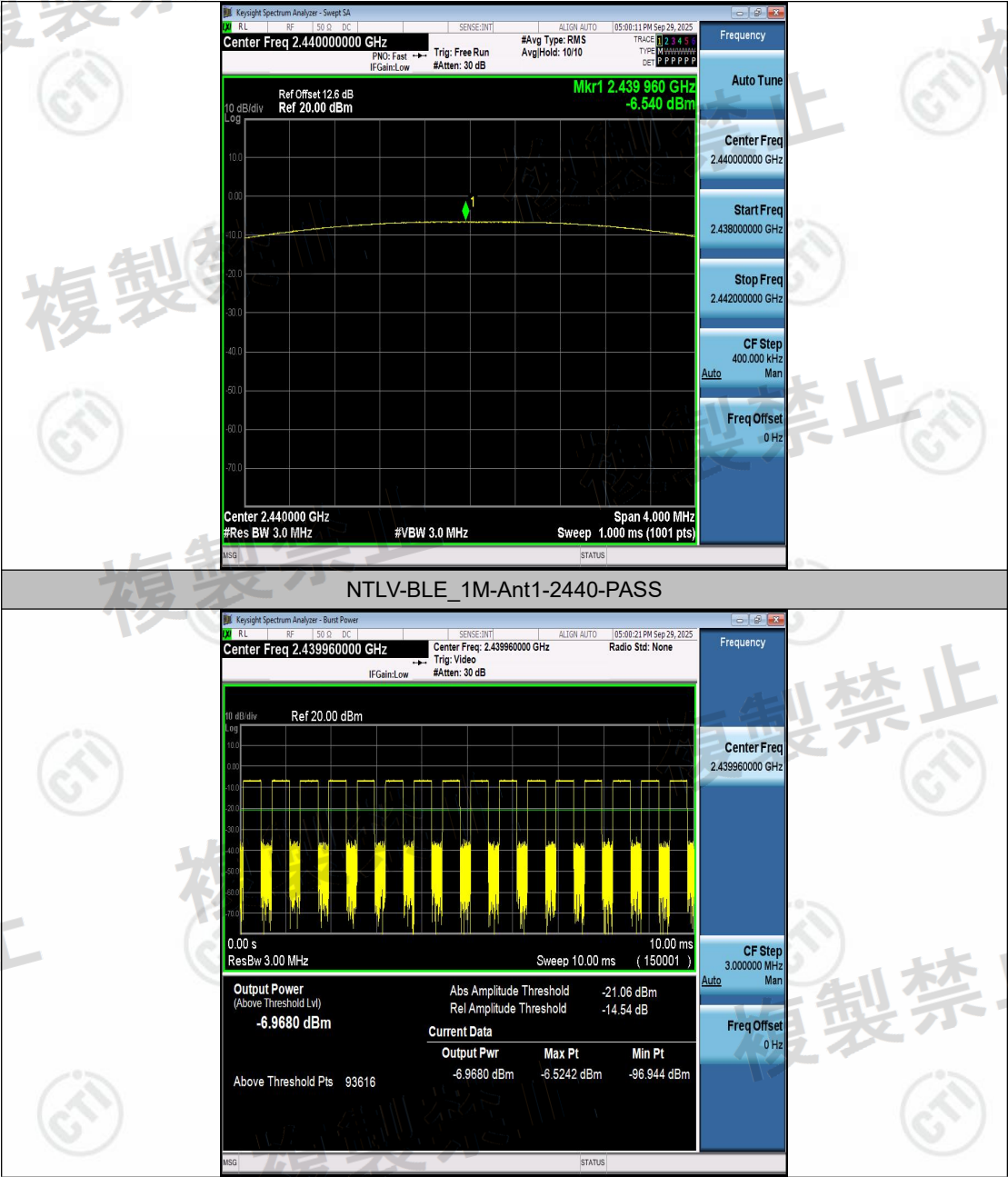
TestCondition	TestMode	Antenna	Freq(MHz)	Result(dBm)	EIRP(dBm)	Limit(dBm)	Verdict
NTLV	BLE_1M	Ant1	2402	-6.31	-8.41	≤12.14	PASS
NTNV	BLE_1M	Ant1	2402	-6.29	-8.39	≤12.14	PASS
NTHV	BLE_1M	Ant1	2402	-6.27	-8.37	≤12.14	PASS
NTLV	BLE_1M	Ant1	2440	-6.97	-9.07	≤12.14	PASS
NTNV	BLE_1M	Ant1	2440	-6.99	-9.09	≤12.14	PASS
NTHV	BLE_1M	Ant1	2440	-7.05	-9.15	≤12.14	PASS
NTLV	BLE_1M	Ant1	2480	-7.70	-9.80	≤12.14	PASS
NTNV	BLE_1M	Ant1	2480	-7.46	-9.56	≤12.14	PASS
NTHV	BLE_1M	Ant1	2480	-7.52	-9.62	≤12.14	PASS
NTLV	BLE_2M	Ant1	2402	-6.65	-8.75	≤12.14	PASS
NTNV	BLE_2M	Ant1	2402	-6.60	-8.70	≤12.14	PASS
NTHV	BLE_2M	Ant1	2402	-6.52	-8.62	≤12.14	PASS
NTLV	BLE_2M	Ant1	2440	-7.22	-9.32	≤12.14	PASS
NTNV	BLE_2M	Ant1	2440	-7.35	-9.45	≤12.14	PASS
NTHV	BLE_2M	Ant1	2440	-7.14	-9.24	≤12.14	PASS
NTLV	BLE_2M	Ant1	2480	-7.83	-9.93	≤12.14	PASS
NTNV	BLE_2M	Ant1	2480	-7.80	-9.90	≤12.14	PASS
NTHV	BLE_2M	Ant1	2480	-7.87	-9.97	≤12.14	PASS

