

Appendix A: Test Results of Bluetooth BR & EDR

APPENDIX A: TEST RESULTS OF BLUETOOTH BR & EDR	1
APPENDIX A.1: TEST RESULTS OF FREQUENCY TOLERANCE	2
Test Result	2
APPENDIX A.2: TEST RESULTS OF ANTENNA POWER	3
Test Result	3
APPENDIX A.3: TEST RESULTS OF OCCUPIED CHANNEL BANDWIDTH (99%)	4
Test Result	4
Test Graphs	5
APPENDIX A.4: TEST RESULTS OF SPREAD BANDWIDTH (90%)	10
Test Result	10
Test Graphs	11
APPENDIX A.5: TEST RESULTS OF SPURIOUS EMISSIONS FOR TRANSMITTER	13
Test Result	13
Test Graphs	14
APPENDIX A.6: TEST RESULTS OF SPURIOUS EMISSIONS FOR RECEIVER	27
Test Result	27
Test Graphs	28
APPENDIX A.7: TEST RESULTS OF MAX. BURST LENGTH / DWELL TIME	35
Test Result	35
APPENDIX A.8: TEST RESULTS OF INTERFERENCE PREVENTION FUNCTION	35
Test Result	35

Appendix A.1: Test Results of Frequency Tolerance

Test Result

Test Condition	Test Mode	Antenna	Freq(MHz)	Result[ppm]	Limit[ppm]	Verdict
NTNV	DH5	Ant1	2402	3.74688	±50	PASS
			2441	3.68701	±50	PASS
			2480	3.62903	±50	PASS
	3DH5	Ant1	2402	3.74688	±50	PASS
			2441	3.68701	±50	PASS
			2480	3.62903	±50	PASS

Appendix A.2: Test Results of Antenna Power

Test Result

Tolerance								
Test Condition	Test Mode	Antenna	Freq(MHz)	Power (mW /MHz)	RatedPower (mW/MHz)	Result (%)	Limit (%)	Verdict
NTNV	DH5	Ant1	Hop	0.0610	0.3	-79.67	+20	PASS
	3DH5	Ant1	Hop	0.0651	0.3	-78.30	+20	PASS
	AFH_DH5	Ant1	Hop	0.2440	0.3	-18.67	+20	PASS
	AFH_3DH5	Ant1	Hop	0.2578	0.3	-14.07	+20	PASS

EIRP							
Test Condition	TestMode	Antenna	Freq(MHz)	Power (dBm/MHz)	EIRP (dBm/MHz)	Limit (dBm/MHz)	Verdict
NTNV	DH5	Ant1	Hop	-12.15	-10.05	≤6.91	PASS
	3DH5	Ant1	Hop	-11.87	-9.77	≤6.91	PASS
	AFH_DH5	Ant1	Hop	-6.13	-4.03	≤6.91	PASS
	AFH_3DH5	Ant1	Hop	-5.89	-3.79	≤6.91	PASS

Antenna gain: 2.1 dBi

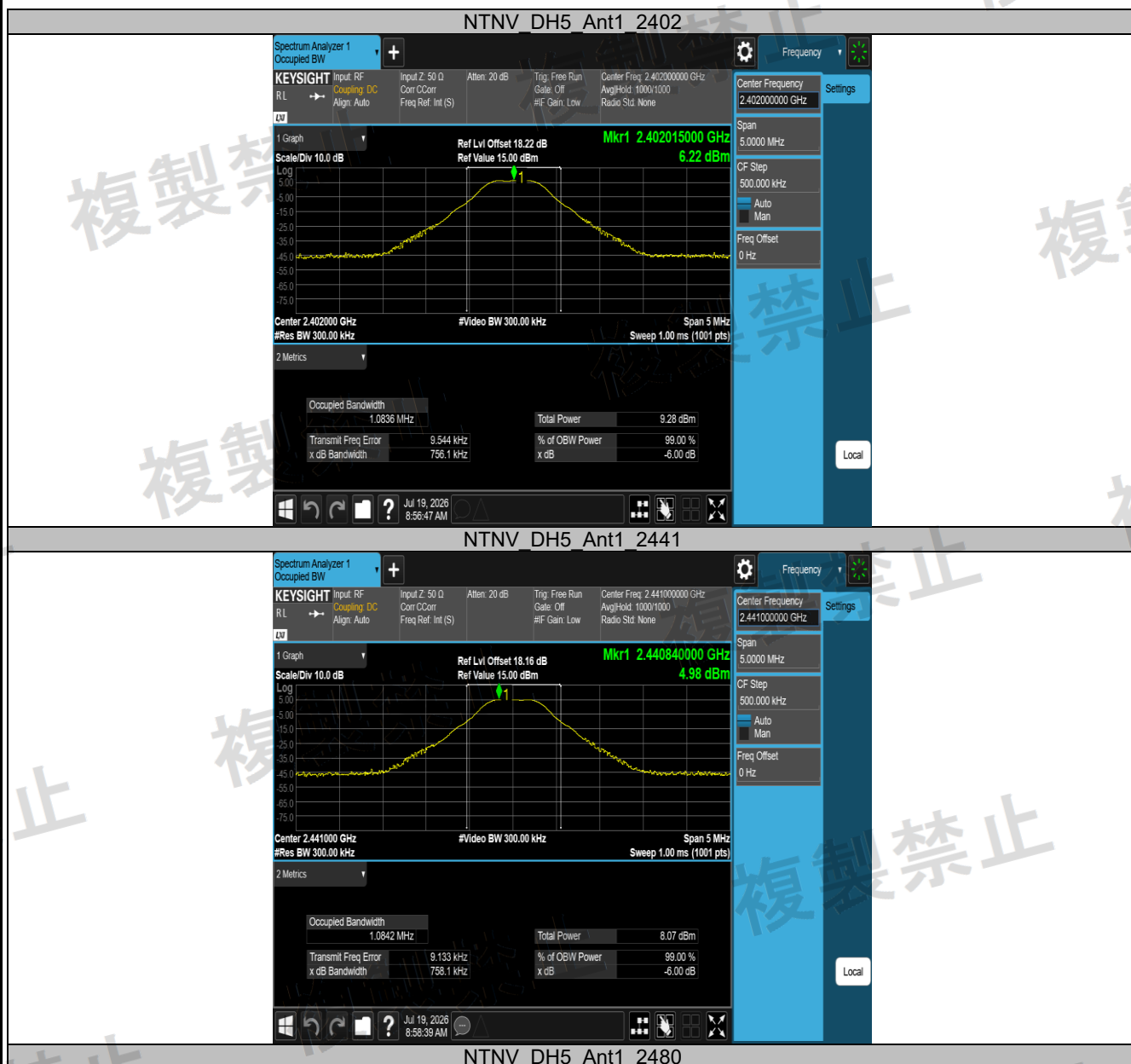
Appendix A.3: Test Results of Occupied Channel Bandwidth (99%)

