



Appendix A for BT Test Data

Product Name: Game Controller

Test Model: 2513/GHMGC-BL

Environmental Conditions

Temperature:	22.3°C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Luo
Supervised by:	Nick Peng



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A.1 Frequency_Error

Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	Result[ppm]	Limit[ppm]	Verdict
NTNV	Frequency Error	Ant1	2402	-0.41632	±50	PASS
			2441	-0.40967	±50	PASS
			2480	-0.40323	±50	PASS

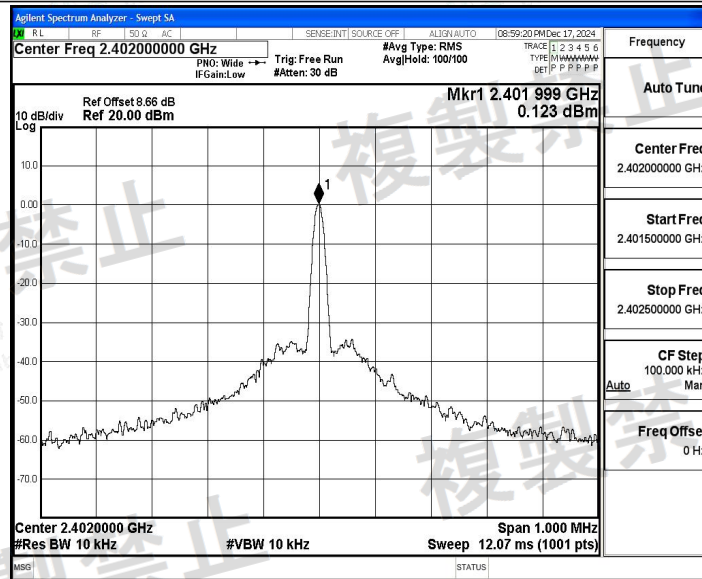


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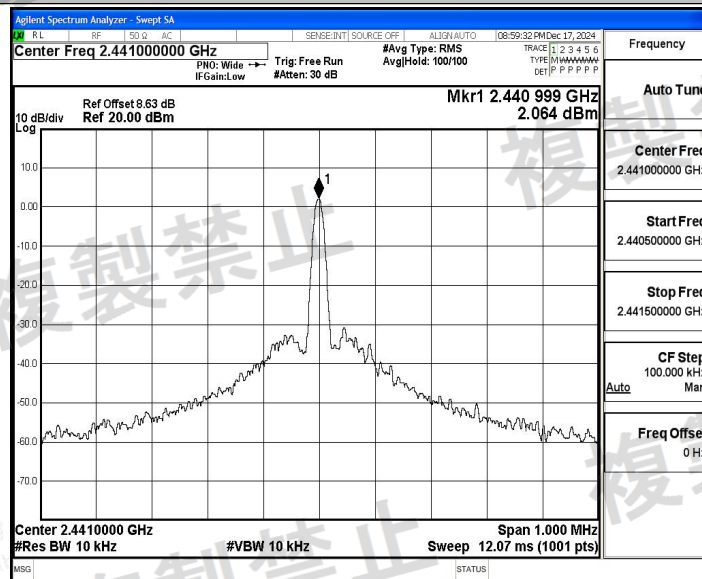


Test Graphs

NTNV_Ant1_2402

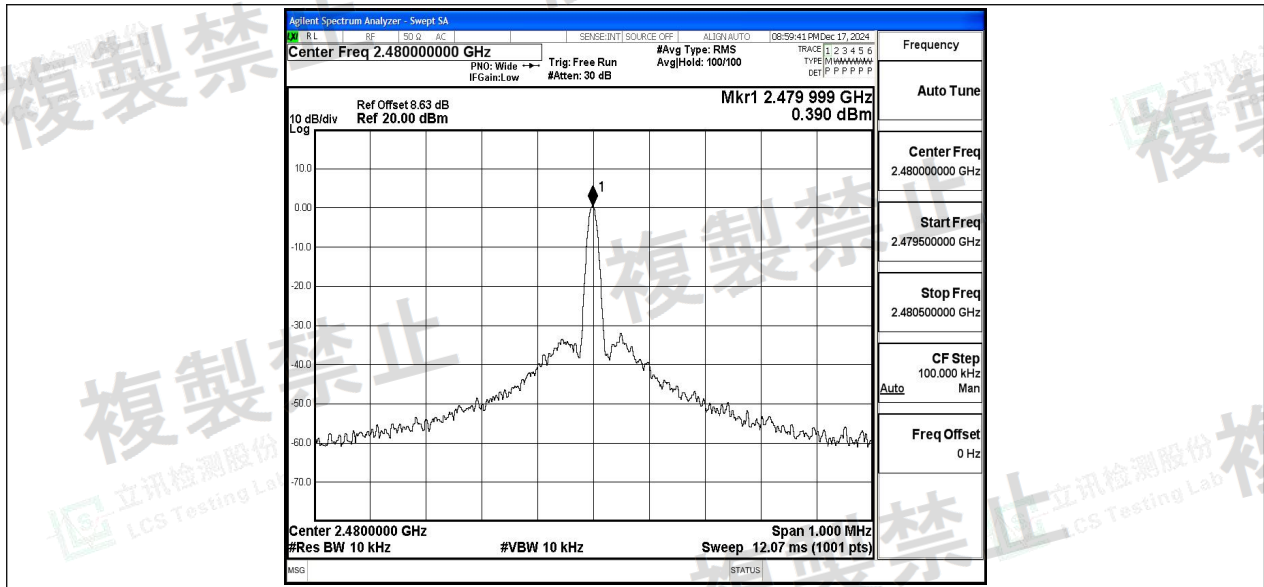


NTNV_Ant1_2441



NTNV_Ant1_2480





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A.2 Antenna Power

Test Result

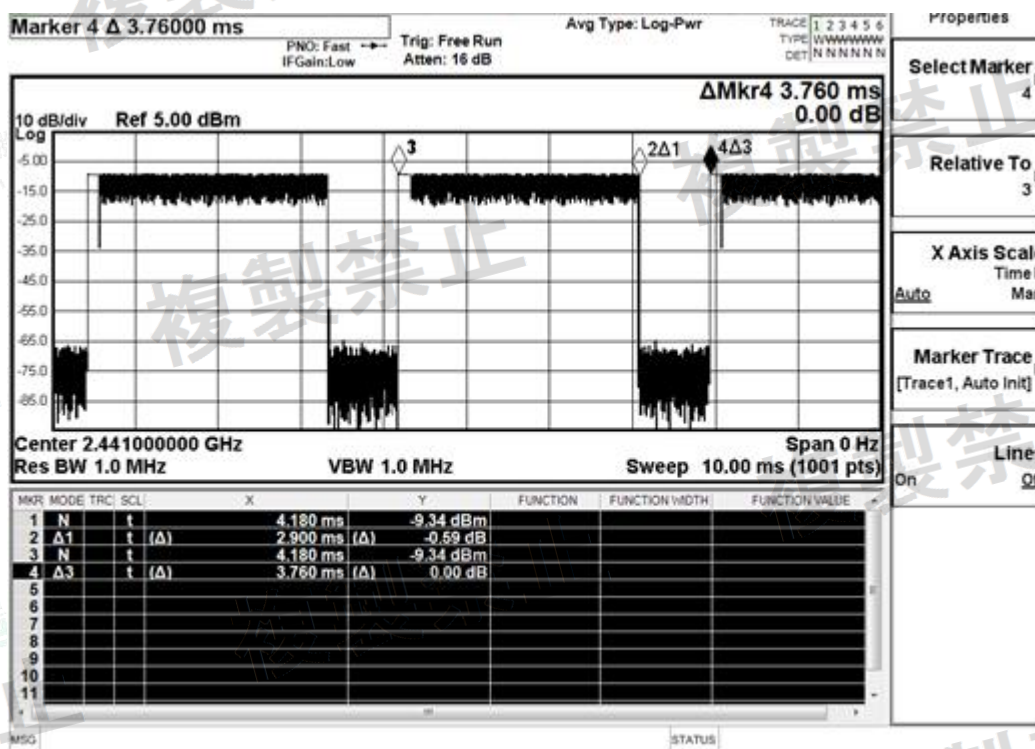
Test Voltage				Normal Voltage			
Mode	Declared power	Average Result	Average Result	Result	Limit	Tolerance	Limit
	(mW/MHz)	(dBm)	(mW)	(mW/MHz)	(mW/MHz)	/	/
Hoping-Tx (1Mbps)	0.02	0.62	1.153	0.022	3	10.00	+20%
Conclusion: PASS							

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

Antenna power Result = Measured Power / Spreading bandwidth

Spread Bandwidth (DH5) = 68.680MHz

Duty cycle=77.1%

$$\text{Duty cycle} = [T_{on} / (T_{on} + T_{off})] * 100\% = 2.900 / 3.760 * 100\% = 77.1\%$$


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A.3 Occupied Bandwidth

Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	2402	0.863	≤83.5	PASS
			2441	0.861	≤83.5	PASS
			2480	0.863	≤83.5	PASS

