

TEST REPORT

Reference No..... : WTX25X06158537W002

Applicant : Lumi United Technology Co., Ltd
Room 801-804, Building 1, Chongwen Park, Nanshan iPark, No. 3370,
Address : Liuxian Avenue, Fuguang Community, Taoyuan Residential District,
Nanshan District, Shenzhen, China

Manufacturer : The same as Applicant

Address : The same as Applicant

Product Name : Hub M200

Model No..... : HM-G03D

Standards : Item 19 of Article 2 Paragraph 1

Date of Receipt sample : 2025-06-17

Date of Test..... : 2025-06-17 to 2025-07-27

Date of Issue : 2025-07-27

Test Report Form No. : WTX_Item 19_2_1W

Test Result..... : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

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TABLE OF CONTENTS

1. GENERAL INFORMATION	5
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	5
1.2 TEST STANDARDS	7
1.3 TEST METHODOLOGY	7
1.4 TEST FACILITY	7
1.5 EUT SETUP AND TEST MODE	8
1.6 TEST CONDITIONS	9
1.7 MEASUREMENT UNCERTAINTY	10
1.8 TEST EQUIPMENT LIST AND DETAILS	11
1.9 CALIBRATION INFORMATION	11
2. SUMMARY OF TEST RESULTS	12
3. RF OUTPUT POWER	13
3.1 STANDARD APPLICABLE	13
3.2 TEST SETUP BLOCK DIAGRAM	13
3.3 TEST PROCEDURE	13
3.4 SUMMARY OF TEST RESULTS/PLOTS	13
4. FREQUENCY TOLERANCE	14
4.1 STANDARD APPLICABLE	14
4.2 TEST SETUP BLOCK DIAGRAM	14
4.3 TEST PROCEDURE	14
4.4 SUMMARY OF TEST RESULTS/PLOTS	14
5. OCCUPIED BANDWIDTH	15
5.1 STANDARD APPLICABLE	15
5.2 TEST SETUP BLOCK DIAGRAM	15
5.3 TEST PROCEDURE	15
5.4 SUMMARY OF TEST RESULTS/PLOTS	16
6. TRANSMITTER SPURIOUS EMISSIONS	17
6.1 STANDARD APPLICABLE	17
6.2 TEST SETUP BLOCK DIAGRAM	17
6.3 TEST PROCEDURE	17
6.4 SUMMARY OF TEST RESULTS/PLOTS	18
7. RECEIVER SPURIOUS EMISSIONS	19
7.1 STANDARD APPLICABLE	19
7.2 TEST SETUP BLOCK DIAGRAM	19
7.3 TEST PROCEDURE	19
7.4 SUMMARY OF TEST RESULTS/PLOTS	19
8. CARRIER SENSING FUNCTION	20
8.1 STANDARD APPLICABLE	20
8.2 TEST SETUP BLOCK DIAGRAM	20
8.3 TEST PROCEDURE	20
8.4 SUMMARY OF TEST RESULTS/PLOTS	20
9. INTERFERENCE PREVENTION FUNCTION	21
9.1 STANDARD APPLICABLE	21
9.2 TEST SETUP BLOCK DIAGRAM	21
9.3 TEST PROCEDURE	21
9.4 SUMMARY OF TEST RESULTS/PLOTS	21
APPENDIX SUMMARY	22
APPENDIX A	23
APPENDIX B	25
APPENDIX C	32
APPENDIX D	45

APPENDIX E80

APPENDIX F84

APPENDIX G85

APPENDIX PHOTOGRAPHS.....86

Version No.	Date of issue	Description
Rev.00	2025-07-27	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Hub M200
Trade Name:	Aqara
Model No.:	HM-G03D
Adding Model(s):	HM-G03E
Rated Voltage:	Type-C DC5V POE DC48V
Battery Capacity:	/
Power Adapter:	/
Software Version:	4.3.6_0025
Hardware Version:	V1.1
<i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model HM-G03D, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Wi-Fi	
Support Standards:	802.11b, 802.11g, 802.11n-HT20/40, 802.11ax-HE20/40
Frequency Range:	2412-2472MHz for 802.11b/g/n/ax(HT/HE20) 2422-2462MHz for 802.11n/ax(HT/HE40)
Rated Power:	3mW/MHz for 802.11b 1mW/MHz for 802.11b/g/n/ax(HT/HE20) 0.5mW/MHz for 802.11n/ax(HT/HE40)
Numbers of Channels:	13 for 802.11b/g/n/ax(HT/HE20), 9 for 802.11n/ax(HT/HE40)
Channel Separation:	5MHz
Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM, 256QAM, 1024QAM
Type of Emission:	G1D for 802.11b, G1D, D1D for 802.11g, 802.11n/ax (HT/HE20), 802.11n/ax(HT/HE40)
Type of Antenna:	Internal Antenna
Antenna Gain:	0dBi
<i>Note: The Antenna Gain is provided by the customer and can affect the validity of results.</i>	

➤ Center Frequency of Each of Channel:

802.11b/g/n/ax(HT/HE20)		802.11n/ax(HT/HE40)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	01	-
02	2417	02	-
03	2422	03	2422
04	2427	04	2427
05	2432	05	2432
06	2437	06	2437
07	2442	07	2442
08	2447	08	2447
09	2452	09	2452
10	2457	10	2457
11	2462	11	2462
12	2467		
13	2472		

1.2 Test Standards

The tests were performed according to following standards:

Article 2 paragraph 1 item 19: Low power data communications system in the 2.4GHz band.

MIC Notice No.88 Appendix No.43: Test Method for Radio Equipment specified in Article 2 paragraph 1 item 19 of Regulations for Certification

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with test method for radio equipment specified in MIC public notice 88:2004, annex 43 for certification.

1.4 Test Facility

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx/Rx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	802.11b	Low:2412MHz, Middle:2442MHz,High:2472MHz
TM2	802.11g	Low:2412MHz, Middle:2442MHz,High:2472MHz
TM3	802.11n-HT20	Low:2412MHz, Middle:2442MHz,High:2472MHz
TM4	802.11ax-HE20	Low:2412MHz, Middle:2442MHz,High:2472MHz
TM5	802.11n-HT40	Low:2422MHz, Middle:2442MHz,High:2462MHz
TM6	802.11ax-HE40	Low:2422MHz, Middle:2442MHz,High:2462MHz
Note: Number of carriers of OFDM: This device has more than 1 subcarrier in 1MHz, compliance with the requirement.		

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

1.6 Test Conditions

Supply Voltage					
	EUT supply power V	module input power V	Rated module power V	Tolerance (%)	
Normal	5.0	3.3	3.3		
+10%	5.5	3.3	3.3		0
-10%	4.5	3.3	3.3		0
Others					
Temperature (°C)		20-25			
Relative humidity		51 %.			
ATM Pressure:		1019 mbar			
Note 1: When the input voltage is reduced or increased by 10%, the regulator voltage changes of less than 1%. So the following test items are conducted in the normal voltage.					
Note 2: For PoE power, No voltage fluctuations occurred.					

1.7 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	9kHz-6GHz	0.57dB
Frequency Tolerance	9kHz-6GHz	1×10 ⁻⁷
Spreading Bandwidth	9kHz-6GHz	3%
Occupied Bandwidth	9kHz-6GHz	0.015MHz
Transmitter Spurious Emissions	9kHz-25GHz	2.76dB
Receiver Spurious Emissions	9kHz-25GHz	2.76dB

1.8 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Signal Generator	Agilent	83752A	3610A01453	2025-02-23	2026-02-22
Vector Signal Generator	Agilent	N5182A	MY47070202	2025-02-23	2026-02-22
Power Sensor	Agilent	U2021XA	MY55160007	2025-02-23	2026-02-22
Power Sensor	Agilent	U2021XA	MY54240001	2025-02-23	2026-02-22
Spectrum Analyzer	Agilent	N9020A	US47140102	2025-02-23	2026-02-22
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2025-02-23	2026-02-22
Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2025-02-23	2026-02-22
Universal Radio Communication Tester	Rohde & Schwarz	CMW500	148650	2025-02-23	2026-02-22
Attenuator	Pasternack	PE4007-4	/	2025-02-23	2026-02-22

Remark:

- (a) Calibration conducted by the National institute of information and communications Technology (NICT) in Japan (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph in JRL.
- (b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Act (Act No. 51 of 1992).
- (c) Calibration conducted in countries except Japan, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
- (d) 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 (c).

The calibration corresponds to c described above.

From JRL Article 24-2, paragraph 4, Item 2

Notice: calibration duration for above equipments is 1 year

1.9 Calibration Information

CCIC (Shenzhen) Metrology & Testing Service Co., Ltd
Shenghui Hongxing Chuangzhi Square, Tongren Road, Tianliao Community,
Yutang Subdistrict, Guangming District, Shenzhen, Guangdong, China.

2. SUMMARY OF TEST RESULTS

TELEC RULES	DESCRIPTION OF TEST	RESULT
Item 19	RF Output Power	Compliant
Item 19	Frequency Tolerance	Compliant
Item 19	Occupied Bandwidth /Spreading Bandwidth/Spread Factor	Compliant
Item 19	Transmitter Spurious Emissions	Compliant
Item 19	Receiver Spurious Emissions	Compliant
Item 19	Carrier Sensing Function	Compliant
Item 19	Interference Prevention Function	Compliant

N/A: not applicable.

3. RF OUTPUT POWER

3.1 Standard Applicable

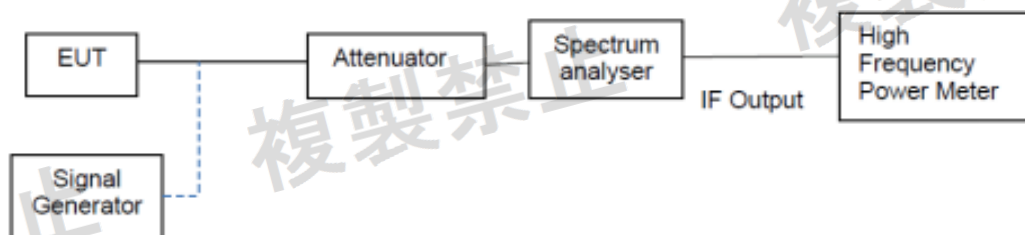
According to Item 19 of Article 2 Paragraph 1, the antenna power of the transmitter shall be one of the items below.

(1) The antenna power of the transmitting equipment which uses the frequency hopping method (including a combination of the frequency hopping method and direct spread method or a combination of the frequency hopping method and OFDM), and that uses emissions of a frequency from 2,427 MHz to 2,470.75 MHz shall provide a mean power within a bandwidth of 1 MHz of 3mW or less in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal.

(2) The antenna power of the transmitting equipment which uses OFDM or the spread spectrum method and does not conform to (1) above shall provide the mean power within a bandwidth of 1 MHz of 10 mW or less for the 20MHz system and 5 mW for the 40MHz system in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal.

(3) The antenna power of the transmitting equipment other than that stated in (1) and (2) above shall be 10 mW or less. and the maximum permit tolerance is +20%, no lower limit..

3.2 Test Setup Block Diagram



3.3 Test Procedure

Refer to Schedule 43: Wireless Equipment Test Methods published in Certification Regulations, Article 2-1(19)

3.4 Summary of Test Results/Plots

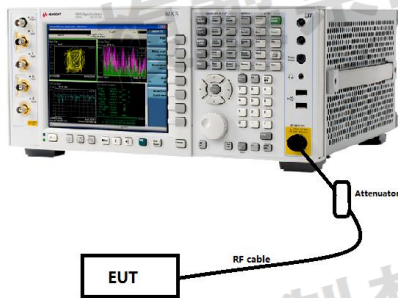
Please refer to Appendix A

4. FREQUENCY TOLERANCE

4.1 Standard Applicable

According to Item 19 of Article 2 Paragraph 1, the maximum permit tolerance of frequency is 50ppm.

4.2 Test Setup Block Diagram



4.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. Set the spectrum analyzer as RBW, VBW=10KHz, Span = 1MHz.
- 4 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided emission is repetitive in nature.
5. Repeat above procedures until all frequency measured was complete.

4.4 Summary of Test Results/Plots

Please refer to Appendix B

5. OCCUPIED BANDWIDTH

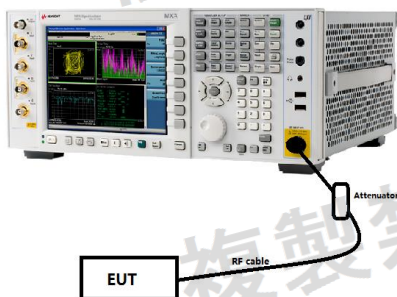
5.1 Standard Applicable

According to Item 19 of Article 2 Paragraph 1.

Occupied bandwidth: $FH \leq 83.5\text{MHz}$; $DS \leq 26\text{MHz}$; $OFDM \leq 38\text{MHz}$, Others $\leq 26\text{MHz}$

Spread Bandwidth: $\geq 500\text{kHz}$ (FH, DS), Spread factor > 5 .

5.2 Test Setup Block Diagram



5.3 Test Procedure

(1) Set up the spectrum analyzer as the follows:

Center frequency: Test frequency

Sweep bandwidth: 2 to 3.5 times of allowance

Resoluble bandwidth: less than 3% of allowance

Video bandwidth: Equivalent to resolvable bandwidth

Sweep time: Minimum time by which measuring accuracy is assured (In case of burst wave, 1 burst shall be contained per 1 sample)

Sampling points: More than 400 points

Sweep mode : Continuous sweeping

Detection mode: Positive peak

Display mode: Maximum holding

(2) Repeat the sweeping till no change was observed on the display and enter all values of data point to the computer as array variable.

(3) About all data, convert dB value to antilogarithm of electric power dimension.

(4) Add up the electric power of all data and record it as "Sum total of electric power".

(5) Adding up data in order from the lowest frequency to upper frequencies, look for a limit point where the value reaches to 0.5% (5% in case of diffusion bandwidth) of "Sum total of electric power". Convert the limit point to frequency and record as "Lowest limit frequency".

(6) Adding up data in order from the highest frequency to lower frequencies, look for a limit point where the value reaches to 0.5% (5% in case of diffusion bandwidth) of “Sum total of electric power”. Convert the limit point to frequency and record as “Highest limit frequency”.

(7) Repeat above procedures until all frequency measured was complete.

(8) Spread Factor=Spread Bandwidth/modulation rate. The modulation rate: MR=1.375 for 802.11b, MR=1.5 for 802.11g/n20, MR=3 for 802.11n40.

5.4 Summary of Test Results/Plots

Please refer to Appendix C

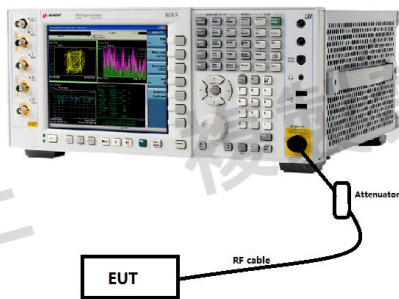
6. TRANSMITTER SPURIOUS EMISSIONS

6.1 Standard Applicable

According to Item 19 of Article 2 Paragraph 1. The transmitter spurious emissions shall not exceeded the following limit:

- (1) Below 2387MHz : $2.5\mu\text{W}/\text{MHz}$
- (2) 2387 to 2400MHz : $25\mu\text{W}/\text{MHz}$
- (3) 2483.5 through 2496.5MHz : $25\mu\text{W}/\text{MHz}$
- (4) Over 2496.5MHz : $2.5\mu\text{W}/\text{MHz}$

6.2 Test Setup Block Diagram



6.3 Test Procedure

- (1) A spectrum in case of conducted measurements, the radio device shall be connected to the measuring equipment via a suitable attenuator.
- (2) The measurement equipment shall be set for peak hold mode of operation.
- (3) the transmitter shall be operated at the highest output power, or, in the case of equipment able to operate at more than one power level, at the lowest and highest output powers;
- (4) The resolution bandwidth shall be set to 100kHz from 10MHz to 1GHz, the resolution bandwidth shall be set to 1MHz above 1GHz , and the sweep time shall be set to auto mode, to ensure all major modulation products are captured.
- (5) When the searched result is less than the specified limit, the maximum one shall be recorded, when the result is more than the specified limit, all measured values shall be recorded.
- (5) This measurement shall be repeated with the transmitter in standby mode where applicable.

Reference No.: WTX25X06158537W002

(6) Repeat above procedures until all frequency measured was complete.

6.4 Summary of Test Results/Plots

Please refer to Appendix D

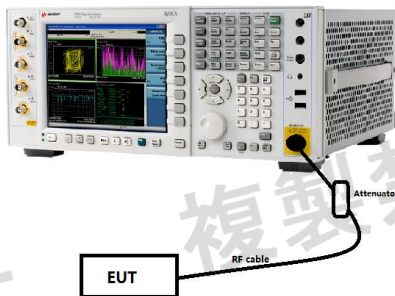
7. RECEIVER SPURIOUS EMISSIONS

7.1 Standard Applicable

According to Item 19 of Article 2 Paragraph 1. The receiver spurious emissions shall not exceeded the following limit:

- (1) Below 1GHz : 4nW/100kHz
- (2) 1GHz or higher : 20nW/MHz

7.2 Test Setup Block Diagram



7.3 Test Procedure

- (1) A spectrumIn case of conducted measurements, the radio device shall be connected to the measuring equipment via a suitable attenuator.
- (2) The measurement equipment shall be set for peak hold mode of operation.
- (3) the transmitter shall be operated at the receiving mode.
- (4) The resolution bandwidth shall be set to 100kHz from 10MHz to 1GHz, the resolution bandwidth shall be set to 1MHz above 1GHz , and the sweep time shall be set to auto mode, to ensure all major modulation products are captured.
- (5) When the searched result is less than the specified limit, the maximum one shall be recorded, when the result is more than the specified limit, all measured values shall be recorded.
- (5) This measurement shall be repeated with the transmitter in standby mode where applicable.
- (6) Repeat above procedures until all frequency measured was complete.

7.4 Summary of Test Results/Plots

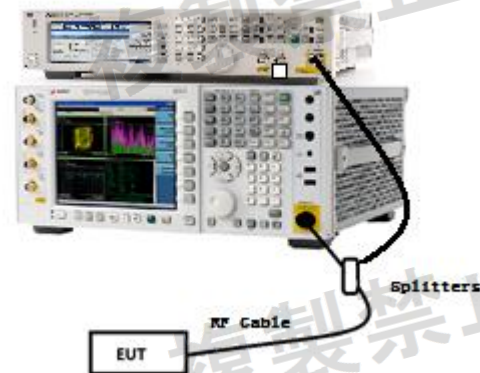
Please refer to Appendix E

8. CARRIER SENSING FUNCTION

8.1 Standard Applicable

According to Item 19 of Article 2 Paragraph 1. The device shall have the carrier sensing function.

8.2 Test Setup Block Diagram



8.3 Test Procedure

1. SG adjust the frequency as same as the EUT transmitted signal, unmodulation, power level $22.79 + Gr - 20\log(\text{freq_MHz}) \text{ dBm}$,
Then turn off the RF signal
2. EUT have transmitted the maximum modulation signal and fixed channel
3. Setting of the SA following as RBW/VBW: 1/3MHz SPAN: 50MHz Sweep time: Auto continue PK
4. SG Signal on EUT shall be stop the transmitted, Then turn off the SG, The EUT shall be continuous transmitted signal.

8.4 Summary of Test Results/Plots

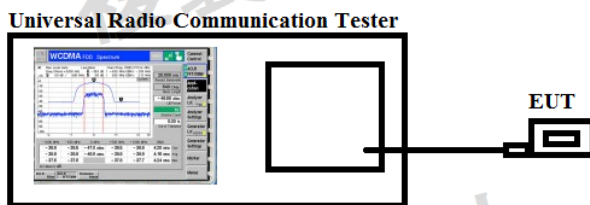
Please refer to Appendix F

9. INTERFERENCE PREVENTION FUNCTION

9.1 Standard Applicable

According to Item 19 of Article 2 Paragraph 1. The device shall have the function of automatic transmission or reception of identification code.

9.2 Test Setup Block Diagram



9.3 Test Procedure

1. Set the EUT in the usual operation condition
2. The radio equipment with automatic transmitting function of identification code
 - A. Transmit the assigned identification code from the radio equipment.
 - B. Confirm the identification code received by the demodulator.
3. The radio equipment with automatic receiving function of identification code
 - A. Transmit the assigned identification code from the opposite equipment.
 - B. Confirm that the usual communication is available.
 - C. Transmit the identification code distinct from the assigned one from the opposite equipment.
 - D. Confirm that the radio equipment is stopped or an indication is displayed as the identification code is different.
4. The identification function shall be recorded with "Good" or "No".

9.4 Summary of Test Results/Plots

Please refer to Appendix G

APPENDIX SUMMARY

Project No.	WTX25X06158537W	Test Engineer	Jennifer Song
Start date	2025/7/16	Finish date	2025/7/18
Temperature	22.7℃	Humiditdy	51%
RF specifications	WIFI-2.4G		

APPENDIX	Description of Test Item	Result
A	RF Output Power	Compliant
B	Frequency Tolerance	Compliant
C	Occupied Bandwidth /Spreading Bandwidth/Spread Factor	Compliant
D	Transmitter Spurious Emissions	Compliant
E	Receiver Spurious Emissions	Compliant
F	Carrier Sensing Function	Compliant
G	Interference Prevention Function	Compliant

APPENDIX A

RF OUTPUT POWER

➤ RF Output Power:

Test mode	Channel	Measure Value (dBm/MHz)	Limit (dBm/MHz)	Antenna Gain (dBi)	EIRP (dBm/MHz)	EIRP Limit (dBm/MHz)	Result
11b_11_Mbps	Low	3.88	10	0	3.88	12.14	Pass
	Middle	4.47	10	0	4.47	12.14	Pass
	High	4.73	10	0	4.73	12.14	Pass
11g_54_Mbps	Low	-0.46	10	0	-0.46	12.14	Pass
	Middle	0.23	10	0	0.23	12.14	Pass
	High	0.23	10	0	0.23	12.14	Pass
11n_HT20_MCS_7_Mbps	Low	-0.40	10	0	-0.40	12.14	Pass
	Middle	-0.10	10	0	-0.10	12.14	Pass
	High	0.14	10	0	0.14	12.14	Pass
11n_HT40_MCS_7_Mbps	Low	-5.34	6.989	0	-5.34	9.129	Pass
	Middle	-4.78	6.989	0	-4.78	9.129	Pass
	High	-4.95	6.989	0	-4.95	9.129	Pass
11ax_HE20_MCS_7_Mbps	Low	-3.37	10	0	-3.37	12.14	Pass
	Middle	-2.90	10	0	-2.90	12.14	Pass
	High	-2.23	10	0	-2.23	12.14	Pass
11ax_HE40_MCS_7_Mbps	Low	-5.91	6.989	0	-5.91	9.129	Pass
	Middle	-4.99	6.989	0	-4.99	9.129	Pass
	High	-5.29	6.989	0	-5.29	9.129	Pass

All the EIRP is less than 12.14, the half-power beam width is not necessary

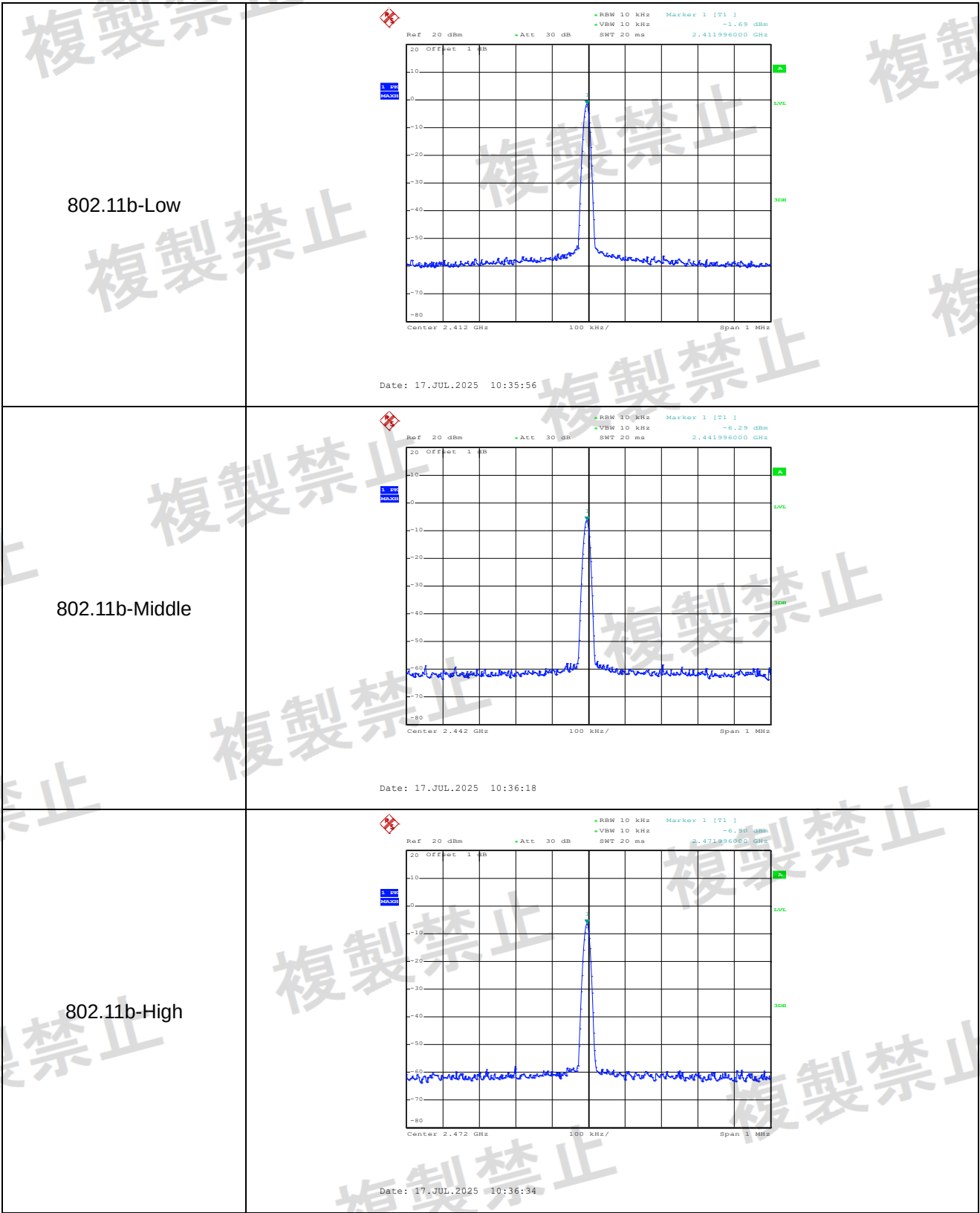
➤ RF Output Power Tolerance

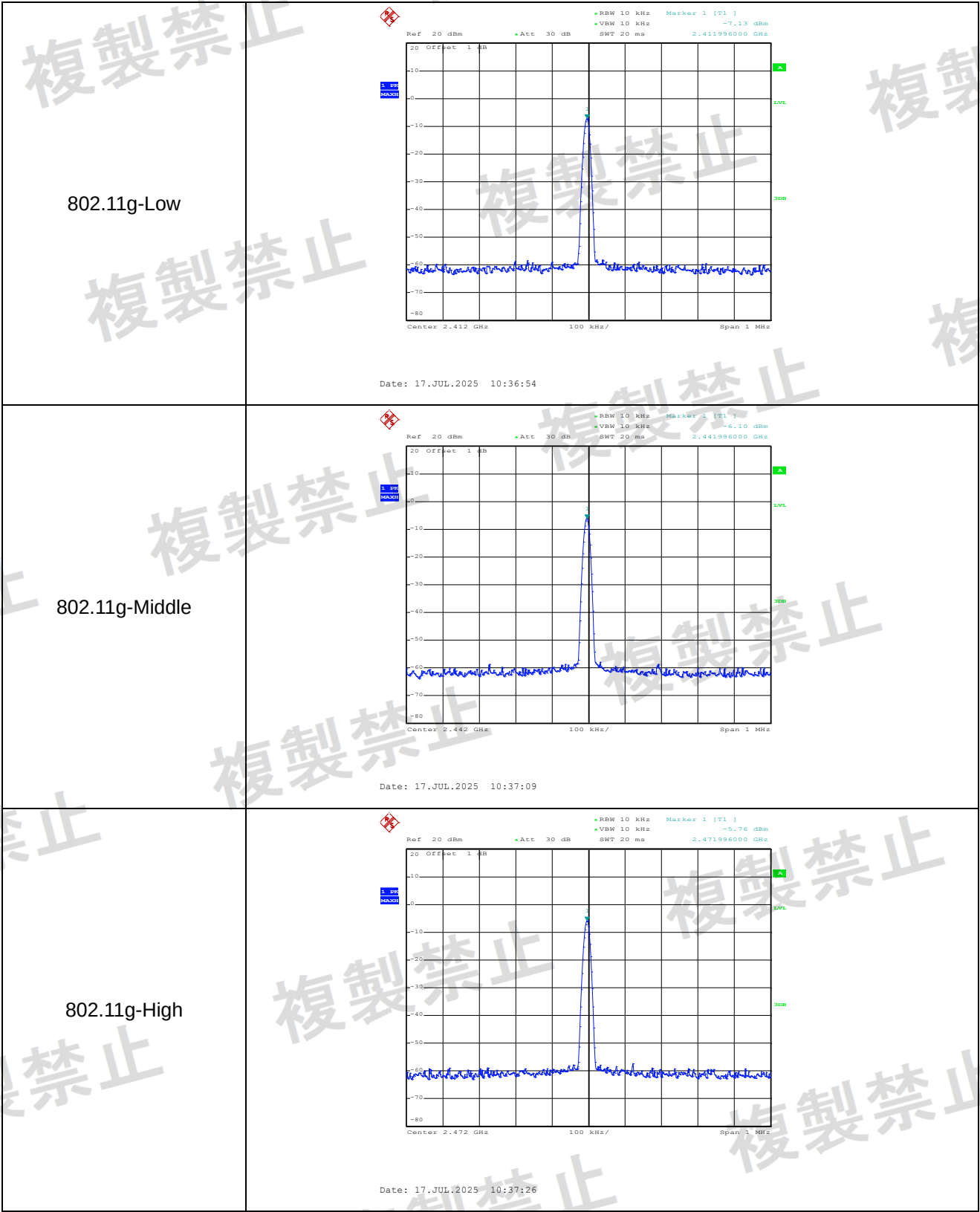
Test mode	Channel	Output Power (mW/MHz)	Rated Output Power(mW/MHz)	Tolerance (%)	Limit (%)	Result
11b_11_Mbps	Low	2.44	3	-18.67	≤+20%	Pass
	Middle	2.80	3	-6.67	≤+20%	Pass
	High	2.97	3	-1.00	≤+20%	Pass
11g_54_Mbps	Low	0.90	1	-10.00	≤+20%	Pass
	Middle	1.05	1	5.00	≤+20%	Pass
	High	1.05	1	5.00	≤+20%	Pass
11n_HT20_MCS_7_Mbps	Low	0.91	1	-9.00	≤+20%	Pass
	Middle	0.98	1	-2.00	≤+20%	Pass
	High	1.03	1	3.00	≤+20%	Pass
11n_HT40_MCS_7_Mbps	Low	0.29	0.5	-42.00	≤+20%	Pass
	Middle	0.33	0.5	-34.00	≤+20%	Pass
	High	0.32	0.5	-36.00	≤+20%	Pass
11ax_HE20_MCS_7_Mbps	Low	0.46	1	-54.00	≤+20%	Pass
	Middle	0.51	1	-49.00	≤+20%	Pass
	High	0.60	1	-40.00	≤+20%	Pass
11ax_HE40_MCS_7_Mbps	Low	0.26	0.5	-48.00	≤+20%	Pass
	Middle	0.32	0.5	-36.00	≤+20%	Pass
	High	0.30	0.5	-40.00	≤+20%	Pass

