

Appendix A for BT Test Data

Product Name: OWS Bluetooth Headphones

Test Model: DKOD-01

Environmental Conditions

Temperature:	23.8°C
Relative Humidity:	52.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Suichao Lai
Supervised by:	Yan Chen

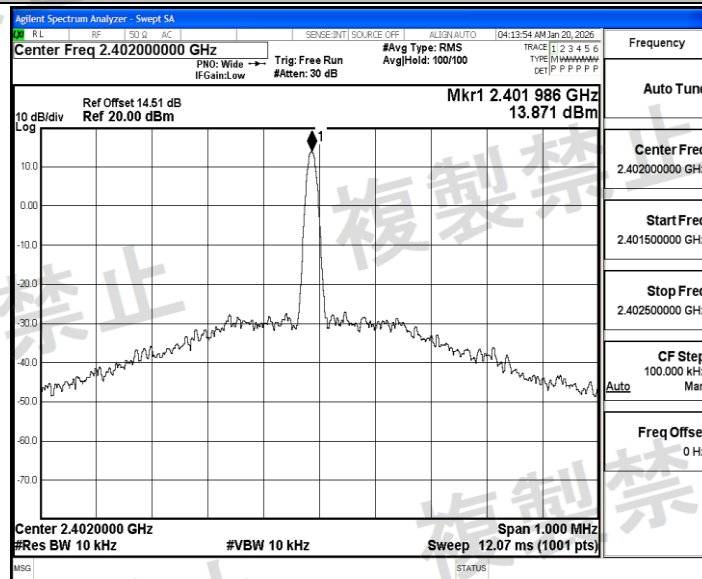
A.1 Frequency_Error

Test Result

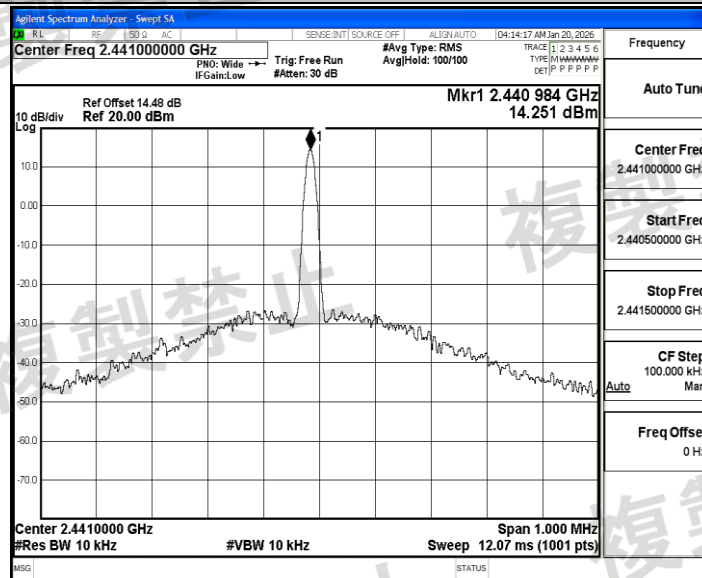
TestCondition	TestMode	Antenna	Frequency[MHz]	Result[ppm]	Limit[ppm]	Verdict
NTNV	Frequency Error	Ant1	2402	-5.82848	±50	PASS
			2441	-6.55469	±50	PASS
			2480	-6.85484	±50	PASS

Test Graphs

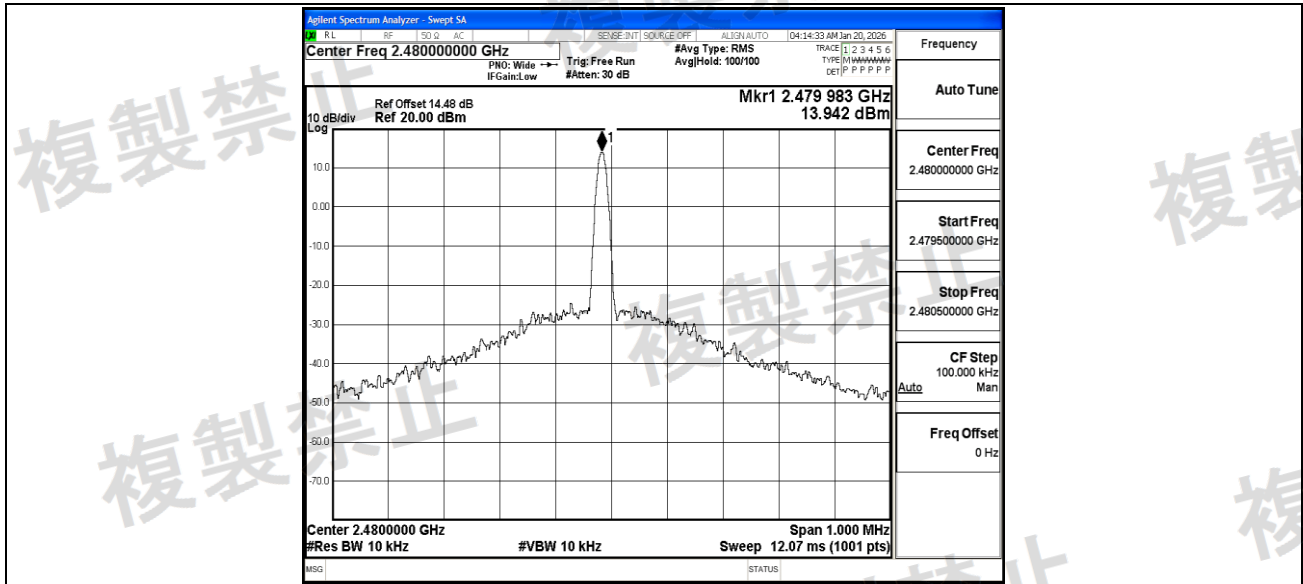
NTNV_Ant1_2402



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	1.77	1.503	0.027	3	-10.00%	+20%
Hopping-Tx (2Mbps)	0.03	1.45	1.396	0.025	3	-16.67%	+20%
Hopping-Tx (3Mbps)	0.03	1.39	1.377	0.025	3	-16.67%	+20%
Conclusion: PASS							

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

Antenna power Result = Measured Power / Spreading bandwidth

Spread Bandwidth (DH5) = 71.252MHz, Spread Bandwidth (2DH5) = 71.212MHz,

Spread Bandwidth (3DH5) = 71.235MHz

Duty cycle=77.1%

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



A.3 Occupied Bandwidth

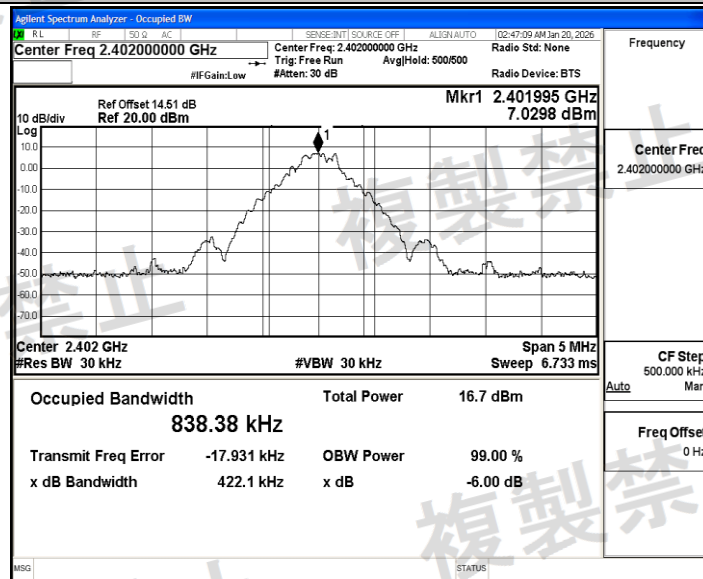
Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	2402	0.838	≤83.5	PASS
			2441	0.838	≤83.5	PASS
			2480	0.842	≤83.5	PASS
	2DH5	Ant1	2402	1.152	≤83.5	PASS
			2441	1.151	≤83.5	PASS
			2480	1.152	≤83.5	PASS
	3DH5	Ant1	2402	1.159	≤83.5	PASS
			2441	1.161	≤83.5	PASS
			2480	1.160	≤83.5	PASS

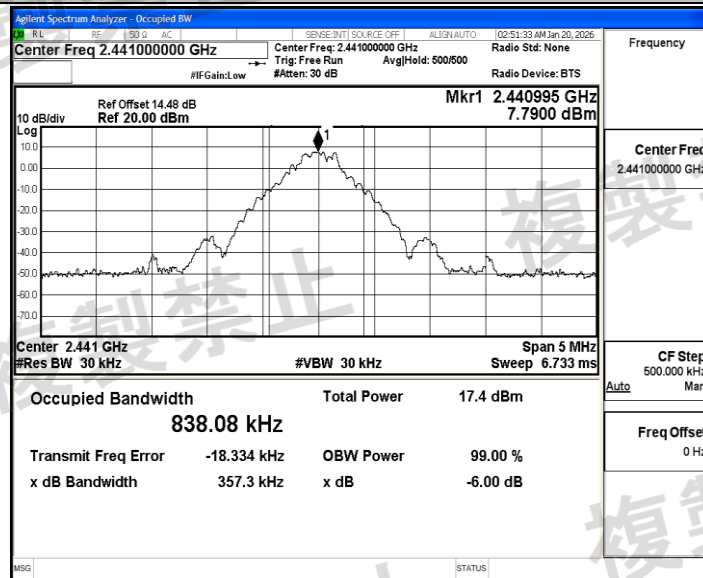
TestCondition	TestMode	Antenna	Frequency[MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	Hop	78.669	≤83.5	PASS
	2DH5	Ant1	Hop	78.747	≤83.5	PASS
	3DH5	Ant1	Hop	78.775	≤83.5	PASS

