



CTC Laboratories, Inc.

TEST REPORT

Report No. : **CTC2025746202**

Applicant : **Shenzhen Skyworth Digital Technology Co.,LTD.**

Address : 14/F, Unit A, Skyworth Building, Gaoxin Ave.1.S., Nanshan District, Shenzhen, China

Manufacturer : Shenzhen Skyworth Digital Technology Co.,LTD.

Address : 14/F, Unit A, Skyworth Building, Gaoxin Ave.1.S., Nanshan District, Shenzhen, China

Product Name : **Wi-Fi Camera**

Trade Mark : SKYWORTH

Model/Type reference : LC2418

Listed Model(s) : SW4K, H80X Pro, H80X PRO

Standard : **Article 2, Paragraph 1, Item 19**

Test Report Form No : CTC-TR-070_A2

Master TRF : Dated 2025-05-12

Date of receipt of test sample : Nov. 20, 2025

Date of testing : Nov. 20, 2025 to Dec. 19, 2025

Date of issue : Dec. 22, 2025

Result : **PASS**

Compiled by:
(Printed name + signature) Jim Jiang

Supervised by:
(Printed name + signature) Eric Zhang

Approved by:
(Printed name + signature) Totti Zhao

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CTC Laboratories, Inc.

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TRF No: CTC-TR-070_A2

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Table of Contents

Page

1. SUMMARY	3
1.1. TEST STANDARDS	3
1.2. REPORT VERSION	3
1.3. TEST DESCRIPTION	3
1.4. TEST FACILITY	4
1.5. MEASUREMENT UNCERTAINTY	4
2. GENERAL INFORMATION	5
2.1. ENVIRONMENTAL CONDITIONS	5
2.2. CLIENT INFORMATION	5
2.3. GENERAL DESCRIPTION OF EUT	6
2.4. DESCRIPTION OF TEST MODES	7
2.5. MEASUREMENT INSTRUMENTS LIST	8
3. TEST CONDITIONS AND RESULTS	9
3.1. FREQUENCY ERROR	9
3.2. ANTENNA POWER	12
3.3. OCCUPIED BANDWIDTH	14
3.4. SPREADING BANDWIDTH	21
3.5. TRANSMITTER SPURIOUS EMISSION STRENGTH AND UNWANTED EMISSION INTENSITY	23
3.6. RECEIVER SPURIOUS EMISSION AND UNWANTED EMISSION INTENSITY	58
3.7. CONSTRUCTION PROTECTION CONFIRMATION METHOD	72
3.8. CARRIER SENSE CAPABILITY	73
3.9. INTERFERENCE PREVENTION FUNCTION	74
3.10. CONDITION FOR VOLTAGE STABILIZATION	75
3.11. TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH) MEASUREMENT	76



1. SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

[Test method which is equal to Appendix No.43 of MIC Notification No 88.](#)

1.2. Report Version

Revised No.	Report No.	Date of issue	Description
01	CTC2025746202	Dec. 22, 2025	Original

1.3. Test Description

Test Item	Result	Test Engineer
Frequency Error	Pass	Jim Jiang
Occupied Bandwidth and Spreading Bandwidth	Pass	Jim Jiang
Transmitter Spurious Emission and Unwanted Emission Intensity	Pass	Jim Jiang
Antenna Output Power and Output Power Tolerance	Pass	Jim Jiang
Receiver Spurious Emission and Unwanted Emission Intensity	Pass	Jim Jiang
Radio Interference Prevention Capability	Pass	Jim Jiang
Frequency Hopping Dwell Time	N/A Note 1	N/A
Carrier Sense Capability	Pass	Jim Jiang
Construction Protection Confirmation	Pass	Jim Jiang
Transmission Radiation Angle Width (3dB Beamwidth)	Pass	Jim Jiang

N/A Note 1: Testing is only required OFDM system with occupied frequency bandwidth below 38MHz and exceed 26MHz.



1.4. Test Facility

Address of the test laboratory

CTC Laboratories, Inc.

Add: Room 107, 108, 207, 208, 303 of Building A, Room 101 of Building B, No.7, Lanqing 1st Road, Luhuhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China

Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 951311, Aug 26, 2017.

1.5. Measurement Uncertainty

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR100028-1 [2] and shall correspond to an expansion factor (coverage factor) $K=1.96$ or $K=2$ (which provide confidence levels of respectively 95% and 95.5% in the case where the distributions characterizing the actual measurement uncertainties are normal).

Parameter	Uncertainty
RF frequency	$\pm 6 \times 10^{-7}$
Total RF power, conducted	$\pm 0.8\text{dB}$
Spurious emissions, conducted	$\pm 0.8\text{dB}$
DC and low frequency voltages	$\pm 3\%$
Humidity	$\pm 5\%$
Temperature	$\pm 1^\circ\text{C}$



2. GENERAL INFORMATION

2.1. Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Voltage	Normal Voltage	DC 5.0V
	High Voltage	DC 5.5V
	Low Voltage	DC 4.5V
Other	Normal Temperature/T _{nor} :	23°C
	Relative Humidity	50%
	Air Pressure	101kPa

2.2. Client Information

Applicant:	Shenzhen Skyworth Digital Technology Co.,LTD.
Address:	14/F, Unit A, Skyworth Building, Gaoxin Ave.1.S., Nanshan District, Shenzhen, China
Manufacturer:	Shenzhen Skyworth Digital Technology Co.,LTD.
Address:	14/F, Unit A, Skyworth Building, Gaoxin Ave.1.S., Nanshan District, Shenzhen, China
Factory:	Shenzhen Skyworth Digital Technology Co.,LTD. Baoan Factory
Address:	2-5F, Integration Multi-Storied Building, Skyworth Science and Technology Industrial Park, Tangtou Industrial Zone, Shiyan Street, Baoan District, Shenzhen city, China



2.3. General Description of EUT

Product Name:	Wi-Fi Camera
Trade Mark:	SKYWORTH
Model/Type reference:	LC2418
Listed Model(s):	SW4K, H80X Pro, H80X PRO
Model Different:	All these models are identical in the same PCB, layout, electrical circuit and enclosure. The difference is the model name.
Sample ID:	CTC251120-008-S001
Power supply:	Input: 5V--- 1.5A
Hardware version:	5800-2ALCR42
Software version:	V00001
2.4G WIFI	
Supported type:	802.11b/ 802.11g/ 802.11n(HT20)/ 802.11n(HT40)/802.11ax(HE20)/ 802.11ax(HE40)
Modulation:	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/ n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Number of subcarriers:	Bandwidth 20MHz: 64 Bandwidth 40MHz: 128
Operation frequency:	802.11b/ g/ n(HT20)/ ax(HE20): 2412MHz~2472MHz 802.11n(HT40)/ ax(HE40): 2422MHz~2462MHz
Channel number:	802.11b/ g/ n(HT20)/ ax(HE20): 13 channels 802.11n(HT40)/ ax(HE40): 9 channels
Antenna type:	PIFA Antenna
Antenna gain:	1.5dBi



2.4. Description of Test Modes

The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing.

Operation Frequency List 2.4G Band WIFI:

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13	2472
7	2442		

Note: The 802.11b/802.11g/802.11n(HT20)/802.11ax(HE20) were selected 1/7/13 channel to perform the test, 802.11n(HT40) /802.11ax(HE40) were selected 3/7/11 channel to perform the test.

Operation Mode:

802.11b	IEEE 802.11b with data rate of 1Mbps
802.11g	IEEE 802.11g with data rate of 6Mbps
802.11n(HT20)	IEEE 802.11n20 with data rate of MSC0 for bandwidth 20MHz
802.11n(HT40)	IEEE 802.11n40 with data rate of MSC0 for bandwidth 40MHz
802.11ax(HE20)	IEEE 802.11ax20 with data rate of MSC0 for bandwidth 20MHz
802.11ax(HE40)	IEEE 802.11ax40 with data rate of MSC0 for bandwidth 40MHz

Note: IEEE 802.11ax mode only supports full RU, so only the full RU is evaluated and measured inside report.



2.5. Measurement Instruments List

RF Test System - SRD							
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until	Cal. By
1	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 25, 2025	Mar. 24, 2026	CCIC
2	MXA Signal Analyzer	Keysight	N9020A	MY46471737	Dec. 13, 2024	Dec. 12, 2025	CCIC
3	MXA Signal Analyzer	Keysight	N9020A	MY46471737	Dec. 13, 2025	Dec. 12, 2026	CCIC
4	PSG Analog Signal Generator	Agilent	E8257D	MY46521908	Dec. 13, 2024	Dec. 12, 2025	CCIC
5	PSG Analog Signal Generator	Agilent	E8257D	MY46521908	Dec. 13, 2025	Dec. 12, 2026	CCIC
6	RF Control Unit	Tonscend	JS0806-2	/	Mar. 25, 2025	Mar. 24, 2026	CCIC
7	Test Software	Tonscend	JS1120-3	V3.3.38	/	/	/
8	Attenuator	YUNLIAN	YL-SMA-2W-6G	/	Dec. 13, 2024	Dec. 12, 2025	CCIC
9	Attenuator	YUNLIAN	YL-SMA-2W-6G	/	Dec. 13, 2025	Dec. 12, 2026	CCIC

Note: 1. Calibration conducted in foreign countries, which is equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).

2. Full name of CCIC: CCIC (Shenzhen) Metrology & Testing Service Co.,Ltd.



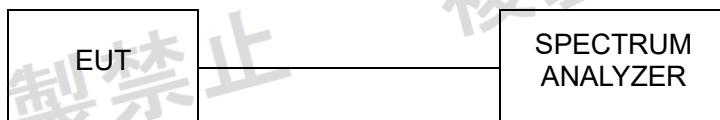
3. TEST CONDITIONS AND RESULTS

3.1. Frequency Error

LIMIT

±50ppm

TEST CONFIGURATION



TEST PROCEDURE

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

EUT Condition: No modulation

Spectrum Condition:

Frequency: Test frequency

Span: Show the entire waveform

RBW: 10 kHz

VBW: 10 kHz

Sweep time: Auto

Detector mode: Peak

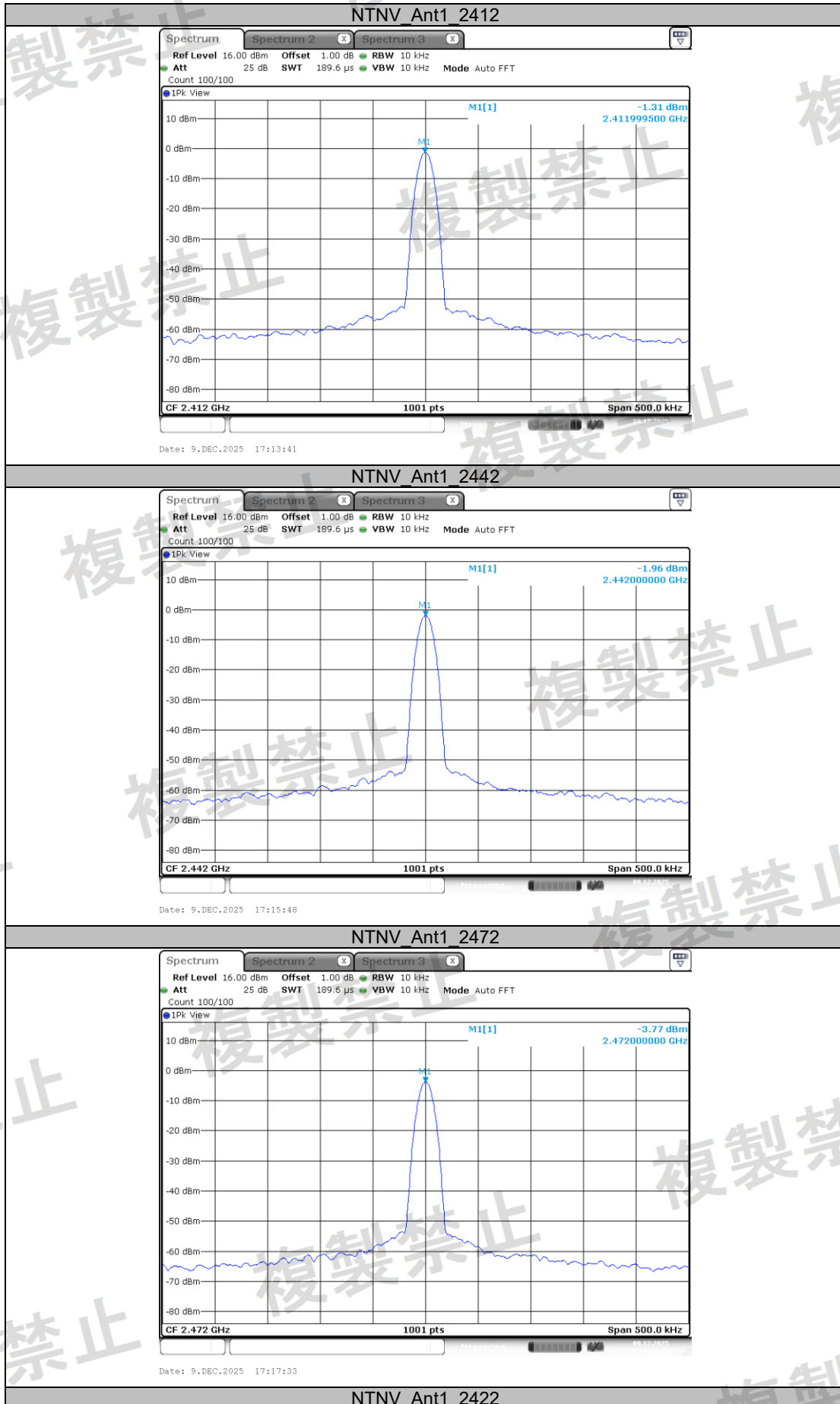
Indication mode: Max hold

TEST RESULTS

Test Condition	Antenna	Freq(MHz)	Result[MHz]	Result[ppm]	Limit[ppm]	Verdict
NTNV	Ant1	2412	2411.9995	-0.20730	±50	PASS
		2442	2442	0.00000	±50	PASS
		2472	2472	0.00000	±50	PASS
		2422	2422	0.00000	±50	PASS
		2462	2462	0.00000	±50	PASS



Test plot as follows:

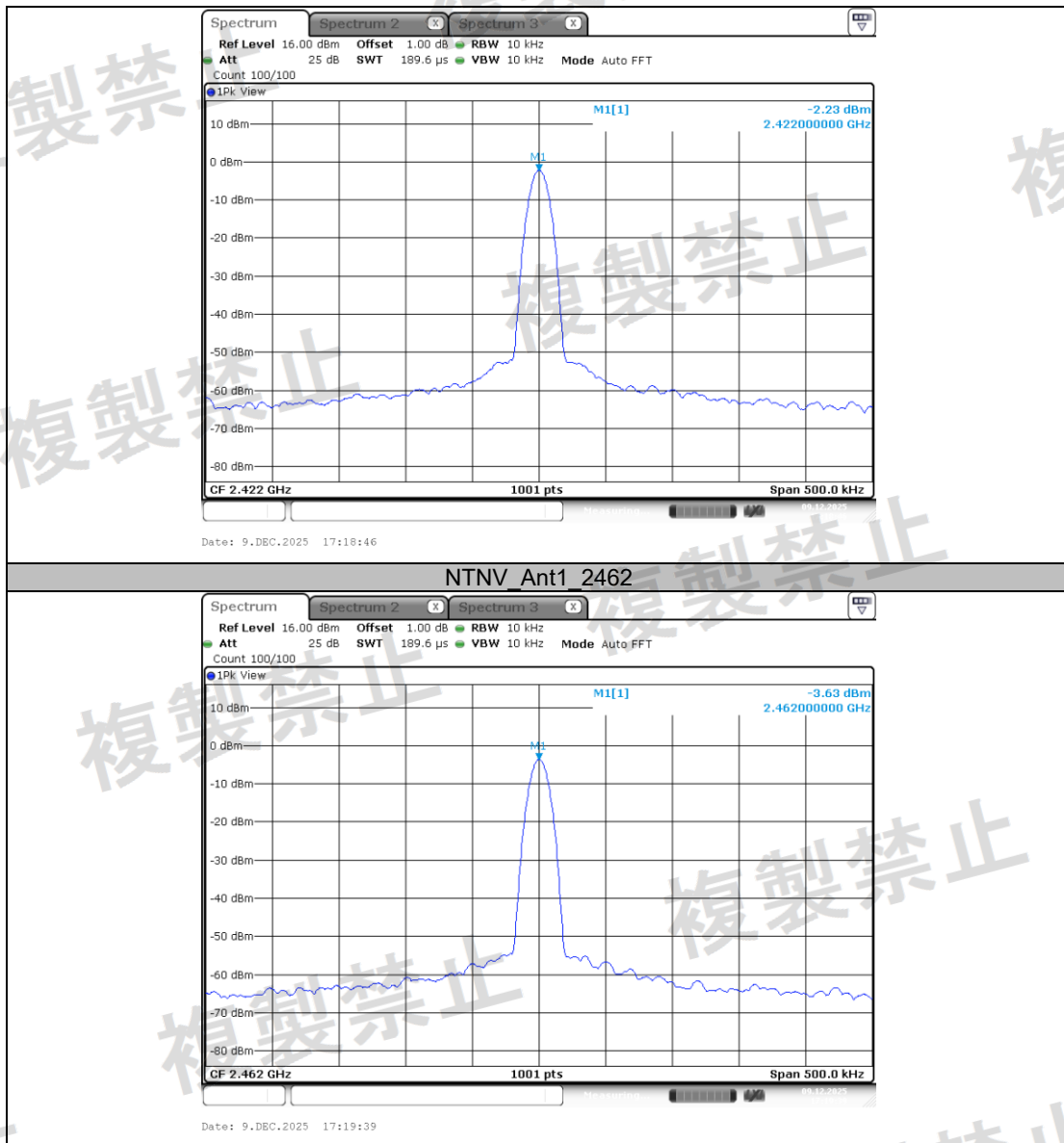


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3.2. Antenna Power

LIMIT

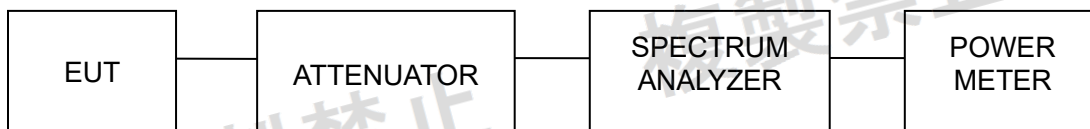
- ≤ 3 mW/MHz (FHSS from 2402-2480 MHz)
- ≤ 5 mW/MHz (OFDM(26MHz <Occupied Bandwidth <38MHz) from 2400-2483.5 MHz)
- ≤ 10 mW (Other from 2400-2483.5 MHz)

EIRP

- OBW 20MHz system: for ≤ 12.14 dBm(16.37mW/MHz)
- OBW 40MHz system: for ≤ 9.13 dBm(8.19mW/MHz)

The Output Power Tolerance must be less than +20%.

TEST CONFIGURATION



TEST PROCEDURE

Step 1:

Connect the UUT to the spectrum analyzer as TEST CONFIGURATION and use the following settings:

- Centre Frequency: The center frequency of the channel under test.
- RBW: 1 MHz
- VBW: 1 MHz
- Span: 2 Times of occupied bandwidth
- Detector: Peak
- Trace Mode: Max Hold

Step 2:

When the trace is complete, find the peak value of the power envelope and record the frequency.

Step 3:

Connecting the high frequency power meter with IF output of the spectrum analyzer.

Use the high frequency power meter to measure the Antenna power.

**TEST RESULTS**

DC 5.0V										
Mode	Antenna	Channel (MHz)	Output power (mW/MHz)	Limit (mW/MHz)	EIRP (dBmW/MHz)	EIRP Limit (dBmW/MHz)	Rated output power (mW/MHz)	Tolerance (%)	Limit (%)	Result
802.11b	Ant1	2412	4.5394	10.0	8.07	12.14	5.0	-9.21	< +20	Pass
		2442	3.5318	10.0	6.98	12.14	5.0	-29.36		
		2472	2.6485	10.0	5.73	12.14	5.0	-47.03		
802.11g	Ant1	2412	0.8610	10.0	0.85	12.14	1.0	-13.90		
		2442	0.8492	10.0	0.79	12.14	1.0	-15.08		
		2472	0.5636	10.0	-0.99	12.14	1.0	-43.64		
802.11n (HT20)	Ant1	2412	0.8035	10.0	0.55	12.14	1.0	-19.65		
		2442	0.7194	10.0	0.07	12.14	1.0	-28.06		
		2472	0.4732	10.0	-1.75	12.14	1.0	-52.68		
802.11n (HT40)	Ant1	2422	0.3251	5.0	-3.38	9.13	1.0	-67.49		
		2442	0.3412	5.0	-3.17	9.13	1.0	-65.88		
		2462	0.2344	5.0	-4.80	9.13	1.0	-76.56		
802.11ax (HE20)	Ant1	2412	0.6761	10.0	-0.20	12.14	1.0	-32.39		
		2442	0.6281	10.0	-0.52	12.14	1.0	-37.19		
		2472	0.4276	10.0	-2.19	12.14	1.0	-57.24		
802.11ax (HE40)	Ant1	2422	0.2547	5.0	-4.44	9.13	1.0	-74.53		
		2442	0.3069	5.0	-3.63	9.13	1.0	-69.31		
		2462	0.2075	5.0	-5.33	9.13	1.0	-79.25		

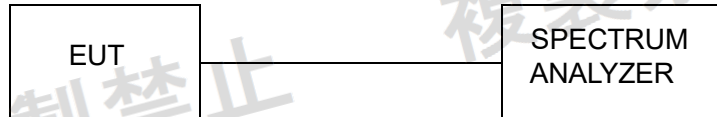


3.3. Occupied Bandwidth

LIMIT

- Occupied bandwidth: FH $\leq$ 83.5 MHz; OFDM $\leq$ 38MHz; DS $\leq$ 26 MHz

TEST CONFIGURATION



TEST PROCEDURE

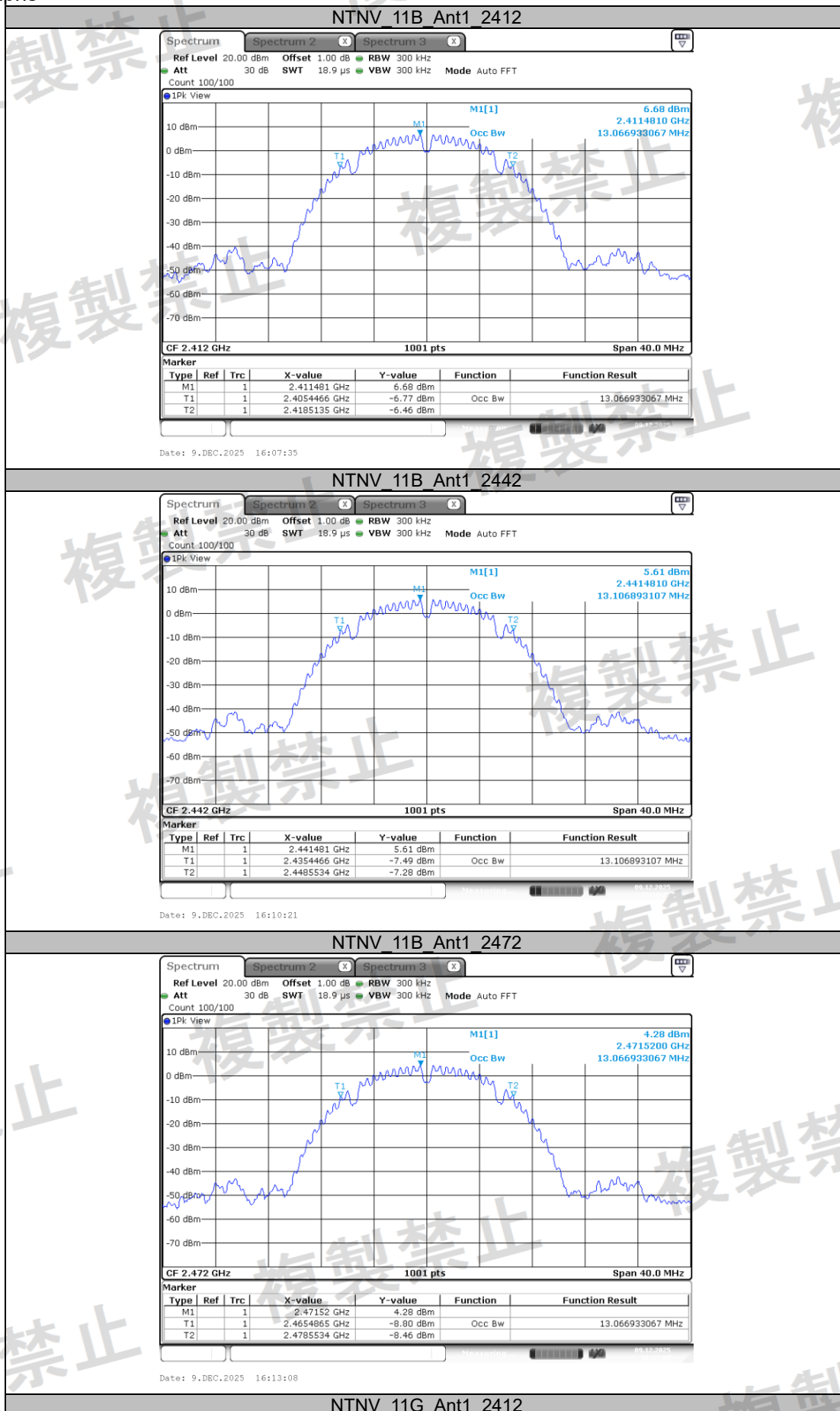
- Setting of SA is following as follow:
RBW: 300 kHz
VBW: 300 kHz
Sweep time: Auto
Sweep Mode: Continuous sweep
Detect mode: Peak
Trace mode: Max hold
- EUT have transmitted the maximum modulation signal and fixed channelize. SA set to 99% of occupied bandwidth to measure occupied bandwidth.

TEST RESULTS

Test Condition	Test Mode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	11B	Ant1	2412	13.067	$\leq$ 26	PASS
			2442	13.107	$\leq$ 26	PASS
			2472	13.067	$\leq$ 26	PASS
	11G	Ant1	2412	16.783	$\leq$ 26	PASS
			2442	16.943	$\leq$ 26	PASS
			2472	16.983	$\leq$ 26	PASS
	11N20SISO	Ant1	2412	17.862	$\leq$ 26	PASS
			2442	17.822	$\leq$ 26	PASS
			2472	18.102	$\leq$ 26	PASS
	11N40SISO	Ant1	2422	36.124	$\leq$ 40	PASS
			2442	36.124	$\leq$ 40	PASS
			2462	36.124	$\leq$ 40	PASS
	11AX20SISO	Ant1	2412	19.021	$\leq$ 26	PASS
			2442	19.101	$\leq$ 26	PASS
			2472	18.941	$\leq$ 26	PASS
	11AX40SISO	Ant1	2422	37.642	$\leq$ 40	PASS
			2442	37.642	$\leq$ 40	PASS
			2462	37.642	$\leq$ 40	PASS