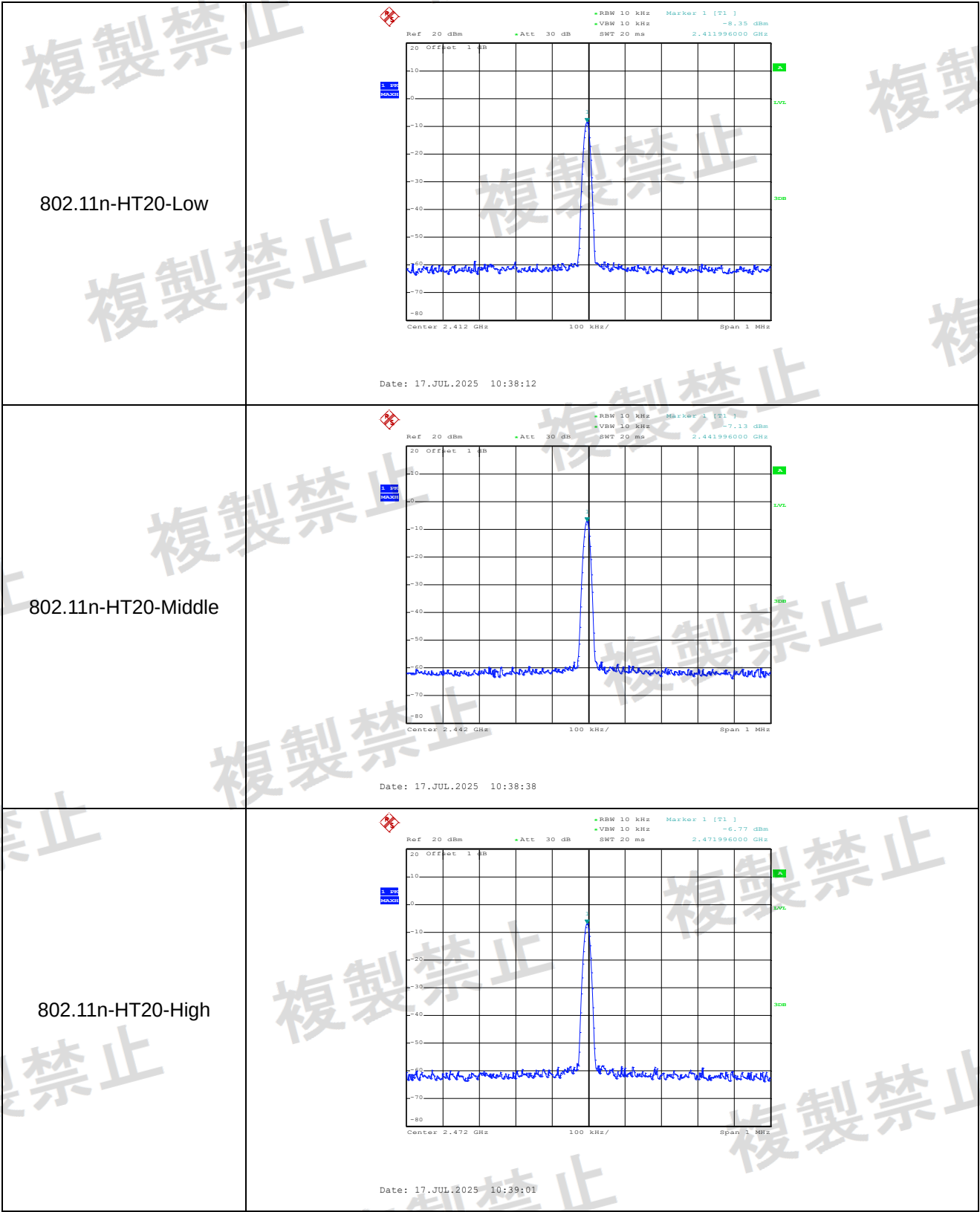
Note: Tolerance = (Output Power – Rated Output Power) / Rated Output Power * 100%

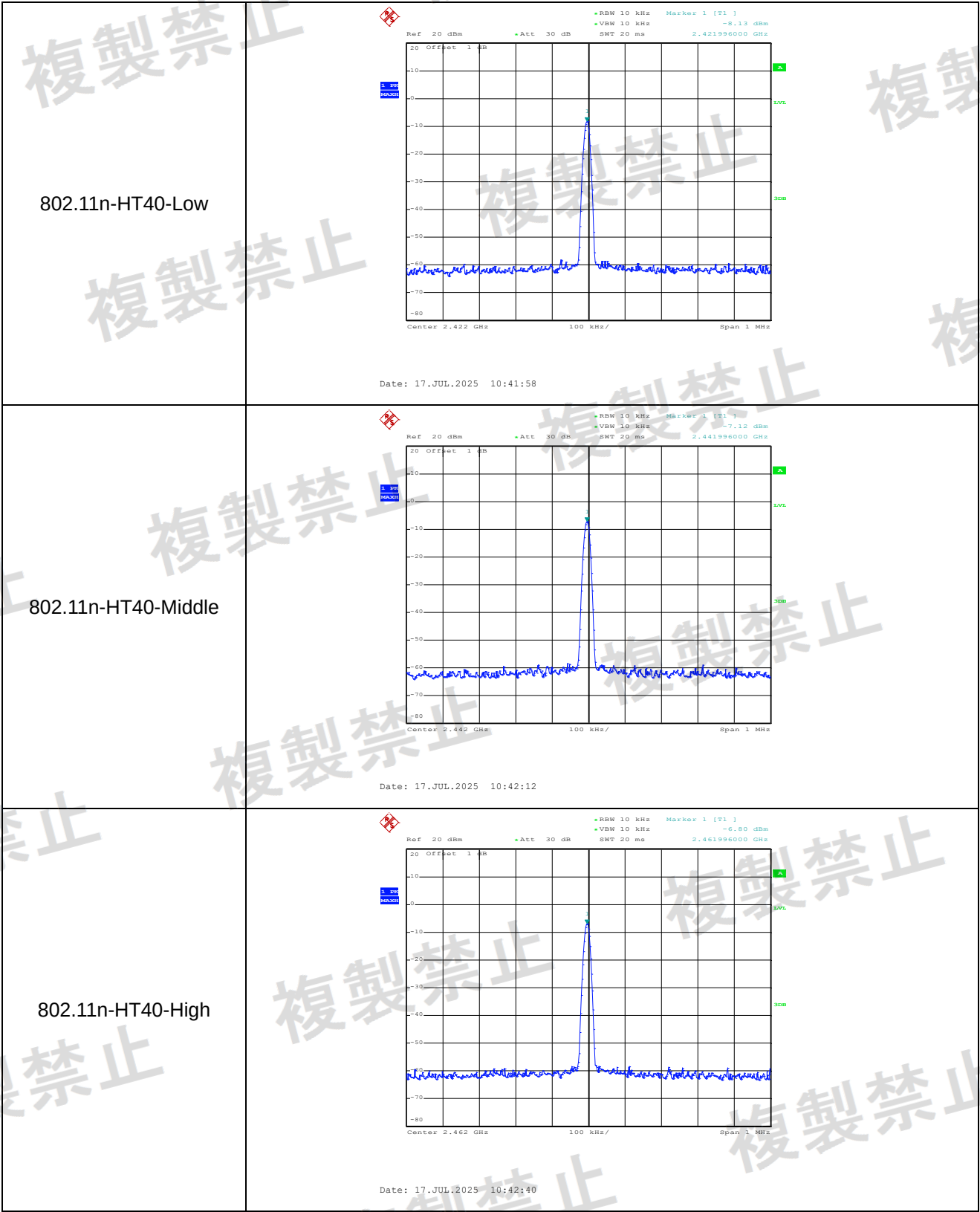
APPENDIX B**FREQUENCY TOLERANCE**

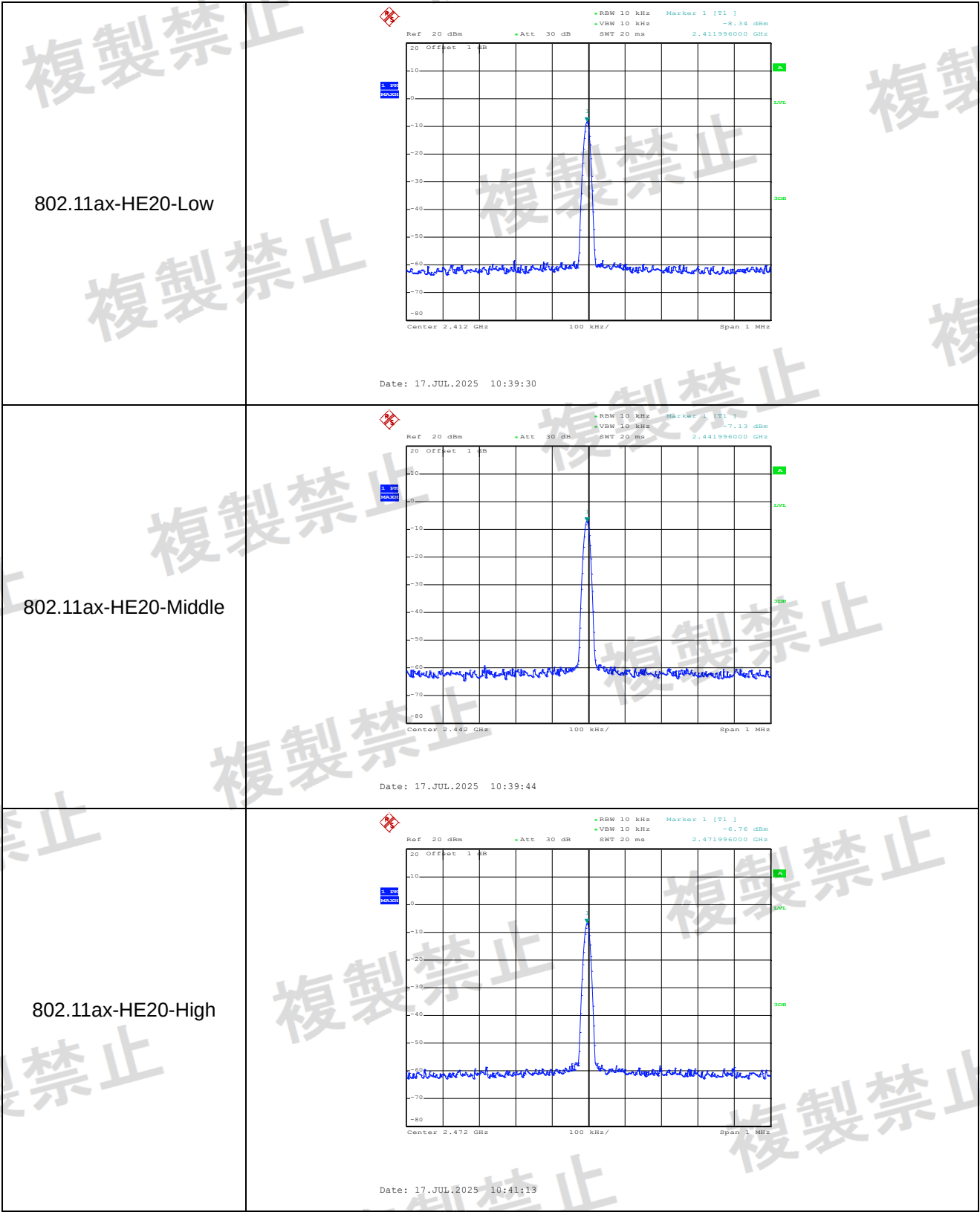
Test mode	Tx Frequency (MHz)	Reading Value (MHz)	Tolerance (ppm)	Limit (ppm)	Result
11b	2412	2411.996	-1.658	±50	Pass
	2442	2441.996	-1.638	±50	Pass
	2472	2471.996	-1.618	±50	Pass
11g	2412	2411.996	-1.658	±50	Pass
	2442	2441.996	-1.638	±50	Pass
	2472	2471.996	-1.618	±50	Pass
11n_ HT20	2412	2411.996	-1.658	±50	Pass
	2442	2441.996	-1.638	±50	Pass
	2472	2471.996	-1.618	±50	Pass
11n_ HT40	2422	2421.996	-1.652	±50	Pass
	2442	2441.996	-1.638	±50	Pass
	2462	2461.996	-1.625	±50	Pass
11ax_ HE20	2412	2411.996	-1.658	±50	Pass
	2442	2441.996	-1.638	±50	Pass
	2472	2471.996	-1.618	±50	Pass
11ax_ HE40	2422	2421.996	-1.652	±50	Pass
	2442	2441.996	-1.638	±50	Pass
	2462	2461.996	-1.625	±50	Pass

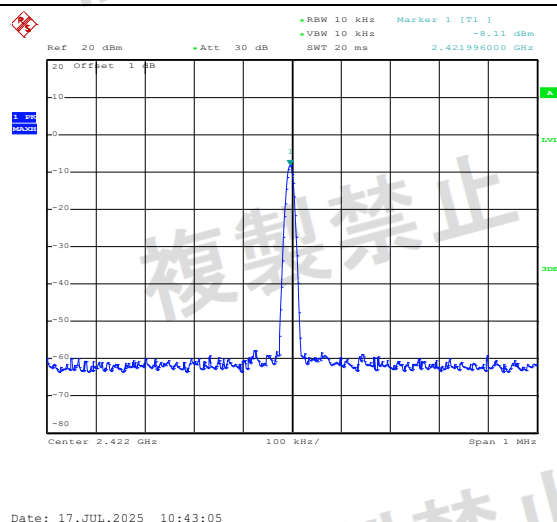
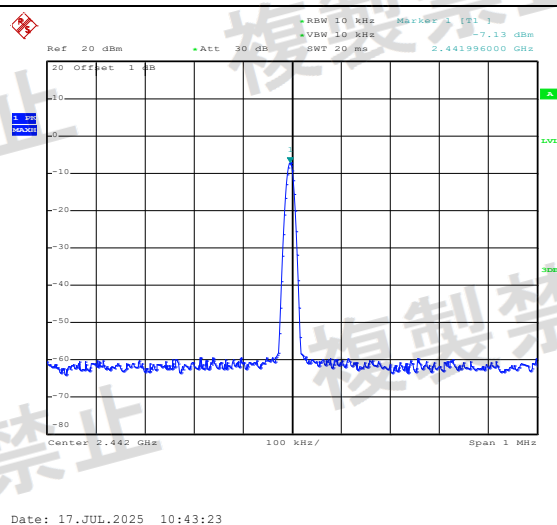
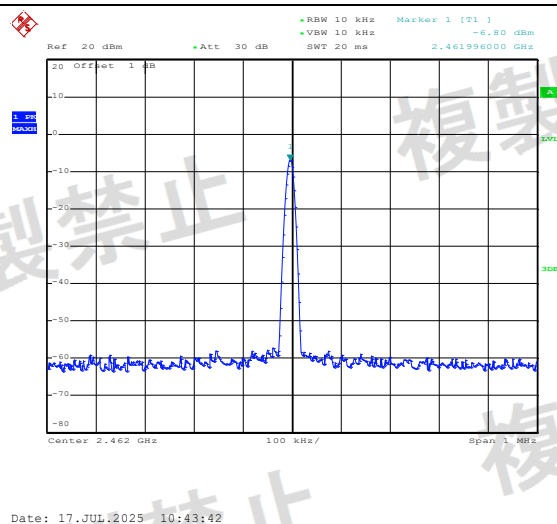












APPENDIX C

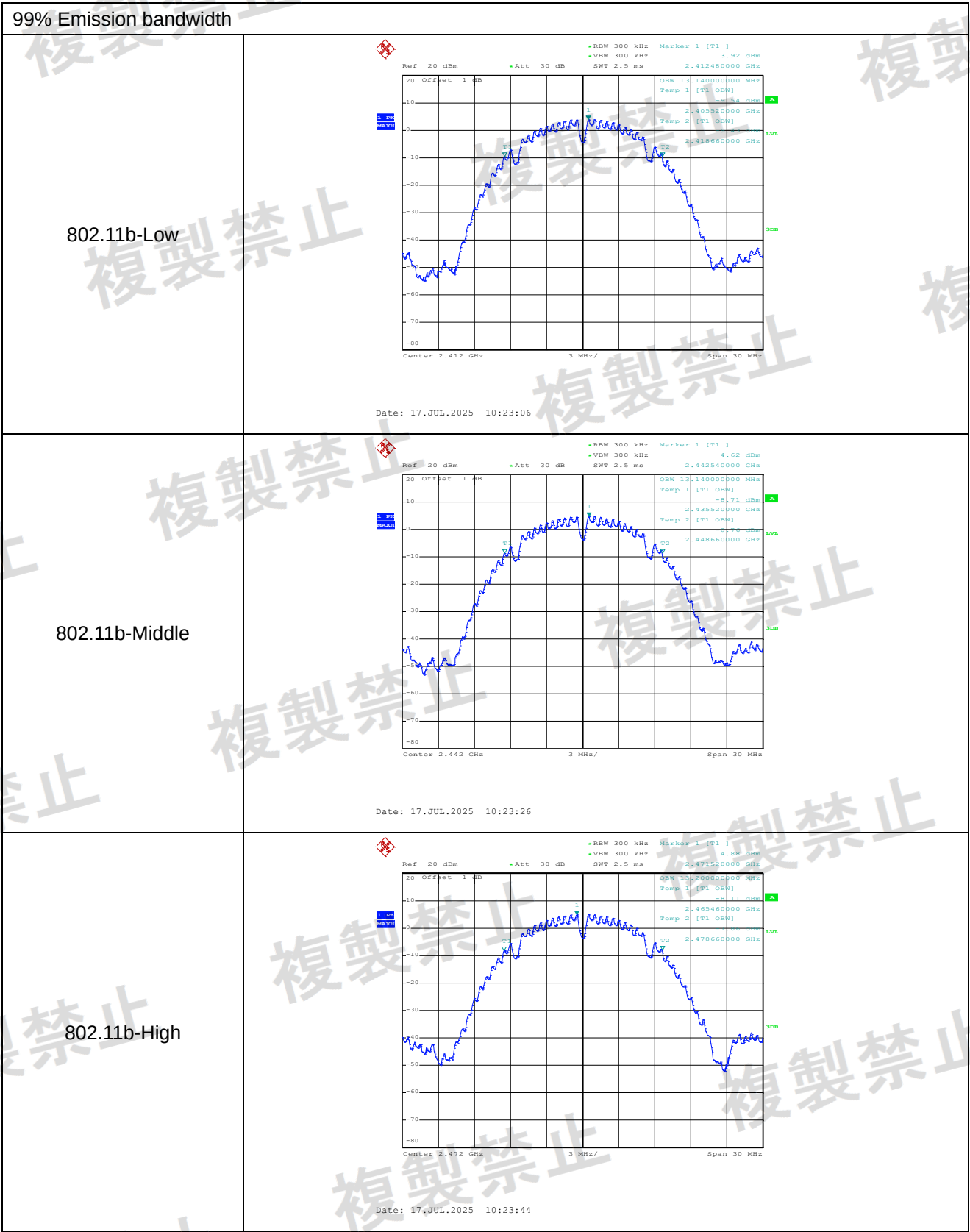
OCCUPIED BANDWIDTH

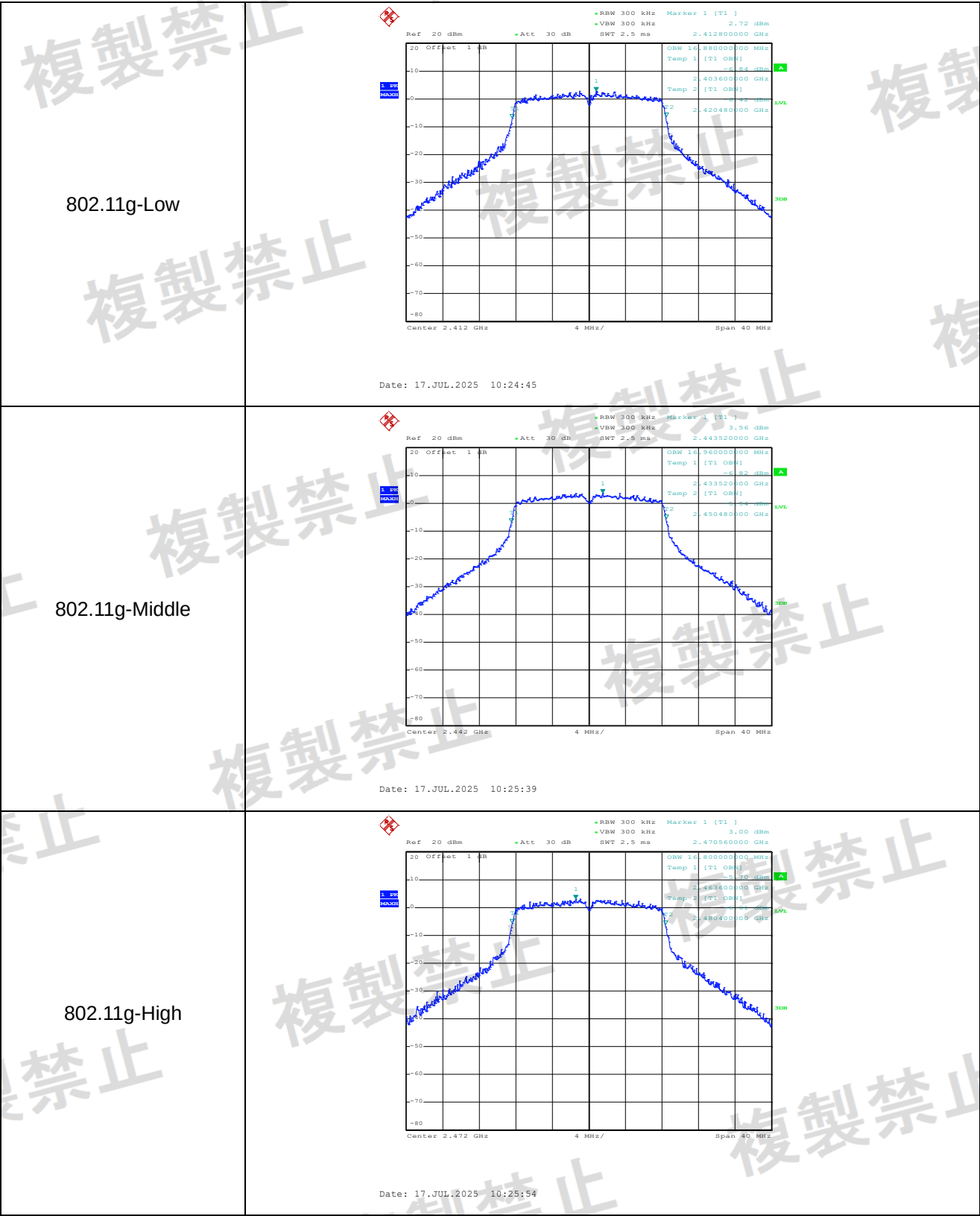
Mode	Channel	99% Emission bandwidth		90% Emission bandwidth	Result
		Reading Value (MHz)	Limit (MHz)	Reading Value (MHz)	
11b	Low	13.14	<26	13.08	Pass
	Middle	13.14	<26	13.14	Pass
	High	13.20	<26	13.14	Pass
11g	Low	16.88	<26	16.48	Pass
	Middle	16.96	<26	16.48	Pass
	High	16.80	<26	16.48	Pass
11n_HT20	Low	18.00	<26	17.76	Pass
	Middle	18.08	<26	17.76	Pass
	High	18.08	<26	17.76	Pass
11n_HT40	Low	36.32	<38	36.32	Pass
	Middle	36.32	<38	36.32	Pass
	High	36.16	<38	36.16	Pass
11ax_HE20	Low	19.20	<26	18.96	Pass
	Middle	19.20	<26	19.04	Pass
	High	19.20	<26	19.04	Pass
11ax_HE40	Low	37.92	<38	37.76	Pass
	Middle	37.92	<38	37.76	Pass
	High	37.92	<38	37.76	Pass