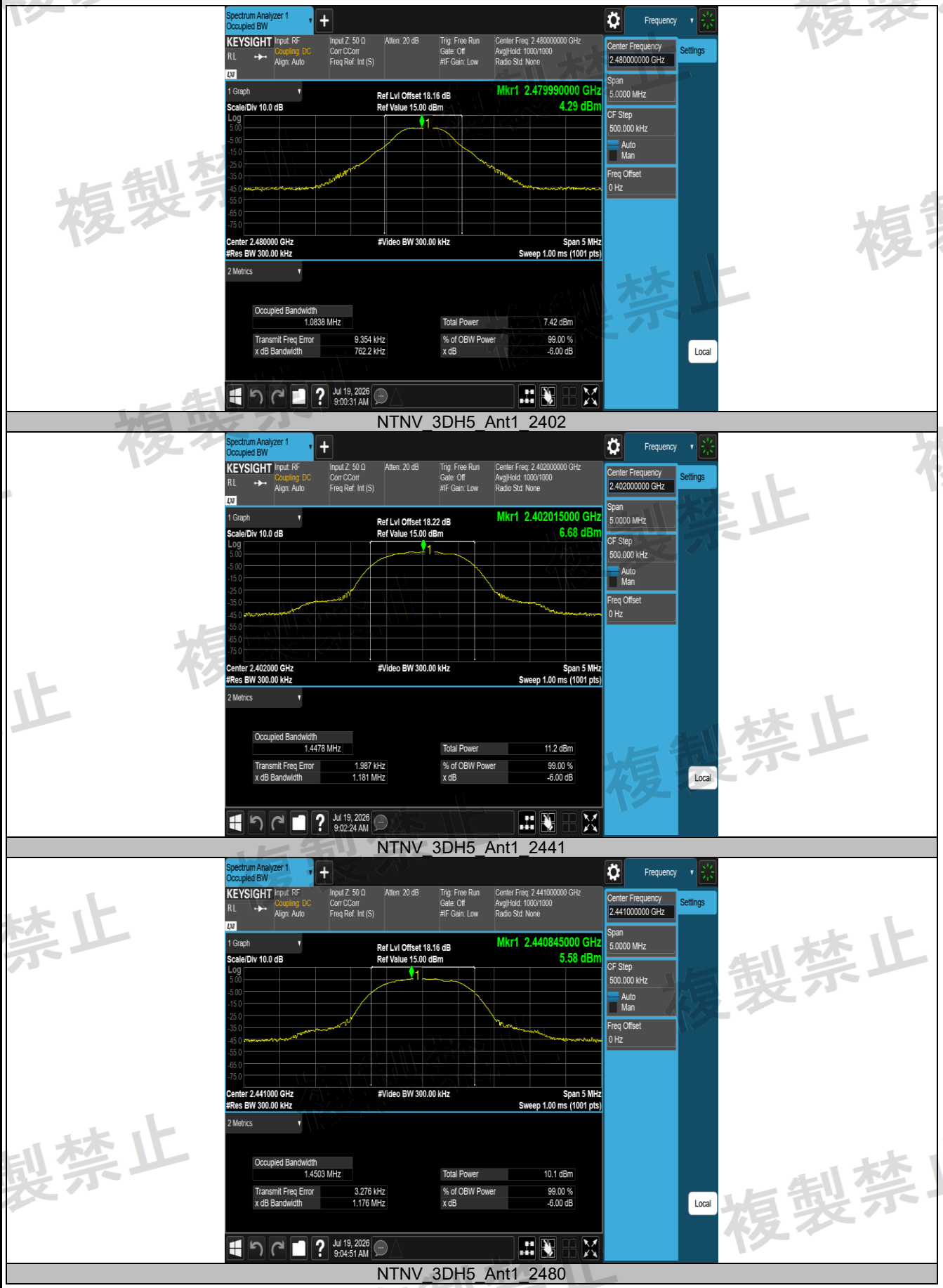
Test Result

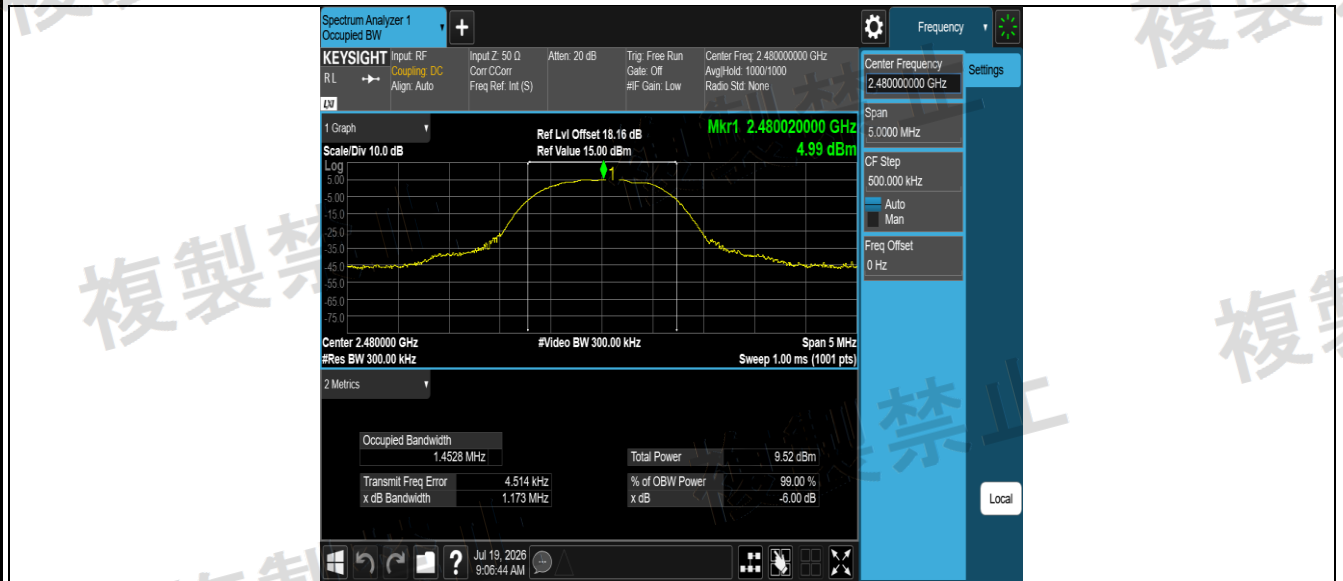
Test Condition	Test Mode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	2402	1.084	≤83.5	PASS
			2441	1.084	≤83.5	PASS
			2480	1.084	≤83.5	PASS
	3DH5	Ant1	2402	1.448	≤83.5	PASS
			2441	1.450	≤83.5	PASS
			2480	1.453	≤83.5	PASS

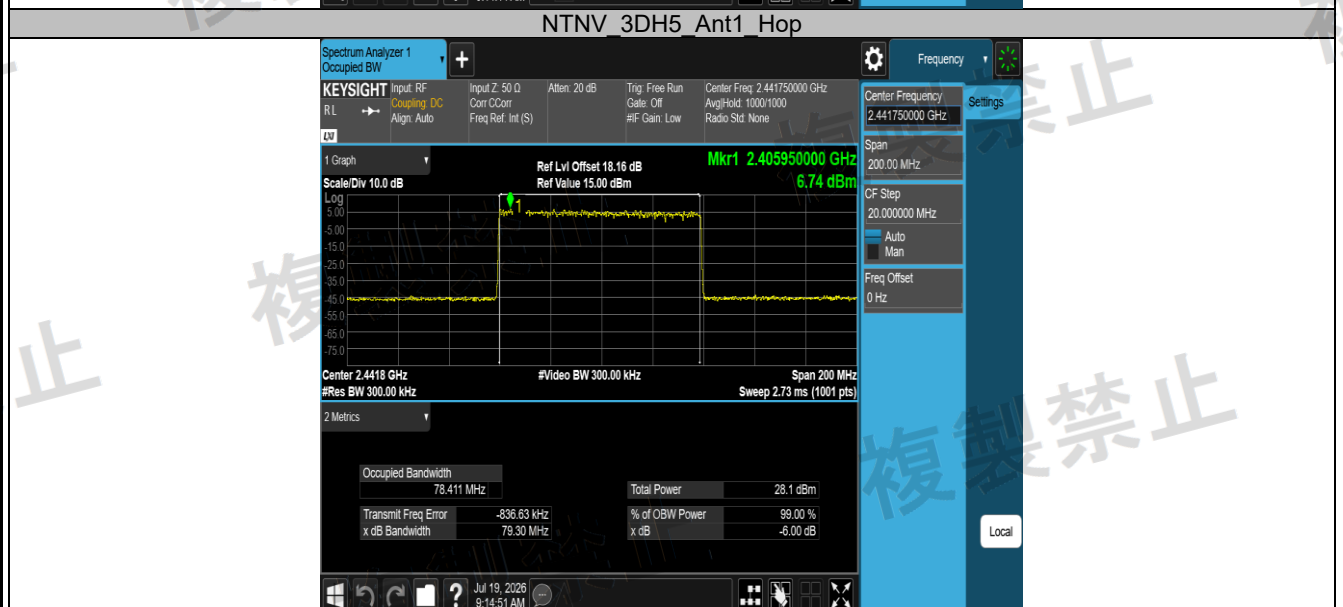
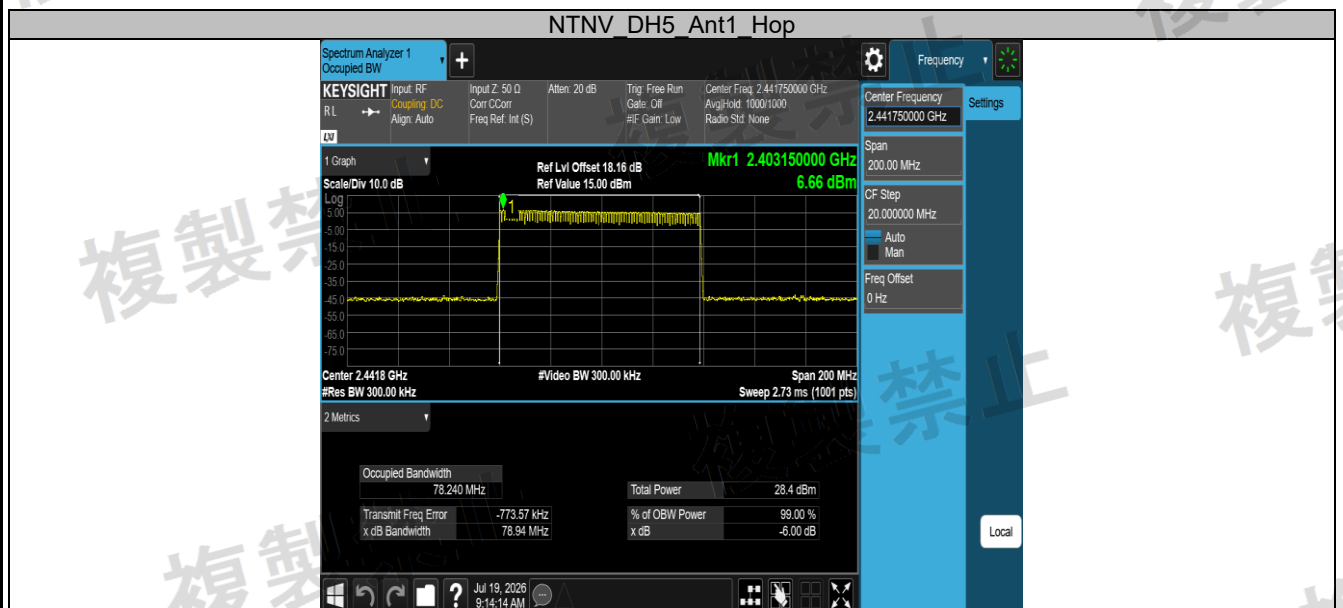
Test Condition	Test Mode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	Hop	78.240	≤83.5	PASS
	3DH5	Ant1	Hop	78.411	≤83.5	PASS
	AFH DH5	Ant1	Hop	19.607	≤83.5	PASS
	AFH 3DH5	Ant1	Hop	19.940	≤83.5	PASS

