

TEST REPORT

Applicant Name: Ackcio Pte. Ltd.
Address: 10 Science Park Rd, #02-10 The Alpha, Singapore 117684
Report Number: 2401S41434E-RF-07

Test Standard (s)

Item 8 of Article 2 Paragraph 1

Sample Description

Product Type: BEAM-AN-S4
Model No.: BEAM-AN-S4
Multiple Model(s) No.: N/A
Trade Mark: 
Date Received: 2024/04/18
Issue Date: 2025/12/04

Test Result:

Pass▲

▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Ga La Liu

Gala Liu
RF Engineer

Approved By:

Nancy Wang

Nancy Wang
RF Supervisor

Note: The information marked # is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.
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Bay Area Compliance Laboratories Corp. (Shenzhen)

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401S41434E-RF-07	Original Report	2025/12/04

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product		BEAM-AN-S4
Tested Model		BEAM-AN-S4
Multiple Model(s)		N/A
Technical Parameters	Modulation Type	GFSK
	Frequency Range	924.2MHz
	Rated Output Power	2.0mW
	Antenna Gain [#]	3.0dBi (It is provided by the applicant)
Nominal Power Supply:		DC 3.6V from Battery or DC 12V from adapter
Sample serial number		2K39-1 (Assigned by BACL, Shenzhen)
Sample/EUT Status		Good condition
Adapter Information		N/A

Objective

The objective of the manufacturer is to demonstrate compliance with Radio Law of Japan item 8 of Article 2 Paragraph 1, rules and limits for this device including:

- Frequency Error
- Occupied Bandwidth
- Transmitter Spurious Emission and Unwanted Emission Intensity
- Antenna Output Power Tolerance
- Adjacent Channel Leakage Power
- Receiver Spurious Emission Strength
- Transmitting Time Restrictions
- Carrier Sense Capability

Test Method

MIC Notice No.88 Appendix No.22-3

Measurement Uncertainty

Item	Expanded Measurement uncertainty
Occupied Channel Bandwidth	109.2kHz(k=2, 95% level of confidence)
RF output power, conducted	0.86dB(k=2, 95% level of confidence)
Unwanted Emission, conducted	1.60dB(k=2, 95% level of confidence)
Temperature	±1°C
Supply voltages	±0.4%
Humidity	±1%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

Each test item follows test standards and with no deviation.

EUT TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a testing engineering mode.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	924.2 MHz	/	/

Normal/Extreme Voltage Condition#:			
		Battery	Adapter
NV	Normal Voltage	3.60V _{DC}	12V _{DC}
LV	Low Voltage	3.24V _{DC}	5V _{DC}
HV	High Voltage	3.96V _{DC}	24V _{DC}
Note: extreme voltage test conditions were declared by manufacturer.			
The EUT works with a battery or adapter, power deviation of the RF circuit is less than 1% when extreme voltage supplied, therefore the test only performed at normal condition. Details as following:			
Voltage Condition		Input (V _{DC})	RF System Voltage (V _{DC})
Battery			
NV		3.60	3.3
LV		3.24	3.3
HV		3.96	3.3
Adapter			
NV		12	3.3
LV		5	3.3
HV		24	3.3

EUT Exercise Software

Software “UniFlash 8.6.0.exe”[#] was used and the power level is Default[#]. The software and power level was provided by the applicant.

Equipment Modifications

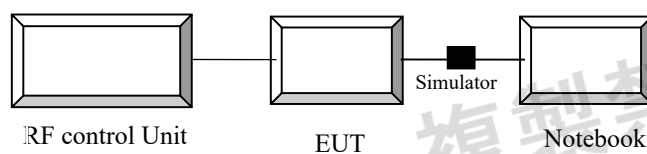
No modification was made to the EUT tested.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Notebook	Latitude E6410	11429208685
Ghostyu	Simulator	XDS110	XDS-GY003443

External I/O Cable

Cable Description	Length (m)	From/Port	To
Un-shielded Detachable USB Cable	1.2	Notebook	Simulator
Un-shielded Detachable Cable	0.2	Simulator	EUT

Configuration of Test Setup

SUMMARY OF TEST RESULTS

MIC Notice No.88 Appendix No.22-3 Article 2, Paragraph 1, Item 8	Description of Test	Result
1	Frequency Error	Compliant*
2	Occupied Bandwidth	Compliant*
3	Transmitter Spurious Emission and Unwanted Emission Intensity	Compliant
4	Antenna Output Power Tolerance	Reporting only
5	Adjacent channel leakage power	Compliant*
6	Receiver Spurious Emission and Unwanted Emission Intensity	Compliant
7	Transmitting Time Restrictions	Compliant*
8	Carrier Sense Capability	Compliant*
9	Construction Protection Confirmation	Compliant

