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Annex for Bluetooth low Energy

Test Report No.: CTL2512298111-MIC01

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MIC: 220-J11275

1. Frequency Error

1.1 Test Result

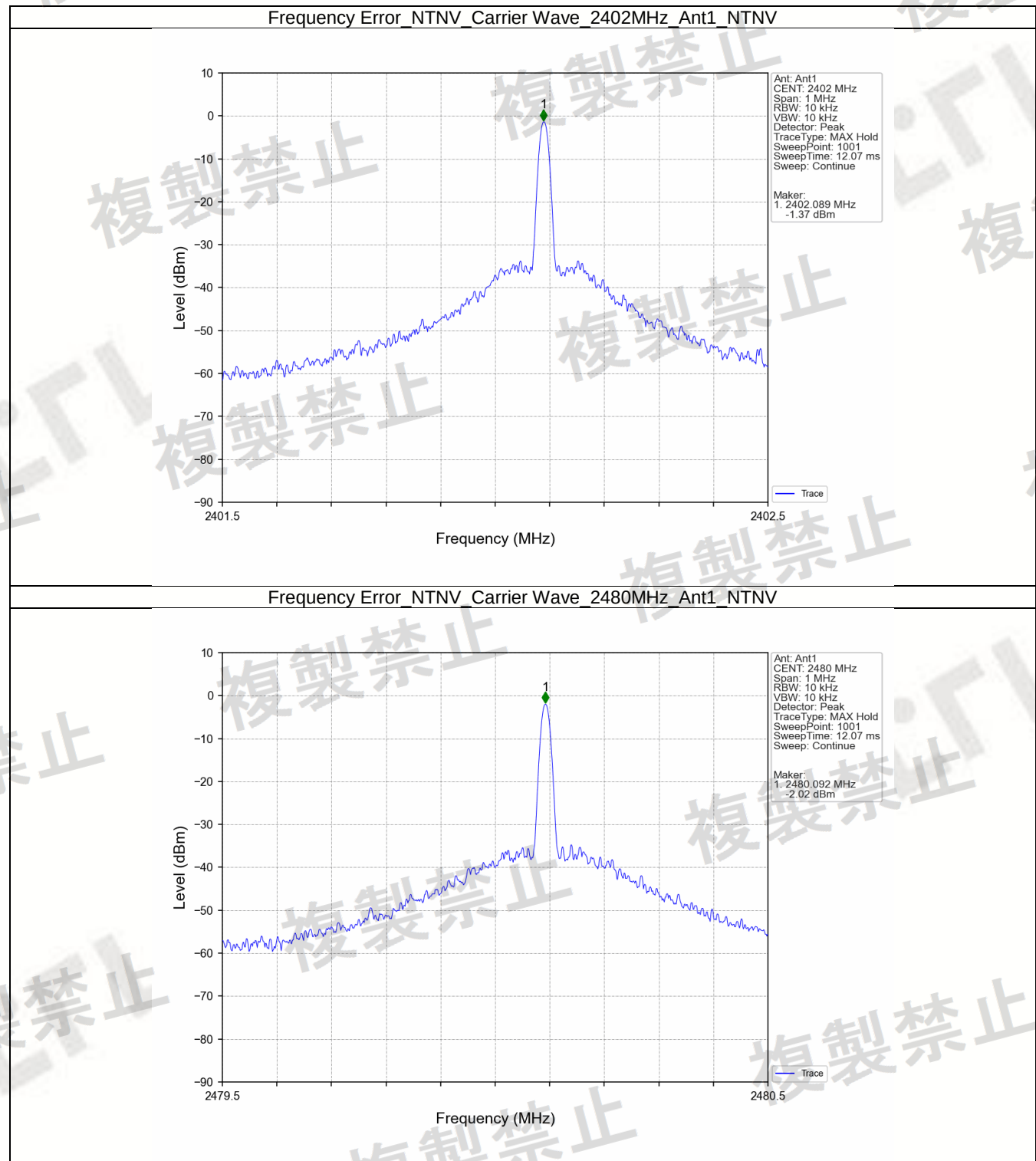
1.1.1 Ant1

Ant1							
ENV	Mode	TX Type	Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)		Verdict
					Result	Limit	
NTNV	Carrier Wave	SISO	2402	2402.089	37.05	-50 to 50	Pass
			2480	2480.092	37.10	-50 to 50	Pass
NTLV	Carrier Wave	SISO	2402	2402.089	37.05	-50 to 50	Pass
			2480	2480.092	37.10	-50 to 50	Pass
NTHV	Carrier Wave	SISO	2402	2402.089	37.05	-50 to 50	Pass
			2480	2480.092	37.10	-50 to 50	Pass

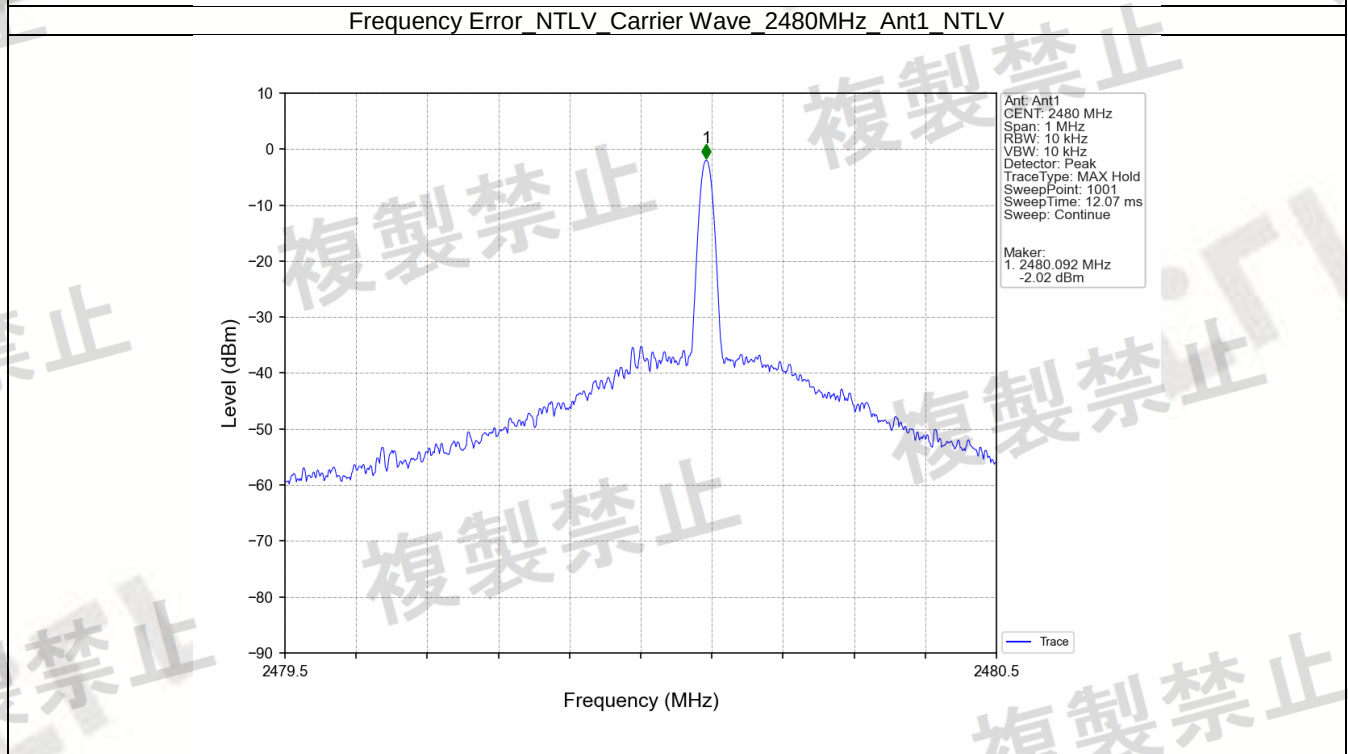
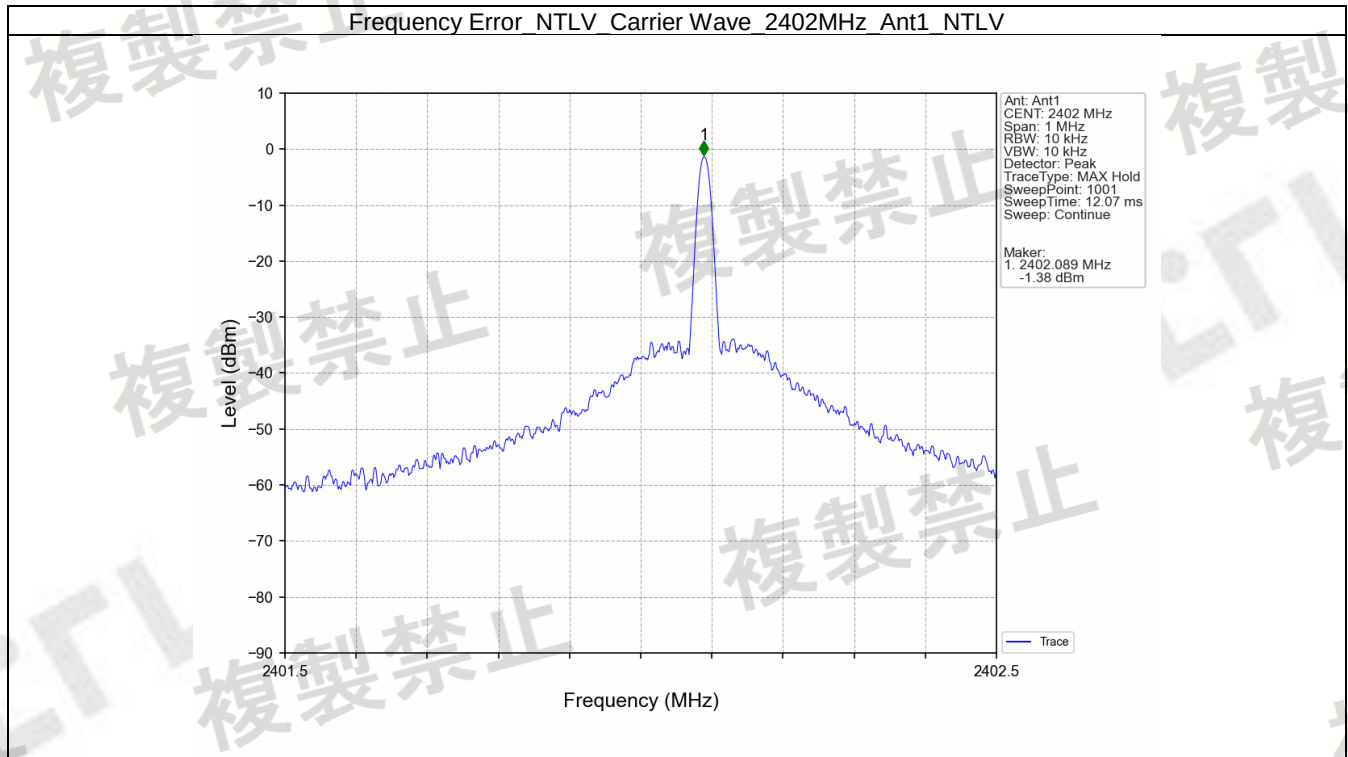
MIC: 220-J11275

