

Japan Radio Test Report

Project No. : 2510H017A
Equipment : Floor Cleaning Robot
Brand Name : ECOVACS
Model Name : DEX96
Applicant : Ecovacs Home Service Robotics Co., Ltd.
Address : No.518 Songwei Road,Wusongjiang industry Park,Guoxiang Street,
Wuzhong District,Suzhou, Jiangsu,China.
Manufacturer : Ecovacs Home Service Robotics Co., Ltd.
Address : No.518 Songwei Road,Wusongjiang industry Park,Guoxiang Street,
Wuzhong District,Suzhou, Jiangsu,China.
Factory : Ecovacs Home Service Robotics Co., Ltd.
Address : No.518 Songwei Road,Wusongjiang industry Park,Guoxiang Street,
Wuzhong District,Suzhou, Jiangsu,China.
Date of Receipt : Apr. 02, 2026
Date of Test : Apr. 07, 2026~ Apr. 28, 2026
Issued Date : May 28, 2026
Test Sample : Engineering Sample No.:SH920260402939
Standard(s) : Ordinance Regulating Radio Equipment General Provisions,
Transmitting Equipment, Receiving Equipment, Article 49-20
Test Procedure : Test Method Specified Radio Equipment Article 2 Paragraph 1 of
item19-2 (MIC Notice No.88 Appendix No.44)

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc. (Shanghai)

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Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** assumes no responsibility for the data provided by the customer, any statements, inferences or generalizations drawn by the customer or others from the reports issued by **BTL**.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

BTL's laboratory quality assurance procedures are in compliance with the ISO/IEC 17025: 2017 requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REVISION HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-JPAP-2-2510H017A	R00	This is a supplementary report to the original test report (BTL-JPAP-2-2510H017). The difference compared with original report are added brand silk printing and updated PCB Layout. Therefore, update the antenna power tolerance and unwanted emission intensity based on the worst-case mode of the original case and record them in the report. All other test items shall refer to the original report.	May 28, 2026	Invalid

1. SUMMARY OF TEST RESULTS

Part	Description of Test	Rule Section	Result
3.3	Unwanted Emission Intensity	Article 7, Table 3	Pass
3.4	Antenna Power Tolerance	Article 14	Pass
3.9	Construction Protection Confirmation	Article 49-20, Item1-a	Pass

Method of measurement:	MIC Notice No.88 Appendix No.44
Test condition:	Conductive, RF test program provided by the customer was used to control the operating channel as well as the output power level.

Abbreviations used in this test report are as follows:

NC:	Normal Condition
EC:	Extreme Condition
EUT:	Equipment Under Test
DS:	Direct spreading
FH:	Frequency hopping
OFDM:	Orthogonal frequency division multiplexing

1.1. TEST FACILITY

The test facilities used to collect the test data in this report:

TR02: No. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210, People's Republic of China.

1.2. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
Antenna Power	± 0.3473 dB
Unwanted Emission Strength	± 0.3792 dB
Temperature	$\pm 0.3^{\circ}\text{C}$
Humidity	± 1.3 %
Voltage	± 0.7 v

1.3. TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
Unwanted Emission Intensity	22.3°C	45%	DC 14.4V	Noel Kuai
Antenna Power Tolerance	22.3°C	45%	DC 14.4V	Noel Kuai

2. GENERAL INFORMATION

2.1. GENERAL DESCRIPTION OF EUT

Equipment	Floor Cleaning Robot
Brand Name	ECOVACS
Test Model	DEX96
Model Name	DEX96
Model Difference(s)	N/A
Hardware Version	N/A
Software Version	N/A
Power Source	DC voltage supplied from AC/DC adapter Brand/ Model: ECOVACS/CH2561 Battery supplied. Model:S31-LI-144-6400
Power Rating	IP:100V~ 50-60Hz 1A(Charging), 4.5A(Emptying), 10.5A(Hot-Water Washing Mop), 10.5A(Drying) OP:20VDC 2A Nominal Voltage: 14.4VDC Max Charge Voltage: 16.6VDC Nominal Capacity: 6400mAh Rated Capacity:5800mAh Rated Energy:83.52Wh
Operation Frequency	2484 MHz
Modulation Technology	IEEE 802.11b: DSSS
Bit Rate of Transmitter	IEEE 802.11b: 11/5.5/2/1Mbps
Antenna Power (Rated Power)	3.28 mW/MHz
Antenna Power (Max. Conducted Power)	3.2063 mW/MHz