Test Graphs

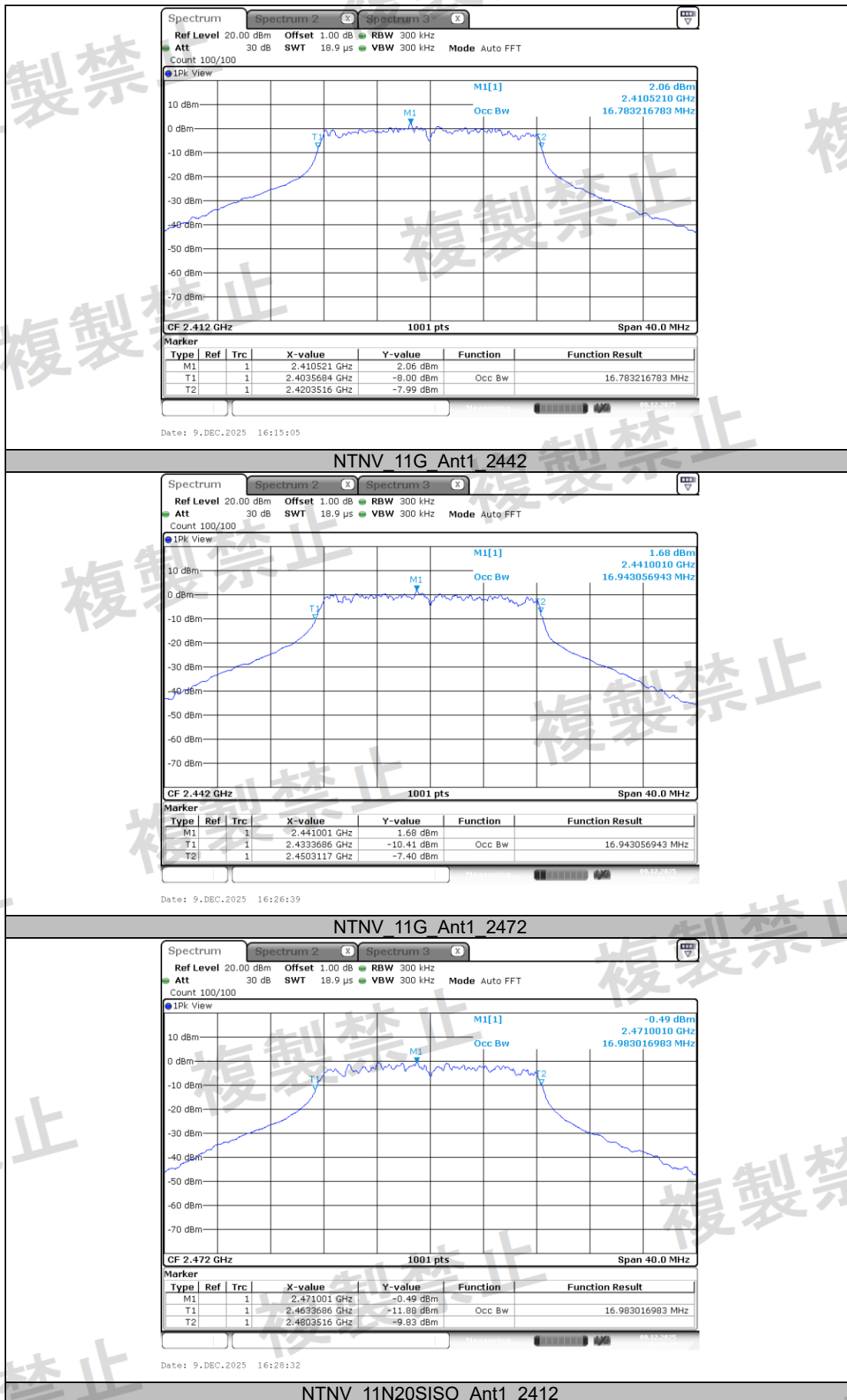


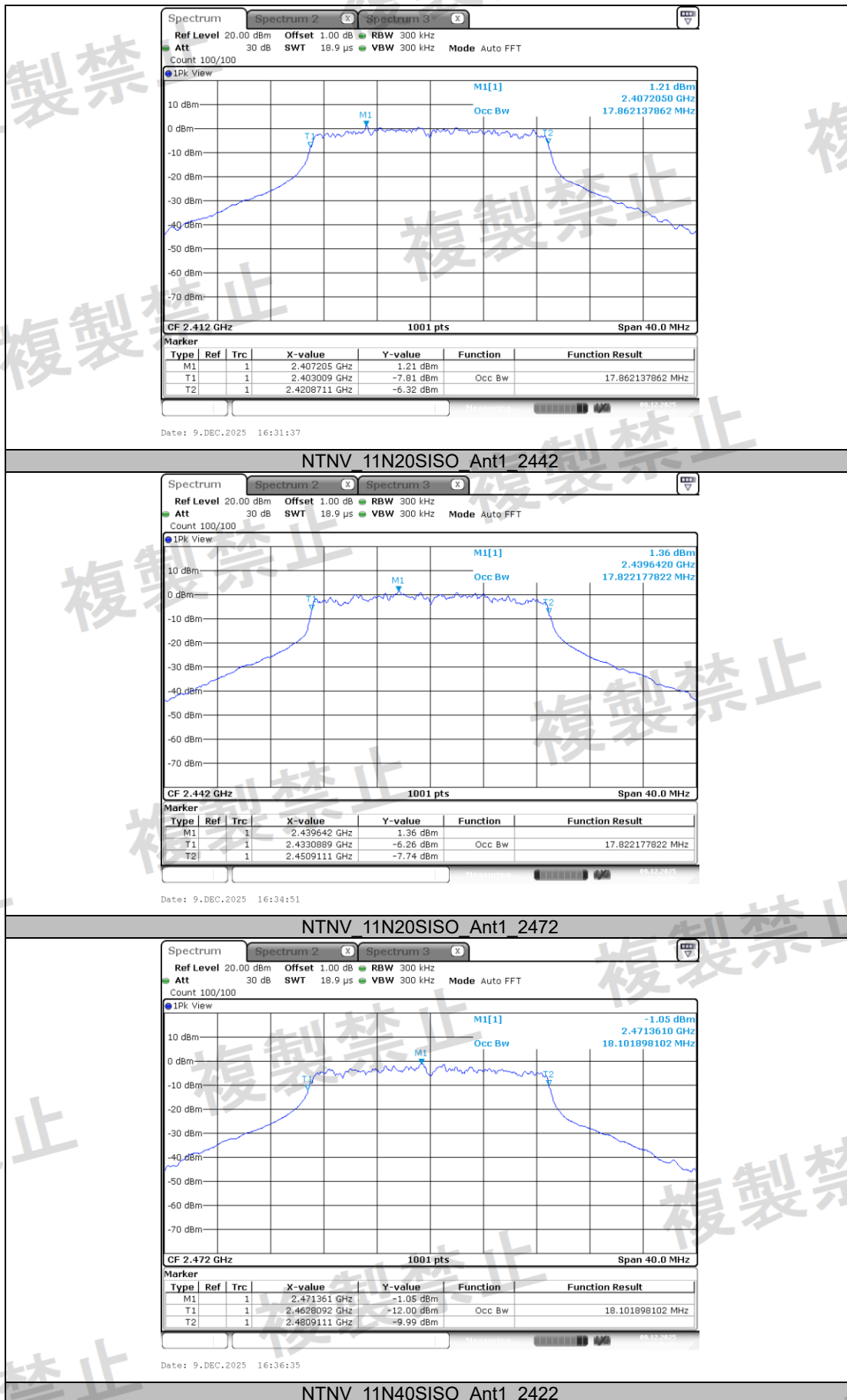
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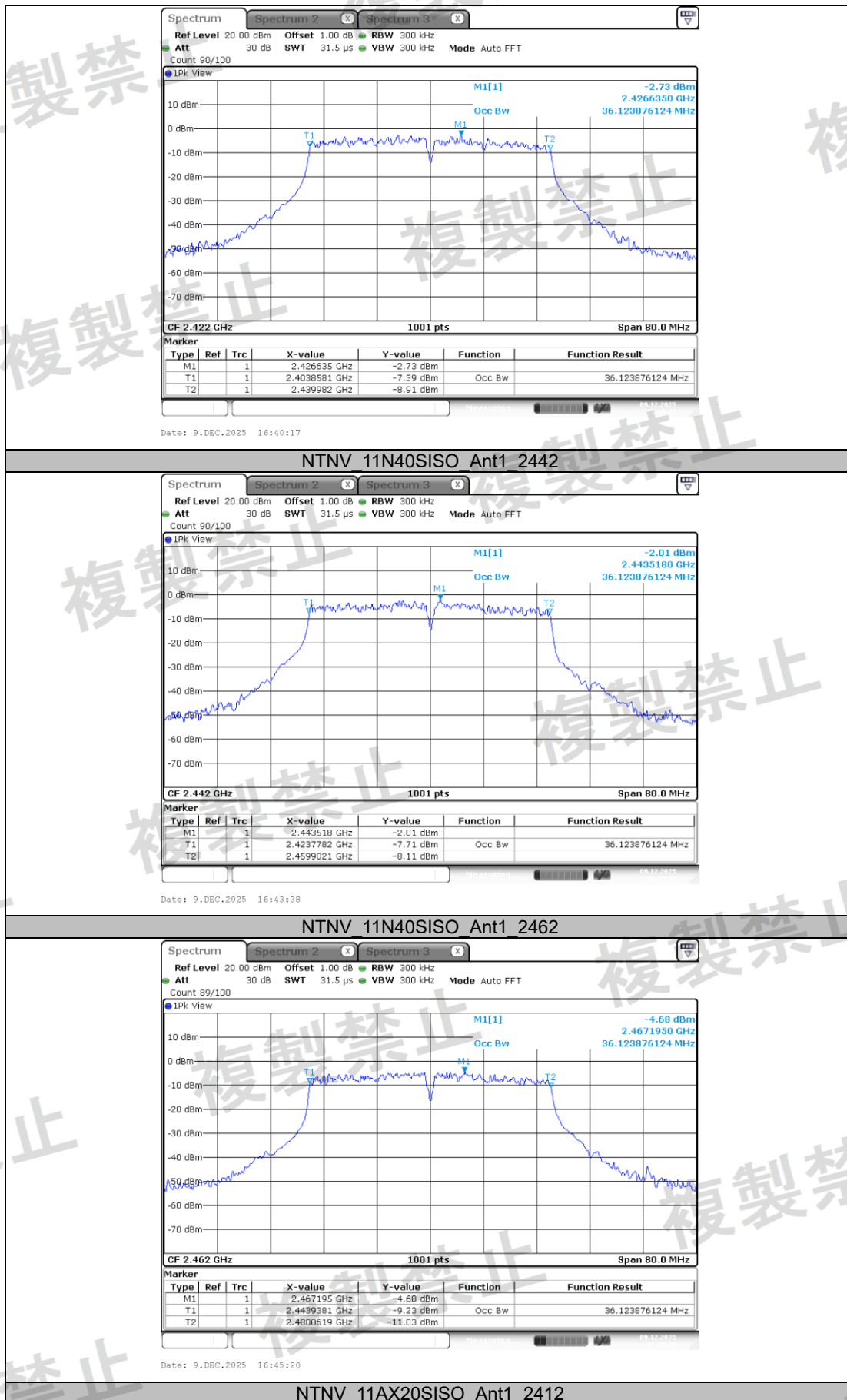
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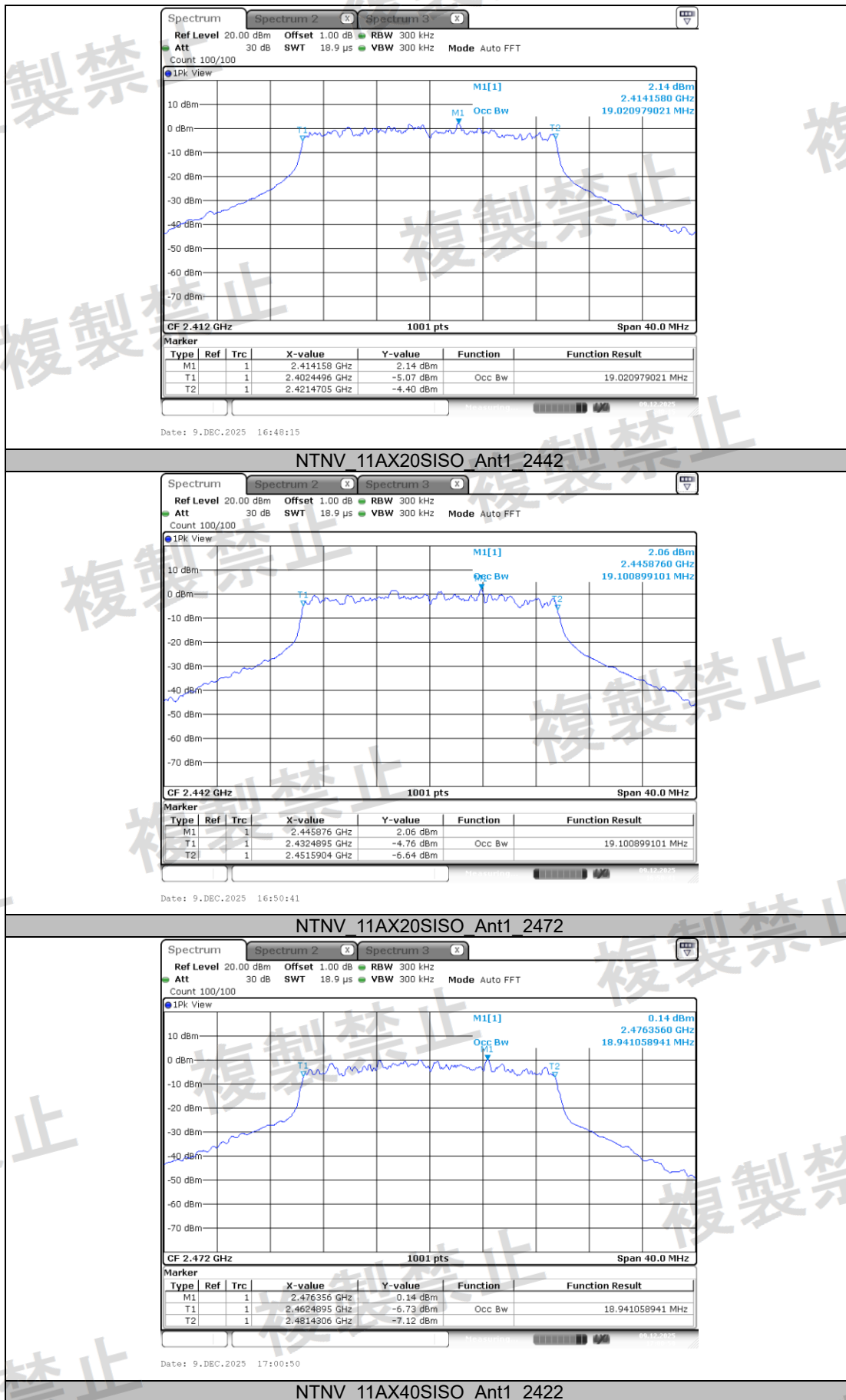
TRF No: CTC-TR-070_A2

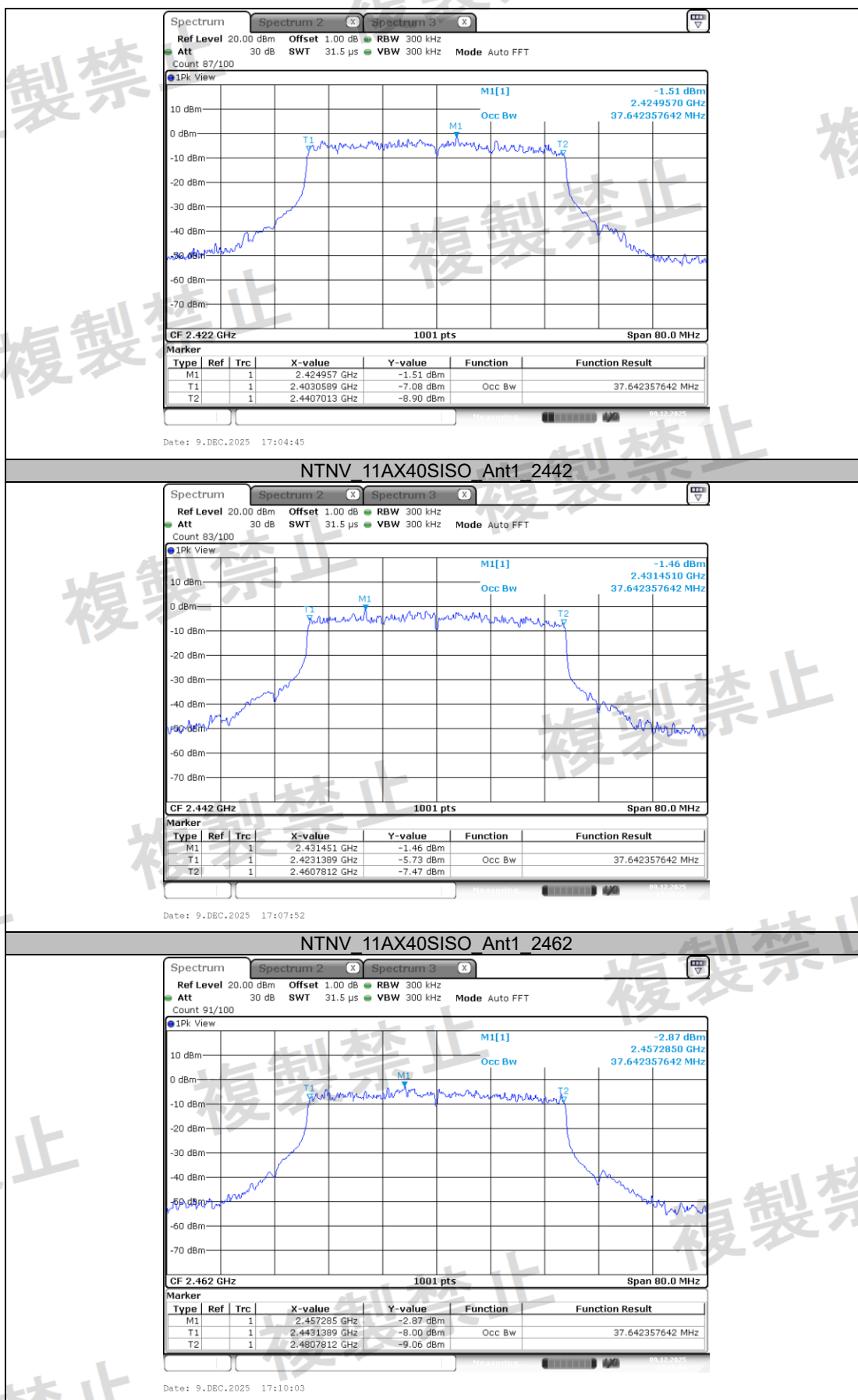
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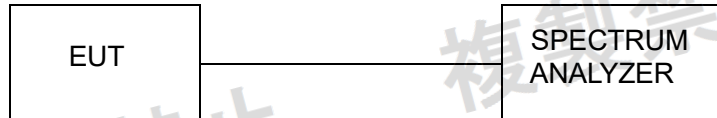


3.4. Spreading Bandwidth

LIMIT

- Spread Bandwidth: ≥ 500 kHz.

TEST CONFIGURATION



TEST PROCEDURE

1. Setting of SA is following as follow:
RBW: 300 kHz
VBW: 300 kHz
Sweep time: Auto
Sweep Mode: Continuous sweep
Detect mode: Peak
Trace mode: Max hold
2. EUT have transmitted the maximum modulation signal and fixed channelize. SA set to 90% of occupied bandwidth to measure spread bandwidth.

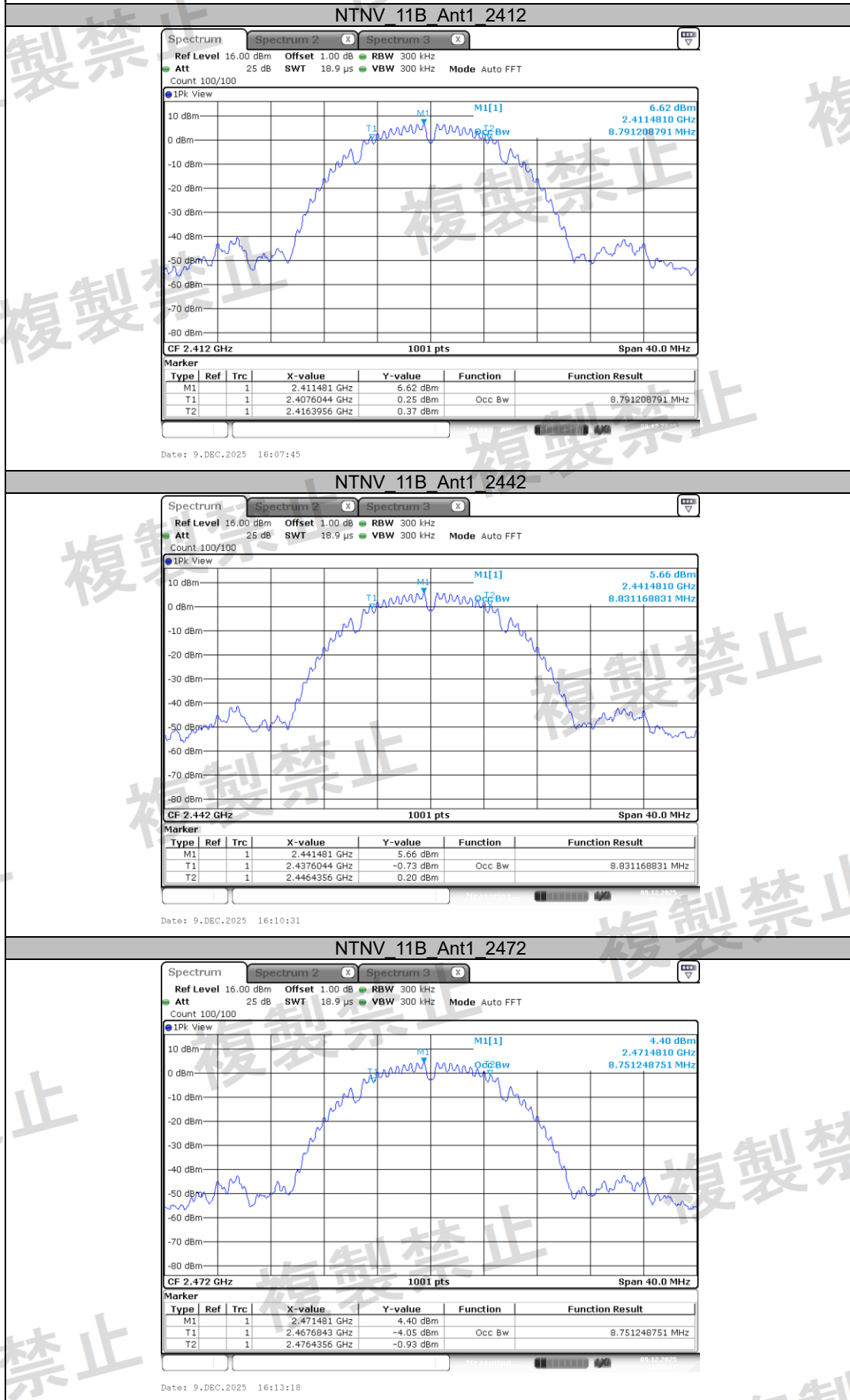
TEST RESULTS

Test voltage (V)	Test Mode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	SpreadFactor	Limit	Verdict
DC 5.0V	11B	Ant1	2412	8.791	≥ 0.5	6.393	>5	PASS
			2442	8.831	≥ 0.5	6.423	>5	PASS
			2472	8.751	≥ 0.5	6.364	>5	PASS

Note: Spreading Rate=Spread Bandwidth/modulation rate. The modulation rate: MR=1.375 for 802.11b.



Test Graphs



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3.5. Transmitter Spurious Emission Strength and Unwanted Emission Intensity

LIMIT

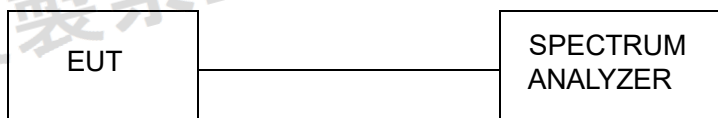
30MHz to 2387 MHz: 2.5 μ W/MHz (-26dBm) or less

2387 to 2400 MHz: 25 μ W/MHz (-16dBm) or less

2483.5 Through 2496.5 MHz: 25 μ W/MHz (-16dBm) or less

Over 2496.5 MHz: 2.5 μ W/MHz (-26dBm) or less

TEST CONFIGURATION



TEST PROCEDURE

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

EUT Condition: Modulation

Spectrum Condition:

Frequency: 30MHz-12.5GHz

RBW: 1MHz

VBW: 1MHz

Sweep time: Auto

Detector mode: Peak

Indication mode: Max hold

TEST RESULTS



Measurement Data:

Test Condition	Test Mode	Antenna	Channel	Freq.Range [MHz]	Freq. [MHz]	Result [dBm/MHz]	Limit [dBm/MHz]	Result [μ W/MHz]	Limit [μ W/MHz]	Verdict
NTNV	11B	Ant1	2412	30~2387	1445.97	-39.88	≤ -26	0.10280	≤ 2.5	PASS
				2387~2400	2397.59	-36.58	≤ -16	0.21979	≤ 25	PASS
				2483.5~2496.5	2488.41	-43.93	≤ -16	0.04046	≤ 25	PASS
				2496.5~12500	4823.81	-36.47	≤ -26	0.22542	≤ 2.5	PASS
			2442	30~2387	1464.23	-40.47	≤ -26	0.08974	≤ 2.5	PASS
				2387~2400	2395.70	-43.42	≤ -16	0.04550	≤ 25	PASS
				2483.5~2496.5	2488.66	-43.56	≤ -16	0.04406	≤ 25	PASS
				2496.5~12500	4883.84	-36.68	≤ -26	0.21478	≤ 2.5	PASS
			2472	30~2387	1485.45	-42.26	≤ -26	0.05943	≤ 2.5	PASS
				2387~2400	2394.38	-44.91	≤ -16	0.03228	≤ 25	PASS
				2483.5~2496.5	2486.74	-38.27	≤ -16	0.14894	≤ 25	PASS
				2496.5~12500	4943.86	-35.51	≤ -26	0.28119	≤ 2.5	PASS
	11G	Ant1	2412	30~2387	2325.13	-39.65	≤ -26	0.10839	≤ 2.5	PASS
				2387~2400	2399.9	-10.87	≤ -16	81.84648	≤ 25	See table below
				2483.5~2496.5	2488.32	-42.43	≤ -16	0.05715	≤ 25	PASS
				2496.5~12500	7000.08	-39.69	≤ -26	0.10740	≤ 2.5	PASS
			2442	30~2387	2303.92	-33.94	≤ -26	0.40365	≤ 2.5	PASS
				2387~2400	2393.25	-35.97	≤ -16	0.25293	≤ 25	PASS
				2483.5~2496.5	2485.36	-39.25	≤ -16	0.11885	≤ 25	PASS
				2496.5~12500	6987.57	-40.16	≤ -26	0.09638	≤ 2.5	PASS
			2472	30~2387	2163.09	-40.67	≤ -26	0.08570	≤ 2.5	PASS
				2387~2400	2390.42	-39.80	≤ -16	0.10471	≤ 25	PASS
				2483.5~2496.5	2483.76	-12.39	≤ -16	57.67665	≤ 25	See table below
				2496.5~12500	6878.53	-40.49	≤ -26	0.08933	≤ 2.5	PASS
	11N20SISO	Ant1	2412	30~2387	2292.13	-39.37	≤ -26	0.11561	≤ 2.5	PASS
				2387~2400	2399.81	-10.52	≤ -16	88.71560	≤ 25	See table below
				2483.5~2496.5	2489.12	-41.48	≤ -16	0.07112	≤ 25	PASS
				2496.5~12500	6962.56	-40.03	≤ -26	0.09931	≤ 2.5	PASS
			2442	30~2387	2180.76	-34.87	≤ -26	0.32584	≤ 2.5	PASS
				2387~2400	2388.16	-35.67	≤ -16	0.27102	≤ 25	PASS

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			2472	2483.5~2496.5	2494.69	-39.82	≤-16	0.10423	≤25	PASS
				2496.5~12500	6713.98	-40.27	≤-26	0.09397	≤2.5	PASS
				30~2387	2225.55	-39.18	≤-26	0.12078	≤2.5	PASS
				2387~2400	2394.07	-39.75	≤-16	0.10593	≤25	PASS
				2483.5~2496.5	2483.58	-12.73	≤-16	53.33349	≤25	See table below
				2496.5~12500	6992.07	-40.87	≤-26	0.08185	≤2.5	PASS
	11N40SISO	Ant1	2422	30~2387	2387.00	-35.70	≤-26	0.26915	≤2.5	PASS
				2387~2400	2399.85	-16.06	≤-16	24.77422	≤25	See table below
				2483.5~2496.5	2496.37	-41.81	≤-16	0.06592	≤25	PASS
				2496.5~12500	6978.07	-39.88	≤-26	0.10280	≤2.5	PASS
			2442	30~2387	2314.52	-38.63	≤-26	0.13709	≤2.5	PASS
				2387~2400	2399.97	-38.42	≤-16	0.14388	≤25	PASS
				2483.5~2496.5	2484.98	-40.14	≤-16	0.09683	≤25	PASS
				2496.5~12500	6935.55	-40.76	≤-26	0.08395	≤2.5	PASS
			2462	30~2387	2169.57	-38.89	≤-26	0.12912	≤2.5	PASS
				2387~2400	2390.57	-39.49	≤-16	0.11246	≤25	PASS
				2483.5~2496.5	2483.55	-17.91	≤-16	16.18080	≤25	See table below
				2496.5~12500	2498.00	-38.03	≤-26	0.15740	≤2.5	PASS
	11AX20SISO	Ant1	2412	30~2387	2316.29	-38.47	≤-26	0.14223	≤2.5	PASS
				2387~2400	2399.93	-8.51	≤-16	140.92888	≤25	See table below
				2483.5~2496.5	2489.61	-41.82	≤-16	0.06577	≤25	PASS
				2496.5~12500	6984.07	-40.10	≤-26	0.09772	≤2.5	PASS
			2442	30~2387	2229.67	-38.00	≤-26	0.15849	≤2.5	PASS
				2387~2400	2387.99	-39.27	≤-16	0.11830	≤25	PASS
				2483.5~2496.5	2494.08	-41.95	≤-16	0.06383	≤25	PASS
				2496.5~12500	6990.07	-40.69	≤-26	0.08531	≤2.5	PASS
			2472	30~2387	2265.61	-38.05	≤-26	0.15668	≤2.5	PASS
				2387~2400	2399.71	-39.34	≤-16	0.11641	≤25	PASS
				2483.5~2496.5	2483.89	-11.22	≤-16	75.50922	≤25	See table below
				2496.5~12500	6980.07	-40.13	≤-26	0.09705	≤2.5	PASS
	11AX40SISO	Ant1	2422	30~2387	2386.41	-34.41	≤-26	0.36224	≤2.5	PASS

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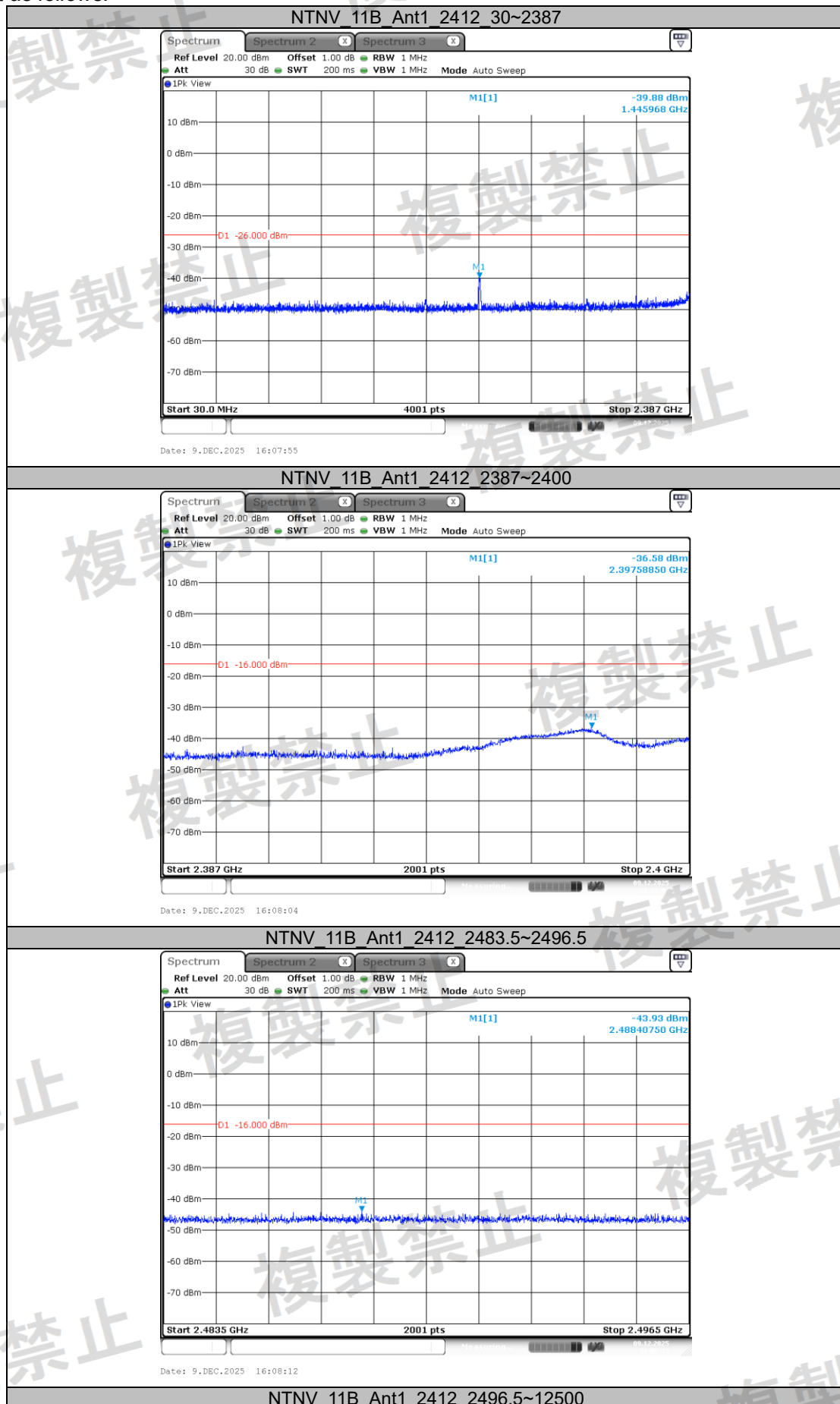
				2387~2400	2399.8 4	-15.06	≤-16	31.1889 0	≤25	See table below
				2483.5~249 6.5	2492.7 7	-41.44	≤-16	0.07178	≤25	PASS
				2496.5~125 00	6985.0 7	-40.14	≤-26	0.09683	≤2.5	PASS
			2442	30~2387	2260.9 0	-38.07	≤-26	0.15596	≤2.5	PASS
				2387~2400	2399.8 5	-38.54	≤-16	0.13996	≤25	PASS
				2483.5~249 6.5	2483.8 8	-40.18	≤-16	0.09594	≤25	PASS
				2496.5~125 00	6998.0 8	-40.51	≤-26	0.08892	≤2.5	PASS
			2462	30~2387	2327.4 9	-37.56	≤-26	0.17539	≤2.5	PASS
				2387~2400	2392.8 4	-39.19	≤-16	0.12050	≤25	PASS
				2483.5~249 6.5	2483.5 3	-16.12	≤-16	24.4343 1	≤25	See table below
				2496.5~125 00	2496.5 0	-36.30	≤-26	0.23442	≤2.5	PASS

