

ARIB STD-T66

Test Report

Applicant: Dongguan Jiadian Electronics Technology Co., Ltd.

Address: No.9 Jinwei East Road, Wangniudun Town, Dongguan City, Guangdong Province, PEOPLE'S REPUBLIC OF CHINA

Manufacturer: GEO CORPORATION

Address: OMC Bldg.8-8, Fujimi-cho, Naka-ku, Nagoya-shi, Aichi 460-00014 Japan

Product: 2.0 Channel Soundbar

Brand: N/A

Test Model(s): GRJID-2.0BTSPK50W BK

Series Model(s): TB509B5

Test Date: Jan. 07, 2026 ~ Jan. 18, 2026

Issued Date: Jan. 19, 2026

Issued By: Hwa-Hsing (Dongguan) Testing Co., Ltd.

Address: No.101, Building N1, Yuyuan 2 Road, Yuyuan Industrial Park, HuangJiang Town, Dongguan City, People's Republic of China

Standards: Article 2 Paragraph 1, item 19, MIC notice 88 Appendix 43

The above equipment has been tested by **Hwa-Hsing (Dongguan) Testing Co., Ltd.**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :



Nature Lee

Reviewed by :



Approved by :



Scott He

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Release Control Record

Issue No.	Description	Date Issued
25122701-1-RF-JP-01	Original Release	Jan. 16, 2026

1 Summary of Test Results

The EUT has been tested according to the following specifications:

Article 2 Paragraph 1, item 19	ARIB STD-T66	Report reference	Parameter	Test Results (Note)
General provisions				
C	3.2(4)	3.1	Frequency tolerance	C
D	3.2(7)	3.2/3.3	Occupied bandwidth	C
E	3.2(6)	3.4	Spurious emissions	C
Transmitting equipment				
F	--	3.5	Antenna power	C
Transmitting antenna				
--	--	2.2.5	Type, configuration, etc. of transmitting antenna	C
--	--	2.2.5	Direction pattern of transmitting antenna	C
Receiving equipment				
H	3.3(1)	3.6	Spurious emissions of receiver	C
--	--	2.2.5	Refer to all articles for transmitting antenna	C
Operating frequency 2400 to 2483.5MHz				
--	3.7 (1)	2.2.3	High Frequency/modulation section cannot be opened easily	C
--	3.1 (1)	2.1	Communication method	C
--	3.2 (1)a	2.1	Modulation method	C
--	3.2 (1)a	2.1	Spread spectrum method	C
--	3.2 (2)	3.5	Antenna power	C
--	3.6 (2)	2.2.5	Absolute gain of transmitting antenna	C
--	3.6 (2)	2.2.5	Angular width of principal radiation (AWPR)	C
--	3.2 (8)	3.3	Diffusion bandwidth	C
--	3.2 (9)	3.3	Spreading factor	NT
--	3.2 (11)	3.7	Frequency retention time (FH employed)	C
--	3.4.1(1)	3.8	Interference Prevention Function	C
Note 1: C = Conform; NC = Not Conform; NT = Not Tested; NA = Not Applicable;				

1.1 Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.Date	Calibration Method
Spectrum	Keysight	N9020A	MY51240612	2026-07-23	C
Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101783	2026-07-23	C
Power Meter 10Hz~18GHz	Tonscend	JS0806-2	188060126	2026-07-23	C
Signal generator	Keysight	E4421B	GB40051020	2026-05-18	C
Horn Antenna	Schwarzbeck	BBHA 9120 D	1959	2027-07-26*	C
Attenuator	Weinschael	54A-10	N/A	2026-07-23	C
Universal Switch Control Unit	Rohde&Schwarz	CMW500	12010002k50	2026-07-23	C
Test Software	Tonscend	JS0806-2	NA	NA	C
Humidity tester	Jingchuang	GSP-8A	CMA22B000592	2026-07-28	C

Note:

1. The test was witness in 966 Chamber and RF Oven room.
2. The calibration interval of the above test instruments is 12/24* months and the calibrations are traceable to LISAI/CHINA.
- 3: Calibration body's name: GUANGZHOU LISAI CALIBRATION AND TESTING CO., LTD.
Address: No.8 South Street Shi Ji Institute Guangzhou. Guangdong. China.

Calibration Method:

- a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1)
- b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992)
- c) Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1)
- d) Calibration conducted by using measuring instruments and other equipment listed in the right column of Table No. 3 attached hereto, which shall have been given any of calibration, etc. listed above from a) to c)

1.2 Measurement Uncertainty

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

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Parameter	Uncertainty
Occupied Bandwidth	206.50 Hz
Spurious emissions	$\pm 3.84\text{dB}$
Output power density	1.37dB
Out of band radiated power	2.52 dB
Frequency Tolerance	0.104 ppm
Temperature	$\pm 0.23^{\circ}\text{C}$
Humidity	$\pm 0.3\%$
DC and low frequency voltages	$\pm 0.3\%$

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

1.3 Modification Record

There were no modifications required for compliance.

2 General Information

2.1 General Description of EUT

Product Name	2.0 Channel Soundbar
Test Model Name	GRJID-2.0BTSPK50W BK
Series Models Name	TB509B5
Power Supply Rating	DC 15V from adapter
Temperature Operating Range	0 ~ 40℃
Modulation Type	GFSK, $\pi/4$ DQPSK, 8DPSK
Modulation Technology	FHSS
Transfer Rate	1 Mbps/2 Mbps/3 Mbps
Operating Frequency	2402MHz ~ 2480 MHz
Rated RF output power density	Please see Note 1
Conducted power density	Please see Note 1
EIRP power density	Please see Note 1
Antenna Type	PCB Antenna
Antenna Gain	1.39dBi
Accessory Device	Adapter*1, remote control*1
Radio FW	V74
Radio HW	V1.0

Note:

1. The power table as below table:

Test condition for Modulation Technology	Rated output power density (mW/MHz)	Conducted power density (mW/MHz)	EIRP power density (mW/MHz)
Normal mode			
GFSK	0.04	0.022893	0.031528
$\pi/4$ -DQPSK	0.04	0.033783	0.046526
8DPSK	0.04	0.038774	0.053400

- The above EUT information was declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or user's manual.
- Hwa-Hsing (Dongguan) Testing Co., Ltd. is not responsible for the accuracy of the information provided by the manufacturer.
- Please refer to the EUT photo document (Reference No.: 25122701-1) for detailed product photo.
- For the test results, the EUT had been tested with all conditions, and only the worst case was shown in the test report.
- Model difference: The products are only different the model number and appearance.
- The EUT can be powered by the following adapter.

Adapter (fixed plug)	
Brand:	pgtec
Model:	PG241-1501600P
Input:	100-240V~ 50/60Hz 0.8A
Output:	15.0Vdc, 1.6A, 24.0W
DC Line:	Unshielded, Non-detachable, 150cm

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2.2 Description of test modes**2.2.1 Channel list of this EUT:**

These are 79 channels are provided to this EUT:

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

2.2.2 Test mode applicability and tested channel detail

Test items		Test Conditions for voltage supply	Environmental Conditions
1	Frequency tolerance measurement	V_{normal} $V_{+10\%}$ $V_{-10\%}$	22.3deg. C, 55%RH
2	Occupied bandwidth measurement (99% power) bandwidth)		
3	Spreading bandwidth measurement (90% power) bandwidth)		
4	Spurious emissions for transmitter measurement		
5	Antenna power measurement		
6	Spurious emissions for receiver		
7	Frequency hopping dwell time		
8	Interference prevention function		

EUT Configure mode No.	Test conditions for modulation technology
Mode A	GFSK
Mode B	$\pi/4$ -DQPSK
Mode C	8DPSK

RF Power Setting Value			
Channel	GFSK	$\pi/4$ -DQPSK	8DPSK
	Power setting	Power setting	Power setting
0	7	7	7
39	7	7	7
78	7	7	7

Note:

- For the test results, the EUT had been tested with all conditions, and the worst-case mode of data will Recording in the report.
- By means of test software which provided by manufacture, the power levels during the tests were set according to the above table.

2.2.3 Assembly

The RF circuit was located inside of the EUT.

2.2.4 Applicable Standard

When there is a fluctuation of +/-10% input voltage from external power to the test equipment. If the fluctuation of input voltage to the circuit of the radio part (excl. power) in the test equipment is confirmed below +/-1%, Measurement shall be tested with the rated voltage.

2.2.5 Antenna Specifications

Ant. Type	Highest Peak Gain (dBi) 2.4GHz ~ 2.5GHz
PCB Antenna	1.39dBi

Note: The Antenna pattern please refer to the attached file (Antenna report).

2.3 Description of Support Units

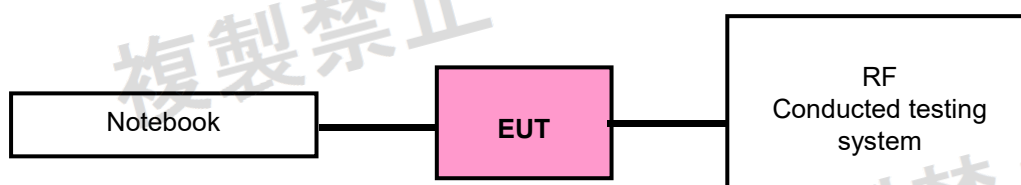
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	Notebook	HUAWEI	NbD-WFH9	EUEPM21725002655	N/A
2	Notebook	DELL	Inspiron 14R Aluminum Edition	6WPG9-63PV4-RBPF2-T6RHW-W9GBP	N/A

No.	Signal Cable Description of The Above Support Units
1	USB extension cord: Unshielded, Detachable 1.2m;

2.3.1 Configuration of System under Test

Bluetooth TX/RX:



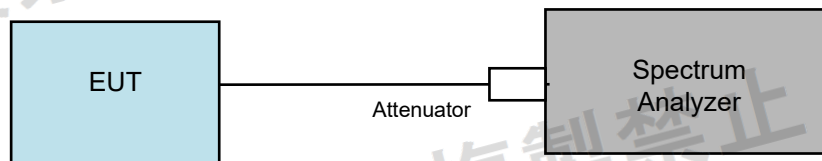
3 Test types and results

3.1 Frequency tolerance measurement

3.1.1 Limits of frequency tolerance measurement

Condition	Tolerance of frequency Limit (e.i.r.p)
Under all test conditions	Within +/- 50ppm

3.1.2 Test Setup



3.1.3 Deviation from Test Standard

No deviation.

3.1.4 Test Procedure

If the fluctuation of input voltage to the circuit of the radio part (excl. power) in the test equipment is confirmed below +/-1%, Measurement shall be tested with the rated voltage.

When there is a fluctuation of +/-10% input voltage from external power to the test equipment. In case the test equipment is designed to function only within the specified fluctuation range of +/-10% for the voltage source tests shall be conducted applying the rated voltage and a respective specified maximum/minimum value of fluctuation range.

Test method according to Clause 5 of Annex No.43 of MIC Notification No.88.

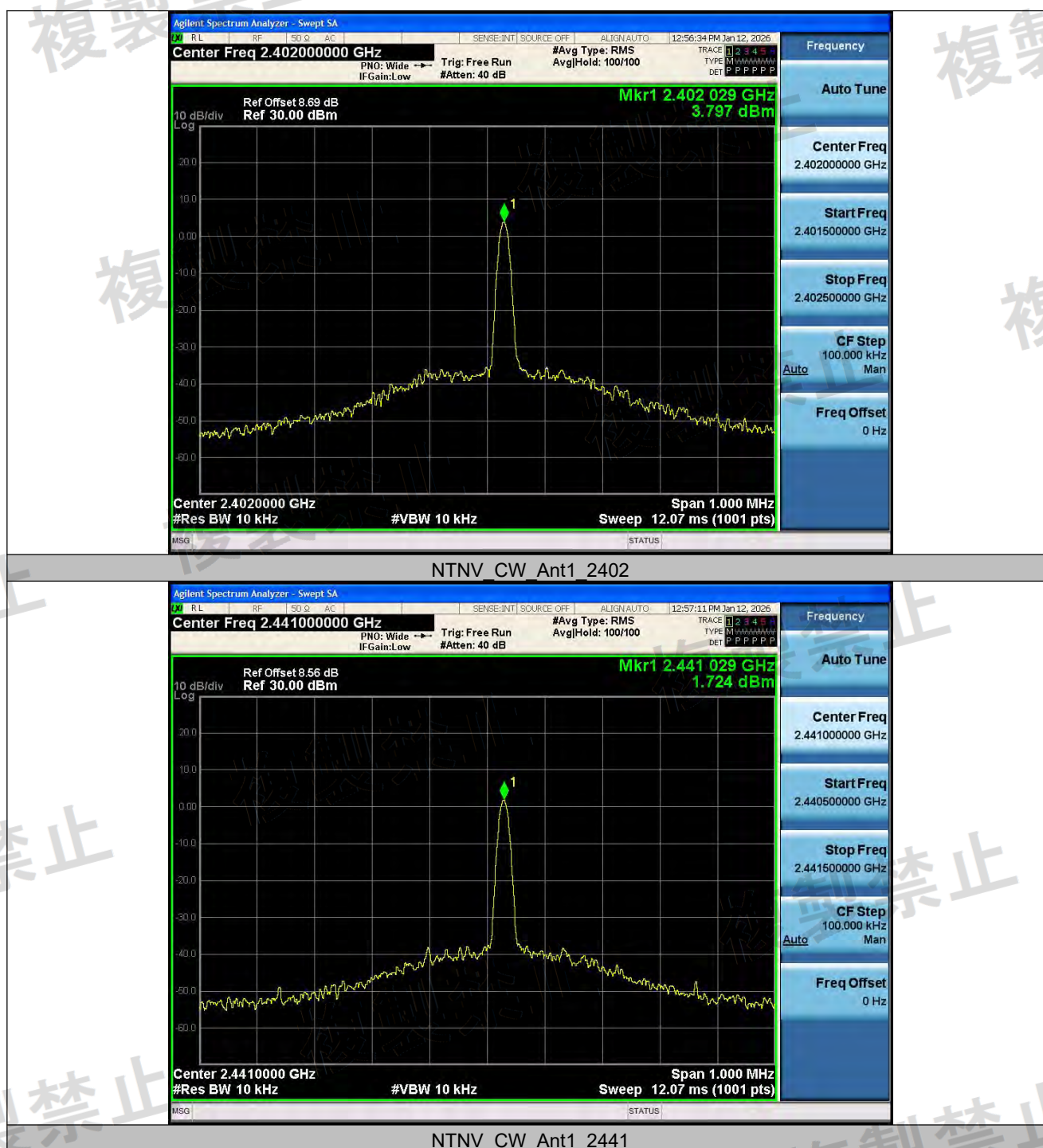
- The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- The EUT was transmitted non-modulated frequencies.
- In case of a test mode generating specific frequency spectrum, the spectrum frequency is measured with the spectrum analyzer.

3.1.5 Test Results

Test Condition	Test Mode	Antenna	Channel	Result[ppm]	Limit[ppm]	Verdict
NTNV	CW	Ant1	2402	12.07327	±50	PASS
			2441	11.88038	±50	PASS
			2480	11.69355	±50	PASS
NTLV	CW	Ant1	2402	12.07327	±50	PASS
			2441	11.88038	±50	PASS
			2480	11.69355	±50	PASS
NTHV	CW	Ant1	2402	12.07327	±50	PASS
			2441	11.88038	±50	PASS
			2480	11.69355	±50	PASS

- The test plots listing in the below pages.

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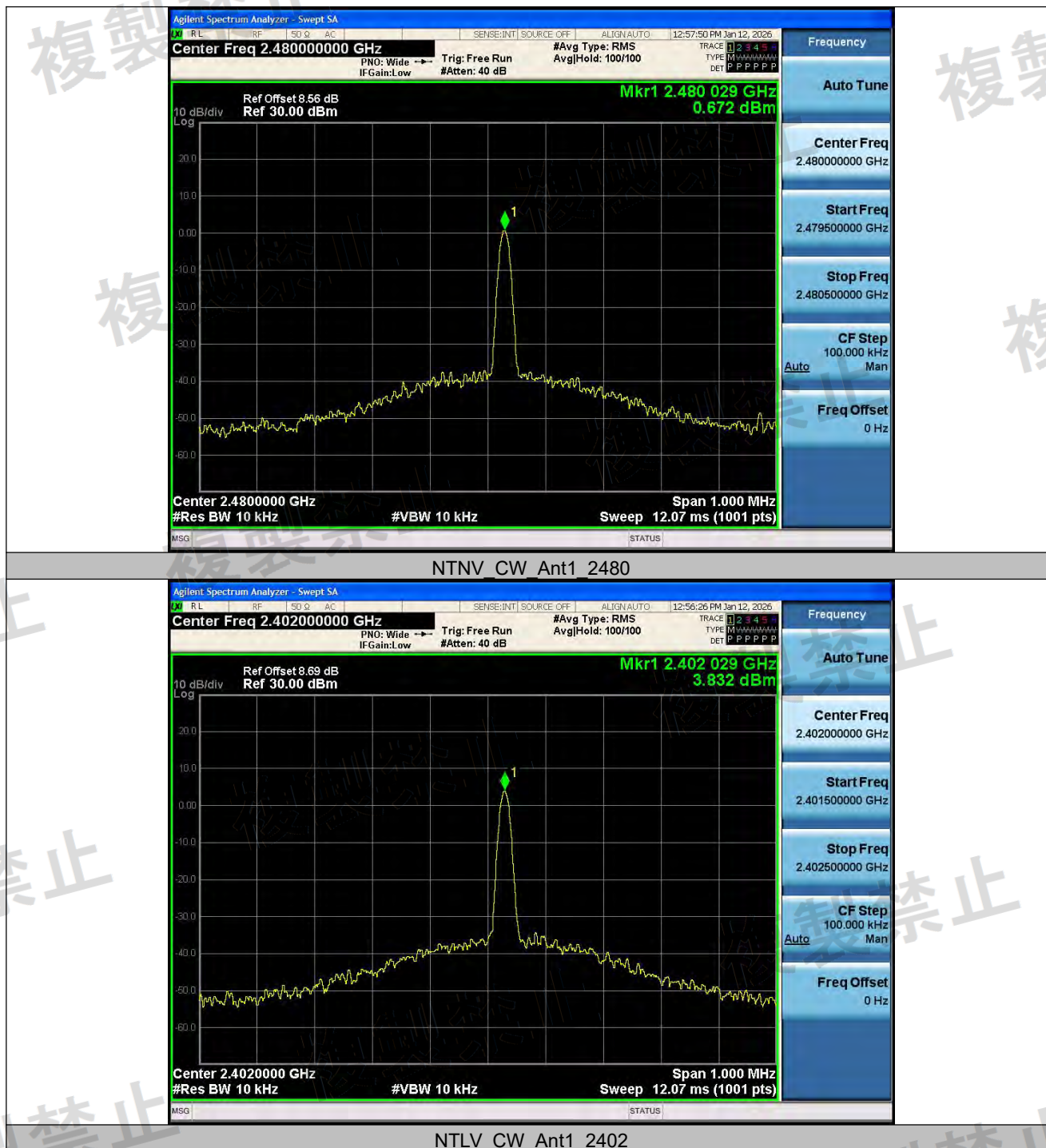


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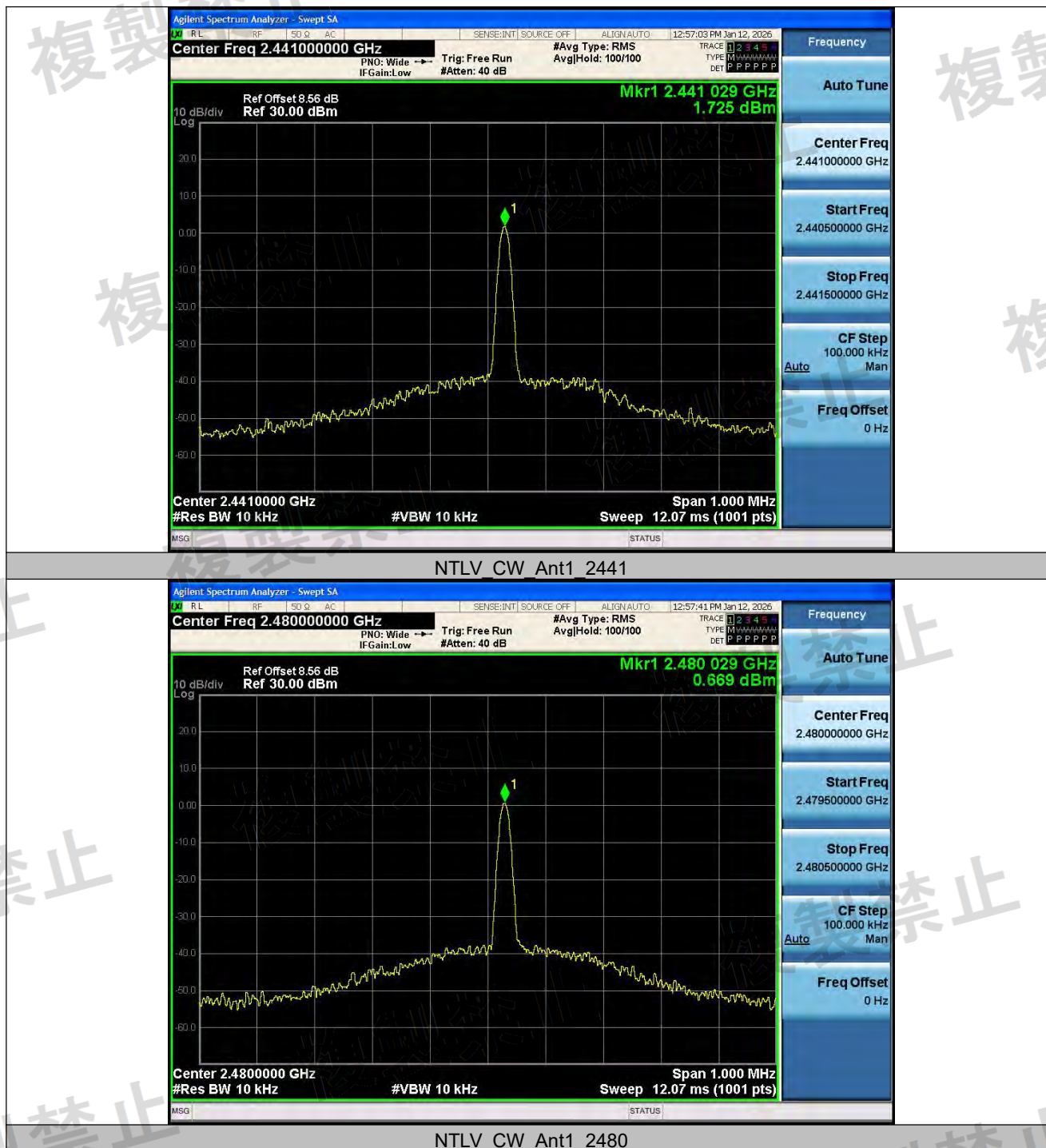


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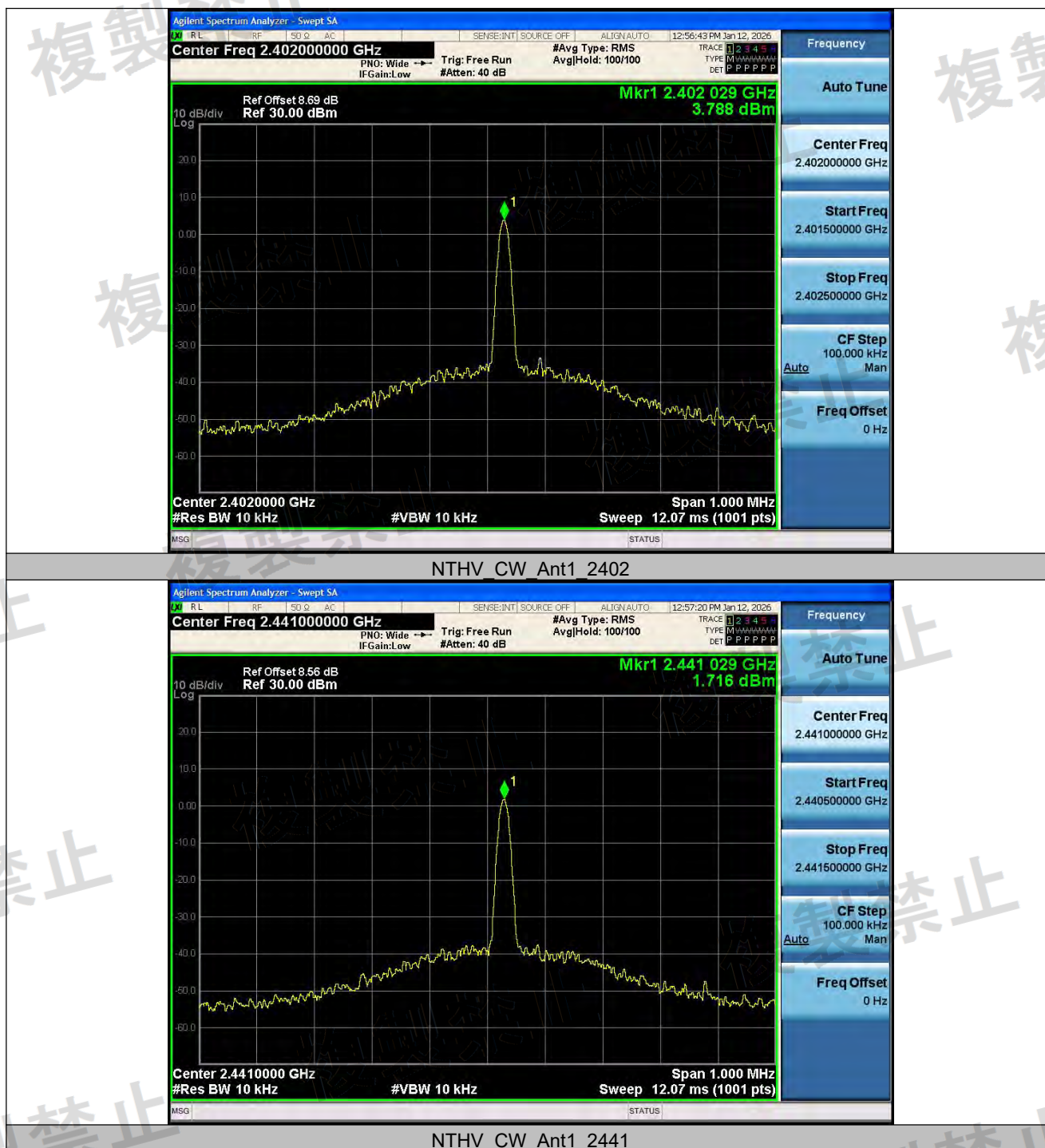
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NTLV CW Ant1 2441

NTLV CW Ant1 2480

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NTHV CW Ant1 2441

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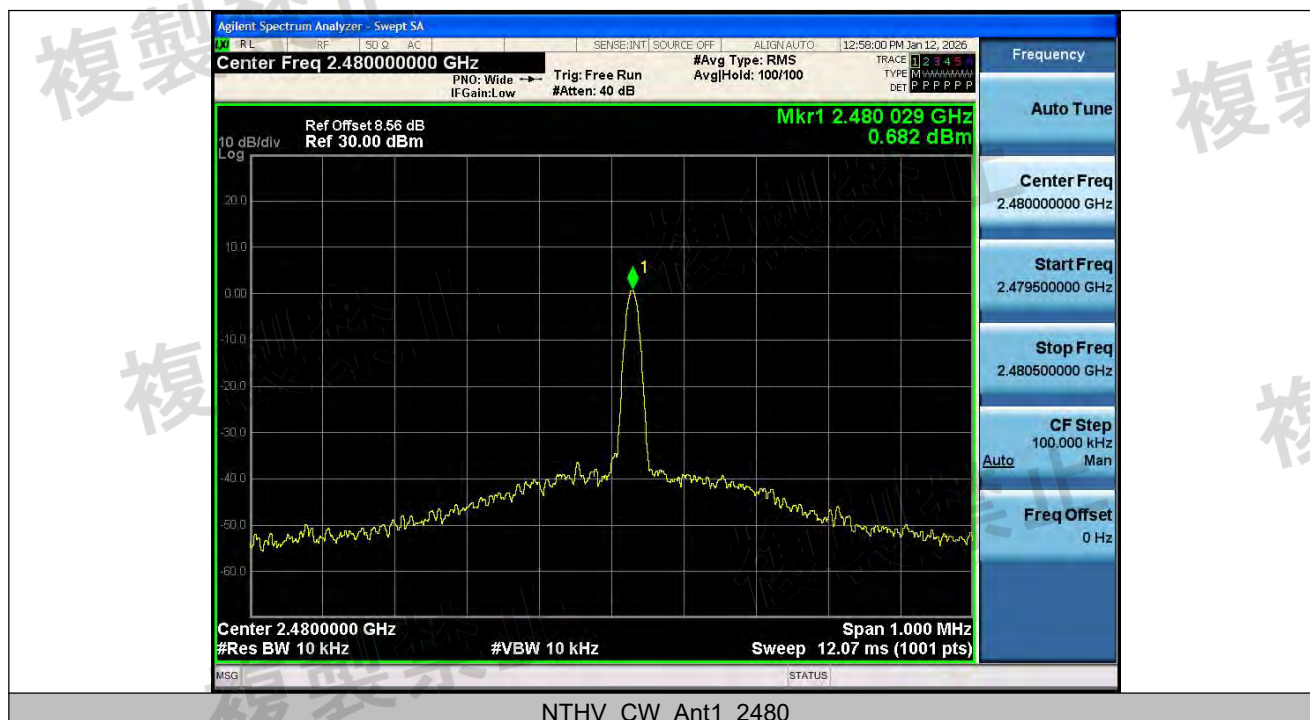
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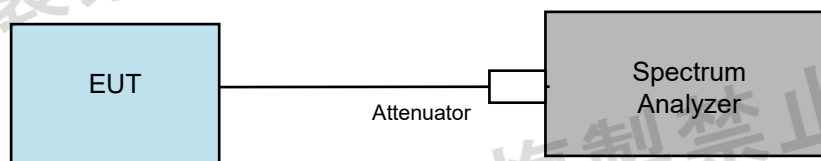
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3.2 Occupied bandwidth measurement (99% power bandwidth)**3.2.1 Limits of occupied bandwidth measurement**

Condition	Occupied bandwidth Limit
Under all test conditions	≤83.5MHz

3.2.2 Test Setup**3.2.3 Deviation of Test Standard**

No deviation.

3.2.4 Test Procedure

Test method according to Clause 5 of Annex No.43 of MIC Notification No.88.

The EUT was placed inside the environmental test chamber. The bandwidth of the fundamental frequency was measured by spectrum analyzer. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

3.2.5 Test Results

Test Condition	Test Mode	Antenna	Channel	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH1	Ant1	Hop_Num_79	78.220	≤83.5	PASS
	DH3	Ant1	Hop_Num_79	78.200	≤83.5	PASS
	DH5	Ant1	Hop_Num_79	78.182	≤83.5	PASS
	2DH1	Ant1	Hop_Num_79	78.379	≤83.5	PASS
	2DH3	Ant1	Hop_Num_79	78.265	≤83.5	PASS
	2DH5	Ant1	Hop_Num_79	78.429	≤83.5	PASS
	3DH1	Ant1	Hop_Num_79	78.228	≤83.5	PASS
	3DH3	Ant1	Hop_Num_79	78.327	≤83.5	PASS
	3DH5	Ant1	Hop_Num_79	78.415	≤83.5	PASS
NTLV	DH1	Ant1	Hop_Num_79	78.174	≤83.5	PASS
	DH3	Ant1	Hop_Num_79	78.209	≤83.5	PASS
	DH5	Ant1	Hop_Num_79	78.215	≤83.5	PASS
	2DH1	Ant1	Hop_Num_79	78.345	≤83.5	PASS
	2DH3	Ant1	Hop_Num_79	78.423	≤83.5	PASS
	2DH5	Ant1	Hop_Num_79	78.434	≤83.5	PASS
	3DH1	Ant1	Hop_Num_79	78.381	≤83.5	PASS
	3DH3	Ant1	Hop_Num_79	78.357	≤83.5	PASS
	3DH5	Ant1	Hop_Num_79	78.428	≤83.5	PASS
NTHV	DH1	Ant1	Hop_Num_79	78.178	≤83.5	PASS
	DH3	Ant1	Hop_Num_79	78.211	≤83.5	PASS
	DH5	Ant1	Hop_Num_79	78.208	≤83.5	PASS
	2DH1	Ant1	Hop_Num_79	78.218	≤83.5	PASS
	2DH3	Ant1	Hop_Num_79	78.372	≤83.5	PASS
	2DH5	Ant1	Hop_Num_79	78.406	≤83.5	PASS
	3DH1	Ant1	Hop_Num_79	78.409	≤83.5	PASS
	3DH3	Ant1	Hop_Num_79	78.363	≤83.5	PASS
	3DH5	Ant1	Hop_Num_79	78.388	≤83.5	PASS

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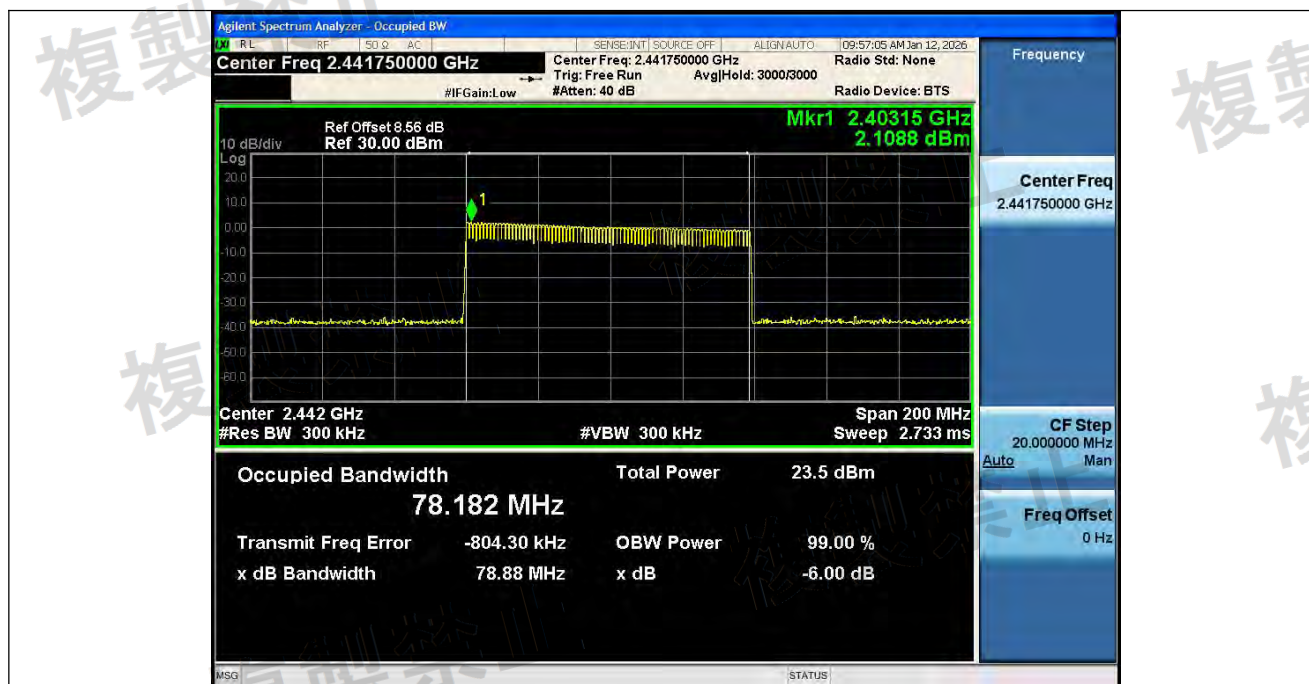


NTVN DH1 Ant1 Hop Num 79

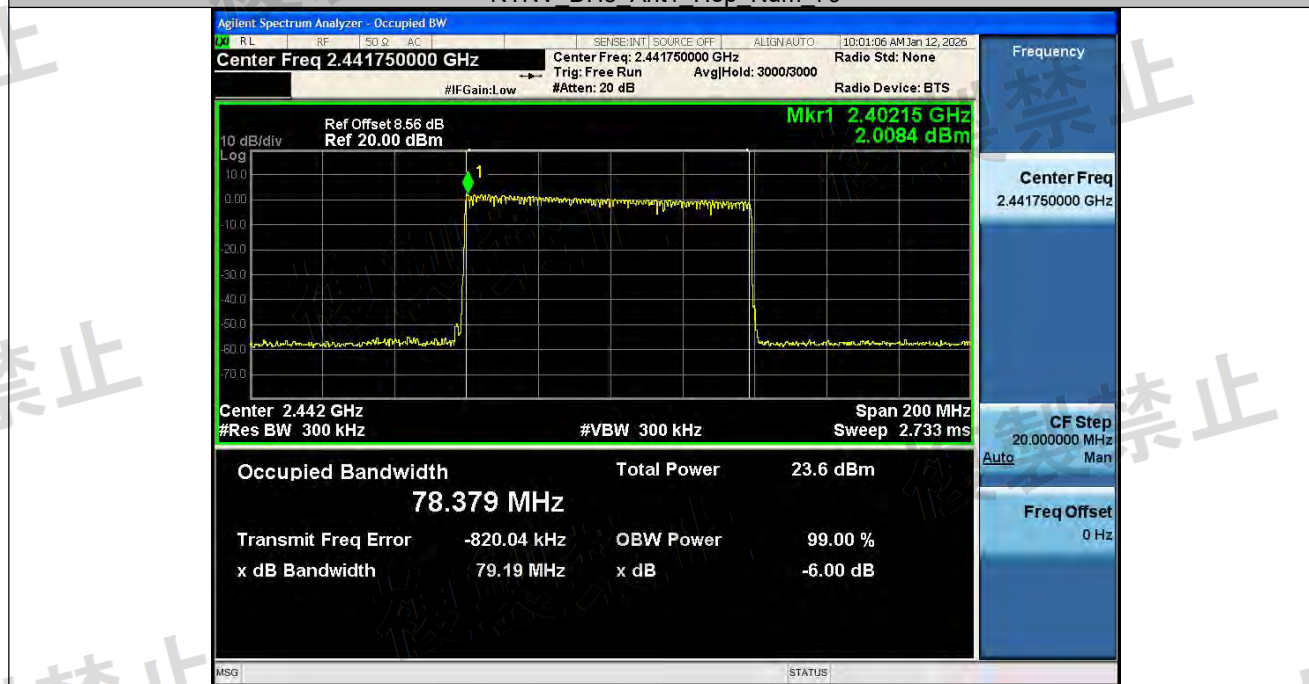


NTVN DH3 Ant1 Hop Num 79

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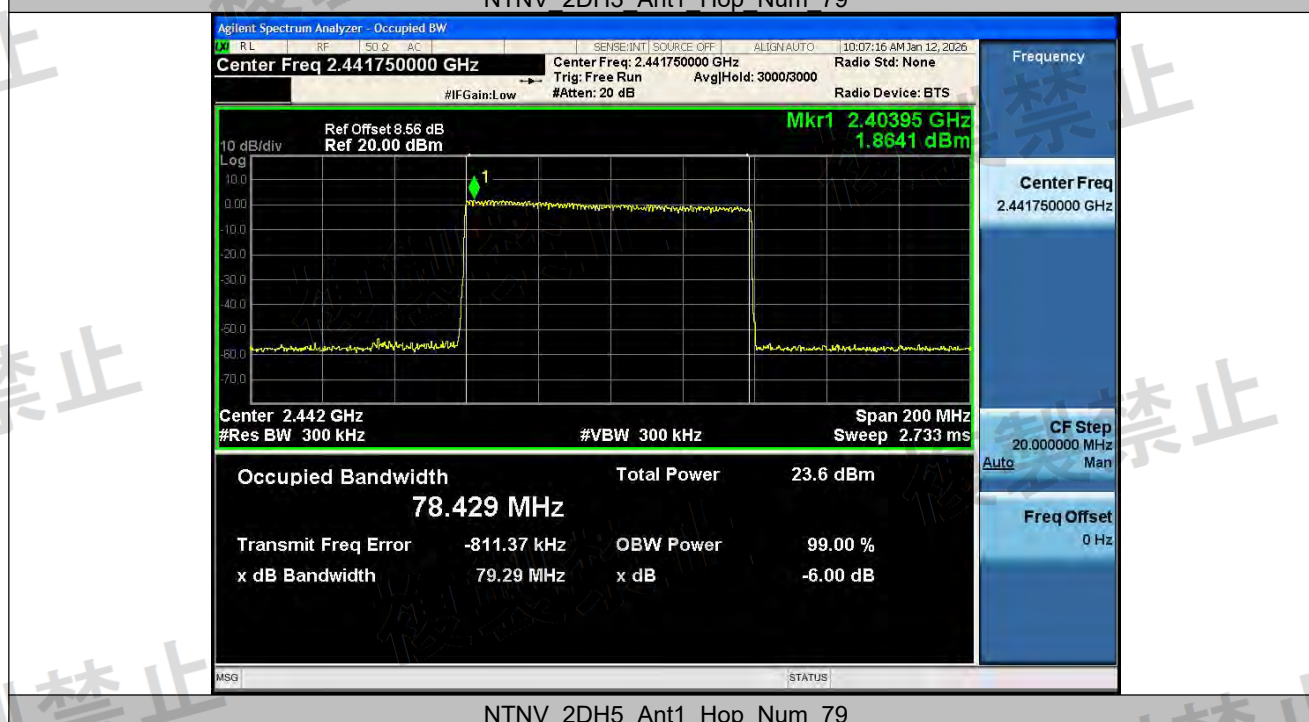
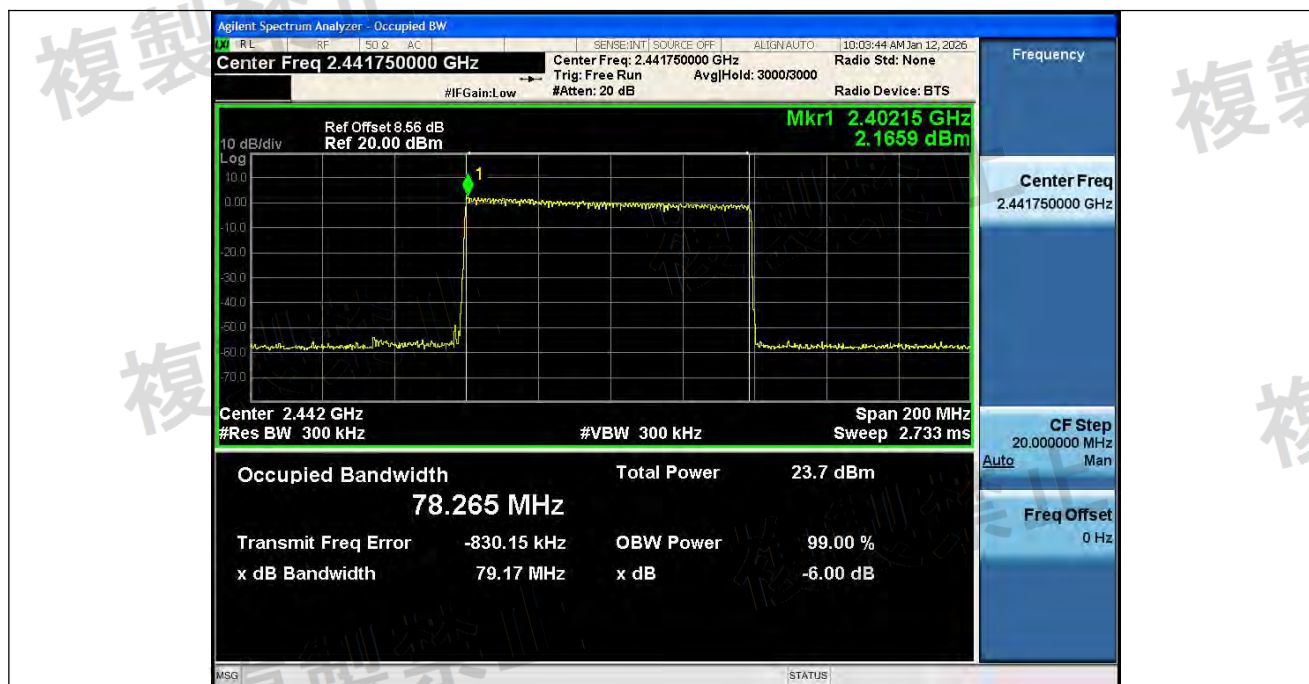


NTVN DH5 Ant1 Hop Num 79



NTVN 2DH1 Ant1 Hop Num 79

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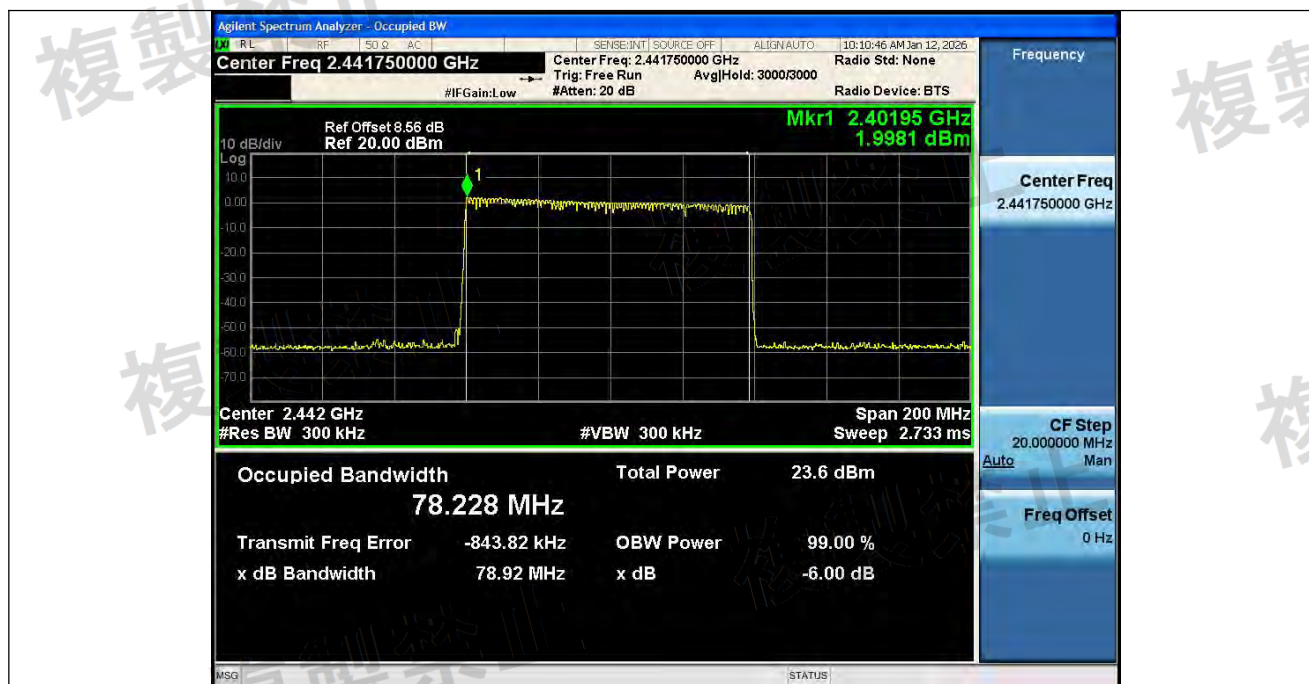
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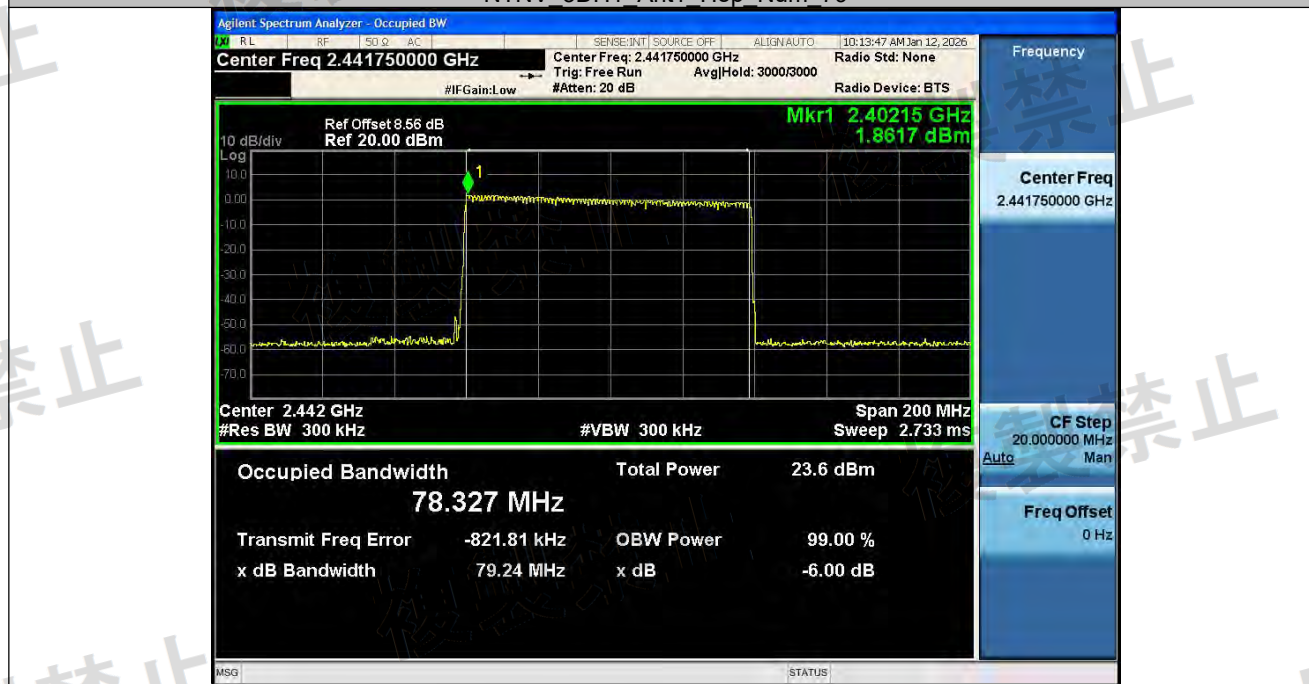
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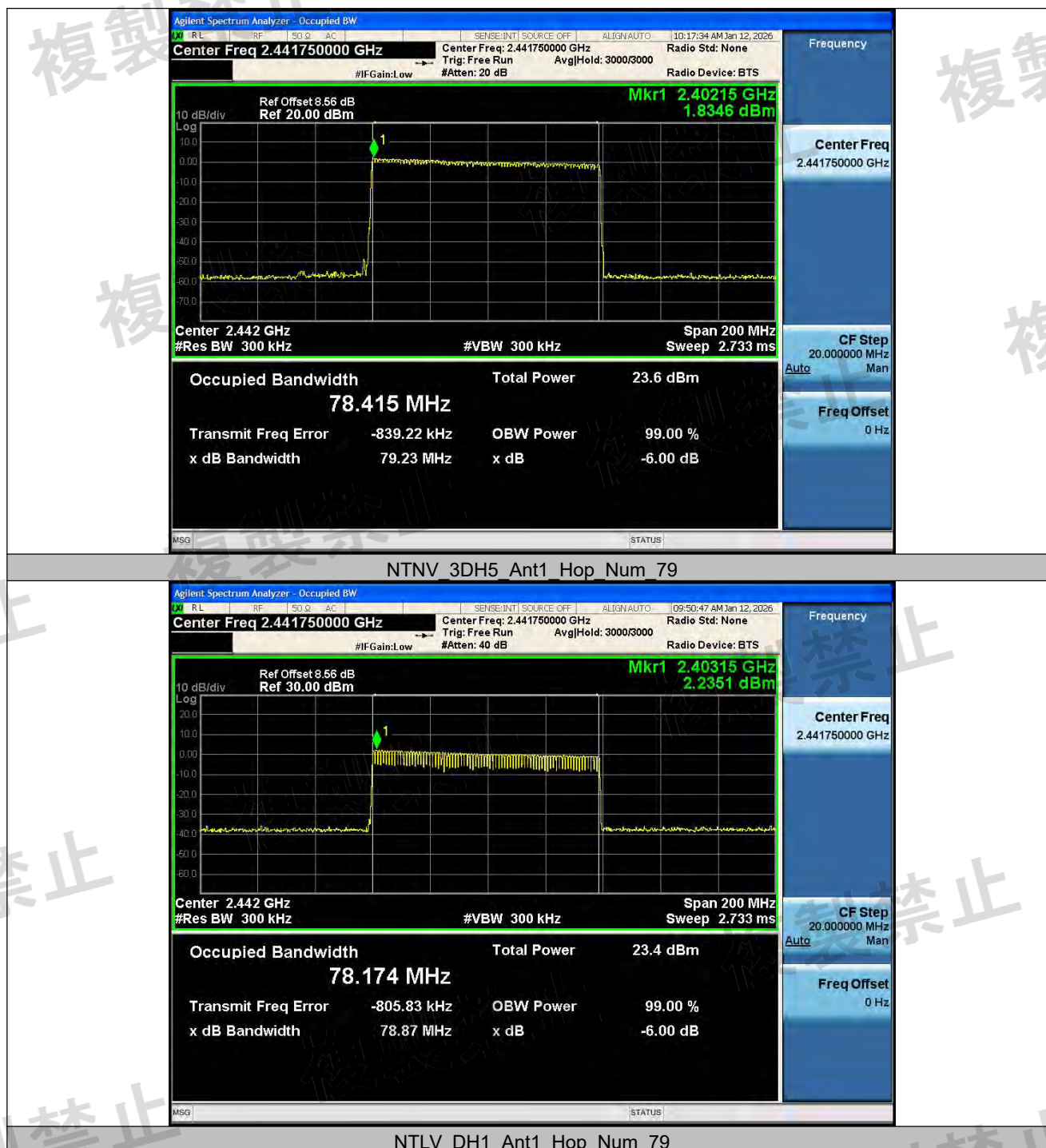


