

**Japan Test Report****Report Reference No. : SZE2606050580ET02****Prepared by**
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(position+printed name+signature) Technical Director Andrea Hu*Andrea Hu***Date of issue : July 08, 2026****Testing Laboratory Name : EUSACERT (Shenzhen) Testing Co., Ltd.****Address : 103, 2F, Building A2 and 106, Building A3, No. 2082, Jincheng Road, Haoxiang Community, Shajing Street, Bao'an District, Shenzhen, People's Republic of China****Applicant's Name : CYBERTRONICS LIMITED****Address : Room 508, Building 12, Zhongguancun Entrepreneurship Street, Haidian District, Beijing, China****Test Specification****Standard : Article 2 paragraph 1 item(19)****TRF Originator : EUSACERT (Shenzhen) Testing Co., Ltd.****Master TRF : Dated 2025-06****EUSACERT (Shenzhen) Testing Co., Ltd. All rights reserved.**

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Product Name : Cyber-stage**Trade Mark : N/A****Model Name : AiSpea-s02****Series Model(s) : N/A****Hardware Version : V1.0****Firmware Version : V1.0****Operation Frequency : From 2402-2480MHz****Ratings : DC5V from Type-C or DC3.7V from Battery****Result : Pass**



Test Report No.:	SZE2606050580ET02	July 08, 2026
		Date of issue

Product Name : Cyber-stage

Model Name : AiSpea-s02

Series Model(s) : N/A

Applicant : CYBERTRONICS LIMITED

Address : Room 508, Building 12, Zhongguancun Entrepreneurship Street,
Haidian District, Beijing, China

Manufacturer : Shenzhen Jingchen Electronics Co., Ltd

Address : C802, He Center, No. 60, Shenglong Road, Longgang District,
Shenzhen City, Guangdong Province, China

Test Result	PASS
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



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**** Issued History ****

Revision	Description	Issued Date	Remark
Revision 1.0	Initial Test Report Release	July 08, 2026	



1. Summary

1.1 Test Procedures and Results

Part	Rule Section	Description of Test	Result
4.1	Appendix No.43 of MIC Notification No 88 section 3	Frequency Error	PASS
4.3	Appendix No.43 of MIC Notification No 88 section 4	Occupied Bandwidth (99%)	PASS
4.4	Appendix No.43 of MIC Notification No 88 section 5	Unwanted Emission Intensity	PASS
4.2	Appendix No.43 of MIC Notification No 88 section 6	Antenna Power Error	PASS
4.5	Appendix No.43 of MIC Notification No 88 section 7	Limitation of Collateral Emission of Receiver	PASS
4.6	Appendix No.43 of MIC Notification No 88 section 8	Transmission Antenna Gain (EIRP Antenna Power)	N/A
4.7	Appendix No.43 of MIC Notification No 88 section 11	Transmission Radiation Angle Width (3dB Beam width)	N/A
4.8	Appendix No.43 of MIC Notification No 88 section 12	Radio Interference Prevention Capability	PASS
4.9	/	Carrier Sense Capability	N/A

NOTE:

- (1) PASS: Test item meets the requirement.
- (2) Fail: Test item does not meet the requirement.
- (3) N/A: Test case does not apply to the test object.
- (4) MIC Public Notice 88:2023, annex 1 and annex 43.
- (5) MIC Ordinance Regulating Radio Equipment Section 4.17 of Article 49.20.
- (6) Referenced in the standard ARIB STD-T66.



1.2 Information of the Test Laboratory

EUSACERT (Shenzhen) Testing Co., Ltd.

103, 2F, Building A2 and 106, Building A3, No. 2082, Jincheng Road, Haoxiang Community, Shajing Street, Bao'an District, Shenzhen, People's Republic of China

1.3 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

No.	Item	Uncertainty
1	RF Power, Conducted	$\pm 0.15\text{dB}$
2	Occupied Bandwidth	$\pm 3.64\%$
3	Temperature	$\pm 0.1^\circ\text{C}$
4	Humidity	$\pm 1.0\%$



2. General Information

2.1 General Description of EUT

Equipment	Cyber-stage
Model Name	AiSpea-s02
Series Model(s)	N/A
Model Difference	N/A
Antenna Type	Internal Antenna
Antenna Gain	5.60dBi
Operation Frequency	2402-2480MHz
Number of Channels	40CH
Modulation Type	GFSK
Power Source	DC5V from Type-C or DC3.7V from Battery
Power Rating	DC5V from Type-C or DC3.7V from Battery
Firmware Version	V1.0
Hardware Version	V1.0

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. Antenna gain Refer to the antenna specifications.
3. The cable loss data is obtained from the supplier.
4. The test results in the report only apply to the tested sample.
5. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain(dBi)	NOTE
1	N/A	N/A	Internal Antenna	N/A	5.60	



2.2 Operation Frequency of Channel

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2402	11	2422	21	2442	31	2462
02	2404	12	2424	22	2444	32	2464
03	2406	13	2426	23	2446	33	2466
04	2408	14	2428	24	2448	34	2468
05	2410	15	2430	25	2450	35	2470
06	2412	16	2432	26	2452	36	2472
07	2414	17	2434	27	2454	37	2474
08	2416	18	2436	28	2456	38	2476
09	2418	19	2438	29	2458	39	2478
10	2420	20	2440	30	2460	40	2480

2.3 Description of Test Modes

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	CH01:2402MHz
Mode 2	CH20:2440MHz
Mode 3	CH40:2480MHz



2.4 Test Conditions

The BT module was tested while in a continuous transmitter/receiver mode. The EUT was tuned to a low, middle, and high channel for all tests. For all test case pre/scans were completed in all Modes to determine worst case levels.

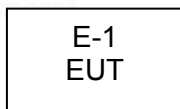
Power Supply Voltage Fluctuation Test

Voltage Mode	Input Voltage	Radio Unit Voltage
DC Input	DC 4.50V	3.31V
	DC 5.00V	3.30V
	DC 5.50V	3.30V
Battery	DC 3.33V	3.31V
	DC 3.70V	3.30V
	DC 4.07V	3.30V
Note: 1 The radio unit Voltage with the module regulator IC regulator. 2 The radio unit less than 1%, so the test only rated voltage (Normal voltage) with the DC power.		

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 test, EUT only operated in normal voltage to test all regulations.

