



TEST REPORT

Application No.: DNT2504170466R3828-04092
Applicant: Shenzhen Kai Chuang Future Technology Co., LTD
Address of Applicant: Xinghe WORLD Twin Towers, No. 8, Yaxing Road, Nankeng Community, Bantian Street, Longgang District, Shenzhen. 3102, 31st floor, West Tower
EUT Description: OWS Bluetooth Headset
Model No.: sanag S9S AI, sanag S9S AI Max
Trade Mark: sanag
Standards: MIC Notice No.88 Appendix No.43
Item 19 of Article 2 Paragraph 1
Date of Receipt: 2024/10/13
Date of Test: 2024/10/14 to 2024/10/22
Date of Issue: 2025/6/10
Test Result: **PASS ***

Prepared By: Wayne Lin (Testing Engineer)

Reviewed By: Pencils Chen (Project Engineer)

Approved By: Heise An (Manager)



Note: If there is any objection to the results in this report, please submit a written inquiry to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp, and is issued by the company in accordance with the requirements of the "Conditions of Issuance of Test Reports" printed in the attached page. Unless otherwise stated, the results presented in this report only apply to the samples tested this time. Partial reproduction of this report is not allowed unless approved by the company in writing.

Dongguan DN Testing Co., Ltd.

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Date: June 10, 2025

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Oct 23, 2024	Original Report	DNT2410100061R2499-03697
V2.0	/	Jun 10, 2025	Report 1	DNT2504170466R3828-04092

Modification:

The original Test Report Ref. No. DNT2410100061R2499-03697, dated 2024 Oct 23 was modified on Jun 10, 2025 to include the following changes: Applicant and Address of applicant , Manufacturer and Address of manufacturer; name of EUT, which were considered not technical modifications no additional tests were considered necessary.



1 Test Summary

Test	Test Requirement	Limit/Severity	Result
Antenna Requirement	MIC Notice No.88 Appendix No.43	Notice 88 Appendix 43, B-1 (1) & (2)	PASS
Test frequency	MIC Notice No.88 Appendix No.43	Notice 88 Appendix 43, A-3	PASS
Frequency Error	MIC Notice No.88 Appendix No.43	$\leq \pm 50$ ppm	PASS
Occupied Bandwidth	MIC Notice No.88 Appendix No.43	FH, FH+DS, FH+OFDM: ≤ 83.5 MHz	PASS
Spread-spectrum Bandwidth	MIC Notice No.88 Appendix No.43	≥ 500 kHz (Only Spread Spectrum)	PASS
Antenna Power and Tolerance	MIC Notice No.88 Appendix No.43	FH, FH+DS, FH+OFDM: a. 2427 ~ 2470.75 MHz ≤ 3 mW/MHz b. Others ≤ 10 mW/MHz Tolerance: +20%	PASS
Spurious Emission of Tx	MIC Notice No.88 Appendix No.43	< 2387 MHz ≤ 2.5 μ W/MHz 2387 ~ 2400 MHz ≤ 25 μ W/MHz 2483.5 ~ 2496.5 MHz ≤ 25 μ W/MHz > 2496.5 MHz ≤ 2.5 μ W/MHz	PASS
Dwell Time	MIC Notice No.88 Appendix No.43	less than 0.4 sec	PASS
Interference prevention capability	MIC Notice No.88 Appendix No.43	Notice 88 Appendix 43, 44, 45	PASS
RF accessibility	MIC Notice No.88 Appendix No.43	Notice 88 Appendix 43, 44, 45	PASS
Spurious Emission of Rx	MIC Notice No.88 Appendix No.43	(1) Below 1 GHz: ≤ 4 nW (2) Above 1 GHz: ≤ 20 nW	PASS

Remark:

EUT: In this whole report EUT means Equipment Under Test.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radio Frequency.

Item 19 of Article 2 Paragraph 1



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2 General Information

2.1 General Description of E.U.T.

Manufacturer:	Dongguan Chiyuan Jizhi Electronic Technology Co.,Ltd		
Address of Manufacture:	Room 4387, Building 2, No. 20 Caotang Road, Nancheng Street, Dongguan City, Guangdong Province		
Product Name:	OWS Bluetooth Headset		
Test Model No.:	sanag S9S AI		
Additional Model:	sanag S9S AI Max		
Trade Mark:	sanag		
Hardware Version:	ATL-69-V1.2		
Software Version:	ATL_69B_V021_20921		
Operating Frequency:	2402 MHz to 2480 MHz		
Bluetooth version:	V5.4		
Declared Antenna Power:	GFSK: 0.1 mW/MHz π /4-DQPSK: 0.1 mW/MHz 8-DPSK: 0.1 mW/MHz		
Type of Modulation:	BT BDR(1Mbps): GFSK BT EDR(2Mbps): π /4-DQPSK BT EDR(3Mbps): 8-DPSK		
Number of Channels:	79 Channels		
Antenna Type:	☐ External, ☒ Integrated		
Antenna Gain*:	☒ Provided by client		
	0.01dBi (ANT1)		
RF Cable*:	☒ Provided by client		
	0.5dB(0.6~1GHz)	0.8dB(1.4~2GHz)	1.0dB(2.1~2.7GHz)
	1.5dB(3~4GHz)	1.8dB(4.4~6GHz)	
power supply(Earphone):	DC 3.7V From Lithium Battery		
power supply (Charging Box):	Input:DC 5V & DC 3.7V From Lithium Battery		
Note: *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion. *As above information is provided and confirmed by the applicant. DNT is not liable to the accuracy, suitability, reliability or/and integrity of the information.			



2.2 Description of Support Units

The EUT has been tested independently.

2.3 Test Location

Company:	Dongguan DN Testing Co., Ltd
Address:	No. 1, West Fourth Street, South Xinfu Road, Wusha Liwu, Chang' an Town, Dongguan City, Guangdong P.R.China
Test engineer:	Wayne Lin

Remark: Our test report is under the quality assurance system according to ISO17025.

- **FCC, USA**

Designation Number: CN1348

- **A2LA (Certificate No. 7050.01)**

DONGGUAN DN TESTING CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 7050.01.

- **Innovation, Science and Economic Development Canada**

DONGGUAN DN TESTING CO., LTD. EMC Laboratory has been recognized by ISED as an accredited testing laboratory. CAB identifier is CN0149.

IC#: 30755.



2.4 Channel List

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	27	2429	54	2456
1	2403	28	2430	55	2457
2	2404	29	2431	56	2458
3	2405	30	2432	57	2459
4	2406	31	2433	58	2460
5	2407	32	2434	59	2461
6	2408	33	2435	60	2462
7	2409	34	2436	61	2463
8	2410	35	2437	62	2464
9	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

Test frequencies are the lowest channel: 0 channel (2402 MHz), middle channel: 39 channel (2441 MHz) and highest channel: 78 channel (2480 MHz).



2.5 Test Environment and Mode

Operating Environment:	
Temperature:	20~25.0 °C
Humidity:	45~56 % RH
Atmospheric Pressure:	101.0~101.30 KPa
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.

2.6 Power Setting of Test Software

Software Name	BQB		
Frequency(MHz)	2402	2441	2480
GFSK Setting	Default	Default	Default
$\pi/4$ -DQPSK Setting	Default	Default	Default
8DPSK	Default	Default	Default

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

No.	Item	Measurement Uncertainty
1	DTS Bandwidth	$\pm 0.0196\%$
2	Maximum Conducted Output Power	± 0.686 dB
3	Maximum Power Spectral Density Level	± 0.743 dB
4	Band-edge Compliance	± 1.328 dB
5	Unwanted Emissions In Non-restricted Freq Bands	9KHz-1GHz: ± 0.746 dB 1GHz-26GHz: ± 1.328 dB



2.8 Equipment List

For Connect EUT Antenna Terminal Test						
Description	Manufacturer	Model	Serial Number	Cal date	Due date	correcting mechanism
Signal Generator	Keysight	N5181A-6G	MY48180415	2023-10-25	2024-10-24	Dongguan DN Testing Co.,Ltd.
Signal Generator	Keysight	N5182B	MY57300617	2023-10-25	2024-10-24	Dongguan DN Testing Co.,Ltd.
Power supply	Keysight	E3640A	ZB2022656	2023-10-25	2024-10-24	Dongguan DN Testing Co.,Ltd.
Radio Communication Tester	R&S	CMW500	105082	2023-10-25	2024-10-24	Dongguan DN Testing Co.,Ltd.
Spectrum Analyzer	Aglient	N9010A	MY52221458	2023-10-25	2024-10-24	Dongguan DN Testing Co.,Ltd.
BT/WIFI Test Software	Tonscend	JS1120 V3.1.83	NA	NA	NA	NA
RF Control Unit	Tonscend	JS0806-2	22F8060581	NA	NA	NA
Power Sensor	Anritsu	ML2495A	2129005	2023-10-25	2024-10-24	Dongguan DN Testing Co.,Ltd.
Pulse Power Sensor	Anritsu	MA2411B	1911397	2023-10-25	2024-10-24	Dongguan DN Testing Co.,Ltd.
temperature and humidity box	SCOTEK	SCD-C40-80PRO	6866682020008	2023-10-25	2024-10-24	Dongguan DN Testing Co.,Ltd.
Voltmetre	FLUKE	F15B PRO	59755315WS	2023-10-25	2024-10-24	Dongguan DN Testing Co.,Ltd.

Note: Calibration by the calibration agencies listed in the table correspond to paragraph 4 (ii) (c) of Article 24-2 in the Radio Law.



3 Test Results

3.1 Radio Technical Requirements Specification

Tabel 1: Radio Technical Requirements Specification for 2.4 GHz band wide-band low-power data communication system (Item 19 of Article 2-1)

Items	Technical standard
Assigned frequency or designated frequency	2400-2483.5MHz
Communication method	One-way communication, simplex, semi-duplex, or duplex operation of digital signal transmission including spread spectrum
Tolerance of frequency ($\times 10^{-6}$)	± 50 ppm
Tolerance of occupied bandwidth	FH/FH+DS+FH+OFDM: ≤ 83.5 MHz
Antenna power	FH, FH+DS, FH+OFDM: (1) 2427 - 2470.75 MHz: ≤ 3 mW/MHz (2) Others: ≤ 10 mW/MHz Tolerance: +20%.
Antenna gain	1) 12.14 dBi or less in principle 2) In case of directional antenna (1) FH, FH+DS or FH+OFDM using 2427-2470.75 MHz EIRP ≤ 16.91 dBm/MHz (2) OFDM or DS other than (1) EIRP ≤ 22.14 dBm/MHz (3) Other than (1) and (2): 22.14 dB or less (4) OFDM OBW 26 - 40MHz: 19.14dBm/MHz (5) Half-power angle of directional antenna (e) in case of the item 2): $e \leq 360/A$ (The A is 10 in maximum.)
Tolerance of spurious emission intensity	< 2387 MHz: 2.5 μ W 2387 to 2400 MHz: 25 μ W 2483.5 through 2496.5 MHz: 25 μ W > 2496.5 MHz: 2.5 μ W
Spreading bandwidth	DS, FH, FH+DS, FH+OFDM: 500kHz or more
Spreading rate of spectrum	For DS system; (Spreading bandwidth) / (Frequency corresponding to transmission rate) ≥ 5
Limit of secondary radiated emissions	(1) Below 1 GHz: 4 nW (2) Above 1 GHz: 20 nW
Interference prevention function	Shall have the function of automatic transmission and reception of identification sign.
Structure	Shall be of the structure that the RF and modulator sections excluding antenna cannot easily be opened.
Note	DS: Direct spread FH: Frequency hopping OFDM: Orthogonal frequency division multiplexing



3.2 E.U.T. test conditions

Power Supply:	Lithium Battery (DC 3.7V)			
	During the input supply voltage to the EUT from the external power source is varied by $\pm 10\%$, the fluctuation of input voltage to the circuit of RF unit of test equipment is exceed $\pm 1\%$. So, all measurement has been conducted by normal and limit voltage.			
	The measurement result of the voltage fluctuation at RF circuit when DC 3.7V +/- 10%.			
	DC Input		input voltage to the circuit	Deviation
	High Voltage	4.07V	3.4V	3%
	Normal Voltage	3.7V	3.3V	0.0%
Test Frequencies:	Low Voltage	3.33V	3.2V	3%
	If the EUT can be set to 3 of more different (carrier) frequencies in 1 allocated band, testing shall be performed using the Lowest, Middle and the Highest frequency (L, M and H). If there are 2 or fewer frequencies, testing shall be performed with the available frequencies.			



3.3 Antenna Requirement

Standard requirement

Applicable for equipment with an antenna terminal, including testing terminals) If an antenna connector is available, all relevant tests will be carried out conducted. If not, tests will be carried out in an anechoic room or with a suitable test-fixture.

The antenna is a FPC Antenna and no consideration of replacement. The best case gain of the antenna is 0.01dBi.

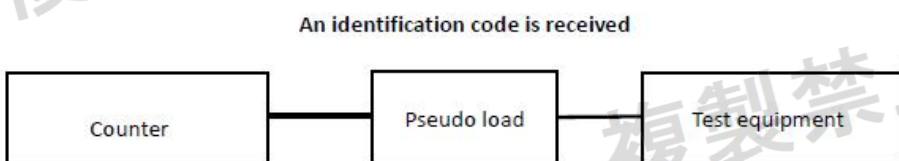
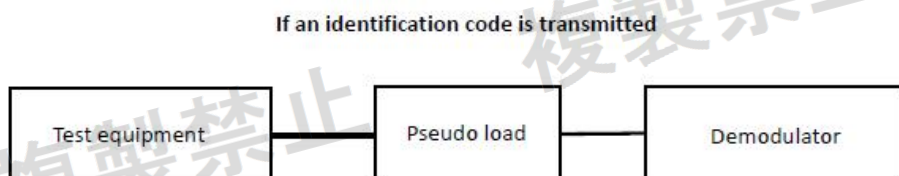
Result: An antenna connector is available, all relevant tests will be carried out conducted.



3.4 Interference prevention function

1) Measurement system diagram

(a) When transmitting identification code



2) Condition of measuring instrument

(b) Demodulator must be able to demodulate the transmitting signal emitted by test equipment and to indicate the identification code.

3) Condition of test equipment The mode of normal use.

4) Measuring operation procedure

(a) When test equipment has the function to transmit identification code automatically:

A) Transmit the predetermined identification code from test equipment.

B) Confirm the transmitted identification code by demodulator.

F0:A9:68:8C:24:DF

5) Test result: The unit does meet the requirements (Good).

PASS



3.5 Frequency Error

Test Requirement:	MIC Notice No.88 Appendix No.43
Limit:	Tolerance of frequency: $\pm 50 \times 10^{-6}$
Test Status:	Test the EUT in transmitting mode without modulation.
Temperature:	25 °C
Humidity:	51% RH
Atmospheric Pressure:	101.1kPa
Test Configuration:	EUT Spectrum Analyzer
Test Procedure:	1. Test Conditions: Spectrum Analyzer is used for measurement. 2. EUT conditions: Modulation/Spread/Hopping OFF, CW Tx 3. Spectrum Analyzer conditions: Frequency: Test Frequency Span 1MHz RBW 10 kHz (Modulation OFF), VBW 10 kHz (Modulation OFF), Sweep Time Auto Detector mode Positive peak Indication mode Max hold

Test Result: PASS. The detailed test data see: Appendix A



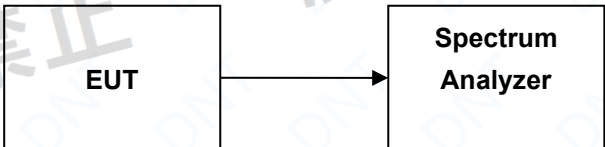
3.6 Occupied Bandwidth (99%)

Test Requirement:	MIC Notice No.88 Appendix No.43
Limit:	FH: 83.5MHz or less
Test Method:	MIC Notice No.88 Appendix No.43
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
Temperature:	25 °C
Humidity:	51% RH
Atmospheric Pressure:	101.1kPa
Test Configuration:	 <pre>graph LR; EUT[EUT] --> SA[Spectrum Analyzer]</pre>
Test Procedure:	1. Test Conditions: Spectrum Analyzer is used for measurement. 2. EUT conditions: Modulation/Spread/Hopping ON, Modulation Tx For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal. 3. Spectrum Analyzer conditions: Frequency: Test Frequency Span 120 MHz (FHSS), RBW 1 MHz VBW 1 MHz Sweep Time Auto detector mode Positive peak Indication mode Max hold OBW 99%

Test Result: PASS. The detailed test data see: Appendix B



3.7 Spread spectrum Bandwidth (90%)

Test Requirement:	MIC Notice No.88 Appendix No.43
Limit:	500 kHz or more
Text Method:	MIC Notice No.88 Appendix No.43
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
Temperature:	25 °C
Humidity:	51% RH
Atmospheric Pressure:	101.1kPa
Test Configuration:	 <pre>graph LR; EUT[EUT] --> SA[Spectrum Analyzer]</pre>
Test Procedure:	1. Test Conditions: Spectrum Analyzer is used for measurement. 2. EUT conditions: Modulation/Spread/Hopping ON, Modulation Tx For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal. 3. Spectrum Analyzer conditions: Frequency: Test Frequency Span 120MHz (FHSS), RBW 1 MHz VBW 1 MHz Sweep Time Auto detector mode Positive peak Indication mode Max hold OBW 90%

Test Result: PASS. The detailed test data see: Appendix C



3.8 Antenna Power and Tolerance of Antenna Power

Test Requirement:	MIC Notice No.88 Appendix No.43
Limit:	3mW/MHz or less 10mW/MHz or less Tolerance: +20%
Text Method:	MIC Notice No.88 Appendix No.43
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
Temperature:	25 °C
Humidity:	51% RH
Atmospheric Pressure:	101.1kPa
Test Configuration:	 <pre>graph LR; EUT[EUT] --> SA[Spectrum Analyzer]</pre>
Test Procedure:	1. Test Conditions: Spectrum Analyzer is used for measurement. 2. EUT conditions: Modulation/Spread/Hopping ON For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal. 3. Power meter is connected to the EUT to measure total power. The total power is divided by the spread bandwidth to calculate the average power per MHz 4. Test Conditions: Power meter is used for measurement.

Test Result: PASS. The detailed test data see: Appendix D



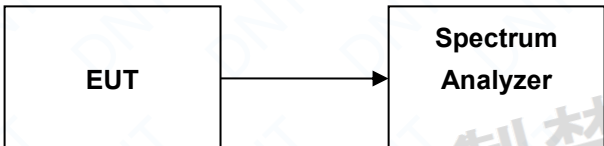
3.9 Dwell Time

Test Requirement:	MIC Notice No.88 Appendix No.43
Limit:	less than 0.4sec
Text Method:	MIC Notice No.88 Appendix No.43
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below. Modulation/Spread/Hopping ON, Hopping frequency is fixed, Bluetooth equipment is setting DH5 mode
Temperature:	25 °C
Humidity:	51% RH
Atmospheric Pressure:	101.1kPa
Test Configuration:	EUT Spectrum Analyzer
Test Procedure:	1. Test Conditions: Spectrum Analyzer is used for measurement. 2. EUT conditions: Modulation/Spread/Hopping ON, Hopping frequency is fixed, Bluetooth equipment is setting DH5 mode For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal. 3. Spectrum Analyzer conditions: Frequency: Test Frequency (fixed hopping frequency) Span 0 Hz RBW 1 MHz VBW 1 MHz Sweep Time EUT condition Trigger Video Trigger Measures the Transmission time of 1 burst (sec) Measures the Burst cycle (sec) Calculation procedure: Dwell time = (0.4(s) x [spreading rate] x [Transmission time of 1 burst(s)]) / ([burst cycle(s)] x [No. of hopping channel]) Note:* Spreading rate = [Spread bandwidth (actual measurement value)] / [Transmission rate]

Test Result: PASS. The detailed test data see: Appendix E



3.10 Spurious Emissions of Tx

Test Requirement:	MIC Notice No.88 Appendix No.43								
Limit:	<table><tr><td>< 2387MHz</td><td>$\leq 2.5\mu\text{W/MHz}$</td></tr><tr><td>2387 ~ 2400MHz</td><td>$\leq 25\mu\text{W/MHz}$</td></tr><tr><td>2483.5 ~ 2496.5MHz</td><td>$\leq 25\mu\text{W/MHz}$</td></tr><tr><td>>2496.5MHz</td><td>$\leq 2.5\mu\text{W/MHz}$</td></tr></table>	< 2387MHz	$\leq 2.5\mu\text{W/MHz}$	2387 ~ 2400MHz	$\leq 25\mu\text{W/MHz}$	2483.5 ~ 2496.5MHz	$\leq 25\mu\text{W/MHz}$	>2496.5MHz	$\leq 2.5\mu\text{W/MHz}$
< 2387MHz	$\leq 2.5\mu\text{W/MHz}$								
2387 ~ 2400MHz	$\leq 25\mu\text{W/MHz}$								
2483.5 ~ 2496.5MHz	$\leq 25\mu\text{W/MHz}$								
>2496.5MHz	$\leq 2.5\mu\text{W/MHz}$								
Text Method:	MIC Notice No.88 Appendix No.43								
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.								
Temperature:	25 °C								
Humidity:	51% RH								
Atmospheric Pressure:	101.1kPa								
Test Configuration:	 <pre>graph LR; EUT[EUT] --> SA[Spectrum Analyzer]</pre>								
Test Procedure:	1. Test Conditions: Spectrum Analyzer is used for measurement. 2. EUT conditions: Modulation/Spread/Hopping ON, Modulation Tx For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal. 3. Spectrum Analyzer conditions: Step 1: All spurious are measured from 30 MHz to 13 GHz by peak mode. Step 2: IF the value measured by Step1 is 2 dB or less, measure in average mode. Test setup for Step 1: Frequency: 30MHz~2400MHz, 2483.5MHz~13GHz (for 2412-2472MHz) RBW 1 MHz VBW 1 MHz Sweep Time Auto detector mode Positive peak Indication mode Max hold Test setup for Step 2: Frequency: Spurious Frequency RBW 1 MHz VBW 1 MHz Sweep Time Auto detector mode Sample Indication mode Max hold								

Test Result: PASS. The detailed test data see: Appendix F



3.11 Spurious Emissions of Rx

Test Requirement:	MIC Notice No.88 Appendix No.43
Limit:	(1) Below 1 GHz: ≤ 4 nW (2) Above 1 GHz: ≤ 20 nW
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
Temperature:	25 °C
Humidity:	51% RH
Atmospheric Pressure:	101.1kPa
Test Configuration:	
Test Procedure:	1. Test Conditions: Spectrum Analyzer is used for measurement. 2. EUT conditions: Modulation/Spread/Hopping ON For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal 3. Spectrum Analyzer conditions: Step 1: All spurious are measured from 30 MHz to 13 GHz by peak mode. Step 2: IF the value measured by Step1 is 2 dB or less, measure in average mode. Test setup for Step 1: Frequency: 30 MHz – 2400 MHz , 2483.5 MHz –13 GHz RBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz) VBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz) Sweep Time Auto detector mode Positive peak Indication mode Max hold Test setup for Step 2: Frequency: Spurious Frequency Span 0 Hz RBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz) VBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz) Sweep Time Auto detector mode Sample Indication mode Max hold

Test Result: PASS. The detailed test data see: Appendix G



3.12 Pseudorandom Frequency Hopping Sequence

Standard requirement

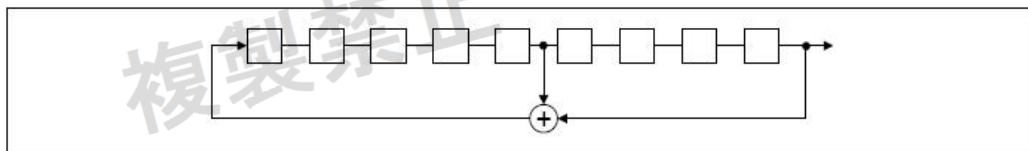
Article 2, Item (19) Notice 88 Appendix 43, 44, 45 requirement:

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

EUT Pseudorandom Frequency Hopping Sequence

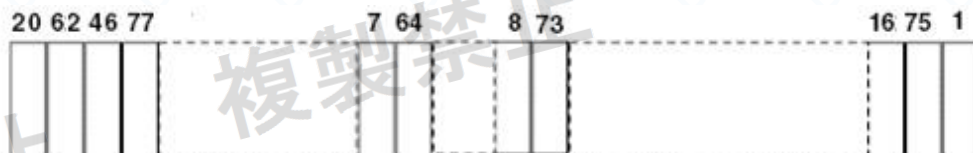
The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage, and the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONES; i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence: $2^9 - 1 = 511$ bits
- Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

Test Result: PASS



3.13 RF accessibility

Standard requirement

Article 49-20, paragraph 1 (a)

The EUT shall be constructed in such a way that sensitive RF parts, (like modulation and oscillator parts) cannot be reached easily by the user. These parts shall be covered by soldered metal caps or glue or by other mechanical covers. If the covers are fixed with screws, these shall be not the common type(s) like a Phillips, but special versions like Torx, so that the user cannot open the device with common tools.

RF and Modulation parts are mounted on PCB with surface mount technology, and there is no any adjustable parts on PCB or adjustable parts are not exposed.





4 Appendix

Appendix A: Frequency_Error

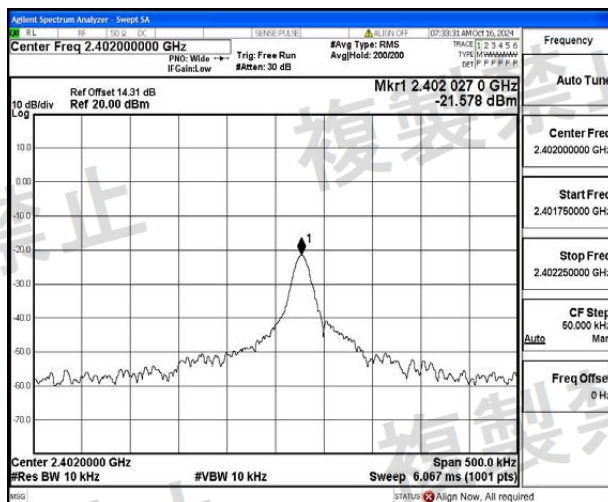
Test Result

Test Condition	Test Mode	Antenna	Freq(MHz)	Result[ppm]	Limit[ppm]	Verdict
NTNV	DH5	Ant1	2402	11.24063	±50	PASS
			2441	11.06104	±50	PASS
			2480	11.08871	±50	PASS
NTLV	DH5	Ant1	2402	11.24063	±50	PASS
			2441	11.06104	±50	PASS
			2480	11.08871	±50	PASS
NTHV	DH5	Ant1	2402	11.24063	±50	PASS
			2441	11.06104	±50	PASS
			2480	11.08871	±50	PASS

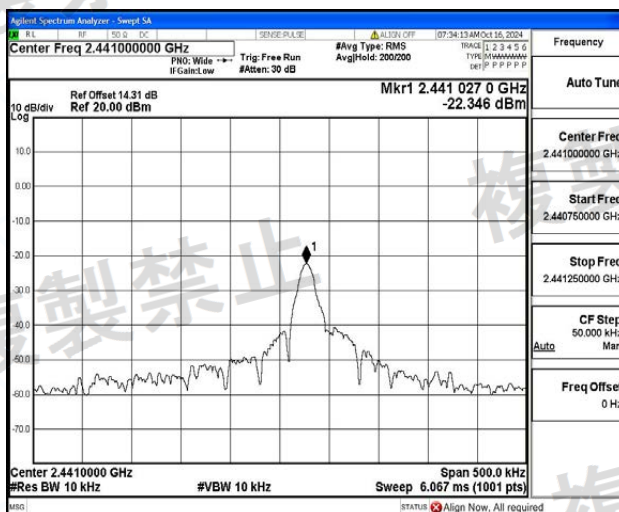


Test Graphs

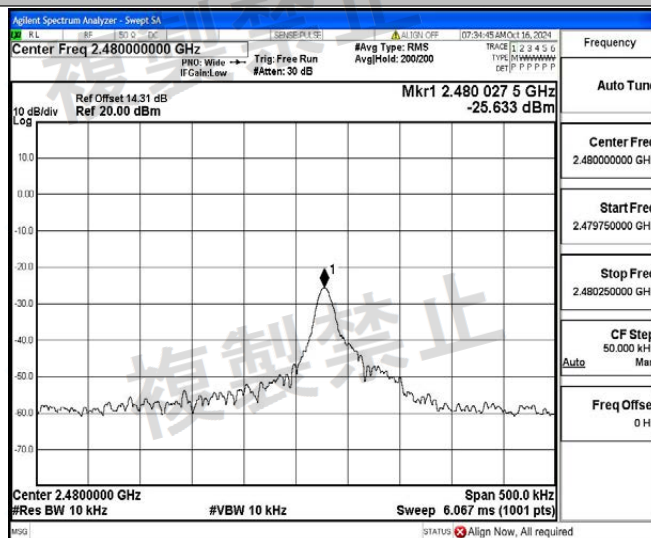
NTNV_DH5_Ant1_2402



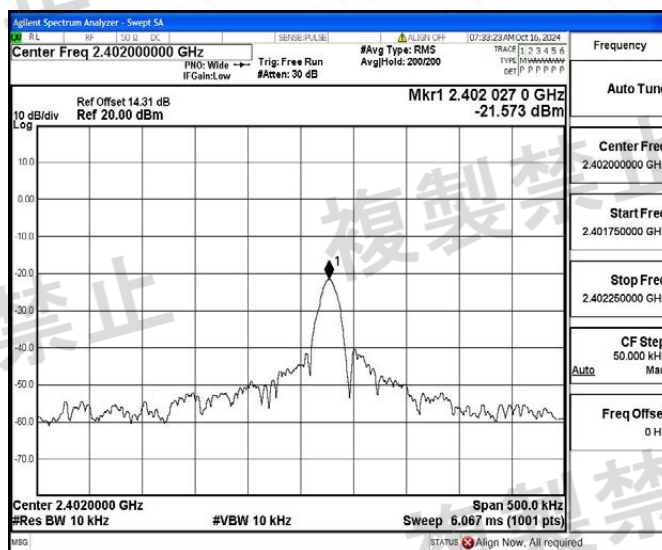
NTNV_DH5_Ant1_2441



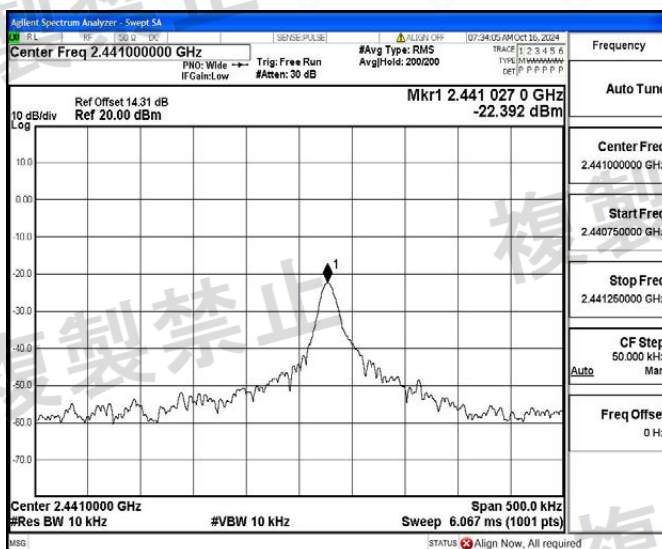
NTNV_DH5_Ant1_2480



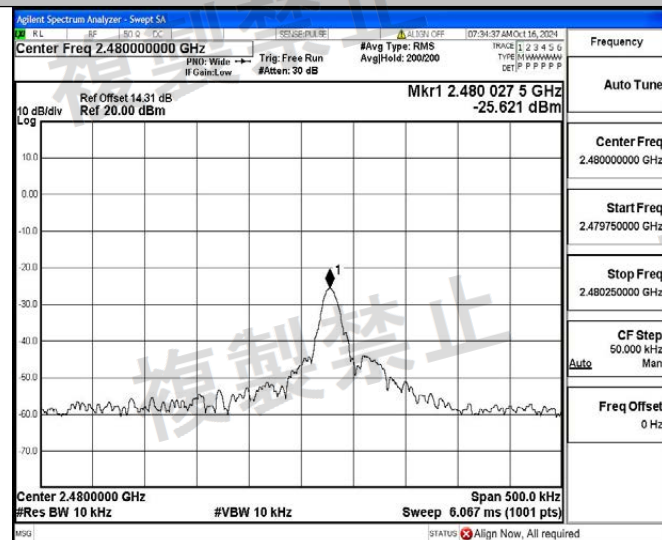
NTLV_DH5_Ant1_2402



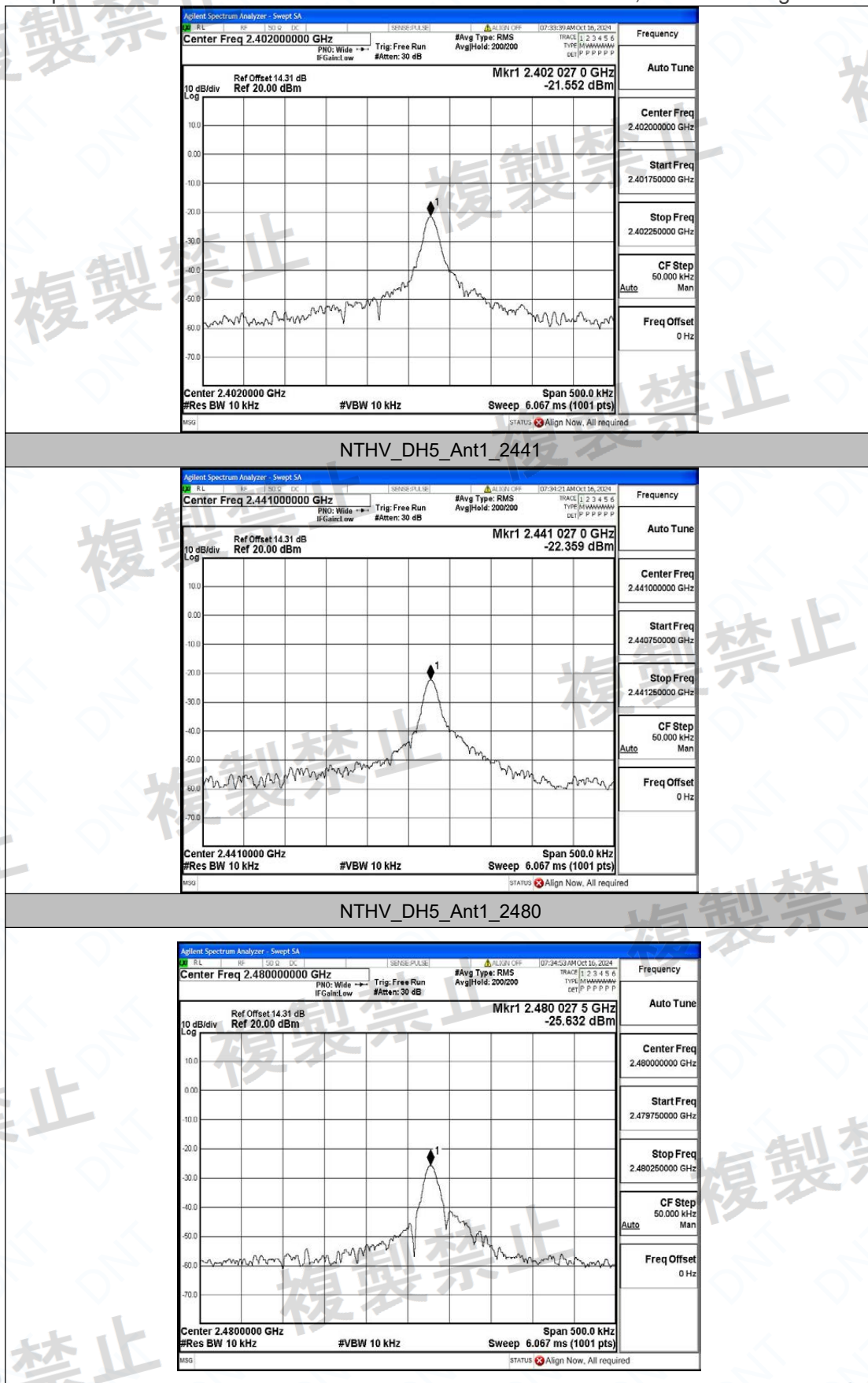
NTLV_DH5_Ant1_2441



NTLV_DH5_Ant1_2480



NTHV_DH5_Ant1_2402



Appendix B: Occupied Bandwidth

Test Result

Dongguan DN Testing Co., Ltd.

