

Appendix A for BT LE Test Data

Product Name: smart glasses
Test Model: X02

Environmental Conditions	
Temperature:	23.9°C
Relative Humidity:	52.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhang hai
Supervised by:	Fengliu Tang

A.1 Frequency Error

Test Result

Left

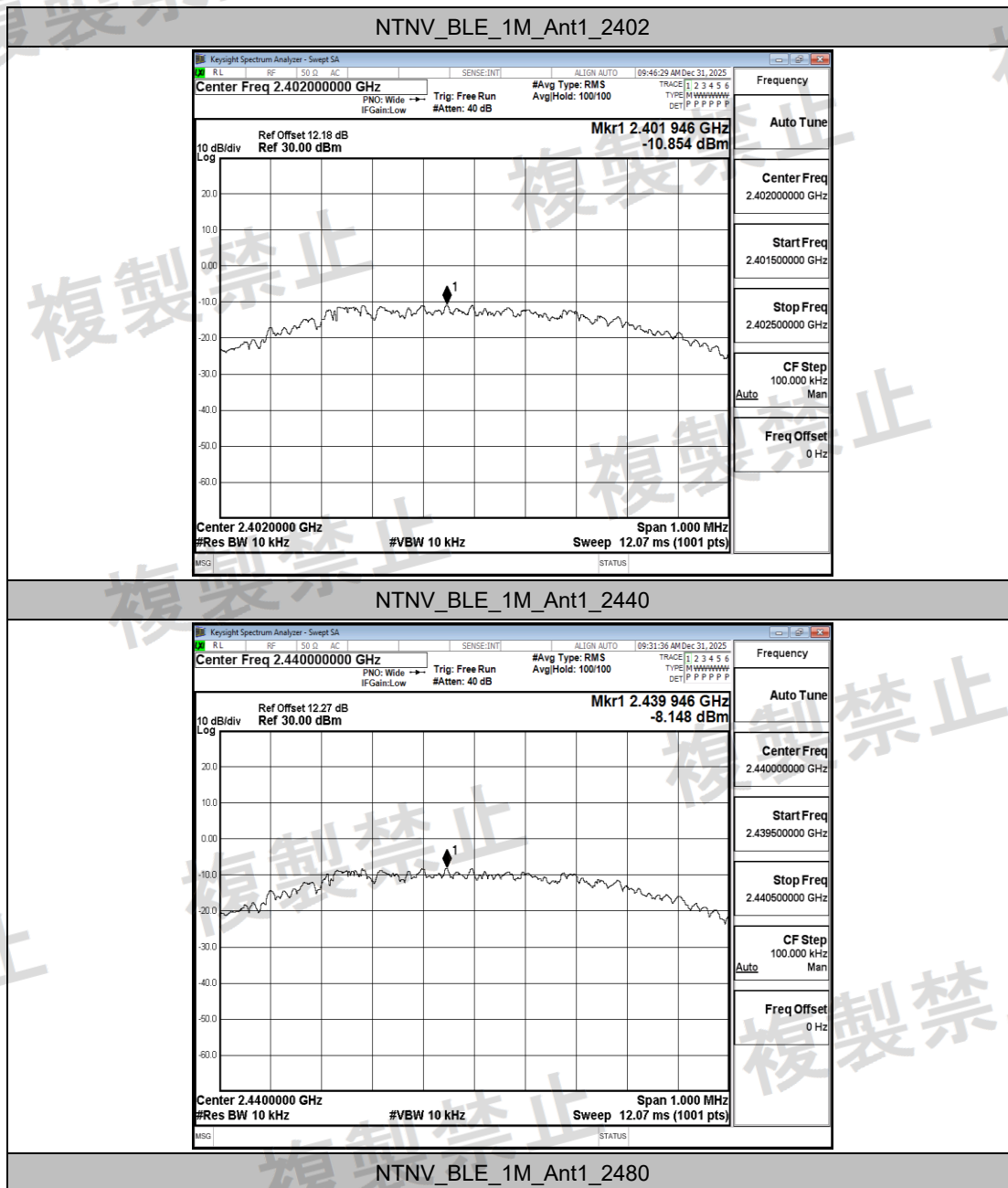
TestCondition	TestMode	Antenna	Freq (MHz)	Result[ppm]	Limit[ppm]	Verdict
NTNV	BLE_1M	Ant1	2402	-22.48127	±50	PASS
			2440	-22.13115	±50	PASS
			2480	-40.72581	±50	PASS

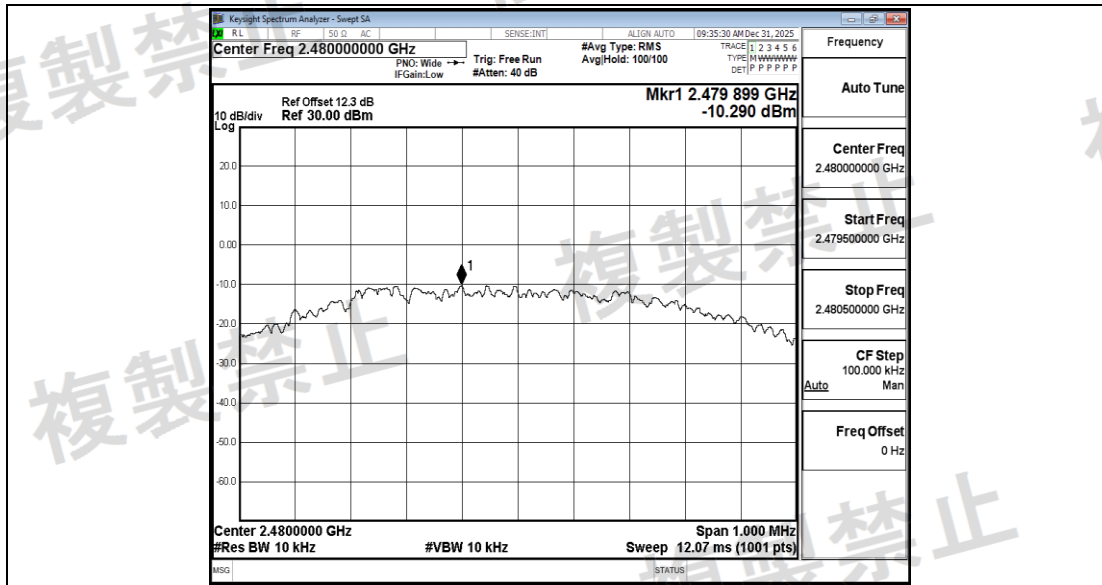
Test Result

Right

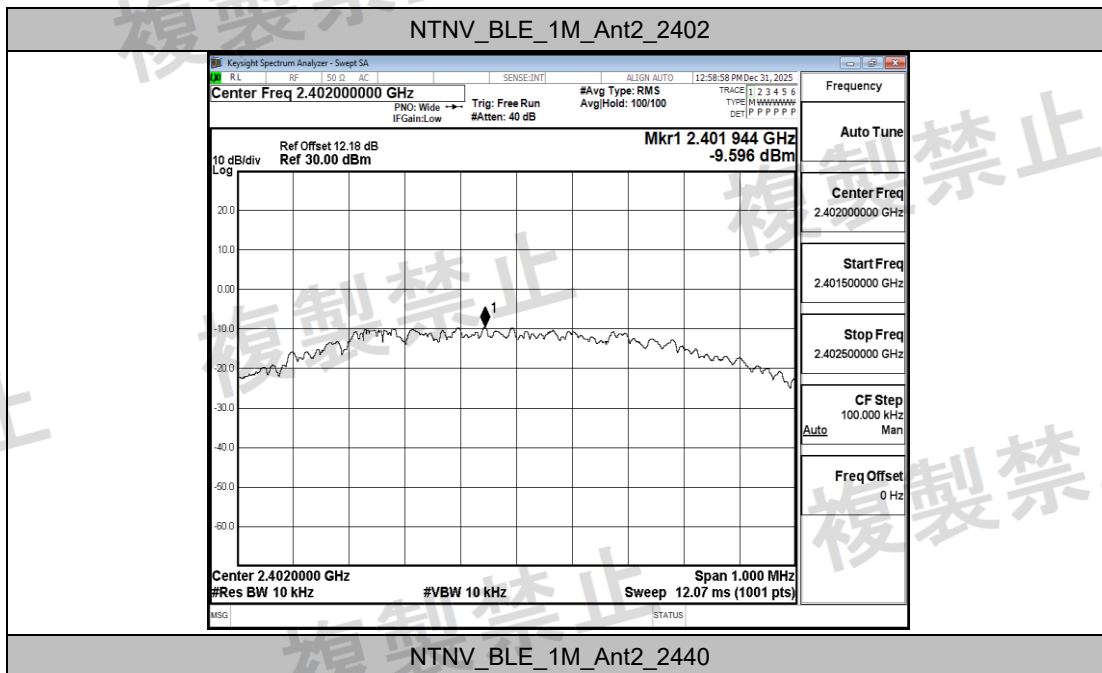
TestCondition	TestMode	Antenna	Freq (MHz)	Result[ppm]	Limit[ppm]	Verdict
NTNV	BLE_1M	Ant2	2402	-23.31391	±50	PASS
			2440	-43.03279	±50	PASS
			2480	-3.22581	±50	PASS

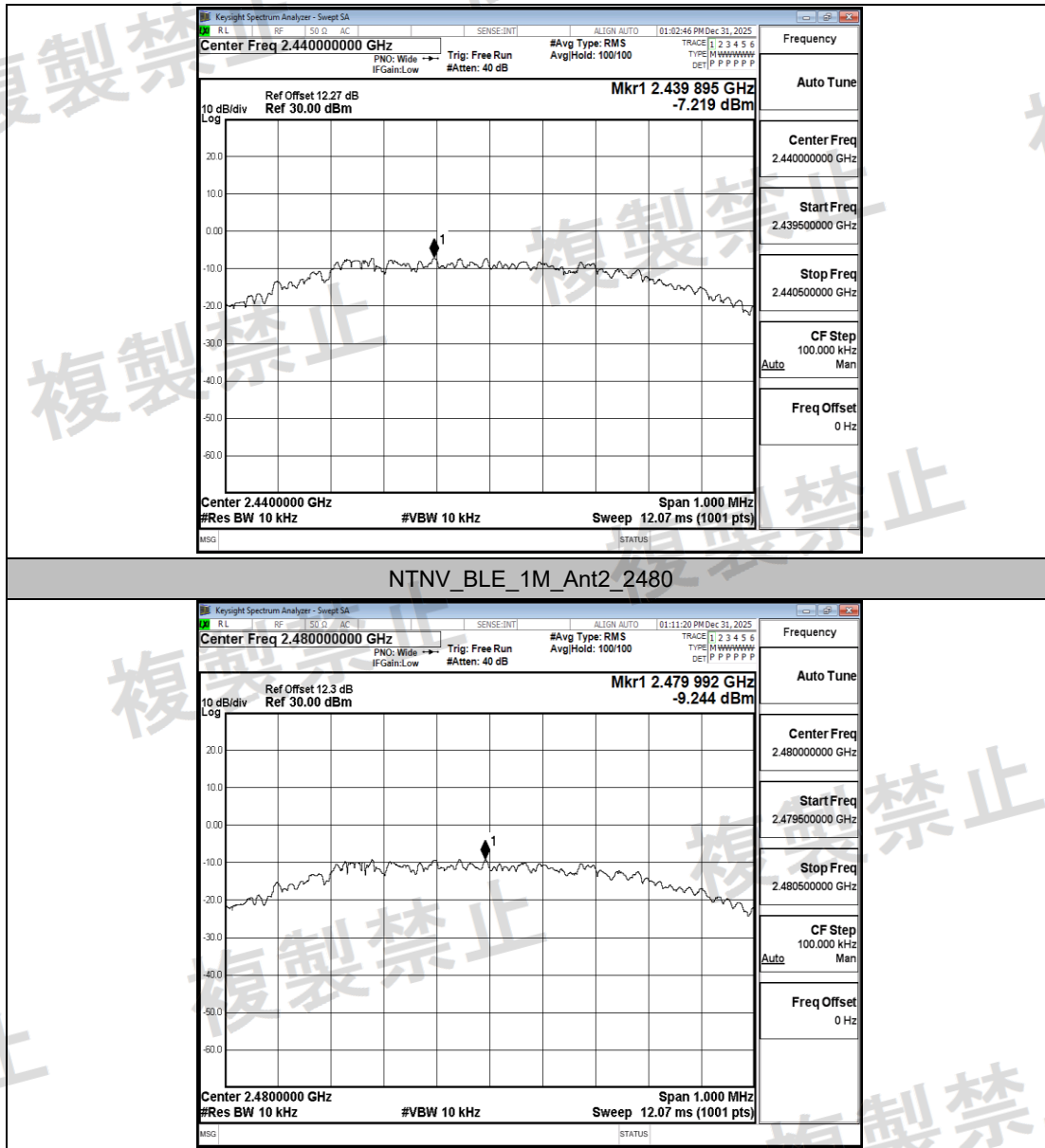
Test Graphs





Test Graphs





A.2 Antenna Power & EIRP

Test Result

Left

Antenna Power							
TestCondition	TestMode	Antenna	Freq (MHz)	Result(dBm)	Result(mW)	Limit(mW)	Verdict
NTNV	BLE_1M	Ant1	2402	-1.47	0.7129	≤10	PASS
			2440	1.09	1.2853	≤10	PASS
			2480	-1.11	0.7745	≤10	PASS

