

Test Report

Applicant: GAINSCHA AUTO ID CO., LTD.

Product Name: Barcode Printer

Product Model: GS-2208DM, GS-2208D, GS-3205D, GS-3205DM,
GS-2208DC, GS-3205DC, GS-2208DE, GS-3205DE,
GS-2208DR, GS-3205DR, GA-L330

Brand Name: N/A

Test standard: MIC public notice 88:2004, annex 43 and annex 1, Article 2,
Paragraph 1, Item 19

Date of Issue: 2026-06-15

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RF TEST REPORT

According to

**MIC public notice 88:2004, annex 43 and annex 1, Article 2,
Paragraph 1, Item 19**

Applicant:	GAINSCHA AUTO ID CO., LTD.
Address:	8-9 Floor, Building 2, No. 625, Xinsha Fifth Street, High-tech Zone, Zhuhai
Manufacturer:	GAINSCHA AUTO ID CO., LTD.
Address:	8-9 Floor, Building 2, No. 625, Xinsha Fifth Street, High-tech Zone, Zhuhai
Factory:	GAINSCHA AUTO ID CO., LTD.
Address:	8-9 Floor, Building 2, No. 625, Xinsha Fifth Street, High-tech Zone, Zhuhai
Sample No:	1000077497
Product Name:	Barcode Printer
Brand Name:	N/A
Product Model:	GS-2208DM, GS-2208D, GS-3205D, GS-3205DM, GS-2208DC, GS-3205DC, GS-2208DE, GS-3205DE, GS-2208DR, GS-3205DR, GA-L330
Test No.:	GS-2208DM

Date of Receipt:	2026-04-30
Date of Test:	2026-05-09
Issued Date:	2026-06-15
Testing Lab:	TIRT

Note:

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History of the test report

Report No.	Version	Description	Issued Date	Note
ITEZA2-202600160RF1	V1.0	Original Report.	2026-06-15	Valid

1. General Information

1.1. Description of Device (EUT)

EUT	: Barcode Printer
Model No.	: GS-2208DM, GS-2208D, GS-3205D, GS-3205DM, GS-2208DC, GS-3205DC, GS-2208DE, GS-3205DE, GS-2208DR, GS-3205DR, GA-L330
Power supply	: DC 24V from external SWITCHING POWER SUPPLY
Radio Technology	: Bluetooth V5.0
Operation frequency	: 2402MHz -2480MHz
Number of channels	: 79
Data Rate	: 1Mbps, 2Mbps, 3Mbps
Modulation	: GFSK / Pi/4-DQPSK / 8-DPSK
Max Power Antena power	: 0.1mW/MHz
Antenna Type	: FPC Antenna, max gain 3.46dBi Antenna information is provided by applicant. Testing lab is not responsible for the accuracy of the information.
Software Version	: V1.0
Hardware version	: 2INCH_MB_RT1011_V14

1.2. Accessories of Device (EUT)

Accessories : SWITCHING POWER SUPPLY
Manufacturer : Xiamen Xunheng Electronics Tech Co.,Ltd.
Model : XH2400-2500
Ratings : INPUT: 100-240V~50/60Hz 1.5A
OUTPUT: 24.0V= 2.5A 60.0W

1.3. Ancillary Equipment Details

No.	Description	Manufacturer	Model	Note
1	PC	DELL	3511	N/A

1.4. Additions, Deviations and Exclusions from Standards

None

1.5. Model differences

There is no difference except the name of the model

2. Summary of test

2.1. Summary of test result

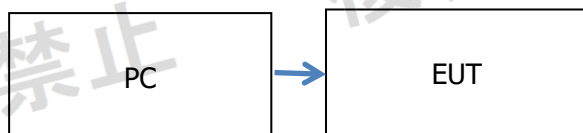
CLAUSE	TEST PARAMETER	RESULTS
Transmitter Parameters		
3.2 (2)	Antenna Power	Pass
3.2 (3)	Tolerances for Antenna Power	Pass
3.2 (4)	Frequency Tolerance	Pass
3.2 (5)	Transmission Rate	Pass
3.2 (7)	Occupied Frequency Bandwidth	Pass
3.2 (8)	Spread Bandwidth	Pass
3.2 (8)	Spread factor	Pass
3.2 (9)	Process Gain	Pass
3.2 (10)	Number of Carriers	Pass
3.2 (11)	Dwell Time	N/A
3.2 (6)	Spurious Emissions	Pass
/	Equivalent Isotropic Radiated Power	Pass
/	3dB Beam Bandwidth	N/A
/	Interference prevention function	Pass
/	Carrier Sensing function	N/A
Receiver Parameters		
3.3 (1)	Secondary Radiated Emissions	Pass

N/A is an abbreviation for Not Applicable.

2.2. The standard of Calibration Equipment

- Calibration conducted by the National institute of information and Communications Technology NICT or a designated calibration agency under Article 102-18 paragraph.
 - Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992).
 - Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph.
 - Calibration, etc. conducted by using measuring instruments and other equipment listed in the right column of appended table No. 3, which shall have been given any type of calibration, etc. listed above from (a) to.
- The all calibration corresponds to c) described above.

2.3. Block Diagram



2.4. Test mode

The test software is used to control the operation of the EUT in the continuous transmission mode, and select the test channel and wireless mode:

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
Carrier Tx Mode	CH0	2402
	CH39	2441
	CH78	2480
GFSK / Pi/4-DQPSK / 8-DPSK hopping on Tx Mode	CH0 to CH78	2402 to 2480
GFSK / Pi/4-DQPSK / 8-DPSK hopping off Tx Mode	CH0	2402
	CH39	2441
	CH78	2480
GFSK / Pi/4-DQPSK / 8-DPSK Rx Mode	CH0	2402
	CH39	2441
	CH78	2480

2.5. Test Conditions

Temperature range	5-35℃
Humidity range	45-85%
Pressure range	86-106kPa

2.6. Test Voltage

Voltage mode	Input Voltage	Radio Unit Voltage
DC	DC 3.2V	DC 3.3V
	DC 3.3V	DC 3.3V
	DC 3.6V	DC 3.3V
Note: 1 The radio unit Voltage with the IC regulator. 2 The radio unit less than 1%, so the test only rated voltage (Normal voltage DC 3.3V).		

2.7. Test Facility

Company:	Beijing TIRT Technology Service Co., Ltd. Shenzhen Branch
Address:	1/F., South Flat, Building 7, Tongfuyu Industrial Zone, Xinhe Avenue, Gonghe Community, Shajing Subdistrict, Baoan District, Shenzhen, Guangdong, China
CNAS Registration Number:	CNAS L14158
A2LA Registration Number:	6049.01
Telephone:	+86-0755-27087573

2.8. Measurement Uncertainty (95% confidence levels, k=2)

Item	MU
Frequency Error	±1.9%
Antenna Power	±0.743dB
Occupied Bandwidth	±0.0196%
Spread Bandwidth	±0.0196%
Transmitter Spurious Emission Strength and Unwanted Emission Intensity	30MHz-1GHz:±0.746dB 1GHz-13GHz: ±1.328dB
Receiver Spurious Emission and Unwanted Emission Intensity	30MHz-1GHz:±0.746dB 1GHz-26GHz: ±1.328dB
Dwell Time	±0.028%
Frequency Error	±1.9%

3. Antenna Power

3.1. Test Equipment

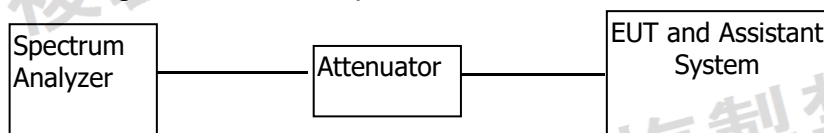
Item	Type	Manufacturer	Model No.	Serial No.	Last Calibration	Due Calibration
1	Spectrum analyzer	ROHDE&SCHWARZ	FSU26	200732	2025/11/10	2026/11/09
2	Attenuator	SCHWARZBECK	DGA 9552N	3161	2025/10/17	2026/10/16
3	Automatic RF control unit	Tonscend	JS0806-2	20G8060288	2025/11/12	2026/11/11

Note: The test equipment is calibrated by Huajue Medical Testing and Metrology (Shenzhen) Co., Ltd. Calibration standard: Article 24-2, Paragraph 4 of the Radio Act, method c

3.2. Limit

Limit	3mW/MHz
Tolerance	+20%, No Low Limit

3.3. Block diagram of test setup



3.4. Test Procedure

- (1) Configure EUT and assistant system according clause 2.3 and 3.3
- (2) Set EUT work in test mode as described in clause 2.4
- (3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

Resolution BW: 1 MHz.

Video BW: 1 MHz.

Span: Wide enough to cover the complete power envelope of the signal of the EUT.

Detector: Peak.

Trace Mode: Max Hold.

- (4) When the trace is complete, find the peak value of the power envelope and record.

3.5. Test result

Antenna Power									
Test Condition	Test Mode	Antenna	Freq (MHz)	Result (dBm)	Result (mW /MHz)	90% BW (MHz)	Result (mW /MHz)	Limit (mW /MHz)	Verdict
NTNV	DH5	Ant1	Hop	2.75	1.8836	71.928	0.0262	≤3	PASS
	2DH5	Ant1	Hop	2.52	1.7865	71.129	0.0251	≤3	PASS
	3DH5	Ant1	Hop	2.79	1.9011	71.928	0.0264	≤3	PASS
LTVN	DH5	Ant1	Hop	2.83	1.9187	71.928	0.0267	≤3	PASS
	2DH5	Ant1	Hop	2.61	1.8239	71.129	0.0256	≤3	PASS
	3DH5	Ant1	Hop	2.55	1.7989	71.928	0.0250	≤3	PASS
HTNV	DH5	Ant1	Hop	2.85	1.9275	71.928	0.0268	≤3	PASS
	2DH5	Ant1	Hop	2.60	1.8197	71.129	0.0256	≤3	PASS
	3DH5	Ant1	Hop	2.55	1.7989	71.928	0.0250	≤3	PASS

Note:

- Output Power Density (mW/MHz) = Total Output Power (mW) / Burst Ratio / Spread Bandwidth (MHz)
- Burst Ratio = ON Time / (ON Time + OFF Time)

Tolerance								
Test Condition	Test Mode	Antenna	Freq (MHz)	Power (mW /MHz)	Rated Power (mW /MHz)	Result (%)	Limit (%)	Verdict
NTNV	DH5	Ant1	Hop	0.0262	0.1	-73.80	+20	PASS
	2DH5	Ant1	Hop	0.0251	0.1	-74.90	+20	PASS
	3DH5	Ant1	Hop	0.0264	0.1	-73.60	+20	PASS
LTVN	DH5	Ant1	Hop	0.0267	0.1	-73.30	+20	PASS
	2DH5	Ant1	Hop	0.0256	0.1	-74.40	+20	PASS
	3DH5	Ant1	Hop	0.0250	0.1	-75.00	+20	PASS
HTNV	DH5	Ant1	Hop	0.0268	0.1	-73.20	+20	PASS
	2DH5	Ant1	Hop	0.0256	0.1	-74.40	+20	PASS
	3DH5	Ant1	Hop	0.0250	0.1	-75.00	+20	PASS

4. Frequency Tolerance

4.1. Test Equipment

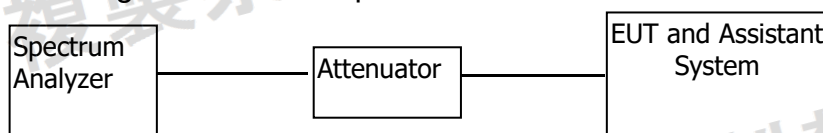
Item	Type	Manufacturer	Model No.	Serial No.	Last Calibration	Due Calibration
1	Spectrum analyzer	ROHDE&SCHWARZ	FSU26	200732	2025/11/10	2026/11/09
2	Attenuator	SCHWARZBECK	DGA 9552N	3161	2025/10/17	2026/10/16
3	Automatic RF control unit	Tonscend	JS0806-2	20G8060288	2025/11/12	2026/11/11

Note: The test equipment is calibrated by Huajue Medical Testing and Metrology (Shenzhen) Co., Ltd.
Calibration standard: Article 24-2, Paragraph 4 of the Radio Act, method c

4.2. Limit

+/- 50x 10⁻⁶ or less(50ppm)

4.3. Block diagram of test setup



4.4. Test Procedure

- (1) Configure EUT and assistant system according clause 2.3 and 4.3
- (2) Set EUT work in carrier Tx mode as described in clause 2.4
- (3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

Resolution BW: 10 KHz.

Video BW: 10 KHz.

Span: 1MHz.

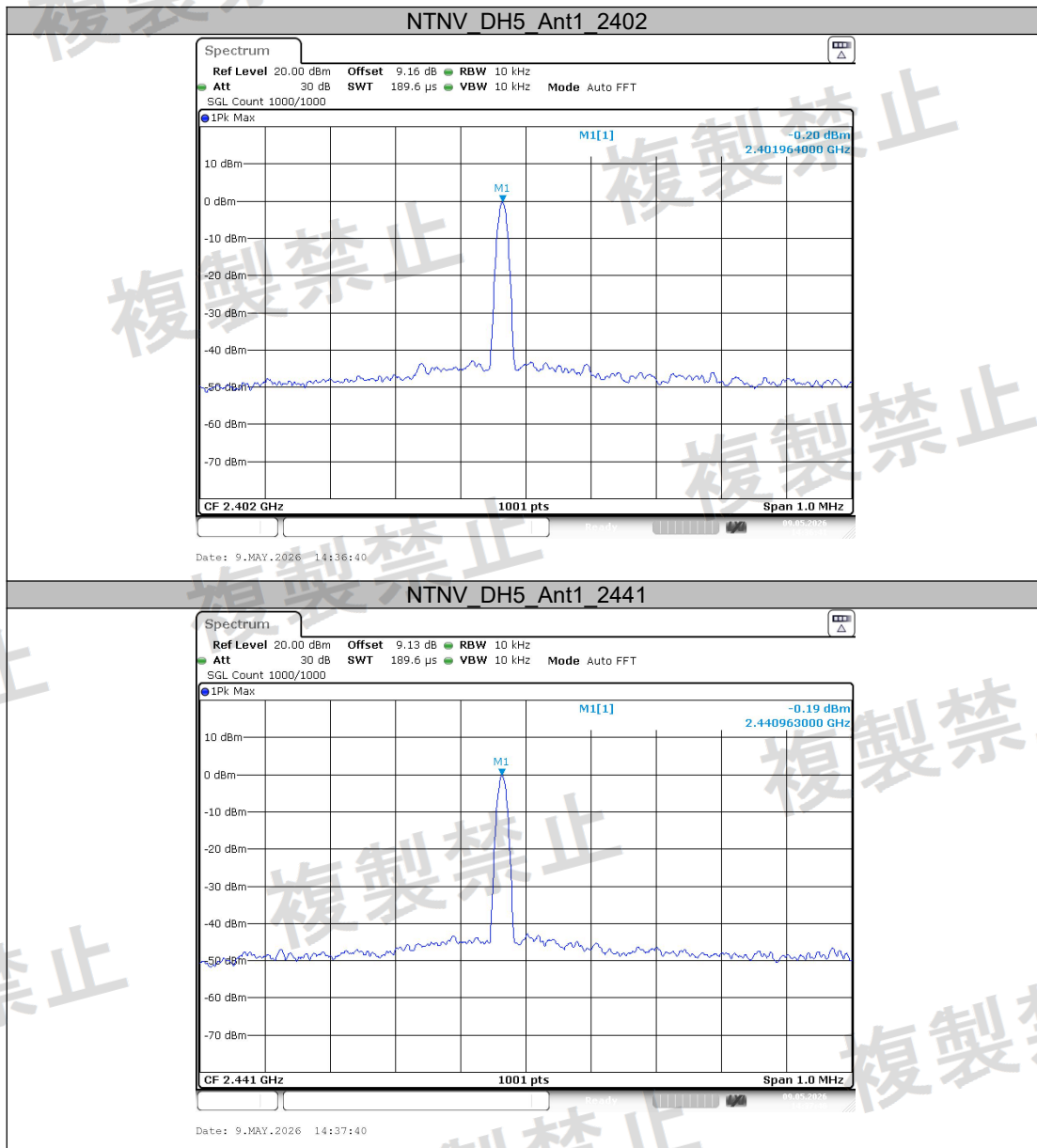
Detector: Peak.

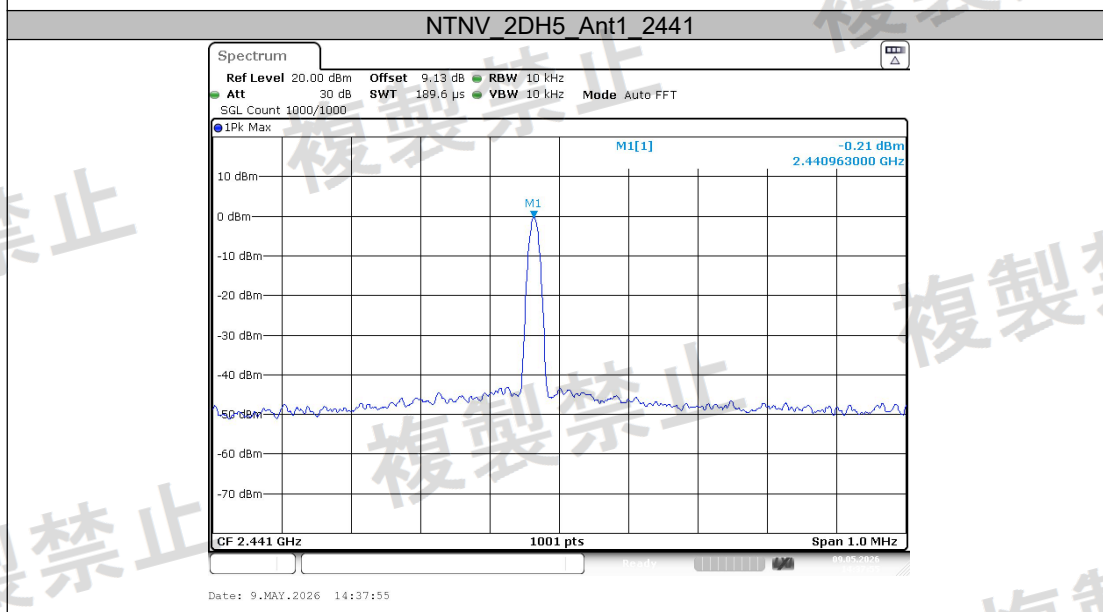
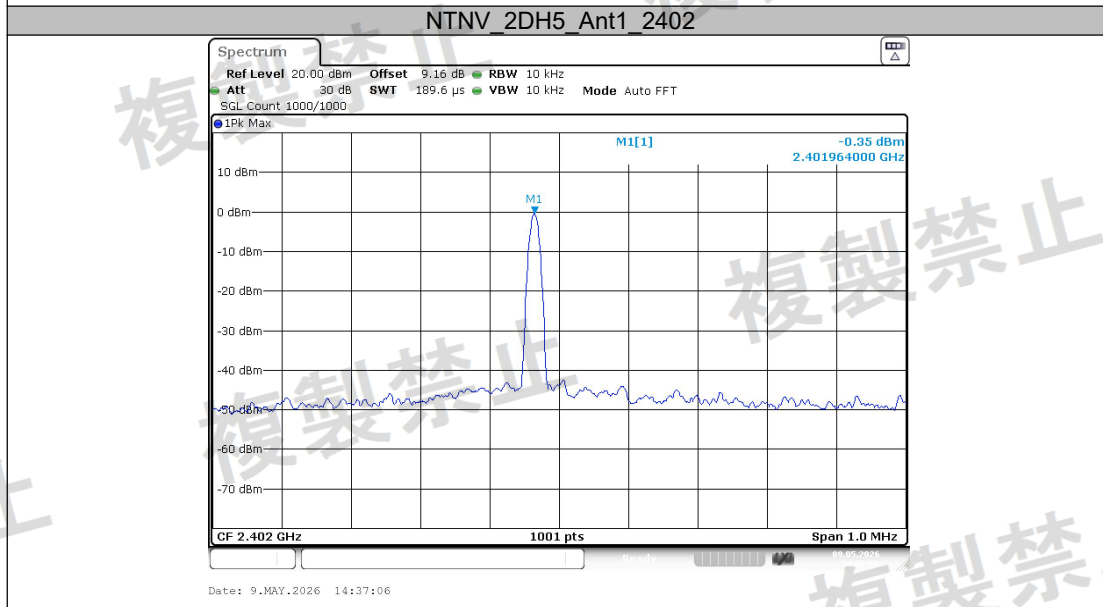
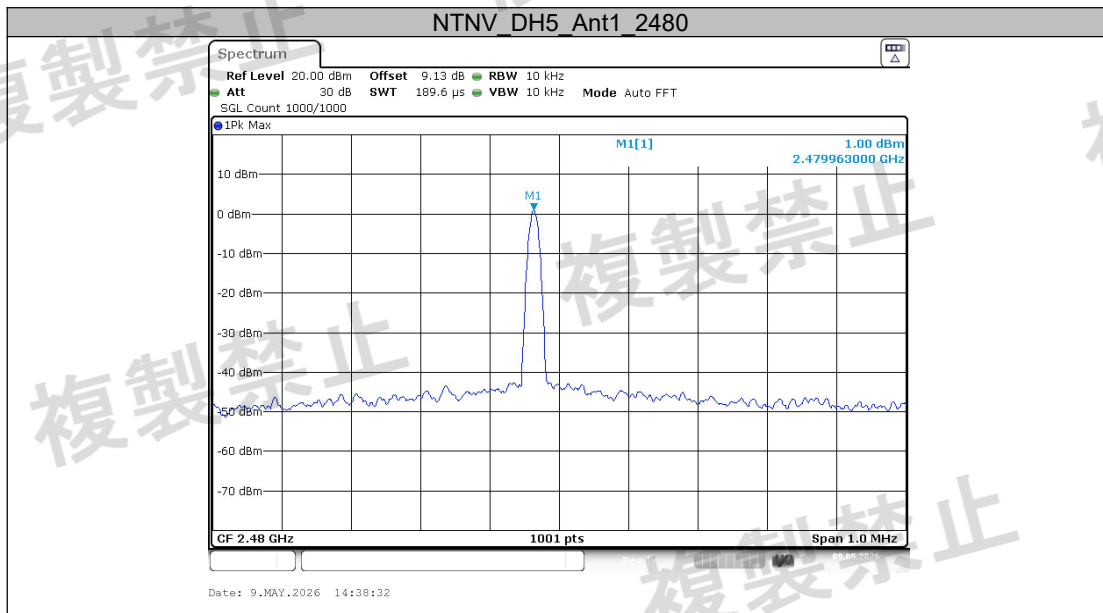
Trace Mode: Max Hold.

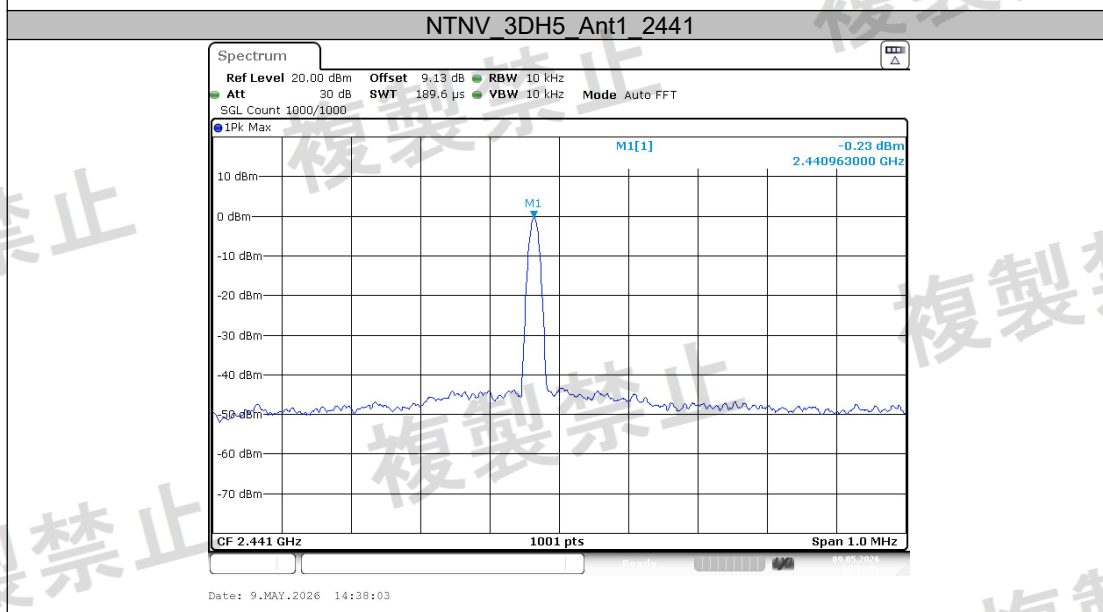
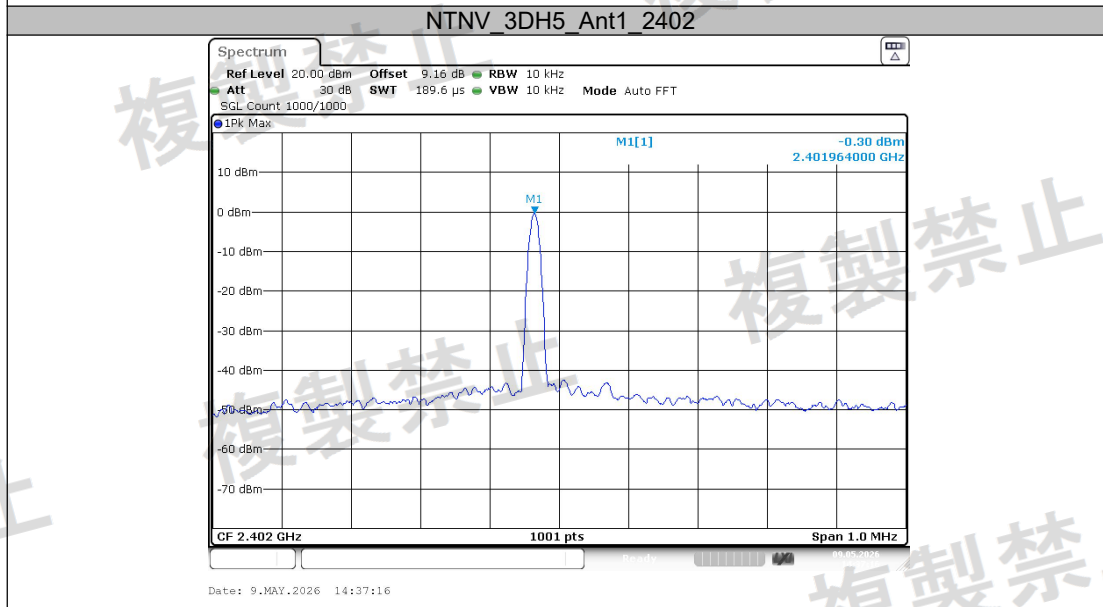
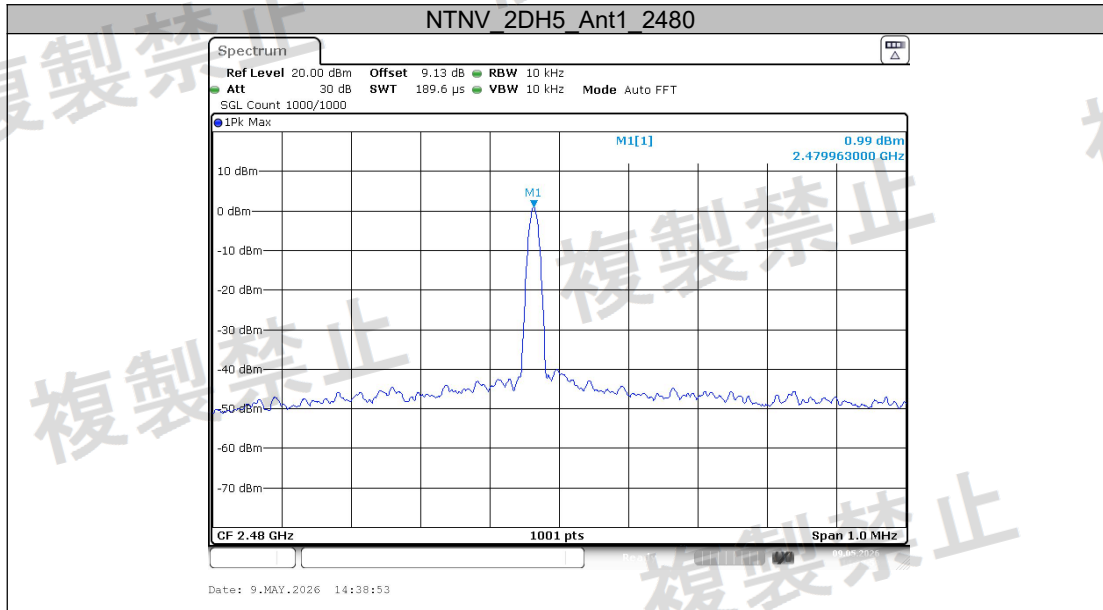
- (4)When the trace is complete, find the peak value of the power envelope and record the frequency.

