

Appendix A for BT Test Data

Product Name: Cat Theme Multi-mode Mouse

Test Model: Cat Theme Mouse

Environmental Conditions

Temperature:	23.5°C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Suichao Lai
Supervised by:	Yan Chen

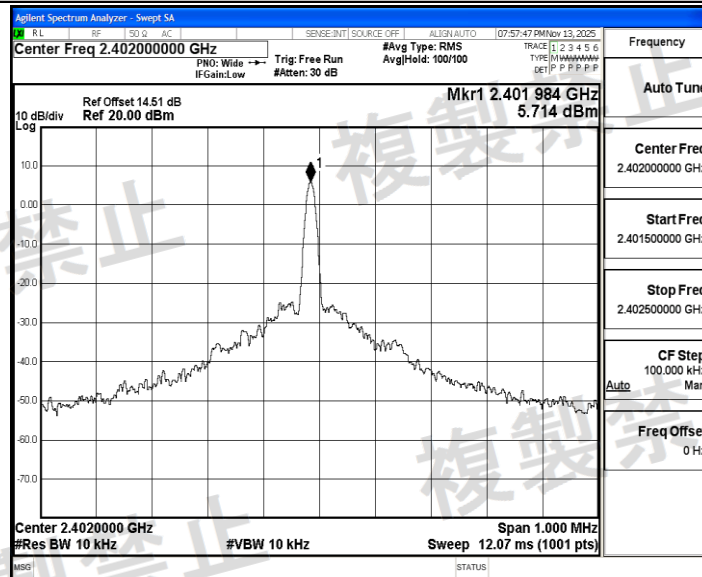
A.1 Frequency Error

Test Result

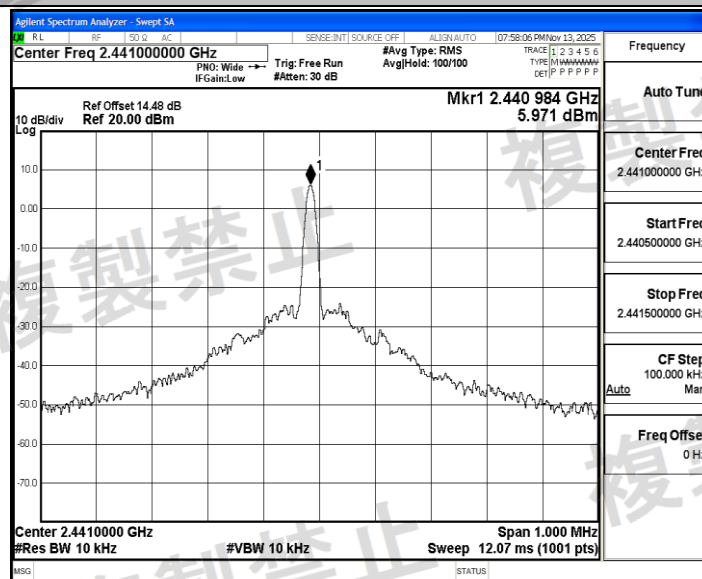
TestCondition	TestMode	Antenna	Frequency [MHz]	Result[ppm]	Limit[ppm]	Verdict
NTNV	Frequency_Error	Ant1	2402	-6.66112	±50	PASS
			2441	-6.55469	±50	PASS
			2480	-6.45161	±50	PASS

Test Graphs

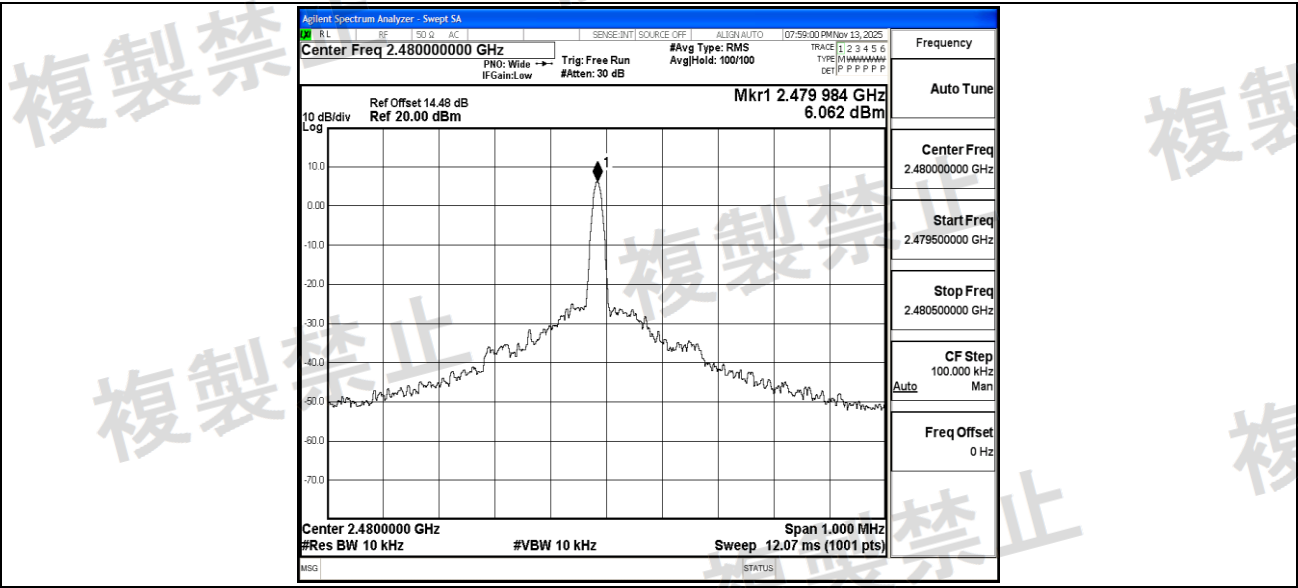
NTNV_Ant1_2402



NTNV_Ant1_2441



NTNV_Ant1_2480



A.2 Antenna Power

Test Result

Test Voltage				Normal Voltage			
Mode	Declared power	Average Result	Average Result	Result	Limit	Tolerance	Limit
	(mW/MHz)	(dBm)	(mW)	(mW/MHz)	(mW/MHz)	/	/
Hopping-Tx (1Mbps)	0.03	1.47	1.403	0.025	3	-16.67%	+20%
Hopping-Tx (2Mbps)	0.03	1.66	1.466	0.029	3	-3.33%	+20%
Hopping-Tx (3Mbps)	0.03	1.59	1.442	0.028	3	-6.67%	+20%
Conclusion: PASS							

Result power= Average value / (Duty Cycle * Spreading bandwidth)

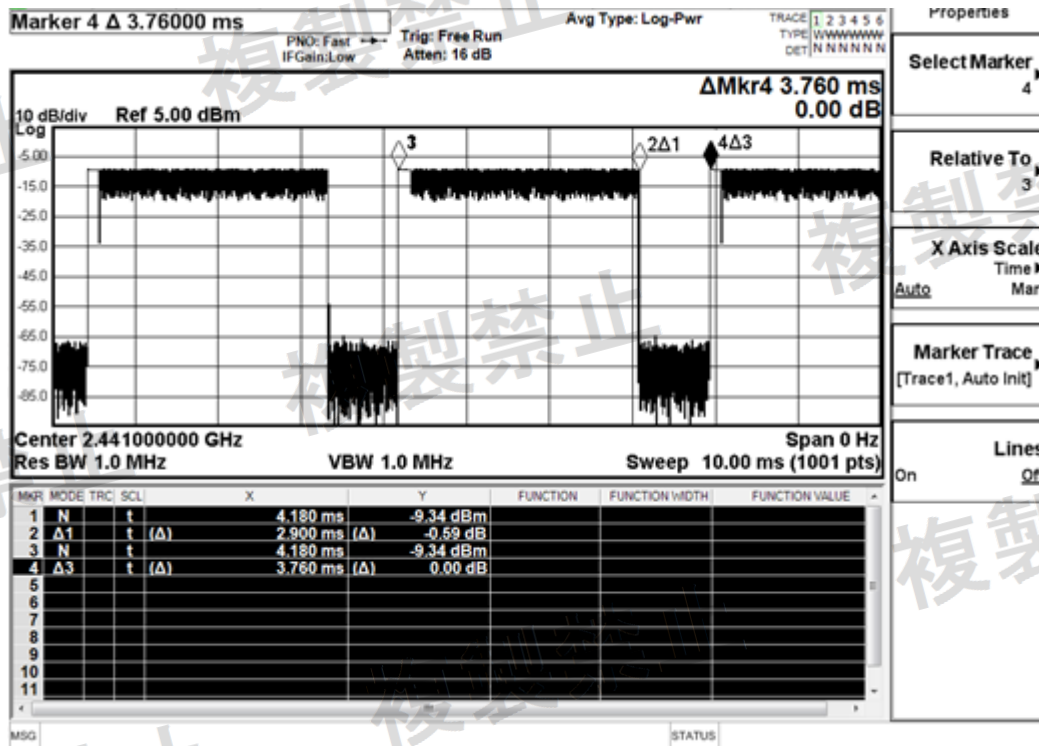
Antenna power Result = Measured Power / Spreading bandwidth

Spread Bandwidth (DH5) = 71.694MHz, Spread Bandwidth (2DH5) = 66.191MHz,

Spread Bandwidth (3DH5) = 66.355MHz

Duty cycle=77.1%

Duty cycle= [Ton/ (Ton+Toff)]*100%=2.900/3.760*100%=77.1%



A.3 Occupied Bandwidth

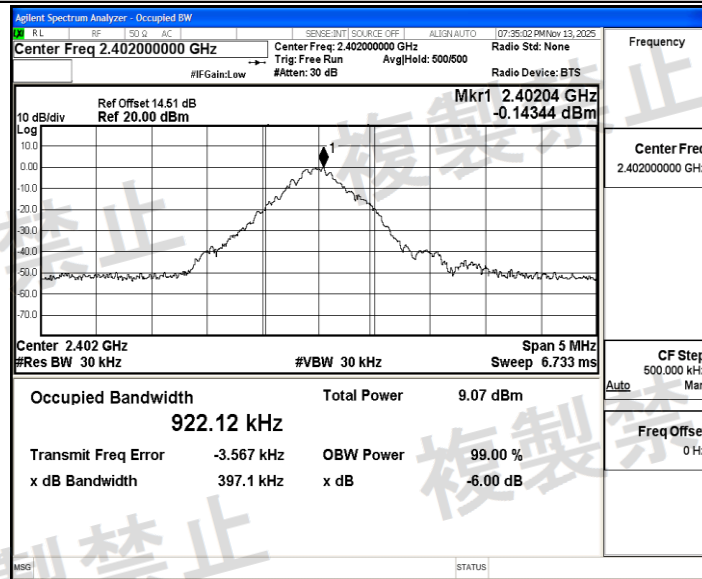
Test Result

TestCondition	TestMode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	2402	0.922	≤83.5	PASS
			2441	0.910	≤83.5	PASS
			2480	0.897	≤83.5	PASS
	2DH5	Ant1	2402	1.183	≤83.5	PASS
			2441	1.188	≤83.5	PASS
			2480	1.192	≤83.5	PASS
	3DH5	Ant1	2402	1.186	≤83.5	PASS
			2441	1.189	≤83.5	PASS
			2480	1.193	≤83.5	PASS

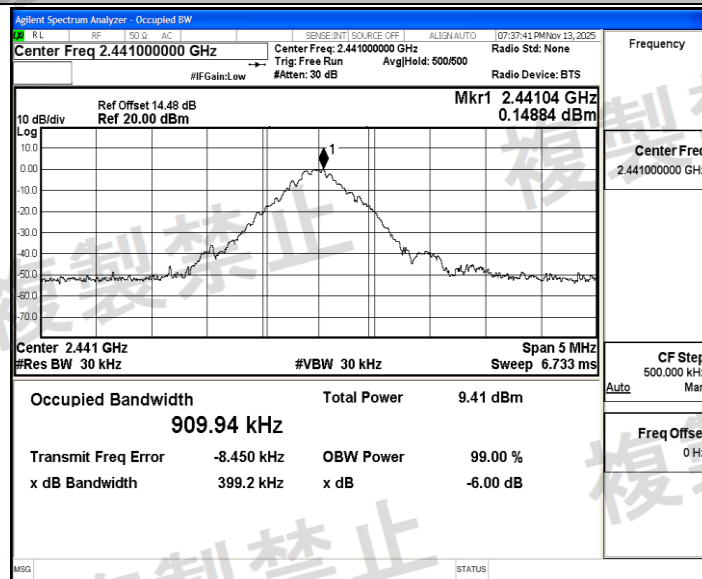
TestCondition	TestMode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	Hop	78.725	≤83.5	PASS
	2DH5	Ant1	Hop	78.097	≤83.5	PASS
	3DH5	Ant1	Hop	78.141	≤83.5	PASS