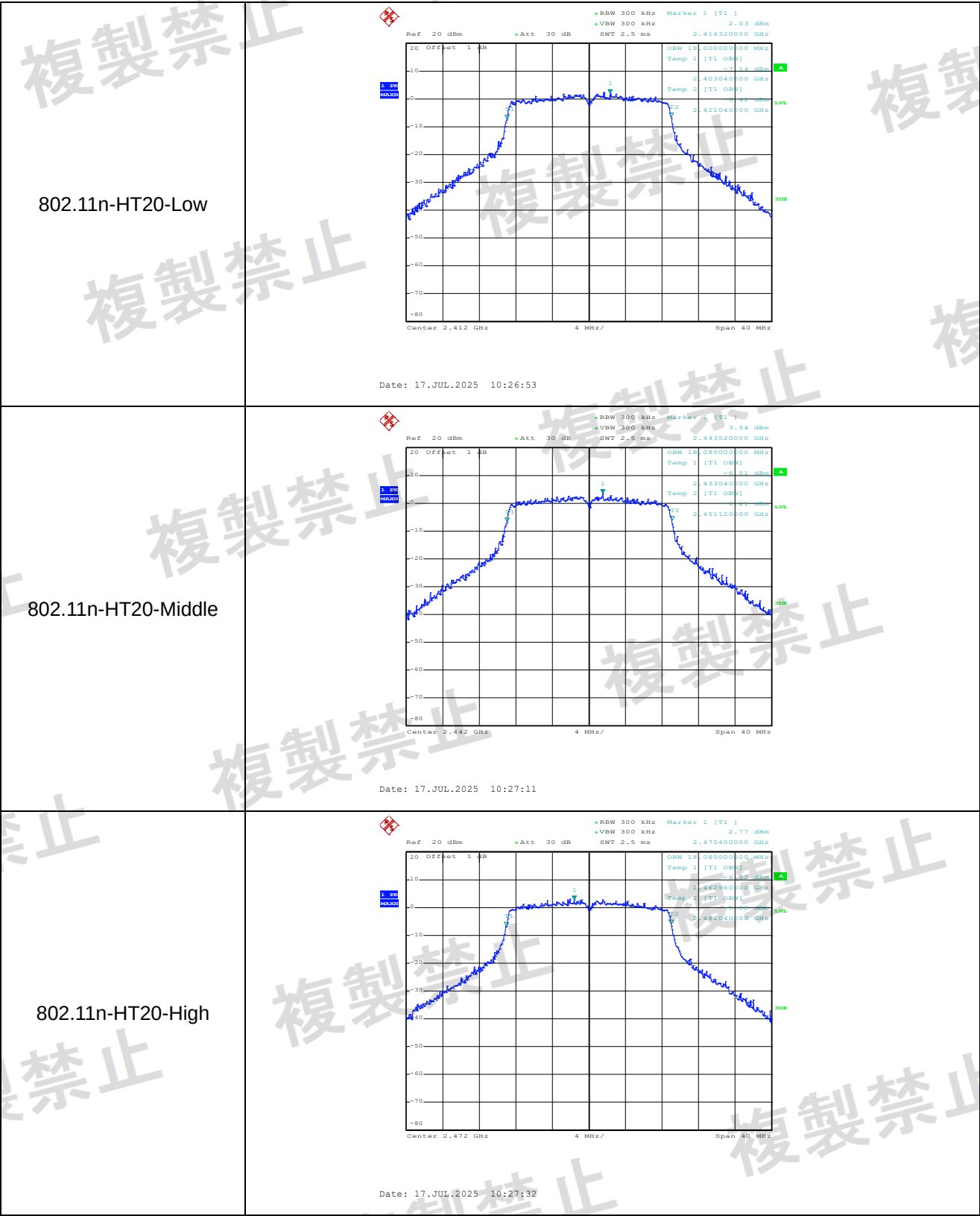
➤ Spread Factor

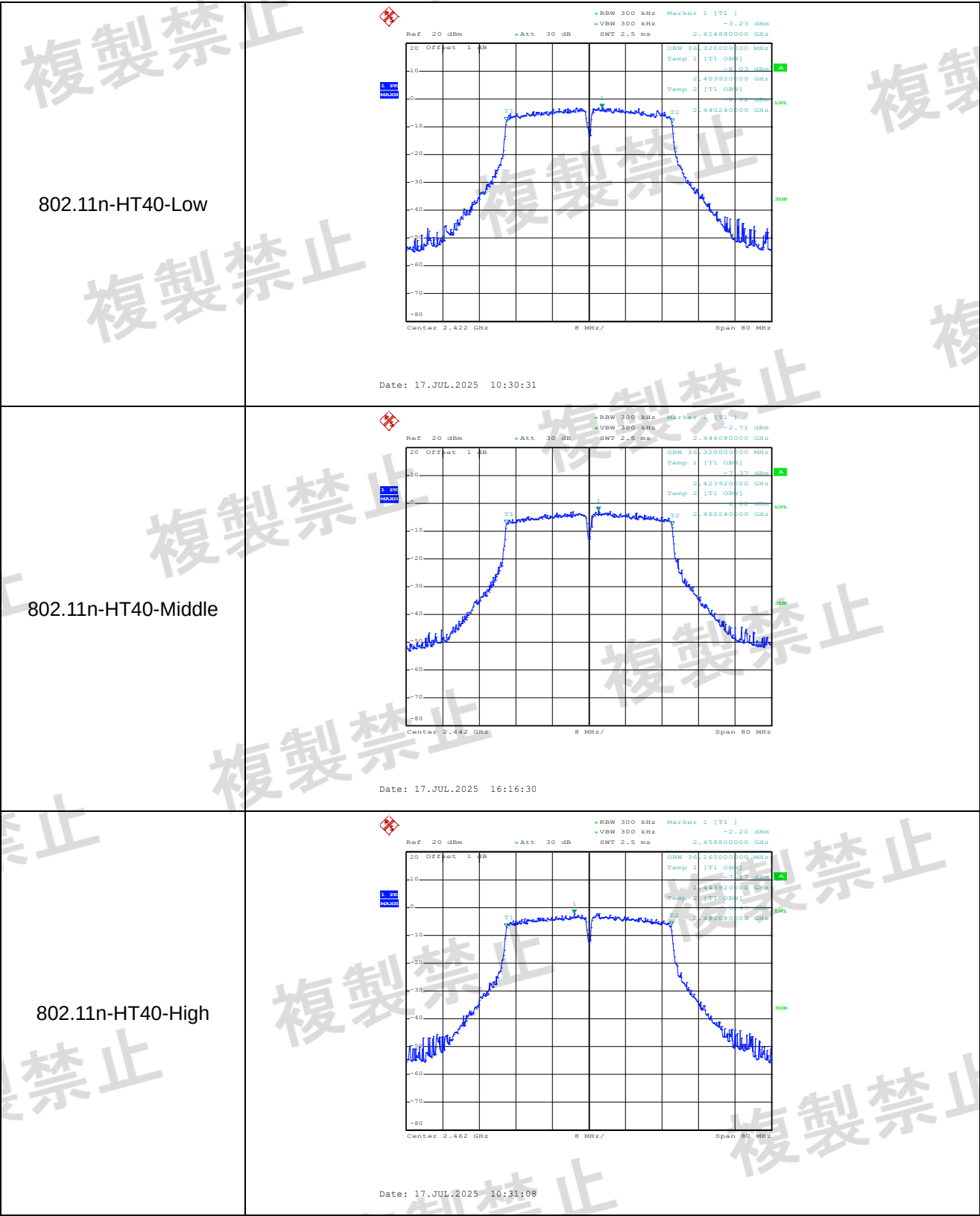
Test mode	Channel	Spread Bandwidth	Rate (MHz)	Spread Factor	Limit	Result
802.11b	Low	13.08	1.375	9.51	>5	Pass
	Middle	13.14	1.375	9.56	>5	Pass
	High	13.14	1.375	9.56	>5	Pass

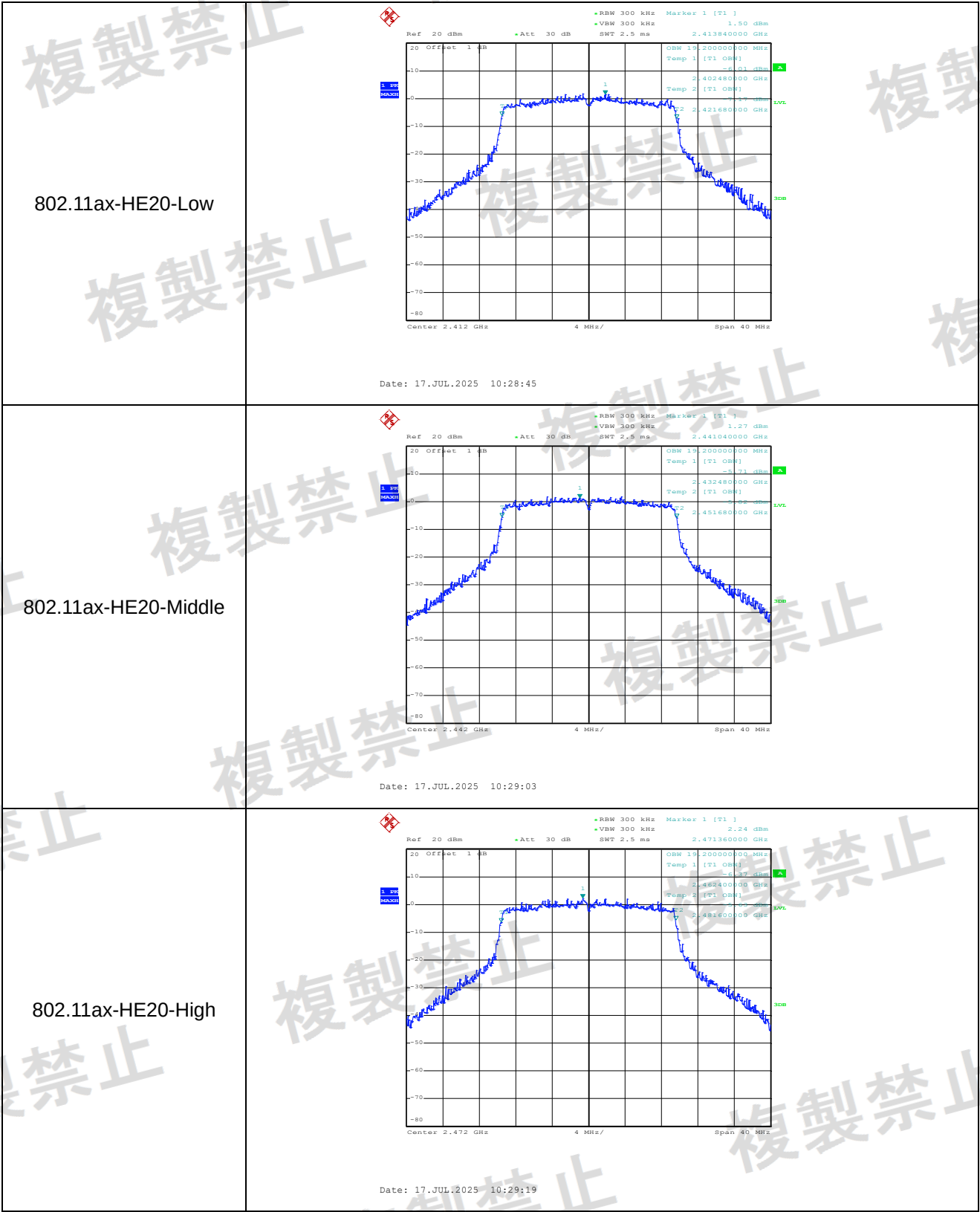
Spread Factor= Spread Bandwidth/Modulation Rate