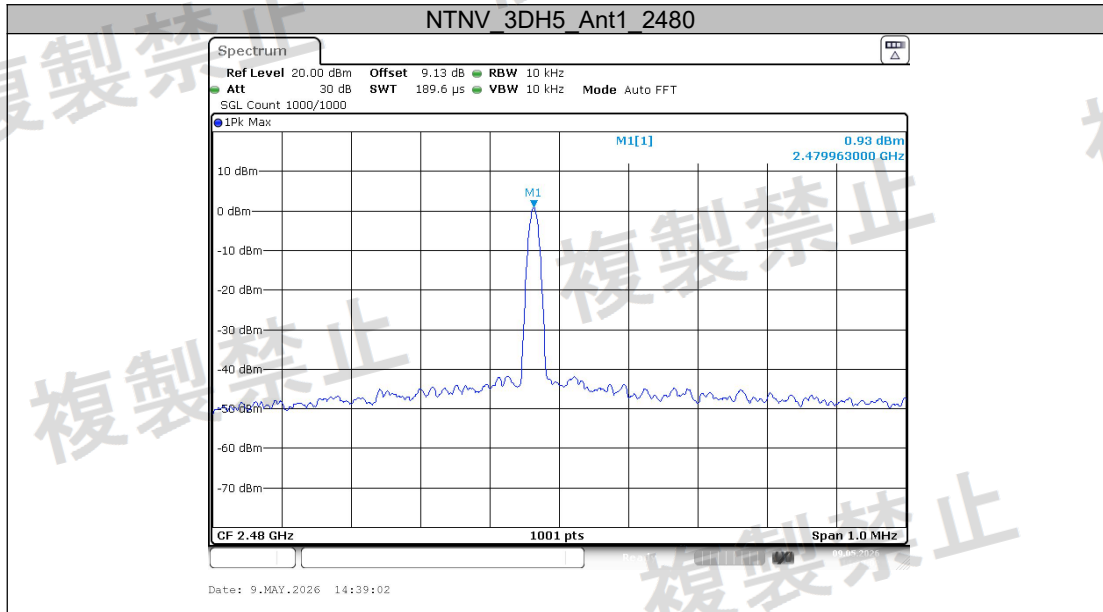
4.5. Test result

Test Condition	Test Mode	Antenna	Freq(MHz)	Result[ppm]	Limit[ppm]	Verdict
NTNV	DH5	Ant1	2402	-14.98751	±50	PASS
			2441	-15.15772	±50	PASS
			2480	-14.91936	±50	PASS
	2DH5	Ant1	2402	-14.98751	±50	PASS
			2441	-15.15772	±50	PASS
			2480	-14.91936	±50	PASS
	3DH5	Ant1	2402	-14.98751	±50	PASS
			2441	-15.15772	±50	PASS
			2480	-14.91936	±50	PASS









5. Occupied Frequency Bandwidth

5.1. Test Equipment

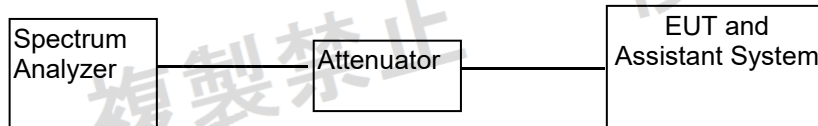
Item	Type	Manufacturer	Model No.	Serial No.	Last Calibration	Due Calibration
1	Spectrum analyzer	ROHDE&SCHWARZ	FSU26	200732	2025/11/10	2026/11/09
2	Attenuator	SCHWARZBECK	DGA 9552N	3161	2025/10/17	2026/10/16
3	Automatic RF control unit	Tonscend	JS0806-2	20G8060288	2025/11/12	2026/11/11

Note: The test equipment is calibrated by Huajue Medical Testing and Metrology (Shenzhen) Co., Ltd. Calibration standard: Article 24-2, Paragraph 4 of the Radio Act, method c

5.2. Limit

Permissible value for occupied bandwidth using the FH system, a hybrid system combining DS and FH systems, or a hybrid system combining FH and OFDM systems shall be 83.5 MHz or less, while necessary bandwidth (minimum occupied bandwidth sufficient to ensure information transmission of required quality at a required transmission rate for the system used under specified conditions for a given emission type) using a system other than any of the above shall be 26 MHz or less.

5.3. Block diagram of test setup



5.4. Test Procedure

- (1) Configure EUT and assistant system according clause 2.3 and 5.3
- (2) Set EUT work in test mode as described in clause 2.4
- (3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

Resolution BW: 1MHz

Video BW: 1MHz

Span: Wide enough to cover the complete power envelope of the signal of the EUT.

Detector: Peak.

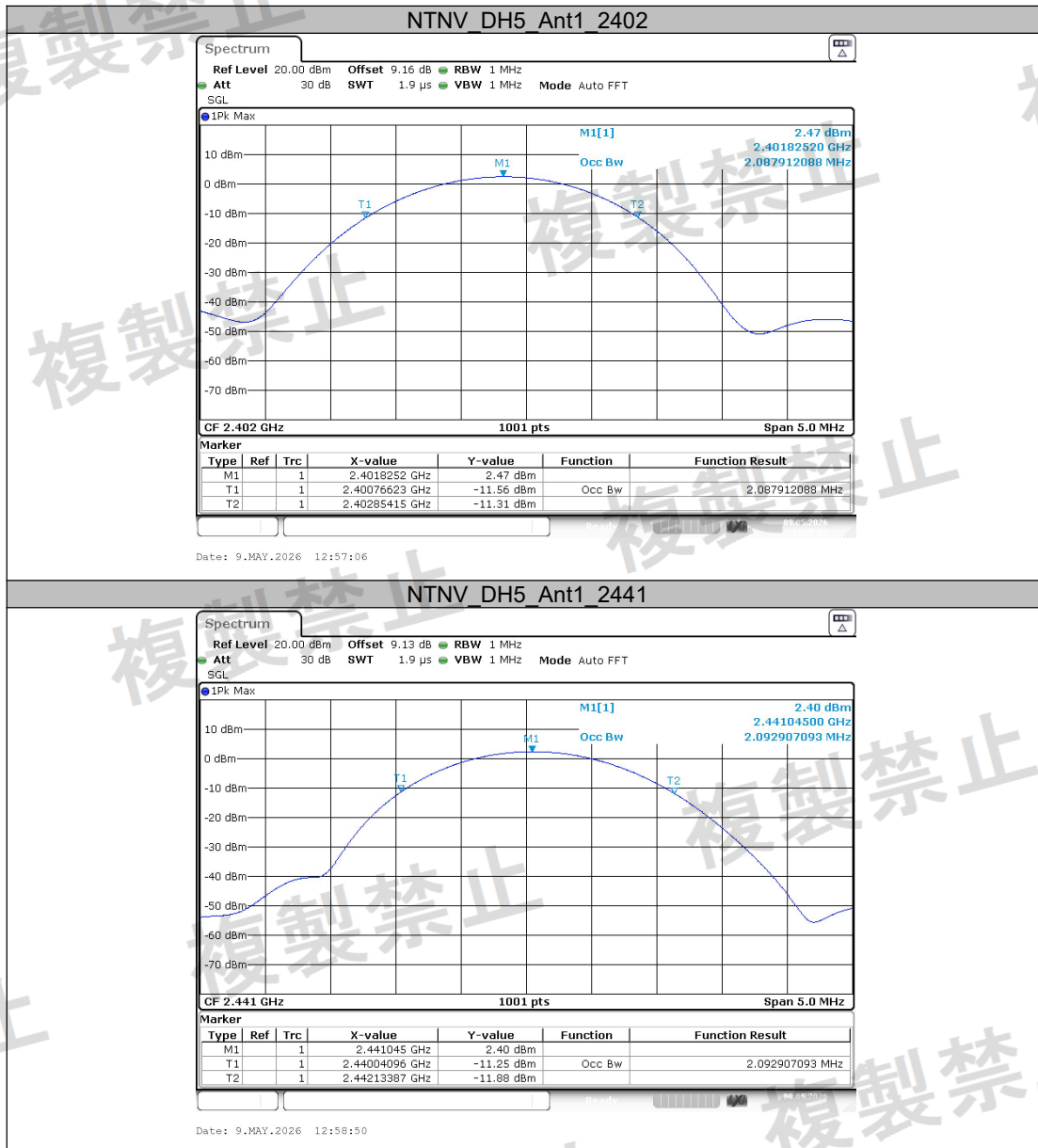
Trace Mode: Max Hold.

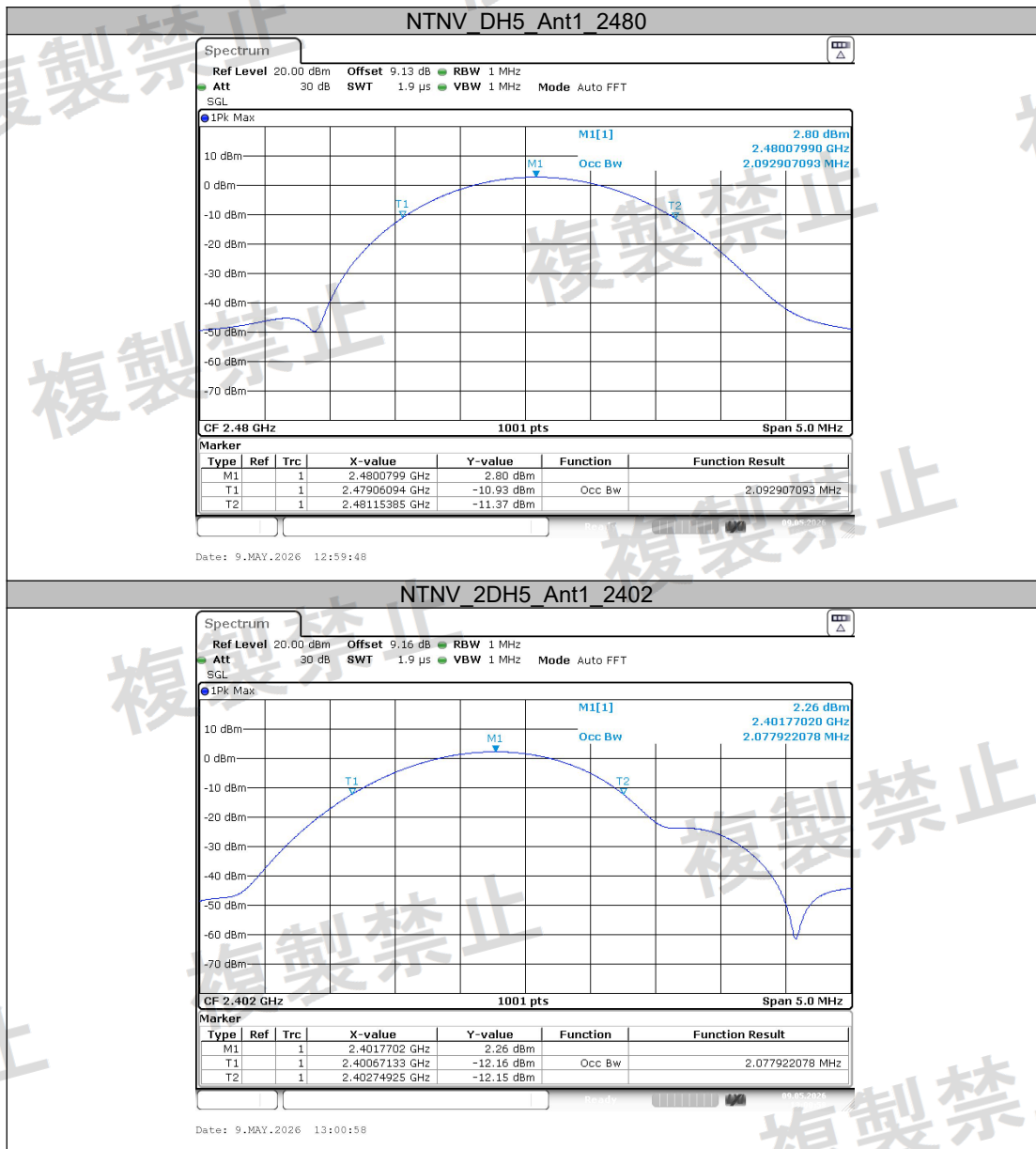
- (4) When the trace is complete, measure the occupied bandwidth (99% bandwidth) with spectrum analyzer's bandwidth measure function.

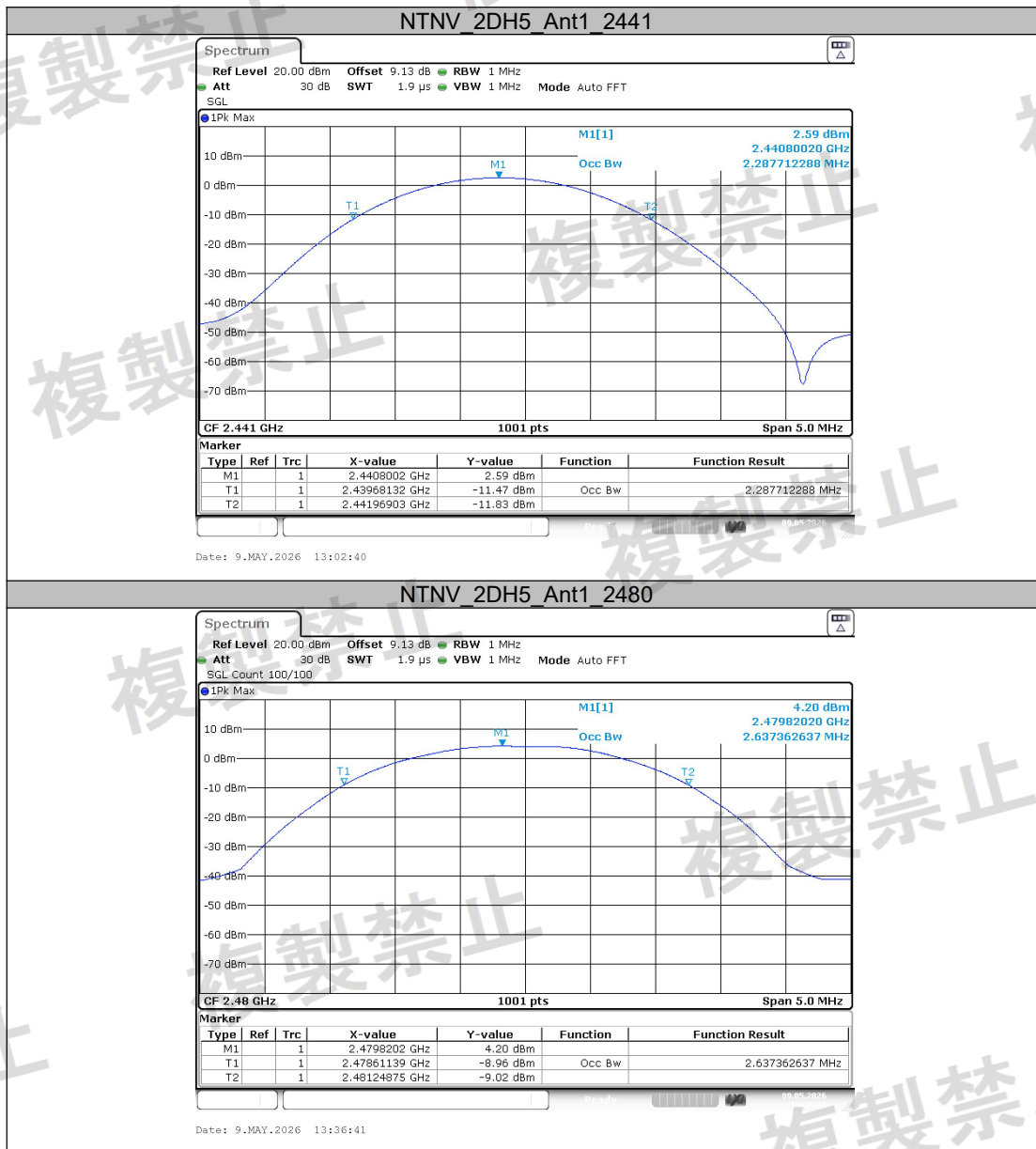
5.5. Test result

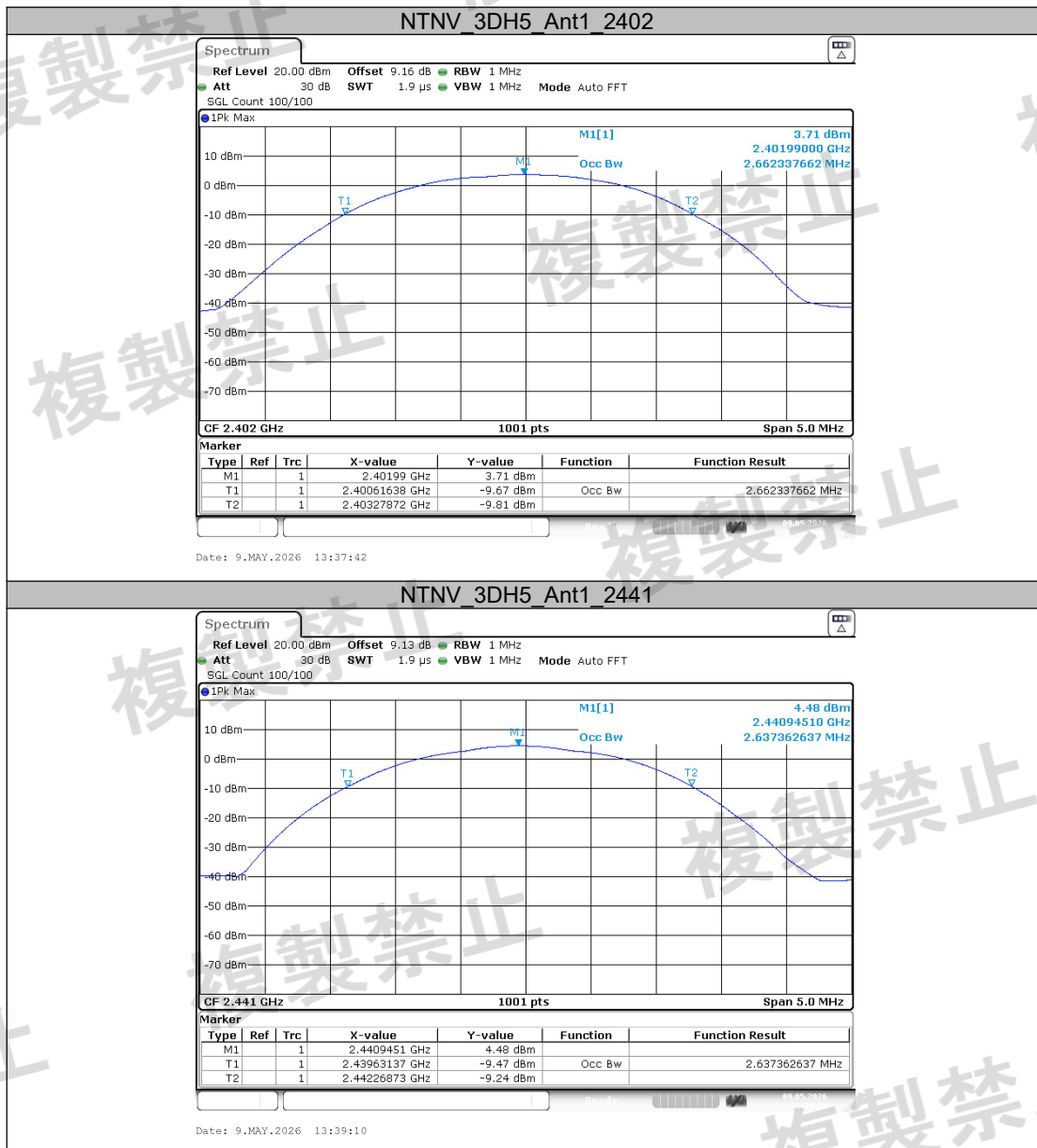
Test Condition	Test Mode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	2402	2.088	≤83.5	PASS
			2441	2.093	≤83.5	PASS
			2480	2.093	≤83.5	PASS
	2DH5	Ant1	2402	2.078	≤83.5	PASS
			2441	2.288	≤83.5	PASS
			2480	2.637	≤83.5	PASS
	3DH5	Ant1	2402	2.662	≤83.5	PASS
			2441	2.637	≤83.5	PASS
			2480	2.667	≤83.5	PASS

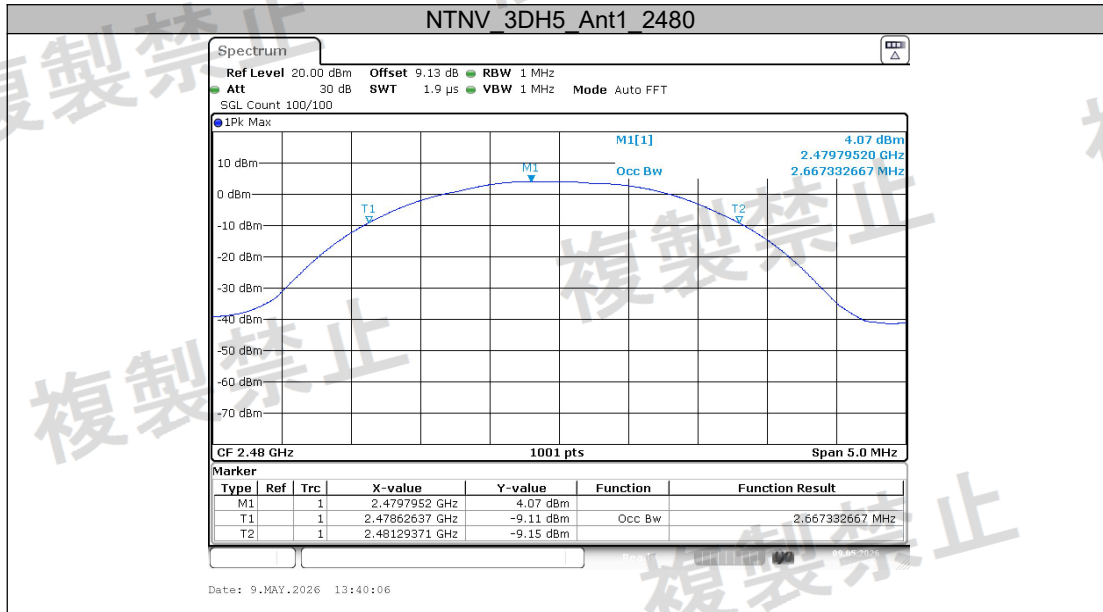
Test Condition	Test Mode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	Hop	78.721	≤83.5	PASS
	2DH5	Ant1	Hop	78.721	≤83.5	PASS
	3DH5	Ant1	Hop	78.721	≤83.5	PASS

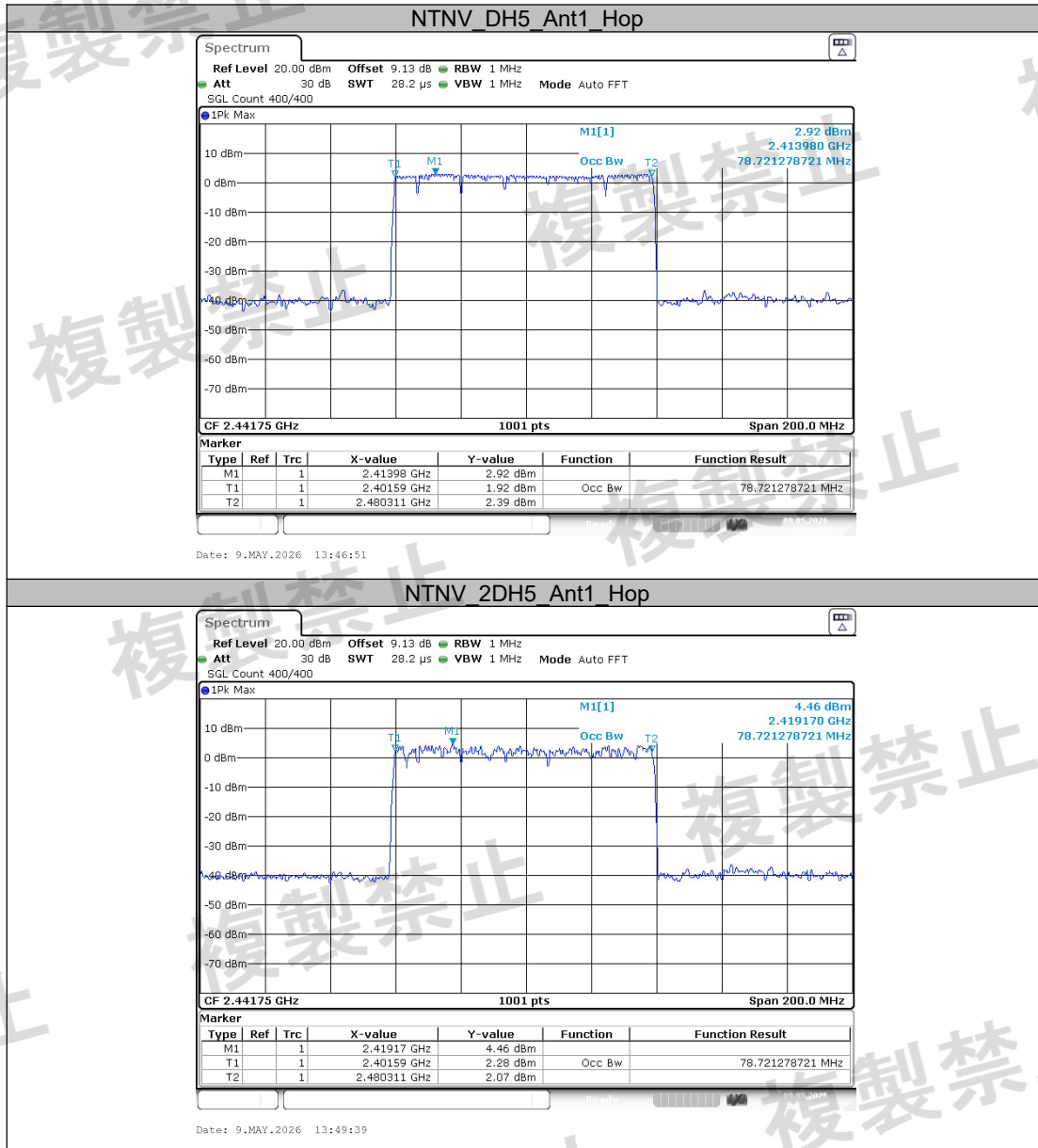


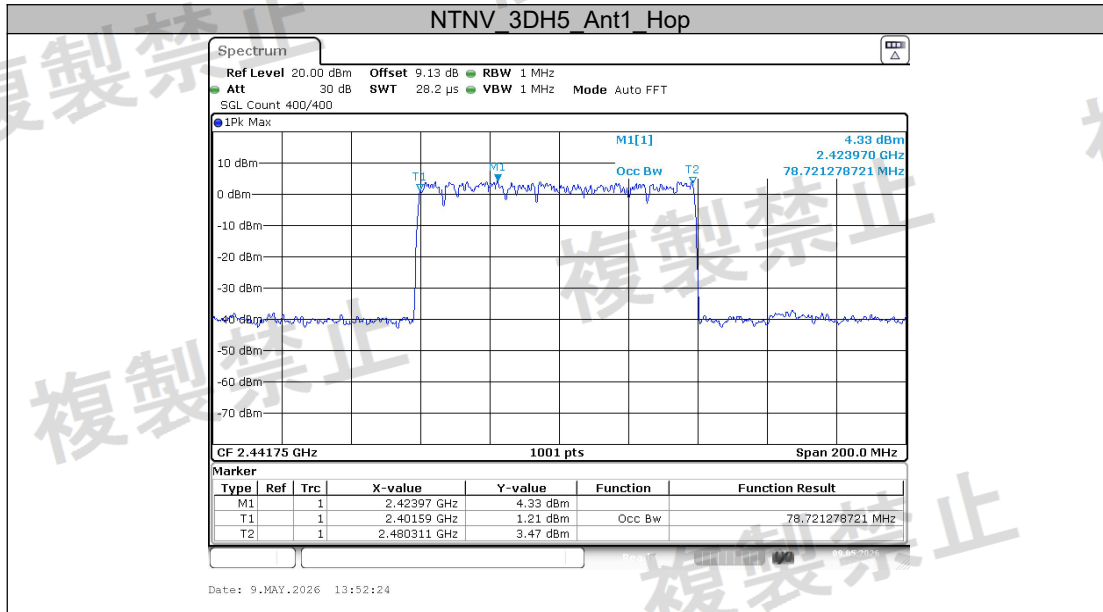












6. Spread Bandwidth

6.1. Test Equipment

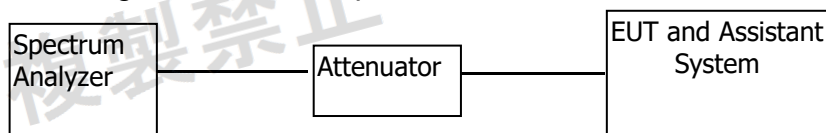
Item	Type	Manufacturer	Model No.	Serial No.	Last Calibration	Due Calibration
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2	Attenuator	SCHWARZBECK	DGA 9552N	3161	2025/10/17	2026/10/16
3	Automatic RF control unit	Tonscend	JS0806-2	20G8060288	2025/11/12	2026/11/11

Note: The test equipment is calibrated by Huajue Medical Testing and Metrology (Shenzhen) Co., Ltd. Calibration standard: Article 24-2, Paragraph 4 of the Radio Act, method c

6.2. Limit

N/A

6.3. Block diagram of test setup



6.4. Test Procedure

- (1) Configure EUT and assistant system according clause 2.3 and 6.3
- (2) Set EUT work in test mode as described in clause 2.4
- (3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

Resolution BW: 1MHz.

