



Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

Telephone: +86-755-26648640
Fax: +86-755-26648637
Website: www.cqa-cert.com

Report Template Version: V03
Report Template Revision Date: Mar.1st, 2017

TEST REPORT

Report No.: CQASZ20251102607E-02

Applicant: DREO PTE. LTD.

Address of Applicant: 112 ROBINSON ROAD, #03-01, ROBINSON 112, SINGAPORE 068902

Manufacturer: DREO PTE. LTD.

Address of Manufacturer: 112 ROBINSON ROAD, #03-01, ROBINSON 112, SINGAPORE 068902

Factory: Ningbo Biyi Technology Co., Ltd.

Address of Factory: No.106. Binhai Avenue, Xiaocao'e Town, YUYAO Zhejiang 315400 CHINA

Factory: FUHAODA (THAILAND) CO., LTD.

Address of Factory: 247/8 Moo.10 Nonglakok Subdistrict, BAAN KAI DISTRICT Rayong 21120, THAILAND

Equipment Under Test (EUT):

Product: Smart Town Fan

Test Model No.: DR-HTF009S, DWTF09S

Model No.: DR-HTF009S

Brand Name: DREO, DREO HOME

Standards: Item 19 of Article 2 Paragraph 1

Date of Receipt: 2025-11-14

Date of Test: 2025-11-14 to 2025-11-27

Date of Issue: 2025-12-09

Test Result : PASS*

Test Method: MIC Notice No.88 Appendix No.43

Tested By:

Lewis Zhou

(Lewis Zhou)

Reviewed By:

Timo Lei

(Timo Lei)

Approved By:

Jack Ai

(Jack Ai)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20251102607E-02	Rev.01	Initial report	2025-12-09

2 Test Summary

Test	Test Requirement	Result
Frequency Error	Item 19 of Article 2-1	PASS
Occupied Bandwidth	Item 19 of Article 2-1	PASS
Spread-spectrum Bandwidth	Item 19 of Article 2-1	PASS
Antenna Power	Item 19 of Article 2-1	PASS
Spurious Emission of Tx	Item 19 of Article 2-1	PASS
Interference prevention capability	Item 19 of Article 2-1	PASS
Carrier sense capability	Item 19 of Article 2-1	PASS
RF accessibility	Item 19 of Article 2-1	PASS
Spurious Emission of Rx	Item 19 of Article 2-1	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.

Other: NV-Normal voltage, HV-High voltage, LV-Low voltage, NTNV-Normal temperature & normal voltage

3 Contents

1 VERSION	3
2 TEST SUMMARY	4
3 CONTENTS	5
4 GENERAL INFORMATION	6
4.1 General Description of E.U.T.	6
4.2 Details of E.U.T.	6
4.3 Description of Support Units	7
4.4 Deviation from Standards	7
4.5 Abnormalities from Standard Conditions	7
4.6 Other Information Requested by the Customer	7
4.7 Test Location	7
4.8 Test Facility	7
5 EQUIPMENT USED DURING TEST	8
6 TEST RESULTS	10
6.1 Radio Technical Requirements Specification	10
6.2 E.U.T. test conditions	11
6.3 Test Environment	13
6.4 Antenna Requirement	13
6.5 Interference prevention function	14
6.6 Carrier sense capability	14
6.7 Frequency Error	15
6.8 Occupied Bandwidth (99%)	22
6.9 Spread spectrum Bandwidth (90%)	29
6.10 Antenna Power	36
6.11 Spurious Emissions of Tx	46
6.12 RF accessibility	73
6.13 Spurious Emissions of Rx	74
7 PHOTOGRAPHS	85
7.1 EUT Test Setup	85
8 PHOTOGRAPHS - EUT CONSTRUCTIONAL DETAILS	86

4 General Information

4.1 General Description of E.U.T.

Product Name: Smart Town Fan
Model No: DR-HTF009S, DWTF09S
Test Model No: DR-HTF009S
Trade Mark: DREO, DREO HOME

4.2 Details of E.U.T.

Operating Frequency: IEEE 802.11b: 2412MHz to 2472MHz
IEEE 802.11g/n(HT20): 2412 MHz to 2472 MHz

Type of Modulation: 802.11b: DSSS(CCK/QPSK/BPSK)
802.11g: OFDM(BPSK/QPSK/16QAM/64QAM)
802.11n (HT20): OFDM (64QAM, 16QAM, QPSK, BPSK)

Transmit Data Rate: 802.11b: 1M/2M/5.5M/11M bps
802.11g: 6M/9M/12M/18M/24M/36M/48M/54M bps
802.11n: 7.2M/14.4M/21.7M/28.9M/43.3M/57.8M/65M/72.2M bps

Number of Channels: 802.11b: 13 Channels
802.11g/n(HT20): 13 Channels

Channel Separation: 5 MHz

Software version: V1.0

Hardware version: PAI-051 V1.2 20210824

Antenna Type: FPC antenna

Antenna Gain: 5.8dBi

The Max. Antenna Power: 802.11b: 3.1mW/MHz, 802.11g: 0.46mW/MHz,
802.11n (HT20): 0.41mW/MHz

Sample Type: Portable product

Power Supply: ☒ For EUT operation: AC 100V
☐ For other: Charge by DC5.0V

Test Voltage: ☒ Normal voltage (EUT operation): AC 100V
☐ Low voltage (Normal voltage -10%):
☐ High voltage (Normal voltage+10%):

4.3 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	Remark
/	/	/	/

4.4 Deviation from Standards

None.

4.5 Abnormalities from Standard Conditions

None.

4.6 Other Information Requested by the Customer

None.

4.7 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District,
Shenzhen, China

4.8 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **CNAS (No. CNAS L5785)**

CNAS has accredited Shenzhen Huaxia Testing Technology Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• **ISED Registration No.: 22984-1**

The 3m Semi-anechoic chamber of Shenzhen Huaxia Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

• **A2LA (Certificate No. 4742.01)**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

5 Equipment Used during Test

Test Equipment List						
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date (yyyy-mm-dd)	Calibration body	Classificati on
Humi/ Temp Indicator	ANPUHUA	HTC-1	212066	2026/8/31	CCIC (Shenzhen) Metrology & Testing Service Co.,Ltd	(c)
Spectrum Analyzer	Rohde & Schwarz	FSU26	200019	2026/8/31	CCIC (Shenzhen) Metrology & Testing Service Co.,Ltd	(c)
Multimeter	Fluke	15B	96710318	2026/8/31	CCIC (Shenzhen) Metrology & Testing Service Co.,Ltd	(c)
Signal generator	ANRITSU	MG3692B	074702	2026/8/31	CCIC (Shenzhen) Metrology & Testing Service Co.,Ltd	(c)
DC Power Supply	GW	GPC3030D	A671672	2026/8/31	CCIC (Shenzhen) Metrology & Testing Service Co.,Ltd	(c)

Remark:

(a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) in Japan (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1) in JRL.

(b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Act (Act No. 51 of 1992) .

- (c) Calibration conducted in countries except Japan, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
- (d) Calibration, etc. conducted by using measuring instruments and other equipment listed in the right column of appended table No. 3, which shall have been given any type of calibration, etc. listed above from (a) to (c). From JRL Article 24-2, paragraph 4, Item 2

Notice: Calibration duration for above equipments is 1 year.

6 Test Results

6.1 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
Tolerance of occupied bandwidth	FH : 83.5MHz or less FH + DS : 83.5MHz or less FH + OFDM : 83.5MHz or less OFDM 40MHz System: 26~40MHz Others : 26MHz or less
Antenna power	Designated value (1) FH, FH+DS , FH+OFDM: 3mW/MHz (used in the range of 2427 - 2470.75 MHz) (2) OFDM , DS other than (1) 10mW/MHz (3) Other than (1) & (2) 10mW (4) OFDM OBW 26 - 38MHz: 5mW/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 $\leq$ 16.91 dBm/MHz (2) OFDM or DS other than (1) EIRP $\leq$ 22.14 dBm/MHz (3) Other than (1) and (2): 22.14 dBm 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	for 2412-2472MHz (1) Below 2387 MHz : 2.5 μ W/MHz (2) 2387 to 2400 MHz : 25 μ W/MHz (3) 2483.5 through 2496.5 MHz : 25 μ W/MHz (4) Over 2496.5 MHz : 2.5 μ W/MHz
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) 1 GHz or higher : 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

6.2 E.U.T. test conditions

Power supply:

The fluctuation of input voltage to the circuit of RF unit of test equipment is under $\pm 1\%$, when input voltage to the test equipment is fluctuated by $\pm 10\%$, So, all measurement has been conducted by only rated voltage.

The measurement result of the voltage fluctuation at RF circuit		
	EUT Voltage for operation	RF Circuitry Voltage
High voltage	110V	3.3V
Normal voltage	100V	3.3V
Low voltage	90V	3.3V

Temperature:

5 -35.0 °C

Humidity:

45-85 % RH

Atmospheric Pressure:

1000 -1020 mbar

Test frequencies:

If the EUT can be set to 3 or 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.

EUT channels and frequencies list:

802.11b/g/n (HT20)

Channel	Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462
12	2467
13	2472

Test frequencies are the lowest channel: 1 channel(2412MHz), middle channel: 7 channel(2442 MHz) and the highest channel: 13 channel(2472 MHz)

6.3 Test Environment

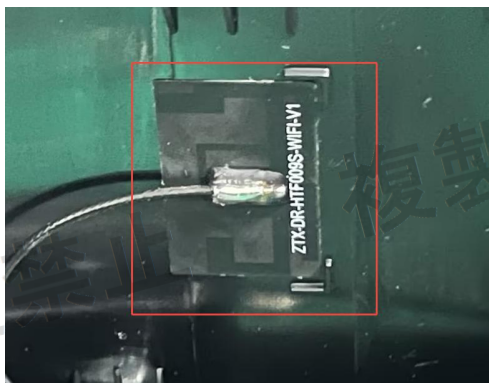
Operating Environment:	
Temperature:	25.5°C
Humidity:	53 % RH
Atmospheric Pressure:	1009 mbar

6.4 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-fixure.

EUT Antenna



The EUT with FPC antenna, the max peak gain of the antenna is 5.8dBi.

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

6.5 Interference prevention function

The device consists of the internal antenna and 2.4 GHz WIFI IC; Component IC CPU also can use the protocol function to protect interference come from outside.

The identification code is: 41:2C:1E:3D:B5:15

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

6.6 Carrier sense capability

Conducted carrier sense function with test procedure annex table No.45 and confirmed the result was OK.

Test result: The unit does meet the requirements.

6.7 Frequency Error

Test Requirement:

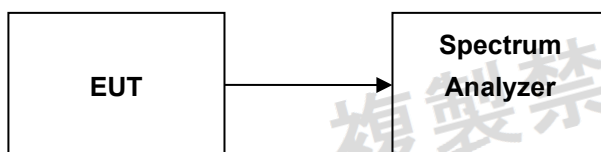
Item 19 of Article 2-1

Tolerance of frequency: $\pm 50 \times 10^{-6}$

Test Status:

Test the EUT in transmitting mode without modulation.

Test Configuration:



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

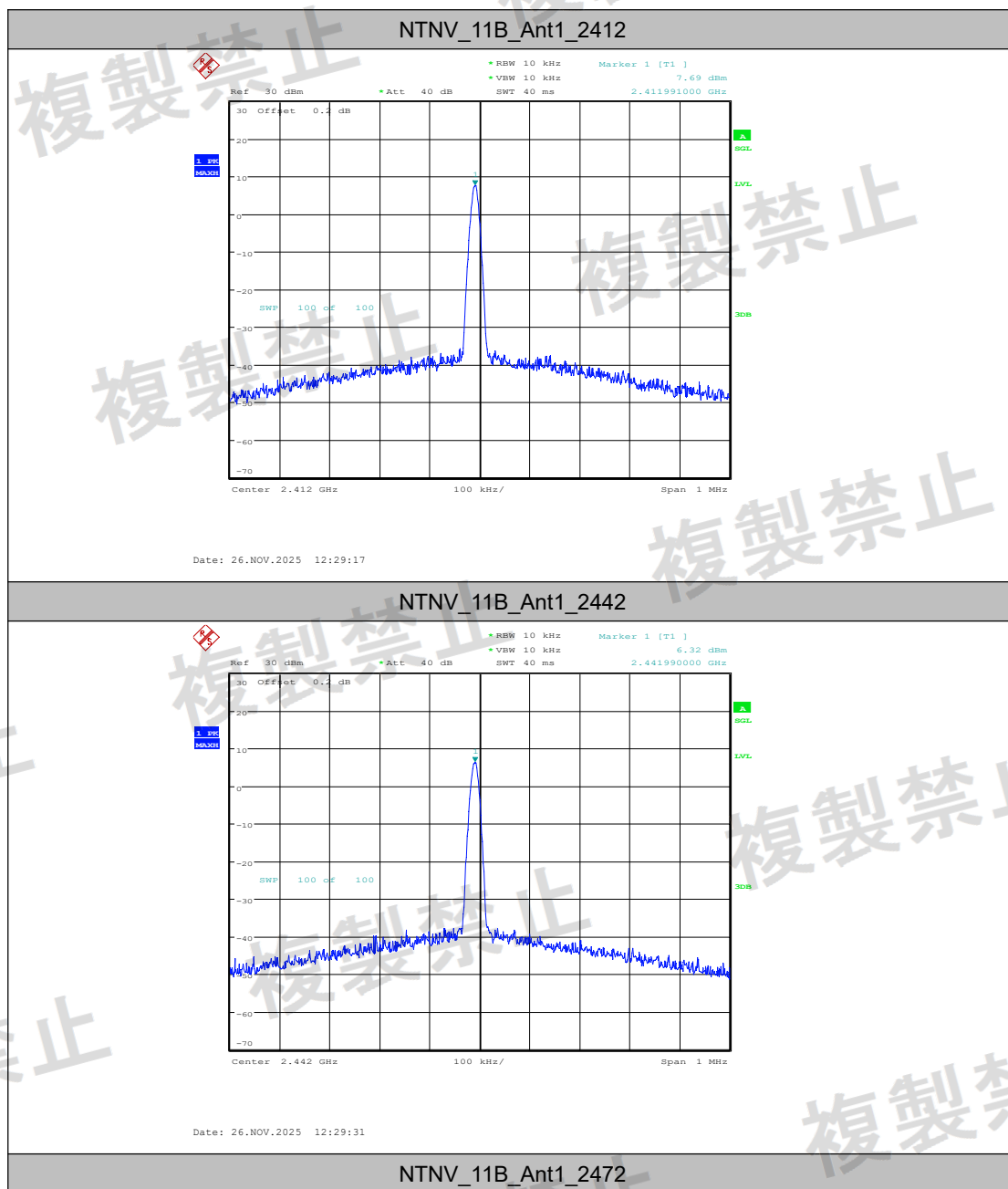
Indication mode Max hold

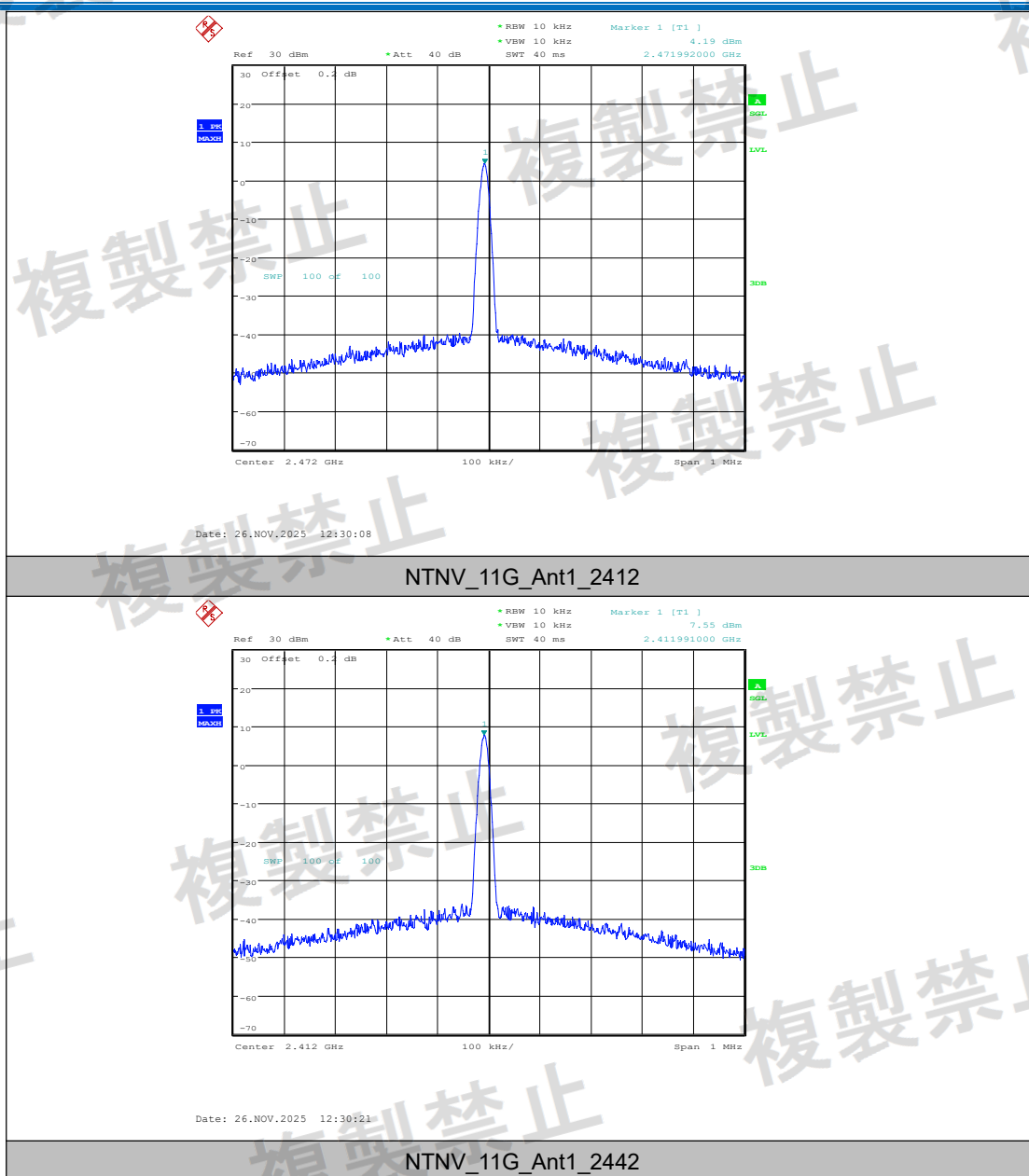
Test result:

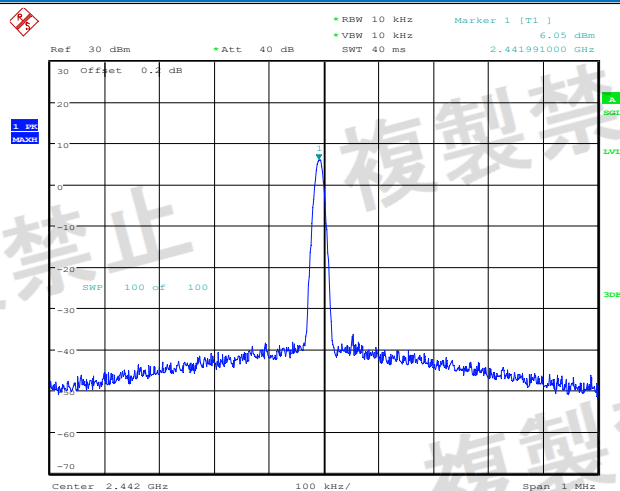
TestCondition	TestMode	Antenna	Freq(MHz)	CenterFreq [MHz]	Result[ppm]	Limit[ppm]	Verdict
NTNV	11B	Ant1	2412	2411.991	-3.73134	±50	PASS
			2442	2441.99	-4.09500	±50	PASS
			2472	2471.992	-3.23625	±50	PASS
	11G	Ant1	2412	2411.991	-3.73134	±50	PASS
			2442	2441.991	-3.68550	±50	PASS
			2472	2471.992	-3.23625	±50	PASS
	11N20SISO	Ant1	2412	2411.993	-2.90216	±50	PASS
			2442	2441.992	-3.27600	±50	PASS
			2472	2471.992	-3.23625	±50	PASS

Note: The nominal frequency shall be confirmed by the applicant and test lab.

