



——沃德检测——

TEST REPORT

Applicant Name: FJ Dynamics Technology
(Fujian) Co., Ltd

Product Name: FJD Robotic Line Marker

Model: RLM01

Test Report Number: WD25041039RA2

Worldtest (GuangDong) Co., Ltd.

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Applicant Information

Company Name: FJ Dynamics Technology (Fujian) Co., Ltd.
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Manufacturer Information

Company Name: FJ Dynamics Technology (Fujian) Co., Ltd.
Address: Room 305, Unit 5, Huajian Building, No. 12, 16, and 18, East Keji Road, Shangjie Town, Minhou County, Fuzhou City, Fujian Province, China

EUT Information

EUT Name: FJD Robotic Line Marker
Model: RLM01
Brand: 
Sample Received Date: Apr.21, 2025
Sample Status: Normal
Sample ID: WD-YP250421001
Date of Tested: Apr.21, 2025 to May 20, 2025

Standard(s)

MIC Notice No.88 Appendix No.43
MIC Article 2-1 Item (19)

Issued By: Worldtest (GuangDong) Co., Ltd.
Address: Room 102 and 201, Building 6, No.6, Gongye North Road, Songshan Lake(SSL), Dongguan, Guangdong, China

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RELEASE CONTROL RECORD

Issue No.	Description	Issued Date
WD25041039RA2	Original release.	June 06, 2025

1. SUMMARY OF TEST RESULTS

- ☒ No deviations from the test standards
☐ Deviations from the test standards as below description:

Technical requirements for Frequency Hopping equipment

Performed Test Item	Normative References	Test Performed
Antenna power, antenna power tolerance and E.I.R.P.	MIC Notice No. 88 Appendix No. 43 Clause 6	Yes
Transmission Antenna Gain (EIRP Antenna Power)	MIC Notice No. 88 Appendix No. 43 Clause 10	Yes
Transmission Radiation Angle Width (3dB Beam width)	MIC Notice No. 88 Appendix No. 43 Clause 22	No (Note 3)
Carrier Sensing Function 1	MIC Notice No. 88 Appendix No. 43 Clause 8	No (Note 1)
Carrier Sensing Function 2	MIC Notice No. 88 Appendix No. 43 Clause 8	No (Note 2)
Occupied Bandwidth	MIC Notice No. 88 Appendix No. 43 Clause 4	Yes
Frequency Tolerance	MIC Notice No. 88 Appendix No. 43 Clause 3	Yes
Duty Cycle	MIC Notice No. 88 Appendix No. 43	Yes
Transmitter Spurious Emissions	MIC Notice No. 88 Appendix No. 43 Clause 5	Yes
Receiver Spurious Emissions	MIC Notice No. 88 Appendix No. 43 Clause 7	Yes
Interference Preverntion fuchtion	MIC Notice No. 88 Appendix No. 43 Clause 12	Good

Note 1: Application to transmitting devices which EIRP is less than 【2.14dBi + antenna power limit】 and the shortage of EIRP is compensated by the antenna power,Not applicable to this product.

Note 2: Application to transmitting devices with OFDM modulation and The occupied bandwidth greater than 26MHz ,Not applicable to this product.

Note 3: EIRP of EUT less than 12.14dBm/MHz, Not applicable to this product.

1.1. TEST METHODOLOGY

All tests were performed in accordance with the procedures documented in MIC Notice No.88 Appendix No.43

1.2. TEST FACILITIES

No.	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook	lenovo	S14 G2 ITL	PF4119QS	Power by adapter
2	LAN cable	N/A	N/A	N/A	Unshielded,1m
3	SMA cable	N/A	N/A	N/A	Shielded,1m
4	Power cable	N/A	N/A	N/A	Unshielded,1.5m

1.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-7}$
RF Power Conducted	$\pm 1.15\text{dB}$
RF Power Radiated	$\pm 3.5\text{dB}$
Occupied Channel Bandwidth	$\pm 1.17\%$
Spurious Emissions, Conducted	$\pm 1.68\text{dB}$
Spurious Emissions, Radiated	$\pm 3.5\text{dB}$
Humidity	$\pm 1\%$
Temperature	$\pm 0.5^{\circ}\text{C}$
Time	$\pm 8\%$

1.4. TEST EQUIPMENT LIST AND DETAILS

Radiated emission

Equipment Name	Model	Manufacturer	Serial No.	Cal. date	Interval
3m semi-anechoic chamber	3m SAC	yiheng	966	2022.09.13	3 Years
Spectrum analyzer	N9010A	Agilent	MY50483285	2025.01.22	1 Year
Horn Antenna	BBHA 9120D	Schwarzbeck	2557	2022.12.08	3 Years
Horn Antenna	BBHA 9170	Schwarzbeck	1173	2022.12.09	3Years
Pre-amplifier	TAP0118045	Tonscend	6150	2025.01.22	1 Year
Pre-amplifier	TAP-184050	Tonscend	6214	2025.01.22	1 Year
1~18GHz cable 1.5m	SFT205PUR	NMNM	N/A	2024.01.16	3 Years
1~18GHz cable 2.0m	HF160	NMNM	N/A	2024.01.16	3 Years
1~18GHz cable 0.3m	SFT205PUR	NMSWSM	N/A	2024.01.16	3 Years
1~18GHz cable 7.0m	SFT205PUR	NMSWSM	N/A	2024.01.16	3 Years

RF Conducted Test System					
Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Interval
RF Control Unit	Tonscend	JS0806-2	23F80620689	2024.08.06	1 Year
DC Power Supply	Agilent	E3642A	MY40000323	2024.08.06	1 Year
MClean Robot Vector Signal Generator	Agilent	N5182A	MY50141372	2024.08.06	1 Year
MClean Robot Analog Signal Generator	Agilent	N5181A	MY47421166	2024.08.06	1 Year
Spectrum analyzer	Agilent	N9010A	MY50483285	2025.01.22	1 Year
Software					
Description	Manufacturer		Name		Version
Tonsend SRD Test System	Tonsend		JS1120-3 RF Test System		2.6.77.0518
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 (1) 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 102-18paragraph(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)					
From JRL Article 24-2,paragraph 4.Item 2					

2. GENERAL INFORMATION

2.1. GENERAL DESCRIPTION OF EUT

EUT Name	FJD Robotic Line Marker
Model Name	RLM01
Hardware Version	V1.0
Software Version	V1.0
Radio Technology	IEEE802.11b/g/n HT20/ ax HE20
Operation frequency	IEEE 802.11b: 2412MHz—2472MHz IEEE 802.11g: 2412MHz—2472MHz IEEE 802.11n/ax HT20: 2412MHz—2472MHz
Modulation	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g/n: HT20 OFDM (BPSK, QPSK, 16QAM, 64QAM) IEEE 802.11ax HE20 OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Antenna description	WiFi uses ANT 2 ; BT uses ANT 1

Note: The manufacturer claims that 802.11AX only supports full RU.

2.2. ANTENNA LIST

Model No.	N/A								
Antenna manufacturer	N/A								
Antenna Delivery	☒	1*TX+1*RX		☐	2*TX+2*RX		☐	3*TX+3*RX	
Antenna technology	☐	SISO							
		☐	Basic						
	☐	MIMO	☐	CDD					
			☐	Beam-forming					
Antenna Type	☐	External	☐	Patch					
		☒ Internal	☒	FPC					
			☐	PCB					
			☐	Ceramic Chip Antenna					
			☐	Metal plate type F antenna					
			☐	stamping antenna					
Antenna Gain Reference	2.48dBi								

2.3. CHANNEL LIST

Channel List for IEEE 802.11b/g/n (20 MHz)/ax (20 MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	5	2432	9	2452	13	2472
2	2417	6	2437	10	2457	/	/
3	2422	7	2442	11	2462	/	/
4	2427	8	2447	12	2467	/	/

2.4. TEST CHANNEL CONFIGURATION

IEEE Std. 802.11	Test Channel Number	Frequency
b	CH 1(Low Channel), CH 7(MID Channel), CH 13(High Channel)	2412 MHz, 2442 MHz, 2472 MHz
g	CH 1(Low Channel), CH 7(MID Channel), CH 13(High Channel)	2412 MHz, 2442 MHz, 2472 MHz
n HT20	CH 1(Low Channel), CH 7(MID Channel), CH 13(High Channel)	2412 MHz, 2442 MHz, 2472 MHz
ax HE20	CH 1(Low Channel), CH 7(MID Channel), CH 13(High Channel)	2412 MHz, 2442 MHz, 2472 MHz

2.5. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)	Uncorrelated directional gain(dBi)
ANT 2	2412 ~ 2472	FPC Antenna	2.48dBi	2.48dBi

IEEE Std. 802.11	Transmit and Receive Mode	Description
b	1TX, 1RX	Separate individual antenna can be used as transmitting/receiving .
g	1TX, 1RX	Separate individual antenna can be used as transmitting/receiving .
n HT20	1TX, 1RX	Separate individual antenna can be used as transmitting/receiving .
ax HE20	1TX, 1RX	Separate individual antenna can be used as transmitting/receiving .

Note: The value of the antenna gain was declared by customer.

2.6. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5 MHz Band							
Test Software		RF Test Tool.apk					
IEEE Std. 802.11	Transmit Antenna Number	Test Software Setting Value					
		NCB: 20MHz			NCB: 40MHz		
		CH 1	CH 7	CH 13	CH 3	CH 7	CH 11
b SISO	1	default	default	default	N/A		
g SISO	1	default	default	default			
n HT20	1	default	default	default			
ax HE20	1	default	default	default			
n HT40	1	N/A			N/A	N/A	N/A
ax HE40	1	N/A			N/A	N/A	N/A

2.7. TEST CONDITIONS

The WIFI module was tested while in a continuous transmitter/receiver mode. The eut was tuned to a low,middle and high channel for all tests.For all test case pre/scans were completed in all modes to determine worst case levels.

Power Supply Voltage Fluctuation Test

Voltage Fluctuation Test	Normal Voltage	High Voltage +10% of Normal Voltage	Low Voltage -10% of Normal Voltage
Input DC Power	DC 58.8V	64.68V	52.92V
RF Chip measuring voltage	3.30V	3.29V	3.30V
Measurement point			

When EUT be operated at $\pm 10\%$ from the normal supply voltage,the supply voltage of RF part was varied within $\pm 1\%$.All test cases were done under the normal supply voltage.

2.8. DESCRIPTION OF TEST SETUP

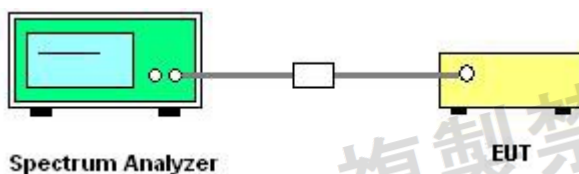
SUPPORT EQUIPMENT

Follow up the claims of the applicant

TEST SETUP

The EUT can work in engineering mode during the testing.

SETUP DIAGRAM FOR TESTS



2.9. TEST ENVIRONMEN

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	24
Humidity (%RH)	25-75	56
Barometric pressure (mbar)	860-1060	1001

3. TEST PROCEDURES AND RESULTS

3.1. FREQUENCY TOLERANCE

LIMITS

$\cong \pm 50$ ppm

TEST PROCEDURE

1. Frequency accuracy of instrument shall be less than 10% of limits tolerance (5ppm).
2. Three testing methods
 - a.Measure frequency tolerance by the system simulator.
 - b.CW Tone method
Setting of SA is following as: RBW:10kHz / VBW:10kHz.
Maker Max. level to get measuring frequency f.
 - c.10dB down method
Setting of SA is following as: RBW:100kHz / VBW: 100kHz / Trace: MaxHold
Display line Level = Max. level – 10dB to place two markers, highest(fH) and lowest(fL) frequency
Determine measuring frequency $f = (fH+fL)/2$
3. The frequency tolerance test case is directly measured using the frequency accuracy function of Wifi tester or spectrum analyzer. Then the frequency error formula is $(f-fc)/fc \times 10^{-6}$ ppm and the limit is less than ± 50 ppm.

RESULTS

Please refer to appendix A.

3.2. ANTENNA POWER, ANTENNA POWER TOLERANCE AND E.I.R.P.

LIMITS

- $\leq 3 \text{ mW /MHz}$ (FHSS from 2402-2480 MHz)
- $\leq 10 \text{ mW/MHz}$ (OFDM, DSSS from 2400-2483.5 MHz)
- $\leq 5 \text{ mW/MHz}$ (OFDM 26MHz $\leq$ OBW $\leq$ 40MHz)
- $\leq 10 \text{ mW}$ (other from 2400-2483.5 MHz)

Output Power Tolerance: +20%

TEST PROCEDURE

Search Frequency of Peak Power

Test Frequency: test channel

RBW=VBW=1MHz, SPAN=40MHz, Sweep time=Auto, Detector mode=Positive peak

Measure of average burst power

Test Frequency: frequency of peak power

RBW=VBW=1MHz, SPAN=0Hz, Sweep time=Auto, Detector mode=RMS

Reading Level=burst power

$EIRP = D + G + 10 \log (1/x)$

D: antenna power ; G: antenna gain x: duty Cycle

RESULTS

Please refer to appendix B.

3.3. TRANSMISSION ANTENNA GAIN (EIRP ANTENNA POWER) MEASUREMENT

LIMITS

Item	Limits
EIRP Power Density	$\leq 12.14\text{dBm/MHz}$ (OFDM,DS from 2400~2483.5MHz) $\leq 12.14\text{dBm/MHz}$ (Other from 2400~2483.5MHz)
Remark: This test item will not be applied to EIRP power of EUT is lower than 12.14dBm/MHz.	

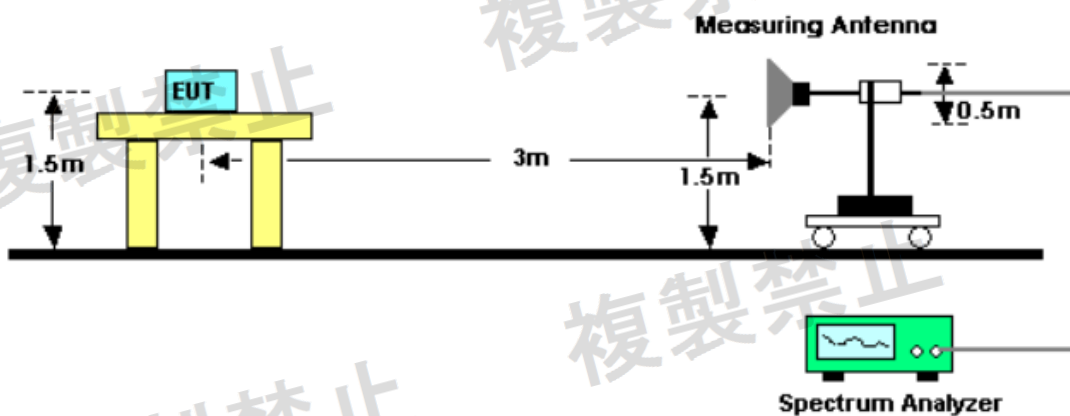
TEST PROCEDURE

Setting of spectrum analyzer

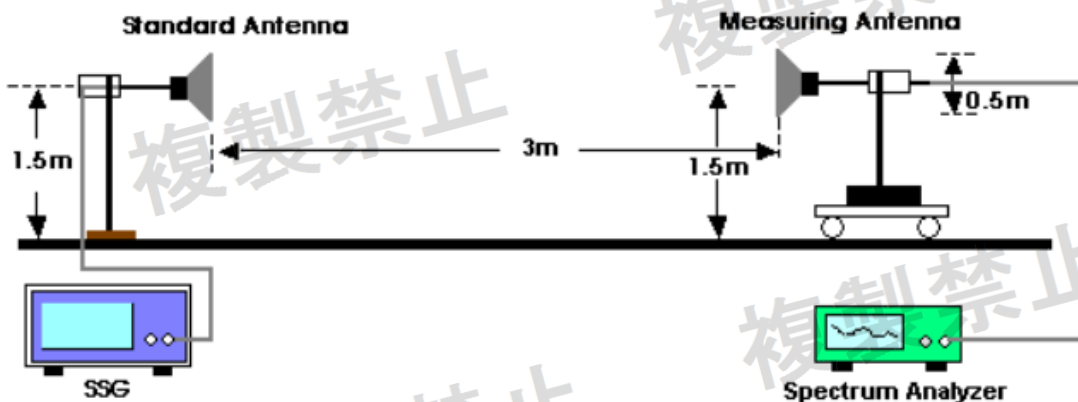
Spectrum Parameter	Setting
Attenuation	Auto
RBW / VBW	1 MHz
Span	0 MHz
Detector	Peak
Trace	Max Hold

1. Set EUT ad measuring antenna at the same height and roughly facing each other.
2. 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 the measuring antenna. The output level at the spectrum analyzer is read sa "E".
3. Remove the EUT from the turn table and put the replacing antenna facing to measuring antenna at same height. Set the standard signal generator (SSG) at same frequency and transmit on then receive the signal.
4. Swing the replacing antenna give a maximum receiving level.
5. Move the measuring antenna height up and down within $\pm 50\text{cm}$ of replacing antenna height and swing it to find the maximum receiving level.
6. Set SSG output power at Pt to give the equivalent output level of "E" or caluate Pt with SSG output which gives the nearest of "E" and difference ($\pm 1\text{dB}$). Record the Pt.
7. Calculate EIRP by the formula below $\text{EIRP} = \text{Gt} - \text{L} + \text{Pt}$. Gt: gain of replacing antenna (dBi)
L: feeder loss between SSG and replacing antenna Pt: Output power of the SSG
8. If the antenna for the EUT has circular polarization, sum of V-field and H-field will be result if measuring antenna is linear polarization

For EUT radiation measurement



For standard antenna measurement



RESULTS

Please refer to appendix C.

3.4. TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH) MEASUREMENT

LIMITS

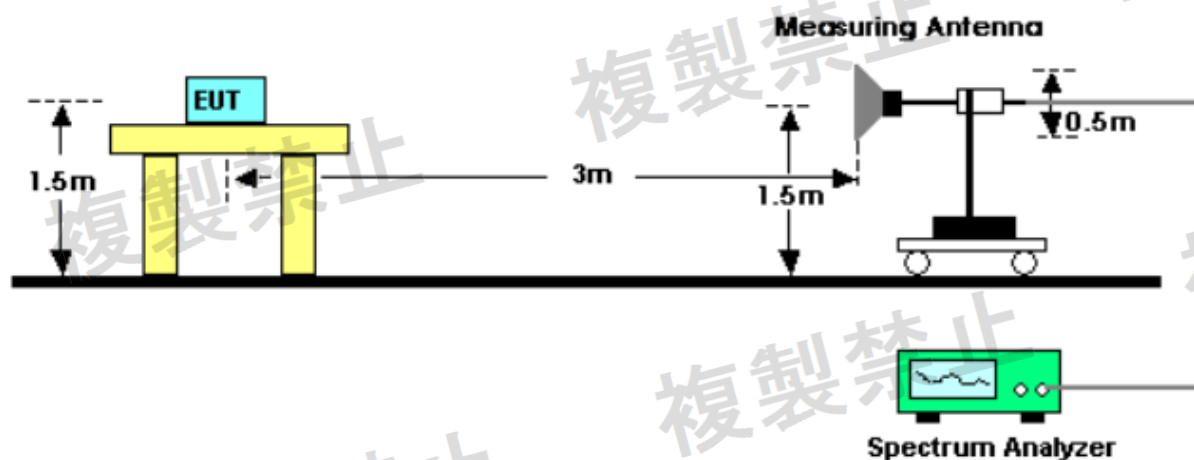
Item	Limits
3dB antenna beamwidth	$360/A$ (If $A < 1$; then $A = 1$) $A = \{ \text{EIRP Power [dBm/MHz]} - 12.14 \text{ [dBm/MHz]} \text{ for DS, OFDM} \}$ or $\{ \text{E.I.R.P Power [dBm/MHz]} - 6.91 \text{ [dBm/MHz]} \text{ for FH} \}$
Remark: This test item will not be applied to EIRP power of EUT is lower than 12.14dBm/MHz.	

TEST PROCEDURE

Setting of 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

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Set spectrum analyzer 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 $A = 1$). $A = \{ \text{EIRP Power [dBm/MHz]} - 12.14 \text{ [dBm/MHz]} \text{ for DS, OFDM} \}$ or $A = \{ \text{E.I.R.P Power [dBm/MHz]} - 6.91 \text{ [dBm/MHz]} \text{ for FH} \}$



RESULTS

Please refer to appendix D.

3.5. OCCUPIED BANDWIDTH

LIMIT

≤26 MHz for DSSS&OFDM, ≤83.5 MHz for FHSS

TEST PROCEDURE

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

1. A positive peak detector function must be used.
2. A measurement instrument with an integrated 99% power bandwidth function may be used to automate the test process.
3. The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
4. 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

Spectrum Analyzer Conditions:

RBW : 300kHz

VBW : 300kHz

Span: 40MHz

Sweep time : Auto, Marker : Marker Off

Log scale : 10dB/Div,

Data points : 1001points or more

Detection : Sample, Sweep mode : Continuous

Measurement Procedure and Capture Image

A,B -> Storage -> Average -> Averaging count -> 100 -> enter

Measure -> more -> Occupied Bandwidth -> N% Ratio -> 99%

RESULTS

Please refer to appendix E.

3.6. CARRIER SENSING FUNCTION

LIMIT

Item	Limits (See Article 49-20, Item1-k of the Ordinance Regulating Radio Equipment)
Carrier Sense	Good – EUT stop RF transmission signal after carrier inject to EUT. (On $22.79+Gr-20*\log(f)$ [dBm] (Gr: dBi; f: MHz) or 100mV/m)
Remarks	This test item will be applied to OFDM, $26MHz < BW \leq 38MHz$

TEST PROCEDURE

Test method which surpass to Clause 8,9 of Annex No.43 of MIC Notification No.88.

1. SSG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SSG and power level is (On $22.79+Gr-20*\log(f)$ [dBm] (Gr: dBi; f: MHz). Then turn off the RF signal of SSG.
2. EUT have transmitted the maximum modulation signal and fixed channelize.
3. Setting of SA is following as: RBW:1MHz / VBW:1MHz / SPAN: 50MHz / AT: 10dB /Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak.
4. SSG RF Signal On.
5. EUT shall be stop the transmitted any signal and SSG RF Signal Off. Then EUT will be continuous transmitted signal.

RESULTS

Note:For Carrier Sense Capability

1. Application to transmitting devices which EIRP is less than 2.14dBi+antenna power limit and the shortage of EIRP ic compensated by the antenna.Not applicable to this product.
2. Application to transmitting devices with OFDM modulation and occupied bandwidth greater than 26MHz,Not applicable to this product.

Not applicable

3.7. DUTY CYCLE

LIMITS

N/A

TEST PROCEDURE

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

1. A positive peak detector function must be used.
2. The center frequency is set to the test frequency and the span is switched to zero.
3. The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
4. 'Single sweep' mode may be used to capture a packet over a single scan.

RESULTS

Please refer to appendix H.

3.8. TRANSMITTER SPURIOUS EMISSIONS

LIMITS

$\leq 2.5\mu\text{W}/\text{MHz}$ or less for 30 – 2387 MHz
 $\leq 25\mu\text{W}/\text{MHz}$ or less for 2387 – 2400 MHz
 $\leq 25\mu\text{W}/\text{MHz}$ or less for 2483.5 – 2496.5 MHz
 $\leq 2.5\mu\text{W}/\text{MHz}$ or less for 2496.5 – 12500 MHz

TEST PROCEDURE

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

1. A positive peak detector function must be used.
2. The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
3. 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

Spectrum Analyzer Conditions:

RBW : 1MHz

VBW : 1MHz

Sweep time : Auto

Trace mode:Max hold

Log scale : 10dB/Div,

Data points : 8001points or more

Detection : Peak, Sweep mode : Continuous

RESULTS

Please refer to appendix F.

3.9. RECEIVER SPURIOUS EMISSIONS

LIMITS

$\leq 4\text{nW}$ for 30 – 1000 MHz
 $\leq 20\text{nW}$ for 1000 – 12750 MHz

TEST PROCEDURE

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

1. A positive peak detector function must be used.
2. The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
3. 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

Spectrum Analyzer Conditions:

RBW : 100kHz(Below 1000MHz)/1MHz(Above 1000MHz)

RBW=VBW

Sweep time : Auto

Trace mode:Max hold

Log scale : 10dB/Div,

Data points : 8001points or more

Detection : Peak, Sweep mode : Continuous

RESULTS

Please refer to appendix G.

3.8 INTERFERENCE PREVENTION FUNCTION

LIMITS

N/A

Requirement:

The EUT shall have the interference prevention capability to transmit or to receive the identification Automatically, so that sender and receiver shall exclude other equipment.

TEST PROCEDURE

In the case that the EUT has the function of automatically transmitting the identification code:

- 1) Transmit the predetermined identification codes from EUT
- 2) Check the transmitted identification codes with the demodulator.

