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Annex for Bluetooth low Energy

Test Report No.: CTL2602028031-MIC01

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MIC: 219-269111

1. Frequency Error

1.1 Test Result

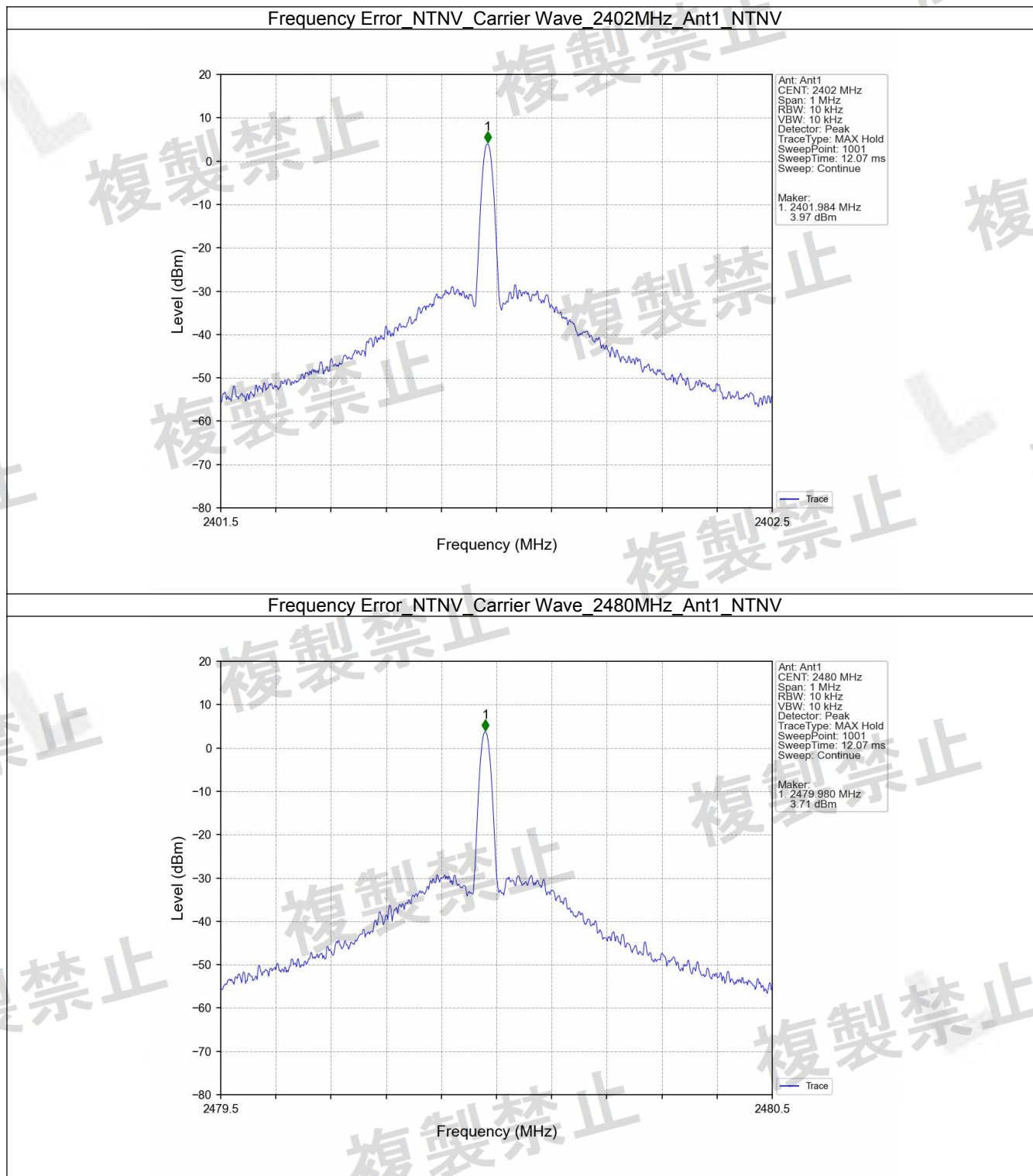
1.1.1 Ant1

Ant1							
ENV	Mode	TX Type	Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)		Verdict
					Result	Limit	
NTNV	Carrier Wave	SISO	2402	2401.984	-6.66	-50 to 50	Pass
			2480	2479.980	-8.06	-50 to 50	Pass
NTLV	Carrier Wave	SISO	2402	2401.984	-6.66	-50 to 50	Pass
			2480	2479.980	-8.06	-50 to 50	Pass
NTHV	Carrier Wave	SISO	2402	2401.984	-6.66	-50 to 50	Pass
			2480	2479.980	-8.06	-50 to 50	Pass

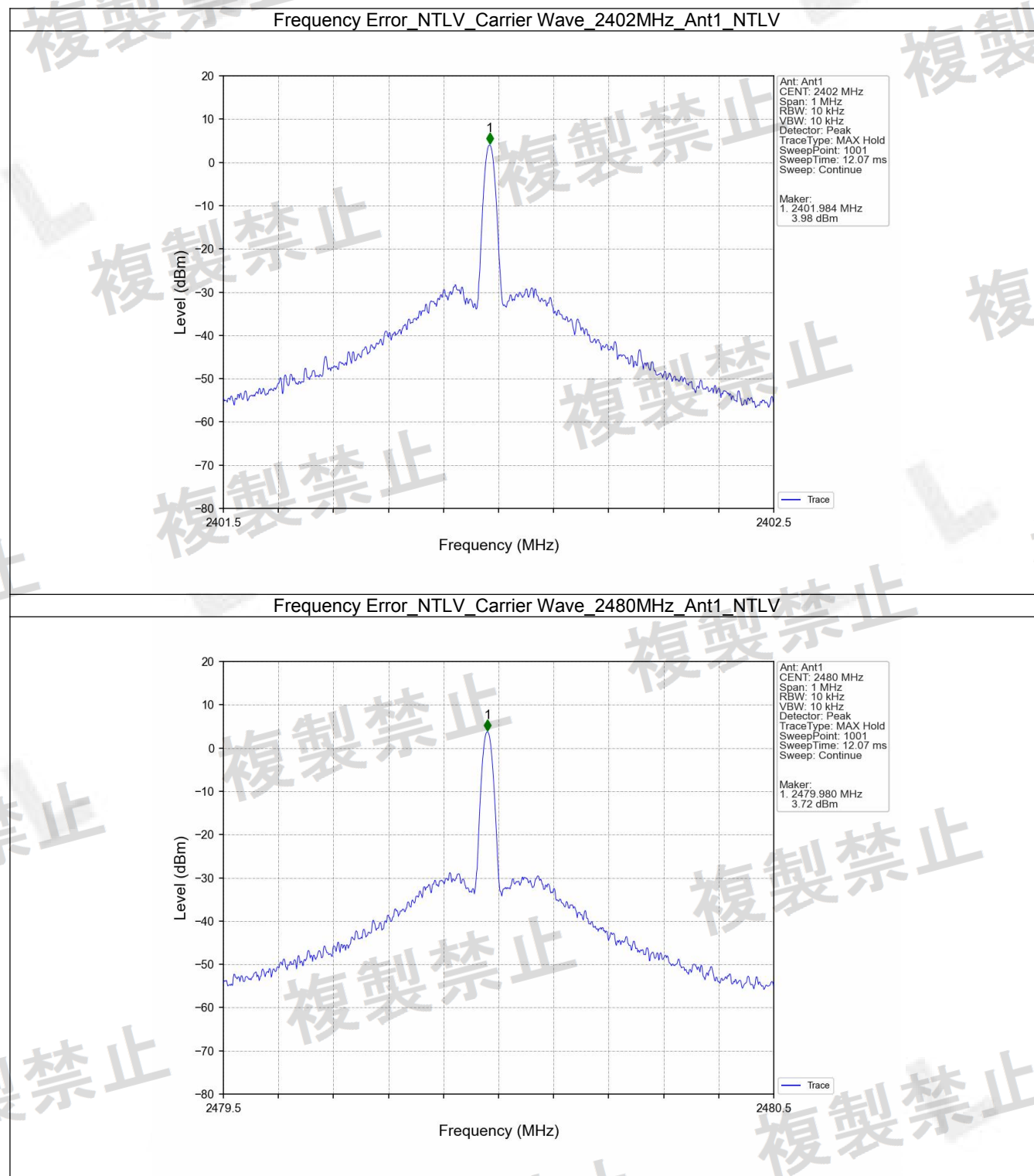
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1.2 Test Graph

1.2.1 Ant1

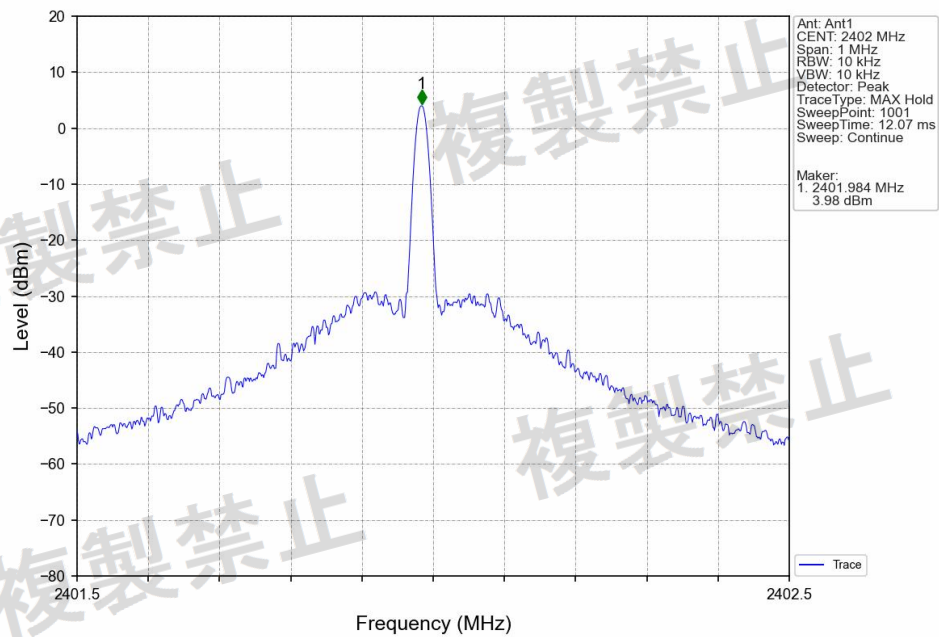


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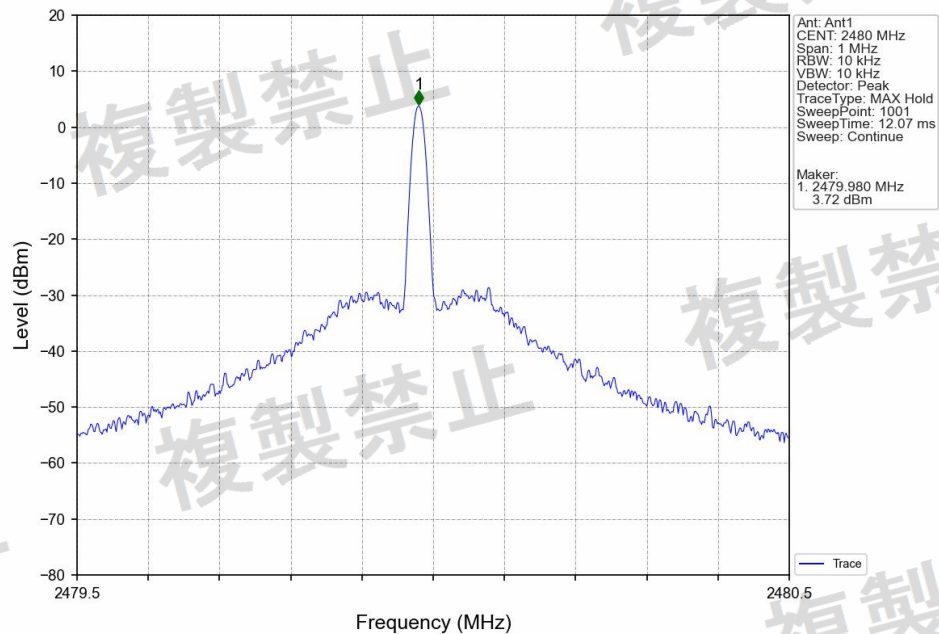


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Frequency Error_NTHV_Carrier Wave_2402MHz_Ant1_NTHV