Video BW: 1MHz.

Span: Wide enough to cover the complete power envelope of the signal of the EUT.

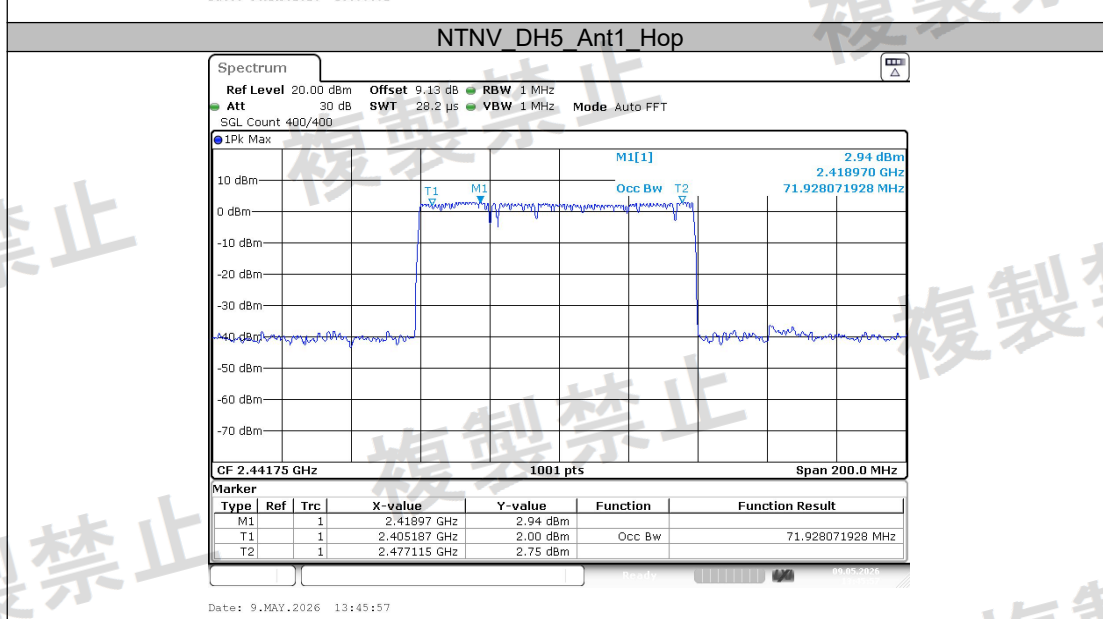
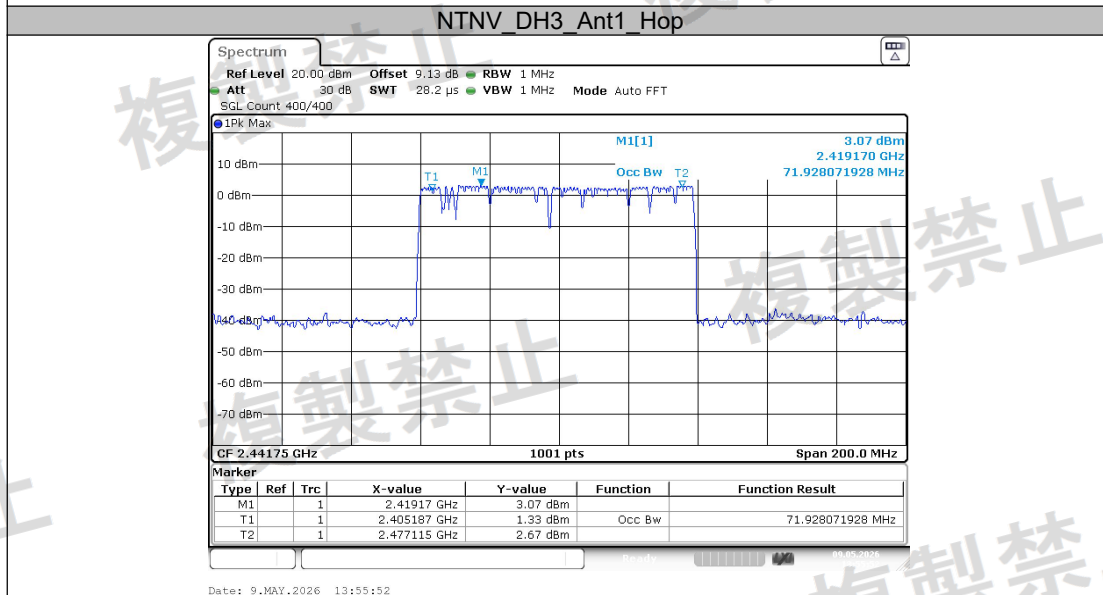
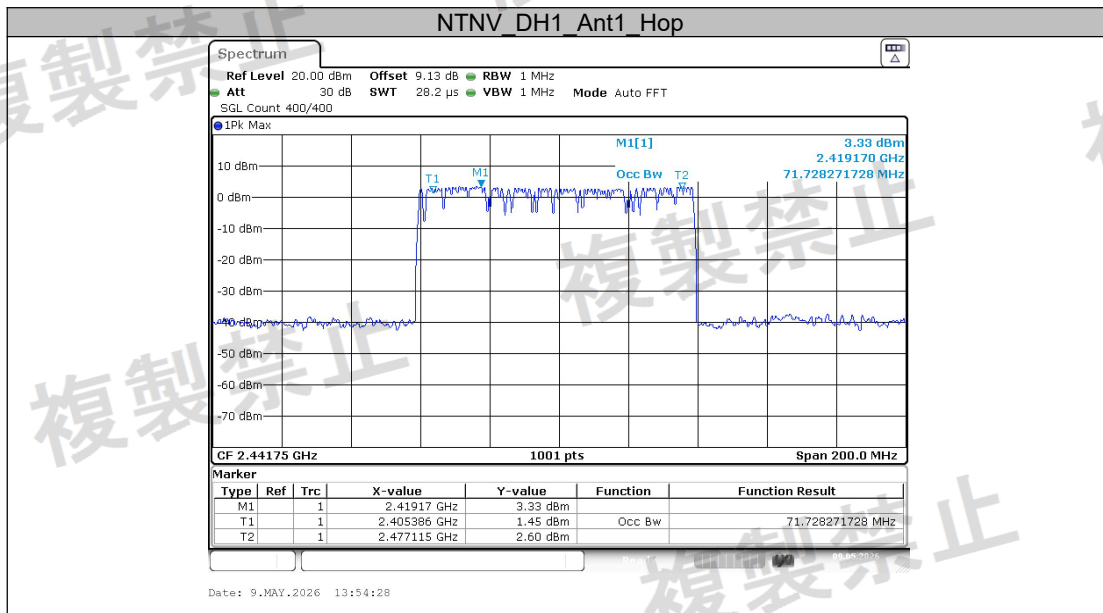
Detector: Peak.

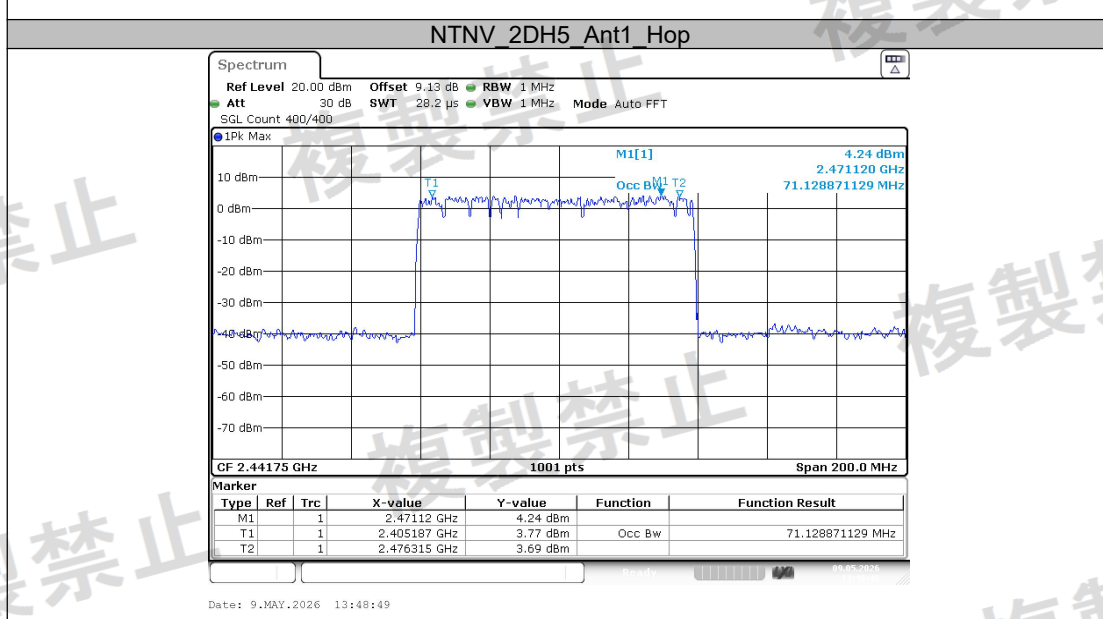
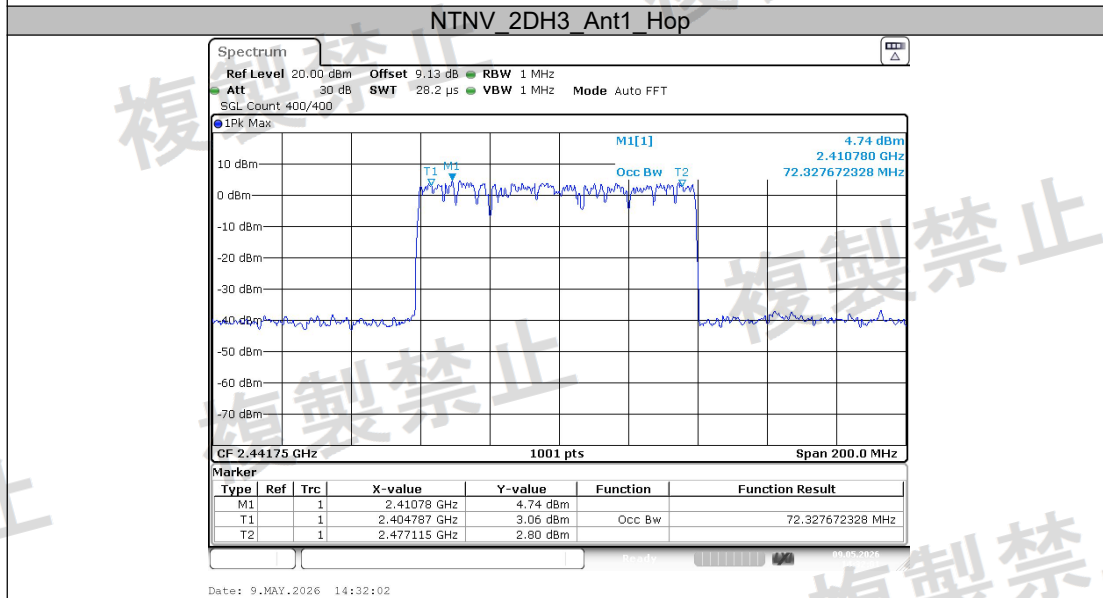
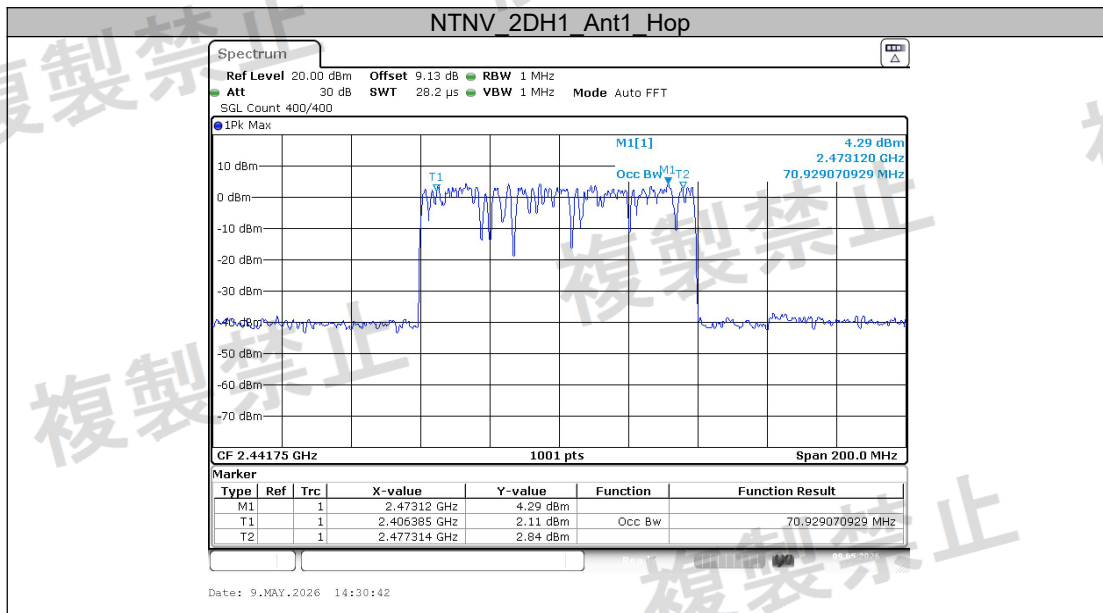
Trace Mode: Max Hold.

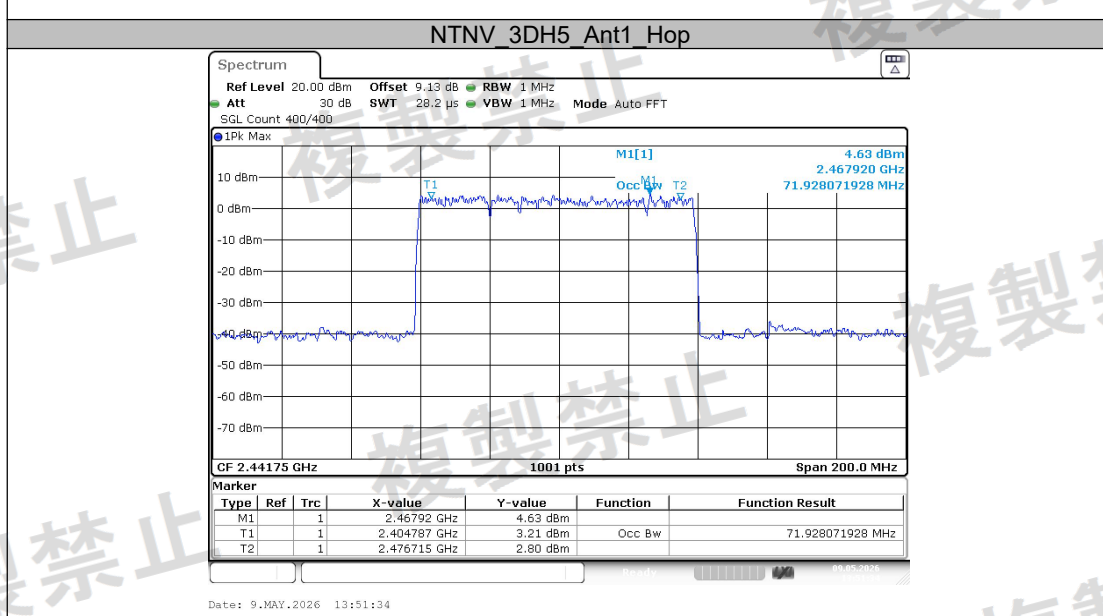
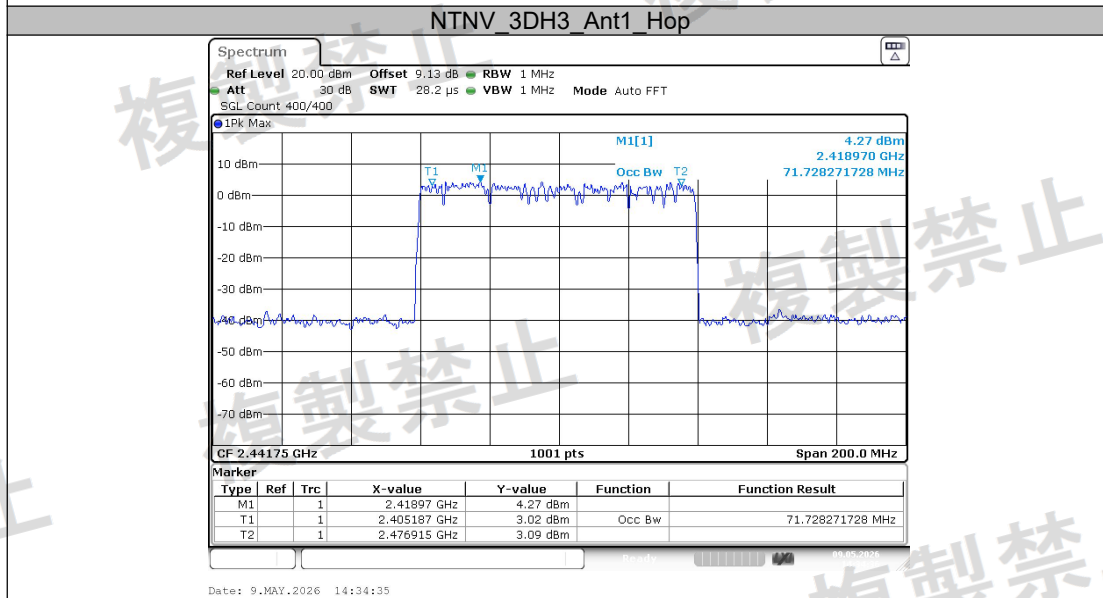
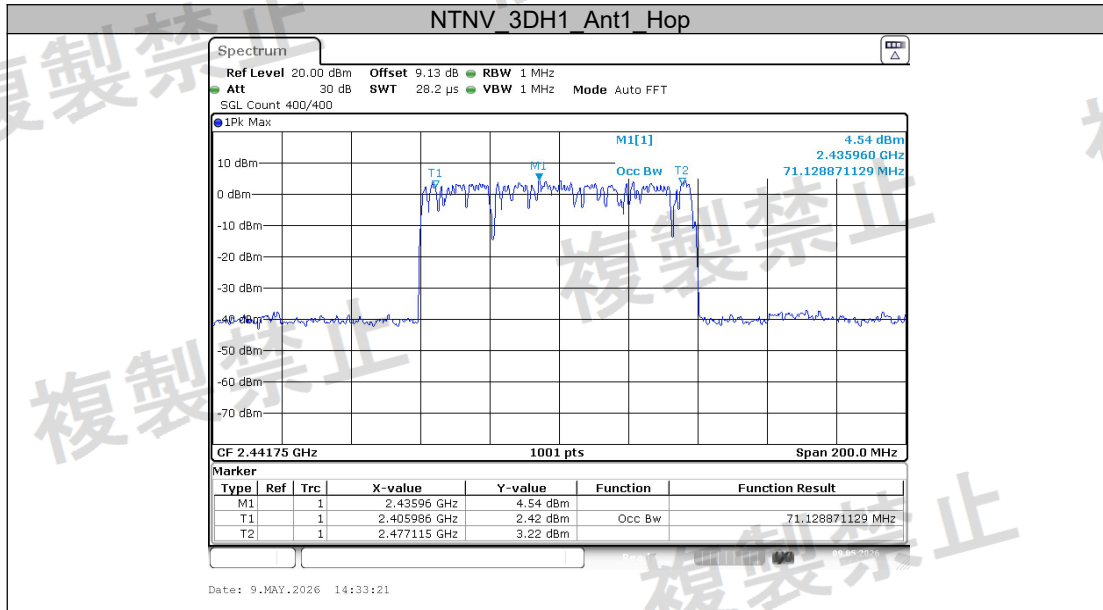
- (4) When the trace is complete, measure the spread bandwidth (90% bandwidth) with spectrum analyzer's bandwidth measure function.

6.5. Test result

Test Condition	Test Mode	Antenna	Freq (MHz)	Result [MHz]	Spread Factor	Verdict
NTNV	DH1	Ant1	Hop	71.728	71.728	PASS
	DH3	Ant1	Hop	71.928	71.928	PASS
	DH5	Ant1	Hop	71.928	71.928	PASS
	2DH1	Ant1	Hop	70.929	70.929	PASS
	2DH3	Ant1	Hop	72.328	72.328	PASS
	2DH5	Ant1	Hop	71.129	71.129	PASS
	3DH1	Ant1	Hop	71.129	71.129	PASS
	3DH3	Ant1	Hop	71.728	71.728	PASS
	3DH5	Ant1	Hop	71.928	71.928	PASS







7. Transmitter Spurious Emissions (conducted)

7.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Last Calibration	Due Calibration
1	Spectrum analyzer	ROHDE&SCHWARZ	FSU26	200732	2025/11/10	2026/11/09
2	Attenuator	SCHWARZBECK	DGA 9552N	3161	2025/10/17	2026/10/16
3	Automatic RF control unit	Tonscend	JS0806-2	20G8060288	2025/11/12	2026/11/11

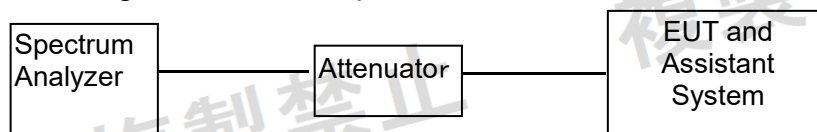
Note: The test equipment is calibrated by Huajue Medical Testing and Metrology (Shenzhen) Co., Ltd. Calibration standard: Article 24-2, Paragraph 4 of the Radio Act, method c

7.2. Limit

Permissible mean power of spurious emission of each frequency supplied to a feeder, that is, mean power of spurious emission in the 1 MHz bandwidth at frequency f other than frequency band used shall be as follows:

- $2,387\text{MHz} \leq f \leq 2,400\text{MHz}$ and $2,483.5\text{MHz} < f \leq 2,496.5\text{MHz}$ 25 μW or less
- $2,387\text{MHz} > f$ and $2,496.5\text{MHz} < f$ 2.5 μW or less

7.3. Block diagram of test setup

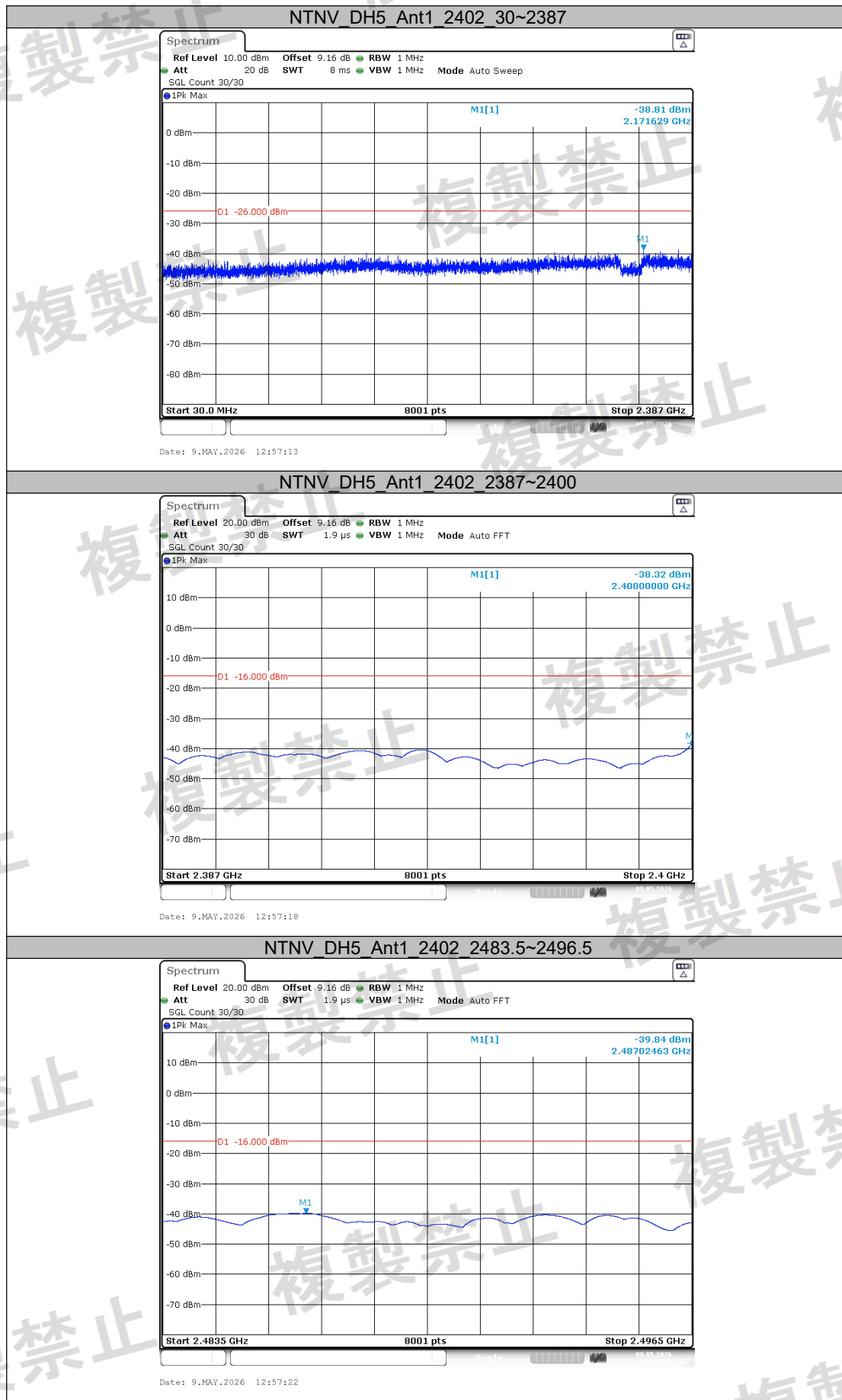


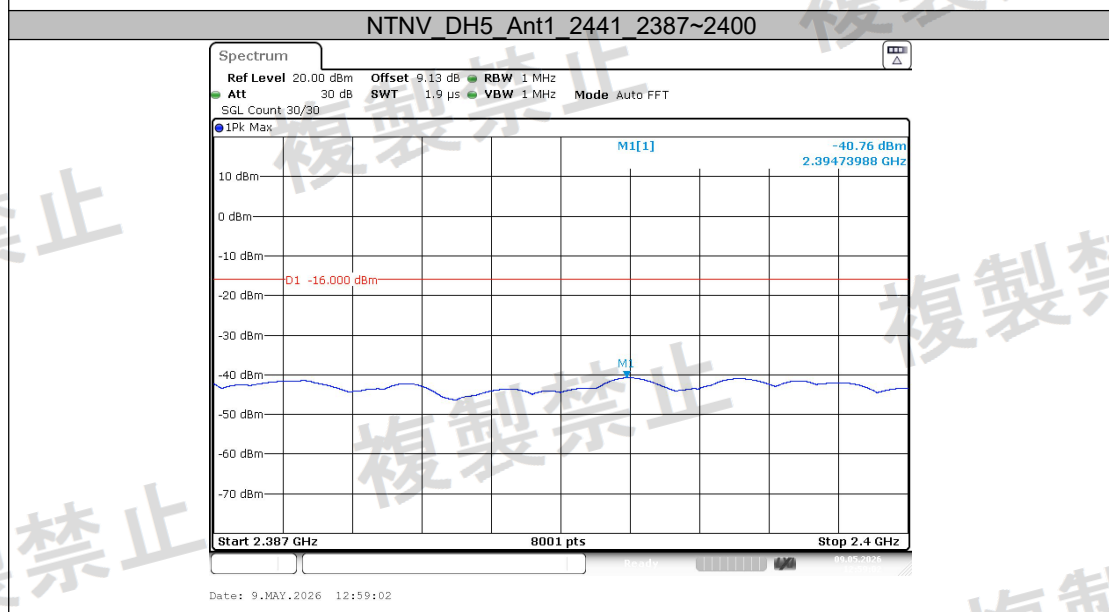
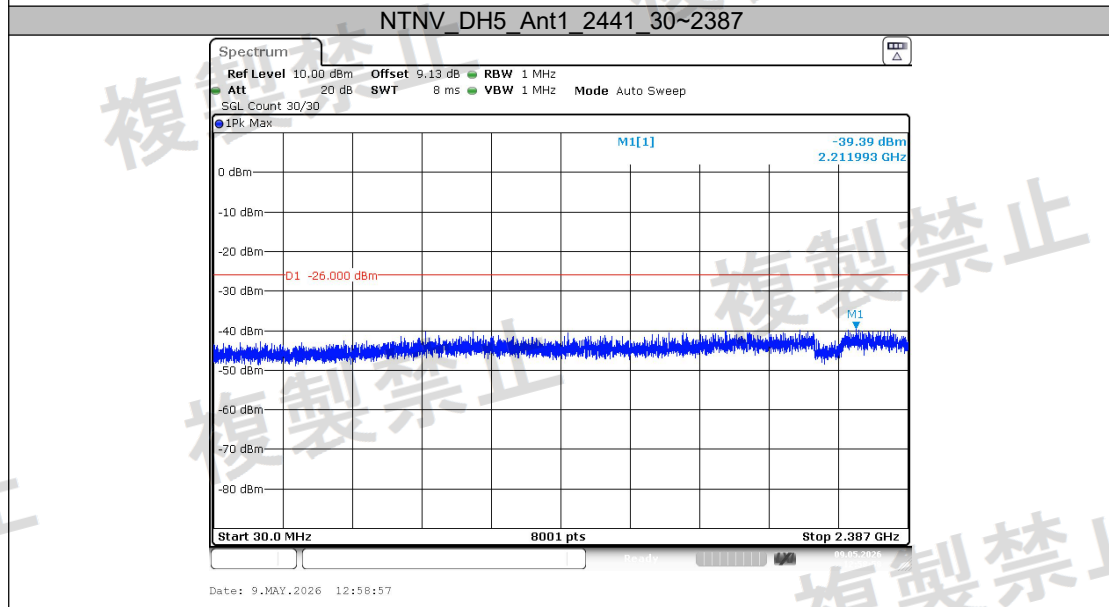
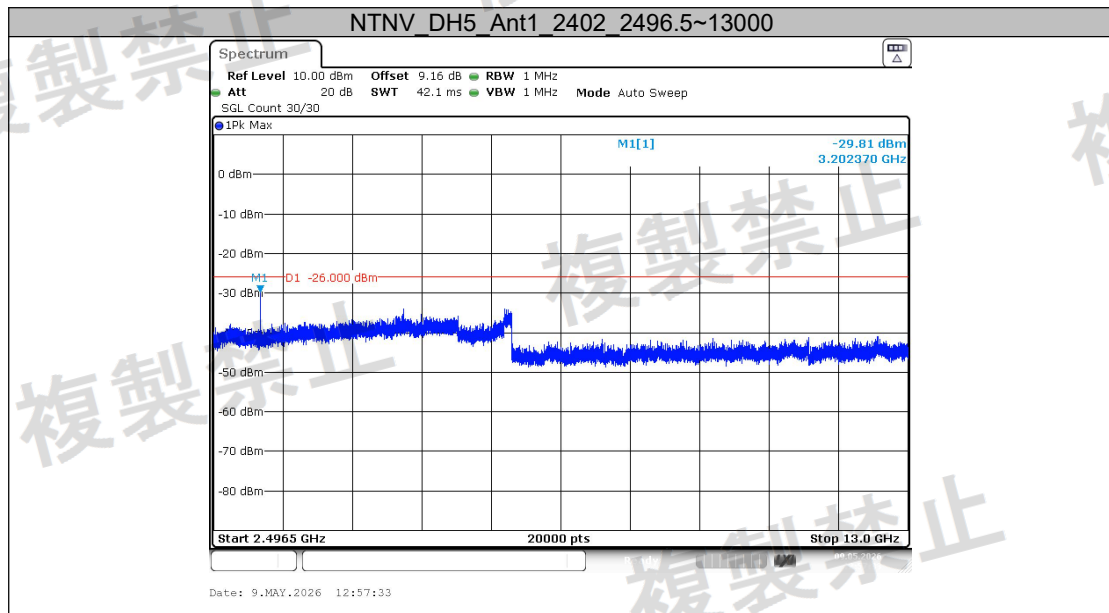
7.4. Test Procedure