NTNV 3DH1 Ant1 Hop Num 79

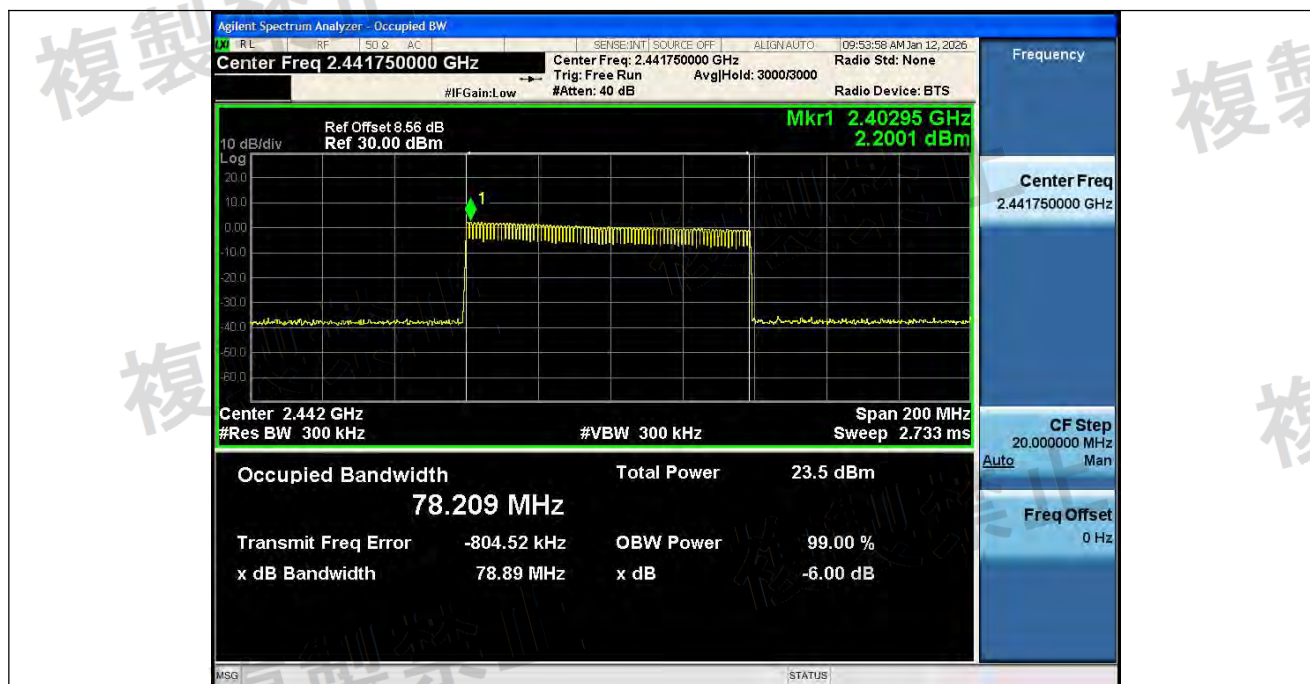


NTNV 3DH3 Ant1 Hop Num 79

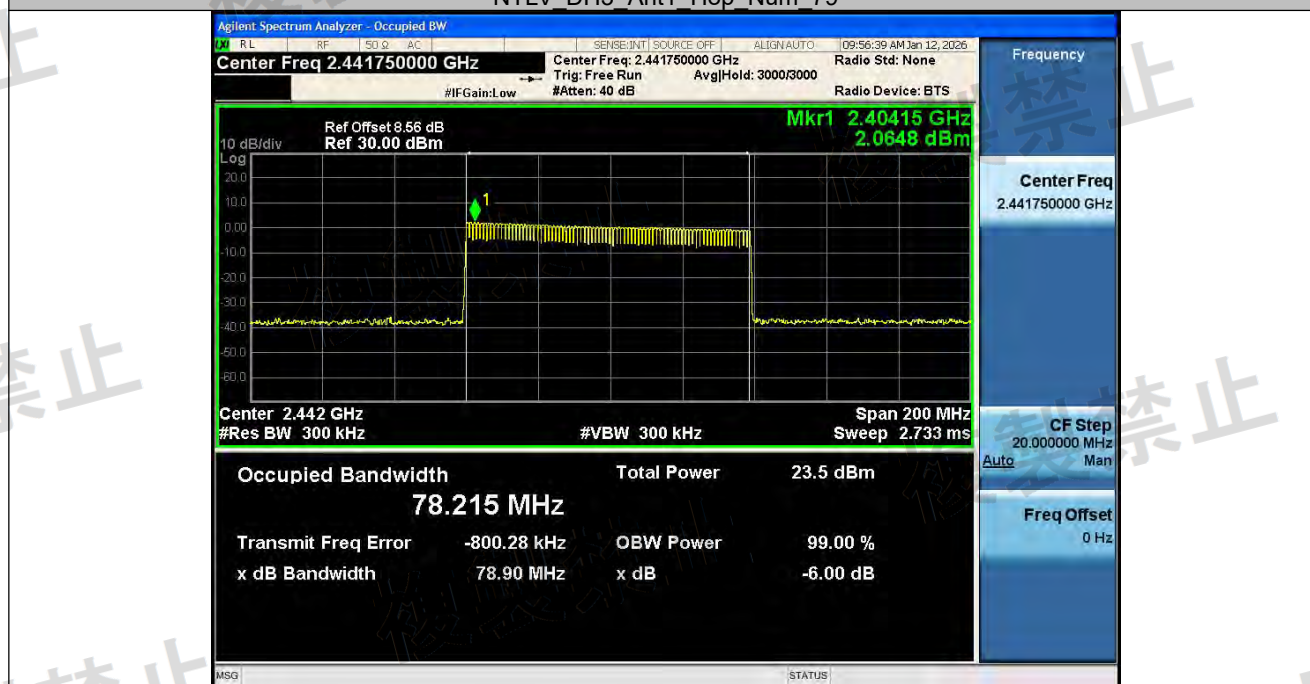
Test Report No.: 25122701-1-RF-JP-01



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NTLV DH3 Ant1 Hop Num 79



NTLV DH5 Ant1 Hop Num 79

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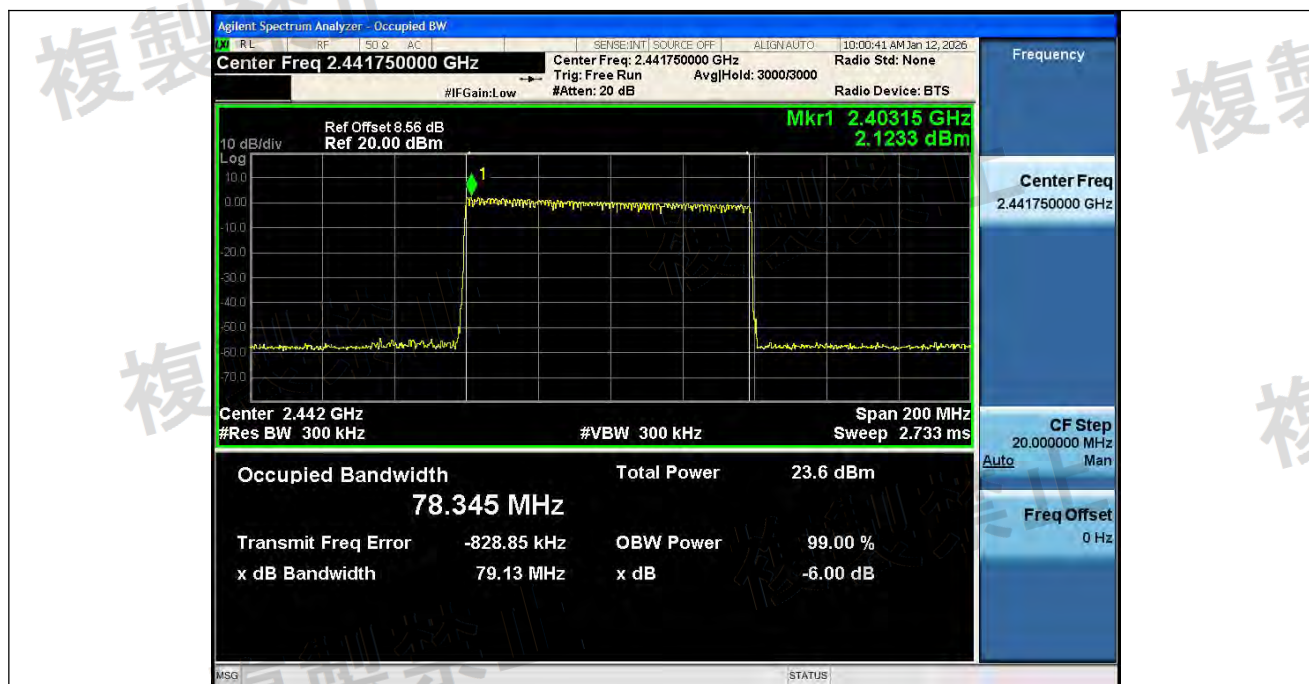
Web.: [www.lyns-tci.com](#)

E-Mail: [service-hs@lyns-tci.com](#)

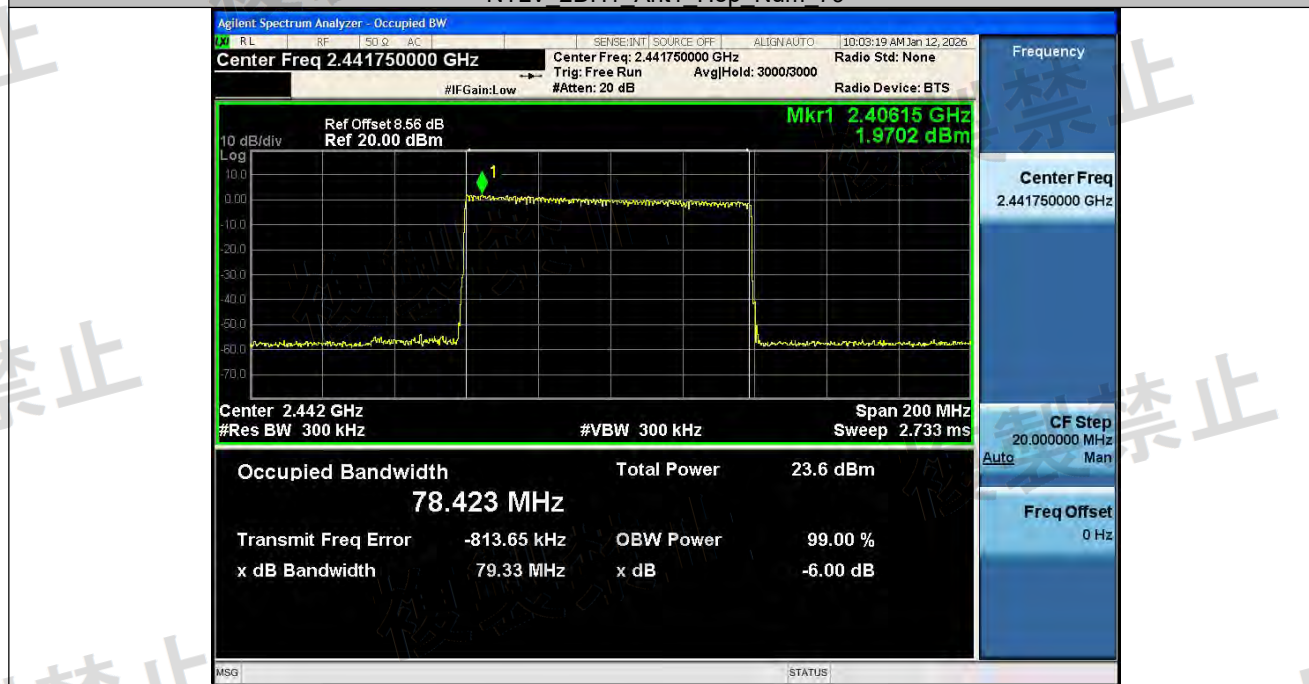
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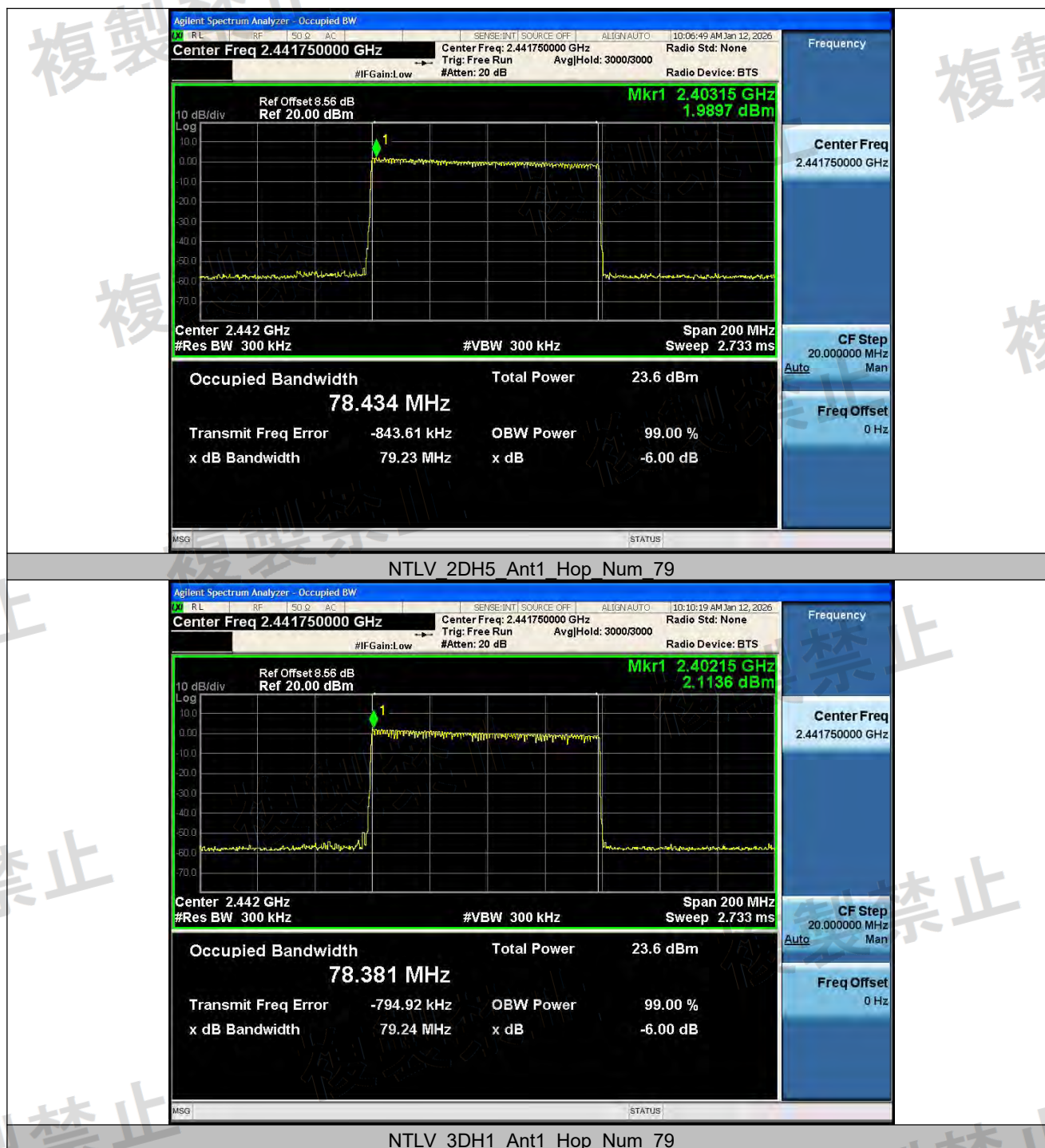


NTLV 2DH1 Ant1 Hop Num 79

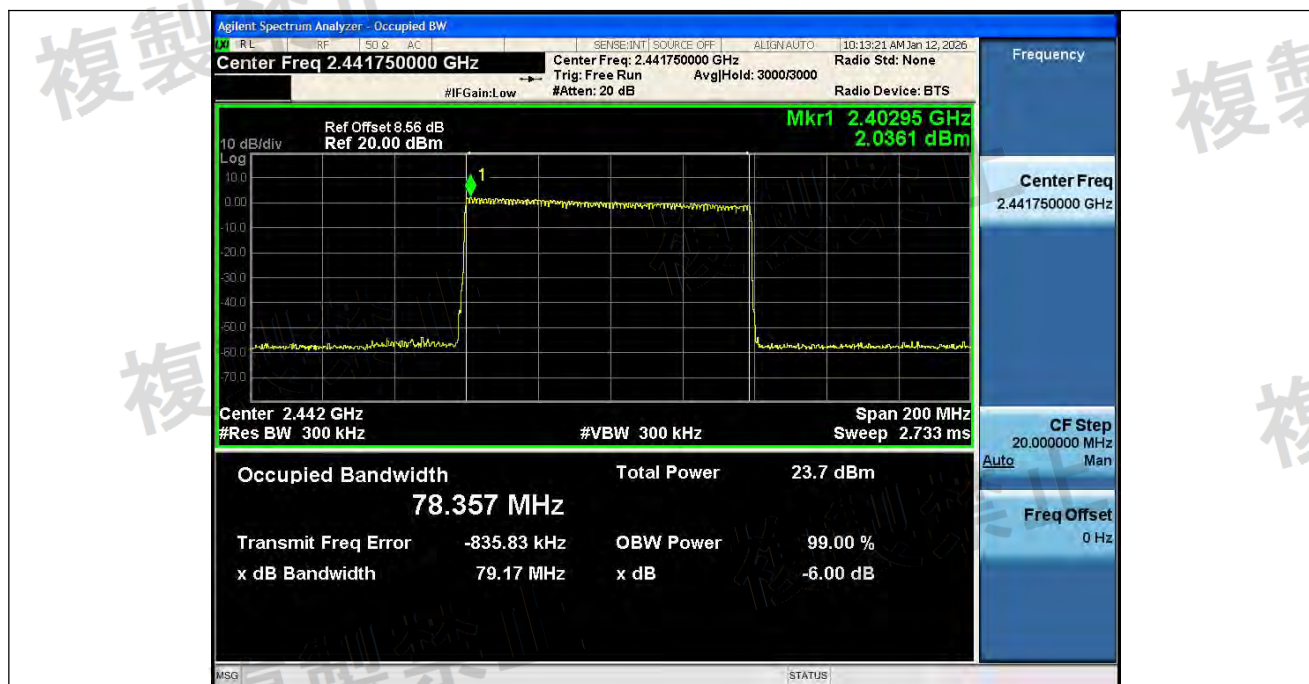


NTLV 2DH3 Ant1 Hop Num 79

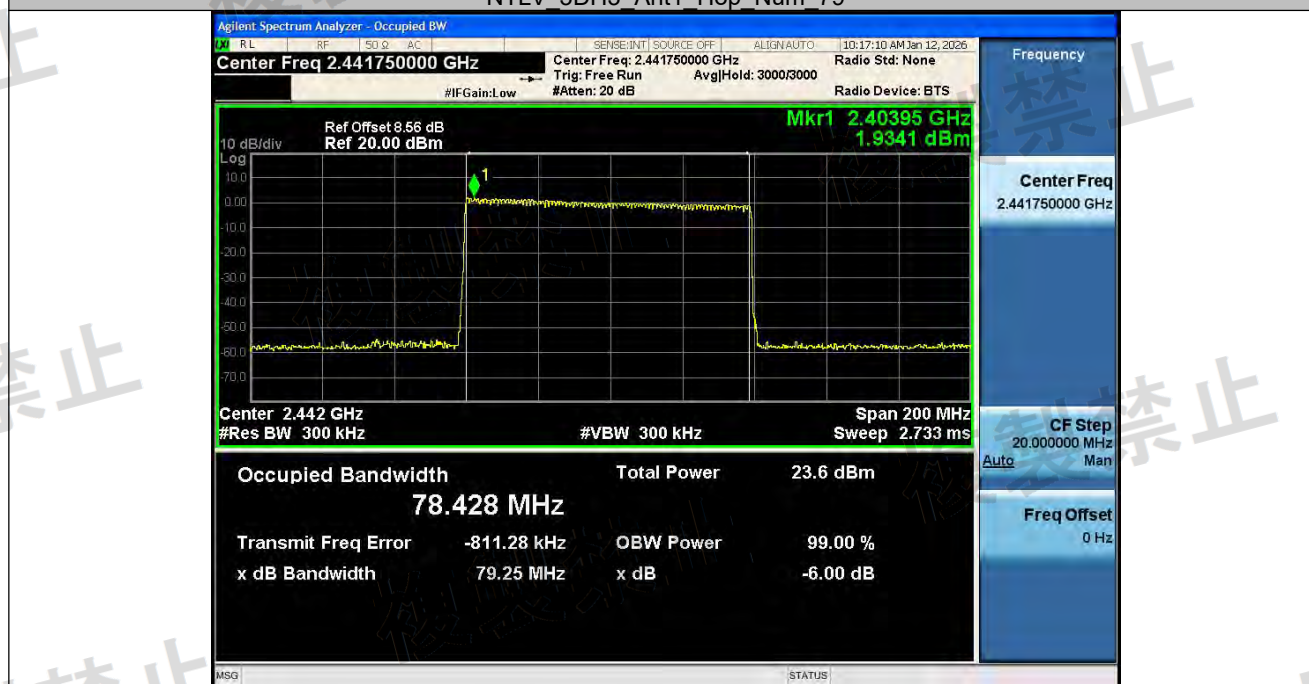
Test Report No.: 25122701-1-RF-JP-01



Test Report No.: 25122701-1-RF-JP-01

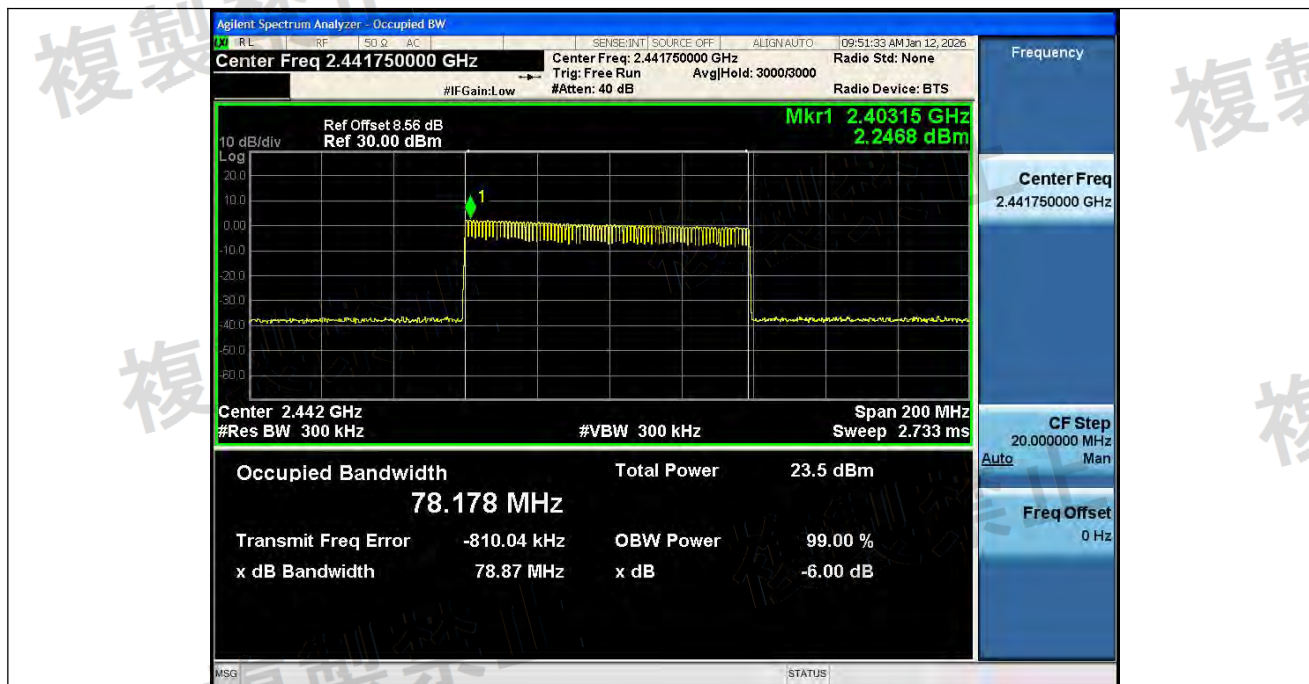


NTLV 3DH3 Ant1 Hop Num 79

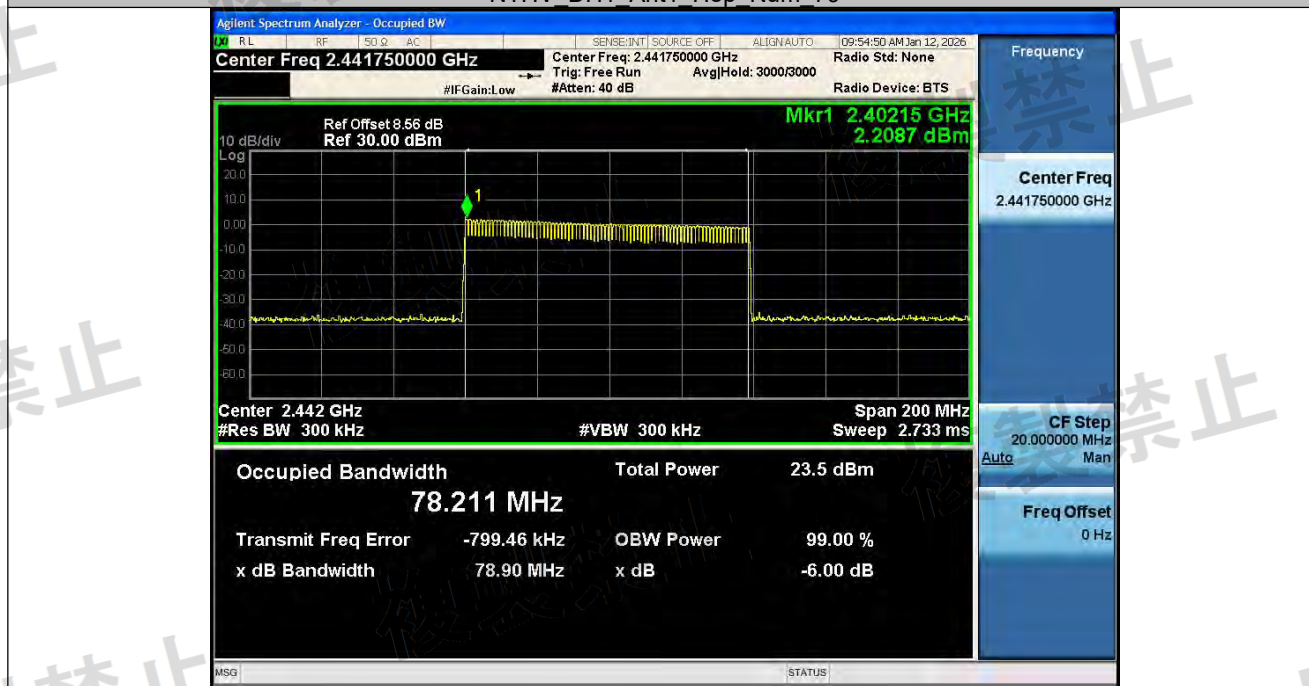


NTLV 3DH5 Ant1 Hop Num 79

Test Report No.: 25122701-1-RF-JP-01

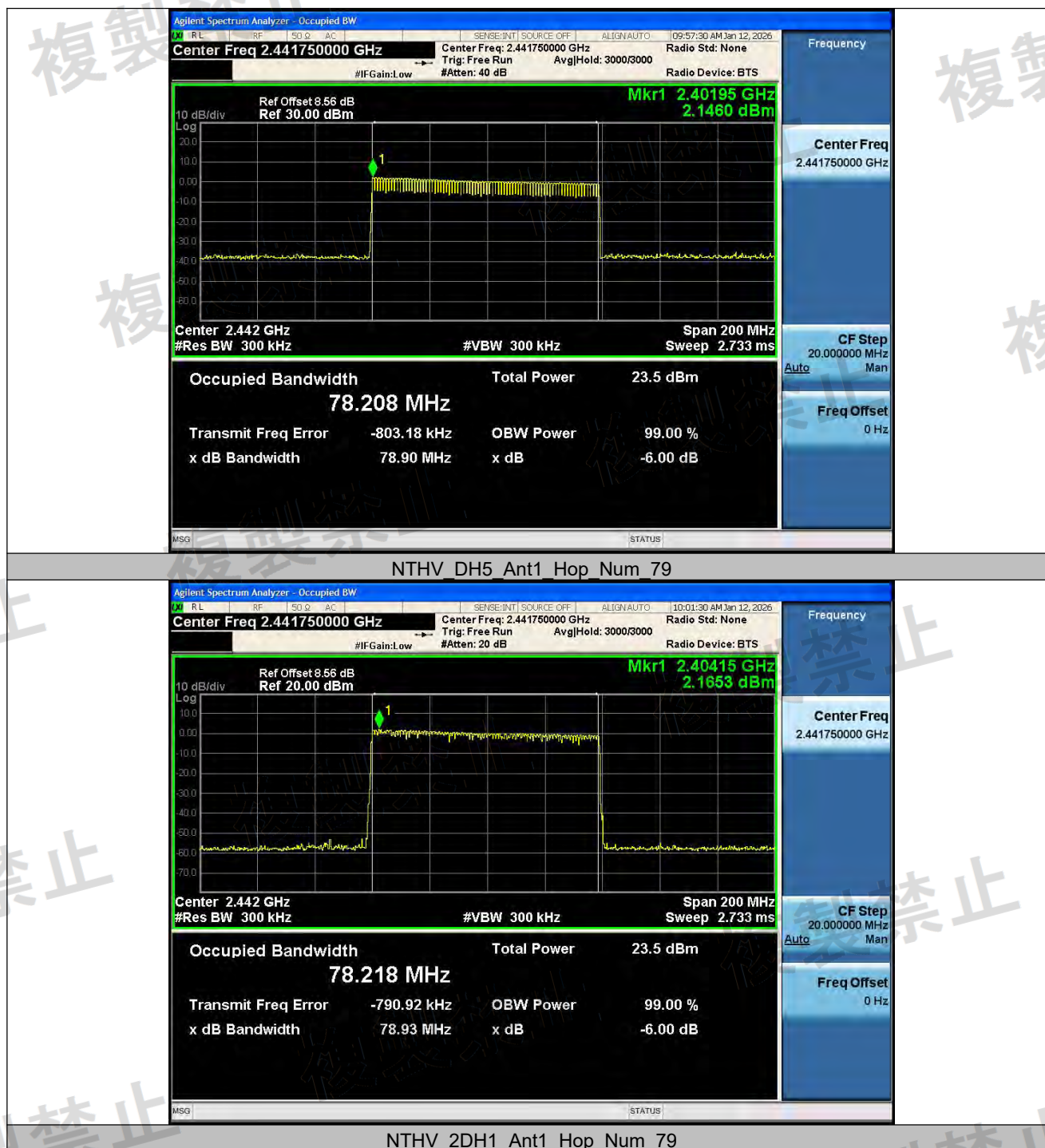


NTHV DH1 Ant1 Hop Num 79

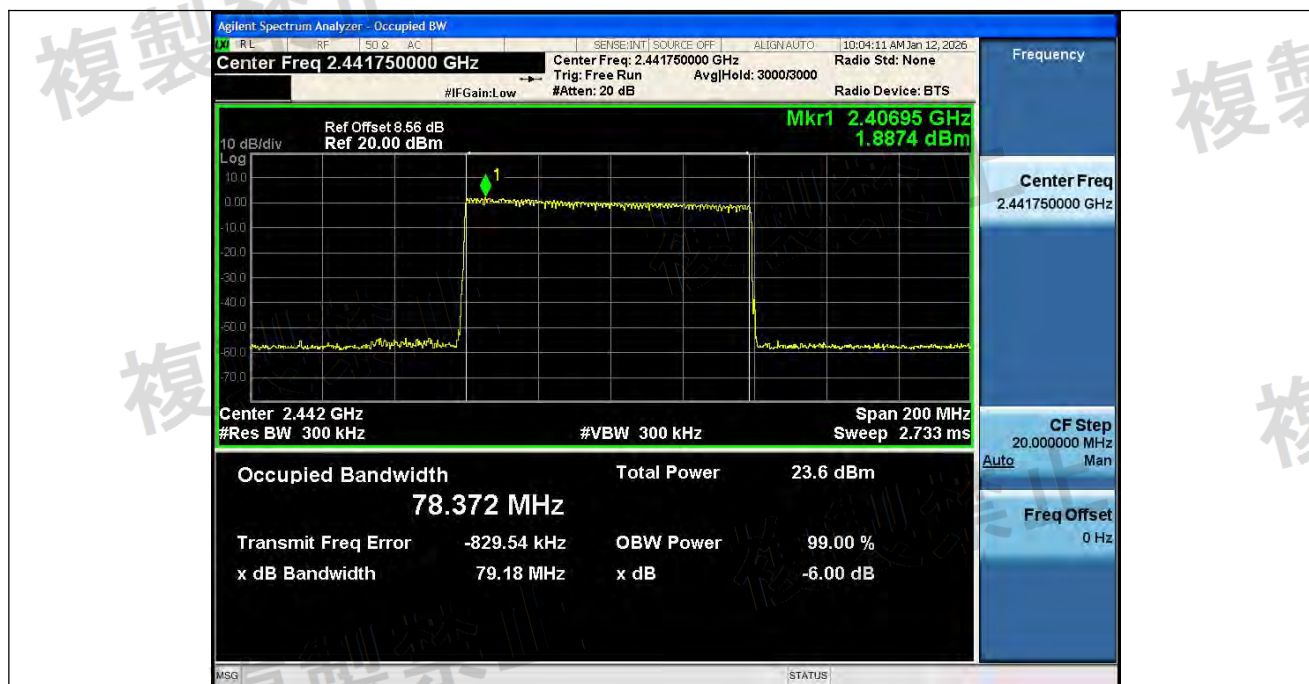


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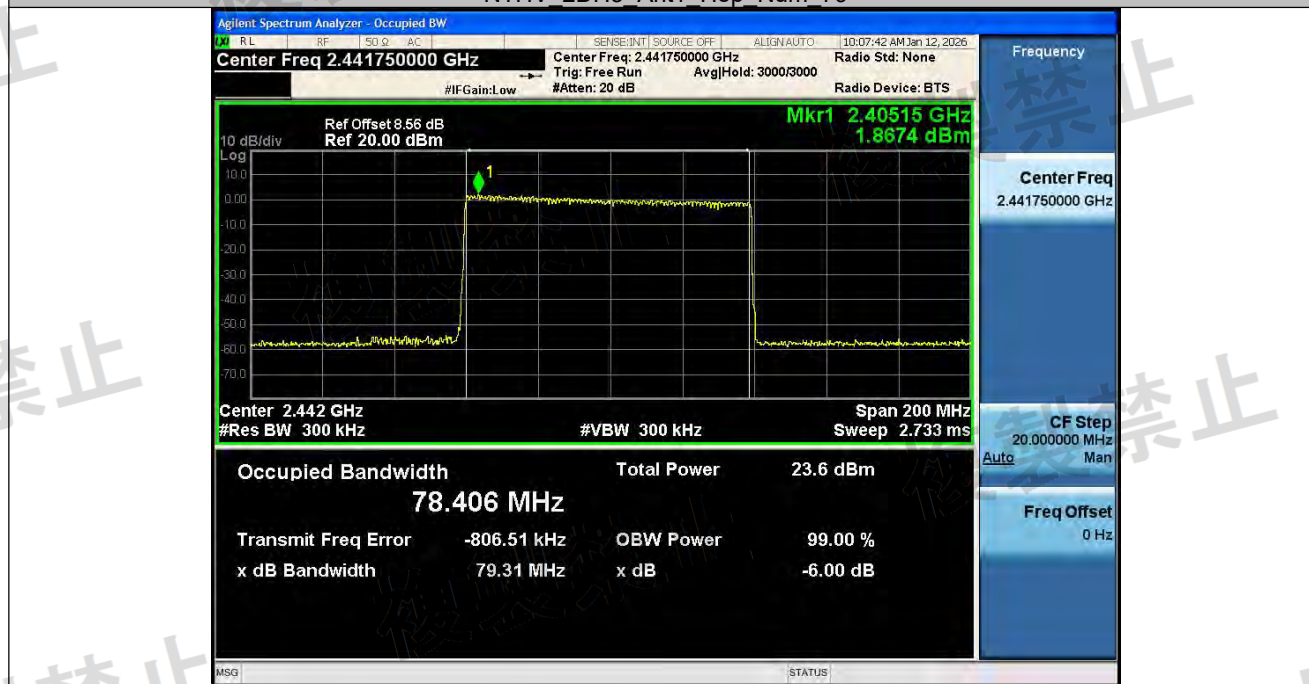
Test Report No.: 25122701-1-RF-JP-01



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NTHV 2DH3 Ant1 Hop Num 79



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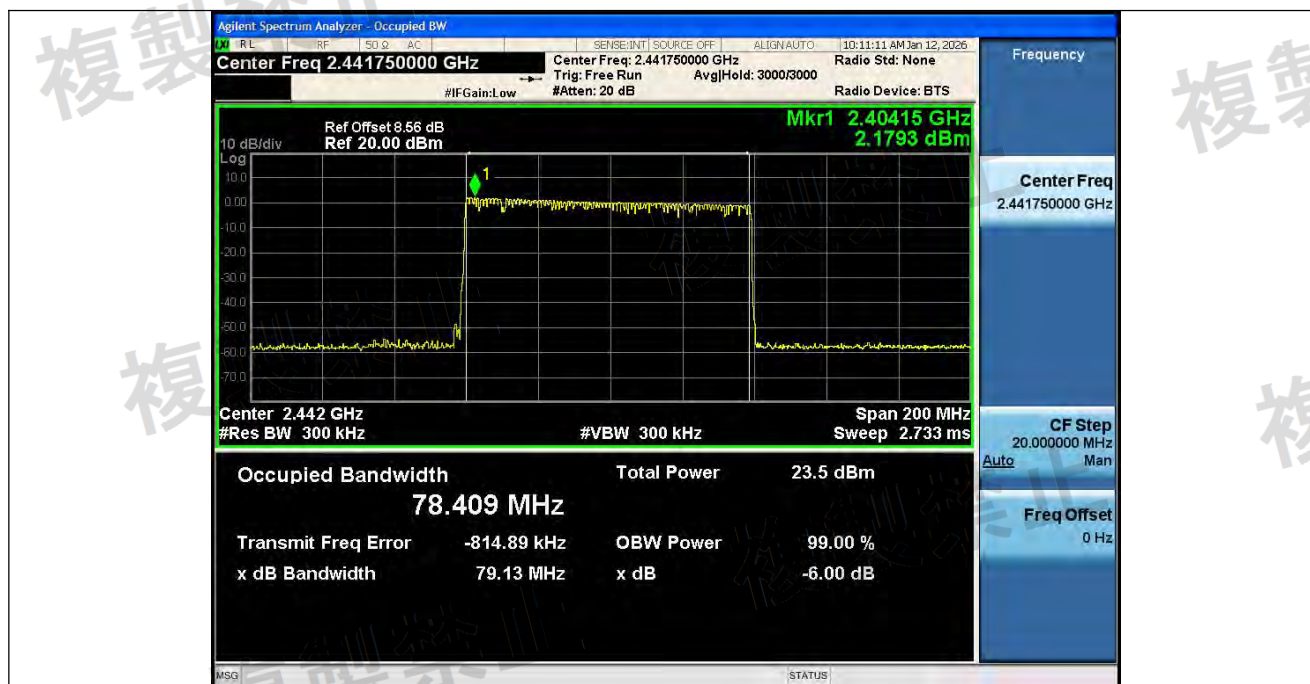
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E-Mail: [service-hs@lyns-tci.com](#)

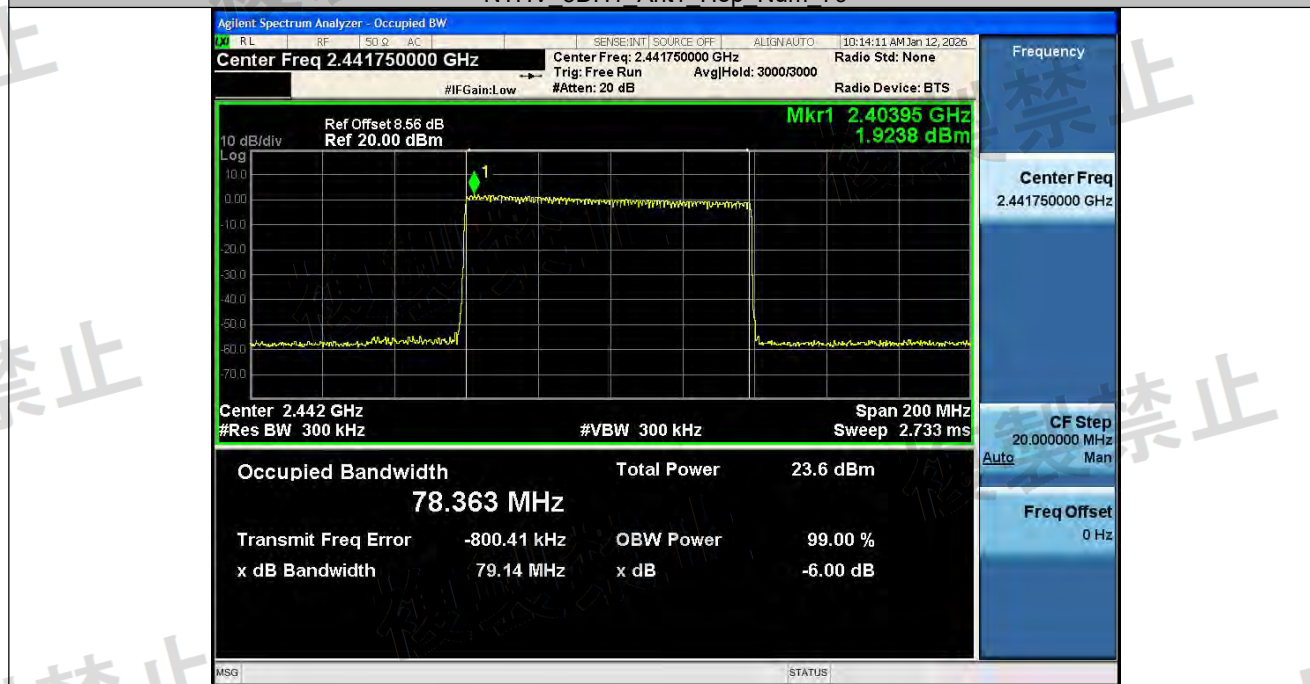
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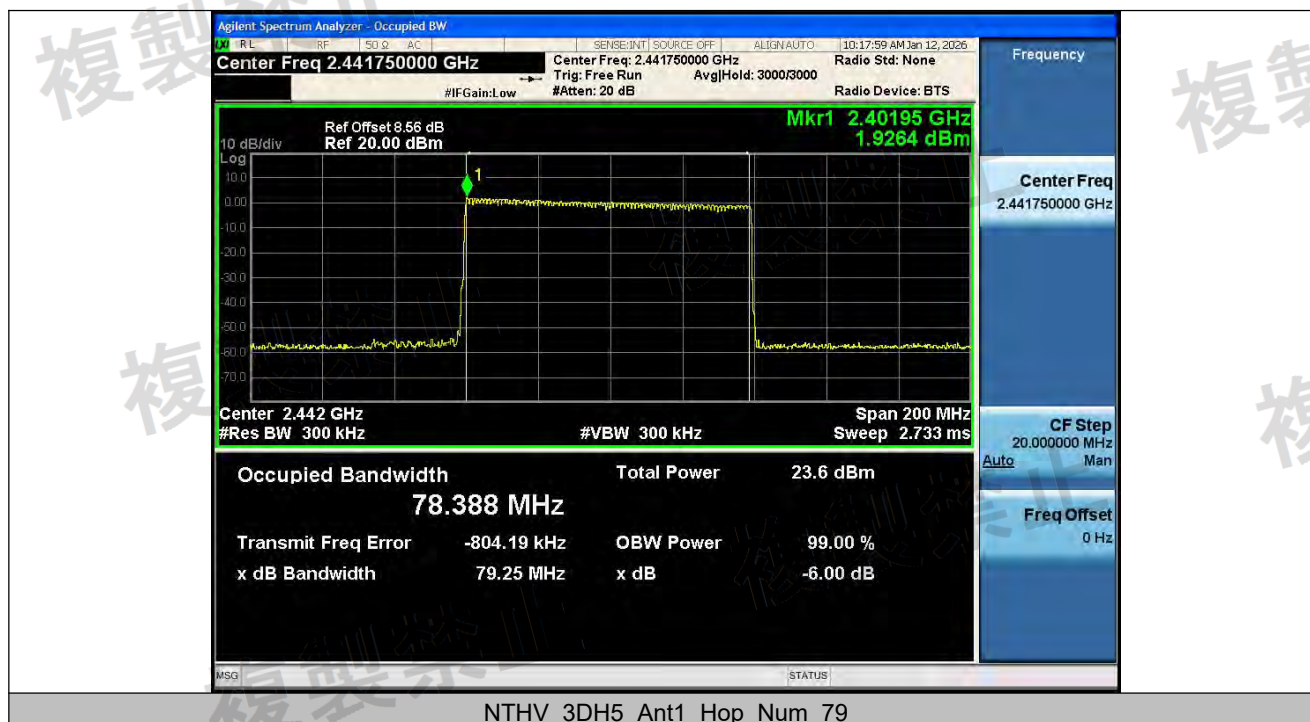


NTHV 3DH1 Ant1 Hop Num 79



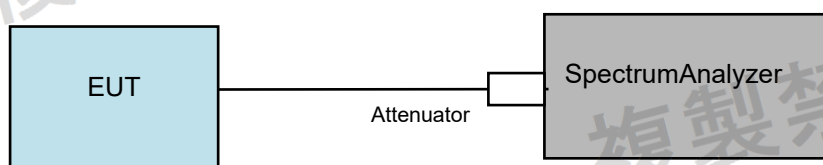
NTHV 3DH3 Ant1 Hop Num 79

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3.3 Spreading bandwidth measurement (90% power bandwidth)**3.3.1 Limits of spreading bandwidth and spreading factor**

Condition	Limit
☒ Adaptive frequency hopping systems	The minimum spreading bandwidth shall be 500 kHz.

3.3.2 Test Procedure**3.3.3 Deviation from Test Standard**

No deviation.