Test Graphs

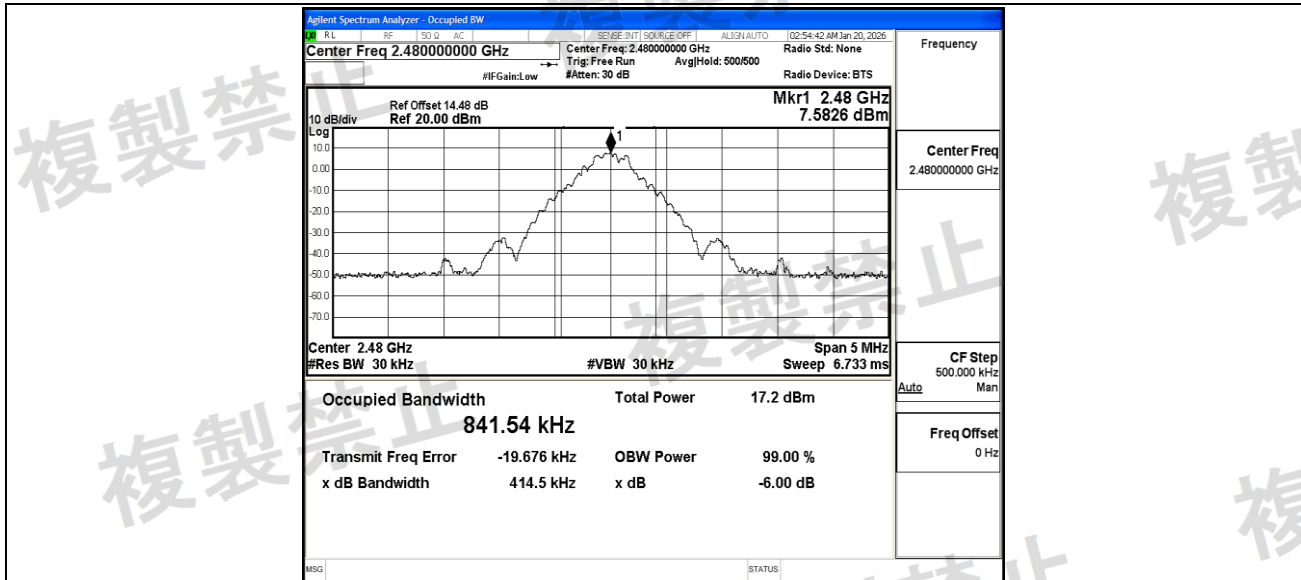
NTNV_DH5_Ant1_2402



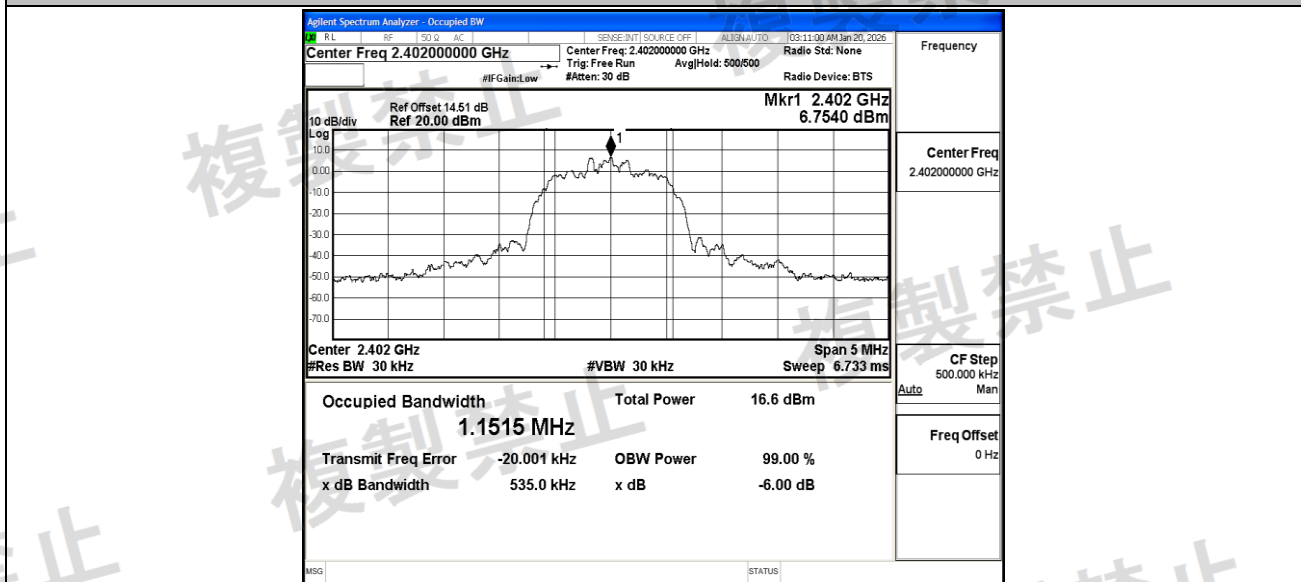
NTNV_DH5_Ant1_2441



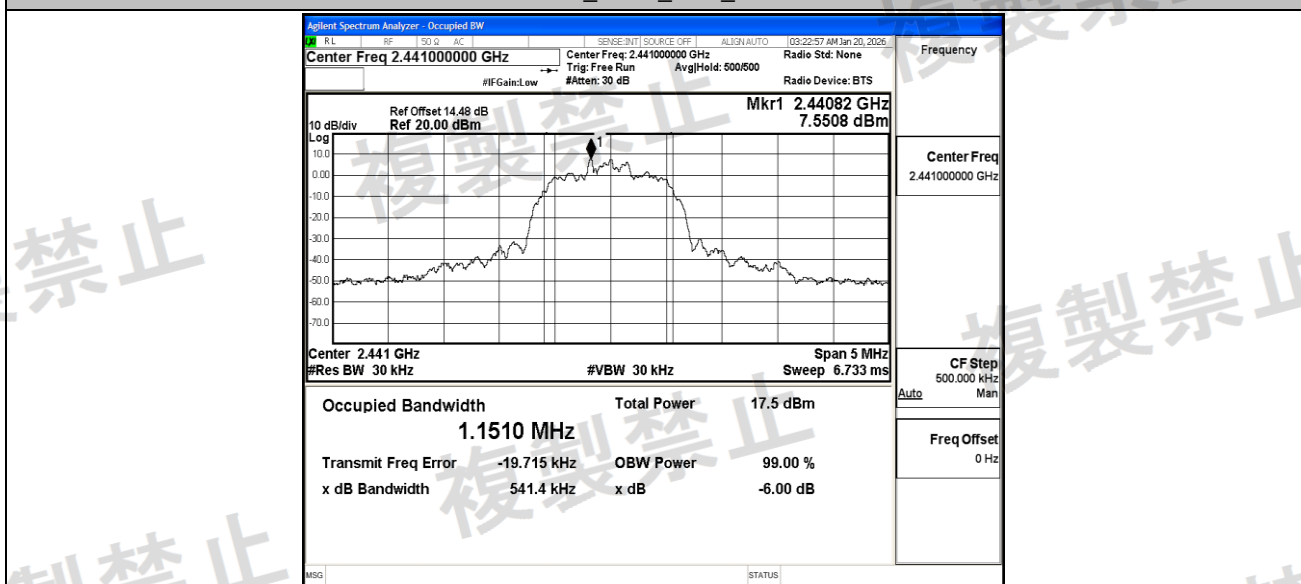
NTNV_DH5_Ant1_2480



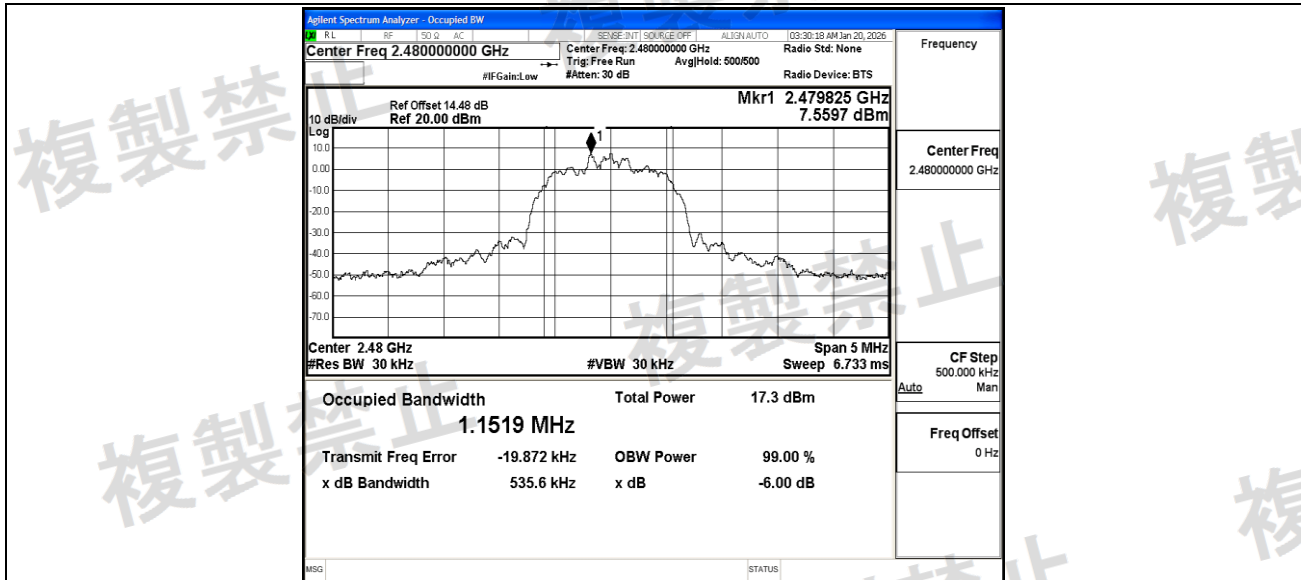
NTNV_2DH5_Ant1_2402



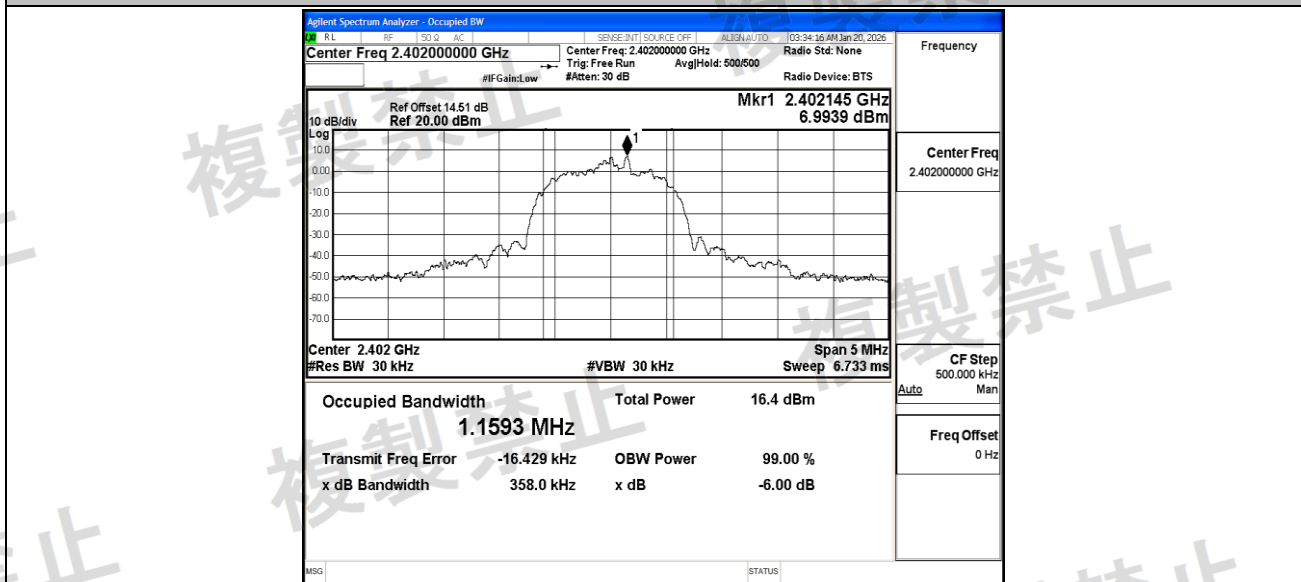
NTNV_2DH5_Ant1_2441



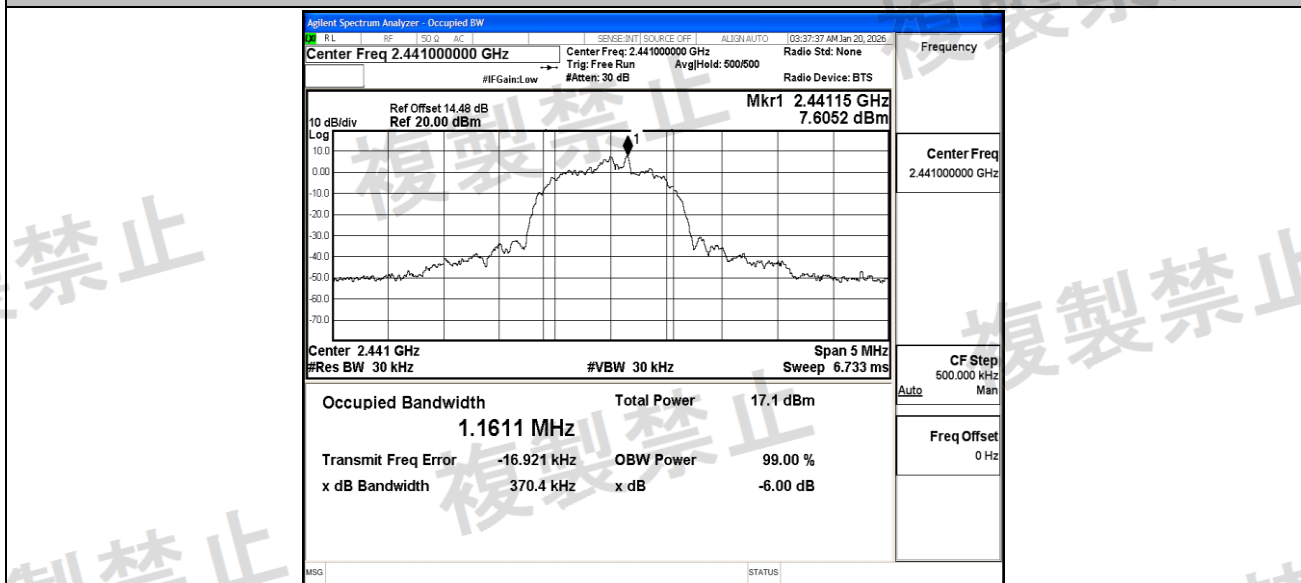
NTNV_2DH5_Ant1_2480



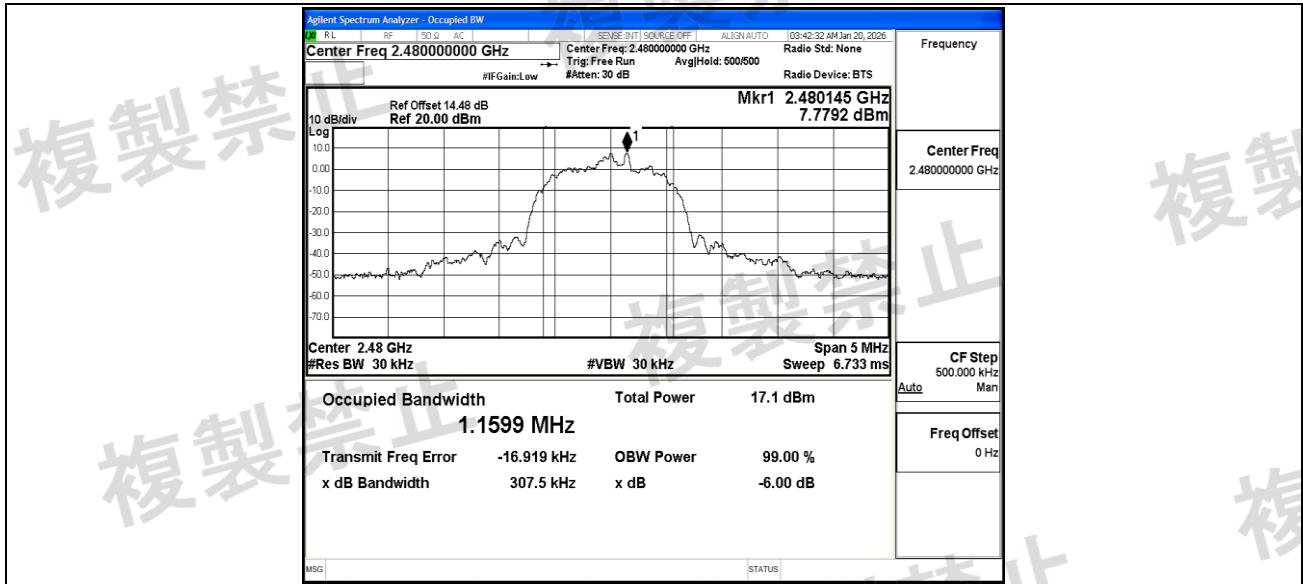
NTNV_3DH5_Ant1_2402



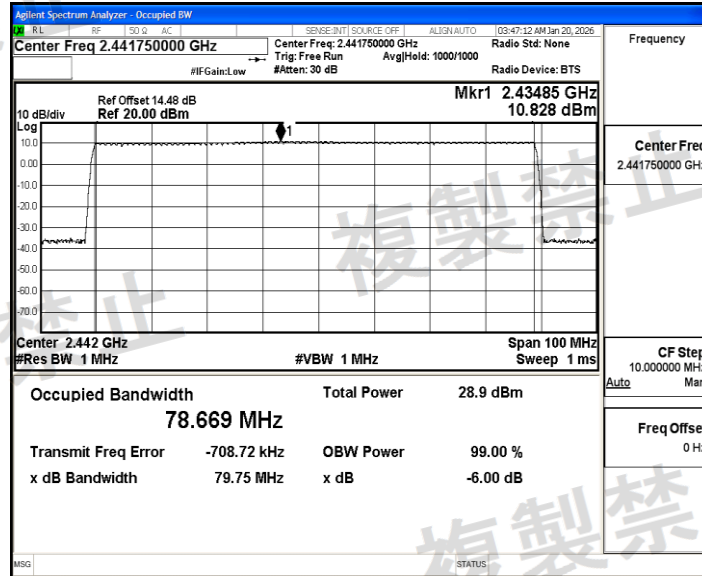
NTNV_3DH5_Ant1_2441



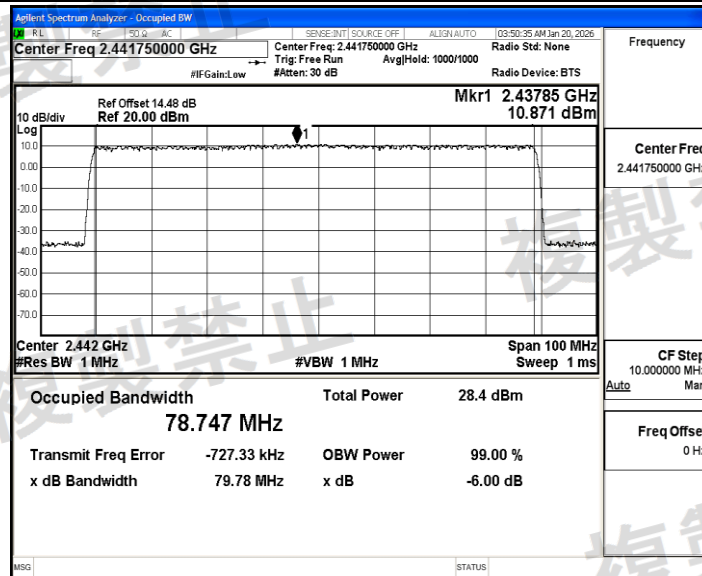
NTNV_3DH5_Ant1_2480



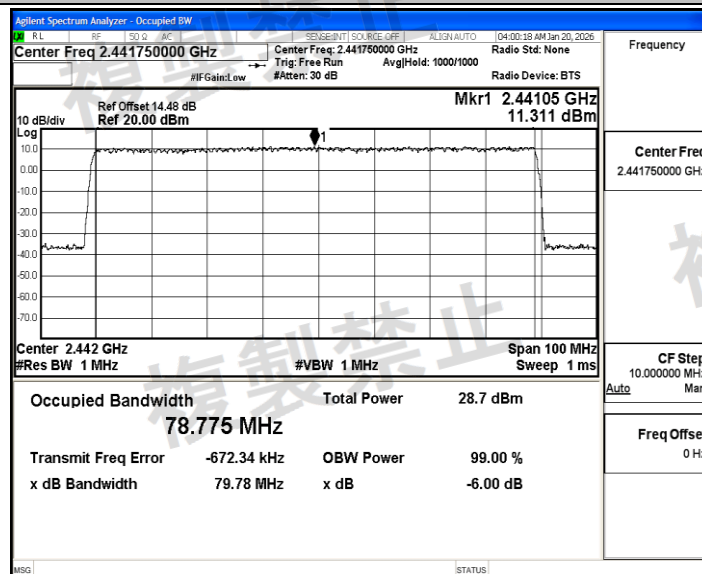
NTNV_DH5_Ant1_Hop



NTNV_2DH5_Ant1_Hop



NTNV_3DH5_Ant1_Hop



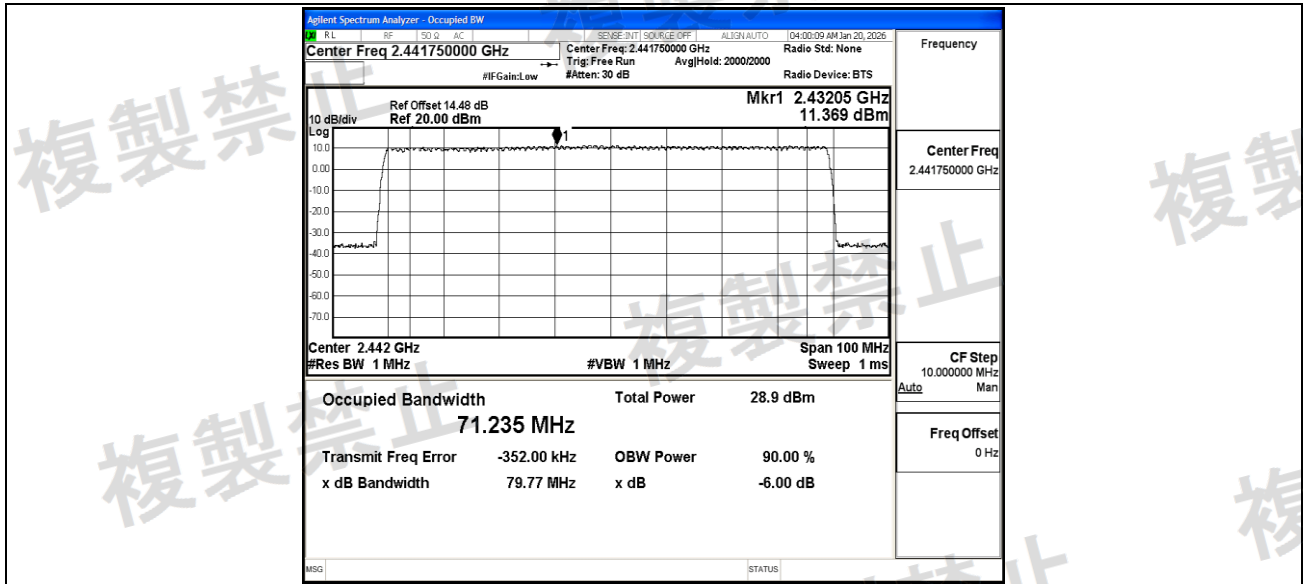
A.4 Spread Bandwidth

Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	Hop	71.252	---	PASS
	2DH5	Ant1	Hop	71.212	---	PASS
	3DH5	Ant1	Hop	71.235	---	PASS

Test Graphs





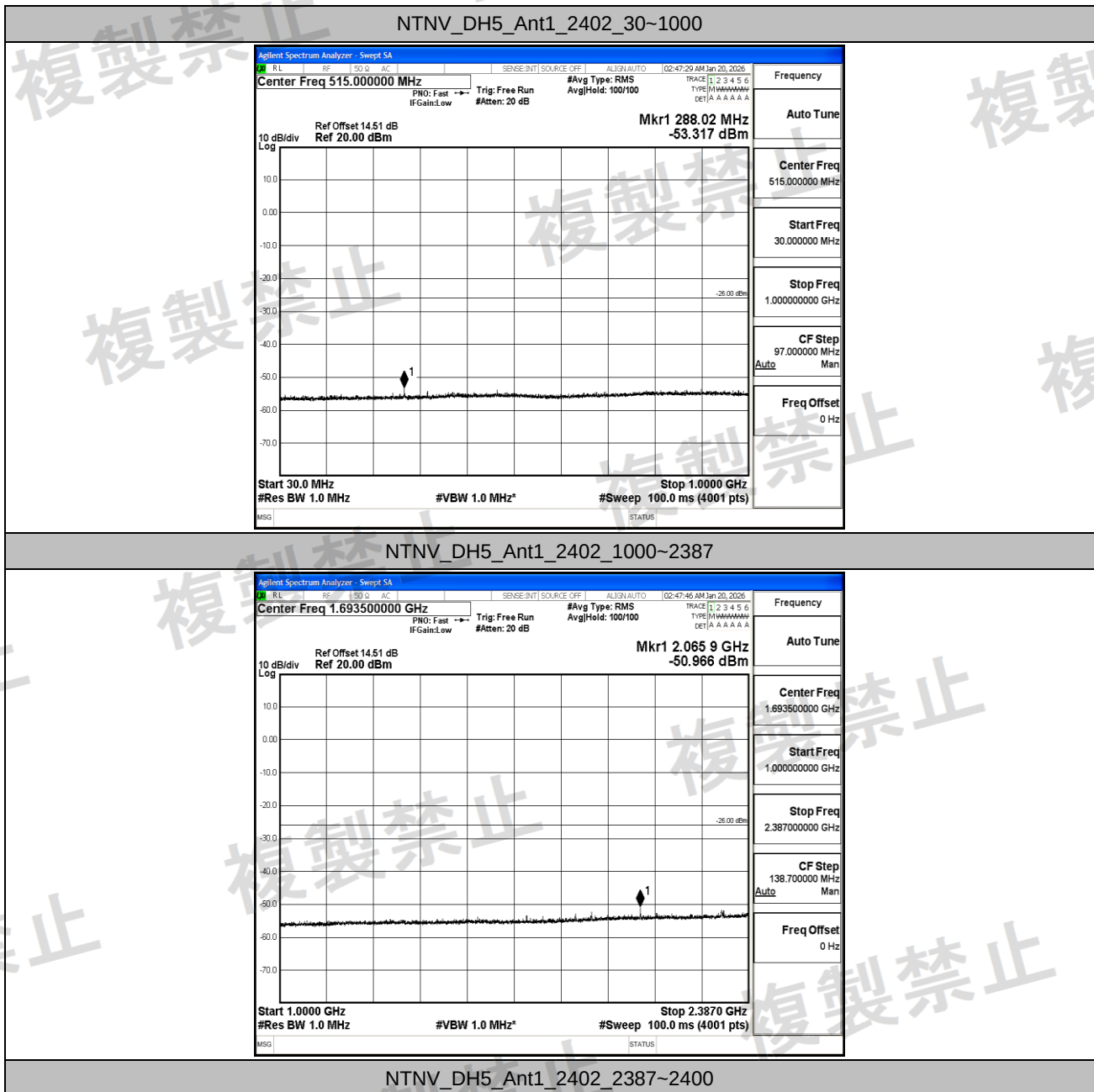
A.5 Spurious Emission of TX

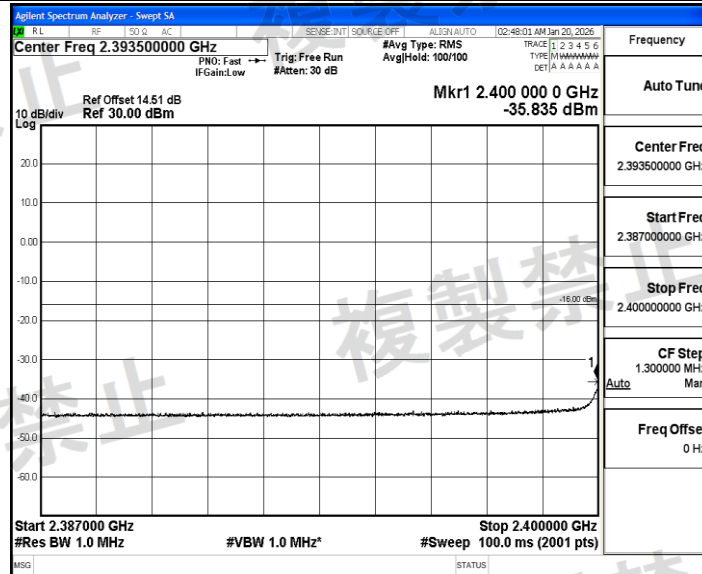
Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	DH5	Ant1	2402	30~1000	-53.32	≤-26	0.00466	≤2.5	PASS
				1000~2387	-50.97	≤-26	0.00800	≤2.5	PASS
				2387~2400	-35.84	≤-16	0.26062	≤25	PASS
				2483.5~2496.5	-42.99	≤-16	0.05023	≤25	PASS
				2496.5~13000	-30.67	≤-26	0.85704	≤2.5	PASS
			2441	30~1000	-53.66	≤-26	0.00431	≤2.5	PASS
				1000~2387	-50.21	≤-26	0.00953	≤2.5	PASS
				2387~2400	-43.26	≤-16	0.04721	≤25	PASS
				2483.5~2496.5	-43.00	≤-16	0.05012	≤25	PASS
				2496.5~13000	-28.87	≤-26	1.29718	≤2.5	PASS
			2480	30~1000	-53.73	≤-26	0.00424	≤2.5	PASS
				1000~2387	-51.00	≤-26	0.00794	≤2.5	PASS
				2387~2400	-43.25	≤-16	0.04732	≤25	PASS
				2483.5~2496.5	-42.59	≤-16	0.05508	≤25	PASS
				2496.5~13000	-28.29	≤-26	1.48252	≤2.5	PASS
	2DH5	Ant1	2402	30~1000	-53.39	≤-26	0.00458	≤2.5	PASS
				1000~2387	-51.96	≤-26	0.00637	≤2.5	PASS
				2387~2400	-28.90	≤-16	1.28825	≤25	PASS
				2483.5~2496.5	-43.15	≤-16	0.04842	≤25	PASS
				2496.5~13000	-32.50	≤-26	0.56234	≤2.5	PASS
			2441	30~1000	-53.52	≤-26	0.00445	≤2.5	PASS
				1000~2387	-51.57	≤-26	0.00697	≤2.5	PASS
				2387~2400	-43.47	≤-16	0.04498	≤25	PASS
				2483.5~2496.5	-43.31	≤-16	0.04667	≤25	PASS
				2496.5~13000	-28.87	≤-26	1.29718	≤2.5	PASS
			2480	30~1000	-53.09	≤-26	0.00491	≤2.5	PASS
				1000~2387	-51.25	≤-26	0.00750	≤2.5	PASS
				2387~2400	-43.17	≤-16	0.04819	≤25	PASS
				2483.5~2496.5	-42.47	≤-16	0.05662	≤25	PASS
				2496.5~13000	-27.95	≤-26	1.60325	≤2.5	PASS
	3DH5	Ant1	2402	30~1000	-53.69	≤-26	0.00428	≤2.5	PASS
				1000~2387	-49.99	≤-26	0.01002	≤2.5	PASS
				2387~2400	-28.77	≤-16	1.32739	≤25	PASS
				2483.5~2496.5	-43.07	≤-16	0.04932	≤25	PASS
				2496.5~13000	-30.73	≤-26	0.84528	≤2.5	PASS
			2441	30~1000	-53.57	≤-26	0.00440	≤2.5	PASS
				1000~2387	-49.80	≤-26	0.01047	≤2.5	PASS

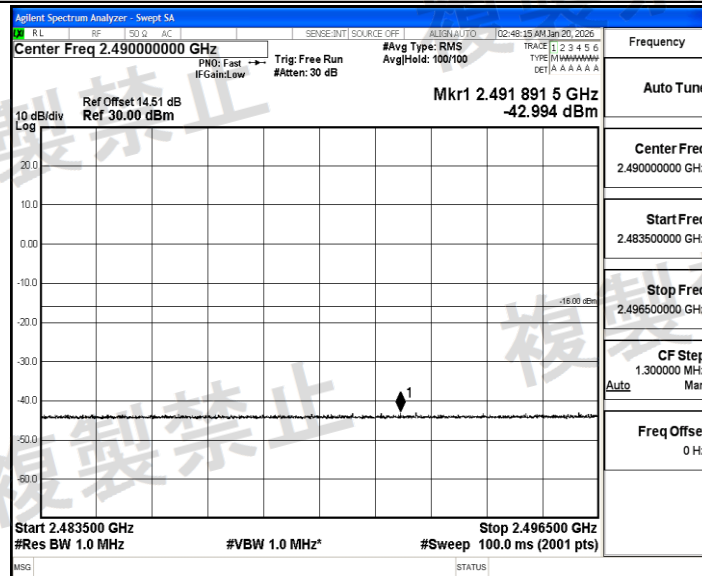
				2387~2400	-43.34	≤-16	0.04634	≤25	PASS
				2483.5~2496.5	-43.29	≤-16	0.04688	≤25	PASS
				2496.5~13000	-29.21	≤-26	1.19950	≤2.5	PASS
			2480	30~1000	-53.64	≤-26	0.00433	≤2.5	PASS
				1000~2387	-51.32	≤-26	0.00738	≤2.5	PASS
				2387~2400	-43.19	≤-16	0.04797	≤25	PASS
				2483.5~2496.5	-42.97	≤-16	0.05047	≤25	PASS
				2496.5~13000	-28.38	≤-26	1.45211	≤2.5	PASS

