

Appendix B for BT LE Test Data

Product Name: Echo Master

Test Model: Echo Master

Environmental Conditions

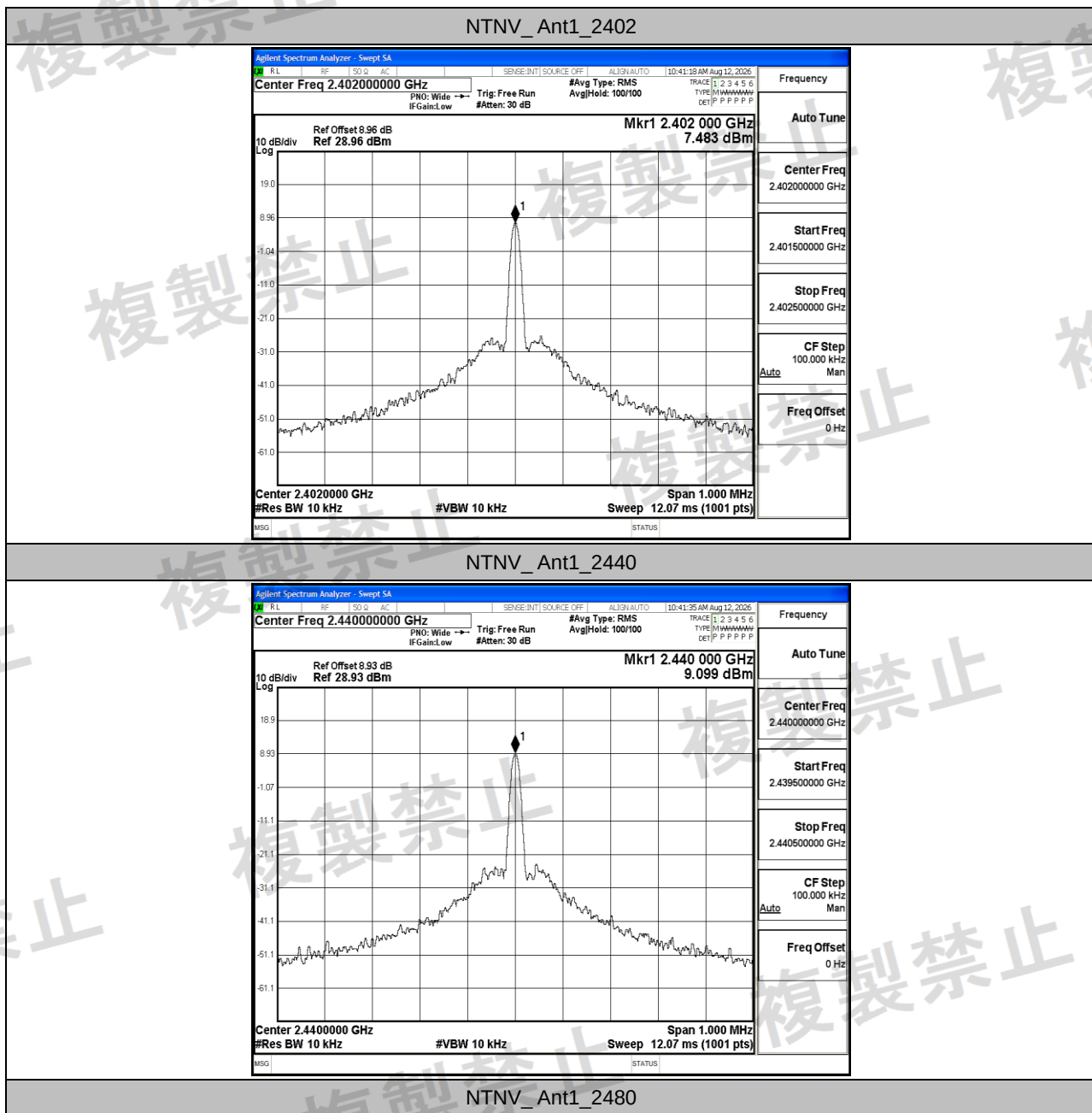
Temperature:	24.1°C
Relative Humidity:	52.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang hai
Supervised by:	Fengliu Tang

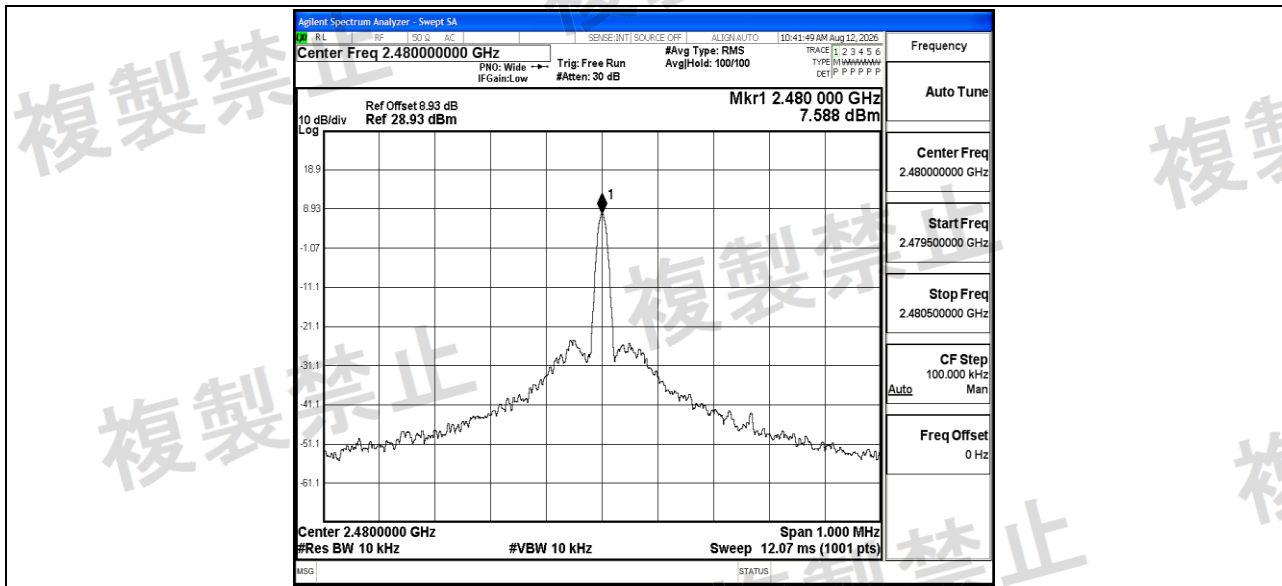
B.1 Frequency Error

Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	Result[ppm]	Limit[ppm]	Verdict
NTNV	Frequency Error	Ant1	2402	0.00000	±50	PASS
			2440	0.00000	±50	PASS
			2480	0.00000	±50	PASS

Test Graphs





B.2 Antenna Power & EIRP

Test Result

Antenna Power							
TestCondition	TestMode	Antenna	Frequency [MHz]	Result [dBm]	Result [mW]	Limit [mW]	Verdict
NTNV	BLE_1M	Ant1	2402	-0.05	0.9886	≤10	PASS
			2440	1.80	1.5136	≤10	PASS
			2480	1.81	1.5171	≤10	PASS
NTNV	BLE_2M	Ant1	2402	-0.61	0.8690	≤10	PASS
			2440	1.75	1.4962	≤10	PASS
			2480	1.43	1.3900	≤10	PASS

Tolerance								
Test Condition	Test Mode	Antenna	Channel	Power (mW)	RatedPower (mW)	Result (%)	Limit (%)	Verdict
NTNV	BLE_1M	Ant1	2402	0.9886	1.5	-34.09	+20	PASS
			2440	1.5136	1.5	0.91	+20	PASS
			2480	1.5171	1.5	1.14	+20	PASS
NTNV	BLE_2M	Ant1	2402	0.8690	1.5	-42.07	+20	PASS
			2440	1.4962	1.5	-0.25	+20	PASS
			2480	1.3900	1.5	-7.33	+20	PASS

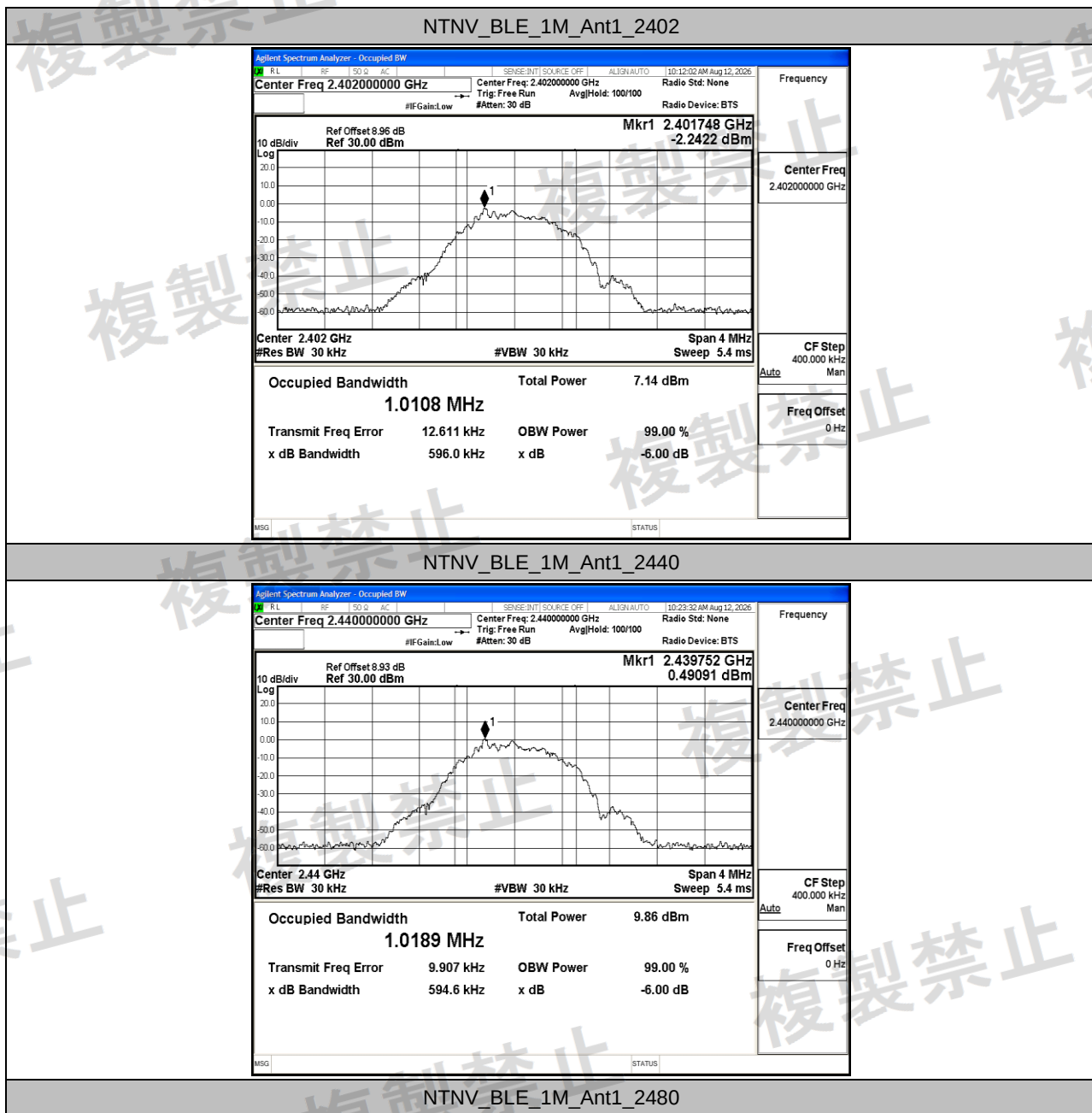
EIRP								
TestCondition	TestMode	Antenna	Frequency[MHz]	Measured Power (dBm/MHz)	Antenna gain (dBi)	EIRP (dBm)	Limit (dBm)	Verdict
NTNV	BLE_1M	Ant1	2402	-0.05	3.58	3.53	≤12.14	PASS
			2440	1.80	3.58	5.38	≤12.14	PASS
			2480	1.81	3.58	5.39	≤12.14	PASS
NTNV	BLE_2M	Ant1	2402	-0.61	3.58	2.97	≤12.14	PASS
			2440	1.75	3.58	5.33	≤12.14	PASS
			2480	1.43	3.58	5.01	≤12.14	PASS