Tolerance								
Test Condition	Test Mode	Antenna	Freq (MHz)	Power (mW)	Rated Power (mW)	Result (%)	Limit (%)	Verdict
NTNV	BLE_1M	Ant1	2402	0.7129	1.5	-52.47	+20	PASS
			2440	1.2853	1.5	-14.31	+20	PASS
			2480	0.7745	1.5	-48.37	+20	PASS

EIRP								
Test Condition	TestMode	Antenna	Freq (MHz)	Measured Power (dBm/MHz)	Antenna gain (dBi)	EIRP (dBm)	Limit (dBm)	Verdict
NTNV	BLE_1M	Ant1	2402	-1.47	2.7	1.23	≤12.14	PASS
			2440	1.09	2.7	3.79	≤12.14	PASS
			2480	-1.11	2.7	1.59	≤12.14	PASS

Right

Antenna Power							
TestCondition	TestMode	Antenna	Freq (MHz)	Result(dBm)	Result(mW)	Limit(mW)	Verdict
NTNV	BLE_1M	Ant2	2402	-0.26	0.9419	≤10	PASS
			2440	2.00	1.5849	≤10	PASS
			2480	-0.07	0.9840	≤10	PASS

Tolerance								
Test Condition	Test Mode	Antenna	Freq (MHz)	Power (mW)	Rated Power (mW)	Result (%)	Limit (%)	Verdict
NTNV	BLE_1M	Ant2	2402	0.9419	1.5	-37.21	20	PASS
			2440	1.5849	1.5	5.66	20	PASS
			2480	0.9840	1.5	-34.40	20	PASS

EIRP								
Test Condition	Test Mode	Antenna	Freq (MHz)	Result (dBm)	Antenna gain (dBi)	EIRP (dBm)	Limit (dBm)	Verdict
NTNV	BLE_1M	Ant2	2402	-0.26	2.7	2.44	≤12.14	PASS
			2440	2.00	2.7	4.70	≤12.14	PASS
			2480	-0.07	2.7	2.63	≤12.14	PASS

Ant1 + Ant2

Mode	Frequency [MHz]	Measured Power (mW)			RatedPower (mW)	Result (%)	Limit (mW)	Limit (%)
		Ant1	Ant2	Ant1+Ant2				
BLE_1M	2402	0.7129	0.9419	1.6548	3.00	-44.84	≤10	+20%
	2440	1.2853	1.5849	2.8702	3.00	-4.33	≤10	+20%
	2480	0.7745	0.9840	1.7585	3.00	-41.38	≤10	+20%

EIRP						
Mode	Frequency [MHz]	EIRP(Ant1) (dBm)	EIRP(Ant2) (dBm)	EIRP ((Ant1+Ant2) (dBm)	Limit (dBm)	Verdict
BLE_1M	2402	1.23	2.44	4.89	≤12.14	PASS
	2440	3.79	4.70	7.28	≤12.14	PASS
	2480	1.59	2.63	5.15	≤12.14	PASS
Test Result		Pass				

A.3 Occupied Bandwidth

Test Result

Left

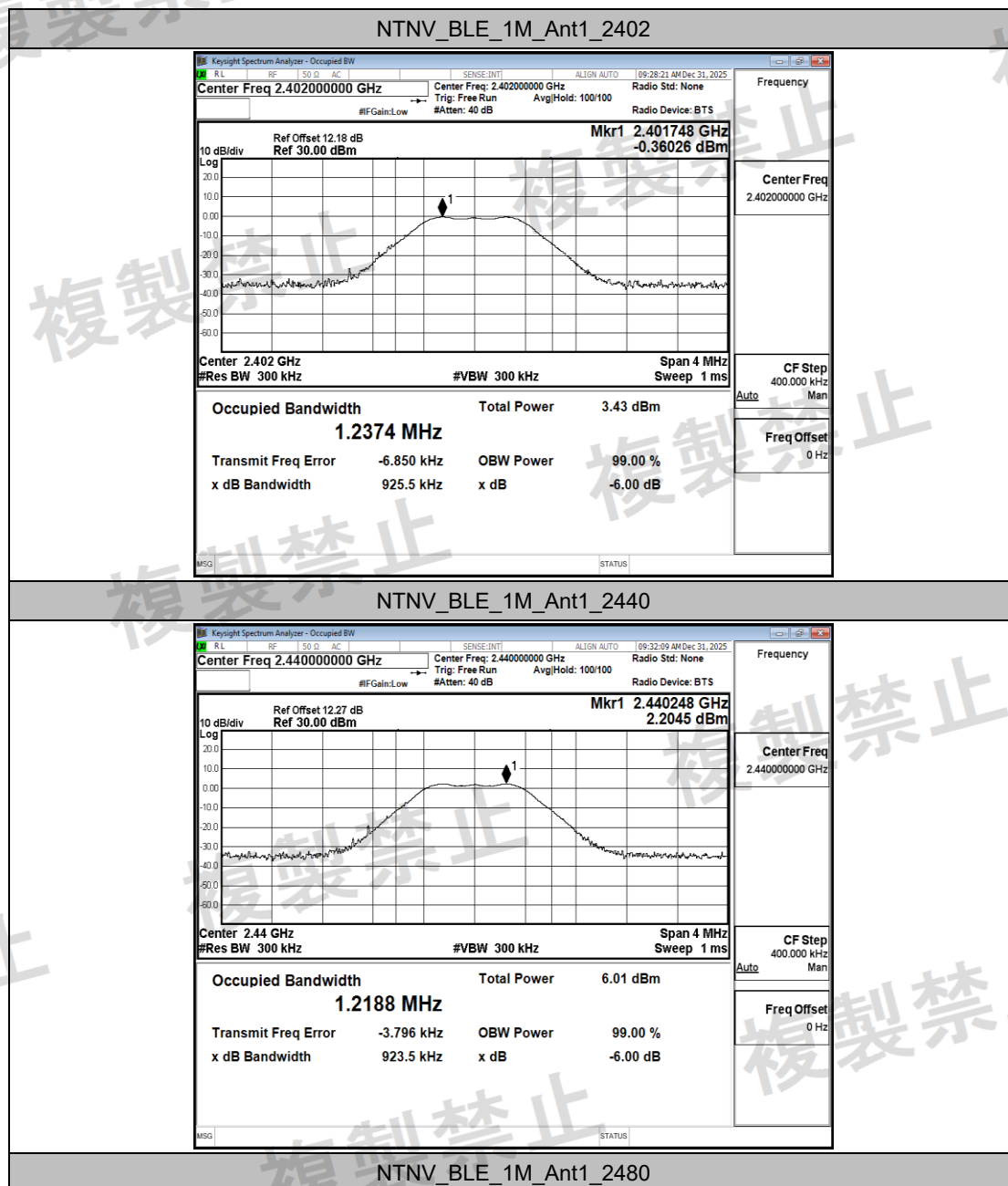
TestCondition	TestMode	Antenna	Freq (MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	BLE_1M	Ant1	2402	1.237	≤26	PASS
			2440	1.219	≤26	PASS
			2480	1.231	≤26	PASS

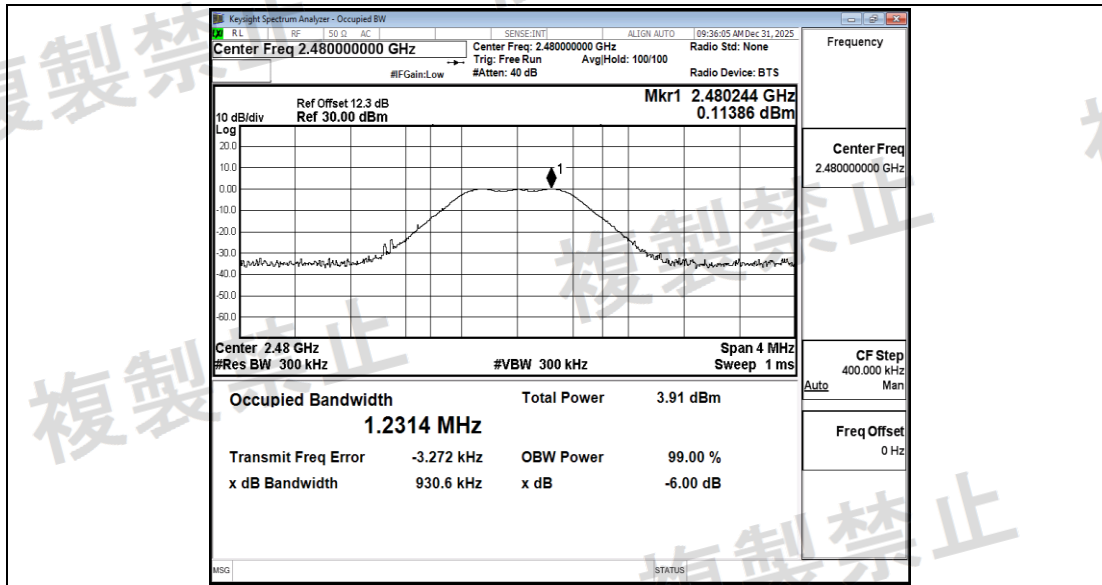
Test Result

Right

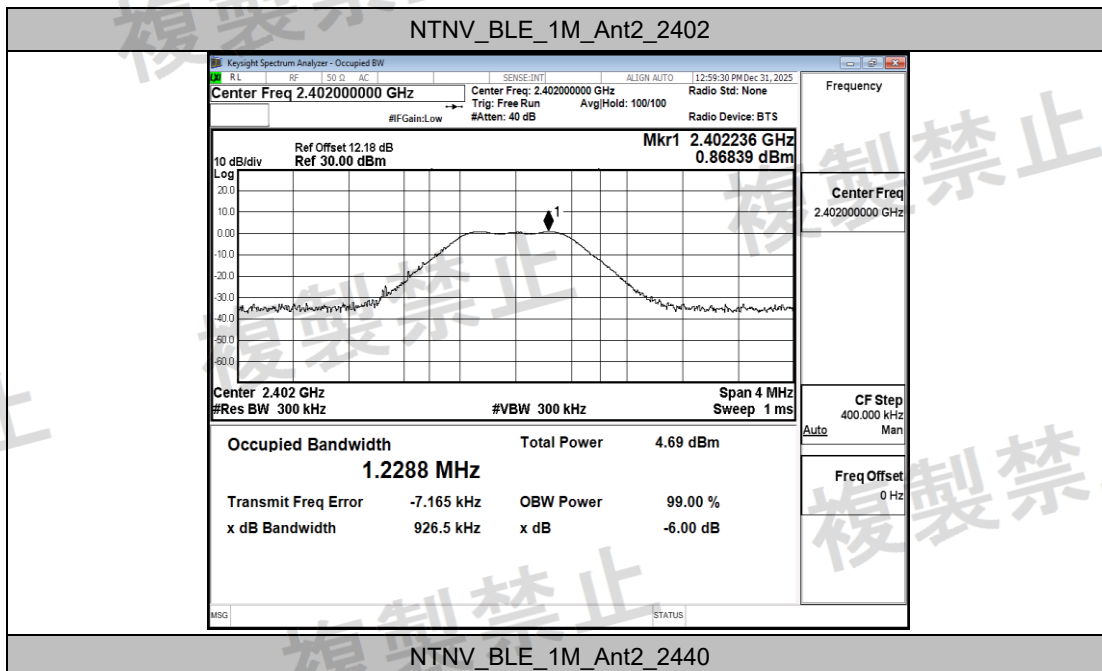
TestCondition	TestMode	Antenna	Freq (MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	BLE_1M	Ant2	2402	1.229	≤26	PASS
			2440	1.221	≤26	PASS
			2480	1.226	≤26	PASS