Test Graphs

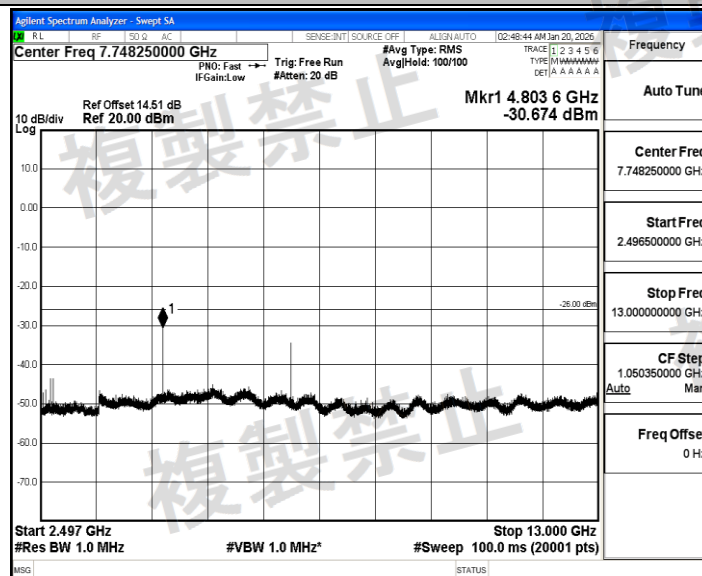




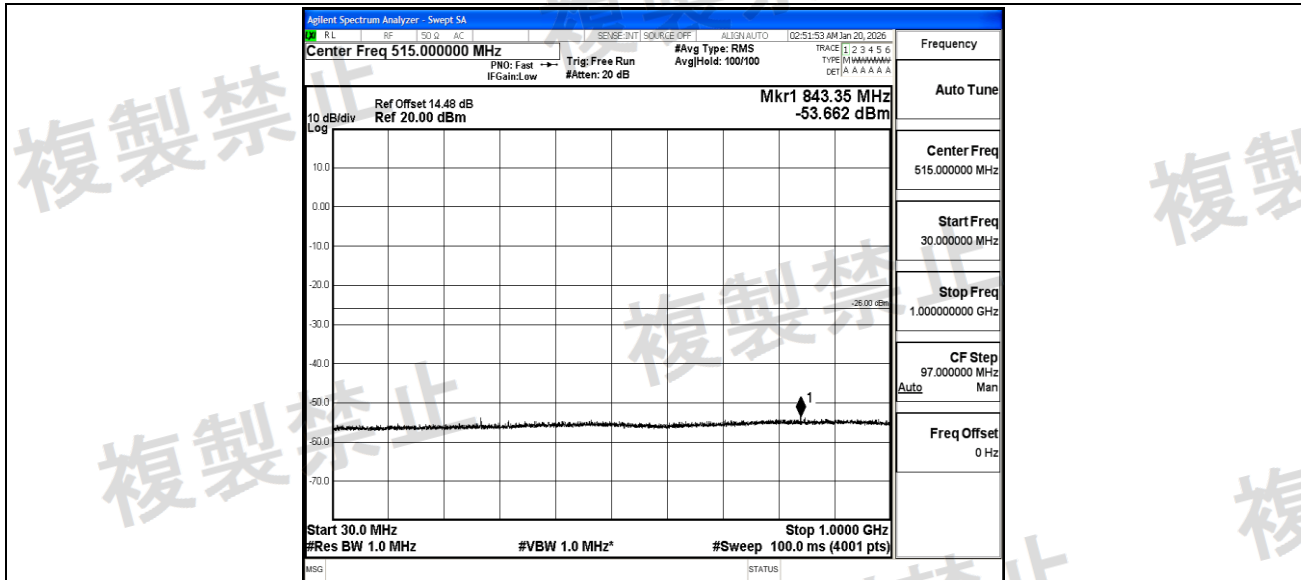
NTNV_DH5_Ant1_2402_2483.5~2496.5



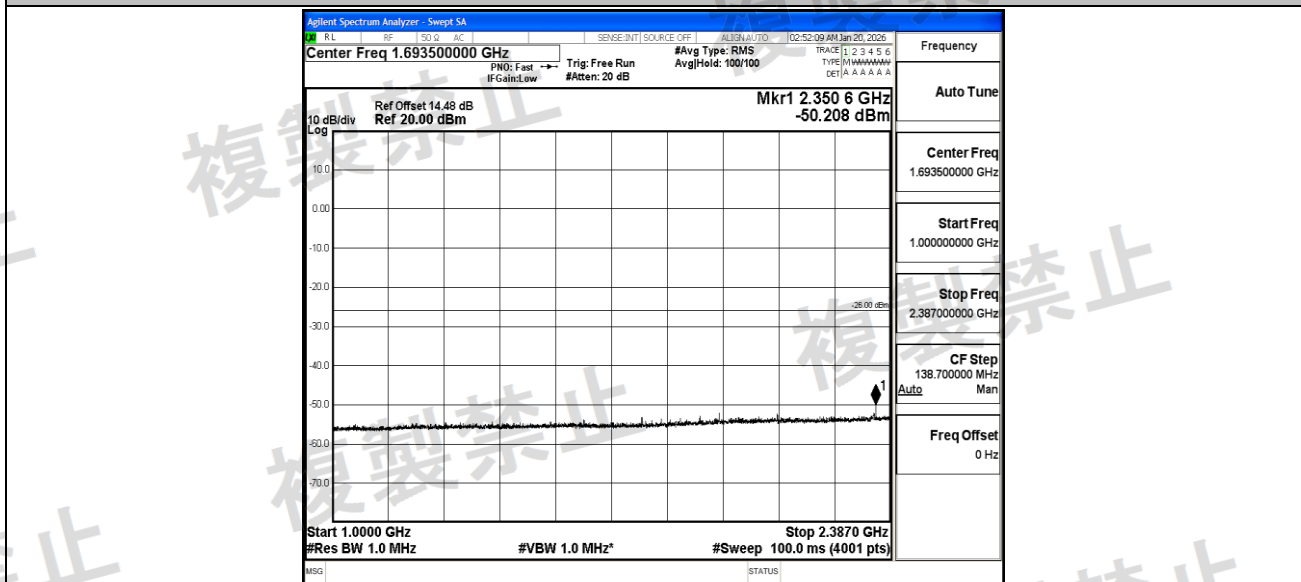
NTNV_DH5_Ant1_2402_2496.5~13000



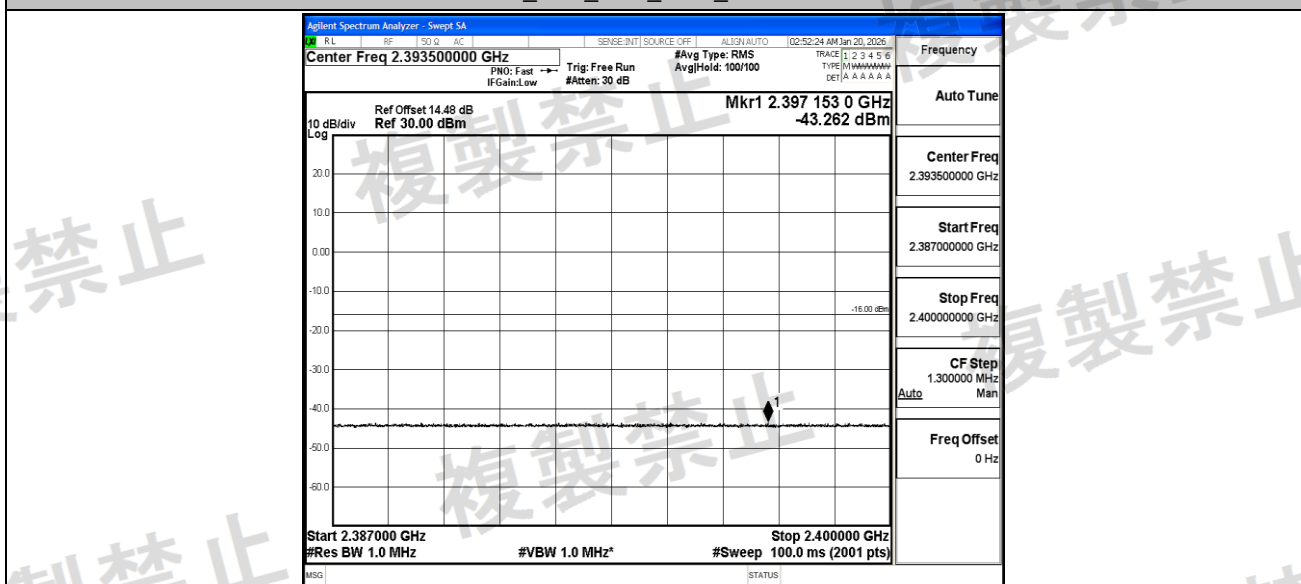
NTNV_DH5_Ant1_2441_30~1000



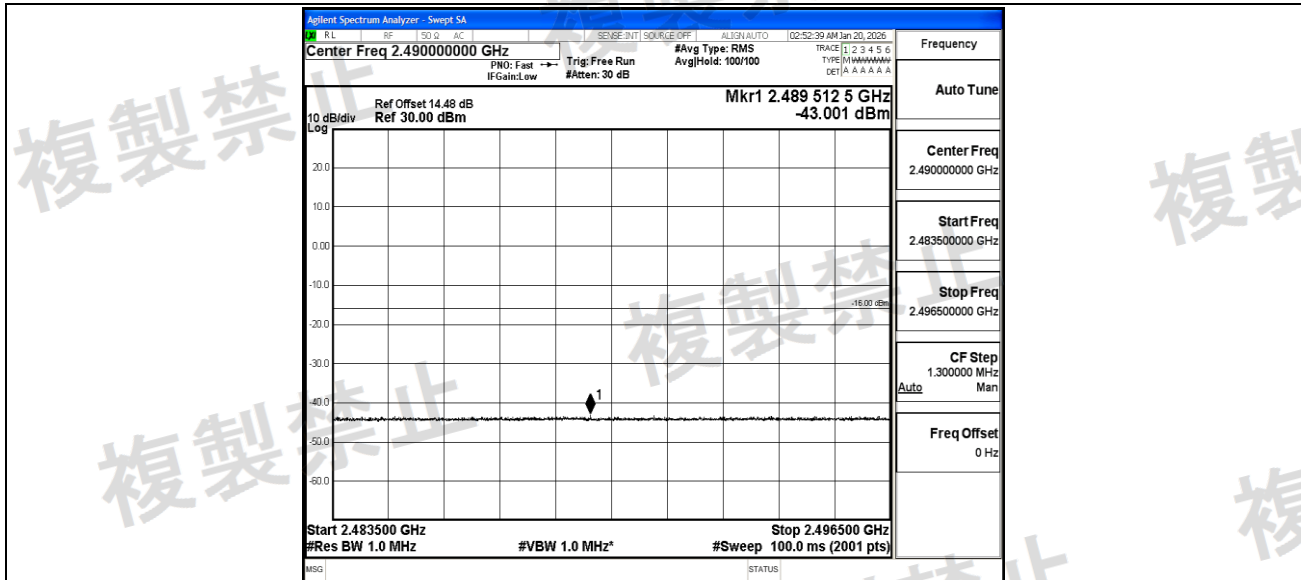
NTNV_DH5_Ant1_2441_1000~2387



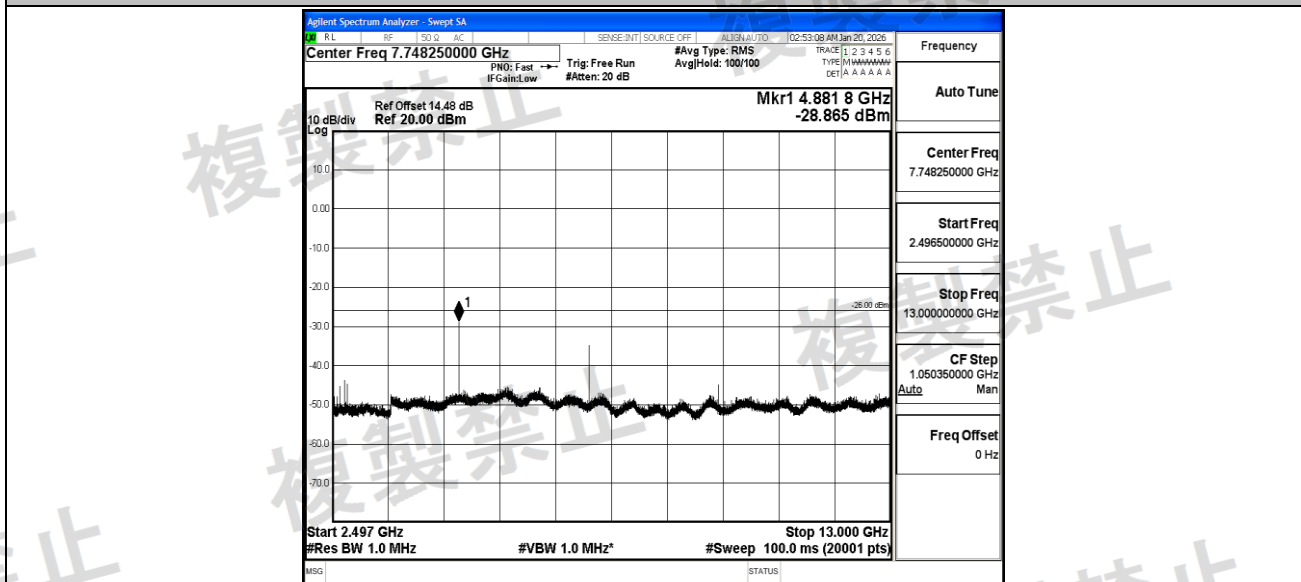
NTNV_DH5_Ant1_2441_2387~2400



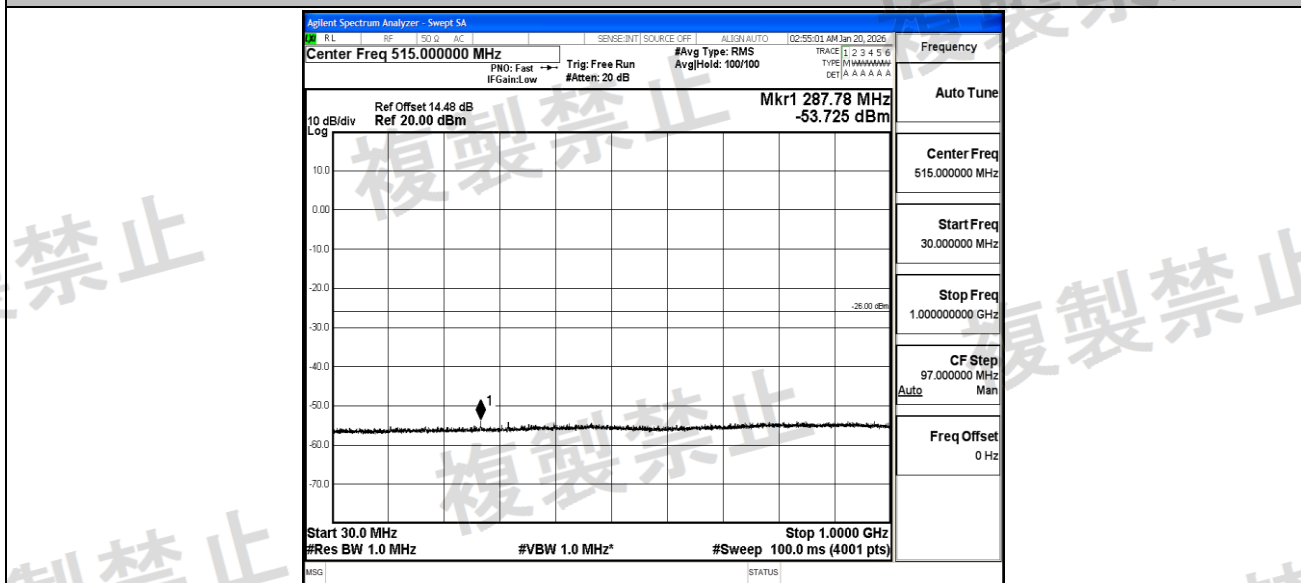
NTNV_DH5_Ant1_2441_2483.5~2496.5



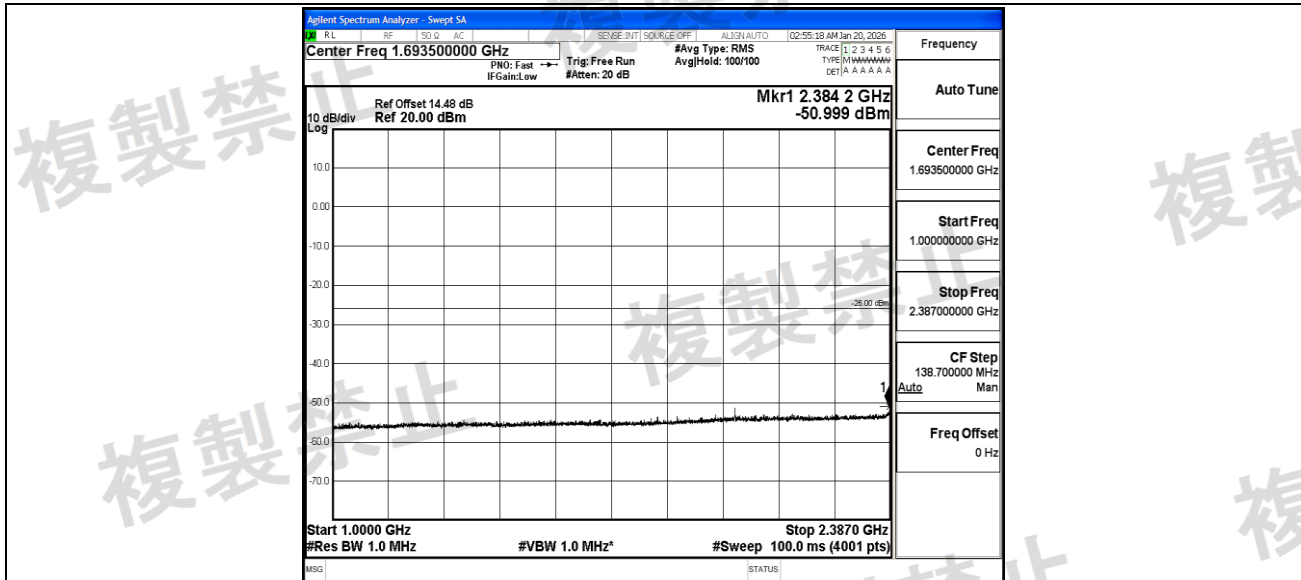
NTNV_DH5_Ant1_2441_2496.5~13000



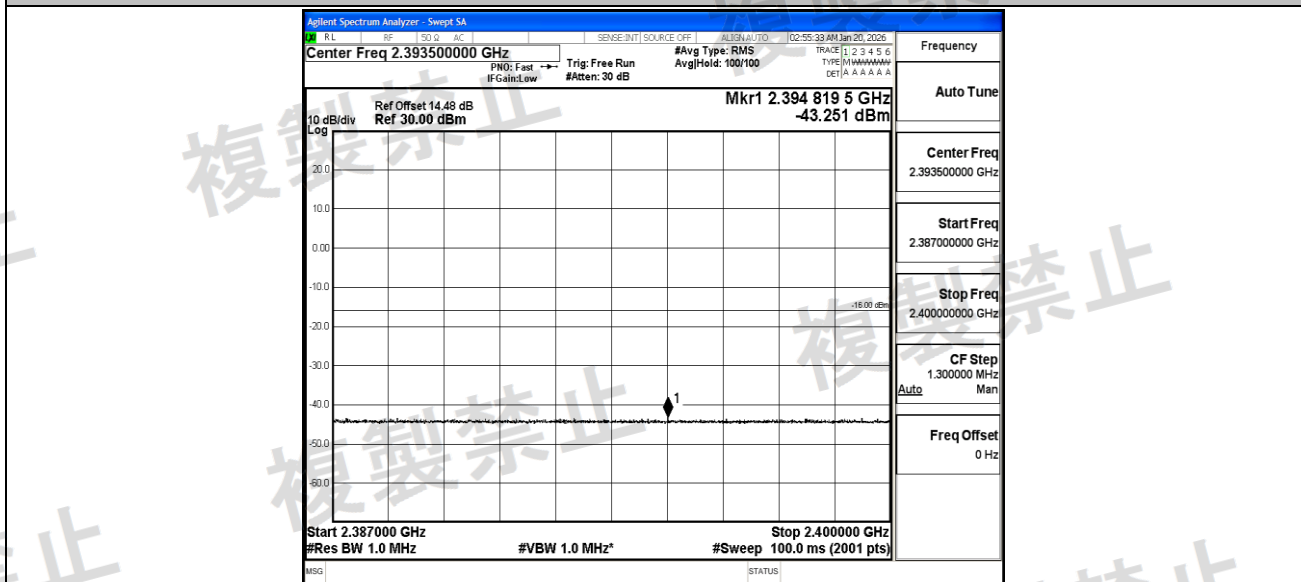
NTNV_DH5_Ant1_2480_30~1000



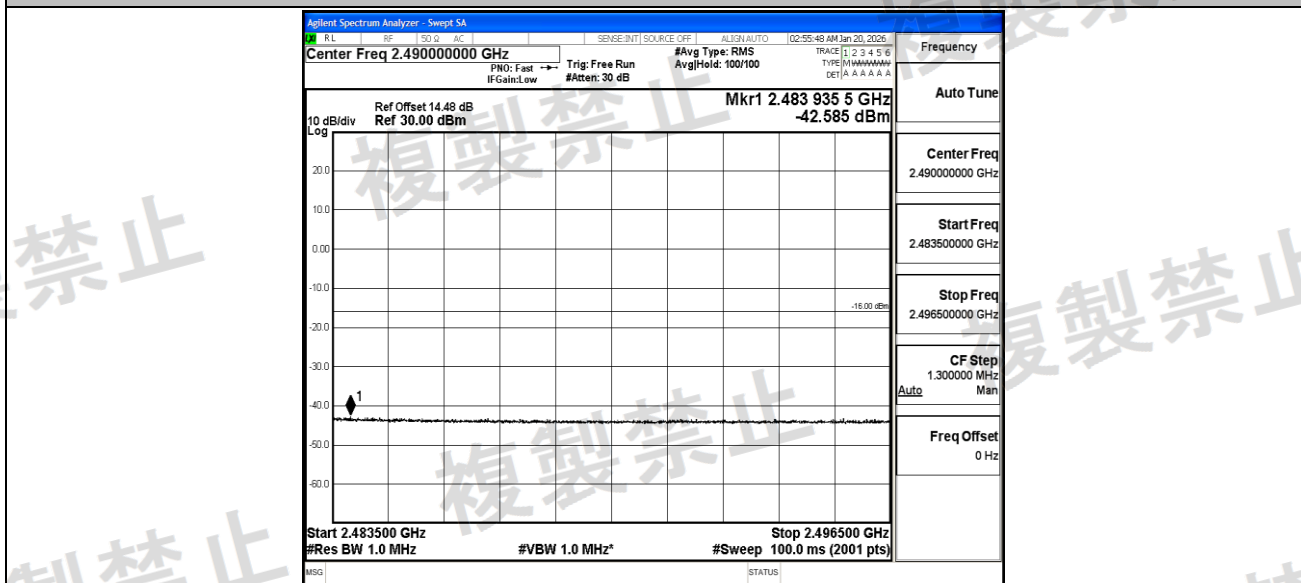
NTNV_DH5_Ant1_2480_1000~2387



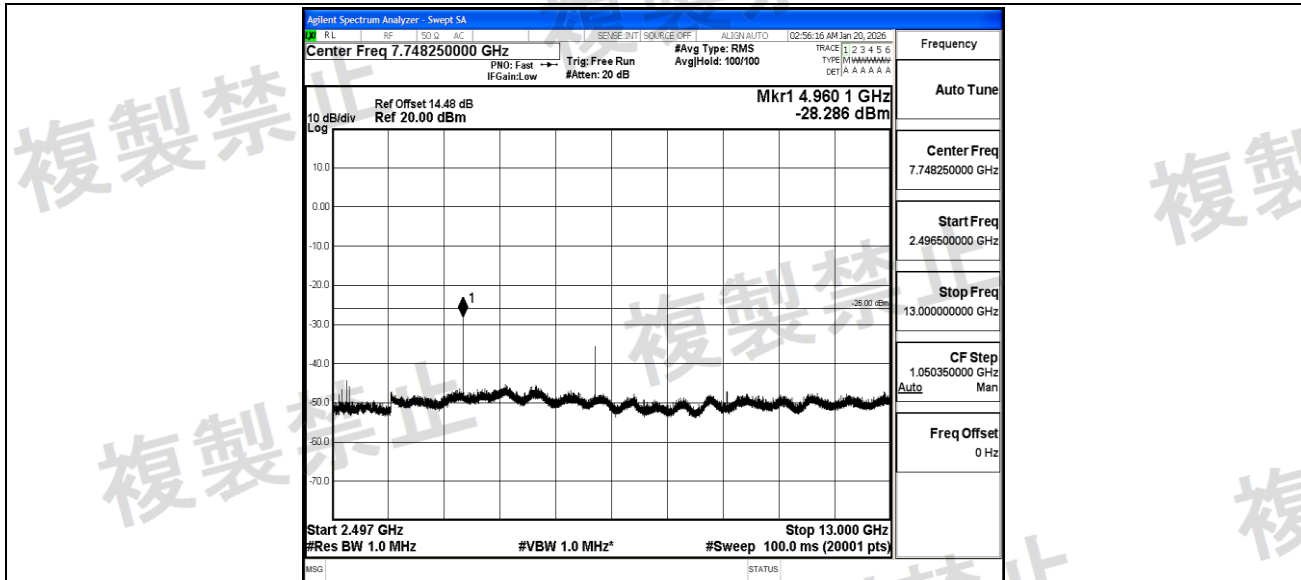
NTNV_DH5_Ant1_2480_2387~2400



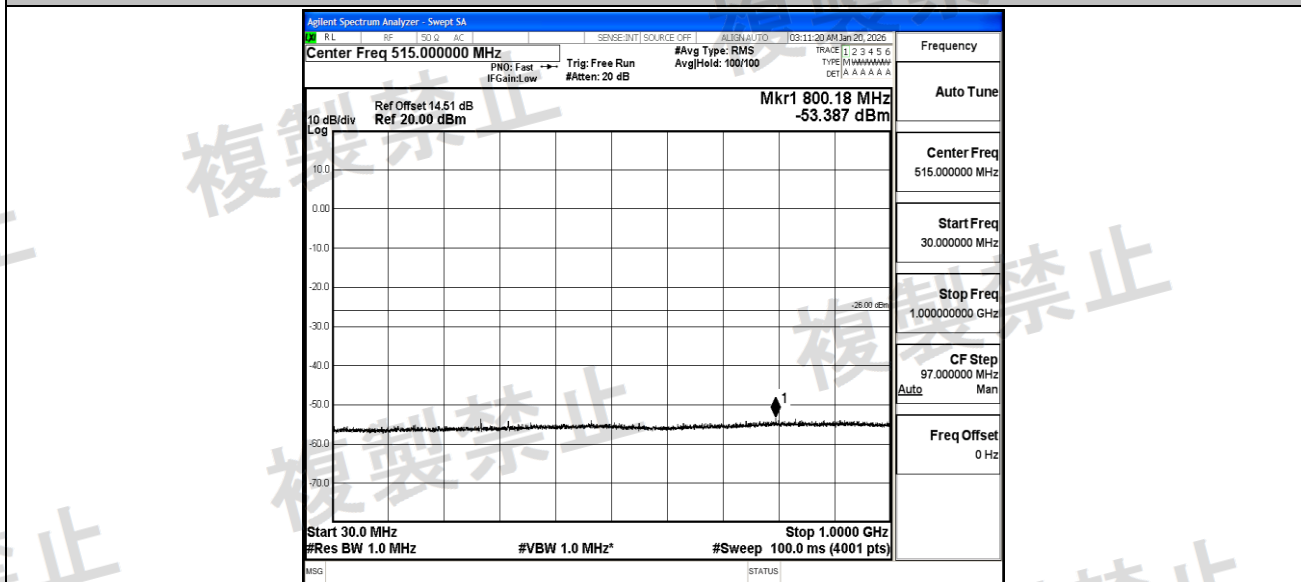
NTNV_DH5_Ant1_2480_2483.5~2496.5



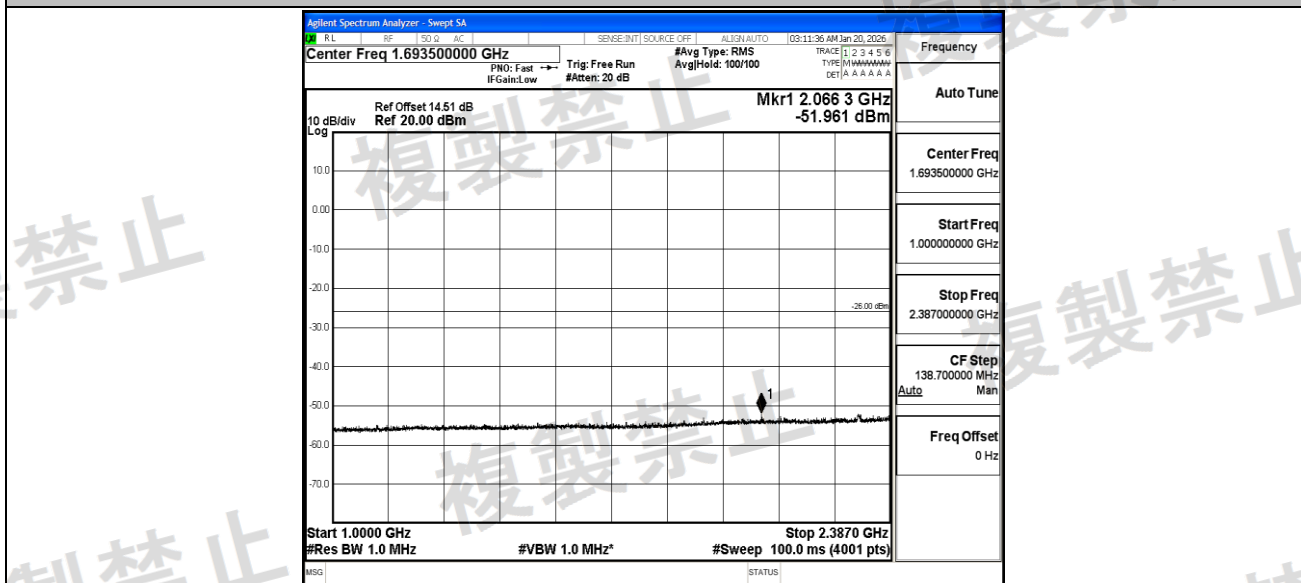
NTNV_DH5_Ant1_2480_2496.5~13000



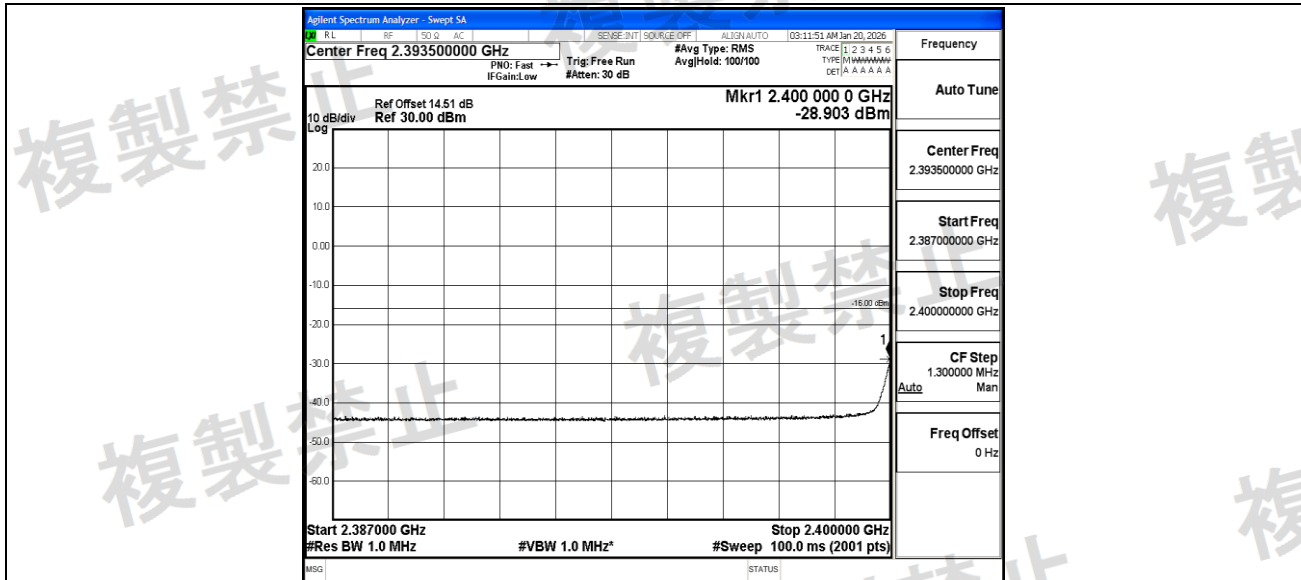
