

**Japan - TEST REPORT**Report Number : **68.950.21.0002.01** Date of Issue: **2021-02-01**Model : **HKTWS158, KOSS TWS250i**

Product Type : TRUE WIRELESS EARBUDS

Applicant : Koss Corporation

Address : 4129 N Port Washington Road Milwaukee, WI 53212

Manufacturer : Koss Corporation

Address : 4129 N Port Washington Road Milwaukee, WI 53212

Test Result : ☒ Positive ☐ NegativeTotal pages including
Appendices**46**

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Table of Content

1	General Information	3
1.1	Notes	3
1.2	Testing Laboratory	4
1.3	Application Details	4
1.4	Test Item	4
1.5	Applied Standard	5
1.6	Test Summary	5
2	Equipment Specification	6
2.1	General Description	6
2.2	Technical Data	6
2.3	Test conditions and test Connections	7
2.4	Auxiliary Equipment Used during Test	7
2.5	Lists of Test Instruments	8
2.6	Measurement Uncertainty (95% confidence levels, k=2)	8
3	Measurements Result	9
3.1	Antenna Power	9
3.2	Tolerances for Antenna Power	10
3.3	Frequency Tolerance	11
3.4	Occupied Frequency Bandwidth	12
3.5	Spread Bandwidth & Process gain	18
3.6	Dwell Time	21
3.7	Interference prevention function	22
3.8	Transmitter Spurious Emissions (Conducted) (For transmitter)	23
3.9	Secondary Radiated Emissions (Conducted) (For receiver)	38
4	Photographs of Test Set-ups	46



1 General Information

1.1 Notes

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Prepared by
Project Engineer

2021-02-01

Date

Joe Gu

Name

Joe Gu

Signature



Approved by
Project Manager

2021-02-01

Date

John Zhi

Name

John Zhi

Signature



1.2 Testing Laboratory

Site 1:

TÜV SÜD Certification and Testing (China) Co., Ltd. – Shenzhen Branch
Address: Building 12&13, Zhiheng Wisdomland Business Park,
Nantou Checkpoint Road 2, Nanshan District,
Shenzhen City, 518052,
P. R. China

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1.3 Application Details

Date of receipt of order:	2021-01-10
Date of receipt of test item:	2021-01-10
Date of test:	2021-01-10 to 2021-01-29

1.4 Test Item

Refer to table 1

1.5 Applied Standard

APPLIED PRODUCT STANDARD

ARIB STD-T66 Version 3.7/2014-10

1.6 Test Summary

Table 1. Summary of results

Conformance requirement according to ARIB STD-T66 Version 3.7		Result	Test Site
Essential parameter	Corresponding technical requirements		
Transmitter requirements	3.2 (2) Antenna Power	PASS	Site 1
	3.2 (3) Tolerances for Antenna Power	PASS	Site 1
	3.2 (4) Frequency Tolerance	PASS	Site 1
	3.2 (5) Transmission Rate	N/A*	---
	3.2 (7) Occupied Frequency Bandwidth	PASS	Site 1
	3.2 (8) Spread Bandwidth	PASS	Site 1
	3.2 (9) Process gain	PASS	Site 1
	3.2 (10) Number of Carriers	N/A*	---
	3.2 (11) Dwell Time	PASS	Site 1
	3.4 (1) Interference prevention function	PASS	Site 1
	3.2 (6) Spurious Emissions	PASS	Site 1
Receiver requirements	3.3 (1) Secondary Radiated Emissions	PASS	Site 1

NOTE 1 Measurement taken is within the measurement uncertainty of measurement system.

NOTE 2 "*" N/A is an abbreviation for Not Applicable.

2 Equipment Specification

2.1 General Description

HKTWS158, KOSS TWS250i is a TRUE WIRELESS EARBUDS with Bluetooth BDR+EDR function.

The difference among all Models is only model name.

Unless otherwise specified the model HKTWS158 was chosen as the representative model to perform full tests, and model: KOSS TWS250i was deemed to fulfil relevant requirements without further testing.

The left earbud is identical with right earbud, so all the RF tests were applied on only one side.

2.2 Technical Data

Description	TRUE WIRELESS EARBUDS
Model	HKTWS158, KOSS TWS250i
Operation frequency	2402MHz-2480MHz
Antenna type	Internal antenna
Antenna gain	0.75dBi
Modulation	GFSK, $\pi/4$ -DQPSK, 8DPSK
Rated Input	Earbuds: 3.7VDC (Charged by charging box) 3.7VDC, 50mAh (Supply by rechargeable battery) Charging Box: 5VDC (Charged by USB port) 3.7VDC, 300mAh (Supply by rechargeable battery)

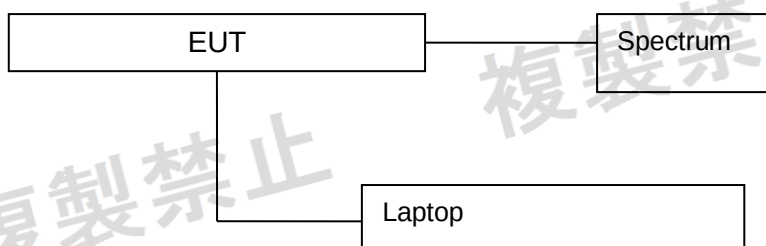
2.3 Test conditions and test Connections

2.3.1 Test Conditions

The EUT will be connected to test system in order to simulate normal operating conditions (with reference to the guidance given in the standard for this type of equipment).

The EUT is supplied by an Li-ion rechargeable battery charged by an external adapter, the battery will not No direct power supply to the wireless module, so $\pm 10\%$ of the rated voltage test is not required. All test items were performed at normal voltage.

2.3.2 Test Connections



Test Configuration

2.4 Auxiliary Equipment Used during Test

Table 3. Auxiliary Equipment Used during Test

Description	Manufacturer	Model no.	Serial no.	CAL. DUE DATE
Laptop	X220	Thinkpad	---	---

2.5 Lists of Test Instruments

Table 4. Lists of Test Instruments

Description	Manufacturer	Model no.	Equipment ID	Serial no.	cal interval (year)	cal. due date
Signal Generator	Rohde & Schwarz	SMB100A	68-4-48-14-001	108272	1	2021-6-21
Vector Signal Generator	Rohde & Schwarz	SMBV100A	68-4-48-18-001	262825	1	2021-6-21
Communication Synthetical Test Instrument	Rohde & Schwarz	CMW 270	68-4-48-18-003	101251	1	2021-6-21
Signal Analyzer	Rohde & Schwarz	FSV40	68-4-74-14-004	101030	1	2021-6-21
Vector Signal Generator	Rohde & Schwarz	SMU 200A	68-4-48-14-003	105324	1	2021-6-22
RF Switch Module	Rohde & Schwarz	OSP120/O SP-B157	68-4-93-14-003	101226/100851	1	2021-6-21
Power Splitter	Weinschel	1580	68-4-85-14-001	SC319	1	2021-7-16
10dB Attenuator	Weinschel	4M-10	68-4-81-14-003	43152	1	2021-6-21
10dB Attenuator	R&S	DNF	68-4-81-14-004	DNF-001	1	2021-6-21
10dB Attenuator	R&S	DNF	68-4-81-14-005	DNF-002	1	2021-6-21
10dB Attenuator	R&S	DNF	68-4-81-14-006	DNF-003	1	2021-6-21
10dB Attenuator	R&S	DNF	68-4-81-14-007	DNF-004	1	2021-6-21
Test software	Rohde & Schwarz	EMC32	68-4-48-14-003-A10	Version 10.38.00	N/A	N/A
Test software	Tonscend	System for BT/WIFI	68-4-74-14-006-A13	Version 2.5.77.04 18	N/A	N/A
Shielding Room	TDK	TS8997	68-4-90-19-003	----	1	2021-11-7

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

Test Item	Uncertainty
Uncertainty for Conducted RF test	RF Power Conducted: 1.16dB Frequency test involved: 0.6×10^{-7} or 1%
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3 Measurements Result

3.1 Antenna Power

3.1.1 Test condition

Channel:	Low, Middle, High
Test position:	Transmitting
Ambient temperature:	24.3°C
Relative humidity:	49.7%
Atmosphere Pressure:	101.3 KPa

3.1.2 Limit (ARIB STD-T66, Clause 3.2 (2)-a)

- The antenna power of a transmitting equipment (with a frequency band of 2,427 – 2,470.75 MHz, for spread spectrum systems using FH systems, hybrid systems of DS and FH, or hybrid systems of FH and OFDM) shall be such that the mean power within a bandwidth of 1 MHz is 3 mW or less in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal.
- The antenna power of a transmitting equipment using a spread spectrum system other than any of those in “a” and the OFDM system shall be such that the mean power within a bandwidth of 1 MHz is 10 mW or less in the case of modulation using a standard coding test signal with the same transmission rate as that of the modulation signal.

3.1.3 Test result

Mode	Frequency (MHz)	Voltage (V)	Result A (mW/MHz)	Limit (mW/MHz)
GFSK	2402	3.7DC	1.776	10
	2441	3.7DC	1.744	3
	2480	3.7DC	1.381	10
$\pi/4$ -DQPSK	2402	3.7DC	1.208	10
	2441	3.7DC	1.076	3
	2480	3.7DC	0.888	10
8-DQPSK	2402	3.7DC	1.185	10
	2441	3.7DC	1.088	3
	2480	3.7DC	0.919	10

3.1.4 Result

The equipment met the requirement of this clause.

3.2 Tolerances for Antenna Power

3.2.1 Test condition

Channel:	Low, Middle, High
Test position:	Transmitting
Ambient temperature:	24.3°C
Relative humidity:	49.7%
Atmosphere Pressure:	101.3 KPa

3.2.2 Limit (ARIB STD-T66, Clause 3.2 (3))

Upper and lower limits of the tolerance for antenna power shall be 20% and 80%, respectively. Note that they represent the tolerance for the maximum rated antenna power and that no upper and lower limits of the tolerance are regulated in the case of antenna power reduction for communications reasons.

3.2.3 Test result

Note: Deviation = (Output power – Declared Output Power) / Declared Output Power * 100%

Mode	Frequency (MHz)	Declared Output Power (mW/MHz)	Output Power (mW/MHz)	Tolerances (%)	Limit
GFSK	2402	3	1.776	-40.80	+20% to -80%
	2441	3	1.744	-41.88	+20% to -80%
	2480	3	1.381	-53.96	+20% to -80%
$\pi/4$ -DQPSK	2402	3	1.208	-59.72	+20% to -80%
	2441	3	1.076	-64.13	+20% to -80%
	2480	3	0.888	-70.39	+20% to -80%
8-DQPSK	2402	3	1.185	-60.51	+20% to -80%
	2441	3	1.088	-63.74	+20% to -80%
	2480	3	0.919	-69.37	+20% to -80%
Conclusion: PASS					

3.2.1 Result

The equipment met the requirement of this clause.

3.3 Frequency Tolerance

3.3.1 Test condition

Channel:	Low, Middle, High
Test position:	Transmitting
Ambient temperature:	24.3°C
Relative humidity:	49.7%
Atmosphere Pressure:	101.3 KPa

3.3.2 Limit (ARIB STD-T66, Clause 3.2 (4))

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

3.3.3 Test Result

Test Frequency (MHz)	Voltage (V)	Result (MHz)	Tolerance (kHz)	Tolerance (ppm)	Limit (ppm)
2402	3.7DC	2401.997	-3	-1.24896	± 50
2441	3.7DC	2440.997	-3	-1.22900	± 50
2480	3.7DC	2479.997	-3	-1.20968	± 50

3.3.4 Result

The equipment met the requirement of this clause.

3.4 Occupied Frequency Bandwidth

3.4.1 Test condition

Channel:	Low, Middle, High
Test position:	Transmitting
Ambient temperature:	24.3°C
Relative humidity:	49.7%
Atmosphere Pressure:	101.3 KPa

3.4.2 Limit (ARIB STD-T66, Clause 3.2 (7))

Permissible value for occupied bandwidth using the FH system, a hybrid system combining DS and FH systems, or a hybrid system combining FH and OFDM systems shall be 83.5 MHz or less, while necessary bandwidth (minimum occupied bandwidth sufficient to ensure information transmission of required quality at a required transmission rate for the system used under specified conditions for a given emission type) using a system other than any of the above shall be 26 MHz or less.

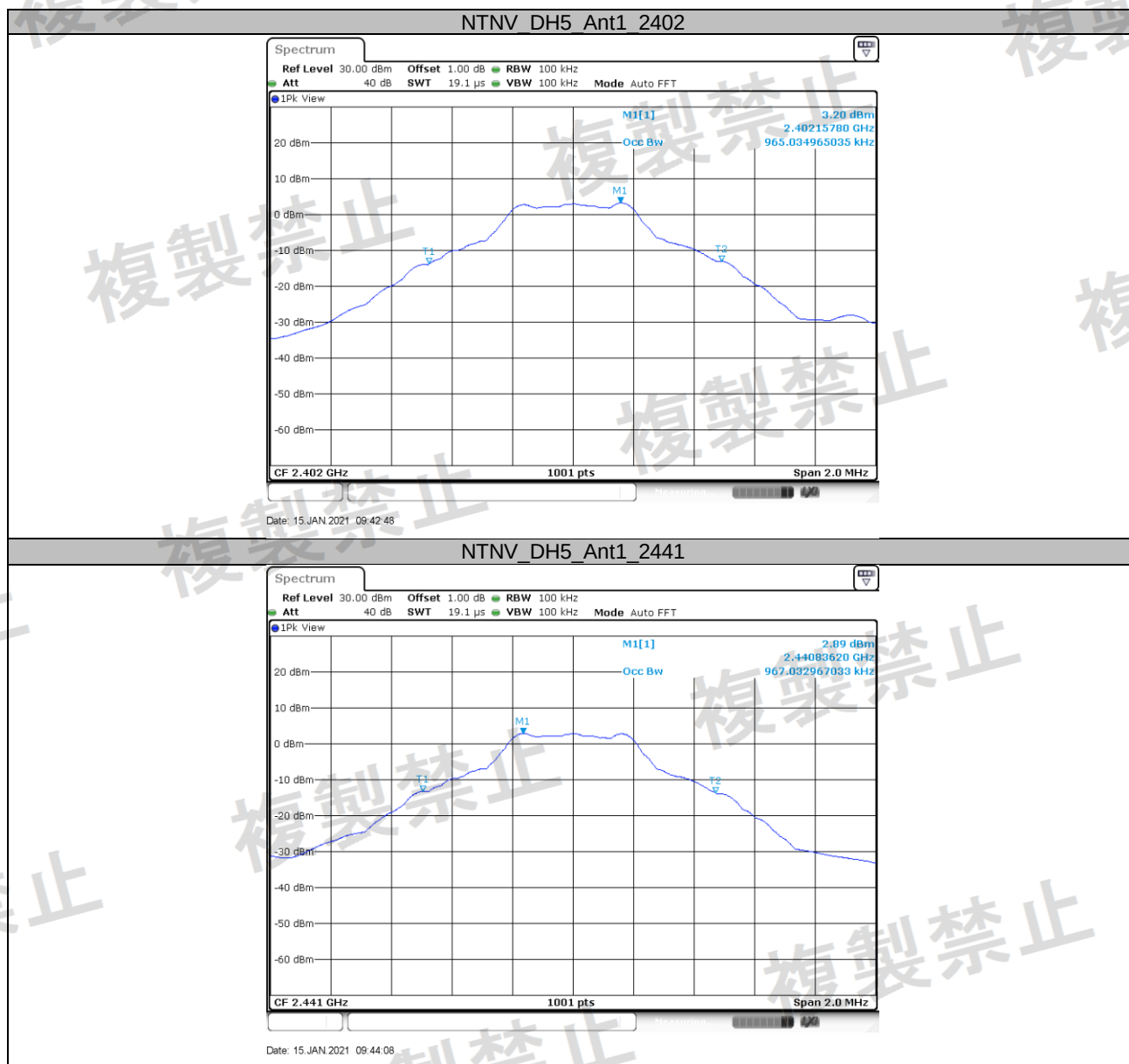
3.4.3 Test Result

Mode	Test Frequency (MHz)	Result (MHz)	Limit (MHz)	Result Hopping Off (MHz)
GFSK	2402	78.078	≤83.5	0.965
	2441		≤83.5	0.967
	2480		≤83.5	0.967

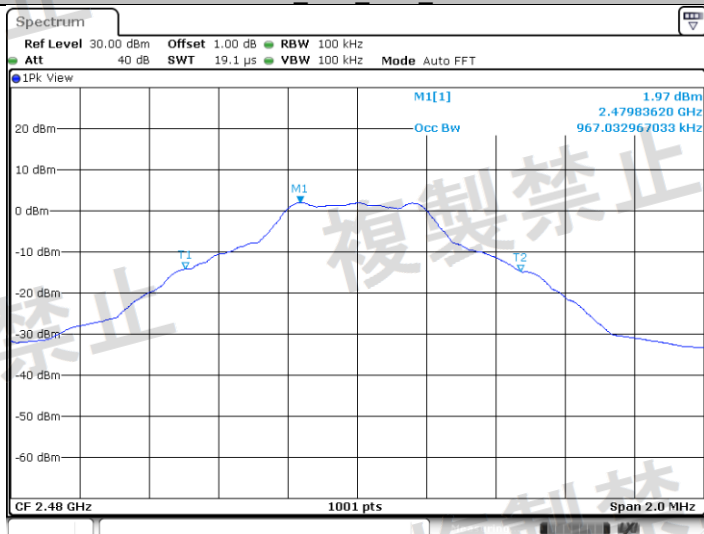
Mode	Test Frequency (MHz)	Result (MHz)	Limit (MHz)	Result Hopping Off (MHz)
Π/4-DQPSK	2402	78.161	≤83.5	1.199
	2441		≤83.5	1.201
	2480		≤83.5	1.201