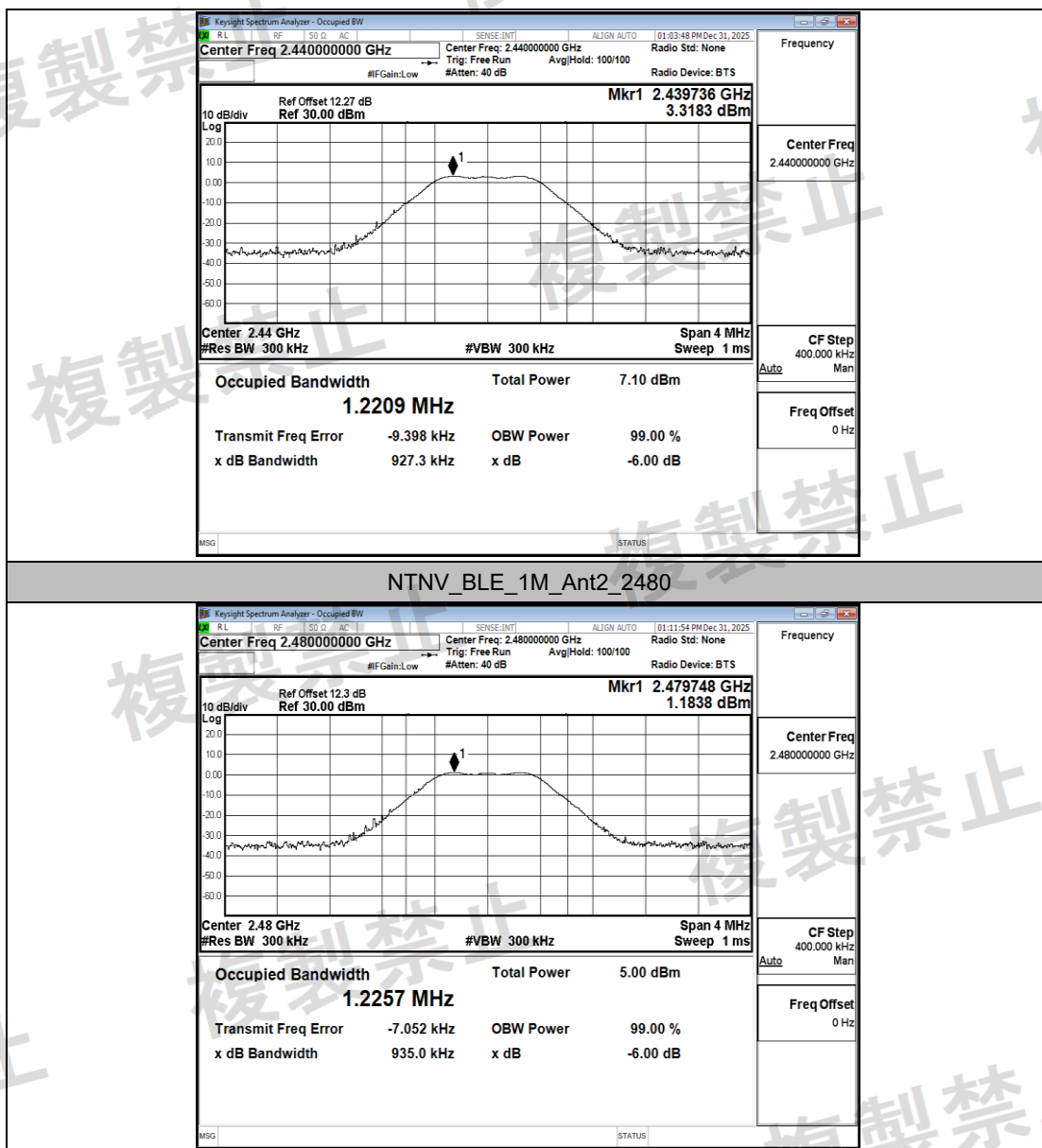
Test Graphs





Test Graphs





A.4 Spread Bandwidth

Test Result

Left

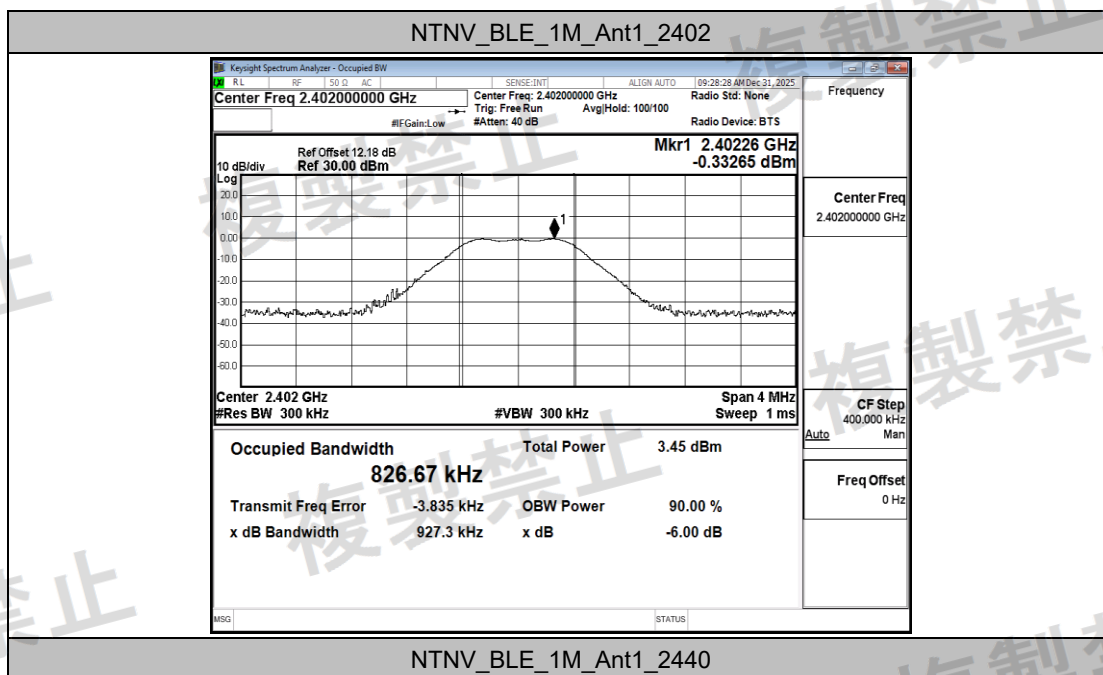
TestCondition	TestMode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	BLE_1M	Ant1	2402	0.827	---	PASS
			2440	0.825	---	PASS
			2480	0.826	---	PASS

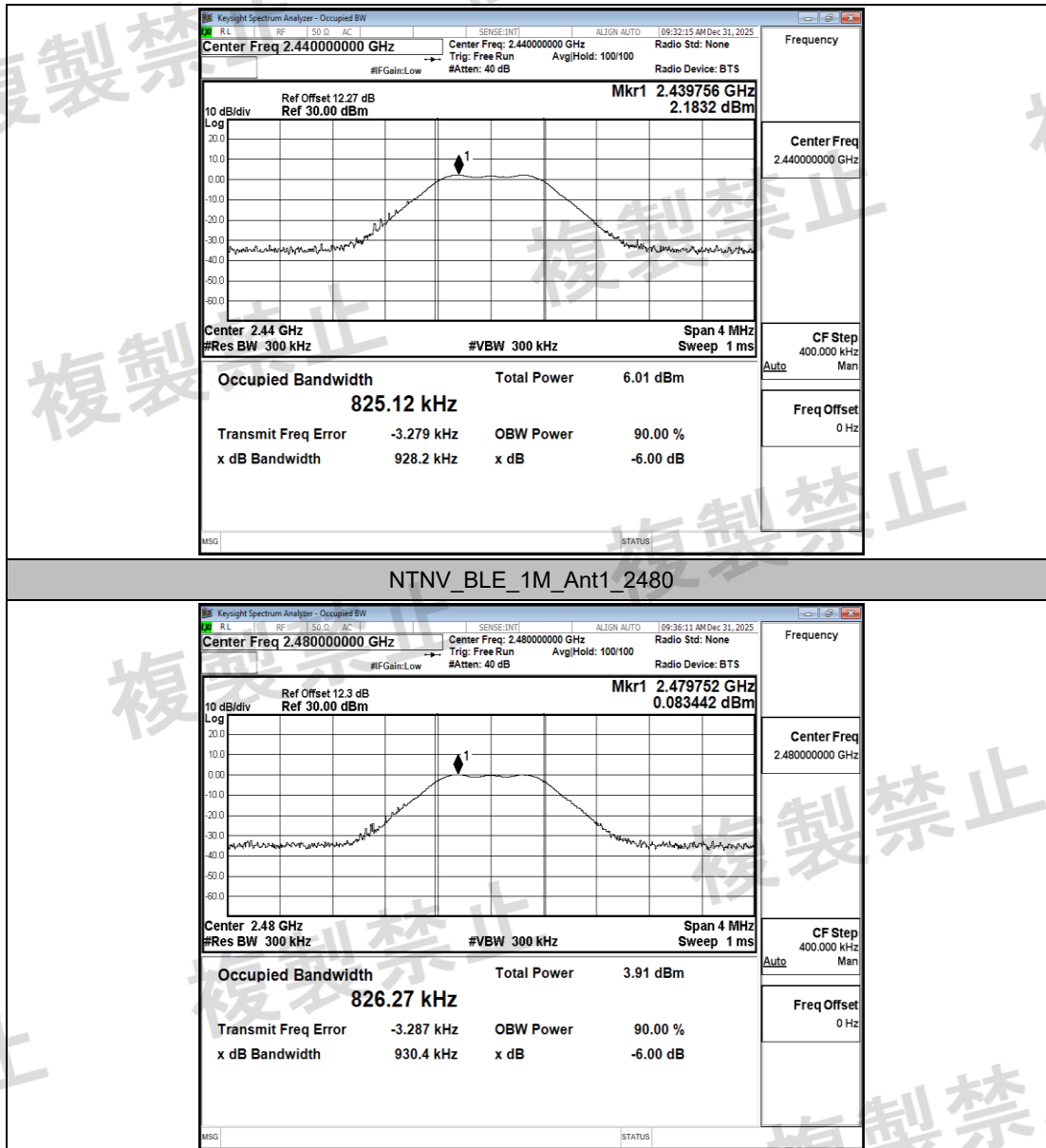
Test Result

Right

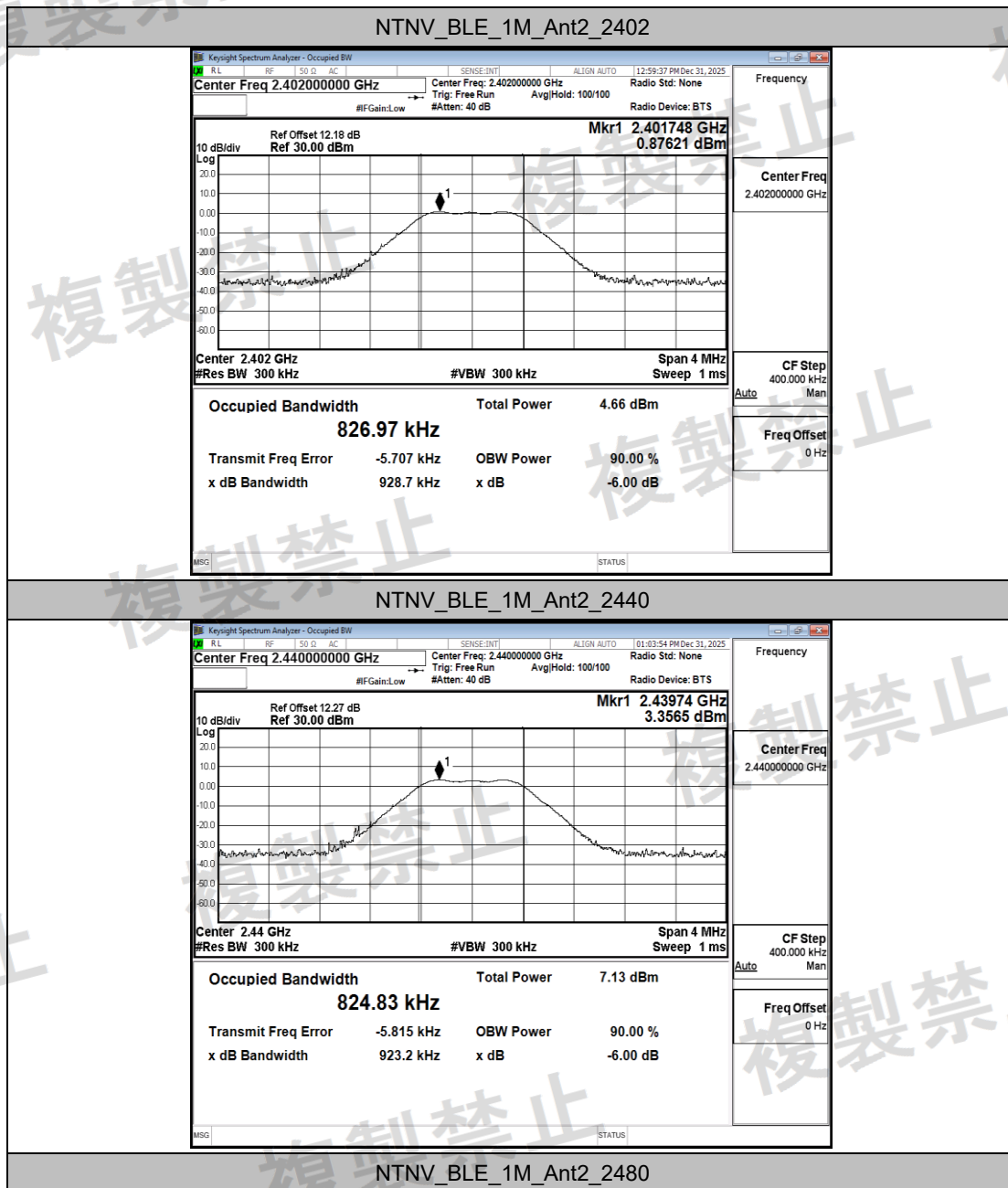
TestCondition	TestMode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	BLE_1M	Ant2	2402	0.827	---	PASS
			2440	0.825	---	PASS
			2480	0.826	---	PASS