1.2 Test Graph

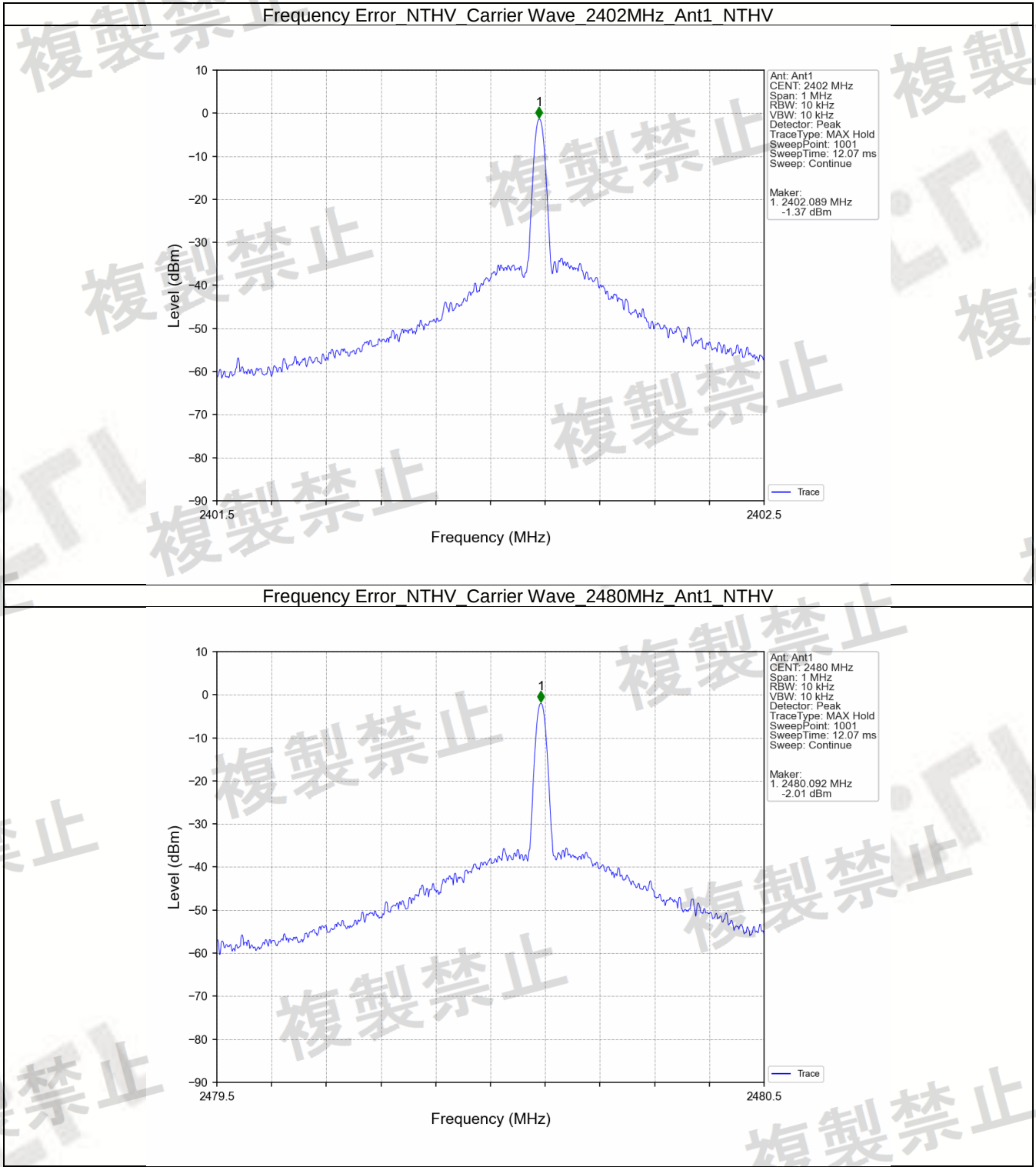
1.2.1 Ant1



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2. Occupied Bandwidth

2.1 Test Result

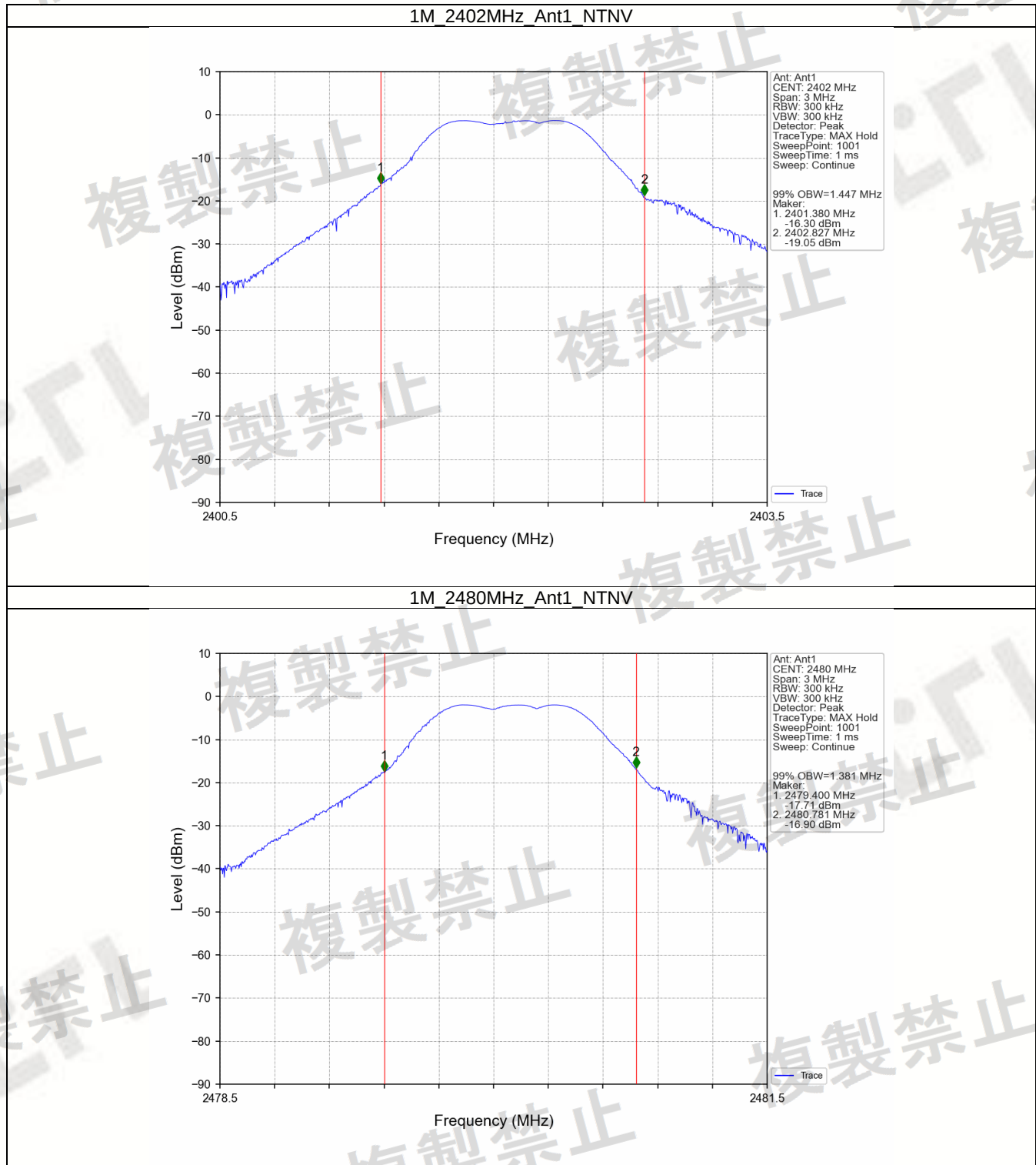
2.1.1 OBW

ENV	Mode	TX Type	Frequency (MHz)	99% Occupied Bandwidth (MHz)		Verdict
				ANT1	Limit	
NTNV	1M	SISO	2402	1.447	<=26	Pass
			2480	1.381	<=26	Pass
NTLV	1M	SISO	2402	1.446	<=26	Pass
			2480	1.381	<=26	Pass
NTHV	1M	SISO	2402	1.444	<=26	Pass
			2480	1.386	<=26	Pass