Mode	Test Frequency (MHz)	Result (MHz)	Limit (MHz)	Result Hopping Off (MHz)
8DPSK	2402	78.078	≤83.5	1.217
	2441		≤83.5	1.215
	2480		≤83.5	1.213

3.4.4 Test Graphs

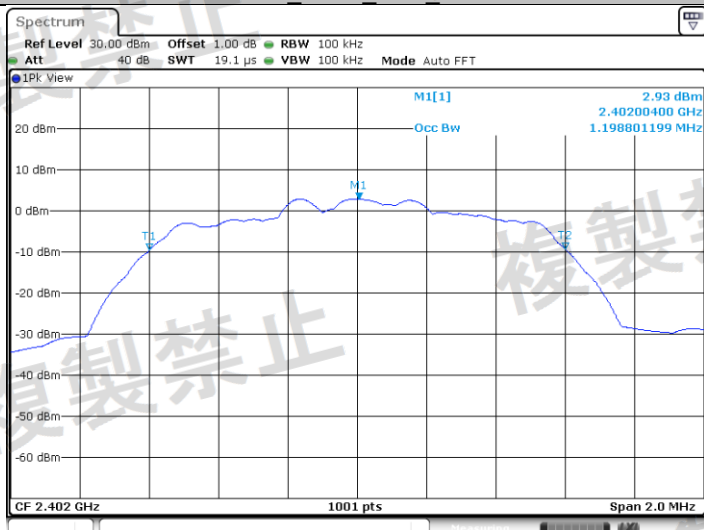


NTNV_DH5_Ant1_2480



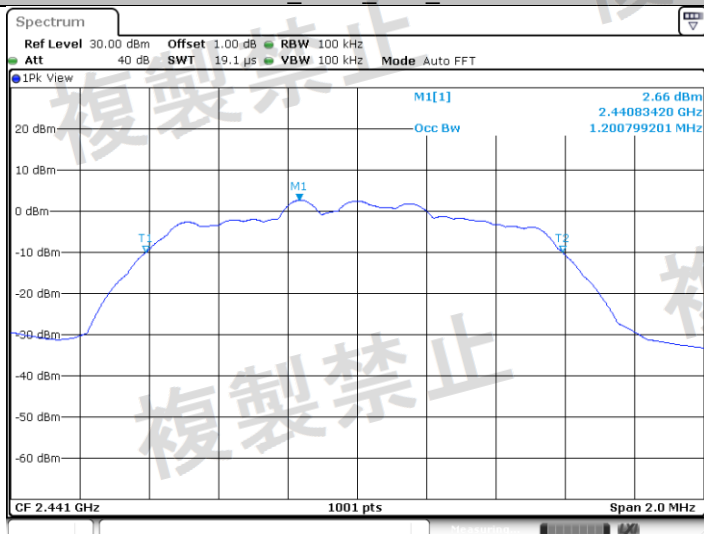
Date: 15 JAN 2021 09:45:22

NTNV_2DH5_Ant1_2402



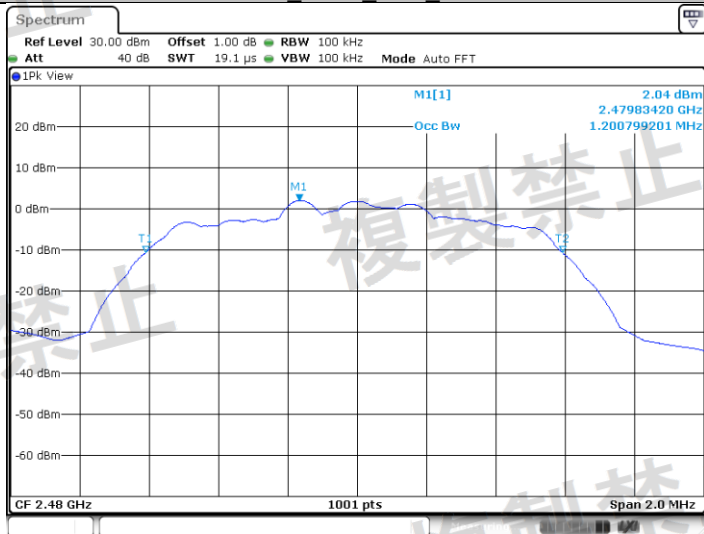
Date: 15 JAN 2021 09:49:19

NTNV_2DH5_Ant1_2441



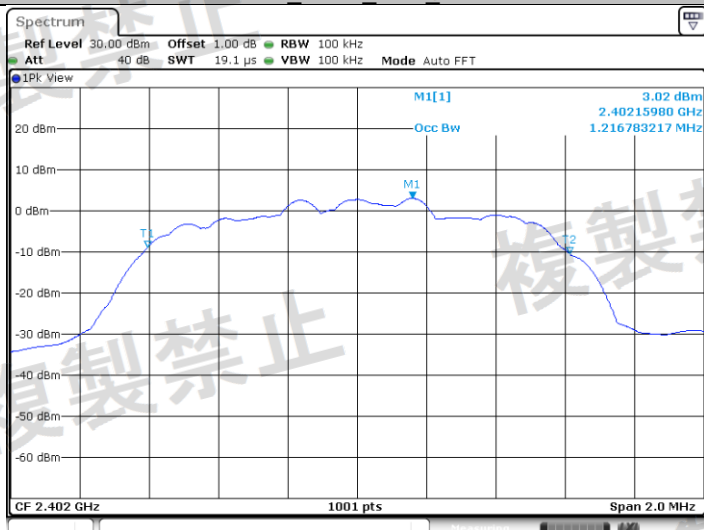
Date: 15 JAN 2021 09:55:14

NTNV_2DH5_Ant1_2480



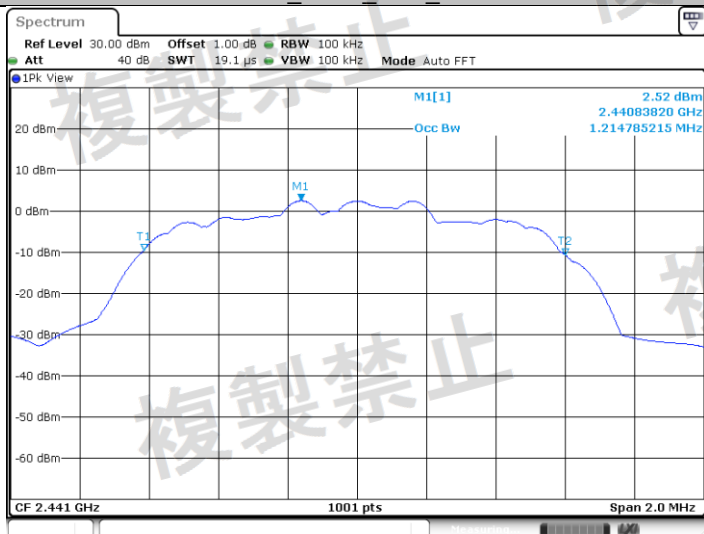
Date: 15 JAN 2021 09:56:55

NTNV_3DH5_Ant1_2402

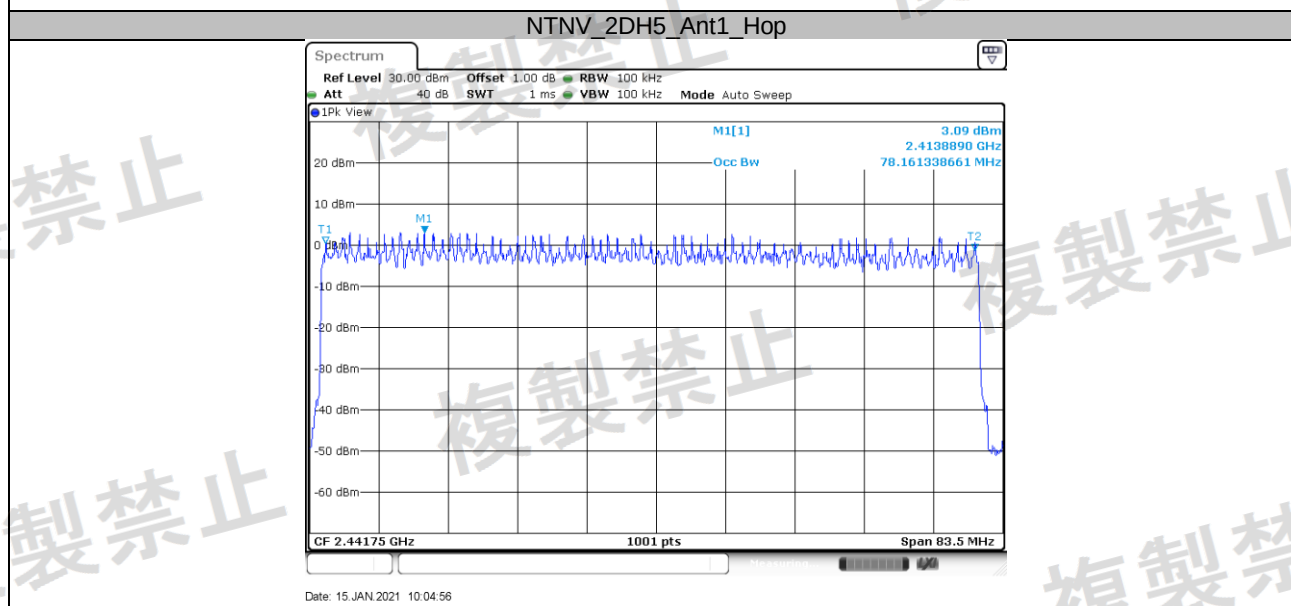
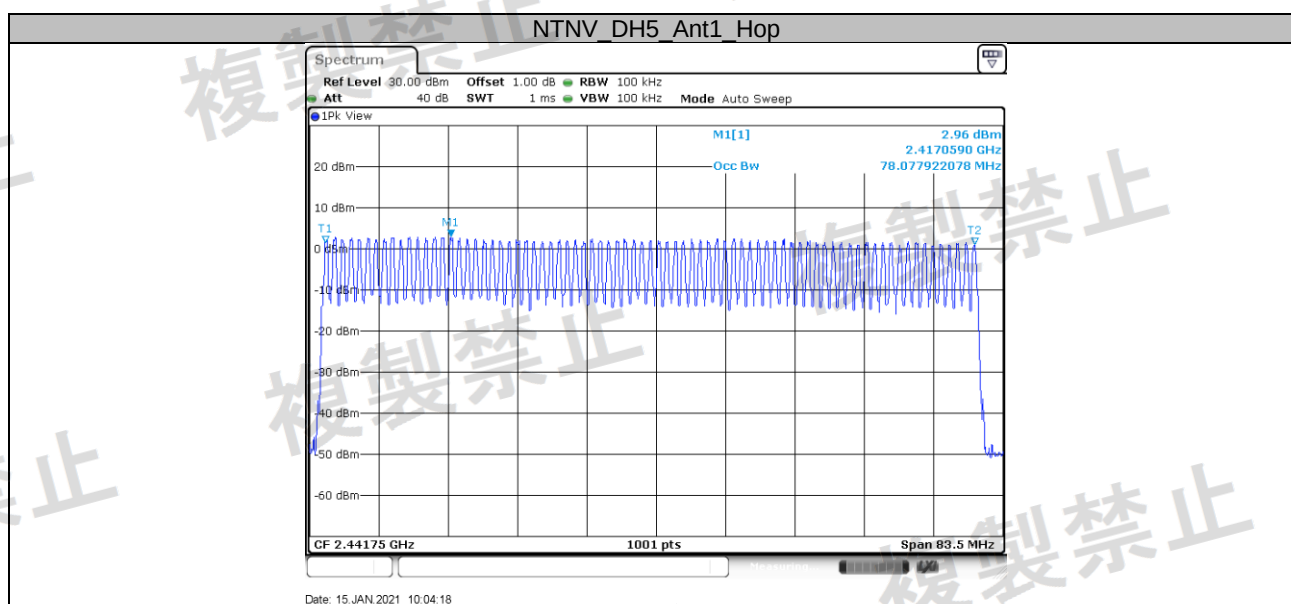
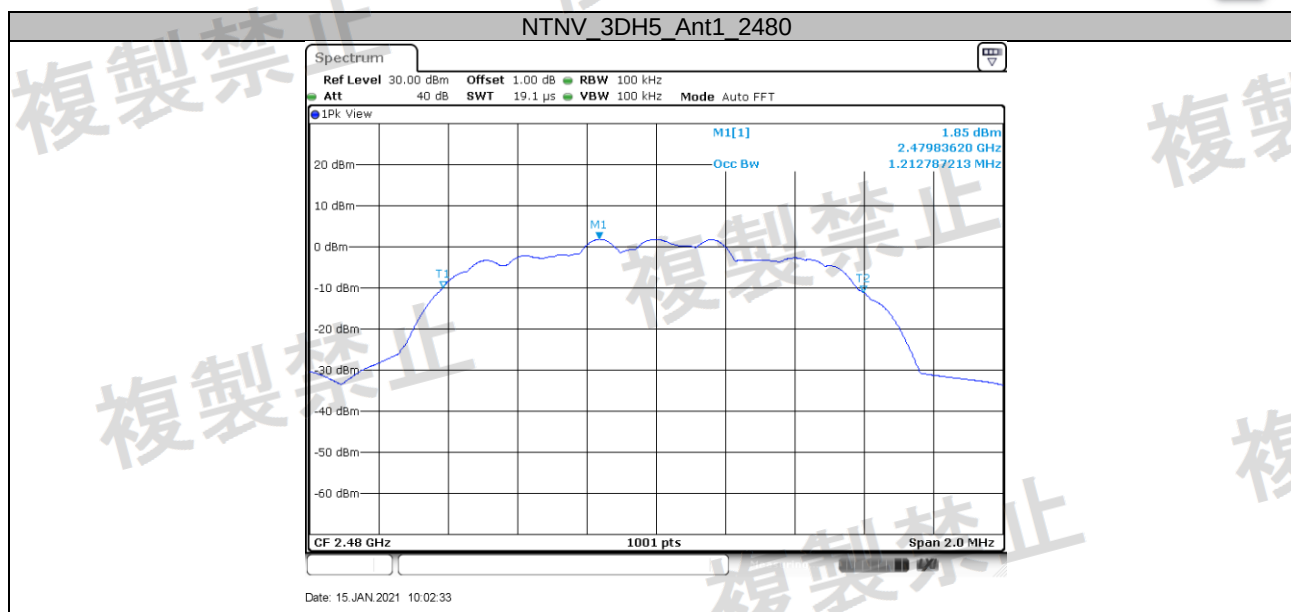


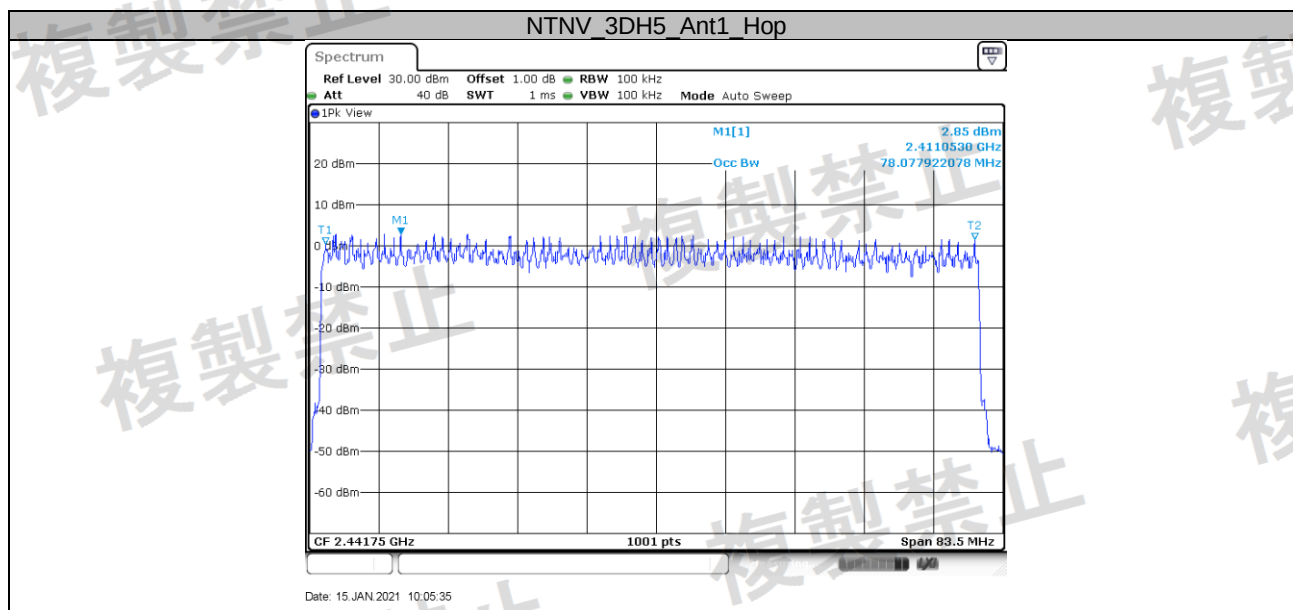
Date: 15 JAN 2021 09:59:19

NTNV_3DH5_Ant1_2441



Date: 15 JAN 2021 10:00:39





3.4.5 Result

The equipment met the requirement of this clause.