TestCondition	TestMode	Antenna	Frequency[MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	Hop	78.359	≤83.5	PASS

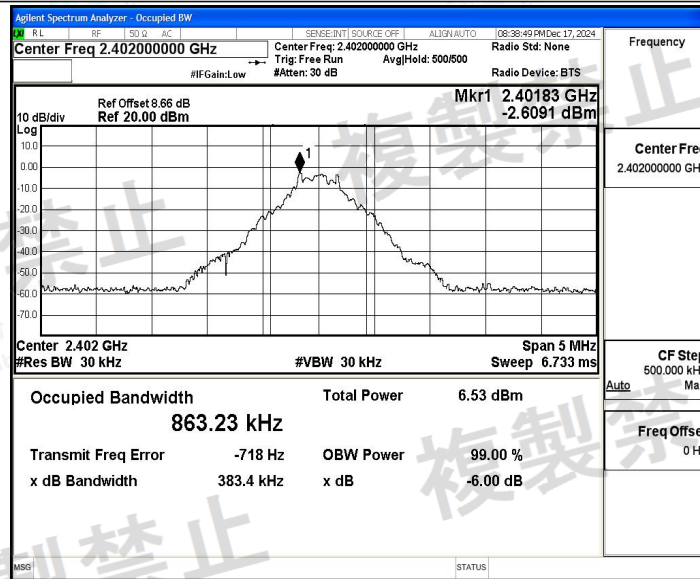


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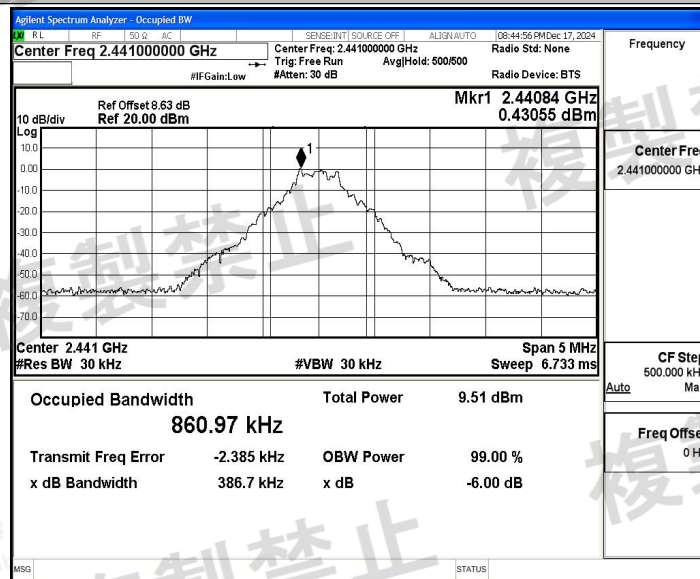


Test Graphs

NTNV_DH5_Ant1_2402



NTNV_DH5_Ant1_2441



NTNV_DH5_Ant1_2480

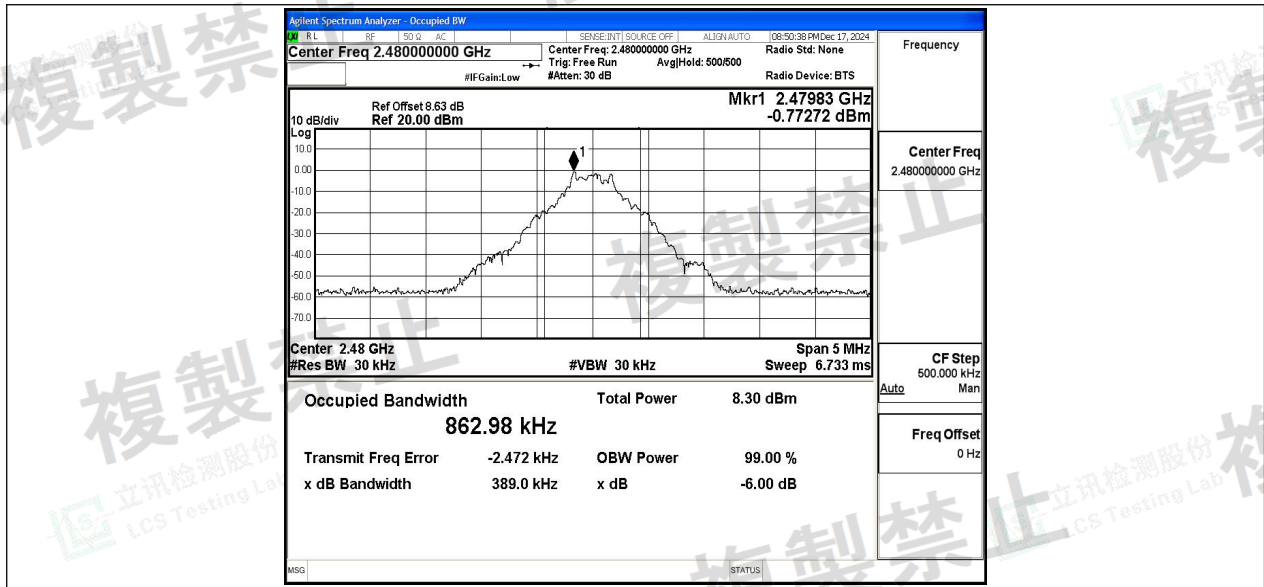


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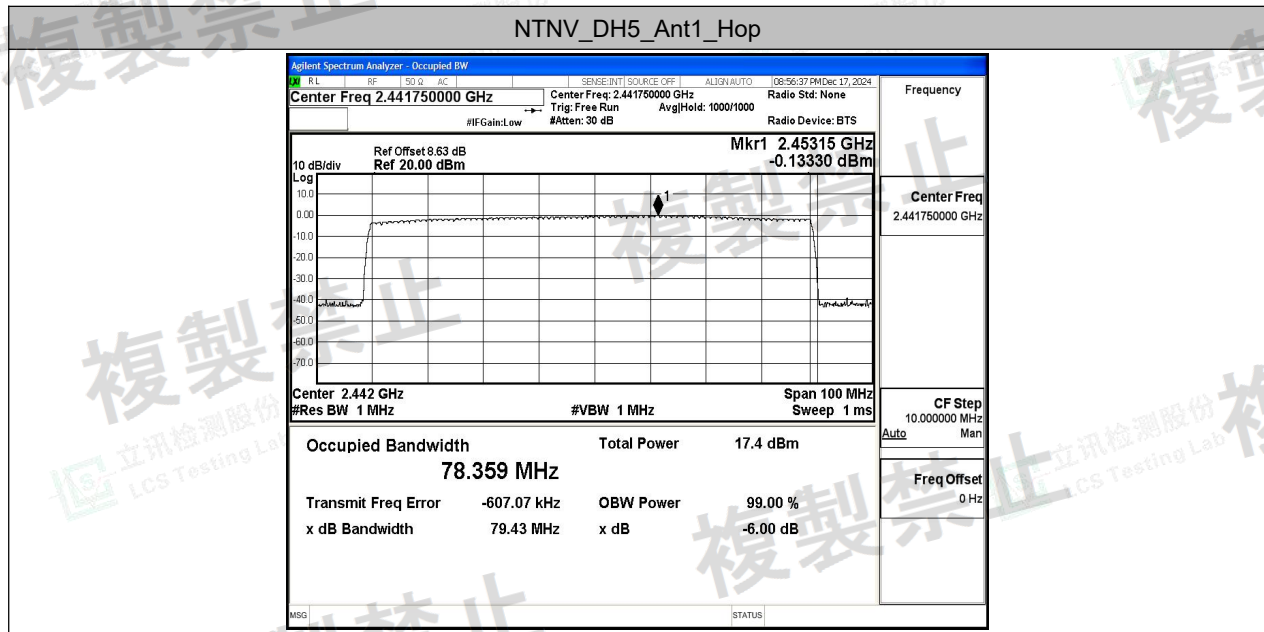
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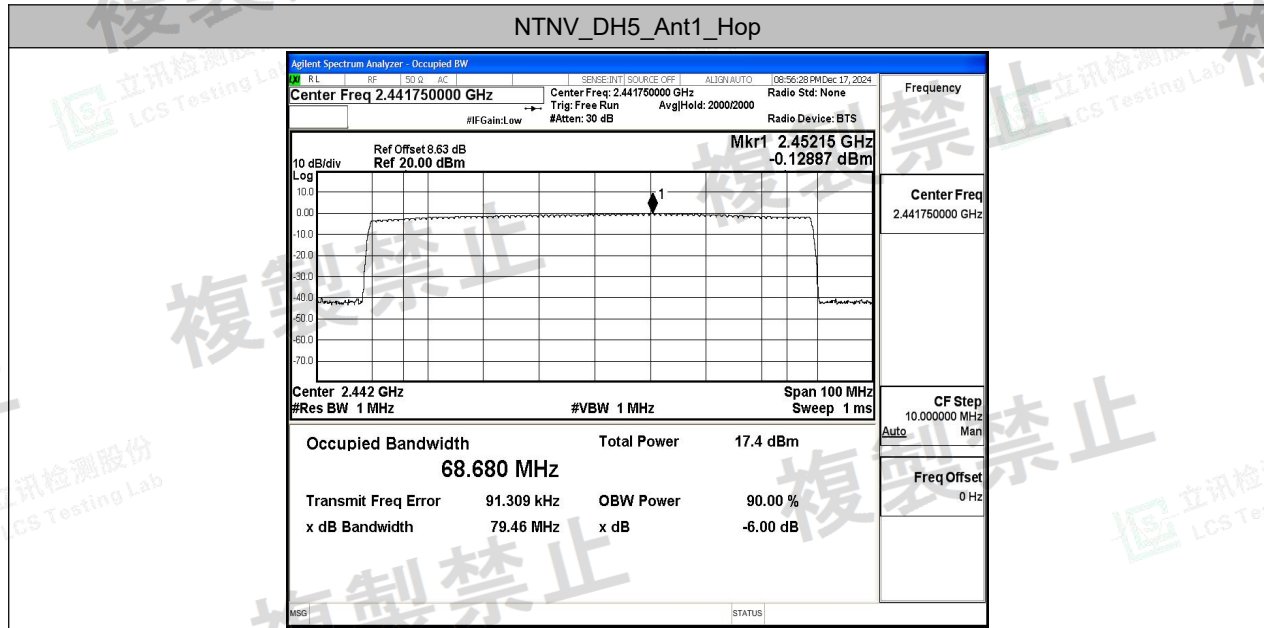