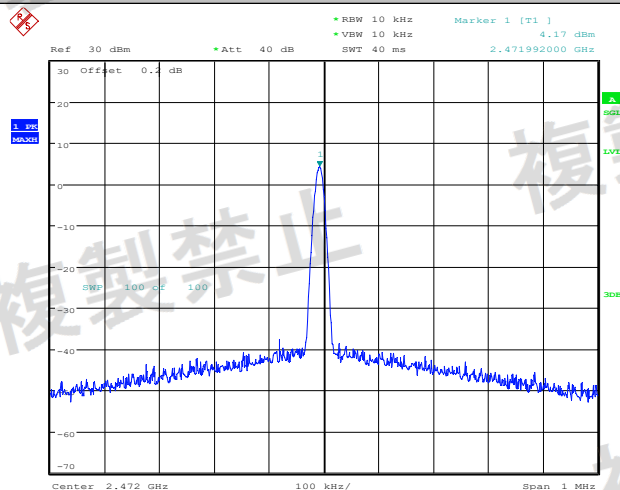
Result plot as follows:



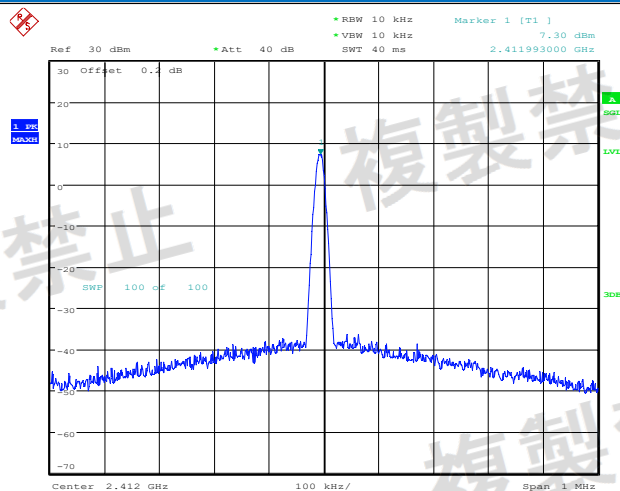




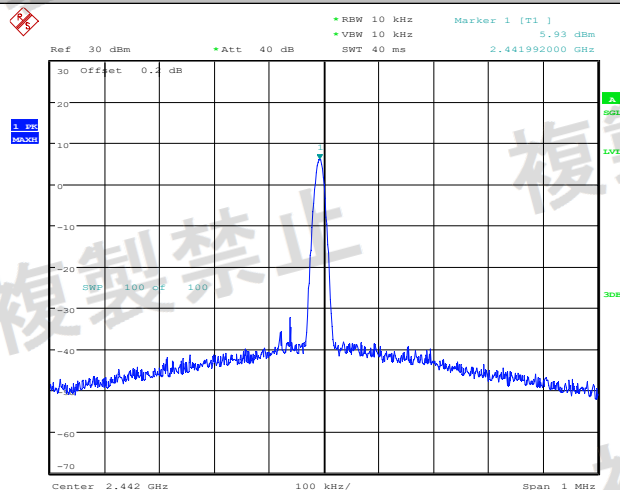
NTVN_11G_Ant1_2472



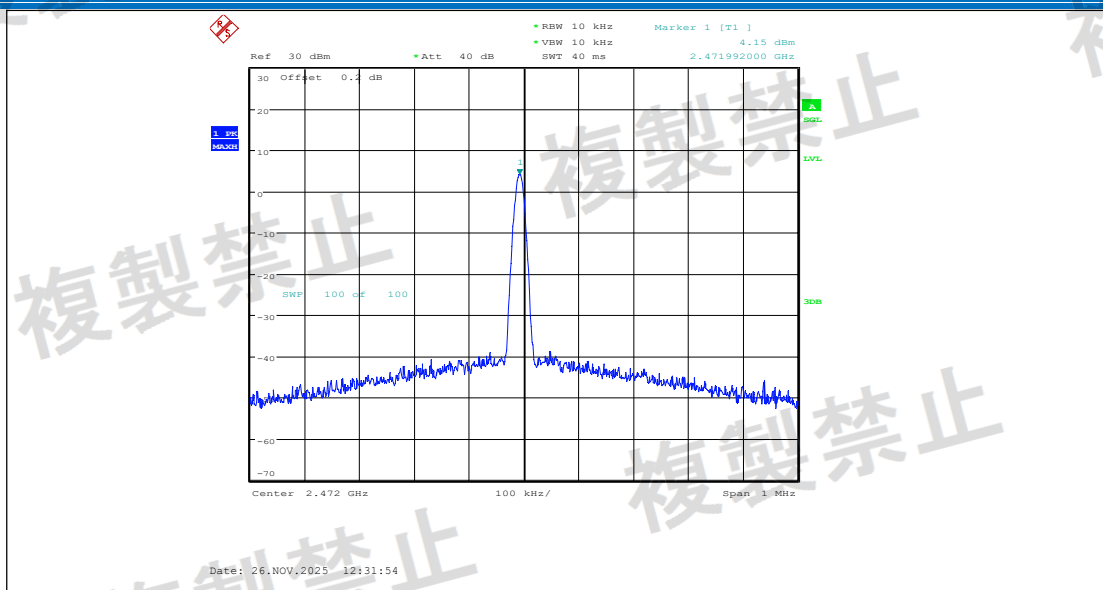
NTVN_11N20SISO_Ant1_2412



NTNV_11N20SISO_Ant1_2442



NTNV_11N20SISO_Ant1_2472



Test result: The unit does meet the requirements.

6.8 Occupied Bandwidth (99%)

Test Requirement:

Item 19 of Article 2-1

DSSS: 26 MHz or less

OFDM 20MHz System: 26 MHz or less

OFDM 40MHz System: 26~40 MHz or less

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.

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:

Frequency: Test Frequency

Span 40MHz/60MHz (DSSS,OFDM)

RBW 300 kHz

VBW 300 kHz

Sweep Time Auto

detector mode Positive peak

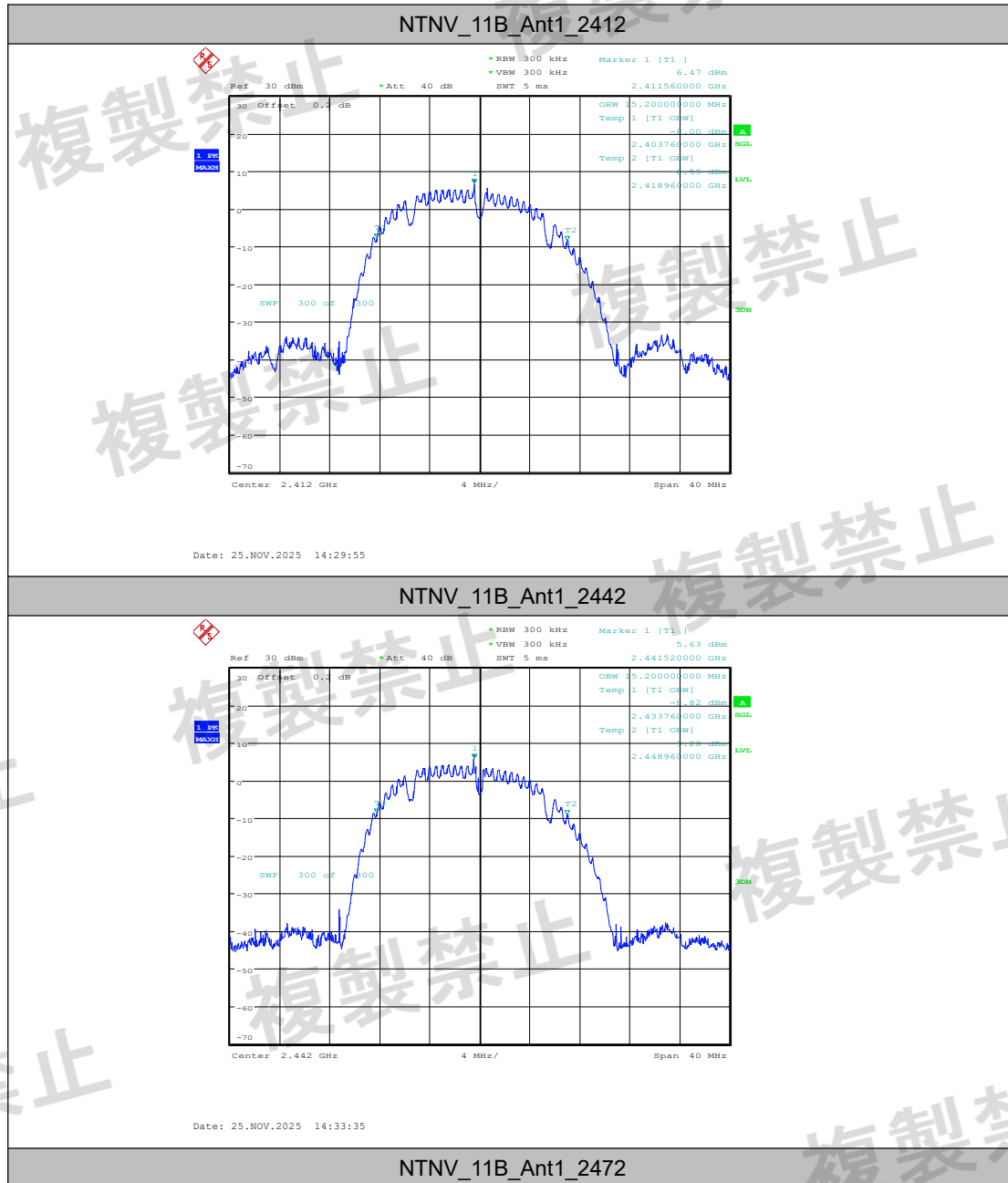
Indication mode Max hold

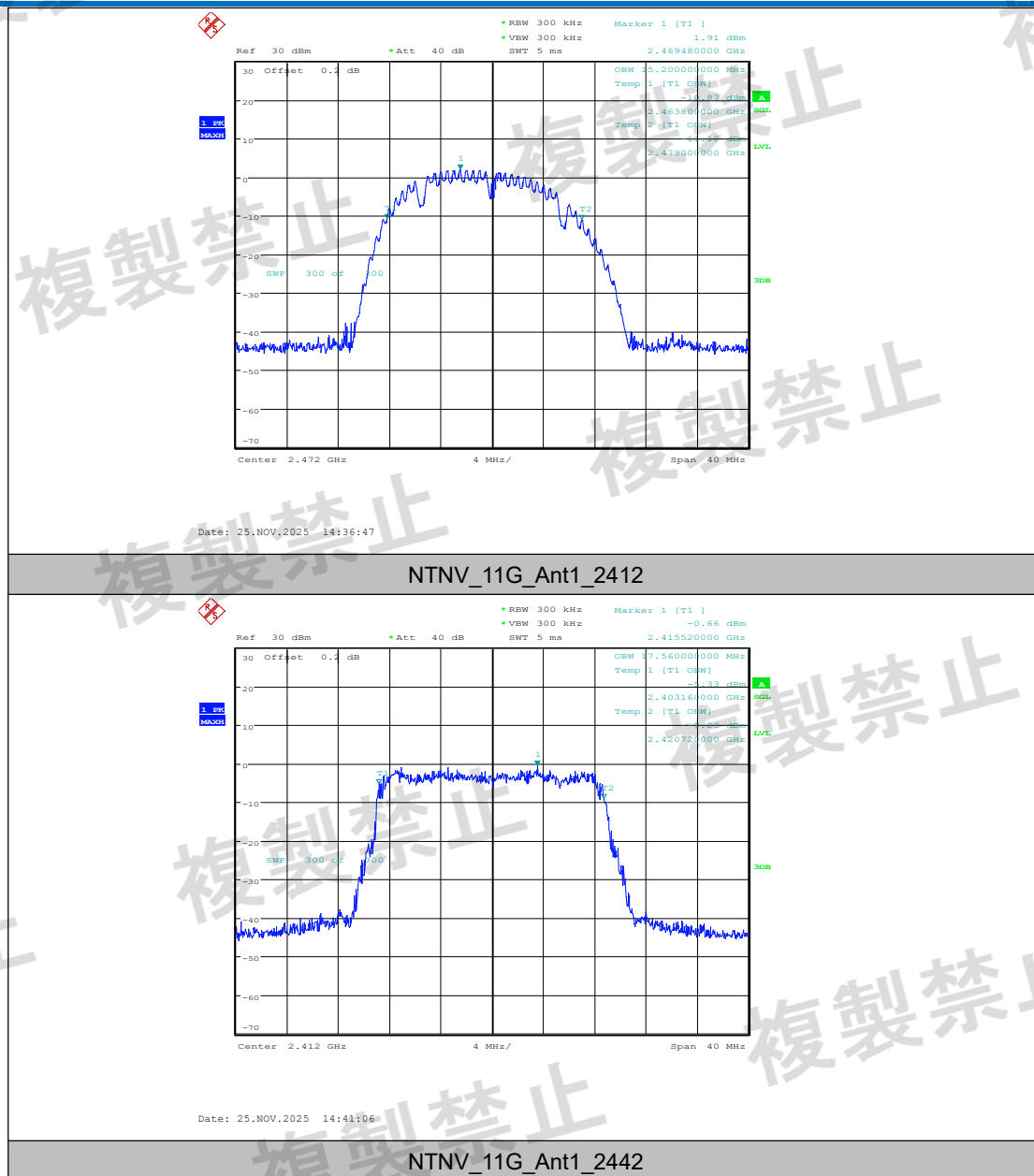
OBW 99%

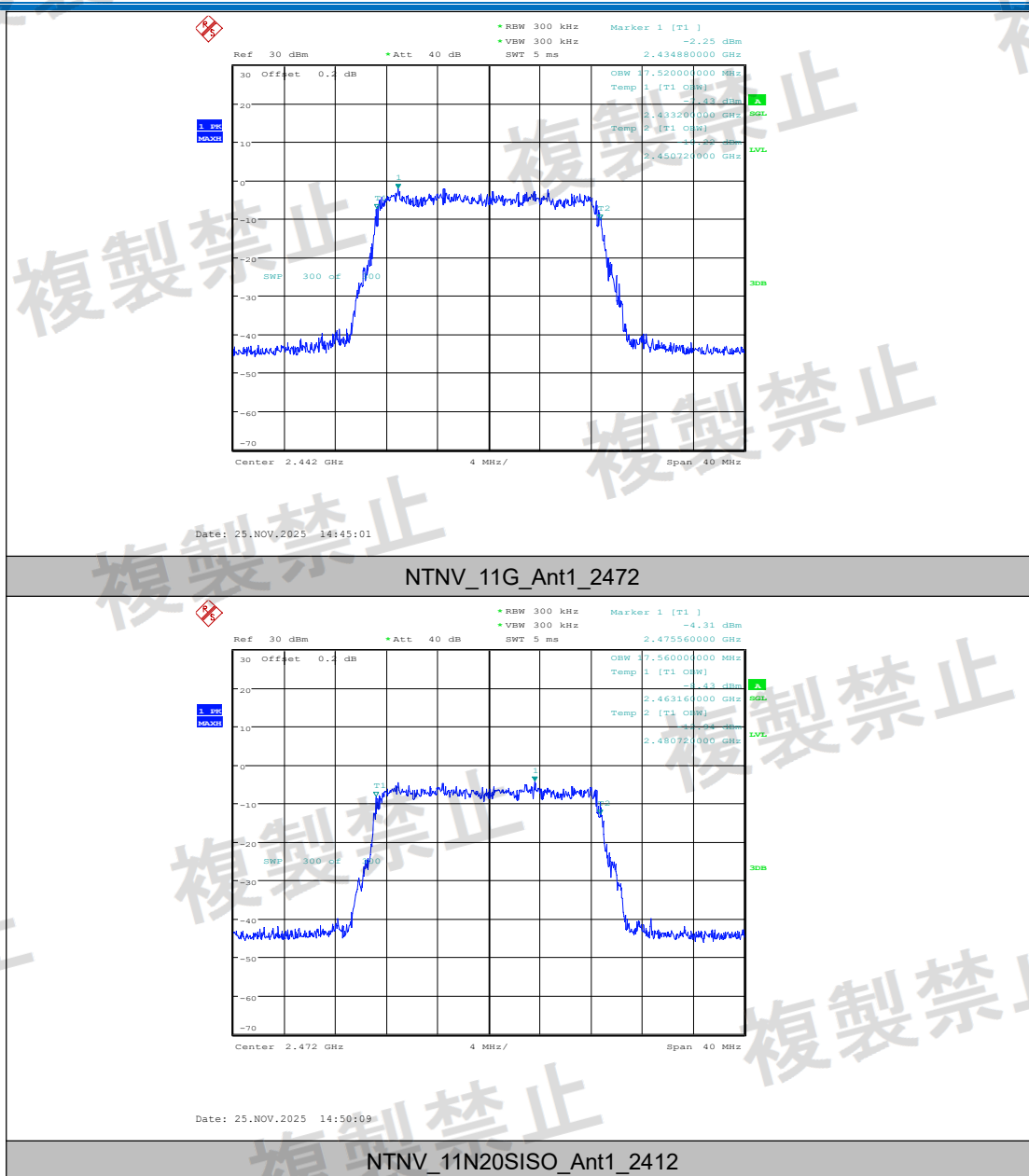
Test result:

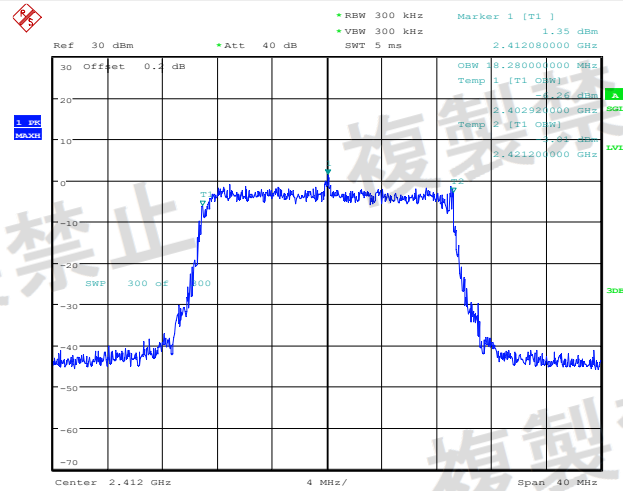
TestCondition	TestMode	Antenna	Freq(MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	11B	Ant1	2412	15.200	≤26	PASS
			2442	15.200	≤26	PASS
			2472	15.200	≤26	PASS
	11G	Ant1	2412	17.560	≤26	PASS
			2442	17.520	≤26	PASS
			2472	17.560	≤26	PASS
	11N20SI SO	Ant1	2412	18.280	≤26	PASS
			2442	18.280	≤26	PASS
			2472	18.440	≤26	PASS

Result plot as follows:



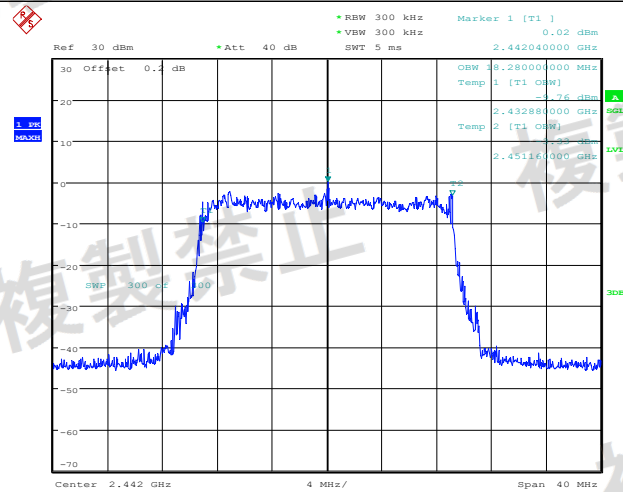






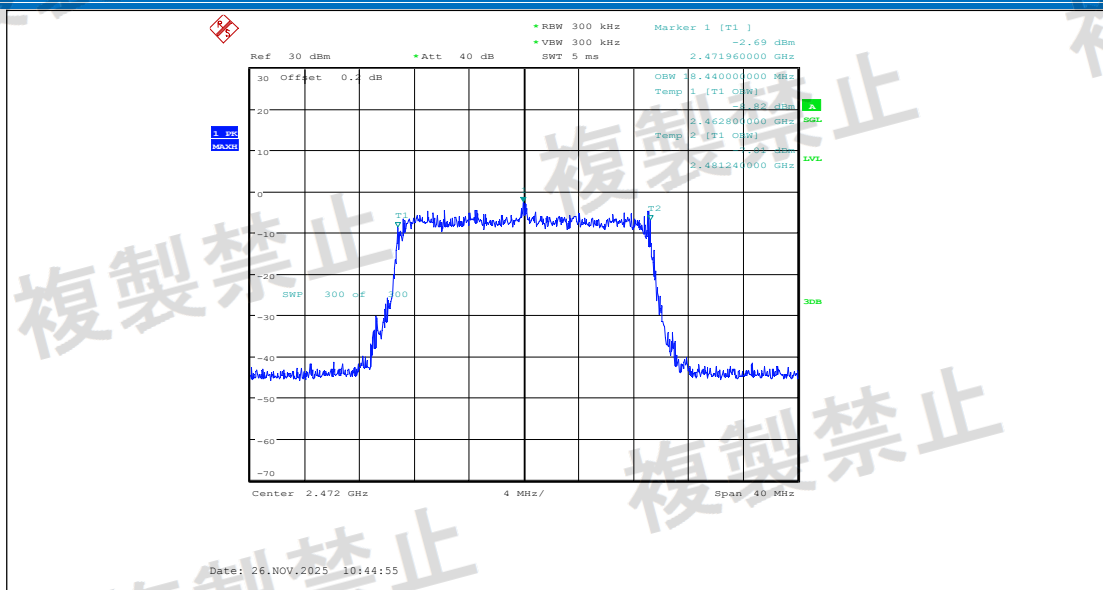
Date: 26.NOV.2025 10:40:37

NTNV_11N20SISO_Ant1_2442



Date: 26.NOV.2025 10:42:39

NTNV_11N20SISO_Ant1_2472



6.9 Spread spectrum Bandwidth (90%)

Test Requirement: Item 19 of Article 2-1
500 kHz or more

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.