Frequency Error_NTHV_Carrier Wave_2480MHz_Ant1_NTHV



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2. Occupied Bandwidth

2.1 Test Result

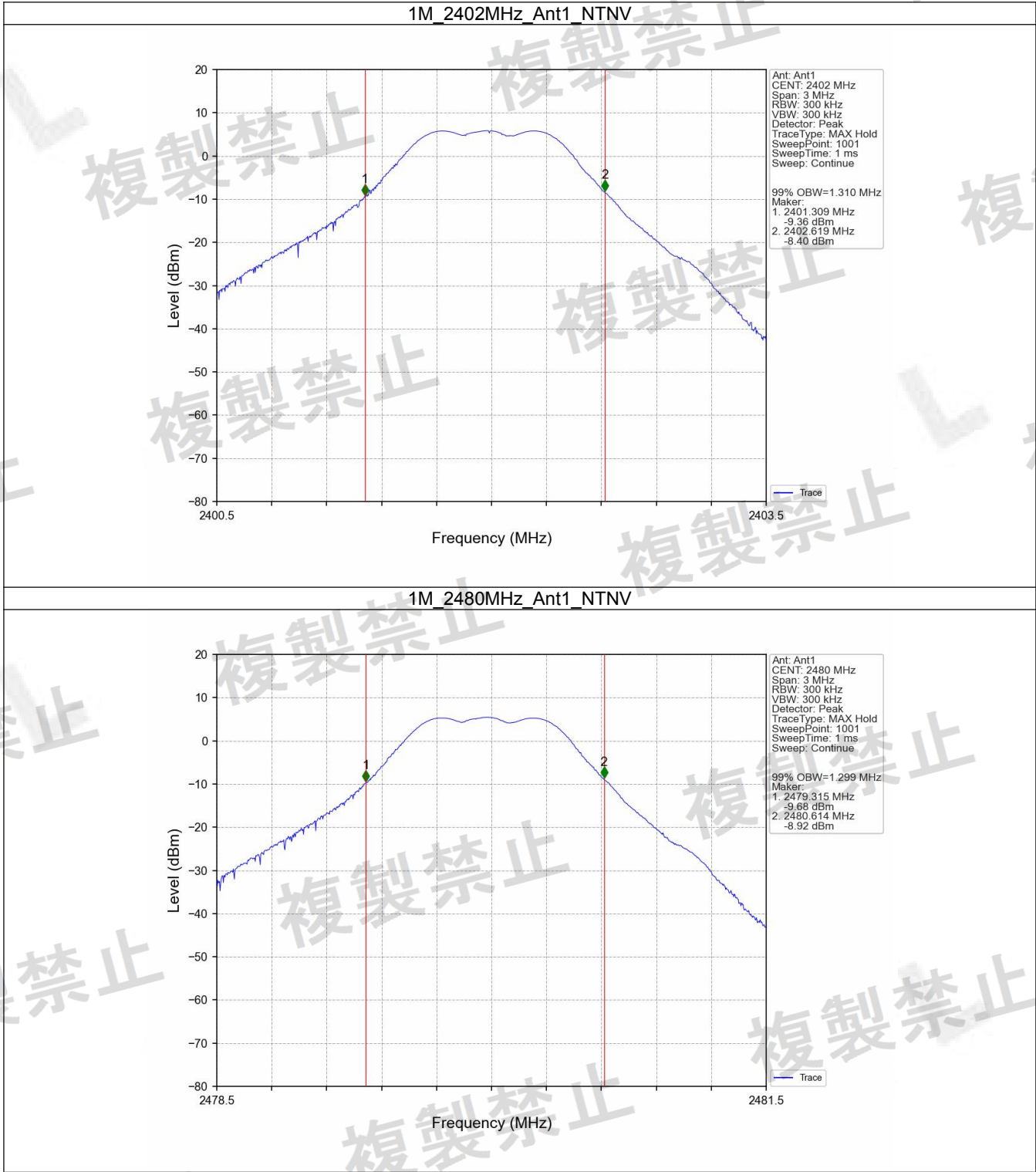
2.1.1 OBW

ENV	Mode	TX Type	Frequency (MHz)	99% Occupied Bandwidth (MHz)		Verdict
				ANT1	Limit	
NTNV	1M	SISO	2402	1.310	<=26	Pass
			2480	1.299	<=26	Pass
NTLV	1M	SISO	2402	1.311	<=26	Pass
			2480	1.300	<=26	Pass
NTHV	1M	SISO	2402	1.310	<=26	Pass
			2480	1.300	<=26	Pass

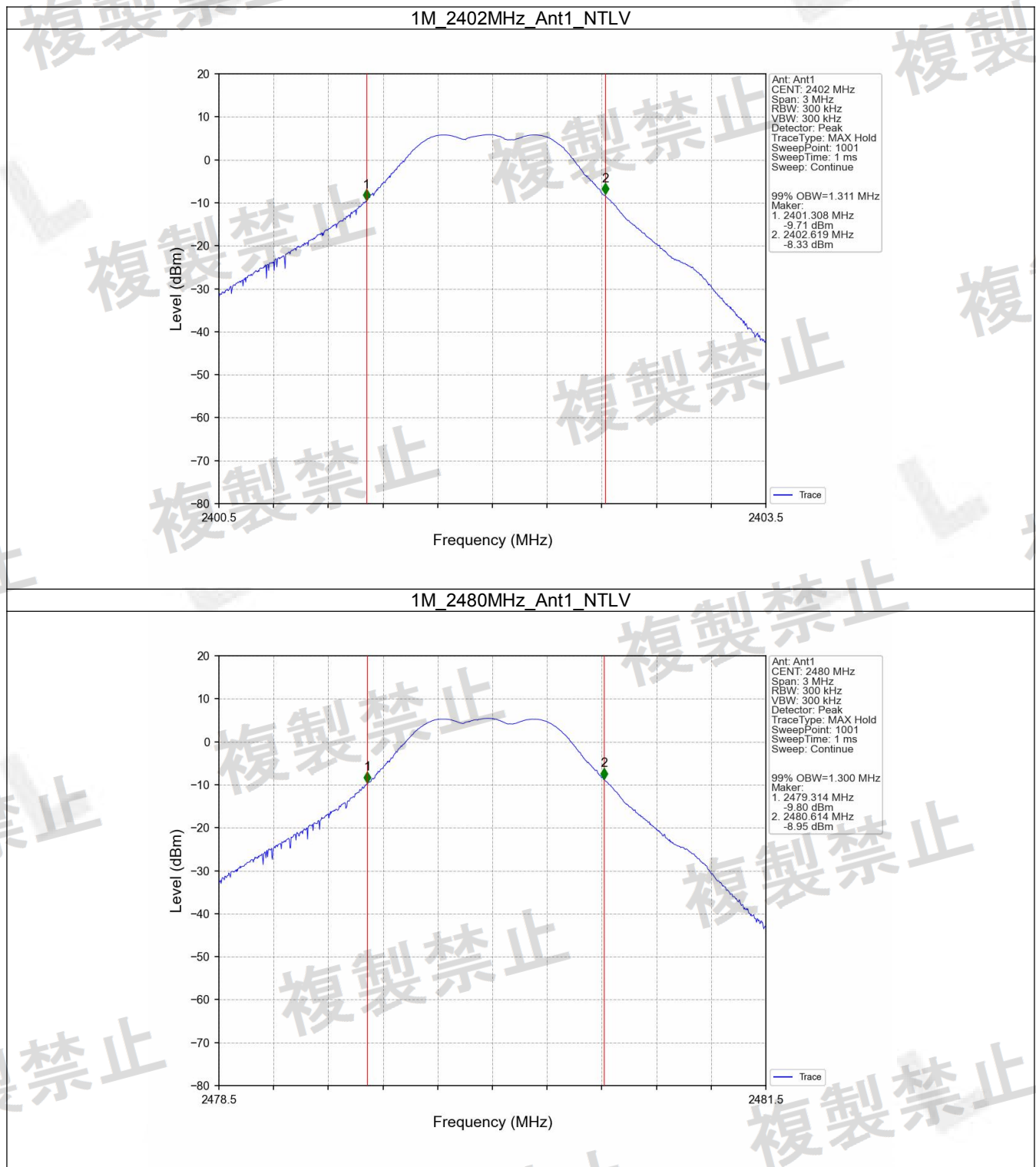
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2.2 Test Graph

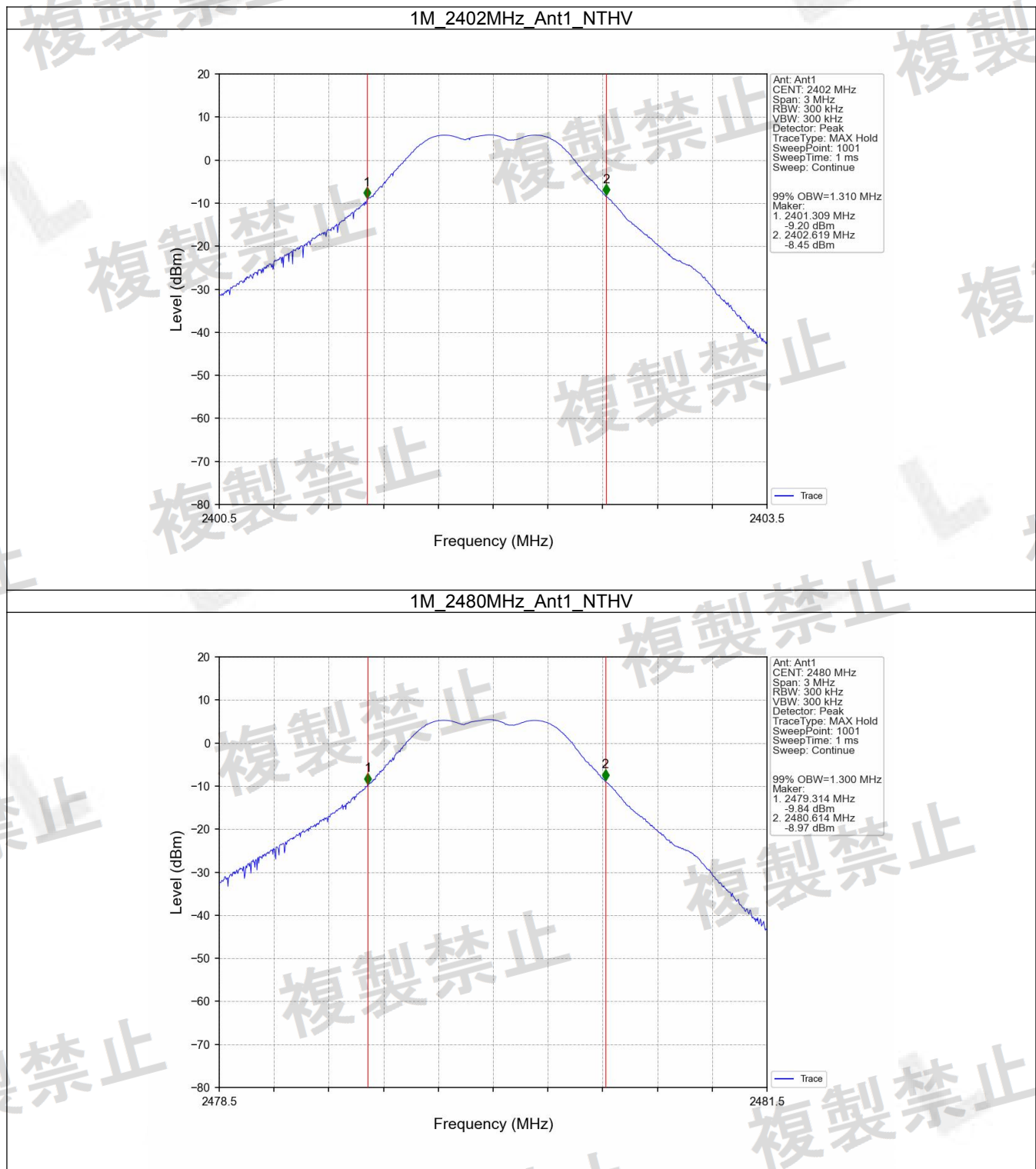
2.2.1 OBW



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3. Antenna Power

3.1 Test Result

3.1.1 Power

ENV	Mode	TX Type	Frequency (MHz)	ANT	Antenna Power (mW)		Nominal Power (mW)	Tolerance (%)		Verdict
					Measured	Limit		Measured	Limit	
NTNV	1M	SISO	2402	1	3.473	<=10.00	3.700	-6.14	<=20	Pass
			2480	1	3.257	<=10.00	3.700	-12	<=20	Pass
NTLV	1M	SISO	2402	1	3.658	<=10.00	3.700	-1.14	<=20	Pass
			2480	1	3.085	<=10.00	3.700	-16.62	<=20	Pass
NTHV	1M	SISO	2402	1	3.467	<=10.00	3.700	-6.30	<=20	Pass
			2480	1	3.076	<=10.00	3.700	-16.9	<=20	Pass