In the case of receiving the identification codes:

- 1) Transmit the predetermined identification codes from the counterpart.
- 2) Check if communication is normal
- 3) Transmit the signal other than predetermined ID codes from the counterpart.
- 4) Check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones

Mac: 20-08-EC-AH-3B-2C

RESULTS

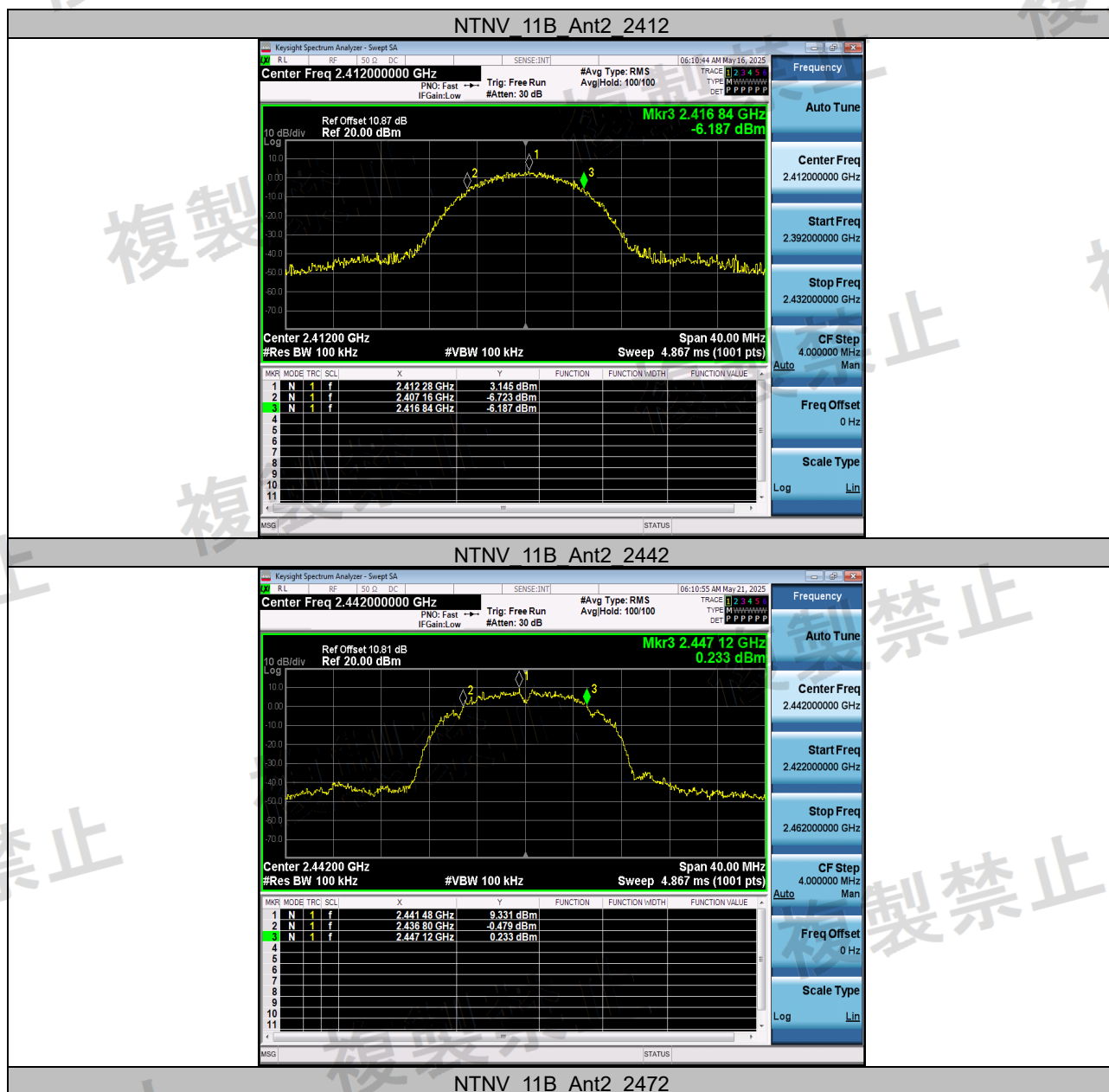
Good, EUT performed relevant functional tests as required, and the product signal was normal.

Appendix A: Frequency Tolerance

Test Result

TestCondition	TestMode	Antenna	Freq(MHz)	Result[ppm]	Limit[ppm]	Verdict
NTNV	11B	Ant2	2412	0.00000	±50	PASS
			2442	-16.38002	±50	PASS
			2472	-48.54369	±50	PASS
	11G	Ant2	2412	8.29187	±50	PASS
			2442	8.19001	±50	PASS
			2472	0.00000	±50	PASS
	11N20SI SO	Ant2	2412	8.29187	±50	PASS
			2442	0.00000	±50	PASS
			2472	8.09062	±50	PASS
	11AX20S ISO	Ant2	2412	8.29187	±50	PASS
			2442	0.00000	±50	PASS
			2472	0.00000	±50	PASS

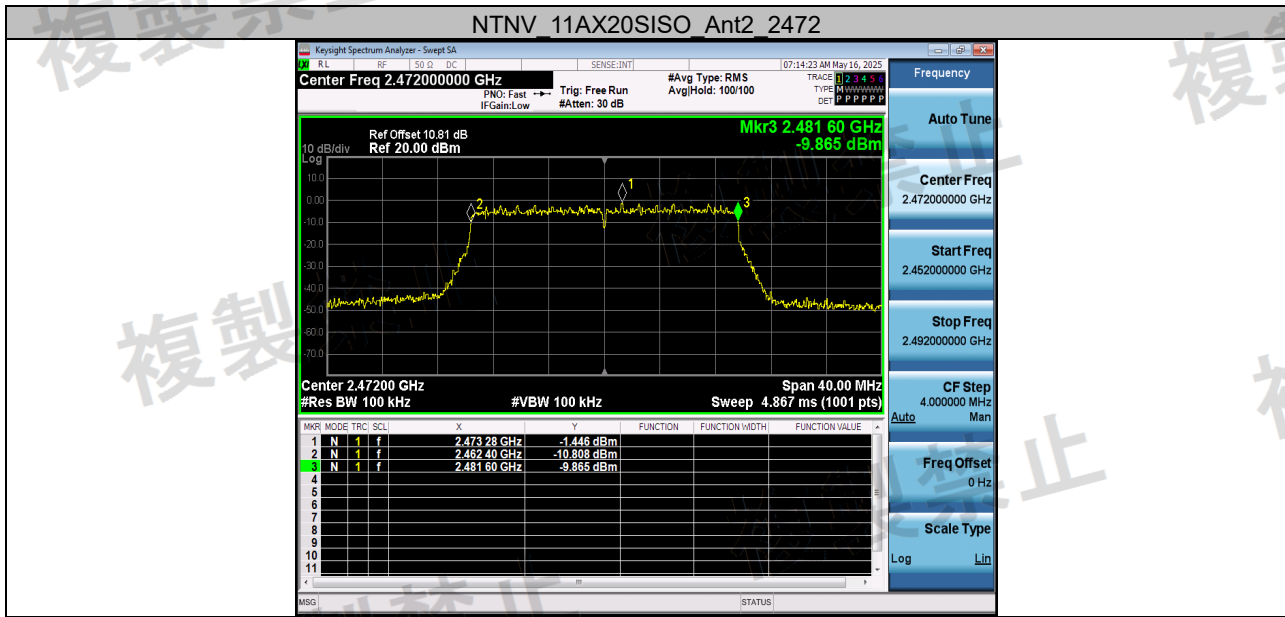
Test Graphs











Appendix B: Antenna power, antenna power tolerance and E.I.R.P.

Test Result PSD

Antenna Power							
Test Condition	Test Mode	Antenna	Freq(M Hz)	Result (dBm/MHz)	Result (mW/MHz)	Limit (mW/MHz)	Verdict
NTNV	11B	Ant2	2412	9.06	8.0538	≤10	PASS
			2442	8.90	7.7625	≤10	PASS
			2472	8.90	7.7625	≤10	PASS
	11G	Ant2	2412	9.17	8.2604	≤10	PASS
			2442	8.73	7.4645	≤10	PASS
			2472	9.08	8.0910	≤10	PASS
	11N20SI SO	Ant2	2412	8.45	6.9984	≤10	PASS
			2442	8.21	6.6222	≤10	PASS
			2472	7.76	5.9704	≤10	PASS
	11AX20S ISO	Ant2	2412	9.49	8.8920	≤10	PASS
			2442	9.35	8.6099	≤10	PASS
			2472	9.65	9.2257	≤10	PASS

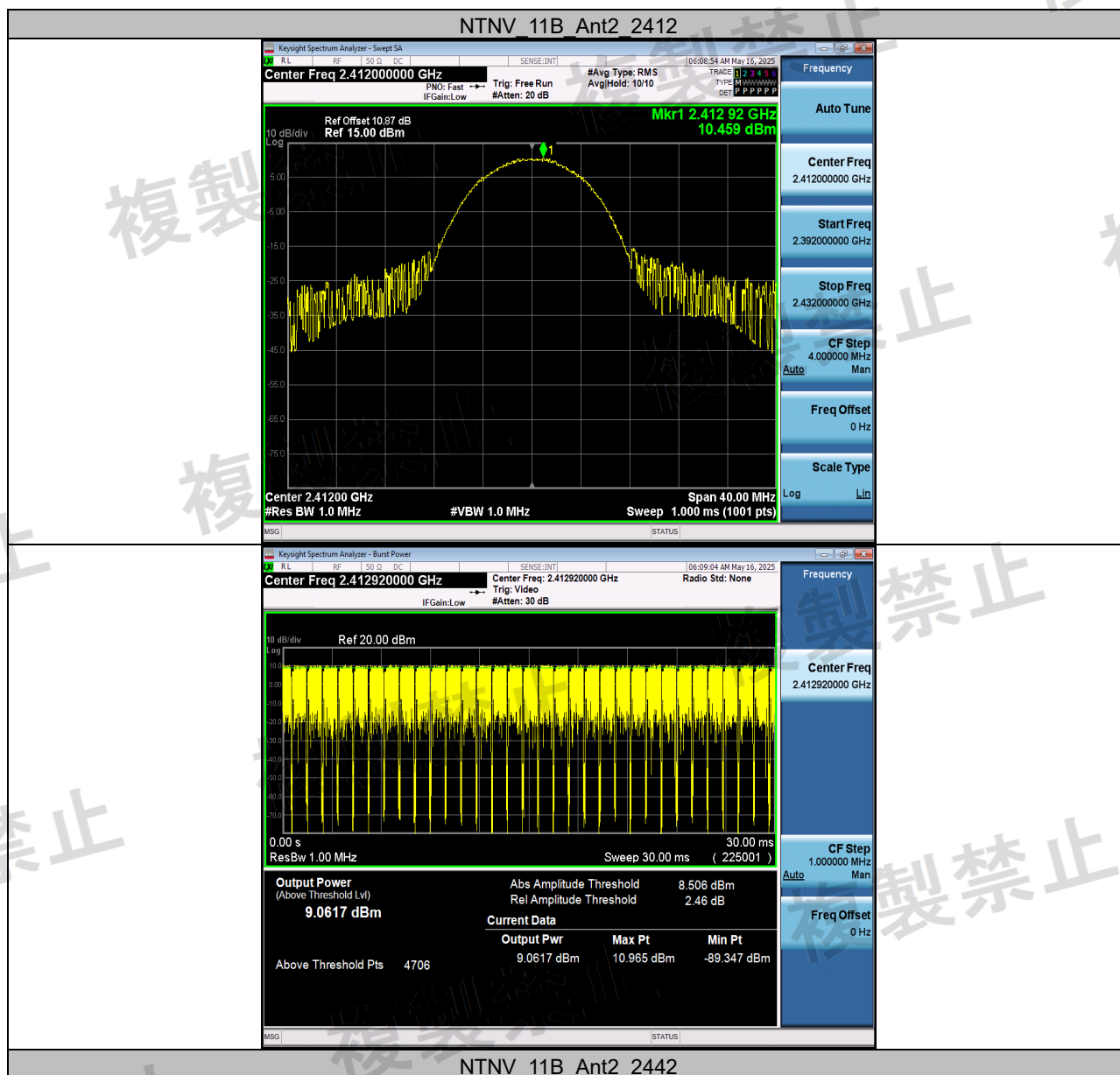
Tolerance								
Test Condition	Test Mode	Antenna	Freq (MHz)	Power (mW/M Hz)	Rated Power (mW/MHz)	Result (%)	Limit (%)	Verdict
NTNV	11B	Ant2	2412	8.0538	10	-19.46	+20	PASS
			2442	7.7625	10	-22.38	+20	PASS
			2472	7.7625	10	-22.38	+20	PASS
	11G	Ant2	2412	8.2604	10	-17.40	+20	PASS
			2442	7.4645	10	-25.36	+20	PASS
			2472	8.0910	10	-19.09	+20	PASS
	11N20SI SO	Ant2	2412	6.9984	10	-30.02	+20	PASS
			2442	6.6222	10	-33.78	+20	PASS
			2472	5.9704	10	-40.30	+20	PASS
	11AX20S ISO	Ant2	2412	8.8920	10	-11.08	+20	PASS
			2442	8.6099	10	-13.90	+20	PASS
			2472	9.2257	10	-7.74	+20	PASS

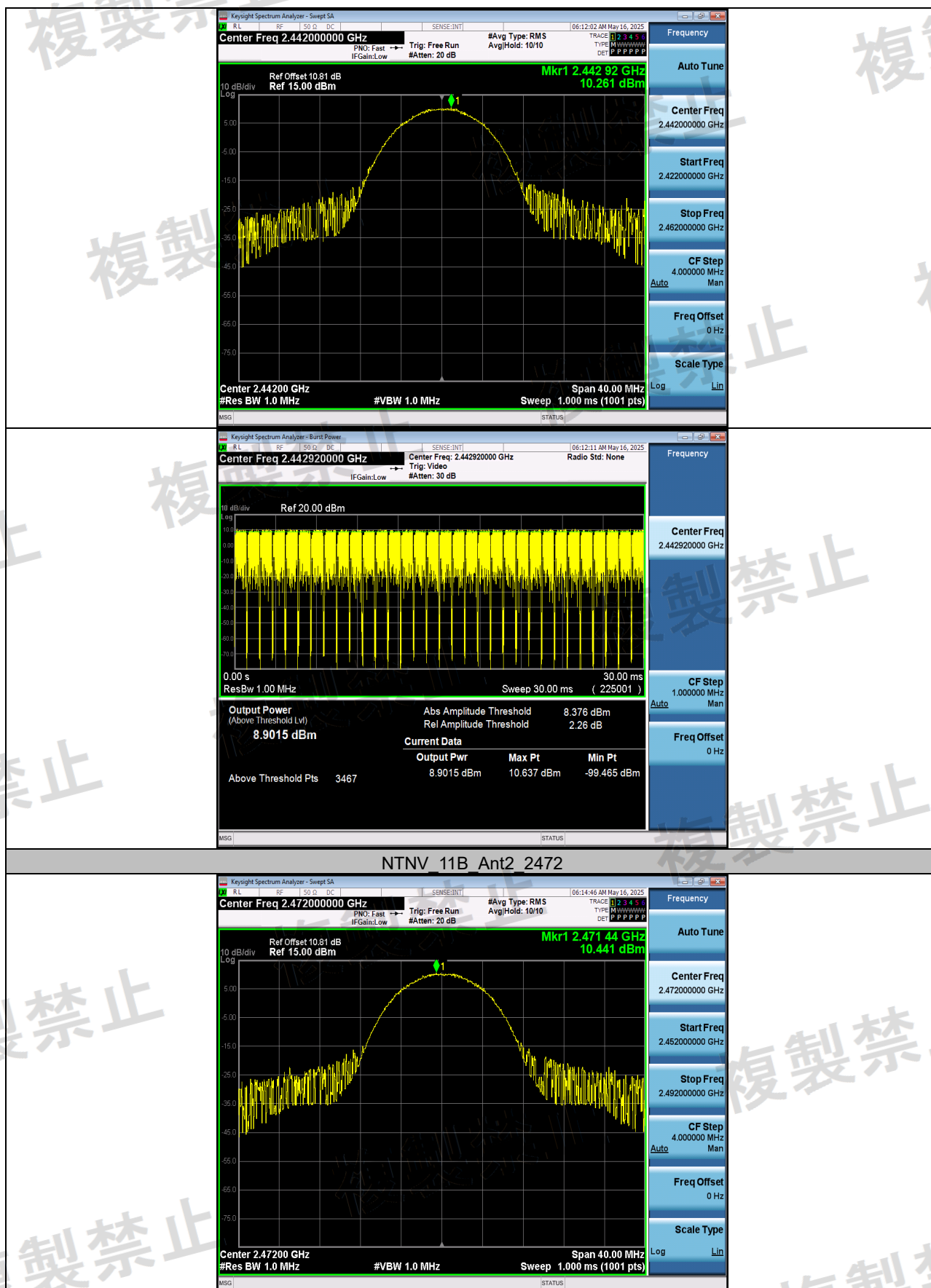
EIRP							
Test Condition	Test Mode	Antenna	Freq (MHz)	Result (dBm/MHz)	EIRP (dBm/MHz)	Limit (dBm/MHz)	Verdict
NTNV	11B	Ant2	2412	9.06	11.54	≤12.14	PASS
			2442	8.90	11.38	≤12.14	PASS
			2472	8.90	11.38	≤12.14	PASS
	11G	Ant2	2412	9.17	11.65	≤12.14	PASS
			2442	8.73	11.21	≤12.14	PASS
			2472	9.08	11.56	≤12.14	PASS
	11N20SI SO	Ant2	2412	8.45	10.93	≤12.14	PASS
			2442	8.21	10.69	≤12.14	PASS
			2472	7.76	10.24	≤12.14	PASS
	11AX20S ISO	Ant2	2412	9.49	11.97	≤12.14	PASS
			2442	9.35	11.83	≤12.14	PASS
			2472	9.65	12.13	≤12.14	PASS

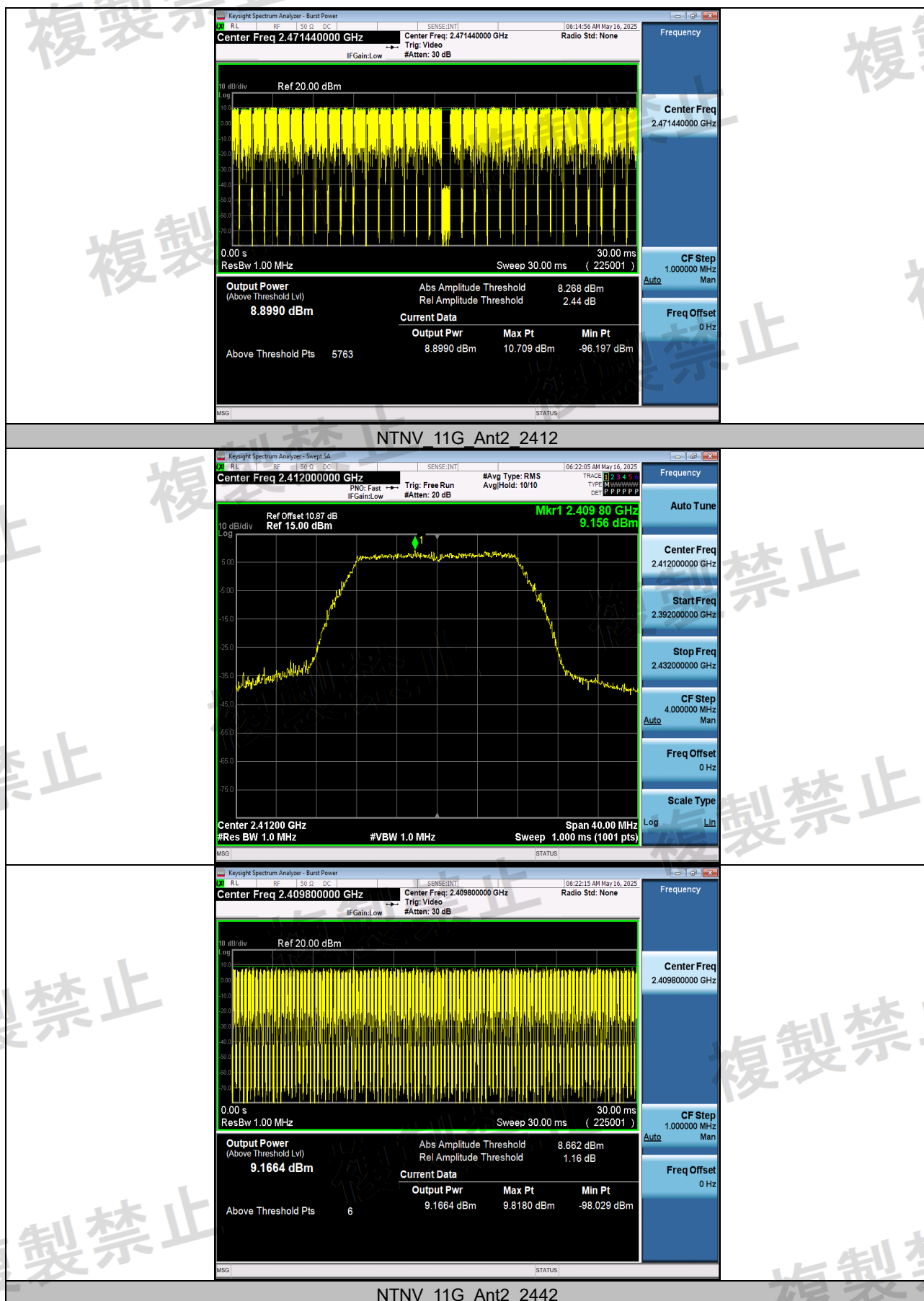
Remark:

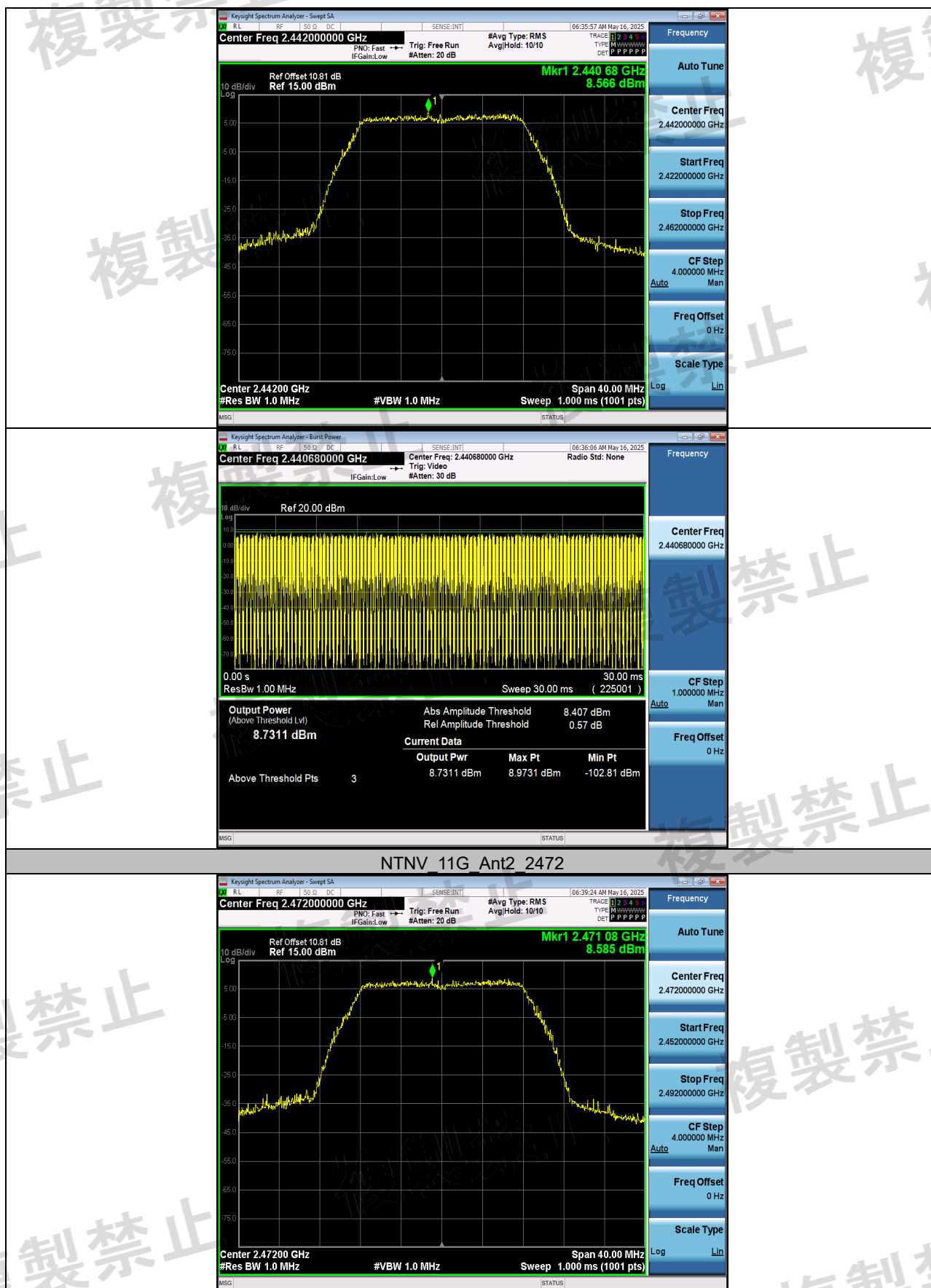
1.EIRP= Antenna Power +Antenna Gain.