A.4 Spread Bandwidth

Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	Hop	68.680	---	PASS

Test Graphs



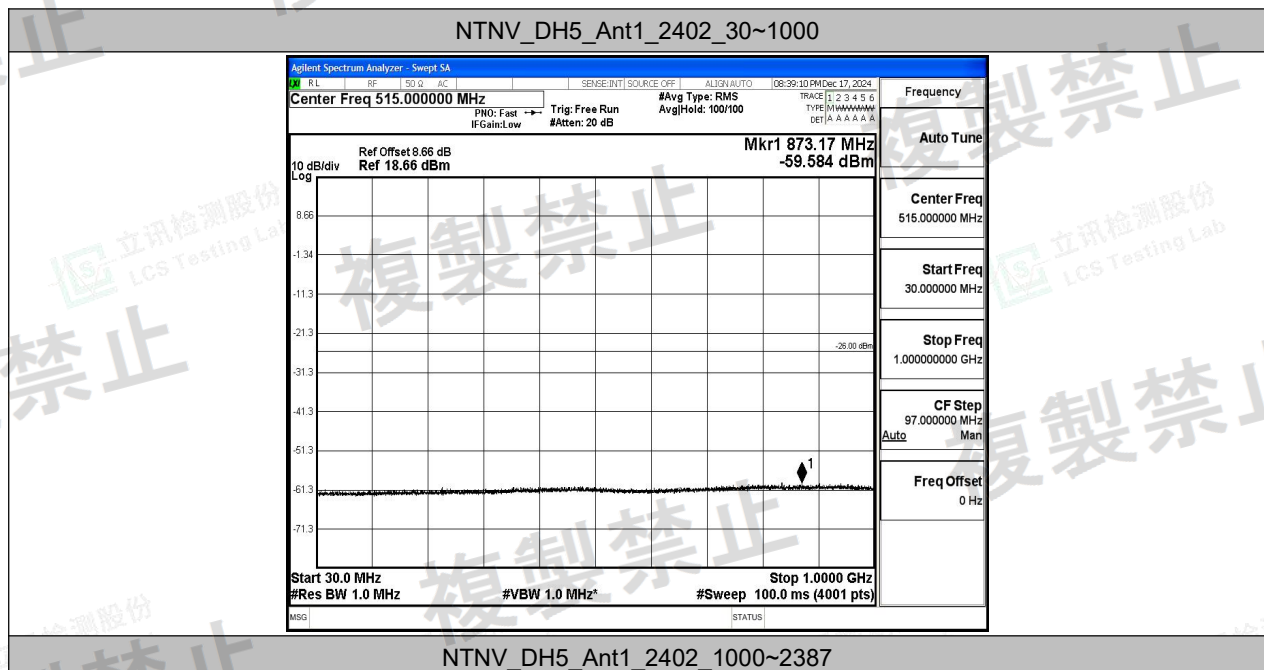


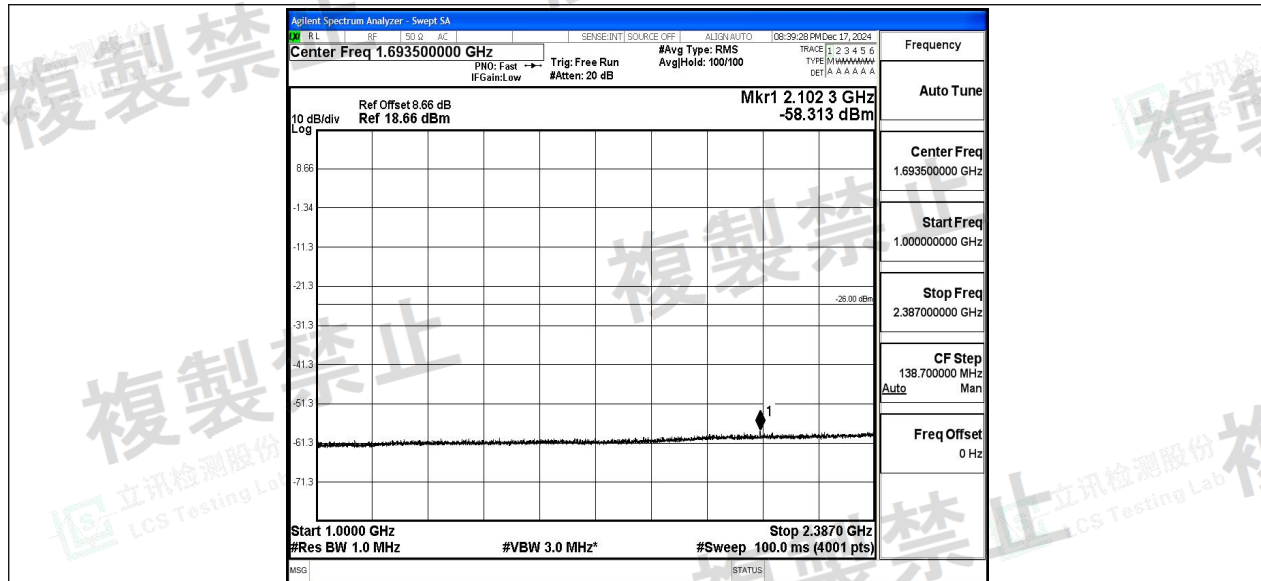
A.5 Spurious Emission of TX

Test Result

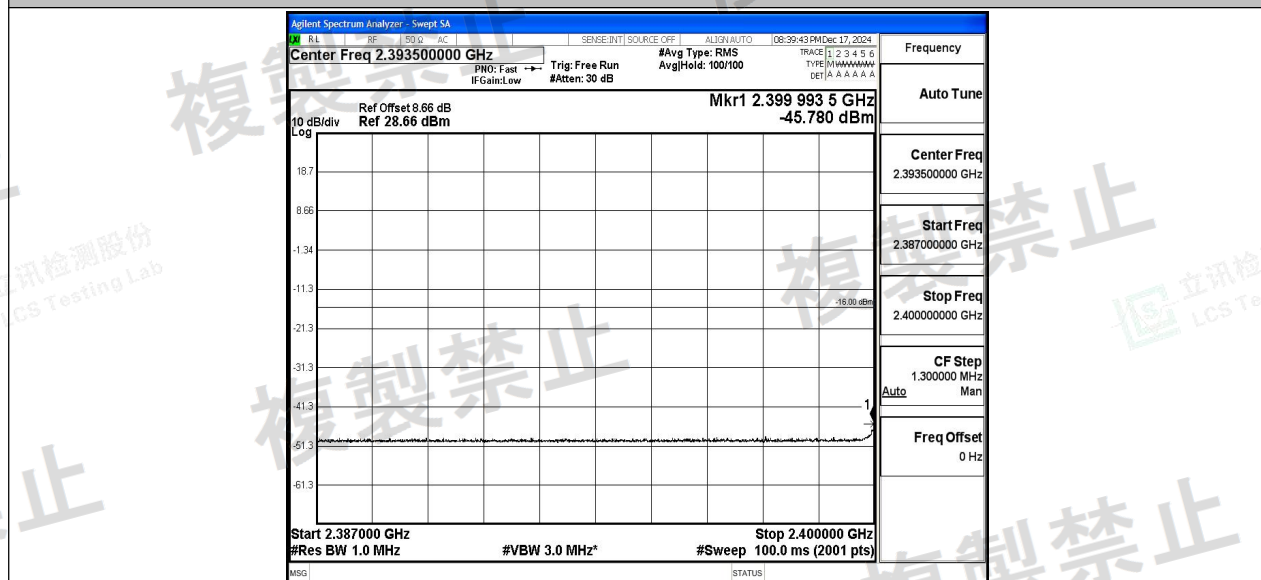
TestCondition	TestMode	Antenna	Frequency[MHz]	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	DH5	Ant1	2402	30~1000	-59.58	≤-26	0.00110	≤2.5	PASS
				1000~2387	-58.31	≤-26	0.00148	≤2.5	PASS
				2387~2400	-45.78	≤-16	0.02642	≤25	PASS
				2483.5~2496.5	-49.01	≤-16	0.01256	≤25	PASS
				2496.5~13000	-51.23	≤-26	0.00753	≤2.5	PASS
			2441	30~1000	-59.43	≤-26	0.00114	≤2.5	PASS
				1000~2387	-58.67	≤-26	0.00136	≤2.5	PASS
				2387~2400	-49.17	≤-16	0.01211	≤25	PASS
				2483.5~2496.5	-48.92	≤-16	0.01282	≤25	PASS
				2496.5~13000	-51.08	≤-26	0.00780	≤2.5	PASS
			2480	30~1000	-59.41	≤-26	0.00115	≤2.5	PASS
				1000~2387	-58.34	≤-26	0.00147	≤2.5	PASS
				2387~2400	-49.26	≤-16	0.01186	≤25	PASS
				2483.5~2496.5	-48.82	≤-16	0.01312	≤25	PASS
				2496.5~13000	-51.11	≤-26	0.00774	≤2.5	PASS

