

Test Report No:
2550395R-RFJPV02S-A

TEST REPORT

Japan Rules & Regulations

Product Name	Multi-frequency access control reader
Brand Name	ELATEC
Model No.	TWN4 Secustos SG30
Applicant's Name / Address	ELATEC GmbH Zeppelinstrasse 1, Puchheim 82178 Germany
Manufacturer's Name	ELATEC GmbH
Test Method Requested, Standard	MIC Notice No.88 Appendix No.43 Article 2 Paragraph 1 of Item 19
Verdict Summary	IN COMPLIANCE
Documented By Jinn Chen	<i>Jinn Chen</i>
Tested by Bill Lin	<i>Bill Lin</i>
Approved By Steven Tsai	<i>Steven Tsai</i>
Date of Receipt	2025/05/15
Date of Issue	2025/08/26
Report Version	V1.0

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Competences and Guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

General Conditions

1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	2025/08/26

Summary of Test Result

Report Clause	Test Items	Result (PASS/FAIL)	Remark
3	Antenna Power, Antenna Power Tolerance and E.I.R.P	PASS	-
4	Occupied Bandwidth	PASS	-
5	Frequency Tolerance	PASS	-
6	Transmitter Spurious Emissions	PASS	-
7	Receiver Spurious Emissions	PASS	-
8	Interference Prevention Function	PASS	-

Comments and Explanations

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1. General Information

1.1. EUT Description

Frequency Range	2400 ~ 2483.5 MHz	
Operating Frequency / Channel Number	2402 ~ 2480 MHz /40 Channels	
Mode	Bluetooth LE	
Type of Modulation	GFSK (1 Mbps)	
Declared Antenna Power	GFSK (1 Mbps)	0.274 mW

Antenna Information				
Item.	Brand Name	Model No.	Type	Gain (dBi)
1	JOHANSON TECHNOLOGY	2450AT18A100	Integrated	0.5

1.2. EUT Information

EUT Power Type	From DC 6-28 V
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1.3. Testing Location Information

Site Description	Accredited by TAF
	Accredited Number: 3023

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
	Linkou Laboratory
Address	No. 85, Wenlin St., Linkou Dist., New Taipei City 244017, Taiwan, R.O.C.
Performed Location	No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan, R.O.C.
Phone Number	+886-3-275-7255
Fax Number	+886-3-327-8031

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual	Test Date
RF Conducted Emission	Temperature (°C)	5~35 °C	26.3 °C	2025/07/17
	Humidity (%RH)	45~85 %	54.5 %	

1.4. Measurement Uncertainty

Uncertainties have been calculated according to the DEKRA internal document.

The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test Item	Uncertainty
Antenna Power, Antenna Power Tolerance and E.I.R.P.	Spectrum Analyzer: ± 2.13 dB Power Meter: ± 1.05 dB
Occupied Bandwidth	± 1580.61 Hz
Frequency Tolerance	± 1580.61 Hz
Transmitter Spurious Emissions	± 2.13 dB
Receiver Spurious Emissions	± 2.13 dB
Interference Prevention Function	N/A

1.5. List of Test Equipment

For Conducted Measurements / HY-SR02

	Equipment	Manufacturer	Model No.	Serial No.	Cal. by	Cal. Method	Cal. Date	Due Date
V	DC Power Supply	GW Instek	SPD-3606	GEQ820915	ETC	*(c)	2025/07/08	2026/07/07
V	Spectrum Analyzer	R&S	FSV30	103464	ETC	*(c)	2025/06/19	2026/06/18
V	Power Meter	Anritsu	ML2496A	1947001	ETC	*(c)	2025/01/02	2026/01/01
V	Power Sensor	Anritsu	MA2411B	1911082	ETC	*(c)	2025/01/02	2026/01/01
V	Power Sensor	Anritsu	MA2411B	1911083	ETC	*(c)	2025/01/02	2026/01/01

Note:

1. All equipments is calibrated every year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software Version: DEKRA Conduction Test System V9.0.6.
4. 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 agency under Article 102-18 paragraph (1).
d) Calibration conducted by using other equipment that listed above from a) to c).

2. Test Configuration of EUT

2.1. Test Condition

EUT Operational Condition	
Testing Voltage	DC 12 V by DC Power Supply

2.2. Test Frequency Mode

Test Software Version	AppBlaster V4.92
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Modulation	Frequency (MHz)	Power Setting
GFSK (1 Mbps)	2402	default
	2440	default
	2480	default

2.3. Test Conditions

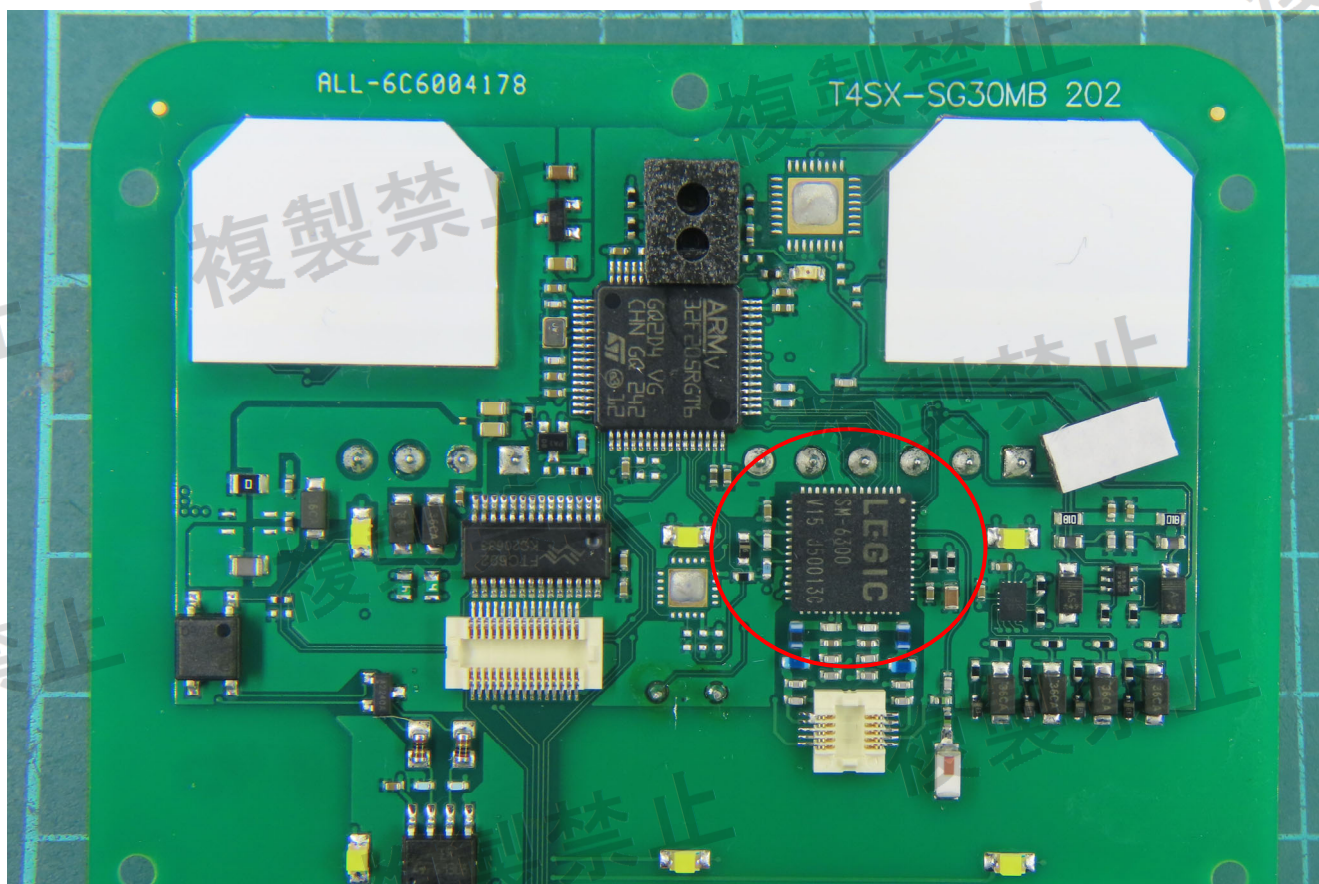
Voltage Test Item	Test Voltage	Voltage meter reading value
Nominal Voltage	DC 12 V	DC 3.3 V
Highest Voltage	DC 13.2 V	DC 3.3 V
Lowest Voltage	DC 10.8 V	DC 3.3 V