Note:

- The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

2. Channel List:

CH14 For IEEE 802.11b	
Channel	Frequency (MHz)
14	2484

3. Table for Filed Antenna:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain(dBi)
1	FN-LINK TECHNOLOGY Ltd.	4A8-1100-4700	PCB	IPEX	0.91

(1) The antenna gain is provided by the manufacturer.

2.2. DESCRIPTION OF TEST MODES

The EUT was tested while in a continuous transmitter / receiver mode.

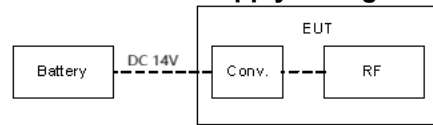
The EUT was tuned to a middle channel for all tests.

The EUT continuously transmitted a modulated packet with payload, while transmitting the EUT was setup to operate at the intended maximum power output available to the end user.

For all test case pre/scans were completed in all modes to determine worst case levels.

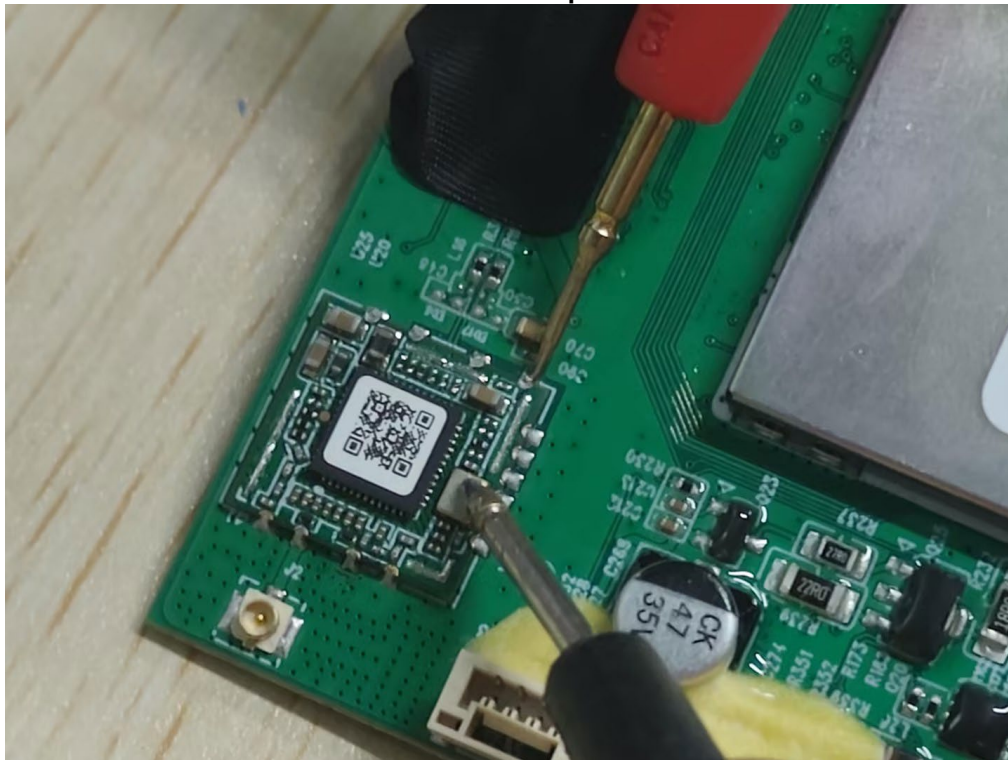
Test Mode	Description
Mode 1	IEEE 802.11b/CH14