Test Result_Step2

Test Conditio n	Test Mode	PreSca n In Ant	Channe l	Ant	Freq. [MHz]	Result [dBm/MHz]	Limit [dBm/MHz]	Result [μW/MHz]	Limit [μW/MHz]	Verdic t
NTNV	11G	Ant1	2412	Ant 1	2399.9 9	-29.30	≤-16	1.17490	≤25	PASS
			2472	Ant 1	2483.6 5	-30.97	≤-16	0.79983	≤25	PASS
	11N20SISO	Ant1	2412	Ant 1	2399.9 8	-27.74	≤-16	1.68267	≤25	PASS
			2472	Ant 1	2483.5 2	-30.02	≤-16	0.99541	≤25	PASS
	11N40SISO	Ant1	2422	Ant 1	2399.9 2	-34.23	≤-16	0.37757	≤25	PASS
			2462	Ant 1	2483.5 6	-35.17	≤-16	0.30409	≤25	PASS
	11AX20SIS O	Ant1	2412	Ant 1	2399.7 5	-27.26	≤-16	1.87932	≤25	PASS
			2472	Ant 1	2483.5 6	-28.29	≤-16	1.48252	≤25	PASS
	11AX40SIS O	Ant1	2422	Ant 1	2399.8 6	-33.97	≤-16	0.40087	≤25	PASS
			2462	Ant 1	2483.6 0	-33.83	≤-16	0.41400	≤25	PASS



Test plot as follows:

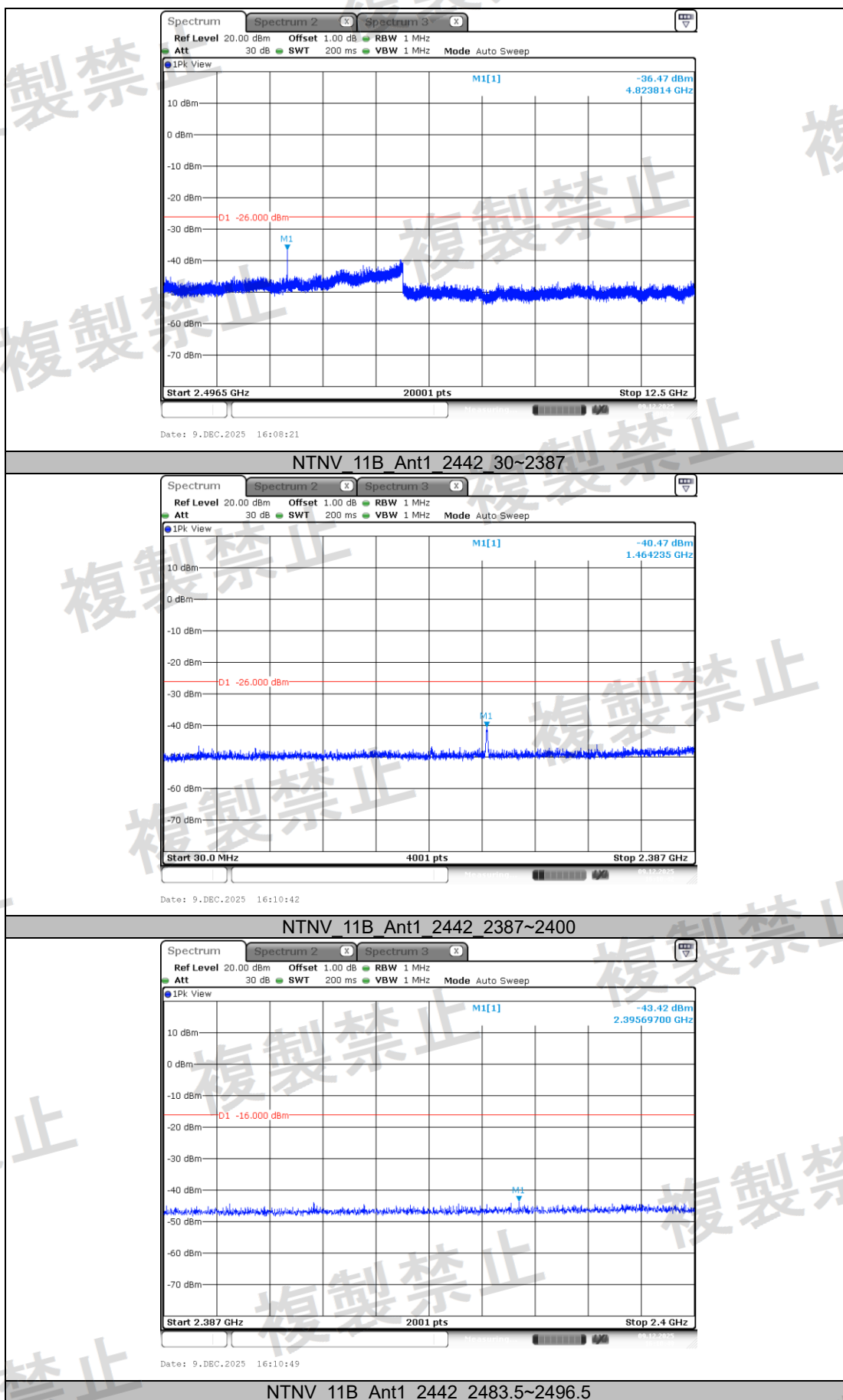


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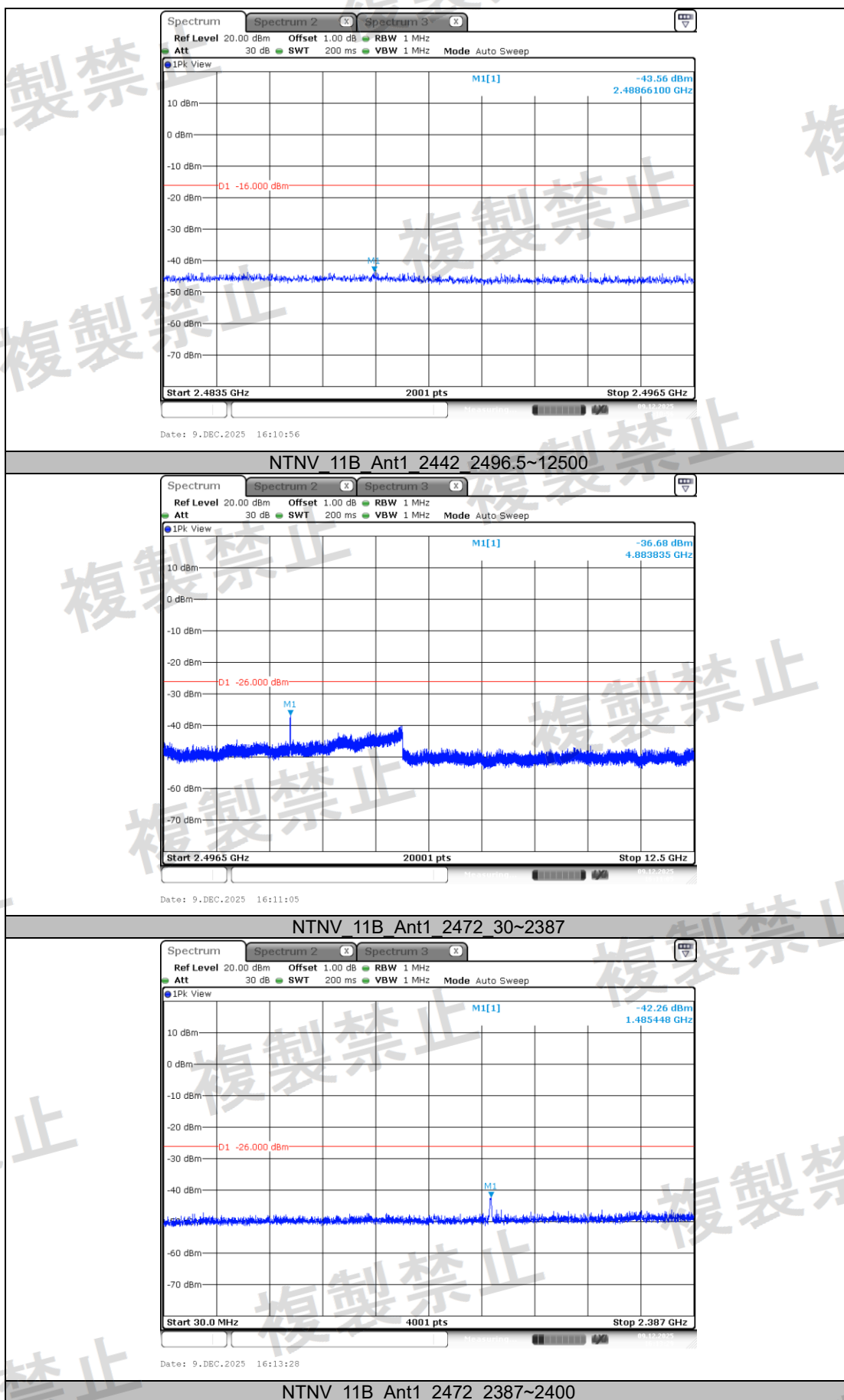
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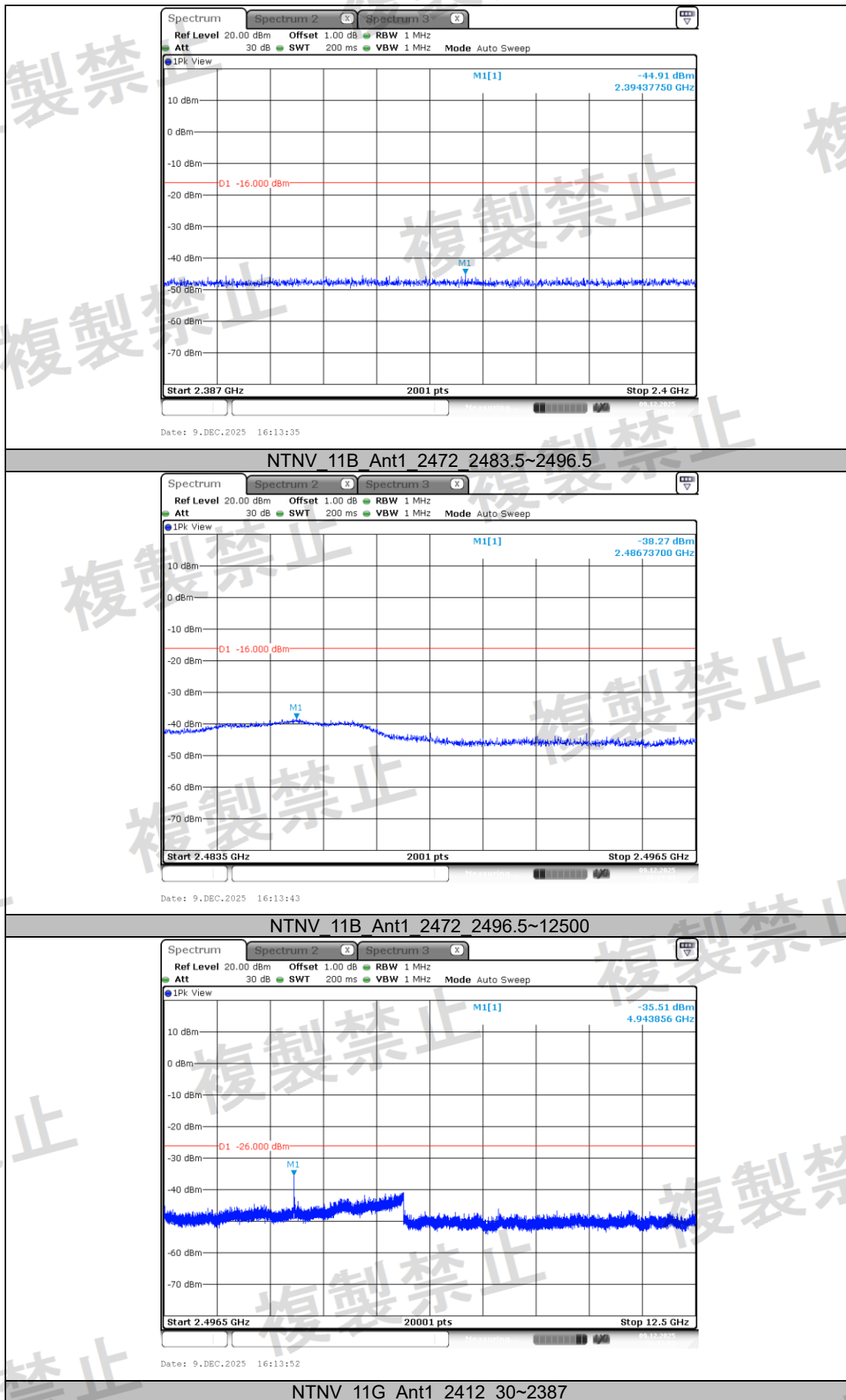
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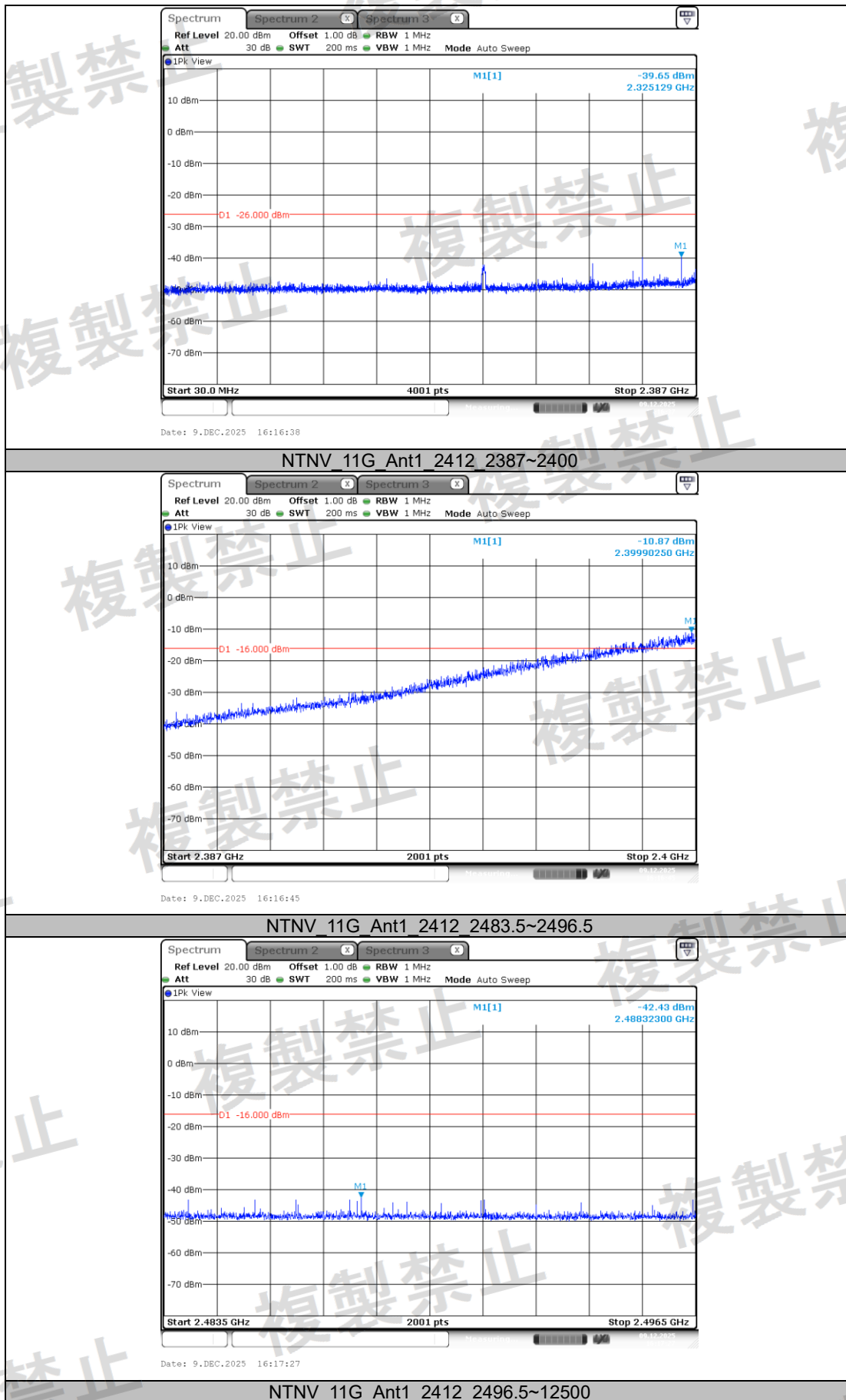


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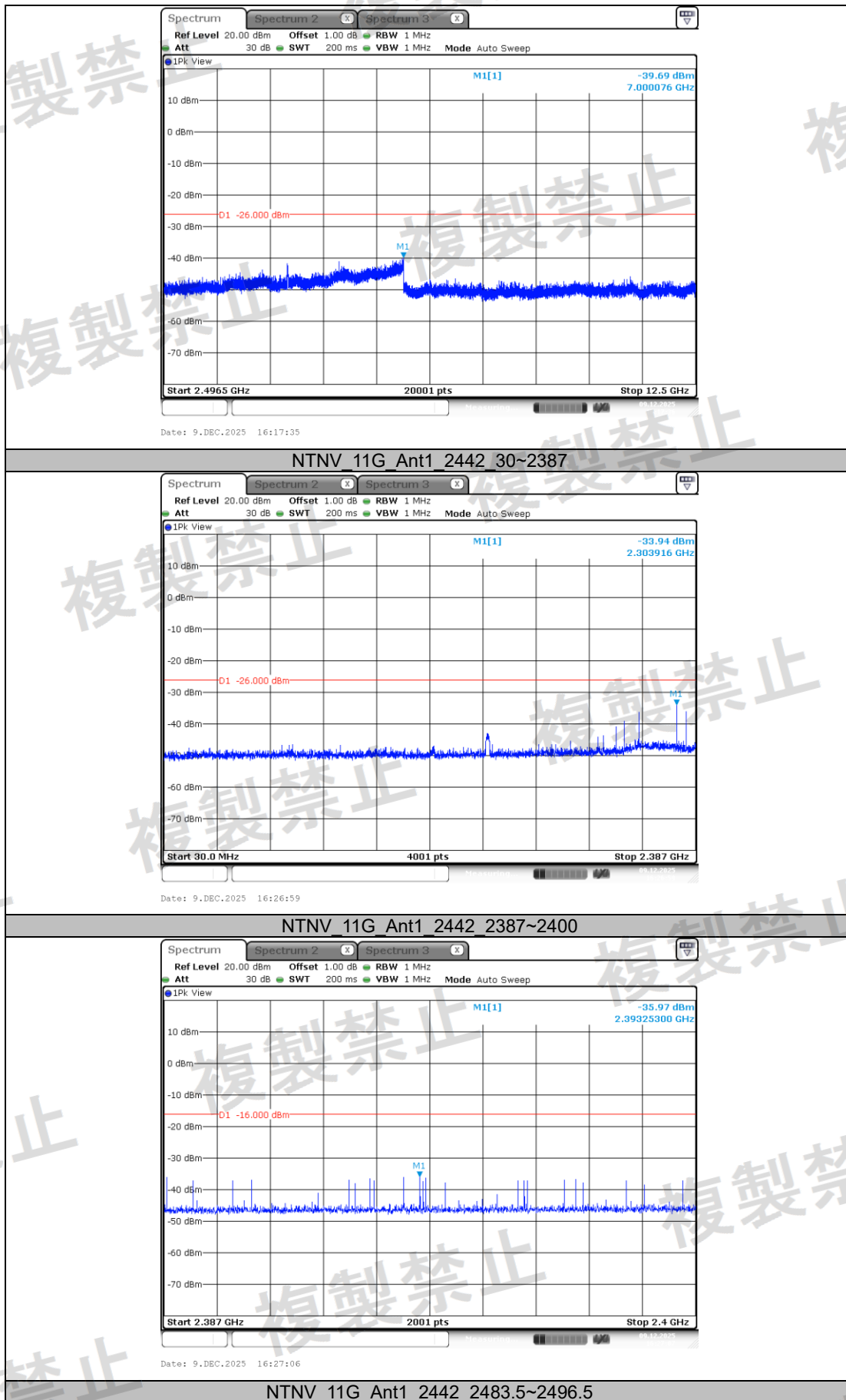


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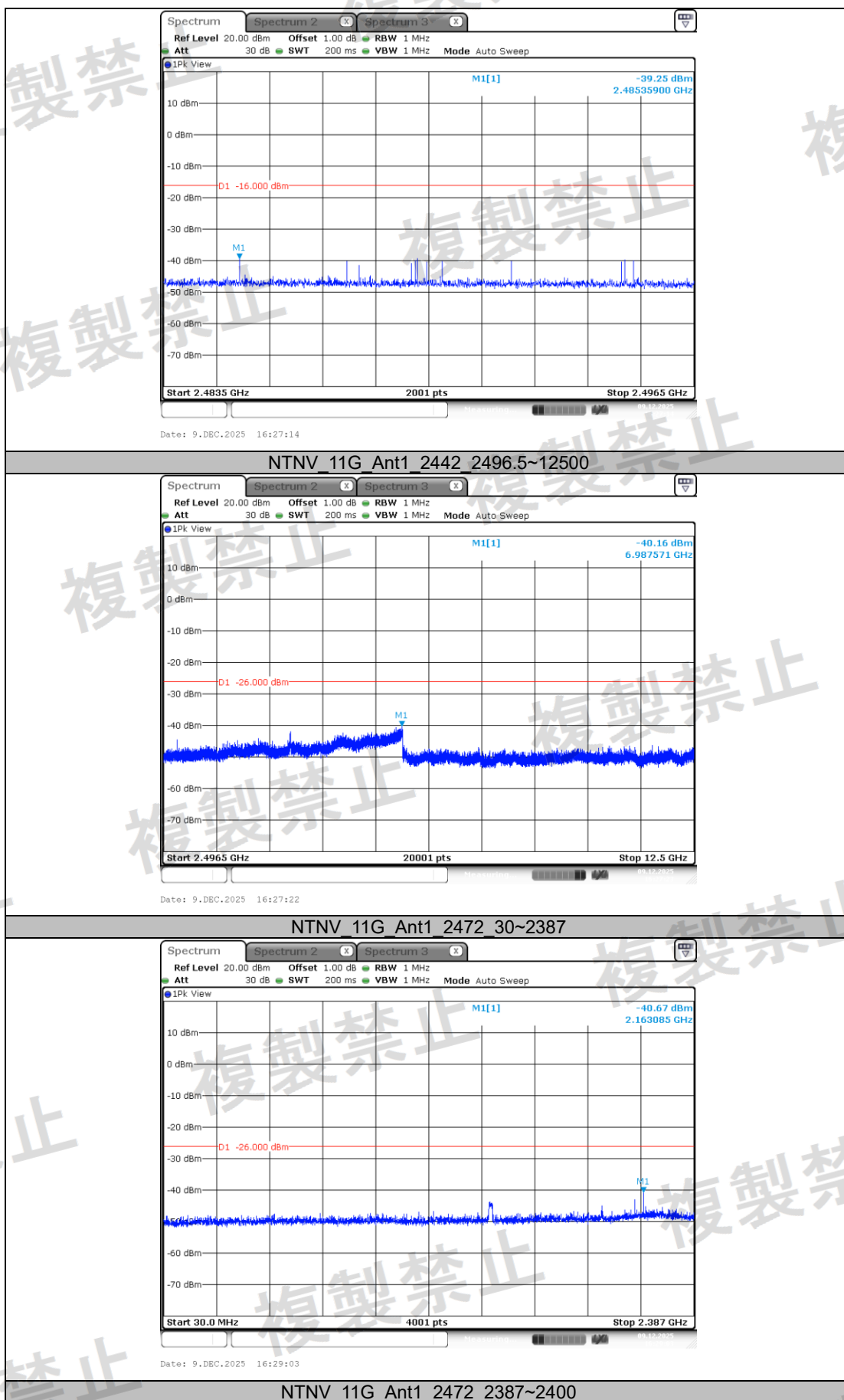
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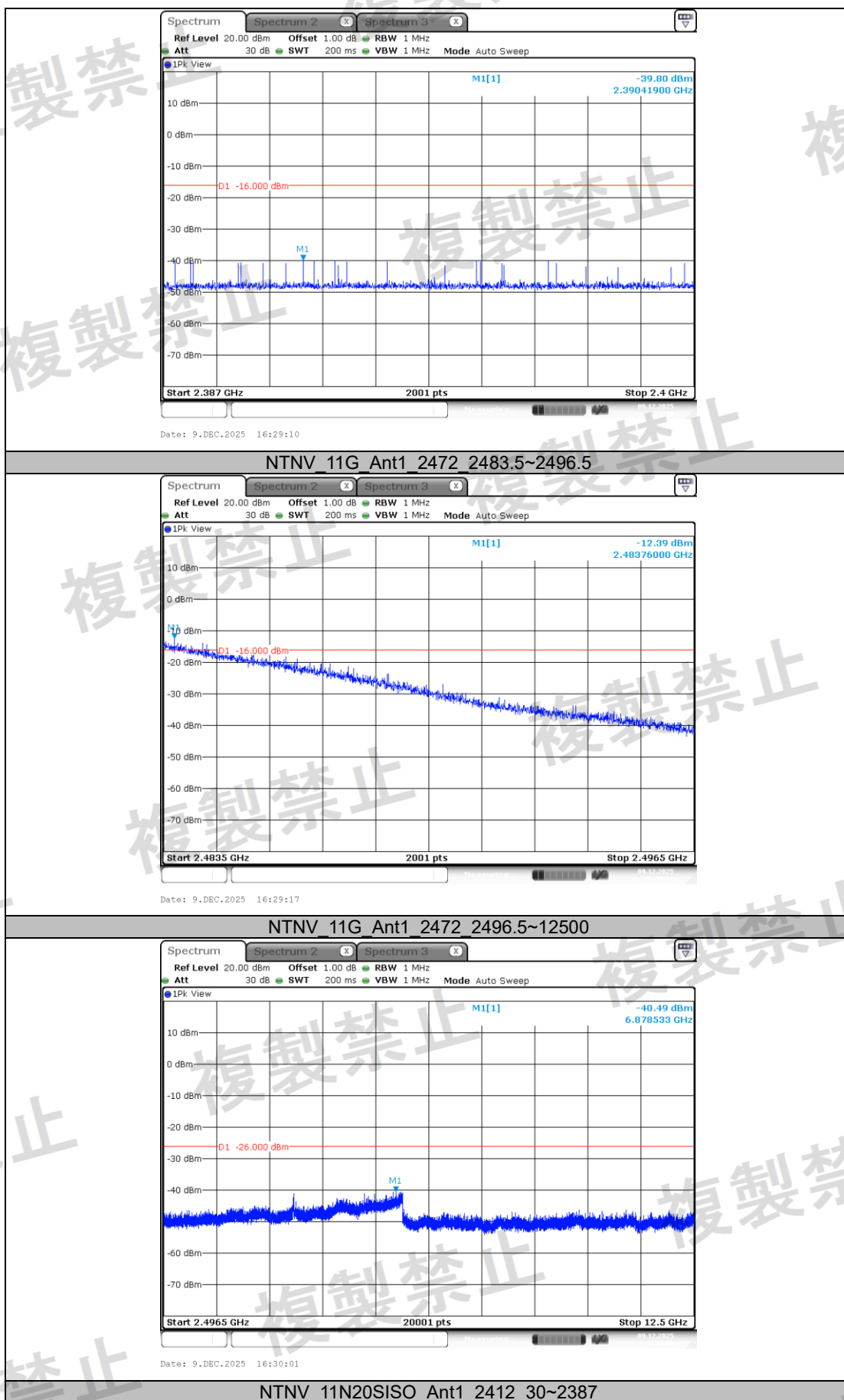
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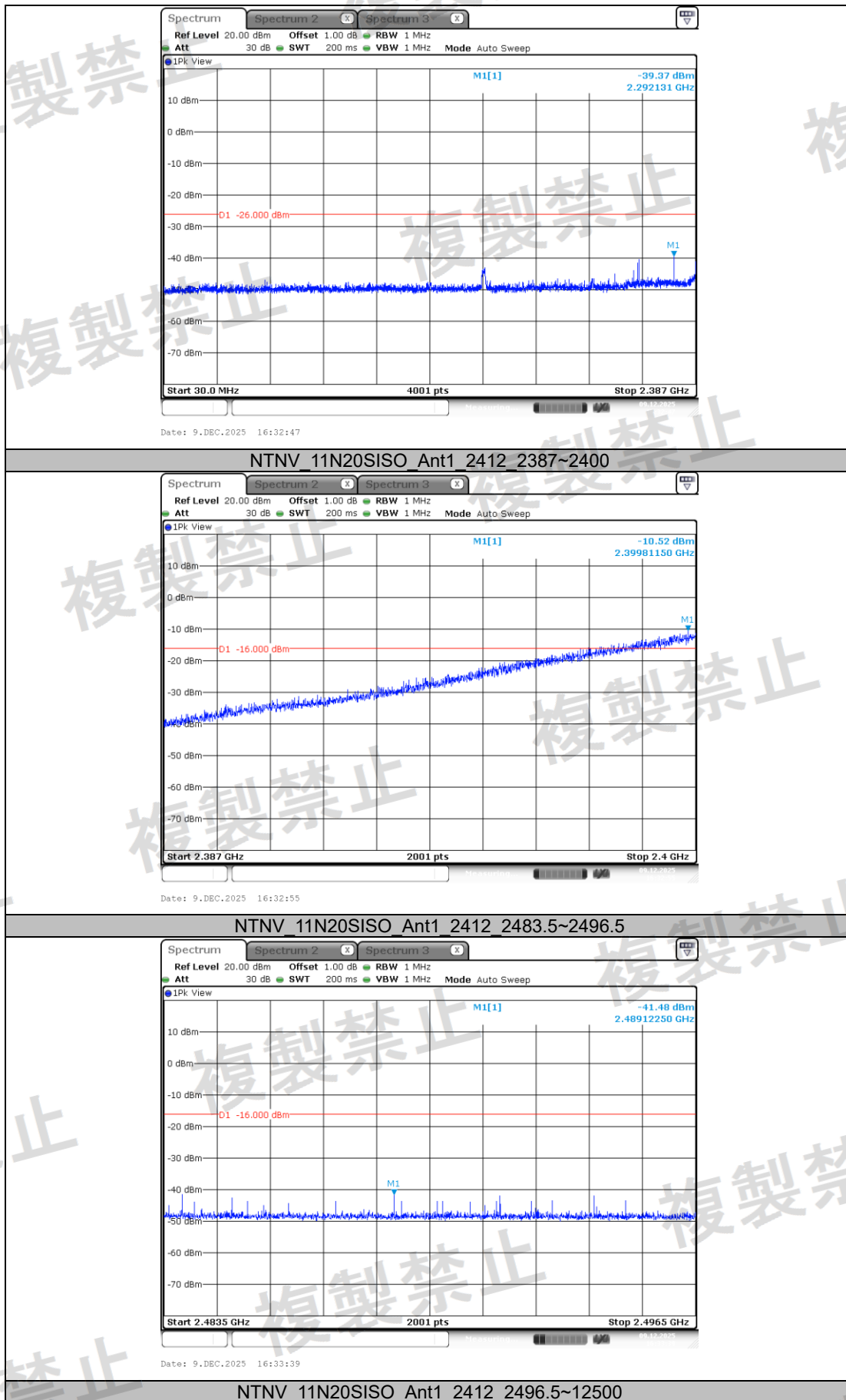
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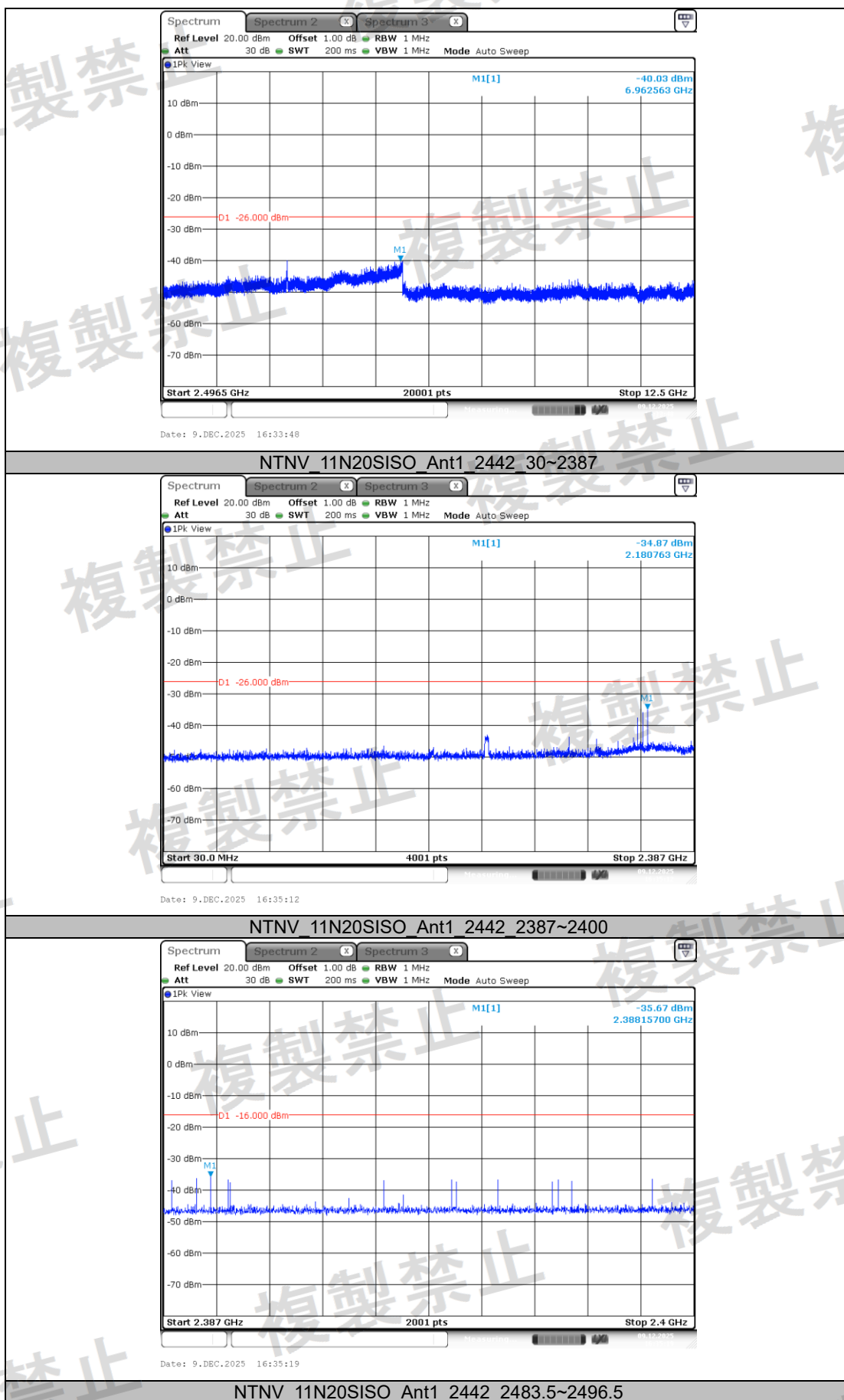