2.5 Block Diagram Showing the Configuration of System Tested

Mode 1:





2.6 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	Trade Mark	Model Name	Specification	Note
E-1	Cyber-stage	N/A	AiSpea-s02	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

Test Software Version	Wifi_Test_Tool_V1.7.8.1
Transmit Antenna Number	1
Test Software setting value	Default

**2.7 Equipments List for All Test Items**

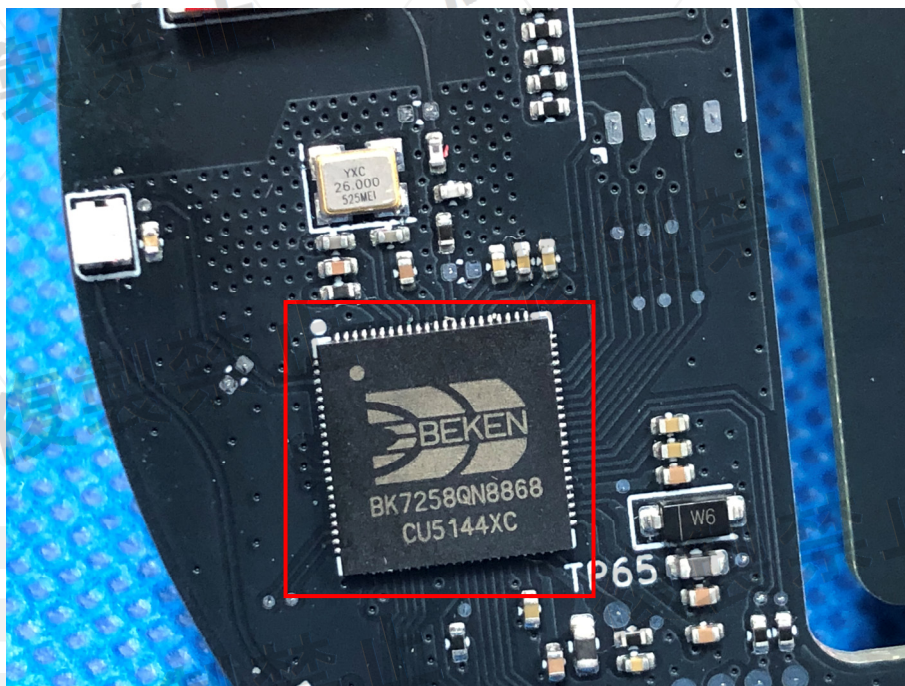
Item	Equipment	Manufacturer	Model No.	Equipment Number	Last Cal.	Cal. Interval
1	Spectrum analyzer	Agilent	N9020A	EUSA-028	2025.07.14	1 Year
2	RF Automatic control unit	Tonscend	JS0806-2	EUSA-053	2025.07.14	1 Year
3	High pass filter unit	Tonscend	JS0806-F	EUSA-034	2025.07.14	1 Year
4	Wireless Communication Test Set	R&S	CMW500	EUSA-029	2025.07.14	1 Year
5	RF Test Software	Tonscend	JS 1120-3 V3.6.21	EUSA-060	/	/
6	Signal generator	Agilent	N5181A	EUSA-019	2025.07.14	1 Year

Note: The calibration agency listed on the table corresponds to item ii c) of Article 24-2 paragraph 4.
Calibration Institution: CHINA CERTIFICATION & INSPECTION GROUP METROLOGY CO, LTD.



3. RF Shielding Method

We apply the product for Japan RF certification. Number of terminals is 88, Terminal pitch is 1 mm.
It is not easily removed. Please refer to following for photo for details.
Red circle part of the RF module soldered on the PCB.





4. Test Result

4.1 Frequency Error

4.1.1 Limit

Item	Limits
Frequency Error	+/-50ppm

4.1.2 Measuring Instruments and Setting

The following table is the setting of Spectrum Analyzer.

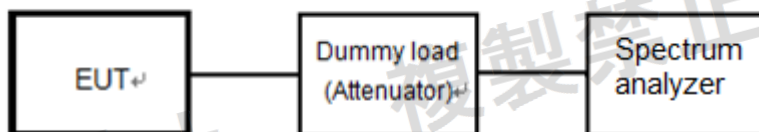
Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	10KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.1.3 Test Procedures

- (1) In the case of un-modulated signal (continuous or continuous burst), measure the frequency directly by a spectrum analyzer.
- (2) In the case of burst waves, the measurement shall be done for enough time in order to obtain the enough measuring accuracy, and the average of the measured values becomes the final value.
- (3) In the case of a test mode with a specific frequency spectrum, measure the frequency of the specific spectrum by a spectrum analyzer.
- (4) In the cases above, if the frequency equivalent to the test frequency is not directly measured in principle, it shall be obtained by necessary calculation.

In the case of modulated signal, if there is no specific spectrum measurable by a spectrum analyzer but a specific dip is observed, it is allowed to measure the frequency with the signal generator (synthesized). That is observe a signal of the signal generator concurrently (or alternately) with the tested signal using the spectrum analyzer while setting the frequency of the signal generator to the position of the dip on the screen of the spectrum analyzer, and determine the frequency of the signal generator at the time as a measured value.

4.1.4 Test Setup Layout



4.1.5 EUT Operation during Test

The EUT was placed on the test table and programmed in un-modulation function.



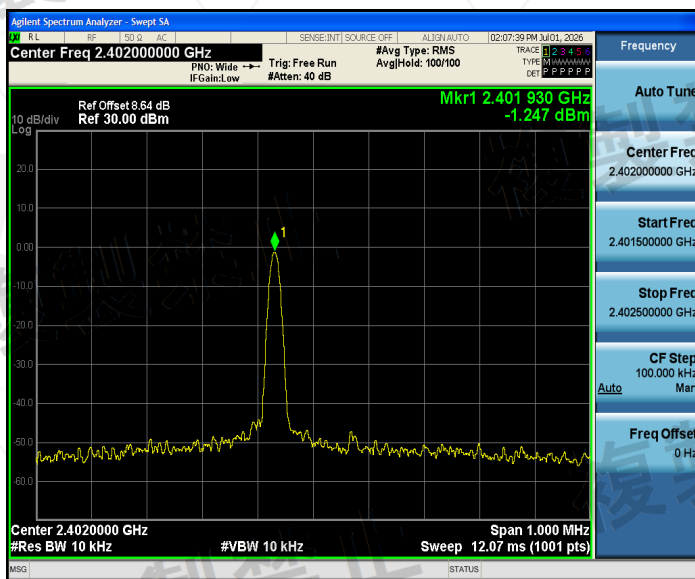
4.1.6 Test Result

EUT:	Cyber-stage	Test Date:	July 01, 2026
Temperature:	25°C	Tested by:	Jones Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage- Carrier Tx Mode		

Mode	CH	Measured	Tolerance	Result	Limit
		MHz	MHz	ppm	ppm
Carrier	CH01:2402MHz	2401.930	-0.070	-29.14238	+/-50
	CH20:2440MHz	2439.929	-0.071	-29.09836	+/-50
	CH40:2480MHz	2479.928	-0.072	-29.03226	+/-50

