

Appendix A for 2.4G Test Data

Product Name: Echo Master

Test Model: Echo Master

Environmental Conditions

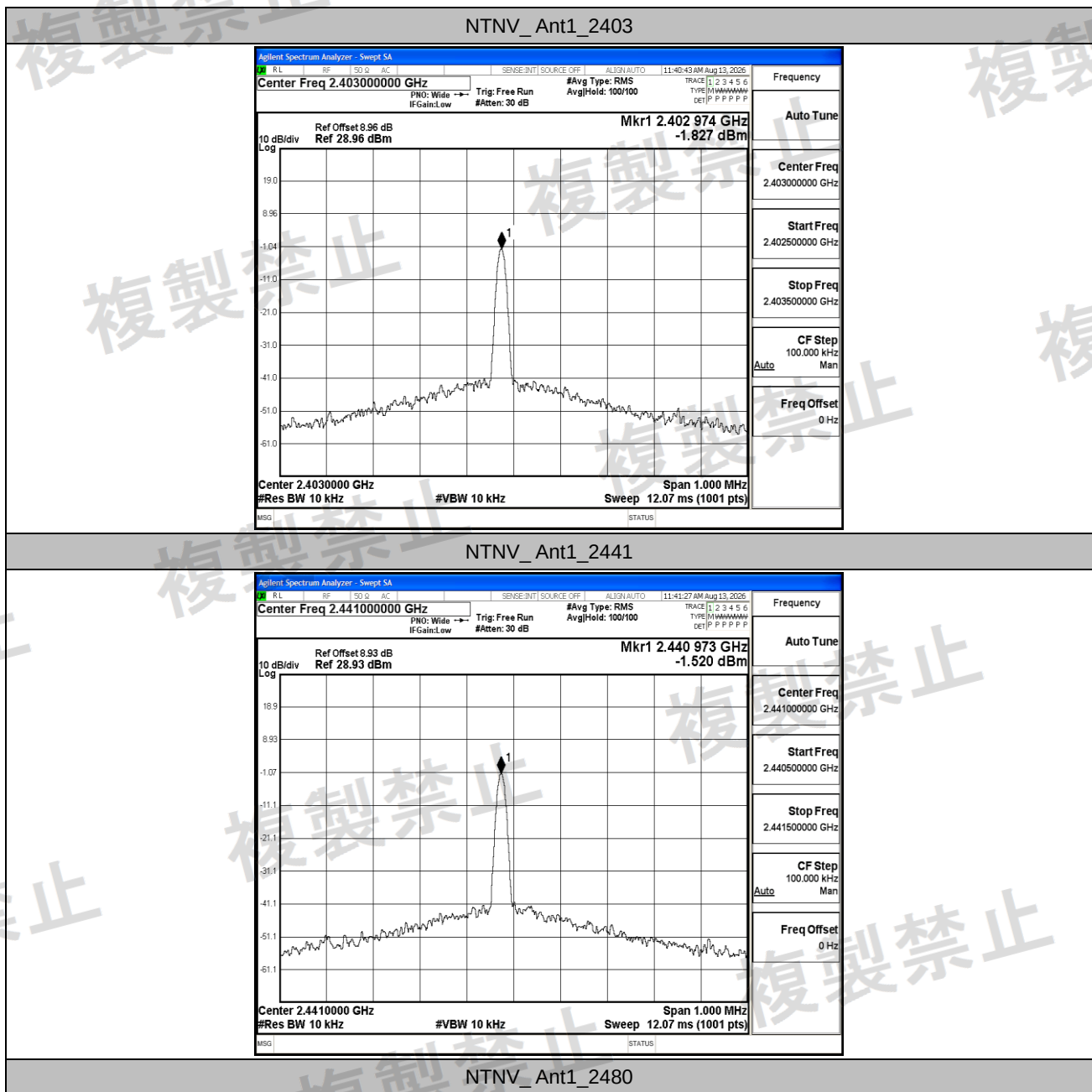
Temperature:	24.1°C
Relative Humidity:	52.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang hai
Supervised by:	Fengliu Tang