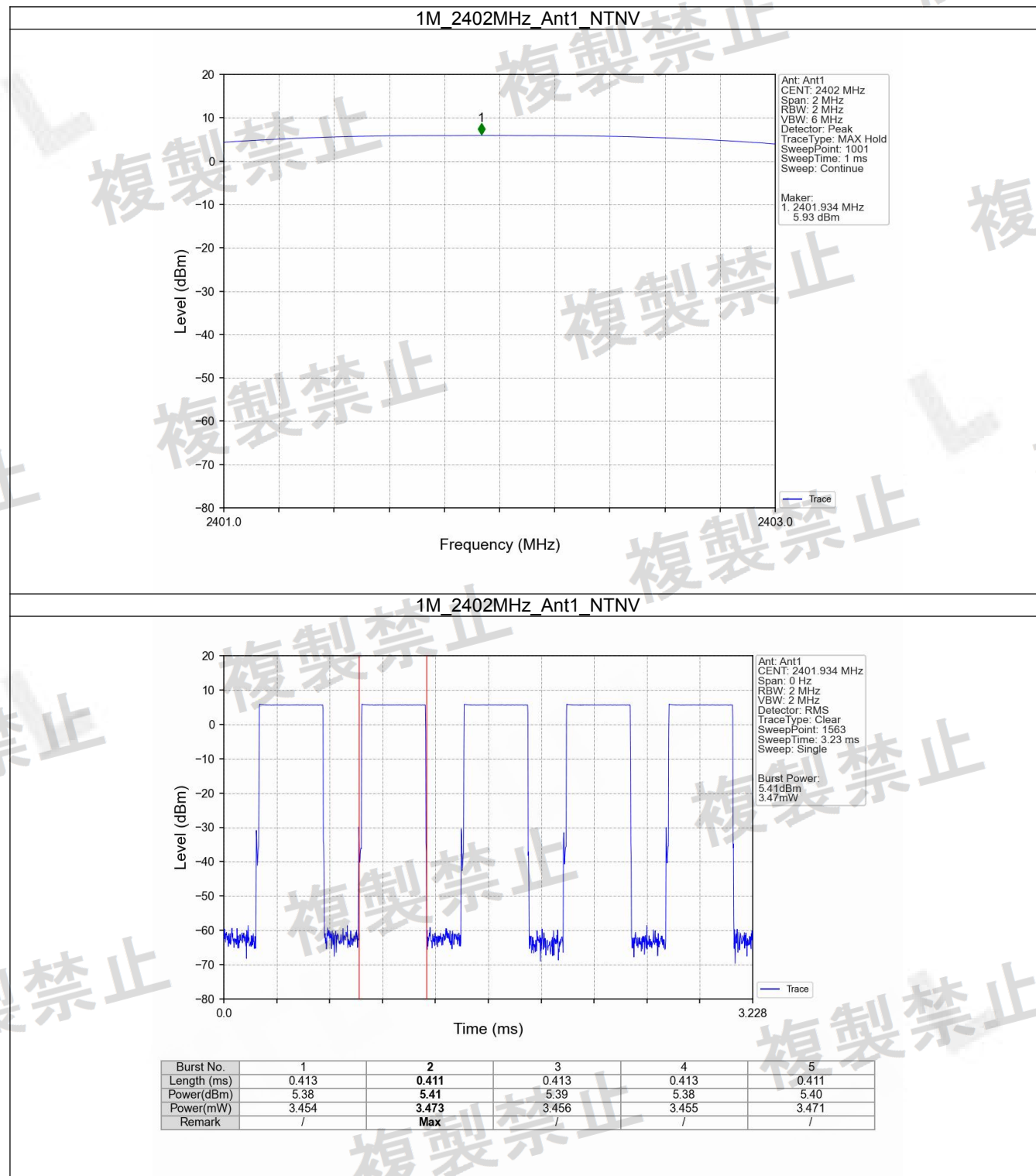
3.1.2 EIRP

ENV	Mode	TX Type	Frequency (MHz)	ANT	Gain (dBi)	EIRP (dBm)		Verdict
						Result	Limit	
NTNV	1M	SISO	2402	1	-1.09	4.32	<=12.14	Pass
			2480	1	-1.09	4.04	<=12.14	Pass
NTLV	1M	SISO	2402	1	-1.09	4.54	<=12.14	Pass
			2480	1	-1.09	3.80	<=12.14	Pass
NTHV	1M	SISO	2402	1	-1.09	4.31	<=12.14	Pass
			2480	1	-1.09	3.79	<=12.14	Pass