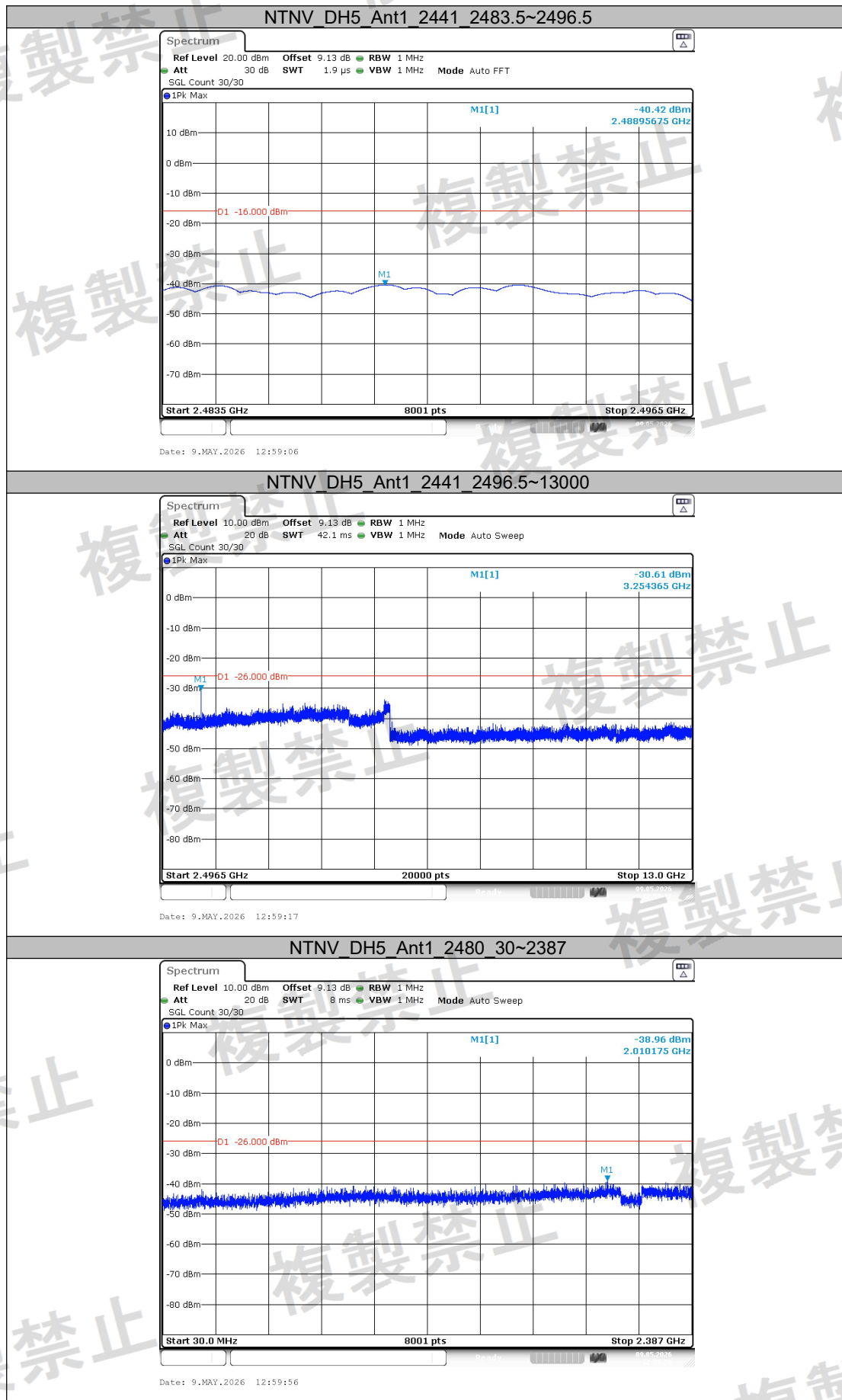
- Configure EUT and assistant system according clause 2.3 and 7.3
- Set EUT work in test mode as described in clause 2.4
- Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:
Resolution BW: 1MHz.
Video BW: 1MHz.
Detector: Peak.
Trace Mode: Max Hold.
- All the emissions from 30MHz to 13GHz were measured and record.

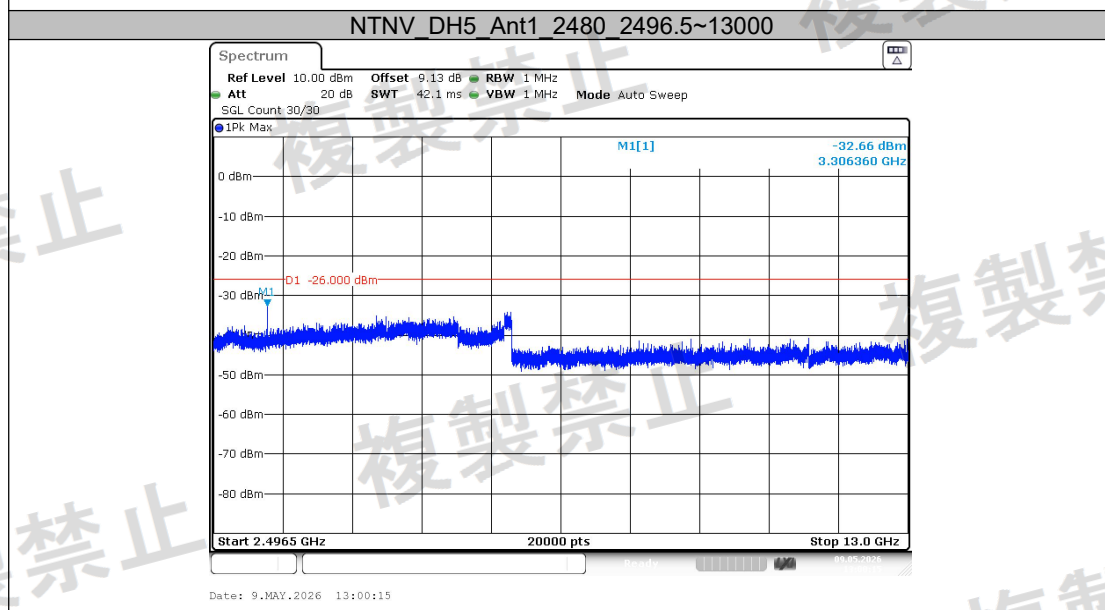
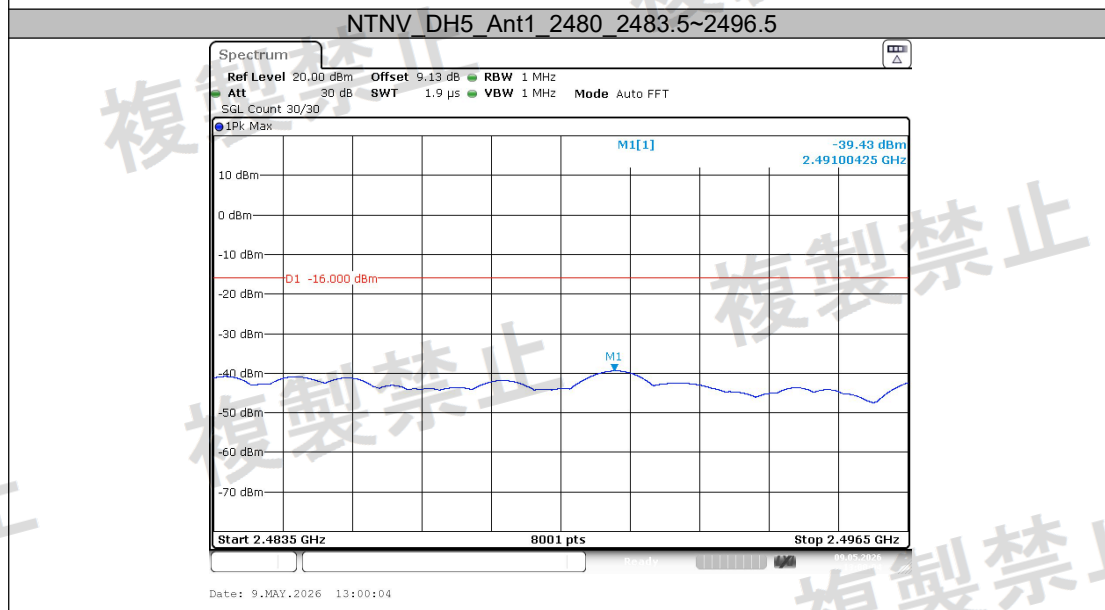
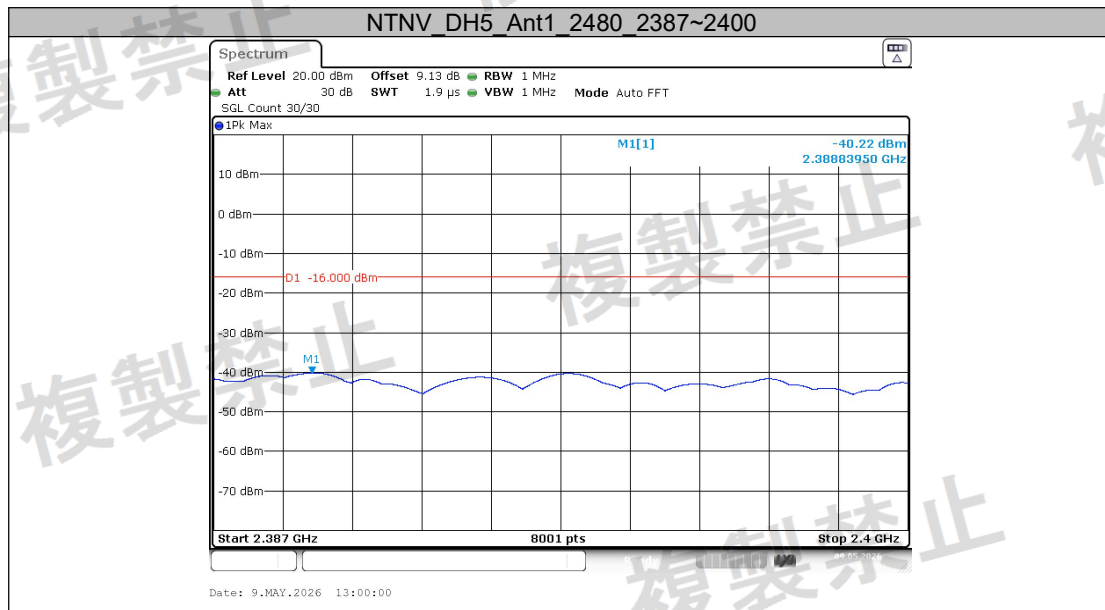
7.5. Test result

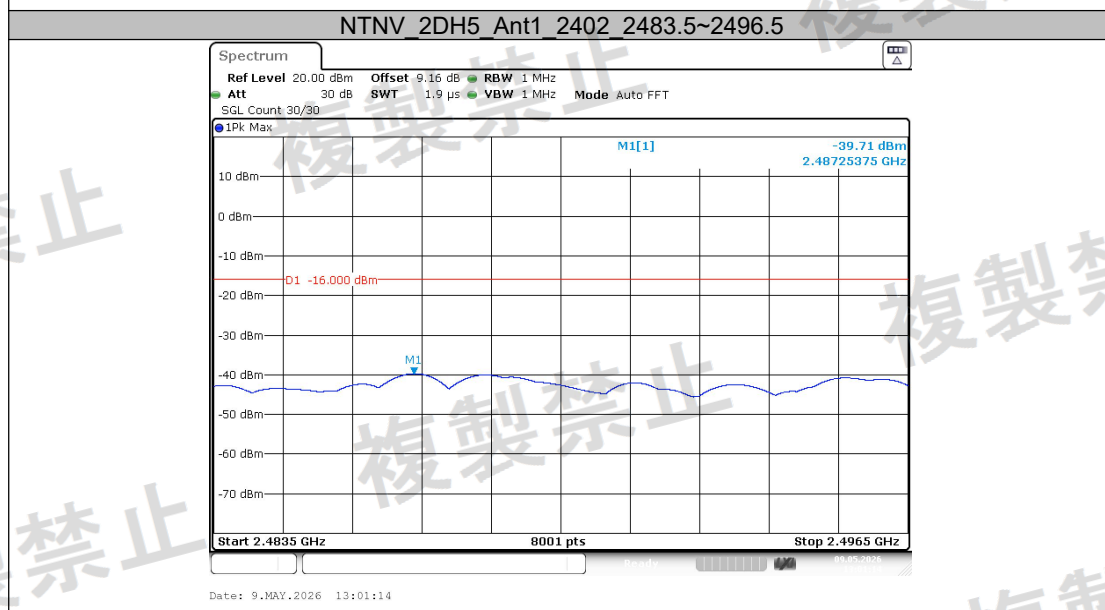
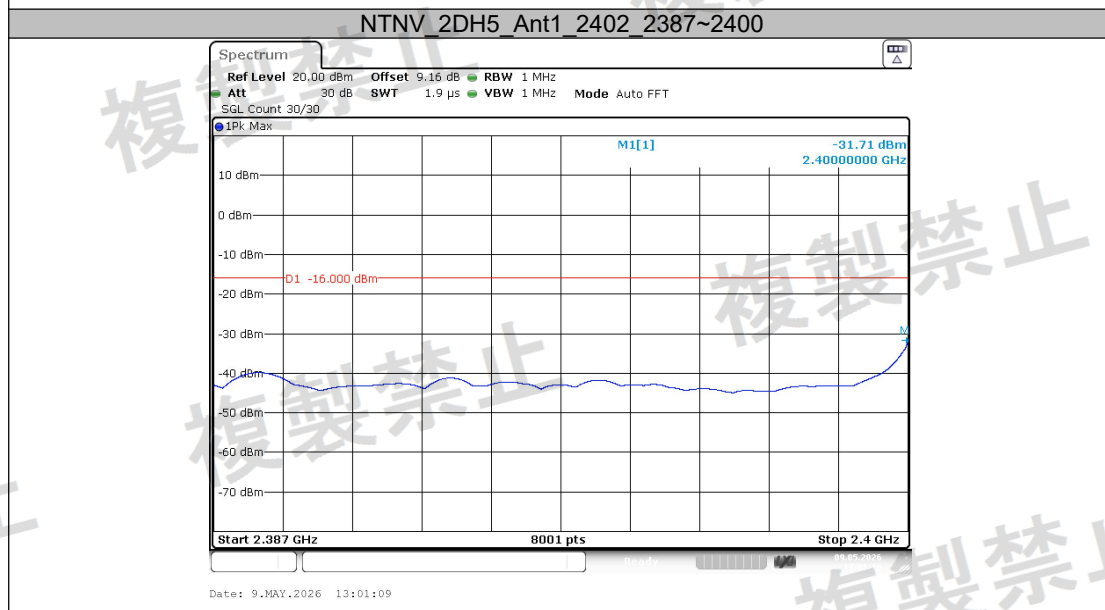
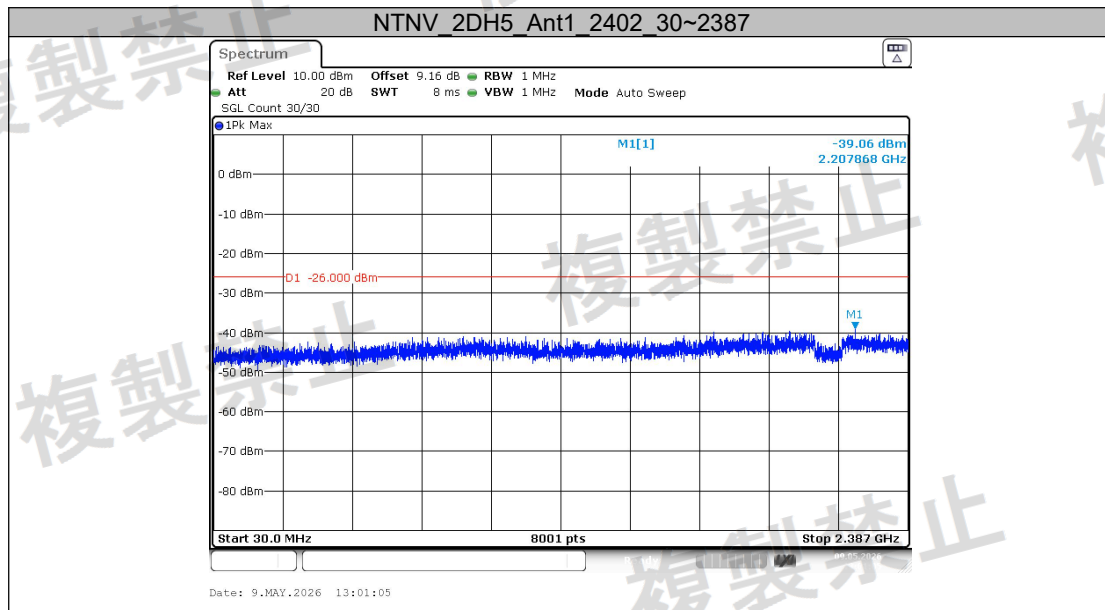
Test Condition	Test Mode	Antenna	Freq(M Hz)	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [μ W]	Limit [μ W]	Verdict
NTNV	DH5	Ant1	2402	30~2387	-38.81	≤ -26	0.13152	≤ 2.5	PASS
				2387~2400	-38.32	≤ -16	0.14723	≤ 25	PASS
				2483.5~2496.5	-39.84	≤ -16	0.10375	≤ 25	PASS
				2496.5~13000	-29.81	≤ -26	1.04472	≤ 2.5	PASS
			2441	30~2387	-39.39	≤ -26	0.11508	≤ 2.5	PASS
				2387~2400	-40.76	≤ -16	0.08395	≤ 25	PASS
				2483.5~2496.5	-40.42	≤ -16	0.09078	≤ 25	PASS
				2496.5~13000	-30.61	≤ -26	0.86896	≤ 2.5	PASS
			2480	30~2387	-38.96	≤ -26	0.12706	≤ 2.5	PASS
				2387~2400	-40.22	≤ -16	0.09506	≤ 25	PASS
				2483.5~2496.5	-39.43	≤ -16	0.11402	≤ 25	PASS
				2496.5~13000	-32.66	≤ -26	0.54200	≤ 2.5	PASS
	2DH5	Ant1	2402	30~2387	-39.06	≤ -26	0.12417	≤ 2.5	PASS
				2387~2400	-31.71	≤ -16	0.67453	≤ 25	PASS
				2483.5~2496.5	-39.71	≤ -16	0.10691	≤ 25	PASS
				2496.5~13000	-30.41	≤ -26	0.90991	≤ 2.5	PASS
			2441	30~2387	-39.43	≤ -26	0.11402	≤ 2.5	PASS
				2387~2400	-40.41	≤ -16	0.09099	≤ 25	PASS
				2483.5~2496.5	-39.21	≤ -16	0.11995	≤ 25	PASS
				2496.5~13000	-29.81	≤ -26	1.04472	≤ 2.5	PASS
			2480	30~2387	-39.39	≤ -26	0.11508	≤ 2.5	PASS
				2387~2400	-39.99	≤ -16	0.10023	≤ 25	PASS
				2483.5~2496.5	-39.94	≤ -16	0.10139	≤ 25	PASS
				2496.5~13000	-32.36	≤ -26	0.58076	≤ 2.5	PASS
	3DH5	Ant1	2402	30~2387	-38.86	≤ -26	0.13002	≤ 2.5	PASS
				2387~2400	-30.89	≤ -16	0.81470	≤ 25	PASS
				2483.5~2496.5	-39.10	≤ -16	0.12303	≤ 25	PASS
				2496.5~13000	-30.15	≤ -26	0.96605	≤ 2.5	PASS
			2441	30~2387	-39.02	≤ -26	0.12531	≤ 2.5	PASS
				2387~2400	-39.50	≤ -16	0.11220	≤ 25	PASS
				2483.5~2496.5	-39.36	≤ -16	0.11588	≤ 25	PASS
				2496.5~13000	-30.58	≤ -26	0.87498	≤ 2.5	PASS
			2480	30~2387	-39.29	≤ -26	0.11776	≤ 2.5	PASS
				2387~2400	-39.21	≤ -16	0.11995	≤ 25	PASS
				2483.5~2496.5	-39.25	≤ -16	0.11885	≤ 25	PASS
				2496.5~13000	-31.30	≤ -26	0.74131	≤ 2.5	PASS

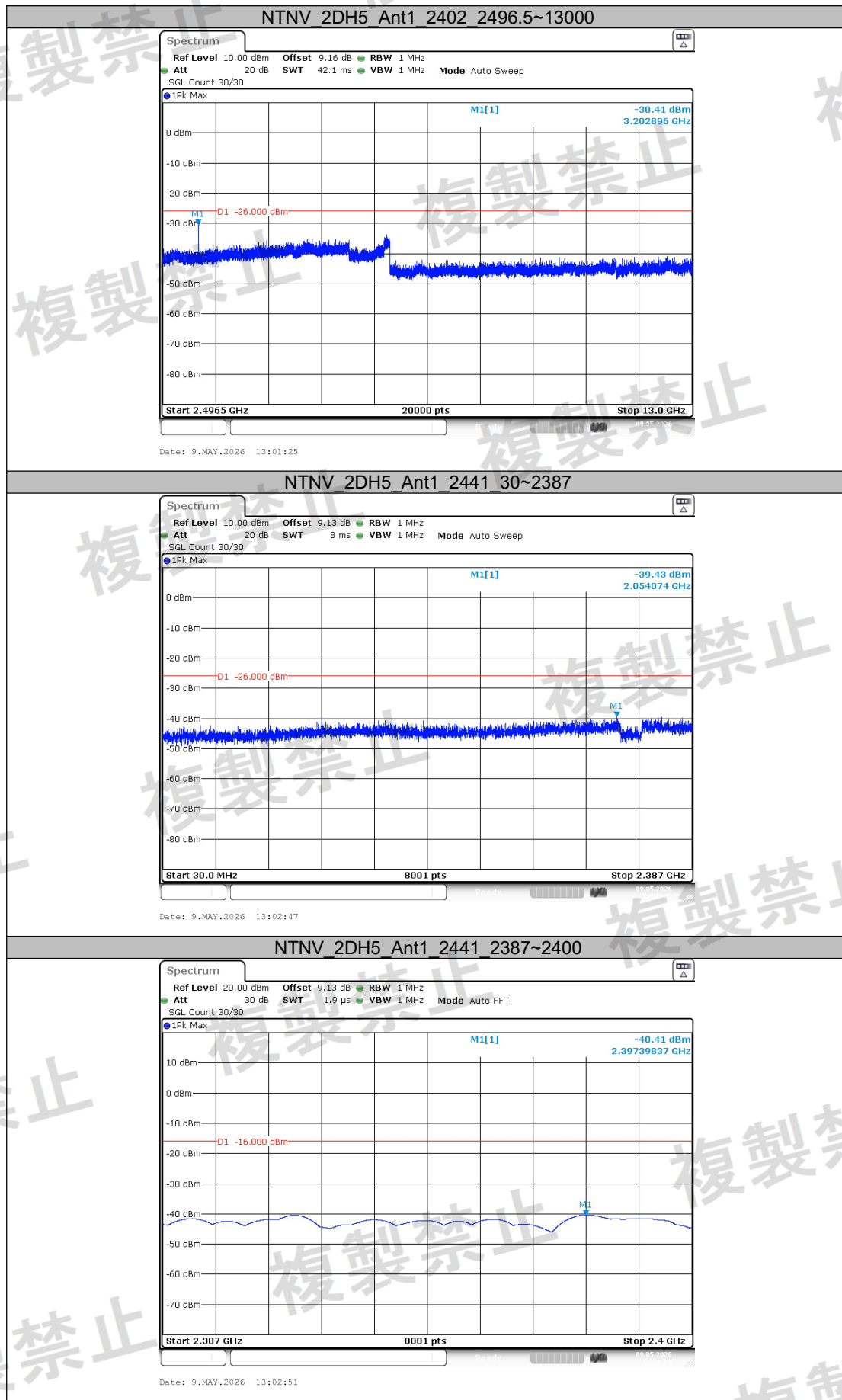


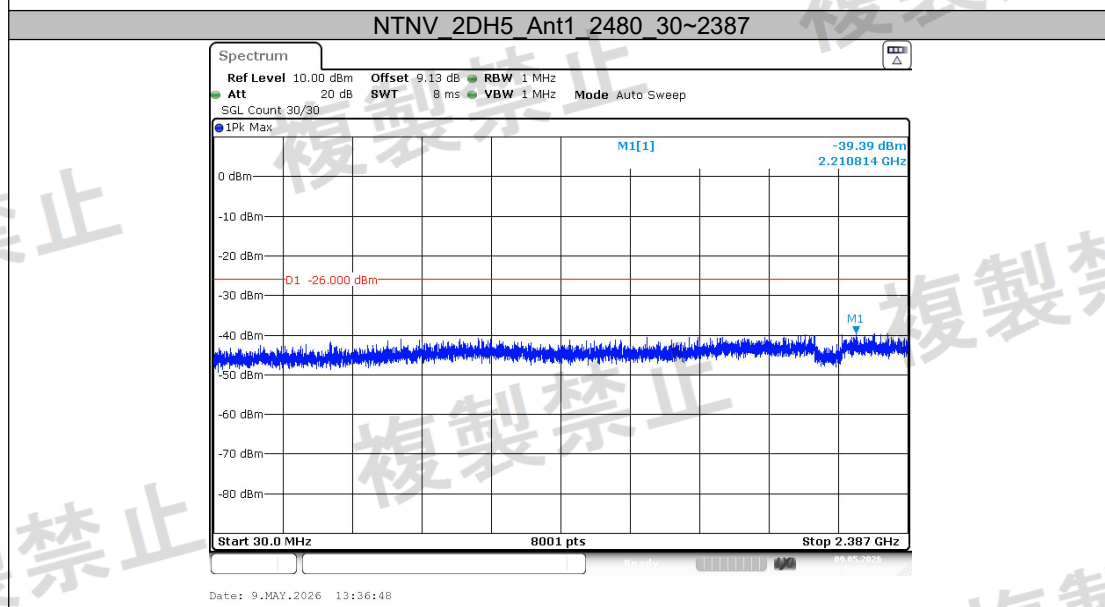
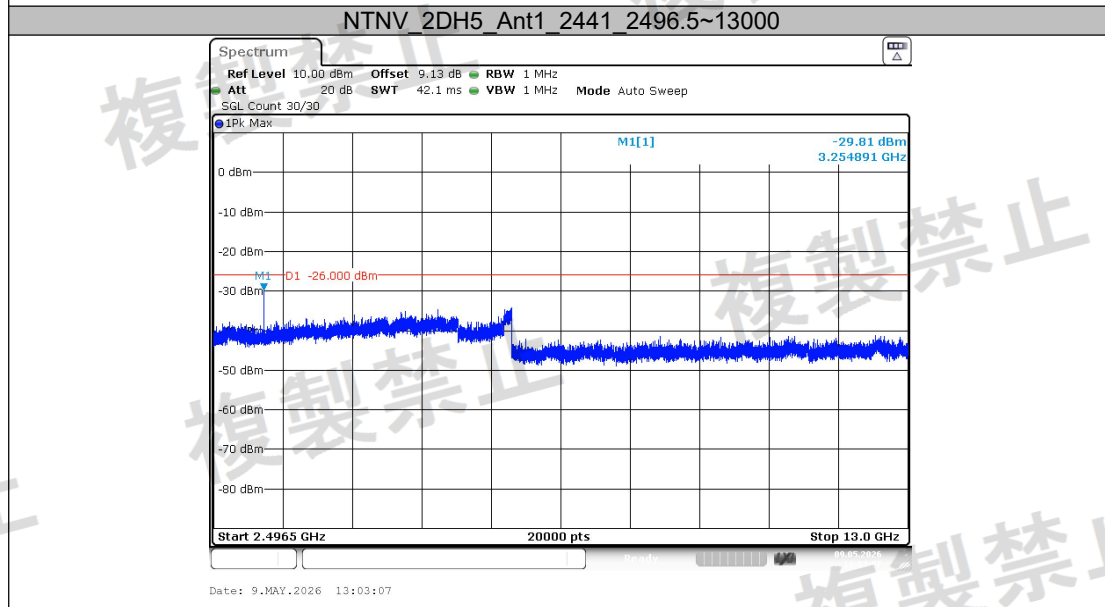
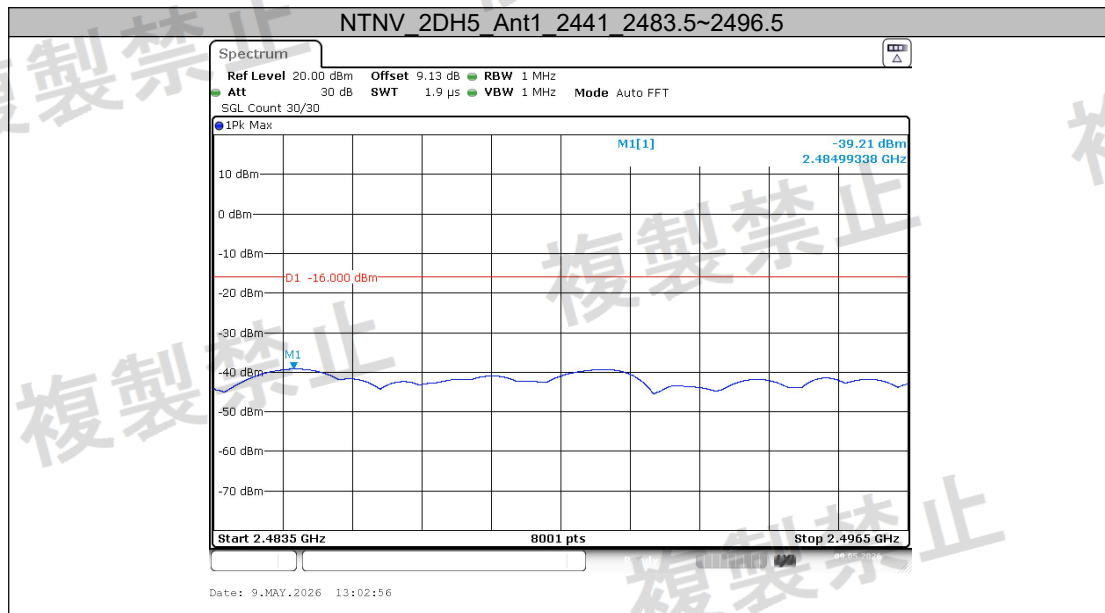