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:

Frequency: Test Frequency

Span 40MHz/60MHz (DSSS, OFDM)

RBW 300kHz

VBW 300kHz

Sweep Time Auto

detector mode Positive peak

Indication mode Max hold

OBW 90%

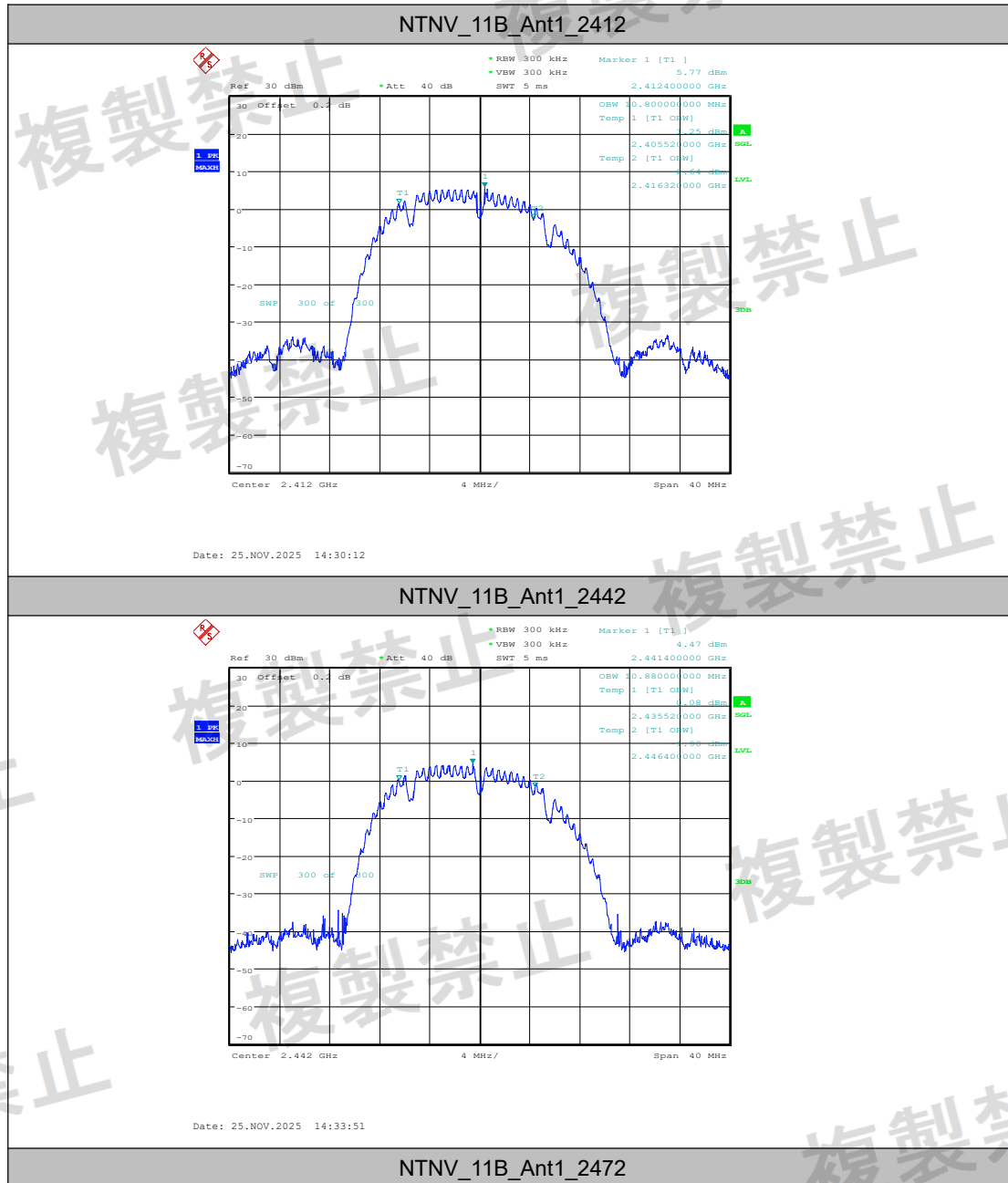
Test result:

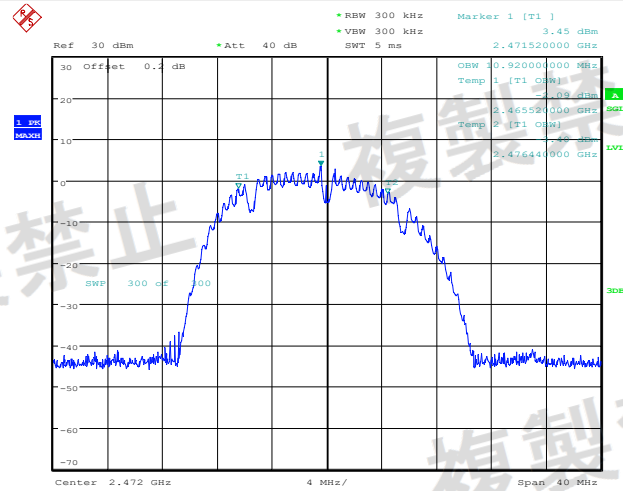
TestCondition	TestMode	Antenna	Freq (MHz)	Result [MHz]	Limit [MHz]	Verdict
NTNV	11B	Ant1	2412	10.800	≥0.5	PASS
			2442	10.880	≥0.5	PASS
			2472	10.920	≥0.5	PASS
	11G	Ant1	2412	15.600	≥0.5	PASS
			2442	15.440	≥0.5	PASS
			2472	15.520	≥0.5	PASS
	11N20SI SO	Ant1	2412	16.320	≥0.5	PASS
			2442	16.360	≥0.5	PASS
			2472	16.080	≥0.5	PASS

Remark:

1. Spreading factor = Spread bandwidth/ Transmission rate
2. 802.11b max rate of 11Mbps, Transmission rate= max rate/8

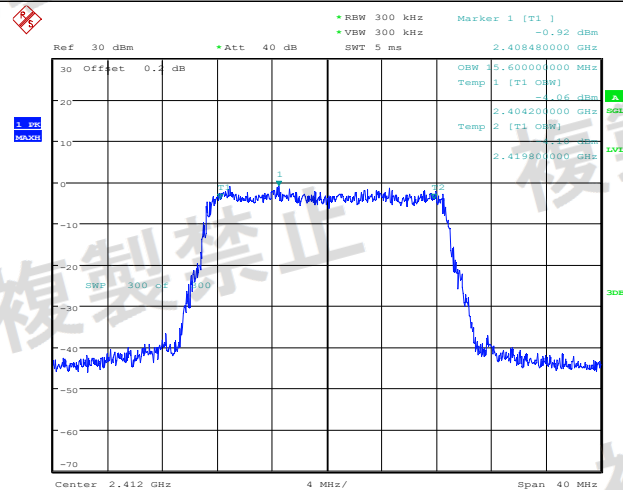
Result plot as follows:





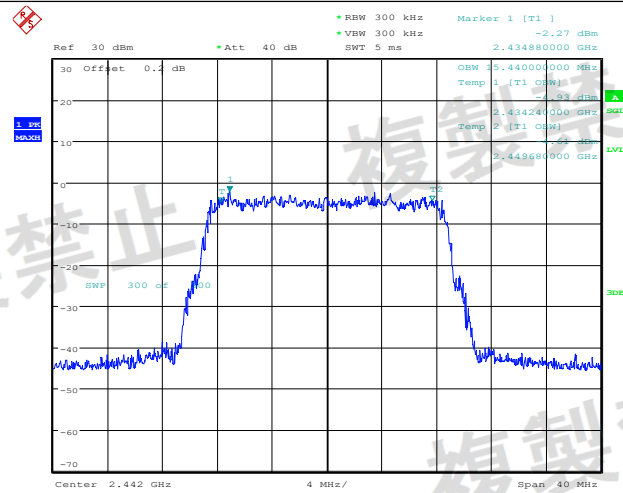
Date: 25.NOV.2025 14:37:03

NTNV_11G_Ant1_2412



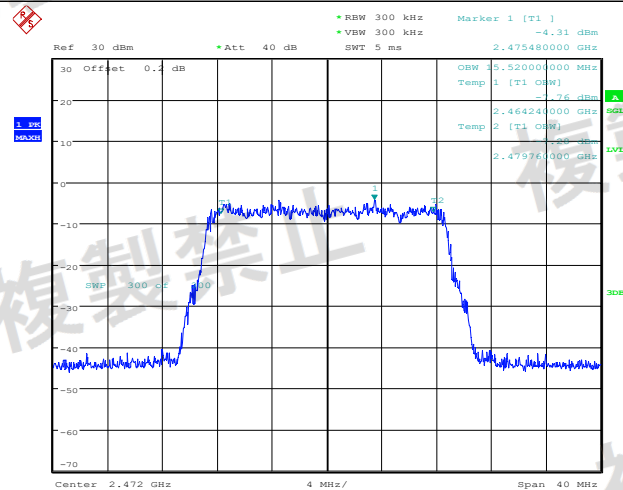
Date: 25.NOV.2025 14:41:23

NTNV_11G_Ant1_2442



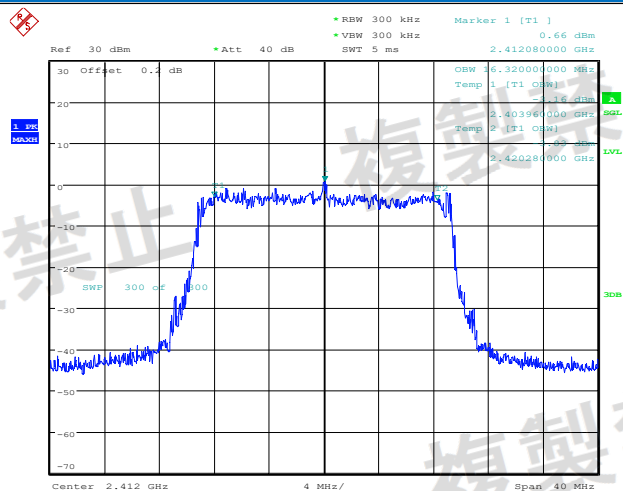
Date: 25.NOV.2025 14:45:17

NTNV_11G_Ant1_2472



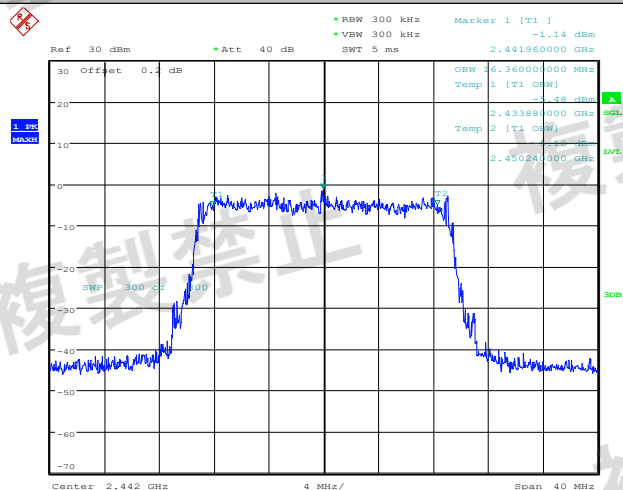
Date: 25.NOV.2025 14:50:25

NTNV_11N20SISO_Ant1_2412



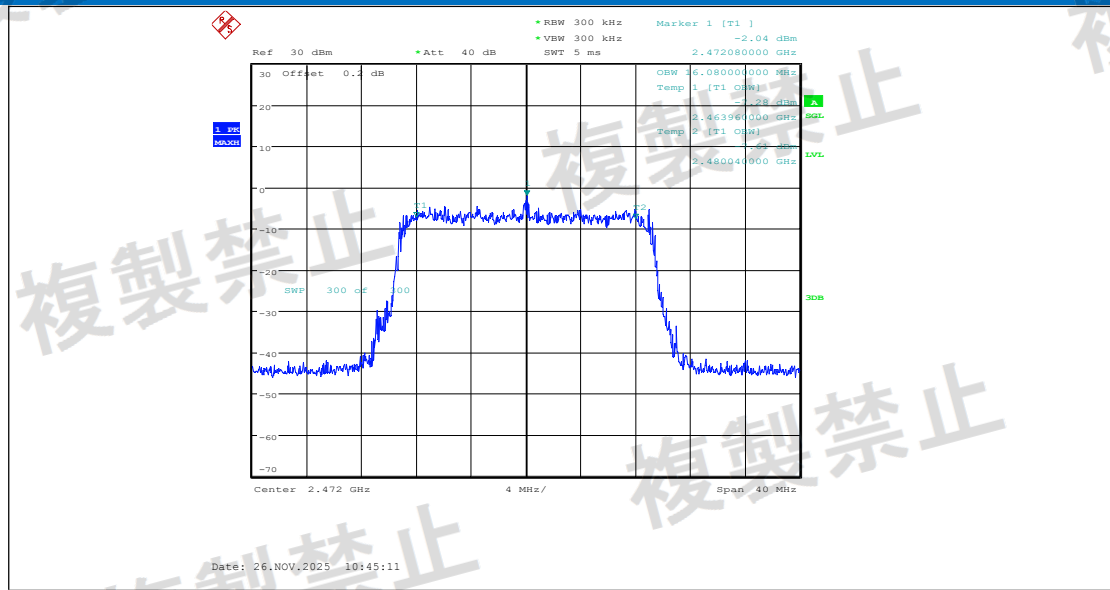
Date: 26.NOV.2025 10:40:55

NTNV_11N20SISO_Ant1_2442



Date: 26.NOV.2025 10:42:55

NTNV_11N20SISO_Ant1_2472



6.10 Antenna Power

Test Requirement:

Item 19 of Article 2-1
10mW/MHz or less

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.

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:

Frequency: Test Frequency

Span 40 MHz/60MHz (DSSS,OFDM)

RBW 1 MHz

VBW 1 MHz

Sweep Time Auto

detector mode Positive peak

Indication mode Max hold

Test result:

Antenna Power							
Test Condition	Test Mode	Antenna	Freq(M Hz)	Result(dBm/ MHz)	Result(mW/M Hz)	Limit(mW/ MHz)	Verdict
NTNV	11B	Ant1	2412	4.89	3.0832	≤10	PASS
			2442	3.97	2.4946	≤10	PASS
			2472	2.24	1.6749	≤10	PASS
	11G	Ant1	2412	-3.30	0.4677	≤10	PASS
			2442	-4.47	0.3573	≤10	PASS
			2472	-6.93	0.2028	≤10	PASS
	11N20SI SO	Ant1	2412	-3.82	0.4150	≤10	PASS
			2442	-5.33	0.2931	≤10	PASS
			2472	-6.97	0.2009	≤10	PASS

Tolerance								
Test Condition	Test Mode	Antenna	Freq(MHz)	Power (mW/M Hz)	RatedPower (mW/MHz)	Result (%)	Limit (%)	Verdict
NTNV	11B	Ant1	2412	3.0832	3.1	-69.10	+20	PASS
			2442	2.4946	3.1	-75.05	+20	PASS
			2472	1.6749	3.1	-83.25	+20	PASS
	11G	Ant1	2412	0.4677	0.46	-95.33	+20	PASS
			2442	0.3573	0.46	-96.43	+20	PASS
			2472	0.2028	0.46	-97.97	+20	PASS
	11N20SI SO	Ant1	2412	0.4150	0.41	-95.85	+20	PASS
			2442	0.2931	0.41	-97.15	+20	PASS
			2472	0.2009	0.41	-97.97	+20	PASS

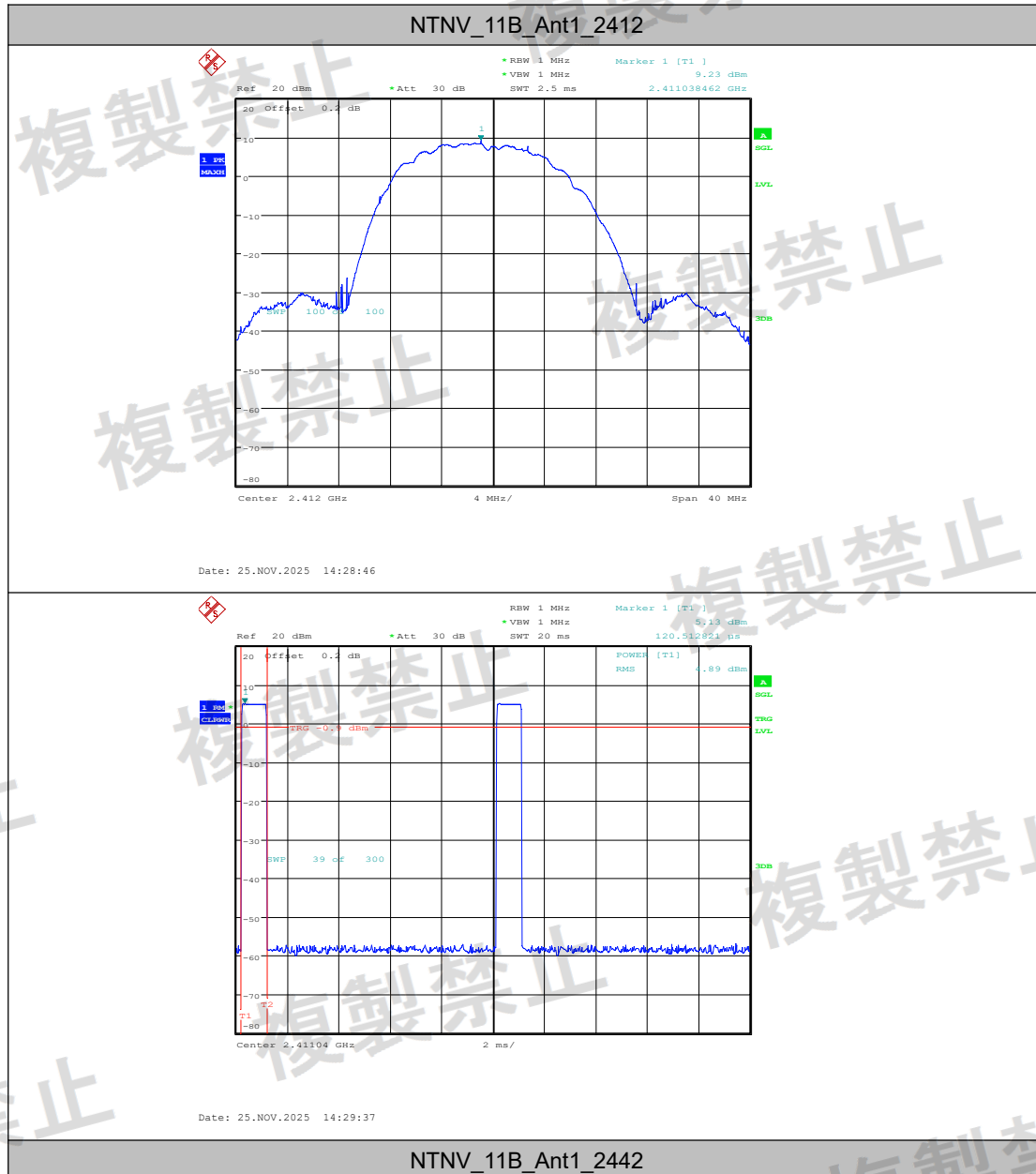
EIRP							
Test Condition	Test Mode	Antenna	Freq(M Hz)	Result(dBm/MHz)	EIRP(dBm/M Hz)	Limit(dBm/MHz)	Verdict
NTNV	11B	Ant1	2412	4.89	10.69	≤12.14	PASS
			2442	3.97	9.77	≤12.14	PASS
			2472	2.24	8.04	≤12.14	PASS
	11G	Ant1	2412	-3.30	2.5	≤12.14	PASS
			2442	-4.47	1.33	≤12.14	PASS
			2472	-6.93	-1.13	≤12.14	PASS
	11N20SI SO	Ant1	2412	-3.82	1.98	≤12.14	PASS
			2442	-5.33	0.47	≤12.14	PASS
			2472	-6.97	-1.17	≤12.14	PASS

