

**ARIB STD-T66
Test Report**

Applicant: Marshall Group AB

Address: Centralplan 15 111 20 Stockholm Sweden

Manufacturer: Marshall Group AB

Address: Centralplan 15 111 20 Stockholm Sweden

Product: Headphones

Brand: Marshall, *Marshall*

Test Model(s): MILTON A.N.C.

Series Model(s): N/A

Test Date: Sep. 15, 2025 ~ Oct. 10, 2025

Issued Date: Oct. 11, 2025

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 ChinaStandards: ARIB STD-T66, 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 :



Nature Lee

Approved by :

Scott He
Scott He

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Release Control Record

Issue No.	Description	Date Issued
25061906-RF-JP-01	Original Release	Oct. 11, 2025

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)	4.1	Frequency tolerance	C
D	3.2(7)	4.2/4.3	Occupied bandwidth	C
E	3.2(6)	4.4	Spurious emissions	C
Transmitting equipment				
F	--	4.5	Antenna power	C
Transmitting antenna				
--	--	2.25	Type, configuration, etc. of transmitting antenna	C
--	--	2.25	Direction pattern of transmitting antenna	C
Receiving equipment				
H	3.3(1)	4.6	Spurious emissions of receiver	C
--	--	2.25	Refer to all articles for transmitting antenna	C
Operating frequency 2400 to 2483.5MHz				
--	3.7 (1)	2.23	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	4.3	Spread spectrum method	C
--	3.2 (2)	4.5	Antenna power	C
--	3.6 (2)	4.5	Absolute gain of transmitting antenna	C
--	3.6 (2)	4.5	Angular width of principal radiation (AWPR)	C
--	3.2 (8)	4.3	Diffusion bandwidth	C
--	3.2 (9)	4.3	Spreading factor	C
--	3.2 (11)	4.7	Frequency retention time (FH employed)	C
--	3.4.1(1)	4.8	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	Headphones
Test Model Name	MILTON A.N.C.
Series Models Name	N/A
Power Supply Rating	DC 5V from USB or DC 3.85V from battery
Temperature Operating Range	-10 ~ 40°C
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	1.66dBi
Accessory Device	USB-C cable 23cm, 3.5mm to USB-C cable 120cm
Radio FW	V04.1
Radio HW	V1.0.9

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	0.03	0.023589	0.034571
$\pi/4$ -DQPSK	0.03	0.028590	0.041900
8DPSK	0.03	0.028652	0.041991
Enable AFH function			
GFSK	0.1	0.092974	0.136258
$\pi/4$ -DQPSK	0.1	0.110747	0.162305
8DPSK	0.1	0.111231	0.163014

- 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.: 25061906) 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.

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}	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		
Mode D	Enable AFH GFSK		
Mode E	Enable AFH $\pi/4$ -DQPSK		
Mode F	Enable AFH 8DPSK		
RF Power Setting Value			
Channel	GFSK	$\pi/4$ -DQPSK	8DPSK
	Power setting	Power setting	Power setting
0	48	48	48
39	48	48	48
78	48	48	48

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.
- For AFH function only tested occupied bandwidth, spreading bandwidth, Antenna power and dwell time.
- 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. The housing consists of two parts, and the enclosure was assembled with glue and covered by rubbers, separating the two parts was only possible by means of brute force.

2.2.4 Applicable Standard

When there is a fluctuation of $\pm 10\%$ 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 $\pm 1\%$, 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	1.66dBi

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

2.3 Description of Support Units

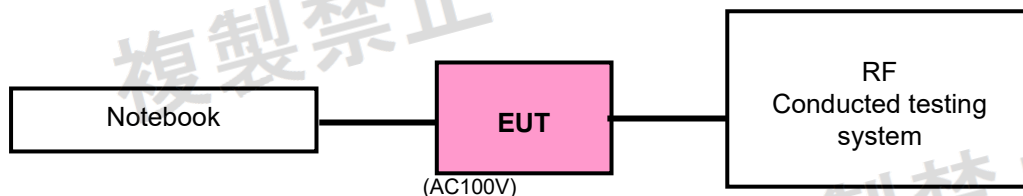
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

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:



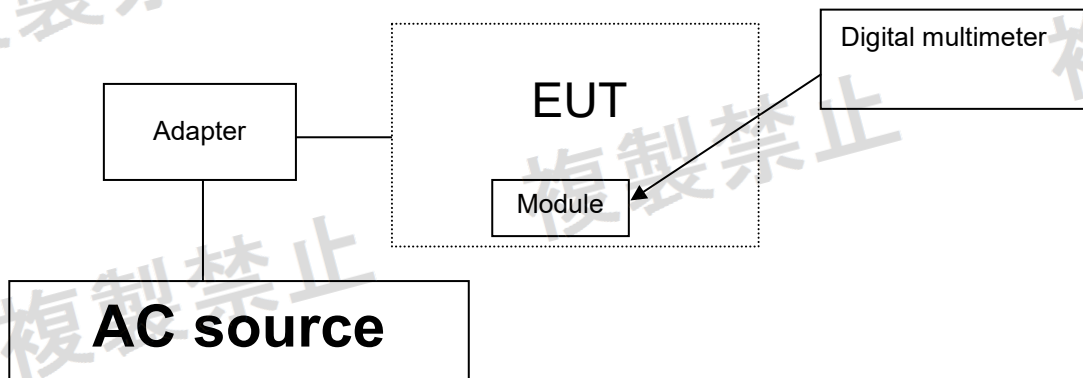
3 Wireless module voltage test in extreme conditions

3.1 Applicable Standard

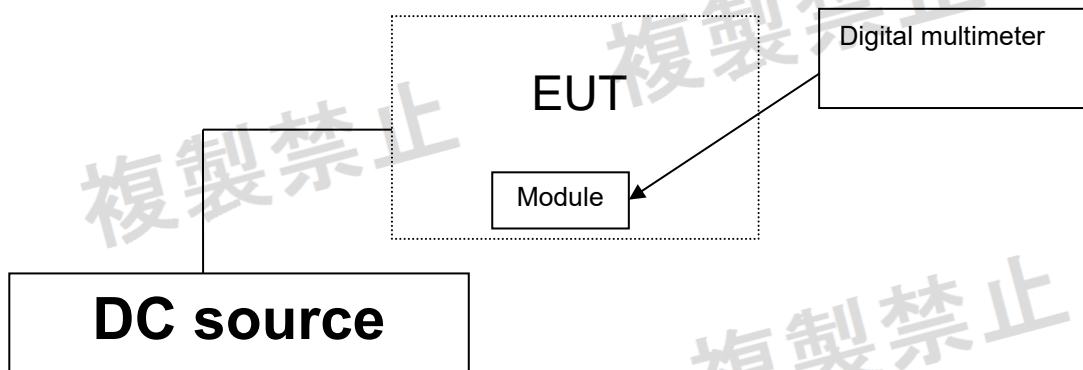
When there is a fluctuation of $\pm 10\%$ input voltage from external power to the test equipment. If the fluctuation of input voltage to the circuit of the radio part (excl. power) in the test equipment is confirmed below $\pm 1\%$, Measurement shall be tested with the rated voltage.

3.2 Test Configuration

Config A



Config B



3.3 Test Results

Temperature :	25°C
Humidity :	45 %
Test By:	HUA
Config B	

Test Voltage(DC, V)	4.5	5.0	5.5
Module Test voltage(DC, V)	1.80	1.80	1.80
Module Rated voltage(DC, V)	1.80	1.80	1.80
The Range of Module Voltage(%)	0	0	0

Temperature :	25°C
Humidity :	45 %
Test By:	HUA
Config B	

Test Voltage(DC, V)	3.47	3.85	4.24
Module Test voltage(DC, V)	1.80	1.80	1.80
Module Rated voltage(DC, V)	1.80	1.80	1.80
The Range of Module Voltage(%)	0	0	0

Note: In extreme conditions, EUT module power is confirmed below +/-1%.

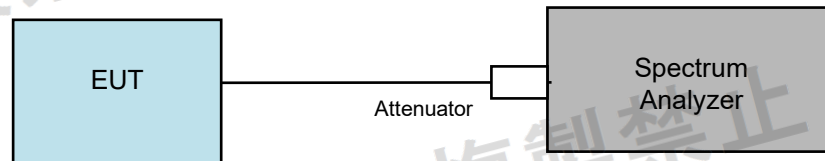
4 Test types and results

4.1 Frequency tolerance measurement

4.1.1 Limits of frequency tolerance measurement

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

4.1.2 Test Setup



4.1.3 Deviation from Test Standard

No deviation.

4.1.4 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.

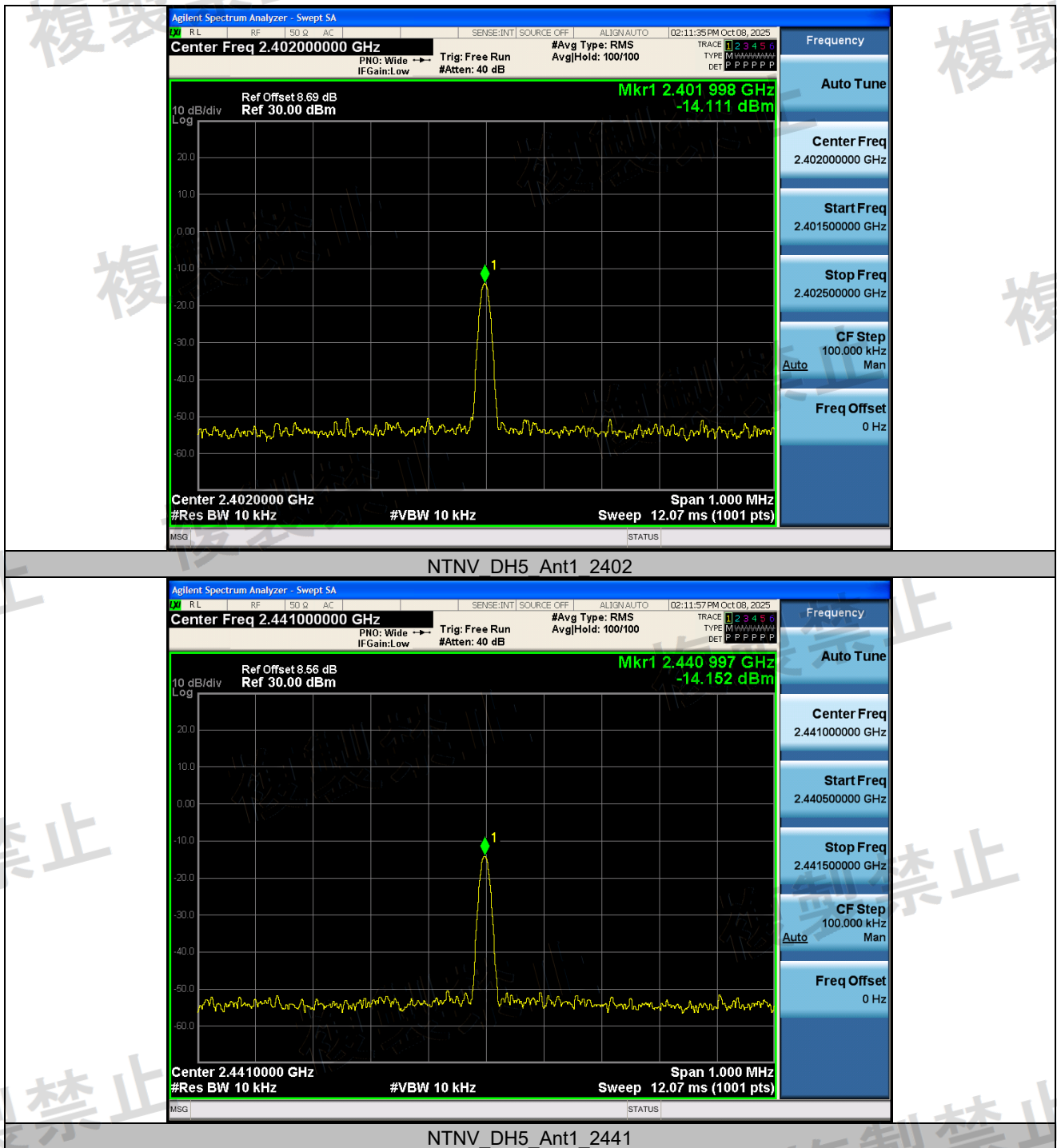
Test method according to Clause 5 of Annex No.43 of MIC Notification No.88.

- 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.

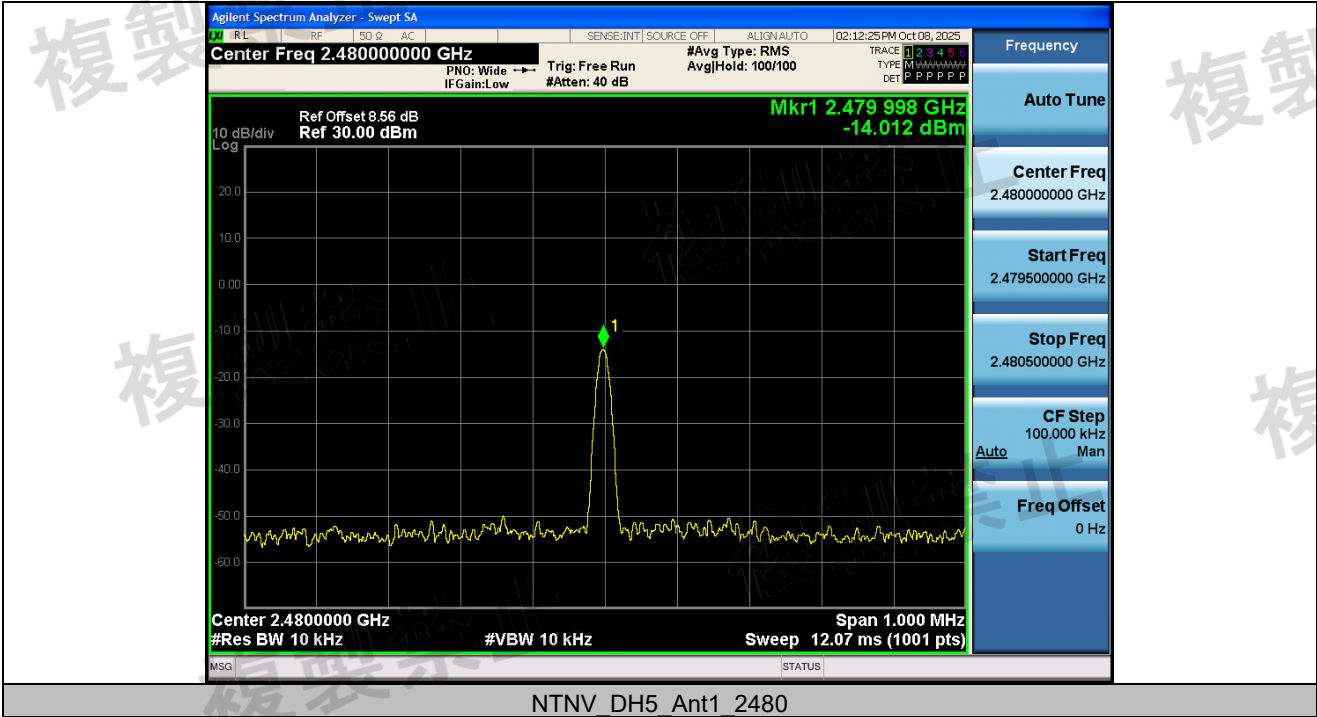
4.1.5 Test Results

Test Condition	Test Mode	Channel	Result[ppm]	Limit[ppm]	Verdict
NTNV	GFSK	2402	-0.83264	±50	PASS
		2441	-1.22901	±50	PASS
		2480	-0.80645	±50	PASS

- The test plots listing in the below pages.



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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](#)

Tel: [0769-85598986](tel:0769-85598986)
Web: www.lyns-tci.com
E-Mail: service-hs@lyns-tci.com

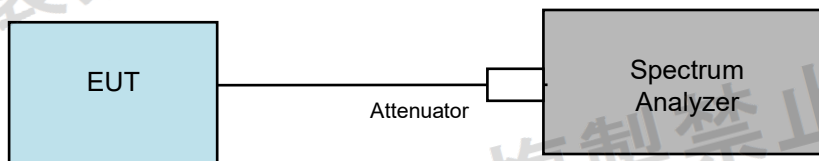
Release
Ver. 1.5

4.2 Occupied bandwidth measurement (99% power bandwidth)

4.2.1 Limits of occupied bandwidth measurement

Condition	Occupied bandwidth Limit
Under all test conditions	≤83.5MHz

4.2.2 Test Setup



4.2.3 Deviation of Test Standard

No deviation.