3.5 Spread Bandwidth & Process gain

3.5.1 Test condition

Channel:	Low, Middle, High
Test position:	Transmitting
Ambient temperature:	24.3°C
Relative humidity:	49.7%
Atmosphere Pressure:	101.3 KPa

3.5.2 Limit (ARIB STD-T66, Clause 3.2 (8))

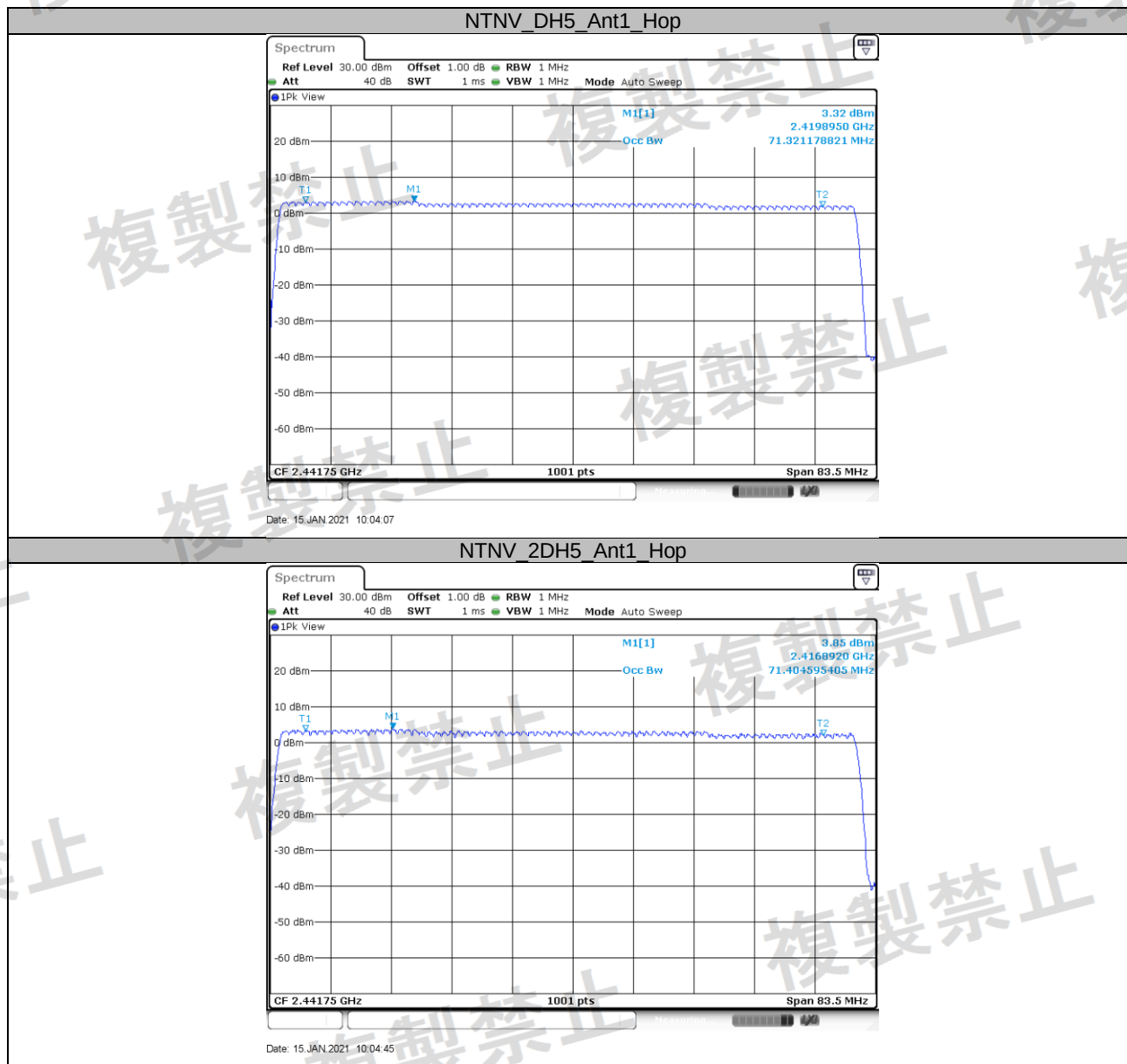
In spread spectrum systems, spread bandwidth (which refers to a frequency bandwidth with an upper limit and lower limit such that each of the mean powers radiated above the upper frequency limit and below the lower frequency limit is equal to 5 % of the total mean power radiated; this also applies hereafter) shall be 500 kHz or more

Process gain (value obtained by dividing the spread bandwidth by a frequency equal to the transmission rate of the modulation signal; this also applies hereafter) in the spread spectrum system shall be 5 or more.

3.5.3 Test Result

Modulation	Spread Bandwidth (MHz)	Limit (kHz)	Symbol rate (Mbps)	Result	Limit
GFSK	71.321	>500	1	71.32	≥5
Π/4-DQPSK	71.405	>500	1.7	42.00	≥5
8DPSK	71.321	>500	2.7	26.42	≥5

3.5.4 Test Graphs





The equipment met the requirement of this clause.

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Shenzhen City, 518052, P. R. China Tel. +86 755 8828 6998, Fax: +86 755 8828 5299

3.6 Dwell Time

3.6.1 Test condition

Channel:	Low, Middle, High
Test position:	Transmitting
Ambient temperature:	24.3°C
Relative humidity:	49.7%
Atmosphere Pressure:	101.3 KPa

3.6.2 Limit (ARIB STD-T66, Clause 3.2 (11))

Frequency dwell time (time during which radio waves continue to be emitted at a specified frequency) of a transmitting equipment using the FH system shall be 0.4 seconds or less.

3.6.3 Test Result

The Dwell Time = Burst Width * Total Hops. The detailed calculations are showed as follows:

The observation time for dwell time calculation: 0.4 [s] * hopping number = 0.4 [s] * 79 = 31.6 [s];

The burst width, which is directly measured, refers to the duration on one channel hop.

The maximum number of hopping channels in 31.6s for

$$DH5 = (31.6s/5s) * 17 = 107.44$$

$$2DH5 = (31.6s/5s) * 17 = 107.44$$

$$3DH5 = (31.6s/5s) * 17 = 107.44$$

Test Result (Packet DH5, 2DH5, 3DH5 the worse result was reported to show compliance):

Channel	Modulation	Packet	Dwell time [ms]	Number of chirps	Accumulated Dwell time (ms)	Limit (ms)
2402	GFSK	DH5	2.89	107.44	310.50	400
2441		DH5	2.89	107.44	310.50	400
2480		DH5	2.89	107.44	310.50	400
2402	π/4-DQPSK	2DH5	2.89	107.44	310.50	400
2441		2DH5	2.89	107.44	310.50	400
2480		2DH5	2.89	107.44	310.50	400
2402	8DPSK	3DH5	2.89	107.44	310.50	400
2441		3DH5	2.89	107.44	310.50	400
2480		3DH5	2.89	107.44	310.50	400

3.6.4 Result

The equipment met the requirement of this clause.

3.7 Interference prevention function

3.7.1 Test condition

Channel:	Low, Middle, High
Test position:	Transmitting
Ambient temperature:	24.3°C
Relative humidity:	49.7%
Atmosphere Pressure:	101.3 KPa

3.7.2 Limit

Item	Limits
Identification Code	≥48 bits

Measured Result:

Test Conditions	Operation Frequency		
	2402 MHz	2441 MHz	2480 MHz
Normal Voltage	48	48	48

3.7.3 Result

The equipment met the requirement of this clause.

3.8 Transmitter Spurious Emissions (Conducted) (For transmitter)

3.8.1 Test condition

Channel:	Low, Middle, High
Test position:	Transmitting
Ambient temperature:	24.3°C
Relative humidity:	49.7%
Atmosphere Pressure:	101.3 KPa

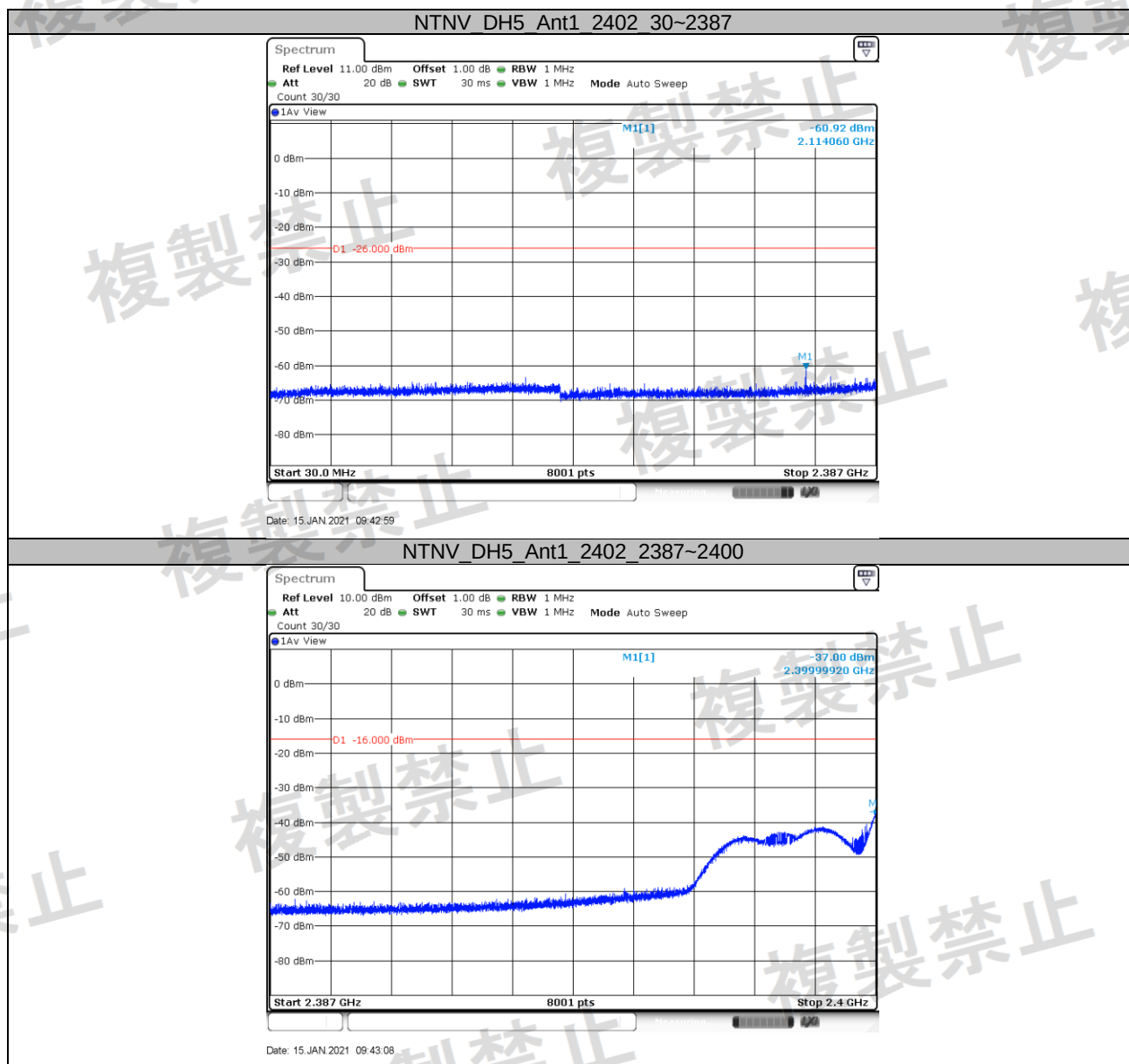
3.8.2 Limit (ARIB STD-T66, Clause 3.2 (6))

Permissible mean power of spurious emission of each frequency supplied to a feeder, that is, mean power of spurious emission in the 1 MHz bandwidth at frequency f other than frequency band used shall be as follows: a. $2,387\text{MHz} \leq f \leq 2,400\text{MHz}$ and $2,483.35\text{MHz} < f \leq 2,496.5\text{MHz}$ 25 μW or less
b. $2,387\text{MHz} > f$ and $2,496.5\text{MHz} < f$ 2.5 μW or less

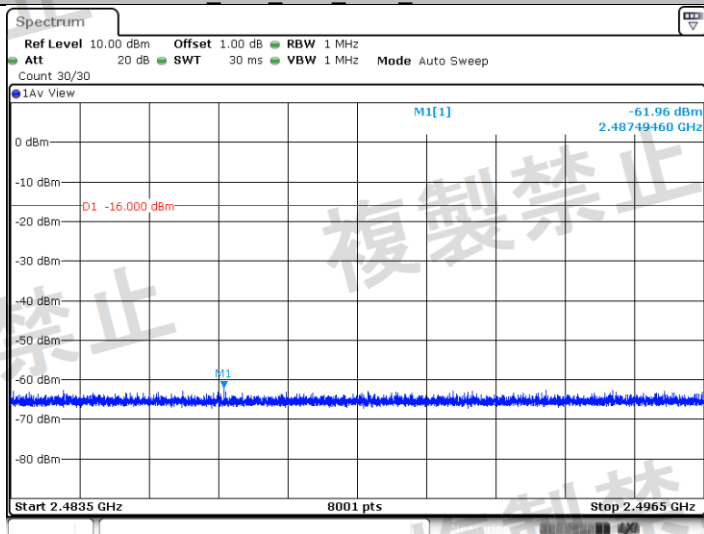
3.8.3 Test Result

TestCondition	TestMode	Antenna	Channel (MHz)	Freq.Range (MHz)	Result (dBm)	Limit (dBm)	Verdict
NTNV	DH5	Ant1	2402	30~2387	-60.92	<=-26	PASS
				2387~2400	-37	<=-16	PASS
				2483.5~2496.5	-61.96	<=-16	PASS
				2496.5~13000	-27.67	<=-26	PASS
			2441	30~2387	-60.86	<=-26	PASS
				2387~2400	-63.46	<=-16	PASS
				2483.5~2496.5	-62.42	<=-16	PASS
				2496.5~13000	-30.43	<=-26	PASS
			2480	30~2387	-62.42	<=-26	PASS
				2387~2400	-63.39	<=-16	PASS
				2483.5~2496.5	-48.37	<=-16	PASS
				2496.5~13000	-34.37	<=-26	PASS
	2DH5	Ant1	2402	30~2387	-62.46	<=-26	PASS
				2387~2400	-29.08	<=-16	PASS
				2483.5~2496.5	-61.92	<=-16	PASS
				2496.5~13000	-28.86	<=-26	PASS
			2441	30~2387	-62.58	<=-26	PASS
				2387~2400	-62.86	<=-16	PASS
				2483.5~2496.5	-62.71	<=-16	PASS
				2496.5~13000	-34.51	<=-26	PASS
			2480	30~2387	-63.74	<=-26	PASS
				2387~2400	-63.38	<=-16	PASS
				2483.5~2496.5	-48.66	<=-16	PASS
				2496.5~13000	-38.53	<=-26	PASS
	3DH5	Ant1	2402	30~2387	-58.35	<=-26	PASS
				2387~2400	-29.38	<=-16	PASS
				2483.5~2496.5	-62.73	<=-16	PASS
				2496.5~13000	-32.13	<=-26	PASS
			2441	30~2387	-57.6	<=-26	PASS
				2387~2400	-63	<=-16	PASS
				2483.5~2496.5	-62.8	<=-16	PASS
				2496.5~13000	-34.03	<=-26	PASS
			2480	30~2387	-56.14	<=-26	PASS
				2387~2400	-62.89	<=-16	PASS
				2483.5~2496.5	-49.34	<=-16	PASS
				2496.5~13000	-37.91	<=-26	PASS