NTNV_2DH5_Ant1_2402_30~1000



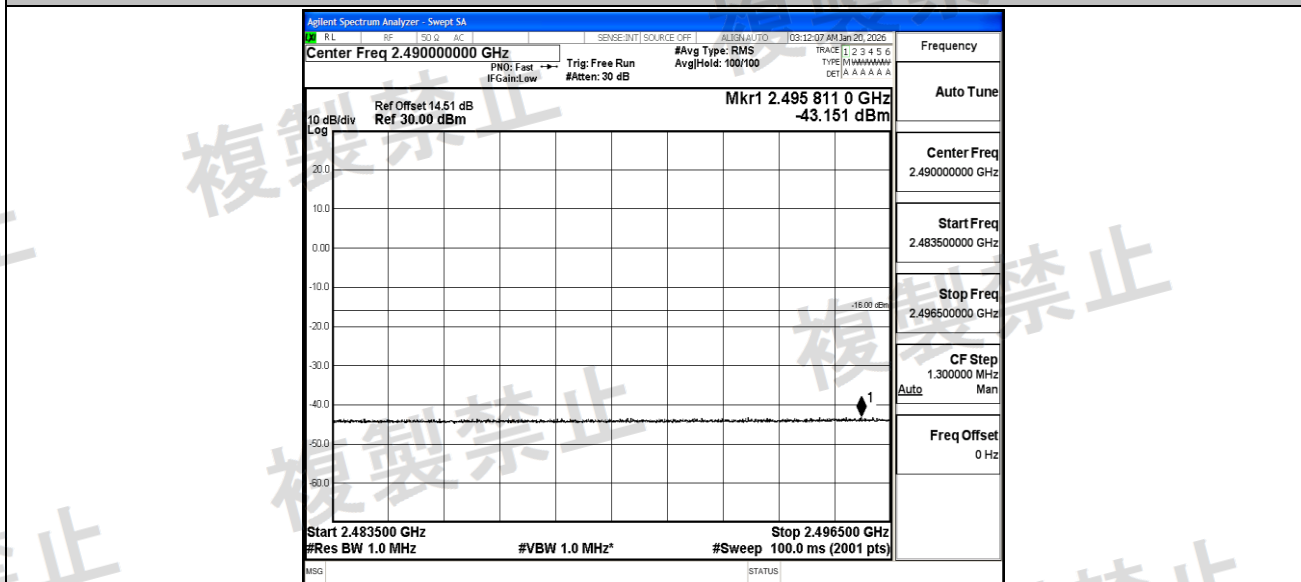
NTNV_2DH5_Ant1_2402_1000~2387



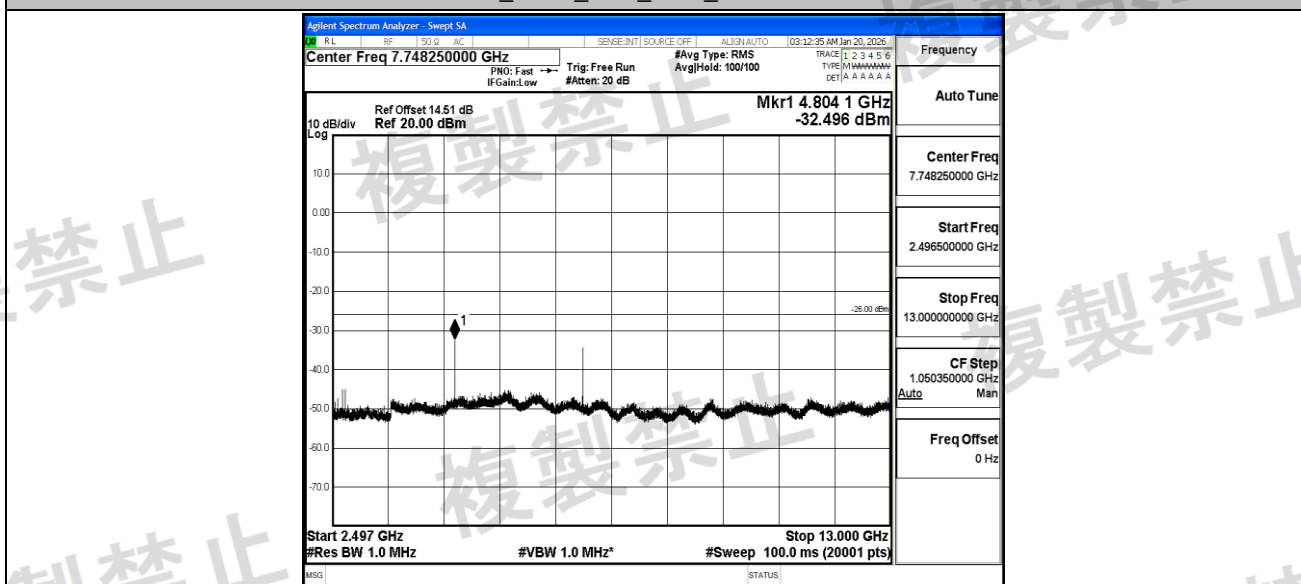
NTNV_2DH5_Ant1_2402_2387~2400



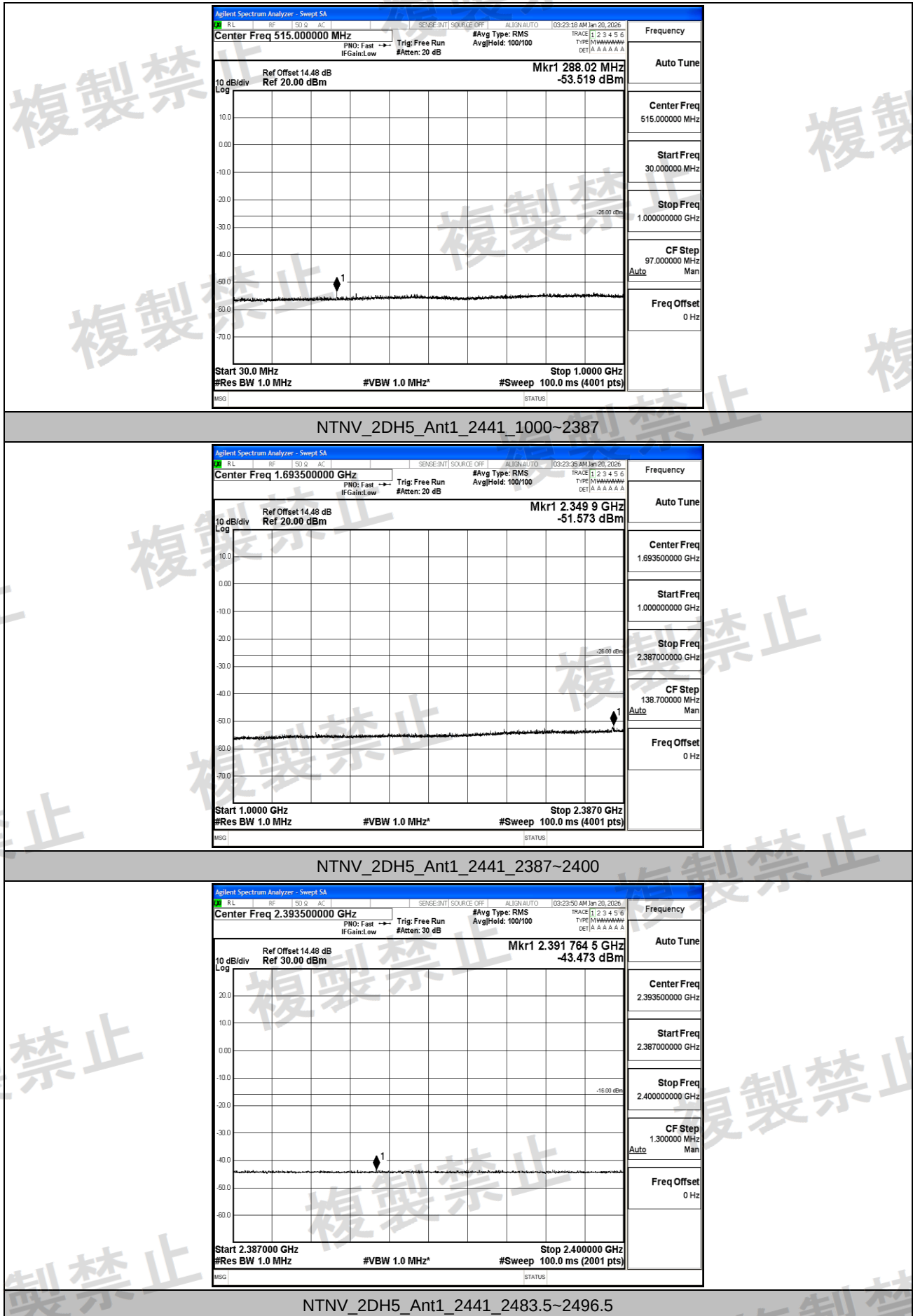
NTNV_2DH5_Ant1_2402_2483.5~2496.5

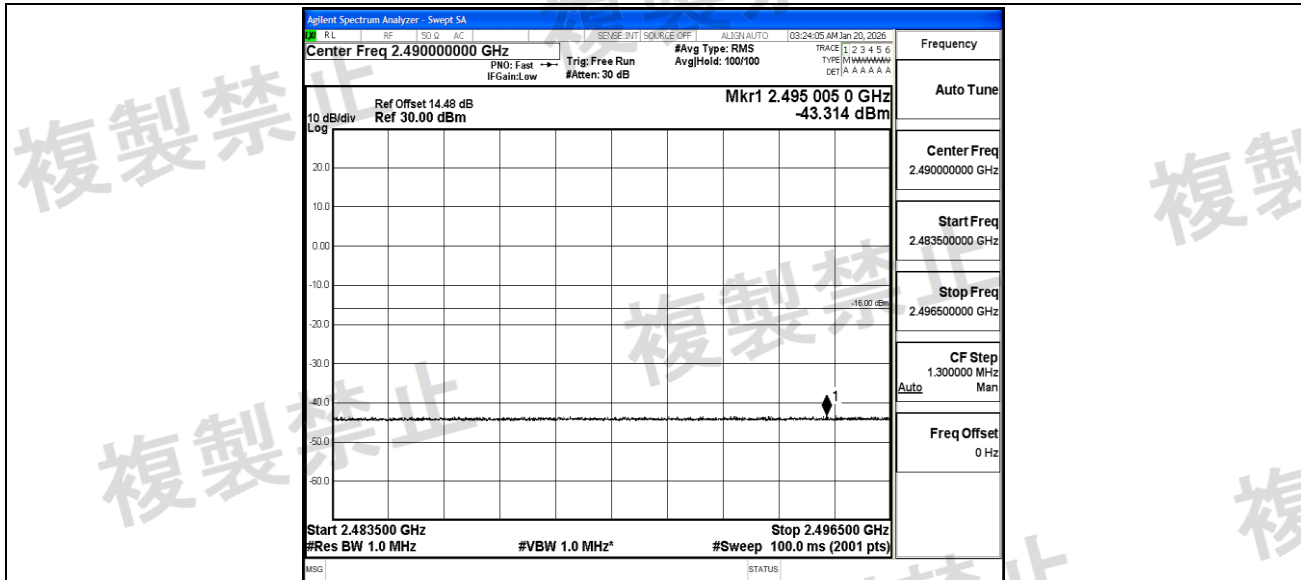


NTNV_2DH5_Ant1_2402_2496.5~13000

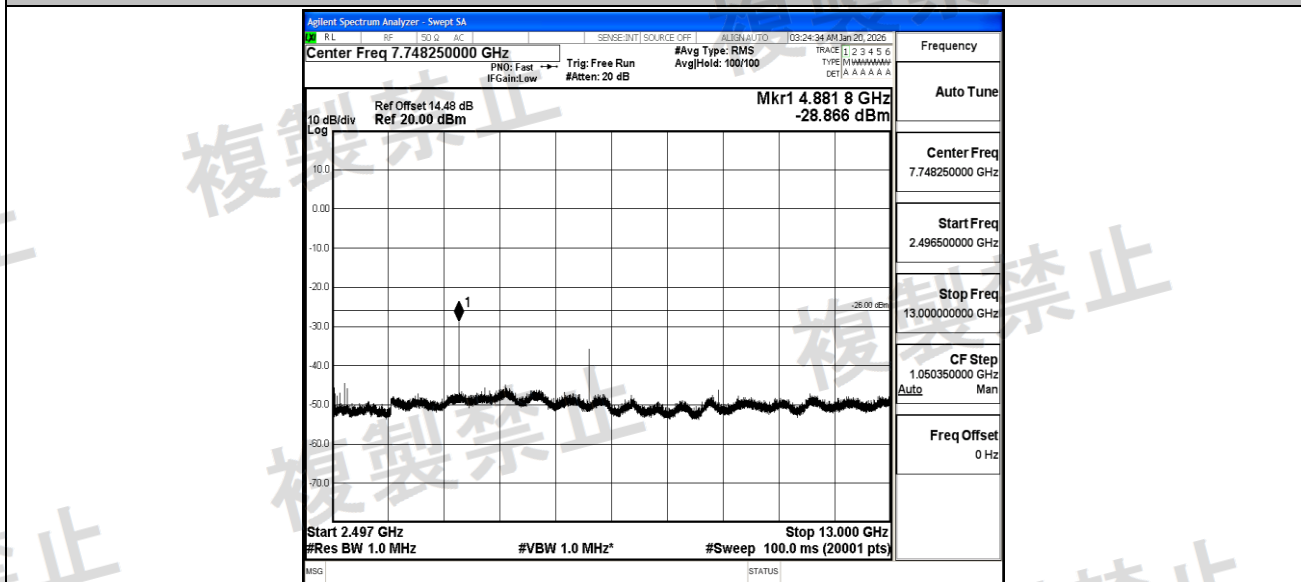


NTNV_2DH5_Ant1_2441_30~1000

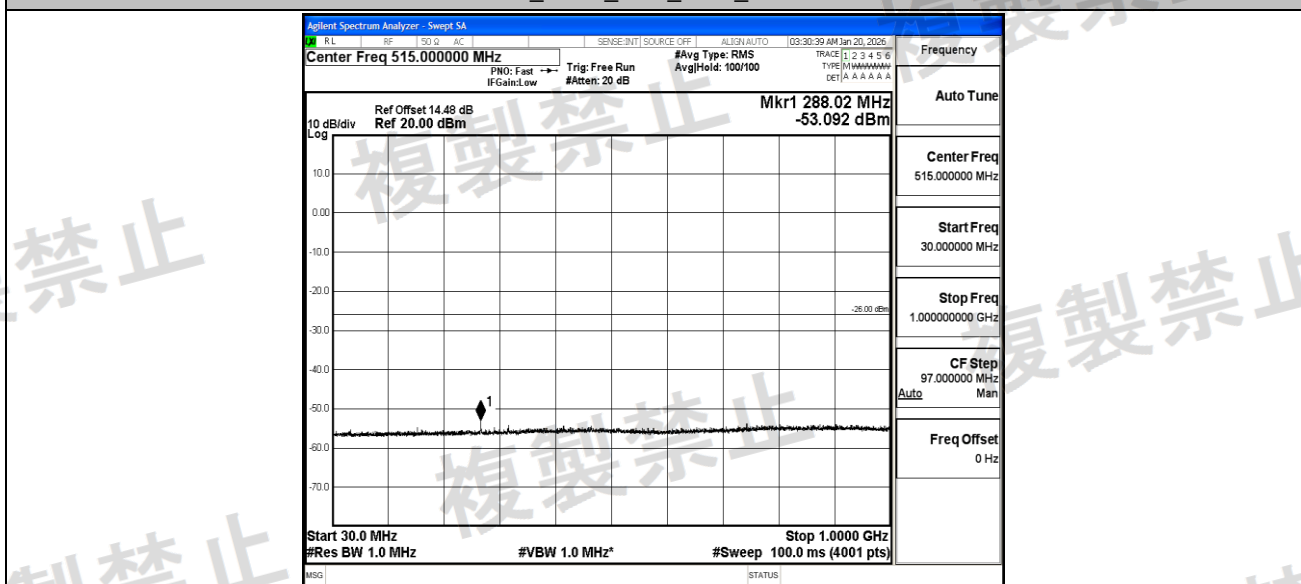




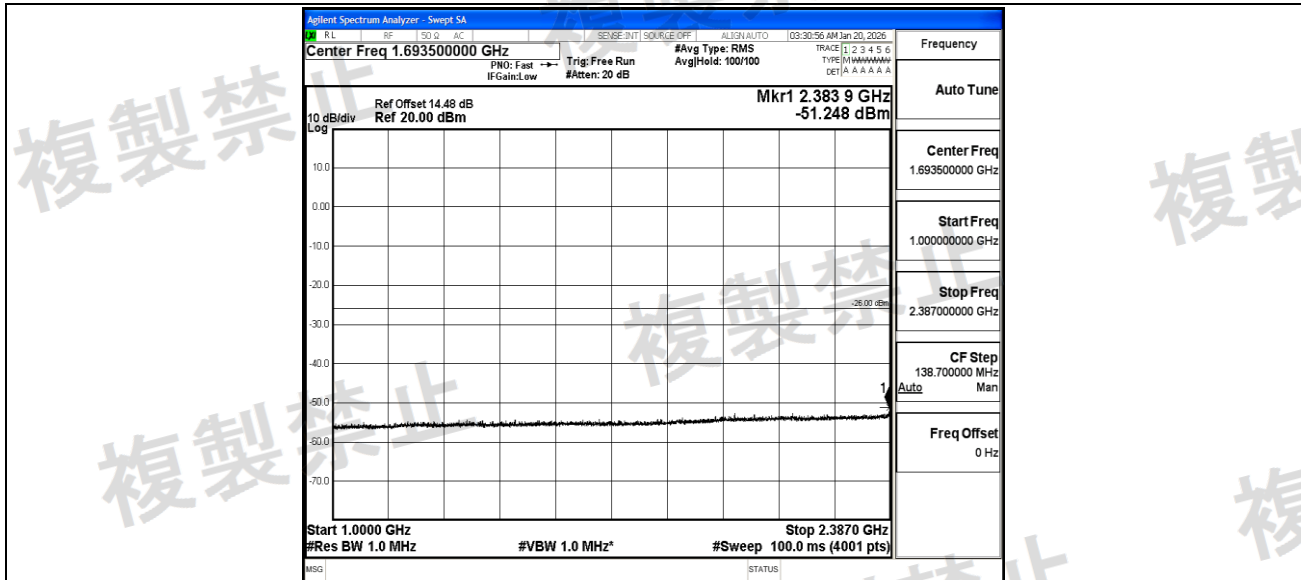
NTNV_2DH5_Ant1_2441_2496.5~13000



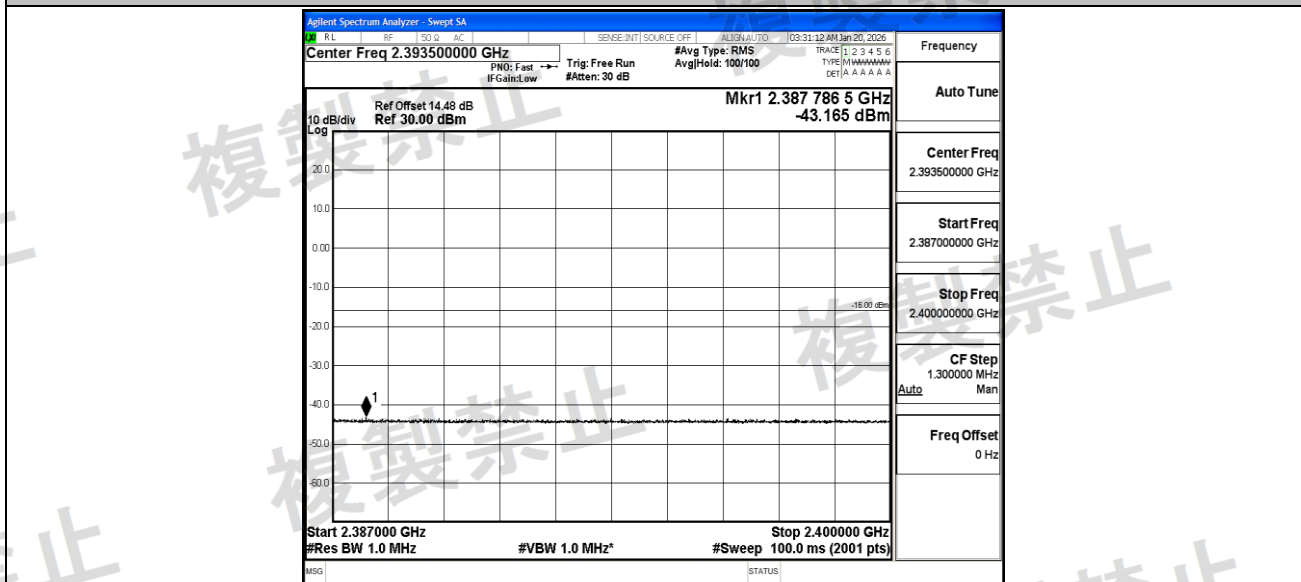
NTNV_2DH5_Ant1_2480_30~1000



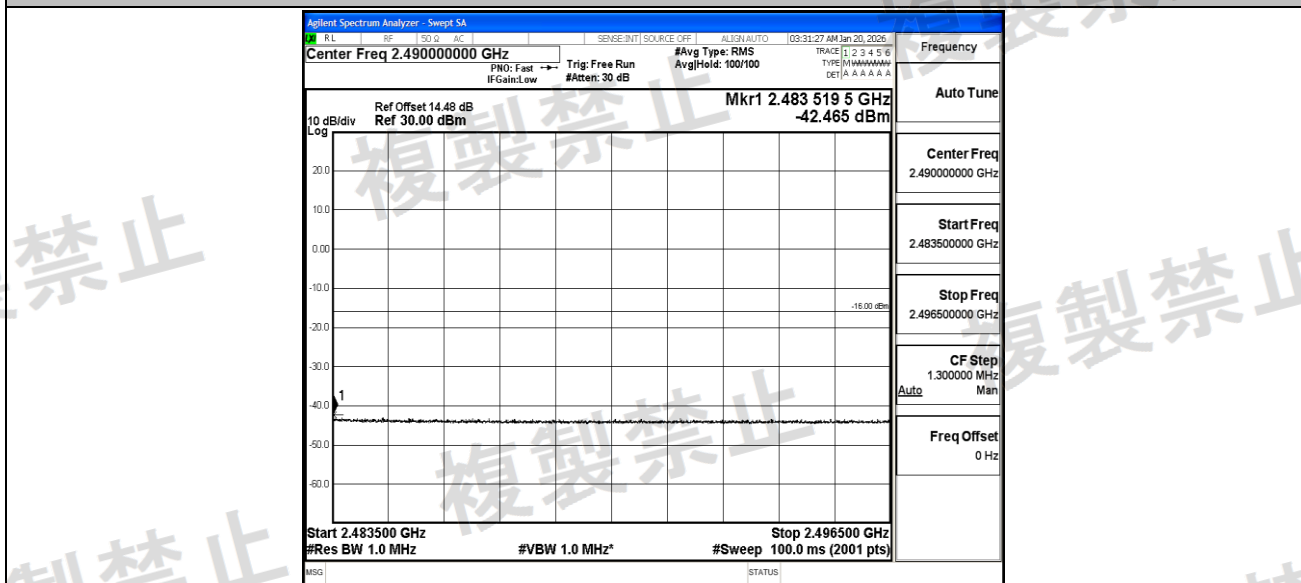
NTNV_2DH5_Ant1_2480_1000~2387



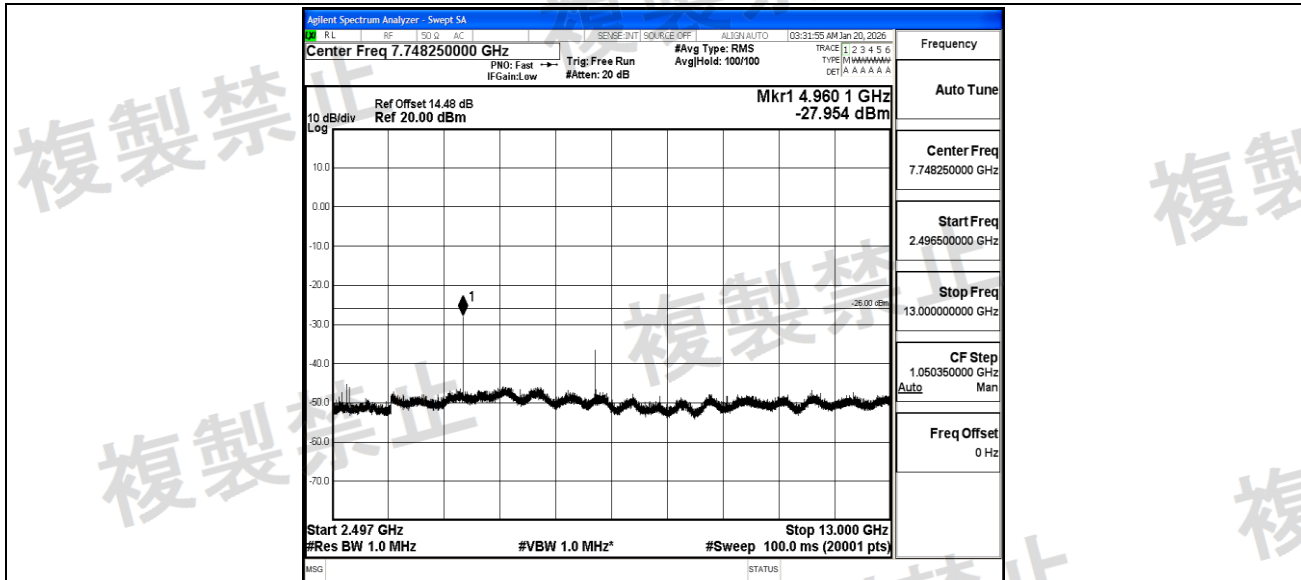
NTNV_2DH5_Ant1_2480_2387~2400



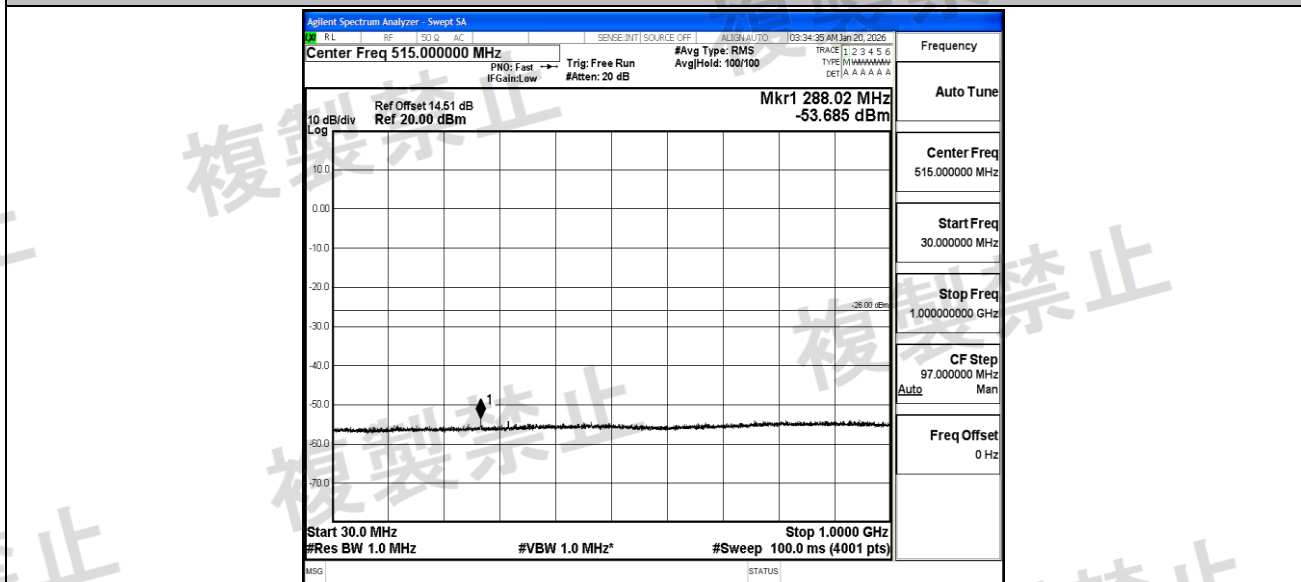
NTNV_2DH5_Ant1_2480_2483.5~2496.5



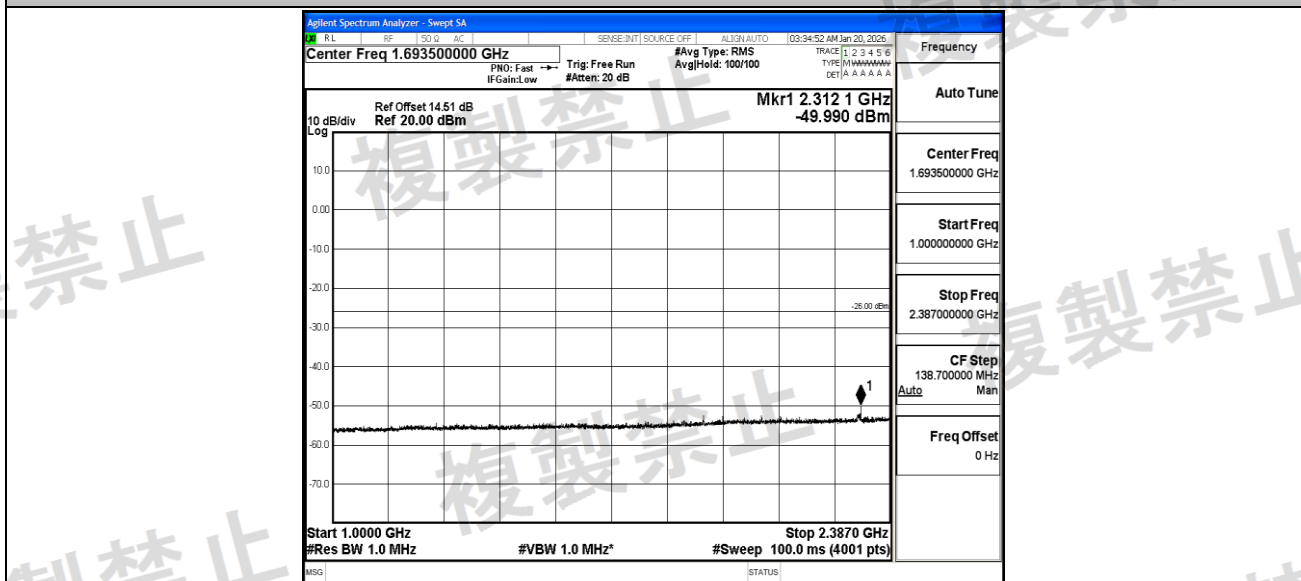
NTNV_2DH5_Ant1_2480_2496.5~13000



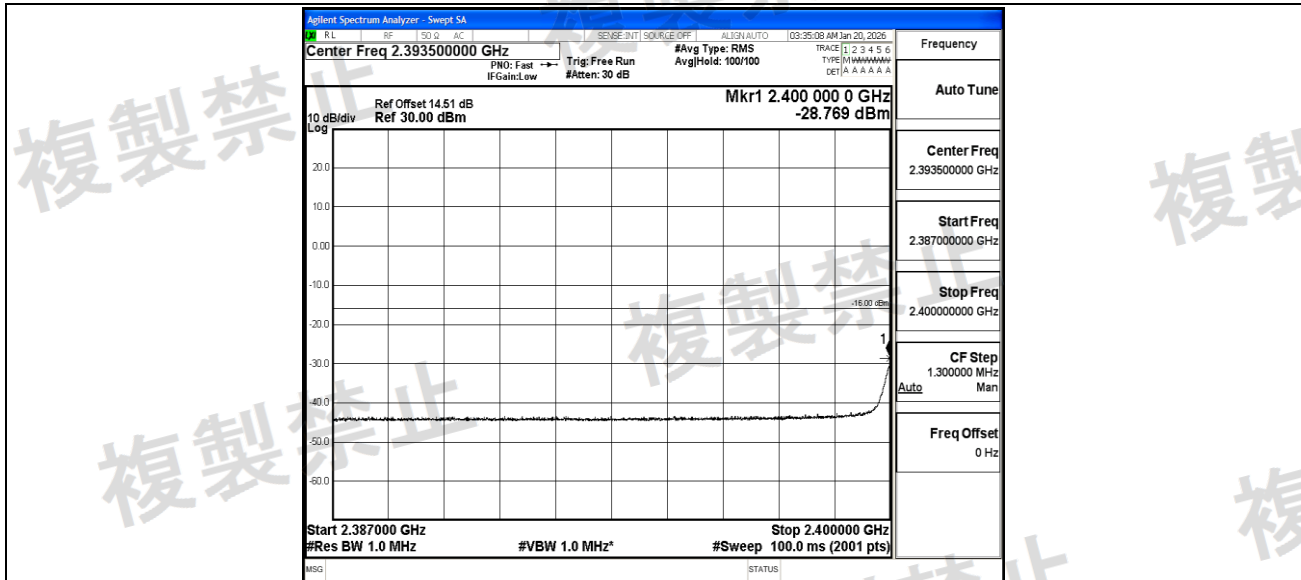
NTVN_3DH5_Ant1_2402_30~1000



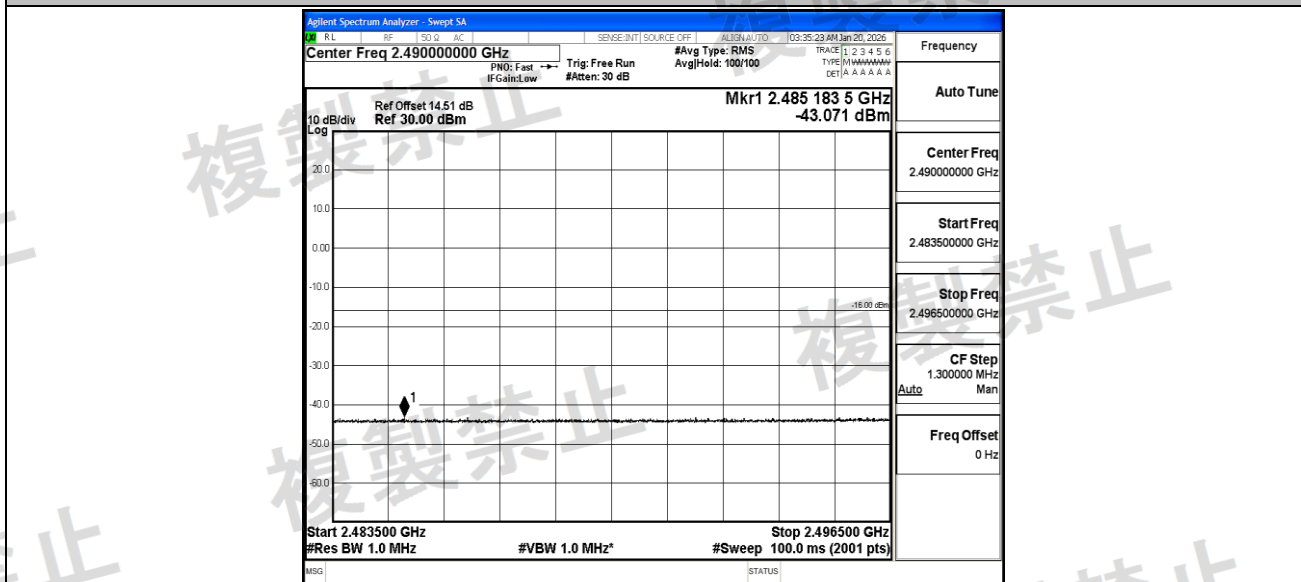