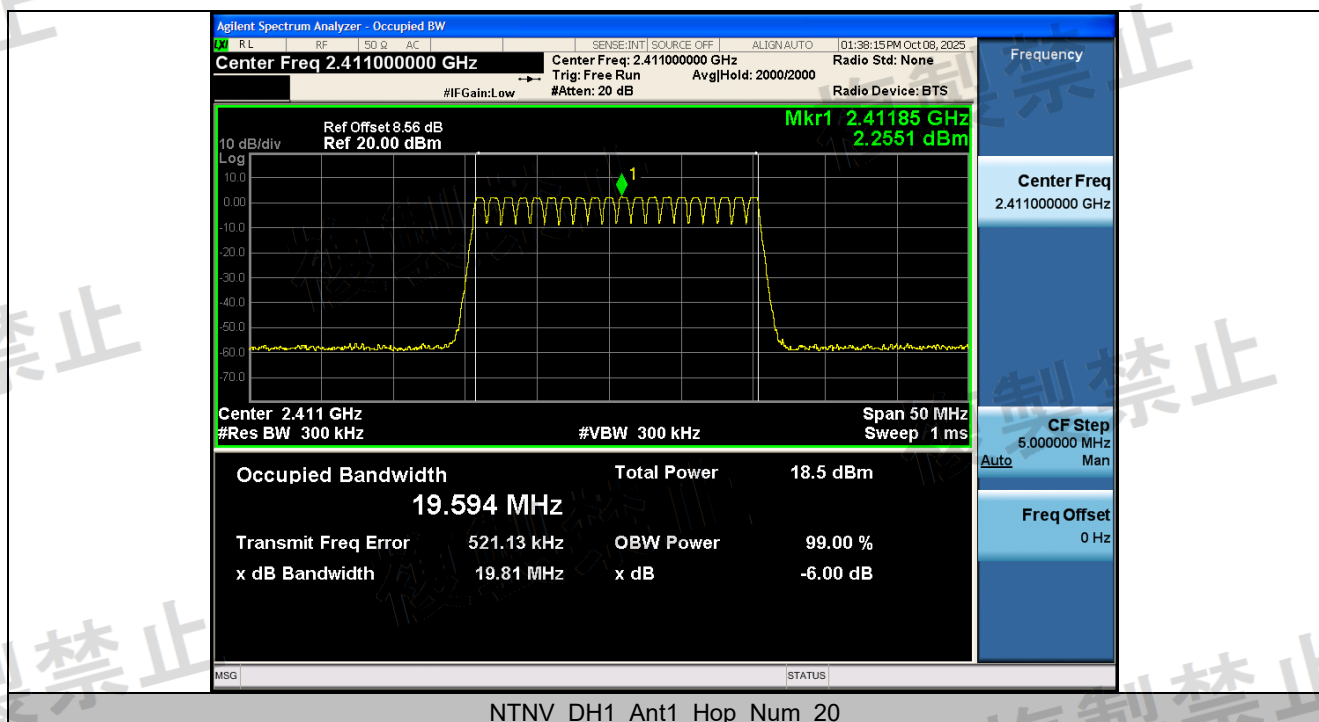
4.2.4 Test Procedure

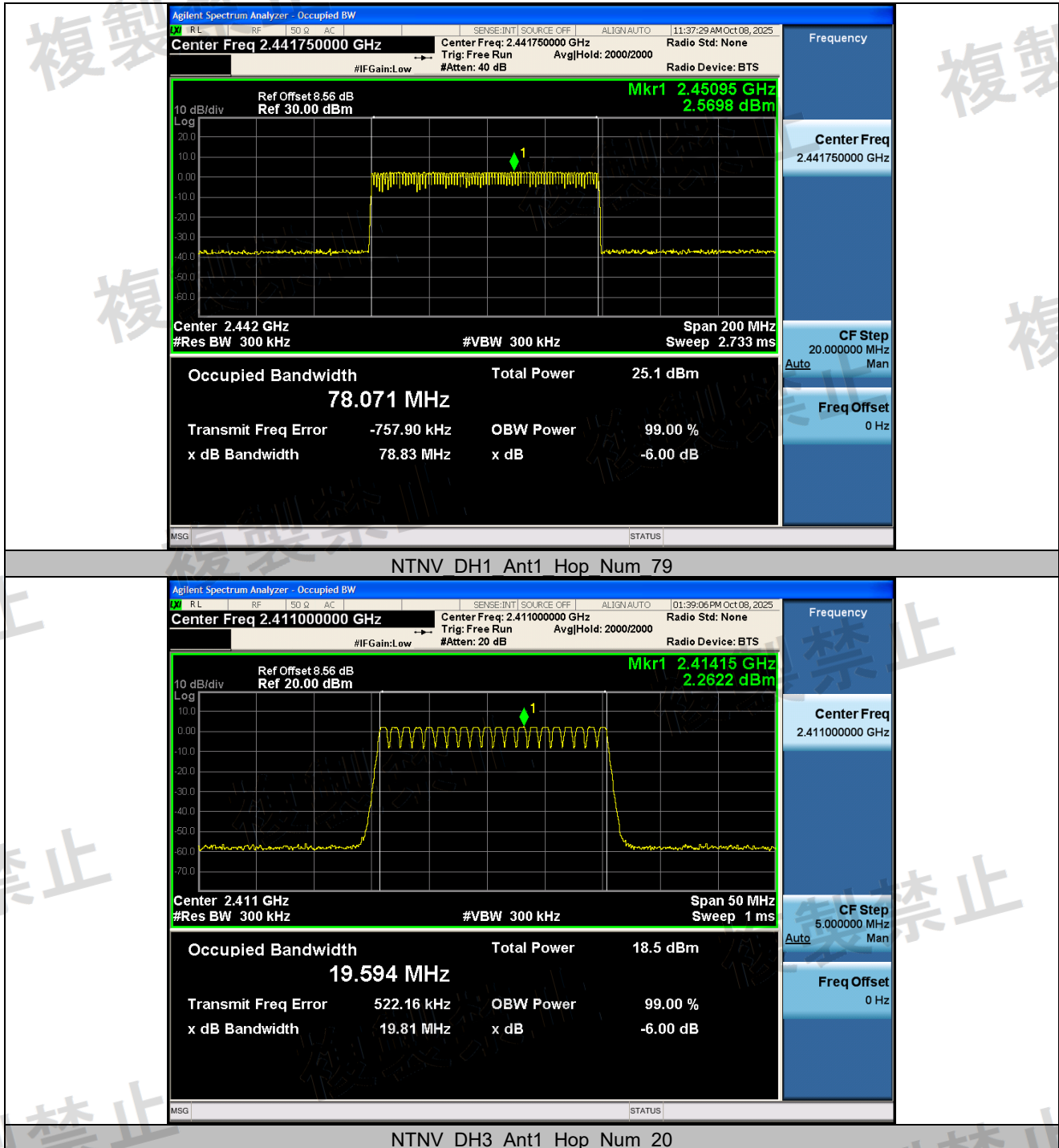
Test method according to Clause 5 of Annex No.43 of MIC Notification No.88.

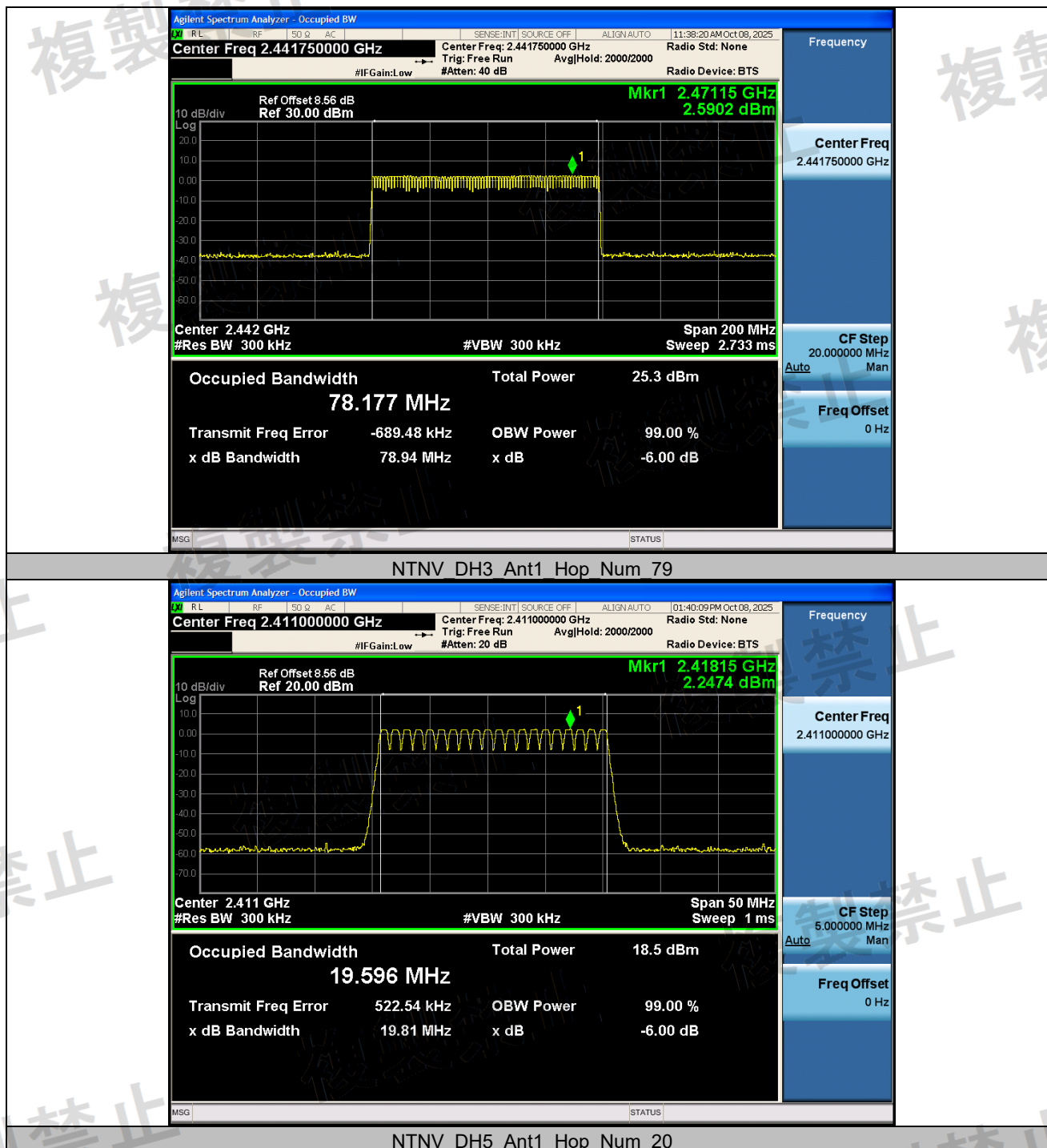
The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. The bandwidth of the fundamental frequency was measured by spectrum analyzer. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal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

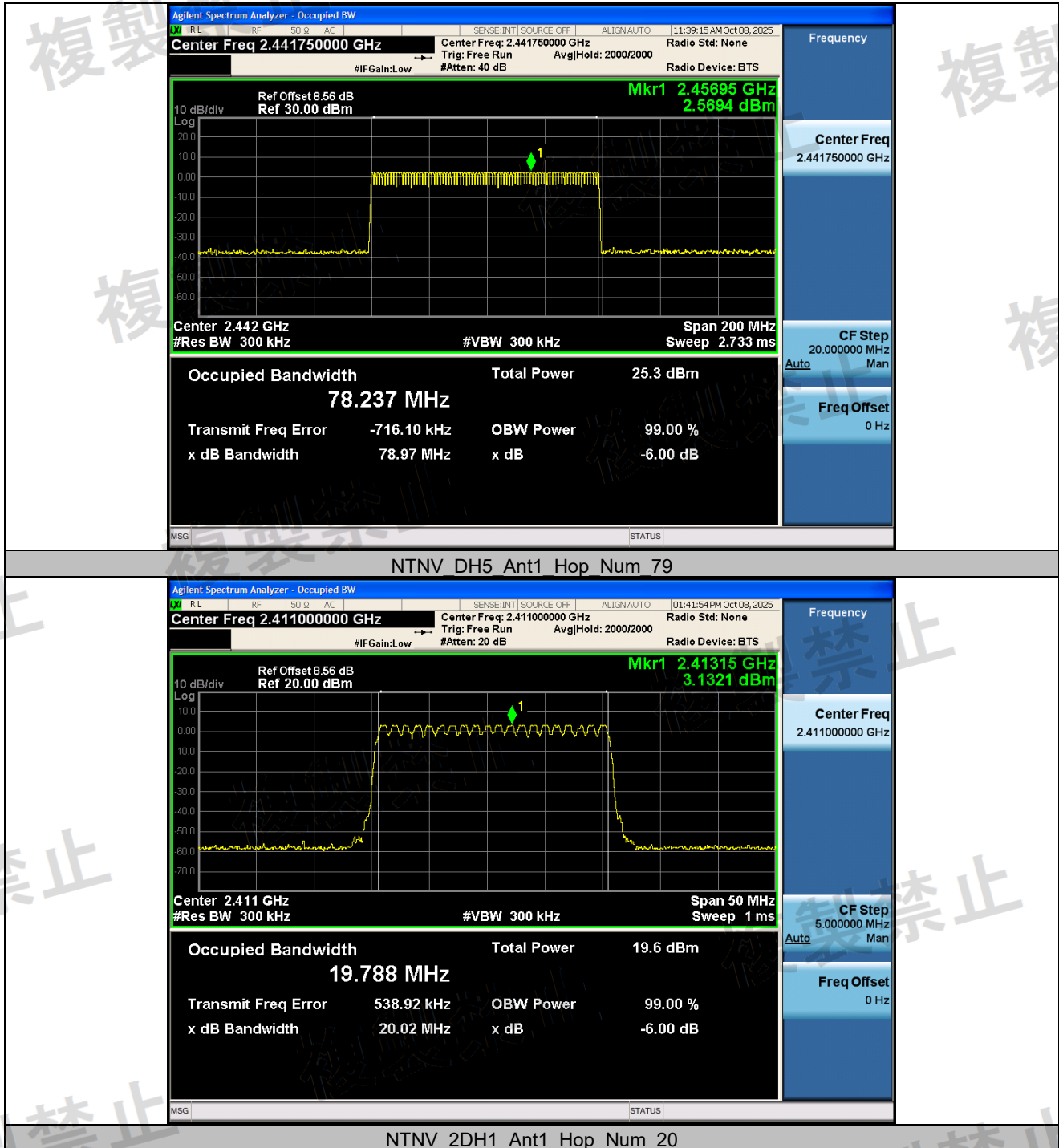
4.2.5 Test Results

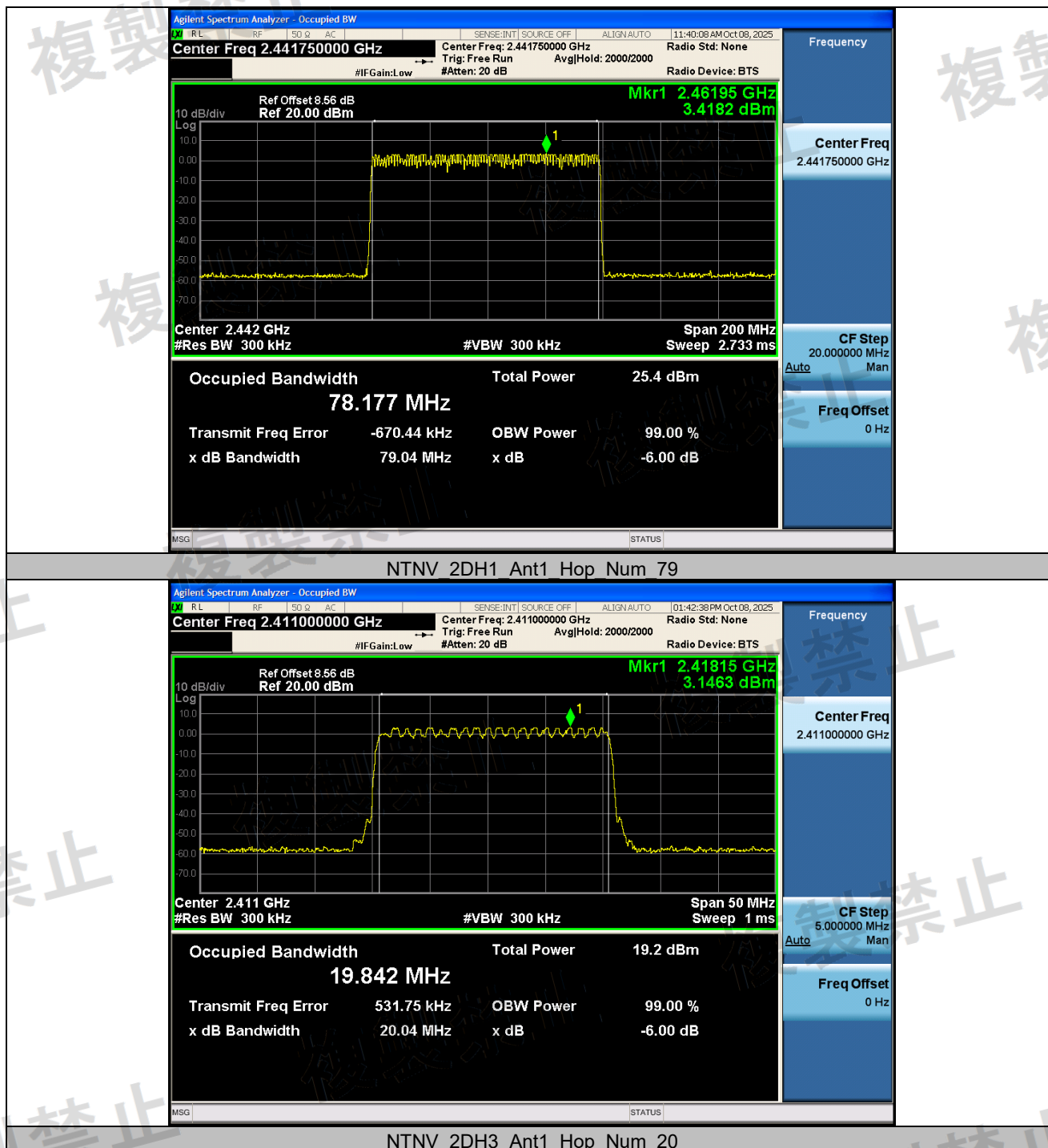
TestCondition	TestMode	Antenna	Channel	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH1	Ant1	Hop Num 20	19.594	≤83.5	PASS
			Hop Num 79	78.071	≤83.5	PASS
	DH3	Ant1	Hop Num 20	19.594	≤83.5	PASS
			Hop Num 79	78.177	≤83.5	PASS
	DH5	Ant1	Hop Num 20	19.596	≤83.5	PASS
			Hop Num 79	78.237	≤83.5	PASS
	2DH1	Ant1	Hop Num 20	19.788	≤83.5	PASS
			Hop Num 79	78.177	≤83.5	PASS
	2DH3	Ant1	Hop Num 20	19.842	≤83.5	PASS
			Hop Num 79	78.399	≤83.5	PASS
	2DH5	Ant1	Hop Num 20	19.886	≤83.5	PASS
			Hop Num 79	78.412	≤83.5	PASS
	3DH1	Ant1	Hop Num 20	19.833	≤83.5	PASS
			Hop Num 79	78.123	≤83.5	PASS
	3DH3	Ant1	Hop Num 20	19.869	≤83.5	PASS
			Hop Num 79	78.272	≤83.5	PASS
	3DH5	Ant1	Hop Num 20	19.881	≤83.5	PASS
			Hop Num 79	78.377	≤83.5	PASS