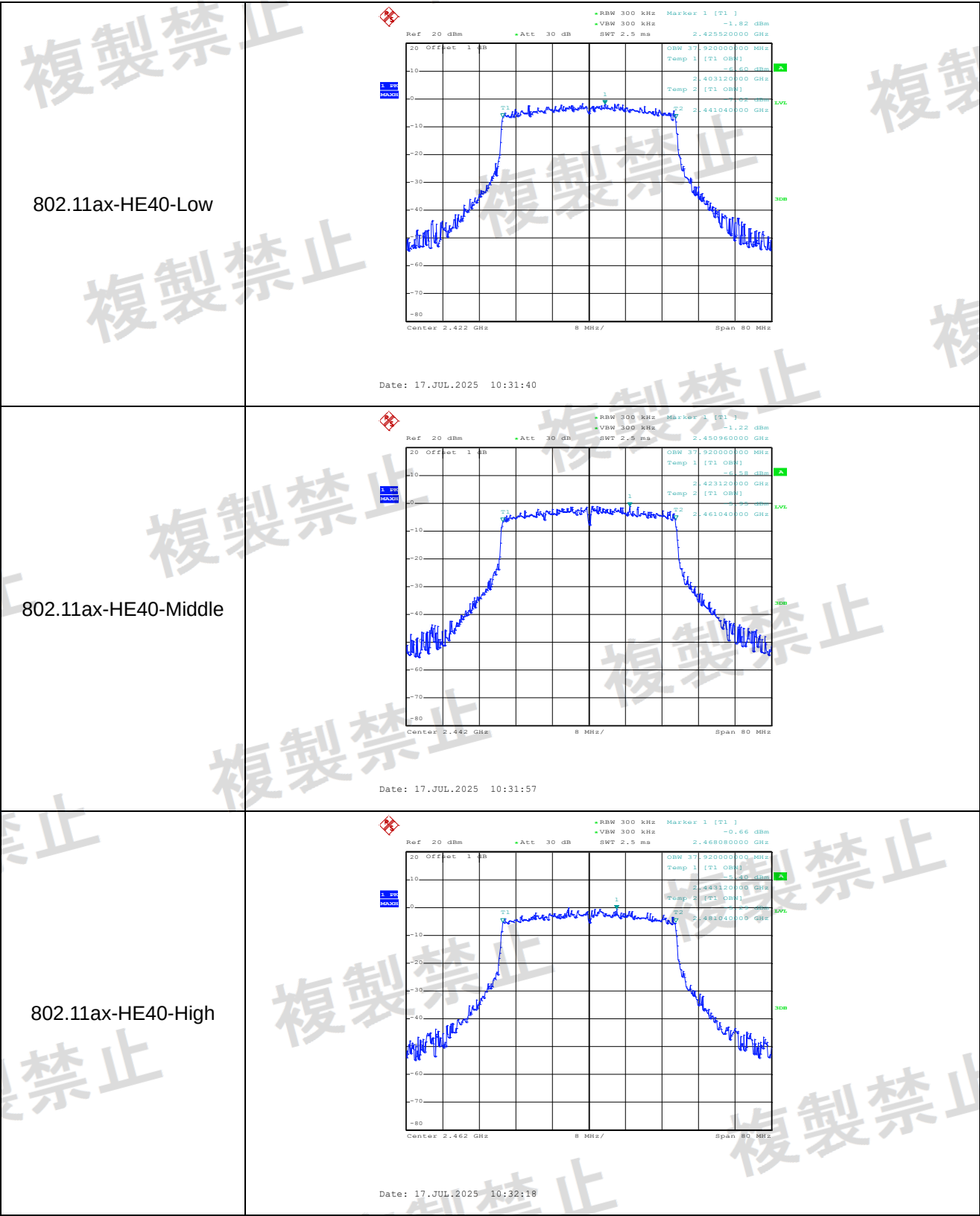


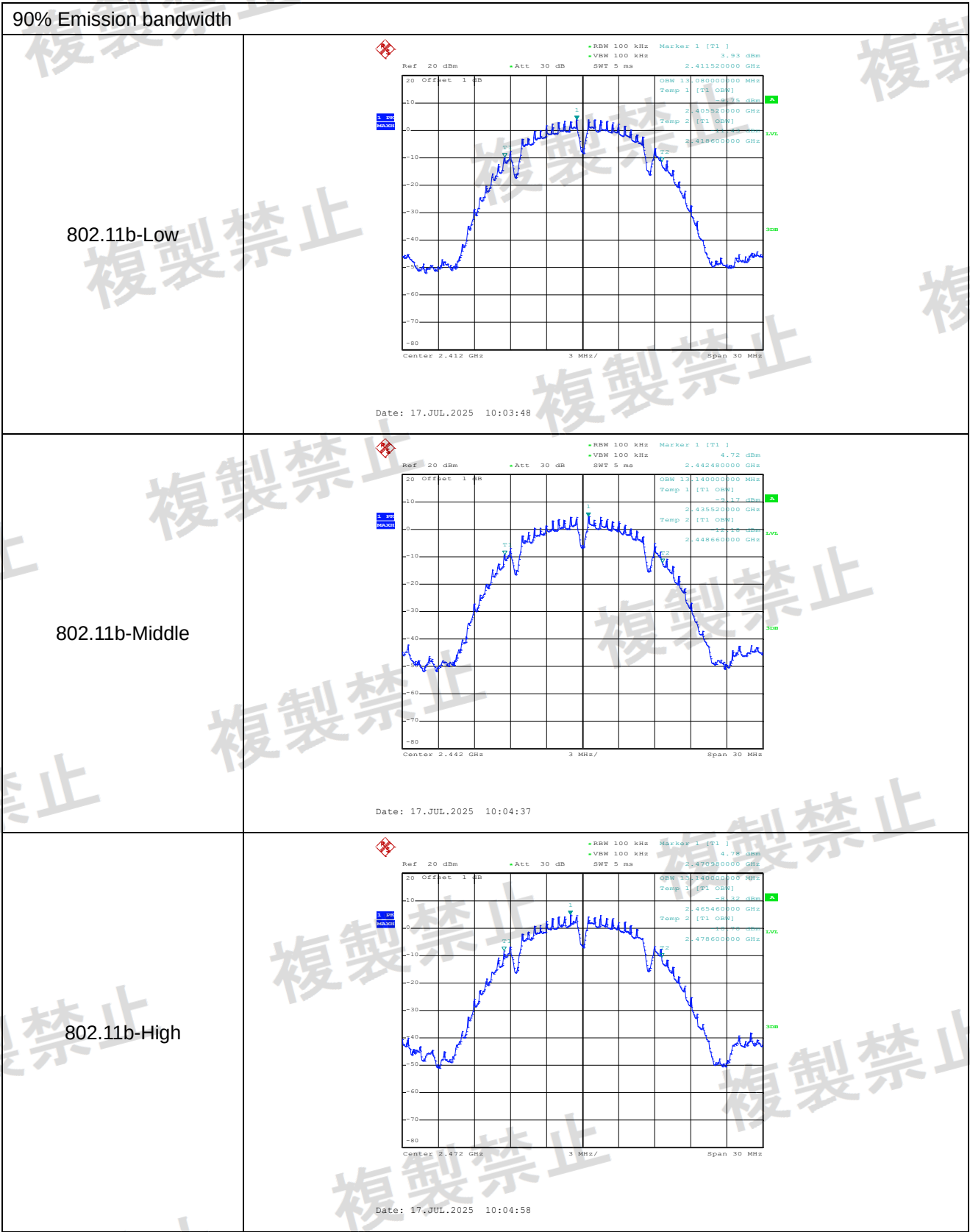


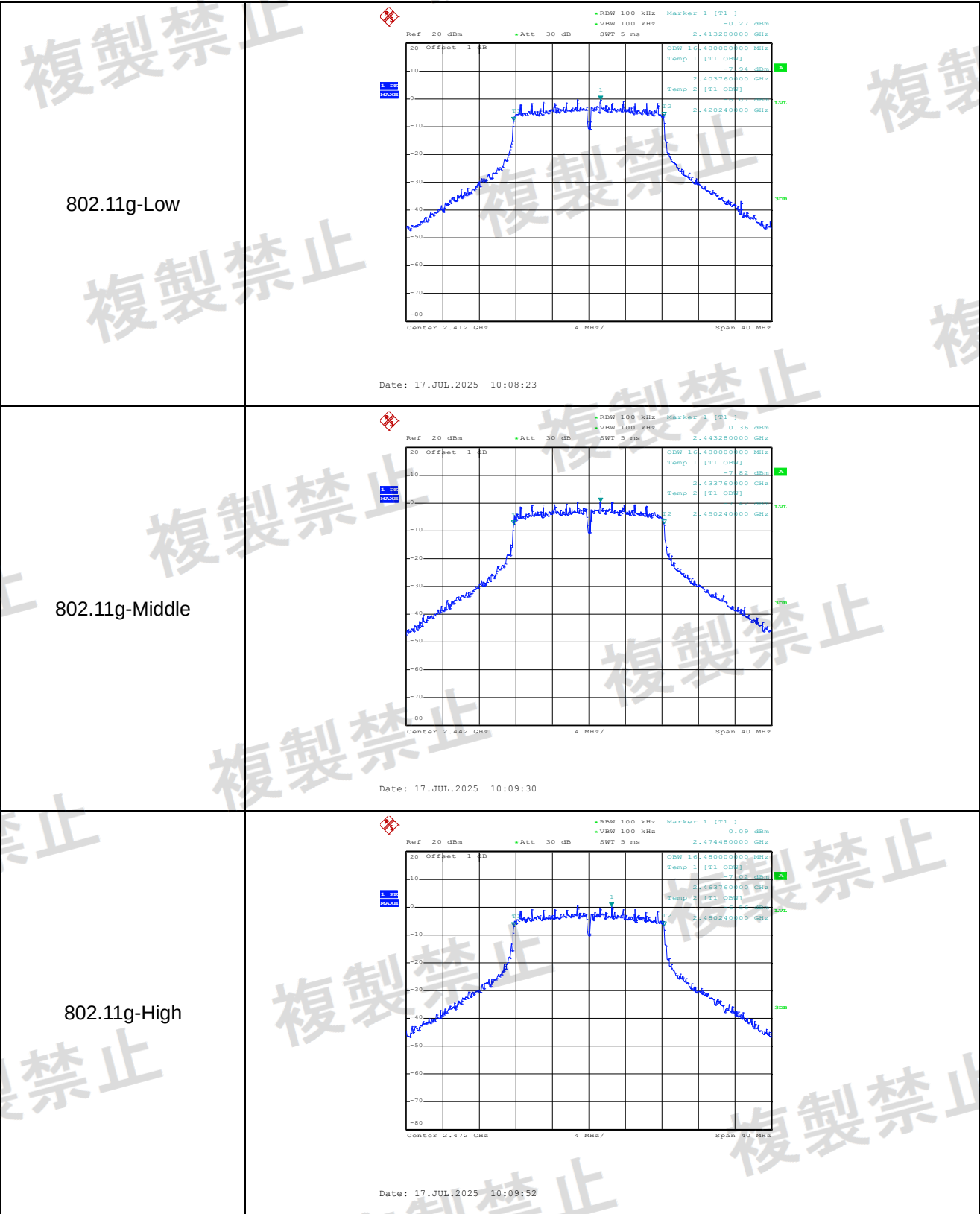


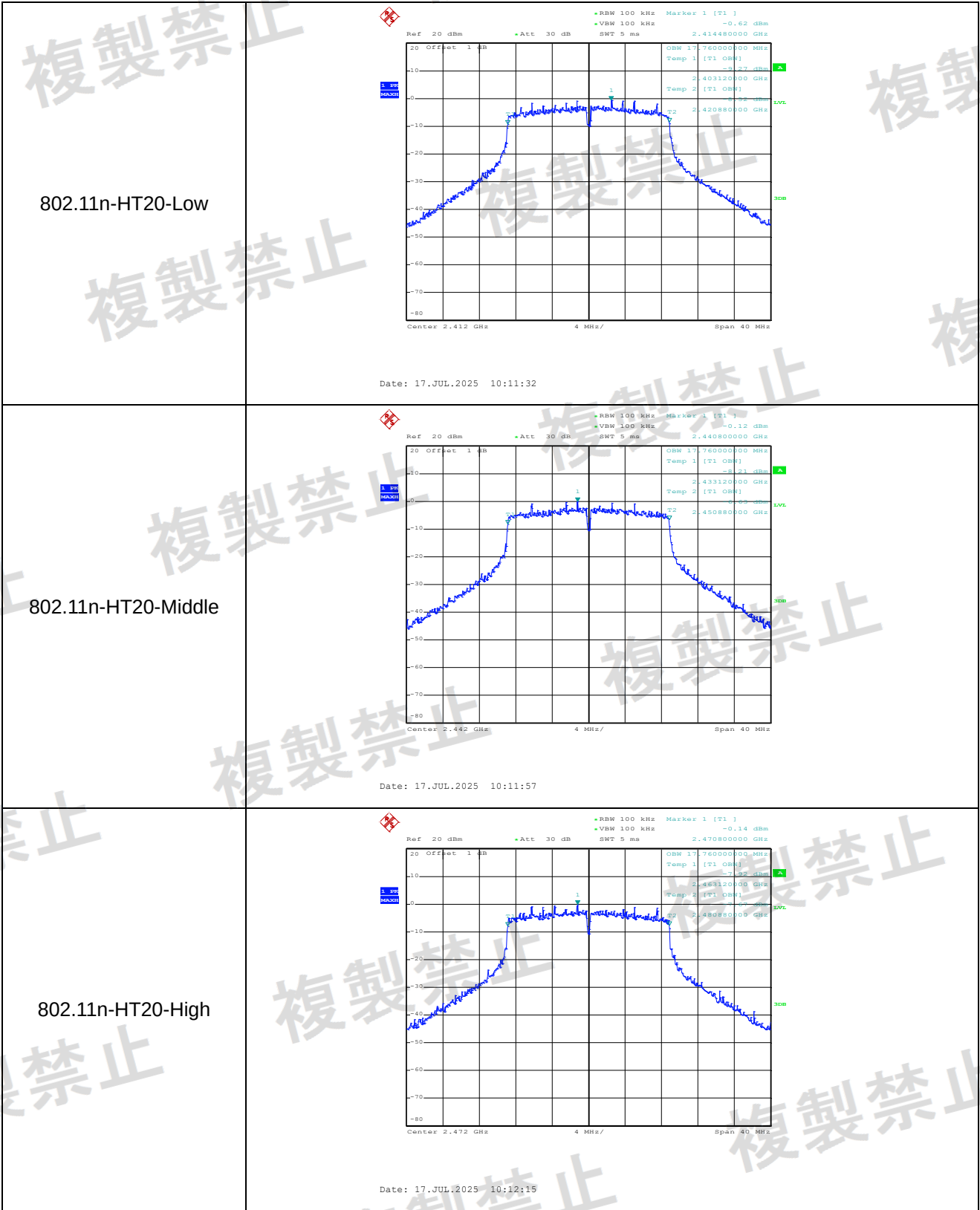


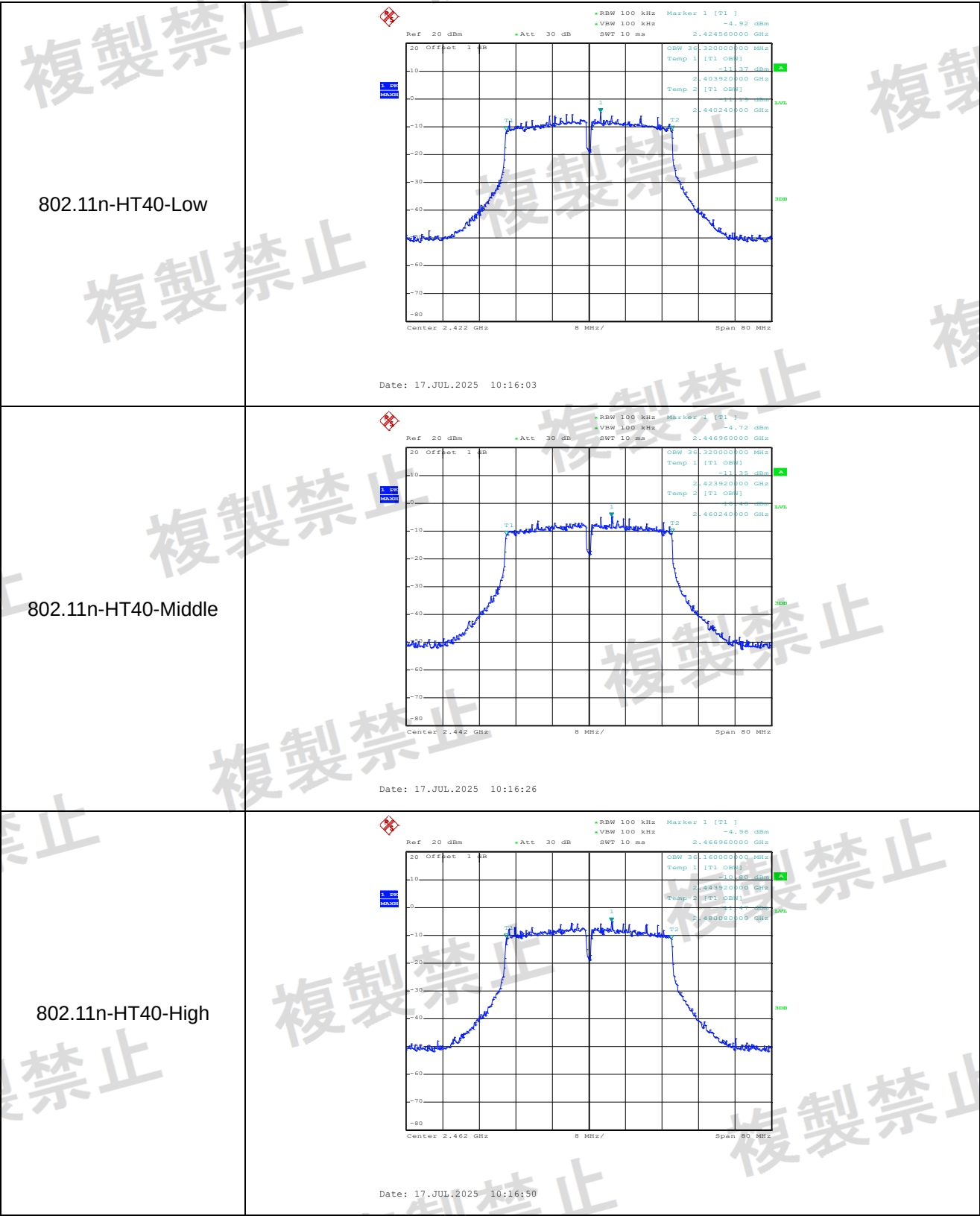


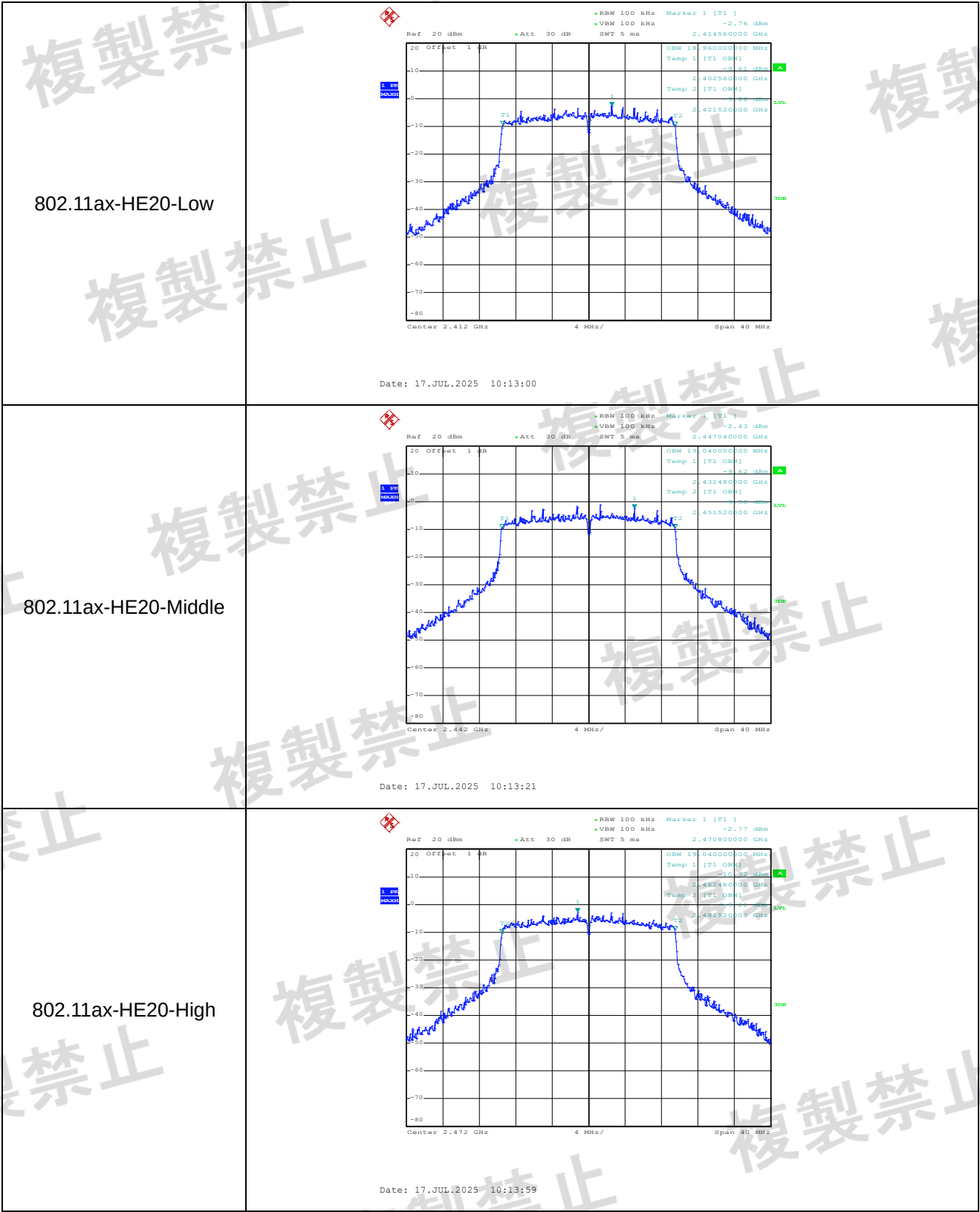


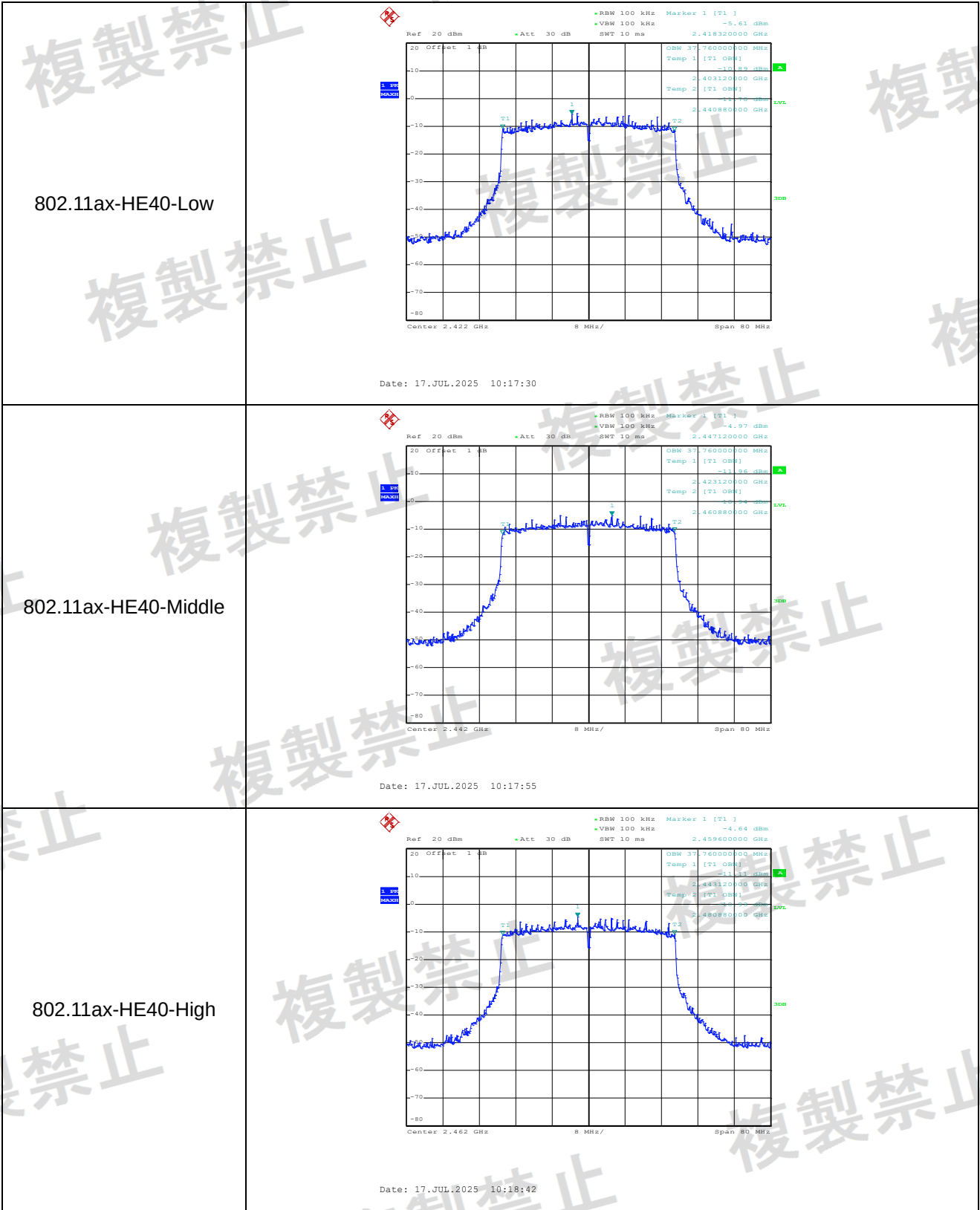












APPENDIX D**TRANSMITTER SPURIOUS EMISSIONS**

Mode	Channel	Frequency Range (MHz)	Freq. (MHz)	Reading Value	Result ($\mu\text{W}/\text{MHz}$)	Limit ($\mu\text{W}/\text{MHz}$)	Result
802.11b	Low	30-1000	47.46	-48.86dBm/100kHz	0.130	2.5	Pass
		1000-2387	1446.14	-49.20dBm/Mhz	0.012	2.5	Pass
		2387-2400	2397.32	-41.52dBm/Mhz	0.070	25	Pass
		2483.5-2496.5	2495.64	-47.44dBm/Mhz	0.018	25	Pass
		2496.5-12750	4813.79	-42.44dBm/Mhz	0.057	2.5	Pass
	Middle	30-1000	644.98	-48.21dBm/100kHz	0.151	2.5	Pass
		1000-2387	1463.26	-49.77dBm/Mhz	0.011	2.5	Pass
		2387-2400	2391.58	-49.27dBm/Mhz	0.012	25	Pass
		2483.5-2496.5	2486.52	-45.93dBm/Mhz	0.026	25	Pass
		2496.5-12750	4875.31	-40.49dBm/Mhz	0.089	2.5	Pass
	High	30-1000	359.80	-48.77dBm/100kHz	0.133	2.5	Pass
		1000-2387	1482.68	-50.13dBm/Mhz	0.010	2.5	Pass
		2387-2400	2395.74	-50.59dBm/Mhz	0.009	25	Pass
		2483.5-2496.5	2485.76	-34.93dBm/Mhz	0.321	25	Pass
		2496.5-12750	4936.83	-37.46dBm/Mhz	0.179	2.5	Pass

Mode	Channel	Frequency Range (MHz)	Freq. (MHz)	Reading Value	Result ($\mu\text{W}/\text{MHz}$)	Limit ($\mu\text{W}/\text{MHz}$)	Result
802.11g	Low	30-1000	881.66	-48.26dBm/100kHz	0.149	2.5	Pass
		1000-2387	2231.66	-40.97dBm/Mhz	0.080	2.5	Pass
		2387-2400	2399.92	-25.70dBm/Mhz	2.692	25	Pass
		2483.5-2496.5	2487.92	-38.01dBm/Mhz	0.158	25	Pass
		2496.5-12750	9407.36	-43.34dBm/Mhz	0.046	2.5	Pass
	Middle	30-1000	513.06	-48.55dBm/100kHz	0.140	2.5	Pass
		1000-2387	2317.65	-52.38dBm/Mhz	0.006	2.5	Pass
		2387-2400	2396.72	-51.45dBm/Mhz	0.007	25	Pass
		2483.5-2496.5	2492.50	-51.71dBm/Mhz	0.007	25	Pass
		2496.5-12750	12462.90	-42.37dBm/Mhz	0.058	2.5	Pass
	High	30-1000	278.32	-48.44dBm/100kHz	0.143	2.5	Pass
		1000-2387	1502.09	-51.84dBm/Mhz	0.007	2.5	Pass
		2387-2400	2390.90	-51.64dBm/Mhz	0.007	25	Pass
		2483.5-2496.5	2483.55	-45.76dBm/Mhz	0.027	25	Pass
		2496.5-12750	11314.51	-42.50dBm/Mhz	0.056	2.5	Pass

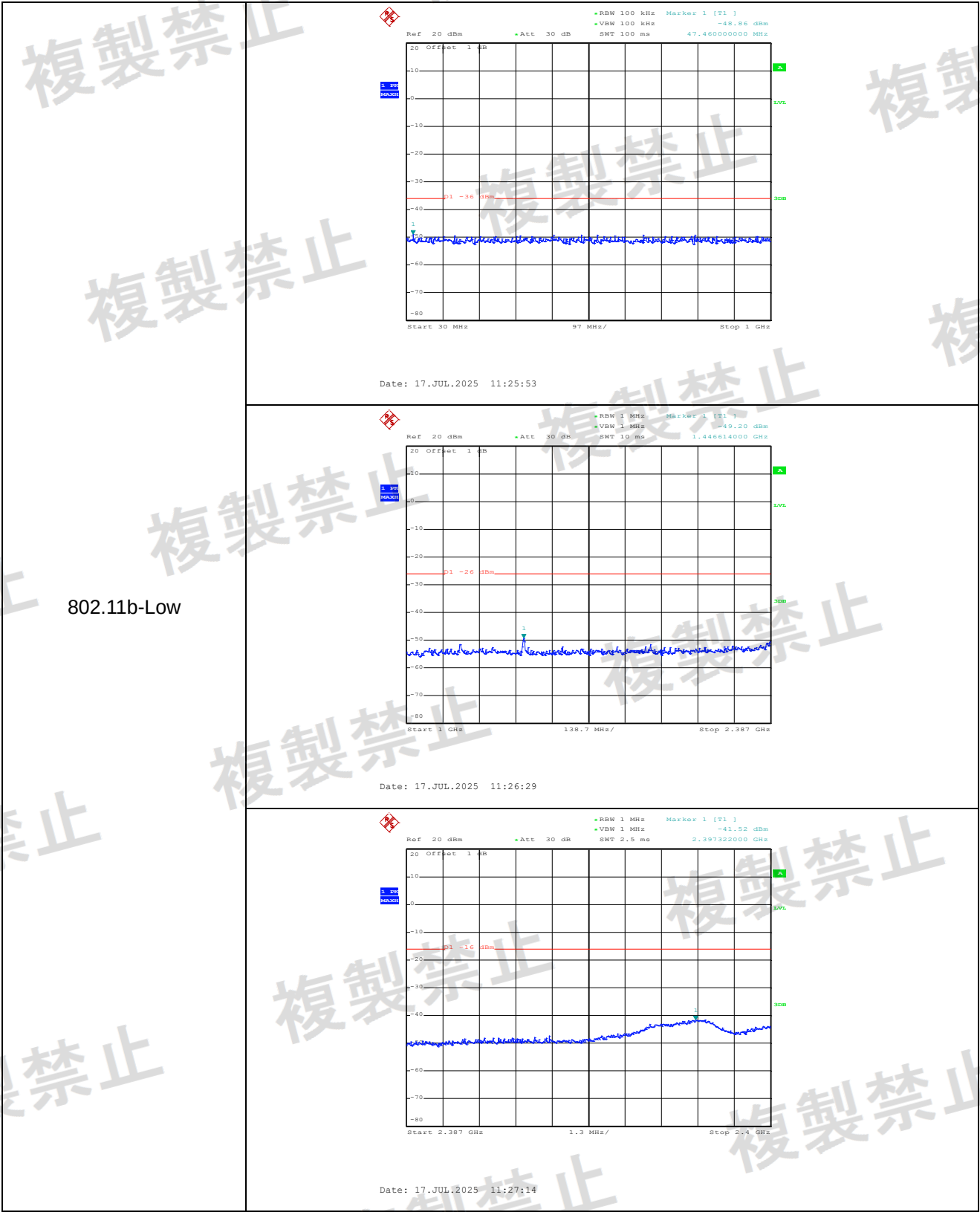
Mode	Channel	Frequency Range (MHz)	Freq. (MHz)	Reading Value	Result ($\mu\text{W}/\text{MHz}$)	Limit ($\mu\text{W}/\text{MHz}$)	Result
802.11n- _HT20	Low	30-1000	78.50	-48.38dBm/100kHz	0.145	2.5	Pass
		1000-2387	2381.45	-40.24dBm/Mhz	0.095	2.5	Pass
		2387-2400	2399.81	-27.76dBm/Mhz	1.675	25	Pass
		2483.5-2496.5	2491.30	-38.25dBm/Mhz	0.150	25	Pass
		2496.5-12750	9591.92	-42.53dBm/Mhz	0.056	2.5	Pass
	Middle	30-1000	191.02	-47.49dBm/100kHz	0.178	2.5	Pass
		1000-2387	2264.94	-51.90dBm/Mhz	0.006	2.5	Pass
		2387-2400	2390.69	-51.41dBm/Mhz	0.007	25	Pass
		2483.5-2496.5	2478.76	-52.14dBm/Mhz	0.006	25	Pass
		2496.5-12750	12011.748	-42.85dBm/Mhz	0.052	2.5	Pass
	High	30-1000	784.660	-48.64dBm/100kHz	0.137	2.5	Pass
		1000-2387	1979.222	-50.54dBm/Mhz	0.009	2.5	Pass
		2387-2400	2390.692	-51.09dBm/Mhz	0.008	25	Pass
		2483.5-2496.5	2483.500	-43.57dBm/Mhz	0.044	25	Pass
		2496.5-12750	12462.902	-43.07dBm/Mhz	0.049	2.5	Pass

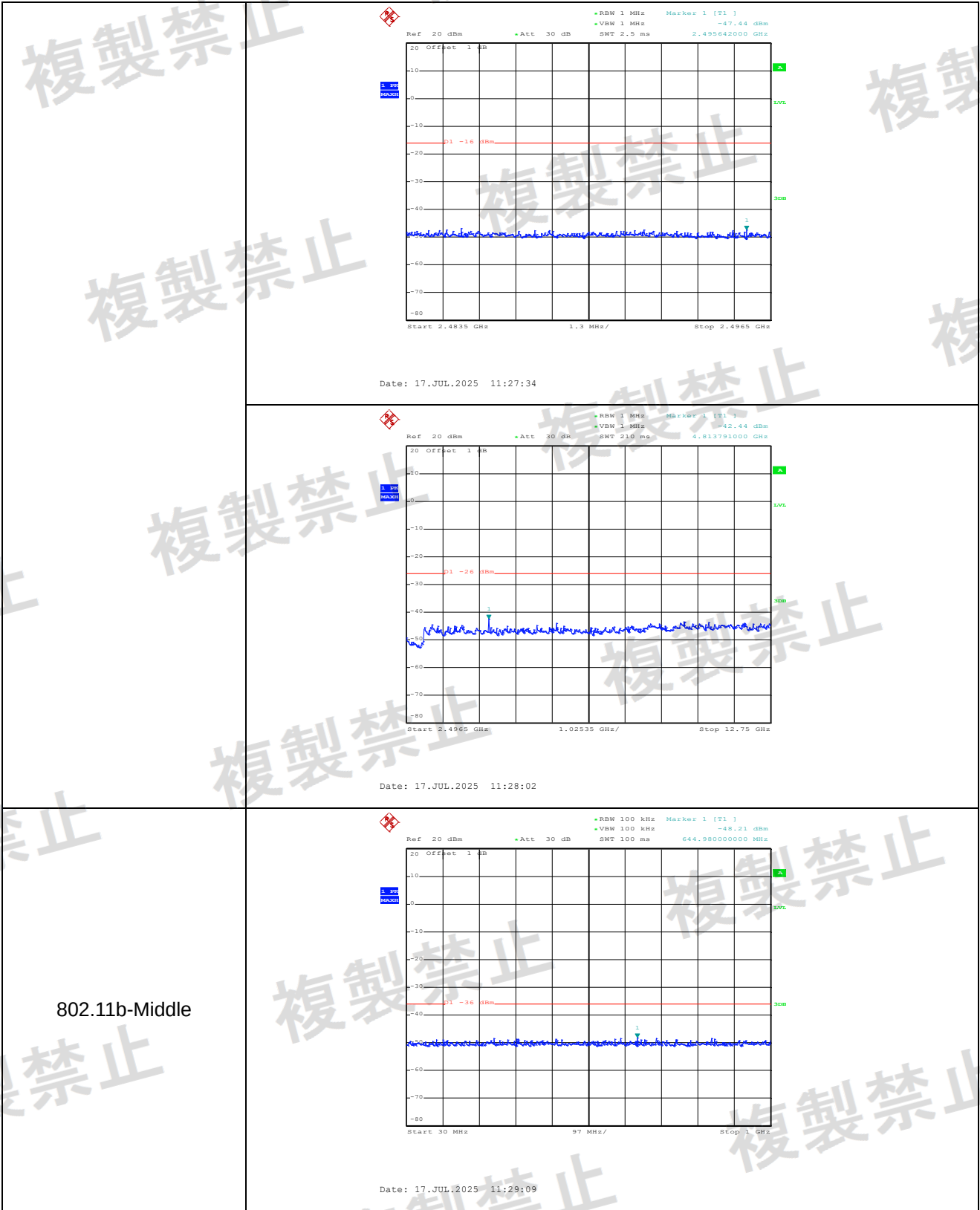
Mode	Channel	Frequency Range (MHz)	Freq. (MHz)	Reading Value	Result ($\mu\text{W}/\text{MHz}$)	Limit ($\mu\text{W}/\text{MHz}$)	Result
802.11n- _HT40	Low	30-1000	926.280	-47.75dBm/100kHz	0.168	2.5	Pass
		1000-2387	2387.000	-43.38dBm/MHz	0.046	2.5	Pass
		2387-2400	2400.000	-33.75dBm/MHz	0.422	25	Pass
		2483.5-2496.5	2488.674	-41.67dBm/MHz	0.068	25	Pass
		2496.5-12750	3870.469	-39.50dBm/MHz	0.112	2.5	Pass
	Middle	30-1000	191.020	-48.41dBm/100kHz	0.144	2.5	Pass
		1000-2387	2251.074	-51.43dBm/MHz	0.007	2.5	Pass
		2387-2400	2395.528	-42.29dBm/MHz	0.059	25	Pass
		2483.5-2496.5	2490.286	-40.41dBm/MHz	0.091	25	Pass
		2496.5-12750	9489.387	-43.39dBm/MHz	0.046	2.5	Pass
	High	30-1000	311.300	-48.83dBm/100kHz	0.131	2.5	Pass
		1000-2387	2348.164	-48.57dBm/MHz	0.014	2.5	Pass
		2387-2400	2389.860	-42.79dBm/MHz	0.053	25	Pass
		2483.5-2496.5	2483.526	-27.33dBm/MHz	1.849	25	Pass
		2496.5-12750	12.319.353	-42.31dBm/MHz	0.059	2.5	Pass

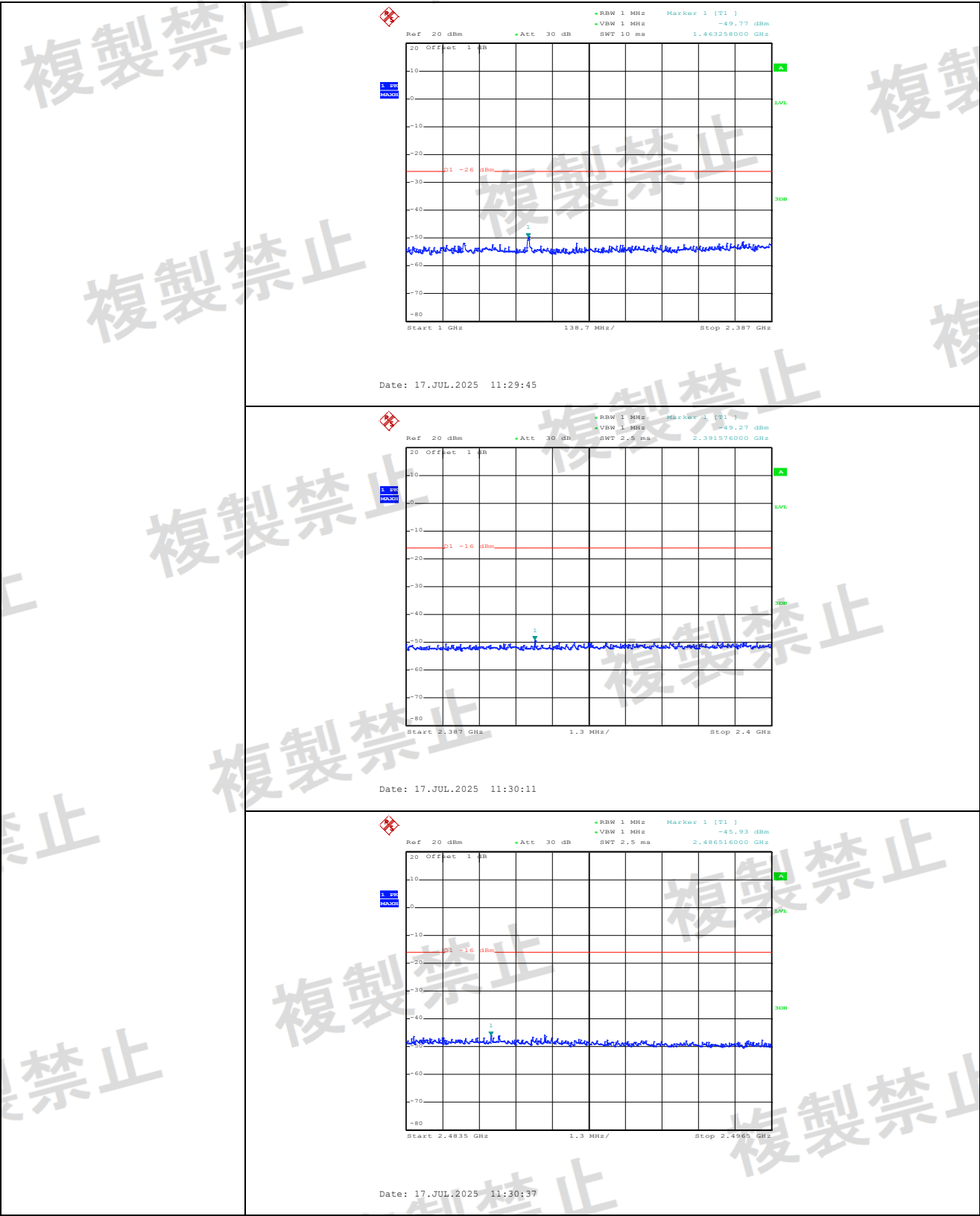
2.5 $\mu\text{W}/\text{MHz}$ =-26dBm/MHz, 25 $\mu\text{W}/\text{MHz}$ =-16dBm/MHz 2.5 $\mu\text{W}/\text{MHz}$ =-36dBm/100kHz,

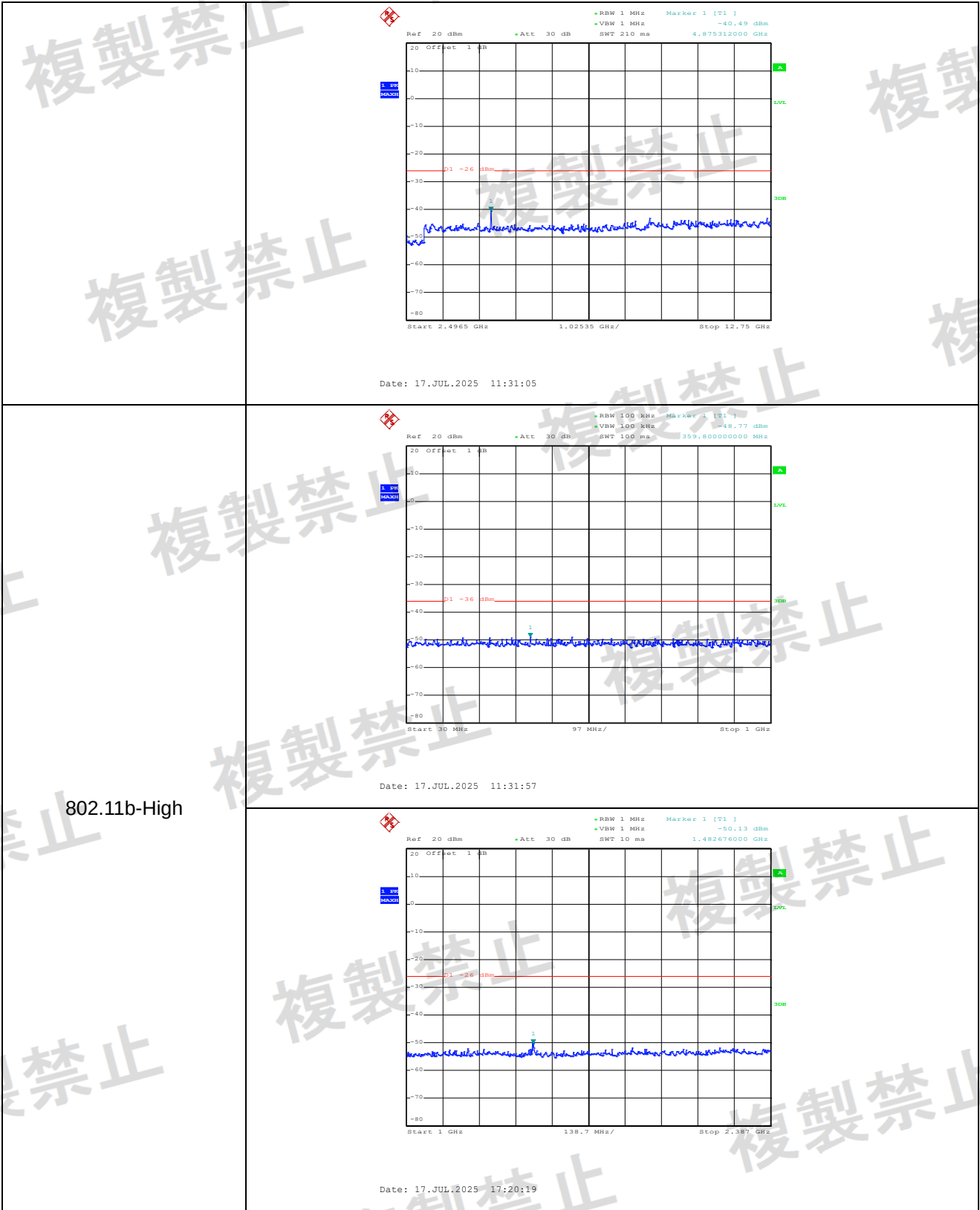
Mode	Channel	Frequency Range (MHz)	Freq. (MHz)	Reading Value	Result ($\mu\text{W}/\text{MHz}$)	Limit ($\mu\text{W}/\text{MHz}$)	Result
802.11ax _HE20	Low	30-1000	340.400	-48.69dBm/100kHz	0.135	2.5	Pass
		1000-2387	2129.018	-51.79dBm/Mhz	0.007	2.5	Pass
		2387-2400	2399.922	-29.17dBm/Mhz	1.211	25	Pass
		2483.5-2496.5	2491.456	-40.50dBm/Mhz	0.089	25	Pass
		2496.5-12750	9571.415	-42.89dBm/Mhz	0.051	2.5	Pass
	Middle	30-1000	49.400	-48.65dBm/100kHz	0.136	2.5	Pass
		1000-2387	2256.622	-51.48dBm/Mhz	0.007	2.5	Pass
		2387-2400	2396.100	-51.01dBm/Mhz	0.008	25	Pass
		2483.5-2496.5	2489.896	-52.16dBm/Mhz	0.006	25	Pass
		2496.5-12750	9345.838	-43.14dBm/Mhz	0.049	2.5	Pass
	High	30-1000	95.960	-48.91dBm/100kHz	0.129	2.5	Pass
		1000-2387	2184.498	-52.09dBm/Mhz	0.006	2.5	Pass
		2387-2400	2395.138	-50.97dBm/Mhz	0.008	25	Pass
		2483.5-2496.5	2483.500	-40.80dBm/Mhz	0.083	25	Pass
		2496.5-12750	9366.345	-43.31dBm/Mhz	0.047	2.5	Pass