Compliant*:

- 1: The manufacturer declared the RF module installed in EUT is identical to the certified model BEAM-GW (MIC-R: 211-240515), which granted on 2025-09-25.
- 2: Per spot check with the output power, the RF parameters identical with the certified model BEAM-GW.
- 3: The test data are referred to the certified model report 2401S57609E-RF-07.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date	Calibration Authority	Calibration Method
Tonscend	RF control Unit	JS0806-2	19D8060154	2025/07/18	2026/07/17	BACL Cal	c)
Rohde & Schwarz	Spectrum Analyzer	FSU26	200120	2024/12/04	2025/12/03	BACL Cal	c)
Unknown	10dB Attenuator	Unknown	F-03-EM190	2025/06/26	2026/06/25	BACL (Shenzhen)	d)
Fluke	Digital Multimeter	287	19000011	2025/04/29	2026/04/28	BACL Cal	c)
instek	DC Power Supply	GPS-3030DD	EM832096	NCR	NCR	/	/

Note: Calibration Method

a) Calibration conducted by the National Institute of Information and Communications Technology (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) ~Japan Calibration Service System~

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 other equipment that listed above from a) to c)

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

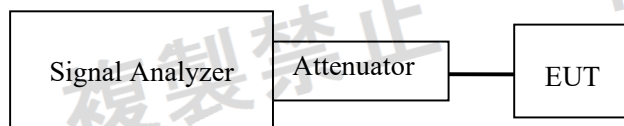
TRANSMITTER SPURIOUS EMISSION AND UNWANTED EMISSION INTENSITY

Limit

Unwanted Emission Strength	≤710MHz : -36dBm/100kHz 710MHz<, ≤900MHz : -55dBm/1MHz 900MHz<, ≤915MHz : -55dBm/100kHz 915MHz<, ≤930MHz* : -36dBm/100kHz 930MHz<, ≤1000MHz : -55dBm/100kHz 1000MHz<, ≤1215MHz : -45dBm/1MHz 1215MHz< : -30dBm/1MHz
	*Unt channel 200kHz BW : except "200 + 100 x n kHz" from Cf *Unt channel 100kHz BW : except "100 + 50 x n kHz" from Cf

Test Procedure

Measurement System Diagram



Conditions of Application Equipment (EUT)

- The modulation state shall be in continuously transmitting mode.

Spectrum Analyzer Conditions:

Frequency range: 30MHz-710MHz, RBW/VBW=100/100kHz
Frequency range: 710MHz-900MHz, RBW/VBW=1/1MHz
Frequency range: 900MHz-915MHz, RBW/VBW=100/100kHz
Frequency range: 915MHz-930MHz, RBW/VBW=100/100kHz
Frequency range: 930MHz-1000MHz, RBW/VBW=100/100kHz
Frequency range: 1000MHz-1215MHz, RBW/VBW=1/1MHz
Frequency range: 1215MHz-13GHz, RBW/VBW=1/1MHz

Test Data

Environmental Conditions

Temperature:	26.1 °C
Relative Humidity:	48 %
ATM Pressure:	101 kPa

The testing was performed by Cheeb Huang on 2025-11-19.

