

RADIO PERFORMANCE TEST REPORT

Test Report No. : OT-256-RWD-033

Reception No. : 2505001693

Applicant : SBELECTRIC co., Ltd.

Address : 89 Saneopdanji 7-ro, Eomo-myeon, Gimcheon-si, G`yeongsangbuk-do, Korea

Manufacturer : Konecs Ontech Co., Ltd.

Address : A-201, 155, Jeongwangcheon-ro, Siheung-si, Gyeonggi-do, Korea

Type of Equipment : Conalog Guard 2in1

Model Name : CA-GARD01D-KR05

Multiple Model Name : N/A

Serial Part Number : N/A

Total page of Report : 28 pages (including this page)

Date of Incoming : May 28, 2025

Date of issue : June 25, 2025

SUMMARY

The equipment complies with the standard;

Specified Low Power Radio Equipment Article 2 Paragraph 1 Item (19)

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

This report is not correlated with the "KS Q ISO/IEC 17025 and KOLAS accreditation" of Korean Laboratory Accreditation Scheme.

한동연



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OTC-TRF-RF-001(0)

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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-256-RWD-033	June 25, 2025	Initial Release	All

1. APPLICANT AND MANUFACTURER INFORMATION

- Applicant : SBELECTRIC co., Ltd.
- Address : 89 Saneopdanji 7-ro, Eomo-myeon, Gimcheon-si, G`yeongsangbuk-do, Korea
- Manufacturer : Konecs Ontech Co., Ltd.
- Address : A-201, 155, Jeongwangcheon-ro, Siheung-si, Gyeonggi-do, Korea

2. GENERAL INFORMATION

2.1 Test standards and results

Requirement	Result
Frequency Tolerance	Pass
Occupied Bandwidth	Pass
Antenna Power & Antenna Power Tolerance	Pass
Transmitter Spurious Emissions	Pass
Collateral Emission	Pass
Interference prevention function	Pass

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Purpose of the test

To determine whether the equipment under test fulfills the RF requirements of the standards stated in section 2.1.

2.4 Test Facility

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea.

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-20122/ C-14617/ G-10666/ T-11842

ISED (Innovation, Science and Economic Development Canada) – Registration No. Site# 3736A-3

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation NO. KT085

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

3. EUT (Equipment Under Test)

3.1 Identification of the EUT

- Equipment : Conalog Guard 2in1
- Model Name : CA-GARD01D-KR05
- Brand Name : -
- Serial number : N/A
- Manufacturer : Konecs Ontech Co., Ltd.

3.2 Product Description

The SBELECTRIC co., Ltd., Model CA-GARD01D-KR05 (referred to as the EUT in this report) is a Conalog Guard 2in1.

The product specification described herein was obtained from product data sheet or user's manual.

Device Type	Conalog Guard 2in1	
Temperature Range	-25 °C ~ +60 °C	
OPERATING FREQUENCY	Bluetooth LE	2 402 MHz ~ 2 480 MHz
MODULATION TYPE	Bluetooth LE	GFSK for 1 Mbps
RF OUTPUT POWER	Bluetooth LE	0.34 mW
ANTENNA TYPE	Chip Antenna	
ANTENNA GAIN	0.5 dBi	
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	140 kHz	

3.3 Alternative type(s)/model(s); also covered by this test report.

- None

4. EUT MODIFICATIONS

- None

5. Frequency Tolerance

5.1 Operating environment

Temperature : 24 °C
Relative humidity : 35 % R.H.

5.2 Test Setup

The EUT was operated in continuous transmit mode (modulated). The frequency was measured by the use of a Spectrum Analyzer

5.3 Measurement uncertainty

The uncertainty for Frequency is $\pm 12\,698.42$ Hz.

5.4 Test Method

Ministry of Internal Affairs and Communications Notification Article 88 Appendix 43

5.5 Test Date

May 29, 2025

5.6 Test Data for 1 Mbps

Voltage	Nominal TX Frequency	Deviation from Nominal Frequency		Limit (ppm)
		Hz	ppm	
DC 60.0 V (Normal)	LOW (2 402 MHz)	-55 310	-23.03	± 50.00
	MIDDLE (2 440 MHz)	-51 250	-21.00	
	HIGH (2 480 MHz)	-50 935	-20.54	
DC 54.0 V (Low)	LOW (2 402 MHz)	-52 655	-21.92	
	MIDDLE (2 440 MHz)	-50 390	-20.64	
	HIGH (2 480 MHz)	-59 215	-23.88	
DC 66.0 V (High)	LOW (2 402 MHz)	-53 905	-22.44	
	MIDDLE (2 440 MHz)	-55 700	-22.82	
	HIGH (2 480 MHz)	-56 795	-22.90	

6. Occupied Bandwidth

6.1 Operating environment

Temperature : 24 °C
Relative humidity : 35 % R.H.

6.2 Test Setup

The EUT was operated in continuous transmit mode (modulated). For occupied bandwidth measurement the internal occupied bandwidth measurement capability of Spectrum Analyzer was used. The bandwidth for 99 % power was measured.

6.3 Measurement uncertainty

The uncertainty for Occupied Channel Bandwidth is $\pm 5\,555.70$ Hz.

6.4 Test Method

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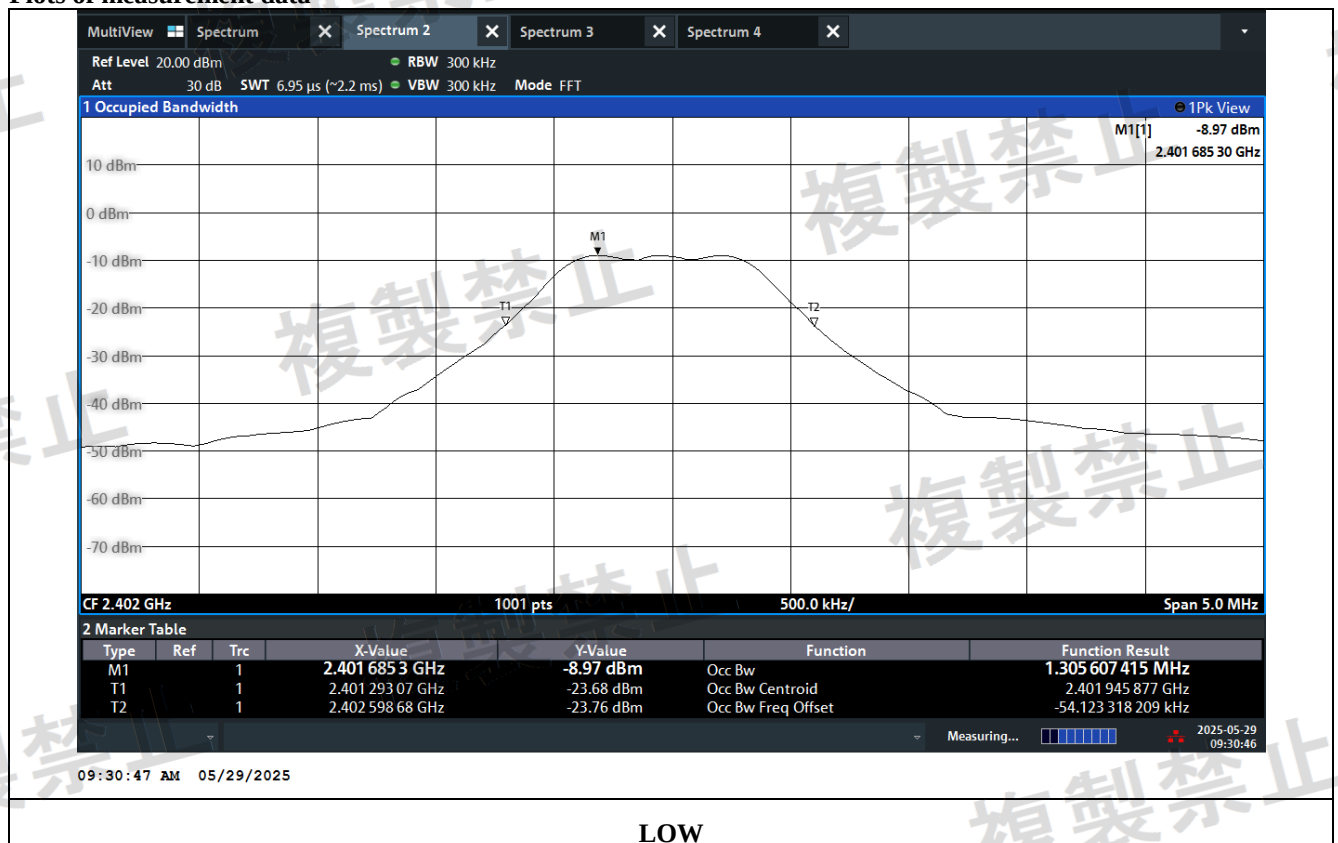
6.5 Test Date