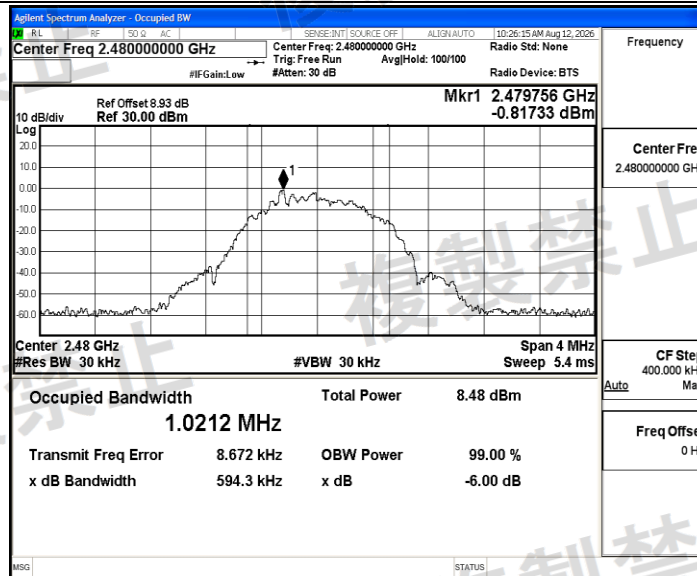
B.3 Occupied Bandwidth

Test Result

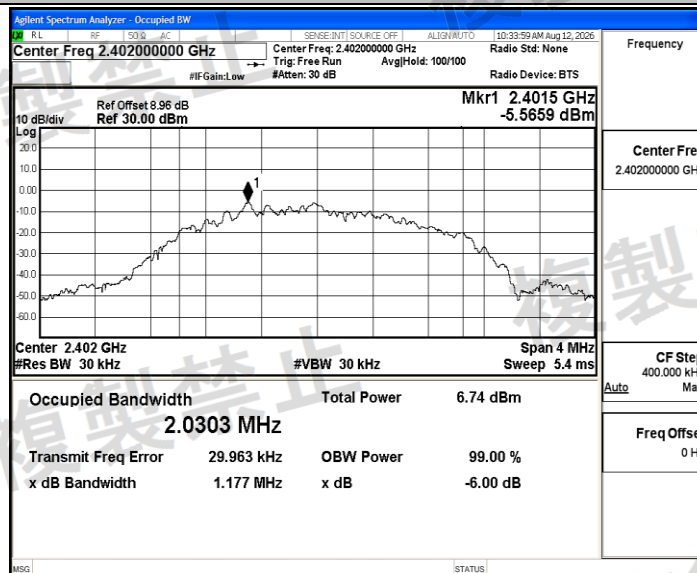
TestCondition	TestMode	Antenna	Frequency[MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	BLE_1M	Ant1	2402	1.011	≤26	PASS
			2440	1.019	≤26	PASS
			2480	1.021	≤26	PASS
	BLE_2M	Ant1	2402	2.030	≤26	PASS
			2440	2.031	≤26	PASS
			2480	2.035	≤26	PASS

Test Graphs

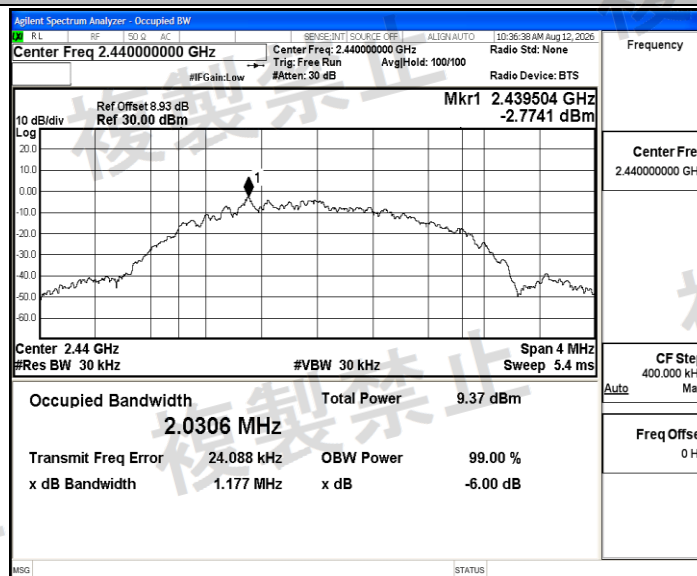




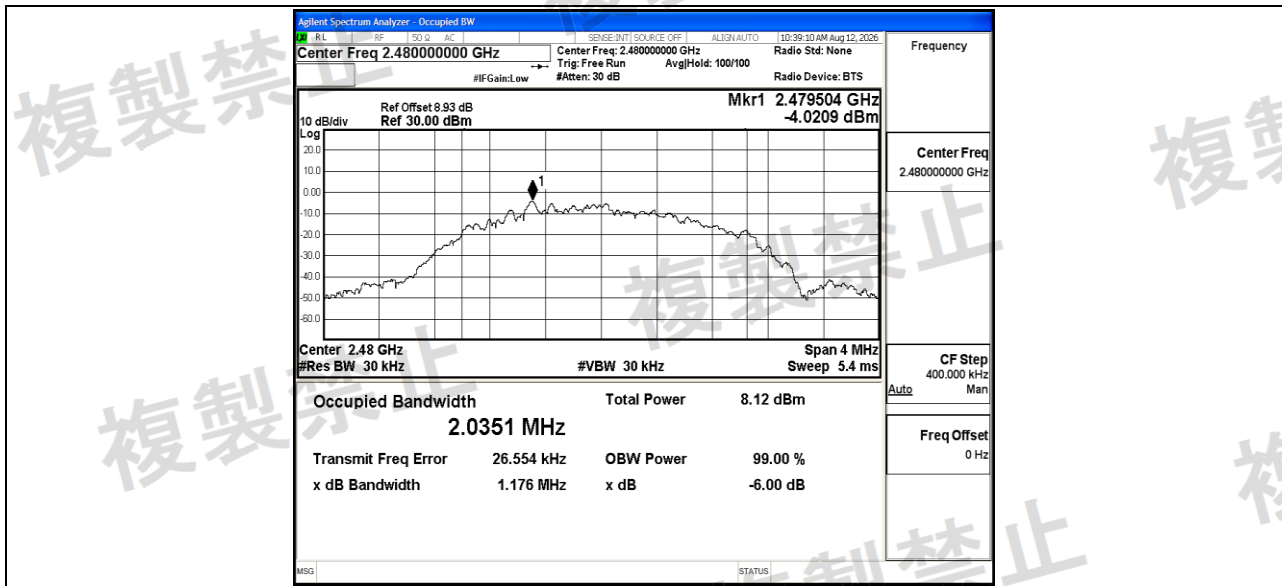
NTNV_BLE_2M_Ant1_2402



NTNV_BLE_2M_Ant1_2440



NTNV_BLE_2M_Ant1_2480

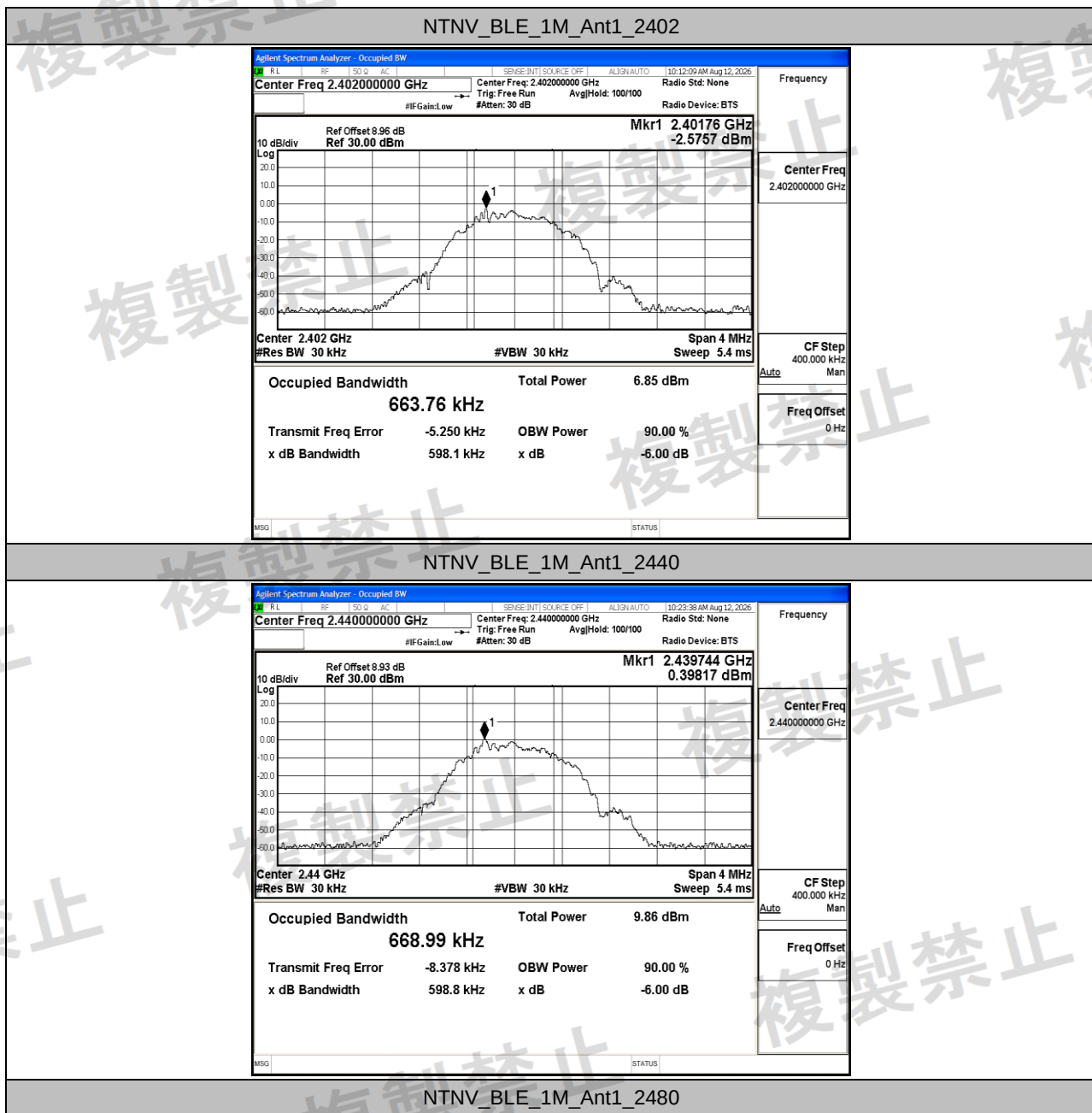


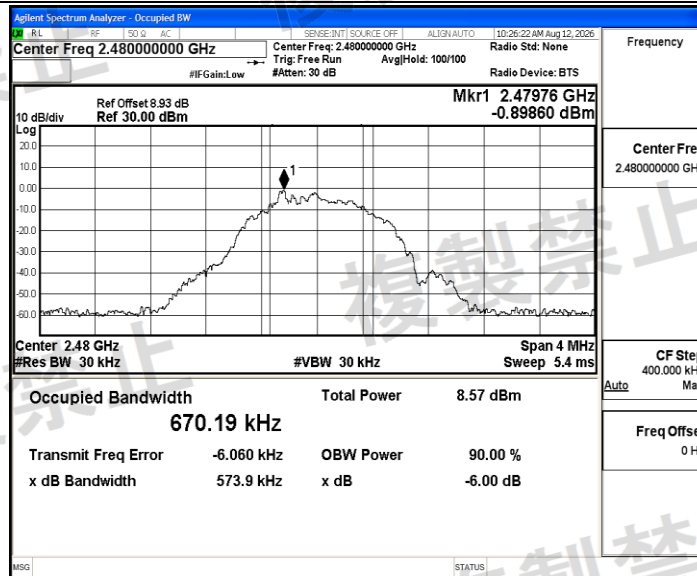
B.4 Spread Bandwidth

Test Result

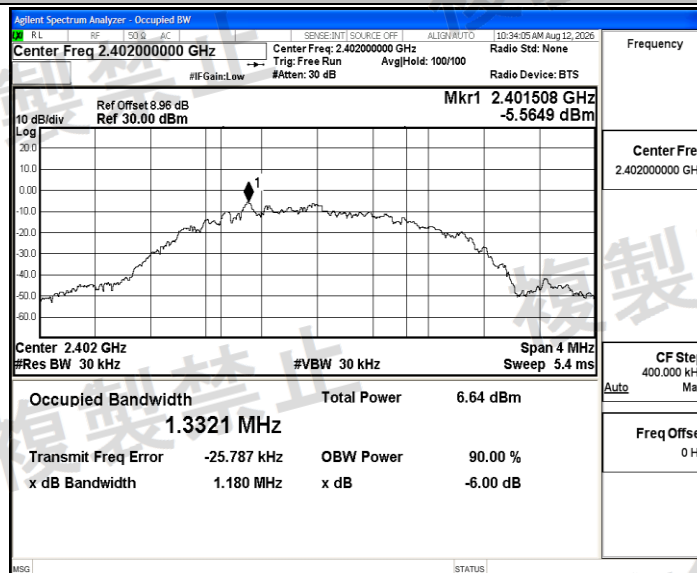
TestCondition	TestMode	Antenna	Frequency[MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	BLE_1M	Ant1	2402	0.664	---	PASS
			2440	0.669	---	PASS
			2480	0.670	---	PASS
	BLE_2M	Ant1	2402	1.332	---	PASS
			2440	1.326	---	PASS
			2480	1.335	---	PASS