Add: No. 1, West Fourth Street, Xingfa South Road, Wusha Community, Chang 'an Town, Dongguan City, Guangdong P.R.China

Web: www.dn-testing.com

Tel: +86-769-88087383

E-mail: service@dn-testing.com

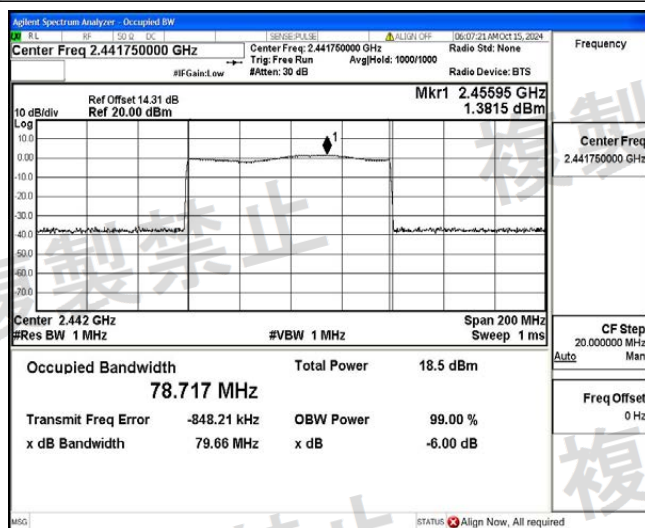


Test Condition	Test Mode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH5	Ant1	Hop	78.717	≤83.5	PASS
	2DH5	Ant1	Hop	78.707	≤83.5	PASS
	3DH5	Ant1	Hop	78.591	≤83.5	PASS
NTLV	DH5	Ant1	Hop	78.670	≤83.5	PASS
	2DH5	Ant1	Hop	78.789	≤83.5	PASS
	3DH5	Ant1	Hop	78.761	≤83.5	PASS
NTHV	DH5	Ant1	Hop	78.674	≤83.5	PASS
	2DH5	Ant1	Hop	78.806	≤83.5	PASS
	3DH5	Ant1	Hop	78.866	≤83.5	PASS

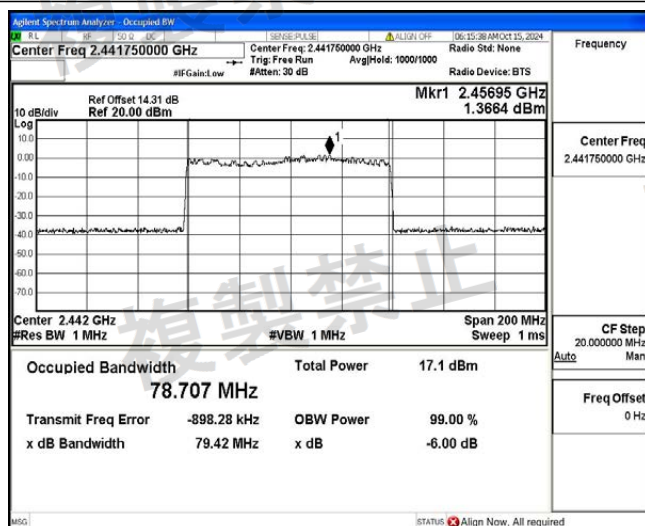


Test Graphs

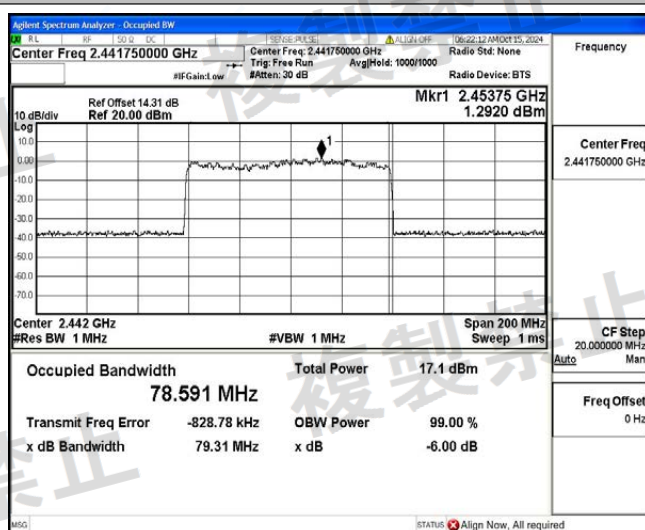
NTNV_DH5_Ant1_Hop



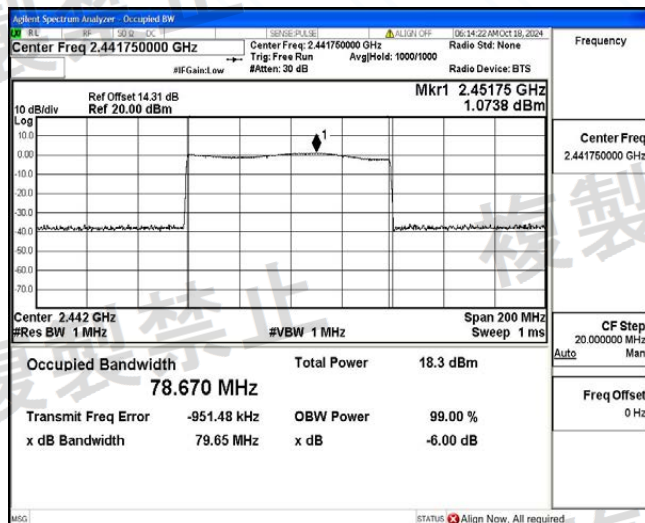
NTNV_2DH5_Ant1_Hop



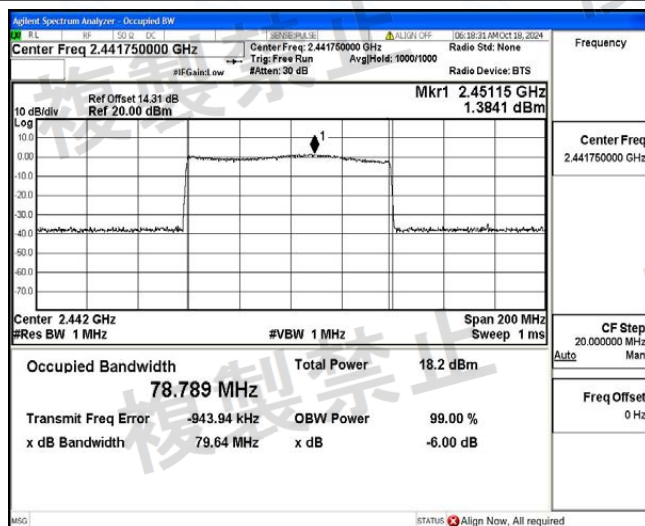
NTNV_3DH5_Ant1_Hop



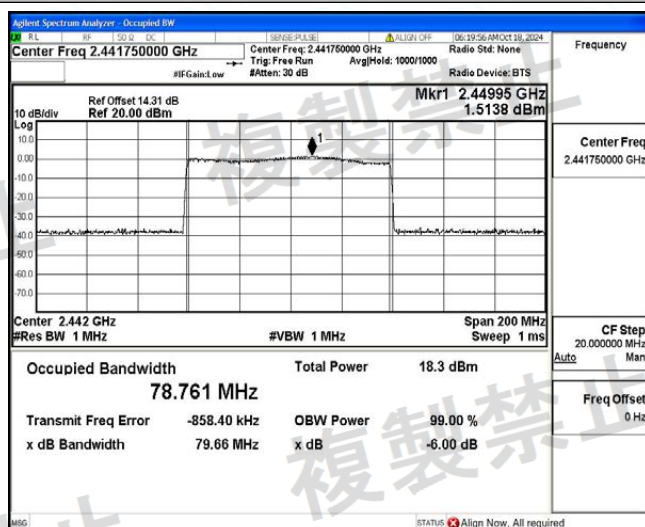
NTLV_DH5_Ant1_Hop



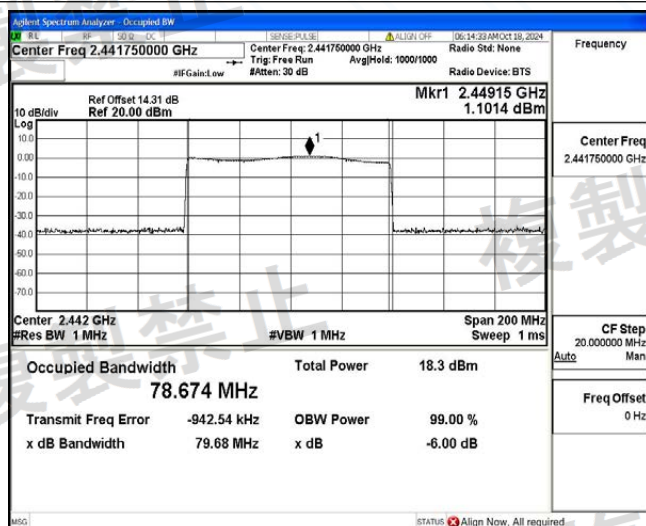
NTLV_2DH5_Ant1_Hop



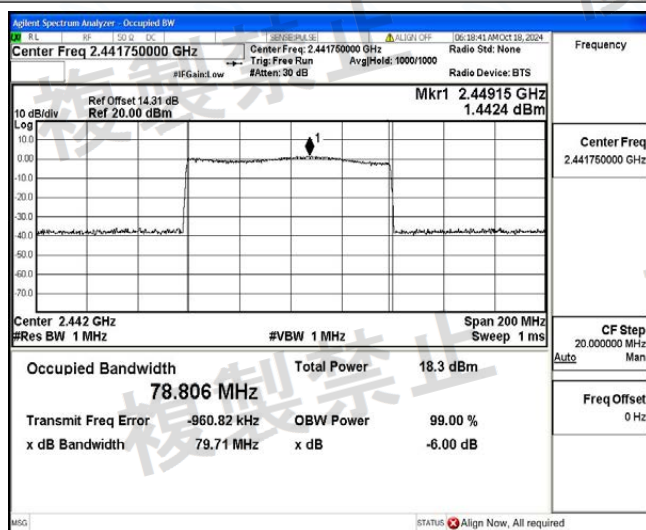
NTLV_3DH5_Ant1_Hop



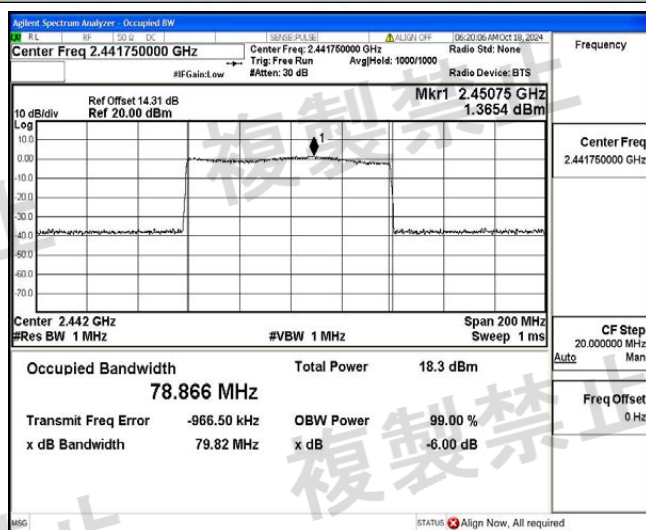
NTHV_DH5_Ant1_Hop



NTHV_2DH5_Ant1_Hop



NTHV_3DH5_Ant1_Hop





Appendix C: Spread Bandwidth

Test Result

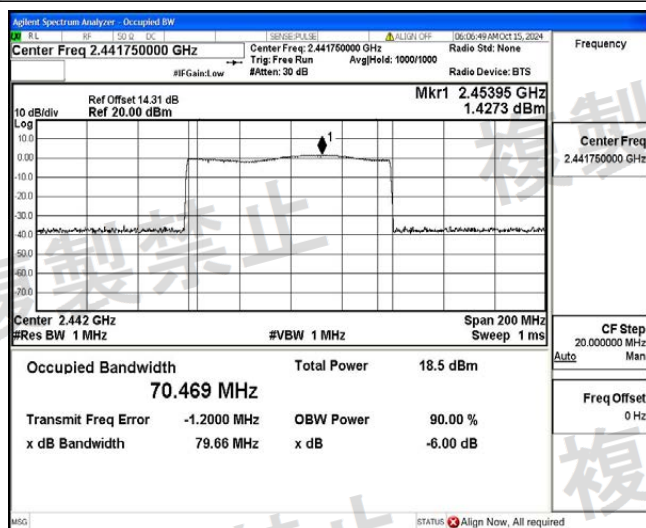
Test Condition	Test Mode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Spread Factor	Limit	Verdict
NTNV	DH5	Ant1	Hop	70.469	≥0.5	70.469	>5	PASS
	2DH5	Ant1	Hop	70.698	≥0.5	70.698	>5	PASS
	3DH5	Ant1	Hop	69.957	≥0.5	69.957	>5	PASS
NTLV	DH5	Ant1	Hop	69.982	≥0.5	69.982	>5	PASS
	2DH5	Ant1	Hop	70.065	≥0.5	70.065	>5	PASS
	3DH5	Ant1	Hop	70.094	≥0.5	70.094	>5	PASS
NTHV	DH5	Ant1	Hop	70.007	≥0.5	70.007	>5	PASS
	2DH5	Ant1	Hop	69.991	≥0.5	69.991	>5	PASS
	3DH5	Ant1	Hop	70.026	≥0.5	70.026	>5	PASS

Note: Spreading rate = [Spread bandwidth (actual measurement value)]/[Transmission rate]
Transmission rate is 1.0 Mbps.

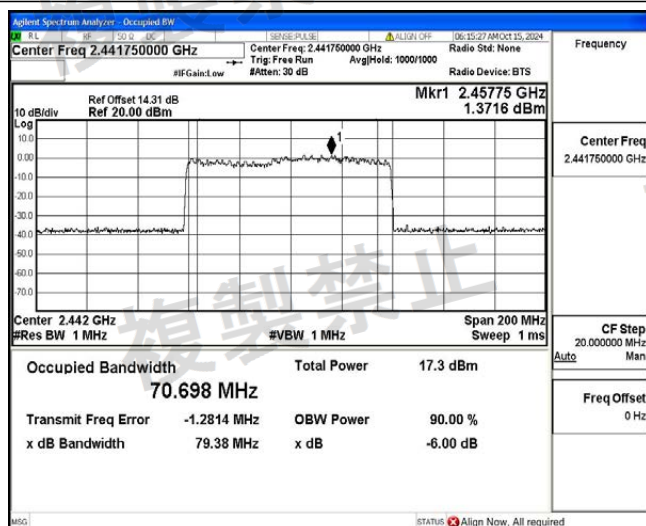


Test Graphs

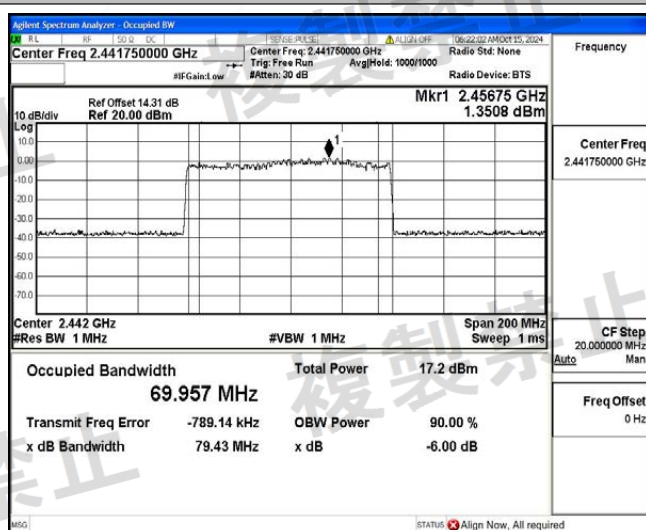
NTNV_DH5_Ant1_Hop



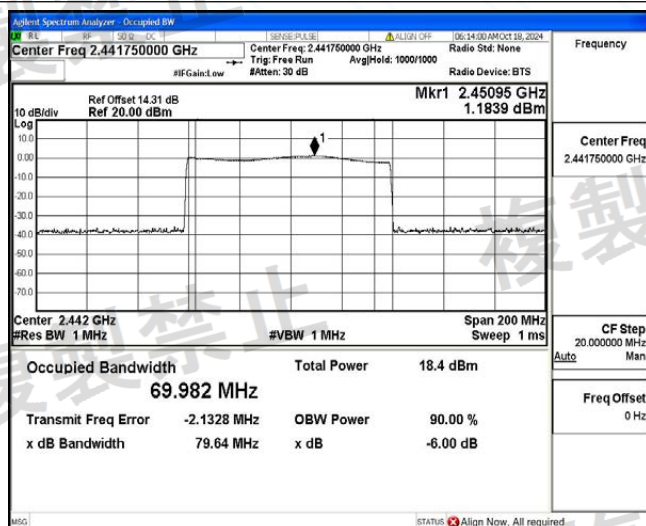
NTNV_2DH5_Ant1_Hop



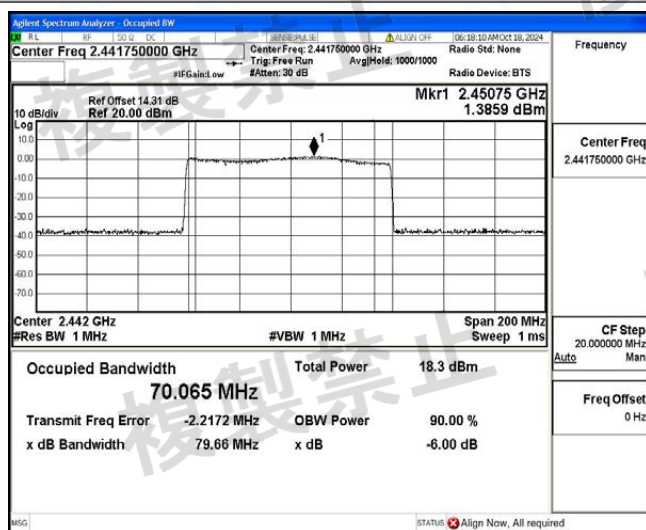
NTNV_3DH5_Ant1_Hop



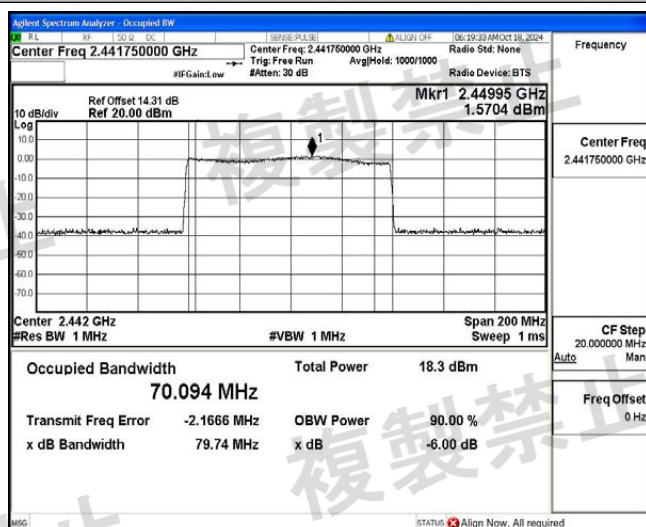
NTLV_DH5_Ant1_Hop



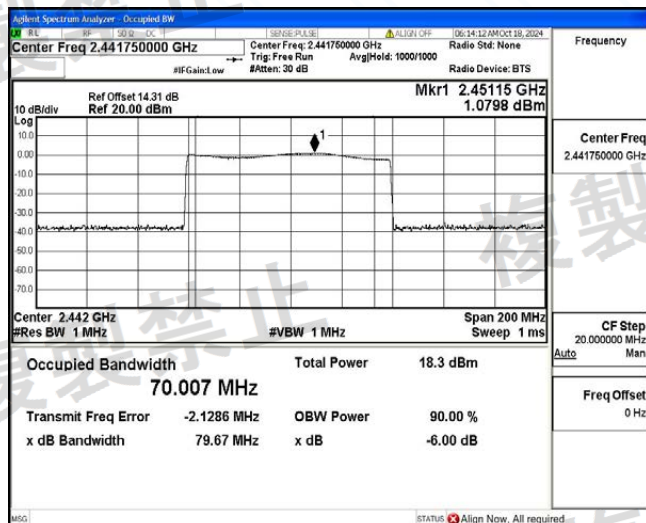
NTLV_2DH5_Ant1_Hop



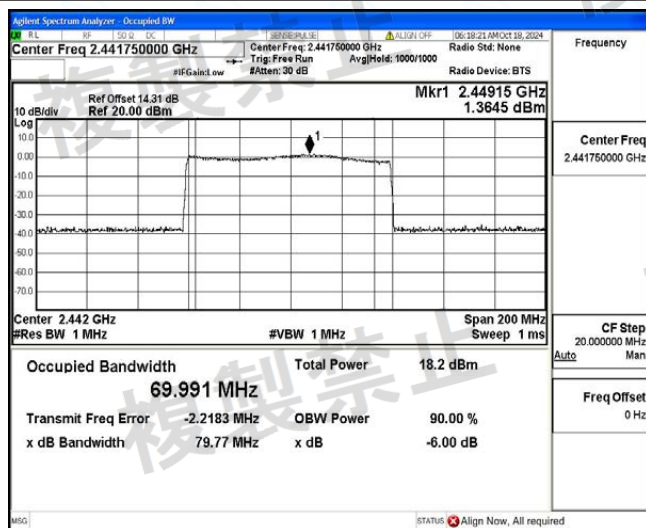
NTLV_3DH5_Ant1_Hop



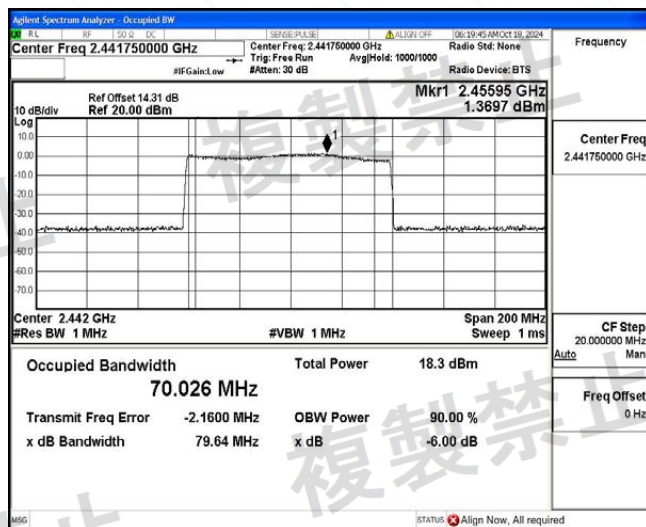
NTHV_DH5_Ant1_Hop



NTHV_2DH5_Ant1_Hop



NTHV_3DH5_Ant1_Hop



**Appendix D: Antenna Power****Test Result**

Antenna Power									
Test Condition	Test Mode	Antenna	Freq (MHz)	Result (dBm)	Result (mW)	90% BW (MHz)	Result (mW /MHz)	Limit (mW /MHz)	Verdict
NTNV	DH5	Ant1	Hop	5.86	3.8548	70.469	0.0547	≤3	PASS
	2DH5	Ant1	Hop	2.71	1.8664	70.698	0.0264	≤3	PASS
	3DH5	Ant1	Hop	2.73	1.8750	69.957	0.0268	≤3	PASS
NTLV	DH5	Ant1	Hop	5.75	3.7584	69.982	0.0537	≤3	PASS
	2DH5	Ant1	Hop	4.75	2.9854	70.065	0.0426	≤3	PASS
	3DH5	Ant1	Hop	4.86	3.0620	70.094	0.0437	≤3	PASS
NTHV	DH5	Ant1	Hop	5.76	3.7670	70.007	0.0538	≤3	PASS
	2DH5	Ant1	Hop	4.79	3.0130	69.991	0.0430	≤3	PASS
	3DH5	Ant1	Hop	4.86	3.0620	70.026	0.0437	≤3	PASS

Tolerance								
Test Condition	Test Mode	Antenna	Freq (MHz)	Power (mW/M Hz)	RatedPower (mW/MHz)	Result (%)	Limit (%)	Verdict
NTNV	DH5	Ant1	Hop	0.0547	0.1	-45.3	+20	PASS
	2DH5	Ant1	Hop	0.0264	0.1	-73.6	+20	PASS
	3DH5	Ant1	Hop	0.0268	0.1	-73.2	+20	PASS
NTLV	DH5	Ant1	Hop	0.0537	0.1	-46.3	+20	PASS
	2DH5	Ant1	Hop	0.0426	0.1	-57.4	+20	PASS
	3DH5	Ant1	Hop	0.0437	0.1	-56.3	+20	PASS
NTHV	DH5	Ant1	Hop	0.0538	0.1	-46.2	+20	PASS
	2DH5	Ant1	Hop	0.0430	0.1	-57	+20	PASS
	3DH5	Ant1	Hop	0.0437	0.1	-56.3	+20	PASS



EIRP								
Test Condition	TestMode	Antenna	Freq (MHz)	Power (dBm/MHz)	Ant (dBi)	EIRP(dBm/MHz)	Limit(dBm/MHz)	Verdict
NTNV	DH5	Ant1	Hop	-12.62	0.01	-12.61	≤6.91	PASS
	2DH5	Ant1	Hop	-15.78	0.01	-15.77	≤6.91	PASS
	3DH5	Ant1	Hop	-15.72	0.01	-15.71	≤6.91	PASS
NTLV	DH5	Ant1	Hop	-12.70	0.01	-12.69	≤6.91	PASS
	2DH5	Ant1	Hop	-13.71	0.01	-13.7	≤6.91	PASS
	3DH5	Ant1	Hop	-13.60	0.01	-13.59	≤6.91	PASS
NTHV	DH5	Ant1	Hop	-12.69	0.01	-12.68	≤6.91	PASS
	2DH5	Ant1	Hop	-13.66	0.01	-13.65	≤6.91	PASS
	3DH5	Ant1	Hop	-13.59	0.01	-13.58	≤6.91	PASS

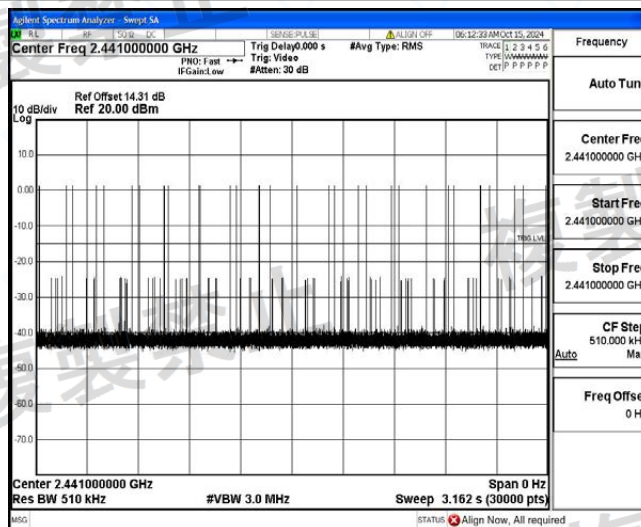
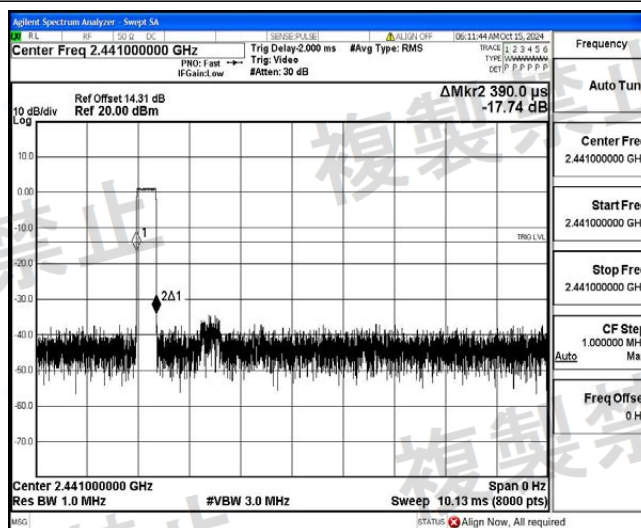
**Appendix E: Dwell Time****Test Result**

Test Condition	Test Mode	Antenna	Freq(M Hz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit [s]	Verdict
NTNV	DH1	Ant1	Hop	0.39	330	0.129	≤0.4	PASS
	DH3	Ant1	Hop	1.64	160	0.262	≤0.4	PASS
	DH5	Ant1	Hop	2.89	100	0.289	≤0.4	PASS
	2DH1	Ant1	Hop	0.40	320	0.128	≤0.4	PASS
	2DH3	Ant1	Hop	1.65	180	0.297	≤0.4	PASS
	2DH5	Ant1	Hop	2.90	100	0.29	≤0.4	PASS
	3DH1	Ant1	Hop	0.40	320	0.128	≤0.4	PASS
	3DH3	Ant1	Hop	1.65	160	0.264	≤0.4	PASS
	3DH5	Ant1	Hop	2.90	120	0.348	≤0.4	PASS
NTLV	DH1	Ant1	Hop	0.38	330	0.125	≤0.4	PASS
	DH3	Ant1	Hop	1.64	200	0.328	≤0.4	PASS
	DH5	Ant1	Hop	2.89	130	0.376	≤0.4	PASS
	2DH1	Ant1	Hop	0.39	330	0.129	≤0.4	PASS
	2DH3	Ant1	Hop	1.64	170	0.279	≤0.4	PASS
	2DH5	Ant1	Hop	2.89	130	0.376	≤0.4	PASS
	3DH1	Ant1	Hop	0.39	330	0.129	≤0.4	PASS
	3DH3	Ant1	Hop	1.64	200	0.328	≤0.4	PASS
	3DH5	Ant1	Hop	2.89	120	0.347	≤0.4	PASS
NTHV	DH1	Ant1	Hop	0.38	320	0.122	≤0.4	PASS
	DH3	Ant1	Hop	1.64	160	0.262	≤0.4	PASS
	DH5	Ant1	Hop	2.89	130	0.376	≤0.4	PASS
	2DH1	Ant1	Hop	0.39	320	0.125	≤0.4	PASS
	2DH3	Ant1	Hop	1.64	170	0.279	≤0.4	PASS
	2DH5	Ant1	Hop	2.89	70	0.202	≤0.4	PASS
	3DH1	Ant1	Hop	0.39	320	0.125	≤0.4	PASS
	3DH3	Ant1	Hop	1.64	190	0.312	≤0.4	PASS
	3DH5	Ant1	Hop	2.89	130	0.376	≤0.4	PASS

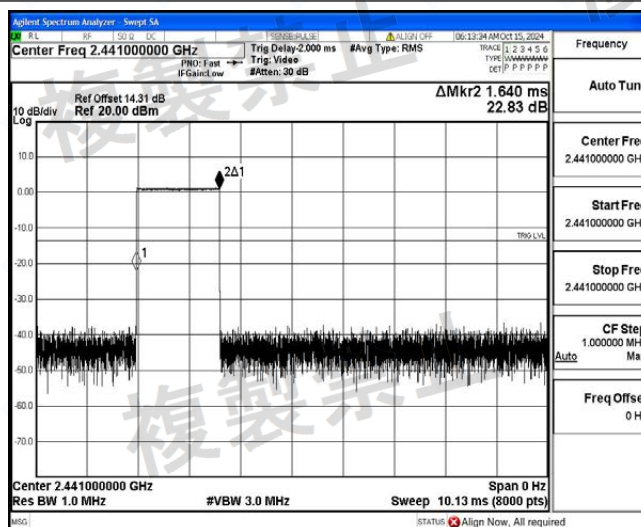


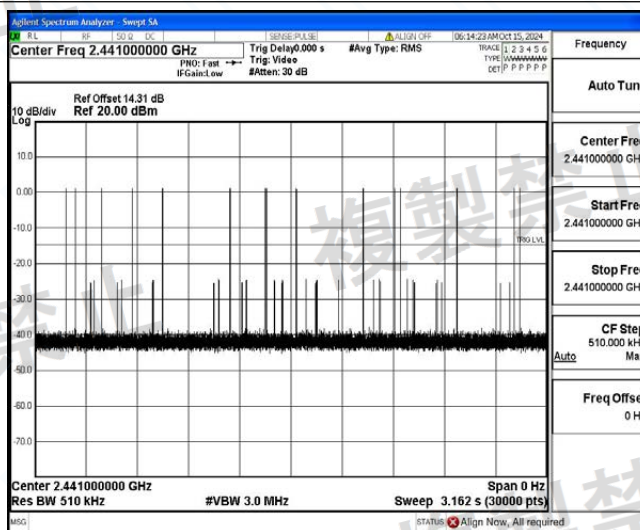
Test Graphs

NTNV_DH1_Ant1_Hop

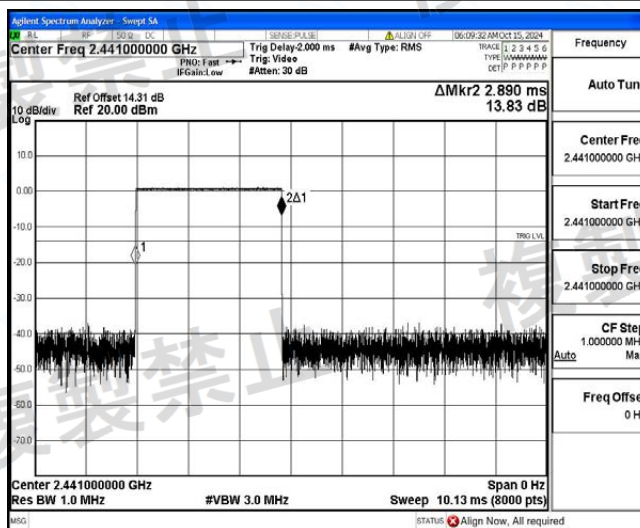


NTNV_DH3_Ant1_Hop

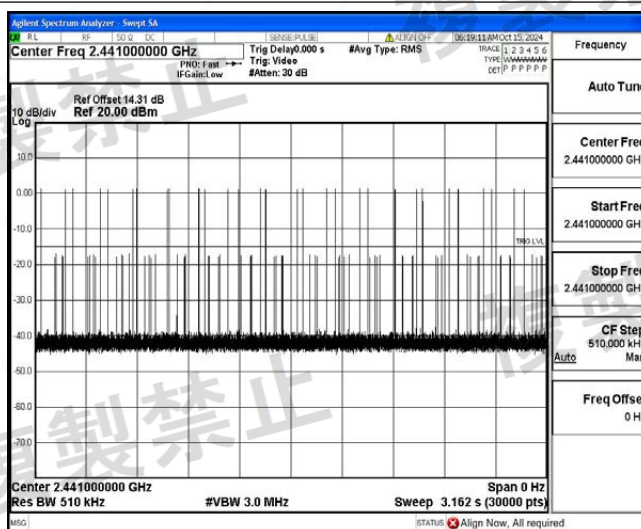
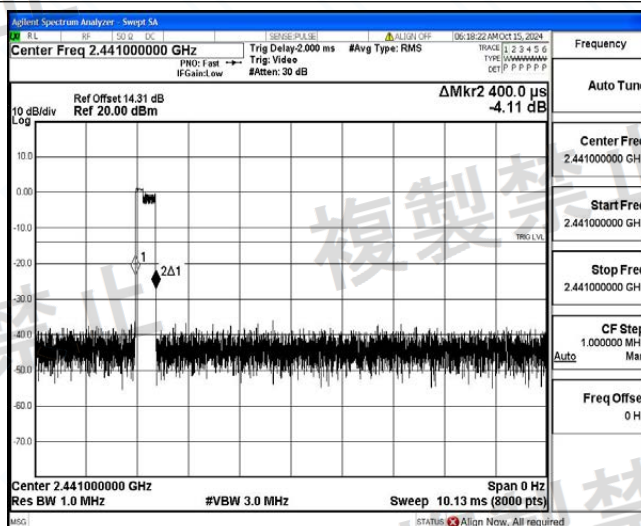




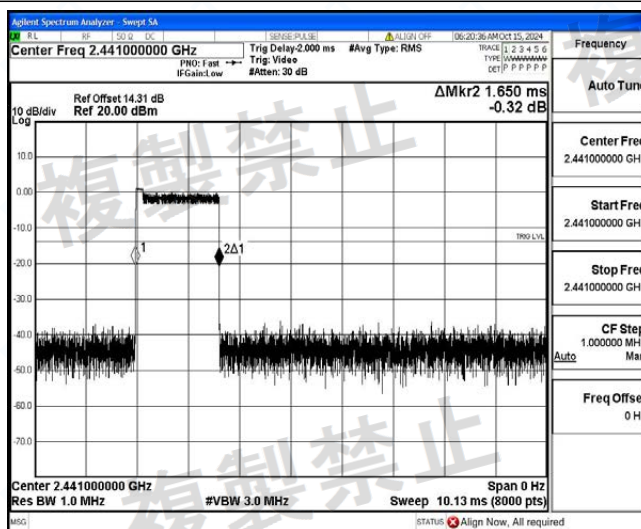
NTNV_DH5_Ant1_Hop

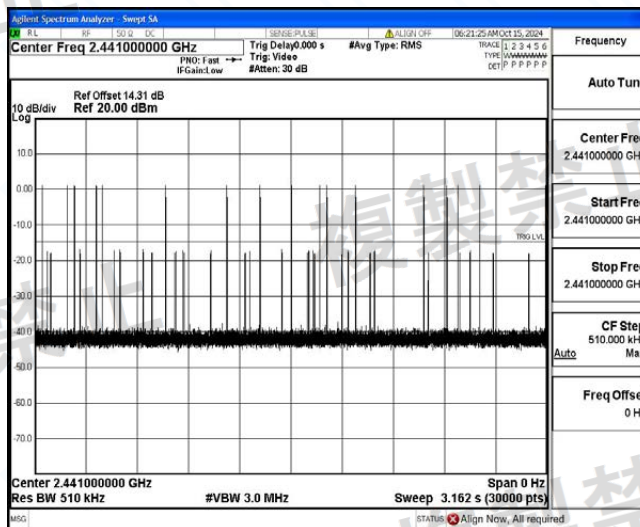


NTNV_2DH1_Ant1_Hop

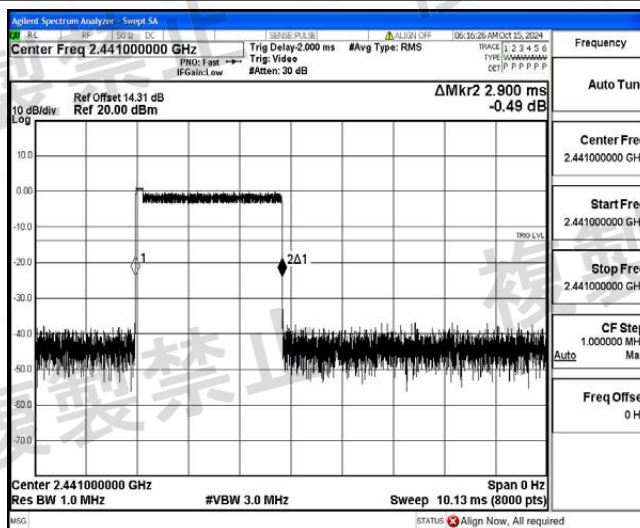


NTNV_2DH3_Ant1_Hop

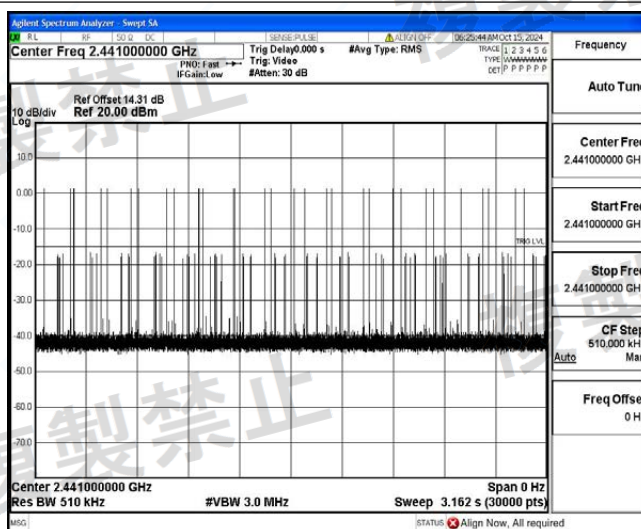
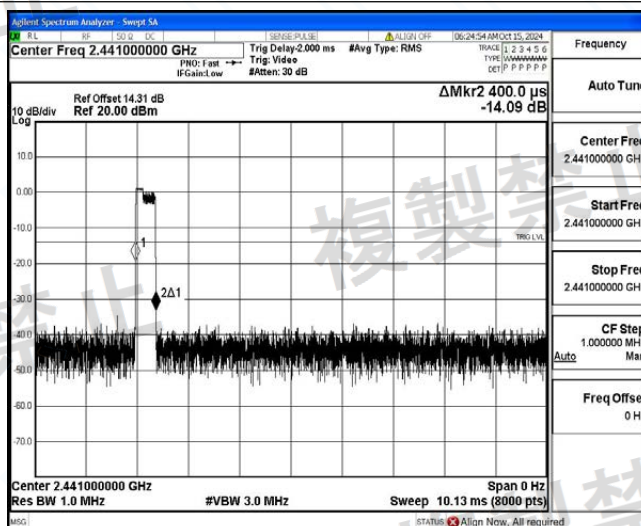