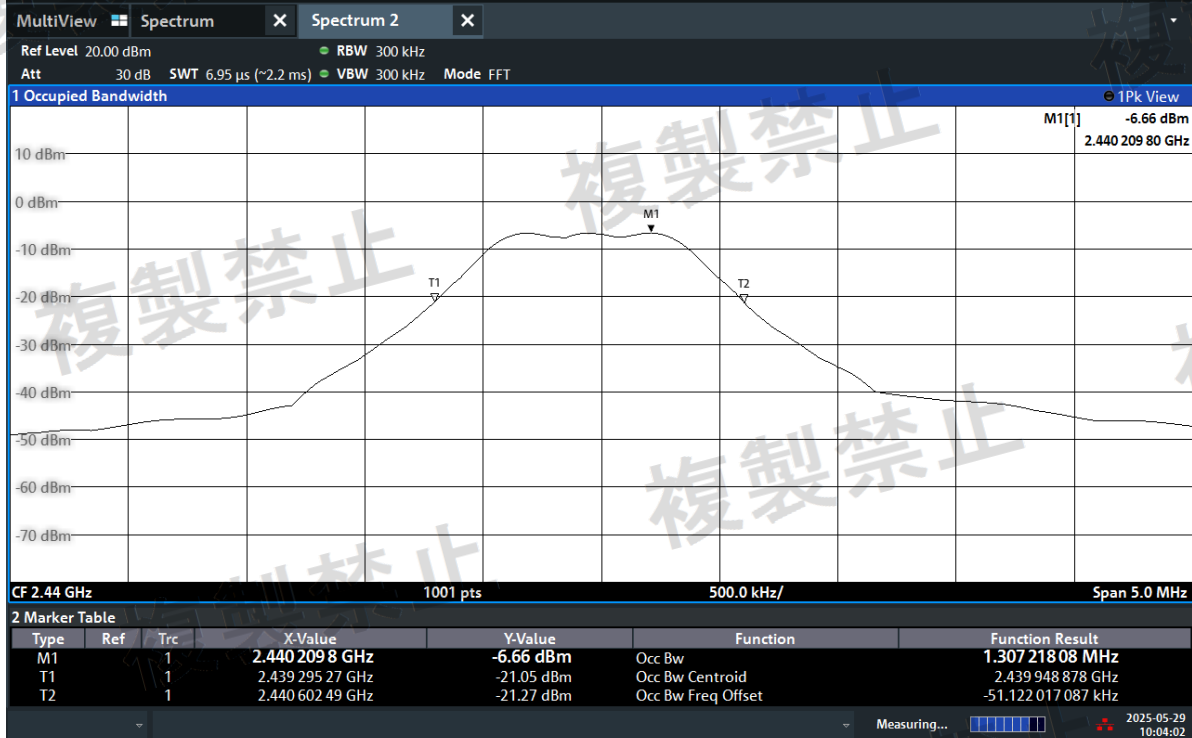
May 29, 2025

6.6 Test data for 1 Mbps

Voltage	Nominal TX Frequency	Occupied Bandwidth (MHz)	Limit (MHz)
DC 60.0 V (Normal)	LOW (2 402 MHz)	1.31	≤ 26.00
	MIDDLE (2 440 MHz)	1.31	
	HIGH (2 480 MHz)	1.31	
DC 54.0 V (Low)	LOW (2 402 MHz)	1.31	
	MIDDLE (2 440 MHz)	1.31	
	HIGH (2 480 MHz)	1.31	
DC 66.0 V (High)	LOW (2 402 MHz)	1.31	
	MIDDLE (2 440 MHz)	1.31	
	HIGH (2 480 MHz)	1.32	

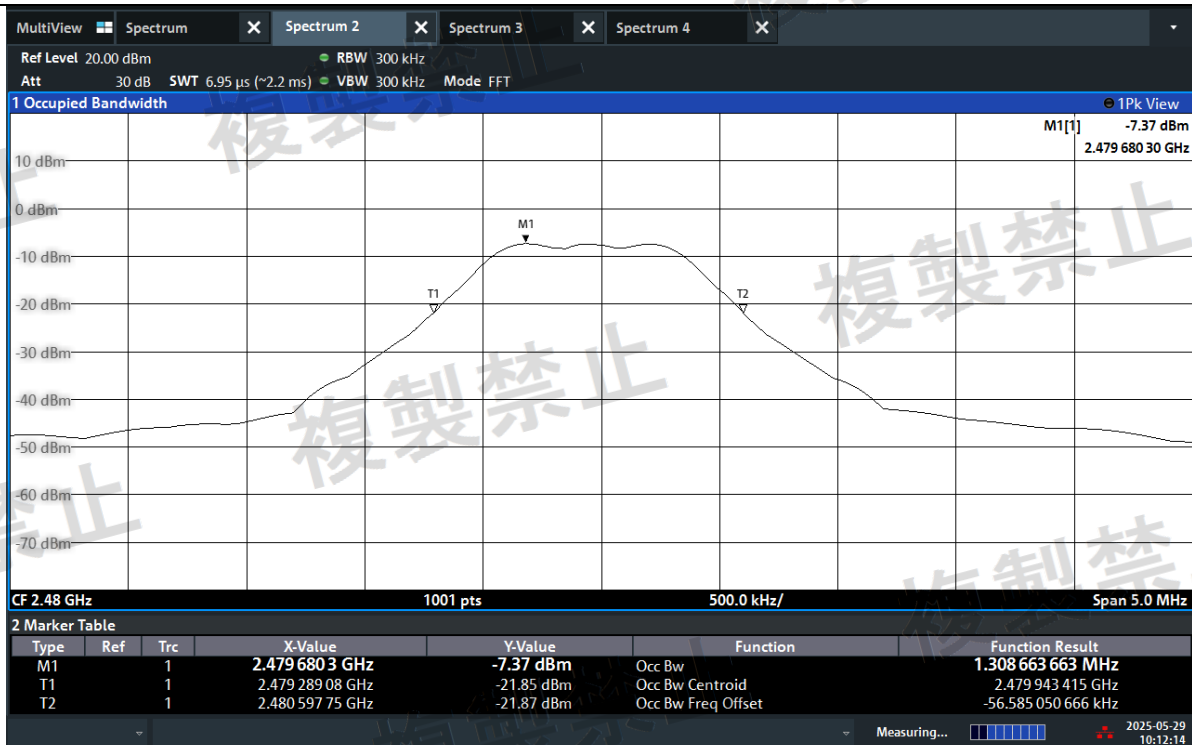
Plots of measurement data





10:04:03 AM 05/29/2025

MIDDLE



10:12:14 AM 05/29/2025

HIGH

7. Antenna Power & Antenna Power Tolerance

7.1 Operating environment

Temperature : 24 °C
Relative humidity : 35 % R.H.

7.2 Test Setup

The EUT was operated in continuous transmit mode (modulated). The power meter was connected to IF output.
The external attenuation was corrected by the power meter's correction capability.

7.3 Measurement uncertainty

The uncertainty for Antenna Power is ± 1.20 dB.

7.4 Test Method

Ministry of Internal Affairs and Communications Notification Article 88 Appendix 43

7.5 Test Date

May 29, 2025

7.6 Test data for 1 Mbps

Frequency	Power Voltage	Power Value (mW)	Power Value (dBm)	E.I.R.P (dBm)	Rated output (mW)	Deviation (%)	Deviation average value(%)	Limit (mW)
LOW (2 402 MHz)	DC 60.0 V	0.3192	-4.96	-4.46	0.34	-6.13	-20.36	10.00
	DC 54.0 V	0.3170	-4.99	-4.49		-6.78		
	DC 66.0 V	0.3206	-4.94	-4.44		-5.70		
MIDDLE (2 440 MHz)	DC 60.0 V	0.2564	-5.91	-5.41		-24.57		
	DC 54.0 V	0.2547	-5.94	-5.44		-25.09		
	DC 66.0 V	0.2570	-5.90	-5.40		-24.40		
HIGH (2 480 MHz)	DC 60.0 V	0.2388	-6.22	-5.72		-29.77		
	DC 54.0 V	0.2360	-6.27	-5.77		-30.57		
	DC 66.0 V	0.2371	-6.25	-5.75		-30.25		

8. Transmitter Spurious Emissions

8.1 Operating environment

Temperature : 24 °C
Relative humidity : 35 % R.H.

8.2 Test Setup

Measurement frequency range acc. to Ordinance Regulation Radio Equipment (2008-04) from 30 MHz to 5 times the carrier frequency; measurement performed in the range 30 MHz to 12.5 GHz.

The EUT was operated in continuous transmit mode (modulated).

Cable losses and external attenuators were regarded by the use of a transducer factor.

8.3 Measurement uncertainty

Conducted spurious emissions of transmitter, 30 MHz ~ 40 GHz : ± 1.26 dB

8.4 Test Method

Ministry of Internal Affairs and Communications Notification Article 88 Appendix 43

