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Annex for Bluetooth low Energy

Test Report No.: CTL2601202045-MIC

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MIC: 219-269107

1. Frequency Error

1.1 Test Result

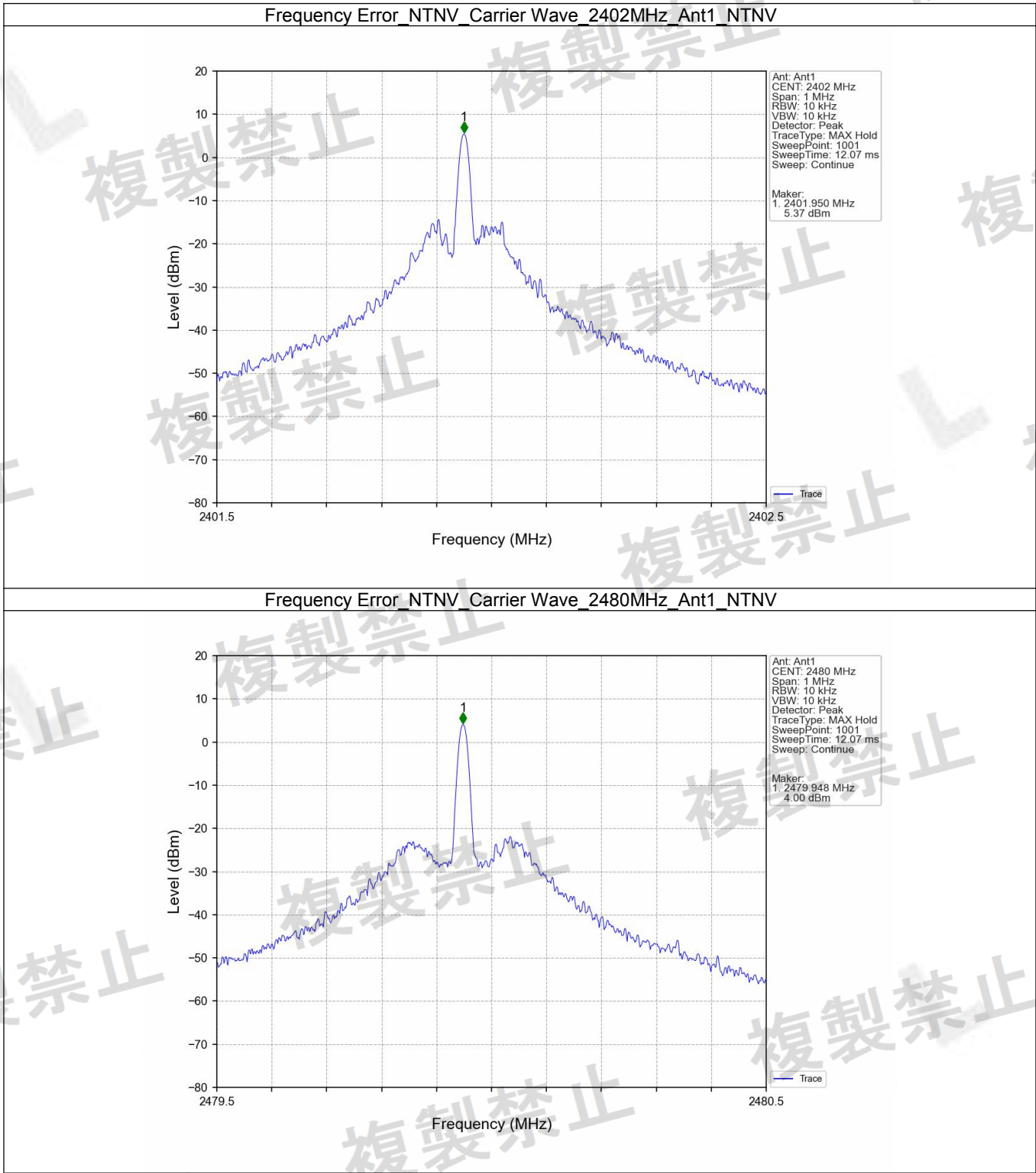
1.1.1 Ant1

Ant1							
ENV	Mode	TX Type	Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)		Verdict
					Result	Limit	
NTNV	Carrier Wave	SISO	2402	2401.950	-20.82	-50 to 50	Pass
			2480	2479.948	-20.97	-50 to 50	Pass
NTLV	Carrier Wave	SISO	2402	2401.950	-20.82	-50 to 50	Pass
			2480	2479.948	-20.97	-50 to 50	Pass
NTHV	Carrier Wave	SISO	2402	2401.950	-20.82	-50 to 50	Pass
			2480	2479.948	-20.97	-50 to 50	Pass

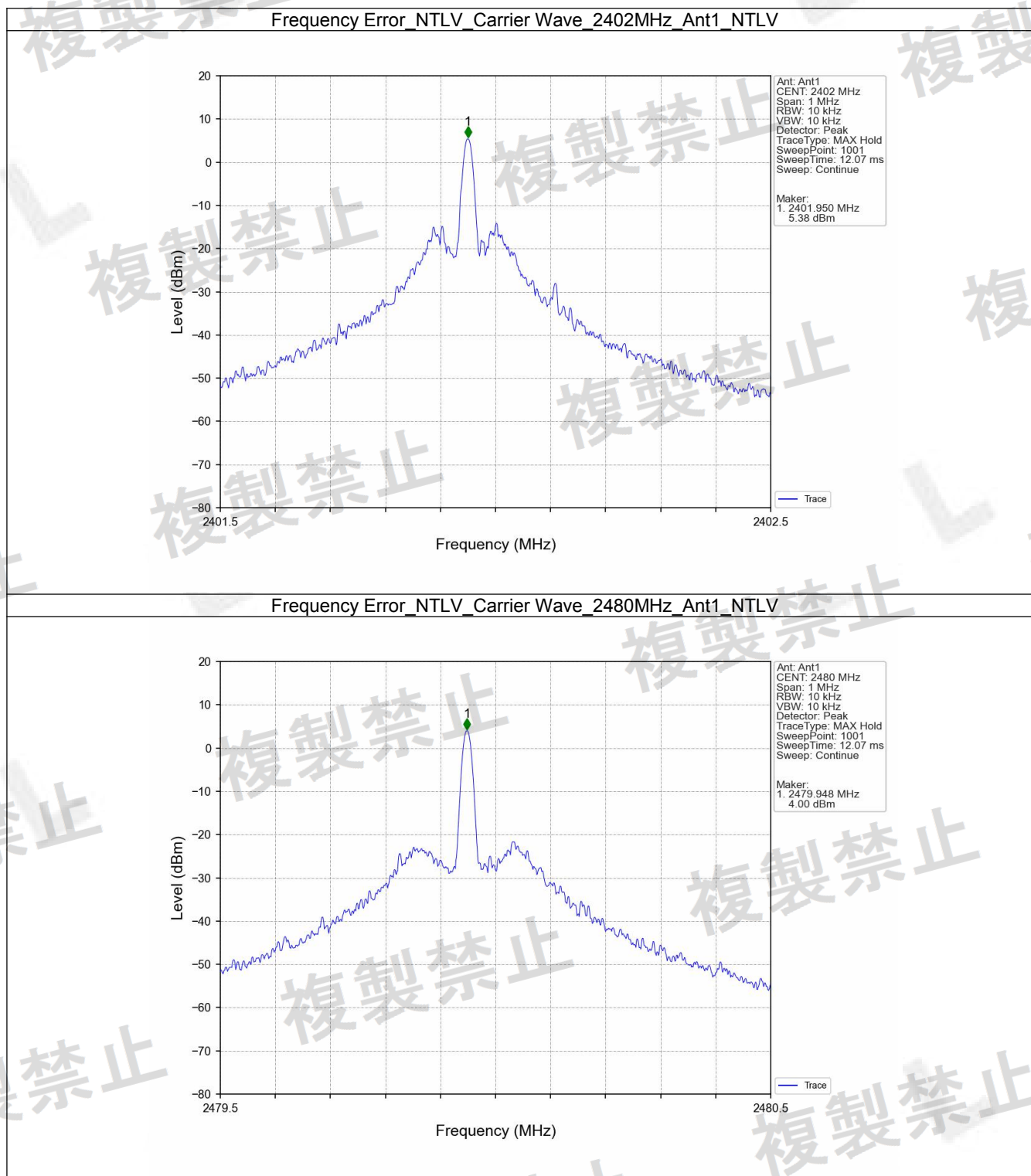
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1.2 Test Graph

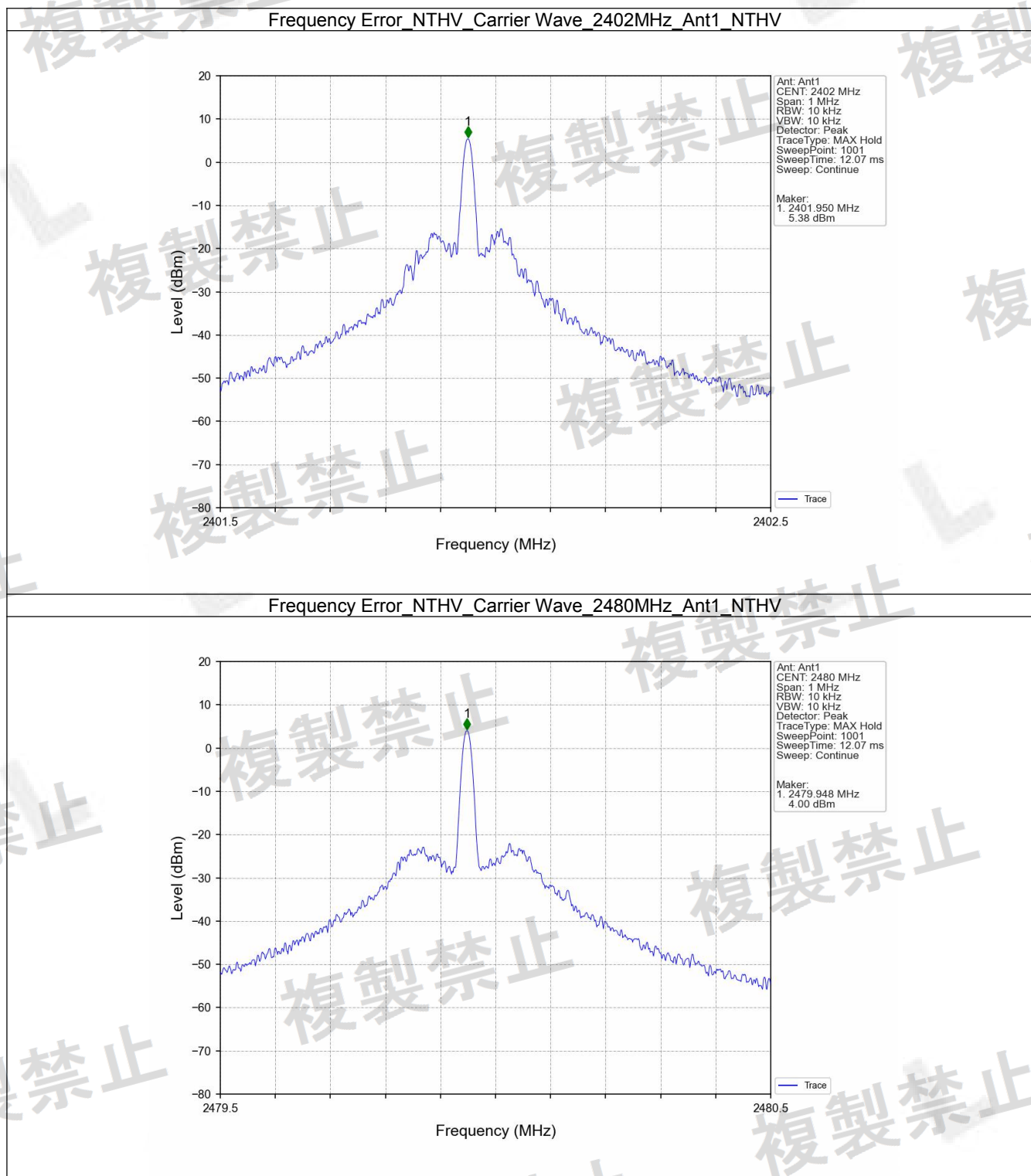
1.2.1 Ant1



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2. Occupied Bandwidth

2.1 Test Result

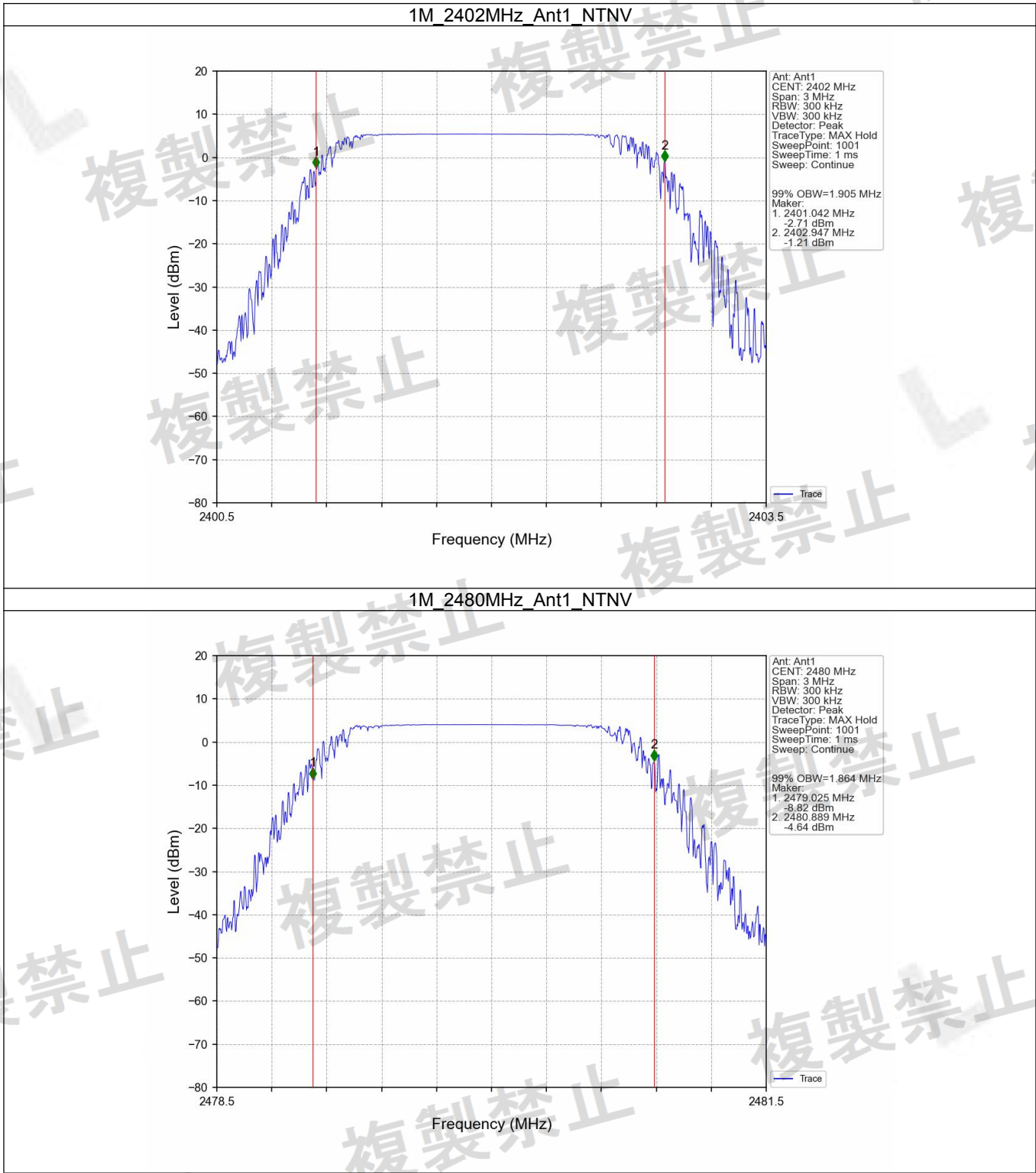
2.1.1 OBW

ENV	Mode	TX Type	Frequency (MHz)	99% Occupied Bandwidth (MHz)		Verdict
				ANT1	Limit	
NTNV	1M	SISO	2402	1.905	<=26	Pass
			2480	1.864	<=26	Pass
NTLV	1M	SISO	2402	1.882	<=26	Pass
			2480	1.874	<=26	Pass
NTHV	1M	SISO	2402	1.885	<=26	Pass
			2480	1.830	<=26	Pass