Test Graphs







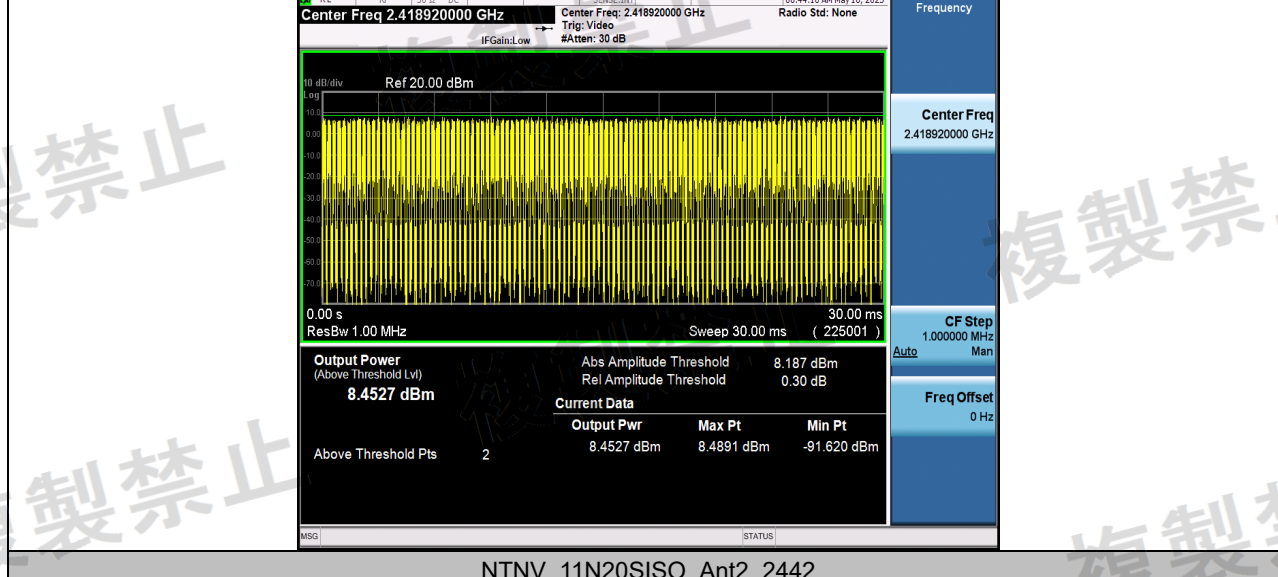




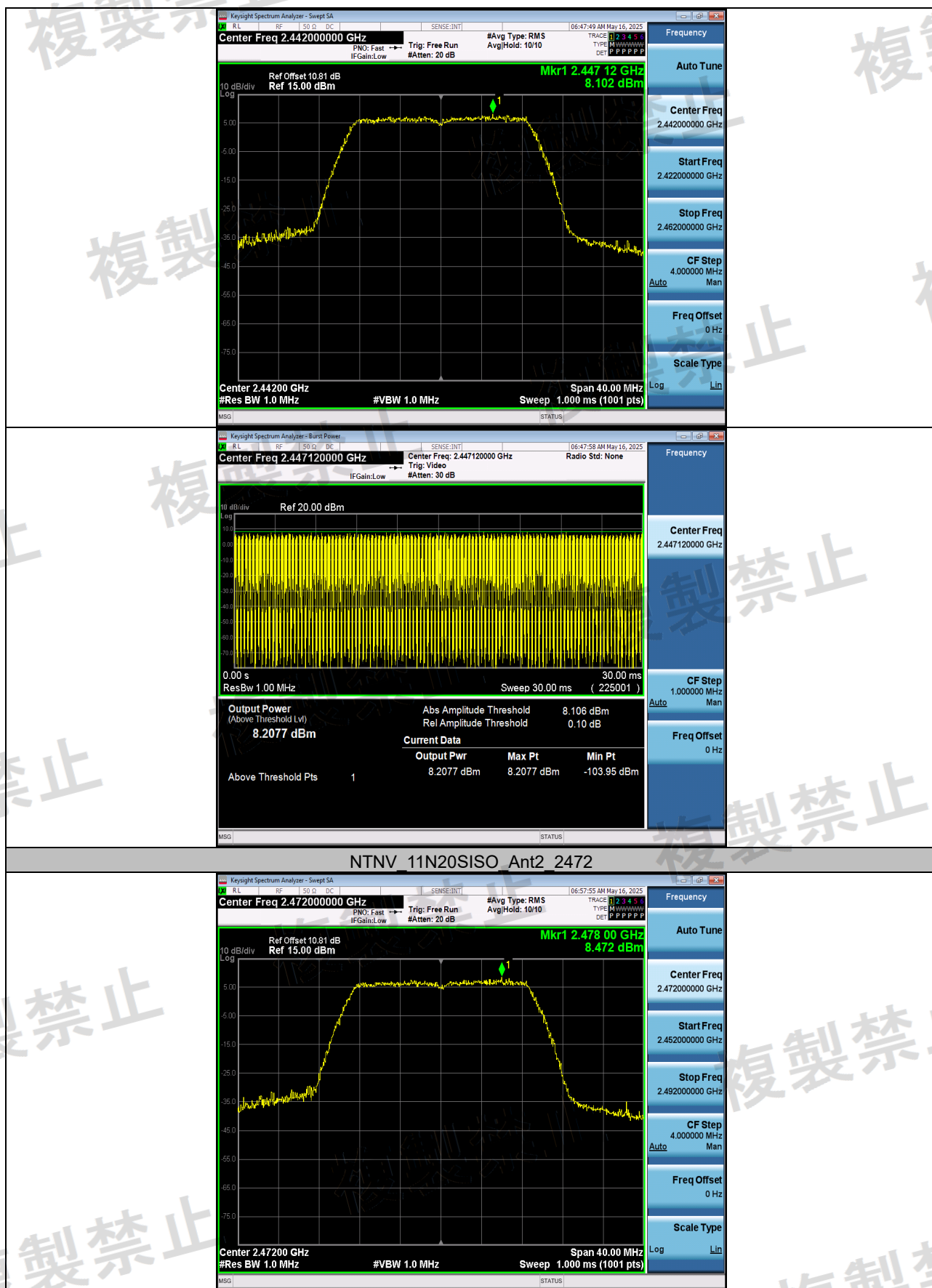
NTNV_11N20SISO_Ant2_2412

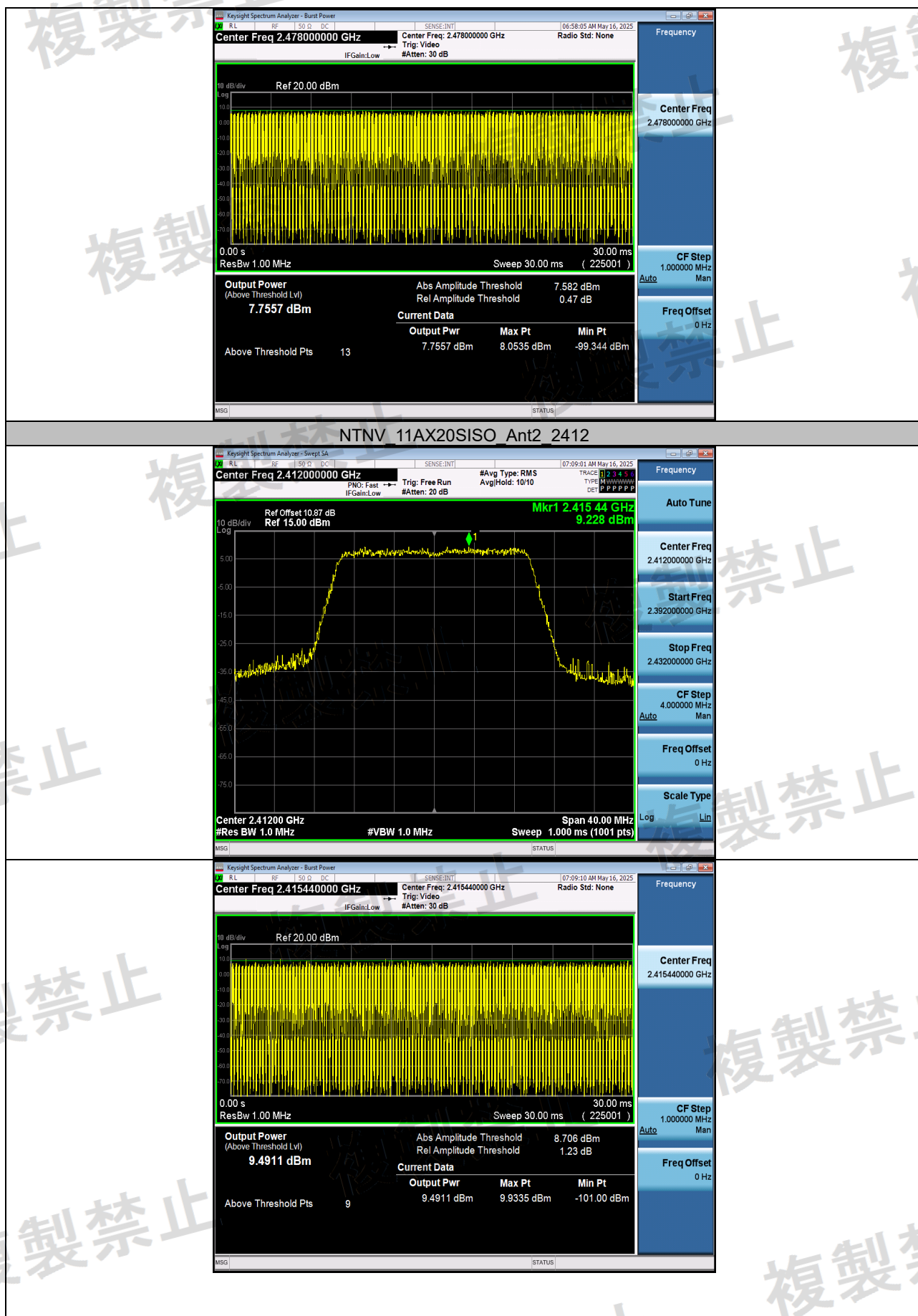


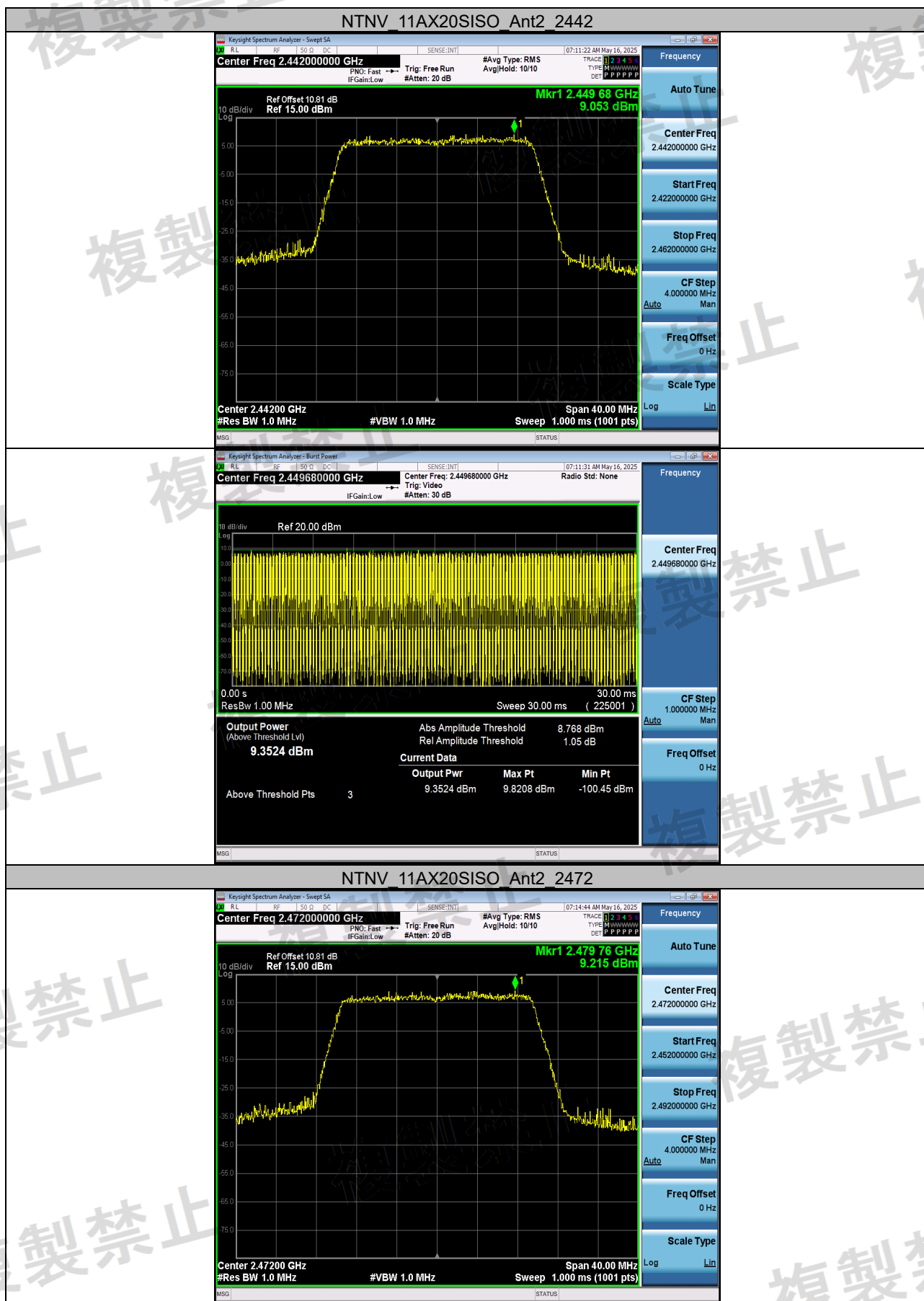
NTNV_11N20SISO_Ant2_2442



NTNV_11N20SISO_Ant2_2442









Appendix C: Transmission Antenna Gain (EIRP Antenna Power)

Test Result

Test Mode	802.11b				
Antenna Power (EIRP) (mW/mhZ)	Test Voltage (V)	Test Frequency(MHz)			Remarks
		2412	2442	2472	
	Normal Voltage	7.321	7.221	7.401	Limit 16.368mW/mhZ (12.14dBm/MHz)
Test Mode	802.11g				
Antenna Power (EIRP) (mW/mhZ)	Test Voltage (V)	Test Frequency(MHz)			Remarks
		2412	2442	2472	
	Normal Voltage	5.782	5.431	5.443	Limit 16.368mW/mhZ (12.14dBm/MHz)
Test Mode	802.11n 20M				
Antenna Power (EIRP) (mW/mhZ)	Test Voltage (V)	Test Frequency(MHz)			Remarks
		2412	2442	2472	
	Normal Voltage	6.443	6.312	6.784	Limit 16.368mW/mhZ (12.14dBm/MHz)
Test Mode	802.11ax 20M				
Antenna Power (EIRP) (mW/mhZ)	Test Voltage (V)	Test Frequency(MHz)			Remarks
		2412	2442	2472	
	Normal Voltage	6.347	6.443	6.439	Limit 16.368mW/mhZ (12.14dBm/MHz)

Appendix D: Transmission Radiation Angle Width (3dB Beam width)

Test Result

N/A

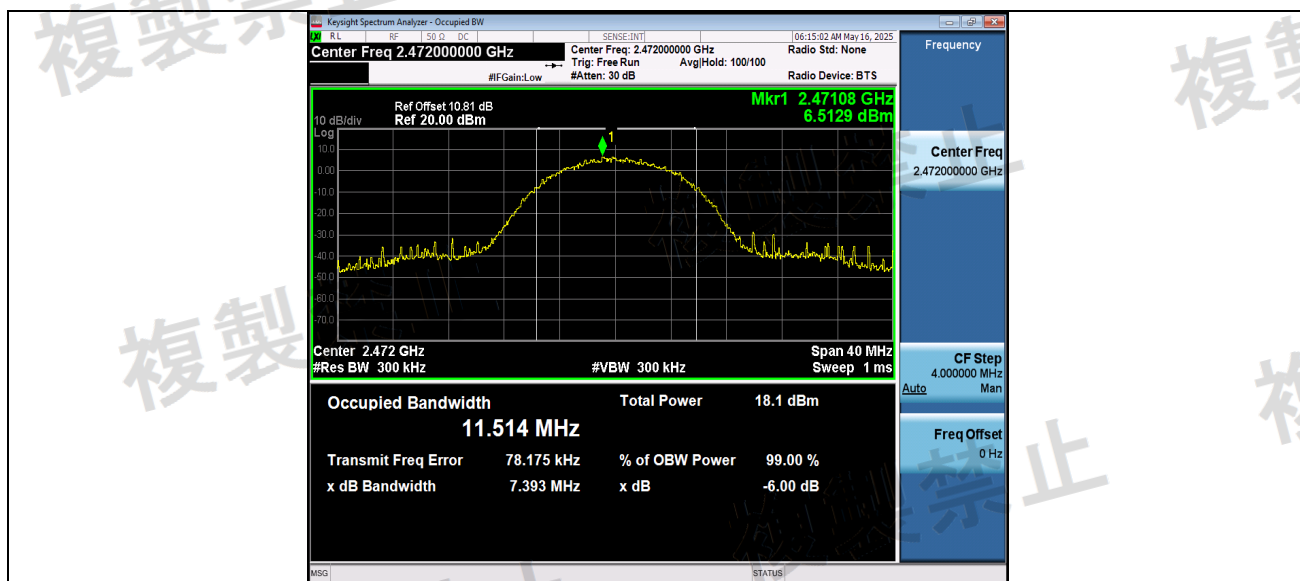
Appendix E: Occupied Bandwidth

Test Result

TestCondition	TestMode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	11B	Ant2	2412	11.434	≤26	PASS
			2442	11.505	≤26	PASS
			2472	11.514	≤26	PASS
	11G	Ant2	2412	16.769	≤26	PASS
			2442	16.781	≤26	PASS
			2472	16.750	≤26	PASS
	11N20SI SO	Ant2	2412	17.940	≤26	PASS
			2442	17.865	≤26	PASS
			2472	17.951	≤26	PASS
	11AX20S ISO	Ant2	2412	19.130	≤26	PASS
			2442	19.049	≤26	PASS
			2472	19.089	≤26	PASS