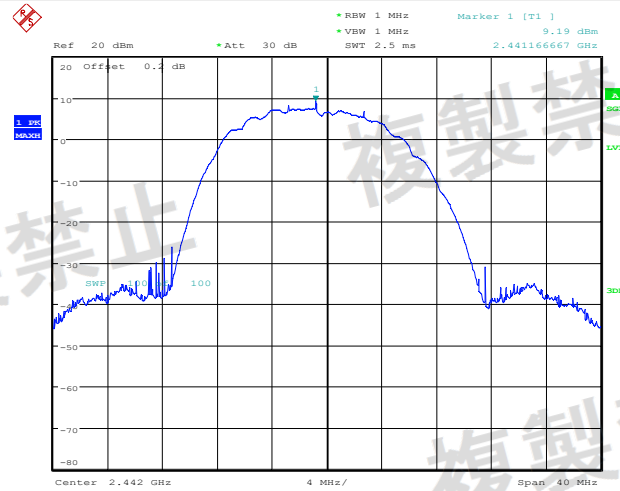
Remark:

Rated power:

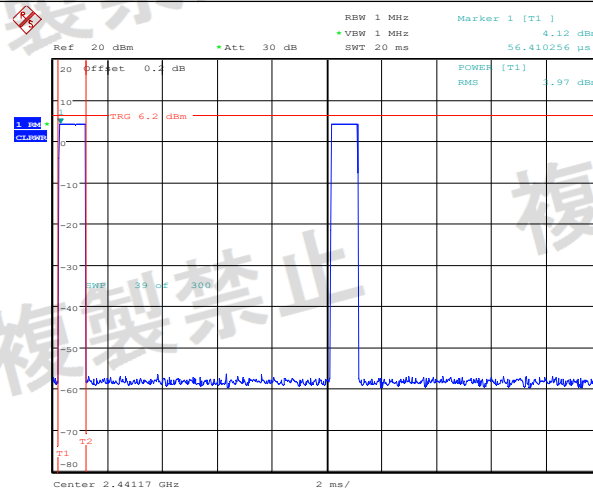
802.11b: 3.1mW/MHz, 802.11g: 0.46mW/MHz, 802.11n (HT20): 0.41mW/MHz

Result plot as follows:



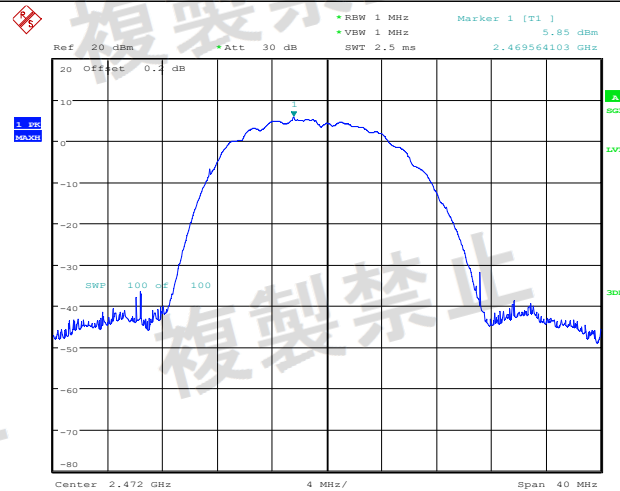


Date: 25.NOV.2025 14:33:06



Date: 25.NOV.2025 14:33:18

NTNV_11B_Ant1_2472



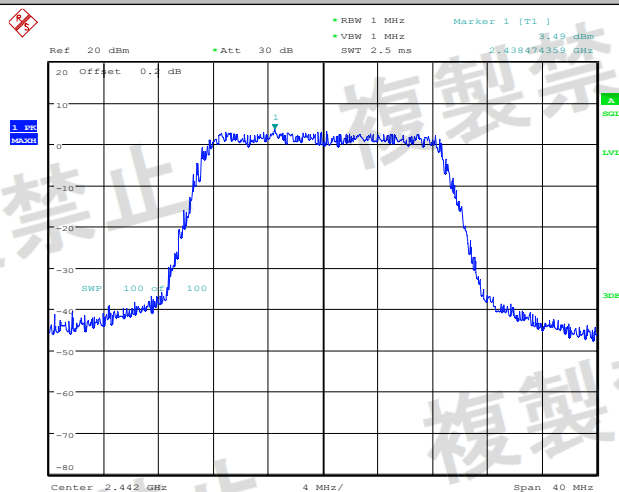
Date: 25.NOV.2025 14:36:11

NTNV 11G Ant1 2412

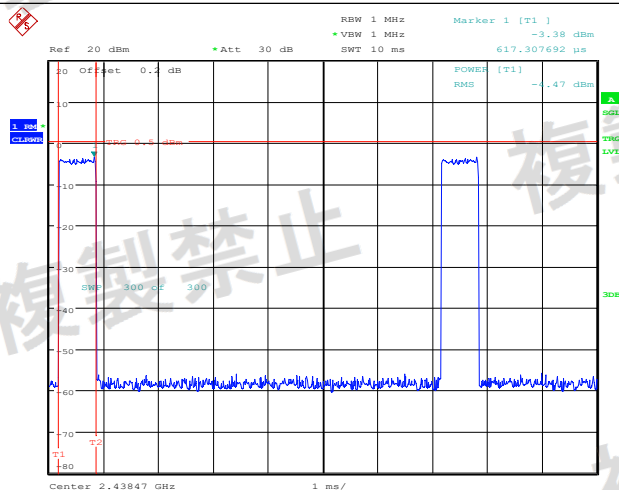
Date: 25.NOV.2025 14:40:34

Date: 25.NOV.2025 14:40:46

NTNV_11G_Ant1_2442

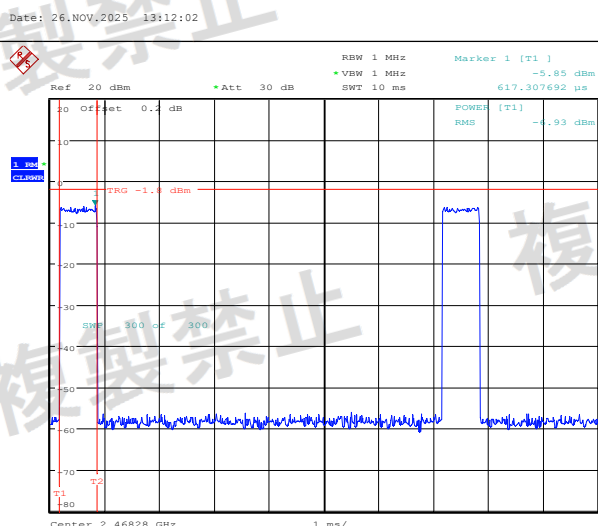
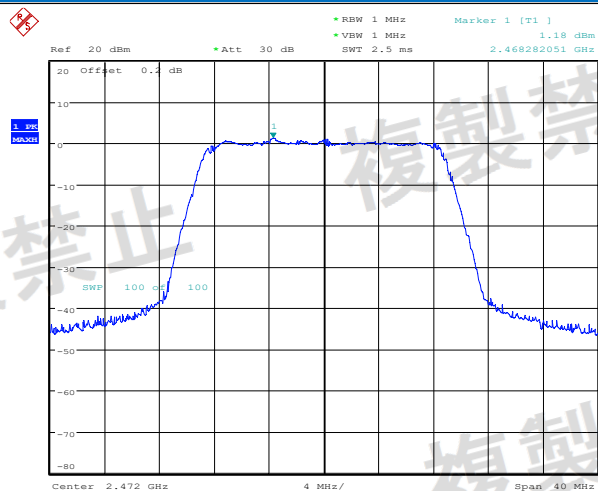


Date: 25.NOV.2025 14:44:23



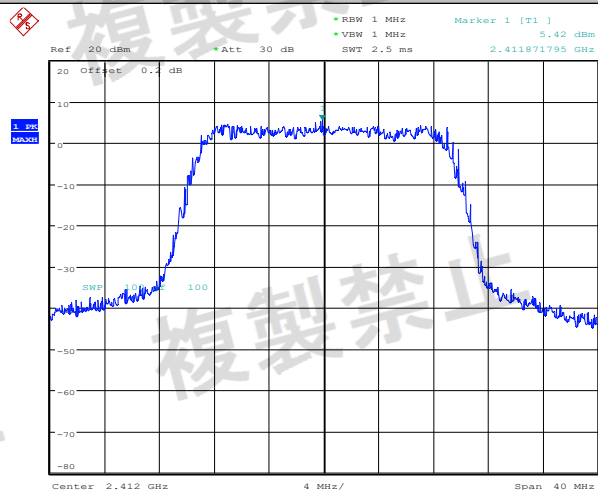
Date: 25.NOV.2025 14:44:45

NTNV_11G_Ant1_2472

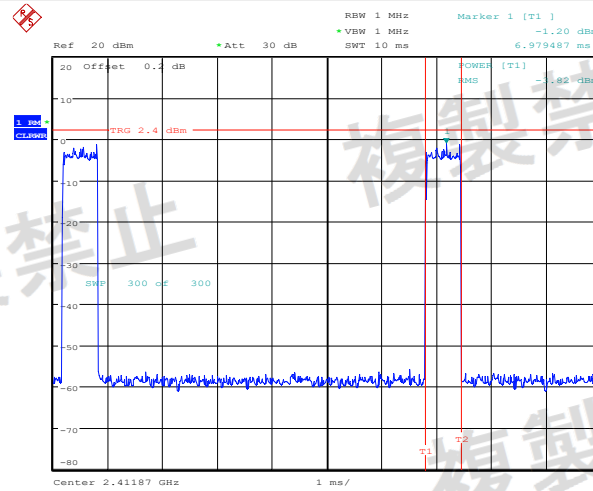


Date: 26.NOV.2025 13:12:23

NTNV_11N20SISO_Ant1_2412

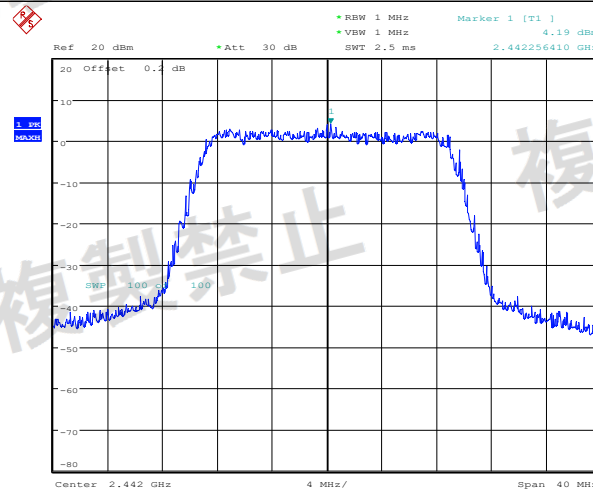


Date: 26.NOV.2025 10:31:22

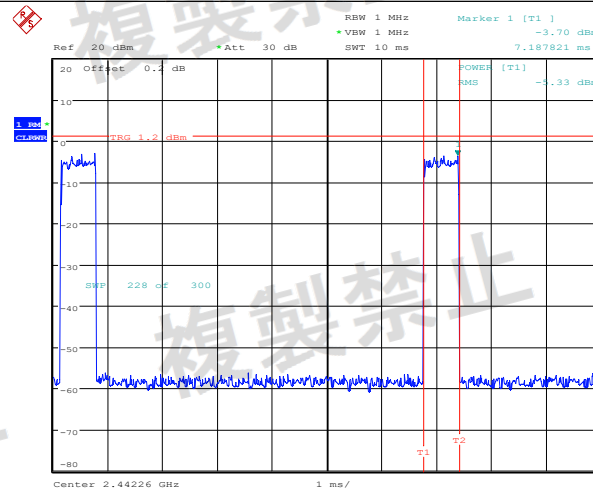


Date: 26.NOV.2025 10:39:57

NTNV_11N20SISO_Ant1_2442

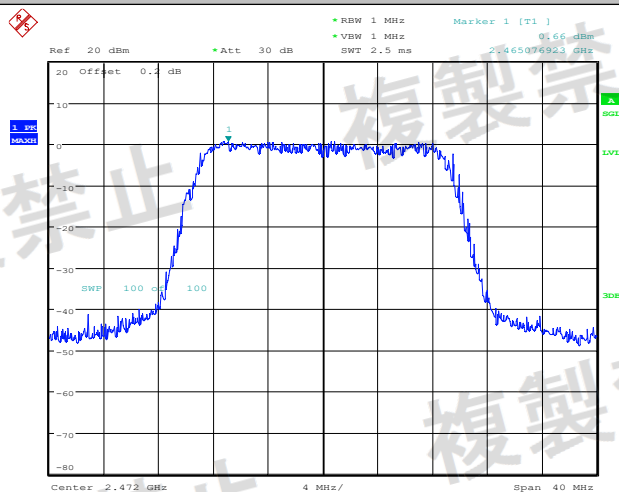


Date: 26.NOV.2025 10:42:11

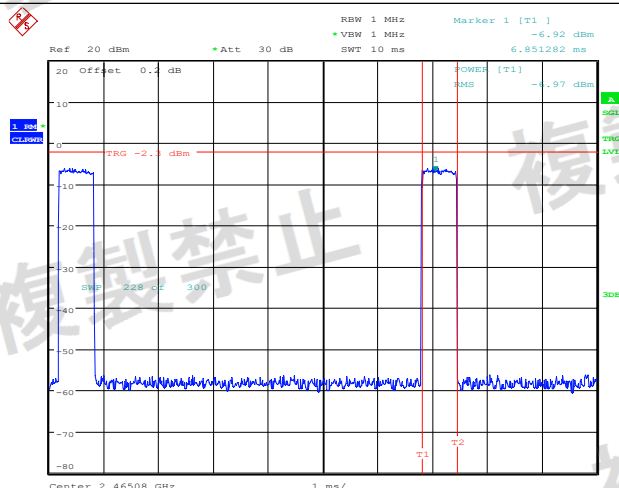


Date: 26.NOV.2025 10:42:22

NTNV_11N20SISO_Ant1_2472



Date: 26.NOV.2025 10:44:27



Date: 26.NOV.2025 10:44:38

6.11 Spurious Emissions of Tx

Test Requirement:

Item 19 of Article 2-1

for 2412-2472MHz

(1) Below 2387 MHz : 2.5 μ W/MHz

(2) 2387 to 2400 MHz : 25 μ W/MHz

(3) 2483.5 through 2496.5 MHz : 25 μ W/MHz

(4) Over 2496.5 MHz : 2.5 μ W/MHz

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.