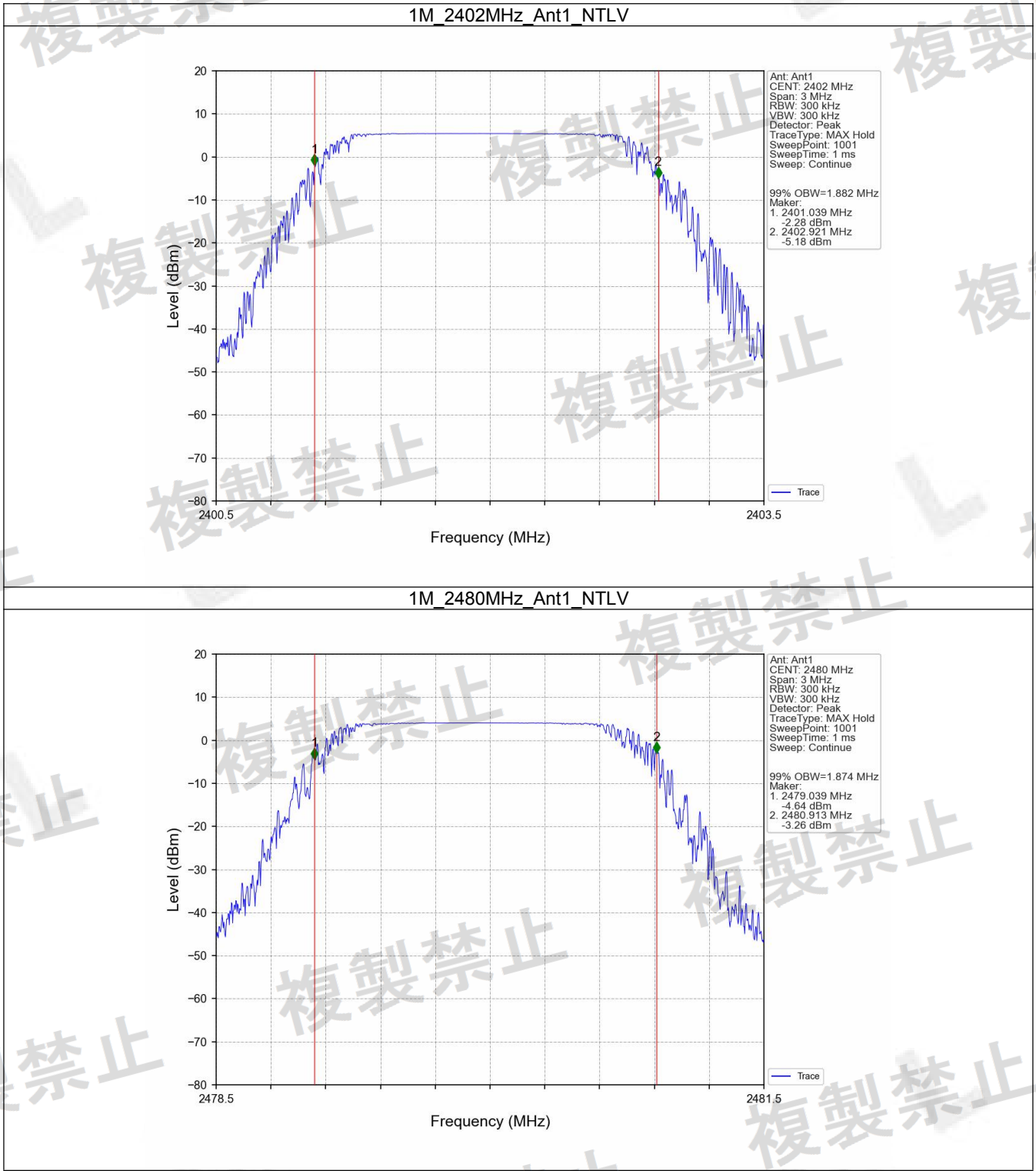
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2.2 Test Graph

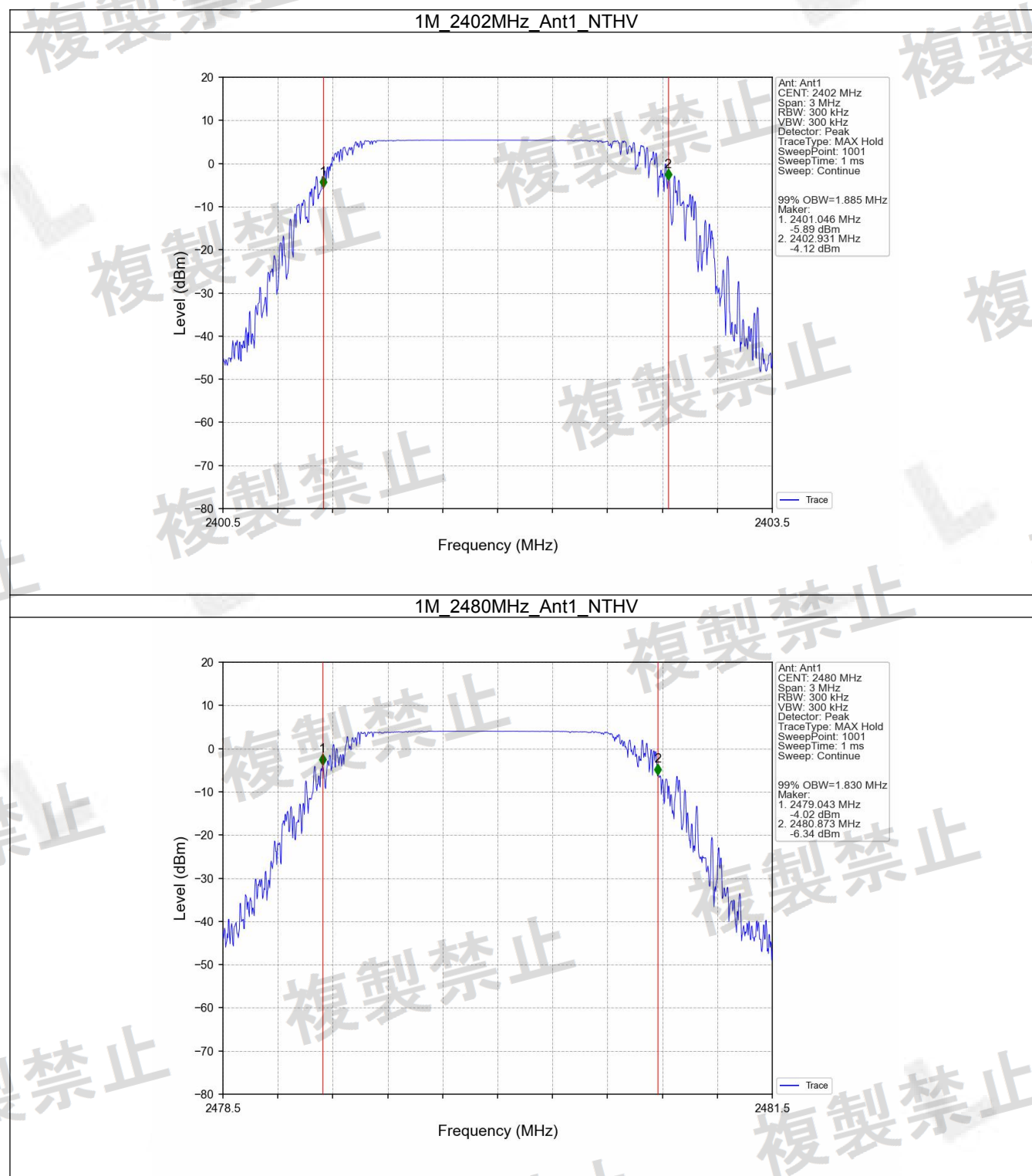
2.2.1 OBW



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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	2.543	≤ 10.00	2.600	-2.19	≤ 20	Pass
			2480	1	2.301	≤ 10.00	2.600	-11.50	≤ 20	Pass
NTLV	1M	SISO	2402	1	2.582	≤ 10.00	2.600	-0.69	≤ 20	Pass
			2480	1	1.799	≤ 10.00	2.600	-30.81	≤ 20	Pass
NTHV	1M	SISO	2402	1	2.780	≤ 10.00	2.600	6.92	≤ 20	Pass
			2480	1	1.831	≤ 10.00	2.600	-29.58	≤ 20	Pass

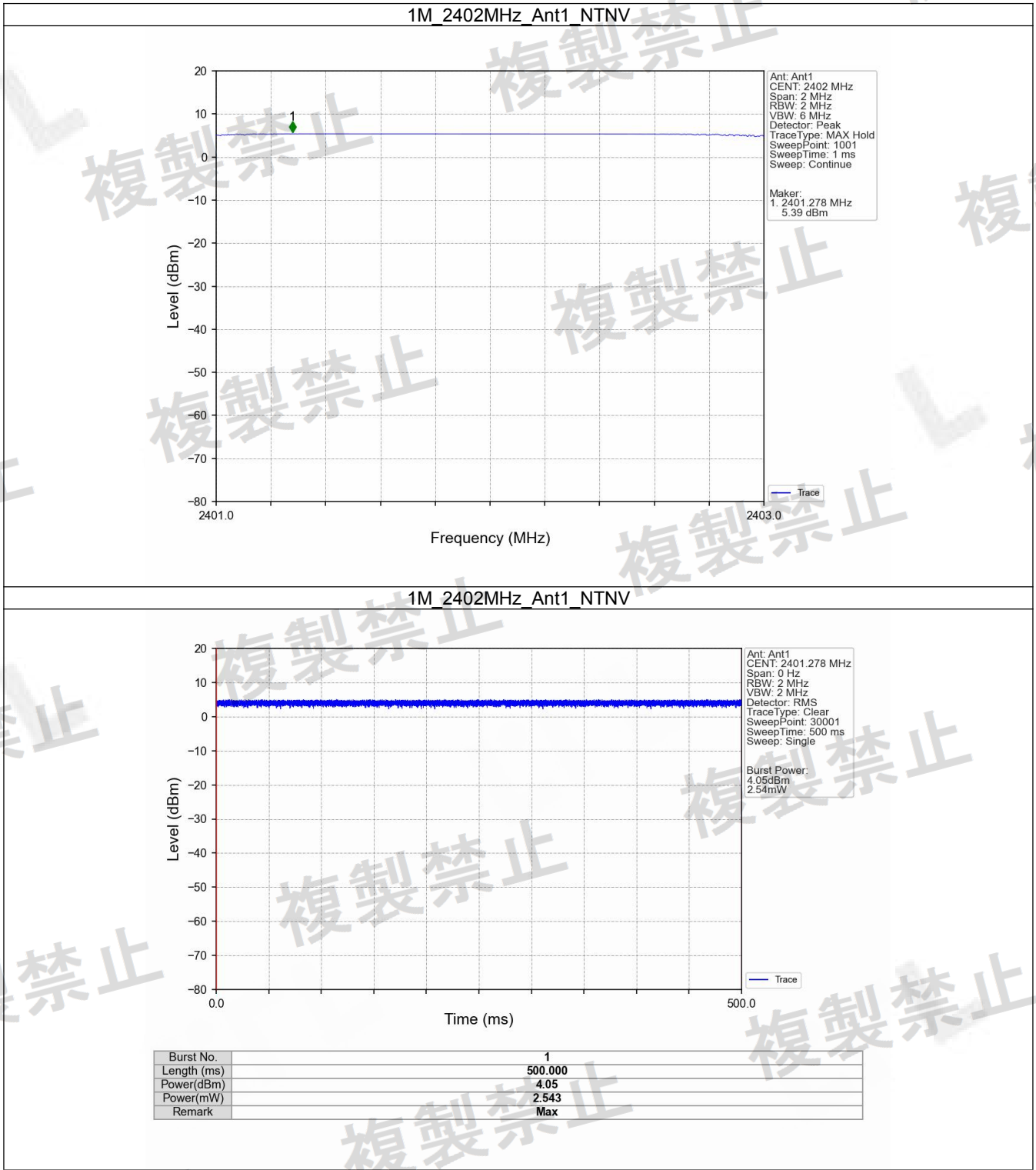
3.1.2 EIRP

ENV	Mode	TX Type	Frequency (MHz)	ANT	Gain (dBi)	EIRP (dBm)		Verdict
						Result	Limit	
NTNV	1M	SISO	2402	1	-11.71	-7.65	≤ 12.14	Pass
			2480	1	-11.71	-8.08	≤ 12.14	Pass
NTLV	1M	SISO	2402	1	-11.71	-7.58	≤ 12.14	Pass
			2480	1	-11.71	-9.15	≤ 12.14	Pass
NTHV	1M	SISO	2402	1	-11.71	-7.26	≤ 12.14	Pass
			2480	1	-11.71	-9.07	≤ 12.14	Pass

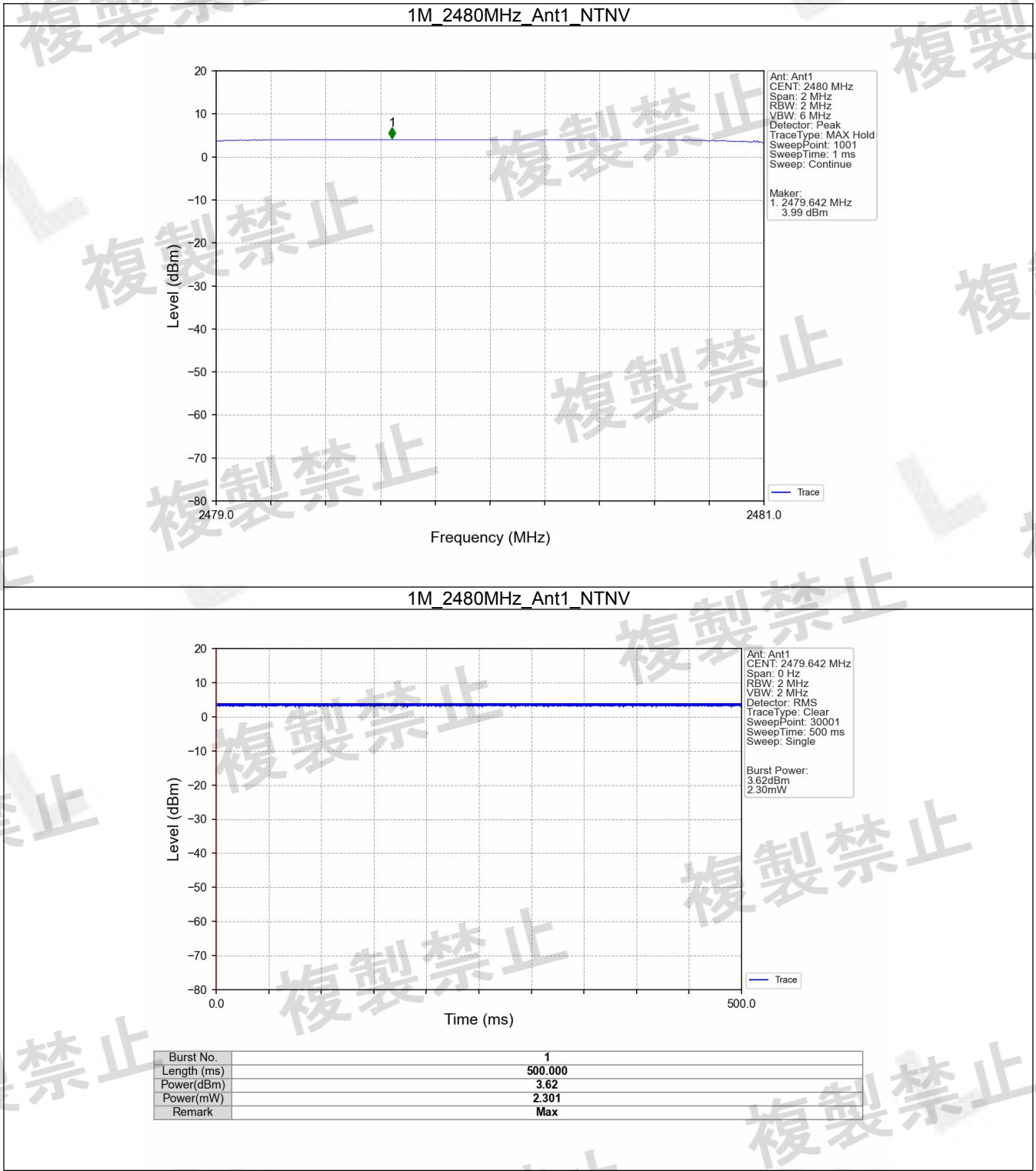
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3.2 Test Graph