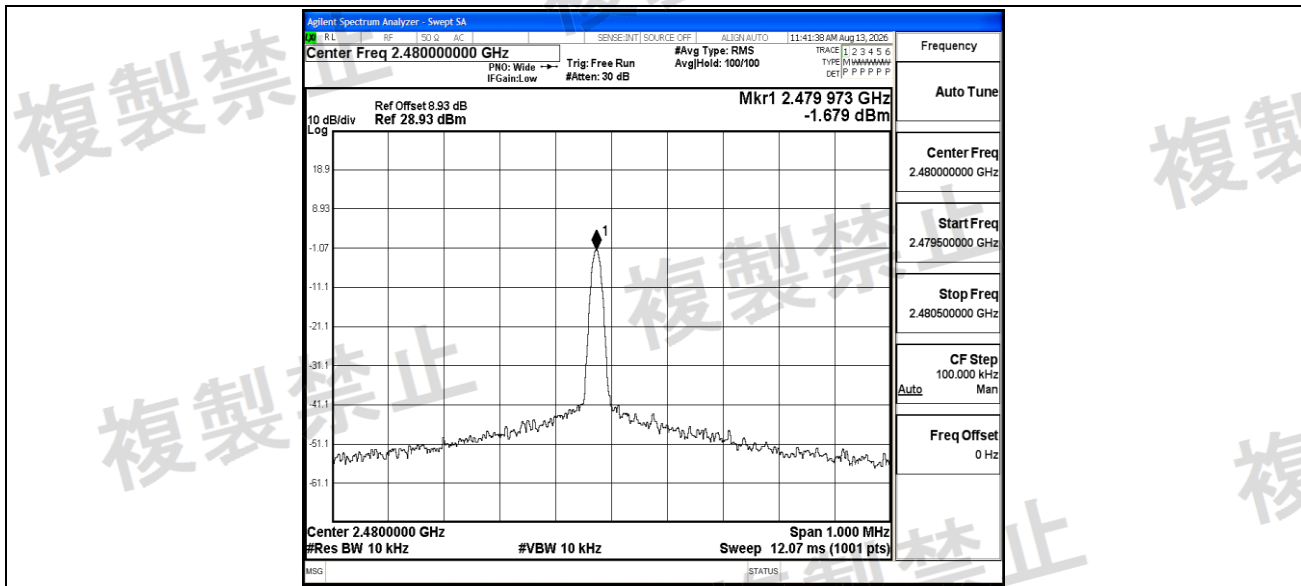
A.1 Frequency_Error

Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	Result[ppm]	Limit[ppm]	Verdict
NTNV	Frequency_Error	Ant1	2403	-10.81981	±50	PASS
			2441	-11.06104	±50	PASS
			2480	-10.88710	±50	PASS

Test Graphs





A.2 Antenna Power & EIRP

Test Result

Antenna Power							
TestCondition	TestMode	Antenna	Frequency[MHz]	Result(dBm)	Result(mW)	Limit(mW)	Verdict
NTNV	2.4G	Ant1	2403	-5.39	0.2891	≤10	PASS
			2441	-5.05	0.3126	≤10	PASS
			2480	-5.15	0.3055	≤10	PASS

Tolerance								
Test Condition	Test Mode	Antenna	Frequency [MHz]	Power (mW)	RatedPower (mW)	Result (%)	Limit (%)	Verdict
NTNV	2.4G	Ant1	2403	0.2891	0.5	-42.18	+20	PASS
			2441	0.3126	0.5	-37.48	+20	PASS
			2480	0.3055	0.5	-38.90	+20	PASS

EIRP								
Test Condition	Test Mode	Antenna	Frequency [MHz]	Measured Power (dBm/MHz)	Antenna gain (dBi)	EIRP (dBm)	Limit (dBm)	Verdict
NTNV	2.4G	Ant1	2403	-5.39	3.58	-1.81	≤12.14	PASS
			2441	-5.05	3.58	-1.47	≤12.14	PASS
			2480	-5.15	3.58	-1.57	≤12.14	PASS

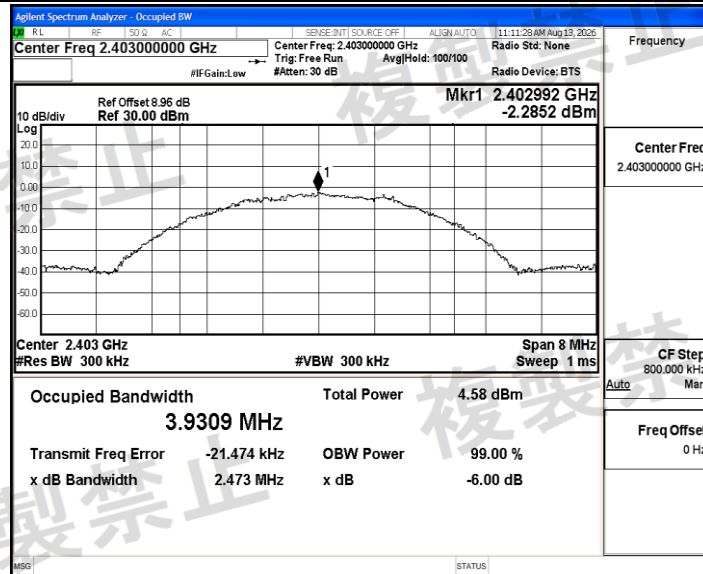
A.3 Occupied Bandwidth

Test Result

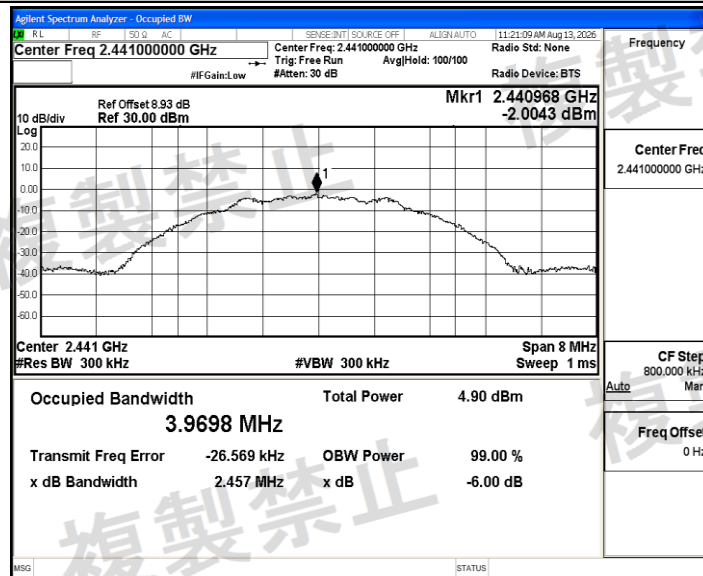
TestCondition	TestMode	Antenna	Frequency[MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	2.4G	Ant1	2403	3.931	≤26	PASS
			2441	3.970	≤26	PASS
			2480	3.972	≤26	PASS