Test Graphs

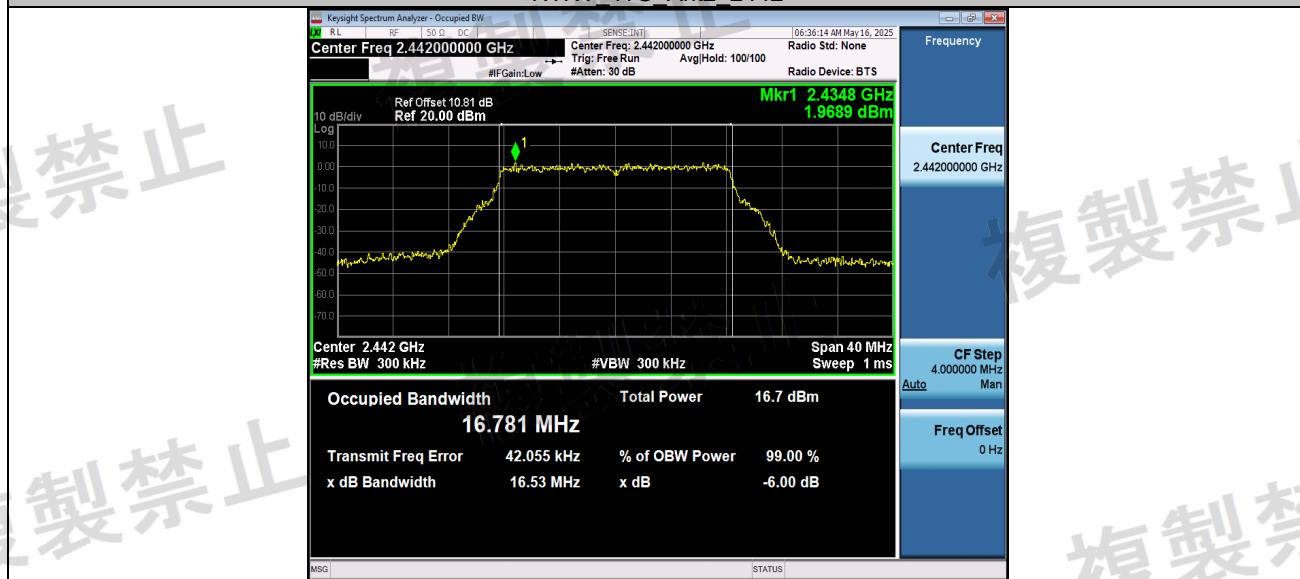




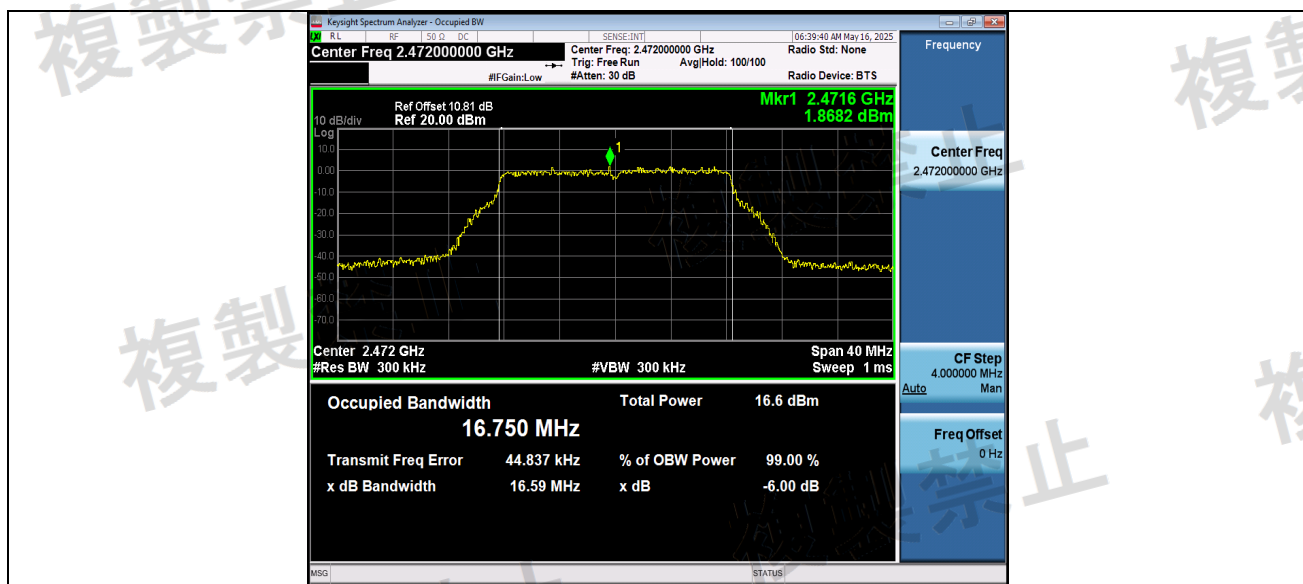
NTNV 11G Ant2 2412



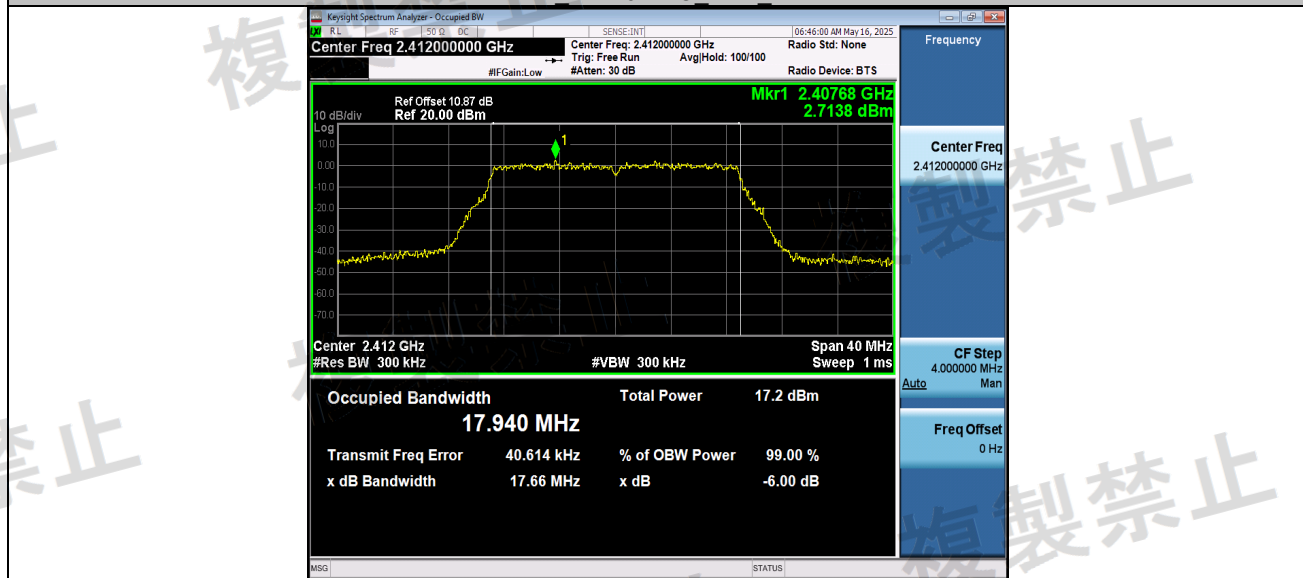
NTNV 11G Ant2 2442



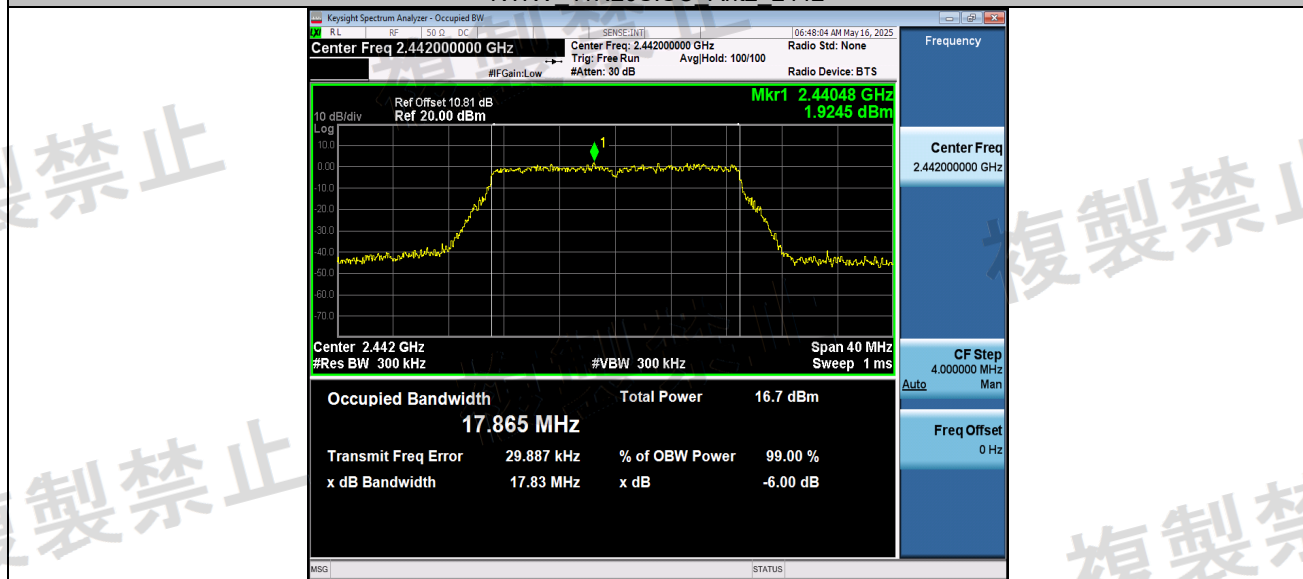
NTNV 11G Ant2 2472



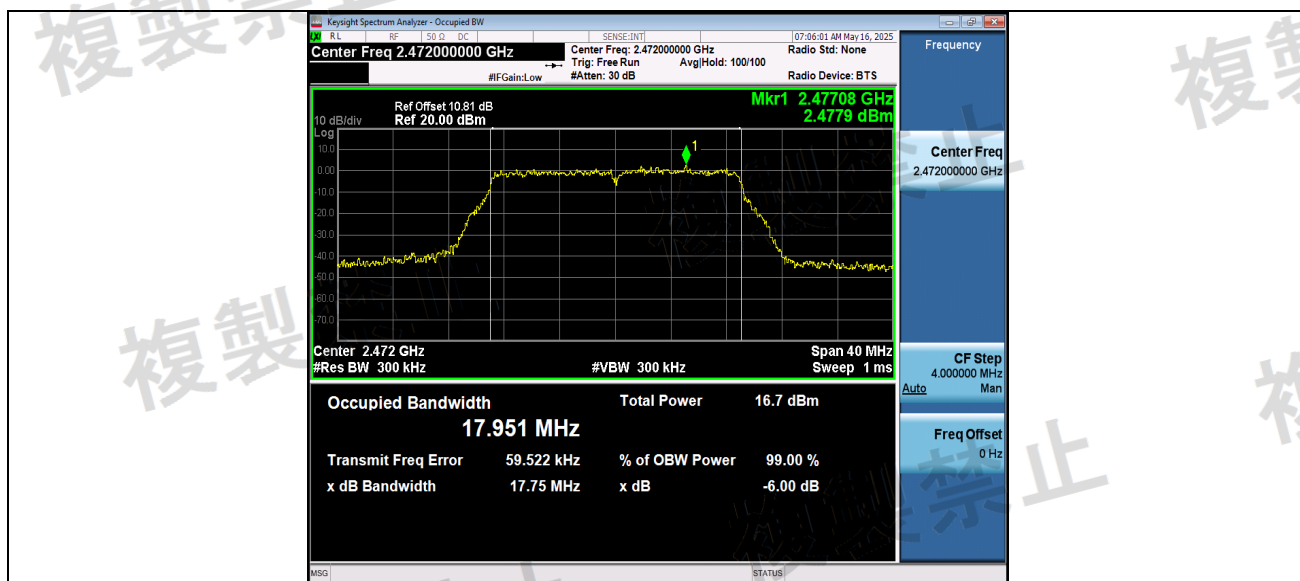
NTNV 11N20SISO Ant2 2412



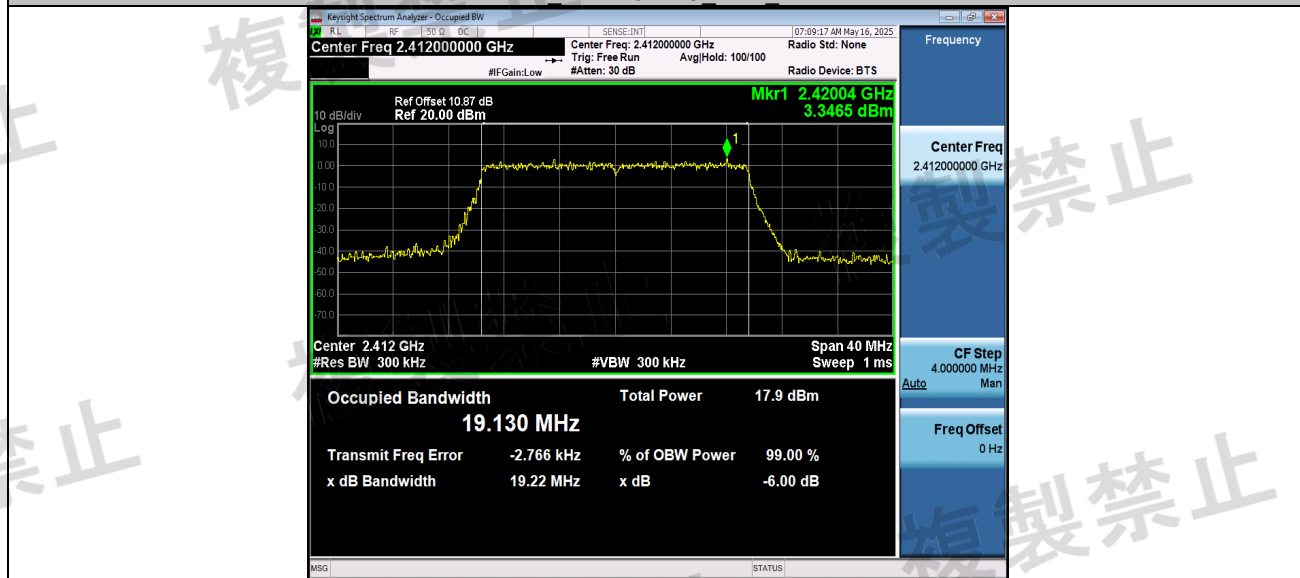
NTNV 11N20SISO Ant2 2442



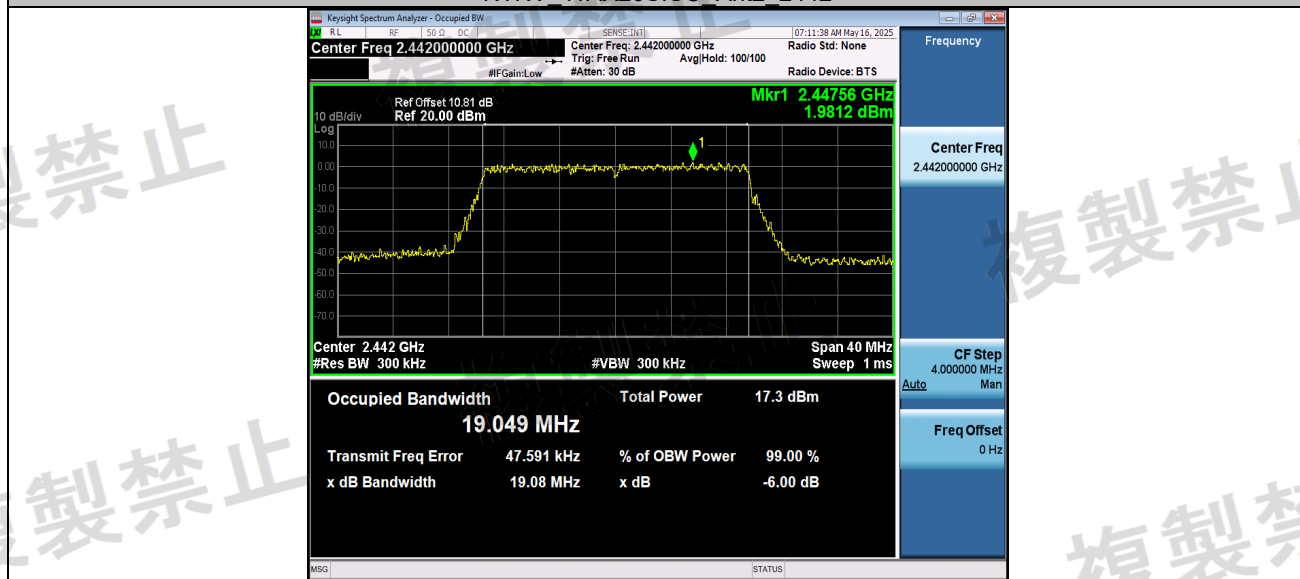
NTNV 11N20SISO Ant2 2472



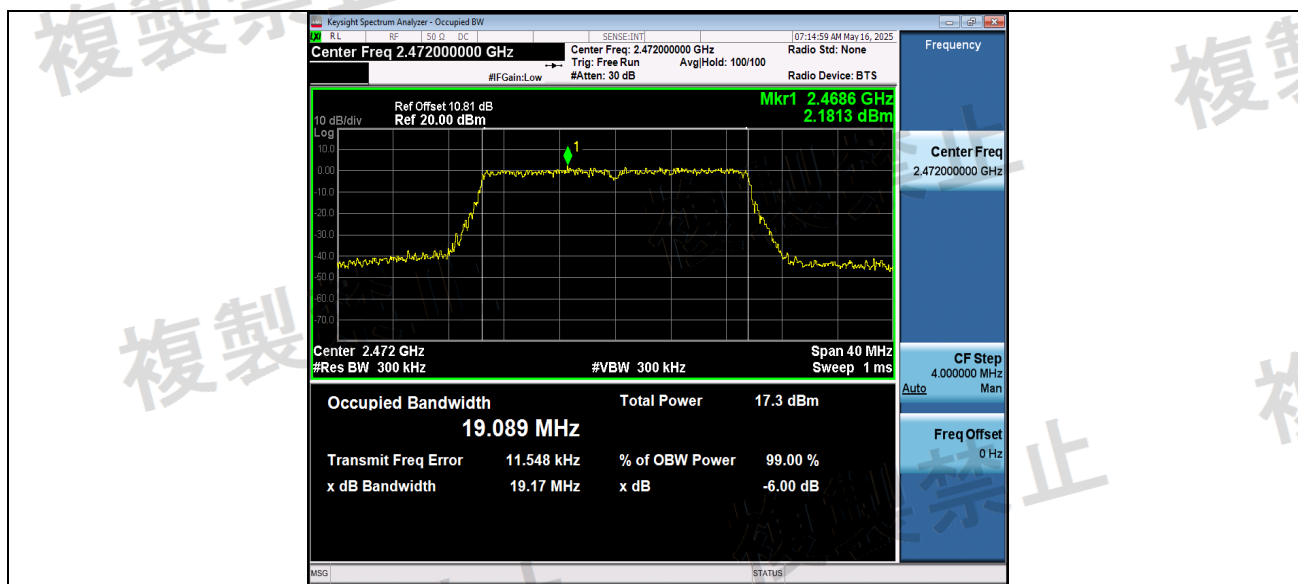
NTVN 11AX20SISO Ant2 2412



NTVN 11AX20SISO Ant2 2442



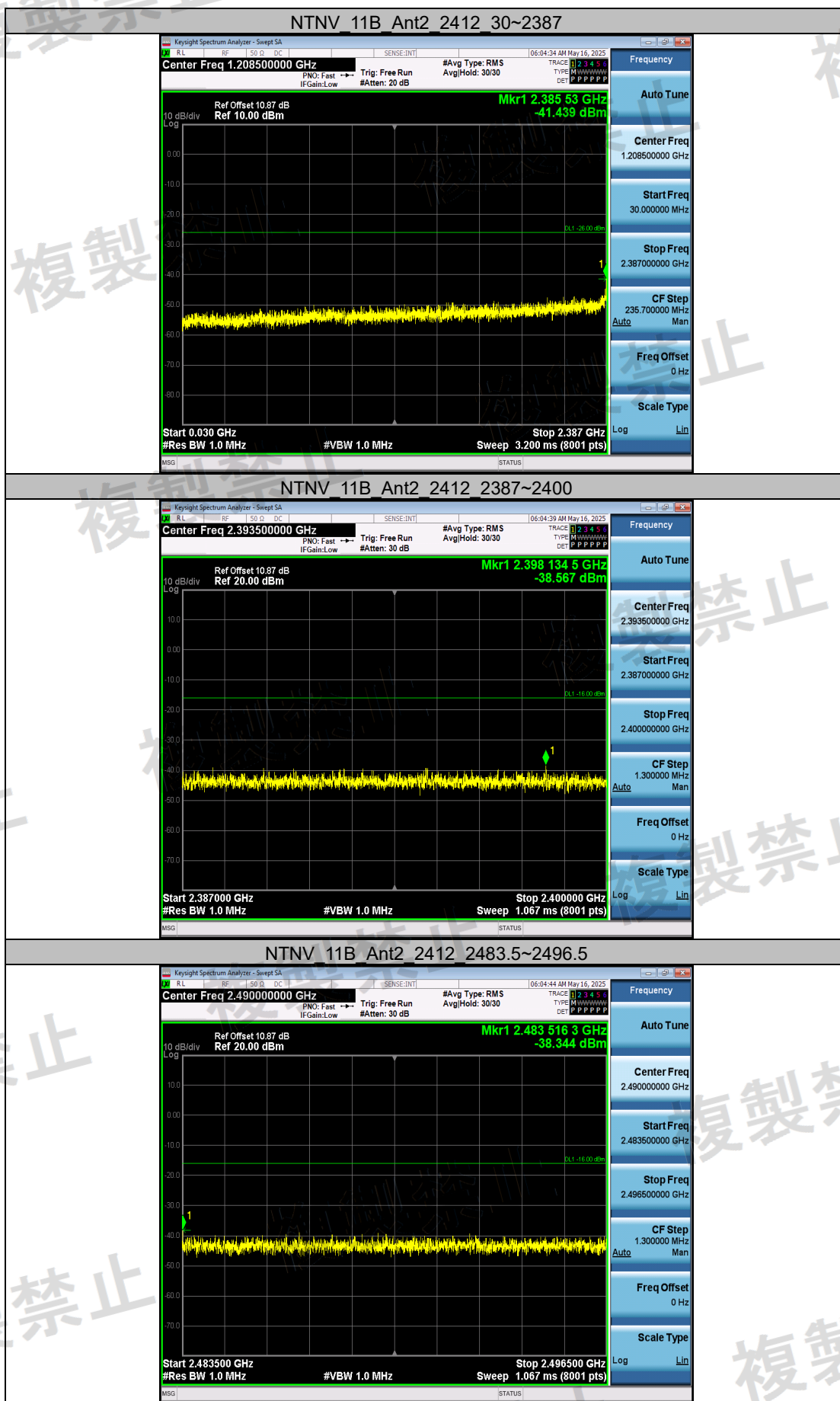
NTVN 11AX20SISO Ant2 2472

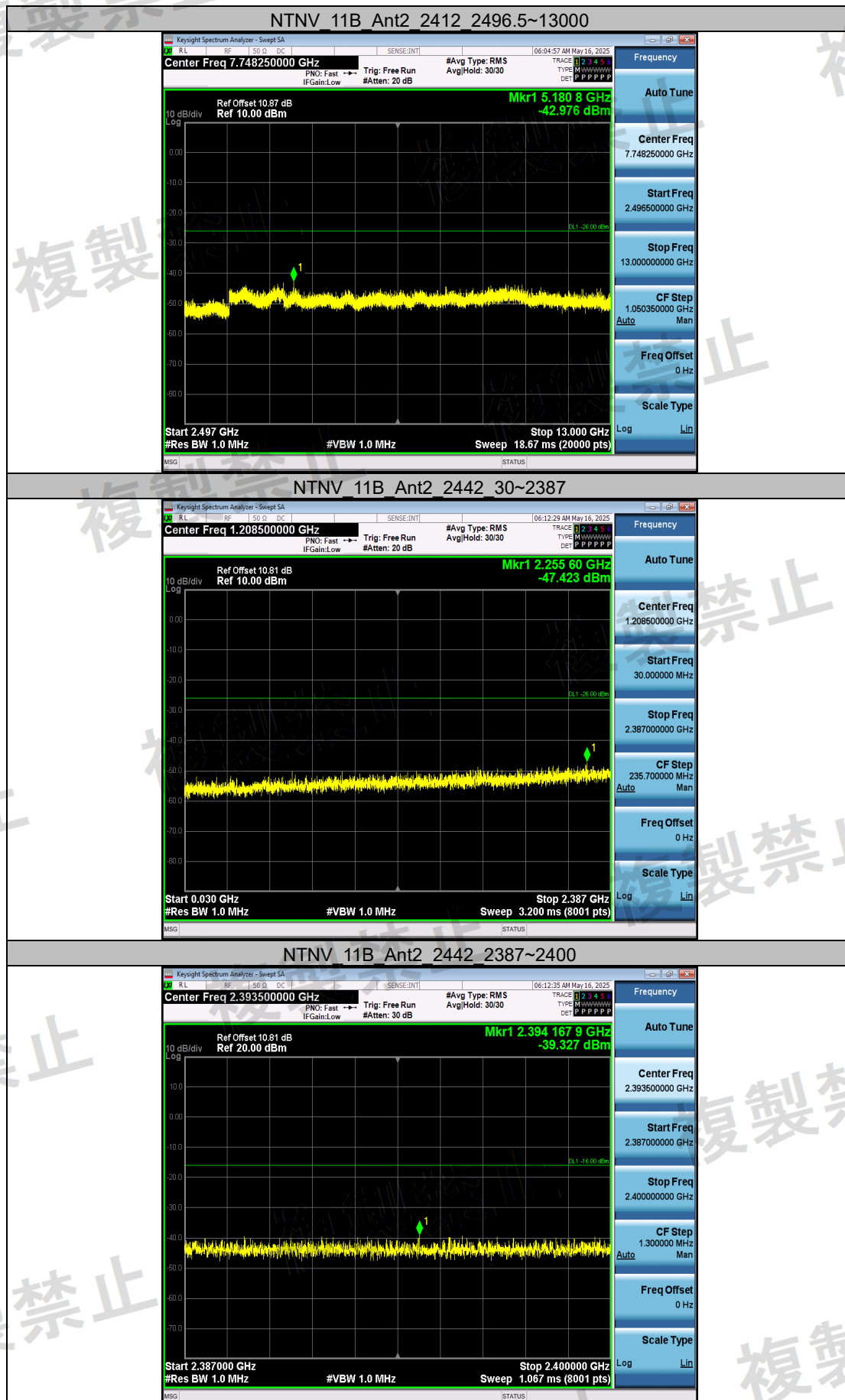


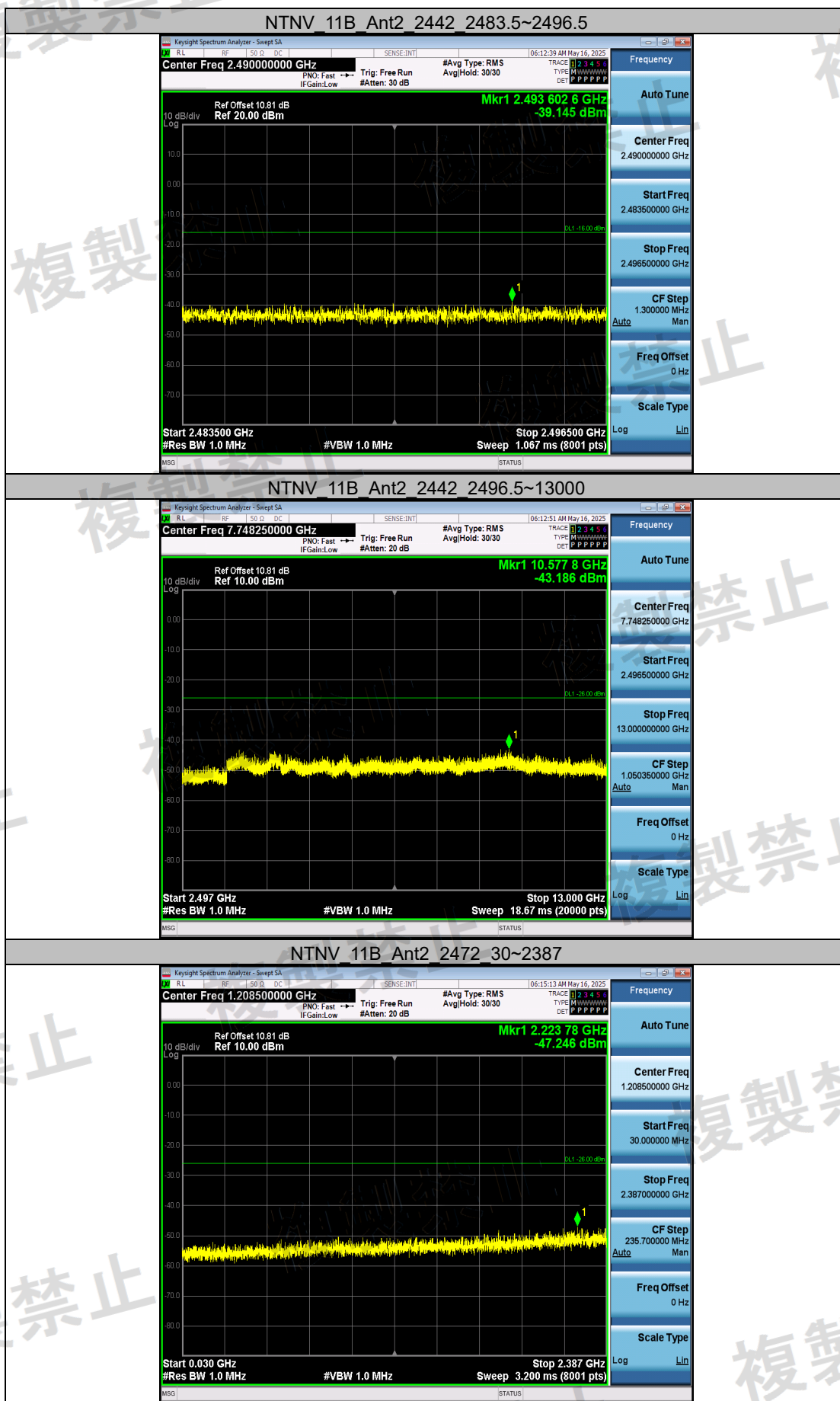
Appendix F: Transmitter Spurious Emissions

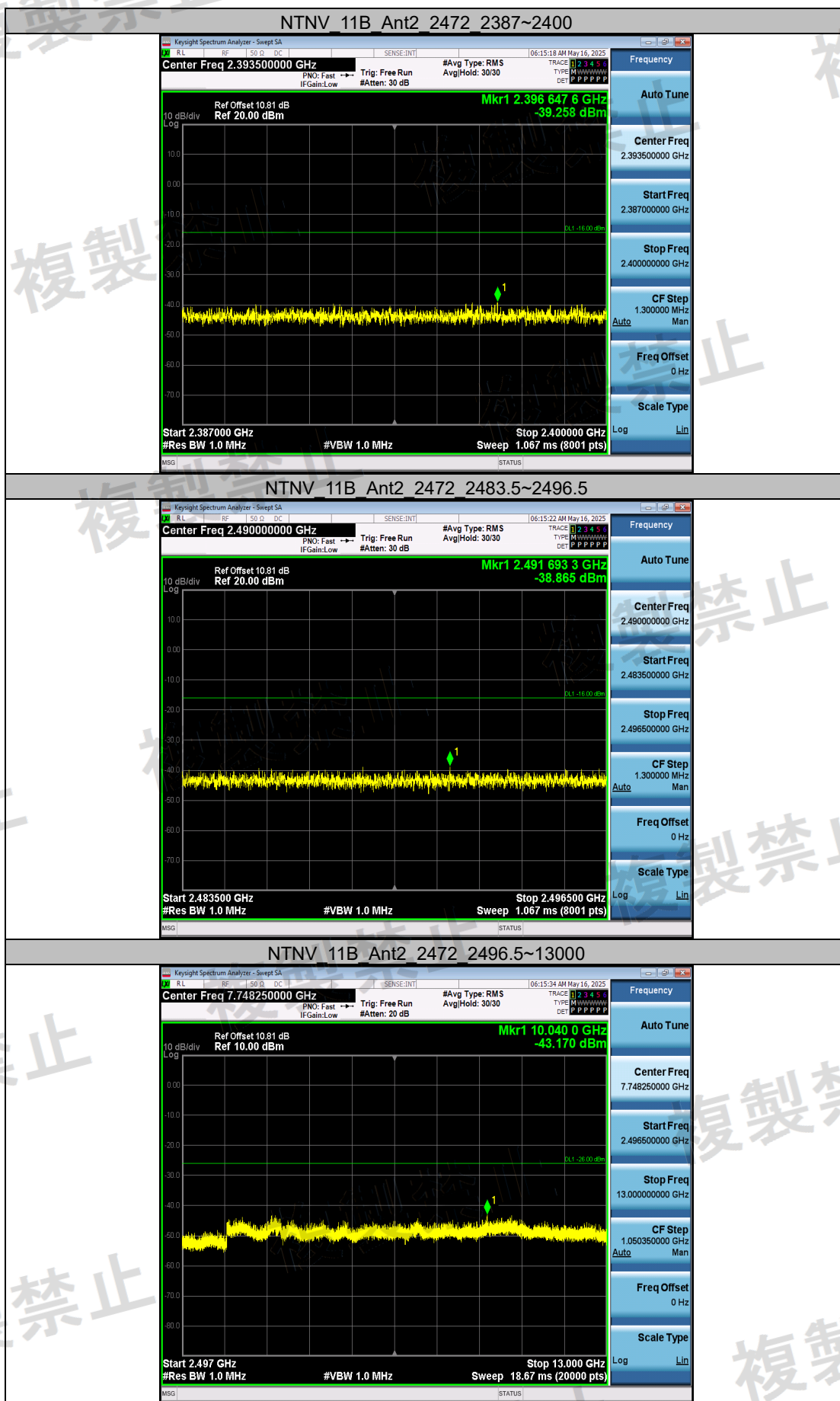
Test Result:

TestCondition	TestMode	Antenna	Freq(M Hz)	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	11B	Ant2	2412	30~2387	-41.44	≤-26	0.07178	≤2.5	PASS
				2387~2400	-38.57	≤-16	0.13900	≤25	PASS
				2483.5~2496.5	-38.34	≤-16	0.14655	≤25	PASS
				2496.5~13000	-42.98	≤-26	0.05035	≤2.5	PASS
			2442	30~2387	-47.42	≤-26	0.01811	≤2.5	PASS
				2387~2400	-39.33	≤-16	0.11668	≤25	PASS
				2483.5~2496.5	-39.15	≤-16	0.12162	≤25	PASS
				2496.5~13000	-43.19	≤-26	0.04797	≤2.5	PASS
			2472	30~2387	-47.25	≤-26	0.01884	≤2.5	PASS
				2387~2400	-39.26	≤-16	0.11858	≤25	PASS
				2483.5~2496.5	-38.87	≤-16	0.12972	≤25	PASS
				2496.5~13000	-43.17	≤-26	0.04819	≤2.5	PASS
	11G	Ant2	2412	30~2387	-46.68	≤-26	0.02148	≤2.5	PASS
				2387~2400	-29.19	≤-16	1.20504	≤25	PASS
				2483.5~2496.5	-38.28	≤-16	0.14859	≤25	PASS
				2496.5~13000	-42.07	≤-26	0.06209	≤2.5	PASS
			2442	30~2387	-46.94	≤-26	0.02023	≤2.5	PASS
				2387~2400	-38.93	≤-16	0.12794	≤25	PASS
				2483.5~2496.5	-37.93	≤-16	0.16106	≤25	PASS
				2496.5~13000	-43.68	≤-26	0.04285	≤2.5	PASS
			2472	30~2387	-47.28	≤-26	0.01871	≤2.5	PASS
				2387~2400	-39.05	≤-16	0.12445	≤25	PASS
				2483.5~2496.5	-21.95	≤-16	6.38263	≤25	PASS
				2496.5~13000	-43.38	≤-26	0.04592	≤2.5	PASS
	11N20SI SO	Ant2	2412	30~2387	-46.09	≤-26	0.02460	≤2.5	PASS
				2387~2400	-28.16	≤-16	1.52757	≤25	PASS
				2483.5~2496.5	-38.49	≤-16	0.14158	≤25	PASS
				2496.5~13000	-42.93	≤-26	0.05093	≤2.5	PASS
			2442	30~2387	-47.29	≤-26	0.01866	≤2.5	PASS
				2387~2400	-38.97	≤-16	0.12677	≤25	PASS
				2483.5~2496.5	-37.80	≤-16	0.16596	≤25	PASS
				2496.5~13000	-43.30	≤-26	0.04677	≤2.5	PASS
			2472	30~2387	-47.20	≤-26	0.01905	≤2.5	PASS
				2387~2400	-39.38	≤-16	0.11535	≤25	PASS
				2483.5~2496.5	-22.31	≤-16	5.87489	≤25	PASS
				2496.5~13000	-43.08	≤-26	0.04920	≤2.5	PASS
	11AX20S ISO	Ant2	2412	30~2387	-40.95	≤-26	0.08035	≤2.5	PASS
				2387~2400	-26.98	≤-16	2.00447	≤25	PASS
				2483.5~2496.5	-37.81	≤-16	0.16558	≤25	PASS
				2496.5~13000	-43.62	≤-26	0.04345	≤2.5	PASS
			2442	30~2387	-45.74	≤-26	0.02667	≤2.5	PASS
				2387~2400	-39.38	≤-16	0.11535	≤25	PASS
				2483.5~2496.5	-38.19	≤-16	0.15171	≤25	PASS
				2496.5~13000	-42.88	≤-26	0.05152	≤2.5	PASS
			2472	30~2387	-46.42	≤-26	0.02280	≤2.5	PASS
				2387~2400	-39.50	≤-16	0.11220	≤25	PASS
				2483.5~2496.5	-38.75	≤-16	0.13335	≤25	PASS
				2496.5~13000	-43.56	≤-26	0.04406	≤2.5	PASS