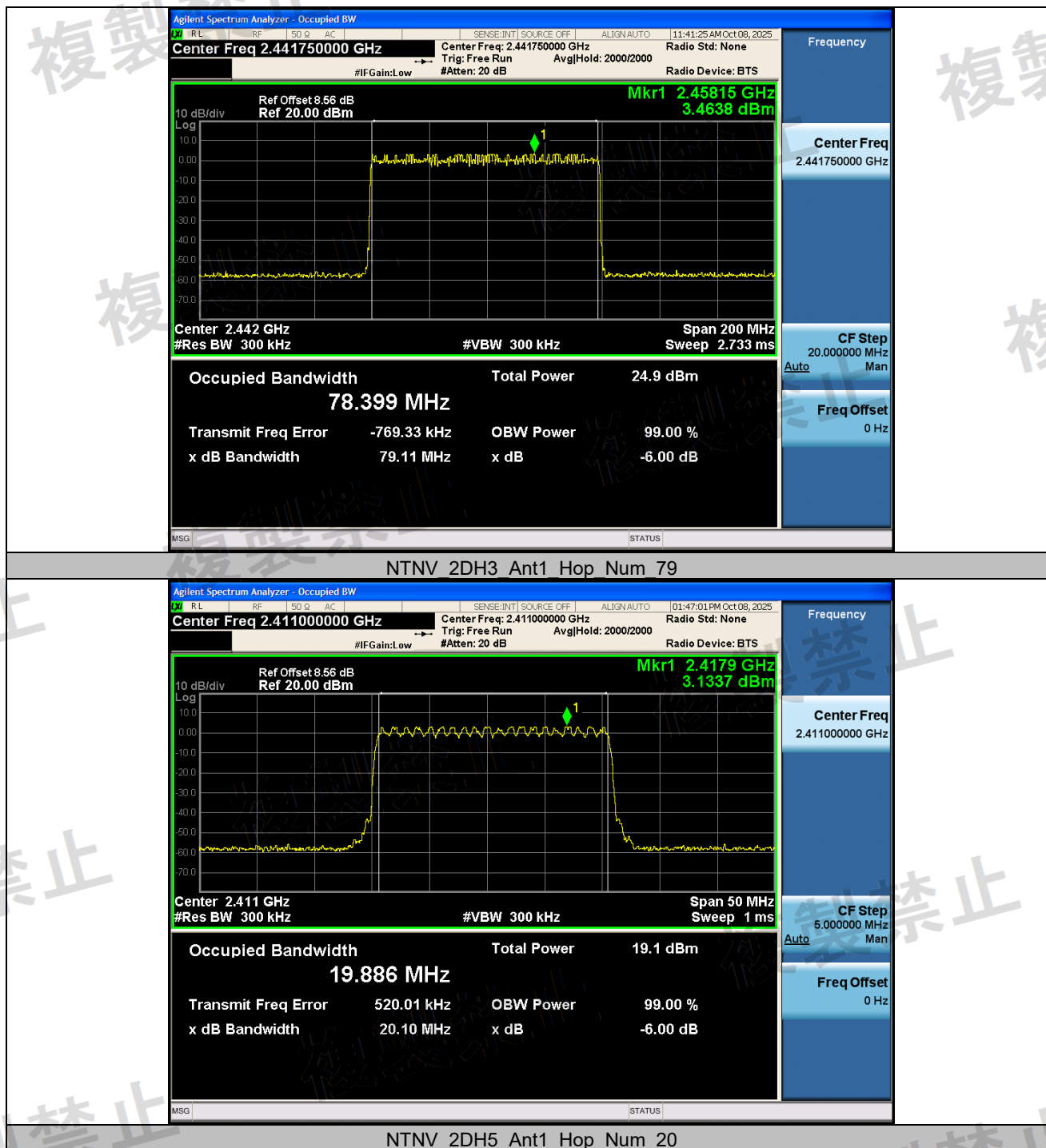


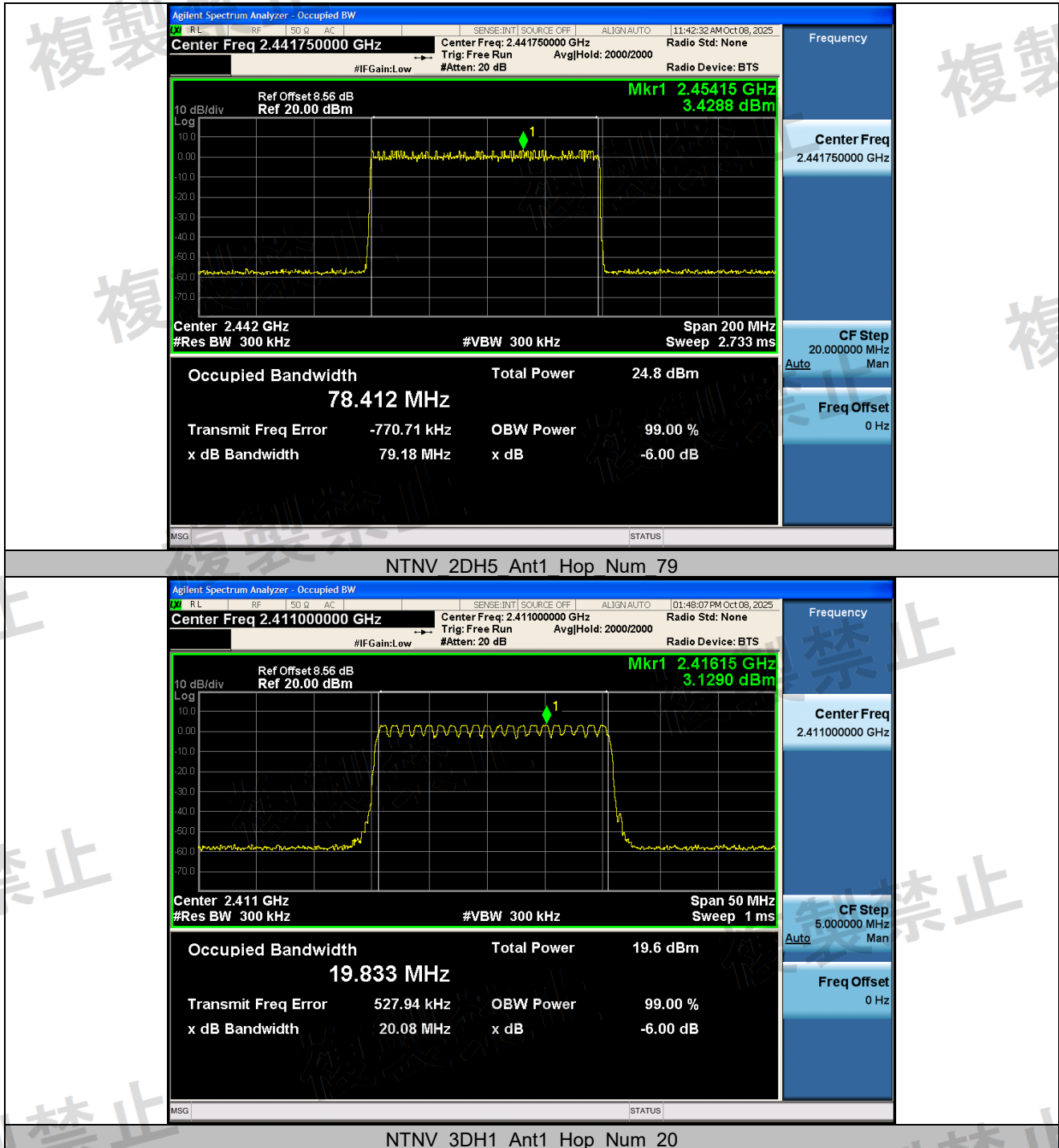


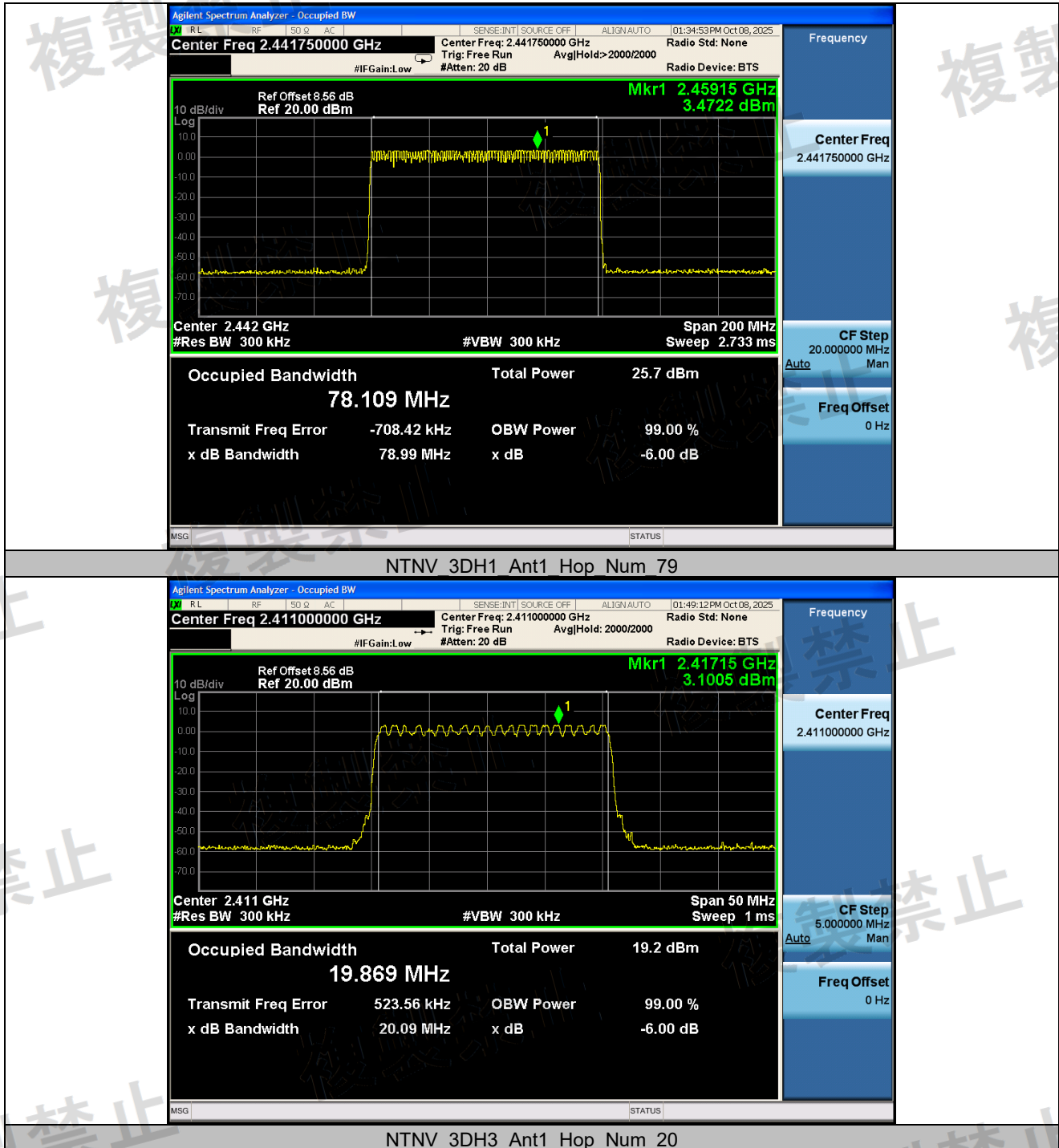


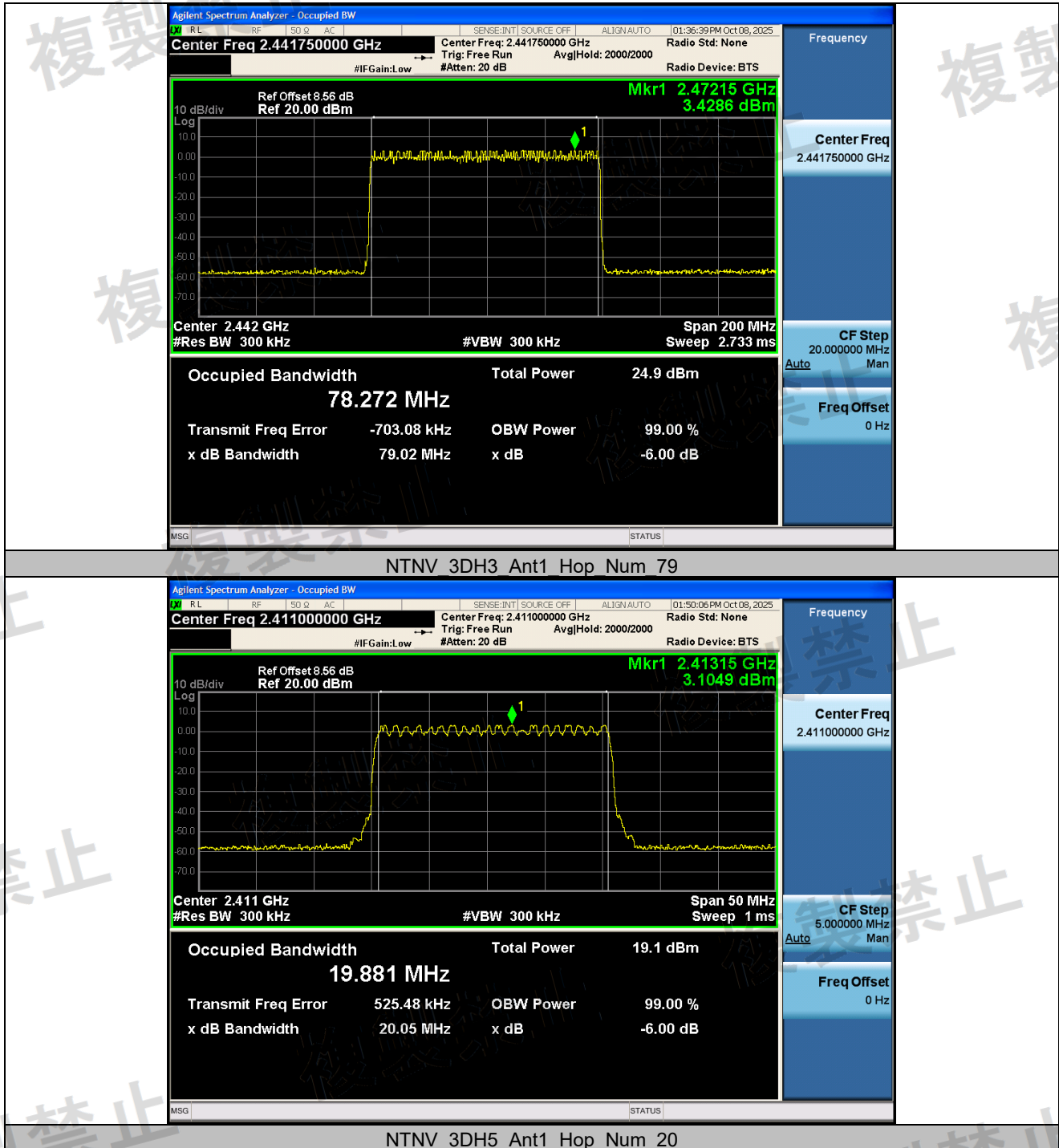
NTNV 2DH1 Ant1 Hop Num 79

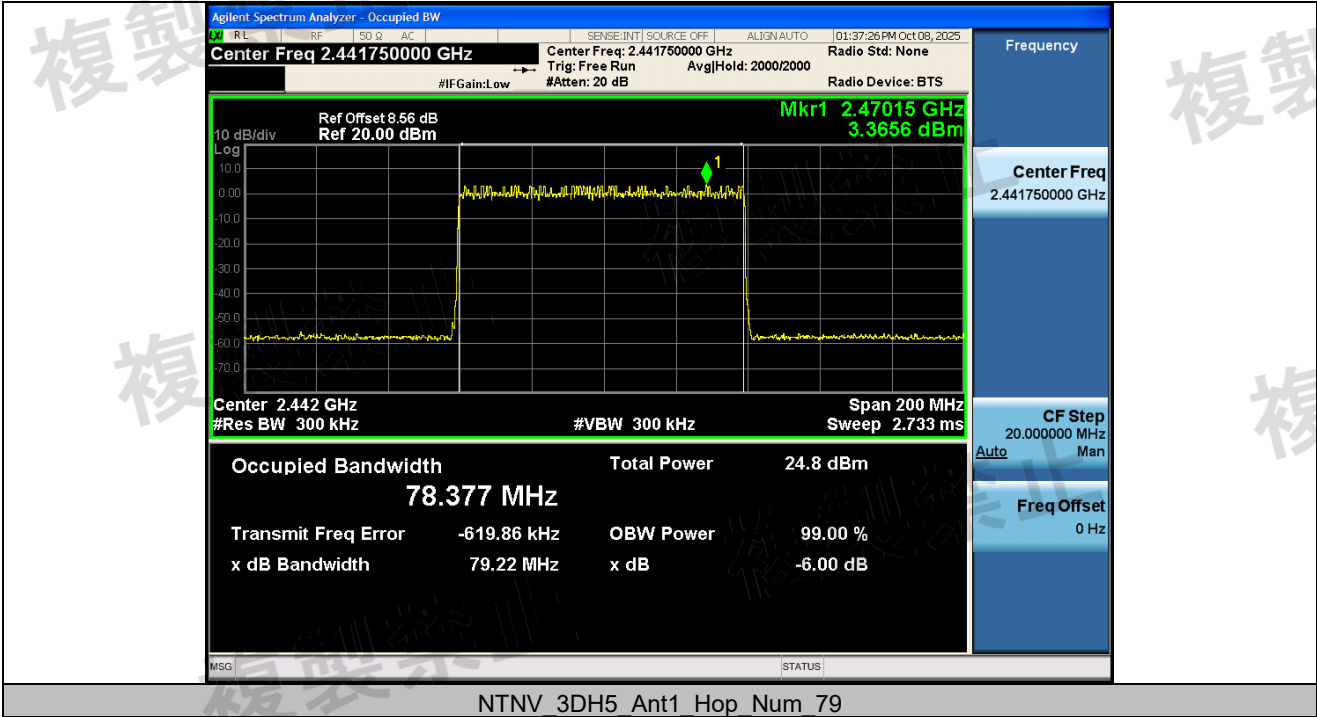
NTNV 2DH3 Ant1 Hop Num 20









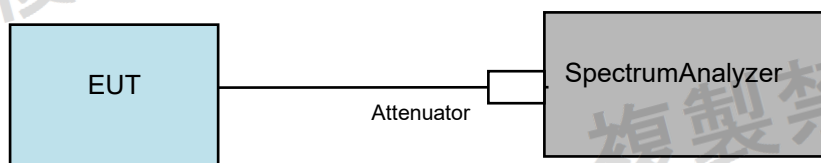


4.3 Spreading bandwidth measurement (90% power bandwidth)

4.3.1 Limits of spreading bandwidth and spreading factor

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

4.3.2 Test Procedure



4.3.3 Deviation from Test Standard

No deviation.