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 – 1000 MHz

RBW 100 KHz

VBW 100 KHz

Sweep Time Auto

detector mode Positive peak

Indication mode Max hold

Frequency: 1000 MHz – 2400 MHz , 2483.5 MHz –13 GHz

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

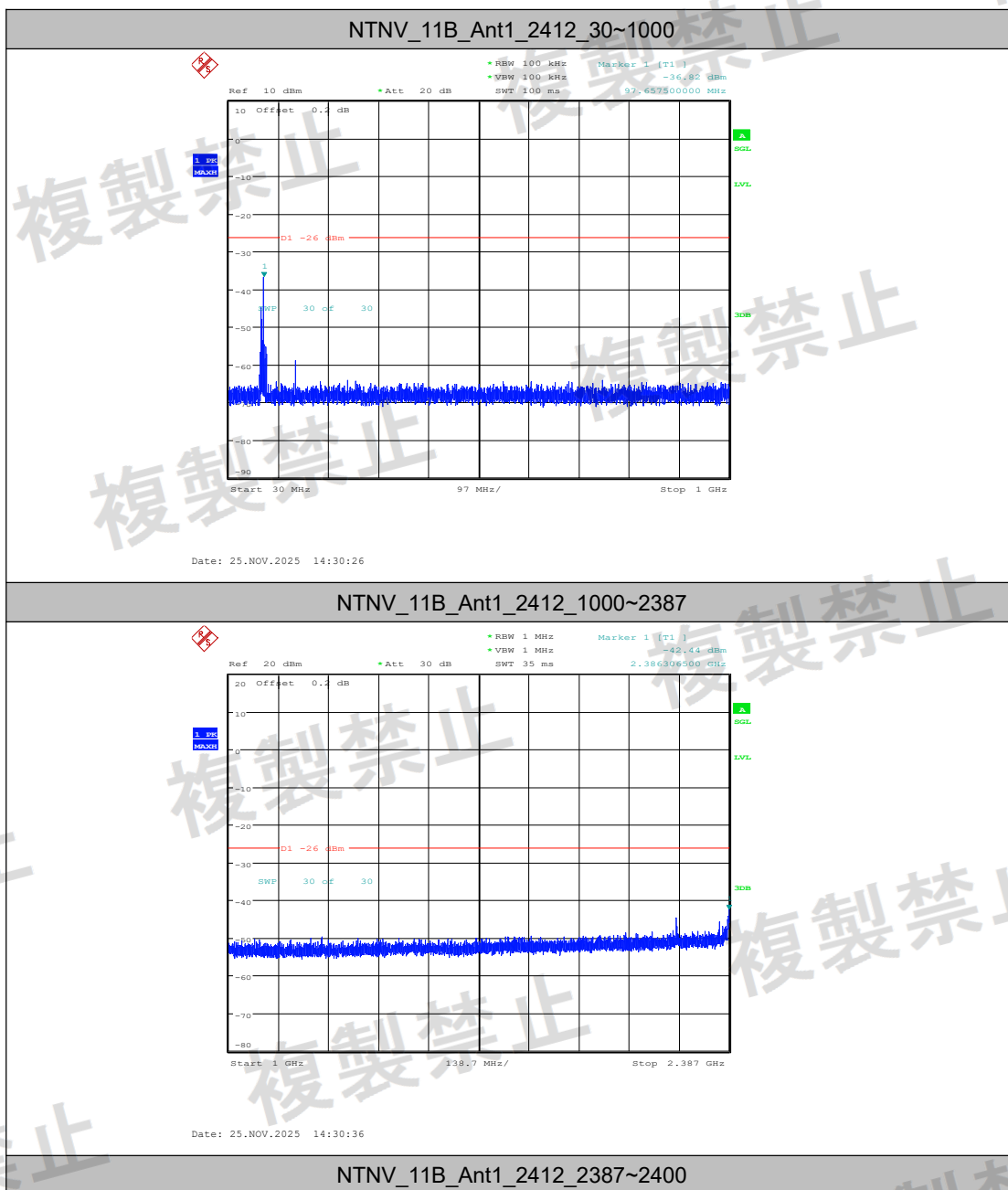
detector mode Sample

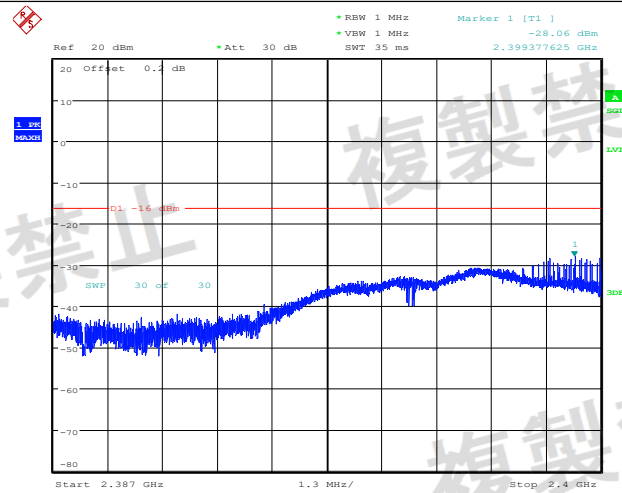
Indication mode Max hold

Test Mode	Antenna	Channel (MHz)	Freq.Range [MHz]	Freq (MHz)	Result [dBm/MHz]	Limit [dBm/MHz]	Result [μW/MHz]	Limit [μW/MHz]	Verdict
11B	Ant1	2412	30~1000	97.66	-36.82	≤-26	0.20797	≤2.5	PASS
			1000~2387	2386.31	-42.44	≤-26	0.05702	≤2.5	PASS
			2387~2400	2399.38	-28.06	≤-16	1.56315	≤25	PASS
			2483.5~2496.5	2490.73	-45.85	≤-16	0.02600	≤25	PASS
			2496.5~13000	2559.52	-53.79	≤-26	0.00418	≤2.5	PASS
		2442	30~1000	127.73	-38.82	≤-26	0.13122	≤2.5	PASS
			1000~2387	1934.14	-44.40	≤-26	0.03631	≤2.5	PASS
			2387~2400	2399.84	-44.62	≤-16	0.03451	≤25	PASS
			2483.5~2496.5	2484.46	-45.26	≤-16	0.02979	≤25	PASS
			2496.5~13000	2559.52	-53.87	≤-26	0.00410	≤2.5	PASS
		2472	30~1000	157.68	-42.21	≤-26	0.06012	≤2.5	PASS
			1000~2387	2264.60	-47.98	≤-26	0.01592	≤2.5	PASS
			2387~2400	2391.82	-46.80	≤-16	0.02089	≤25	PASS
			2483.5~2496.5	2483.54	-32.29	≤-16	0.59020	≤25	PASS
			2496.5~13000	2559.52	-52.34	≤-26	0.00583	≤2.5	PASS
11G	Ant1	2412	30~1000	98.39	-57.15	≤-26	0.00193	≤2.5	PASS
			1000~2387	2240.32	-45.03	≤-26	0.03141	≤2.5	PASS
			2387~2400	2398.70	-32.64	≤-16	0.54450	≤25	PASS
			2483.5~2496.5	2483.66	-46.14	≤-16	0.02432	≤25	PASS
			2496.5~13000	2560.05	-53.30	≤-26	0.00468	≤2.5	PASS
		2442	30~1000	159.98	-59.14	≤-26	0.00122	≤2.5	PASS
			1000~2387	2239.98	-46.36	≤-26	0.02312	≤2.5	PASS
			2387~2400	2399.72	-43.20	≤-16	0.04786	≤25	PASS
			2483.5~2496.5	2488.99	-45.34	≤-16	0.02924	≤25	PASS
			2496.5~13000	2559.52	-52.72	≤-26	0.00535	≤2.5	PASS
		2472	30~1000	159.98	-58.11	≤-26	0.00155	≤2.5	PASS
			1000~2387	2239.98	-45.47	≤-26	0.02838	≤2.5	PASS
			2387~2400	2399.87	-46.32	≤-16	0.02333	≤25	PASS
			2483.5~2496.5	2483.53	-35.09	≤-16	0.30974	≤25	PASS
			2496.5~13000	2559.52	-52.55	≤-26	0.00556	≤2.5	PASS
11N20 SISO	Ant1	2412	30~1000	98.39	-58.65	≤-26	0.00136	≤2.5	PASS
			1000~2387	2240.15	-44.86	≤-26	0.03266	≤2.5	PASS
			2387~2400	2399.84	-32.61	≤-16	0.54828	≤25	PASS
			2483.5~2496.5	2490.29	-45.40	≤-16	0.02884	≤25	PASS
			2496.5~13000	2559.52	-53.66	≤-26	0.00431	≤2.5	PASS
		2442	30~1000	159.98	-58.23	≤-26	0.00150	≤2.5	PASS
			1000~2387	2239.46	-45.52	≤-26	0.02805	≤2.5	PASS
			2387~2400	2399.67	-44.42	≤-16	0.03614	≤25	PASS

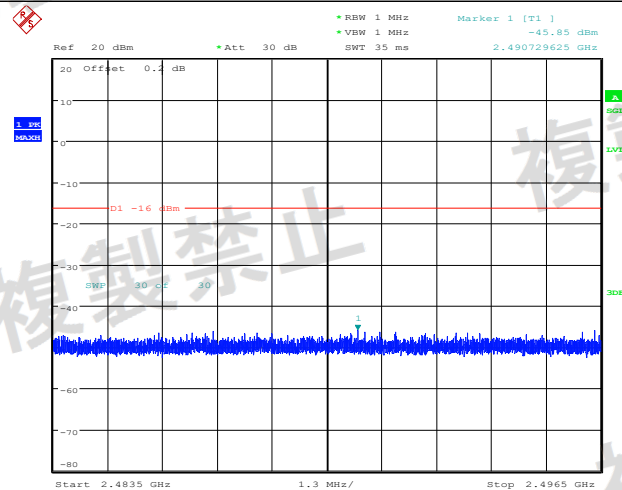
			2483.5~2496.5	2483.89	-45.75	≤-16	0.02661	≤25	PASS
			2496.5~13000	2559.52	-55.04	≤-26	0.00313	≤2.5	PASS
		2472	30~1000	159.98	-58.14	≤-26	0.00153	≤2.5	PASS
			1000~2387	2240.32	-45.46	≤-26	0.02844	≤2.5	PASS
			2387~2400	2399.75	-45.47	≤-16	0.02838	≤25	PASS
			2483.5~2496.5	2483.67	-32.20	≤-16	0.60256	≤25	PASS
			2496.5~13000	2559.52	-50.56	≤-26	0.00879	≤2.5	PASS