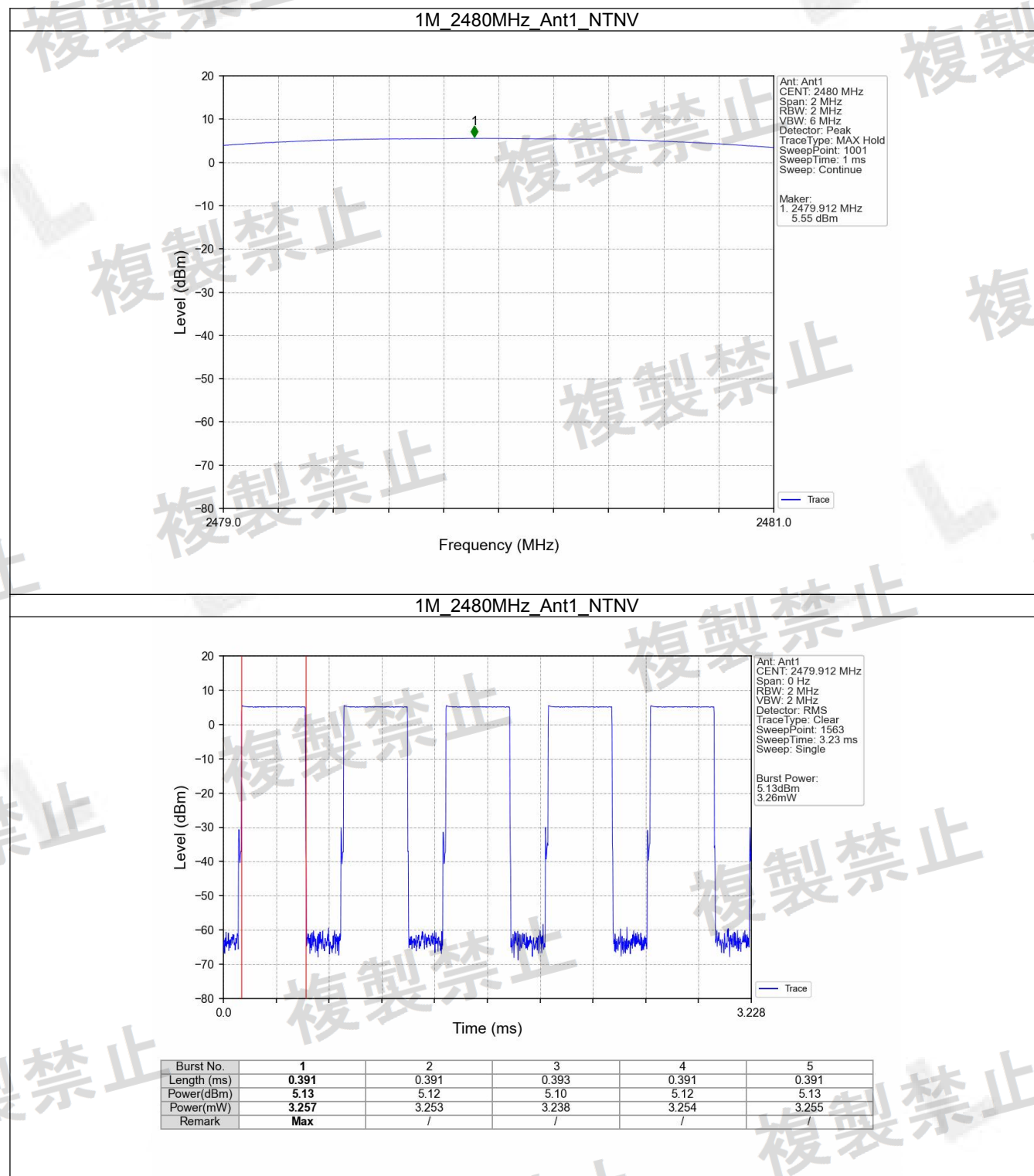
MIC: 219-269111

3.2 Test Graph

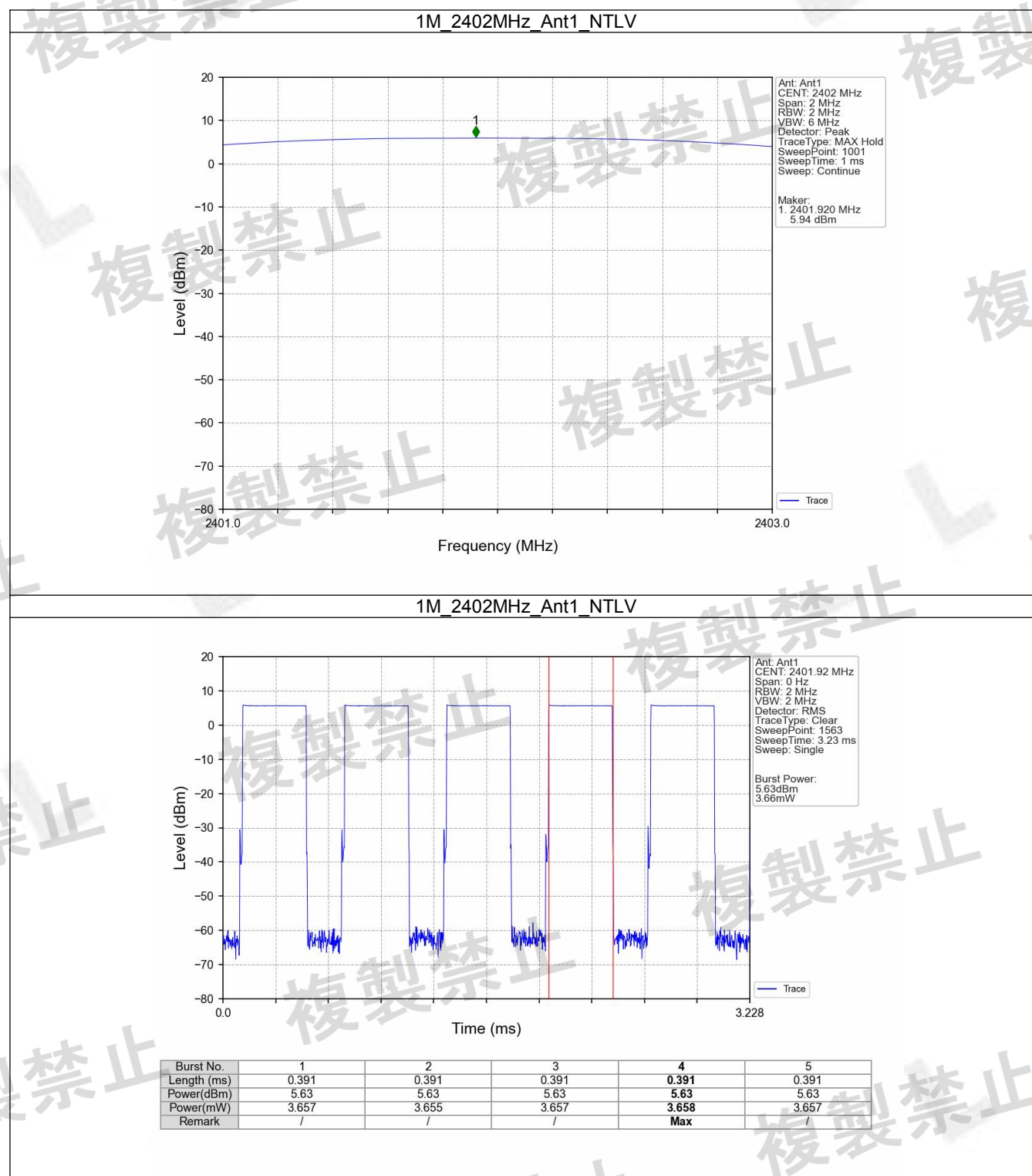
3.2.1 Power



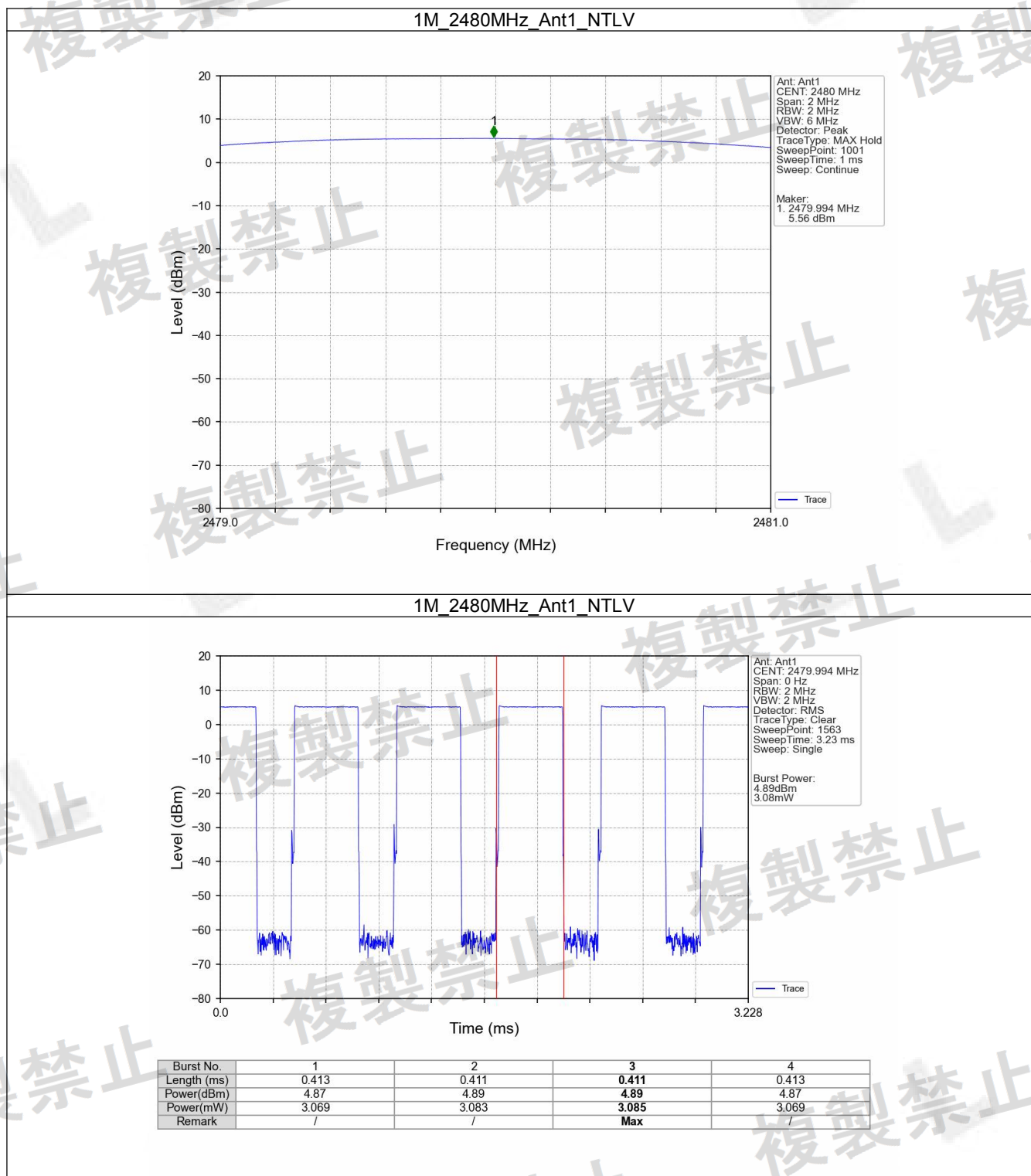
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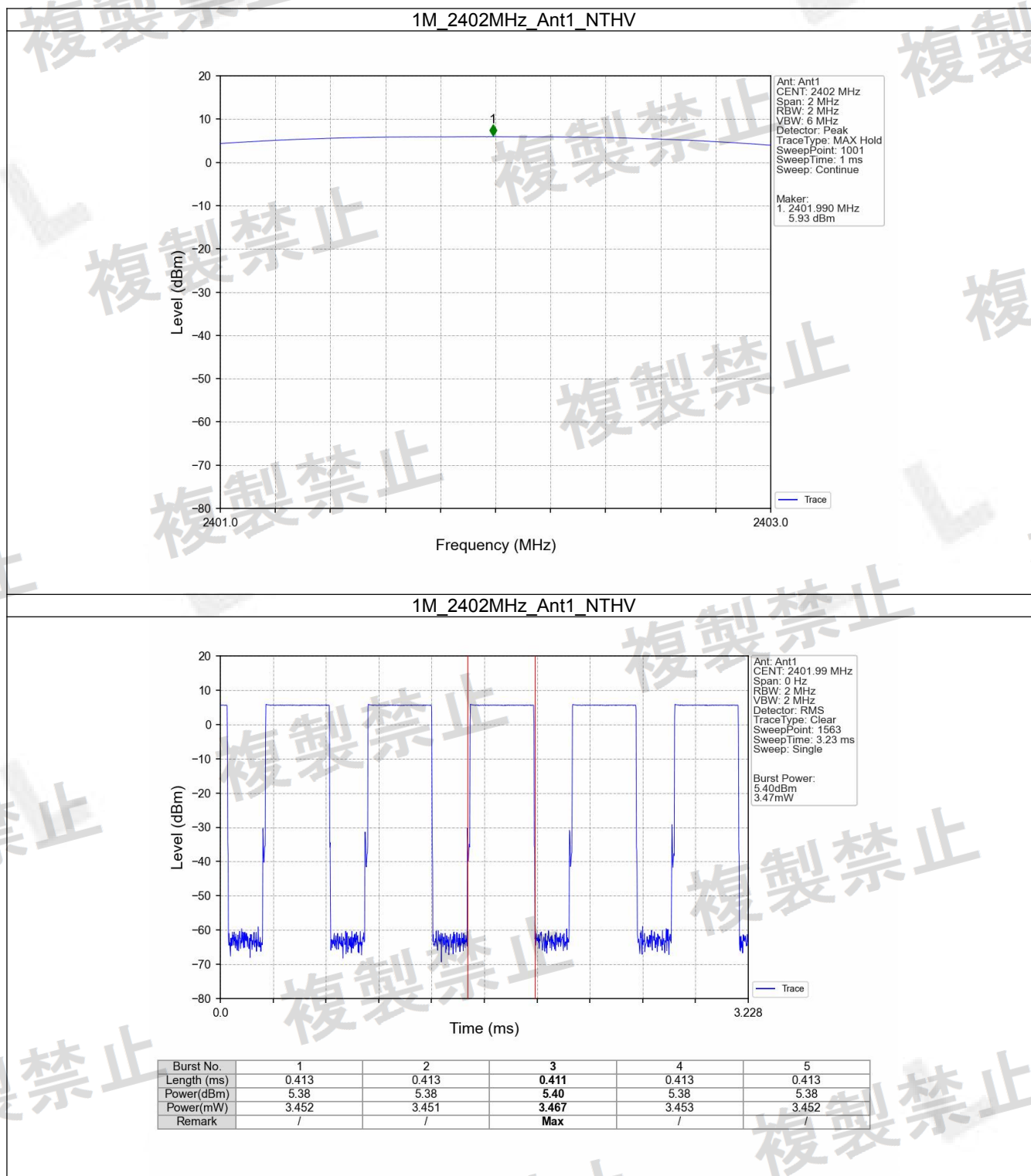
MIC: 219-269111



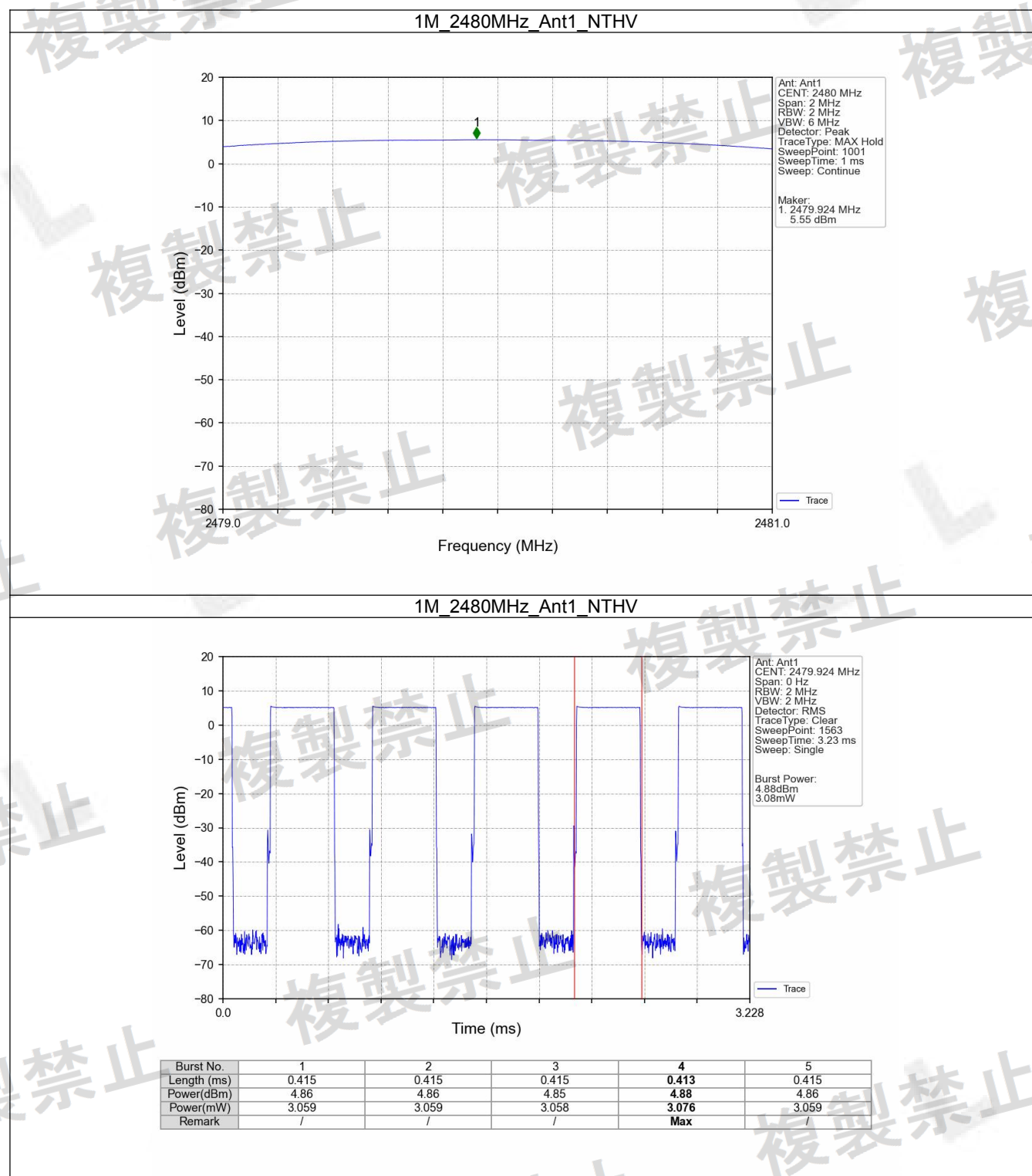
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4. Spurious Emission Intensity

4.1 Test Result

4.1.1 TxSe_NTNV

NTNV												
Mode	TX Type	Freq. (MHz)	ANT	Freq. Range		Marker					Limit (uW /MHz)	Verdict
				Start (MHz)	Stop (MHz)	Freq. (MHz)	PK Power (dBm /MHz)	PK Power (uW /MHz)	AV Power (dBm /MHz)	AV Power (uW /MHz)		
1M	SISO	2402	1	30	2387	2219.5	-52.24	0.006	/	/	2.5	Pass
				2387	2400	2399.974	-24.58	3.483	/	/	25	Pass
				2483.5	2496.5	2492.73	-54.51	0.004	/	/	25	Pass
				2496.5	12500	5752.5	-47.25	0.019	/	/	2.5	Pass
		2480	1	30	2387	2158	-52.44	0.006	/	/	2.5	Pass
				2387	2400	2389.626	-54.60	0.003	/	/	25	Pass
				2483.5	2496.5	2483.526	-41.91	0.064	/	/	25	Pass
				2496.5	12500	5143.5	-53.45	0.005	/	/	2.5	Pass