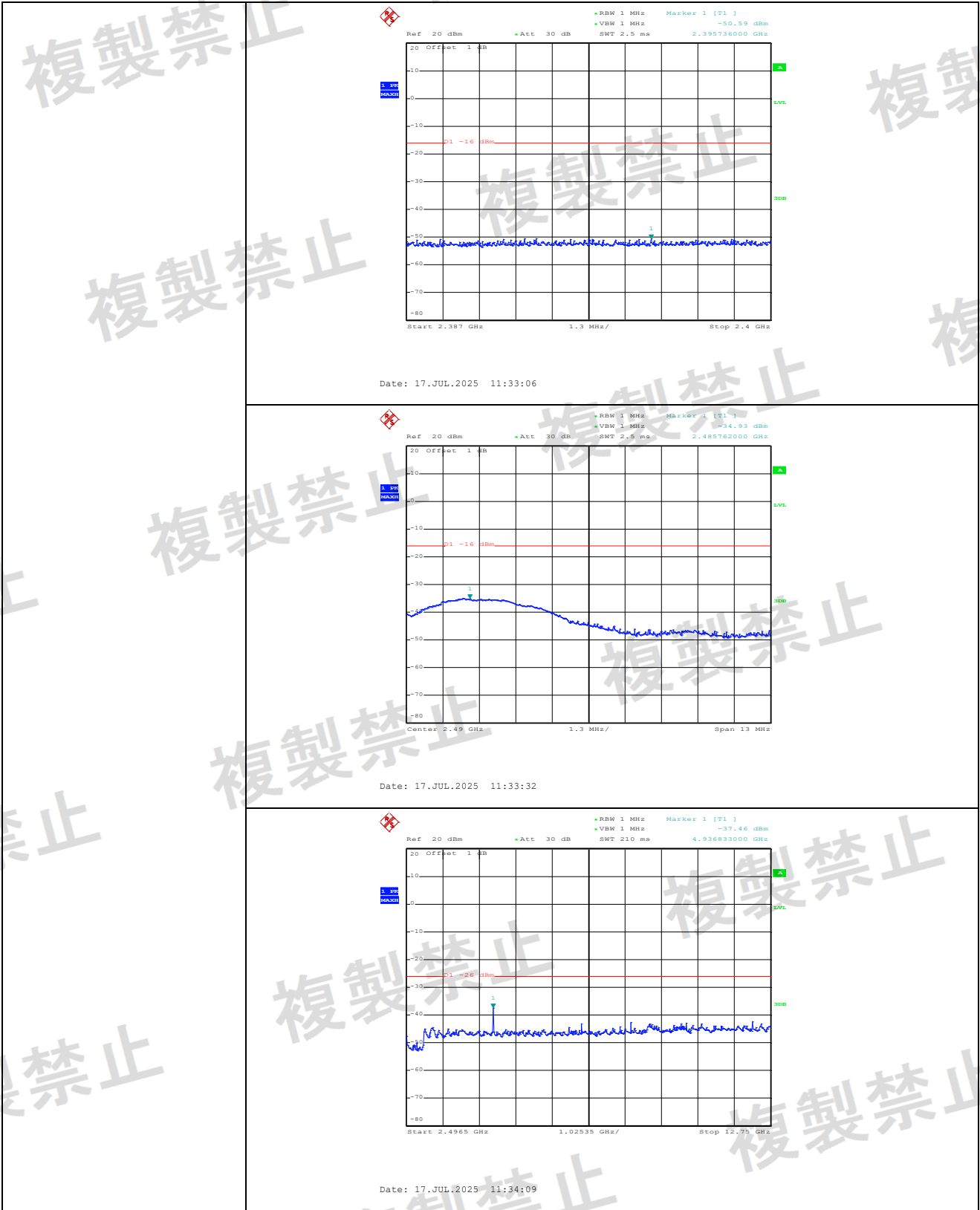
Mode	Channel	Frequency Range (MHz)	Freq. (MHz)	Reading Value	Result ($\mu\text{W}/\text{MHz}$)	Limit ($\mu\text{W}/\text{MHz}$)	Result
802.11ax _HE40	Low	30-1000	980.600	-48.95dBm/100kHz	0.127	2.5	Pass
		1000-2387	1549.252	-51.23dBm/Mhz	0.008	2.5	Pass
		2387-2400	2399.948	-30.07dBm/Mhz	0.984	25	Pass
		2483.5-2496.5	2495.850	-42.91dBm/Mhz	0.051	25	Pass
		2496.5-12750	12422.395	-42.55dBm/Mhz	0.056	2.5	Pass
	Middle	30-1000	637.220	-48.21dBm/100kHz	0.151	2.5	Pass
		1000-2387	2237.204	-52.33dBm/Mhz	0.006	2.5	Pass
		2387-2400	2399.896	-42.33dBm/Mhz	0.058	25	Pass
		2483.5-2496.5	2486.984	-38.19dBm/Mhz	0.152	25	Pass
		2496.5-12750	12483.409	-42.64dBm/Mhz	0.054	2.5	Pass
	High	30-1000	286.080	-48.63dBm/100kHz	0.137	2.5	Pass
		1000-2387	2253.848	-42.34dBm/Mhz	0.058	2.5	Pass
		2387-2400	2388.014	-43.55dBm/Mhz	0.044	25	Pass
		2483.5-2496.5	2483.552	-27.81dBm/Mhz	1.656	25	Pass
		2496.5-12750	4916.326	-42.47dBm/Mhz	0.057	2.5	Pass