6.11.1 Test Graphs

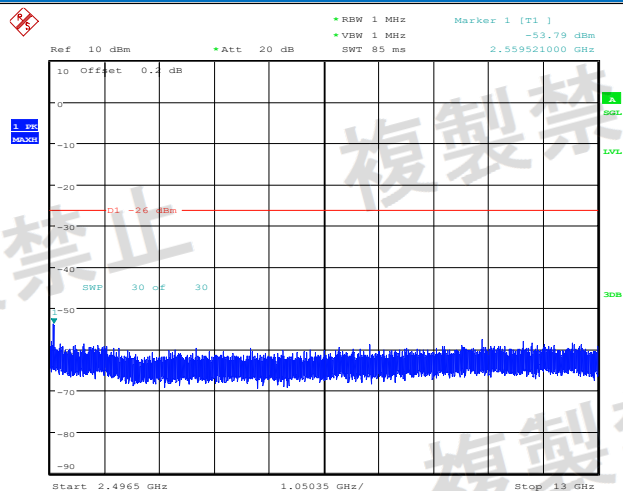




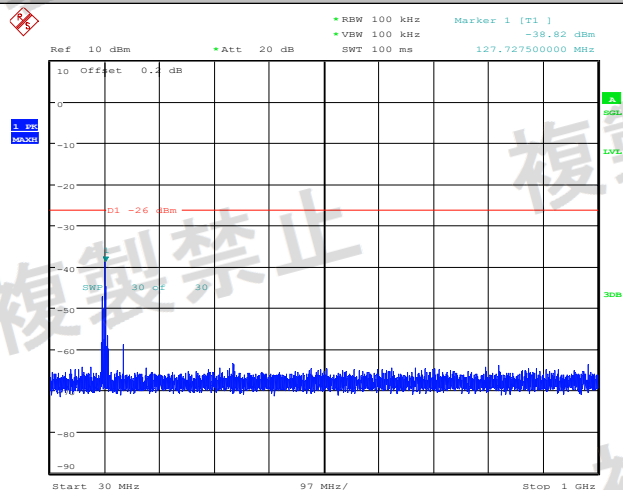
NTNV_11B_Ant1_2412_2483.5~2496.5



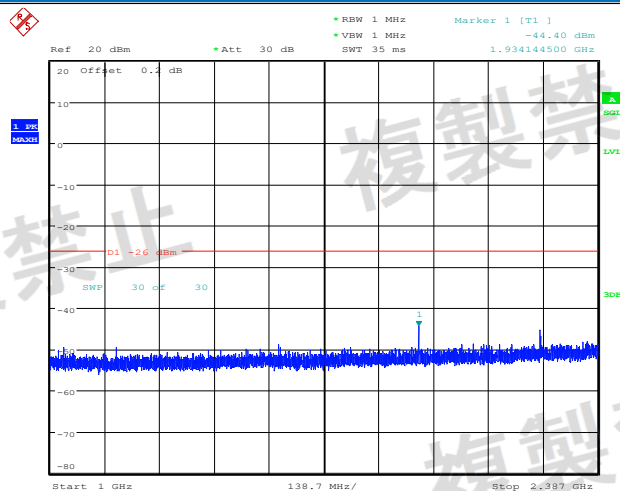
NTNV_11B_Ant1_2412_2496.5~13000



NTNV_11B_Ant1_2442_30~1000

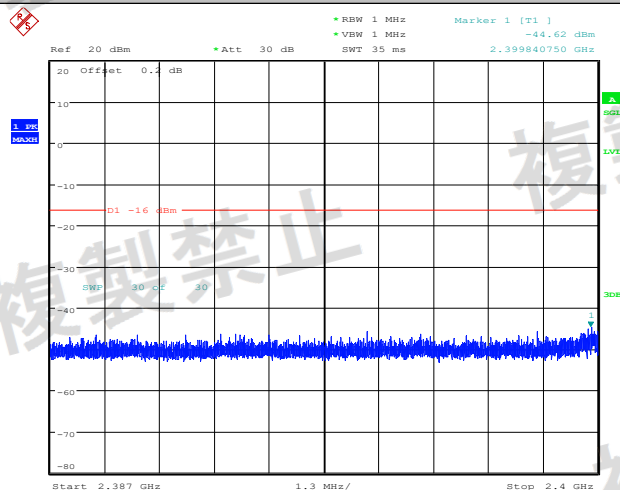


NTNV_11B_Ant1_2442_1000~2387



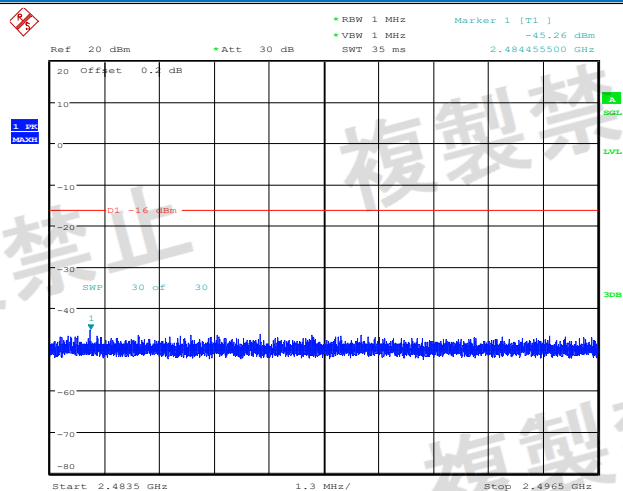
Date: 25.NOV.2025 14:34:13

NTNV_11B_Ant1_2442_2387~2400



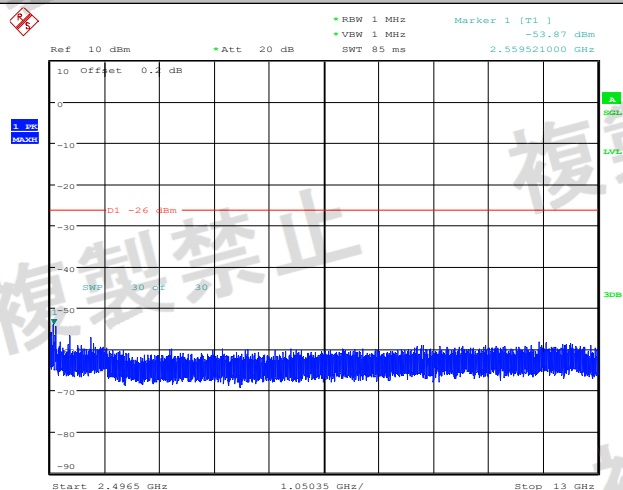
Date: 25.NOV.2025 14:34:22

NTNV_11B_Ant1_2442_2483.5~2496.5



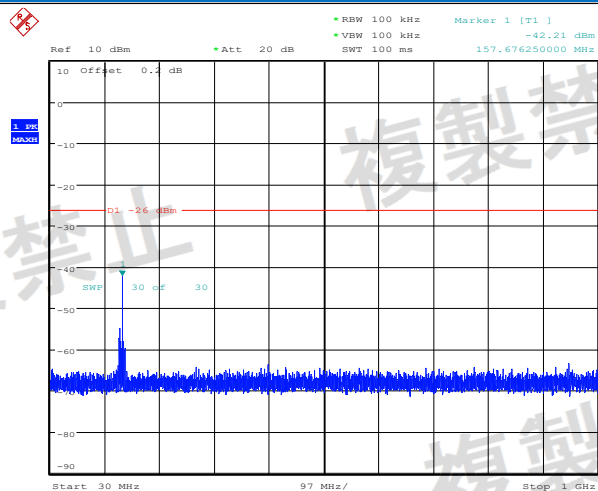
Date: 25.NOV.2025 14:34:30

NTNV_11B_Ant1_2442_2496.5~13000



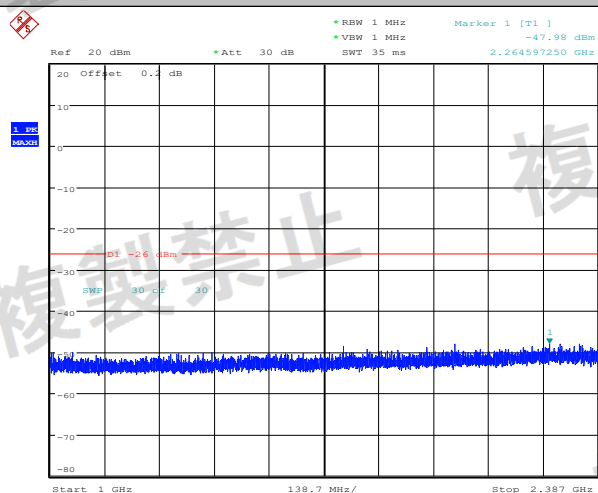
Date: 25.NOV.2025 14:34:45

NTNV_11B_Ant1_2472_30~1000



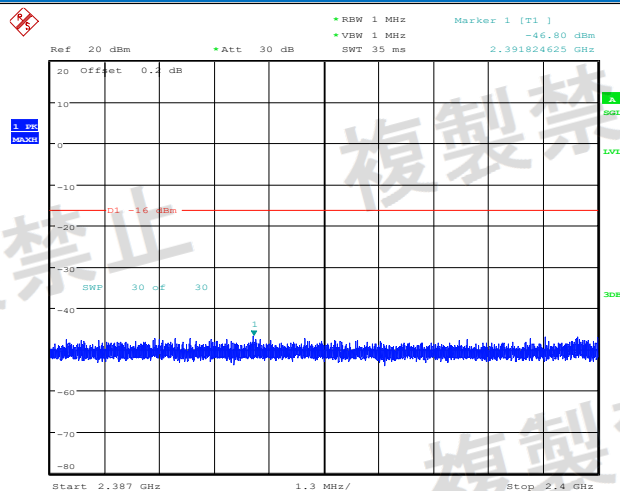
Date: 25.NOV.2025 14:37:15

NTNV_11B_Ant1_2472_1000~2387



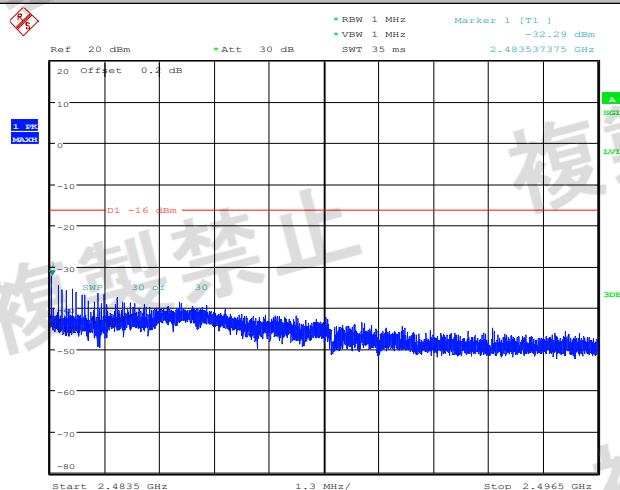
Date: 25.NOV.2025 14:37:25

NTNV_11B_Ant1_2472_2387~2400



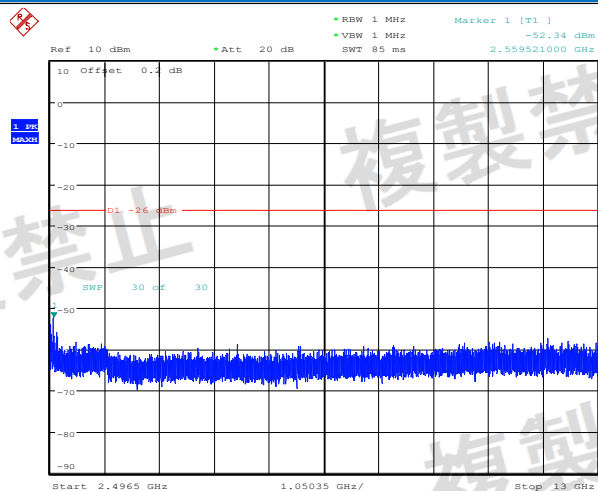
Date: 25.NOV.2025 14:37:34

NTNV_11B_Ant1_2472_2483.5~2496.5



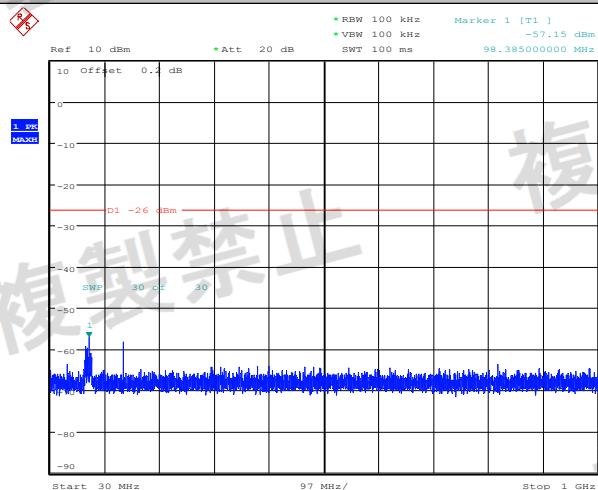
Date: 25.NOV.2025 14:37:42

NTNV_11B_Ant1_2472_2496.5~13000



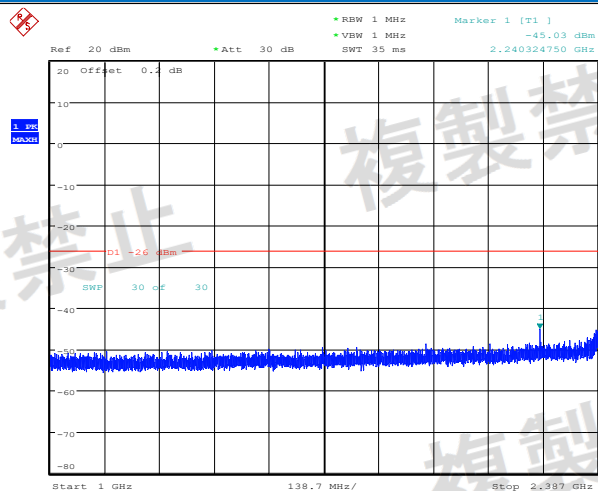
Date: 25.NOV.2025 14:37:57

NTNV_11G_Ant1_2412_30~1000



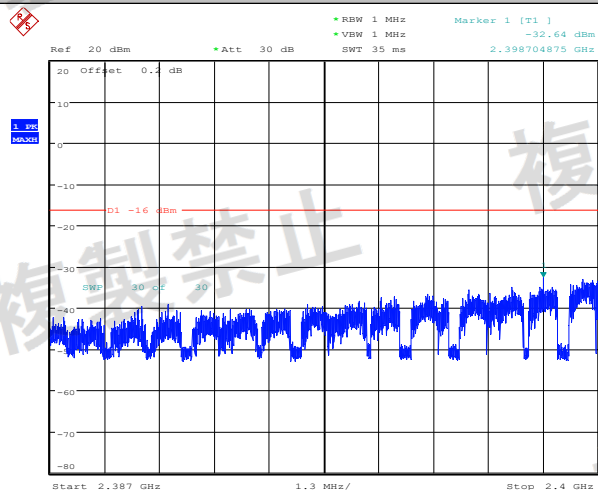
Date: 25.NOV.2025 14:41:35

NTNV_11G_Ant1_2412_1000~2387



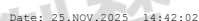
Date: 25.NOV.2025 14:41:45

NTNV_11G_Ant1_2412_2387~2400



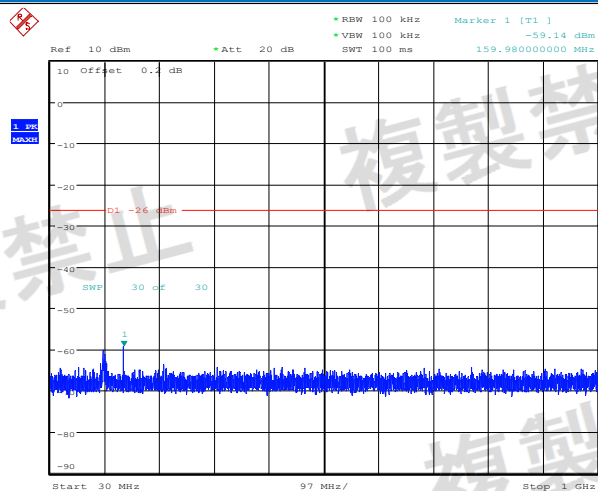
Date: 25.NOV.2025 14:41:54

NTNV_11G_Ant1_2412_2483.5~2496.5



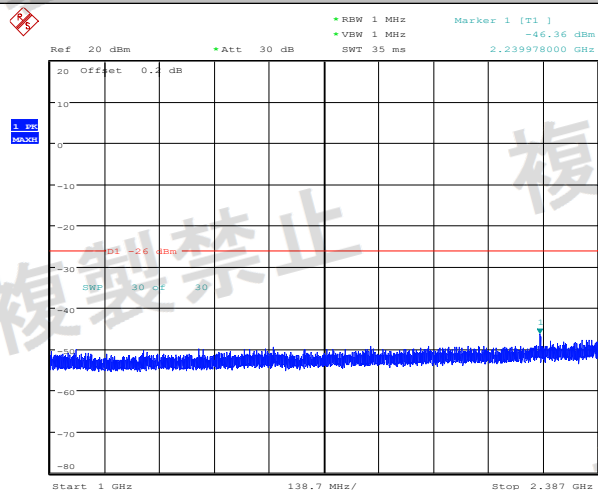
Date: 25.NOV.2025 14:42:17

Page:59 of 86



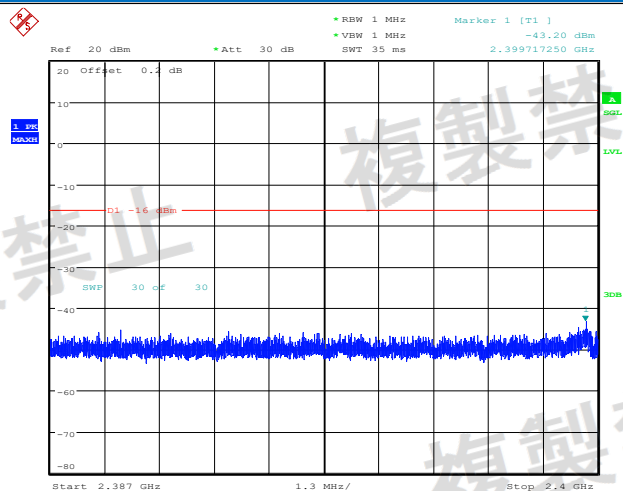
Date: 25.NOV.2025 14:45:29

NTNV_11G_Ant1_2442_1000~2387



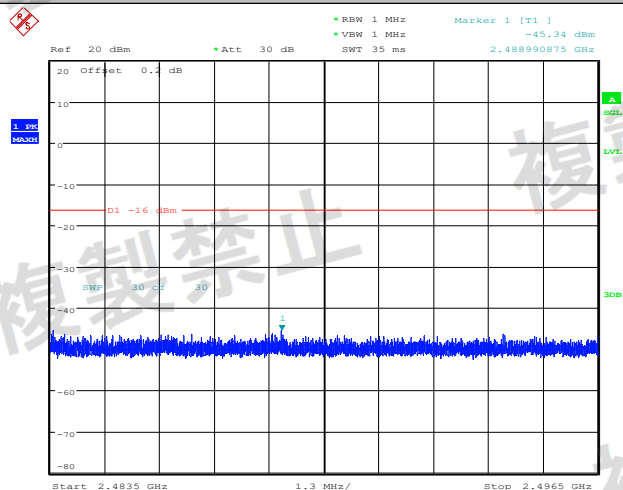
Date: 25.NOV.2025 14:45:39

NTNV_11G_Ant1_2442_2387~2400



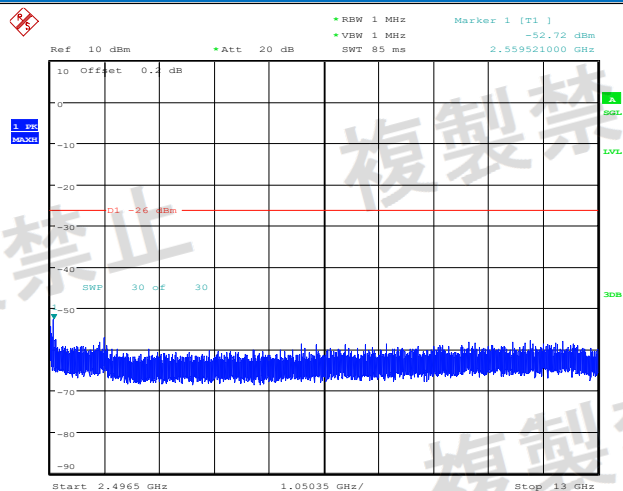
Date: 25.NOV.2025 14:45:48

NTNV_11G_Ant1_2442_2483.5~2496.5

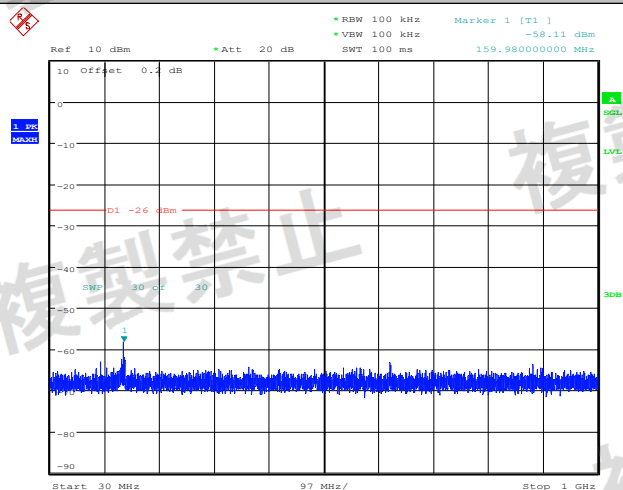


Date: 25.NOV.2025 14:45:56

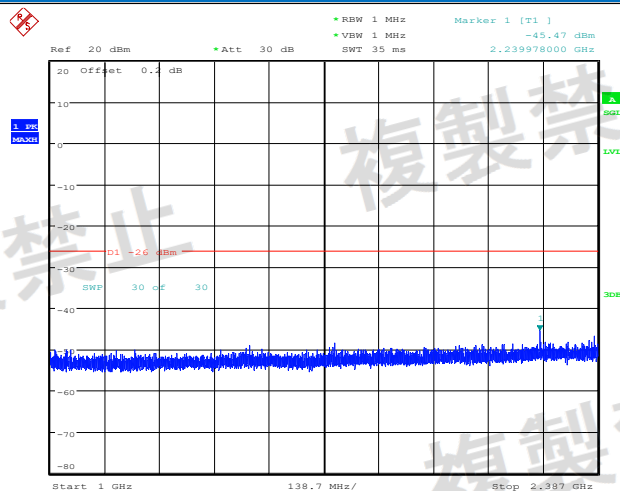
NTNV_11G_Ant1_2442_2496.5~13000



NTNV_11G_Ant1_2472_30~1000

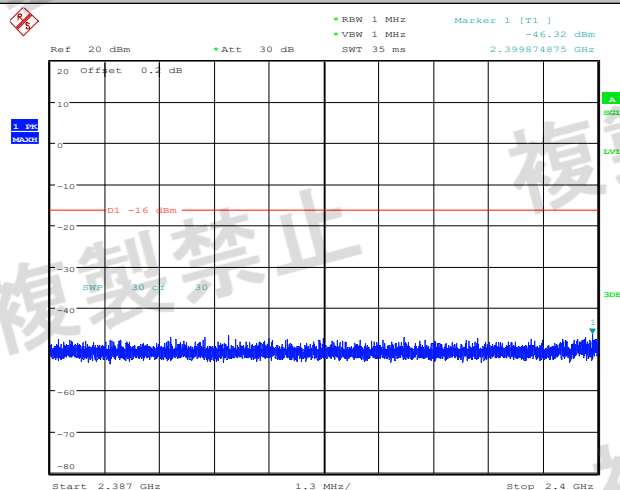


NTNV_11G_Ant1_2472_1000~2387



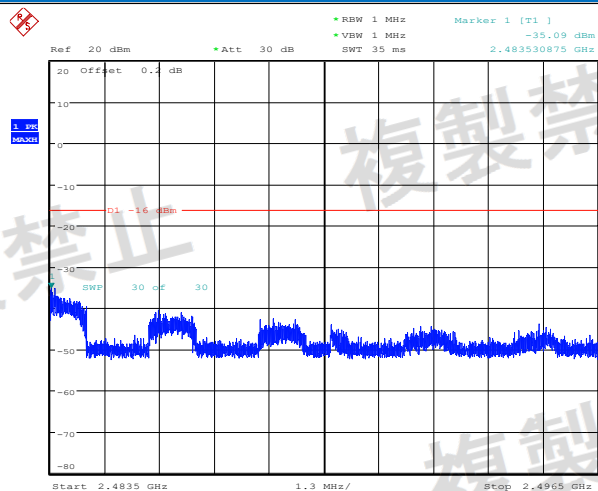
Date: 25.NOV.2025 14:50:46

NTNV_11G_Ant1_2472_2387~2400



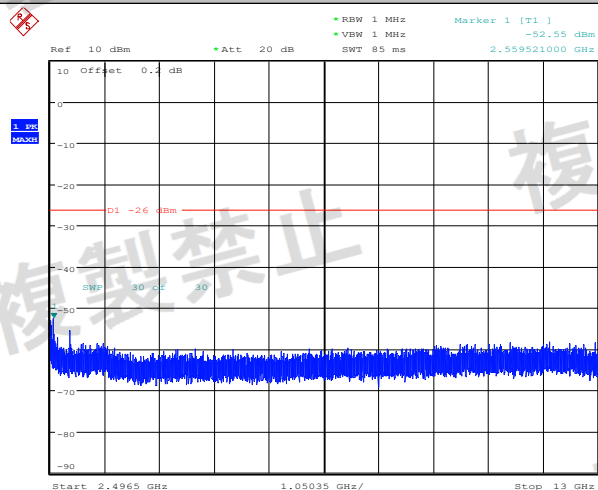
Date: 25.NOV.2025 14:50:55

NTNV_11G_Ant1_2472_2483.5~2496.5



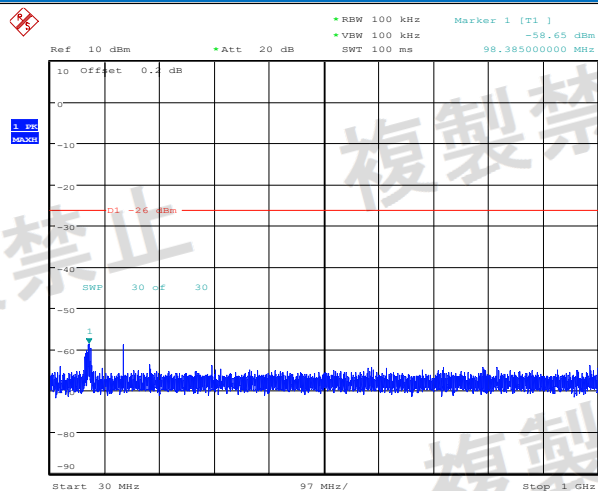
Date: 25.NOV.2025 14:51:04

NTNV_11G_Ant1_2472_2496.5~13000



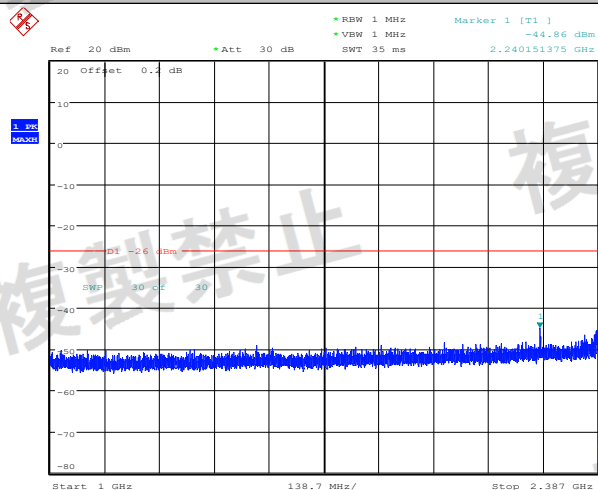
Date: 25.NOV.2025 14:51:19

NTNV_11N20SISO_Ant1_2412_30~1000



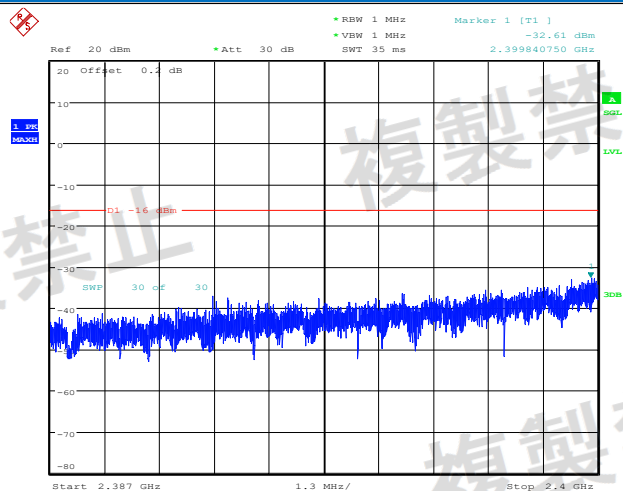
Date: 26.NOV.2025 10:41:10

NTNV_11N20SISO_Ant1_2412_1000~2387

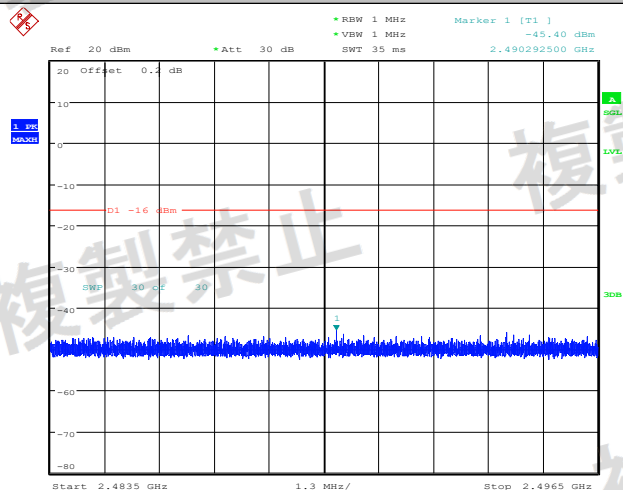


Date: 26.NOV.2025 10:41:20

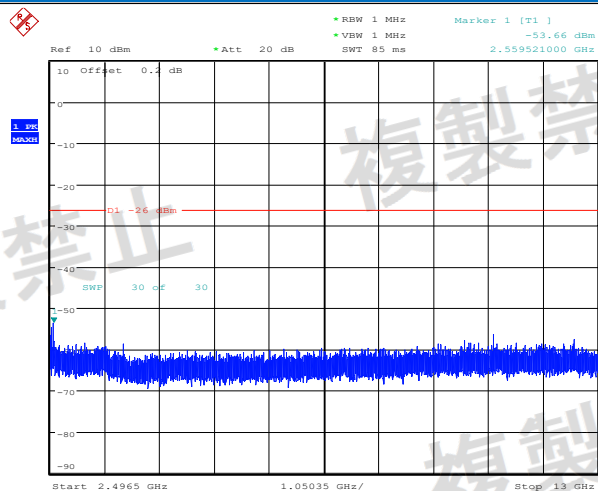
NTNV_11N20SISO_Ant1_2412_2387~2400



NTNV_11N20SISO_Ant1_2412_2483.5~2496.5

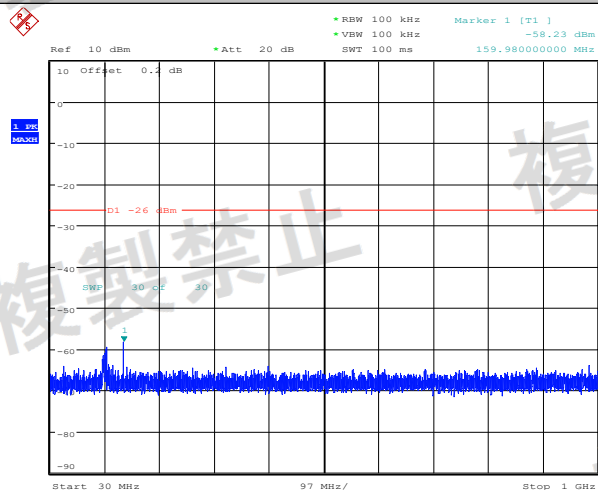


NTNV_11N20SISO_Ant1_2412_2496.5~13000



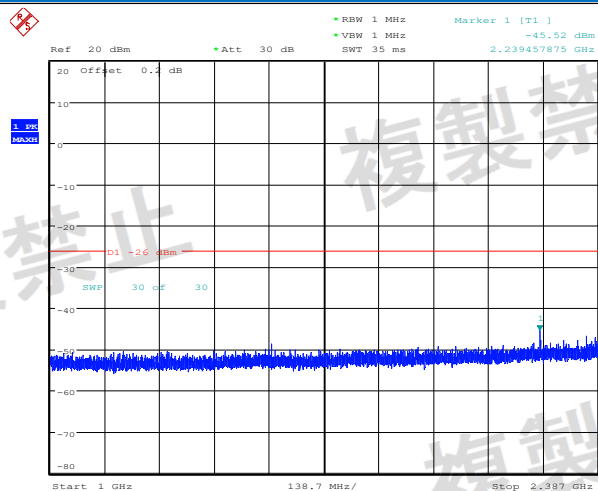
Date: 26.NOV.2025 10:41:52

NTNV_11N20SISO_Ant1_2442_30~1000



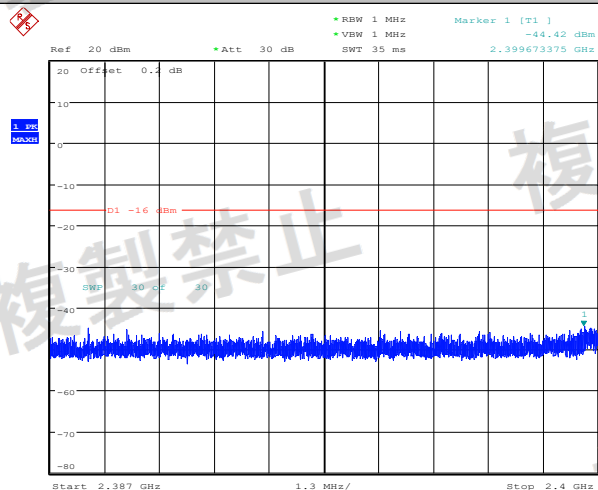
Date: 26.NOV.2025 10:43:08

NTNV_11N20SISO_Ant1_2442_1000~2387



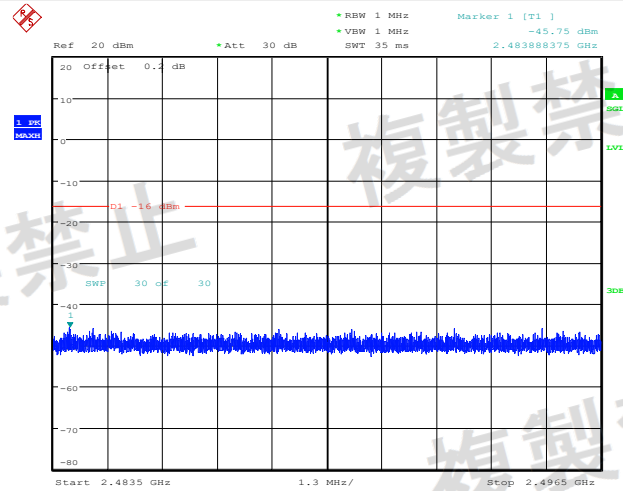
Date: 26.NOV.2025 10:43:17

NTNV_11N20SISO_Ant1_2442_2387~2400



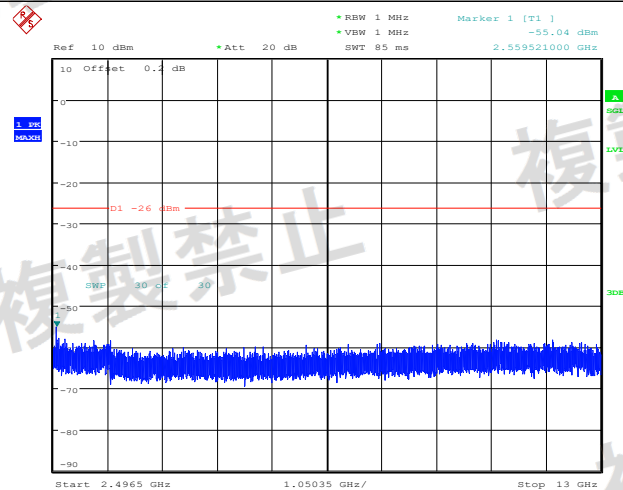