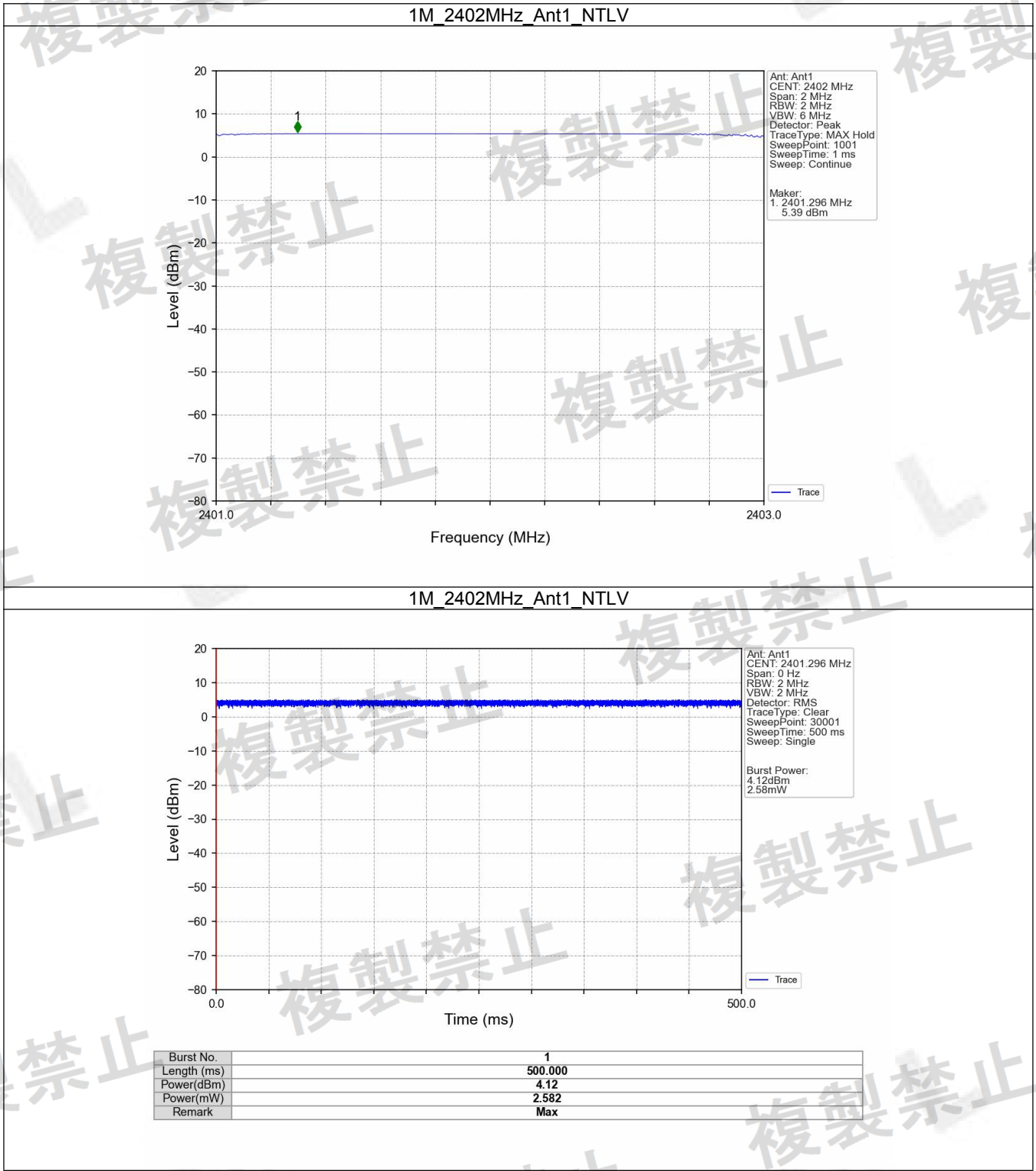
3.2.1 Power



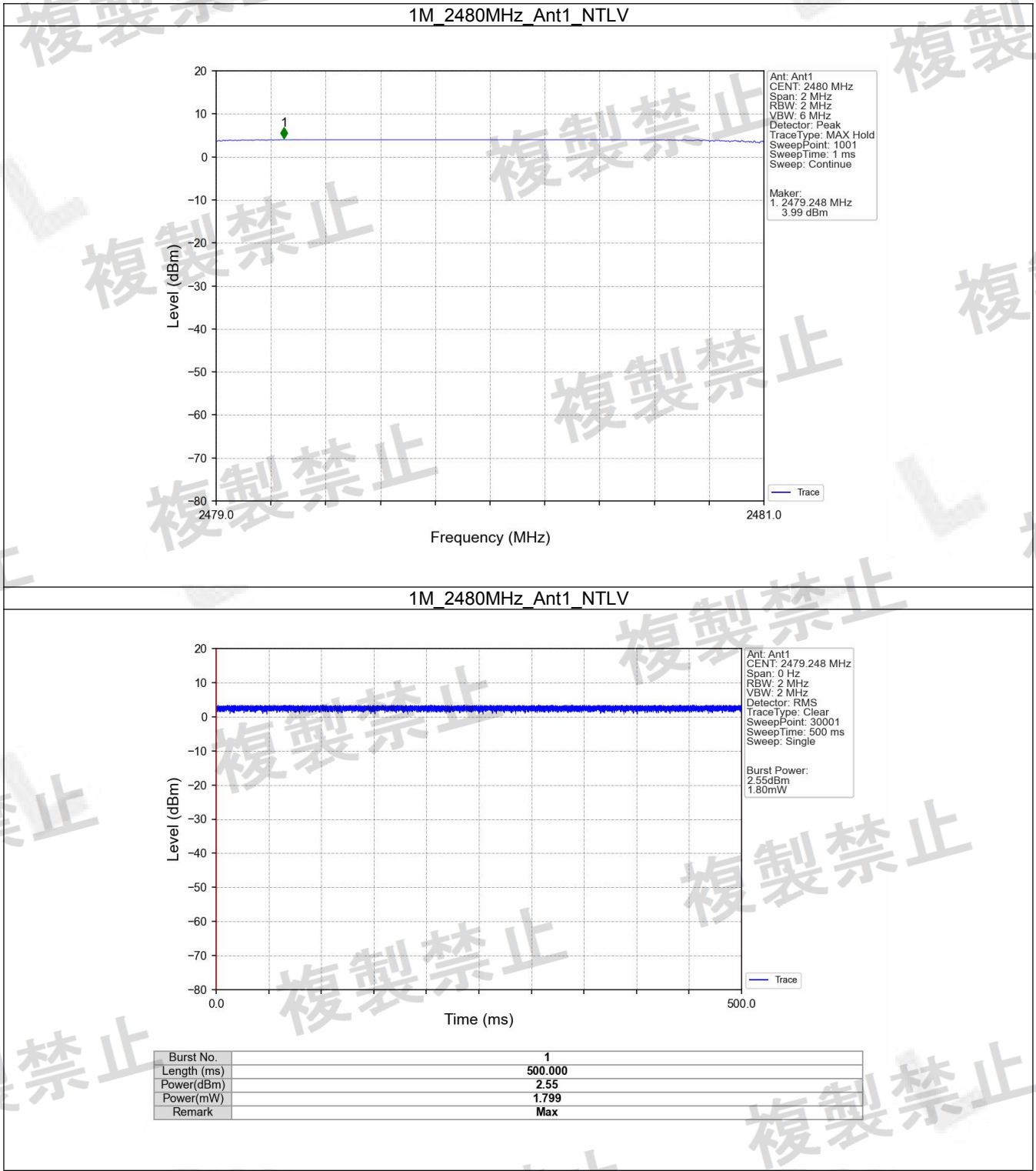
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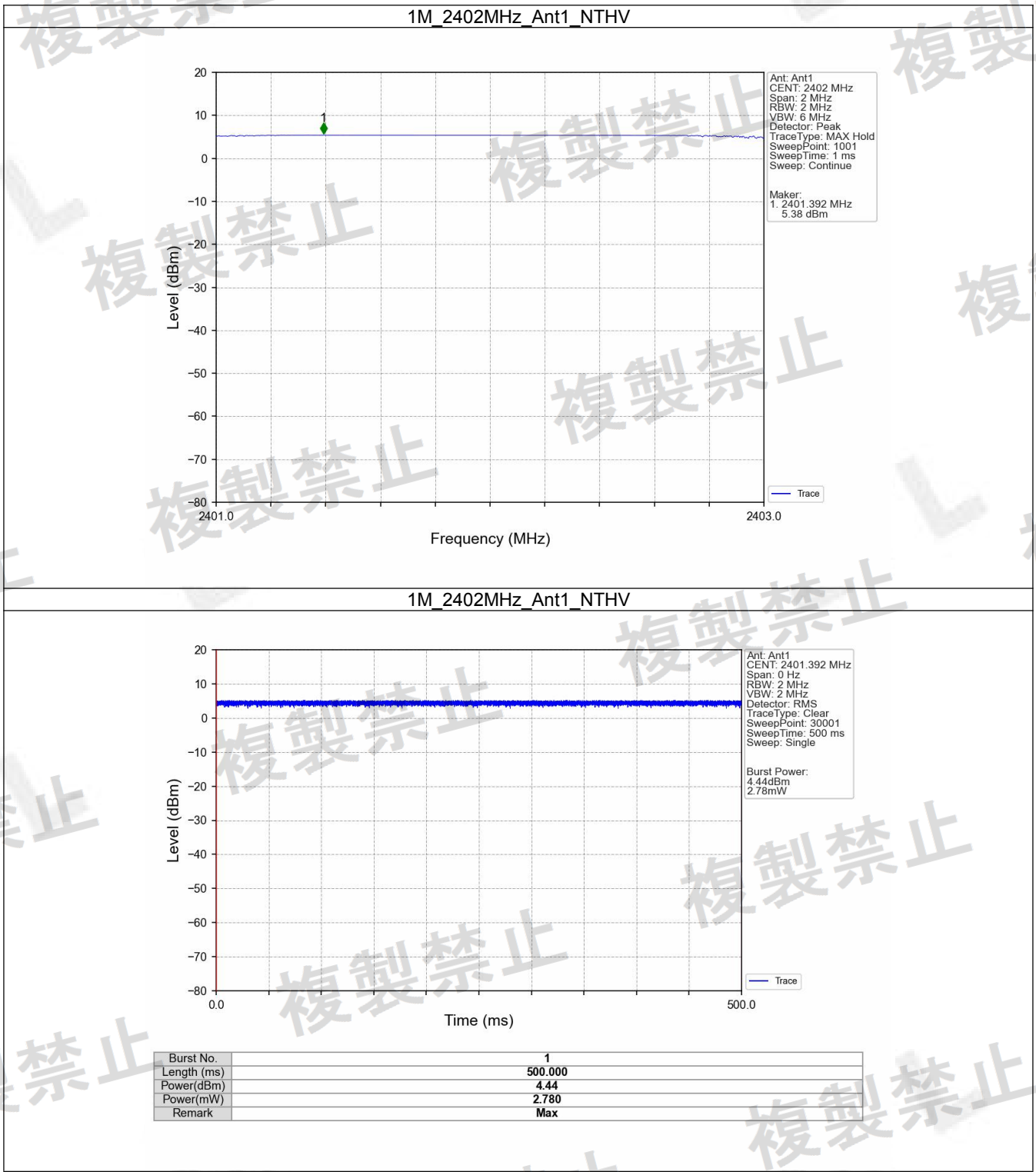
MIC: 219-269107



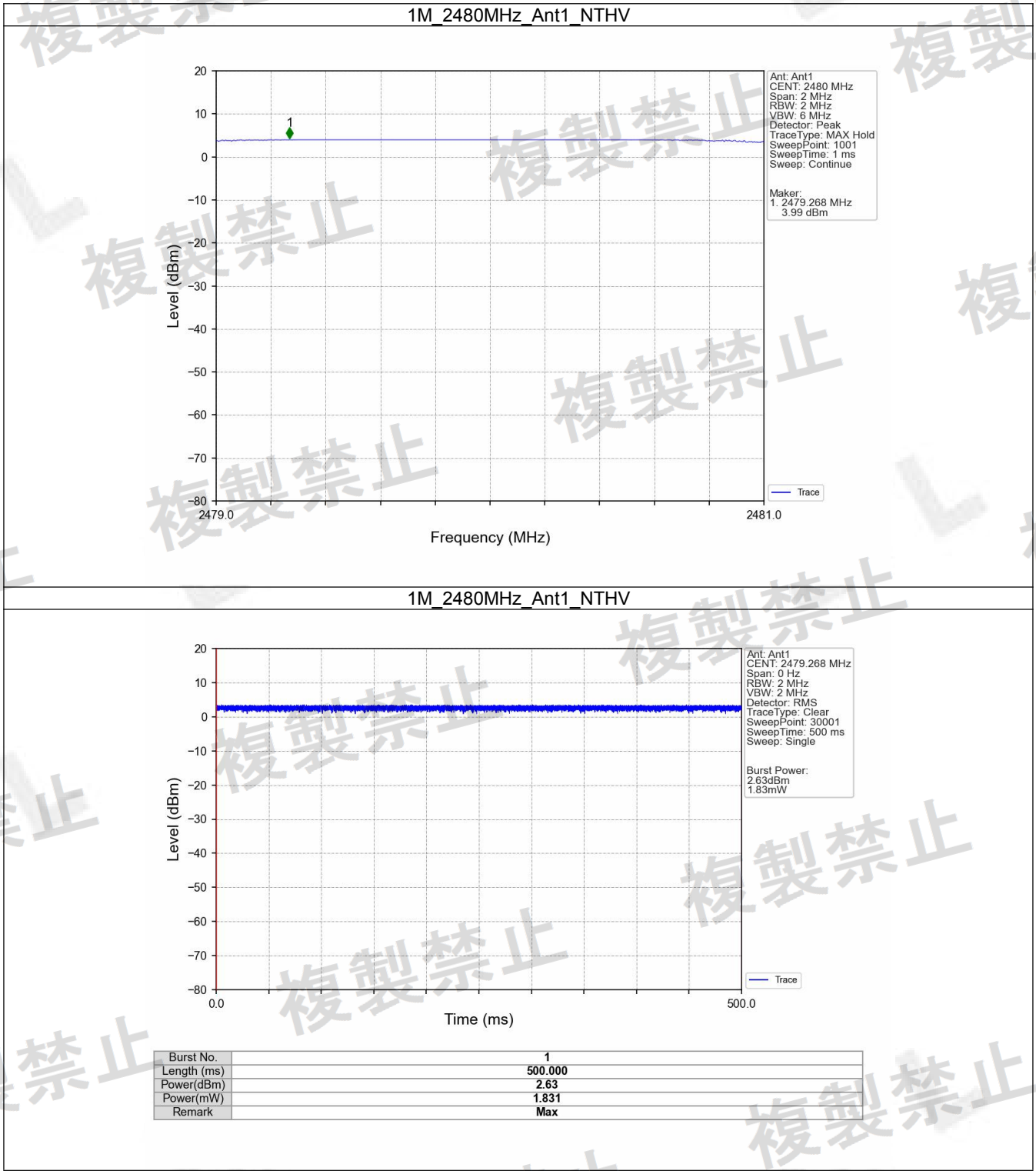
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4. Spurious Emission Intensity