8.5 Test Date

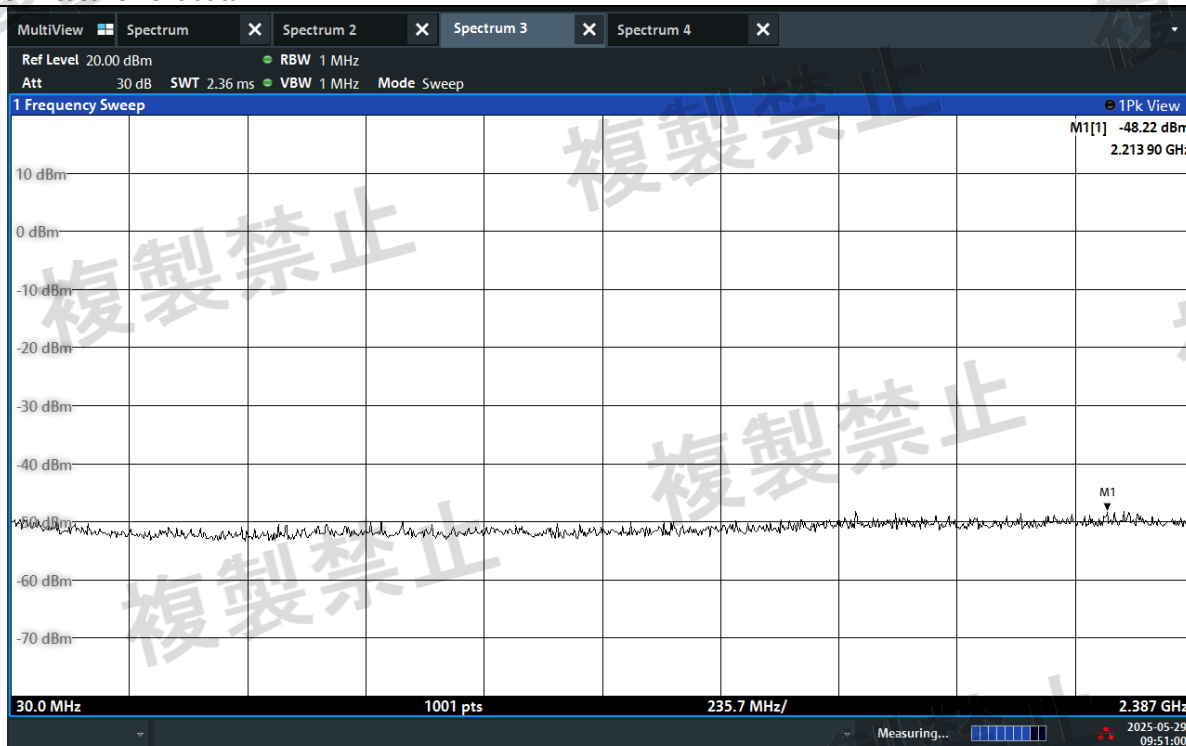
May 29, 2025

8.6 Test data for 1 Mbps

Frequency	Power Voltage	Frequency (MHz)	Measured Level(dBm)	Cable loss(dB)	RBW Converted Value(dB)	Total (dBm/MHz)	Total (uW/MHz)	Limit (uW/MHz)
LOW (2 402 MHz)	DC 60.0 V	2 213.90	-48.22	0.49	-	-47.73	0.016 9	2.5
		2 399.56	-35.12	0.58	-	-34.54	0.351 7	25.0
		2 484.81	-46.87	0.57	-	-46.30	0.023 4	25.0
		4 800.50	-42.28	0.91	-	-41.37	0.073 0	2.5
	DC 54.0 V	2 275.20	-47.46	0.49	-	-46.97	0.020 1	2.5
		2 399.99	-35.31	0.58	-	-34.73	0.336 7	25.0
		2 487.26	-47.34	0.57	-	-46.77	0.021 0	25.0
		4 800.50	-42.42	0.91	-	-41.51	0.070 7	2.5
	DC 66.0 V	2 284.60	-46.69	0.49	-	-46.20	0.024 0	2.5
		2 399.96	-35.23	0.58	-	-34.65	0.342 9	25.0
		2 488.13	-47.17	0.57	-	-46.60	0.021 9	25.0
		4 800.50	-42.60	0.91	-	-41.69	0.067 8	2.5
MIDDLE (2 440 MHz)	DC 60.0 V	2 296.30	-47.33	0.49	-	-46.84	0.020 7	2.5
		2 394.45	-47.67	0.58	-	-47.09	0.019 6	25.0
		2 484.23	-47.02	0.57	-	-46.45	0.022 6	25.0
		4 879.50	-41.63	0.91	-	-40.72	0.084 8	2.5
	DC 54.0 V	2 296.30	-48.03	0.49	-	-47.54	0.017 6	2.5
		2 394.41	-47.85	0.58	-	-47.27	0.018 8	25.0
		2 487.30	-47.78	0.57	-	-47.21	0.019 0	25.0
		4 879.50	-41.61	0.91	-	-40.70	0.085 2	2.5
	DC 66.0 V	2 093.80	-47.77	0.49	-	-47.28	0.018 7	2.5
		2 390.02	-47.39	0.58	-	-46.81	0.020 9	25.0
		2 484.21	-46.91	0.57	-	-46.34	0.023 2	25.0
		4 879.50	-41.90	0.91	-	-40.99	0.079 7	2.5

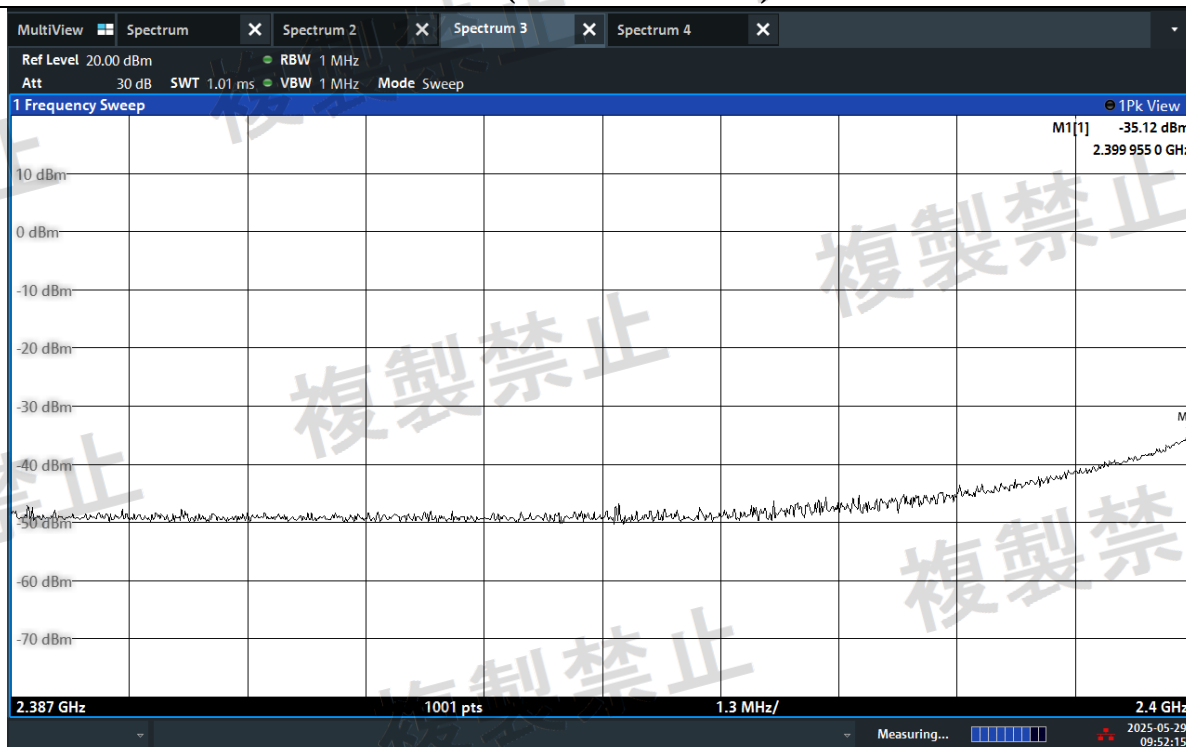
HIGH (2 480 MHz)	DC 60.0 V	2 348.10	-47.76	0.58	-	-47.18	0.019 2	2.5
		2 390.67	-47.20	0.58	-	-46.62	0.021 8	25.0
		2 483.60	-40.66	0.57	-	-40.09	0.097 9	25.0
		4 959.50	-41.98	0.91	-	-41.07	0.078 2	2.5
	DC 54.0 V	2 334.00	-48.30	0.58	-	-47.72	0.016 9	2.5
		2 389.31	-46.96	0.58	-	-46.38	0.023 0	25.0
		2 483.58	-41.98	0.57	-	-41.41	0.072 3	25.0
		4 959.50	-42.16	0.91	-	-41.25	0.075 0	2.5
	DC 66.0 V	2 312.80	-47.72	0.58	-	-47.14	0.019 3	2.5
		2 393.23	-47.31	0.58	-	-46.73	0.021 2	25.0
		2 483.86	-41.30	0.57	-	-40.73	0.084 5	25.0
		4 959.50	-42.70	0.91	-	-41.79	0.066 3	2.5

Plots of measurement data



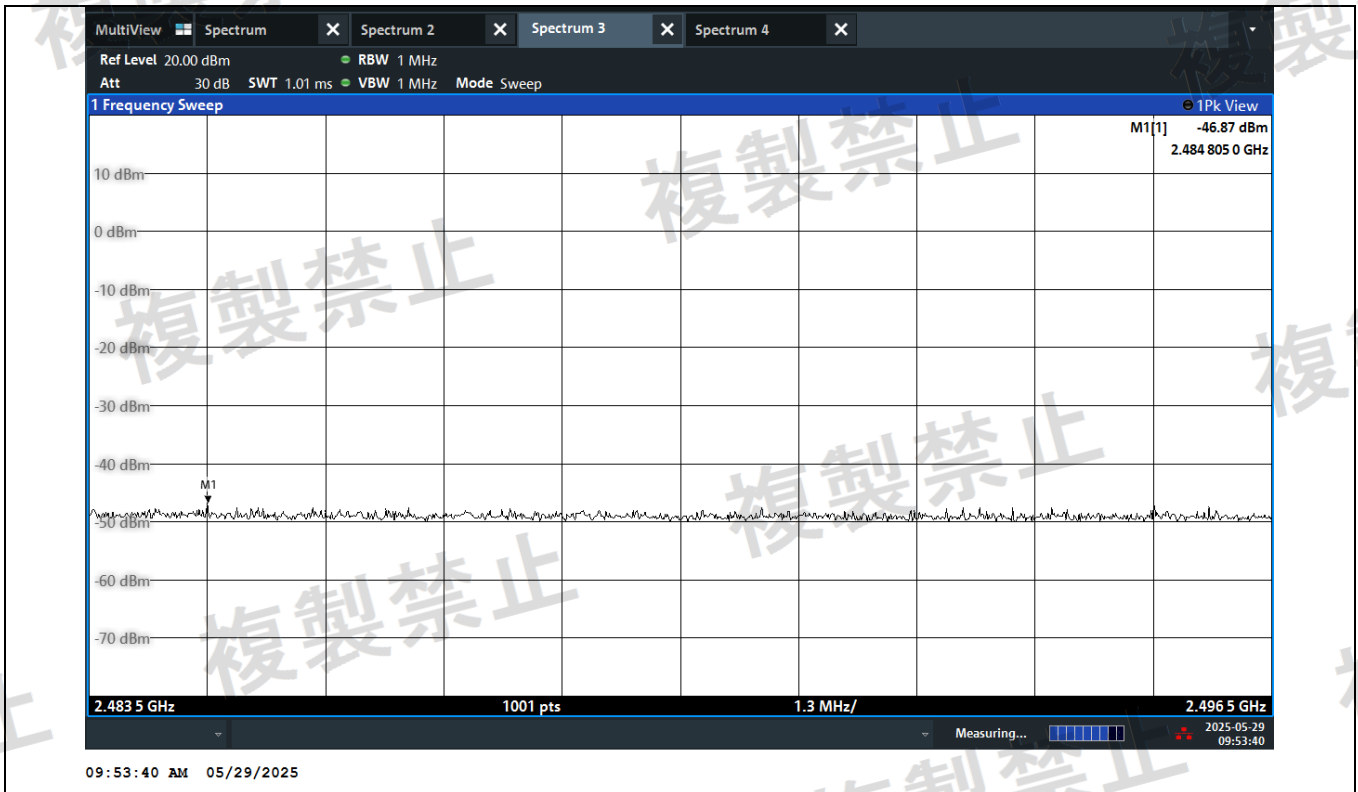
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LOW (30 MHz ~ 2 387 MHz)