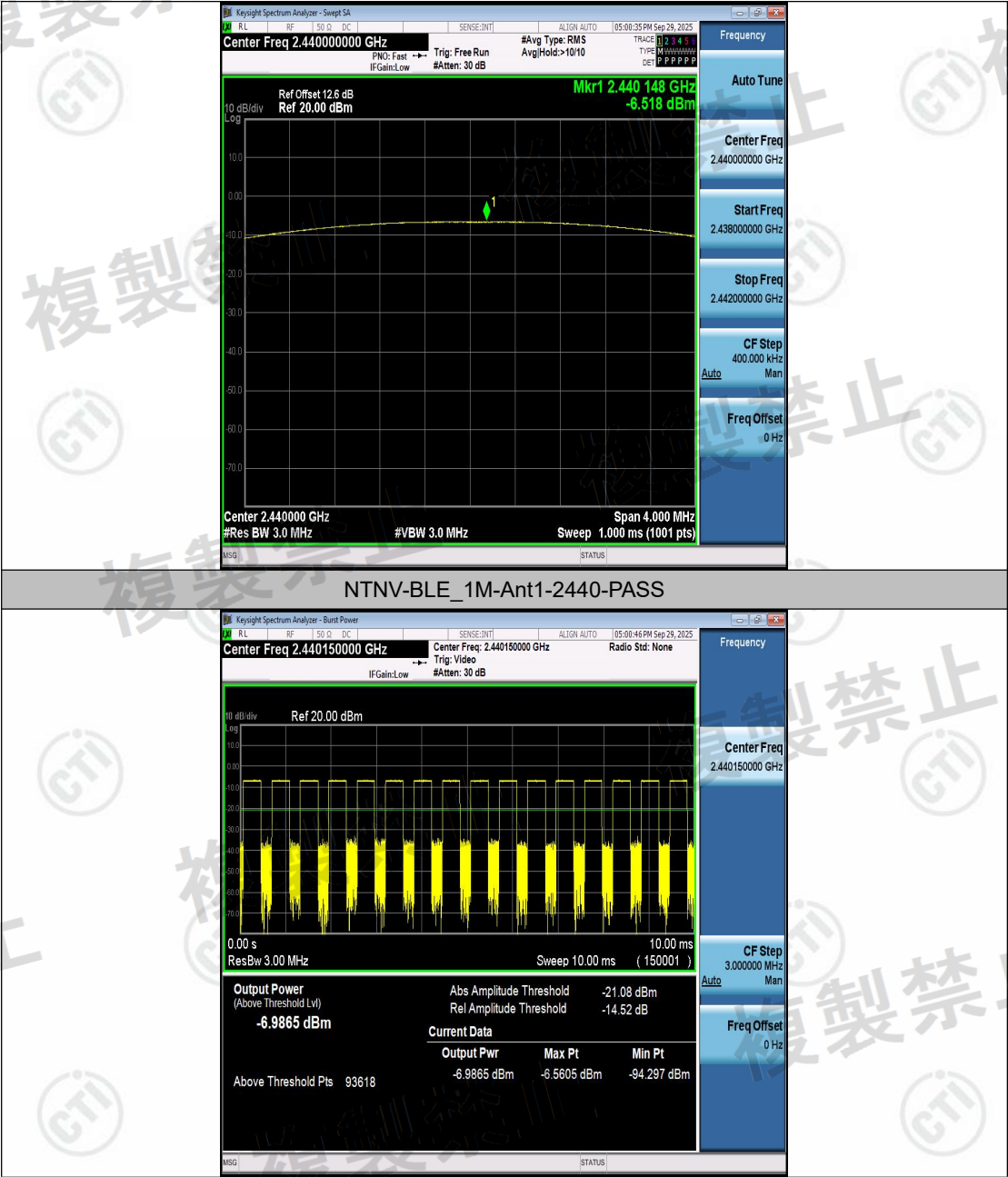
Test Graphs

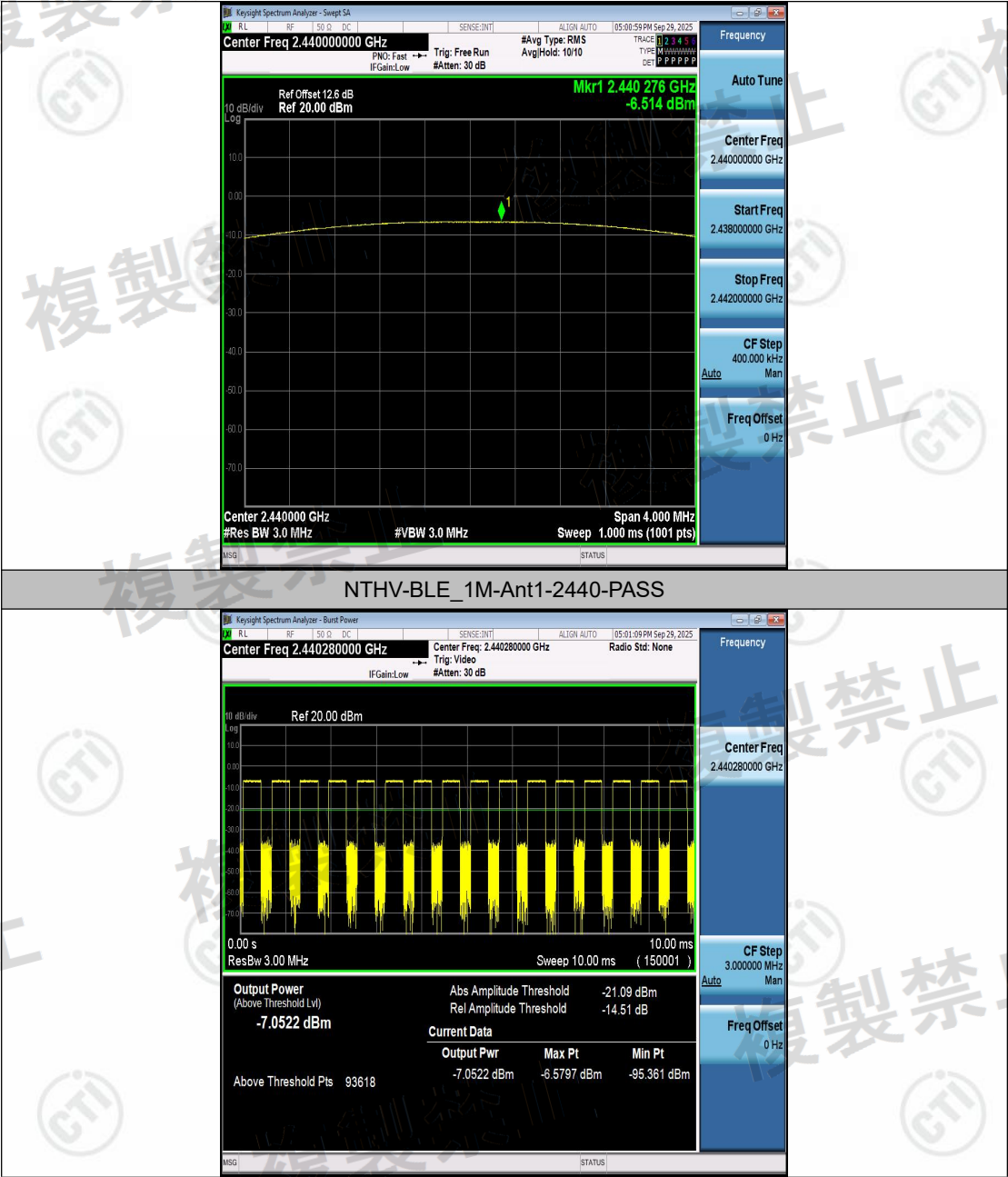


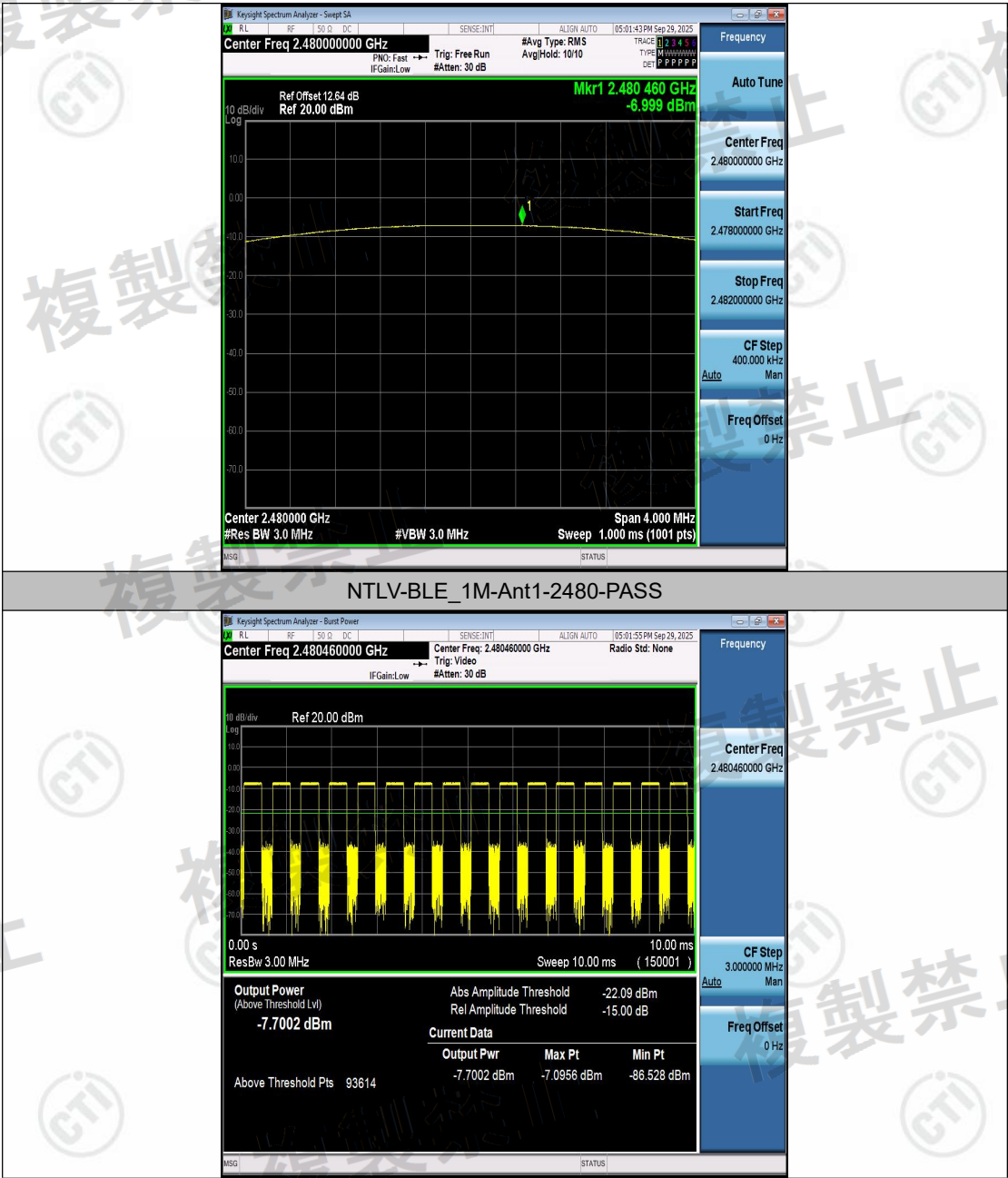


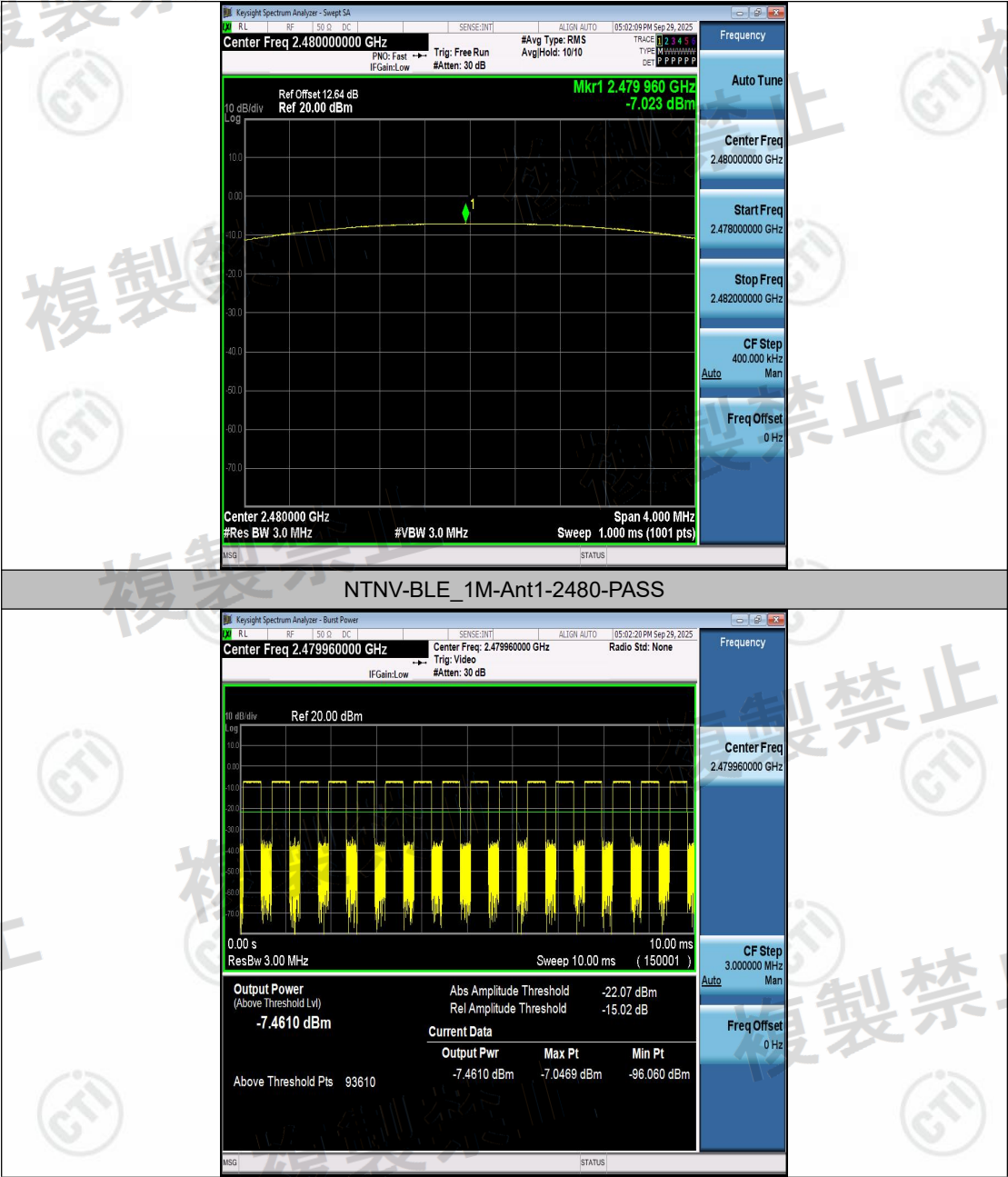


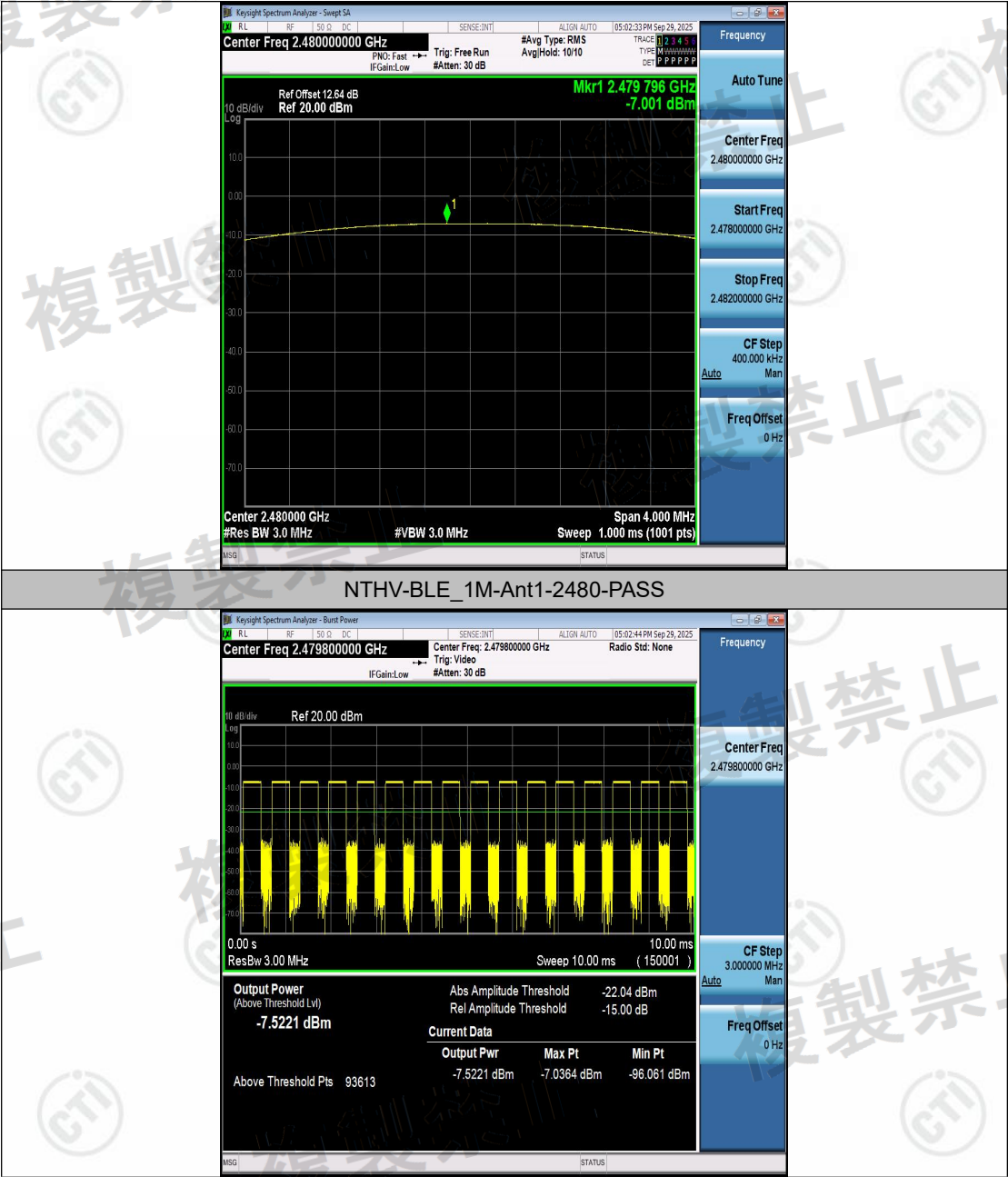


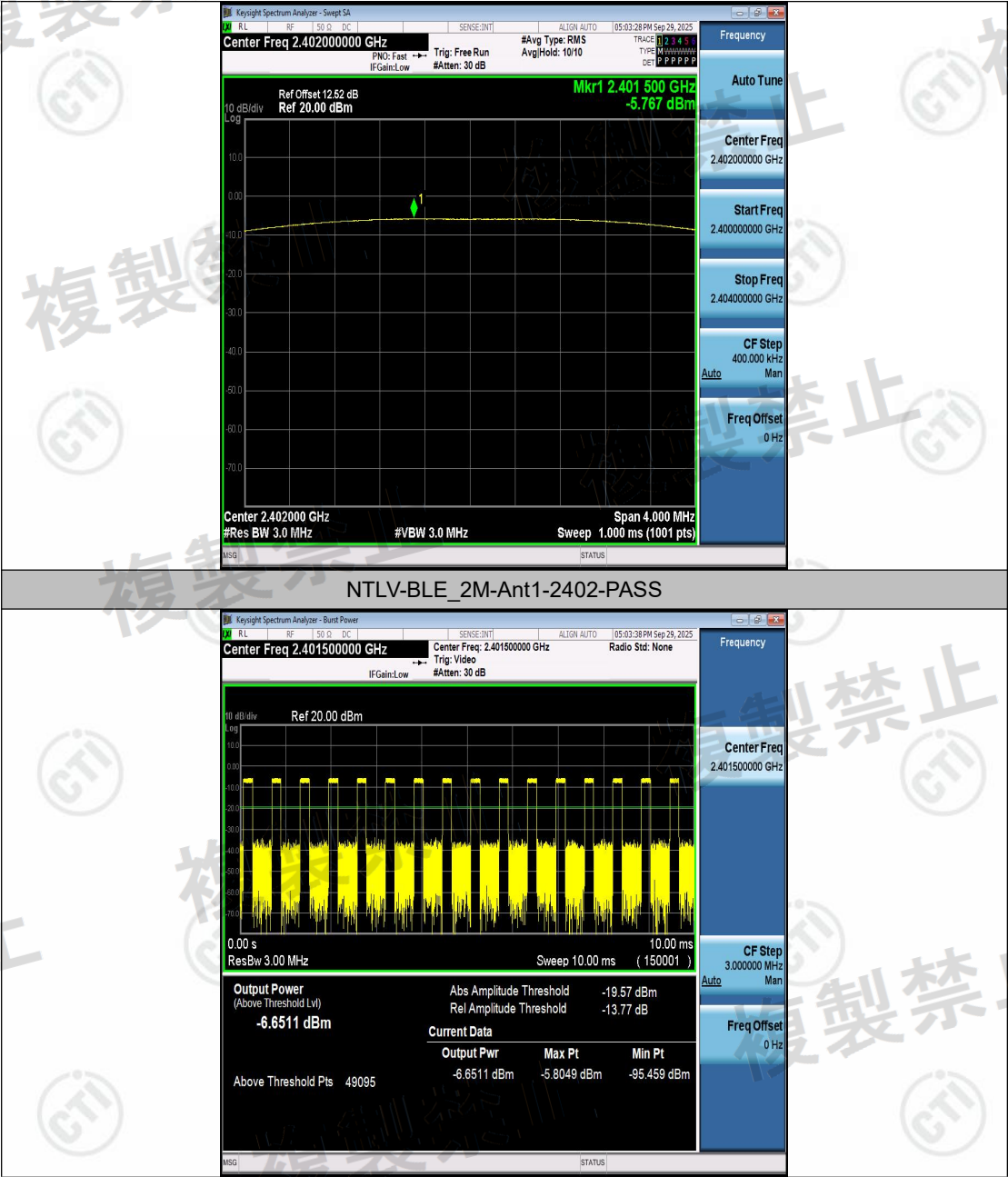


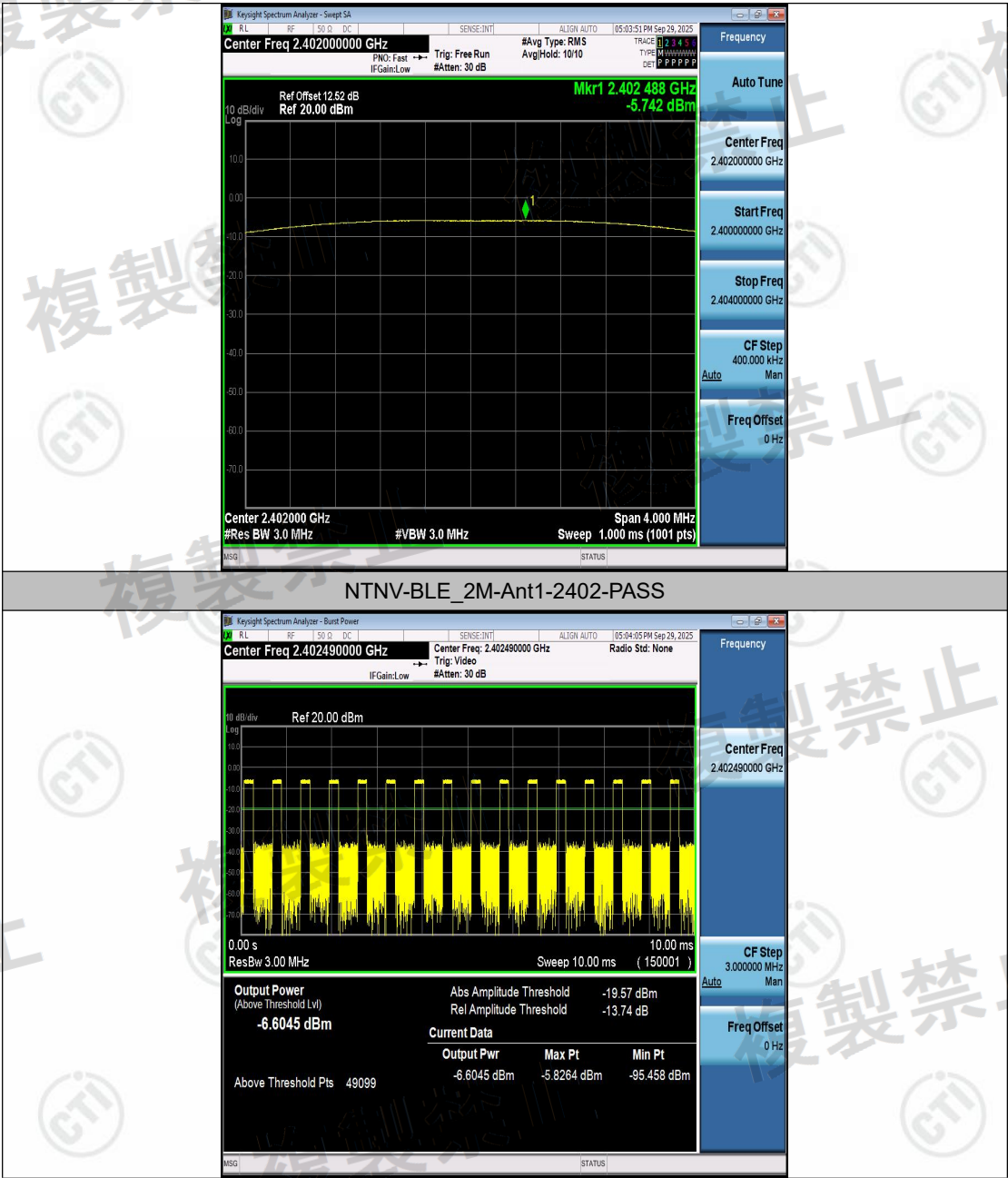


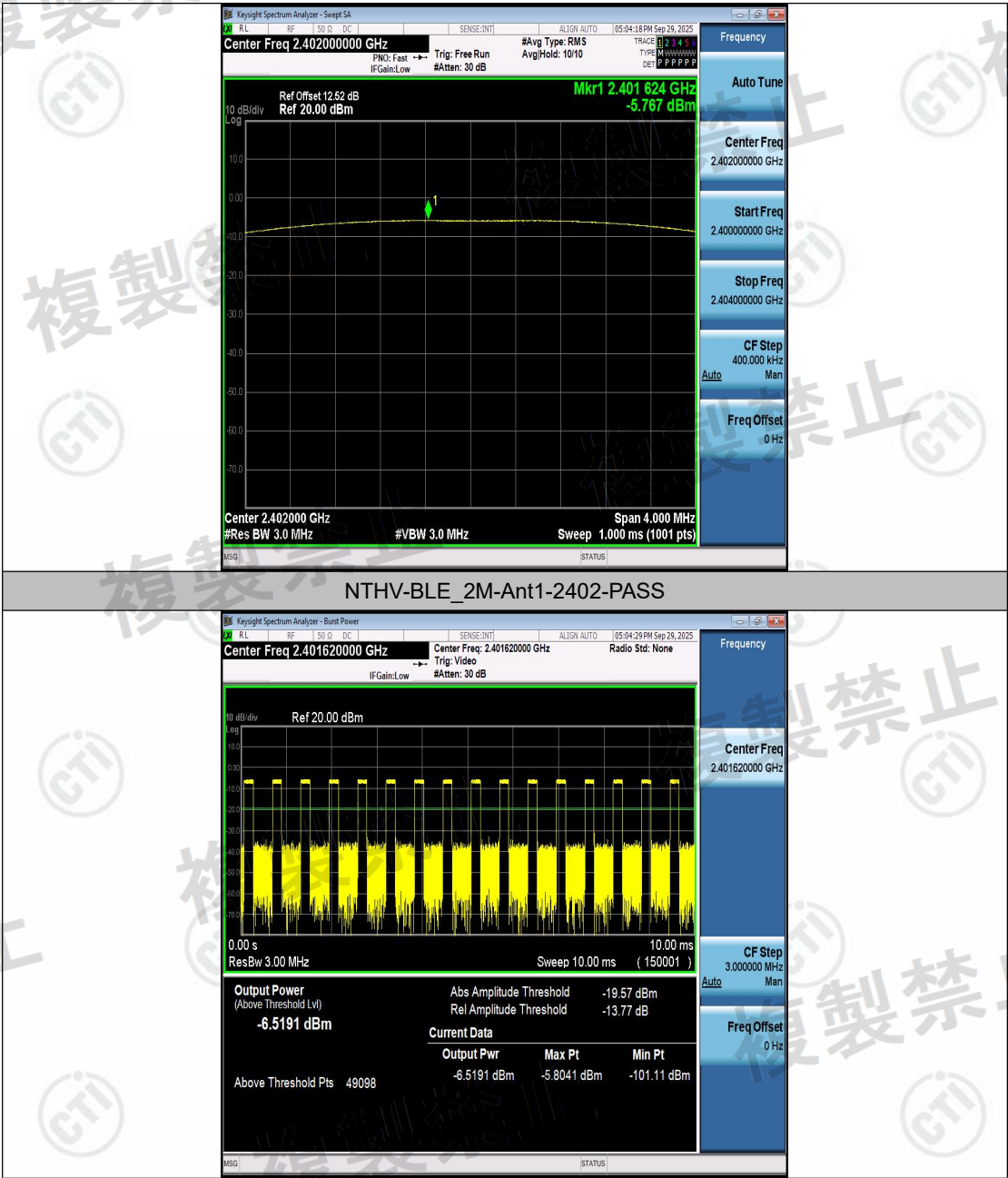


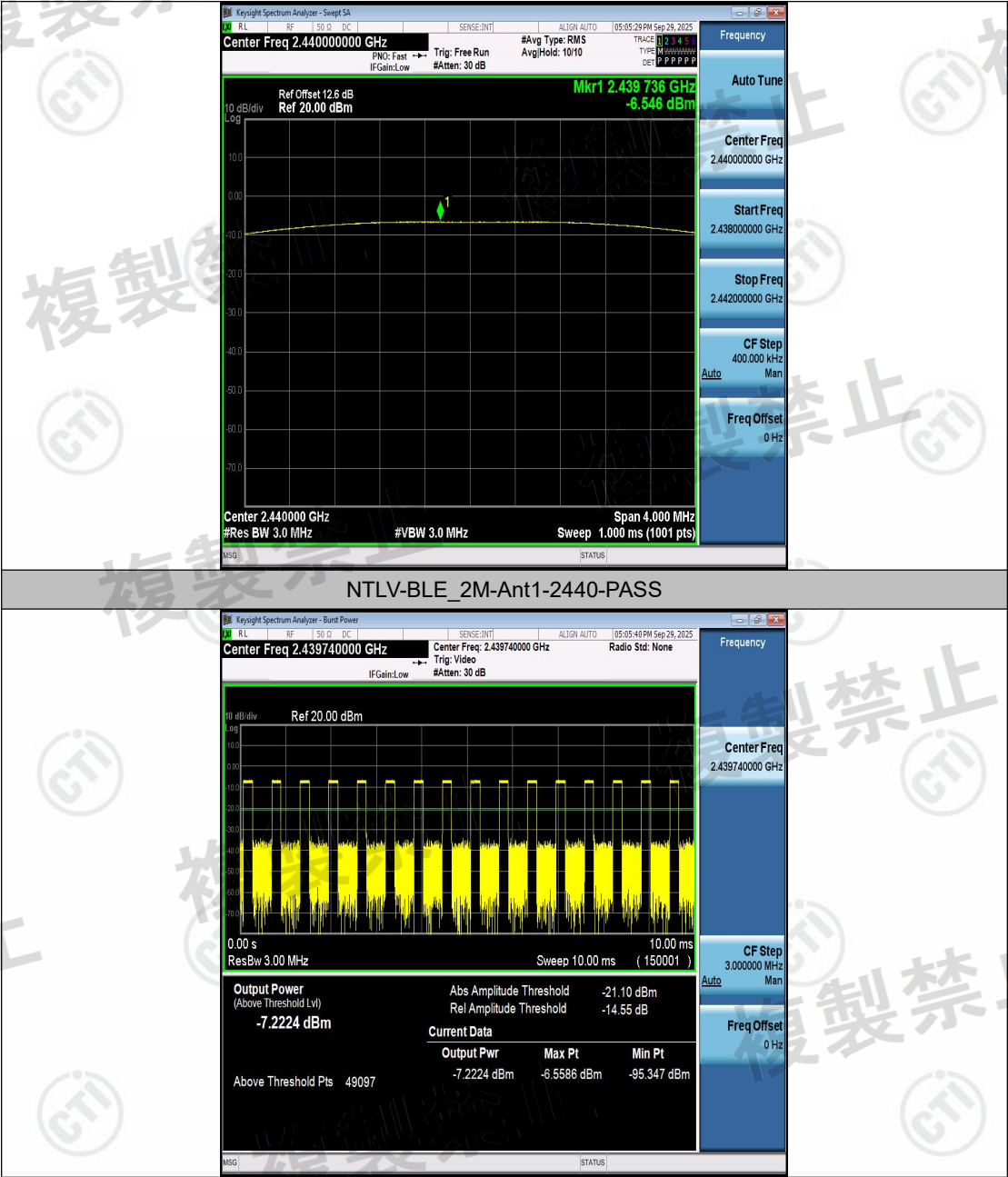


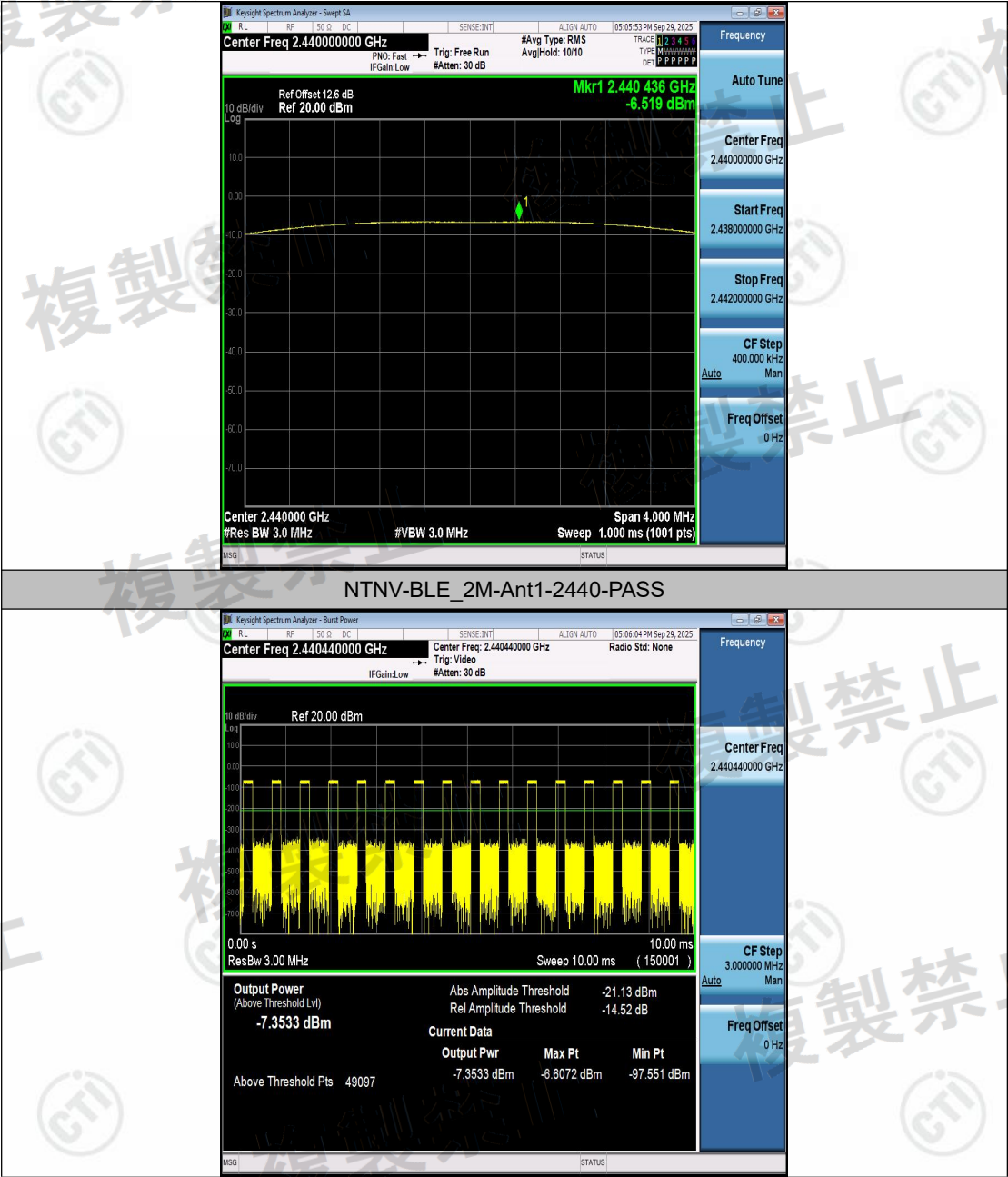


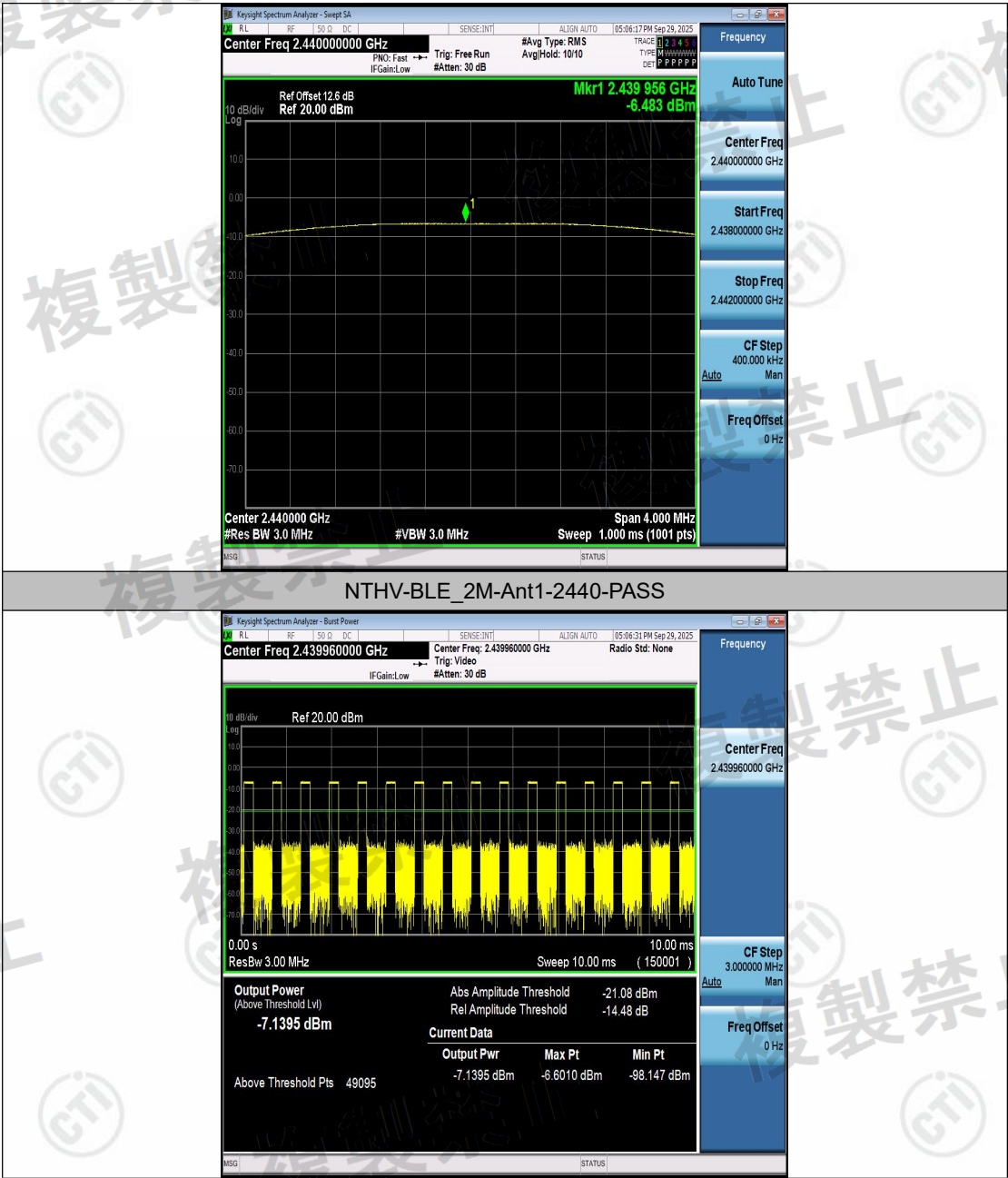


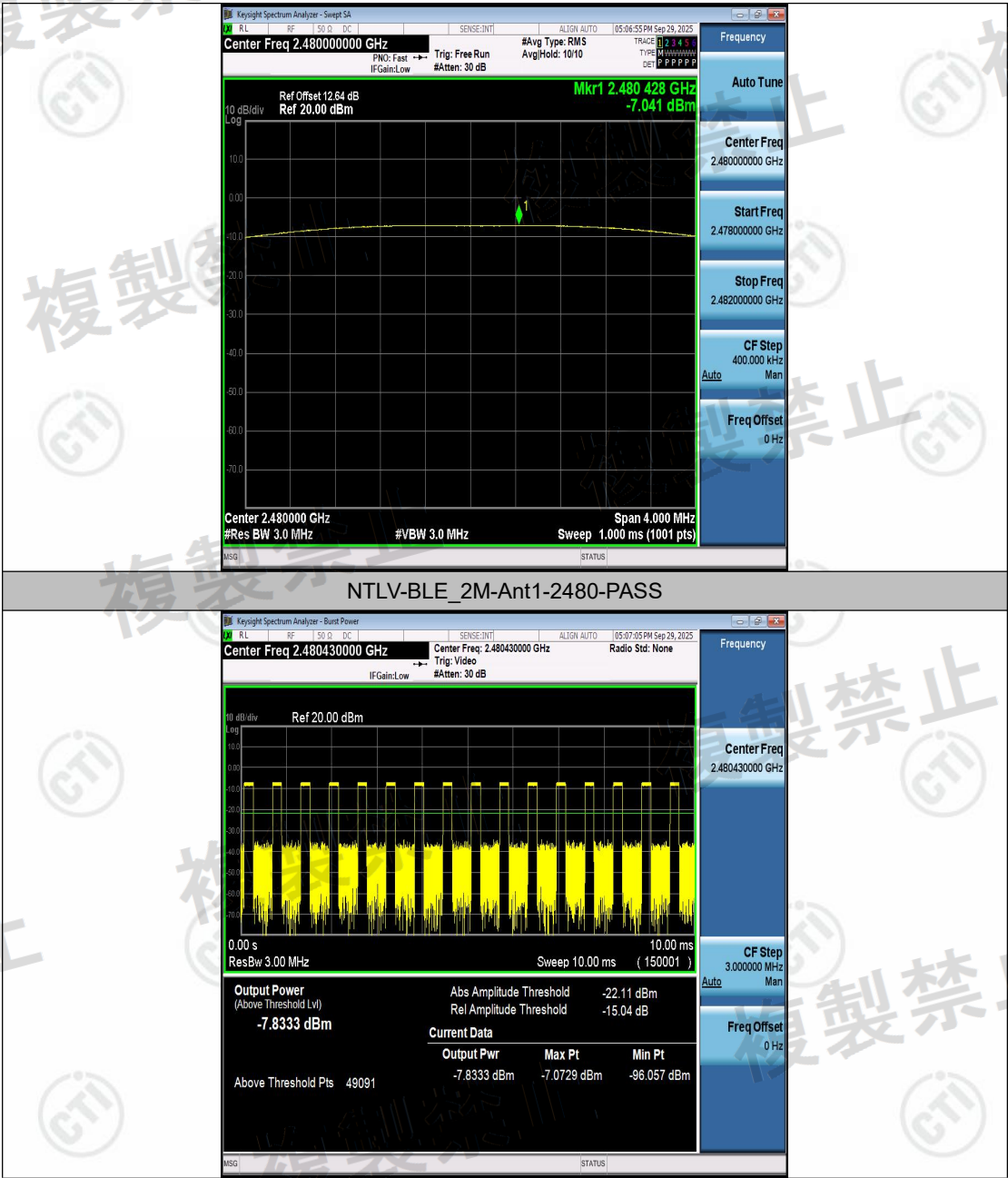


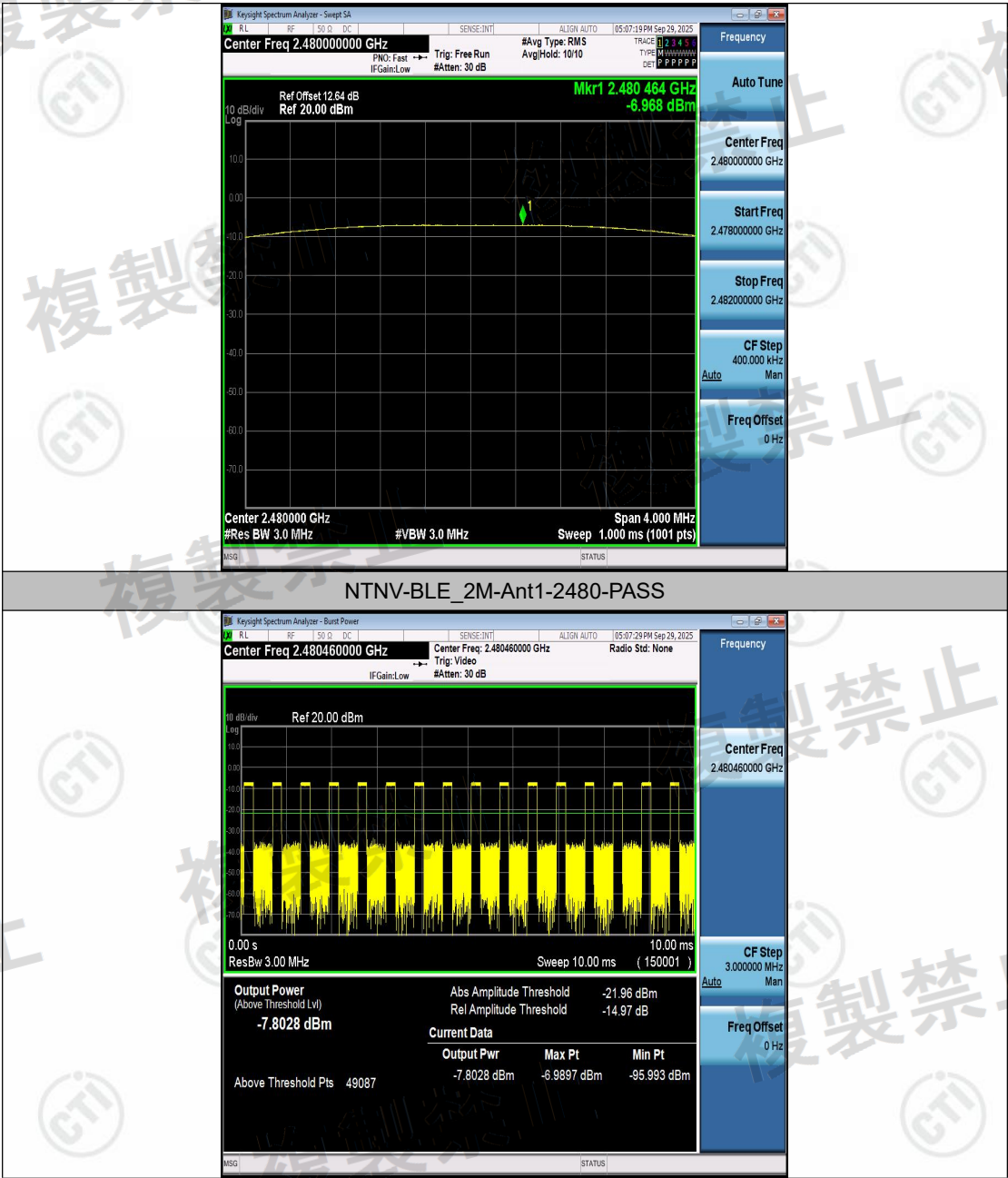