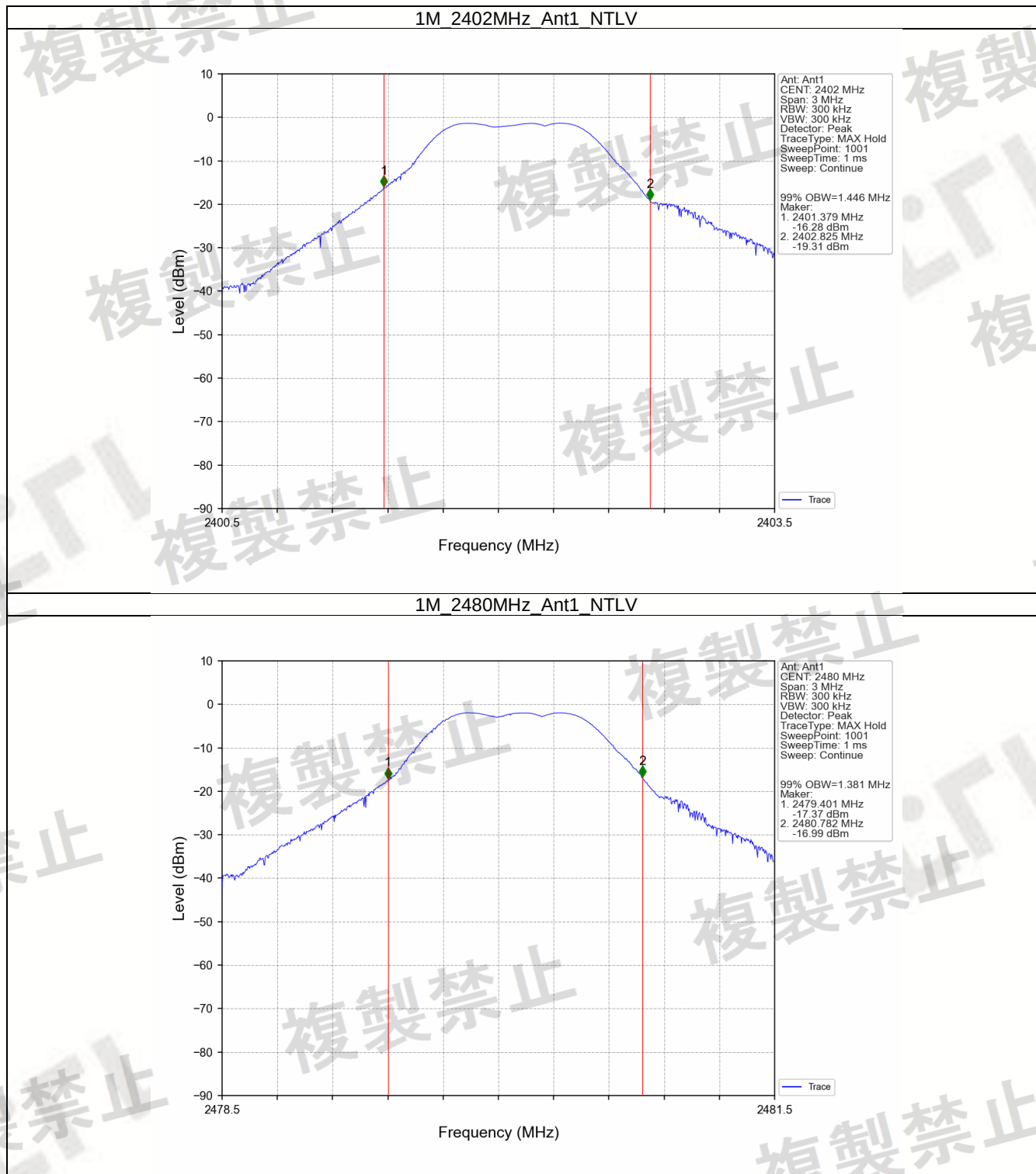
MIC: 220-J11275

2.2 Test Graph

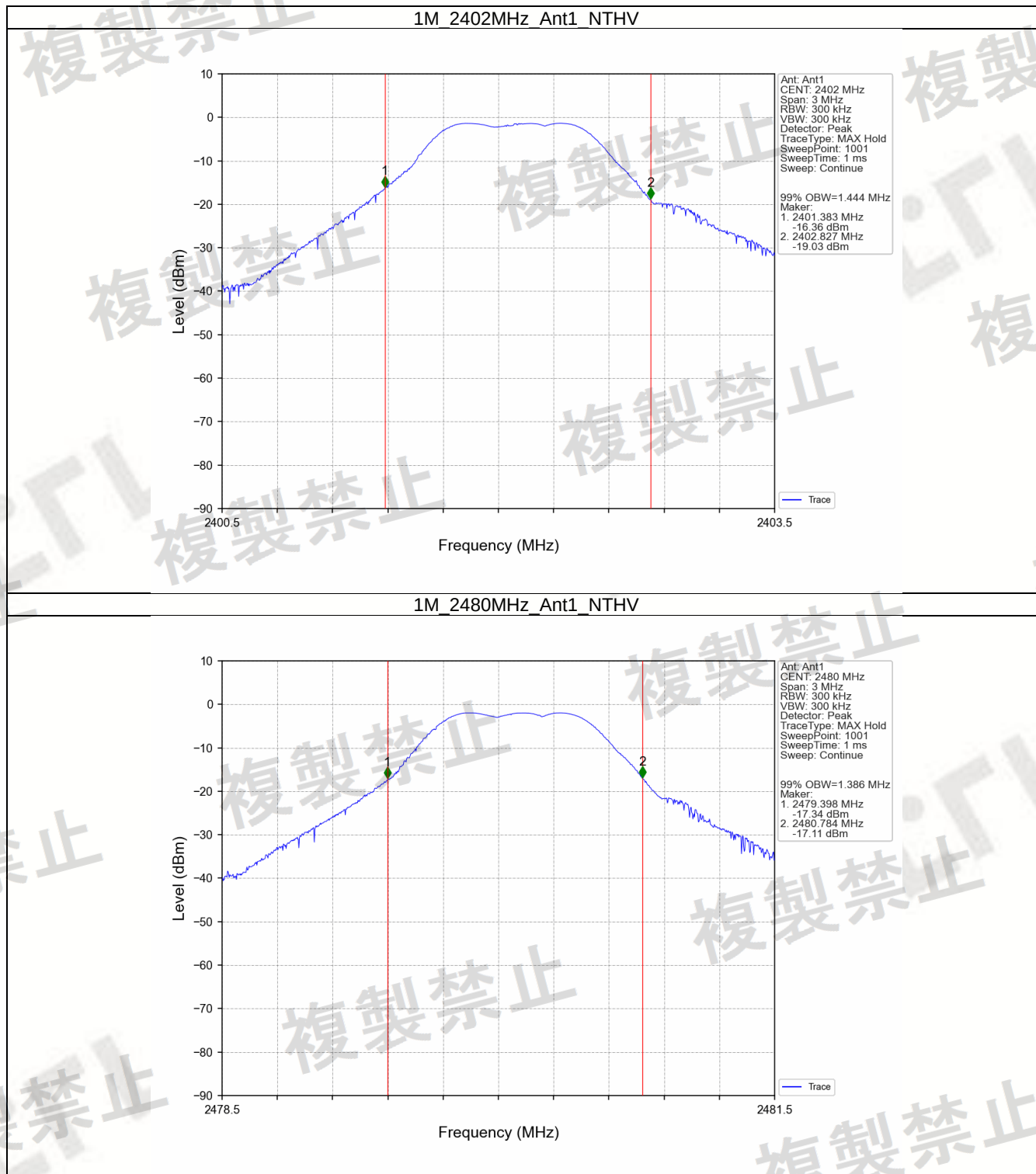
2.2.1 OBW



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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	0.696	<=10.00	0.700	-0.57	<=20	Pass
			2480	1	0.589	<=10.00	0.590	-0.17	<=20	Pass
NTLV	1M	SISO	2402	1	0.691	<=10.00	0.690	0.14	<=20	Pass
			2480	1	0.594	<=10.00	0.590	0.68	<=20	Pass
NTHV	1M	SISO	2402	1	0.696	<=10.00	0.700	-0.57	<=20	Pass
			2480	1	0.590	<=10.00	0.590	0.00	<=20	Pass

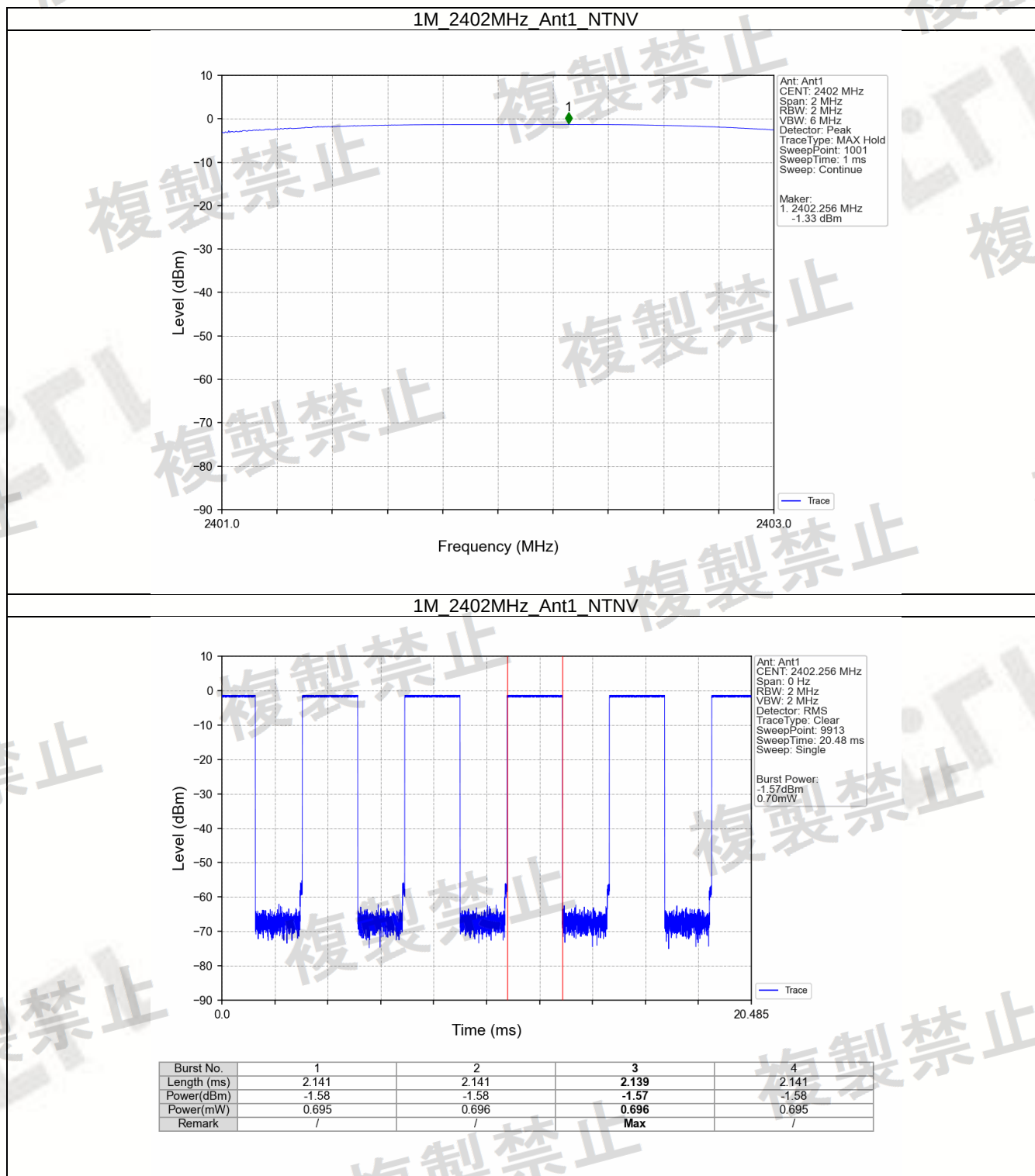
3.1.2 EIRP

ENV	Mode	TX Type	Frequency (MHz)	ANT	Gain (dBi)	EIRP (dBm)		Verdict
						Result	Limit	
NTNV	1M	SISO	2402	1	1.11	-0.46	<=12.14	Pass
			2480	1	1.11	-1.19	<=12.14	Pass
NTLV	1M	SISO	2402	1	1.11	-0.50	<=12.14	Pass
			2480	1	1.11	-1.16	<=12.14	Pass
NTHV	1M	SISO	2402	1	1.11	-0.46	<=12.14	Pass
			2480	1	1.11	-1.18	<=12.14	Pass

