

Appendix RF Test Data for BLE

Product Name: 2.4G+Bluetooth Mouse

Test Model: MA-WBIRS550

Environmental Conditions

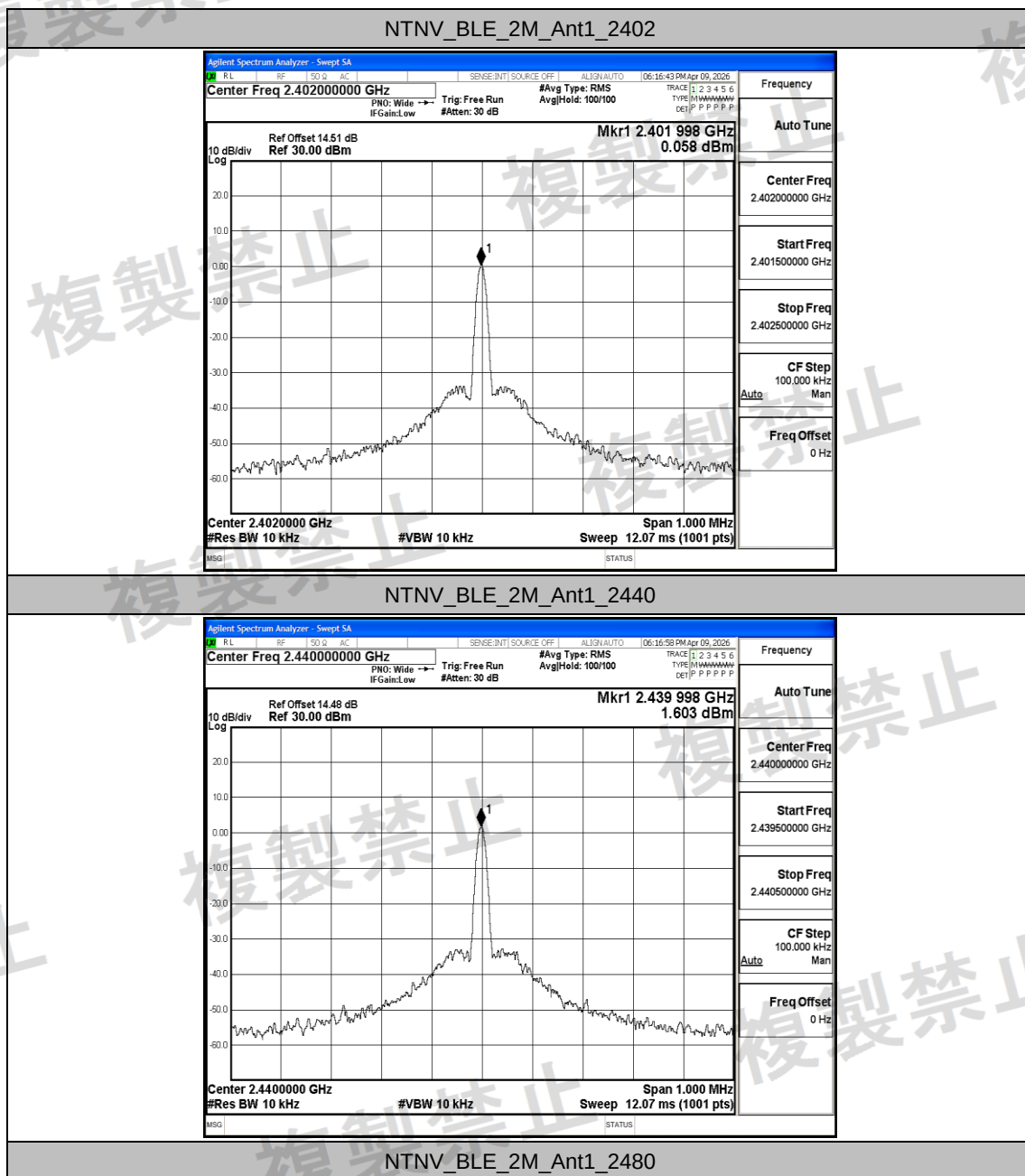
Temperature:	23.2° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Zoey Cao
Supervised by:	Eric Wang

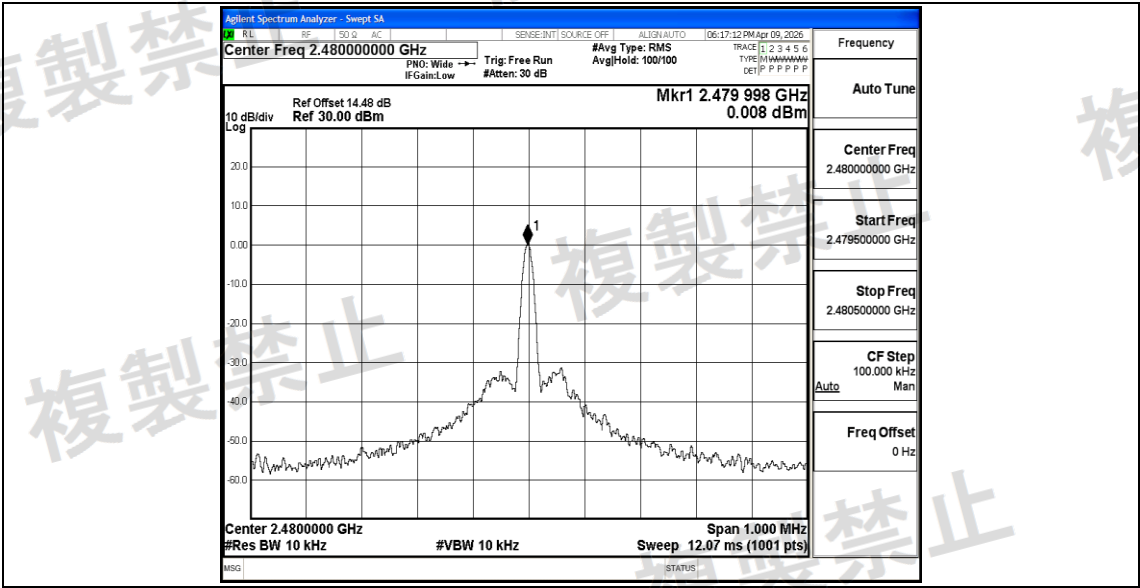
1 Frequency Error

Test Result

TestCondition	TestMode	Antenna	Freq(MHz)	Result[ppm]	Limit[ppm]	Verdict
NTNV	Frequency Error	Ant1	2402	-0.83264	±50	PASS
			2440	-0.81967	±50	PASS
			2480	-0.80645	±50	PASS

Test Graphs





2 Antenna Power

Test Result

Antenna Power							
TestCondition	TestMode	Antenna	Freq (MHz)	Result(dBm)	Result(mW)	Limit(mW)	Verdict
NTNV	BLE_2M	Ant1	2402	1.45	1.40	≤10	PASS
			2440	1.35	1.36	≤10	PASS
			2480	1.25	1.33	≤10	PASS

Tolerance								
Test Condition	Test Mode	Antenna	Freq (MHz)	Power (mW)	Rated Power (mW)	Result (%)	Limit (%)	Verdict
NTNV	BLE_2M	Ant1	2402	1.40	3.0	-53.33	20	PASS
			2440	1.36	3.0	-54.67	20	PASS
			2480	1.33	3.0	-55.67	20	PASS