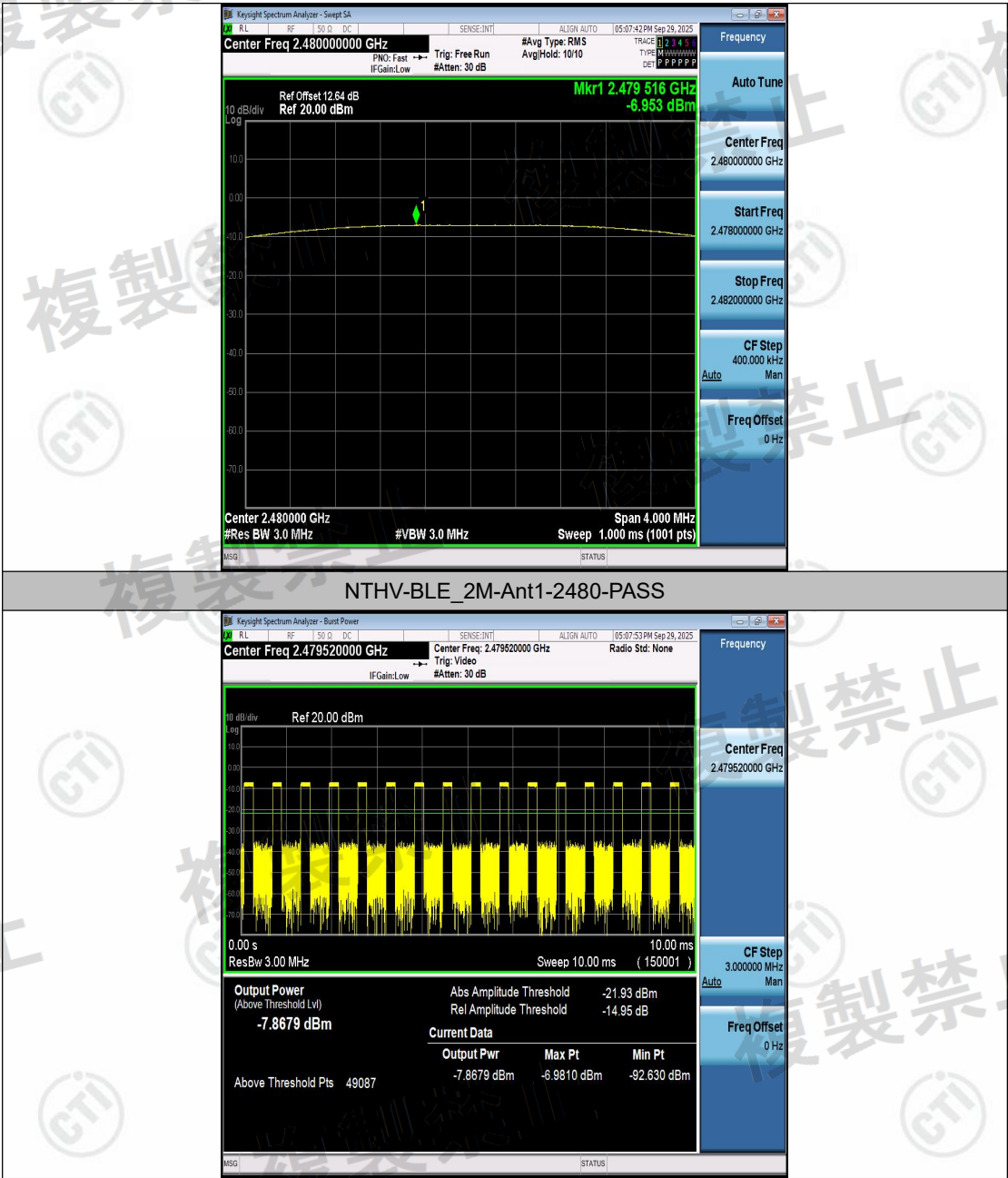












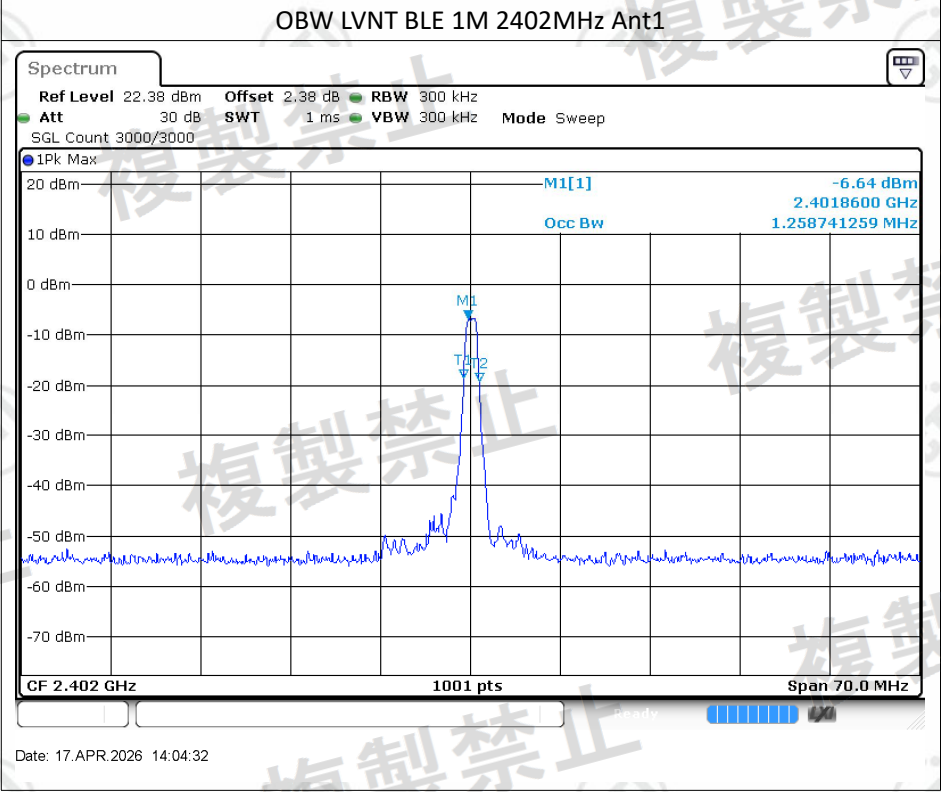
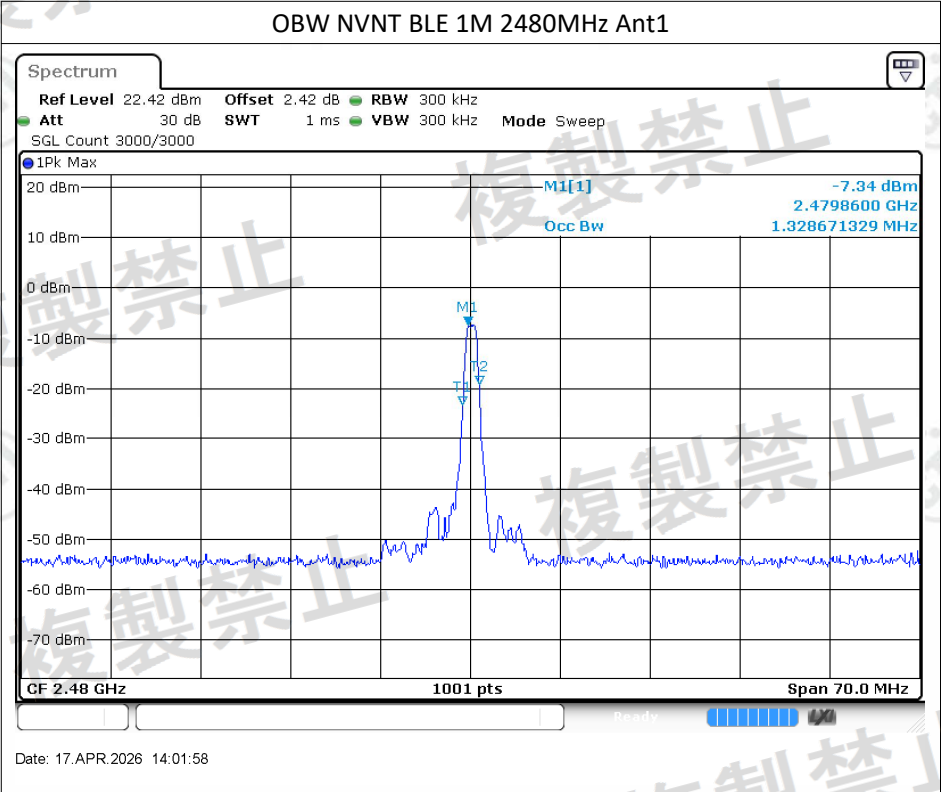
Appendix C: Occupied Bandwidth

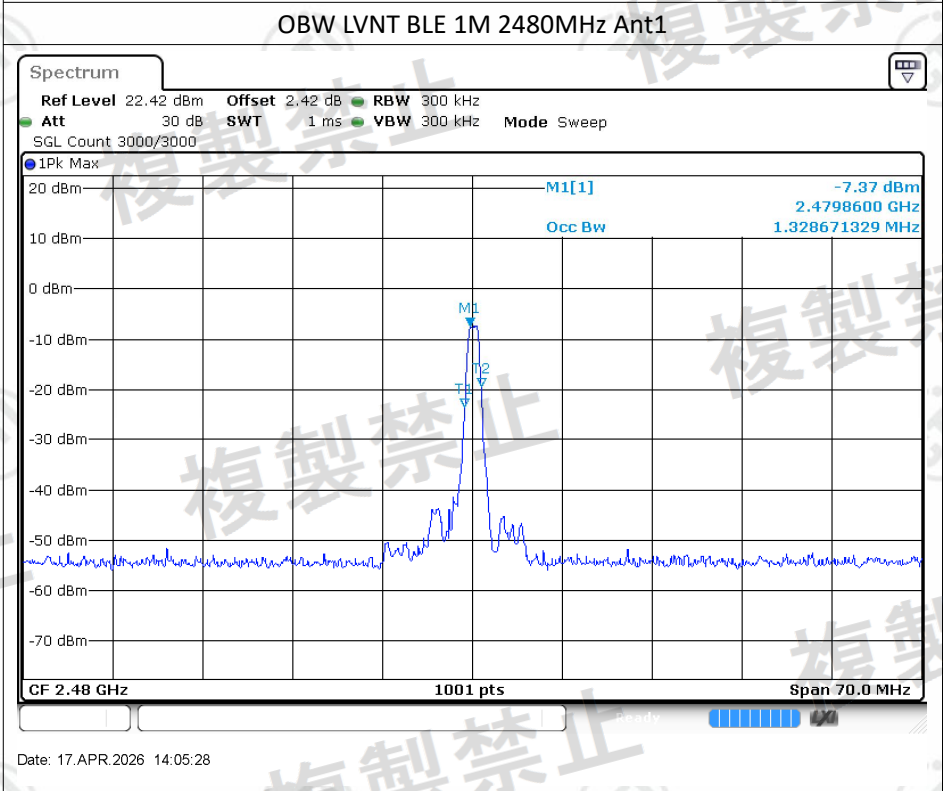
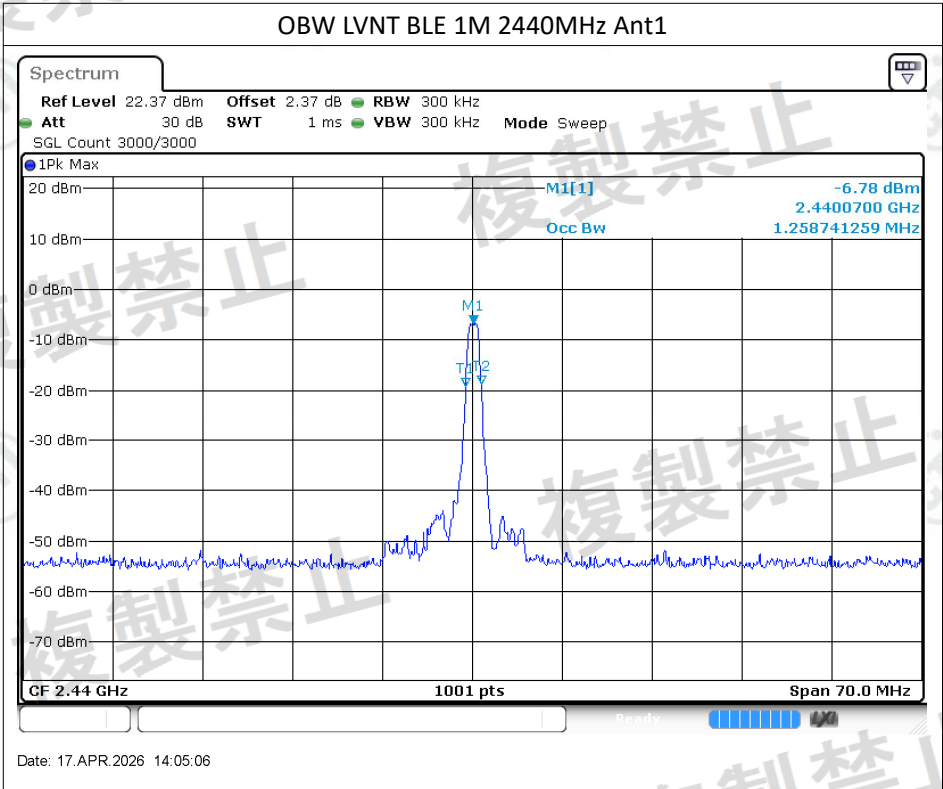
Test Result

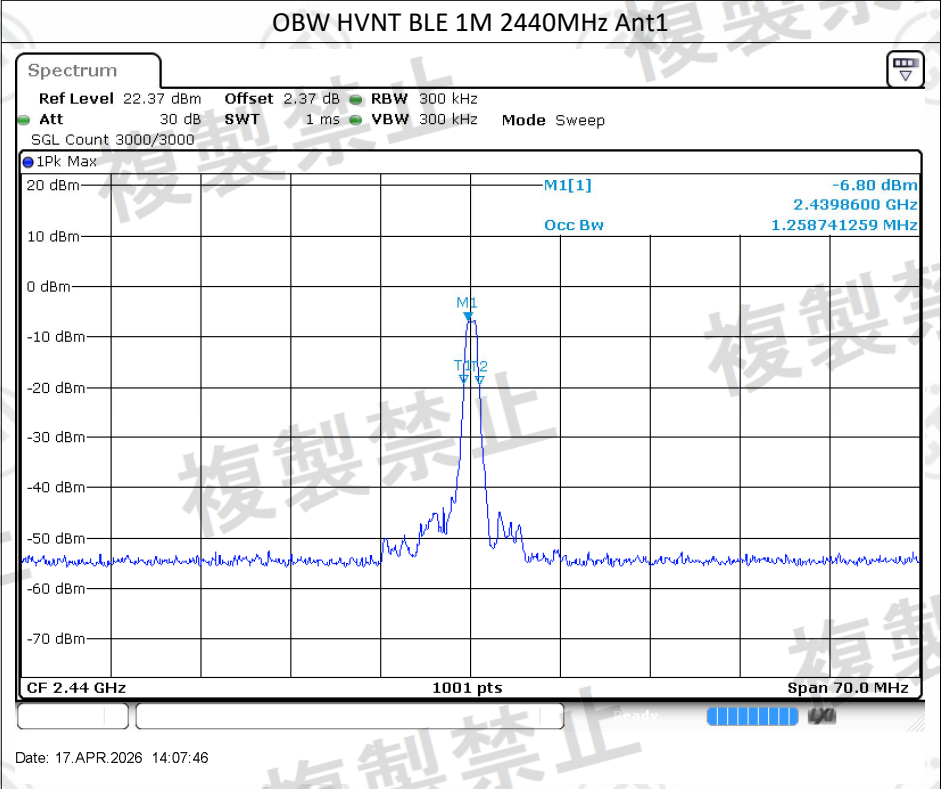
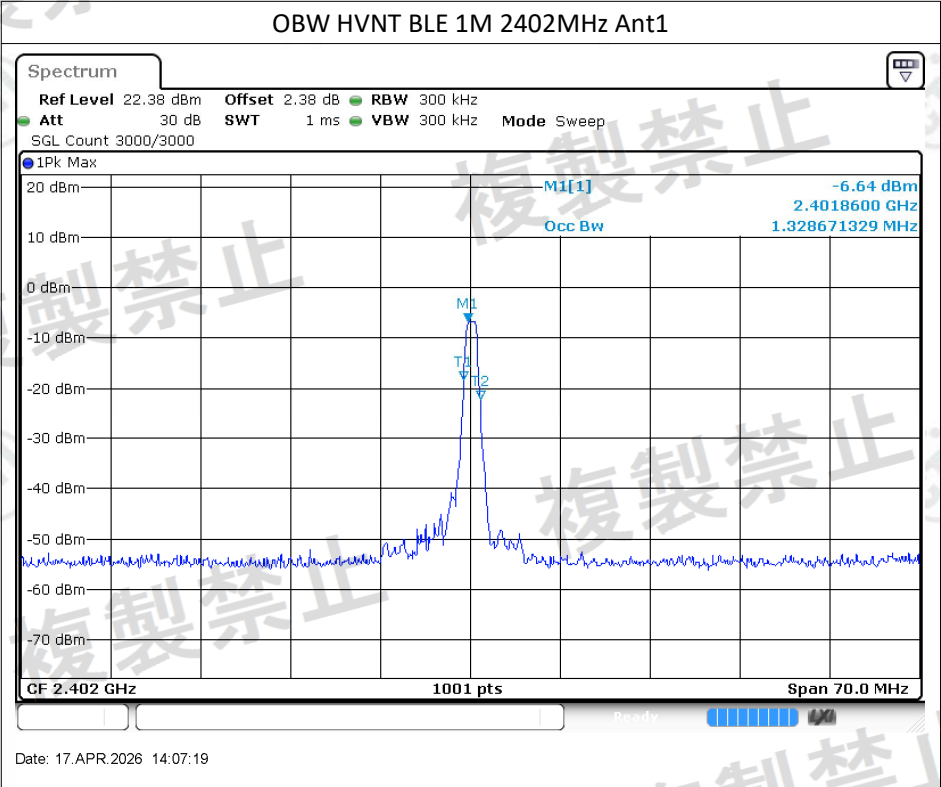
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)	Limit (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	1.259	26	Pass
NVNT	BLE 1M	2440	Ant1	1.259	26	Pass
NVNT	BLE 1M	2480	Ant1	1.329	26	Pass
LVNT	BLE 1M	2402	Ant1	1.259	26	Pass
LVNT	BLE 1M	2440	Ant1	1.259	26	Pass
LVNT	BLE 1M	2480	Ant1	1.329	26	Pass
HVNT	BLE 1M	2402	Ant1	1.329	26	Pass
HVNT	BLE 1M	2440	Ant1	1.259	26	Pass
HVNT	BLE 1M	2480	Ant1	1.329	26	Pass
NVNT	BLE 2M	2402	Ant1	2.238	26	Pass
NVNT	BLE 2M	2440	Ant1	2.238	26	Pass
NVNT	BLE 2M	2480	Ant1	2.238	26	Pass
LVNT	BLE 2M	2402	Ant1	2.238	26	Pass
LVNT	BLE 2M	2440	Ant1	2.238	26	Pass
LVNT	BLE 2M	2480	Ant1	2.238	26	Pass
HVNT	BLE 2M	2402	Ant1	2.238	26	Pass
HVNT	BLE 2M	2440	Ant1	2.238	26	Pass
HVNT	BLE 2M	2480	Ant1	2.238	26	Pass