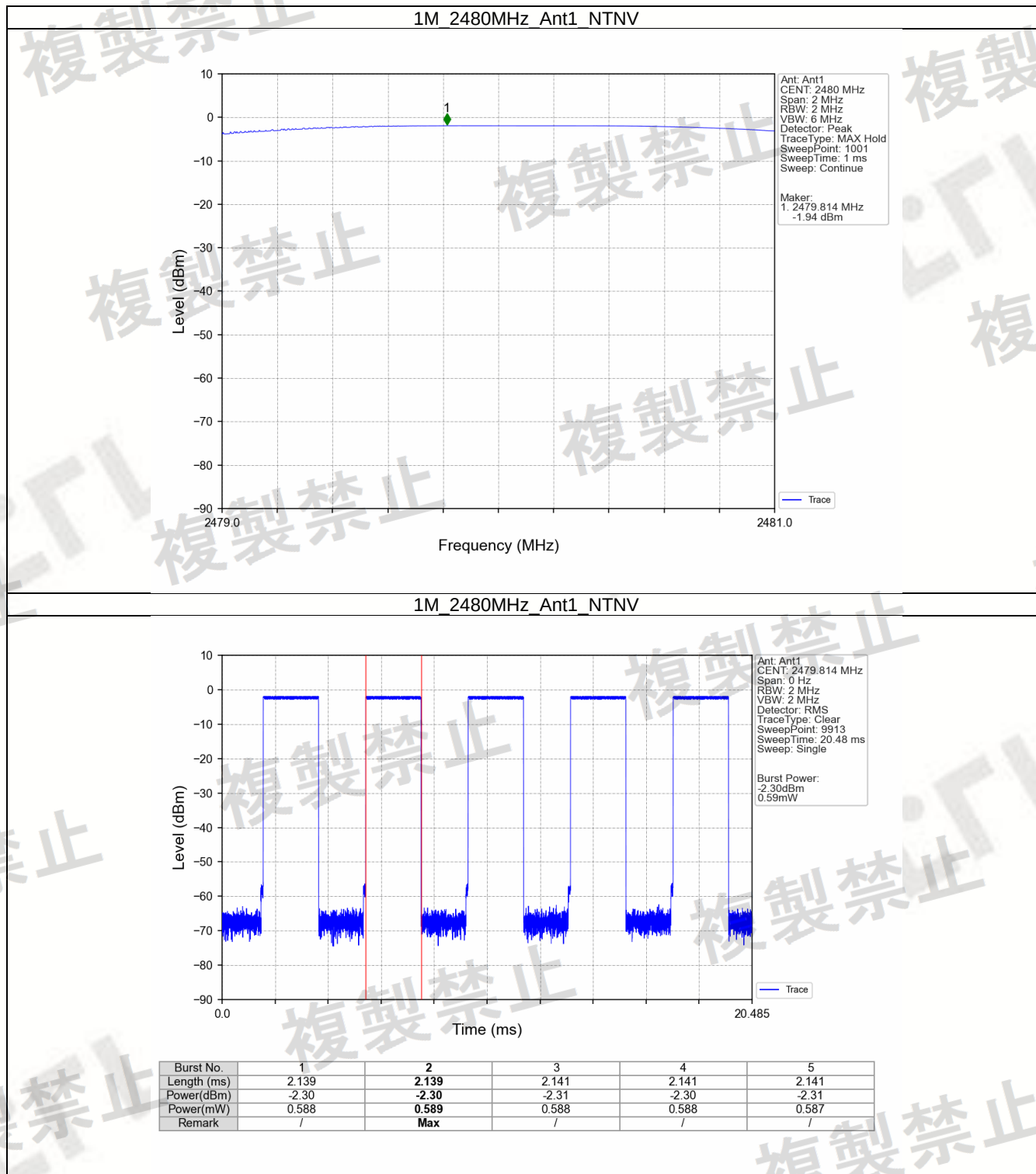
MIC: 220-J11275

3.2 Test Graph

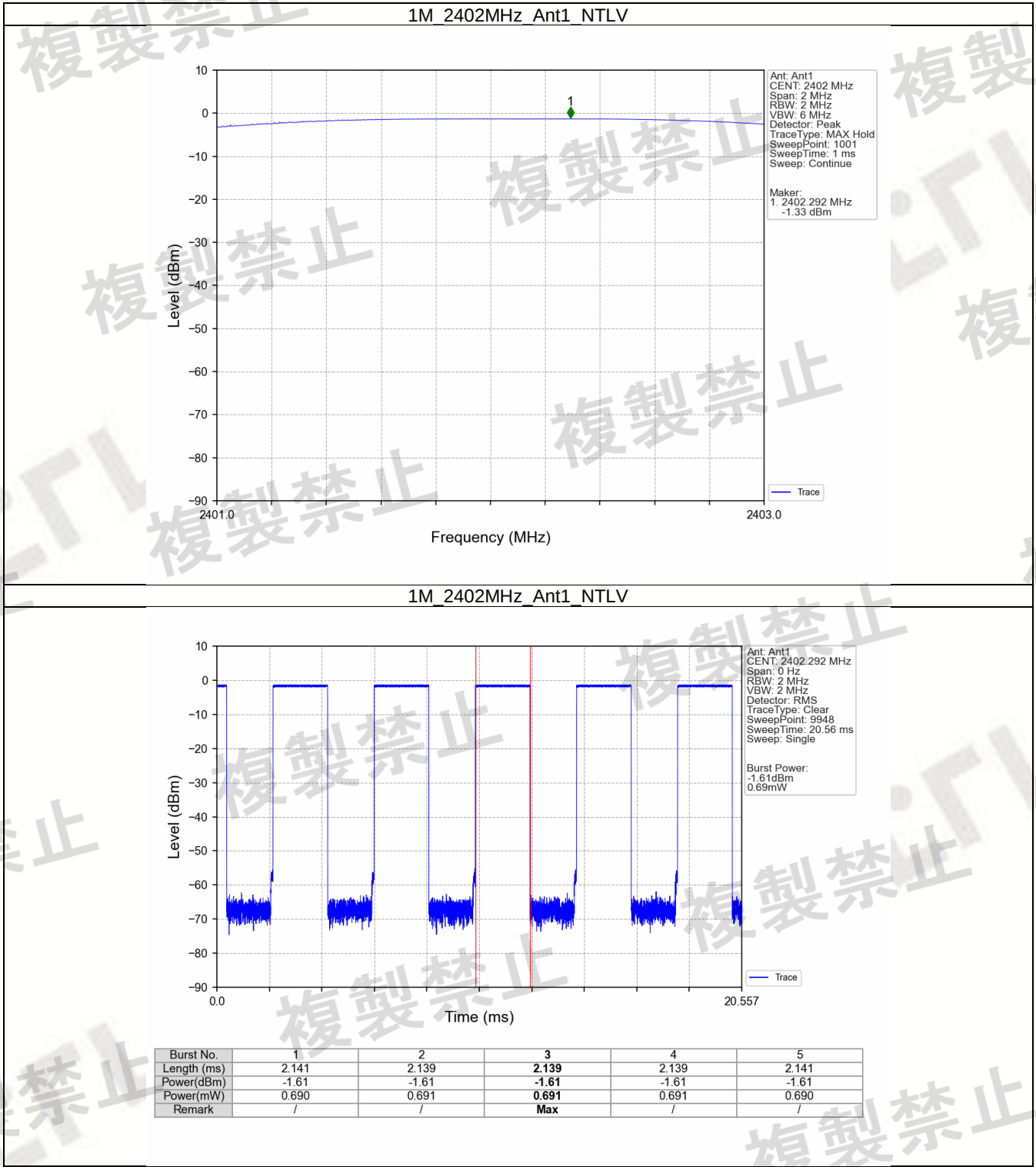
3.2.1 Power



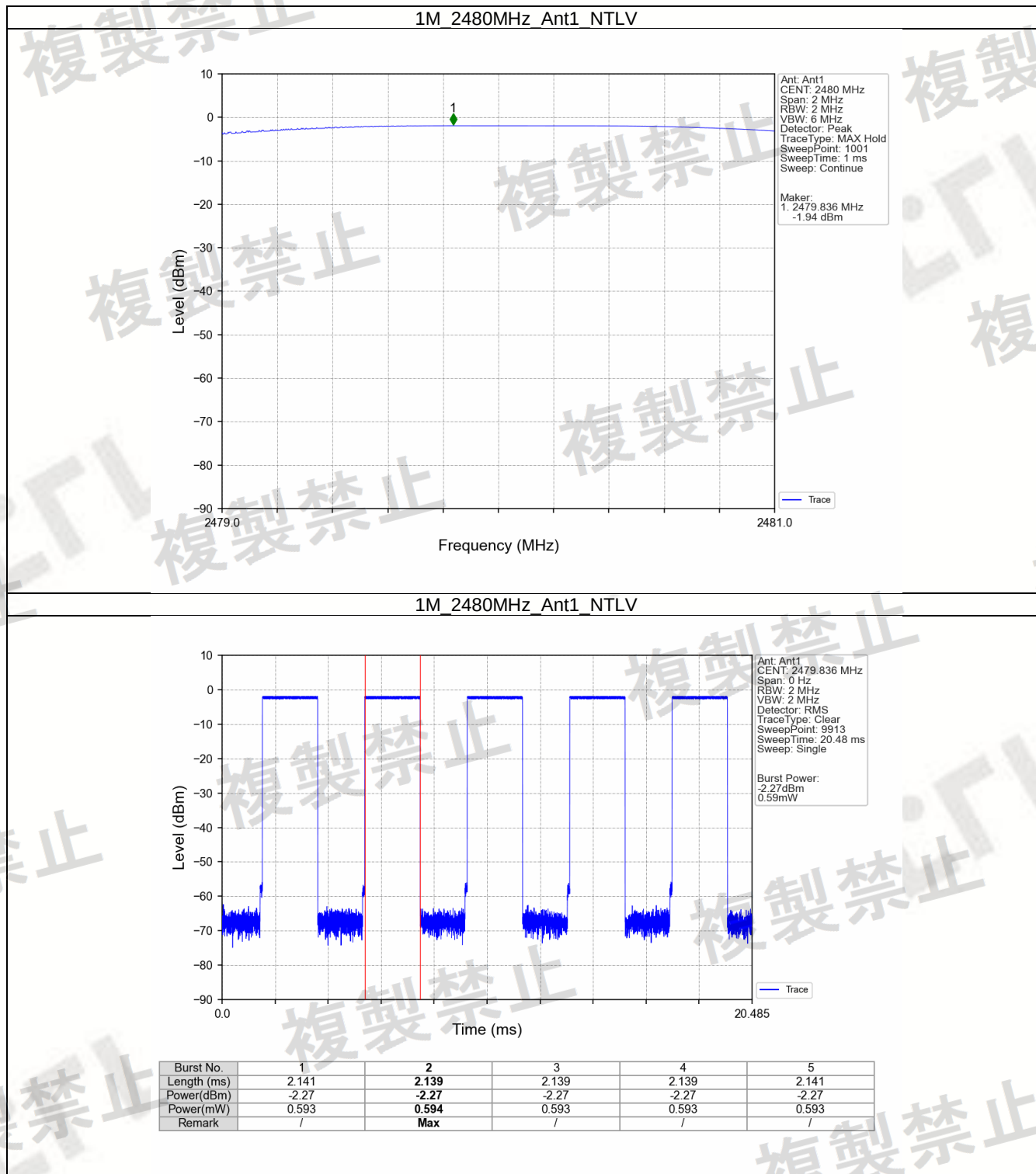
MIC: 220-J11275



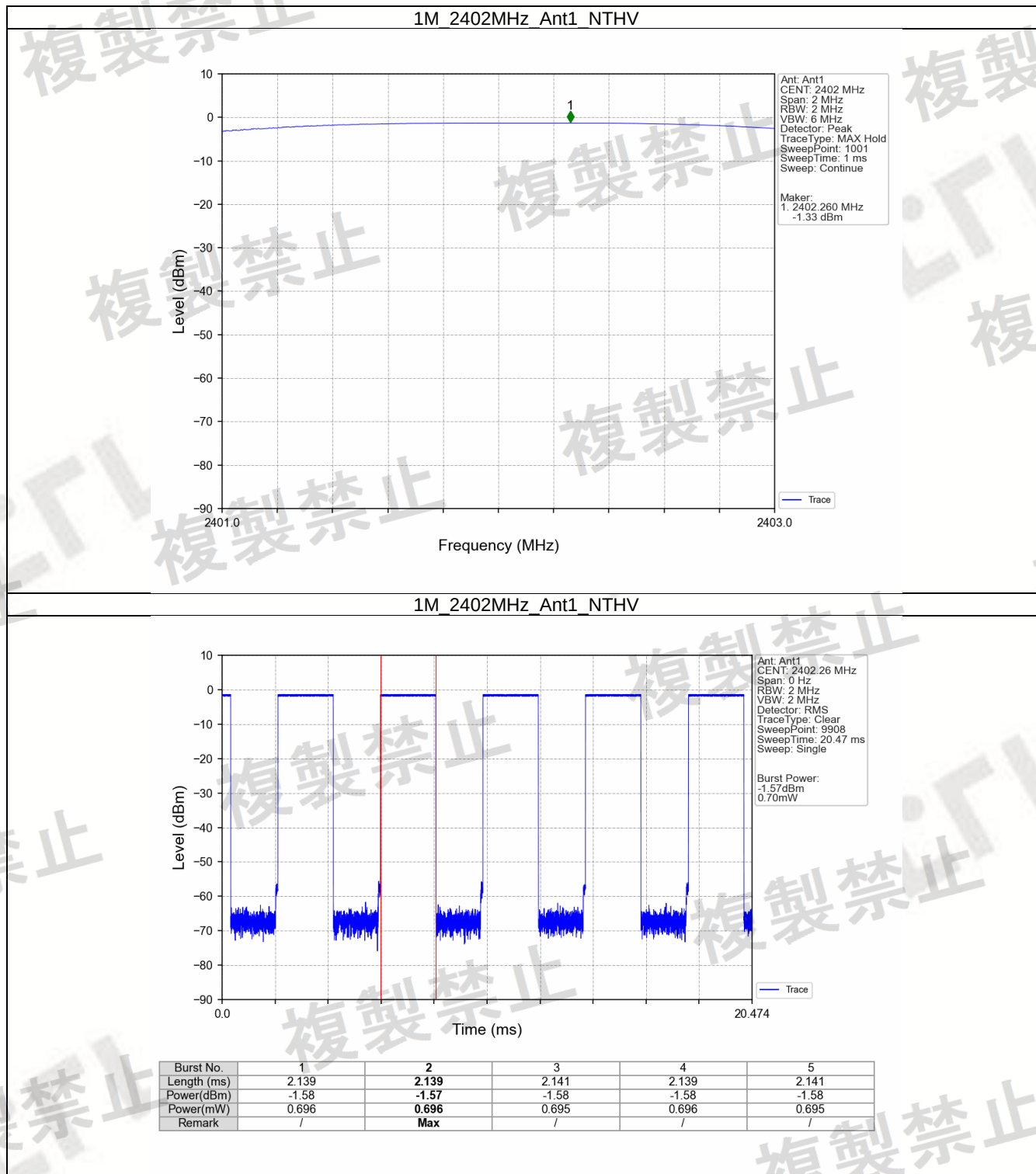
MIC: 220-J11275



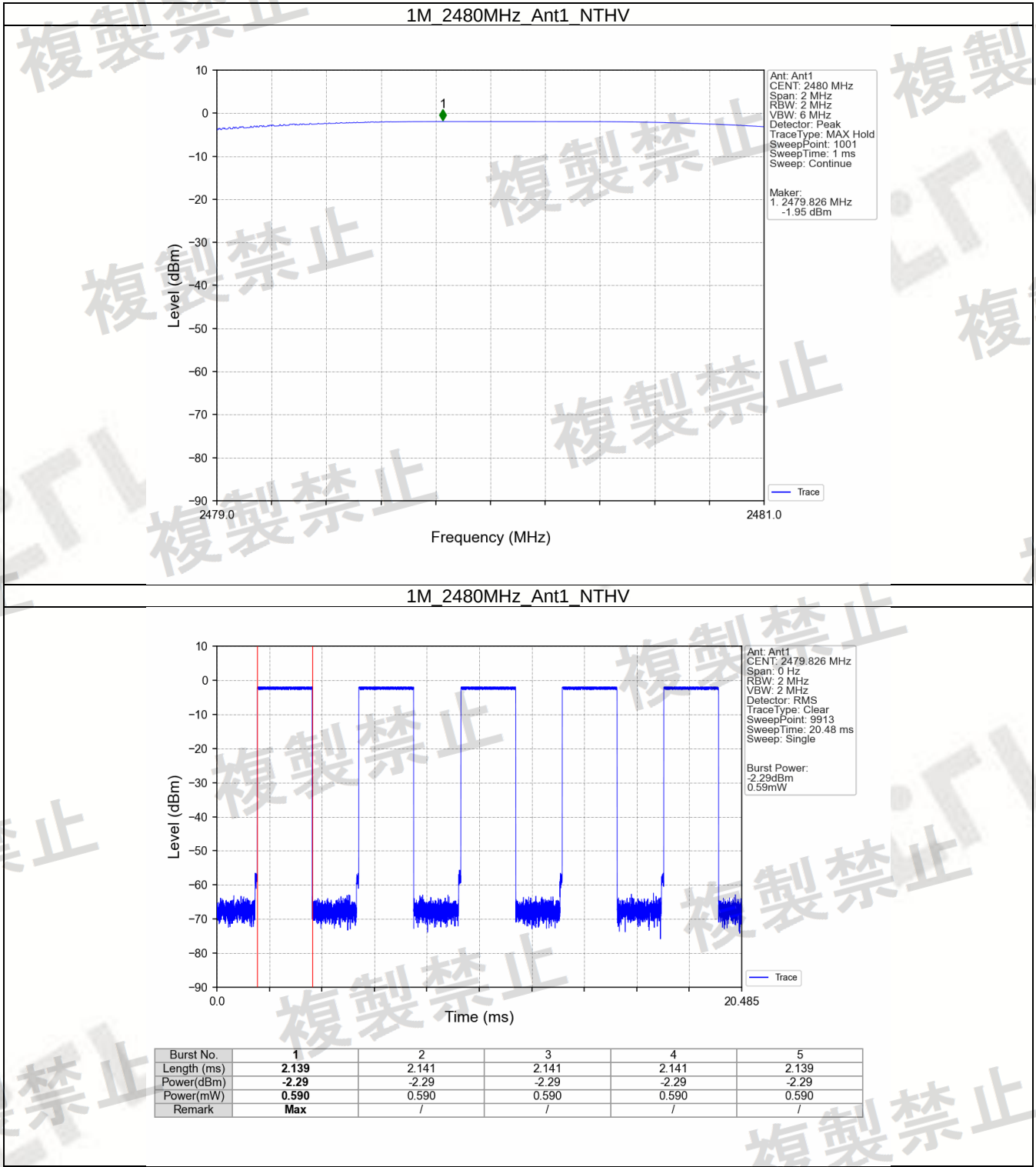
MIC: 220-J11275



MIC: 220-J11275



MIC: 220-J11275



MIC: 220-J11275

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	2372	-42.47	0.057	/	/	2.5	Pass
				2387	2400	2394.501	-31.36	0.731	/	/	25	Pass
				2483.5	2496.5	2490.793	-48.04	0.016	/	/	25	Pass
				2496.5	12500	4805	-41.81	0.066	/	/	2.5	Pass
		2480	1	30	2387	2338	-49.59	0.011	/	/	2.5	Pass
				2387	2400	2391.836	-44.70	0.034	/	/	25	Pass
				2483.5	2496.5	2488.375	-32.14	0.611	/	/	25	Pass
				2496.5	12500	4960.5	-41.32	0.074	/	/	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	2379	-40.30	0.093	/	/	2.5	Pass