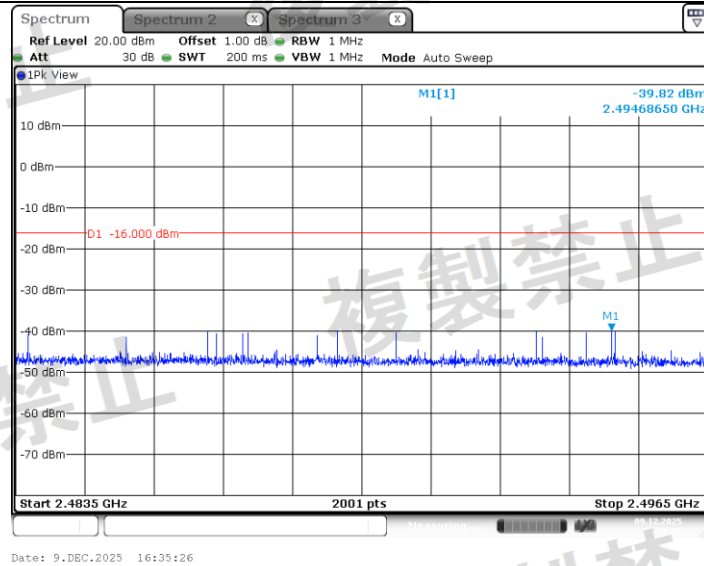
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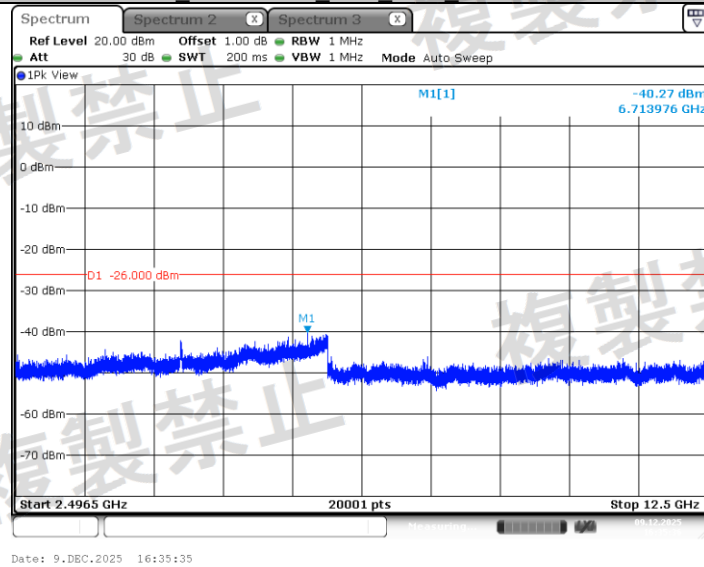
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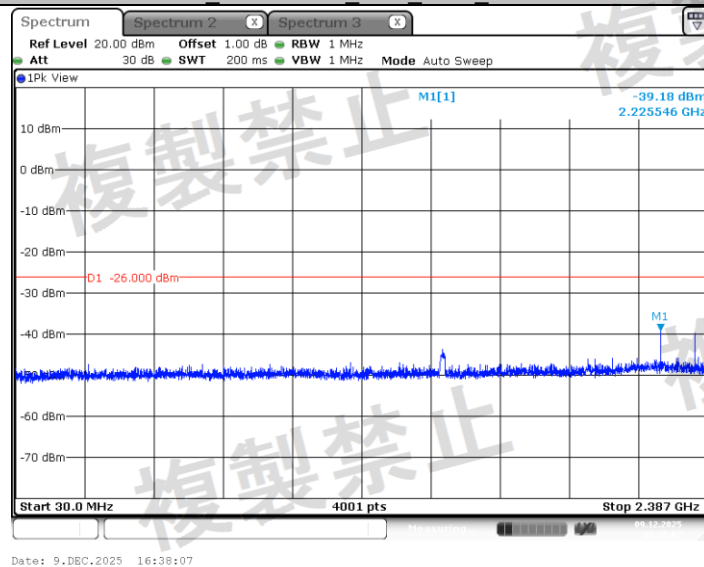




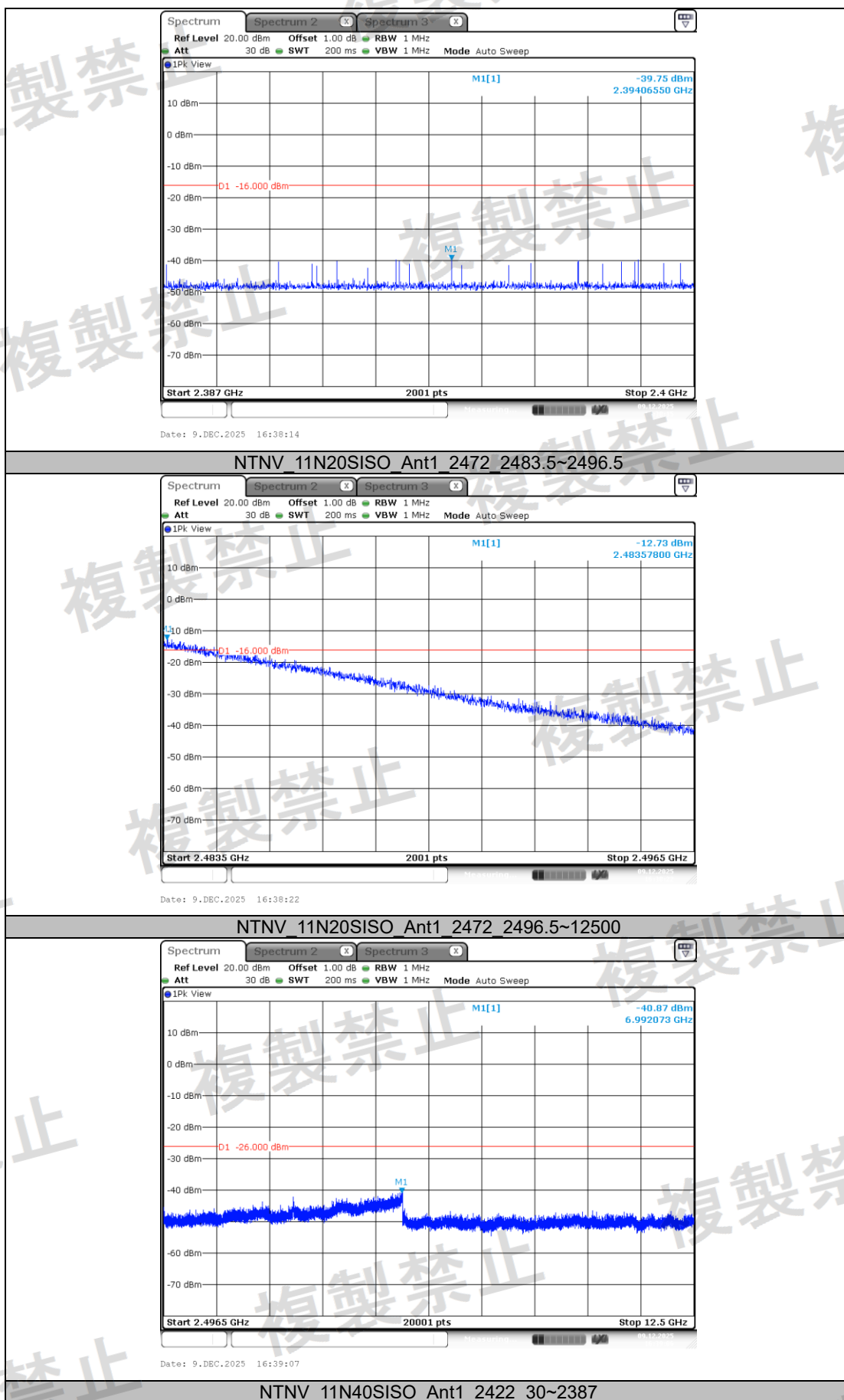
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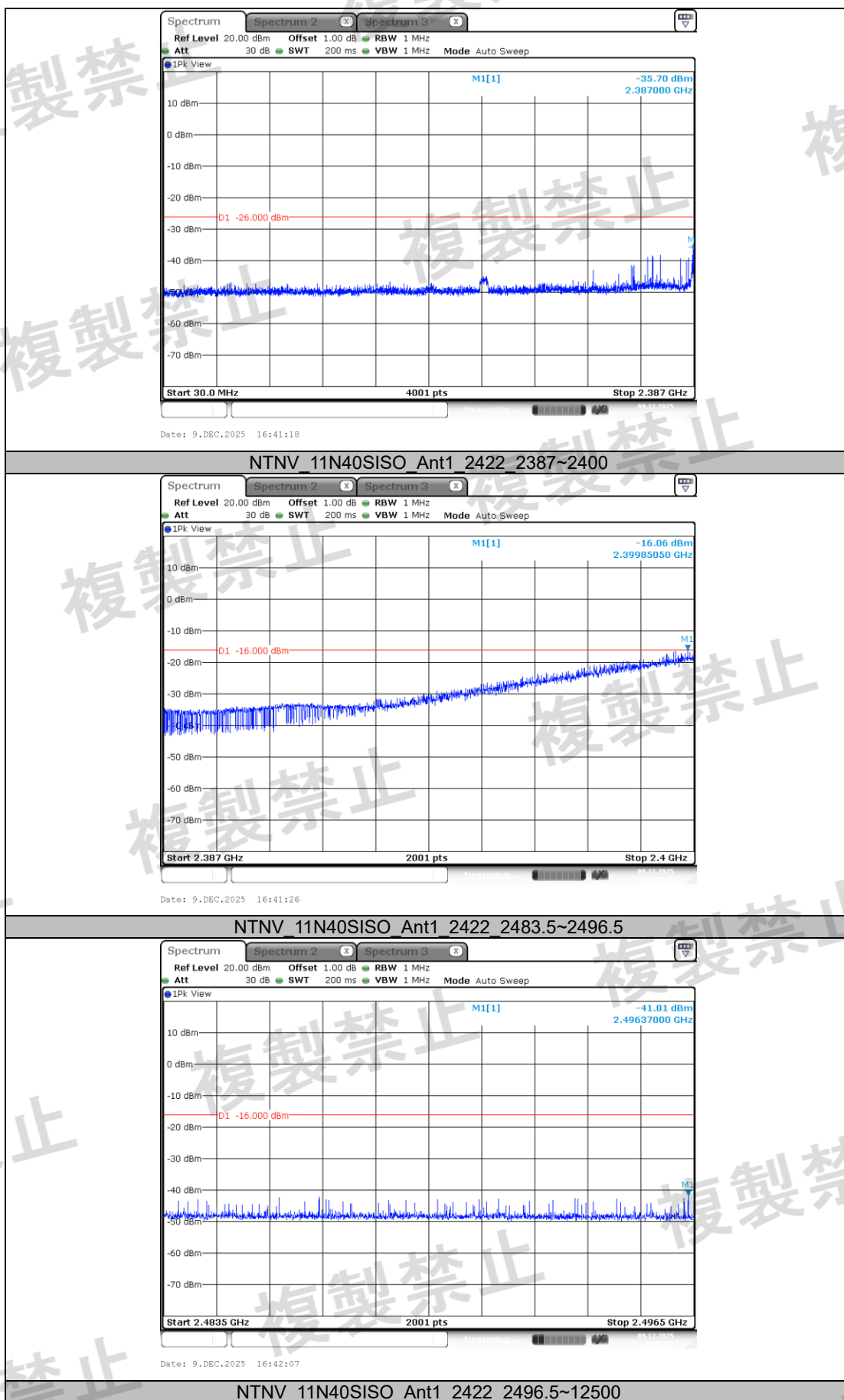


NTNV_11N20SISO_Ant1_2472_30~2387



NTNV_11N20SISO_Ant1_2472_2387~2400



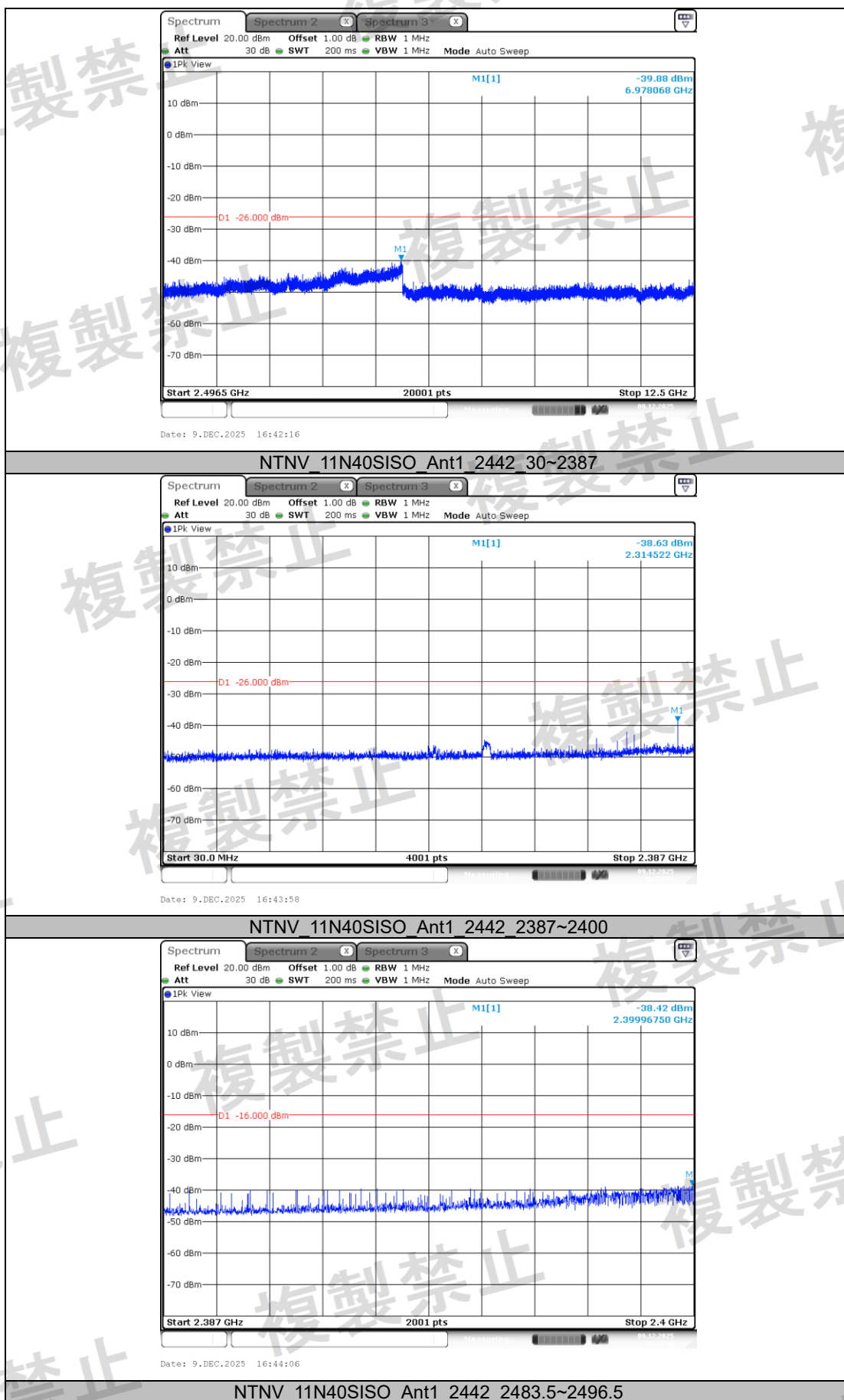


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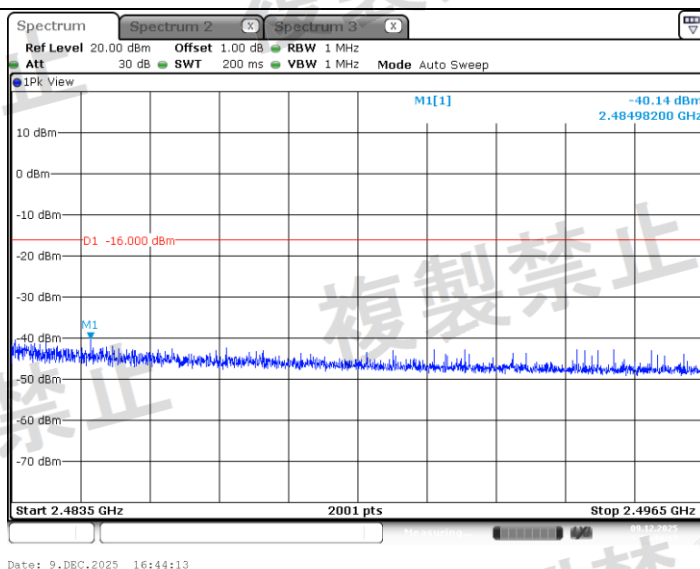


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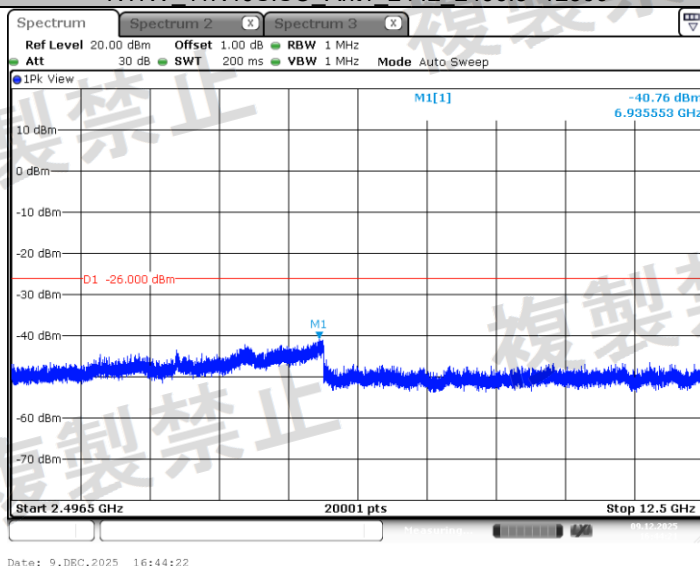
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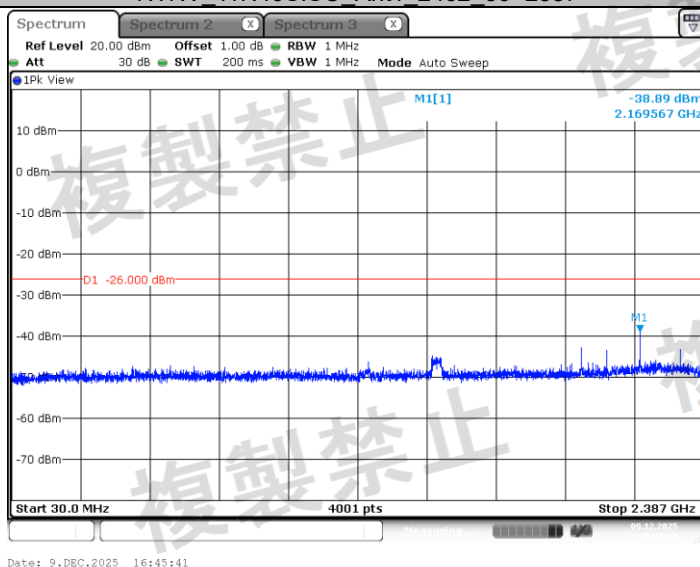
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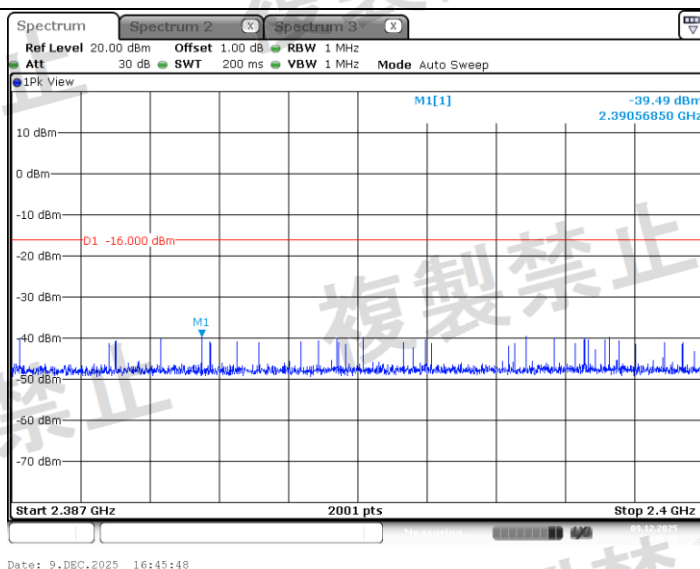
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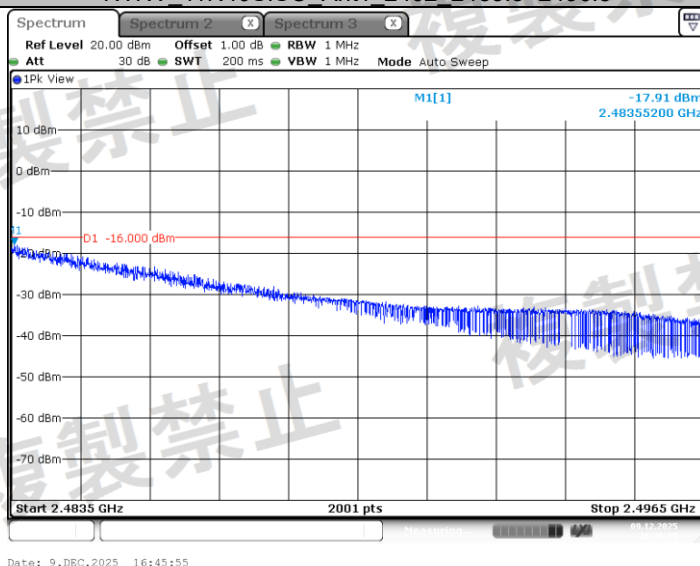
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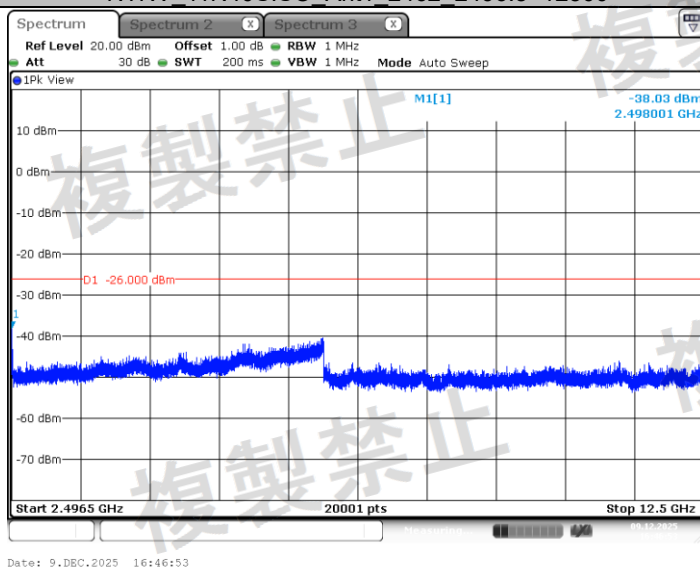
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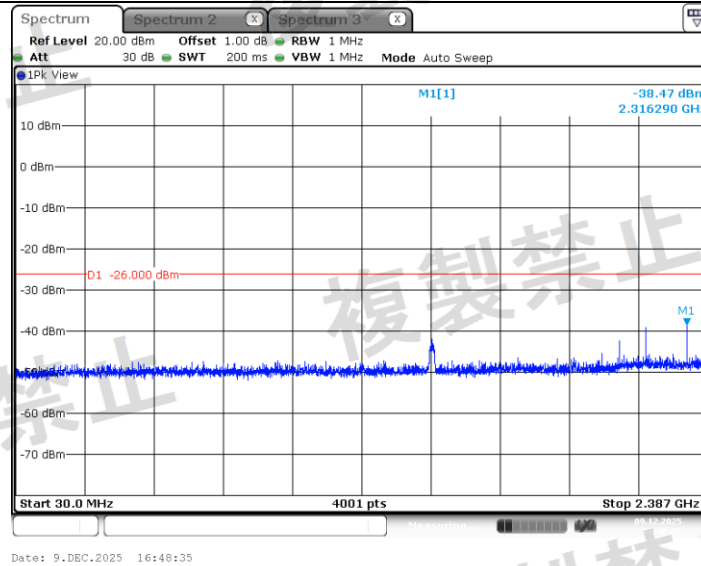
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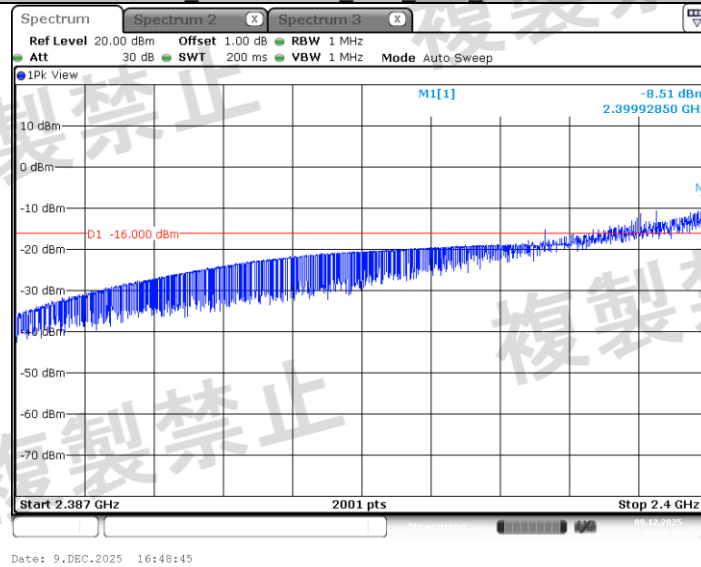
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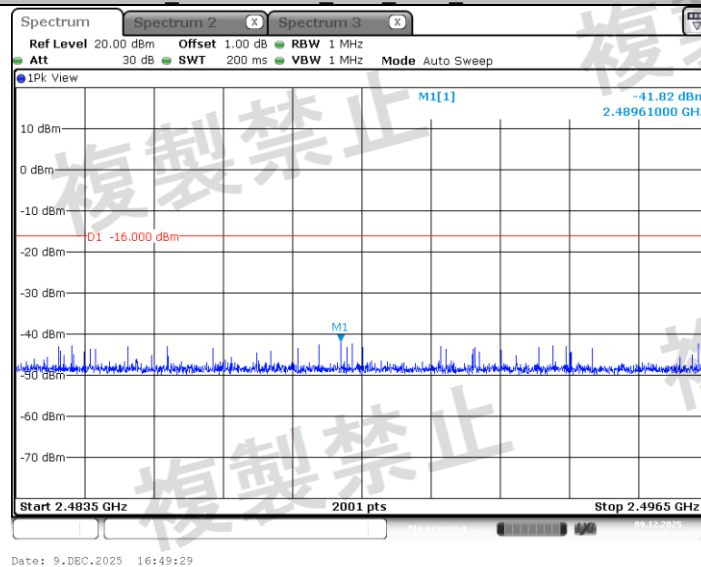
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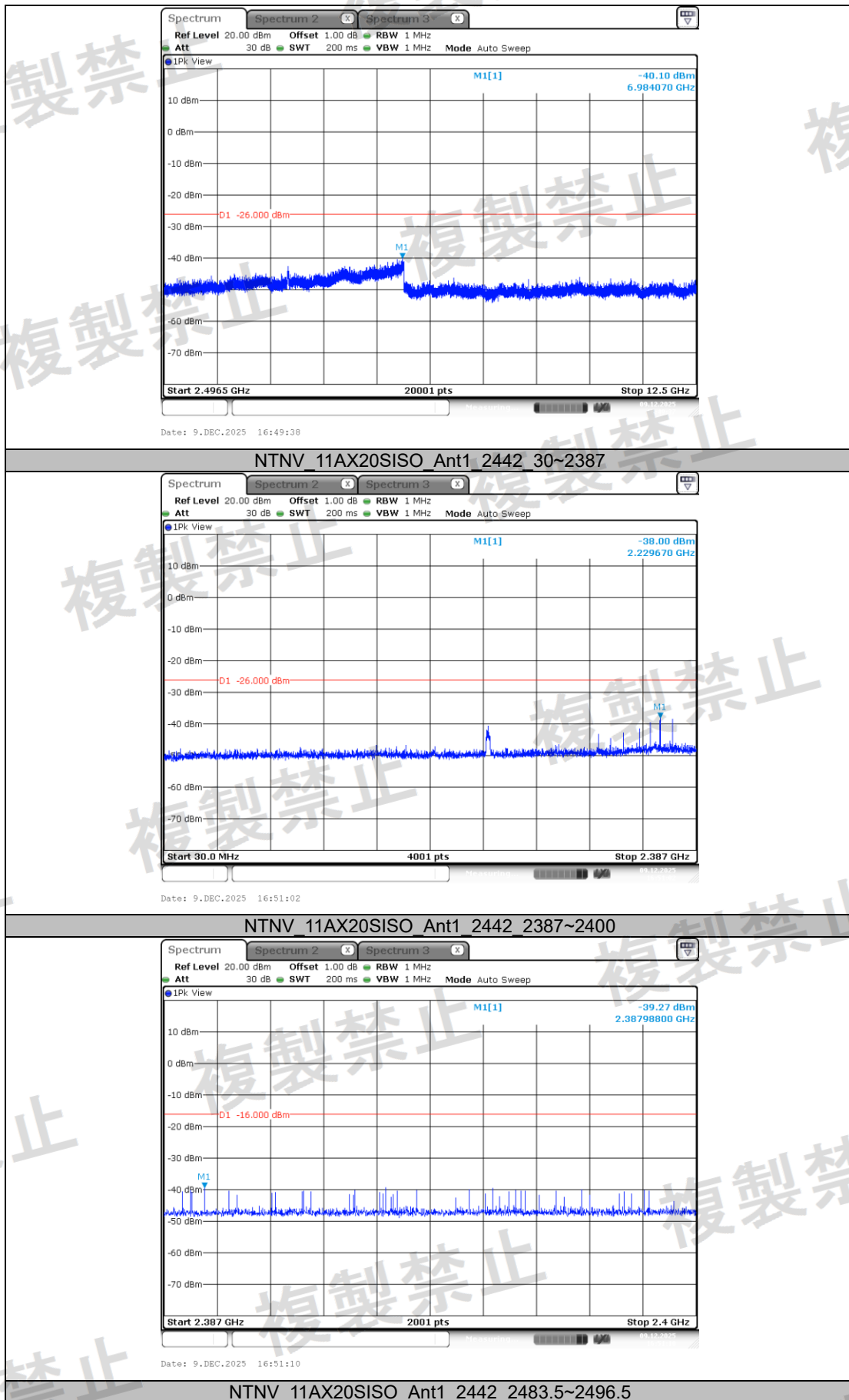
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NTNV_11AX20SISO_Ant1_2412_2483.5~2496.5