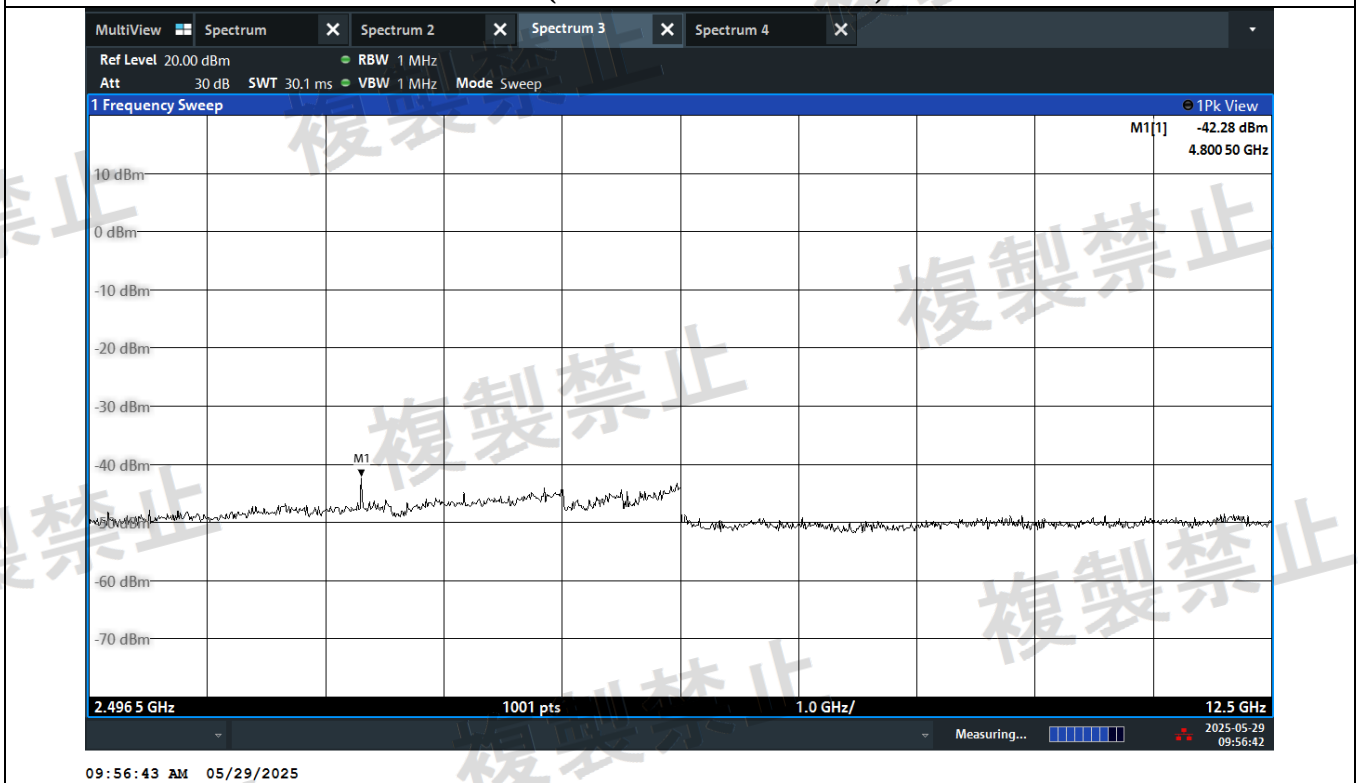


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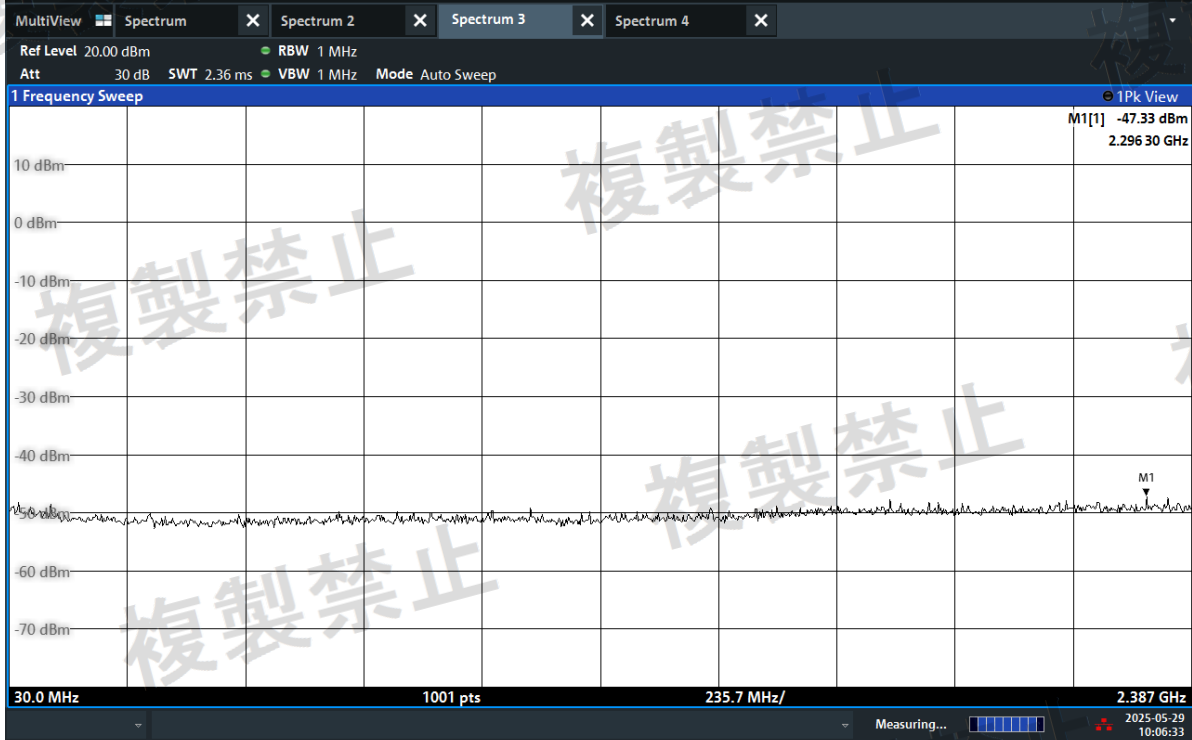
LOW (2 387 MHz ~ 2 400 MHz)



LOW (2 483.5 MHz ~ 2 496.5 MHz)

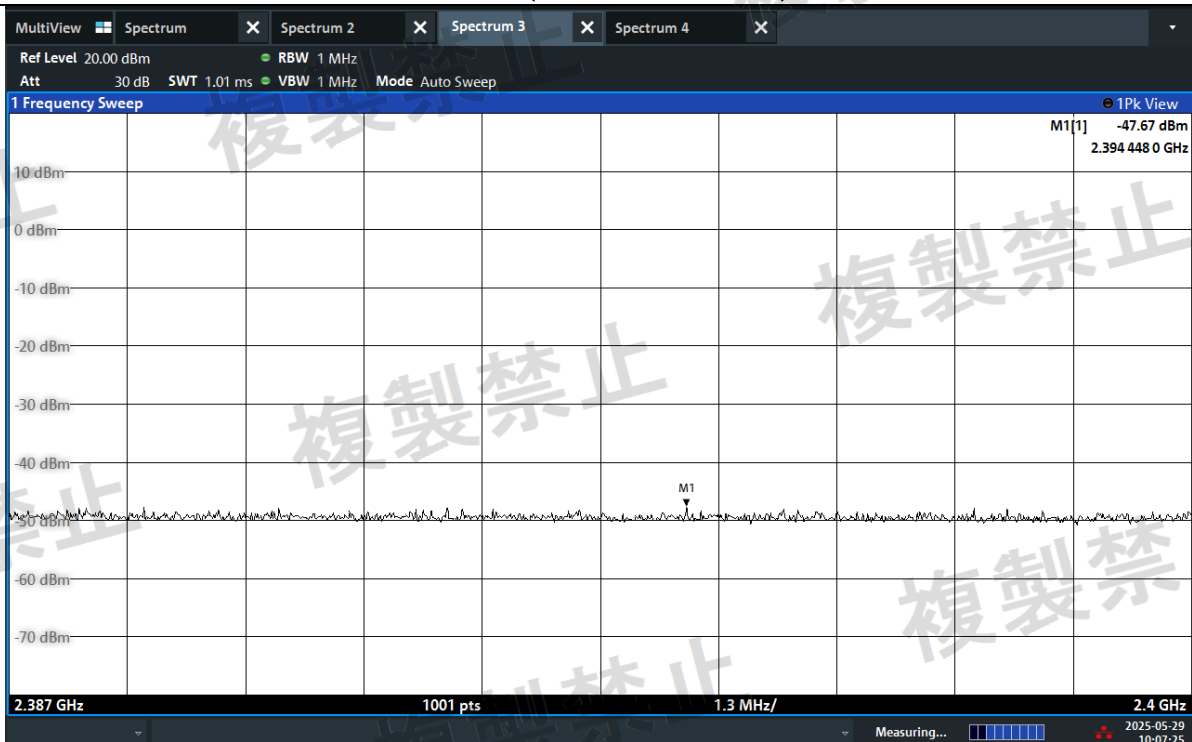


LOW (2 496.5 MHz ~ 12.5 GHz)