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	729.5	-34.47	0.357	/	/	2.5	Pass
				2387	2400	2399.948	-17.64	17.219	-32.08	0.619	25	Pass
				2483.5	2496.5	2493.731	-53.20	0.005	/	/	25	Pass
				2496.5	12500	4804.5	-47.63	0.017	/	/	2.5	Pass
		2480	1	30	2387	893	-33.42	0.455	/	/	2.5	Pass
				2387	2400	2387.494	-53.17	0.005	/	/	25	Pass
				2483.5	2496.5	2496.019	-44.32	0.037	/	/	25	Pass
				2496.5	12500	2544.5	-43.76	0.042	/	/	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	2338	-42.25	0.060	/	/	2.5	Pass
				2387	2400	2399.961	-15.87	25.882	-33.14	0.485	25	Pass
				2483.5	2496.5	2493.432	-53.63	0.004	/	/	25	Pass
				2496.5	12500	4804.5	-48.28	0.015	/	/	2.5	Pass
		2480	1	30	2387	2269.5	-50.28	0.009	/	/	2.5	Pass
				2387	2400	2399.857	-53.27	0.005	/	/	25	Pass
				2483.5	2496.5	2496.136	-44.21	0.038	/	/	25	Pass
				2496.5	12500	2544	-44.63	0.034	/	/	2.5	Pass

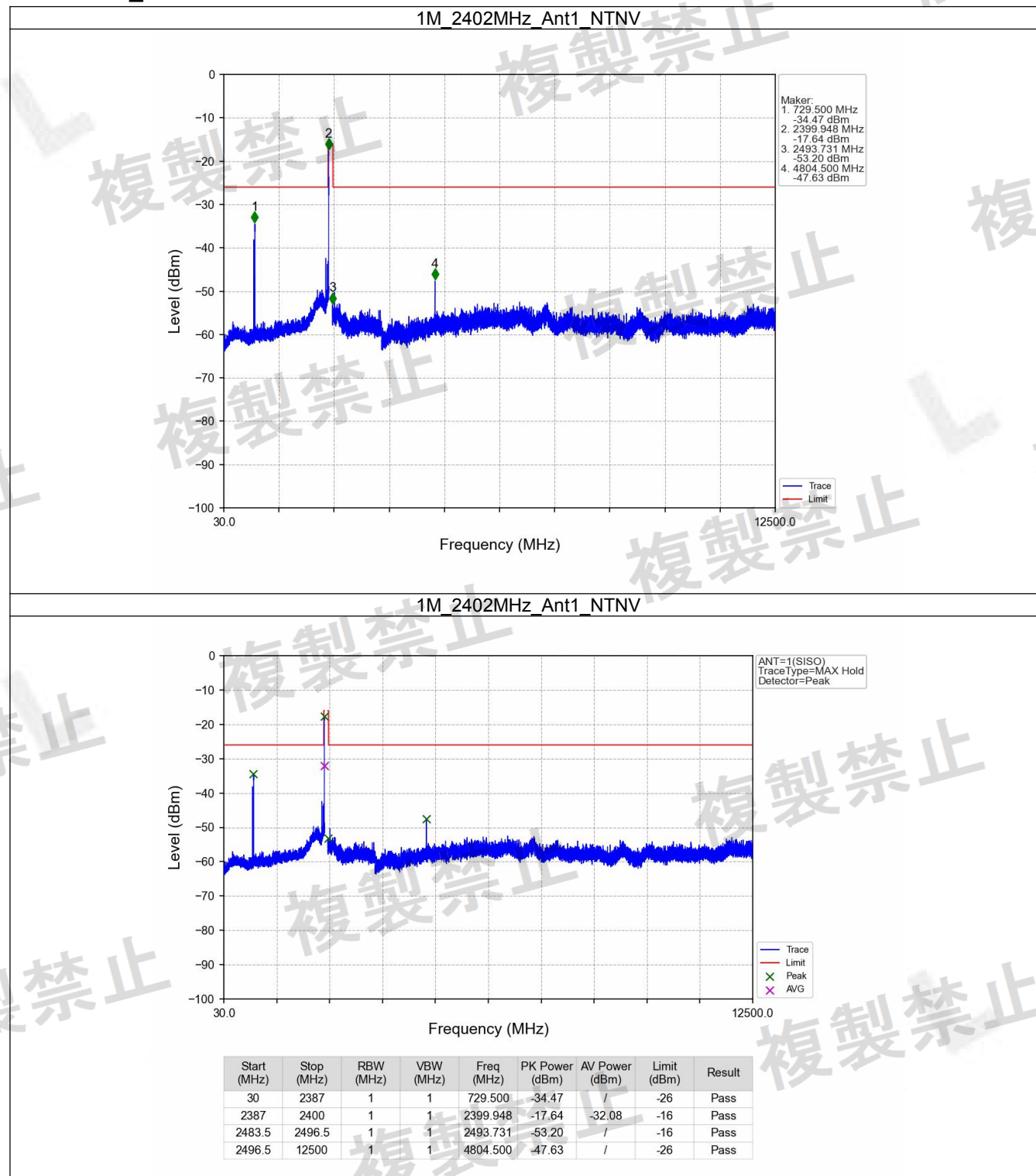
4.1.3 TxSe_NTHV

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	2338.5	-42.55	0.056	/	/	2.5	Pass
				2387	2400	2399.961	-16.50	22.387	-36.68	0.215	25	Pass
				2483.5	2496.5	2484.033	-53.31	0.005	/	/	25	Pass
				2496.5	12500	4804	-48.23	0.015	/	/	2.5	Pass
		2480	1	30	2387	2288	-50.57	0.009	/	/	2.5	Pass
				2387	2400	2396.1	-52.96	0.005	/	/	25	Pass
				2483.5	2496.5	2495.941	-44.05	0.039	/	/	25	Pass
				2496.5	12500	2544	-44.04	0.039	/	/	2.5	Pass

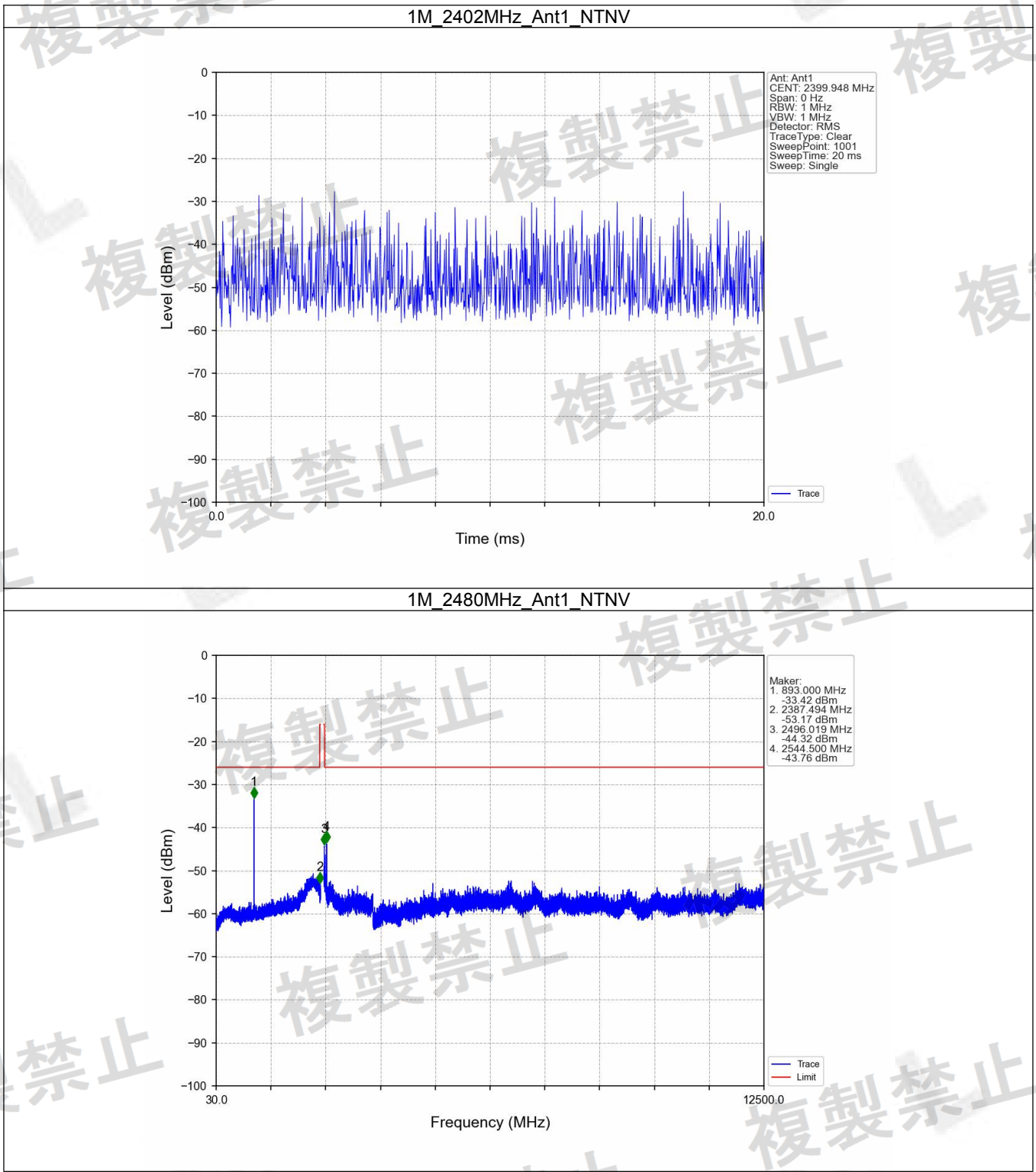
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4.2 Test Graph