Power Supply Voltage Fluctuation Test



Voltage Fluctuation Test	Normal Voltage	High Voltage + 10% of Normal Voltage	Low Voltage - 10% of Normal Voltage
Input: AC Power	14.4V	15.84V	12.96V
Output: DC Power	3.309V	3.308V	3.309V
Voltage Variation (%)	-	-0.30	0

Measurement point



Note:

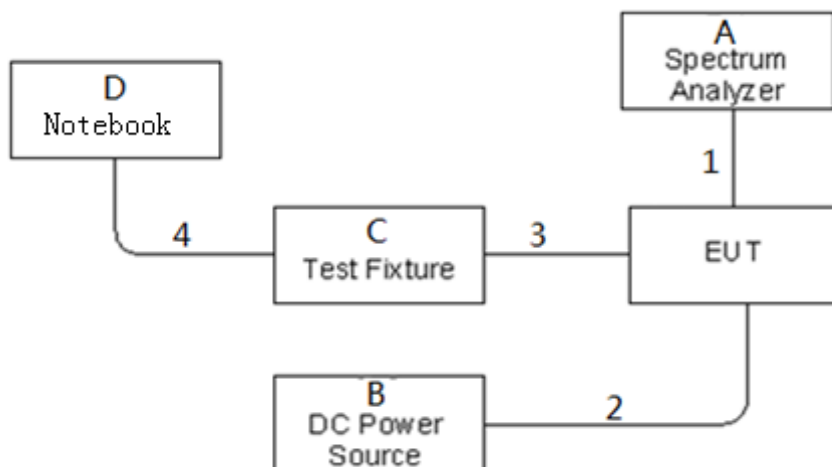
Voltage Variation (%)

= (Output High Voltage or Low Voltage - Output Normal Voltage)/Output Normal Voltage * 100

During the input supply voltage to the EUT from the external power source is varied by +/- 10%, if output voltage had been confirmed that the fluctuation of power supply to the RF circuit of EUT (excluding power source) is equal to or less than +/- 1%.

Exempt extremely high and low supply voltage condition tests, EUT only operated in normal voltage to test all regulations.

2.3. BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.
A	EXA Spectrum Analyzer	Keysight	N9020B	MY57120173
B	DC Power Supply	GW INSTEK	GPC-3030DN	EH897352
C	Test Fixture	N/A	N/A	N/A
D	PC	Lenovo	N/A	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	RF CABLE	YES	NO	0.1m
2	DC POWER CABLE	YES	NO	1.2m
3	CONTROL CABLE	NO	NO	0.1m
4	USB CABLE	NO	NO	1.1m

2.5. TABLE FOR PARAMETERS OF TEST SOFTWARE SETTING

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level.

Test Software Version	IPOP V4.0
Frequency(MHz)	2484
IEEE 802.11b	Default

3. TEST RESULTS

3.3. UNWANTED EMISSION INTENSITY MEASUREMENT

3.3.1. LIMIT

Item	Limits
	(See Article 7, Table 3 of the Ordinance Regulating Radio Equipment)
TX Spurious Emission	$\leq 2.5 \mu\text{W/MHz}$ ($30\text{MHz} \leq f \leq 1000\text{MHz}$)
	$\leq 2.5 \mu\text{W/MHz}$ ($1000\text{MHz} \leq f < 2458\text{MHz}$; $2510\text{MHz} < f$)
	$\leq 25 \mu\text{W/MHz}$ ($2458\text{MHz} \leq f < 2471\text{MHz}$) and ($2497\text{MHz} < f \leq 2510\text{MHz}$)
Measurement range: 30MHz~5th harmonics	

3.3.2. SETTING

The following table is the setting of spectrum analyzer.

Spectrum Parameter	Setting
RBW / VBW	100kHz / 100kHz (30~1000MHz) 1MHz / 1MHz (Above 1000MHz)
Detector	Positive Peak
Trace	Max Hold
Sweep Time	Auto

3.3.3. TEST PROCEDURES

Test method which surpass to Clause 5 of Annex No.44 of MIC Notification No.88.