Test Graphs

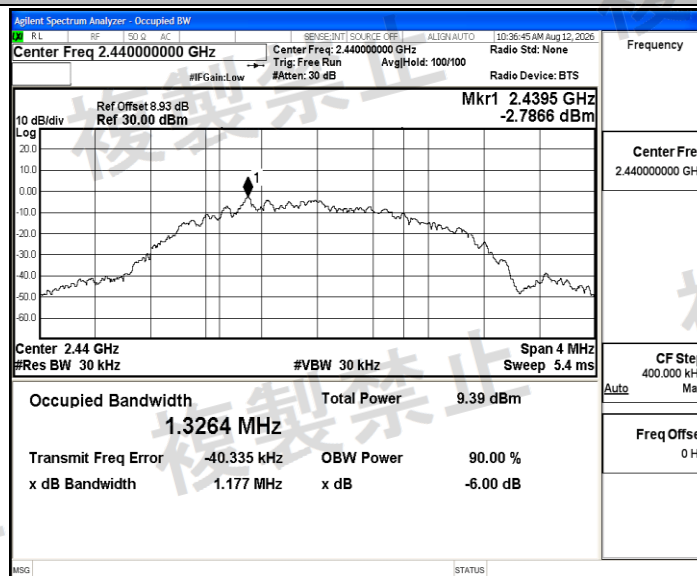




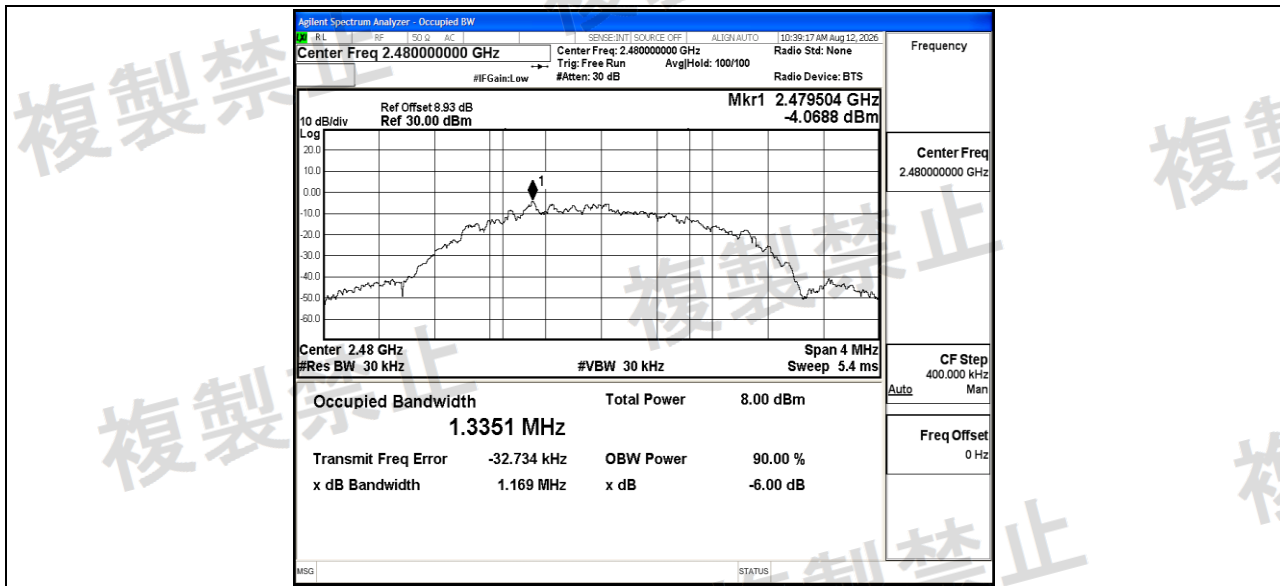
NTNV_BLE_2M_Ant1_2402



NTNV_BLE_2M_Ant1_2440



NTNV_BLE_2M_Ant1_2480

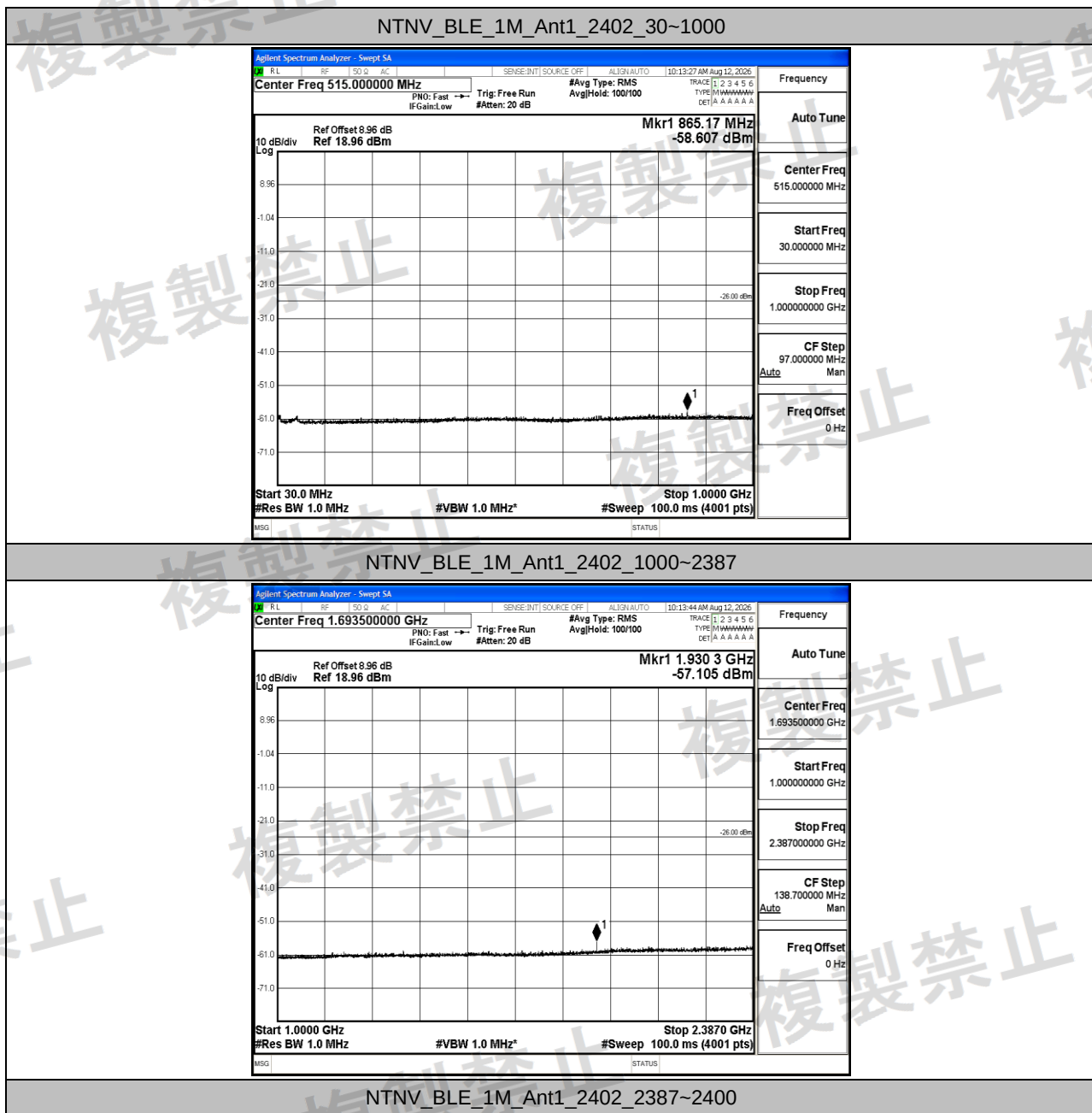


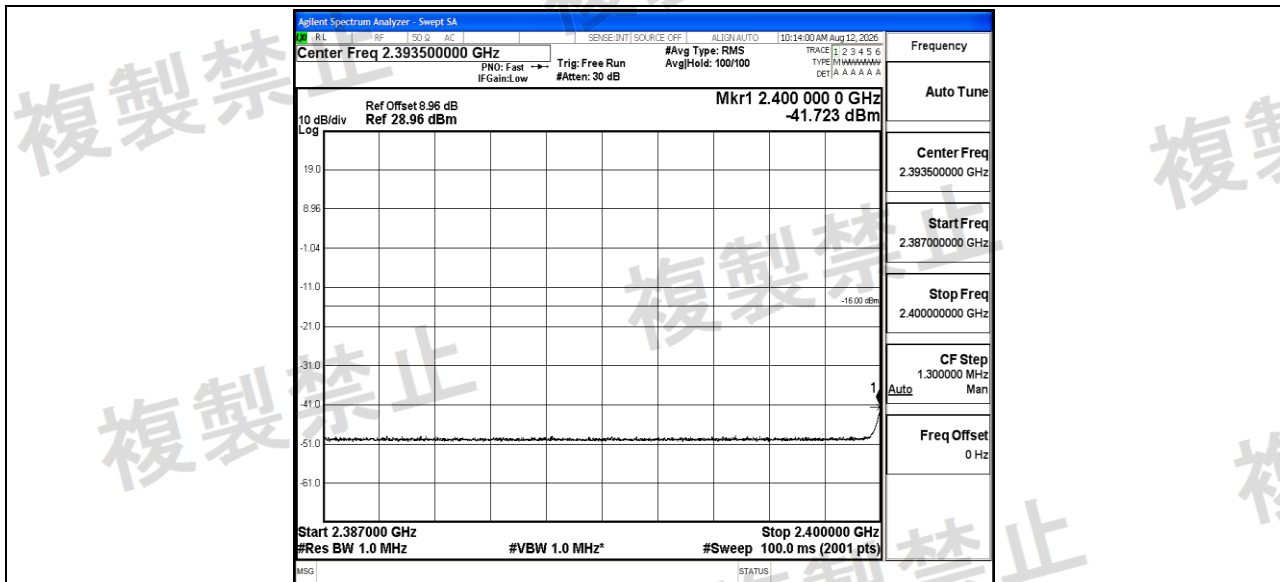
B.5 Spurious Emission of TX

Test Result

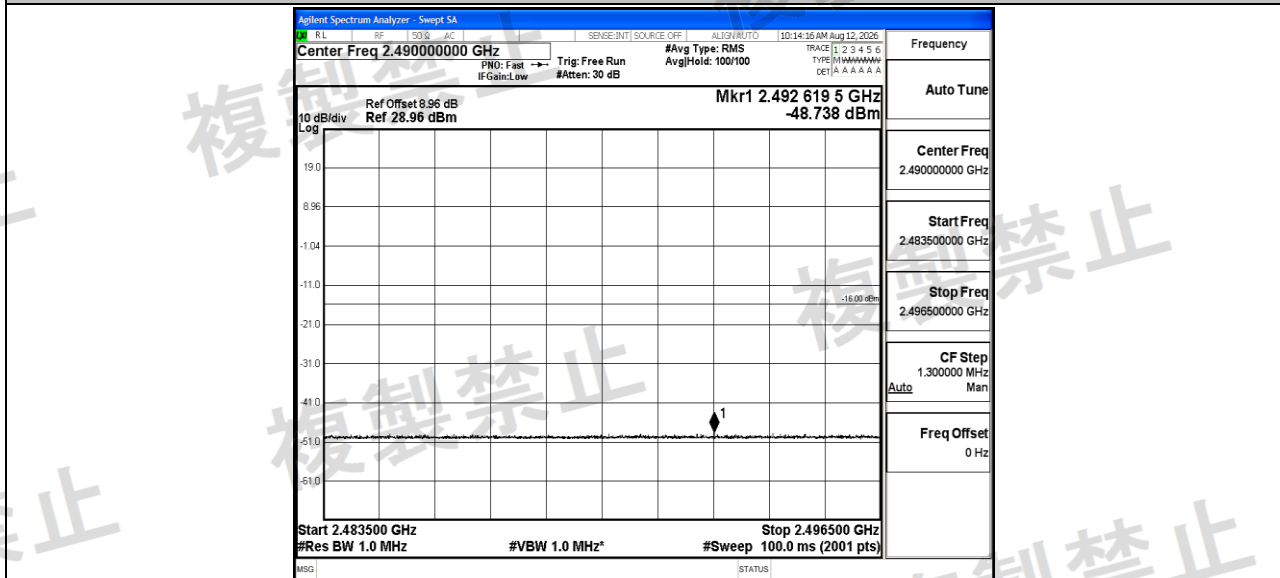
TestCondition	TestMode	Antenna	Frequency [MHz]	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [μ W]	Limit [μ W]	Verdict
NTNV	BLE_1 M	Ant1	2402	30~1000	-58.61	≤ -26	0.00138	≤ 2.5	PASS
				1000~2387	-57.11	≤ -26	0.00195	≤ 2.5	PASS
				2387~2400	-41.72	≤ -16	0.06730	≤ 25	PASS
				2483.5~2496.5	-48.74	≤ -16	0.01337	≤ 25	PASS
				2496.5~13000	-51.55	≤ -26	0.00700	≤ 2.5	PASS
			2440	30~1000	-59.20	≤ -26	0.00120	≤ 2.5	PASS
				1000~2387	-52.34	≤ -26	0.00583	≤ 2.5	PASS
				2387~2400	-48.81	≤ -16	0.01315	≤ 25	PASS
				2483.5~2496.5	-48.90	≤ -16	0.01288	≤ 25	PASS
				2496.5~13000	-51.08	≤ -26	0.00780	≤ 2.5	PASS
			2480	30~1000	-59.57	≤ -26	0.00110	≤ 2.5	PASS
				1000~2387	-50.25	≤ -26	0.00944	≤ 2.5	PASS
				2387~2400	-48.86	≤ -16	0.01300	≤ 25	PASS
				2483.5~2496.5	-48.55	≤ -16	0.01396	≤ 25	PASS
				2496.5~13000	-51.37	≤ -26	0.00729	≤ 2.5	PASS
	BLE_2 M	Ant1	2402	30~1000	-59.59	≤ -26	0.00110	≤ 2.5	PASS
				1000~2387	-58.09	≤ -26	0.00155	≤ 2.5	PASS
				2387~2400	-25.98	≤ -16	2.52348	≤ 25	PASS
				2483.5~2496.5	-48.80	≤ -16	0.01318	≤ 25	PASS
				2496.5~13000	-51.42	≤ -26	0.00721	≤ 2.5	PASS
			2440	30~1000	-59.37	≤ -26	0.00116	≤ 2.5	PASS
				1000~2387	-58.50	≤ -26	0.00141	≤ 2.5	PASS
				2387~2400	-49.03	≤ -16	0.01250	≤ 25	PASS
				2483.5~2496.5	-48.78	≤ -16	0.01324	≤ 25	PASS
				2496.5~13000	-51.23	≤ -26	0.00753	≤ 2.5	PASS
			2480	30~1000	-59.27	≤ -26	0.00118	≤ 2.5	PASS
				1000~2387	-58.28	≤ -26	0.00149	≤ 2.5	PASS
				2387~2400	-49.03	≤ -16	0.01250	≤ 25	PASS
				2483.5~2496.5	-49.03	≤ -16	0.01250	≤ 25	PASS
				2496.5~13000	-50.93	≤ -26	0.00807	≤ 2.5	PASS