Test Graphs

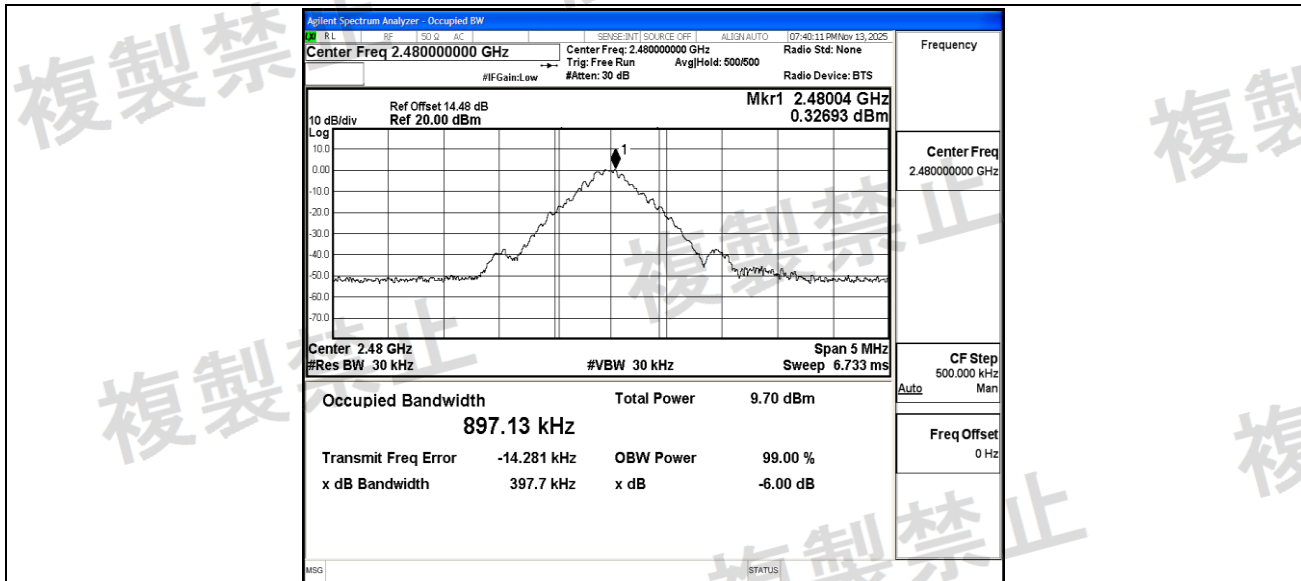
NTNV_DH5_Ant1_2402



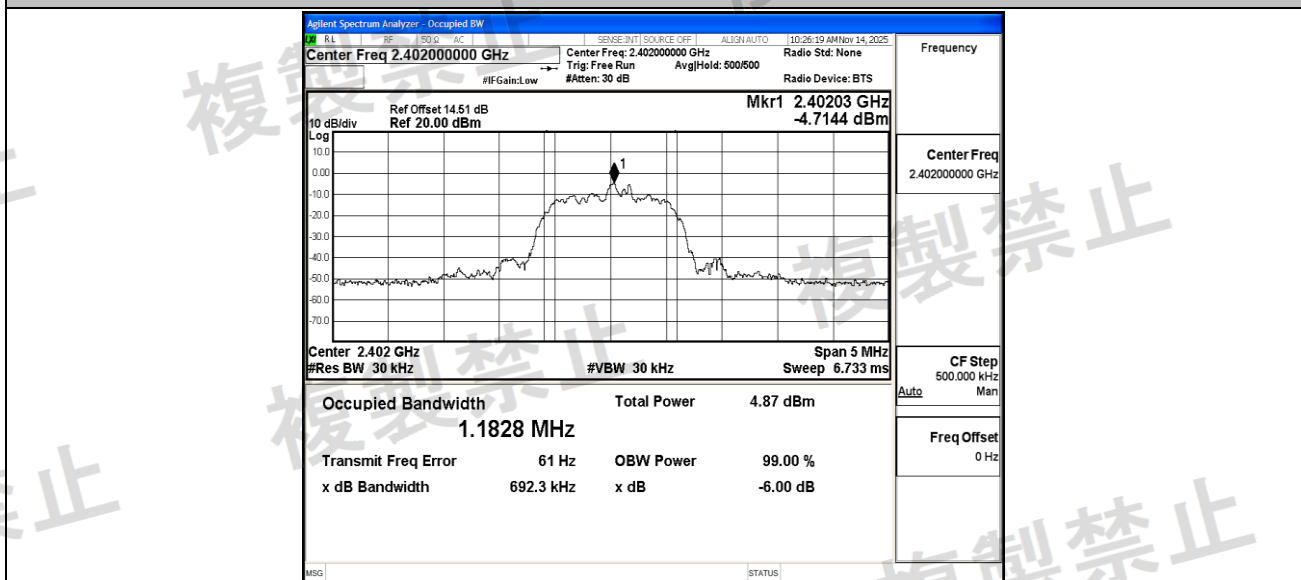
NTNV_DH5_Ant1_2441



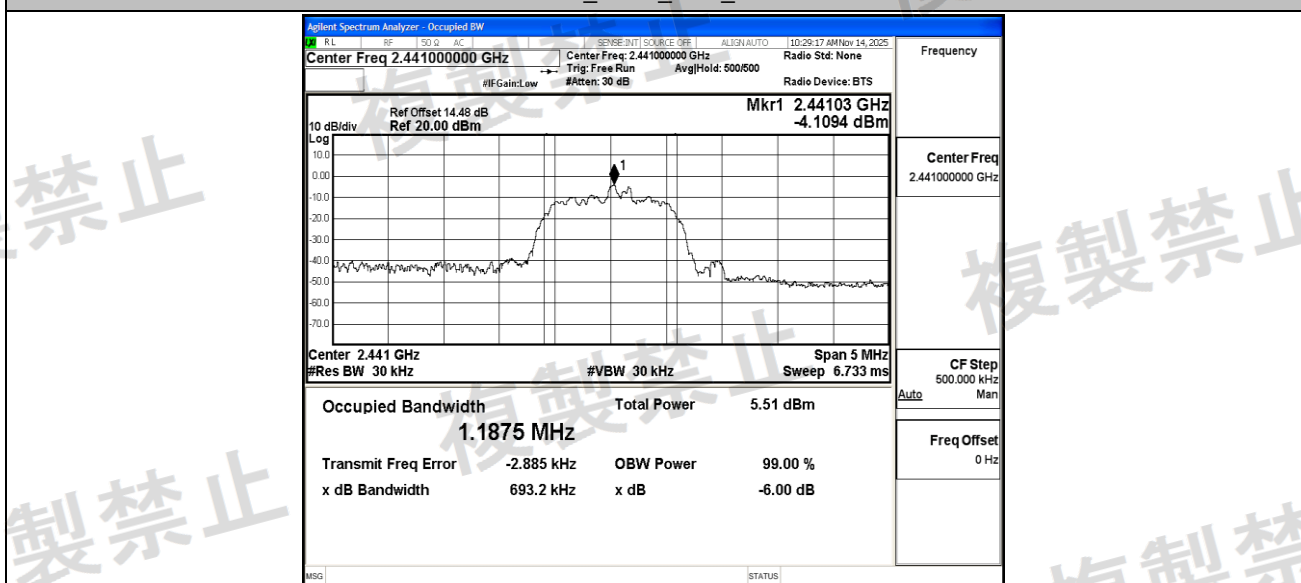
NTNV_DH5_Ant1_2480



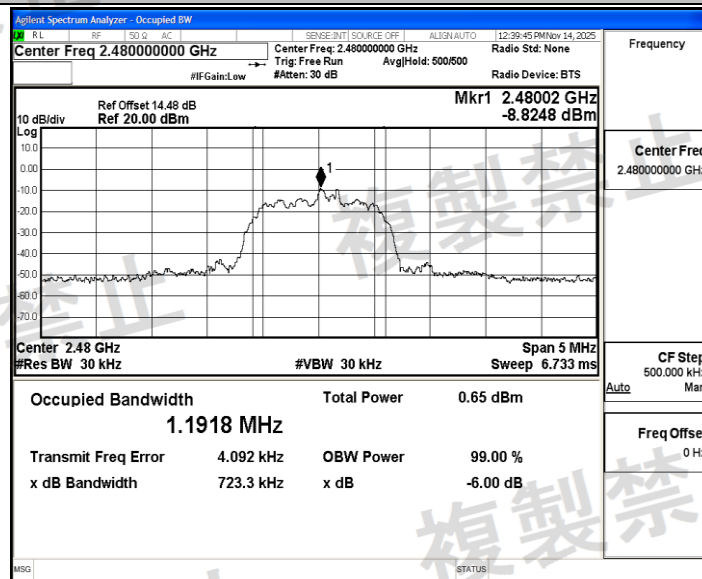
NTNV_2DH5_Ant1_2402



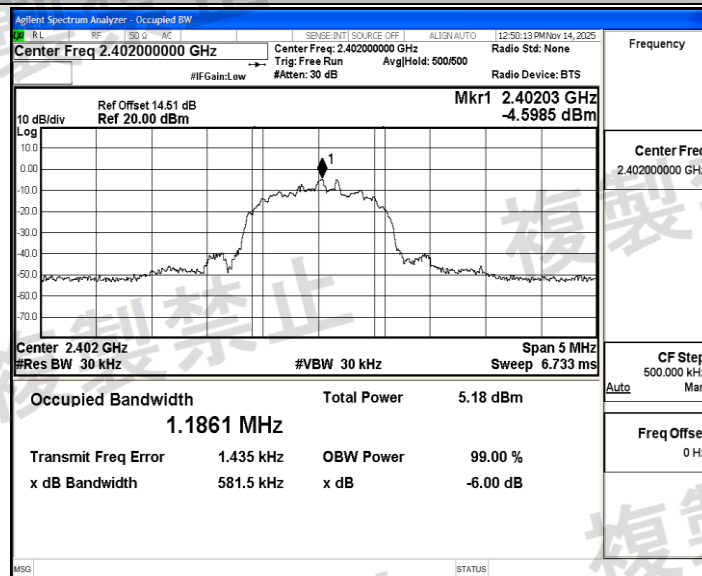
NTNV_2DH5_Ant1_2441



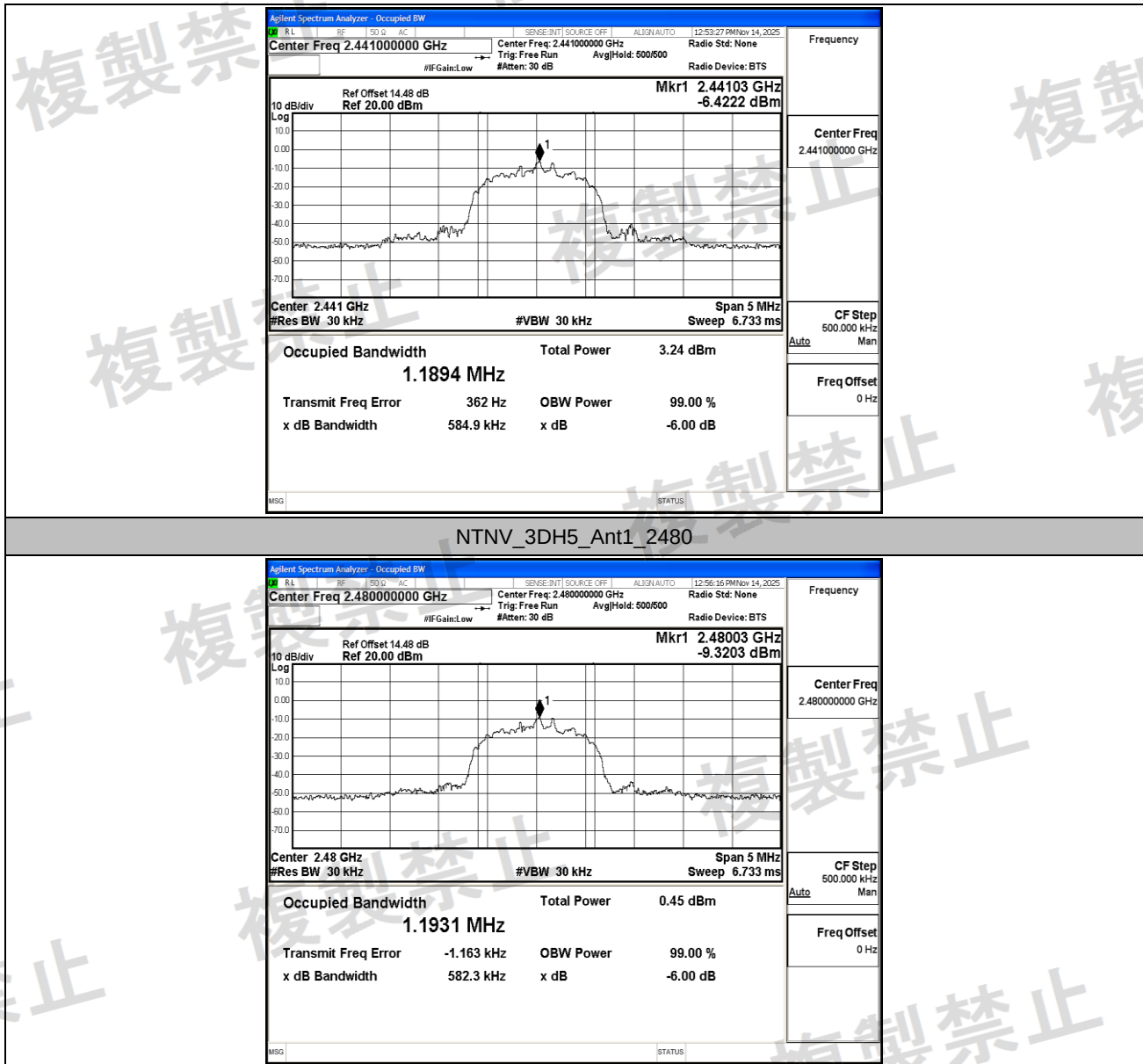
NTNV_2DH5_Ant1_2480



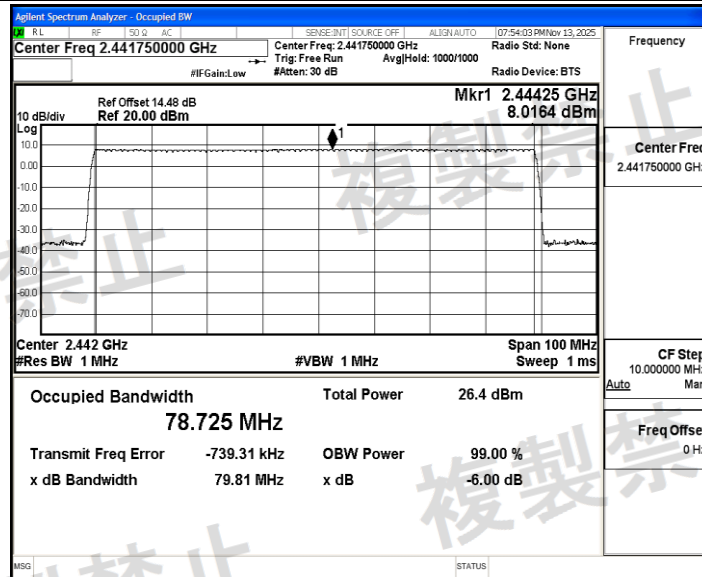
NTNV_3DH5_Ant1_2402



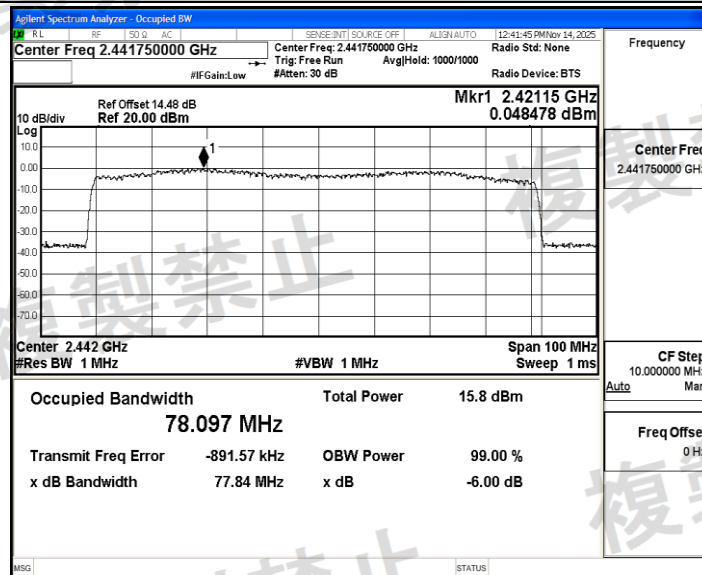
NTNV_3DH5_Ant1_2441



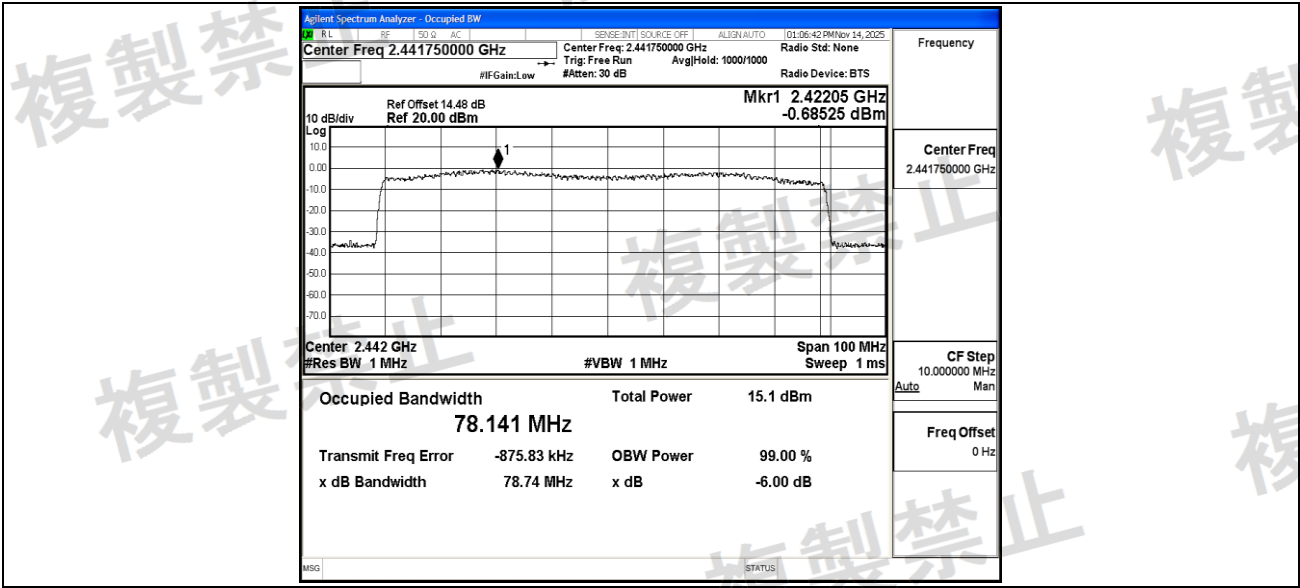
NTNV_DH5_Ant1_Hop



NTNV_2DH5_Ant1_Hop



NTNV_3DH5_Ant1_Hop



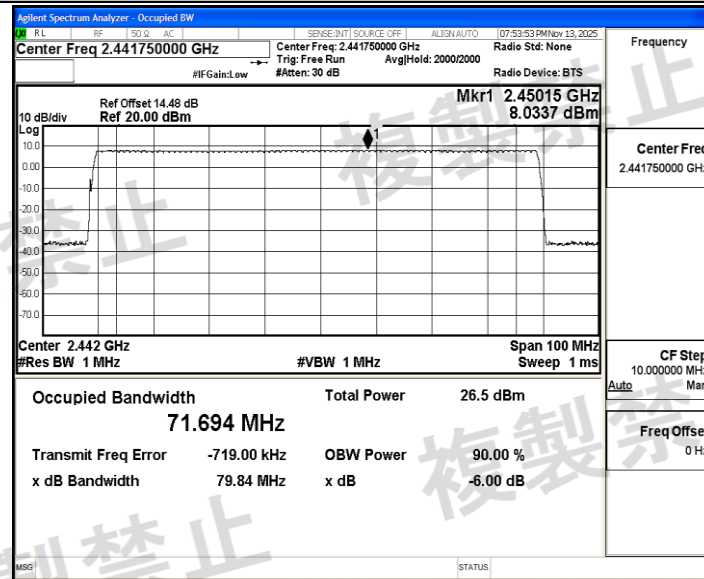
A.4 Spread Bandwidth

Test Result

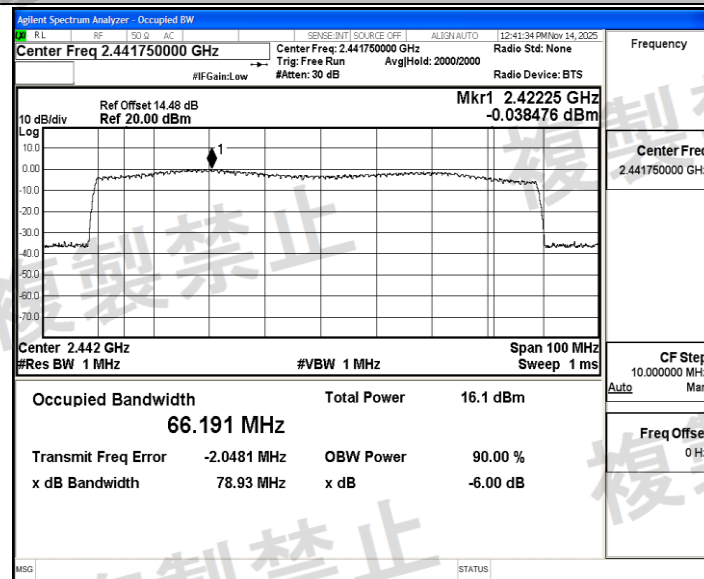
TestCondition	TestMode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	Hop	71.694	---	PASS
	2DH5	Ant1	Hop	66.191	---	PASS
	3DH5	Ant1	Hop	66.355	---	PASS

Test Graphs

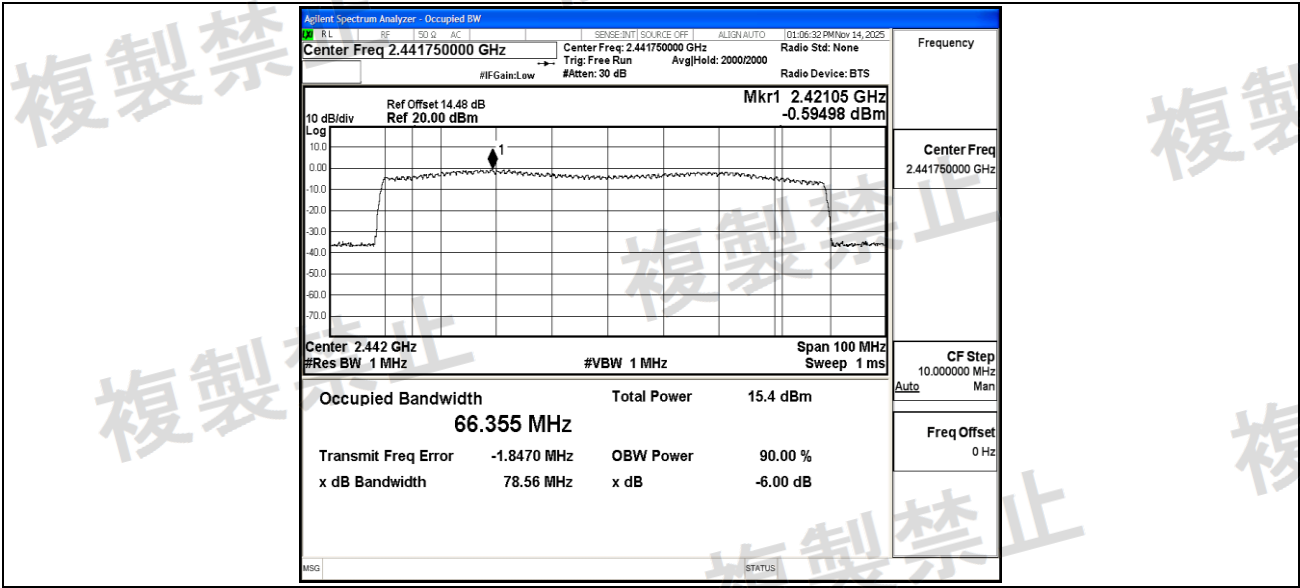
NTNV_DH5_Ant1_Hop



NTNV_2DH5_Ant1_Hop



NTNV_3DH5_Ant1_Hop



A.5 Spurious Emission of TX

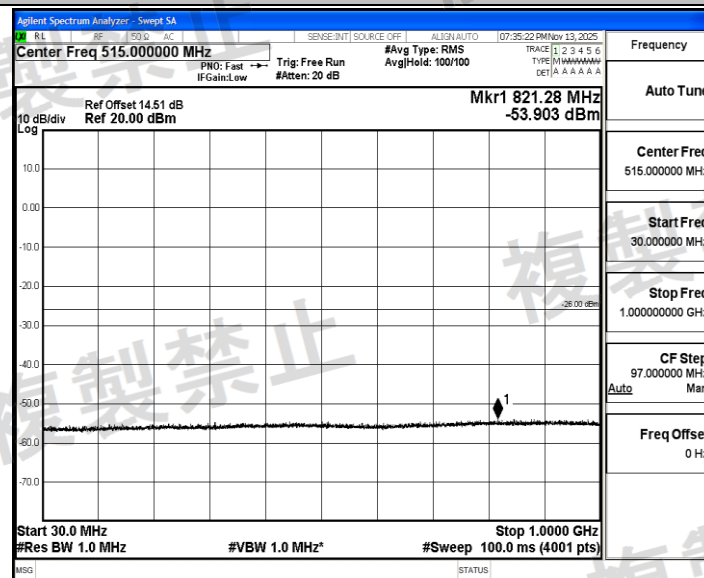
Test Result

TestCondition	TestMode	Antenna	Frequency [MHz]	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	DH5	Ant1	2402	30~1000	-53.90	≤-26	0.00407	≤2.5	PASS
				1000~2387	-52.37	≤-26	0.00579	≤2.5	PASS
				2387~2400	-40.60	≤-16	0.08710	≤25	PASS
				2483.5~2496.5	-43.02	≤-16	0.04989	≤25	PASS
				2496.5~13000	-43.58	≤-26	0.04385	≤2.5	PASS
			2441	30~1000	-53.68	≤-26	0.00429	≤2.5	PASS
				1000~2387	-52.43	≤-26	0.00571	≤2.5	PASS
				2387~2400	-43.25	≤-16	0.04732	≤25	PASS
				2483.5~2496.5	-43.18	≤-16	0.04808	≤25	PASS
				2496.5~13000	-44.85	≤-26	0.03273	≤2.5	PASS
			2480	30~1000	-53.49	≤-26	0.00448	≤2.5	PASS
				1000~2387	-52.47	≤-26	0.00566	≤2.5	PASS
				2387~2400	-43.47	≤-16	0.04498	≤25	PASS
				2483.5~2496.5	-43.21	≤-16	0.04775	≤25	PASS
				2496.5~13000	-44.04	≤-26	0.03945	≤2.5	PASS
	2DH5	Ant1	2402	30~1000	-51.99	≤-26	0.00632	≤2.5	PASS
				1000~2387	-52.32	≤-26	0.00586	≤2.5	PASS
				2387~2400	-38.52	≤-16	0.14060	≤25	PASS
				2483.5~2496.5	-43.05	≤-16	0.04955	≤25	PASS
				2496.5~13000	-32.95	≤-26	0.50699	≤2.5	PASS
			2441	30~1000	-49.67	≤-26	0.01079	≤2.5	PASS
				1000~2387	-52.78	≤-26	0.00527	≤2.5	PASS
				2387~2400	-43.46	≤-16	0.04508	≤25	PASS
				2483.5~2496.5	-43.41	≤-16	0.04560	≤25	PASS
				2496.5~13000	-36.63	≤-26	0.21727	≤2.5	PASS
			2480	30~1000	-53.78	≤-26	0.00419	≤2.5	PASS
				1000~2387	-52.62	≤-26	0.00547	≤2.5	PASS
				2387~2400	-43.44	≤-16	0.04529	≤25	PASS
				2483.5~2496.5	-42.97	≤-16	0.05047	≤25	PASS
				2496.5~13000	-45.38	≤-26	0.02897	≤2.5	PASS
	3DH5	Ant1	2402	30~1000	-53.88	≤-26	0.00409	≤2.5	PASS
				1000~2387	-52.54	≤-26	0.00557	≤2.5	PASS
				2387~2400	-38.71	≤-16	0.13459	≤25	PASS
				2483.5~2496.5	-43.08	≤-16	0.04920	≤25	PASS
				2496.5~13000	-45.76	≤-26	0.02655	≤2.5	PASS