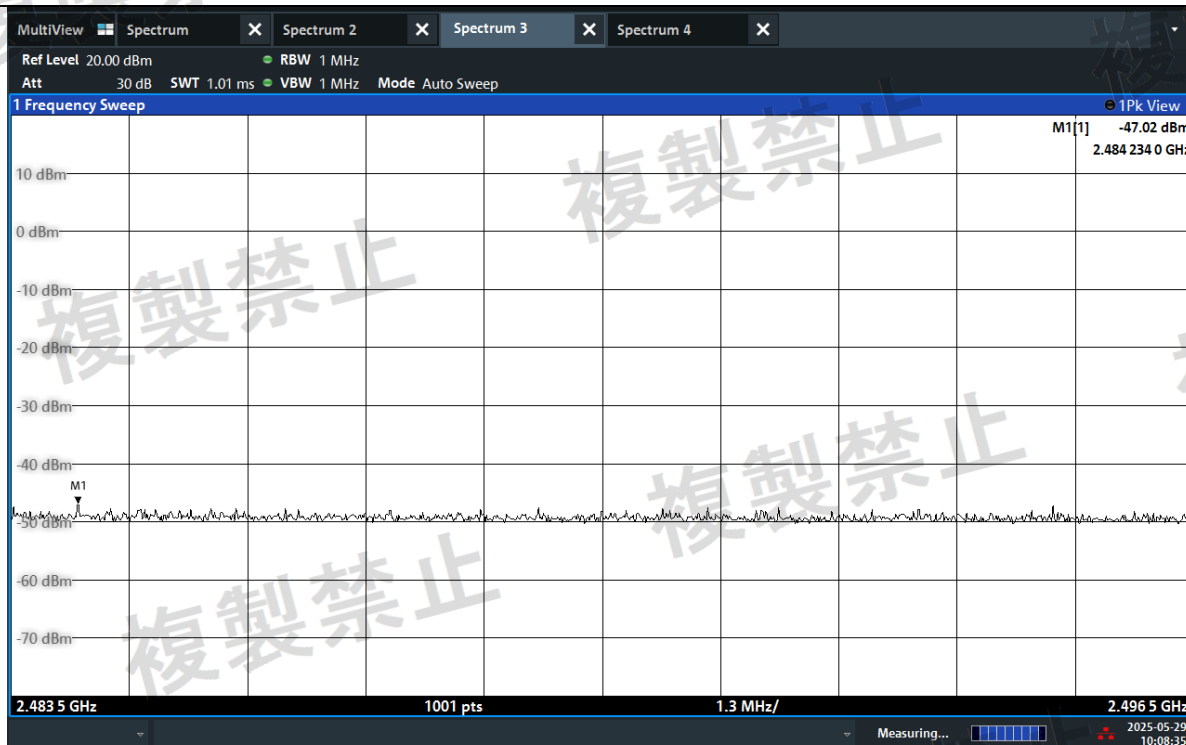
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MIDDLE (30 MHz ~ 2 387 MHz)

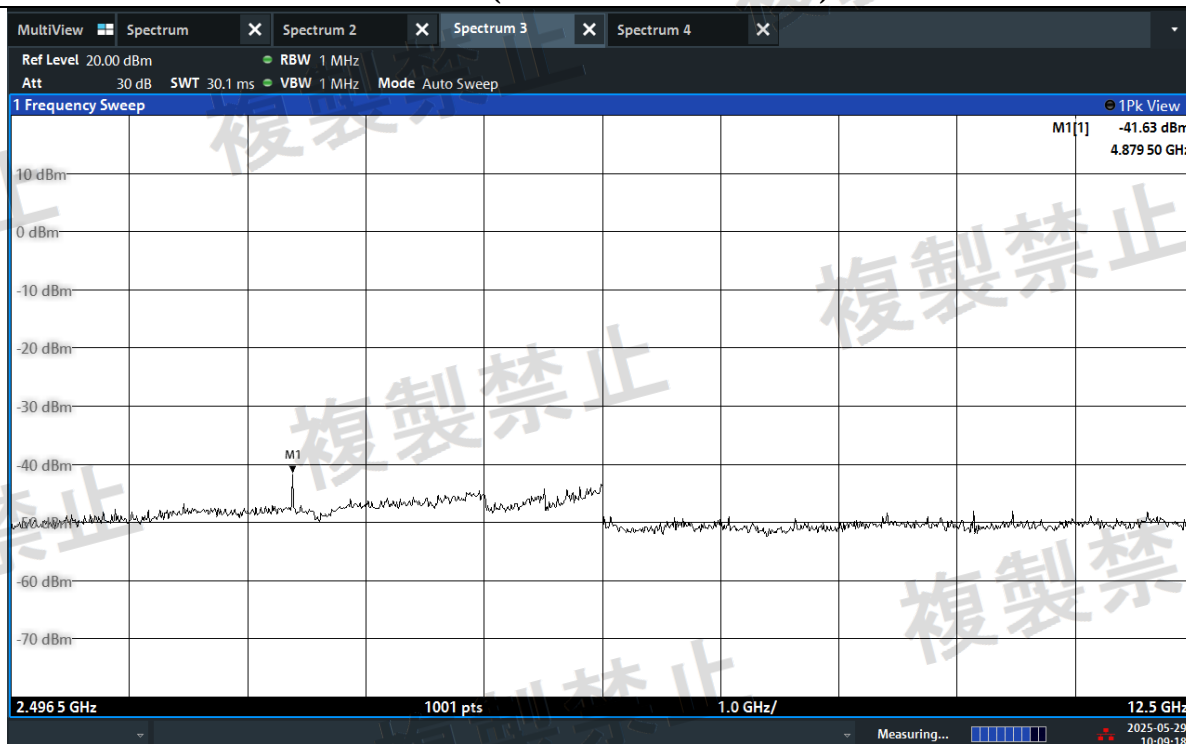


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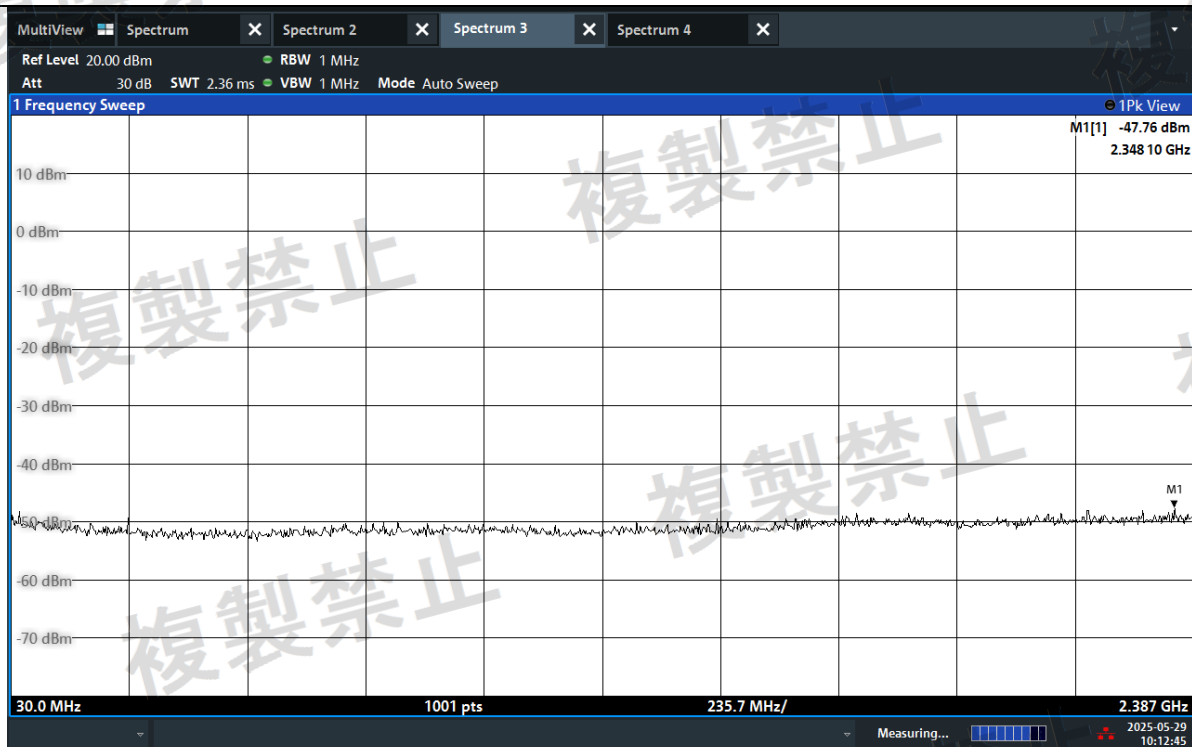
MIDDLE (2 387 MHz ~ 2 400 MHz)



MIDDLE (2 483.5 MHz ~ 2 496.5 MHz)