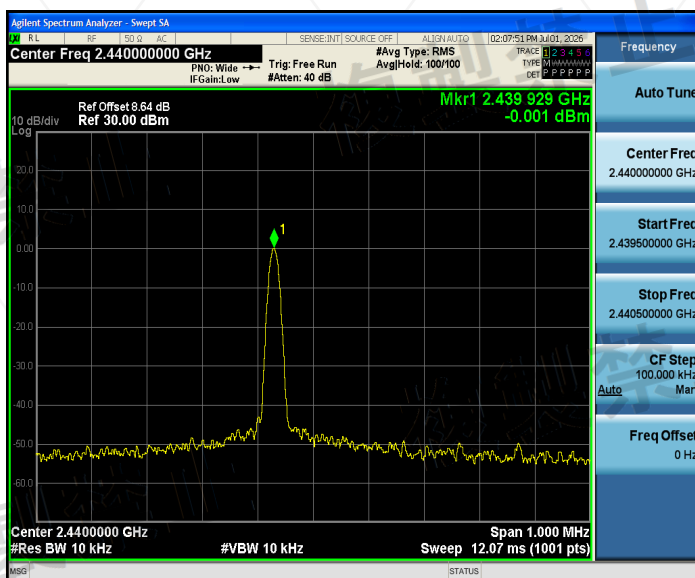
Conclusion: PASS

CH01:2402MHz:

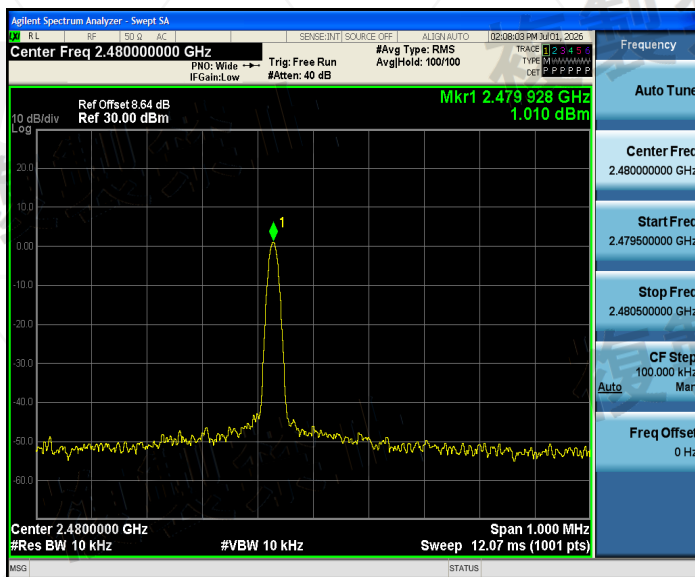




CH20:2440MHz:



CH40:2480MHz:





4.2 Antenna Power

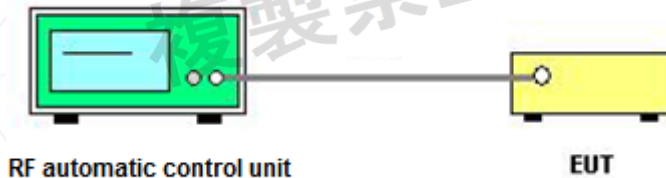
4.2.1 Limit

Item	Limits
Antenna Power Density	$\leq 3\text{mW/MHz}$ (FH form 2427 - 2470.75 MHz) $\leq 10\text{mW/MHz}$ (OFDM,DS from 2400~2483.5MHz) $\leq 10\text{mW}$ (Other from 2400~2483.5MHz)
Antenna Power Error	+20% (Base on manufacturer declare antenna power density)

4.2.2 Measuring Instruments and Setting

1. The EUT was placed on a table which is 0.8m above ground plane.
2. The EUT was directly connected to the RF automatic control unit.

4.2.3 Test Setup Layout



4.2.4 Test Deviation

- (1) Configure EUT and assistant system according clause 2.3.
- (2) Set EUT work in test mode as described in clause 2.4.
- (3) Connect the RF automatic control unit for testing, find the peak power and record it.

**4.2.5 Test Result**

EUT:	Cyber-stage	Test Date:	July 01, 2026
Temperature:	25°C	Tested by:	Jones Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage		

Test Frequency	Antenna Power (dBm)	Result (mW)	Limit (mW)
2402MHz	-2.89	0.5140	10
2440MHz	-1.10	0.7762	10
2480MHz	-0.08	0.9817	10

Test Frequency	Conducted RF Output Power Density (mW)	Rated Power Density (mW)	Antenna Power Error (%)
2402MHz	0.5140	2	-74.30
2440MHz	0.7762	2	-61.19
2480MHz	0.9817	2	-50.91

Limit : +20% (Base on manufacturer declare antenna power density)

Test Frequency	Antenna Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)
2402MHz	-2.89	5.60	2.71	12.14
2440MHz	-1.10	5.60	4.50	12.14
2480MHz	-0.08	5.60	5.52	12.14



4.3 Occupied Bandwidth

4.3.1 Limit

Item	Limits
Occupied Bandwidth:	FH 83.5MHz; OFDM,DS $\leq$ 26MHz; Others $\leq$ 26MHz

4.3.2 Measuring Instruments and Setting

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	300kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.3.3 Test Procedures

- Setting of SA is following as: RB: 300kHz / VB: 300kHz / SPAN: 4MHz / AT: 20dB Ref: 10dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold.
- EUT have transmitted the maximum modulation signal and fixed channelize (For DSSS or OFDM Device) or continuous maximum power of hopping mode (For FHSS Device). SA set to 99% of occupied bandwidth to measure occupied bandwidth. The limit is less than 26MHz (For DSSS or OFDM Device) or 83.5MHz(For FHSS Device).

4.3.4 Test Setup Layout



4.3.5 Test Deviation

There is no deviation with the original standard.

4.3.6 EUT Operation during Test

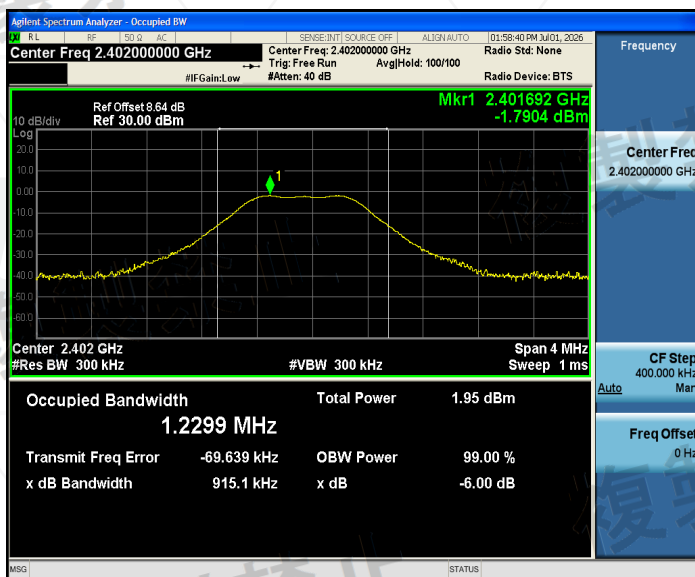
The EUT was programmed to be in continuously transmitting mode.