Note: 1. The Voltage supply for C510 is DC 3.3 V.

2. The internal supply gives a fluctuation value less than 1 % (Around 0% from max. to min.)

2.4. RF and IF section must be tamper requirement

Requirement	Comments	Result
RF, IF and Modulation section must be tamper	☐ Use Special Screw ☐ Metal Shielding is Soldered ☒ Use QFN (Quad Flat No-lead) (Please see Attachment: EUT Detailed Photographs)	Complete
	☒ RF module/Chip pin >10 ☒ RF module/Chip pins distance <1.5mm (Please see Attachment: EUT Detailed Photographs)	Complete



2.5. Measurement Configuration

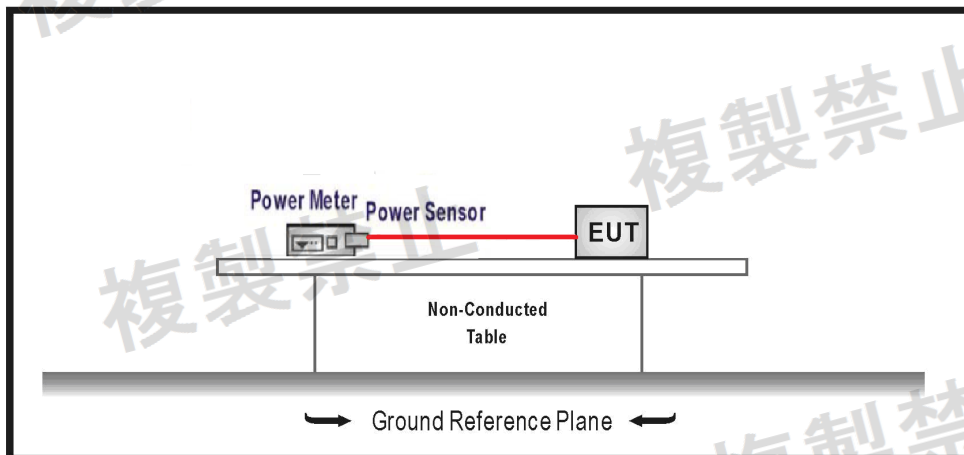
Test Mode	Mode 1 (Transmit)	GFSK(1 Mbps)
	Mode 2 (Receive)	GFSK(1 Mbps)

Note:

1. After checking the fluctuation of input voltage to the circuit of the radio part (excluding the power supply) of the equipment to be tested, the fluctuation less than $\pm 1\%$ when input voltage from an external supply into the equipment fluctuates $\pm 10\%$, therefore, the test is carried out only at the normal voltage.
2. Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

3. Antenna Power, Antenna Power Tolerance and E.I.R.P.

3.1. Test Setup



3.2. Test Limit

Antenna Power:

For 20MHz Bandwidth: $\leq 10 \text{ mW/MHz}$

For 40MHz Bandwidth: $\leq 5 \text{ mW/MHz}$

For Other Digital Methods: $\leq 10 \text{ mW}$

Antenna Power Tolerance: $\leq +20\%$

EIRP:

For 20MHz Bandwidth: $\leq 12.14 \text{ dBm/MHz}$

For 40MHz Bandwidth: $\leq 9.13 \text{ dBm/MHz}$

For Other Digital Methods: $\leq 12.14 \text{ dBm}$

3.3. Test Method

According to MIC Notice No. 88 Annex 43.

3.4. Test Procedure

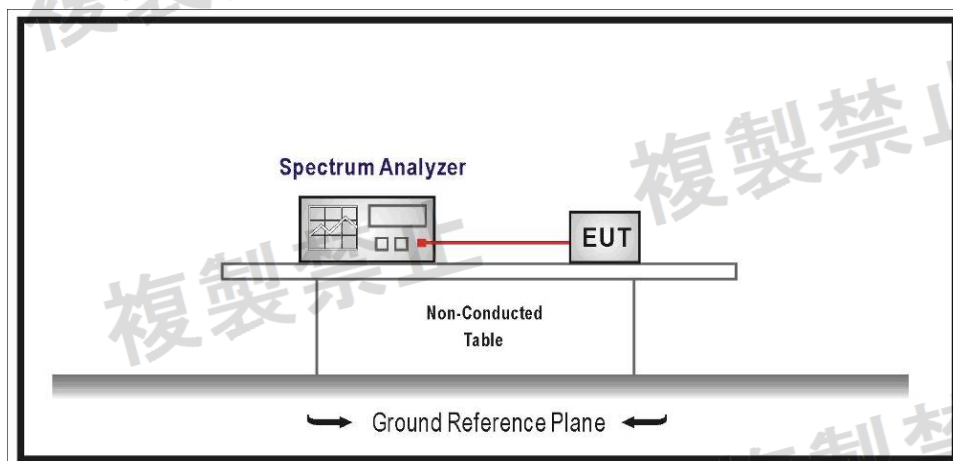
1. Connect a high-frequency power meter to the output of the dummy load (attenuator) and measure the output power.
2. Output power shall be as follows.
 - (1) Value of a continuous wave.
 - (2) The output power is calculated from the value and the duty factor.

3.5. Test Result of Antenna Power, Antenna Power Tolerance and E.I.R.P.

Refer as Appendix A

4. Occupied Bandwidth

4.1. Test Setup



4.2. Test Limit

≤ 26 MHz for DSSS, ≤ 83.5 MHz for FHSS

4.3. Test Method

According to MIC Notice No. 88 Annex 43.

4.4. Test Procedure

A spectrum analyzer or similar device shall be used to observe a sample of the modulated transmitter's radio frequency power output.