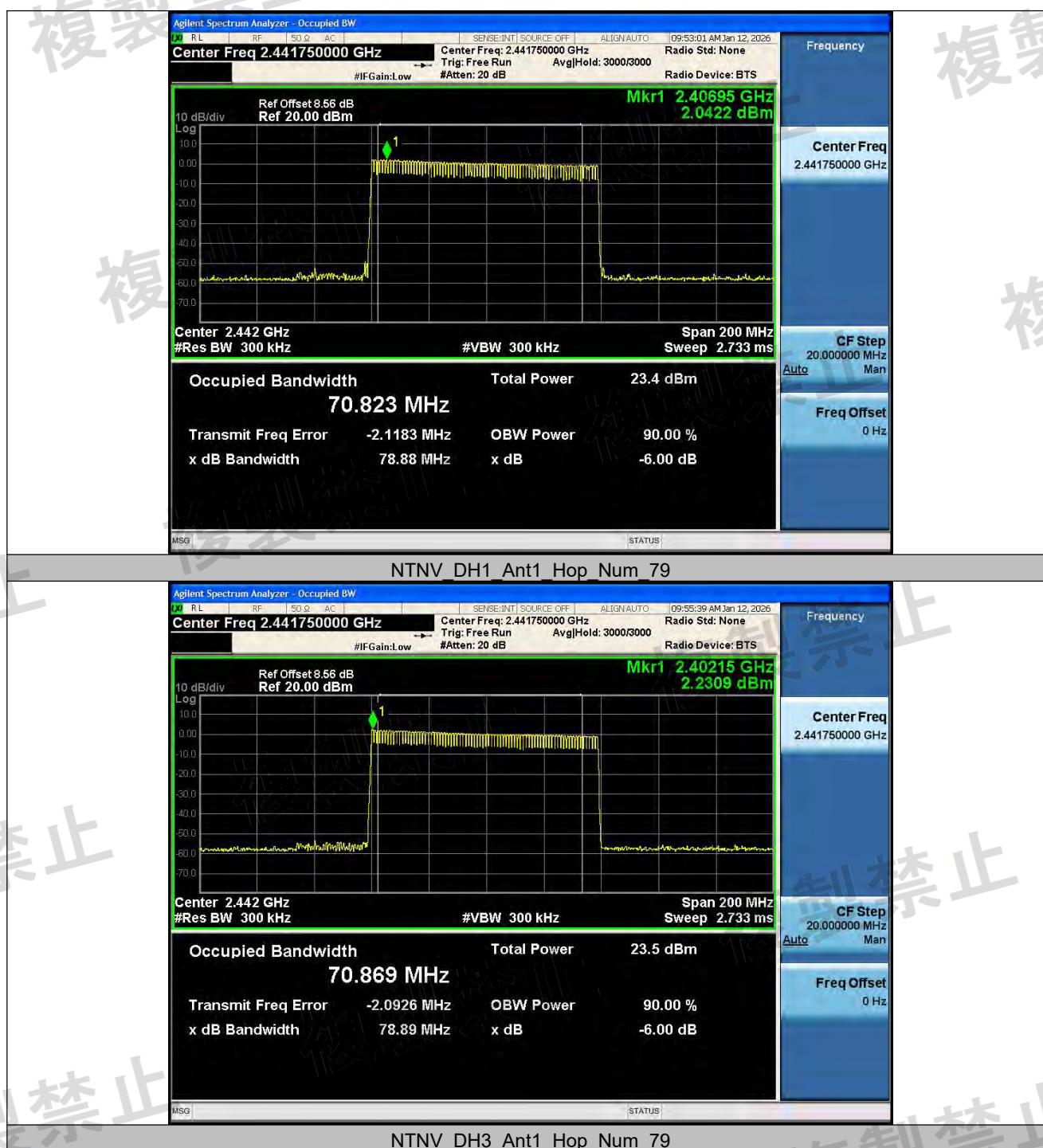
3.3.4 Test Procedure

Test method according to Clause 5 of Annex No.43 of MIC Notification No.88.

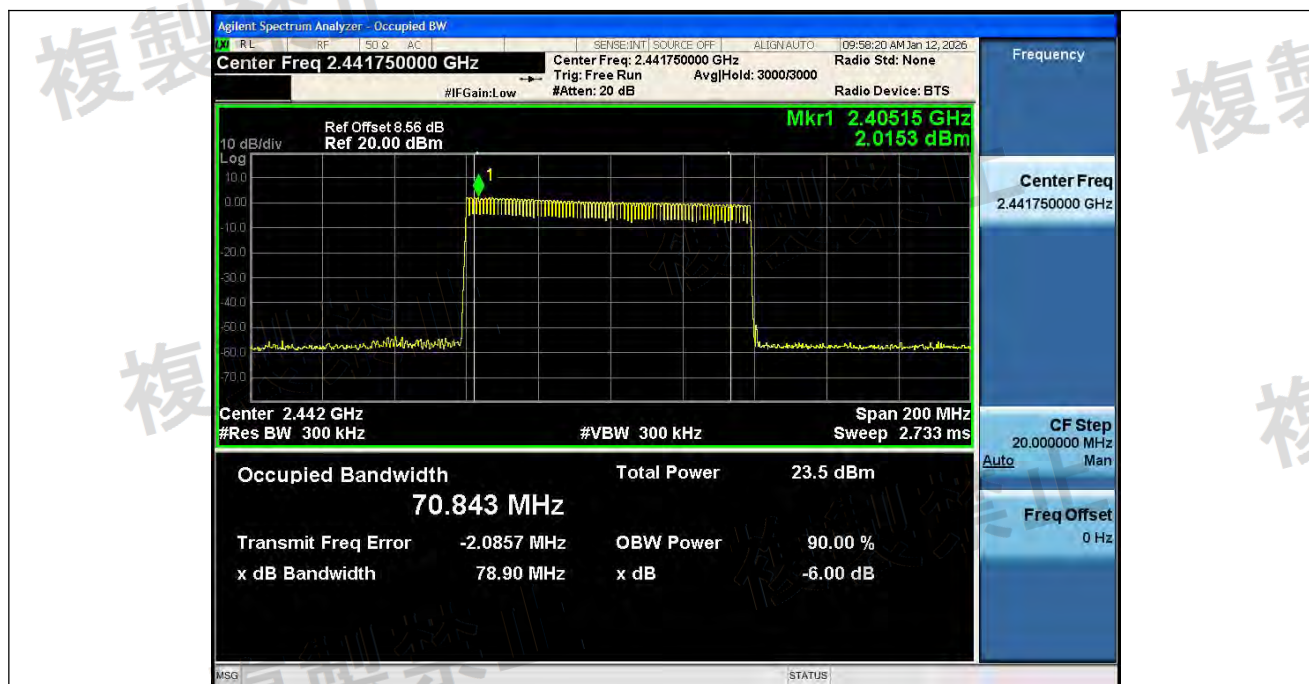
The EUT was placed inside the environmental test chamber. The bandwidth of the fundamental frequency was measured by spectrum analyzer. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 5 % of the total mean power of a given emission.

3.3.5 Test Results

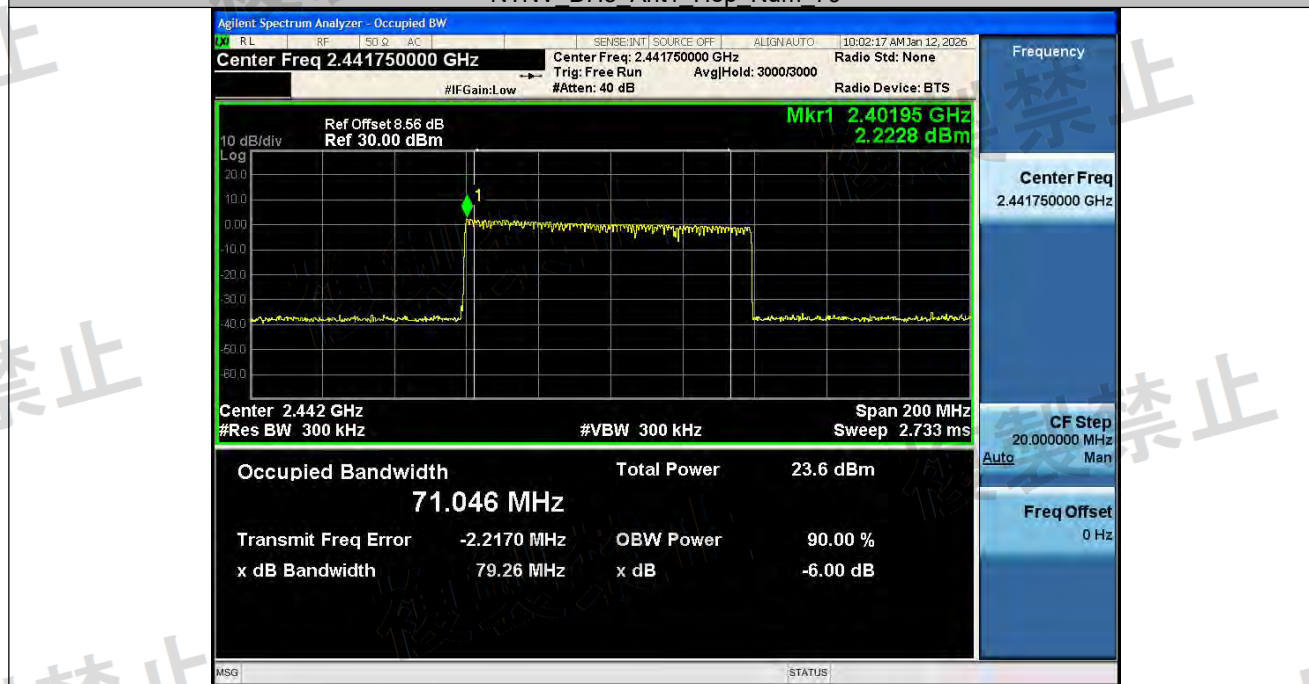
Test Condition	Test Mode	Antenna	Channel	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH1	Ant1	Hop_Num_79	70.823	≥0.5	PASS
	DH3	Ant1	Hop_Num_79	70.869	≥0.5	PASS
	DH5	Ant1	Hop_Num_79	70.843	≥0.5	PASS
	2DH1	Ant1	Hop_Num_79	71.046	≥0.5	PASS
	2DH3	Ant1	Hop_Num_79	70.878	≥0.5	PASS
	2DH5	Ant1	Hop_Num_79	71.106	≥0.5	PASS
	3DH1	Ant1	Hop_Num_79	70.997	≥0.5	PASS
	3DH3	Ant1	Hop_Num_79	70.946	≥0.5	PASS
	3DH5	Ant1	Hop_Num_79	71.001	≥0.5	PASS
NTLV	DH1	Ant1	Hop_Num_79	70.840	≥0.5	PASS
	DH3	Ant1	Hop_Num_79	70.811	≥0.5	PASS
	DH5	Ant1	Hop_Num_79	70.827	≥0.5	PASS
	2DH1	Ant1	Hop_Num_79	70.759	≥0.5	PASS
	2DH3	Ant1	Hop_Num_79	70.925	≥0.5	PASS
	2DH5	Ant1	Hop_Num_79	71.115	≥0.5	PASS
	3DH1	Ant1	Hop_Num_79	70.764	≥0.5	PASS
	3DH3	Ant1	Hop_Num_79	70.905	≥0.5	PASS
	3DH5	Ant1	Hop_Num_79	70.904	≥0.5	PASS
NTHV	DH1	Ant1	Hop_Num_79	70.901	≥0.5	PASS
	DH3	Ant1	Hop_Num_79	70.834	≥0.5	PASS
	DH5	Ant1	Hop_Num_79	70.880	≥0.5	PASS
	2DH1	Ant1	Hop_Num_79	70.951	≥0.5	PASS
	2DH3	Ant1	Hop_Num_79	71.048	≥0.5	PASS
	2DH5	Ant1	Hop_Num_79	70.987	≥0.5	PASS
	3DH1	Ant1	Hop_Num_79	70.799	≥0.5	PASS
	3DH3	Ant1	Hop_Num_79	71.078	≥0.5	PASS
	3DH5	Ant1	Hop_Num_79	71.046	≥0.5	PASS



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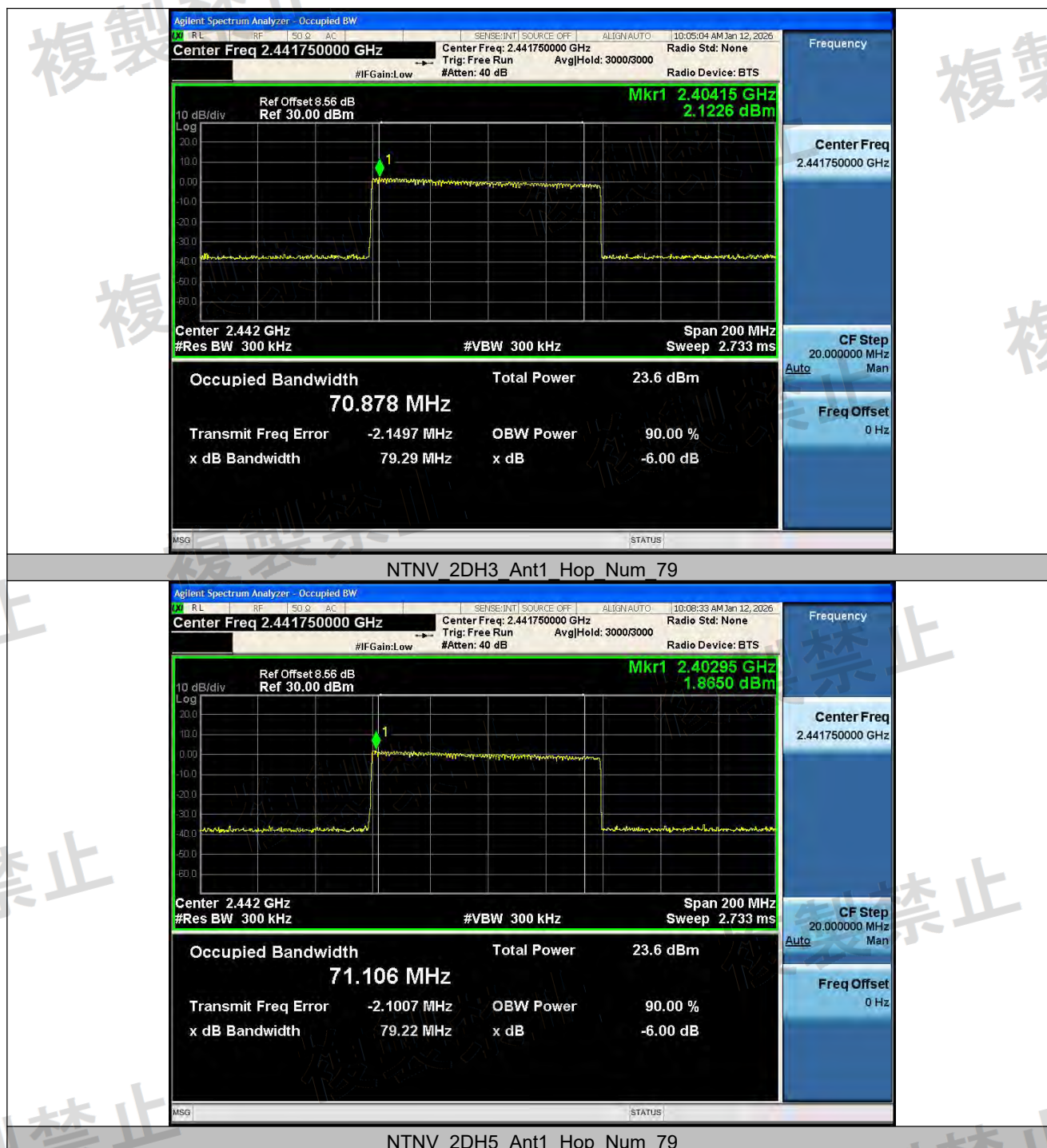


NTNV DH5 Ant1 Hop Num 79

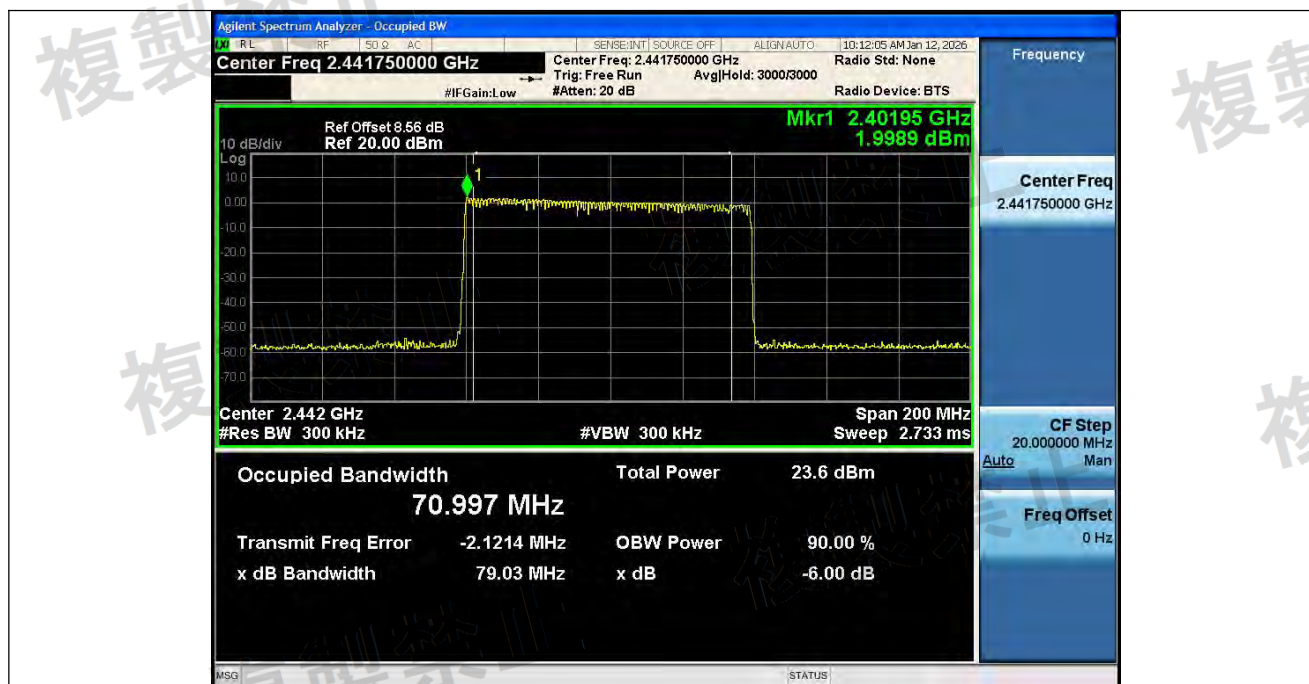


NTNV 2DH1 Ant1 Hop Num 79

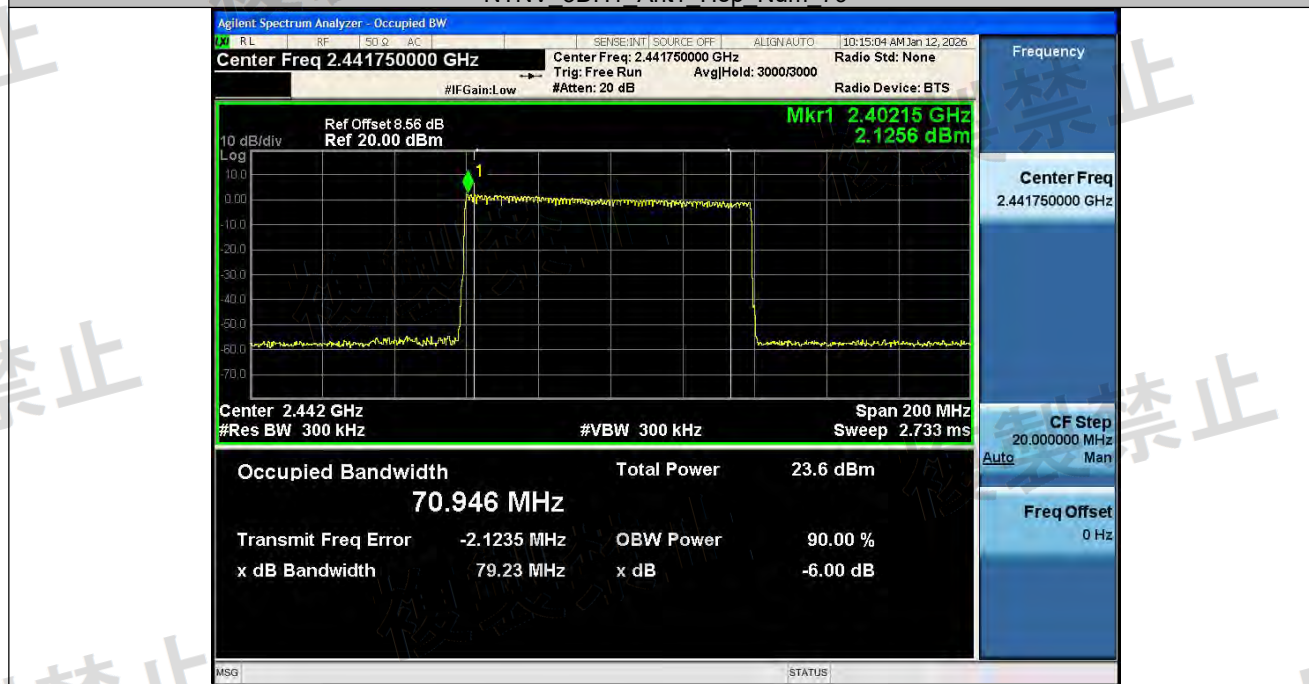
Test Report No.: 25122701-1-RF-JP-01



Test Report No.: 25122701-1-RF-JP-01

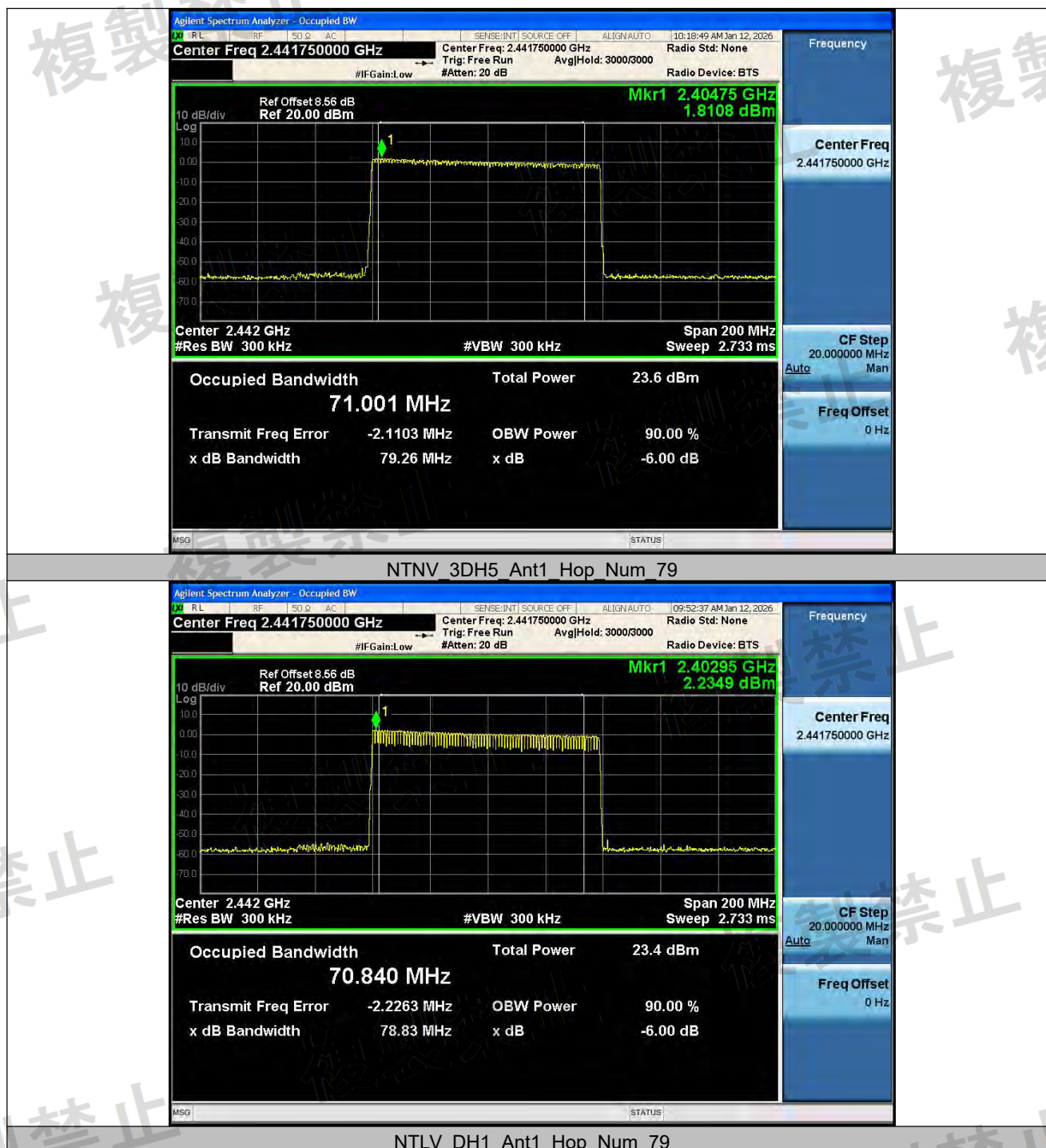


NTNV 3DH1 Ant1 Hop Num 79

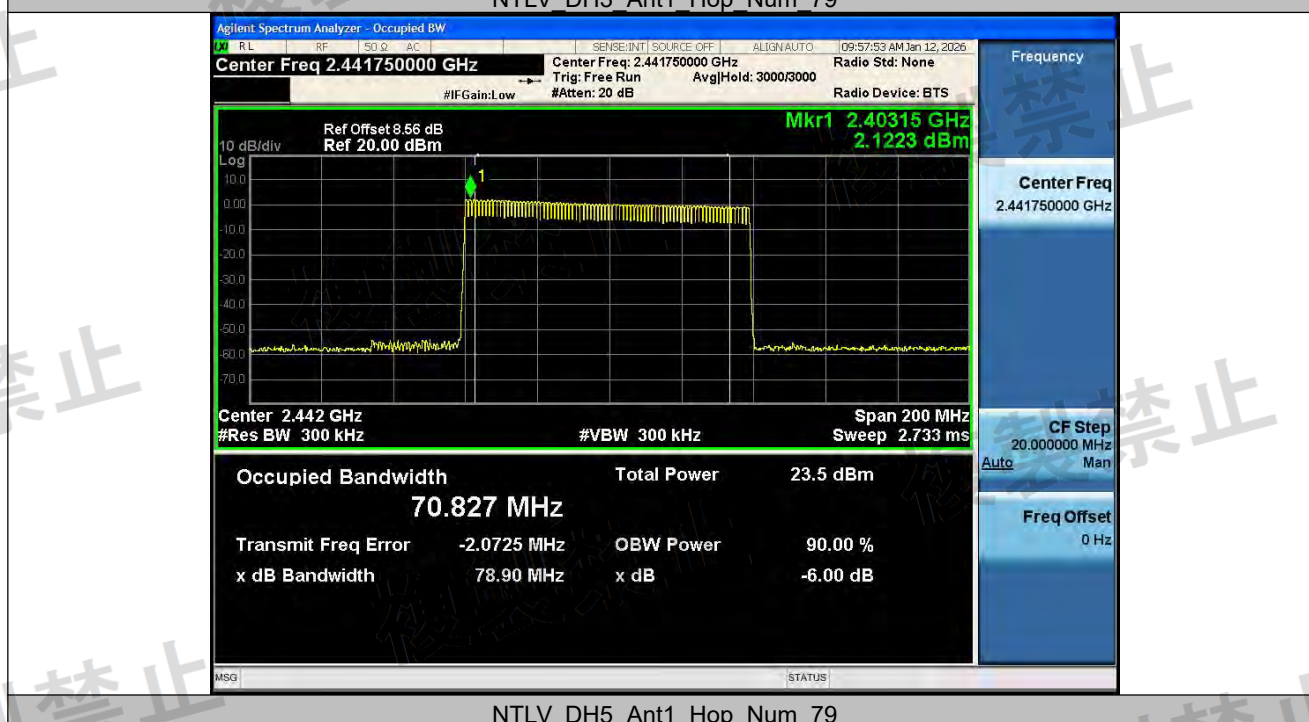
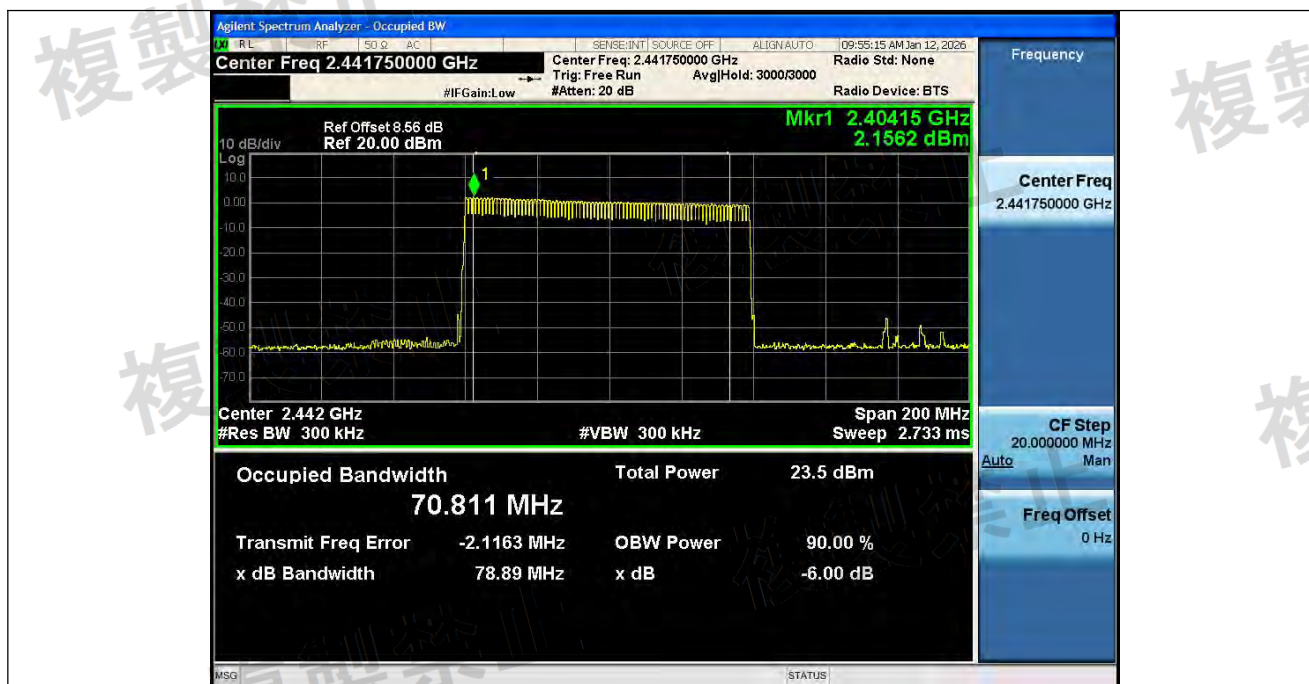


NTNV 3DH3 Ant1 Hop Num 79

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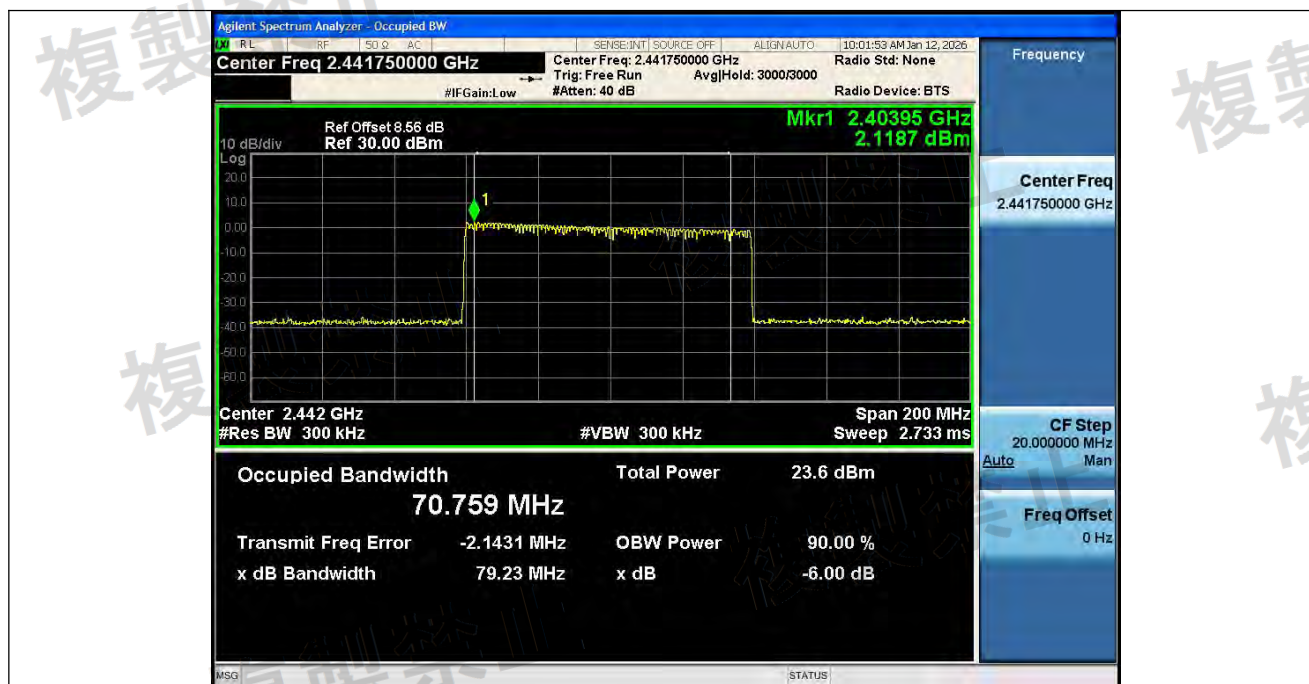
Web.: [www.lyns-tci.com](#)

E-Mail: [service-hs@lyns-tci.com](#)

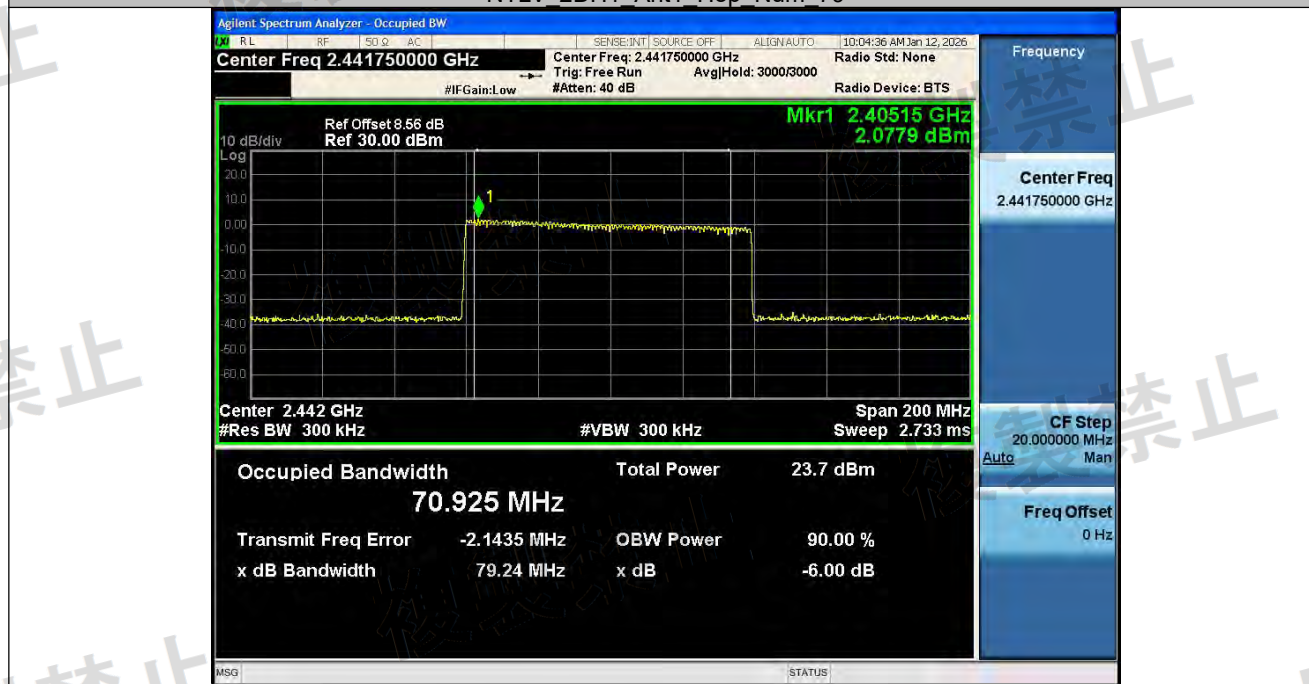
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NTLV 2DH1 Ant1 Hop Num 79

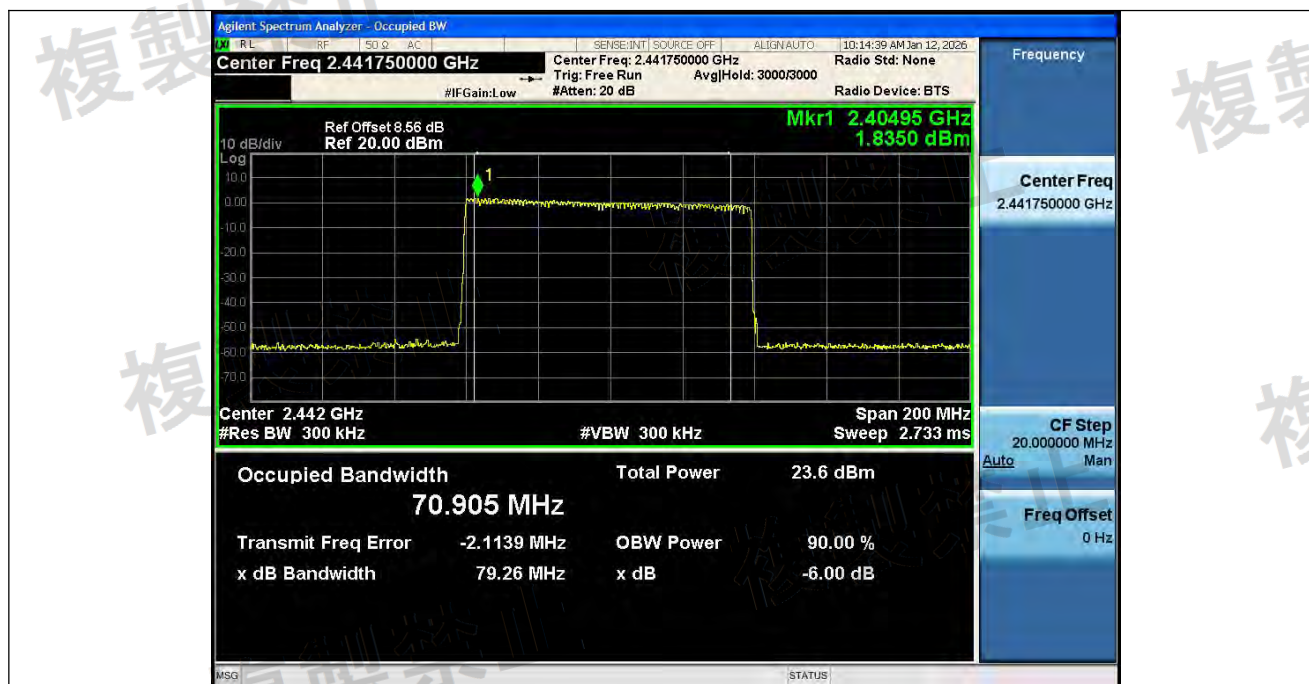


NTLV 2DH3 Ant1 Hop Num 79

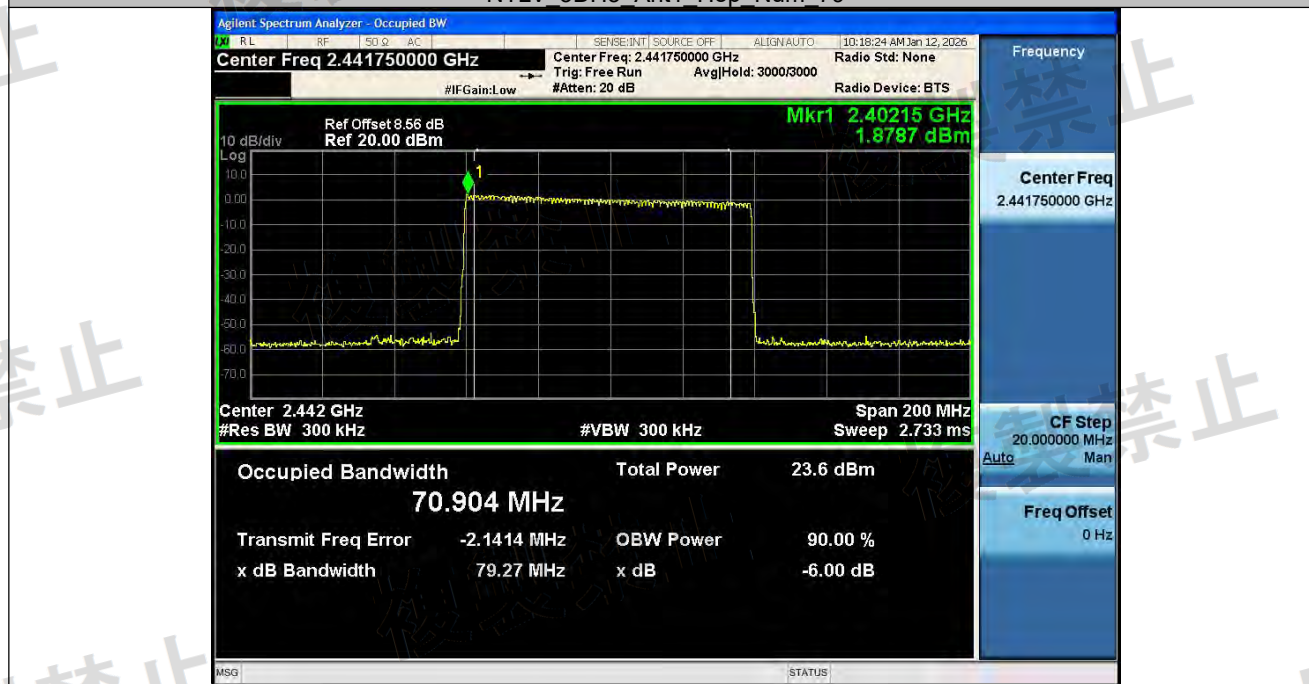
Test Report No.: 25122701-1-RF-JP-01



Test Report No.: 25122701-1-RF-JP-01

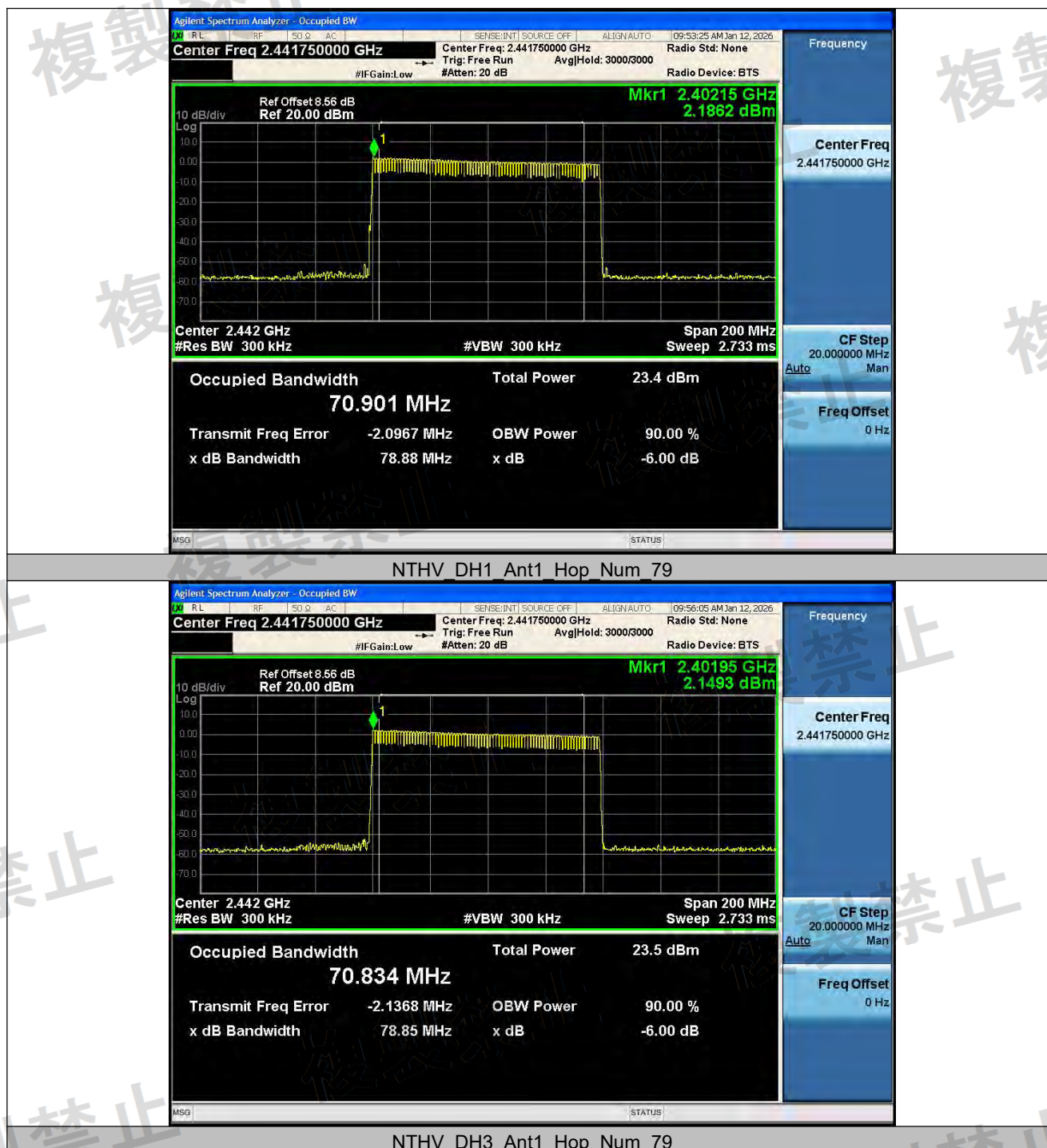


NTLV 3DH3 Ant1 Hop Num 79

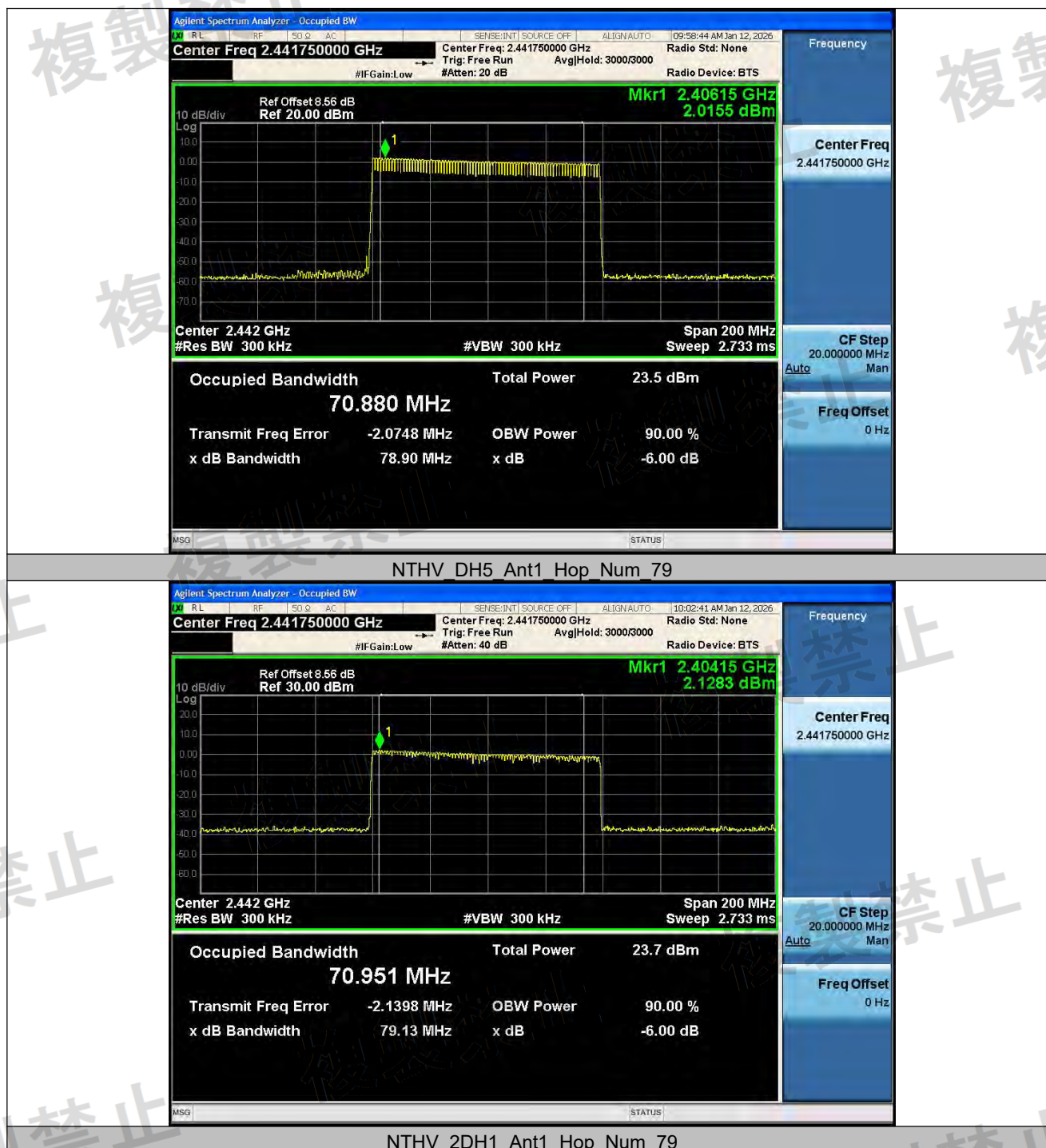


NTLV 3DH5 Ant1 Hop Num 79

Test Report No.: 25122701-1-RF-JP-01



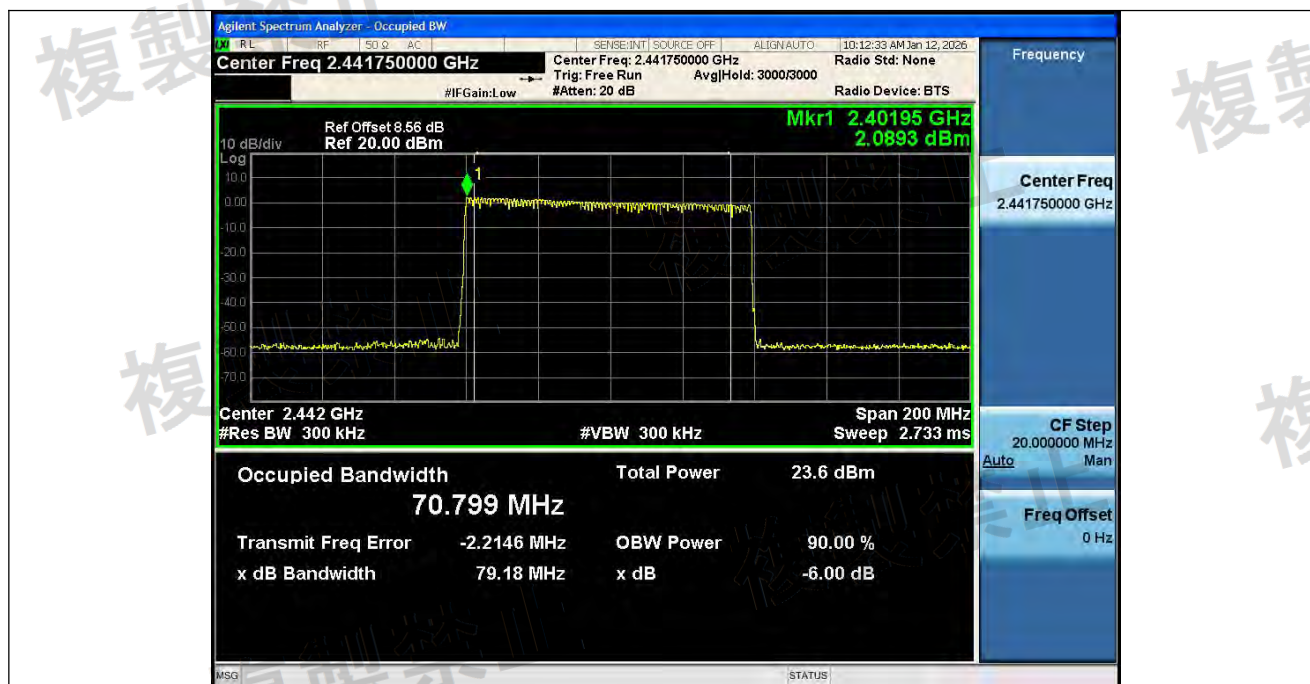
Test Report No.: 25122701-1-RF-JP-01



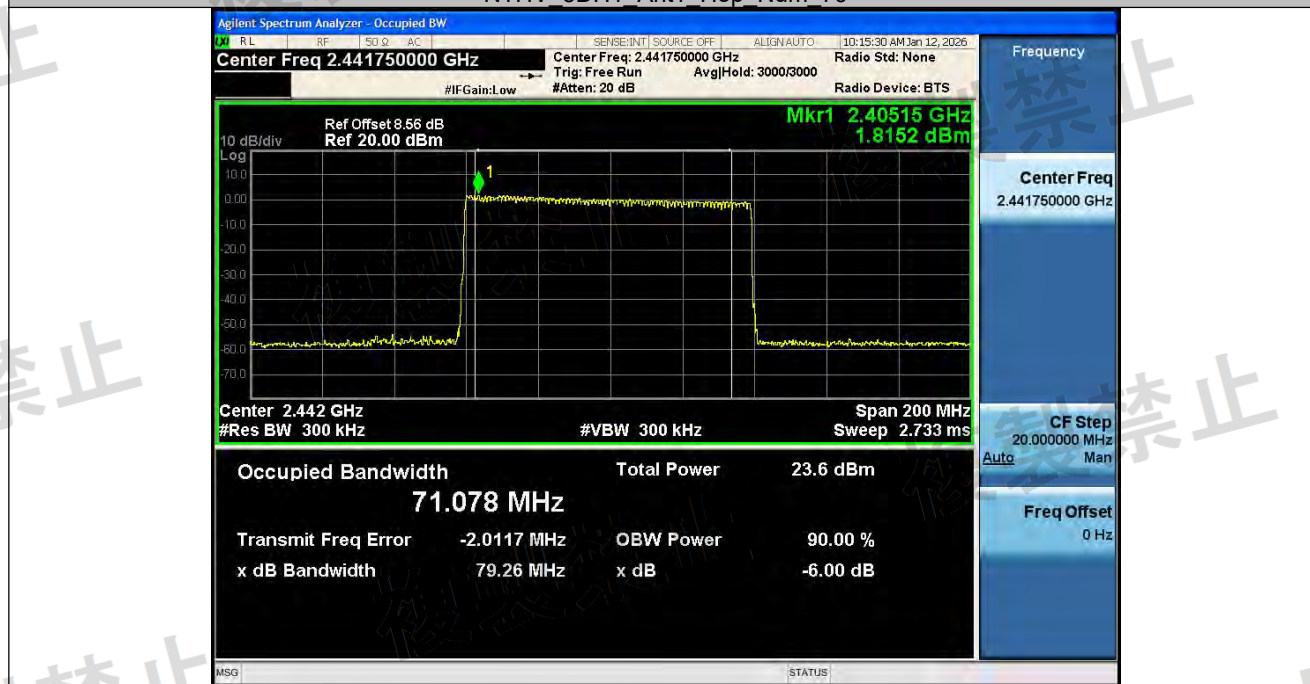
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Test Report No.: 25122701-1-RF-JP-01