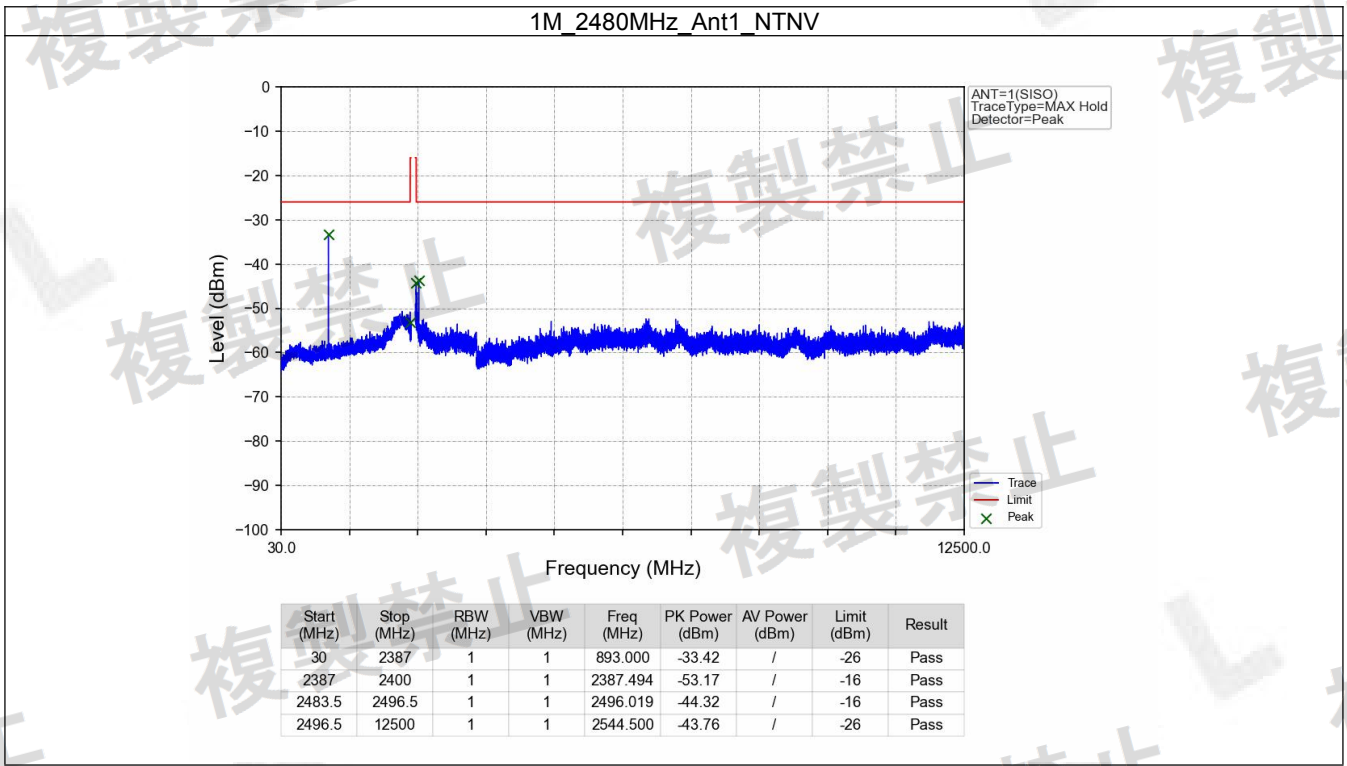
4.2.1 TxSe_NTNV



MIC: 219-269107

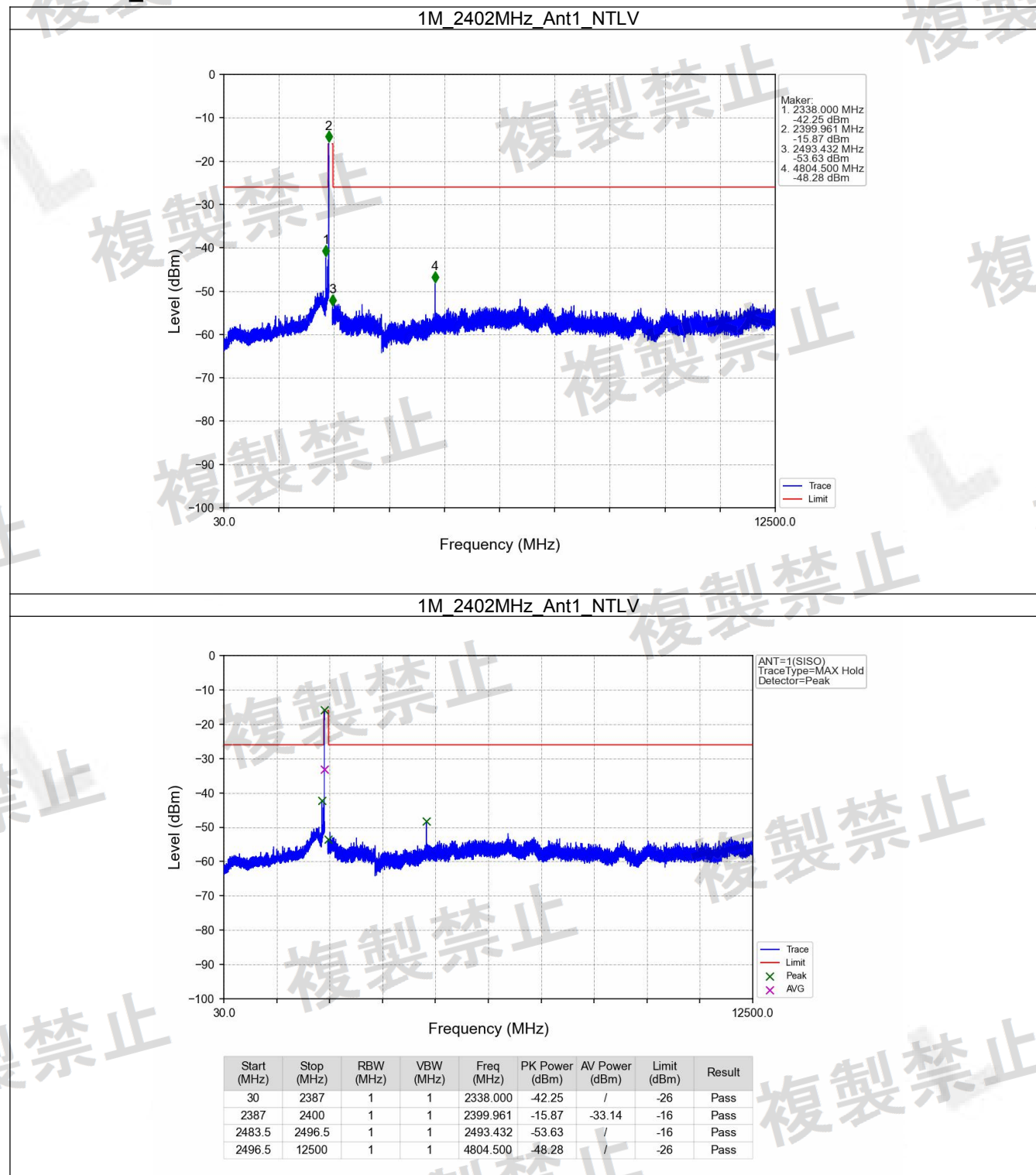


MIC: 219-269107

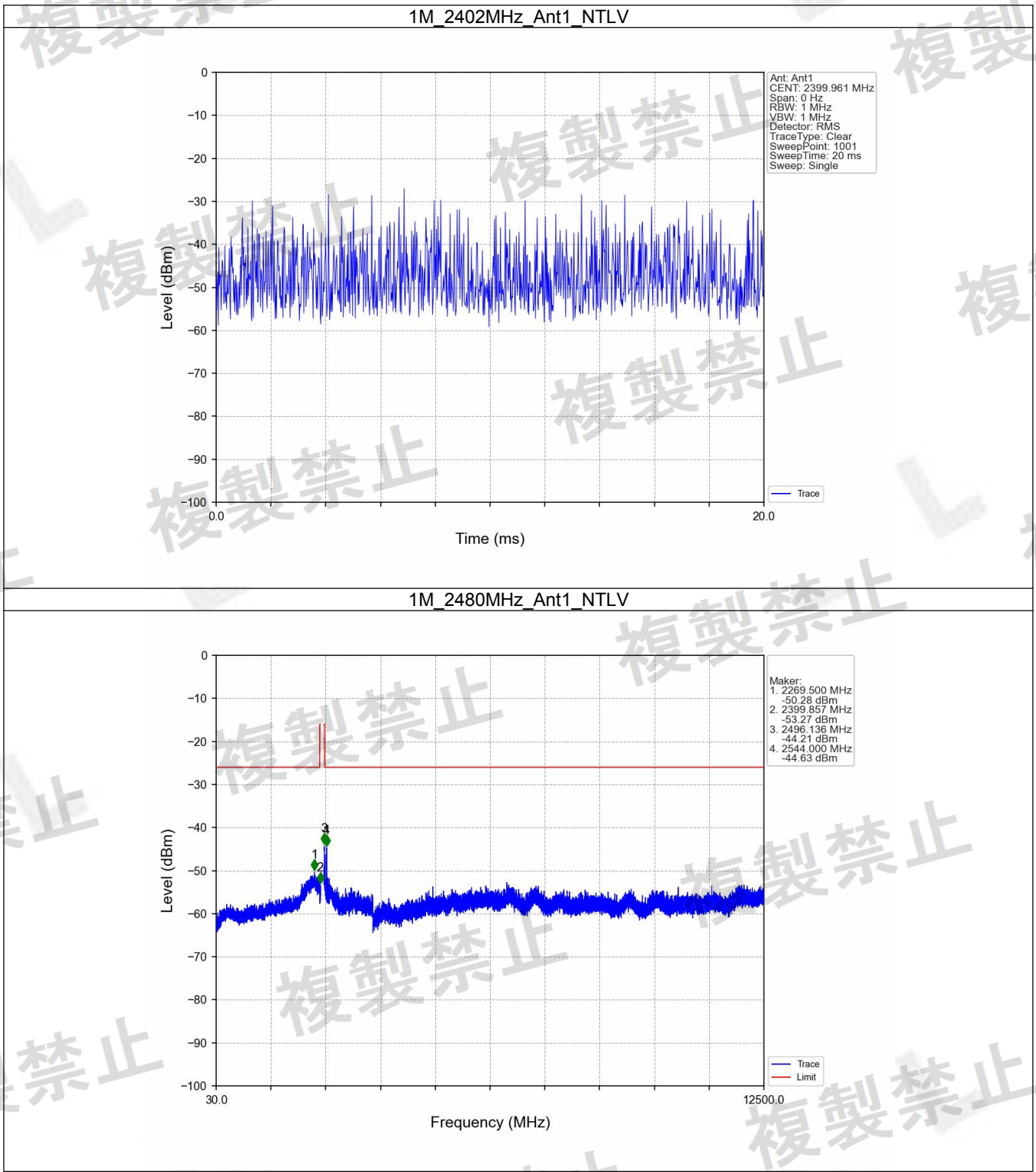


MIC: 219-269107

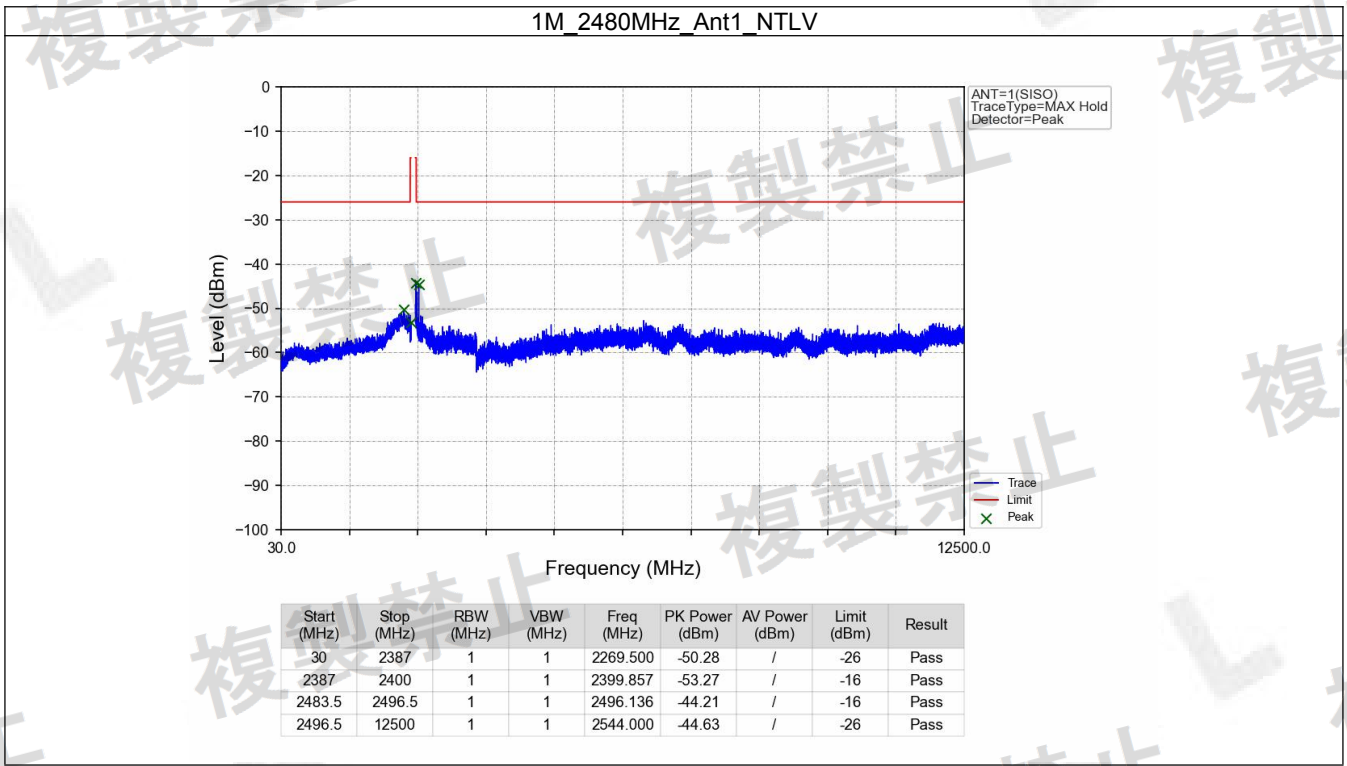
4.2.2 TxSe_NTLV



MIC: 219-269107

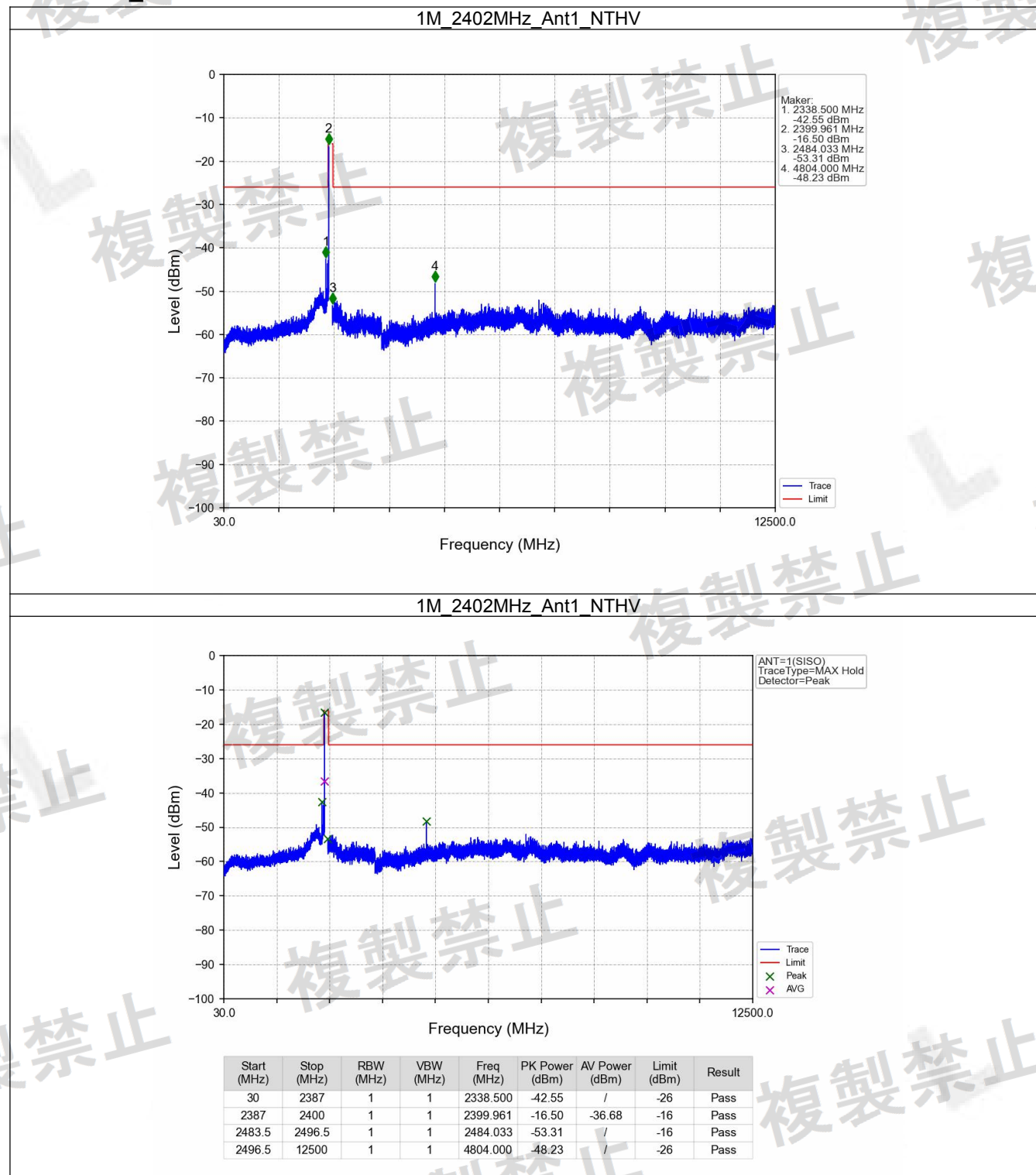


MIC: 219-269107

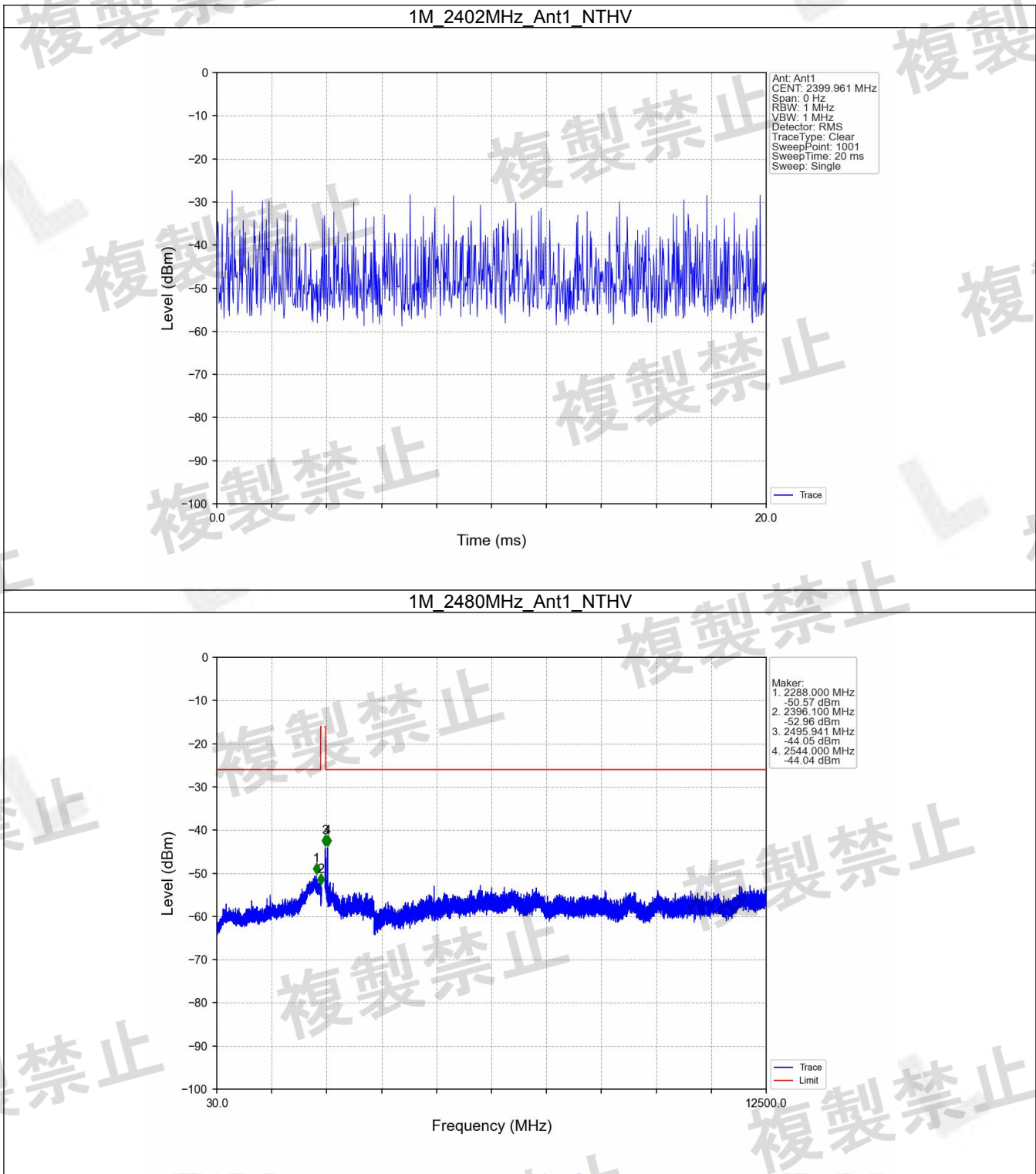


MIC: 219-269107

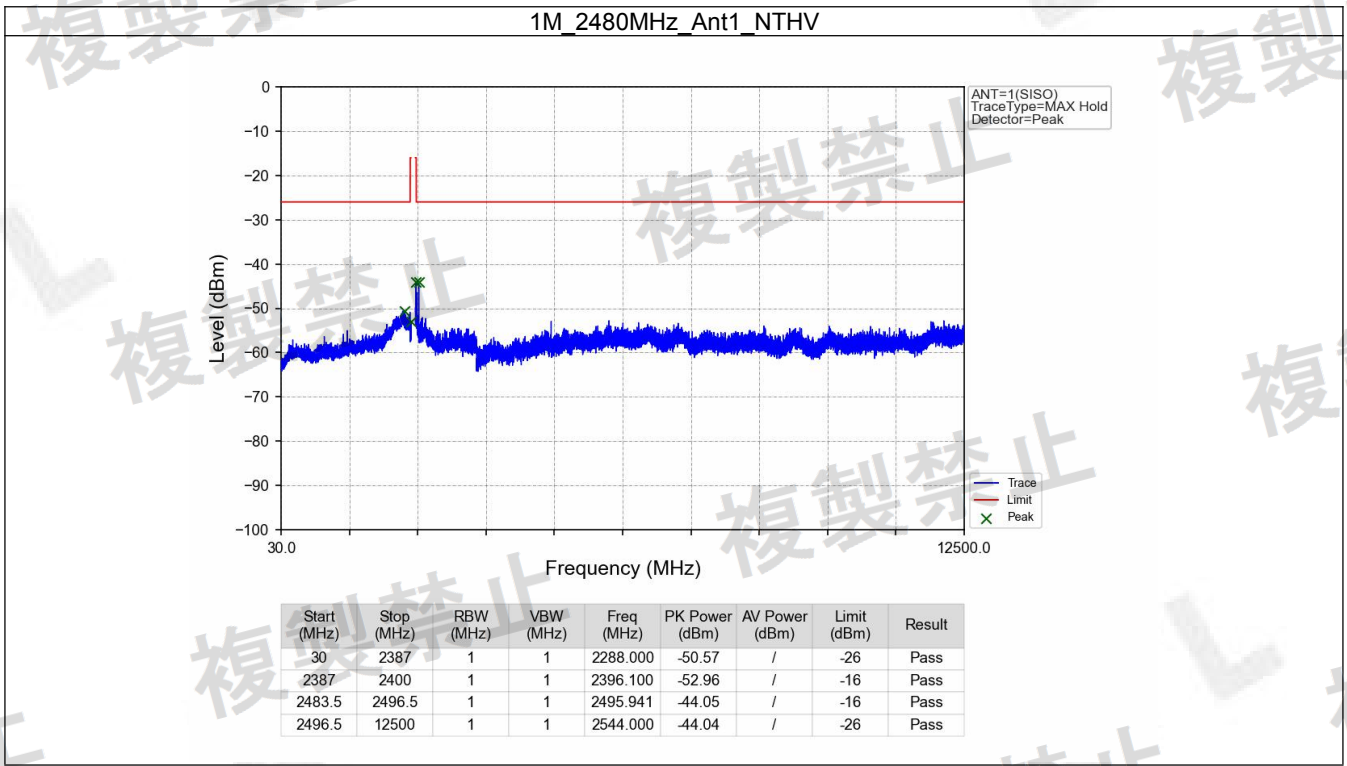
4.2.3 TxSe_NTHV



MIC: 219-269107



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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	806.05	-76.74	0.021	/	/	4	Pass
				1000	12500	1779.5	-50.26	9.419	-81.74	0.007	20	Pass
		2480	1	30	1000	1950.5	-46.12	24.434	-80.95	0.008	20	Pass