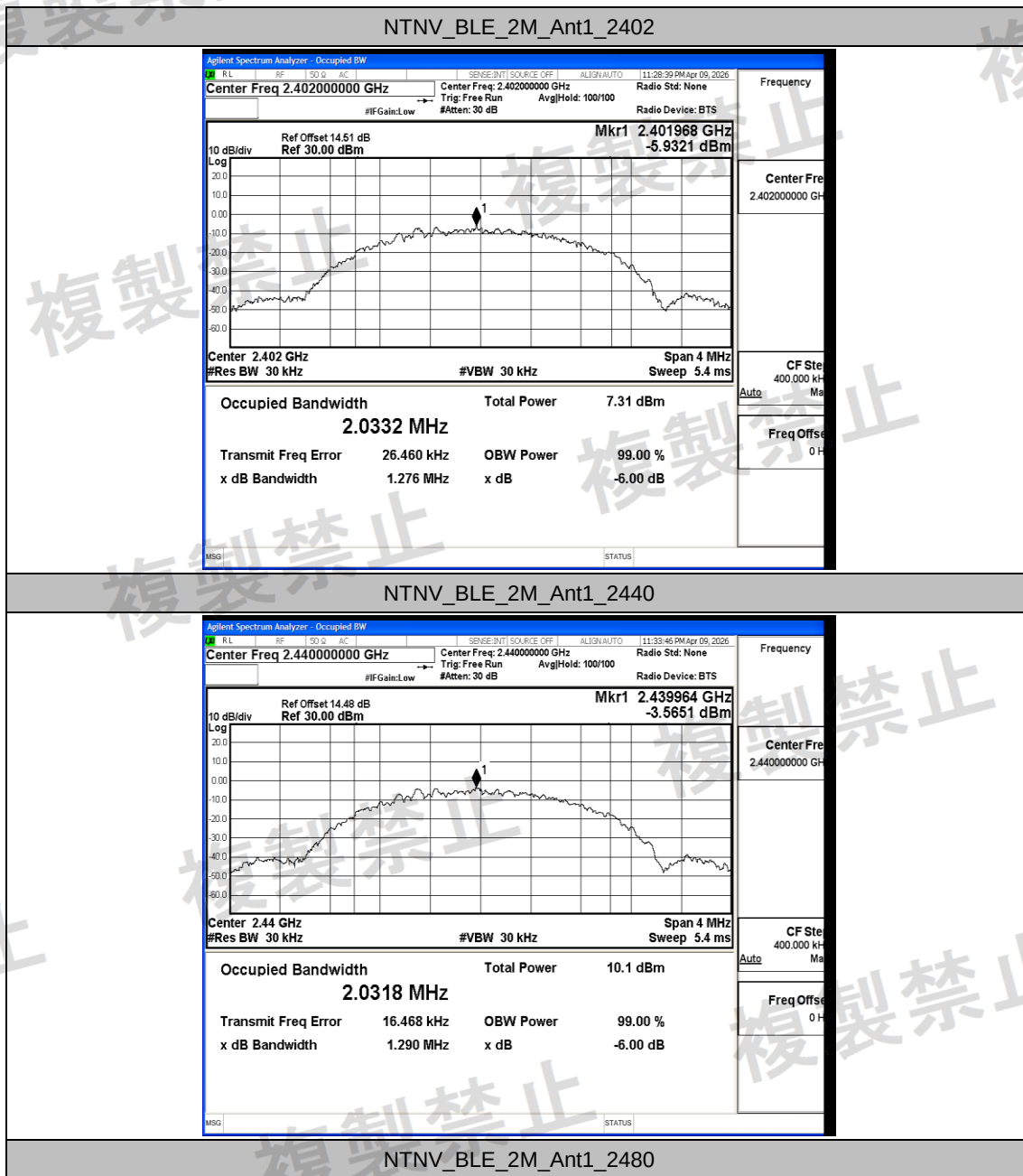
EIRP								
TestCondition	TestMode	Antenna	Frequency[MHz]	Measured Power (dBm)	Antenna gain (dBi)	EIRP (dBm)	Limit (dBm)	Verdict
NTNV	BLE_2M	Ant1	2402	1.45	2.48	3.93	≤12.14	PASS
			2440	1.35	2.48	3.83	≤12.14	PASS
			2480	1.25	2.48	3.73	≤12.14	PASS

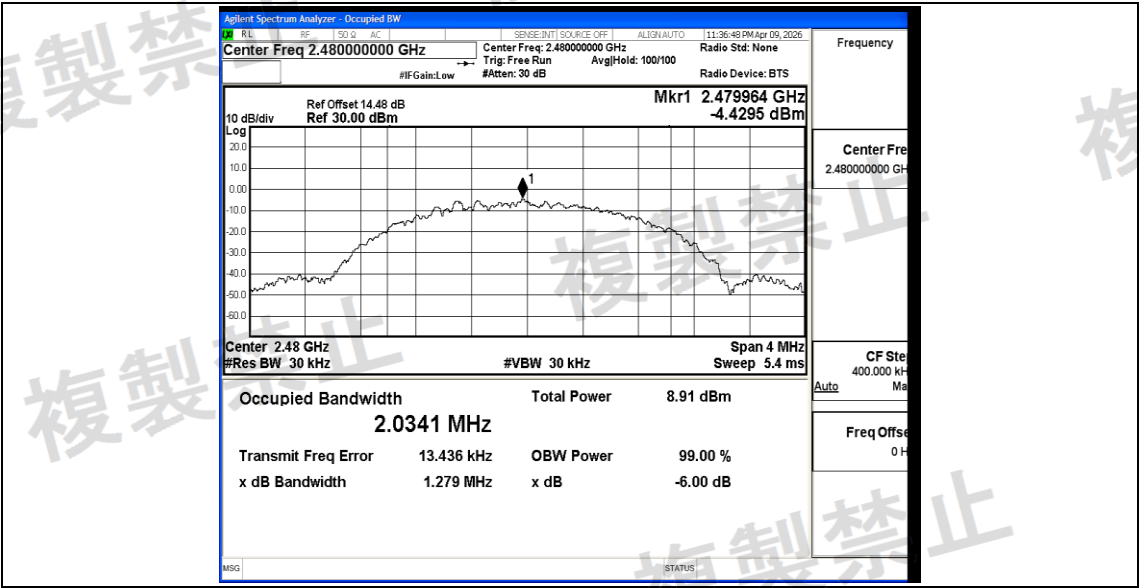
3 Occupied Bandwidth

Test Result

TestCondition	TestMode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	BLE_2M	Ant1	2402	2.033	≤26	PASS
			2440	2.032	≤26	PASS
			2480	2.034	≤26	PASS