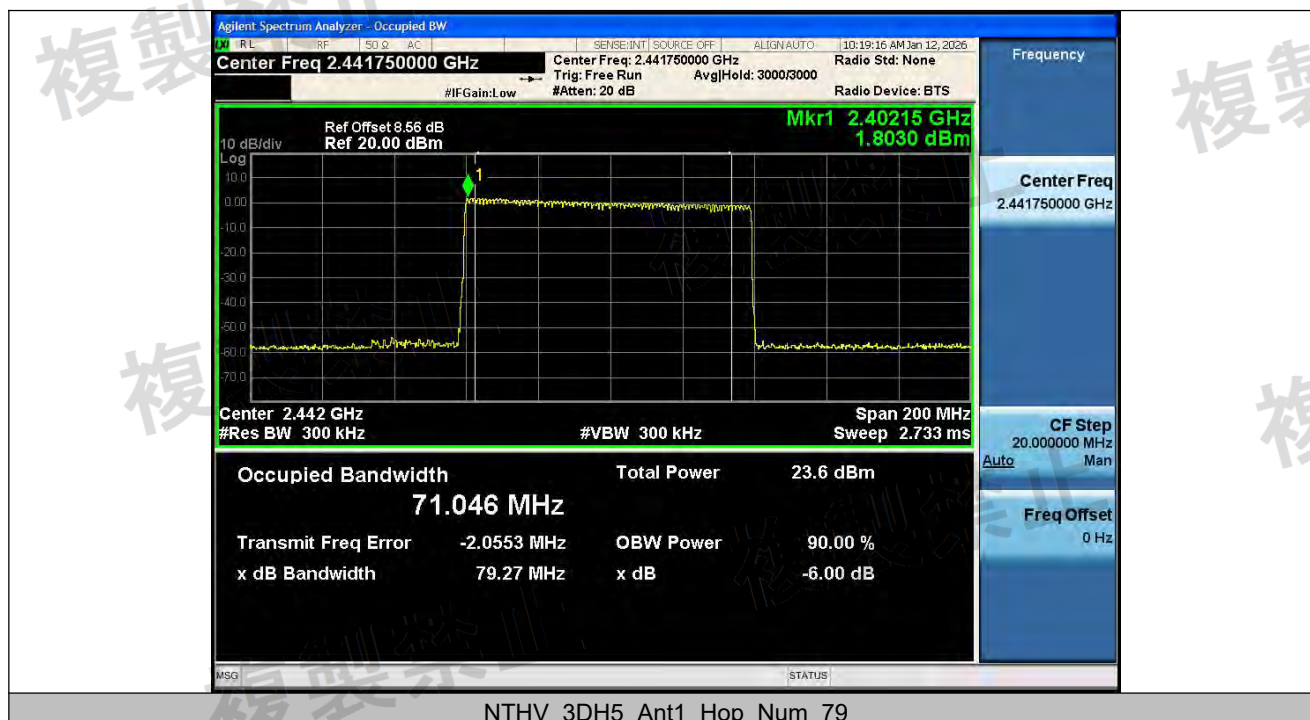


NTHV 3DH1 Ant1 Hop Num 79



NTHV 3DH3 Ant1 Hop Num 79

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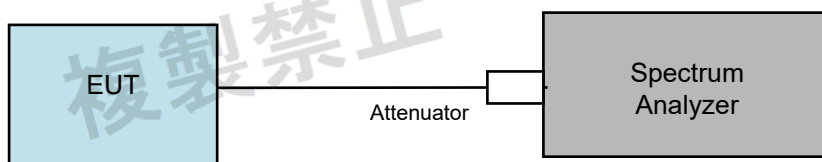
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3.4 Spurious emissions for transmitter measurement

3.4.1 Limit of Spurious emissions for transmitter measurement

Frequencies (MHz)	Limit
Operating frequency 2400 to 2483.5MHz	
30.0MHz to 2387MHz	$\leq 2.5\mu\text{W}(-26\text{dBm})/\text{MHz}$
2387.0MHz to 2400.0MHz	$\leq 25\mu\text{W}(-16\text{dBm})/\text{MHz}$
2483.5MHz to 2496.5MHz	$\leq 25\mu\text{W}(-16\text{dBm})/\text{MHz}$
2496.5MHz to 12500.0MHz	$\leq 2.5\mu\text{W}(-26\text{dBm})/\text{MHz}$

3.4.2 Test Setup



3.4.3 Deviation from Test Standard

No deviation.

3.4.4 Test Procedure

Test method according to Clause 5 of Annex No.43 of MIC Notification No.88.

The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. The spurious emissions for transmitter was measured by spectrum analyzer.

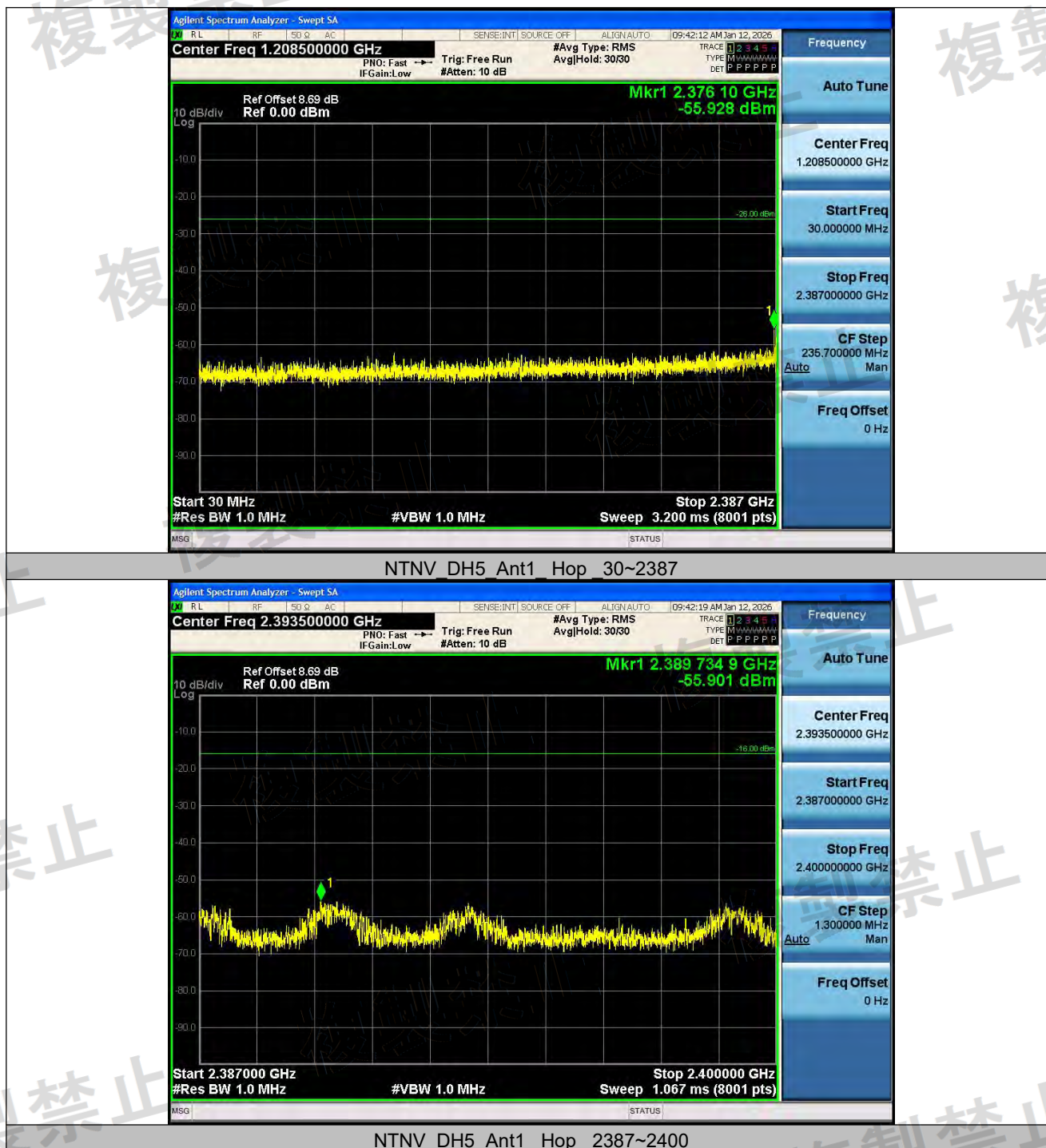
The settings of the spectrum analyzer during spurious searches are as follows:

- Sweep Bandwidth Starts spurious searches from the smallest possible frequencies to more than 5 times the carrier frequencies (for example from 30 MHz up to 12.5 GHz for a 2.4 GHz system).
- Resolution Bandwidth 1 MHz
- Video Bandwidth 1 MHz
- Y-Axis Scale 10 dB/Div
- Input Level: Maximum dynamic range value
- Sweep Time: Minimum amount of time to ensure measurement accuracy.
- Sweep Points: Over 400 points
- Detection Mode: Positive peak
- Display mode: Maximum hold

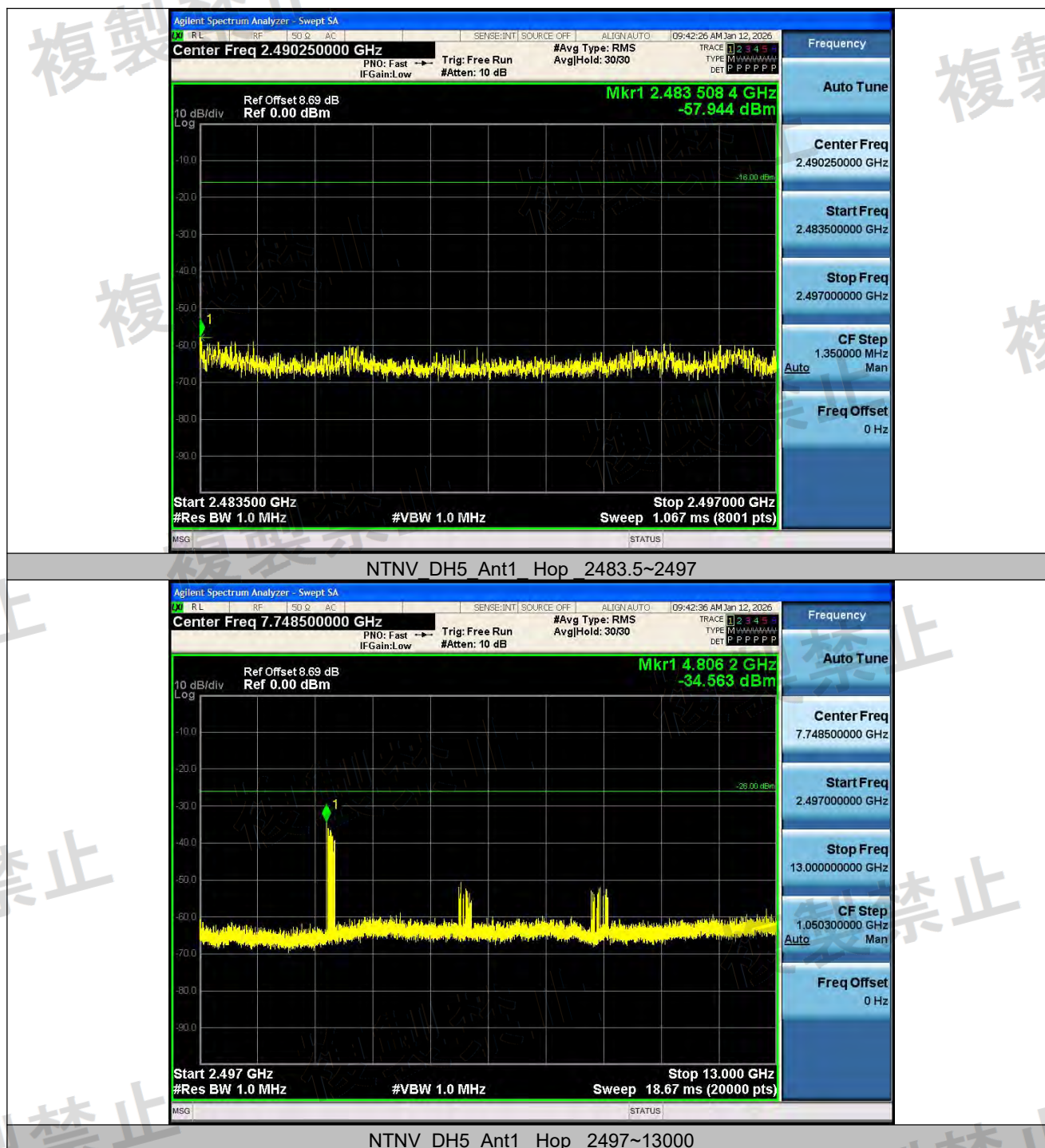
3.4.5 Test Results

Test Condition	Test Mode	Channel	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Result [uW/Mhz]	Limit [uW/Mhz]	Verdict
NTNV	DH5	Hop	30~2387	2376.10	-55.93	0.002552701	≤2.5	PASS
			2387~2400	2389.73	-55.90	0.002570396	≤25	PASS
			2483.5~2497	2483.51	-57.94	0.001606941	≤25	PASS
			2497~13000	4806.20	-34.56	0.349945167	≤2.5	PASS
	2DH5	Hop	30~2387	825.19	-55.80	0.002630268	≤2.5	PASS
			2387~2400	2399.96	-52.54	0.005571857	≤25	PASS
			2483.5~2497	2491.82	-58.97	0.001267652	≤25	PASS
			2497~13000	4810.90	-33.34	0.46344692	≤2.5	PASS
	3DH5	Hop	30~2387	2384.64	-58.30	0.001479108	≤2.5	PASS
			2387~2400	2391.88	-55.05	0.003126079	≤25	PASS
			2483.5~2497	2492.82	-58.83	0.001309182	≤25	PASS
			2497~13000	4866.10	-34.85	0.327340695	≤2.5	PASS
NTLV	DH5	Hop	30~2387	824.90	-57.10	0.001949845	≤2.5	PASS
			2387~2400	2399.92	-46.34	0.023227368	≤25	PASS
			2483.5~2497	2484.84	-57.91	0.00161808	≤25	PASS
			2497~13000	4806.70	-34.98	0.317687407	≤2.5	PASS
	2DH5	Hop	30~2387	2379.34	-56.44	0.002269865	≤2.5	PASS
			2387~2400	2400.00	-43.34	0.046344692	≤25	PASS
			2483.5~2497	2495.15	-57.90	0.00162181	≤25	PASS
			2497~13000	4822.50	-33.91	0.406443329	≤2.5	PASS
	3DH5	Hop	30~2387	825.19	-52.45	0.005688529	≤2.5	PASS
			2387~2400	2399.99	-31.26	0.748169501	≤25	PASS
			2483.5~2497	2489.99	-58.84	0.001306171	≤25	PASS
			2497~13000	4814.10	-33.68	0.42854852	≤2.5	PASS
NTHV	DH5	Hop	30~2387	2386.12	-57.32	0.001853532	≤2.5	PASS
			2387~2400	2396.01	-55.94	0.00254683	≤25	PASS
			2483.5~2497	2483.66	-59.29	0.001177606	≤25	PASS
			2497~13000	4816.20	-35.89	0.257632116	≤2.5	PASS
	2DH5	Hop	30~2387	825.19	-57.80	0.001659587	≤2.5	PASS
			2387~2400	2399.86	-33.30	0.467735141	≤25	PASS
			2483.5~2497	2486.32	-59.68	0.001076465	≤25	PASS
			2497~13000	4844.00	-35.24	0.299226464	≤2.5	PASS
	3DH5	Hop	30~2387	825.78	-51.93	0.006412096	≤2.5	PASS
			2387~2400	2391.97	-55.61	0.002747894	≤25	PASS
			2483.5~2497	2484.66	-58.68	0.001355189	≤25	PASS
			2497~13000	4830.90	-34.99	0.316956746	≤2.5	PASS

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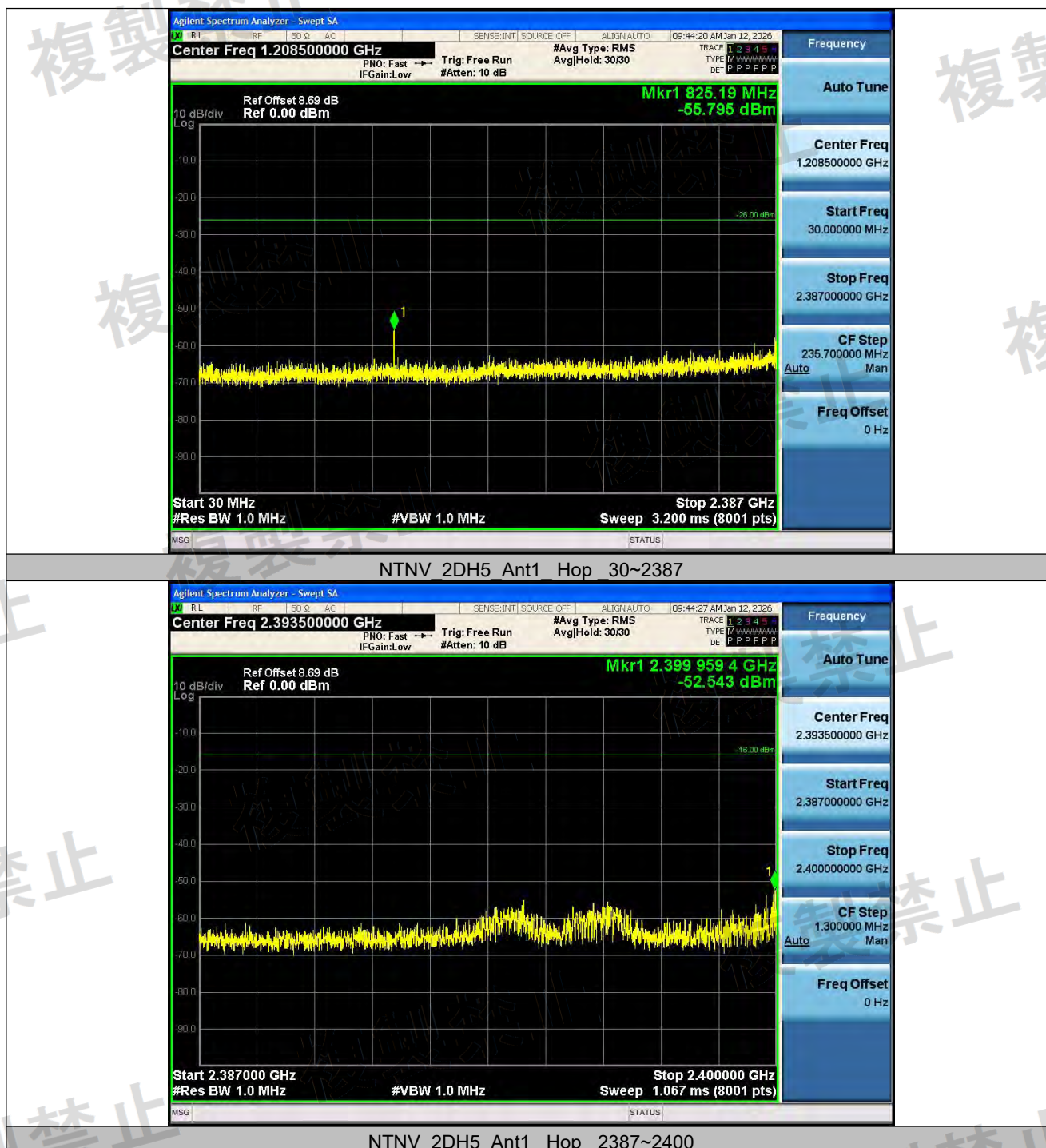


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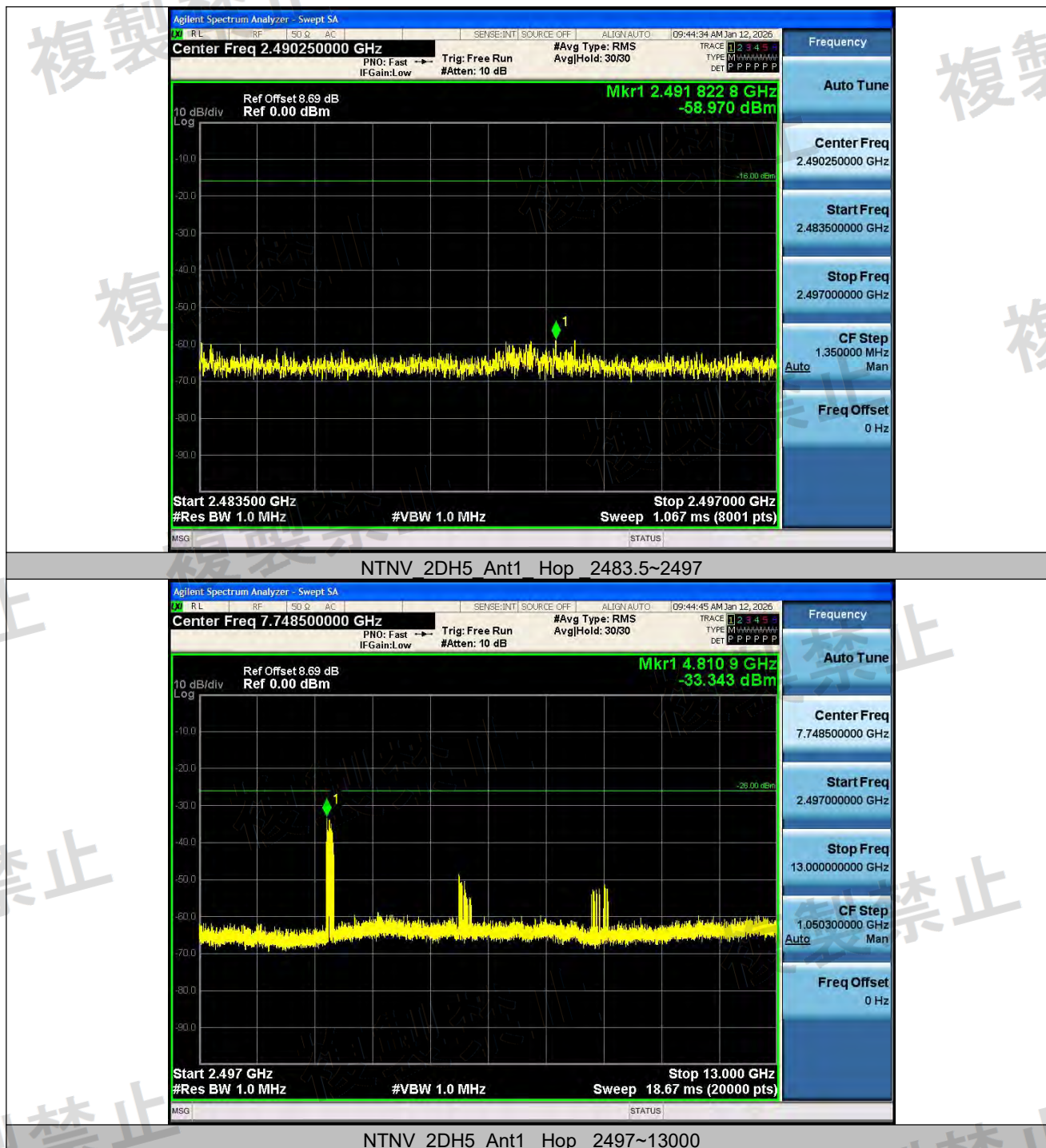
NTNV 2DH5 Ant1 Hop 2387~2400

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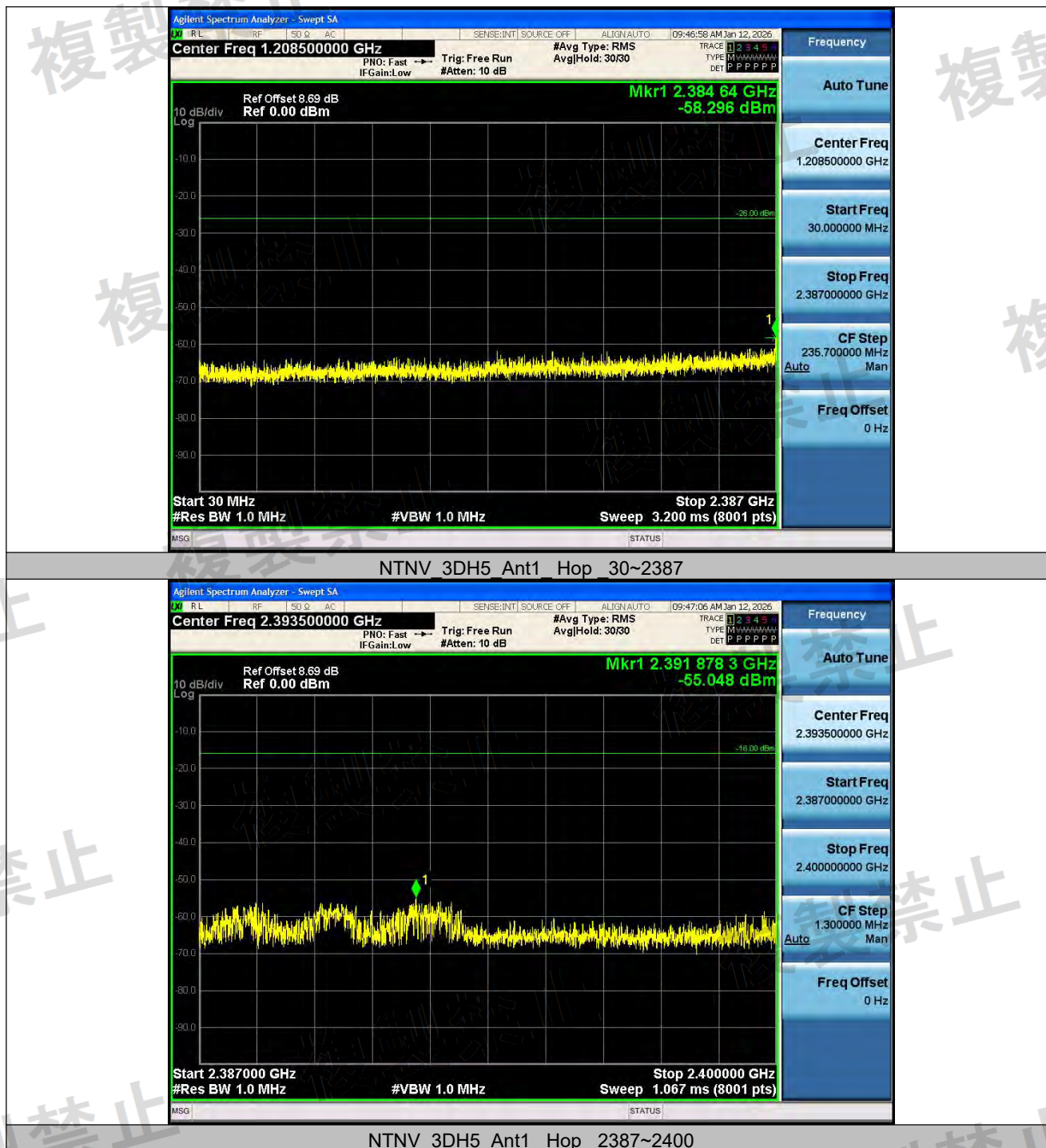
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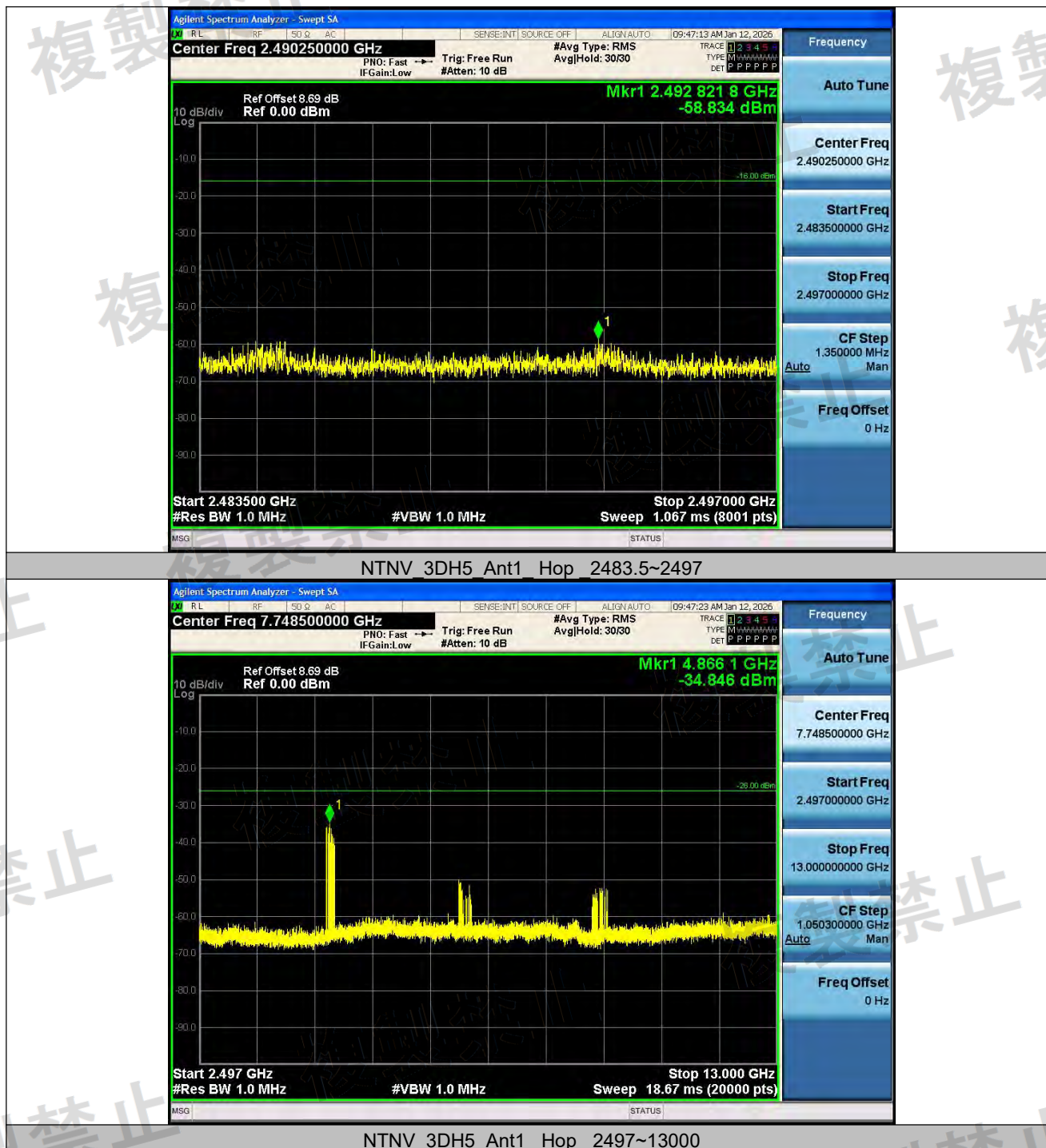
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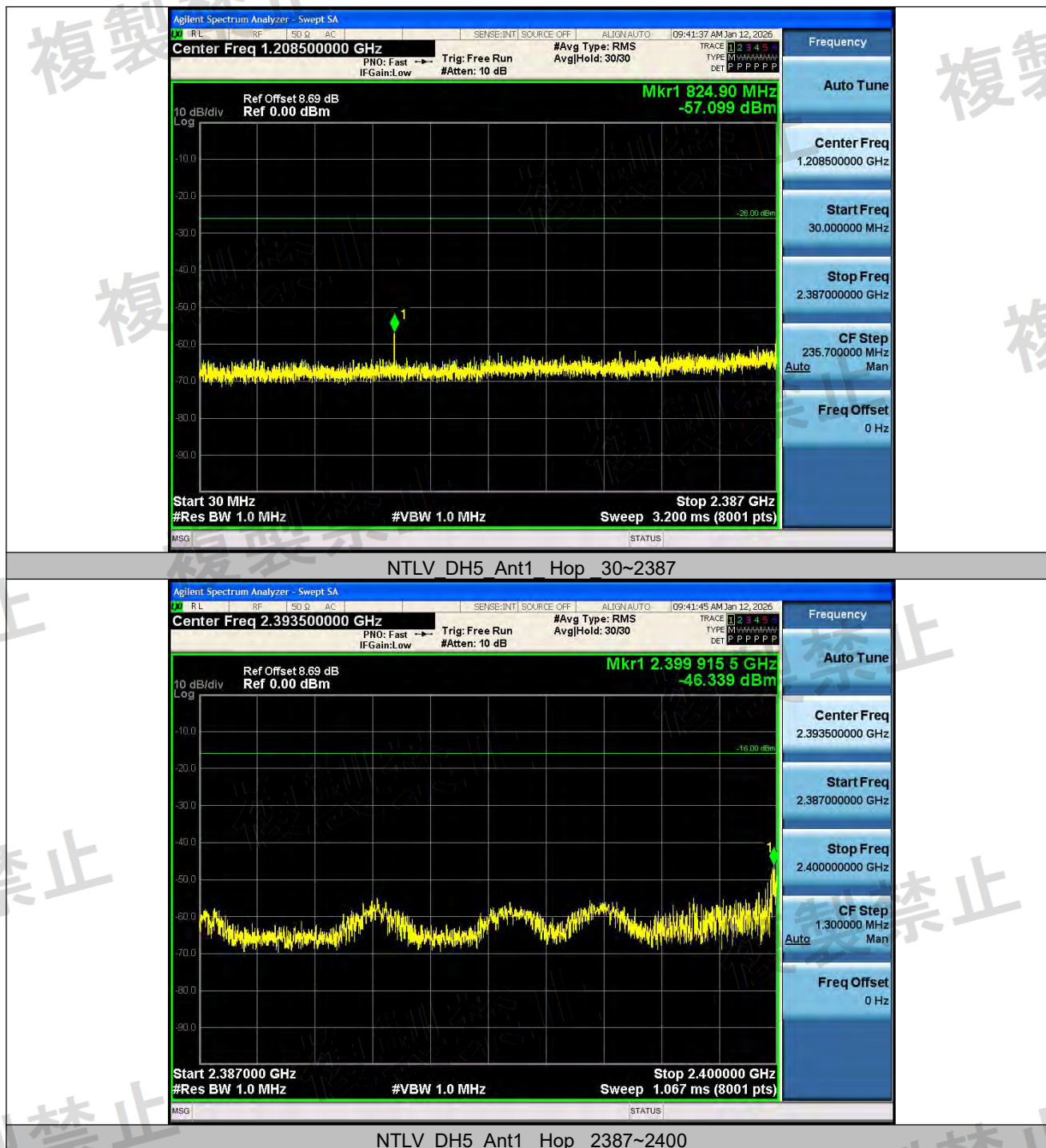
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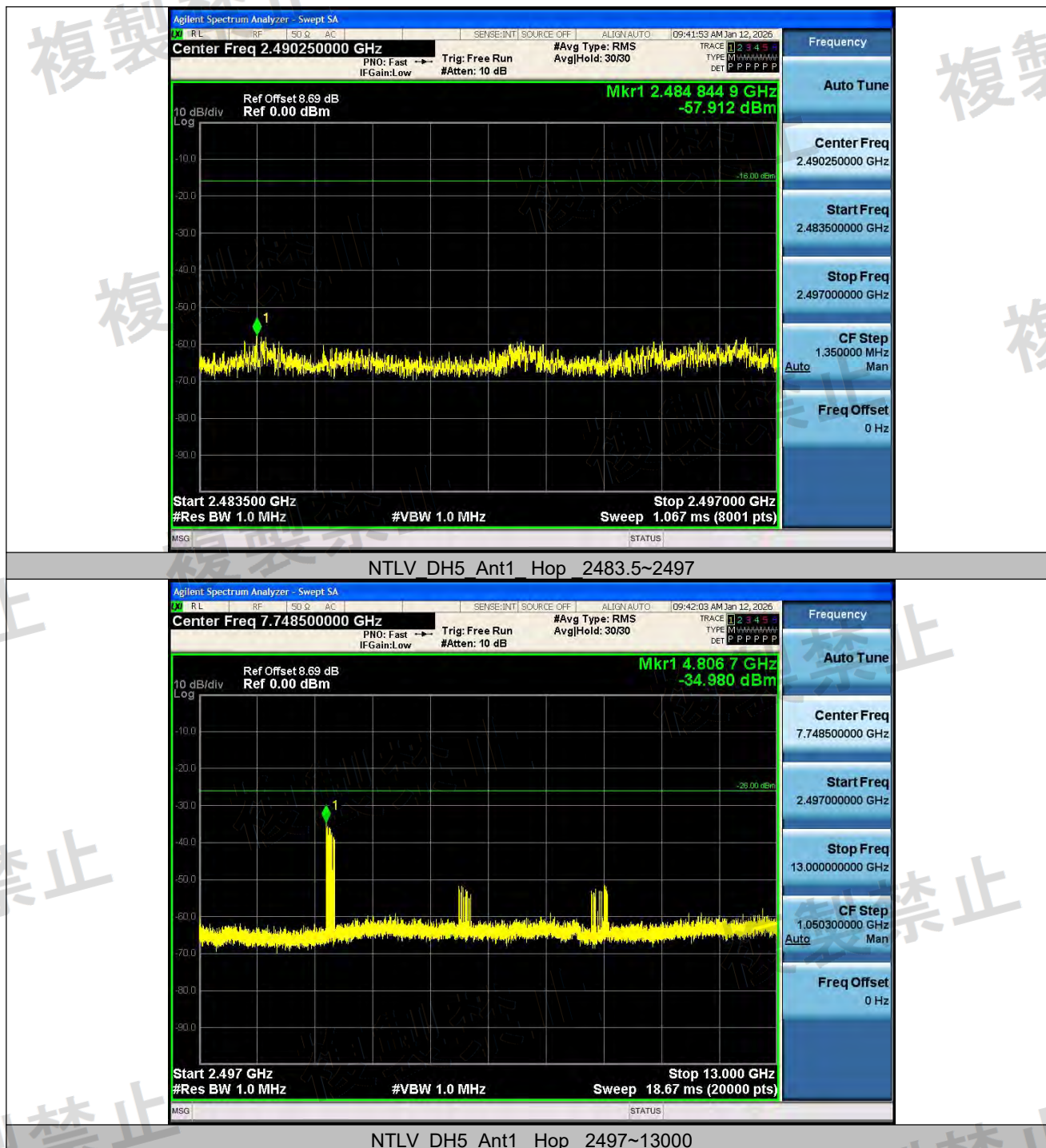
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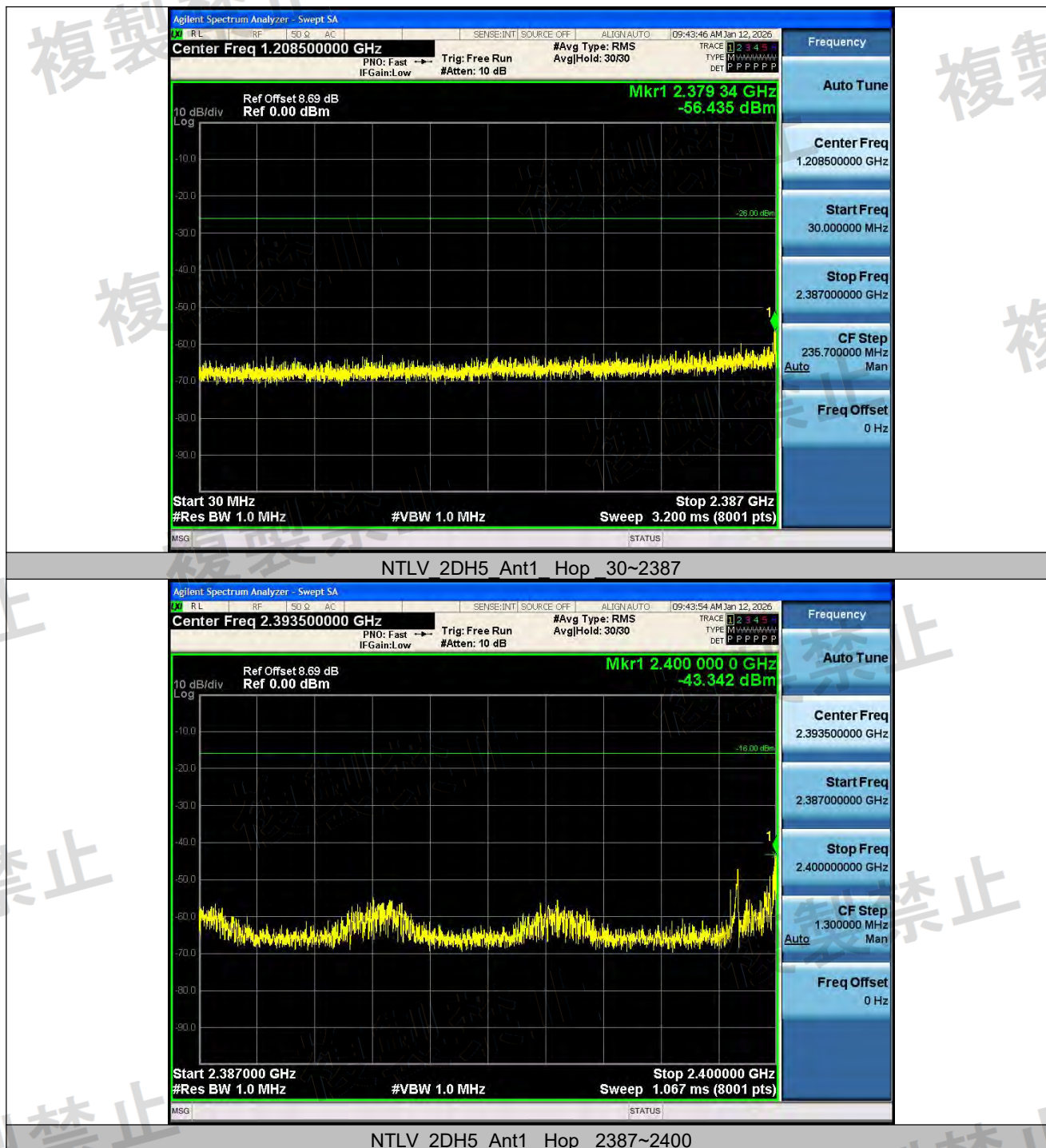
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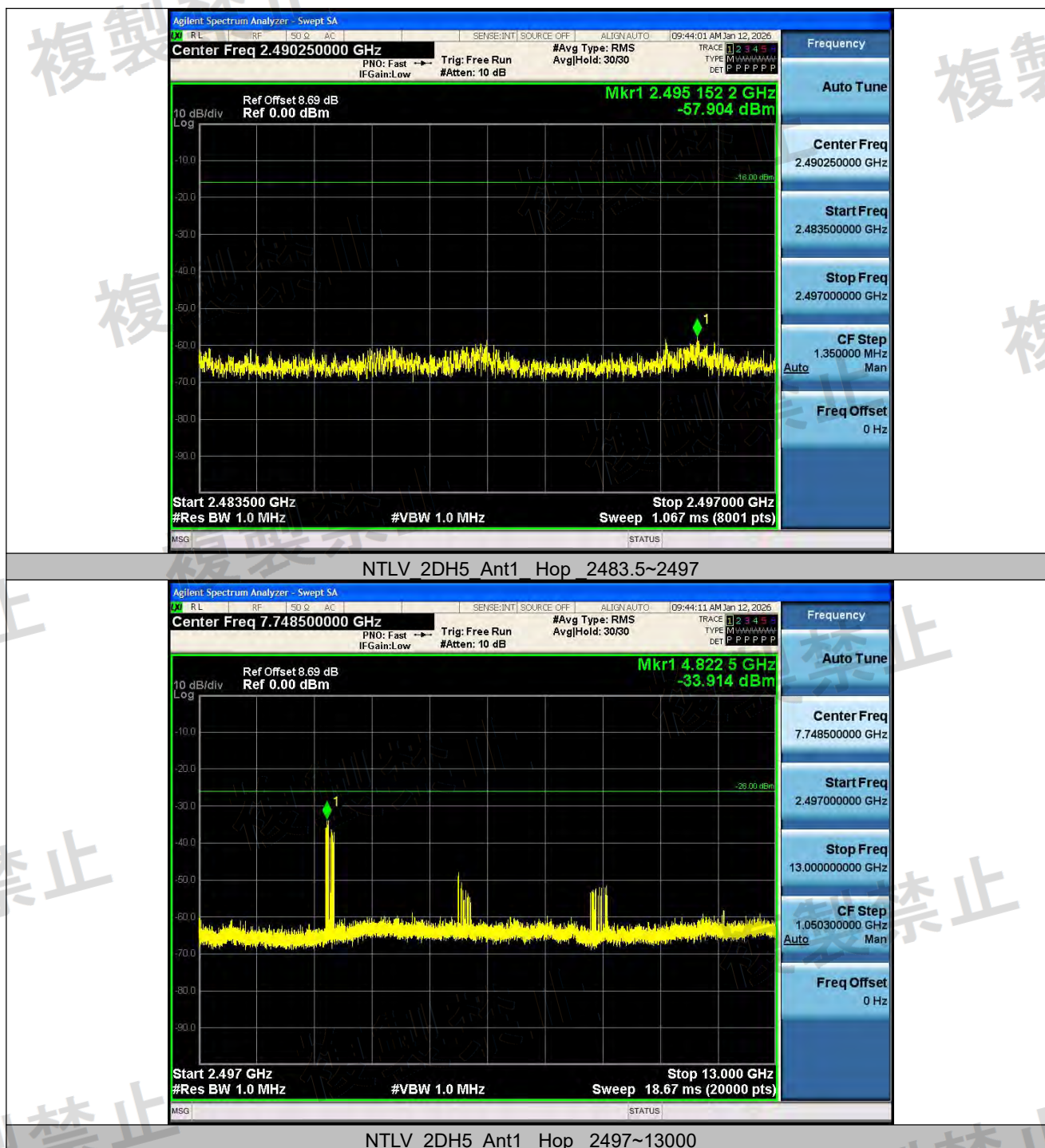
NTLV 2DH5 Ant1_Hop_2387~2400

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NTLV 2DH5 Ant1 Hop 2483.5~2497