4.1.2 TxSe_NTLV

NTLV												
Mode	TX Type	Freq. (MHz)	ANT	Freq. Range		Marker					Limit (uW /MHz)	Verdict
				Start (MHz)	Stop (MHz)	Freq. (MHz)	PK Power (dBm /MHz)	PK Power (uW /MHz)	AV Power (dBm /MHz)	AV Power (uW /MHz)		
1M	SISO	2402	1	30	2387	2201	-52.31	0.006	/	/	2.5	Pass
				2387	2400	2399.987	-24.80	3.311	/	/	25	Pass
				2483.5	2496.5	2486.919	-54.71	0.003	/	/	25	Pass
				2496.5	12500	12364	-52.48	0.006	/	/	2.5	Pass
		2480	1	30	2387	2161	-52.20	0.006	/	/	2.5	Pass
				2387	2400	2393.825	-54.05	0.004	/	/	25	Pass
				2483.5	2496.5	2483.656	-41.73	0.067	/	/	25	Pass
				2496.5	12500	5791	-51.67	0.007	/	/	2.5	Pass

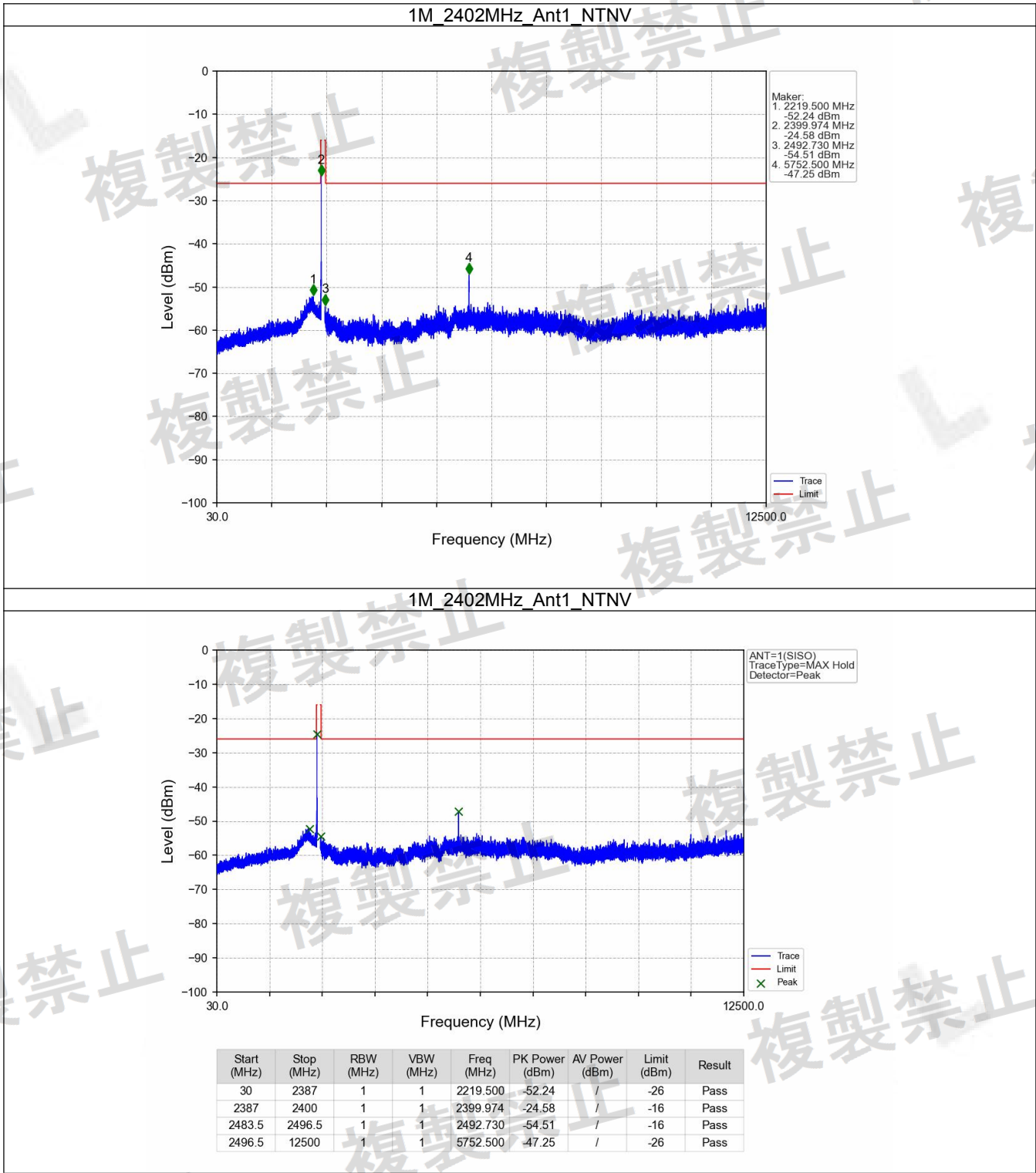
4.1.3 TxSe_NTHV

NTHV												
Mode	TX Type	Freq. (MHz)	ANT	Freq. Range		Marker					Limit (uW /MHz)	Verdict
				Start (MHz)	Stop (MHz)	Freq. (MHz)	PK Power (dBm /MHz)	PK Power (uW /MHz)	AV Power (dBm /MHz)	AV Power (uW /MHz)		
1M	SISO	2402	1	30	2387	2215.5	-52.17	0.006	/	/	2.5	Pass
				2387	2400	2399.987	-24.24	3.767	/	/	25	Pass
				2483.5	2496.5	2490.195	-54.76	0.003	/	/	25	Pass
				2496.5	12500	6126	-53.23	0.005	/	/	2.5	Pass
		2480	1	30	2387	2207.5	-52.64	0.005	/	/	2.5	Pass
				2387	2400	2387.624	-54.29	0.004	/	/	25	Pass
				2483.5	2496.5	2483.643	-41.75	0.067	/	/	25	Pass
				2496.5	12500	10625.5	-53.02	0.005	/	/	2.5	Pass

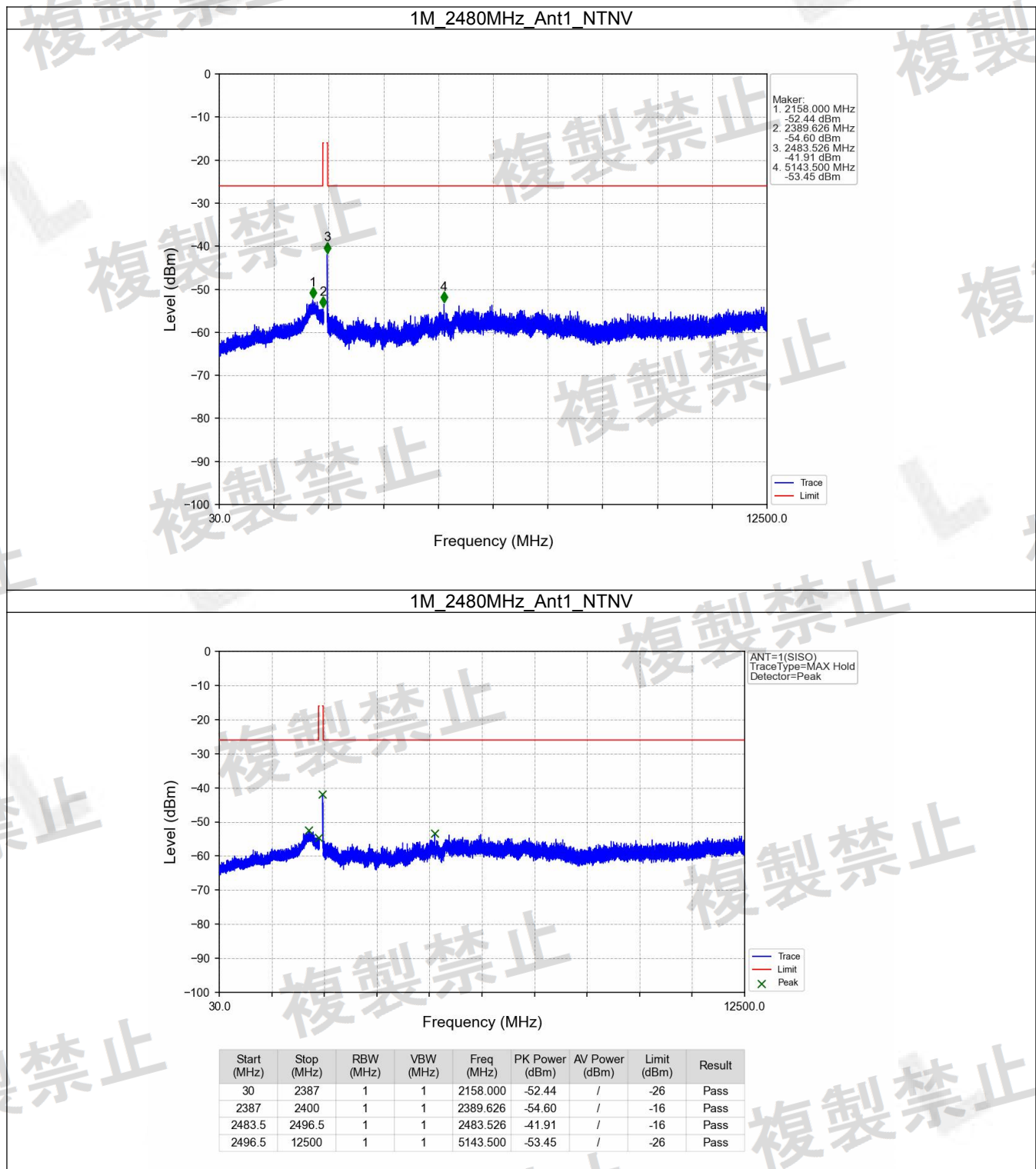
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4.2 Test Graph