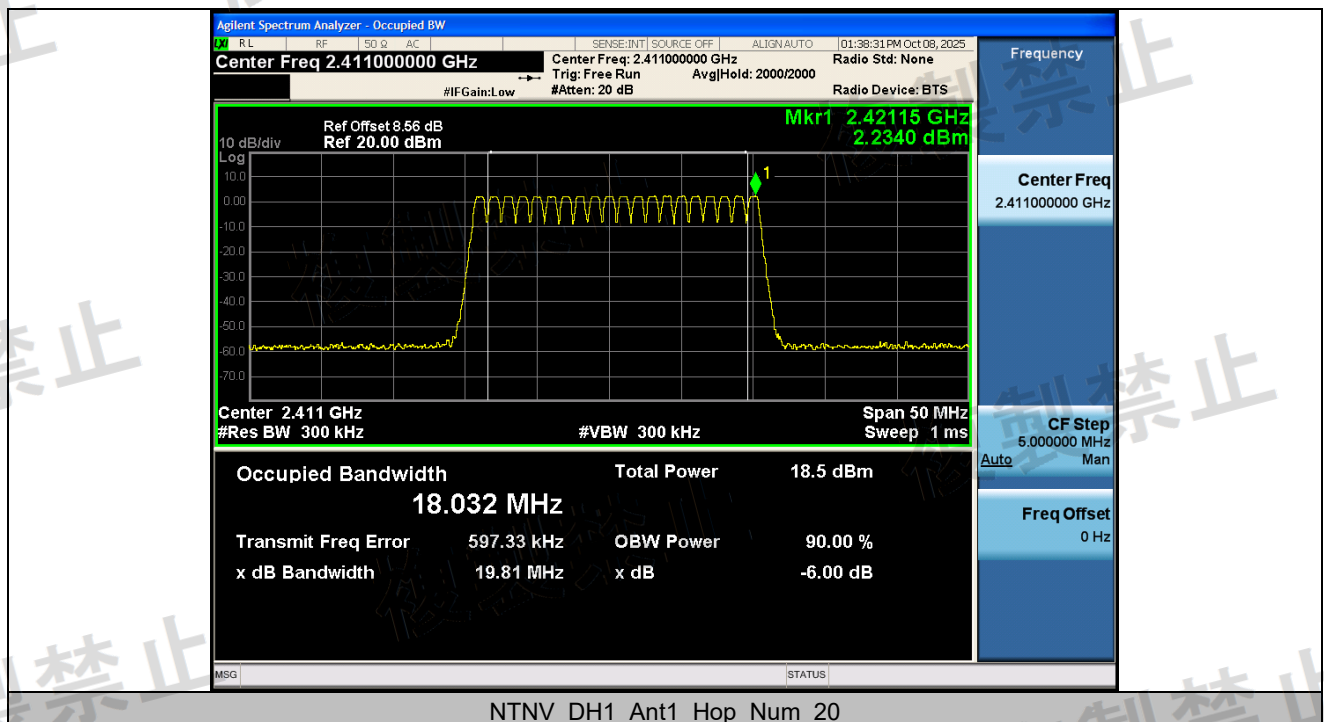
4.3.4 Test Procedure

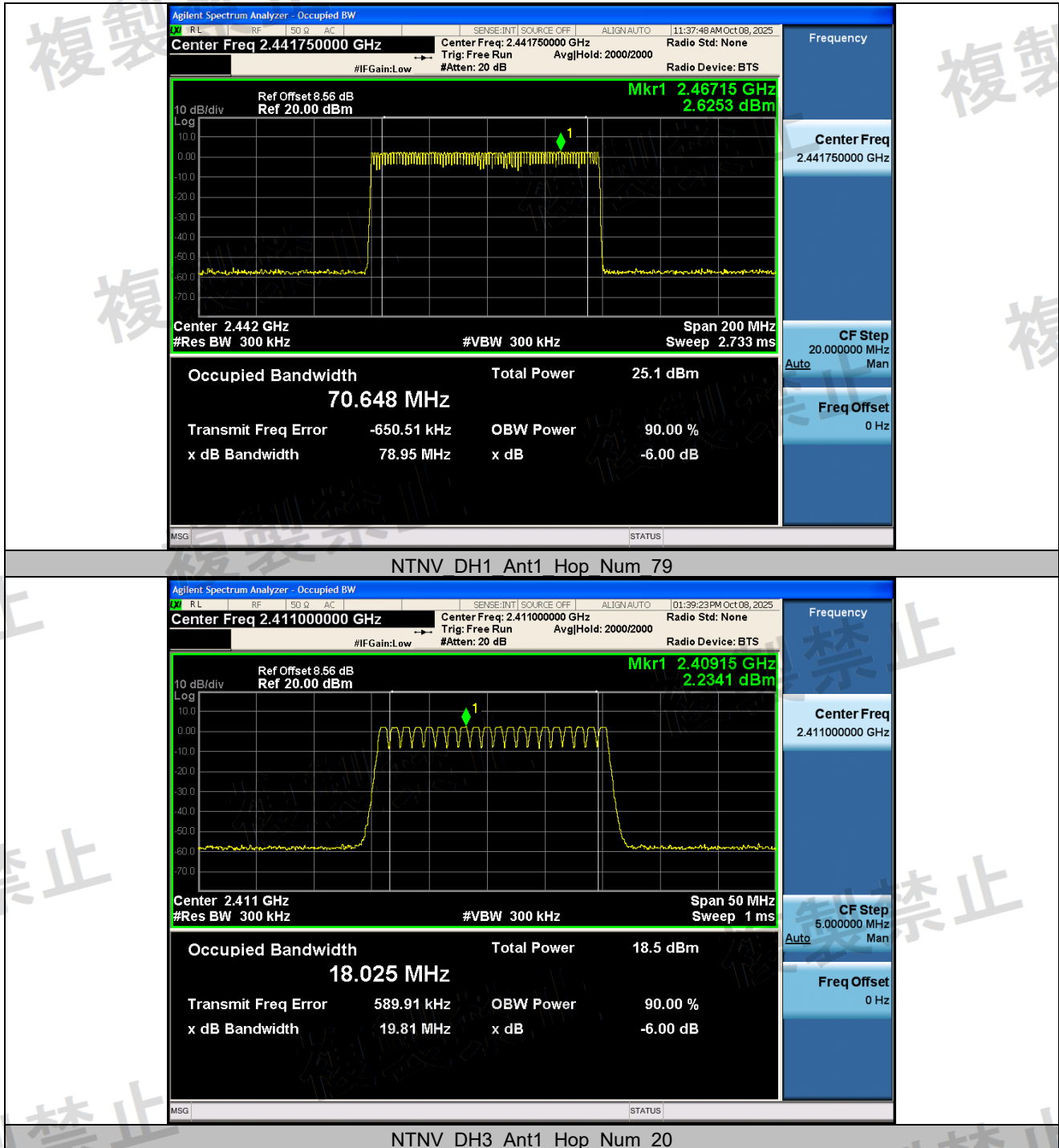
Test method according to Clause 5 of Annex No.43 of MIC Notification No.88.

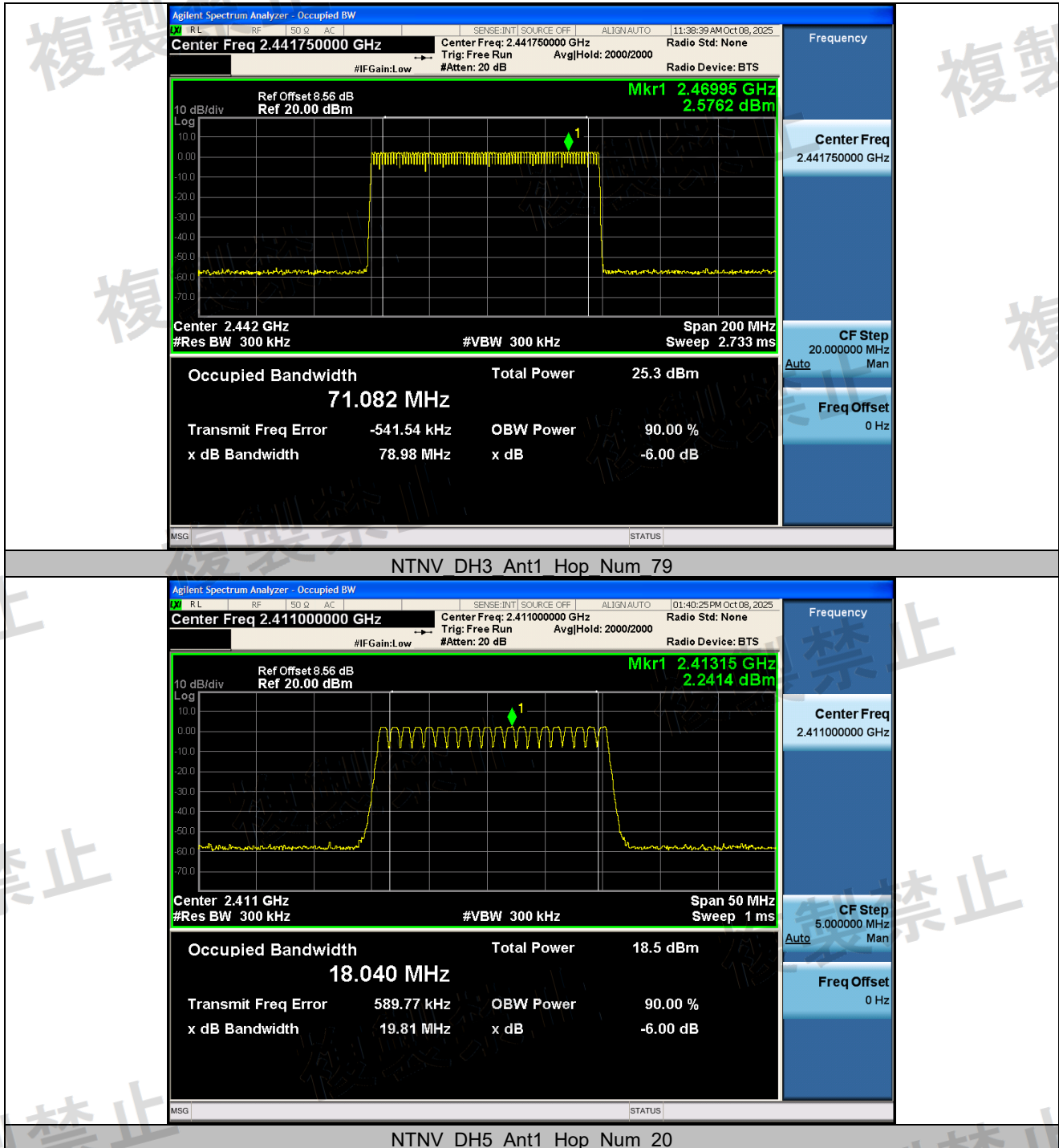
The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. The bandwidth of the fundamental frequency was measured by spectrum analyzer. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal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

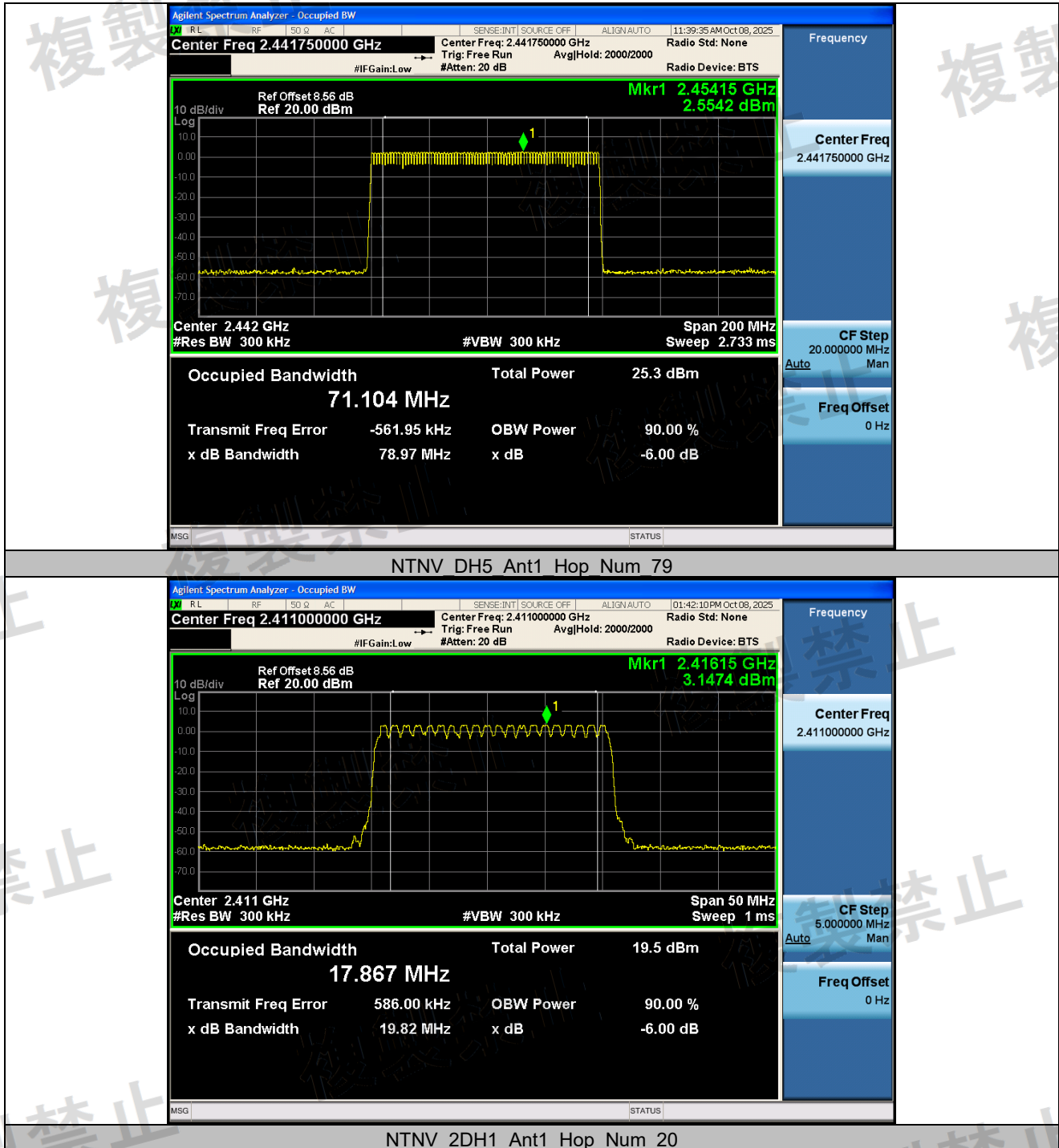
4.3.5 Test Results

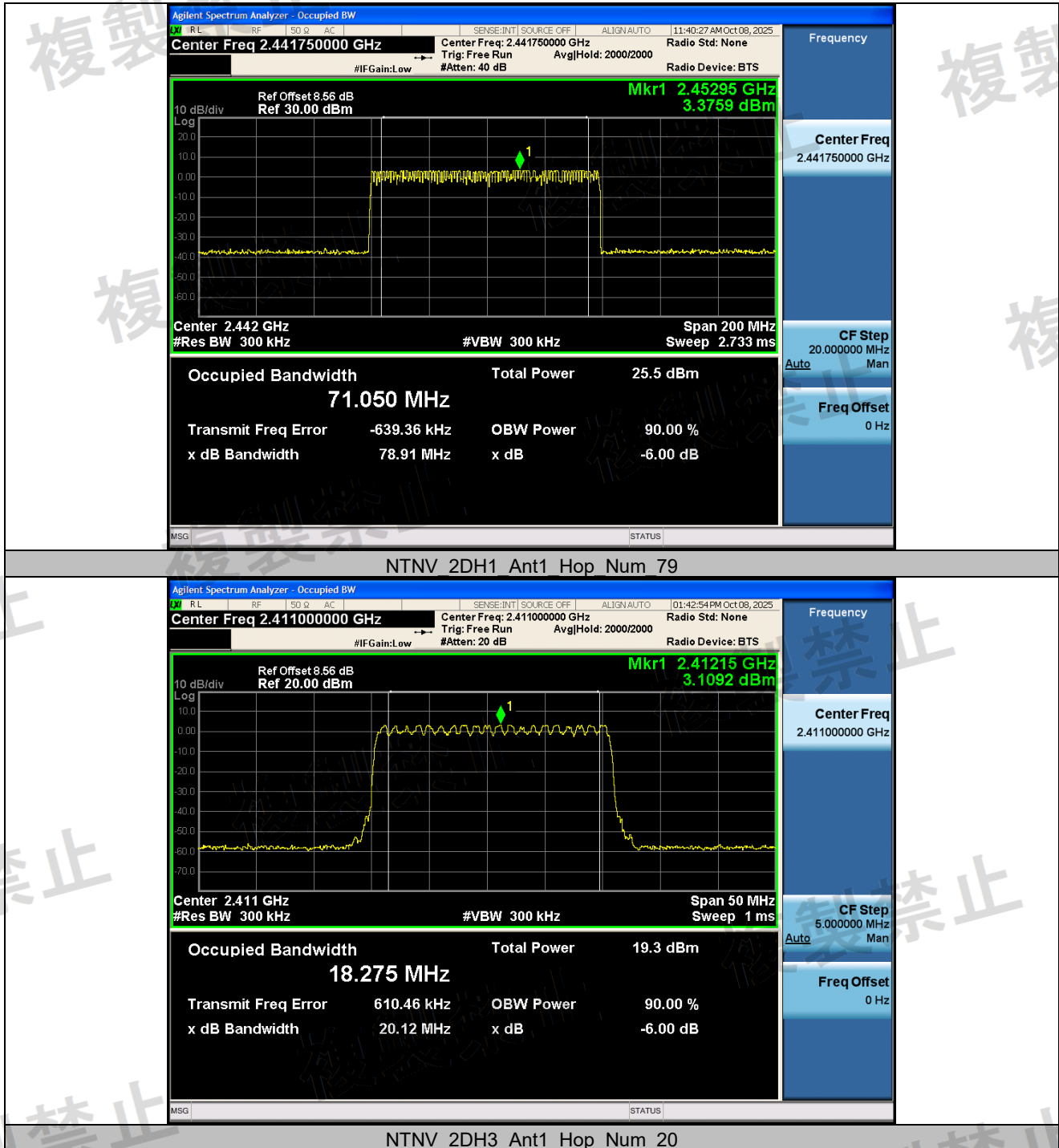
TestCondition	TestMode	Antenna	Channel	Result [MHz]	Limit [MHz]	Verdict
NTNV	DH1	Ant1	Hop Num 20	18.032	≥0.5	PASS
			Hop Num 79	70.648	≥0.5	PASS
	DH3	Ant1	Hop Num 20	18.025	≥0.5	PASS
			Hop Num 79	71.082	≥0.5	PASS
	DH5	Ant1	Hop Num 20	18.040	≥0.5	PASS
			Hop Num 79	71.104	≥0.5	PASS
	2DH1	Ant1	Hop Num 20	17.867	≥0.5	PASS
			Hop Num 79	71.050	≥0.5	PASS
	2DH3	Ant1	Hop Num 20	18.275	≥0.5	PASS
			Hop Num 79	70.912	≥0.5	PASS
	2DH5	Ant1	Hop Num 20	18.364	≥0.5	PASS
			Hop Num 79	71.135	≥0.5	PASS
	3DH1	Ant1	Hop Num 20	18.123	≥0.5	PASS
			Hop Num 79	70.978	≥0.5	PASS
	3DH3	Ant1	Hop Num 20	17.704	≥0.5	PASS
			Hop Num 79	71.708	≥0.5	PASS
	3DH5	Ant1	Hop Num 20	18.301	≥0.5	PASS
			Hop Num 79	71.046	≥0.5	PASS