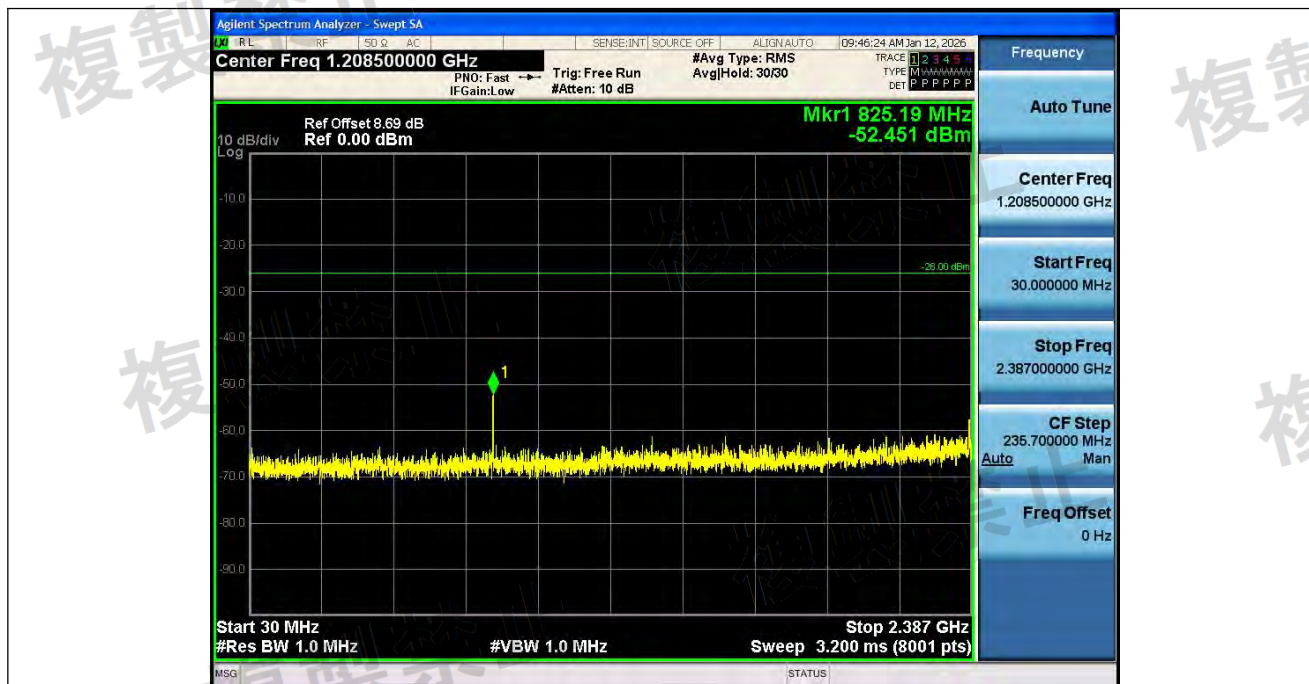
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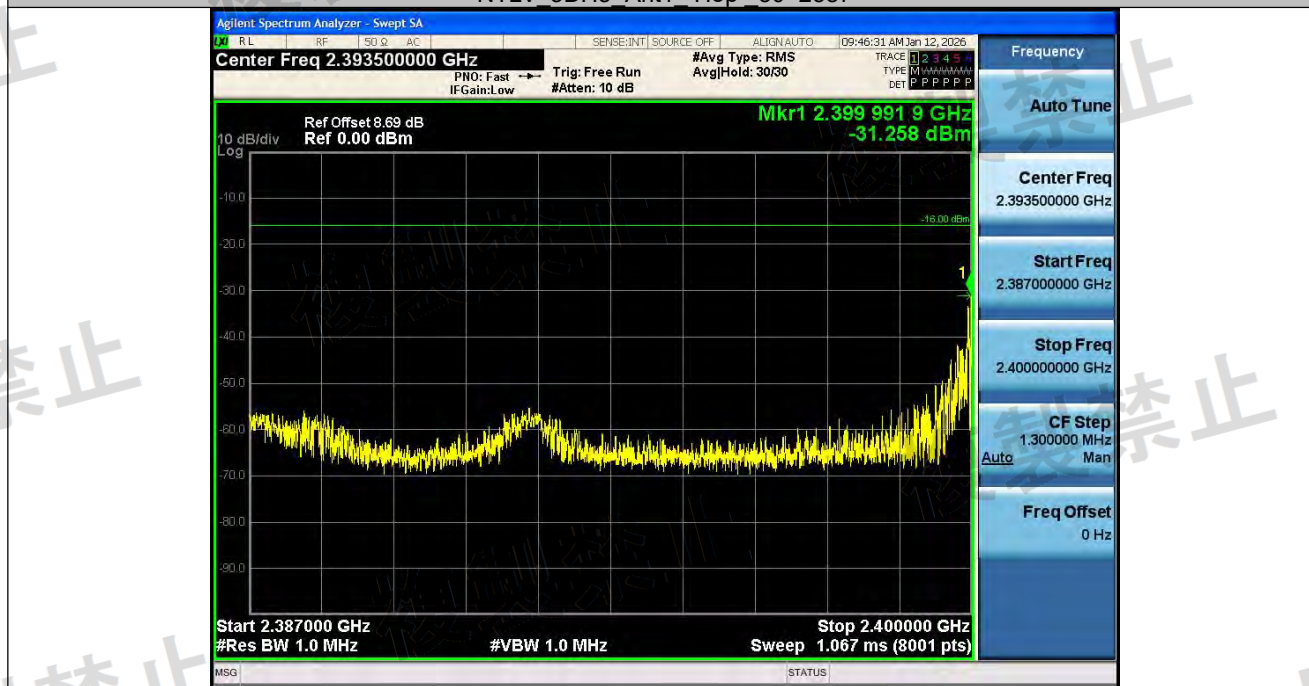
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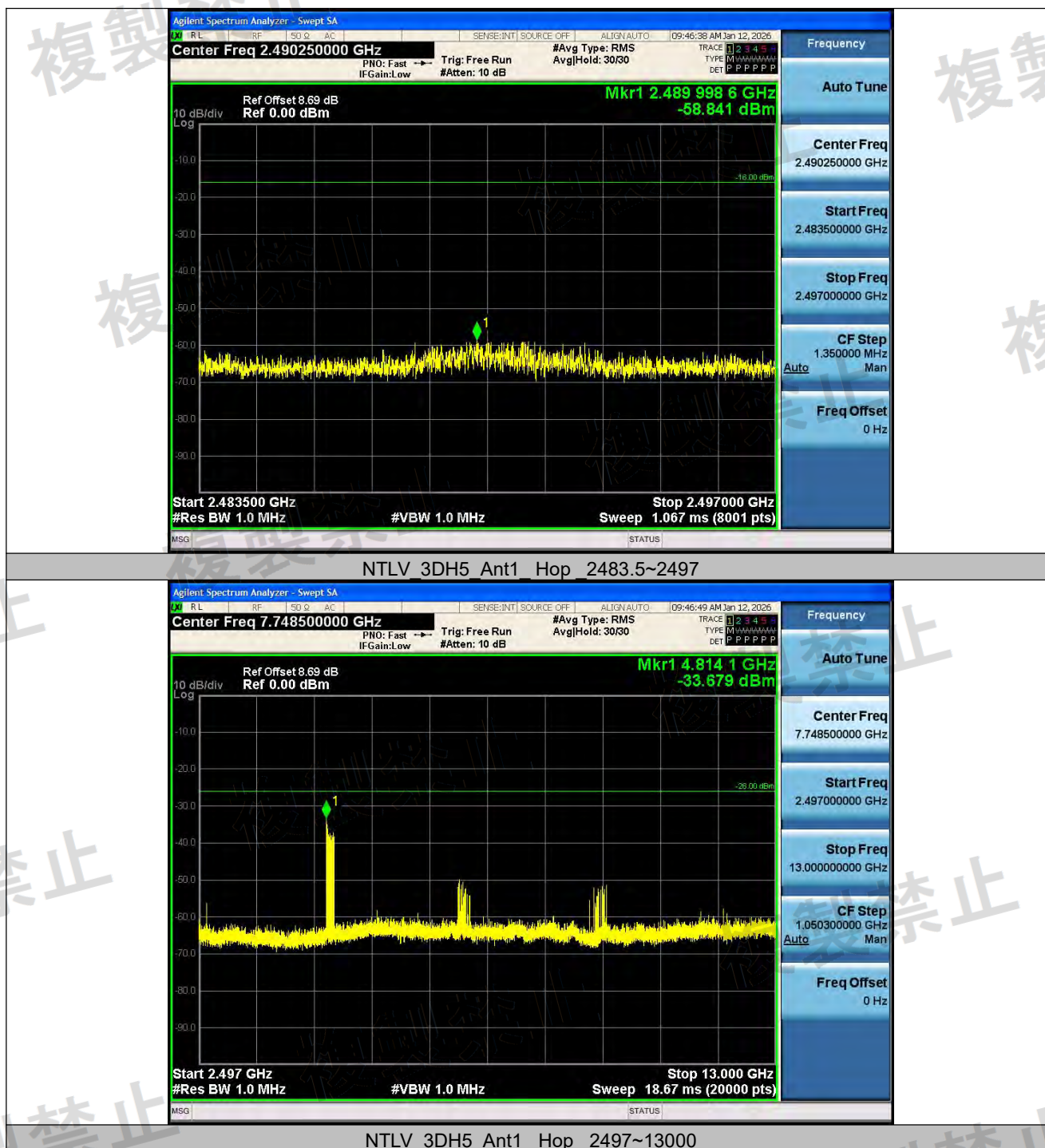


NTLV 3DH5 Ant1 Hop 30~2387



NTLV 3DH5 Ant1 Hop 2387~2400

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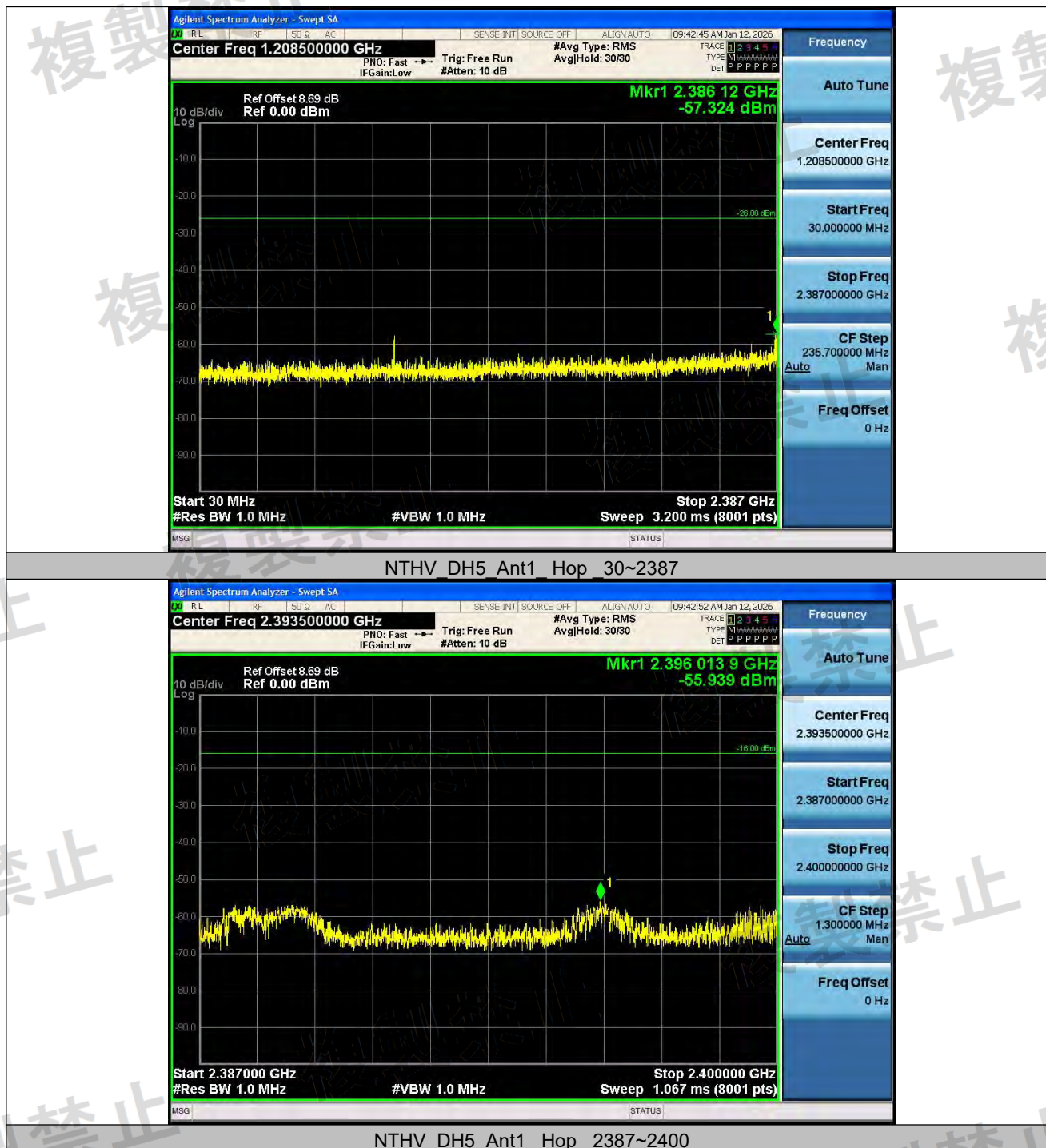
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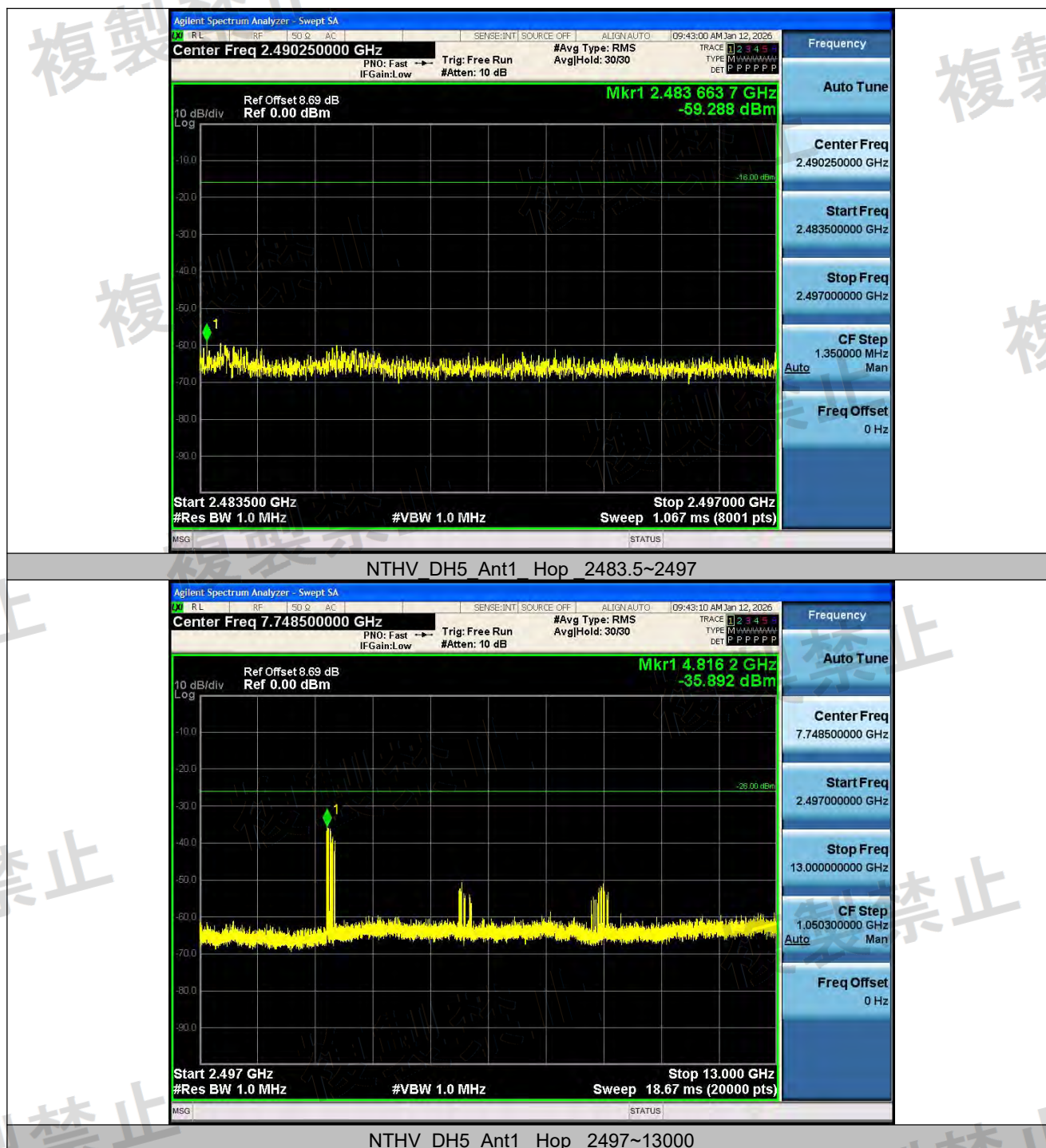
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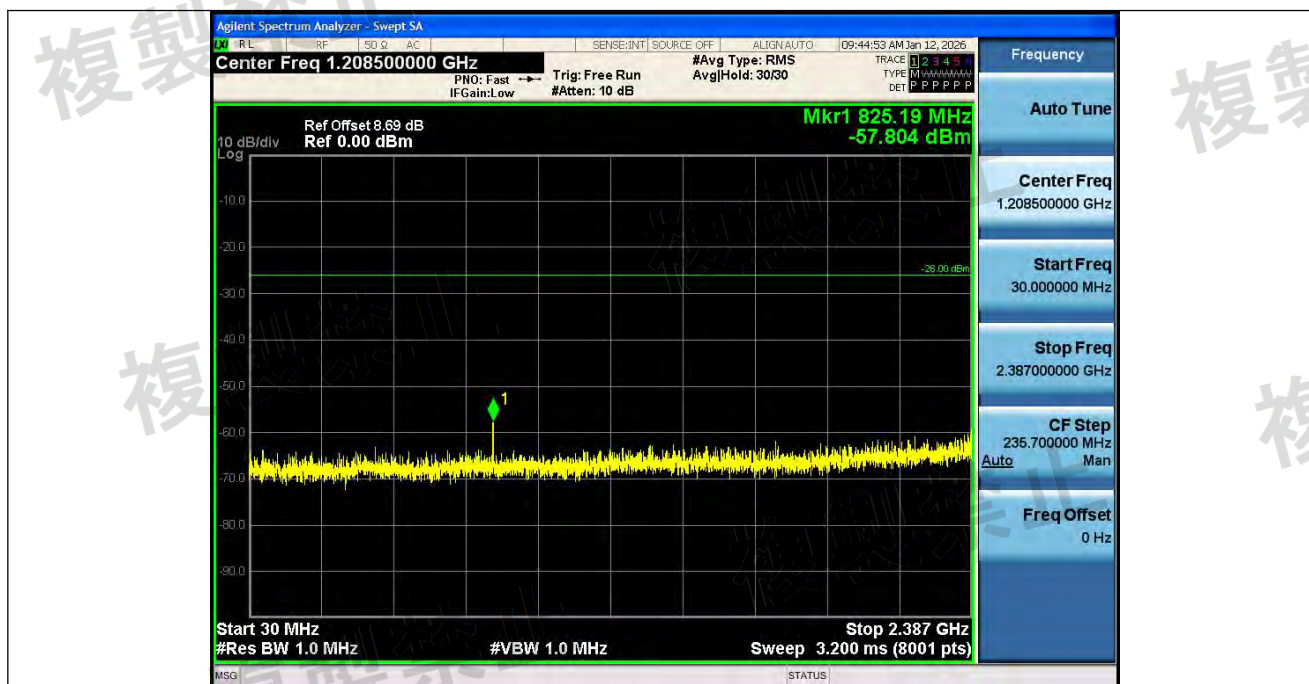


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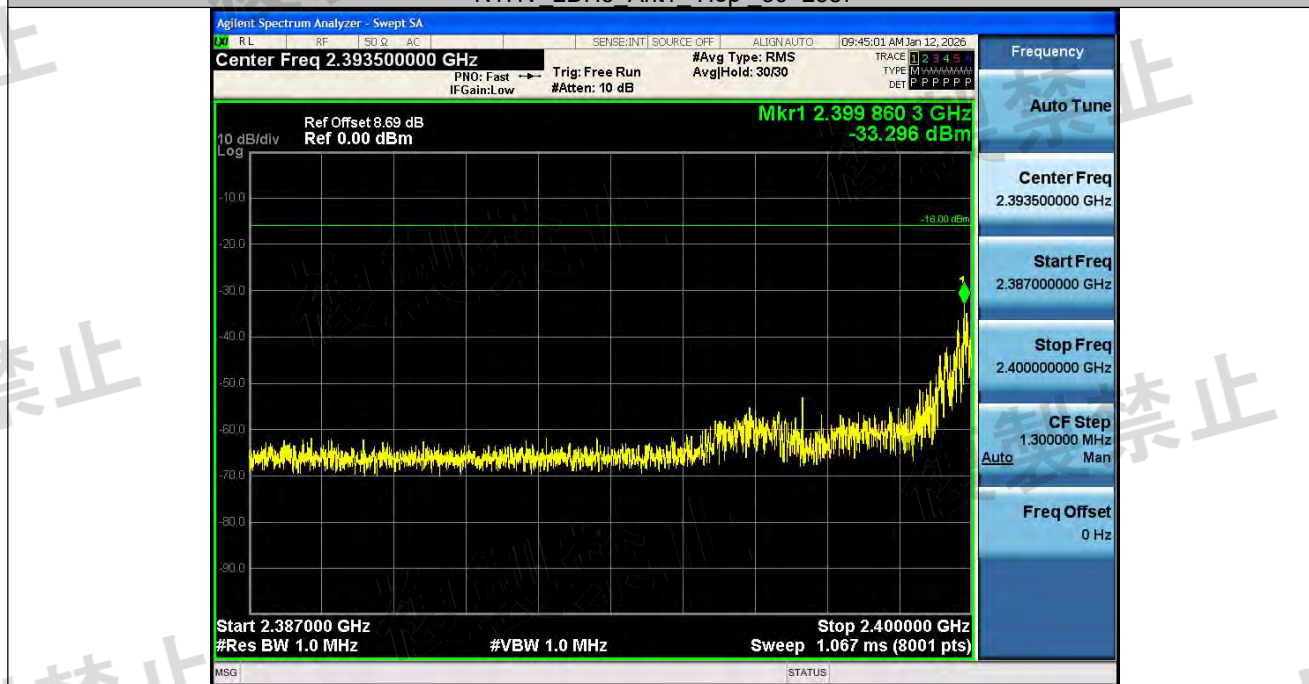
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NTHV 2DH5 Ant1 Hop 30~2387



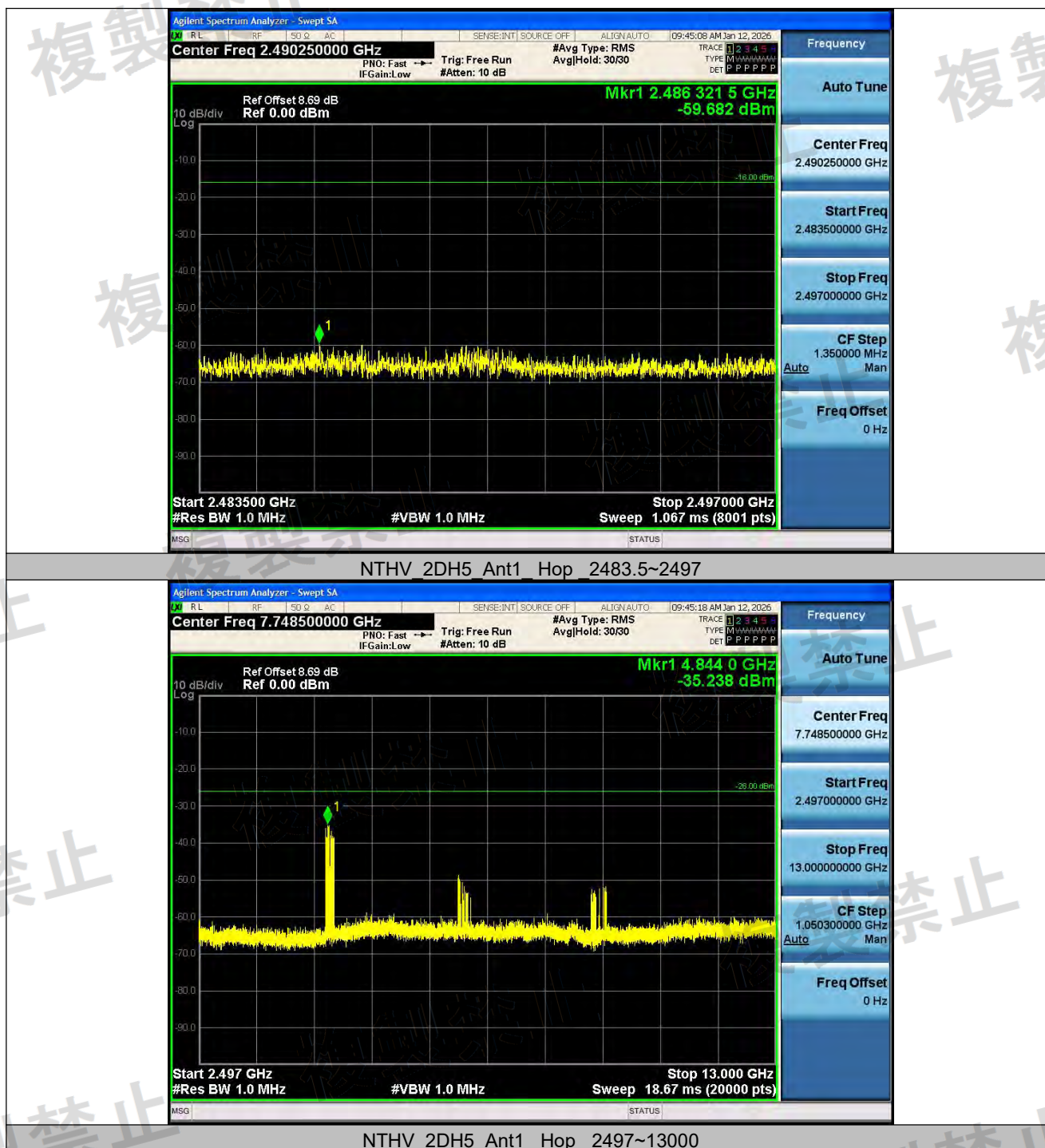
NTHV 2DH5 Ant1 Hop 2387~2400

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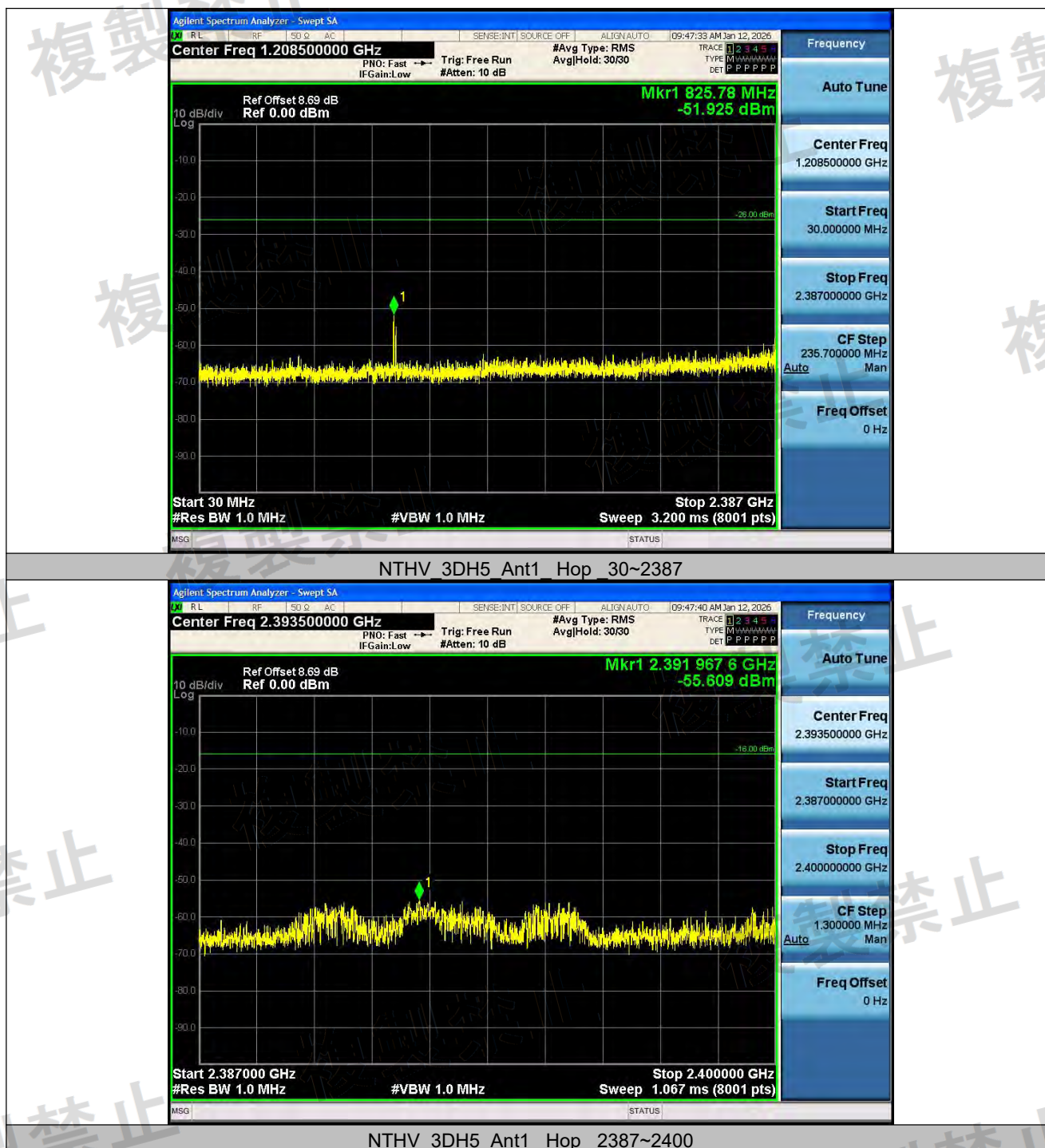


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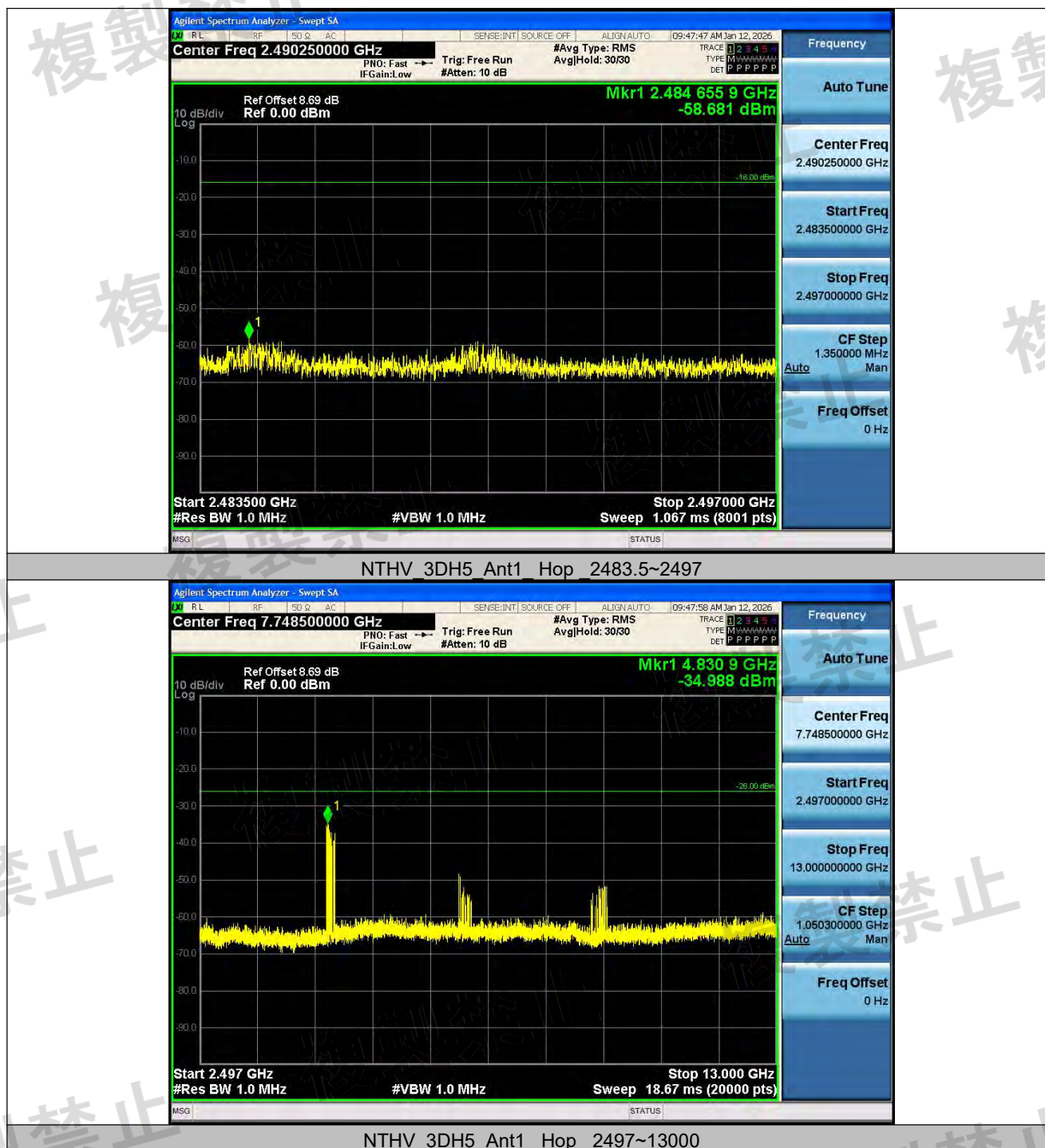
NTHV 3DH5 Ant1 Hop 2387~2400

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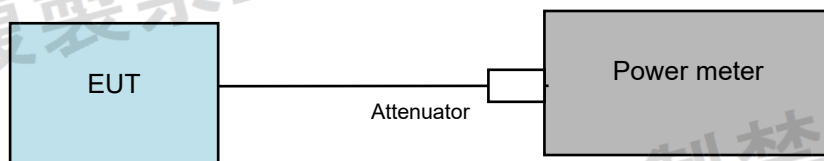
3.5 Antenna power measurement

3.5.1 Limits of antenna power

Antenna power shall be 3mW/MHz or less.

Tolerance of antenna power shall be +20% (upper value).

3.5.2 Test Setup



3.5.3 Deviation from Test Standard

No deviation.

3.5.4 Test Procedure

Test method according to Clause 6 of Annex No.43 of MIC Notification No.88.

The EUT was placed inside the environmental test chamber. The Antenna power was measured by power meter.

- Connect the high frequency power meter to the IF output of the spectrum analysers.
- Recording the power level.

3.5.5 Test result of conducted output power

Test Condition	Conducted output power (dBm)		
	GFSK	$\pi/4$ -DQPSK	8DPSK
Voltage normal	2.012	3.806	4.398
Voltage+10%	1.963	3.797	4.399
Voltage-10%	2.099	3.805	3.947

3.5.6 Test result Disable AFH Function

Test condition	Conducted power density (mW/MHz)					
	Hopping mode					
	Mode A-GFSK		Mode B- $\pi/4$ DQPSK		Mode C-8DPSK	
	Power	Tolerance(%)	Power	Tolerance(%)	Power	Tolerance(%)
Voltage normal	0.022434	-43.92	0.033783	-15.54	0.038774	-3.06
Voltage+10%	0.022171	-44.57	0.033769	-15.58	0.038758	-3.11
Voltage-10%	0.022893	-42.77	0.033771	-15.57	0.034997	-12.51
Rated power	0.04		0.04		0.04	

Note: 1. Conducted power density=Conducted output power/Spread-Spectrum
2. Tolerance of antenna power shall be +20% (upper value).

Test condition	EIRP power density (mW/MHz)		
	Hopping mode		
	Mode A	Mode B	Mode C
	GFSK	$\pi/4$ DQPSK	8DPSK
Voltage normal	0.030896	0.046526	0.053400
Voltage+10%	0.030534	0.046507	0.053378
Voltage-10%	0.031528	0.046510	0.048198

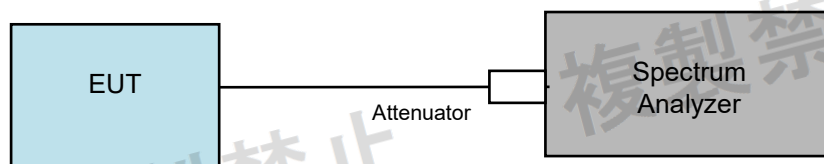
Note: The value of EIRP densities are "calculated" values.

3.6 Spurious emissions for receiver

3.6.1 Limits of spurious emissions for receiver

Frequencies (MHz)	Limit
Below 1GHz	$\leq 4\text{nW}$ (-54dBm)
Above 1GHz	$\leq 20\text{nW}$ (-47dBm)

3.6.2 Test Setup



3.6.3 Deviation from Test Standard

No deviation.

3.6.4 Test Procedure

Test method according to Clause 7 of Annex No.43 of MIC Notification No.88.

The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. The spurious emissions for receiver was measured by spectrum analyzer.

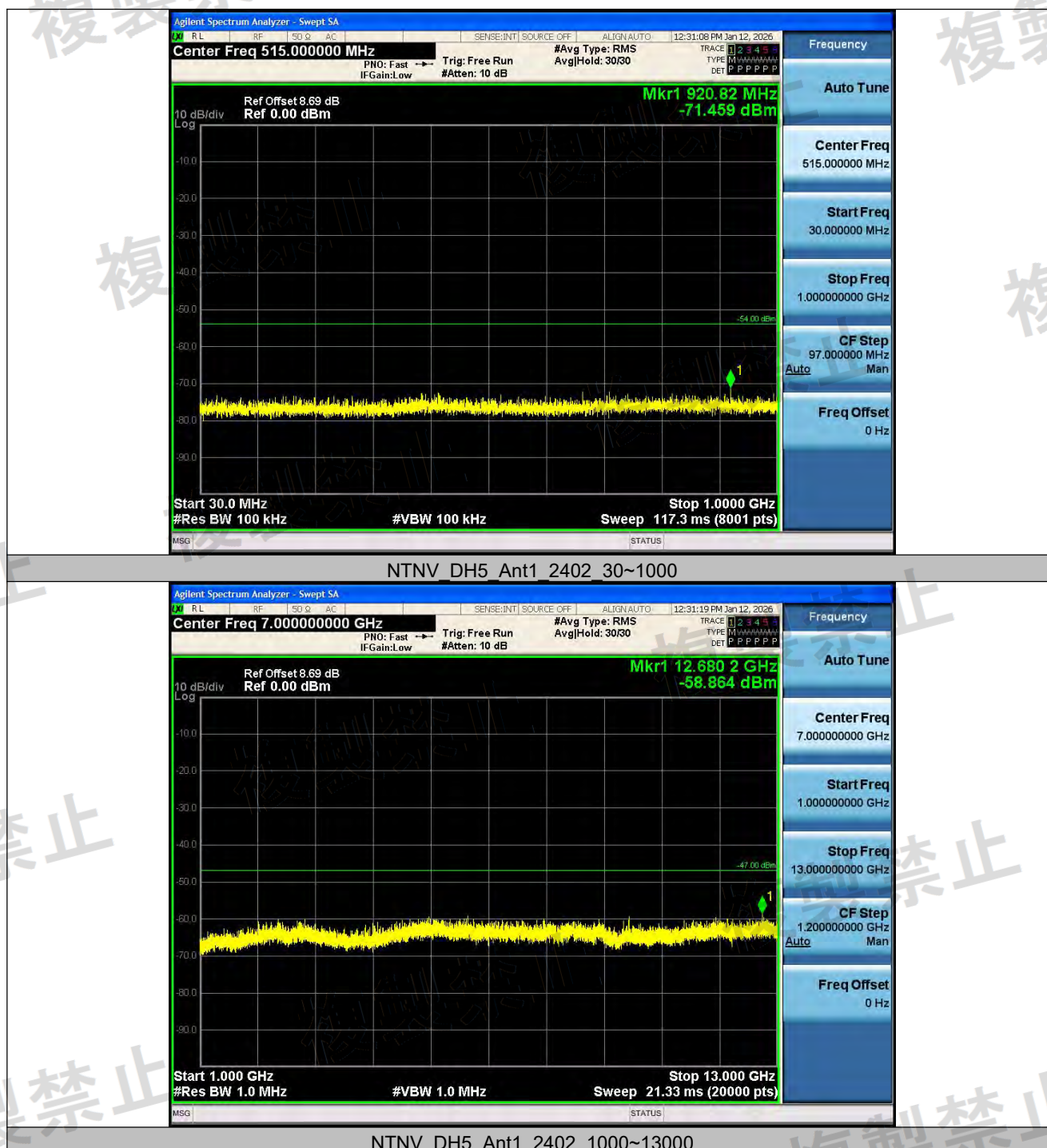
The settings of the spectrum analyzer during spurious searches are as follows:

- Sweep Bandwidth Starts spurious searches from the smallest possible frequencies to more than 5 times the carrier frequencies (for example from 30 MHz up to 12.5 GHz for a 2.4 GHz system).
- Resolution Bandwidth 1 MHz
- Video Bandwidth 1 MHz
- Y-Axis Scale 10 dB/Div
- Input Level: Maximum dynamic range value
- Sweep Time: Minimum amount of time to ensure measurement accuracy.
- Sweep Points: Over 400 points
- Detection Mode: Positive peak
- Display mode: Maximum hold

3.6.5 Test Results

Test Condition	Test Mode	Channel	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	DH5	2402	30~1000	920.82	-71.46	0.07145	≤4	PASS
			1000~13000	12680.20	-58.86	1.30017	≤20	PASS
		2441	30~1000	871.84	-72.44	0.05702	≤4	PASS
			1000~13000	9314.60	-59.2	1.20226	≤20	PASS
		2480	30~1000	601.57	-71.69	0.06776	≤4	PASS
			1000~13000	6003.10	-58.65	1.36458	≤20	PASS
	2DH5	2402	30~1000	827.10	-72.41	0.05741	≤4	PASS
			1000~13000	12647.20	-58.31	1.47571	≤20	PASS
		2441	30~1000	759.56	-72.33	0.05848	≤4	PASS
			1000~13000	6058.90	-59.16	1.21339	≤20	PASS
		2480	30~1000	596.24	-72.37	0.05794	≤4	PASS
			1000~13000	5688.60	-58.32	1.47231	≤20	PASS
	3DH5	2402	30~1000	738.71	-71.23	0.07534	≤4	PASS
			1000~13000	5828.40	-58.29	1.48252	≤20	PASS
		2441	30~1000	664.26	-72.32	0.05861	≤4	PASS
			1000~13000	8285.00	-58.68	1.35519	≤20	PASS
		2480	30~1000	378.59	-72.28	0.05916	≤4	PASS
			1000~13000	5693.40	-58.93	1.27938	≤20	PASS
NTLV	DH5	2402	30~1000	513.67	-72.4	0.05754	≤4	PASS
			1000~13000	12931.00	-58.46	1.42561	≤20	PASS
		2441	30~1000	713.61	-71.58	0.06950	≤4	PASS
			1000~13000	12817.00	-59.33	1.16681	≤20	PASS
		2480	30~1000	391.81	-72.73	0.05333	≤4	PASS
			1000~13000	12795.40	-59.07	1.23880	≤20	PASS
	2DH5	2402	30~1000	827.46	-70.06	0.09863	≤4	PASS
			1000~13000	12767.20	-58.84	1.30617	≤20	PASS
		2441	30~1000	792.91	-72.27	0.05929	≤4	PASS
			1000~13000	12816.40	-58.95	1.27350	≤20	PASS
		2480	30~1000	766.96	-72.19	0.06039	≤4	PASS
			1000~13000	12479.80	-58.68	1.35519	≤20	PASS
	3DH5	2402	30~1000	446.74	-71.62	0.06887	≤4	PASS
			1000~13000	12336.40	-58.65	1.36458	≤20	PASS
		2441	30~1000	689.84	-71.85	0.06531	≤4	PASS
			1000~13000	12627.40	-58.45	1.42889	≤20	PASS
		2480	30~1000	854.99	-72.14	0.06109	≤4	PASS
			1000~13000	6049.30	-59.02	1.25314	≤20	PASS
NTHV	DH5	2402	30~1000	430.13	-72.25	0.05957	≤4	PASS
			1000~13000	8715.20	-58.68	1.35519	≤20	PASS
		2441	30~1000	851.35	-72.42	0.05728	≤4	PASS
			1000~13000	12668.20	-59.06	1.24165	≤20	PASS
		2480	30~1000	833.65	-67.81	0.16558	≤4	PASS
			1000~13000	5838.60	-58.89	1.29122	≤20	PASS
	2DH5	2402	30~1000	474.50	-71.97	0.06353	≤4	PASS
			1000~13000	5726.40	-59.23	1.19399	≤20	PASS
		2441	30~1000	905.91	-72.37	0.05794	≤4	PASS
			1000~13000	12891.40	-59.07	1.23880	≤20	PASS
		2480	30~1000	770.35	-72.64	0.05445	≤4	PASS
			1000~13000	3497.30	-58.75	1.33352	≤20	PASS
	3DH5	2402	30~1000	789.15	-71.95	0.06383	≤4	PASS
			1000~13000	5984.40	-58.93	1.27938	≤20	PASS
		2441	30~1000	446.62	-71.74	0.06699	≤4	PASS
			1000~13000	6562.90	-59.23	1.19399	≤20	PASS
		2480	30~1000	115.60	-72.08	0.06194	≤4	PASS
			1000~13000	5916.60	-58.75	1.33352	≤20	PASS

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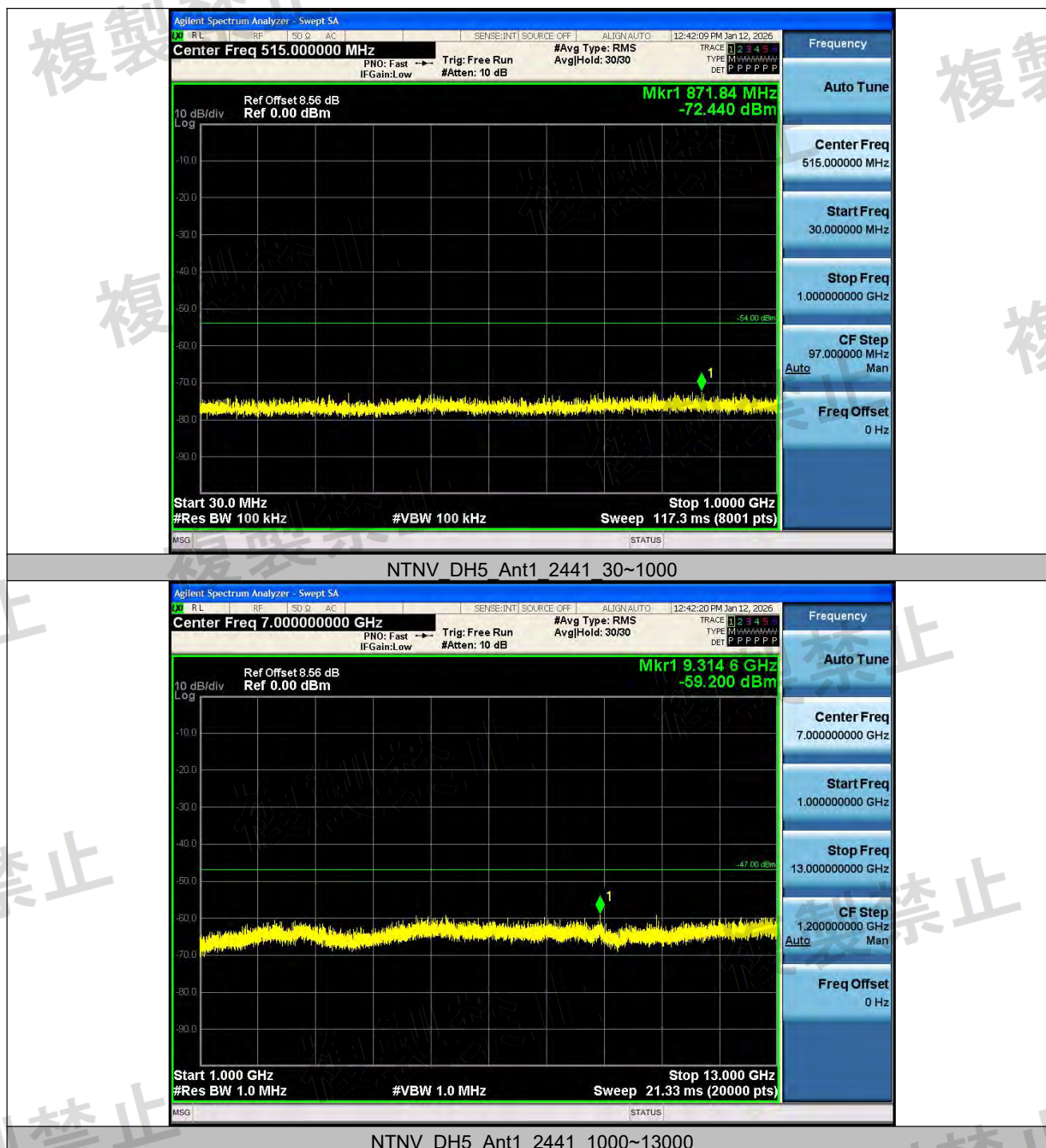
NTNV DH5 Ant1 2402 1000~13000