NTNV_3DH5_Ant1_2402_1000~2387



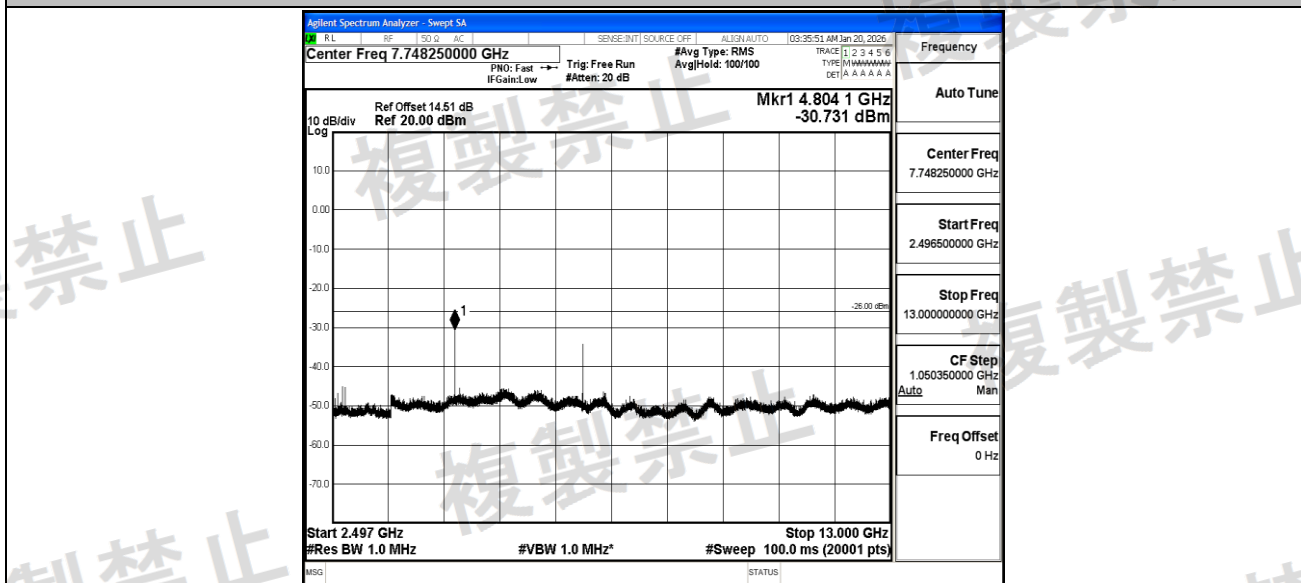
NTNV_3DH5_Ant1_2402_2387~2400



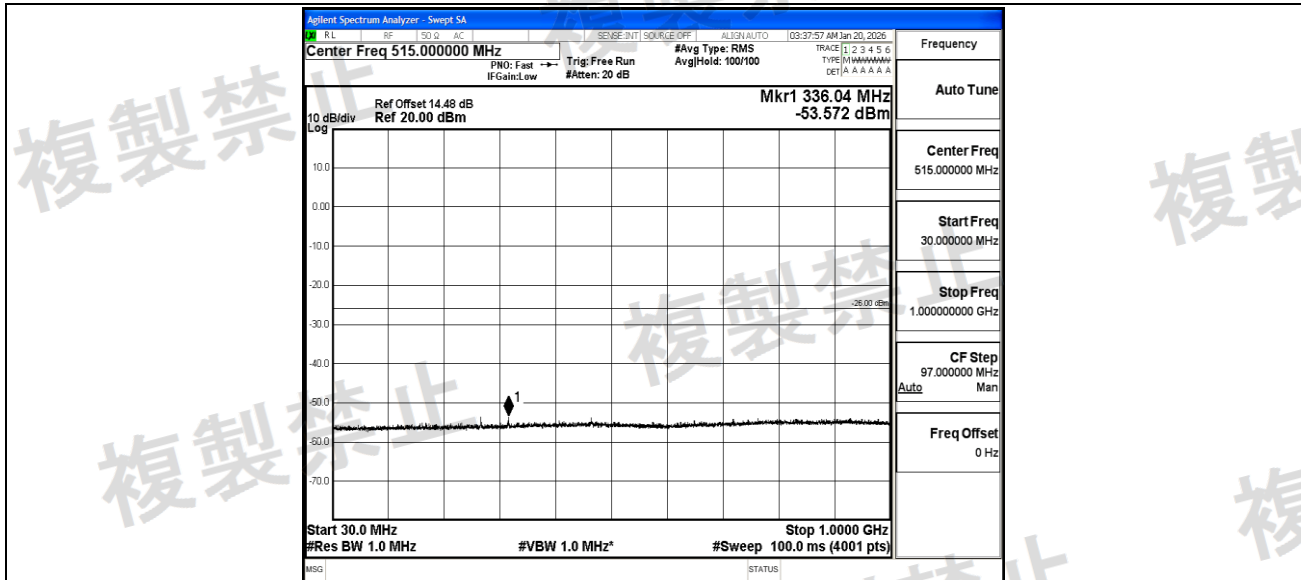
NTNV_3DH5_Ant1_2402_2483.5~2496.5



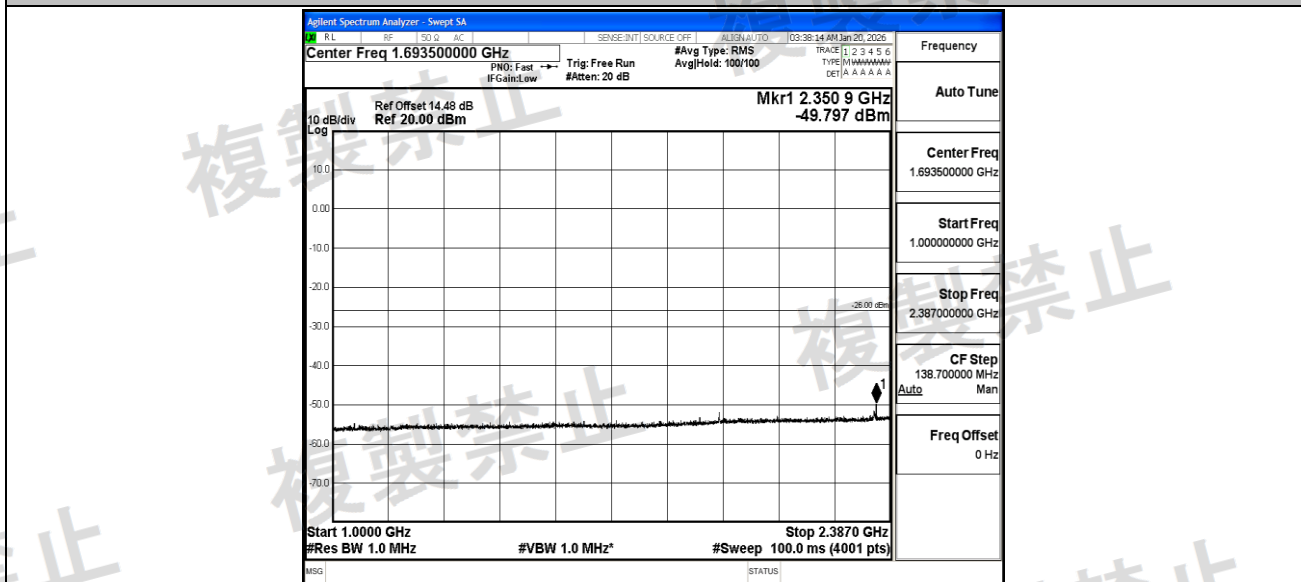
NTNV_3DH5_Ant1_2402_2496.5~13000



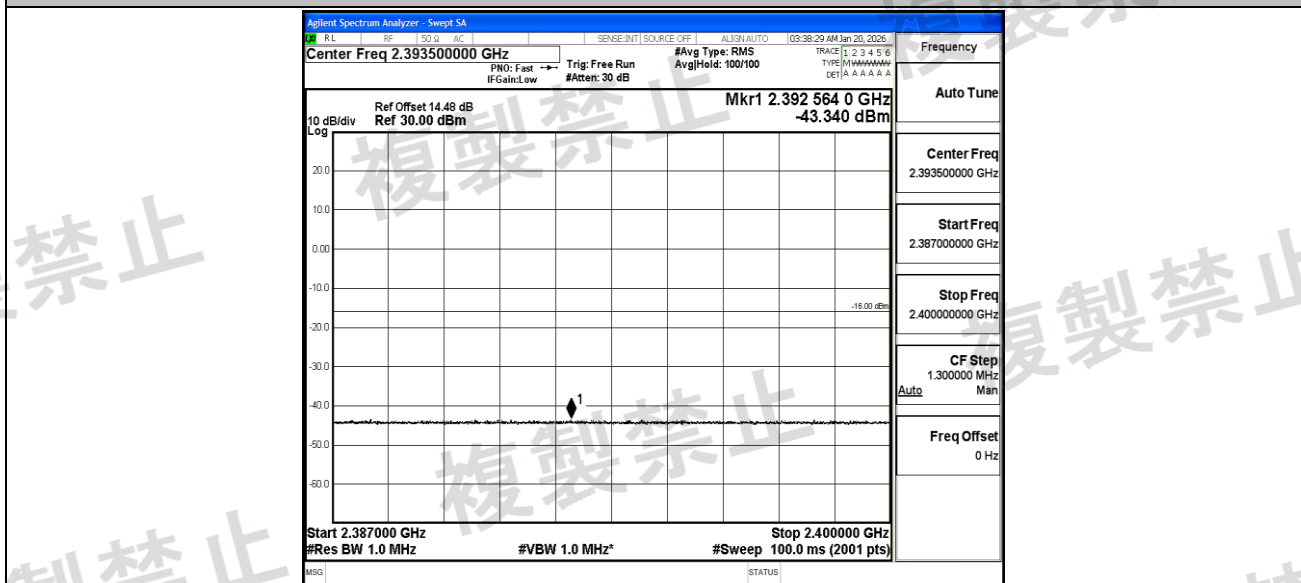
NTNV_3DH5_Ant1_2441_30~1000



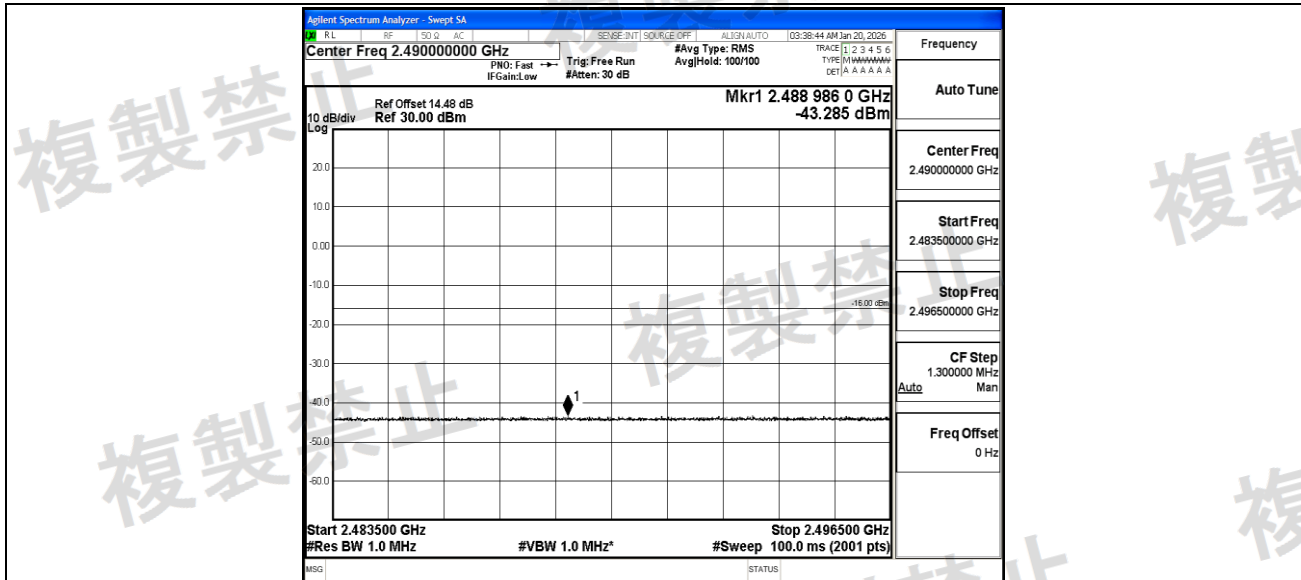
NTNV_3DH5_Ant1_2441_1000~2387



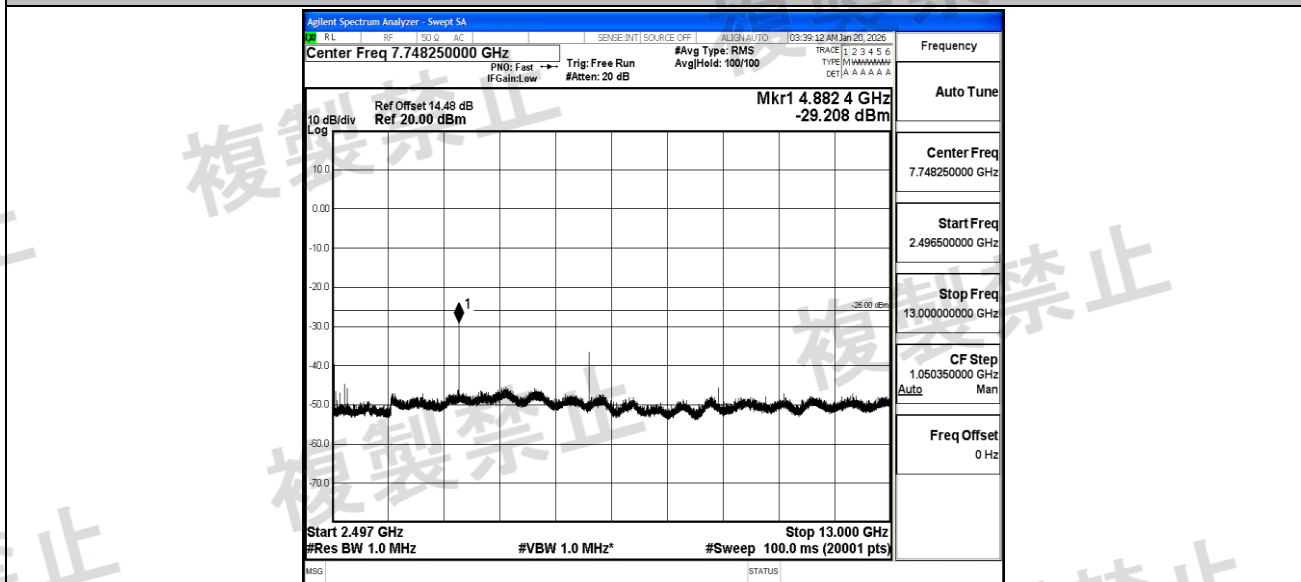
NTNV_3DH5_Ant1_2441_2387~2400



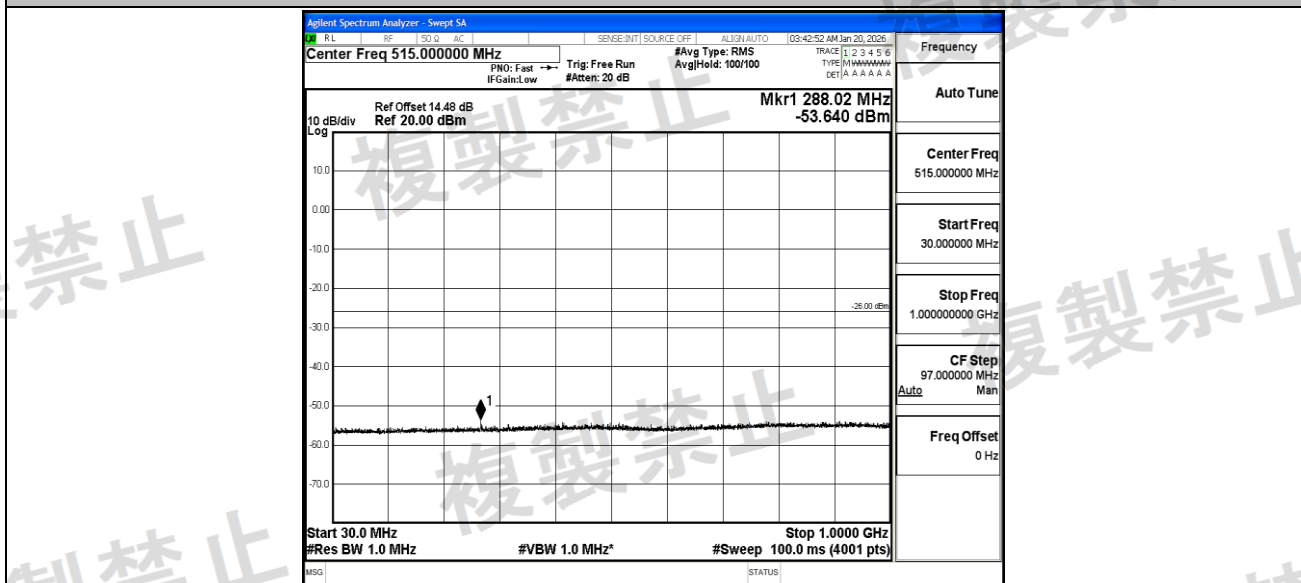
NTNV_3DH5_Ant1_2441_2483.5~2496.5



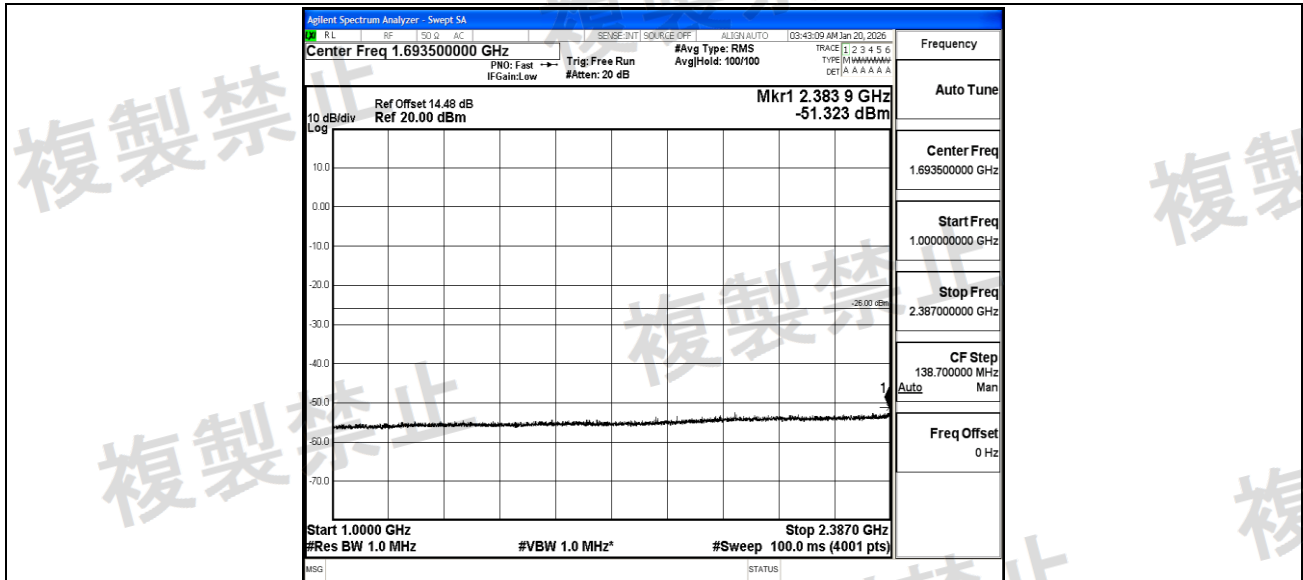
NTNV_3DH5_Ant1_2441_2496.5~13000



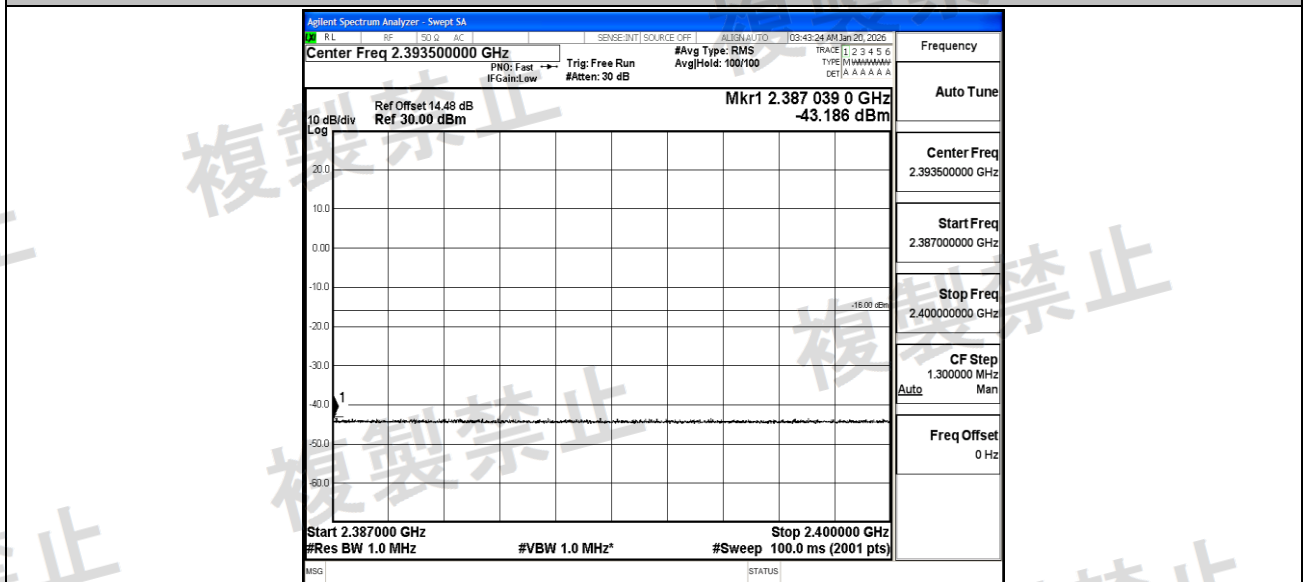
NTNV_3DH5_Ant1_2480_30~1000



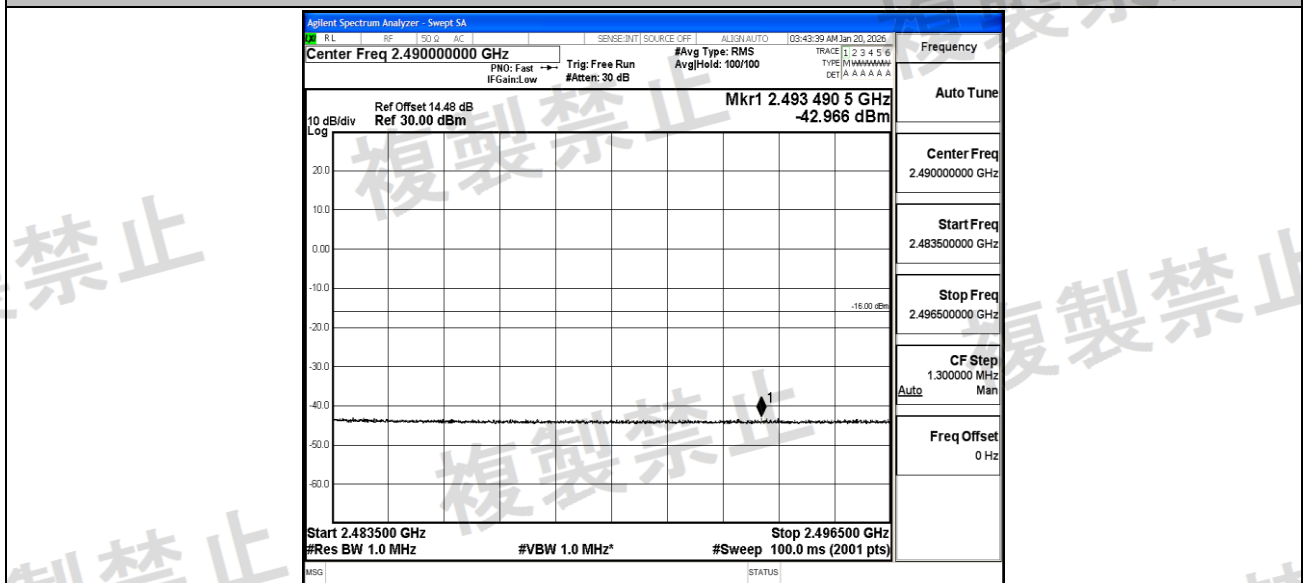
NTNV_3DH5_Ant1_2480_1000~2387



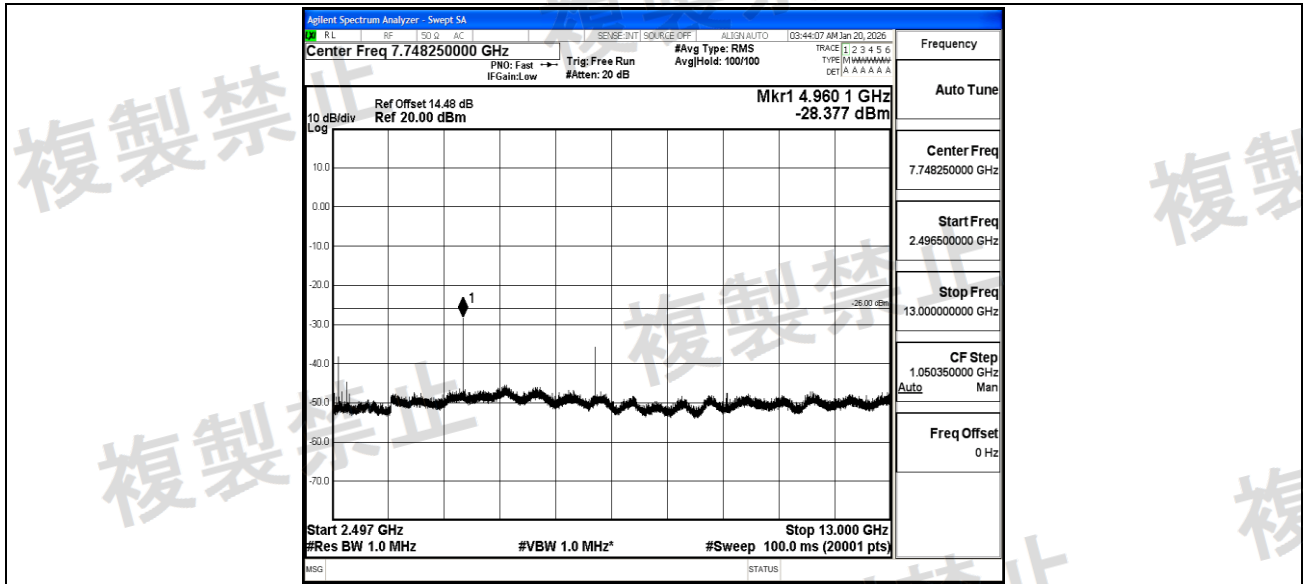
NTNV_3DH5_Ant1_2480_2387~2400



NTNV_3DH5_Ant1_2480_2483.5~2496.5



NTNV_3DH5_Ant1_2480_2496.5~13000



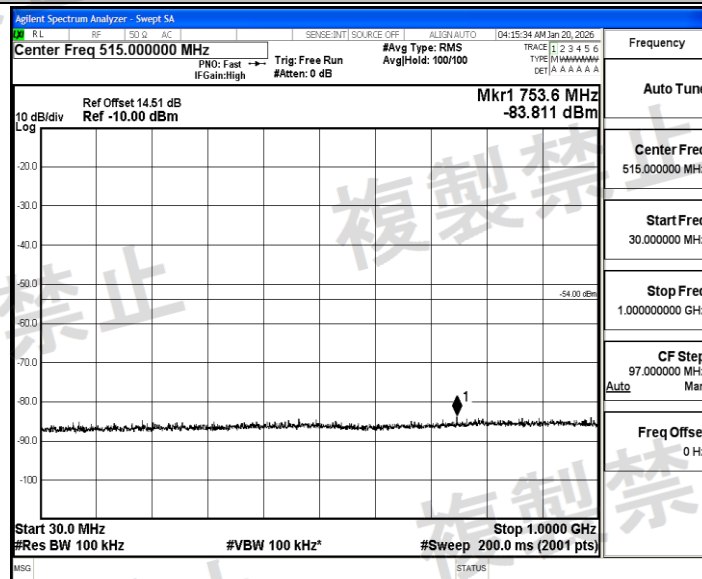