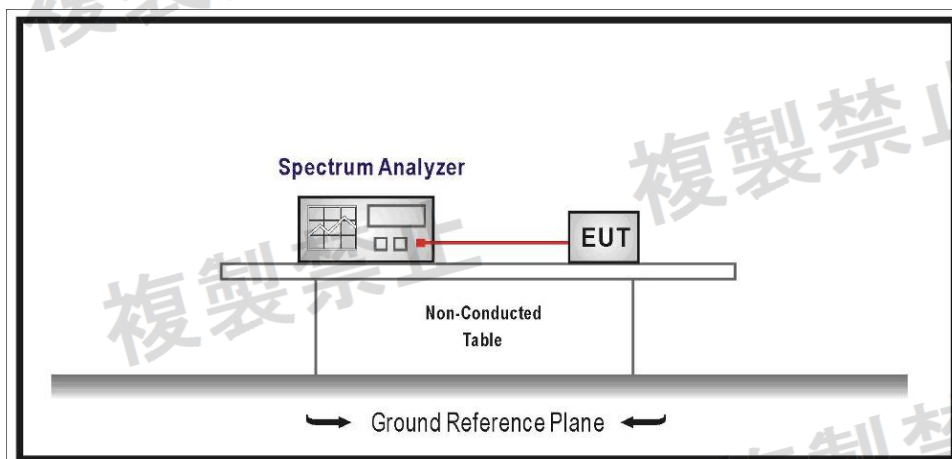
- (a) A positive peak detector function must be used.
- (b) A measurement instrument with an integrated 99% power bandwidth function may be used to automate the test process.
- (c) The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slowly, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
- (d) 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

4.5. Test Result of Occupied Bandwidth

Refer as Appendix B

5. Frequency Tolerance

5.1. Test Setup



5.2. Test Limit

± 50 ppm

5.3. Test Method

According to MIC Notice No. 88 Annex 43.

5.4. Test Procedure

A spectrum analyzer or similar device shall be used to observe a sample of the unmodulated transmitter's radio frequency power output.

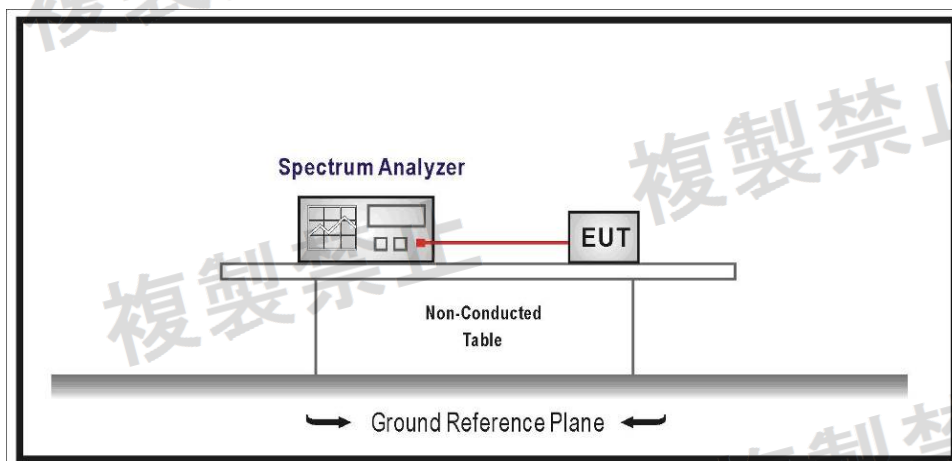
- (a) A positive peak detector function must be used.
- (b) The measurement instrument bandwidth and span must be set sufficiently wide, and the scan time set sufficiently slowly, to ensure all products of the unmodulated signal are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
- (c) 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

5.5. Test Result of Frequency Tolerance

Refer as Appendix C

6. Transmitter Spurious Emissions

6.1. Test Setup



6.2. Test Limit

$\leq 2.5\text{uW/MHz}$ for $30\text{ MHz} < f < 2387\text{ MHz}$

$\leq 25\text{uW/MHz}$ for $2387\text{ MHz} \leq f < 2400\text{ MHz}$

$\leq 25\text{uW/MHz}$ for $2483.5\text{ MHz} < f \leq 2496.5\text{ MHz}$

$\leq 2.5\text{uW/MHz}$ for $2496.5\text{ MHz} < f < 12500\text{ MHz}$

6.3. Test Method

According to MIC Notice No. 88 Annex 43.

6.4. Test Procedure

The EUT is connected to the spectrum analyzer and it is configured at maximum output power in the different test channels.

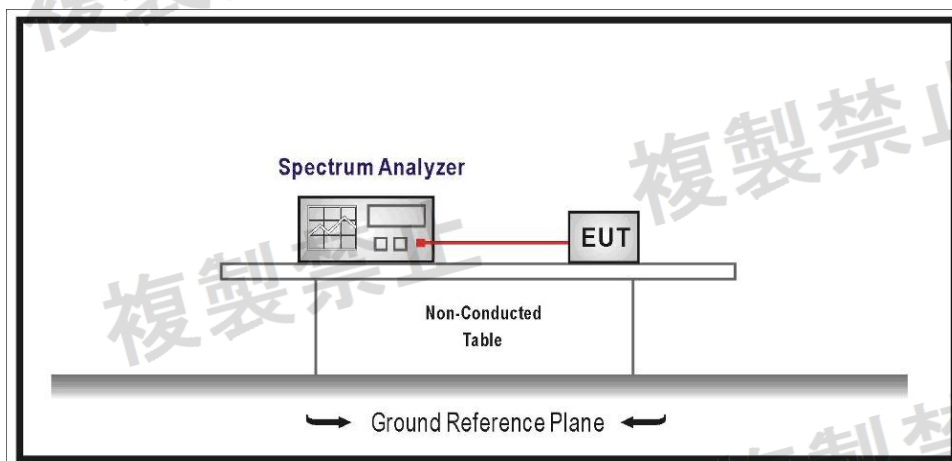
- (a) A positive peak detector function must be used.
- (b) The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slow, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
- (c) 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

6.5. Test Result of Transmitter Spurious Emissions

Refer as Appendix D

7. Receiver Spurious Emissions

7.1. Test Setup



7.2. Test Limit

$\leq 4\text{nW}$ for $30\text{ MHz} < f < 1000\text{MHz}$

$\leq 20\text{nW}$ for $1000\text{ MHz} \leq f < 12500\text{ MHz}$

7.3. Test Method

According to MIC Notice No. 88 Annex 43.

7.4. Test Procedure

The EUT is connected to the spectrum analyzer and it is configured in reception mode in the different test channels.

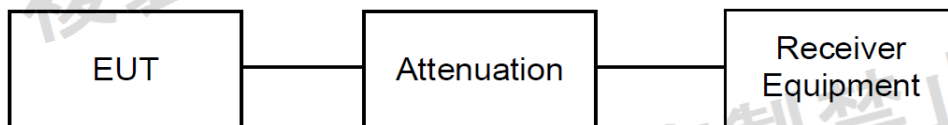
- (a) A positive peak detector function must be used.
- (b) The measurement instrument bandwidth and span must be set sufficiently with, and, the scan time set sufficiently slowly, to ensure all major modulation products are captured. Note that the measurement bandwidth should also be set sufficiently narrow to avoid adding significant error to the test result.
- (c) 'Maximum Hold' mode may be used to accumulate the measurement result over several scans provided the emission is repetitive in nature.

7.5. Test Result of Receiver Spurious Emissions

Refer as Appendix E

8. Interference Prevention Function

8.1. Test Setup



8.2. Test Method

According to MIC Notice No. 88 Annex 43.

8.3. Test Procedure

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

8.4. Test Result of Interference Prevention Function

Refer as Appendix F

Appendix A.1 Test Result of Antenna Power

GFSK (1 Mbps)			
Frequency (MHz)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Limit (mW)
2402	-5.62	0.274	10
2440	-5.71	0.269	10
2480	-5.65	0.272	10

Appendix A.2 Test Result of Antenna Power Tolerance

GFSK (1 Mbps)				
Frequency (MHz)	Declared Antenna Power (mW)	Antenna Power (mW)	Tolerance (%)	Limit (%)
2402	0.274	0.274	0.00	+20
2440	0.274	0.269	-2.05	+20
2480	0.274	0.272	-0.69	+20

Note: Tolerance = (Antenna Power - Declared Antenna Power) / Declared Antenna Power * 100%.