Test Result: Compliant

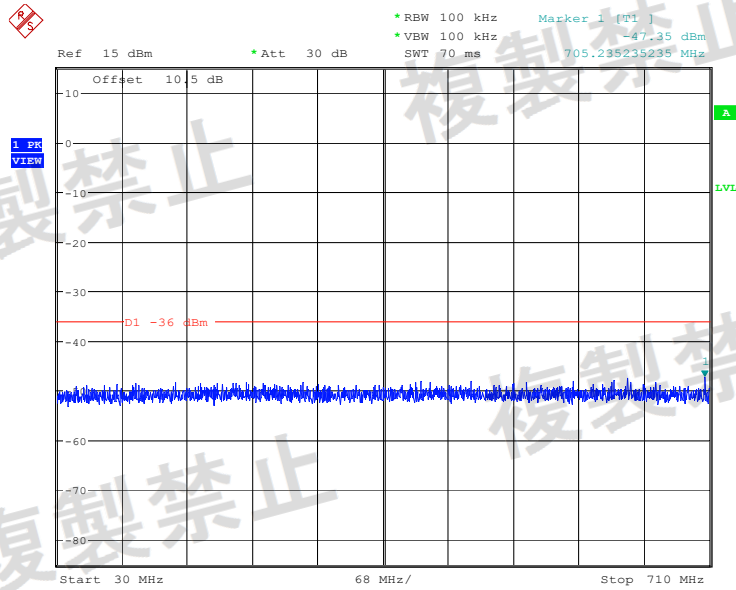
Test Mode: Transmitting

Normal Voltage

Channel	Test Band (RBW)	Frequency Range		Max.Emission Located(MHz)	Result (dBm/RBW)	Limit (dBm/RBW)	Verdict
		Start (MHz)	Stop (MHz)				
924.2MHz	Band I (100kHz)	30	710	705.235	-47.35	-36	Pass
	Band II (1MHz)	710	900	876.226	-58.83	-55	Pass
	Band III (100kHz)	900	915	909.625	-60.98	-55	Pass
	Band IV (100kHz)*	915	923.9	923.900	-38.12	-36	Pass
	Band V (100kHz)*	924.5	930	924.602	-42.97	-36	Pass
	Band VI (100kHz)	930	1000	972.077	-57.13	-55	Pass
	Band VII (1MHz)	1000	1215	1020.230	-46.70	-45	Pass
	Band VIII (1MHz)	1215	13000	11153.801	-41.81	-30	Pass

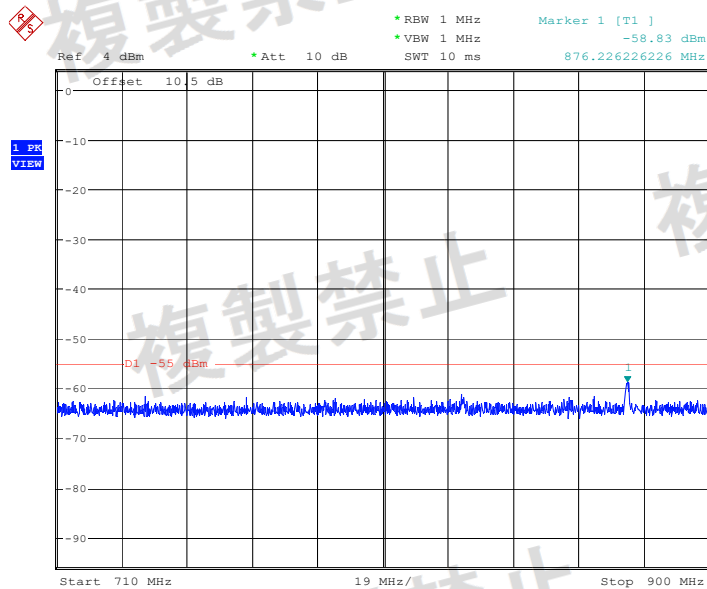
Note: * Unt Channel 200kHz BW: Except 200 + 100 x n kHz from the center frequency of radio channel, n=1

30 MHz ~ 710 MHz



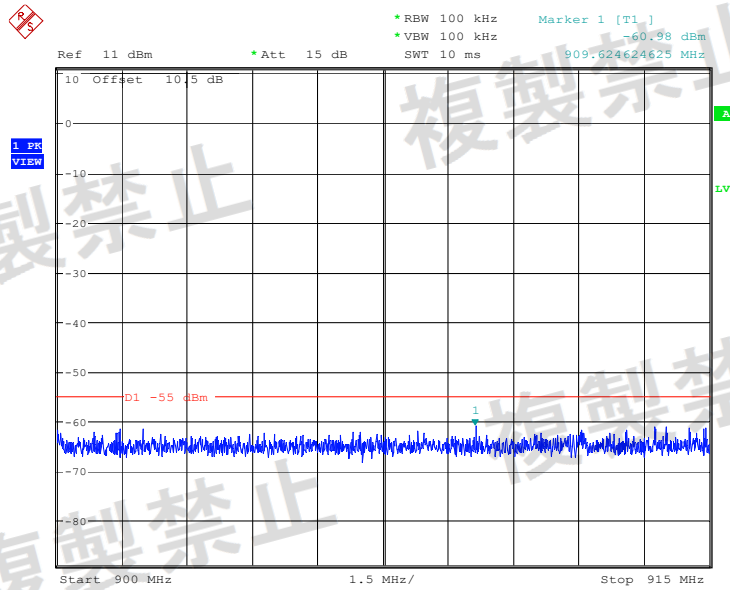
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710 MHz ~ 900 MHz