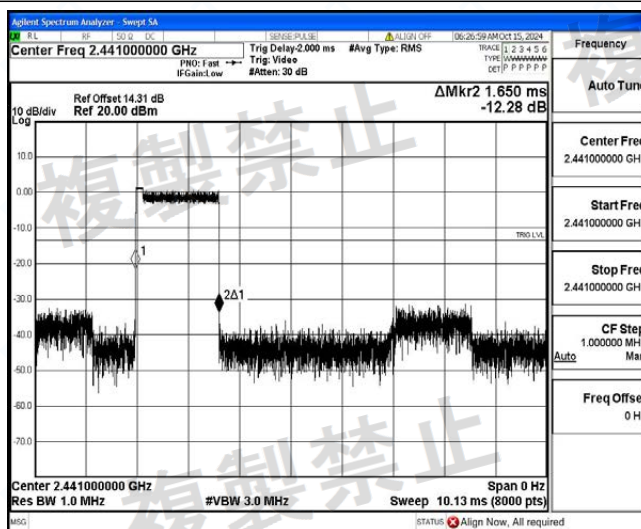
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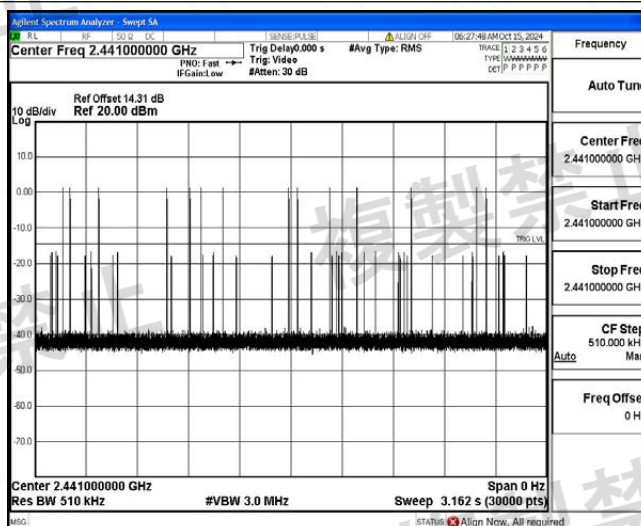


NTNV_3DH1_Ant1_Hop

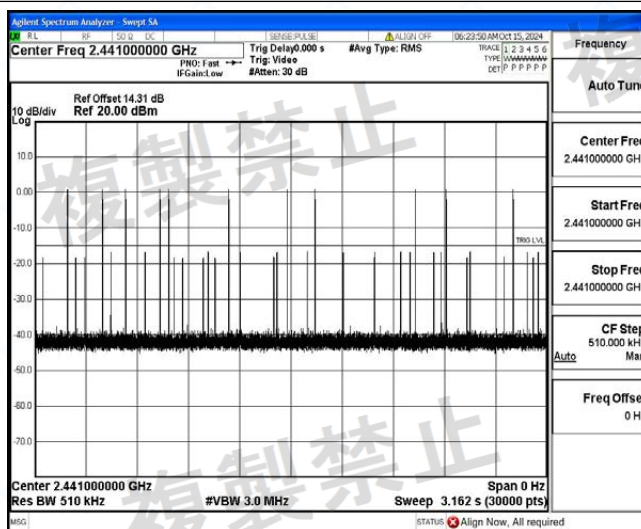
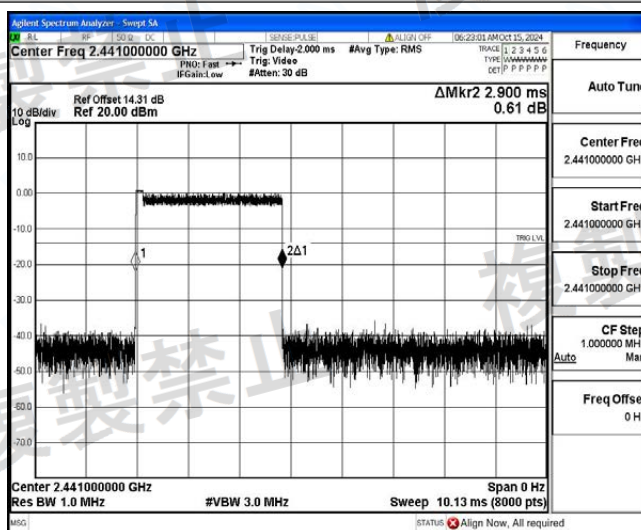


NTNV_3DH3_Ant1_Hop

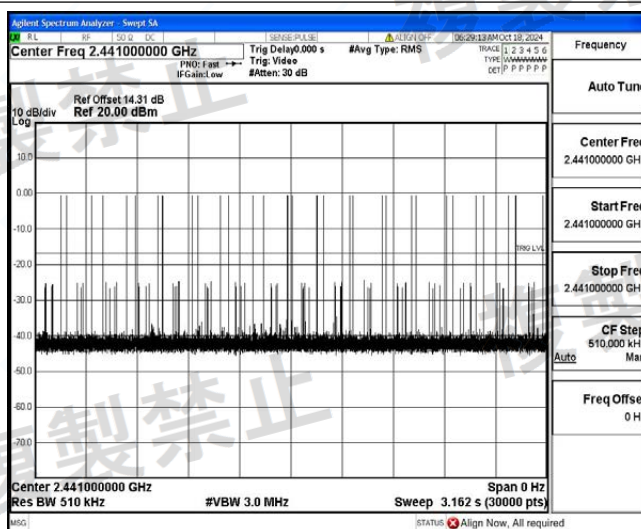
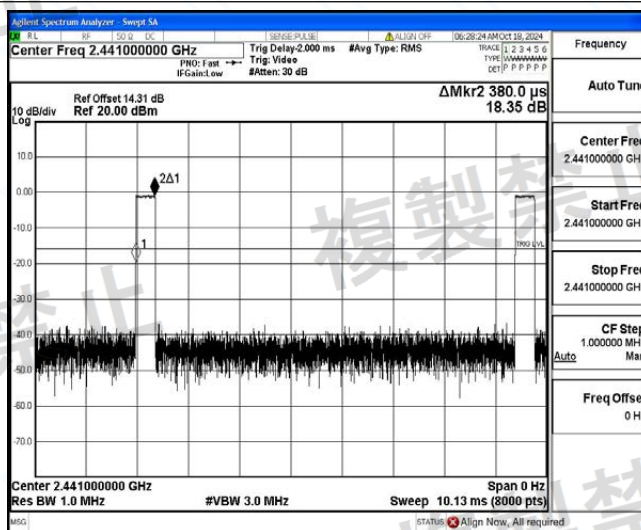




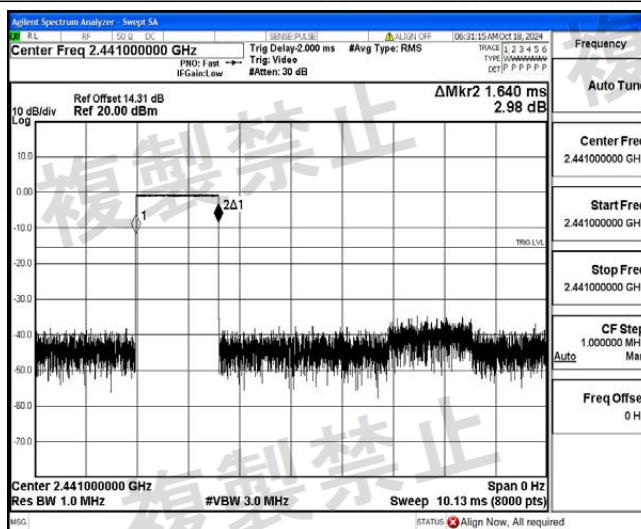
NTNV_3DH5_Ant1_Hop

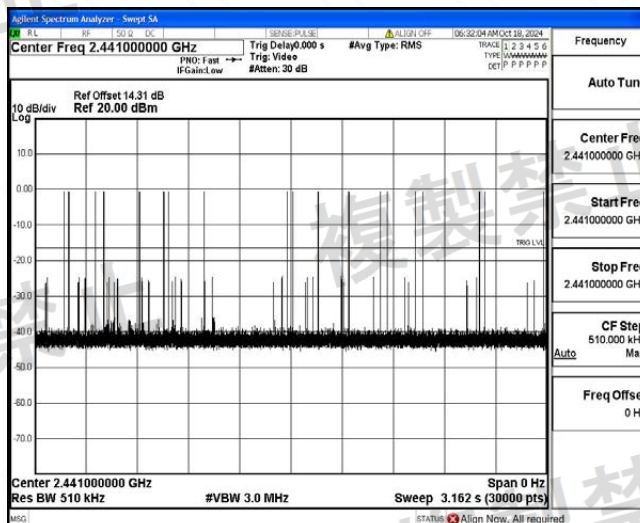


NTLV_DH1_Ant1_Hop

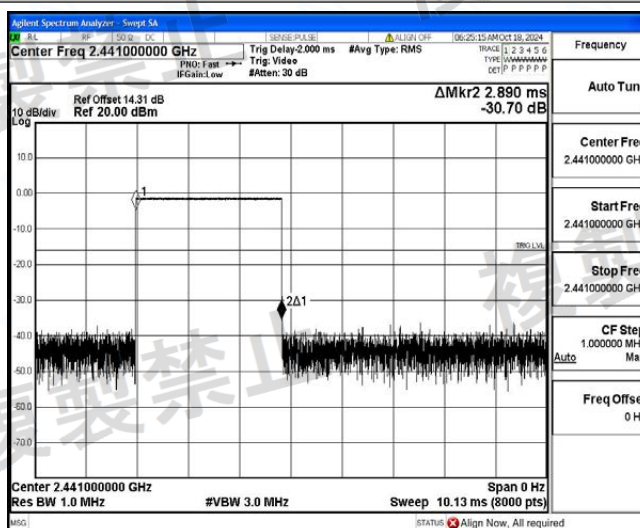


NTLV_DH3_Ant1_Hop

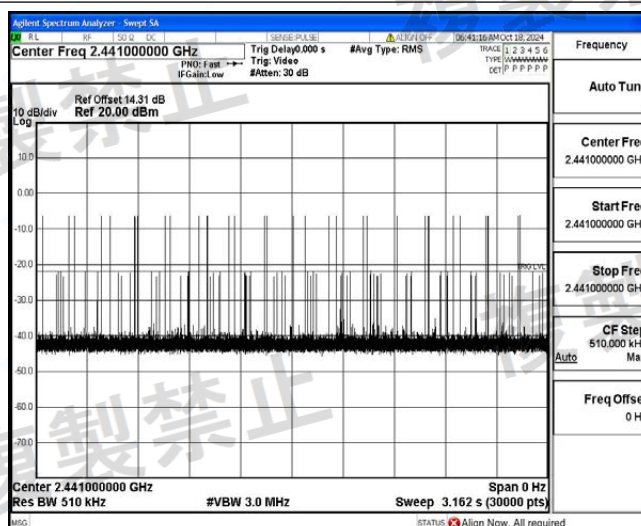
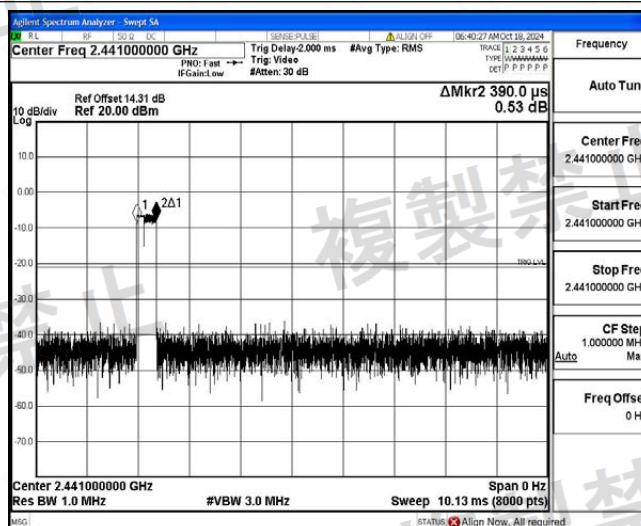




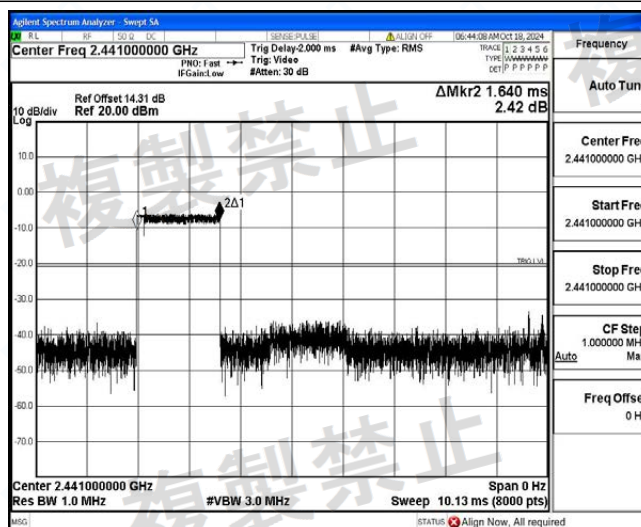
NTLV_DH5_Ant1_Hop

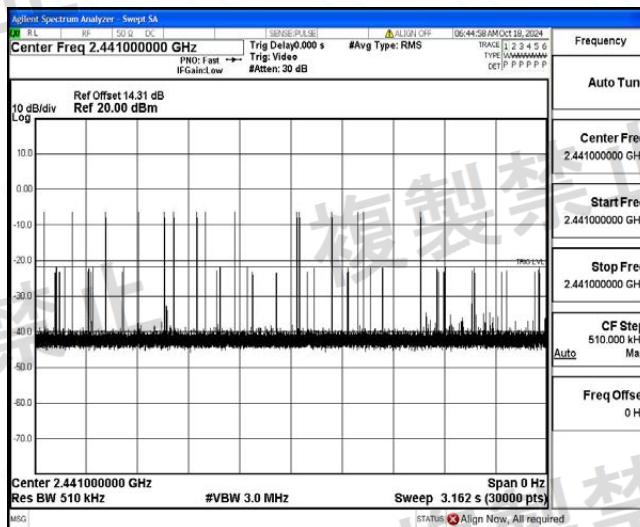


NTLV_2DH1_Ant1_Hop

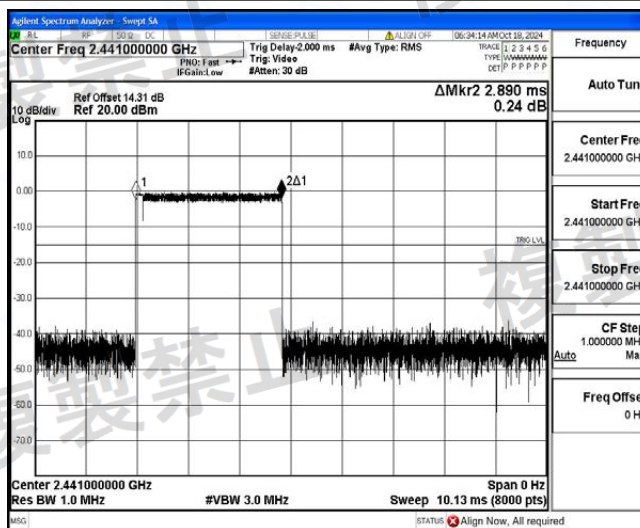


NTLV_2DH3_Ant1_Hop

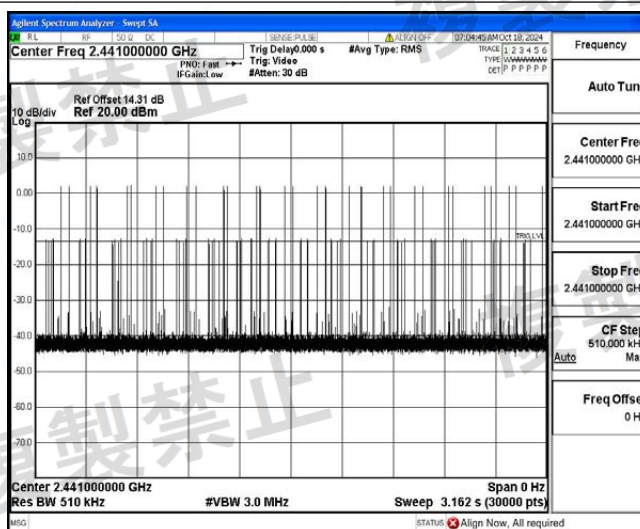
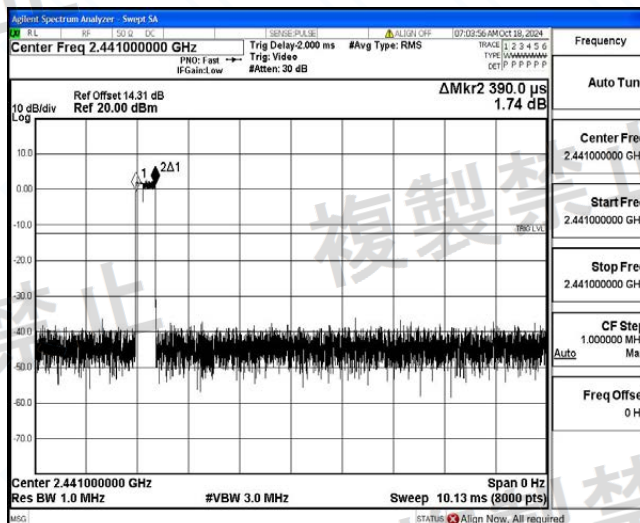




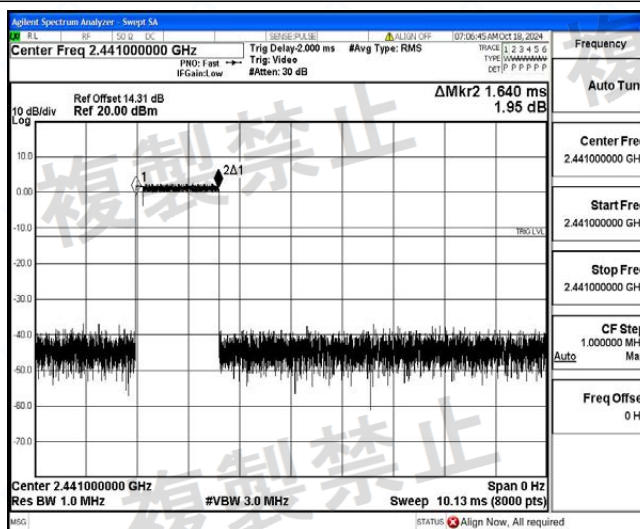
NTLV_2DH5_Ant1_Hop

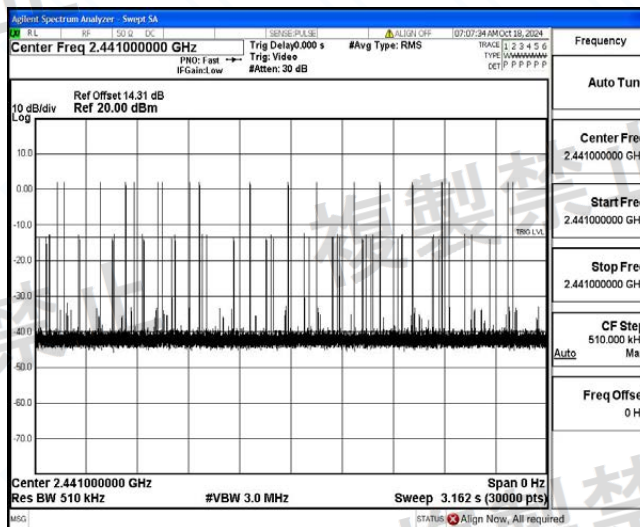


NTLV_3DH1_Ant1_Hop

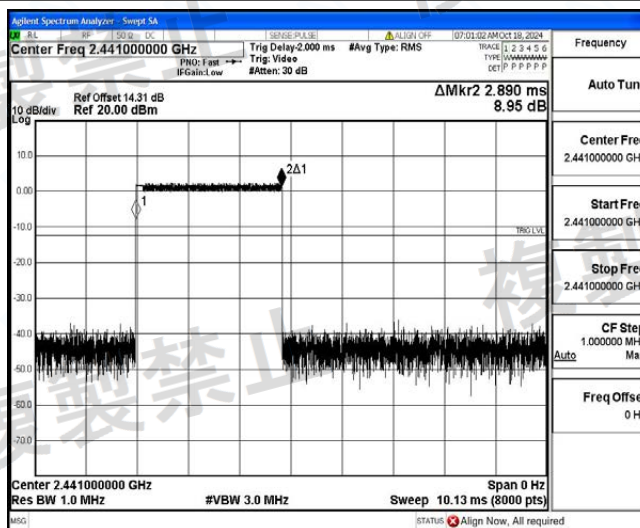


NTLV_3DH3_Ant1_Hop

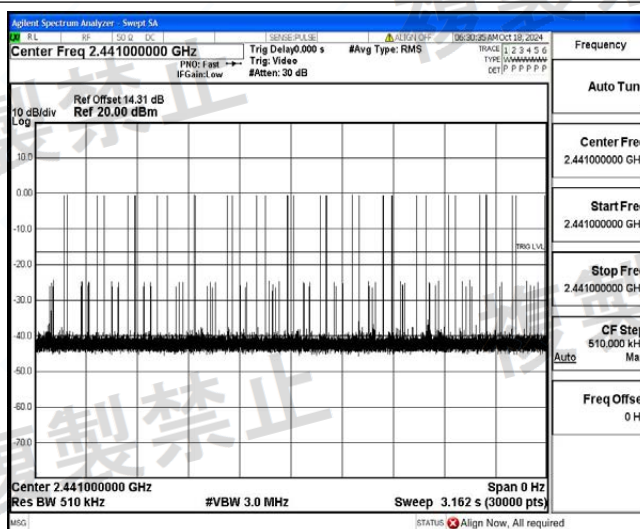
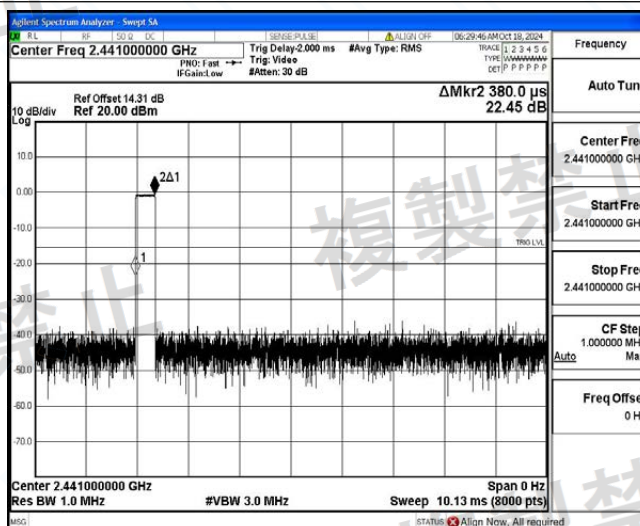




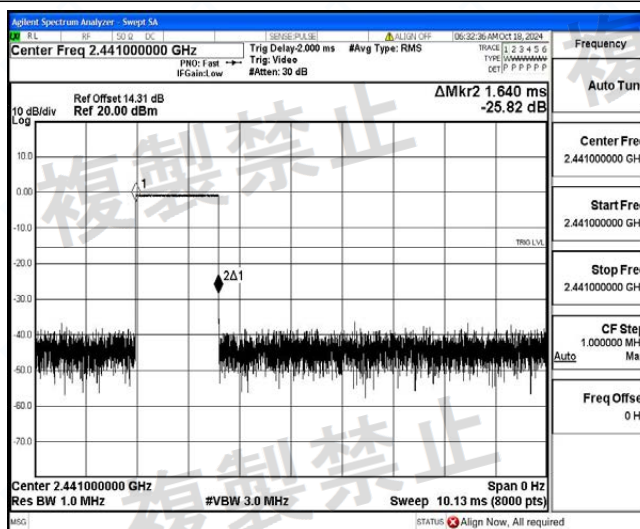
NTLV_3DH5_Ant1_Hop

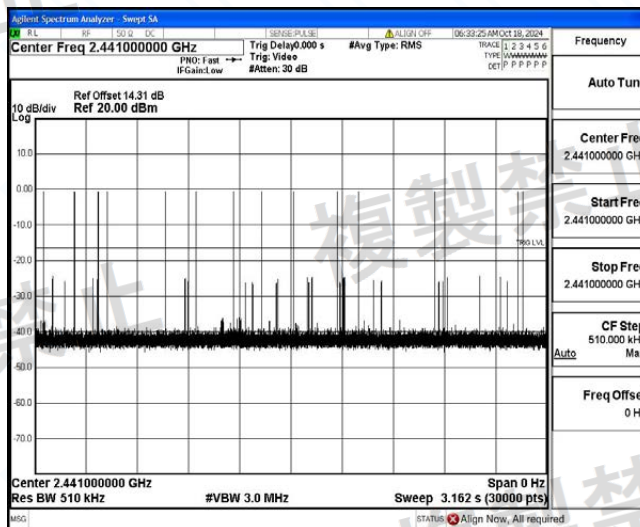


NTHV_DH1_Ant1_Hop

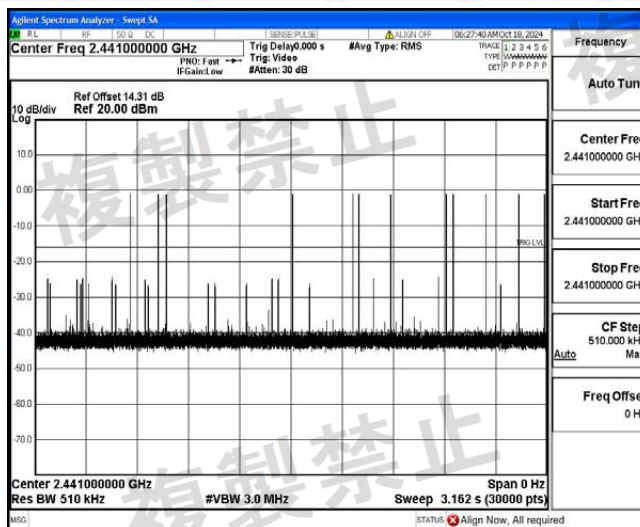
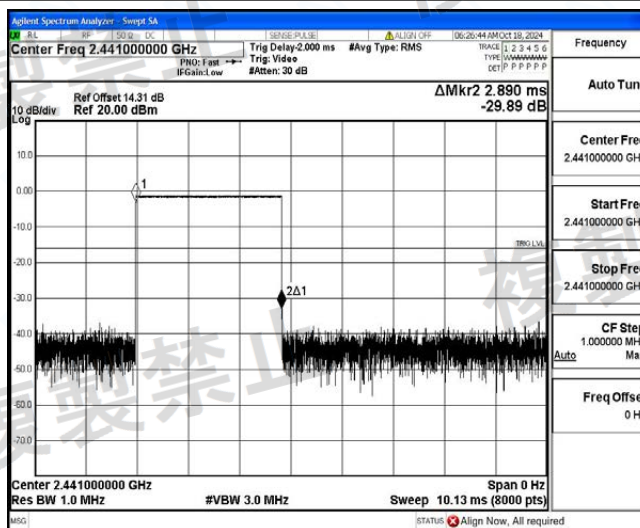


NTHV_DH3_Ant1_Hop

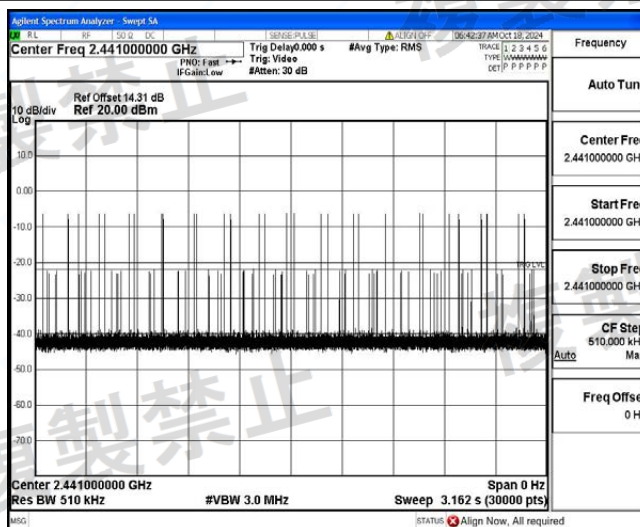
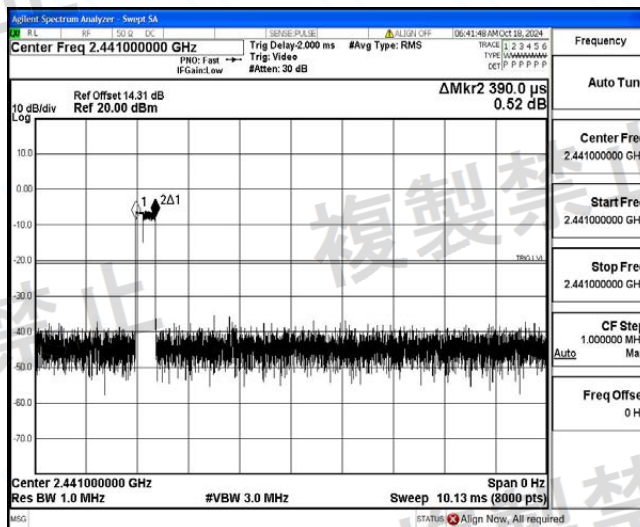




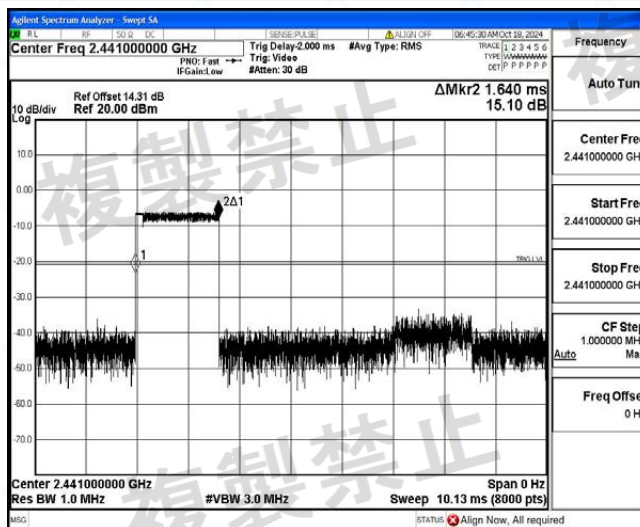
NTHV_DH5_Ant1_Hop

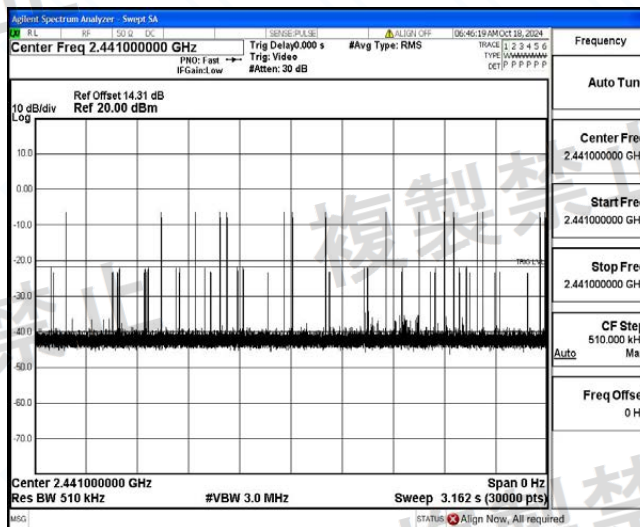


NTHV_2DH1_Ant1_Hop

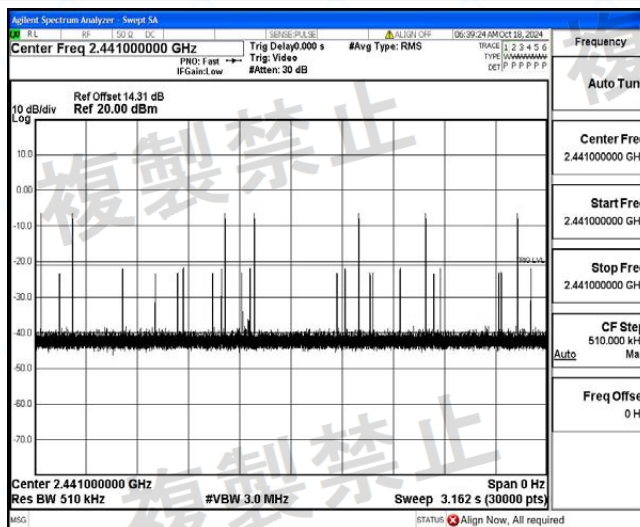
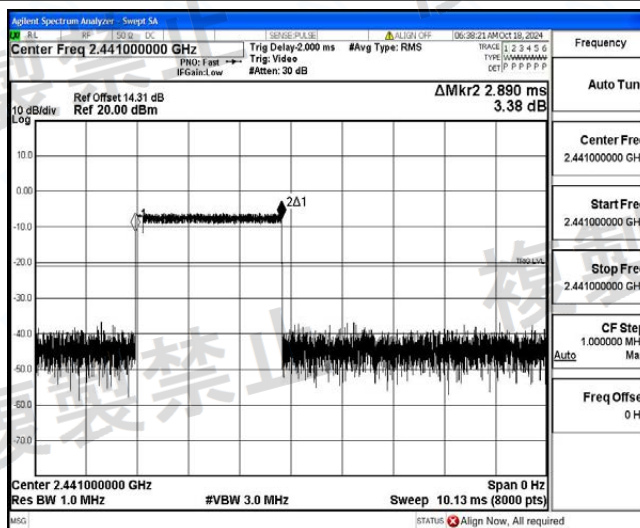


NTHV_2DH3_Ant1_Hop

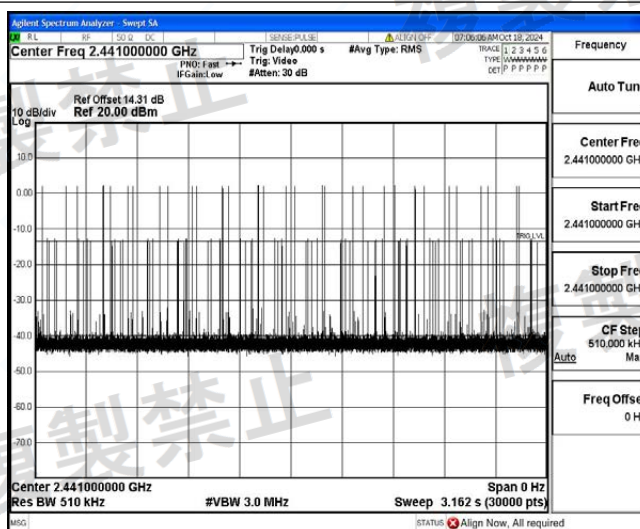
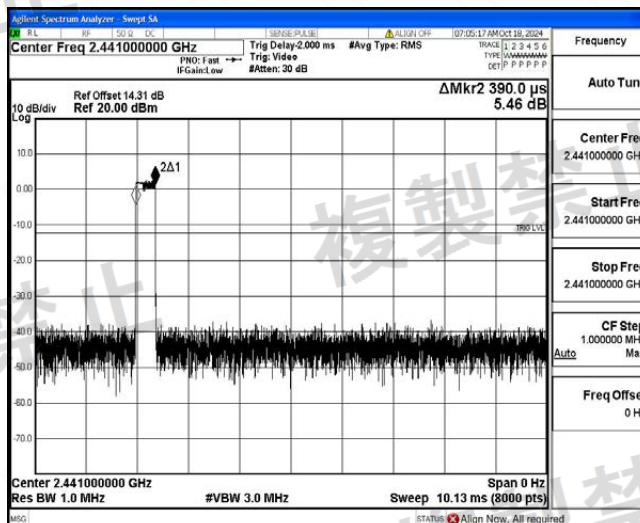