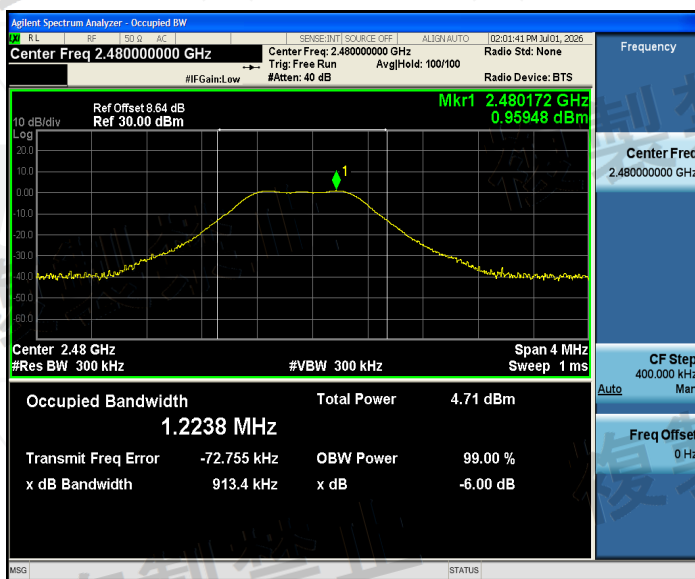
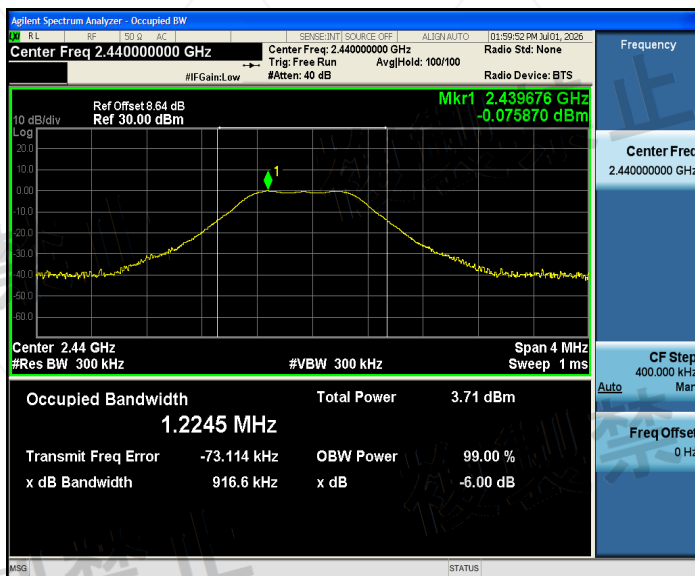


4.3.7 Test Result

EUT:	Cyber-stage	Test Date:	July 01, 2026
Temperature:	25°C	Tested by:	Jones Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage		

Test Voltage	Test Frequency (MHz)	Occupied Bandwidth (MHz)
Normal Voltage	2402	1.2299
	2440	1.2245
	2480	1.2238







4.4 Unwanted Emission Intensity Measurement

4.4.1 Limit

Item	Limits
TX Spurious Emission	$\leq 2.5 \mu\text{W}$ ($30\text{MHz} \leq f \leq 1000\text{MHz}$)
	$\leq 2.5 \mu\text{W}$ ($1000\text{MHz} < f \leq 2387\text{MHz}$)
	$\leq 25 \mu\text{W}$ ($2387\text{MHz} < f \leq 2400\text{MHz}$)
	$\leq 25 \mu\text{W}$ ($2483.5\text{MHz} \leq f < 2496.5\text{MHz}$)
	$\leq 2.5 \mu\text{W}$ ($2496.5\text{MHz} \leq f < 12500\text{MHz}$)

4.4.2 Measuring Instruments and Setting

Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	1 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.4.3 Test Procedures

1. EUT have transmitted the maximum modulation signal and fixed channelize.
2. Setting of SA is following as: Below 1GHz RB:1MHz / VB:1MHz
Above 1GHz RB:1MHz / VB:1MHz / AT: Auto Ref: Auto / Sweep time: Auto
Sweep Mode: Continuous sweep / Detect mode: Positive peak
Trace mode: Max hold
3. Setting of SA is following as 30MHz and stop frequency 1000MHz Then to mark peak reading value + cable loss shall be less than 0.25 μW .
4. Setting of SA is following as 1000MHz and stop frequency 2387MHz Then to mark peak reading value + cable loss shall be less than 2.5 μW .
5. SA adjusted to start frequency 2387MHz and stop frequency 2400MHz. Then to mark peak reading value + cable loss shall be less than 25 μW .
6. SA adjusted to start frequency 2483.5MHz and stop frequency 2496.5MHz Then to mark peak reading value + cable loss shall be less than 25 μW
7. SA adjusted to start frequency 2496.5MHz and stop frequency 12500MHz Then to mark peak reading value + cable loss shall be less than 2.5 μW
8. Measure side band spurious as follows: For 2.4GHz band: 2374MHz~2400MHz and 2483.5MHz~2509.5MHz RBW = VBW = 30kHz, Result_Value = Measured_Value + 15.2 [dBm]
9. If the Result_Value is over the requirement, take total sum of 1MHz band centered at the spur frequency like ACLP measurement as Result_Value.



4.4.4 Test Setup Layout



4.4.5 Test Deviation

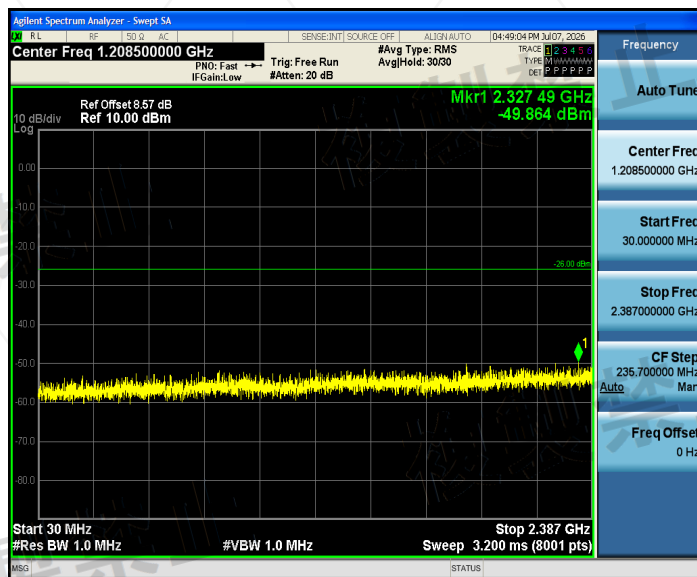
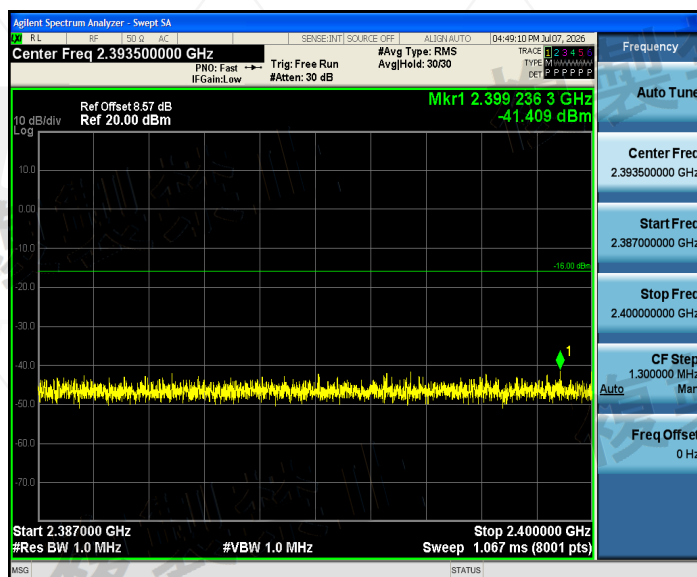
There is no deviation with the original standard.