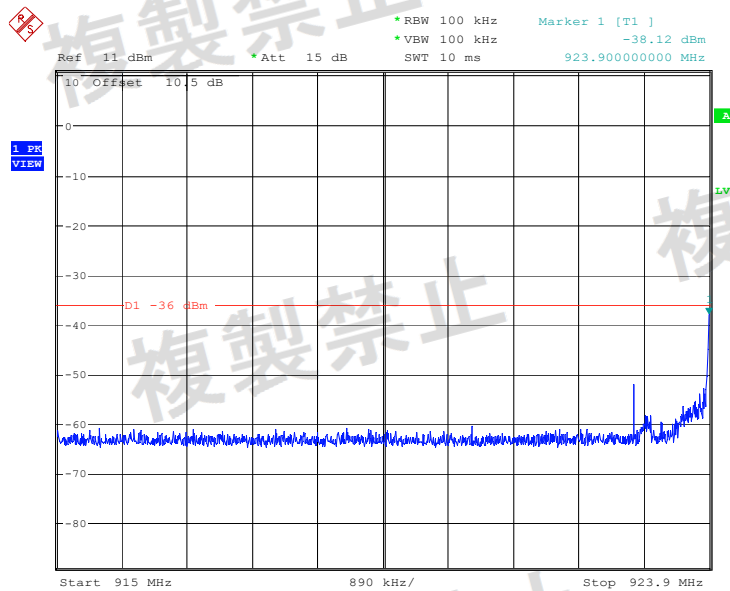
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 Date: 19.NOV.2025 19:44:22

900 MHz ~ 915 MHz



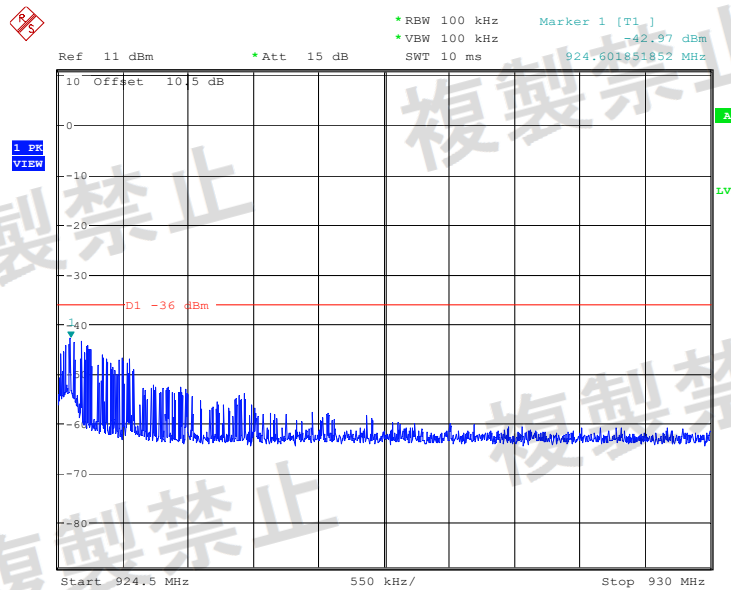
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915 MHz ~ 923.9MHz



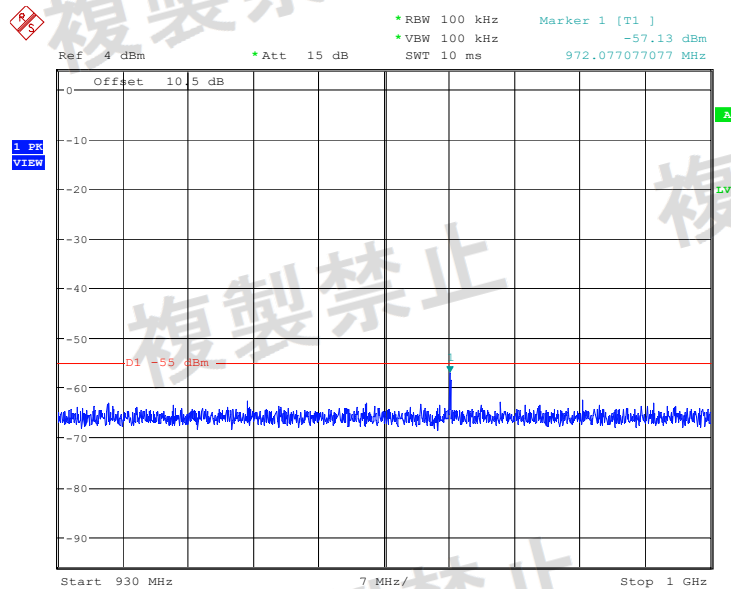
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924.5 MHz ~ 930 MHz