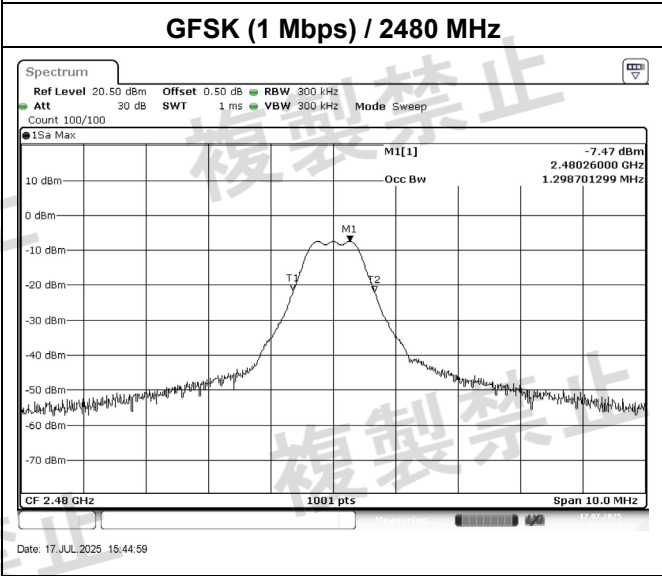
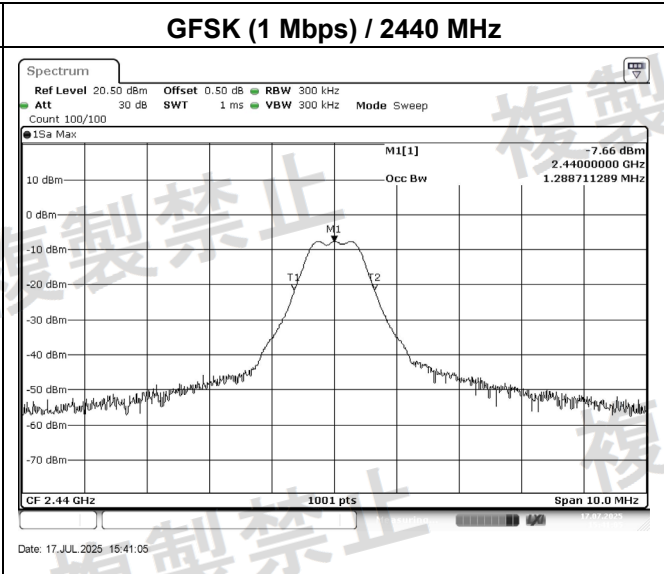
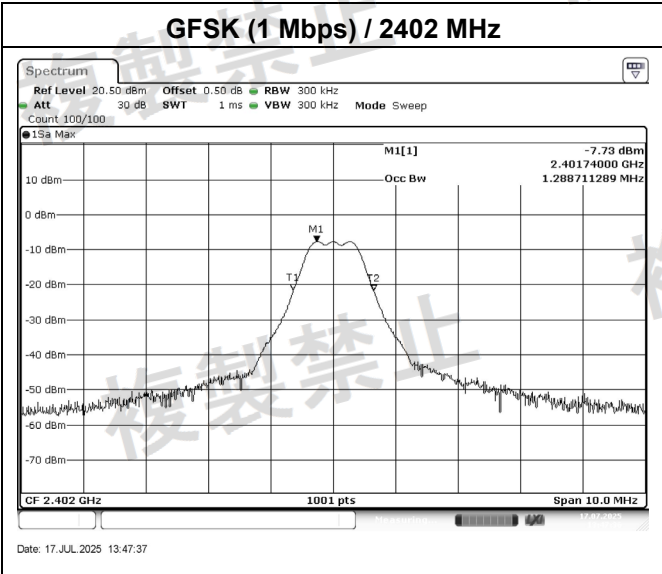
Appendix A.3 Test Result of E.I.R.P

GFSK (1 Mbps)			
Frequency (MHz)	Antenna Power (dBm)	EIRP (dBm)	Limit (dBm)
2402	-5.62	-5.12	12.14
2440	-5.71	-5.21	12.14
2480	-5.65	-5.15	12.14

Note: EIRP = Antenna Power + Antenna Max Gain (dBi).

Appendix B. Test Result of Occupied Bandwidth

GFSK (1 Mbps)		
Frequency (MHz)	Reading Value (MHz)	Limit (MHz)
2402	1.29	≤ 26
2440	1.29	≤ 26
2480	1.30	≤ 26

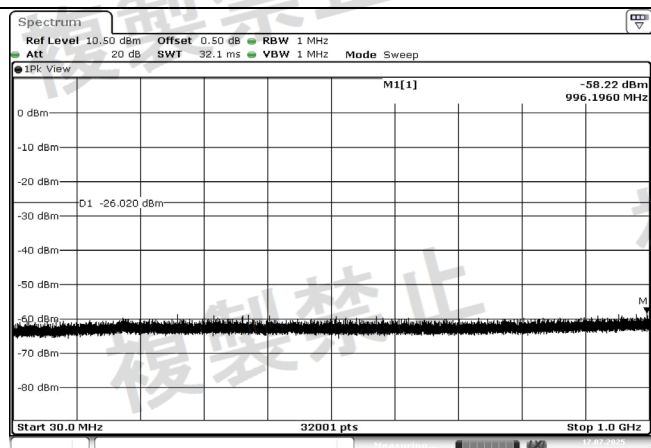


Appendix C. Test Result of Frequency Tolerance

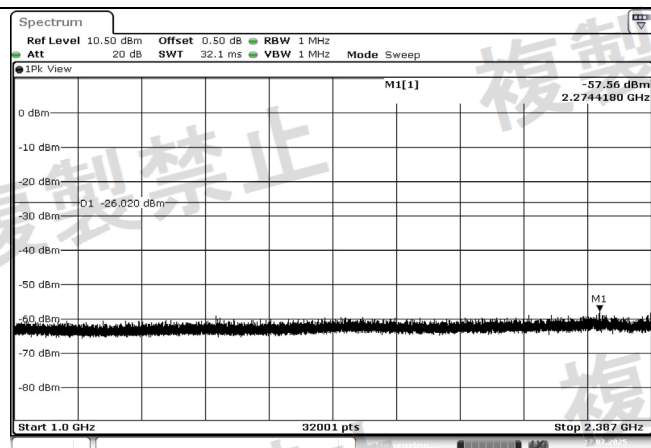
GFSK (1 Mbps)			
Frequency (MHz)	Reading Value (MHz)	Tolerance (ppm)	Limit (ppm)
2402	2401.9975	-1.0408	± 50
2440	2440.0025	1.0246	± 50
2480	2480.0050	2.0161	± 50