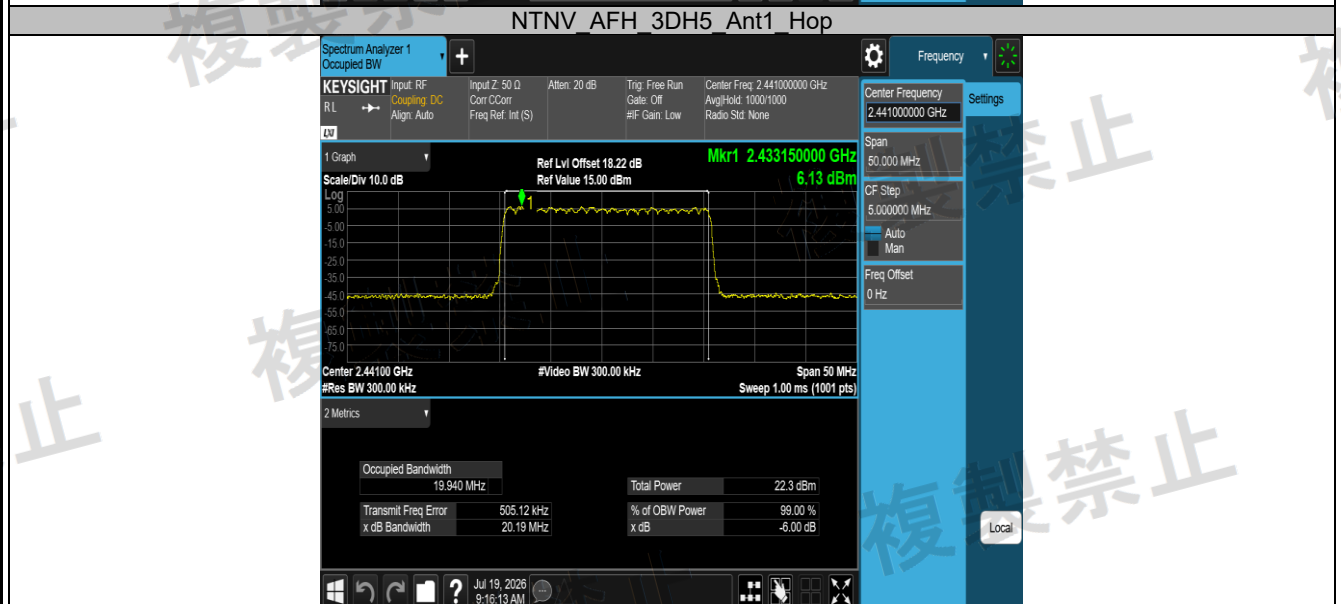
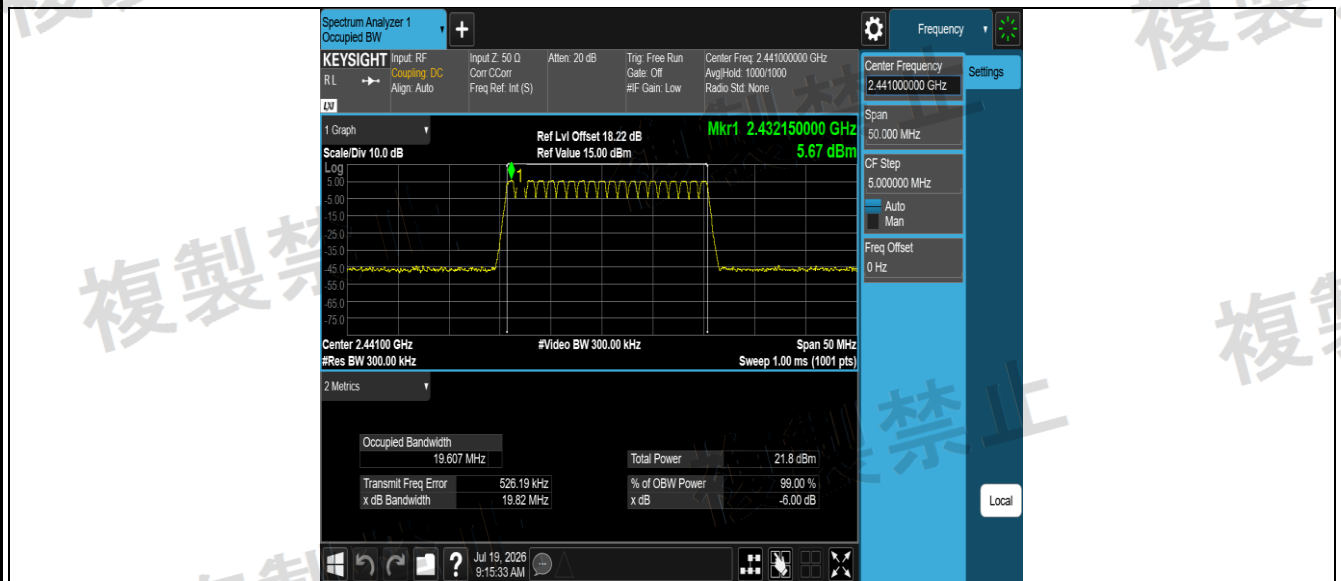
Test Graphs









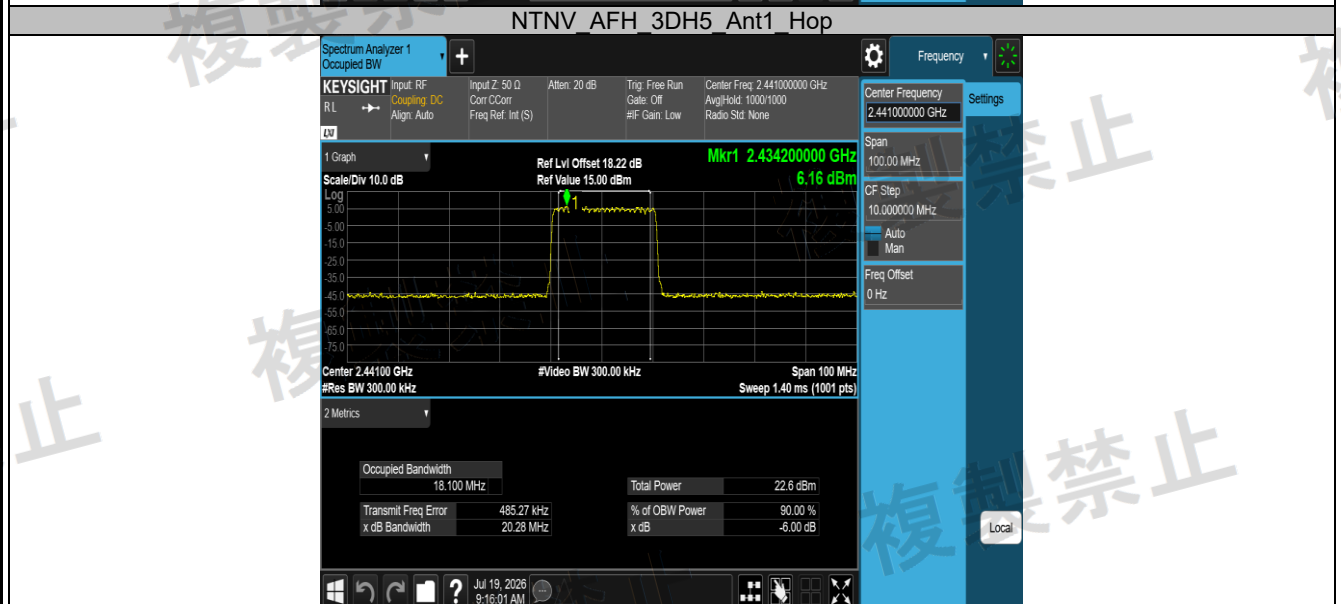
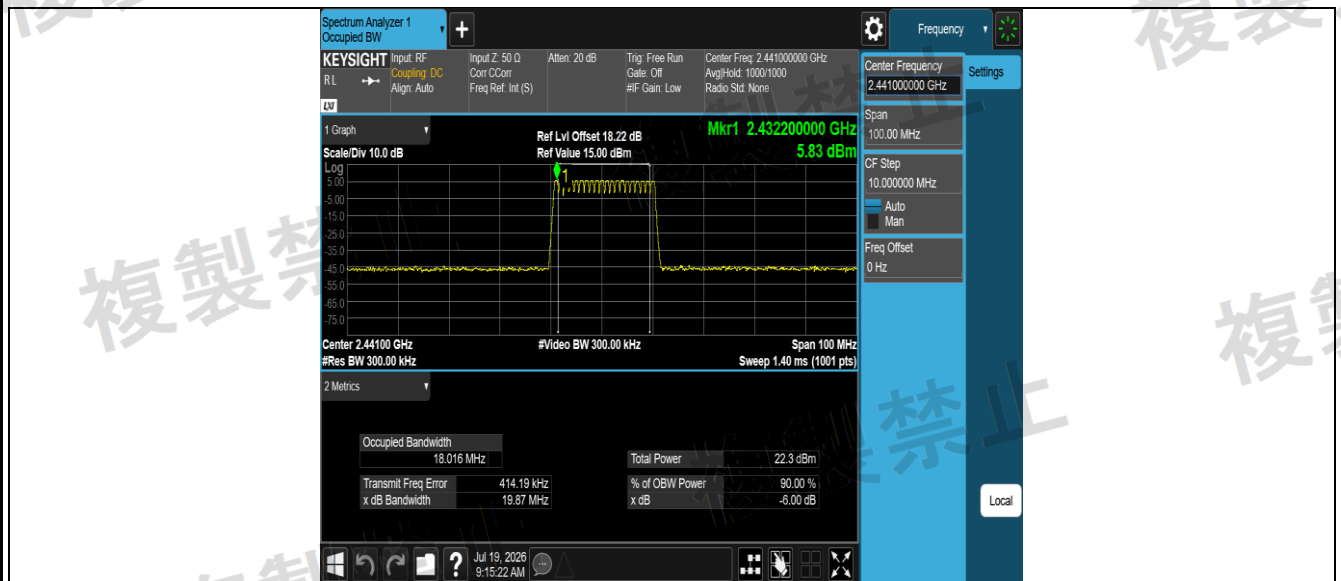


**Appendix A.4: Test Results of Spread Bandwidth (90%)***Test Result*

Test Condition	Test Mode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	SpreadFactor	Limit	Verdict
NTNV	DH5	Ant1	Hop	71.272	≥0.5	71.272	>5	PASS
	3DH5	Ant1	Hop	71.072	≥0.5	71.072	>5	PASS
	AFH_DH5	Ant1	Hop	18.016	≥0.5	18.016	>5	PASS
	AFH_3DH5	Ant1	Hop	18.100	≥0.5	18.100	>5	PASS