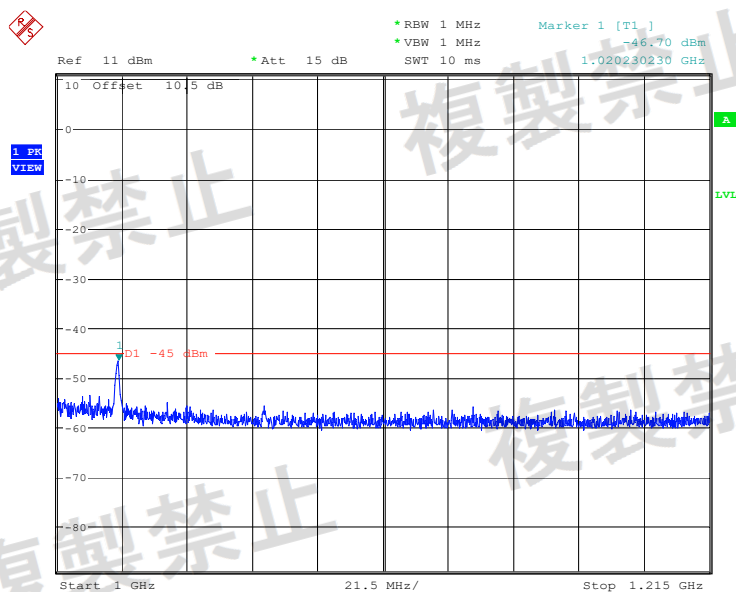
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Date: 19.NOV.2025 19:39:00

930 MHz ~ 1 GHz



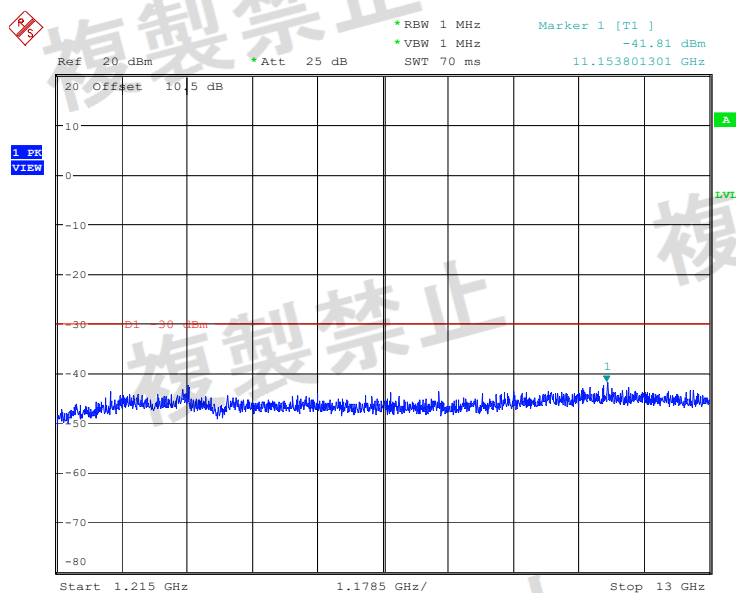
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Date: 19.NOV.2025 19:42:01

1 GHz ~ 1.215 GHz



ProjectNo.:2401S41434E-RF Tester:Cheeb Huang
Date: 19.NOV.2025 20:15:20

1.215 GHz ~ 13 GHz



ProjectNo.:2401S41434E-RF Tester:Cheeb Huang
Date: 19.NOV.2025 20:16:13

ANTENNA OUTPUT POWER TOLERANCE

Limit

The Output Power Tolerance must be within +20%, -80%.

The output power shall be less than 20 mW.

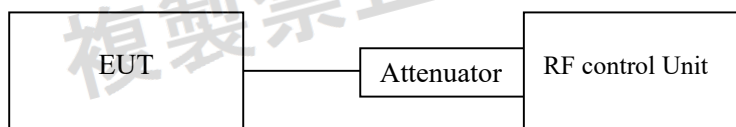
The EIRP Limit: 16dBm or less.

Antenna gain less than 3dBi.

