



TEST REPORT

Report Number : 4840124374000 Date of Issue: 2025.1.26

Product Name : Fifteen-Channel Emitter

Model : DD2712A

Applicant : Prossimo Inc.

Address : #1F Prossimo 1-1-8 Higashiooi, Shinagawa-ku, Tokyo-to 140-0011, Japan

Factory : Ningbo Dooya Mechanic & Electronic Technology Co., Ltd.

Address : No.168 Shengguang Road, Luotuo, Zhenhai 315202, Ningbo, Zhejiang province, PEOPLE'S REPUBLIC OF CHINA

Test Result : ☒ Positive ☐ Negative

Total pages including Appendices : 36



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1 General Information

1.1 Product information and other Remarks

The product is a Fifteen-Channel Emitter.

Prepared by
Project Engineer

2025.01.26

Date

Xin Feng

Name

Signature

Approved by
Project Manager

2025.01.26

Date

Zhilan Xue

Name

Signature



1.2 Testing Laboratory Information

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd.

Company Address: Floor 1-4, Building B, No.37, Tuanjie Road(Middle), Xishan Economic and Technological Development Zone, Wuxi, 214100 P.R. China

Telephone: +86 510 8820 3737

Fax: +86 510 8820 3636

1.3 Details of Applicant

Applicant: Prossimo Inc.

Address: #1F Prossimo 1-1-8 Higashiooi, Shinagawa-ku, Tokyo-to 140-0011, Japan

Product Description: Fifteen-Channel Emitter

Model No.: DD2712A

1.4 Application Details

Sample Received Date: 2024.10.14

Testing Start Date: 2024.10.15

Testing End Date: 2025.01.26

1.5 Test Item

Refer to table 1

1.6 Applied Standard

APPLIED PRODUCT STANDARD

Article 2 Paragraph 1 of Item 8 of Radio Law Certification Regulations, Specified Low Power Radio Equipment: Ministry of Internal Affairs and Communications notification of No. 88, Appendix 22-2

1.7 Test Summary

Table 1. Summary of results

Essential parameter	Corresponding technical requirements: notification of No. 88, Appendix 22-2	Result
Transmitter requirements	Frequency Tolerance	PASS
	Occupied Bandwidth	PASS
	RF Output Power	PASS
	RF Output Power Tolerance	PASS
	Adjacent Channel Leakage Power	PASS
	Transmission time limiting device	PASS
	Carrier Sensing Function	PASS
	Unwanted (Spurious) Emission Strength	PASS
Receiver requirements	Secondary Emitted Radio Wave Strength	PASS

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

Remark: It is compliance to the appropriate section of the Ordinance Article 2 Paragraph 1 of Item 8.



2 Equipment Specification

2.1 General Description

The EUT is a Fifteen-Channel Emitter.

2.2 Technical Data

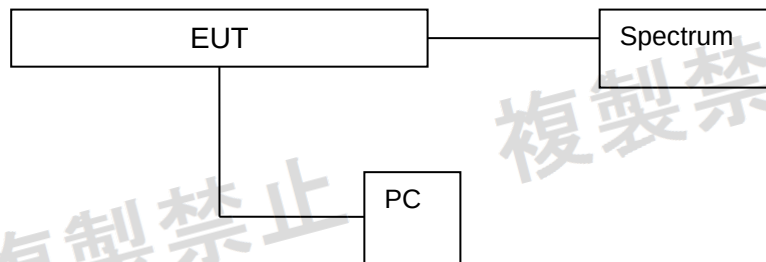
Description	Fifteen-Channel Emitter
Model	DD2712A
Operation frequency	429.1875MHz
Antenna type	Internal antenna
Antenna gain	-17.92dBi
Rated Input	DC 3.0V
Modulation	FSK

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).

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
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2.5 Lists of Test Instruments

Table 4. Lists of Test Instruments

First test time

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED BY	CAL. METHOD	CAL. DATE	CAL. DUE DATE
Spectrum Analyzer	R&S	FSV40	487/641405	JEPSI	C	2024/04/08	2025/04/07
RF test system	R&S	TS8997	487/391835	JEPSI	C	2023/11/23	2024/11/22
Power Probe	R&S	NRP-Z81	487/431819	JEPSI	C	2023/11/23	2024/11/22

Second test time

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED BY	CAL. METHOD	CAL. DATE	CAL. DUE DATE
Spectrum Analyzer	R&S	FSV40	487/641405	JEPSI	C	2024/04/08	2025/04/07
RF test system	R&S	TS8997	487/391835	JEPSI	C	2024/11/23	2025/11/22
Power Probe	R&S	NRP-Z81	487/431819	JEPSI	C	2024/11/23	2025/11/22

Note1: The calibration of measurement equipment is valid for one year period.

Note2: Cal. 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)

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

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Conducted RF test	Power level test involved: 1.32dB Frequency test involved:1%

3 Measurements Result

3.1 Frequency Tolerance

3.1.1 Test condition

Date of testing:	2024.11.2
Test Frequency:	429.1875MHz
Test position:	Transmitting
Ambient temperature:	21.3°C
Relative humidity:	62.3%
Atmosphere Pressure:	1019.8mbar

3.1.2 Limit

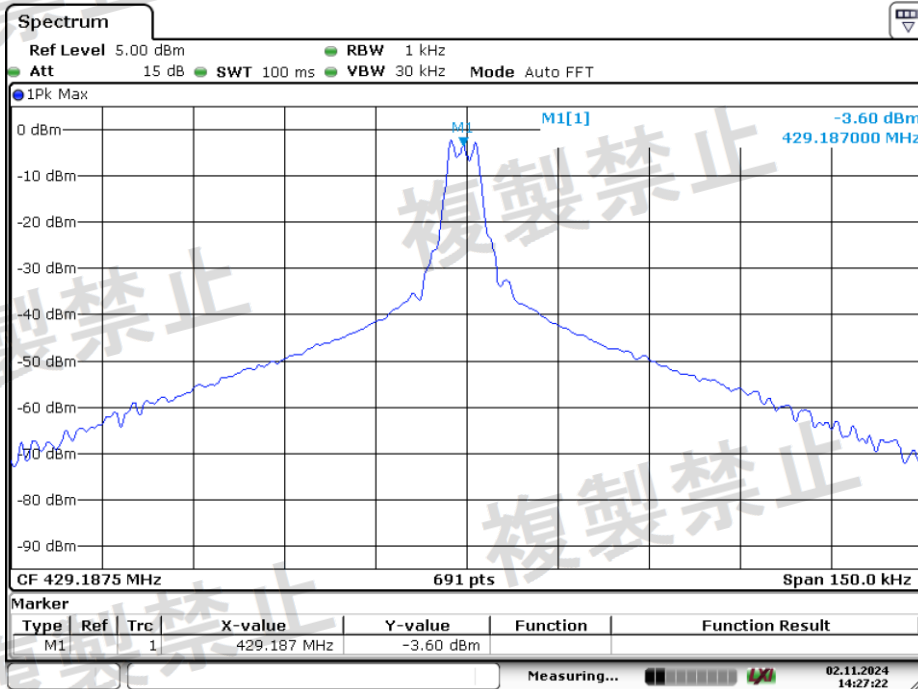
	Objective radio equipment	Tolerance
(1)	400MHz band radio equipment (6.25kHz interval)	$\pm 2 \times 10^{-6}$
(2)	400MHz band radio equipment (12.5kHz、25kHz interval (Radio equipment listed in (3) is excluded)	$\pm 4 \times 10^{-6}$
(3)	Over 426.0375MHz and up to 426.1125MHz Radio equipment (25kHz interval and occupied band width 12kHz or less)	$\pm 10 \times 10^{-6}$

3.1.3 Test result

Test Frequency (MHz)	Voltage (VDC)	Result (MHz)	Tolerance (kHz)	Tolerance (ppm)	Limit (ppm)
429.1875	3.0V	429.1870	-0.5	-1.16	±4
	2.7V	429.1868	-0.7	-1.63	
	3.3V	429.1868	-0.7	-1.63	
Conclusion: PASS					