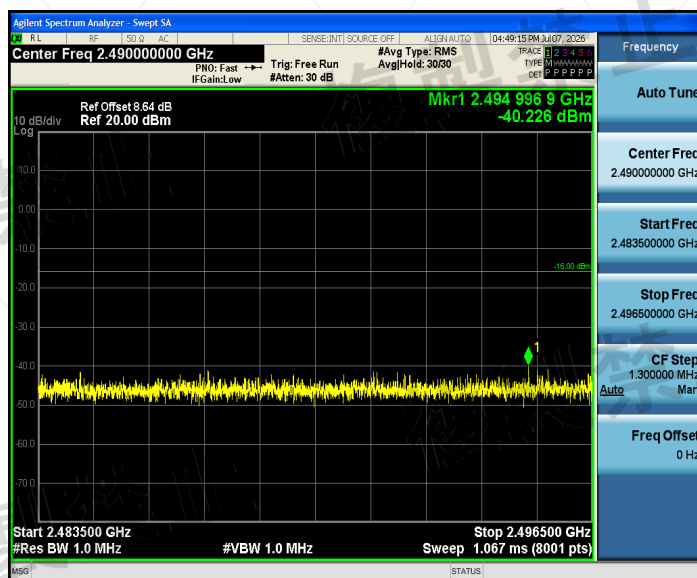
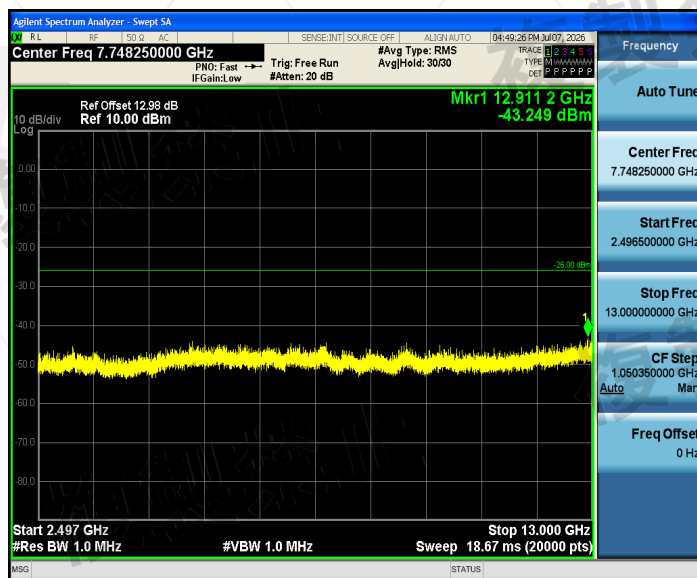


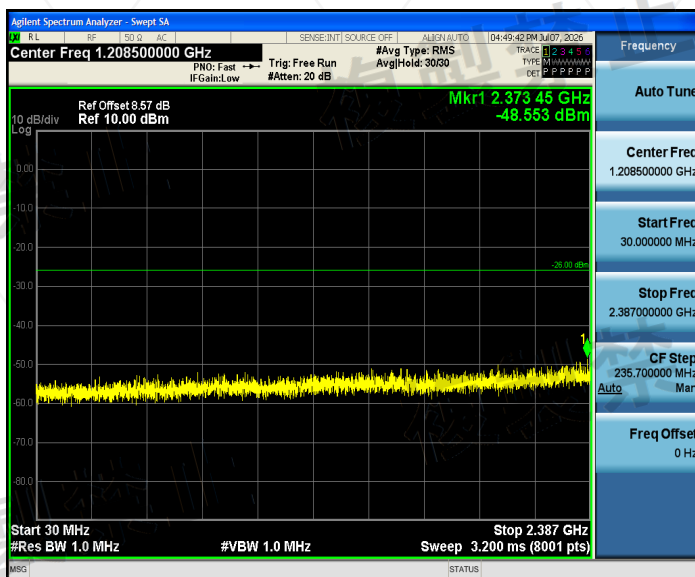
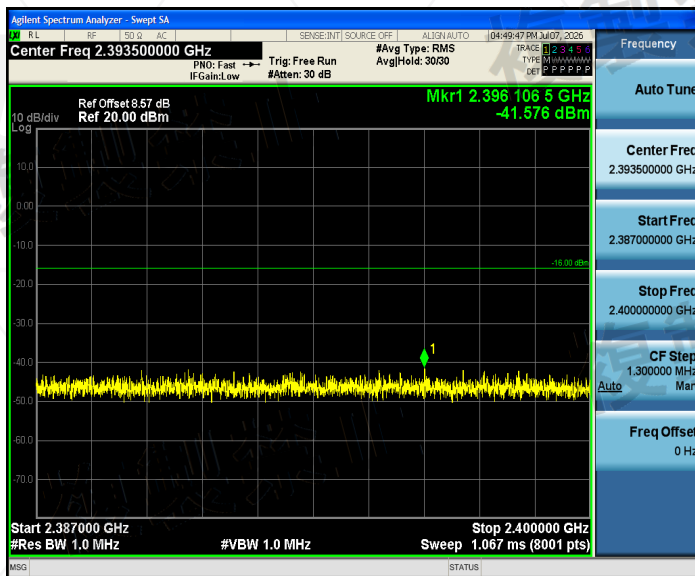
4.4.6 Test Result