Test Procedure

Step 1: Measure the total power by Power Meter in a state of hopping mode or non-hopping mode (with Average Sensor)

Step 2: Record the value in the report and Calculate the tolerance of the output power.



Note: the power meter was integrated in the RF control Unit.

Test Data

Environmental Conditions

Temperature:	28.7 °C
Relative Humidity:	48 %
ATM Pressure:	101.0 kPa

The testing was performed by Cheeb Huang on 2025-09-23.

Test Result: Compliant

Test Mode: Transmitting

Frequency	924.2MHz	Limit
Antenna Output Power (dBm)	2.06	13
Antenna Output Power (mW)	1.61	20
Rated output power (mW)	2.0	/
Tolerance (%)	-19.5	-80 ~ +20
EIRP(dBm)	5.06	16

Note: The antenna gain is 3.0dBi.

Antenna output power tolerance = (Antenna output power – Rated output power)/ Rated output power *100%

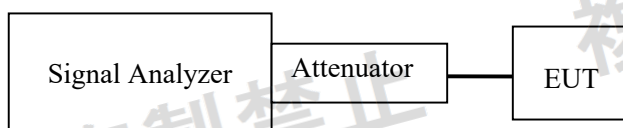
RECEIVER SPURIOUS EMISSION AND UNWANTED EMISSION INTENSITY

Limit

Secondary Radiated Emission Strength	$\leq 710\text{MHz}$: -54dBm/100kHz 710MHz<, $\leq 900\text{MHz}$: -55dBm/1MHz 900MHz<, $\leq 915\text{MHz}$: -55dBm/100kHz 915MHz<, $\leq 930\text{MHz}$: -54dBm/100kHz 930MHz<, $\leq 1000\text{MHz}$: -55dBm/100kHz 1000MHz< : -47dBm/1MHz
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Test Procedure

Measurement System Diagram



Conditions of Application Equipment (EUT)

- The modulation state shall be “continuous receiving mode”.

Spectrum Analyzer Conditions

Frequency range: 30MHz-710MHz, RBW/VBW=100/100kHz

Frequency range: 710MHz-900MHz, RBW/VBW=1/1MHz

Frequency range: 900MHz-915MHz, RBW/VBW=100/100kHz

Frequency range: 915MHz-930MHz, RBW/VBW=100/100kHz

Frequency range: 930MHz-1000MHz, RBW/VBW=100/100kHz

Frequency range: 1000MHz-5000MHz, RBW/VBW=1/1MHz

Test Data**Environmental Conditions**

Temperature:	26.1 °C
Relative Humidity:	48 %
ATM Pressure:	101 kPa

The testing was performed by Cheeb Huang on 2025-11-26.

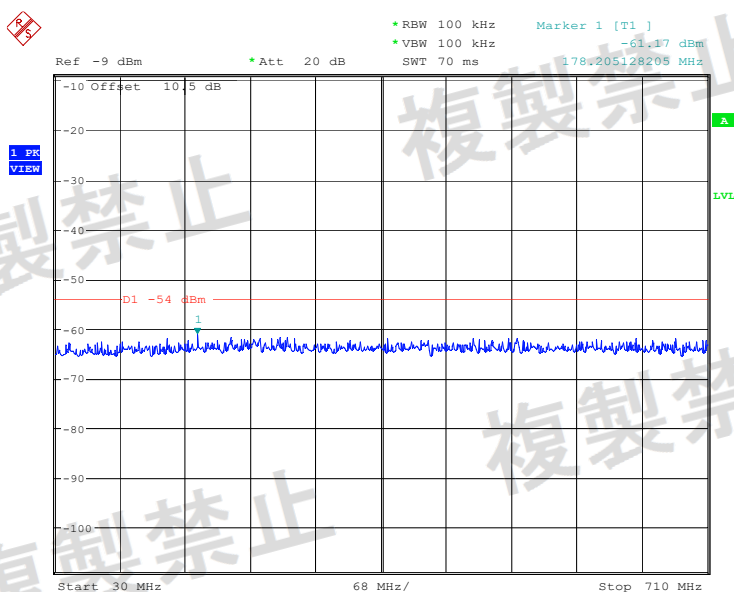
Test Result: Compliant

Test Mode: Receiving

Channel	Test Band (RBW)	Frequency Range		Max.Emission Located(MHz)	Result (dBm/RBW)	Limit (dBm/RBW)	Verdict
		Start (MHz)	Stop (MHz)				
924.2MHz	Band I (100kHz)	30	710	178.205	-61.17	-54	Pass
	Band II (1MHz)	710	900	863.157	-62.23	-55	Pass
	Band III (100kHz)	900	915	908.846	-61.69	-55	Pass
	Band IV (100kHz)	915	930	924.976	-62.00	-54	Pass
	Band V (100kHz)	930	1000	983.061	-61.21	-55	Pass
	Band VI (1MHz)	1000	5000	3596.154	-53.21	-47	Pass