				1000	12500	884.45	-76.32	0.023	/	/	4	Pass
				1000	12500	2410.5	-55.80	2.630	-73.18	0.048	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	899.6	-76.69	0.021	/	/	4	Pass
				1000	12500	1942	-56.14	2.432	-81.13	0.008	20	Pass
						1952.5	-47.60	17.378	-80.96	0.008	20	Pass
						2408.5	-56.97	2.009	-72.27	0.059	20	Pass
						2414	-53.33	4.645	-80.28	0.009	20	Pass
		2480	1	30	1000	915.25	-77.21	0.019	/	/	4	Pass
				1000	12500	2408.5	-56.32	2.333	-80.26	0.009	20	Pass

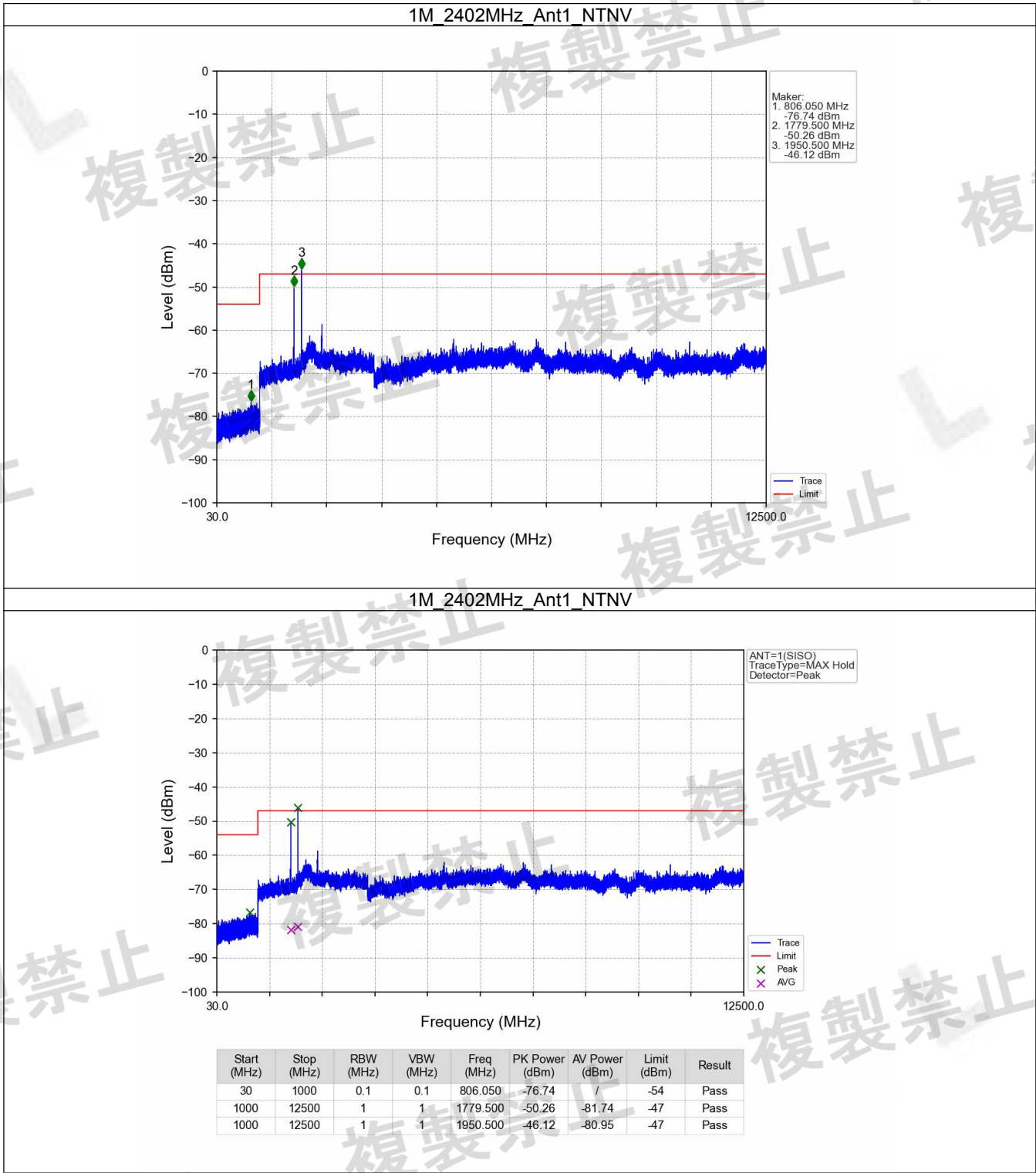
5.1.3 RxSe_NTHV

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	776.75	-76.99	0.020	/	/	4	Pass
				1000	12500	2408	-57.62	1.730	/	/	20	Pass
		2480	1	30	1000	845	-77.00	0.020	/	/	4	Pass
				1000	12500	2413.5	-55.69	2.698	-76.87	0.021	20	Pass