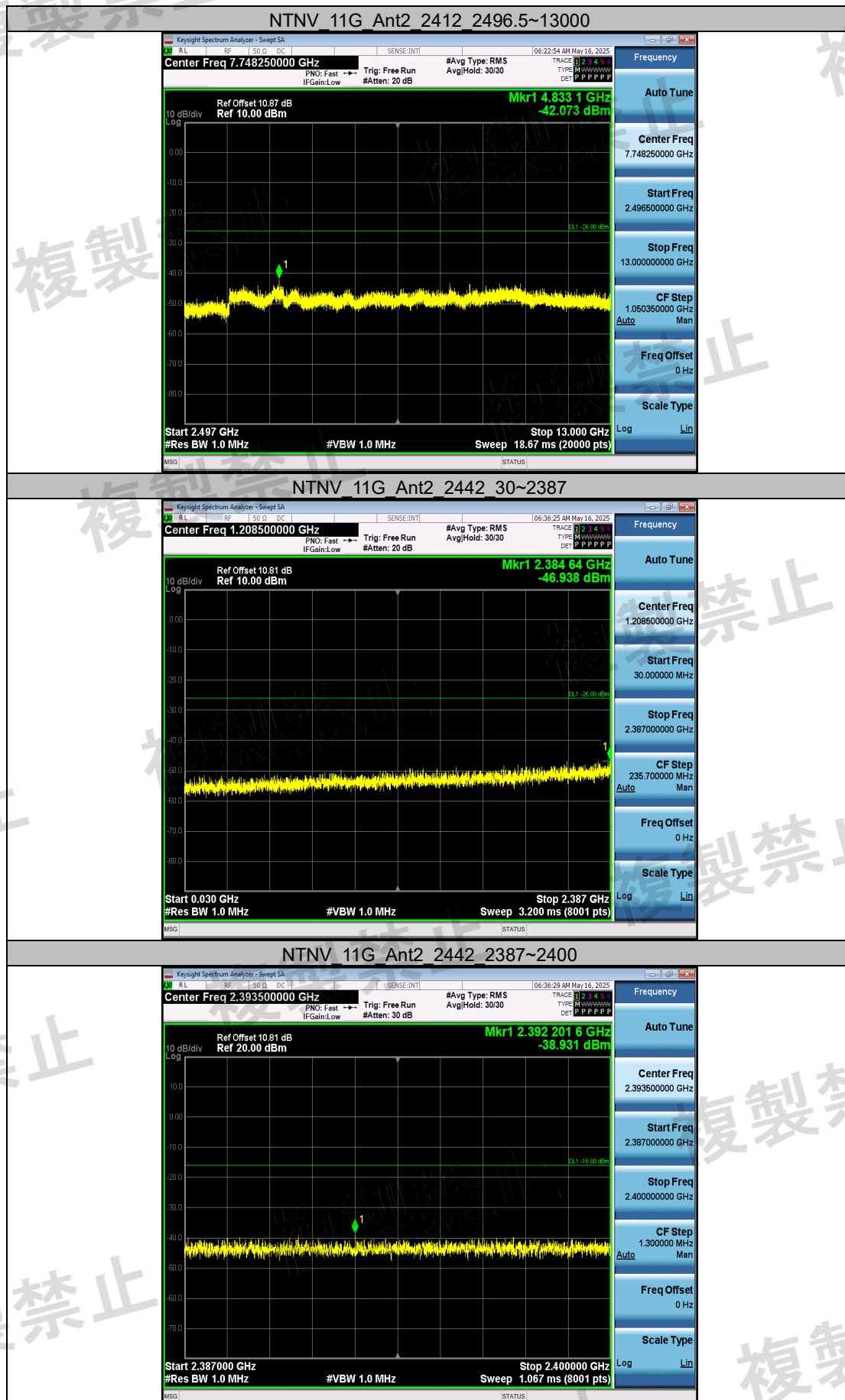


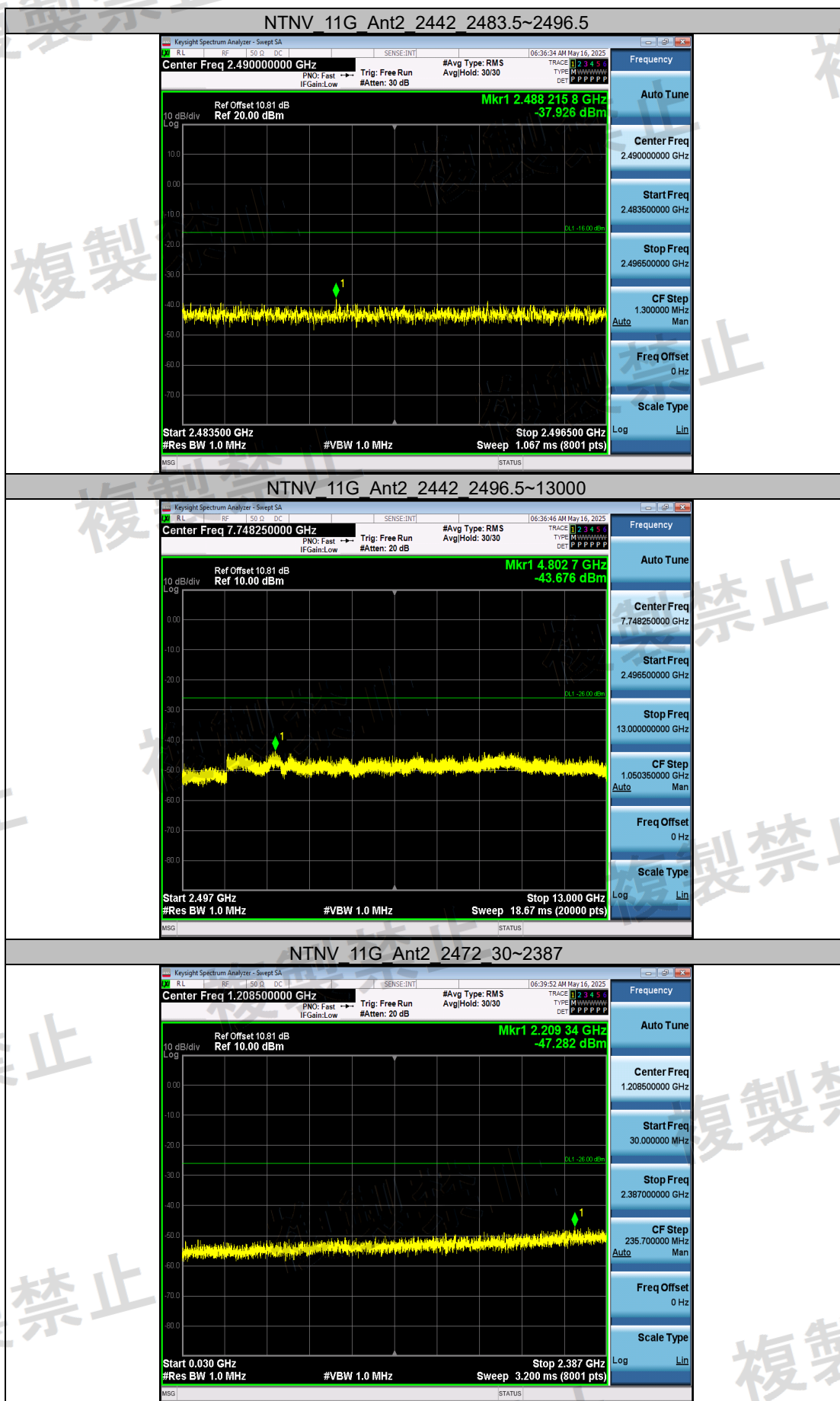


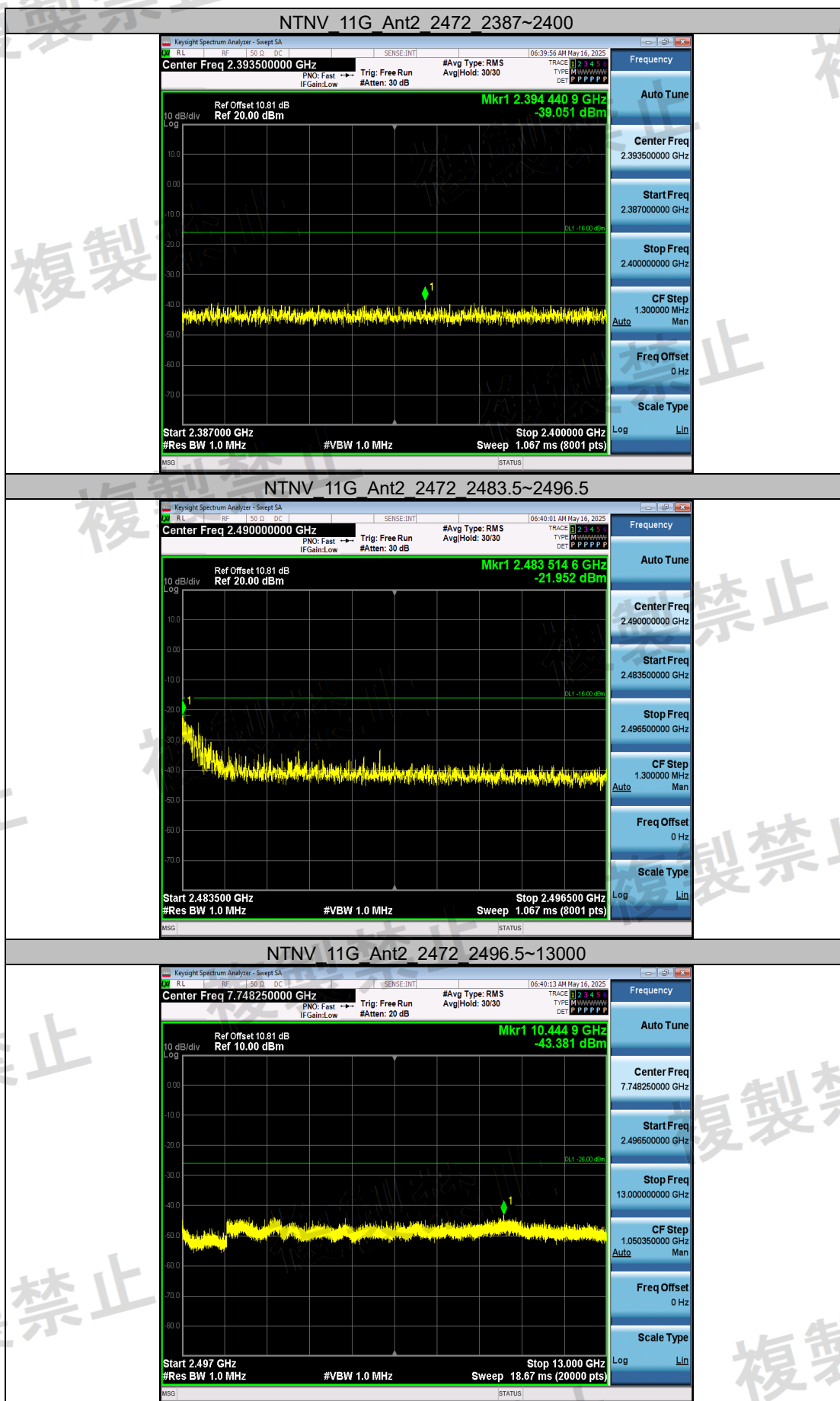


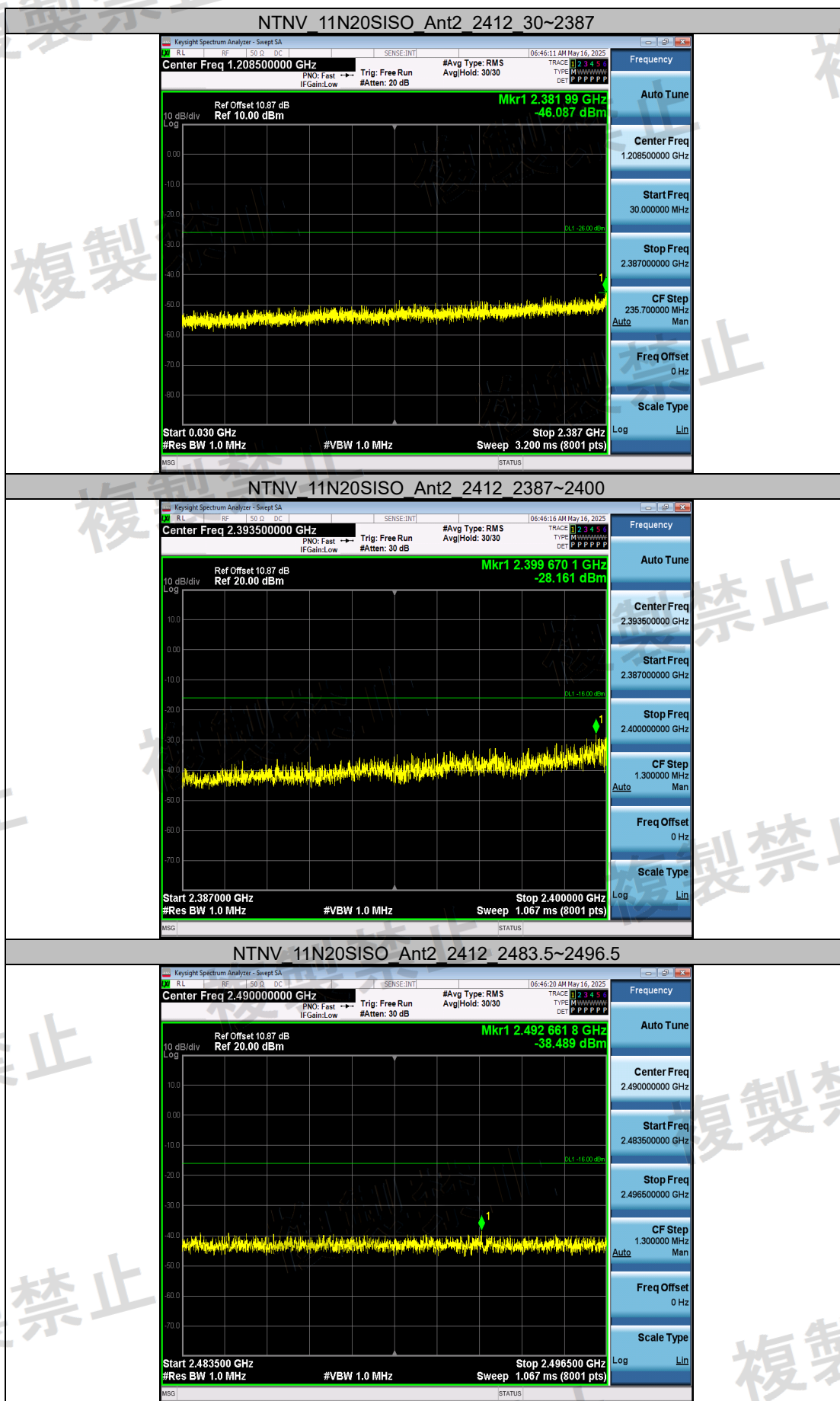


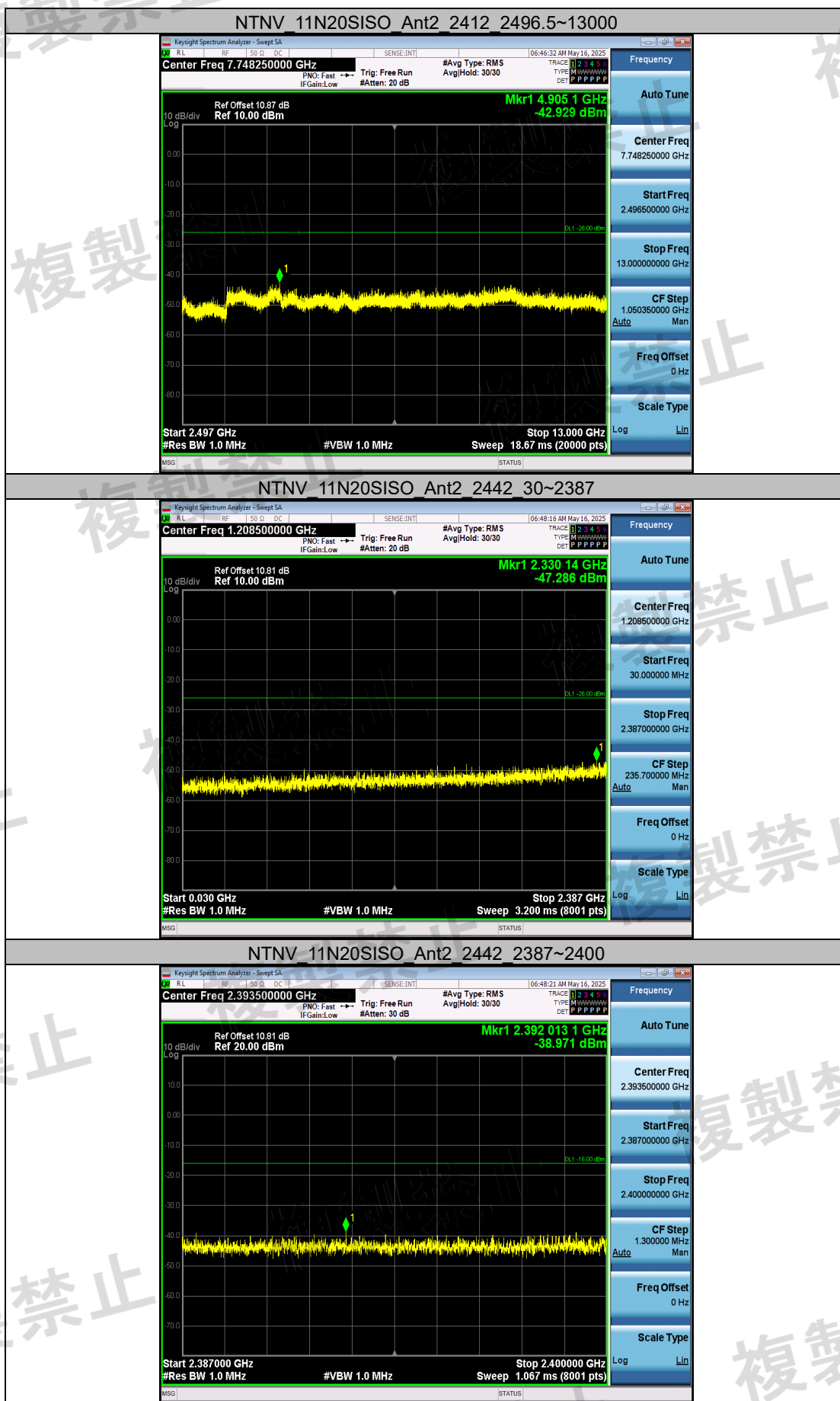


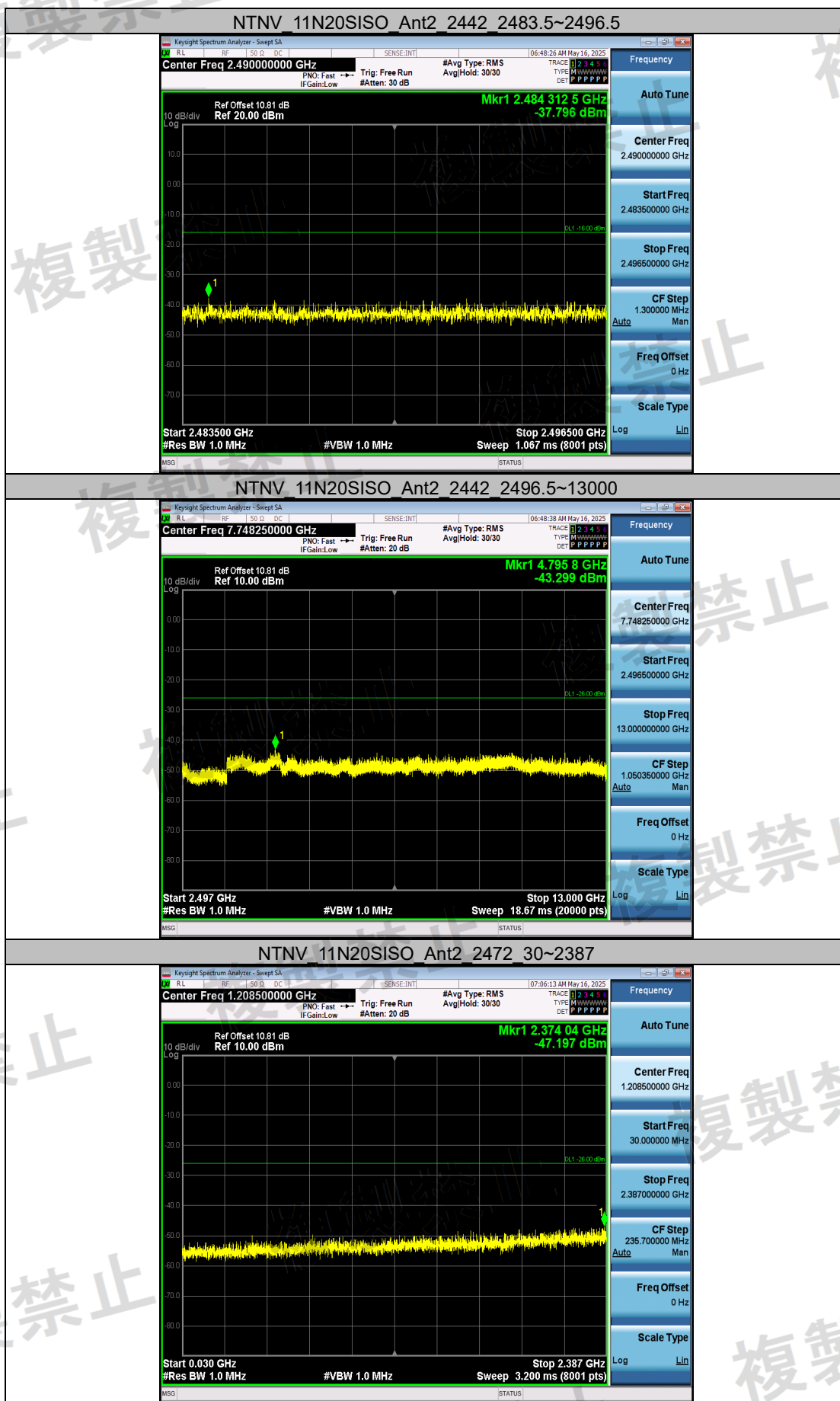


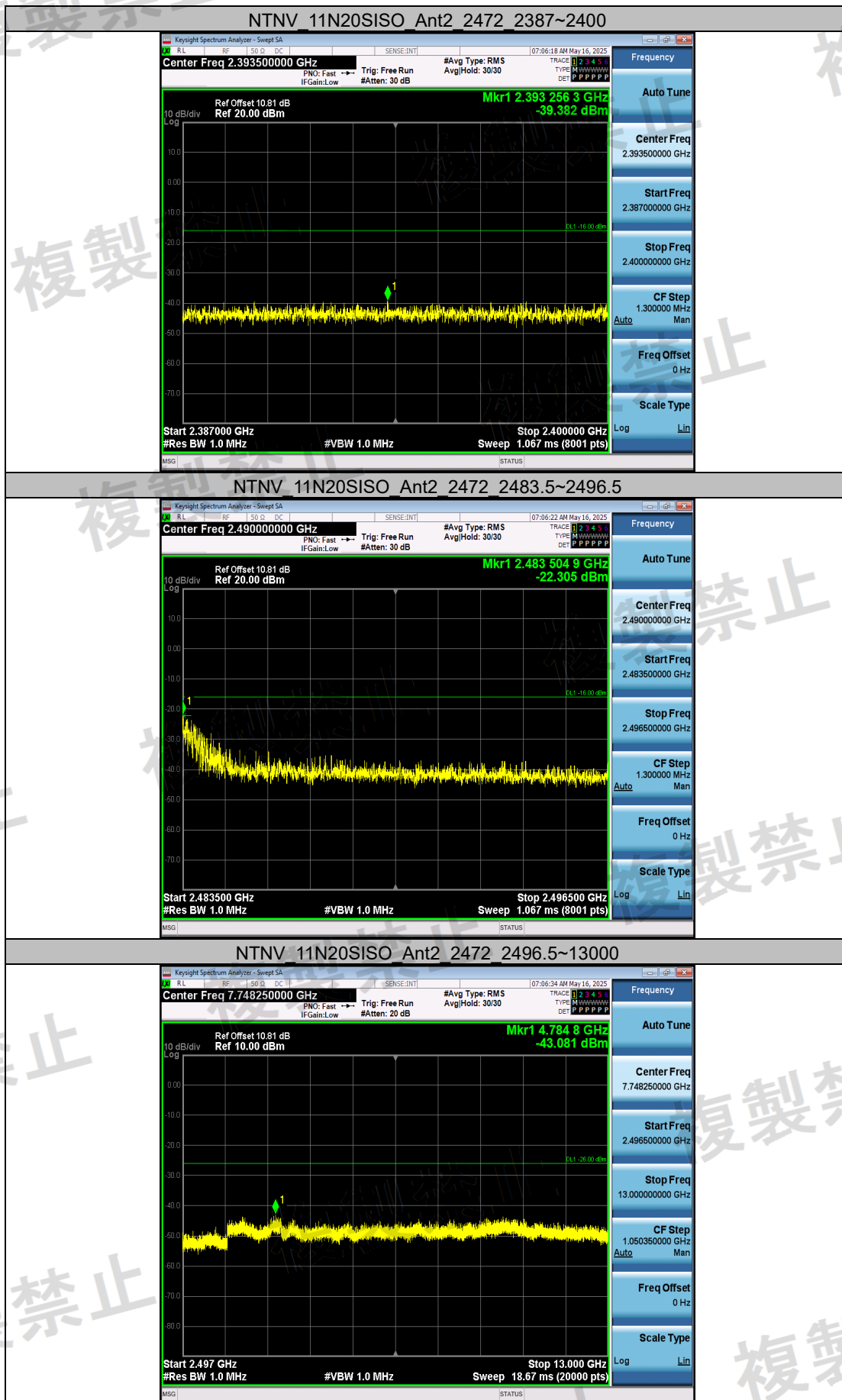


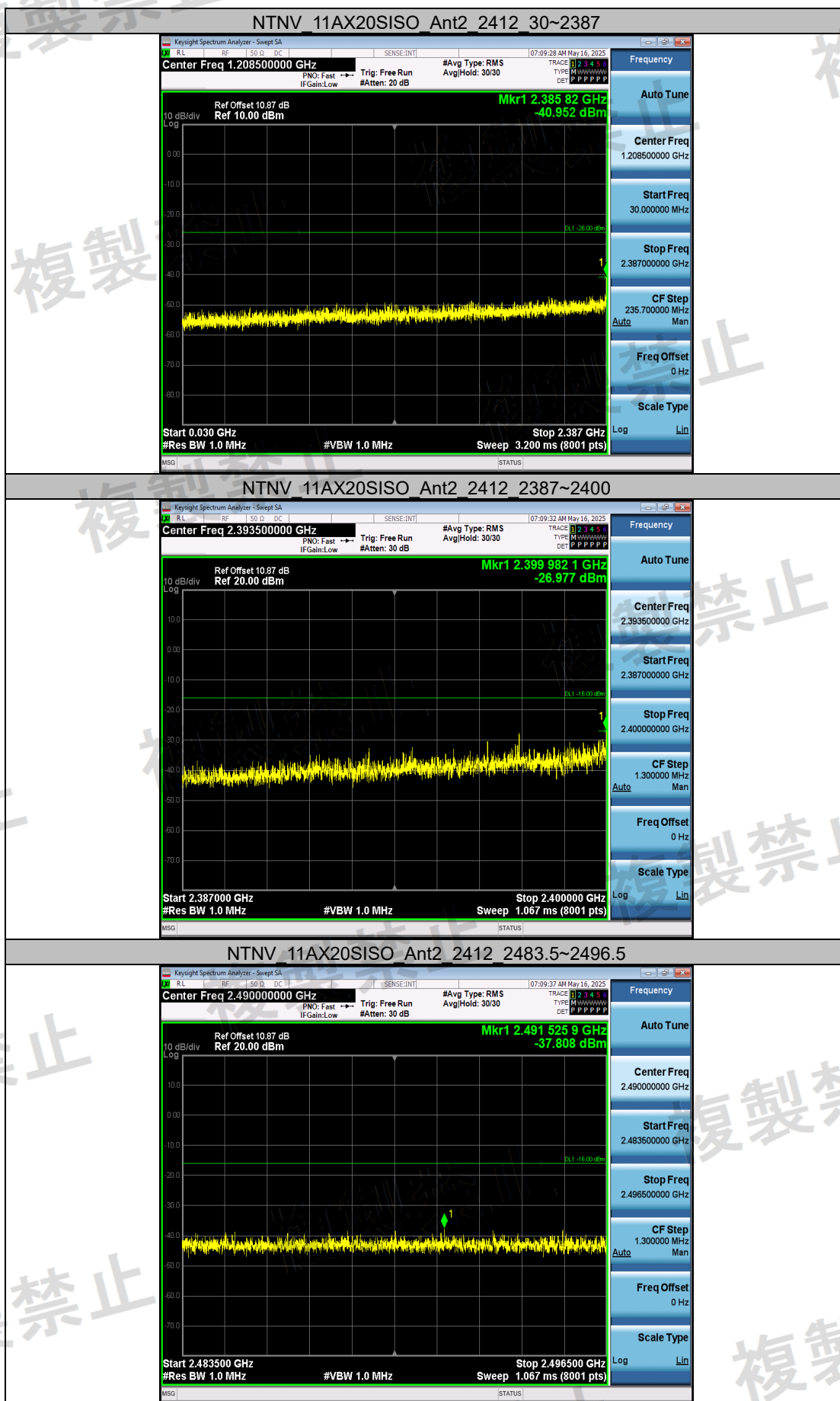


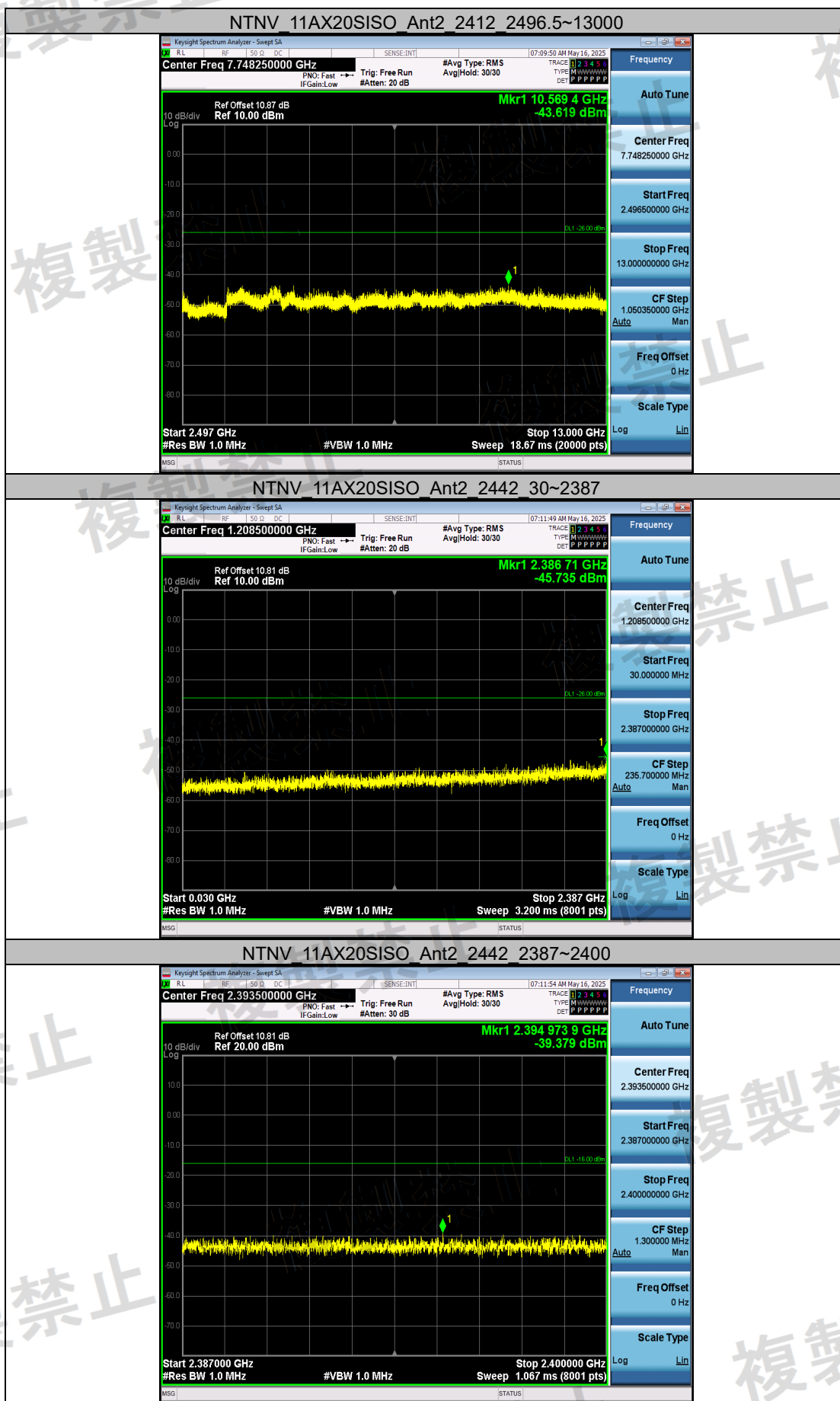


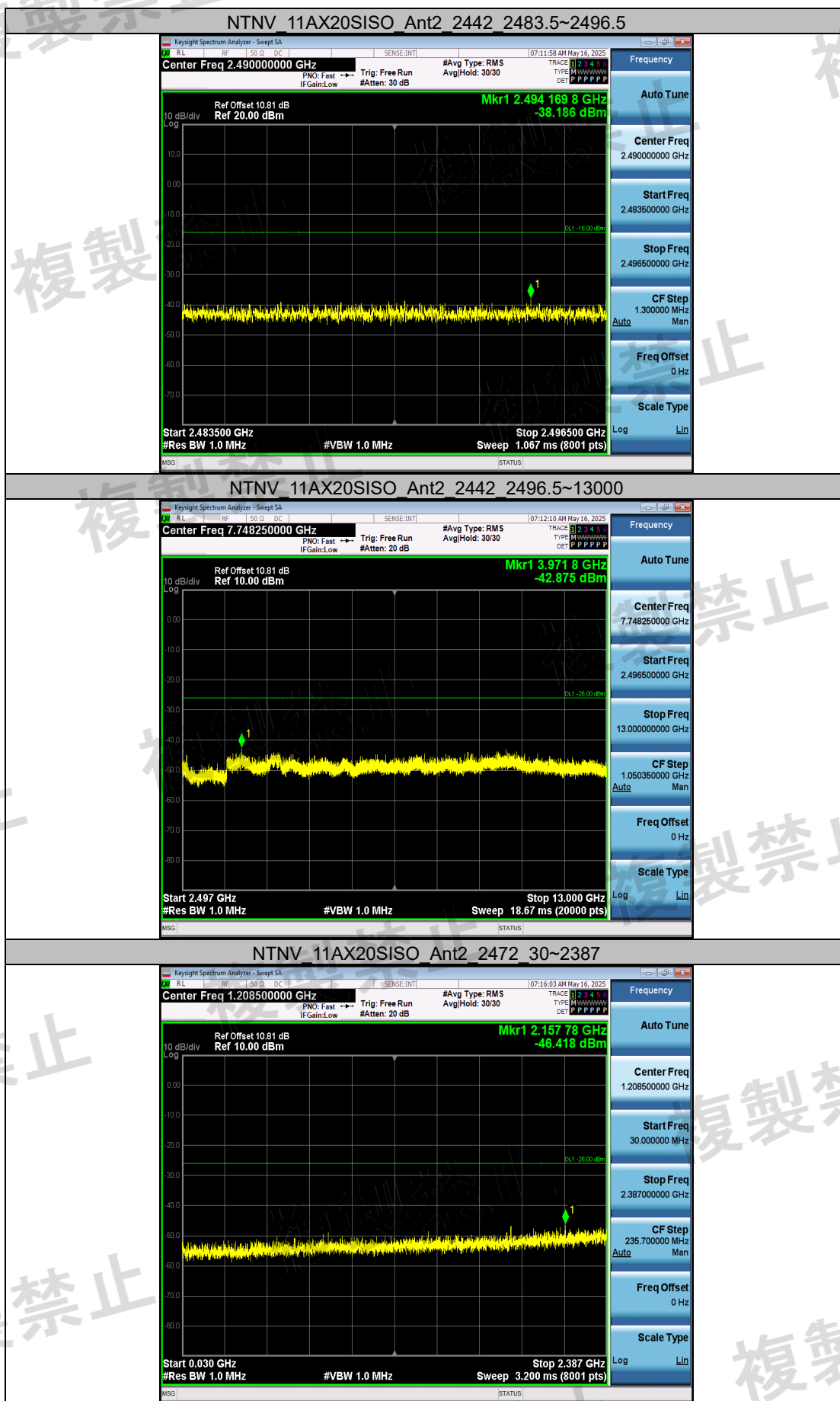


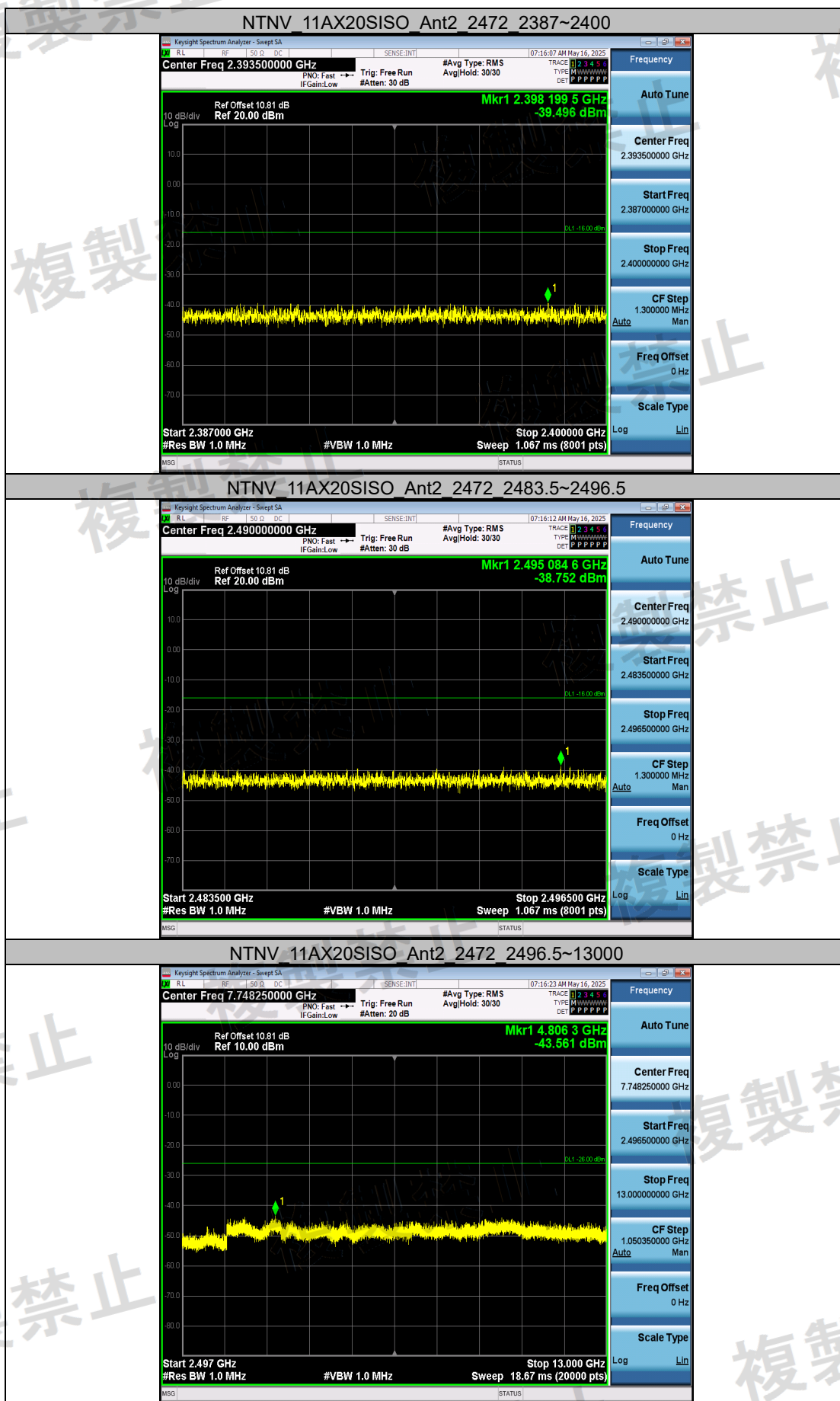








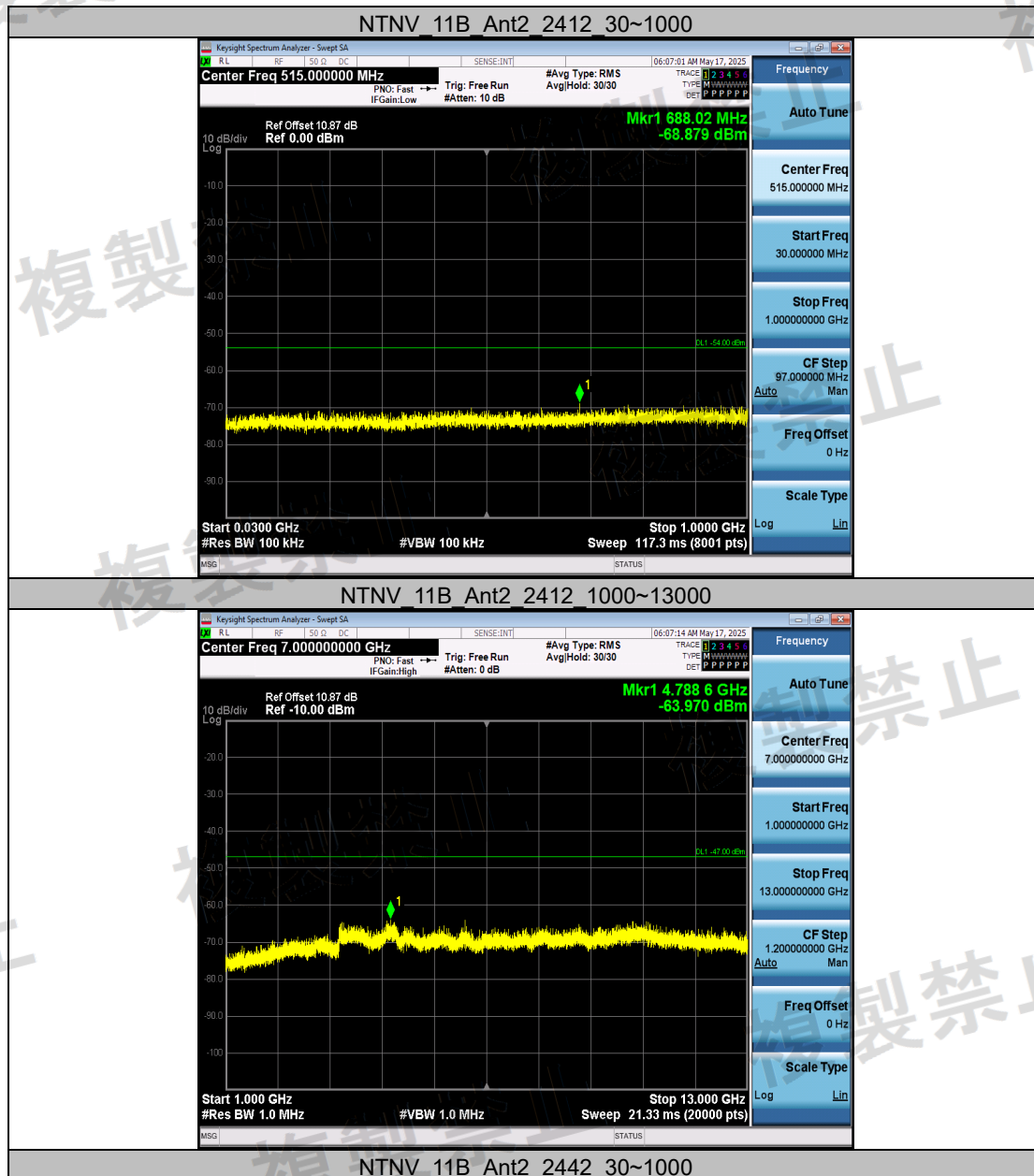


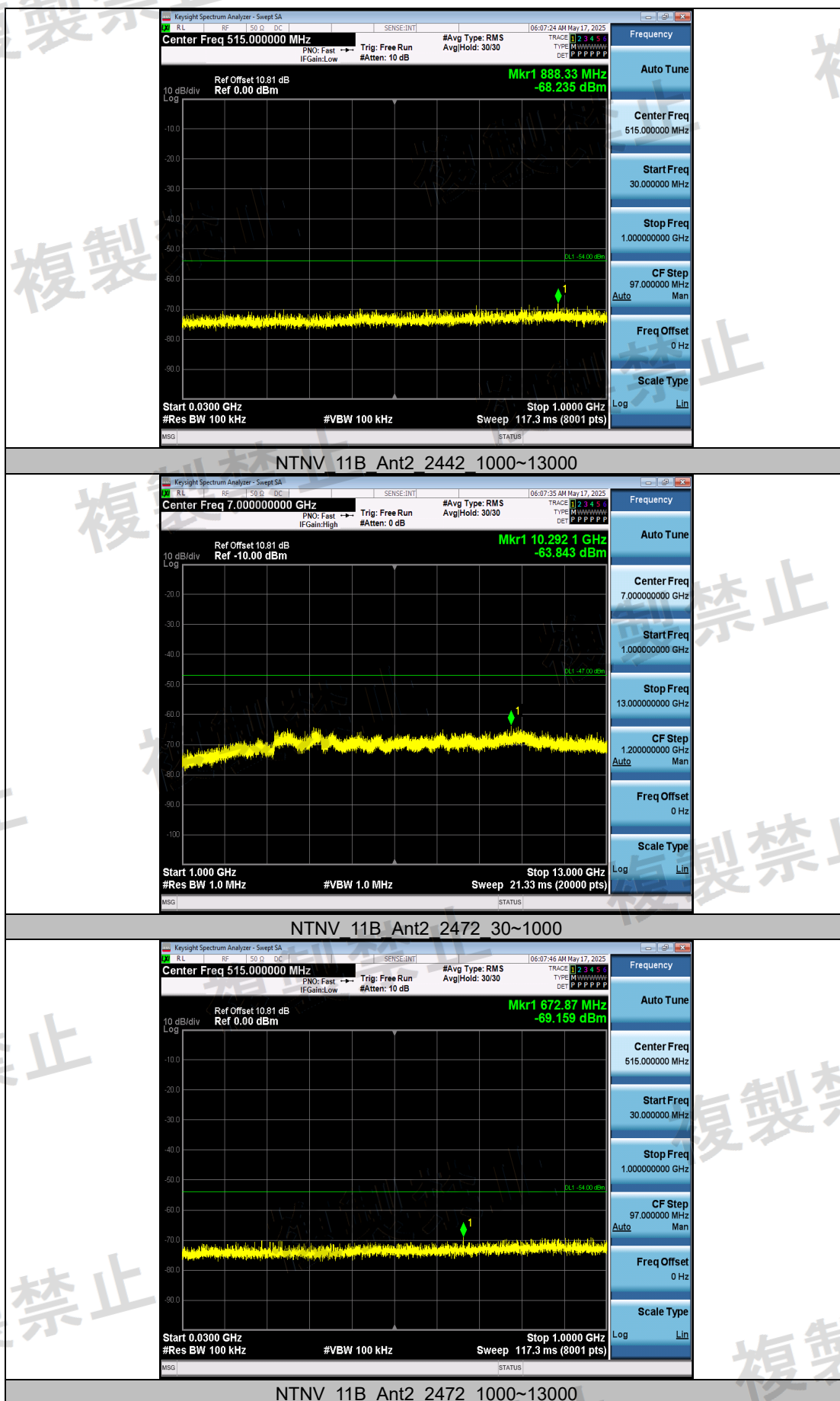


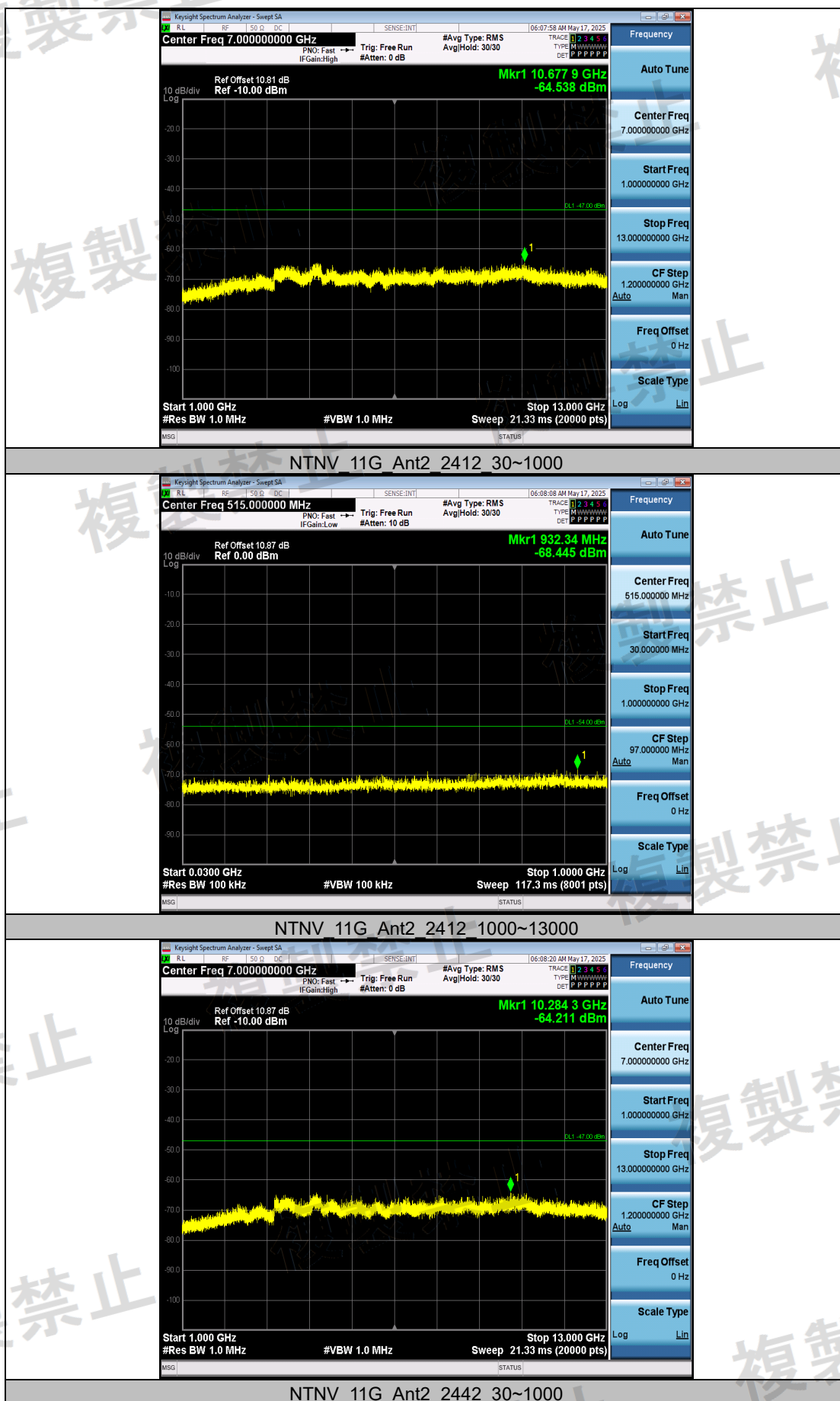
Appendix G: Receiver spurious emissions

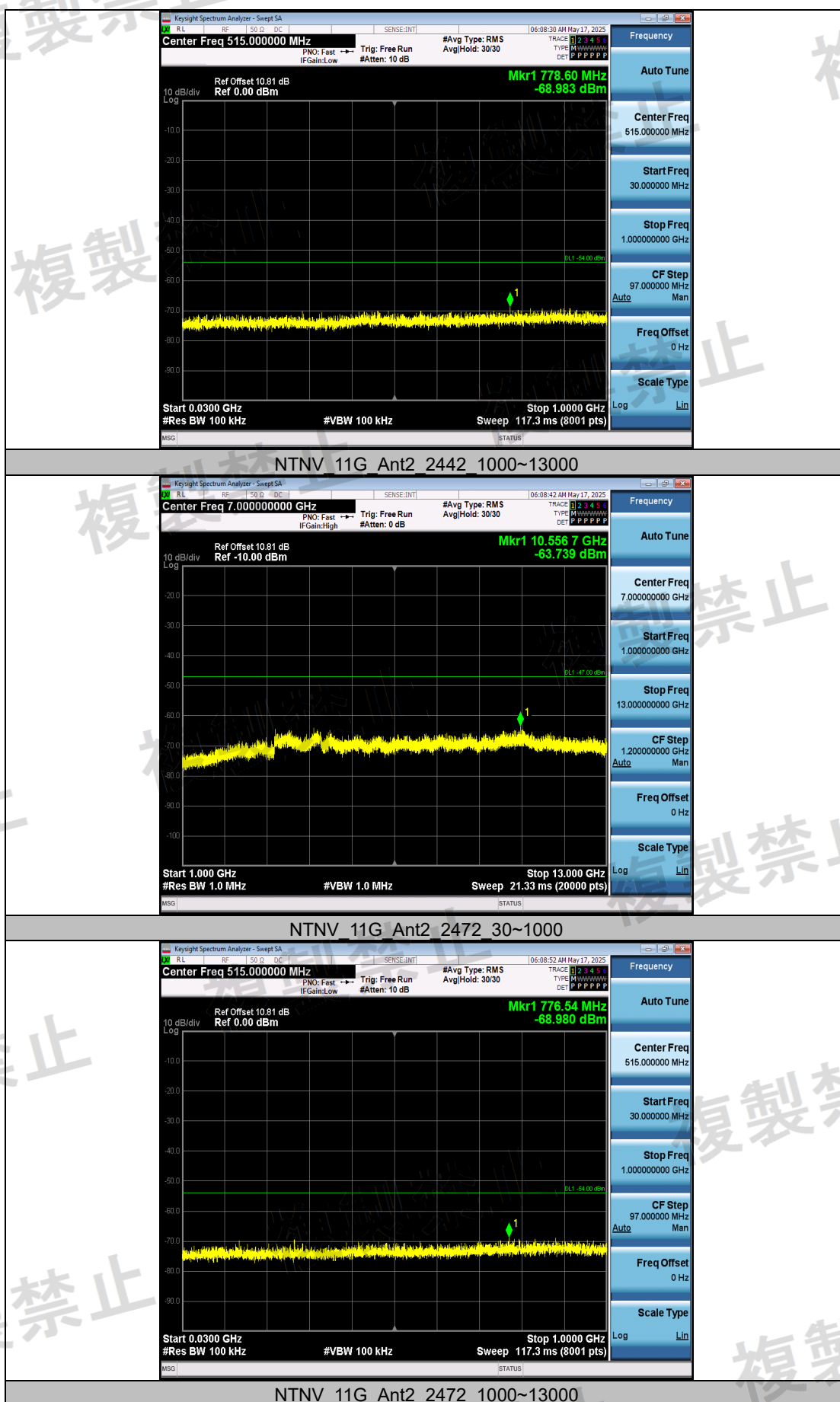
Test Result:

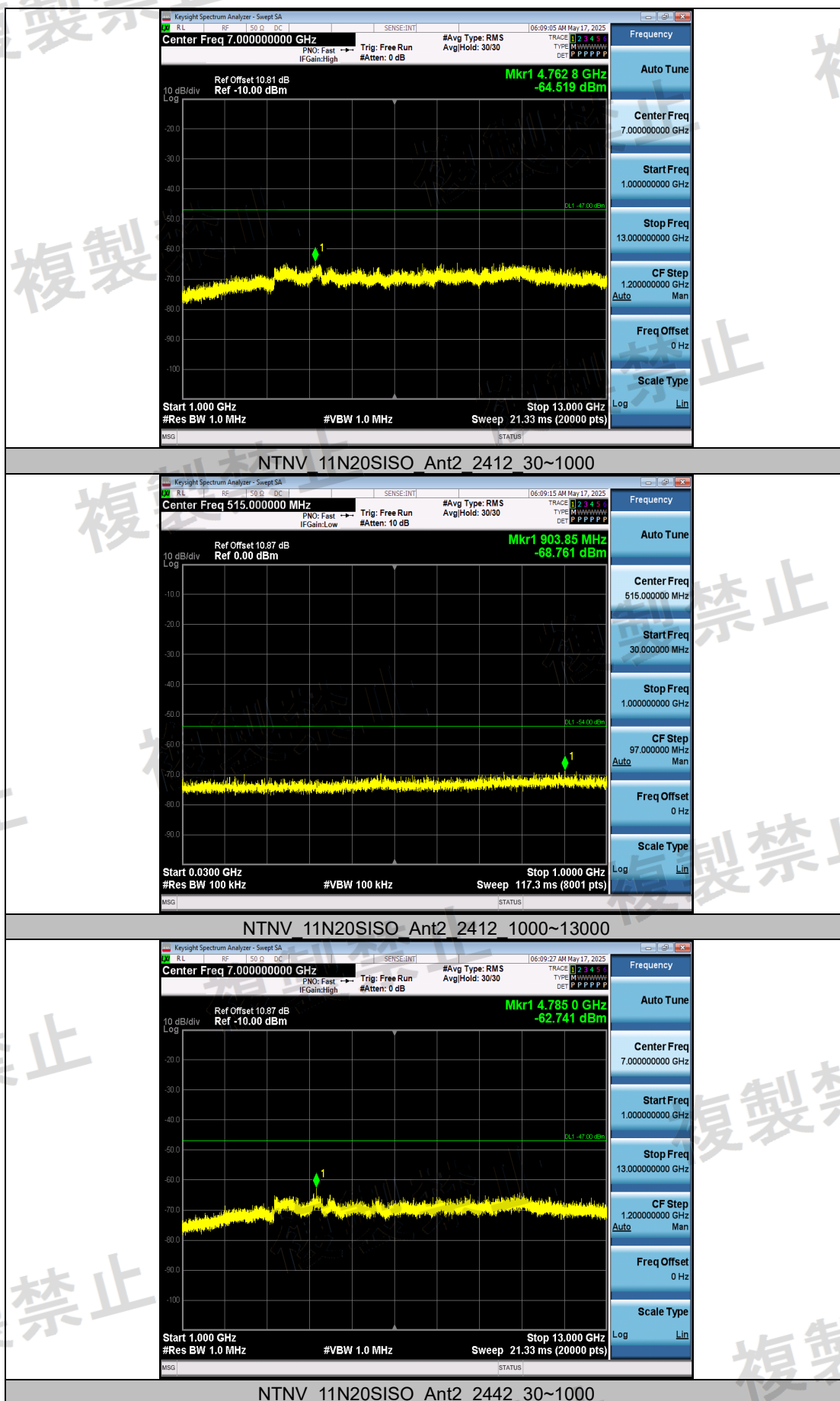
TestCondition	TestMode	Antenna	Freq(M Hz)	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	11B	Ant2	2412	30~1000	-68.88	≤-54	0.12942	≤4	PASS
				1000~13000	-63.97	≤-47	0.40087	≤20	PASS
			2442	30~1000	-68.24	≤-54	0.14997	≤4	PASS