Test Graphs

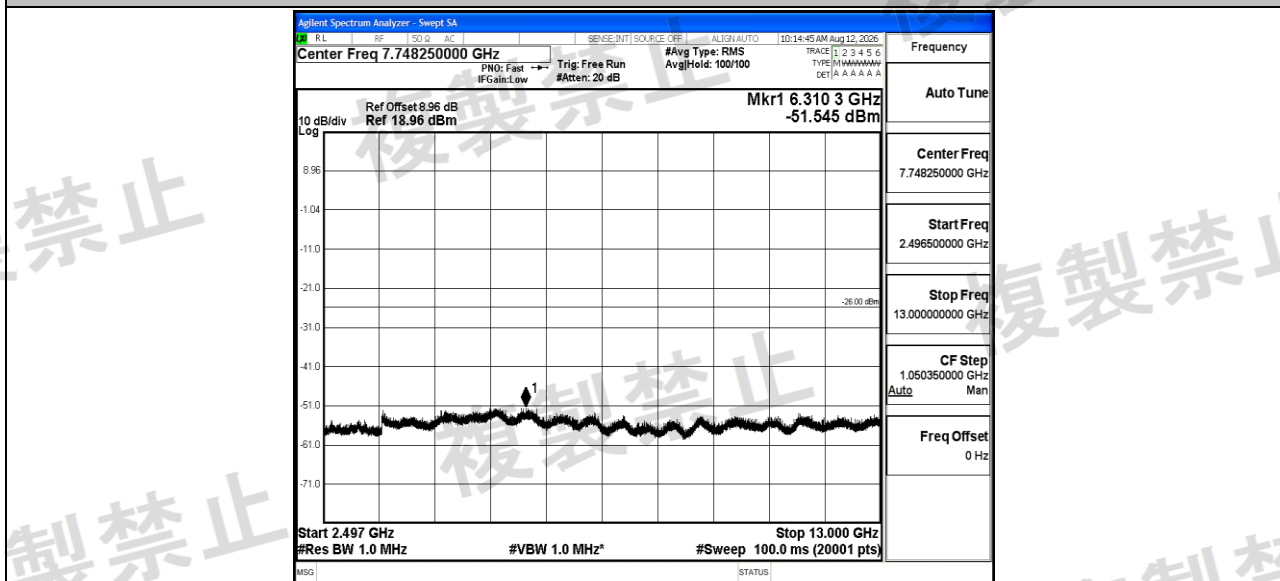




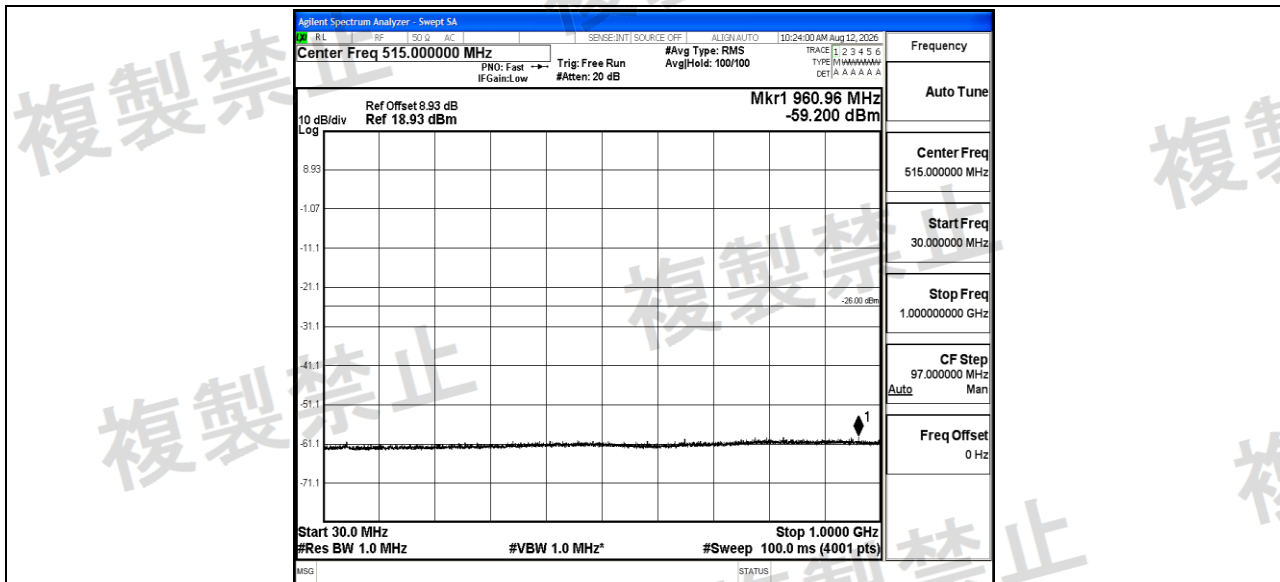
NTNV_BLE_1M_Ant1_2402_2483.5~2496.5



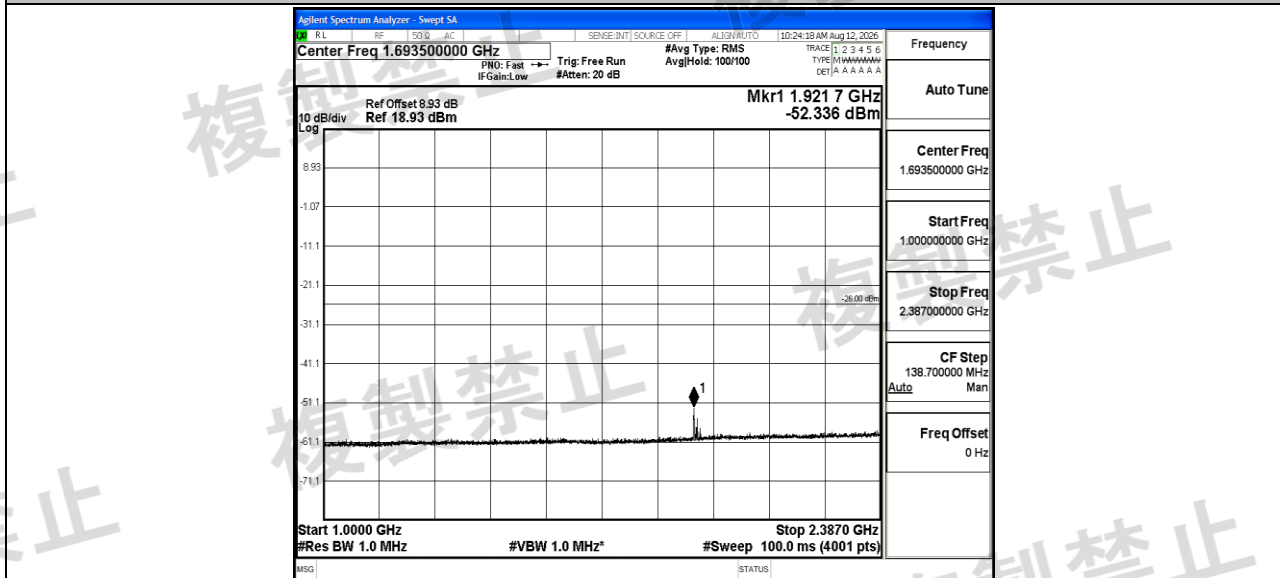
NTNV_BLE_1M_Ant1_2402_2496.5~13000



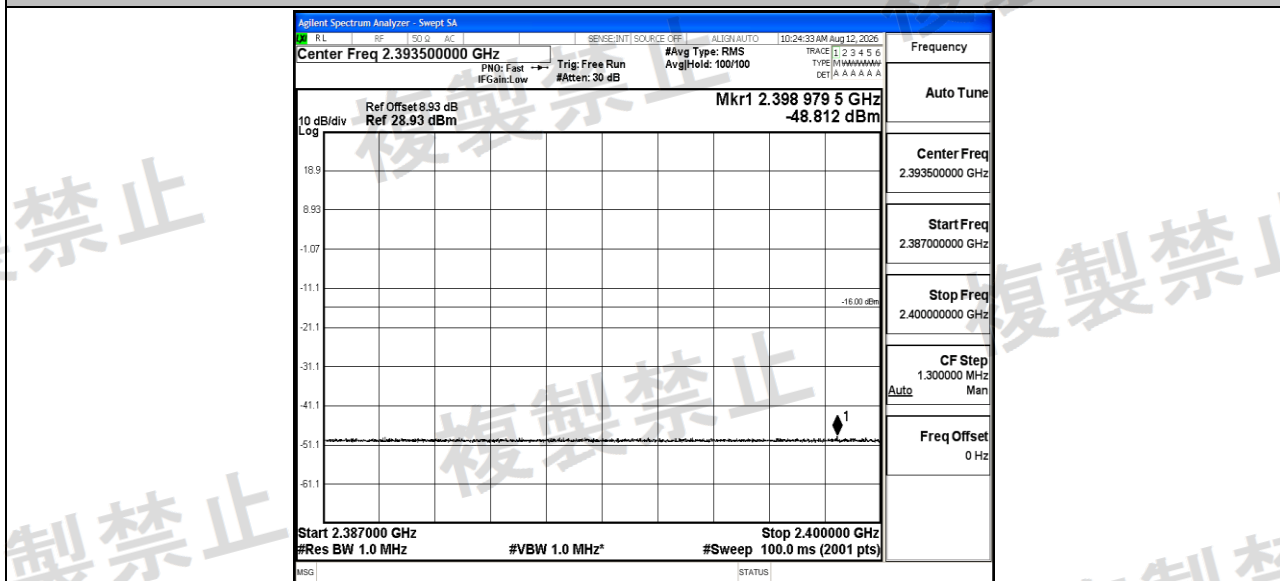
NTNV_BLE_1M_Ant1_2440_30~1000



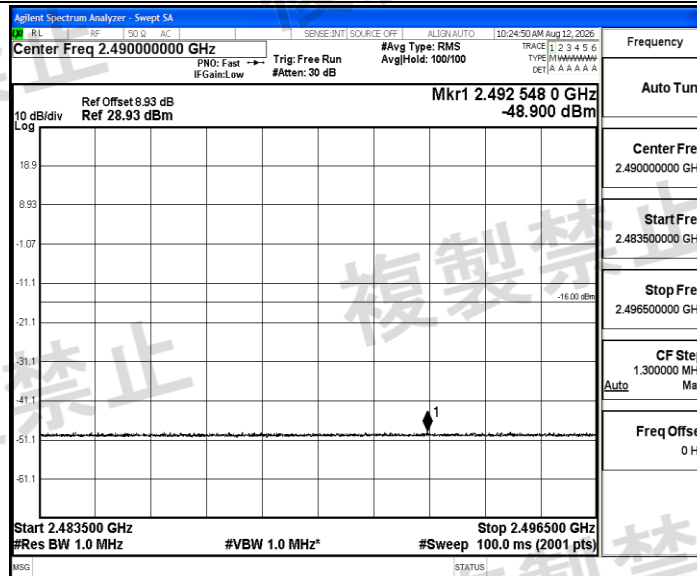
NTNV_BLE_1M_Ant1_2440_1000~2387



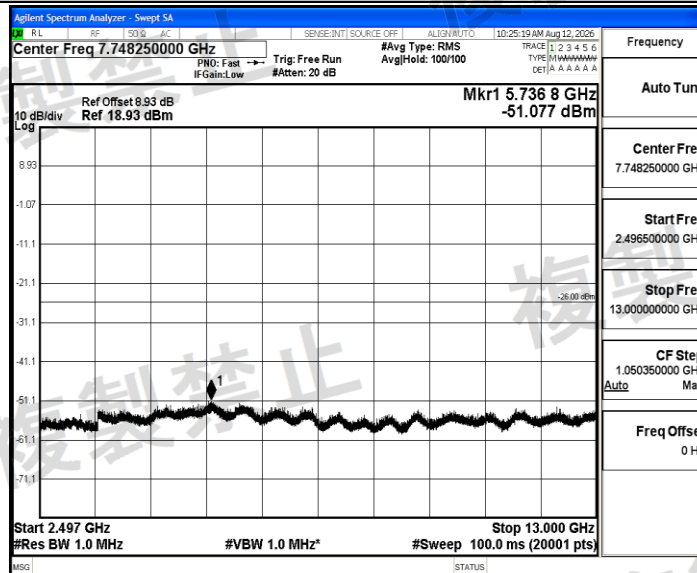
NTNV_BLE_1M_Ant1_2440_2387~2400



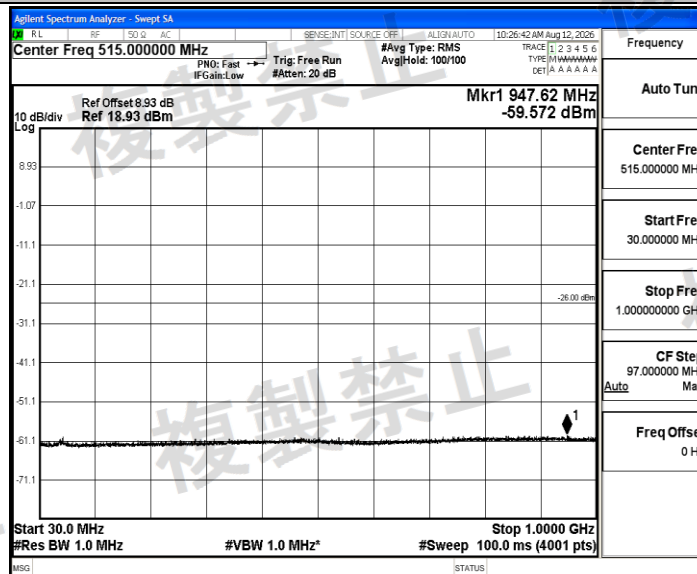
NTNV_BLE_1M_Ant1_2440_2483.5~2496.5