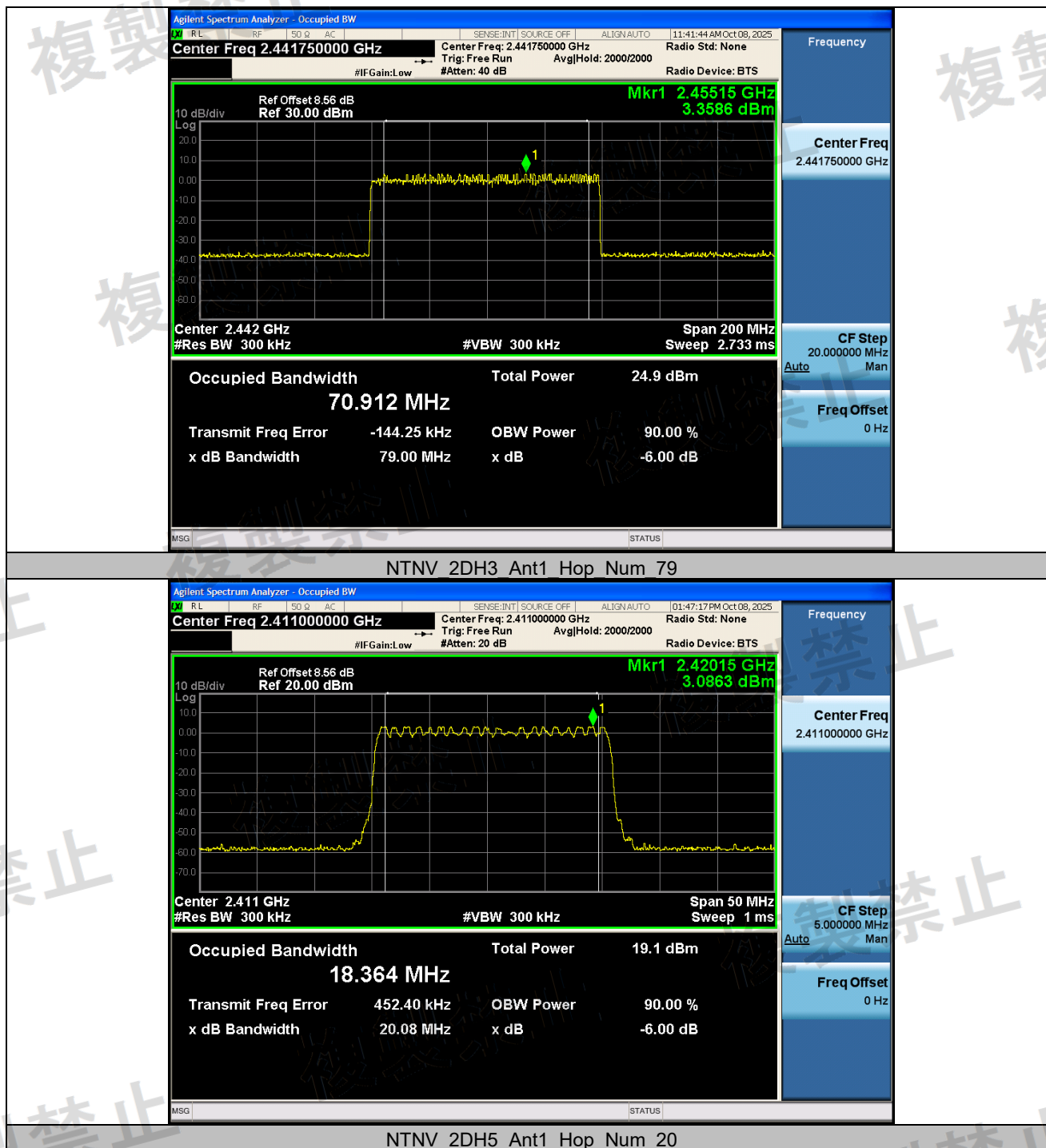


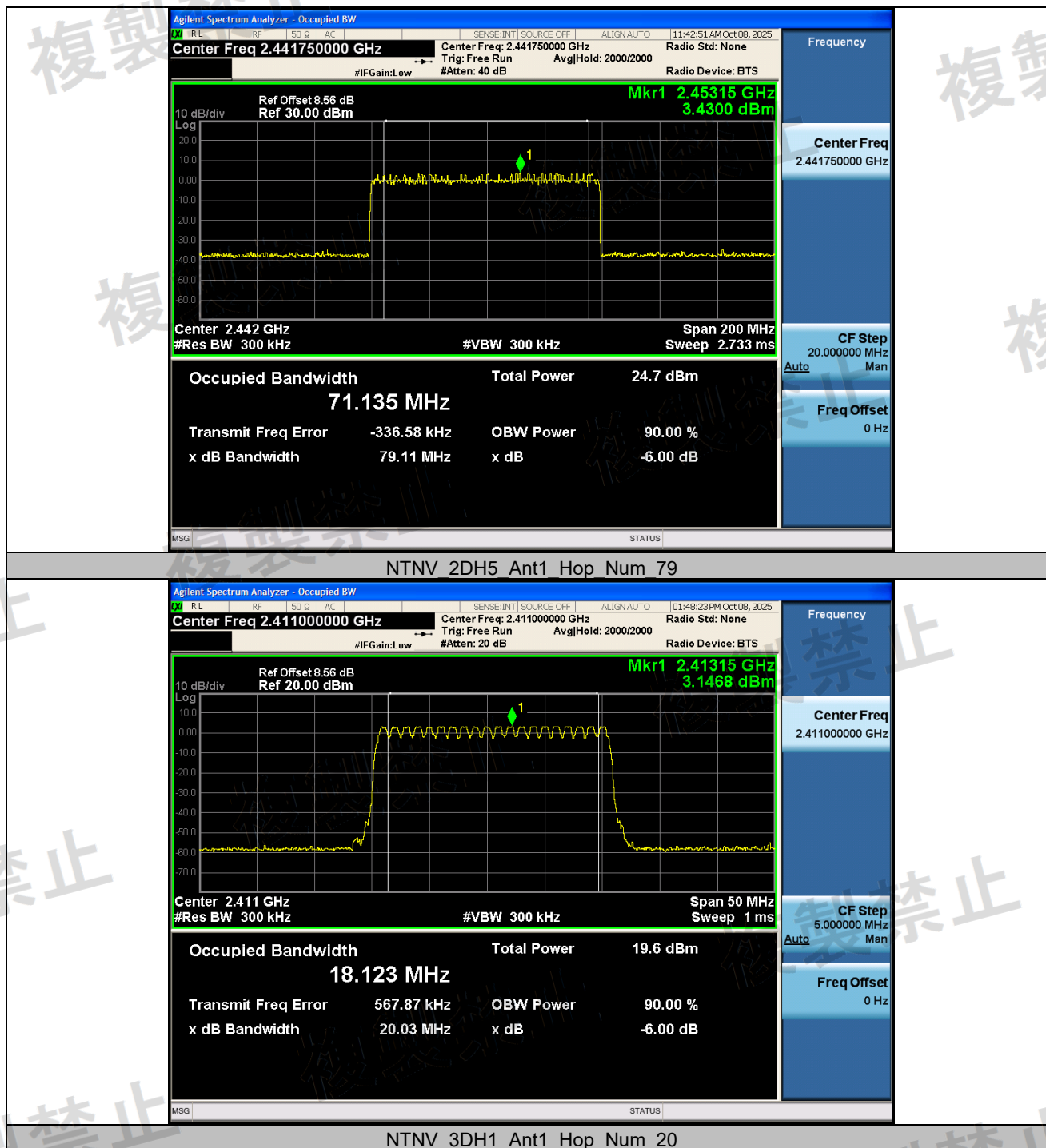


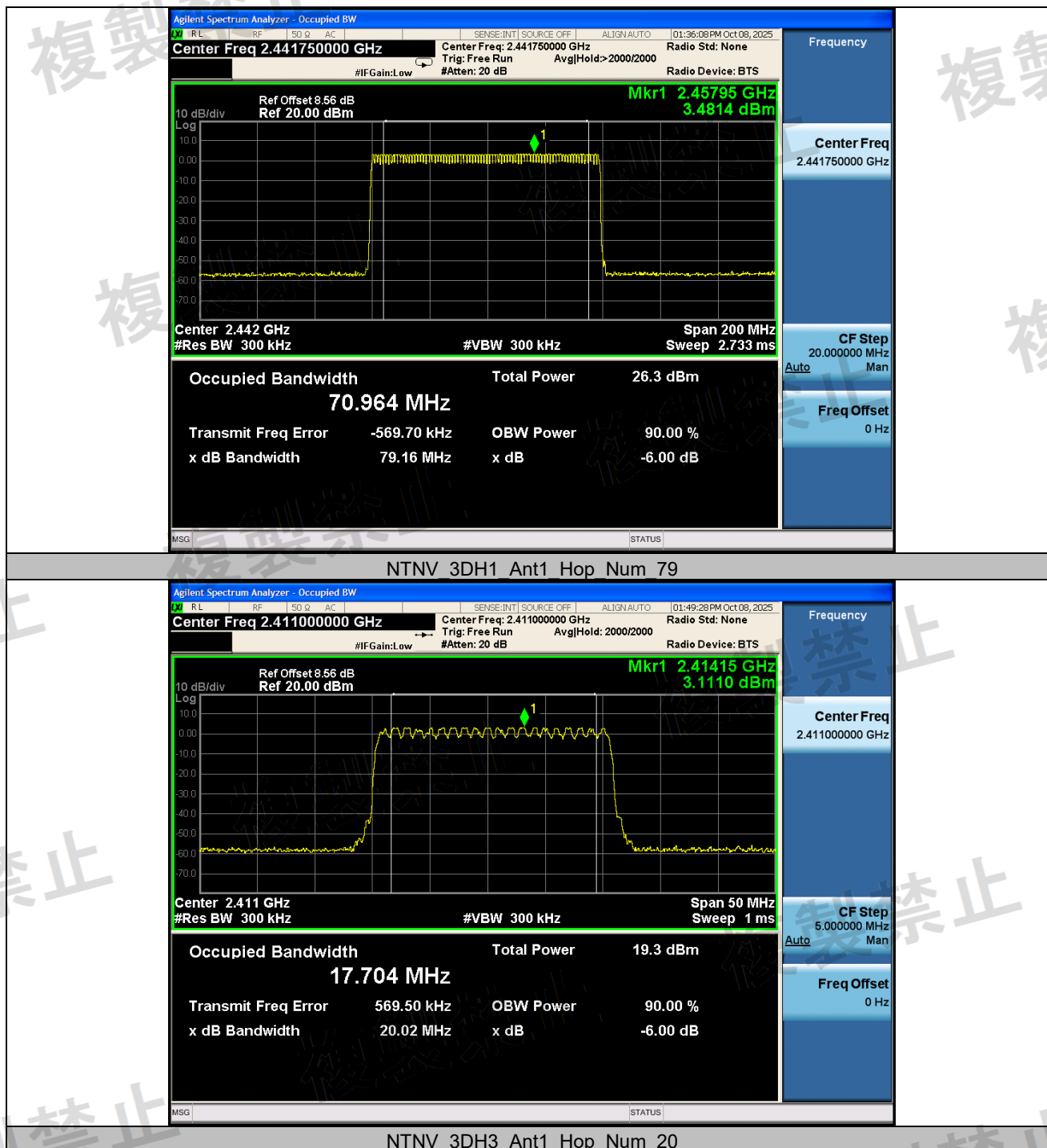


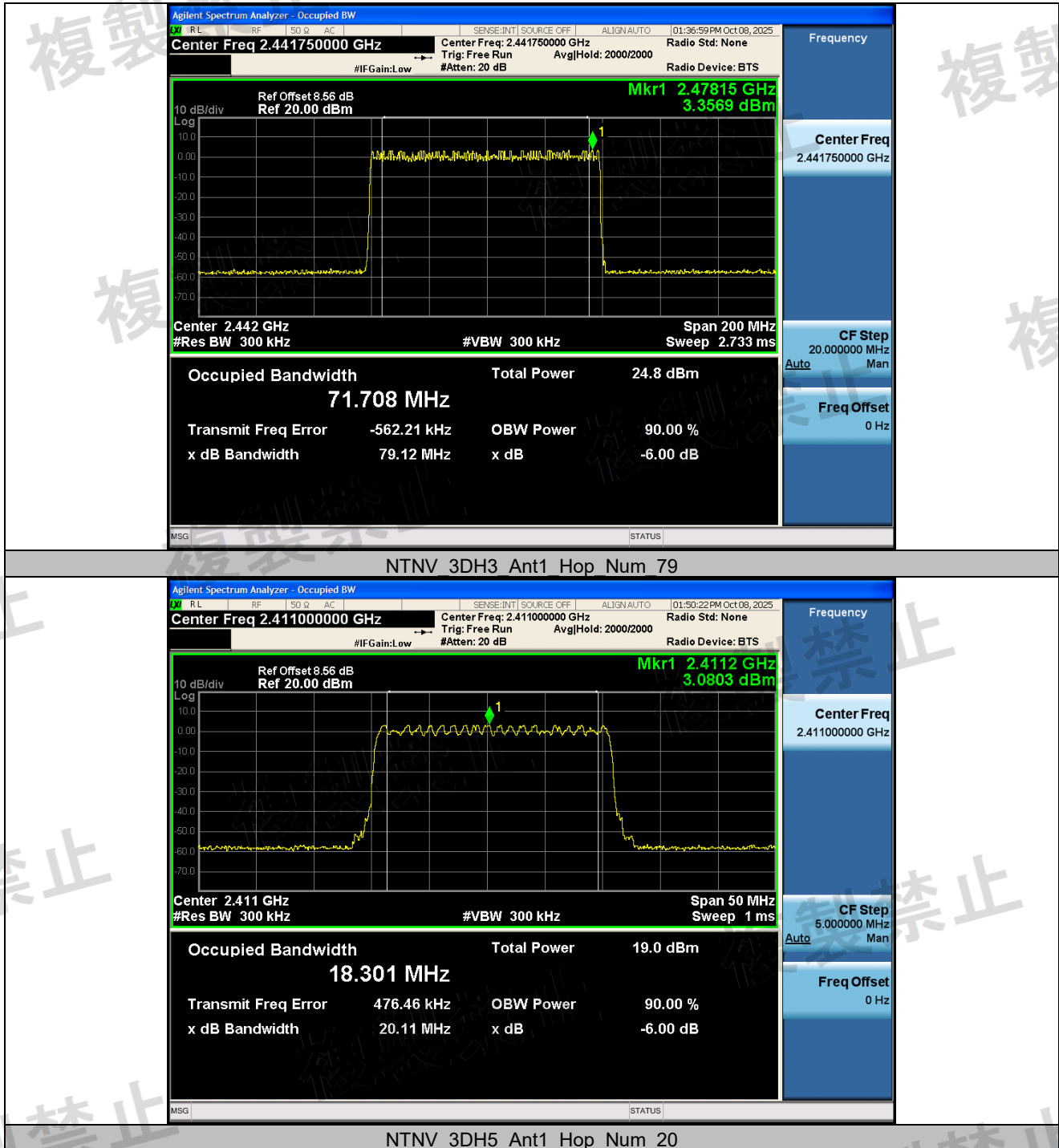




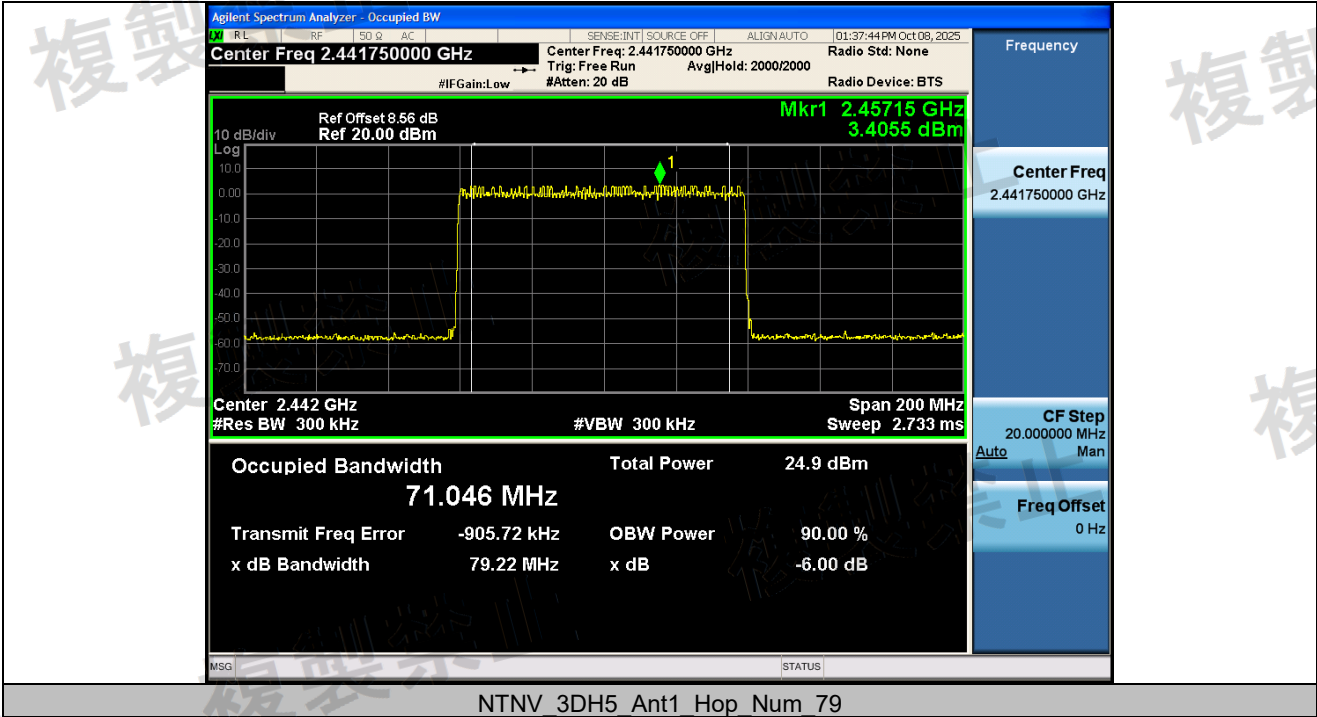








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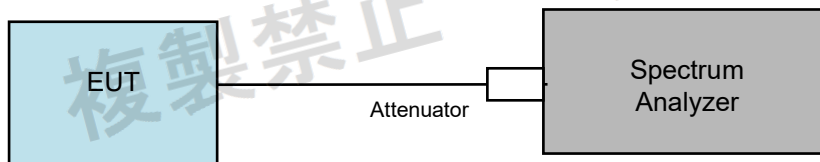


4.4 Spurious emissions for transmitter measurement

4.4.1 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	$\leq 2.5\mu\text{W}(-26\text{dBm})/\text{MHz}$

4.4.2 Test Setup



4.4.3 Deviation from Test Standard

No deviation.

4.4.4 Test Procedure

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

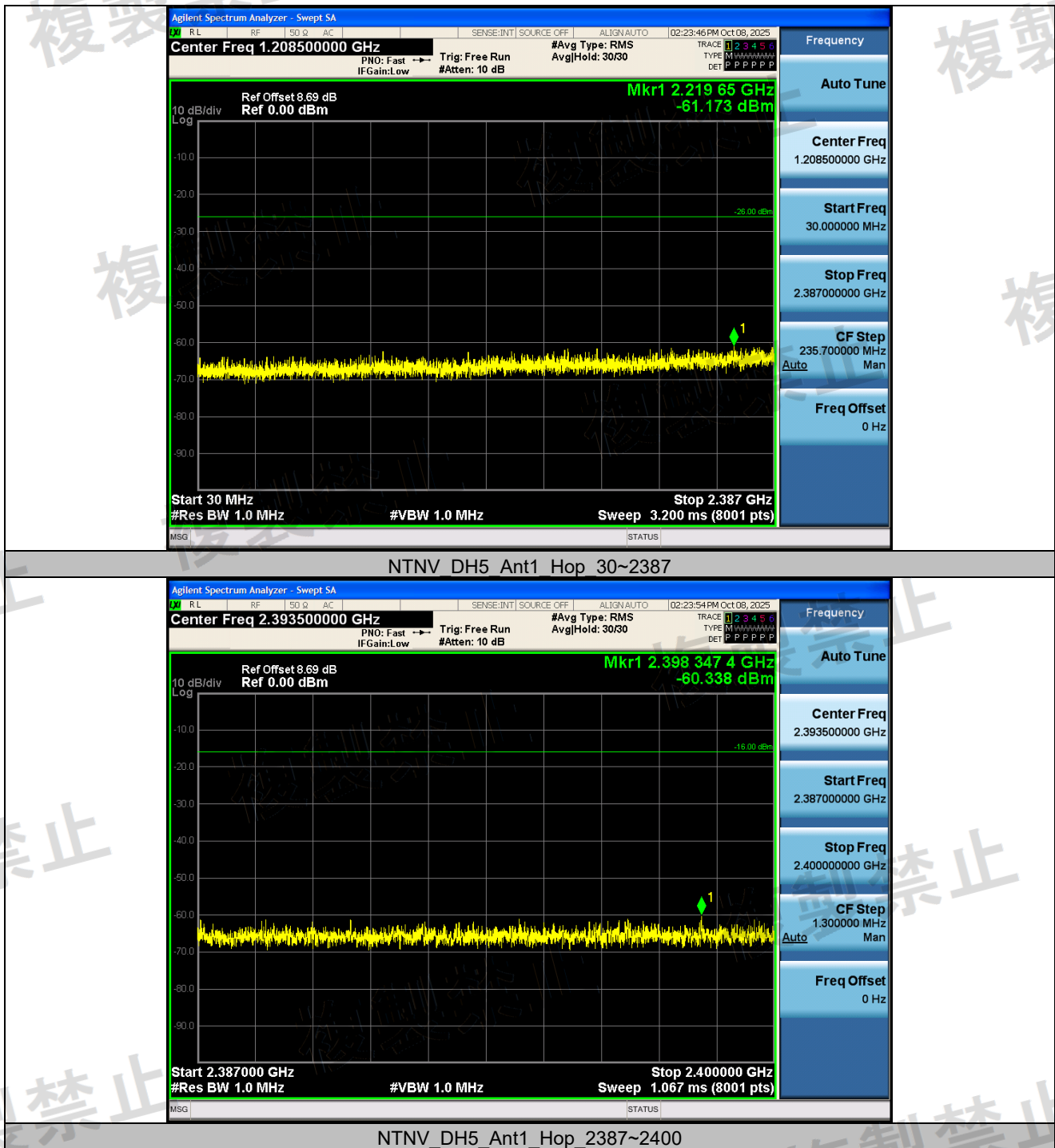
The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. The spurious emissions for transmitter was measured by spectrum analyzer.