1. Set spectrum analyzer with condition in section 3.3.2 and tune reference level to observe receiving signal position.
2. SA adjusted to start frequency 30MHz and stop frequency 1000MHz. Then to mark peak reading value + cable loss shall be less than $2.5\mu\text{W/MHz}$.
3. SA adjusted to start frequency 1000MHz and stop frequency 2458MHz. Then to mark peak reading value + cable loss shall be less than $2.5\mu\text{W/MHz}$.
4. SA adjusted to start frequency 2458MHz and stop frequency 2471MHz. Then to mark peak reading value + cable loss shall be less than $25\mu\text{W/MHz}$.
5. SA adjusted to start frequency 2497MHz and stop frequency 2510MHz. Then to mark peak reading value + cable loss shall be less than $25\mu\text{W/MHz}$.
6. SA adjusted to start frequency 2510MHz and stop frequency 12500MHz. Then to mark peak reading value + cable loss shall be less than $2.5\mu\text{W/MHz}$.
7. If the Result_Value is over the requirement, take total sum of 1MHz band centered at the spur frequency like time domain power measurement as Result_Value.

3.3.4. TEST SETUP LAYOUT



3.3.5. TEST DEVIATION

There is no deviation with the original standard.

3.3.6. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

Note:

- ※ 1: Frequency Band 1 ($30\text{MHz} \leq f \leq 1000\text{MHz}$)
- ※ 2: Frequency Band 2 ($1000\text{MHz} \leq f < 2458\text{MHz}$)
- ※ 3: Frequency Band 3 ($2458\text{MHz} \leq f < 2471\text{MHz}$)
- ※ 4: Frequency Band 4 ($2497\text{MHz} < f \leq 2510\text{MHz}$)
- ※ 5: Frequency Band 5 ($2510\text{MHz} < f$)

Cable Loss(dB)	11.5
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3.3.7. TEST RESULTS

Please refer to the Appendix A.

3.4. ANTENNA POWER TOLERANCE MEASUREMENT

3.4.1. LIMIT

Item	Limits
	(See Article 14 and 49-20 Item1-e of the Ordinance Regulating Radio Equipment)
Antenna Power Density	$\leq 10\text{mW/MHz}$ (DSSS 2471~2497MHz)
Antenna Power Tolerance	+20%, -80% (Base on manufacturer declare antenna power density)

3.4.2. SETTING

The following table is the setting of the spectrum analyzer.

Step 1:

Spectrum Parameter	Setting
Span	50MHz
RBW / VBW	1MHz / 3MHz
Detector	Positive Peak
Trace	Max Hold
Sweep Time	Auto

Step 3:

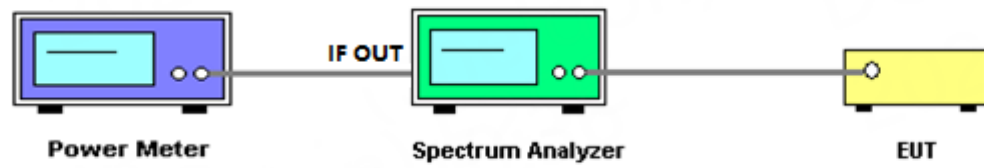
Spectrum Parameter	Setting
Span	0MHz
RBW / VBW	1MHz / 1MHz
Detector	Positive Peak
Trace	Max Hold
Sweep Time	60s

3.4.3. TEST PROCEDURES

Test method which surpass to Clause 6 of Annex No.44 of MIC Notification No.88.

1. Set spectrum analyzer with condition in section 3.4.2 Step 1 and tune reference level to observe receiving signal position.
2. When the trace is complete, find the peak value of the power envelope and record the frequency.
3. Set spectrum analyzer with condition in section 3.4.2 Step 3 and tune reference level to observe receiving signal position.
4. Connect the high frequency power meter to the IF output terminal of the spectrum analyzer, measure the equivalent noise bandwidth at the resolution bandwidth of 1 MHz of the spectrum analyzer, correct the bandwidth to the 1 MHz equivalent bandwidth, and read the displayed value from the high frequency power meter.