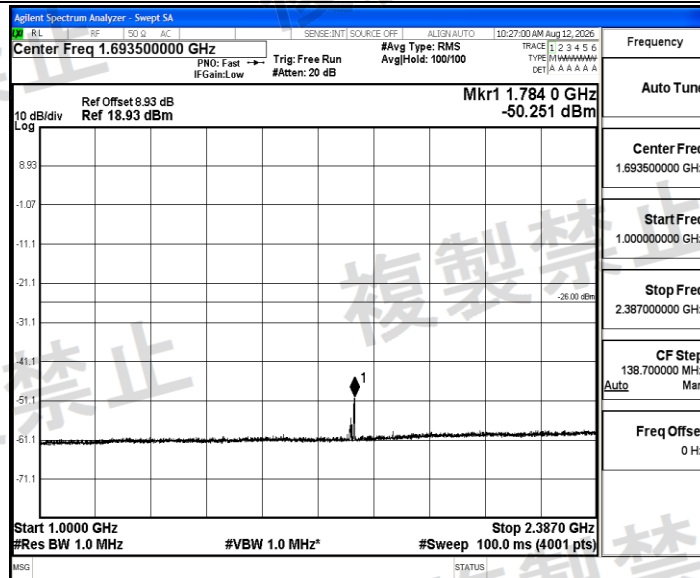
NTNV_BLE_1M_Ant1_2440_2496.5~13000



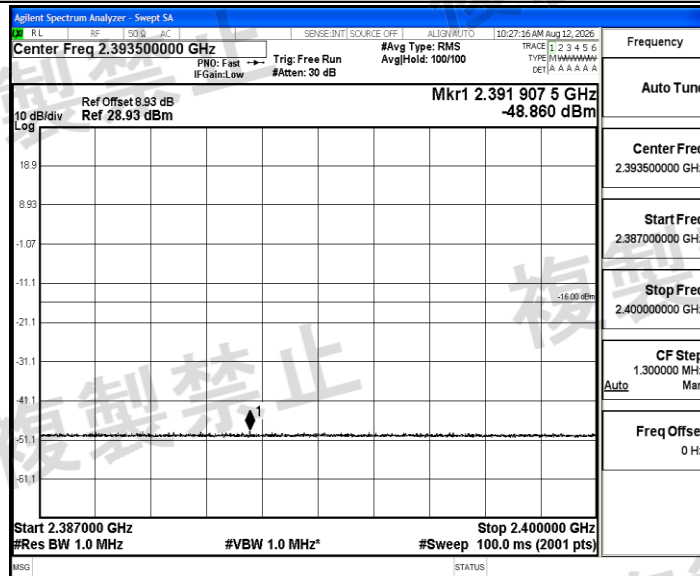
NTNV_BLE_1M_Ant1_2480_30~1000



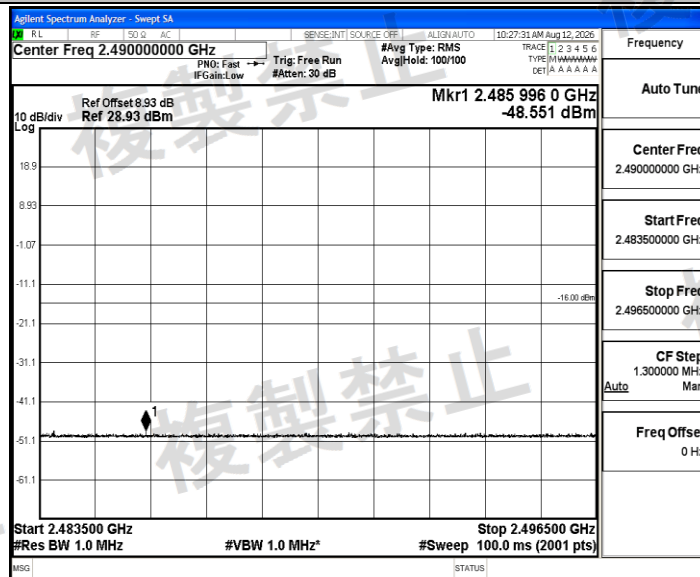
NTNV_BLE_1M_Ant1_2480_1000~2387



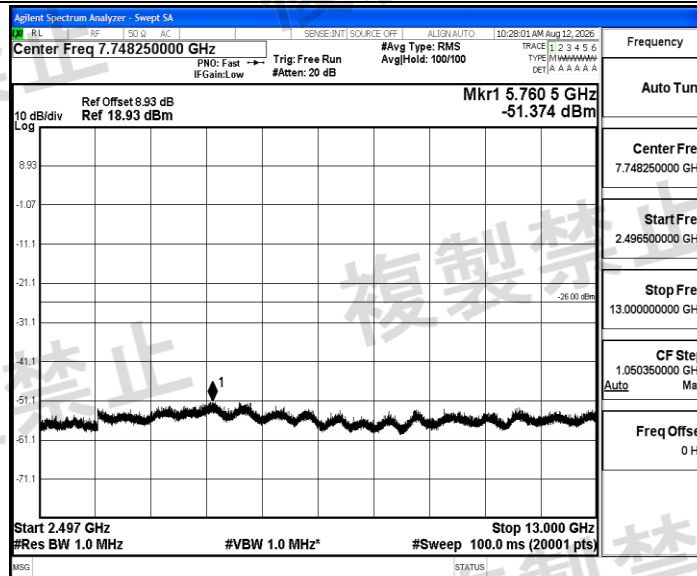
NTNV_BLE_1M_Ant1_2480_2387~2400



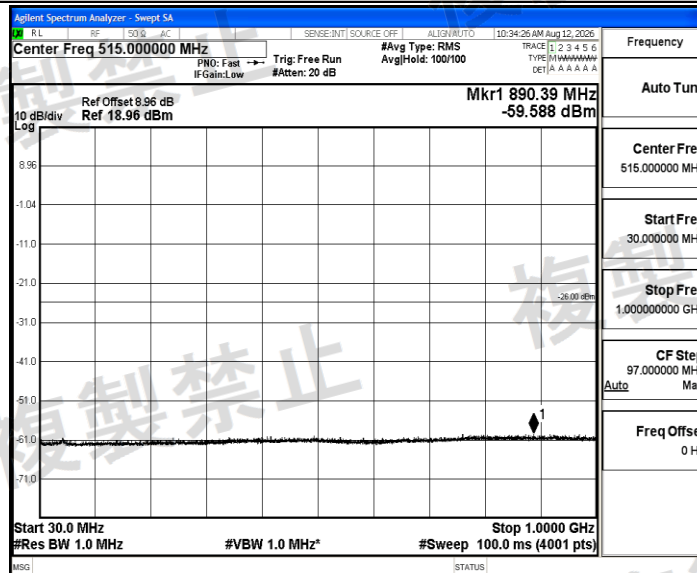
NTNV_BLE_1M_Ant1_2480_2483.5~2496.5



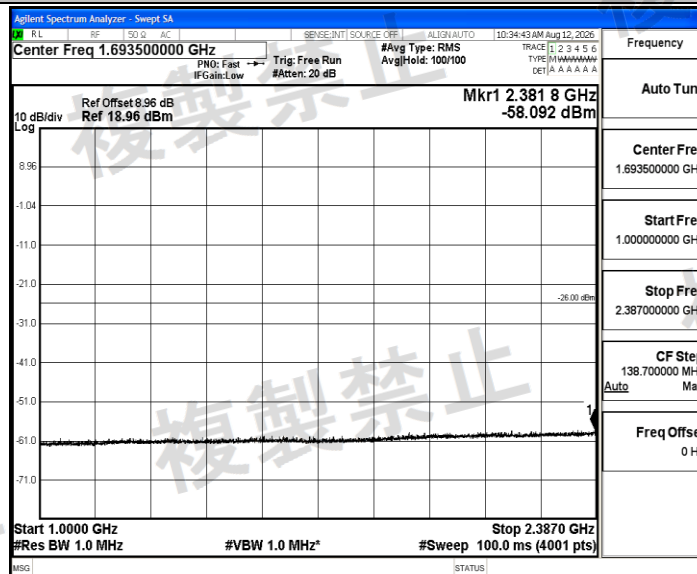
NTNV_BLE_1M_Ant1_2480_2496.5~13000



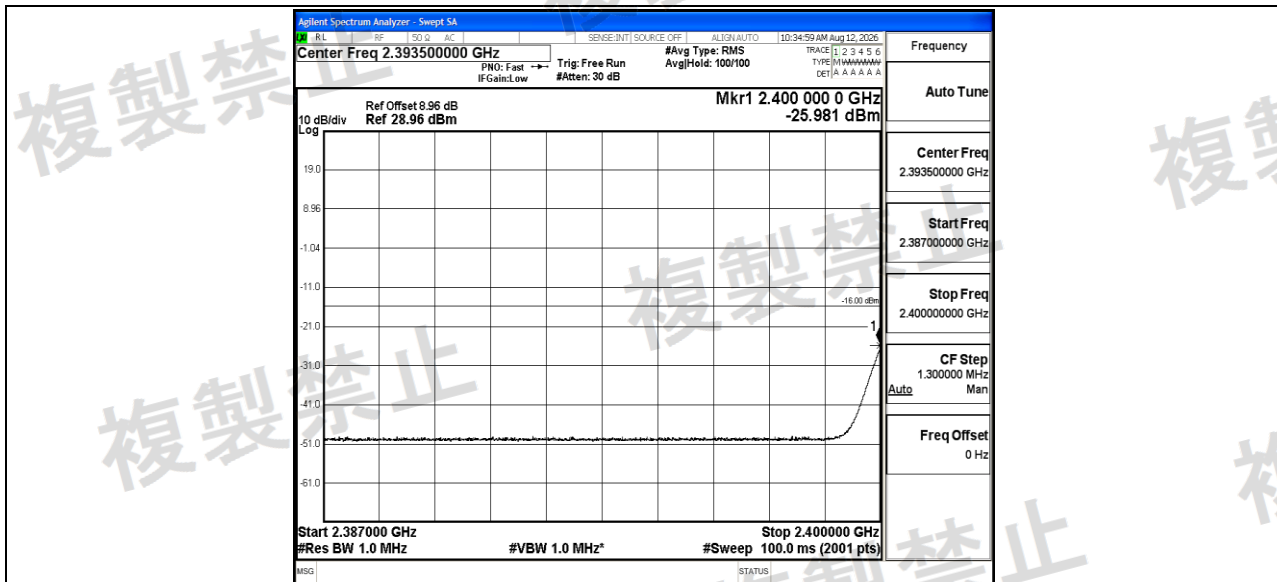
NTNV_BLE_2M_Ant1_2402_30~1000