Date: 26.NOV.2025 10:43:26

NTNV_11N20SISO_Ant1_2442_2483.5~2496.5



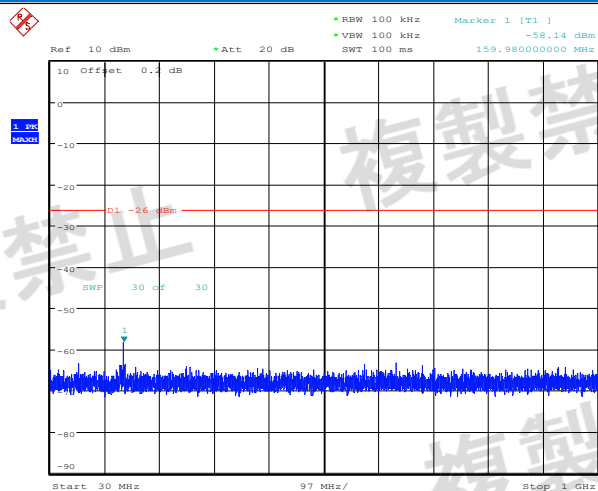
Date: 26.NOV.2025 10:43:34

NTNV_11N20SISO_Ant1_2442_2496.5~13000



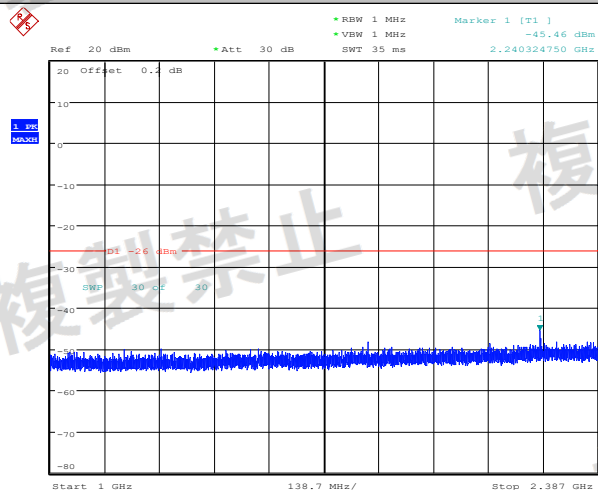
Date: 26.NOV.2025 10:43:50

NTNV_11N20SISO_Ant1_2472_30~1000



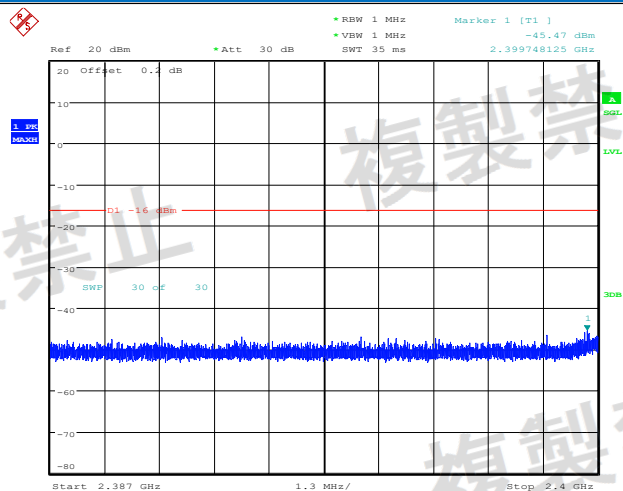
Date: 26.NOV.2025 10:45:24

NTNV_11N20SISO_Ant1_2472_1000~2387



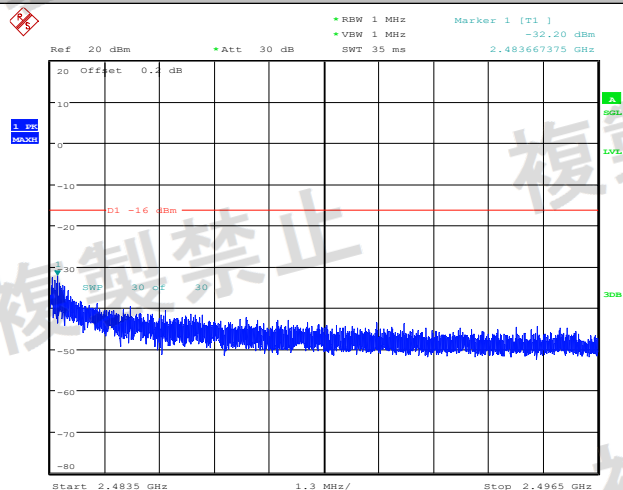
Date: 26.NOV.2025 10:45:34

NTNV_11N20SISO_Ant1_2472_2387~2400



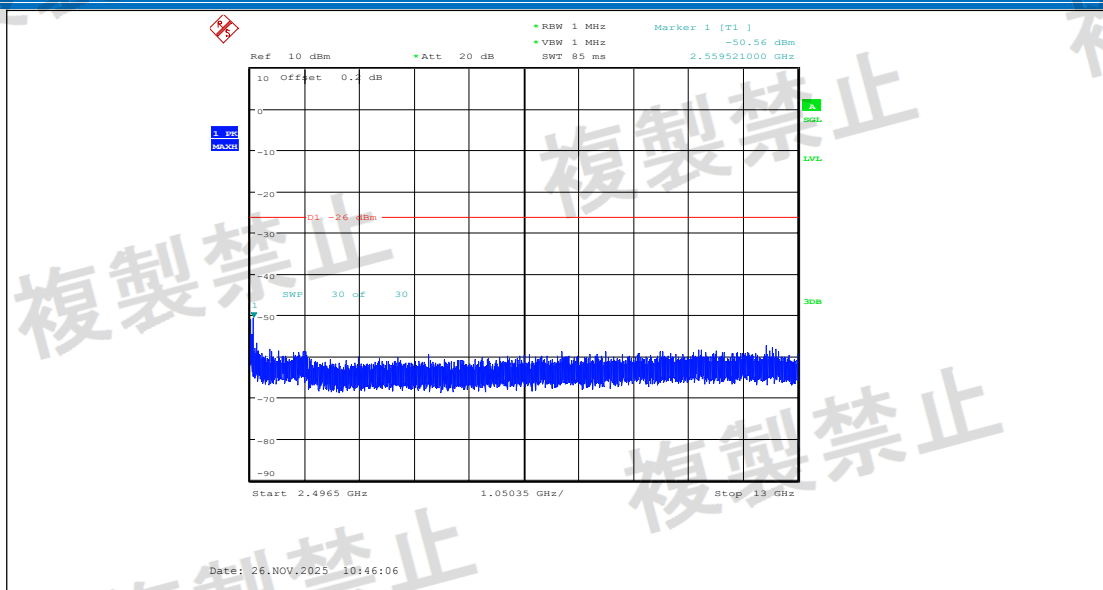
Date: 26.NOV.2025 10:45:43

NTNV_11N20SISO_Ant1_2472_2483.5~2496.5



Date: 26.NOV.2025 10:45:51

NTNV_11N20SISO_Ant1_2472_2496.5~13000



Test Result: The unit does meet the requirements.

6.12 RF accessibility

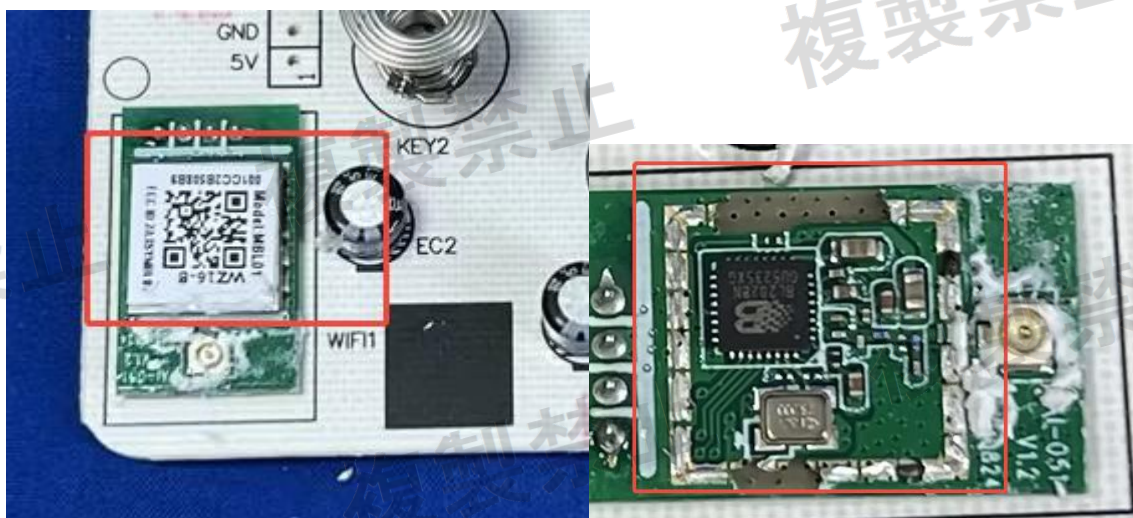
Standard requirement

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.

Tamper proof Declaration:

- ☐ 1. Sealed with special screws.
- ☐ 2. Plastic chassis is being welded using ultrasonic waves.
- ☐ 3. Chassis is glued using a special adhesive.
- ☐ 4. Metal covers are spot-fused.
- ☐ 5. Cover is specially interlocked.
- ☐ 6. RF and Modulation components are covered with shielding case and this shielding case is soldered.
- ☒ 7. Shield case is welded at RF and modulation parts, and ID-ROM is welded using the BGA Method.
- ☐ 8. Shield case is welded at RF and modulation parts, and ID-ROM is glued at its lead with a special adhesive.
- ☐ 9. Shield case is welded at RF and modulation parts, and ID-ROM is glued with a non-transparent laminating agent.
- ☒ 10. 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.



The method used to meet the "cannot be opened easily" is to use a shielding cover to seal it.

Any attempt to modify the RF chip will invalidate the normal operation of the device.

6.13 Spurious Emissions of Rx

Test Requirement: Item 19 of Article 2-1

- (1) Below 1 GHz : 4 nW
- (2) 1 GHz and over : 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.

Test Configuration:

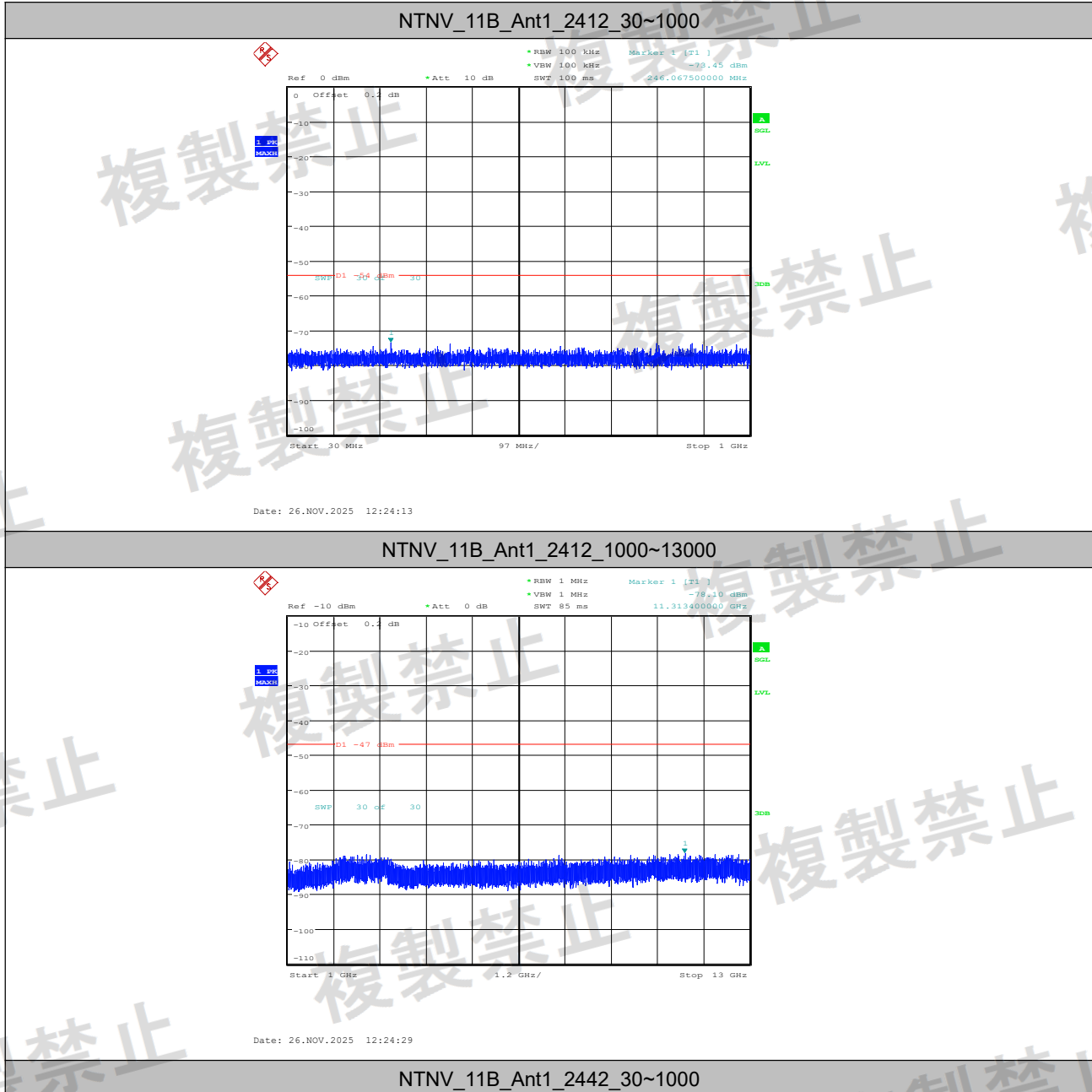


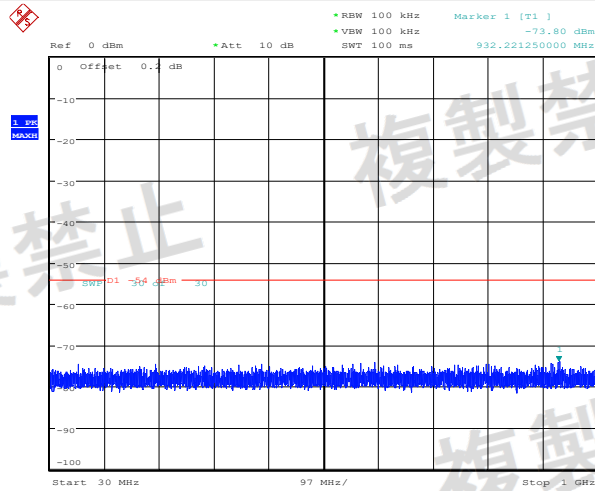
Test Procedure:

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 – 1GHz , 1GHz – 13 GHz (for 2412MHz-2472MHz)
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

TestMode	Antenna	Channel (MHz)	Freq.Range [MHz]	Freq. [MHz]	Result [dBm/MH z]	Limit [dBm/ MHz]	Result [μW/MH z]	Limit μW/MH z]	Verdict
11B	Ant1	2412	30~1000	246.07	-73.45	≤-54	0.04519	≤4	PASS
			1000~13000	11313.40	-78.10	≤-47	0.01549	≤20	PASS
		2442	30~1000	932.22	-73.80	≤-54	0.04169	≤4	PASS
			1000~13000	2530.60	-71.59	≤-47	0.06934	≤20	PASS
		2472	30~1000	929.68	-73.23	≤-54	0.04753	≤4	PASS
			1000~13000	2530.00	-70.97	≤-47	0.07998	≤20	PASS
11G	Ant1	2412	30~1000	206.06	-73.87	≤-54	0.04102	≤4	PASS
			1000~13000	2520.40	-71.84	≤-47	0.06546	≤20	PASS
		2442	30~1000	490.99	-73.15	≤-54	0.04842	≤4	PASS
			1000~13000	2548.00	-72.50	≤-47	0.05623	≤20	PASS
		2472	30~1000	297.72	-73.61	≤-54	0.04355	≤4	PASS
			1000~13000	2534.80	-69.67	≤-47	0.10789	≤20	PASS
11N20SI SO	Ant1	2412	30~1000	479.96	-73.54	≤-54	0.04426	≤4	PASS
			1000~13000	11140.00	-77.75	≤-47	0.01679	≤20	PASS
		2442	30~1000	814.49	-73.54	≤-54	0.04426	≤4	PASS
			1000~13000	2547.40	-76.98	≤-47	0.02004	≤20	PASS
		2472	30~1000	239.64	-73.10	≤-54	0.04898	≤4	PASS
			1000~13000	11164.00	-77.29	≤-47	0.01866	≤20	PASS