3.4.4. TEST SETUP LAYOUT



3.4.5. TEST DEVIATION

There is no deviation with the original standard.

3.4.6. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

3.4.7. TEST RESULTS

Please refer to the Appendix B.

3.9. CONSTRUCTION PROTECTION CONFIRMATION METHOD

3.9.1. LIMIT

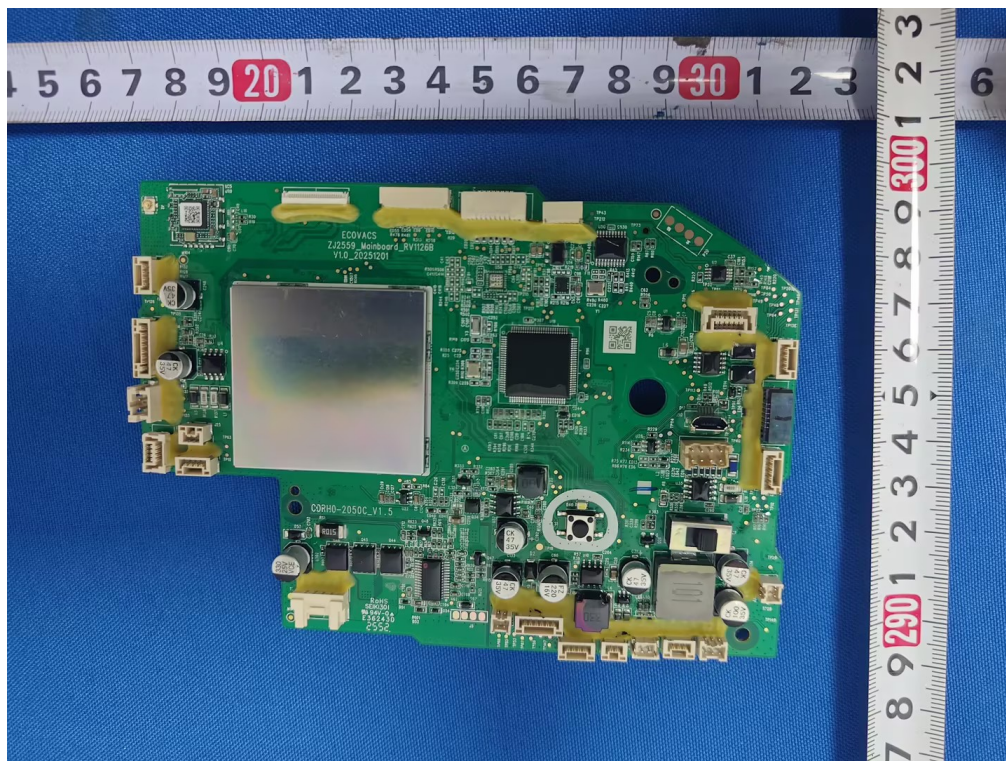
(See Article 49-20, Item1-a of the Ordinance Regulating Radio Equipment).

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

3.9.2. CONFIRMATION METHOD

The RF and modulation portions are protected against illegal modification as following method:

Tick the appropriate box	
☐	1. Sealed with special screws.
☐	2. Plastic chassis is being welded using ultrasonic waves.
☐	3. Chassis is glued using a special adhesive.
☐	4. Metal covers are spot-fused.
☐	5. Cover is specially interlocked.
☐	6. RF and Modulation components are covered with shielding case and this shielding case is soldered.
☐	7. Shield case is welded at RF and modulation parts, and ID-ROM is welded using the BGA Method.
☐	8. Shield case is welded at RF and modulation parts, and ID-ROM is glued at its lead with a special adhesive.
☐	9. Shield case is welded at RF and modulation parts, and ID-ROM is glued with a non-transparent laminating agent.
☒	10. RF and Modulation parts are mounted on PCB with surface mount technology, and there is no any adjustable part on PCB or adjustable parts are not exposed.