				1000~13000	-63.84	≤-47	0.41305	≤20	PASS
			2472	30~1000	-69.16	≤-54	0.12134	≤4	PASS
				1000~13000	-64.54	≤-47	0.35156	≤20	PASS
	11G	Ant2	2412	30~1000	-68.45	≤-54	0.14289	≤4	PASS
				1000~13000	-64.21	≤-47	0.37931	≤20	PASS
			2442	30~1000	-68.98	≤-54	0.12647	≤4	PASS
				1000~13000	-63.74	≤-47	0.42267	≤20	PASS
			2472	30~1000	-68.98	≤-54	0.12647	≤4	PASS
				1000~13000	-64.52	≤-47	0.35318	≤20	PASS
	11N20SI SO	Ant2	2412	30~1000	-68.76	≤-54	0.13305	≤4	PASS
				1000~13000	-62.74	≤-47	0.53211	≤20	PASS
			2442	30~1000	-69.01	≤-54	0.12560	≤4	PASS
				1000~13000	-63.63	≤-47	0.43351	≤20	PASS
			2472	30~1000	-68.54	≤-54	0.13996	≤4	PASS
				1000~13000	-63.84	≤-47	0.41305	≤20	PASS
	11AX20S ISO	Ant2	2412	30~1000	-68.48	≤-54	0.14191	≤4	PASS
				1000~13000	-64.02	≤-47	0.39628	≤20	PASS
			2442	30~1000	-68.98	≤-54	0.12647	≤4	PASS
				1000~13000	-63.96	≤-47	0.40179	≤20	PASS
			2472	30~1000	-68.91	≤-54	0.12853	≤4	PASS
				1000~13000	-62.57	≤-47	0.55335	≤20	PASS