Test Graphs





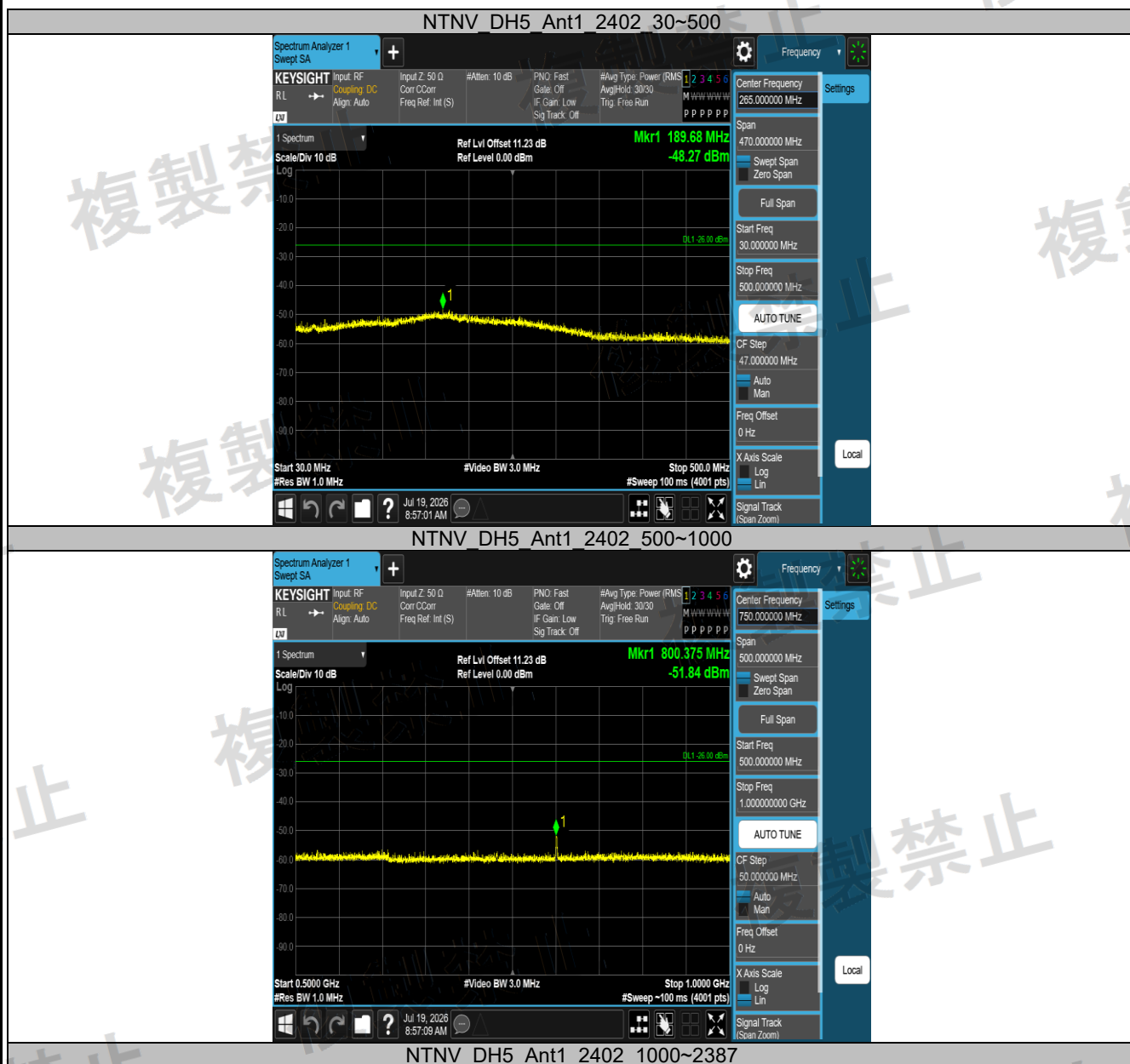
Appendix A.5: Test Results of Spurious Emissions for Transmitter