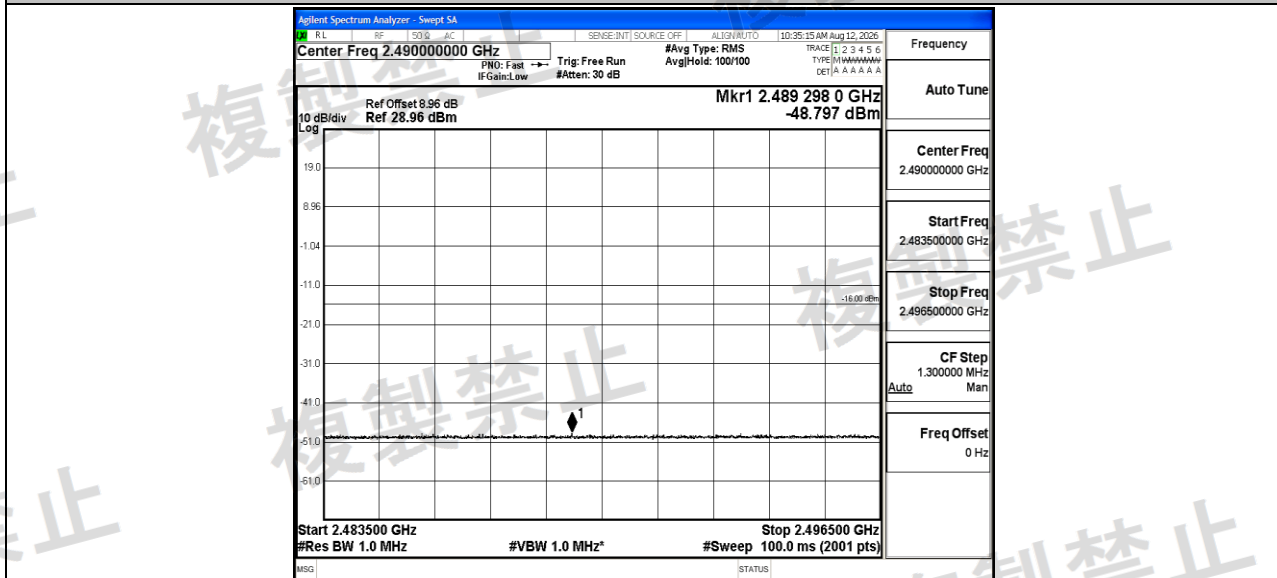
NTNV_BLE_2M_Ant1_2402_1000~2387



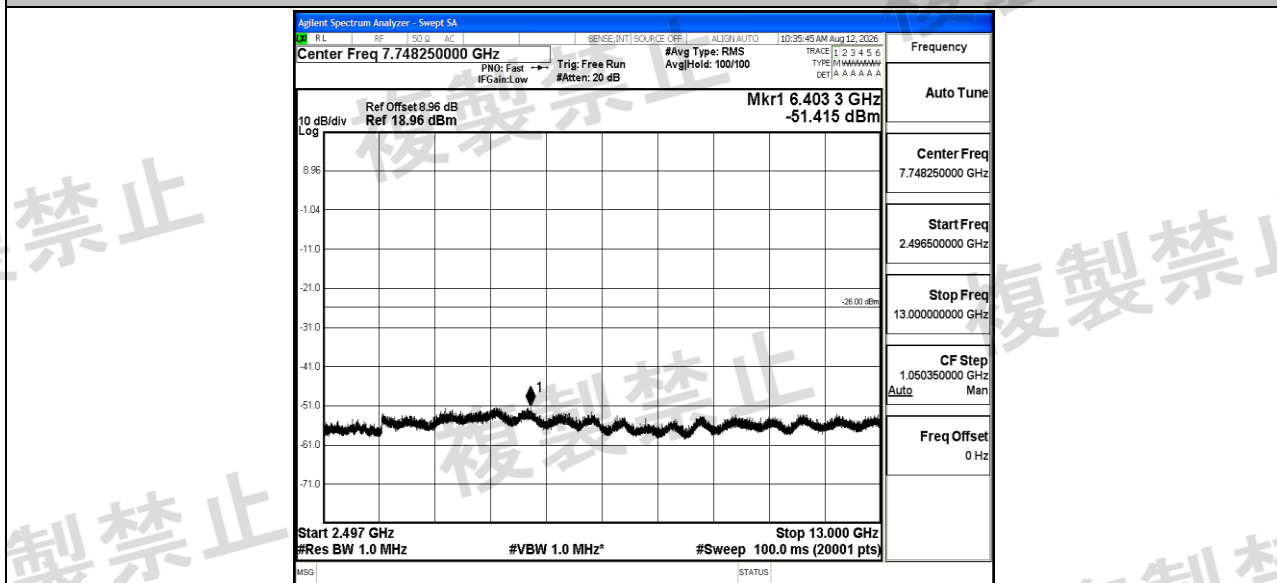
NTNV_BLE_2M_Ant1_2402_2387~2400



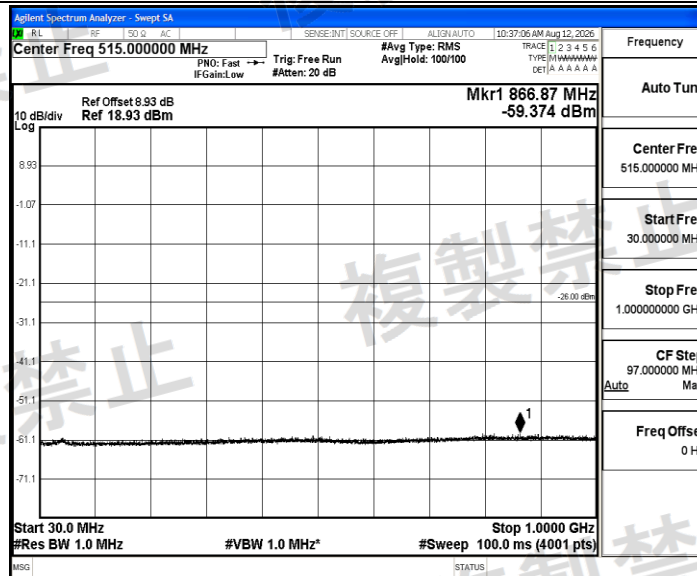
NTNV_BLE_2M_Ant1_2402_2483.5~2496.5



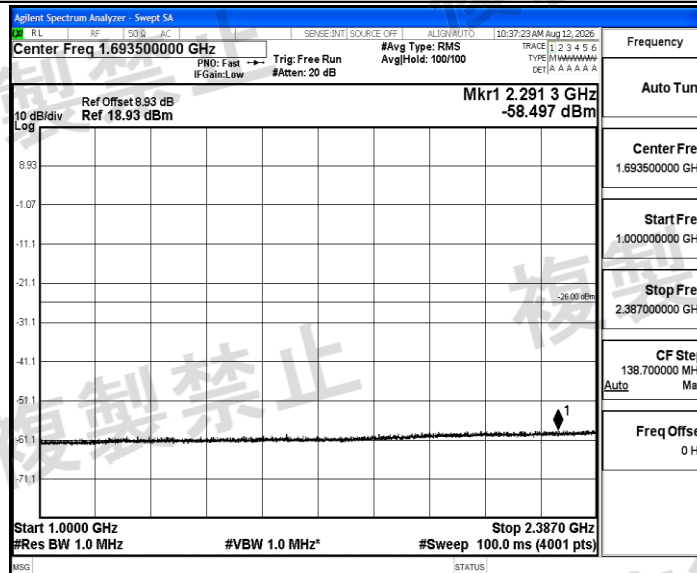
NTNV_BLE_2M_Ant1_2402_2496.5~13000



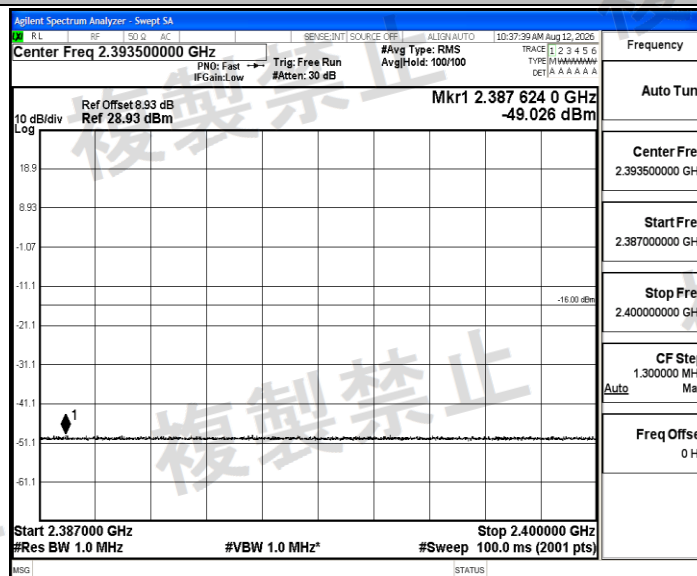
NTNV_BLE_2M_Ant1_2440_30~1000



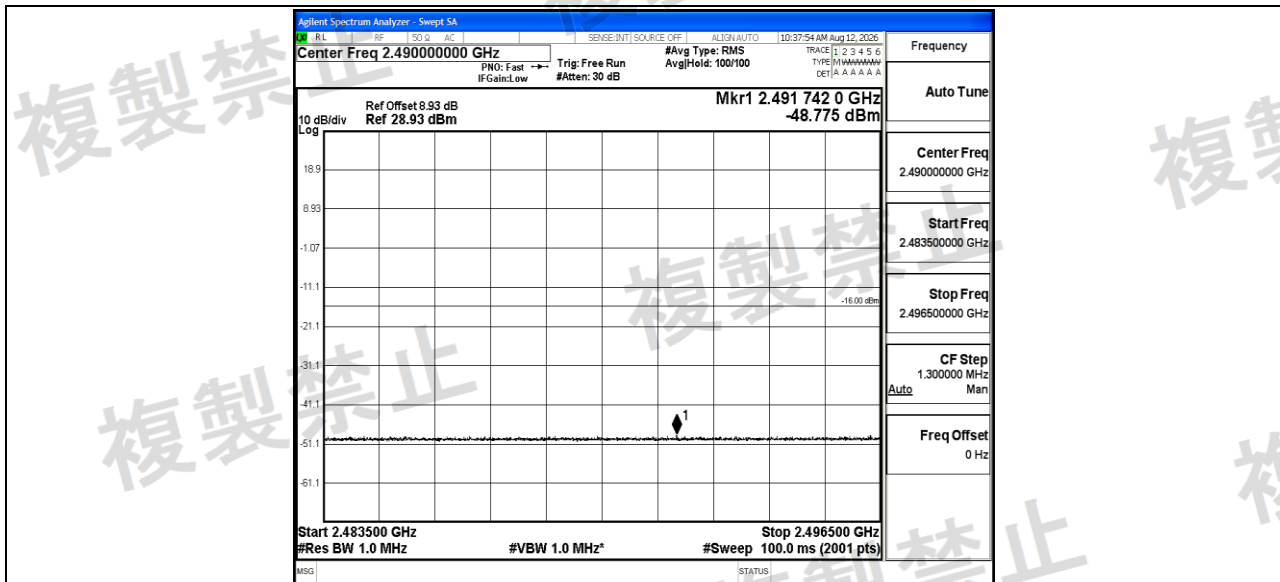
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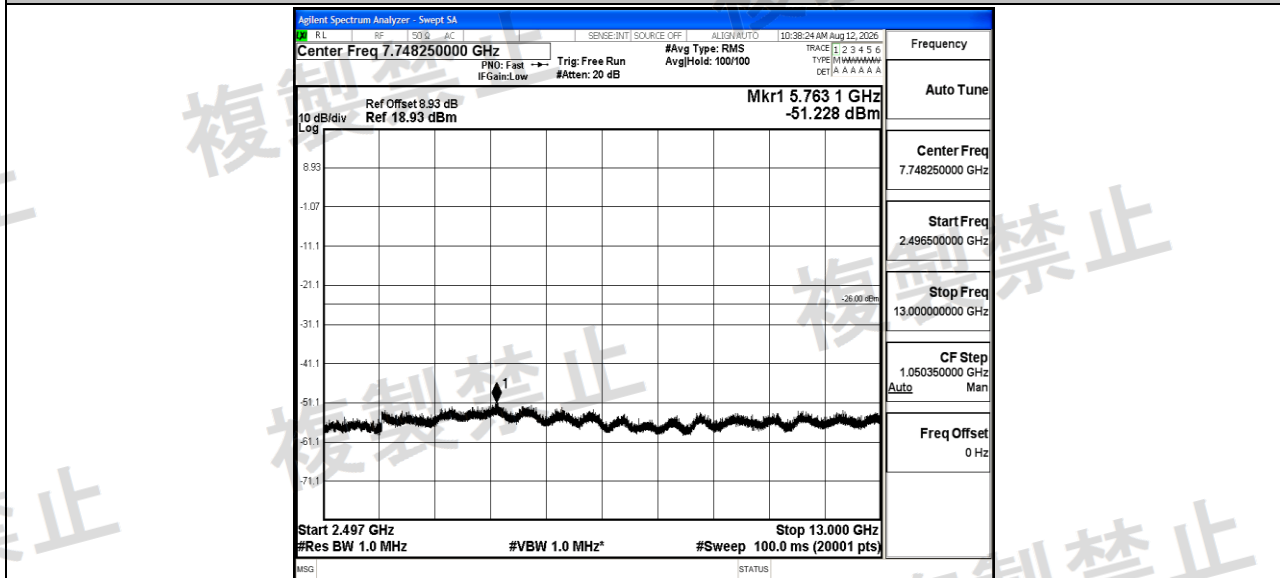
NTNV_BLE_2M_Ant1_2440_2387~2400