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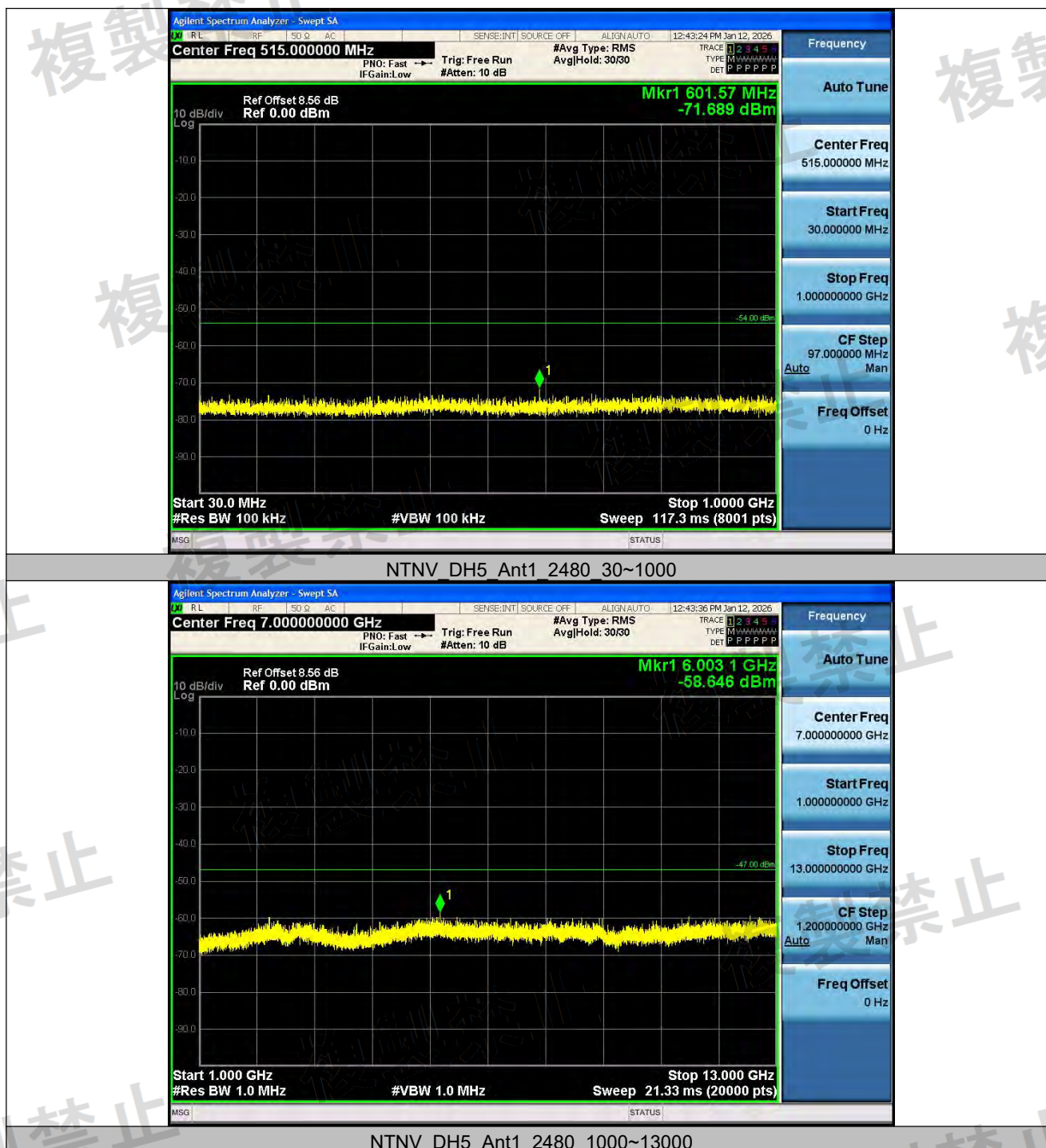


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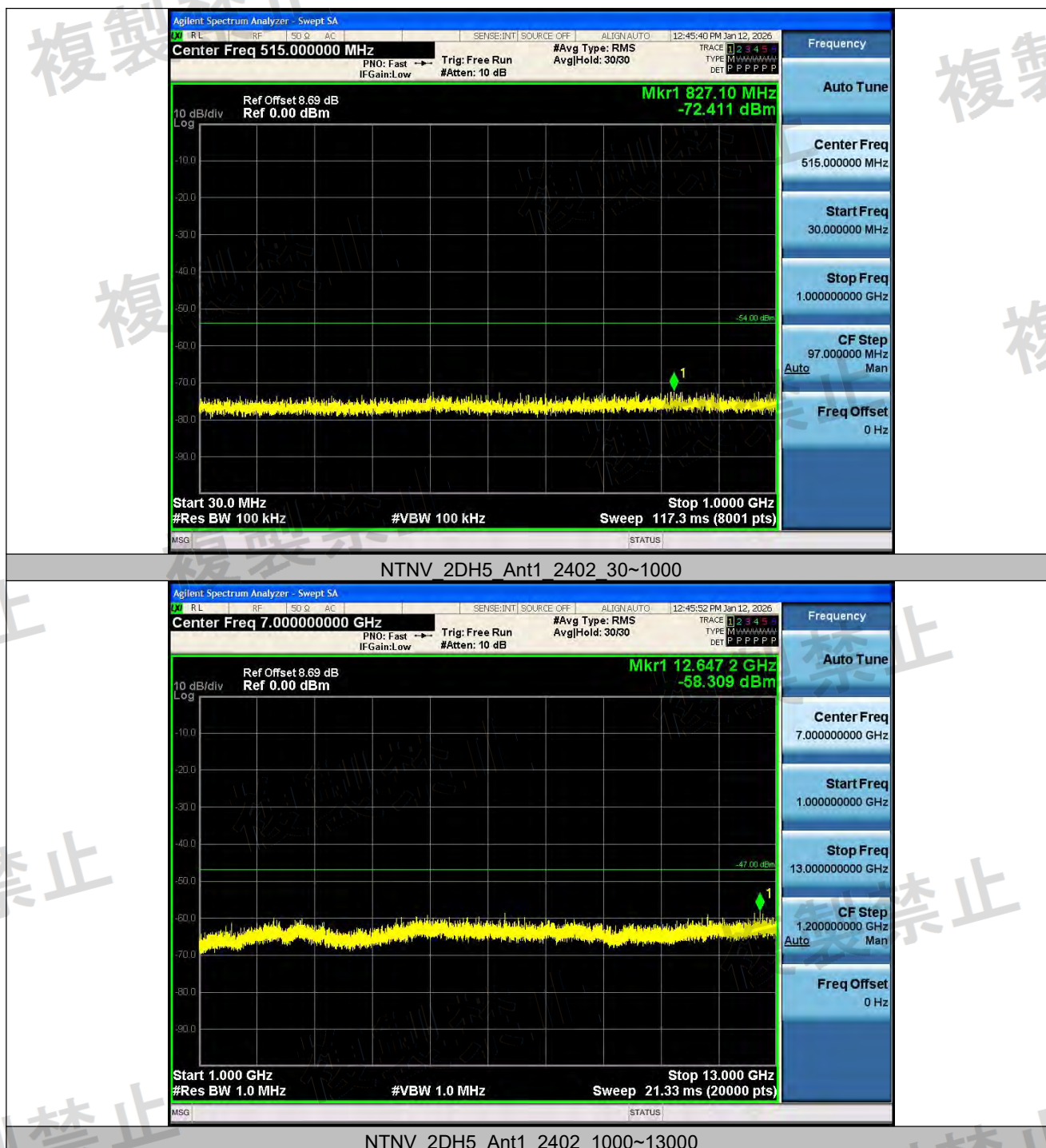
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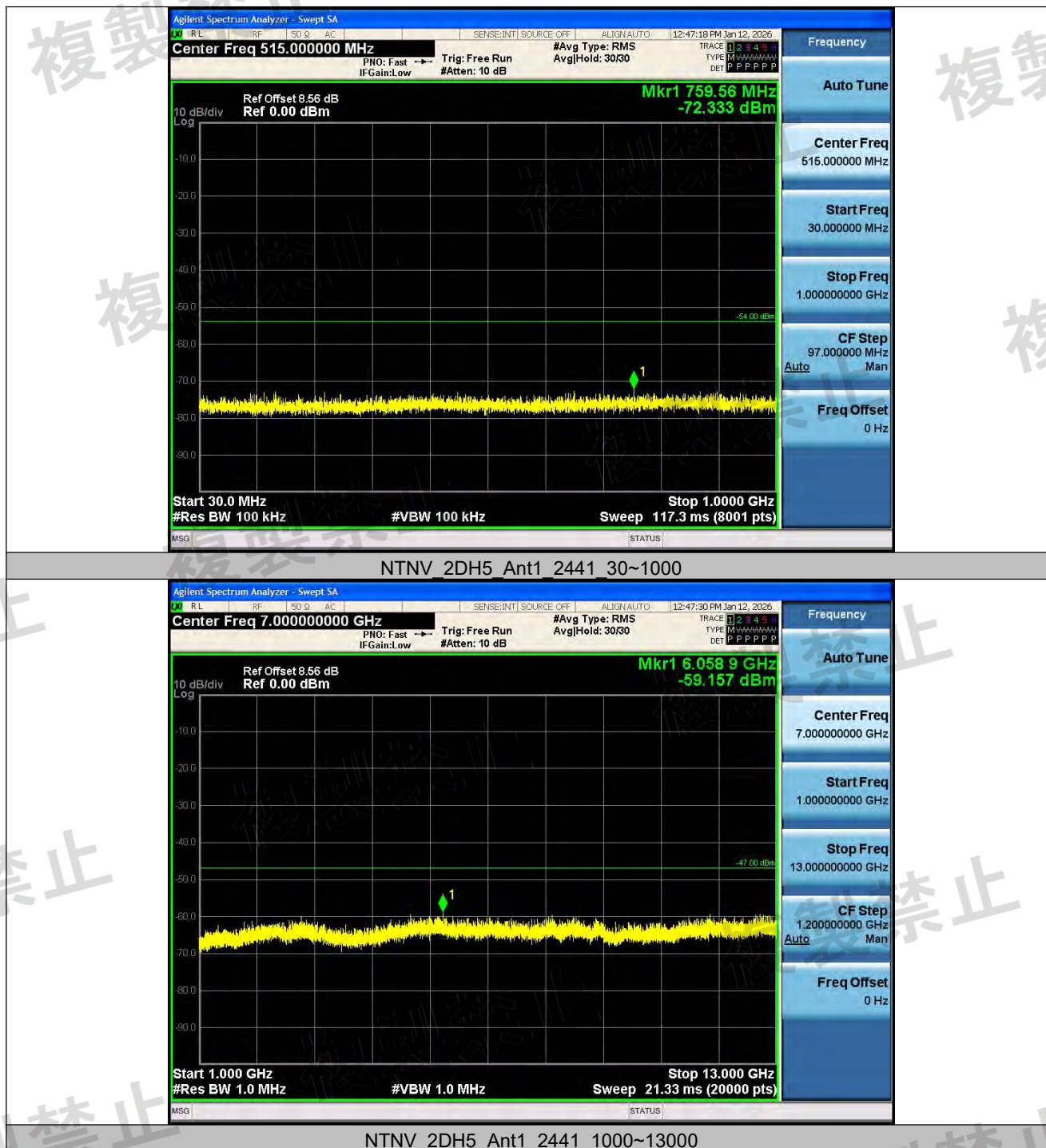
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NTNV 2DH5 Ant1 2402 30~1000

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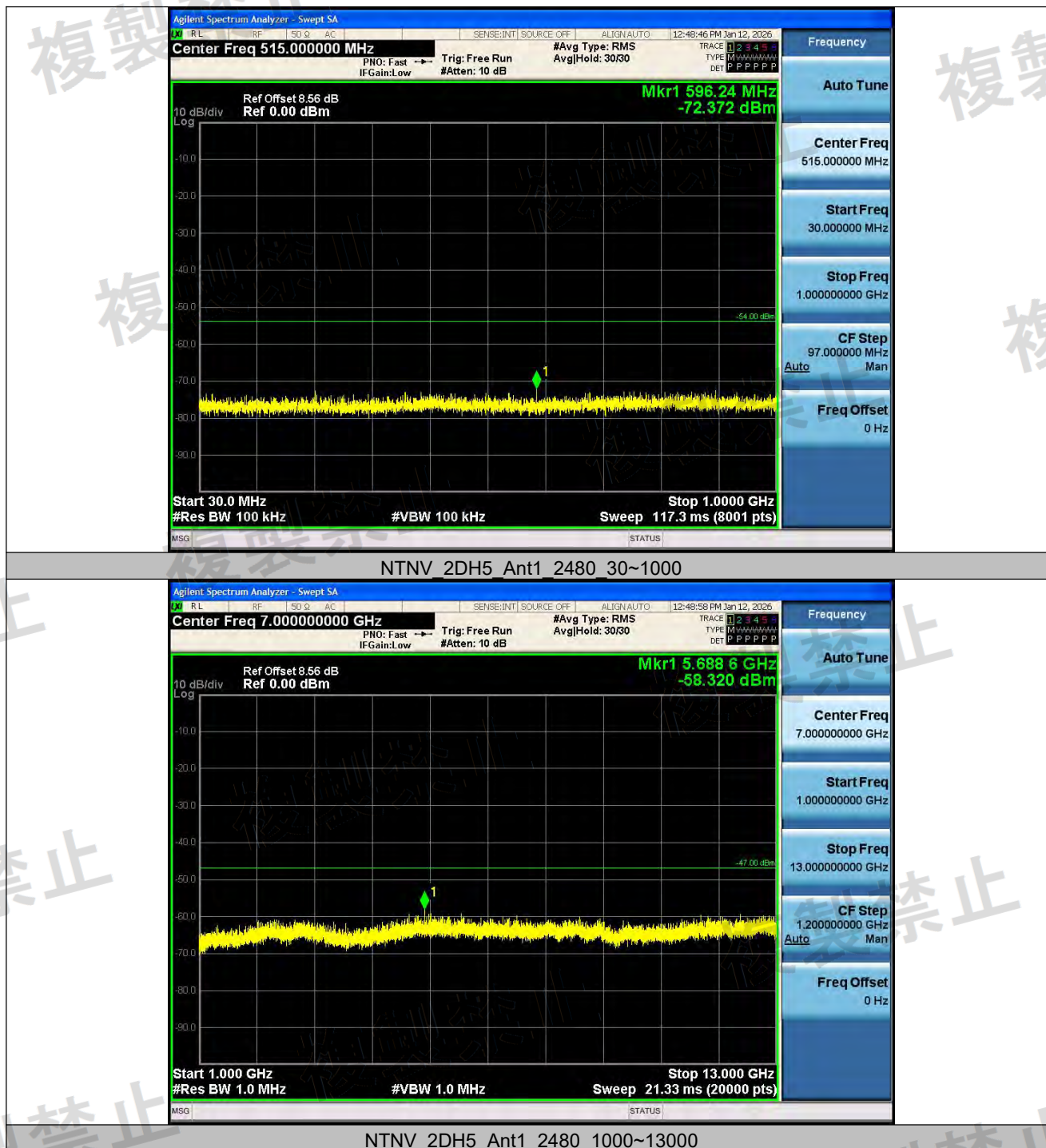


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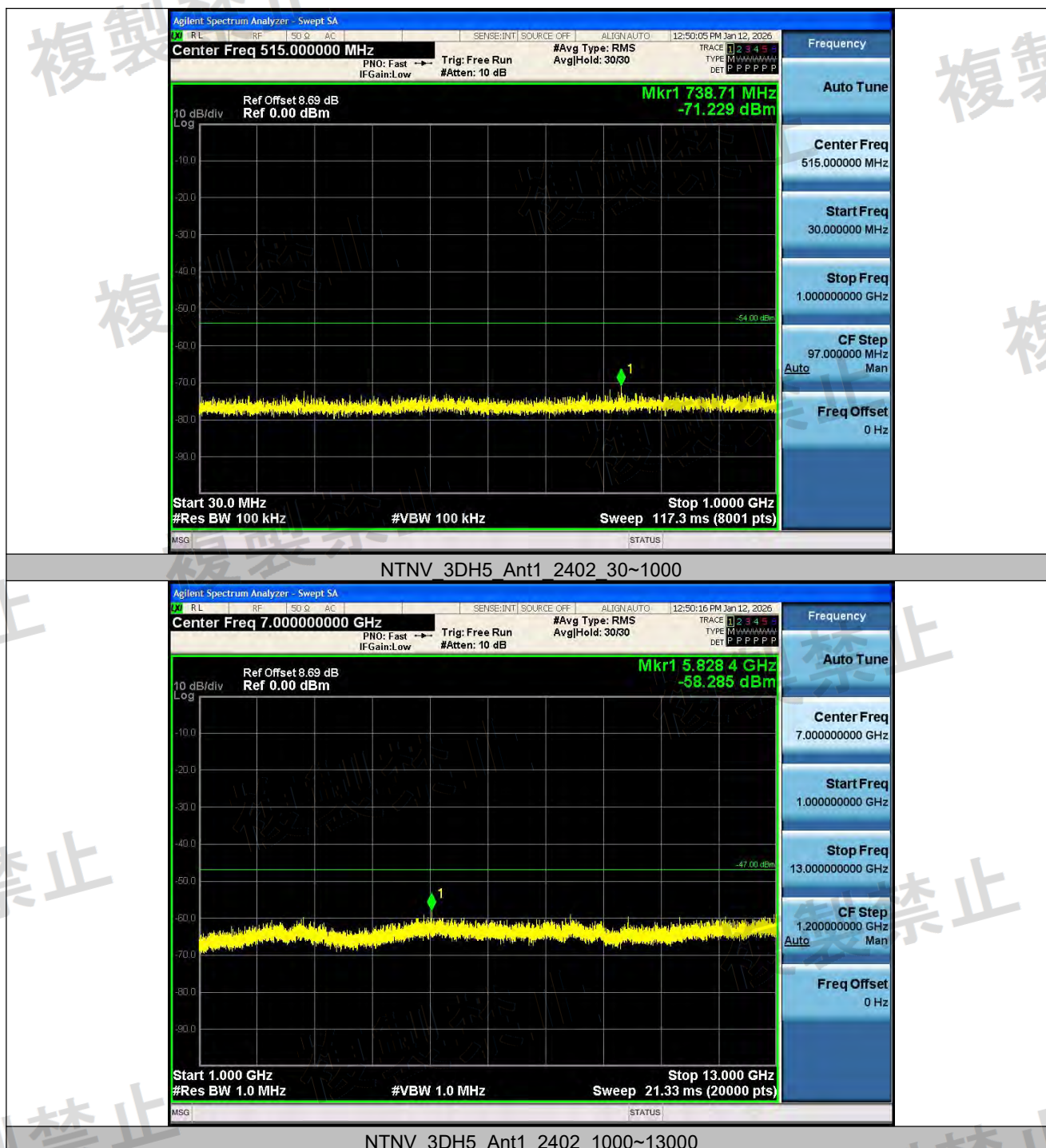
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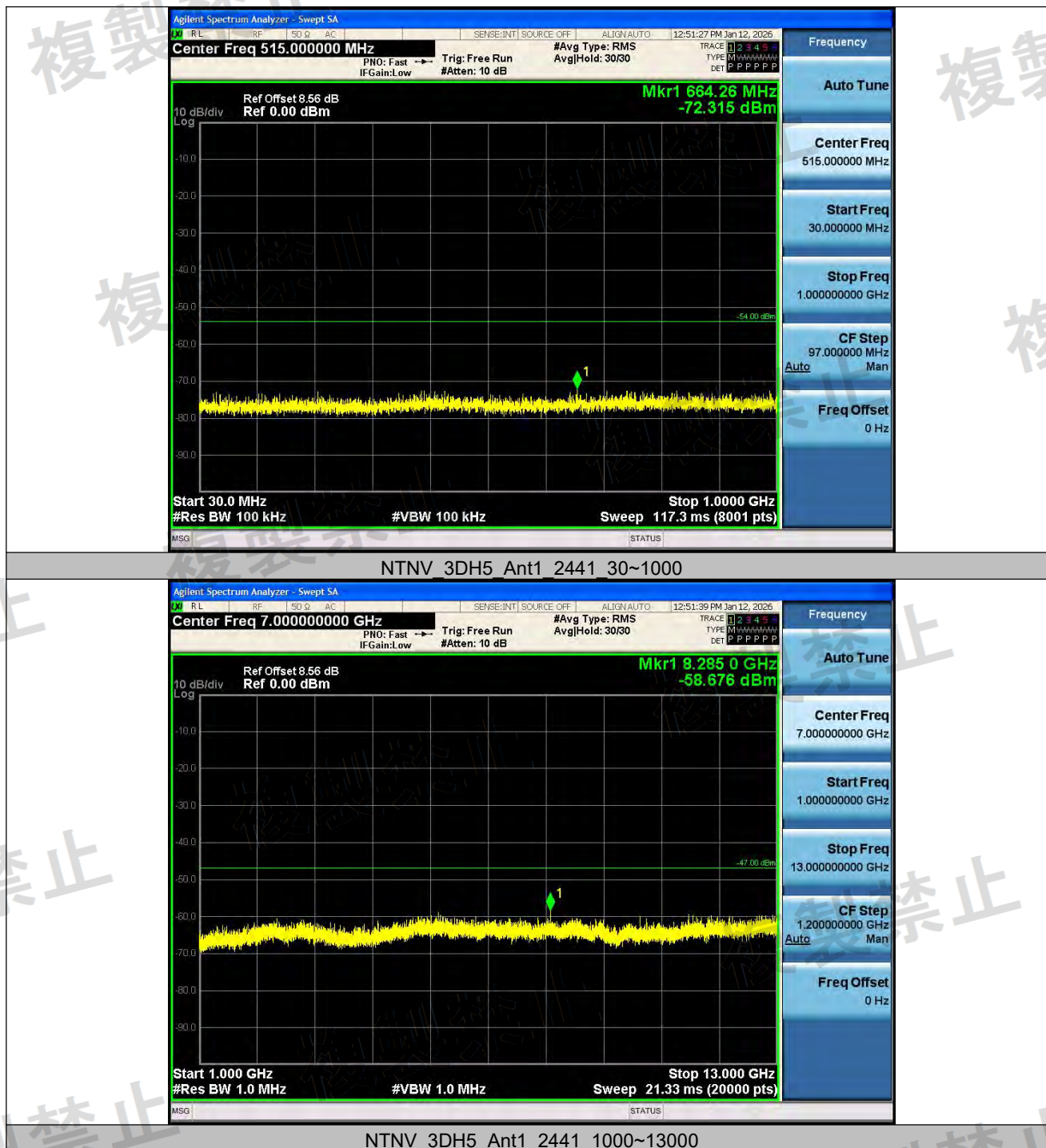
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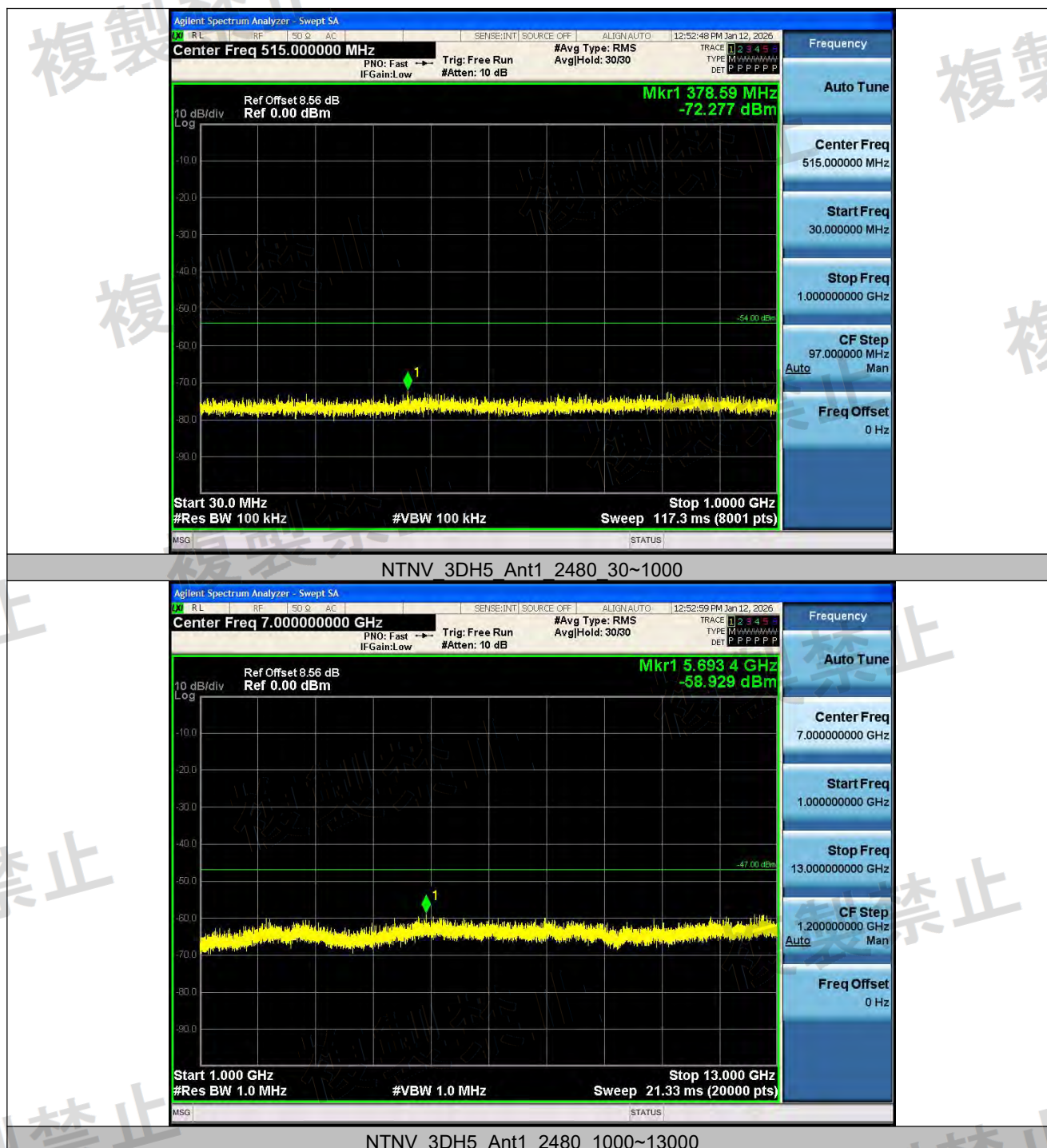
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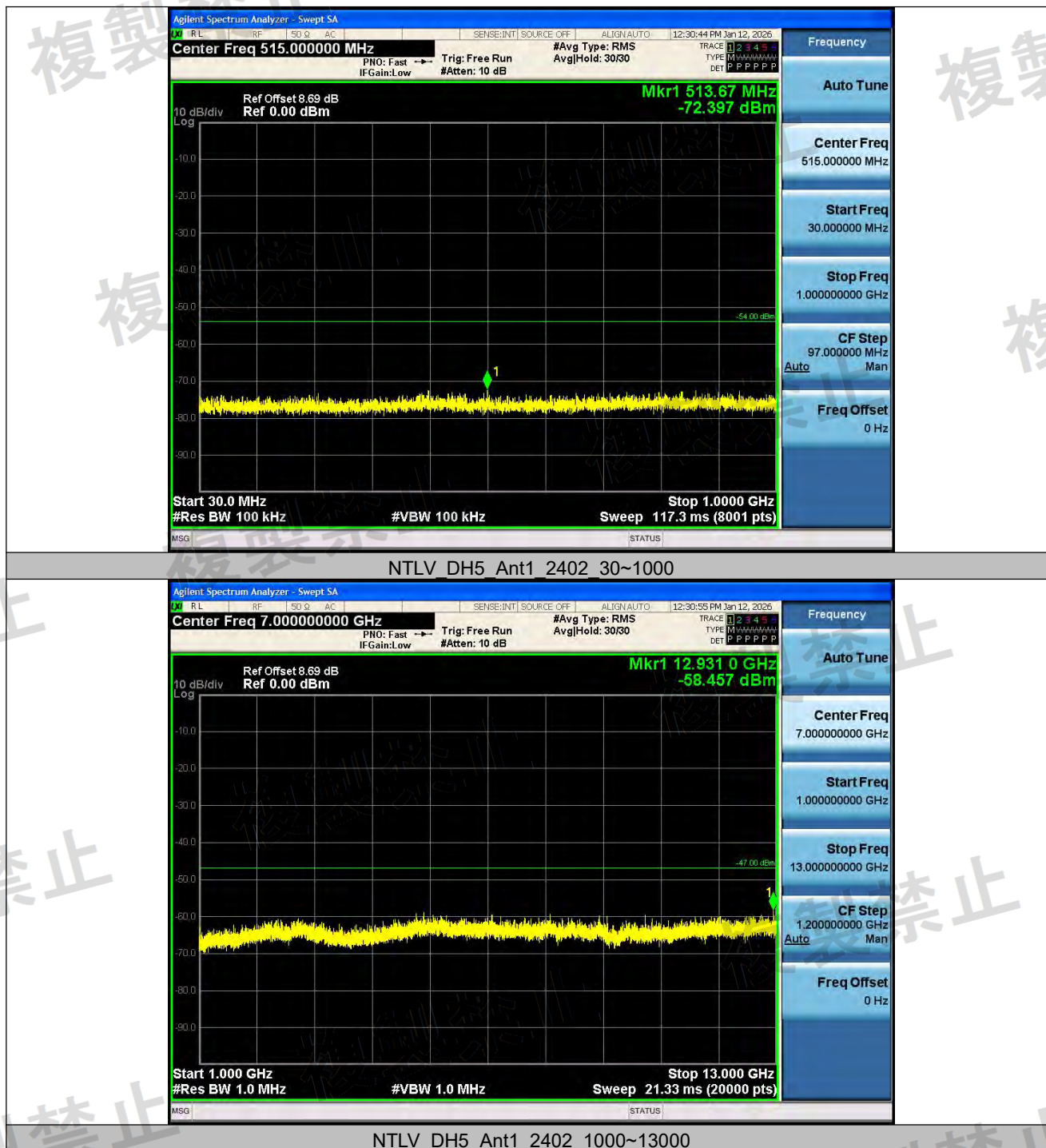


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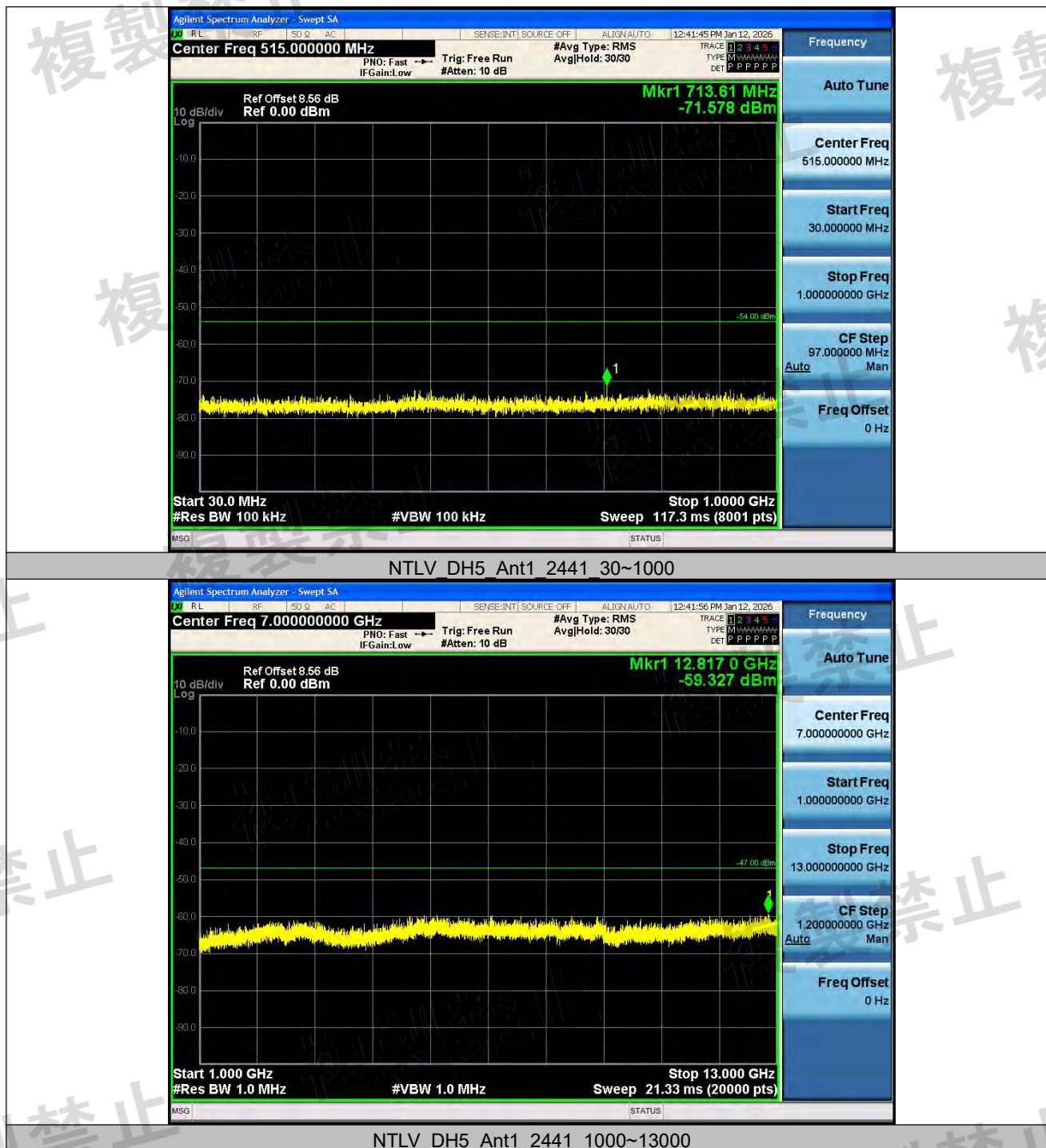
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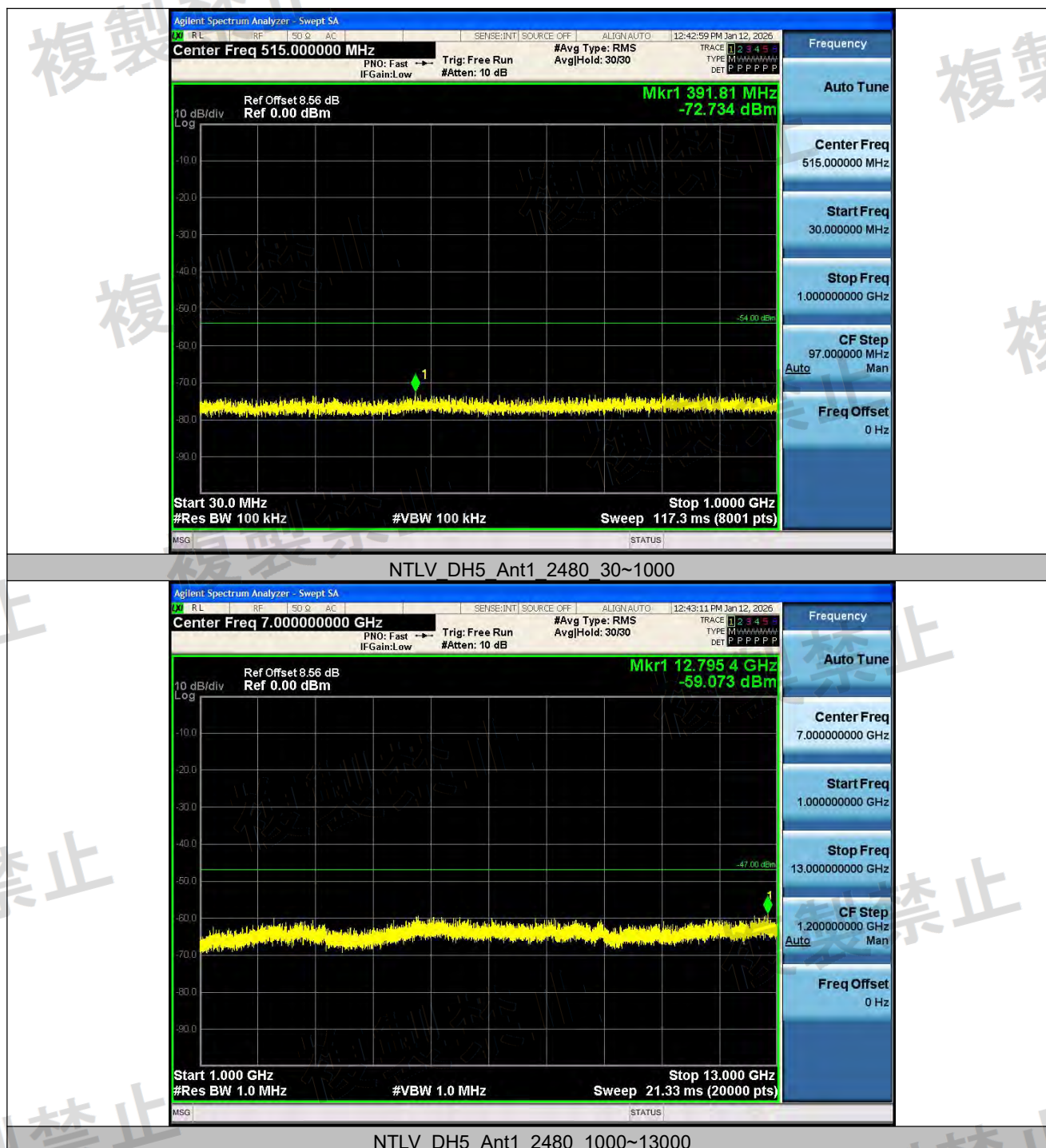
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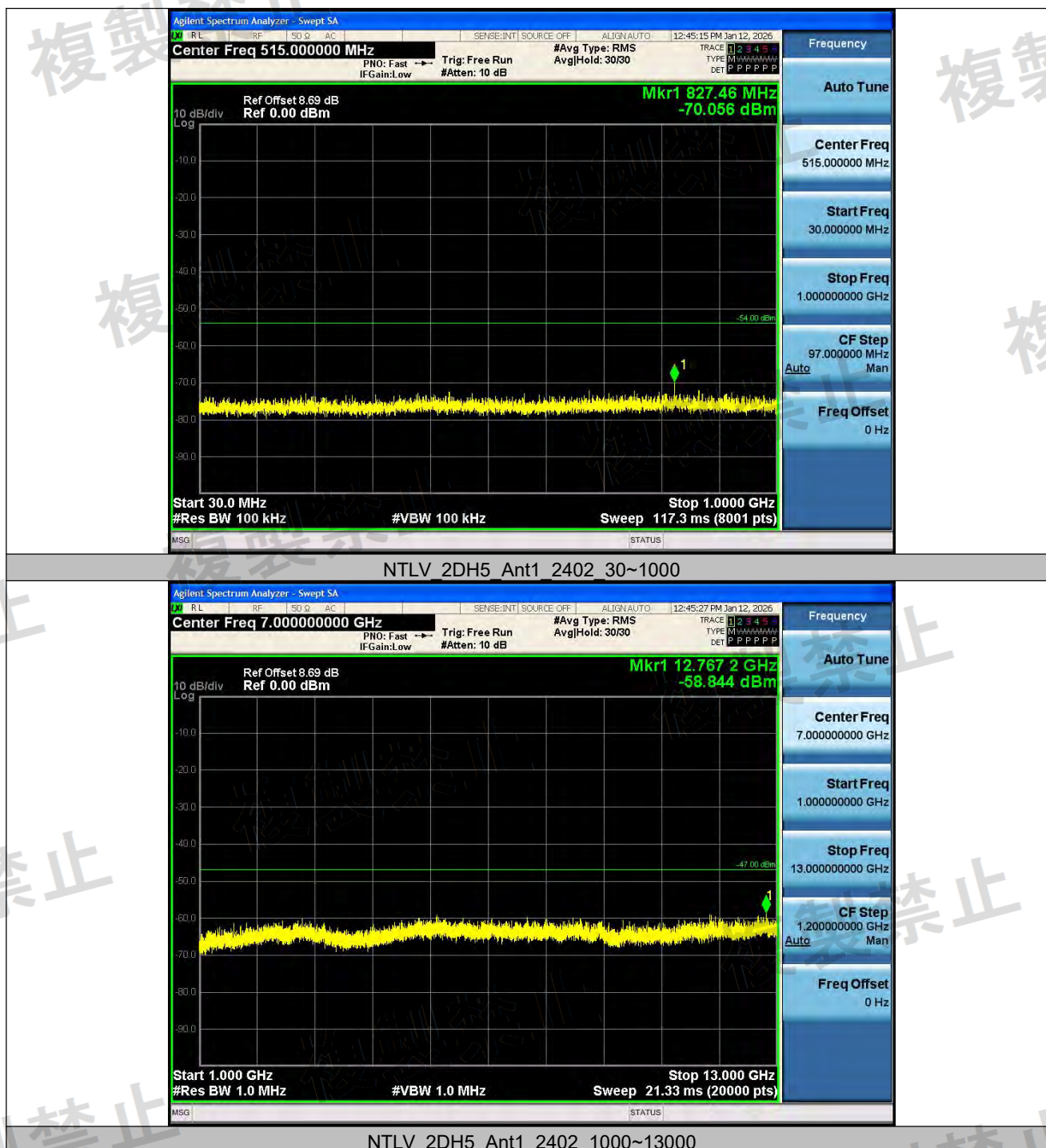
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NTLV DH5 Ant1 2480 30~1000

NTLV DH5 Ant1 2480 1000~13000

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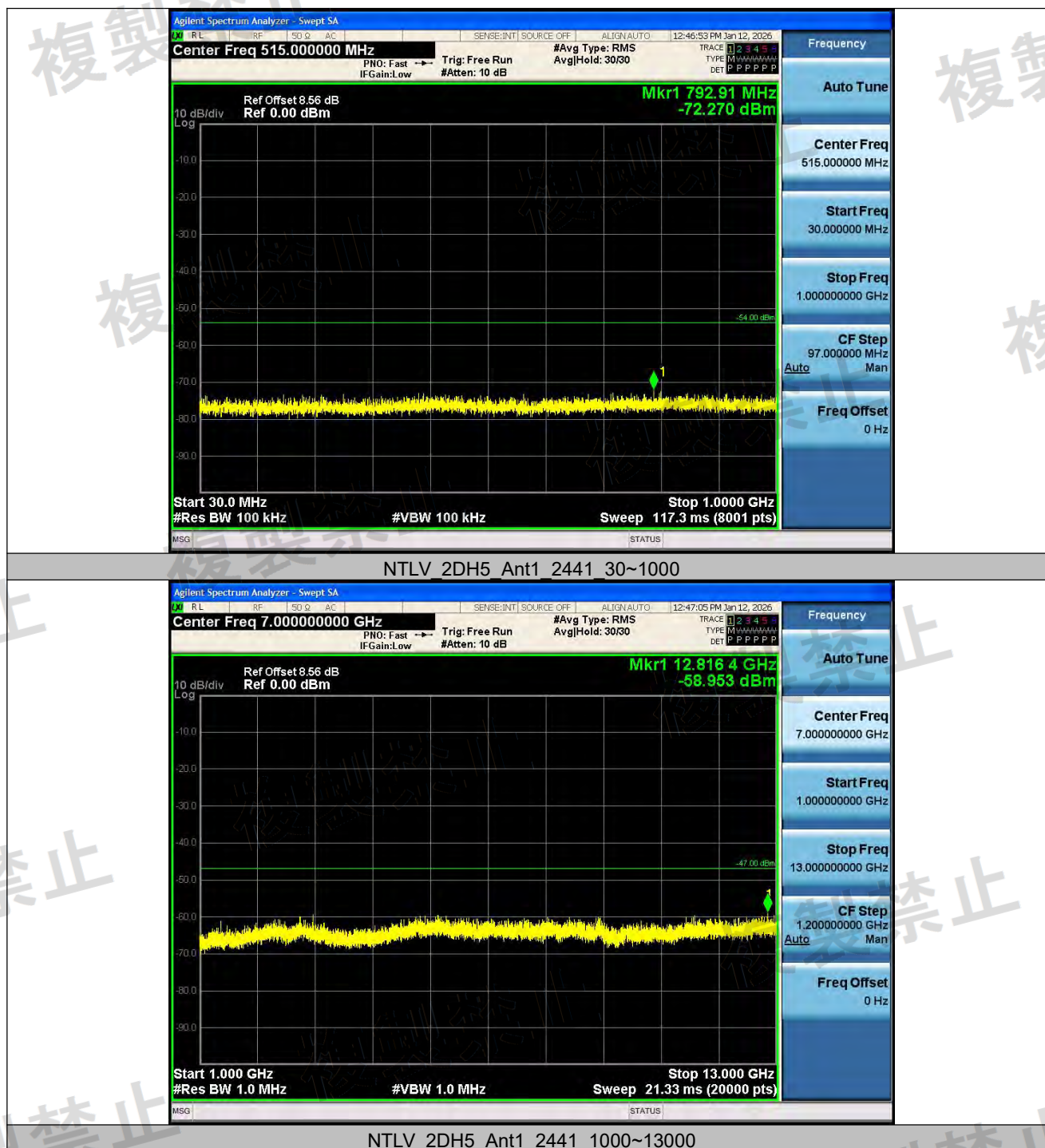


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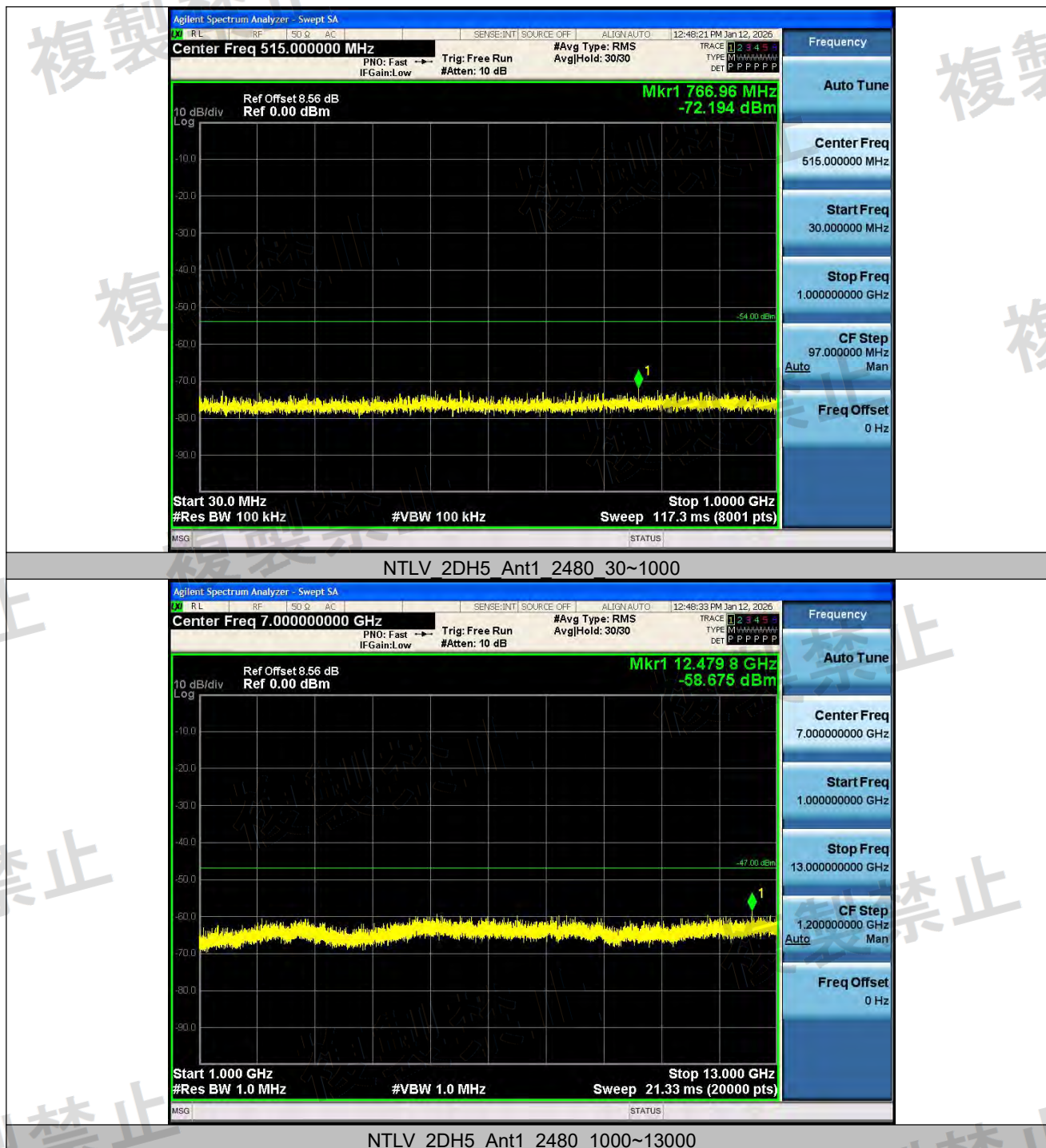


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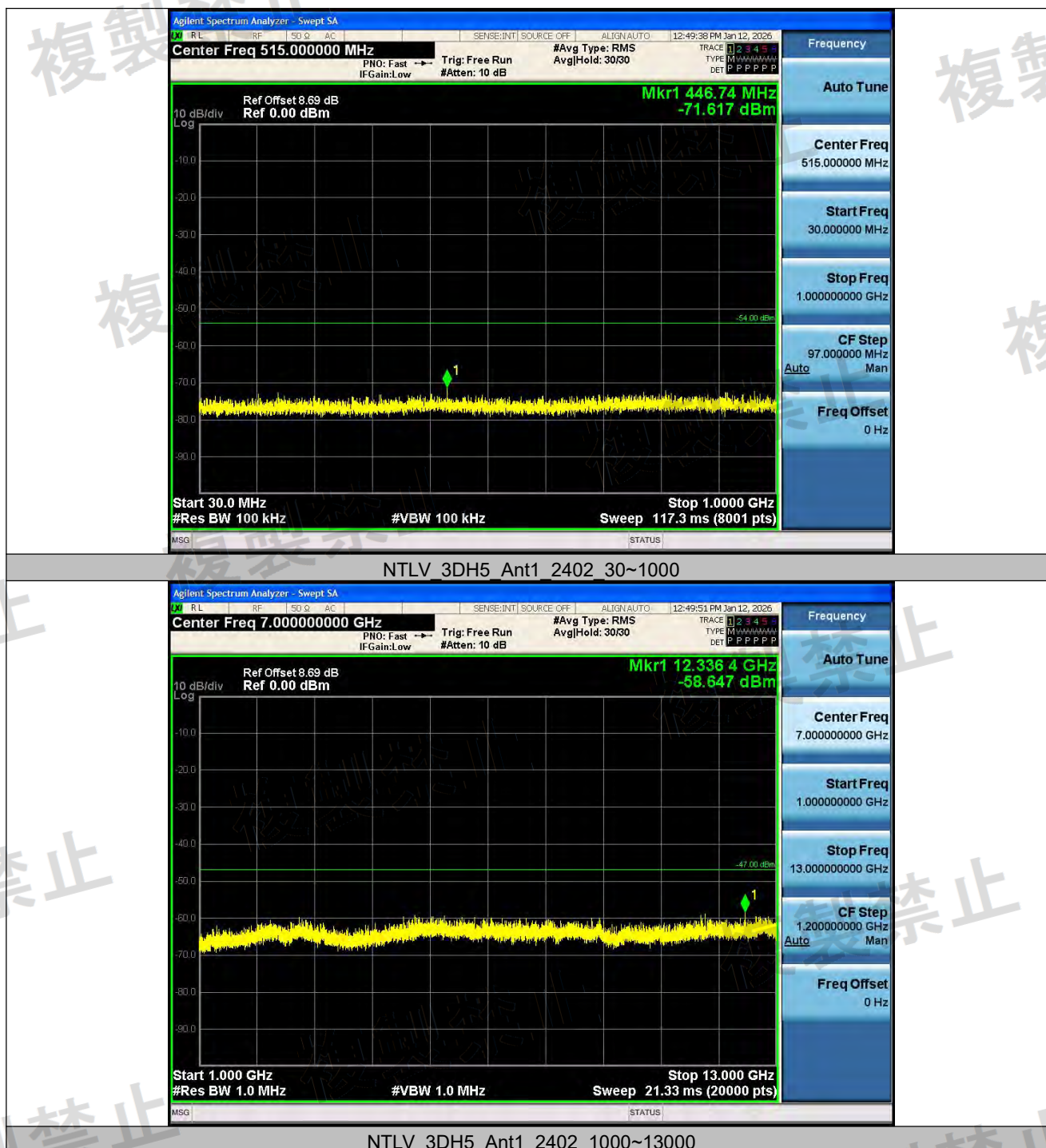