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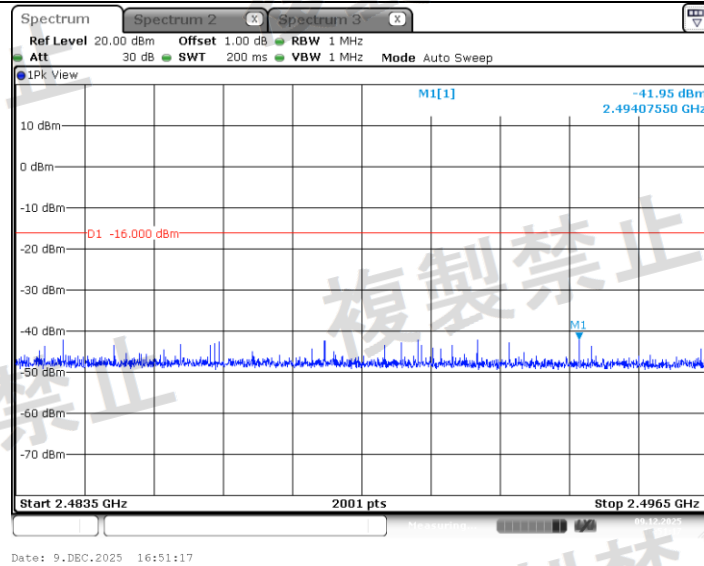


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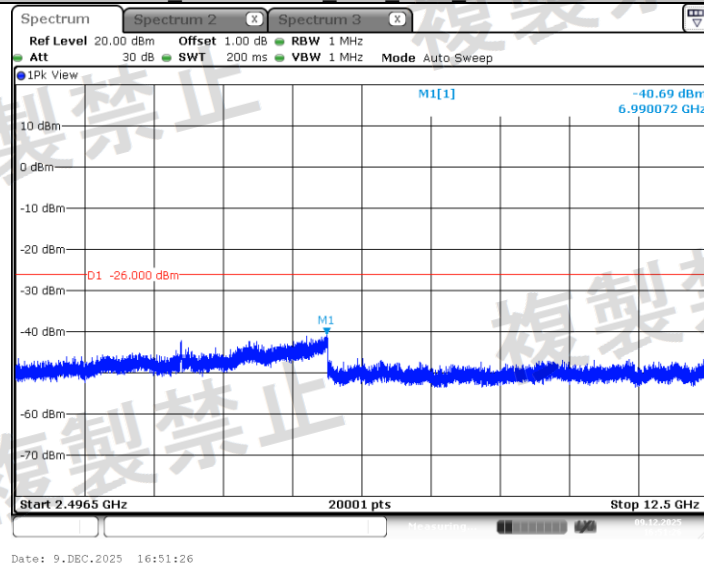
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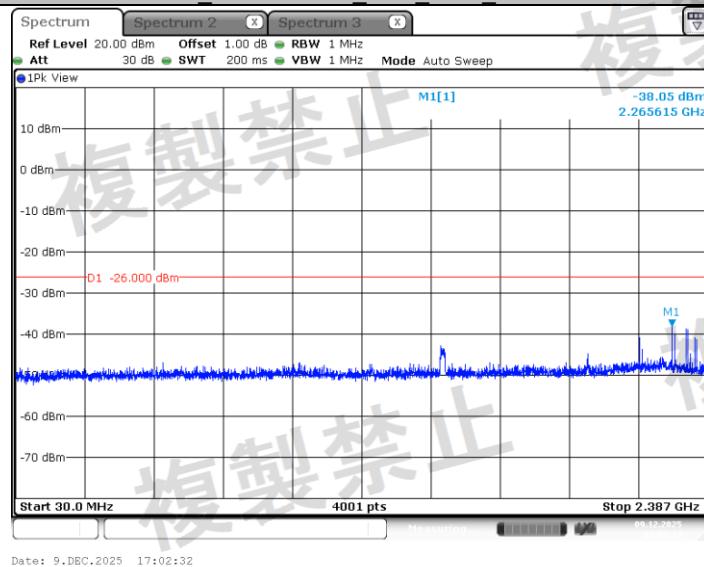
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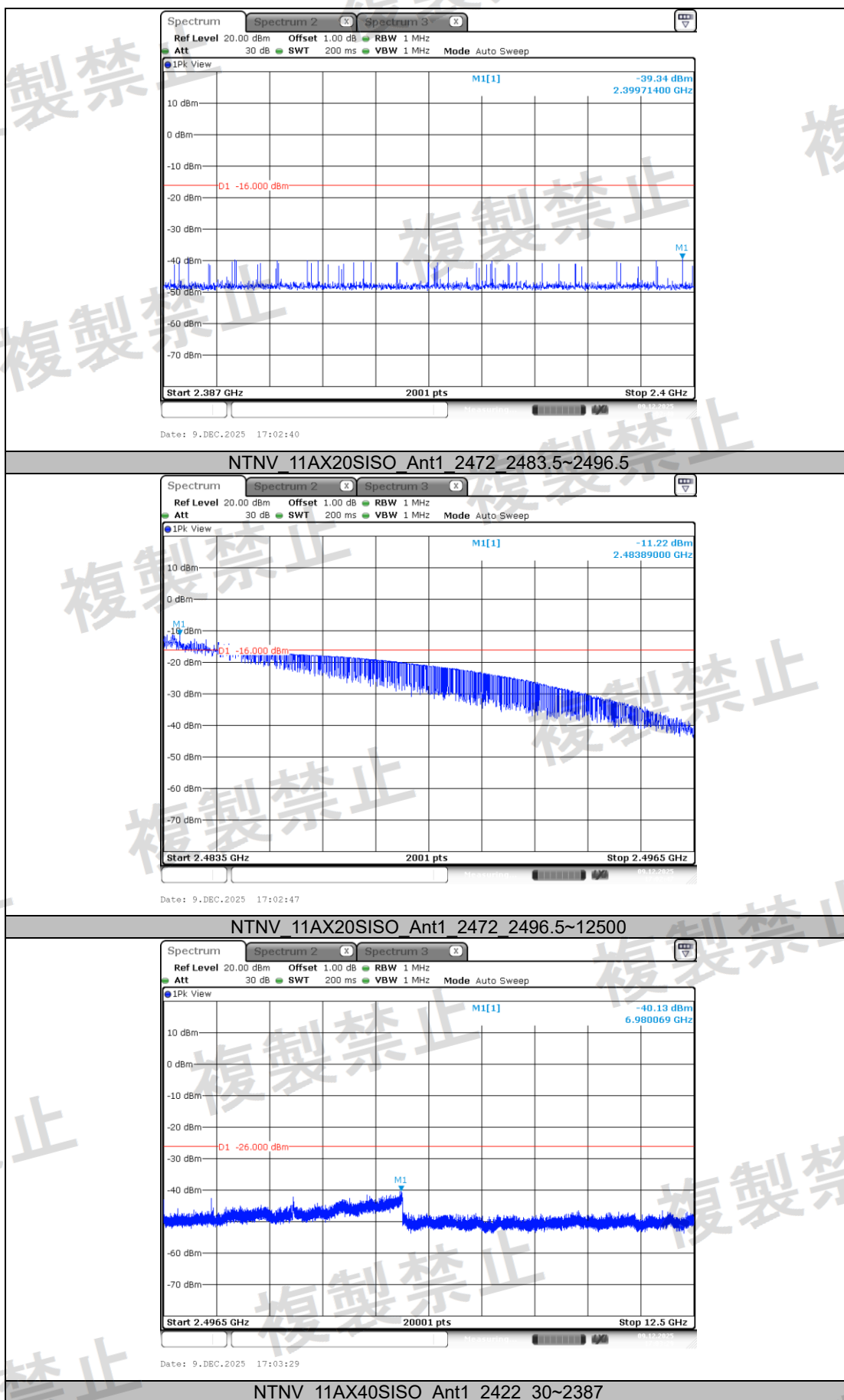
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NTNV_11AX20SISO_Ant1_2472_30~2387



NTNV_11AX20SISO_Ant1_2472_2387~2400

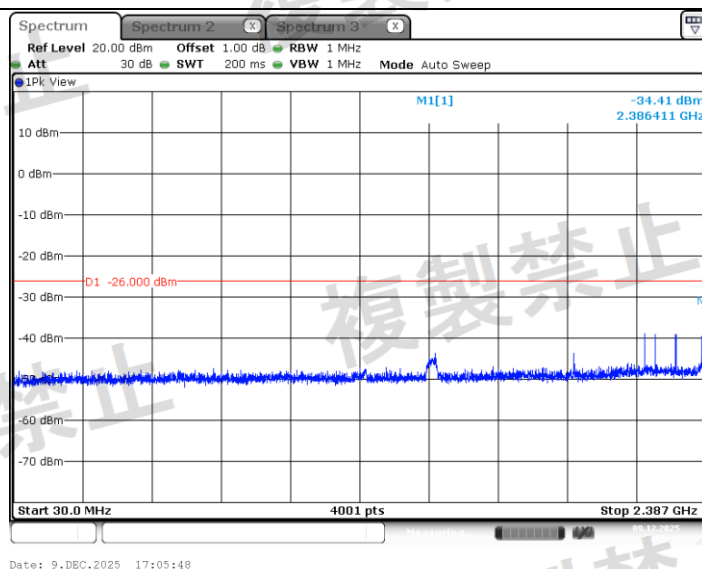


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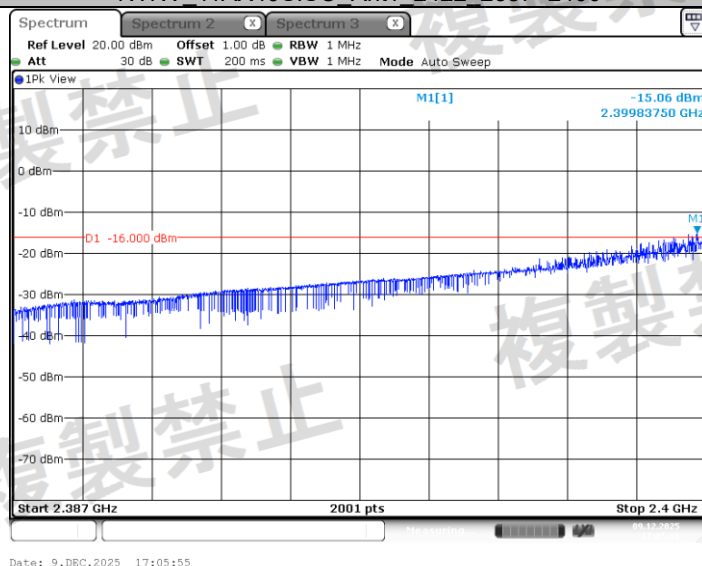
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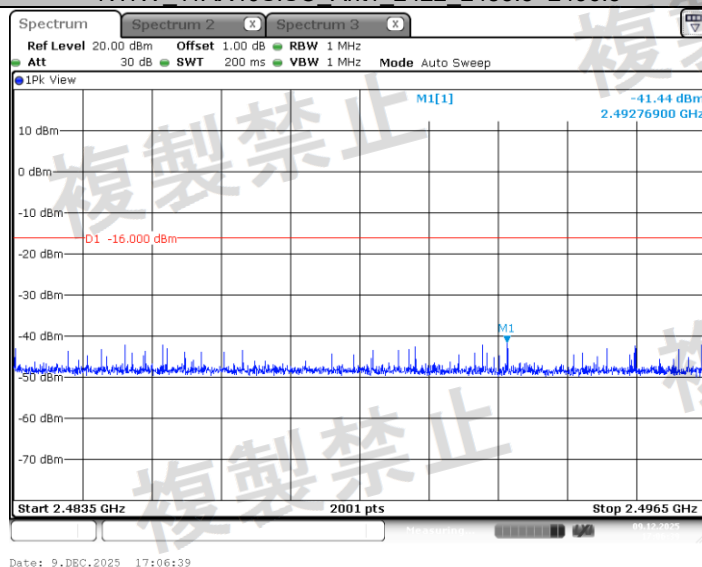
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NTNV_11AX40SISO_Ant1_2422_2387~2400



NTNV_11AX40SISO_Ant1_2422_2483.5~2496.5



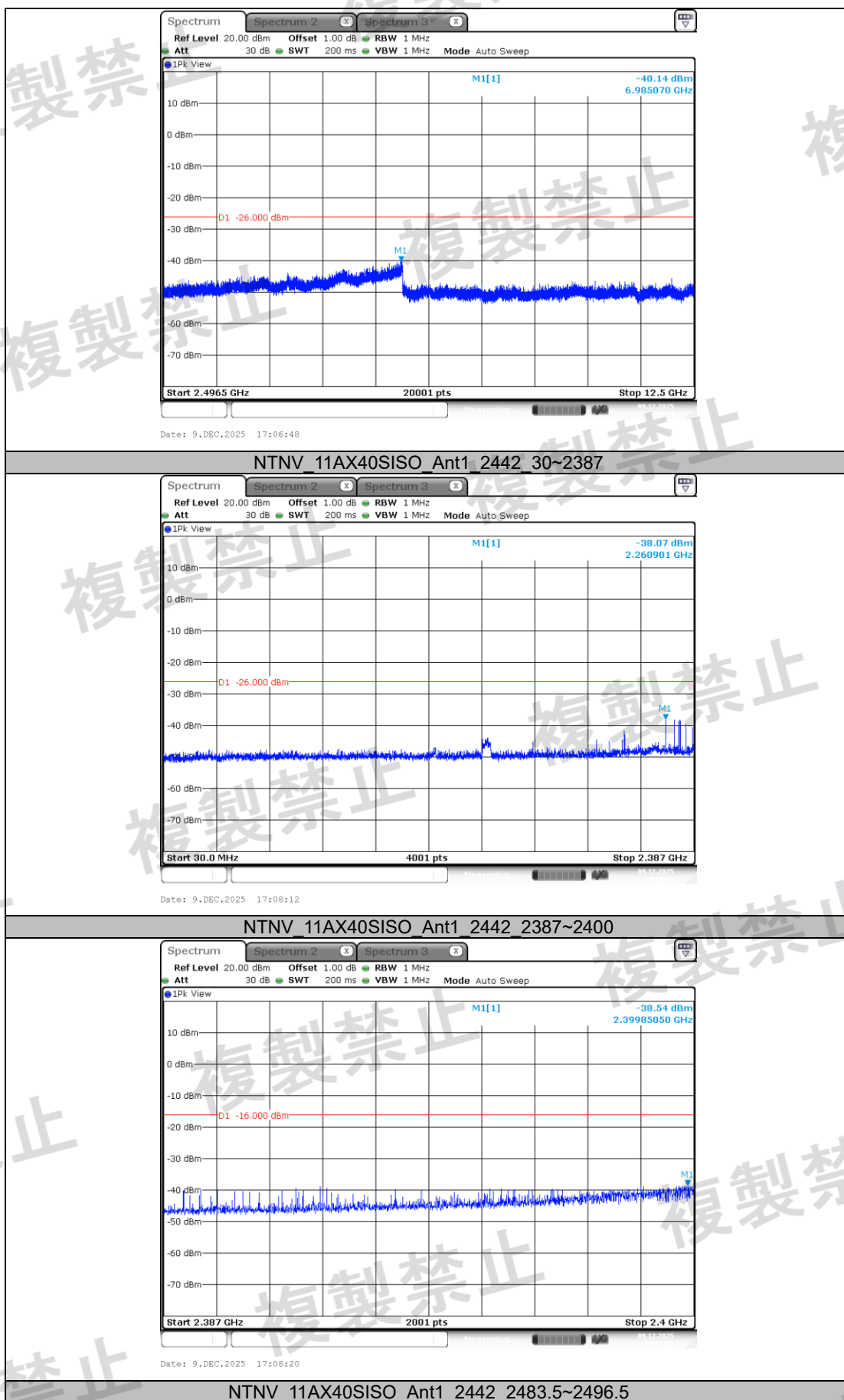
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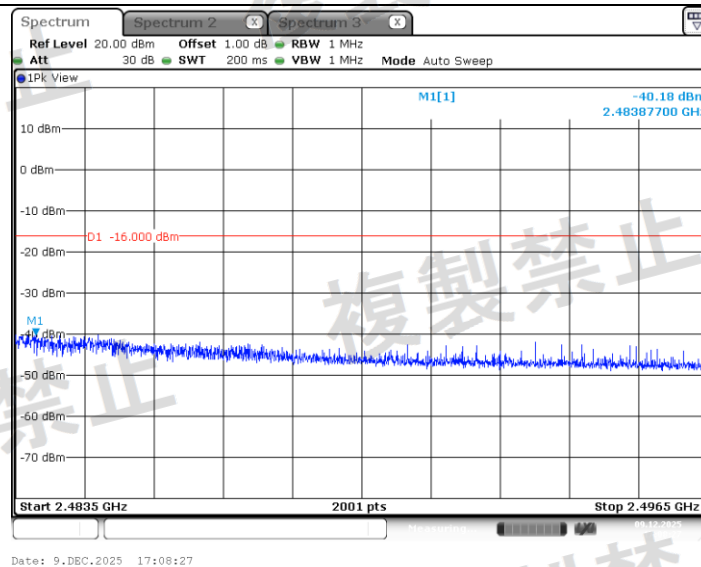
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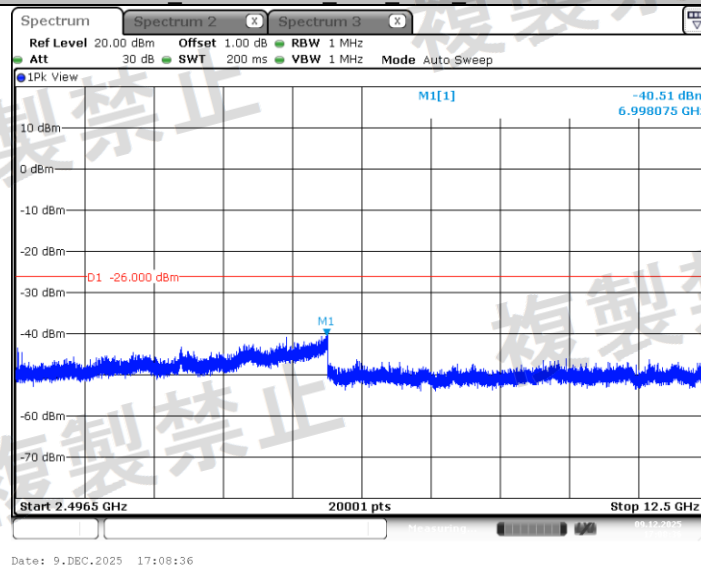
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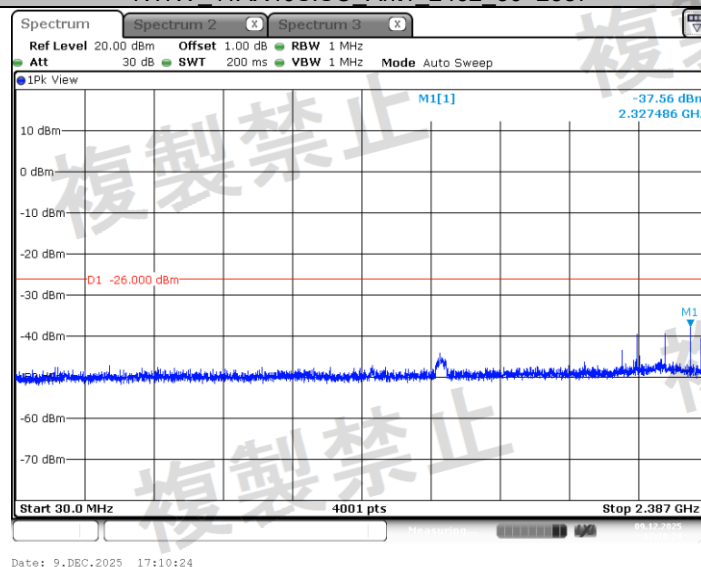
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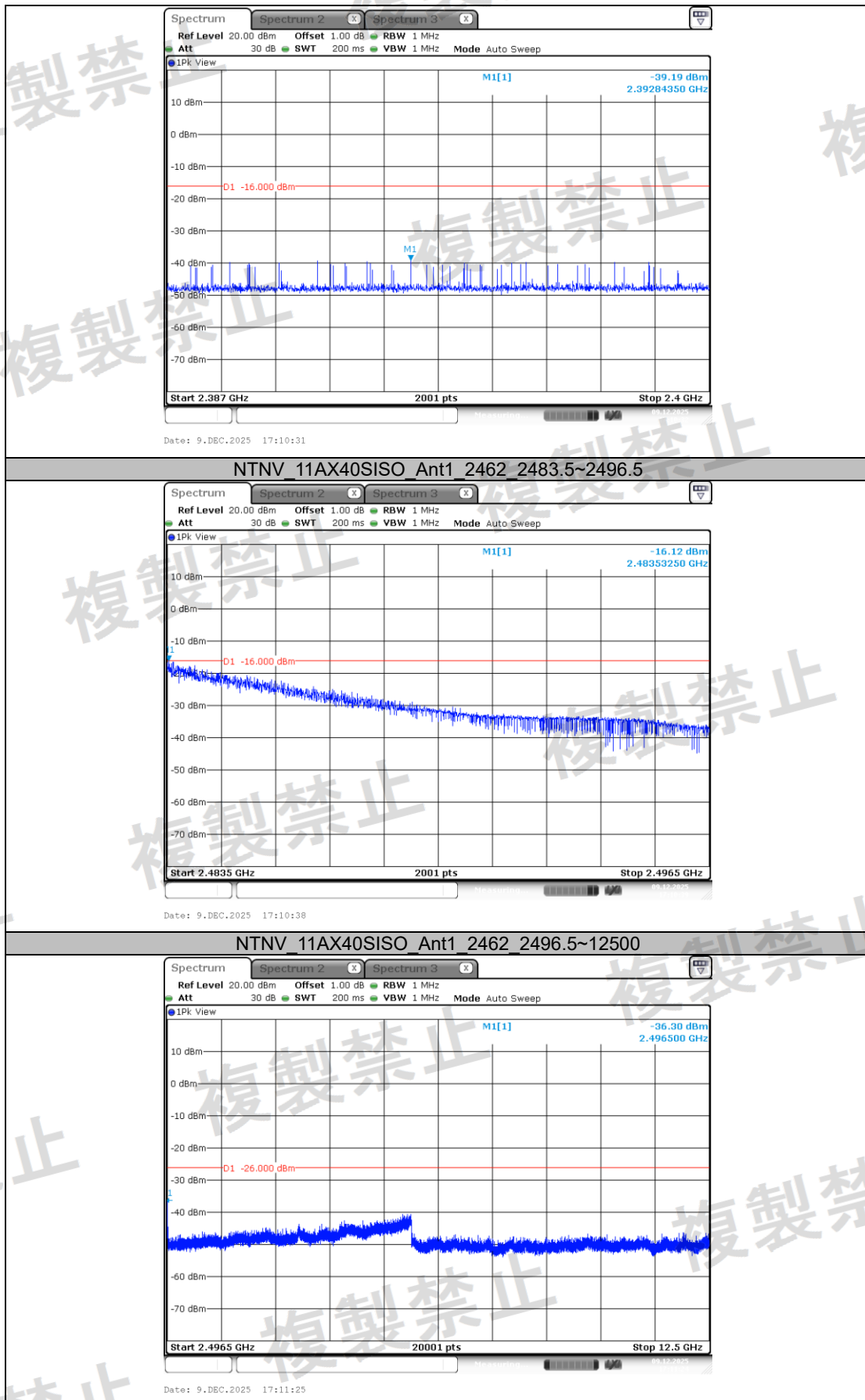
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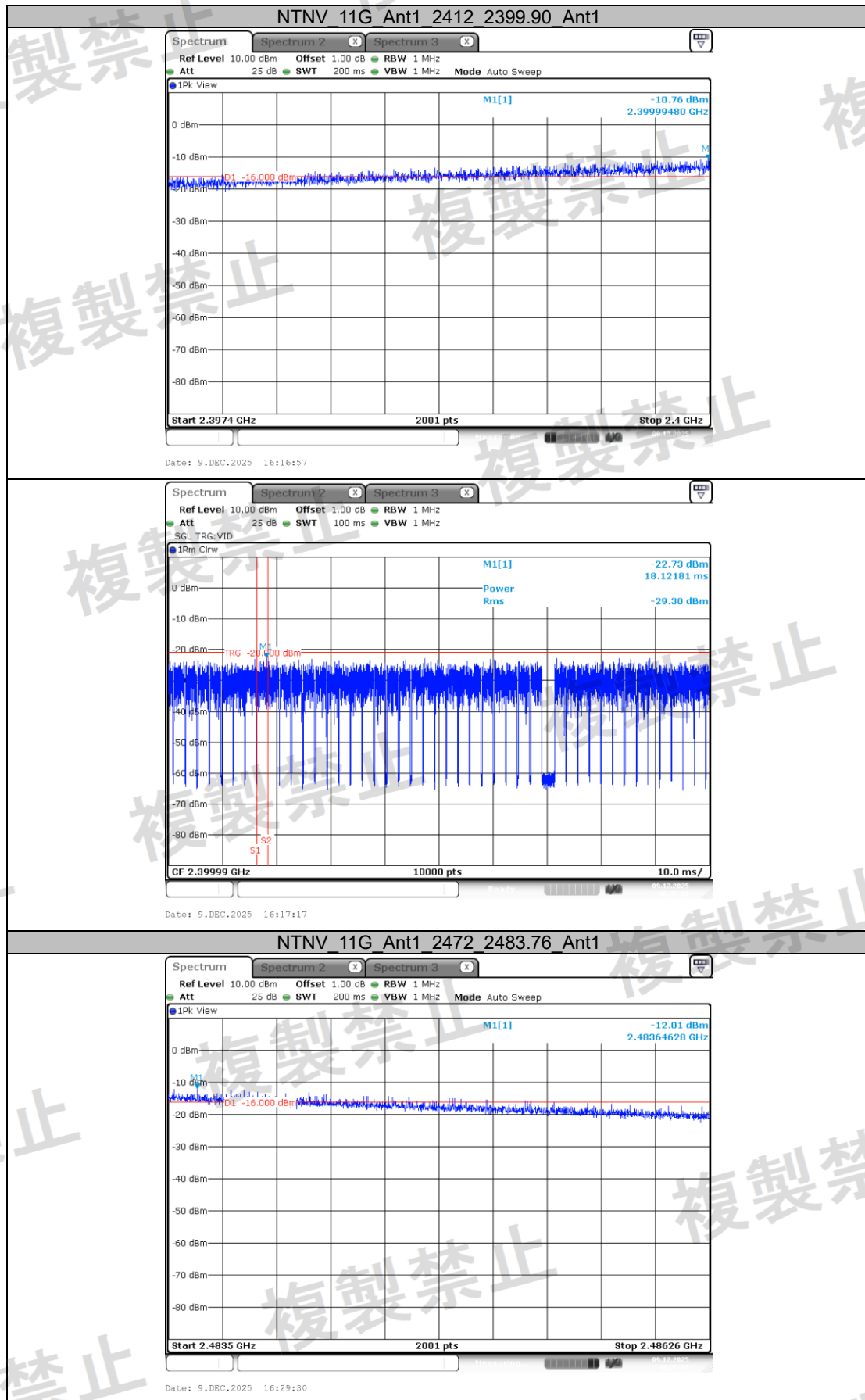