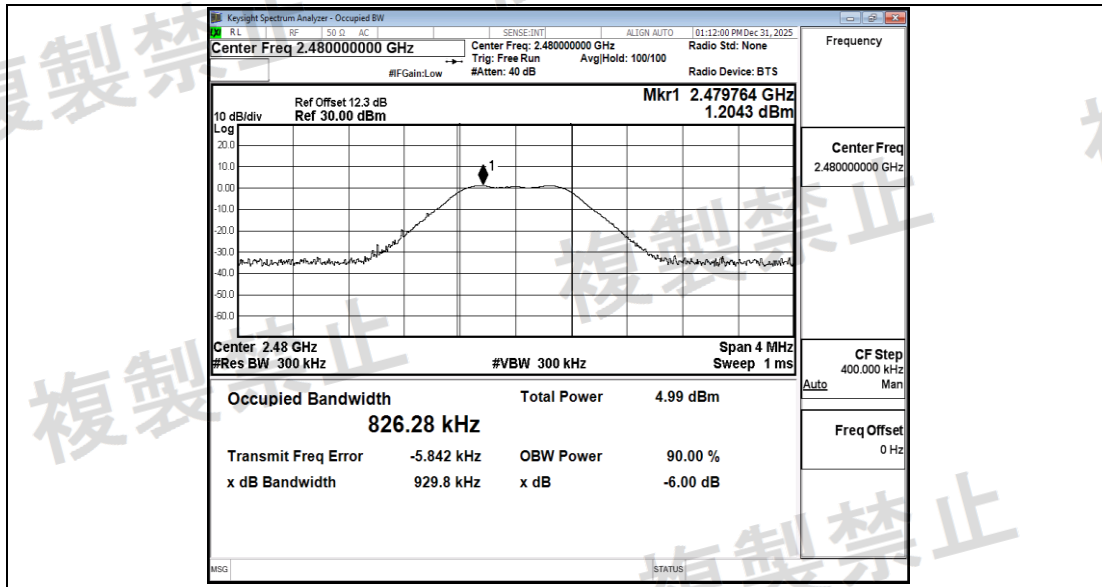
Test Graphs





Test Graphs





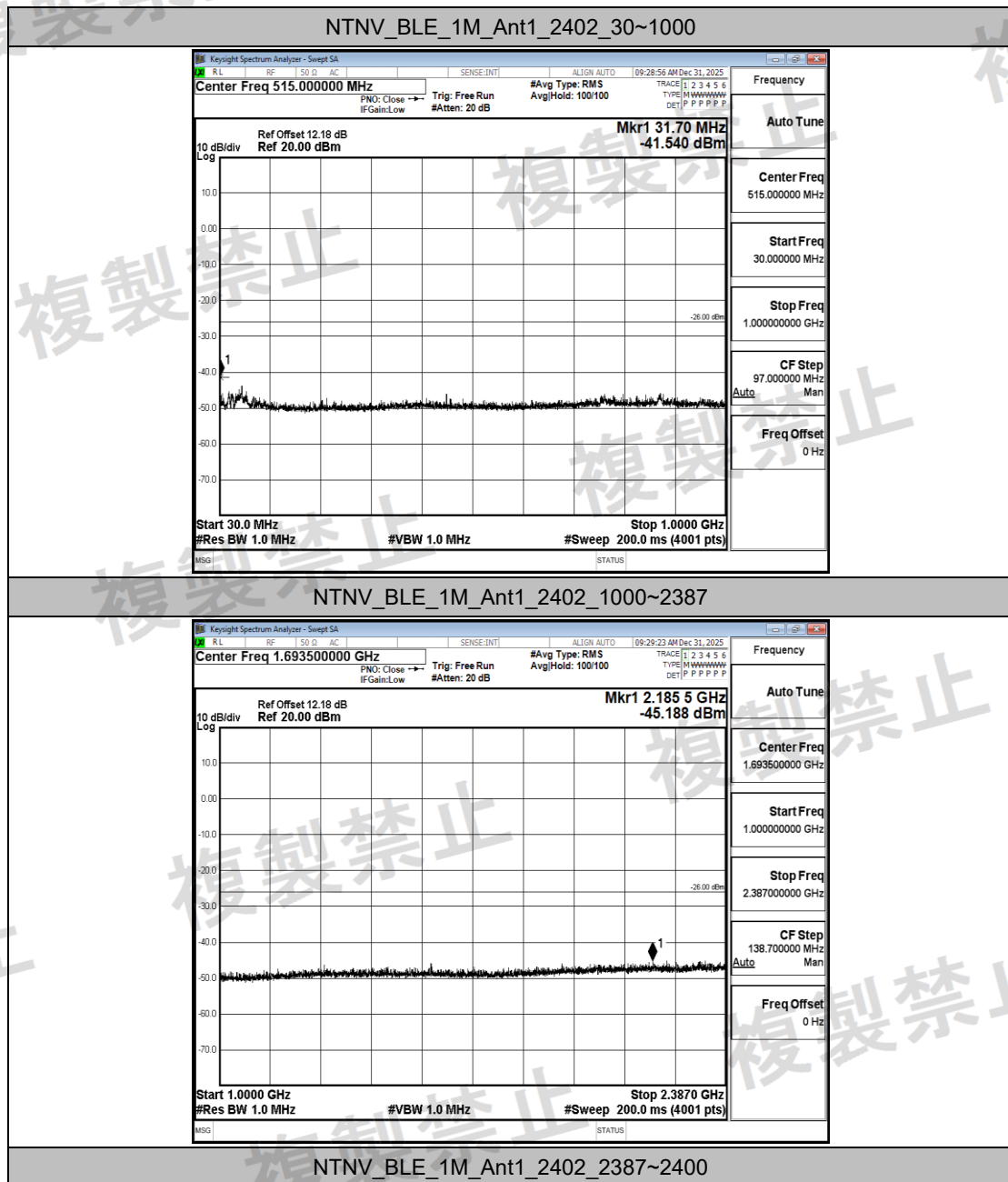
A.5 Spurious Emission of TX

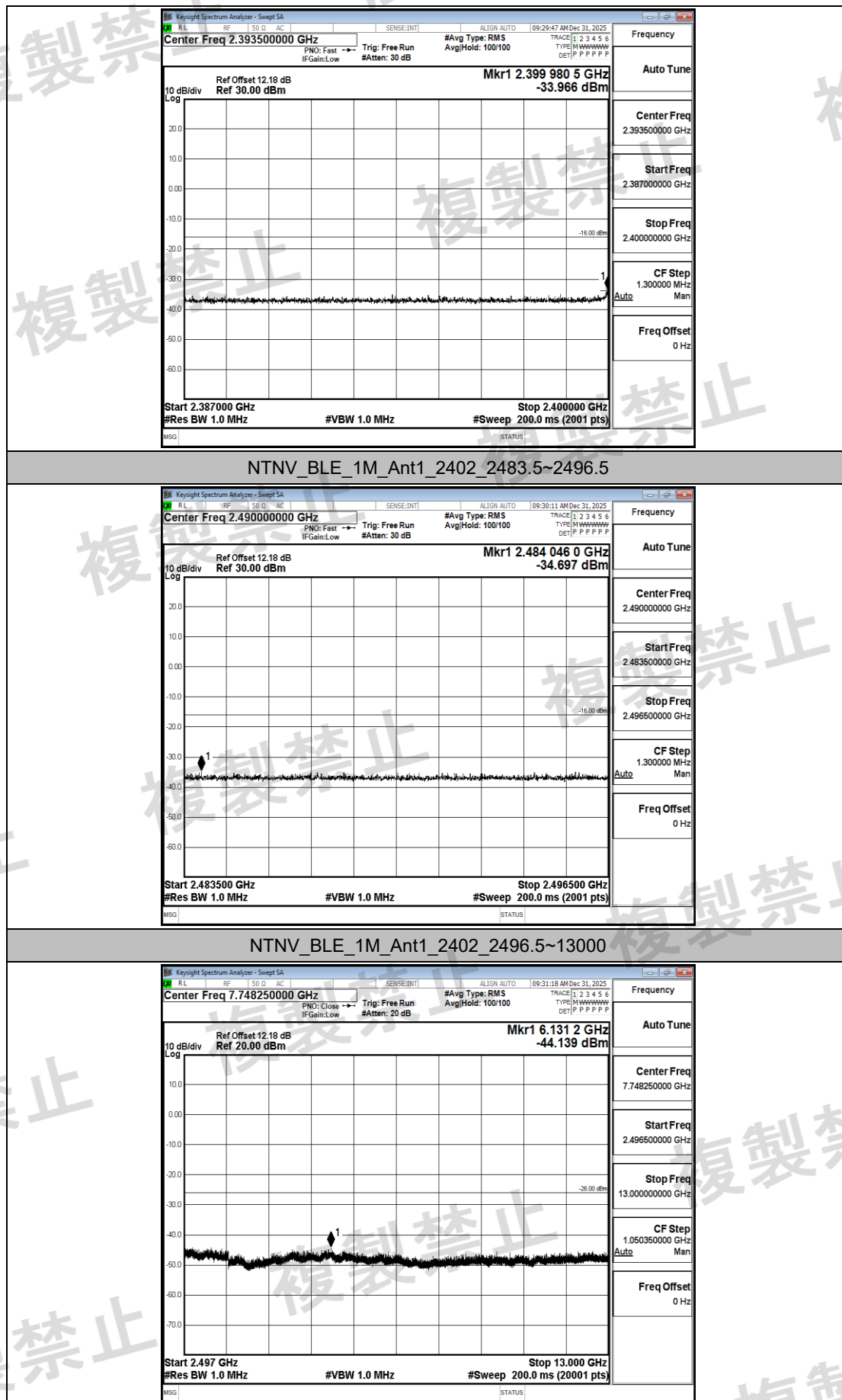
Test Result

Left

Test Condition	TestMode	Antenna	Freq (MHz)	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	BLE_1M	Ant1	2402	30~1000	31.70	-41.54	≤-26	0.07015	≤2.5	PASS
				1000~2387	2185.54	-45.19	≤-26	0.03027	≤2.5	PASS
				2387~2400	2399.98	-33.97	≤-16	0.40087	≤25	PASS
				2483.5~2496.5	2484.05	-34.70	≤-16	0.33884	≤25	PASS
				2496.5~13000	6131.24	-44.14	≤-26	0.03855	≤2.5	PASS
			2440	30~1000	31.94	-41.96	≤-26	0.06368	≤2.5	PASS
				1000~2387	2291.99	-44.95	≤-26	0.03199	≤2.5	PASS
				2387~2400	2396.01	-34.65	≤-16	0.34277	≤25	PASS
				2483.5~2496.5	2484.85	-34.56	≤-16	0.34995	≤25	PASS
				2496.5~13000	2700.79	-43.58	≤-26	0.04385	≤2.5	PASS
			2480	30~1000	30.49	-41.56	≤-26	0.06982	≤2.5	PASS
				1000~2387	2175.14	-45.29	≤-26	0.02958	≤2.5	PASS
				2387~2400	2392.33	-34.14	≤-16	0.38548	≤25	PASS
				2483.5~2496.5	2492.81	-33.82	≤-16	0.41495	≤25	PASS
				2496.5~13000	2558.47	-42.40	≤-26	0.05754	≤2.5	PASS