Test Graphs

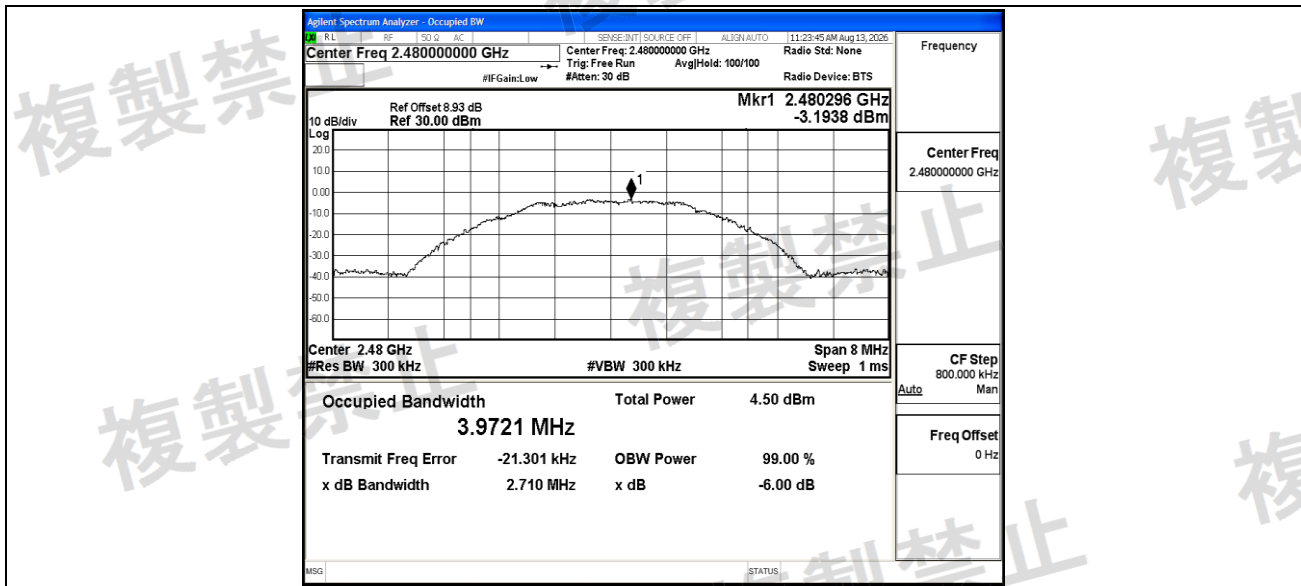
NTNV_BLE_1M_Ant1_2403



NTNV_BLE_1M_Ant1_2441



NTNV_BLE_1M_Ant1_2480

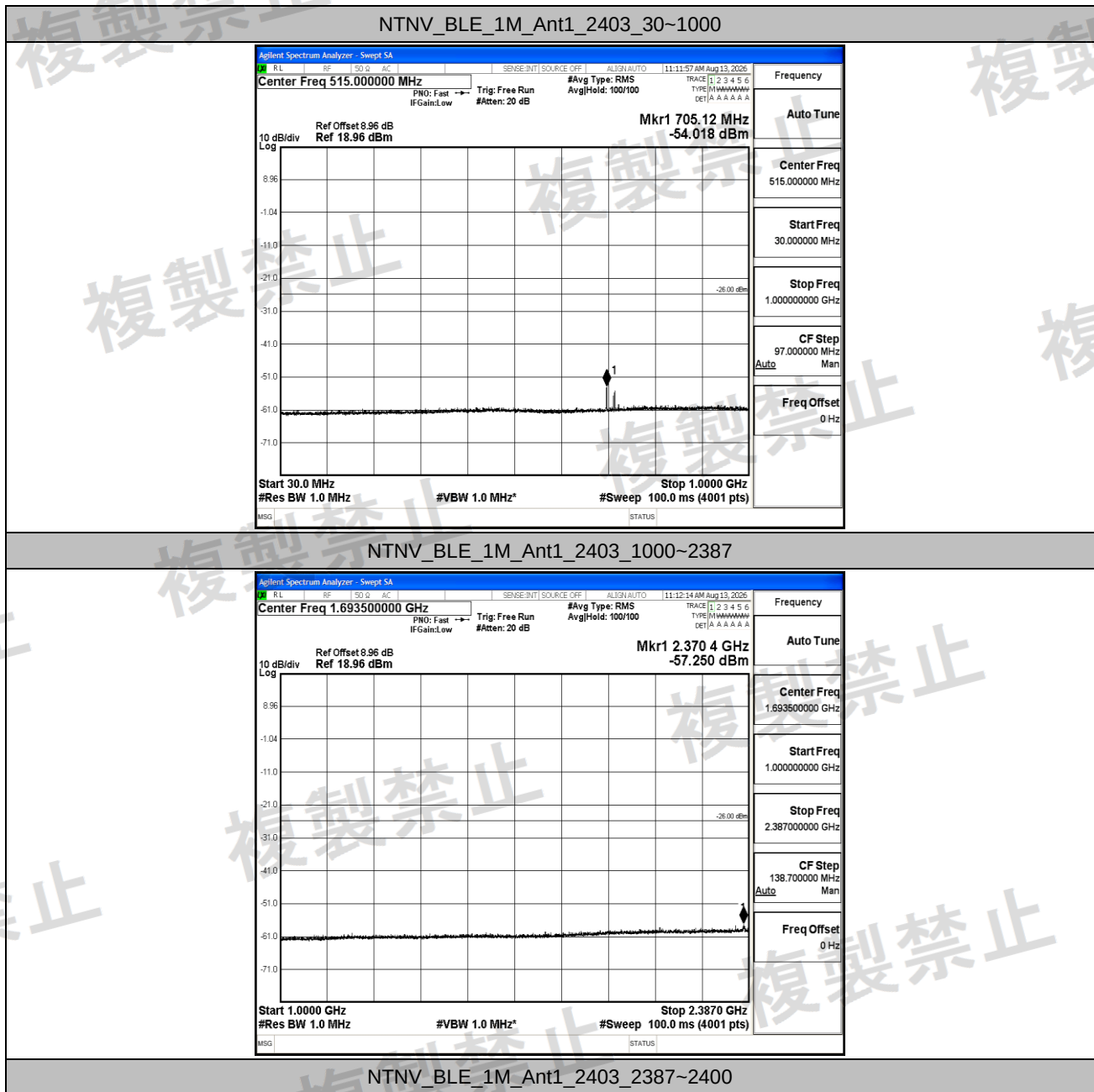


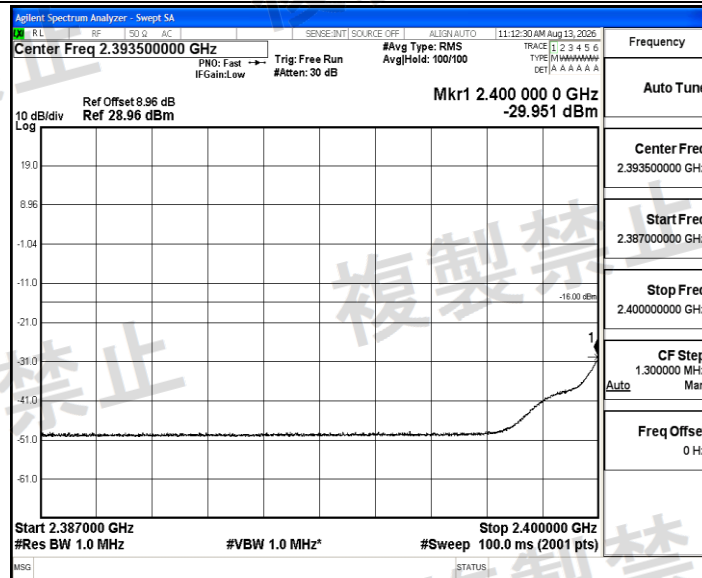
A.4 Spurious Emission of TX

Test Result

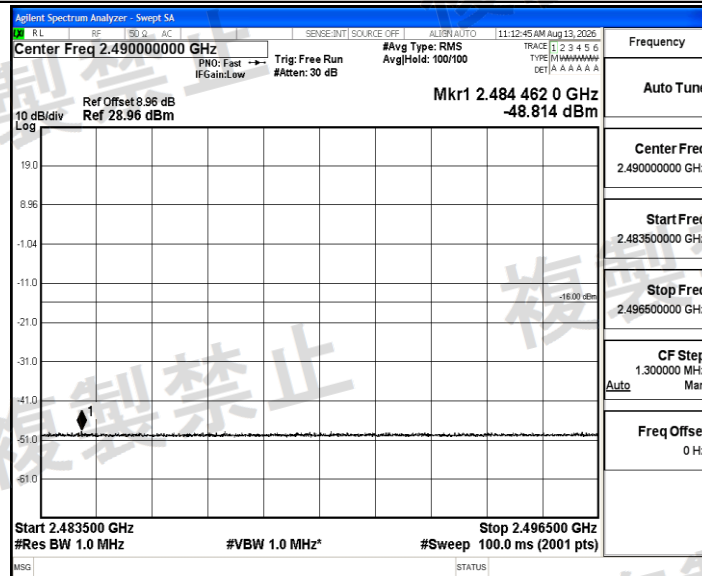
TestCondition	TestMode	Antenna	Frequency [MHz]	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	2.4G	Ant1	2403	30~1000	-54.02	≤-26	0.00396	≤2.5	PASS
				1000~2387	-57.25	≤-26	0.00188	≤2.5	PASS
				2387~2400	-29.95	≤-16	1.01158	≤25	PASS
				2483.5~2496.5	-48.81	≤-16	0.01315	≤25	PASS
				2496.5~13000	-41.27	≤-26	0.07464	≤2.5	PASS
			2441	30~1000	-54.40	≤-26	0.00363	≤2.5	PASS
				1000~2387	-58.21	≤-26	0.00151	≤2.5	PASS
				2387~2400	-49.00	≤-16	0.01259	≤25	PASS
				2483.5~2496.5	-48.90	≤-16	0.01288	≤25	PASS
				2496.5~13000	-39.83	≤-26	0.10399	≤2.5	PASS
			2480	30~1000	-59.47	≤-26	0.00113	≤2.5	PASS
				1000~2387	-50.65	≤-26	0.00861	≤2.5	PASS
				2387~2400	-49.00	≤-16	0.01259	≤25	PASS
				2483.5~2496.5	-37.34	≤-16	0.18450	≤25	PASS
				2496.5~13000	-38.29	≤-26	0.14825	≤2.5	PASS