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

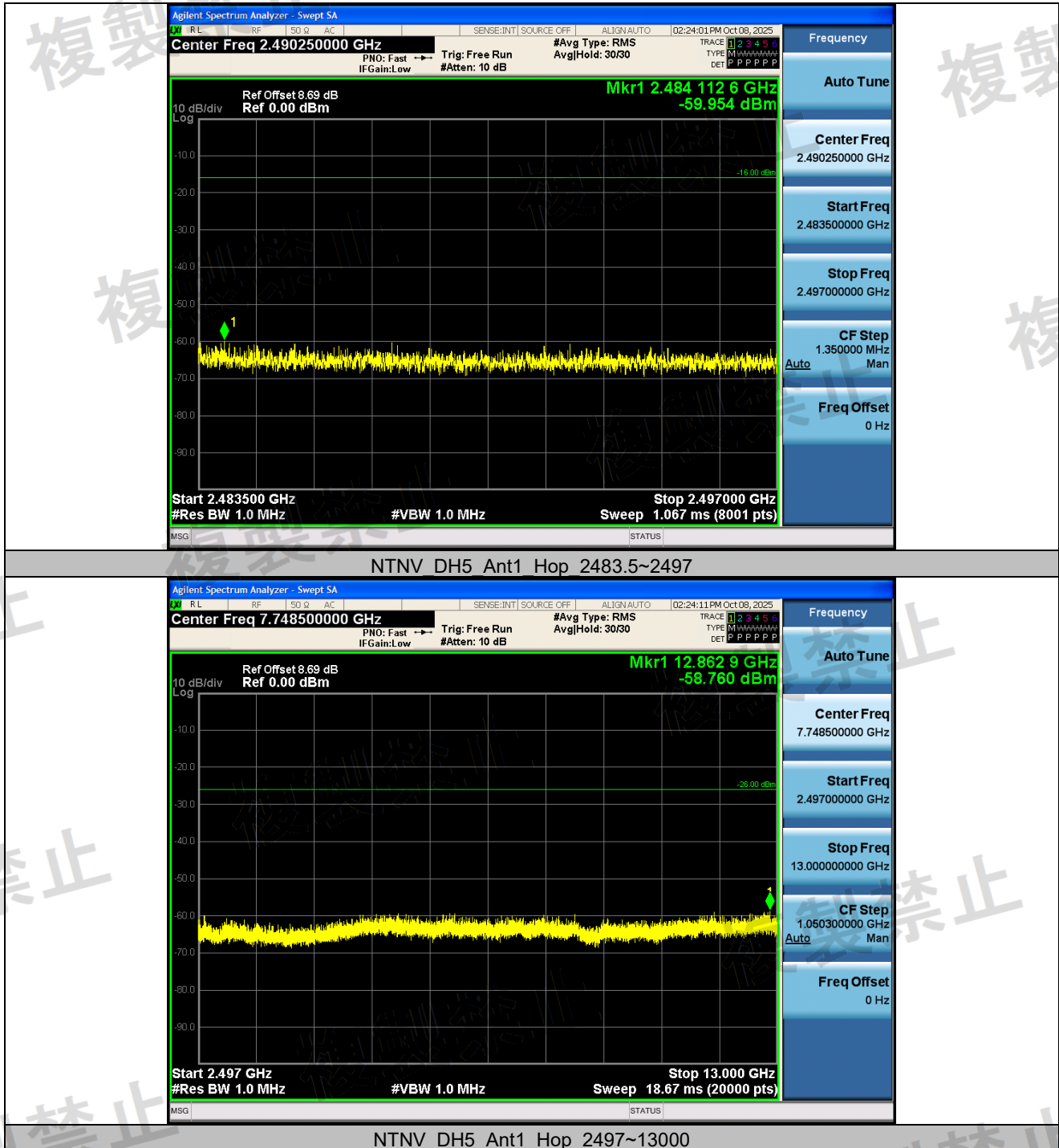
- Sweep Bandwidth Starts spurious searches from the smallest possible frequencies to more than 5 times the carrier frequencies (for example from 30 MHz up to 12.5 GHz for a 2.4 GHz system).
- Resolution Bandwidth 1 MHz
- Video Bandwidth 1 MHz
- Y-Axis Scale 10 dB/Div
- Input Level: Maximum dynamic range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

4.4.5 Test Results

TestCondition	TestMode	Channel	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Result [uW/Mhz]	Limit [uW/Mhz]	Verdict
NTNV	DH5	Hop	30~2387	2219.65	-61.17	0.000763836	≤2.5	PASS
			2387~2400	2398.35	-60.34	0.000924698	≤25	PASS
			2483.5~2497	2484.11	-59.95	0.001011579	≤25	PASS
			2497~13000	12862.90	-58.76	0.001330454	≤2.5	PASS
	2DH5	Hop	30~2387	2350.76	-60.28	0.000937562	≤2.5	PASS
			2387~2400	2390.42	-60.38	0.00091622	≤25	PASS
			2483.5~2497	2483.58	-60.57	0.000877001	≤25	PASS
			2497~13000	5764.10	-58.03	0.001573983	≤2.5	PASS
	3DH5	Hop	30~2387	2382.88	-60.30	0.000933254	≤2.5	PASS
			2387~2400	2388.22	-59.88	0.001028016	≤25	PASS
			2483.5~2497	2483.52	-60.55	0.000881049	≤25	PASS
			2497~13000	5968.40	-58.54	0.001399587	≤2.5	PASS

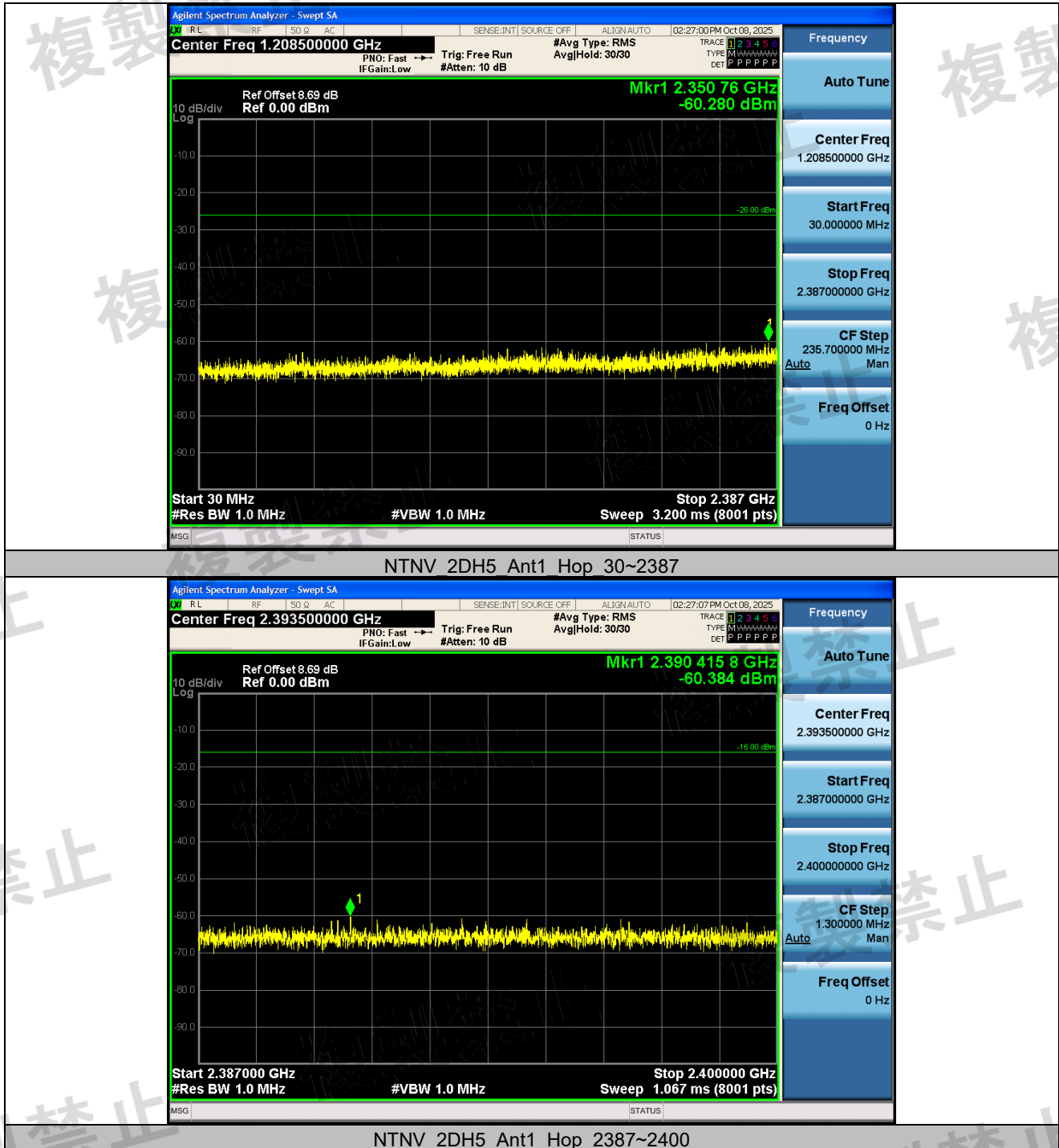


Test Report No.: 25061906-RF-JP-01

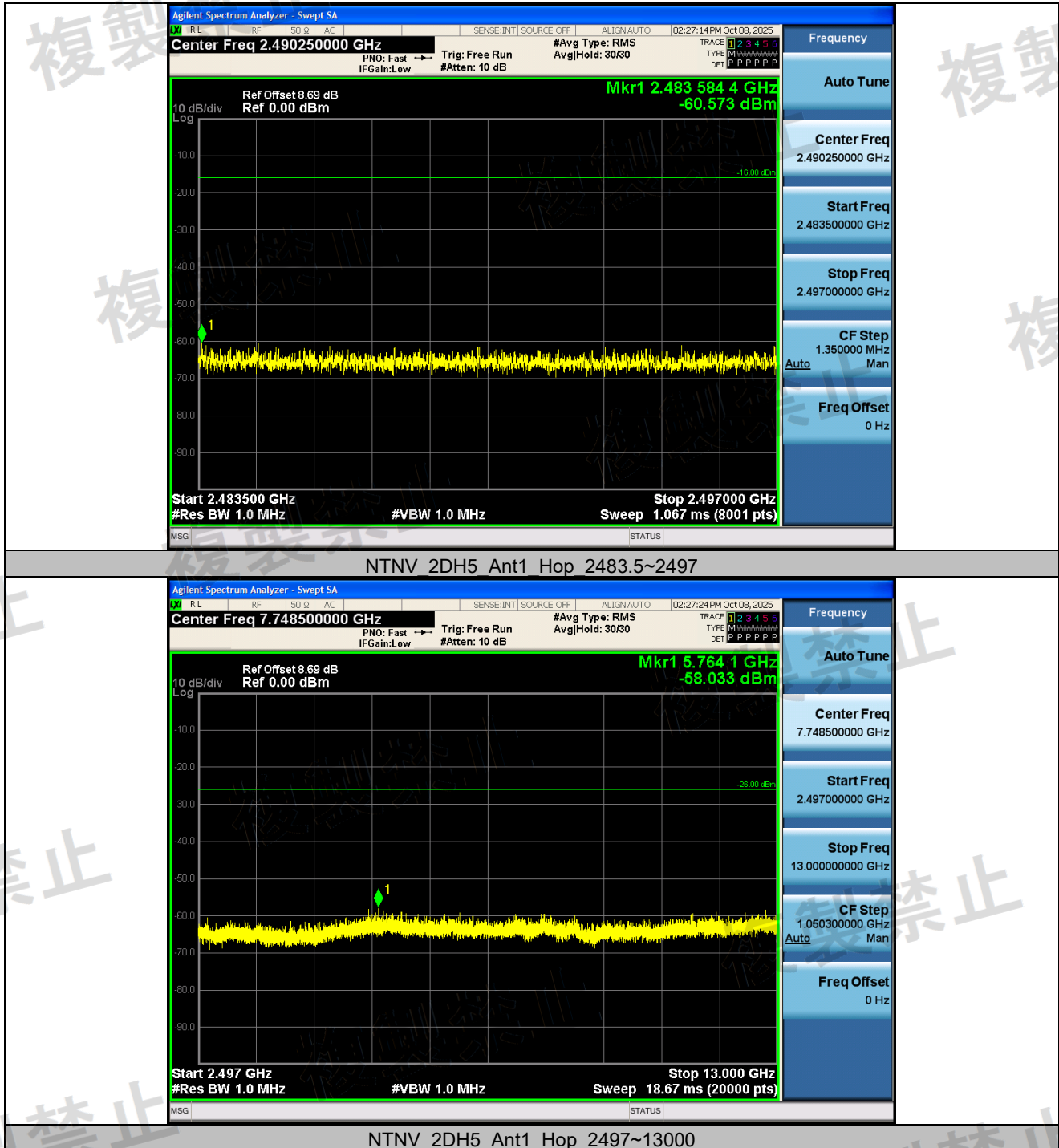
Lab: [Hwa-Hsing \(Dongguan\) Testing Co., Ltd.](#)Address: [No.101, Building N1, Yuyuan 2 Road, Yuyuan Industrial Park, HuangJiang Town, Dongguan City, People's Republic of China](#)Tel: [0769-85598986](#)Web: [www.lyns-tci.com](#)E-Mail: [service-hs@lyns-tci.com](#)

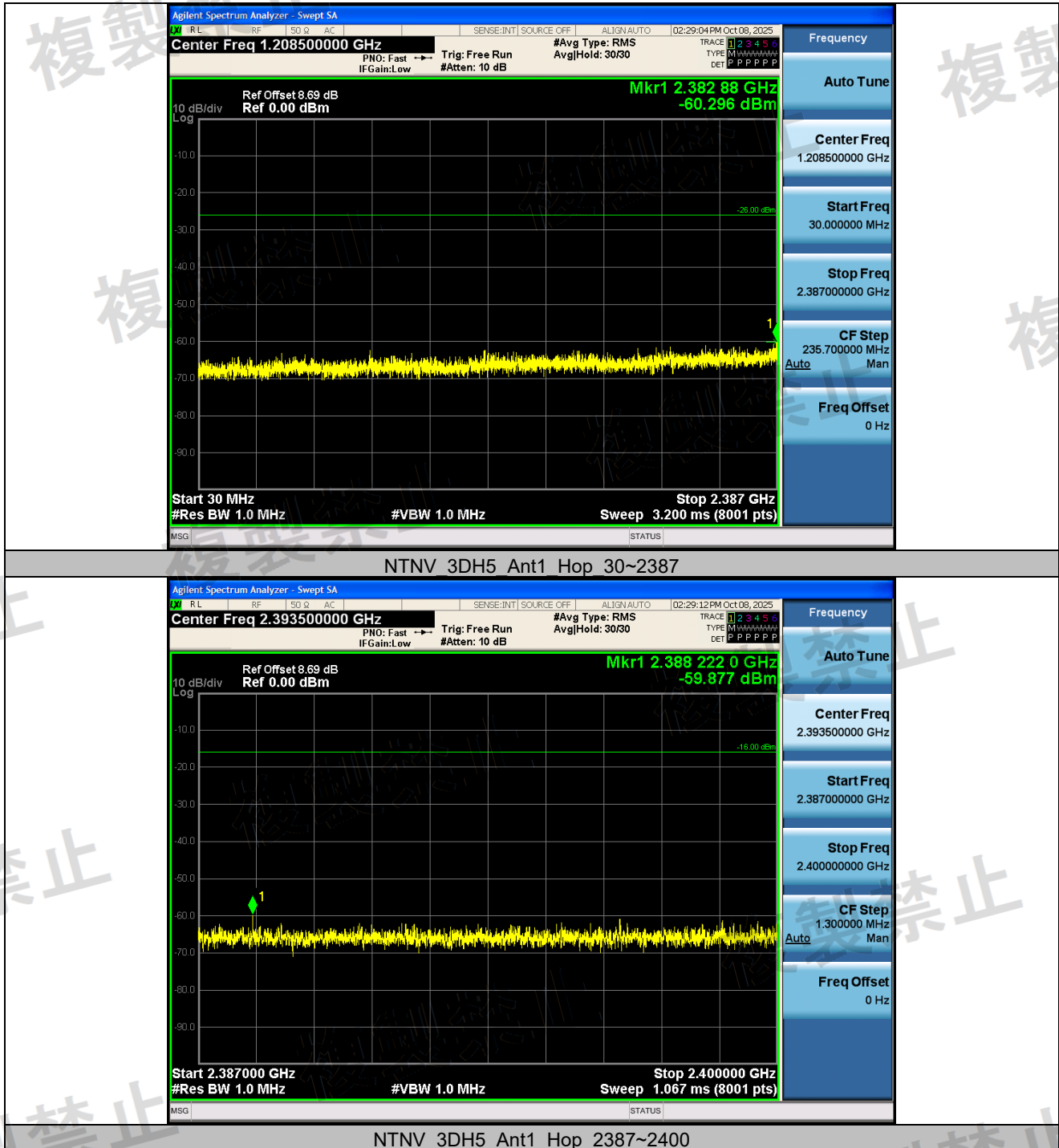
Release

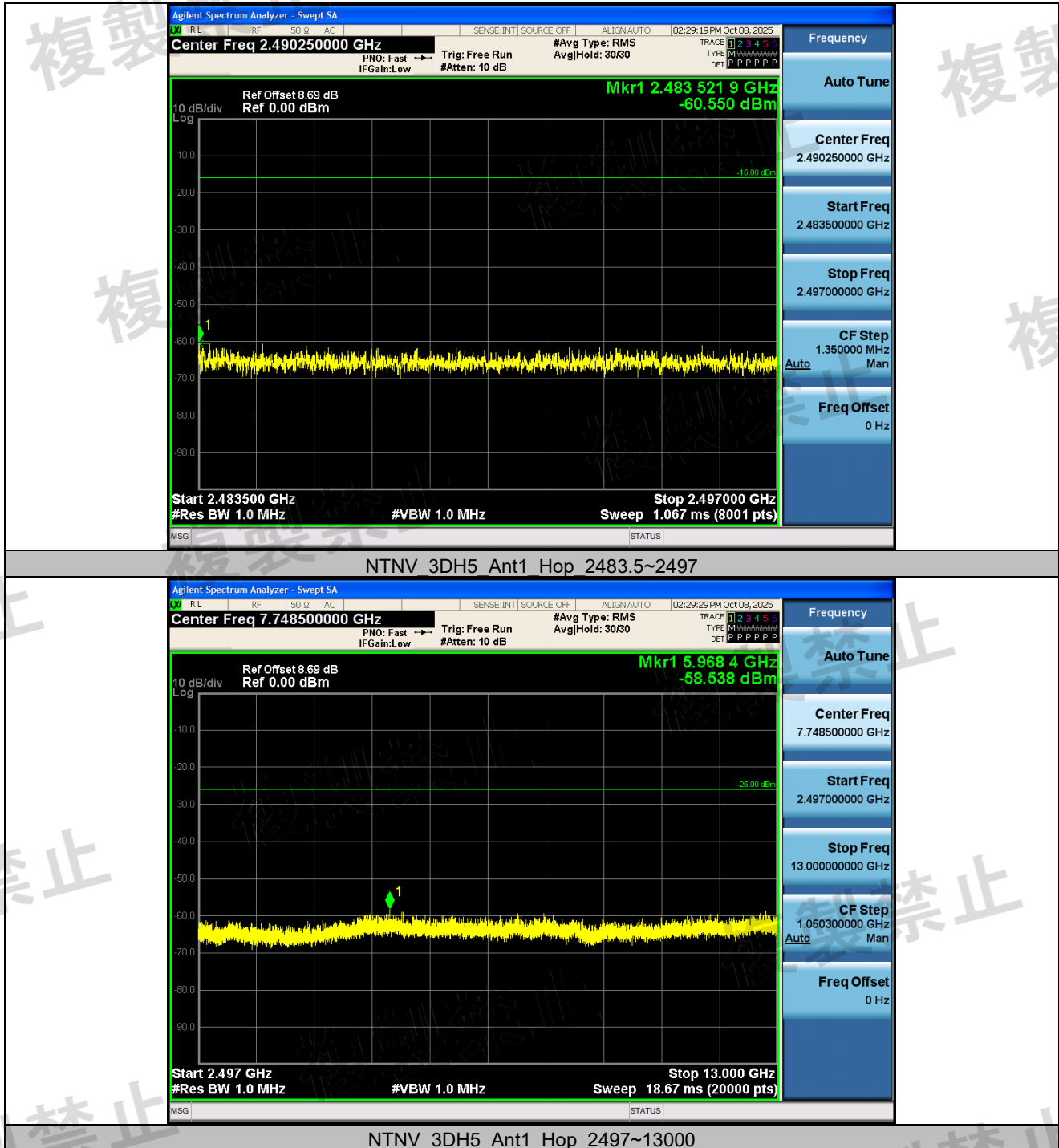
Ver. 1.5



Test Report No.: 25061906-RF-JP-01







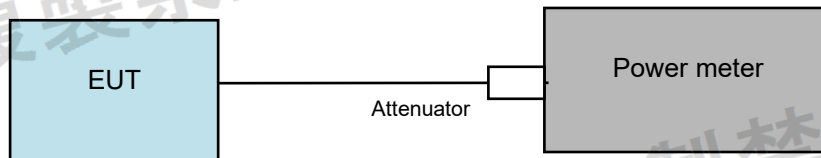
4.5 Antenna power measurement

4.5.1 Limits of antenna power

Antenna power shall be 3mW/MHz or less.