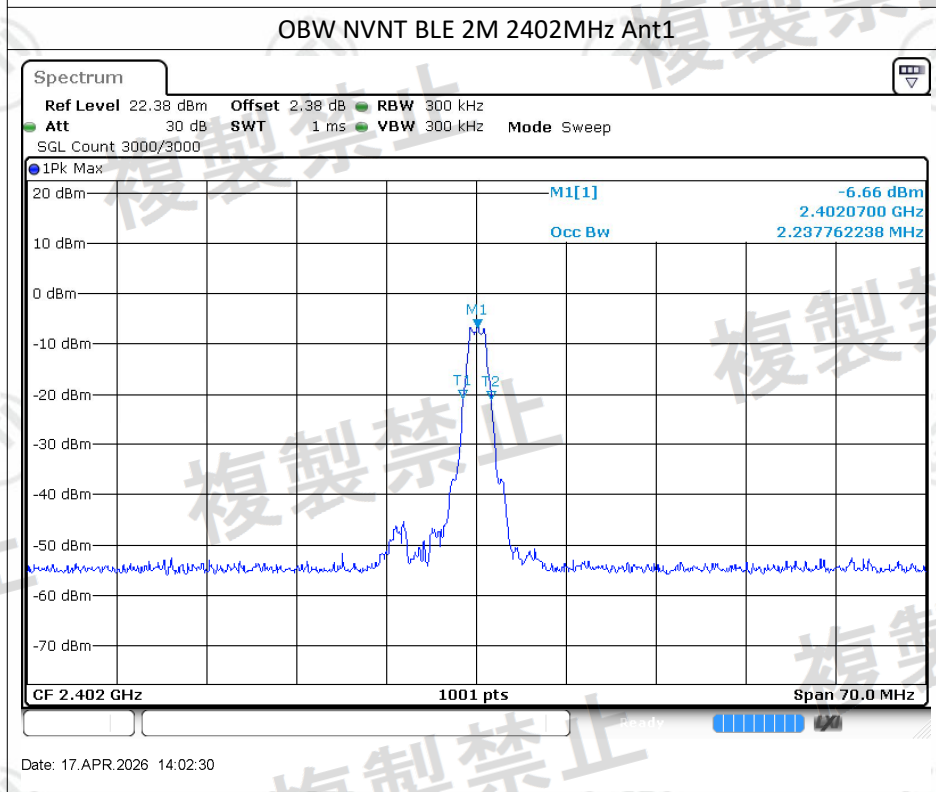
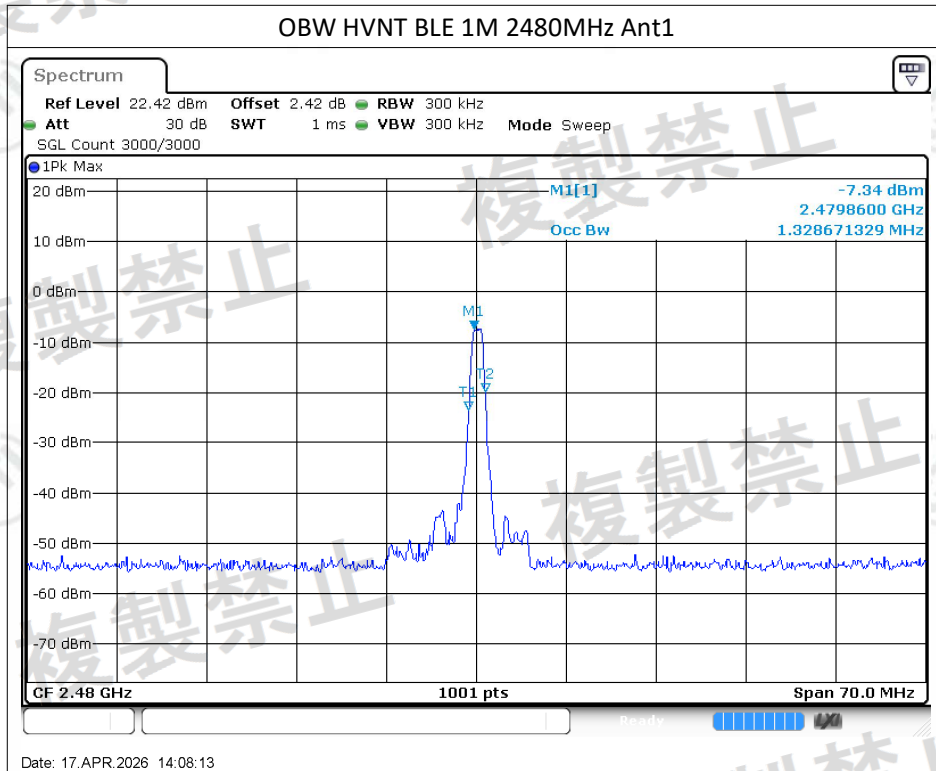
Test Graphs

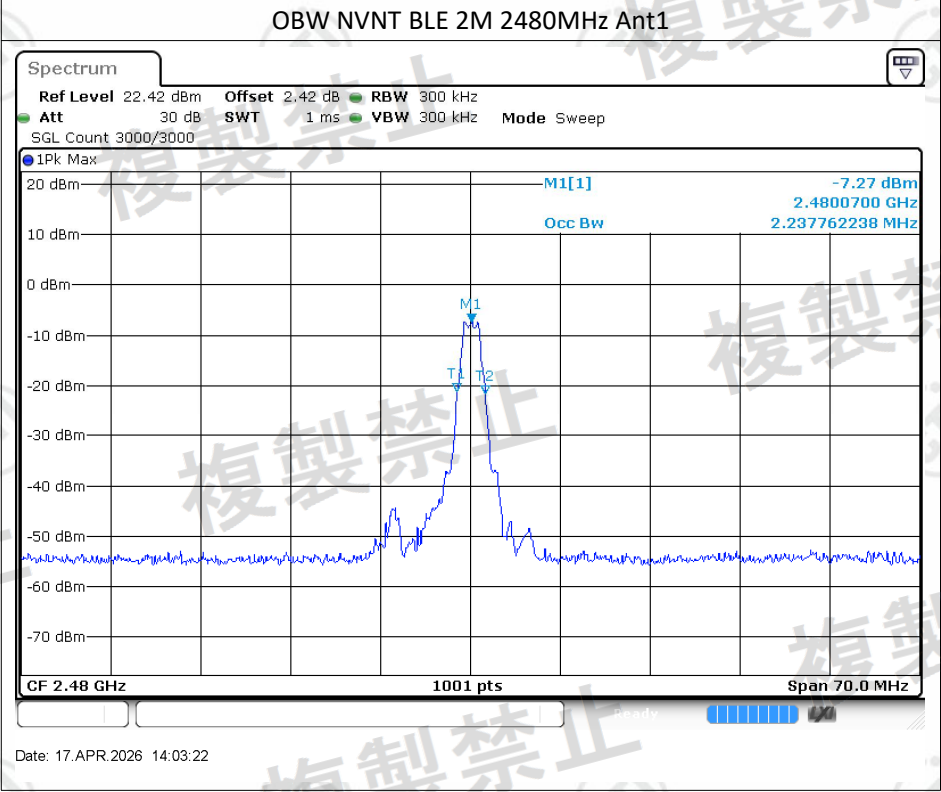
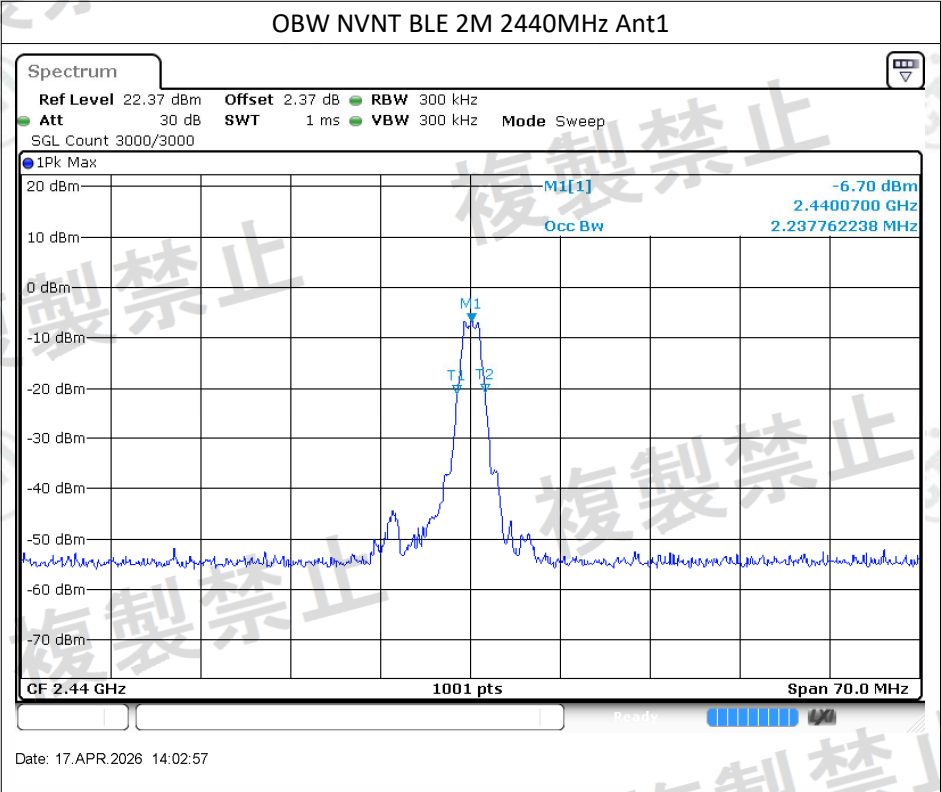


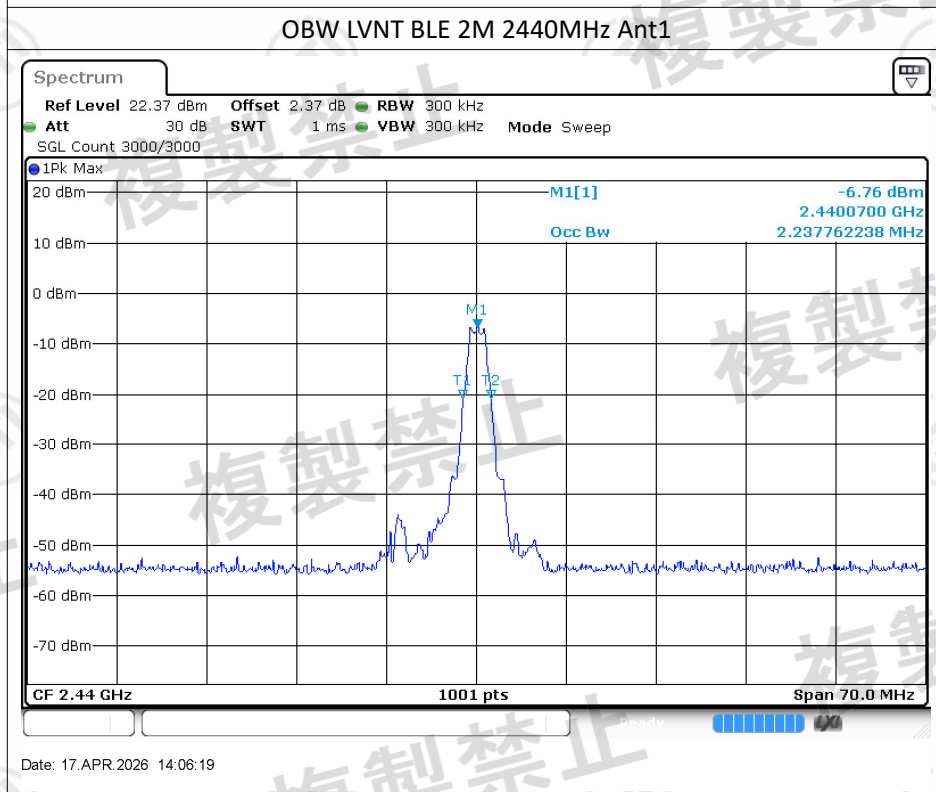
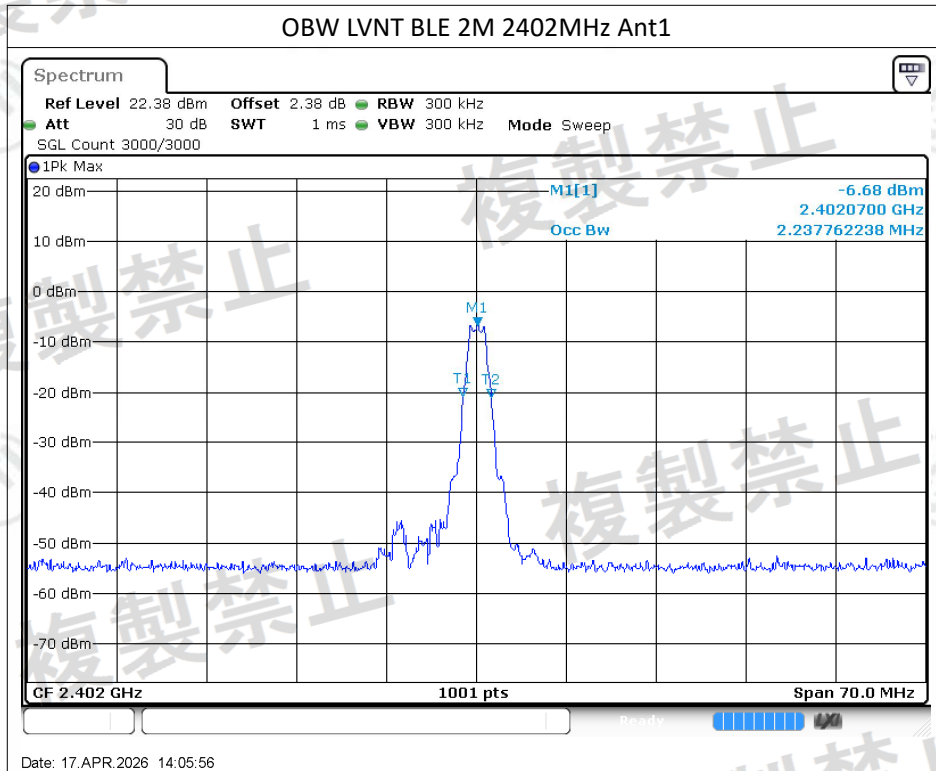


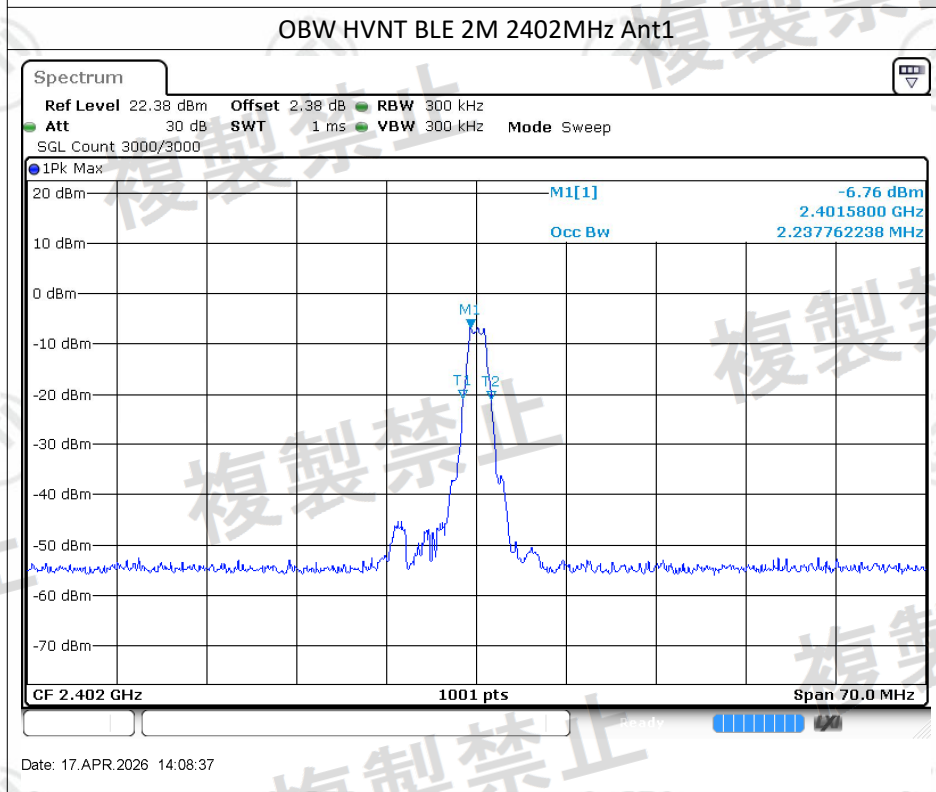
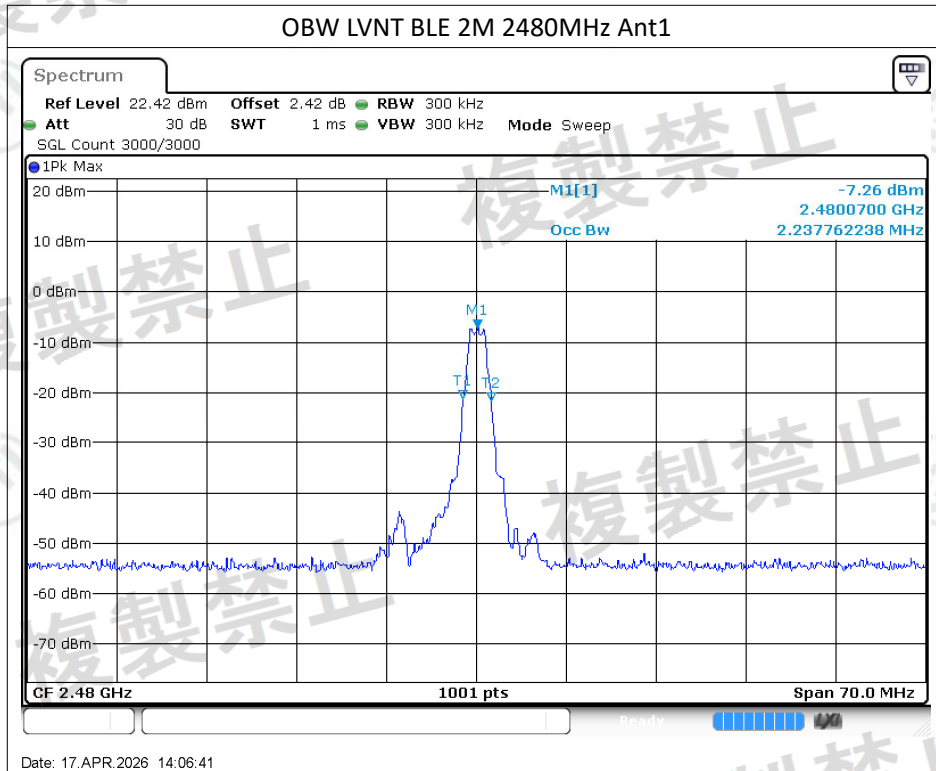