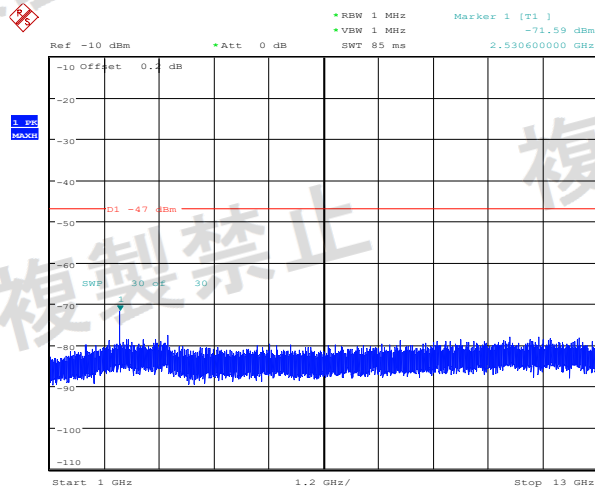
Result plot as follows:





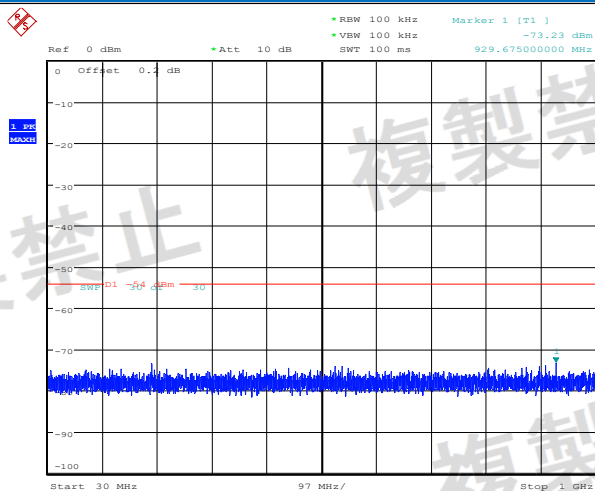
Date: 26.NOV.2025 12:24:42

NTNV_11B_Ant1_2442_1000~13000



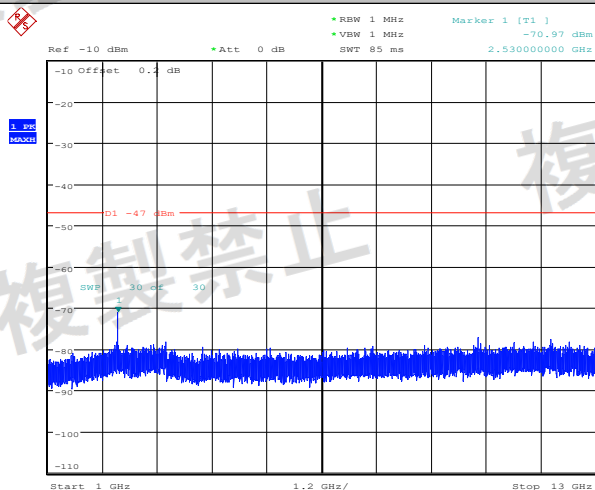
Date: 26.NOV.2025 12:24:57

NTNV_11B_Ant1_2472_30~1000



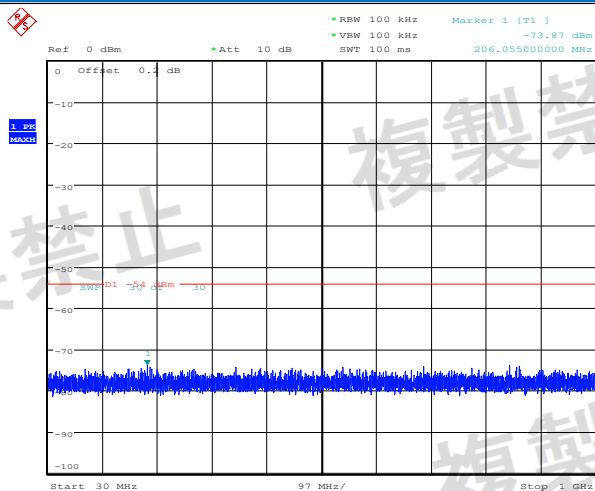
Date: 26.NOV.2025 12:25:11

NTNV_11B_Ant1_2472_1000~13000



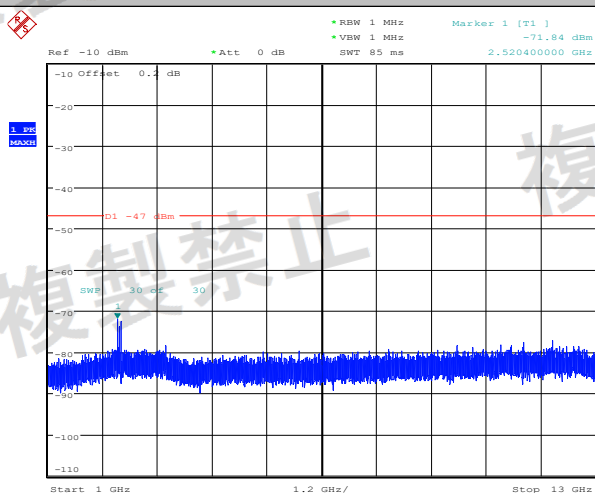
Date: 26.NOV.2025 12:25:27

NTNV_11G_Ant1_2412_30~1000



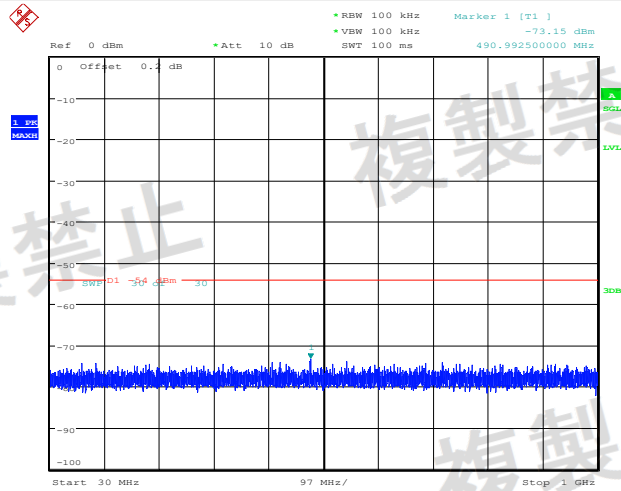
Date: 26.NOV.2025 12:25:41

NTNV_11G_Ant1_2412_1000~13000



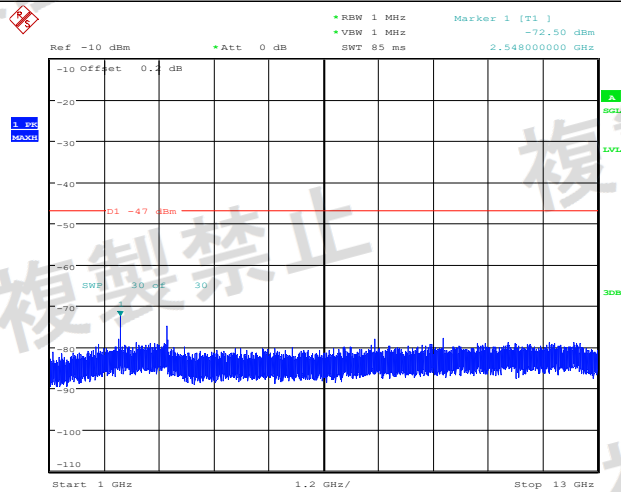
Date: 26.NOV.2025 12:25:56

NTNV_11G_Ant1_2442_30~1000



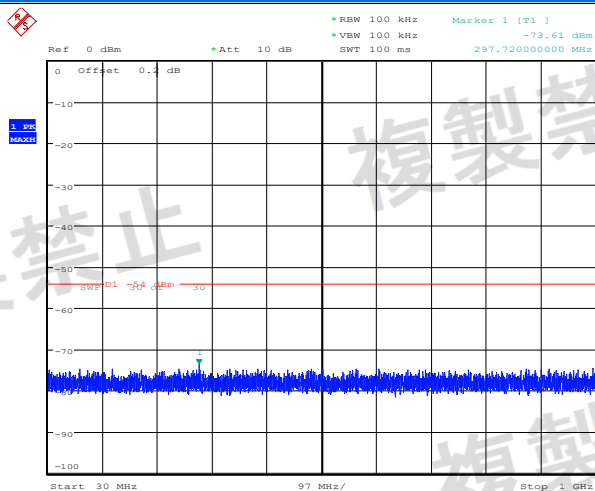
Date: 26.NOV.2025 12:26:11

NTNV_11G_Ant1_2442_1000~13000



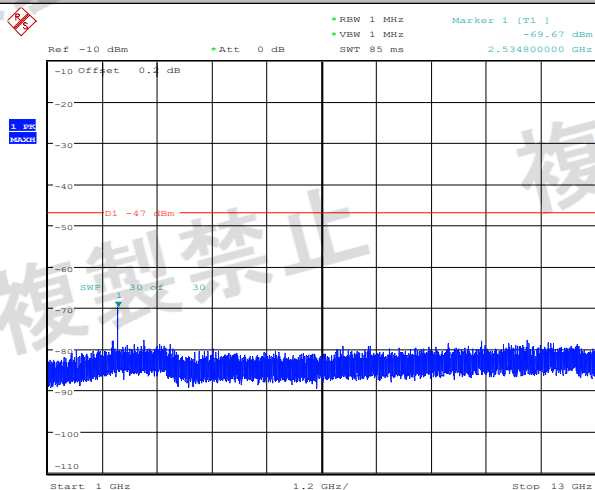
Date: 26.NOV.2025 12:26:26

NTNV_11G_Ant1_2472_30~1000



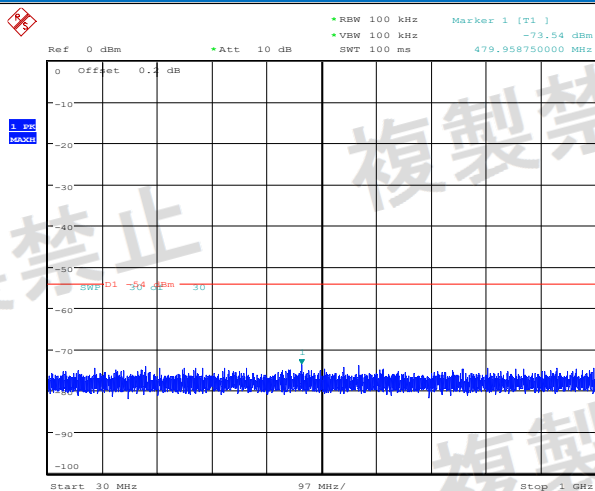
Date: 26.NOV.2025 12:26:40

NTNV_11G_Ant1_2472_1000~13000



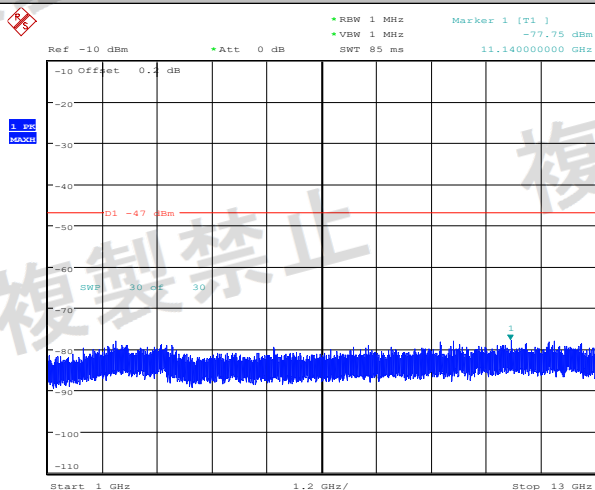
Date: 26.NOV.2025 12:26:55

NTNV_11N20SISO_Ant1_2412_30~1000



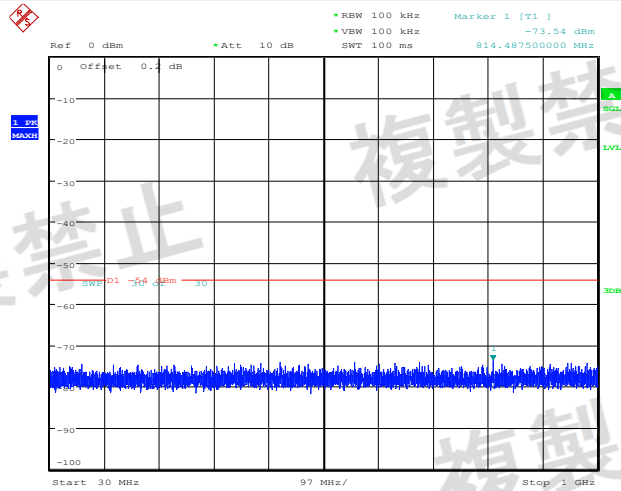
Date: 26.NOV.2025 12:27:11

NTNV_11N20SISO_Ant1_2412_1000~13000



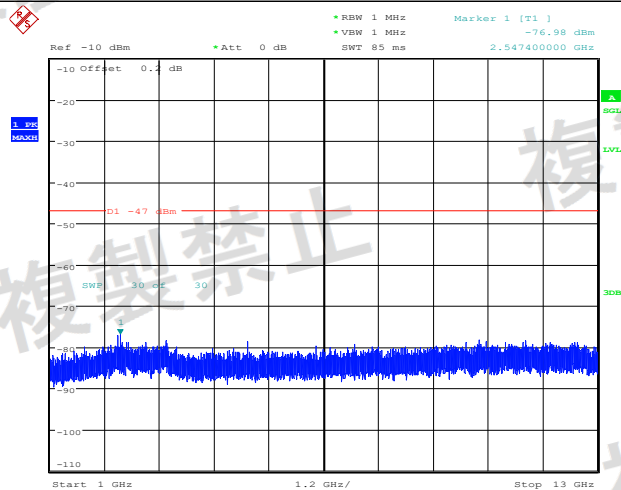
Date: 26.NOV.2025 12:27:26

NTNV_11N20SISO_Ant1_2442_30~1000



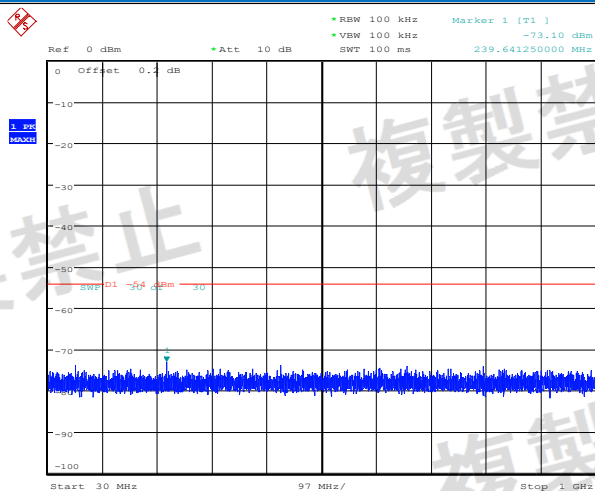
Date: 26.NOV.2025 12:27:40

NTNV_11N20SISO_Ant1_2442_1000~13000



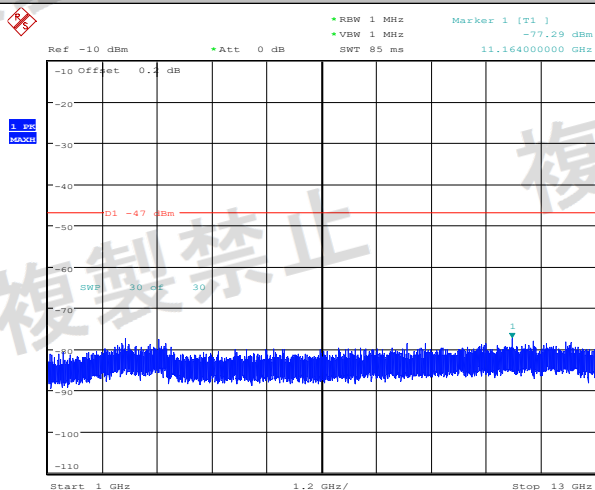
Date: 26.NOV.2025 12:27:56

NTNV_11N20SISO_Ant1_2472_30~1000



Date: 26.NOV.2025 12:28:09

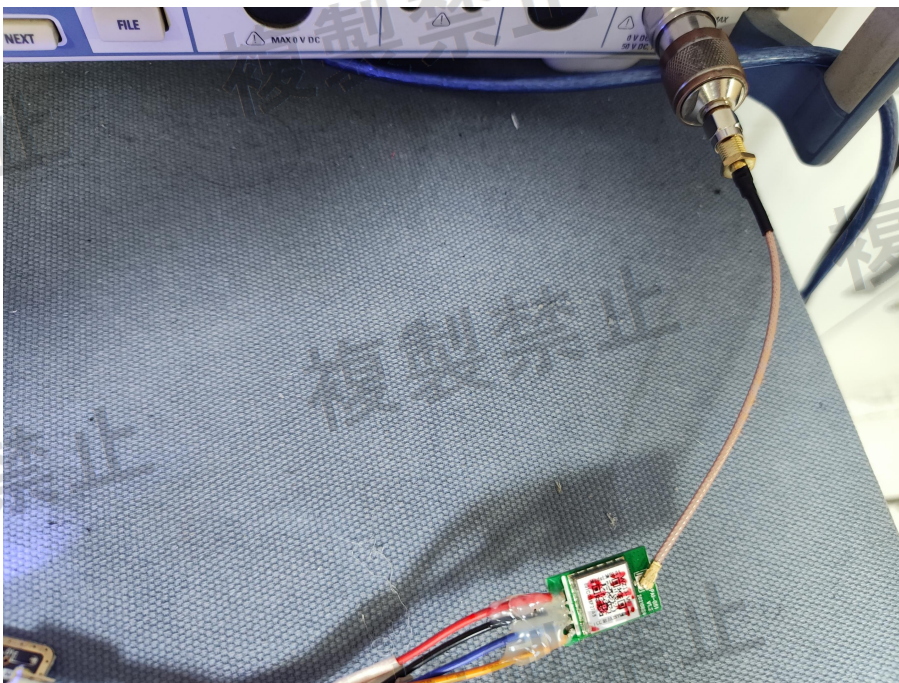
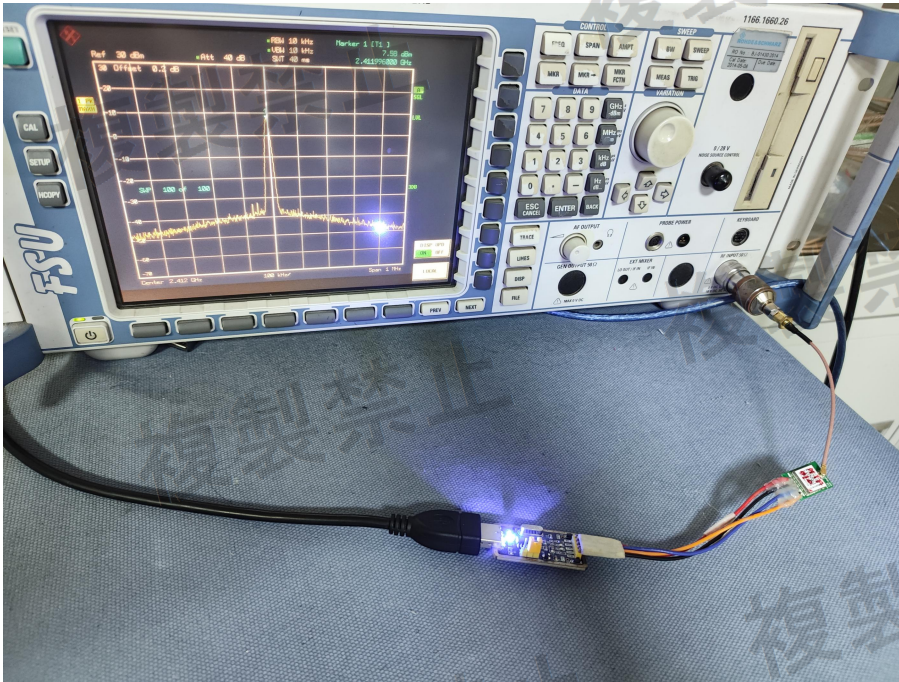
NTNV_11N20SISO_Ant1_2472_1000~13000



Date: 26.NOV.2025 12:28:25

7 Photographs

7.1 EUT Test Setup



8 Photographs - EUT Constructional Details

Refer to Photographs - EUT Constructional Details OF EUT for CQASZ20251102607E-01.

*** END OF REPORT ***