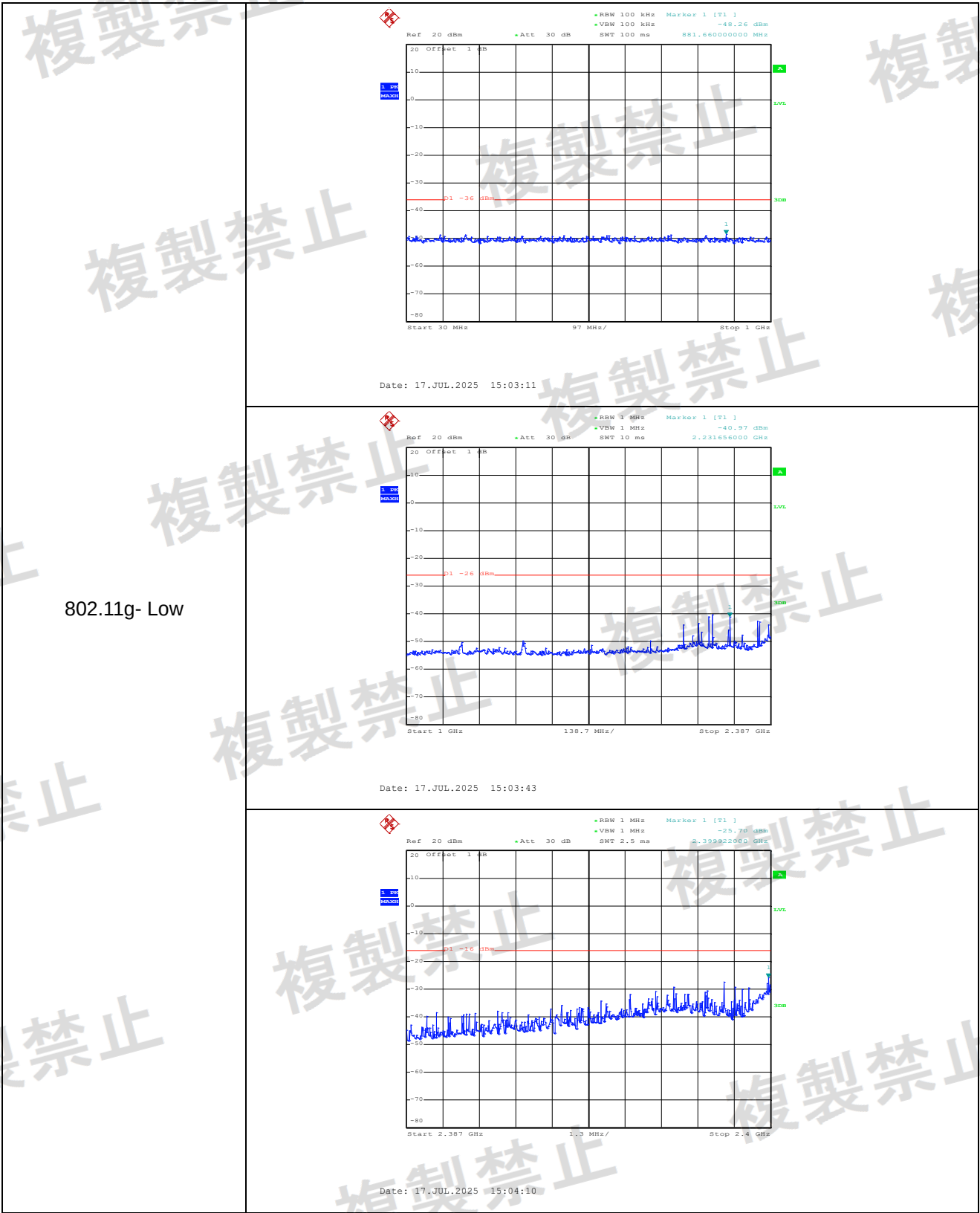


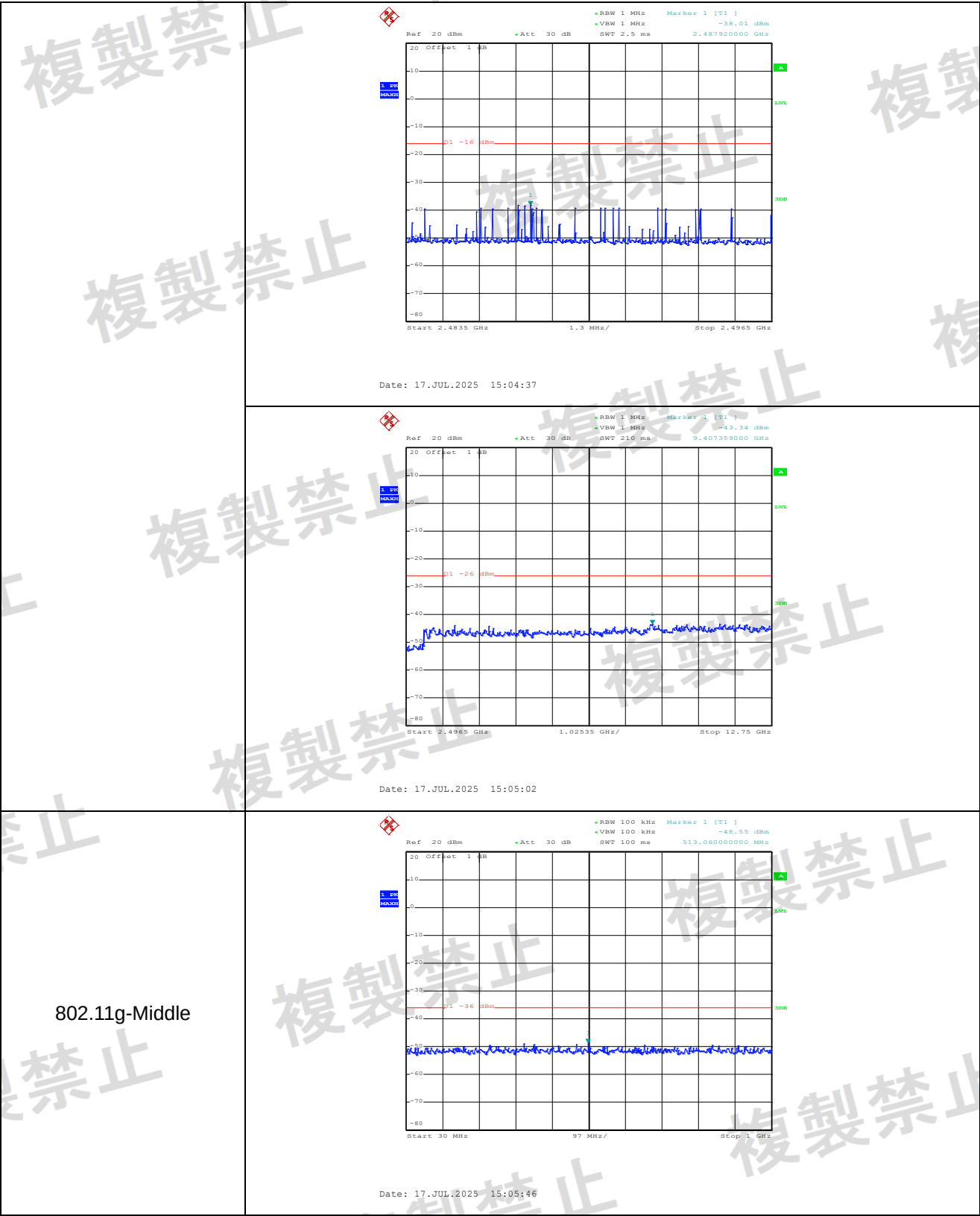


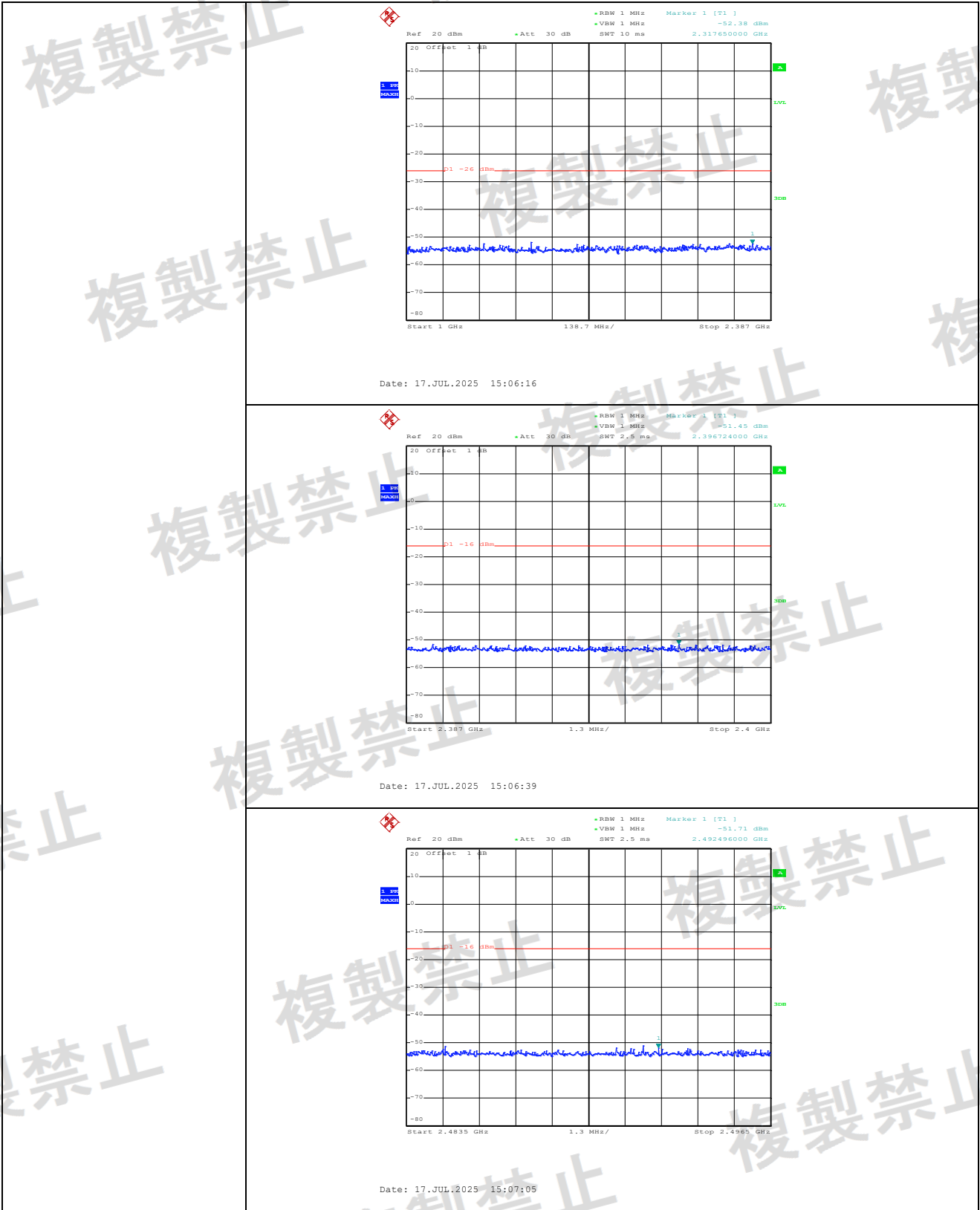


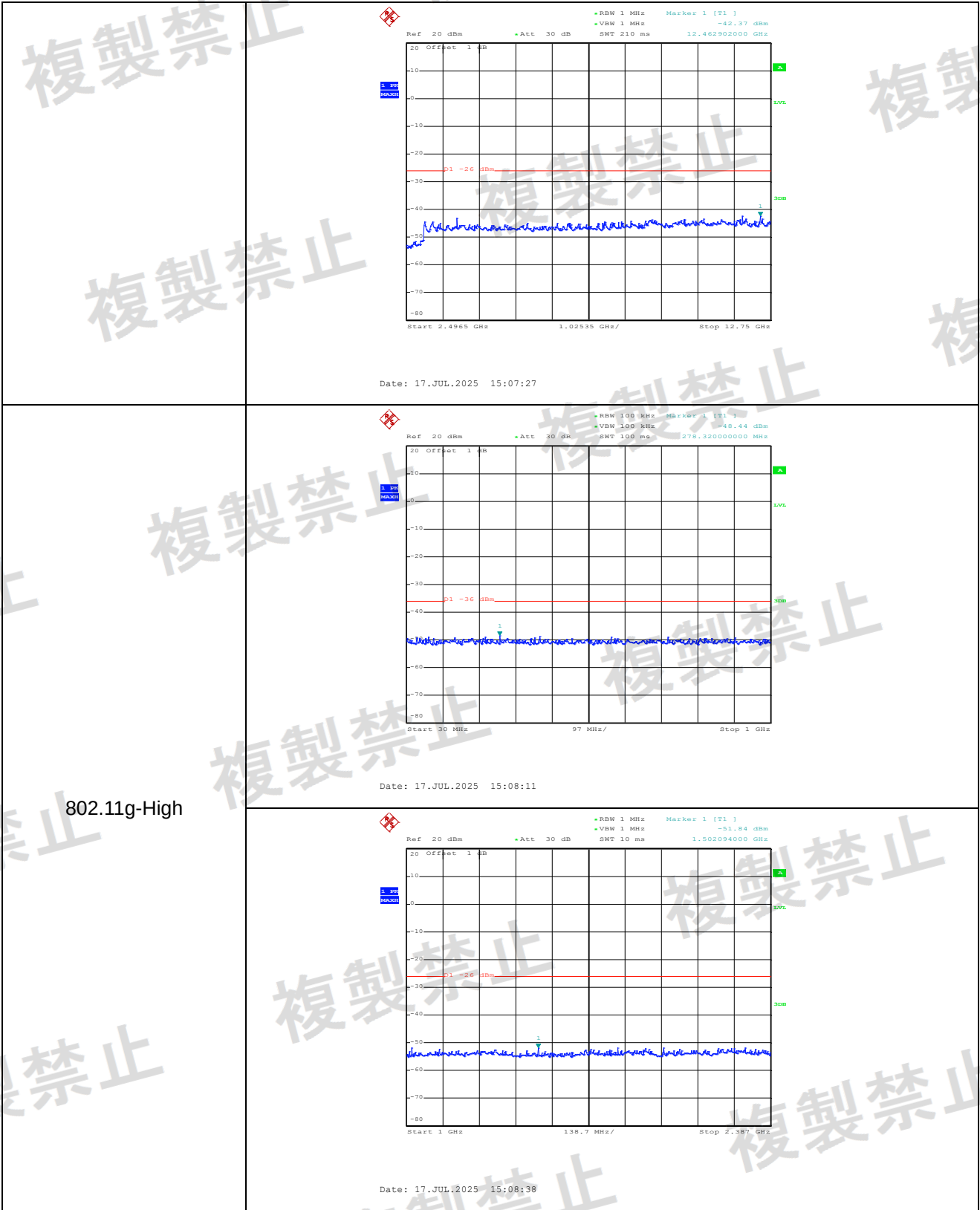


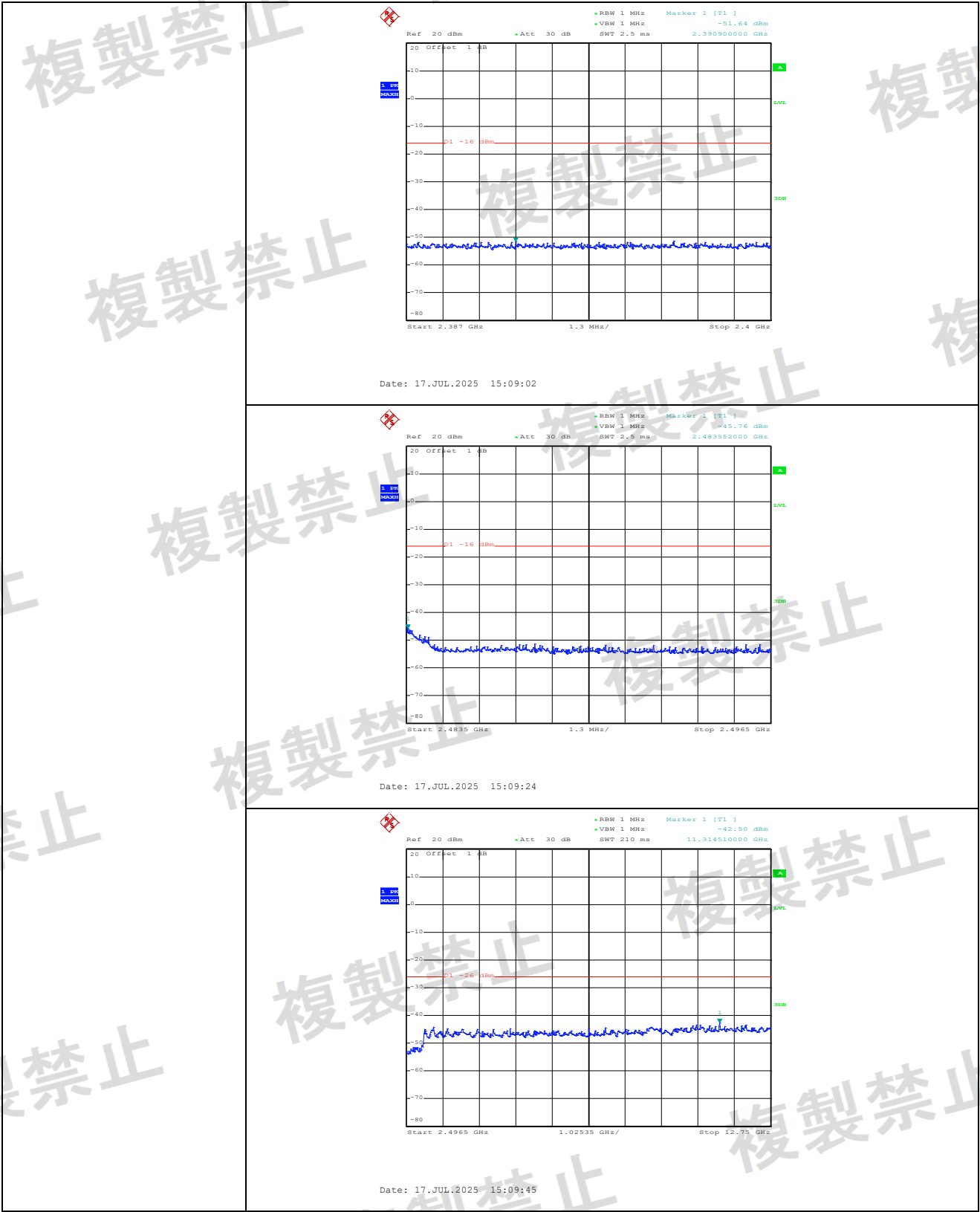


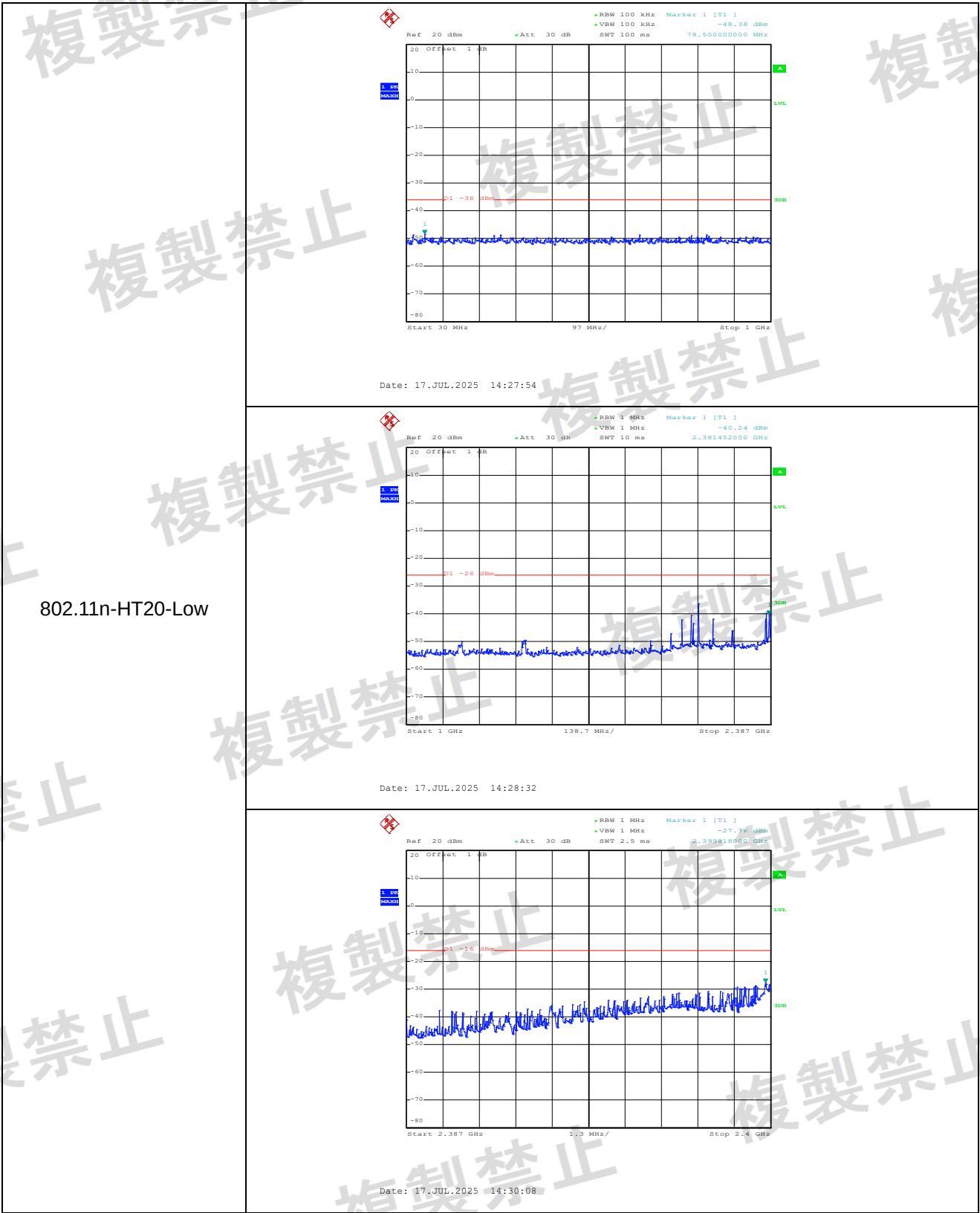


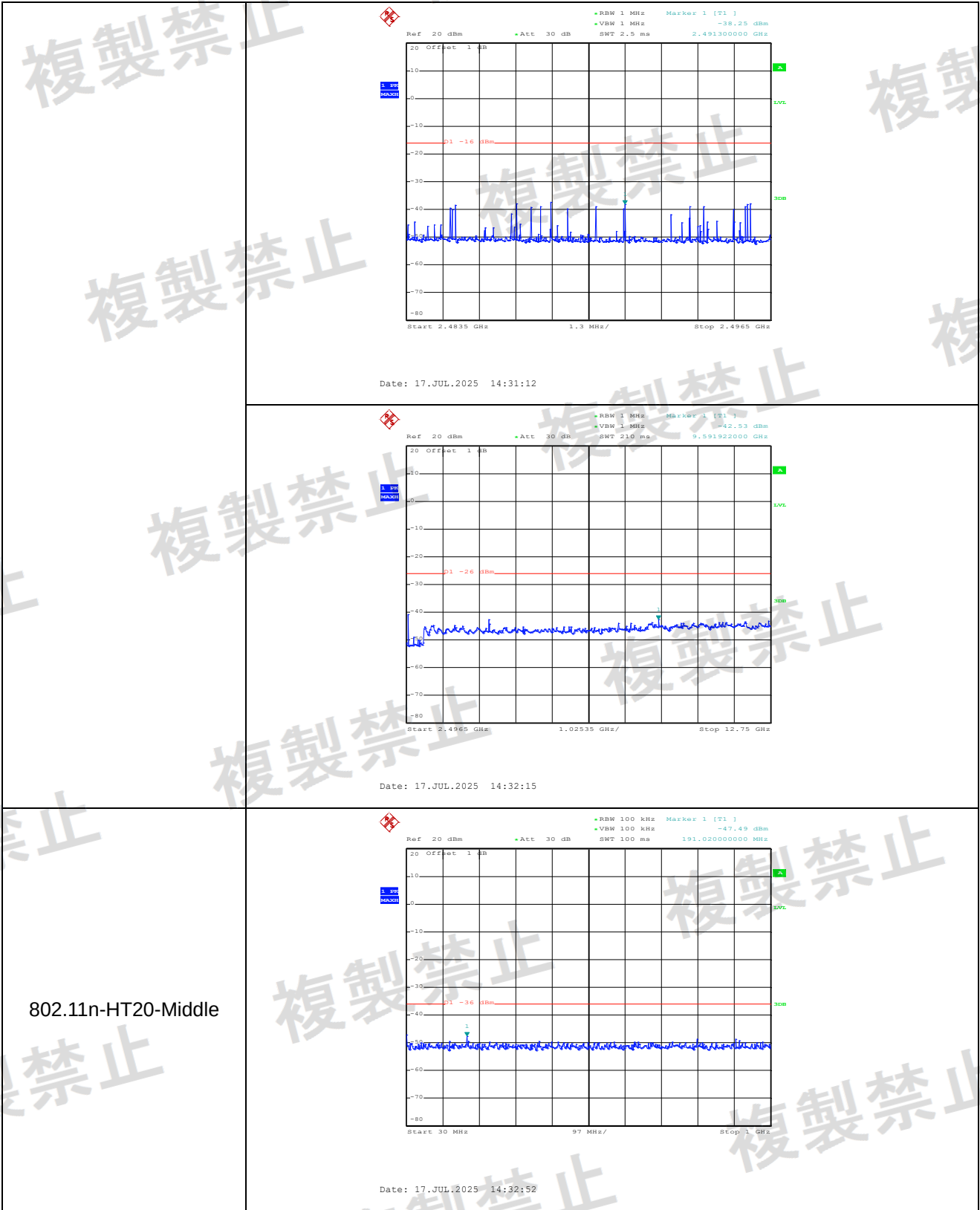


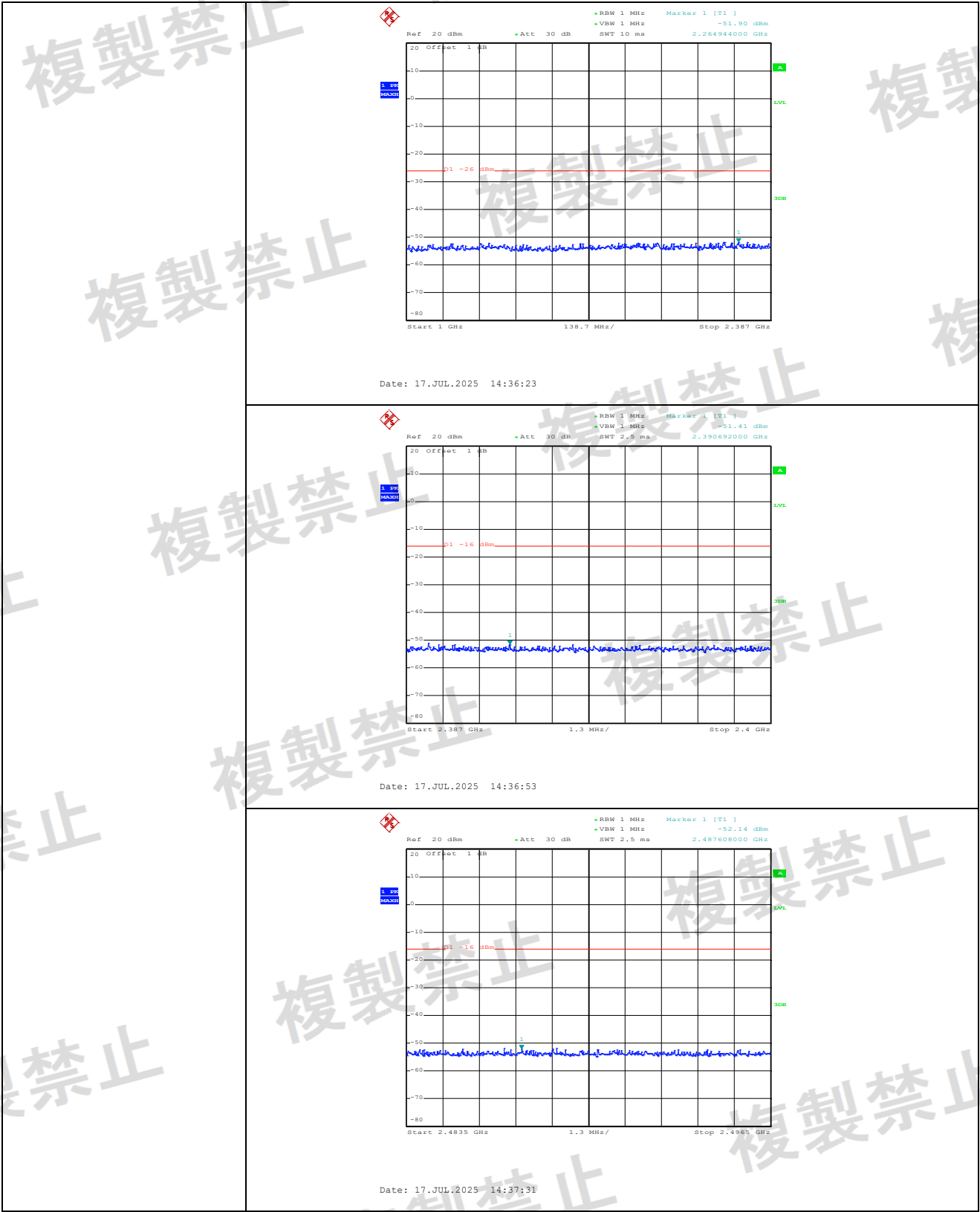


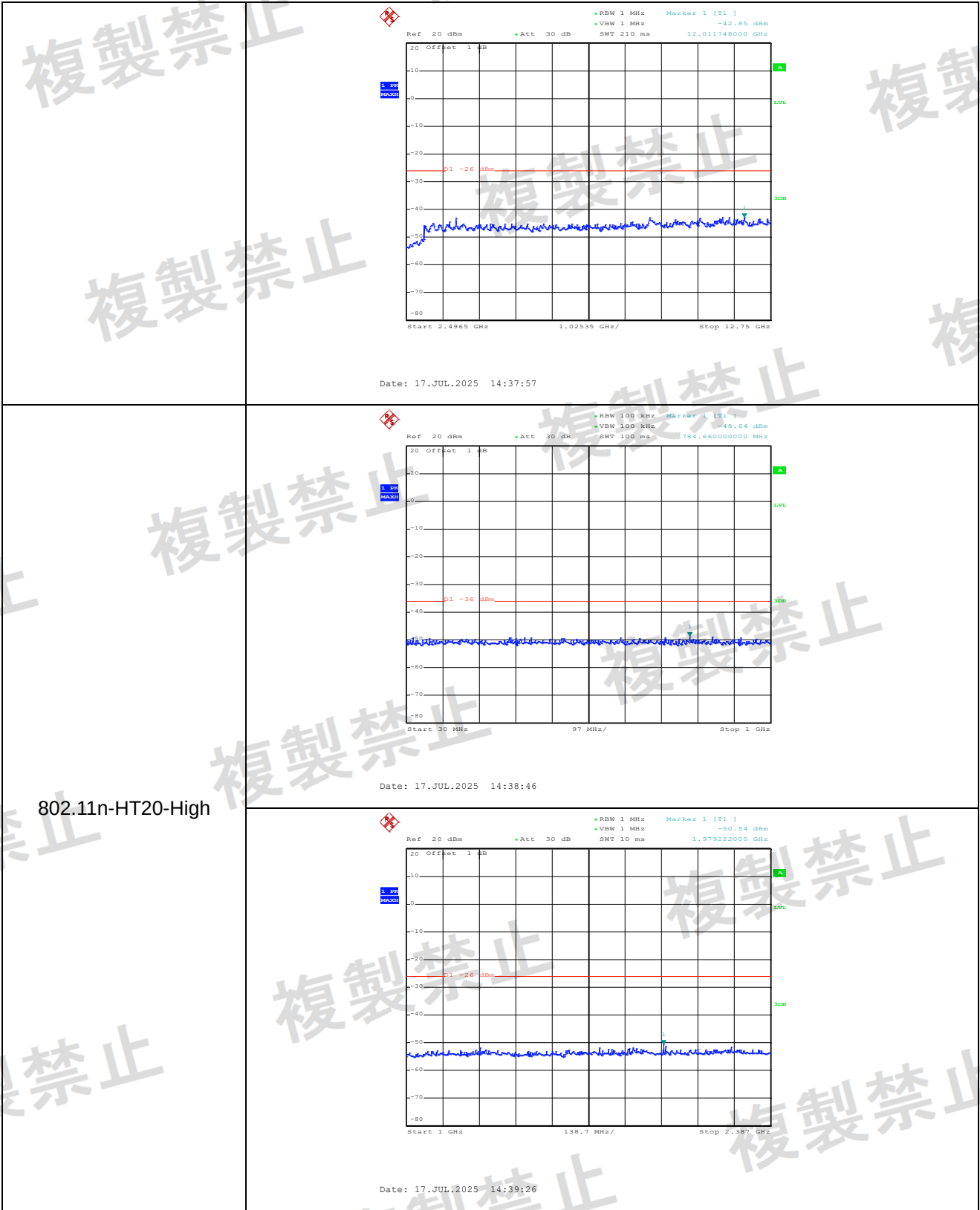




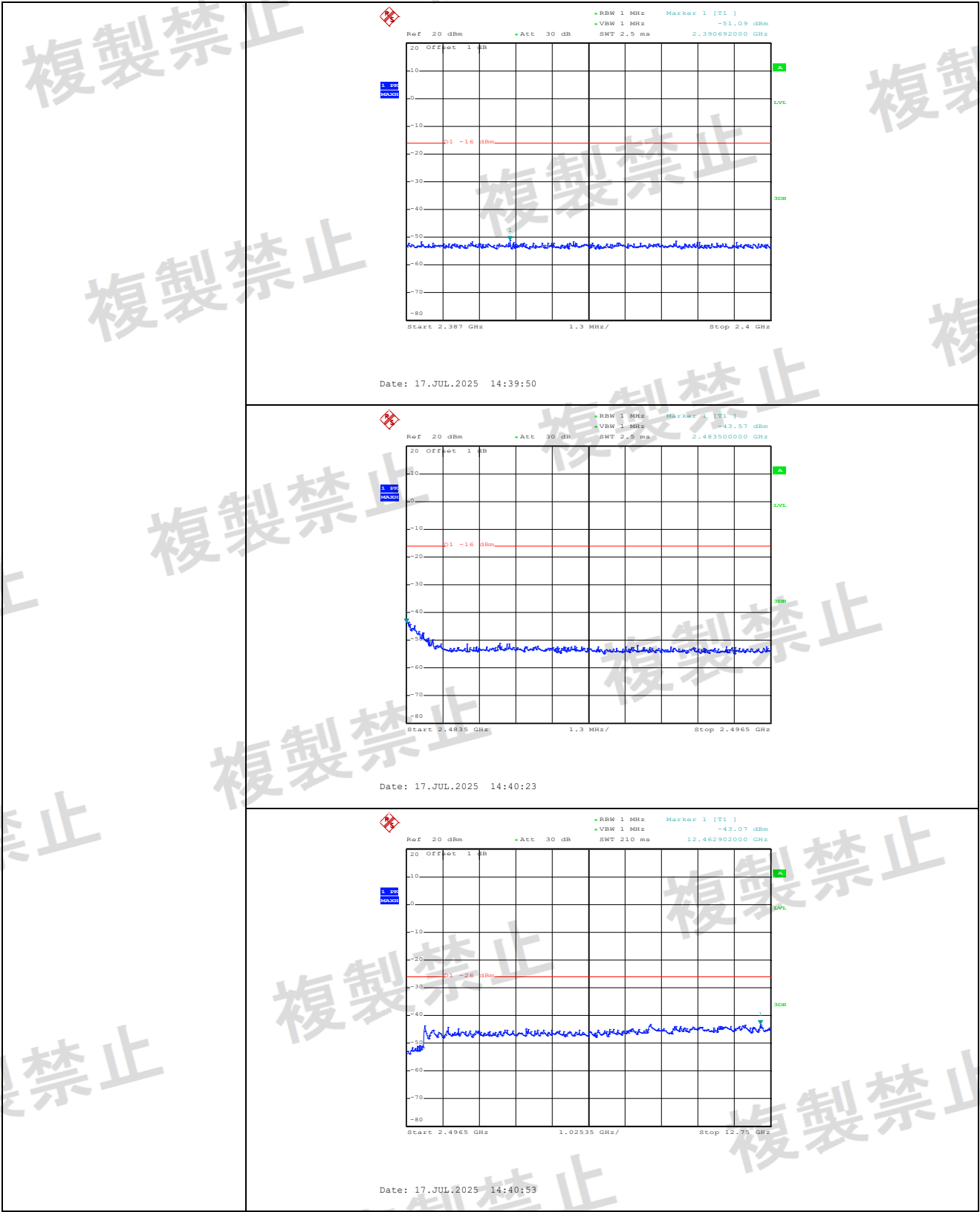


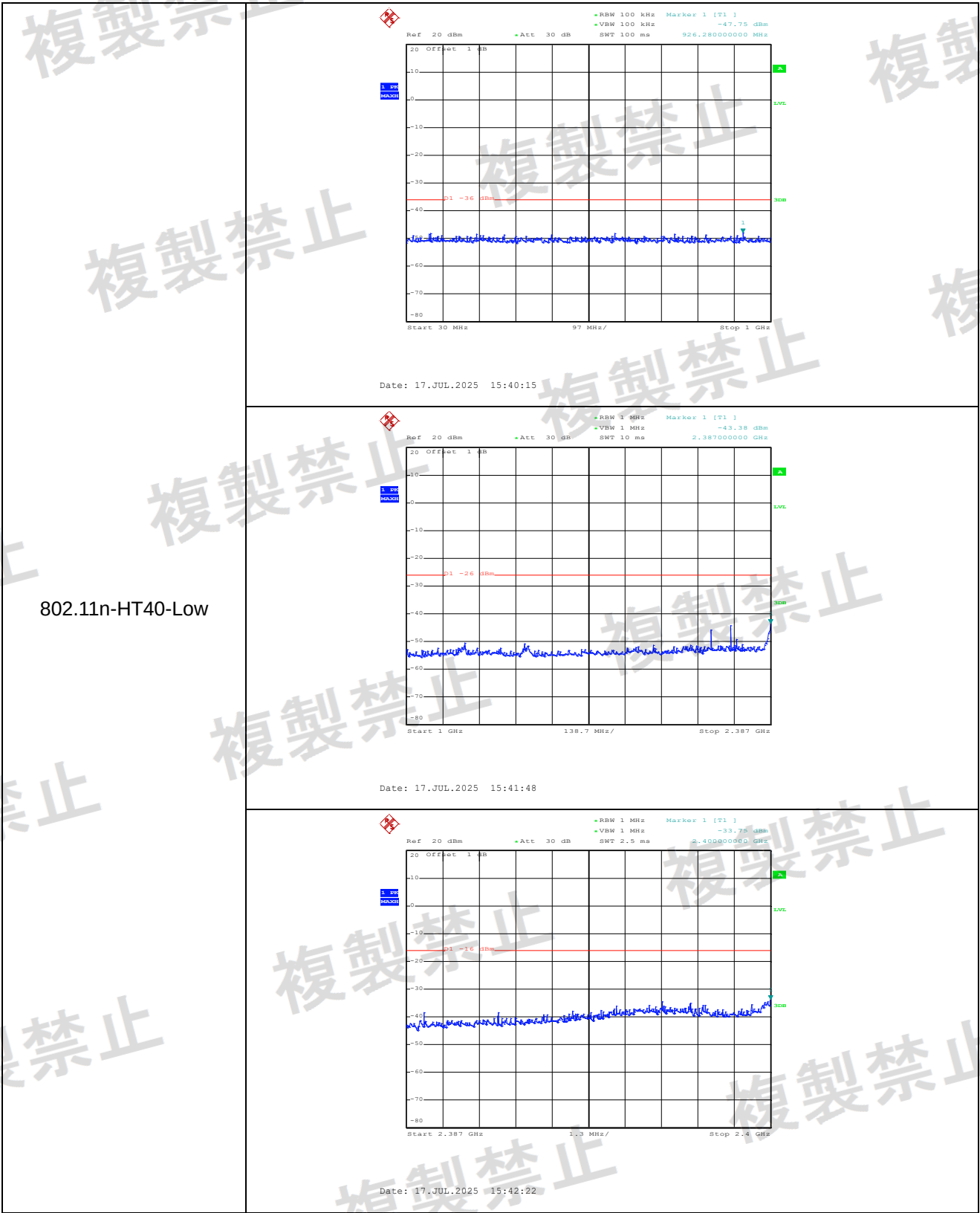


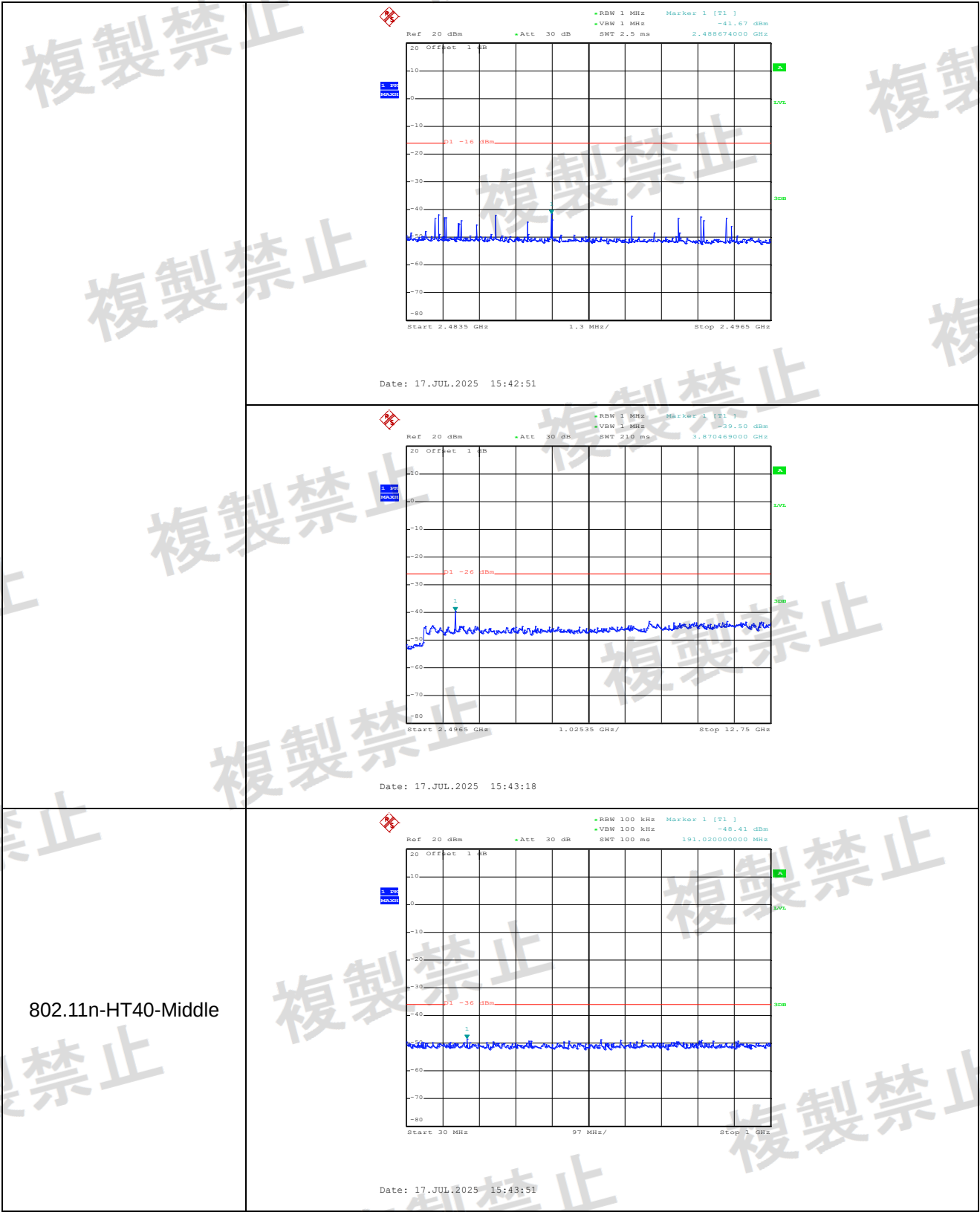


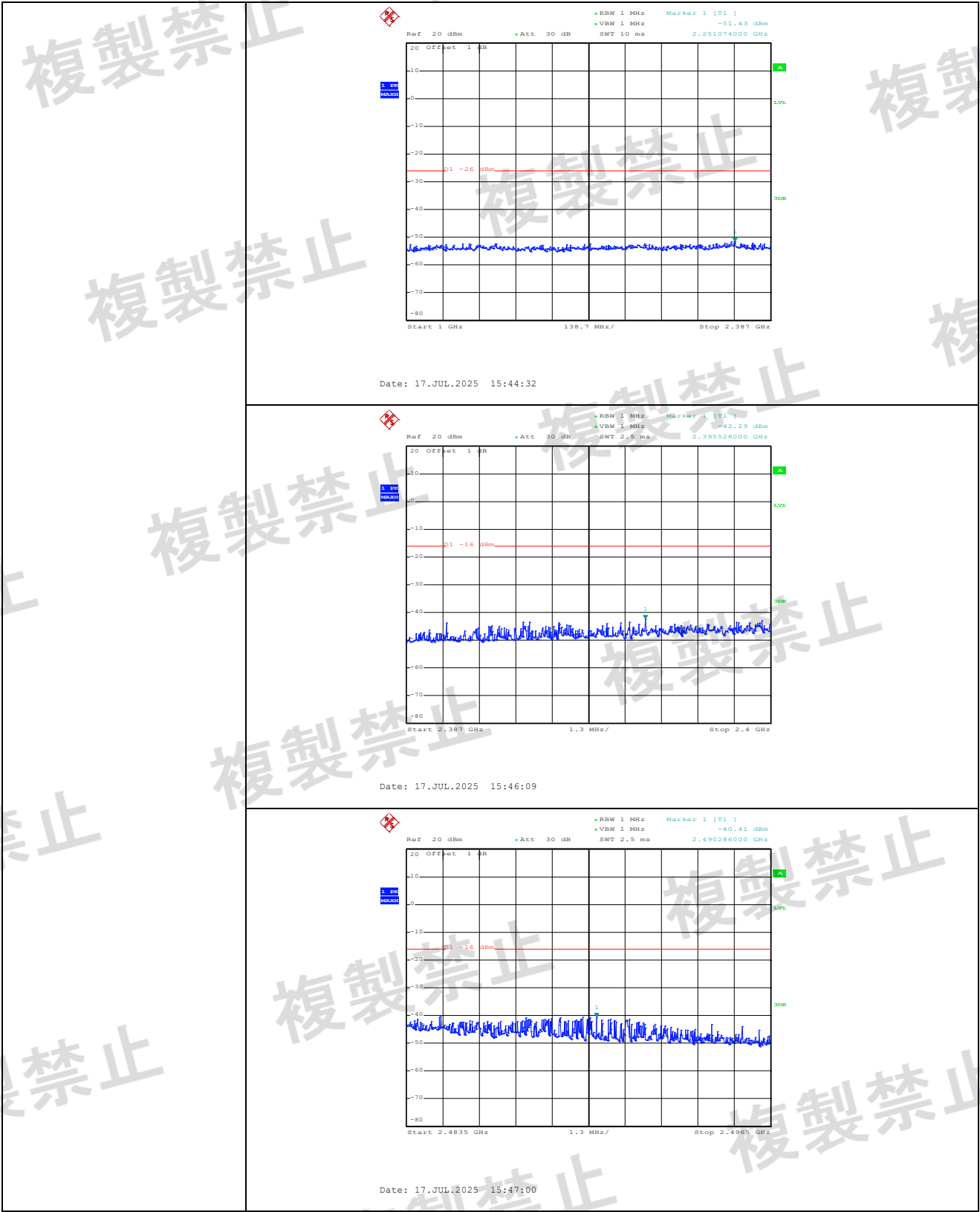


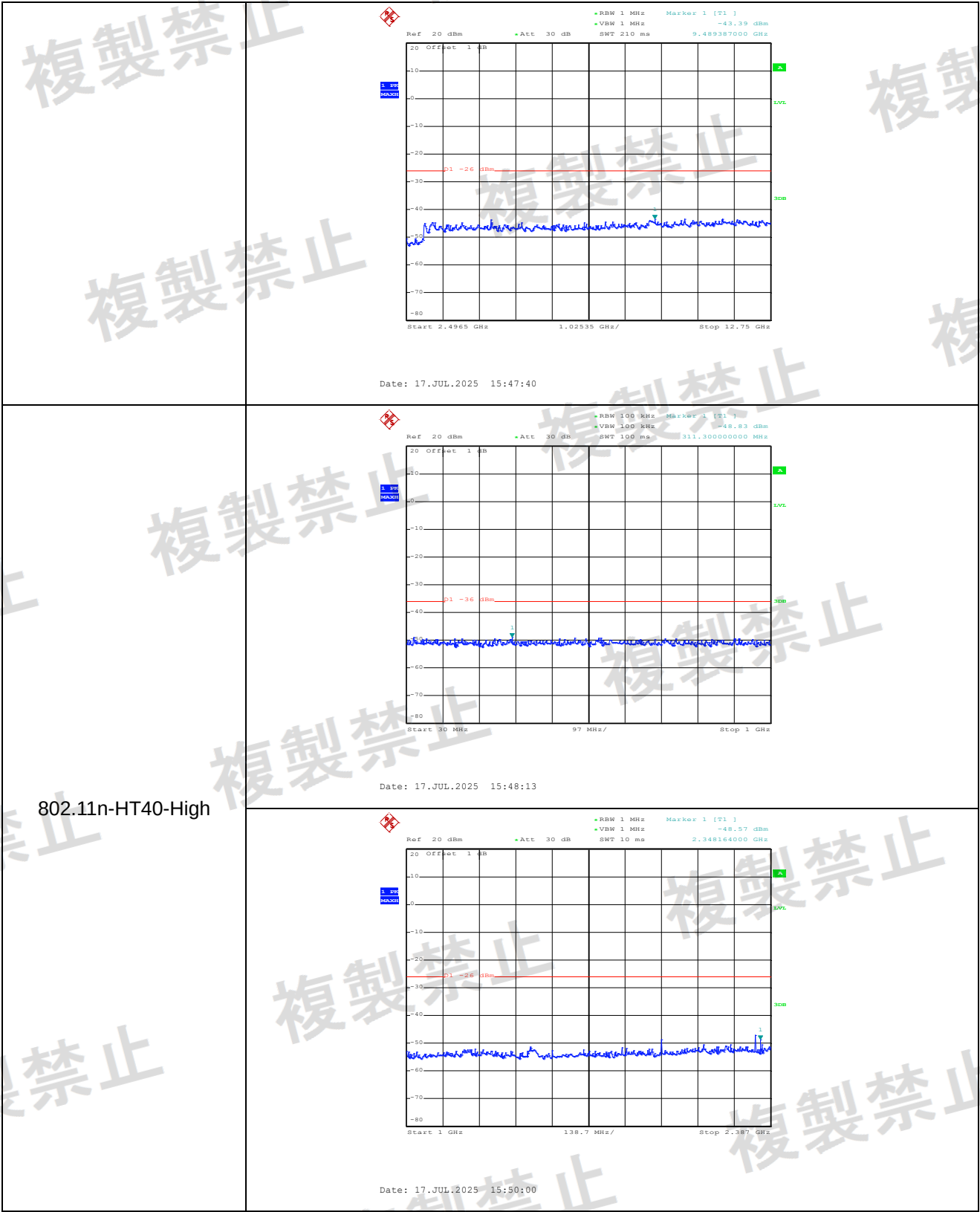
802.11n-HT20-High

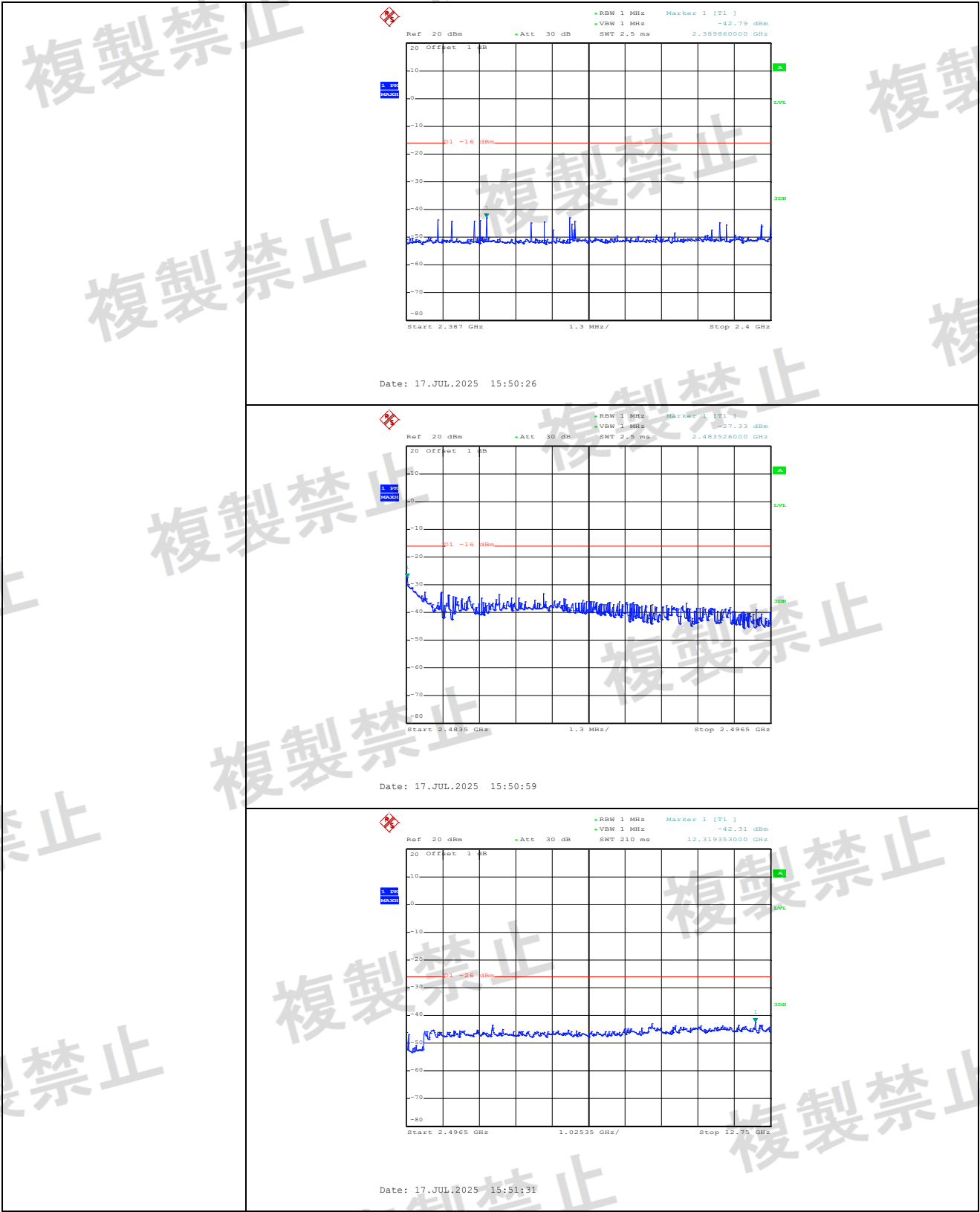


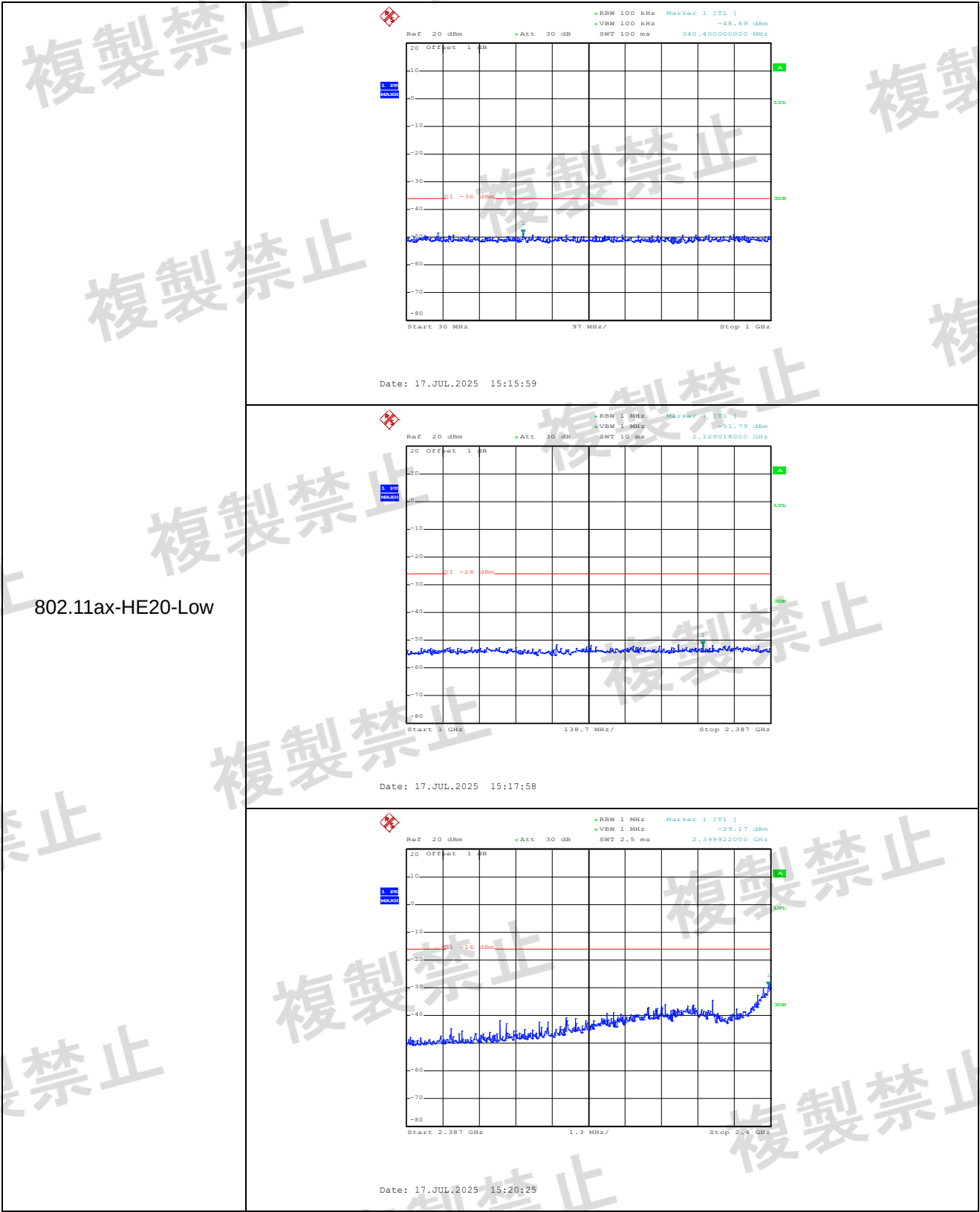


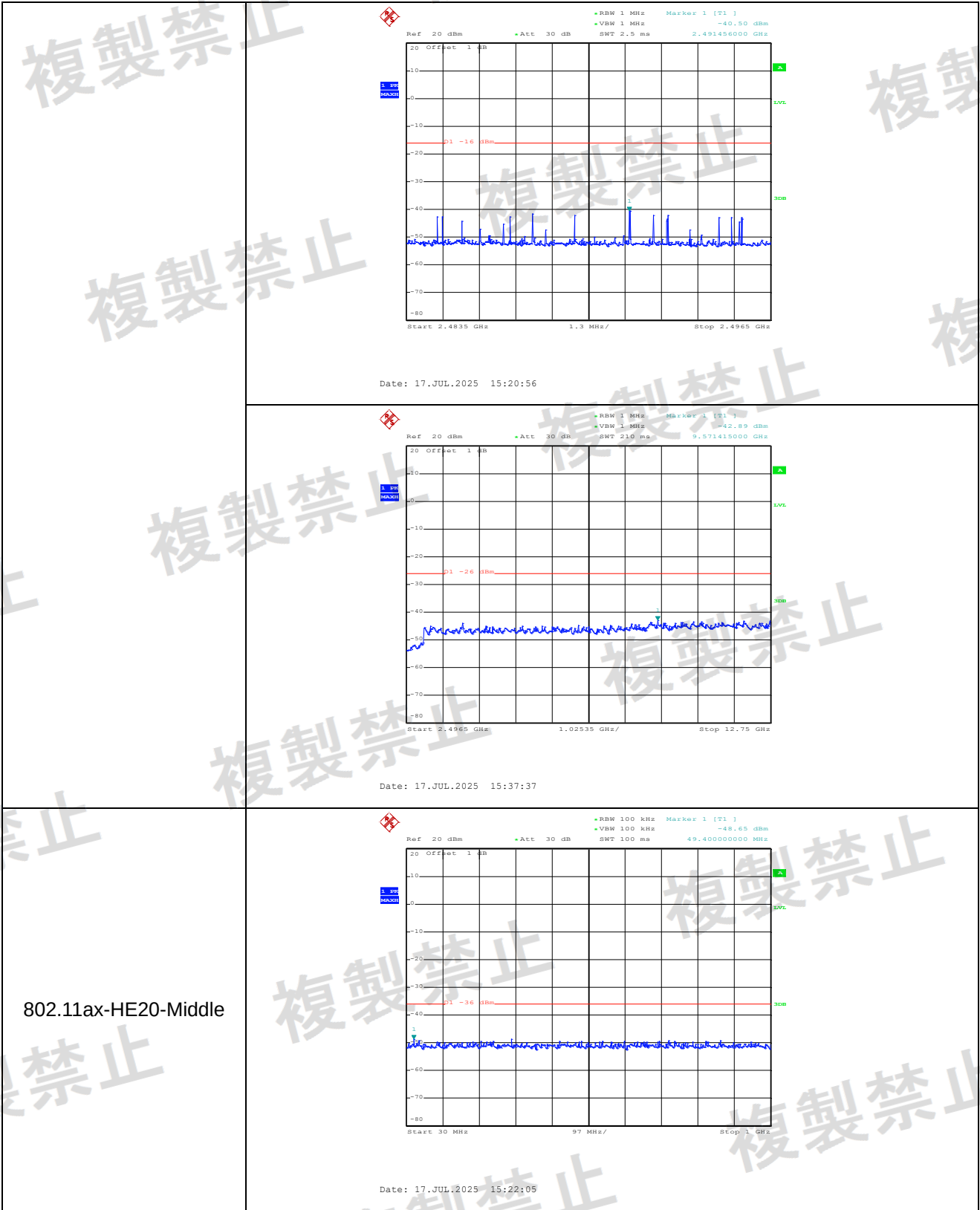


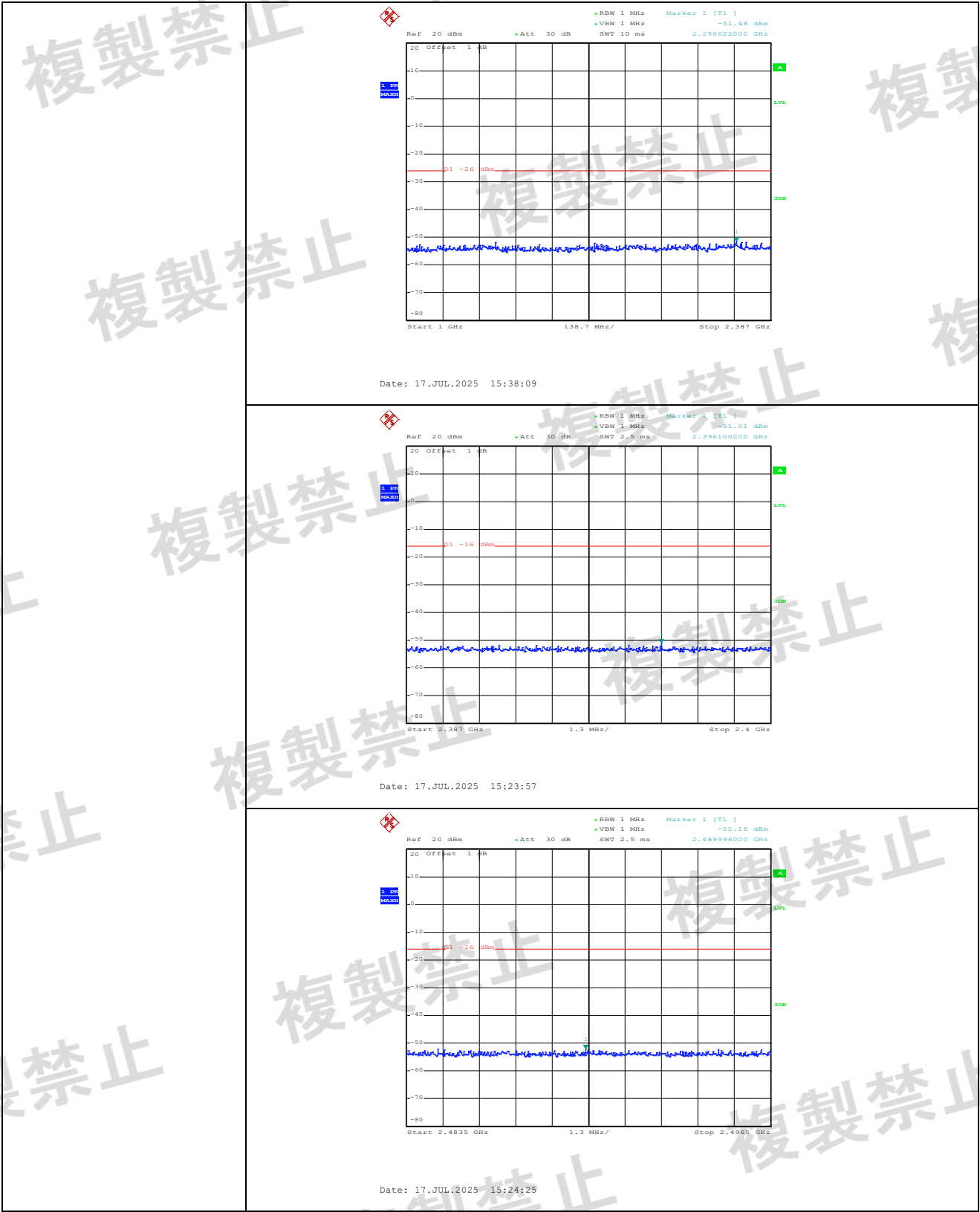


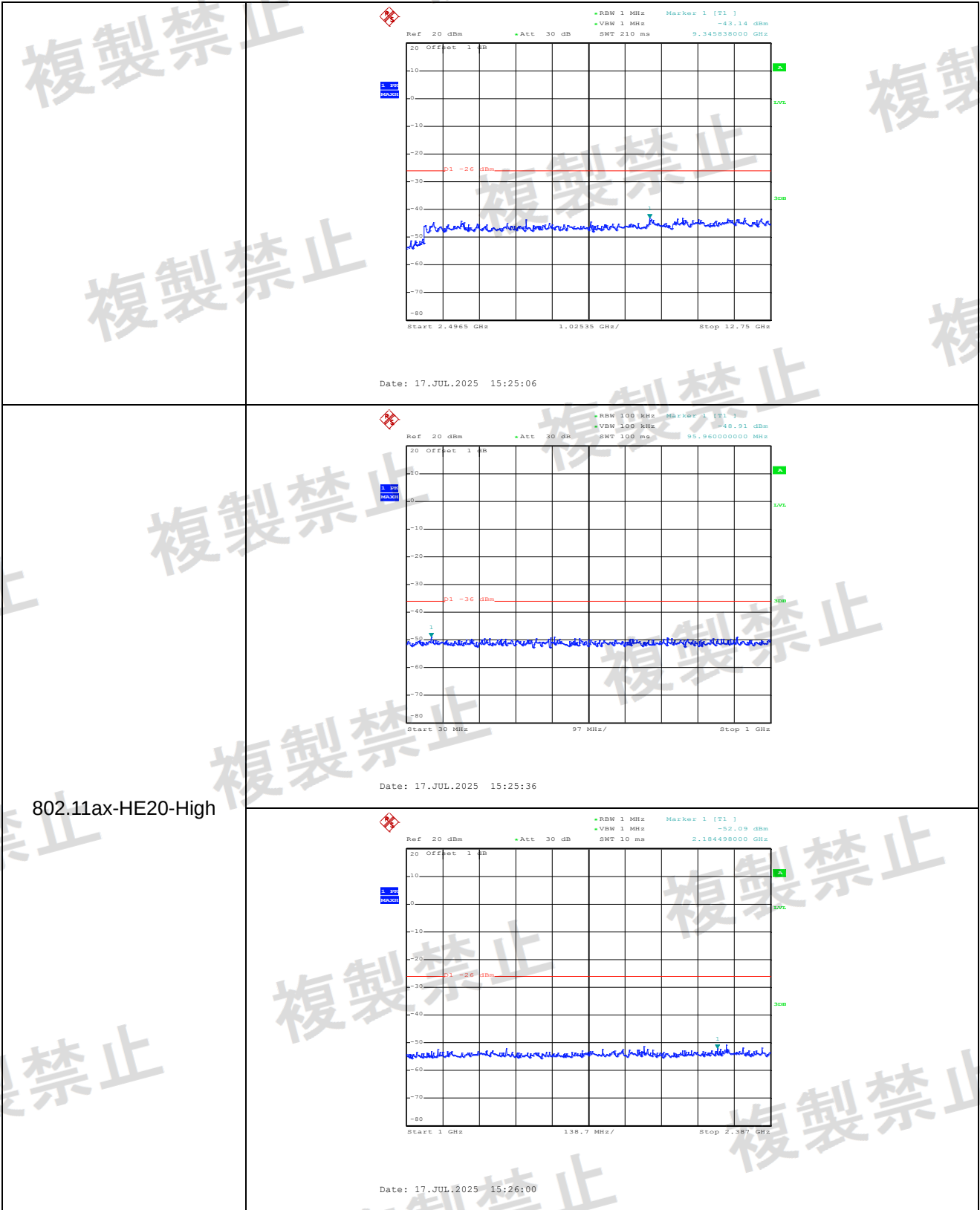




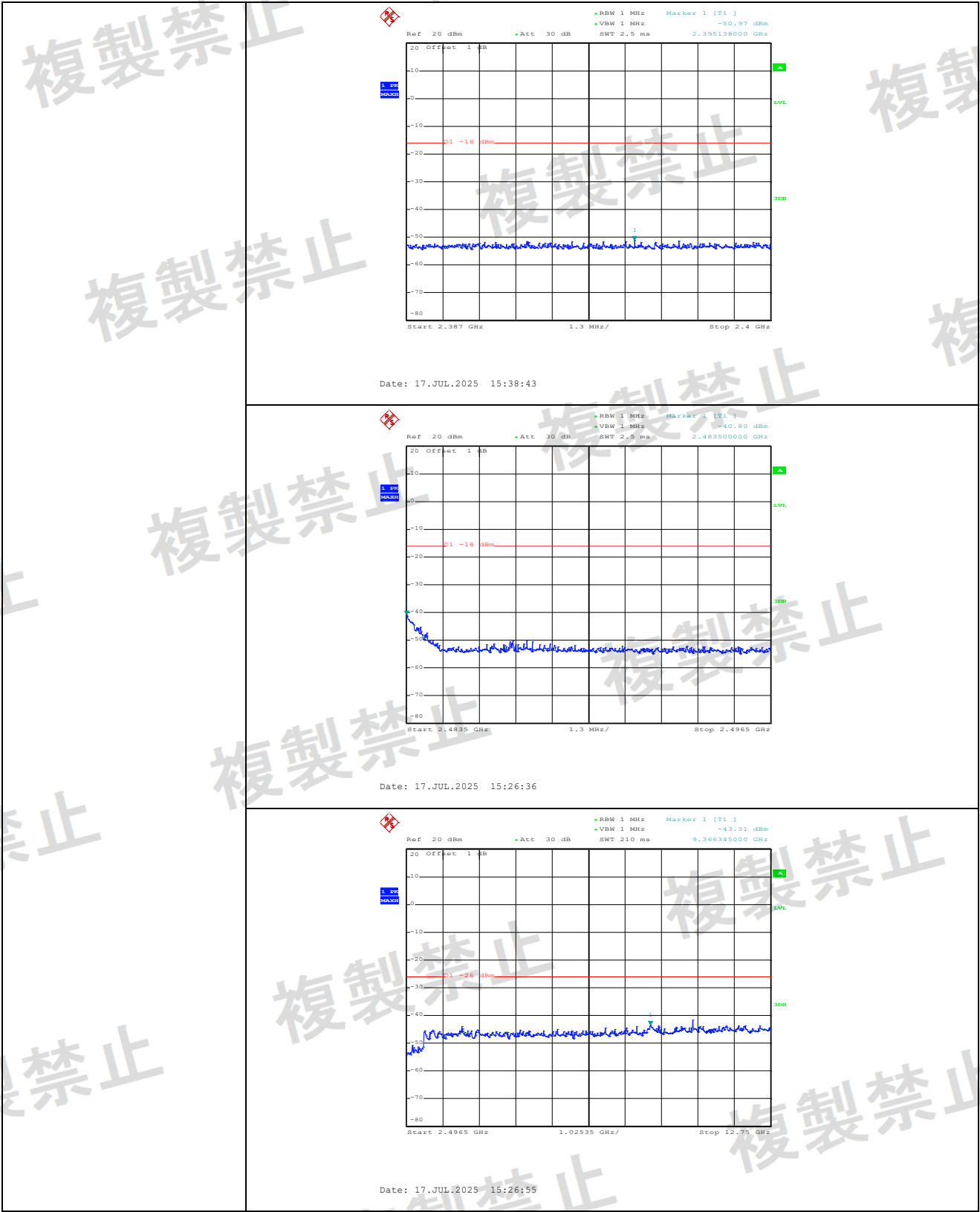