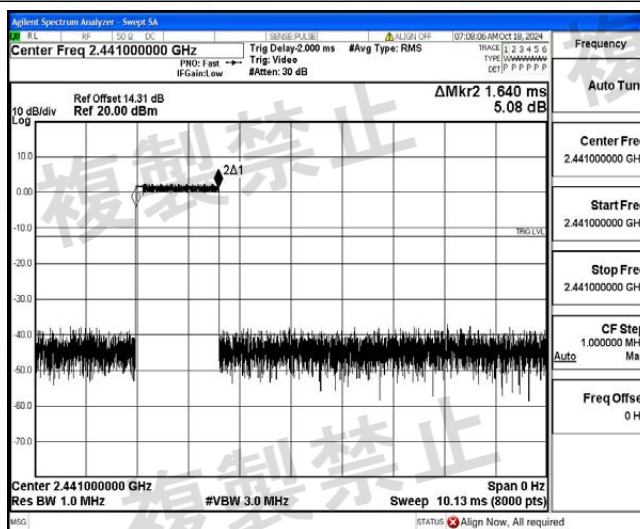
NTHV_2DH5_Ant1_Hop

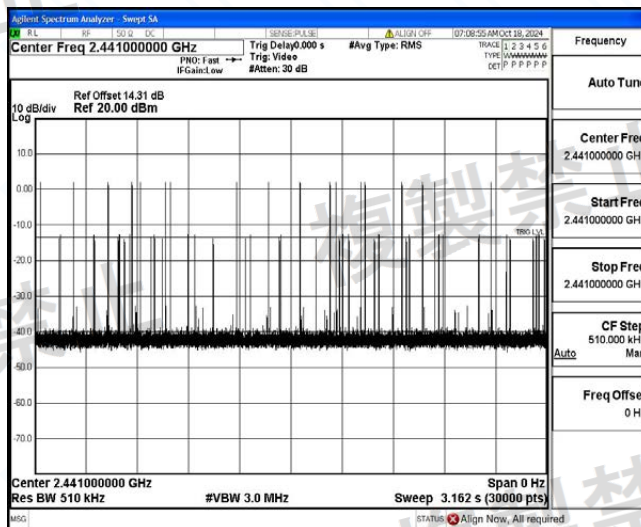


NTHV_3DH1_Ant1_Hop

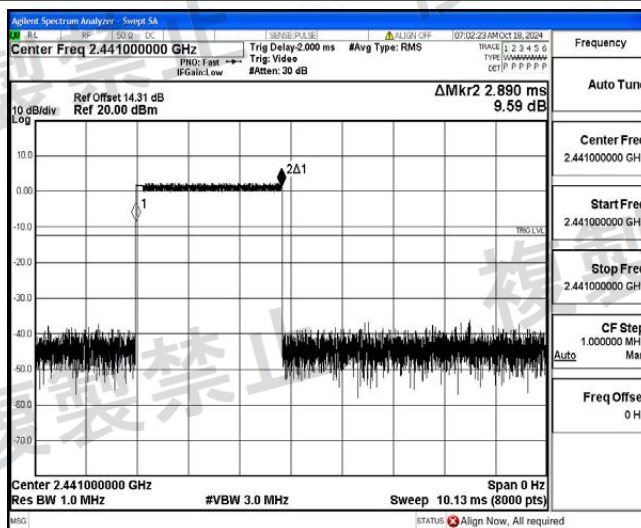


NTHV_3DH3_Ant1_Hop





NTHV_3DH5_Ant1_Hop



**Appendix F: Spurious Emission of TX****Test Result**

Test Condition	Test Mode	Antenna	Freq(M Hz)	Freq.Range [MHz]	Result [dBm]	Limit [dBm]	Result [μW]	Limit [μW]	Verdict
NTNV	DH5	Ant1	2402	30~2387	-44.93	≤-26	0.03214	≤2.5	PASS
				2387~2400	-36.06	≤-16	0.24774	≤25	PASS
				2483.5~2496.5	-36.56	≤-16	0.22080	≤25	PASS
				2496.5~13000	-41.70	≤-26	0.06761	≤2.5	PASS
			2441	30~2387	-44.33	≤-26	0.03690	≤2.5	PASS
				2387~2400	-36.76	≤-16	0.21086	≤25	PASS
				2483.5~2496.5	-36.34	≤-16	0.23227	≤25	PASS
				2496.5~13000	-29.36	≤-26	1.15878	≤2.5	PASS
			2480	30~2387	-44.08	≤-26	0.03908	≤2.5	PASS
				2387~2400	-36.54	≤-16	0.22182	≤25	PASS
				2483.5~2496.5	-36.74	≤-16	0.21184	≤25	PASS
				2496.5~13000	-40.94	≤-26	0.08054	≤2.5	PASS
	2DH5	Ant1	2402	30~2387	-44.01	≤-26	0.03972	≤2.5	PASS
				2387~2400	-36.01	≤-16	0.25061	≤25	PASS
				2483.5~2496.5	-37.18	≤-16	0.19143	≤25	PASS
				2496.5~13000	-40.95	≤-26	0.08035	≤2.5	PASS
			2441	30~2387	-45.34	≤-26	0.02924	≤2.5	PASS
				2387~2400	-36.74	≤-16	0.21184	≤25	PASS
				2483.5~2496.5	-36.45	≤-16	0.22646	≤25	PASS
				2496.5~13000	-39.79	≤-26	0.10495	≤2.5	PASS
			2480	30~2387	-44.84	≤-26	0.03281	≤2.5	PASS
				2387~2400	-36.38	≤-16	0.23014	≤25	PASS
				2483.5~2496.5	-37.12	≤-16	0.19409	≤25	PASS
				2496.5~13000	-41.12	≤-26	0.07727	≤2.5	PASS
	3DH5	Ant1	2402	30~2387	-44.53	≤-26	0.03524	≤2.5	PASS
				2387~2400	-36.81	≤-16	0.20845	≤25	PASS
				2483.5~2496.5	-36.63	≤-16	0.21727	≤25	PASS
				2496.5~13000	-40.58	≤-26	0.08750	≤2.5	PASS
			2441	30~2387	-44.93	≤-26	0.03214	≤2.5	PASS
				2387~2400	-36.56	≤-16	0.22080	≤25	PASS
				2483.5~2496.5	-36.58	≤-16	0.21979	≤25	PASS
				2496.5~13000	-40.86	≤-26	0.08204	≤2.5	PASS
			2480	30~2387	-44.80	≤-26	0.03311	≤2.5	PASS
				2387~2400	-36.20	≤-16	0.23988	≤25	PASS
				2483.5~2496.5	-36.37	≤-16	0.23067	≤25	PASS
				2496.5~13000	-41.40	≤-26	0.07244	≤2.5	PASS
NTLV	DH5	Ant1	2402	30~2387	-44.44	≤-26	0.03597	≤2.5	PASS
				2387~2400	-35.53	≤-16	0.27990	≤25	PASS
				2483.5~2496.5	-36.67	≤-16	0.21528	≤25	PASS
				2496.5~13000	-41.59	≤-26	0.06934	≤2.5	PASS



NTHV	2DH5	Ant1	2441	30~2387	-45.36	≤-26	0.02911	≤2.5	PASS
				2387~2400	-36.74	≤-16	0.21184	≤25	PASS
				2483.5~2496.5	-36.86	≤-16	0.20606	≤25	PASS
				2496.5~13000	-41.15	≤-26	0.07674	≤2.5	PASS
			2480	30~2387	-43.64	≤-26	0.04325	≤2.5	PASS
				2387~2400	-36.92	≤-16	0.20324	≤25	PASS
				2483.5~2496.5	-36.59	≤-16	0.21928	≤25	PASS
				2496.5~13000	-41.37	≤-26	0.07295	≤2.5	PASS
			2402	30~2387	-44.86	≤-26	0.03266	≤2.5	PASS
				2387~2400	-36.81	≤-16	0.20845	≤25	PASS
				2483.5~2496.5	-36.75	≤-16	0.21135	≤25	PASS
				2496.5~13000	-40.91	≤-26	0.08110	≤2.5	PASS
	3DH5	Ant1	2441	30~2387	-45.09	≤-26	0.03097	≤2.5	PASS
				2387~2400	-36.67	≤-16	0.21528	≤25	PASS
				2483.5~2496.5	-36.53	≤-16	0.22233	≤25	PASS
				2496.5~13000	-40.47	≤-26	0.08974	≤2.5	PASS
			2480	30~2387	-43.55	≤-26	0.04416	≤2.5	PASS
				2387~2400	-36.78	≤-16	0.20989	≤25	PASS
				2483.5~2496.5	-36.23	≤-16	0.23823	≤25	PASS
				2496.5~13000	-41.17	≤-26	0.07638	≤2.5	PASS
			2402	30~2387	-44.28	≤-26	0.03733	≤2.5	PASS
				2387~2400	-36.80	≤-16	0.20893	≤25	PASS
				2483.5~2496.5	-36.53	≤-16	0.22233	≤25	PASS
				2496.5~13000	-41.15	≤-26	0.07674	≤2.5	PASS
NTHV	DH5	Ant1	2441	30~2387	-45.54	≤-26	0.02793	≤2.5	PASS
				2387~2400	-36.55	≤-16	0.22131	≤25	PASS
				2483.5~2496.5	-36.75	≤-16	0.21135	≤25	PASS
				2496.5~13000	-41.64	≤-26	0.06855	≤2.5	PASS
			2480	30~2387	-45.26	≤-26	0.02979	≤2.5	PASS
				2387~2400	-37.05	≤-16	0.19724	≤25	PASS
				2483.5~2496.5	-36.40	≤-16	0.22909	≤25	PASS
				2496.5~13000	-40.36	≤-26	0.09204	≤2.5	PASS
			2402	30~2387	-44.17	≤-26	0.03828	≤2.5	PASS
				2387~2400	-36.84	≤-16	0.20701	≤25	PASS
				2483.5~2496.5	-36.89	≤-16	0.20464	≤25	PASS
				2496.5~13000	-29.82	≤-26	1.04232	≤2.5	PASS
			2441	30~2387	-44.63	≤-26	0.03443	≤2.5	PASS
				2387~2400	-36.67	≤-16	0.21528	≤25	PASS
				2483.5~2496.5	-37.35	≤-16	0.18408	≤25	PASS
				2496.5~13000	-41.01	≤-26	0.07925	≤2.5	PASS
			2480	30~2387	-45.46	≤-26	0.02844	≤2.5	PASS
				2387~2400	-35.70	≤-16	0.26915	≤25	PASS
				2483.5~2496.5	-36.02	≤-16	0.25003	≤25	PASS
				2496.5~13000	-40.45	≤-26	0.09016	≤2.5	PASS

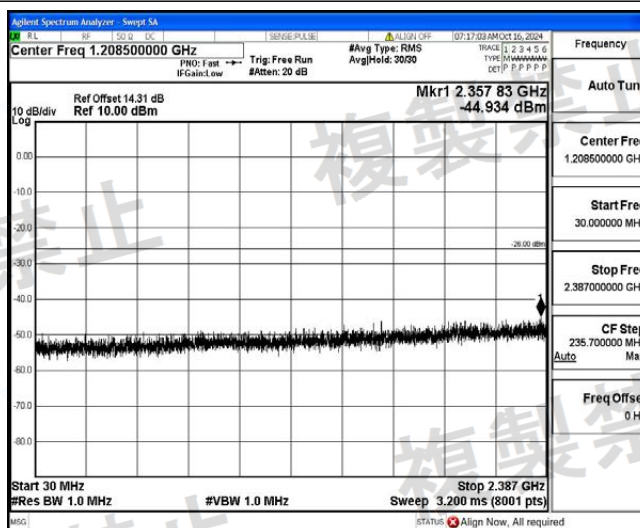


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				2387~2400	-35.54	≤-16	0.27925	≤25	PASS
				2483.5~2496.5	-36.38	≤-16	0.23014	≤25	PASS
				2496.5~13000	-40.97	≤-26	0.07998	≤2.5	PASS
			2441	30~2387	-45.16	≤-26	0.03048	≤2.5	PASS
				2387~2400	-36.59	≤-16	0.21928	≤25	PASS
				2483.5~2496.5	-36.00	≤-16	0.25119	≤25	PASS
				2496.5~13000	-40.83	≤-26	0.08260	≤2.5	PASS
			2480	30~2387	-44.74	≤-26	0.03357	≤2.5	PASS
				2387~2400	-36.09	≤-16	0.24604	≤25	PASS
				2483.5~2496.5	-36.52	≤-16	0.22284	≤25	PASS
				2496.5~13000	-31.75	≤-26	0.66834	≤2.5	PASS
	3DH5	Ant1	2402	30~2387	-45.50	≤-26	0.02818	≤2.5	PASS
				2387~2400	-36.58	≤-16	0.21979	≤25	PASS
				2483.5~2496.5	-36.40	≤-16	0.22909	≤25	PASS
				2496.5~13000	-41.25	≤-26	0.07499	≤2.5	PASS
			2441	30~2387	-45.49	≤-26	0.02825	≤2.5	PASS
				2387~2400	-36.43	≤-16	0.22751	≤25	PASS
				2483.5~2496.5	-35.43	≤-16	0.28642	≤25	PASS
				2496.5~13000	-41.66	≤-26	0.06823	≤2.5	PASS
			2480	30~2387	-44.42	≤-26	0.03614	≤2.5	PASS
				2387~2400	-37.02	≤-16	0.19861	≤25	PASS
				2483.5~2496.5	-36.08	≤-16	0.24660	≤25	PASS
				2496.5~13000	-41.27	≤-26	0.07464	≤2.5	PASS

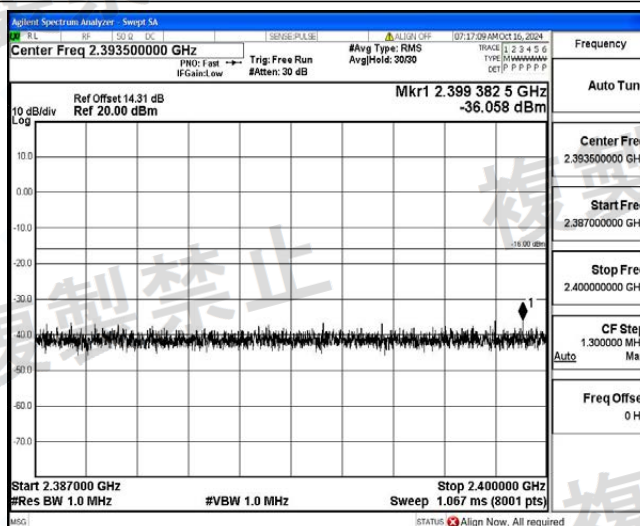


Test Graphs

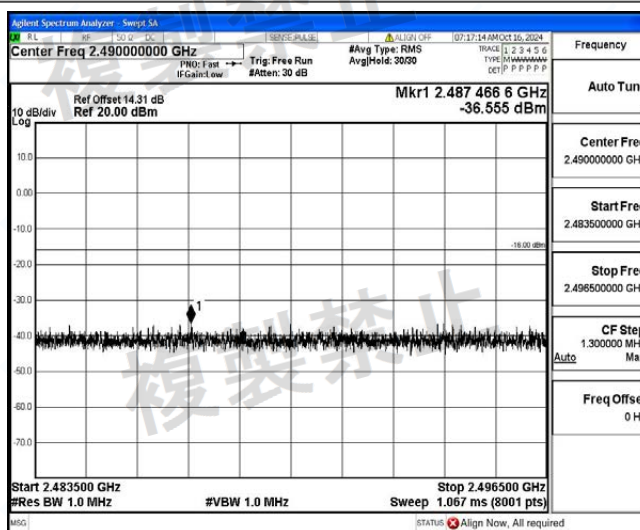
NTNV_DH5_Ant1_2402_30~2387



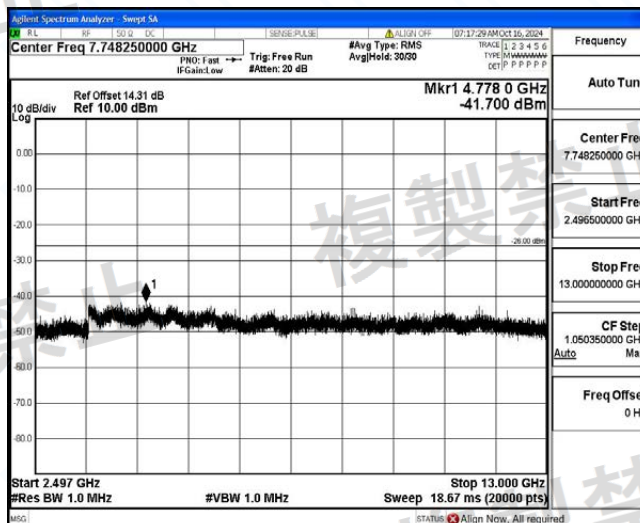
NTNV_DH5_Ant1_2402_2387~2400



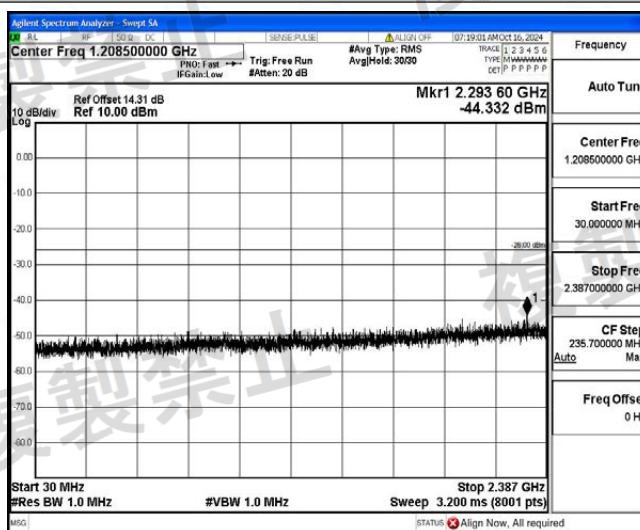
NTNV_DH5_Ant1_2402_2483.5~2496.5



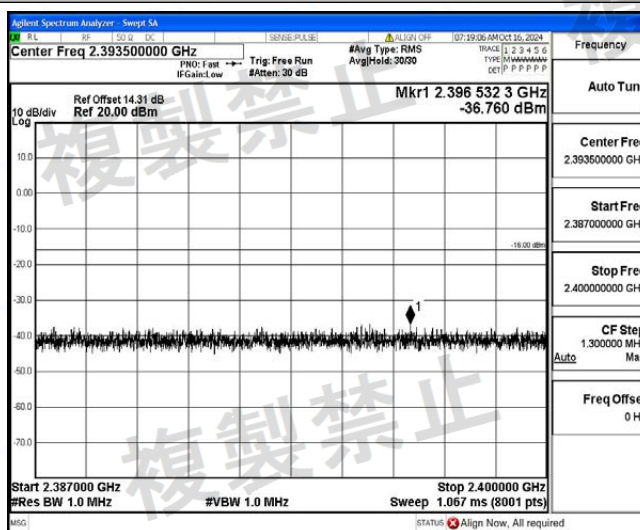
NTNV_DH5_Ant1_2402_2496.5~13000



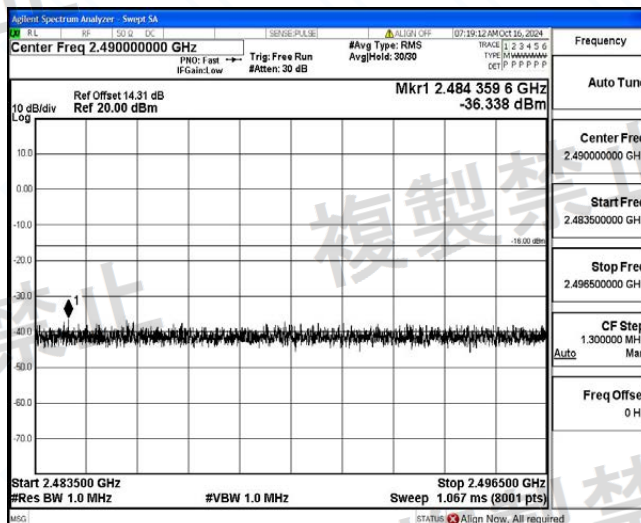
NTNV_DH5_Ant1_2441_30~2387



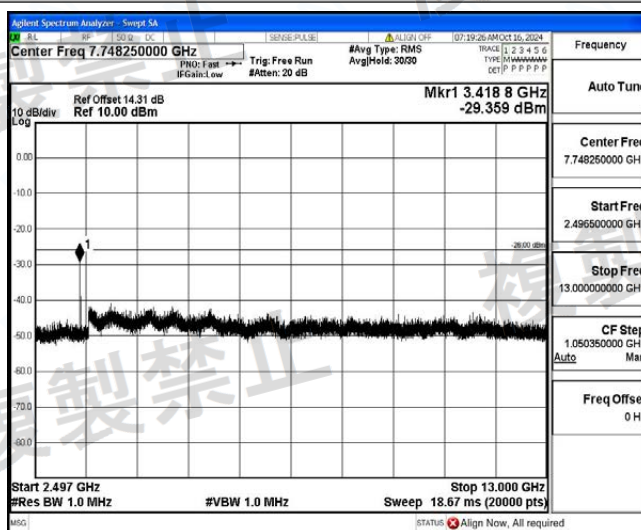
NTNV_DH5_Ant1_2441_2387~2400



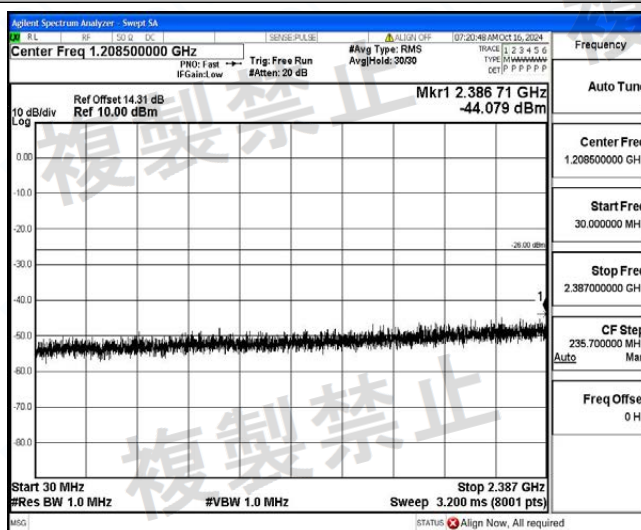
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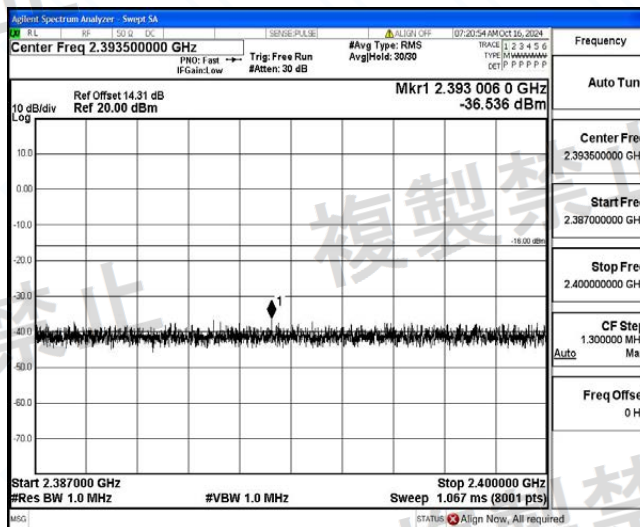
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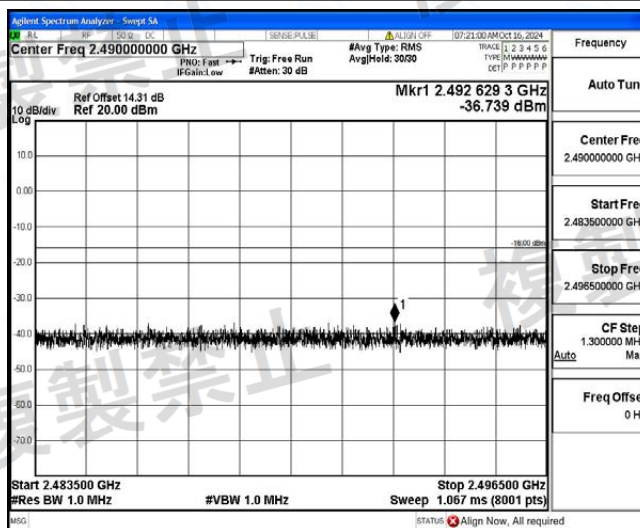
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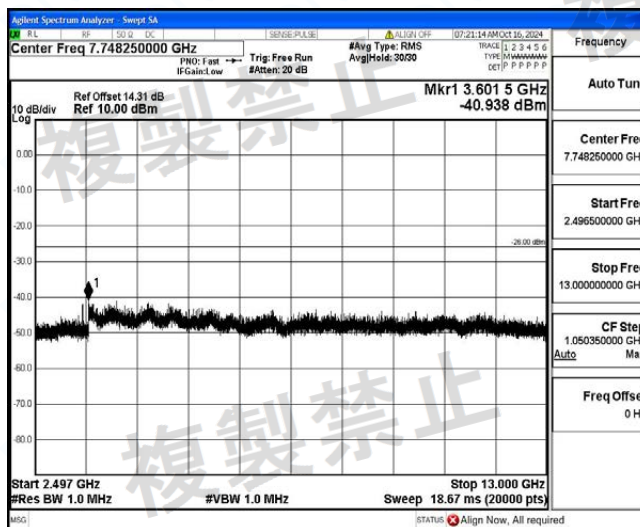
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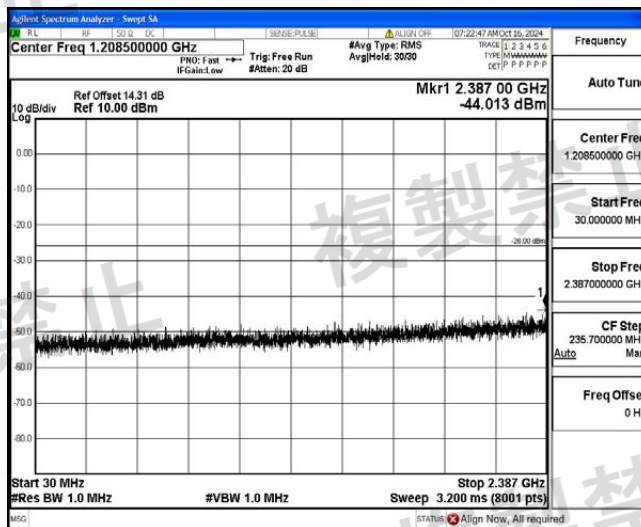
NTNV_DH5_Ant1_2480_2483.5~2496.5



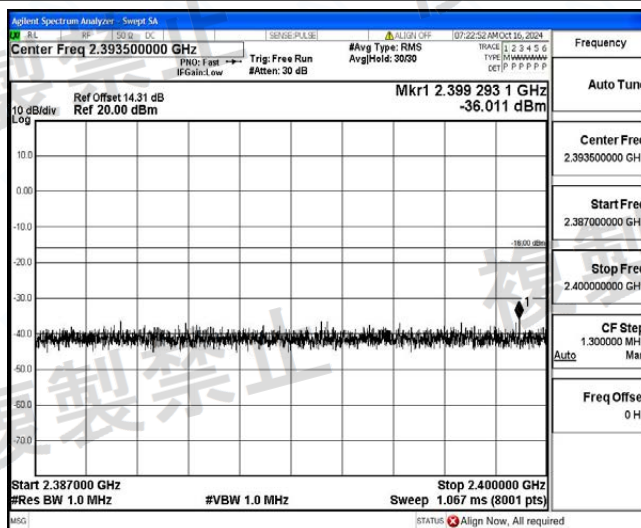
NTNV_DH5_Ant1_2480_2496.5~13000



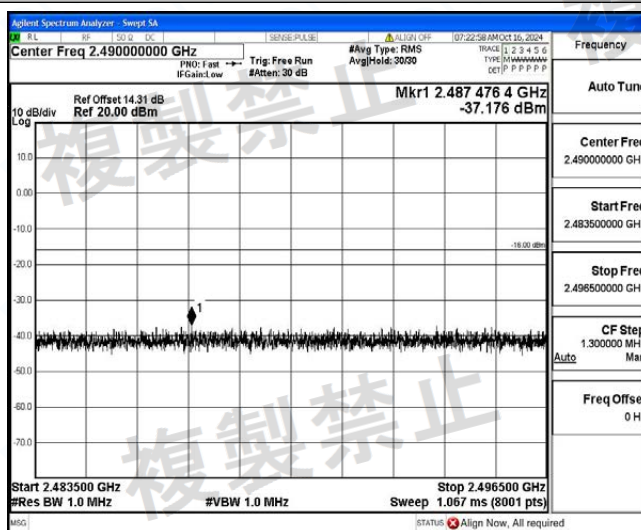
NTNV_2DH5_Ant1_2402_30~2387



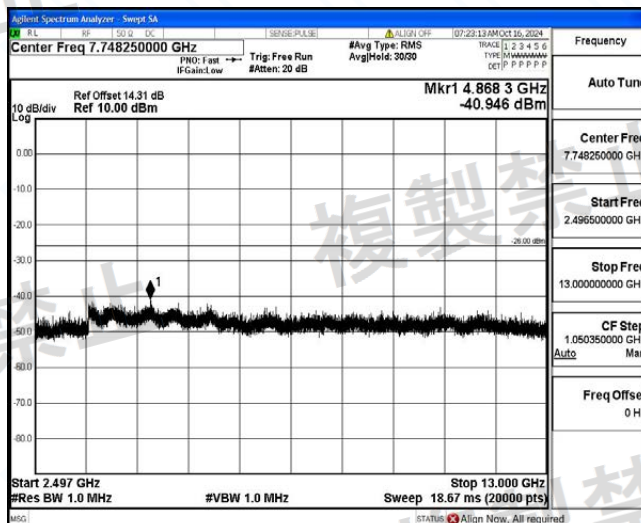
NTNV_2DH5_Ant1_2402_2387~2400



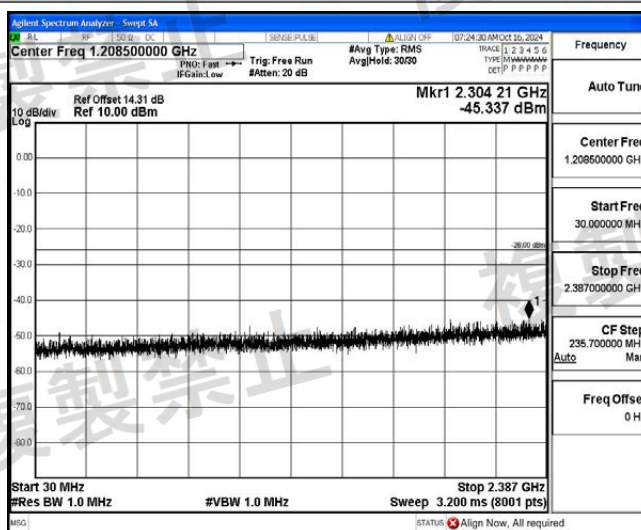
NTNV_2DH5_Ant1_2402_2483.5~2496.5



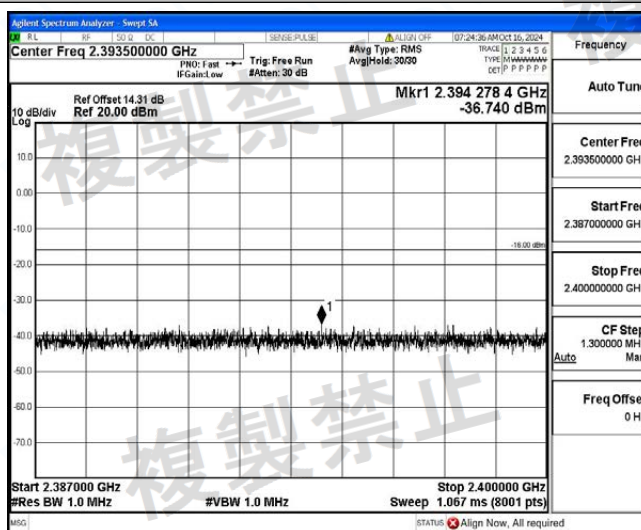
NTNV_2DH5_Ant1_2402_2496.5~13000



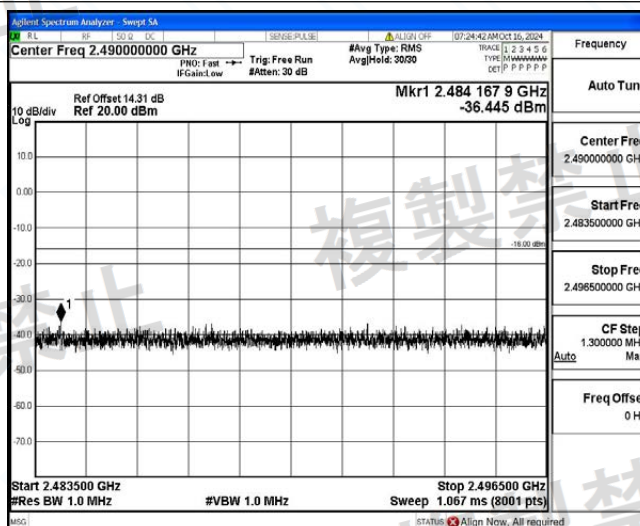
NTNV_2DH5_Ant1_2441_30~2387



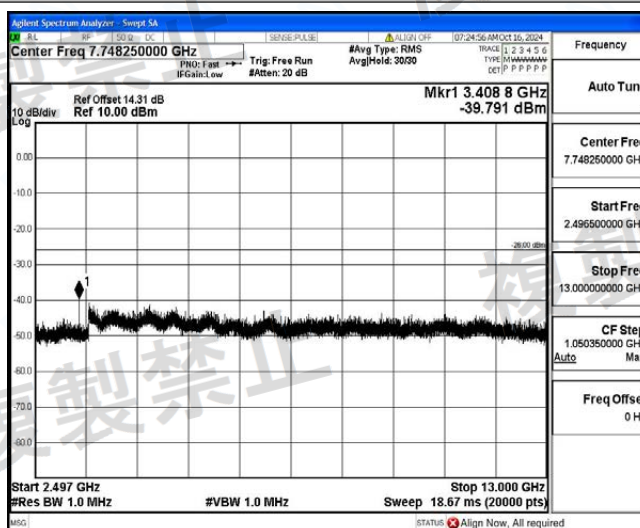
NTNV_2DH5_Ant1_2441_2387~2400



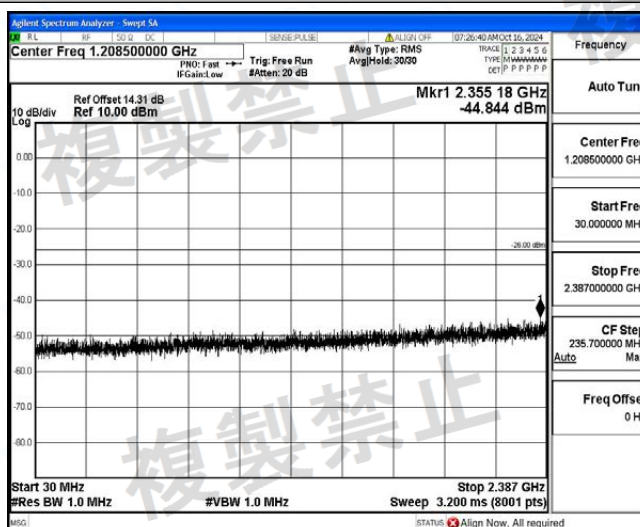
NTNV_2DH5_Ant1_2441_2483.5~2496.5



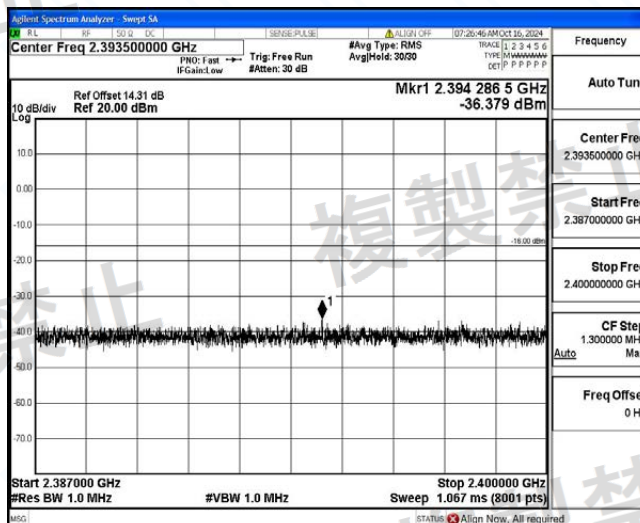
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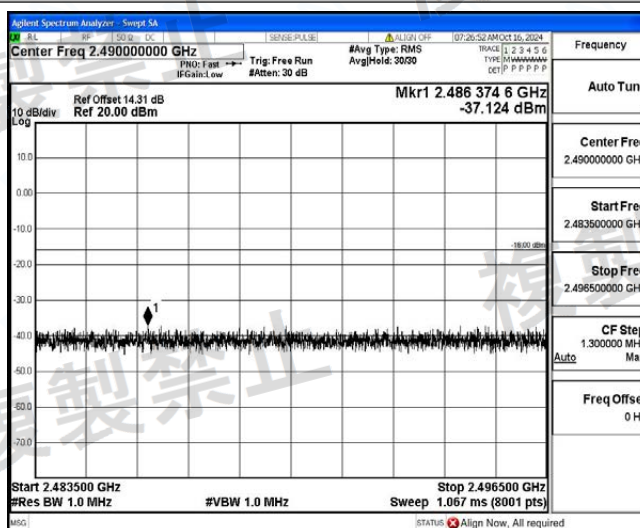
NTNV_2DH5_Ant1_2480_30~2387