Appendix D. Test Result of Transmitter Spurious Emissions

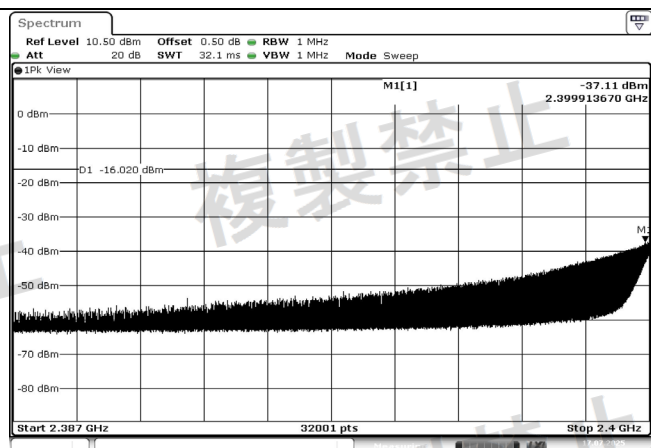
GFSK (1 Mbps)				
Frequency (MHz)	Frequency Range (MHz)	Frequency (MHz)	Reading Value (μW/MHz)	Limit (μW/MHz)
2402	30 - 1000	996.20	0.001507	2.5
	1000 - 2387	2274.42	0.001754	2.5
	2387 - 2400	2399.91	0.194536	25
	2483.5 - 2496.5	2491.19	0.001596	25
	2496.5 - 8000	4804.37	0.008472	2.5
	8000 - 12500	12095.49	0.001746	2.5
2440	30 - 1000	882.16	0.001466	2.5
	1000 - 2387	2311.87	0.001972	2.5
	2387 - 2400	2391.62	0.001413	25
	2483.5 - 2496.5	2490.28	0.001538	25
	2496.5 - 8000	4879.53	0.005754	2.5
	8000 - 12500	12460.04	0.001862	2.5
2480	30 - 1000	981.28	0.001306	2.5
	1000 - 2387	2351.78	0.001750	2.5
	2387 - 2400	2390.81	0.001671	25
	2483.5 - 2496.5	2483.50	0.072111	25
	2496.5 - 8000	4960.87	0.005821	2.5
	8000 - 12500	12244.51	0.001679	2.5

GFSK (1 Mbps) / 2402 MHz

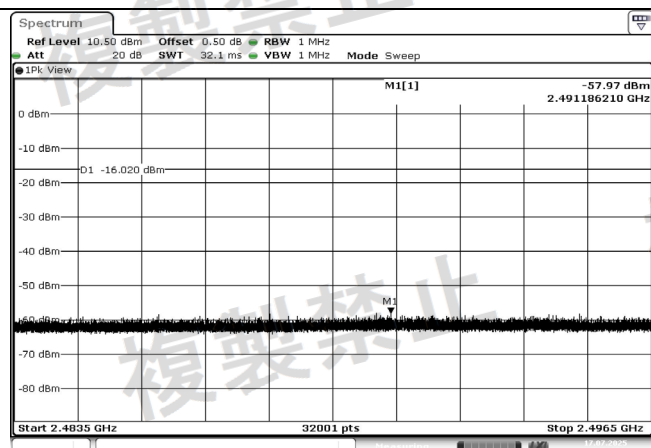
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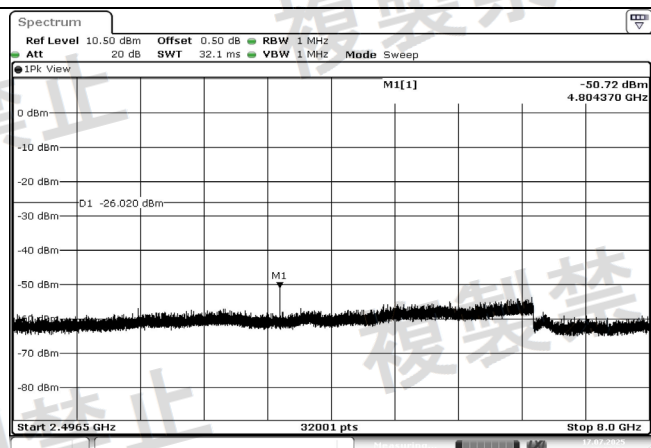
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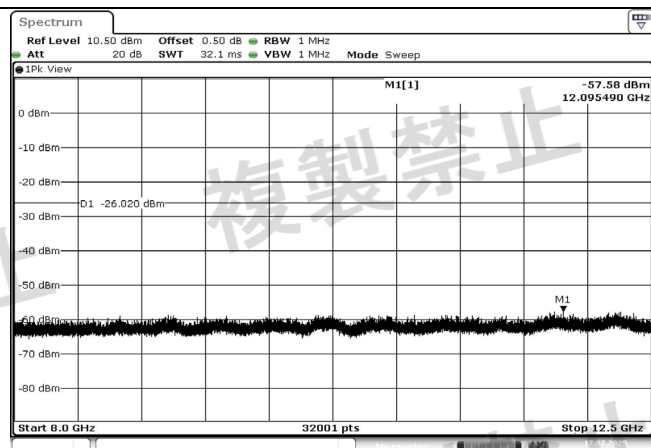
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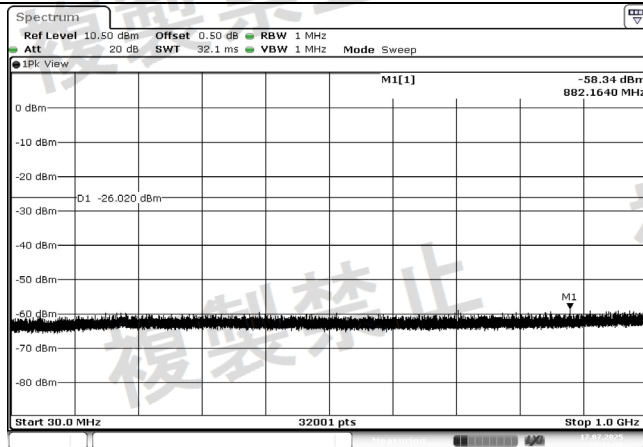
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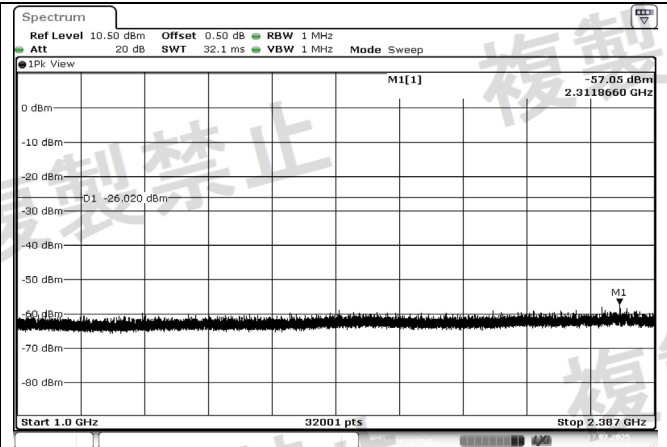
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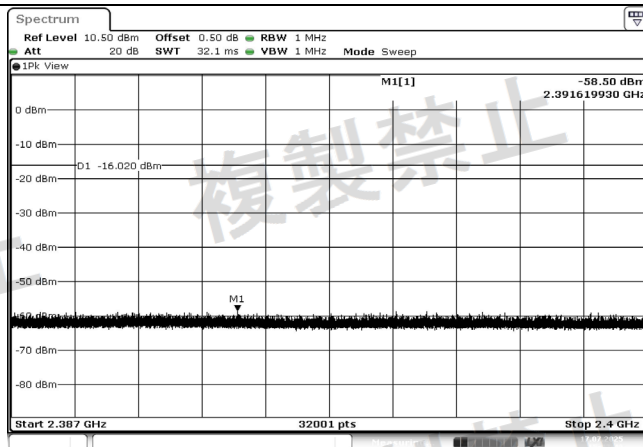
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GFSK (1 Mbps) / 2440 MHz