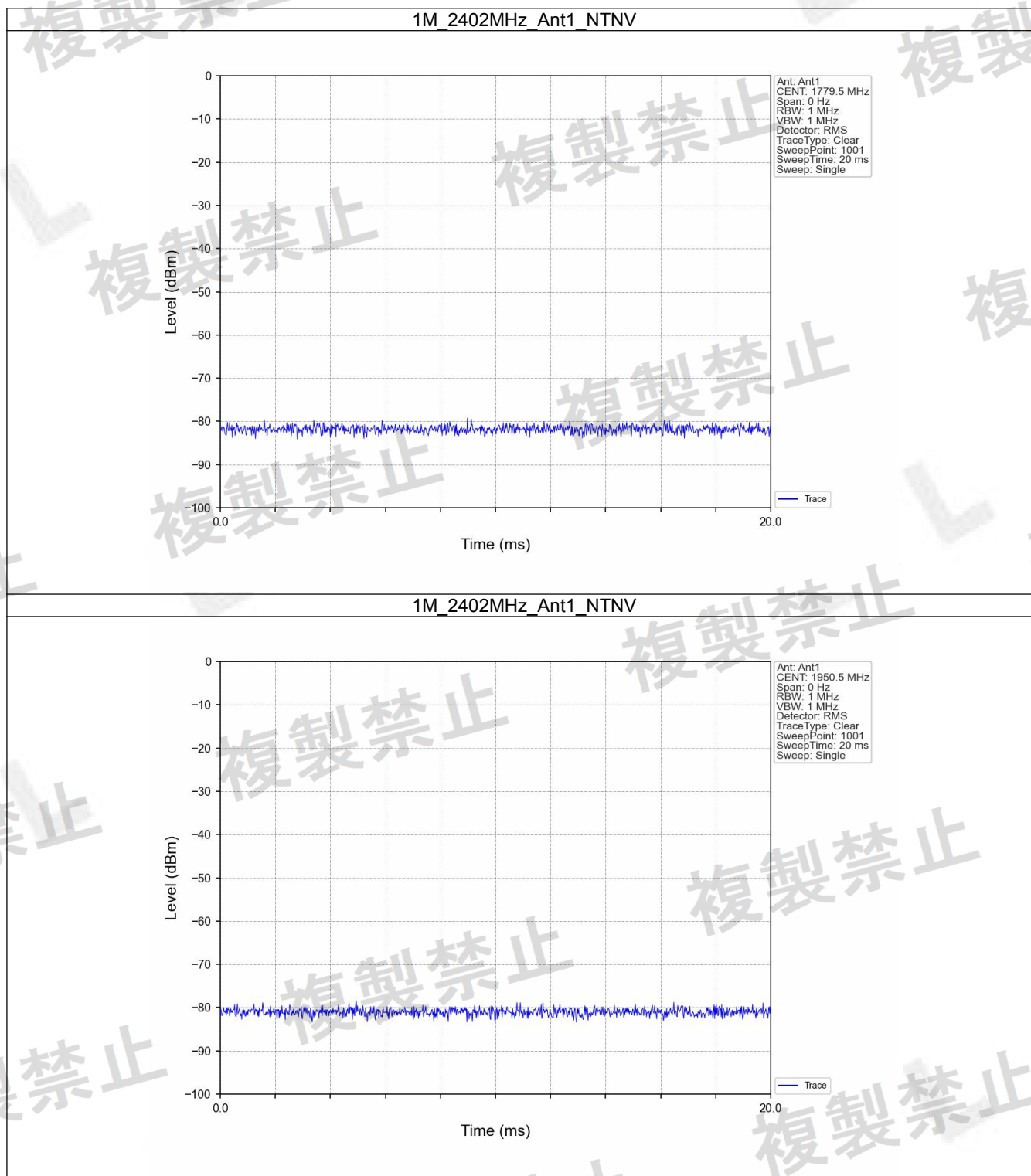
MIC: 219-269107

5.2 Test Graph

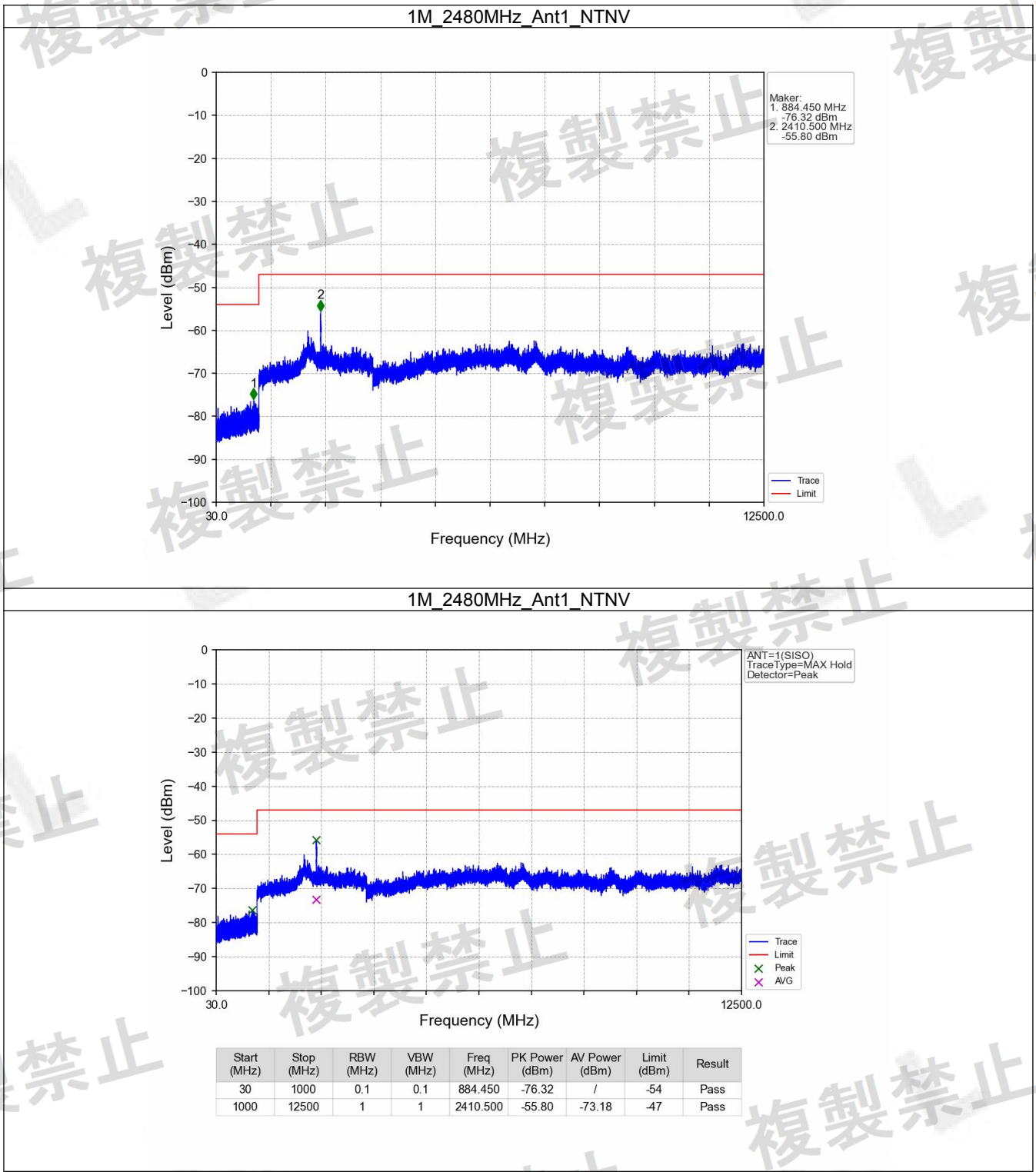
5.2.1 RxSe_NTNV



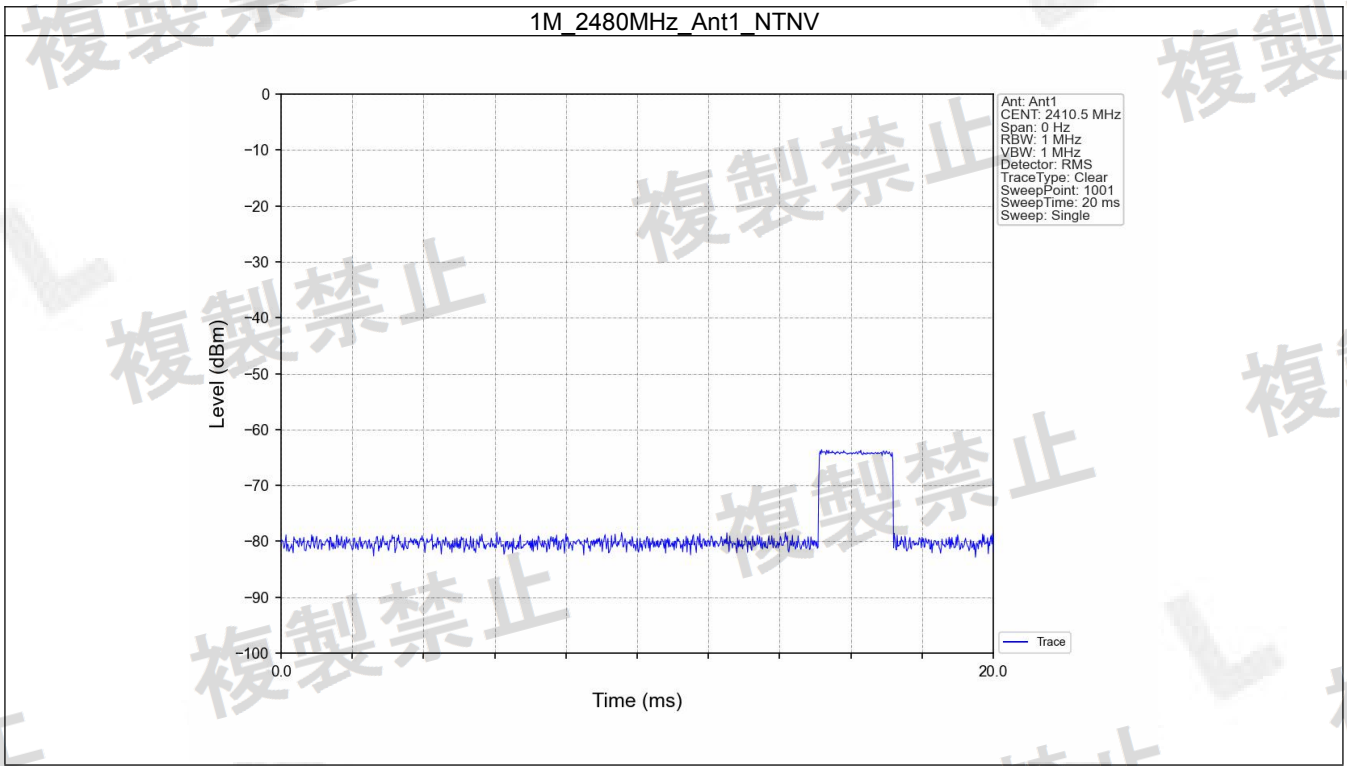
MIC: 219-269107



MIC: 219-269107

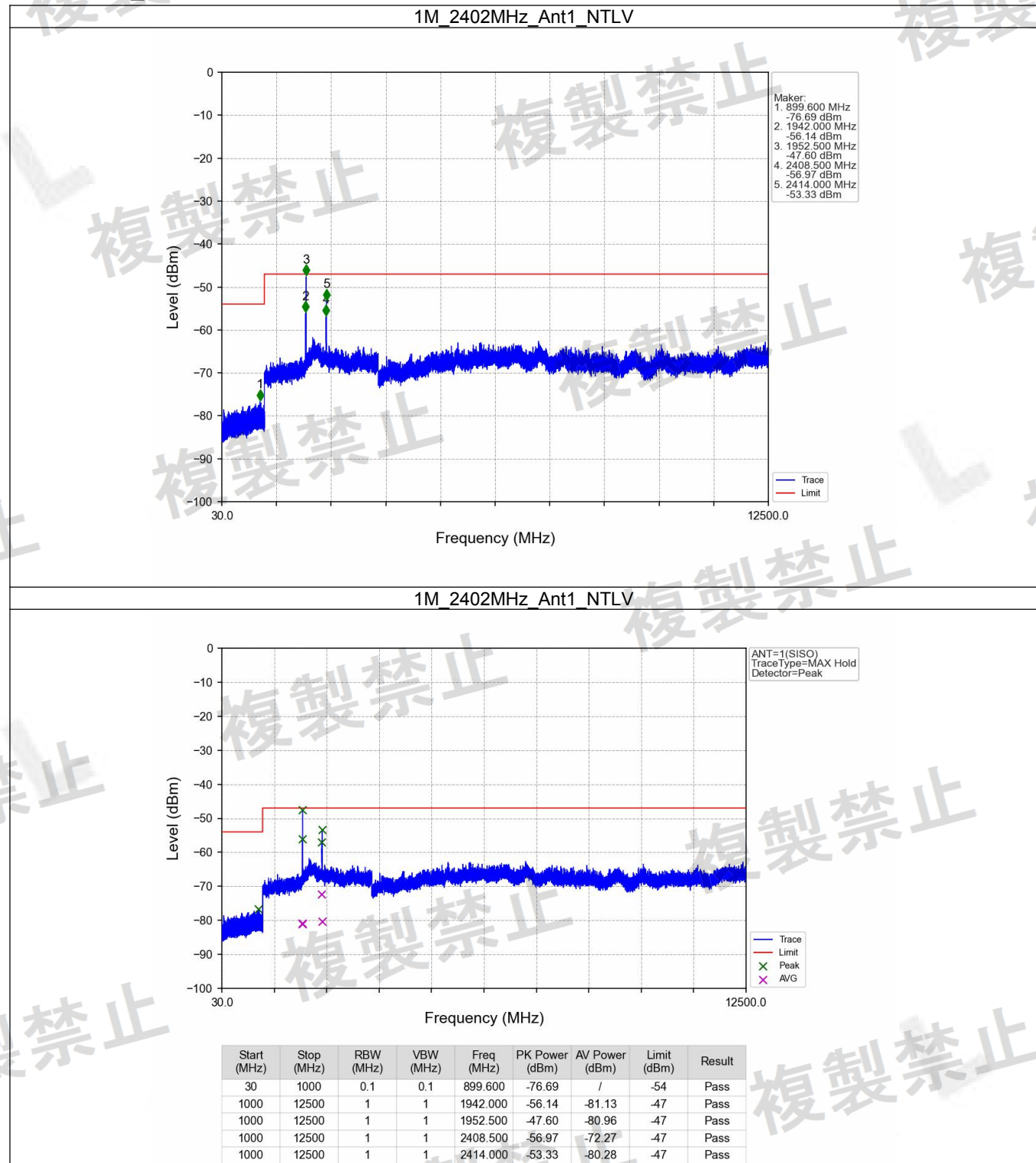


MIC: 219-269107

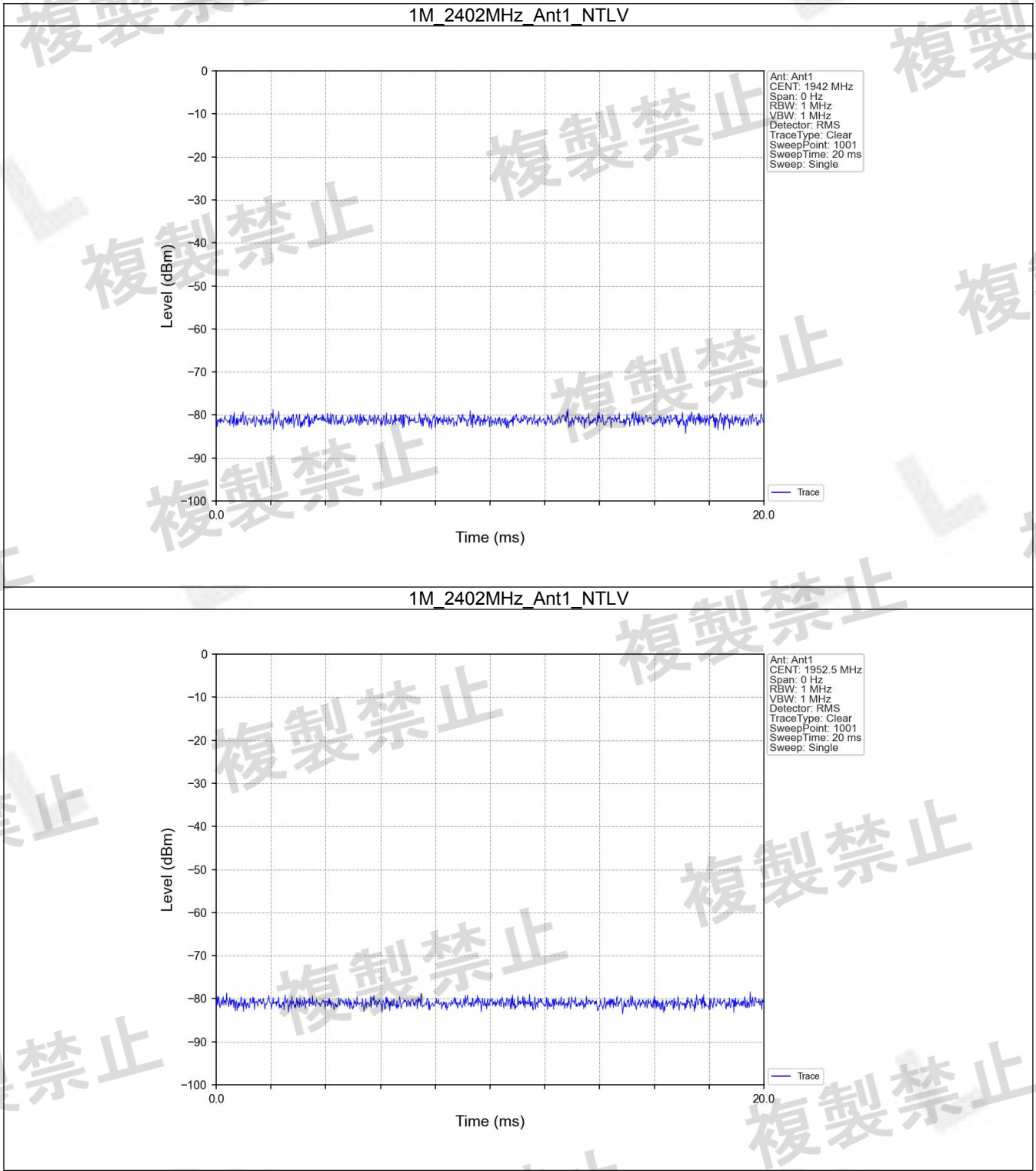


MIC: 219-269107