Test Graphs

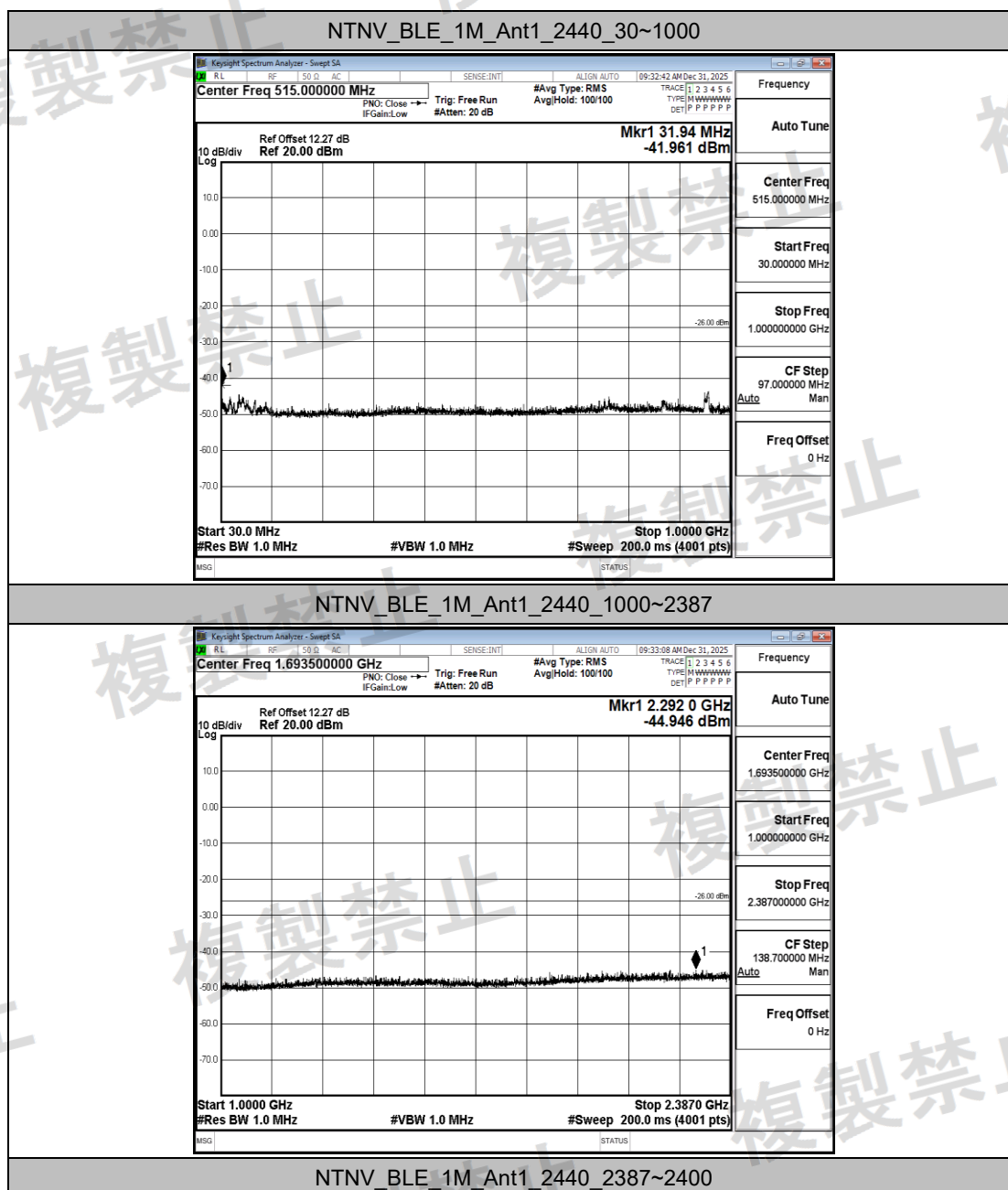


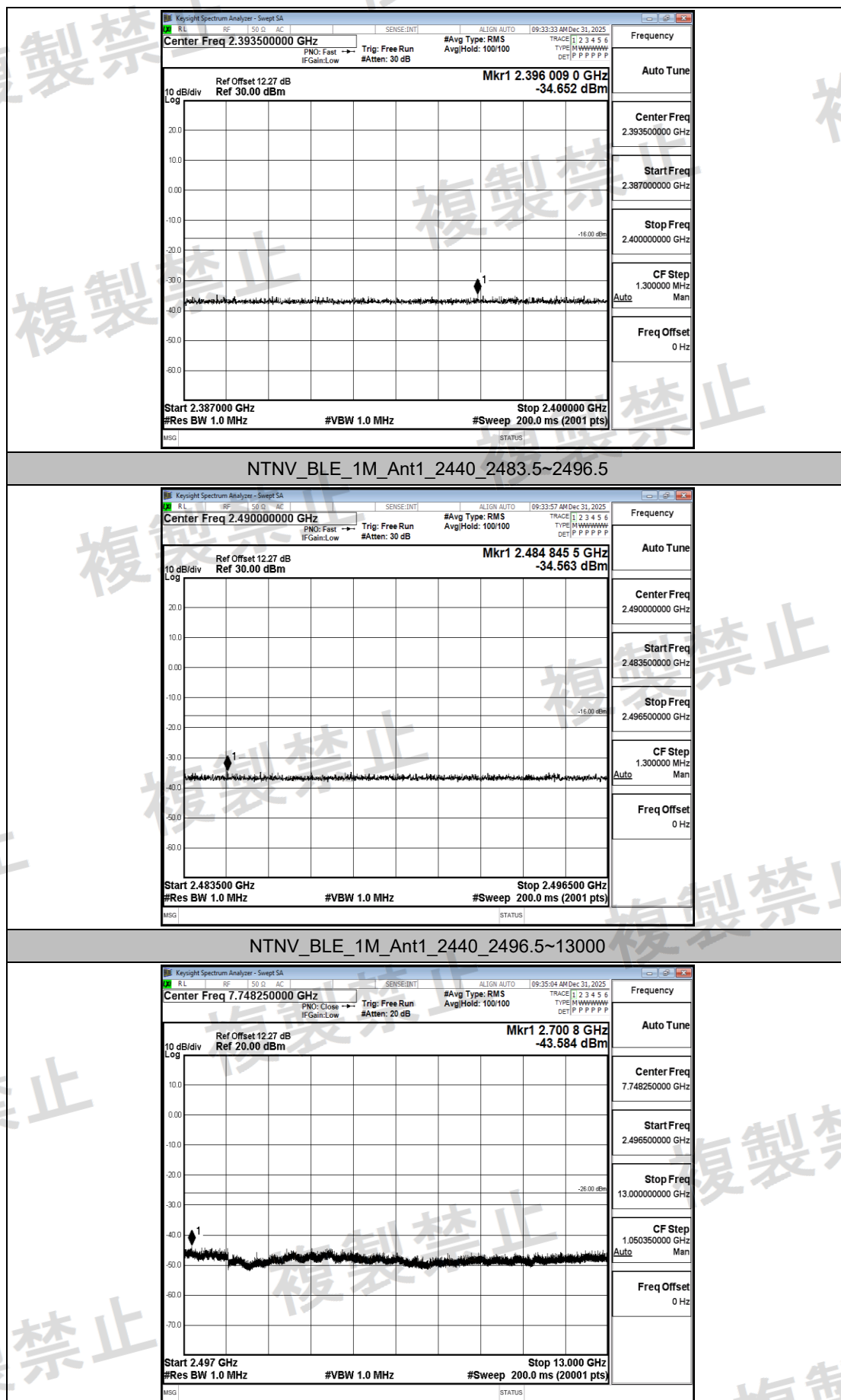


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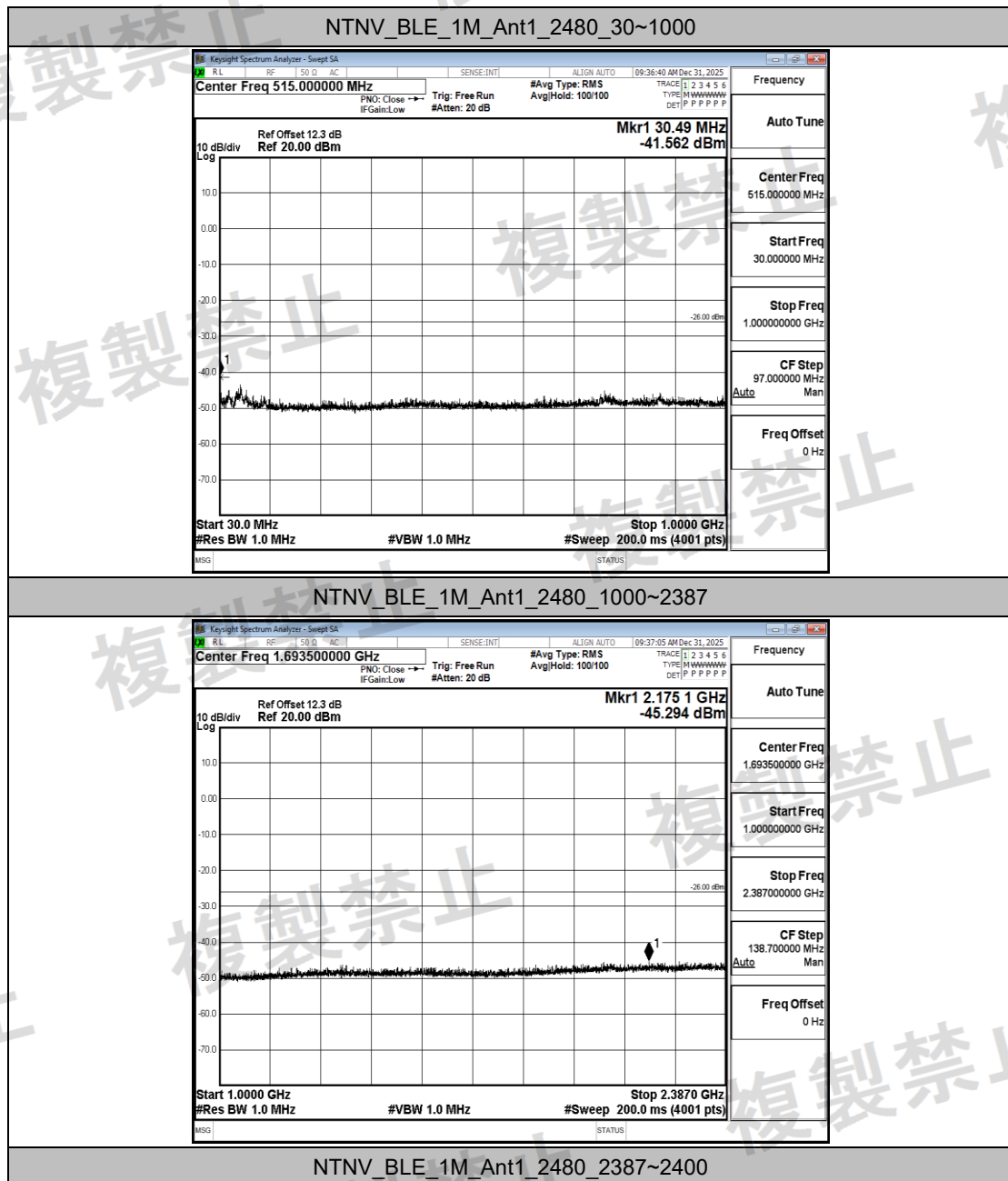




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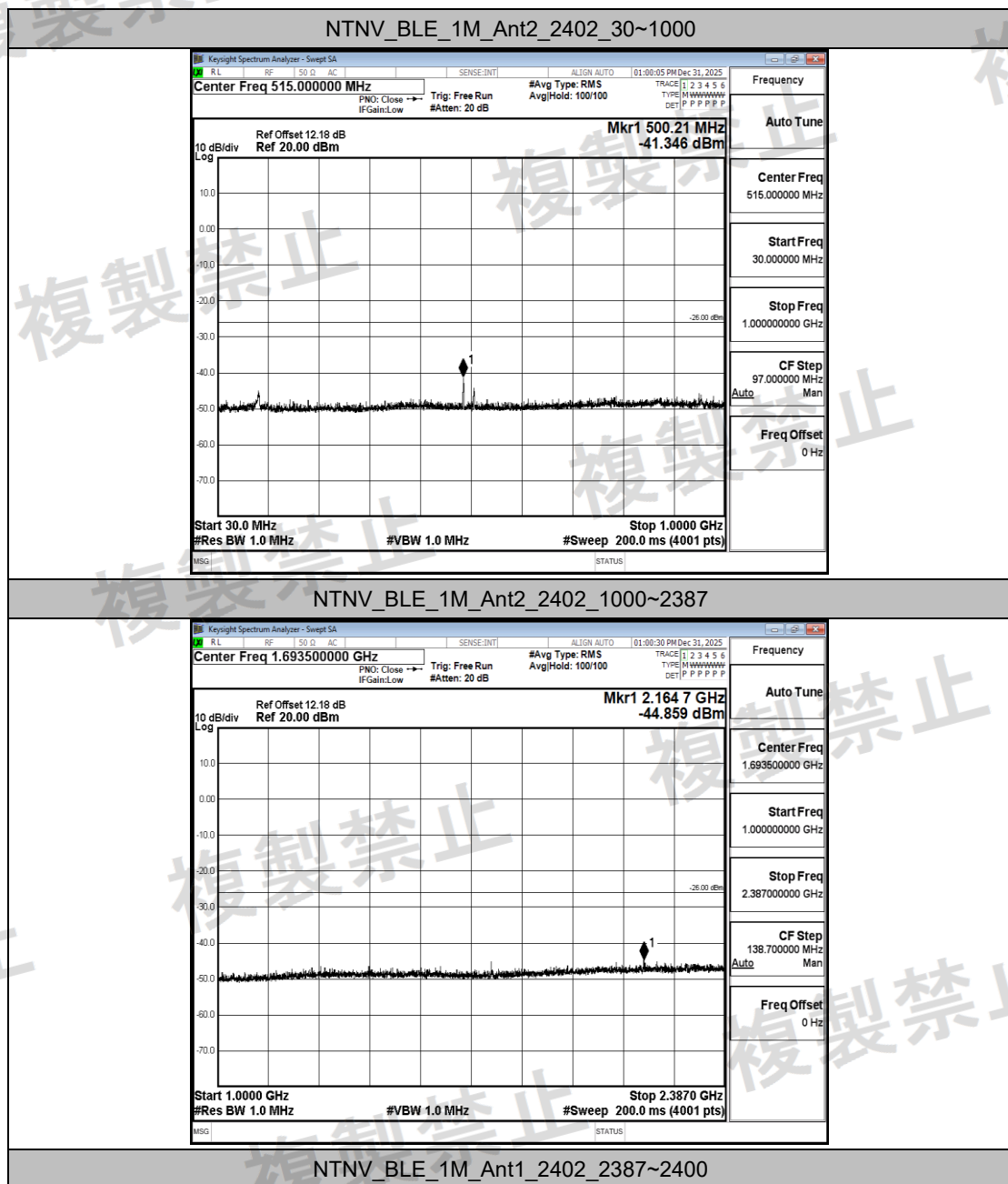
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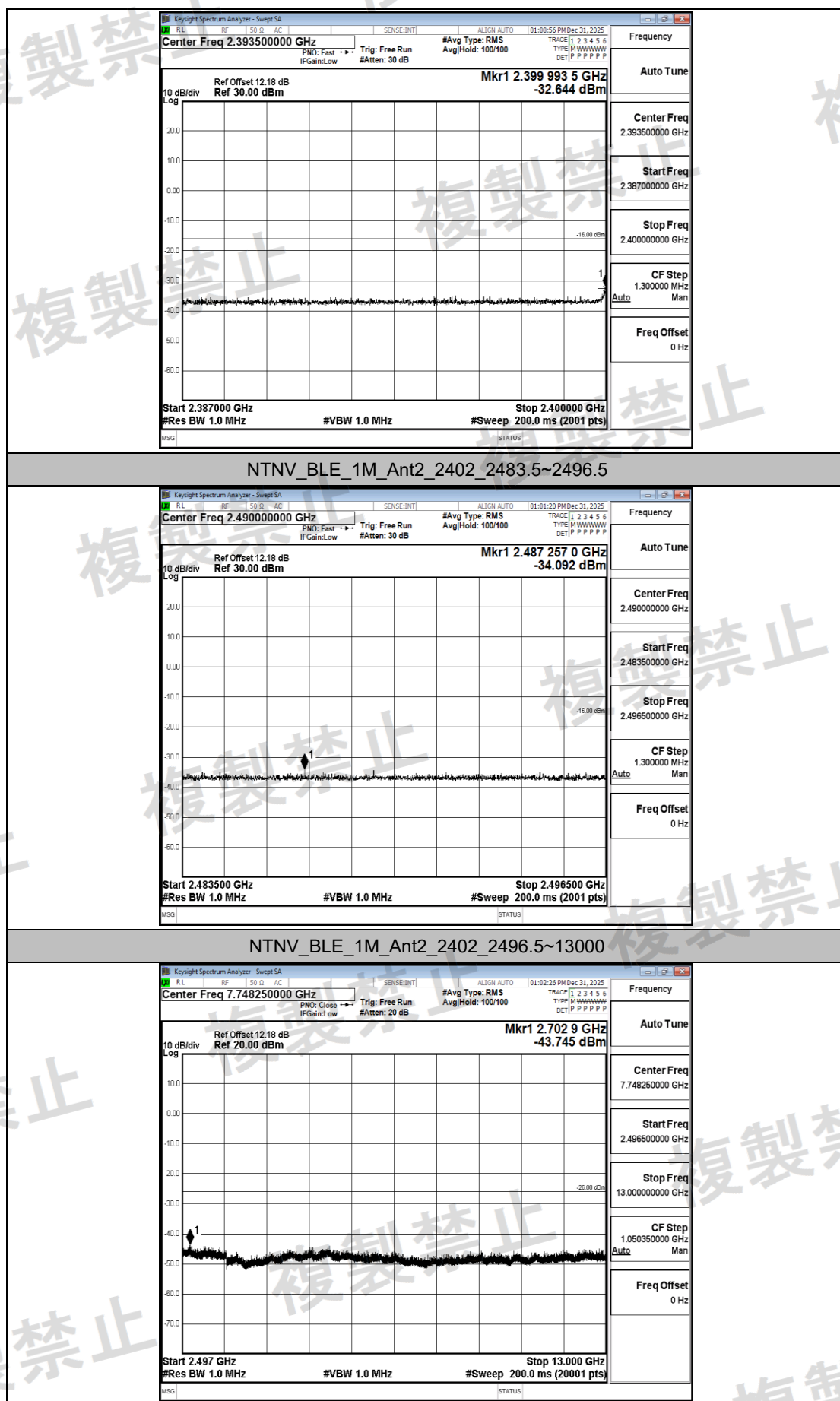
Test Result