Test Graphs



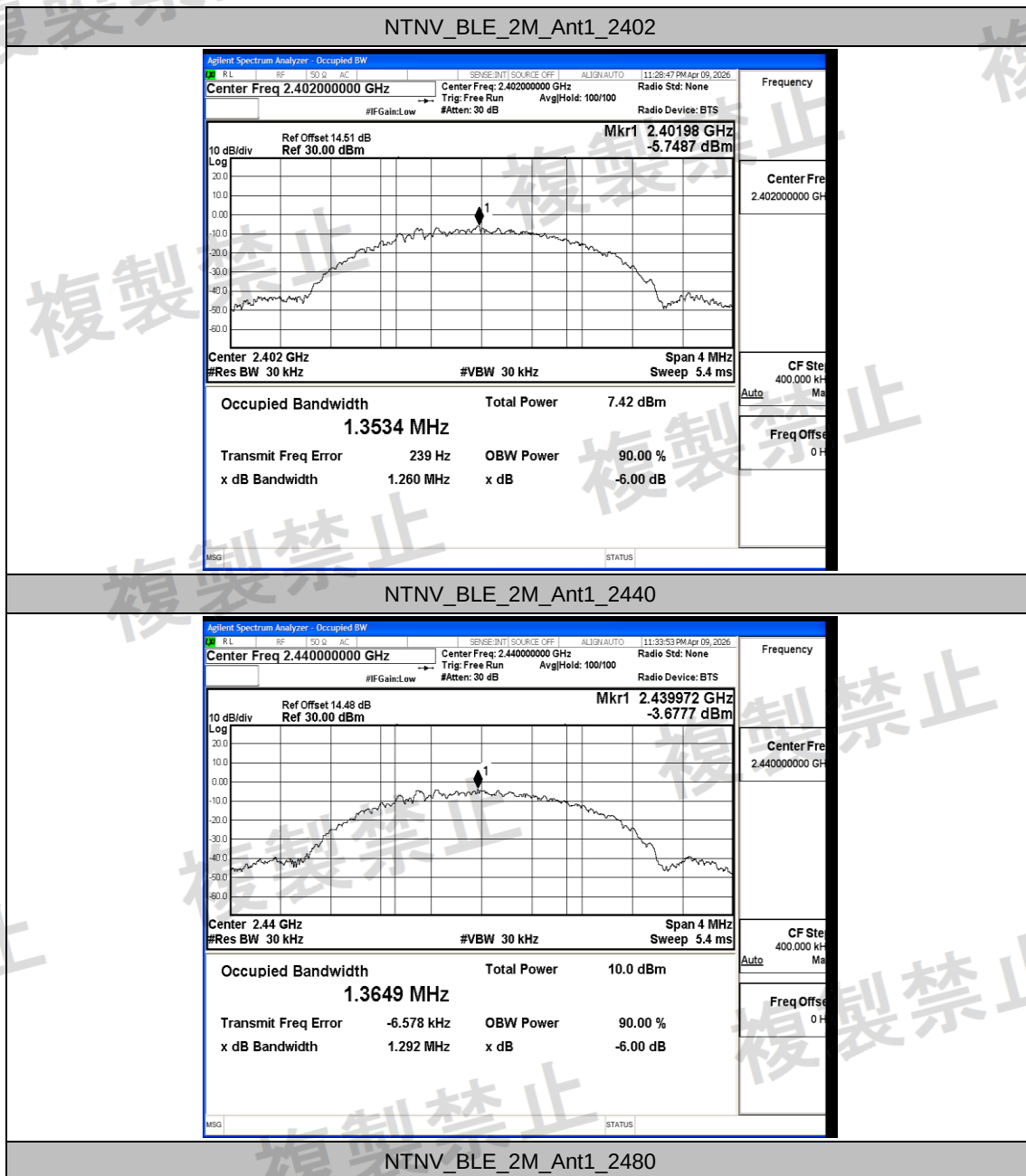


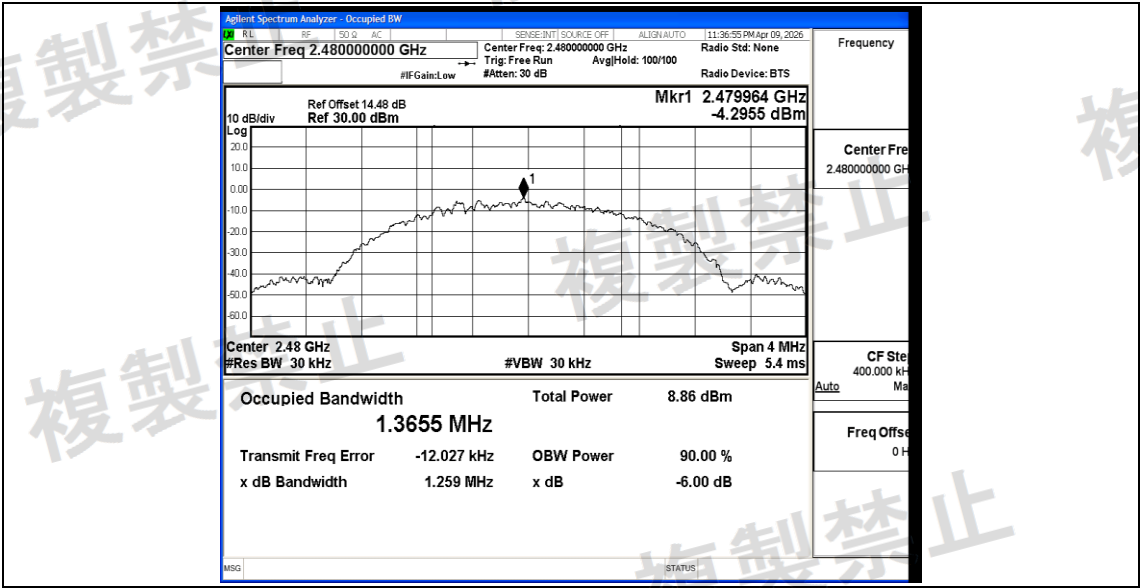
4 Spread Bandwidth

Test Result

TestCondition	TestMode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	BLE_2M	Ant1	2402	1.353	≥0.5	PASS
			2440	1.365	≥0.5	PASS
			2480	1.366	≥0.5	PASS