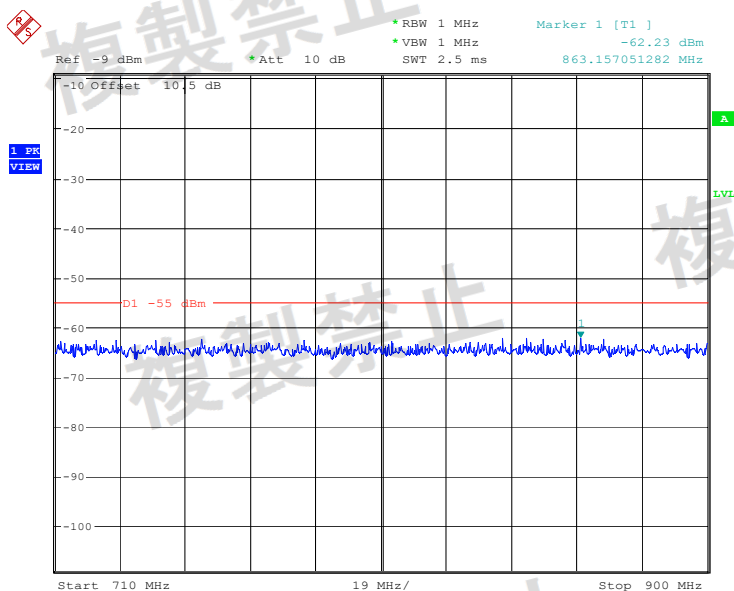
Please refer to the below plots for normal voltage test.

30 MHz ~ 710 MHz



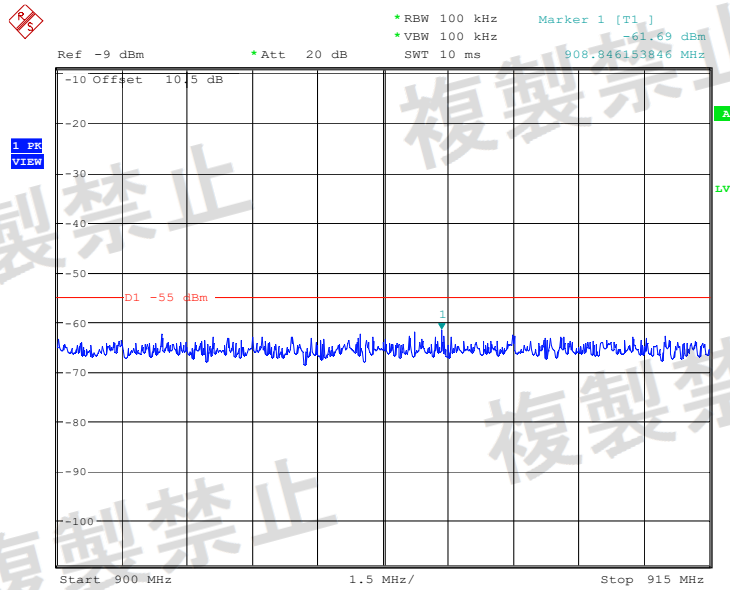
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Date: 26.NOV.2025 21:16:45

710 MHz ~ 900 MHz



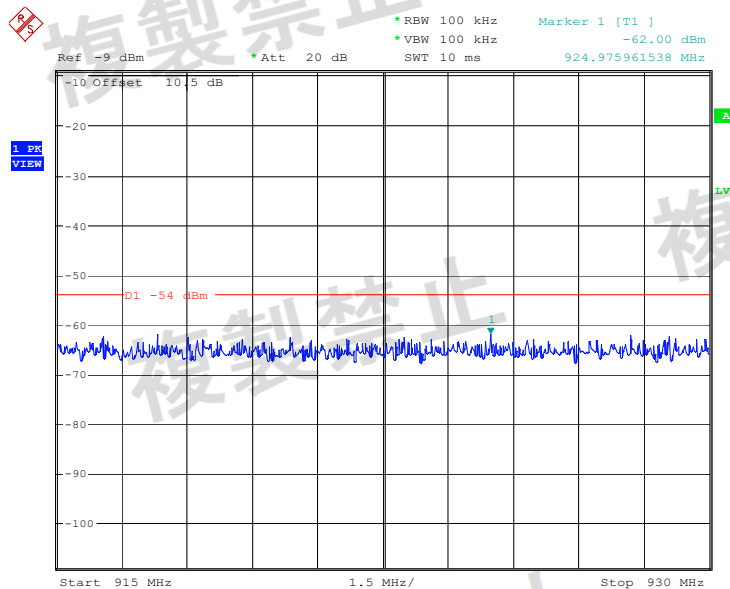
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900 MHz ~ 915MHz