NTNV_11AX40SISO_Ant1_2462_30~2387



NTNV_11AX40SISO_Ant1_2462_2387~2400



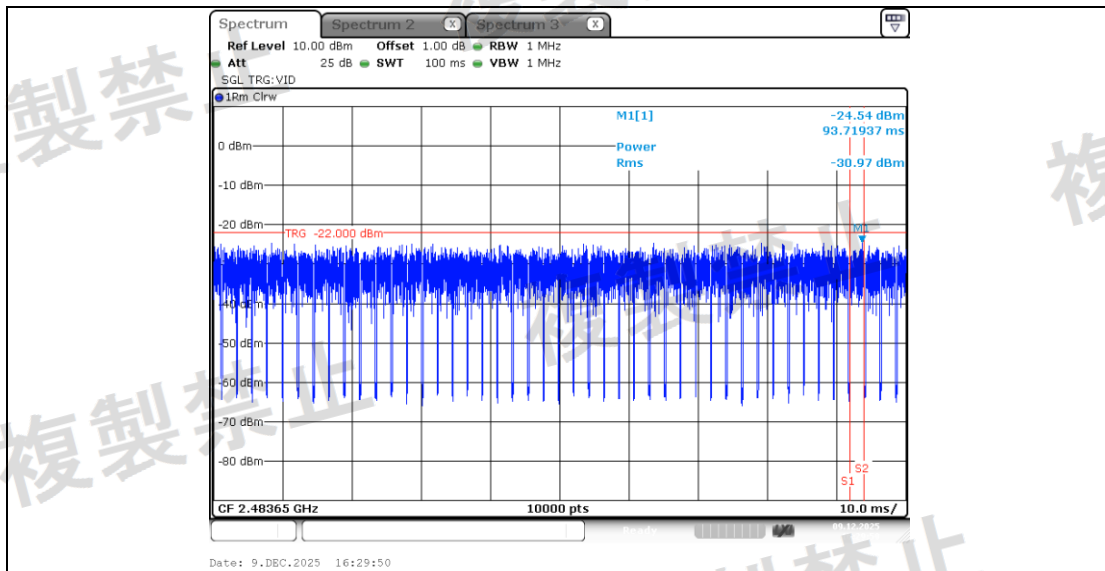


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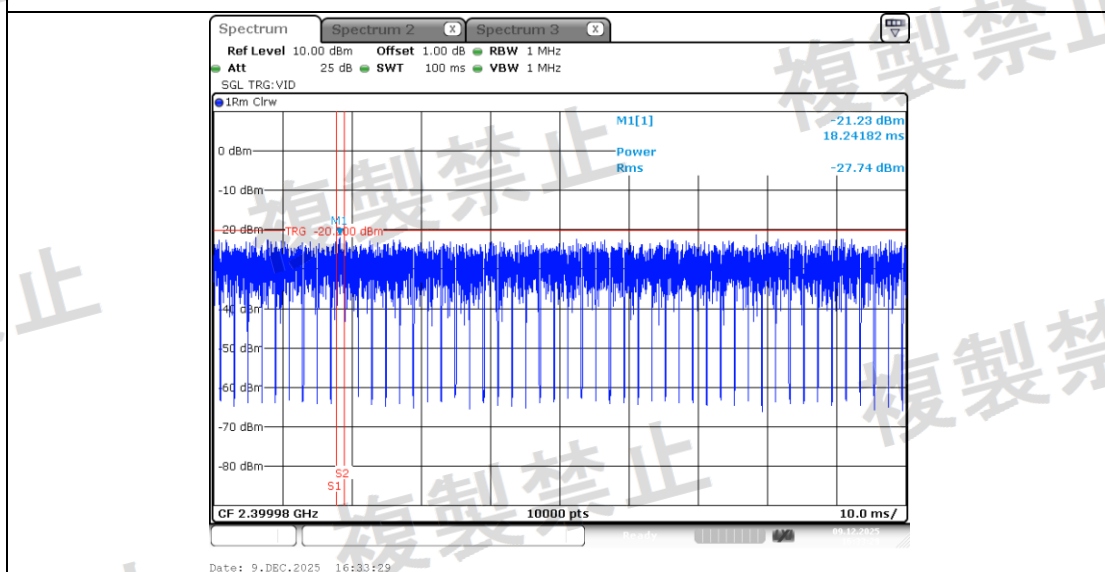
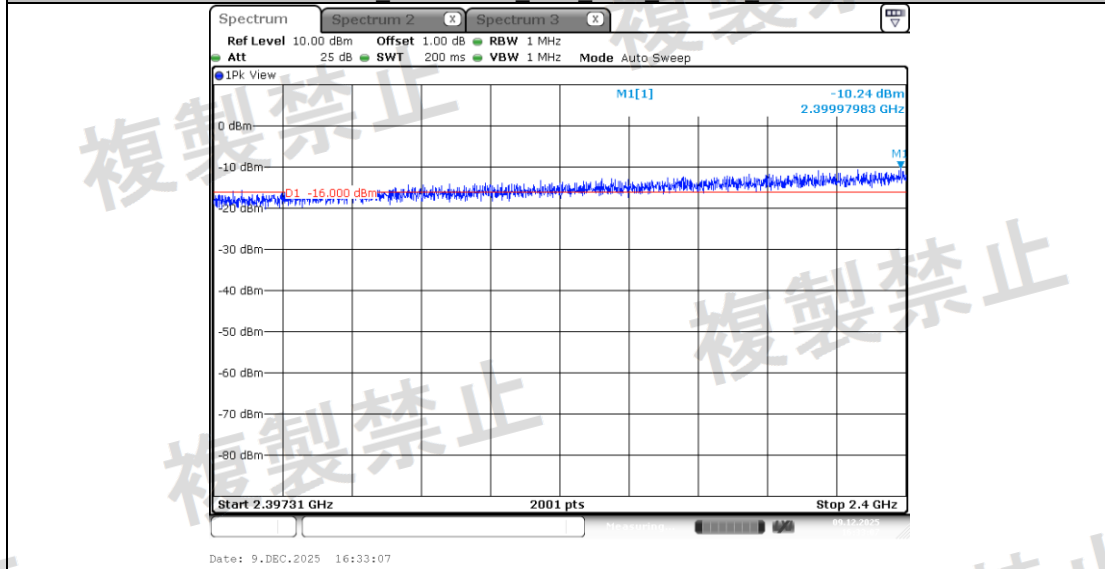
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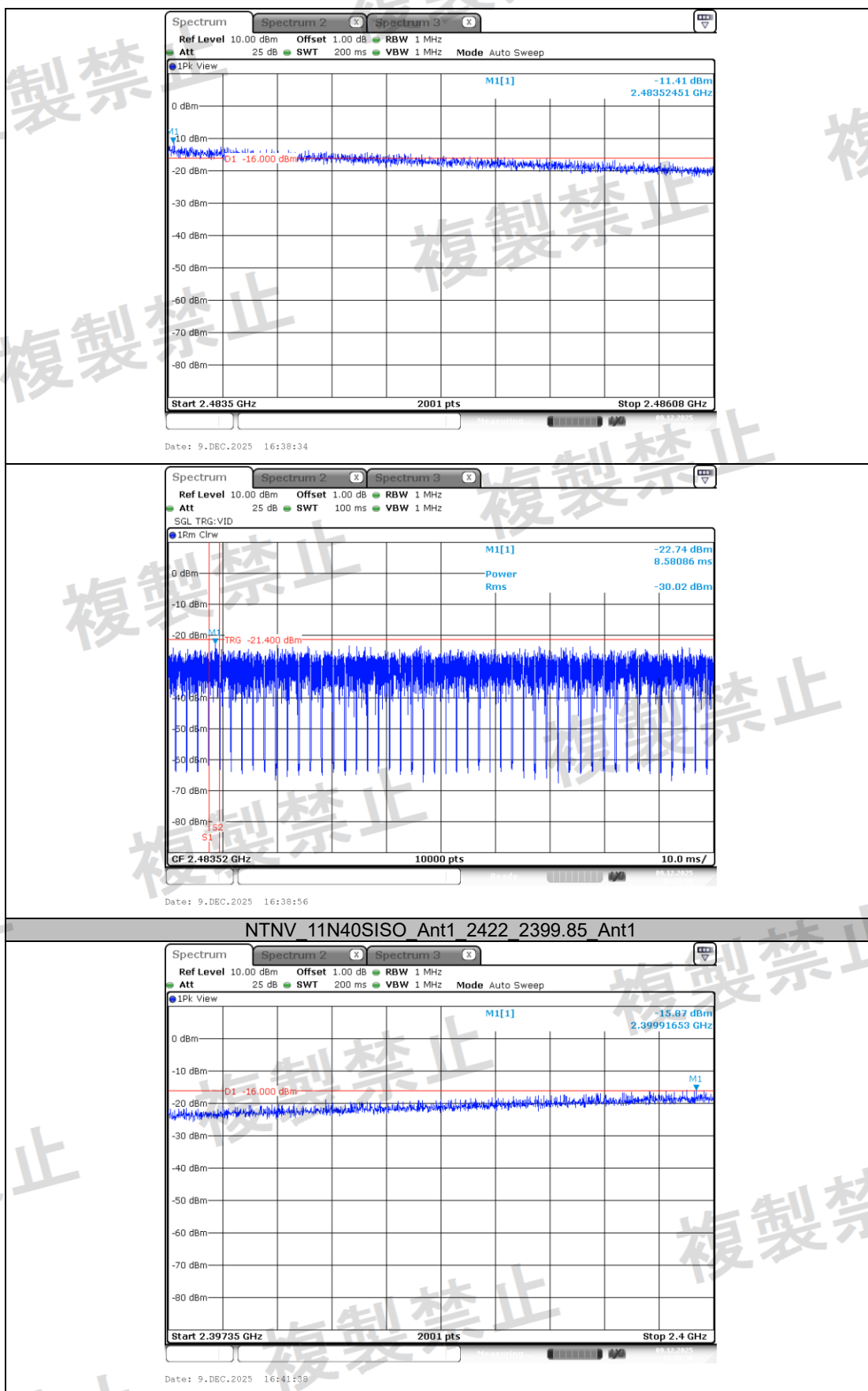
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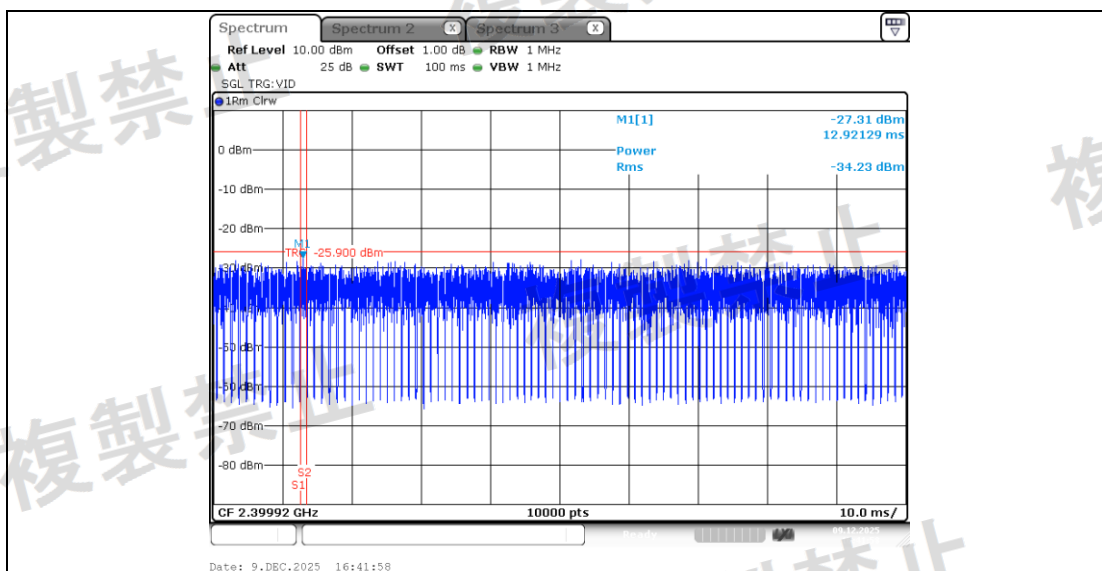


NTNV_11N20SISO_Ant1_2412_2399.81_Ant1

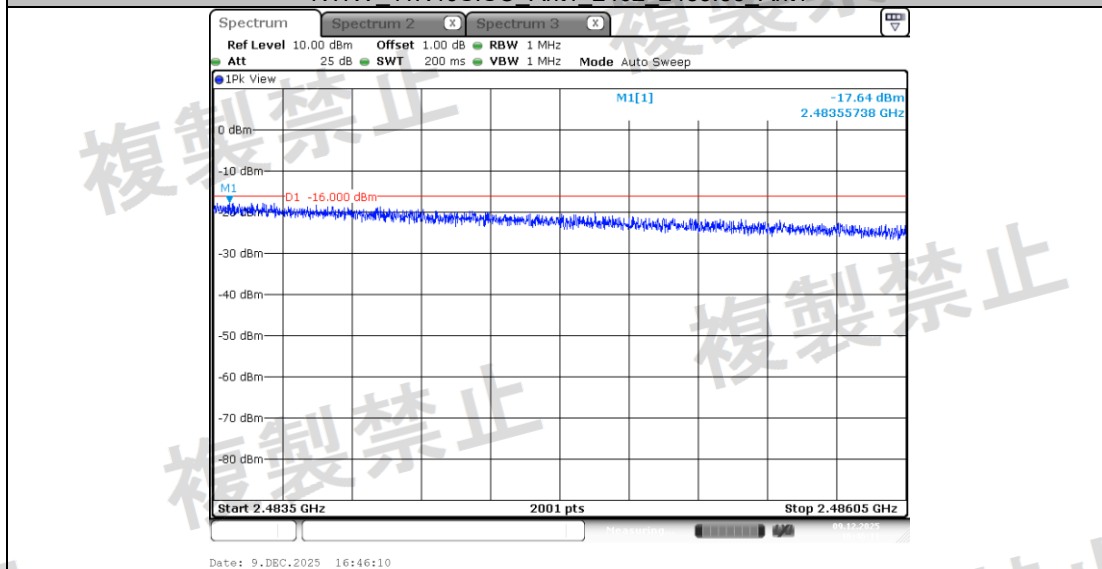


NTNV_11N20SISO_Ant1_2472_2483.58_Ant1

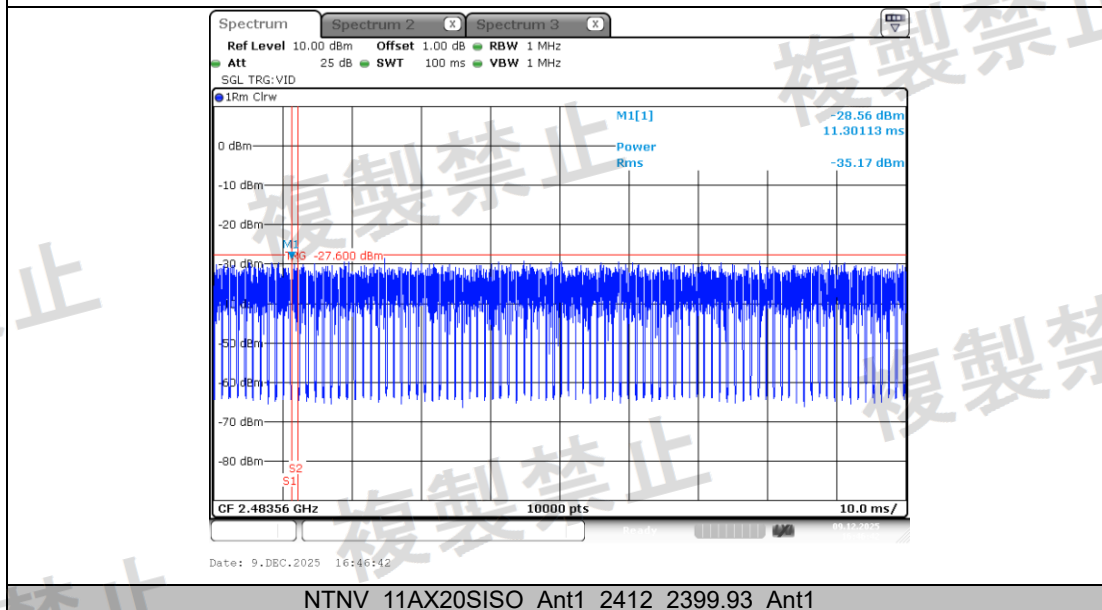


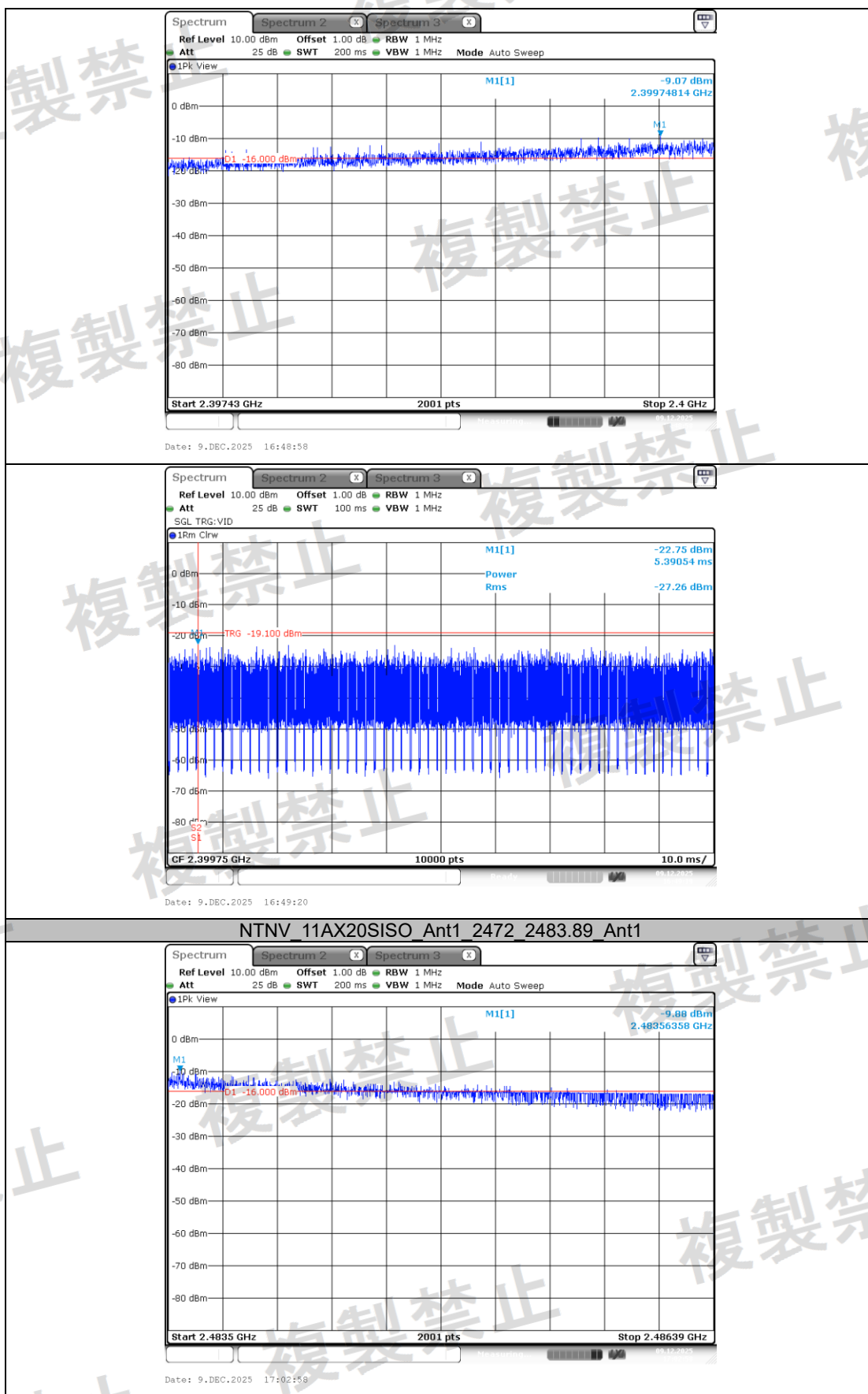


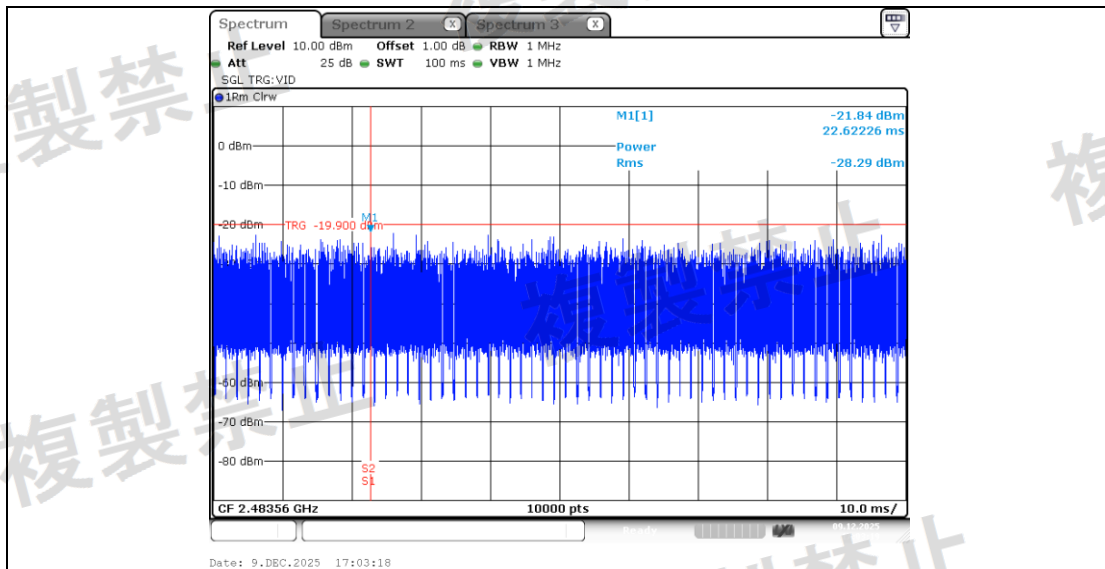
NTNV 11N40SISO Ant1 2462 2483.55 Ant1



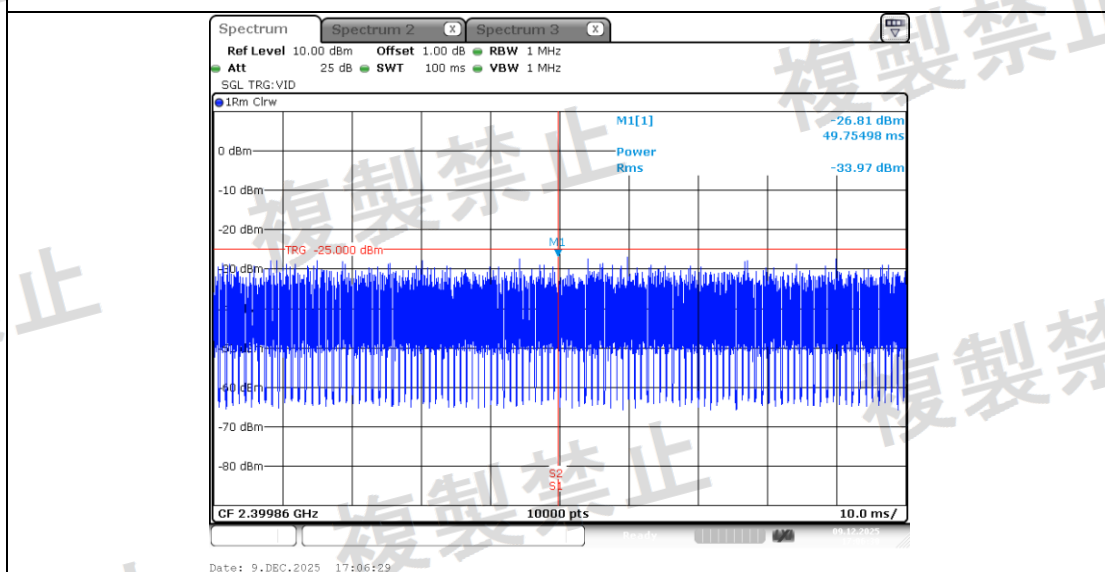
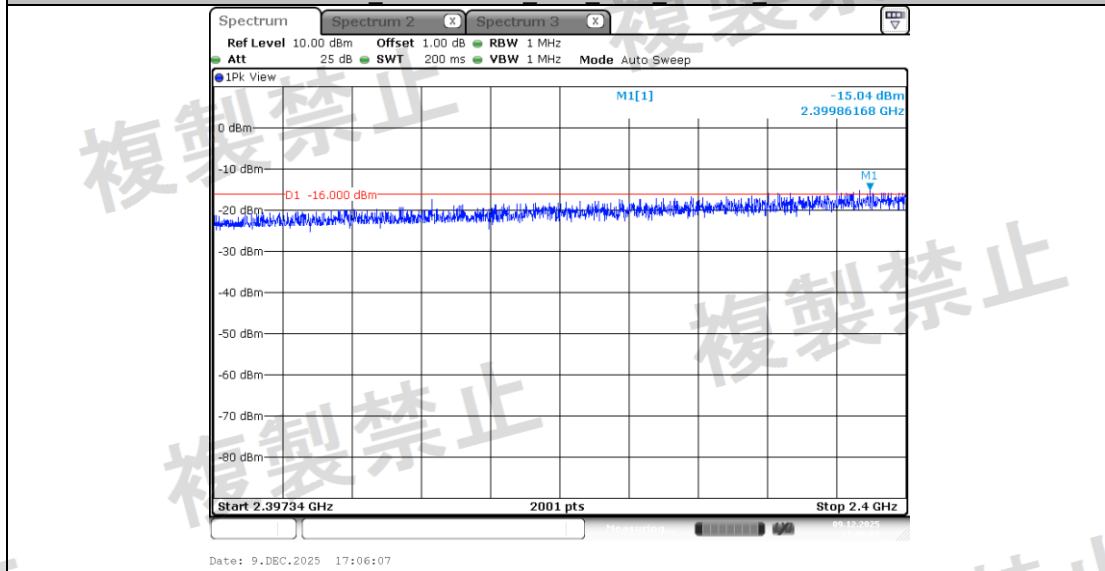
NTNV 11AX20SISO Ant1 2412 2399.93 Ant1



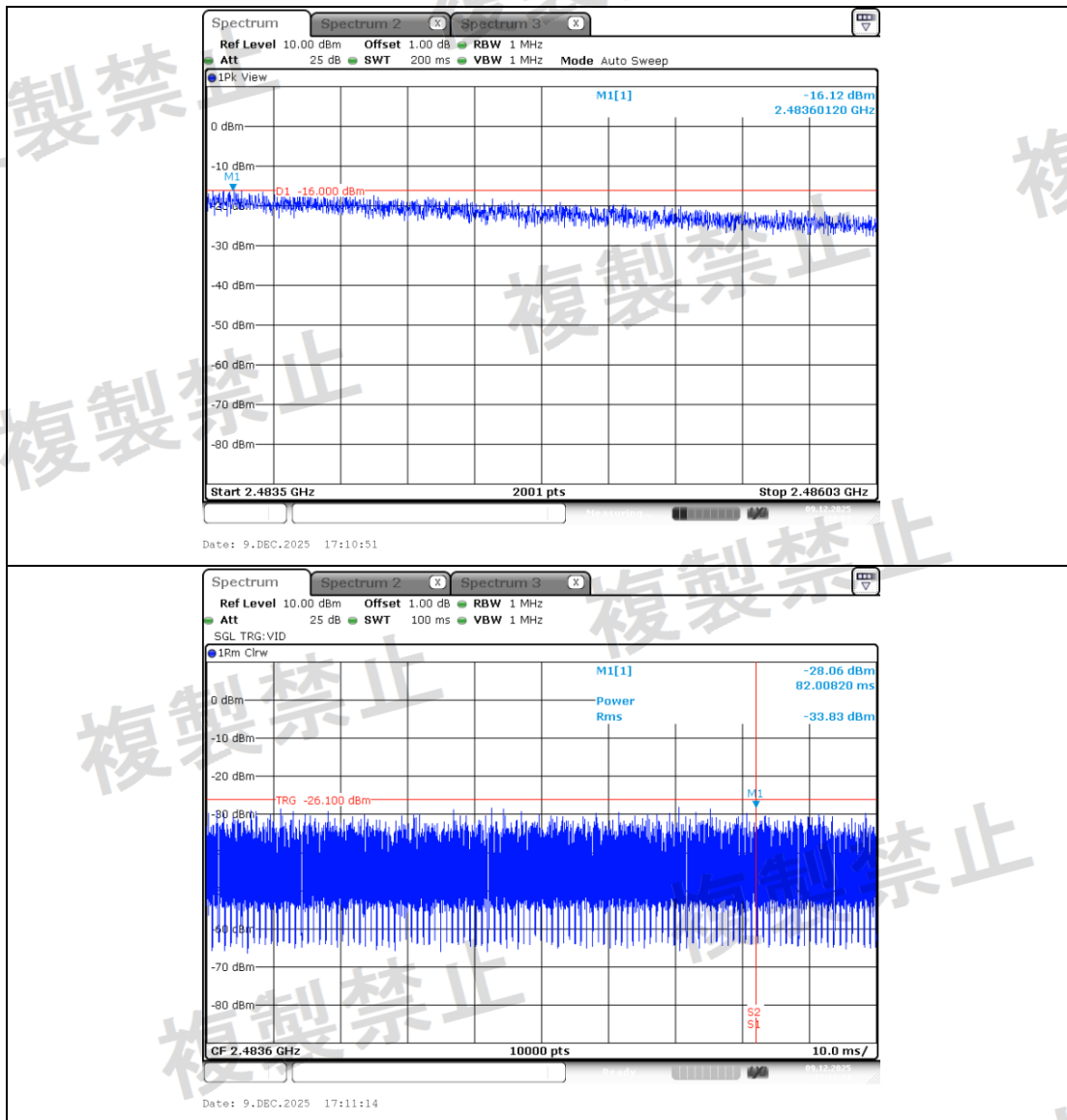




NTNV_11AX40SISO_Ant1_2422_2399.84_Ant1



NTNV_11AX40SISO_Ant1_2462_2483.53_Ant1





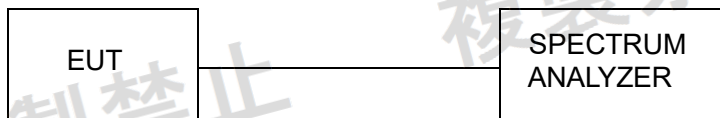
3.6. Receiver Spurious Emission and Unwanted Emission Intensity