				2387	2400	2394.319	-31.45	0.716	/	/	25	Pass
				2483.5	2496.5	2490.585	-48.52	0.014	/	/	25	Pass
				2496.5	12500	4804.5	-41.63	0.069	/	/	2.5	Pass
		2480	1	30	2387	2361	-46.66	0.022	/	/	2.5	Pass
				2387	2400	2391.758	-44.83	0.033	/	/	25	Pass
				2483.5	2496.5	2488.102	-32.05	0.624	/	/	25	Pass
				2496.5	12500	4961	-41.23	0.075	/	/	2.5	Pass

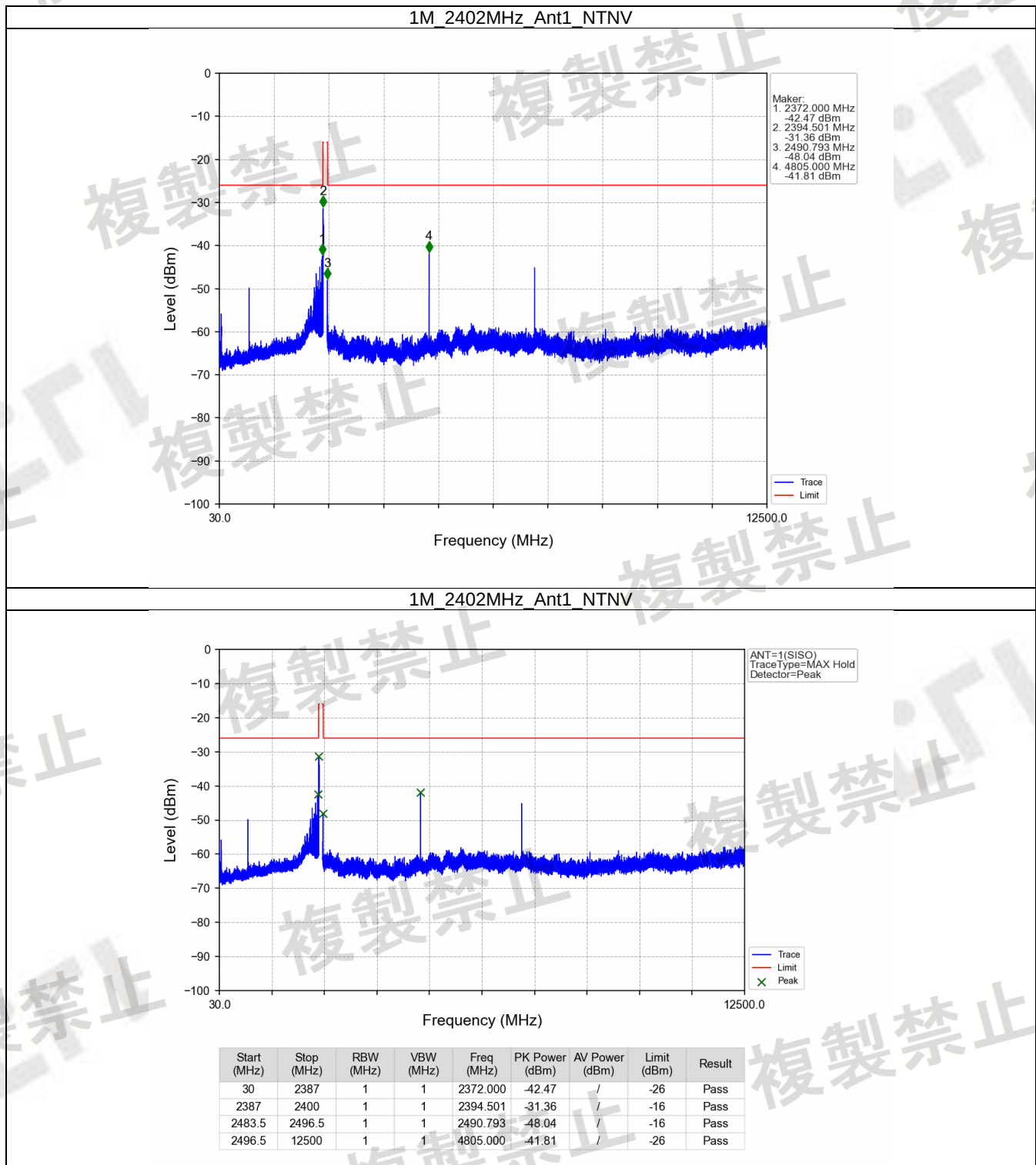
4.1.3 TxSe_NTHV

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	2362	-42.31	0.059	/	/	2.5	Pass
				2387	2400	2394.423	-31.55	0.700	/	/	25	Pass
				2483.5	2496.5	2490.52	-49.02	0.013	/	/	25	Pass
				2496.5	12500	4805	-41.96	0.064	/	/	2.5	Pass
		2480	1	30	2387	2372.5	-48.77	0.013	/	/	2.5	Pass
				2387	2400	2391.836	-44.90	0.032	/	/	25	Pass
				2483.5	2496.5	2488.063	-32.13	0.612	/	/	25	Pass
				2496.5	12500	4961	-41.24	0.075	/	/	2.5	Pass