3.8.4 Test Graphs

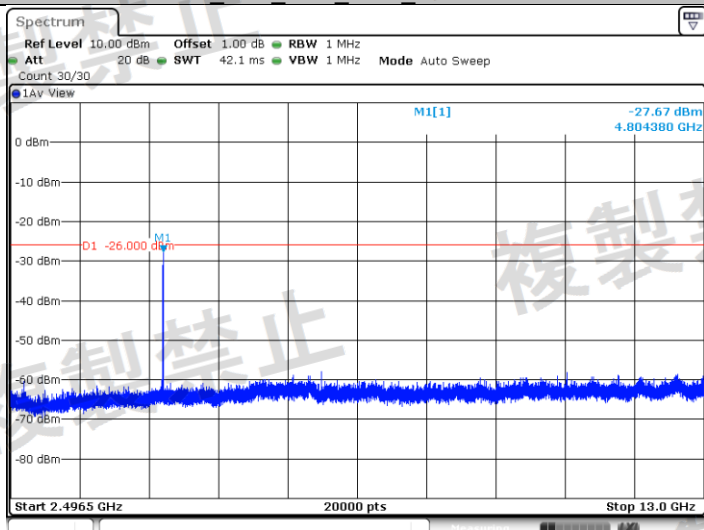


NTNV_DH5_Ant1_2402_2483.5~2496.5



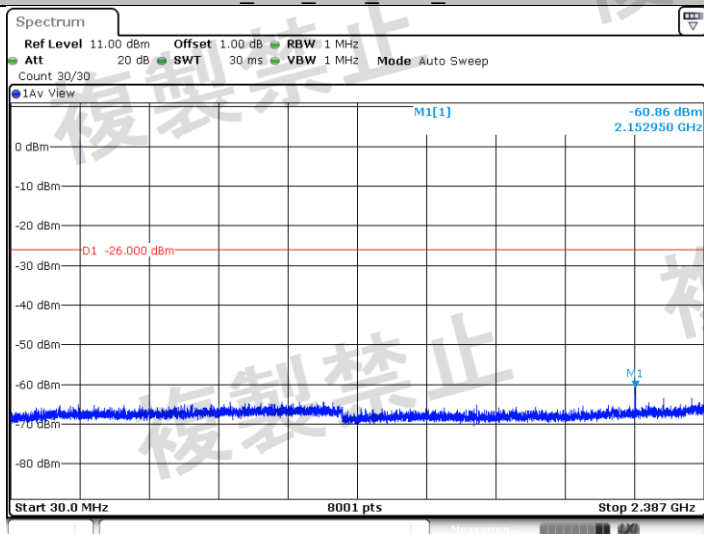
Date: 15 JAN 2021 09:43:20

NTNV_DH5_Ant1_2402_2496.5~13000



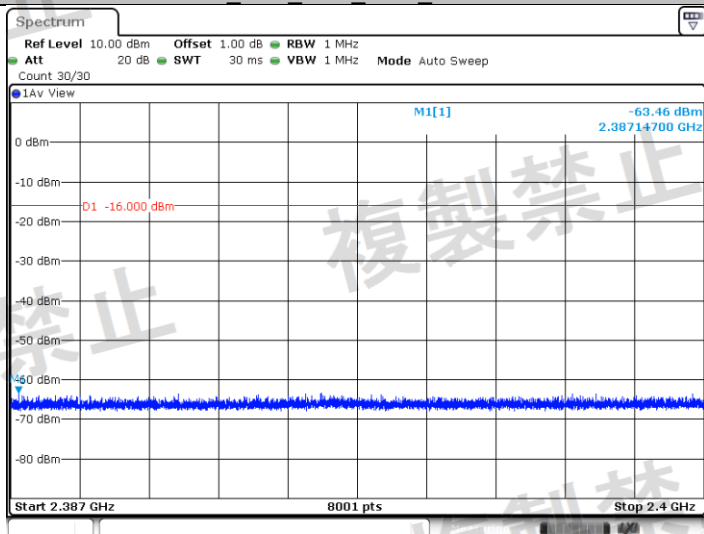
Date: 15 JAN 2021 09:43:30

NTNV_DH5_Ant1_2441_30~2387



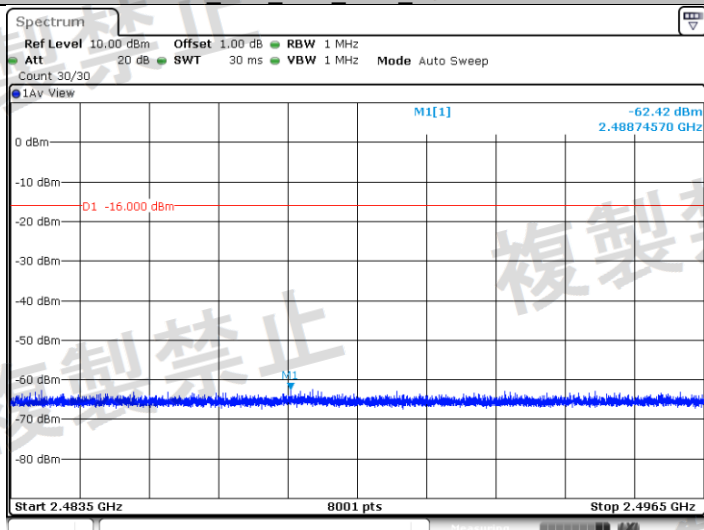
Date: 15 JAN 2021 09:44:19

NTNV_DH5_Ant1_2441_2387~2400



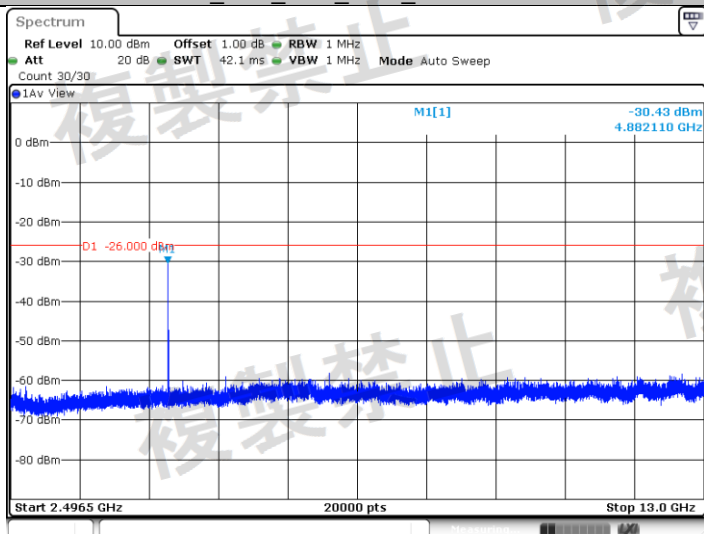
Date: 15 JAN 2021 09:44:29

NTNV_DH5_Ant1_2441_2483.5~2496.5

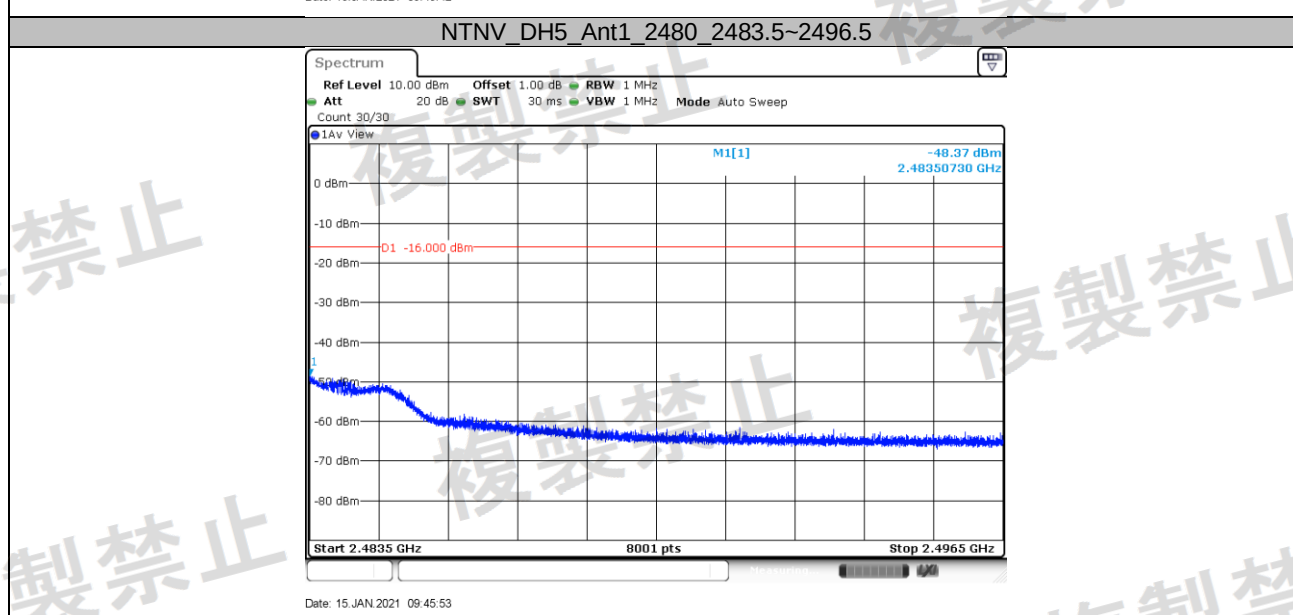
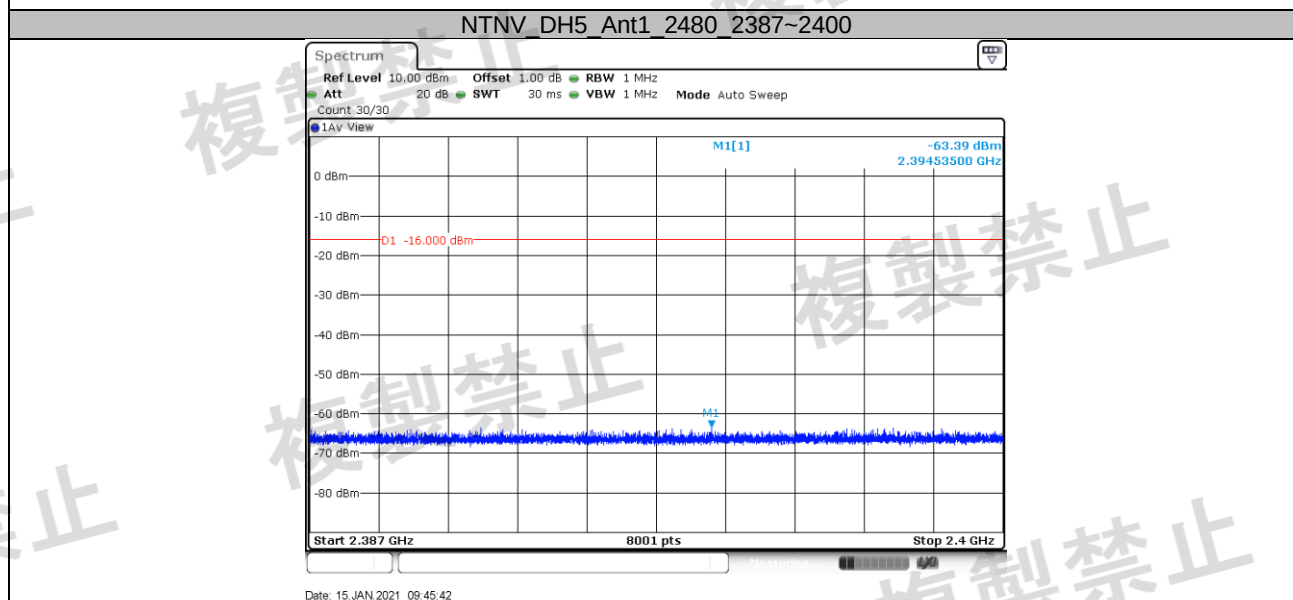
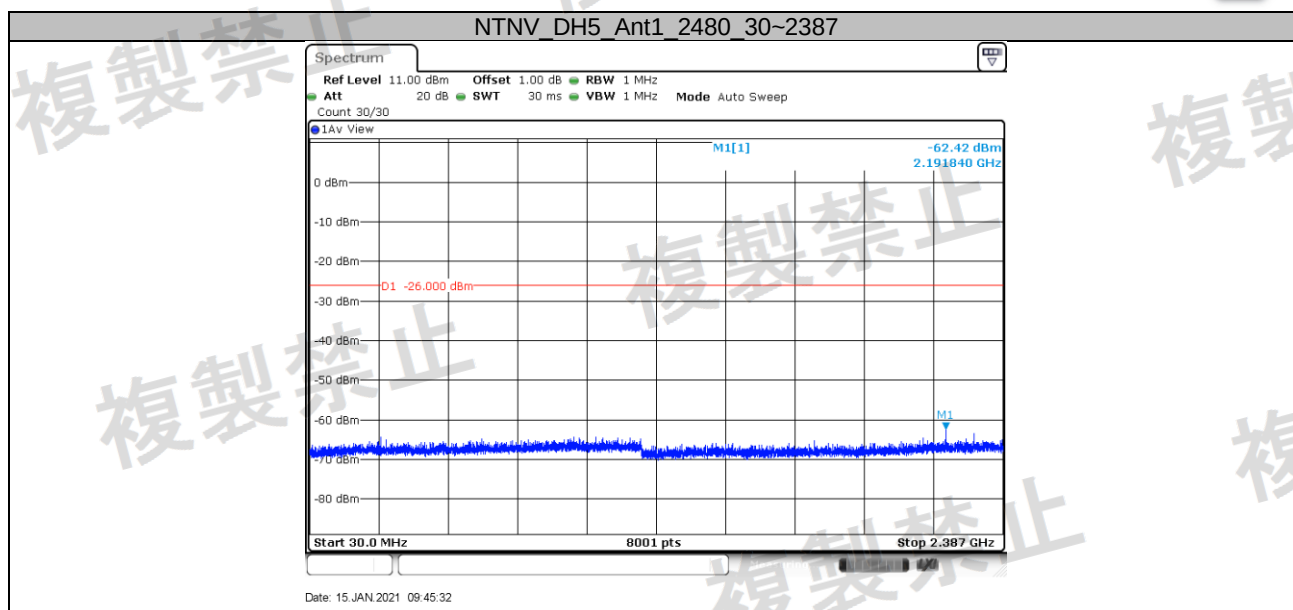