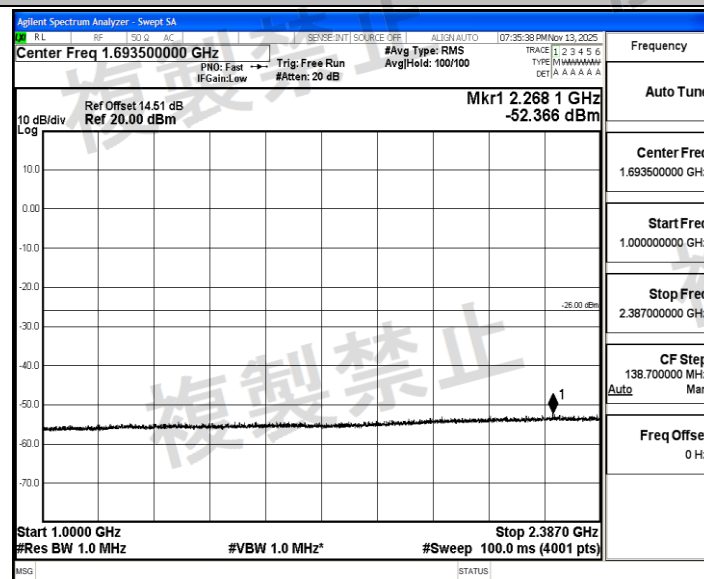
		2441	30~1000	-53.58	≤ -26	0.00439	≤ 2.5	PASS
			1000~2387	-52.74	≤ -26	0.00532	≤ 2.5	PASS
			2387~2400	-43.31	≤ -16	0.04667	≤ 25	PASS
			2483.5~2496.5	-43.31	≤ -16	0.04667	≤ 25	PASS
			2496.5~13000	-29.40	≤ -26	1.14815	≤ 2.5	PASS
		2480	30~1000	-53.88	≤ -26	0.00409	≤ 2.5	PASS
			1000~2387	-52.98	≤ -26	0.00504	≤ 2.5	PASS
			2387~2400	-43.50	≤ -16	0.04467	≤ 25	PASS
			2483.5~2496.5	-43.12	≤ -16	0.04875	≤ 25	PASS
			2496.5~13000	-45.66	≤ -26	0.02716	≤ 2.5	PASS