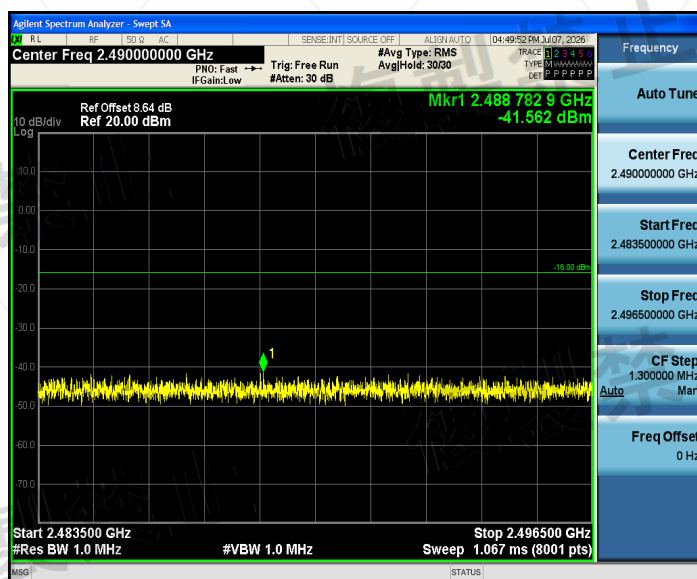
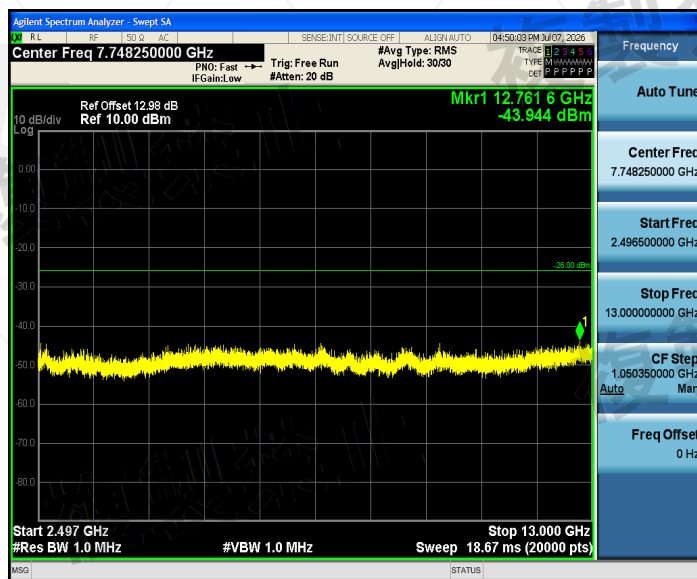
EUT:	Cyber-stage	Test Date:	July 07, 2026
Temperature:	25°C	Tested by:	Jones Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage		

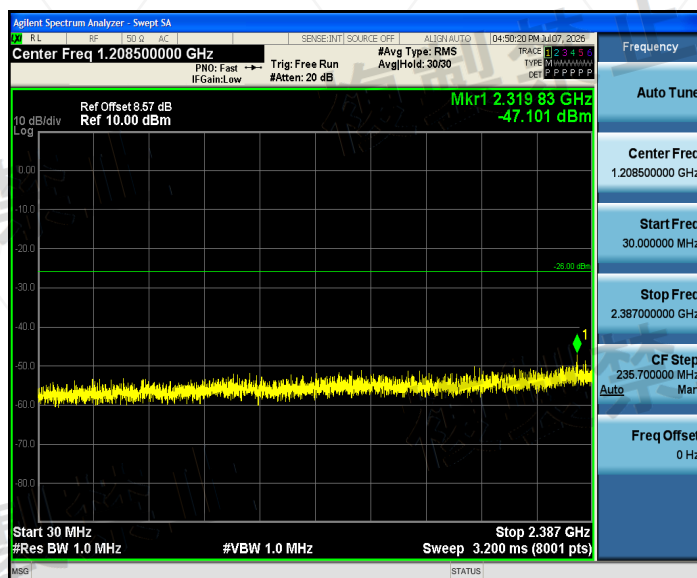
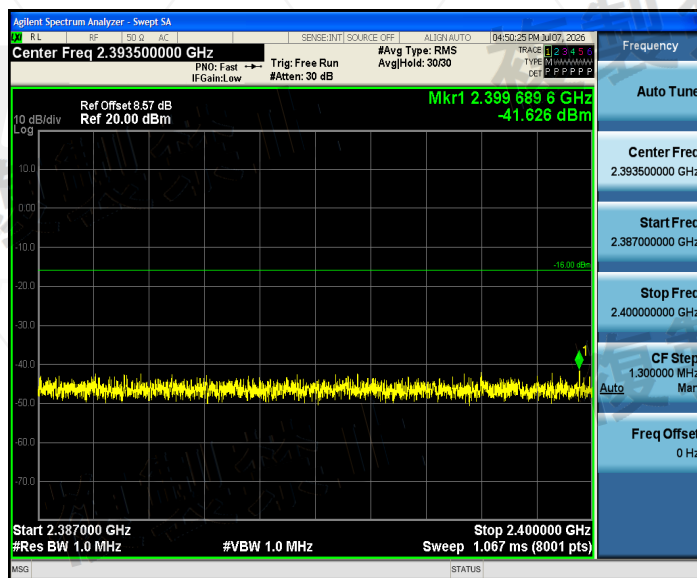
Test Channel	StartFre[MHz]	StopFre[MHz]	Test Fre [MHz]	Max.Level [dBm]	Max.Level[μW]	Limit[μW]	Verdict
2402	30	2387	2327.49	-49.86	0.0103	<2.5	PASS
2402	2387	2400	2399.24	-41.41	0.0723	<25	PASS
2402	2483.5	2496.5	2495.00	-40.23	0.0948	<25	PASS
2402	2496.5	13000	12911.24	-43.25	0.0473	<2.5	PASS
2440	30	2387	2373.45	-48.55	0.0140	<2.5	PASS
2440	2387	2400	2396.11	-41.58	0.0695	<25	PASS
2440	2483.5	2496.5	2488.78	-41.56	0.0698	<25	PASS
2440	2496.5	13000	12761.56	-43.94	0.0404	<2.5	PASS
2480	30	2387	2319.83	-47.10	0.0195	<2.5	PASS
2480	2387	2400	2399.69	-41.63	0.0687	<25	PASS
2480	2483.5	2496.5	2493.32	-40.78	0.0836	<25	PASS
2480	2496.5	13000	12943.80	-43.58	0.0439	<2.5	PASS