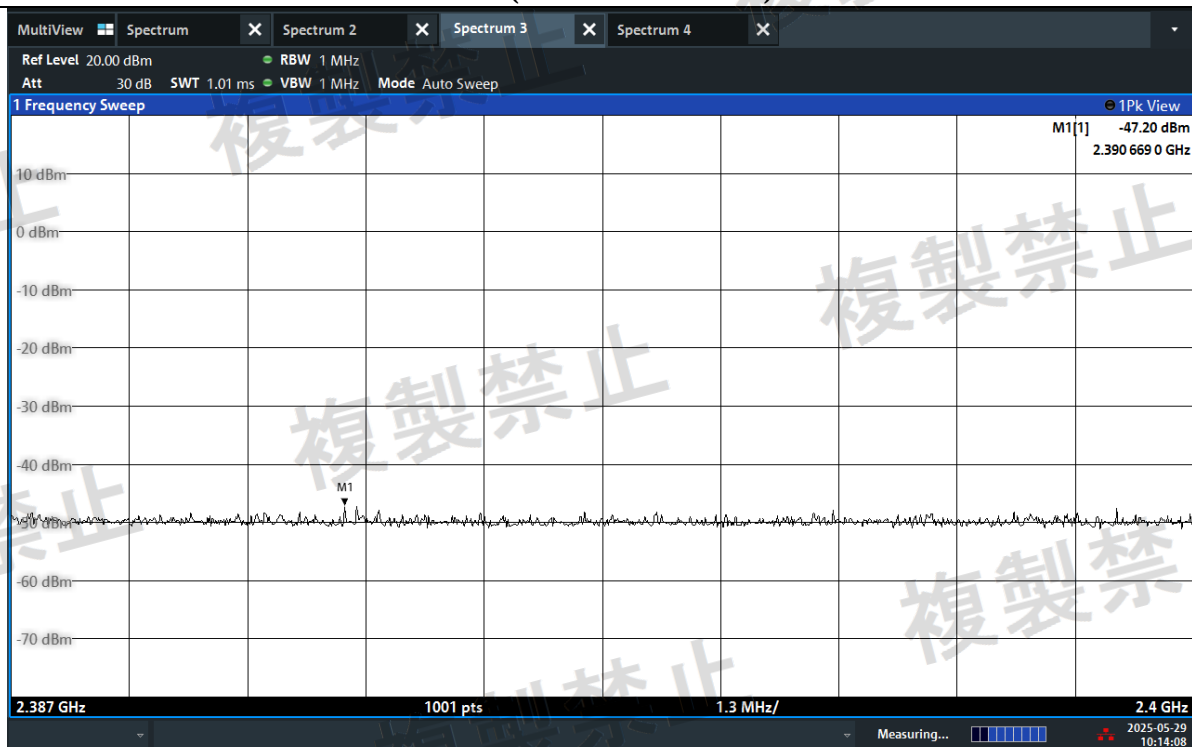


MIDDLE (2 496.5 MHz ~ 12.5 GHz)



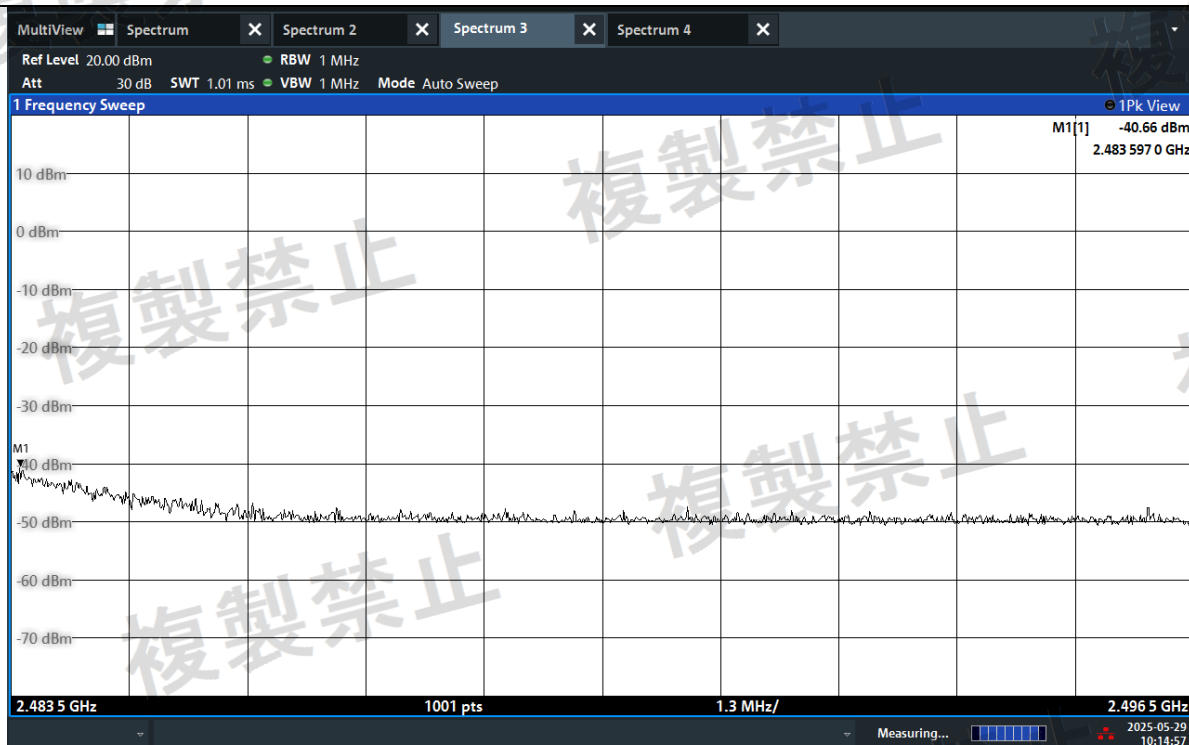
10:12:45 AM 05/29/2025

HIGH (30 MHz ~ 2 387 MHz)



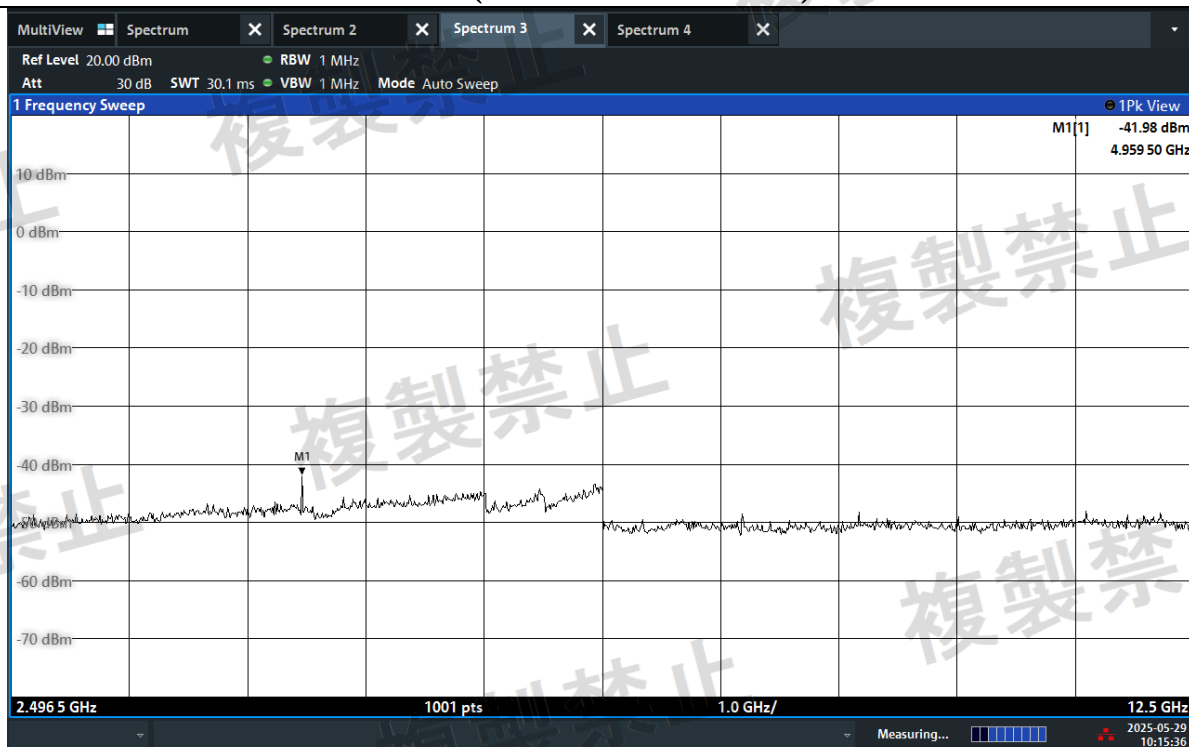
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HIGH (2 387 MHz ~ 2 400 MHz)



10:14:58 AM 05/29/2025

HIGH (2 483.5 MHz ~ 2 496.5 MHz)



10:15:36 AM 05/29/2025

HIGH (2 496.5 MHz ~ 12.5 GHz)

9. Collateral Emission

9.1 Operating environment

Temperature : 24 °C
Relative humidity : 35 % R.H.

9.2 Test Setup

Measurement frequency range acc. to Ordinance Regulation Radio Equipment (2008-04) from 30 MHz to 5 times the carrier frequency; measurement performed in the range 30 MHz to 12.5 GHz.

The EUT was operated in continuous receive mode (modulated).

Cable losses and external attenuators were regarded by the use of a transducer factor.