Test Graphs

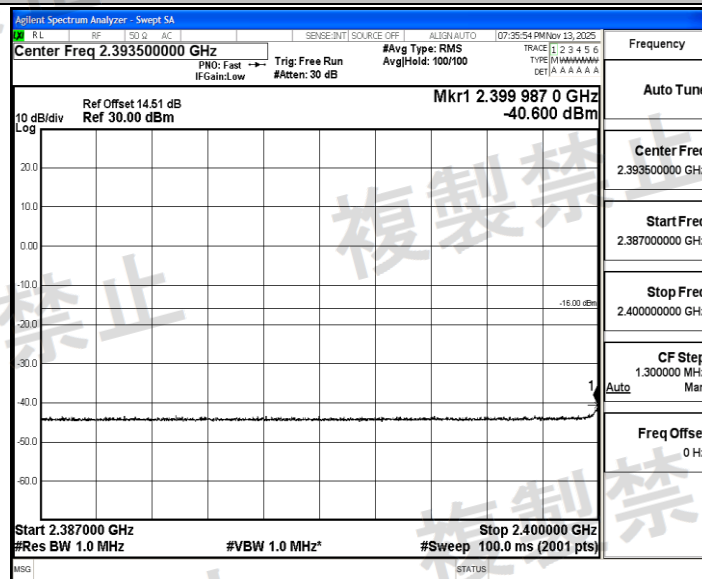
NTNV_DH5_Ant1_2402_30~1000



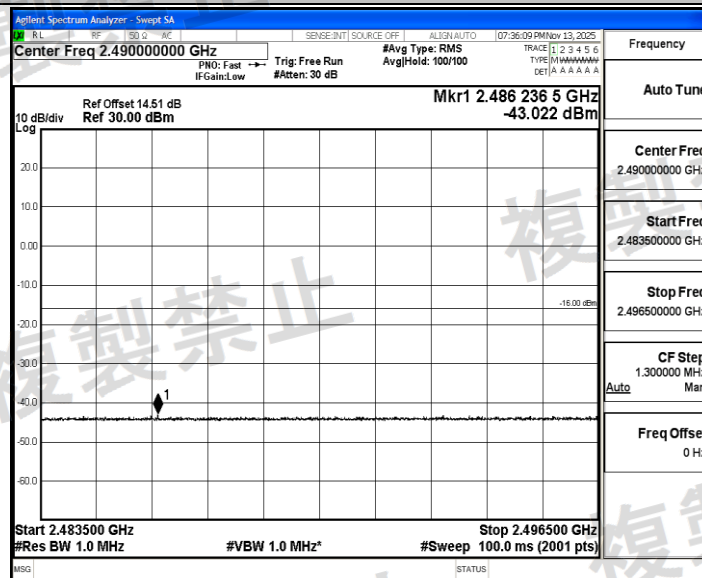
NTNV_DH5_Ant1_2402_1000~2387



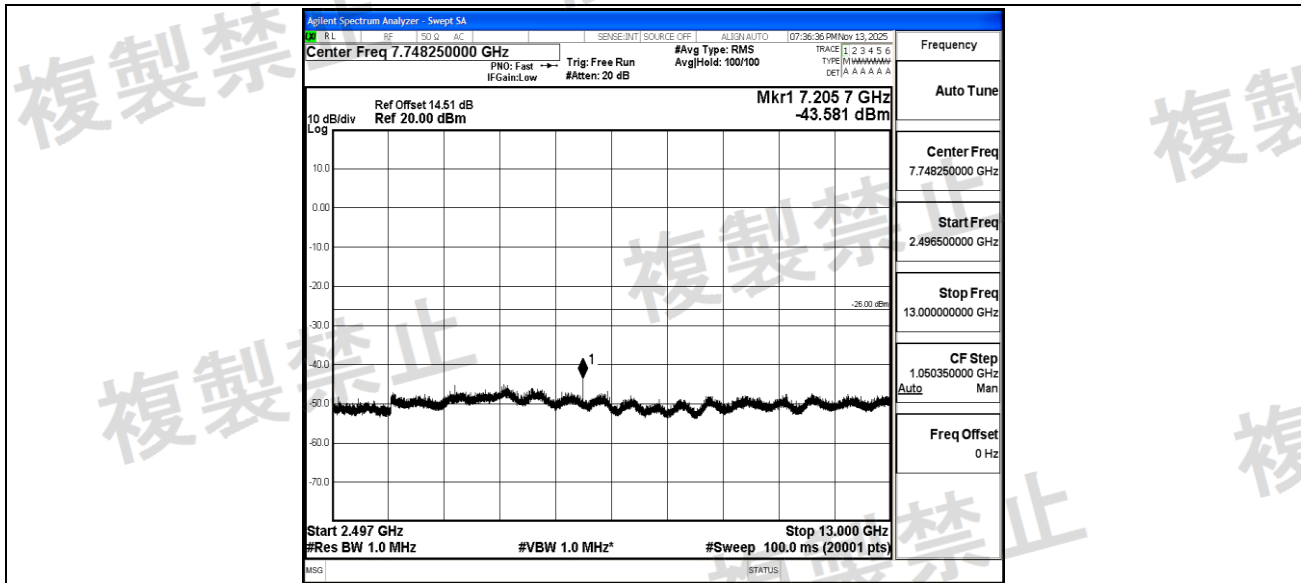
NTNV_DH5_Ant1_2402_2387~2400



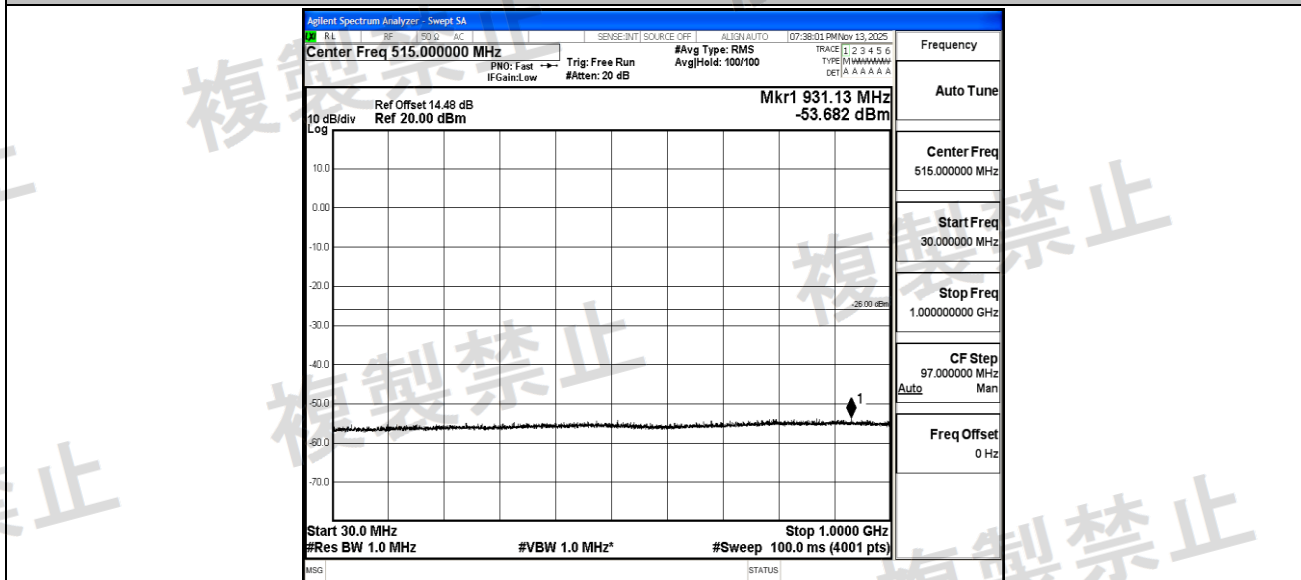
NTNV_DH5_Ant1_2402_2483.5~2496.5



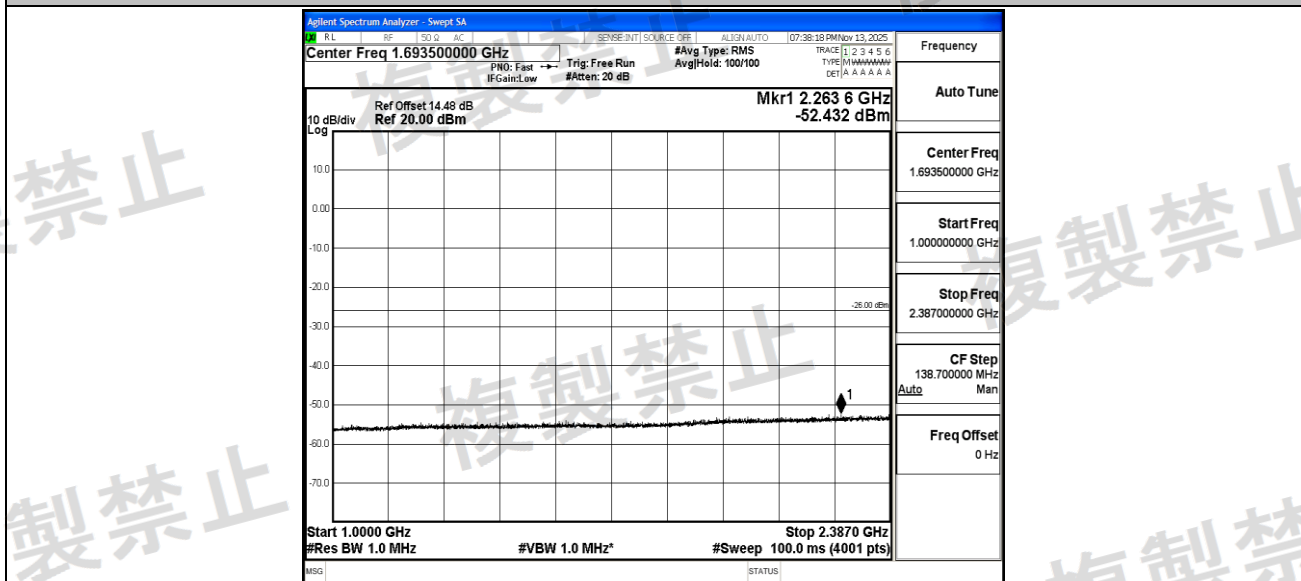
NTNV_DH5_Ant1_2402_2496.5~13000



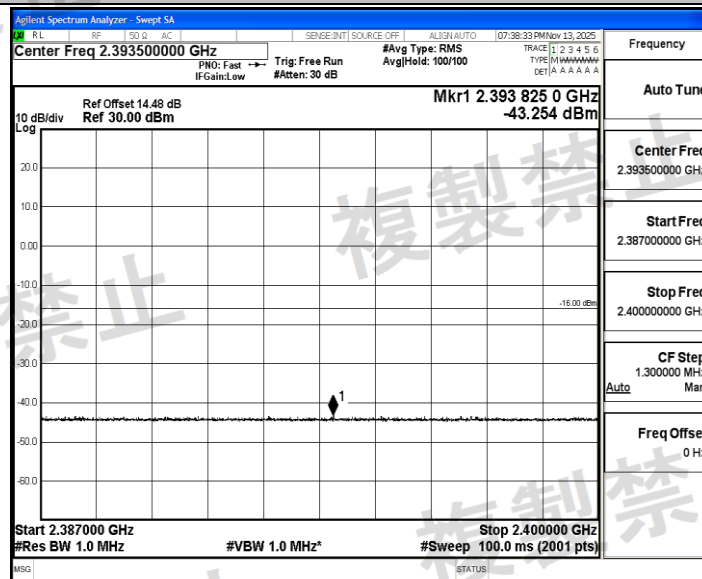
NTNV_DH5_Ant1_2441_30~1000



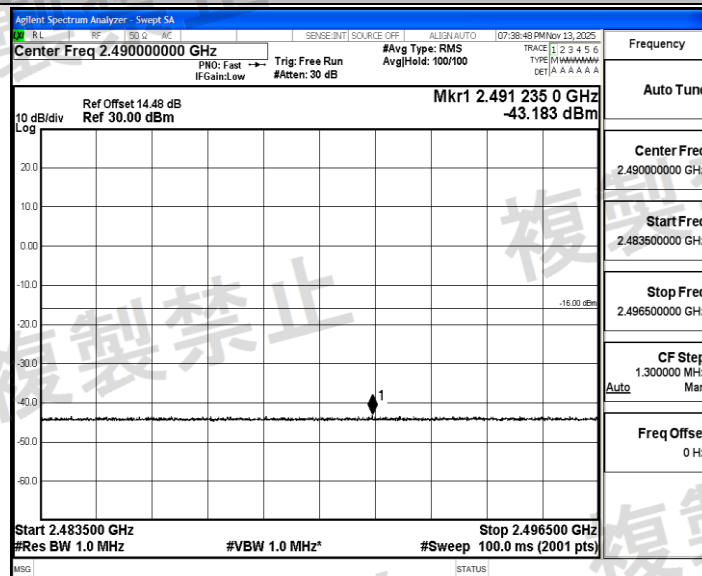
NTNV_DH5_Ant1_2441_1000~2387



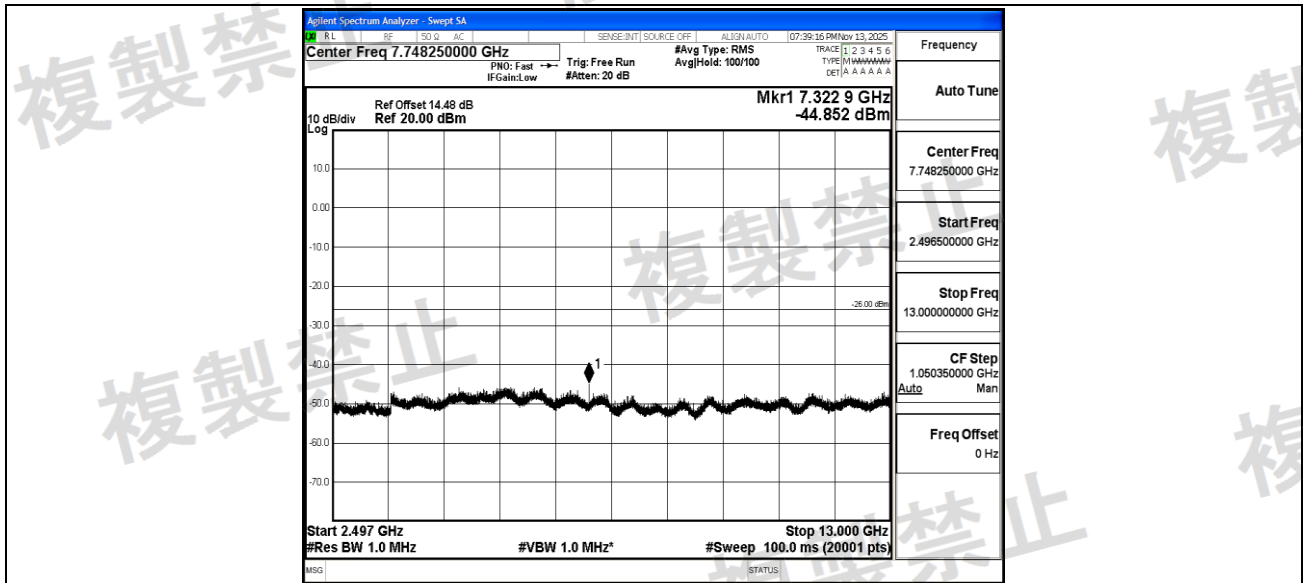
NTNV_DH5_Ant1_2441_2387~2400



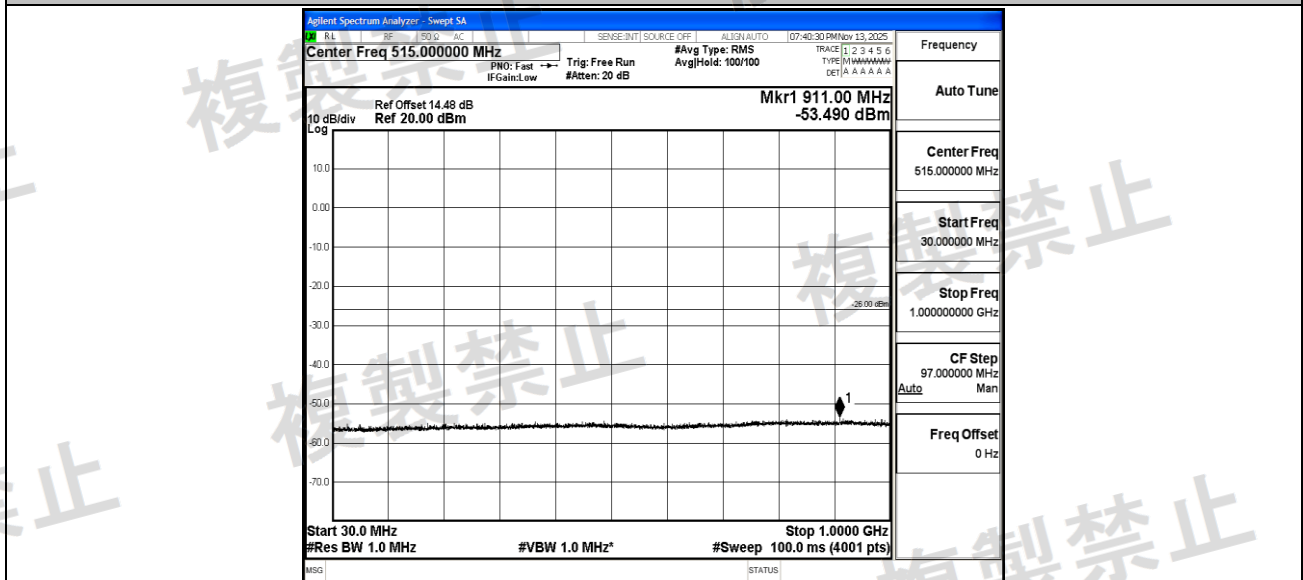
NTNV_DH5_Ant1_2441_2483.5~2496.5



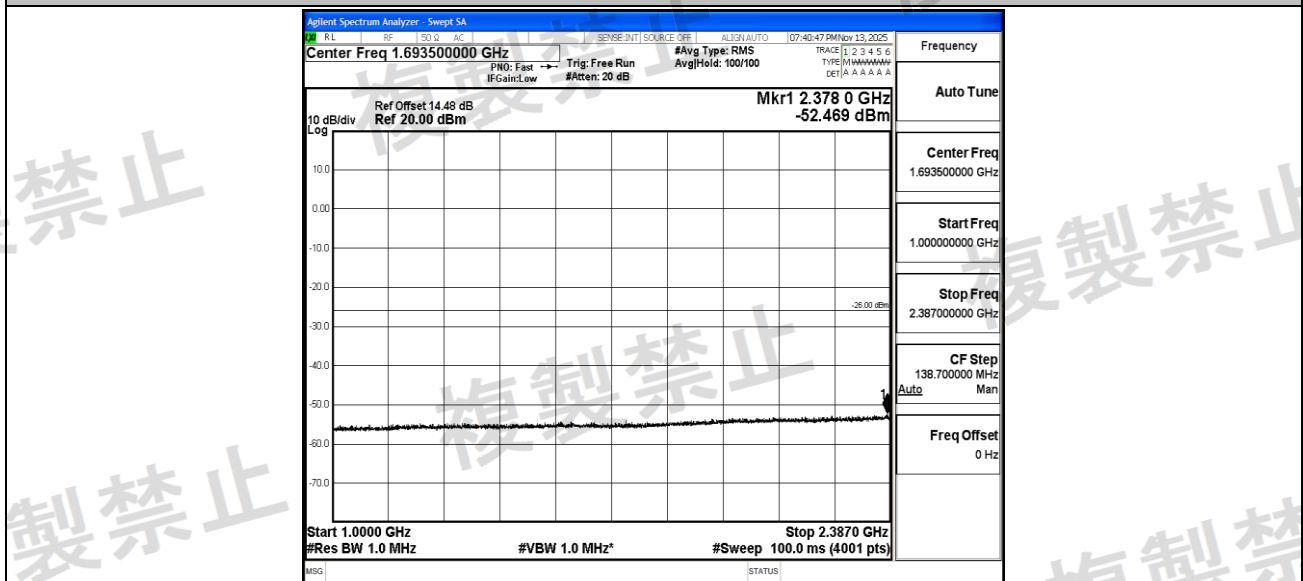
NTNV_DH5_Ant1_2441_2496.5~13000



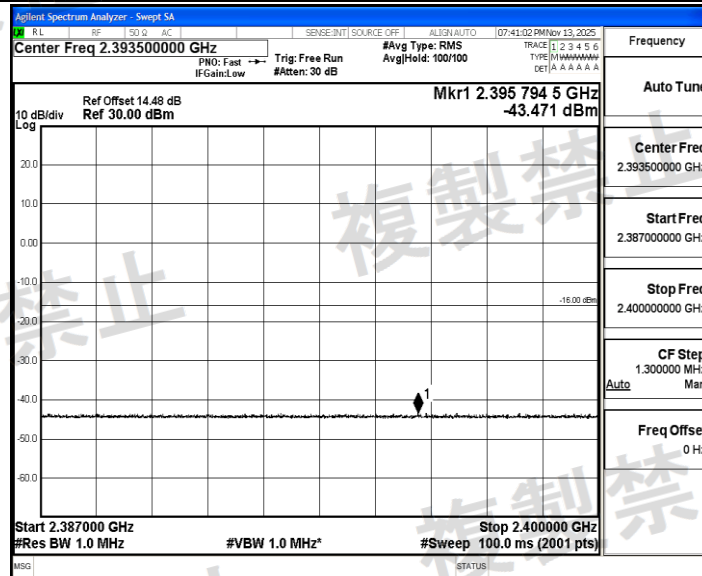
NTNV_DH5_Ant1_2480_30~1000



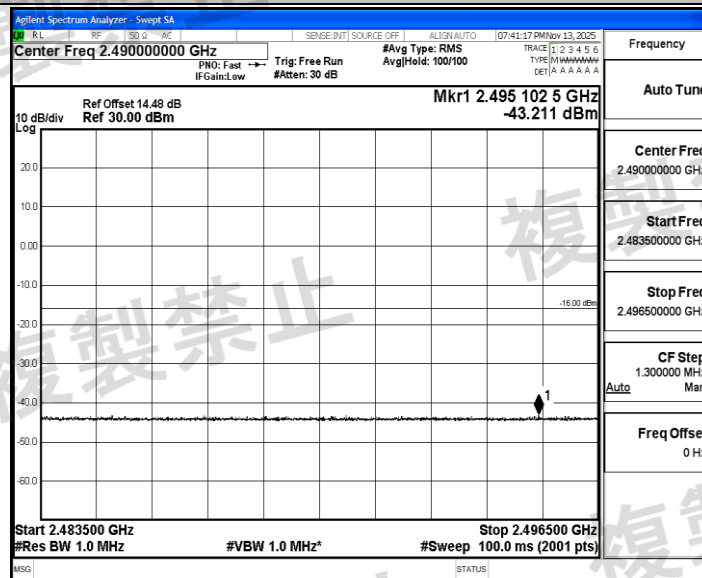
NTNV_DH5_Ant1_2480_1000~2387



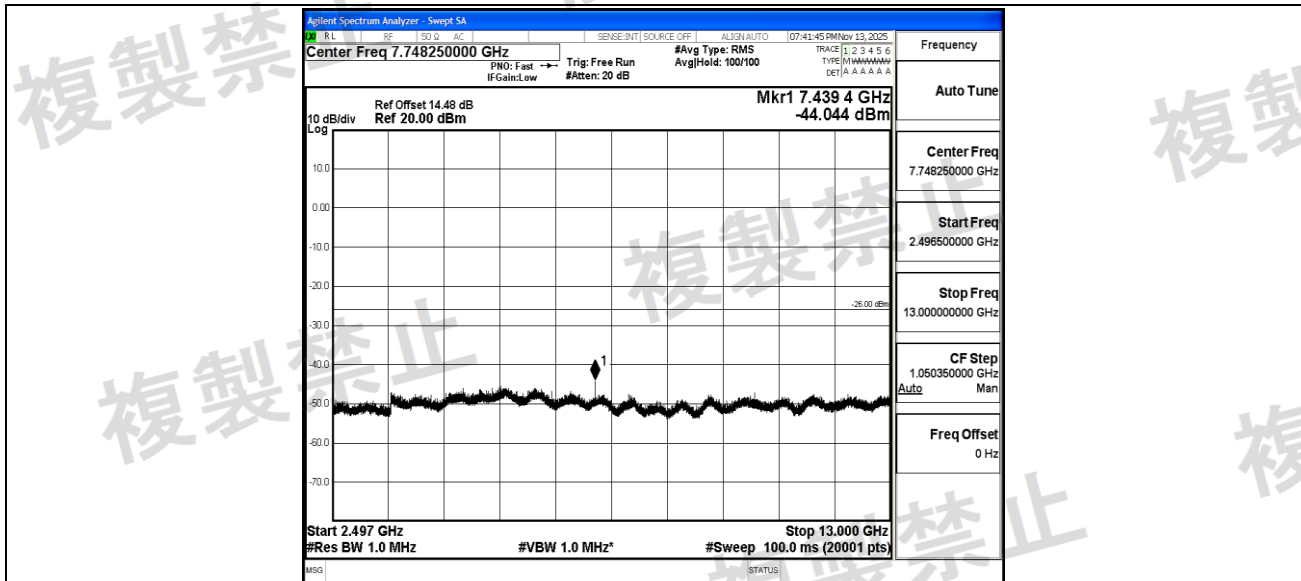
NTNV_DH5_Ant1_2480_2387~2400



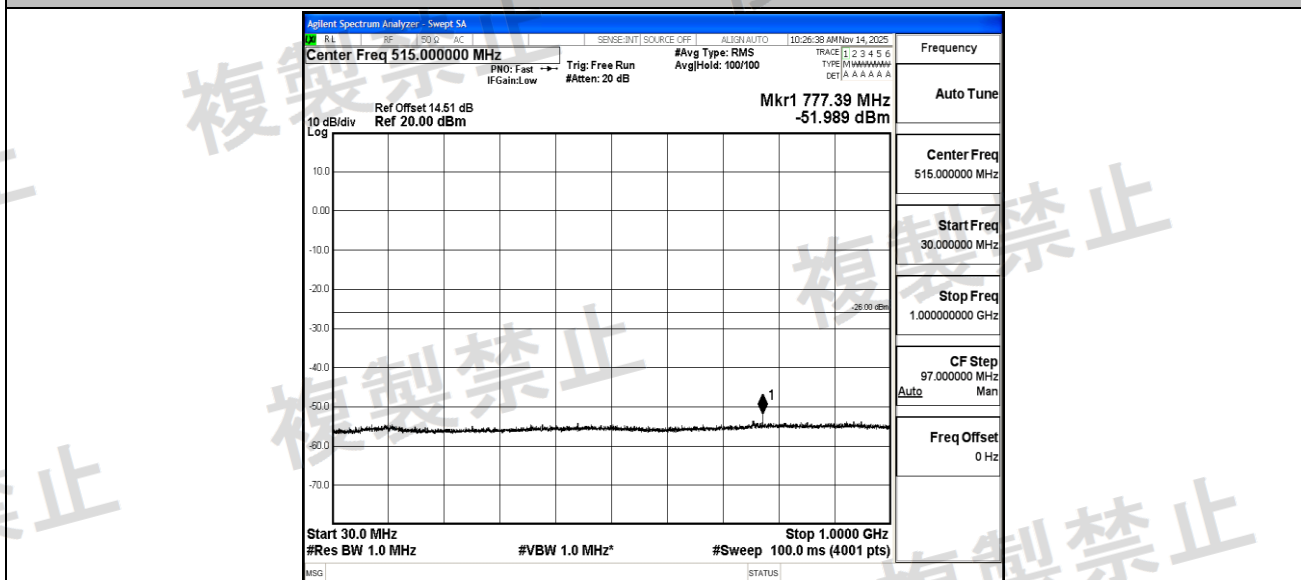
NTNV_DH5_Ant1_2480_2483.5~2496.5