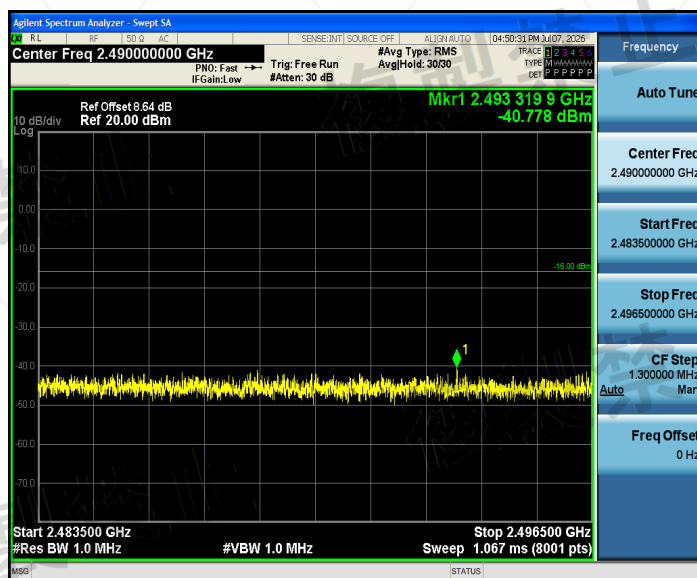
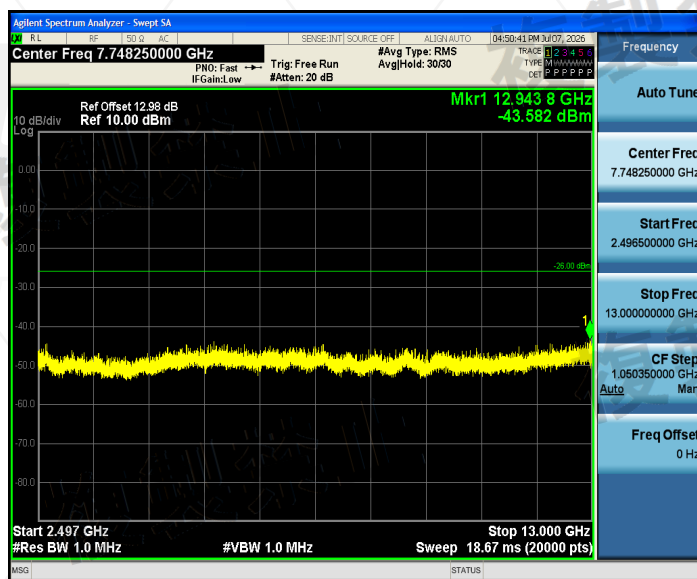
CH 01:2402MHz - Frequency Band 1 ($30 \text{ MHz} \leq f \leq 2387 \text{ MHz}$)CH 01:2402MHz - Frequency Band 3 ($2387 \text{ MHz} < f \leq 2400 \text{ MHz}$)

CH 01:2402MHz - Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)CH 01:2402MHz - Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 13 \text{ GHz}$)

CH 20:2440MHz - Frequency Band 1 ($30 \text{ MHz} \leq f \leq 2387 \text{ MHz}$)CH 20:2440MHz - Frequency Band 3 ($2387 \text{ MHz} < f \leq 2400 \text{ MHz}$)

**CH 20:2440MHz - Frequency Band 4 (2483.5 MHz $\leq$ f < 2496.5 MHz)****CH 20:2440MHz - Frequency Band 5 (2496.5 MHz $\leq$ f < 13 GHz)**

**CH 40:2480MHz- Frequency Band 1 ($30 \text{ MHz} \leq f \leq 2387 \text{ MHz}$)****CH 40:2480MHz - Frequency Band 3 ($2387 \text{ MHz} < f \leq 2400 \text{ MHz}$)**

**CH 40:2480MHz - Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)****CH 40:2480MHz- Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 13 \text{ GHz}$)**



4.5 Imitation of Collateral Emission of Receiver Measurement

4.5.1 Limit

Item	Limits
RX Spurious Emission:	$\leq 4\text{nW}$ ($f < 1\text{GHz}$)
	$\leq 20\text{nW}$ ($1\text{GHz} \leq f$)

4.5.2 Measuring Instruments and Setting

Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB	100 kHz (below 1GHz emissions) 1 MHz (above 1GHz emissions)
VB	100 kHz (below 1GHz emissions) 1 MHz (above 1GHz emissions)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.5.3 Test Procedures

1. EUT have the continuous reception mode and fixed only one channelize.
2. Setting of SA is following as RB / VB: 100 kHz (below 1GHz emissions) / 1 MHz (above 1GHz emissions) /
AT: Auto / Ref: Auto / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
3. SA set RB: 100kHz and VB: 100kHz. Then adjust to start frequency 30MHz and stop frequency 1000MHz. Search to mark peak reading value + cable loss shall be less than 4nW
4. SA set RB: 1MHz and VB: 1MHz. Then adjust to start frequency 1000MHz and stop frequency 12500MHz. Search to mark peak reading value + cable loss shall be less than 20nW
5. If power level of lower emissions are more than 1/10 of limit (.0.4nW for $f < 1\text{GHz}$, 2nW for $f \geq 1\text{GHz}$), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit, no necessary to be indicated.



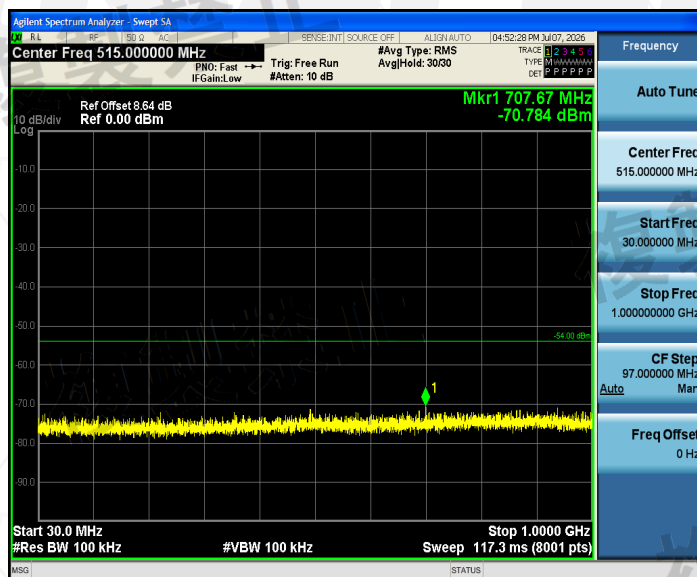
4.5.4 Test Result

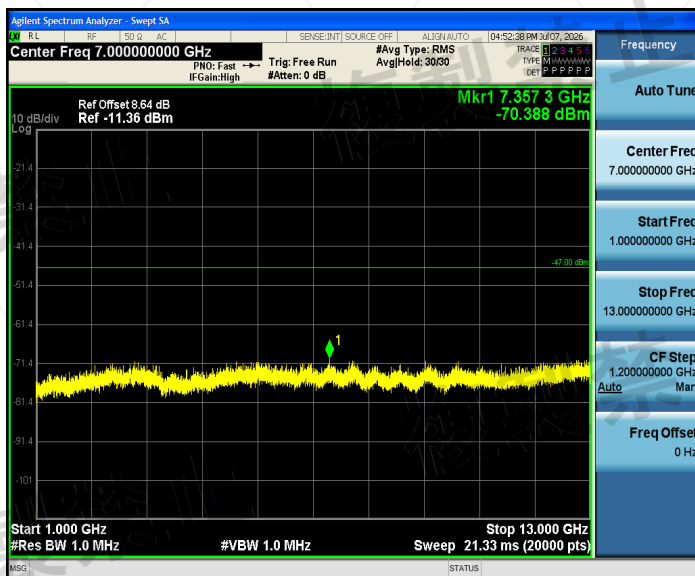
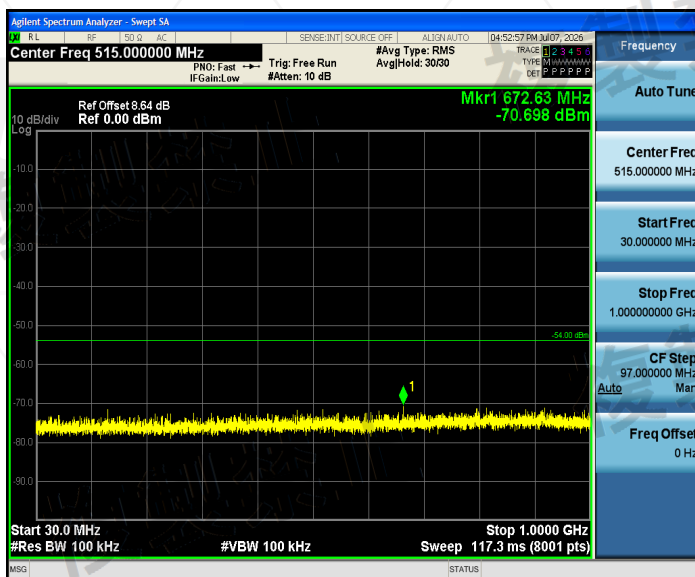
EUT:	Cyber-stage	Test Date:	July 07, 2026
Temperature:	25°C	Tested by:	Jones Pan
Humidity:	55 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage		