4.2.1 TxSe_NTNV

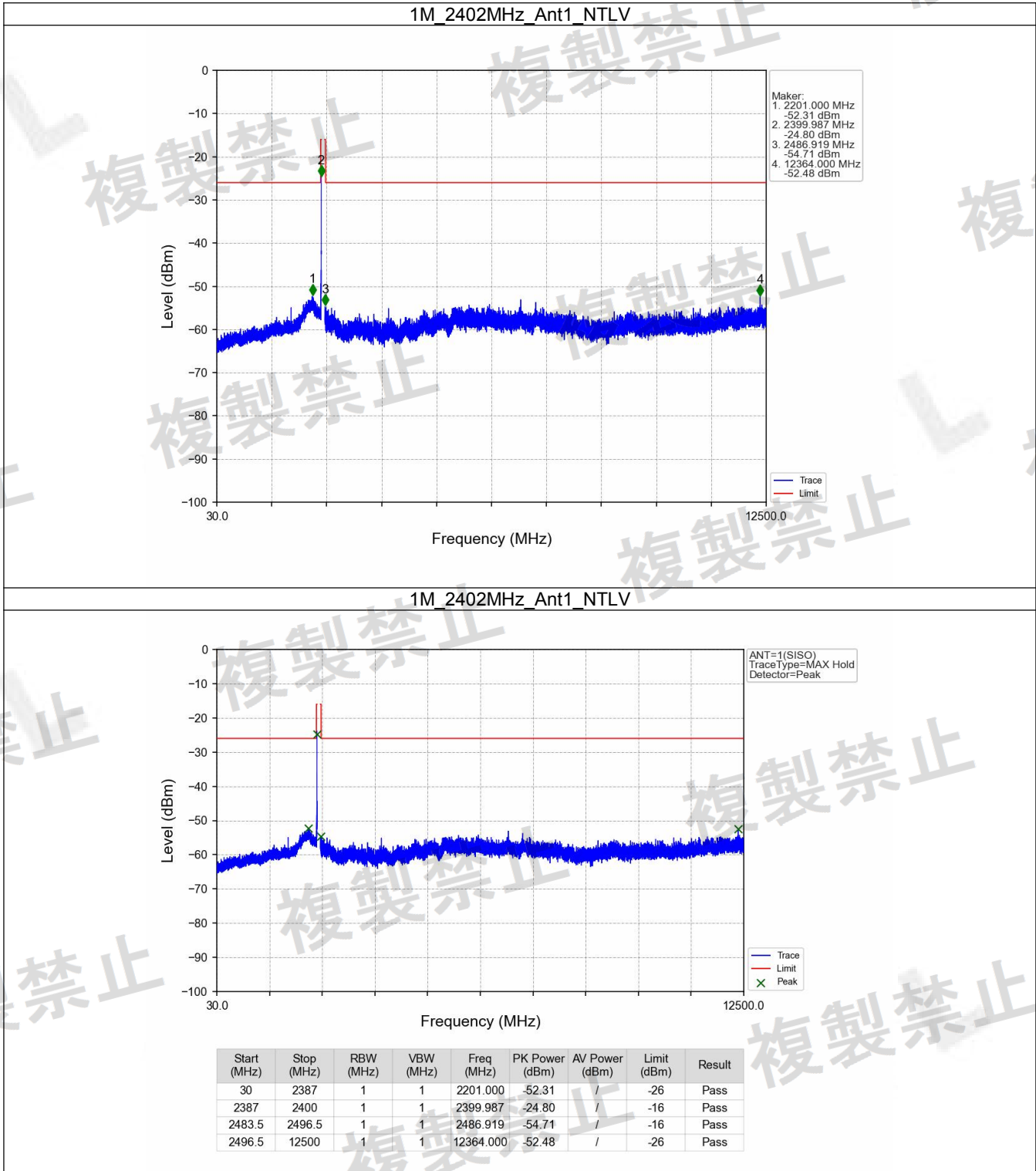


MIC: 219-269111

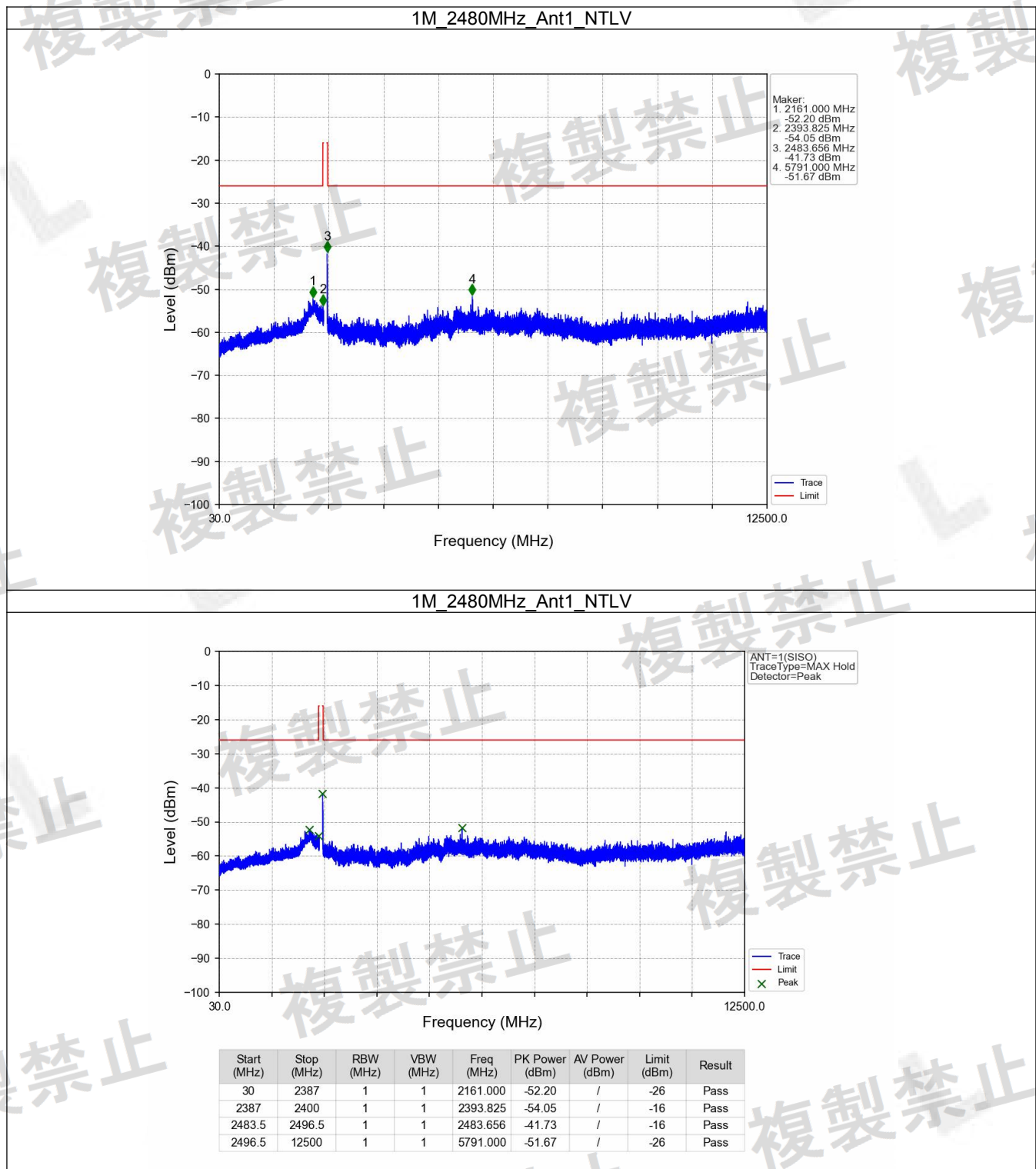


MIC: 219-269111

4.2.2 TxSe_NTLV

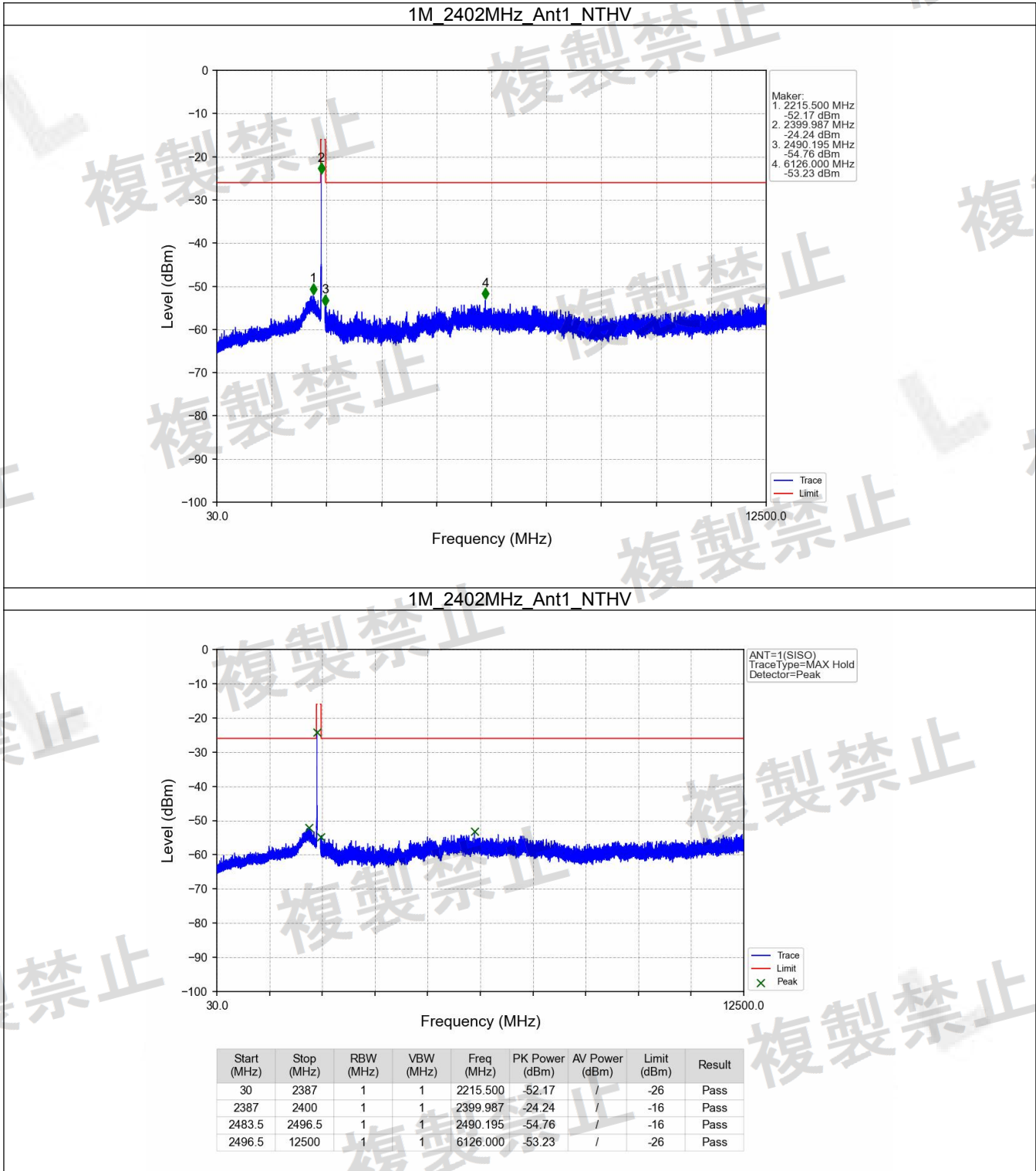


MIC: 219-269111

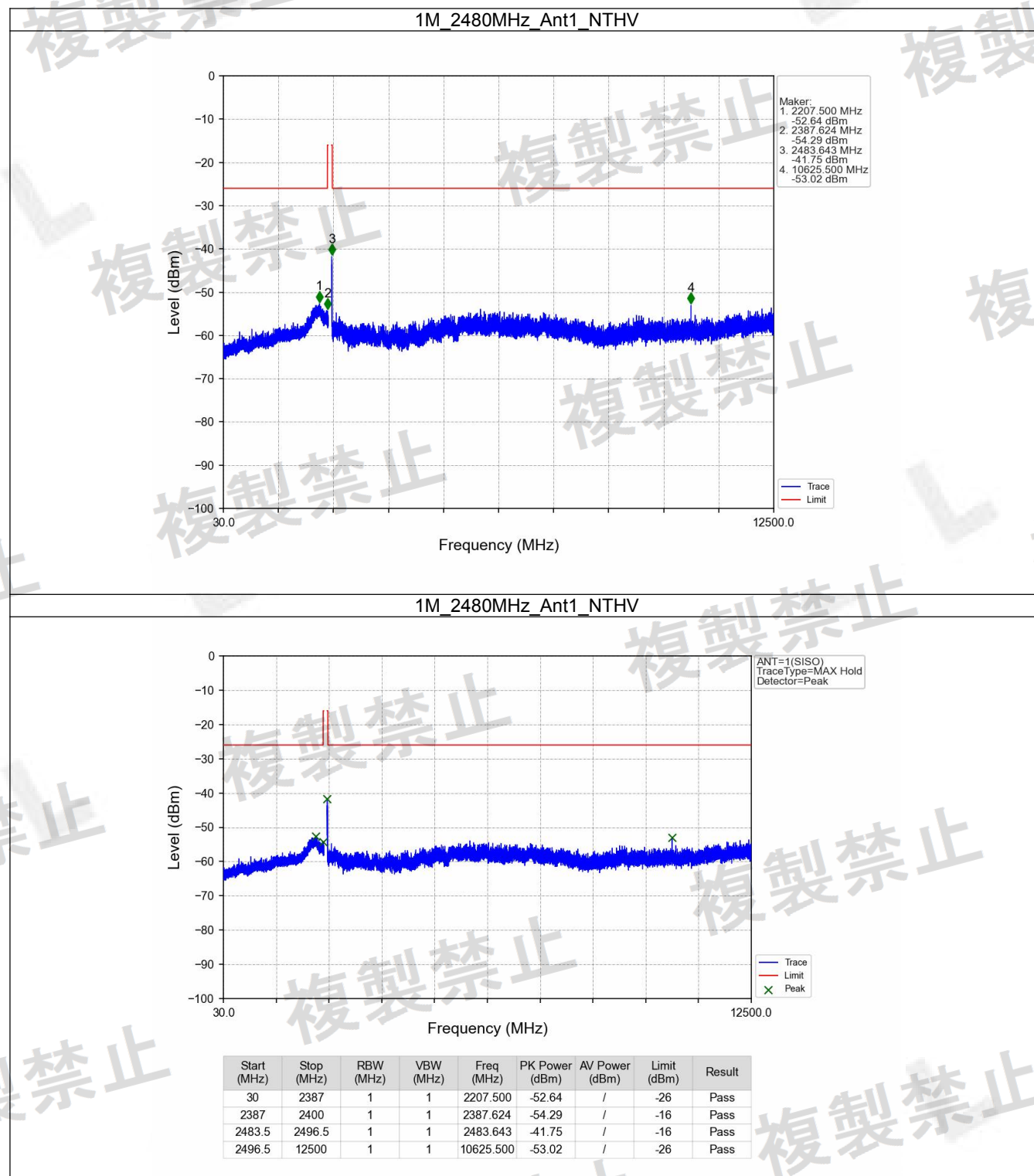


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4.2.3 TxSe_NTHV



MIC: 219-269111



MIC: 219-269111

5. Secondary Radiated Emission

5.1 Test Result

5.1.1 RxSe_NTNV

NTNV												
Mode	TX Type	Freq. (MHz)	ANT	Freq. Range		Marker					Limit (nW)	Verdict
				Start (MHz)	Stop (MHz)	Freq. (MHz)	PK Power (dBm)	PK Power (nW)	AV Power (dBm)	AV Power (nW)		
1M	SISO	2402	1	30	1000	910.65	-77.41	0.018	/	/	4	Pass
				1000	12500	2413.5	-59.81	1.045	/	/	20	Pass
		2480	1	30	1000	839.75	-79.05	0.012	/	/	4	Pass
				1000	12500	2413.5	-59.33	1.167	/	/	20	Pass