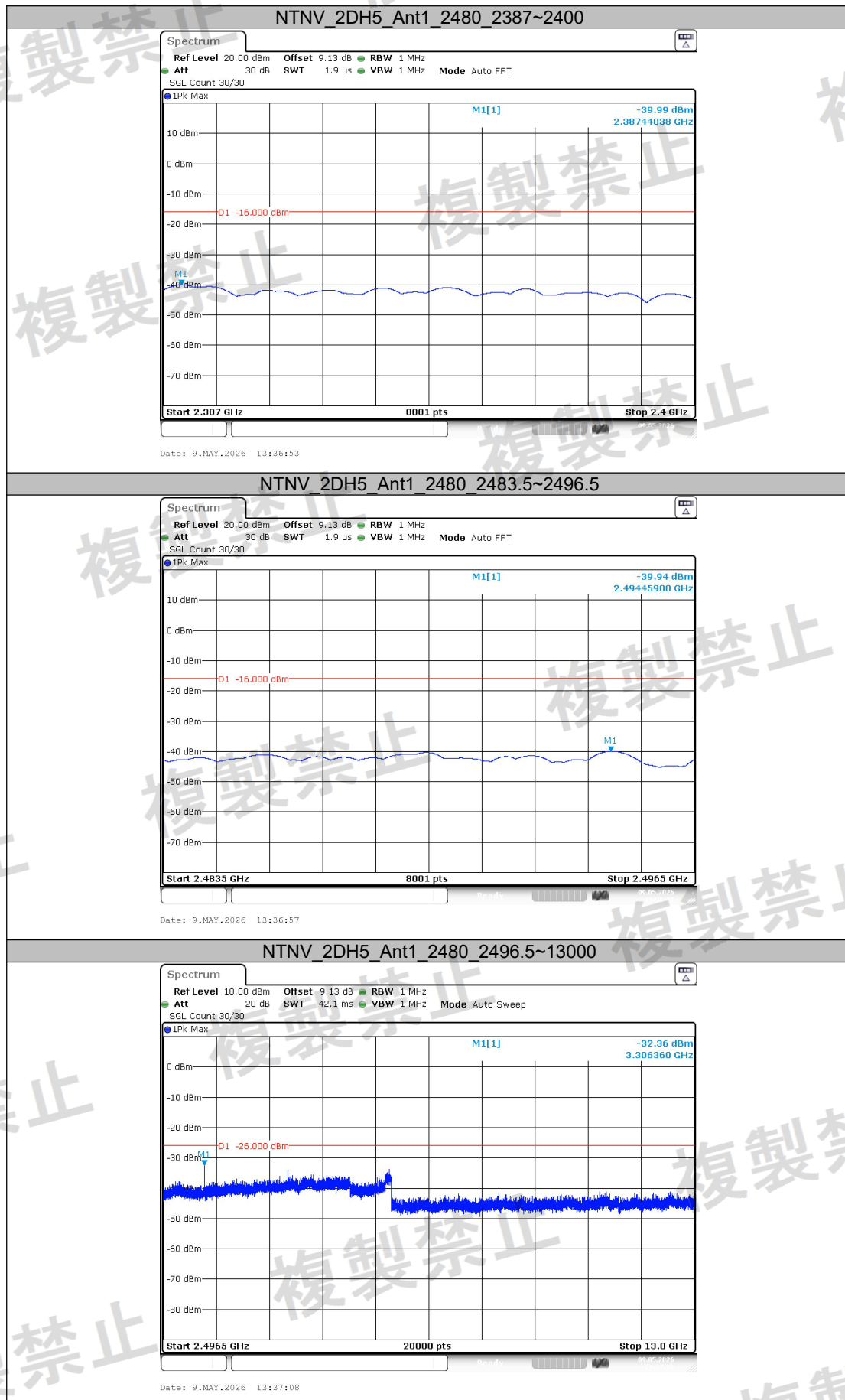


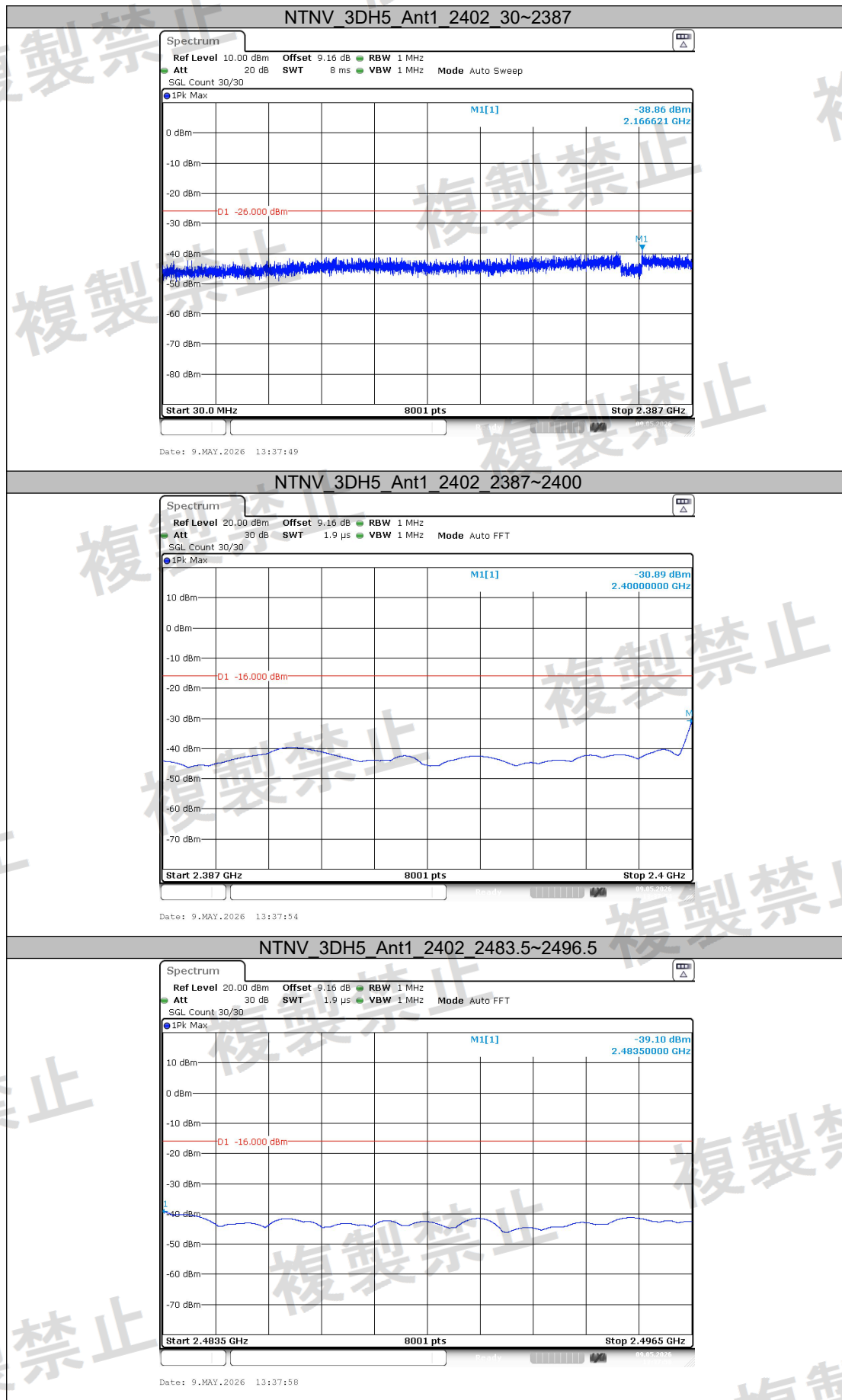


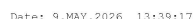


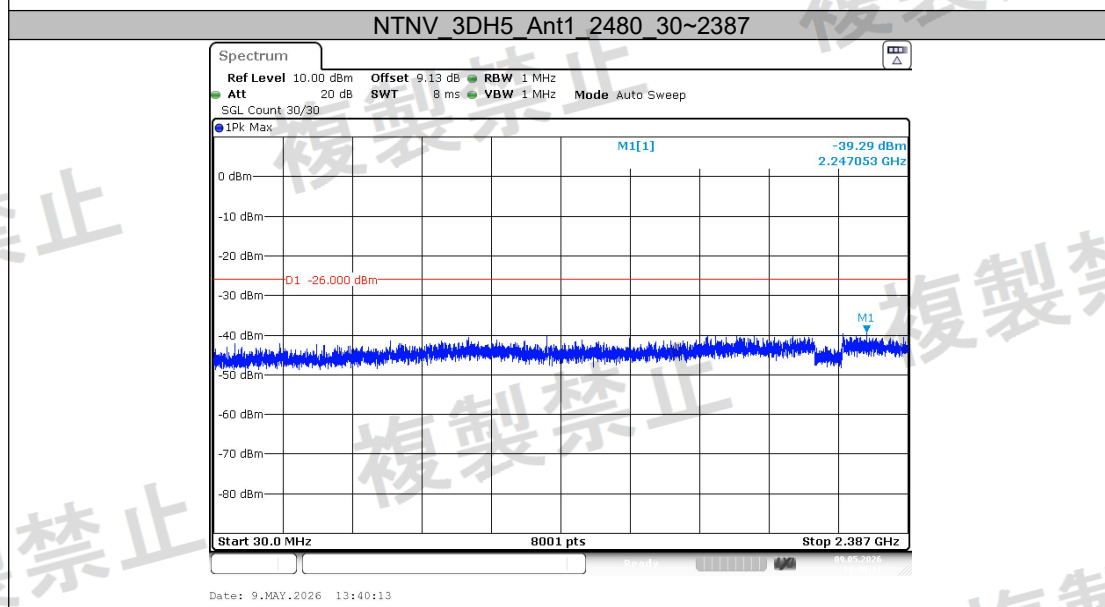
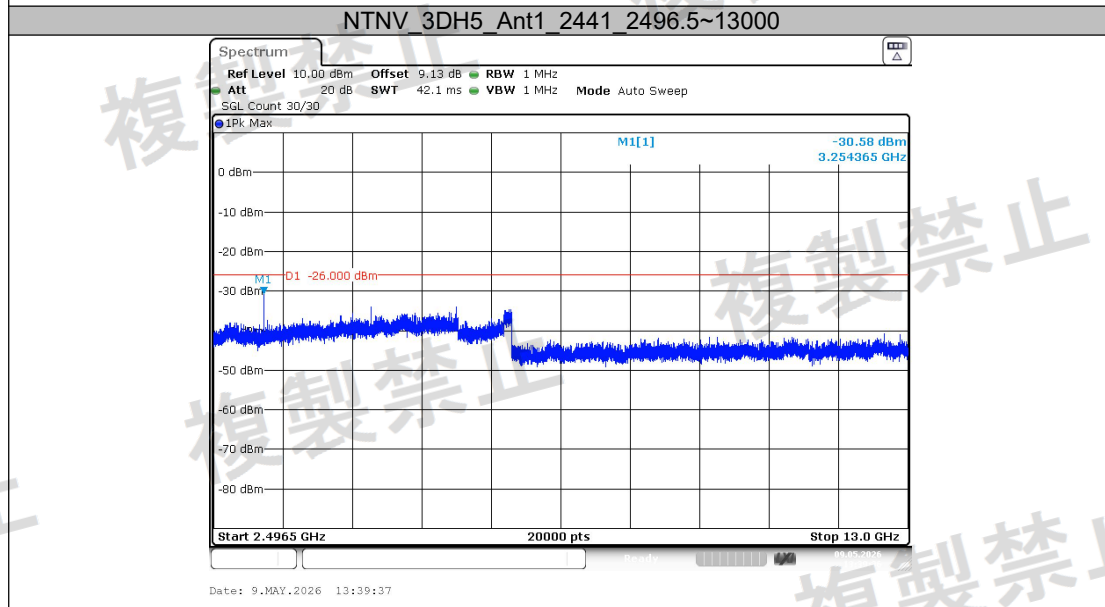
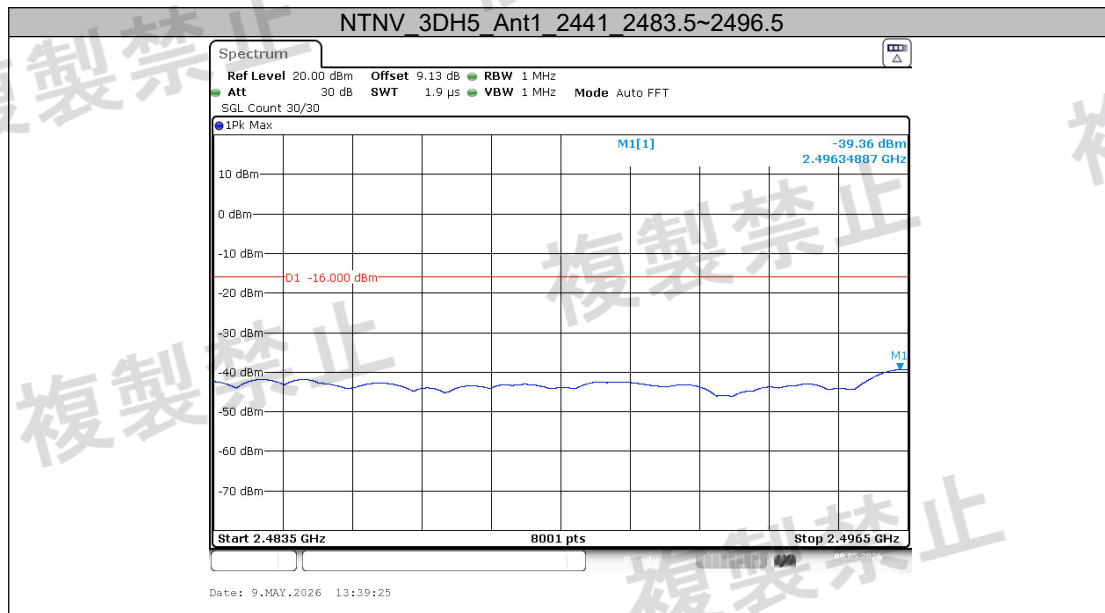


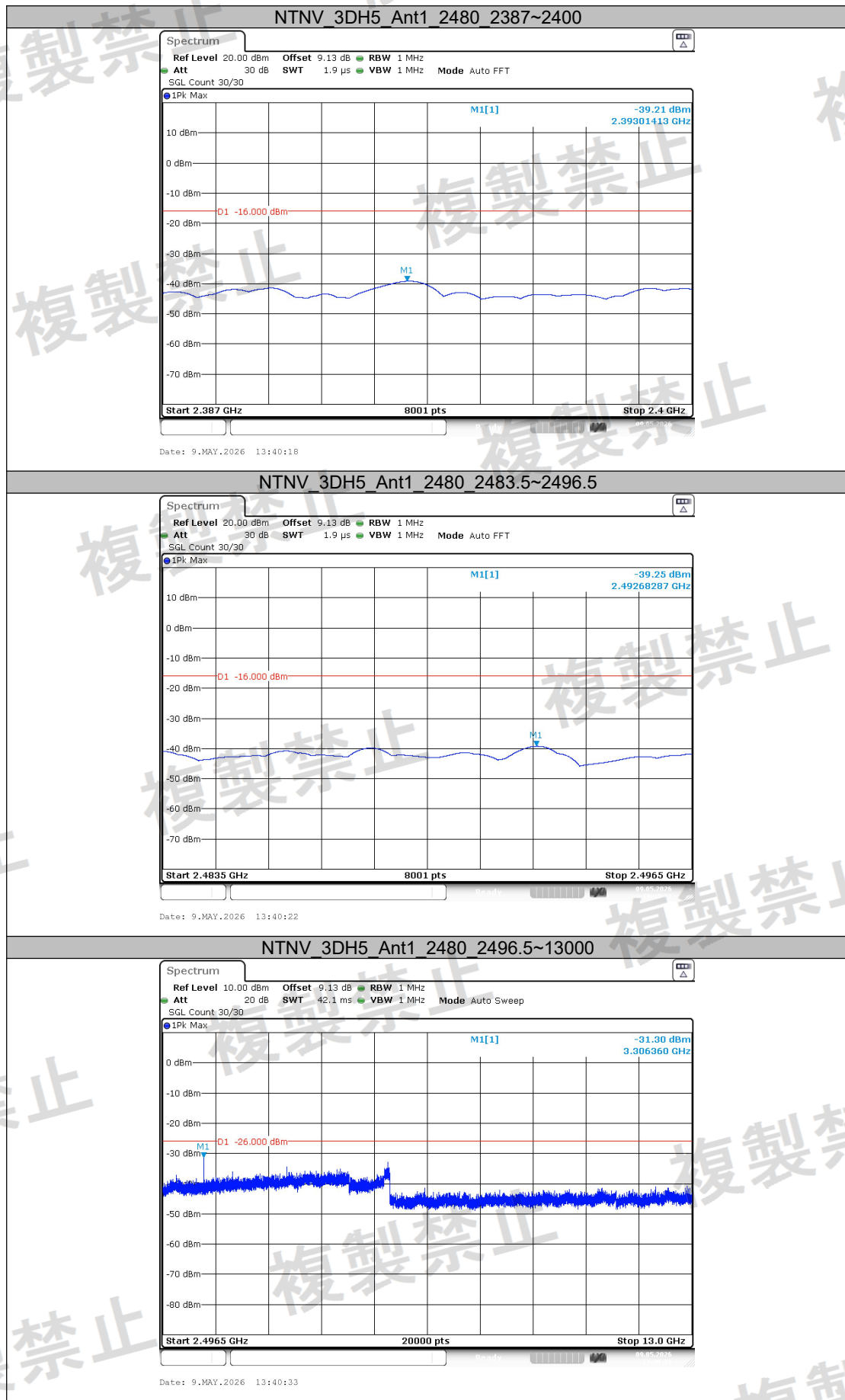












8. Dwell time

8.1. Test Equipment

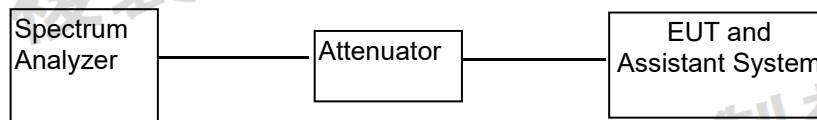
Item	Type	Manufacturer	Model No.	Serial No.	Last Calibration	Due Calibration
1	Spectrum analyzer	ROHDE&SCHWARZ	FSU26	200732	2025/11/10	2026/11/09
2	Attenuator	SCHWARZBECK	DGA 9552N	3161	2025/10/17	2026/10/16
3	Automatic RF control unit	Tonscend	JS0806-2	20G8060288	2025/11/12	2026/11/11

Note: The test equipment is calibrated by Huajue Medical Testing and Metrology (Shenzhen) Co., Ltd. Calibration standard: Article 24-2, Paragraph 4 of the Radio Act, method c

8.2. Limit

Frequency dwell time (time during which radio waves continue to be emitted at a specified frequency) of a transmitting equipment using the FH system shall be 0.4 seconds or less.

8.3. Block diagram of test setup



8.4. Test Procedure

- (1) Configure EUT and assistant system according clause 2.4 and 7.3
- (2) Set EUT work in test mode as described in clause 2.4
- (3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the middle hopping channel.

Resolution BW: 1MHz.

Video BW: 3MHz.

Span: Zero span.

Detector: Peak.

Trace Mode: Max Hold.

Sweep: Video Trigger

- (4) When the trace is complete, measure the sending time of 1 burst and the duty cycle of 1 Burst cycle.

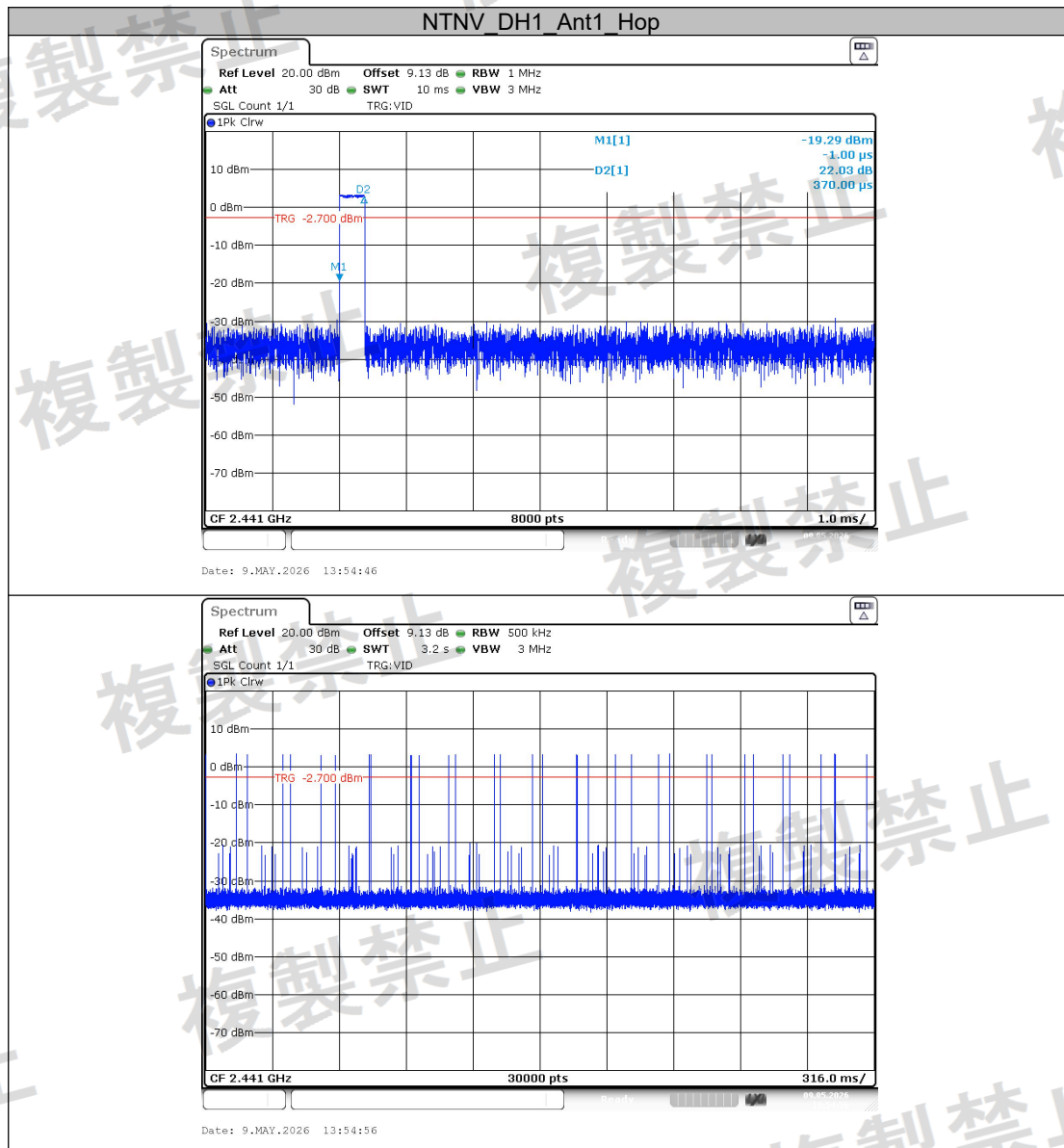
- (5) Calculate dwell time follow below formula:

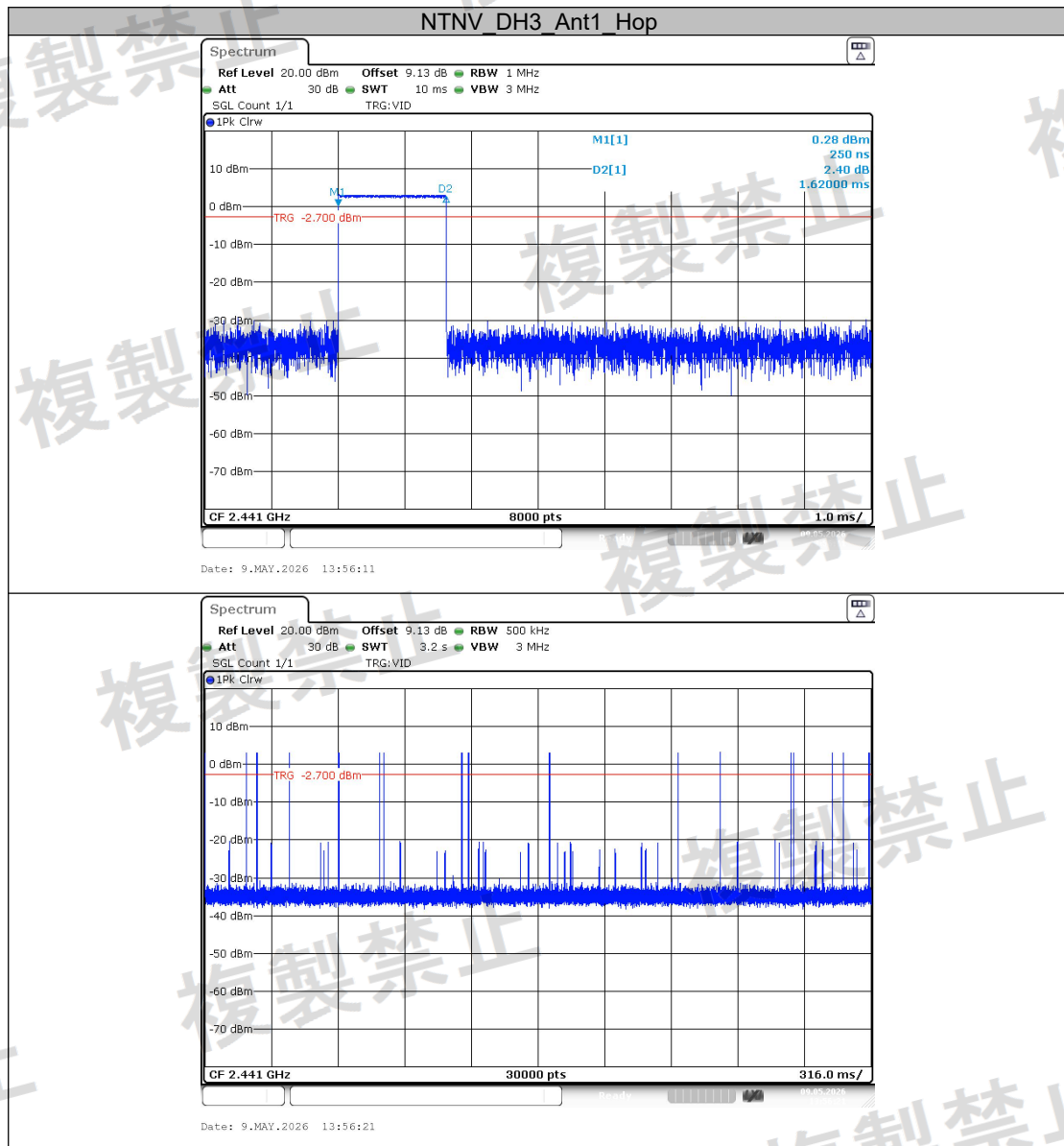
Dwell time = $(0.4(s) \times \text{spreading rate} \times \text{sending time of 1 burst}(s)) / (\text{Burst cycle}(s) \times \text{No. of hopping channel})$

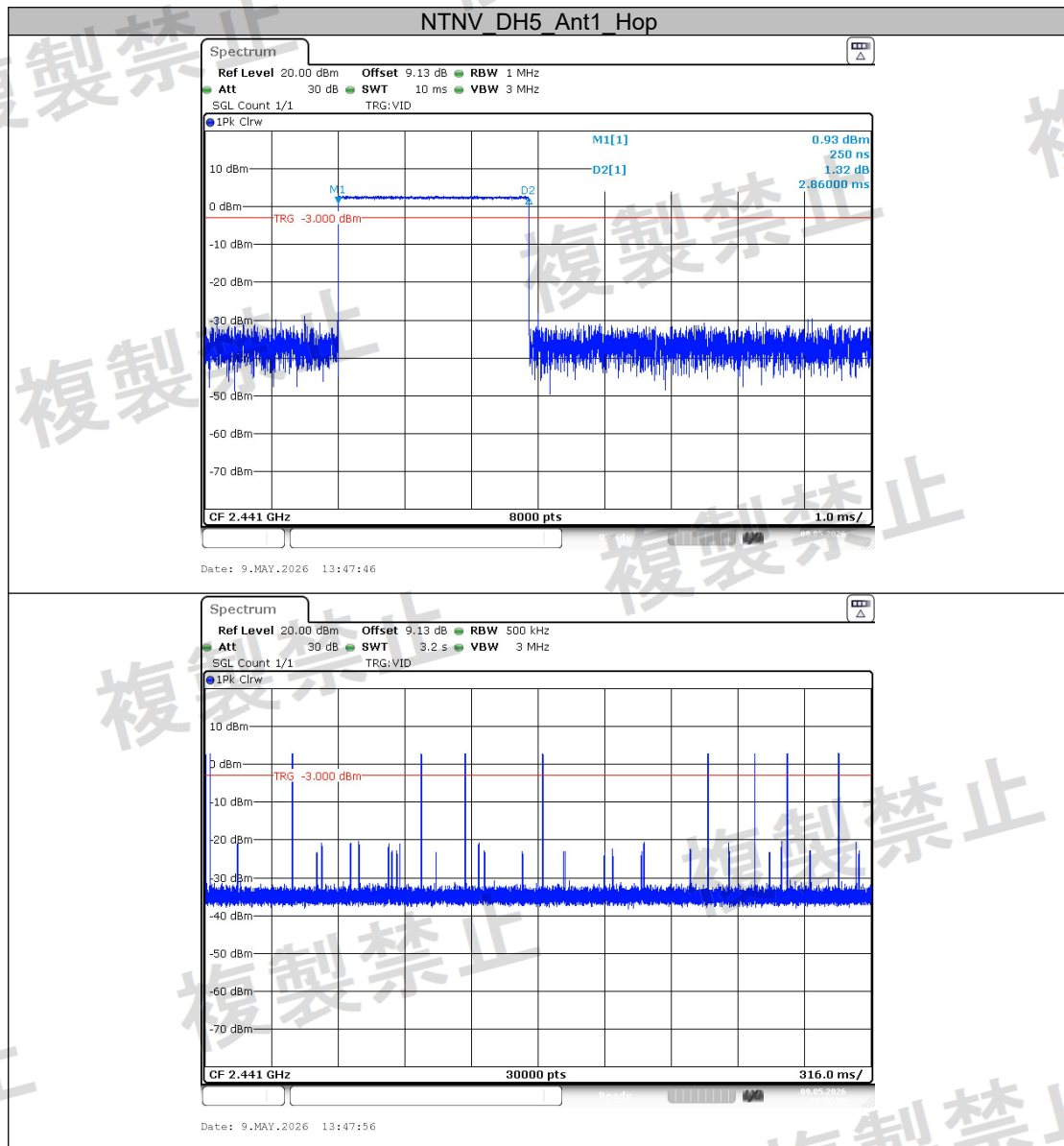
Spreading rate = Spread bandwidth (actual measurement value)/Transmission rate.

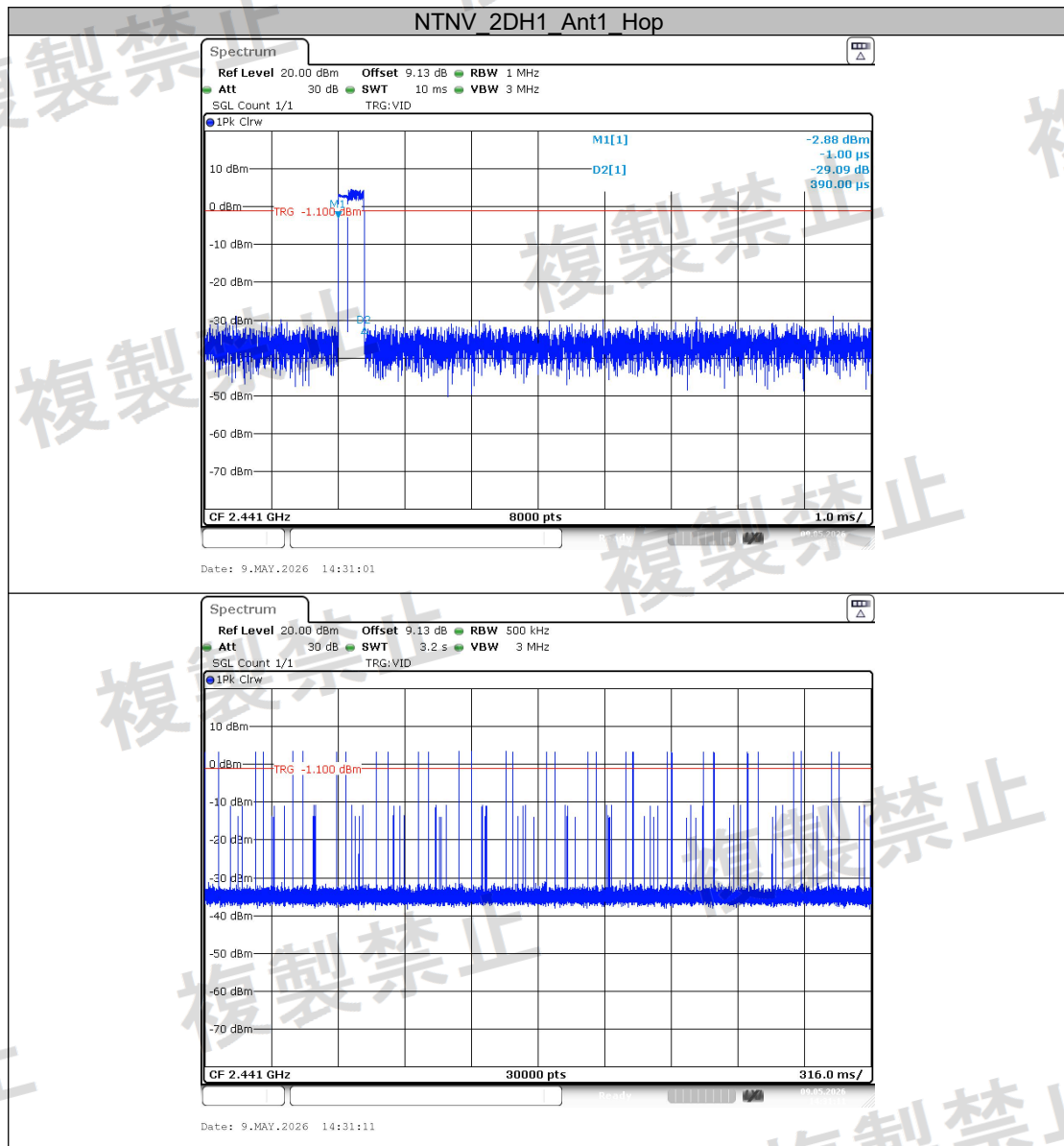
8.5. Test result

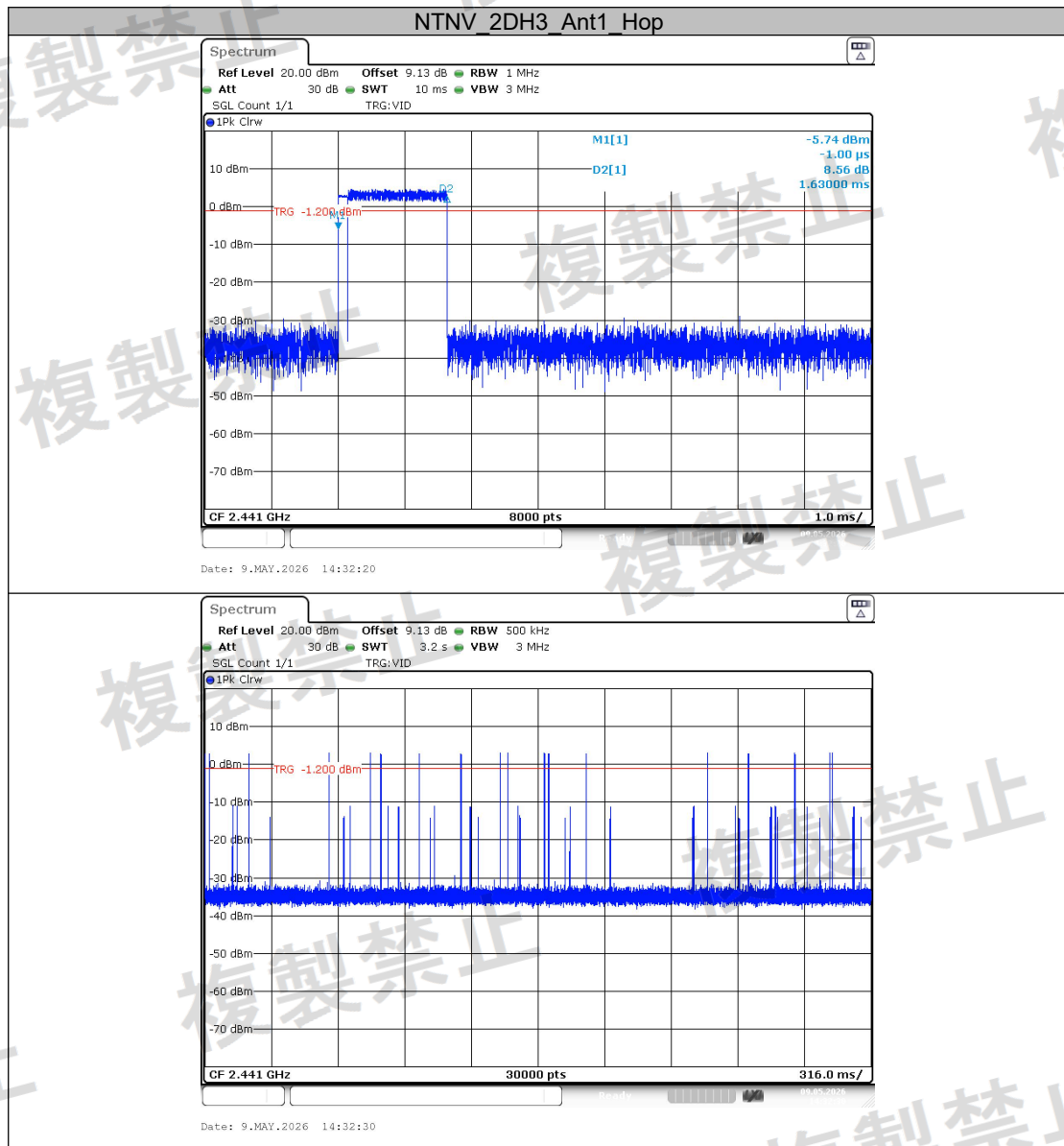
Test Condition	Test Mode	Antenna	Freq(M Hz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit [s]	Verdict
NTNV	DH1	Ant1	Hop	0.37	320	0.118	≤0.4	PASS
	DH3	Ant1	Hop	1.62	170	0.275	≤0.4	PASS
	DH5	Ant1	Hop	2.86	100	0.286	≤0.4	PASS
	2DH1	Ant1	Hop	0.39	320	0.125	≤0.4	PASS
	2DH3	Ant1	Hop	1.63	180	0.293	≤0.4	PASS
	2DH5	Ant1	Hop	2.87	110	0.316	≤0.4	PASS
	3DH1	Ant1	Hop	0.39	320	0.125	≤0.4	PASS
	3DH3	Ant1	Hop	1.63	170	0.277	≤0.4	PASS
	3DH5	Ant1	Hop	2.87	70	0.201	≤0.4	PASS

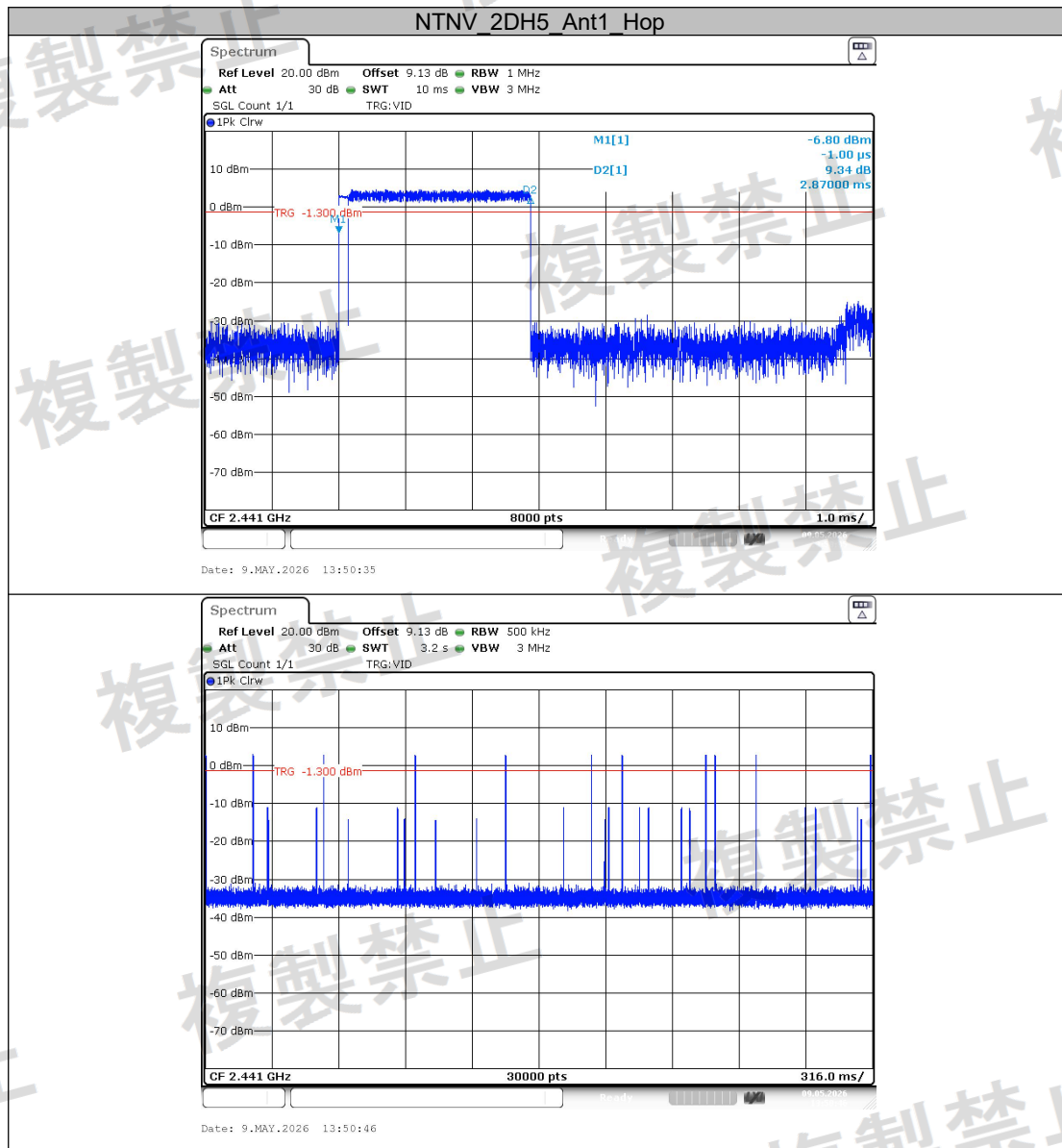


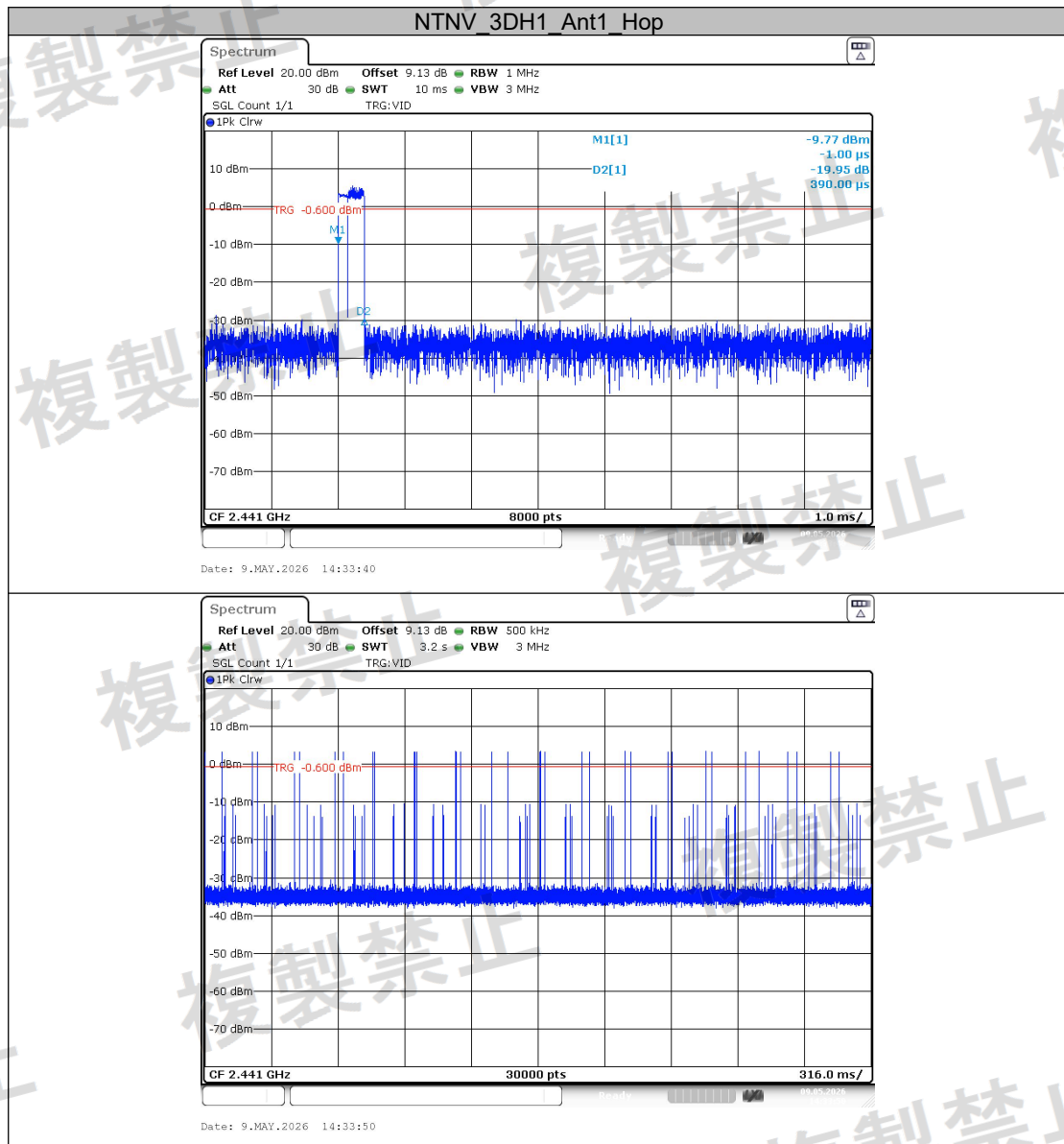


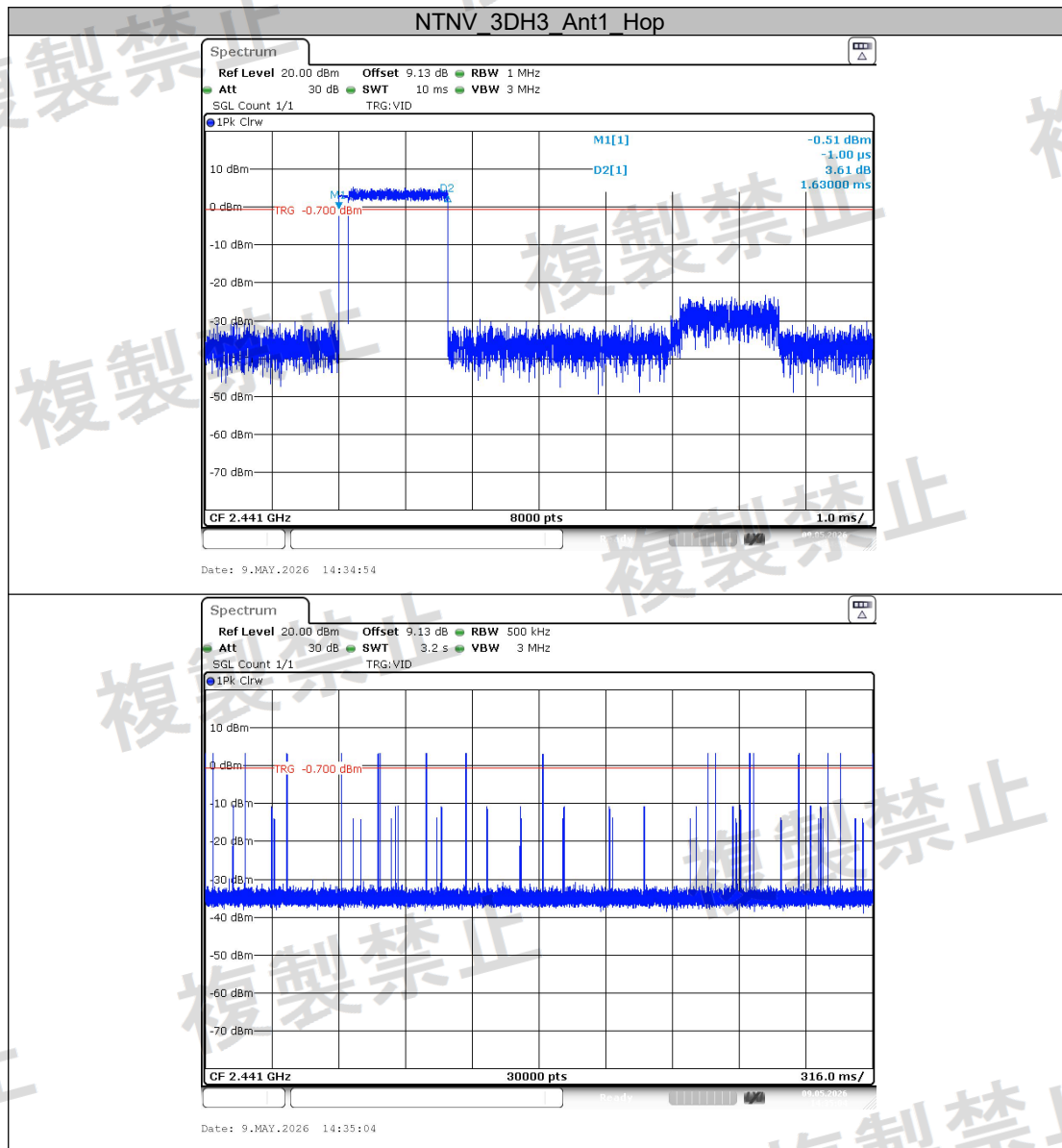


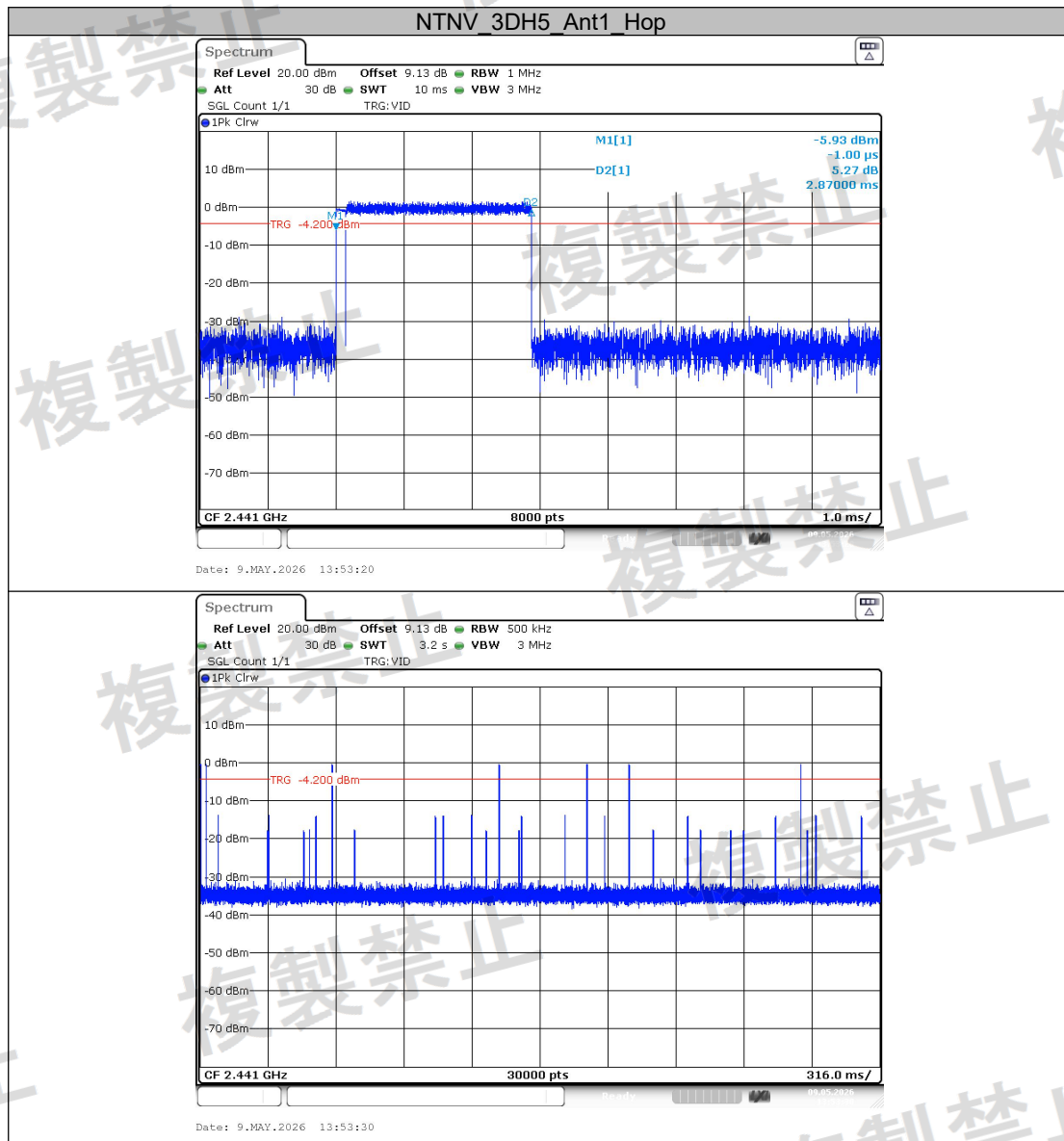










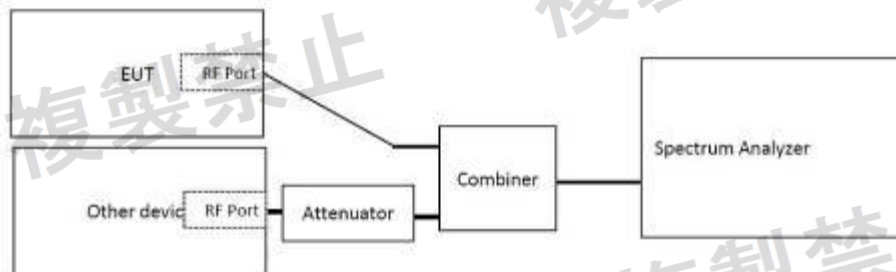


9. Transmission rate

9.1. Limit

The maximum transmission burst length is limited to 4ms.