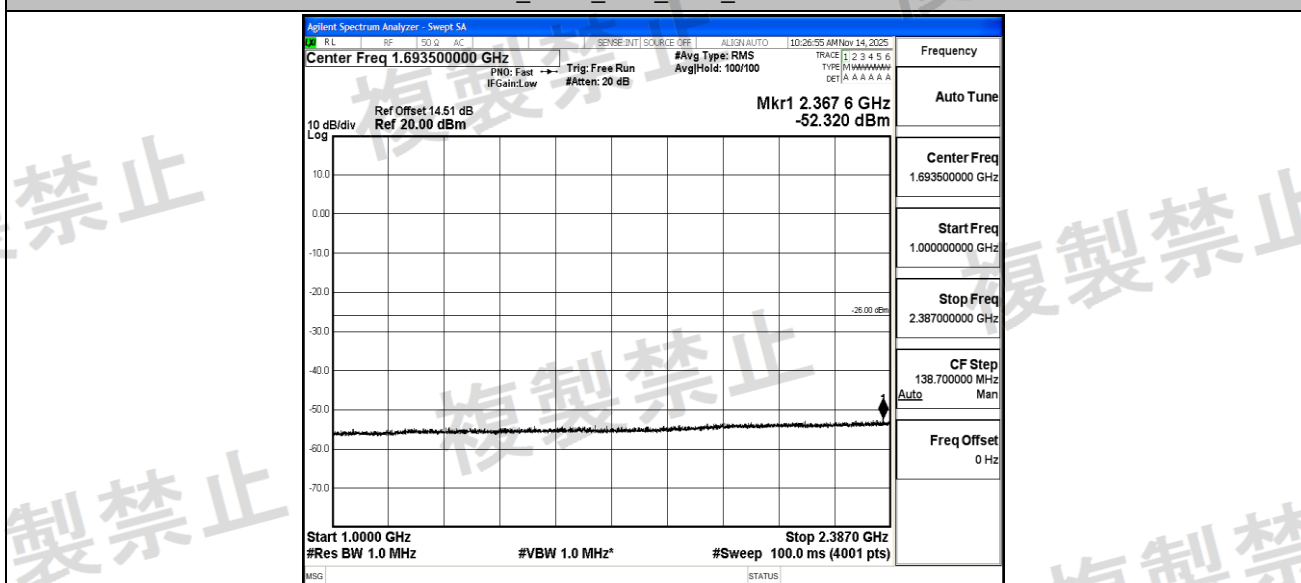
NTNV_DH5_Ant1_2480_2496.5~13000

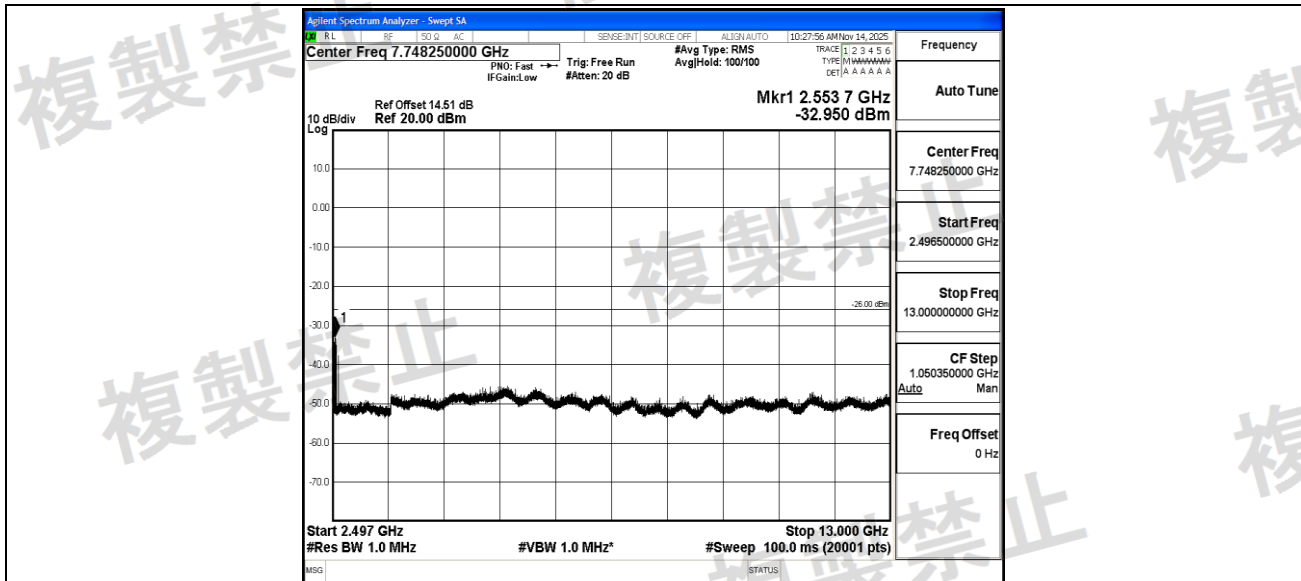


NTNV_2DH5_Ant1_2402_30~1000

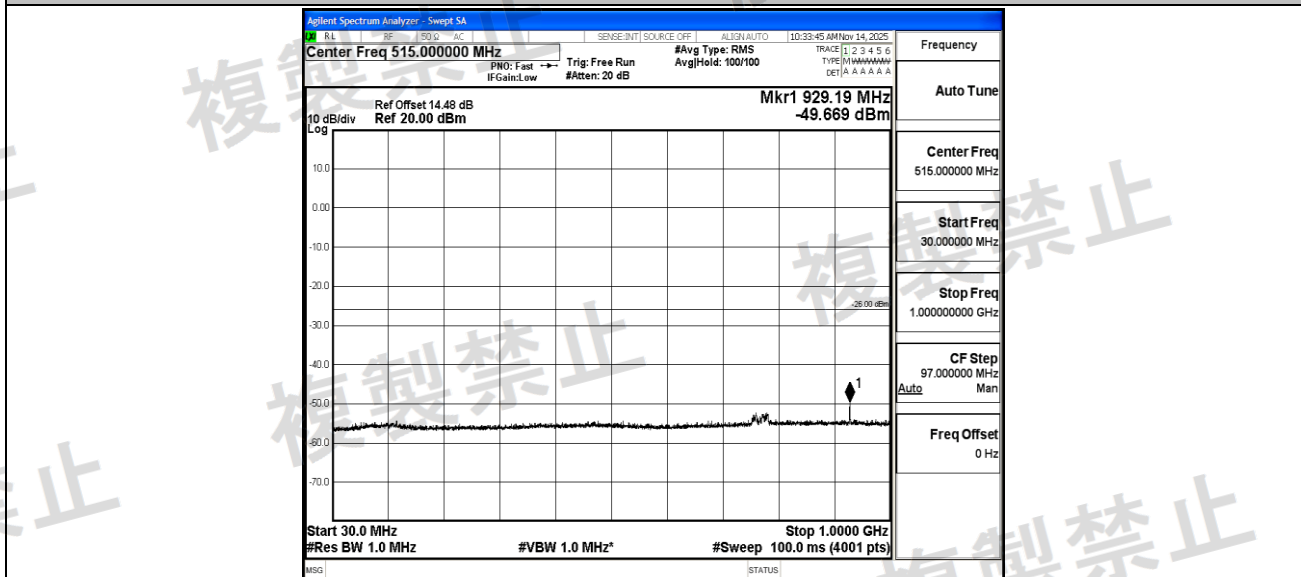


NTNV_2DH5_Ant1_2402_1000~2387

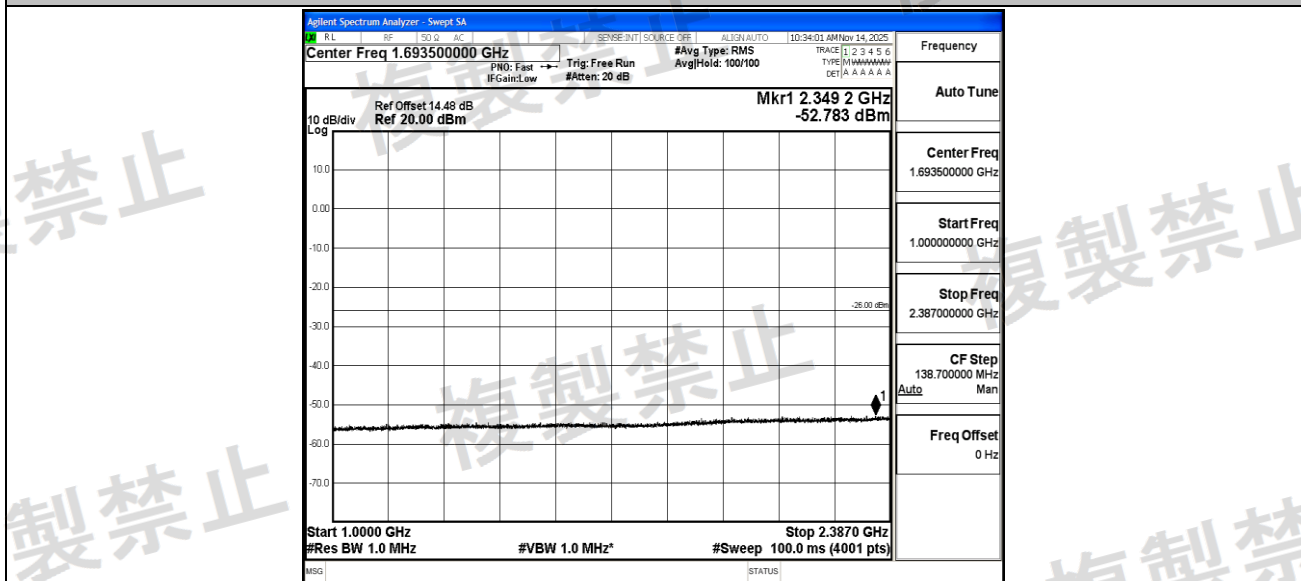




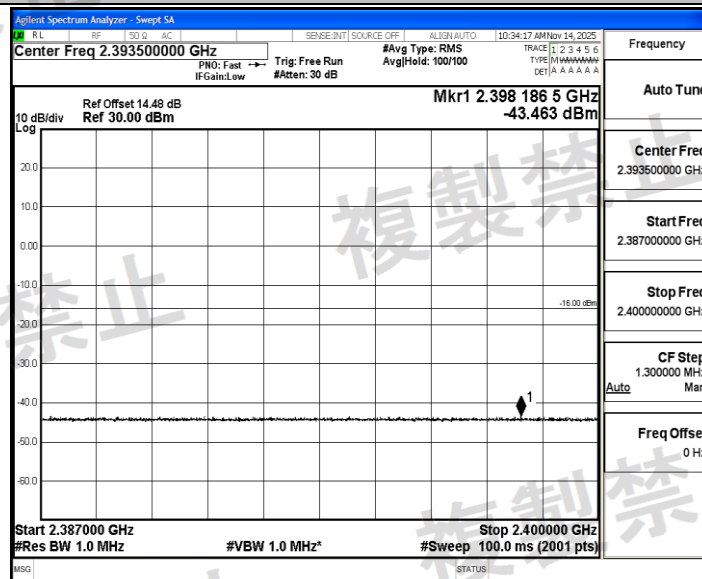
NTNV_2DH5_Ant1_2441_30~1000



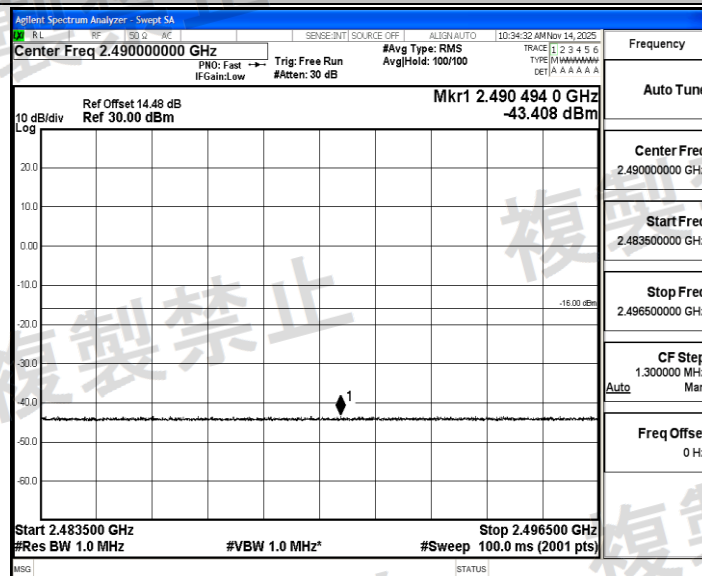
NTNV_2DH5_Ant1_2441_1000~2387



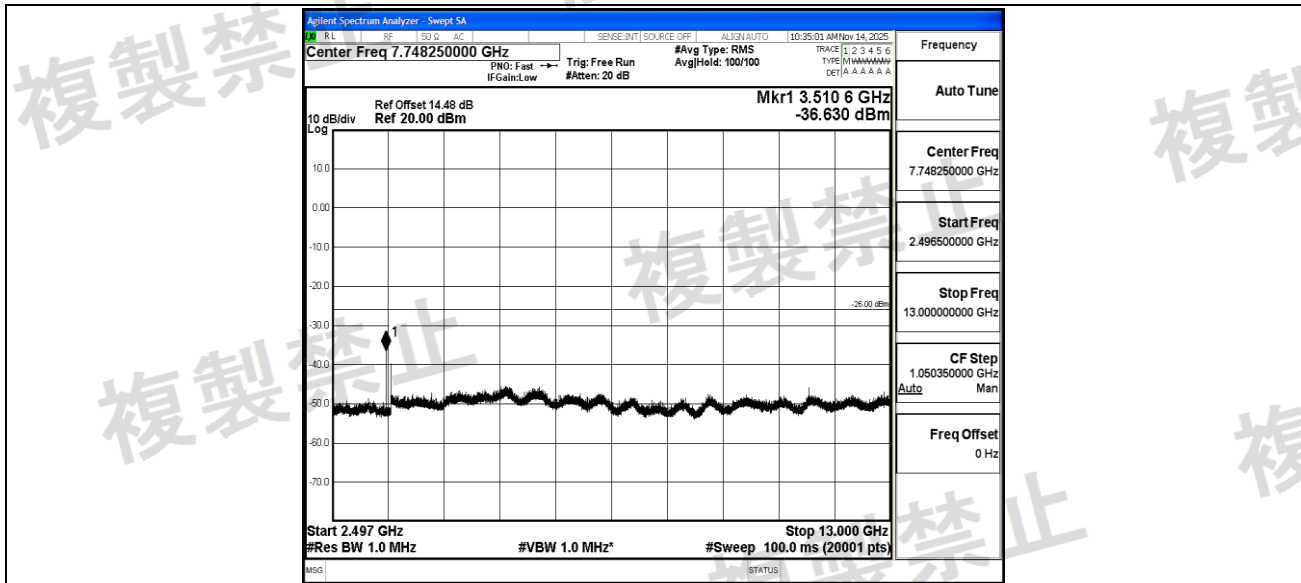
NTNV_2DH5_Ant1_2441_2387~2400



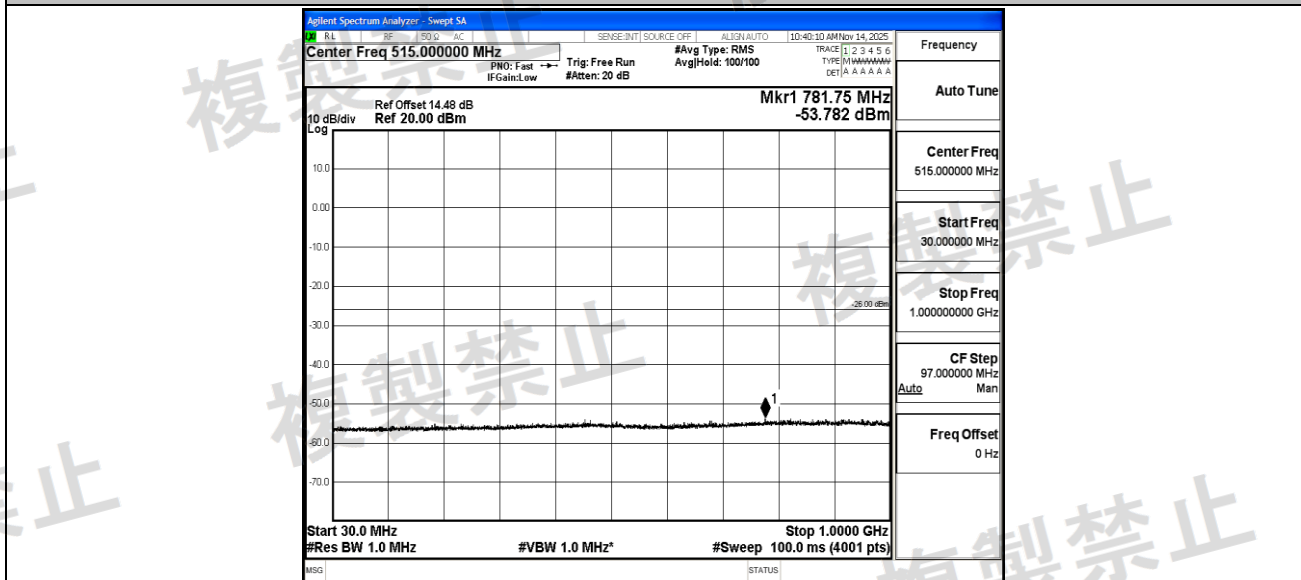
NTNV_2DH5_Ant1_2441_2483.5~2496.5



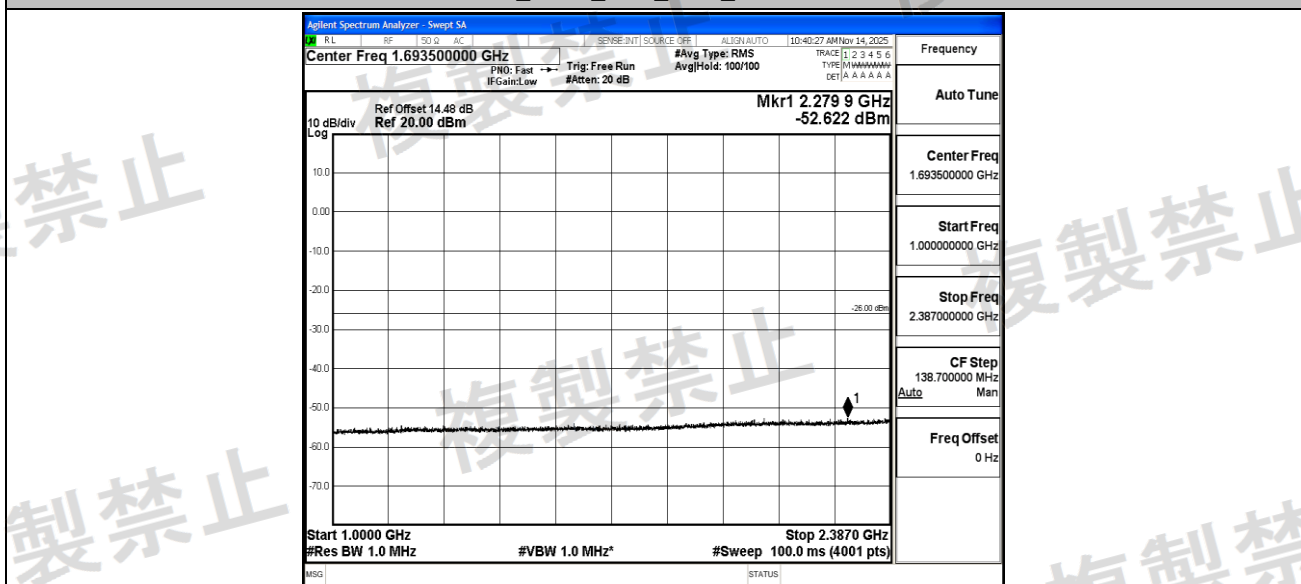
NTNV_2DH5_Ant1_2441_2496.5~13000



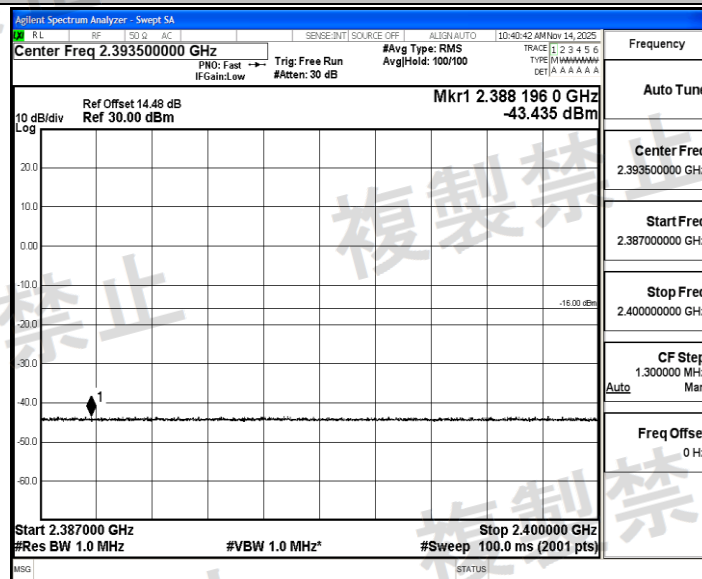
NTNV_2DH5_Ant1_2480_30~1000



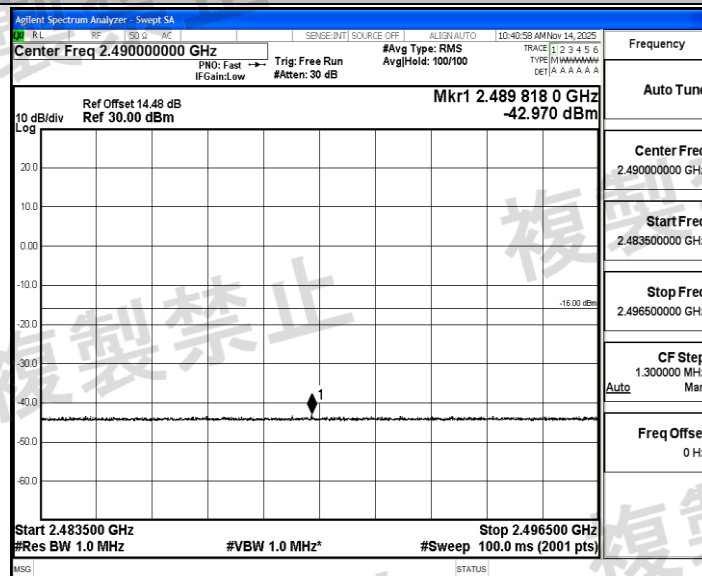
NTNV_2DH5_Ant1_2480_1000~2387



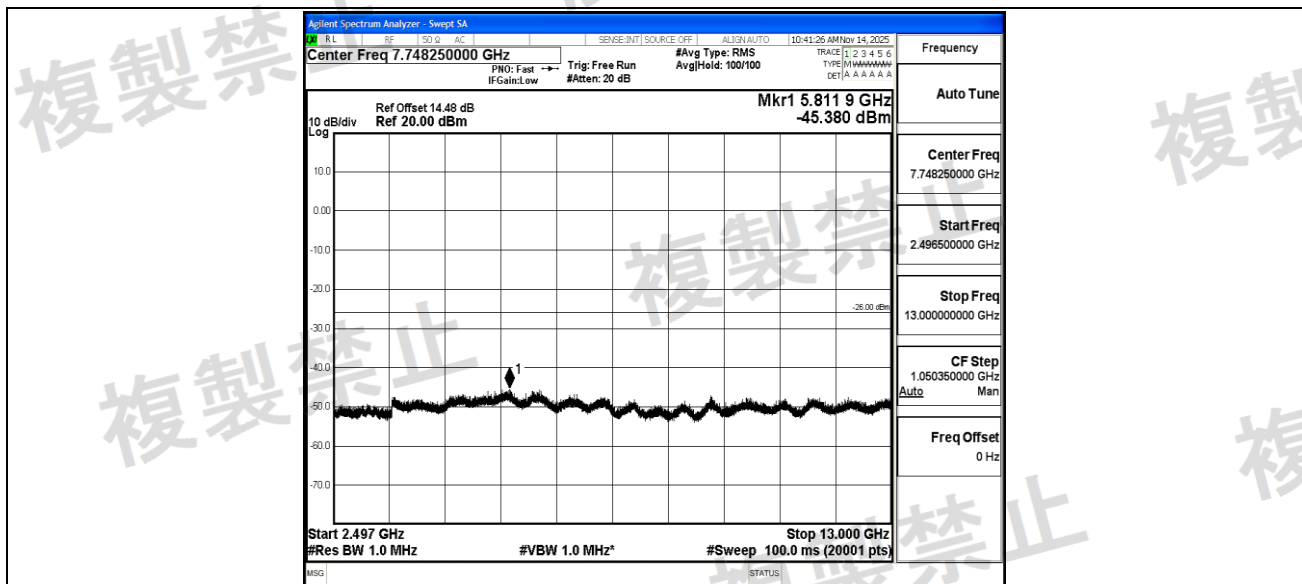
NTNV_2DH5_Ant1_2480_2387~2400



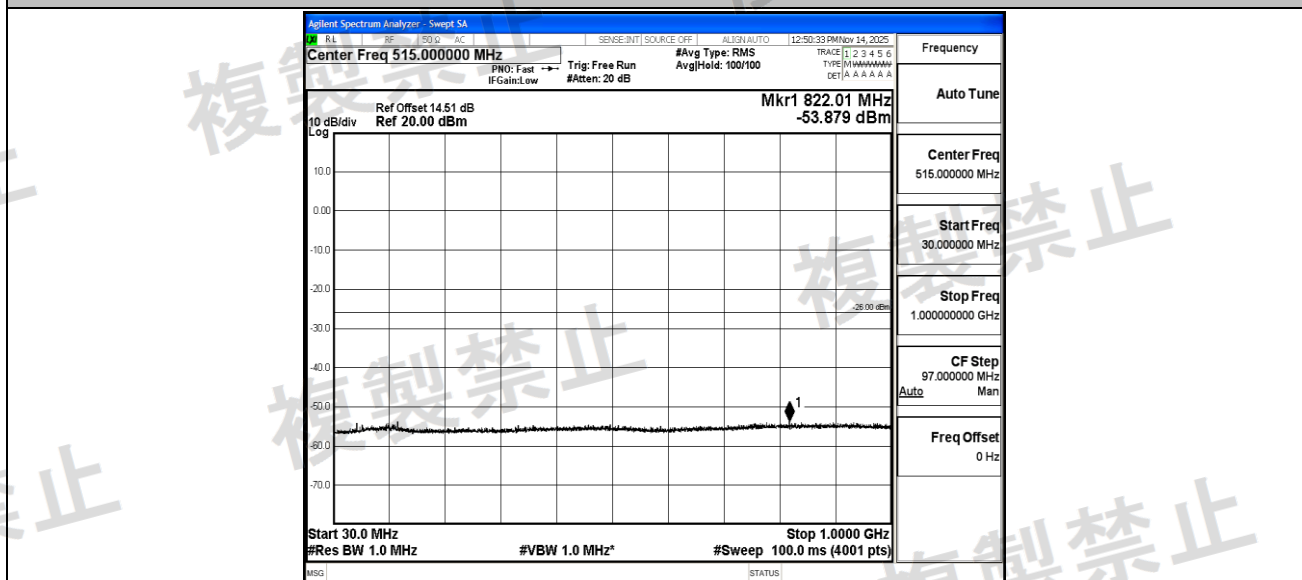
NTNV_2DH5_Ant1_2480_2483.5~2496.5



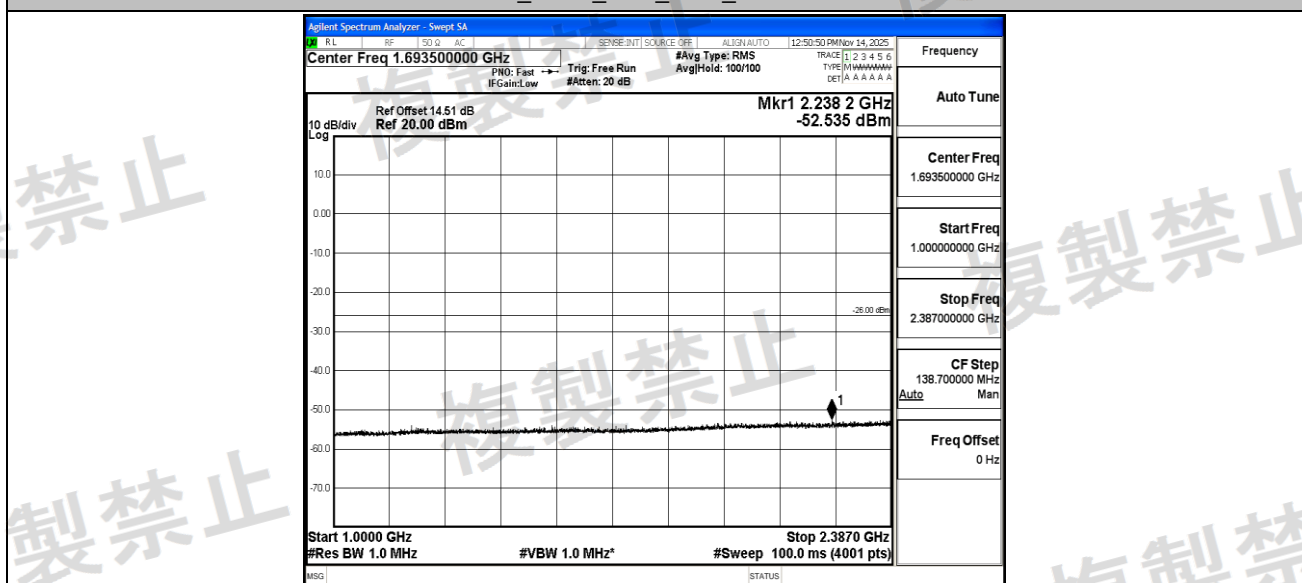
NTNV_2DH5_Ant1_2480_2496.5~13000