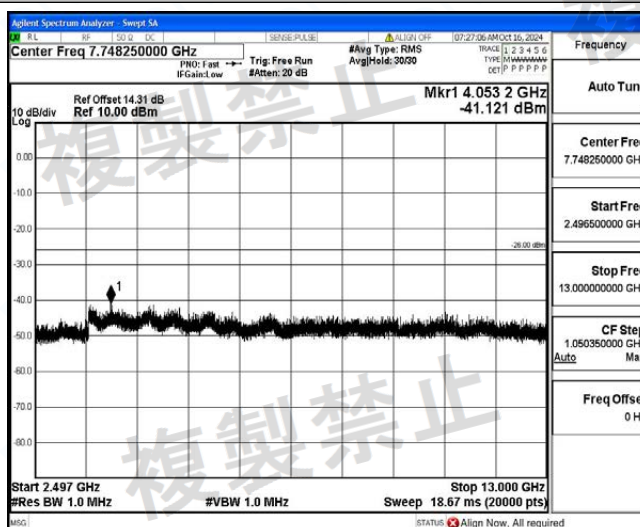
NTNV_2DH5_Ant1_2480_2387~2400



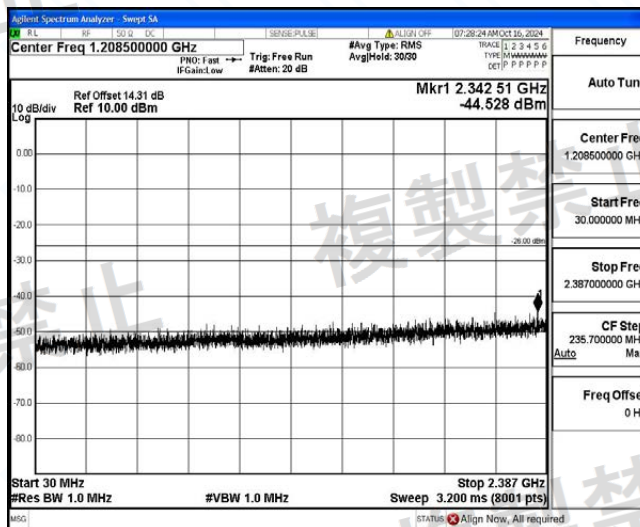
NTNV_2DH5_Ant1_2480_2483.5~2496.5



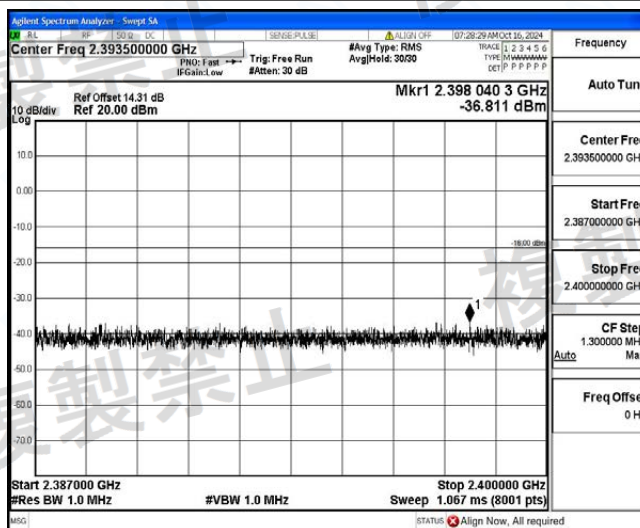
NTNV_2DH5_Ant1_2480_2496.5~13000



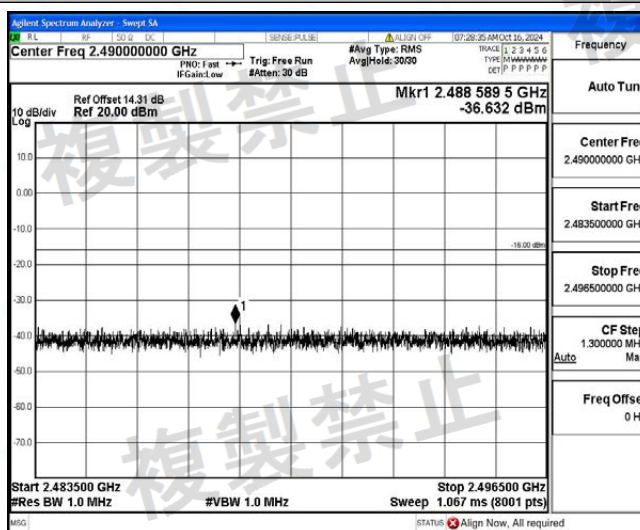
NTNV_3DH5_Ant1_2402_30~2387



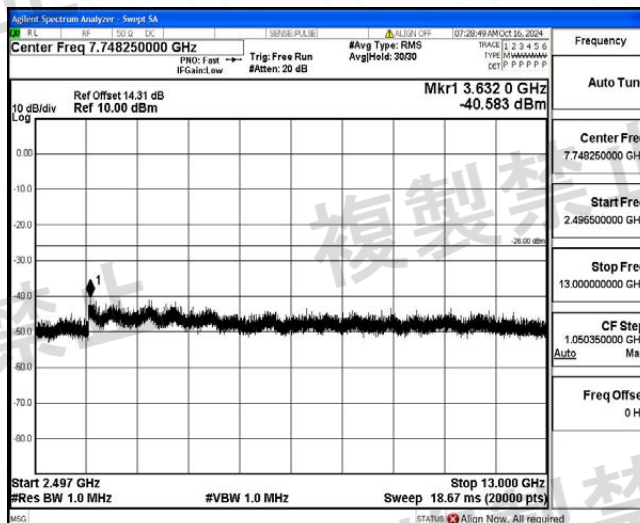
NTNV_3DH5_Ant1_2402_2387~2400



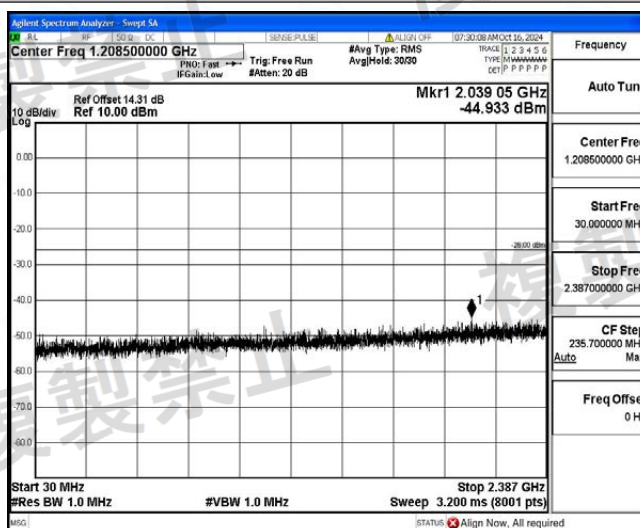
NTNV_3DH5_Ant1_2402_2483.5~2496.5



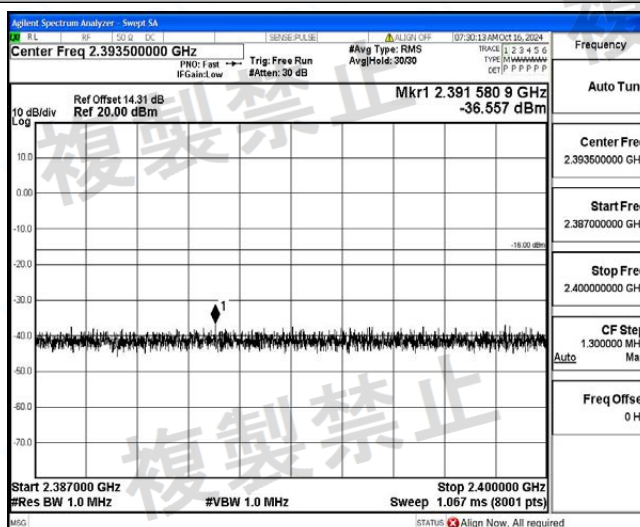
NTNV_3DH5_Ant1_2402_2496.5~13000



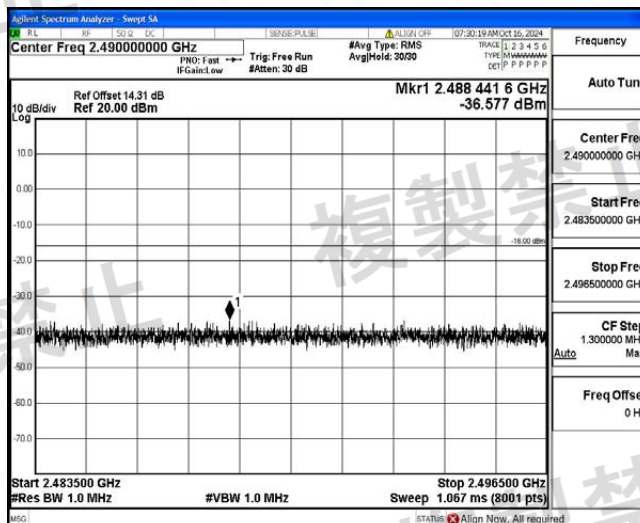
NTNV_3DH5_Ant1_2441_30~2387



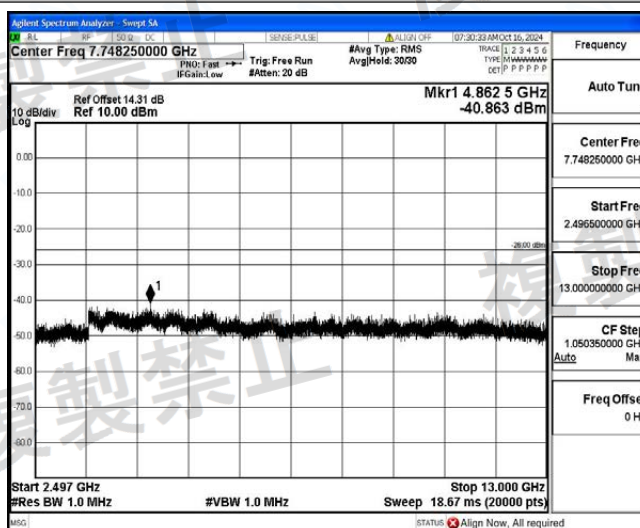
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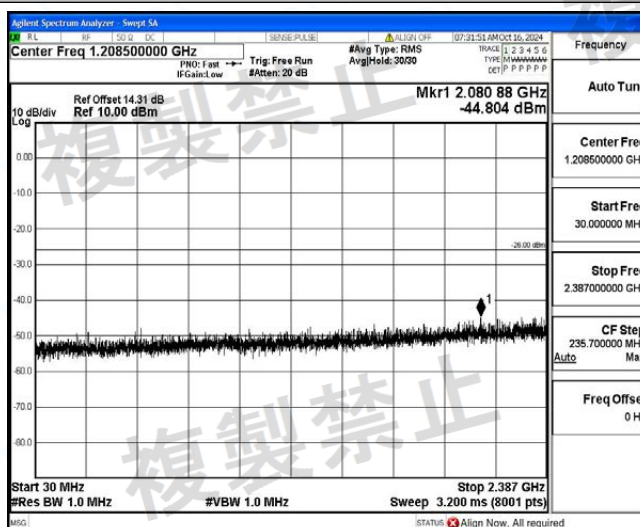
NTNV_3DH5_Ant1_2441_2483.5~2496.5



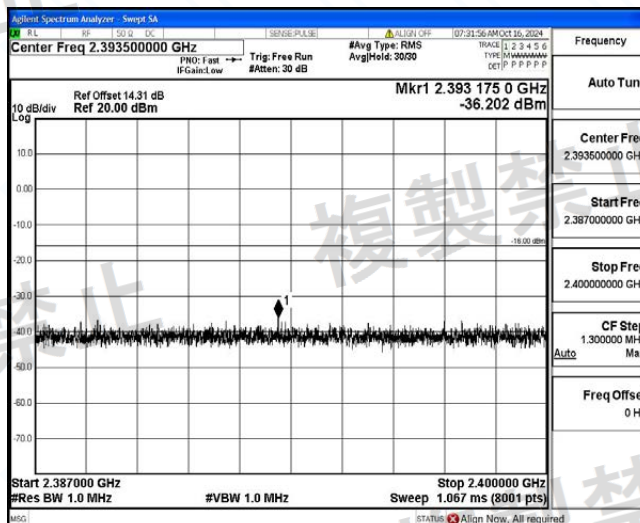
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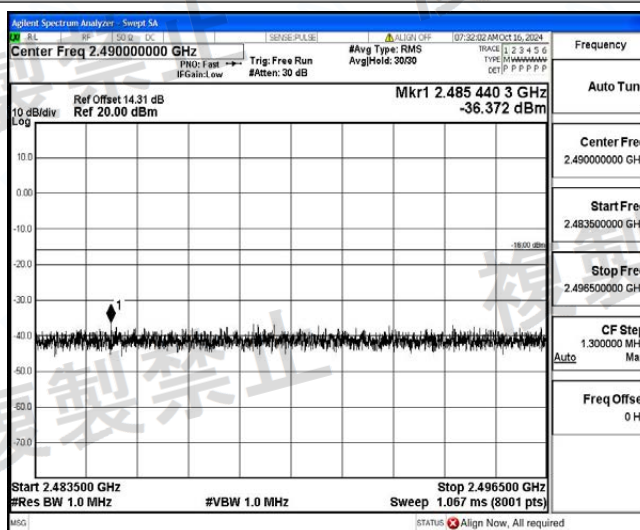
NTNV_3DH5_Ant1_2480_30~2387



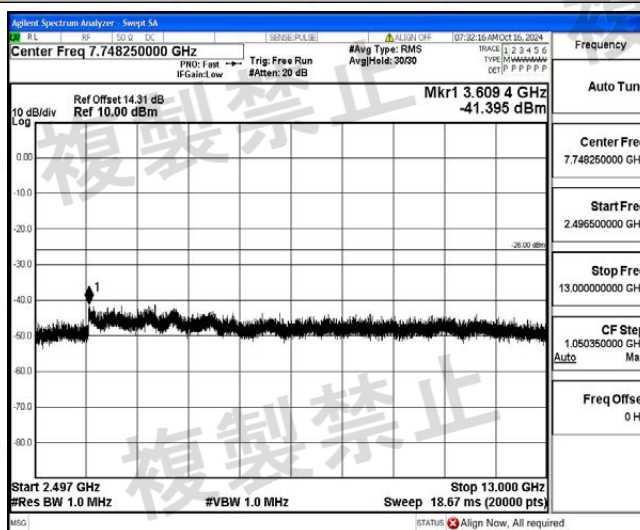
NTNV_3DH5_Ant1_2480_2387~2400



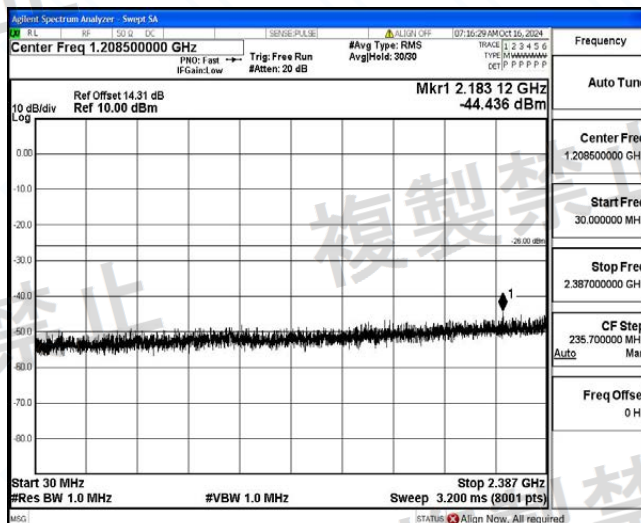
NTNV_3DH5_Ant1_2480_2483.5~2496.5



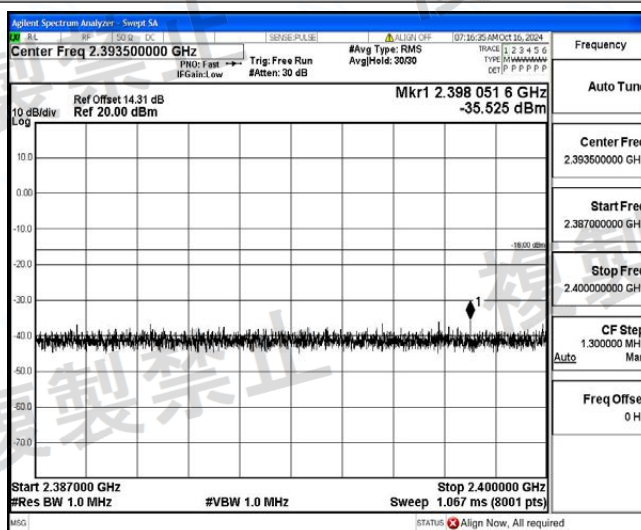
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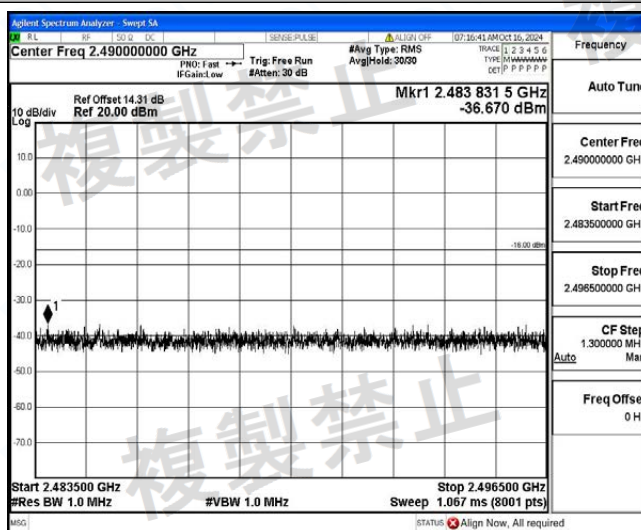
NTLV_DH5_Ant1_2402_30~2387



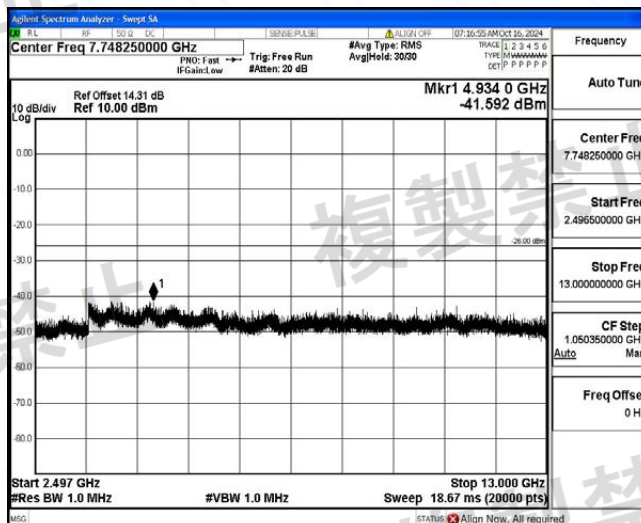
NTLV_DH5_Ant1_2402_2387~2400



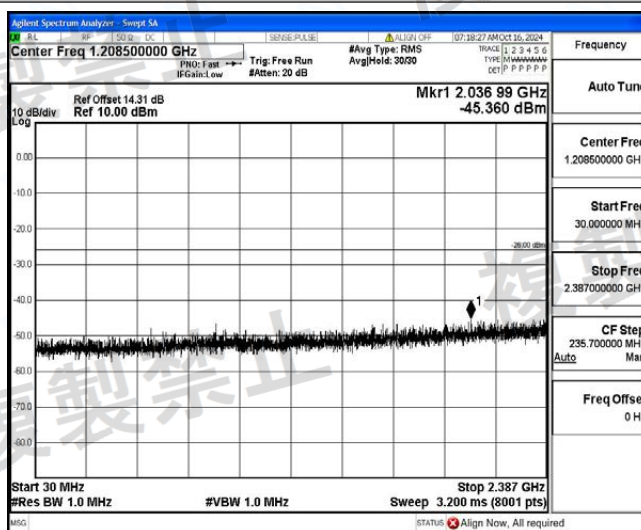
NTLV_DH5_Ant1_2402_2483.5~2496.5



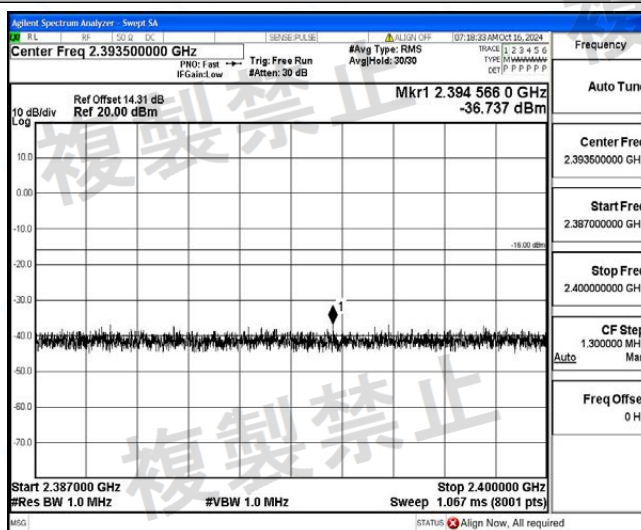
NTLV_DH5_Ant1_2402_2496.5~13000



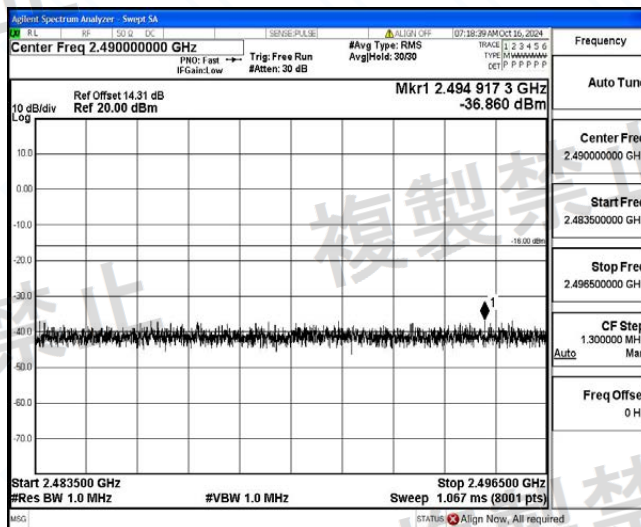
NTLV_DH5_Ant1_2441_30~2387



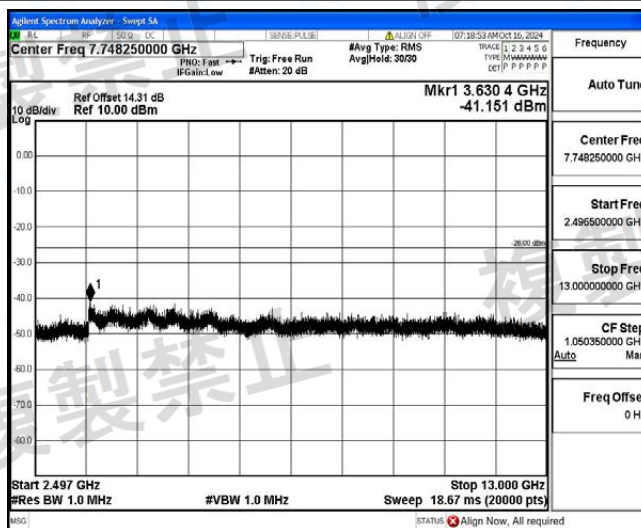
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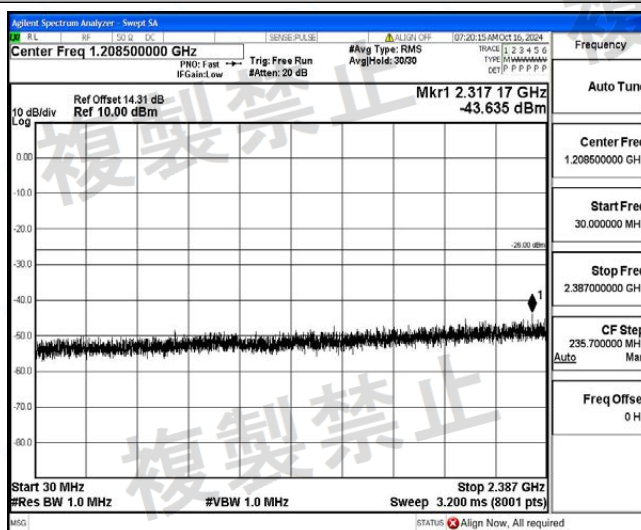
NTLV_DH5_Ant1_2441_2483.5~2496.5



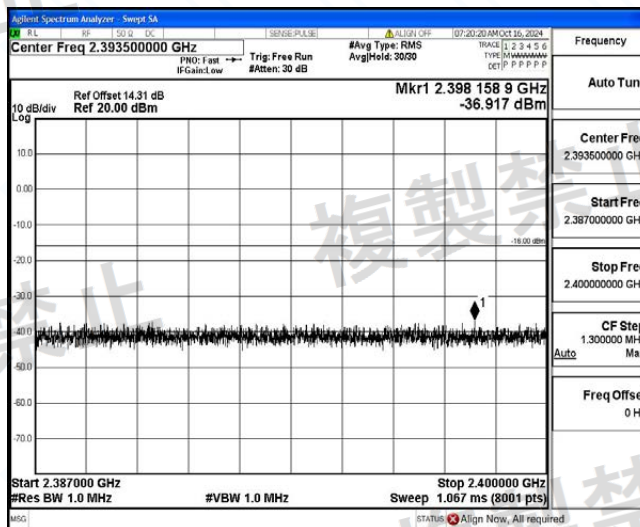
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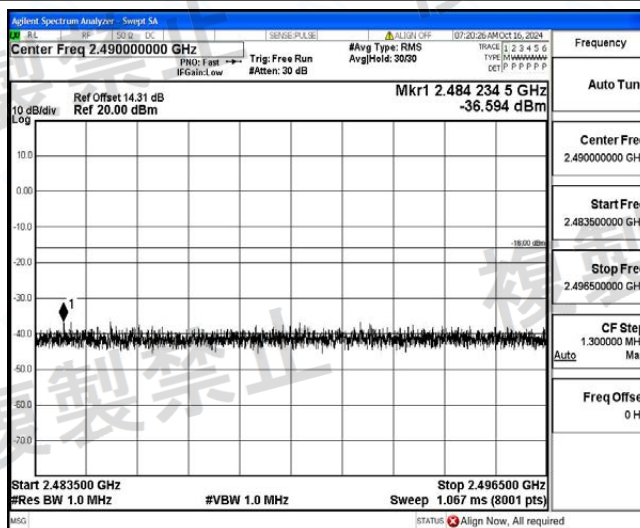
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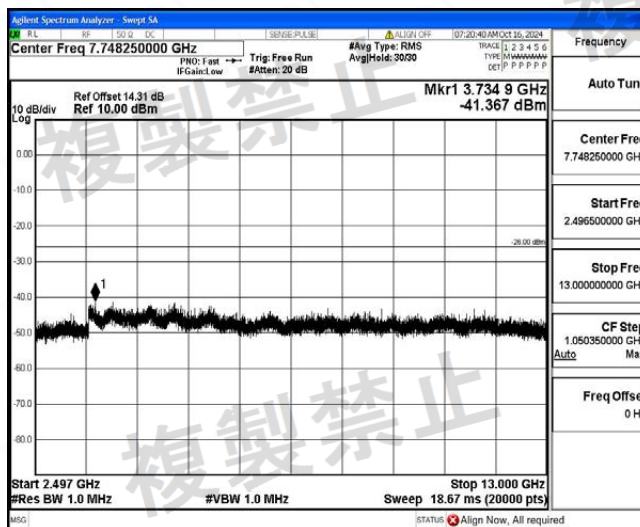
NTLV_DH5_Ant1_2480_2387~2400



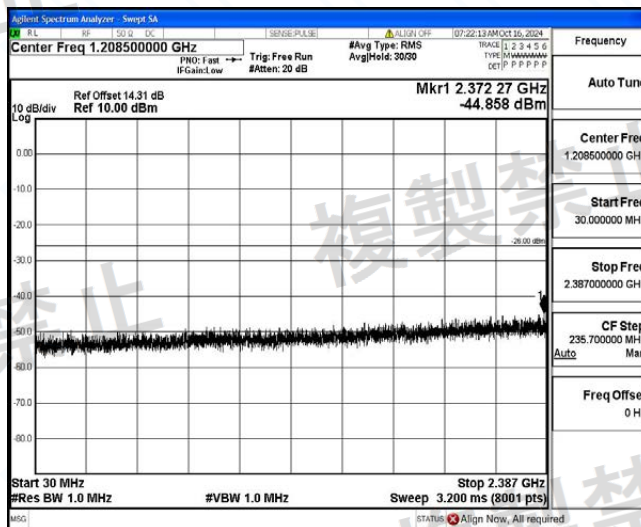
NTLV_DH5_Ant1_2480_2483.5~2496.5



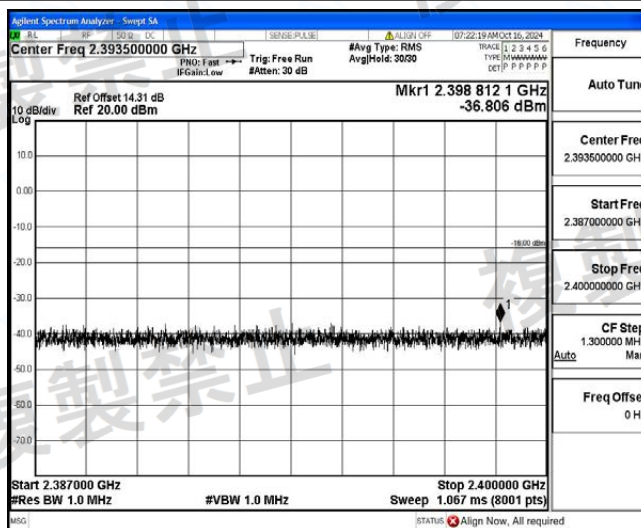
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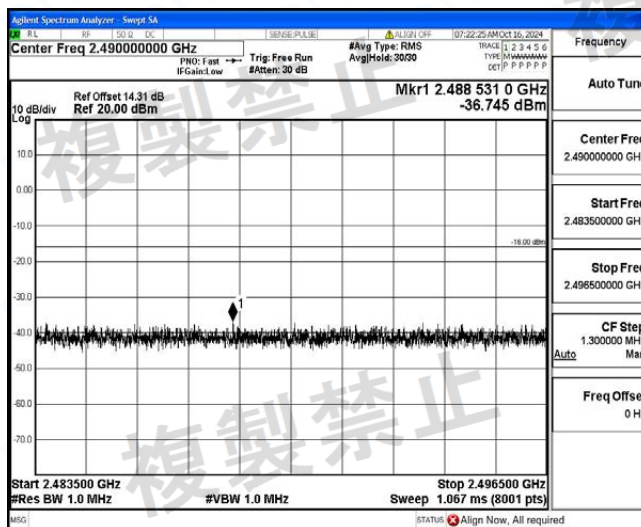
NTLV_2DH5_Ant1_2402_30~2387



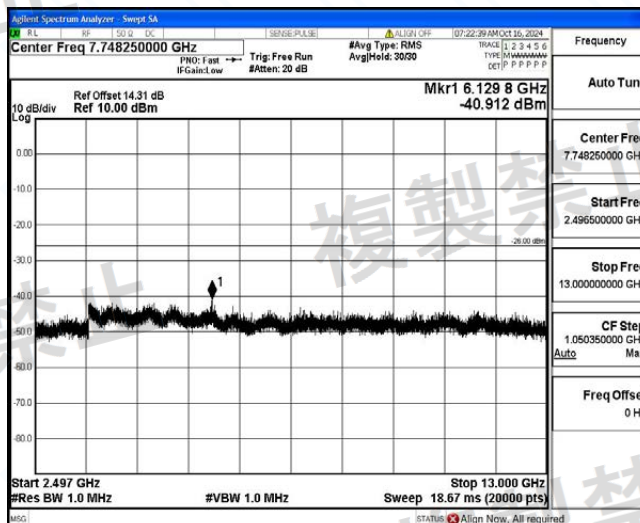
NTLV_2DH5_Ant1_2402_2387~2400



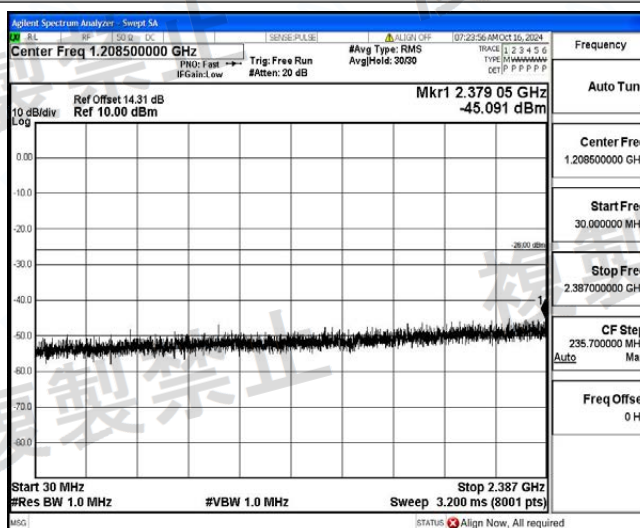
NTLV_2DH5_Ant1_2402_2483.5~2496.5



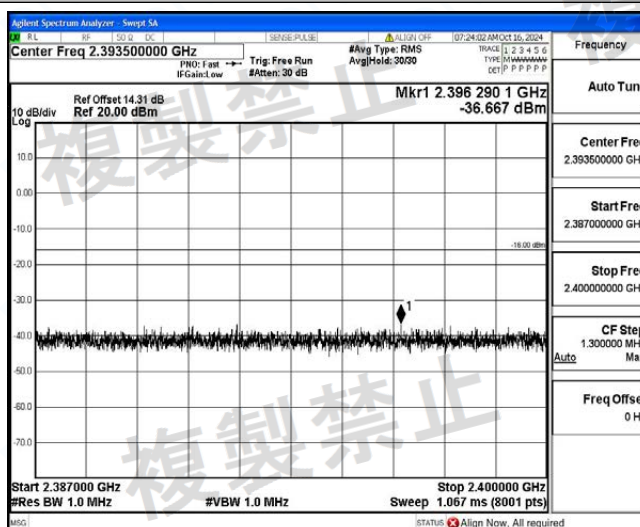
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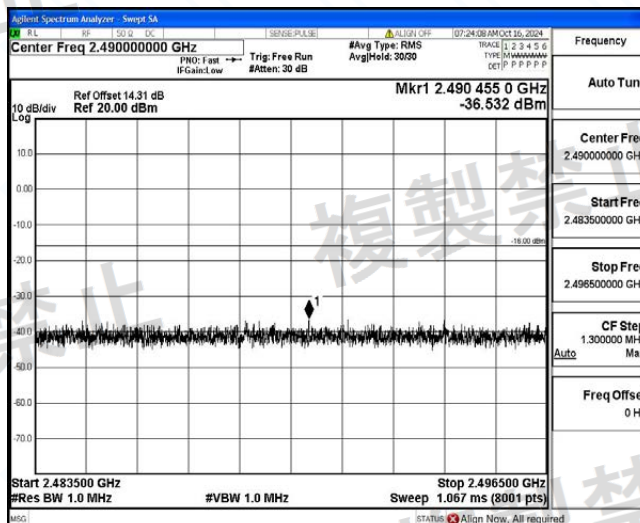
NTLV_2DH5_Ant1_2441_30~2387



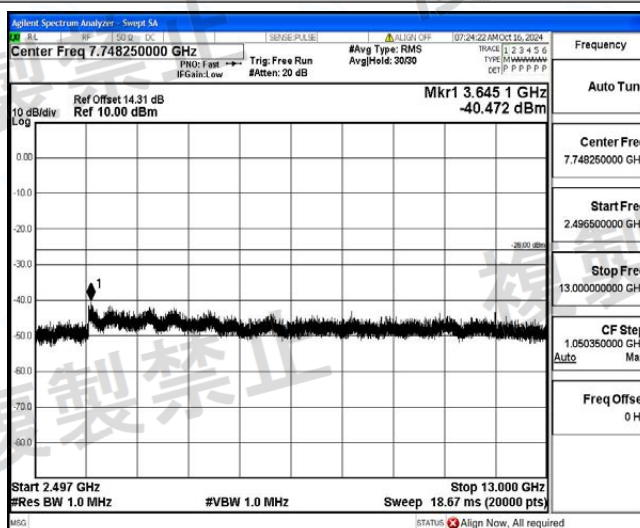
NTLV_2DH5_Ant1_2441_2387~2400



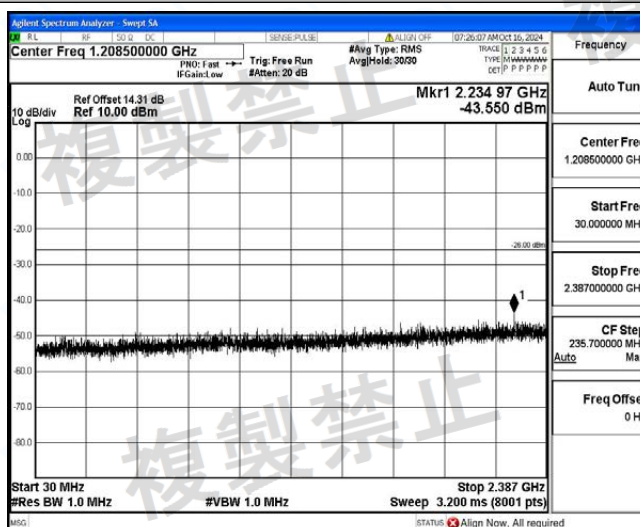
NTLV_2DH5_Ant1_2441_2483.5~2496.5



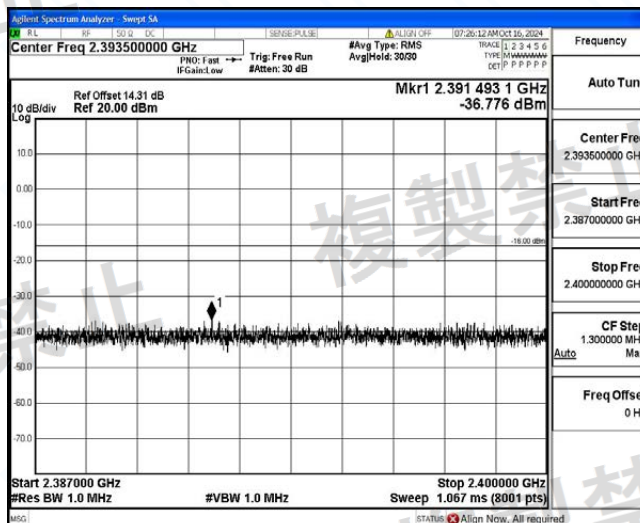
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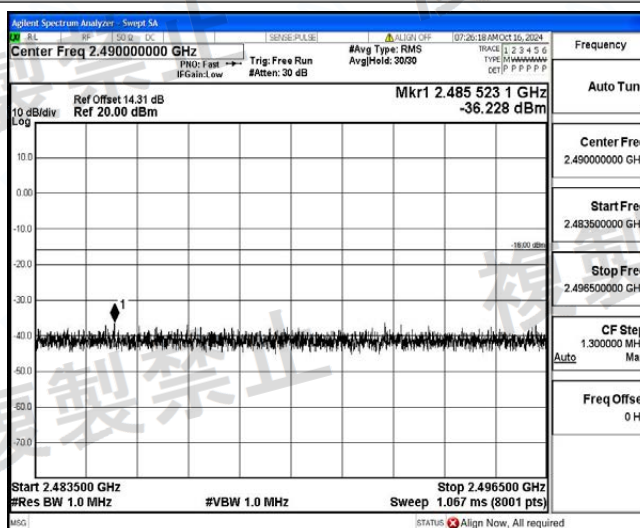
NTLV_2DH5_Ant1_2480_30~2387