Date: 15 JAN 2021 09:44:40

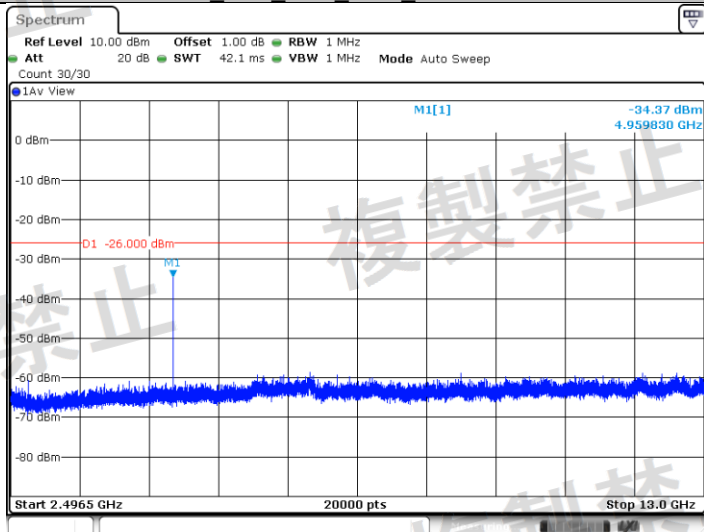
NTNV_DH5_Ant1_2441_2496.5~13000



Date: 15 JAN 2021 09:44:50

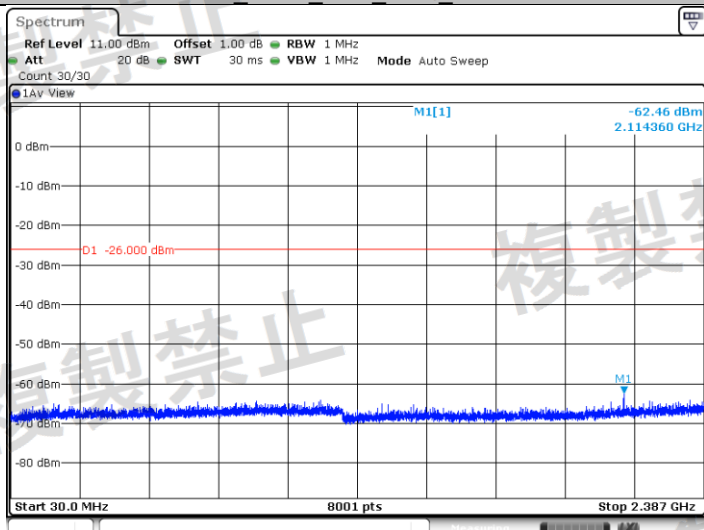


NTNV_DH5_Ant1_2480_2496.5~13000



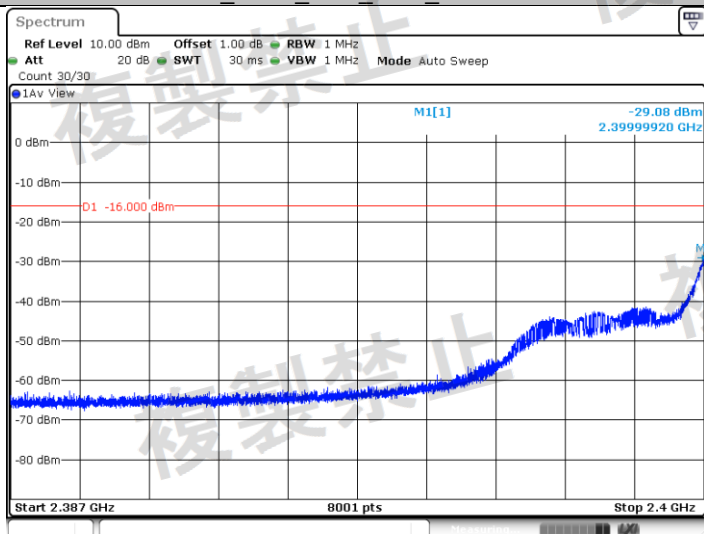
Date: 15 JAN 2021 09:46:03

NTNV_2DH5_Ant1_2402_30~2387



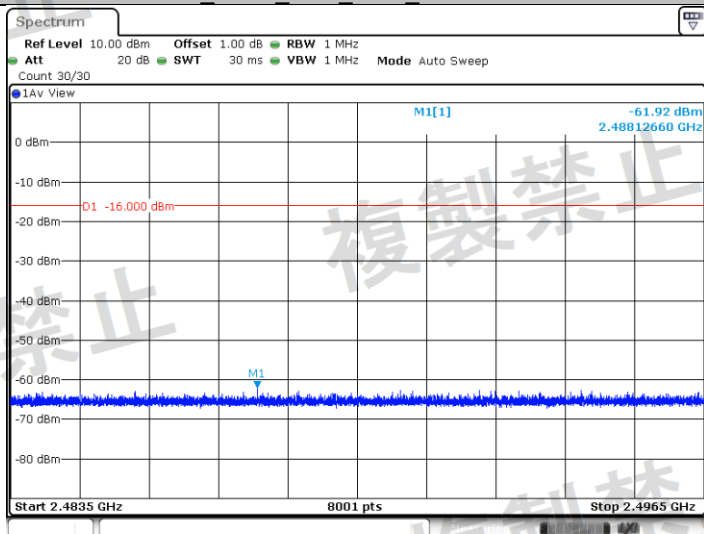
Date: 15 JAN 2021 09:49:30

NTNV_2DH5_Ant1_2402_2387~2400



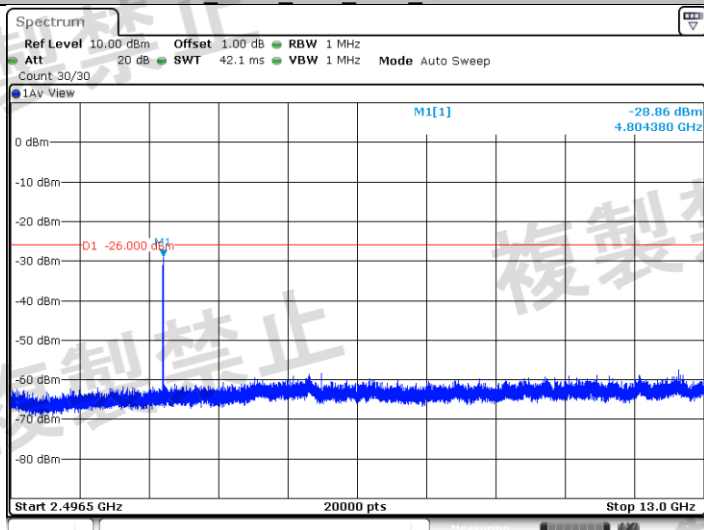
Date: 15 JAN 2021 09:49:39

NTNV_2DH5_Ant1_2402_2483.5~2496.5



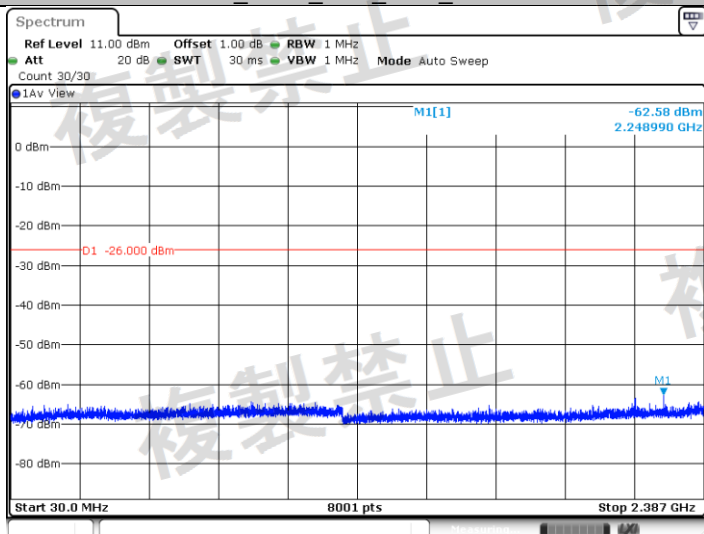
Date: 15 JAN 2021 09:49:51

NTNV_2DH5_Ant1_2402_2496.5~13000



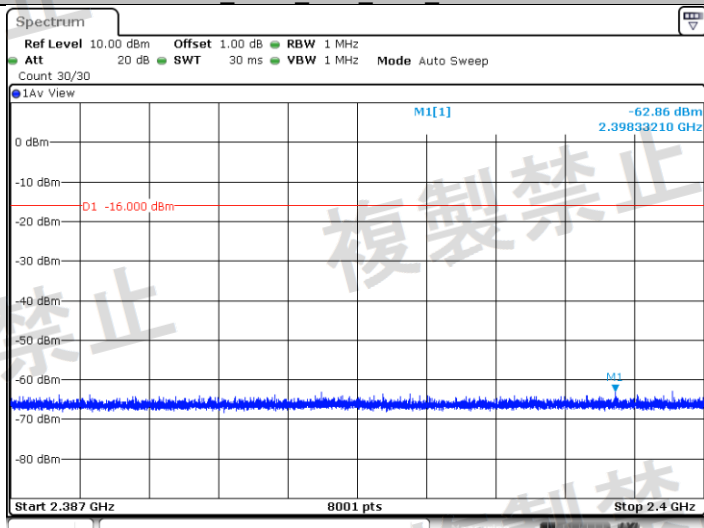
Date: 15 JAN 2021 09:50:01

NTNV_2DH5_Ant1_2441_30~2387



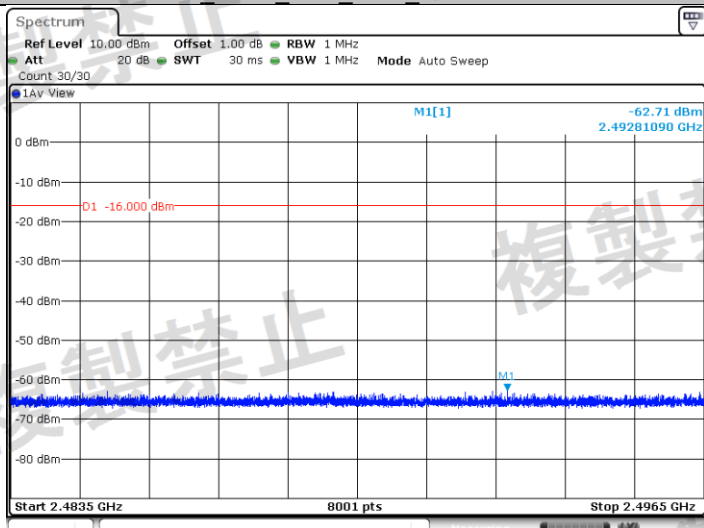
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NTNV_2DH5_Ant1_2441_2387~2400



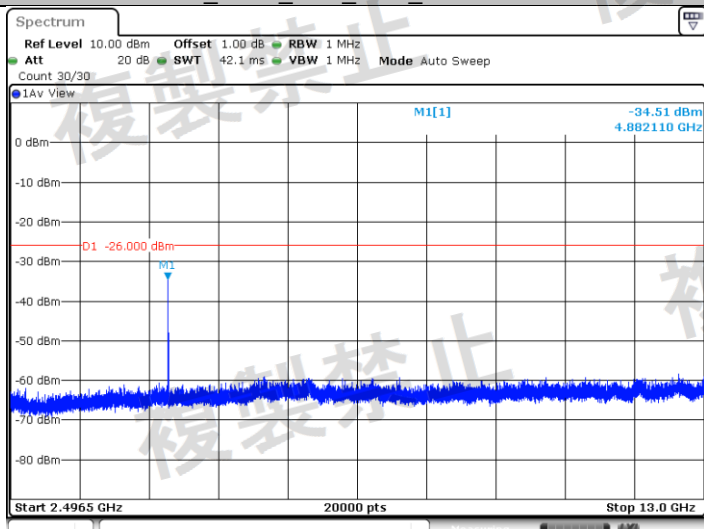
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NTNV_2DH5_Ant1_2441_2483.5~2496.5



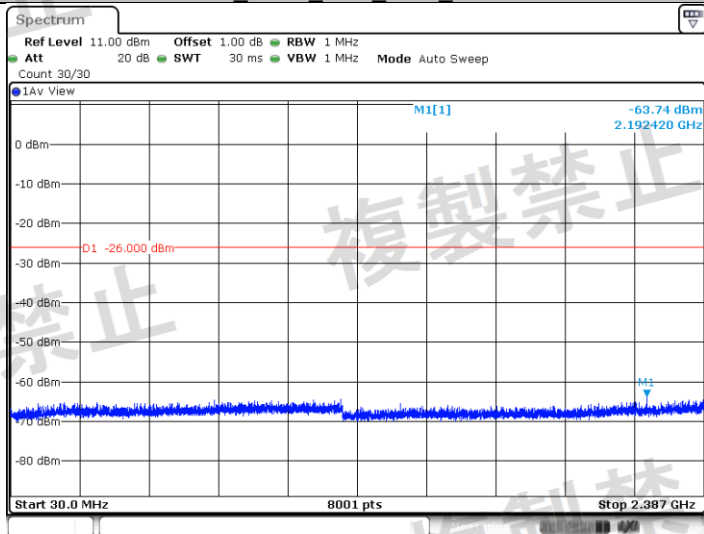
Date: 15 JAN 2021 09:55:45

NTNV_2DH5_Ant1_2441_2496.5~13000



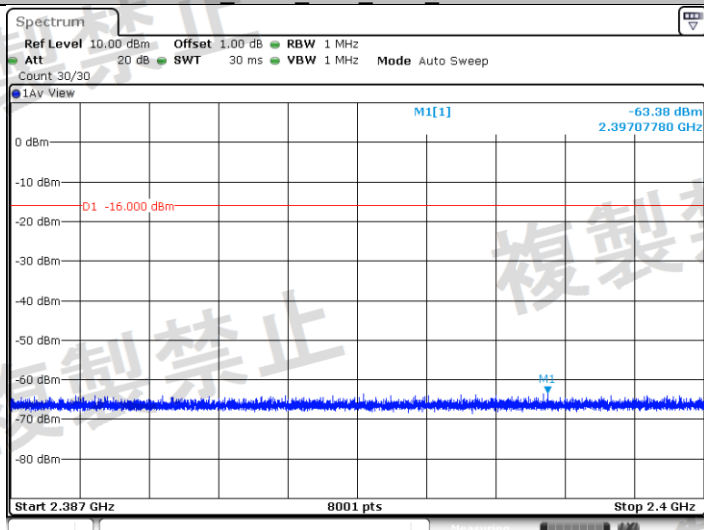
Date: 15 JAN 2021 09:55:55

NTNV_2DH5_Ant1_2480_30~2387



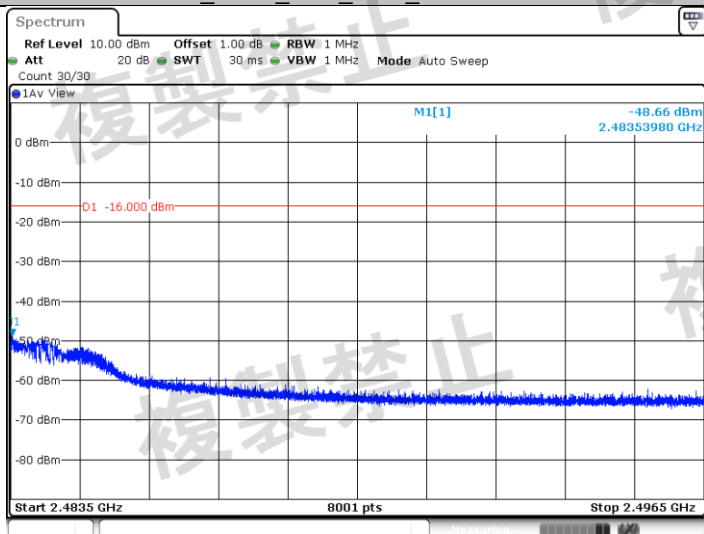
Date: 15 JAN 2021 09:57:05

NTNV_2DH5_Ant1_2480_2387~2400



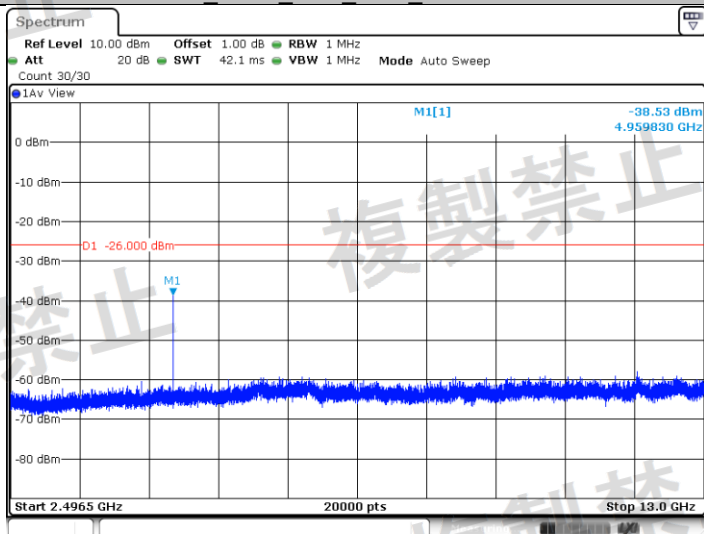
Date: 15 JAN 2021 09:57:15

NTNV_2DH5_Ant1_2480_2483.5~2496.5



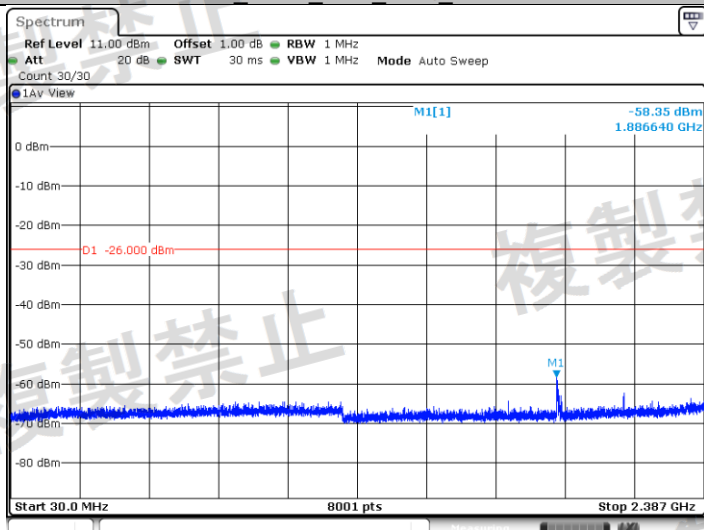
Date: 15 JAN 2021 09:57:26

NTNV_2DH5_Ant1_2480_2496.5~13000



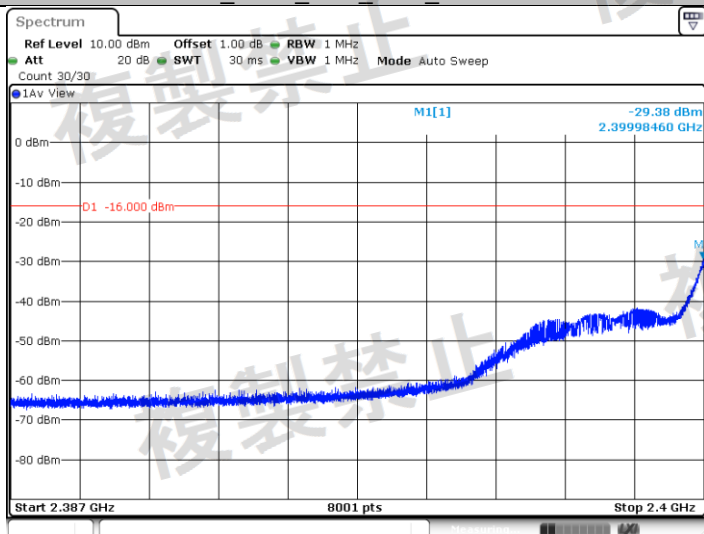
Date: 15 JAN 2021 09:57:36

NTNV_3DH5_Ant1_2402_30~2387

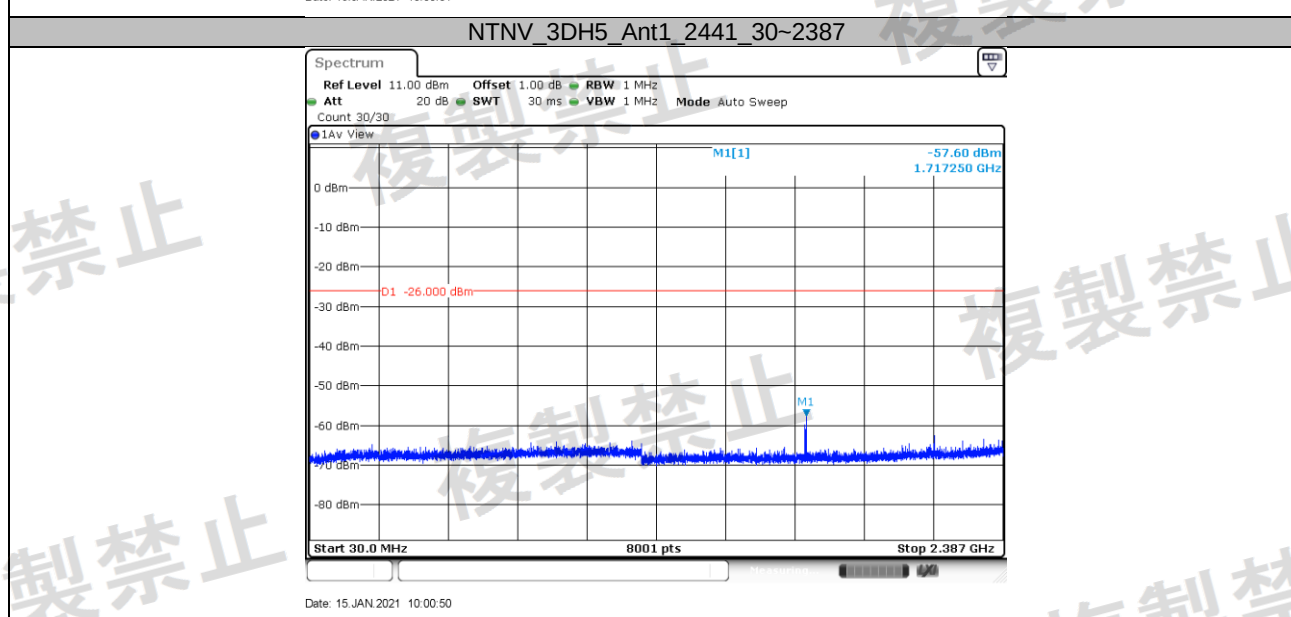
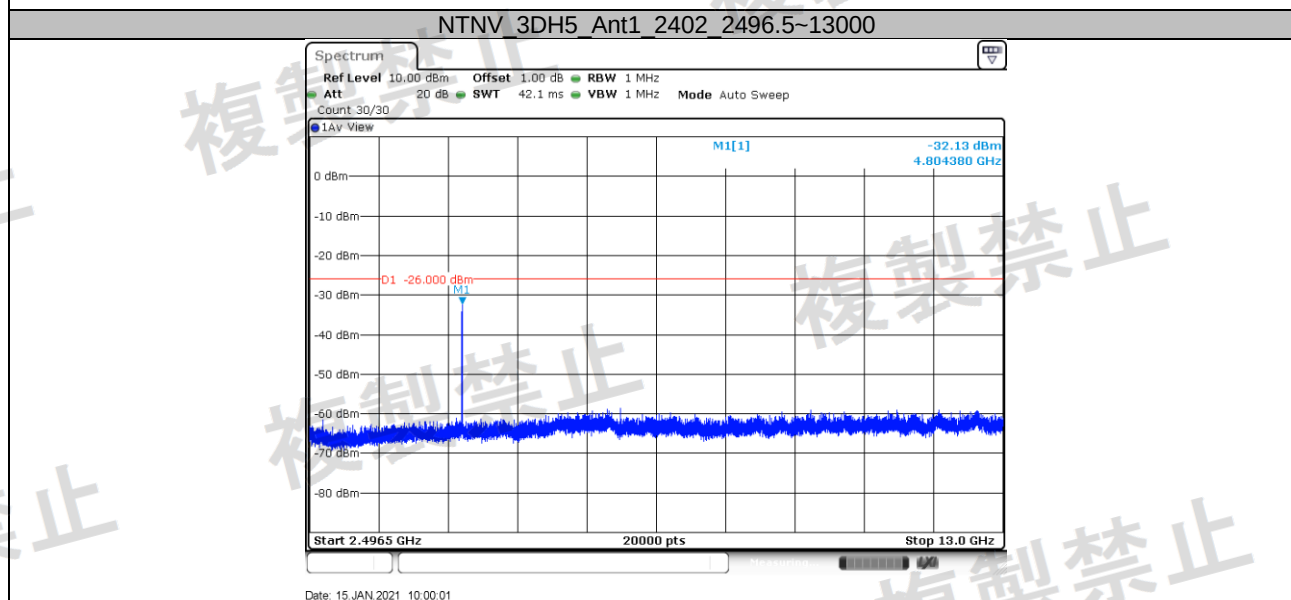
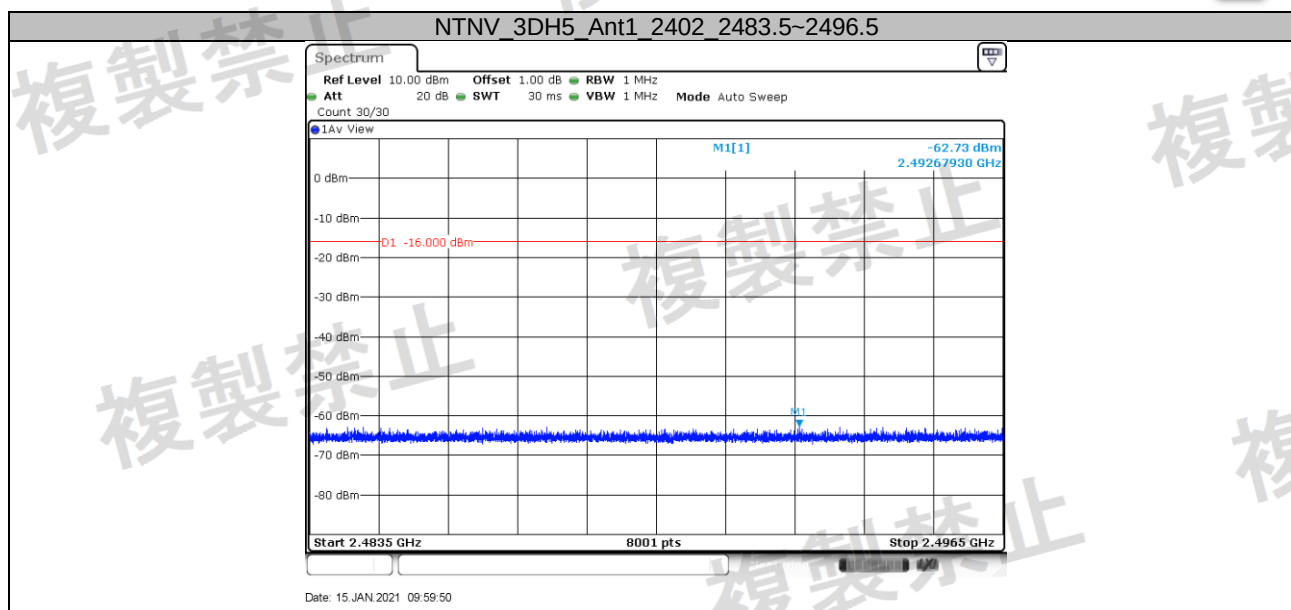