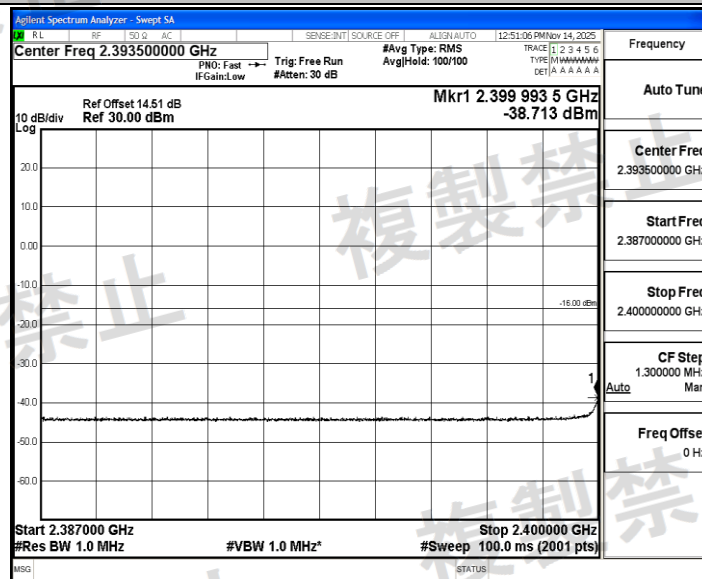
NTNV_3DH5_Ant1_2402_30~1000



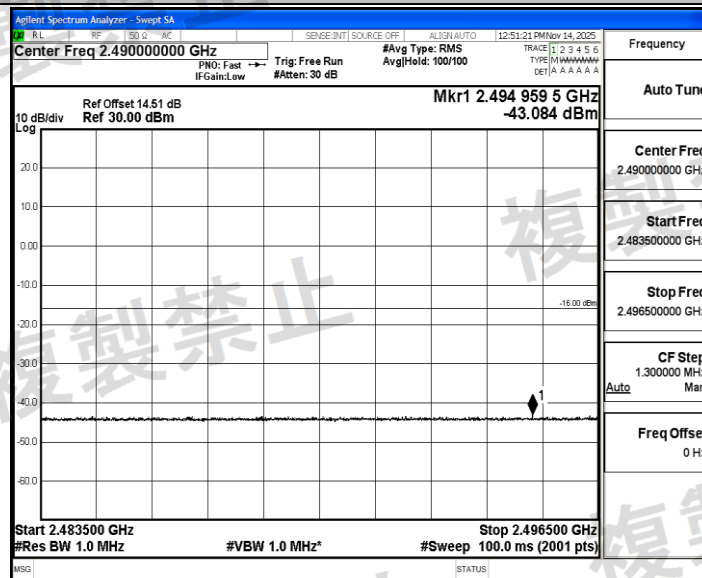
NTNV_3DH5_Ant1_2402_1000~2387



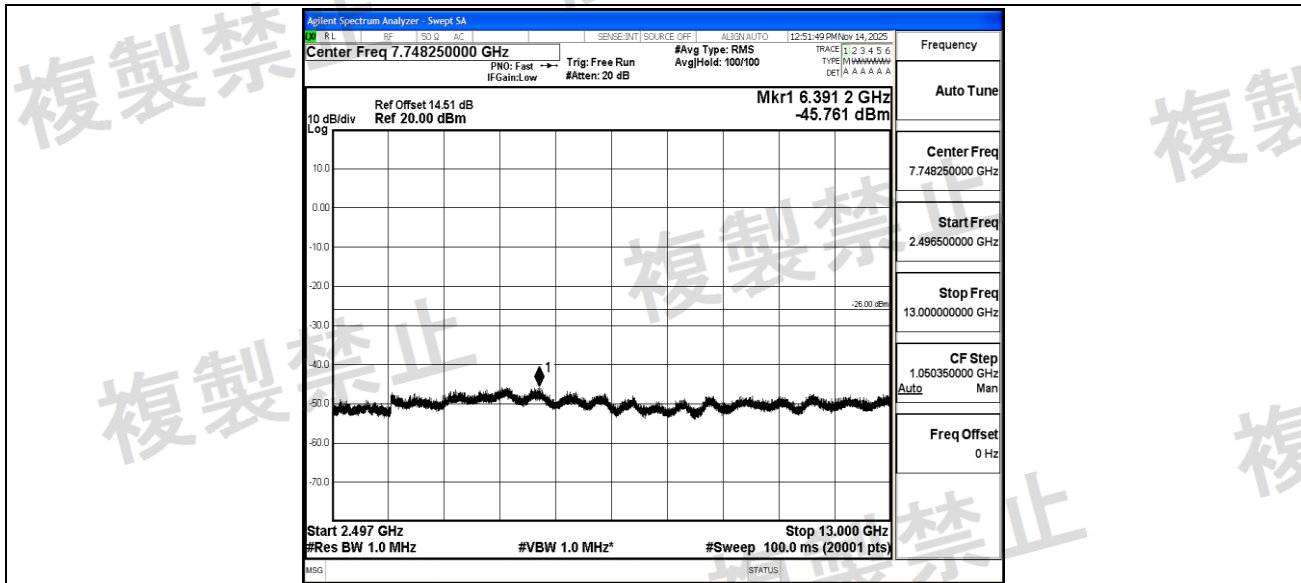
NTNV_3DH5_Ant1_2402_2387~2400



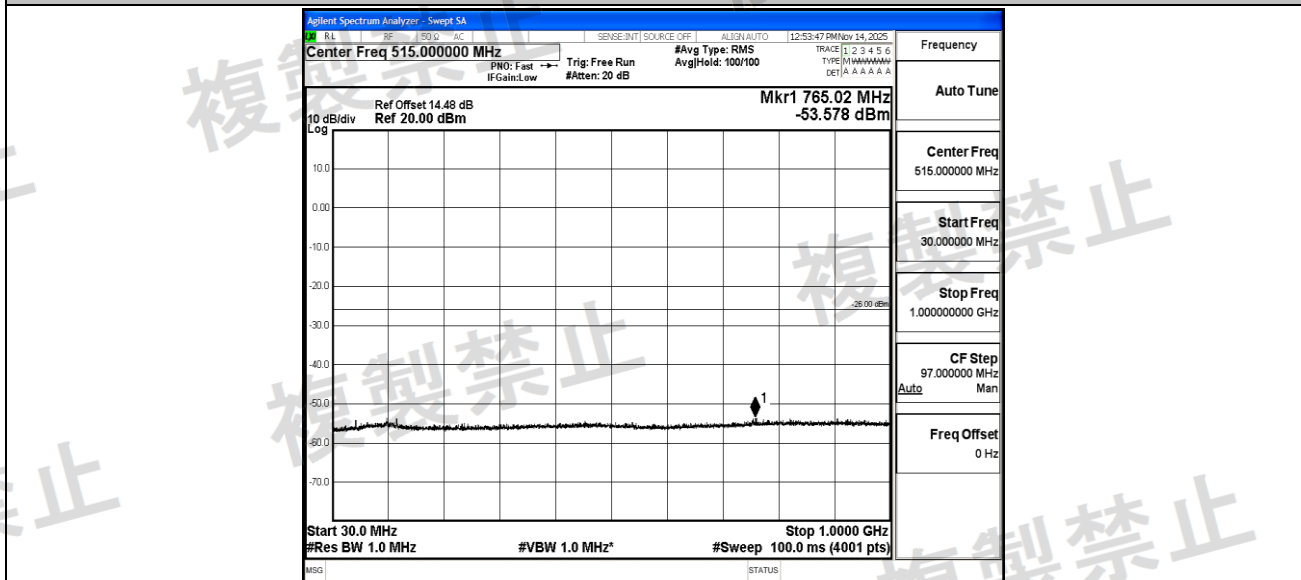
NTNV_3DH5_Ant1_2402_2483.5~2496.5



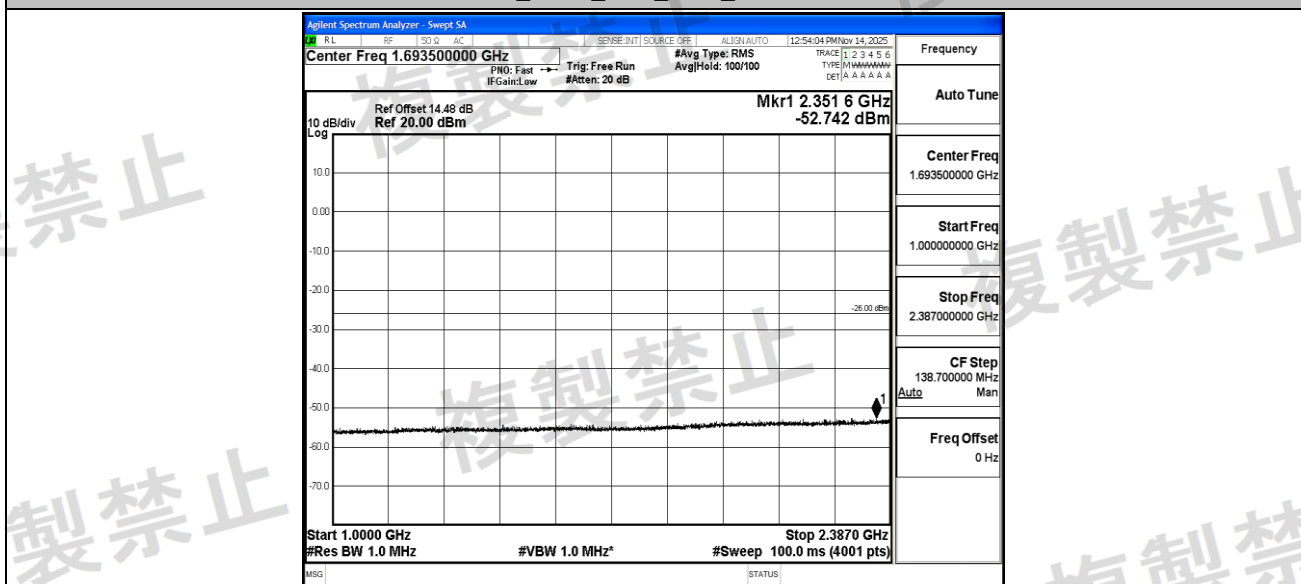
NTNV_3DH5_Ant1_2402_2496.5~13000



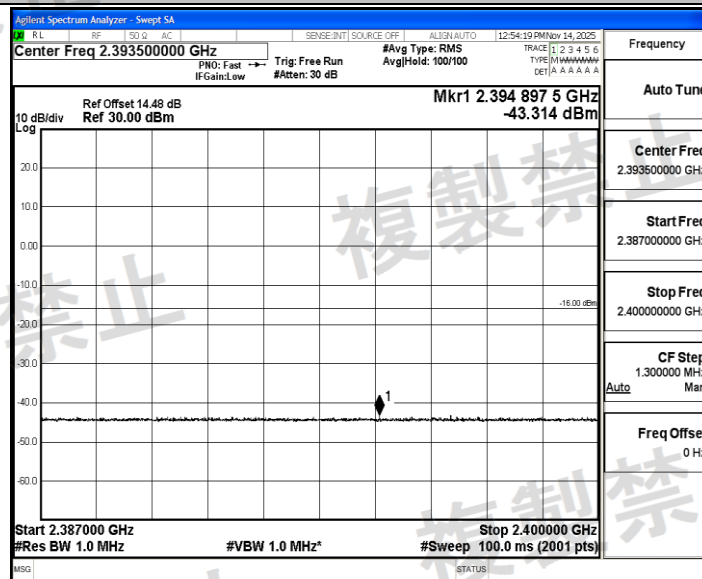
NTNV_3DH5_Ant1_2441_30~1000



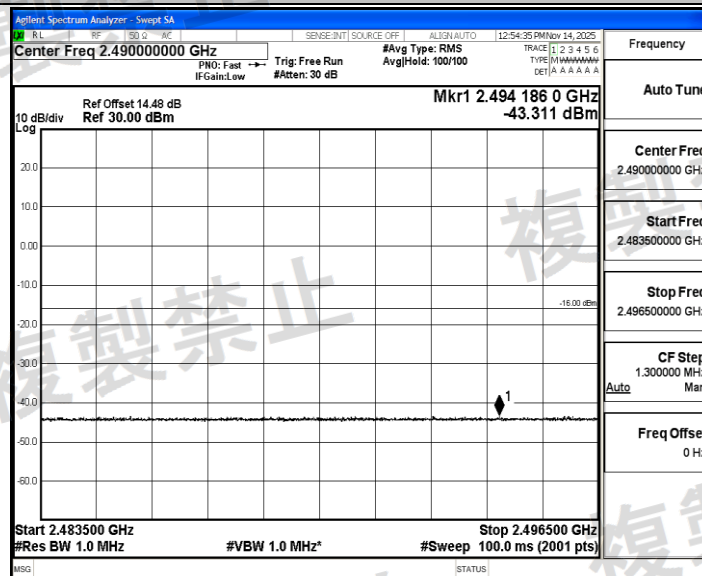
NTNV_3DH5_Ant1_2441_1000~2387



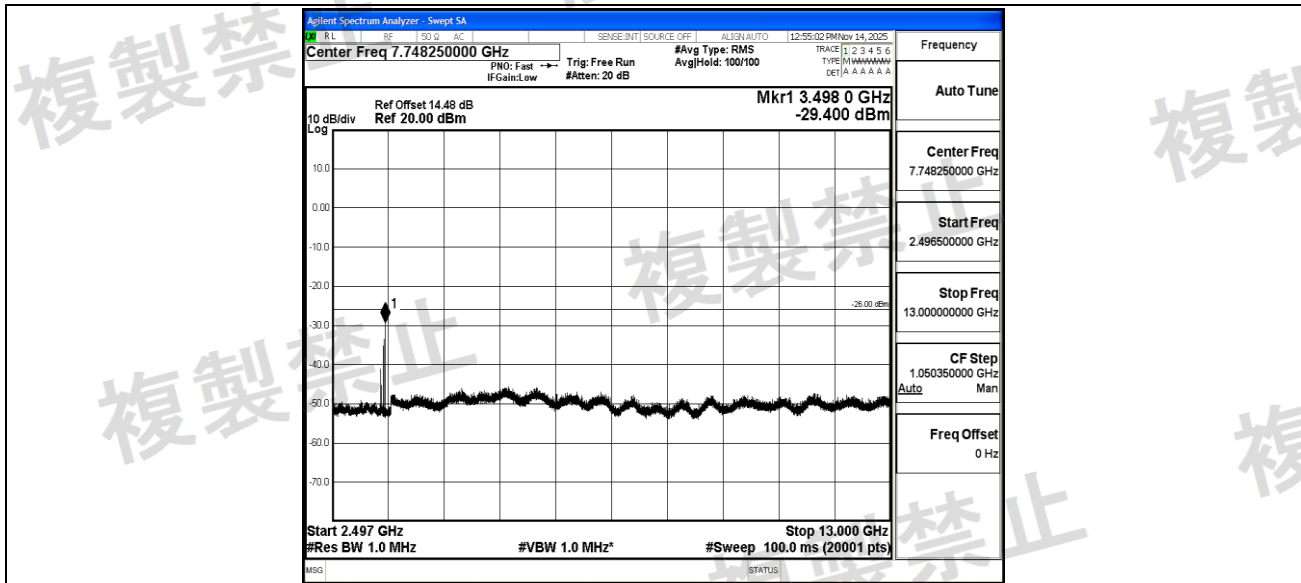
NTNV_3DH5_Ant1_2441_2387~2400



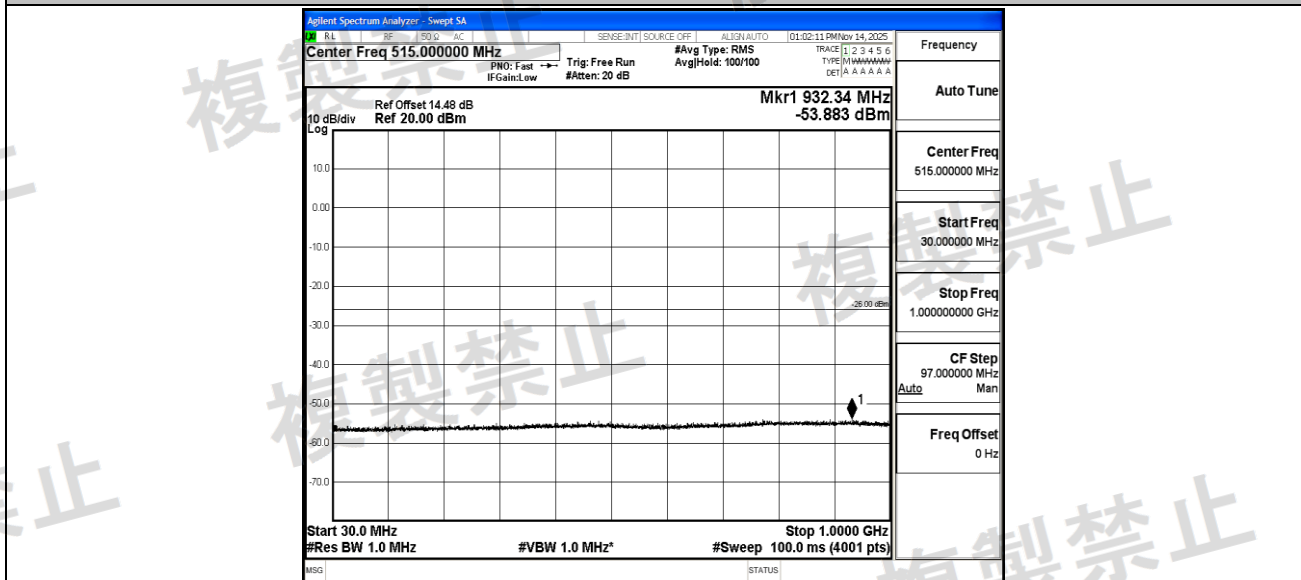
NTNV_3DH5_Ant1_2441_2483.5~2496.5



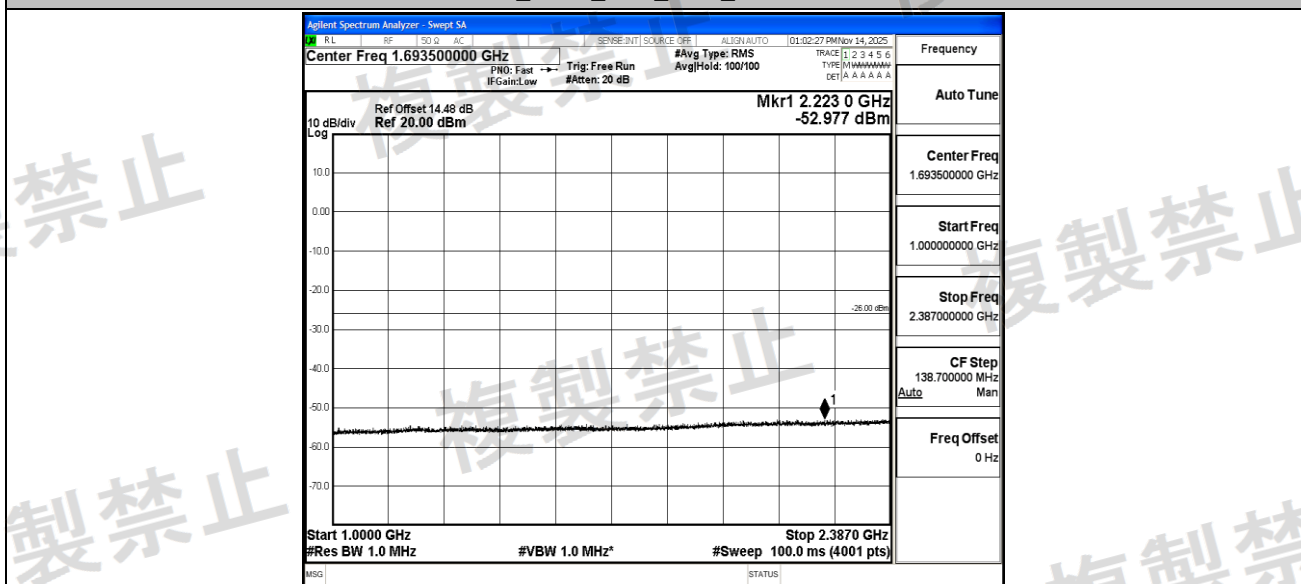
NTNV_3DH5_Ant1_2441_2496.5~13000



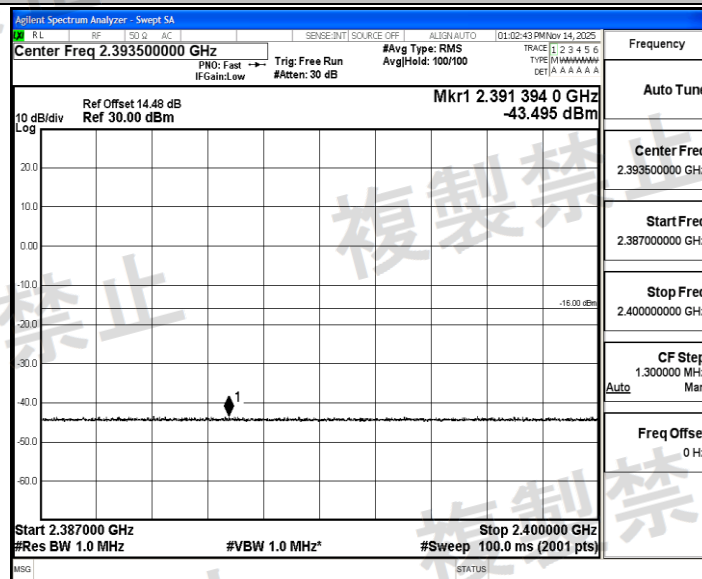
NTNV_3DH5_Ant1_2480_30~1000



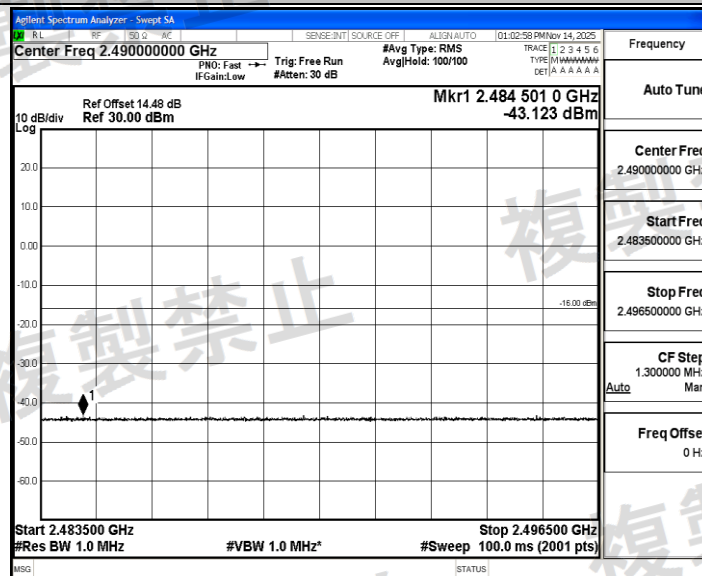
NTNV_3DH5_Ant1_2480_1000~2387



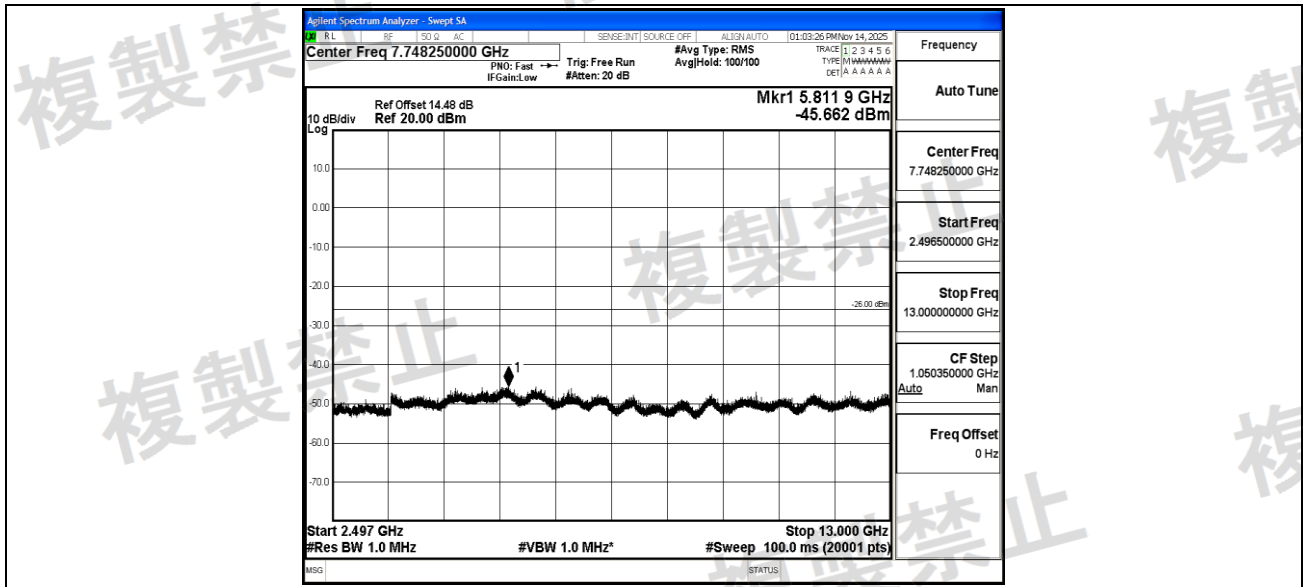
NTNV_3DH5_Ant1_2480_2387~2400



NTNV_3DH5_Ant1_2480_2483.5~2496.5



NTNV_3DH5_Ant1_2480_2496.5~13000