A.6 Spurious Emission of RX

Test Result

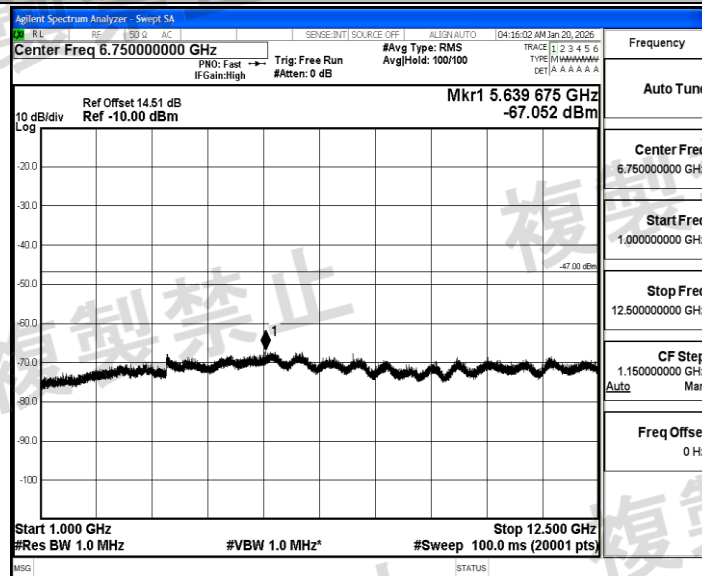
TestCondition	TestMode	Antenna	Frequency[MHz]	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	DH5	Ant1	2402	30~1000	-83.81	≤-54	0.00416	≤4	PASS
				1000~12500	-67.05	≤-47	0.19724	≤20	PASS
			2441	30~1000	-84.39	≤-54	0.00364	≤4	PASS
				1000~12500	-66.69	≤-47	0.21429	≤20	PASS
			2480	30~1000	-83.98	≤-54	0.00400	≤4	PASS
				1000~12500	-66.59	≤-47	0.21928	≤20	PASS
	2DH5	Ant1	2402	30~1000	-83.62	≤-54	0.00435	≤4	PASS
				1000~12500	-67.15	≤-47	0.19275	≤20	PASS
			2441	30~1000	-84.17	≤-54	0.00383	≤4	PASS
				1000~12500	-66.8	≤-47	0.20893	≤20	PASS
			2480	30~1000	-84.11	≤-54	0.00388	≤4	PASS
				1000~12500	-66.41	≤-47	0.22856	≤20	PASS
	3DH5	Ant1	2402	30~1000	-83.82	≤-54	0.00415	≤4	PASS
				1000~12500	-66.77	≤-47	0.21038	≤20	PASS
			2441	30~1000	-84.11	≤-54	0.00388	≤4	PASS
				1000~12500	-66.61	≤-47	0.21827	≤20	PASS
			2480	30~1000	-83.94	≤-54	0.00404	≤4	PASS
				1000~12500	-67.08	≤-47	0.19588	≤20	PASS