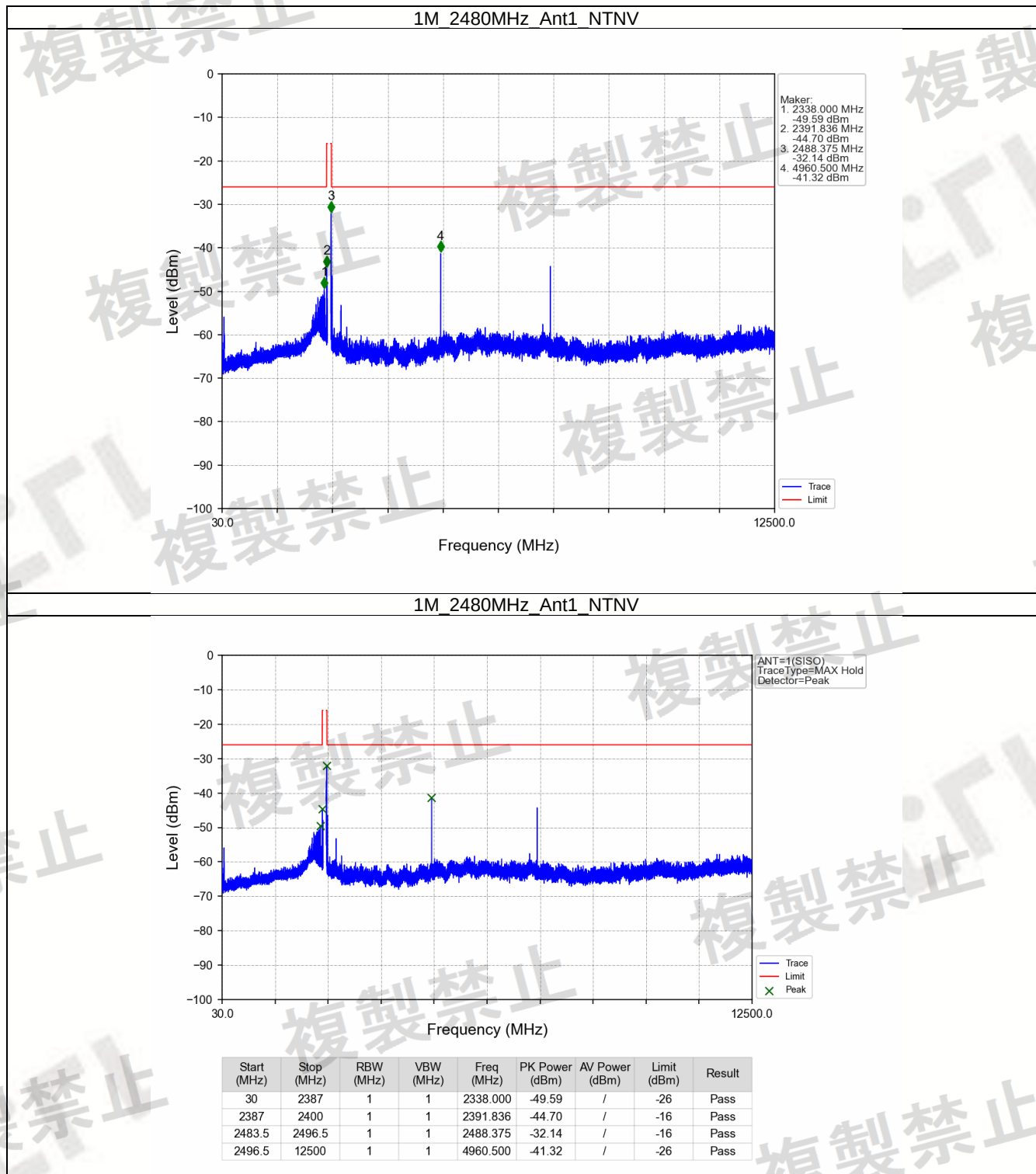
MIC: 220-J11275

4.2 Test Graph

4.2.1 TxSe_NTNV

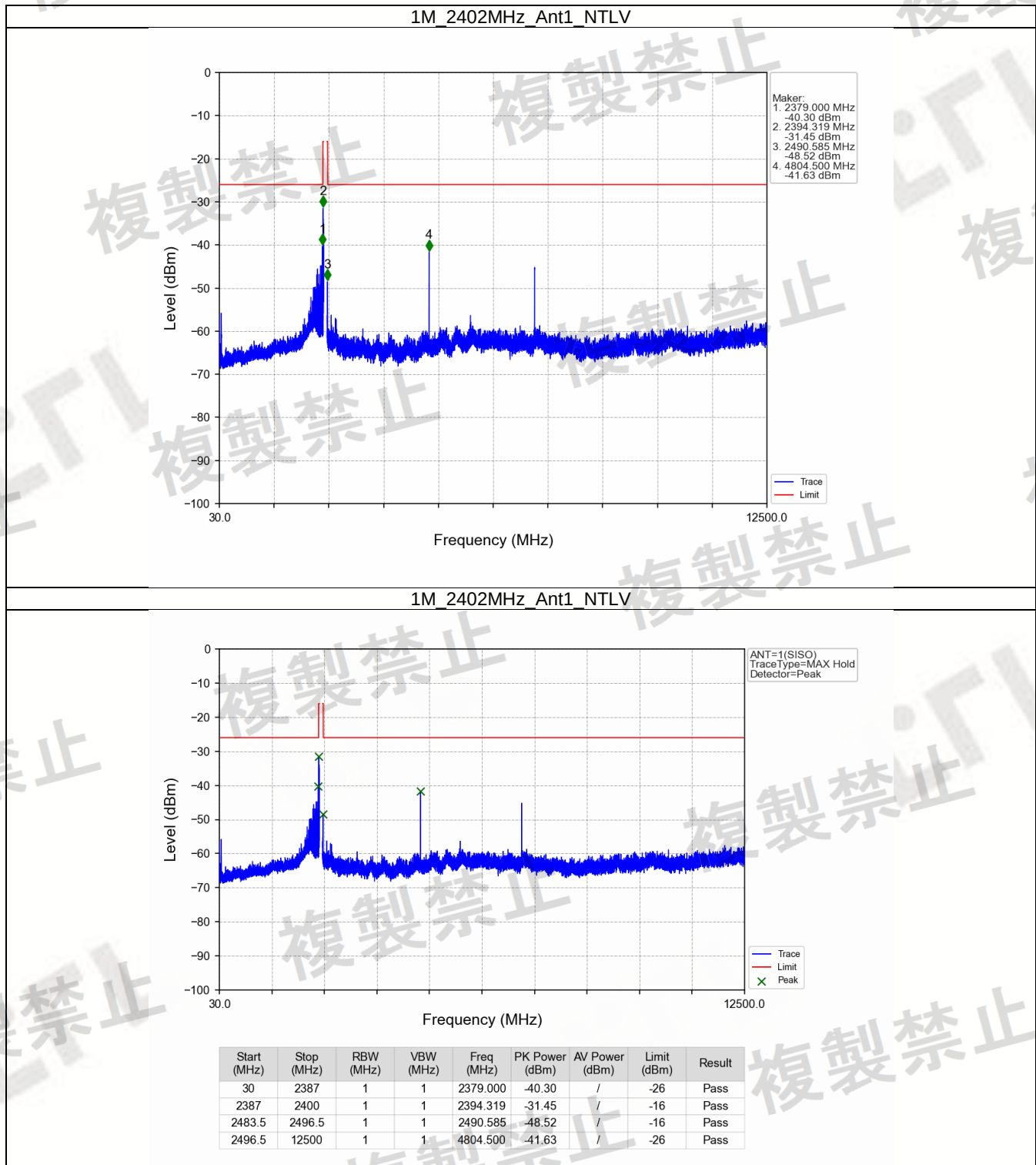


MIC: 220-J11275

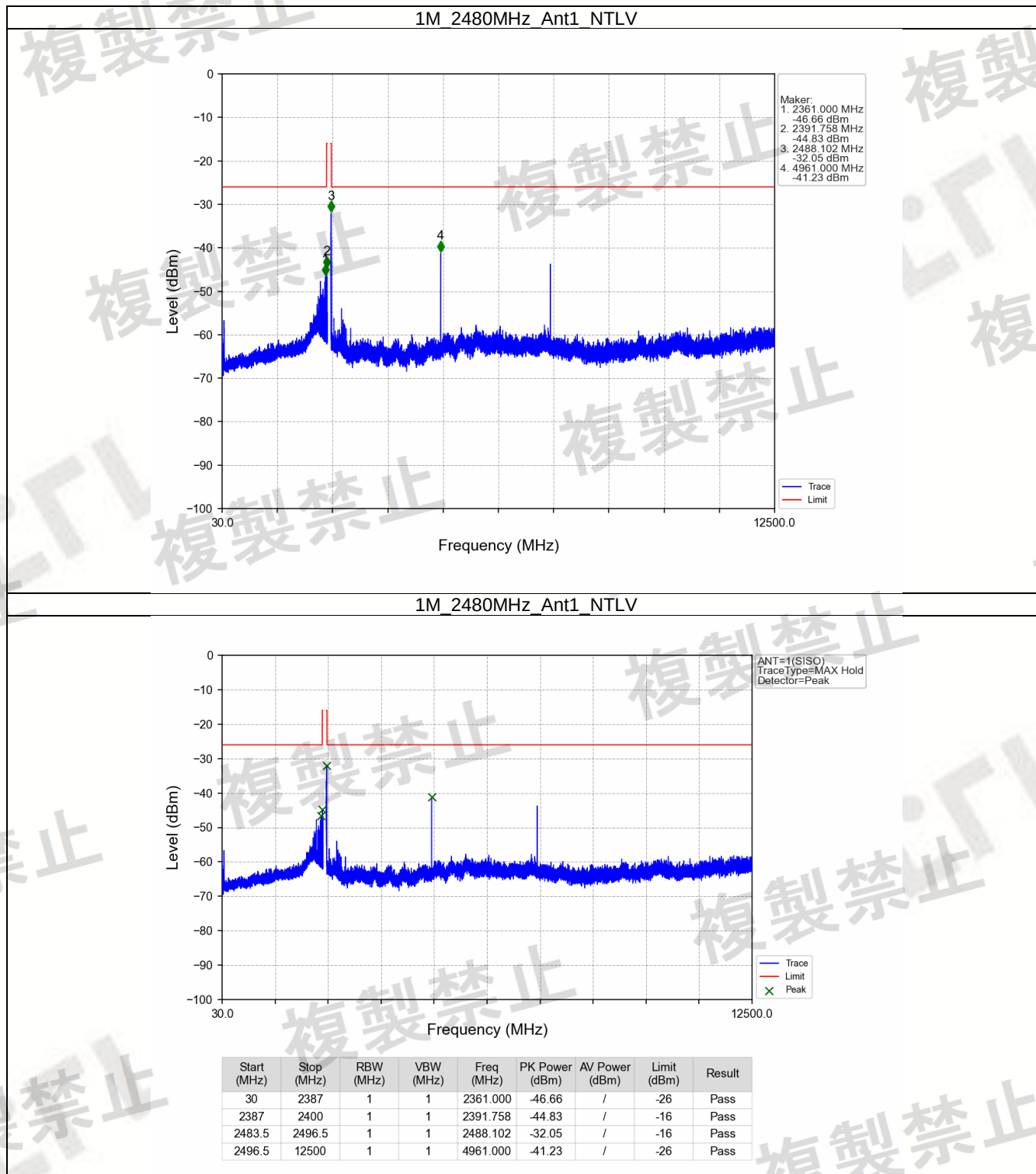


MIC: 220-J11275

4.2.2 TxSe_NTLV

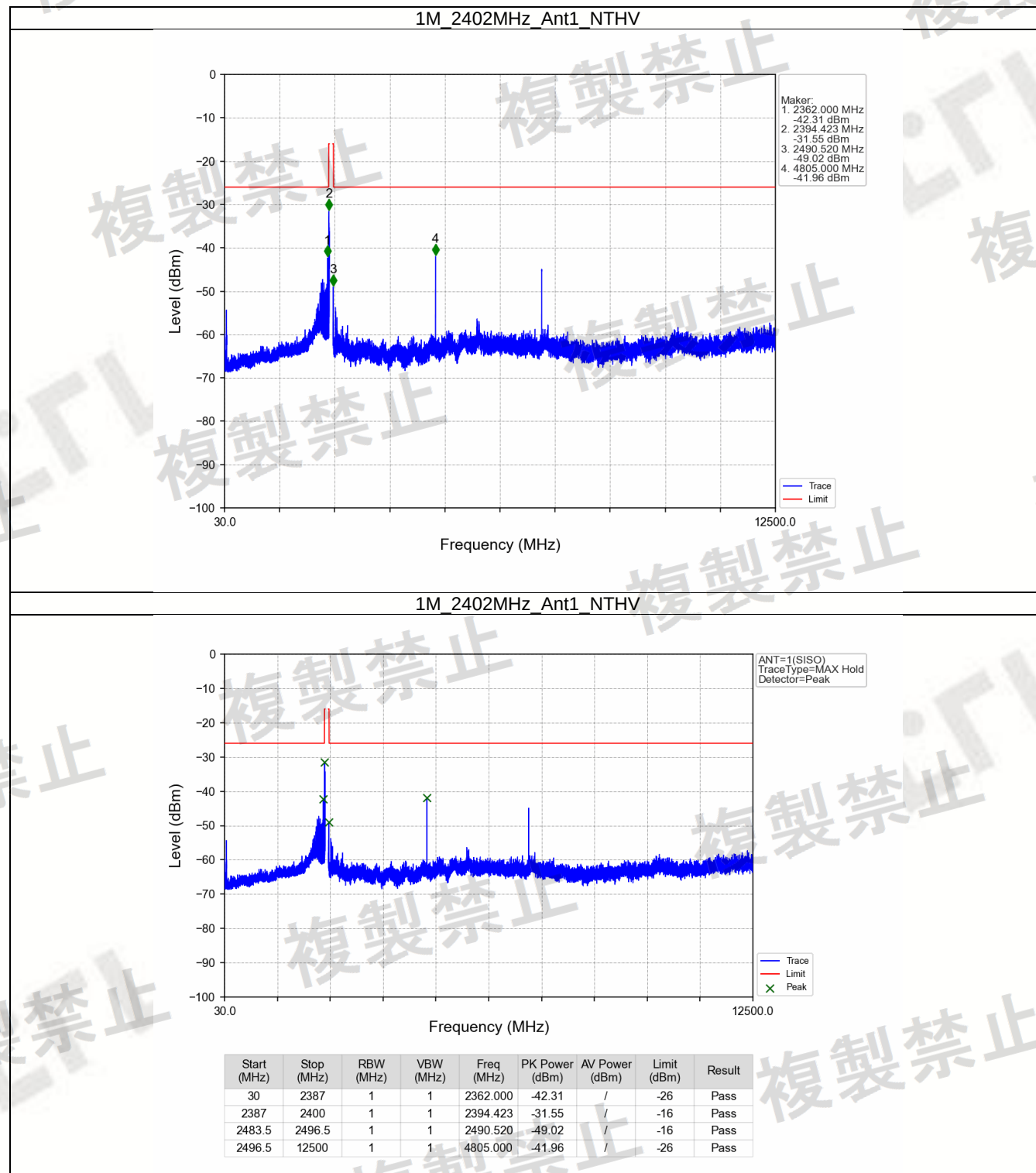


MIC: 220-J11275

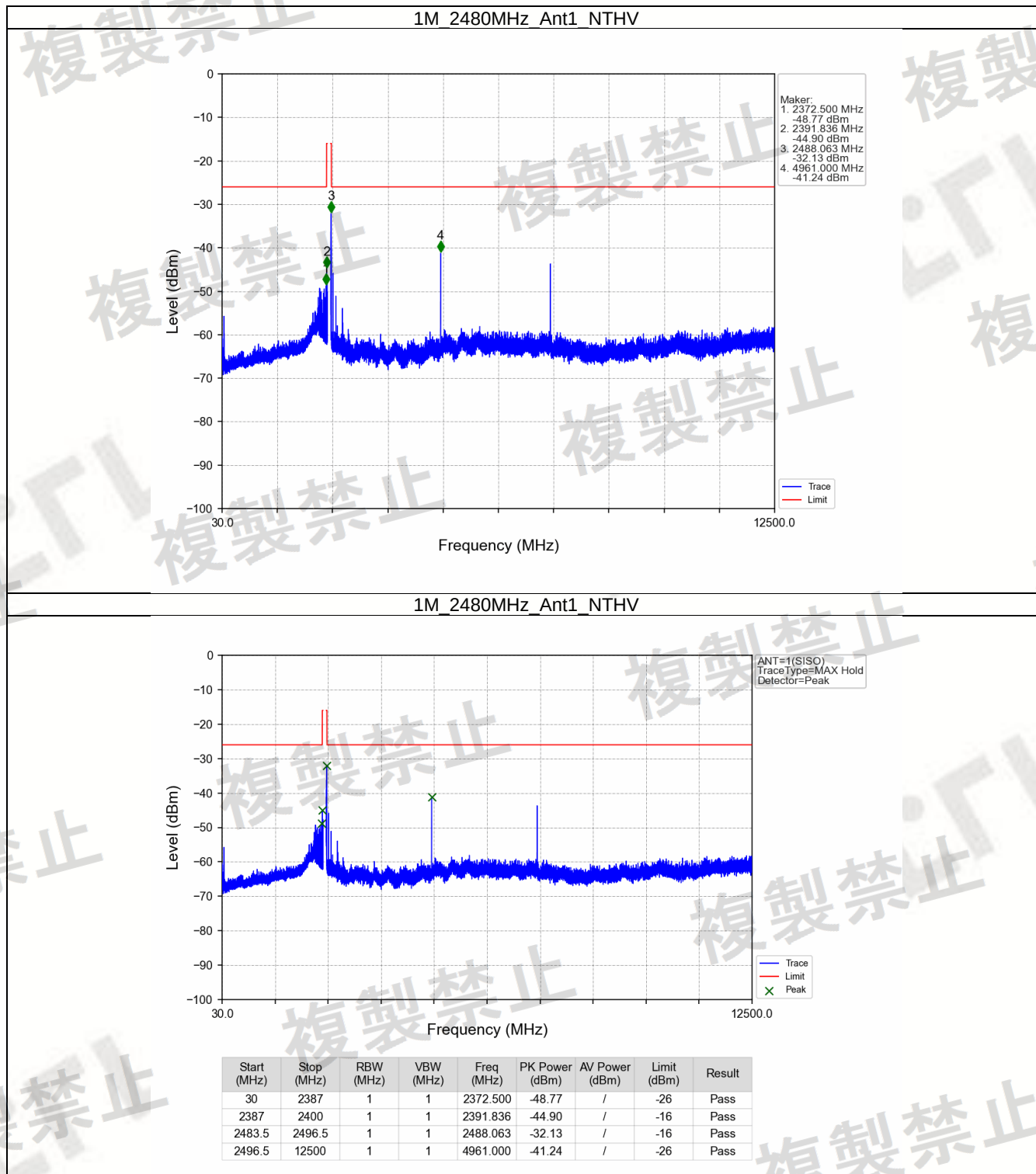


MIC: 220-J11275

4.2.3 TxSe_NTHV



MIC: 220-J11275



MIC: 220-J11275

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	75.05	-69.58	0.110	/	/	4	Pass
				1000	12500	2416.5	-61.32	0.738	/	/	20	Pass
		2480	1	30	1000	75	-70.34	0.092	/	/	4	Pass