Test Graphs



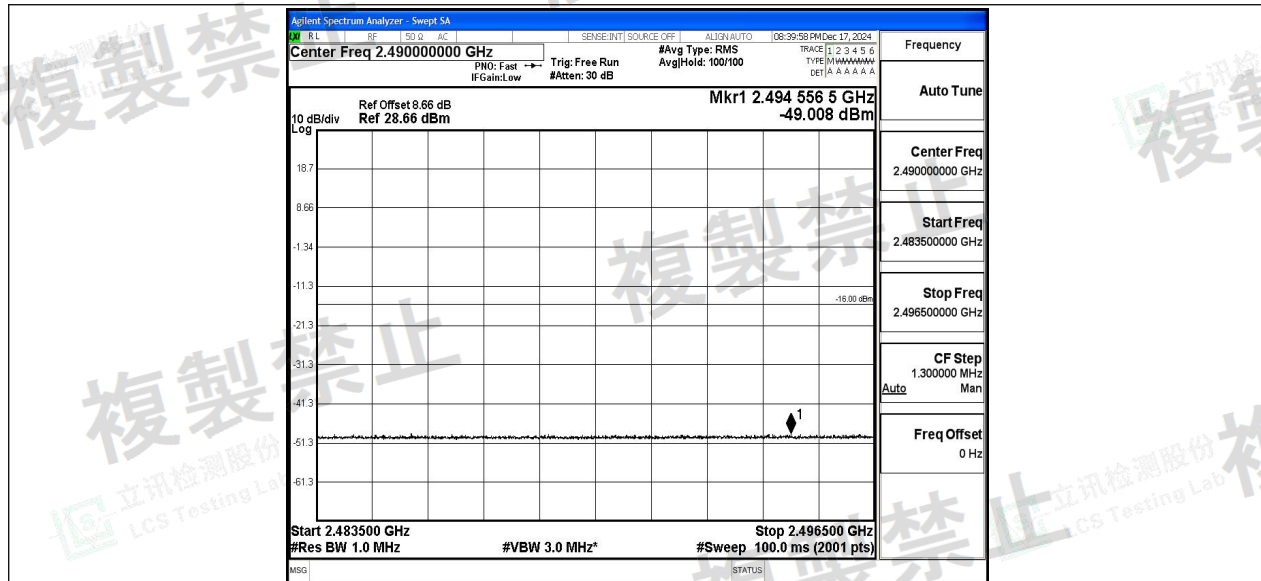


NTNV_DH5_Ant1_2402_2387~2400

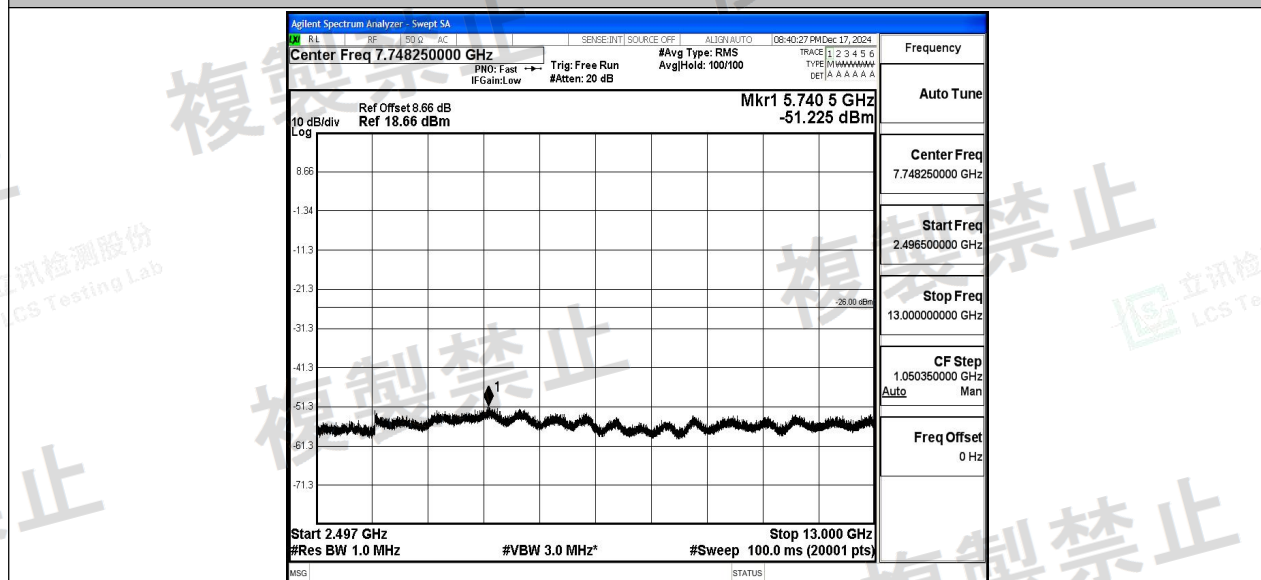


NTNV_DH5_Ant1_2402_2483.5~2496.5



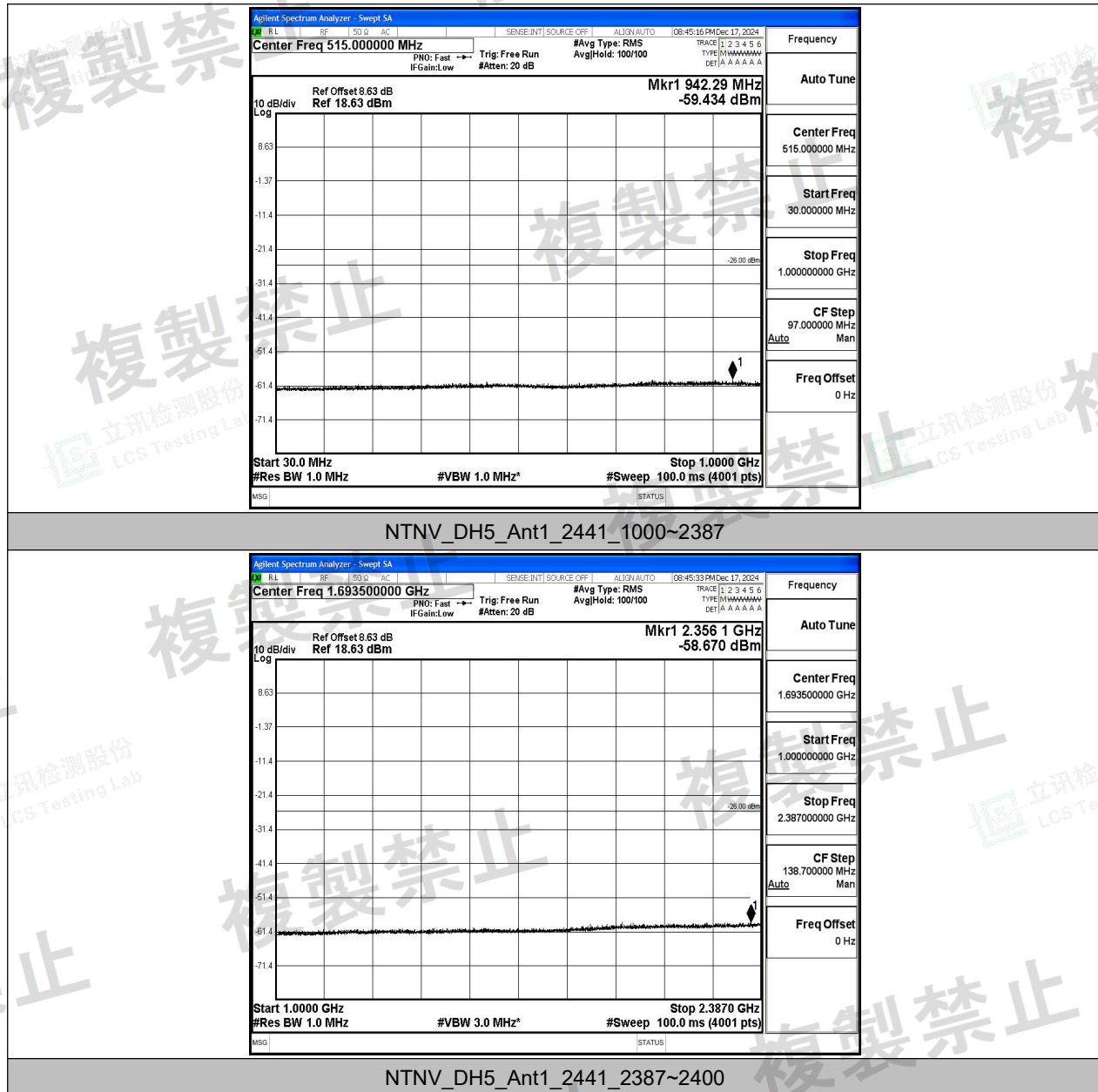


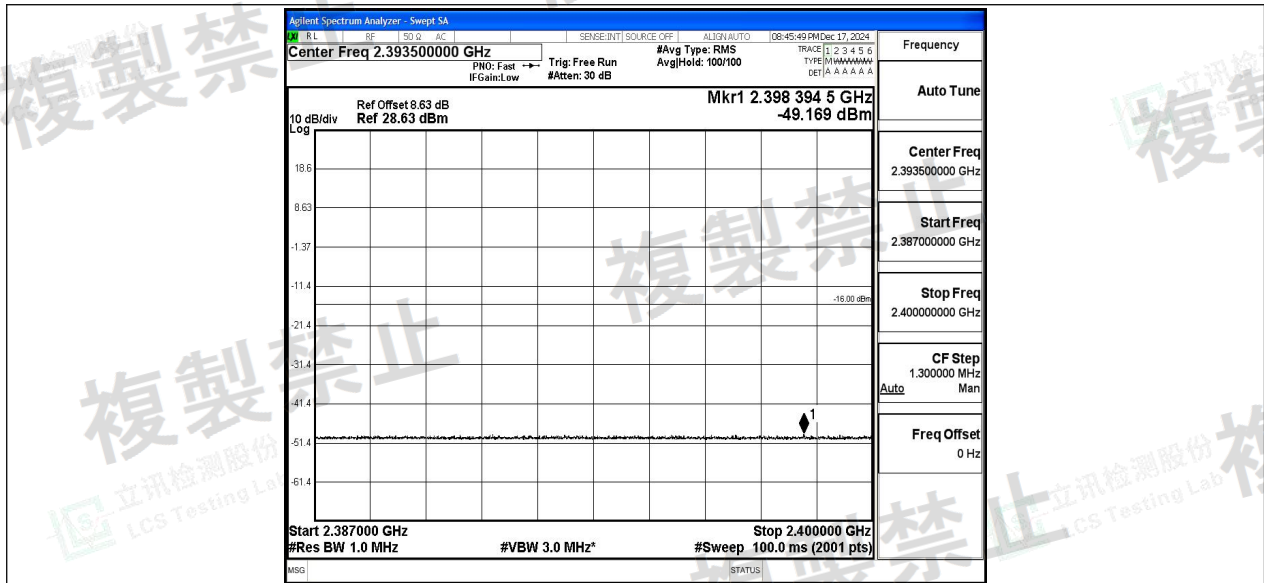