9.2. Block diagram of test setup



9.3. Test Procedure

The device was configured to transmit maximum length packets at the fastest and slowest data rate (54MB/s and 6Mb/s).

9.4. Test result

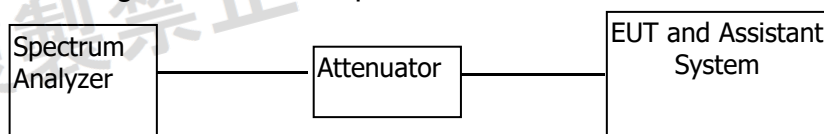
EUT:	Barcode Printer	Tested by:	Aaron Long
Humidity:	56%RH		
Test result:	Conform		

10. Process gain

10.1. Limit

Process gain (value obtained by dividing the spread bandwidth by a frequency equal to the transmission rate of the modulation signal; this also applies hereafter) in the spread spectrum system shall be 5 or more.

10.2. Block diagram of test setup



10.3. Test Procedure

- (1) Configure EUT and assistant system according clause 2.3 and 9.2
- (2) Set EUT work in test mode as described in clause 2.4

10.4. Test result

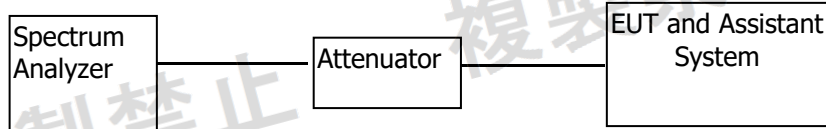
EUT:	Barcode Printer	Tested by:	Aaron Long
Temperature:	24℃	Humidity:	56%RH
Test result:	Conform		

11. Number of carriers

11.1. Limit

The OFDM system shall have one or more carriers per 1 MHz bandwidth.

11.2. Block diagram of test setup



11.3. Test Procedure

- (1) Configure EUT and assistant system according clause 2.3 and 10.2
- (2) Set EUT work in test mode as described in clause 2.4

11.4. Test result

EUT:	Barcode Printer	Tested by:	Aaron Long
Temperature:	24°C	Humidity:	56%RH
Test result:	Conform		

12. Interference prevention function

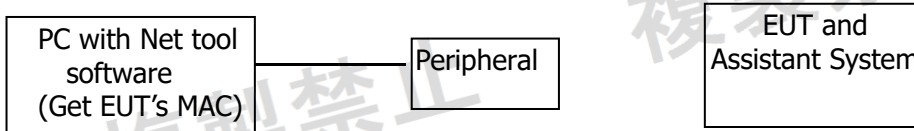
12.1. Limit

Item	Limits
Identification	≥48 bits

12.2. Measuring ID Code Software

Item	Limits
MAC IP List	MAC Scan

12.3. Block diagram of test setup



12.4. Test Procedure

- In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes from EUT. b. Check the transmitted identification codes with the demodulator.
- In the case of receiving the identification code: a. Transmit the predetermined identification codes from the counterpart. b. Check if communication is normal. c. Transmit the signals other than predetermined ID codes from the counterpart. d. Check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

12.5. Test result

EUT:	Barcode Printer	Tested by:	Aaron Long
Temperature:	24℃	MAC address:	56:02:83:EF:5C:09
Humidity:	56%RH		
Test result:	Conform		

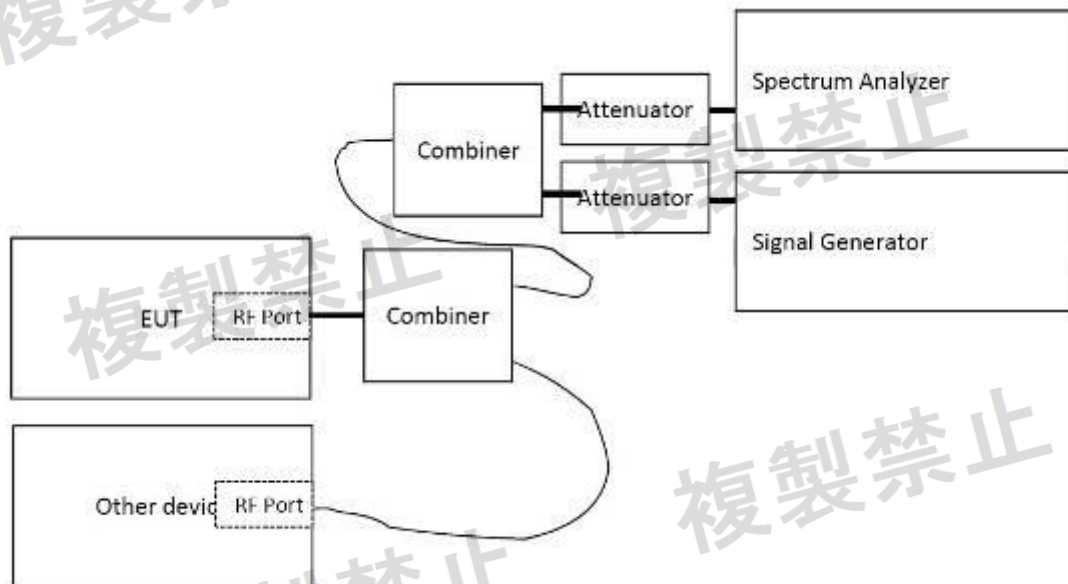
13. Carrier sensing function

13.1. Limit

EUT stop RF transmission signal after carrier inject to EUT.

(On $22.79 + G - 20 \cdot \log(f)$ [dBm] (G :dBi; f :MHz) or 100mV/m)

13.2. Block diagram of test setup



13.3. Test Procedure

12.3.1. SG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SG and power level is $(22.79 + G - 20 \cdot \log(f) \text{ dBm})$ (G is the antenna gain, f is the test frequency).

12.3.2. turn off the RF signal of the SG.

12.3.3. EUT have transmitted the maximum modulation signal and fixed channelize.

12.3.4. Setting of SA :RBW/VBW=1MHz/1MHz, Span=50MHz, Sweep time=auto, Sweep mode=continuous, Detect mode=positive peak

12.3.5. SG RF signal on.

12.3.6. EUT shall be stop the transmitted any signal and SG RF signal off, the EUT will be continuous

13.4. Test result

Not applicable

EUT:	Barcode Printer	Tested by:	Aaron Long
Temperature:	24°C	Antenna gain:	3.46dBi
Test result:	/		
Mode	Frequency (MHz)	Interference power	Result
/	/	/	/
/	/	/	/
/	/	/	/

14. Secondary Radiated Emissions

14.1. Test Equipment

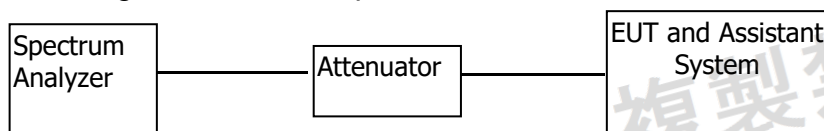
Item	Type	Manufacturer	Model No.	Serial No.	Last Calibration	Due Calibration
1	Spectrum analyzer	ROHDE&SCHWARZ	FSU26	200732	2025/11/10	2026/11/09
2	Attenuator	SCHWARZBECK	DGA 9552N	3161	2025/10/17	2026/10/16
3	Automatic RF control unit	Tonscend	JS0806-2	20G8060288	2025/11/12	2026/11/11

Note: The test equipment is calibrated by Huajue Medical Testing and Metrology (Shenzhen) Co., Ltd. Calibration standard: Article 24-2, Paragraph 4 of the Radio Act, method c

14.2. Limit

The limit on secondary emissions radiated from the receiving equipment within which the function of other radio equipment will not be impaired shall be, in terms of the power of a dummy antenna circuit that has the same electrical constant as the receiving antenna, 4 nW or less at a frequency below 1 GHz and 20 nW or less at a frequency of 1 GHz or higher as measured using the circuit.

14.3. Block diagram of test setup

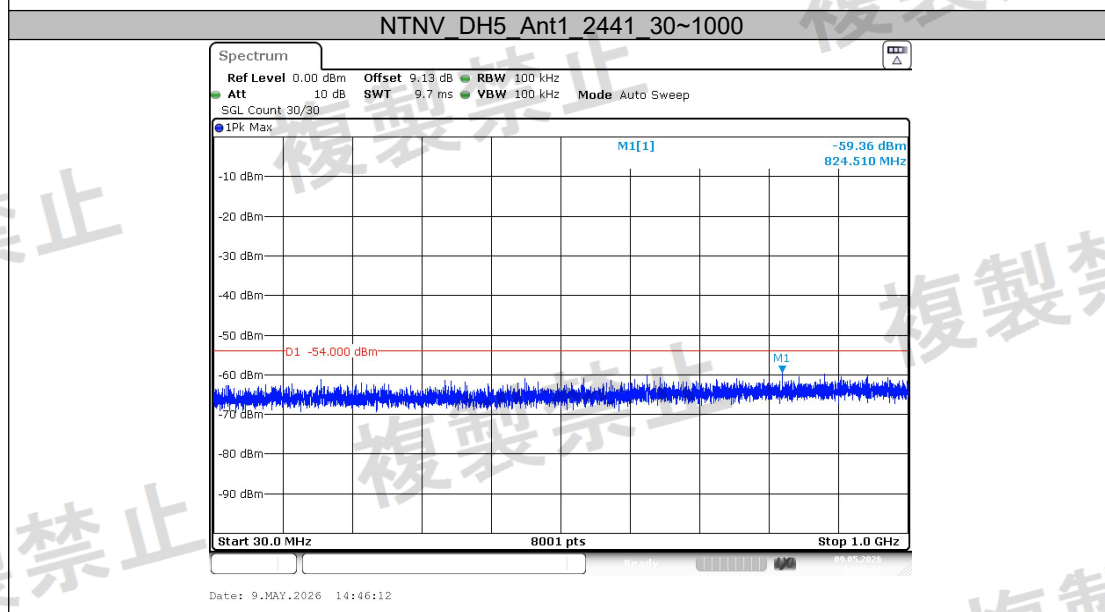
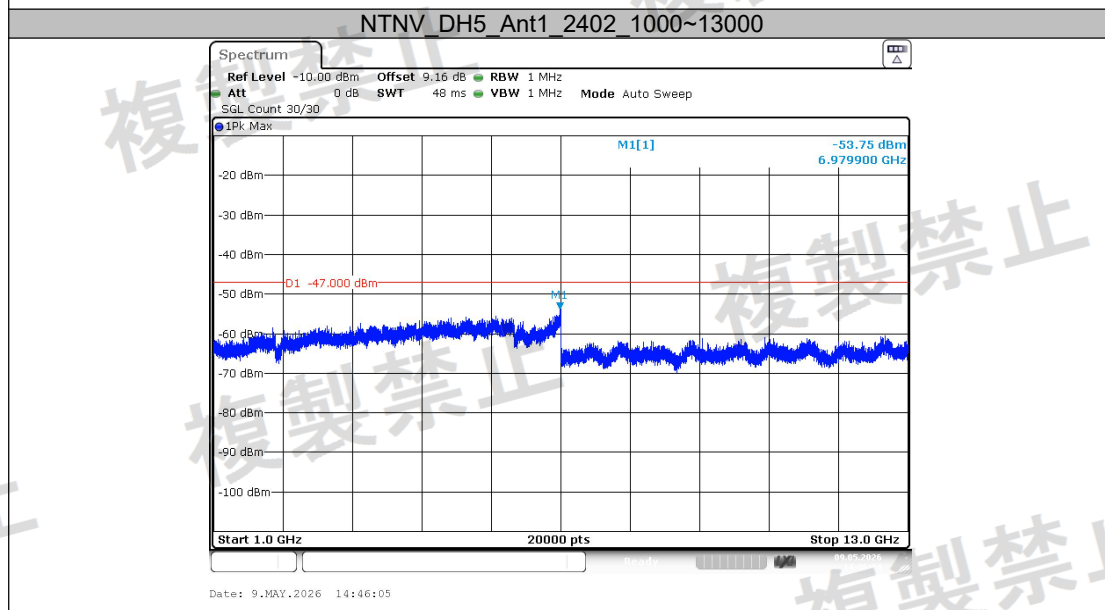
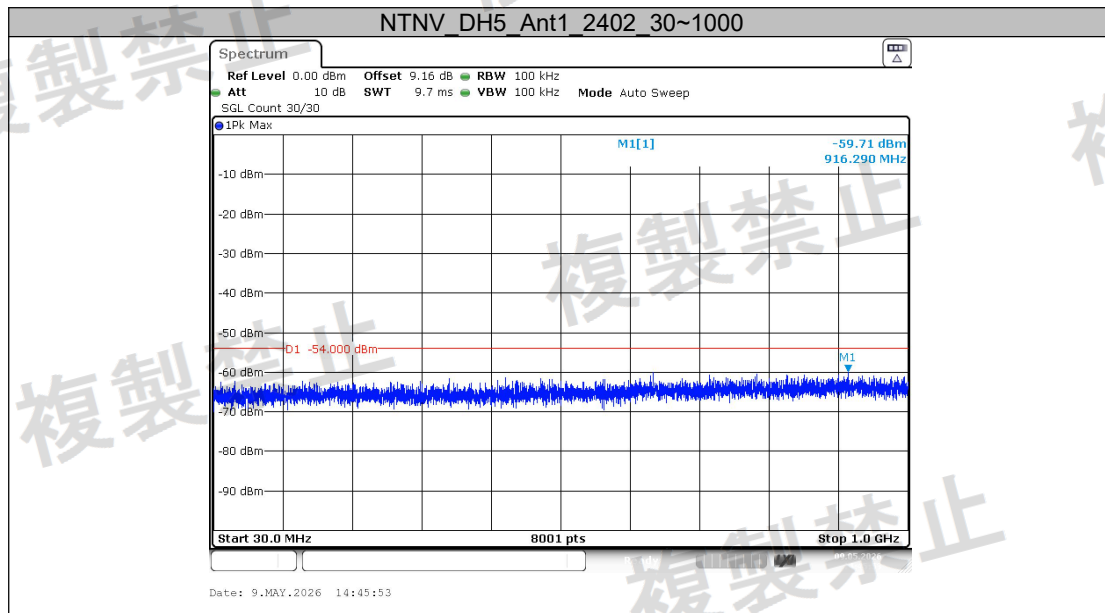


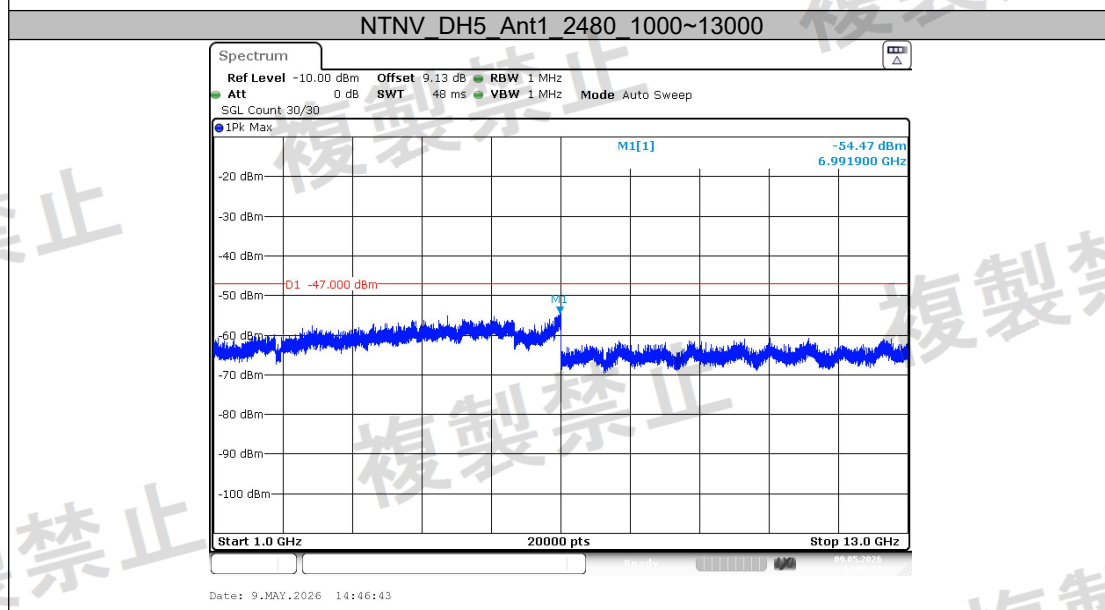
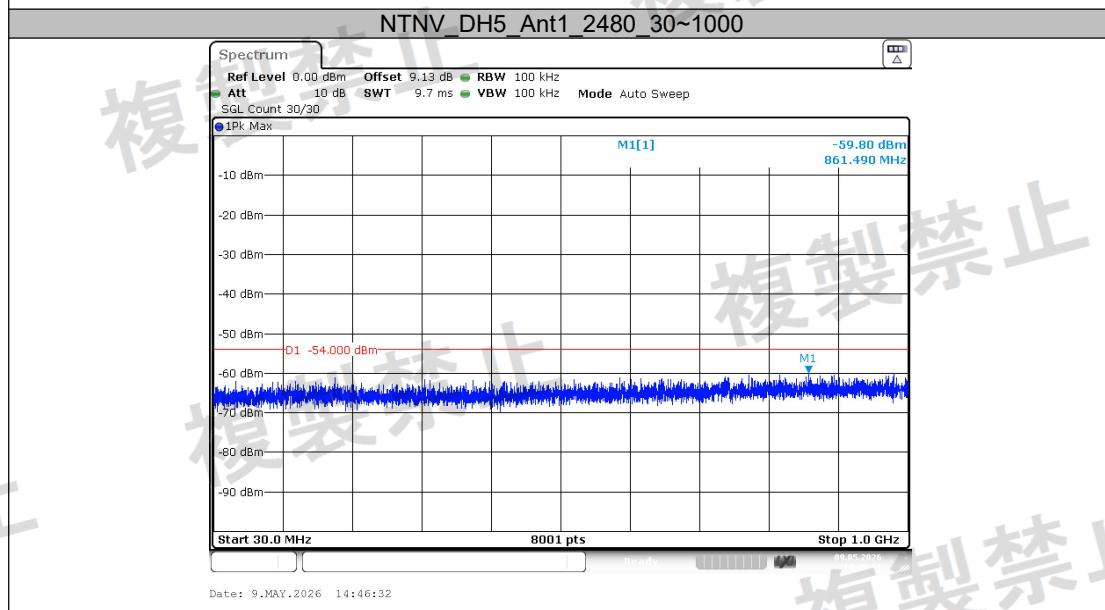
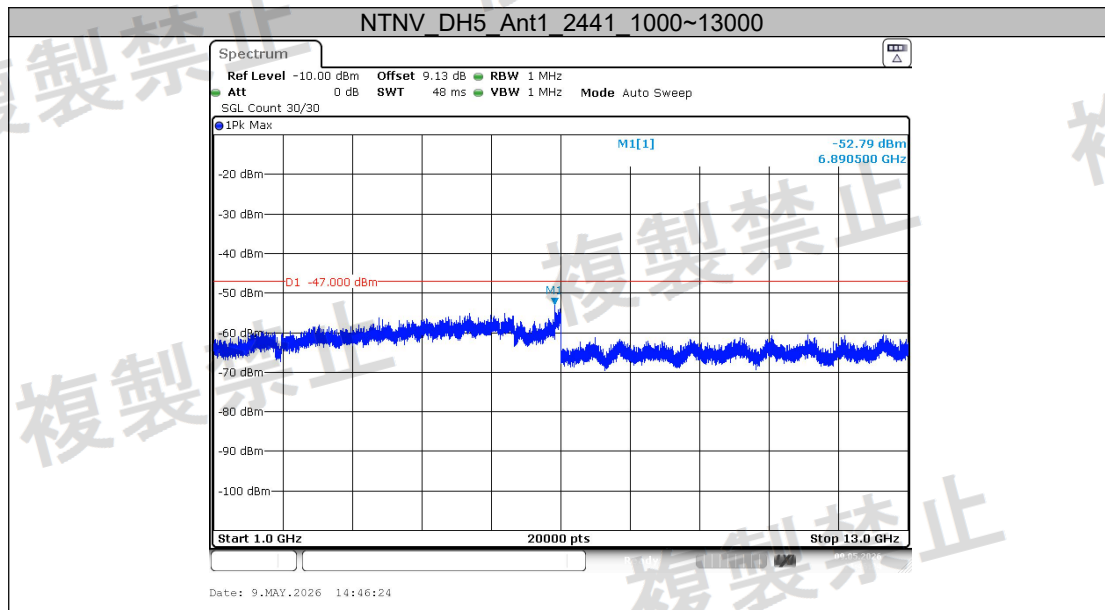
14.4. Test Procedure

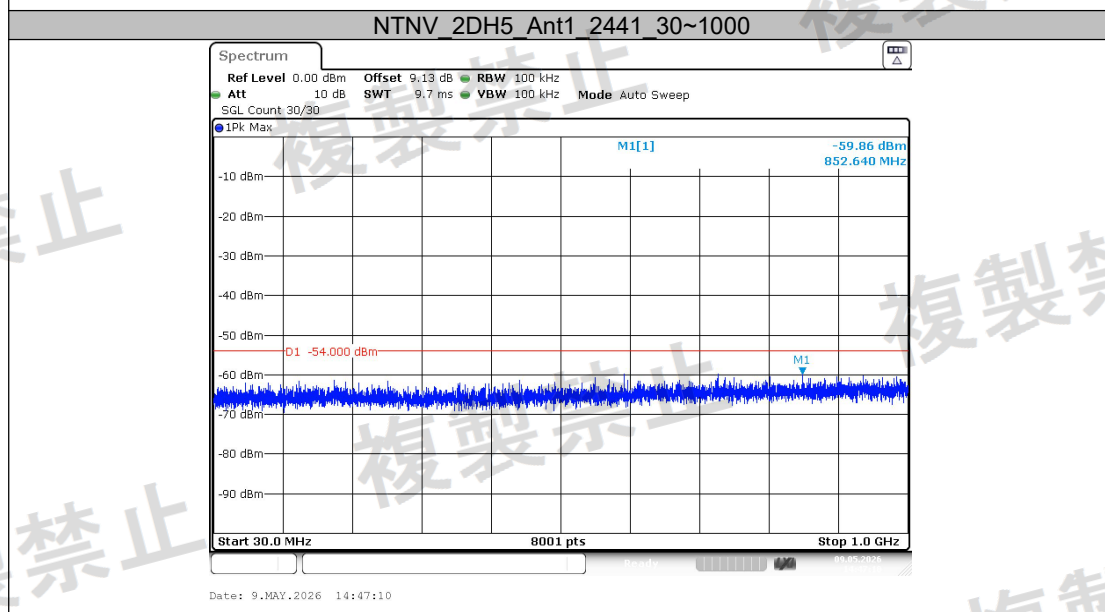
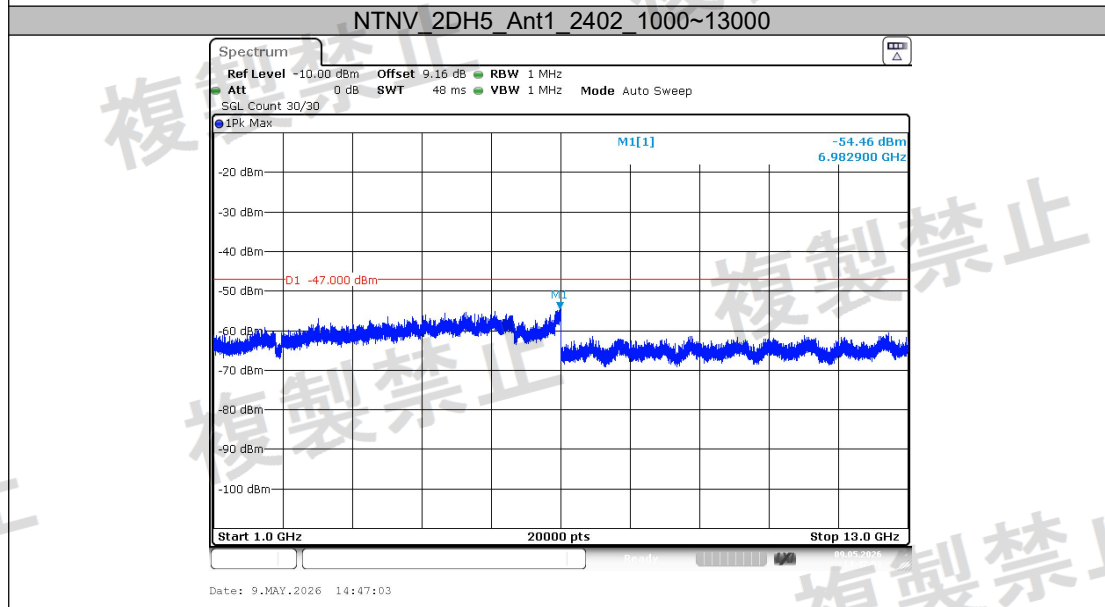
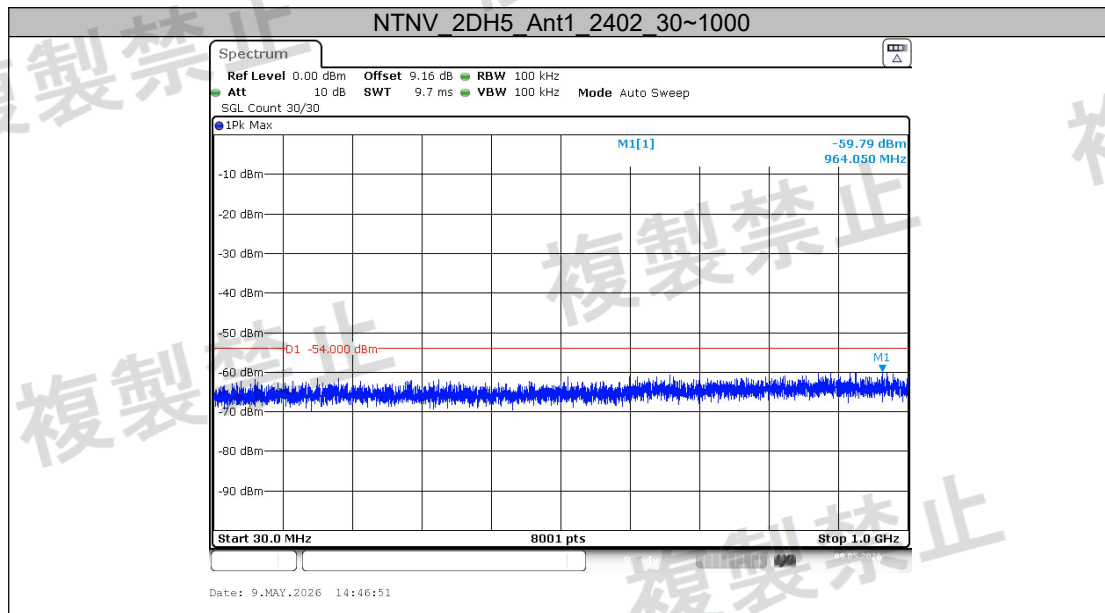
- (1) Configure EUT and assistant system according clause 2.3 and 13.3
- (2) Set EUT work in test mode as described in clause 2.4
- (3) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:
 - Resolution BW: 100 KHz for frequency below 1GHz and 1MHz for frequency above 1GHz
 - Video BW: 100 KHz for frequency below 1GHz and 1MHz for frequency above 1GHz
 - Detector: Peak.
 - Trace Mode: Max Hold.
- (4) All the emissions from 30MHz to 13GHz were measured and record.