Test Graphs

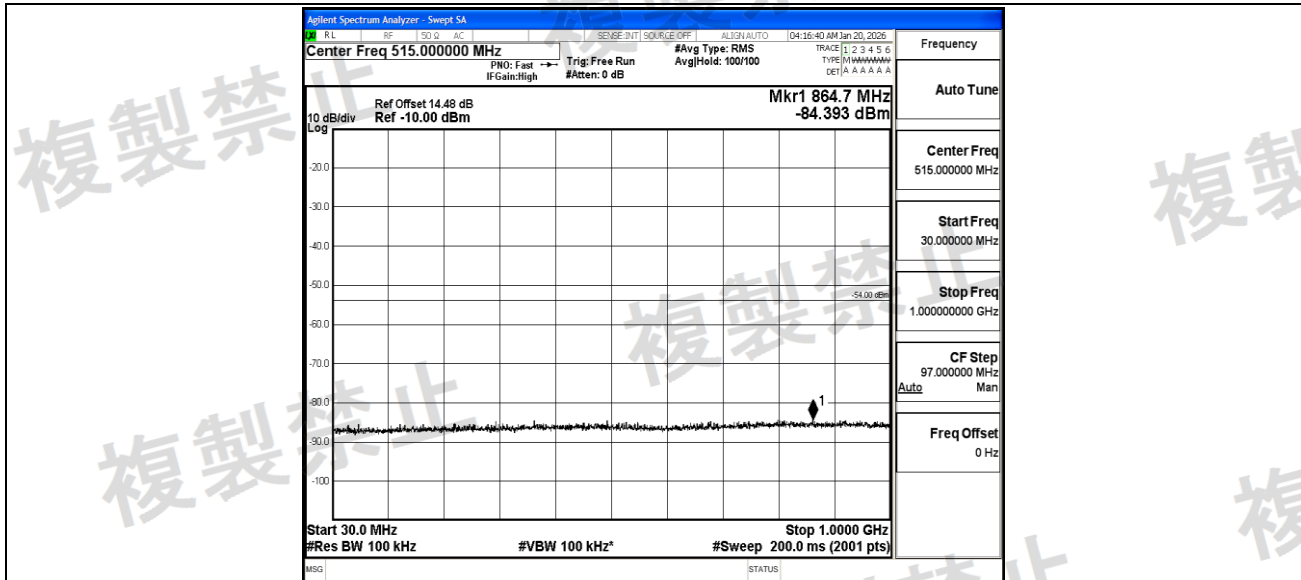
NTNV_DH5_Ant1_2402_30~1000



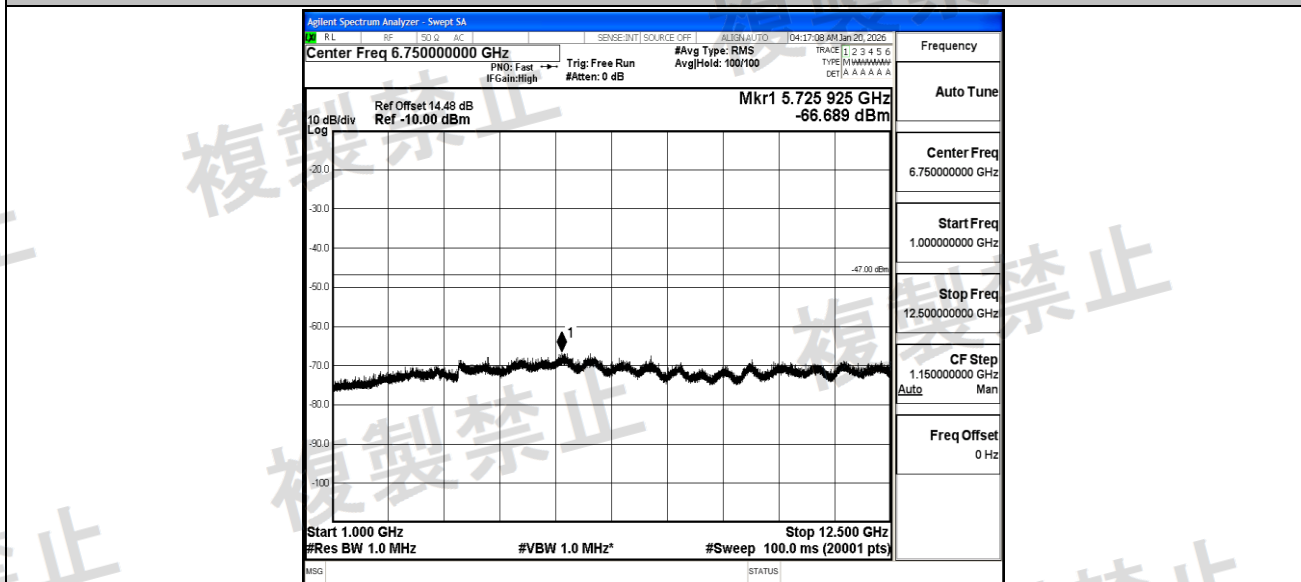
NTNV_DH5_Ant1_2402_1000~12500



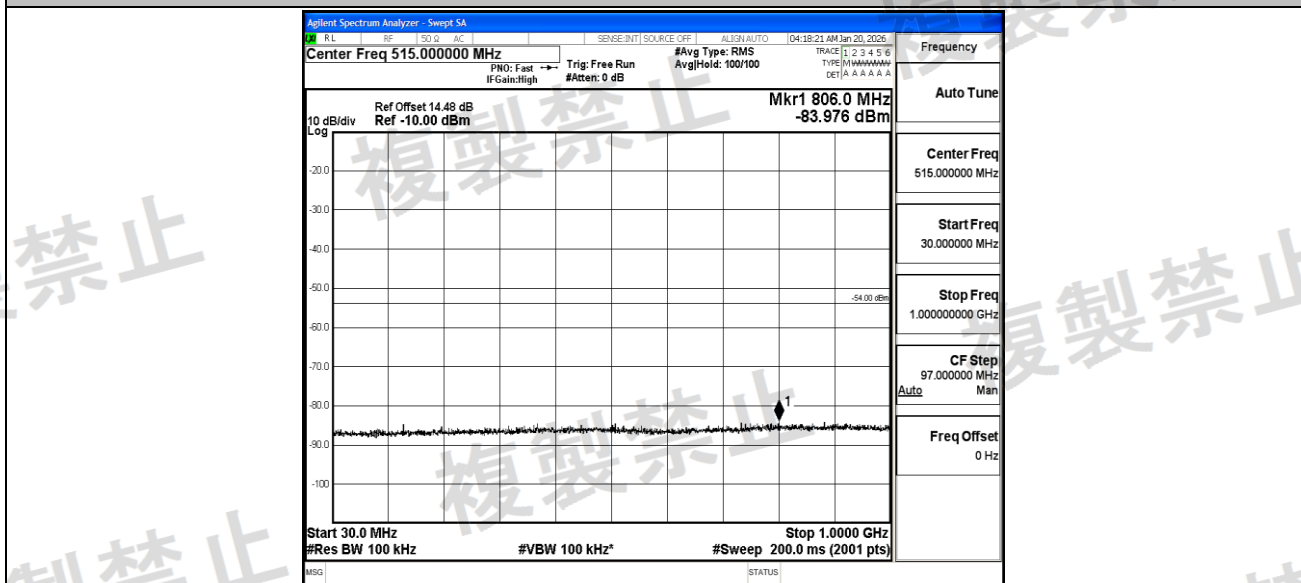
NTNV_DH5_Ant1_2441_30~1000



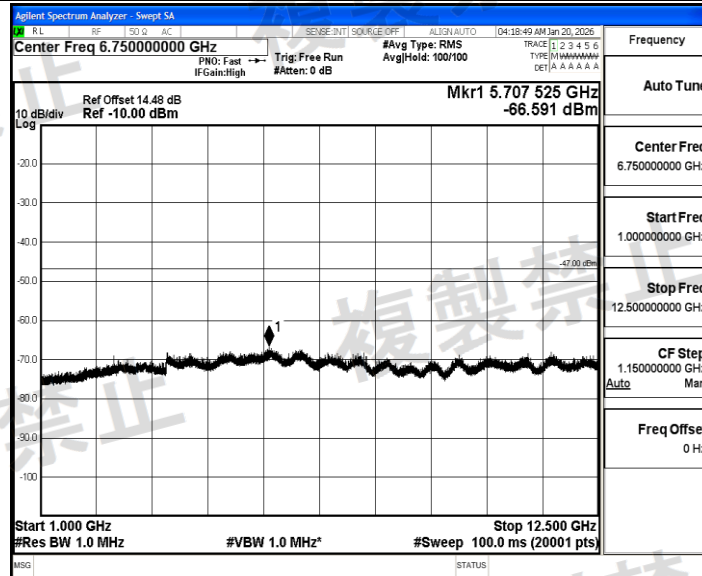
NTNV_DH5_Ant1_2441_1000~12500



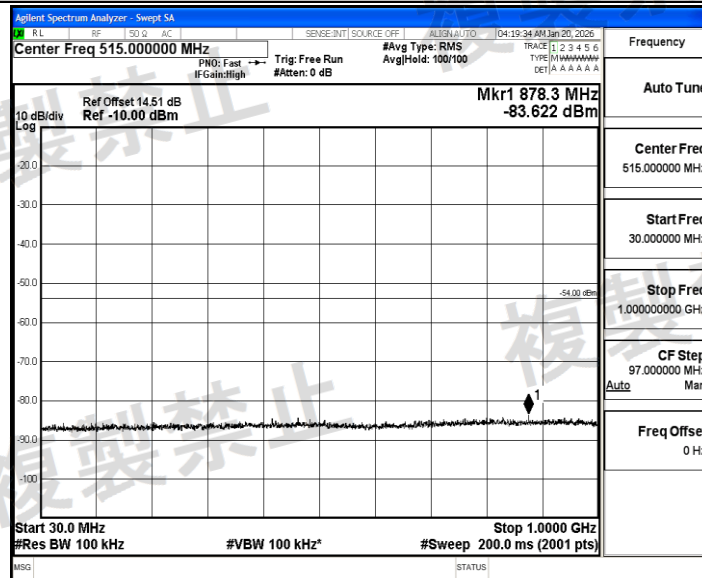
NTNV_DH5_Ant1_2480_30~1000



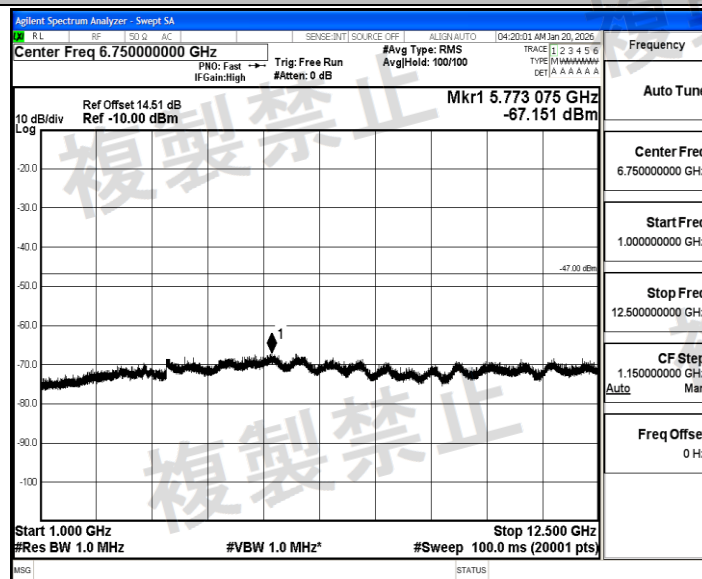
NTNV_DH5_Ant1_2480_1000~12500



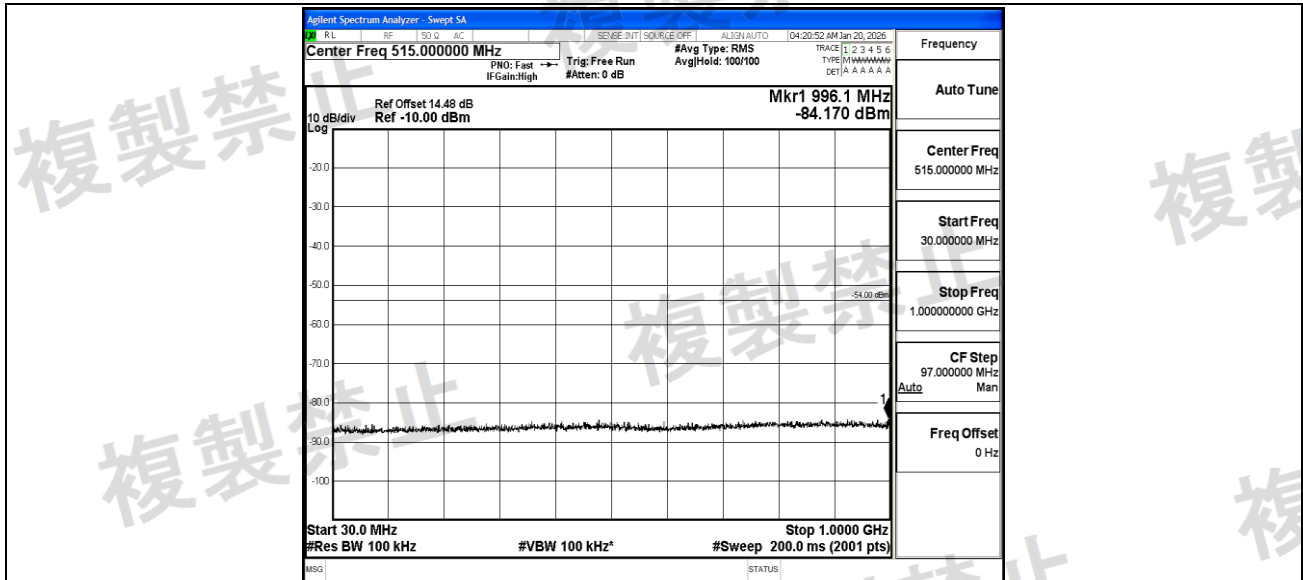
NTNV_2DH5_Ant1_2402_30~1000



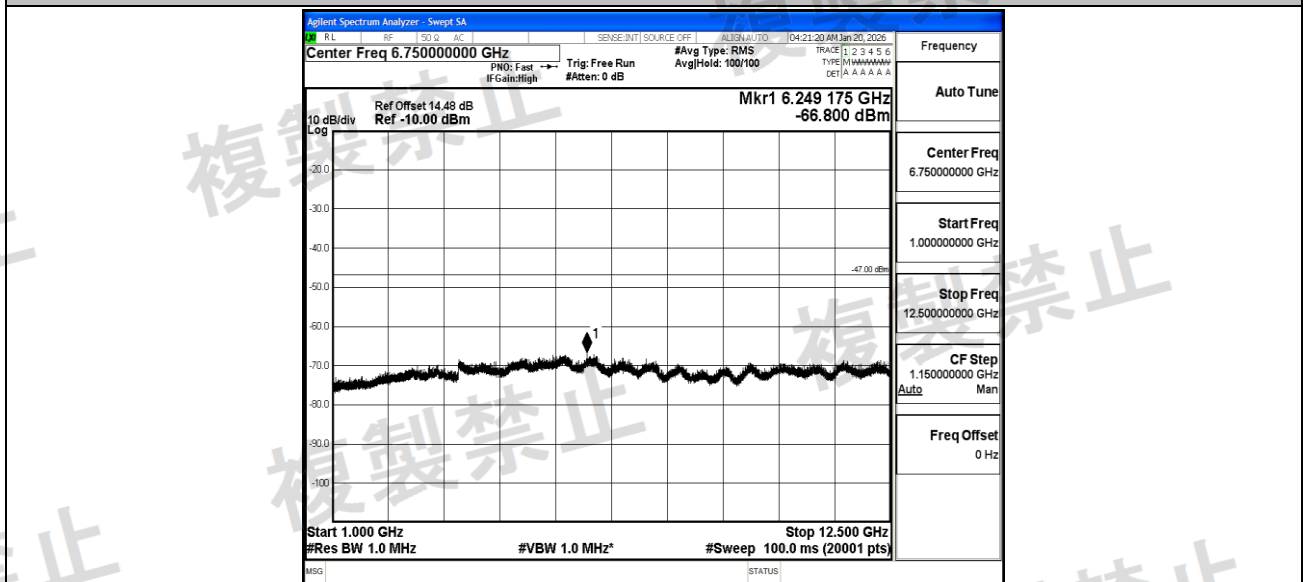
NTNV_2DH5_Ant1_2402_1000~12500



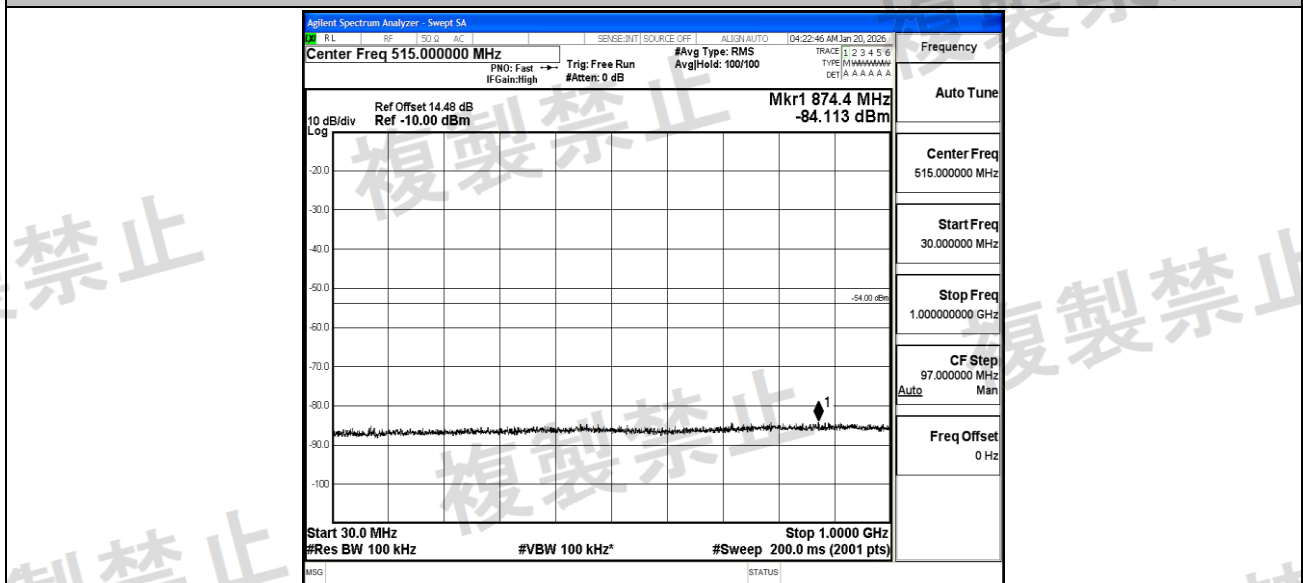
NTNV_2DH5_Ant1_2441_30~1000



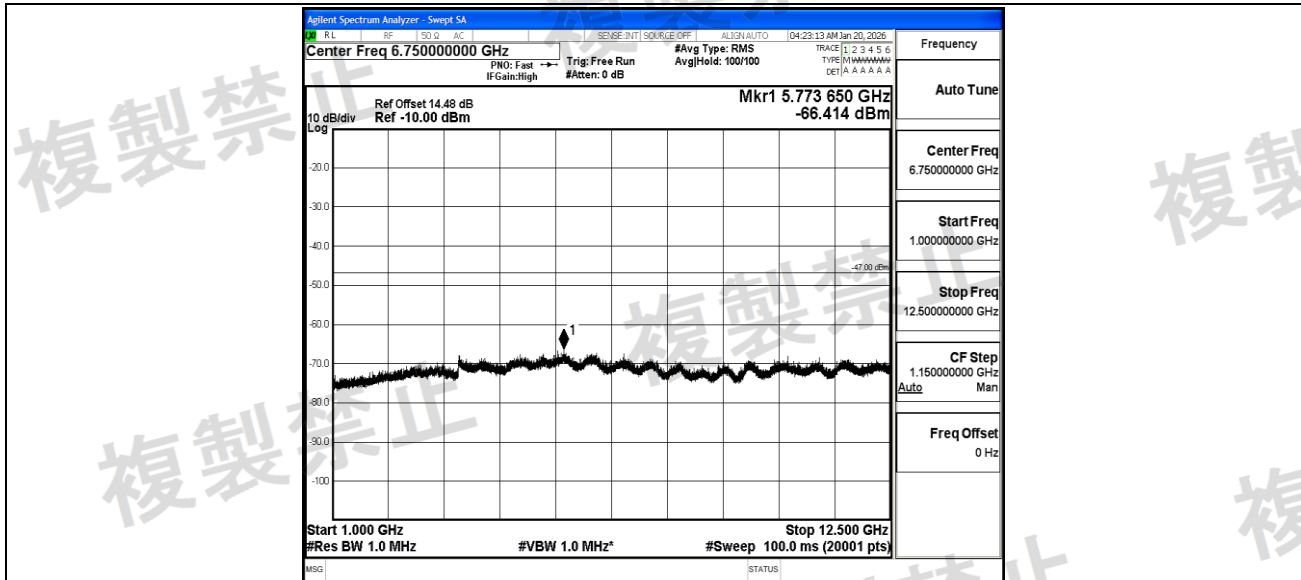
NTNV_2DH5_Ant1_2441_1000~12500