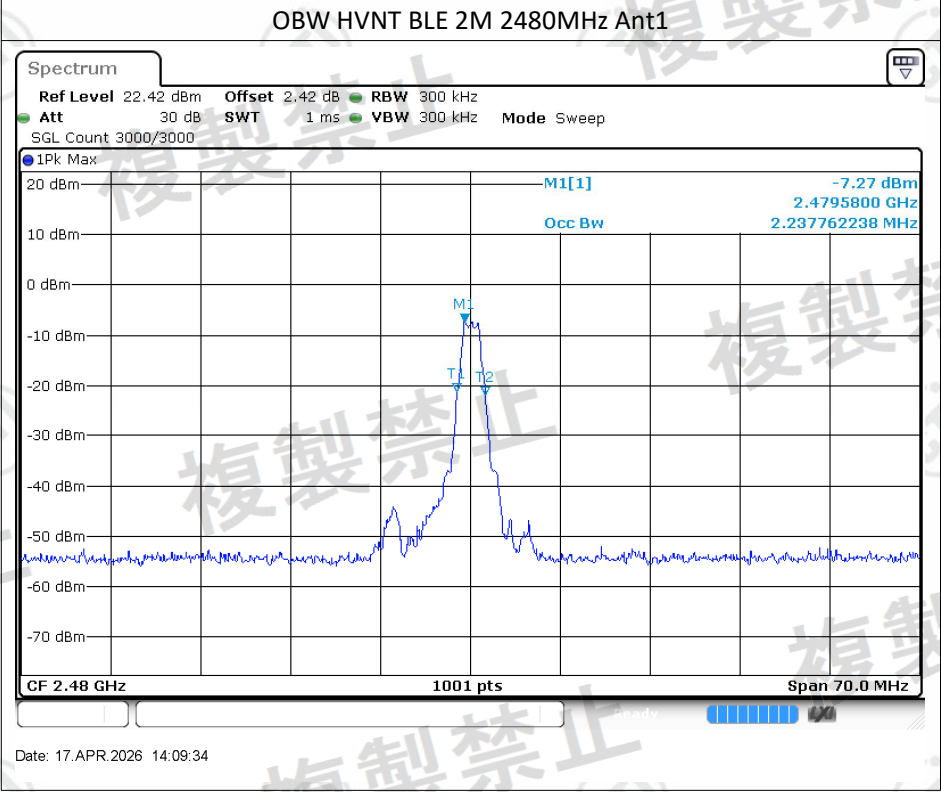
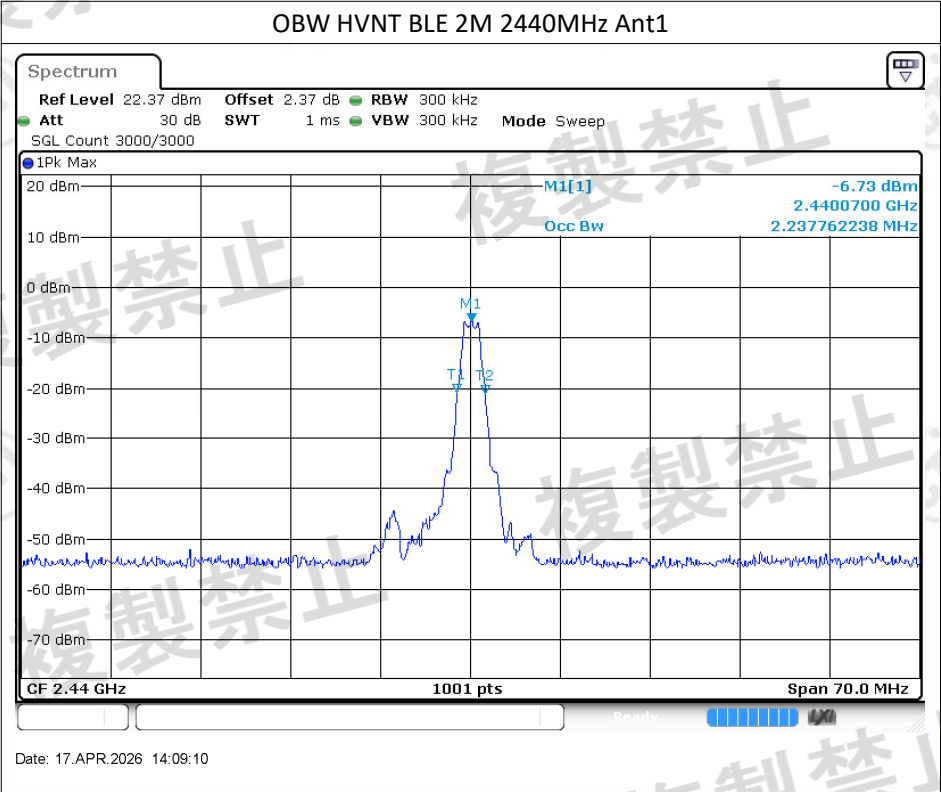










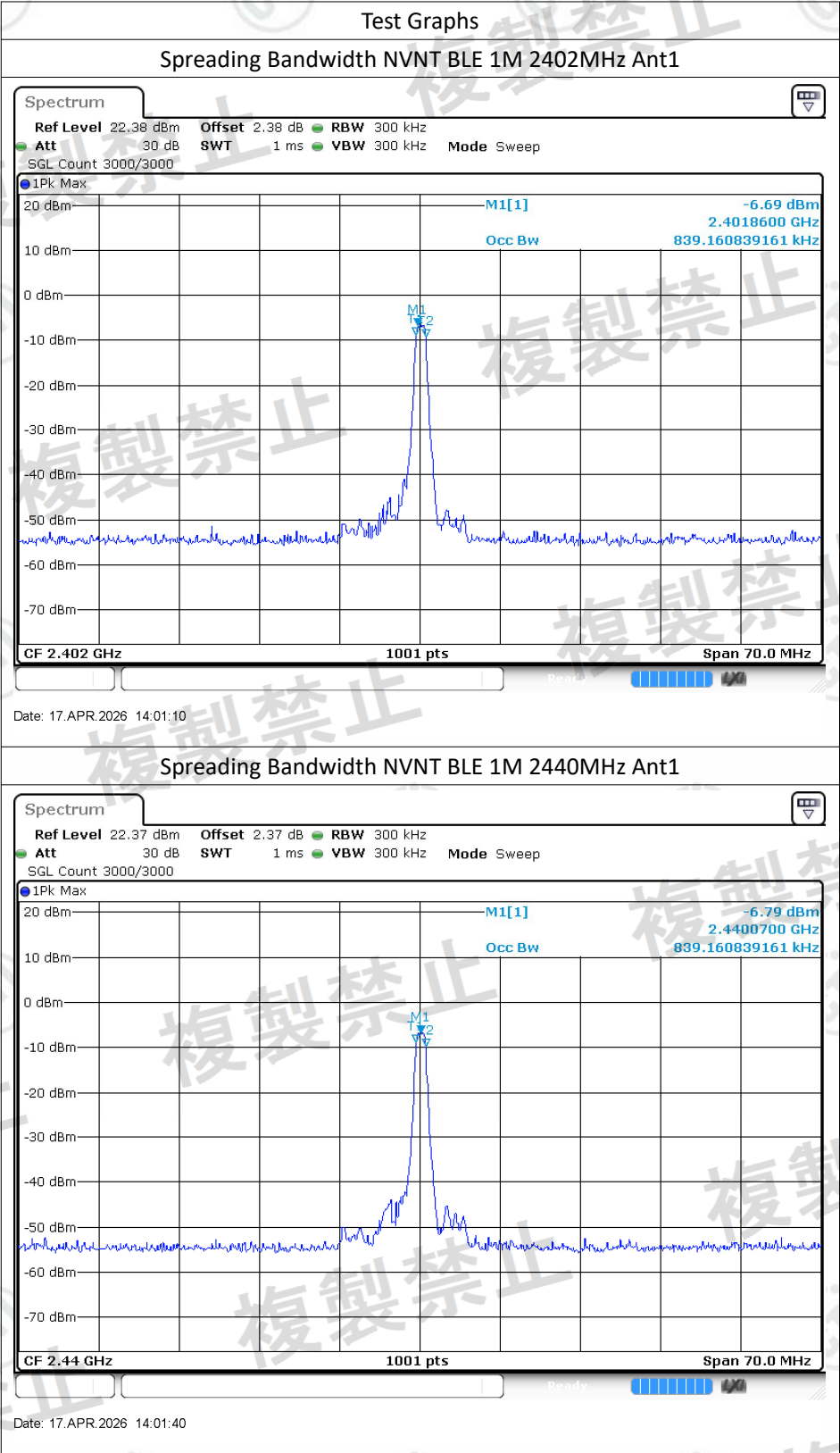


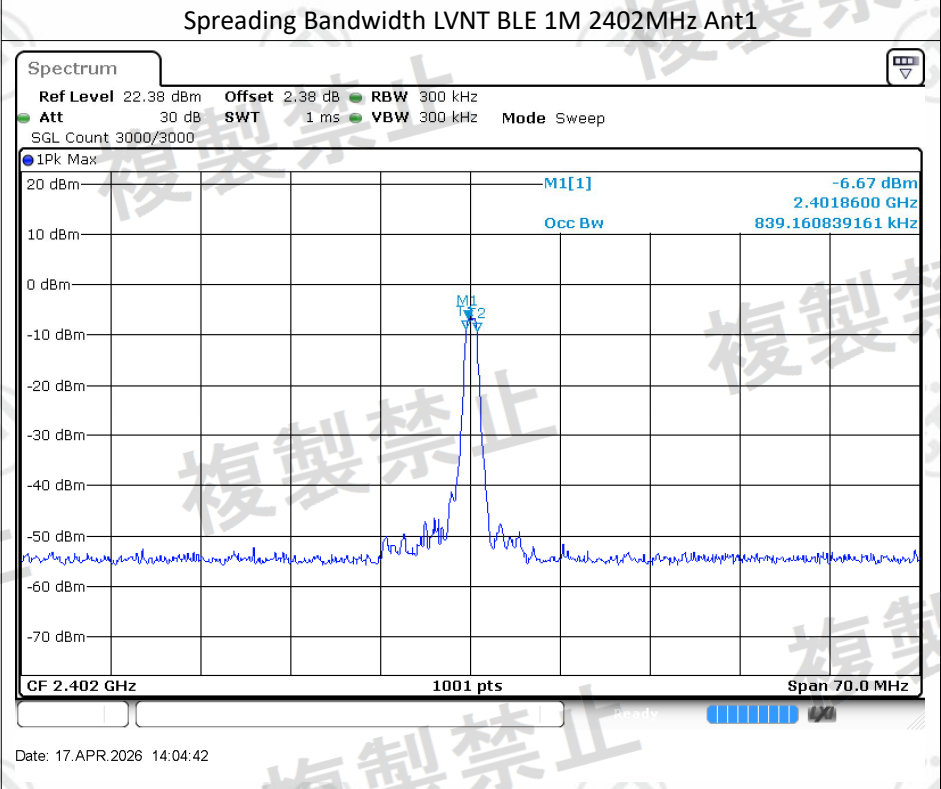
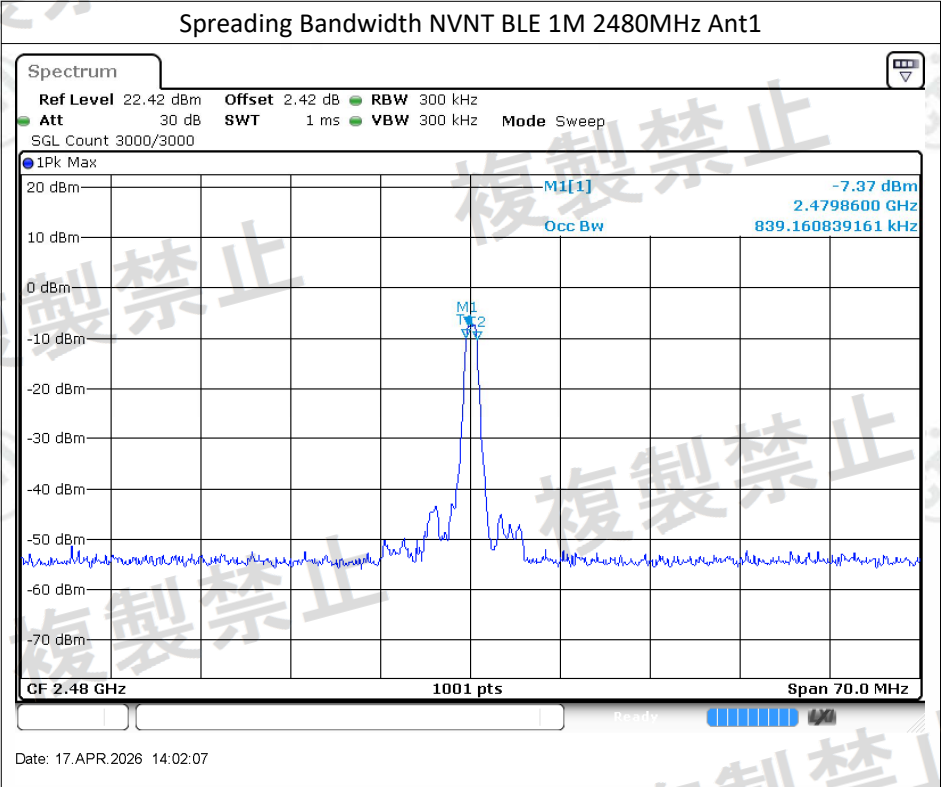
Appendix D: Spread Bandwidth

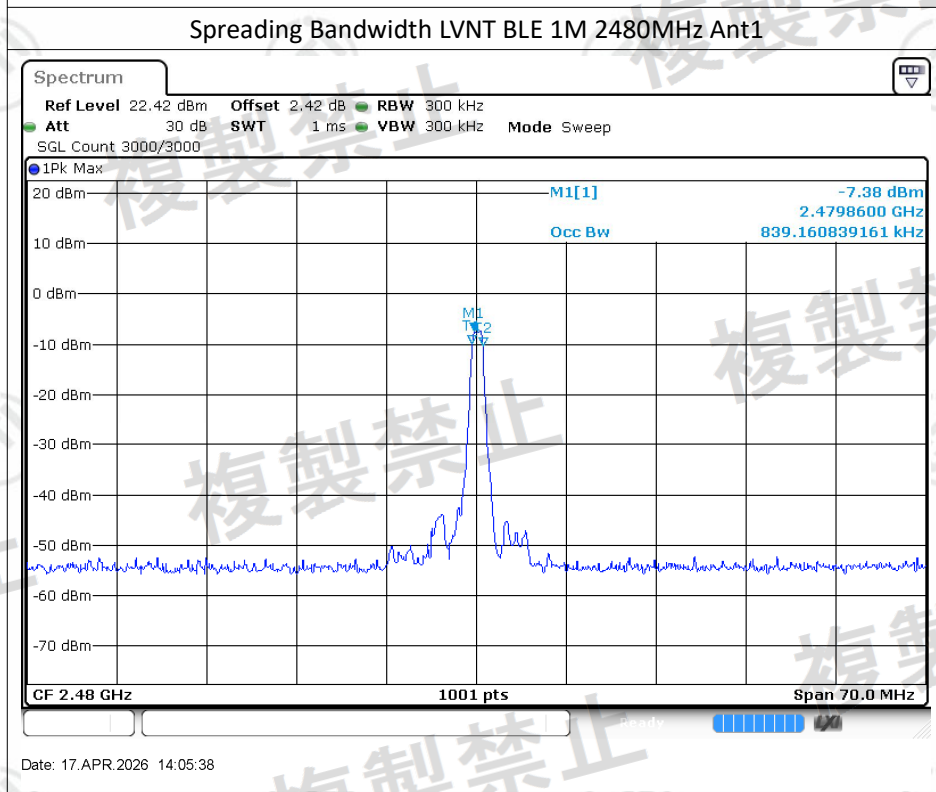
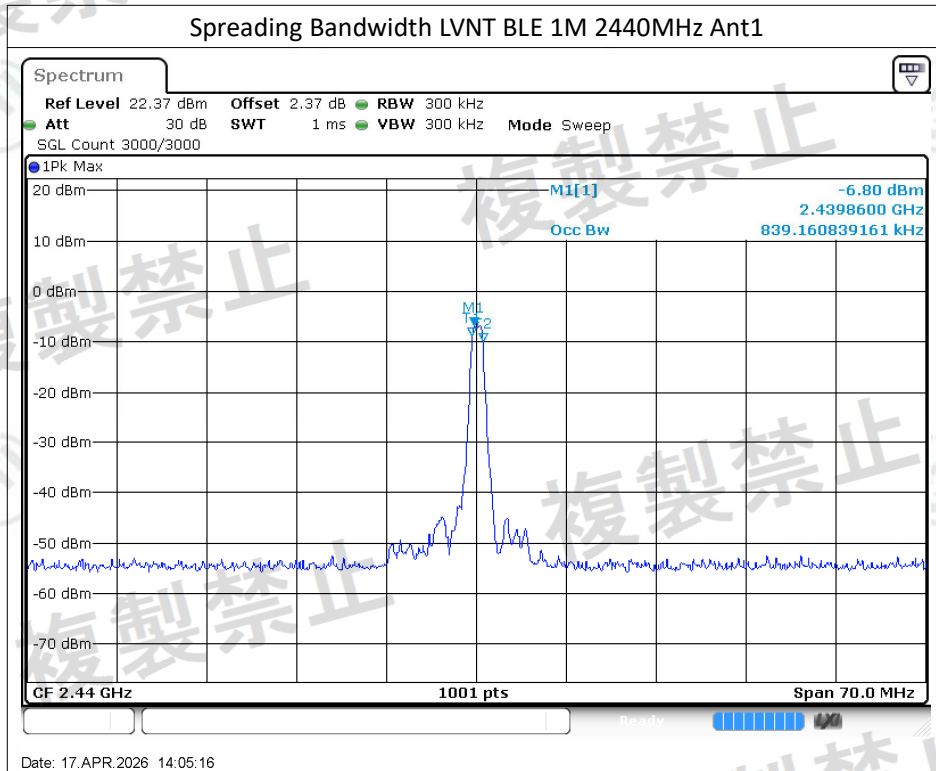
Test Result