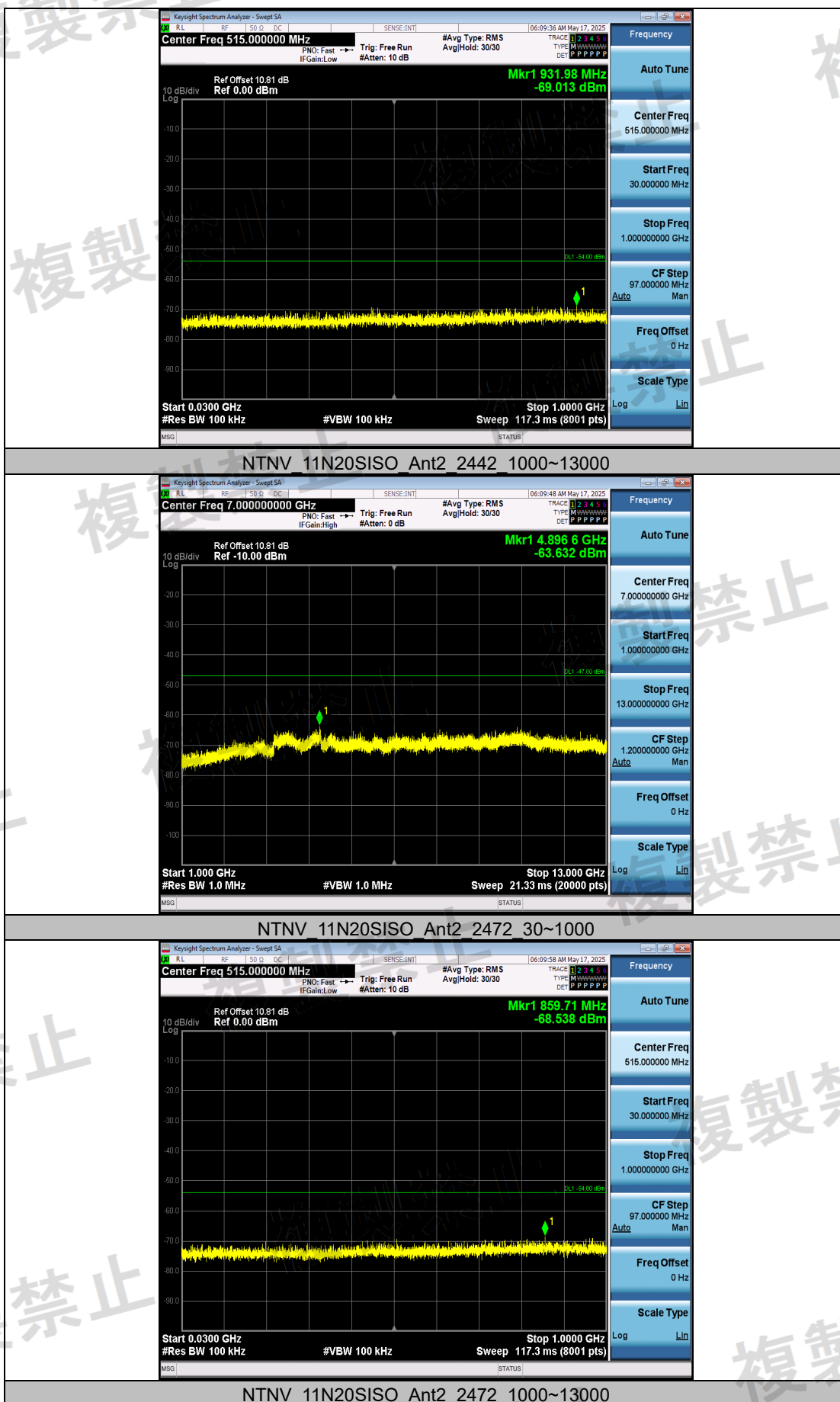


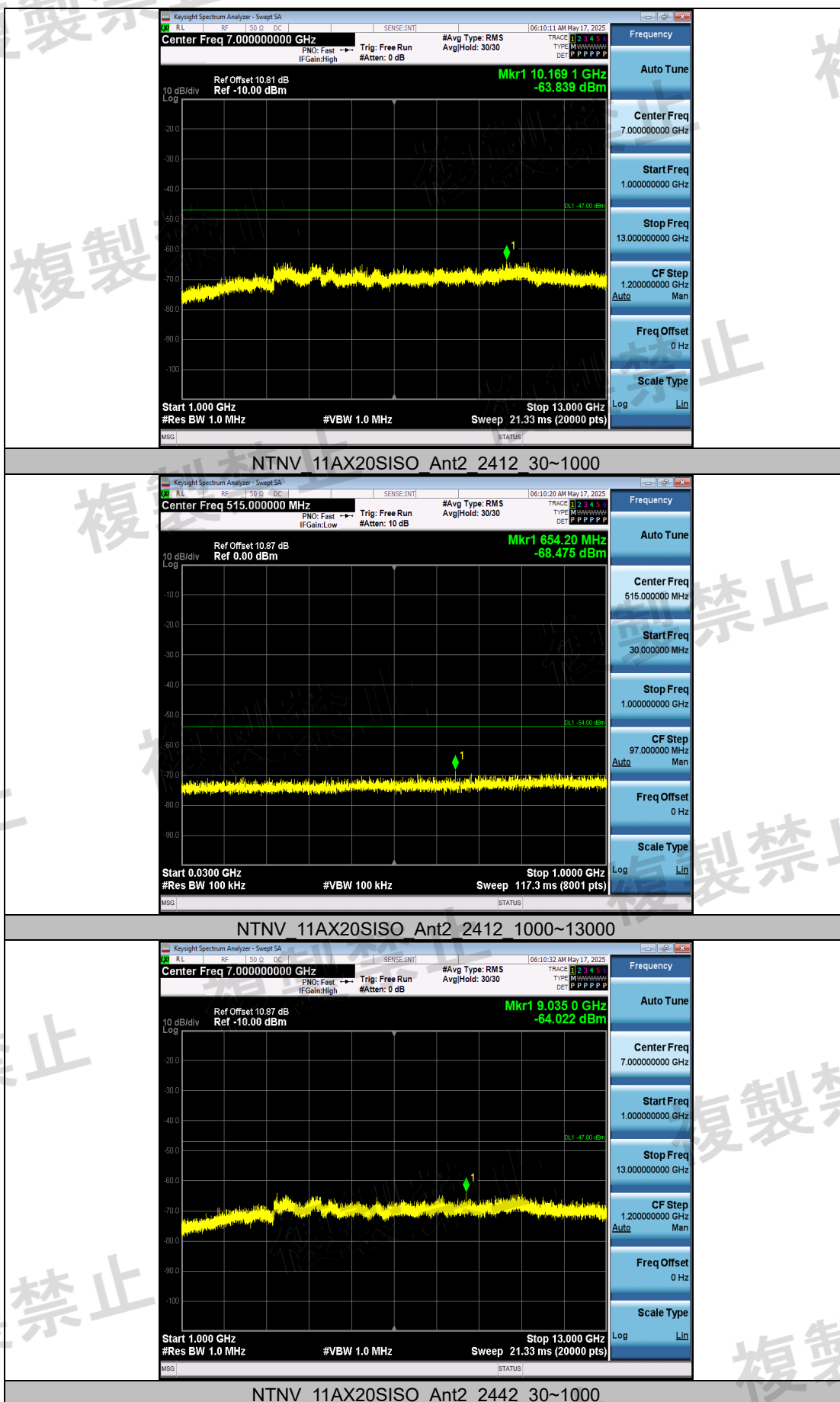


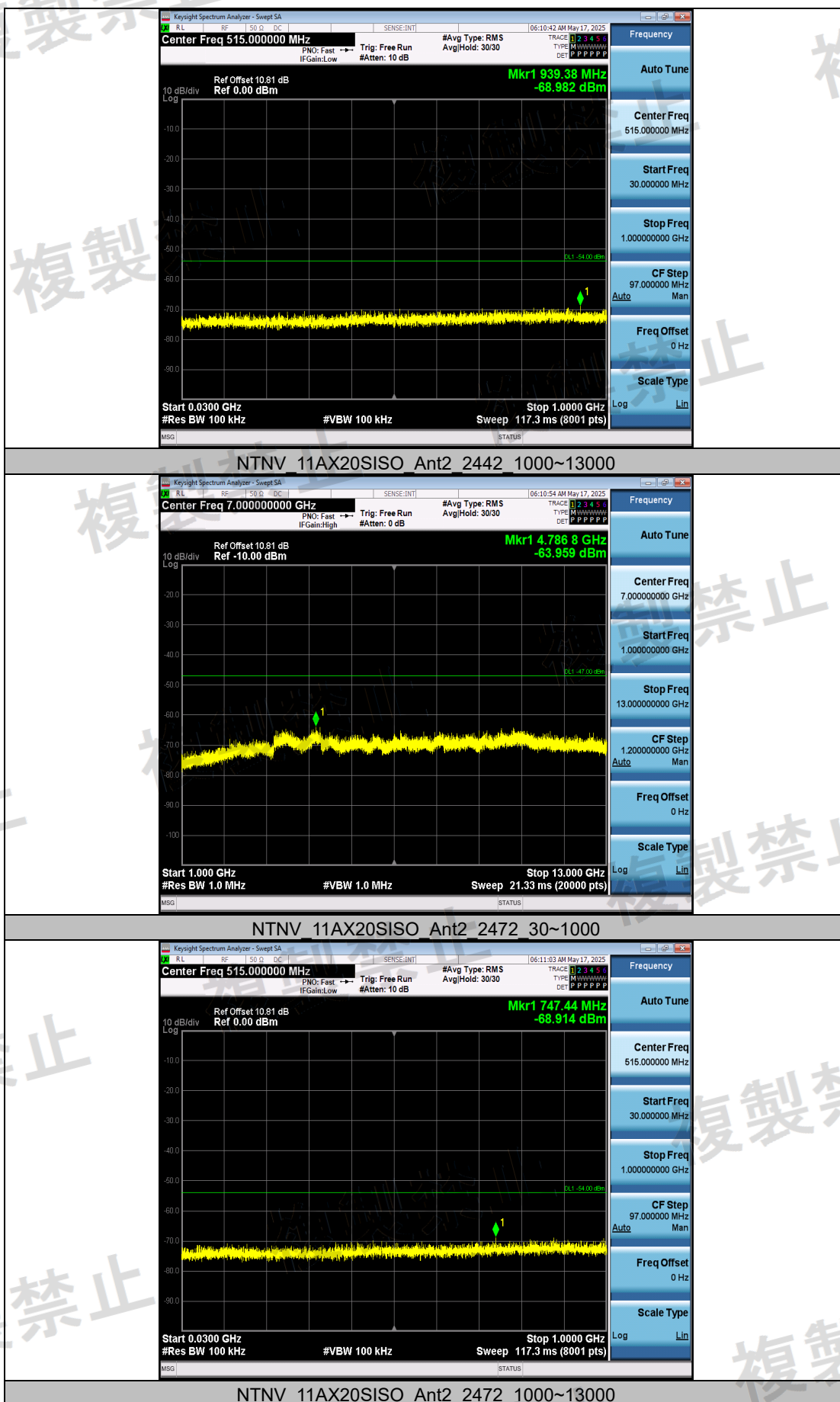


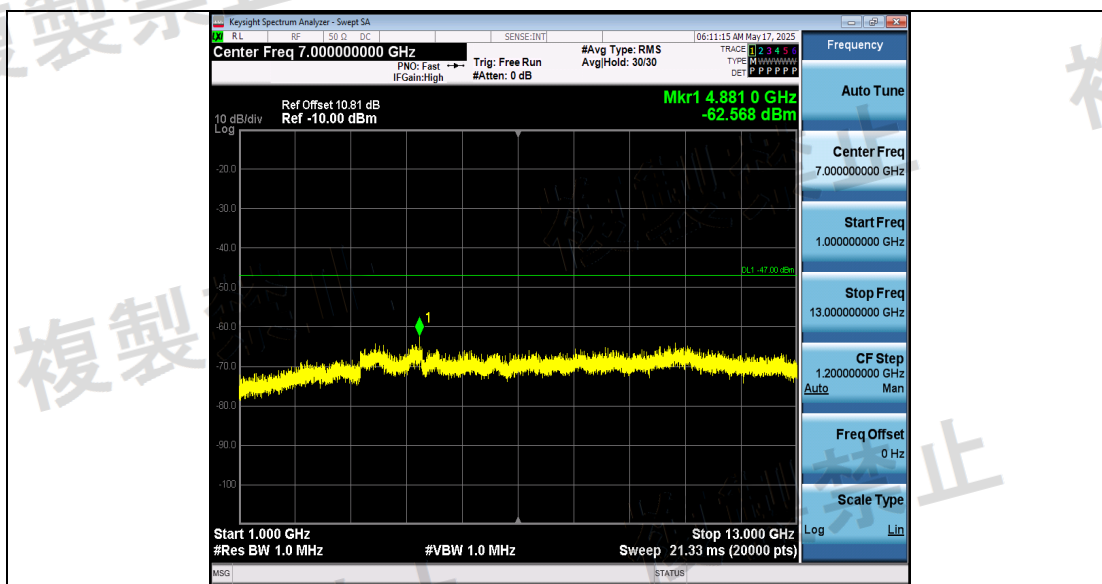








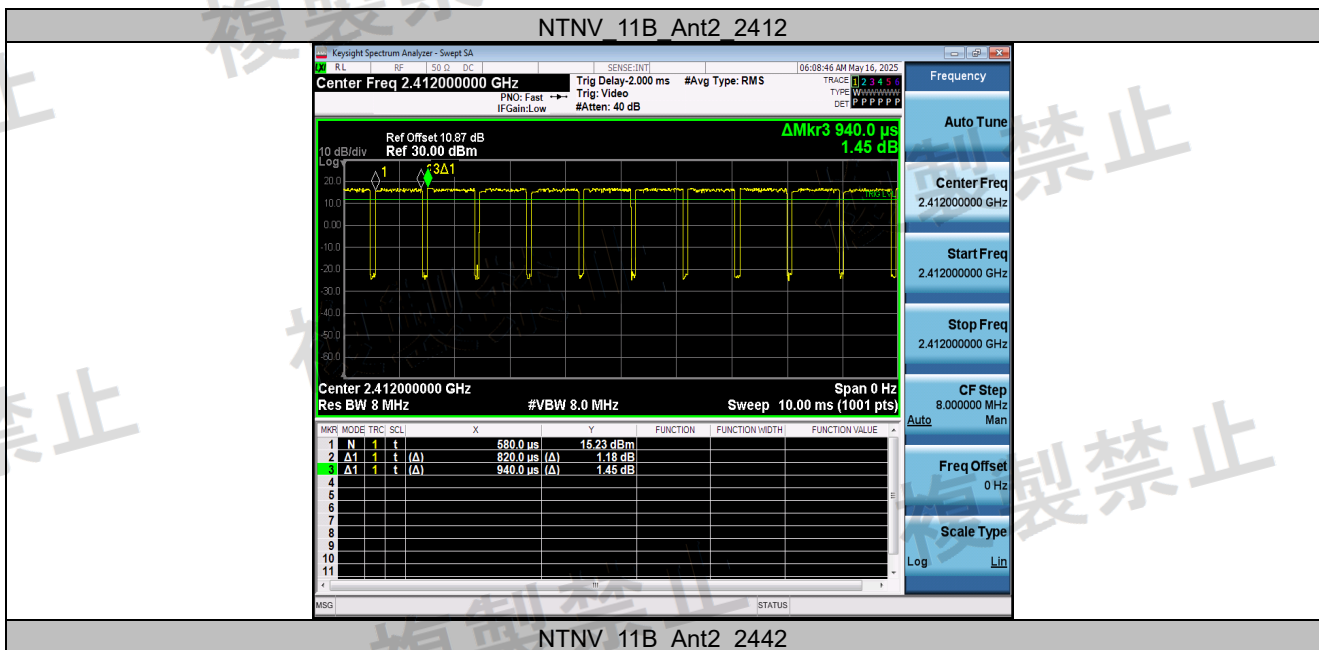


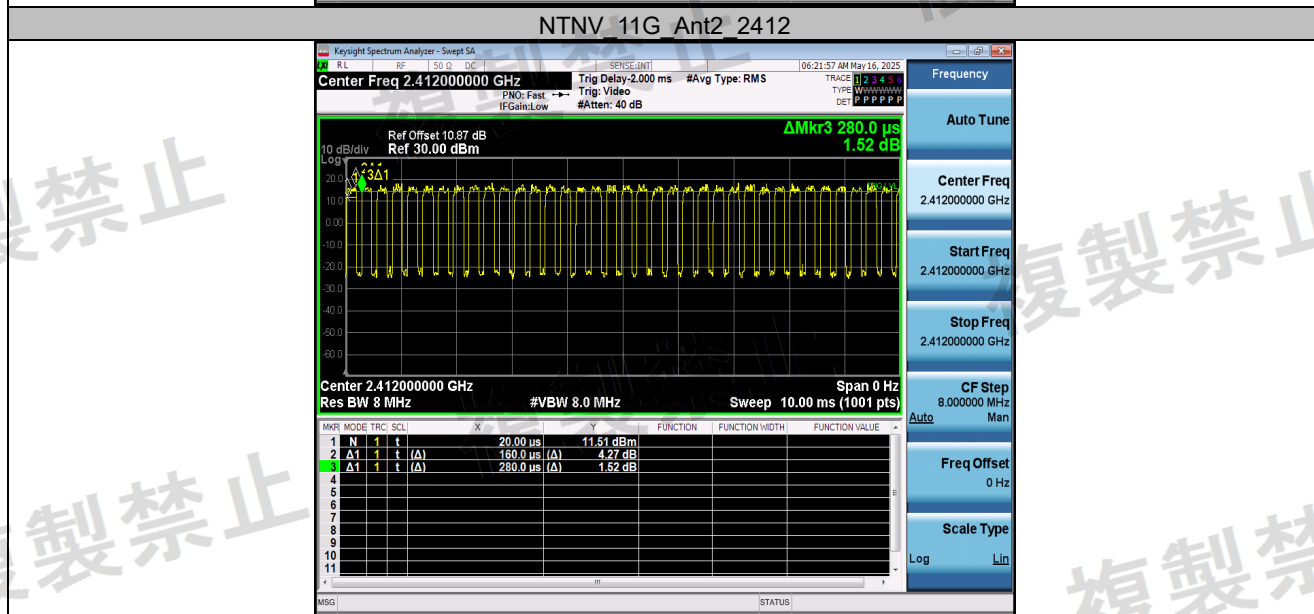
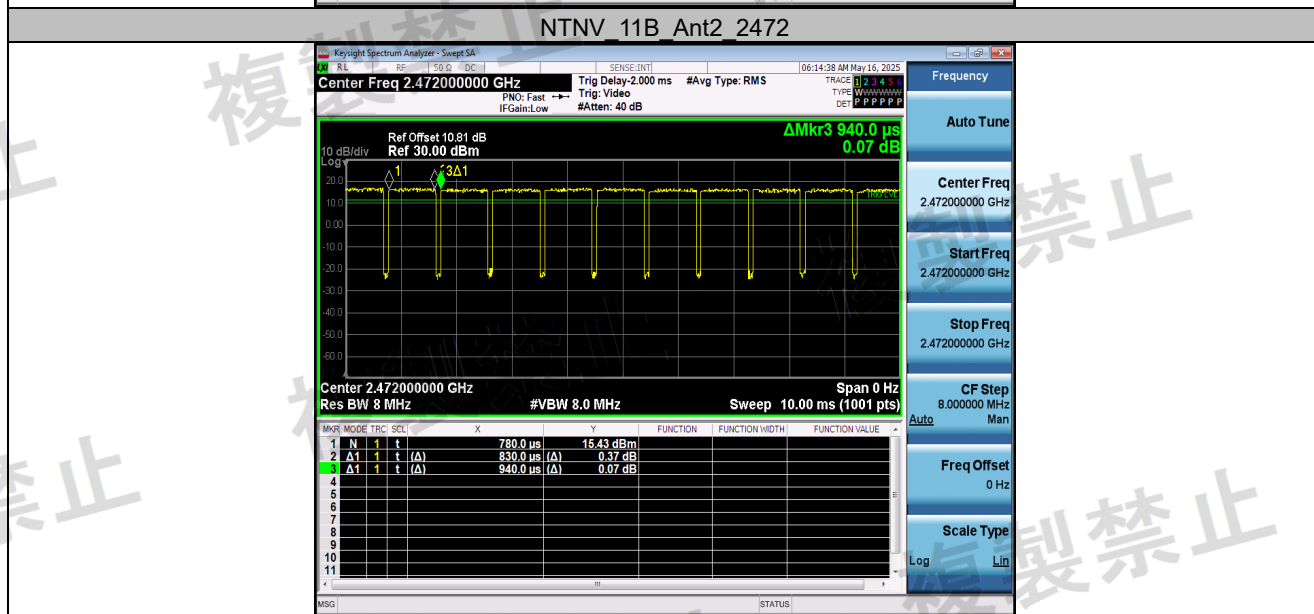
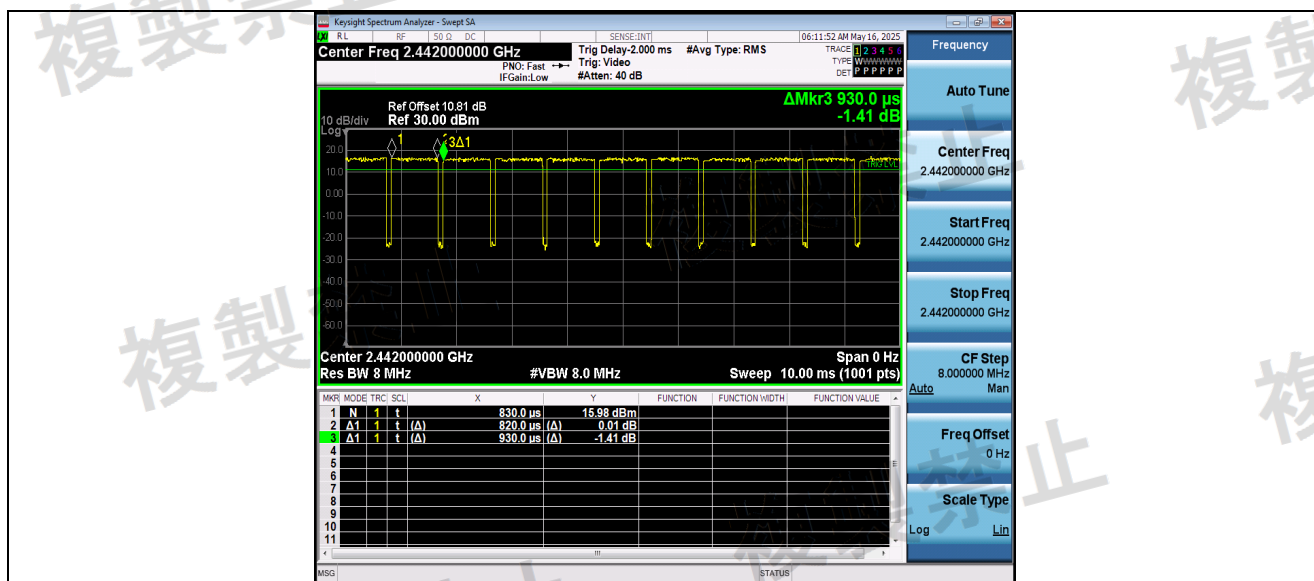


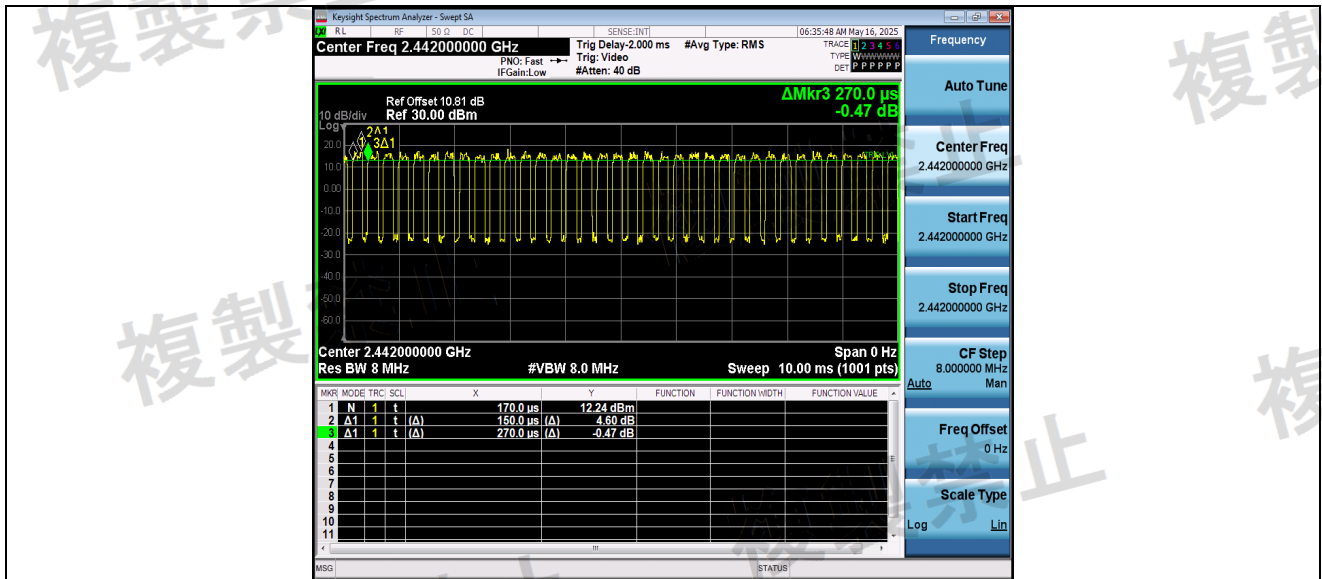
Appendix H: Duty cycle

Test Result:

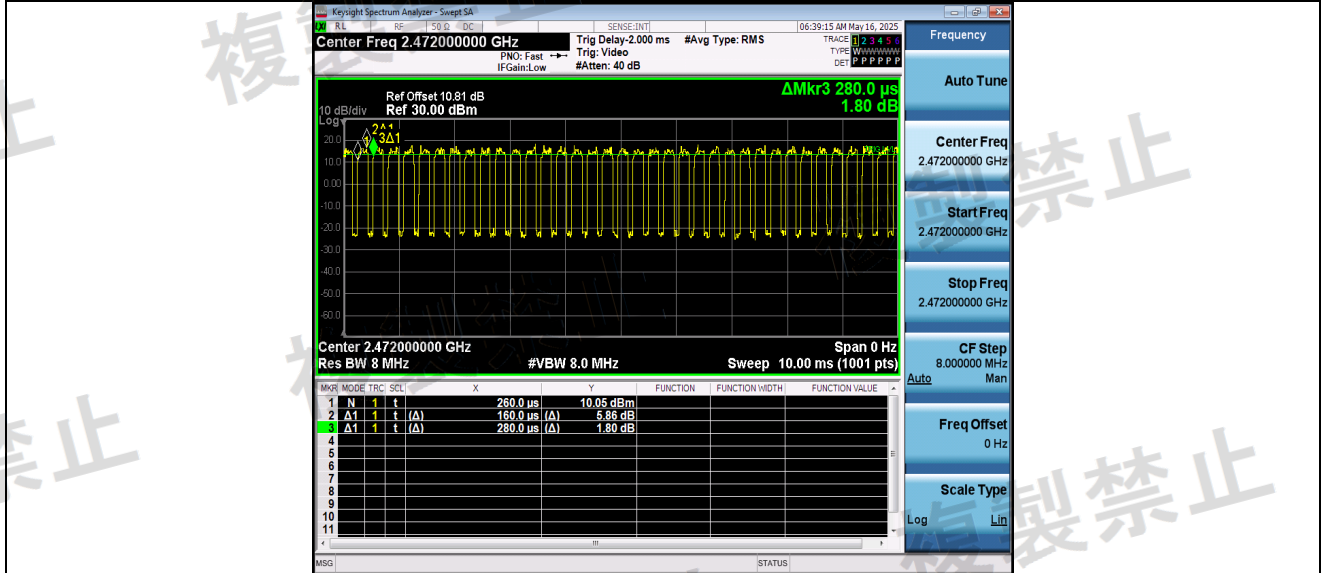
TestMode	Antenna	Freq(MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Verdict
11B	Ant2	2412	0.82	0.94	87.23	---
		2442	0.82	0.93	88.17	---
		2472	0.83	0.94	88.30	---
11G	Ant2	2412	0.16	0.28	57.14	---