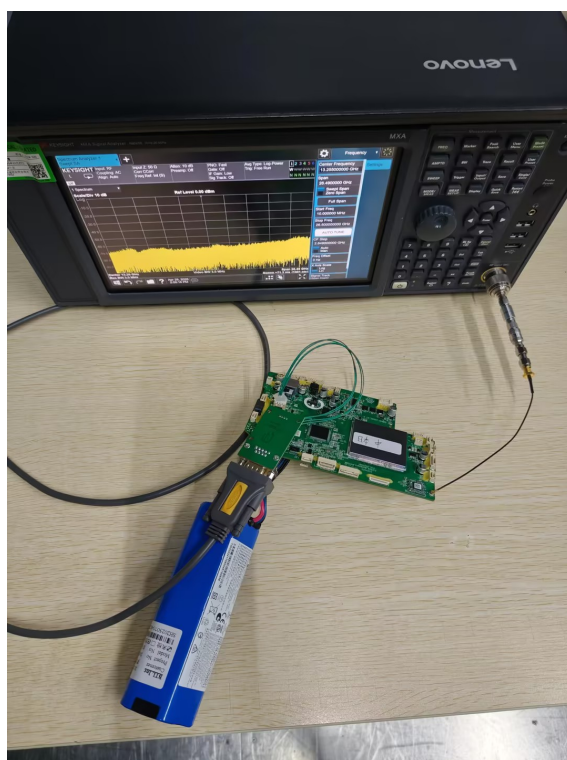
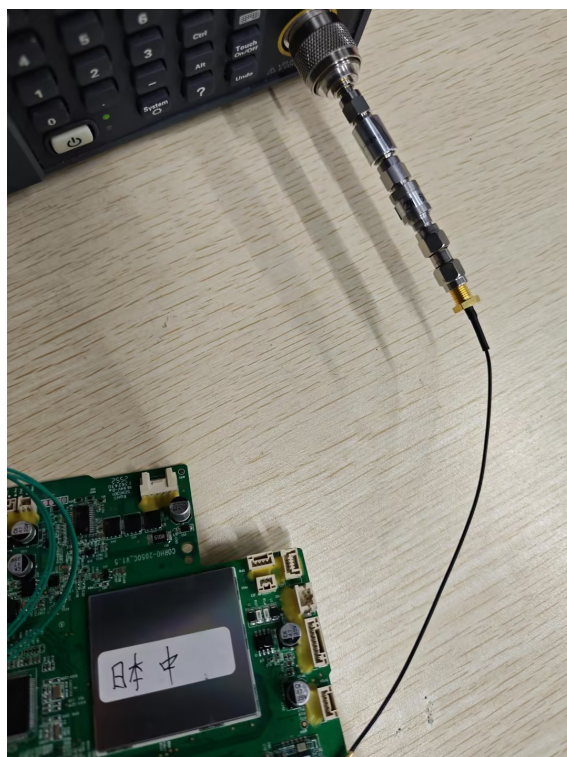
4. LIST OF MEASURING EQUIPMENTS

Kind of Equipment	Manufacturer	Model No.	Serial No.	Calibrated Date	Validity Date	Calibration Agency
EXA Spectrum Analyzer	Keysight	N9020B	MY5712017 3	Jul. 05, 2025	Jul. 04, 2026	China CEPREI Laboratory Calibration & Testing Centrer
BTL Conducted	BTL	20260106	N/A	N/A	N/A	China CEPREI Laboratory Calibration & Testing Centrer

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. Calibration Agency: China CEPREI Laboratory Calibration & Testing Centrer
CEPREI(Suzhou) address : No.601, Taishan Road, Hi-Tech District, Suzhou, Jiangsu, China
3. Calibration conducted in foreign countries, which is equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).