NTNV_DH5_Ant1_2402_2496.5~13000



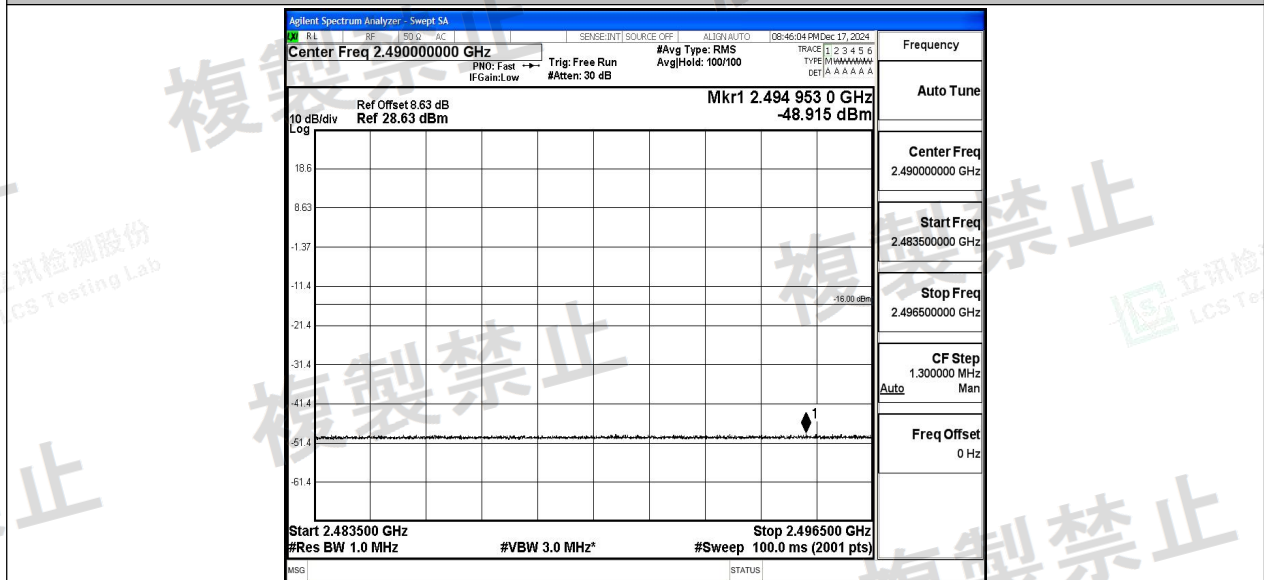
NTNV_DH5_Ant1_2441_30~1000





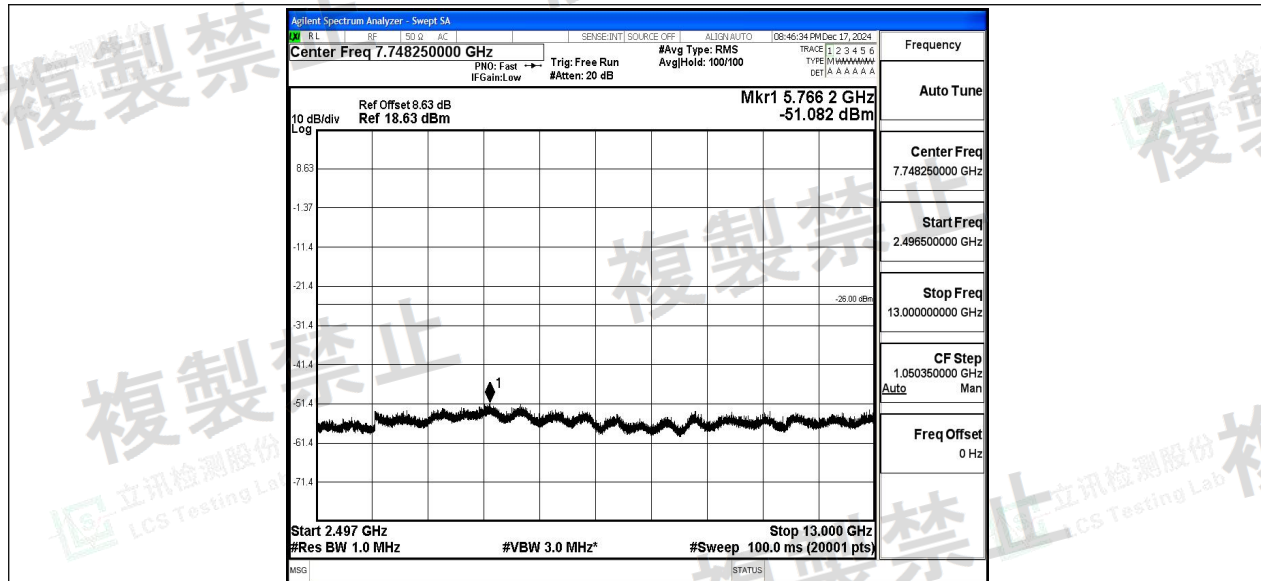


NTNV_DH5_Ant1_2441_2483.5~2496.5

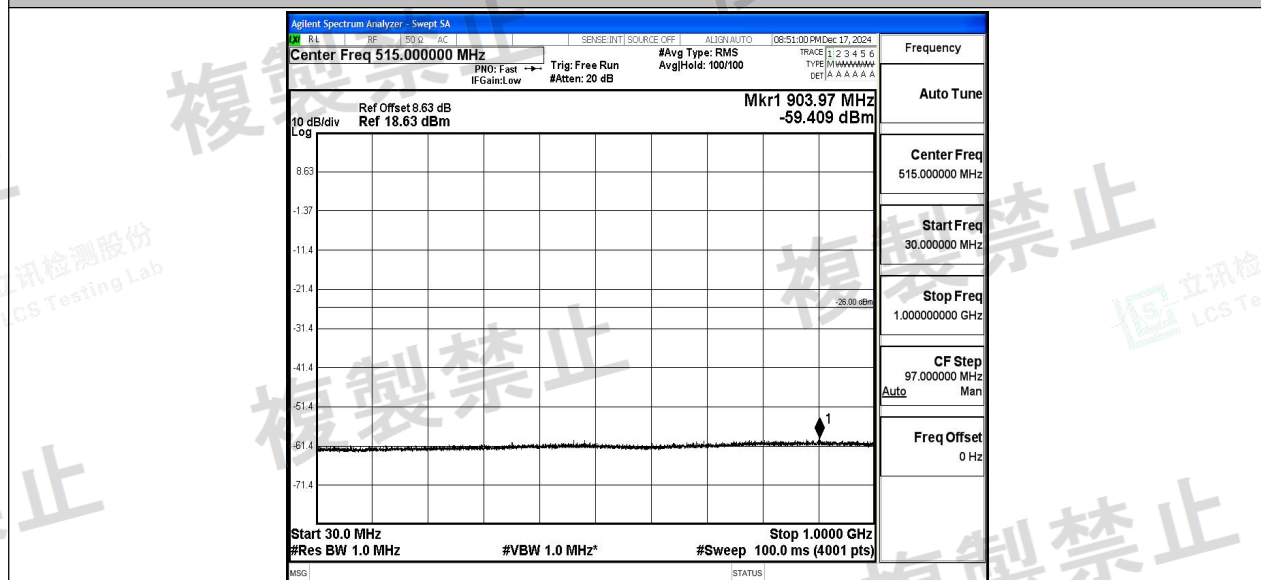