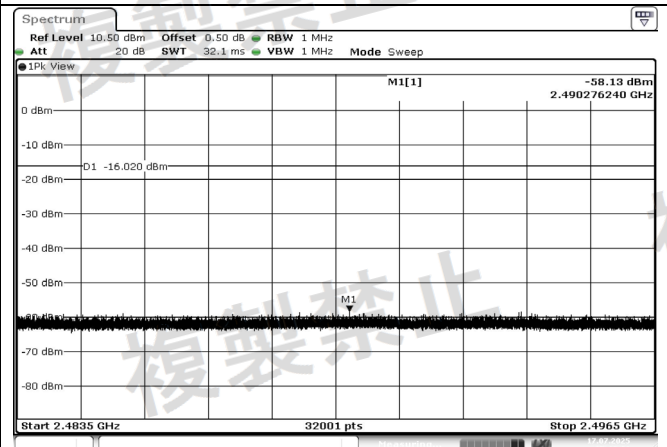
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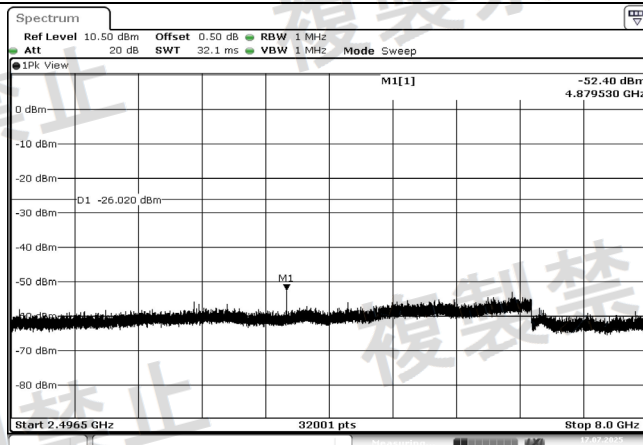
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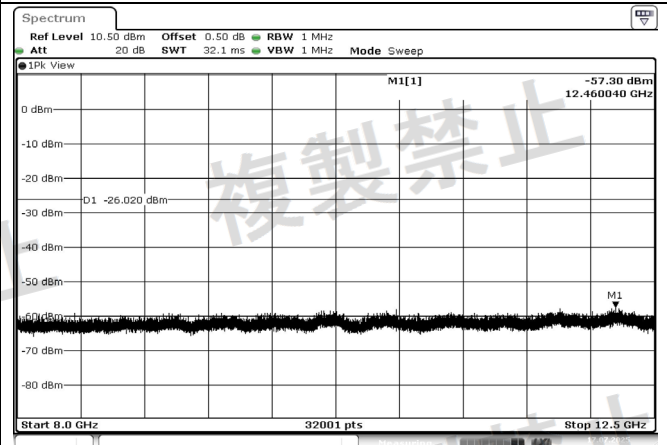
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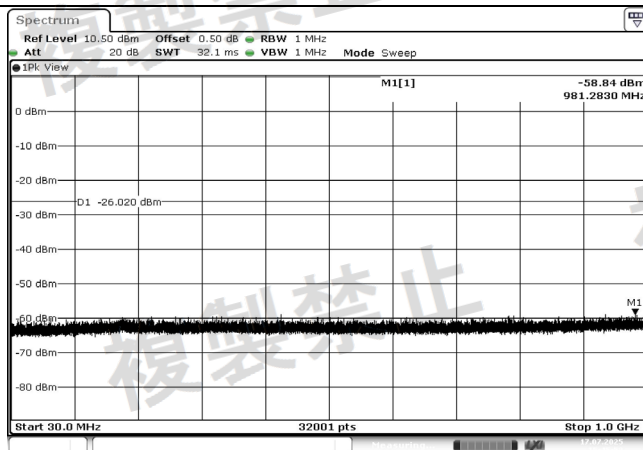
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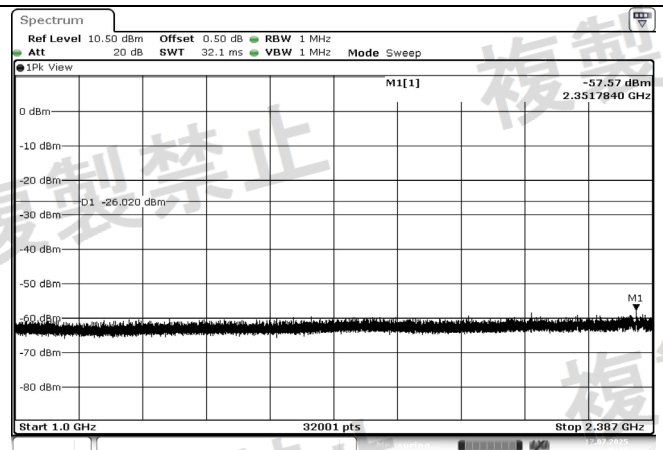
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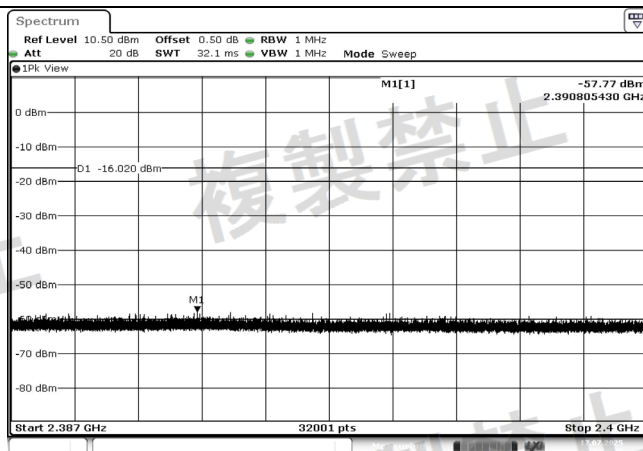
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GFSK (1 Mbps) / 2480 MHz

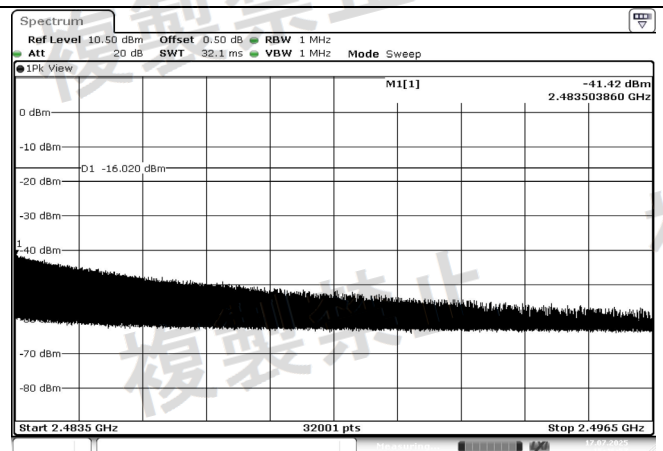
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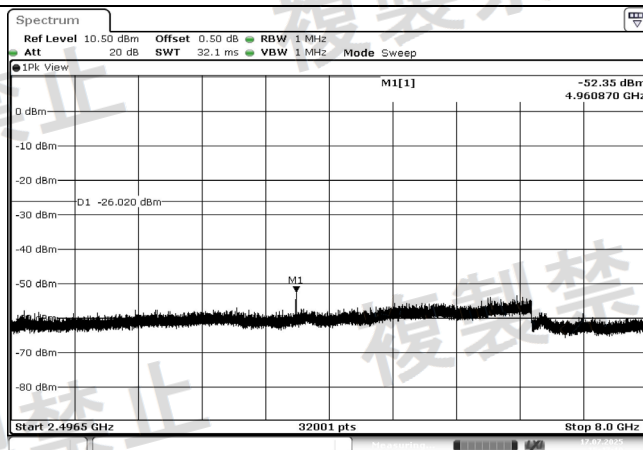
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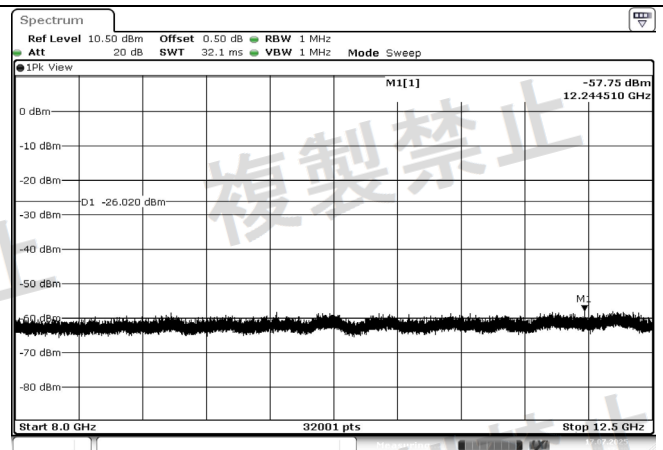
Date: 17.JUL.2025 15:46:36