5. EUT TEST PHOTO



APPENDIX A - UNWANTED EMISSION INTENSITY

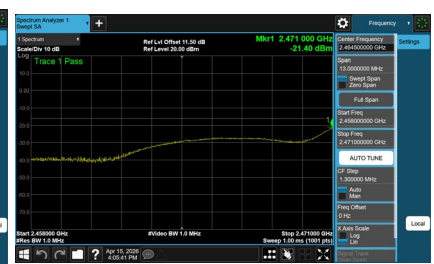
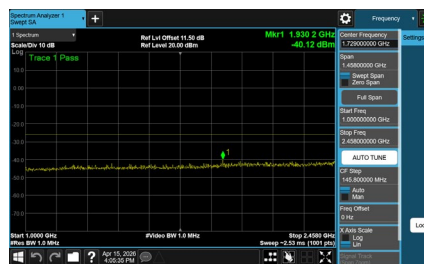
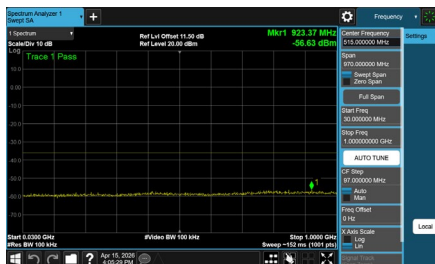
Test Mode: TX Mode_IEEE 802.11b

Test Voltage		Normal Voltage		Remarks
Test Frequency		MHz		Mid of test frequency range
Unwanted Emission Intensity (Power emission within 1MHz bandwidth)	※ 1	MHz	923.37	Limit ≤ 2.5 μW/MHz (-26 dBm/MHz)
		μW/MHz	0.0022	
	※ 2	MHz	930.20	Limit ≤ 2.5 μW/MHz (-26 dBm/MHz)
		μW/MHz	0.0973	
	※ 3	MHz	2471.00	Limit ≤ 25 μW/MHz (-16 dBm/MHz)
		μW/MHz	7.2444	
	※ 4	MHz	2497.00	Limit ≤ 25 μW/MHz (-16 dBm/MHz)
		μW/MHz	6.6834	
	※ 5	MHz	6945.56	Limit ≤ 2.5 μW/MHz (-26 dBm/MHz)
		μW/MHz	0.0407	

※1: 30MHz≤f≤1000MHz

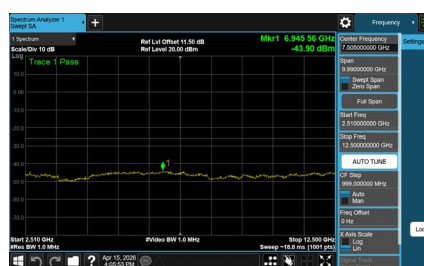
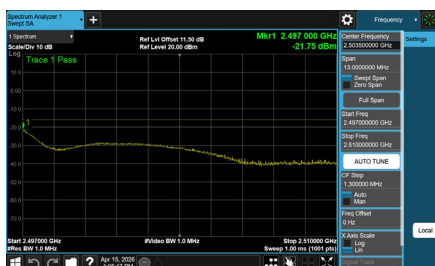
※2: 1000MHz≤f<2458MHz

※3: 2458MHz≤f<2471MHz



※4: 2497MHz<f≤2510MHz

※5: 2510MHz<f



APPENDIX B - ANTENNA POWER TOLERANCE

Test Mode:	TX Mode_IEEE 802.11b
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Normal Voltage

Test Frequency	Conducted RF output power density		Rated RF output power density	Conducted RF output power density Limit	Antenna Power Tolerance in Limit	
(MHz)	(dBm)	(mW)	(mW)	(mW)	(+20%, -80%)	
2484	5.06	3.2063	3.28	10	-2.25	%

Test Frequency	EIRP	ERP	Limit
(MHz)	(dBm)	(dBm)	(dBm)
2484	5.97	3.82	12.14

Note:

1. Antenna power tolerance = (conducted antenna power - rated antenna power)/rated antenna power * 100%
2. Antenna Power value = SA measurement value (Include correction factor and cable loss)
Correction factor = $10 \log(X)$
X = the total number of antennas

End of Test Report