Date: 15 JAN 2021 09:59:30

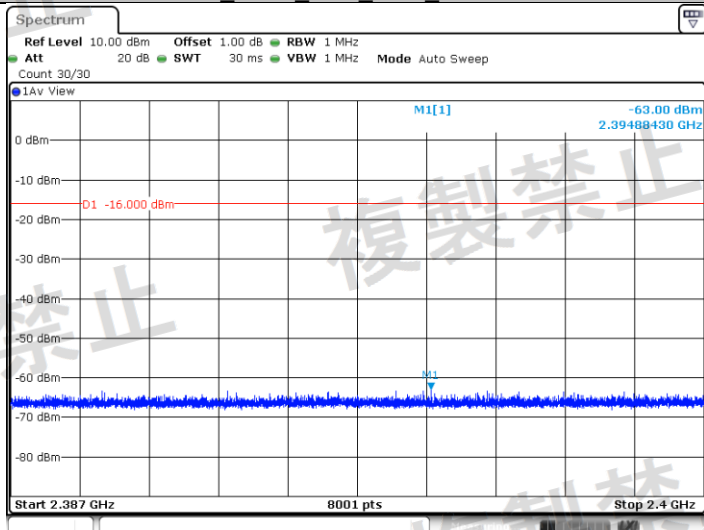
NTNV_3DH5_Ant1_2402_2387~2400



Date: 15 JAN 2021 09:59:39

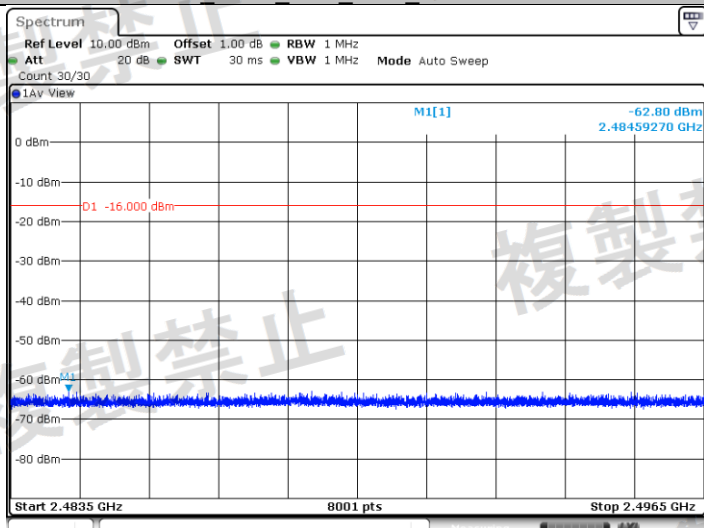


NTNV_3DH5_Ant1_2441_2387~2400



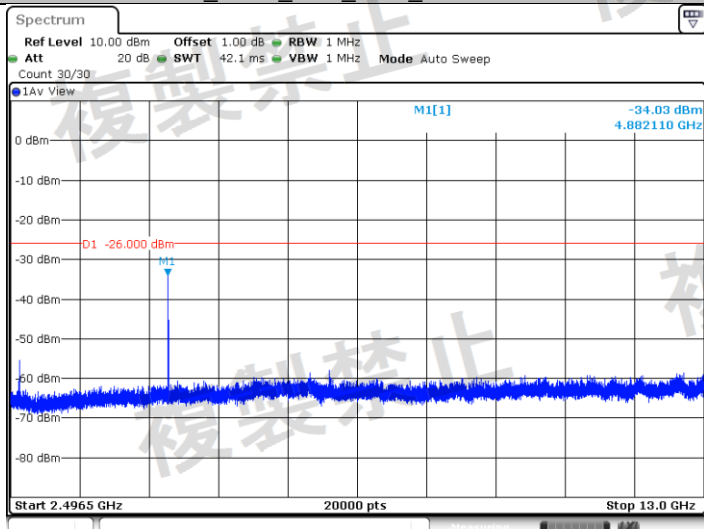
Date: 15 JAN 2021 10:00:59

NTNV_3DH5_Ant1_2441_2483.5~2496.5

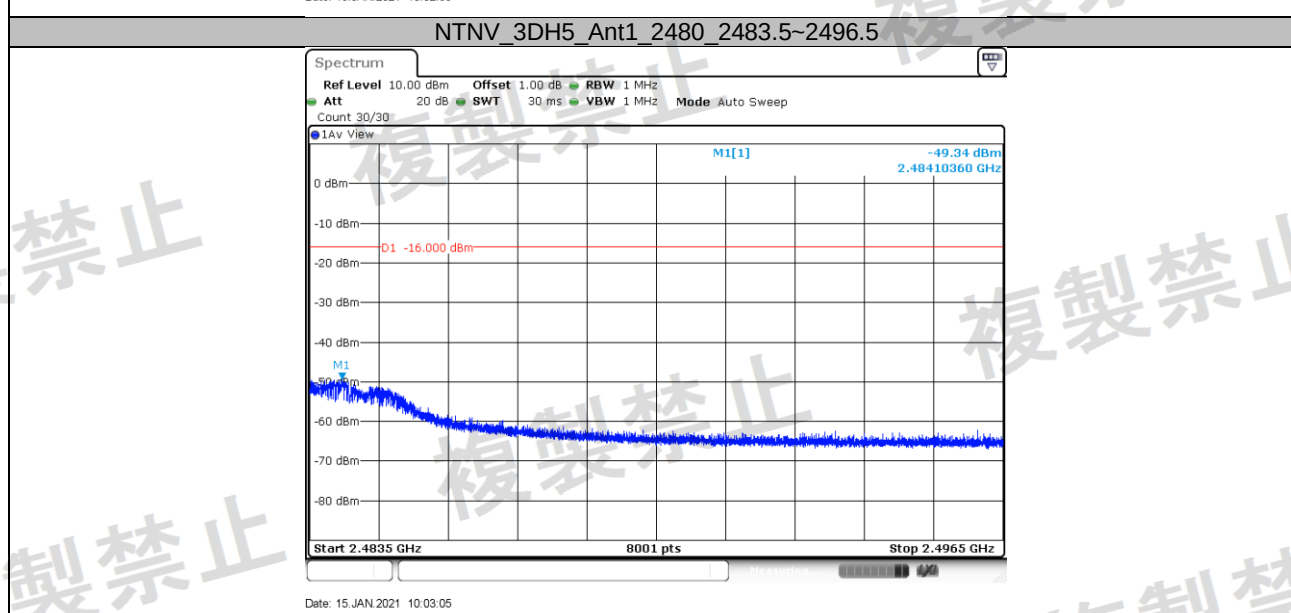
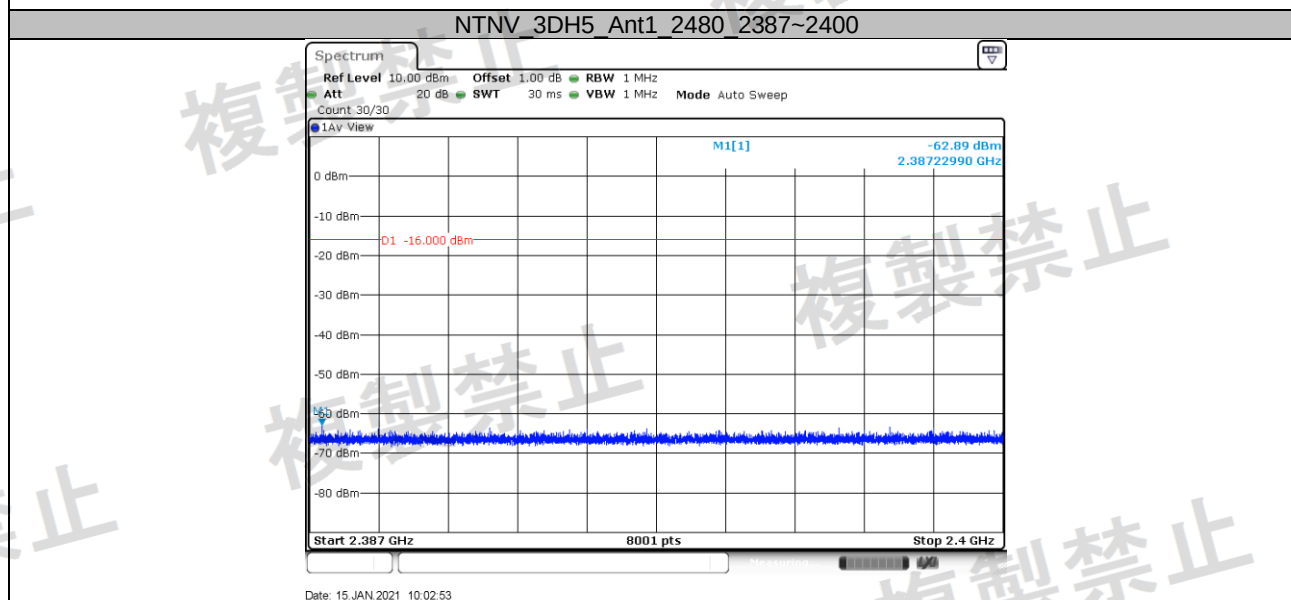
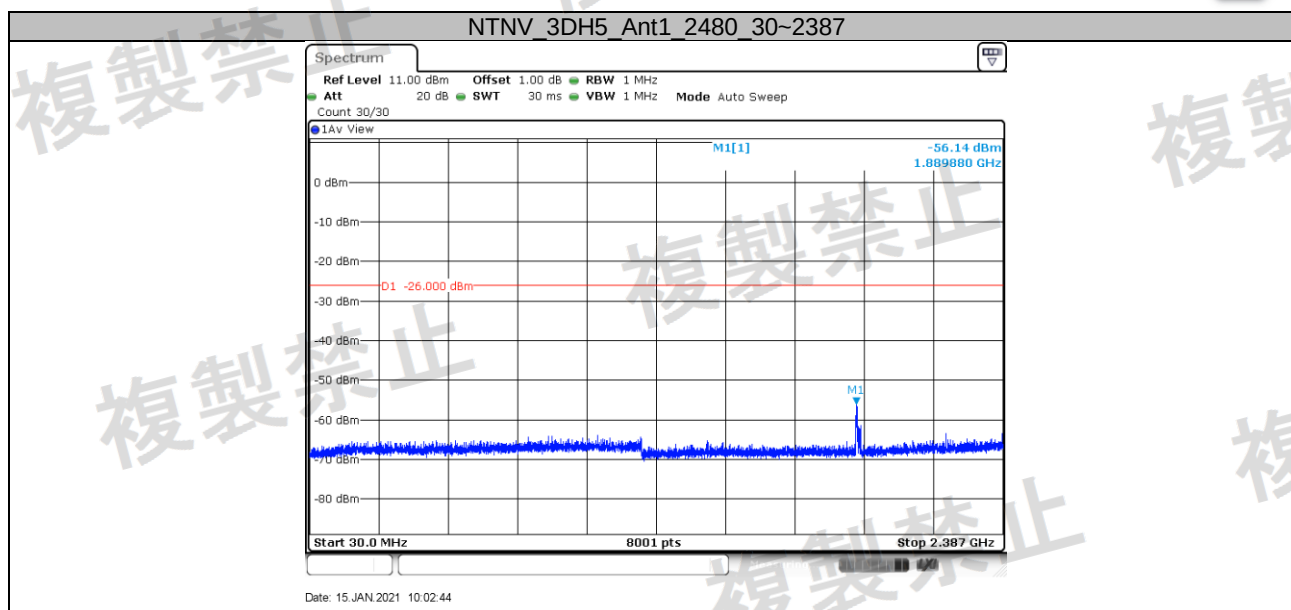


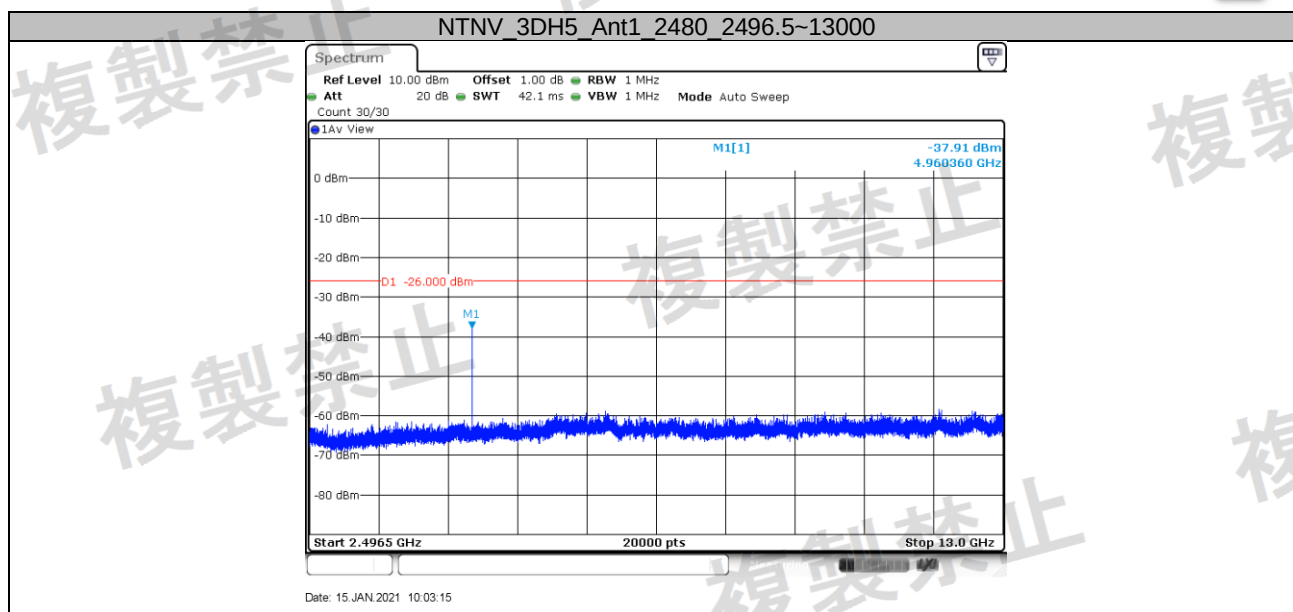
Date: 15 JAN 2021 10:01:11

NTNV_3DH5_Ant1_2441_2496.5~13000



Date: 15 JAN 2021 10:01:21





3.9 Secondary Radiated Emissions (Conducted) (For receiver)

3.9.1 Test condition

Channel:	Low, Middle, High
Test position:	Receiving
Ambient temperature:	24.3°C
Relative humidity:	49.7%
Atmosphere Pressure:	101.3 KPa