Test Graphs





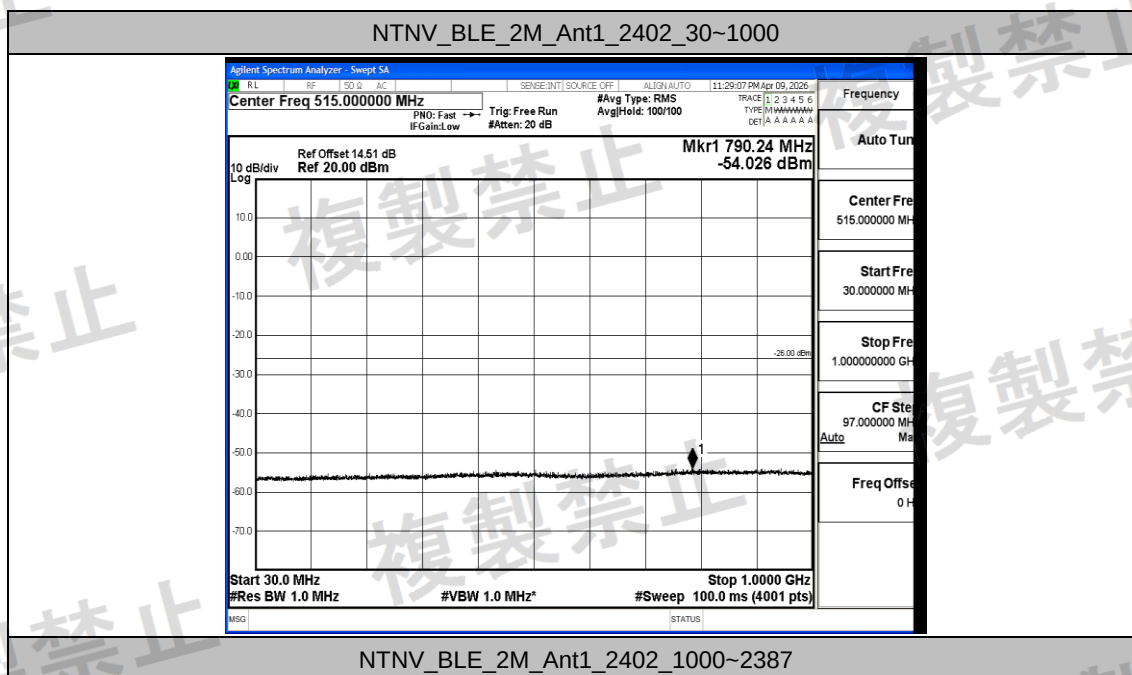
5 Spurious Emission of TX

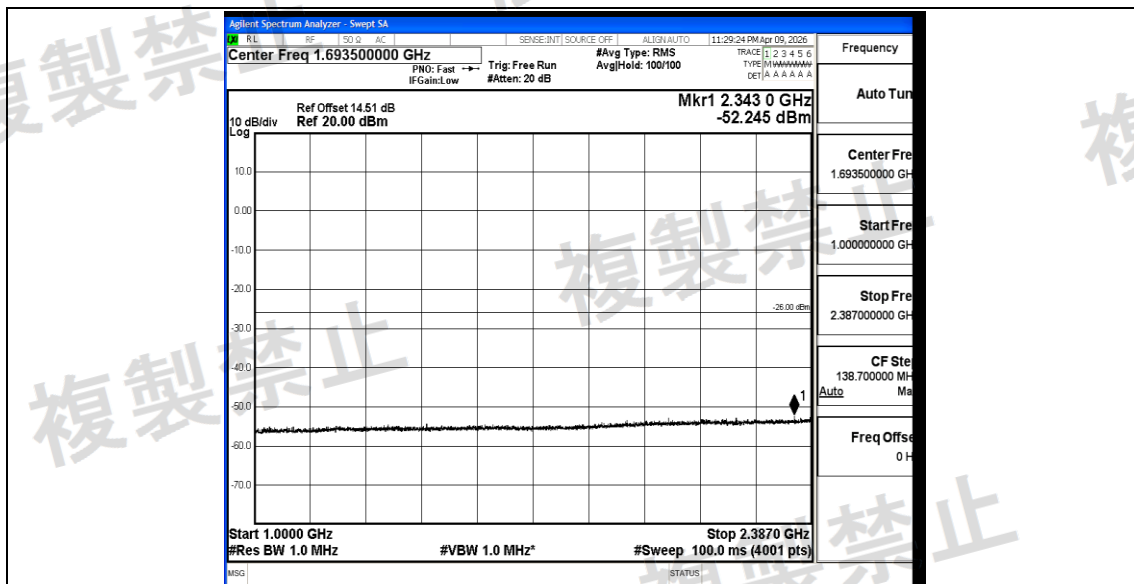
Test Result

TestCondition	TestMode	Antenna	Channel	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	BLE_2M	Ant1	2402	30~1000	-54.03	≤-26	0.00395	≤2.5	PASS
				1000~2387	-52.25	≤-26	0.00596	≤2.5	PASS
				2387~2400	-25.93	≤-16	2.55270	≤25	PASS
				2483.5~2496.5	-43.34	≤-16	0.04634	≤25	PASS
				2496.5~13000	-45.29	≤-26	0.02958	≤2.5	PASS
			2440	30~1000	-53.94	≤-26	0.00404	≤2.5	PASS
				1000~2387	-52.78	≤-26	0.00527	≤2.5	PASS
				2387~2400	-43.58	≤-16	0.04385	≤25	PASS
				2483.5~2496.5	-43.40	≤-16	0.04571	≤25	PASS
				2496.5~13000	-45.45	≤-26	0.02851	≤2.5	PASS
			2480	30~1000	-54.08	≤-26	0.00391	≤2.5	PASS
				1000~2387	-52.84	≤-26	0.00520	≤2.5	PASS
				2387~2400	-43.40	≤-16	0.04571	≤25	PASS
				2483.5~2496.5	-42.84	≤-16	0.05200	≤25	PASS
				2496.5~13000	-45.51	≤-26	0.02812	≤2.5	PASS

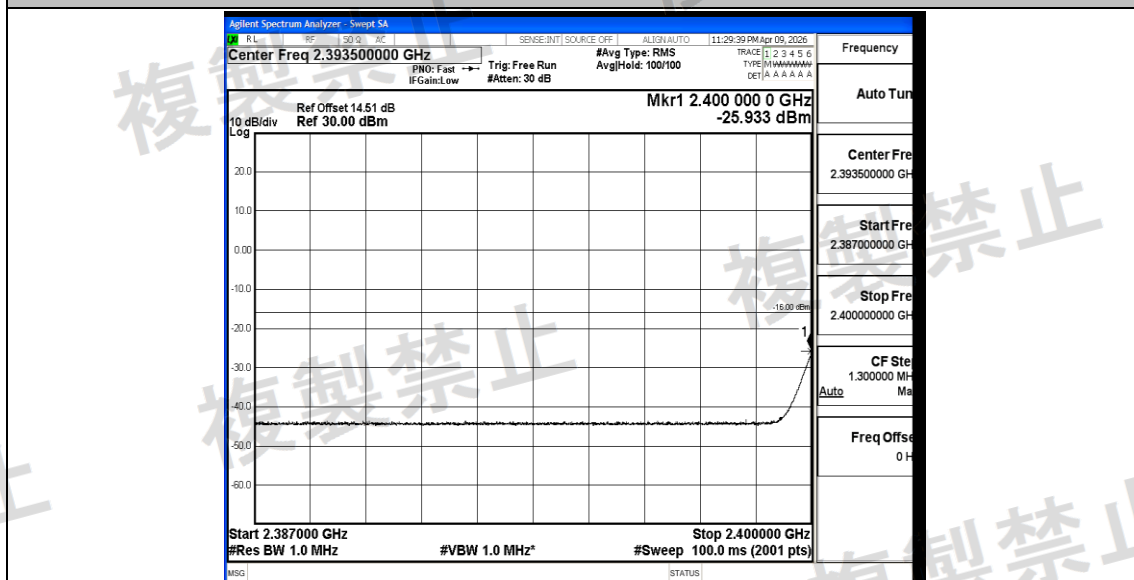
Test Graphs

Note: SA set to from 2.4965GHz to 13GHz, plot shows from 2.497GHz to 13GHz as of SA's default format.