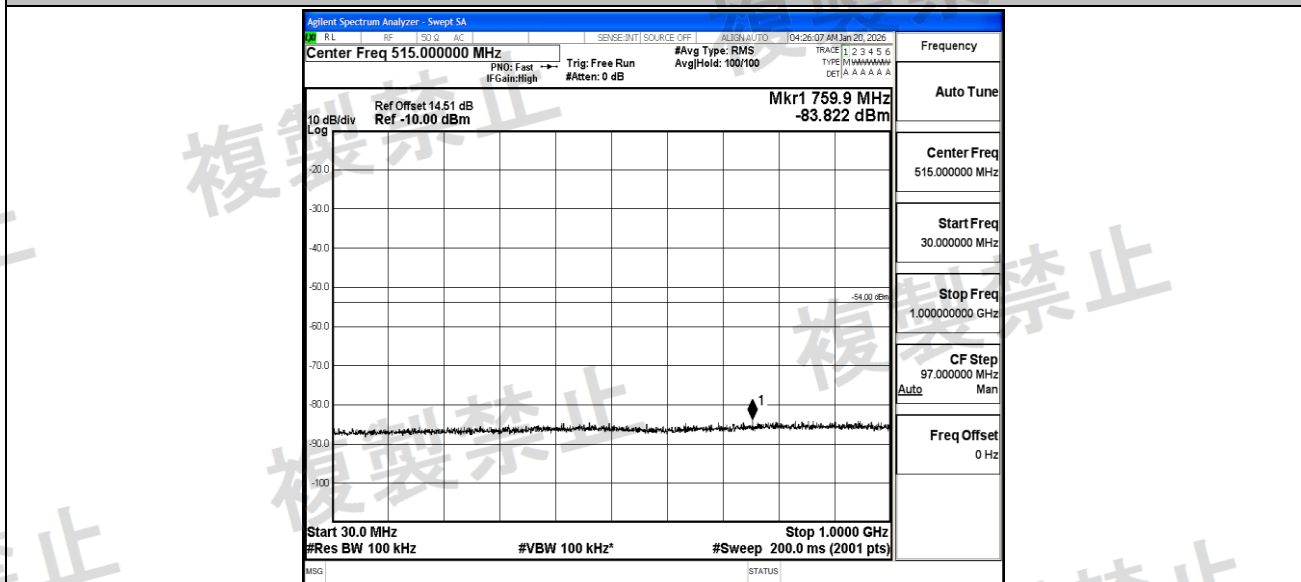
NTNV_2DH5_Ant1_2480_30~1000



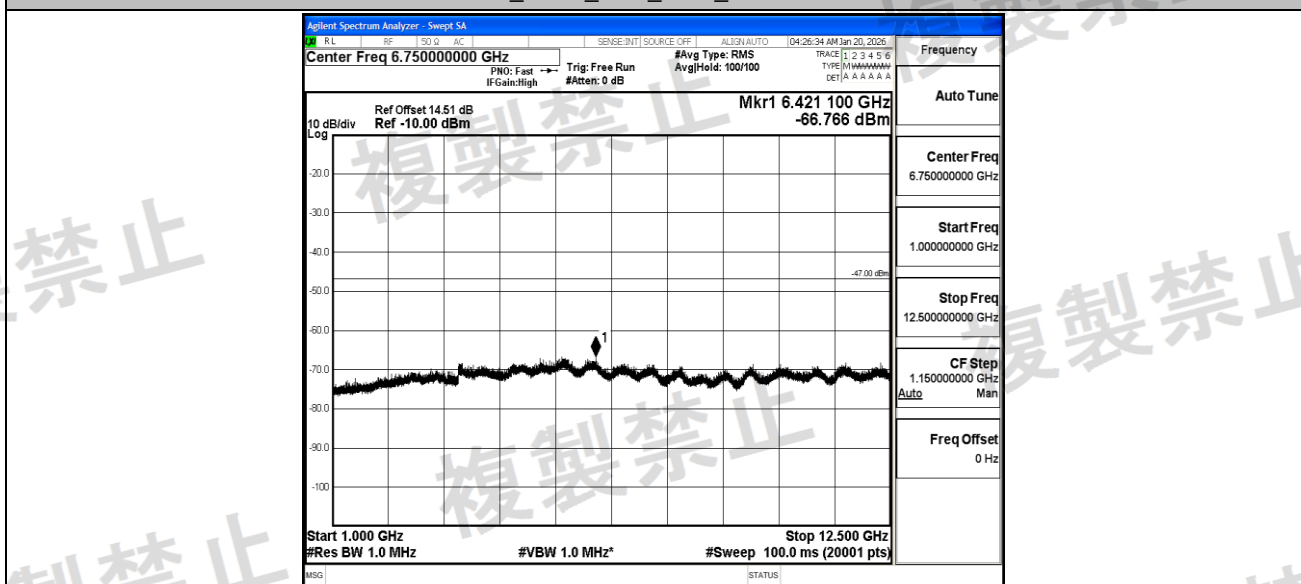
NTNV_2DH5_Ant1_2480_1000~12500



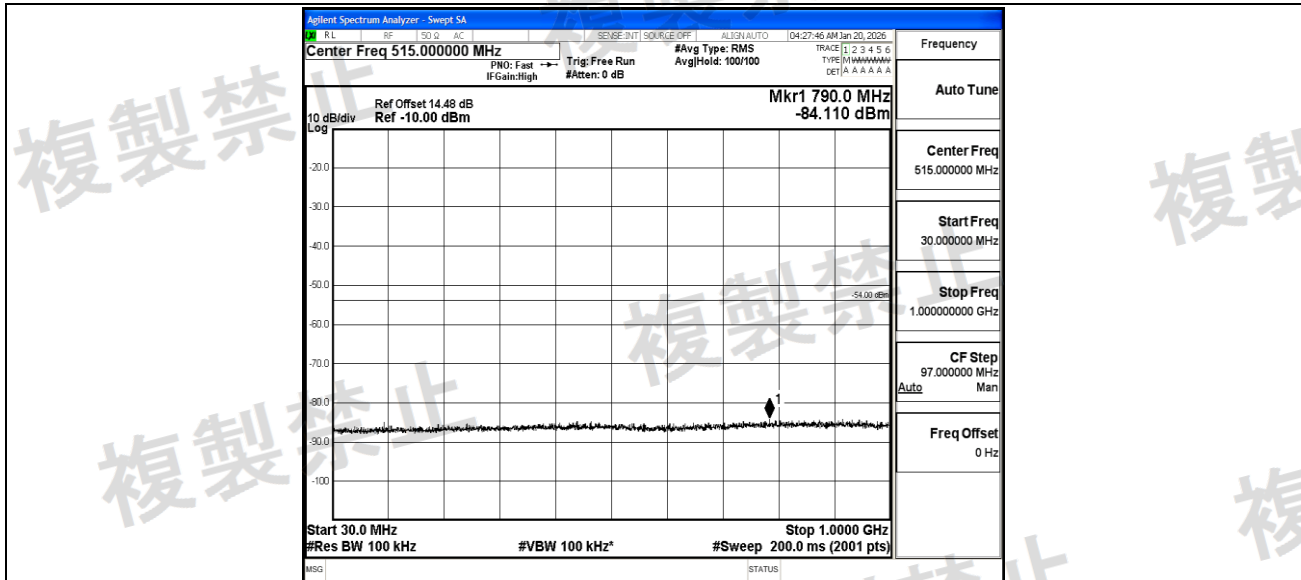
NTNV_3DH5_Ant1_2402_30~1000



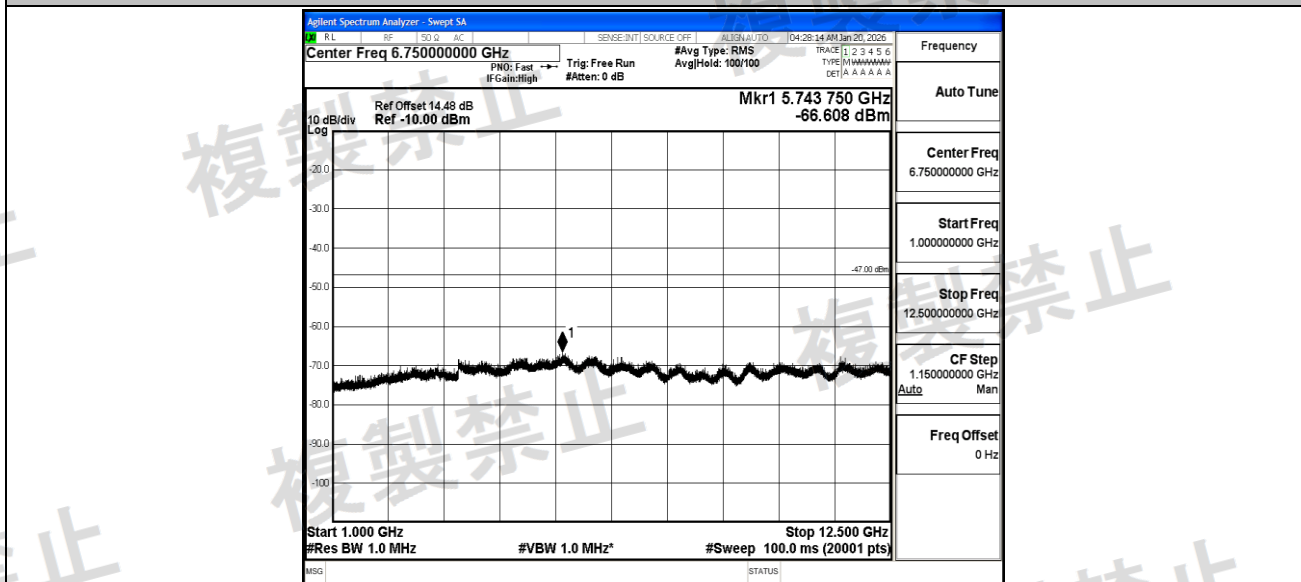
NTNV_3DH5_Ant1_2402_1000~12500



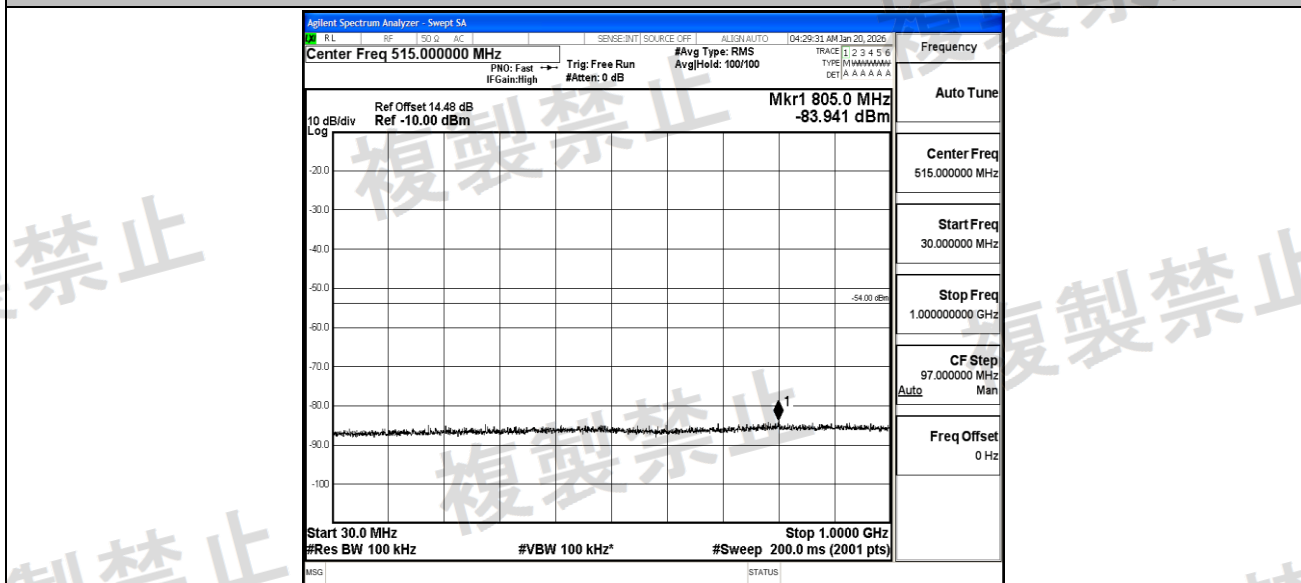
NTNV_3DH5_Ant1_2441_30~1000



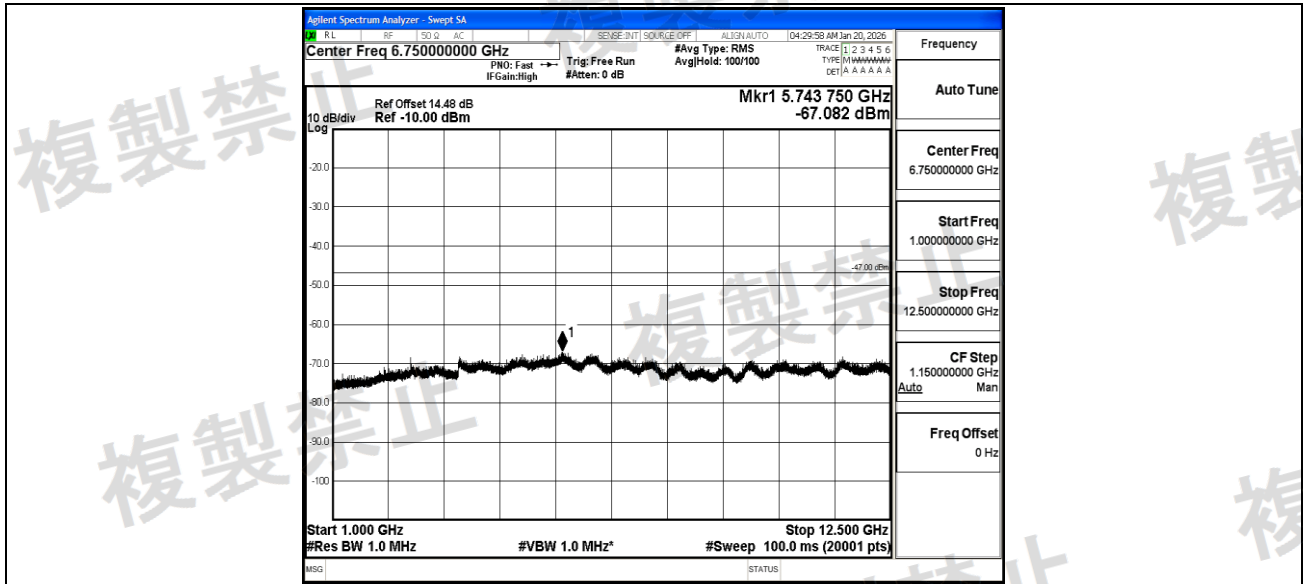
NTNV_3DH5_Ant1_2441_1000~12500



NTNV_3DH5_Ant1_2480_30~1000



NTNV_3DH5_Ant1_2480_1000~12500



A.7 Dwell Time

Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit [s]	Verdict
NTNV	DH5	Ant1	Hop	2.90	104	0.302	≤0.4	PASS
	2DH5	Ant1	Hop	2.91	110	0.32	≤0.4	PASS
	3DH5	Ant1	Hop	2.91	120	0.349	≤0.4	PASS

Test Graphs