Date: 17.JUL.2025 15:46:57



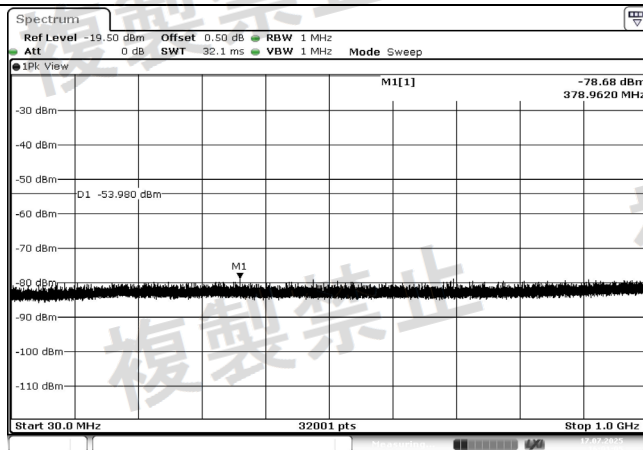
Date: 17.JUL.2025 15:47:19



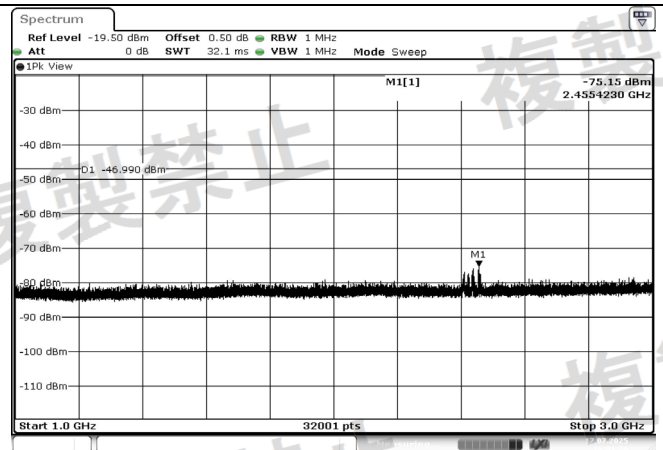
Date: 17.JUL.2025 15:47:40

Appendix E. Test Result of Receiver Spurious Emissions

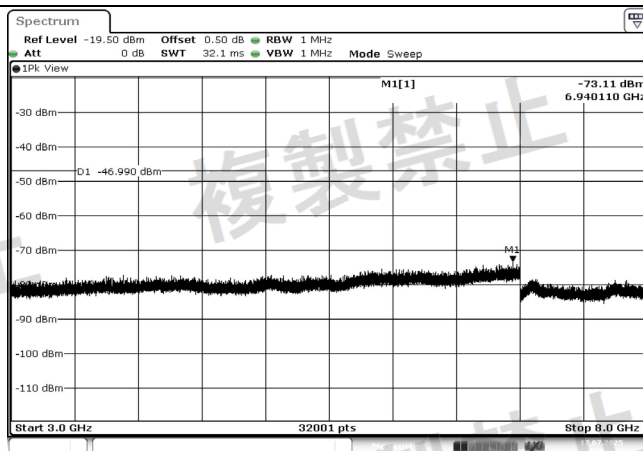
GFSK (1 Mbps)				
Frequency (MHz)	Frequency Range (MHz)	Frequency (MHz)	Reading Value (nW)	Limit (nW)
2402	30 - 1000	378.96	0.013552	4
	1000 - 3000	2455.42	0.030549	20
	3000 - 8000	6940.11	0.048865	20
	8000 - 12750	12441.63	0.019231	20
2440	30 - 1000	182.45	0.014859	4
	1000 - 3000	2880.29	0.014997	20
	3000 - 8000	6909.33	0.036475	20
	8000 - 12750	12497.44	0.021184	20
2480	30 - 1000	925.21	0.014322	4
	1000 - 3000	2901.35	0.018967	20
	3000 - 8000	6754.02	0.048306	20
	8000 - 12750	12444.15	0.022594	20