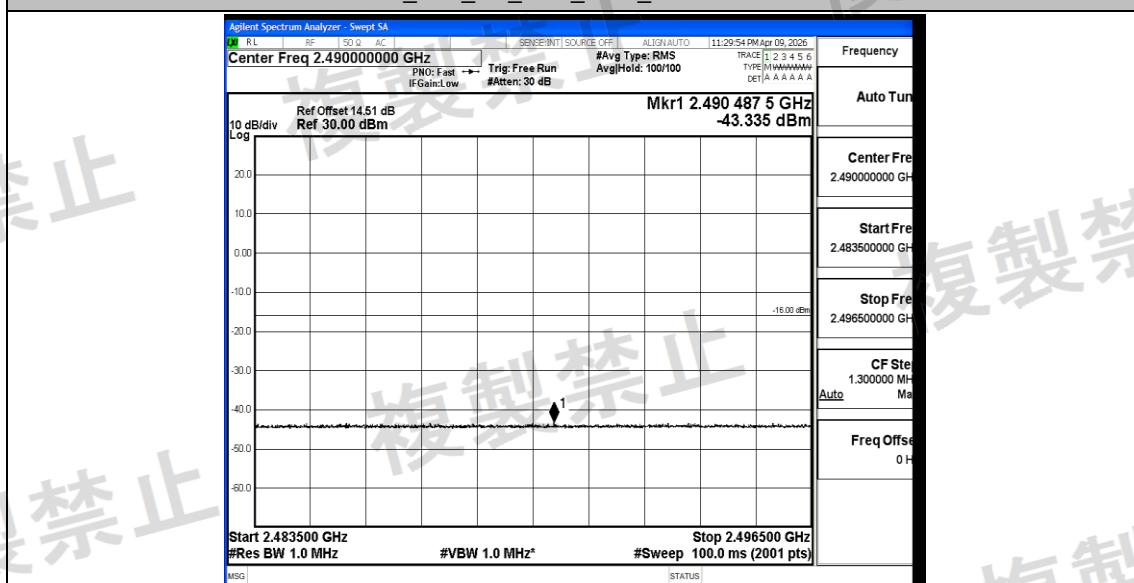


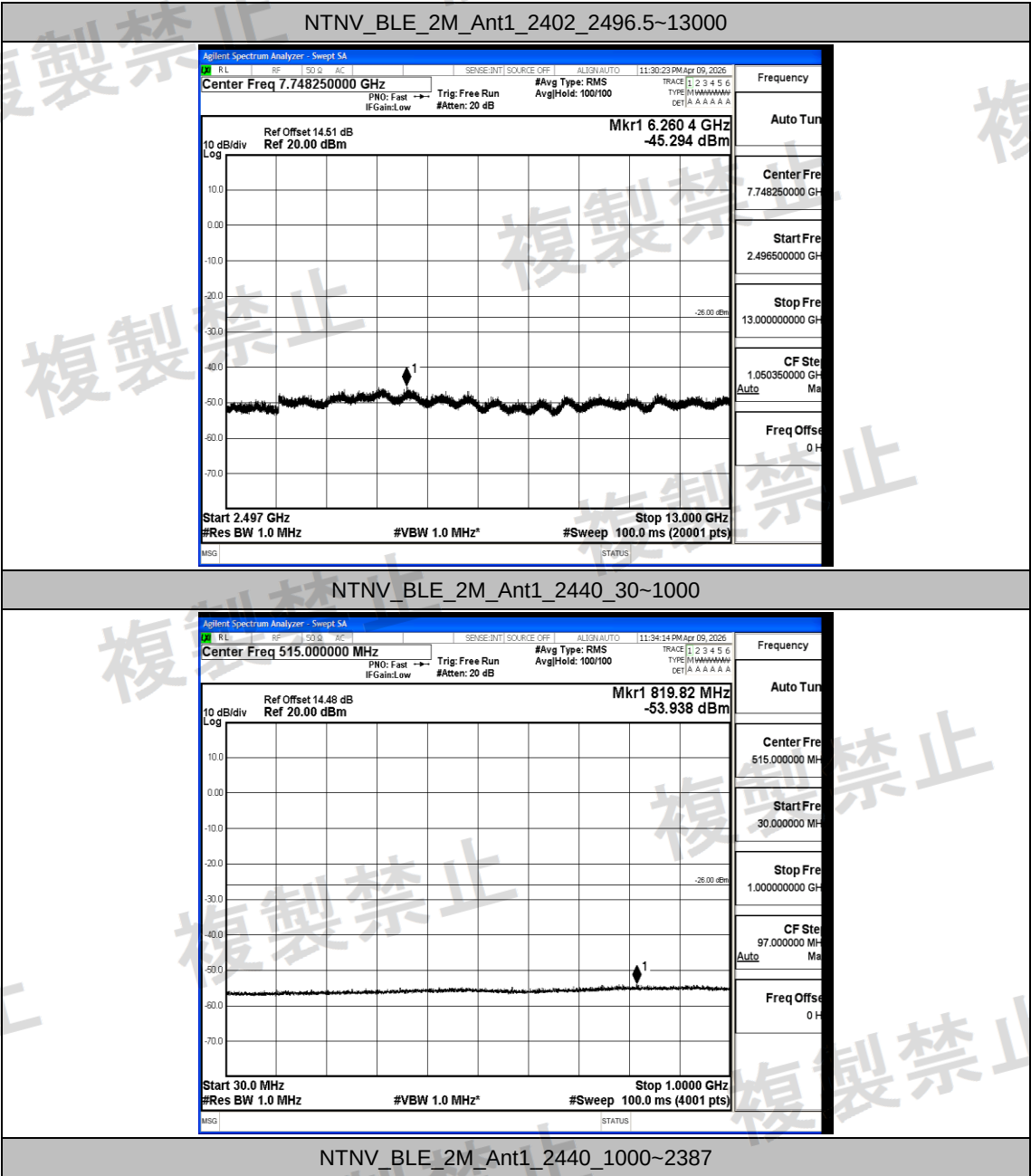


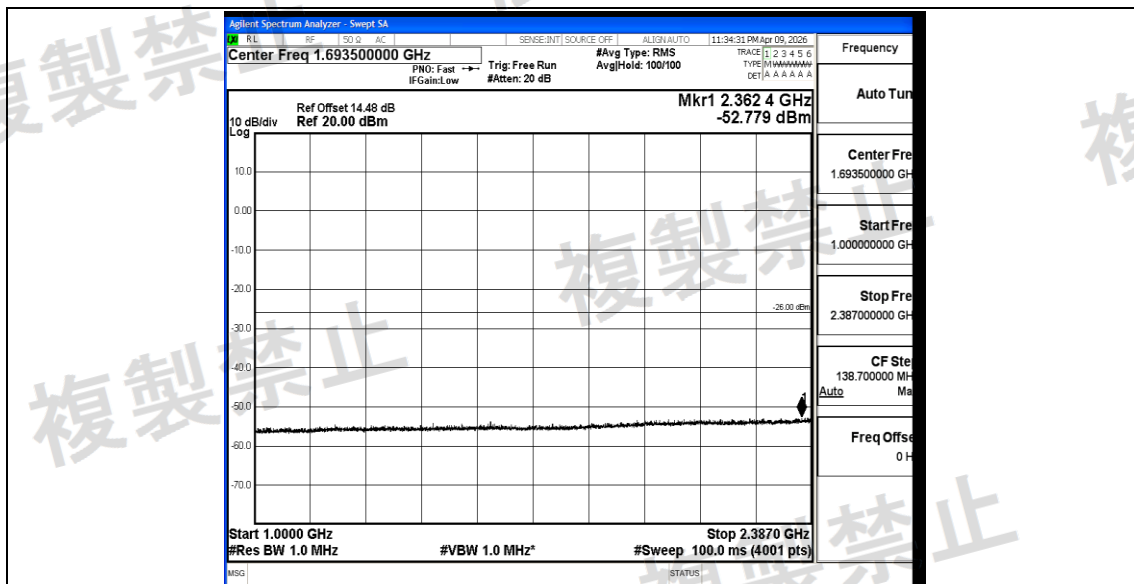
NTNV_BLE_2M_Ant1_2402_2387~2400



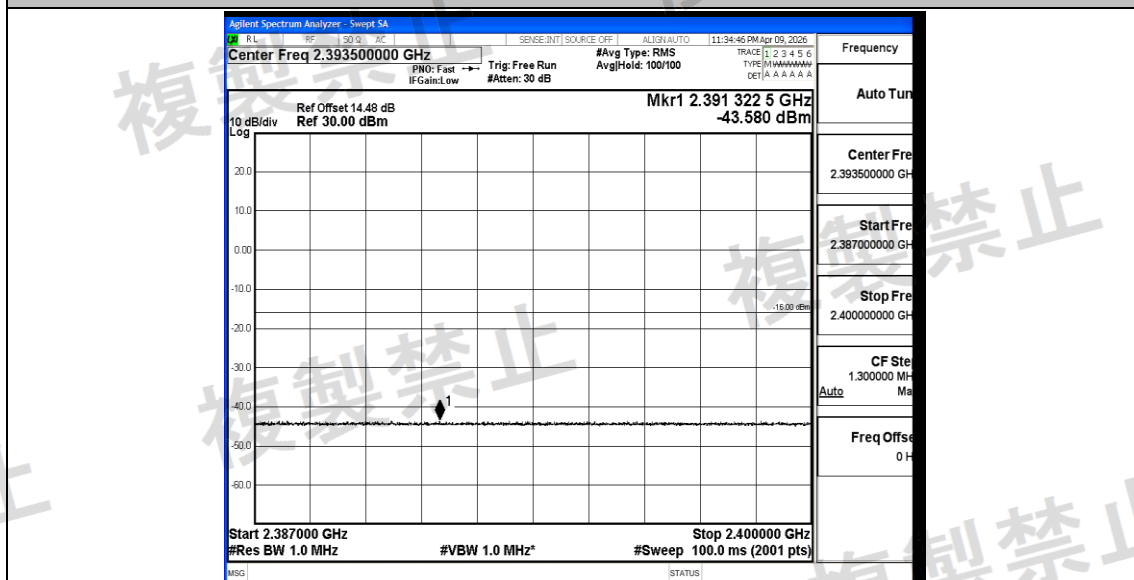
NTNV_BLE_2M_Ant1_2402_2483.5~2496.5



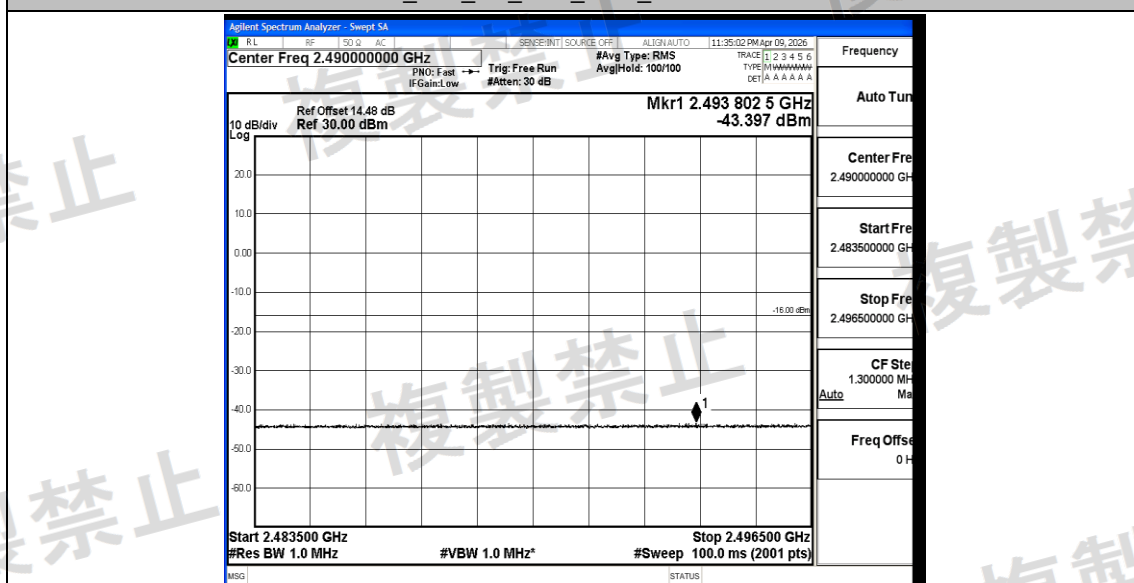


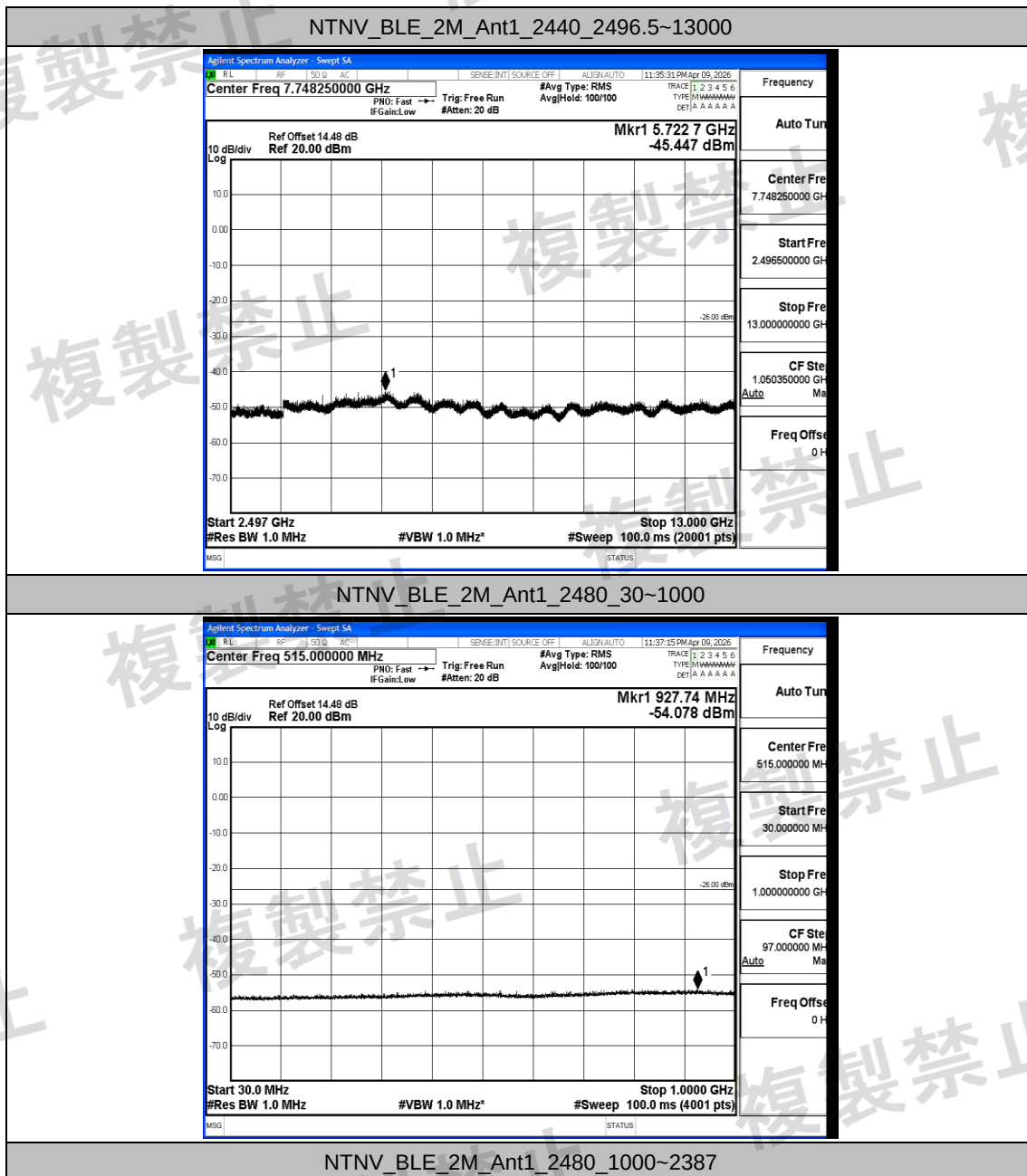