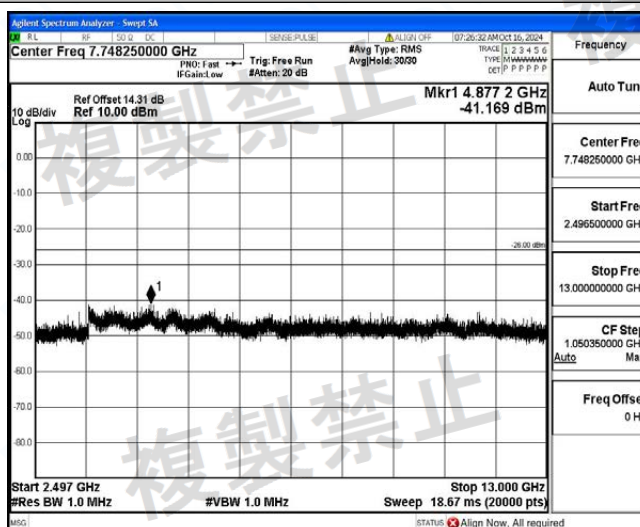
NTLV_2DH5_Ant1_2480_2387~2400



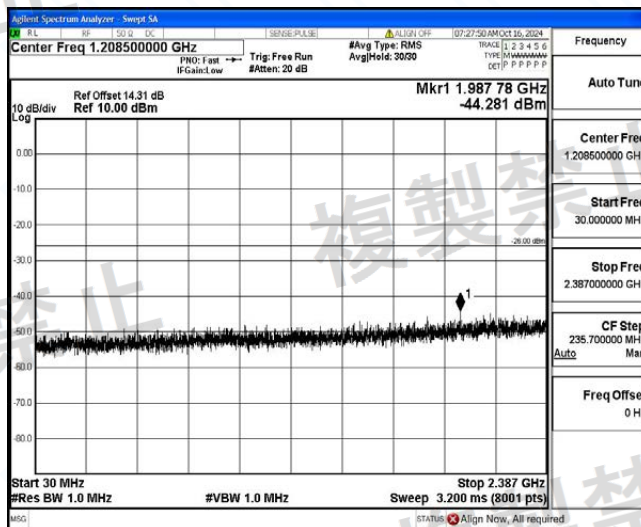
NTLV_2DH5_Ant1_2480_2483.5~2496.5



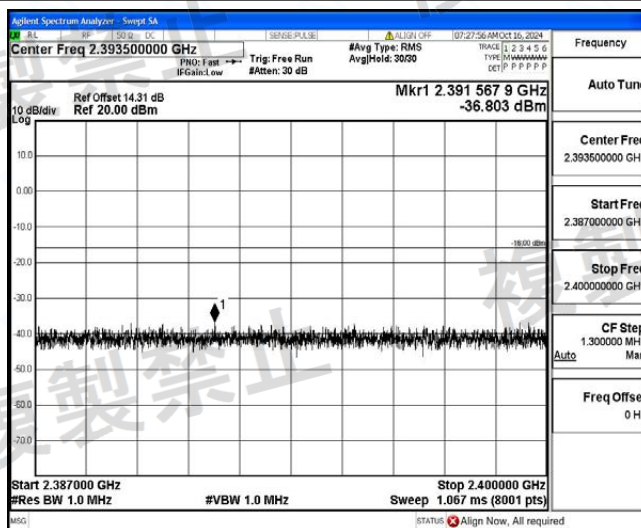
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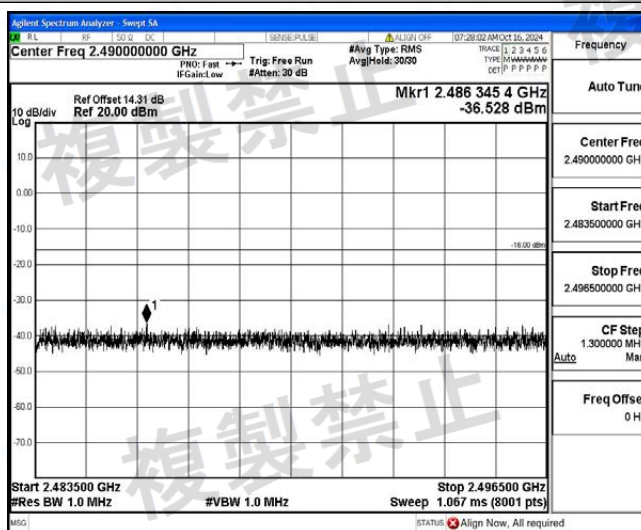
NTLV_3DH5_Ant1_2402_30~2387



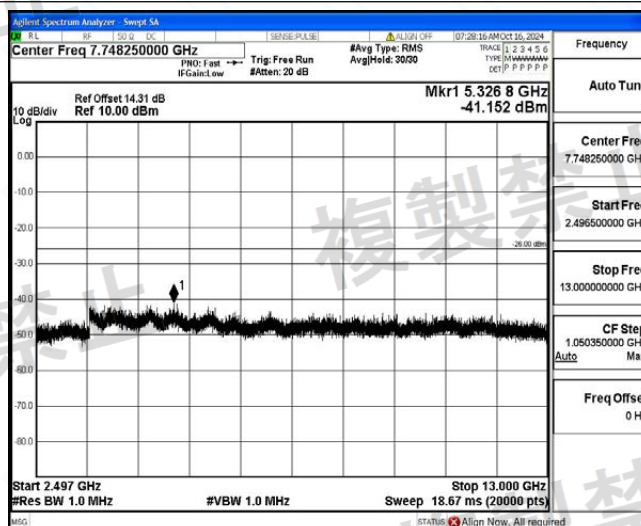
NTLV_3DH5_Ant1_2402_2387~2400



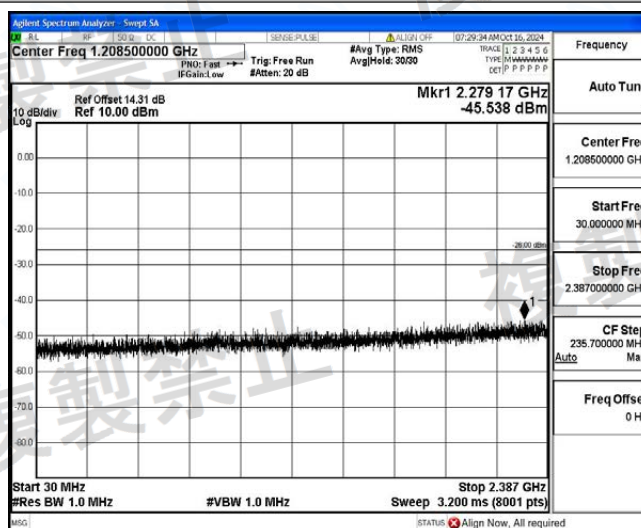
NTLV_3DH5_Ant1_2402_2483.5~2496.5



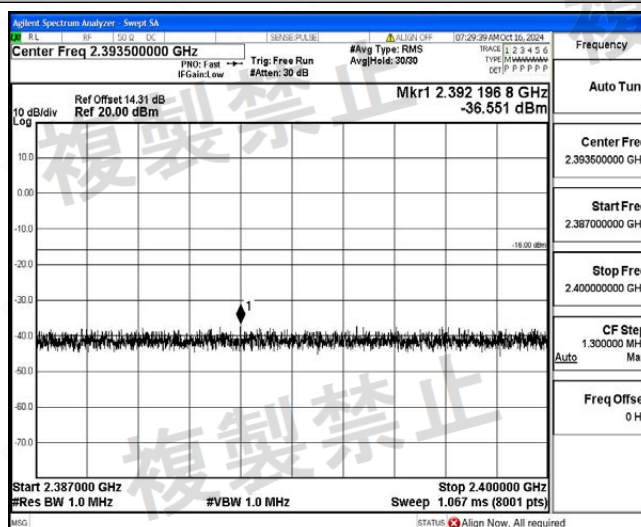
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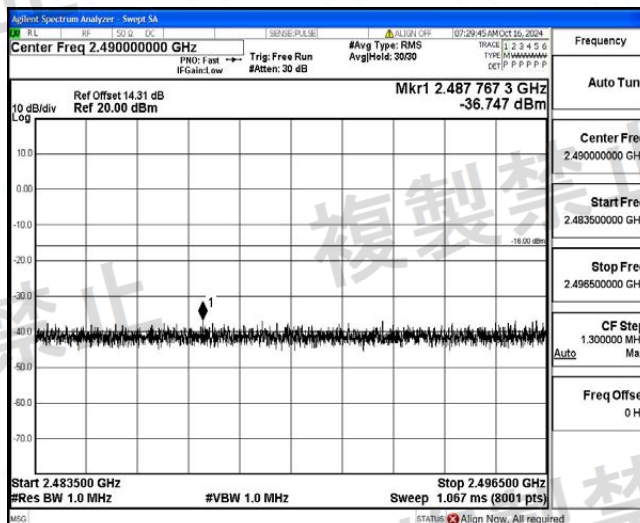
NTLV_3DH5_Ant1_2441_30~2387



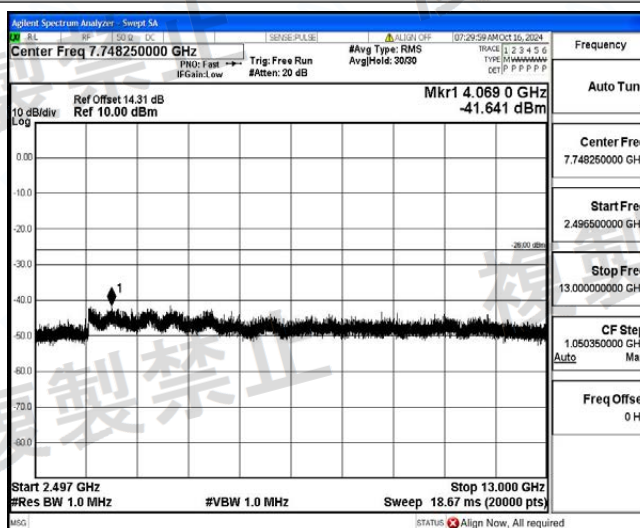
NTLV_3DH5_Ant1_2441_2387~2400



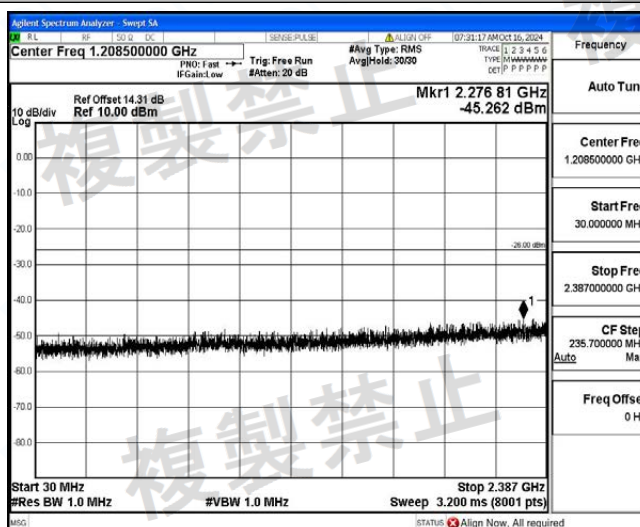
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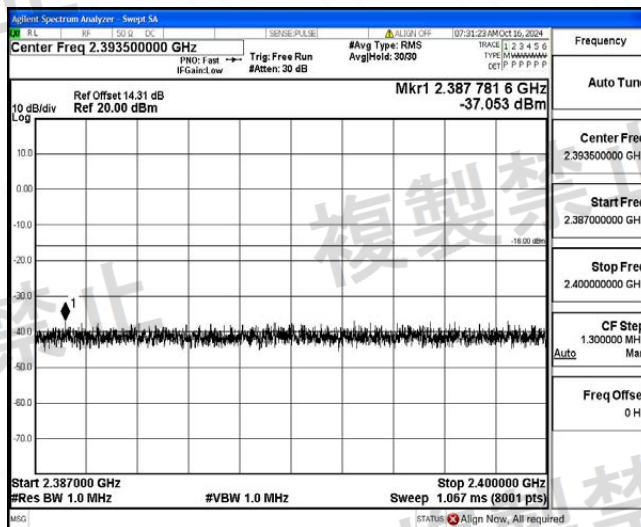
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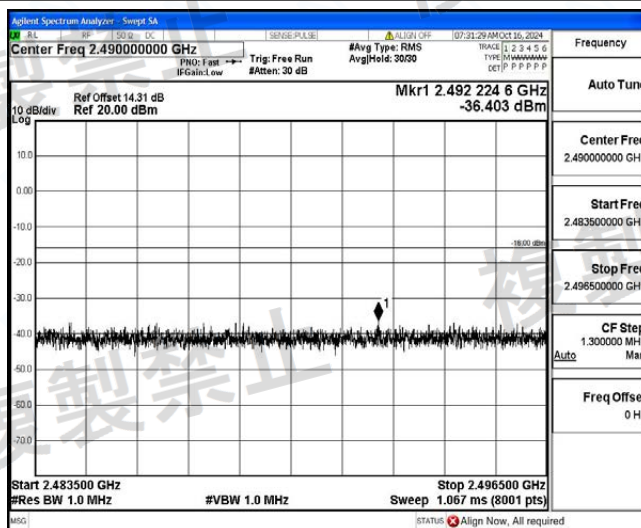
NTLV_3DH5_Ant1_2480_30~2387



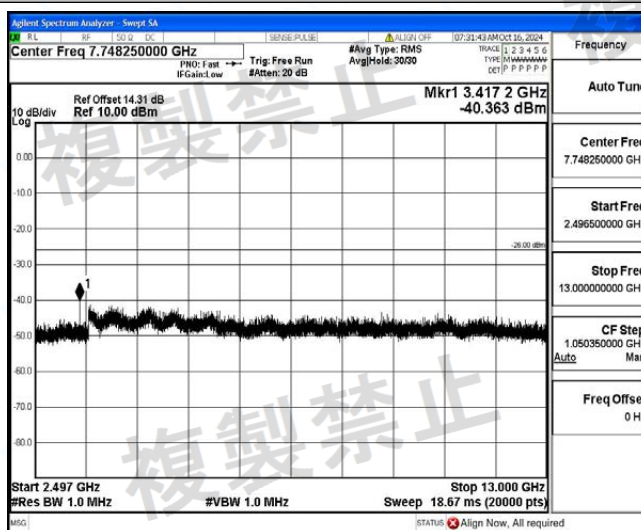
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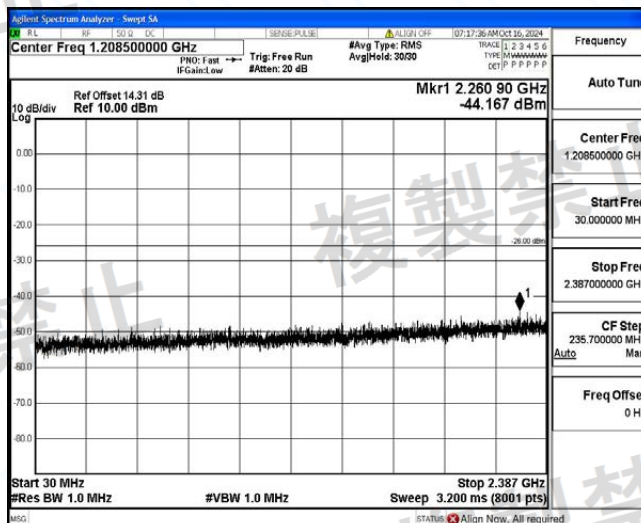
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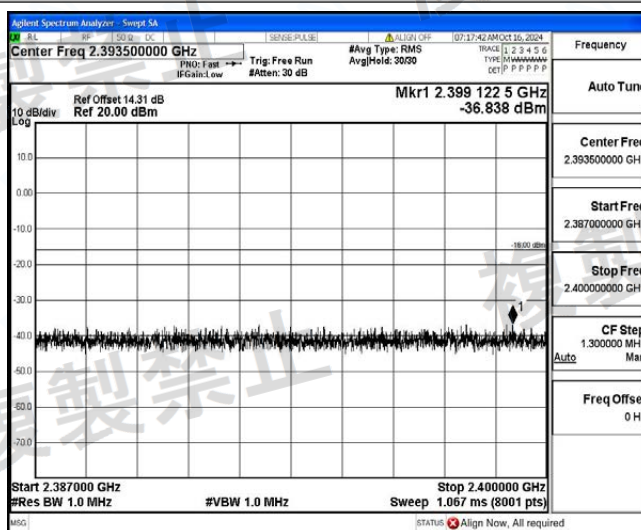
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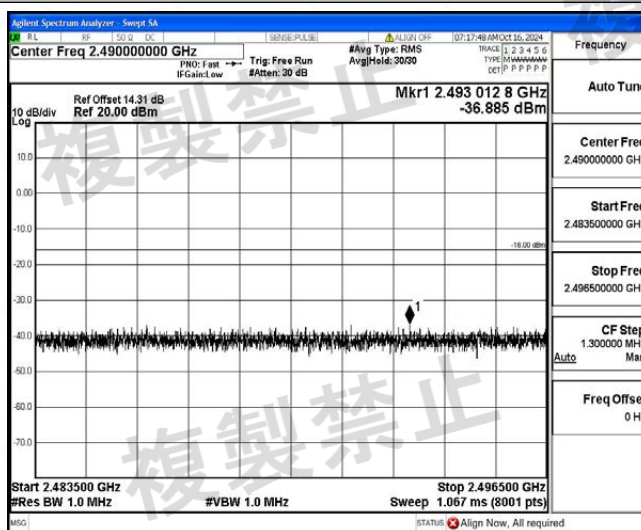
NTHV_DH5_Ant1_2402_30~2387



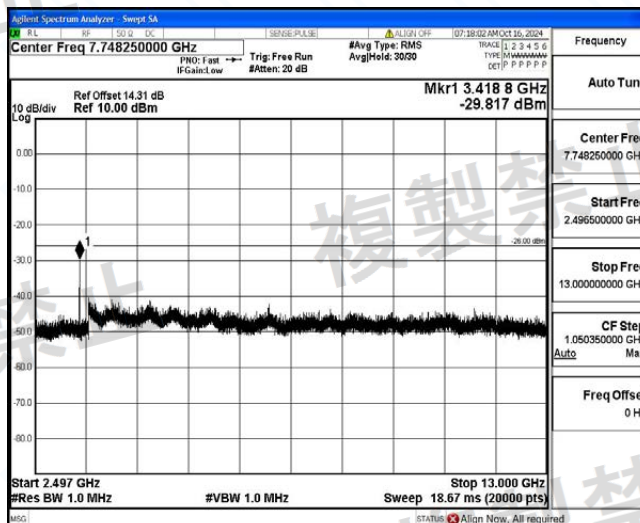
NTHV_DH5_Ant1_2402_2387~2400



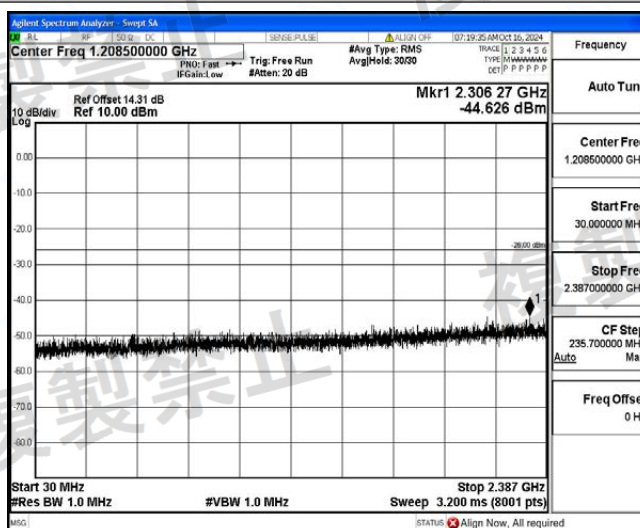
NTHV_DH5_Ant1_2402_2483.5~2496.5



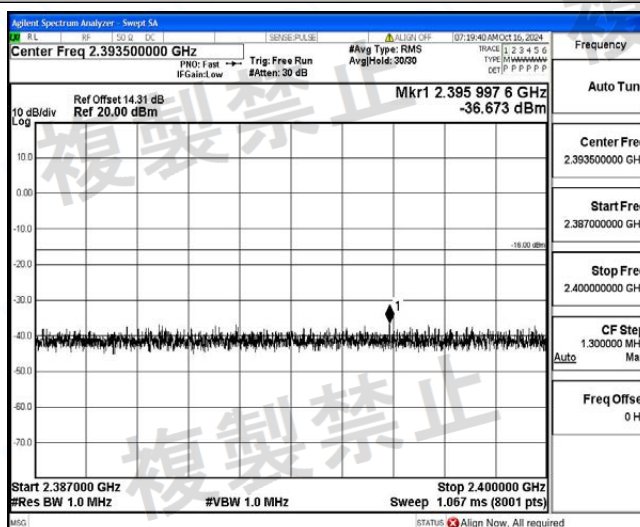
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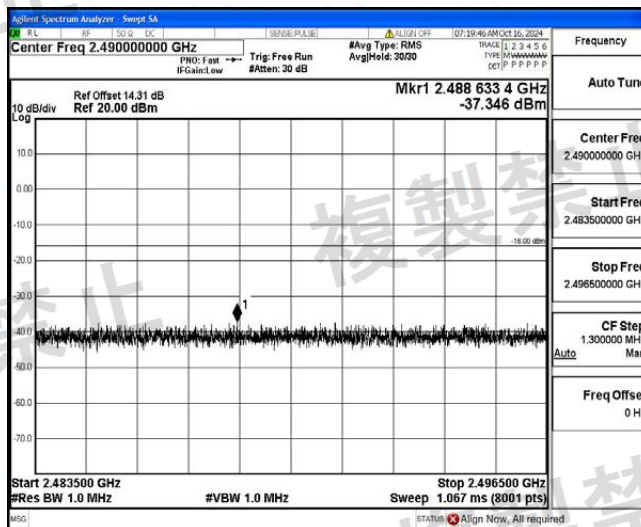
NTHV_DH5_Ant1_2441_30~2387



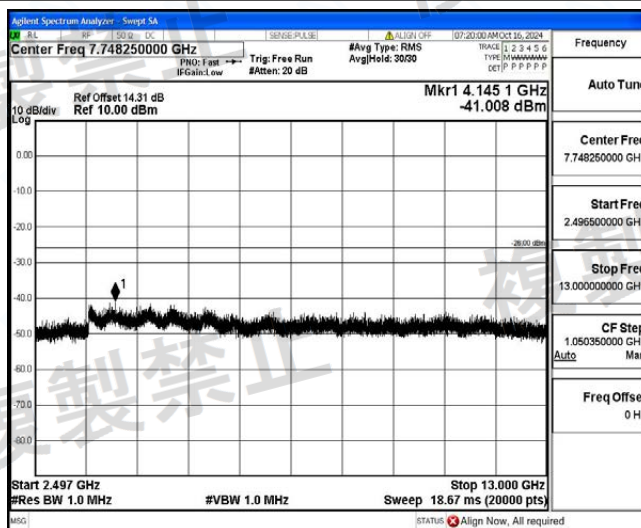
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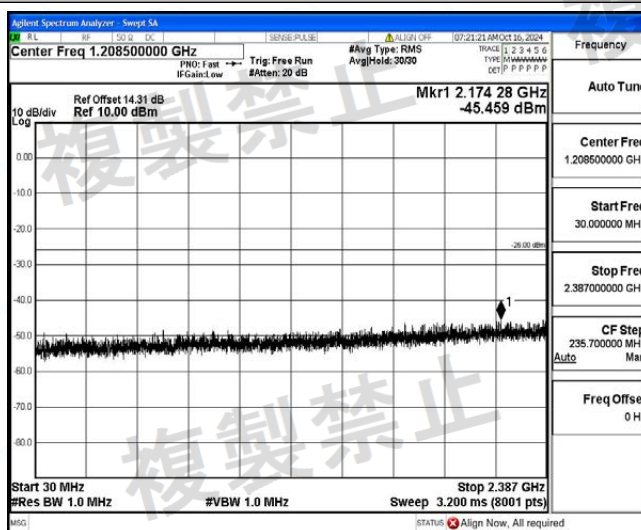
NTHV_DH5_Ant1_2441_2483.5~2496.5



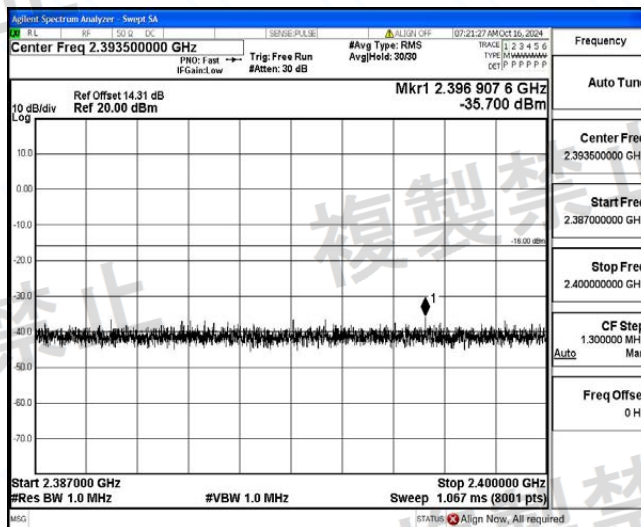
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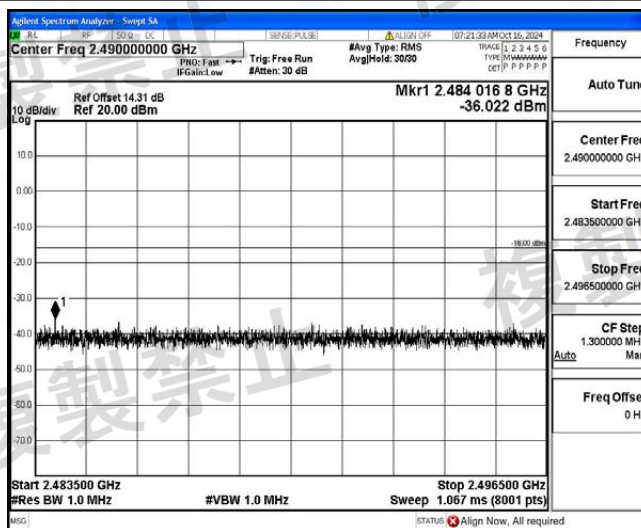
NTHV_DH5_Ant1_2480_30~2387



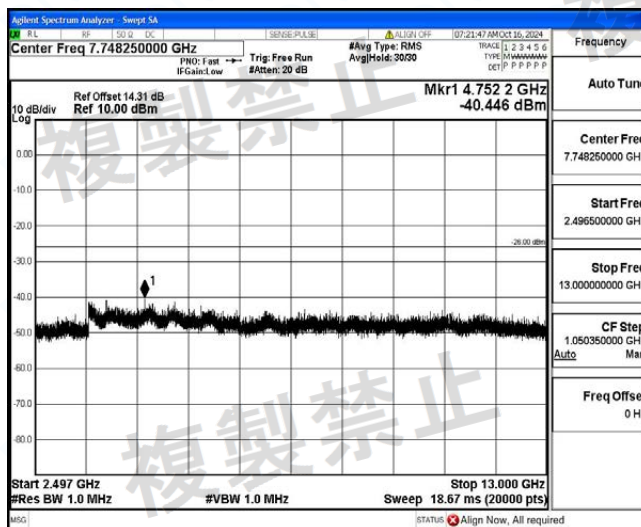
NTHV_DH5_Ant1_2480_2387~2400



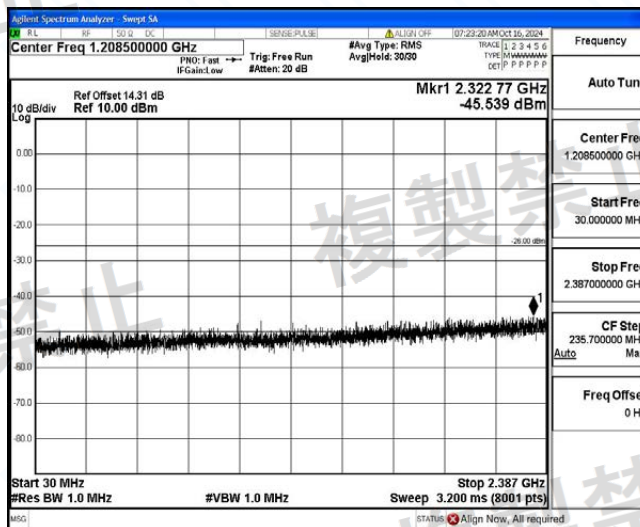
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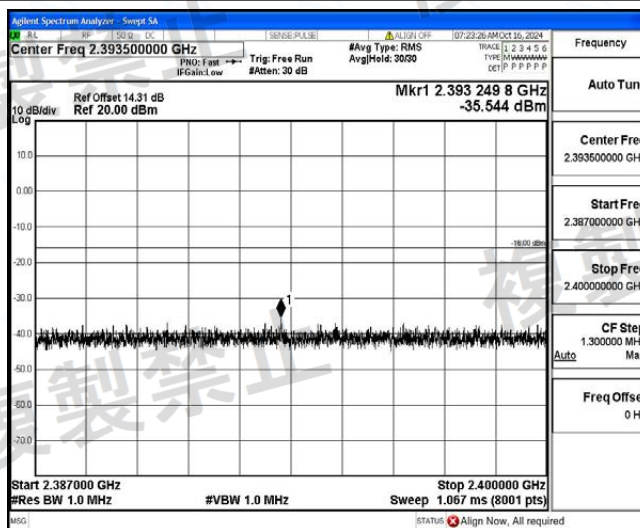
NTHV_DH5_Ant1_2480_2496.5~13000



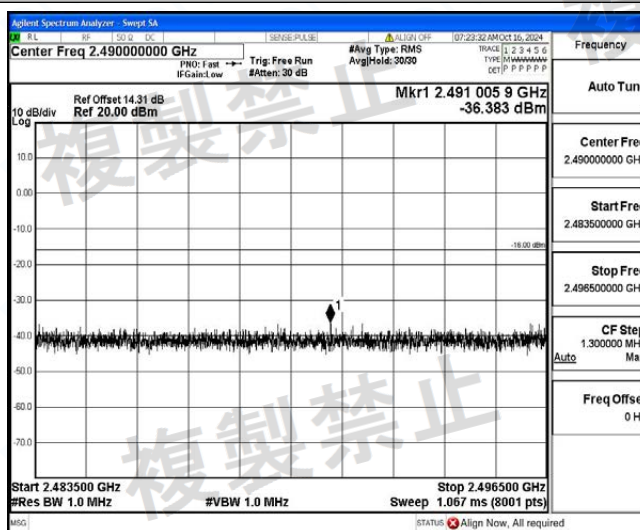
NTHV_2DH5_Ant1_2402_30~2387



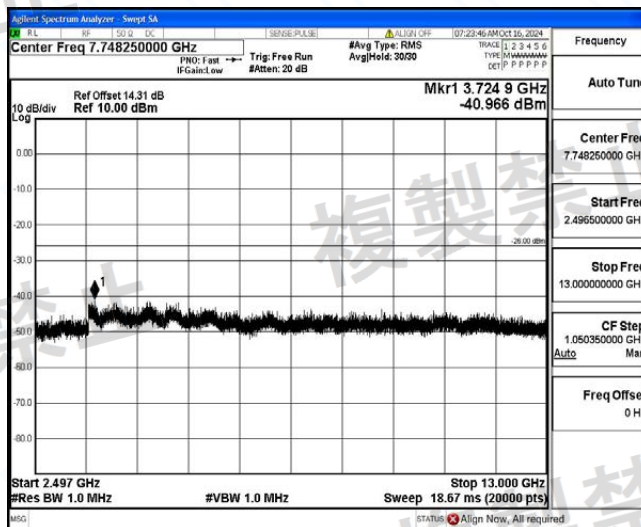
NTHV_2DH5_Ant1_2402_2387~2400



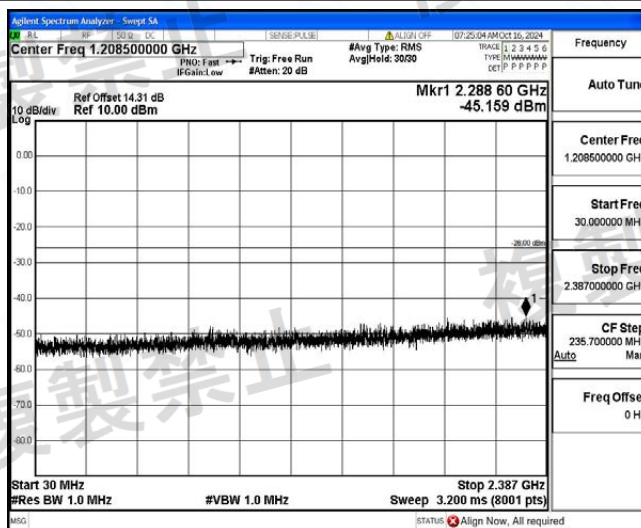
NTHV_2DH5_Ant1_2402_2483.5~2496.5



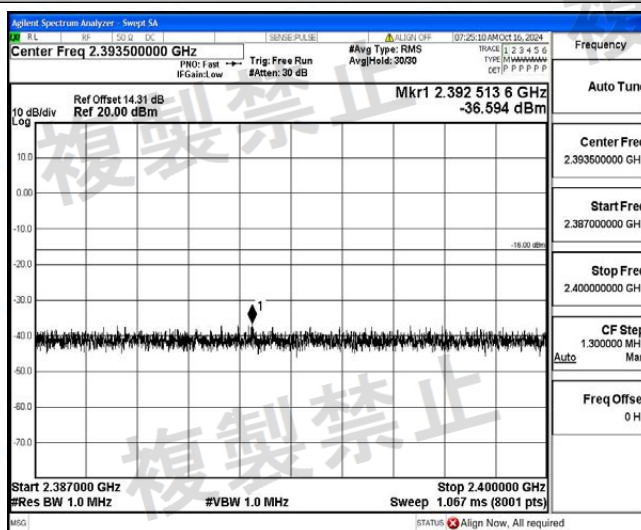
NTHV_2DH5_Ant1_2402_2496.5~13000



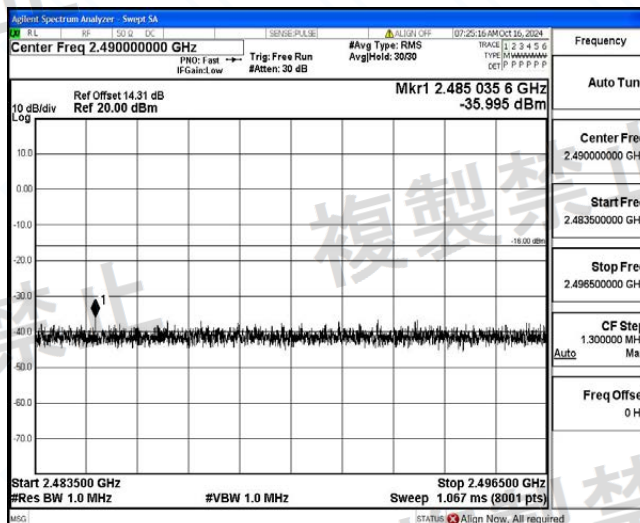
NTHV_2DH5_Ant1_2441_30~2387



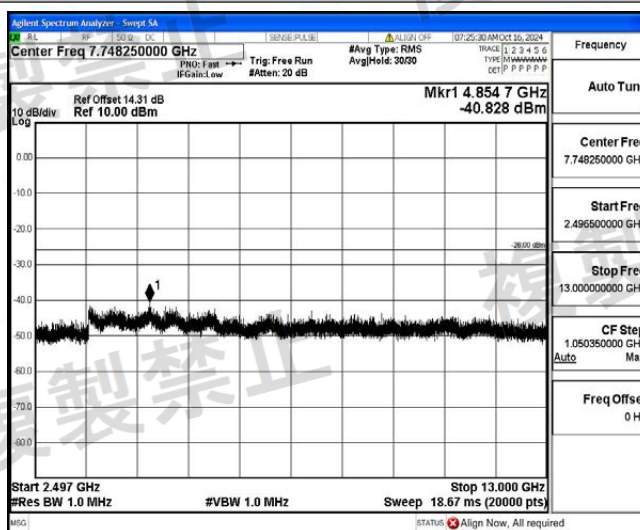
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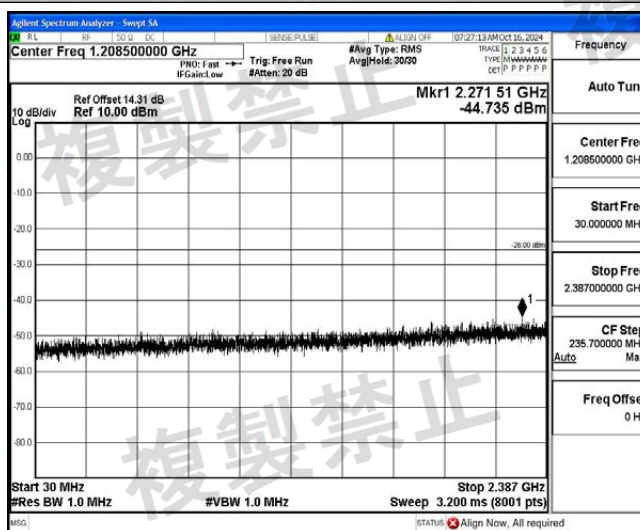
NTHV_2DH5_Ant1_2441_2483.5~2496.5