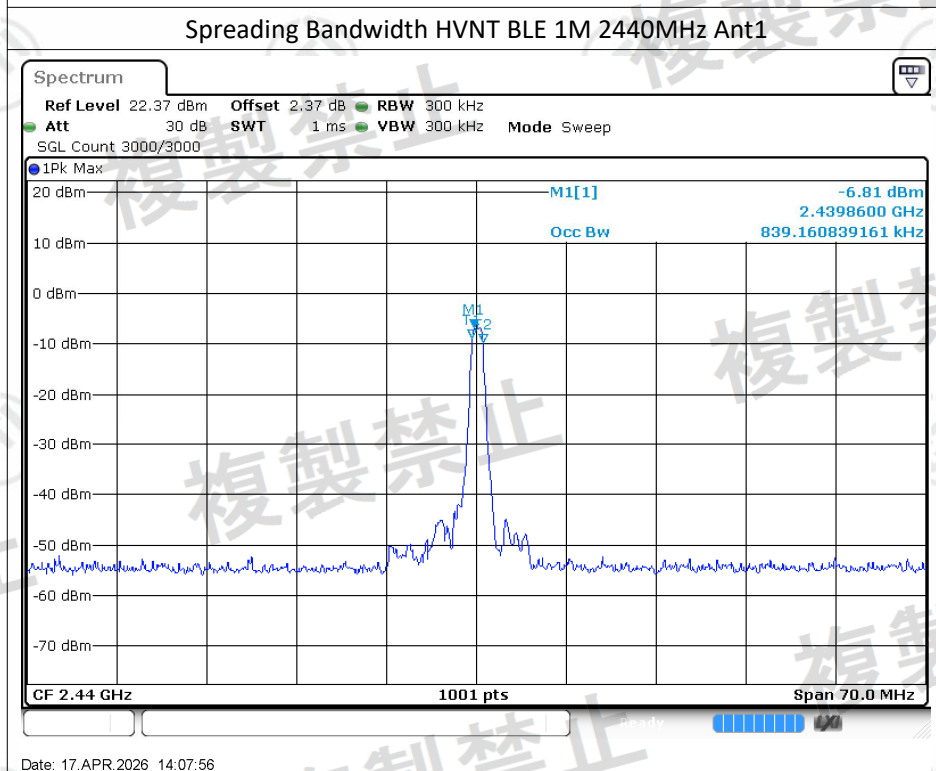
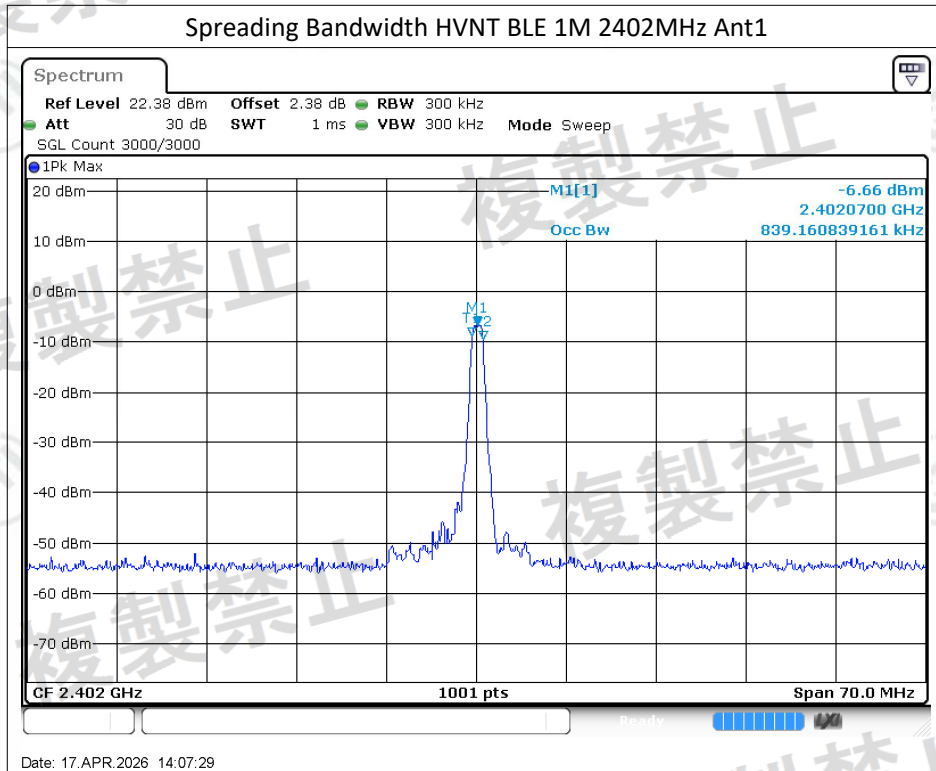
Condition	Mode	Frequency (MHz)	Antenna	90% OBW (MHz)
NVNT	BLE 1M	2402	Ant1	0.839
NVNT	BLE 1M	2440	Ant1	0.839
NVNT	BLE 1M	2480	Ant1	0.839
LVNT	BLE 1M	2402	Ant1	0.839
LVNT	BLE 1M	2440	Ant1	0.839
LVNT	BLE 1M	2480	Ant1	0.839
HVNT	BLE 1M	2402	Ant1	0.839
HVNT	BLE 1M	2440	Ant1	0.839
HVNT	BLE 1M	2480	Ant1	0.839
NVNT	BLE 2M	2402	Ant1	1.399
NVNT	BLE 2M	2440	Ant1	1.399
NVNT	BLE 2M	2480	Ant1	1.399
LVNT	BLE 2M	2402	Ant1	1.399
LVNT	BLE 2M	2440	Ant1	1.399
LVNT	BLE 2M	2480	Ant1	1.399
HVNT	BLE 2M	2402	Ant1	1.399
HVNT	BLE 2M	2440	Ant1	1.399
HVNT	BLE 2M	2480	Ant1	1.399

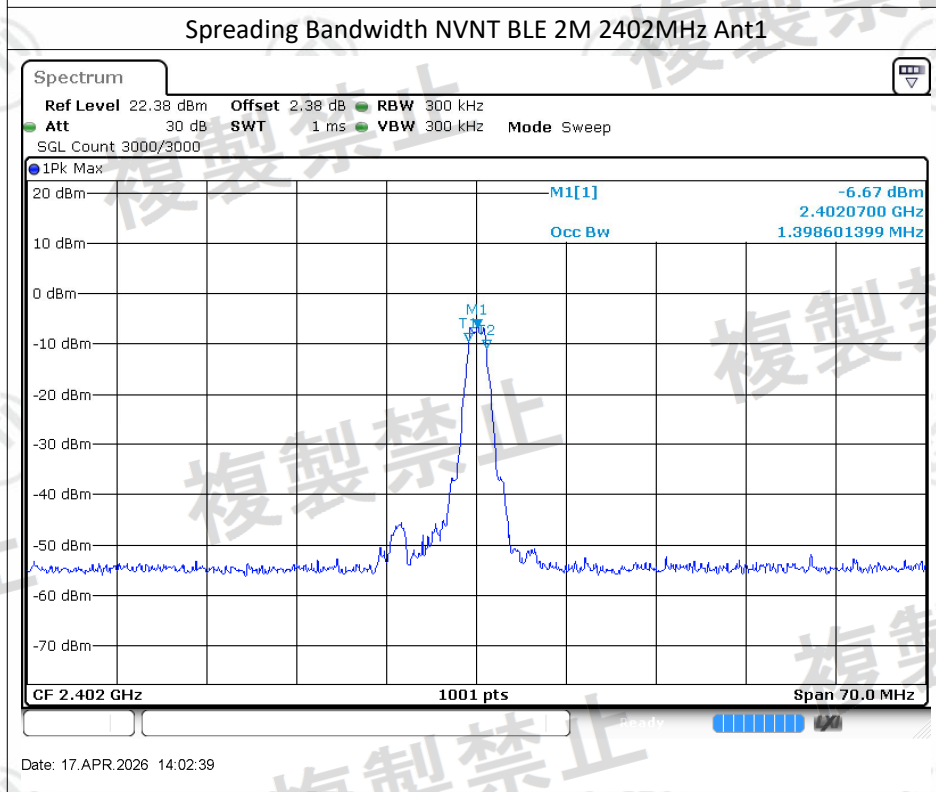
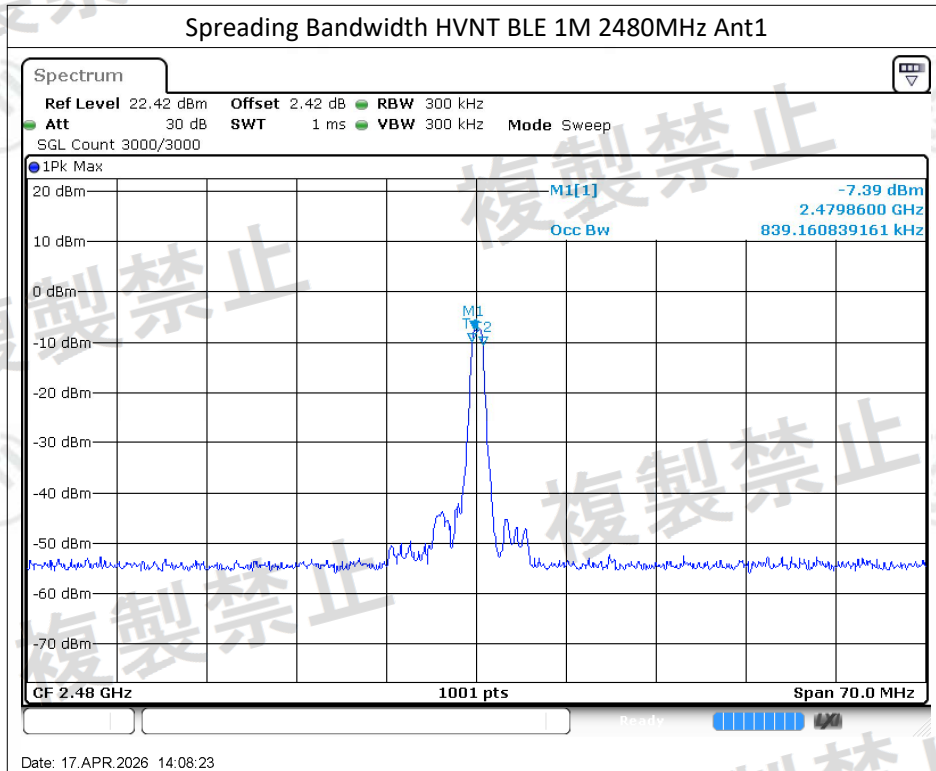
Test Graphs

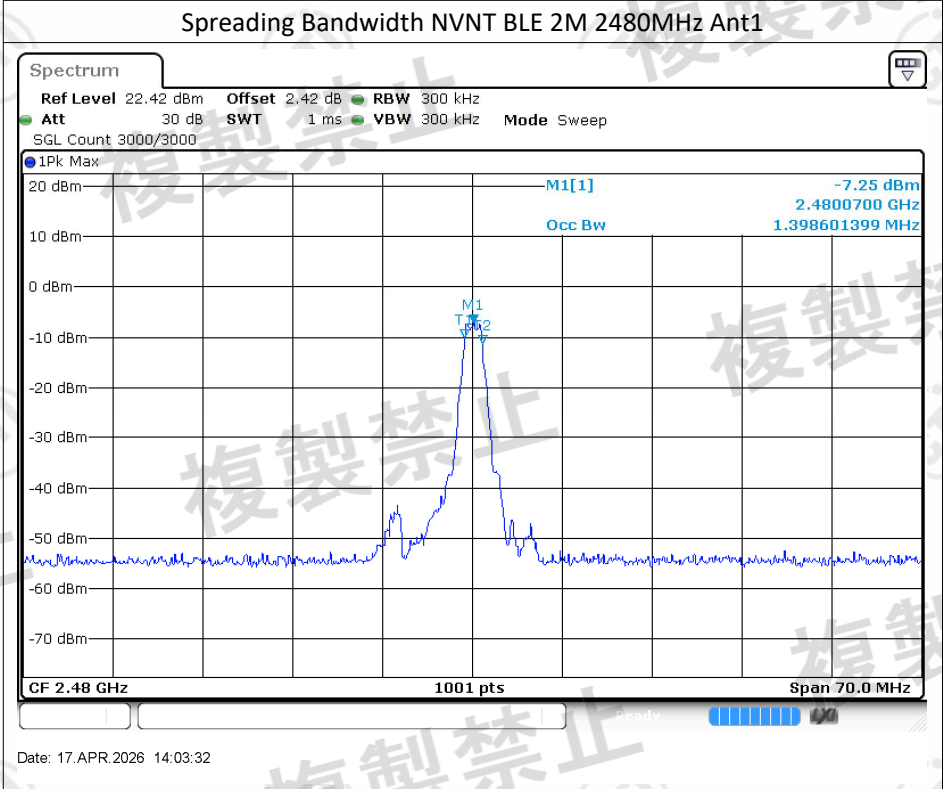
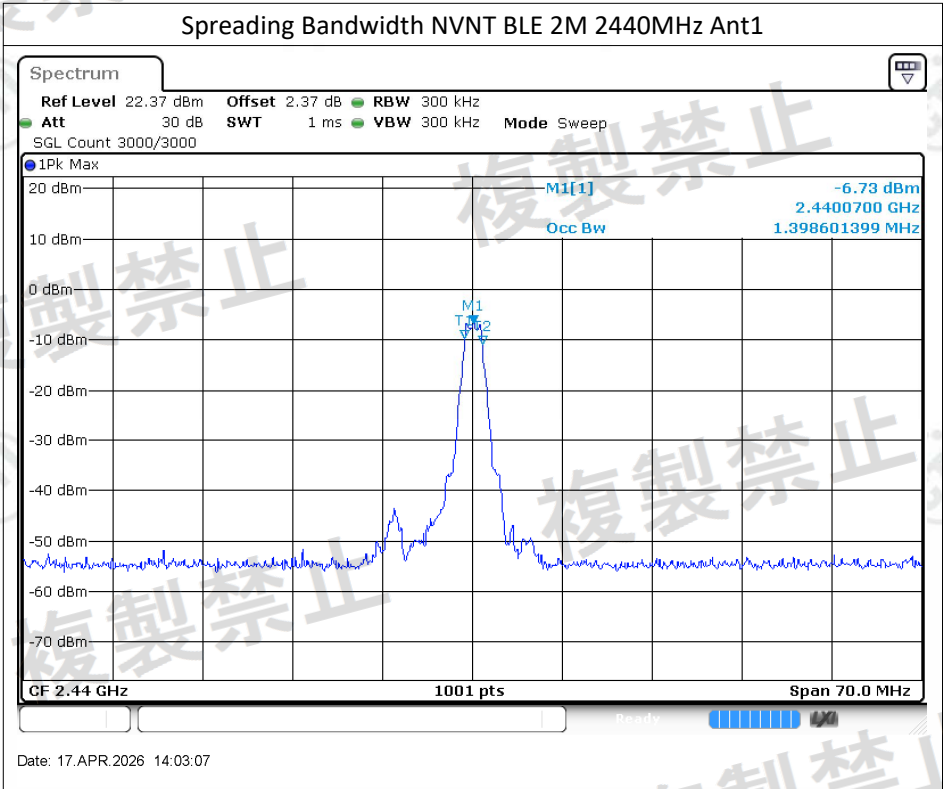


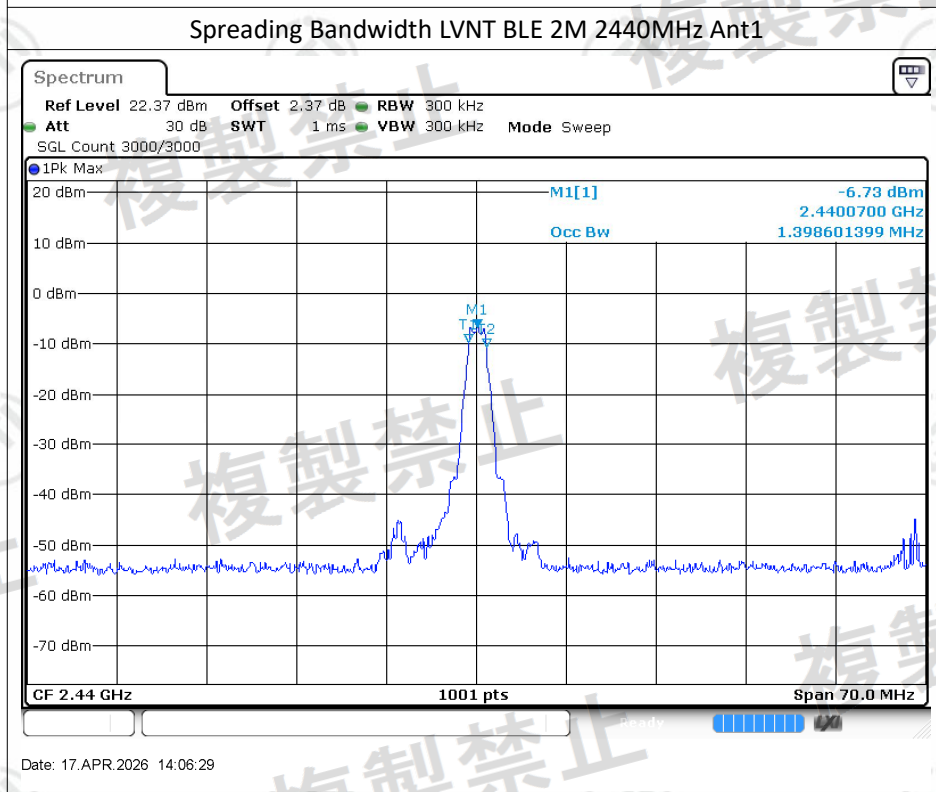
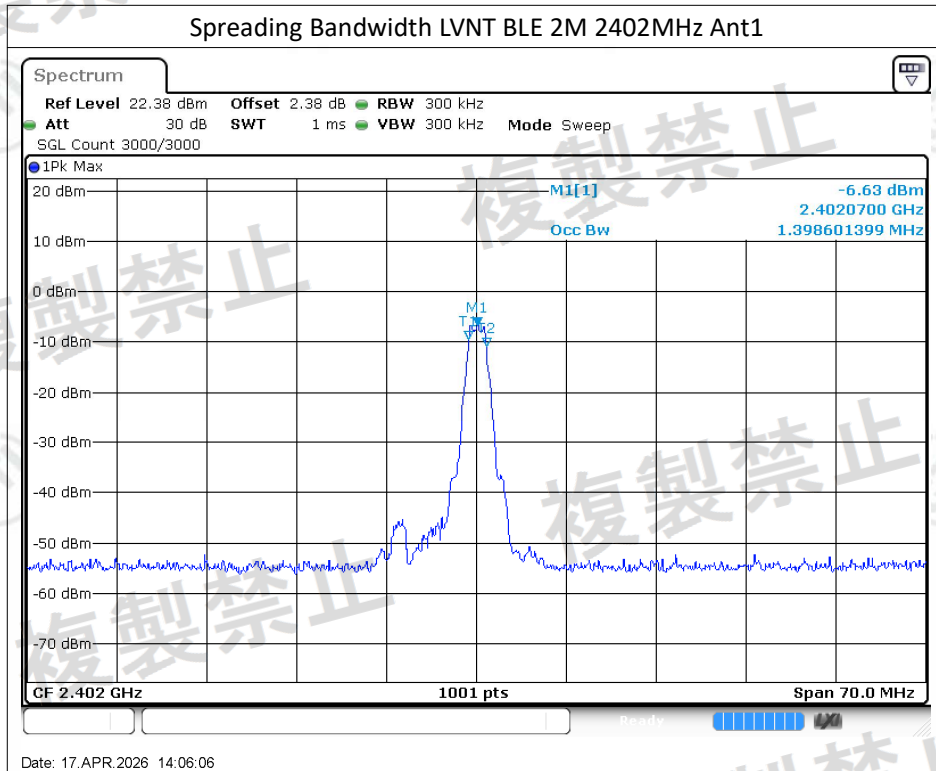