Test Graphs

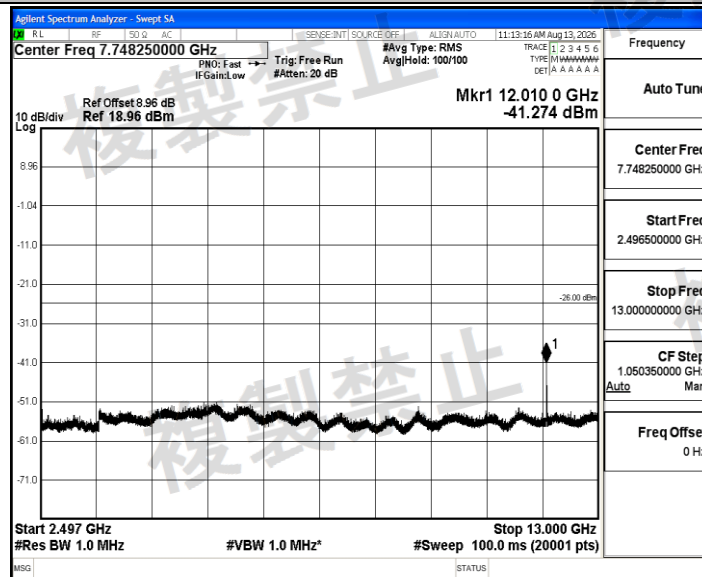




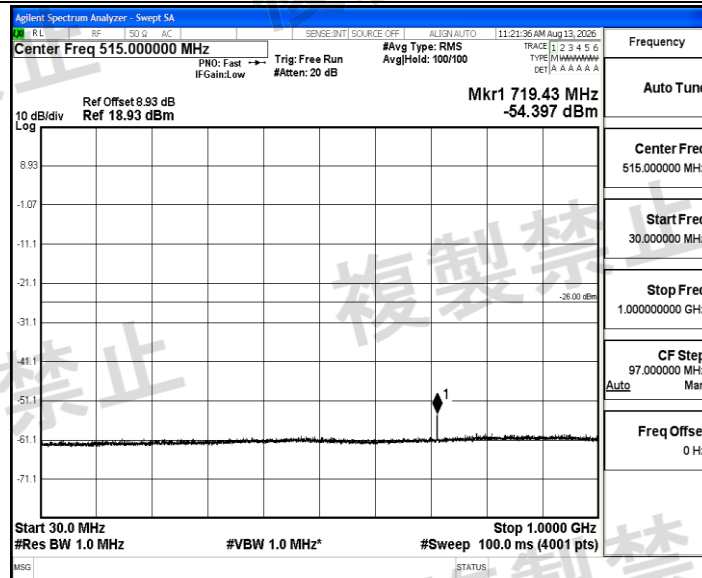
NTNV_BLE_1M_Ant1_2403_2483.5~2496.5



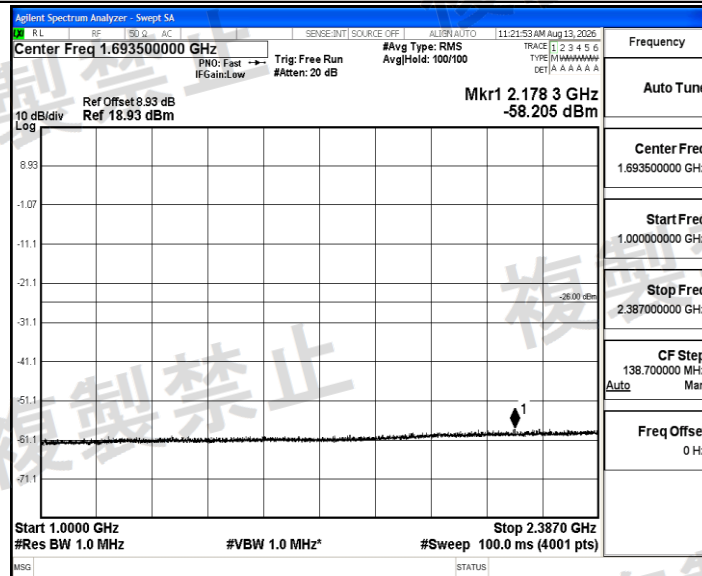
NTNV_BLE_1M_Ant1_2403_2496.5~13000



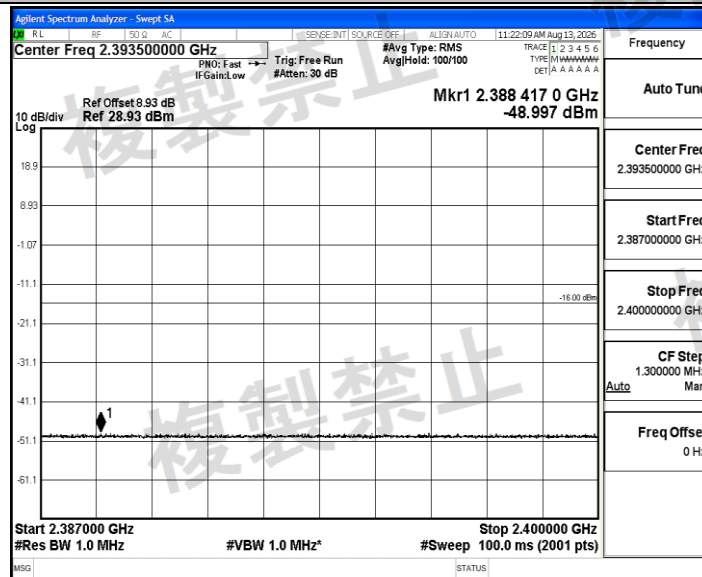
NTNV_BLE_1M_Ant1_2441_30~1000



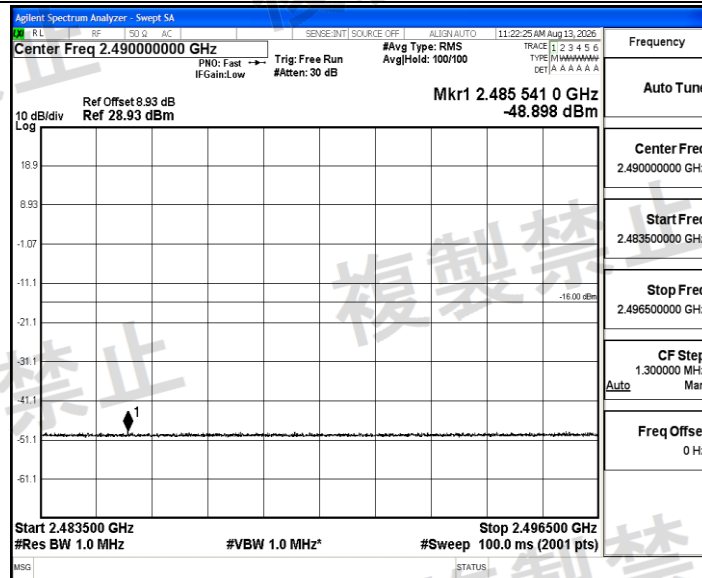
NTNV_BLE_1M_Ant1_2441_1000~2387