Right

Test Condition	TestMode	Antenna	Freq (MHz)	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	BLE_1M	Ant2	2402	30~1000	500.21	-41.35	≤-26	0.07328	≤2.5	PASS
				1000~2387	2164.73	-44.86	≤-26	0.03266	≤2.5	PASS
				2387~2400	2399.99	-32.64	≤-16	0.54450	≤25	PASS
				2483.5~2496.5	2487.26	-34.09	≤-16	0.38994	≤25	PASS
				2496.5~13000	2702.89	-43.75	≤-26	0.04217	≤2.5	PASS
			2440	30~1000	108.81	-45.06	≤-26	0.03119	≤2.5	PASS
				1000~2387	2054.81	-45.19	≤-26	0.03027	≤2.5	PASS
				2387~2400	2389.99	-34.47	≤-16	0.35727	≤25	PASS
				2483.5~2496.5	2495.23	-34.86	≤-16	0.32659	≤25	PASS
				2496.5~13000	6107.08	-43.80	≤-26	0.04169	≤2.5	PASS
			2480	30~1000	144.95	-33.03	≤-26	0.49774	≤2.5	PASS
				1000~2387	2165.08	-45.04	≤-26	0.03133	≤2.5	PASS
				2387~2400	2392.39	-34.56	≤-16	0.34995	≤25	PASS
				2483.5~2496.5	2484.61	-34.63	≤-16	0.34435	≤25	PASS
				2496.5~13000	6125.98	-43.84	≤-26	0.04130	≤2.5	PASS