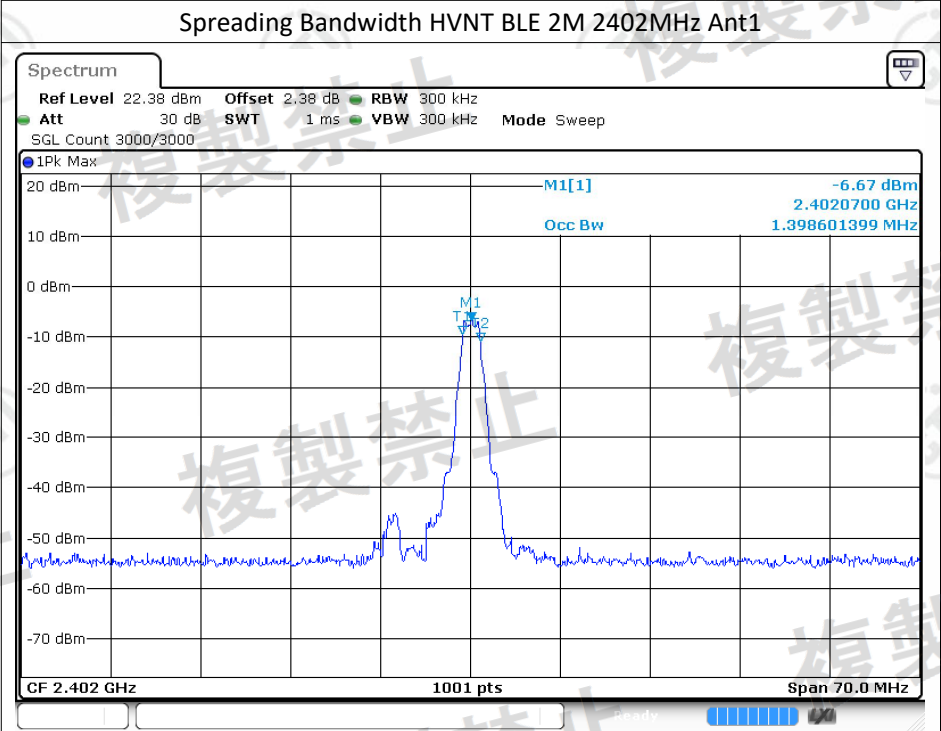
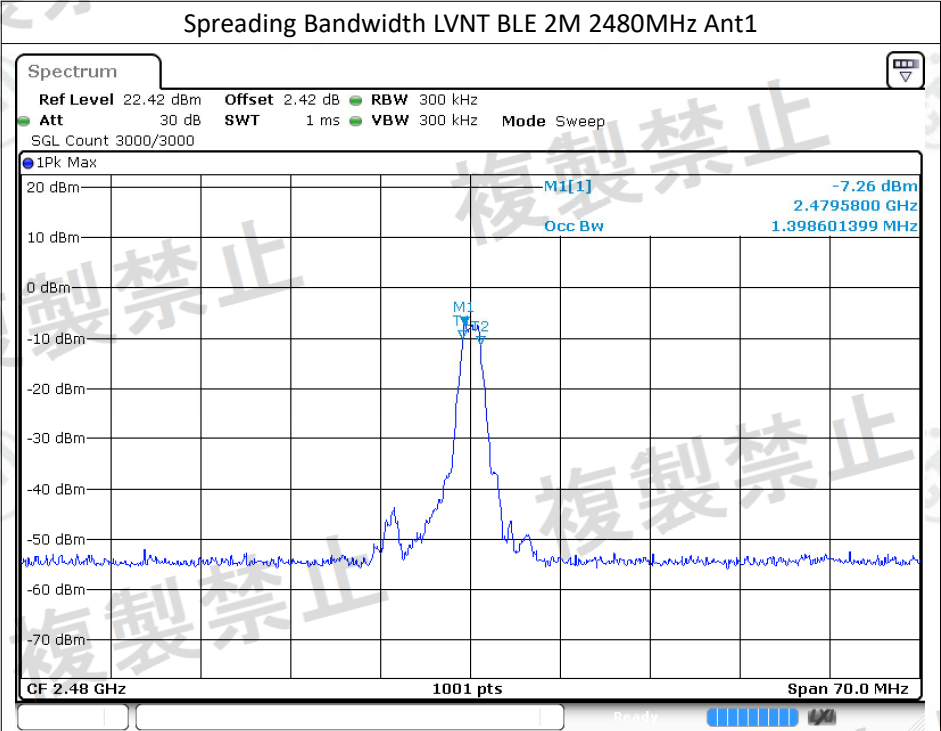


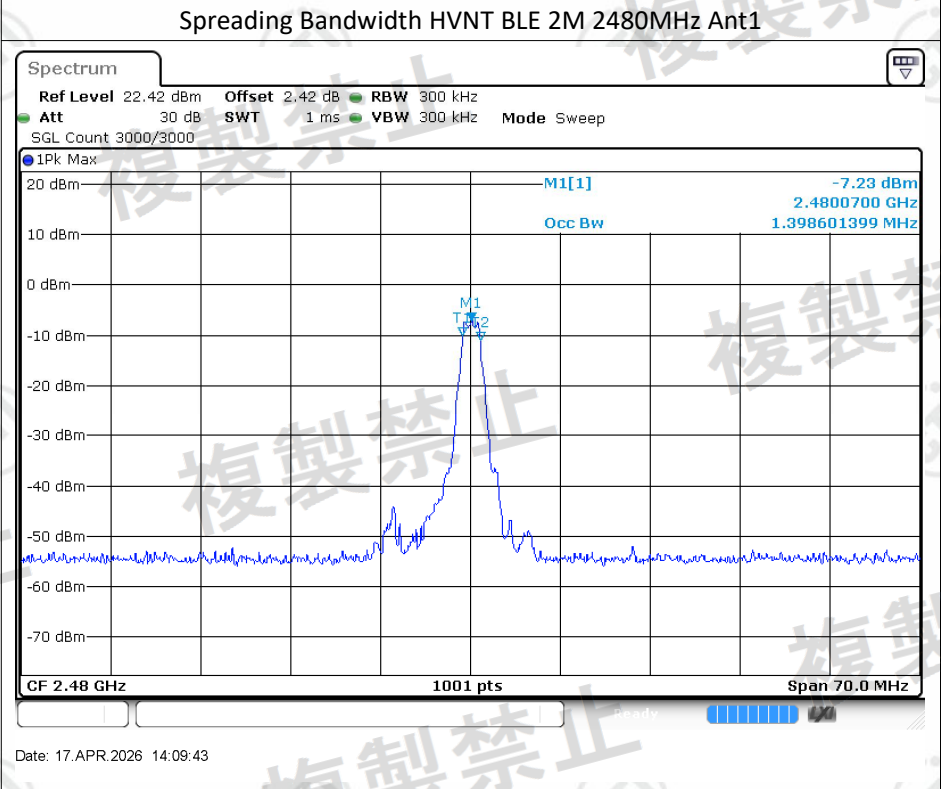
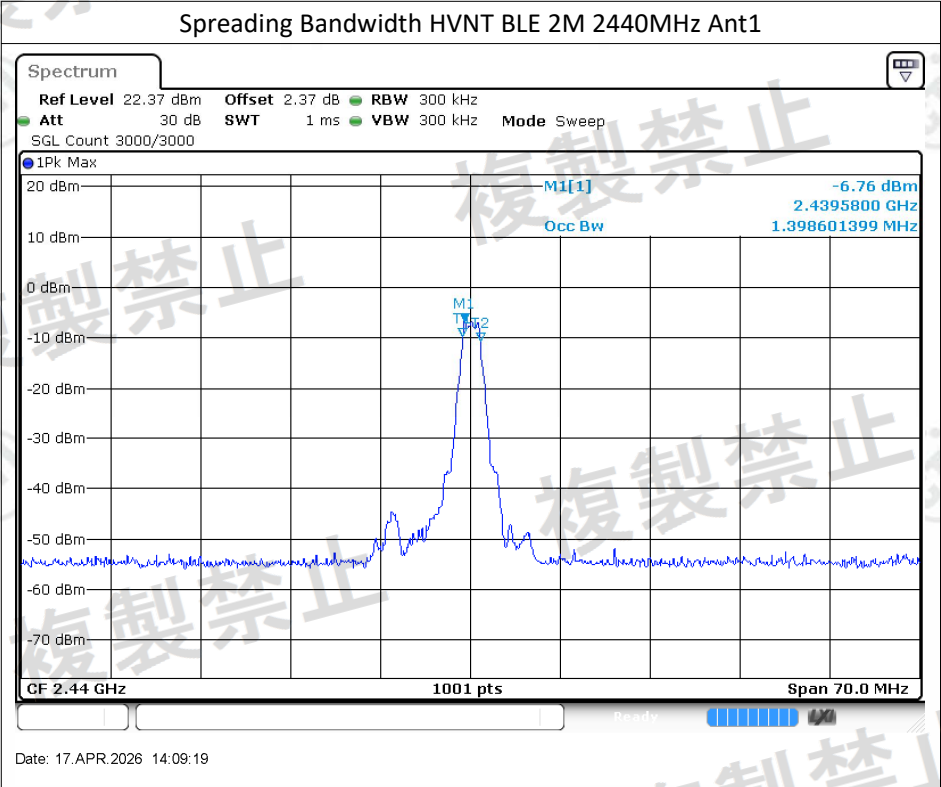












Appendix E: Unwanted Emission Strength

Test Result

TestCondition	TestMode	Antenna	Freq (MHz)	Freq.Range [MHz]	ResultFreq (MHz)	Result [dBm/MHz]	Result [μW/MHz]	Limit [μW/MHz]	Verdict
NTLV	BLE_1M	Ant1	2402	30~1000	143.98	-51.95	0.00638	≤2.5	PASS
NTNV	BLE_1M	Ant1	2402	30~1000	143.98	-53.12	0.00488	≤2.5	PASS
NTHV	BLE_1M	Ant1	2402	30~1000	143.98	-54.50	0.00355	≤2.5	PASS
NTLV	BLE_1M	Ant1	2402	1000~2387	2293.03	-47.39	0.01824	≤2.5	PASS
NTNV	BLE_1M	Ant1	2402	1000~2387	2332.21	-47.56	0.01754	≤2.5	PASS
NTHV	BLE_1M	Ant1	2402	1000~2387	2336.72	-46.93	0.02028	≤2.5	PASS
NTLV	BLE_1M	Ant1	2402	2387~2400	2399.95	-30.49	0.89331	≤25	PASS
NTNV	BLE_1M	Ant1	2402	2387~2400	2399.79	-30.56	0.87902	≤25	PASS
NTHV	BLE_1M	Ant1	2402	2387~2400	2399.97	-30.56	0.87902	≤25	PASS
NTLV	BLE_1M	Ant1	2402	2483.5~2496.5	2492.41	-37.42	0.18113	≤25	PASS
NTNV	BLE_1M	Ant1	2402	2483.5~2496.5	2494.39	-37.90	0.16218	≤25	PASS
NTHV	BLE_1M	Ant1	2402	2483.5~2496.5	2495.66	-37.44	0.18030	≤25	PASS
NTLV	BLE_1M	Ant1	2402	2496.5~13000	3777.40	-44.03	0.03954	≤2.5	PASS
NTNV	BLE_1M	Ant1	2402	2496.5~13000	4656.02	-45.23	0.02999	≤2.5	PASS
NTHV	BLE_1M	Ant1	2402	2496.5~13000	3558.40	-40.65	0.08610	≤2.5	PASS
NTLV	BLE_1M	Ant1	2440	30~1000	143.98	-53.35	0.00462	≤2.5	PASS
NTNV	BLE_1M	Ant1	2440	30~1000	143.98	-53.36	0.00461	≤2.5	PASS
NTHV	BLE_1M	Ant1	2440	30~1000	143.98	-52.96	0.00506	≤2.5	PASS
NTLV	BLE_1M	Ant1	2440	1000~2387	2383.88	-46.87	0.02056	≤2.5	PASS
NTNV	BLE_1M	Ant1	2440	1000~2387	2355.10	-45.87	0.02588	≤2.5	PASS
NTHV	BLE_1M	Ant1	2440	1000~2387	2223.33	-47.60	0.01738	≤2.5	PASS
NTLV	BLE_1M	Ant1	2440	2387~2400	2394.40	-37.69	0.17022	≤25	PASS
NTNV	BLE_1M	Ant1	2440	2387~2400	2394.68	-37.44	0.18030	≤25	PASS
NTHV	BLE_1M	Ant1	2440	2387~2400	2387.81	-37.27	0.18750	≤25	PASS
NTLV	BLE_1M	Ant1	2440	2483.5~2496.5	2490.15	-37.84	0.16444	≤25	PASS
NTNV	BLE_1M	Ant1	2440	2483.5~2496.5	2495.28	-37.10	0.19498	≤25	PASS
NTHV	BLE_1M	Ant1	2440	2483.5~2496.5	2485.85	-37.30	0.18621	≤25	PASS
NTLV	BLE_1M	Ant1	2440	2496.5~13000	3711.23	-44.84	0.03281	≤2.5	PASS
NTNV	BLE_1M	Ant1	2440	2496.5~13000	3856.70	-44.76	0.03342	≤2.5	PASS
NTHV	BLE_1M	Ant1	2440	2496.5~13000	3749.04	-44.47	0.03573	≤2.5	PASS
NTLV	BLE_1M	Ant1	2480	30~1000	143.98	-53.23	0.00475	≤2.5	PASS
NTNV	BLE_1M	Ant1	2480	30~1000	143.98	-54.06	0.00393	≤2.5	PASS
NTHV	BLE_1M	Ant1	2480	30~1000	143.98	-54.22	0.00378	≤2.5	PASS
NTLV	BLE_1M	Ant1	2480	1000~2387	2288.52	-47.66	0.01714	≤2.5	PASS

NTNV	BLE_1M	Ant1	2480	1000~2387	2315.57	-46.21	0.02393	≤2.5	PASS
NTHV	BLE_1M	Ant1	2480	1000~2387	2273.27	-46.85	0.02065	≤2.5	PASS
NTLV	BLE_1M	Ant1	2480	2387~2400	2398.56	-37.71	0.16943	≤25	PASS
NTNV	BLE_1M	Ant1	2480	2387~2400	2399.95	-36.51	0.22336	≤25	PASS
NTHV	BLE_1M	Ant1	2480	2387~2400	2388.20	-37.51	0.17742	≤25	PASS
NTLV	BLE_1M	Ant1	2480	2483.5~2496.5	2484.60	-36.44	0.22699	≤25	PASS
NTNV	BLE_1M	Ant1	2480	2483.5~2496.5	2483.88	-36.92	0.20324	≤25	PASS
NTHV	BLE_1M	Ant1	2480	2483.5~2496.5	2483.75	-37.27	0.18750	≤25	PASS
NTLV	BLE_1M	Ant1	2480	2496.5~13000	9125.26	-45.04	0.03133	≤2.5	PASS
NTNV	BLE_1M	Ant1	2480	2496.5~13000	3819.94	-44.50	0.03548	≤2.5	PASS
NTHV	BLE_1M	Ant1	2480	2496.5~13000	3871.93	-44.89	0.03243	≤2.5	PASS
NTLV	BLE_2M	Ant1	2402	30~1000	143.98	-54.45	0.00359	≤2.5	PASS
NTNV	BLE_2M	Ant1	2402	30~1000	143.98	-53.52	0.00445	≤2.5	PASS
NTHV	BLE_2M	Ant1	2402	30~1000	143.98	-53.64	0.00433	≤2.5	PASS
NTLV	BLE_2M	Ant1	2402	1000~2387	2359.61	-47.55	0.01758	≤2.5	PASS
NTNV	BLE_2M	Ant1	2402	1000~2387	2359.95	-46.44	0.02270	≤2.5	PASS
NTHV	BLE_2M	Ant1	2402	1000~2387	2190.74	-47.81	0.01656	≤2.5	PASS
NTLV	BLE_2M	Ant1	2402	2387~2400	2399.99	-27.18	1.91426	≤25	PASS
NTNV	BLE_2M	Ant1	2402	2387~2400	2400.00	-27.13	1.93642	≤25	PASS
NTHV	BLE_2M	Ant1	2402	2387~2400	2399.99	-27.23	1.89234	≤25	PASS
NTLV	BLE_2M	Ant1	2402	2483.5~2496.5	2494.79	-37.36	0.18365	≤25	PASS
NTNV	BLE_2M	Ant1	2402	2483.5~2496.5	2485.82	-37.30	0.18621	≤25	PASS
NTHV	BLE_2M	Ant1	2402	2483.5~2496.5	2495.14	-37.72	0.16904	≤25	PASS
NTLV	BLE_2M	Ant1	2402	2496.5~13000	3694.95	-45.10	0.03090	≤2.5	PASS
NTNV	BLE_2M	Ant1	2402	2496.5~13000	3778.45	-45.19	0.03027	≤2.5	PASS
NTHV	BLE_2M	Ant1	2402	2496.5~13000	3795.78	-45.24	0.02992	≤2.5	PASS
NTLV	BLE_2M	Ant1	2440	30~1000	143.98	-52.96	0.00506	≤2.5	PASS
NTNV	BLE_2M	Ant1	2440	30~1000	143.98	-52.63	0.00546	≤2.5	PASS
NTHV	BLE_2M	Ant1	2440	30~1000	143.98	-53.87	0.00410	≤2.5	PASS
NTLV	BLE_2M	Ant1	2440	1000~2387	2307.94	-47.42	0.01811	≤2.5	PASS
NTNV	BLE_2M	Ant1	2440	1000~2387	2382.49	-47.52	0.01770	≤2.5	PASS
NTHV	BLE_2M	Ant1	2440	1000~2387	2370.01	-47.32	0.01854	≤2.5	PASS
NTLV	BLE_2M	Ant1	2440	2387~2400	2397.89	-37.49	0.17824	≤25	PASS
NTNV	BLE_2M	Ant1	2440	2387~2400	2397.39	-37.04	0.19770	≤25	PASS
NTHV	BLE_2M	Ant1	2440	2387~2400	2397.06	-37.21	0.19011	≤25	PASS
NTLV	BLE_2M	Ant1	2440	2483.5~2496.5	2484.62	-36.47	0.22542	≤25	PASS
NTNV	BLE_2M	Ant1	2440	2483.5~2496.5	2489.99	-37.11	0.19454	≤25	PASS
NTHV	BLE_2M	Ant1	2440	2483.5~2496.5	2492.39	-37.39	0.18239	≤25	PASS
NTLV	BLE_2M	Ant1	2440	2496.5~13000	3859.33	-44.79	0.03319	≤2.5	PASS
NTNV	BLE_2M	Ant1	2440	2496.5~13000	3662.91	-44.87	0.03258	≤2.5	PASS
NTHV	BLE_2M	Ant1	2440	2496.5~13000	8992.39	-45.42	0.02871	≤2.5	PASS

NTLV	BLE_2M	Ant1	2480	30~1000	143.98	-53.58	0.00439	≤2.5	PASS
NTNV	BLE_2M	Ant1	2480	30~1000	143.98	-53.04	0.00497	≤2.5	PASS
NTHV	BLE_2M	Ant1	2480	30~1000	143.98	-53.90	0.00407	≤2.5	PASS
NTLV	BLE_2M	Ant1	2480	1000~2387	2336.37	-46.95	0.02018	≤2.5	PASS
NTNV	BLE_2M	Ant1	2480	1000~2387	2378.33	-47.33	0.01849	≤2.5	PASS
NTHV	BLE_2M	Ant1	2480	1000~2387	2314.53	-47.16	0.01923	≤2.5	PASS
NTLV	BLE_2M	Ant1	2480	2387~2400	2388.16	-36.77	0.21038	≤25	PASS
NTNV	BLE_2M	Ant1	2480	2387~2400	2397.22	-37.62	0.17298	≤25	PASS
NTHV	BLE_2M	Ant1	2480	2387~2400	2397.91	-37.16	0.19231	≤25	PASS
NTLV	BLE_2M	Ant1	2480	2483.5~2496.5	2483.71	-37.02	0.19861	≤25	PASS
NTNV	BLE_2M	Ant1	2480	2483.5~2496.5	2487.01	-37.00	0.19953	≤25	PASS
NTHV	BLE_2M	Ant1	2480	2483.5~2496.5	2483.67	-37.35	0.18408	≤25	PASS
NTLV	BLE_2M	Ant1	2480	2496.5~13000	3820.47	-44.60	0.03467	≤2.5	PASS
NTNV	BLE_2M	Ant1	2480	2496.5~13000	3782.13	-44.45	0.03589	≤2.5	PASS
NTHV	BLE_2M	Ant1	2480	2496.5~13000	4786.79	-45.10	0.03090	≤2.5	PASS

Test Graphs