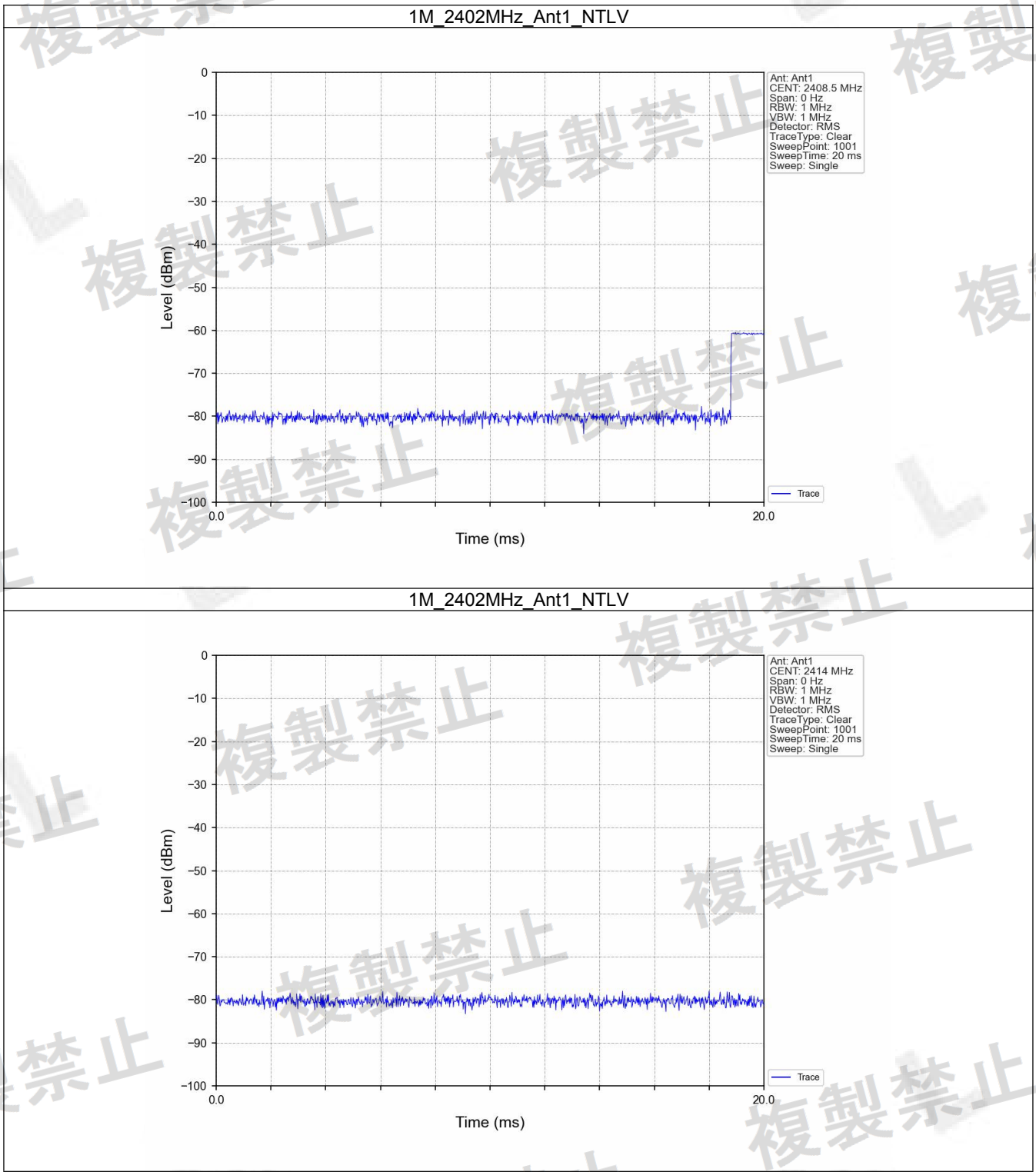
5.2.2 RxSe_NTLV



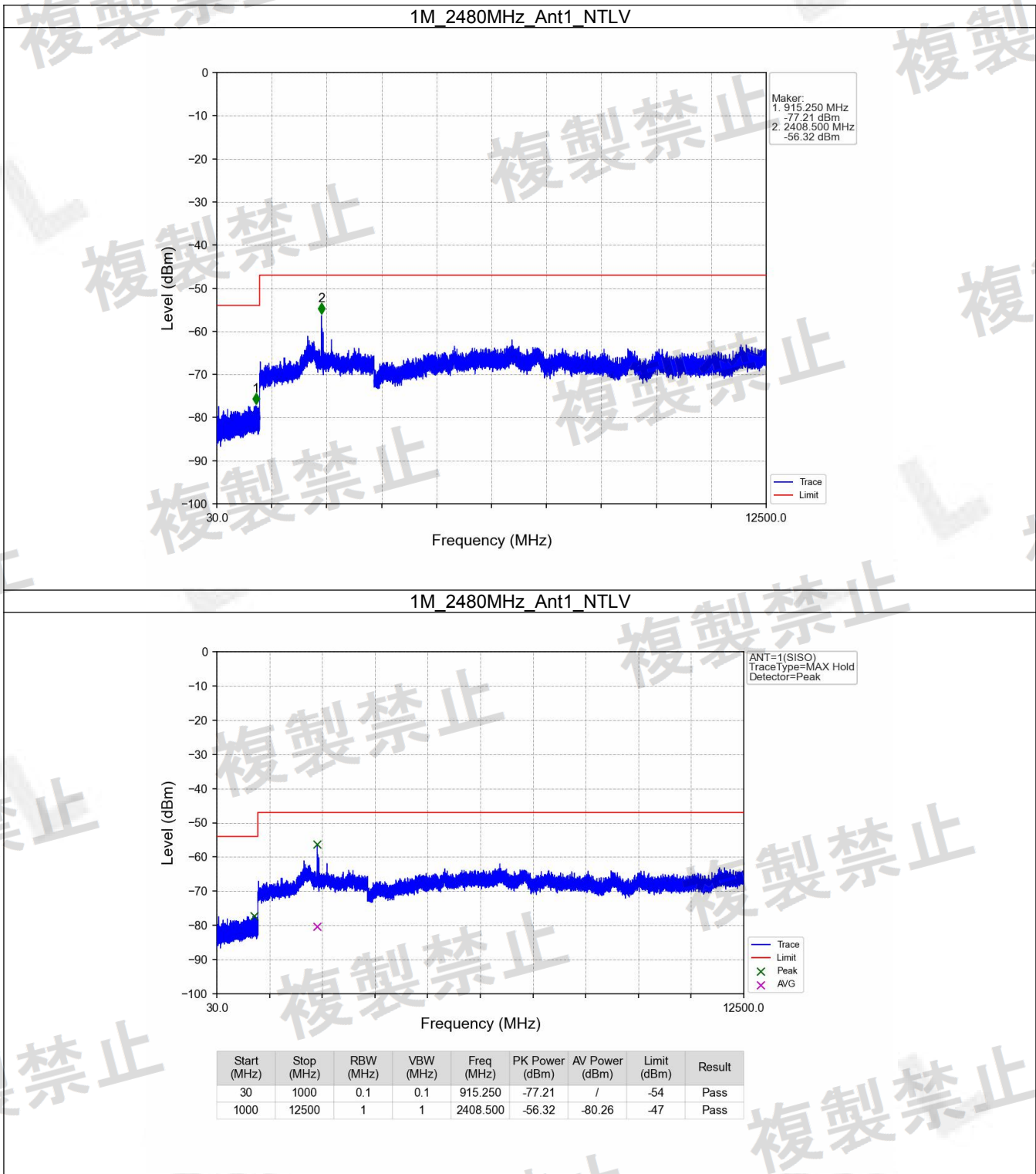
MIC: 219-269107



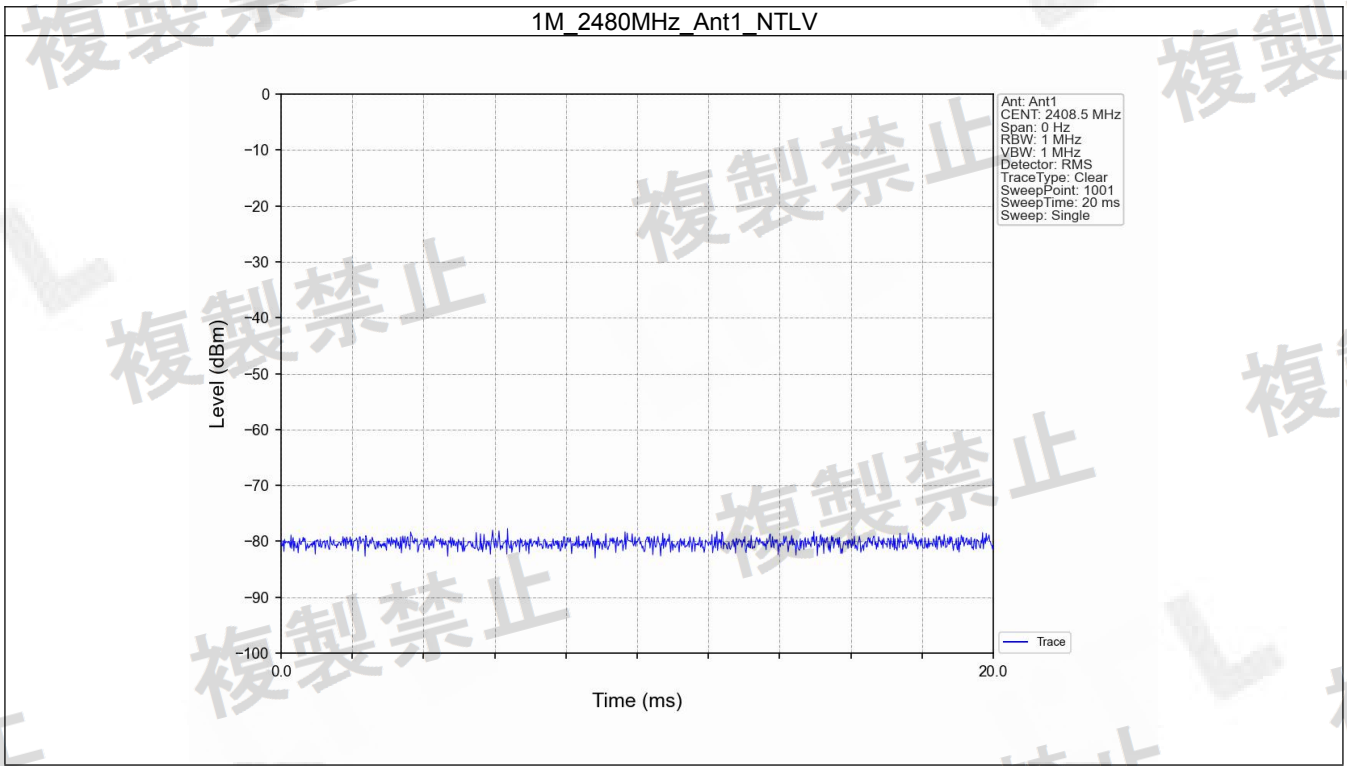
MIC: 219-269107



MIC: 219-269107

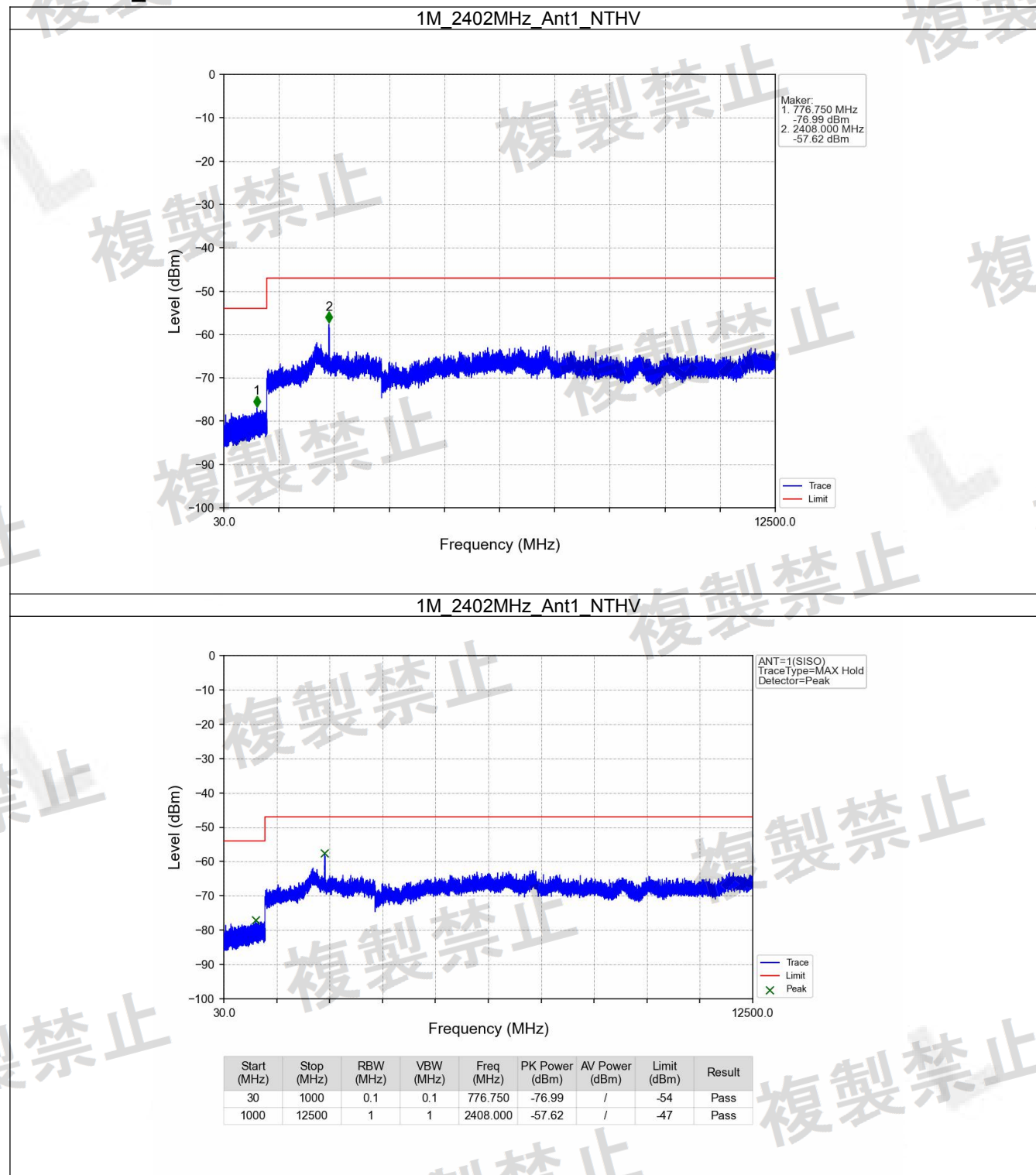


MIC: 219-269107

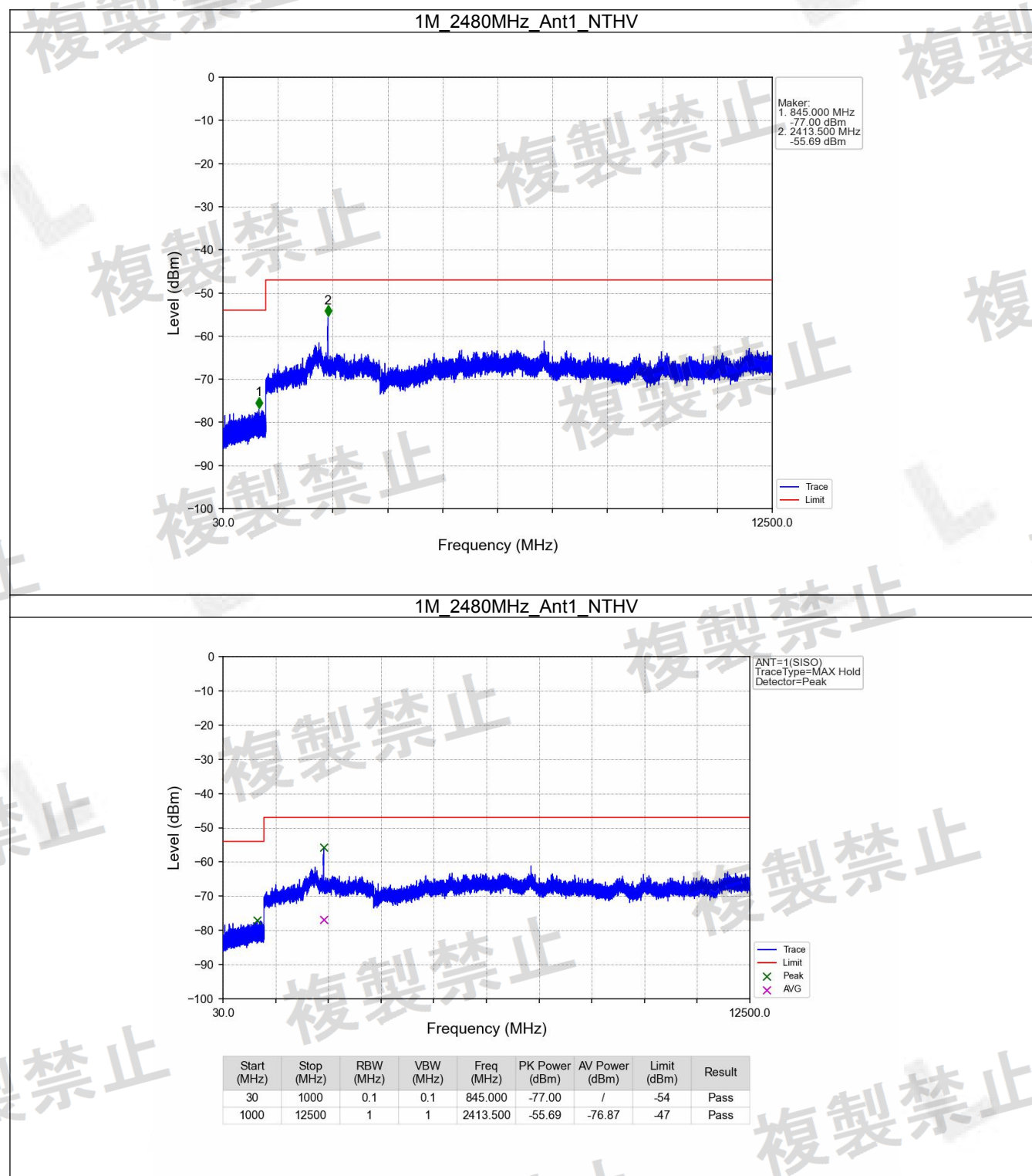


MIC: 219-269107

5.2.3 RxSe_NTHV



MIC: 219-269107



MIC: 219-269107