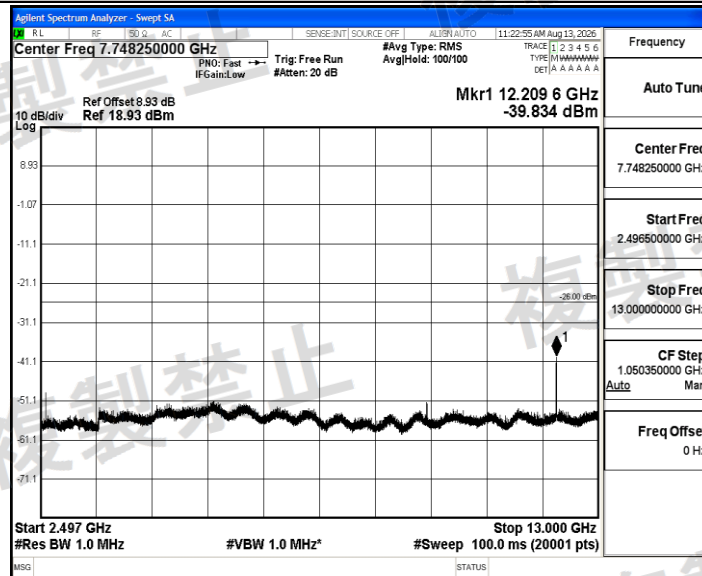
NTNV_BLE_1M_Ant1_2441_2387~2400



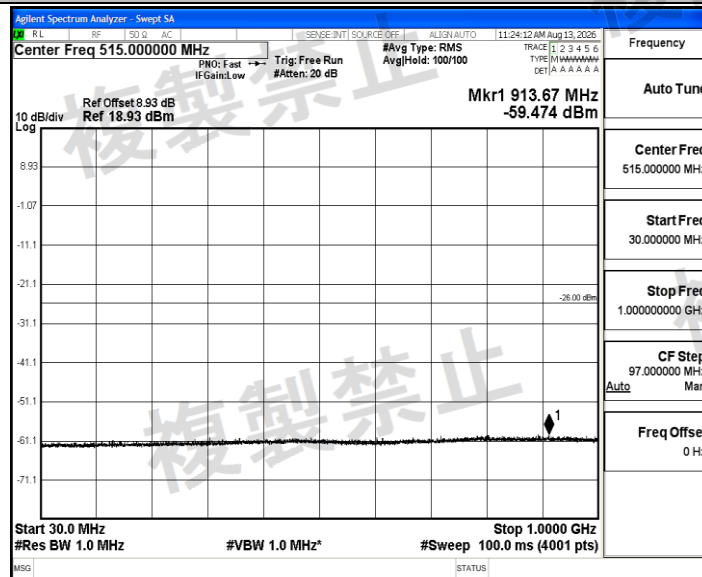
NTNV_BLE_1M_Ant1_2441_2483.5~2496.5



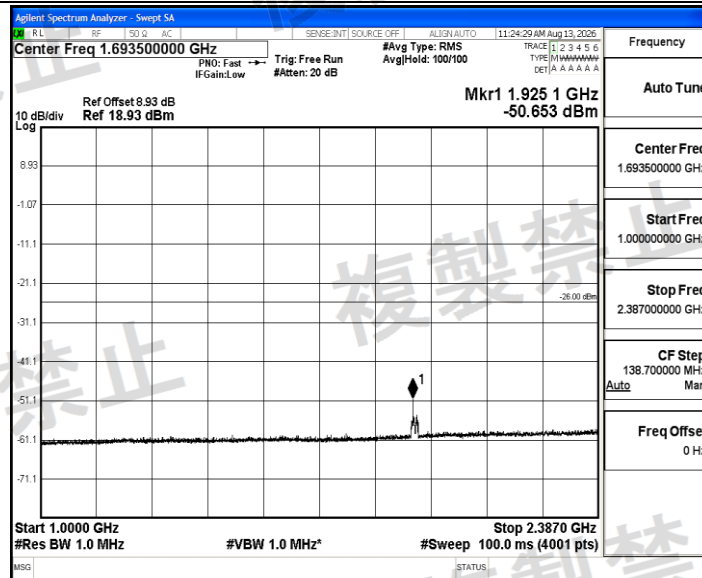
NTNV_BLE_1M_Ant1_2441_2496.5~13000



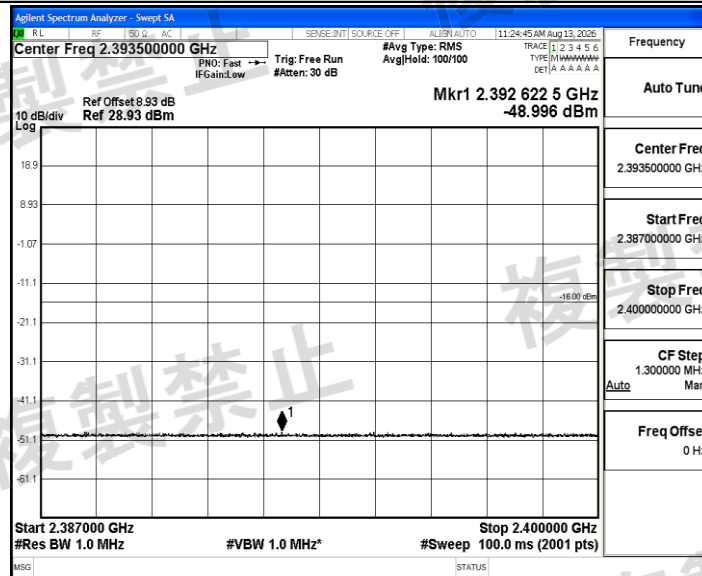
NTNV_BLE_1M_Ant1_2480_30~1000



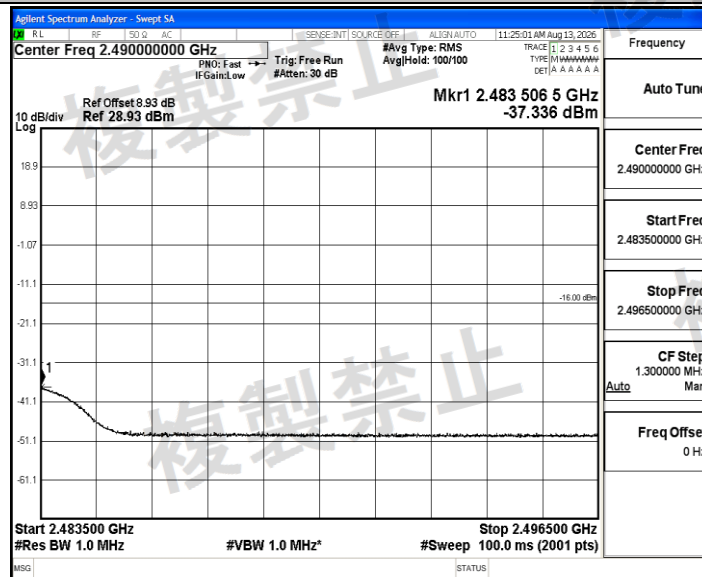
NTNV_BLE_1M_Ant1_2480_1000~2387