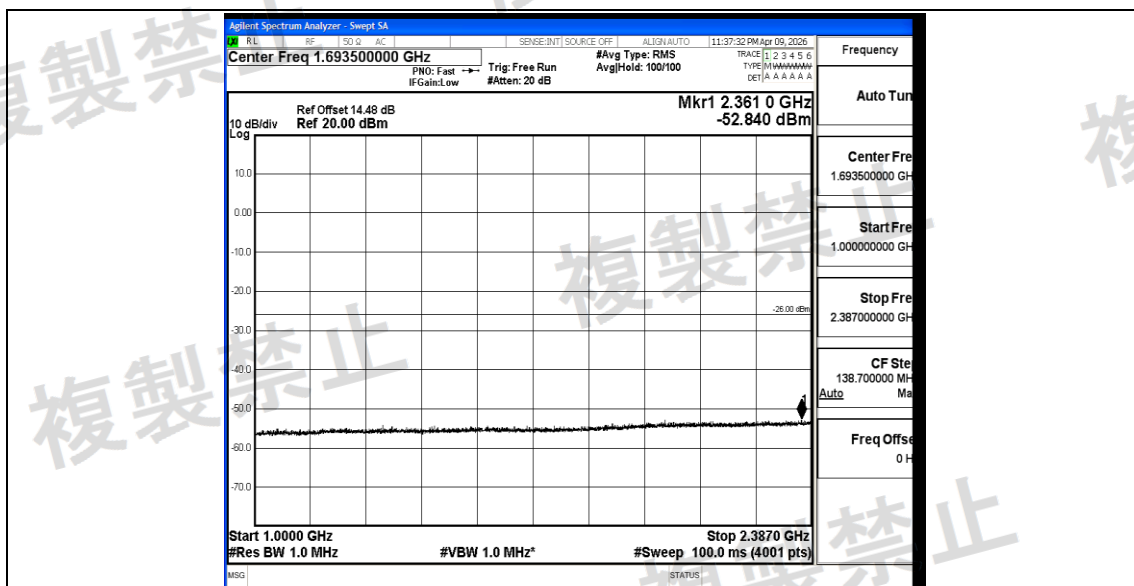
NTNV_BLE_2M_Ant1_2440_2387~2400



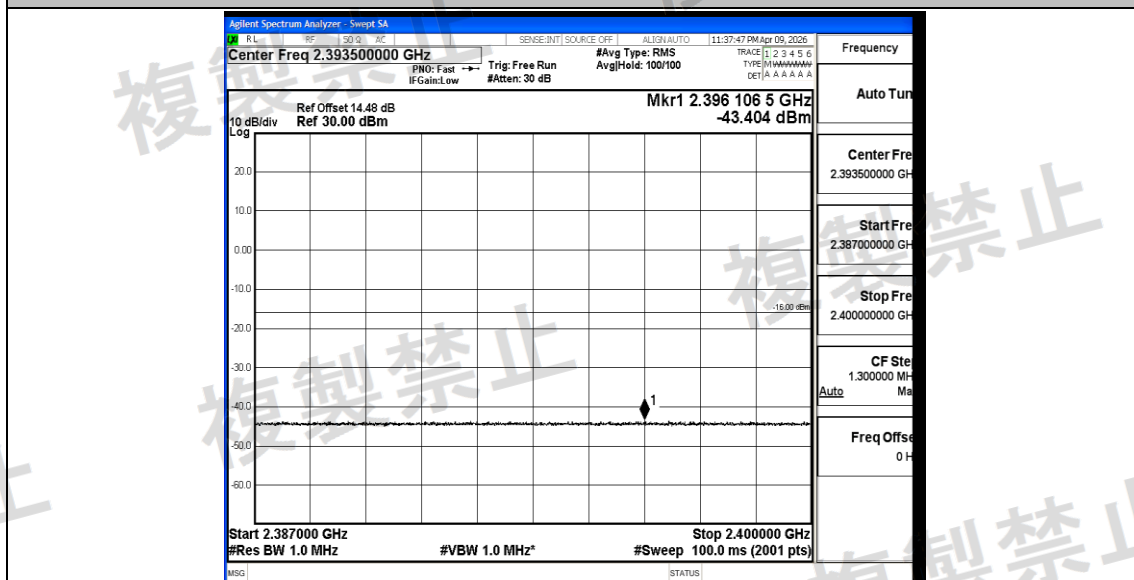
NTNV_BLE_2M_Ant1_2440_2483.5~2496.5



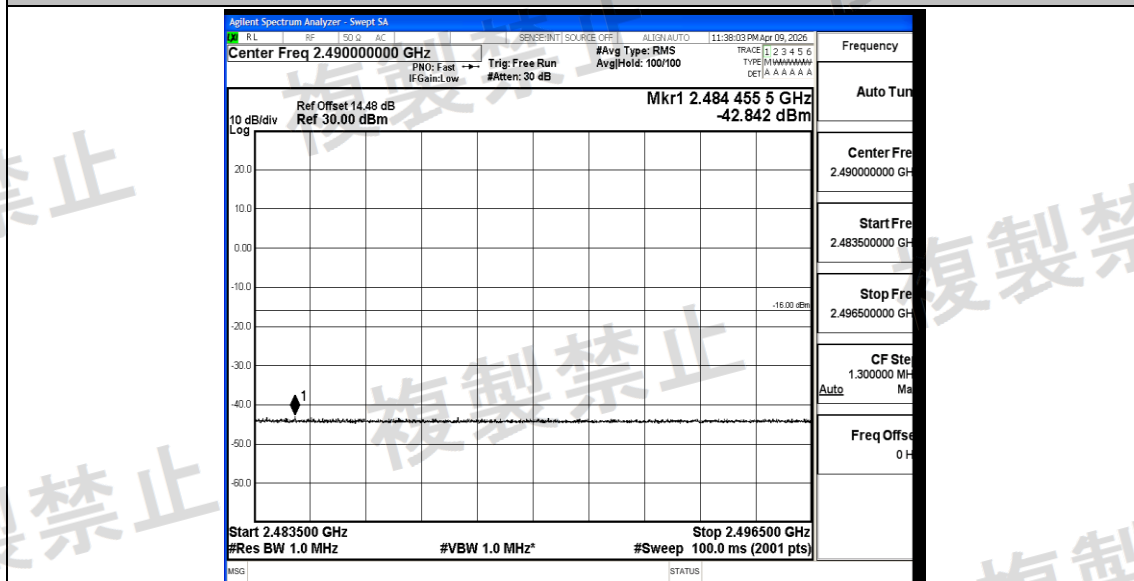


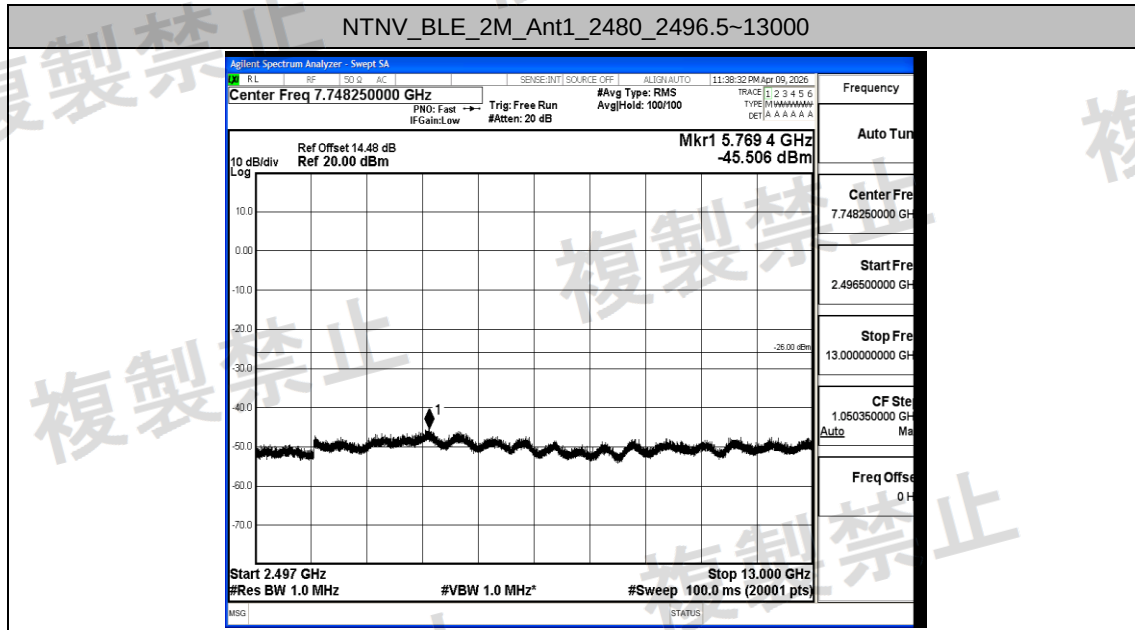


NTNV_BLE_2M_Ant1_2480_2387~2400



NTNV_BLE_2M_Ant1_2480_2483.5~2496.5



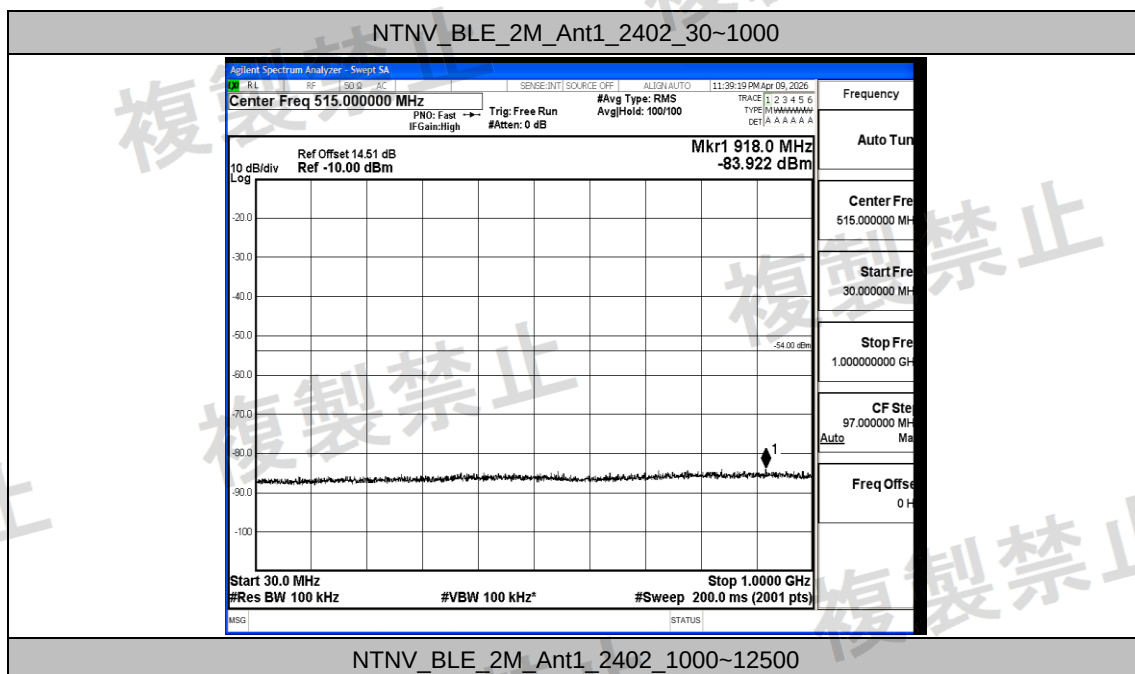