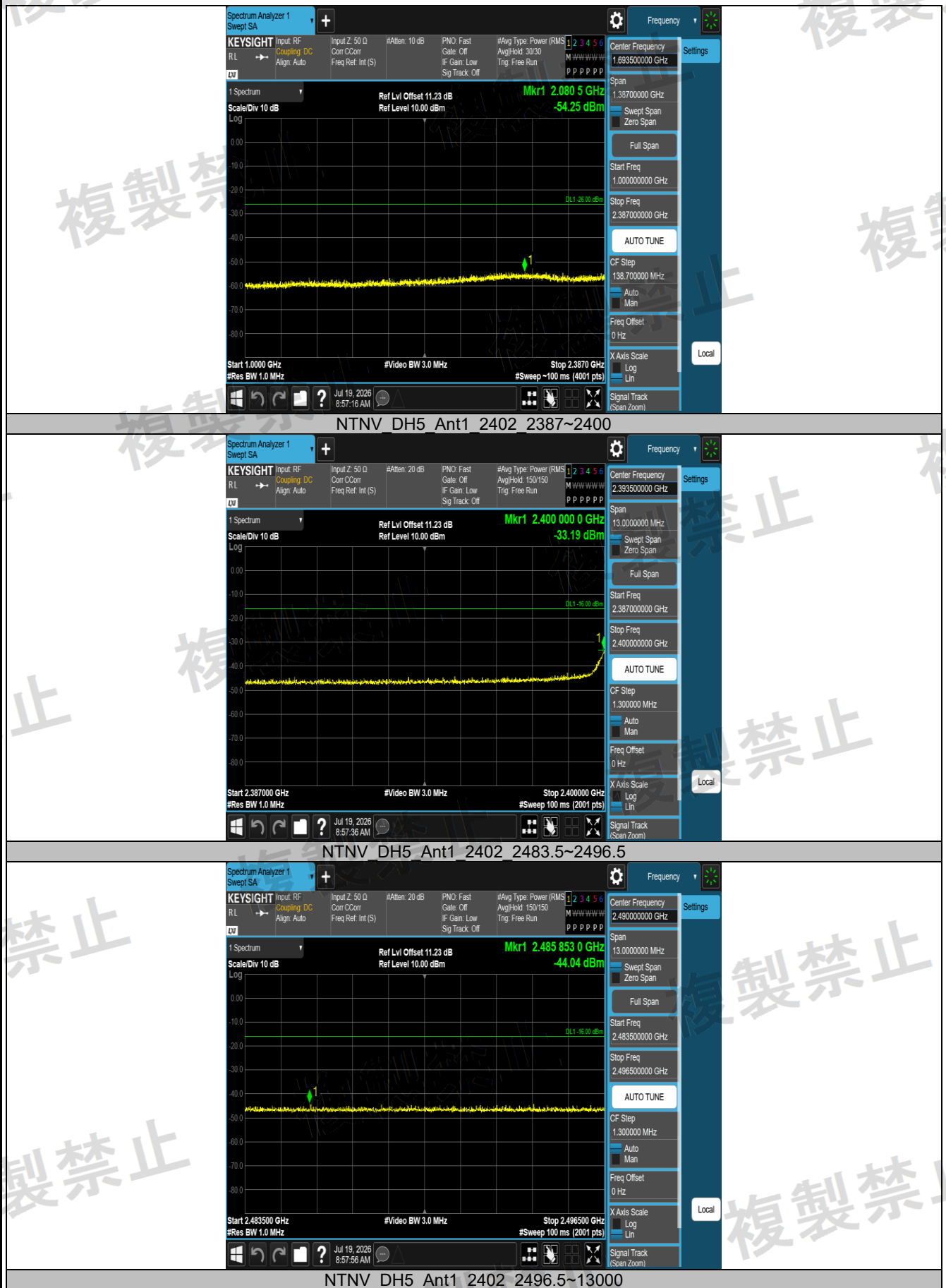
Test Result

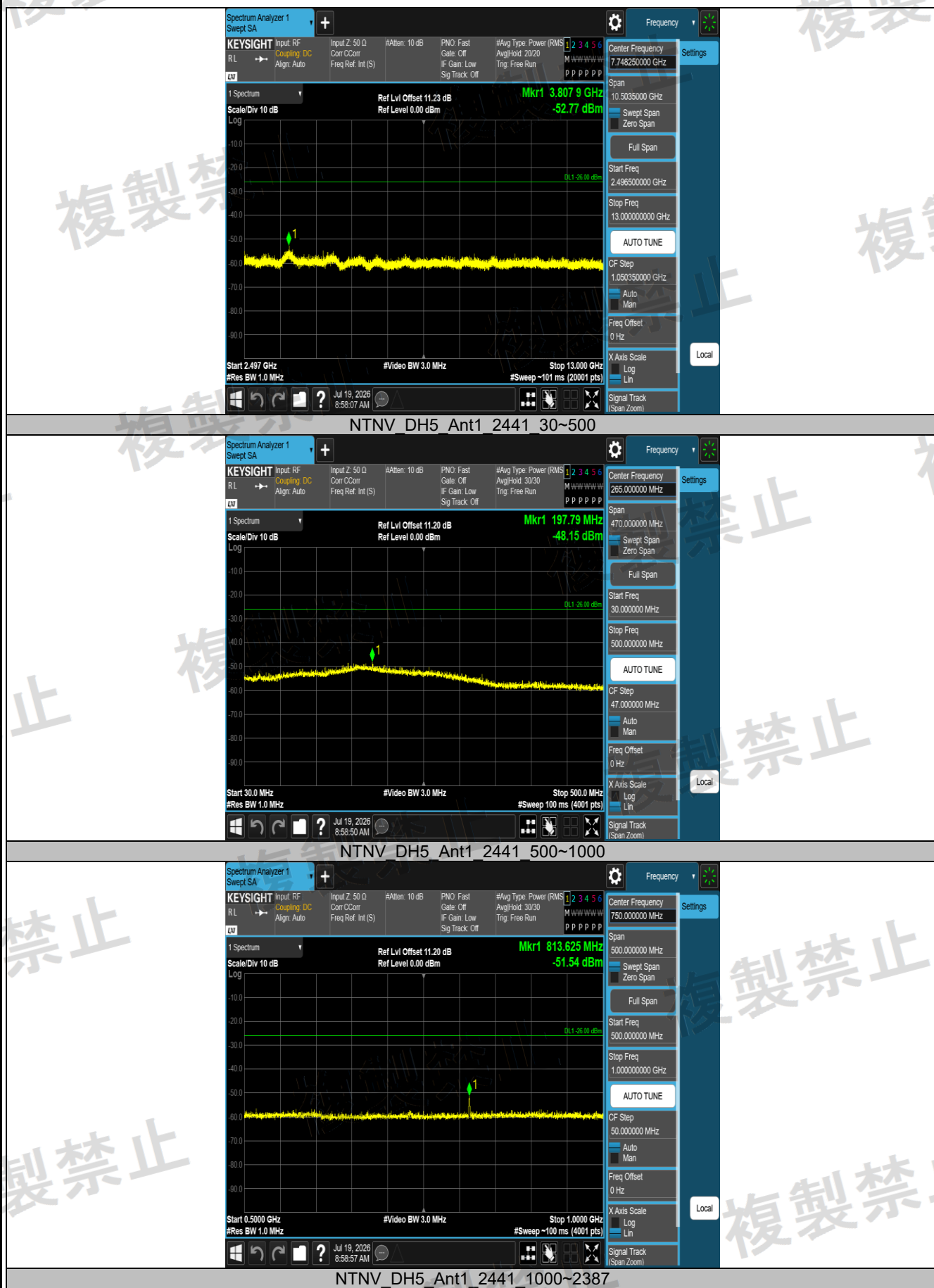
Test Condition	Test Mode	Antenna	Freq (MHz)	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	DH5	Ant1	2402	30~500	189.68	-48.27	≤-26	0.01489	≤2.5	PASS
				500~1000	800.38	-51.84	≤-26	0.00655	≤2.5	PASS
				1000~2387	2080.47	-54.25	≤-26	0.00376	≤2.5	PASS
				2387~2400	2400.00	-33.19	≤-16	0.47973	≤25	PASS
				2483.5~2496.5	2485.85	-44.04	≤-16	0.03945	≤25	PASS
				2496.5~13000	3807.86	-52.77	≤-26	0.00528	≤2.5	PASS
			2441	30~500	197.79	-48.16	≤-26	0.01528	≤2.5	PASS
				500~1000	813.63	-51.54	≤-26	0.00701	≤2.5	PASS
				1000~2387	2073.19	-53.69	≤-26	0.00428	≤2.5	PASS
				2387~2400	2397.57	-44.88	≤-16	0.03251	≤25	PASS
				2483.5~2496.5	2488.82	-44.42	≤-16	0.03614	≤25	PASS
				2496.5~13000	3802.61	-54.12	≤-26	0.00387	≤2.5	PASS
			2480	30~500	188.74	-48.28	≤-26	0.01486	≤2.5	PASS
				500~1000	826.88	-51.72	≤-26	0.00673	≤2.5	PASS
				1000~2387	2027.77	-53.87	≤-26	0.00410	≤2.5	PASS
				2387~2400	2396.43	-43.99	≤-16	0.03990	≤25	PASS
				2483.5~2496.5	2483.81	-44.01	≤-16	0.03972	≤25	PASS
				2496.5~13000	3517.97	-50.24	≤-26	0.00946	≤2.5	PASS
	3DH5	Ant1	2402	30~500	177.35	-48.67	≤-26	0.01358	≤2.5	PASS
				500~1000	800.75	-50.67	≤-26	0.00857	≤2.5	PASS
				1000~2387	2367.24	-54.04	≤-26	0.00394	≤2.5	PASS
				2387~2400	2400.00	-24.56	≤-16	3.49945	≤25	PASS
				2483.5~2496.5	2490.81	-44.33	≤-16	0.03690	≤25	PASS
				2496.5~13000	3792.63	-53.40	≤-26	0.00457	≤2.5	PASS
			2441	30~500	195.32	-48.28	≤-26	0.01486	≤2.5	PASS
				500~1000	813.75	-51.11	≤-26	0.00774	≤2.5	PASS
				1000~2387	2051.00	-53.05	≤-26	0.00495	≤2.5	PASS
				2387~2400	2387.36	-43.75	≤-16	0.04217	≤25	PASS
				2483.5~2496.5	2492.39	-44.01	≤-16	0.03972	≤25	PASS
				2496.5~13000	3405.05	-44.16	≤-26	0.03837	≤2.5	PASS
			2480	30~500	187.92	-48.43	≤-26	0.01435	≤2.5	PASS
				500~1000	826.75	-50.51	≤-26	0.00889	≤2.5	PASS
				1000~2387	2032.62	-52.76	≤-26	0.00530	≤2.5	PASS
				2387~2400	2399.62	-43.64	≤-16	0.04325	≤25	PASS
				2483.5~2496.5	2484.03	-43.95	≤-16	0.04027	≤25	PASS
				2496.5~13000	3419.23	-44.96	≤-26	0.03192	≤2.5	PASS