9.3 Measurement uncertainty

Conducted spurious emissions of transmitter, 30 MHz ~ 40 GHz : ± 1.26 dB

9.4 Test Method

Ministry of Internal Affairs and Communications Notification Article 88 Appendix 43

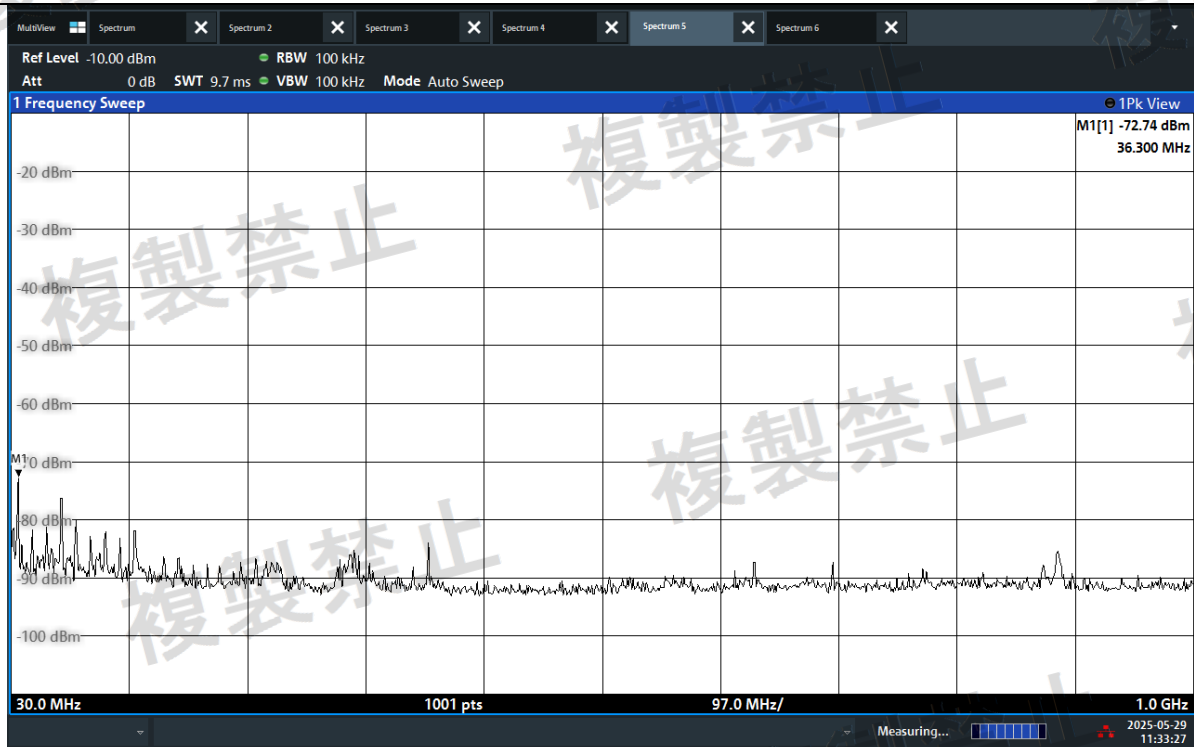
9.5 Test Date

May 29, 2025

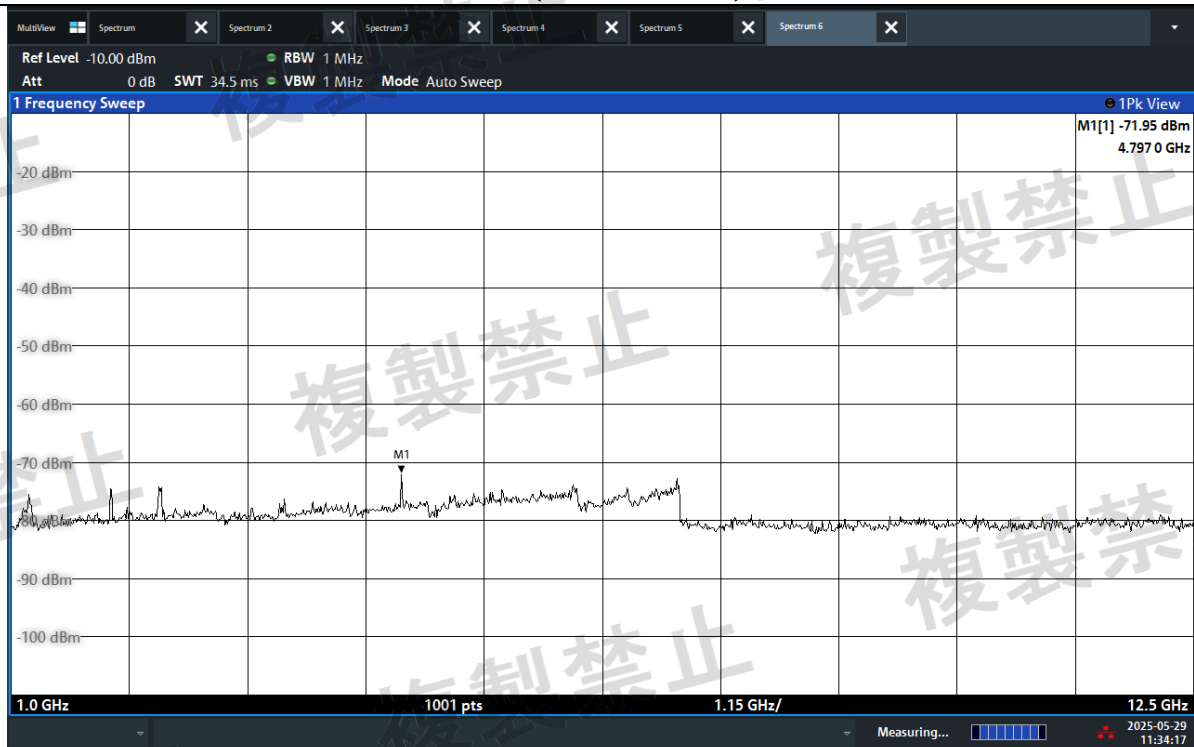
9.6 Test data for 1 Mbps

Frequency	Power Voltage	Frequency (MHz)	Measured Level(dBm)	Cable loss(dB)	Total (dBm)	Total (nW)	Limit (nW)
LOW (2 402 MHz)	DC 60.0 V	36.30	-72.74	0.35	-72.39	0.057 7	4.0
		4 797.00	-71.95	0.91	-71.04	0.078 8	20.0
	DC 54.0 V	108.01	-70.04	0.35	-69.69	0.107 4	4.0
		4 797.00	-71.93	0.91	-71.02	0.079 1	20.0
	DC 66.0 V	47.93	-71.72	0.35	-71.37	0.072 9	4.0
		4 797.00	-71.57	0.91	-70.66	0.086 0	20.0
MIDDLE (2 440 MHz)	DC 60.0 V	72.15	-71.50	0.35	-71.15	0.076 7	4.0
		4 877.00	-69.94	0.91	-69.03	0.125 1	20.0
	DC 54.0 V	95.41	-71.26	0.35	-70.91	0.081 1	4.0
		4 877.00	-70.32	0.91	-69.41	0.114 6	20.0
	DC 66.0 V	119.64	-70.42	0.35	-70.07	0.098 4	4.0
		4 877.00	-70.92	0.91	-70.01	0.099 8	20.0
HIGH (2 480 MHz)	DC 60.0 V	83.78	-67.04	0.35	-66.69	0.214 3	4.0
		4 958.00	-71.21	0.91	-70.30	0.093 4	20.0
	DC 54.0 V	83.78	-66.75	0.35	-66.40	0.229 1	4.0
		4 958.00	-71.38	0.91	-70.47	0.089 8	20.0
	DC 66.0 V	119.64	-72.08	0.35	-71.73	0.067 1	4.0
		4 958.00	-70.51	0.91	-69.60	0.109 7	20.0

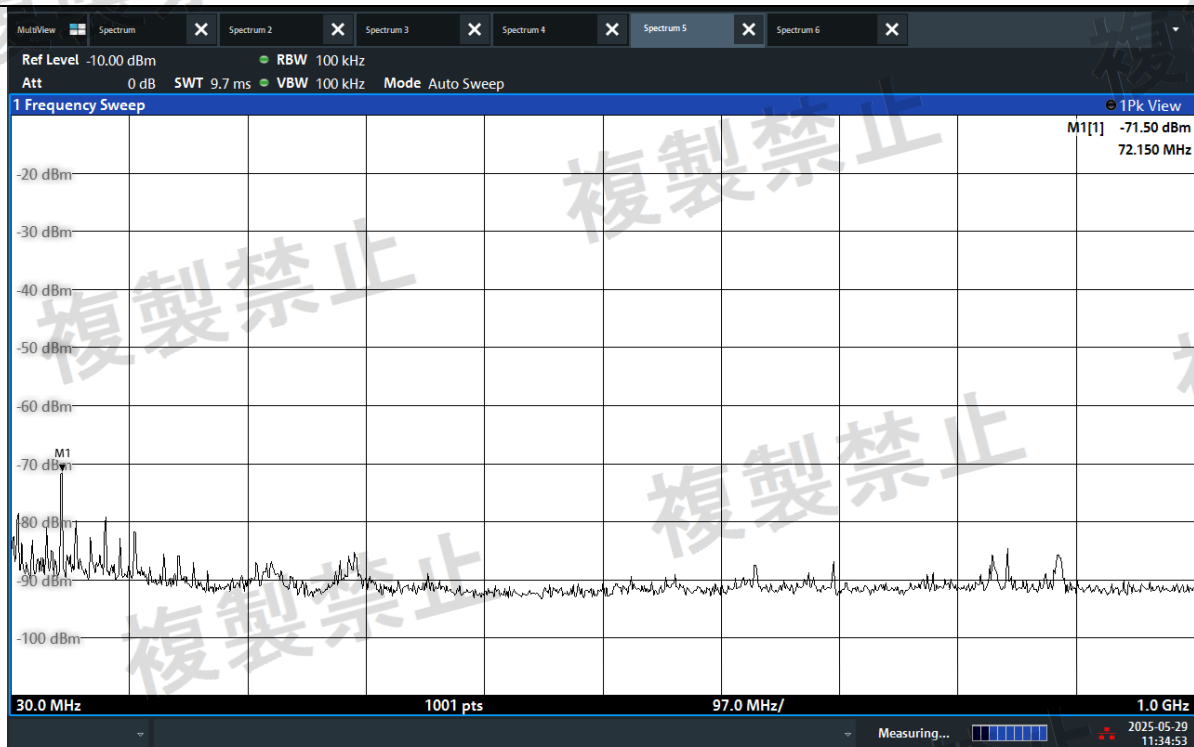
Plots of measurement data



LOW (30 MHz ~ 1 GHz)