NTNV_DH5_Ant1_2441_2496.5~13000



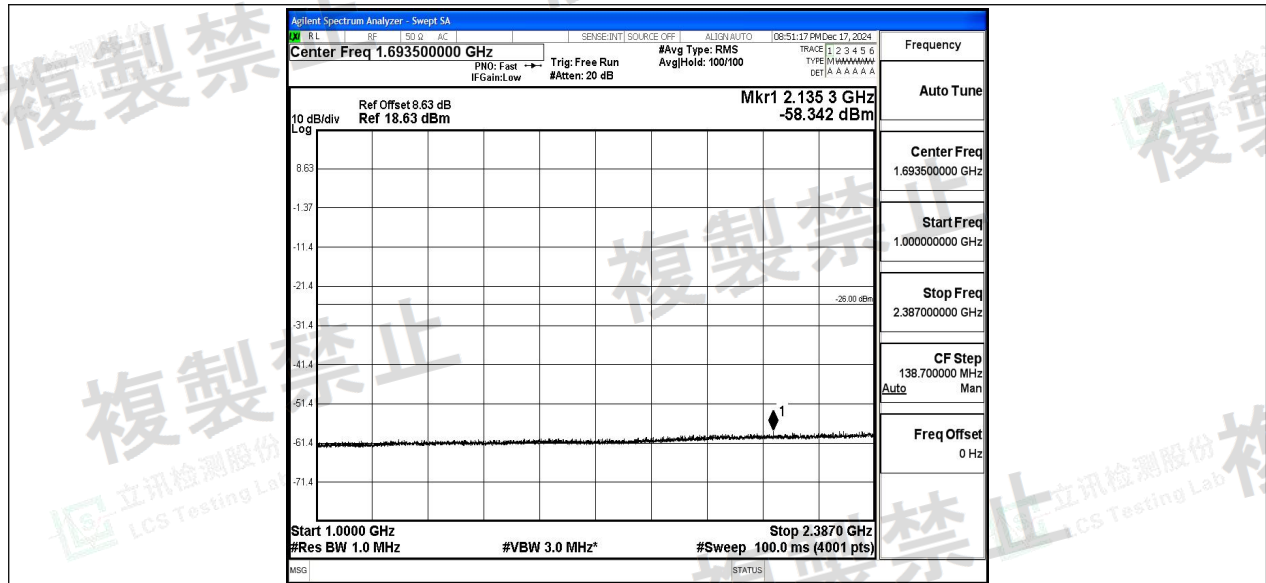


NTNV_DH5_Ant1_2480_30~1000

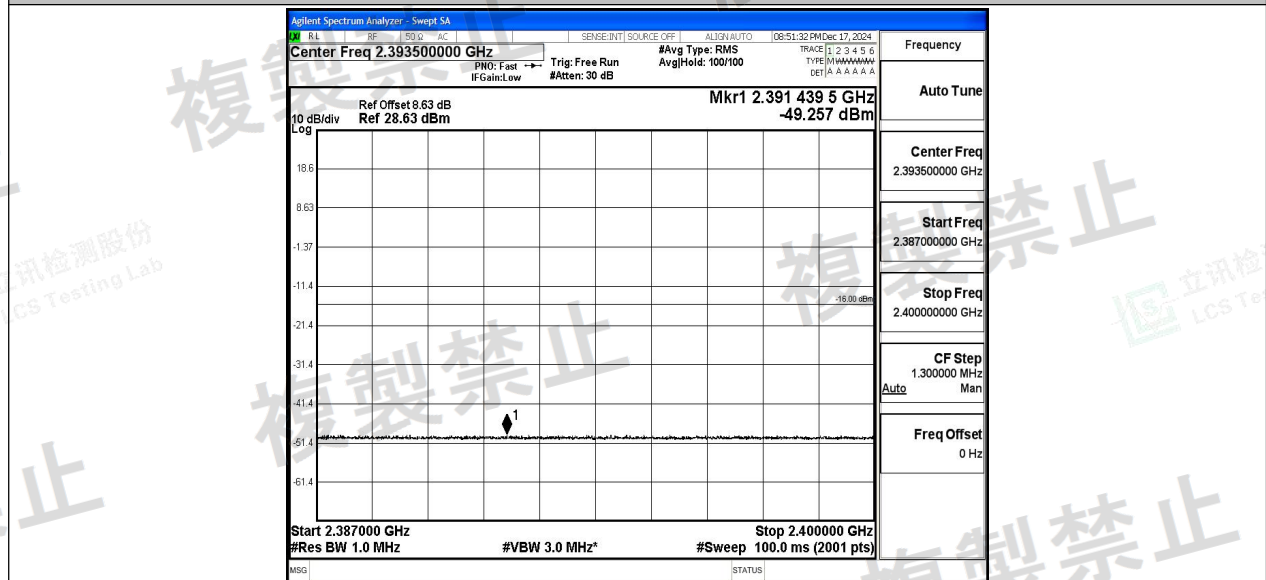


NTNV_DH5_Ant1_2480_1000~2387



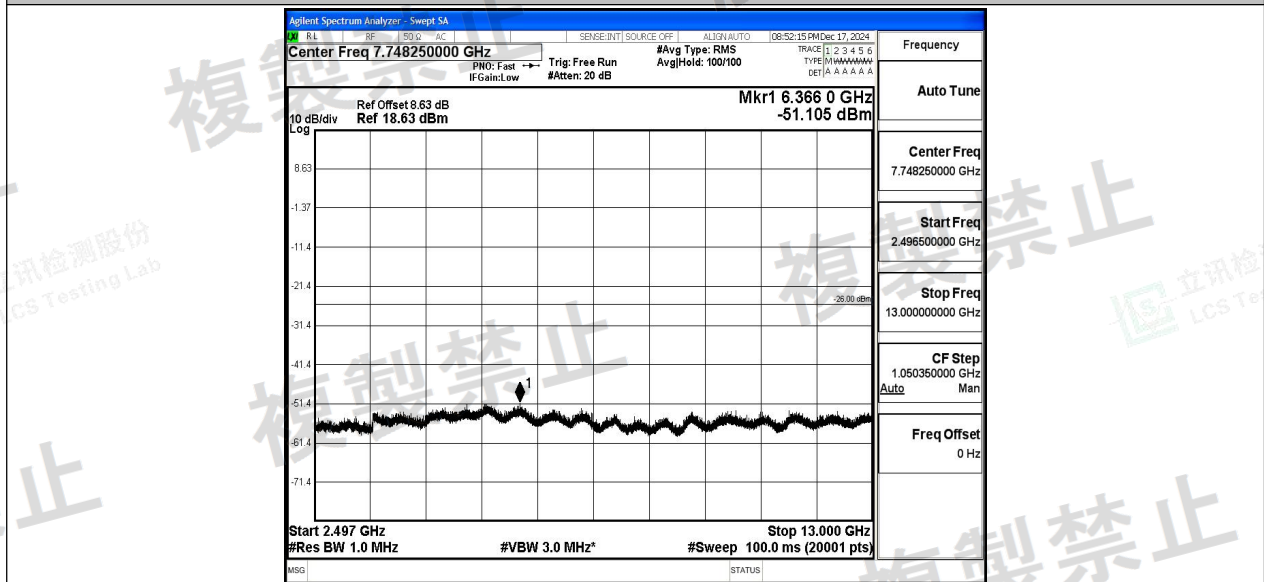
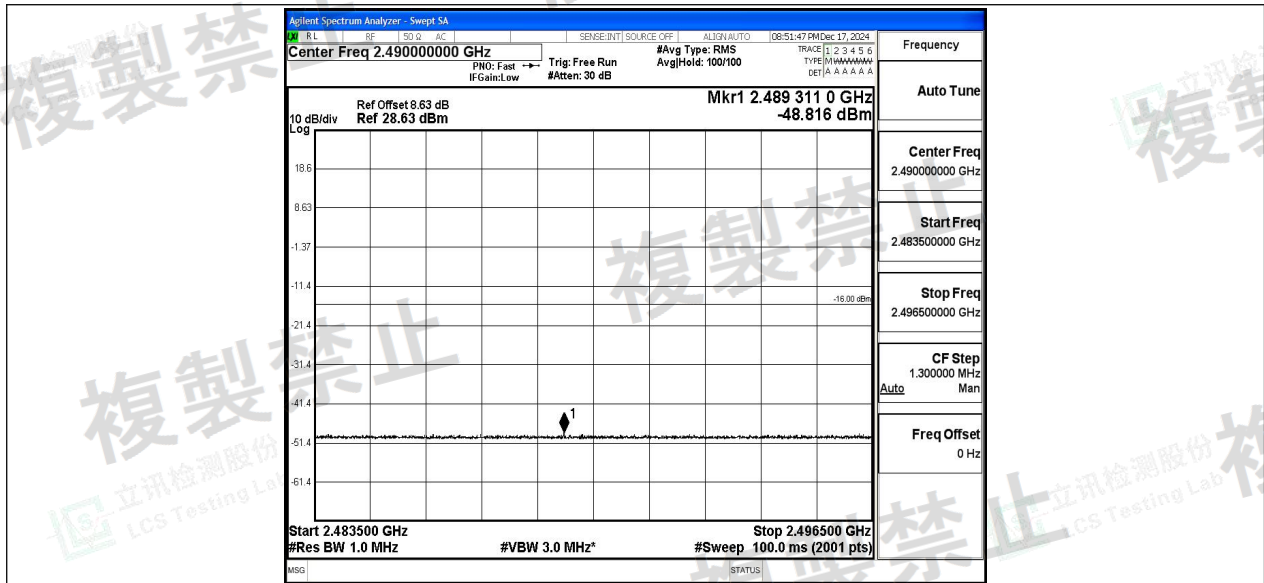