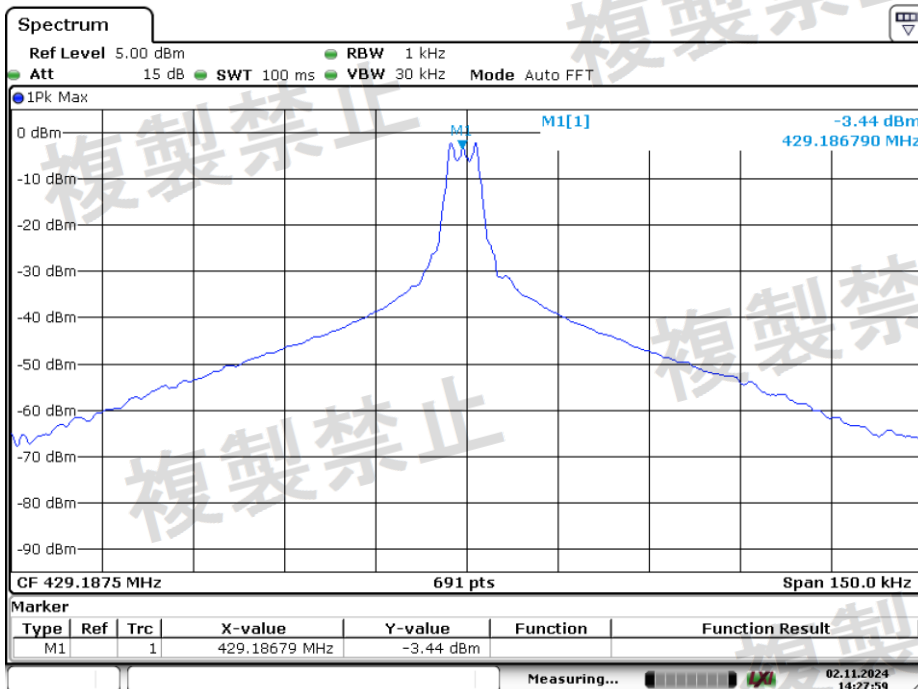


DC 3.0V



Date: 2.NOV.2024 14:27:22

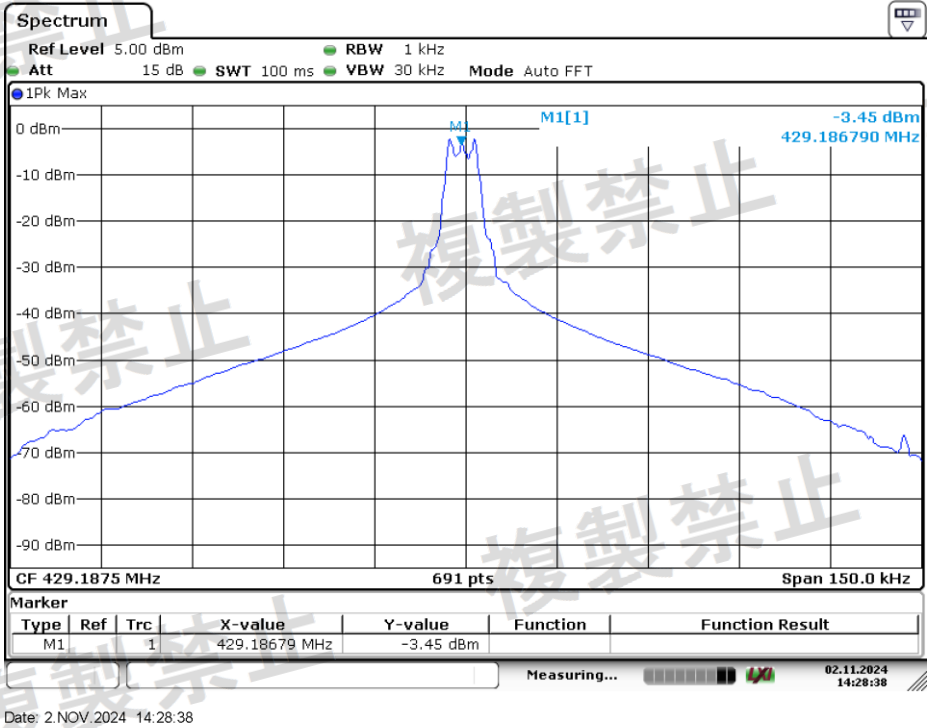
DC 3.3V



Date: 2.NOV.2024 14:28:00



DC 2.7V



3.1.4 Result

The equipment met the requirement of this clause.

3.2 Occupied Bandwidth

3.2.1 Test condition

Date of testing:	2024.11.2
Test Frequency:	429.1875MHz
Test position:	Transmitting
Ambient temperature:	21.3°C
Relative humidity:	62.3%
Atmosphere Pressure:	1019.8mbar

3.2.2 Limit

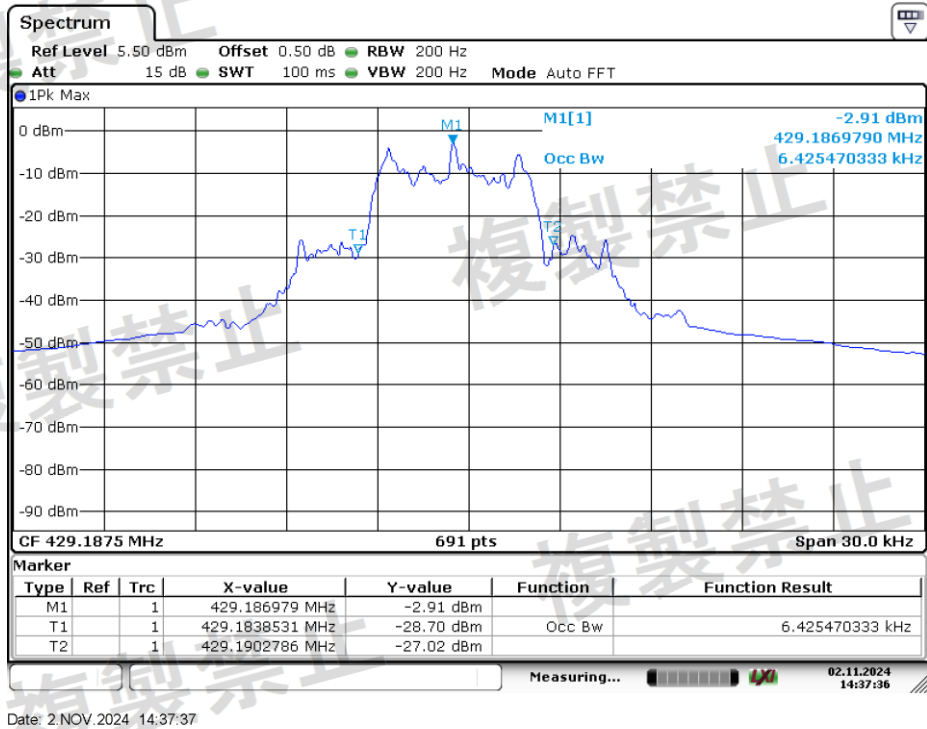
Objective radio equipment	Permissible value
Radio equipment with occupied bandwidth of 5.8kHz or less	5.8kHz
Radio equipment with occupied bandwidth over 5.8kHz	8.5kHz
Radio equipment operated in over 426MHz and up to 427MHz band with 25kHz interval	16kHz

3.2.3 Test result

Test Frequency (MHz)	Voltage (DC)	99% Bandwidth (KHz)	Limit (KHz)
429.1875	3.0V	6.425	<8.5
	3.3V	6.512	
	2.7V	6.425	
Conclusion: PASS			



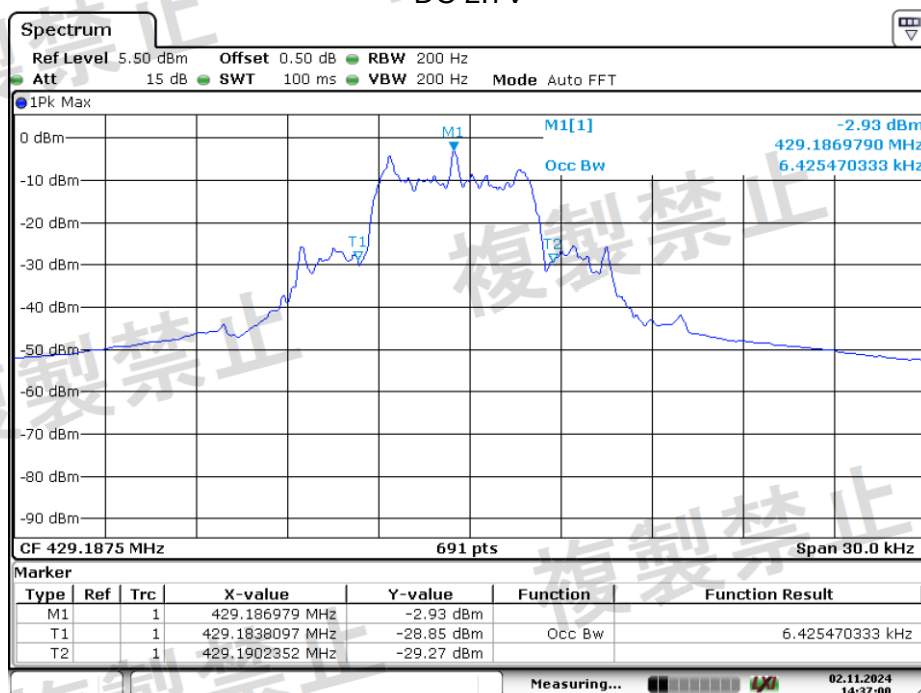
DC 3.0V



DC 3.3V



DC 2.7V



Date: 2.NOV.2024 14:37:00

3.2.4 Result

The equipment met the requirement of this clause.



3.3 RF Output Power

3.3.1 Test condition

Date of testing:	2024.10.15
Test Frequency:	429.1875MHz
Test position:	Transmitting
Ambient temperature:	22.2°C
Relative humidity:	60.9%
Atmosphere Pressure:	1018.4mbar

3.3.2 Limit

The antenna power (the specified or rated power that is supplied from the transmitter to the feeder of an antenna system in normal operation and is averaged over a sufficiently long period of time compared to the cycle of the lowest frequency) shall be 1 W or less (when the antenna is not contained in the housing: shall be 16.37mW or less). However, for transmission units using a frequency between 426.025 MHz and 426.1375 MHz, the antenna power shall be 0.1 W or less (when the antenna is not contained in the housing: shall be 1.637mW or less).

3.3.3 Test Result

Test Frequency (MHz)	Voltage (DC)	Reading (dBm)	Result (dBm)	Result (mW)	Limit (mW)
429.1875	3.0V	-2.21	-2.21	0.601	1000
	3.3V	-2.18	-2.18	0.605	
	2.7V	-2.22	-2.22	0.600	
Conclusion: PASS					
Remark: Result(dBm) = Reading(dBm) + 10log(1/transmission time rate), transmission time rate=100%					

3.3.4 Result

The equipment met the requirement of this clause.



3.4 RF Output Power Tolerance

3.4.1 Test condition

Date of testing:	2024.10.15
Test Frequency:	429.1875MHz
Test position:	Transmitting
Ambient temperature:	22.2°C
Relative humidity:	60.9%
Atmosphere Pressure:	1018.4mbar

3.4.2 Limit

The tolerances for antenna power (the maximum allowable deviation from the specified or rated antenna power) shall be +20% to -50%.

3.4.3 Test Result

Frequency (MHz)	Voltage (VDC)	Declared Output Power (mW)	Result (mW)	Tolerances	Limit (mW)
429.1875	3.0V	0.750	0.601	-19.9%	+20%~-50%
	3.3V	0.750	0.605	-19.3%	
	2.7V	0.750	0.600	-20.0%	
Conclusion: PASS					

3.4.4 Result

The equipment met the requirement of this clause.