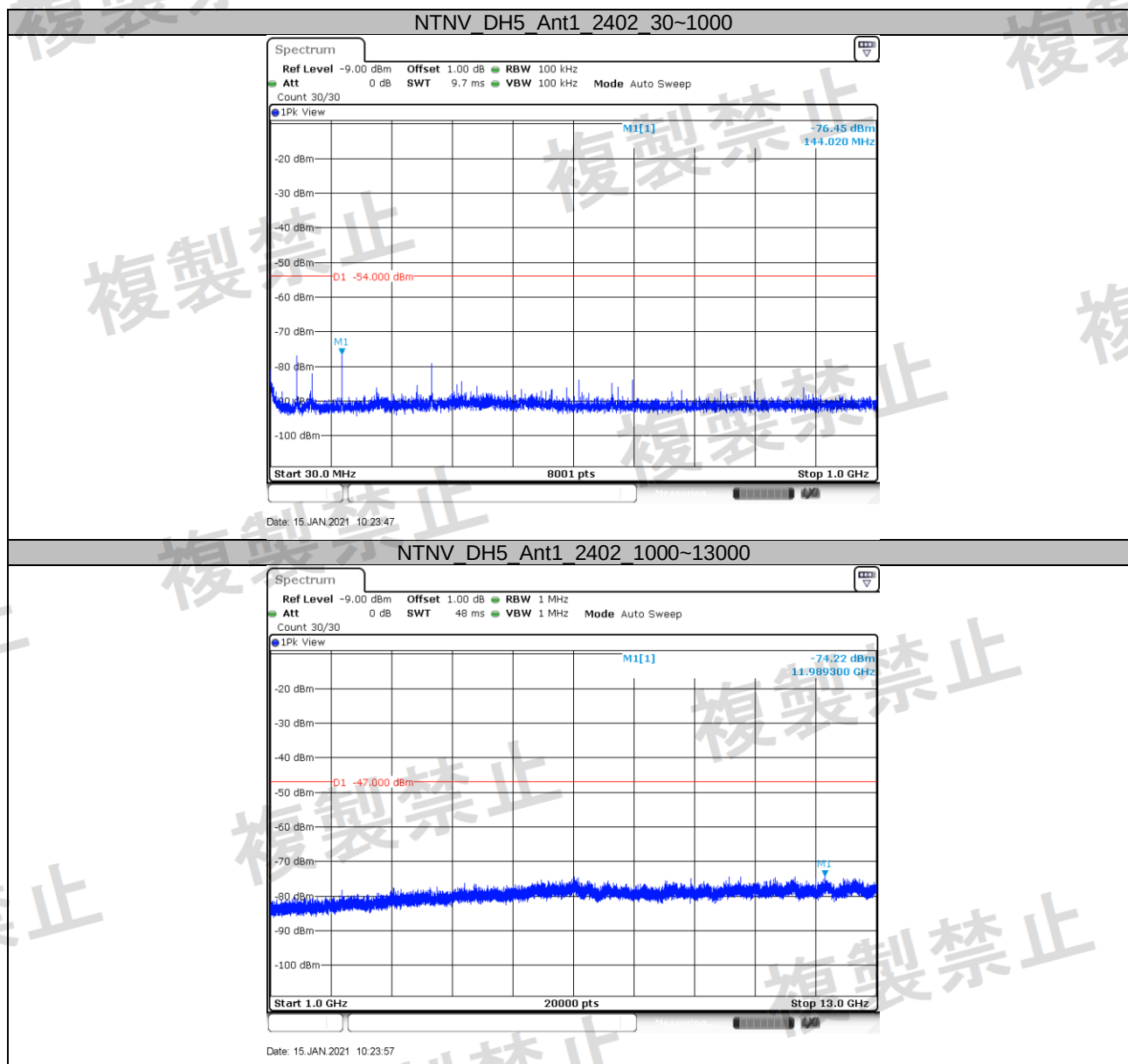
3.9.2 Limit (ARIB STD-T66, Clause 3.3 (1))

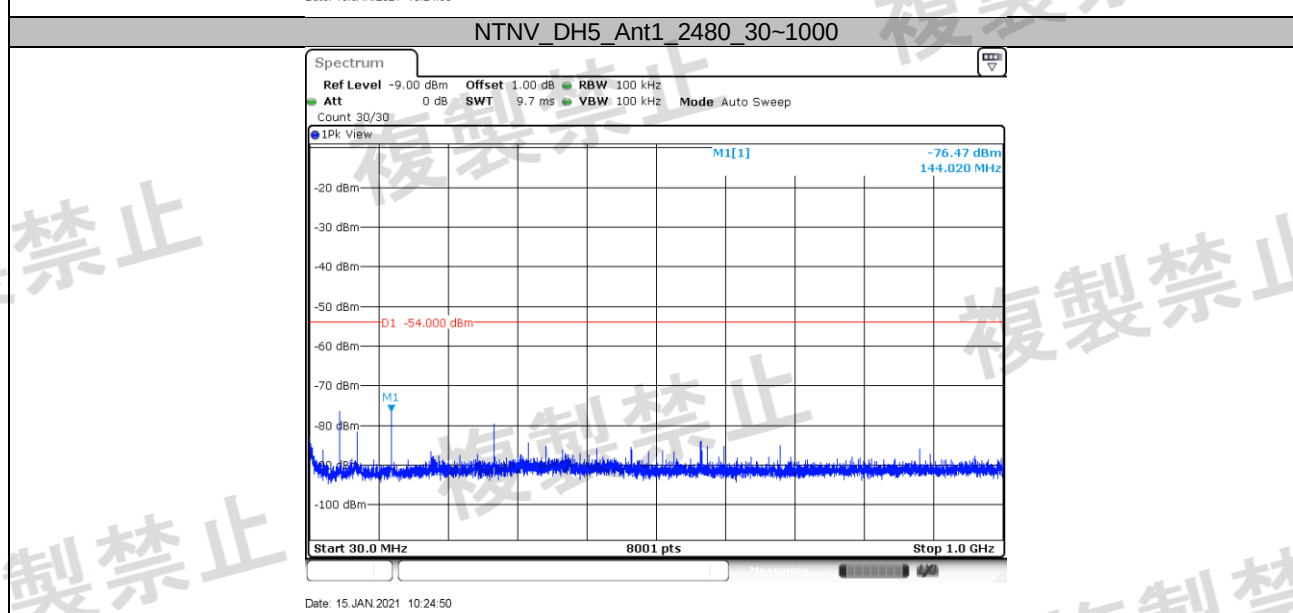
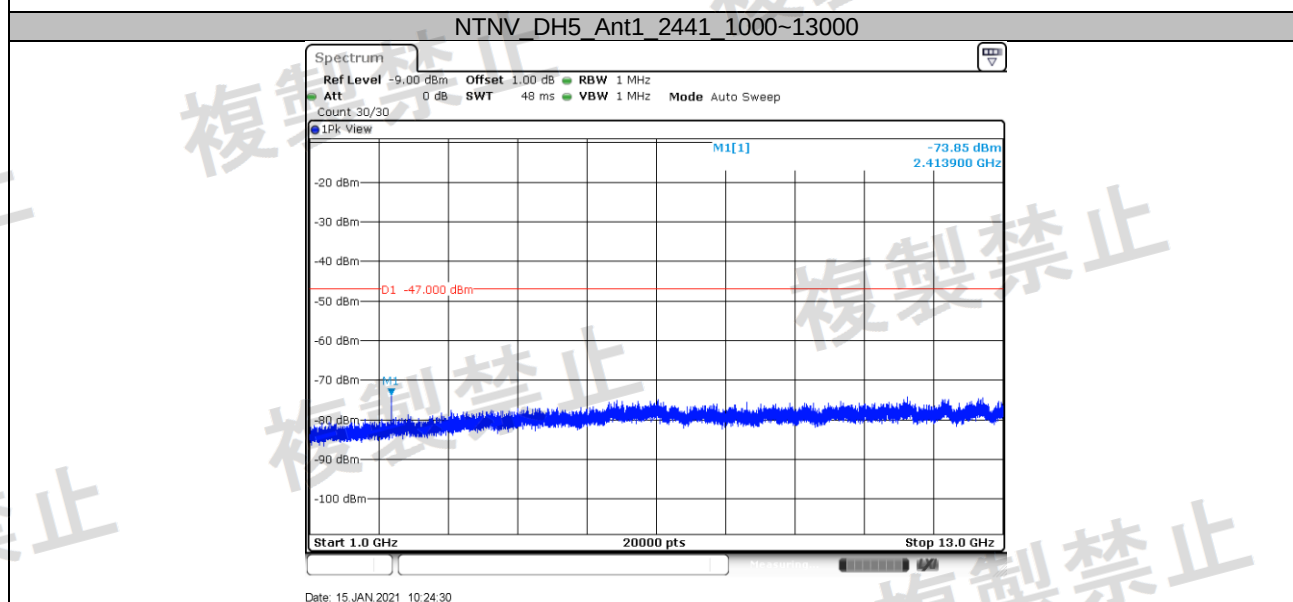
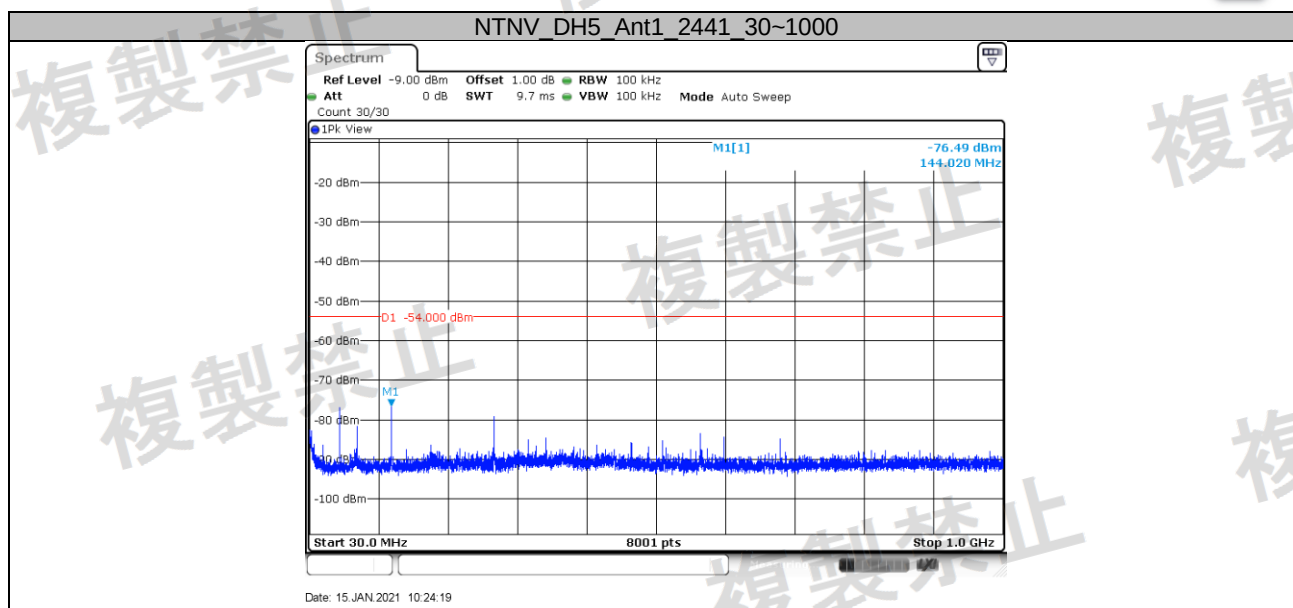
The limit on secondary emissions radiated from the receiving equipment within which the function of other radio equipment will not be impaired shall be, in terms of the power of a dummy antenna circuit that has the same electrical constant as the receiving antenna, 4 nW or less at a frequency below 1 GHz and 20 nW or less at a frequency of 1 GHz or higher as measured using the circuit.

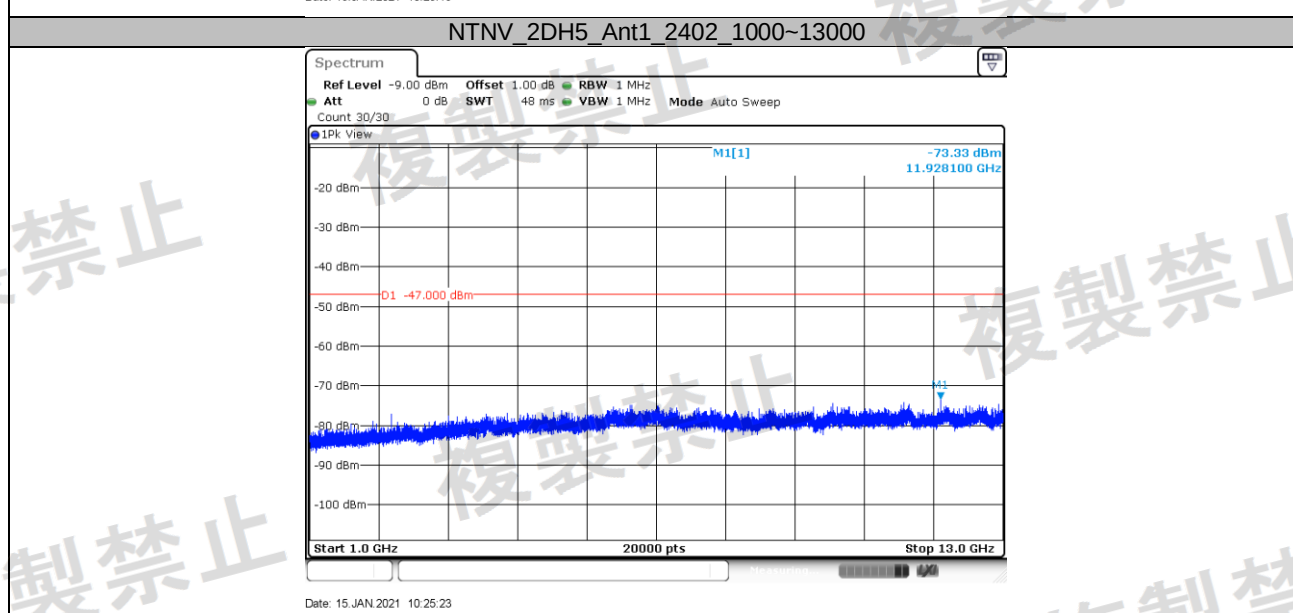
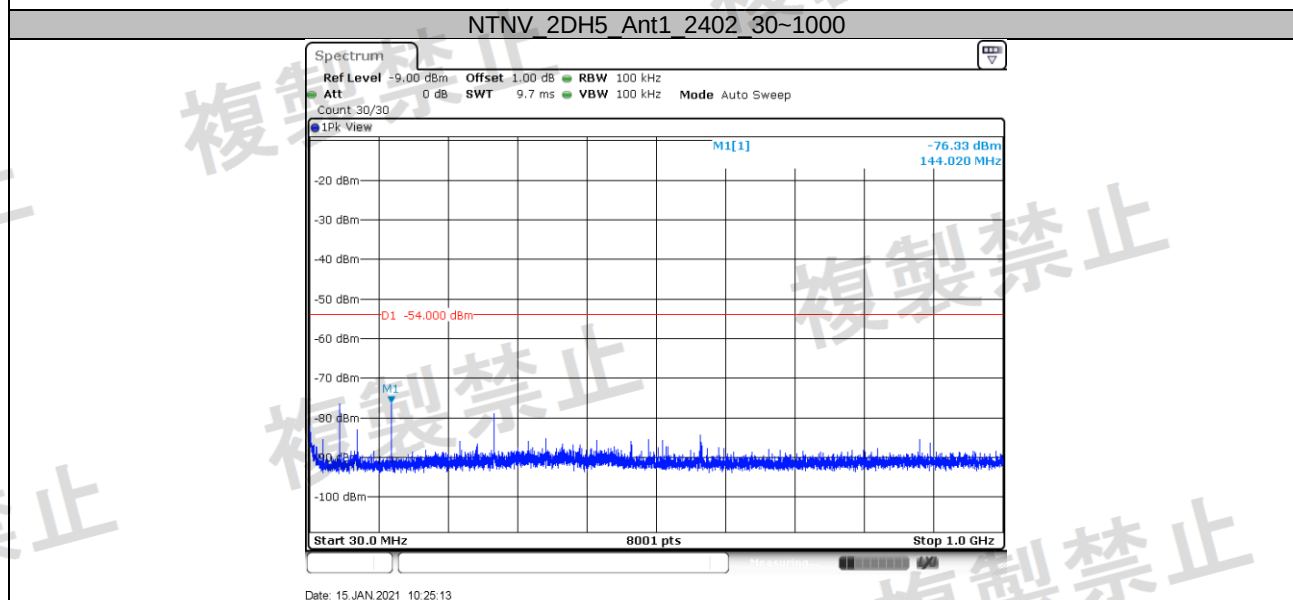
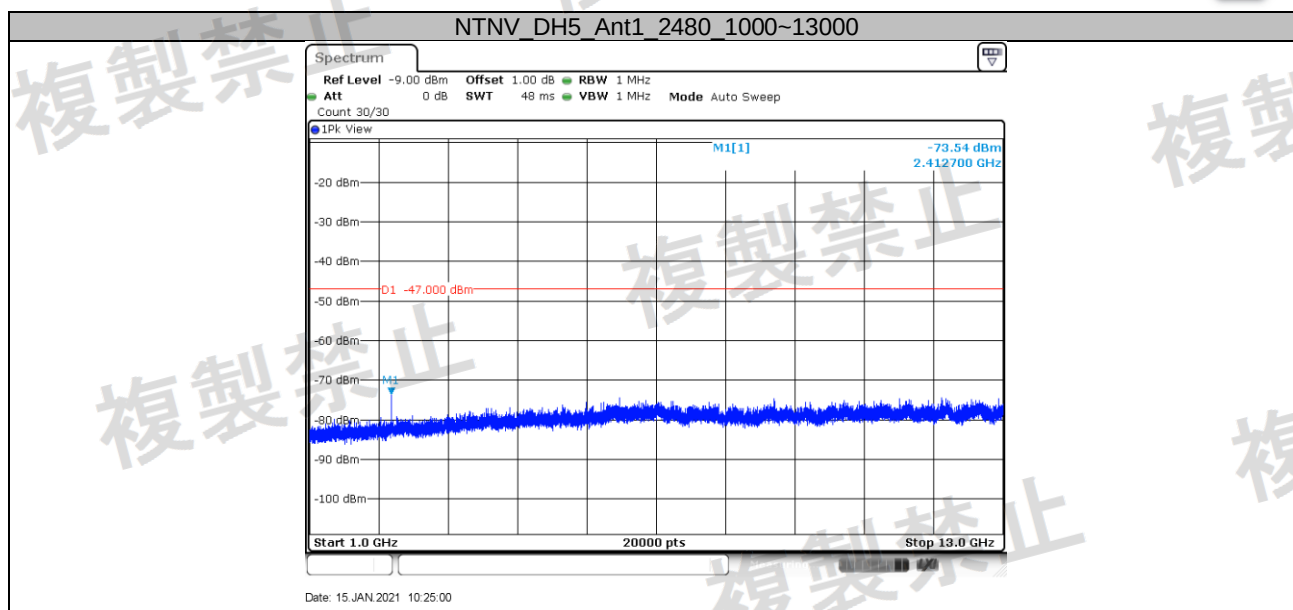
3.9.3 Test Result