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

4.5.2 Test Setup



4.5.3 Deviation from Test Standard

No deviation.

4.5.4 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 and powered by nominal DC voltage. 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.

4.5.5 Test result of conducted output power

Test Condition	Conducted output power (dBm)		
	GFSK	$\pi/4$ -DQPSK	8DPSK
Voltage normal	2.246	3.083	3.087

4.5.6 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	0.023589	-21.37	0.028590	-4.70	0.028652	-4.49
Rated power	0.03		0.03		0.03	

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	0.034571	0.041900	0.041991

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

4.5.7 Test result of for Enable AFH Function

Test Condition	Conducted output power (dBm)		
	GFSK	$\pi/4$ -DQPSK	8DPSK
Voltage normal	2.246	3.083	3.087

Test condition	Conducted power density (mW/MHz)					
	Hopping mode					
	Mode D-GFSK		Mode E- $\pi/4$ DQPSK		Mode F-8DPSK	
	Power	Tolerance(%)	Power	Tolerance(%)	Power	Tolerance(%)
Voltage normal	0.092974	-7.03	0.110747	10.75	0.111231	11.23
Rated power	0.1		0.1		0.1	

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 D	Mode E	Mode F
	GFSK	$\pi/4$ DQPSK	8 DPSK
Voltage normal	0.136258	0.162305	0.163014

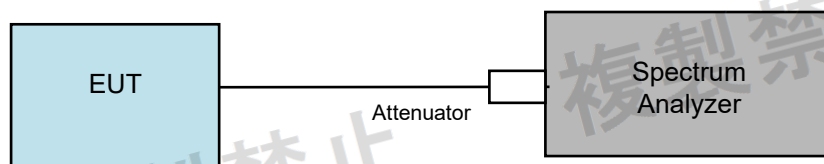
Note: The value of EIRP densities are "calculated" values.

4.6 Spurious emissions for receiver

4.6.1 Limits of spurious emissions for receiver

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

4.6.2 Test Setup



4.6.3 Deviation from Test Standard

No deviation.

4.6.4 Test Procedure

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

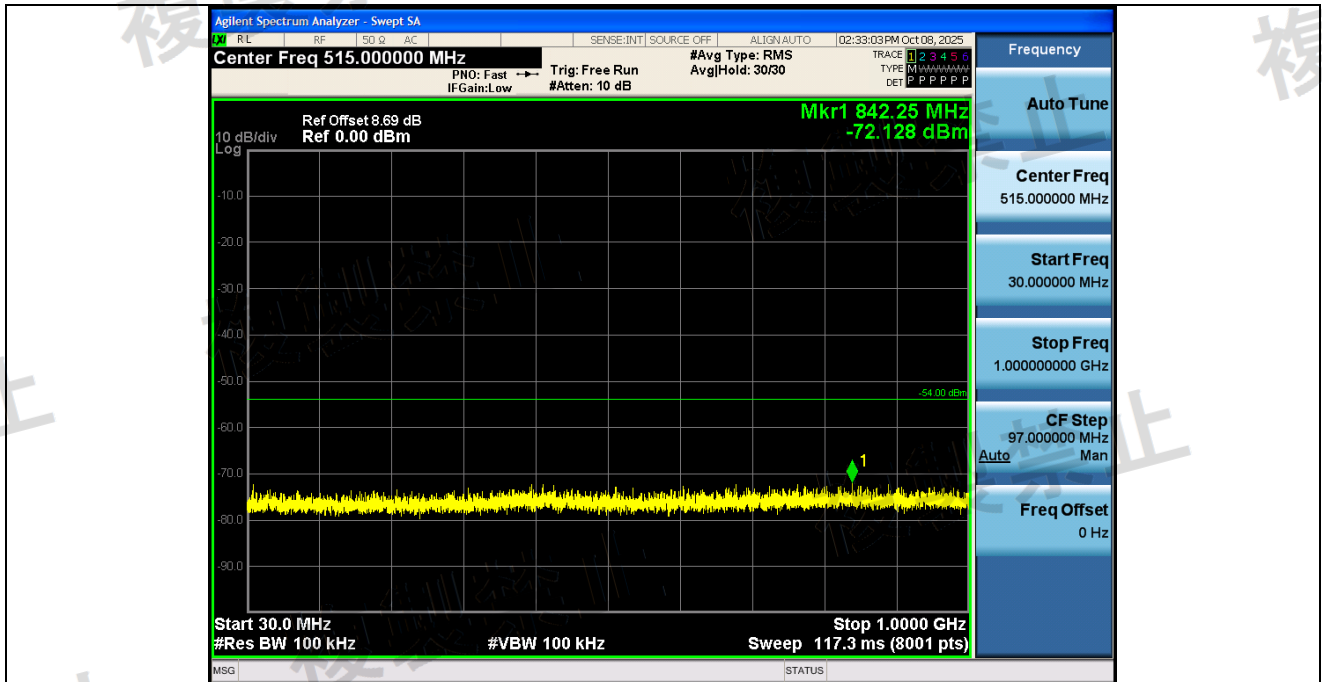
The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. The spurious emissions for receiver was measured by spectrum analyzer.

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

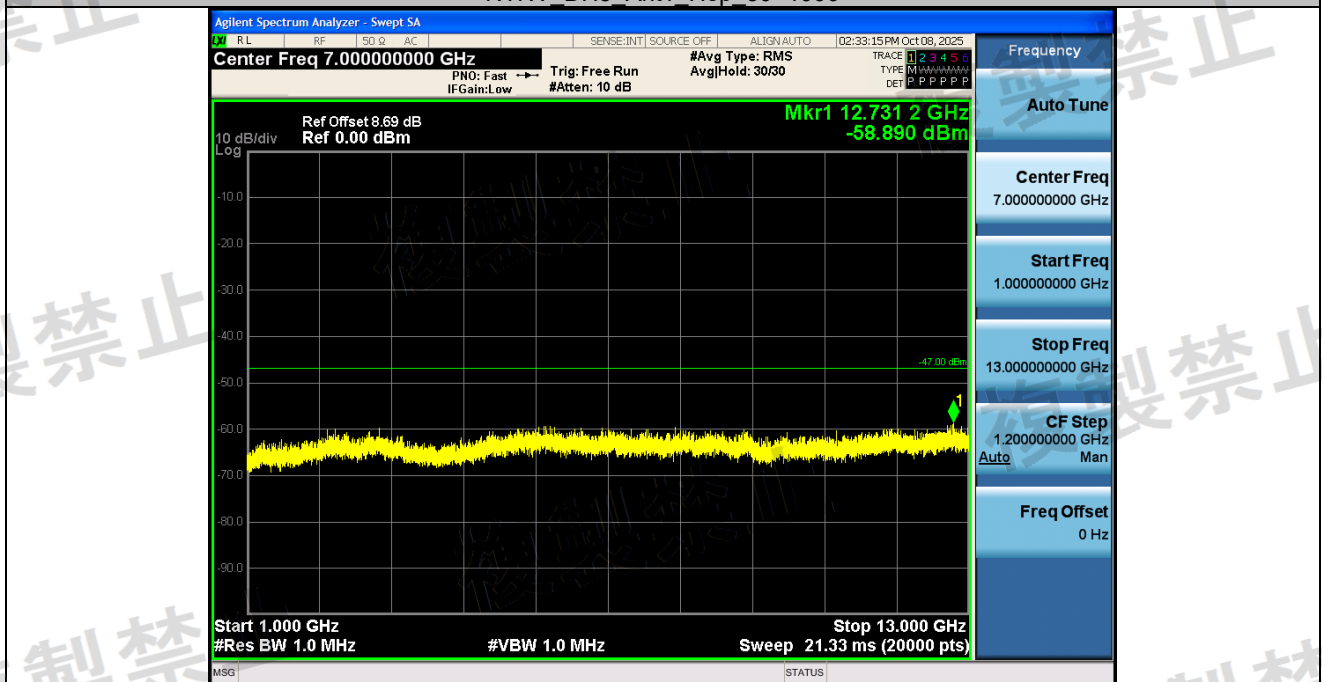
- Sweep Bandwidth Starts spurious searches from the smallest possible frequencies to more than 5 times the carrier frequencies (for example from 30 MHz up to 12.5 GHz for a 2.4 GHz system).
- Resolution Bandwidth 1 MHz
- Video Bandwidth 1 MHz
- Y-Axis Scale 10 dB/Div
- Input Level: Maximum dynamic range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

4.6.5 Test Results

Test Condition	Test Mode	Channel	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	DH5	Hop	30~1000	842.25	-72.13	0.06124	≤4	PASS
			1000~13000	12731.20	-58.89	1.29122	≤20	PASS
	2DH5	Hop	30~1000	650.44	-72.14	0.06109	≤4	PASS
			1000~13000	8238.20	-57.63	1.72584	≤20	PASS
	3DH5	Hop	30~1000	429.16	-70.99	0.07962	≤4	PASS
			1000~13000	5750.40	-58.77	1.32739	≤20	PASS



NTNV DH5 Ant1 Hop 30~1000



NTNV DH5 Ant1 Hop 1000~13000

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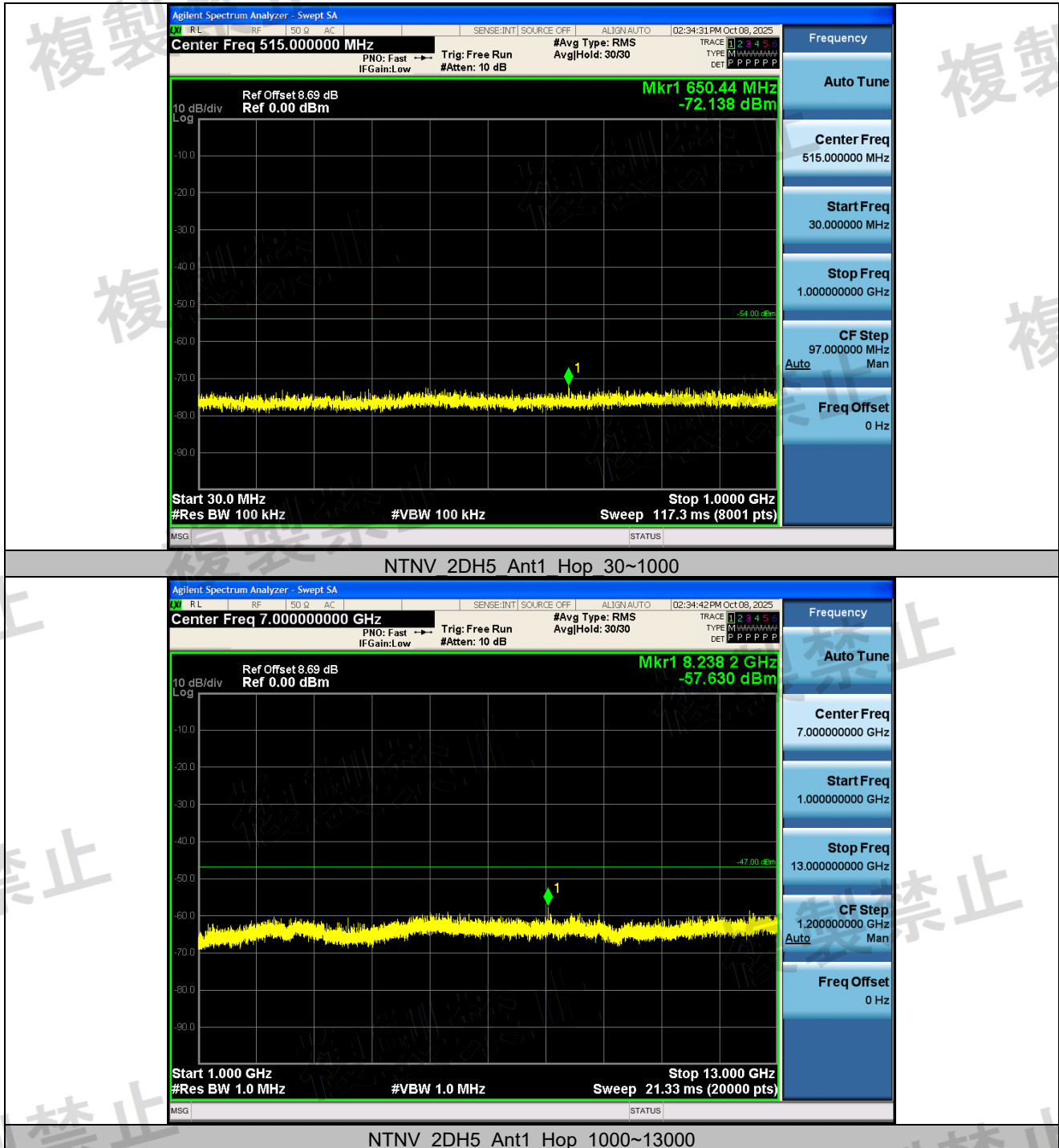
Tel: [0769-85598986](#)

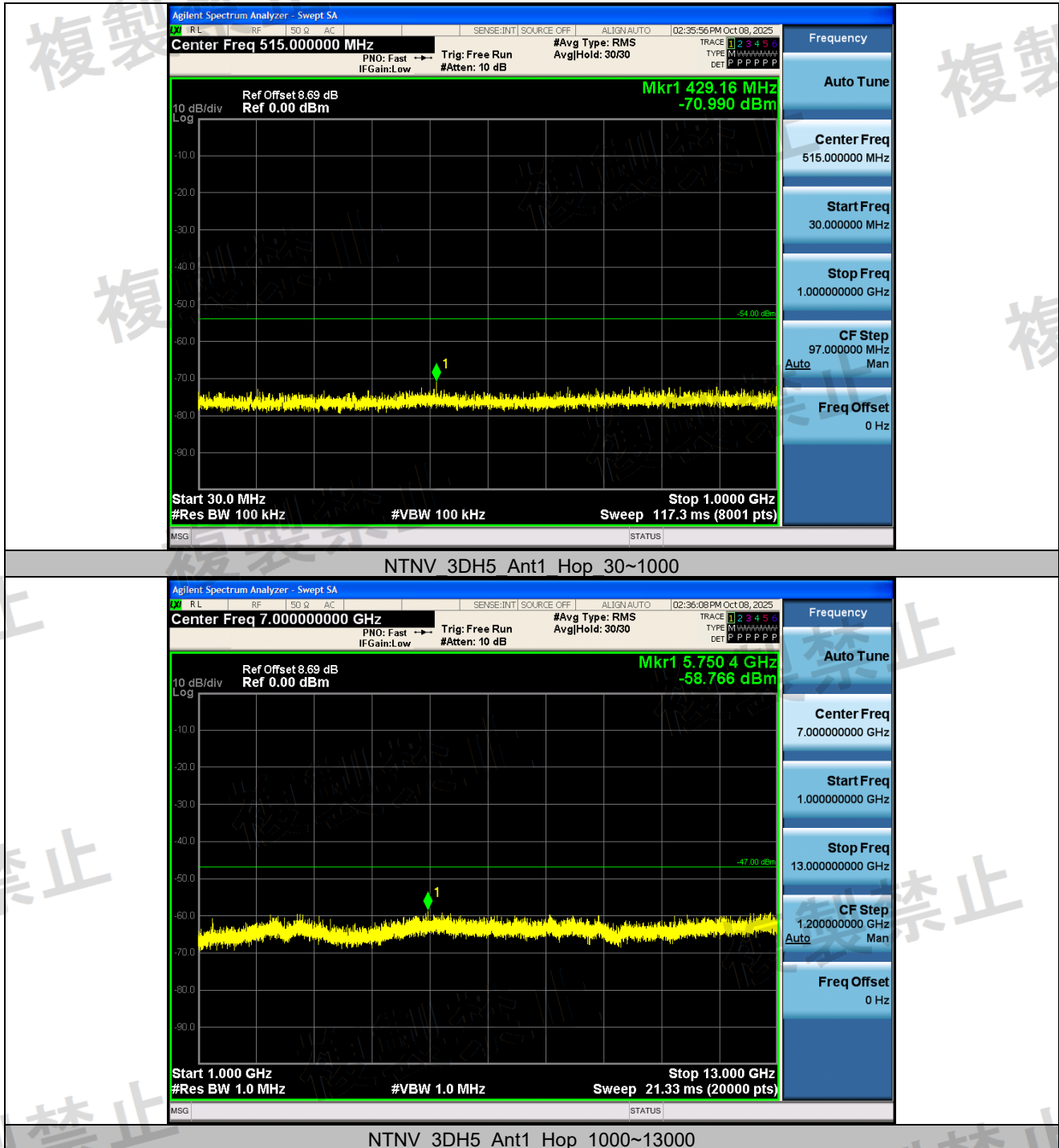
Web.: [www.lyns-tci.com](#)

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

Release

[Ver. 1.5](#)





4.7 Dwell time of frequency hopping

4.7.1 Limits of dwell time

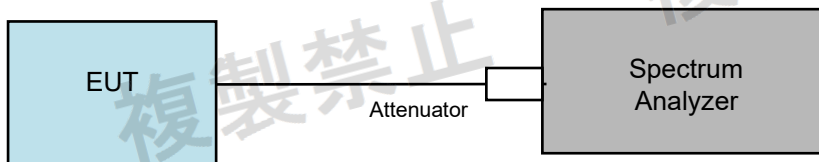
4.7.2 Limit of Receiver Spurious Radiation