3.5 Adjacent Channel Leakage Power

3.5.1 Test condition

Date of testing:	2024.11.2
Test Frequency:	429.1875MHz
Test position:	Transmitting
Ambient temperature:	21.3°C
Relative humidity:	62.3%
Atmosphere Pressure:	1019.8mbar

3.5.2 Limit

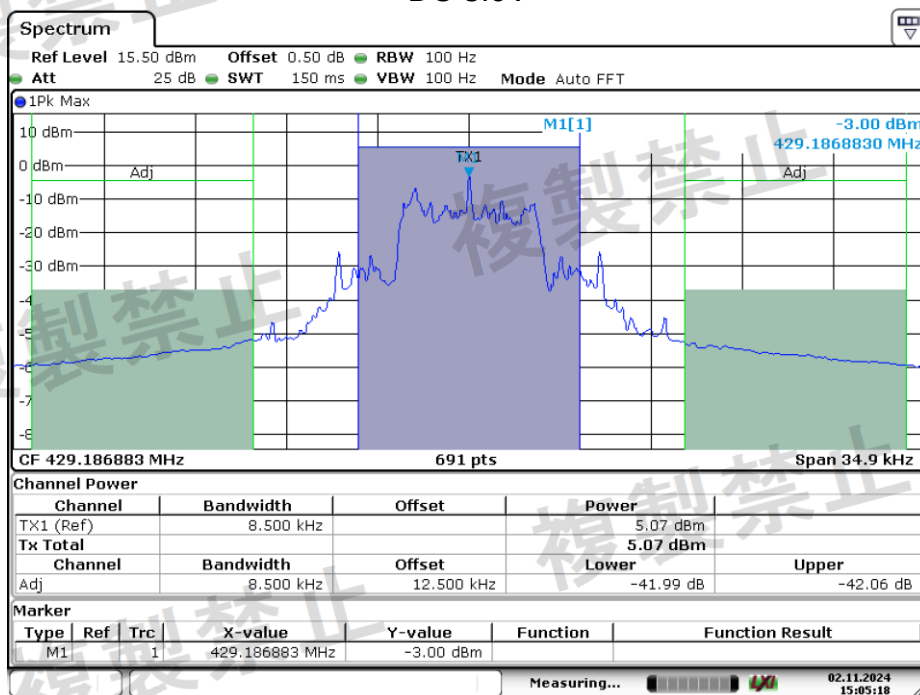
As for the adjacent-channel leakage power (the power radiated in a certain band of the adjacent channel separated from the carrier frequency at the specified frequency interval), the power radiated into the band of the frequency the specified frequency distant from the carrier frequency shall be lower than the carrier power by 40 dB or more, when modulation is performed using the standard coded test signal at the same transmission speed as that of the modulation signal.

Objective radio equipment	Detune frequency	Measured bandwidth
400MHz band radio equipment (6.25kHz interval)	6.25kHz	$\pm 2.0\text{kHz}$
400MHz band /1,200MHz band radio equipment (12.5kHz interval)	12.5kHz	$\pm 4.25\text{kHz}$
400MHz band /1,200MHz band radio equipment (25kHz interval)	25kHz	$\pm 8.0\text{kHz}$

3.5.3 Test Result

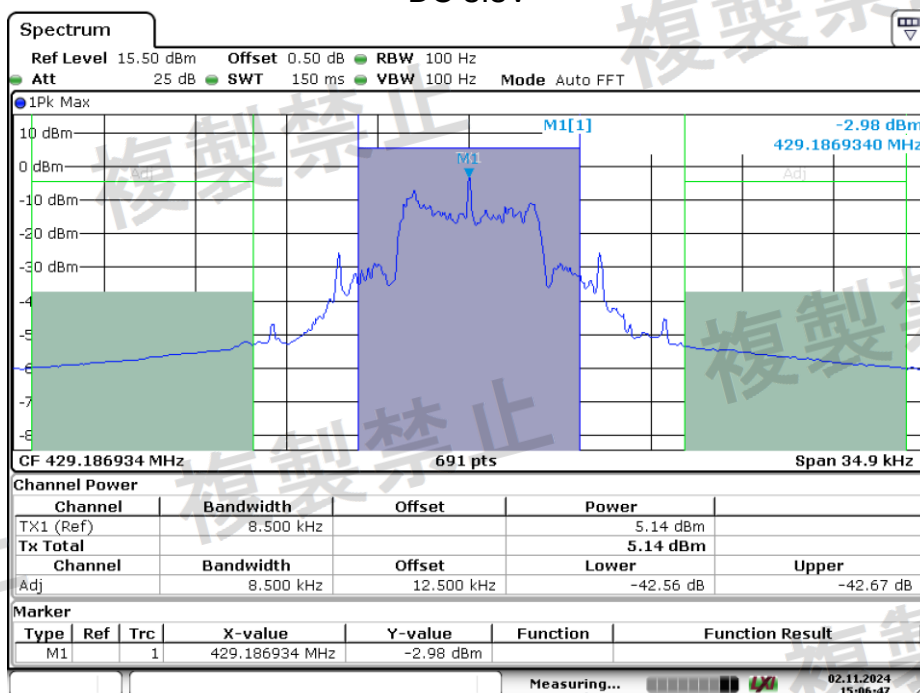
Voltage (VDC)	Frequency	level	Limit
3.0V	carrier frequency	5.07dBm	-40dBc or below
	± 4.25KHz bandwidth at carrier frequency -12.5KHz	-41.99 dBc	
	± 4.25KHz bandwidth at carrier frequency +12.5KHz	-42.06 dBc	
3.3V	carrier frequency	5.14dBm	
	± 4.25KHz bandwidth at carrier frequency -12.5KHz	-42.56 dBc	
	± 4.25KHz bandwidth at carrier frequency +12.5KHz	-42.67 dBc	
2.7V	carrier frequency	4.92dBm	
	± 4.25KHz bandwidth at carrier frequency -12.5KHz	-42.18 dBc	
	± 4.25KHz bandwidth at carrier frequency +12.5KHz	-41.95 dBc	
conclusion: PASS			

DC 3.0V



Date: 2.NOV.2024 15:05:19

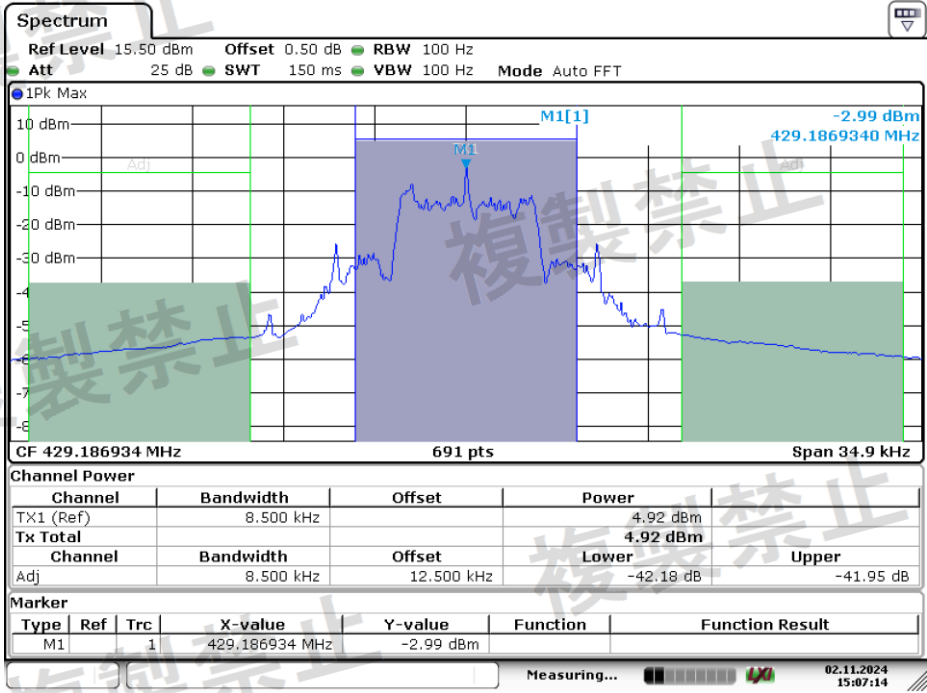
DC 3.3V



Date: 2.NOV.2024 15:06:48



DC 2.7V



Date: 2.NOV.2024 15:07:14

3.5.4 Result

The equipment met the requirement of this clause.

3.6 Transmission time limiting device

3.6.1 Test condition

Date of testing:	2024.10.25
Test Frequency:	429.1875MHz
Test position:	Transmitting
Ambient temperature:	22.8°C
Relative humidity:	57.6%
Atmosphere Pressure:	1019.1mbar

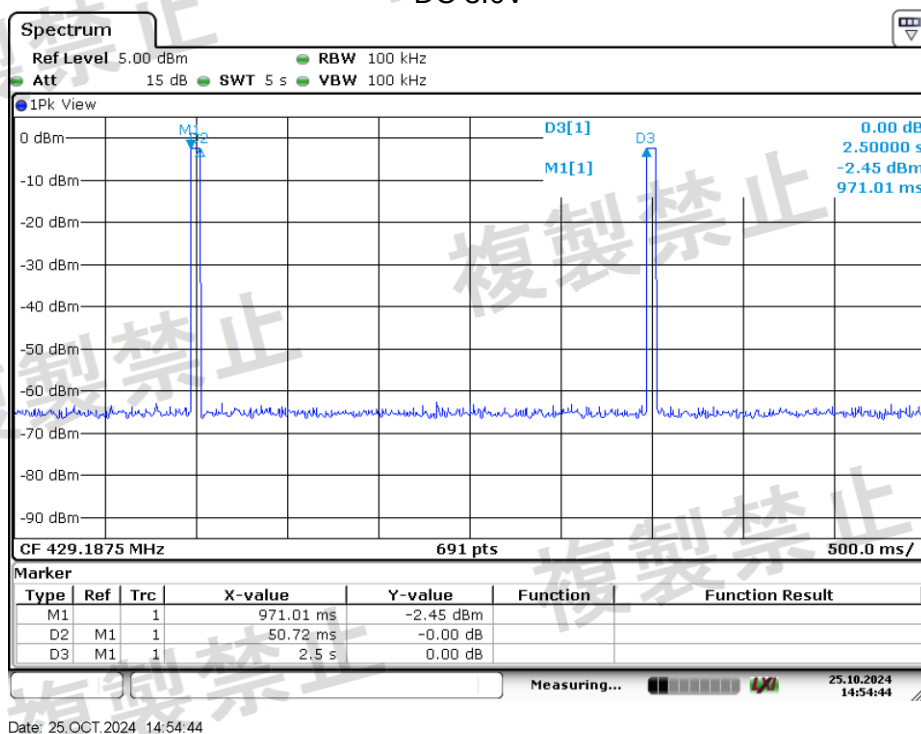
3.6.2 Limit

Operating Frequency (MHz)	Transmission Time restriction (Transmission Continuous Time, Transmission Quiescence Time)
429.1875	Transmission Continuous Time : 40 seconds, Transmission Quiescence Time : 2 seconds