				1000	12500	2411.5	-55.85	2.600	-76.51	0.022	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	75.1	-69.76	0.106	/	/	4	Pass
				1000	12500	2416.5	-57.45	1.799	/	/	20	Pass
		2480	1	30	1000	75.1	-69.26	0.119	/	/	4	Pass
				1000	12500	2411.5	-57.55	1.758	/	/	20	Pass

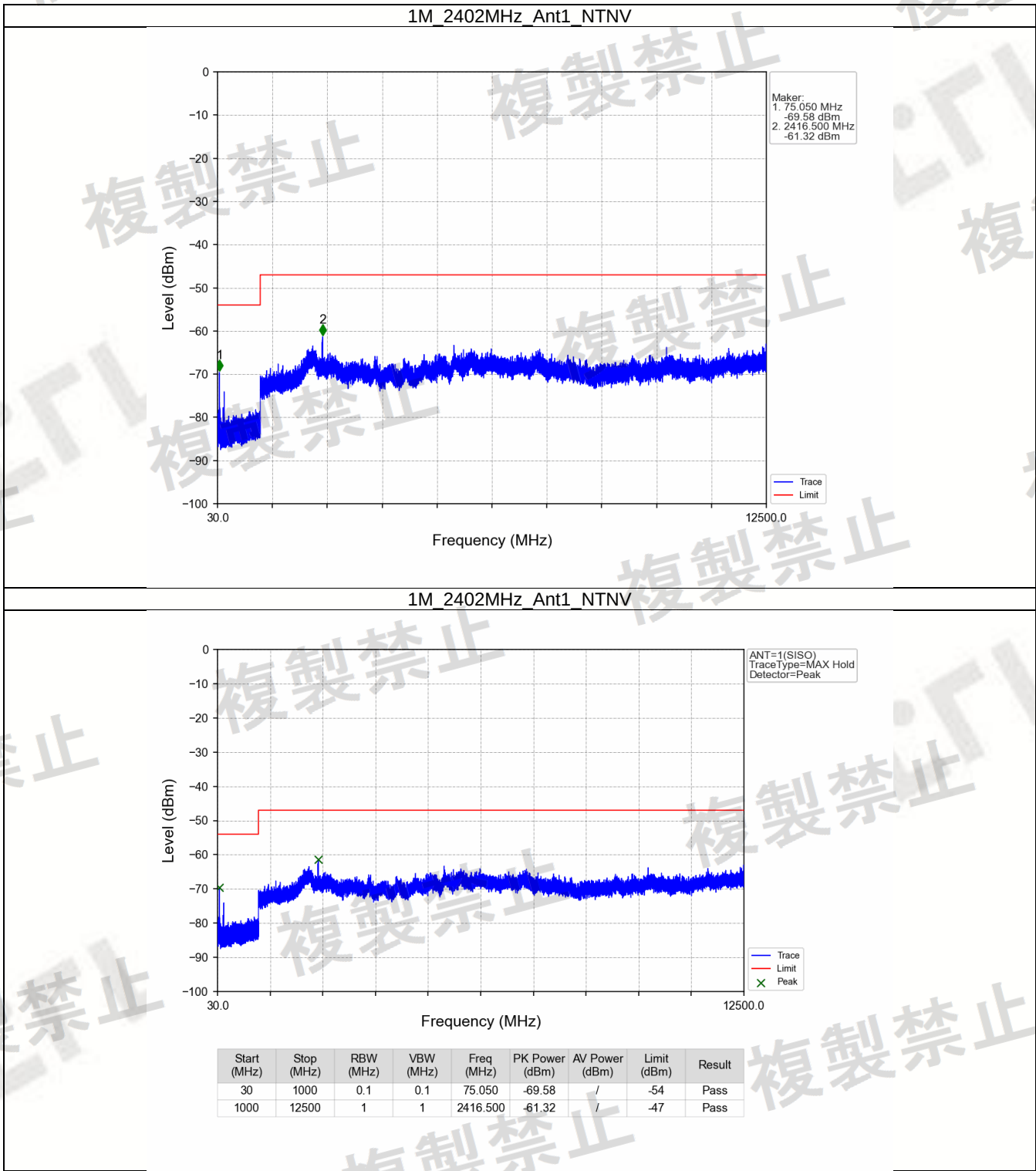
5.1.3 RxSe_NTHV

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	75.05	-70.11	0.097	/	/	4	Pass
				1000	12500	2408.5	-57.99	1.589	/	/	20	Pass
		2480	1	30	1000	75.05	-69.93	0.102	/	/	4	Pass
				1000	12500	2411	-61.86	0.652	/	/	20	Pass