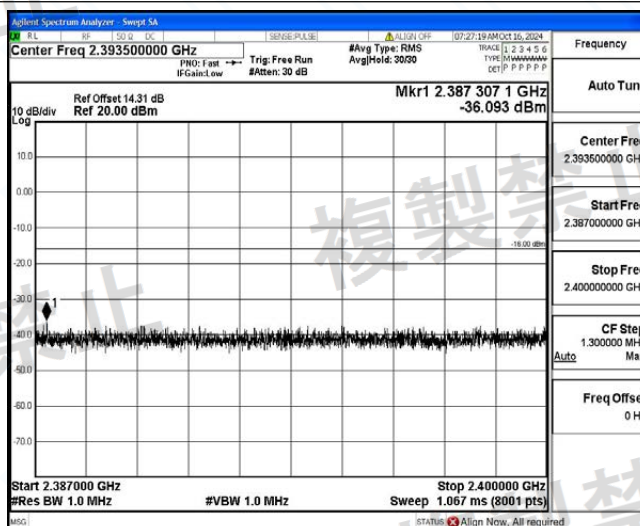
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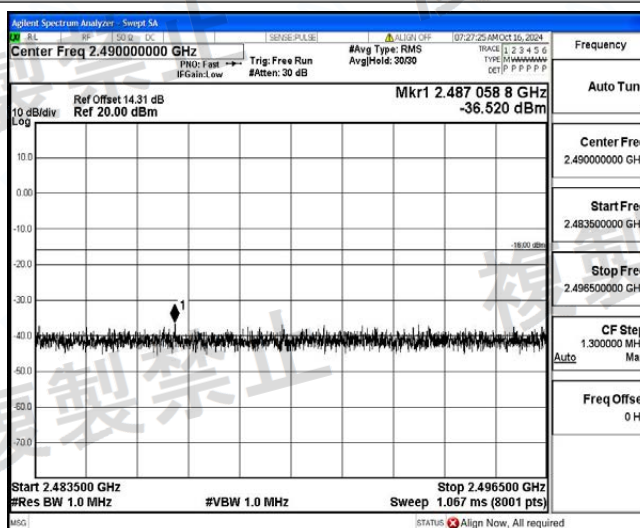
NTHV_2DH5_Ant1_2480_30~2387



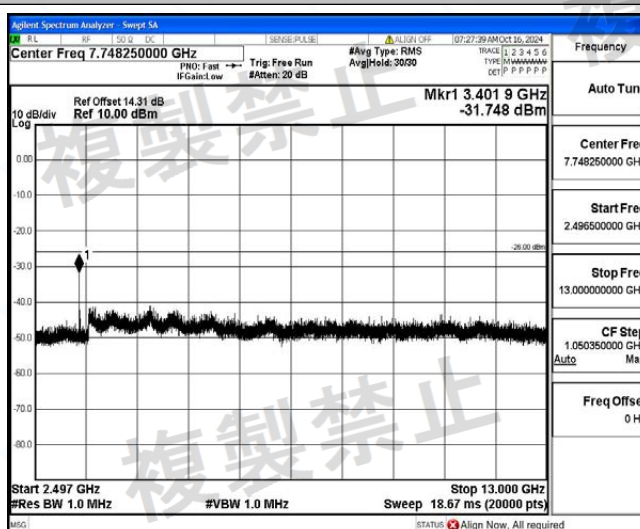
NTHV_2DH5_Ant1_2480_2387~2400



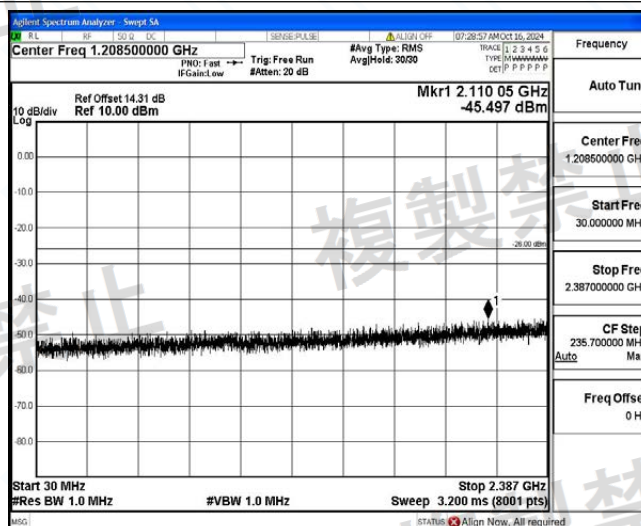
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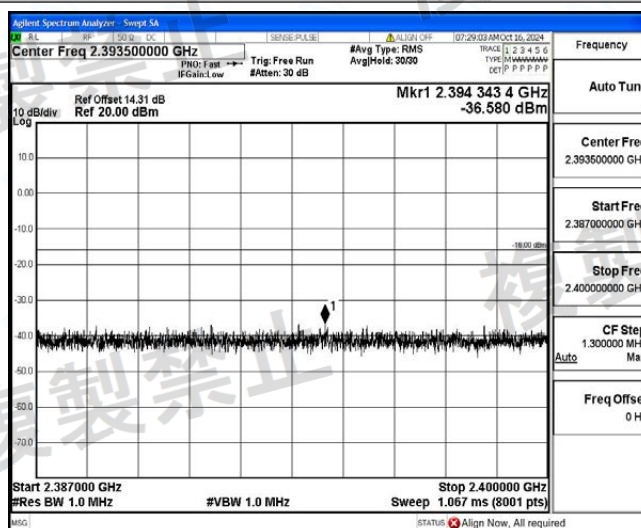
NTHV_2DH5_Ant1_2480_2496.5~13000



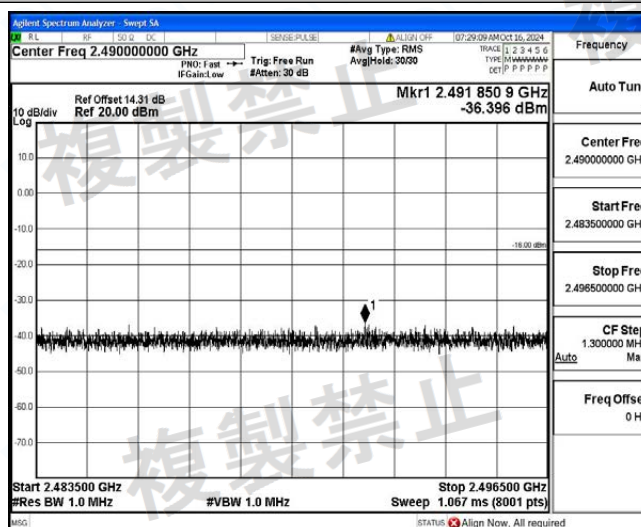
NTHV_3DH5_Ant1_2402_30~2387



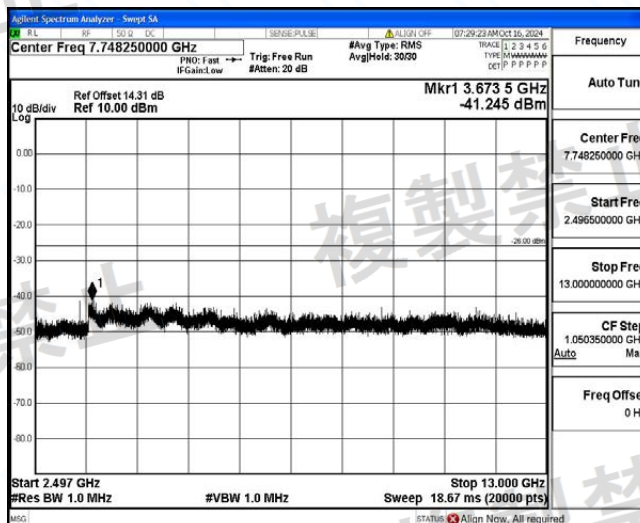
NTHV 3DH5 Ant1 2402 2387~2400



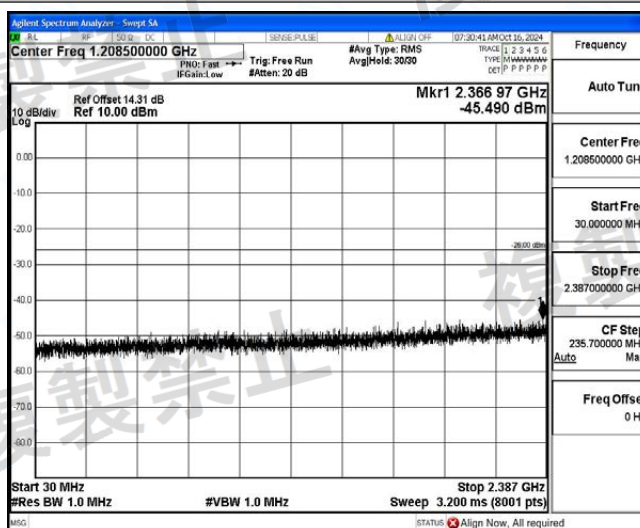
NTHV 3DH5 Ant1 2402 2483.5~2496.5



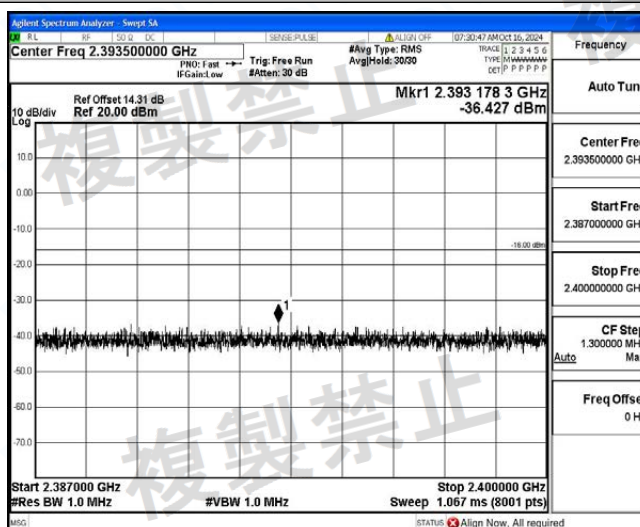
NTHV 3DH5 Ant1 2402 2496.5~13000



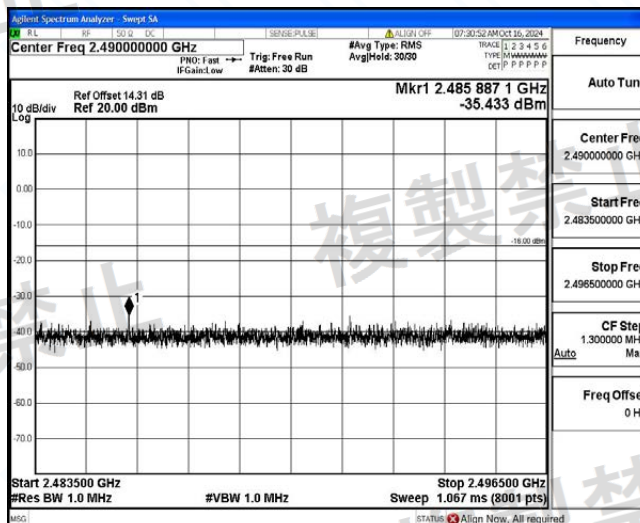
NTHV_3DH5_Ant1_2441_30~2387



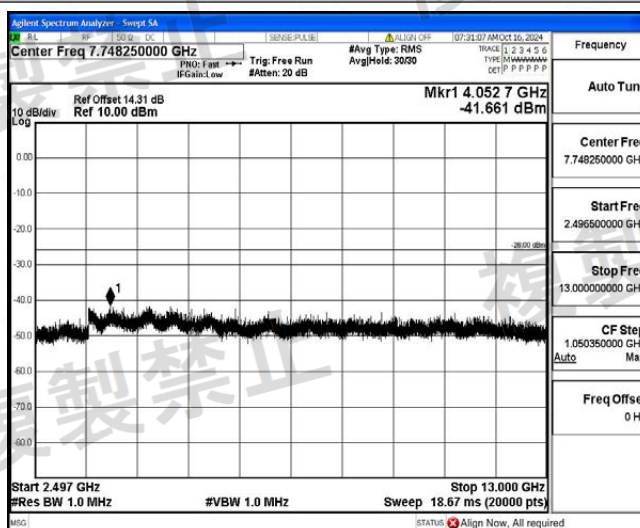
NTHV_3DH5_Ant1_2441_2387~2400



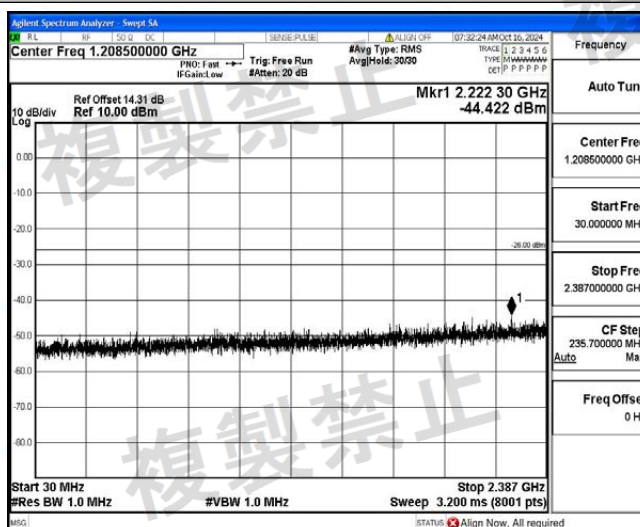
NTHV_3DH5_Ant1_2441_2483.5~2496.5



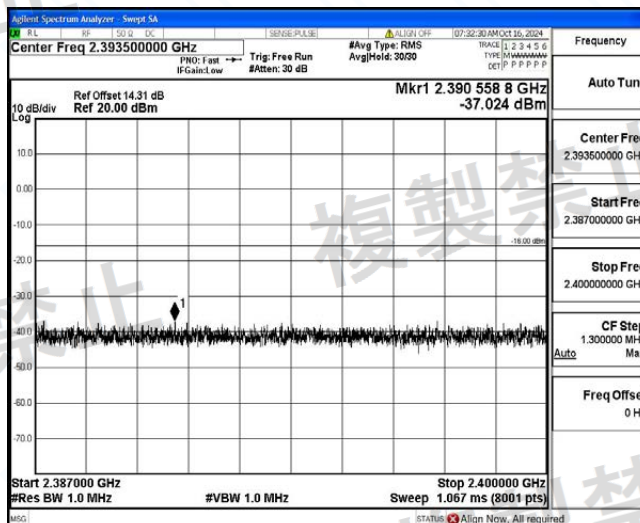
NTHV_3DH5_Ant1_2441_2496.5~13000



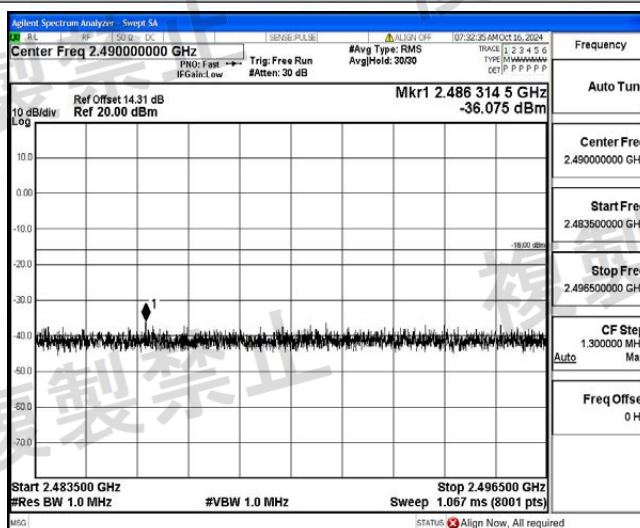
NTHV_3DH5_Ant1_2480_30~2387



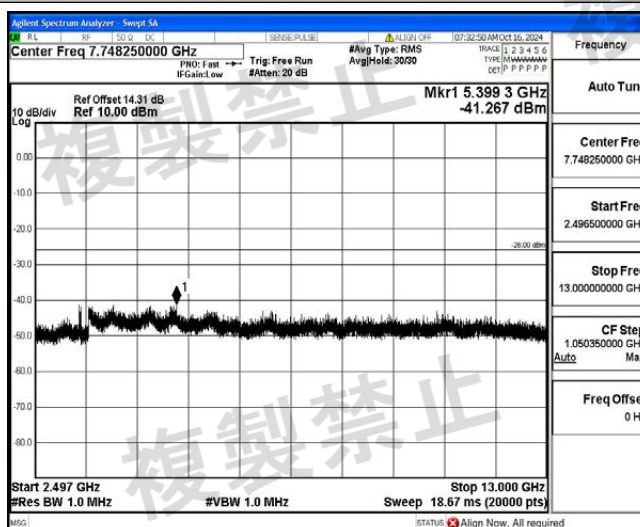
NTHV_3DH5_Ant1_2480_2387~2400



NTHV_3DH5_Ant1_2480_2483.5~2496.5



NTHV_3DH5_Ant1_2480_2496.5~13000



Note: SA set to from 2.4965GHz to 13GHz, plot shows from 2.497GHz to 13GHz as of SA' s default format.

Appendix G: Spurious Emission of RX

Test Result Step1

Dongguan DN Testing Co., Ltd.

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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	-66.78	≤-54	0.20989	≤4	PASS
				1000~13000	-61.37	≤-47	0.72946	≤20	PASS
			2441	30~1000	-67.13	≤-54	0.19364	≤4	PASS
				1000~13000	-61.18	≤-47	0.76208	≤20	PASS
			2480	30~1000	-67.43	≤-54	0.18072	≤4	PASS
				1000~13000	-61.27	≤-47	0.74645	≤20	PASS
	2DH5	Ant1	2402	30~1000	-67.12	≤-54	0.19409	≤4	PASS
				1000~13000	-60.85	≤-47	0.82224	≤20	PASS
			2441	30~1000	-66.72	≤-54	0.21281	≤4	PASS
				1000~13000	-56.26	≤-47	2.36592	≤20	PASS
			2480	30~1000	-66.92	≤-54	0.20324	≤4	PASS
				1000~13000	-54.71	≤-47	3.38065	≤20	PASS
NTLV	3DH5	Ant1	2402	30~1000	-65.4	≤-54	0.28840	≤4	PASS
				1000~13000	-60.3	≤-47	0.93325	≤20	PASS
			2441	30~1000	-67.5	≤-54	0.17783	≤4	PASS
				1000~13000	-61.32	≤-47	0.73790	≤20	PASS
			2480	30~1000	-66.76	≤-54	0.21086	≤4	PASS
				1000~13000	-61.43	≤-47	0.71945	≤20	PASS
	DH5	Ant1	2402	30~1000	-66.42	≤-54	0.22803	≤4	PASS
				1000~13000	-61.31	≤-47	0.73961	≤20	PASS
			2441	30~1000	-67.11	≤-54	0.19454	≤4	PASS
				1000~13000	-61.13	≤-47	0.77090	≤20	PASS
			2480	30~1000	-67.65	≤-54	0.17179	≤4	PASS
				1000~13000	-61.11	≤-47	0.77446	≤20	PASS
NTHV	2DH5	Ant1	2402	30~1000	-67.46	≤-54	0.17947	≤4	PASS
				1000~13000	-57.82	≤-47	1.65196	≤20	PASS
			2441	30~1000	-67.4	≤-54	0.18197	≤4	PASS
				1000~13000	-54.79	≤-47	3.31894	≤20	PASS
			2480	30~1000	-67.65	≤-54	0.17179	≤4	PASS
				1000~13000	-61.43	≤-47	0.71945	≤20	PASS
	3DH5	Ant1	2402	30~1000	-67.24	≤-54	0.18880	≤4	PASS
				1000~13000	-61.4	≤-47	0.72444	≤20	PASS
			2441	30~1000	-66.94	≤-54	0.20230	≤4	PASS
				1000~13000	-61.31	≤-47	0.73961	≤20	PASS
			2480	30~1000	-67.32	≤-54	0.18535	≤4	PASS
				1000~13000	-61.87	≤-47	0.65013	≤20	PASS
NTHV	DH5	Ant1	2402	30~1000	-67.5	≤-54	0.17783	≤4	PASS
				1000~13000	-61.1	≤-47	0.77625	≤20	PASS
			2441	30~1000	-67.69	≤-54	0.17022	≤4	PASS
				1000~13000	-60.58	≤-47	0.87498	≤20	PASS
			2480	30~1000	-67.23	≤-54	0.18923	≤4	PASS
				1000~13000	-61.09	≤-47	0.77804	≤20	PASS

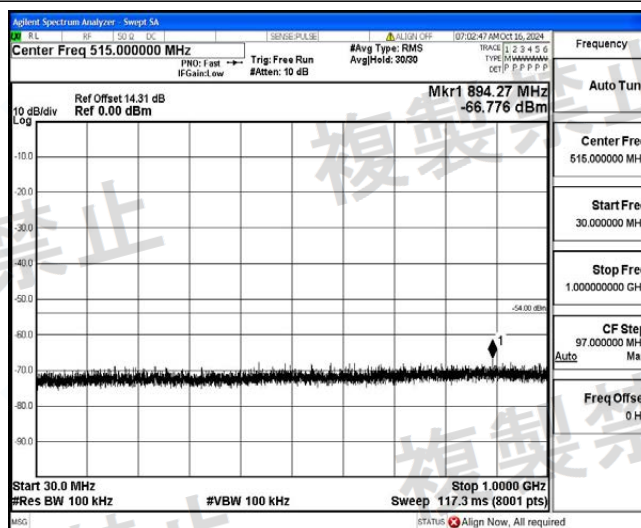


	2DH5	Ant1	2402	30~1000	-67.15	≤-54	0.19275	≤4	PASS
				1000~13000	-60.87	≤-47	0.81846	≤20	PASS
			2441	30~1000	-67.13	≤-54	0.19364	≤4	PASS
				1000~13000	-60.84	≤-47	0.82414	≤20	PASS
			2480	30~1000	-66.57	≤-54	0.22029	≤4	PASS
				1000~13000	-61.35	≤-47	0.73282	≤20	PASS
	3DH5	Ant1	2402	30~1000	-67.48	≤-54	0.17865	≤4	PASS
				1000~13000	-61.05	≤-47	0.78524	≤20	PASS
			2441	30~1000	-67.23	≤-54	0.18923	≤4	PASS
				1000~13000	-61.11	≤-47	0.77446	≤20	PASS
			2480	30~1000	-67.36	≤-54	0.18365	≤4	PASS
				1000~13000	-61.85	≤-47	0.65313	≤20	PASS

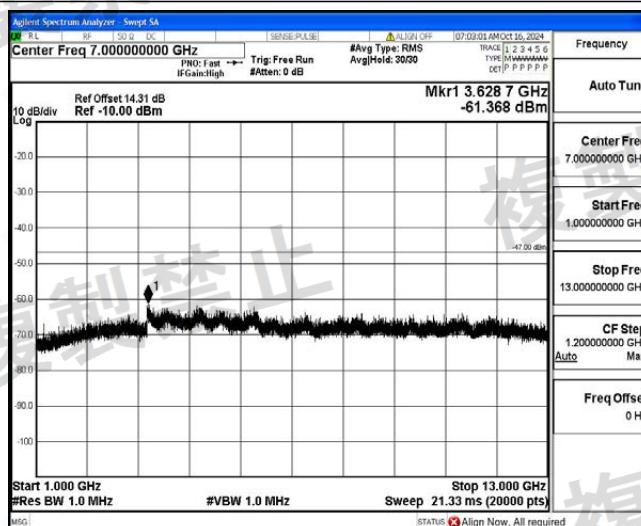


Test Graphs

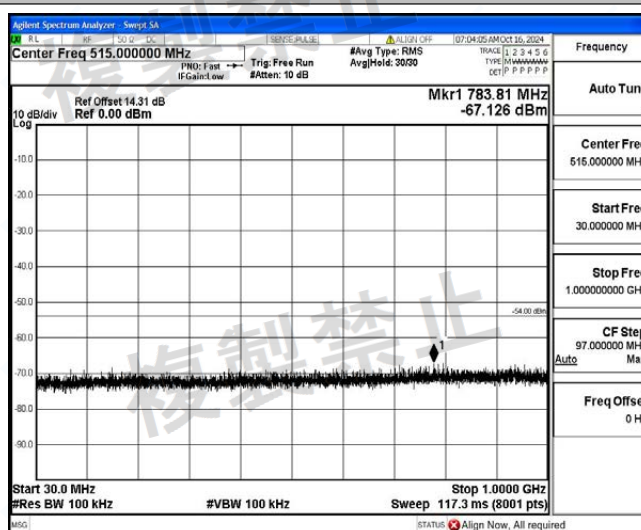
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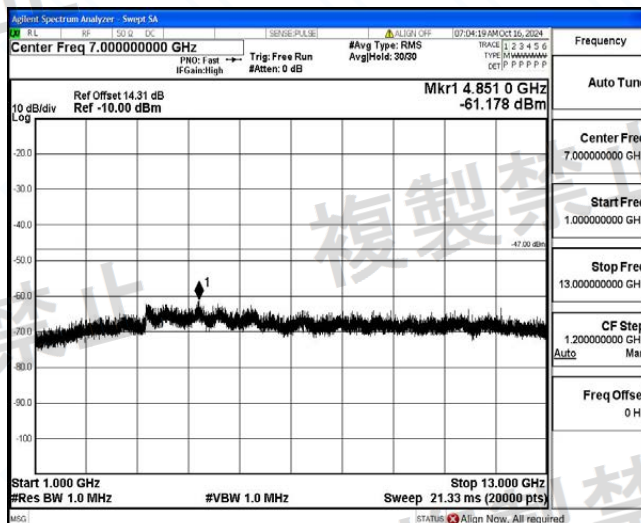
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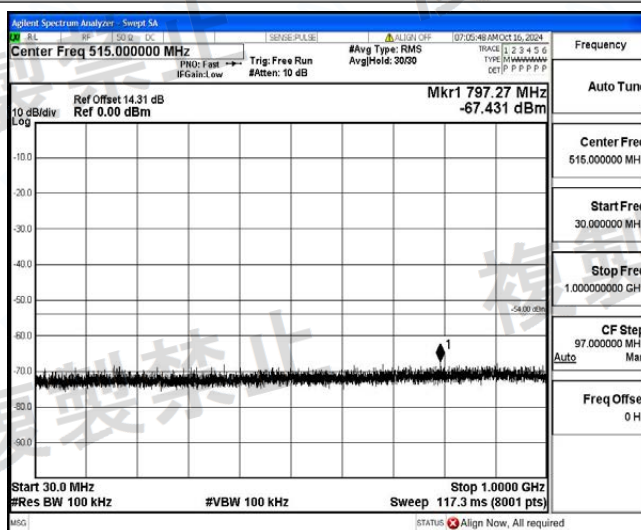
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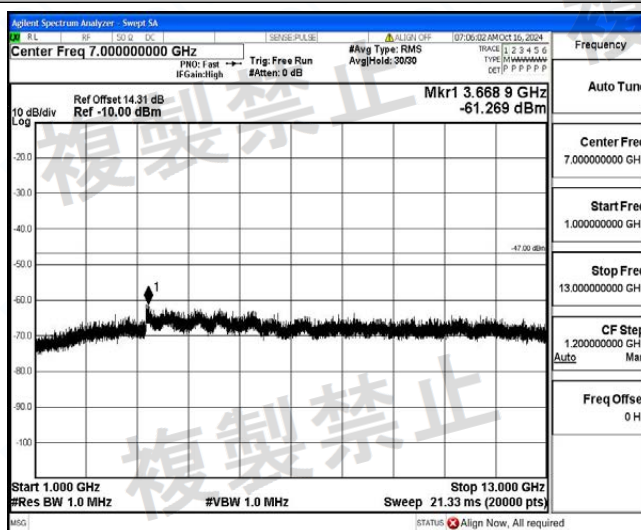
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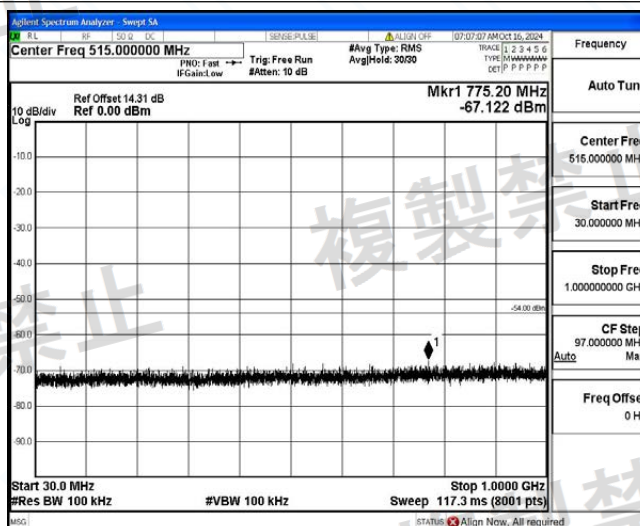
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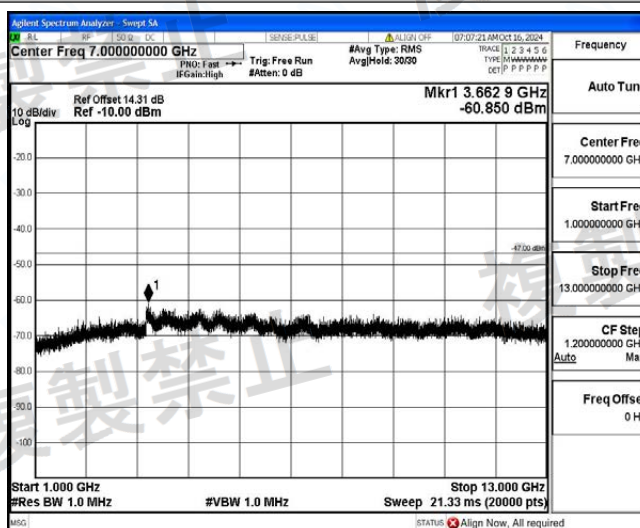
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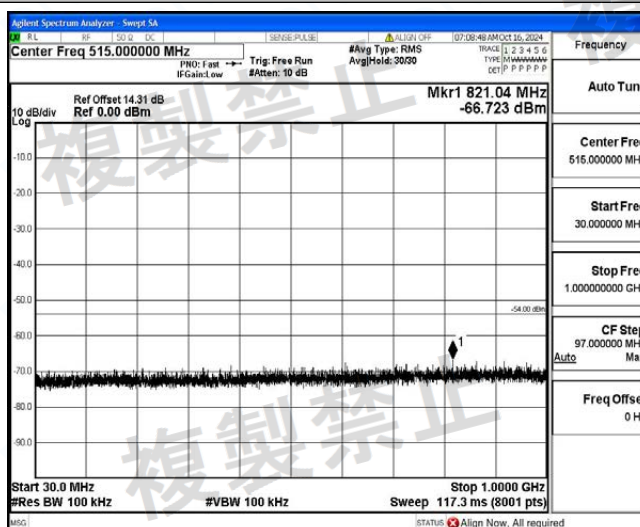
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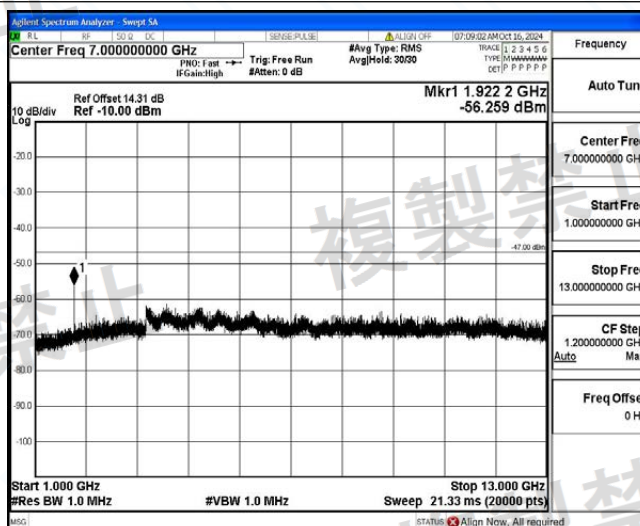
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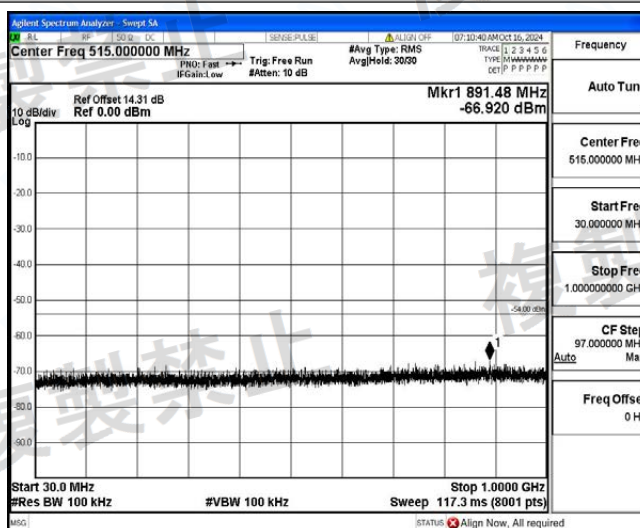
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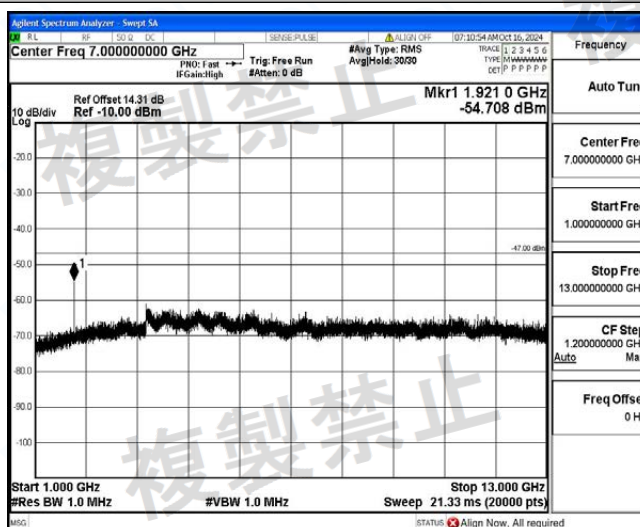
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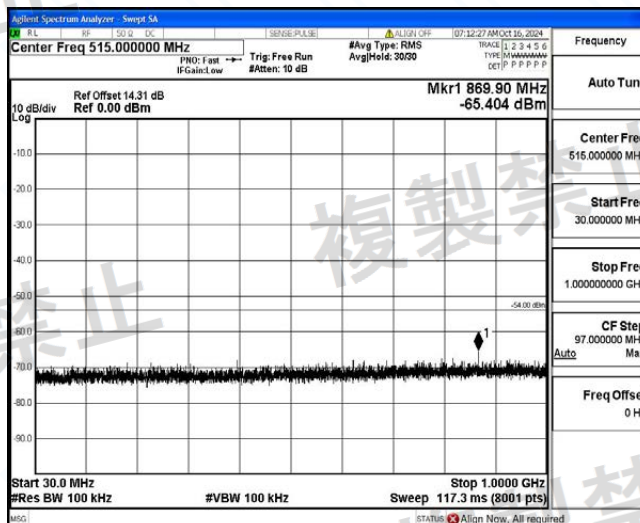
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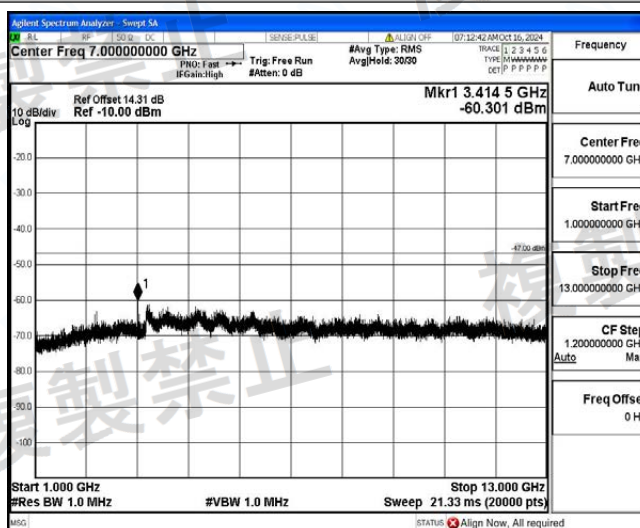
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NTNV_3DH5_Ant1_2402_30~1000