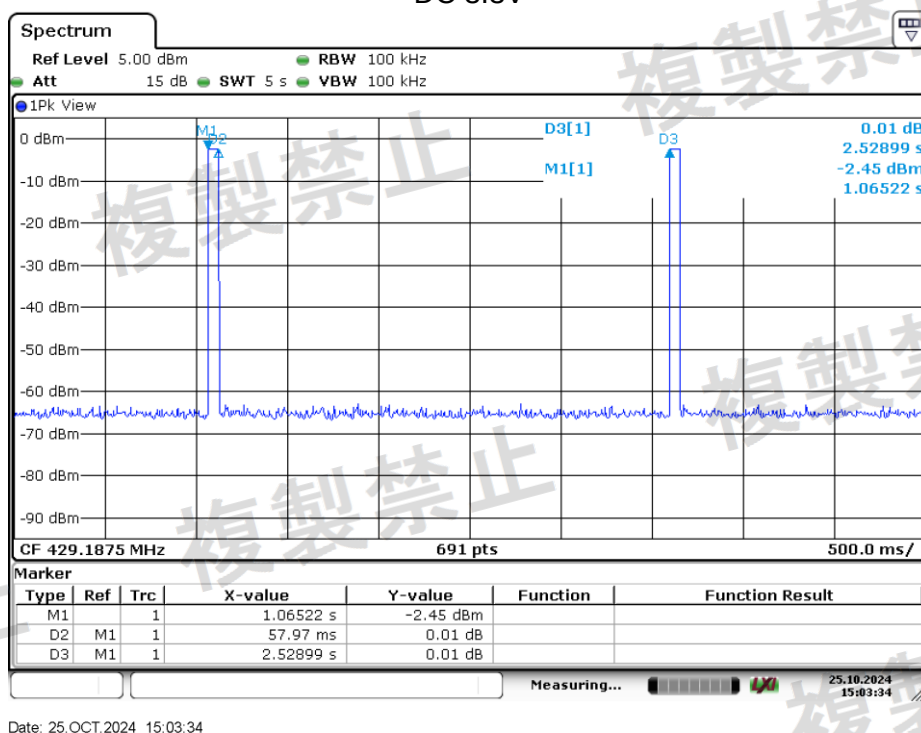
3.6.3 Test Result

Voltage (VDC)	Test condition	Time(s)
3.0V	TX on	0.05
	TX off	2.45
3.3V	TX on	0.06
	TX off	2.47
2.7V	TX on	0.05
	TX off	2.44

DC 3.0V

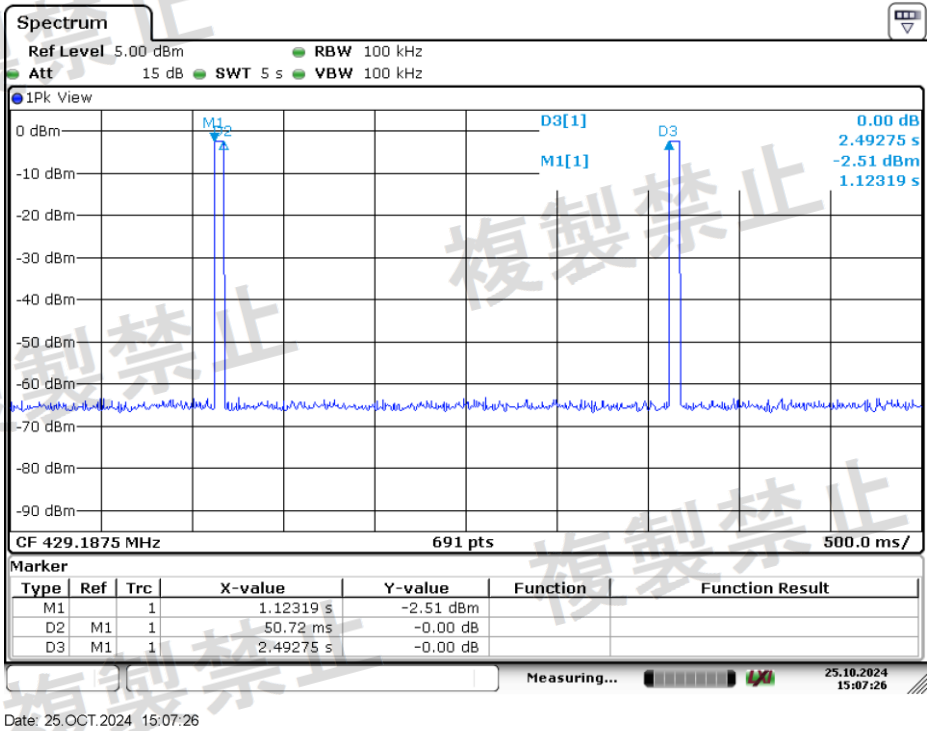


DC 3.3V





DC 2.7V



3.6.4 Result

The equipment met the requirement of this clause.

3.7 Unwanted Spurious Emissions Strength (Conducted) (For transmitter)

3.7.1 Test condition

Date of testing:	2024.10.17-2024.11.2
Test Frequency:	429.1875MHz
Test position:	Transmitting
Ambient temperature:	21.7°C-23.1°C
Relative humidity:	56.7%-63.3%
Atmosphere Pressure:	1019.5-1022.6mbar

3.7.2 Limit

Scanning Bandwidth:

Frequency Range	Limit
30 to 428.1875MHz *1	2.5uW or below(-26.02dBm)
430.1875 to 1000MHz *1	2.5uW or below(-26.02dBm)
1000 to 3000MHz	2.5uW or below(-26.02dBm)
±1MHz Carrier Frequency *2 *3	2.5uW or below(-26.02dBm)
±62.5kHz Carrier Frequency *2 *4	2.5uW or below(-26.02dBm)

*1:Carrier frequency, excluding ± 1MHz.

*2:Value of the Adjacent Channel Leakage Power.

*3:Carrier frequency, excluding ± 62.5kHz.

*4:Carrier frequency, excluding ± 4.25kHz.

3.7.3 Test Result

DC 3.0V:

Frequency (MHz)	Reading (MHz)	Reading(dBm)	Results(uW)	Scanning Bandwidth	Limit
429.1875	427.4090	-51.93	0.00641	30 to 428.1875MHz*1	2.5uW or below(-26.02dBm)
	858.3760	-54.27	0.00374	430.1875 to 1000MHz *1	2.5uW or below(-26.02dBm)
	2426.130	-55.28	0.00297	1000 to 3000MHz	2.5uW or below(-26.02dBm)
	429.2800	-44.20*	0.03802	±1MHz Carrier Frequency *2 *3	2.5uW or below(-26.02dBm)
	429.2244	-48.04*	0.01570	±62.5kHz Carrier Frequency *2 *4	2.5uW or below(-26.02dBm)

Note: "*" denotes for correction of RBW (+15.2dB for 3kHz).



DC 3.3V:

Frequency (MHz)	Reading (MHz)	Reading(dBm)	Results(uW)	Scanning Bandwidth	Limit
429.1875	427.3590	-52.22	0.00603	30 to 428.1875MHz*1	2.5uW or below(-26.02dBm)
	858.3760	-54.36	0.00366	430.1875 to 1000MHz *1	2.5uW or below(-26.02dBm)
	2580.880	-45.31	0.02944	1000 to 3000MHz	2.5uW or below(-26.02dBm)
	429.2900	-46.98*	0.02005	±1MHz Carrier Frequency *2 *3	2.5uW or below(-26.02dBm)
	429.1334	-31.87*	0.65013	±62.5kHz Carrier Frequency *2 *4	2.5uW or below(-26.02dBm)

Note: "*" denotes for correction of RBW (+15.2dB for 3kHz).

DC 2.7V:

Frequency (MHz)	Reading (MHz)	Reading(dBm)	Results(uW)	Scanning Bandwidth	Limit
429.1875	426.0650	-57.23	0.00189	30 to 428.1875MHz*1	2.5uW or below(-26.02dBm)
	858.3760	-54.07	0.00392	430.1875 to 1000MHz *1	2.5uW or below(-26.02dBm)
	2463.380	-55.69	0.00270	1000 to 3000MHz	2.5uW or below(-26.02dBm)
	429.2606	-43.63*	0.04335	±1MHz Carrier Frequency *2 *3	2.5uW or below(-26.02dBm)
	429.1444	-30.19*	0.95719	±62.5kHz Carrier Frequency *2 *4	2.5uW or below(-26.02dBm)

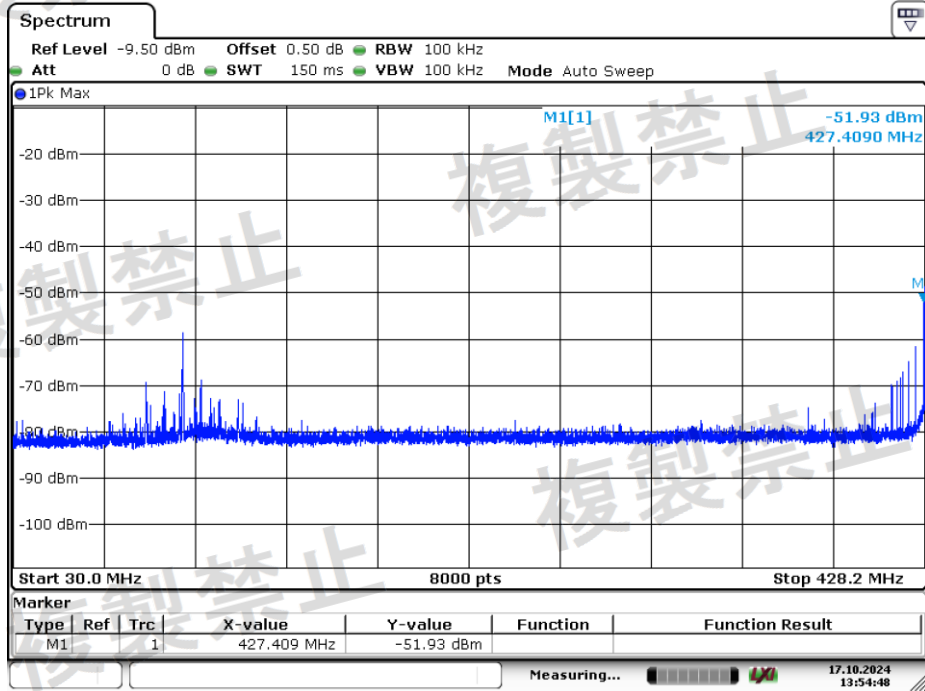
Note: "*" denotes for correction of RBW (+15.2dB for 3kHz).