Test Graphs

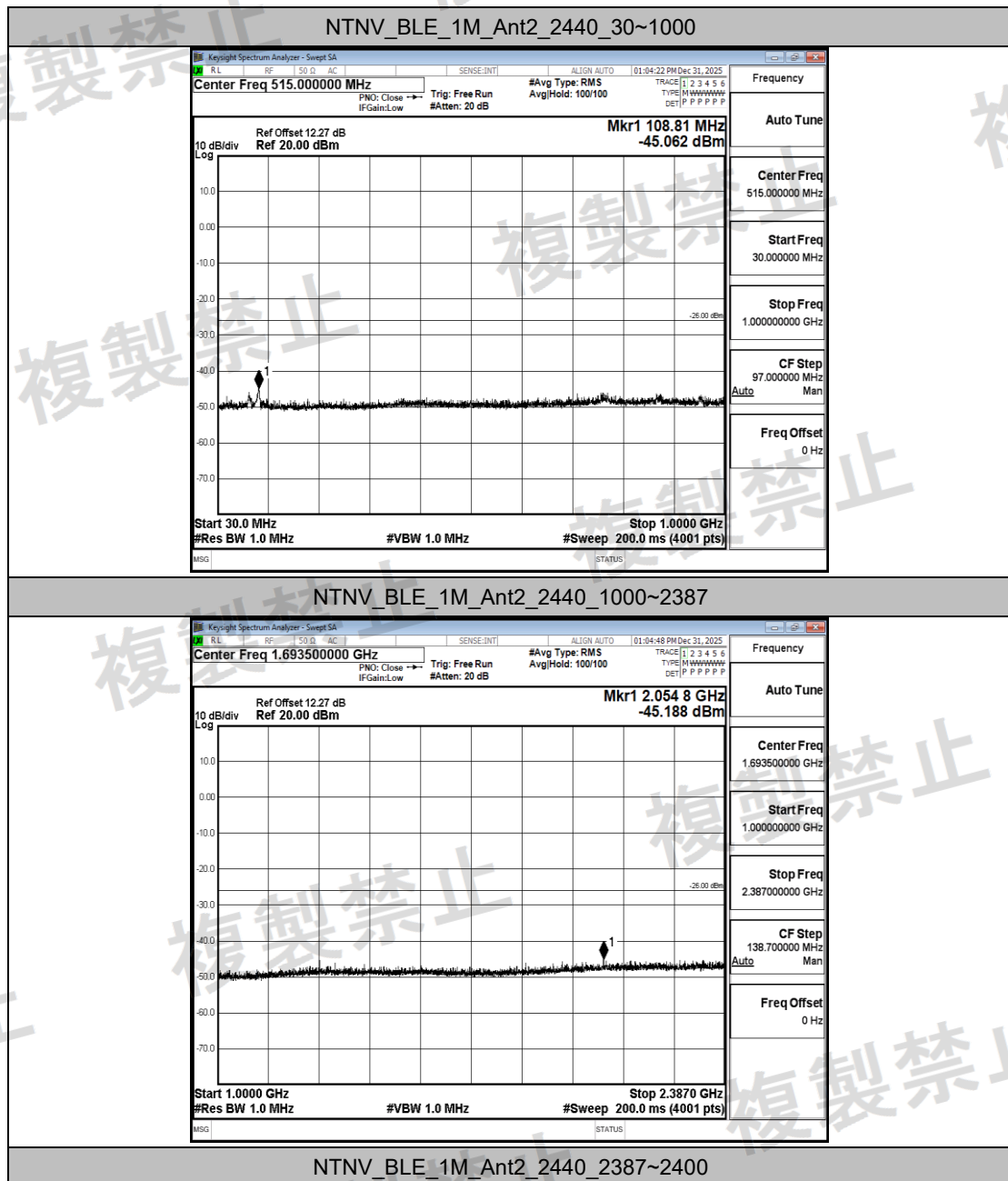


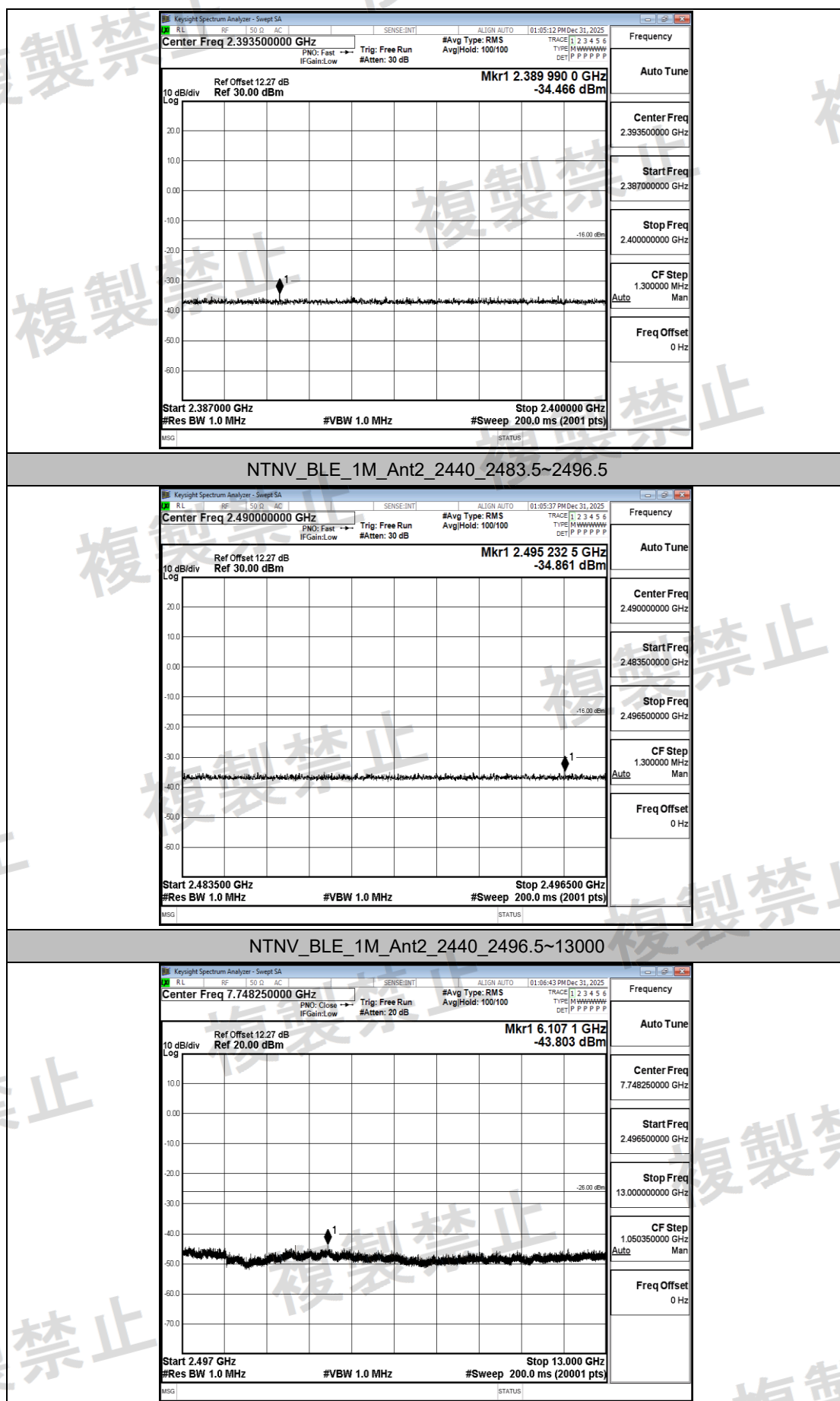


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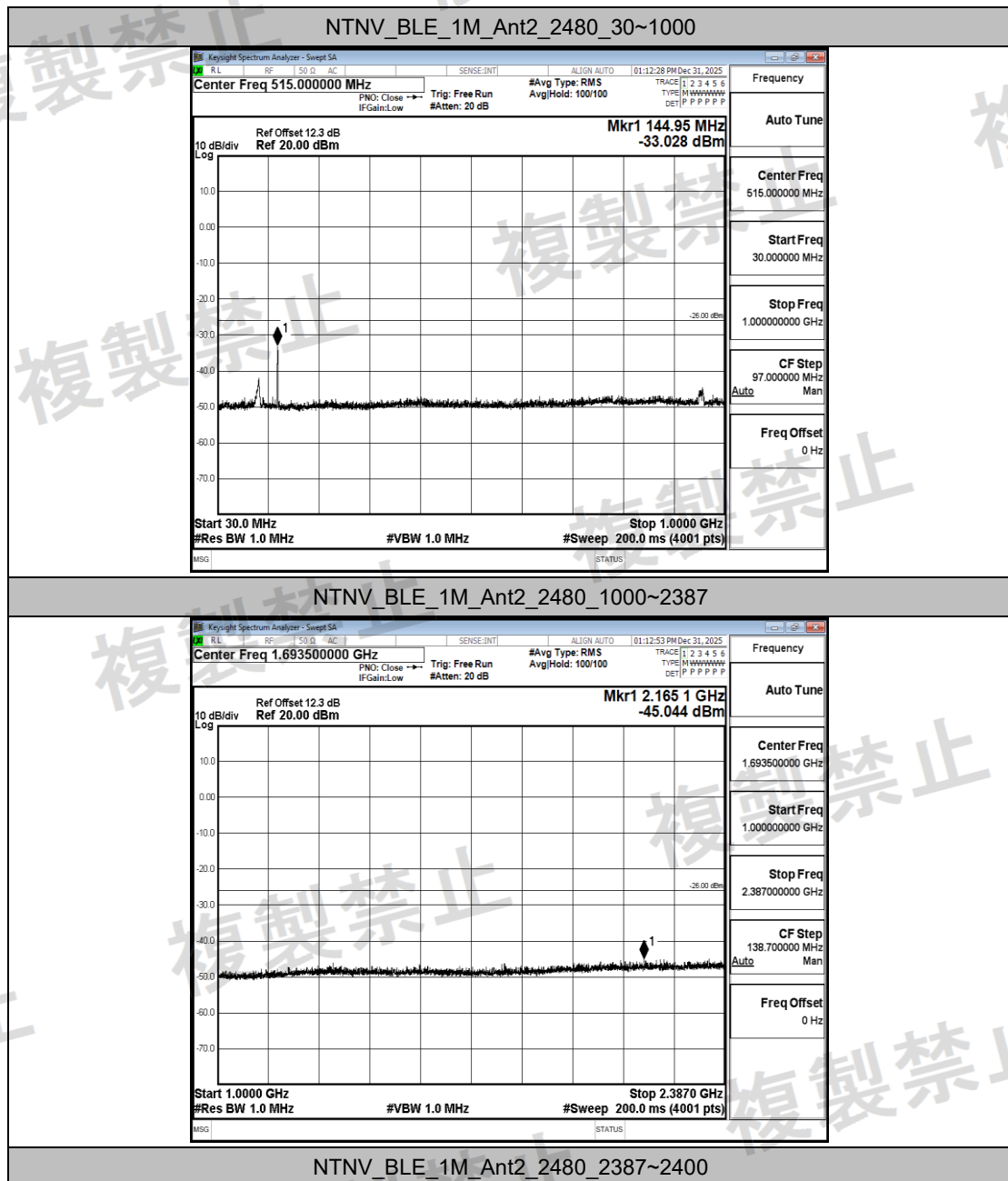


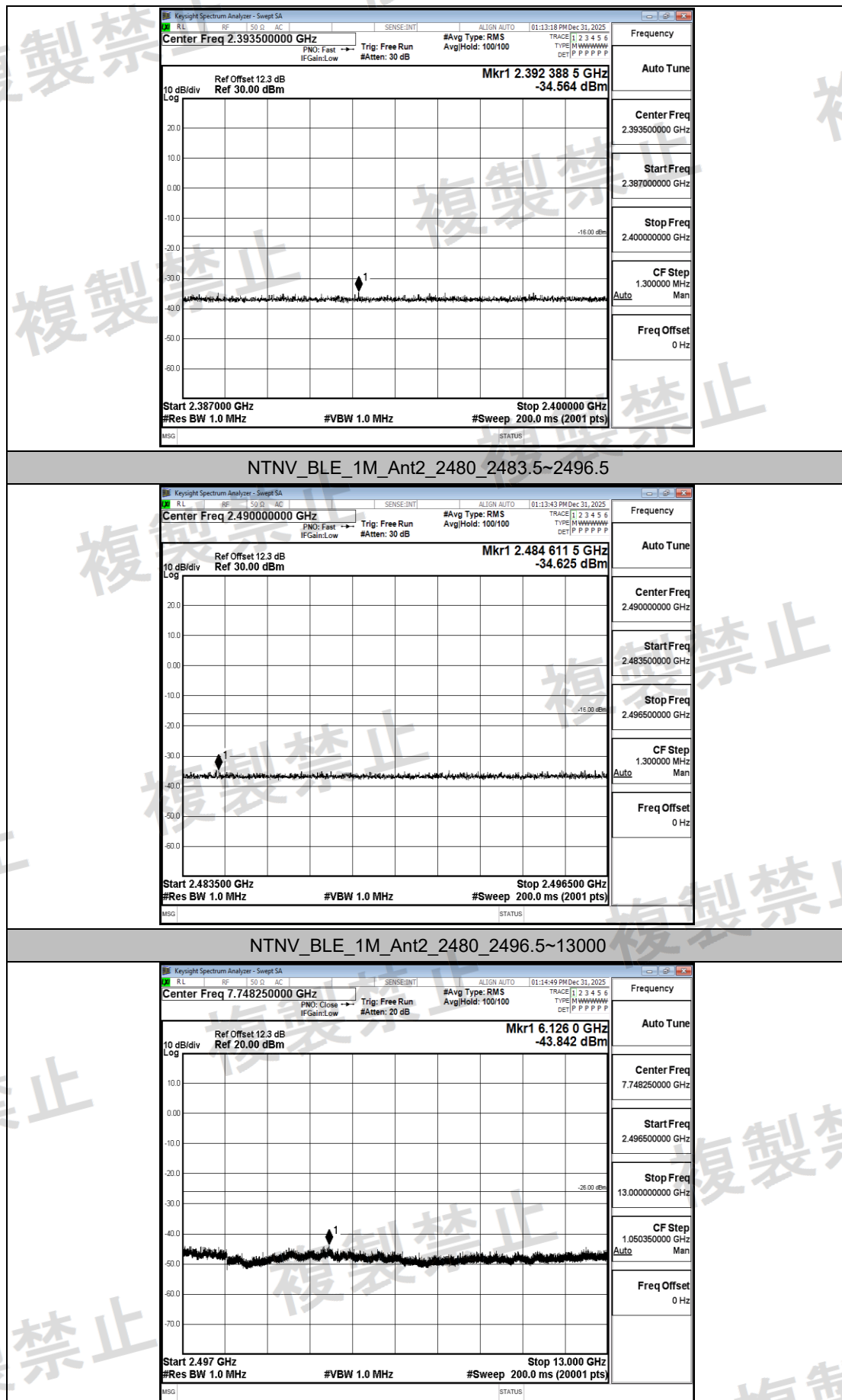


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Ant1 + Ant2

Test Condition	TestMode	Antenna	Freq (MHz)	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	BLE_1M	Ant1+Ant2	2402	30~1000	31.70	-38.43	≤-26	0.14343	≤2.5	PASS
				1000~2387	2185.54	-42.01	≤-26	0.06293	≤2.5	PASS
				2387~2400	2399.98	-30.24	≤-16	0.94537	≤25	PASS
				2483.5~2496.5	2484.05	-31.37	≤-16	0.72879	≤25	PASS
				2496.5~13000	6131.24	-40.93	≤-26	0.08072	≤2.5	PASS
			2440	30~1000	31.94	-40.23	≤-26	0.09487	≤2.5	PASS
				1000~2387	2291.99	-42.06	≤-26	0.06226	≤2.5	PASS
				2387~2400	2396.01	-31.55	≤-16	0.70004	≤25	PASS
				2483.5~2496.5	2484.85	-31.70	≤-16	0.67653	≤25	PASS
				2496.5~13000	2700.79	-40.68	≤-26	0.08554	≤2.5	PASS
			2480	30~1000	30.49	-32.46	≤-26	0.56756	≤2.5	PASS
				1000~2387	2175.14	-42.15	≤-26	0.06091	≤2.5	PASS
				2387~2400	2392.33	-31.33	≤-16	0.73542	≤25	PASS
				2483.5~2496.5	2492.81	-31.20	≤-16	0.75930	≤25	PASS
				2496.5~13000	2558.47	-40.05	≤-26	0.09885	≤2.5	PASS

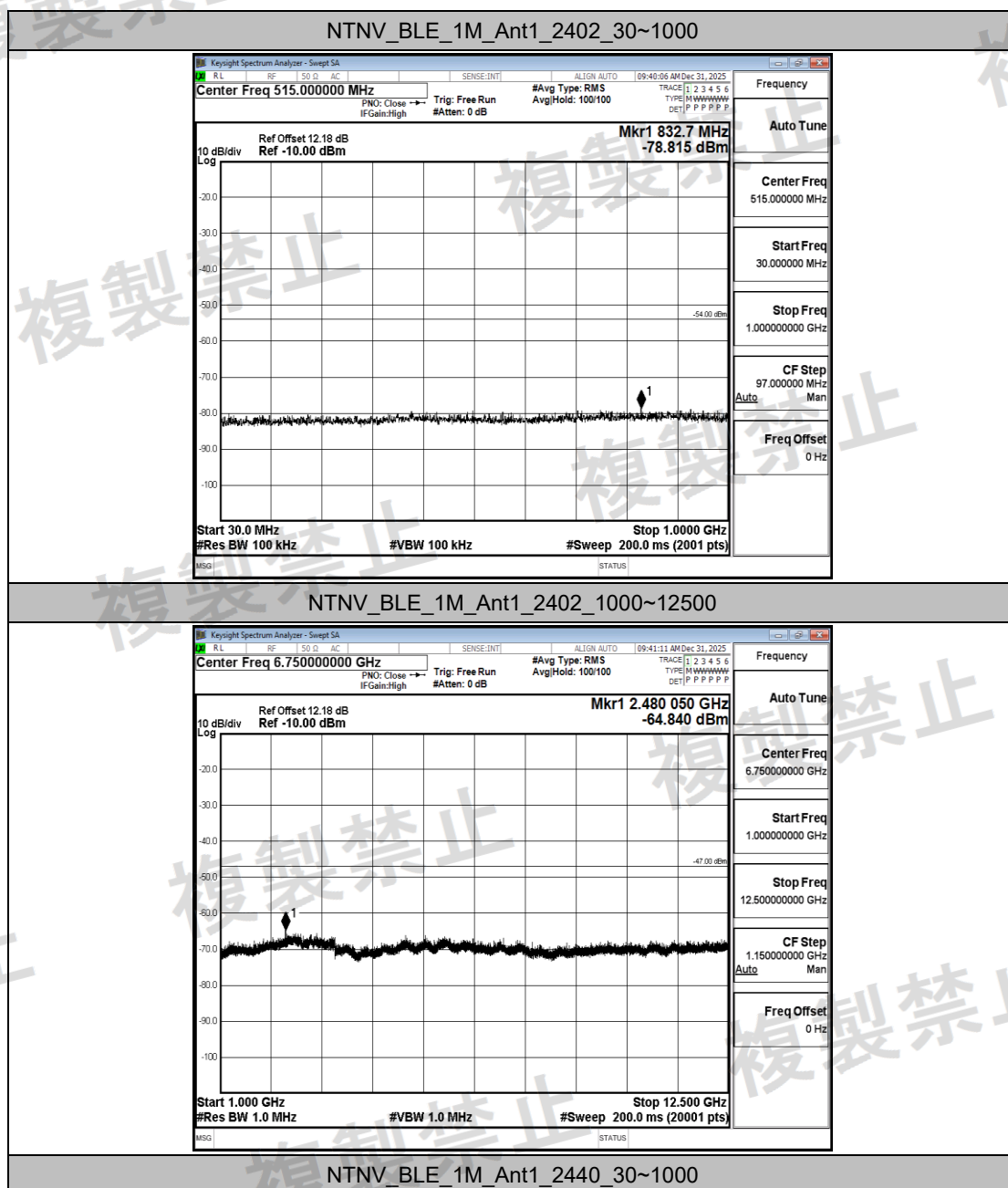
A.6 Spurious Emission of RX

Test Result

Left

Test Condition	TestMode	Antenna	Freq (MHz)	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	BLE_1M	Ant1	2402	30~1000	832.68	-78.82	≤-54	0.01312	≤4	PASS
				1000~12500	2480.05	-64.84	≤-47	0.32810	≤20	PASS
			2440	30~1000	938.89	-78.87	≤-54	0.01297	≤4	PASS
				1000~12500	2480.05	-64.25	≤-47	0.37584	≤20	PASS
			2480	30~1000	821.04	-78.33	≤-54	0.01469	≤4	PASS
				1000~12500	2480.05	-64.54	≤-47	0.35156	≤20	PASS