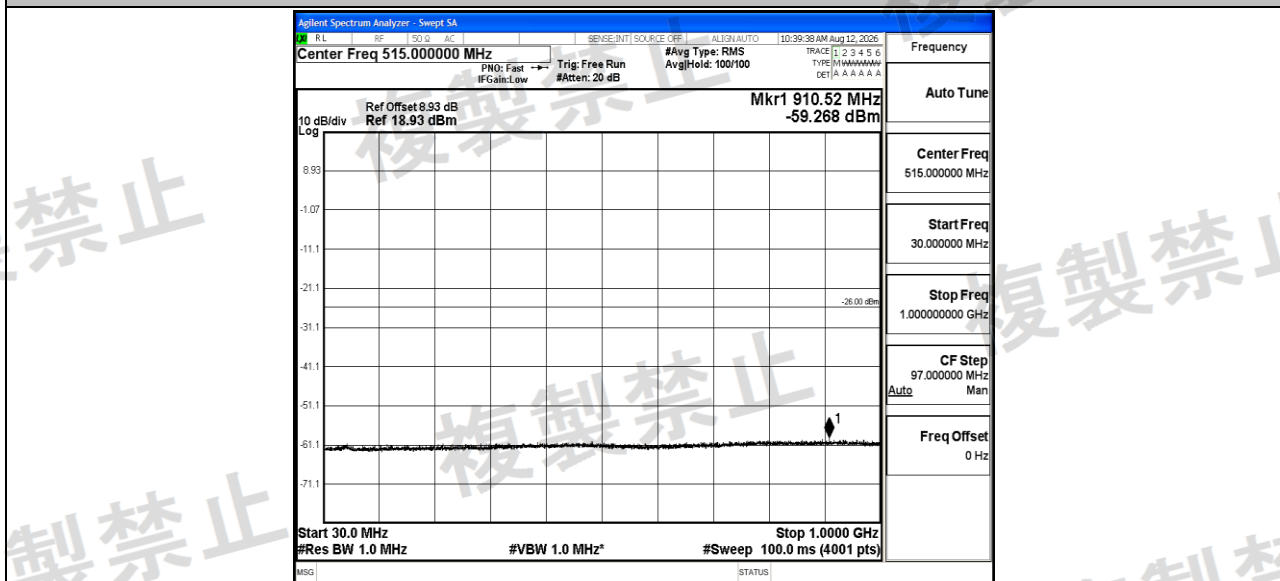
NTNV_BLE_2M_Ant1_2440_2483.5~2496.5



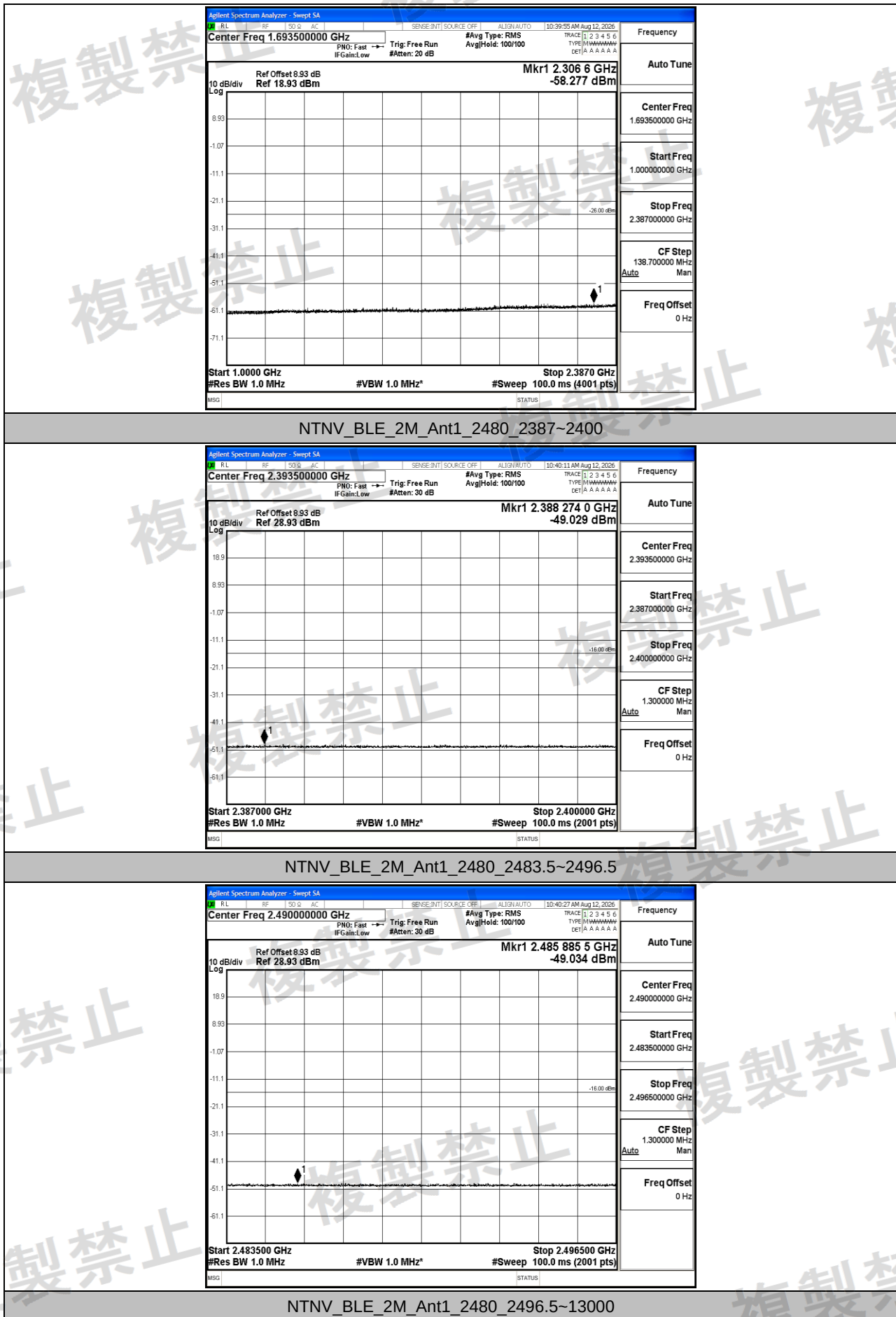
NTNV_BLE_2M_Ant1_2440_2496.5-13000



NTNV_BLE_2M_Ant1_2480_30-1000



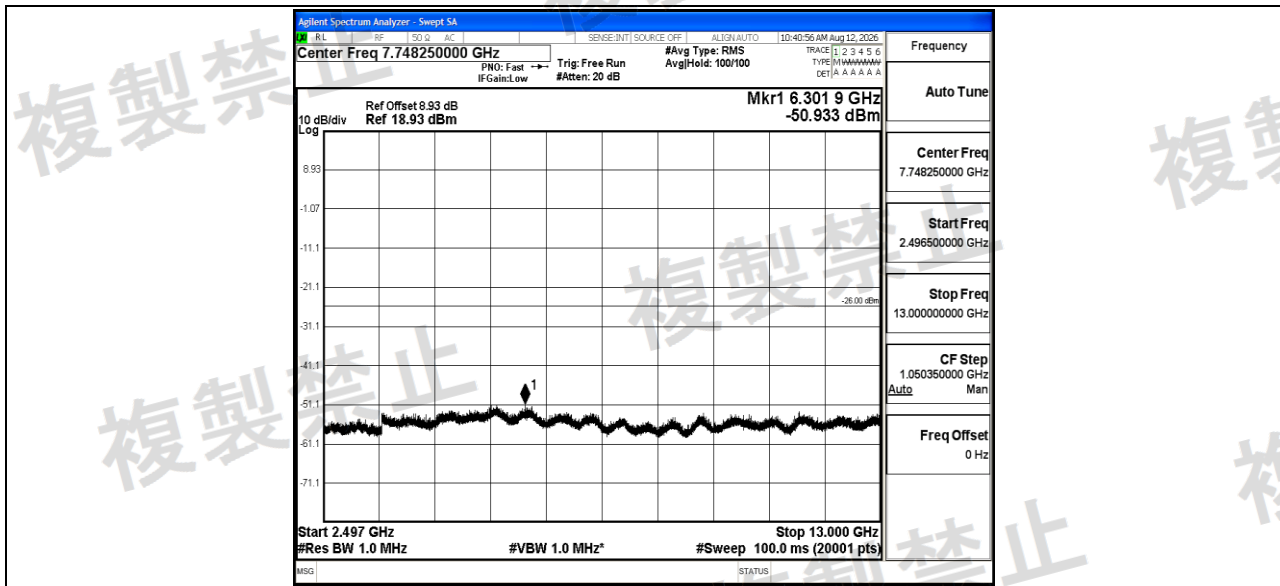
NTNV_BLE_2M_Ant1_2480_1000-2387



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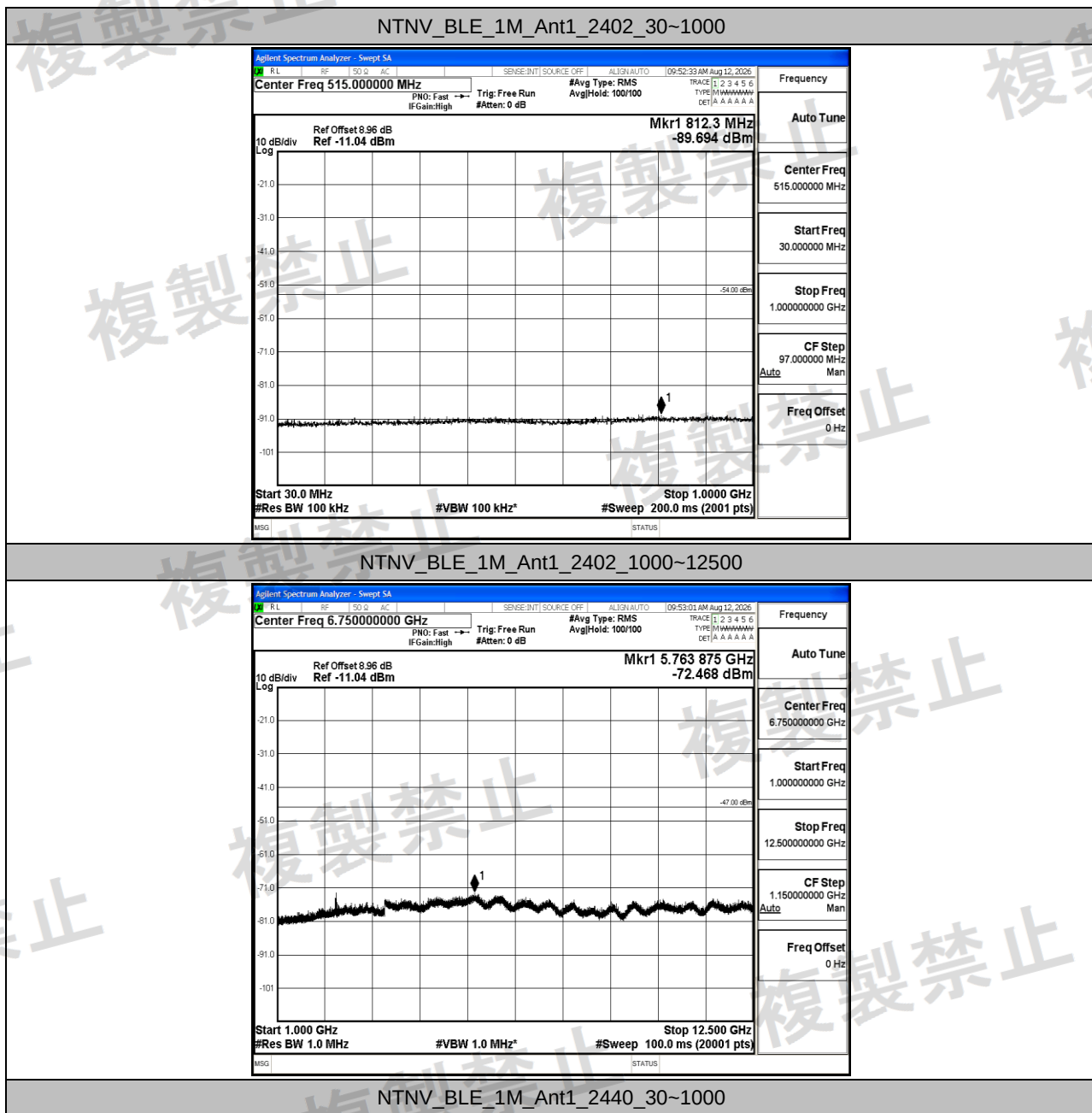


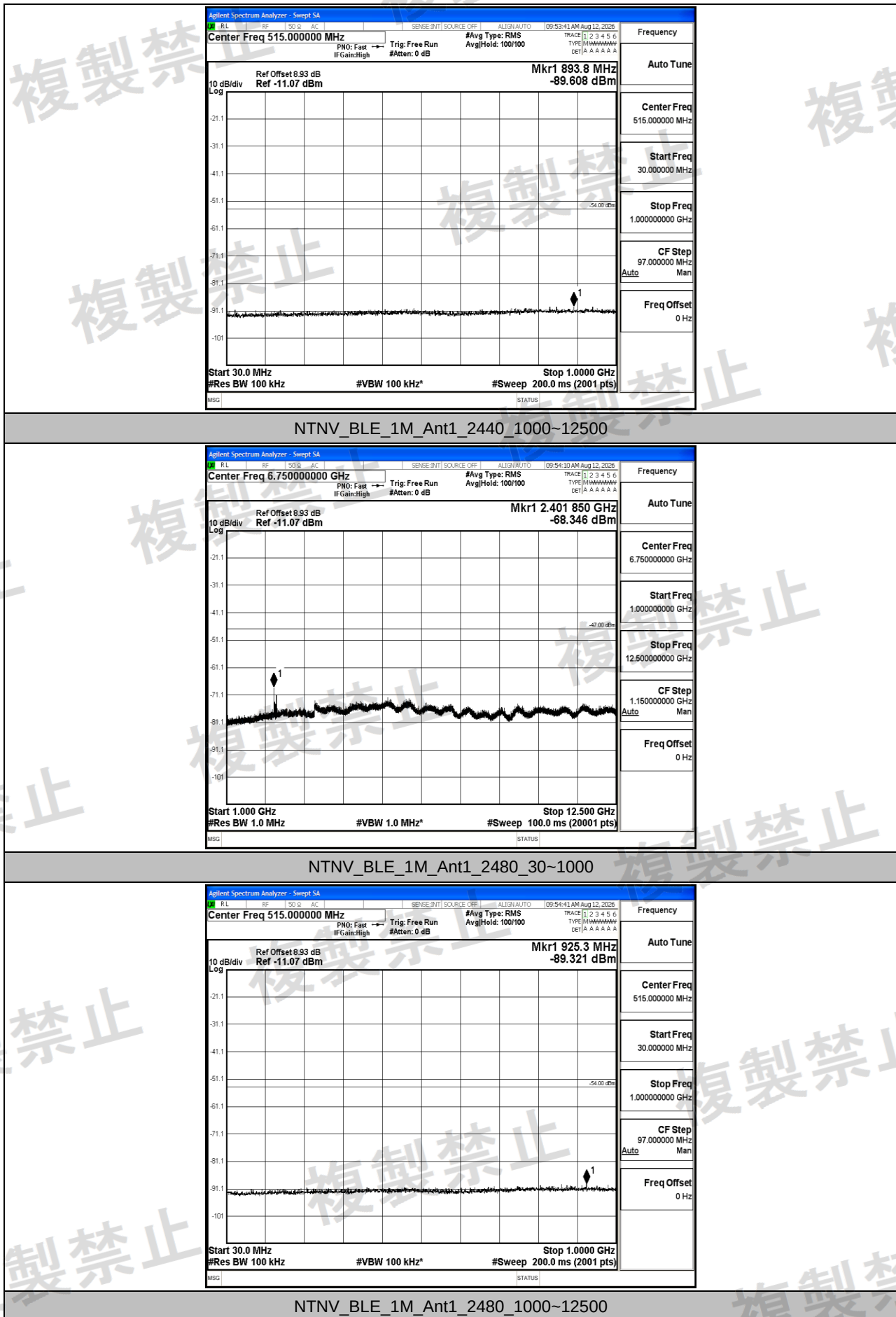
B.6 Spurious Emission of RX

Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	BLE_1M	Ant1	2402	30~1000	-89.69	≤-54	0.00107	≤4	PASS
				1000~12500	-72.47	≤-47	0.05662	≤20	PASS
			2440	30~1000	-89.61	≤-54	0.00109	≤4	PASS
				1000~12500	-68.35	≤-47	0.14622	≤20	PASS
			2480	30~1000	-89.32	≤-54	0.00117	≤4	PASS
				1000~12500	-72.46	≤-47	0.05675	≤20	PASS
	BLE_2M	Ant1	2402	30~1000	-89.49	≤-54	0.00112	≤4	PASS
				1000~12500	-72.07	≤-47	0.06209	≤20	PASS
			2440	30~1000	-89.22	≤-54	0.00120	≤4	PASS
				1000~12500	-72.3	≤-47	0.05888	≤20	PASS
			2480	30~1000	-89.33	≤-54	0.00117	≤4	PASS
				1000~12500	-69.62	≤-47	0.10914	≤20	PASS