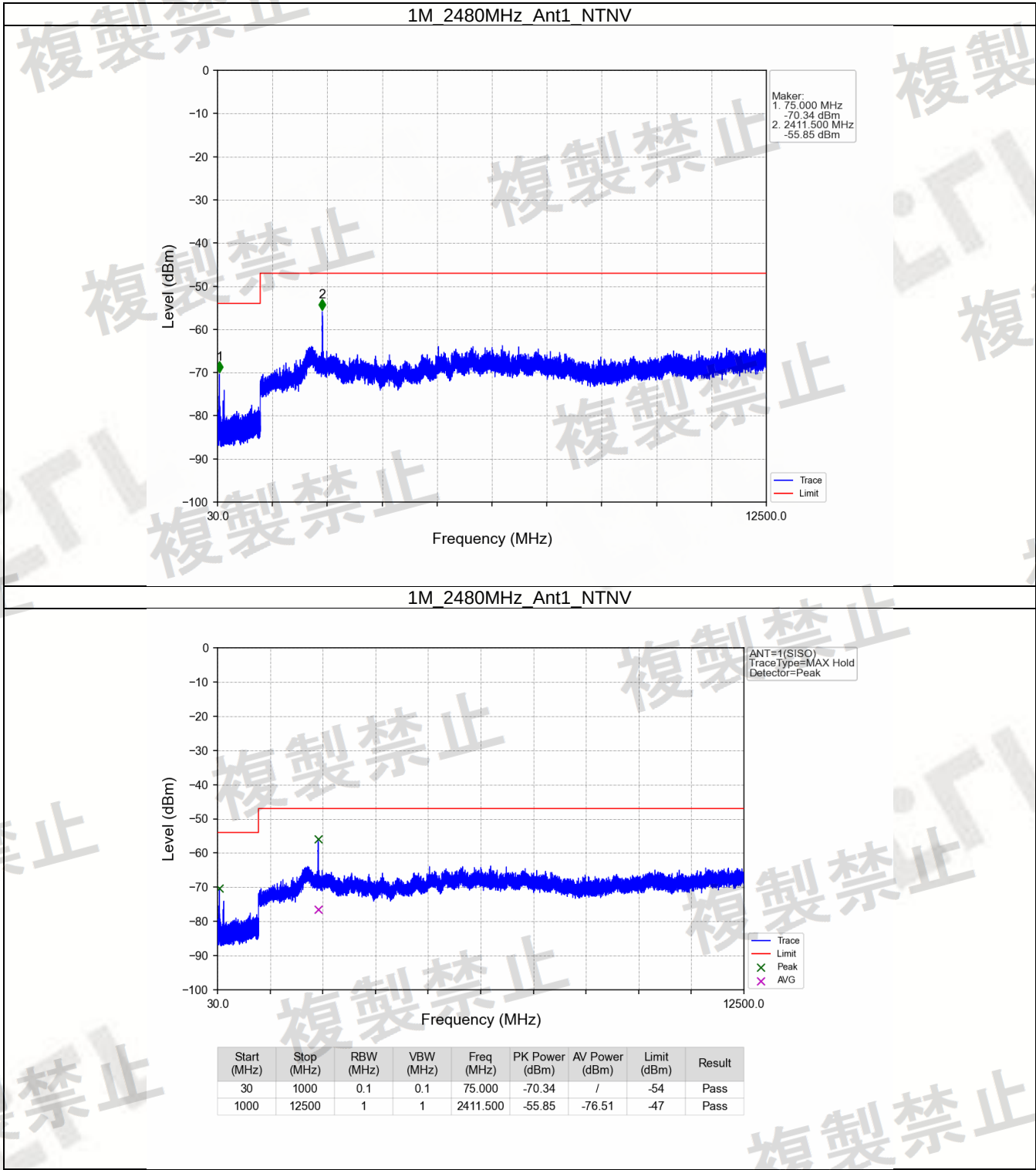
MIC: 220-J11275

5.2 Test Graph

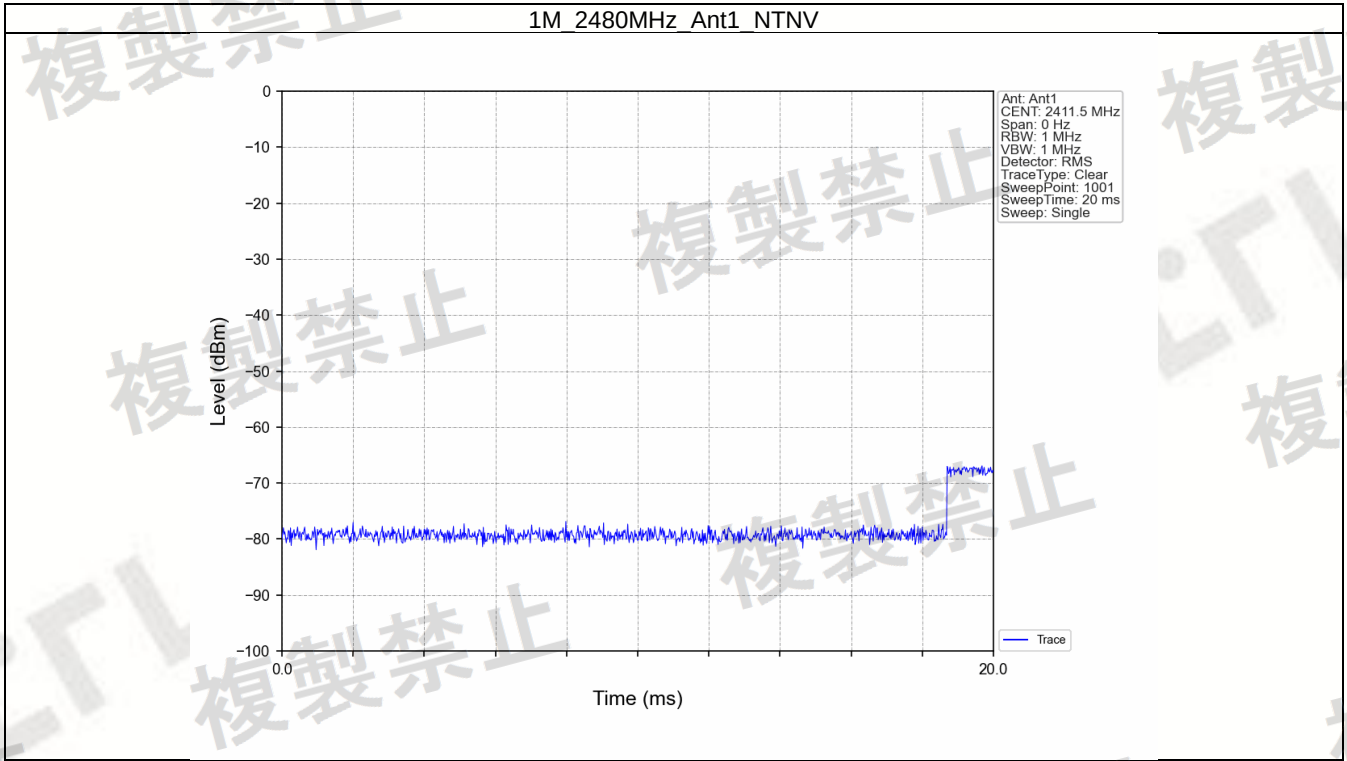
5.2.1 RxSe_NTNV



MIC: 220-J11275

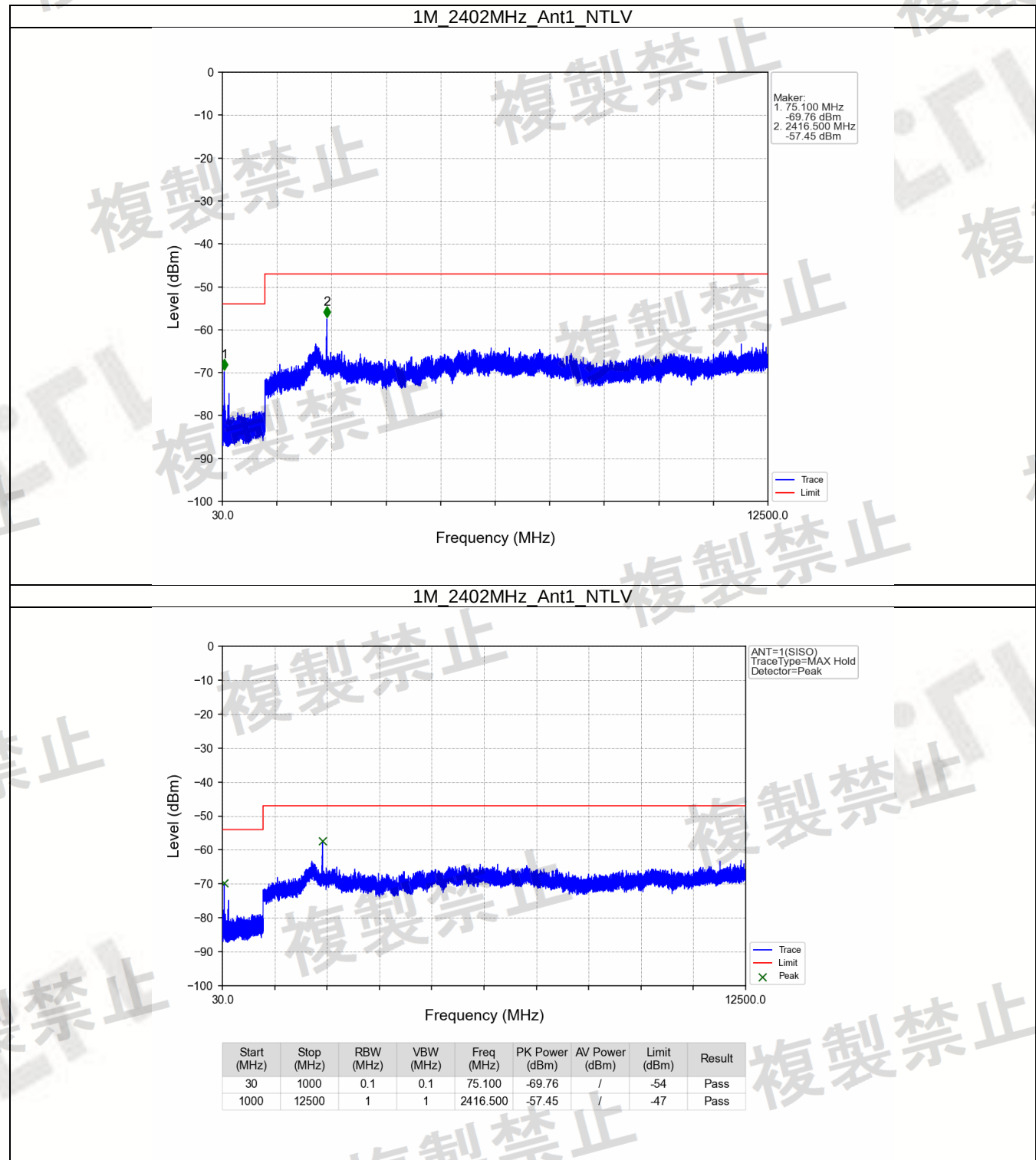


MIC: 220-J11275

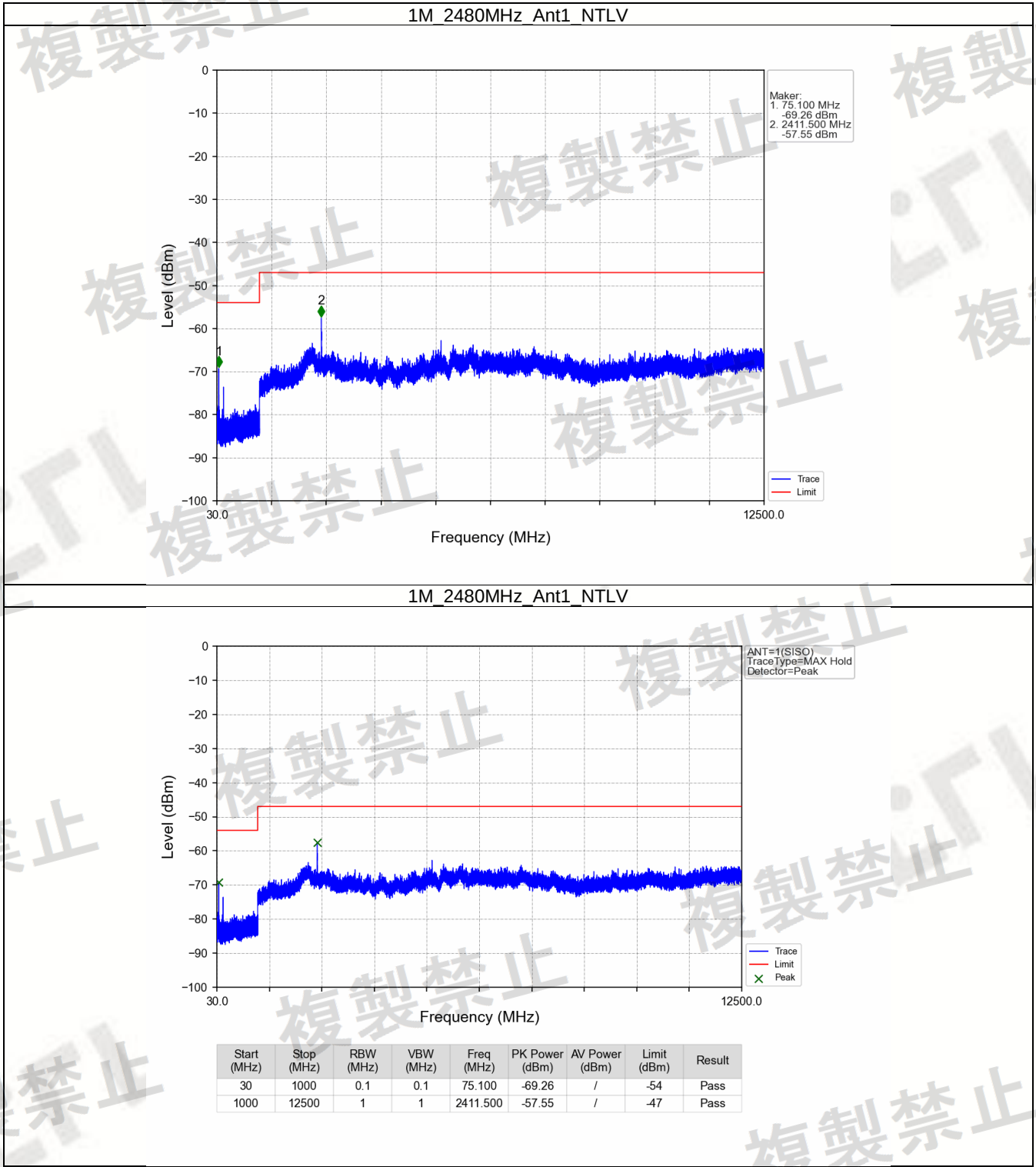


MIC: 220-J11275

5.2.2 RxSe_NTLV

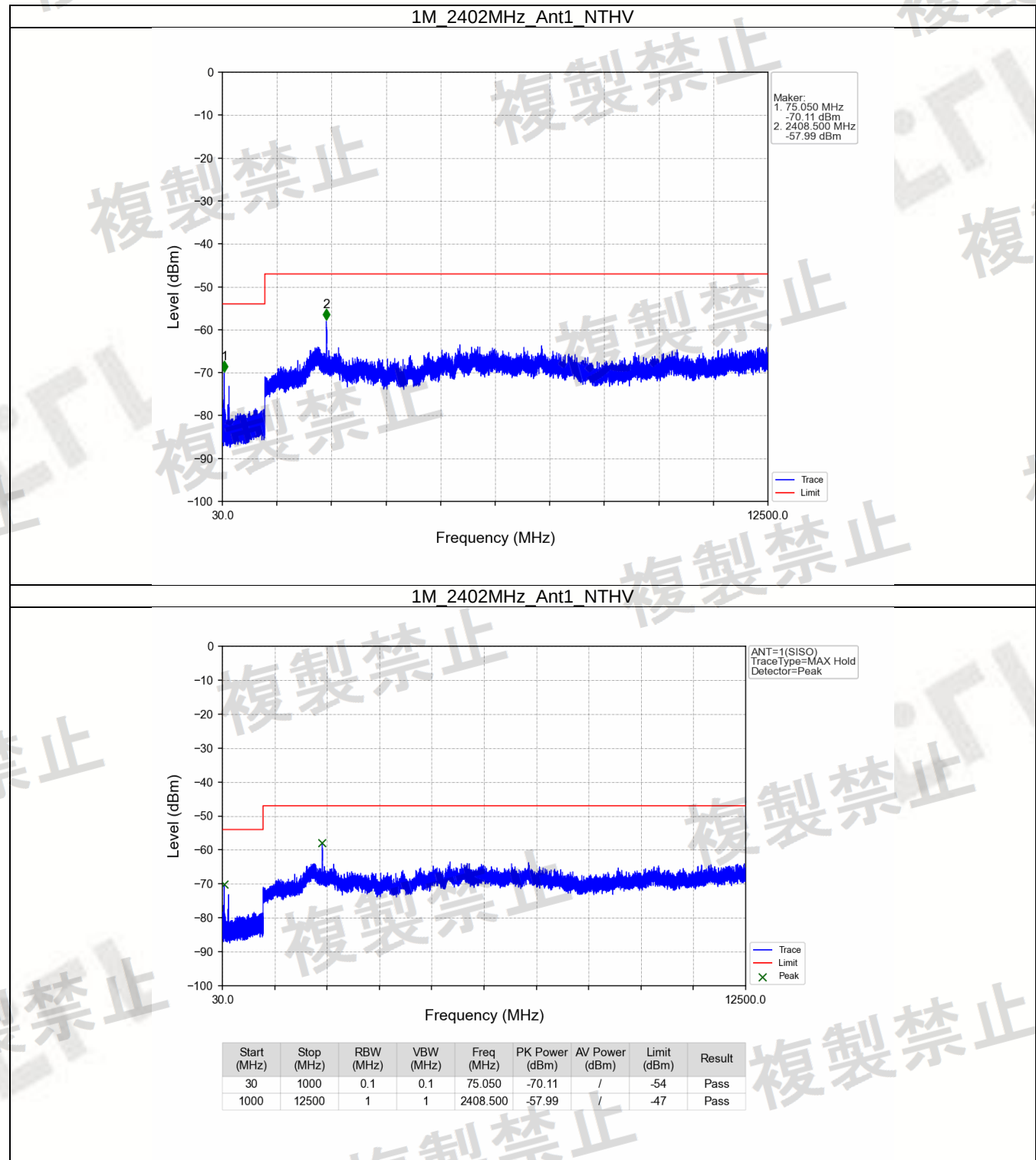


MIC: 220-J11275



MIC: 220-J11275

5.2.3 RxSe_NTHV



MIC: 220-J11275