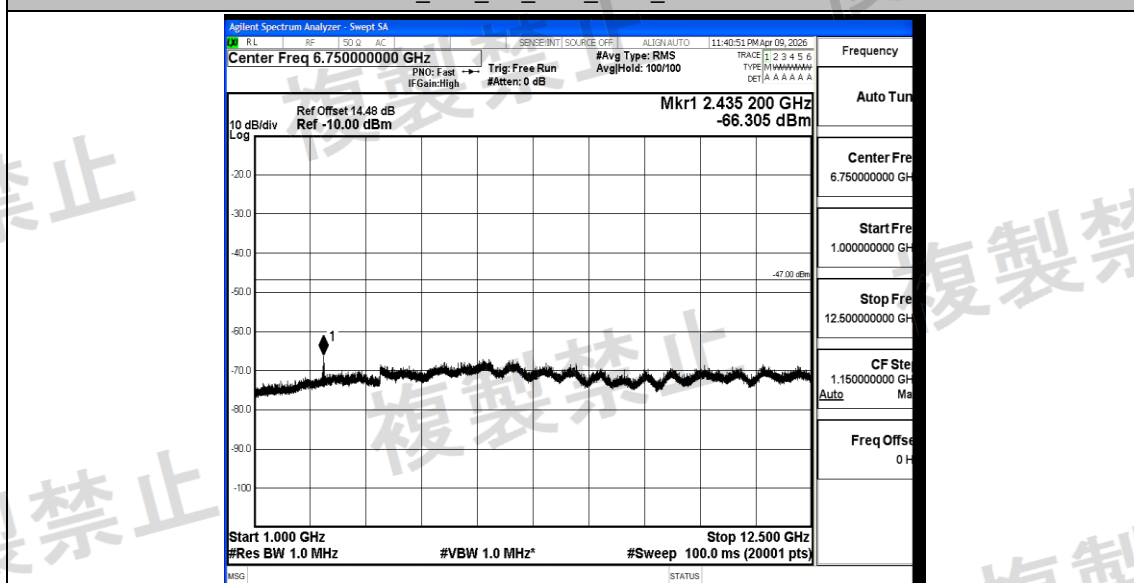
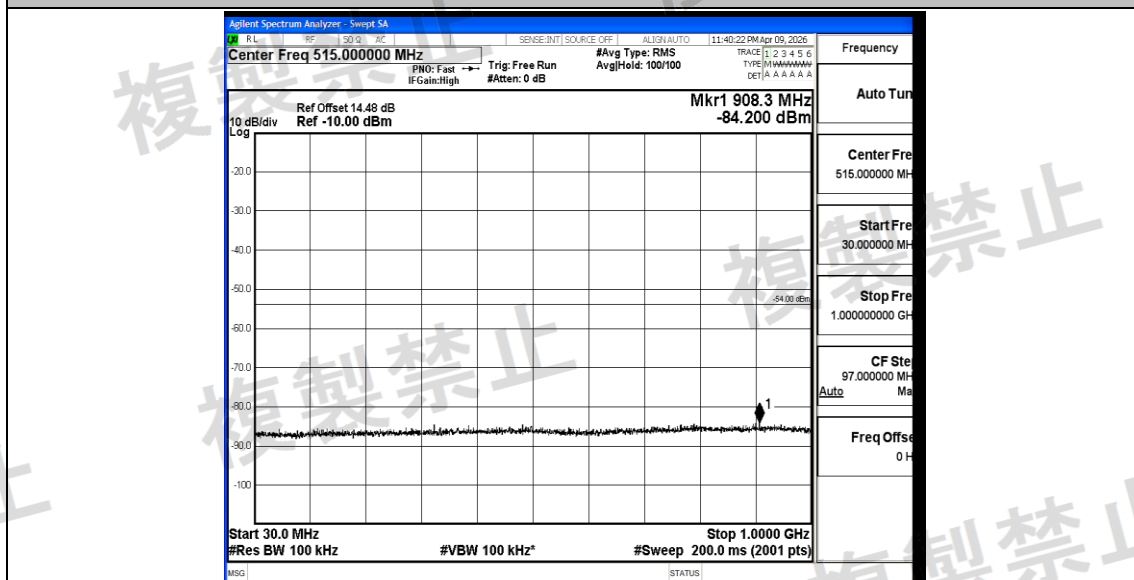
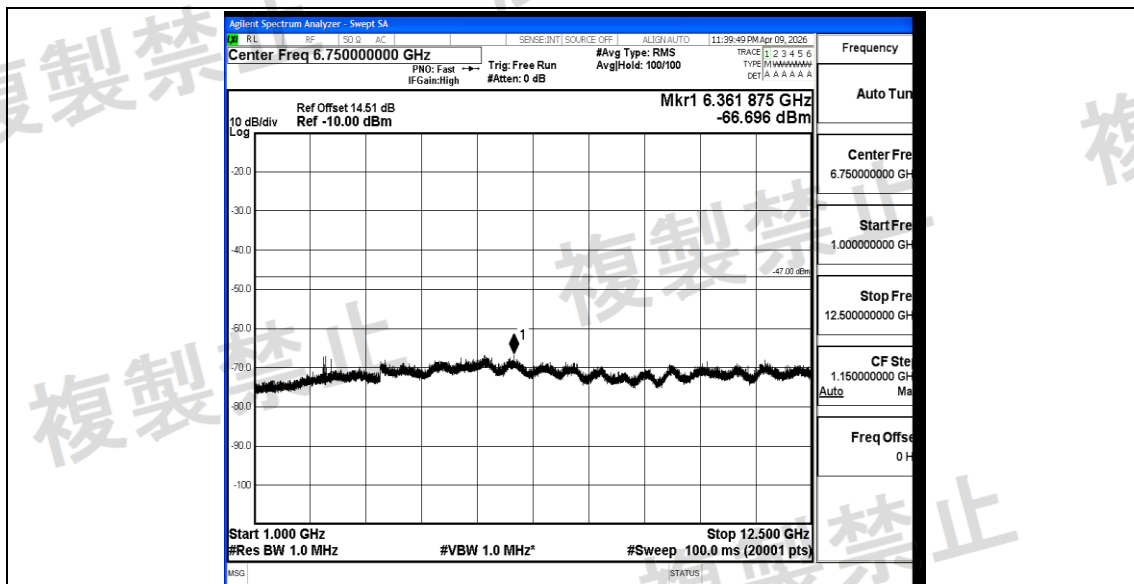
6 Spurious Emission of RX

Test Result

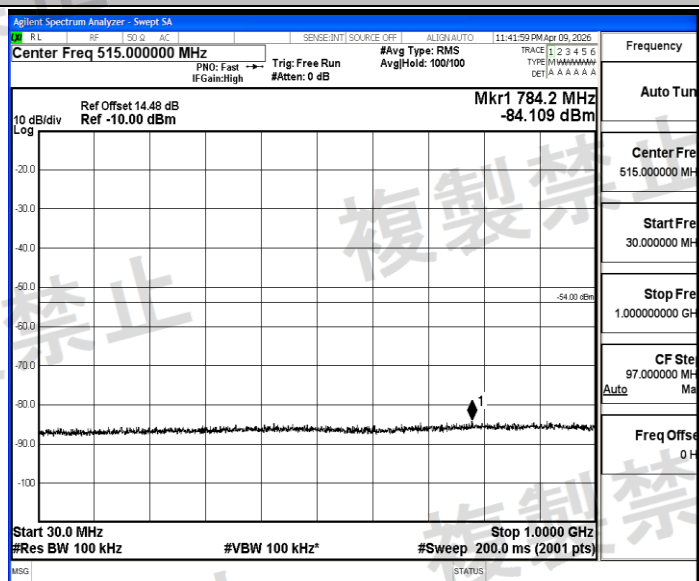
TestCondition	TestMode	Antenna	Channel	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	BLE_2M	Ant1	2402	30~1000	-83.92	≤-54	0.00406	≤4	PASS
				1000~12500	-66.7	≤-47	0.21380	≤20	PASS
			2440	30~1000	-84.2	≤-54	0.00380	≤4	PASS
				1000~12500	-66.31	≤-47	0.23388	≤20	PASS
			2480	30~1000	-84.11	≤-54	0.00388	≤4	PASS
				1000~12500	-66.5	≤-47	0.22387	≤20	PASS

Test Graphs





NTNV_BLE_2M_Ant1_2480_30~1000



NTNV_BLE_2M_Ant1_2480_1000~12500