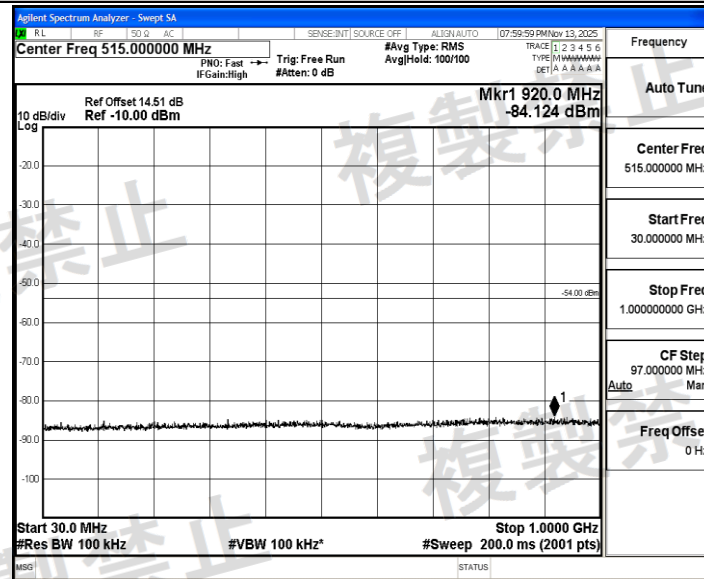
A.6 Spurious Emission of RX

Test Result

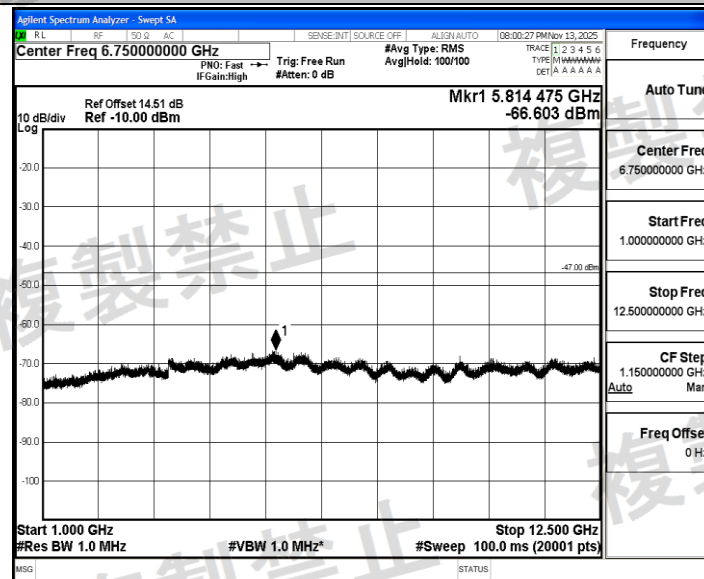
TestCondition	TestMode	Antenna	Frequency [MHz]	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	DH5	Ant1	2402	30~1000	-84.12	≤-54	0.00387	≤4	PASS
				1000~12500	-66.6	≤-47	0.21878	≤20	PASS
			2441	30~1000	-84.18	≤-54	0.00382	≤4	PASS
				1000~12500	-66.78	≤-47	0.20989	≤20	PASS
			2480	30~1000	-81.63	≤-54	0.00687	≤4	PASS
				1000~12500	-67.35	≤-47	0.18408	≤20	PASS
	2DH5	Ant1	2402	30~1000	-83.9	≤-54	0.00407	≤4	PASS
				1000~12500	-66.55	≤-47	0.22131	≤20	PASS
			2441	30~1000	-83.96	≤-54	0.00402	≤4	PASS
				1000~12500	-67.11	≤-47	0.19454	≤20	PASS
			2480	30~1000	-83.82	≤-54	0.00415	≤4	PASS
				1000~12500	-66.93	≤-47	0.20277	≤20	PASS
	3DH5	Ant1	2402	30~1000	-84.26	≤-54	0.00375	≤4	PASS
				1000~12500	-66.68	≤-47	0.21478	≤20	PASS
			2441	30~1000	-84.25	≤-54	0.00376	≤4	PASS
				1000~12500	-67.07	≤-47	0.19634	≤20	PASS
			2480	30~1000	-84.06	≤-54	0.00393	≤4	PASS
				1000~12500	-65.64	≤-47	0.27290	≤20	PASS