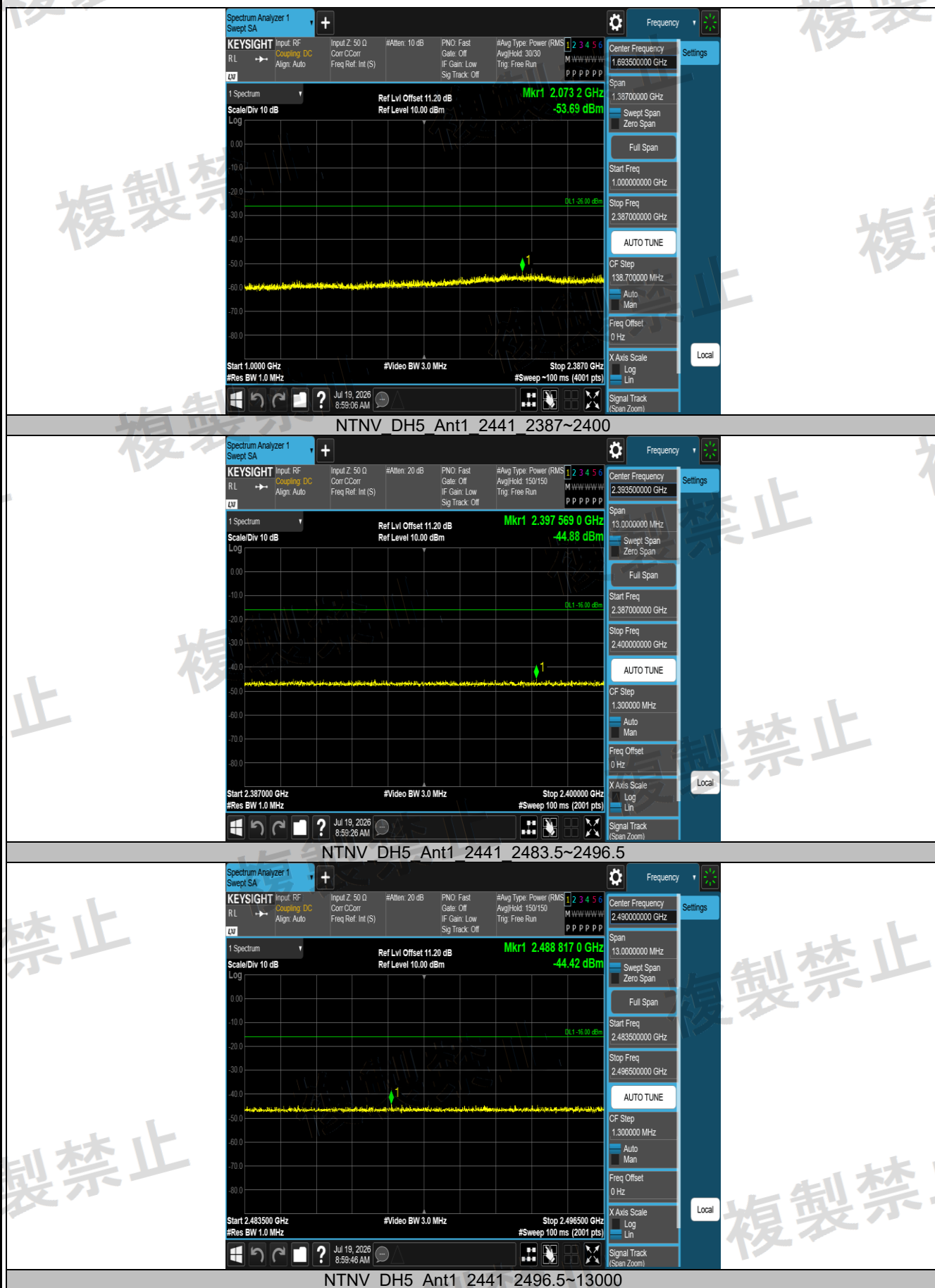


Test Graphs



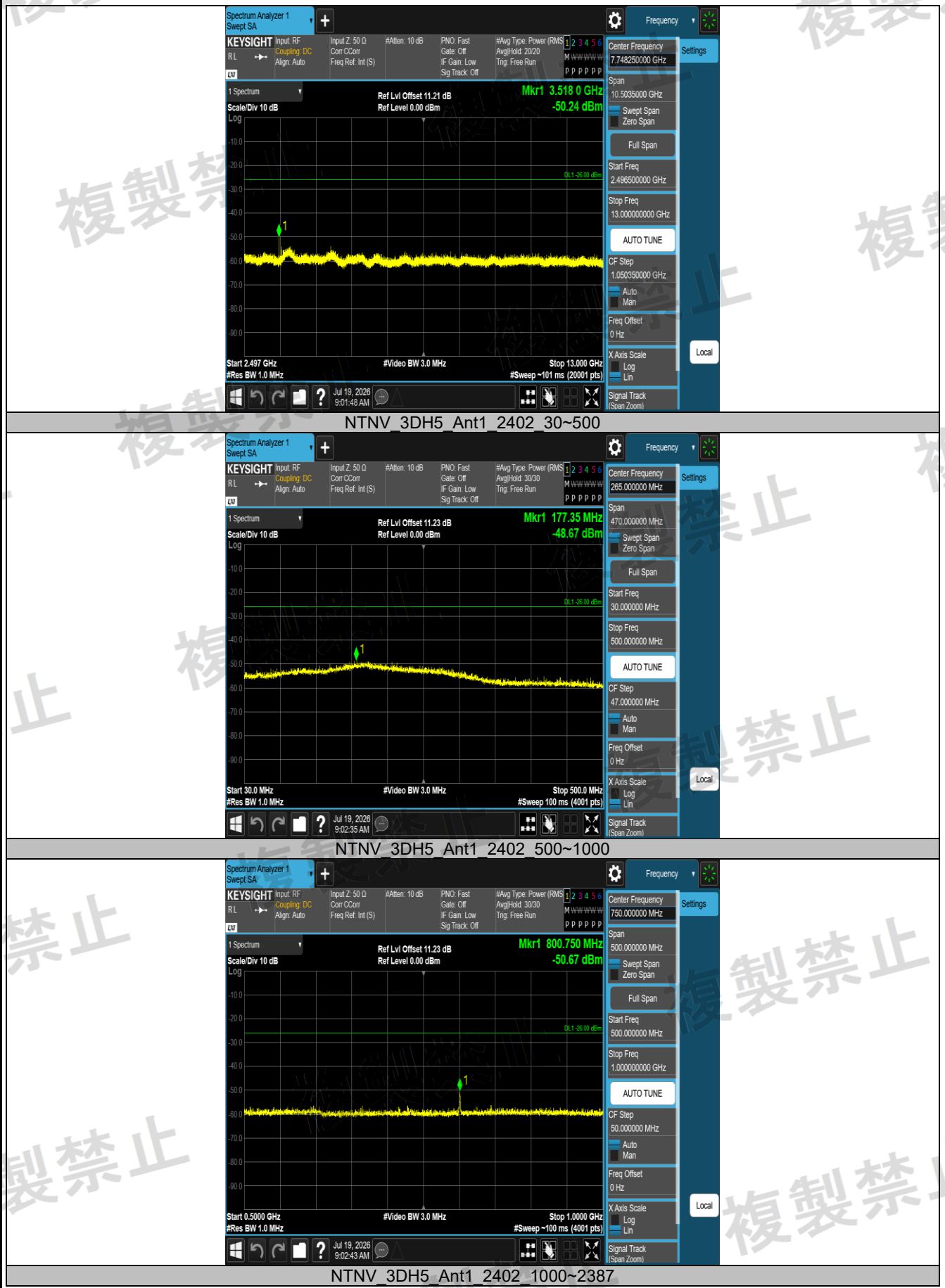


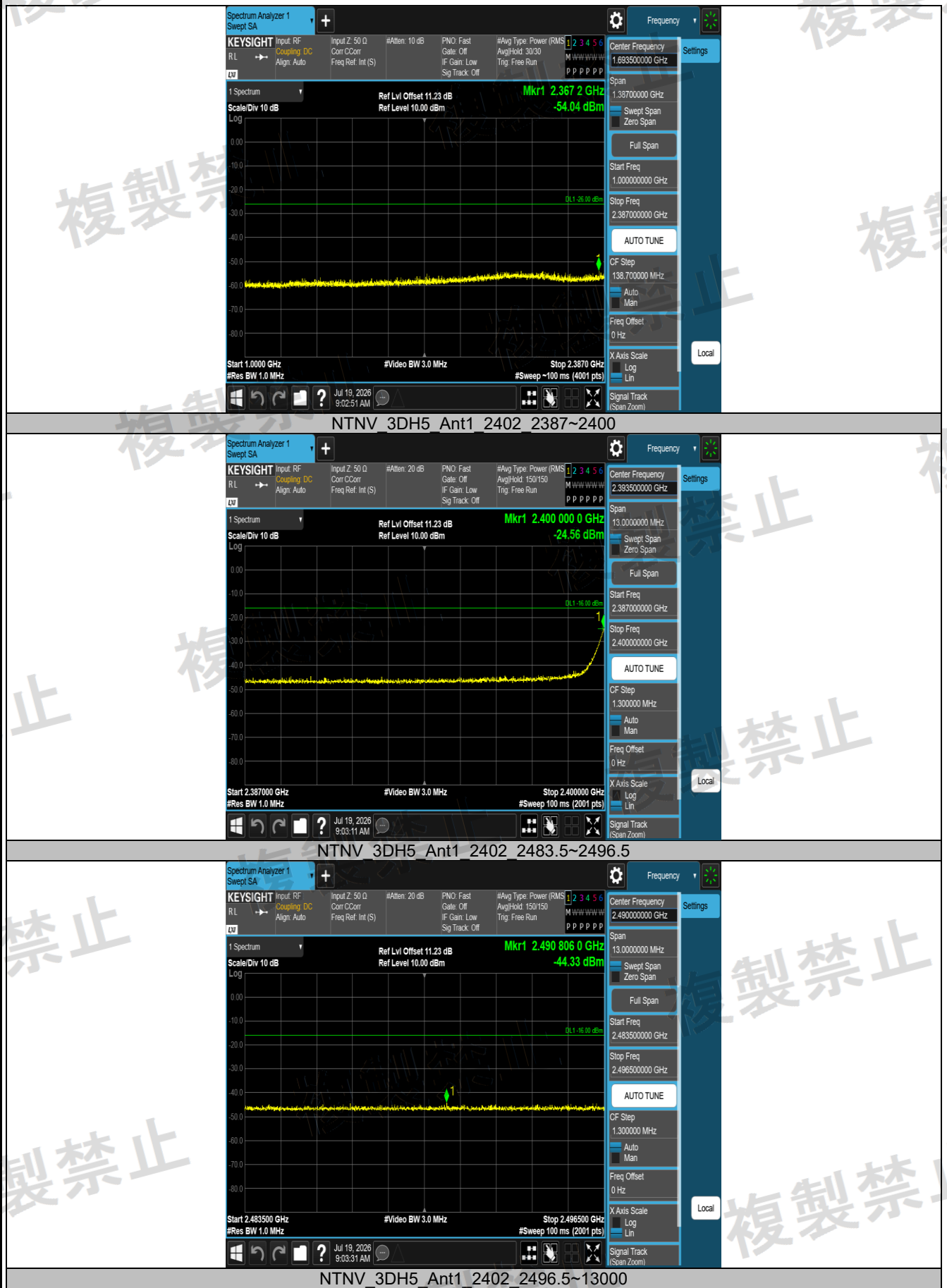




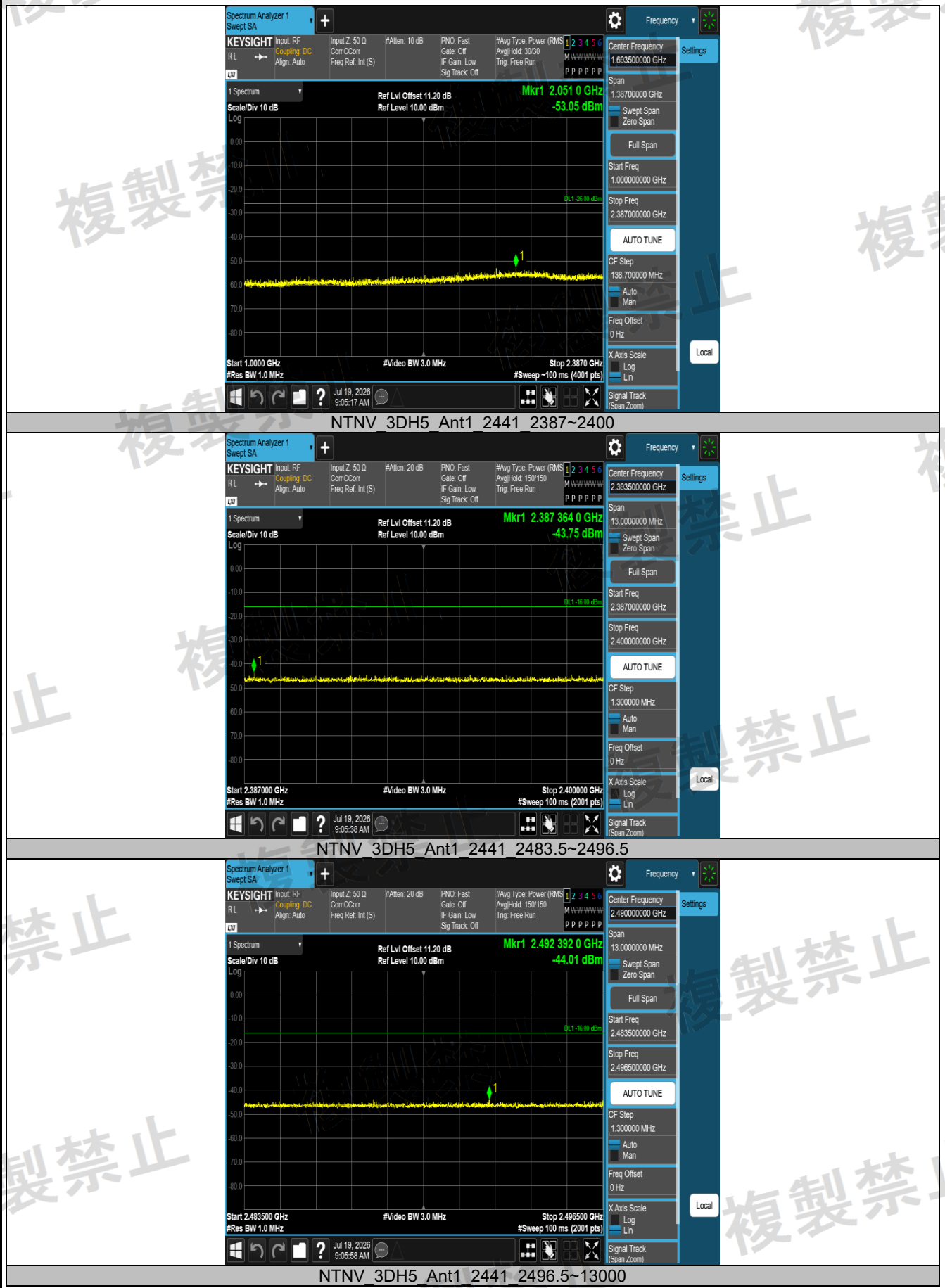


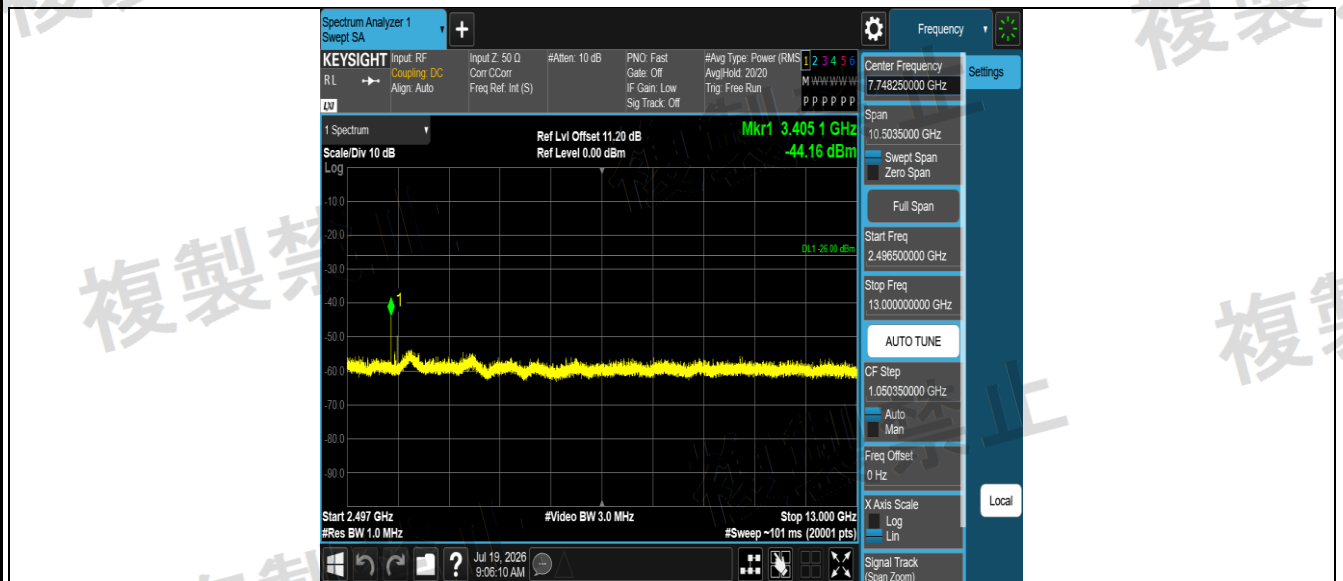




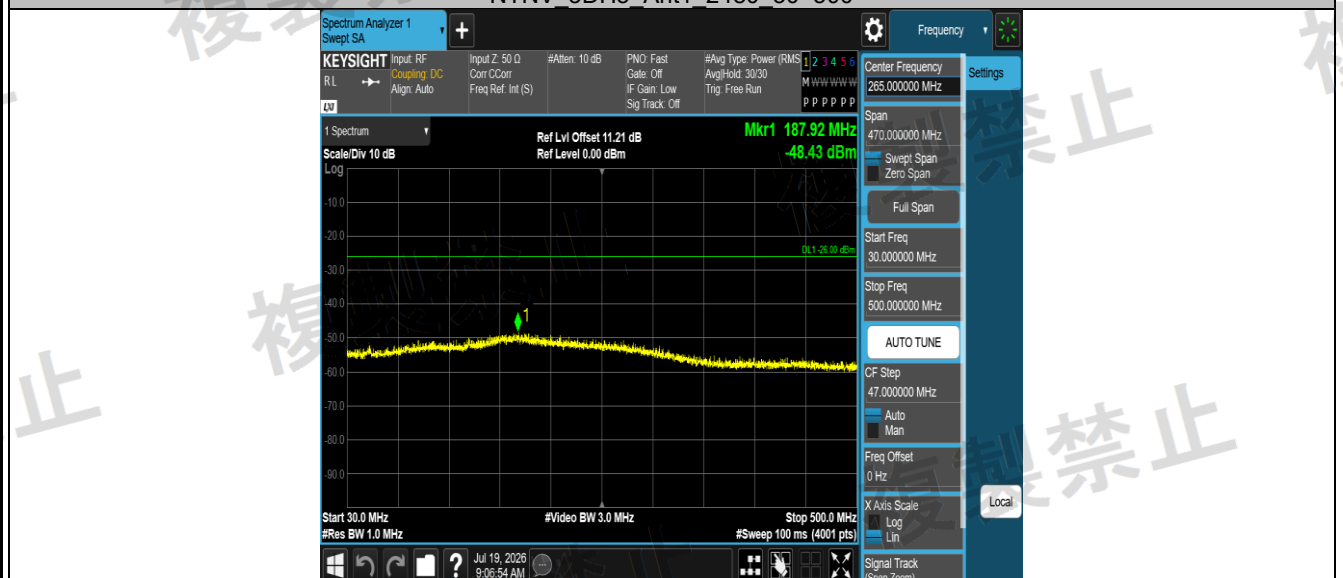




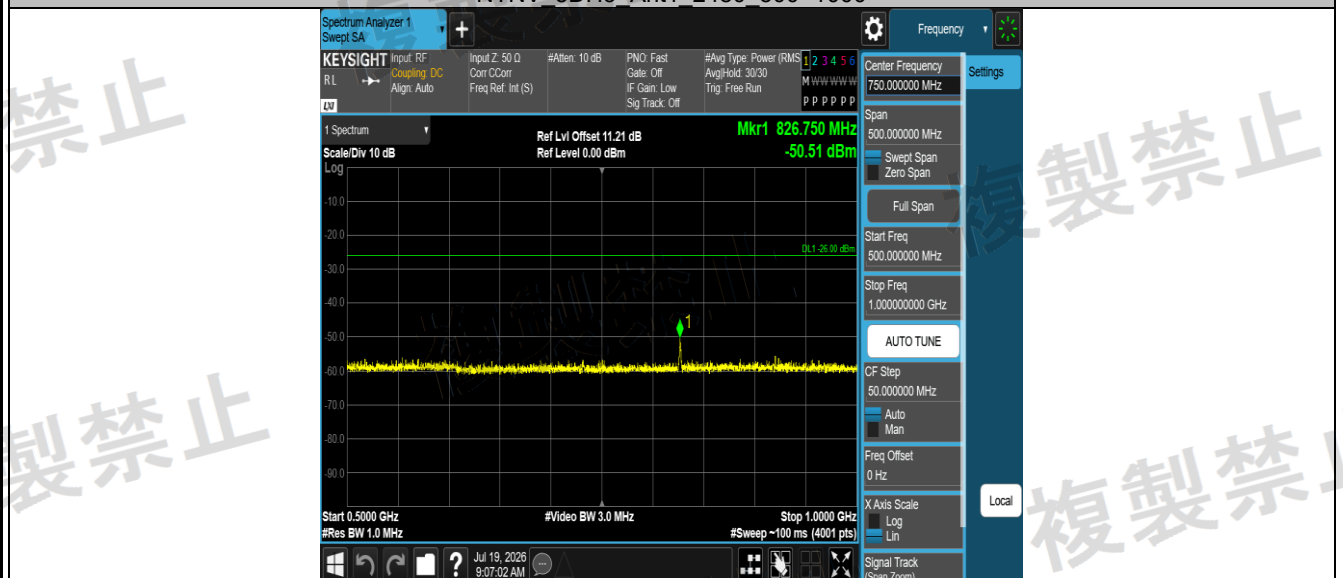




NTNV 3DH5 Ant1 2480 30~500

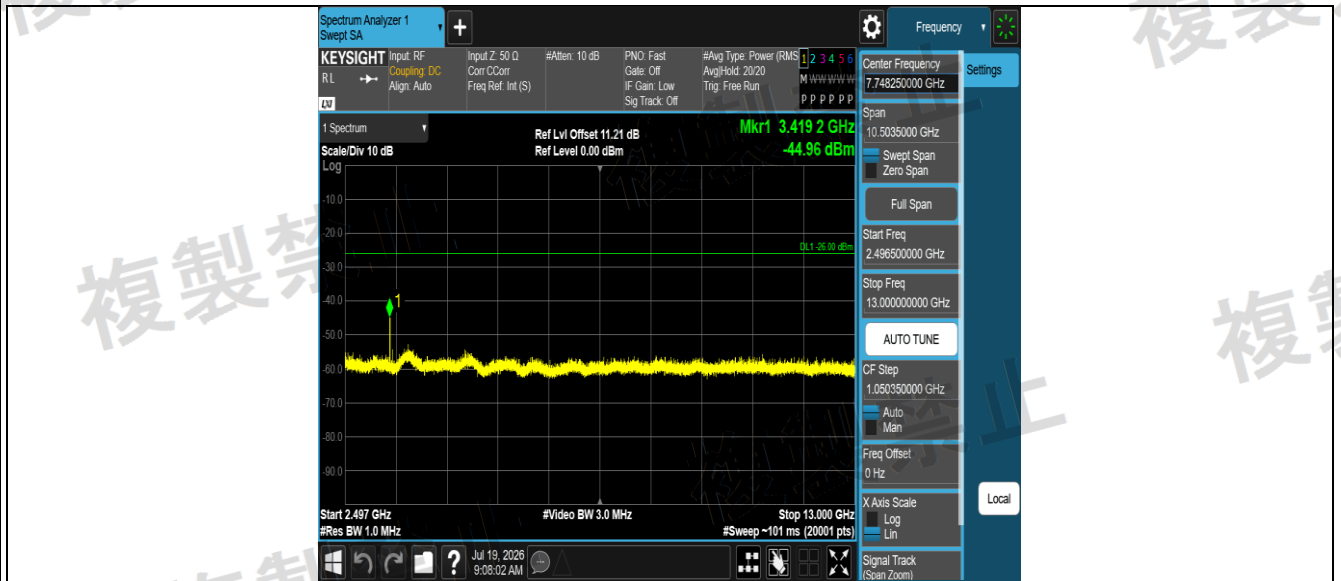


NTNV 3DH5 Ant1 2480 500~1000



NTNV 3DH5 Ant1 2480 1000~2387





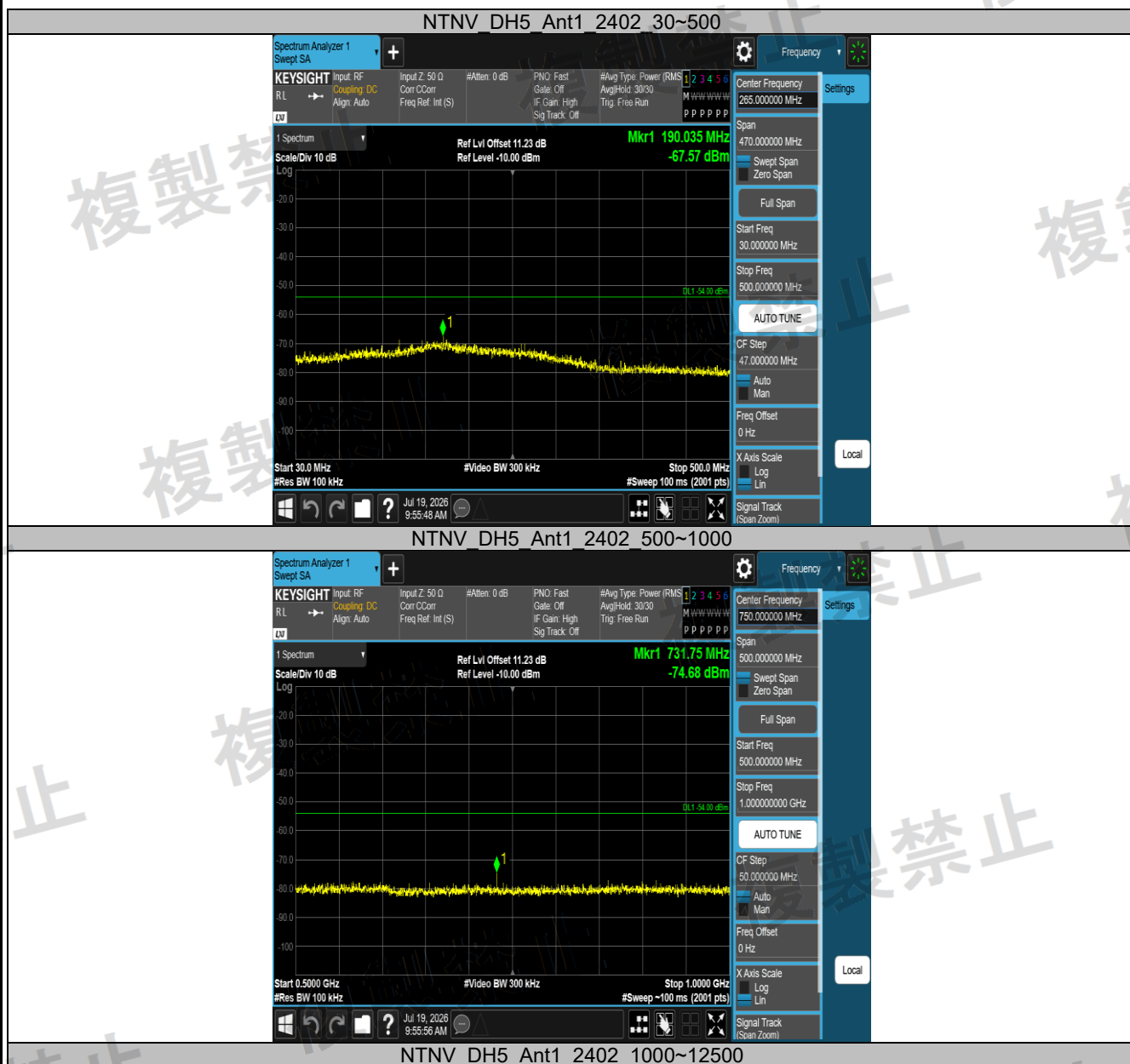
Appendix A.6: Test Results of Spurious Emissions for Receiver

Test Result

Test Condition	Test Mode	Antenna	Freq(MHz)	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	DH5	Ant1	2402	30~500	190.04	-67.57	≤-54	0.17498	≤4	PASS
				500~1000	731.75	-74.68	≤-54	0.03404	≤4	PASS
				1000~12500	3810.60	-63.44	≤-47	0.45290	≤20	PASS