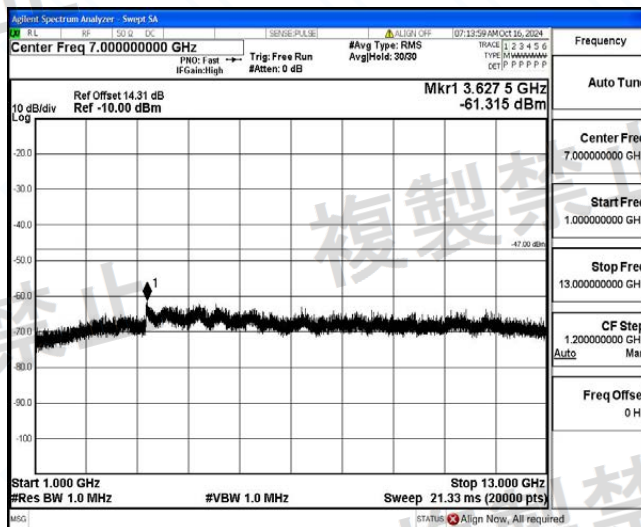
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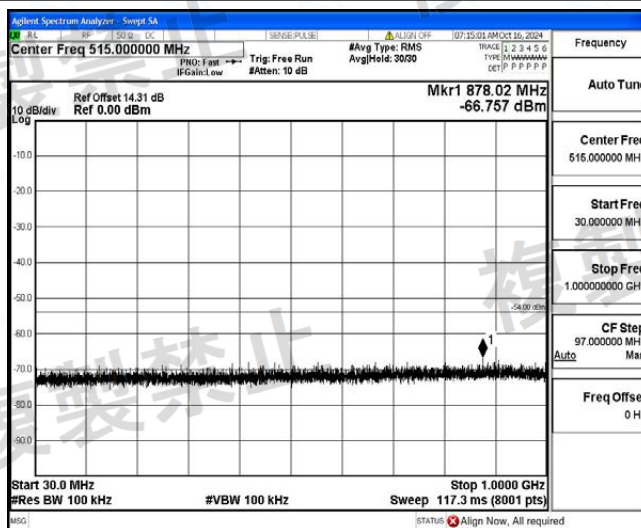
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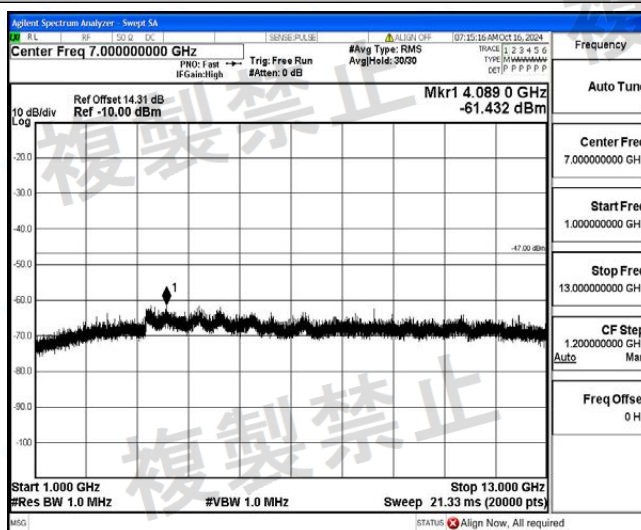
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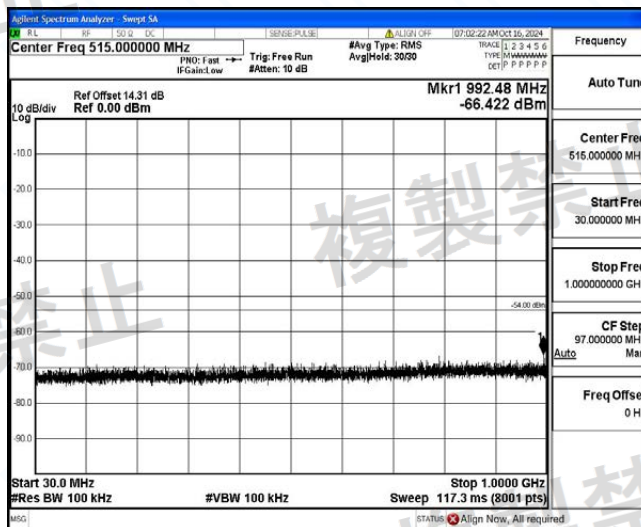
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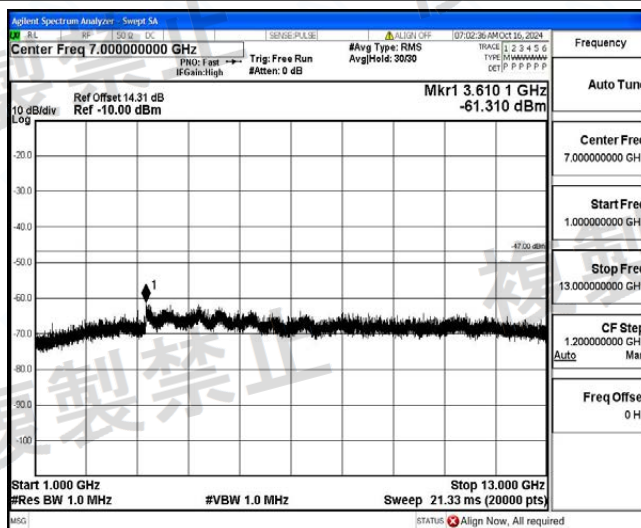
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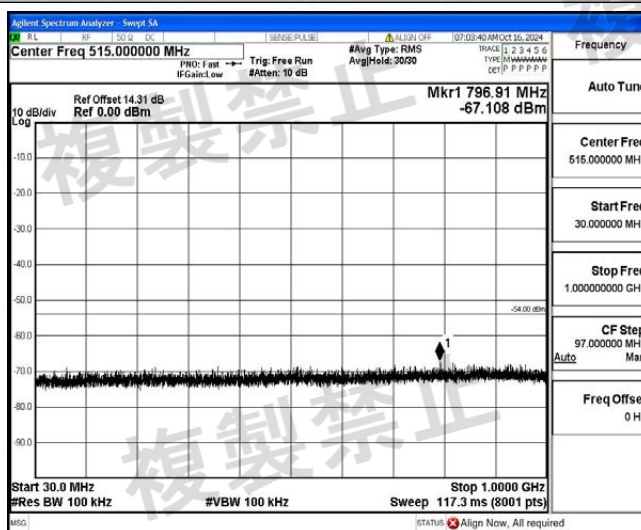
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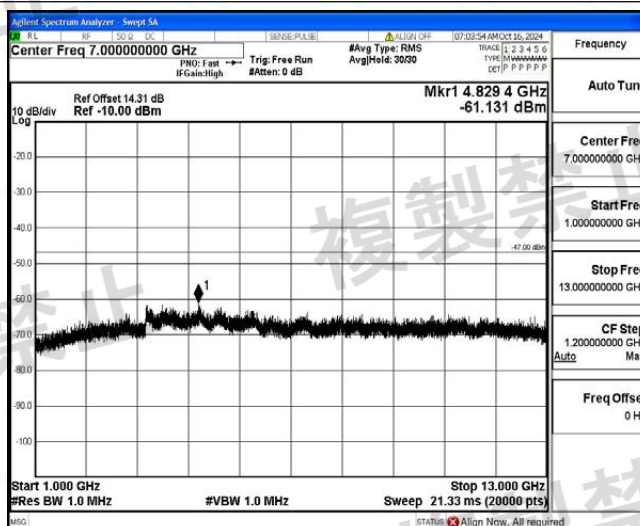
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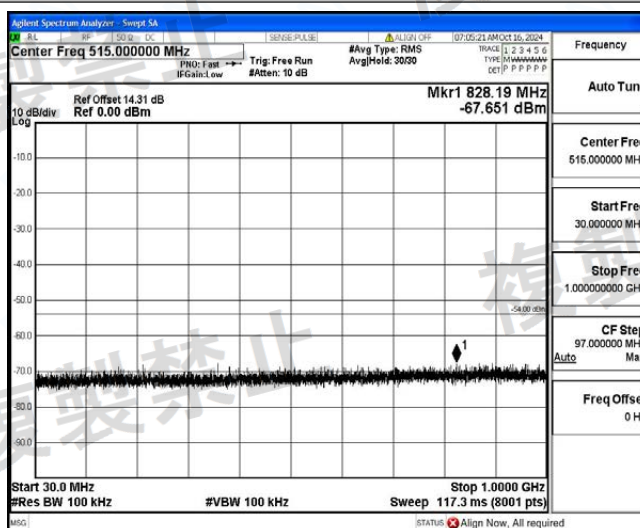
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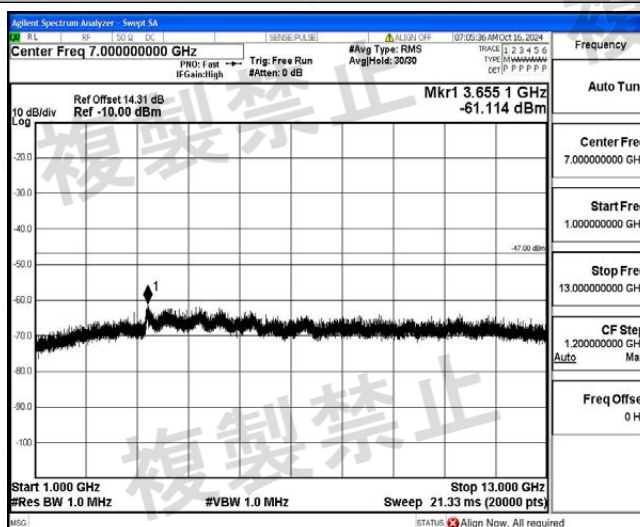
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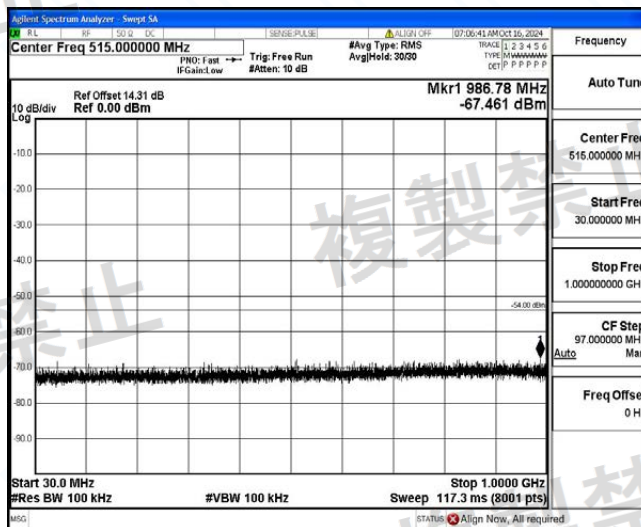
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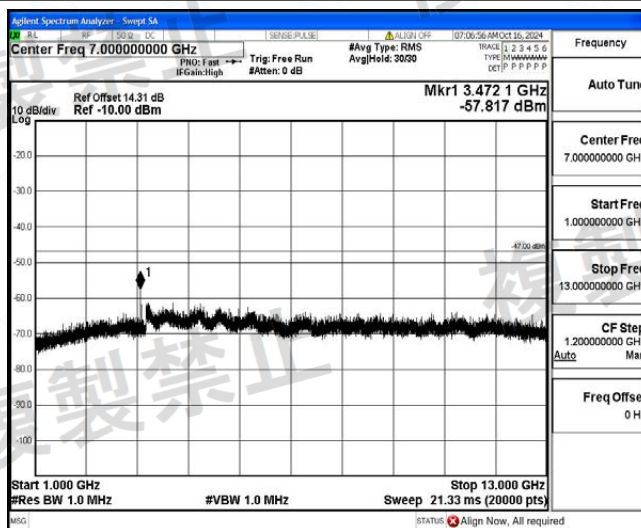
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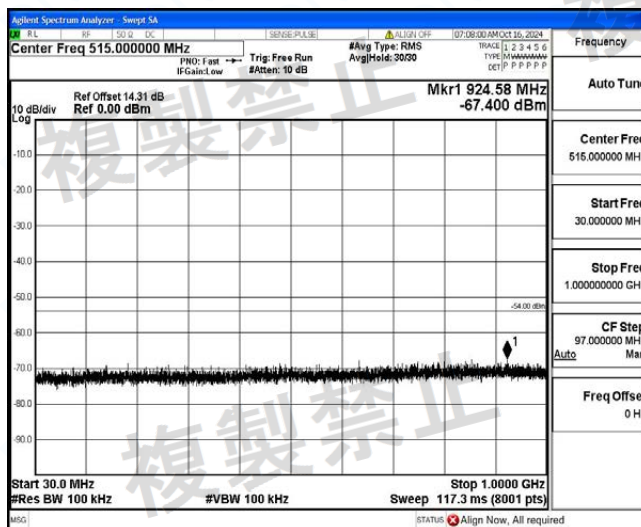
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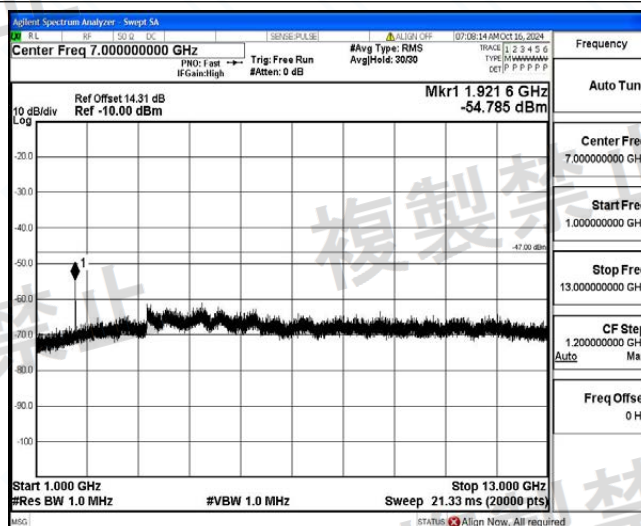
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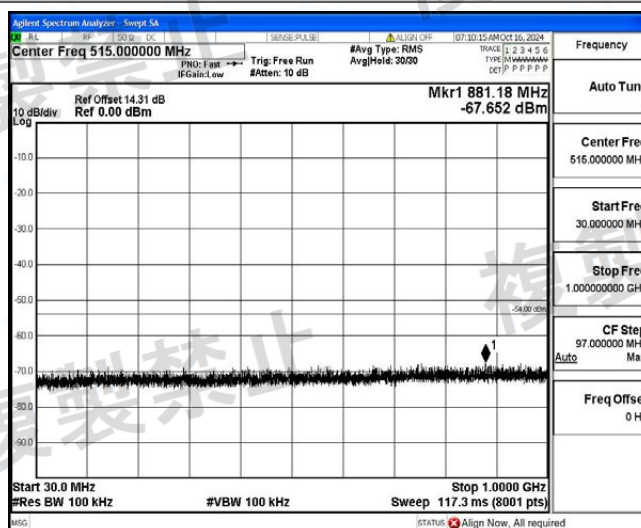
NTLV_2DH5_Ant1_2441_30~1000



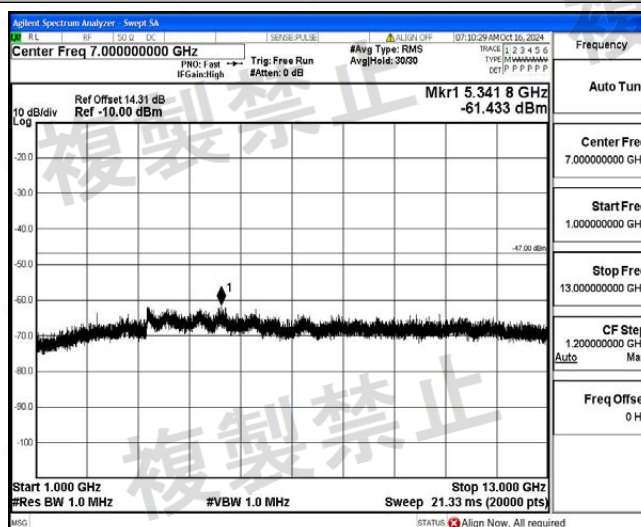
NTLV_2DH5_Ant1_2441_1000~13000



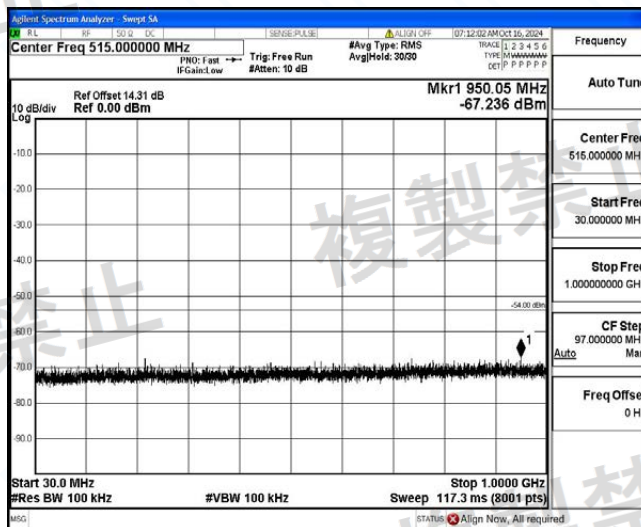
NTLV_2DH5_Ant1_2480_30~1000



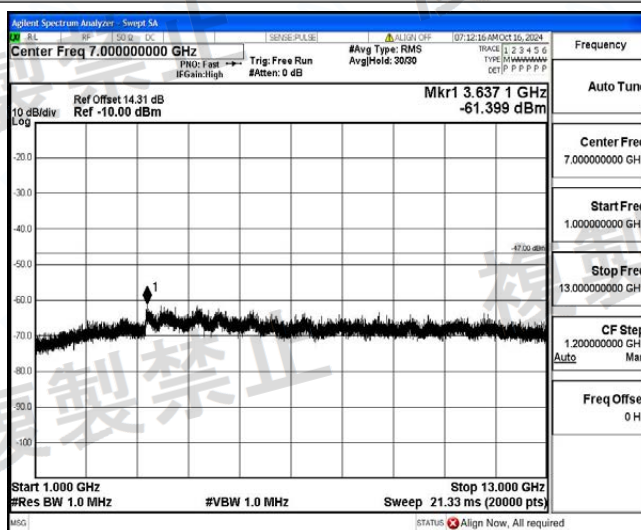
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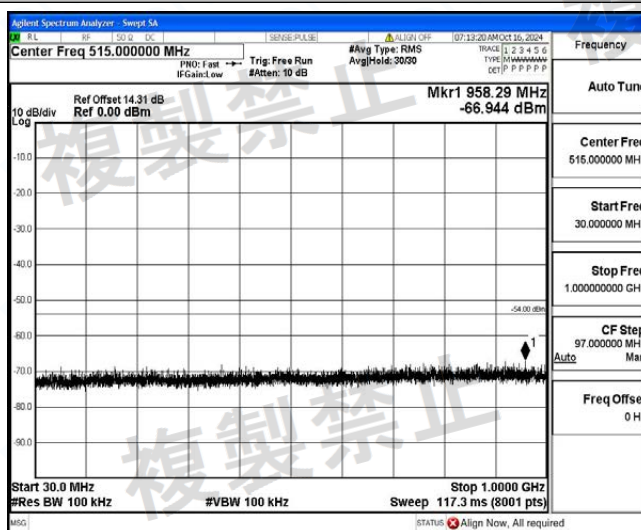
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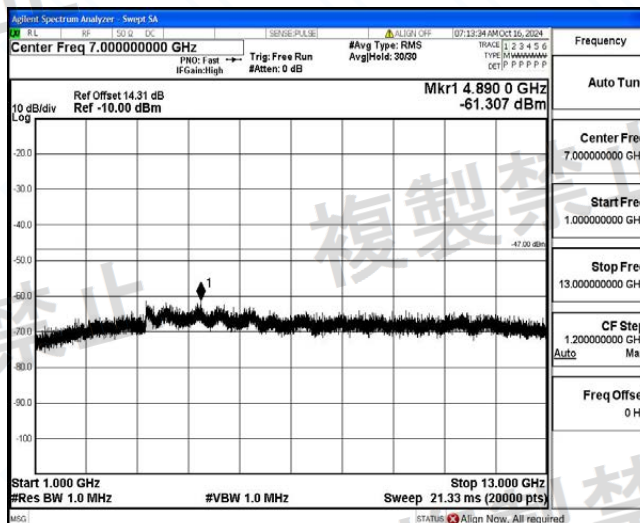
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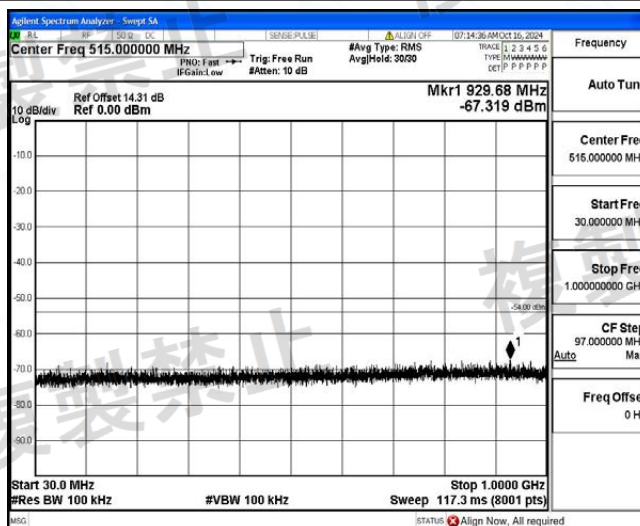
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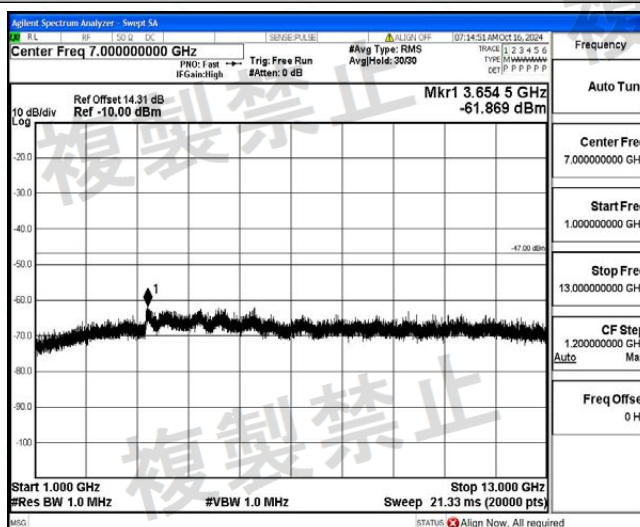
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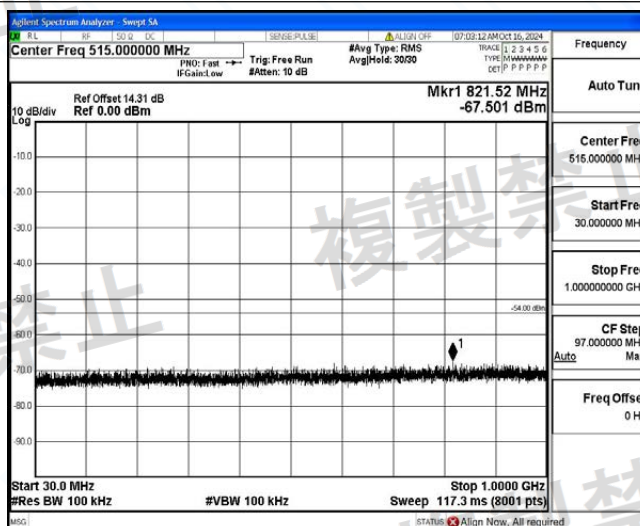
NTLV_3DH5_Ant1_2480_30~1000



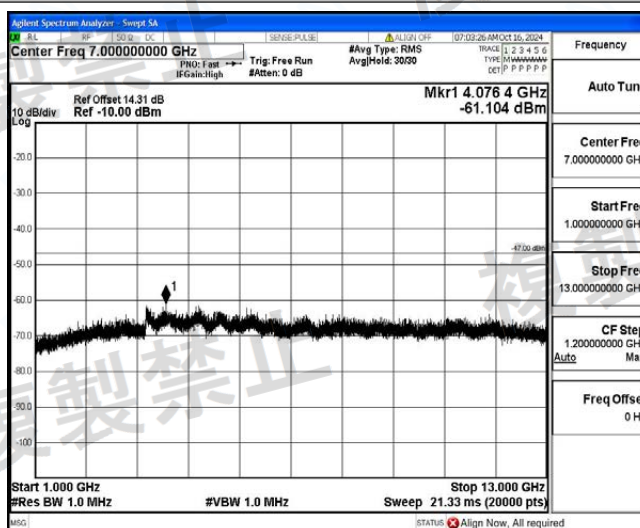
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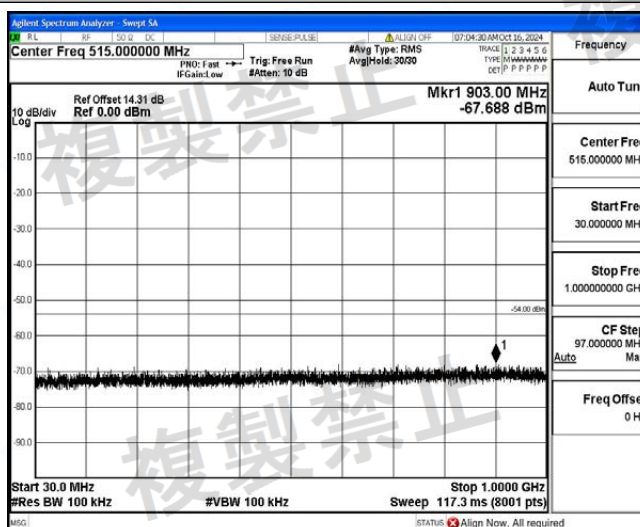
NTHV_DH5_Ant1_2402_30~1000



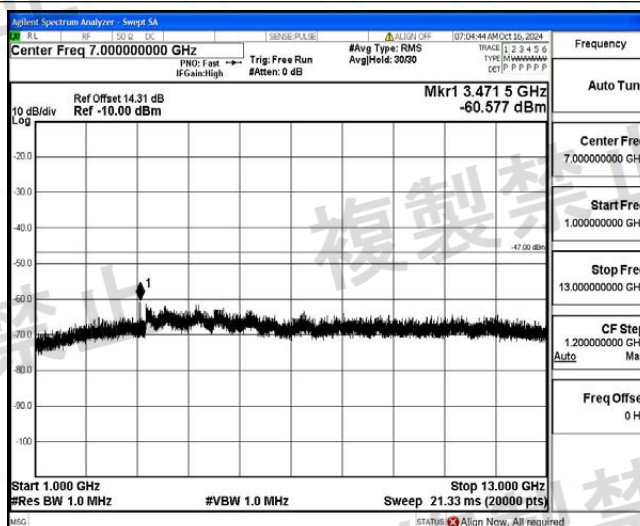
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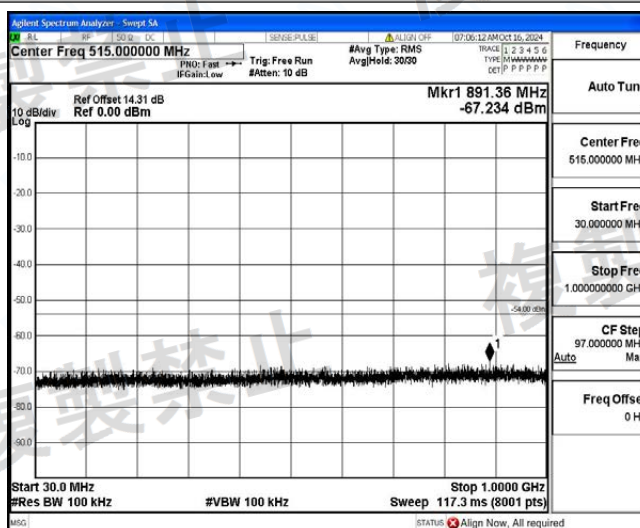
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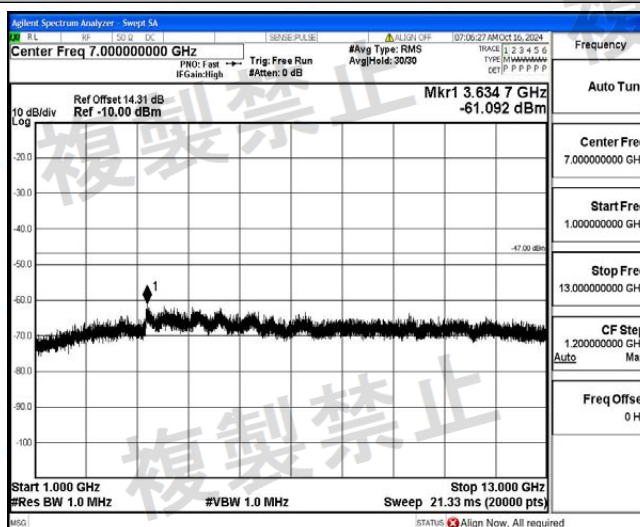
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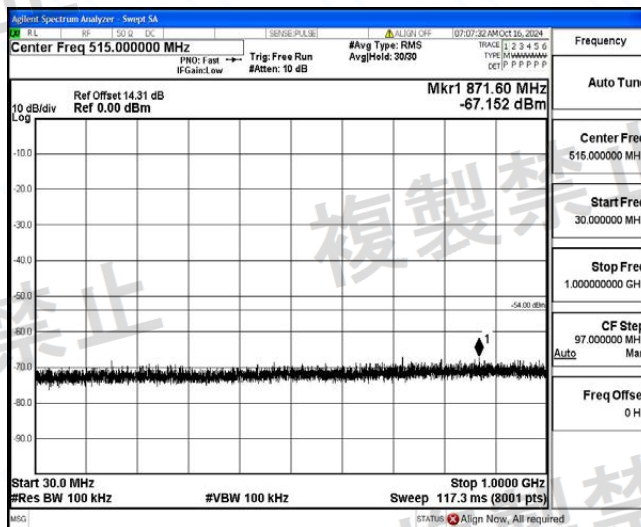
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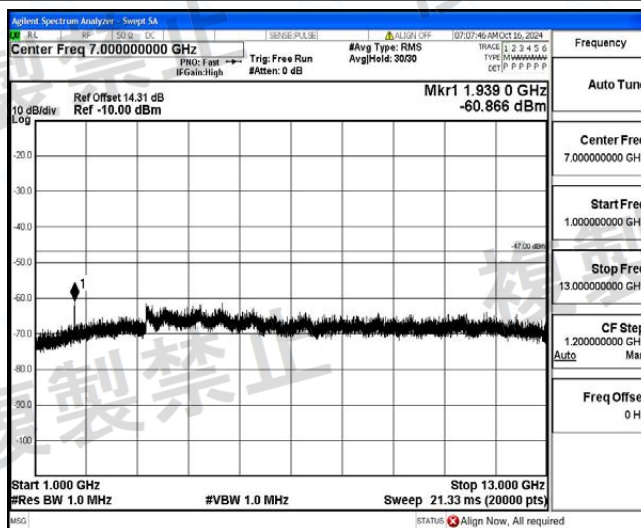
NTHV_DH5_Ant1_2480_1000~13000



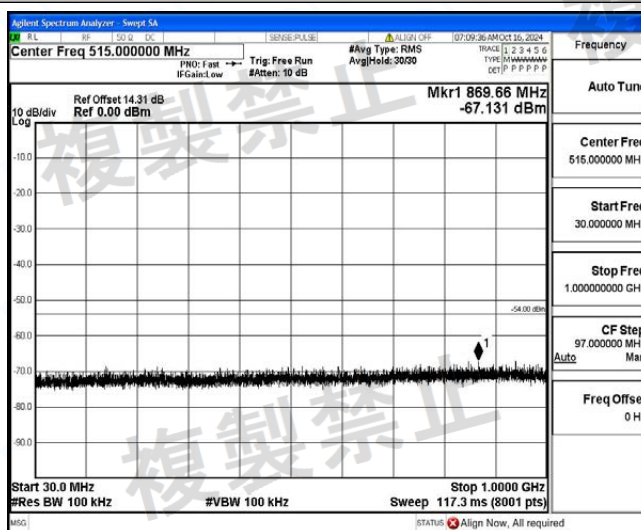
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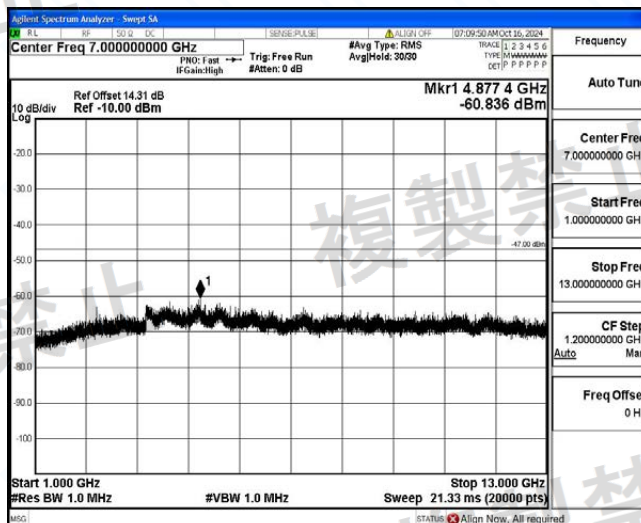
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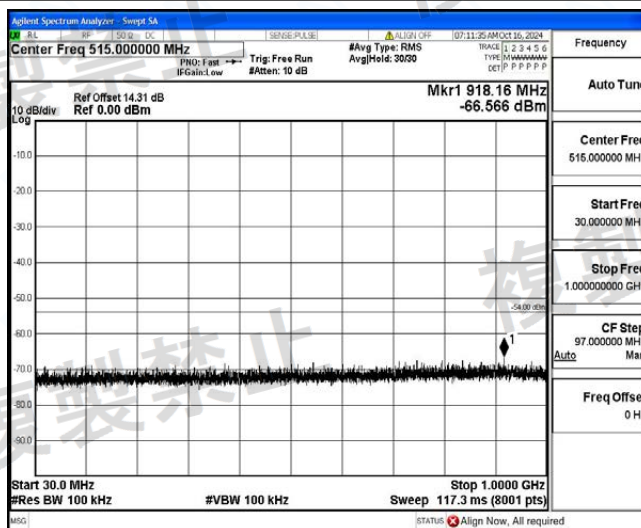
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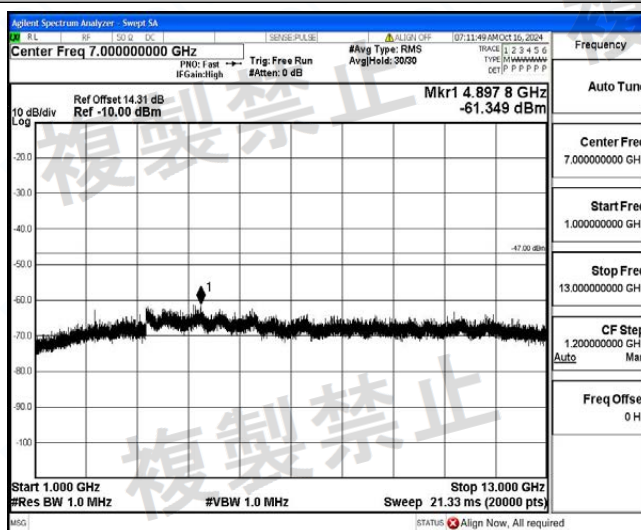
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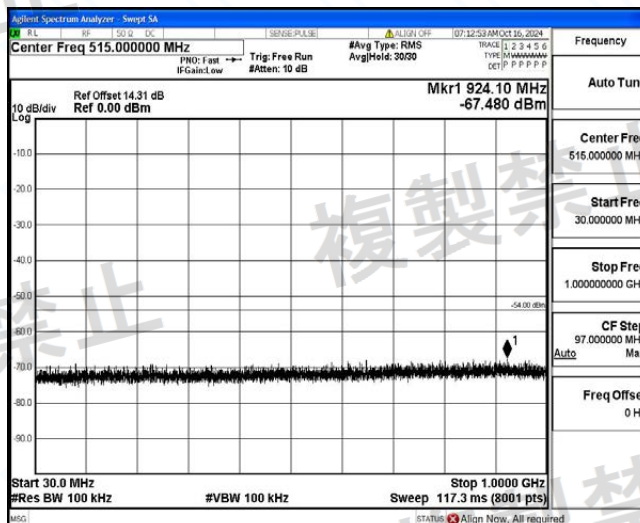
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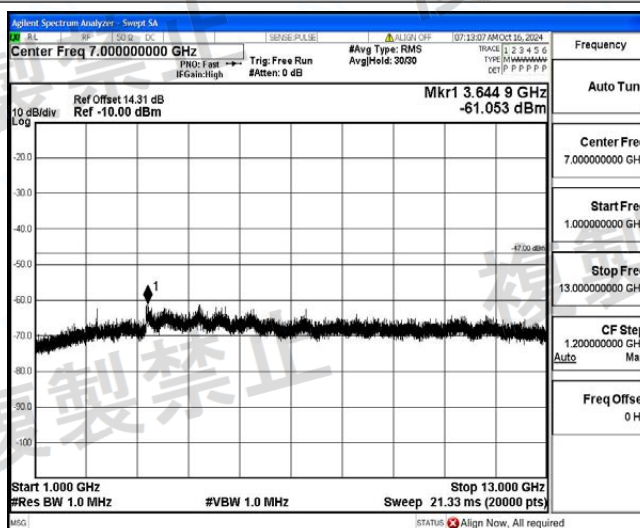
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NTHV_3DH5_Ant1_2402_30~1000



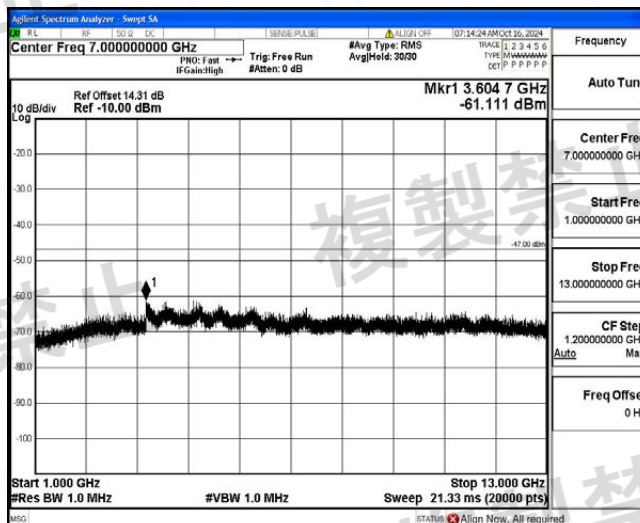
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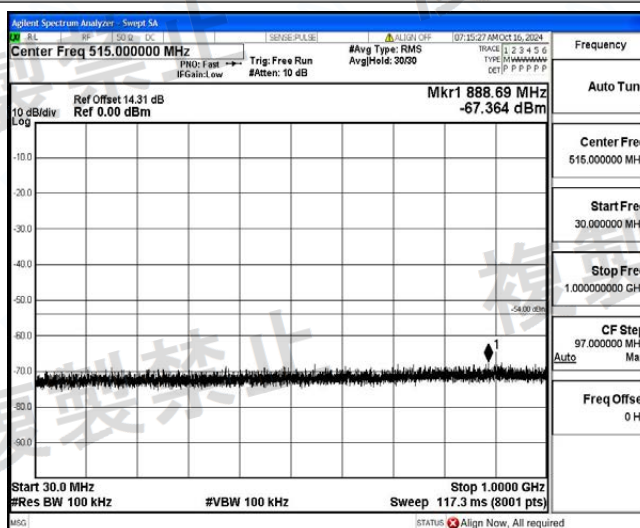
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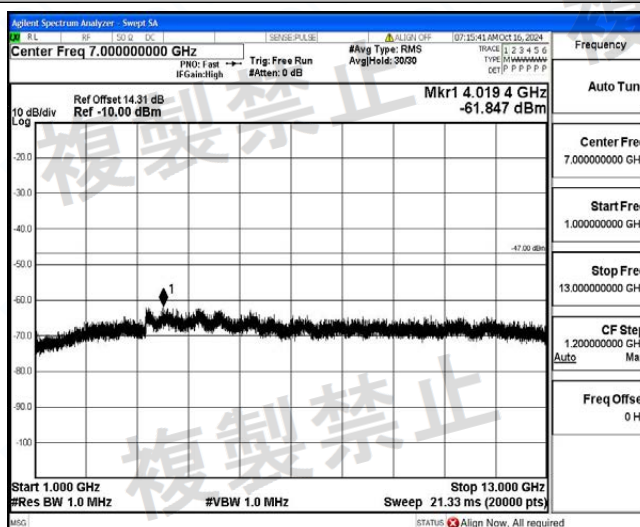
NTHV_3DH5_Ant1_2441_1000~13000



NTHV_3DH5_Ant1_2480_30~1000



NTHV_3DH5_Ant1_2480_1000~13000



---END REPORT---