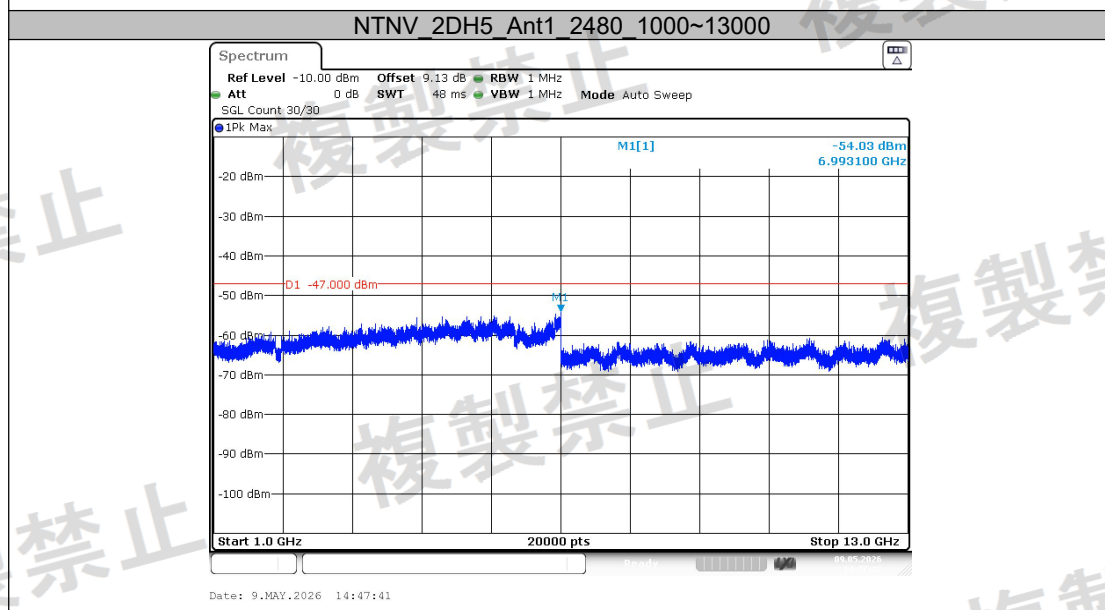
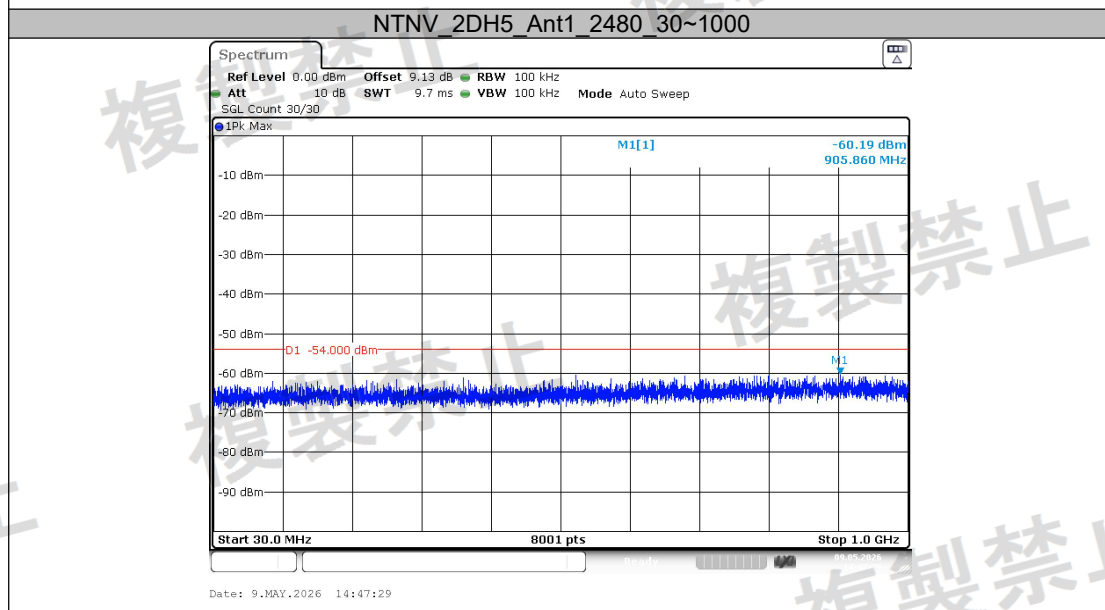
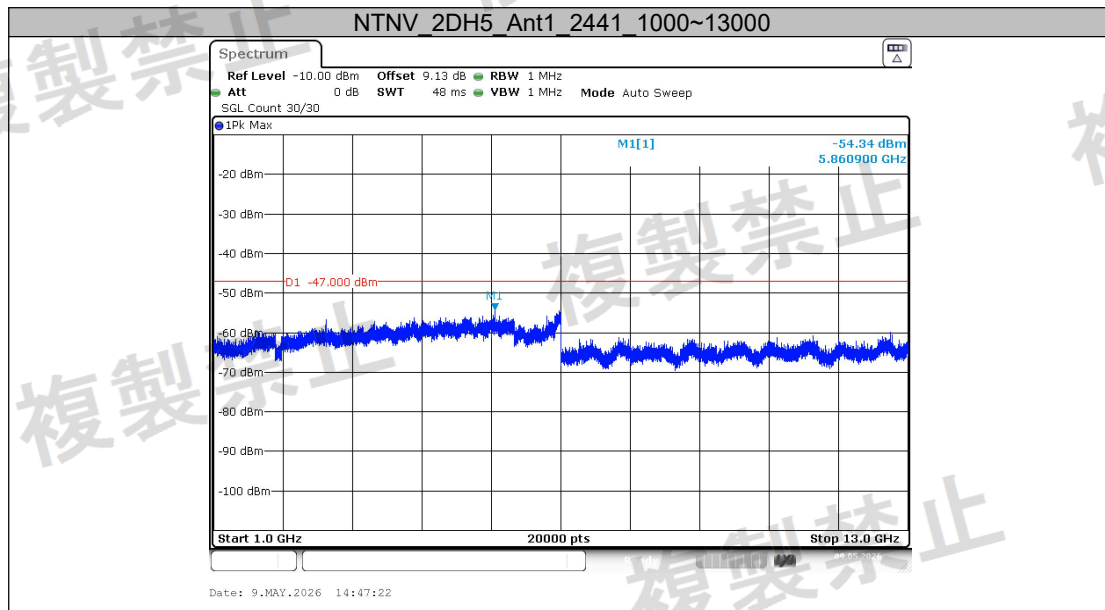
14.5. Test result

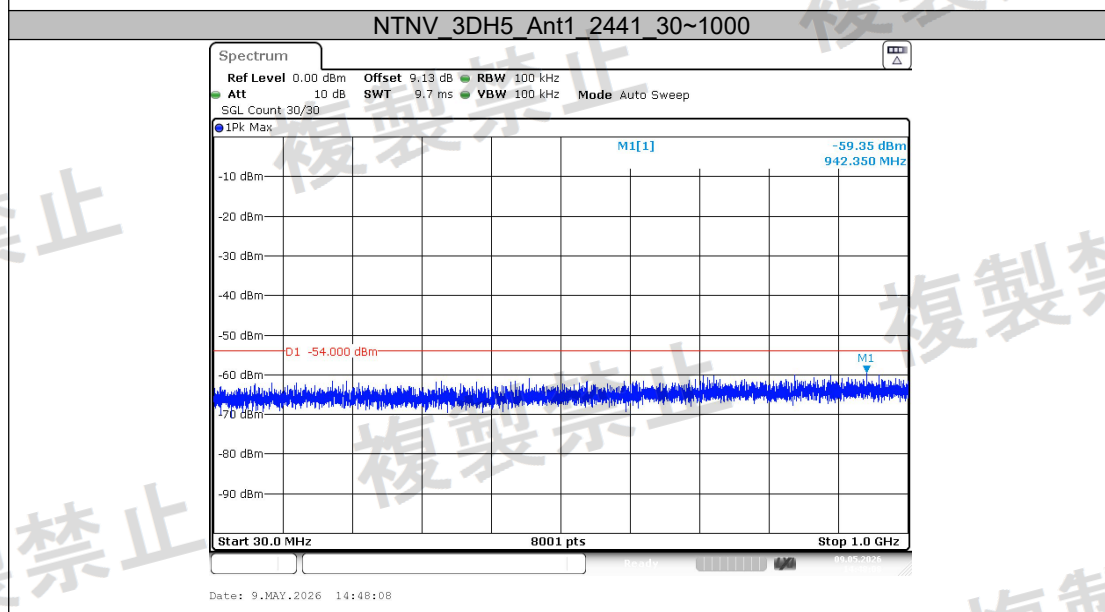
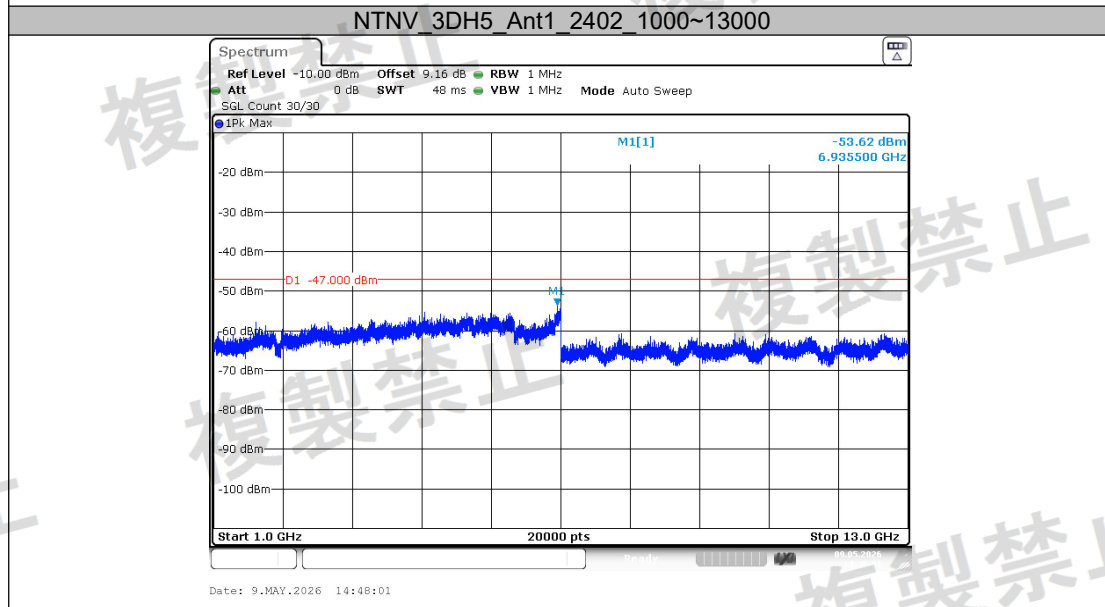
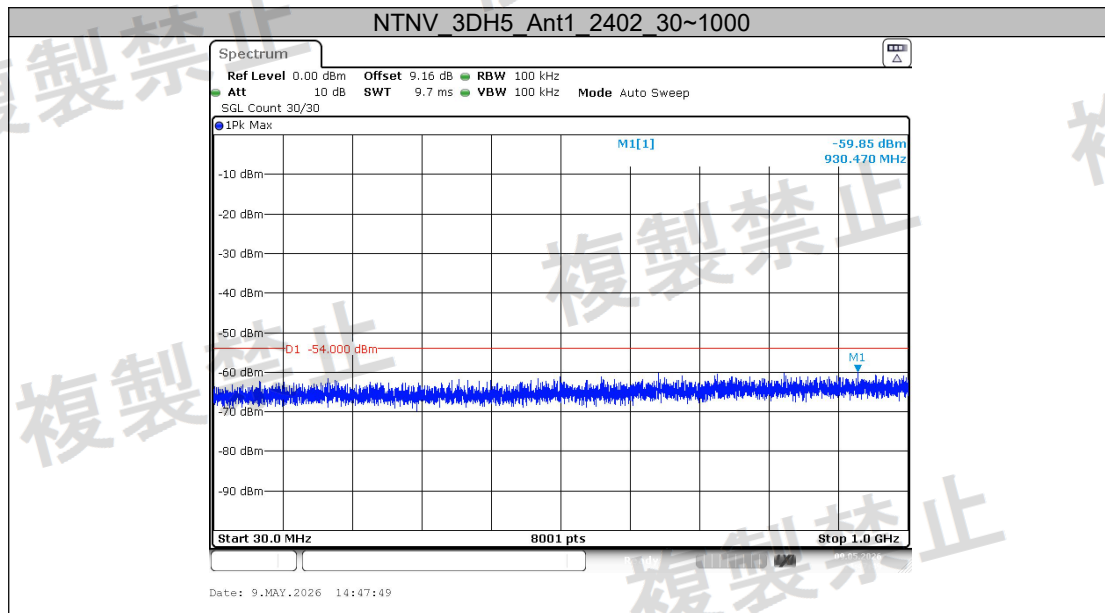
Test Condition	Test Mode	Antenna	Freq(M Hz)	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	DH5	Ant1	2402	30~1000	-59.71	≤-54	1.06905	≤4	PASS
				1000~13000	-53.75	≤-47	4.21697	≤20	PASS
			2441	30~1000	-59.36	≤-54	1.15878	≤4	PASS
				1000~13000	-52.79	≤-47	5.26017	≤20	PASS
			2480	30~1000	-59.8	≤-54	1.04713	≤4	PASS
				1000~13000	-54.47	≤-47	3.57273	≤20	PASS
	2DH5	Ant1	2402	30~1000	-59.79	≤-54	1.04954	≤4	PASS
				1000~13000	-54.46	≤-47	3.58096	≤20	PASS
			2441	30~1000	-59.86	≤-54	1.03276	≤4	PASS
				1000~13000	-54.34	≤-47	3.68129	≤20	PASS
			2480	30~1000	-60.19	≤-54	0.95719	≤4	PASS
				1000~13000	-54.03	≤-47	3.95367	≤20	PASS
	3DH5	Ant1	2402	30~1000	-59.85	≤-54	1.03514	≤4	PASS
				1000~13000	-53.62	≤-47	4.34510	≤20	PASS
			2441	30~1000	-59.35	≤-54	1.16145	≤4	PASS
				1000~13000	-53.75	≤-47	4.21697	≤20	PASS
			2480	30~1000	-59.93	≤-54	1.01625	≤4	PASS
				1000~13000	-53.89	≤-47	4.08319	≤20	PASS

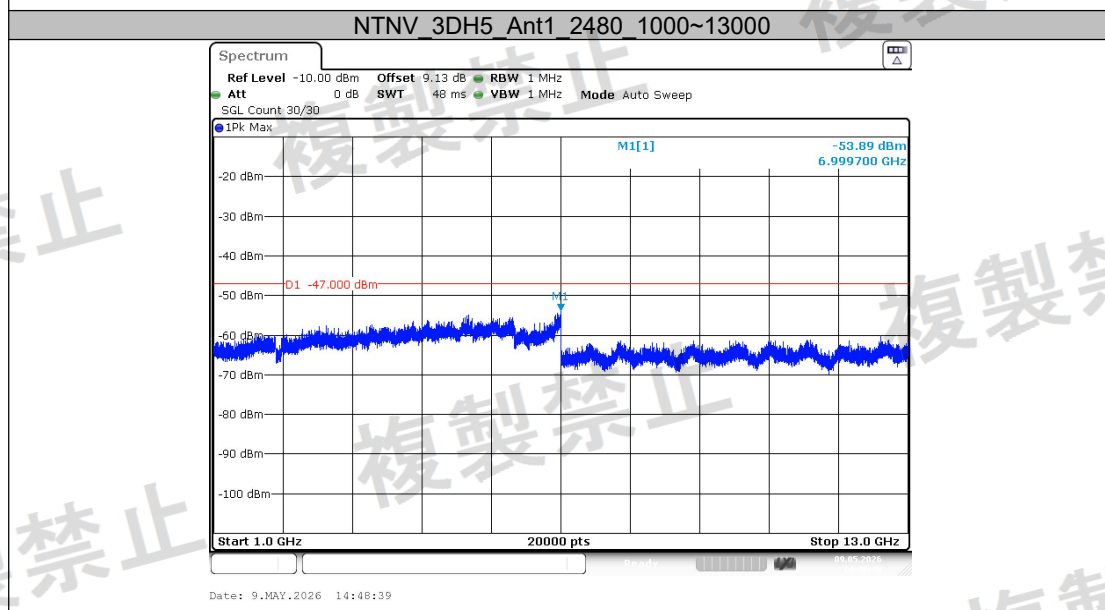
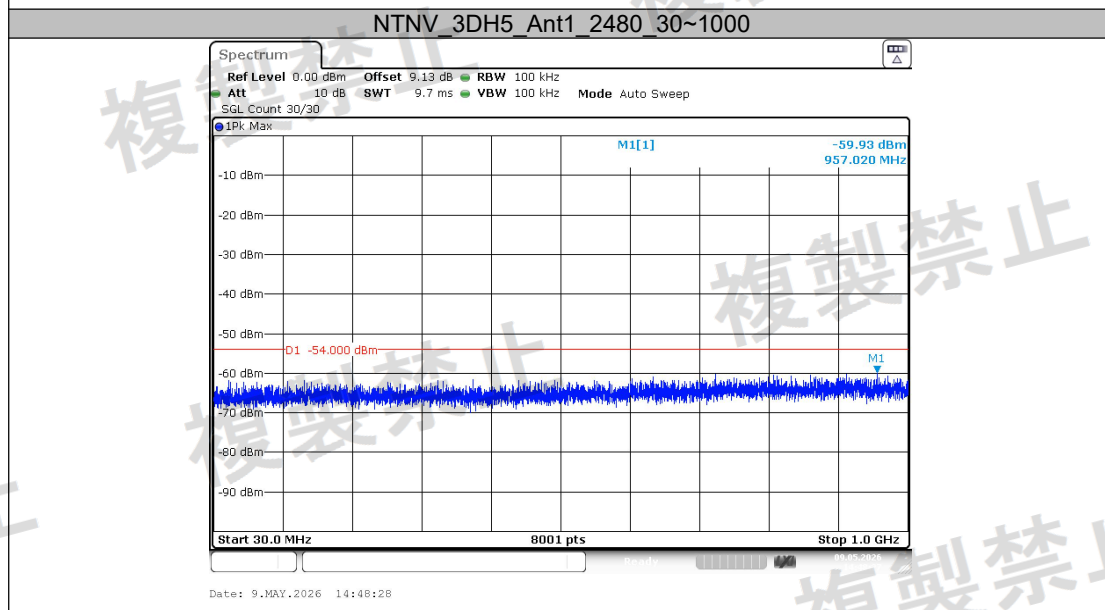
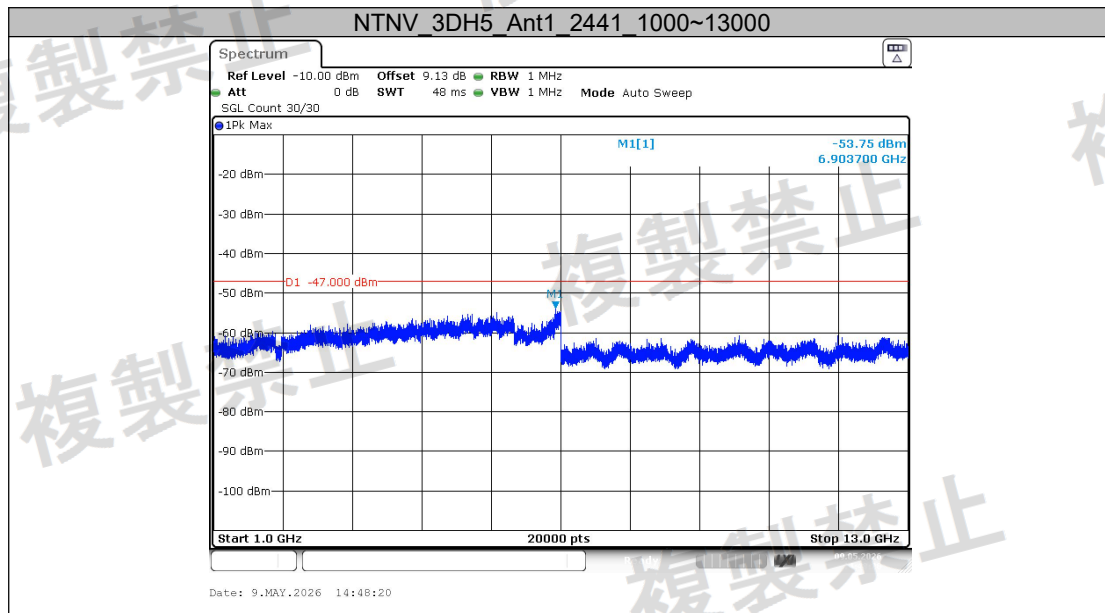












15. Equivalent Isotropic Radiated Power

15.1. Test Equipment

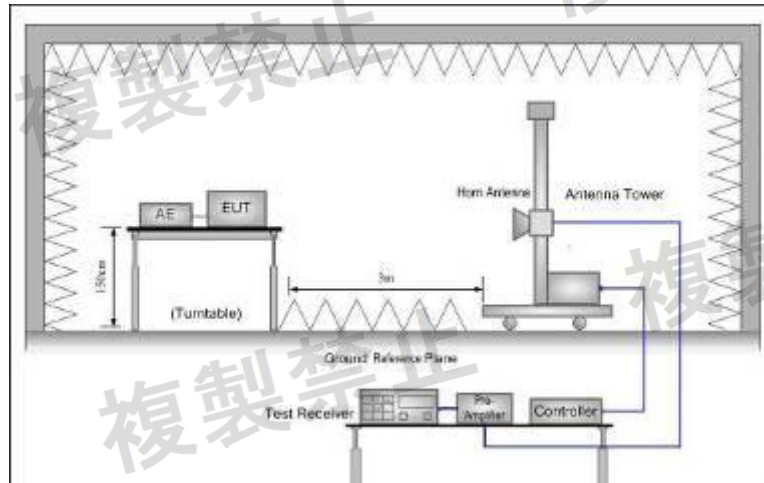
Item	Type	Manufacturer	Model No.	Serial No.	Last Calibration	Due Calibration
1	Spectrum analyzer	ROHDE&SCHWARZ	FSU26	200732	2025/11/10	2026/11/09
2	Attenuator	SCHWARZBECK	DGA 9552N	3161	2025/10/17	2026/10/16
3	Automatic RF control unit	Tonscend	JS0806-2	20G8060288	2025/11/12	2026/11/11
4	Horn Antenna	SCHWARZBECK	BBHA 9120 D	03298	2025/11/18	2026/11/17

Note: The test equipment is calibrated by Huajue Medical Testing and Metrology (Shenzhen) Co., Ltd. Calibration standard: Article 24-2, Paragraph 4 of the Radio Act, method c

15.2. Limit

Modulation system	Frequency band used	Antenna power(max.)	EIRP	
			Omnidirectional case	Directional case
DS	2400~2483.5MHz	10mW/MHz	12.14dBm/MHz	22.14dBm/MHz
OFDM1	2400~2483.5MHz	10mW/MHz	12.14dBm/MHz	22.14dBm/MHz
OFDM2	2400~2483.5MHz	5mW/MHz	9.14dBm/MHz	19.14dBm/MHz

15.3. Block diagram of test setup



15.4. Test Procedure

Step 1

Set the test equipment at test frequency, and in continuous transmitting mode or intermittent burst mode (constant frequency and constant burst time). Stop the spread.

Step 2

Set the height and direction of test equipment and measurement antenna approximately facing each other.

Step 3

In the frequency derived in D), change the height of the measurement antenna from the ground by $\pm 50\text{cm}$ with a central focus on the antenna of test equipment. Search the location that the power is maximum by adjusting the direction of measurement antenna. Set the indicator of spectrum analyzer at this point as “E”.

Step 4

Remove the test equipment from the turntable, set the opening of substitution antenna at the same location as the opening of the test equipment, and receive by outputting radio wave of the same frequency from the standard signal generator for substitution.

Step 5

Adjust at the maximum power point, turning the substitution antenna.

Step 6

Change the height of the measurement antenna from the ground by $\pm 50\text{cm}$ with a central focus on the substitution antenna, and adjust the direction of measurement antenna to the location that the received power is maximum.

Step 7

Adjust output of standard signal generator and record the power P_s that is equal to “E”. Or record P_s by counting backward from the difference with “E” as the close value to “E” (within $\pm 1\text{dB}$).

Step 8

EIRP is derived from the following calculating formula:

$$\text{EIRP} = G_s - L_F + P_s$$

G_s ; Absolute gain of substitution antenna (dBi).

L_F ; Loss of electric supply line between standard signal generator and substitution antenna (dB).

P_s ; Output of standard signal generator (dBm).

Step 9

Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

Frequency Span: 0Hz

Resolution BW: 1MHz

Video BW: 3MHz

Detector: Peak.

Sweep mode: Continuous sweep

15.5. Test result

Condition	Mode	Frequency (MHz)	Antenna	Antenna Power (dBm)	Gain (dBi)	EIRP Power (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	1-DH5	2402	Ant1	2.75	3.46	6.21	12.14	Pass
NVNT	1-DH5	2441	Ant1	2.52	3.46	5.98	12.14	Pass
NVNT	1-DH5	2480	Ant1	2.79	3.46	6.25	12.14	Pass
NVNT	2-DH5	2402	Ant1	2.83	3.46	6.29	12.14	Pass
NVNT	2-DH5	2441	Ant1	2.61	3.46	6.07	12.14	Pass
NVNT	2-DH5	2480	Ant1	2.55	3.46	6.01	12.14	Pass
NVNT	3-DH5	2402	Ant1	2.85	3.46	6.31	12.14	Pass
NVNT	3-DH5	2441	Ant1	2.60	3.46	6.06	12.14	Pass
NVNT	3-DH5	2480	Ant1	2.55	3.46	6.01	12.14	Pass

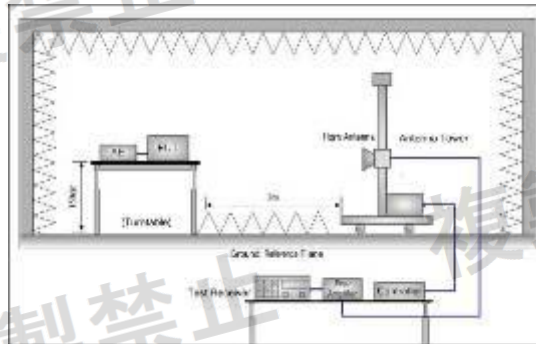
16.3dB Beam Bandwidth

16.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Last Calibration	Due Calibration
1	Spectrum analyzer	ROHDE&SCHWARZ	FSU26	200732	2025/11/10	2026/11/09
2	Attenuator	SCHWARZBECK	DGA 9552N	3161	2025/10/17	2026/10/16
3	Automatic RF control unit	Tonscend	JS0806-2	20G8060288	2025/11/12	2026/11/11
4	Horn Antenna	SCHWARZBECK	BBHA 9120 D	03298	2025/11/18	2026/11/17

Note: The test equipment is calibrated by Huajue Medical Testing and Metrology (Shenzhen) Co., Ltd. Calibration standard: Article 24-2, Paragraph 4 of the Radio Act, method c

16.2. Block diagram of test setup



16.3. Test Procedure

Step 1

Set the test equipment at test frequency, and transmit.

Step 2

Stop the modulation, and make it “continuous transmission of unmodulated wave” in principle. If it is impossible, make it “intermittent burst transmission of unmodulated wave”

Step 3

Polarized wave side of measurement antenna is the same using mode as test equipment.

Step 4

Set the height and direction of test equipment and measurement antenna approximately facing each other.

Step 5

Set the spectrum analyzer according to “Spectrum set” and set as reference level and receive.

Step 6

Adjust at the maximum received power point, turning the test equipment horizontally and vertically.

Step 7

Change the height of the measurement antenna from the ground by $\pm 50\text{cm}$ with a central focus on the antenna of test equipment, and search the location that the power is maximum by adjusting the direction of measurement antenna. Set the indicator of spectrum analyzer at this point as “E”.

Step 8

By using EIRP (P_E) that is measured at 9, calculate allowed main beam angle(θ_0) between the horizontal plane and vertical plane of the test equipment as follows.

Allowed main beam angle (θ_0) = $360/A$

θ_0 : Allowed transmitter antenna beamwidth angle in degree of test equipment

P_E : EIRP of test equipment (dBm)

A: A is defined as EIRP divides by the summation of antenna gain 2.14dBi transmitter antenna and average power 10mW (In case of using OFDM, or DS, or FHSS, or DS and complex with FHSS, or OFDM and complex with FHSS, 10mW/MHz. However, in FHSS or DS and complex with FHSS, or OFDM and complex with FHSS, when using the frequency from 2,427MHz to 2,470.75MHz, 3mW/MHz) antenna power. In case the value is lower than 1, set A as 1.

Step 9

Turn the test equipment in horizontal direction, from main beam direction with the beam angle except main beam angle (θ_0) calculated by (step 8), over all surroundings as much as possible. Confirm that received power is decreased more than 3dB from the maximum point value of received power(E).

Step 10

Return the test equipment to position (step 6), incline the test equipment in vertical direction, from main beam direction with the beam angle except main beam angle (θ_0) calculated by (step 8), widely as much as possible (over 90 degrees. However, it is able to according to "6. other condition", too.) Confirm that received power is 3dB lower than the maximum point value of received power (E).

Step 9

Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

Frequency Span: 0Hz

Resolution BW: 1MHz

Video BW: 1KHz

Y-Axis: 5dB/Div

Detector: Peak.

Sweep mode: Continuous sweep

Input level: the amplitude of transmission signal is set around max. line area of mixer.

16.4. Test result

Not applicable (the EIRP less than 12.14dBm).

17. Photos of test setup

18. EUT Photo

Please refer to the photo of attachment

-----END OF REPORT-----