TestCondition	TestMode	Antenna	Channel (MHz)	Freq.Range (MHz)	Result (dBm)	Limit (dBm)	Verdict
NTNV	DH5	Ant1	2402	30~1000	-76.45	<=-54	PASS
				1000~13000	-74.22	<=-47	PASS
			2441	30~1000	-76.49	<=-54	PASS
				1000~13000	-73.85	<=-47	PASS
			2480	30~1000	-76.47	<=-54	PASS
				1000~13000	-73.54	<=-47	PASS
	2DH5	Ant1	2402	30~1000	-76.33	<=-54	PASS
				1000~13000	-73.33	<=-47	PASS
			2441	30~1000	-76.22	<=-54	PASS
				1000~13000	-74.26	<=-47	PASS
			2480	30~1000	-76.42	<=-54	PASS
				1000~13000	-74.02	<=-47	PASS
	3DH5	Ant1	2402	30~1000	-76.22	<=-54	PASS
				1000~13000	-74.24	<=-47	PASS
			2441	30~1000	-76.45	<=-54	PASS
				1000~13000	-74.23	<=-47	PASS
			2480	30~1000	-76.11	<=-54	PASS
				1000~13000	-74.95	<=-47	PASS

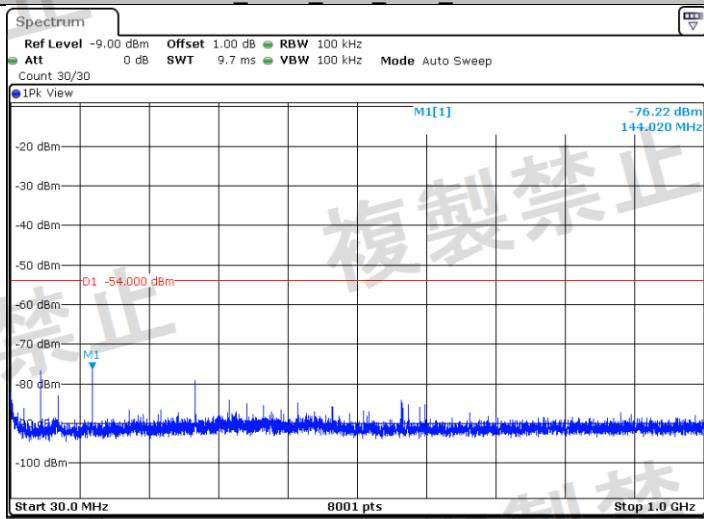
3.9.4 Test Graphs





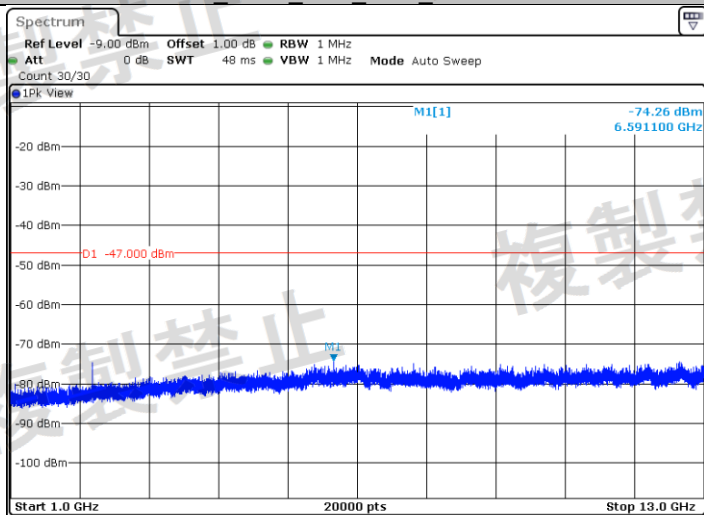


NTNV_2DH5_Ant1_2441_30~1000



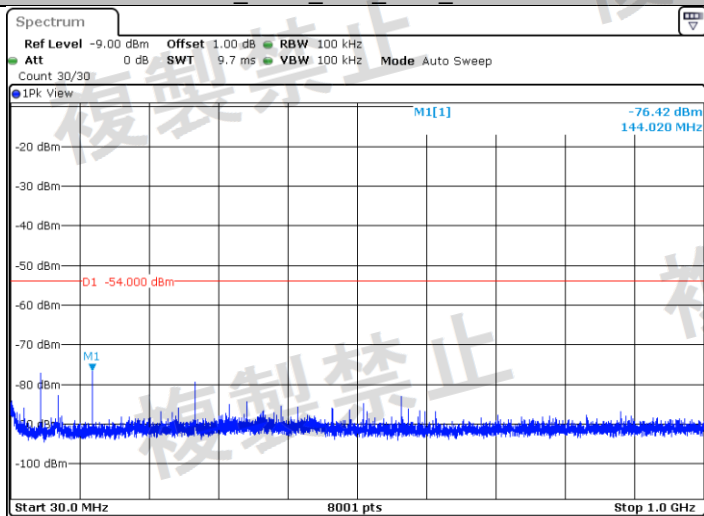
Date: 15 JAN 2021 10:25:35

NTNV_2DH5_Ant1_2441_1000~13000



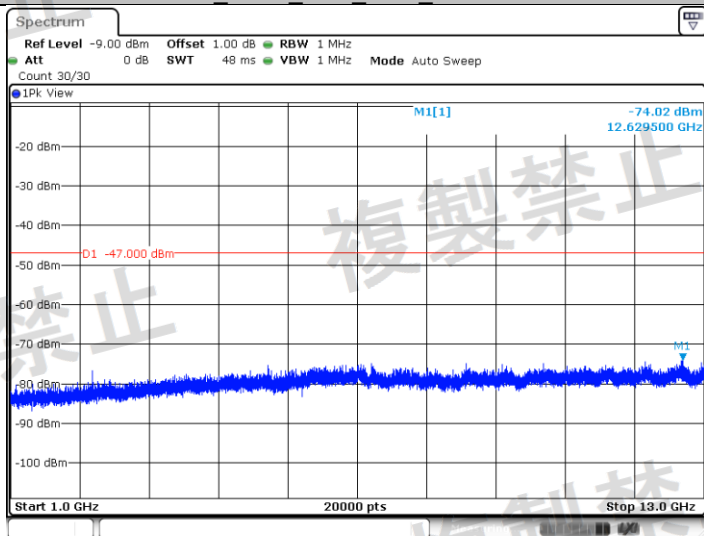
Date: 15 JAN 2021 10:25:45

NTNV_2DH5_Ant1_2480_30~1000



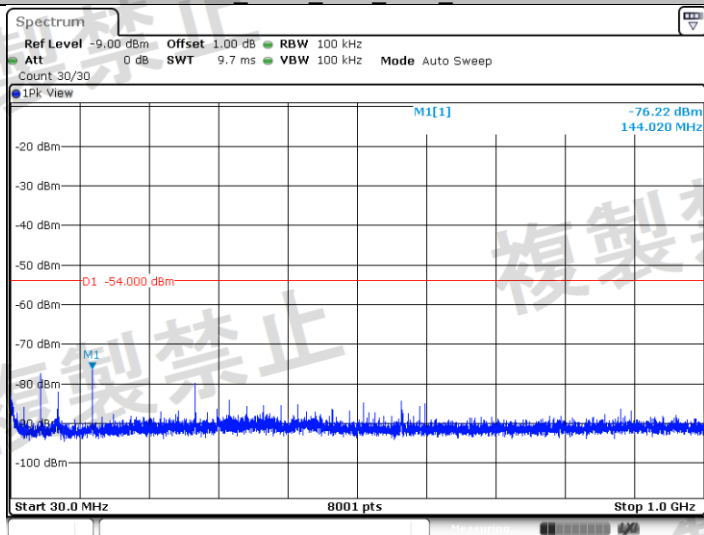
Date: 15 JAN 2021 10:25:56

NTNV_2DH5_Ant1_2480_1000~13000



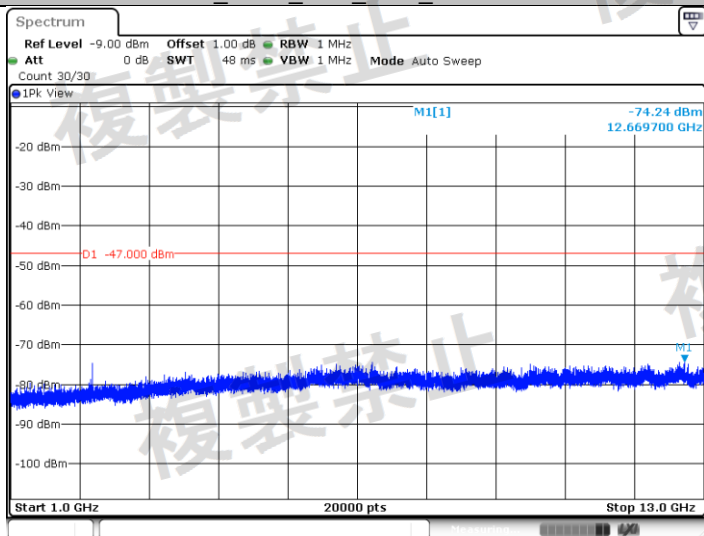
Date: 15 JAN 2021 10:26:07

NTNV_3DH5_Ant1_2402_30~1000



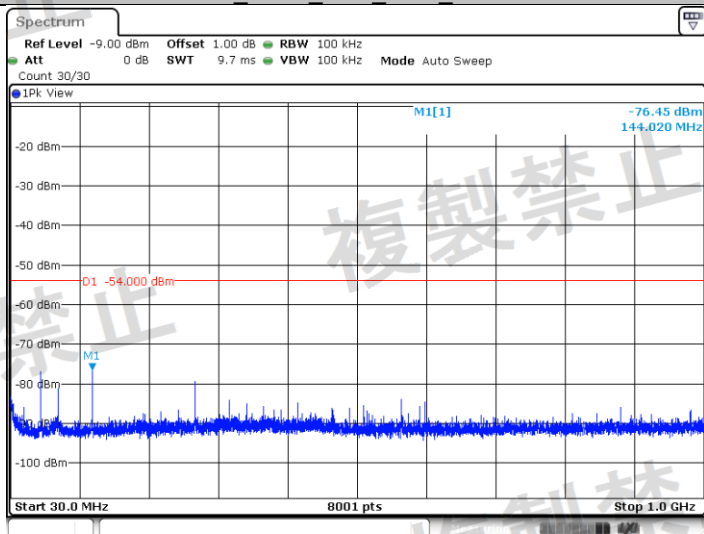
Date: 15 JAN 2021 10:26:22

NTNV_3DH5_Ant1_2402_1000~13000



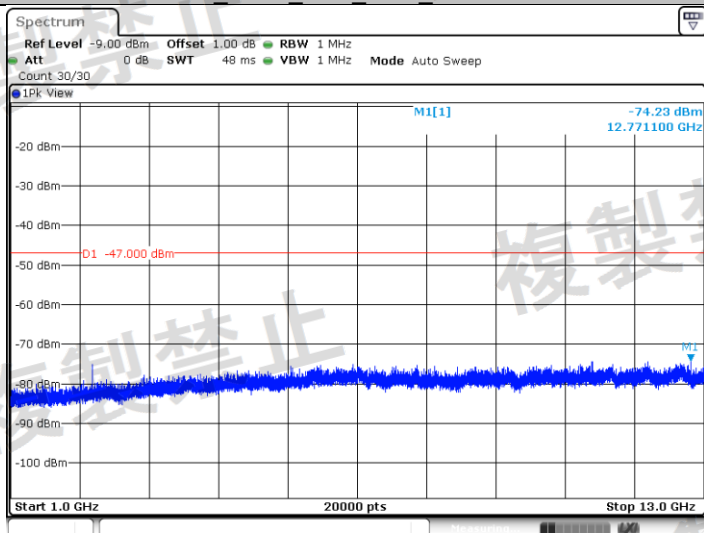
Date: 15 JAN 2021 10:26:32

NTNV_3DH5_Ant1_2441_30~1000



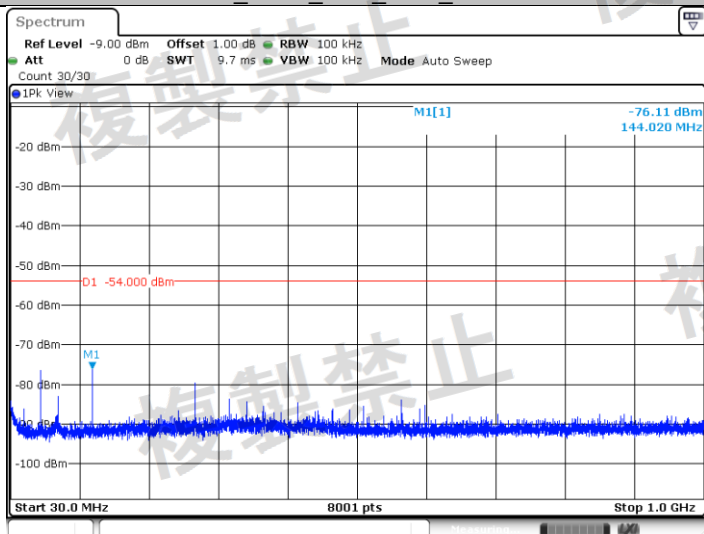
Date: 15 JAN 2021 10:26:48

NTNV_3DH5_Ant1_2441_1000~13000

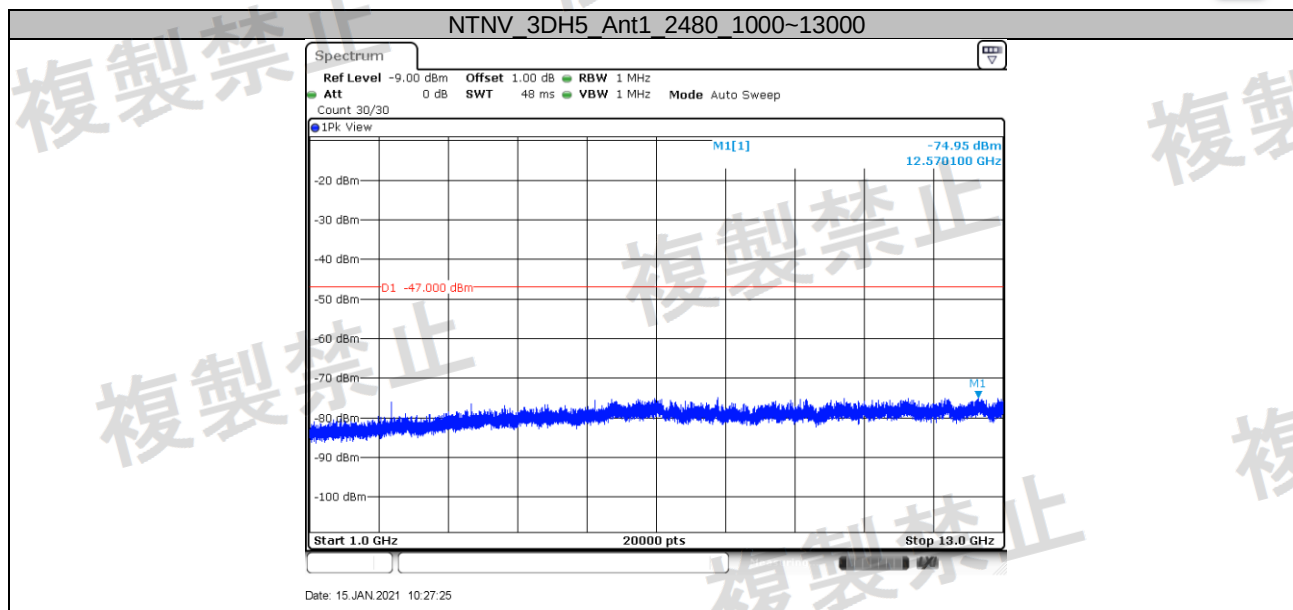


Date: 15 JAN 2021 10:26:59

NTNV_3DH5_Ant1_2480_30~1000



Date: 15 JAN 2021 10:27:15



4 Photographs of Test Set-ups



THE END