Test Graphs

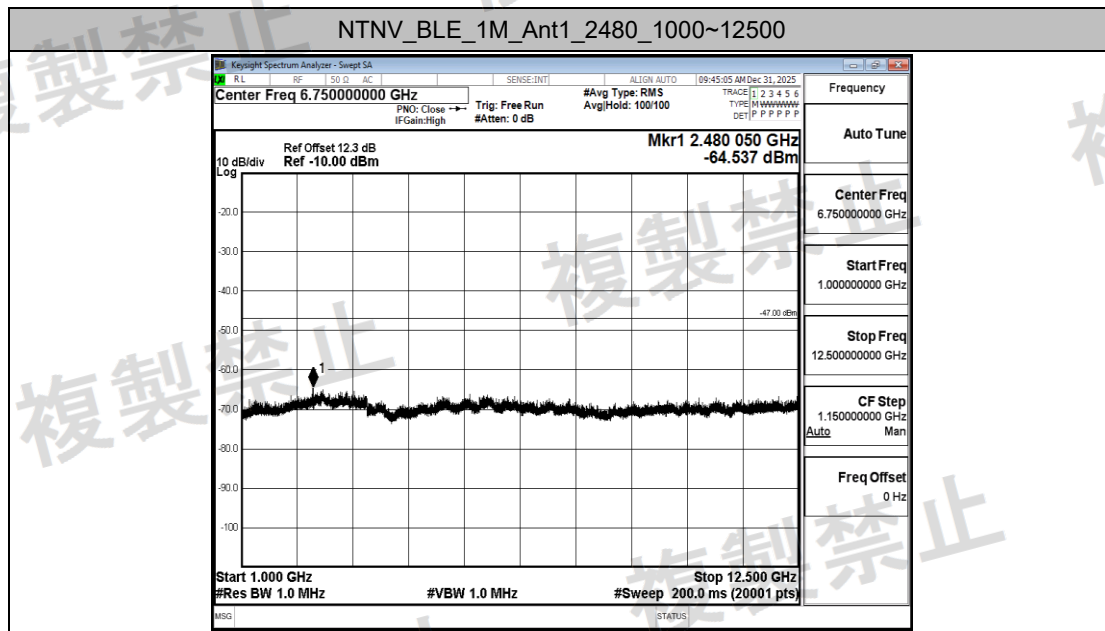




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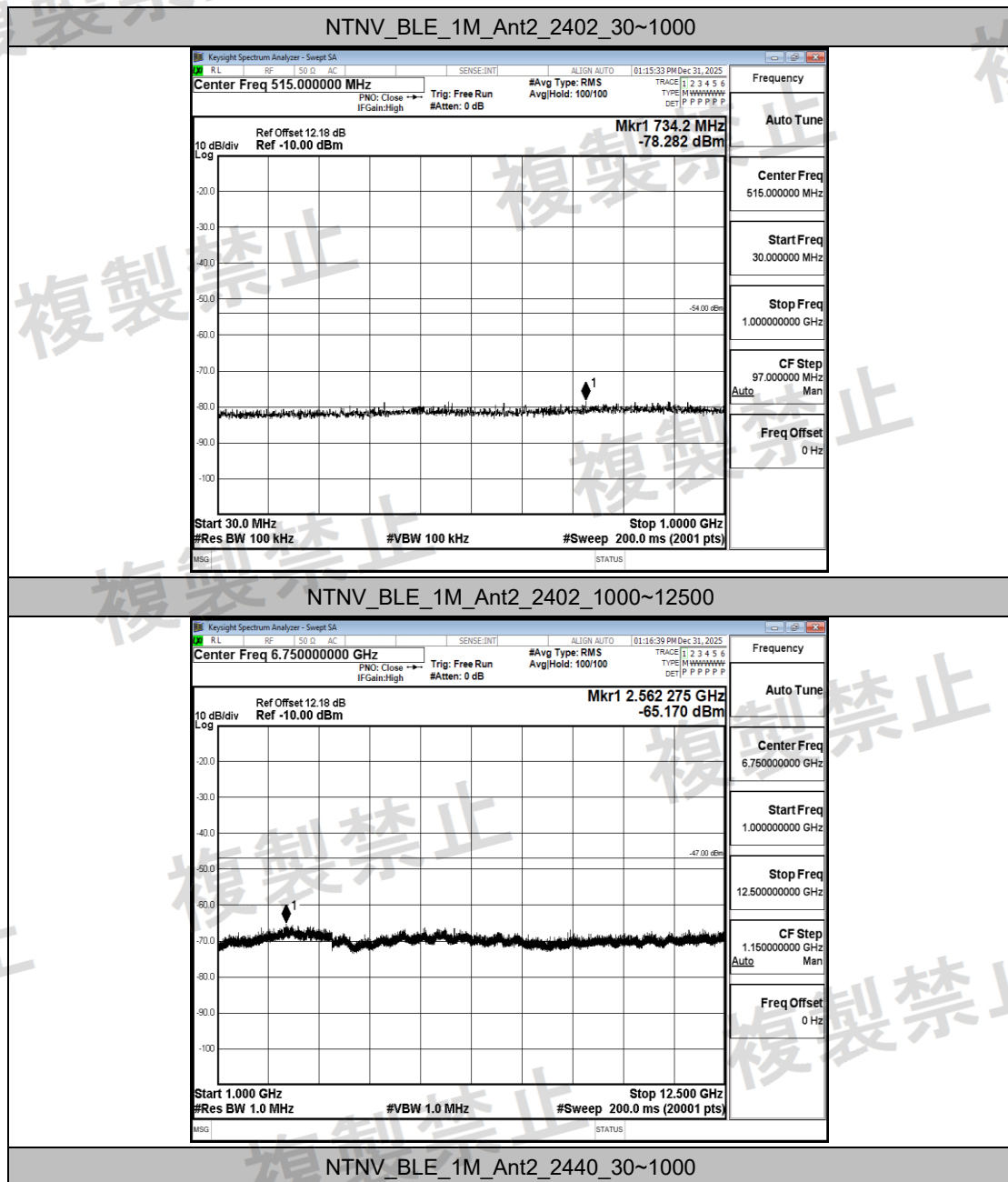


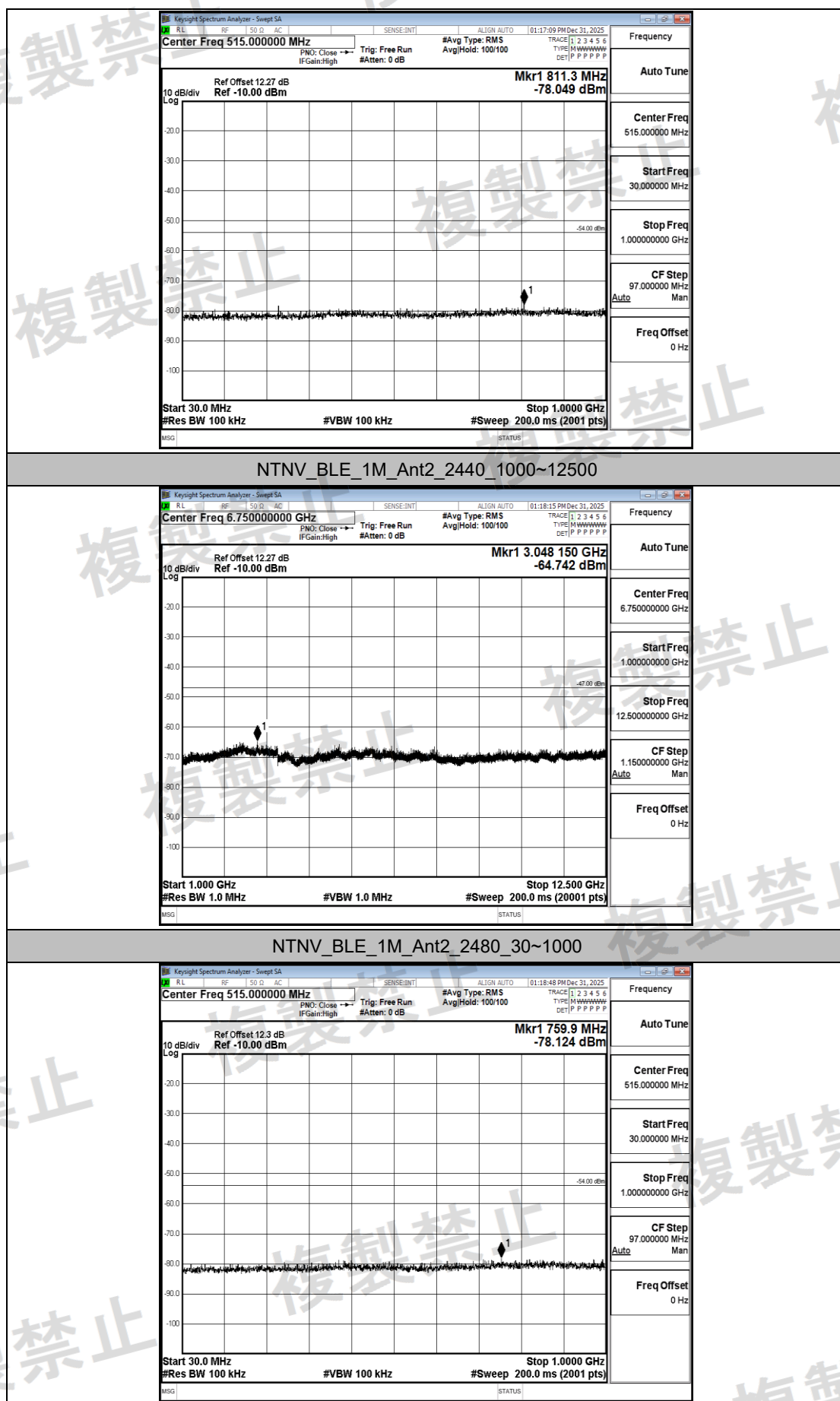
Test Result

Right

Test Condition	TestMode	Antenna	Freq (MHz)	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	BLE_1M	Ant2	2402	30~1000	734.22	-78.28	≤-54	0.01486	≤4	PASS
				1000~12500	2562.28	-65.17	≤-47	0.30409	≤20	PASS
			2440	30~1000	811.34	-78.05	≤-54	0.01567	≤4	PASS
				1000~12500	3048.15	-64.74	≤-47	0.33574	≤20	PASS
			2480	30~1000	759.93	-78.12	≤-54	0.01542	≤4	PASS
				1000~12500	3159.70	-65.04	≤-47	0.31333	≤20	PASS

Test Graphs

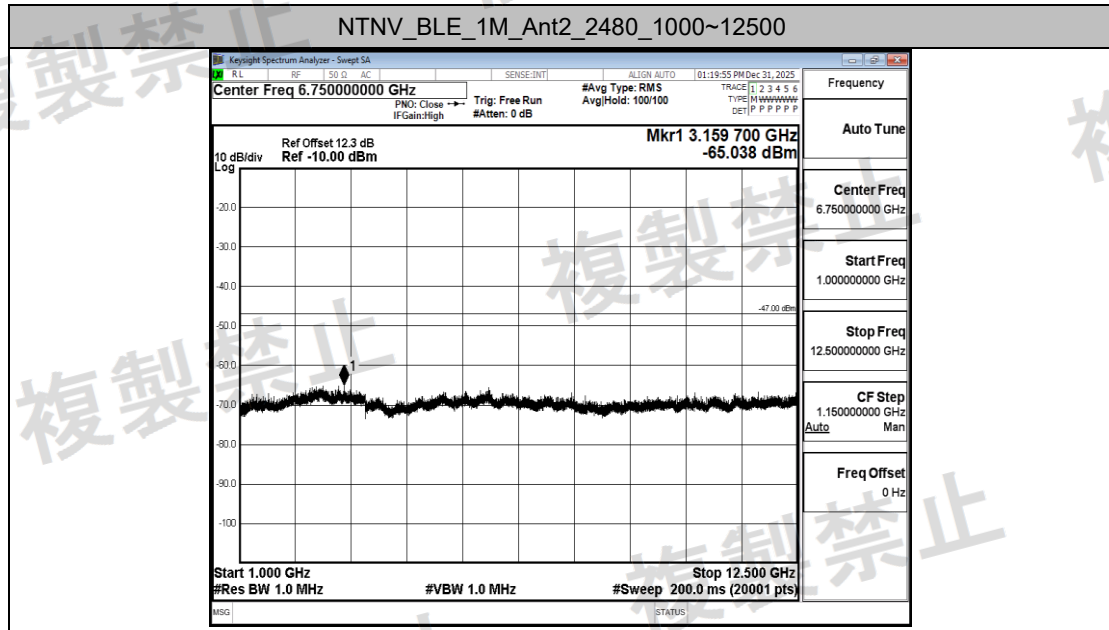




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**Ant1+Ant2**

Test Condition	TestMode	Antenna	Freq (MHz)	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	BLE_1M	Ant1+Ant2	2402	30~1000	734.22	-75.53	≤-54	0.02798	≤4	PASS
				1000~12500	2562.28	-61.99	≤-47	0.63218	≤20	PASS
			2440	30~1000	811.34	-75.43	≤-54	0.02864	≤4	PASS
				1000~12500	3048.15	-61.48	≤-47	0.71158	≤20	PASS
			2480	30~1000	759.93	-75.21	≤-54	0.03011	≤4	PASS
				1000~12500	3159.70	-61.77	≤-47	0.66489	≤20	PASS