LIMIT

Below 1GHz: 4.0nW (-54dBm) or less

Above 1GHz: 20nW (-47dBm) or less

TEST CONFIGURATION



TEST PROCEDURE

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

EUT Condition: Modulation

Spectrum Condition:

Frequency: 30MHz-12.5GHz

RBW: 100kHz (30MHz-1GHz), 1MHz (1GHz-12.5GHz)

VBW: 100kHz (30MHz-1GHz), 1MHz (1GHz-12.5GHz)

Sweep time: Auto

Detector mode: Peak

Indication mode: Max hold

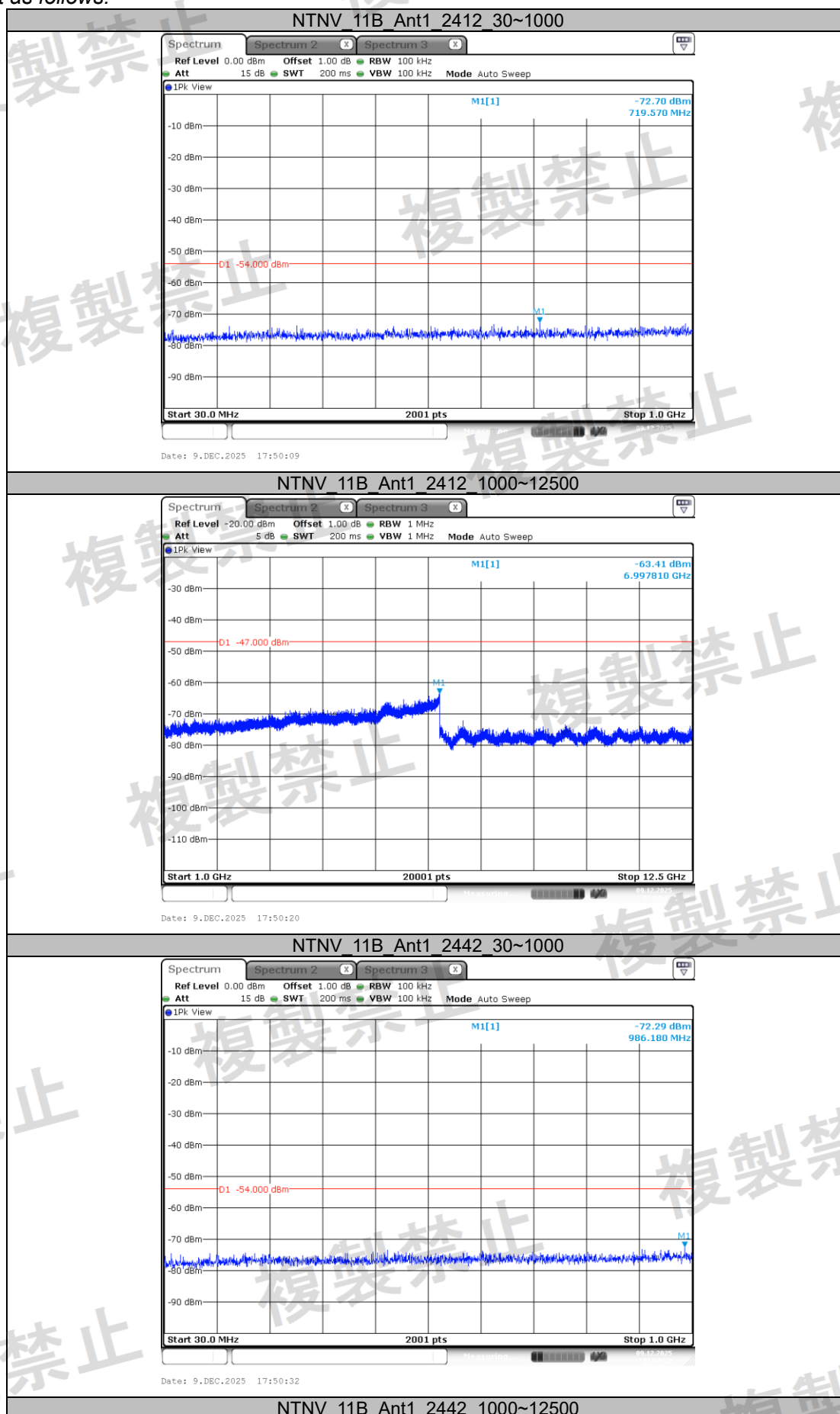
TEST RESULTS



Test Condition	Test Mode	Antenna	Channel	Freq. Range [MHz]	Freq. [MHz]	Result [dBm/MHz]	Limit [dBm/MHz]	Result [μ W/MHz]	Limit [μ W/MHz]	Verdict
NTNV	11B	Ant1	2412	30~1000	719.57	-72.70	≤ -54	0.05370	≤ 4	PASS
				1000~12500	6997.81	-63.41	≤ -47	0.45604	≤ 20	PASS
			2442	30~1000	986.18	-72.29	≤ -54	0.05902	≤ 4	PASS
				1000~12500	6960.44	-63.10	≤ -47	0.48978	≤ 20	PASS
			2472	30~1000	973.10	-72.81	≤ -54	0.05236	≤ 4	PASS
				1000~12500	6996.09	-62.94	≤ -47	0.50816	≤ 20	PASS
	11G	Ant1	2412	30~1000	894.57	-73.40	≤ -54	0.04571	≤ 4	PASS
				1000~12500	6998.39	-62.36	≤ -47	0.58076	≤ 20	PASS
			2442	30~1000	969.70	-73.09	≤ -54	0.04909	≤ 4	PASS
				1000~12500	6976.54	-63.27	≤ -47	0.47098	≤ 20	PASS
			2472	30~1000	981.34	-73.13	≤ -54	0.04864	≤ 4	PASS
				1000~12500	6982.86	-63.58	≤ -47	0.43853	≤ 20	PASS
	11N20SISO	Ant1	2412	30~1000	982.79	-72.94	≤ -54	0.05082	≤ 4	PASS
				1000~12500	6998.96	-62.23	≤ -47	0.59841	≤ 20	PASS
			2442	30~1000	882.93	-72.46	≤ -54	0.05675	≤ 4	PASS
				1000~12500	6976.54	-62.47	≤ -47	0.56624	≤ 20	PASS
			2472	30~1000	630.37	-72.99	≤ -54	0.05023	≤ 4	PASS
				1000~12500	6986.31	-61.80	≤ -47	0.66069	≤ 20	PASS
	11N40SISO	Ant1	2422	30~1000	945.46	-73.27	≤ -54	0.04710	≤ 4	PASS
				1000~12500	6998.39	-62.88	≤ -47	0.51523	≤ 20	PASS
			2442	30~1000	998.79	-71.96	≤ -54	0.06368	≤ 4	PASS
				1000~12500	6987.46	-63.35	≤ -47	0.46238	≤ 20	PASS
			2462	30~1000	592.08	-73.10	≤ -54	0.04898	≤ 4	PASS
				1000~12500	6982.29	-63.03	≤ -47	0.49774	≤ 20	PASS
	11AX20SISO	Ant1	2412	30~1000	198.45	-73.14	≤ -54	0.04853	≤ 4	PASS
				1000~12500	6994.36	-63.72	≤ -47	0.42462	≤ 20	PASS
			2442	30~1000	978.43	-72.03	≤ -54	0.06266	≤ 4	PASS
				1000~12500	6988.04	-63.31	≤ -47	0.46666	≤ 20	PASS
			2472	30~1000	623.10	-72.69	≤ -54	0.05383	≤ 4	PASS
				1000~12500	6950.09	-63.80	≤ -47	0.41687	≤ 20	PASS
	11AX40SISO	Ant1	2422	30~1000	924.62	-73.15	≤ -54	0.04842	≤ 4	PASS
				1000~12500	6997.81	-63.32	≤ -47	0.46559	≤ 20	PASS
			2442	30~1000	626.49	-73.13	≤ -54	0.04864	≤ 4	PASS
				1000~12500	6999.54	-62.86	≤ -47	0.51761	≤ 20	PASS
			2462	30~1000	304.62	-73.34	≤ -54	0.04634	≤ 4	PASS
				1000~12500	6997.24	-61.90	≤ -47	0.64565	≤ 20	PASS



Test plot as follows:



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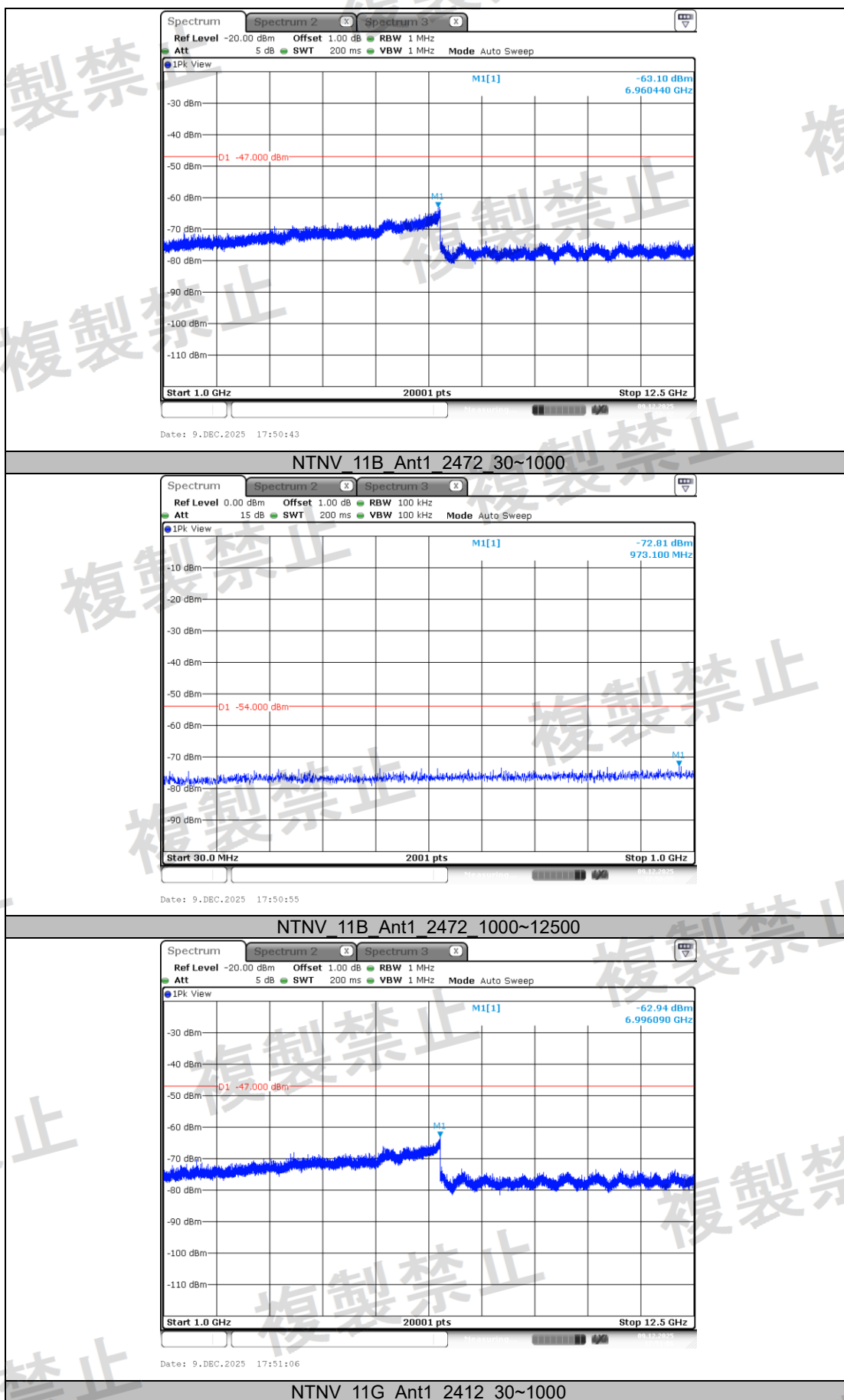
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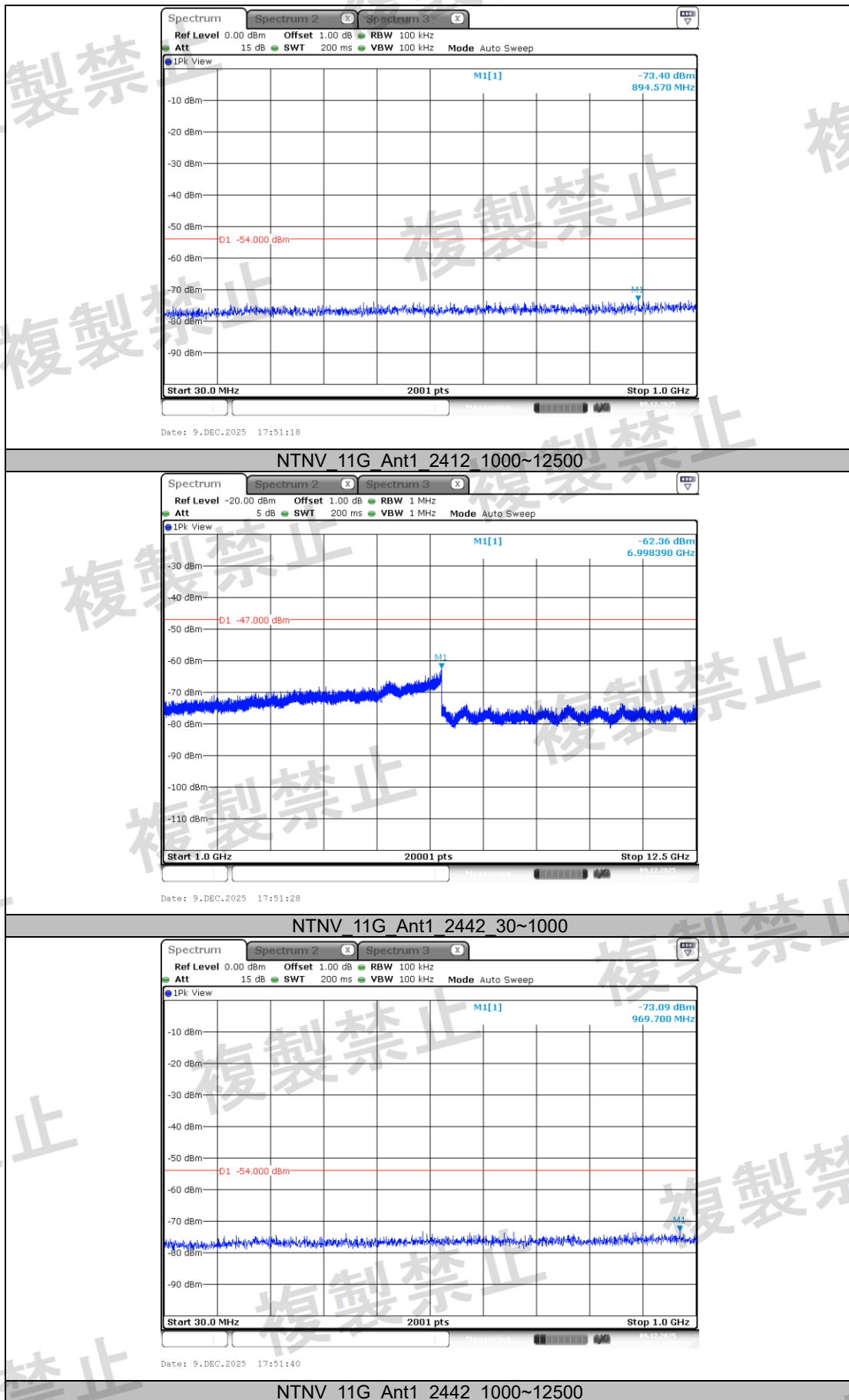


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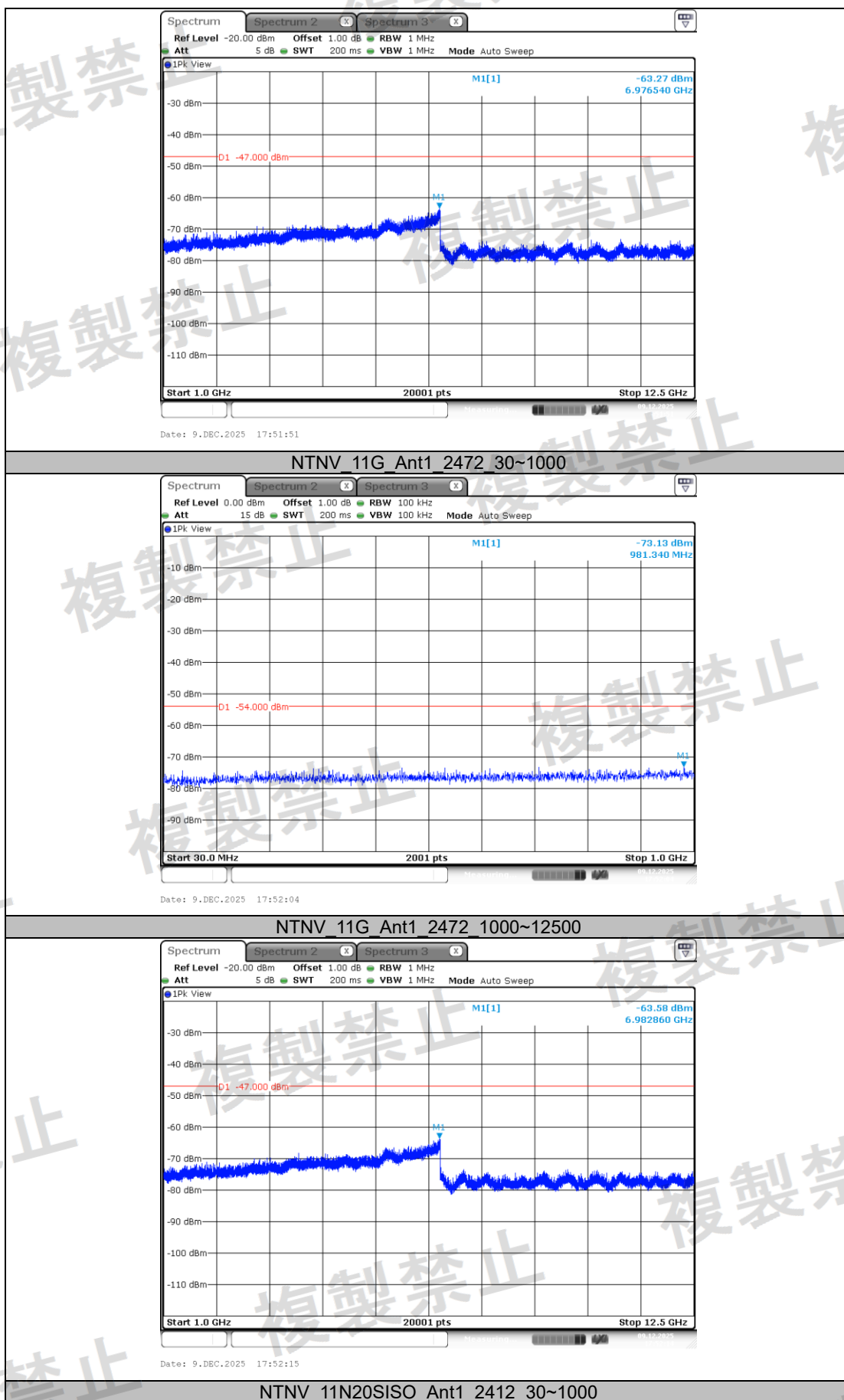


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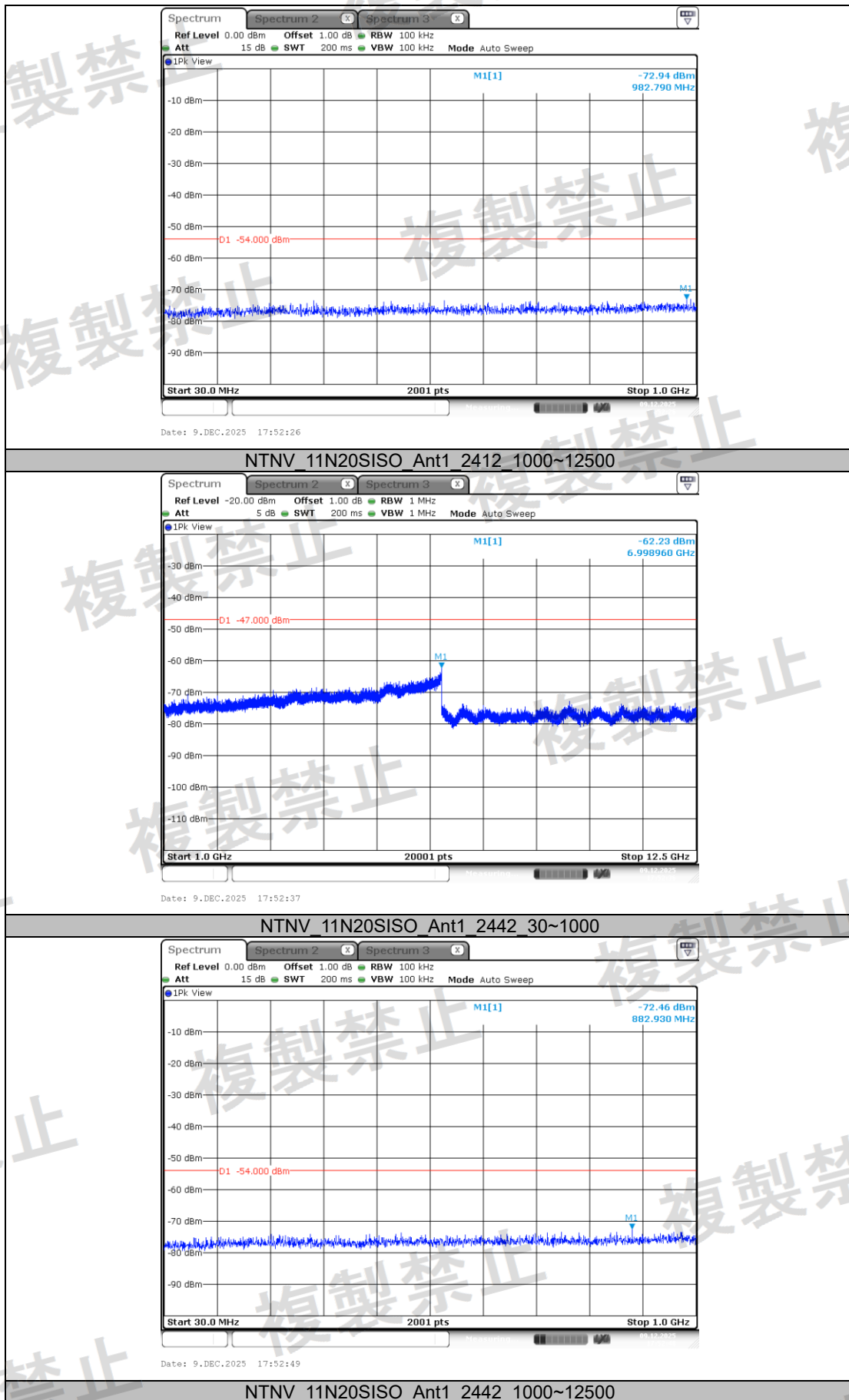


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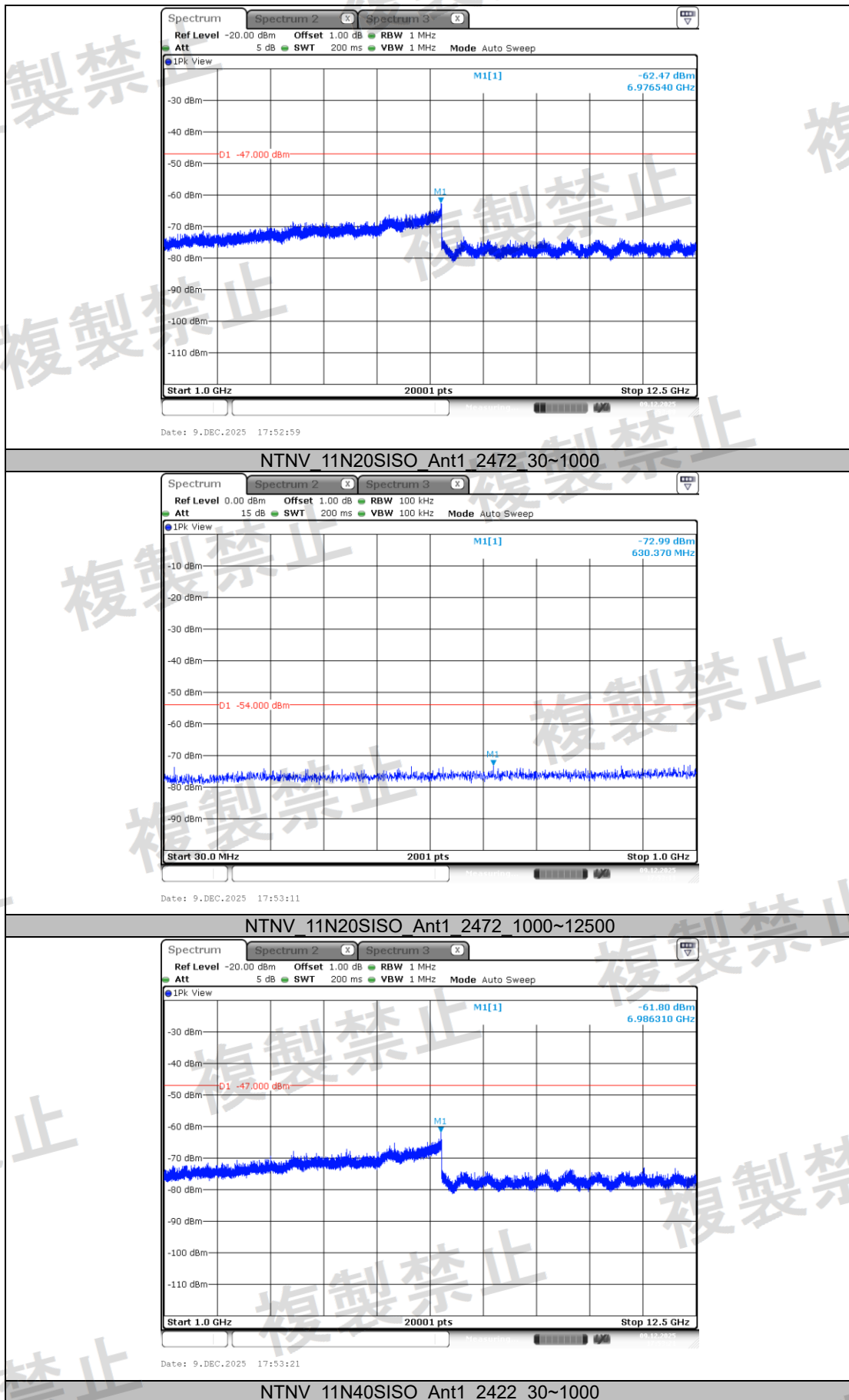


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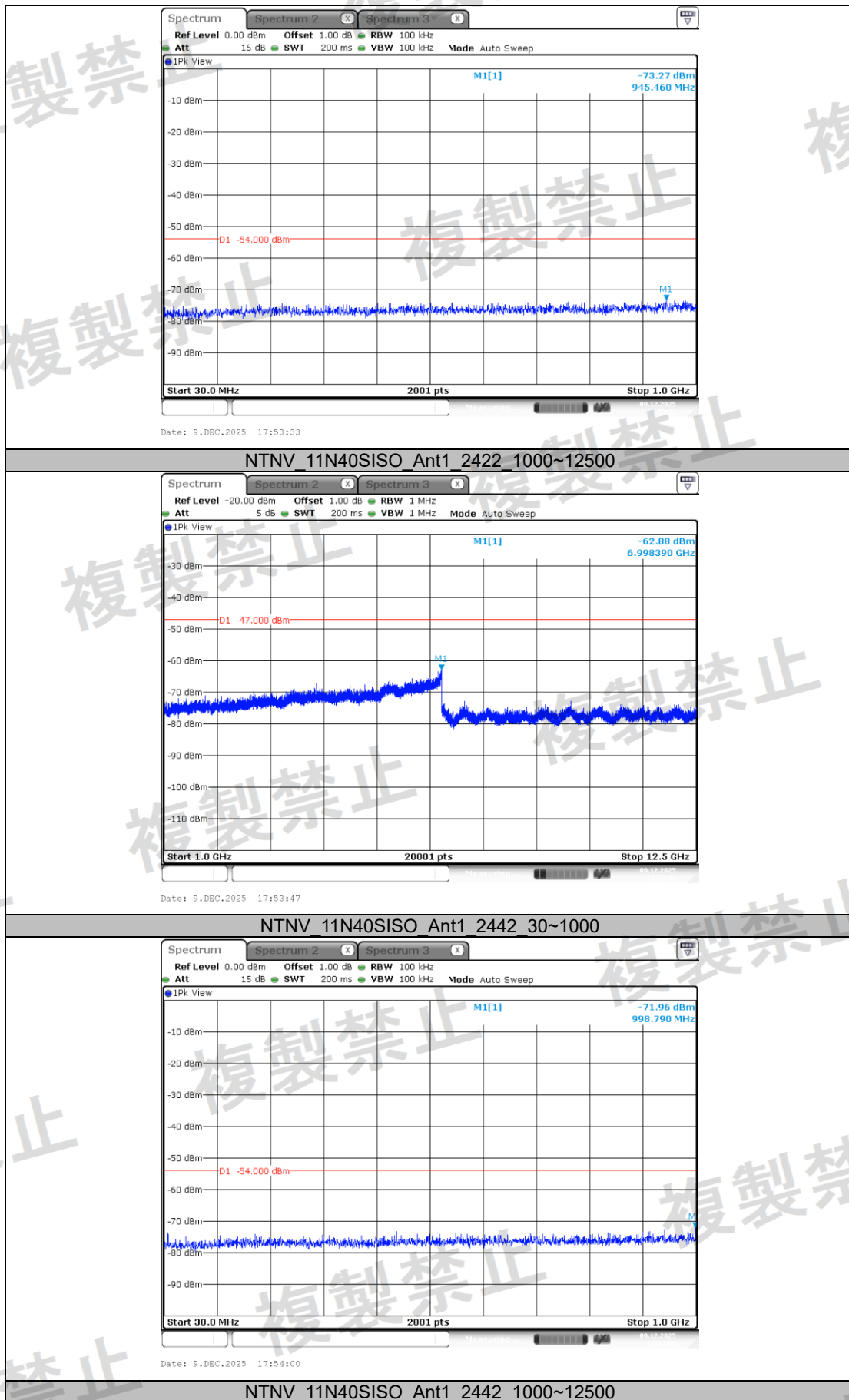