3.7.4 Result

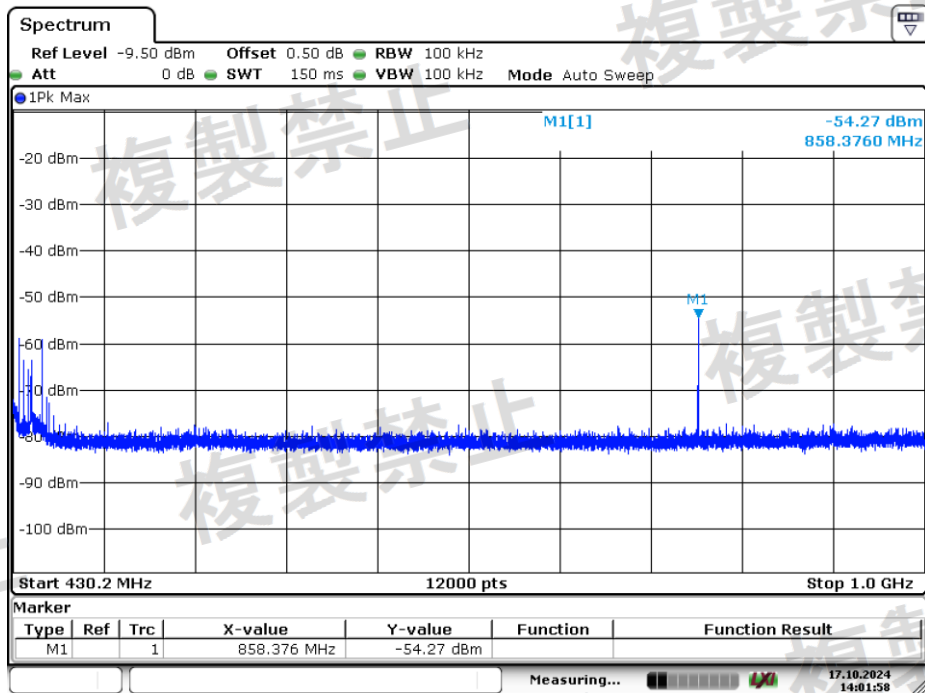
The equipment met the requirement of this clause.

3.7.5 Test Graphs

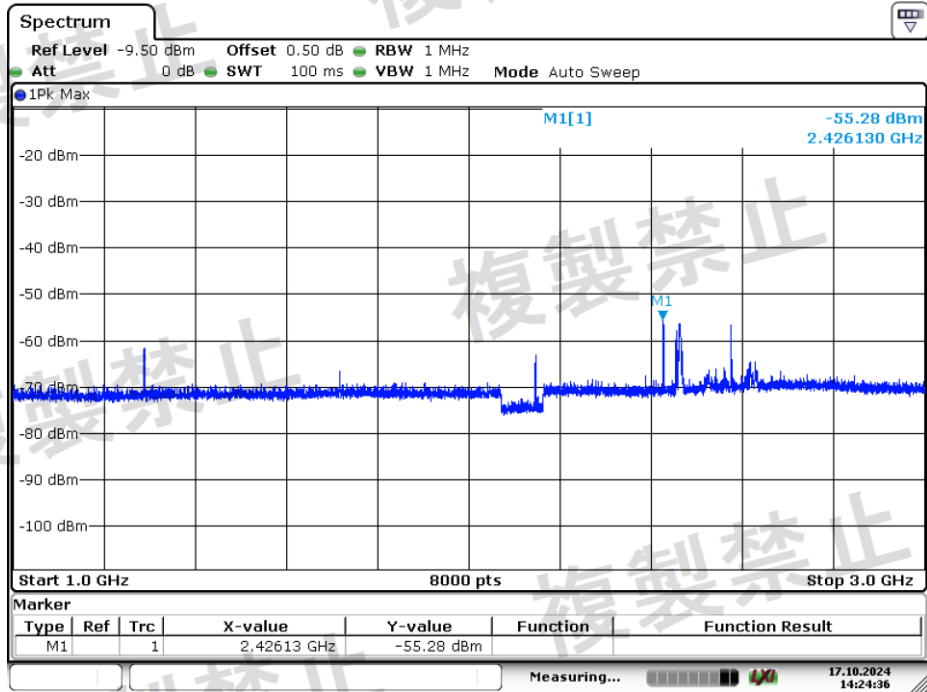
DC 3.0V



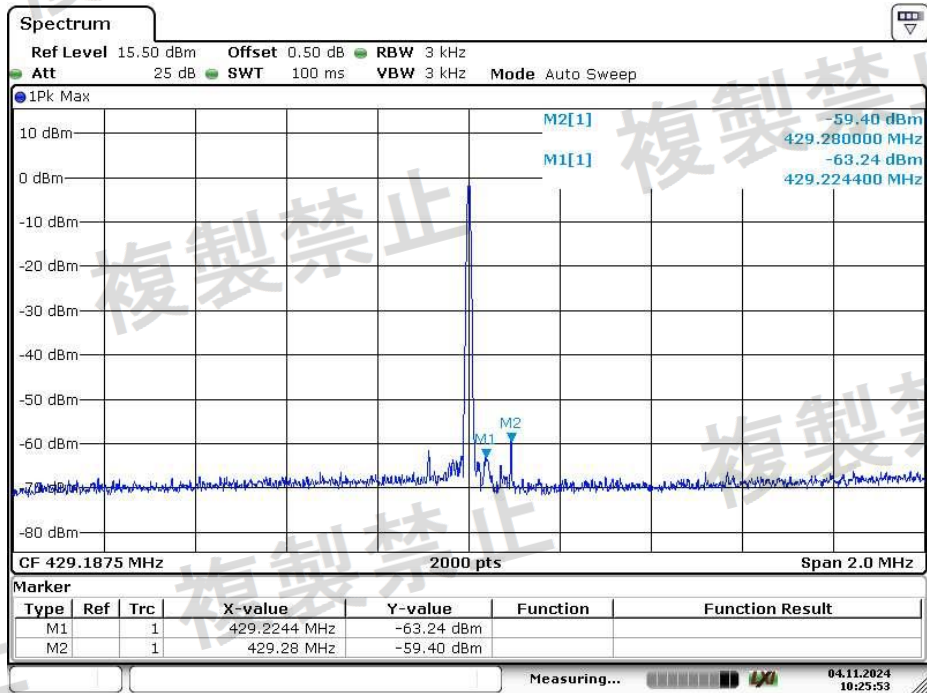
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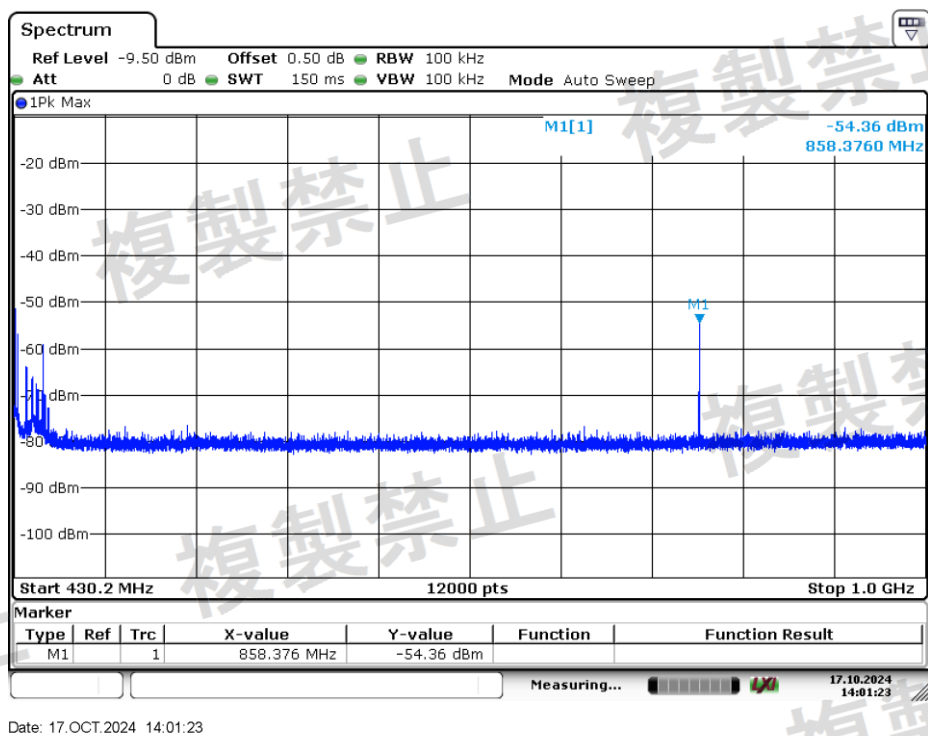
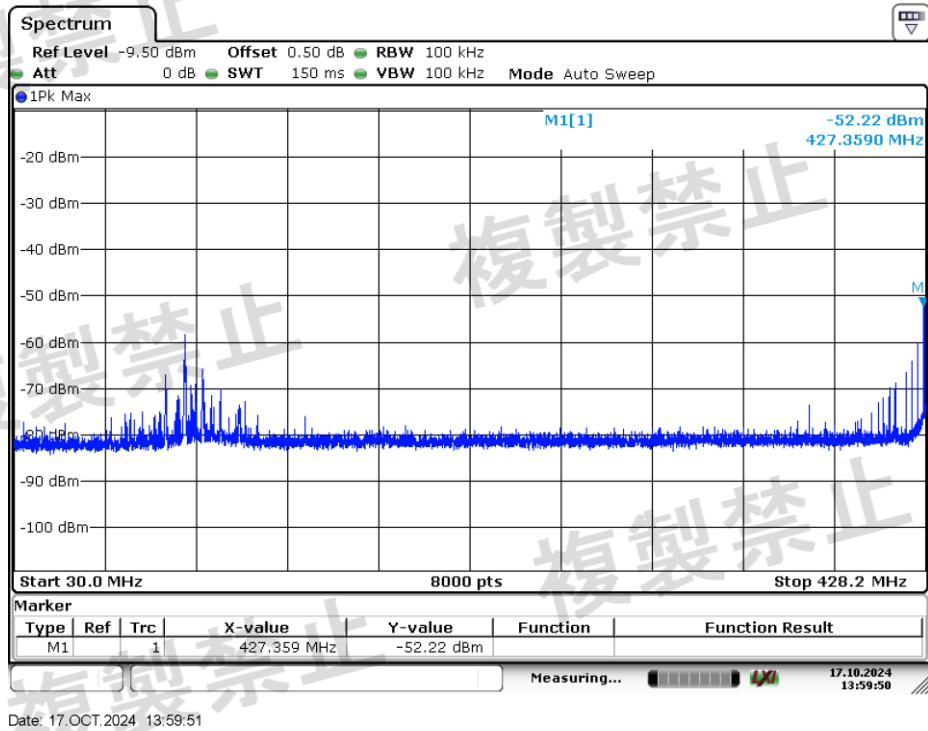