NTNV_DH5_Ant1_2480_2387~2400



NTNV_DH5_Ant1_2480_2483.5~2496.5





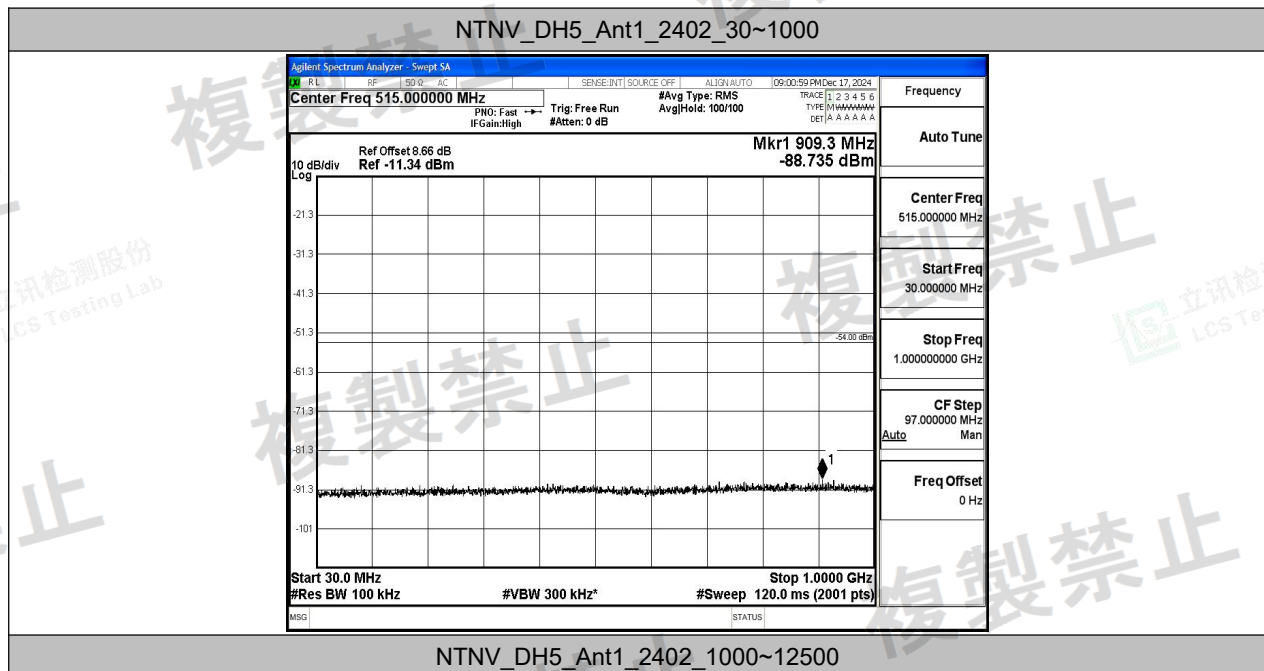


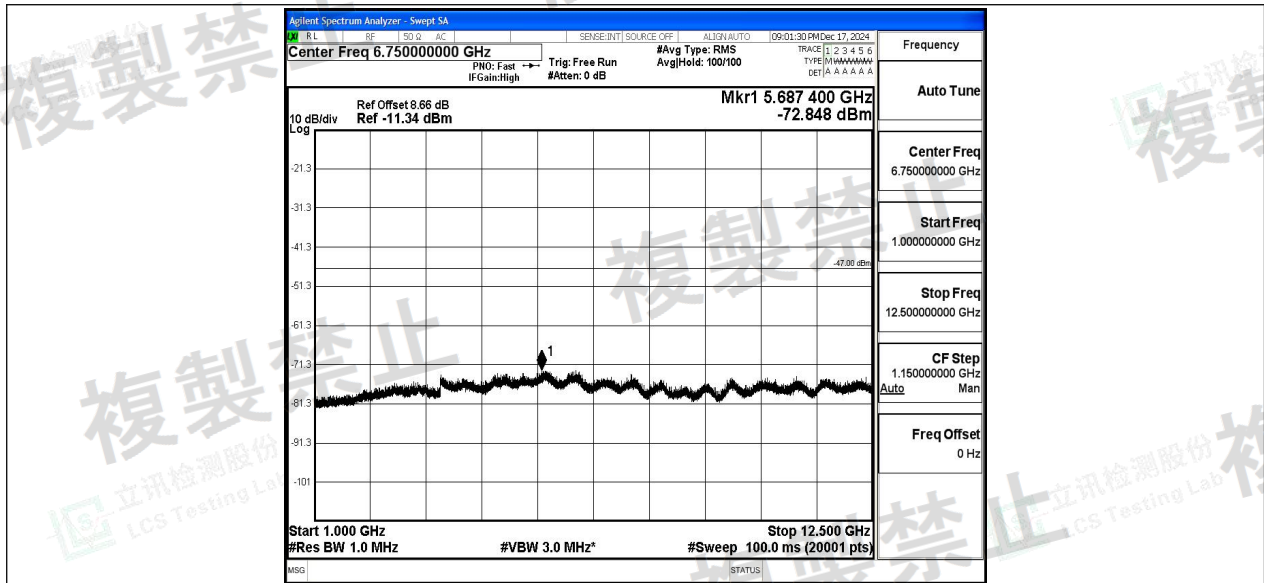
A.6 Spurious Emission of RX

Test Result

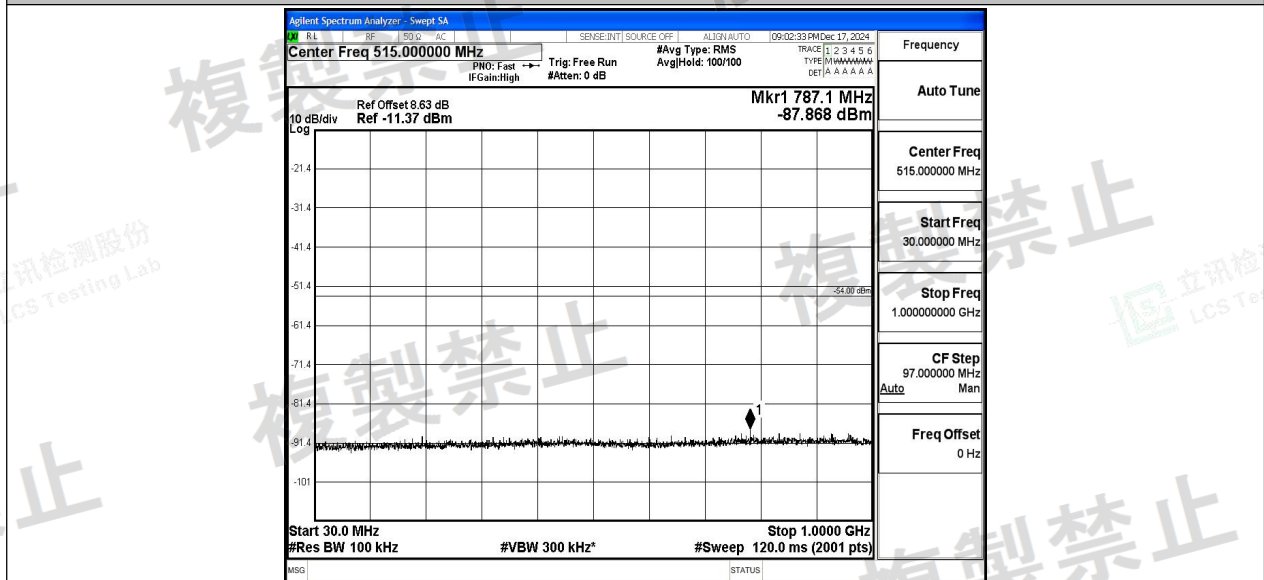
TestCondition	TestMode	Antenna	Frequency[MHz]	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	DH5	Ant1	2402	30~1000	-88.74	≤-54	0.00134	≤4	PASS
				1000~12500	-72.85	≤-47	0.05188	≤20	PASS
			2441	30~1000	-87.87	≤-54	0.00163	≤4	PASS
				1000~12500	-72.01	≤-47	0.06295	≤20	PASS
			2480	30~1000	-88.62	≤-54	0.00137	≤4	PASS
				1000~12500	-72.9	≤-47	0.05129	≤20	PASS