		2442	0.15	0.27	55.56	---
		2472	0.16	0.28	57.14	---
11N20SISO	Ant2	2412	0.15	0.27	55.56	---
		2442	0.14	0.26	53.85	---
		2472	0.15	0.27	55.56	---
11AX20SISO	Ant2	2412	0.12	0.24	50.00	---
		2442	0.12	0.24	50.00	---
		2472	0.12	0.24	50.00	---



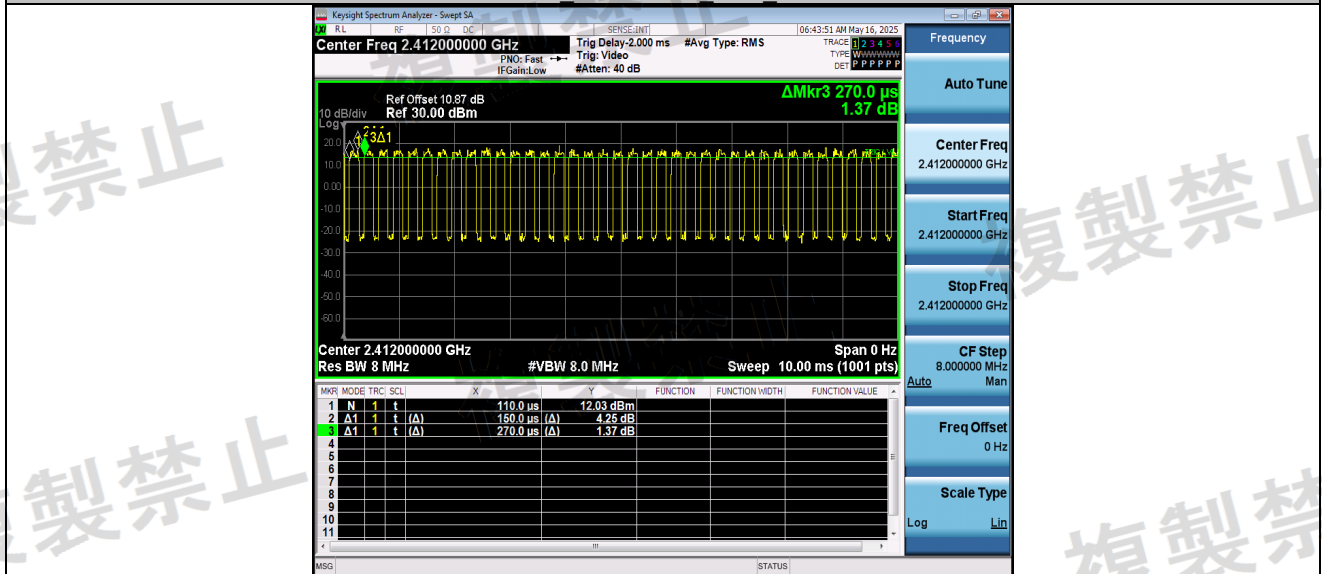




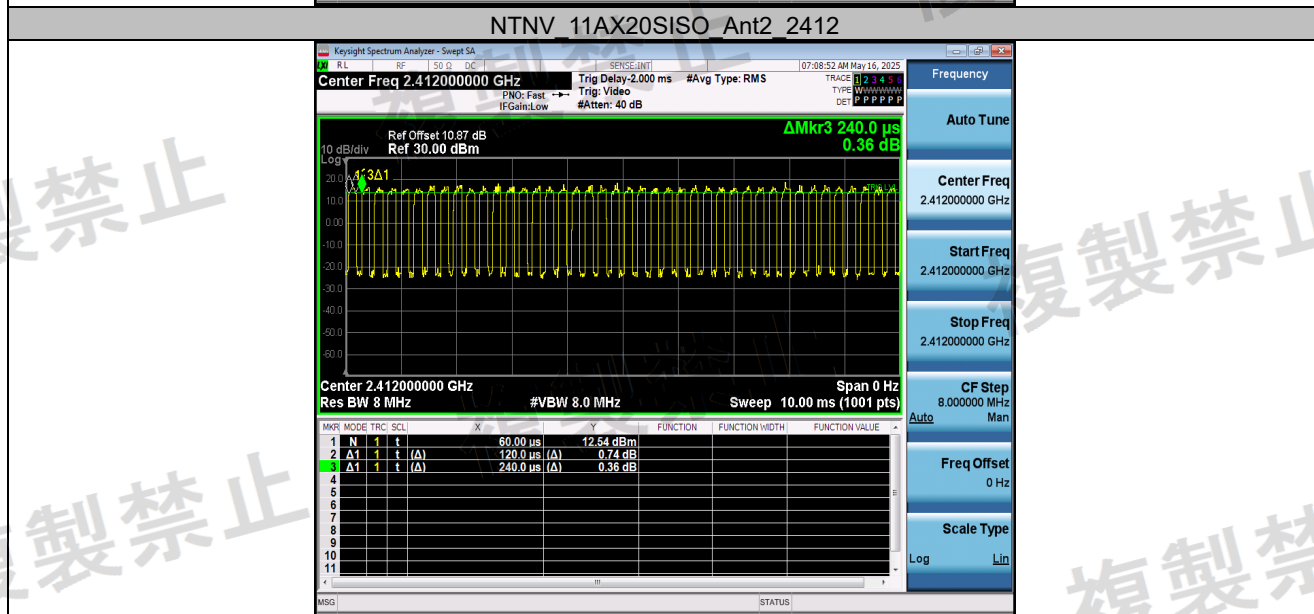
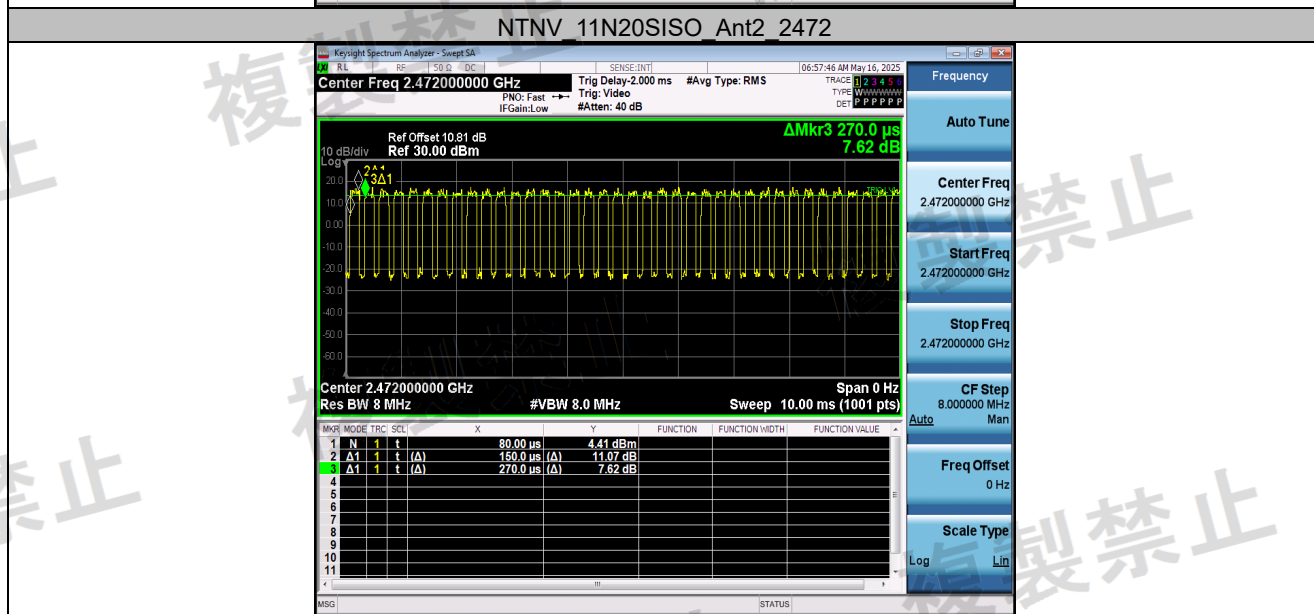
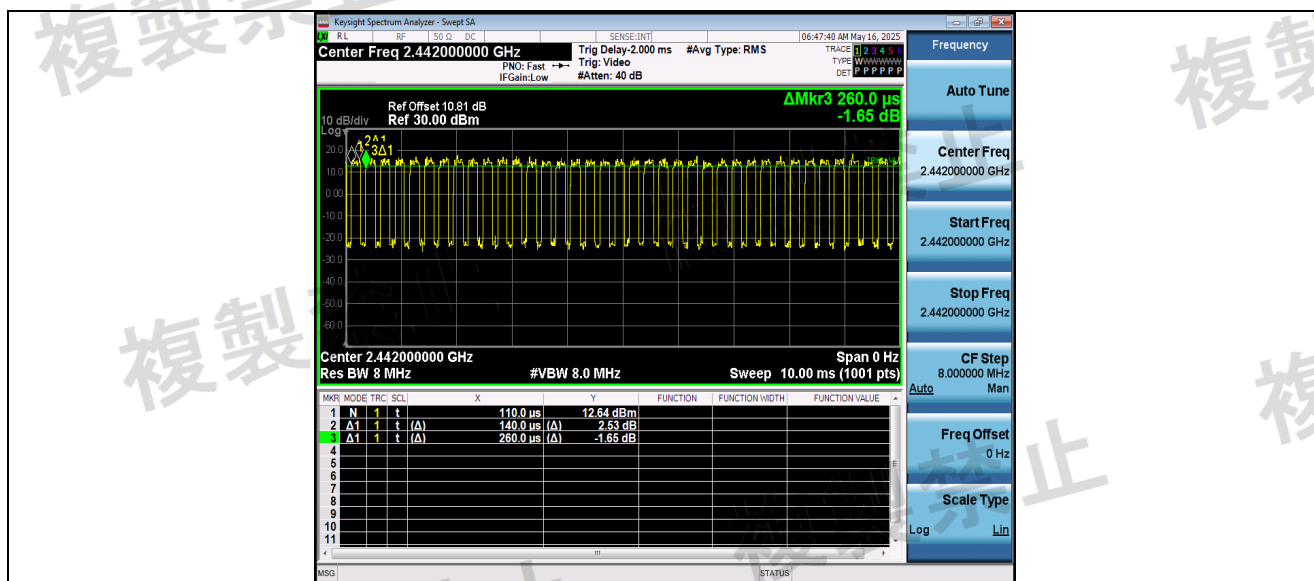
NTNV 11G_Ant2_2472

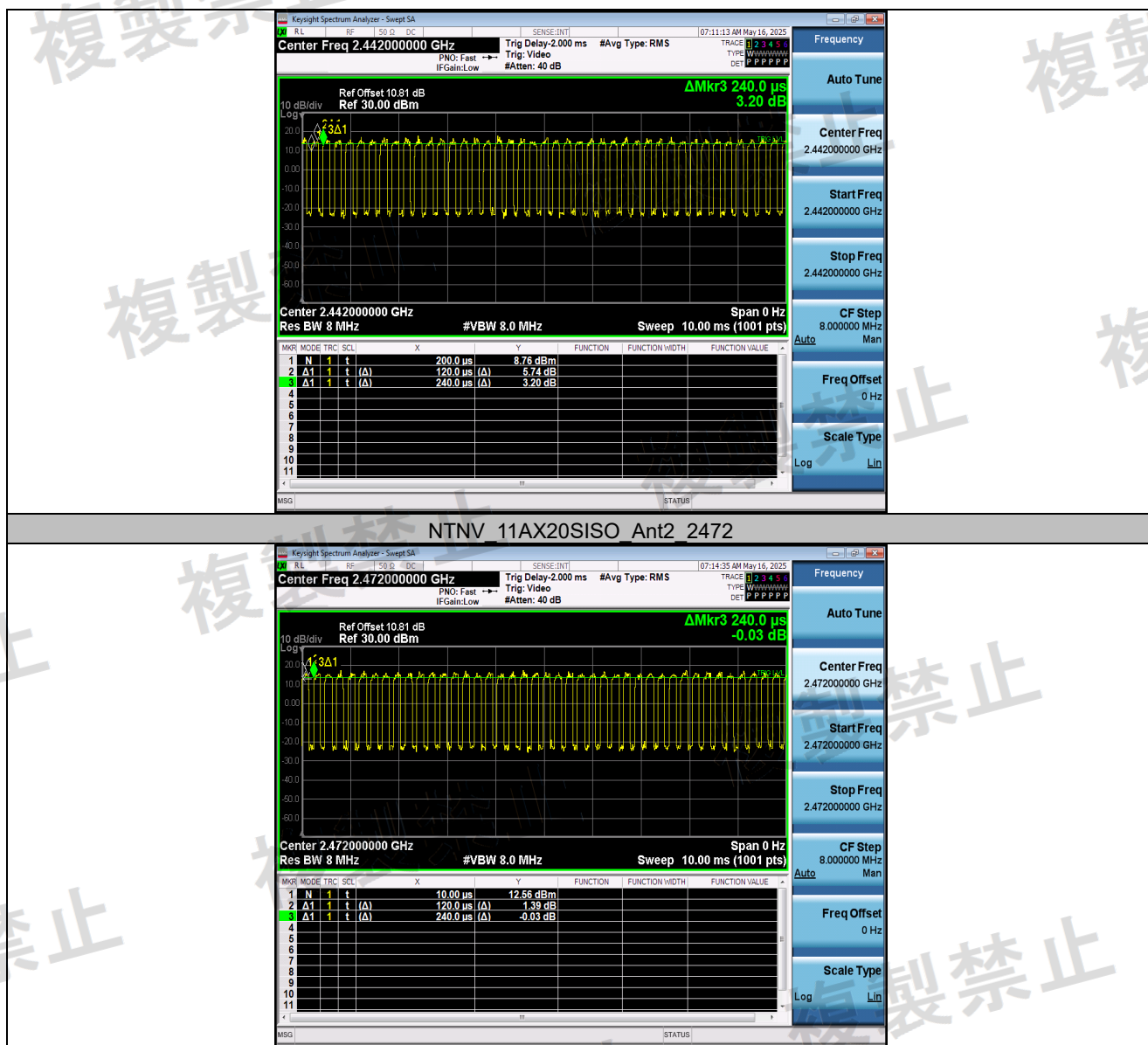


NTNV 11N20SISO_Ant2_2412



NTNV 11N20SISO_Ant2_2442





PHOTOS

1. Appendix I Test photo
2. Appendix II Exterior photo
3. Appendix II Interior photo

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