GFSK (1 Mbps) / 2402 MHz

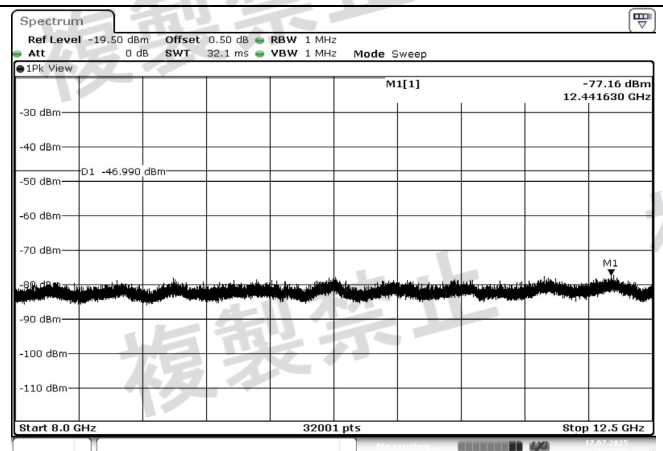
Date: 17.JUL.2025 16:01:05



Date: 17.JUL.2025 16:01:26

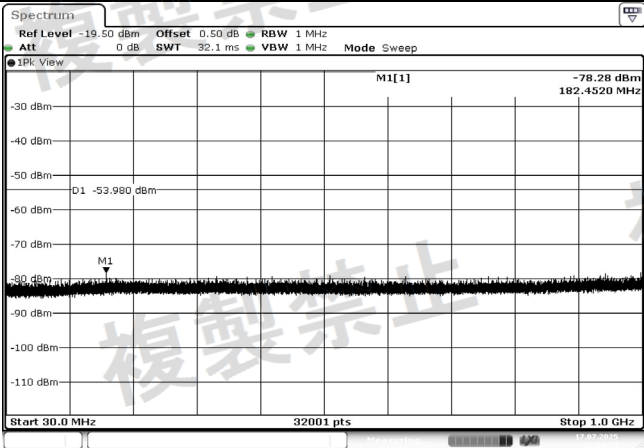


Date: 17.JUL.2025 16:01:48

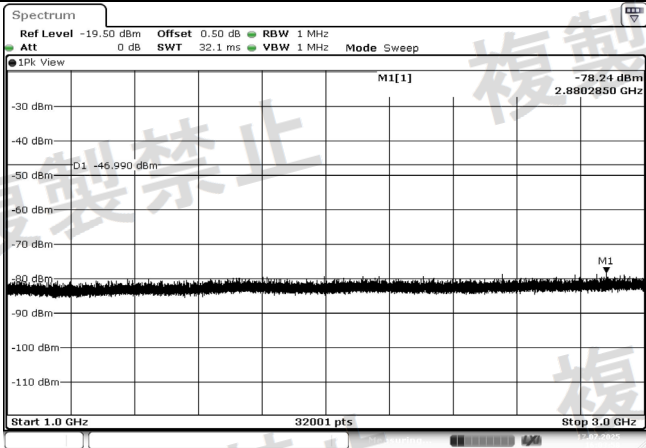


Date: 17.JUL.2025 16:02:10

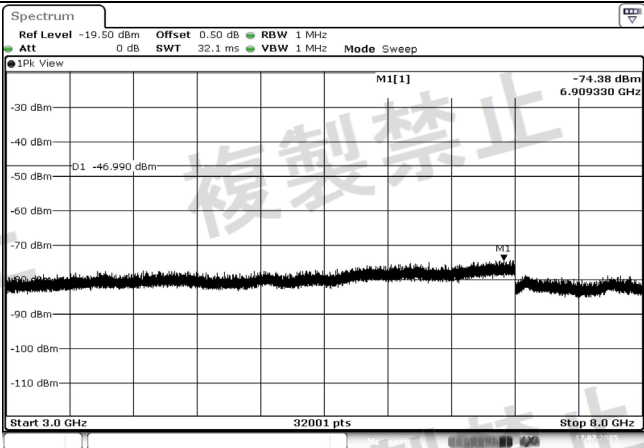
GFSK (1 Mbps) / 2440 MHz



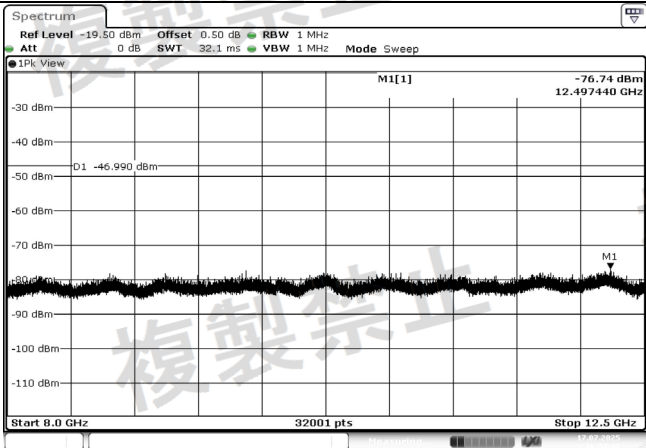
Date: 17.JUL.2025 16:03:38



Date: 17.JUL.2025 16:03:59

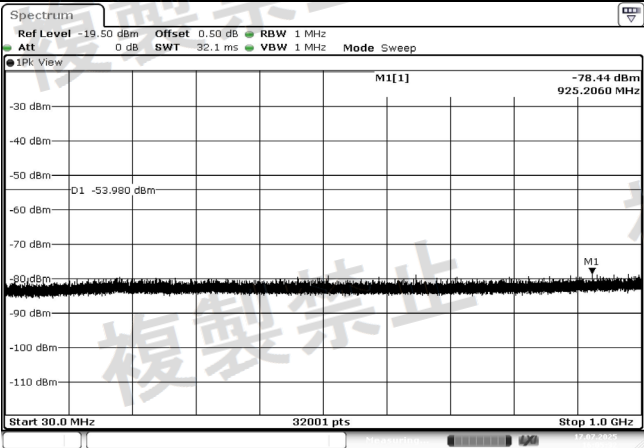


Date: 17.JUL.2025 16:04:21

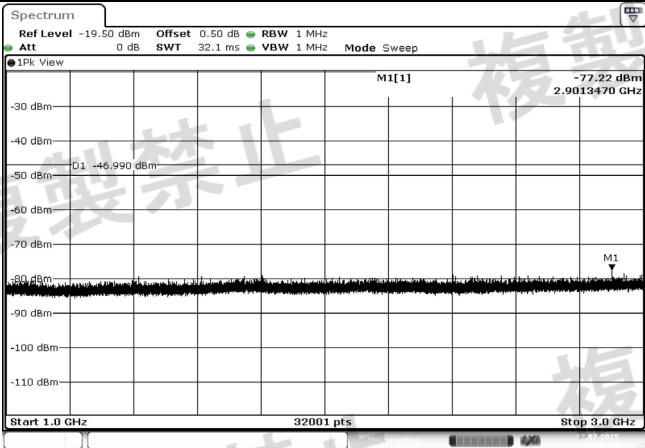


Date: 17.JUL.2025 16:04:42

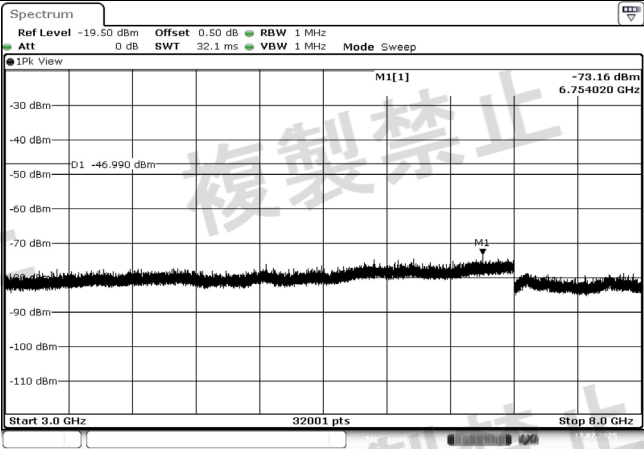
GFSK (1 Mbps) / 2480 MHz



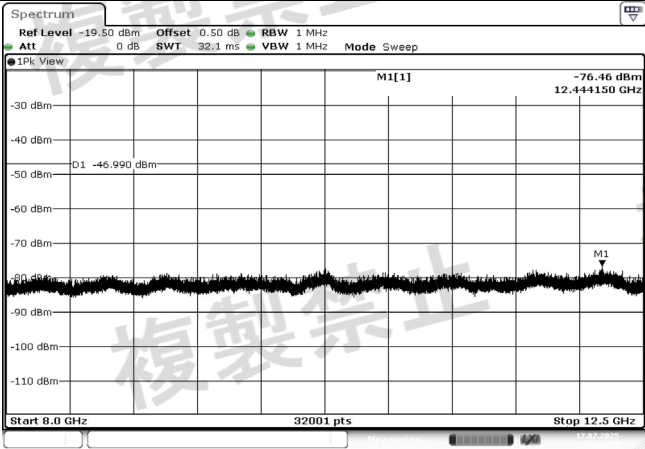
Date: 17.JUL.2025 16:05:33



Date: 17.JUL.2025 16:05:54



Date: 17.JUL.2025 16:06:16



Date: 17.JUL.2025 16:06:37

Appendix F. Test Result of Interference Prevention Function

Test Mode	Test Result
Normal Link	Pass