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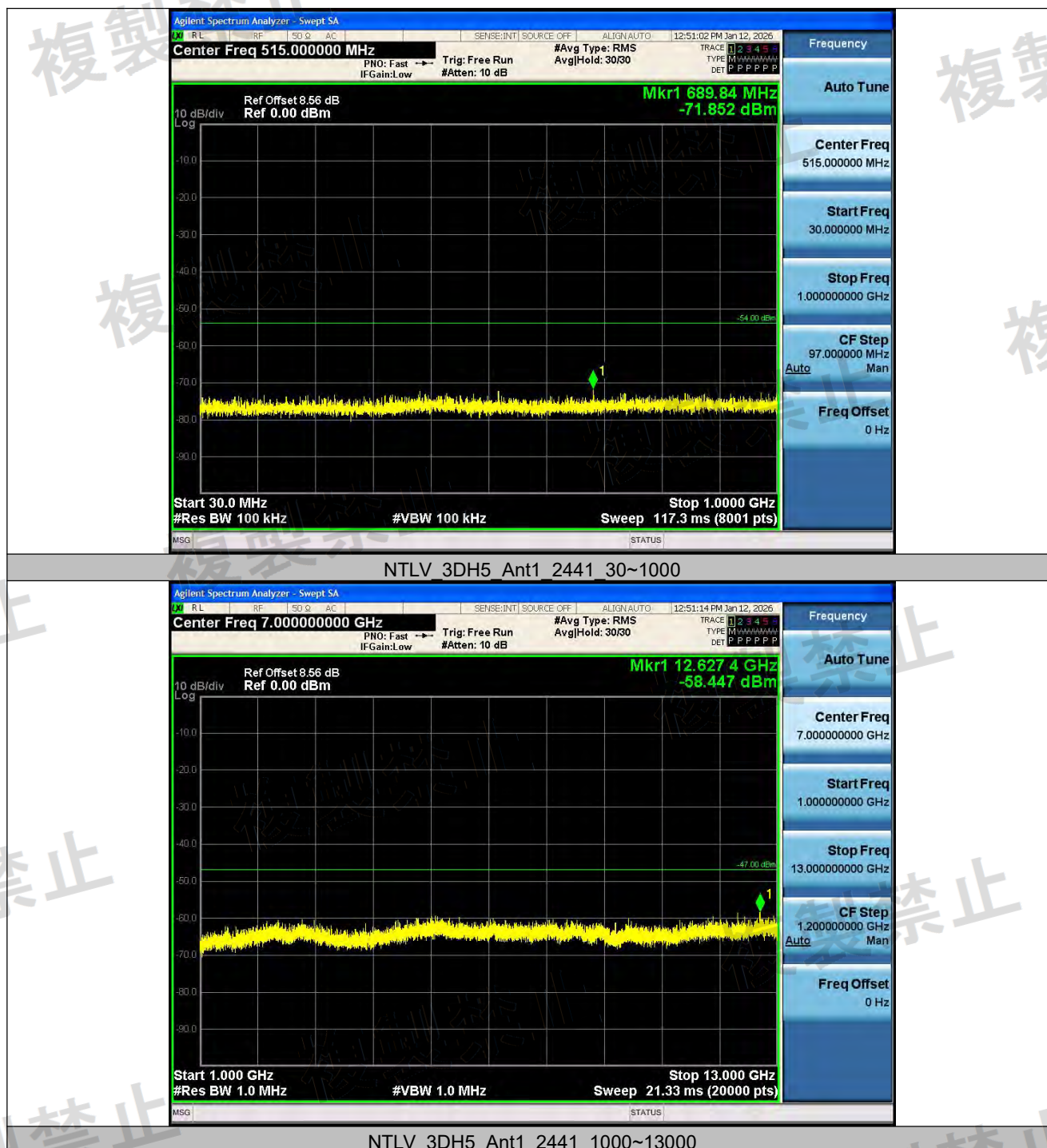
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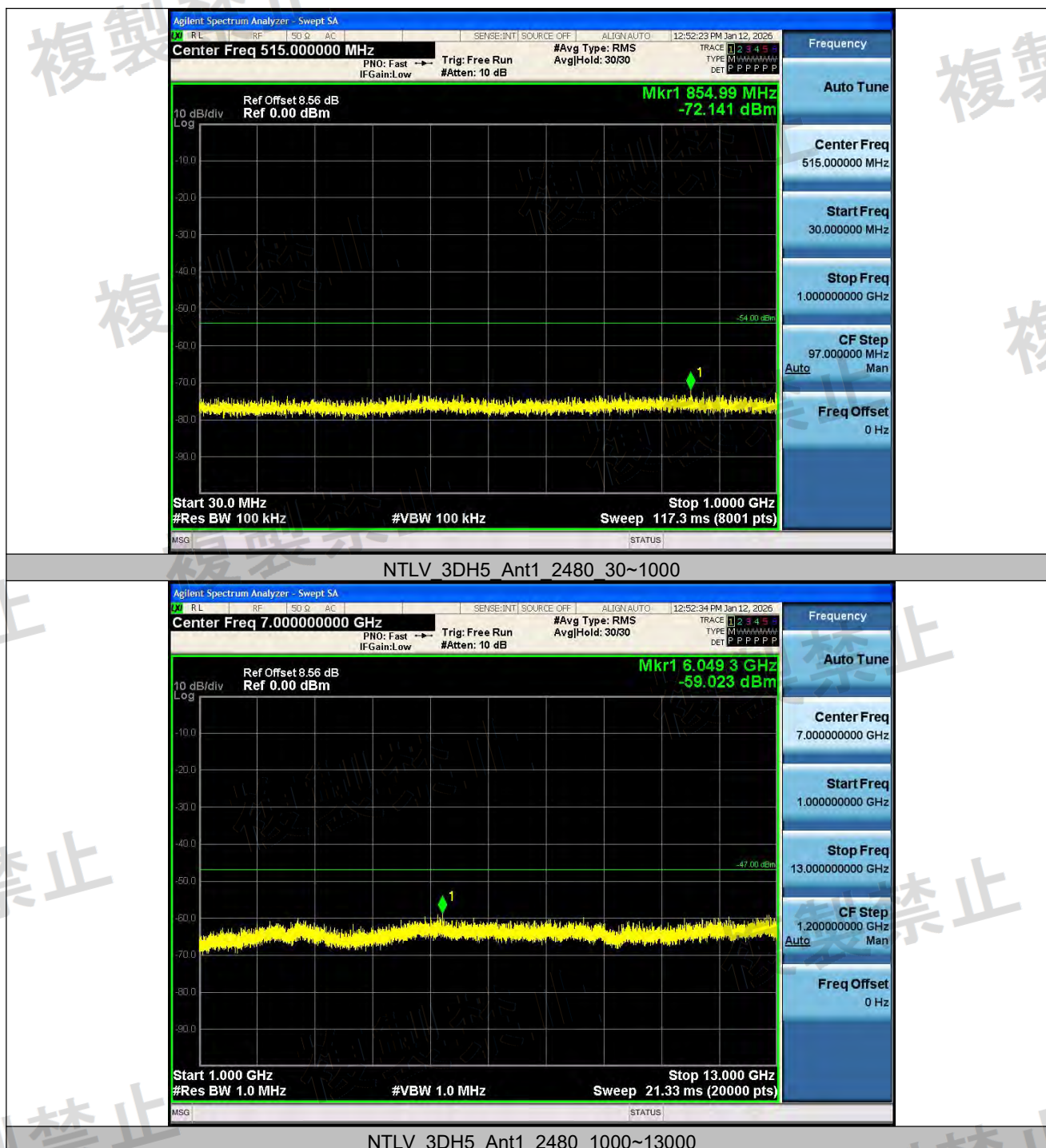


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Test Report No.: 25122701-1-RF-JP-01

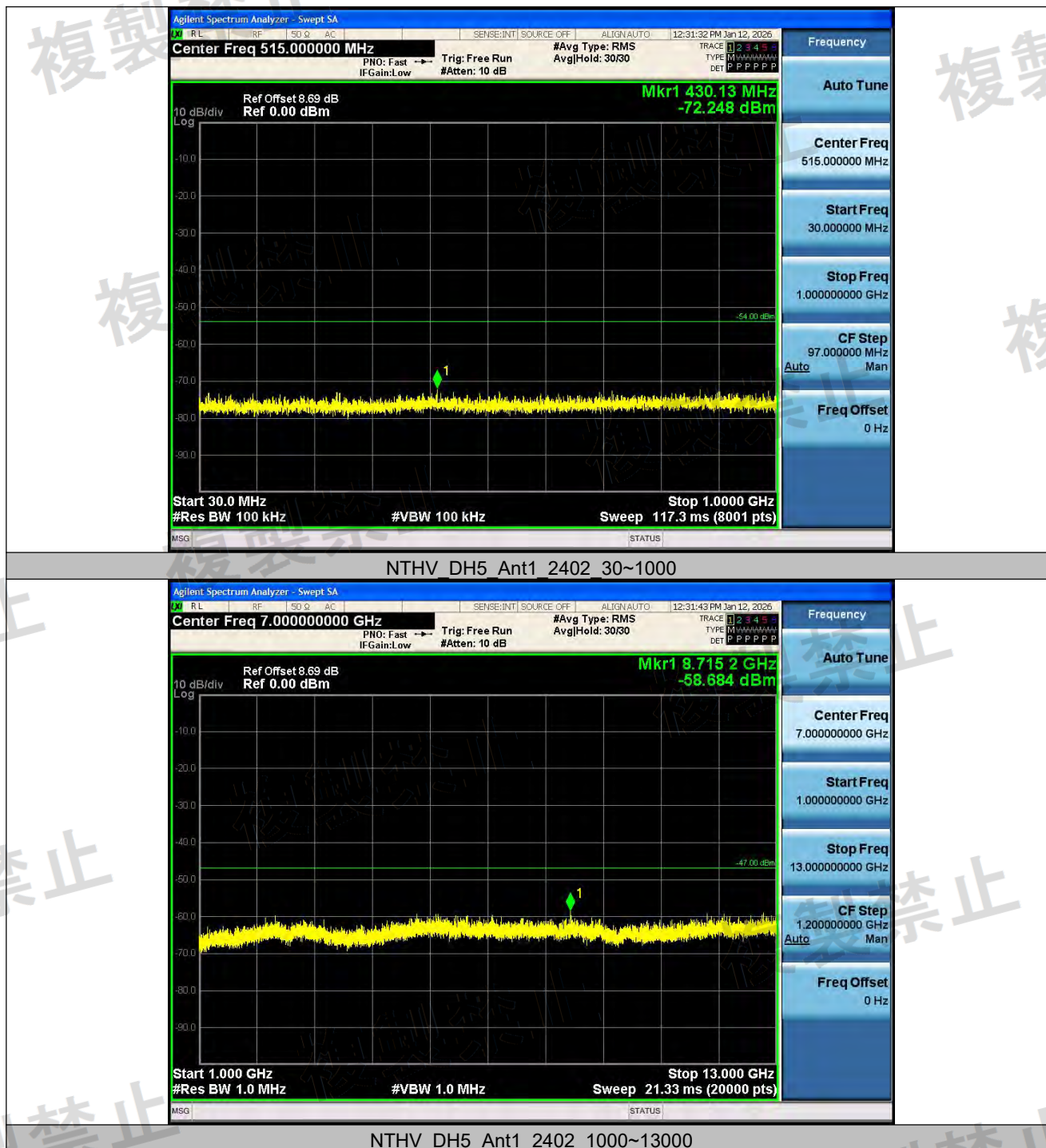


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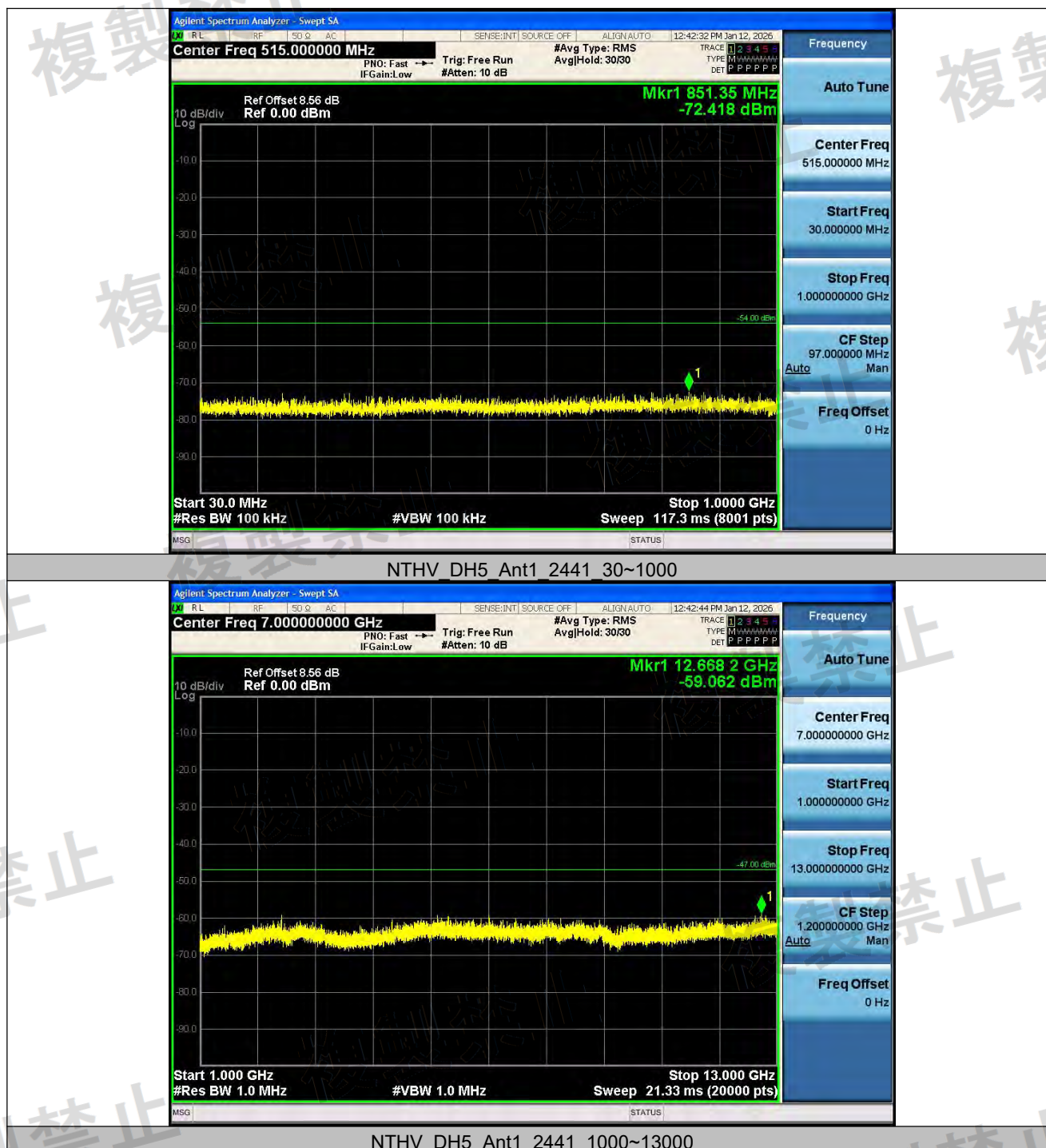
NTHV DH5 Ant1 2402 1000~13000

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Test Report No.: 25122701-1-RF-JP-01

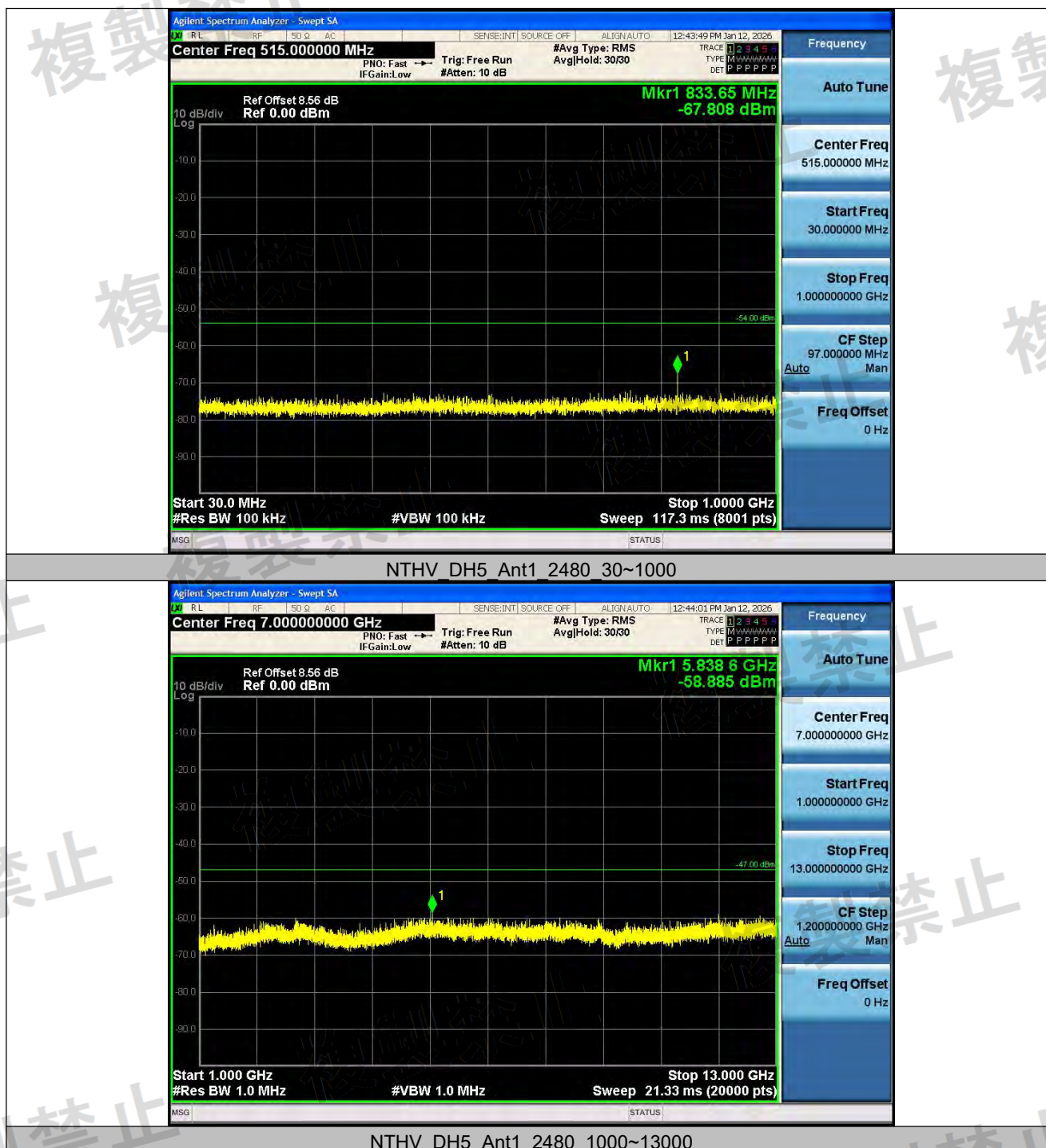


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Test Report No.: 25122701-1-RF-JP-01



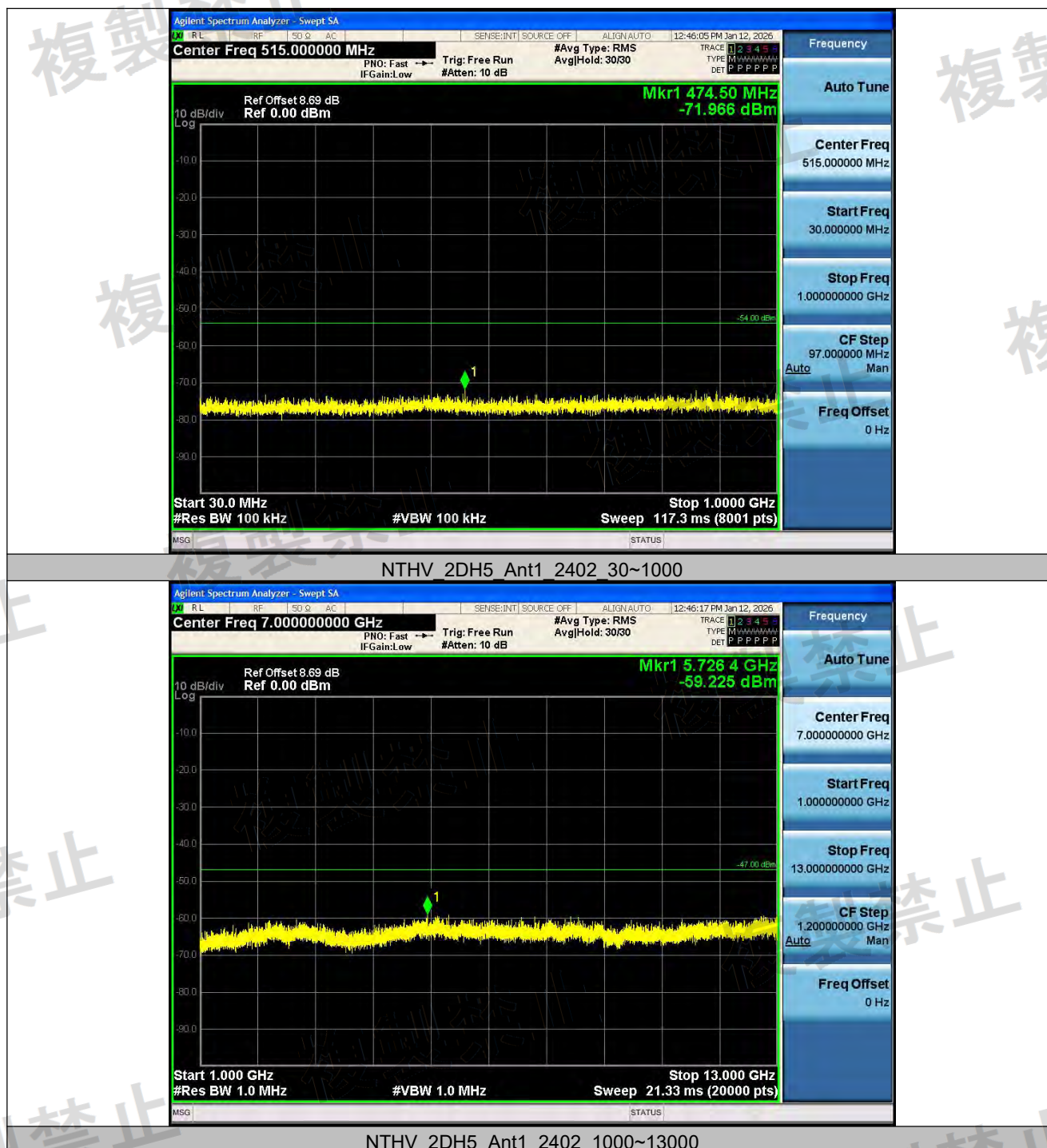
NTHV DH5 Ant1 2480 1000~13000

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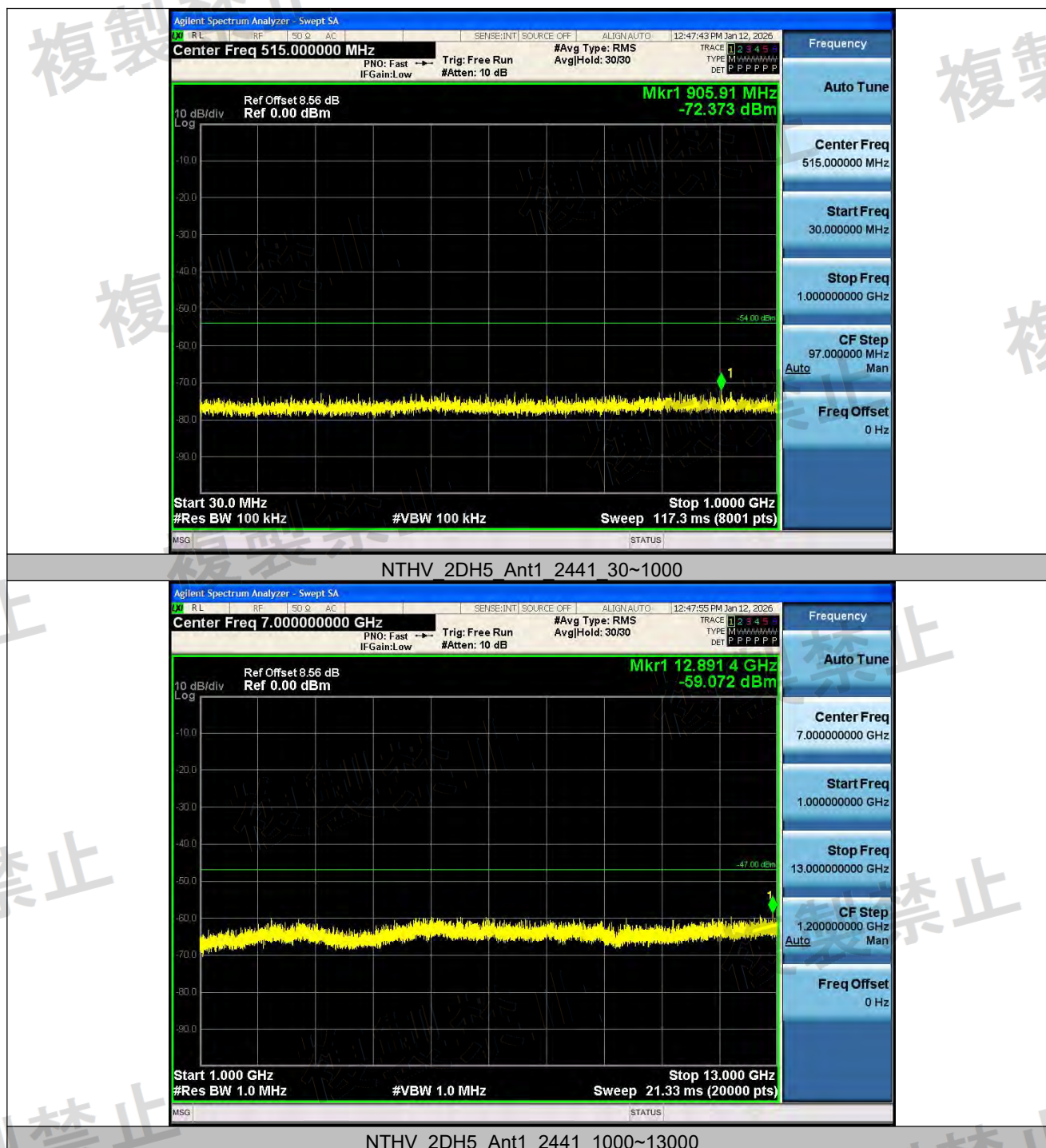


Lab: [Hwa-Hsing \(Dongguan\) Testing Co., Ltd.](#)
Address: [No.101, Building N1, Yuyuan 2 Road, Yuyuan Industrial Park, HuangJiang Town, Dongguan City, People's Republic of China](#)

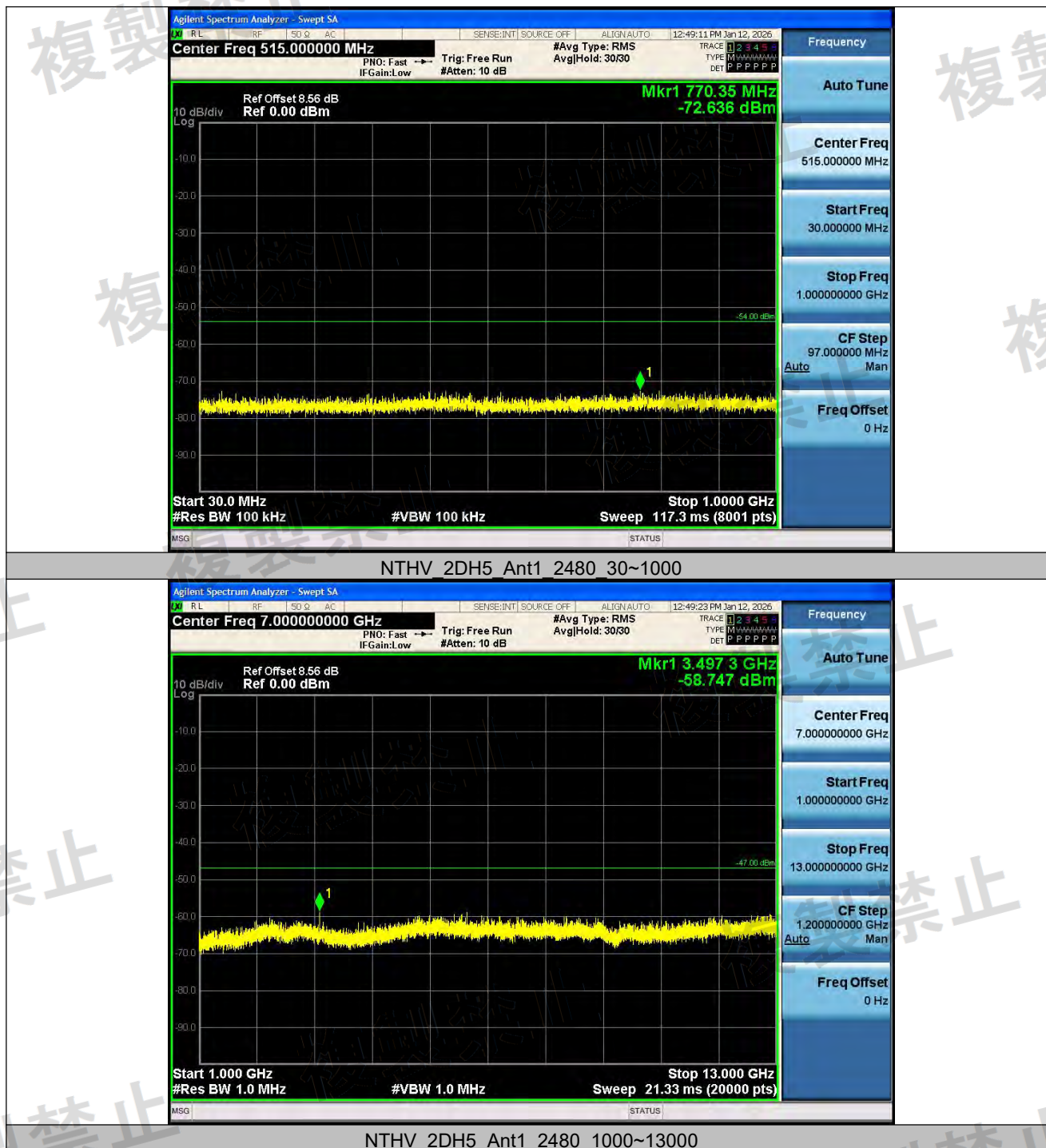
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Test Report No.: 25122701-1-RF-JP-01



NTHV 2DH5 Ant1 2480 30~1000

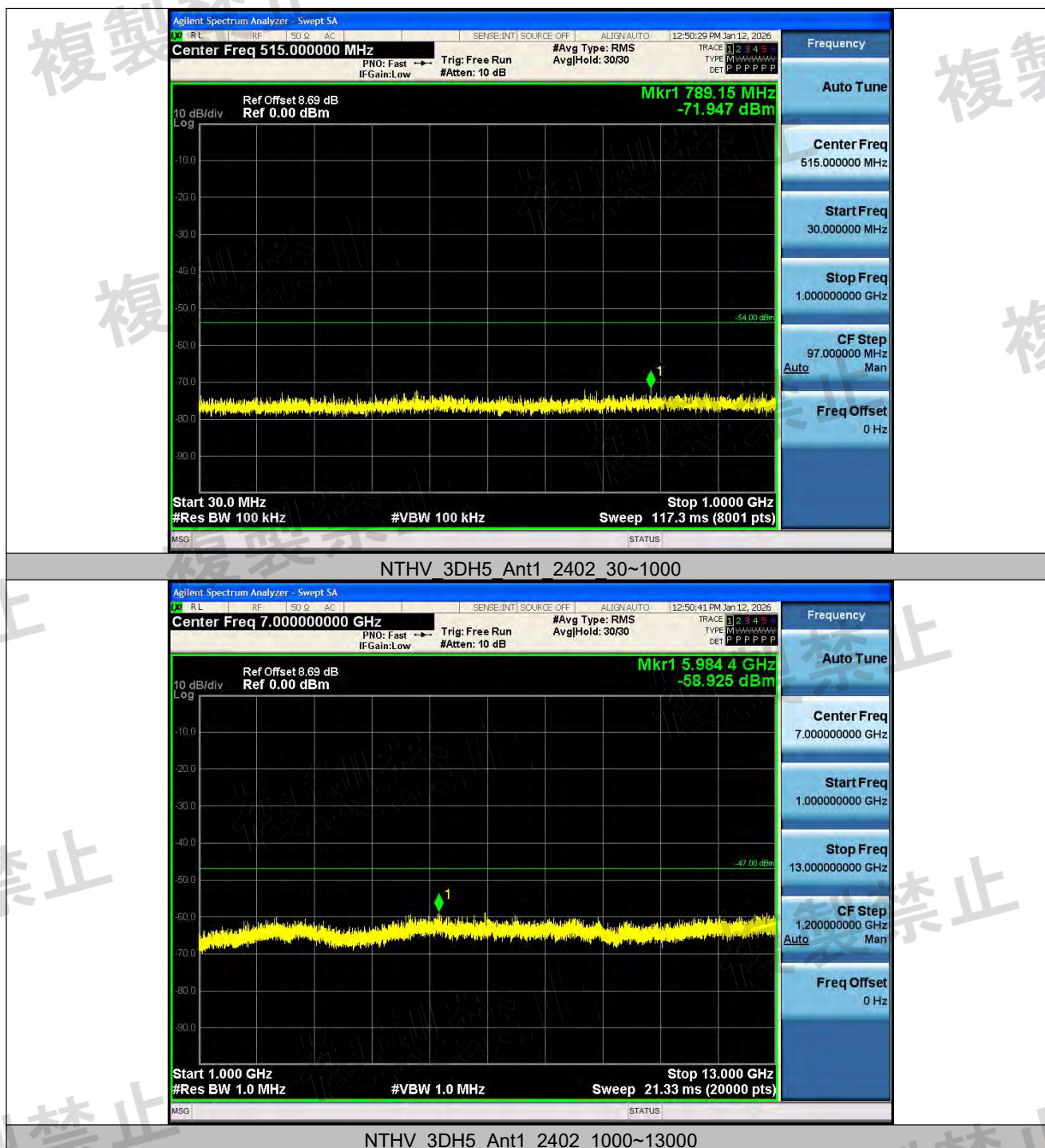
NTHV 2DH5 Ant1 2480 1000~13000

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NTHV 3DH5 Ant1 2402 30~1000

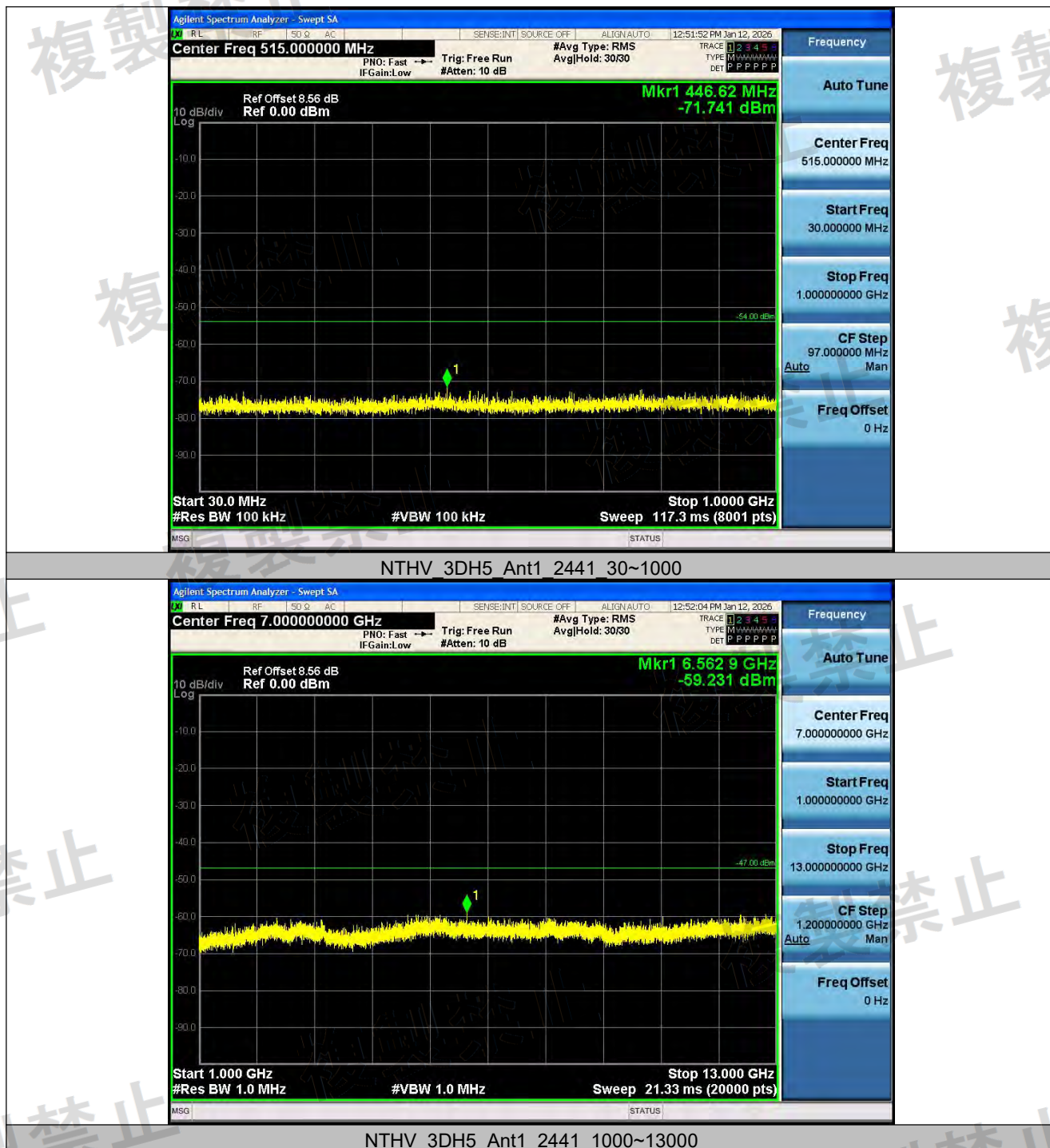
NTHV 3DH5 Ant1 2402 1000~13000

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Test Report No.: 25122701-1-RF-JP-01

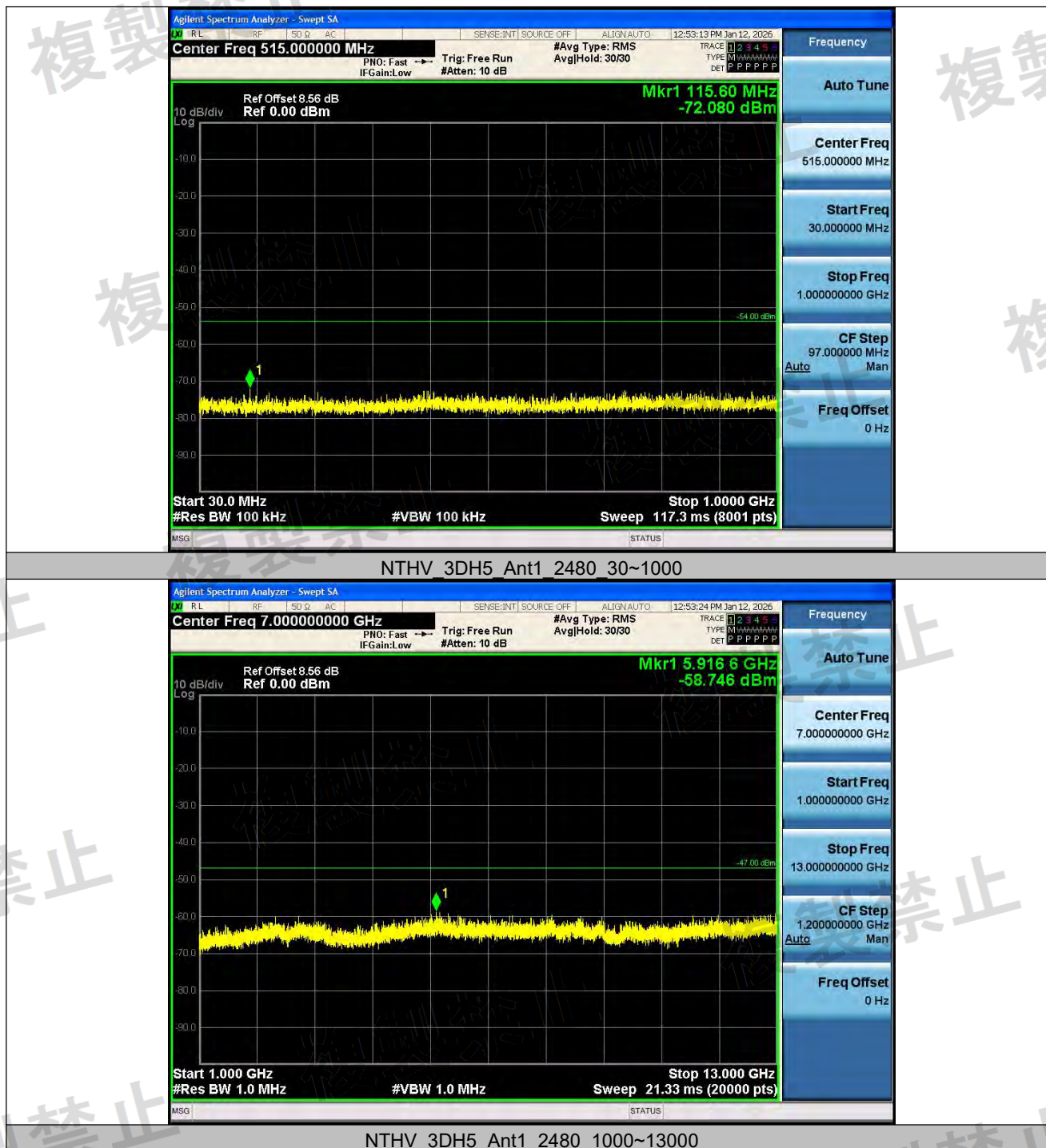


Lab: [Hwa-Hsing \(Dongguan\) Testing Co., Ltd.](#)
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3.7 Dwell time of frequency hopping

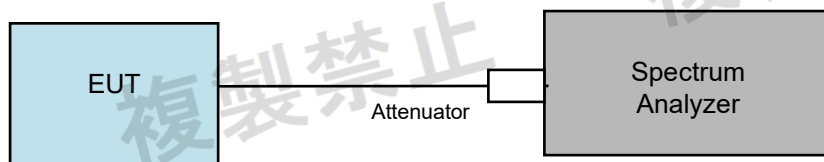
3.7.1 Limits of dwell time

3.7.2 Limit of Receiver Spurious Radiation

The frequency retention time in the frequency hopping method shall be 0.4 second or less. The total sum of the frequency retention time in any frequency within the time obtained by multiplying the diffusion rate by 0.4 second shall be 0.4 second or shorter.

Formula: (Normal mode) dwell time = [Spreading rate/79] x duty ratio x 0.4 seconds

3.7.3 Test setup

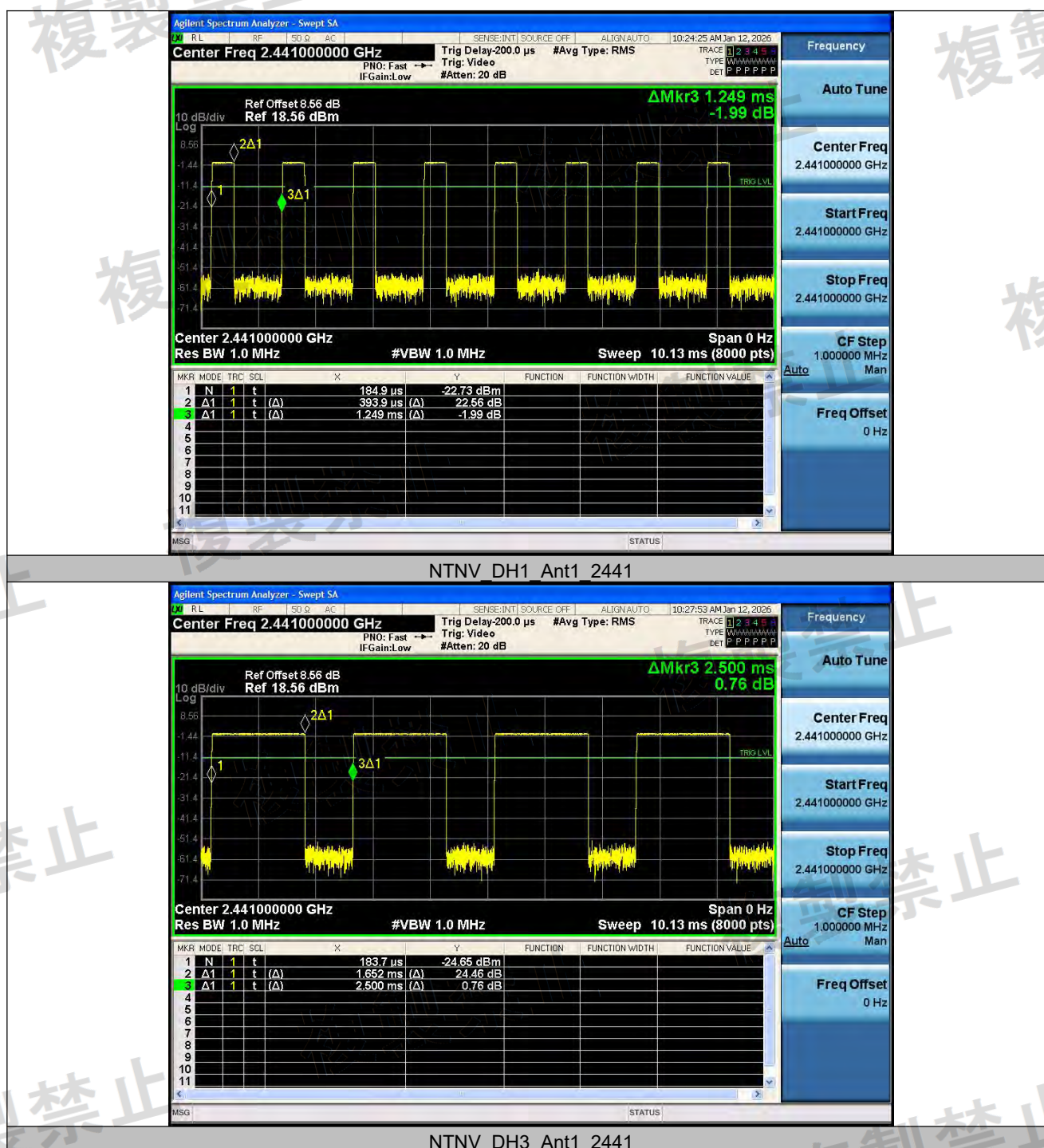


3.7.4 Deviation from test standard

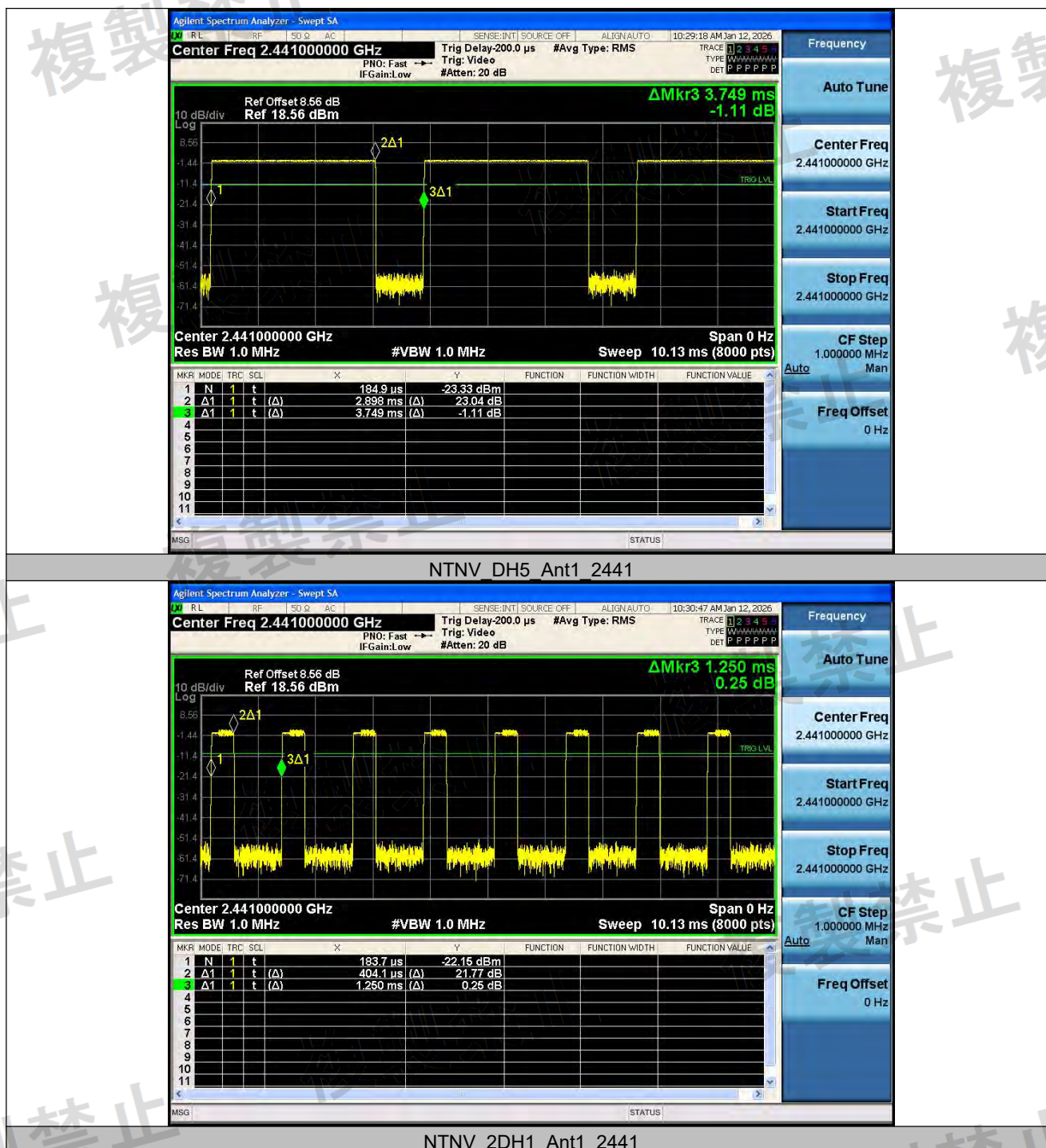
No deviation.