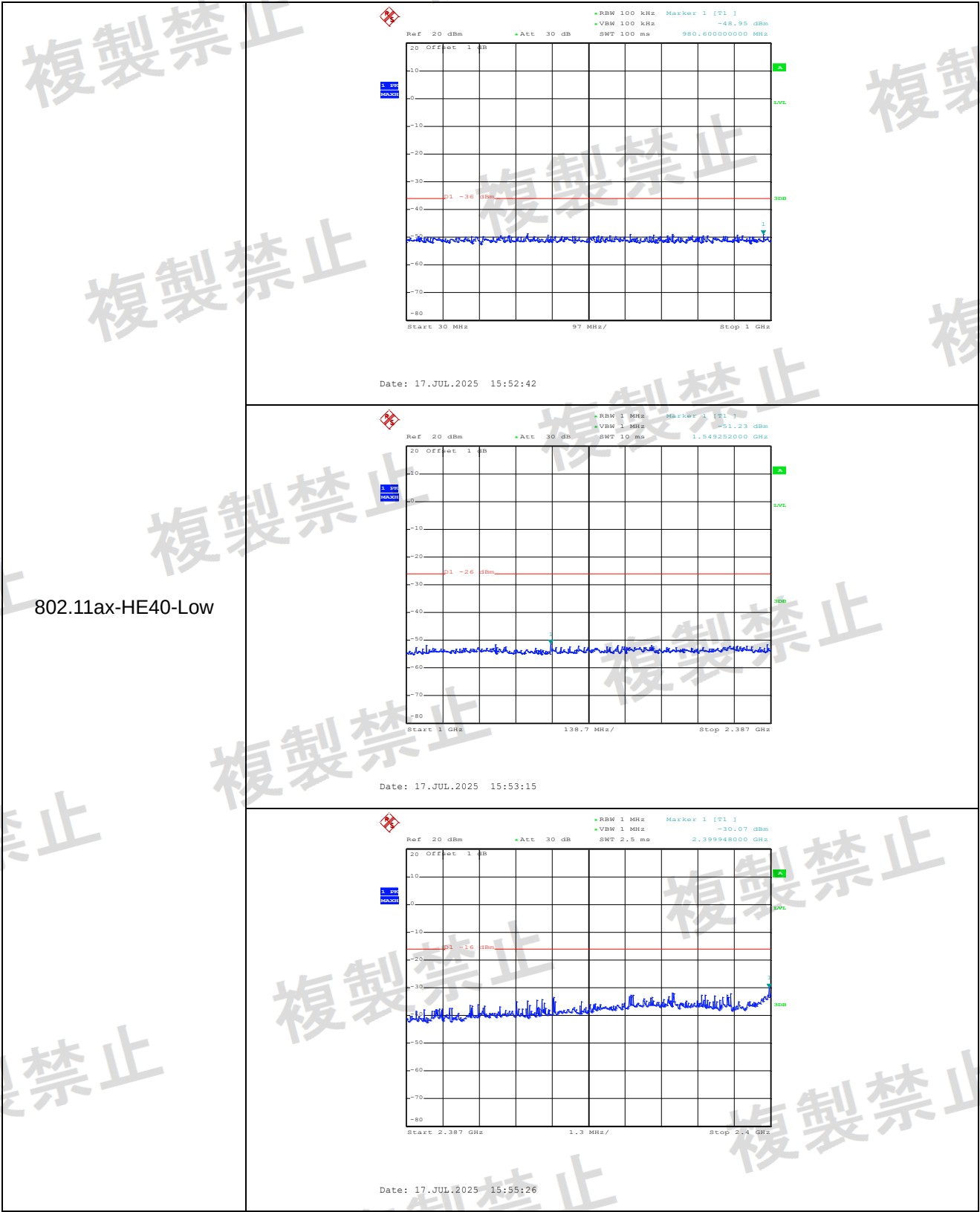


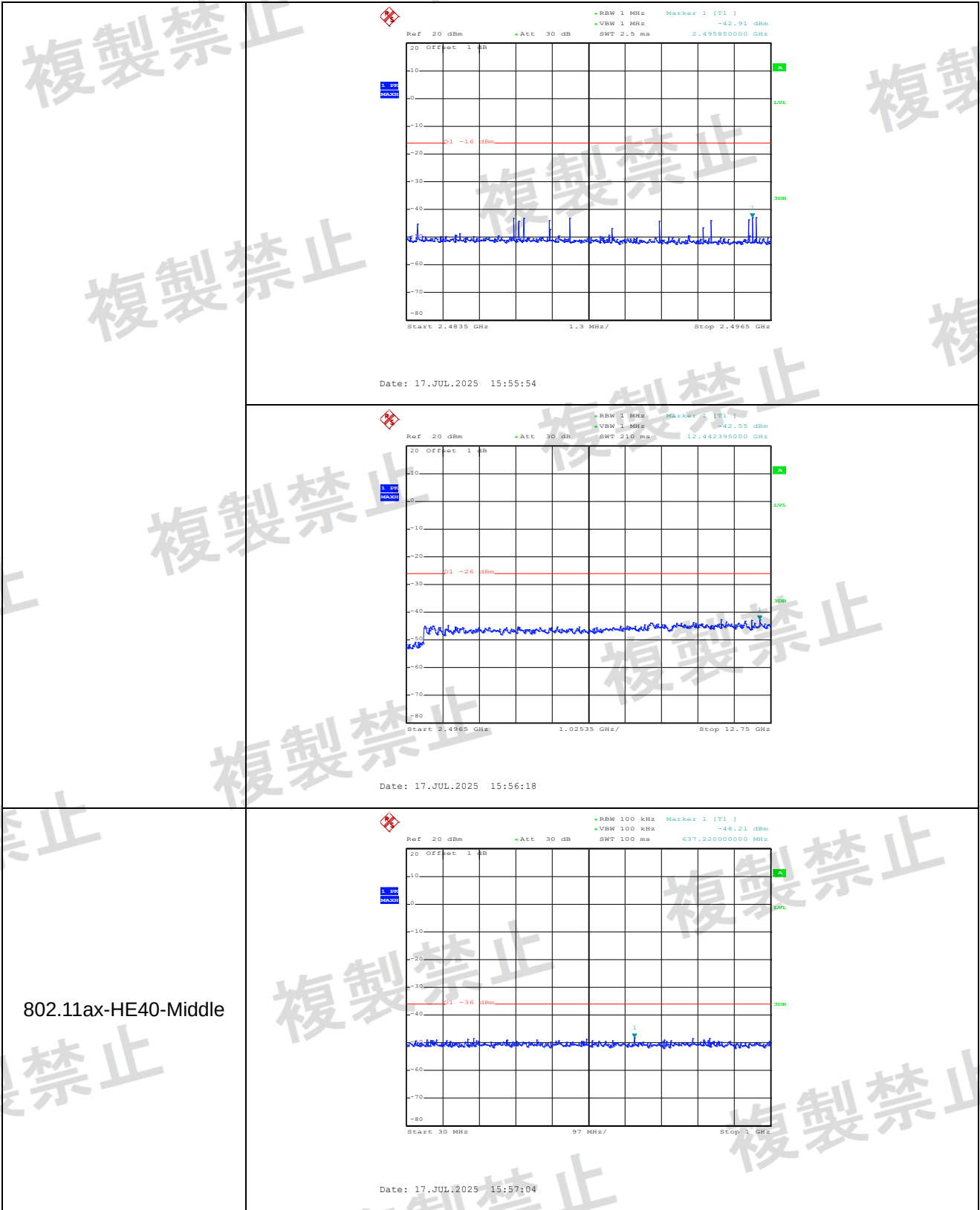


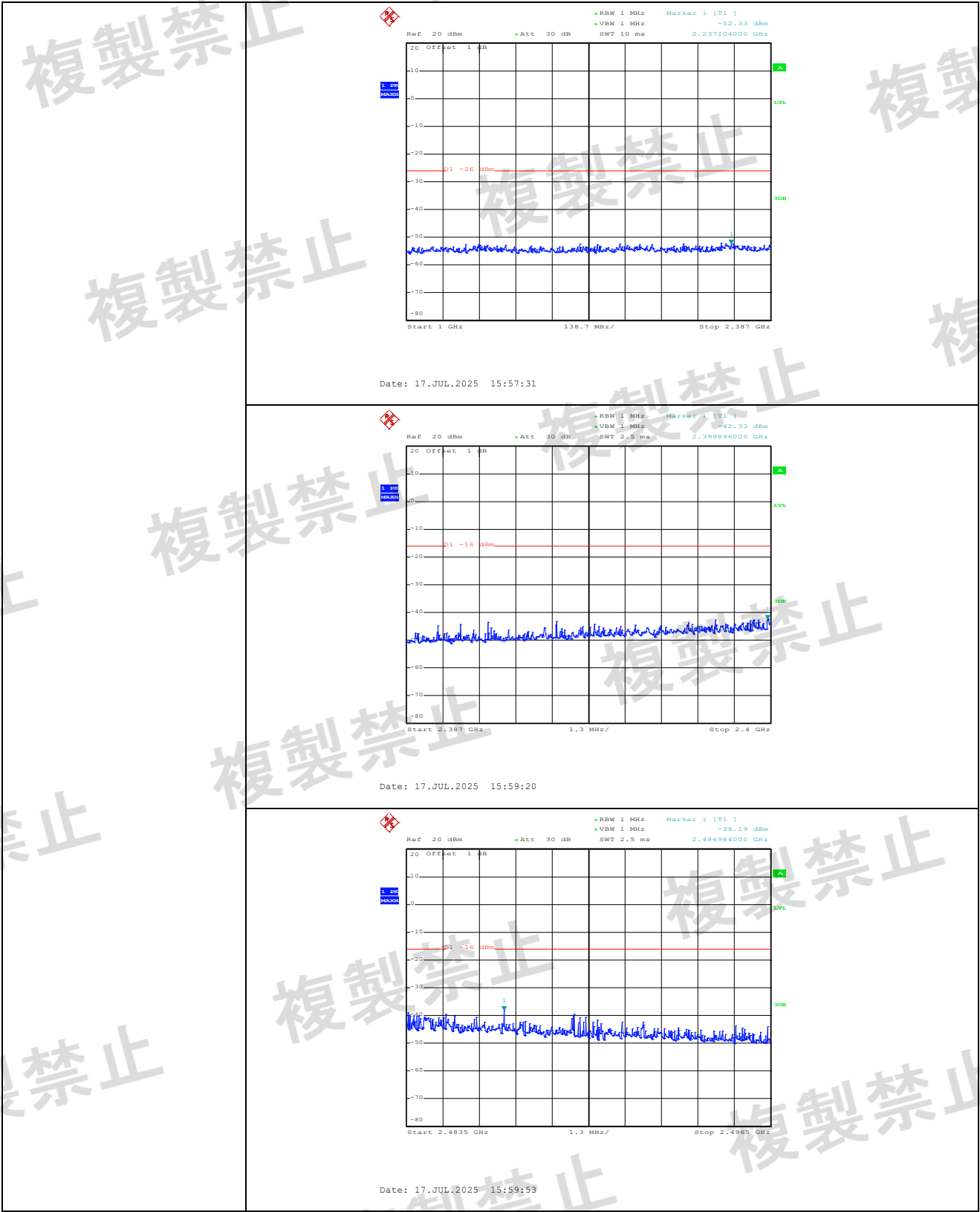


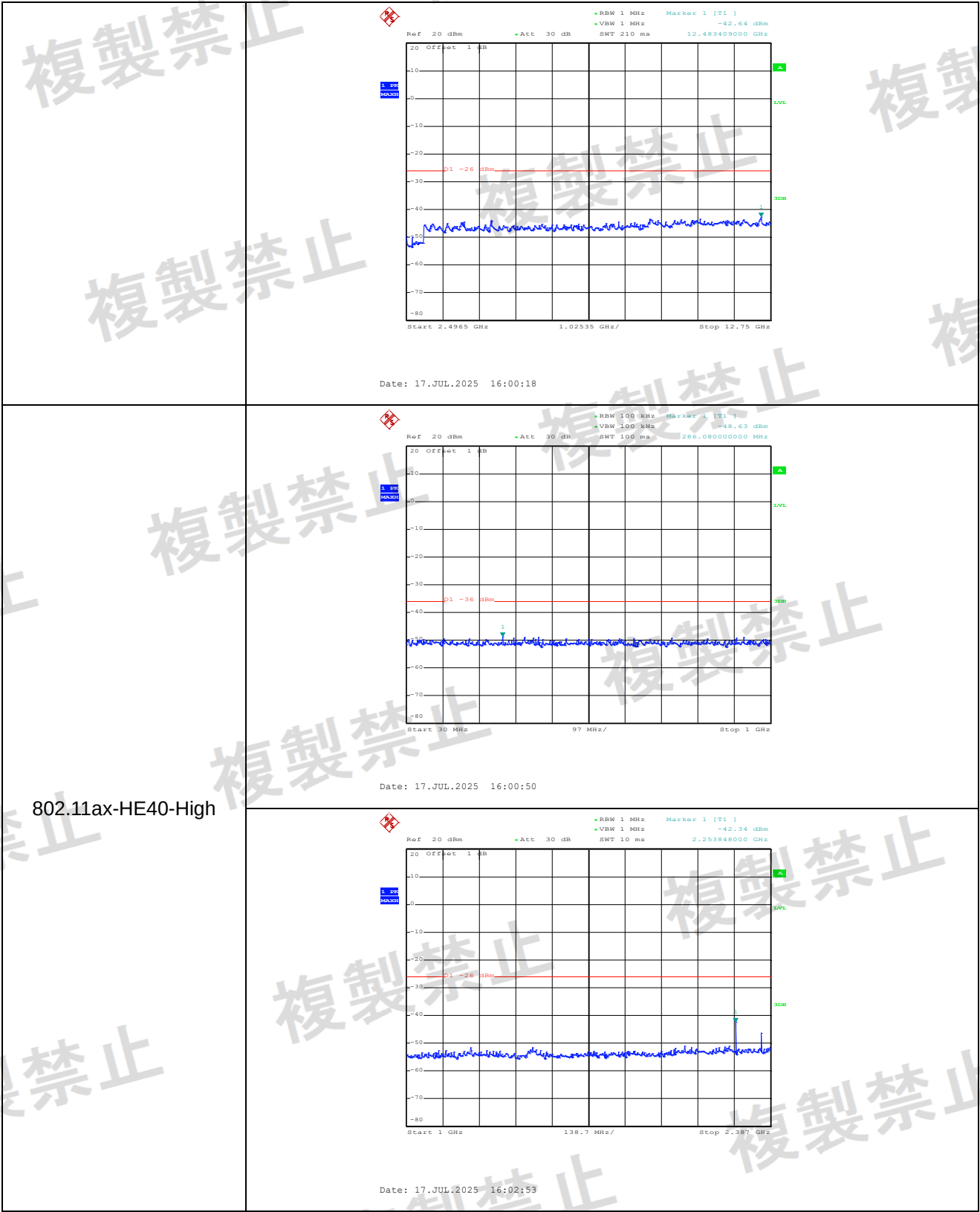
802.11ax-HE20-High



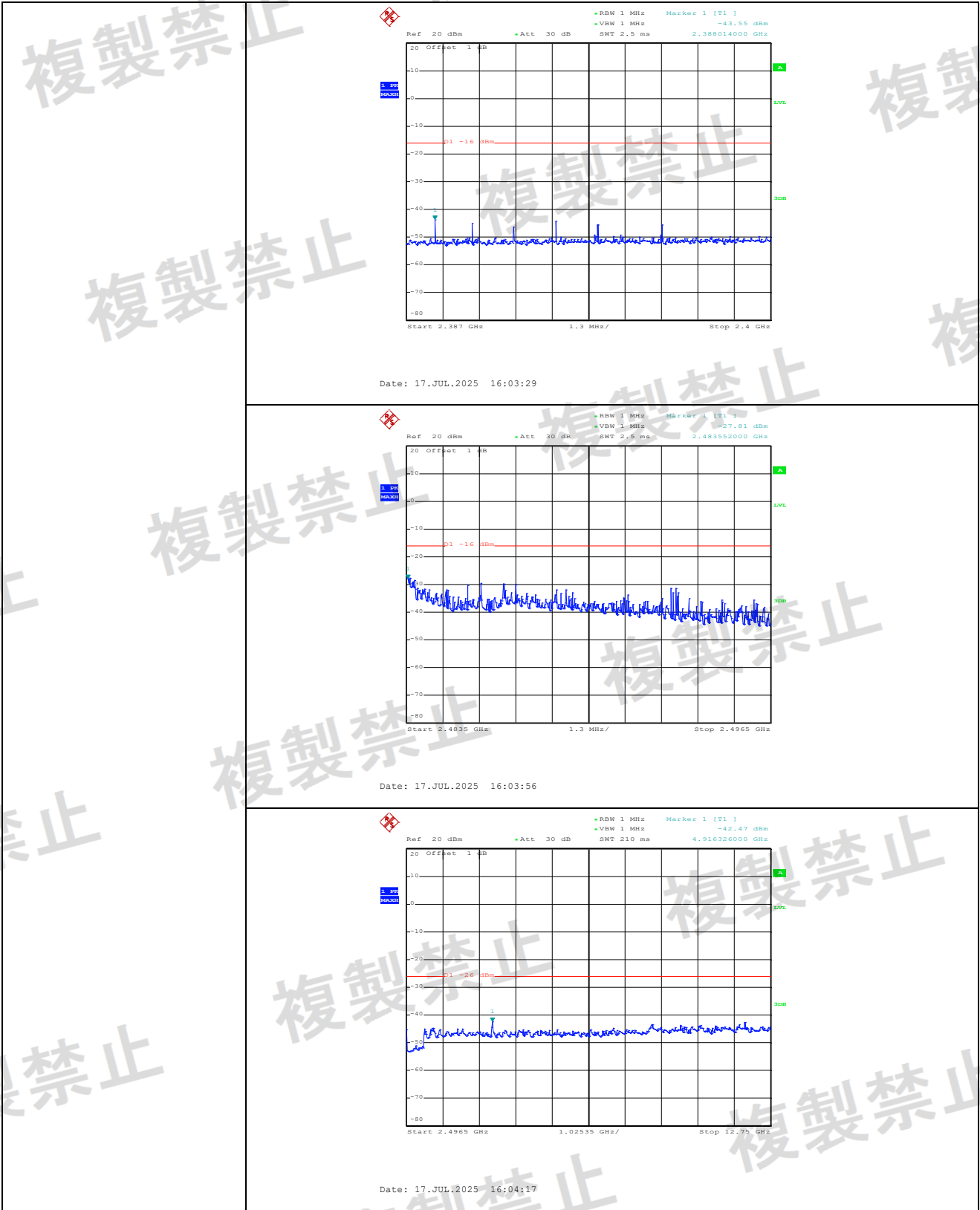








802.11ax-HE40-High



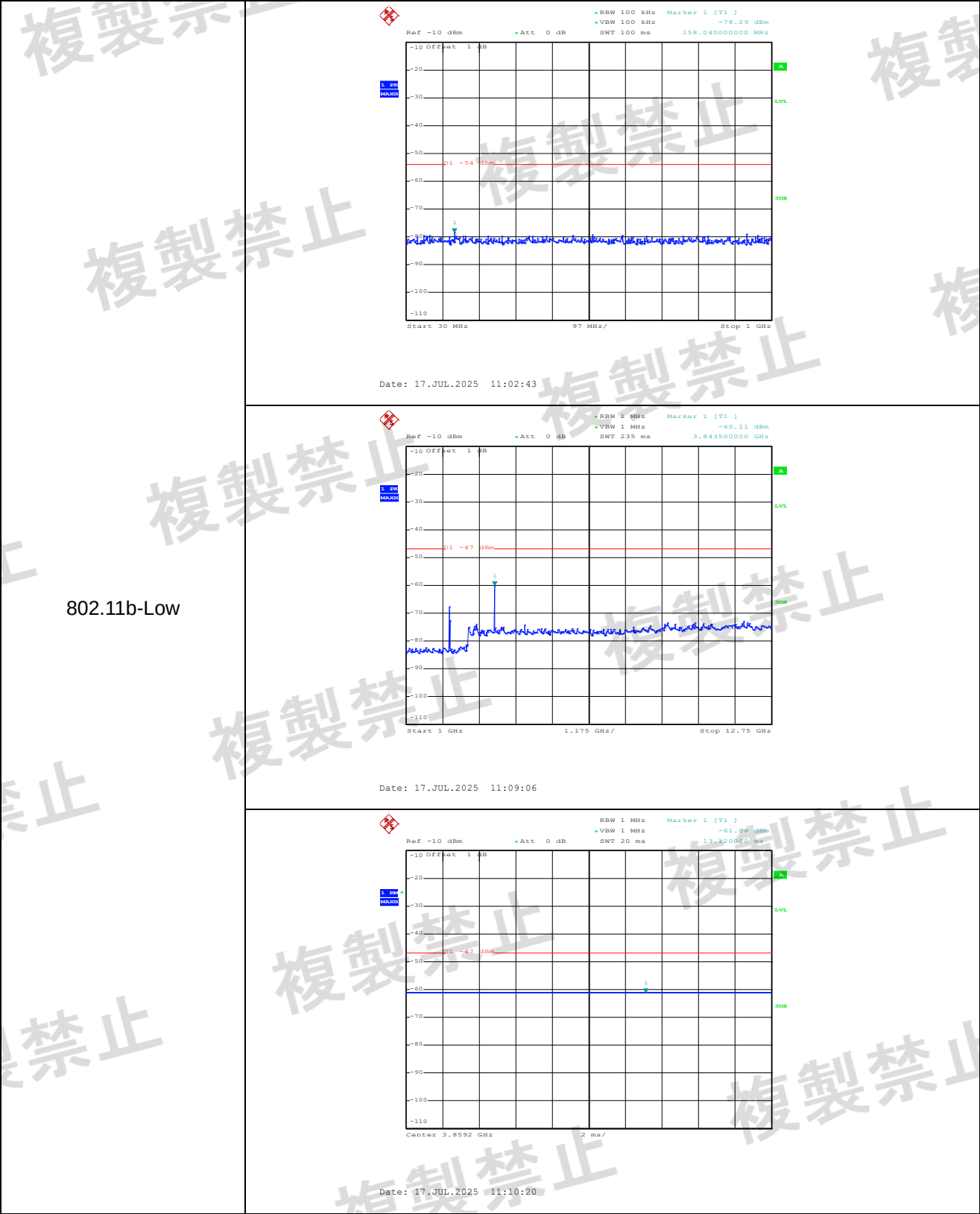
APPENDIX E**RECEIVER SPURIOUS EMISSIONS**

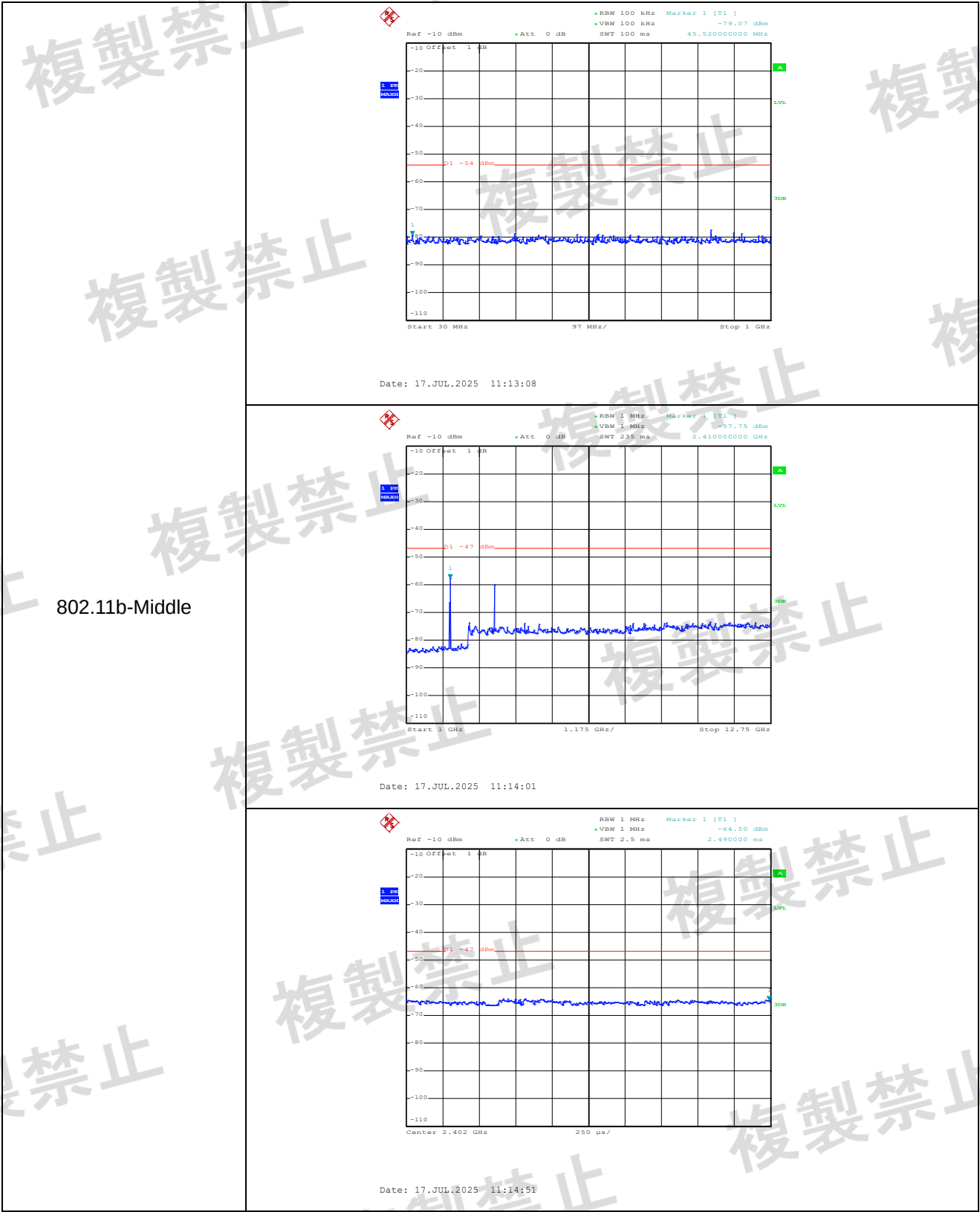
Mode	Channel	Frequency Range (MHz)	Freq. (MHz)	Reading Value	Result (nW)	Limit (nW)	Result
802.11b	Low	30-1000	158.040	-78.29dBm/100kHz	0.015	4	Pass
		1000-12750	3843.500	-61.08dBm/Mhz	0.780	20	Pass
	Middle	30-1000	45.520	-79.07dBm/100kHz	0.012	4	Pass
		1000-12750	2410.000	-64.50dBm/Mhz	0.355	20	Pass
	High	30-1000	520.820	-78.06dBm/100kHz	0.016	4	Pass
		1000-12750	3843.500	-60.73dBm/Mhz	0.845	20	Pass

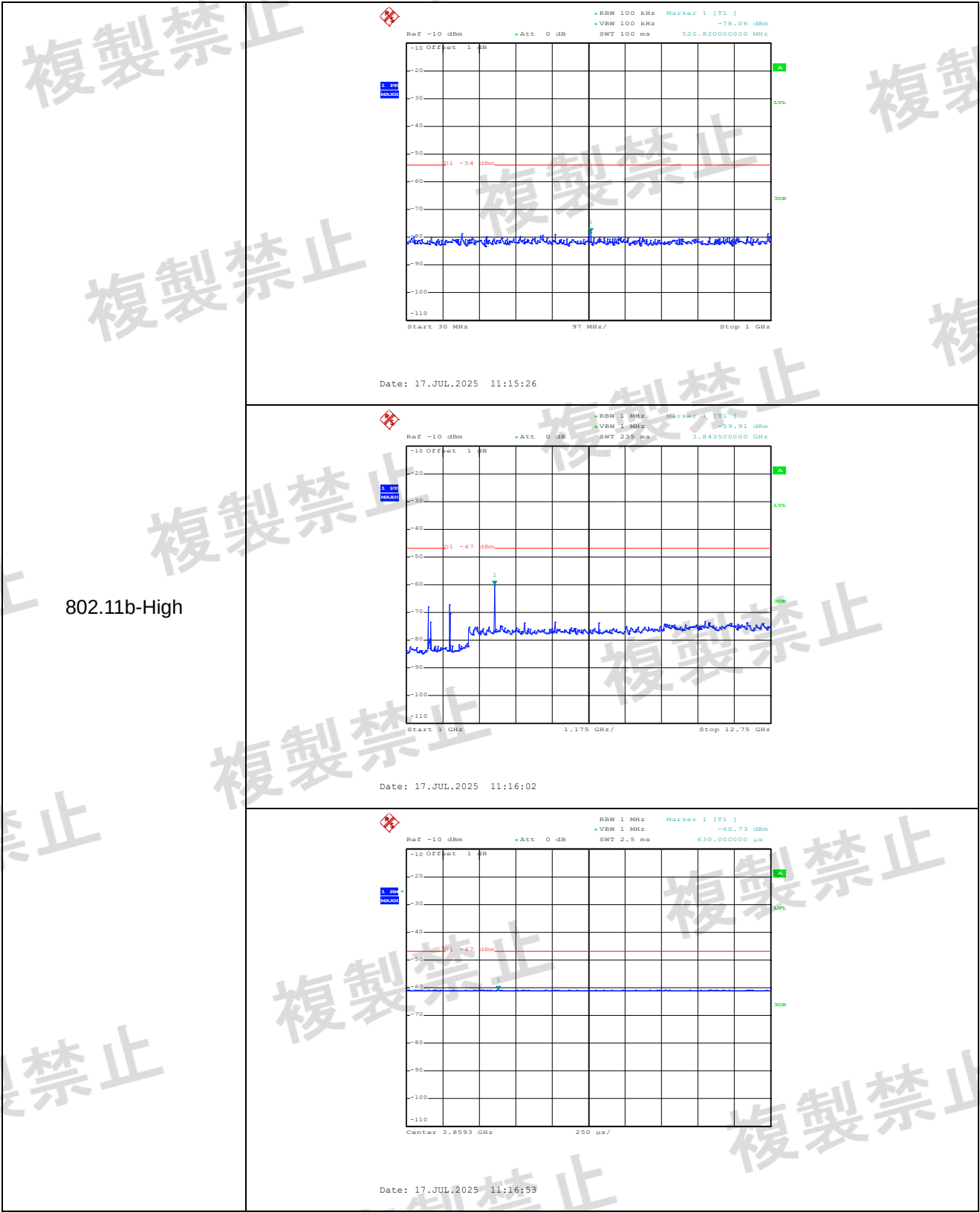
4nW/100kHz=-54dBm/100kHz

20nW/MHz=-47dBm/MHz

Worst case at 802.11b mode







APPENDIX F**CARRIER SENSING FUNCTION**

Test Item	Test Result
Carrier Sensing Function	(EUT Stop RF transmission signal after carrier inject to EUT. Stop carrier inject, EUT will transmitting normal.)

Test Condition	Frequency(MHz)	Transmitting Power(dBm/MHz)
Normal Operating	2442	-5.57
Inject CW(-44.96dBm)	2442	-55.86
Stop Inject CW	2442	-5.35

Antenna is 0dBi.

$22.79 + Gr - 20\log(\text{freq_MHz}) = 22.79 + (0) - 20\log(2442) = -44.96\text{dBm}$

APPENDIX G

INTERFERENCE PREVENTION FUNCTION

Test Item	Test Result
Transmitting Function of Identification Code	Good
Receiving Function of Identification Code	Good

Identification Code	54:EF:44:89:17:A3
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APPENDIX PHOTOGRAPHS

Please refer to “ANNEX”

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