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

(AFH mode) dwell time = [Spreading rate/20] x duty ratio x 0.4 seconds

4.7.3 Test setup

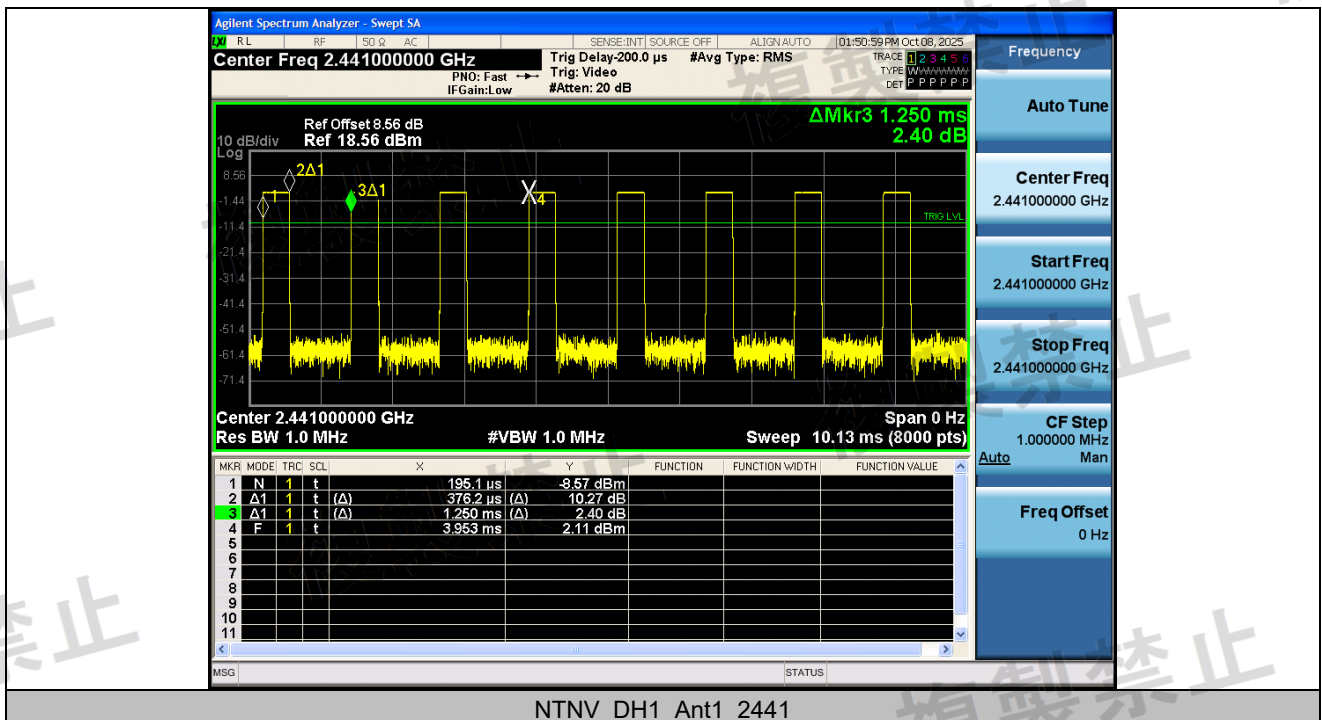


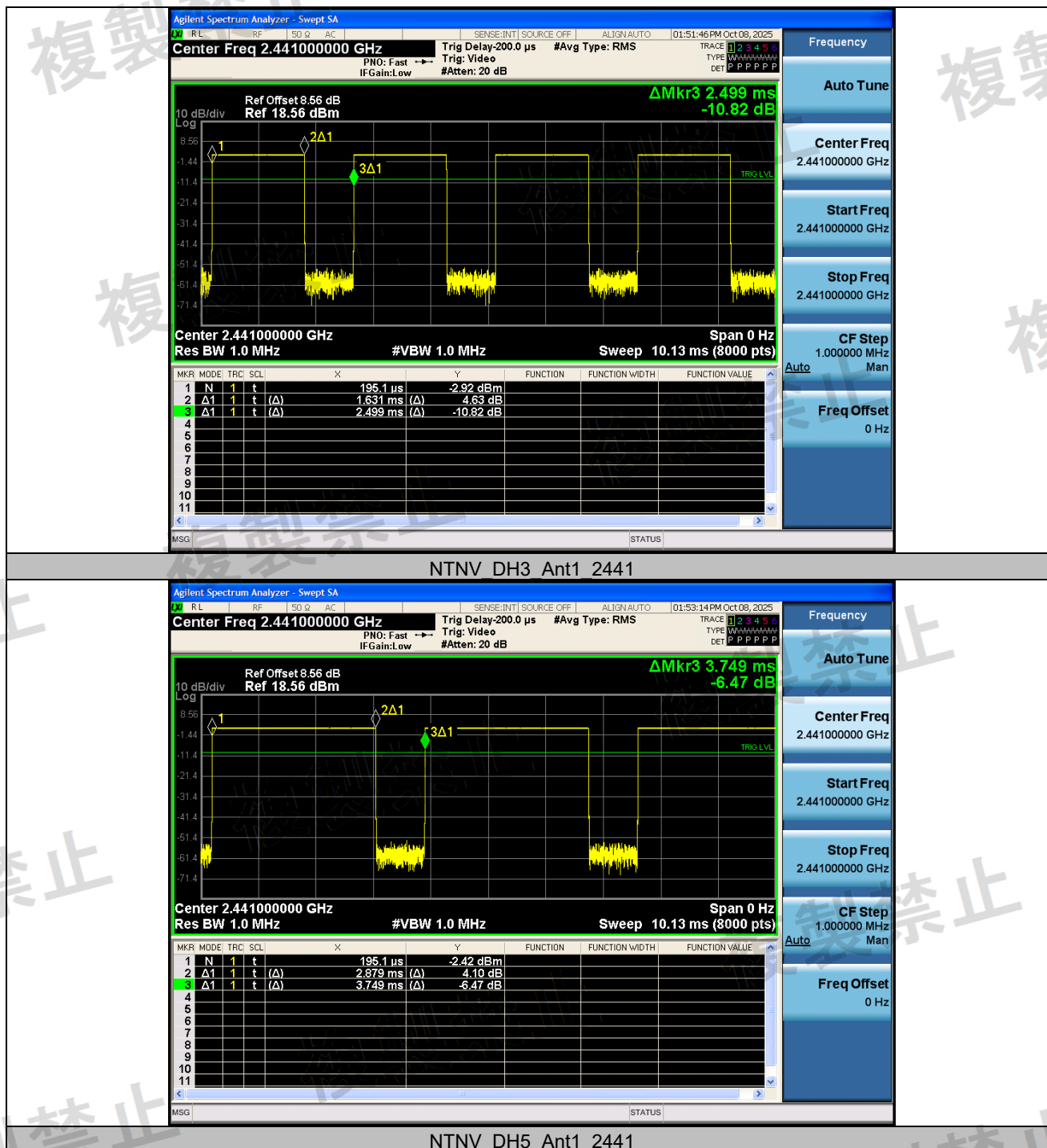
4.7.4 Deviation from test standard

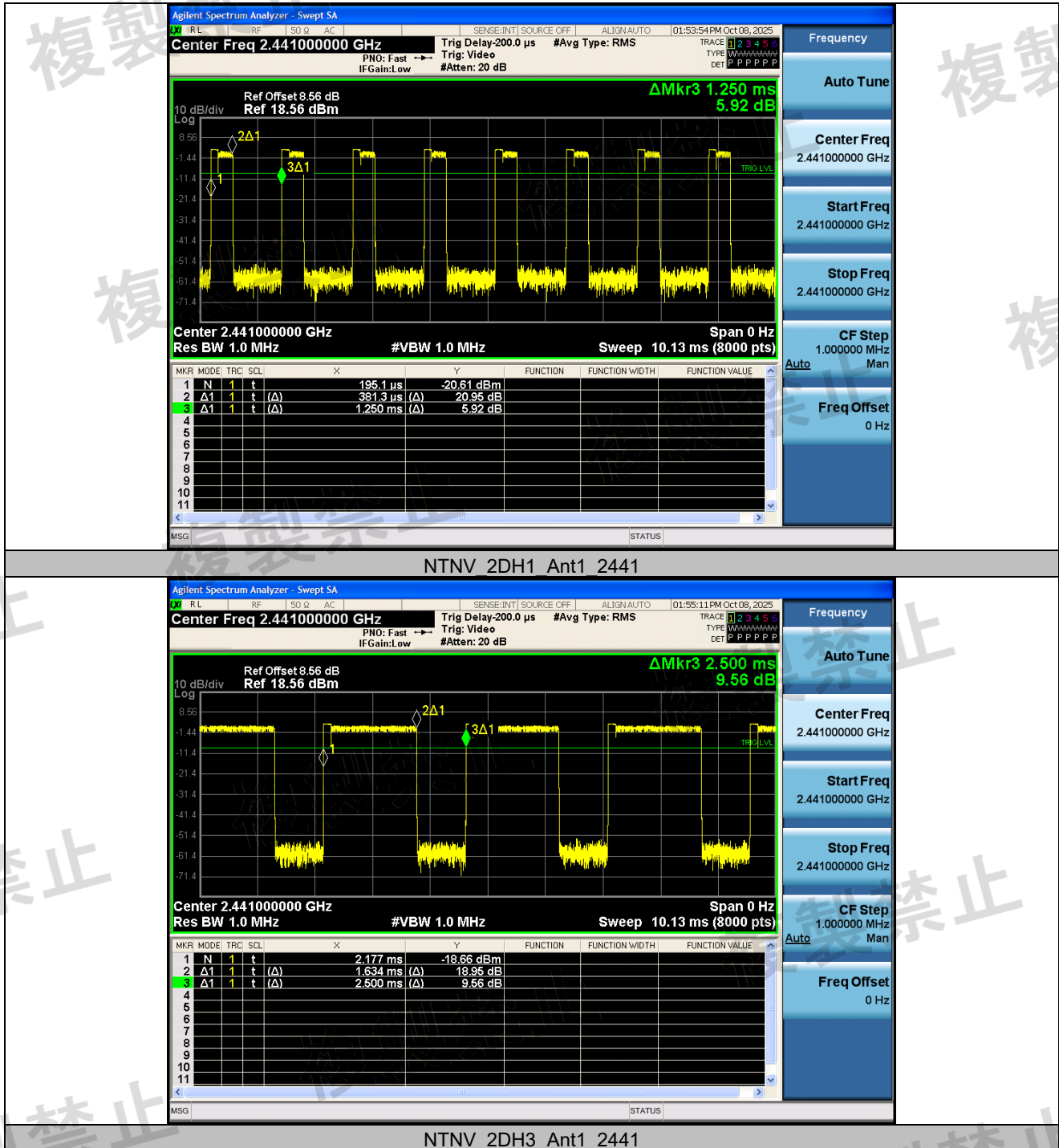
No deviation.

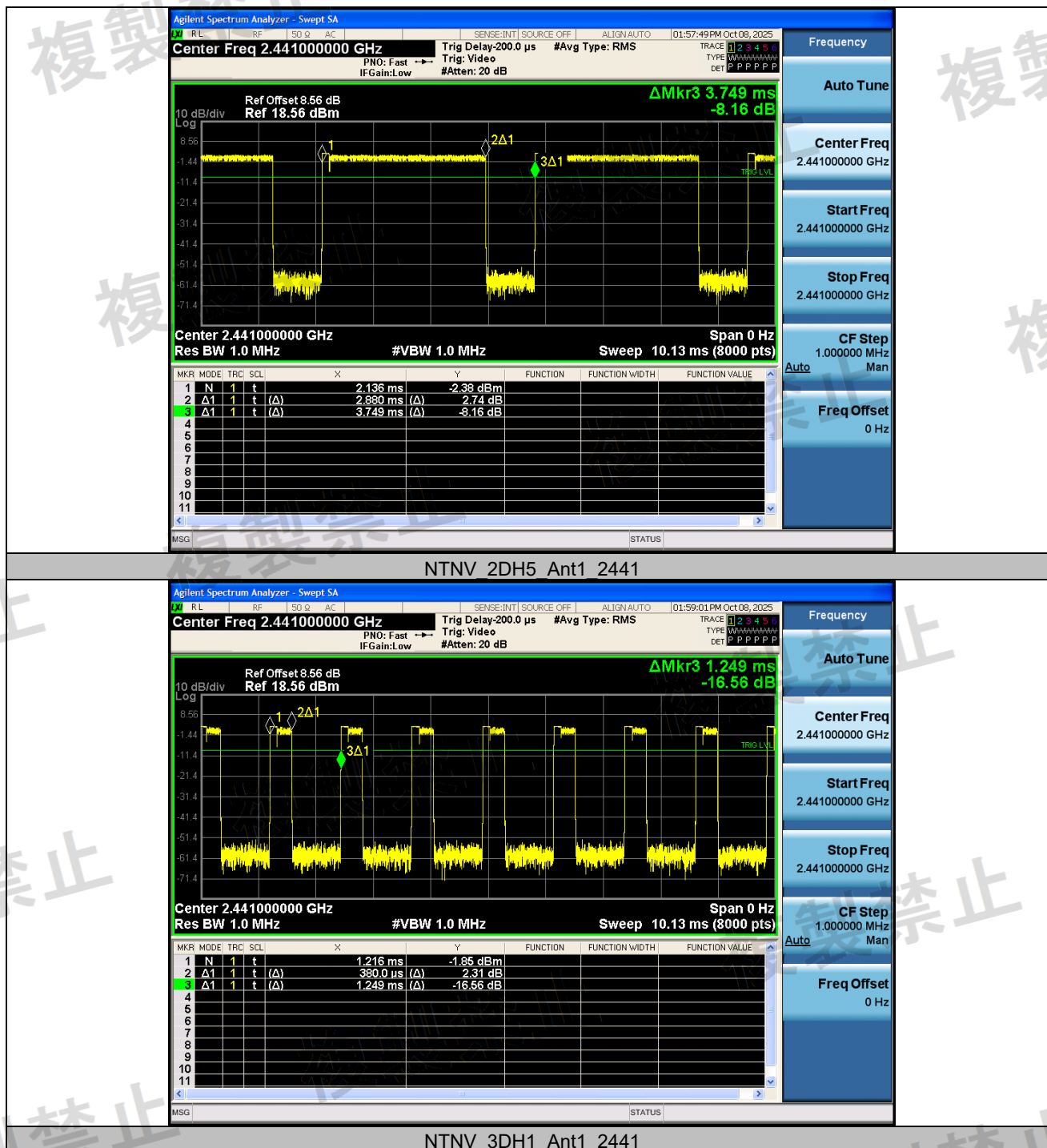
4.7.5 Test results

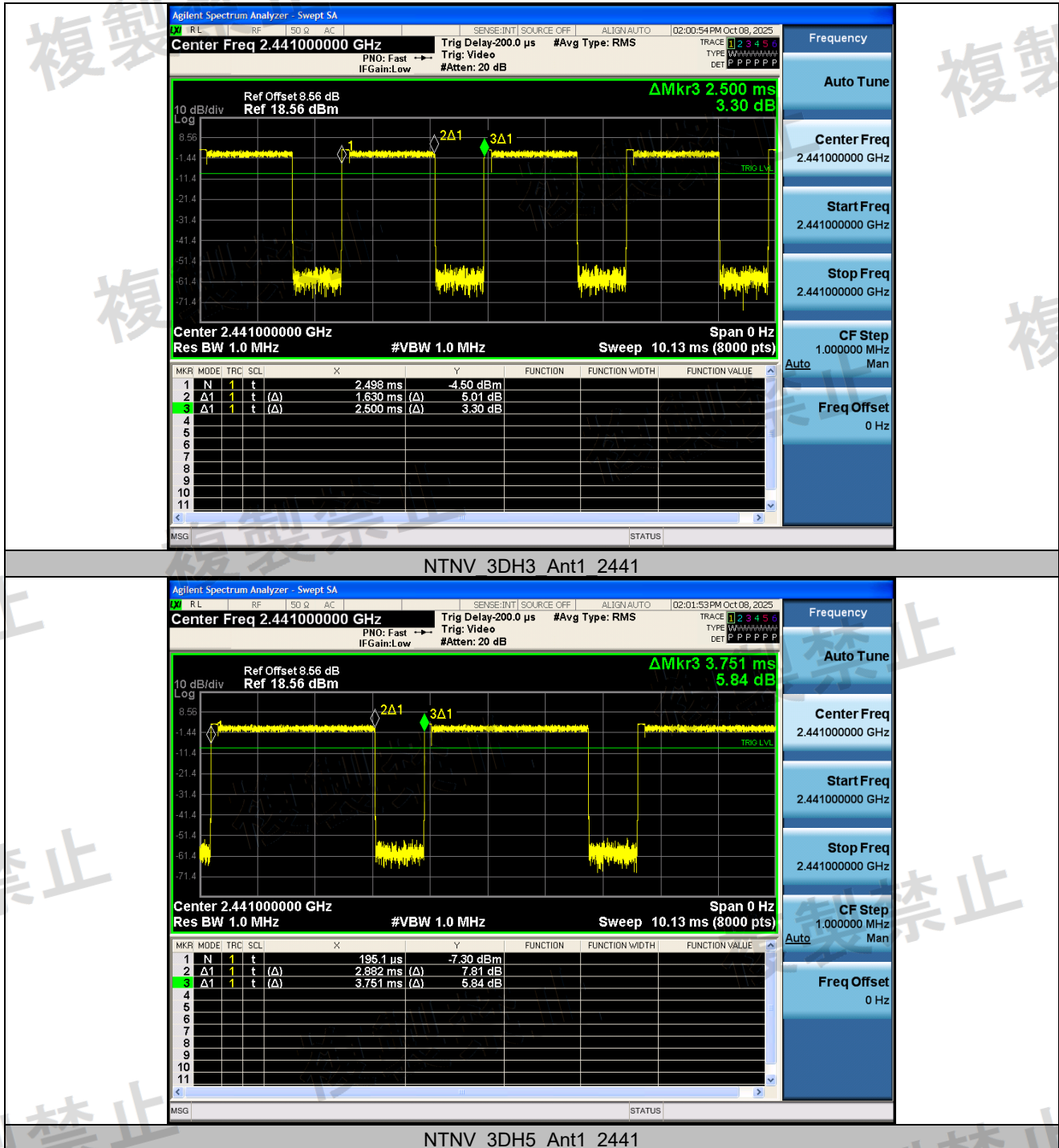
Test Condition	Test Mode	Antenna	Channel	Burst Width [ms]	Period [ms]	Result [s]	Limit [s]	Verdict
NTNV	DH1	Ant1	2441	0.38	1.25	0.11	<0.4	PASS
	DH3	Ant1	2441	1.63	2.50	0.23	<0.4	PASS
	DH5	Ant1	2441	2.88	3.75	0.28	<0.4	PASS
	2DH1	Ant1	2441	0.38	1.25	0.11	<0.4	PASS
	2DH3	Ant1	2441	1.63	2.50	0.23	<0.4	PASS
	2DH5	Ant1	2441	2.88	3.75	0.28	<0.4	PASS
	3DH1	Ant1	2441	0.38	1.25	0.11	<0.4	PASS
	3DH3	Ant1	2441	1.63	2.50	0.24	<0.4	PASS
	3DH5	Ant1	2441	2.88	3.75	0.28	<0.4	PASS











4.8 Interference prevention function

4.8.1 Limits of interference prevention function

No limit for use.

4.8.2 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.

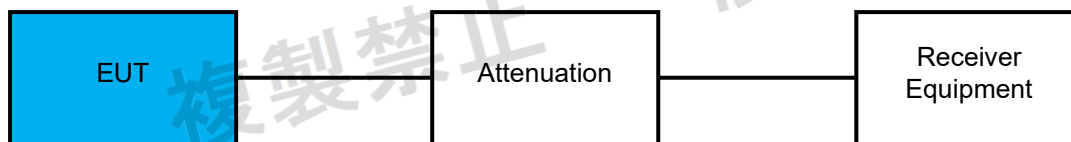
An acceptable result is to take a screenshot to demonstrate that the MAC address is 48 bits,

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.

4.8.3 Test Setup



4.8.4 Test Results

Link mode	Test result
BT	Good
The MAC Adress	34DF2A5FD74D

MILTON A.N.C. 属性

常规

驱动程序

详细信息

事件

 MILTON A.N.C.

属性(P)

蓝牙设备地址

值(V)

34DF2A5FD74D

5 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.

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