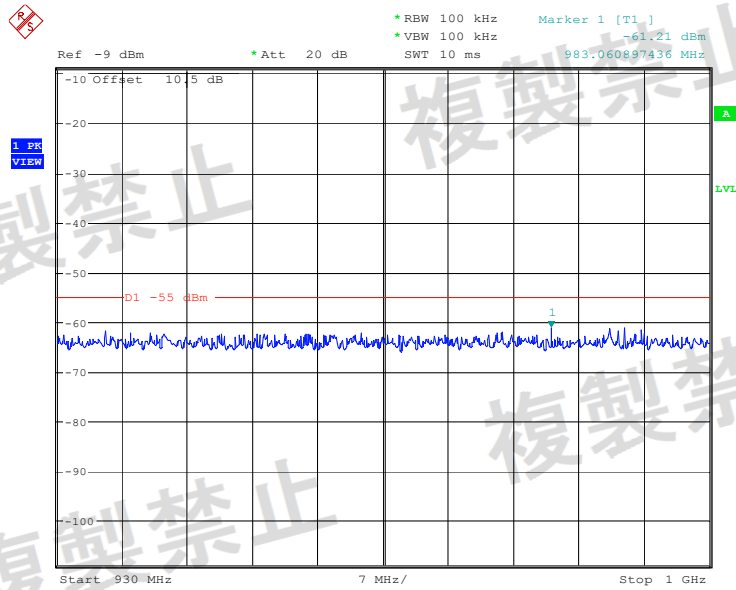
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915 MHz ~ 930 MHz



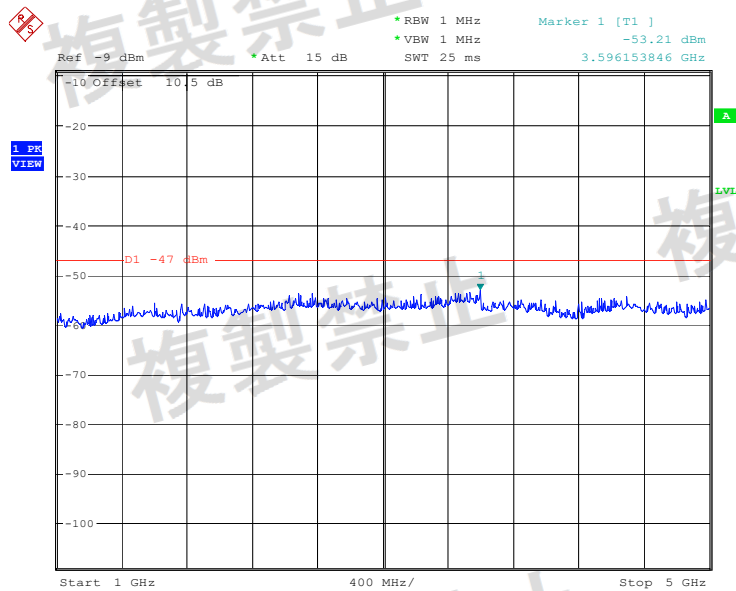
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Date: 26.NOV.2025 21:17:49

930 MHz ~ 1 GHz



ProjectNo.:2401S41434E-RF Tester:Cheeb Huang
Date: 26.NOV.2025 21:19:22

1 GHz ~ 5 GHz



ProjectNo.:2401S41434E-RF Tester:Cheeb Huang
Date: 26.NOV.2025 21:13:12

CONSTRUCTION PROTECTION CONFIRMATION

Limit

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

Result

The EUT has shielding cover for the high-frequency section and modulation section of the radio which can't be opened easily, please see the EUT photos.

EUT PHOTOGRAPHS

Please refer to the attachment 2401S41434E-RF-EXP External photo and 2401S41434E-RF-INP Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401S41434E-RF-TSP Test Setup photo.

****END OF REPORT****