3.7.5 Test results

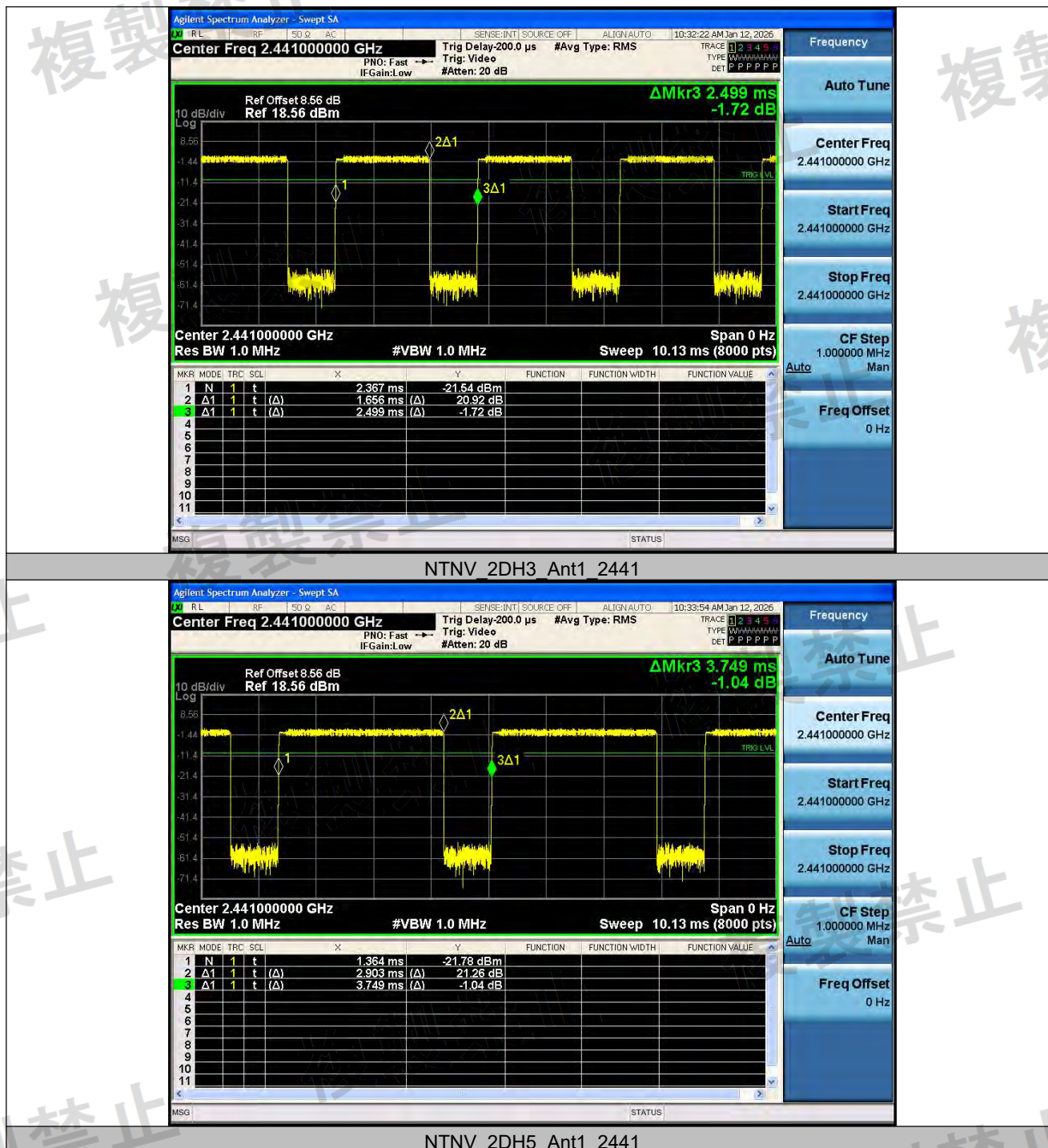
Test Condition	Test Mode	Antenna	Channel	BurstWidth [ms]	Period [ms]	Result [s]	Limit [s]	Verdict
NTNV	DH1	Ant1	2441	0.39	1.25	0.11	<0.4	PASS
	DH3	Ant1	2441	1.65	2.50	0.24	<0.4	PASS
	DH5	Ant1	2441	2.90	3.75	0.28	<0.4	PASS
	2DH1	Ant1	2441	0.40	1.25	0.12	<0.4	PASS
	2DH3	Ant1	2441	1.66	2.50	0.24	<0.4	PASS
	2DH5	Ant1	2441	2.90	3.75	0.28	<0.4	PASS
	3DH1	Ant1	2441	0.41	1.25	0.12	<0.4	PASS
	3DH3	Ant1	2441	1.66	2.50	0.24	<0.4	PASS
	3DH5	Ant1	2441	2.91	3.75	0.28	<0.4	PASS
NTLV	DH1	Ant1	2441	0.40	1.25	0.11	<0.4	PASS
	DH3	Ant1	2441	1.65	2.50	0.24	<0.4	PASS
	DH5	Ant1	2441	2.90	3.75	0.28	<0.4	PASS
	2DH1	Ant1	2441	0.40	1.25	0.12	<0.4	PASS
	2DH3	Ant1	2441	1.66	2.50	0.24	<0.4	PASS
	2DH5	Ant1	2441	2.90	3.75	0.28	<0.4	PASS
	3DH1	Ant1	2441	0.41	1.25	0.12	<0.4	PASS
	3DH3	Ant1	2441	1.66	2.50	0.24	<0.4	PASS
	3DH5	Ant1	2441	2.91	3.75	0.28	<0.4	PASS
NTHV	DH1	Ant1	2441	0.40	1.25	0.11	<0.4	PASS
	DH3	Ant1	2441	1.65	2.50	0.24	<0.4	PASS
	DH5	Ant1	2441	2.90	3.75	0.28	<0.4	PASS
	2DH1	Ant1	2441	0.40	1.25	0.12	<0.4	PASS
	2DH3	Ant1	2441	1.66	2.50	0.24	<0.4	PASS
	2DH5	Ant1	2441	2.90	3.75	0.28	<0.4	PASS
	3DH1	Ant1	2441	0.41	1.25	0.12	<0.4	PASS
	3DH3	Ant1	2441	1.66	2.50	0.24	<0.4	PASS
	3DH5	Ant1	2441	2.91	3.75	0.28	<0.4	PASS

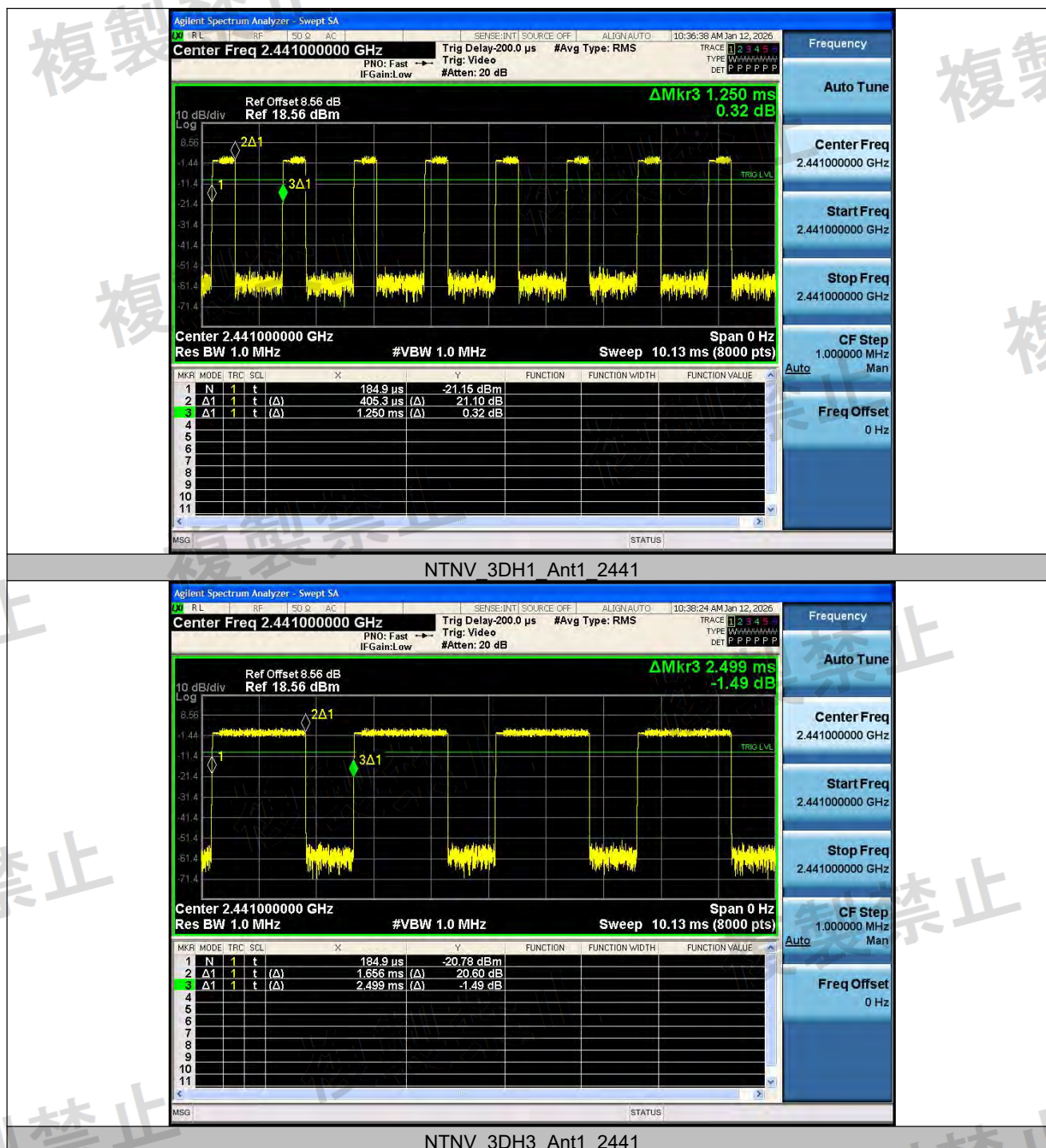


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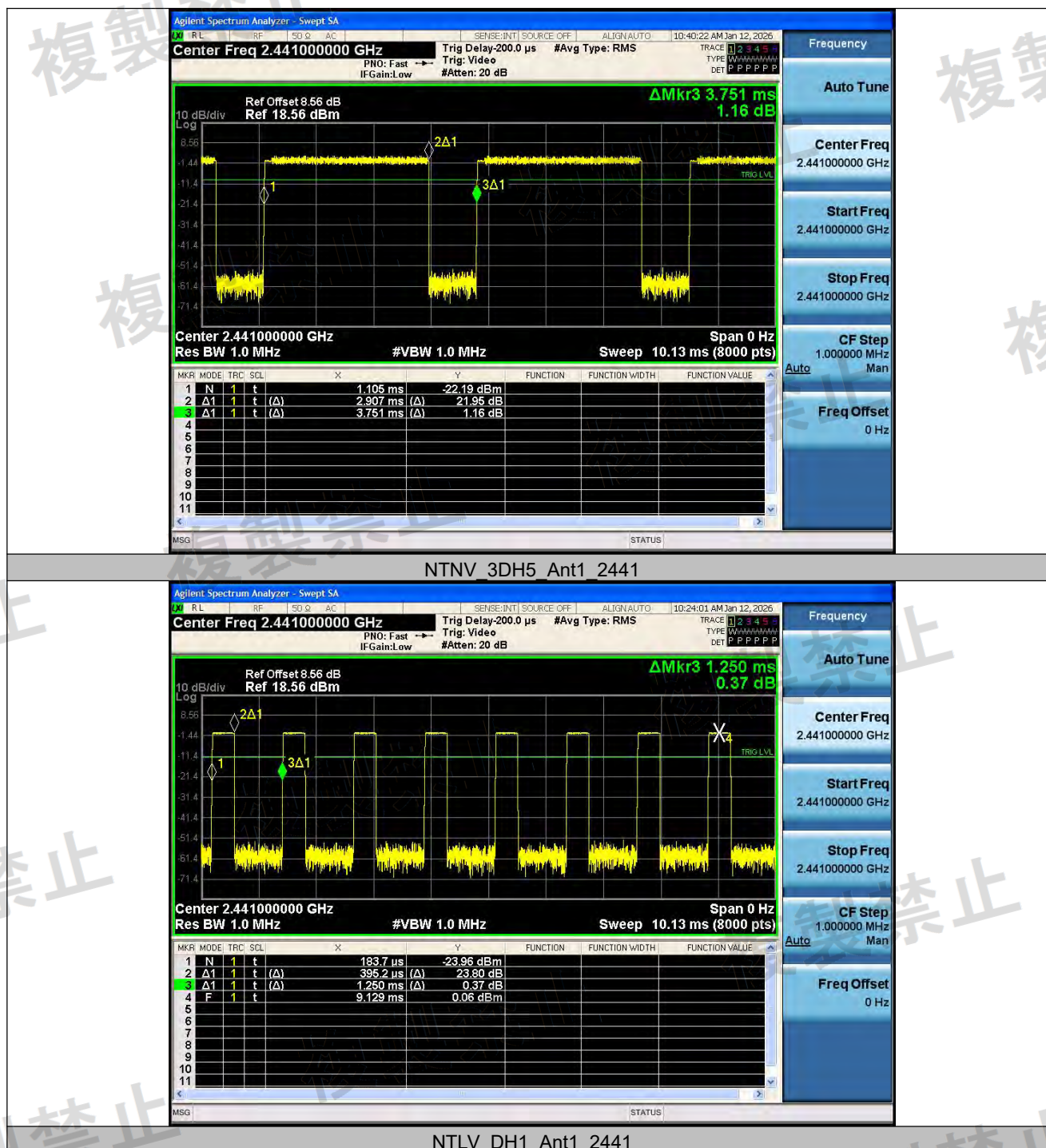


Test Report No.: 25122701-1-RF-JP-01

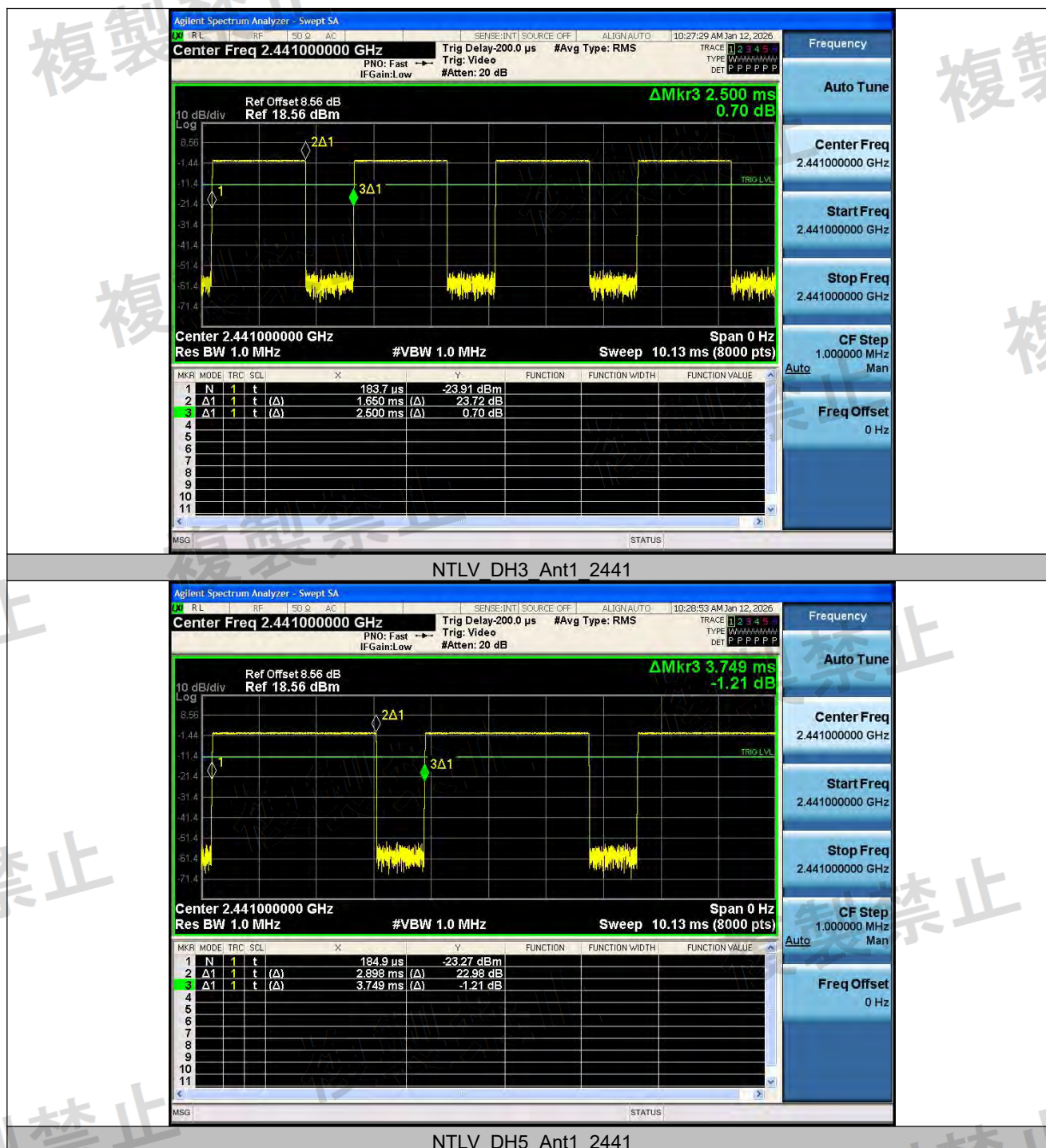


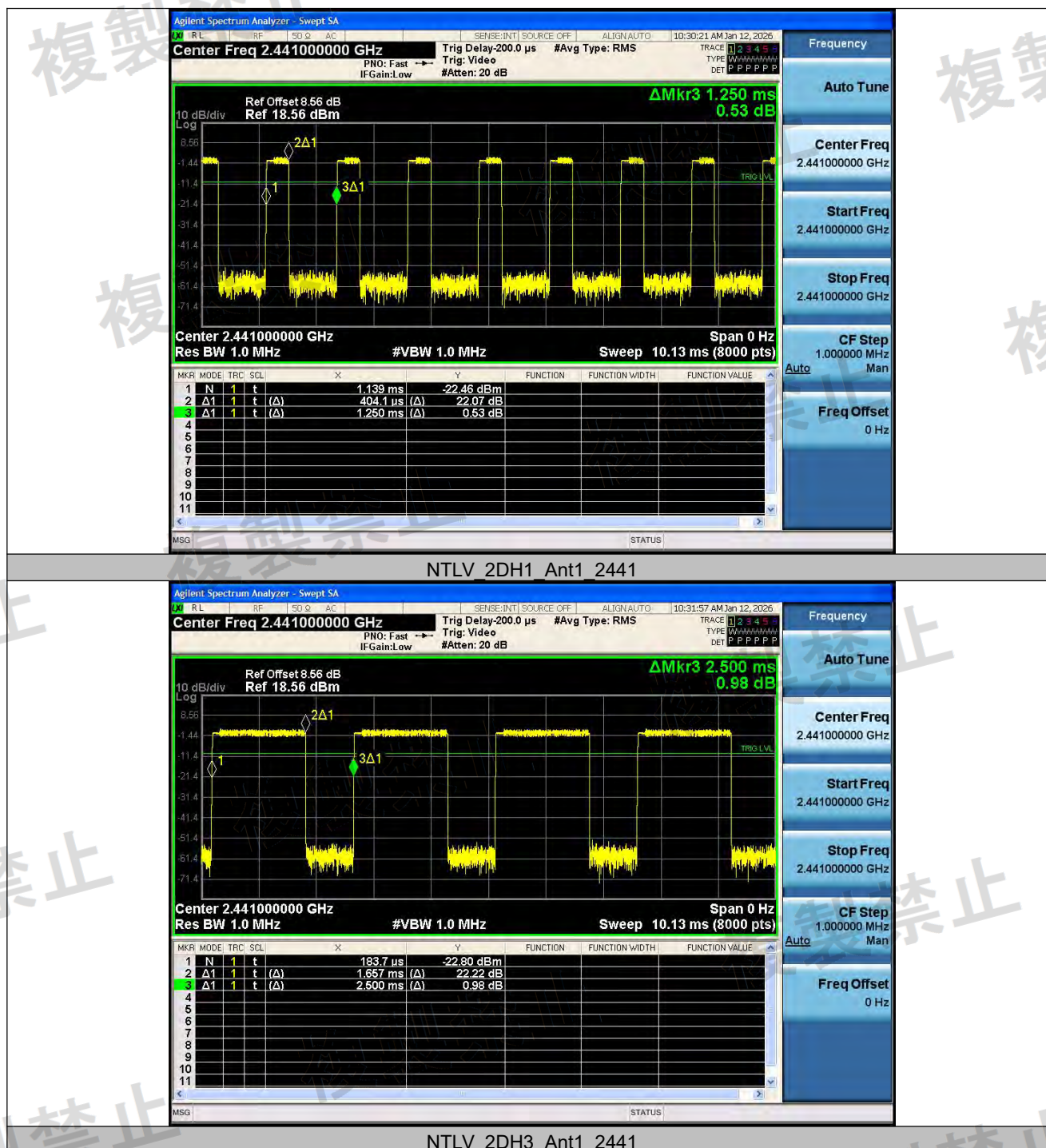


Test Report No.: 25122701-1-RF-JP-01

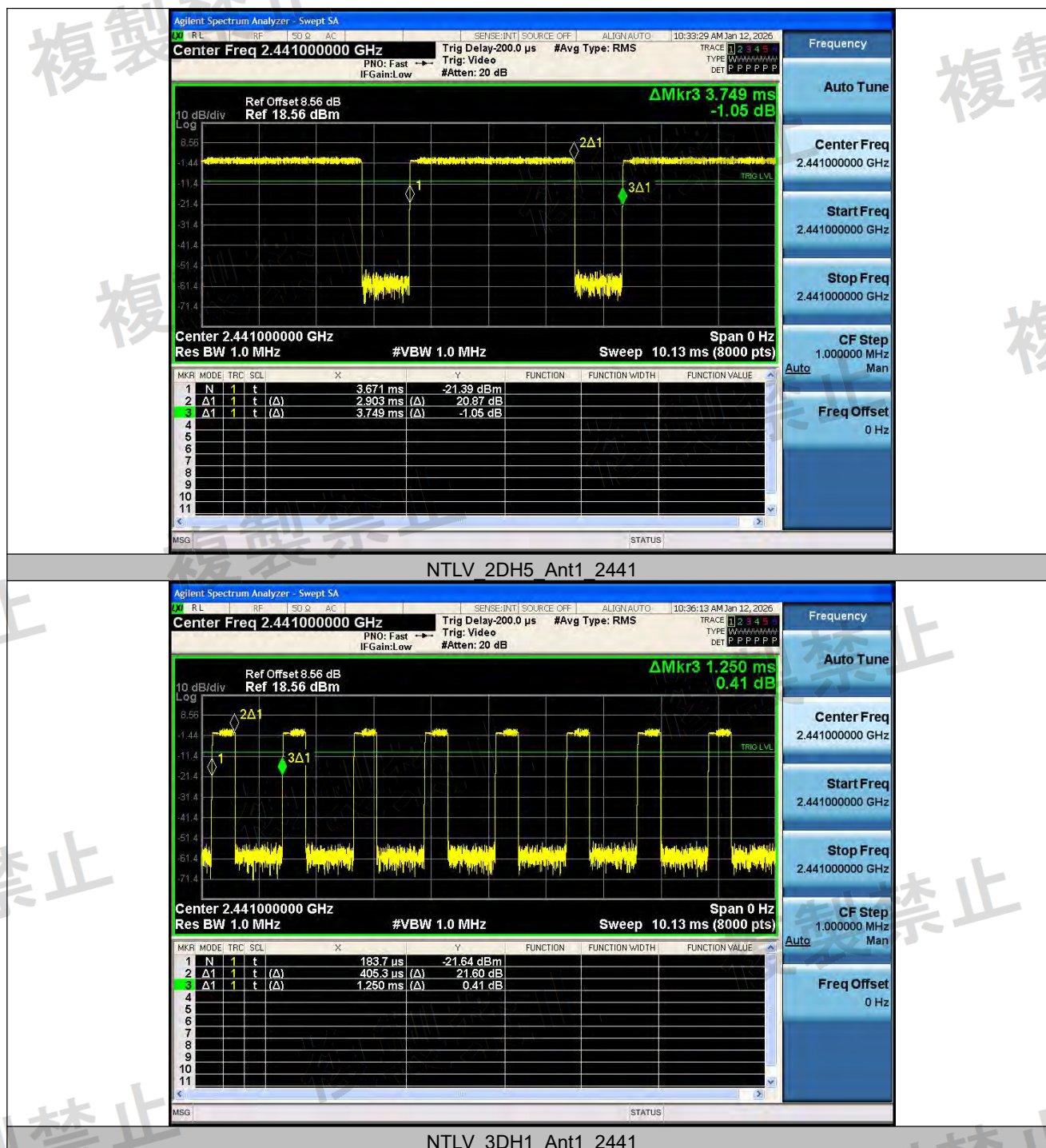


Test Report No.: 25122701-1-RF-JP-01

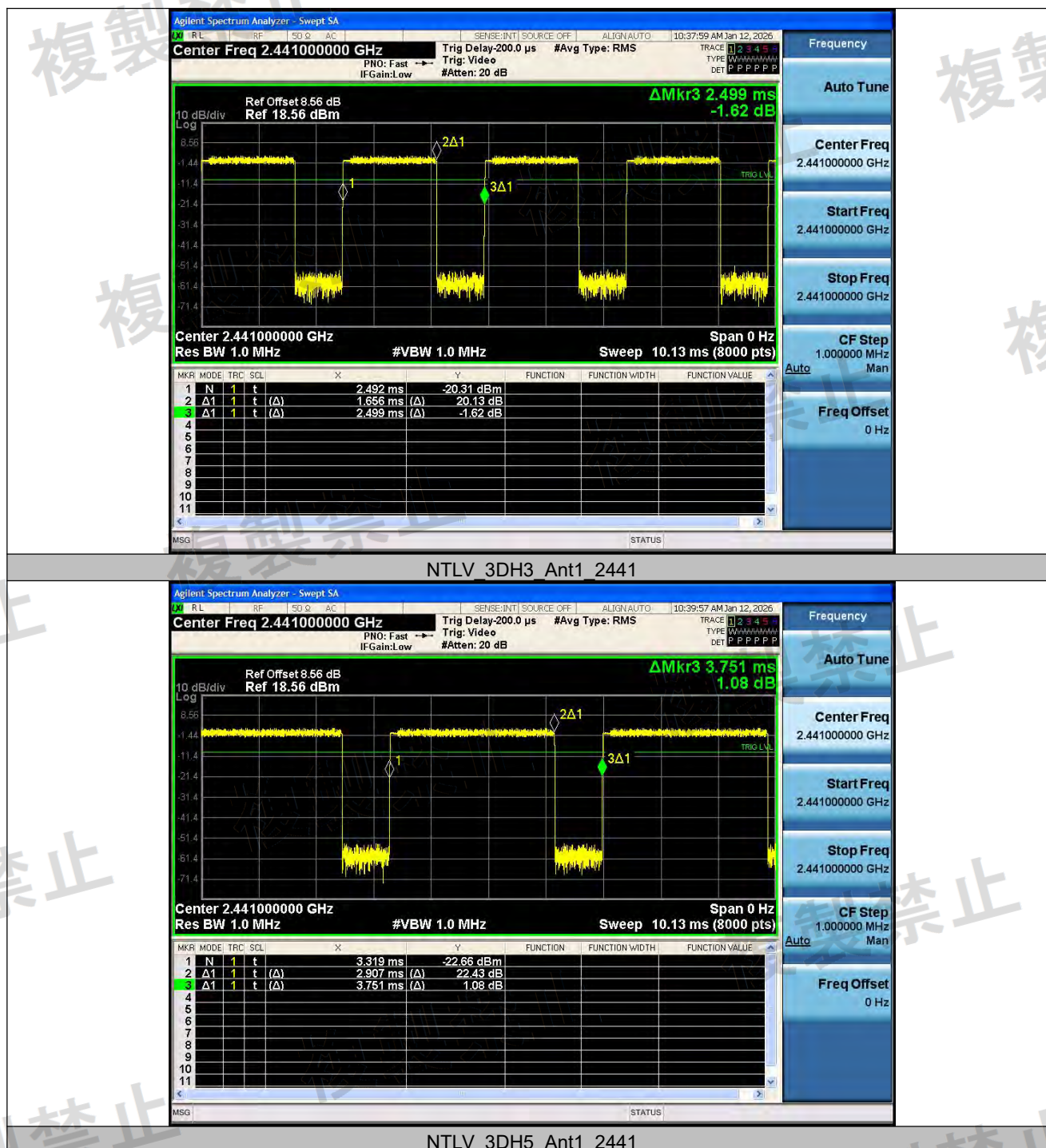




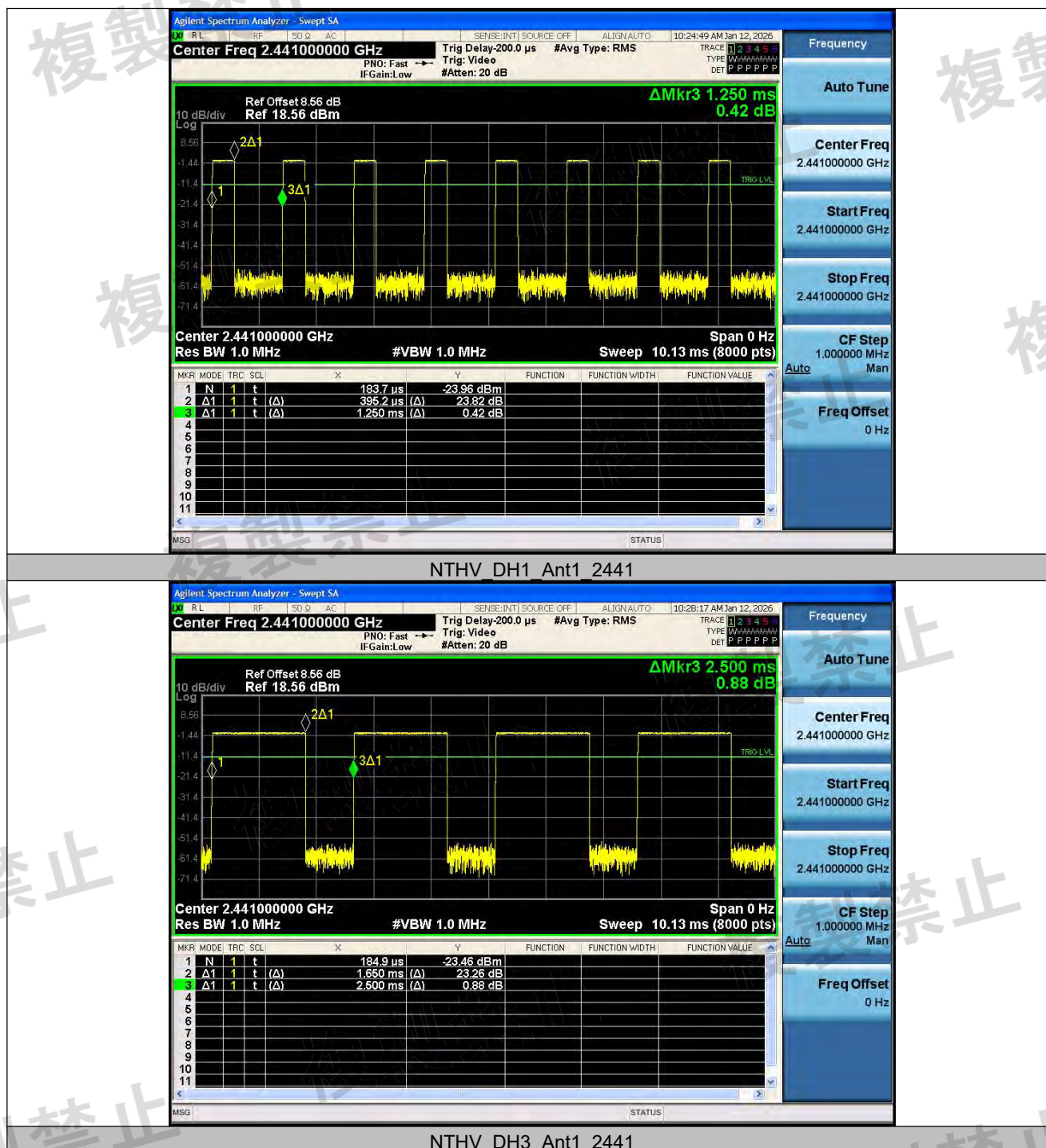
Test Report No.: 25122701-1-RF-JP-01



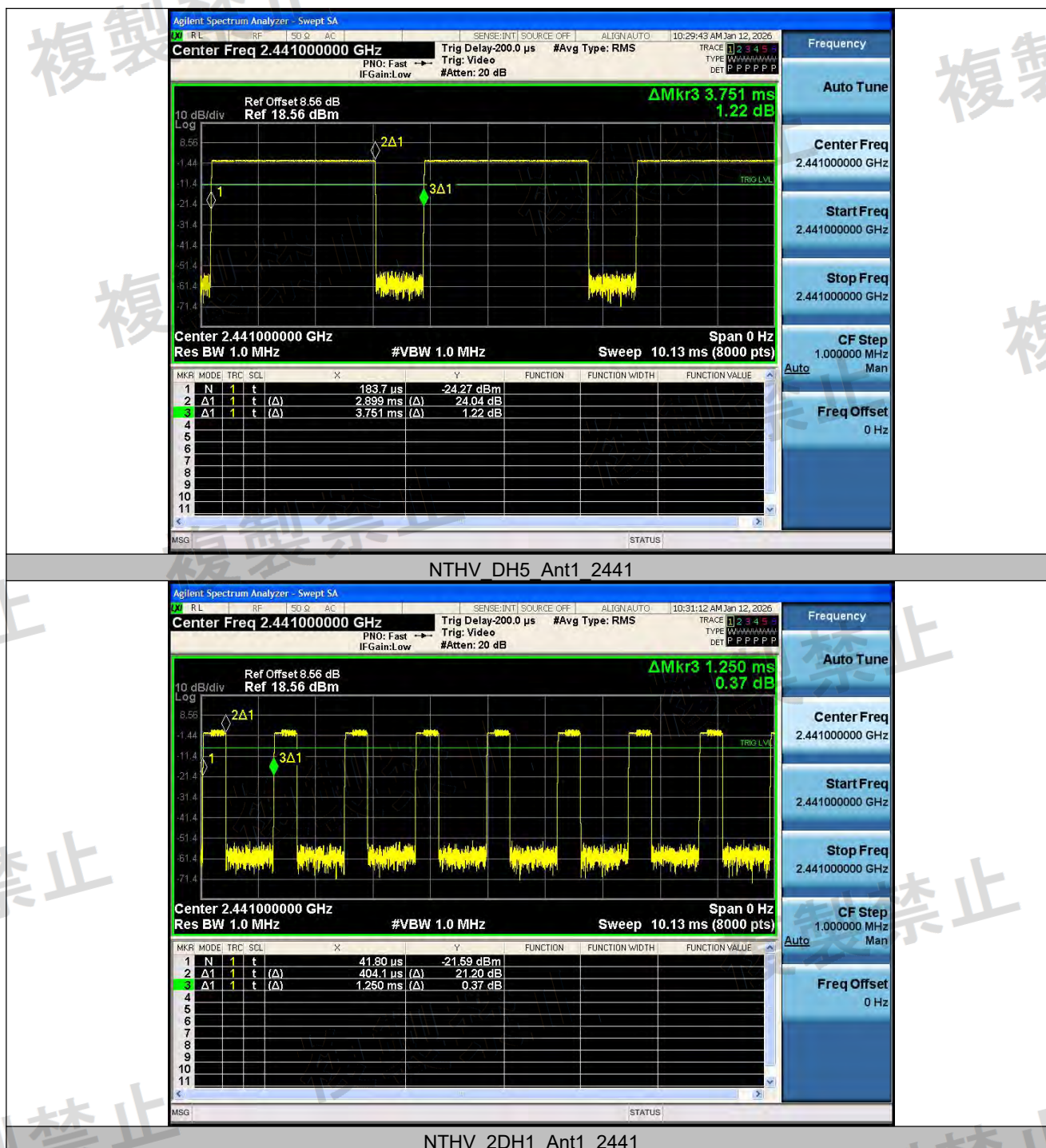
Test Report No.: 25122701-1-RF-JP-01



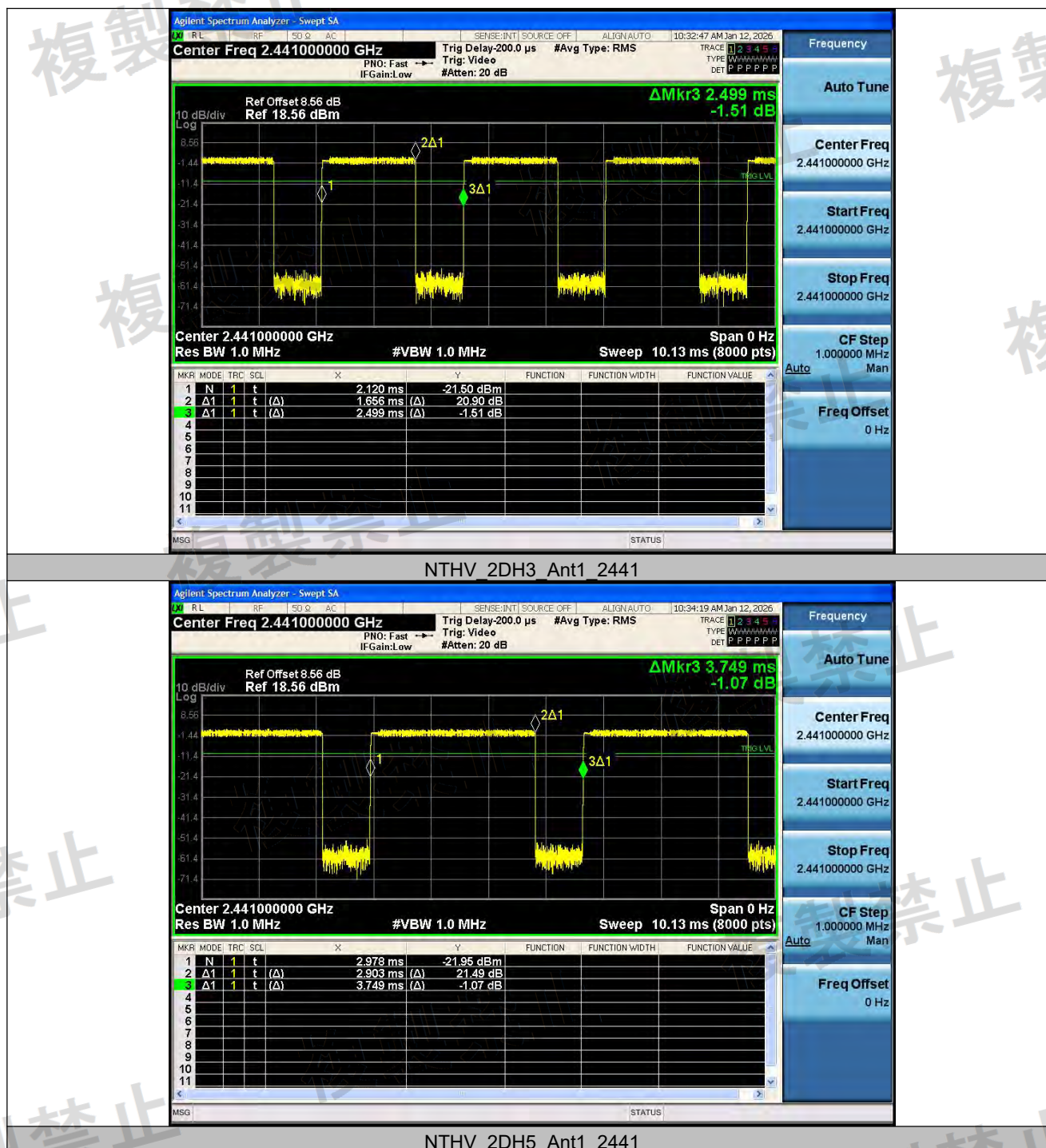
Test Report No.: 25122701-1-RF-JP-01



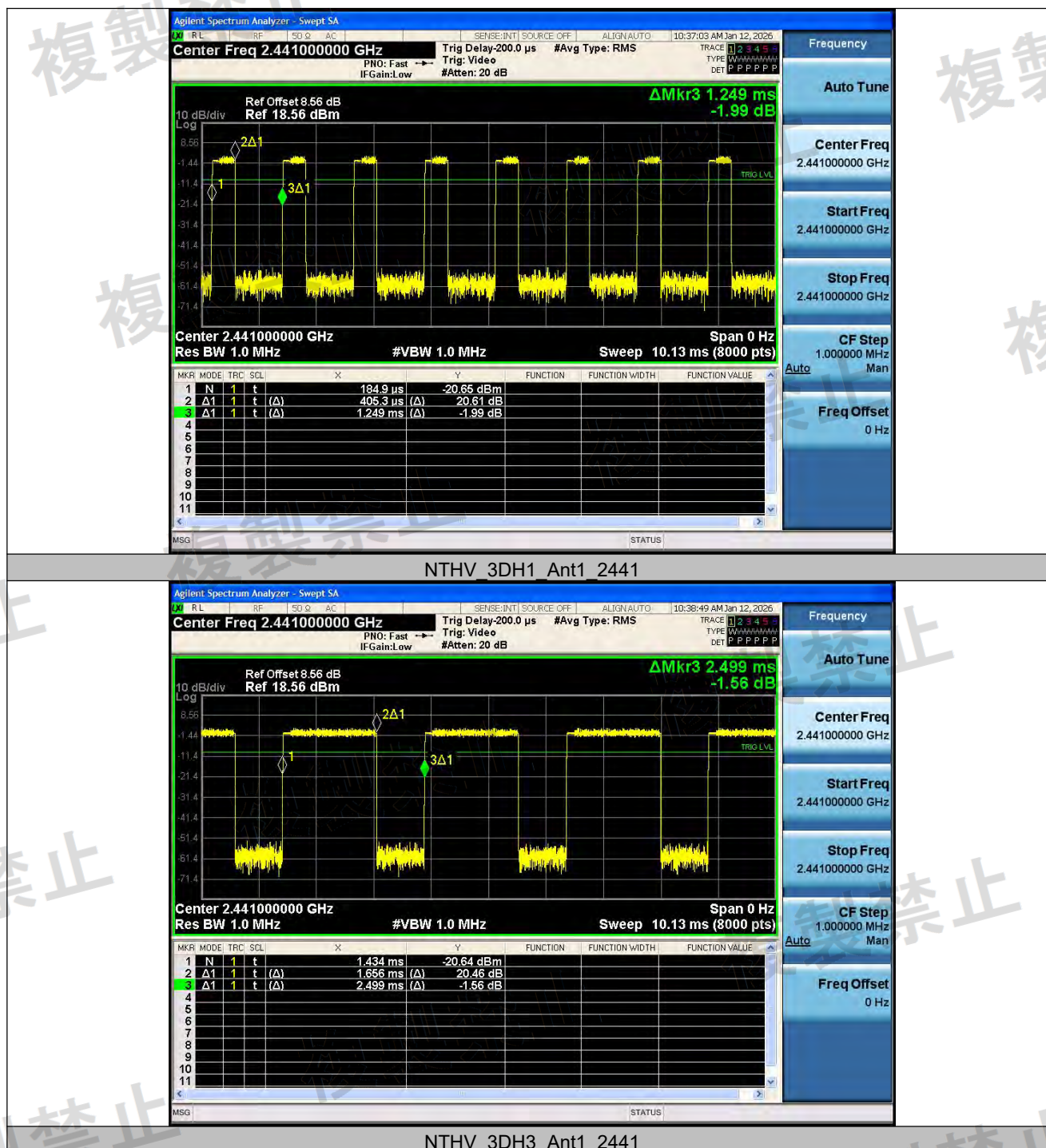
Test Report No.: 25122701-1-RF-JP-01



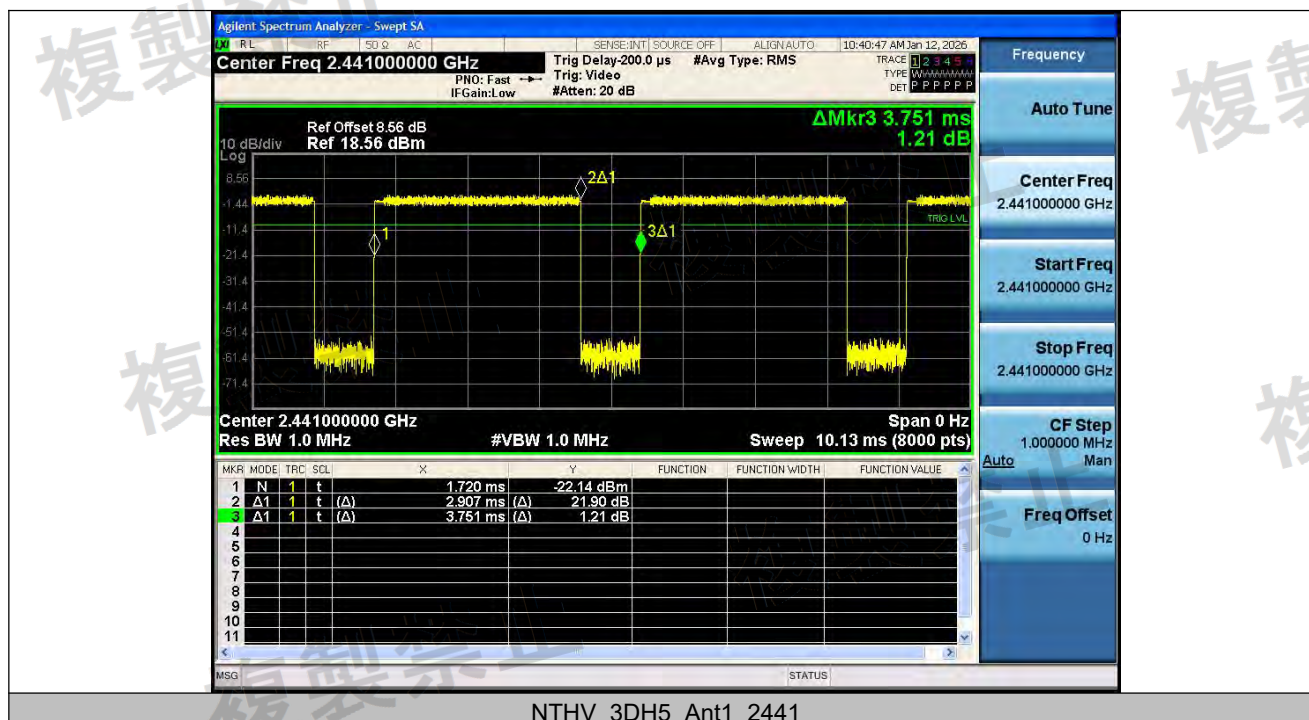
Test Report No.: 25122701-1-RF-JP-01



Test Report No.: 25122701-1-RF-JP-01



Test Report No.: 25122701-1-RF-JP-01

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3.8 Interference prevention function

3.8.1 Limits of interference prevention function

No limit for use.

3.8.2 Test Procedure

The interference prevention requirement is a requirement that client devices should send an identification code to the master device in order to identify itself as a valid/authorized client.

An acceptable result is to take a screenshot to demonstrate that the MAC address is 48 bits,

The intent of this requirement is that client devices which do not have a valid identification code cannot connect to the master device (such unauthorized client devices therefore cannot “interfere” with authorized client devices because unauthorized client devices will not be allowed to connect to the master).

This requirement applies to all 2.4 GHz devices (in fact, this requirement applies to most transmitters/transceivers when they are intended to be used in Japan). For 2.4 GHz devices, the identification code must consist of 48 bits. The majority of 2.4 GHz devices are still WLAN, Bluetooth or ZigBee devices. In such cases, one of the IEEE 802.xx protocols will be used. As it happens (and this is probably not a coincidence) the MAC address which is assigned to such devices consists of 48 bits.

As a result of said changes in the Japanese Radio Law, the test laboratory (now) needs to verify the operation/existence of the interference prevention function and needs to report the result(s) of this test in the test report.

3.8.3 Test Setup



3.8.4 Test Results

Link mode	Test result
BT	Good
The MAC Adress	4142EF7FD712

TB509B5 属性

常规

驱动程序

详细信息

事件



TB509B5

属性(P)

蓝牙设备地址

值(V)

4142EF7FD712

确定

取消

4 Photographs of the test configuration



Appendix – Information on the Testing Laboratories

We, [Hwa-Hsing \(Dongguan\) Testing Co., Ltd.](#), A global provider of TESTING and CERTIFICATION services for consumer products, electronic products and wireless information technology products. Adhering to the core values “HONEST and TRUSTWORTHY, OBJECTIVE and IMPARTIALITY, RIGOROUS and AFFICIENT”, commitment to provide professional, perfect and efficient comprehensive ONE-STOP solution of TESTING and CERTIFICATION services for Manufacturers, Buyers, Traders, Brands, Retailers. Assist client to better manage risk, protect their brands, reduce costs and cut time to over 150 markets in global. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Lab Address: [No.101, Building N1, Yuyuan 2 Road, Yuyuan Industrial Park, HuangJiang Town, Dongguan City, People's Republic of China](#)

Contact Tel: [0769-85598986](#)

Email: service-hs@lyns-tci.com

Web Site: www.lyns-tci.com

The address and road map of all our labs can be found in our web site also.

--- END ---