5.1.2 RxSe_NTLV

NTLV												
Mode	TX Type	Freq. (MHz)	ANT	Freq. Range		Marker					Limit (nW)	Verdict
				Start (MHz)	Stop (MHz)	Freq. (MHz)	PK Power (dBm)	PK Power (nW)	AV Power (dBm)	AV Power (nW)		
1M	SISO	2402	1	30	1000	709.9	-49.34	11.641	-92.74	0.001	4	Pass
				1000	12500	2414	-59.62	1.091	/	/	20	Pass
		2480	1	30	1000	906.4	-78.48	0.014	/	/	4	Pass
				1000	12500	5394	-62.28	0.592	/	/	20	Pass

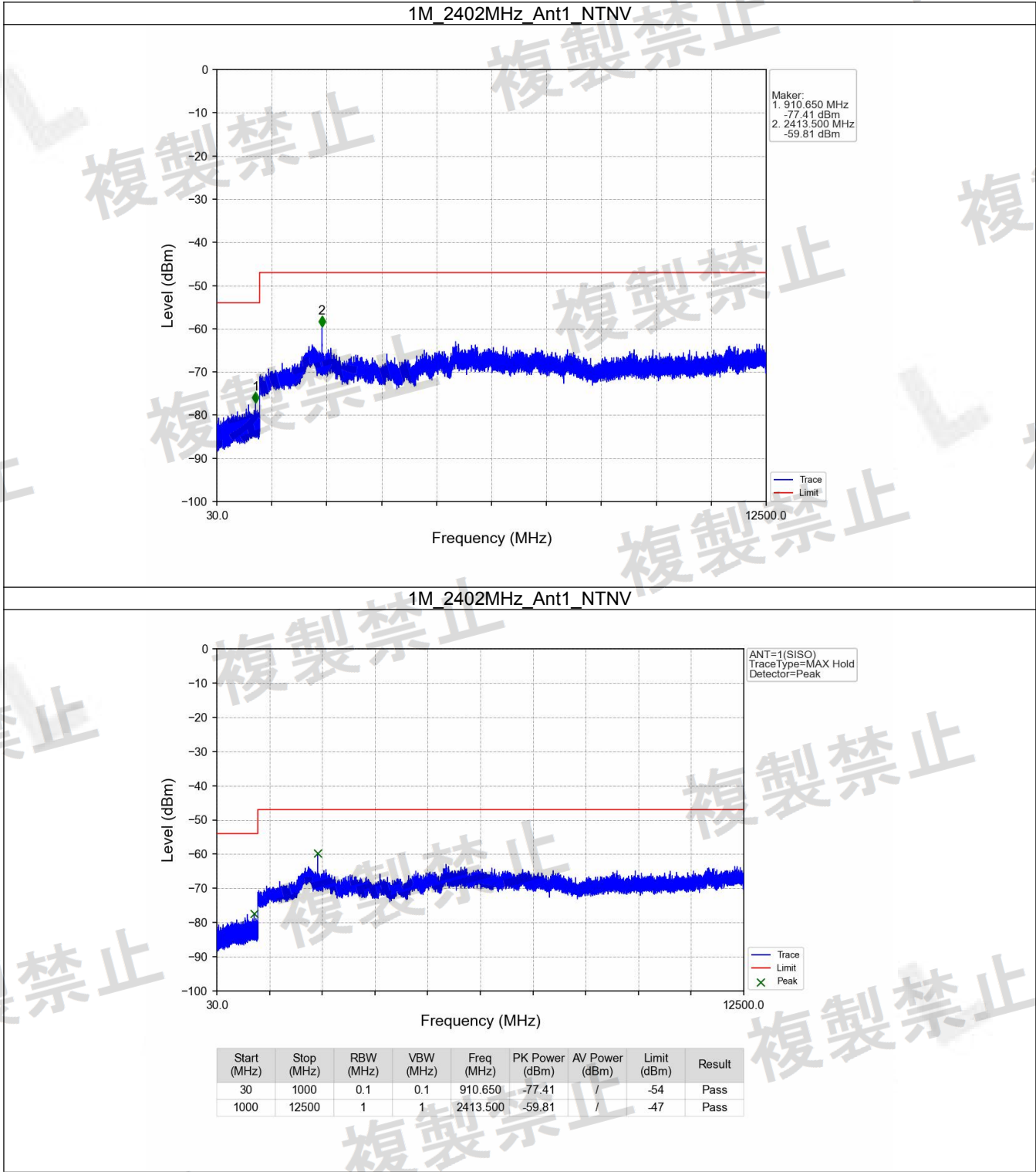
5.1.3 RxSe_NTHV

NTHV												
Mode	TX Type	Freq. (MHz)	ANT	Freq. Range		Marker					Limit (nW)	Verdict
				Start (MHz)	Stop (MHz)	Freq. (MHz)	PK Power (dBm)	PK Power (nW)	AV Power (dBm)	AV Power (nW)		
1M	SISO	2402	1	30	1000	932.75	-78.47	0.014	/	/	4	Pass
				1000	12500	2414	-62.00	0.631	/	/	20	Pass
		2480	1	30	1000	993.9	-78.63	0.014	/	/	4	Pass
				1000	12500	2414.5	-60.20	0.955	/	/	20	Pass