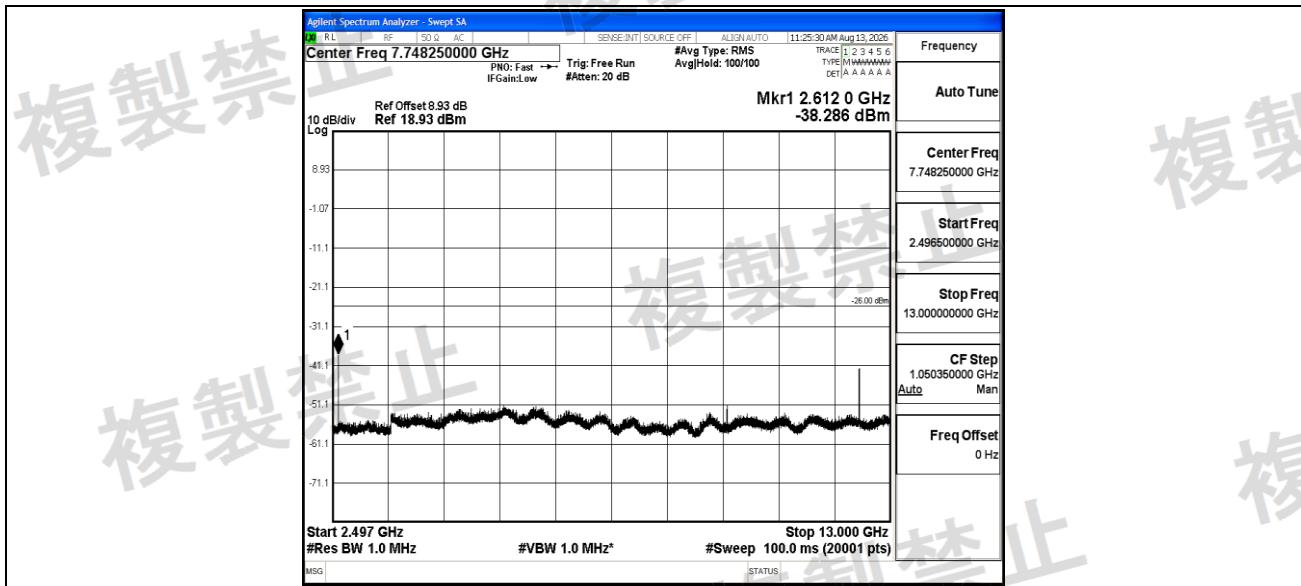
NTNV_BLE_1M_Ant1_2480_2387~2400



NTNV_BLE_1M_Ant1_2480_2483.5~2496.5



NTNV_BLE_1M_Ant1_2480_2496.5~13000

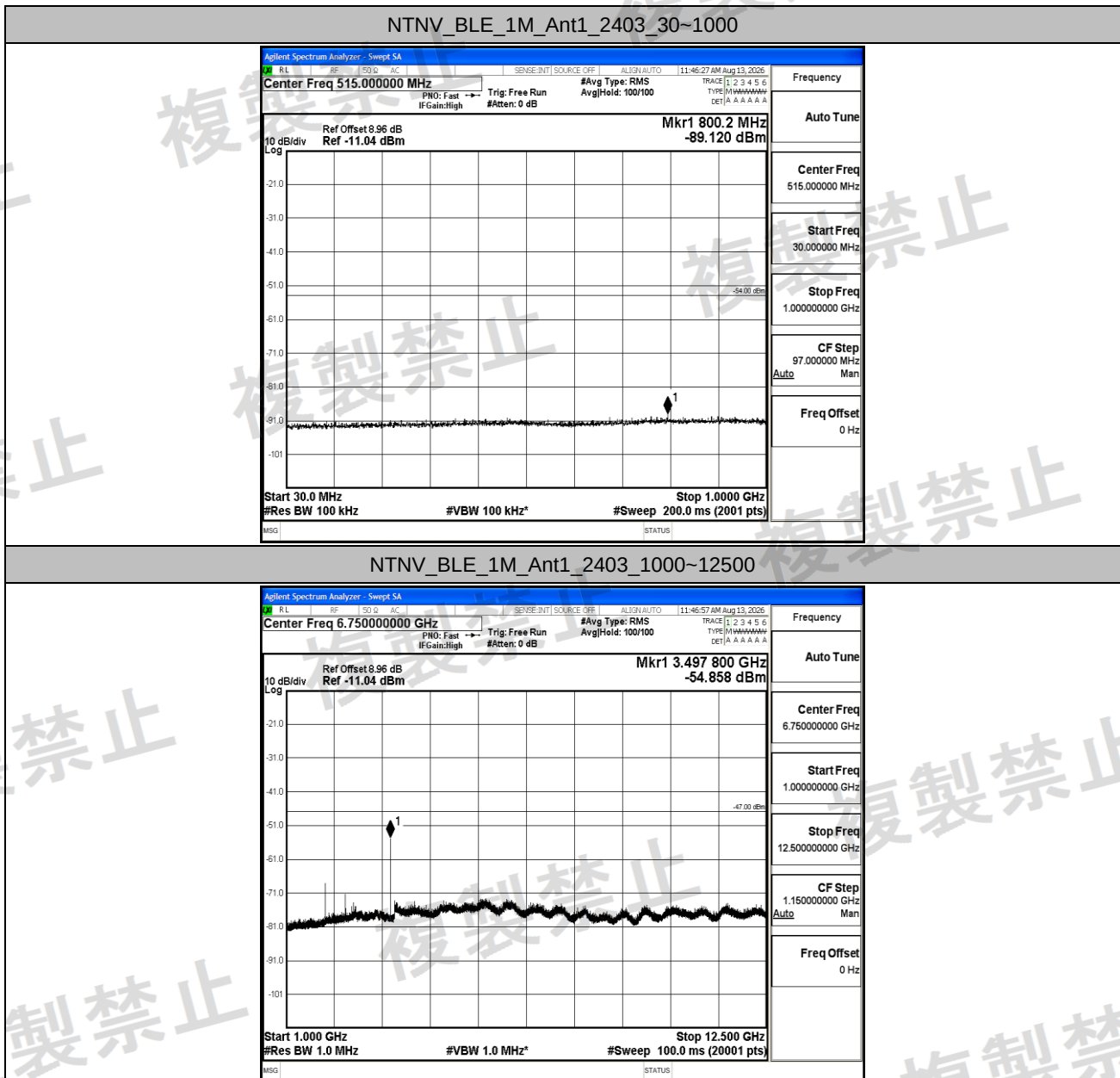


A.5 Spurious Emission of RX

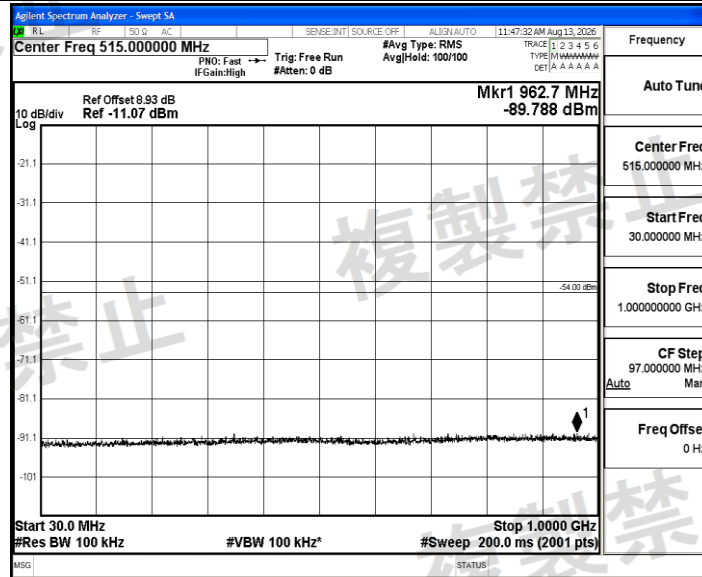
Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	2.4G	Ant1	2403	30~1000	-89.12	≤-54	0.00122	≤4	PASS