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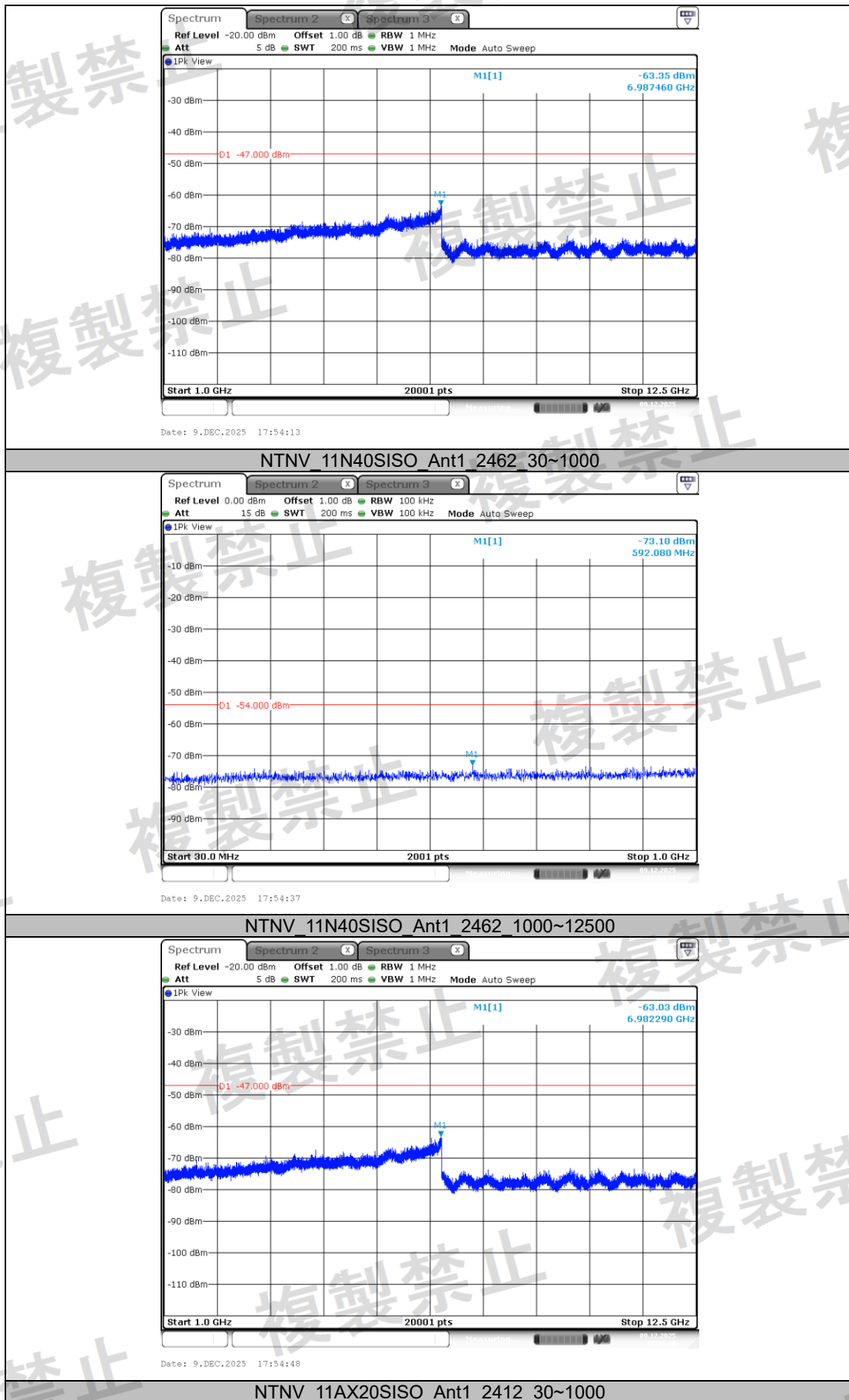


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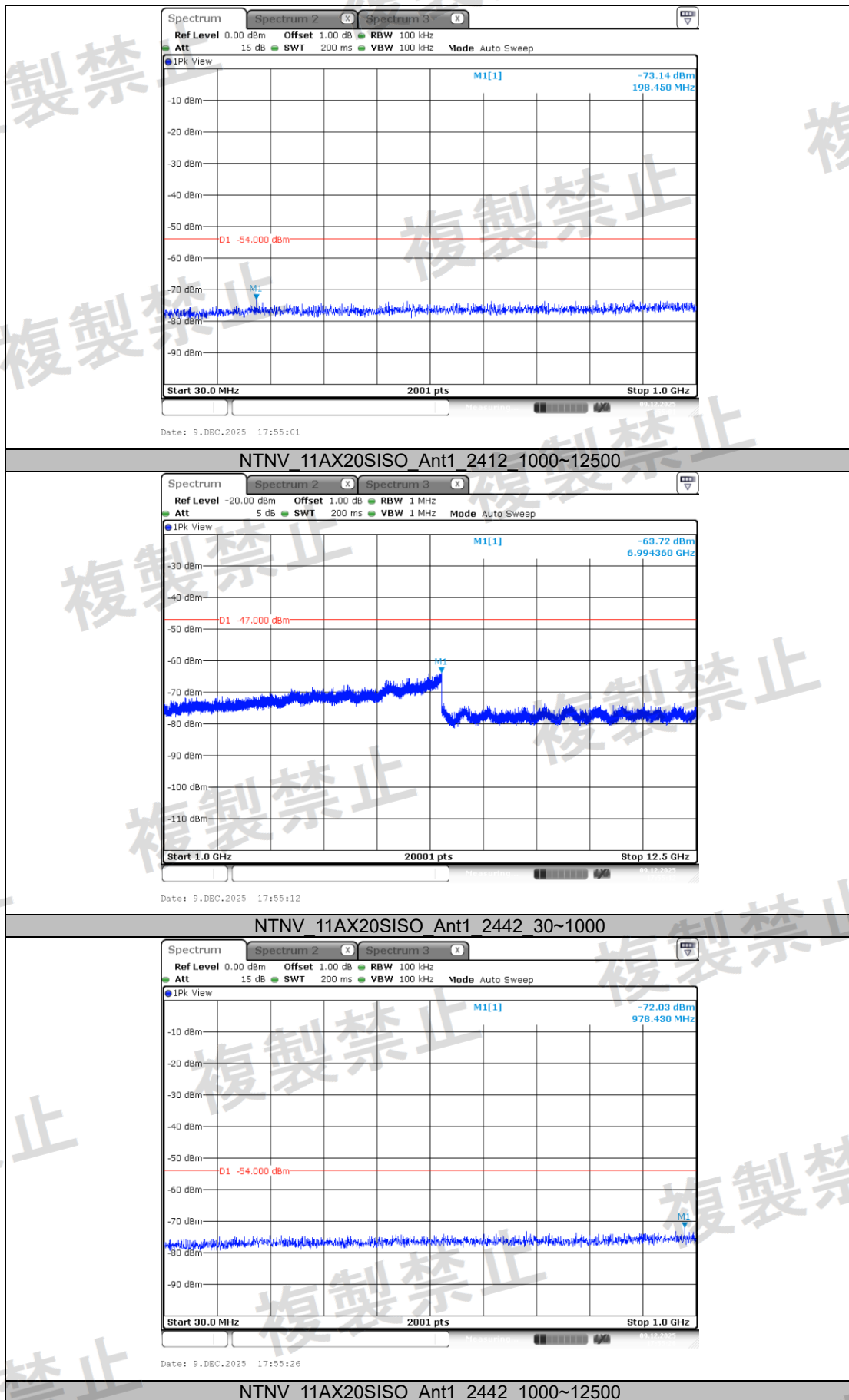


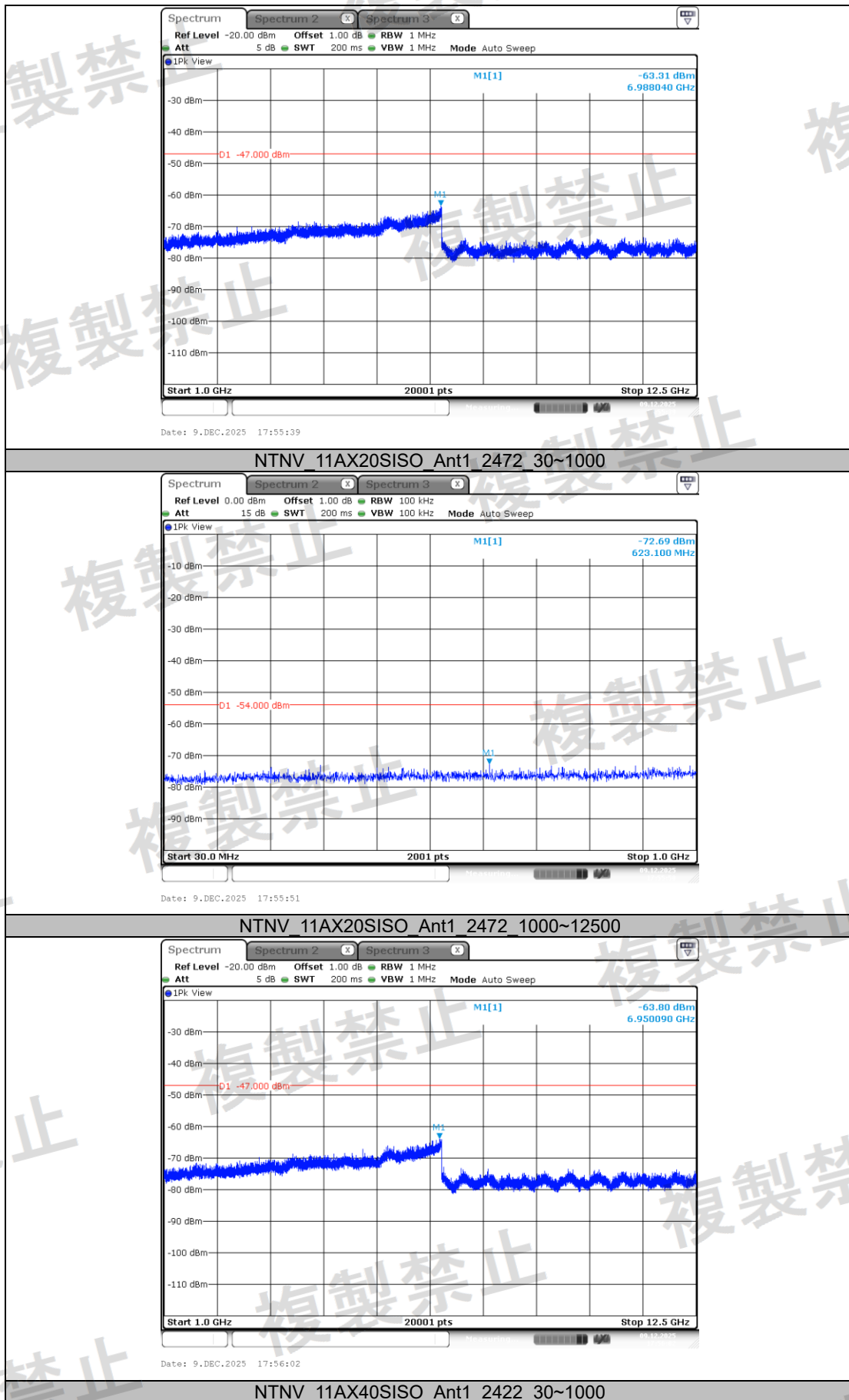
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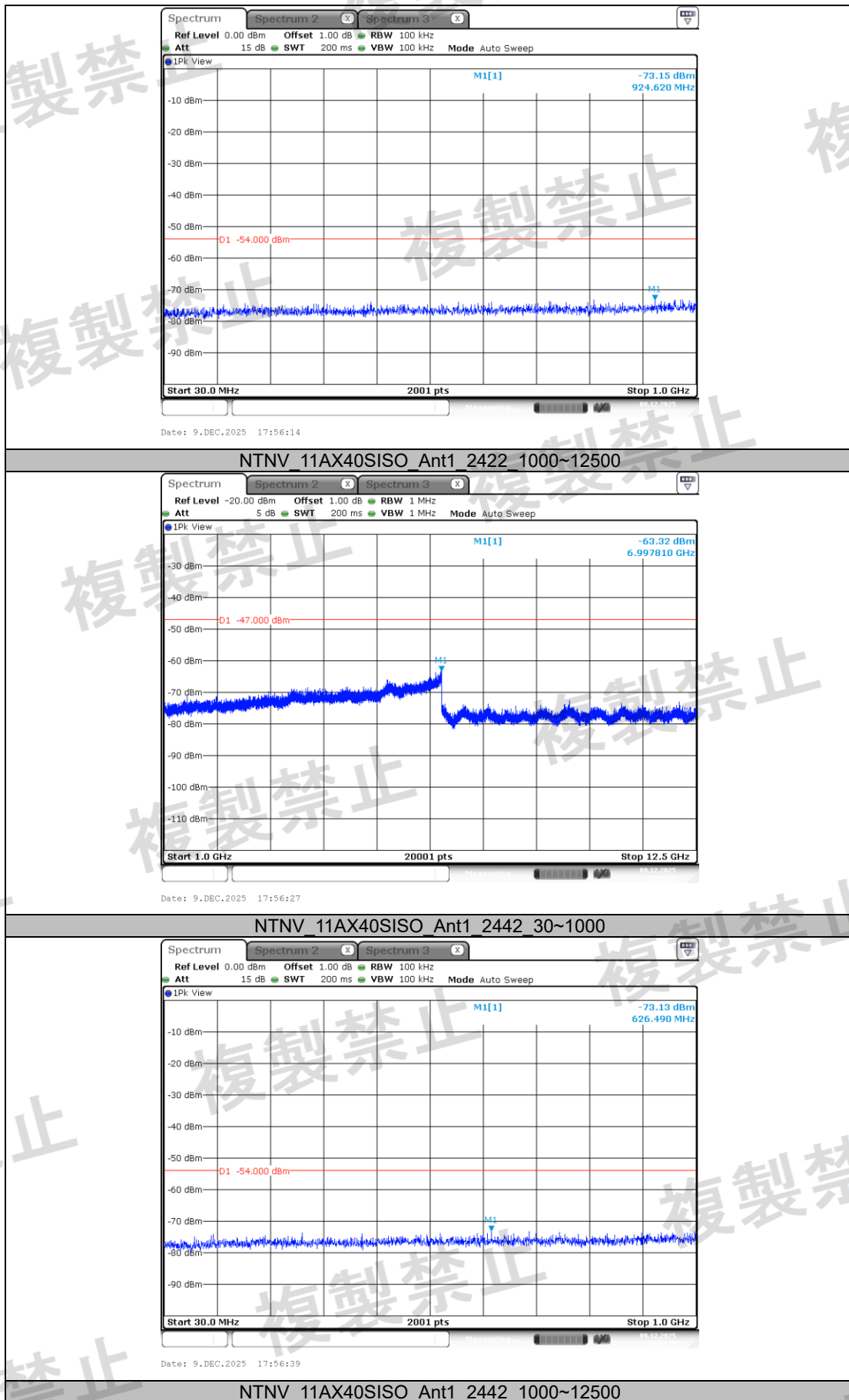


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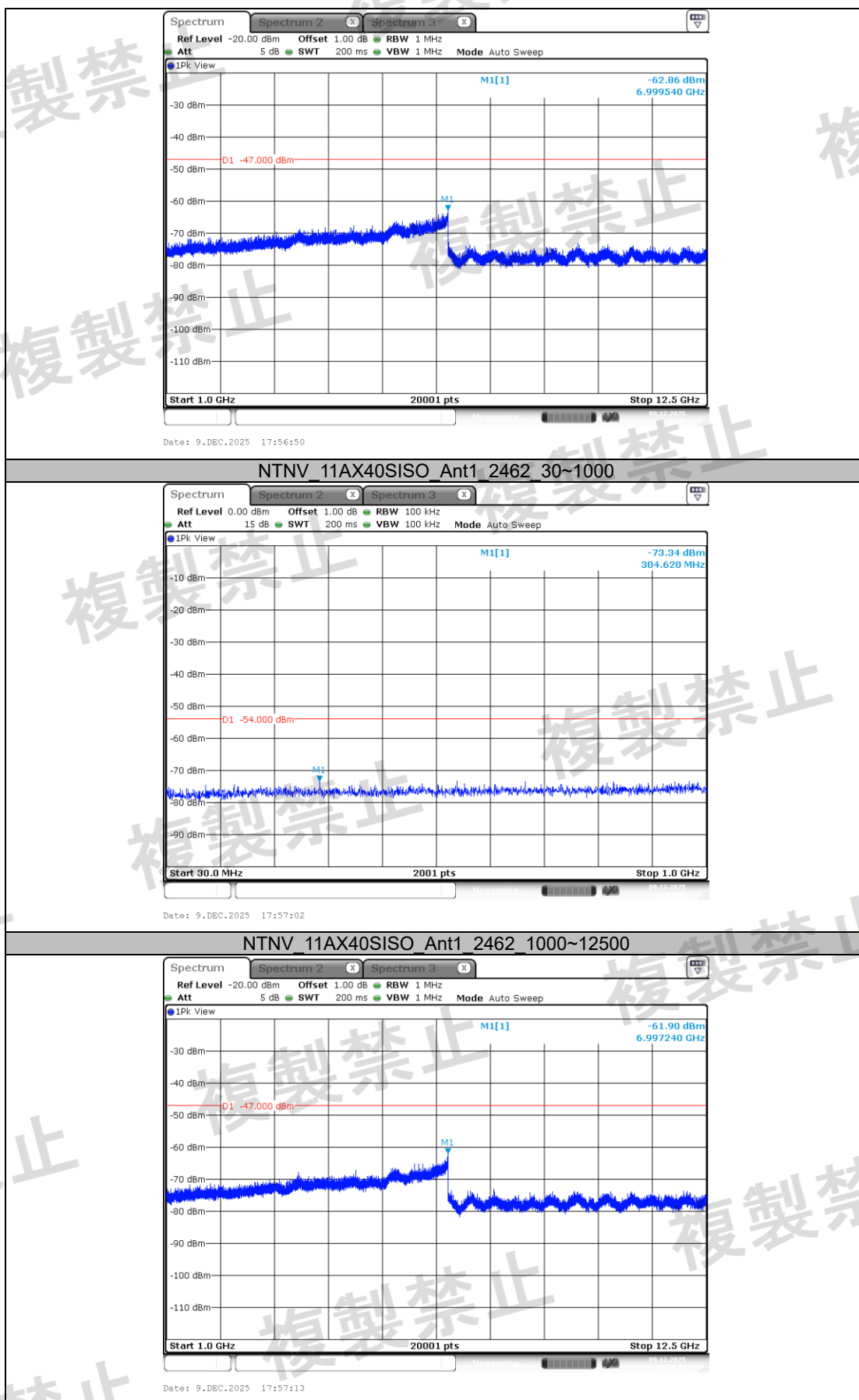


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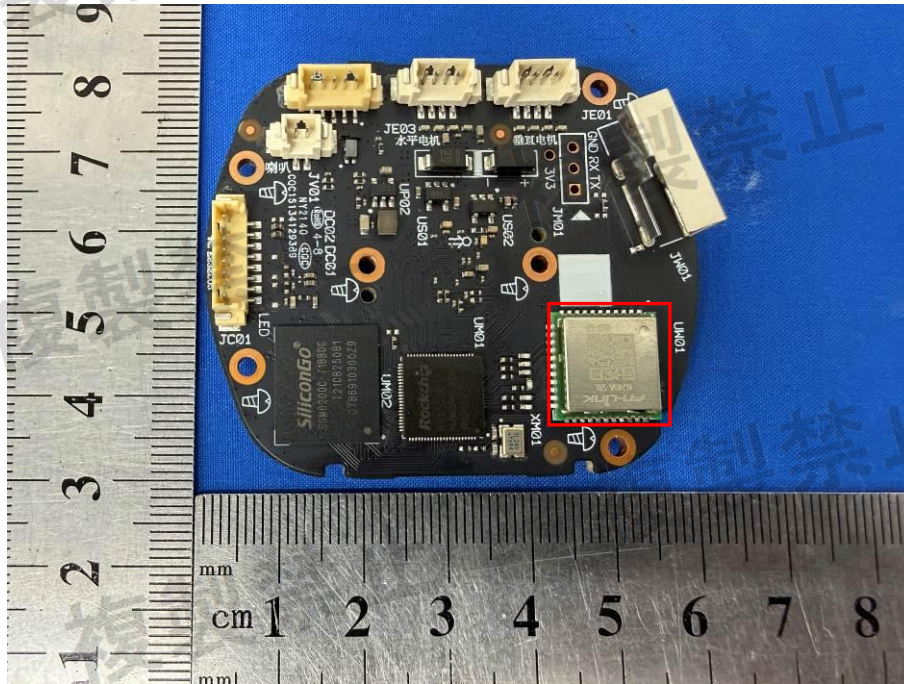
3.7. Construction protection confirmation method

Requirement

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily

Confirmation method

Welded metal shielding makes it impossible for consumers to make changes, and when consumers remove the Welded meta, it can cause damage to the product. The RF module is mark out in the photo below:

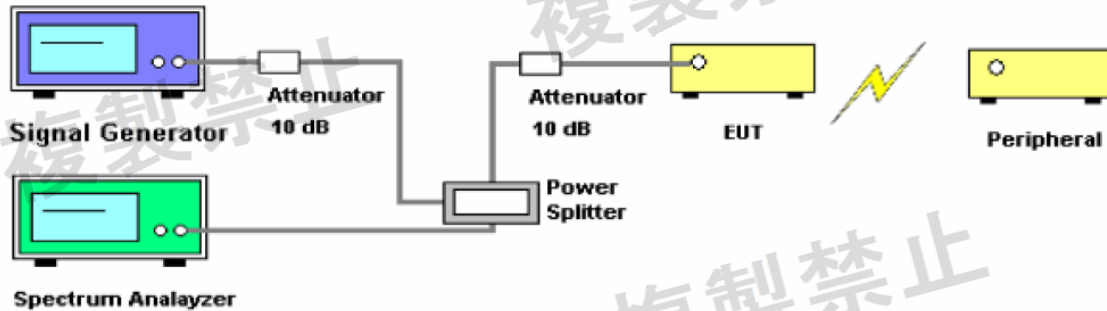


3.8. Carrier Sense Capability

Limit

EUT stop RF transmission signal after carrier inject to EUT and continue to transmit when inference signal turned off for the OFDM system with occupied frequency bandwidth below 38MHz and exceed 26MHz.

TEST CONFIGURATION



TEST PROCEDURE

1. Set The EUT state in "normal mode link with wireless router".
2. SG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SG and power level is $(on\ 22.79 + G - 20 \cdot \log(f))$ dBm (G is the antenna gain is the test frequency)
(f): Test frequency, Unit: MHz
3. Turn off the RF signal of the SG.
4. EUT have transmitted the maximum modulation signal and fixed channelize.
5. Setting the spectrum as follow :
RBW/VBW=1MHz/1MHz
Span=80MHz
Sweep time=auto
Sweep mode=continuous
Detect mode=positive peak
6. SG RF signal on.
7. EUT shall be stop the transmitted any signal and SG RF signal off, the EUT will be continuous transmitted signal.

TEST RESULTS

Good. The carrier sense value is -43 dBm.

Note: $Pcs\ [dBm] = 22.79 - 20 \cdot \log(f_{MHz}) + Antenna\ Gain$

Antenna Gain: 1.5dBi

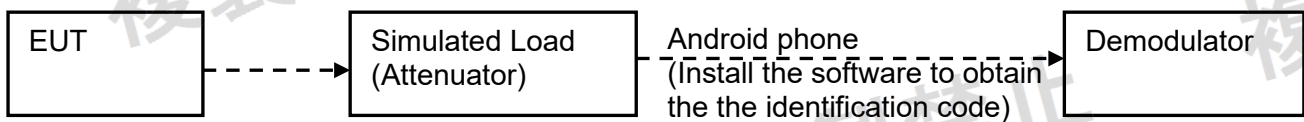


3.9. Interference Prevention Function

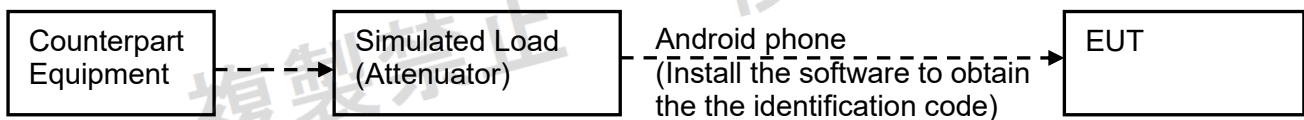
Module apply DSSS technique, in which the message signal is used to modulate a bit sequence known as the Pseudo Noise (PN) code; this PN code consists of pulses of a much shorter duration (larger bandwidth) than the pulse duration of the message signal, therefore the modulation by the message signal has the effect of chopping up the pulses of the message signal and thereby resulting in a signal which has a bandwidth nearly as large as that of the PN sequence. In this context the duration of the pulse of the PN code is referred to as the chip duration and the smaller this value, the larger the bandwidth of the resultant DSSS signal and the more immune to interference the resultant signal becomes.

Measurement System Diagram

1. When transmitting the identification code.



2. When receiving the identification code



Procedure for Measuring Operation

- (1) If the test machine has the function of automatically transmitting identification codes. The test equipment transmits the identification code specified in the equipment regulations. Verify the identification code transmitted by the demodulator.
- (2) If the test equipment has the function of automatically receiving identification codes. The opposing device transmits the identification code specified in the equipment regulations. Confirm that communication with the test equipment is performed using a dedicated jig. The opposing device transmits a code different from the identification code specified in the equipment regulations. Verify that the test equipment stops transmission or indicates that the identification code is different.

TEST RESULTS

```
# ifconfig
lo      Link encap:Local Loopback
        inet addr:127.0.0.1  Mask:255.0.0.0
        UP LOOPBACK RUNNING  MTU:65536  Metric:1
        RX packets:0 errors:0 dropped:0 overruns:0 frame:0
        TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

wlan0   Link encap:Ethernet  Hwaddr: 80:9D:65:2E:95:9C
        UP BROADCAST MULTICAST  MTU:1500  Metric:1
        RX packets:0 errors:0 dropped:0 overruns:0 frame:0
        TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
```

We can get the information as follows:

80:9D:65:2E:95:9C

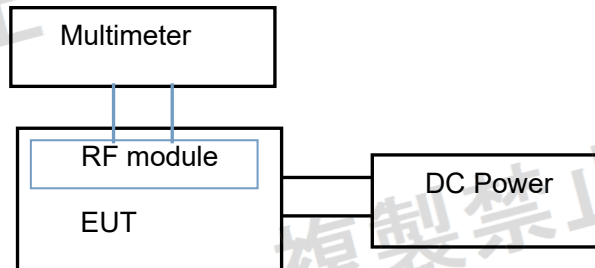
Note: This product is a Wi-Fi Camera, and demodulator is a laptop. The laptop has already obtained certification.



3.10. Condition for Voltage Stabilization

- In the case of a characteristic test in the technical regulations conformity certification, the power supply supplies the voltage rating
- Other cases
The power supply supplies the voltage rating and the rating. However, when it can be confirmed that the change of the input voltage to the wireless part circuit of the testing machine is 1% or less when the input voltage to the testing machine from the external source changes at 10%, examines it only by the voltage rating.

TEST CONFIGURATION



TEST PROCEDURE

1. Use the DC power supplies the EUT, set the output power 5.0V.
2. Connect the BLE module power input ports to the Oscilloscope, record the voltage value.
3. Set respectively the DC power output 4.5V and 5.5V, record the Multimeter's voltage values.

EUT supply power	RF module input power	Rated RF module power	Tolerance (%)
5.0V	3.3V	3.3V	0
4.5V	3.3V	3.3V	0
5.5V	3.3V	3.3V	0

Conclusion: when the input voltage to EUT from the external source changes at 10%, the change of the input voltage to RF Module circuit of EUT is less 1%, all test items only need to test for normal condition.



3.11. Transmission Radiation Angle Width (3DB Beamwidth) Measurement

Limit

Item	Limits
	(See Article 49-20, Item 1-f of the Ordinance Regulating Radio Equipment)
3dB antenna beam width	$360/A$ (if $A < 1$; then $A = 1$) $A = \{ \text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM} \}$

Measuring Instruments and Setting

Please refer to section 5 in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span	0 MHz
RBW	1 MHz
VBW	1 kHz
Y scale	5 dB
Detector	Peak
Trace	Max Hold

Test Procedures

Test method which surpass to Clause 22 of Annex No.43 of MIC Notification No.88.

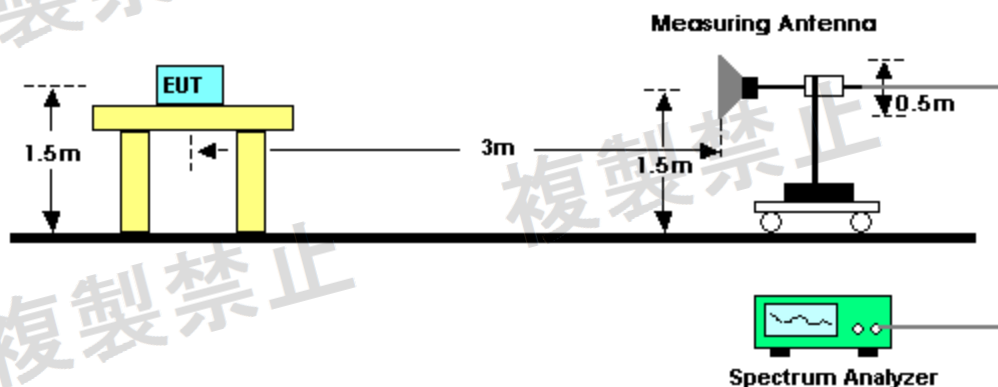
1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Set spectrum analyzer with condition and tune reference level to observe receiving signal position.
3. Rotate directions of the EUT horizontally and vertically to find the maximum receiving power.
4. Move the measuring antenna height up and down within $\pm 50\text{cm}$ of EUT height and swing it to find the maximum output of measuring antenna. The output level at the spectrum analyzer is read as "E"
5. Calculate permitted radiation angle in horizontal and vertical using EIRP measured in another test method.

6. Calculate 3dB antenna beam width by the formula below $360/A$ (If $A < 1$; then $A = 1$).

$A = \{ \text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM} \}$ or

$A = \{ \text{EIRP Power [mW]} / 4.9 \text{ for FH} \}$

Test Setup Layout



Test Result of Transmission Radiation Angle Width (3dB Beamwidth)

Not necessary

Note: Because EIRP < 12.14dBm. So 3dB Beam-width (Degree) does not need to be tested.

*****THE END OF REPORT*****