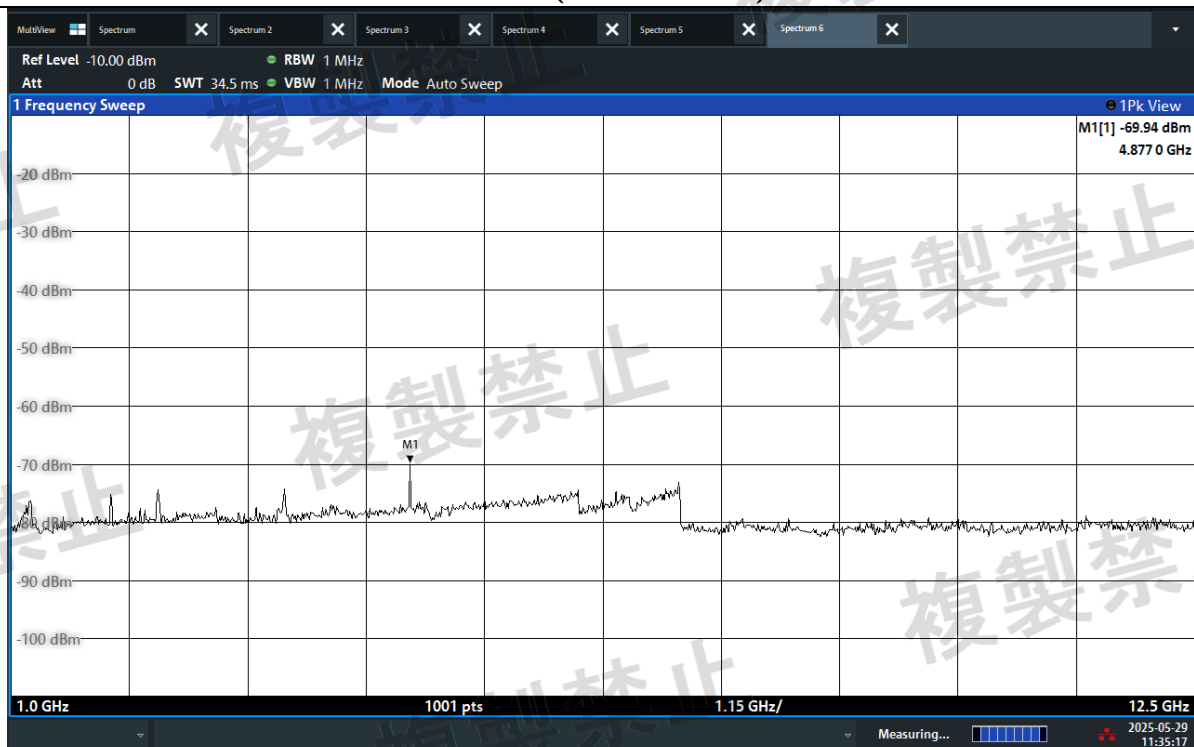


LOW (1 GHz ~ 12.5 GHz)



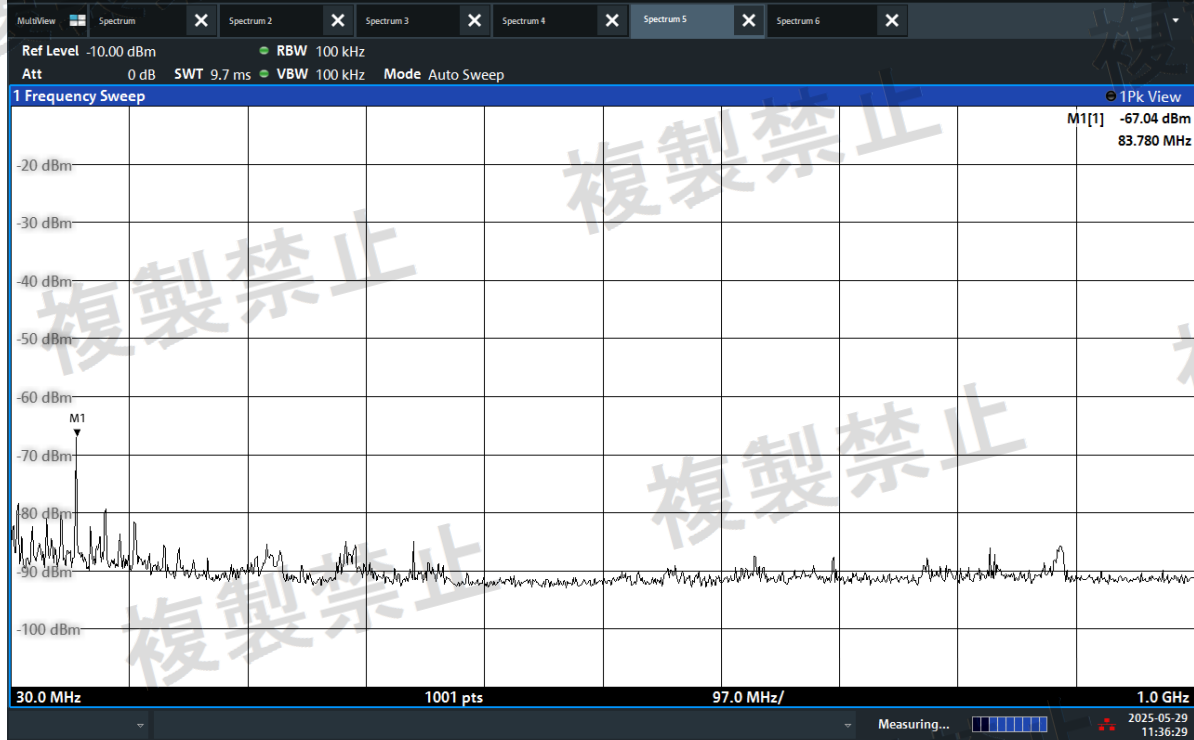
11:34:54 AM 05/29/2025

MIDDLE (30 MHz ~ 1 GHz)

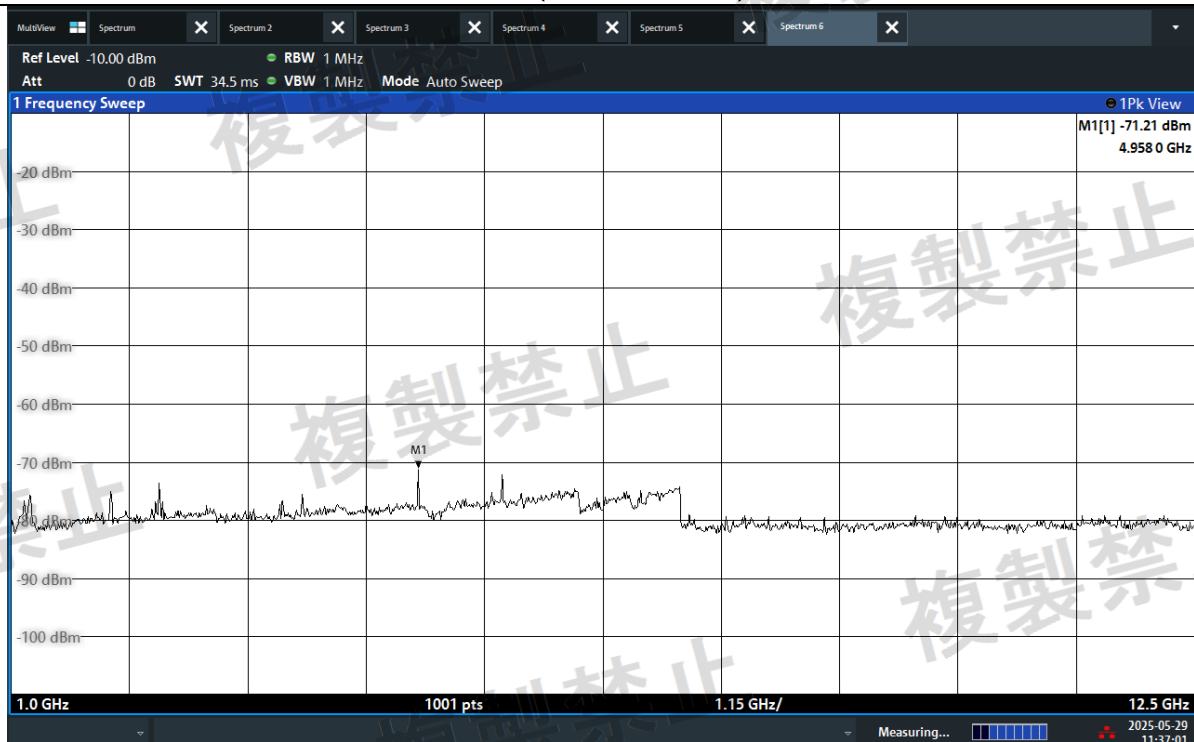


11:35:18 AM 05/29/2025

MIDDLE (1 GHz ~ 12.5 GHz)



HIGH (30 MHz ~ 1 GHz)



HIGH (1 GHz ~ 12.5 GHz)

10. Interference prevention function

10.1 Operating environment

Temperature : 24 °C
Relative humidity : 35 % R.H.

10.2 Test Date

May 22, 2025

10.3 Test Data

Test Voltage	2 402 MHz	2 440 MHz	2 480 MHz
DC 60.0 V	PASS	PASS	PASS
DC 54.0 V	PASS	PASS	PASS
DC 66.0 V	PASS	PASS	PASS

10.4 Limit

Radio equipment used mainly on the same premises and automatically transmits or receives identification code
--

11. LIST OF TEST EQUIPMENT

Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)	Calibration body name	Remarks
FSVA3030	Rohde & Schwarz	Signal Analyzer	101126	Apr. 04, 2025 (1Y)	KTICC	24-2 paragraph 「八」
NRP335	Rohde & Schwarz	3-Path Diode Power Sensor	103230	Jan. 06, 2025 (1Y)	KC LAB	
SMB100A	Rohde & Schwarz	Signal Generator	177648	Jan. 13, 2025 (1Y)	KC LAB	
Programmable DC Power Supply	ODA Technologies	EX 300-6	ODA-02-0923-01077	Jan. 13, 2025 (1Y)	KC LAB	

All test equipment used is calibrated on a regular basis.

Article 24-2, Paragraph 4, Item 2 of the Radio Law

(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)

APPENDIX I - TEST SET-UP PHOTO