Test Graphs

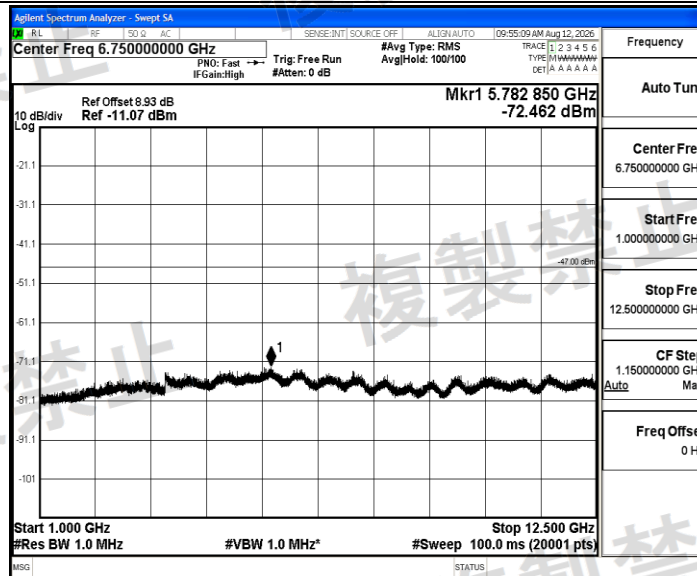




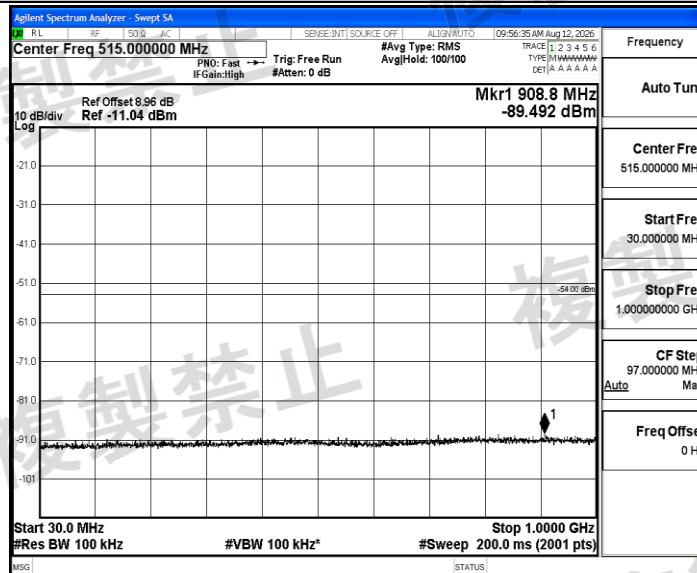
Guangzhou LCS Compliance Testing Laboratory Ltd.

Add: No.44-1, Qianfeng North Road, Shiqi, Panyu District, Guangzhou, Guangdong, China

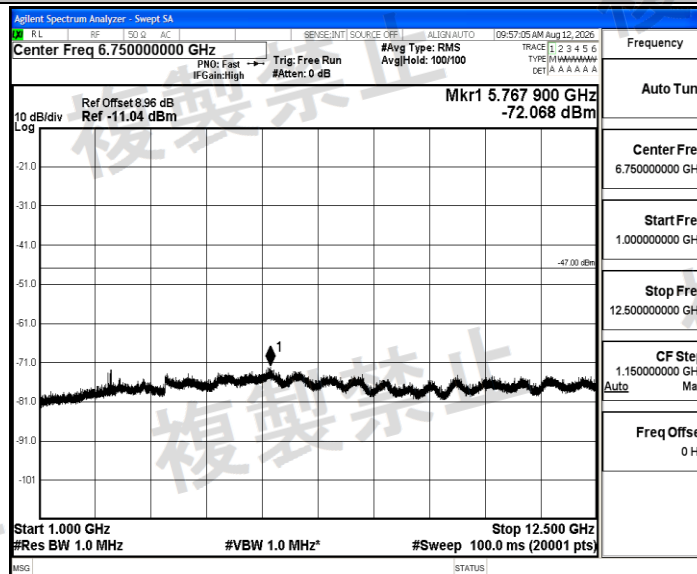
Tel: +(86) 020-39166689 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com



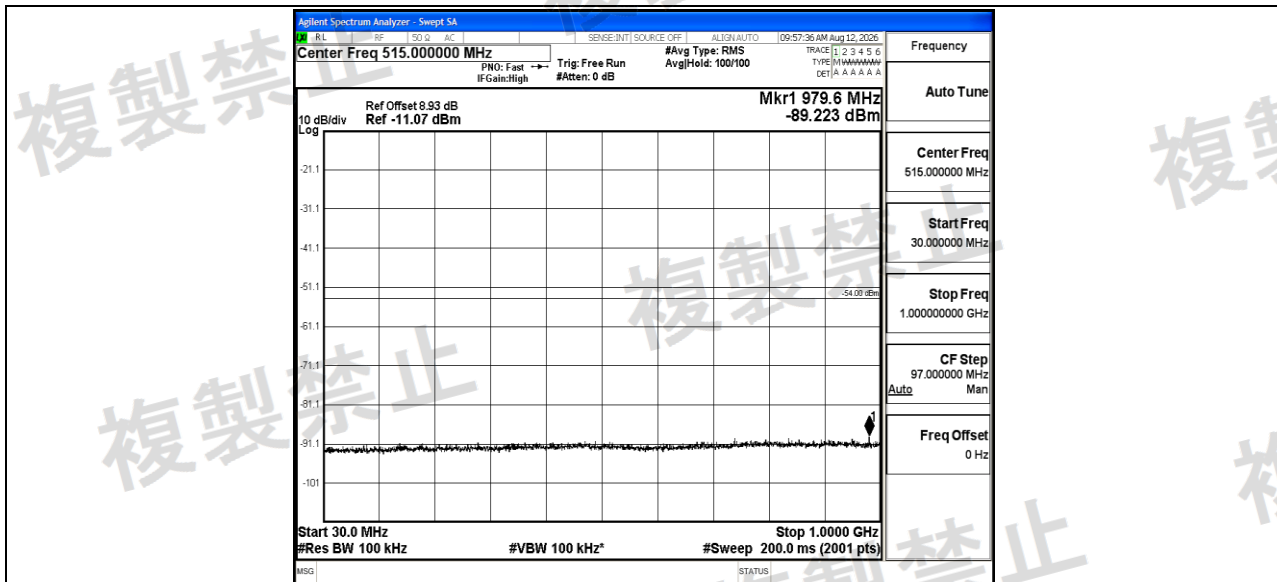
NTNV_BLE_2M_Ant1_2402_30~1000



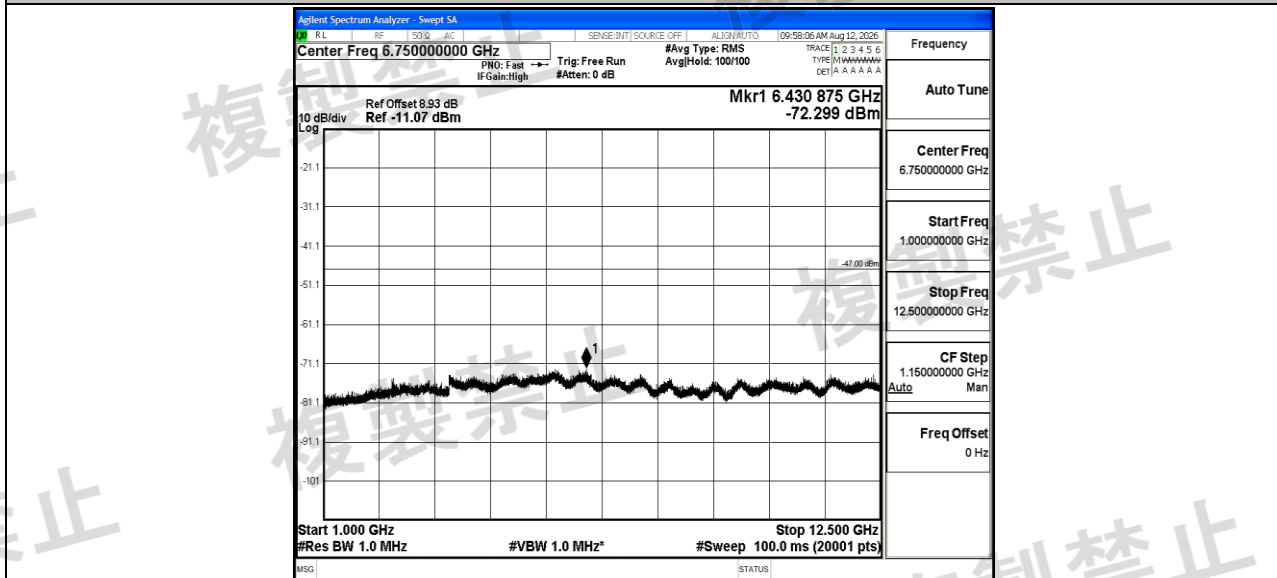
NTNV_BLE_2M_Ant1_2402_1000~12500



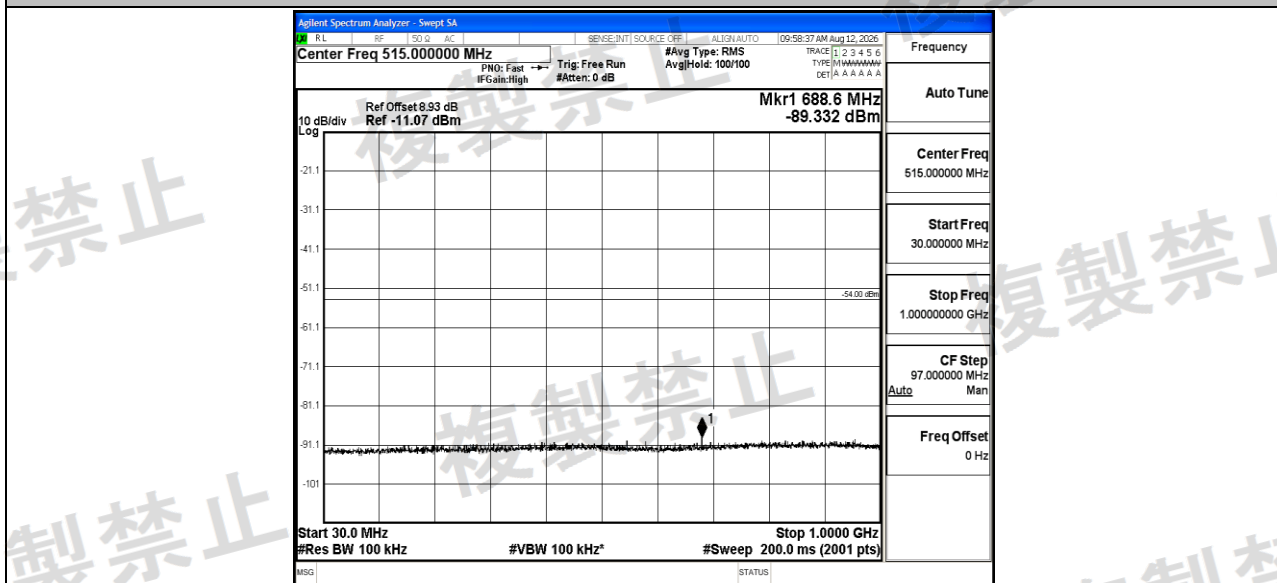
NTNV_BLE_2M_Ant1_2440_30~1000



NTNV_BLE_2M_Ant1_2440_1000~12500



NTNV_BLE_2M_Ant1_2480_30~1000



NTNV_BLE_2M_Ant1_2480_1000~12500