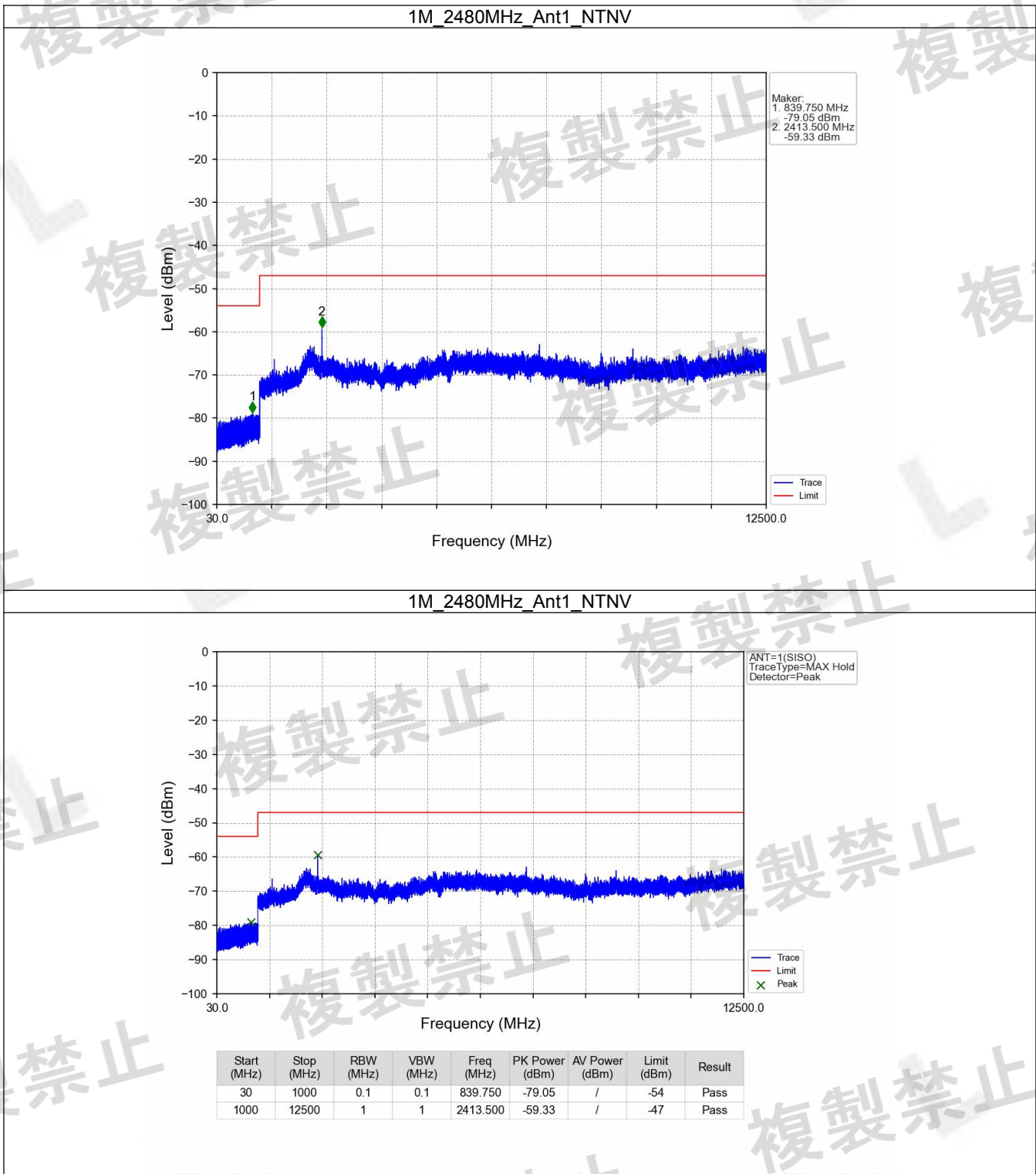
MIC: 219-269111

5.2 Test Graph

5.2.1 RxSe_NTNV

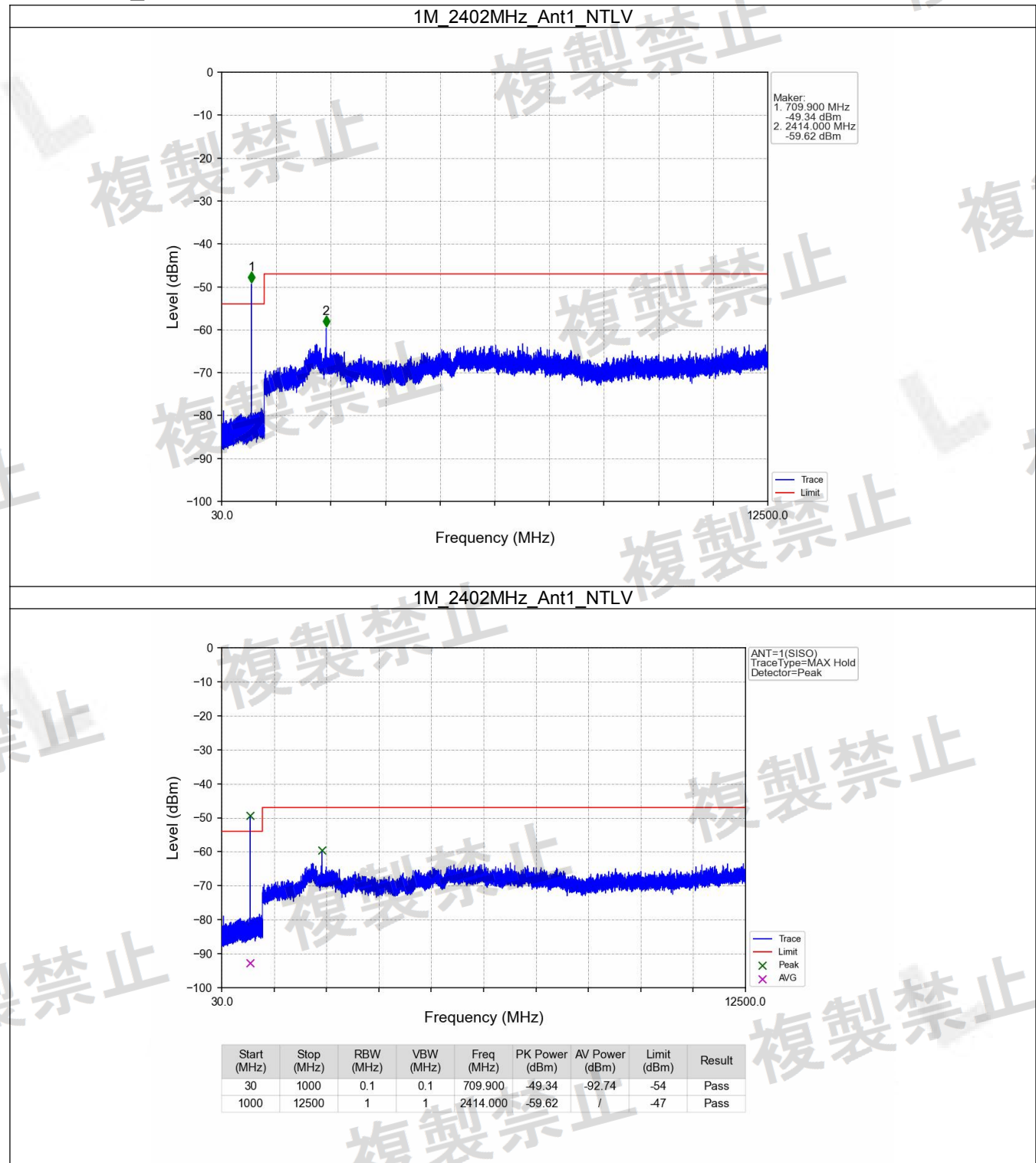


MIC: 219-269111

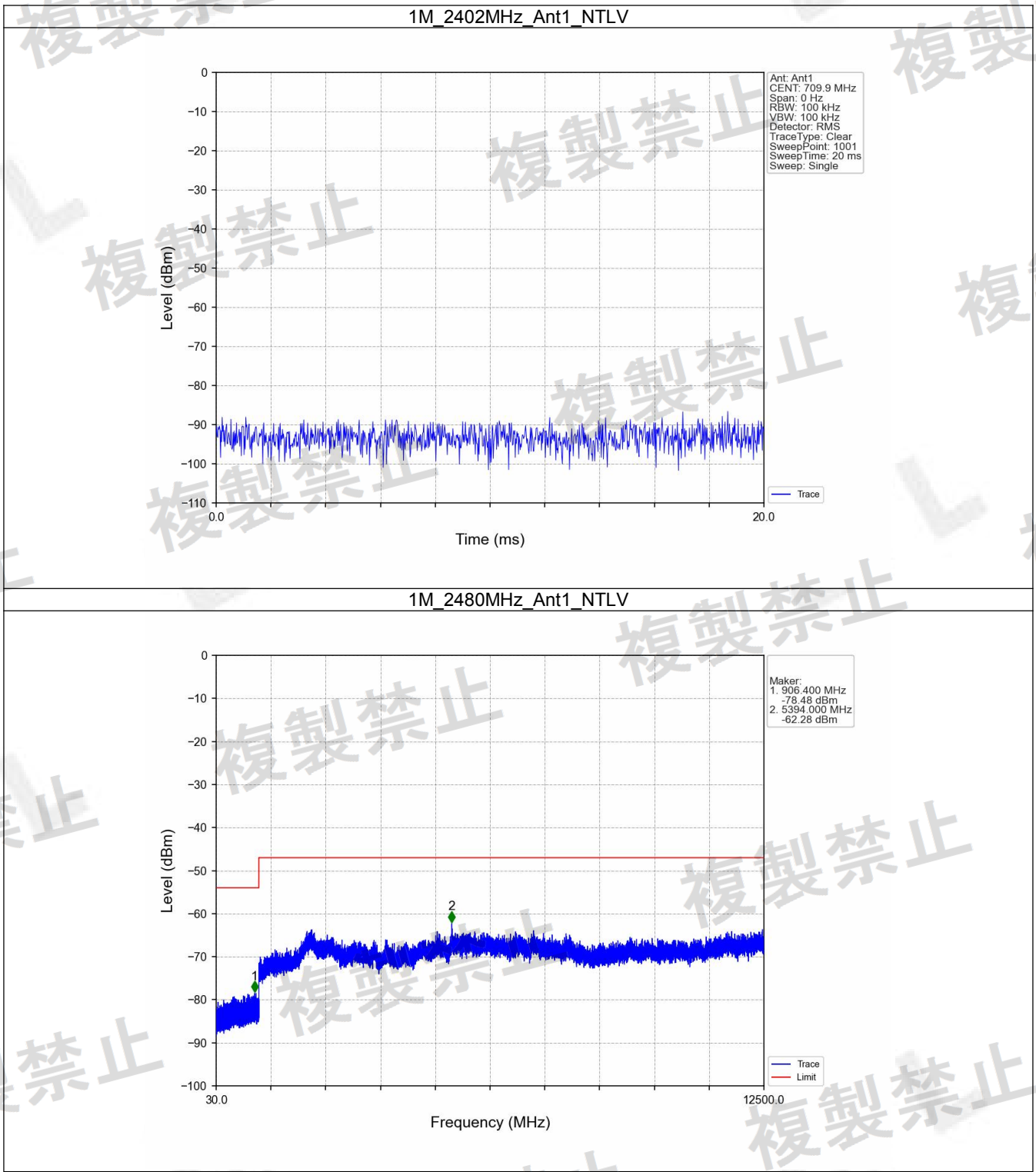


MIC: 219-269111

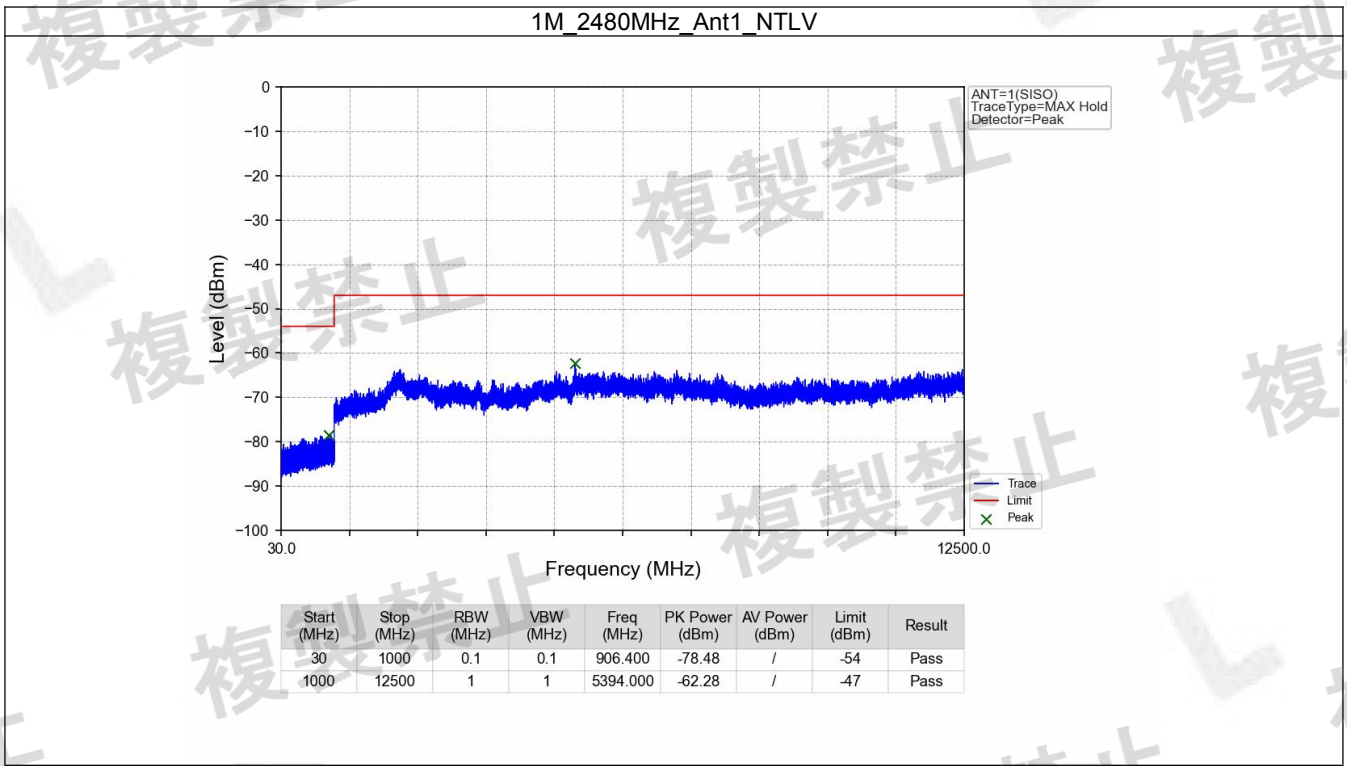
5.2.2 RxSe_NTLV



MIC: 219-269111

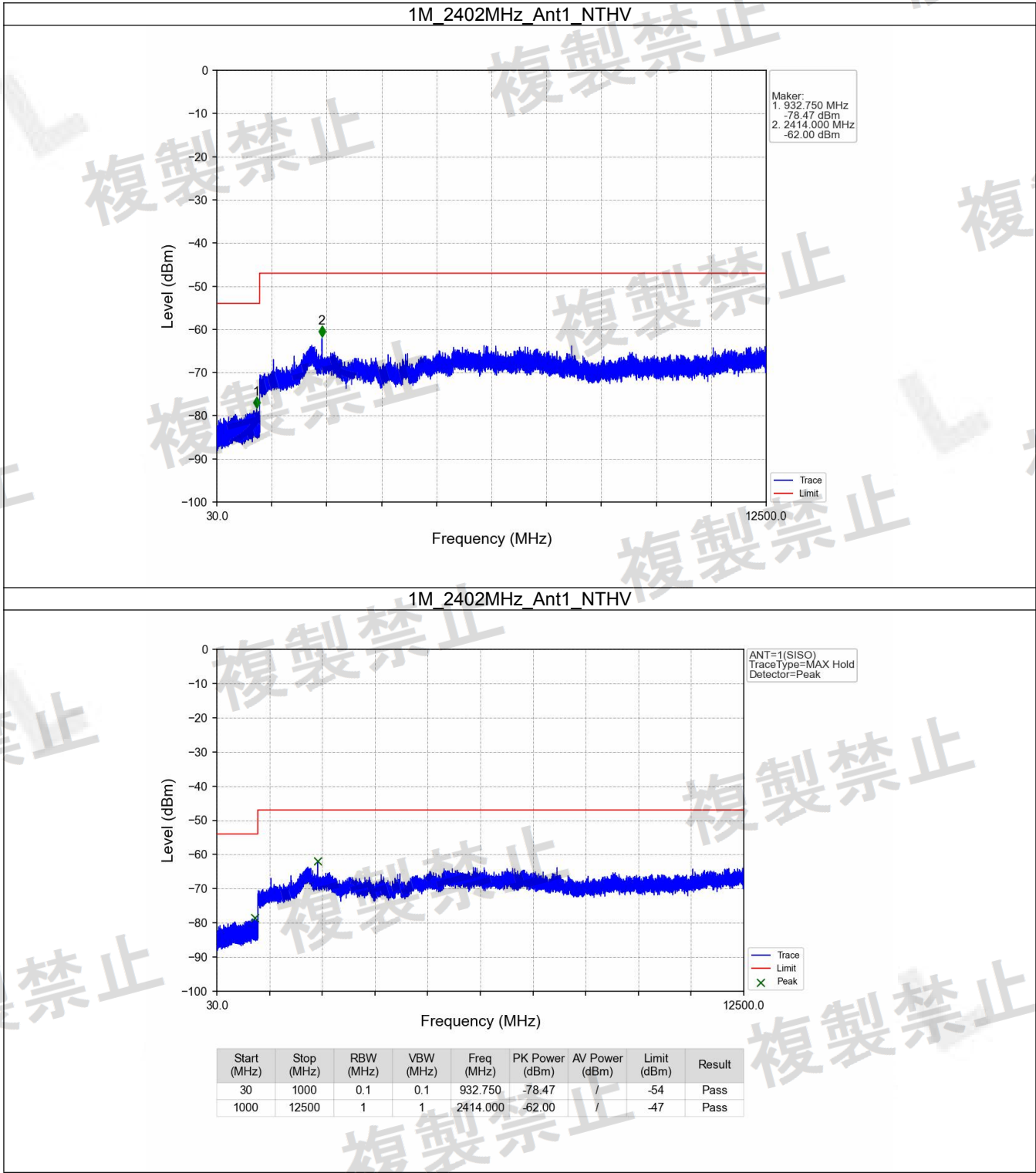


MIC: 219-269111



MIC: 219-269111

5.2.3 RxSe_NTHV



MIC: 219-269111