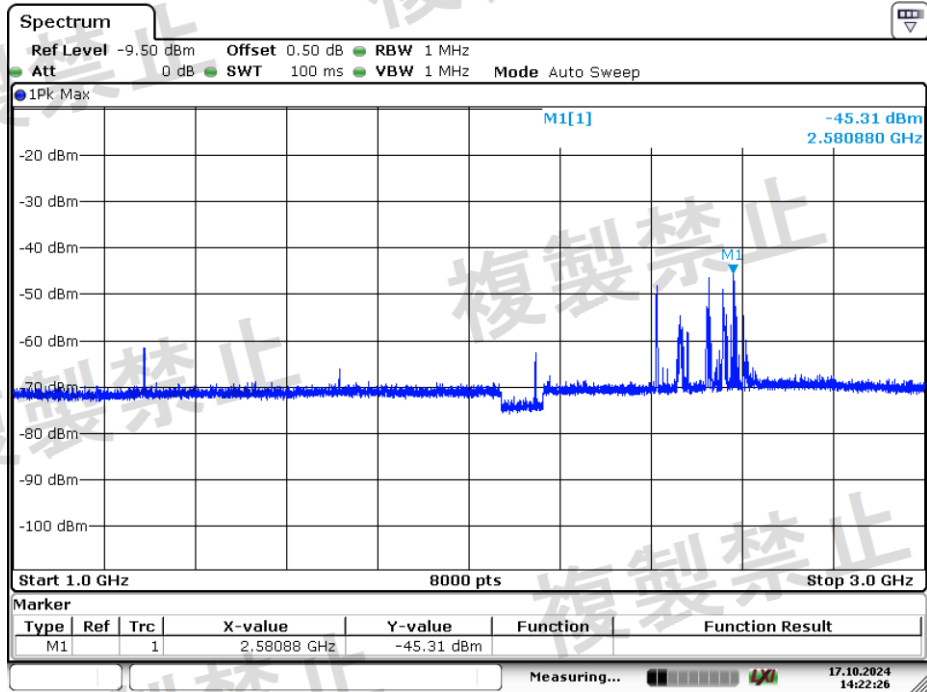
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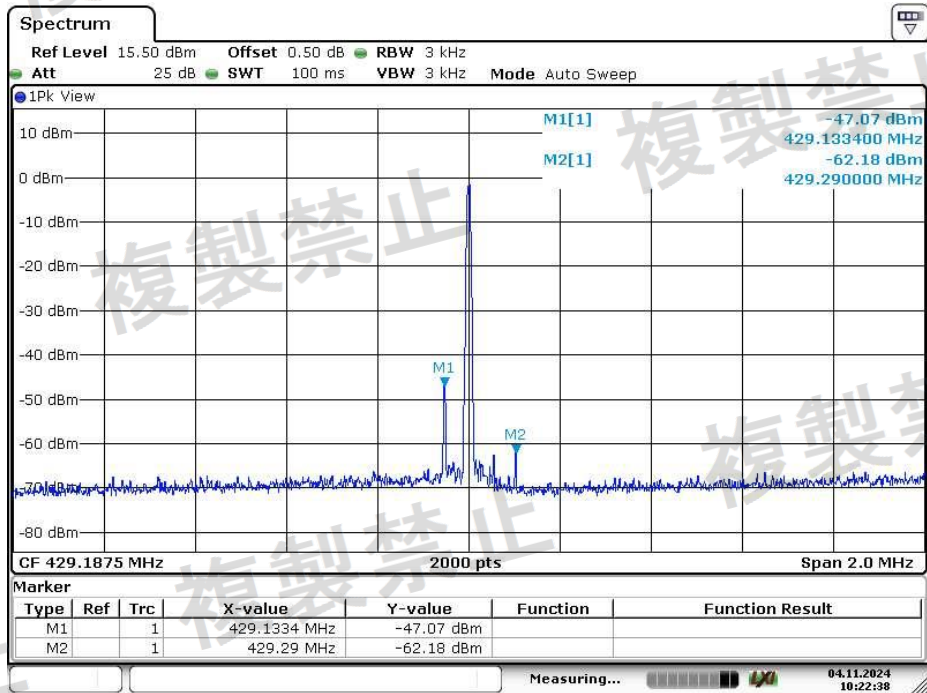
Date: 4.NOV.2024 10:25:54

DC 3.3V



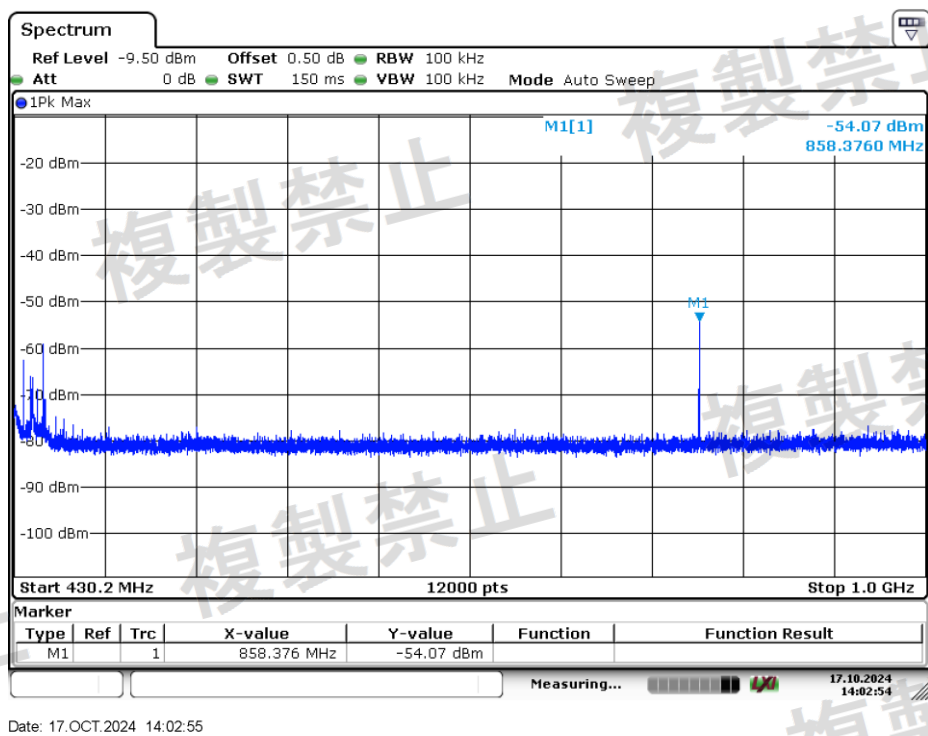
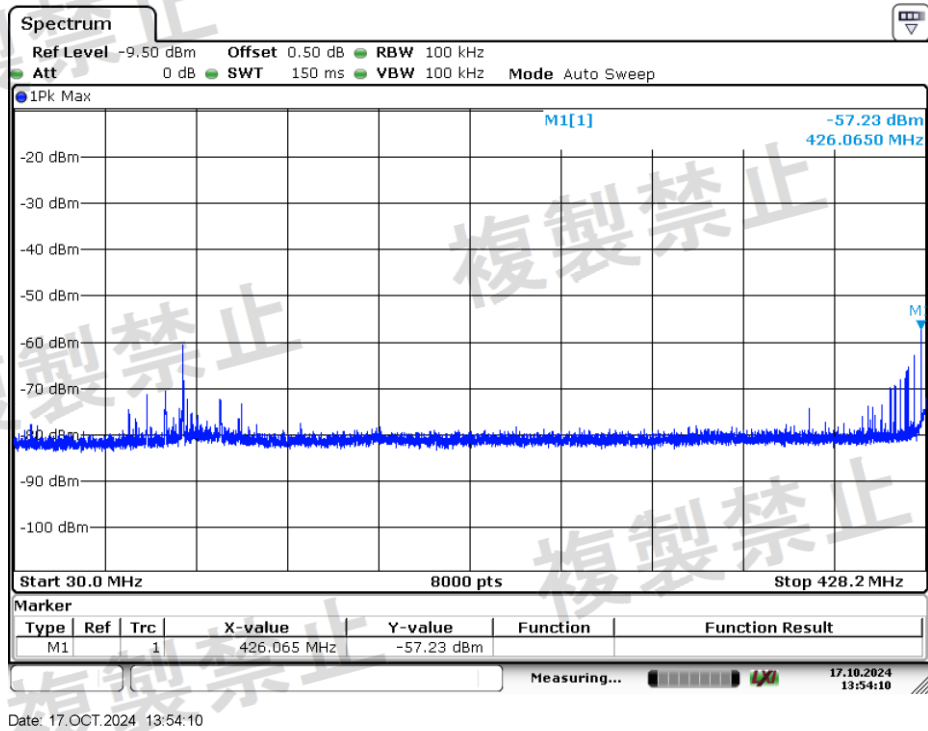