Test Graphs



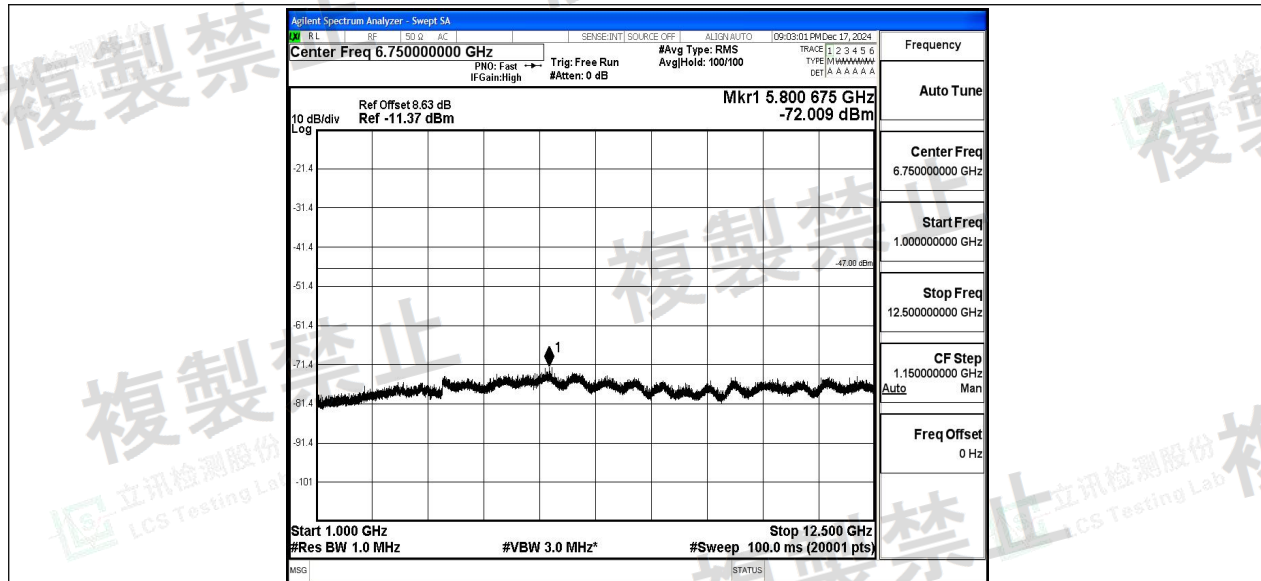


NTNV_DH5_Ant1_2441_30~1000

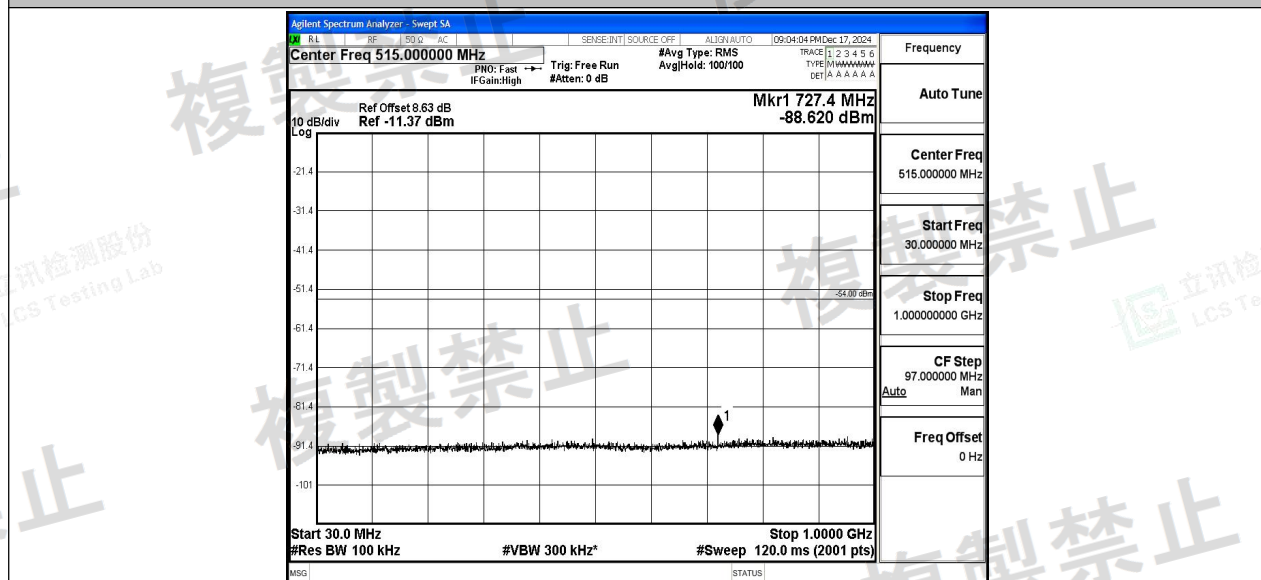


NTNV_DH5_Ant1_2441_1000~12500





NTNV_DH5_Ant1_2480_30~1000



NTNV_DH5_Ant1_2480_1000~12500

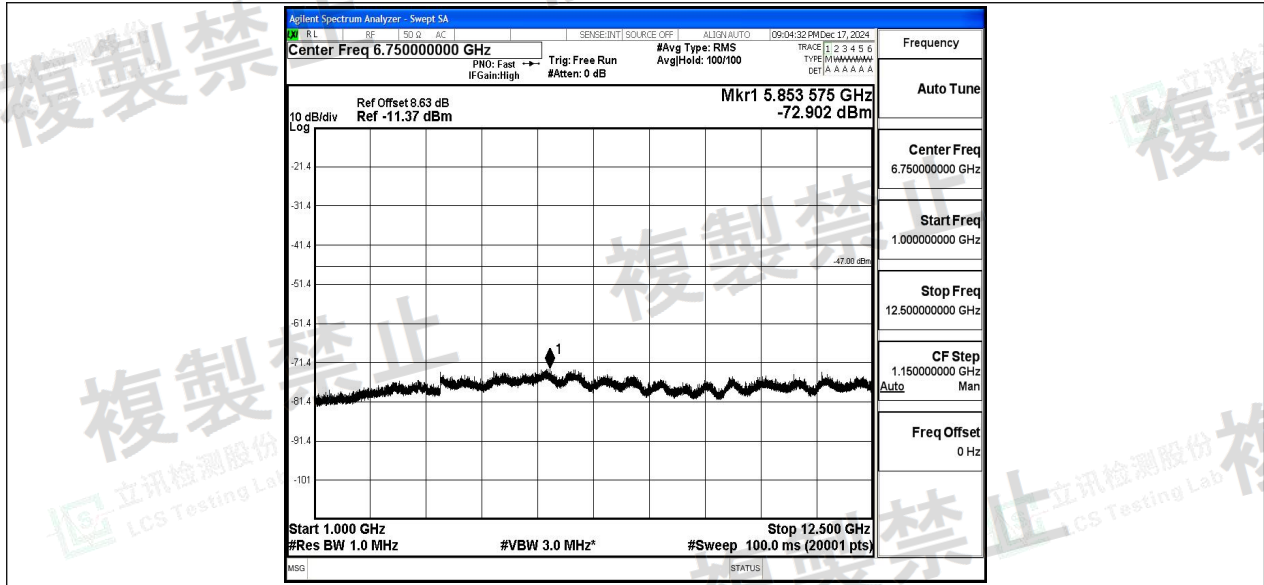


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A.7 Dwell Time

Test Result

TestCondition	TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit [s]	Verdict
NTNV	DH5	Ant1	Hop	2.91	70	0.204	≤0.4	PASS

Test Graphs