			2441	30~500	196.15	-68.25	≤-54	0.14962	≤4	PASS
				500~1000	731.75	-74.10	≤-54	0.03890	≤4	PASS
				1000~12500	3791.63	-63.30	≤-47	0.46774	≤20	PASS
			2480	30~500	194.74	-68.73	≤-54	0.13397	≤4	PASS
				500~1000	731.75	-76.87	≤-54	0.02056	≤4	PASS
				1000~12500	3827.85	-63.84	≤-47	0.41305	≤20	PASS
	3DH5	Ant1	2402	30~500	193.33	-68.83	≤-54	0.13092	≤4	PASS
				500~1000	731.75	-75.74	≤-54	0.02667	≤4	PASS
				1000~12500	3693.30	-63.80	≤-47	0.41687	≤20	PASS
			2441	30~500	197.32	-68.13	≤-54	0.15382	≤4	PASS
				500~1000	731.75	-76.39	≤-54	0.02296	≤4	PASS
				1000~12500	3762.30	-63.49	≤-47	0.44771	≤20	PASS
			2480	30~500	188.63	-67.34	≤-54	0.18450	≤4	PASS
				500~1000	731.75	-75.58	≤-54	0.02767	≤4	PASS
				1000~12500	3810.03	-62.95	≤-47	0.50699	≤20	PASS



Test Graphs



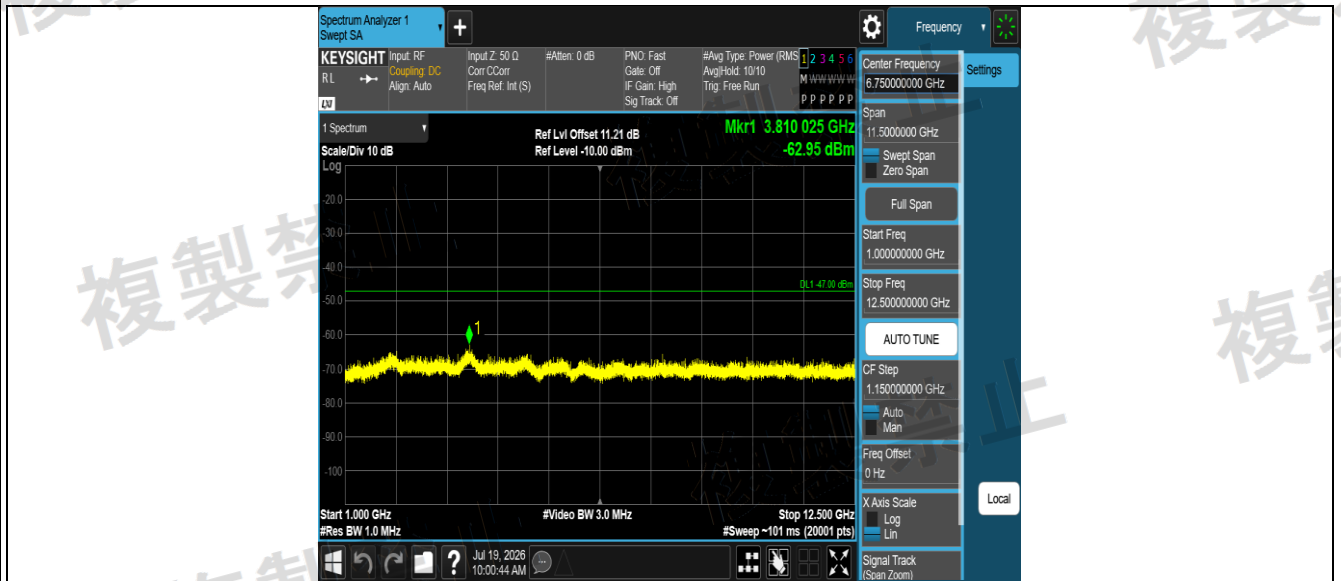












Appendix A.7: Test Results of Max. Burst Length / Dwell Time

Test Result

BDR GFSK					
Test Voltage	Dwell Time		Integrated dwell time		Conclusion
	Result (msec)	Limit(msec)	Result (msec)	Limit (msec)	
Normal	2.77	50	295	400	Pass

BDR Enable AFH GFSK					
Test Voltage	Dwell Time		Integrated dwell time		Conclusion
	Result (msec)	Limit(msec)	Result (msec)	Limit (msec)	
Normal	2.77	50	291	400	Pass

EDR 8DPSK					
Test Voltage	Dwell Time		Integrated dwell time		Conclusion
	Result (msec)	Limit(msec)	Result (msec)	Limit (msec)	
Normal	2.76	50	294	400	Pass

EDR Enable AFH 8DPSK					
Test Voltage	Dwell Time		Integrated dwell time		Conclusion
	Result (msec)	Limit(msec)	Result (msec)	Limit (msec)	
Normal	2.76	50	294	400	Pass

Appendix A.8: Test Results of Interference Prevention Function

Test Result

Temperature:	24.8°C	Humidity:	55%RH
MAC address:	140A02F32C6D	Test result:	Conform