Test Graphs

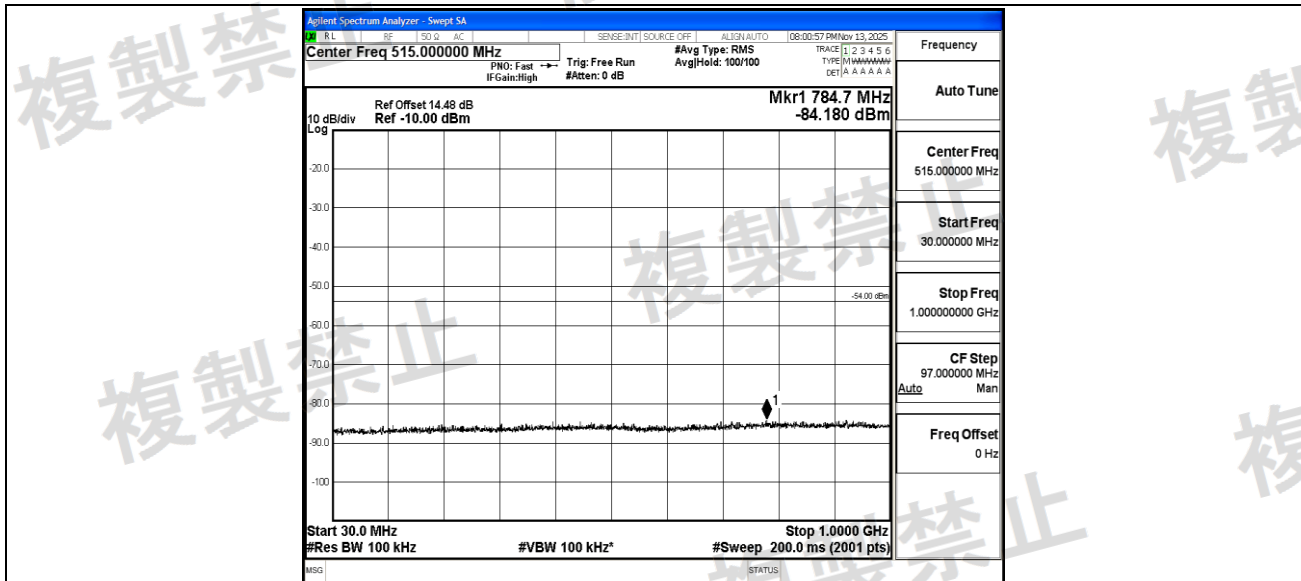
NTNV_DH5_Ant1_2402_30~1000



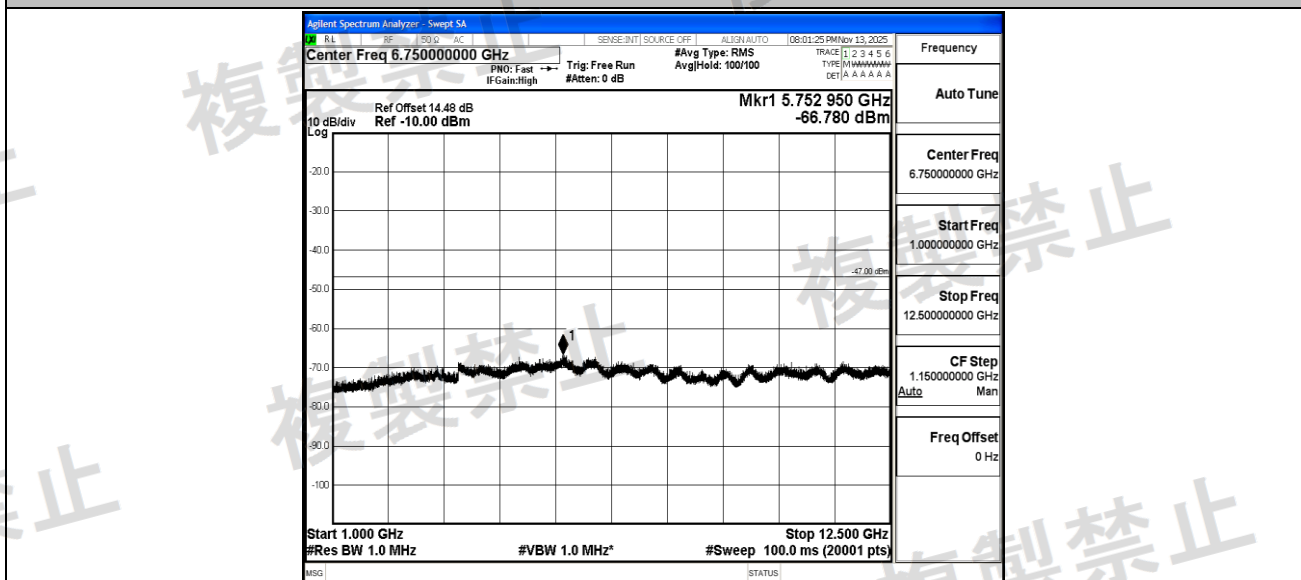
NTNV_DH5_Ant1_2402_1000~12500



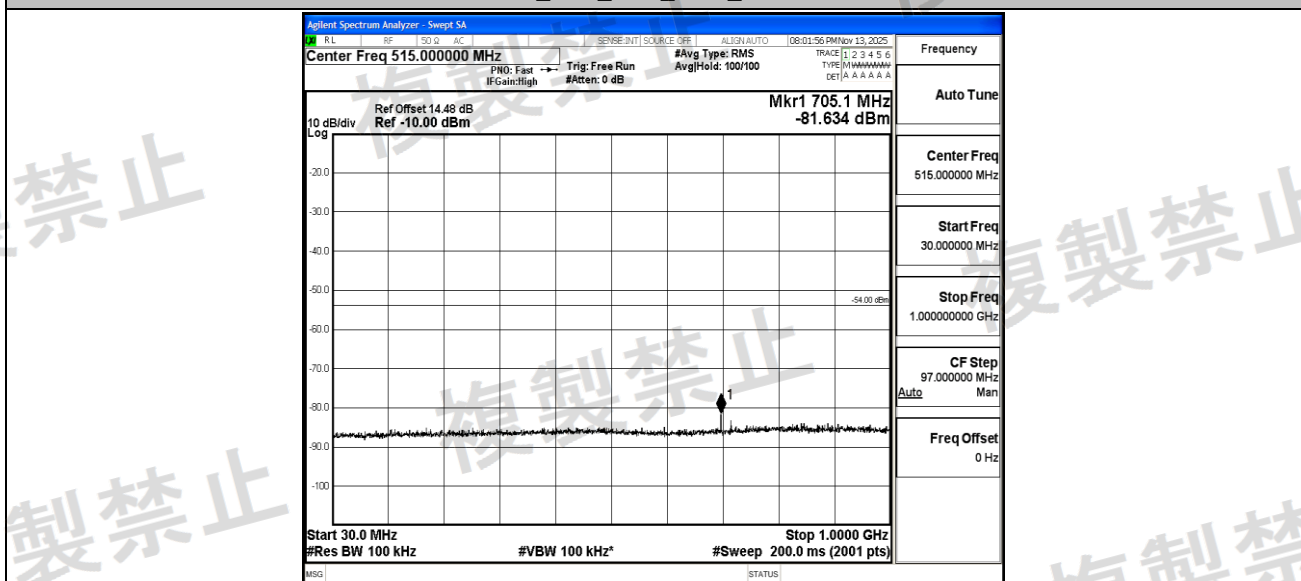
NTNV_DH5_Ant1_2441_30~1000



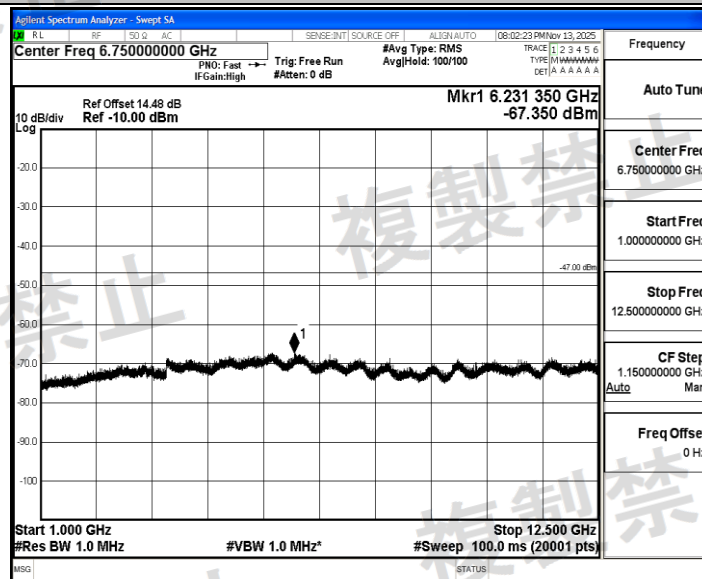
NTNV_DH5_Ant1_2441_1000~12500



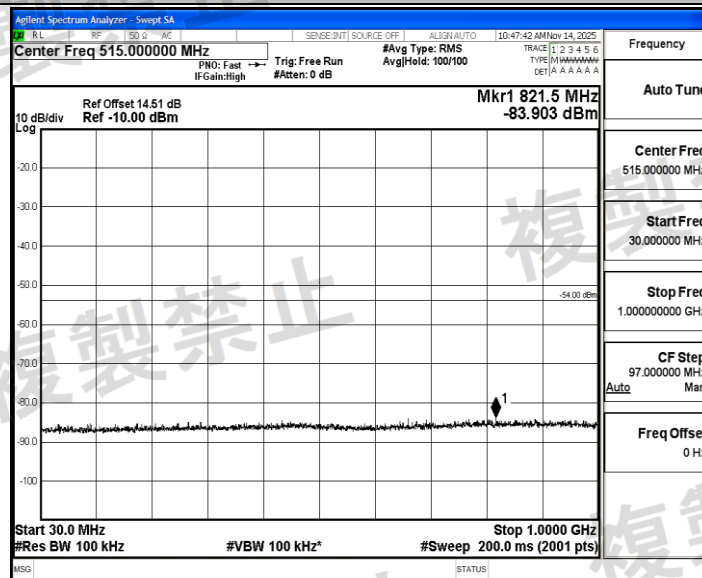
NTNV_DH5_Ant1_2480_30~1000



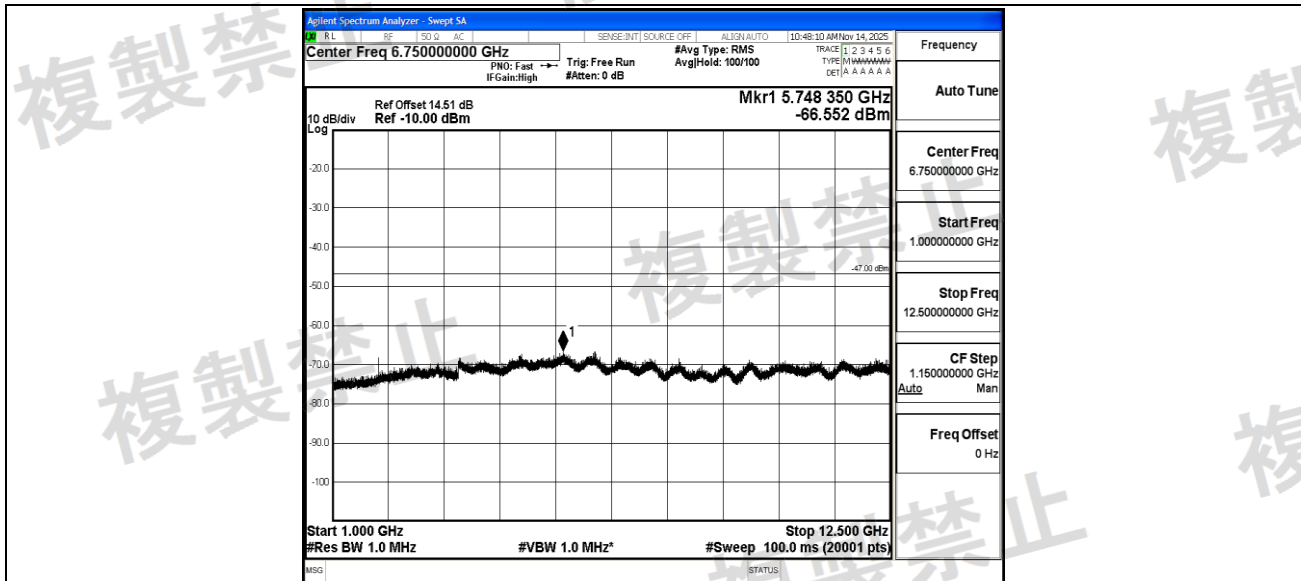
NTNV_DH5_Ant1_2480_1000~12500



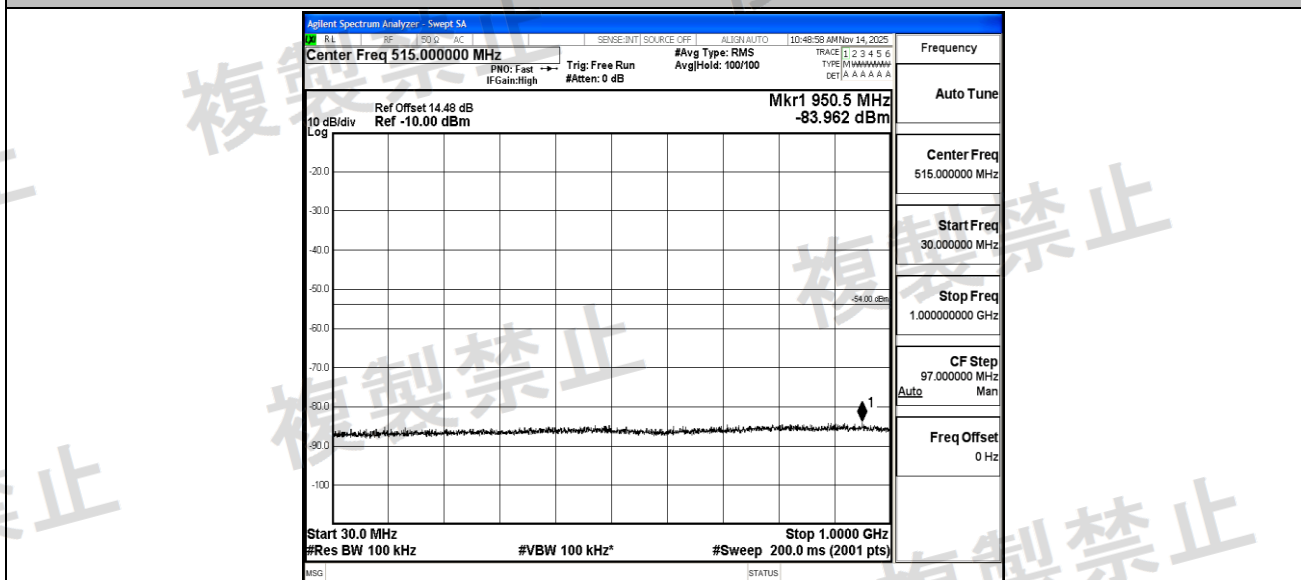
NTNV_2DH5_Ant1_2402_30~1000



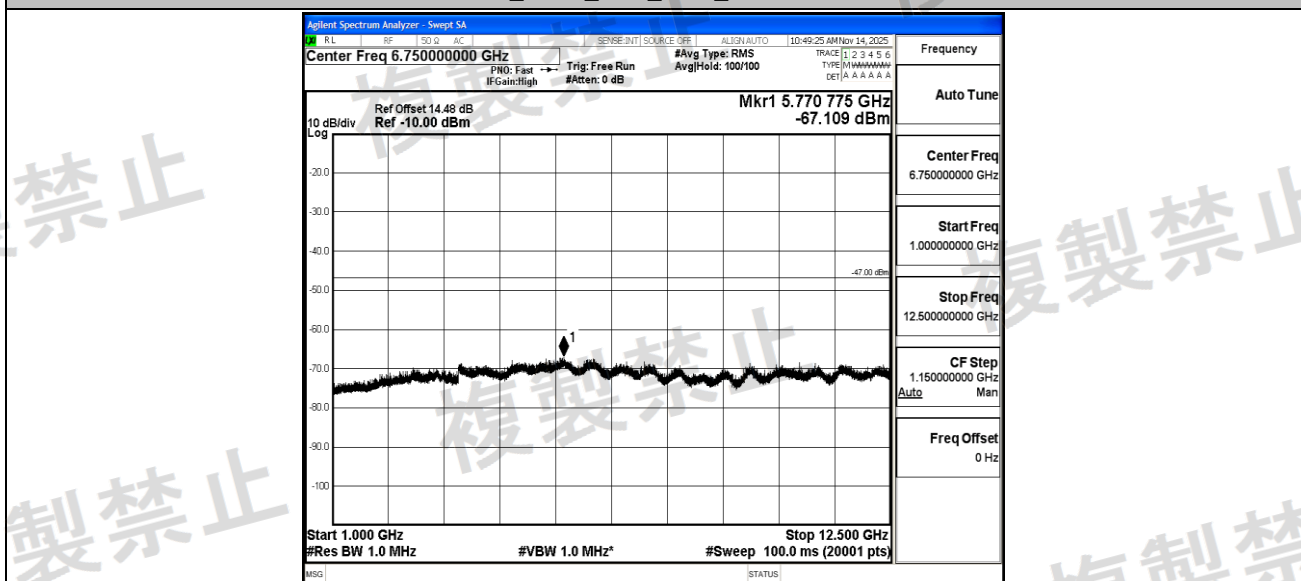
NTNV_2DH5_Ant1_2402_1000~12500



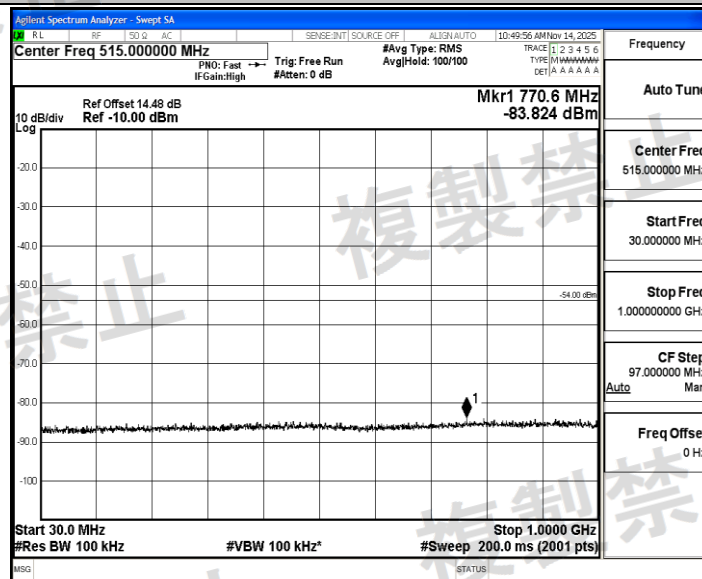
NTNV_2DH5_Ant1_2441_30~1000



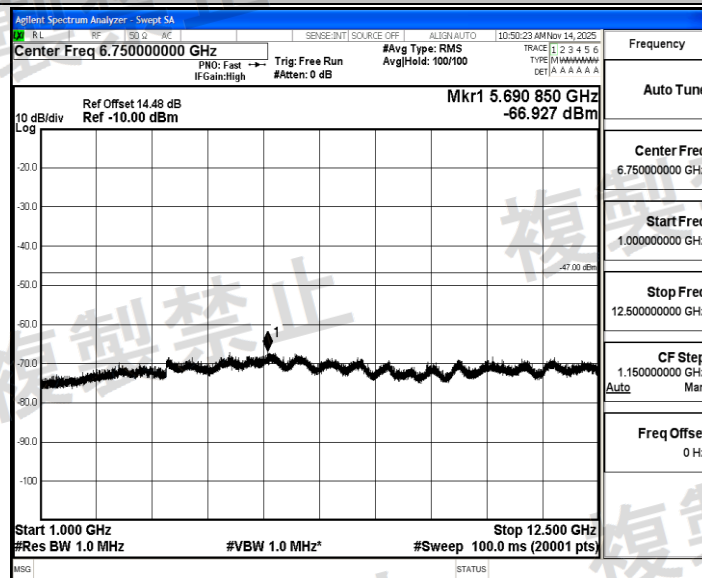
NTNV_2DH5_Ant1_2441_1000~12500



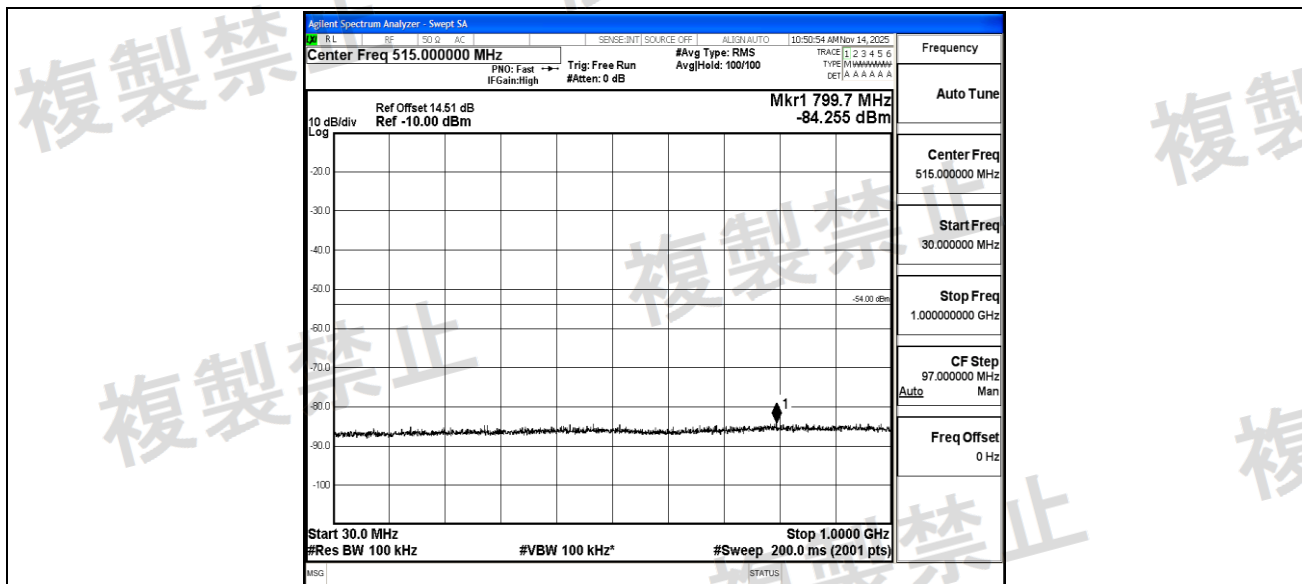
NTNV_2DH5_Ant1_2480_30~1000



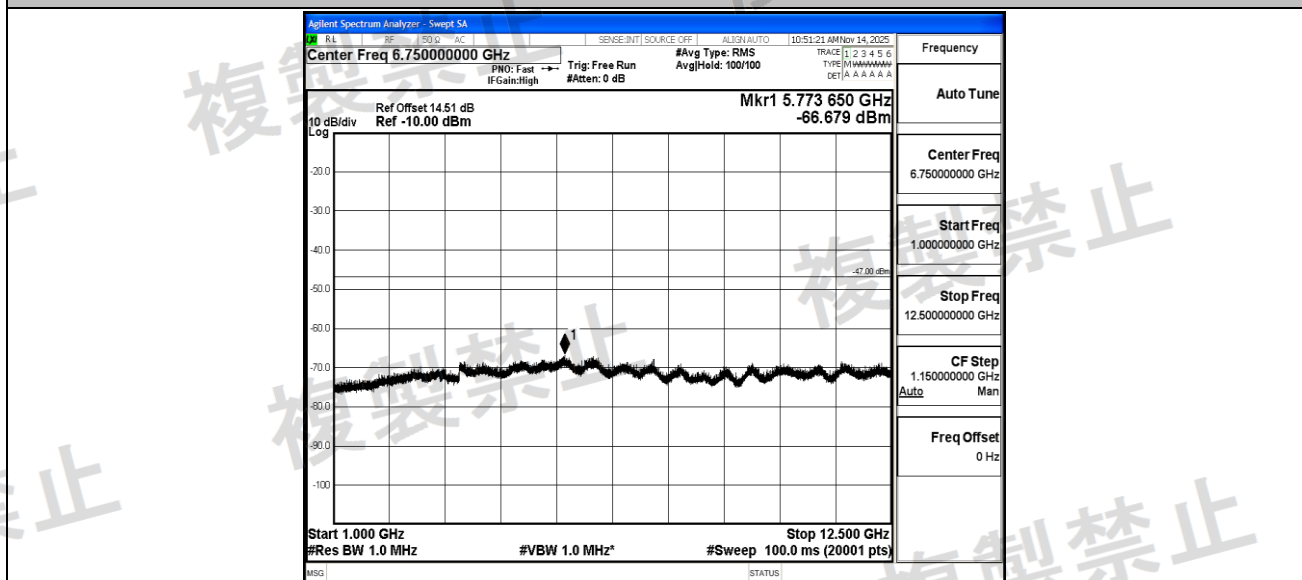
NTNV_2DH5_Ant1_2480_1000~12500



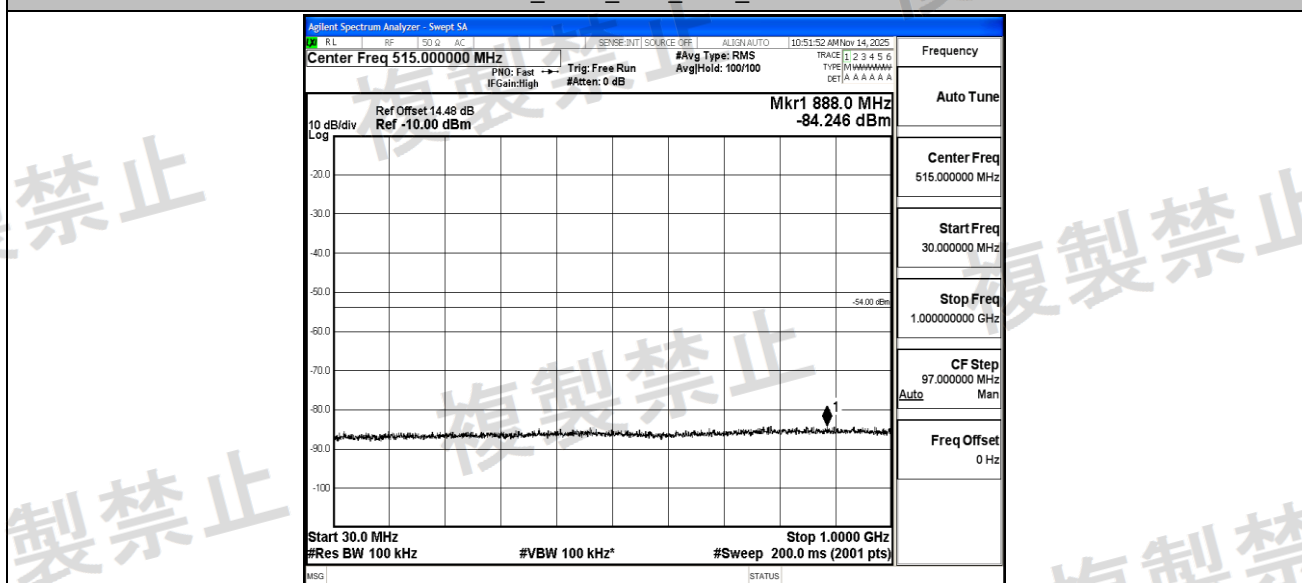
NTNV_3DH5_Ant1_2402_30~1000

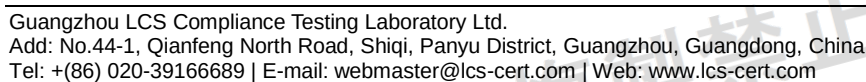


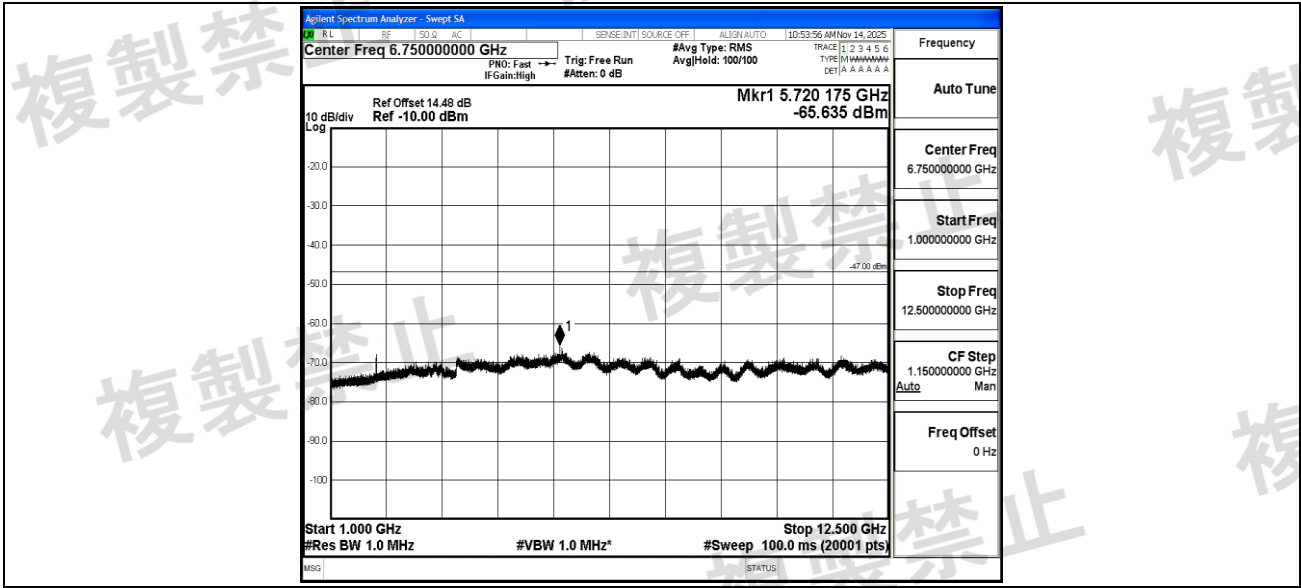
NTNV_3DH5_Ant1_2402_1000~12500



NTNV_3DH5_Ant1_2441_30~1000







A.7 Dwell Time

Test Result

TestCondition	TestMode	Antenna	Frequency [MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit [s]	Verdict
NTNV	DH5	Ant1	Hop	2.79	120	0.335	≤0.4	PASS
	2DH5	Ant1	Hop	2.90	97	0.281	≤0.4	PASS
	3DH5	Ant1	Hop	2.90	99	0.287	≤0.4	PASS

Test Graphs