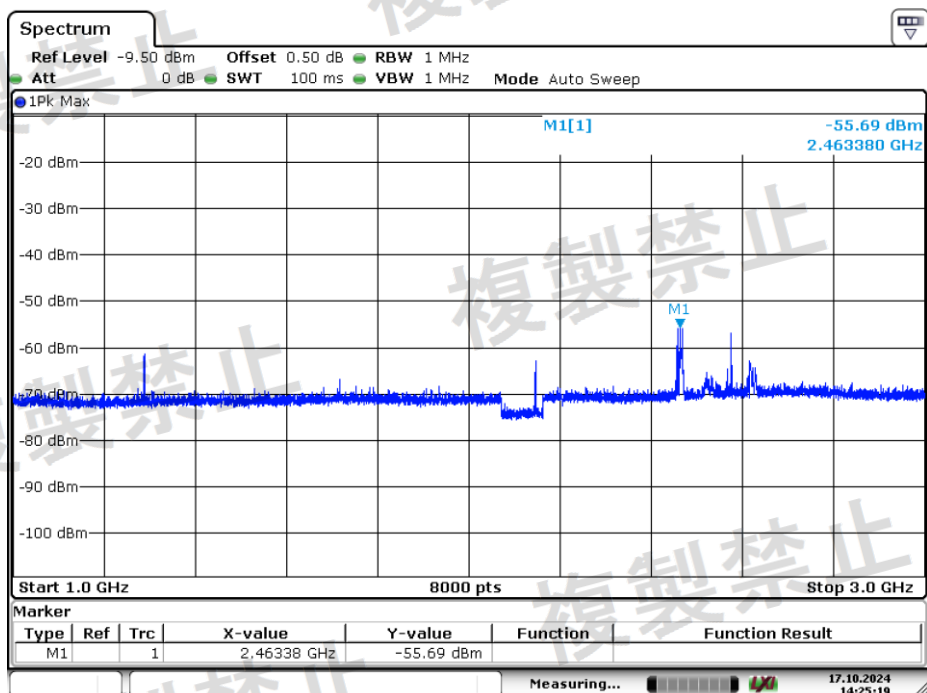
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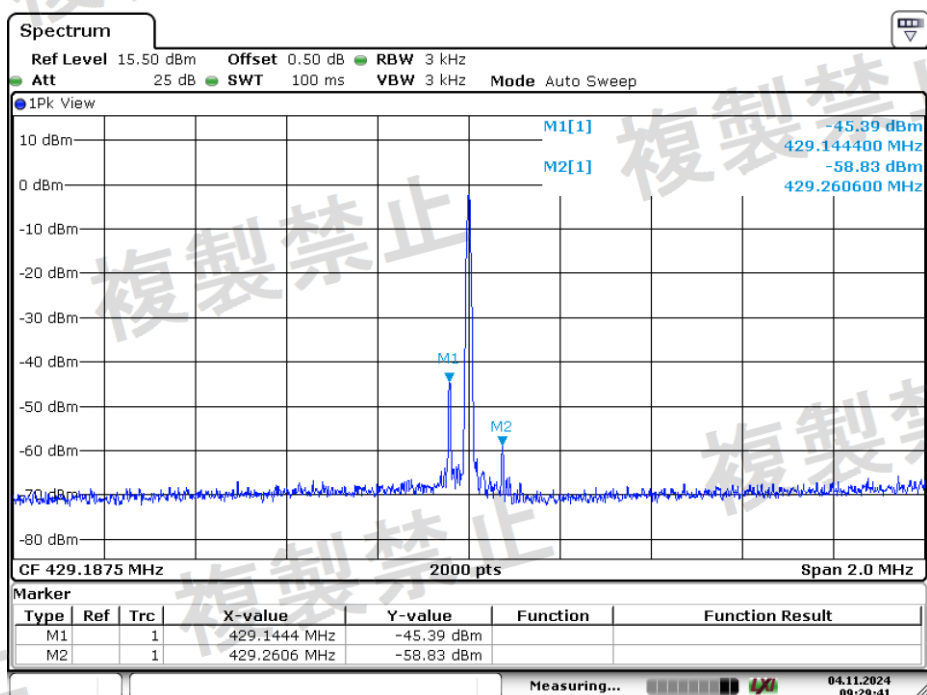
Date: 4.NOV.2024 10:22:37

DC 2.7V





Date: 17.OCT.2024 14:25:19



Date: 4.NOV.2024 09:29:41

3.8 Secondary Radiated Emissions Strength (Conducted) (For receiver)

3.8.1 Test condition

Date of testing:	2025.1.24
Test Frequency:	429.1875MHz
Test position:	Receiving
Ambient temperature:	20.8°C
Relative humidity:	35.4%
Atmosphere Pressure:	1020.1mbar

3.8.2 Limit

Frequency Range	Limit
30 to 1000MHz	4nW or below(-54dBm)
1000 to 3000MHz	4nW or below(-54dBm)

3.8.3 Test Result

DC 3.0V:

Frequency (MHz)	Reading (MHz)	Reading(dBm)	Results(nW)	Scanning Bandwidth	Limit
429.1875	77.9910	-71.70	0.06761	30 to 1000MHz	4nW or below(-54dBm)
	2891.250	-62.44	0.57016	1000 to 3000MHz	4nW or below(-54dBm)

DC 3.3V:

Frequency (MHz)	Reading (MHz)	Reading(dBm)	Results(nW)	Scanning Bandwidth	Limit
429.1875	77.9910	-70.09	0.09795	30 to 1000MHz	4nW or below(-54dBm)
	2413.950	-61.52	0.70469	1000 to 3000MHz	4nW or below(-54dBm)

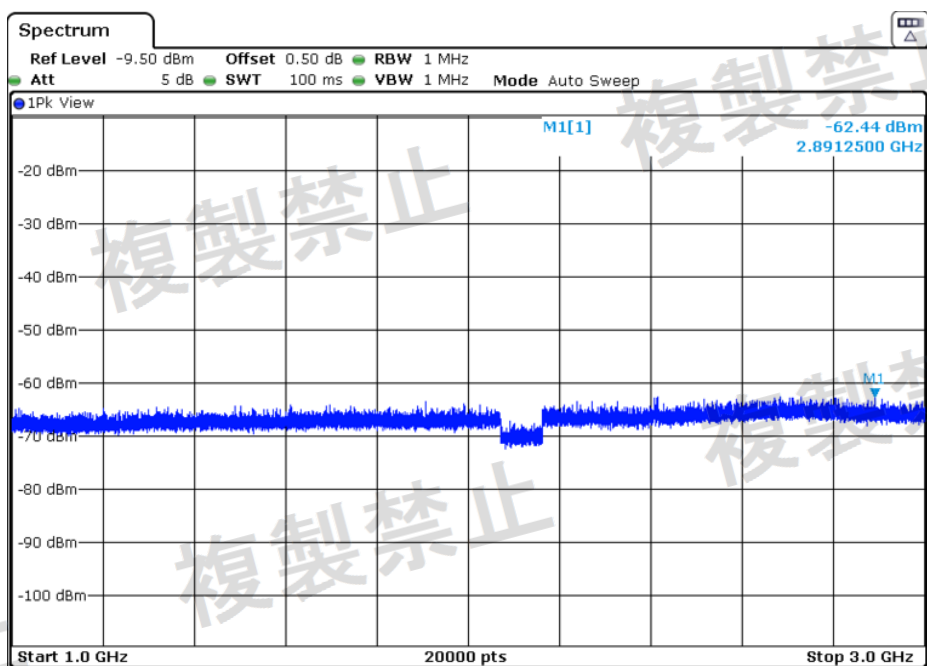
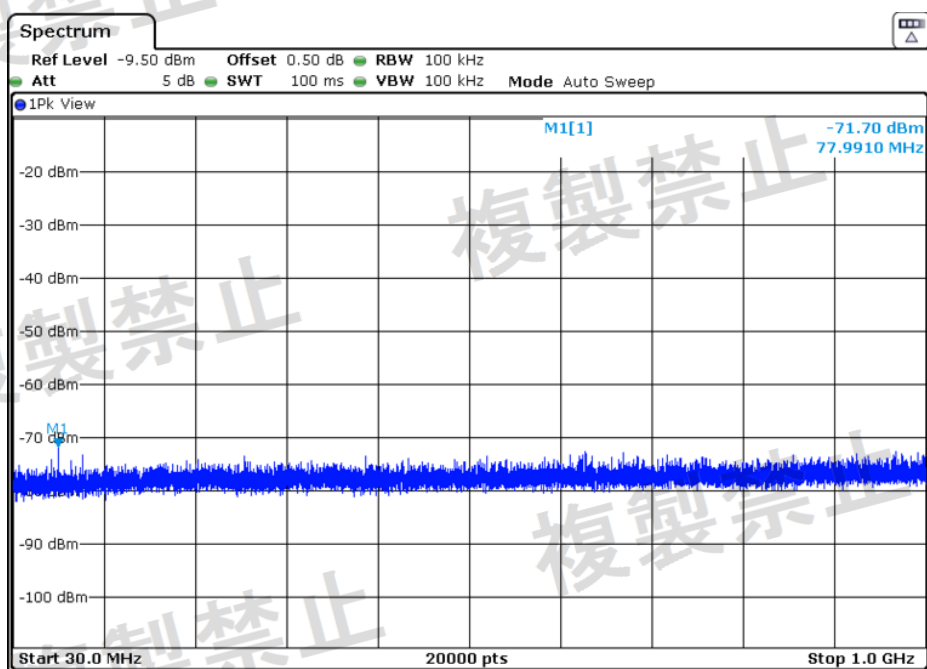
DC 2.7V:

Frequency (MHz)	Reading (MHz)	Reading(dBm)	Results(nW)	Scanning Bandwidth	Limit
429.1875	77.9910	-72.01	0.06295	30 to 1000MHz	4nW or below(-54dBm)
	2750.650	-62.43	0.57148	1000 to 3000MHz	4nW or below(-54dBm)

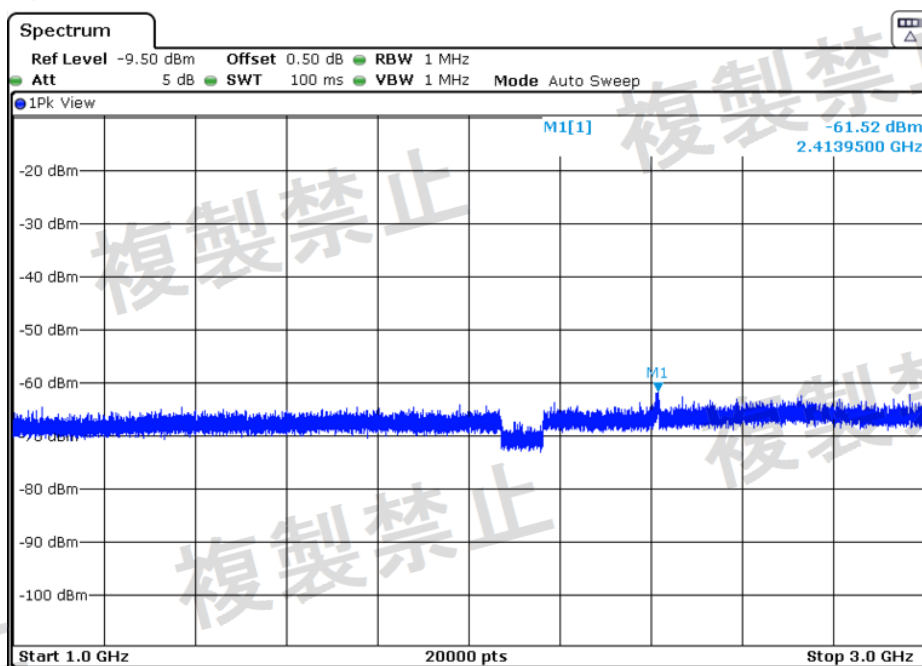
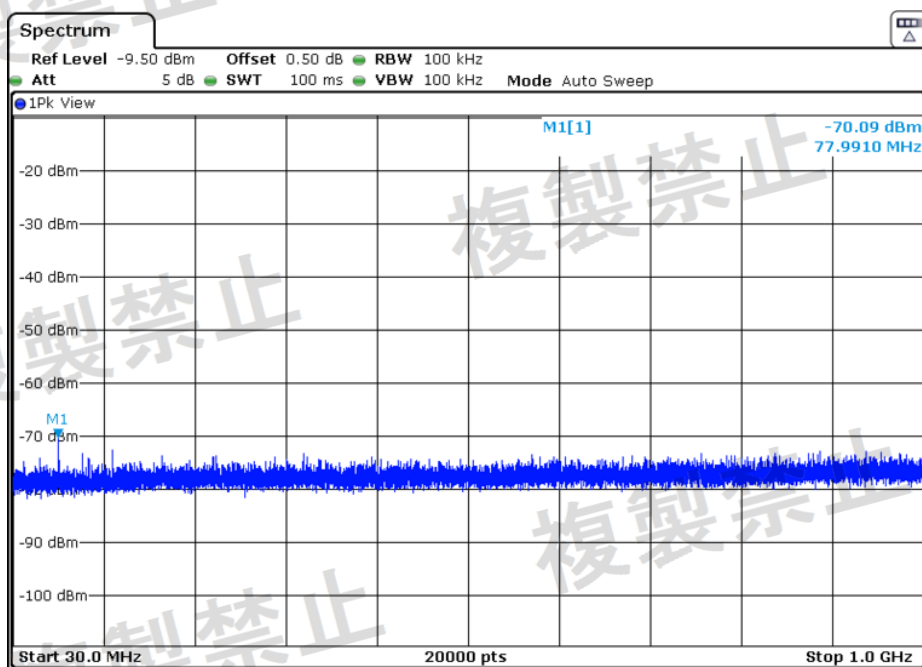
3.8.4 Result

The equipment met the requirement of this clause.

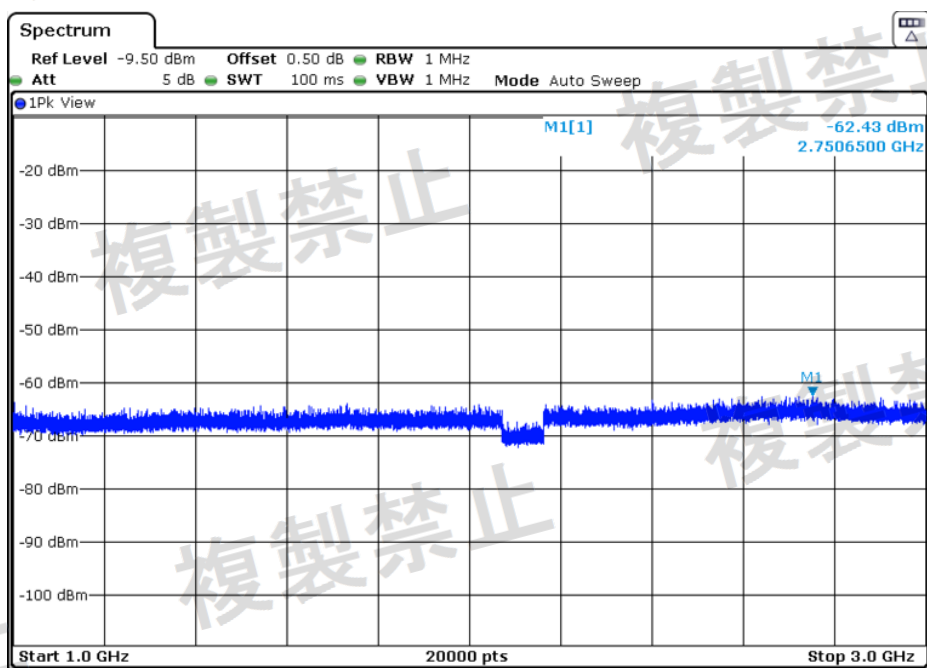
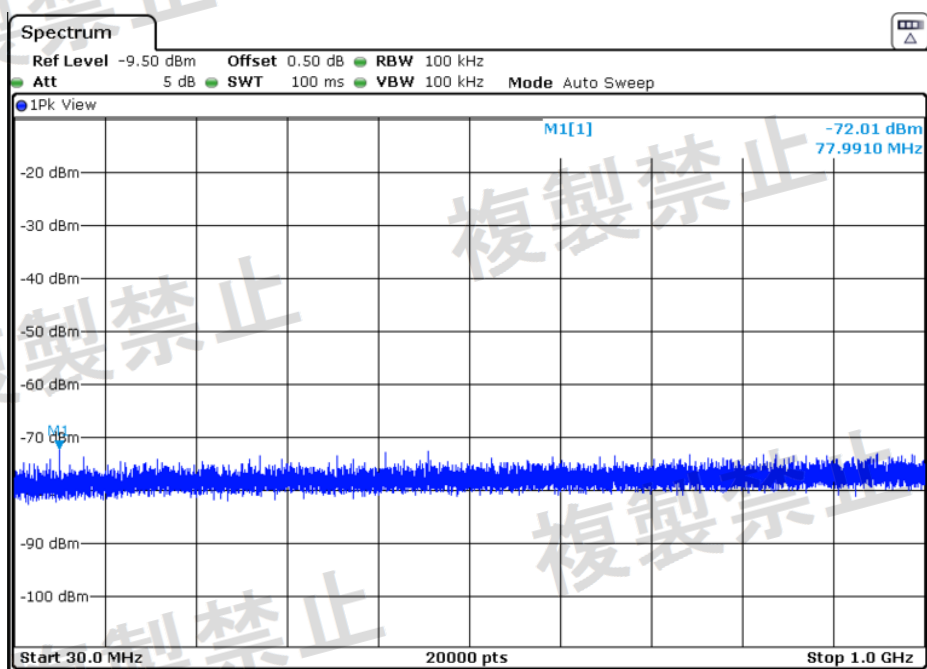
DC 3.0V



DC 3.3V



DC 2.7V



3.9 Carrier Sensing Function

3.9.1 Test condition

Date of testing:	2024.10.25
Test Frequency:	429.1875MHz
Test position:	Transmitting
Ambient temperature:	22.8°C
Relative humidity:	57.6%
Atmosphere Pressure:	1019.1mbar

3.9.2 Limit

When the carrier sensing device receives a radio wave from another radio station before a radio communication channel is established, it shall not radiate emissions of the same frequency (if the communication method of the carrier sensing device is duplex operation or semi-duplex operation, the transmission frequency corresponding to the receiving frequency) as that which the said radio station radiates.

3.9.3 Test Result

Test Condition	Test Frequency	Limit	Result
NTNV	429.1875MHz	-96dBm	Pass
NTLV	429.1875MHz	-96dBm	Pass
NTHV	429.1875MHz	-96dBm	Pass

3.9.4 Result

The equipment met the requirement of this clause.

4 Photographs of Test Set-ups