				1000~12500	-54.86	≤-47	3.26588	≤20	PASS
			2441	30~1000	-89.79	≤-54	0.00105	≤4	PASS
				1000~12500	-68.93	≤-47	0.12794	≤20	PASS
			2480	30~1000	-89.12	≤-54	0.00122	≤4	PASS
				1000~12500	-66.28	≤-47	0.23550	≤20	PASS

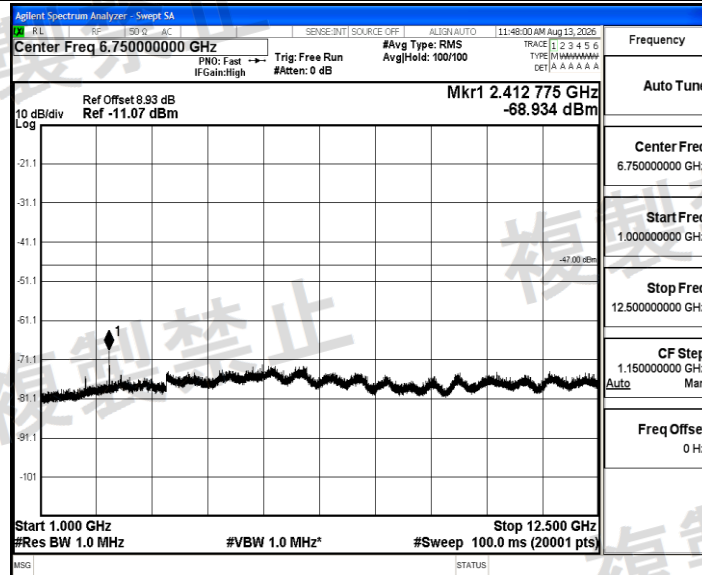
Test Graphs



NTNV_BLE_1M_Ant1_2441_30~1000



NTNV_BLE_1M_Ant1_2441_1000~12500



NTNV_BLE_1M_Ant1_2480_30~1000