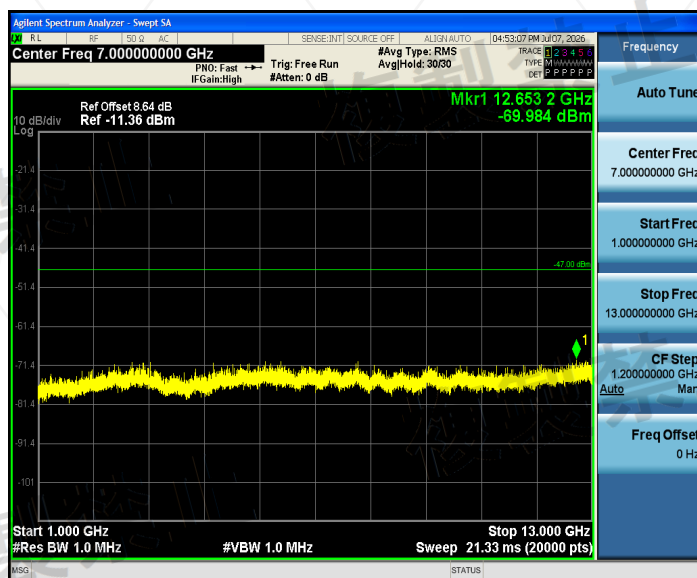
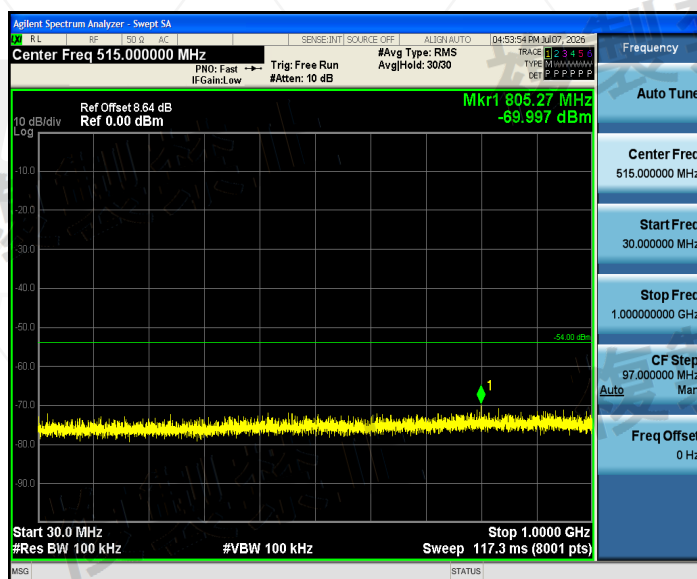
The worst test channel of all channels was showed as the follow:

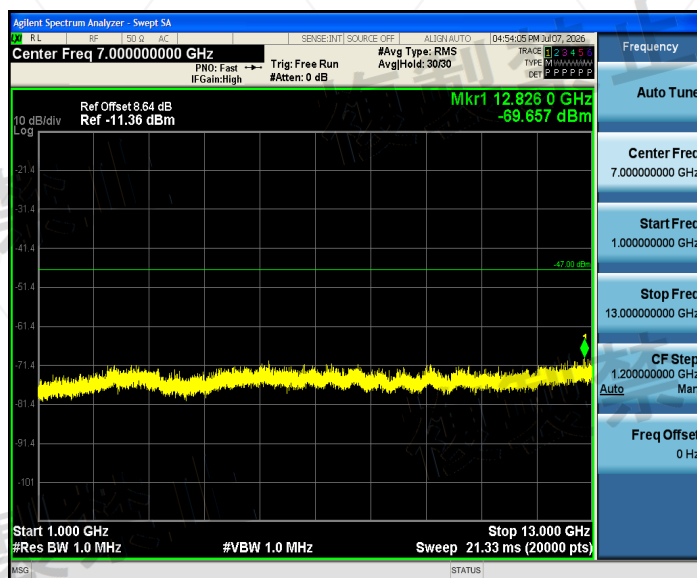
Test Channel	StartFre[MHz]	StopFre[MHz]	Mkr Fre[MHz]	Max.Level[dBm]	Max.Level[nW]	Limit[nW]	Verdict
2402	30	1000	707.67	-70.78	0.0836	<4	PASS
2402	1000	13000	7357.32	-70.39	0.0914	<20	PASS
2440	30	1000	672.63	-70.70	0.0851	<4	PASS
2440	1000	13000	12653.18	-69.98	0.1005	<20	PASS
2480	30	1000	805.27	-70.00	0.1000	<4	PASS
2480	1000	13000	12825.99	-69.66	0.1081	<20	PASS

CH 01:2402MHz-RX-Frequency Band 1 (30 MHz $\leq$ f < 1000 MHz)



CH 01:2402MHz-RX-Frequency Band 2 ($1000 \text{ MHz} \leq f < 13000 \text{ MHz}$)CH 20:2440MHz-RX-Frequency Band 1 ($30 \text{ MHz} \leq f < 1000 \text{ MHz}$)

CH 20:2440MHz-RX-Frequency Band 2 (1000 MHz $\cong$ f < 13000 MHz)CH 40:2480MHz-RX-Frequency Band 1 (30 MHz $\cong$ f < 1000 MHz)

CH 40:2480MHz-RX-Frequency Band 2 (1000 MHz $\leq$ f < 13000 MHz)



4.6 Transmission Antenna Gain (EIRP Antenna Power) Measurement

4.6.1 Limit

Item	Limits
EIRP Power Density	$\leq 6.91\text{dBm/MHz}$ (FH form 2427 - 2470.75 MHz) $\leq 12.14\text{dBm/MHz}$ (OFDM,DS from 2400~2483.5MHz) $\leq 12.14\text{dBm}$ (Other from 2400~2483.5MHz)
Note: This test item is not applied for radio equipment with equivalent isotropic radiation power lower than 12.14dBm/MHz, but Antenna Power(Conducted) limit is 10 mW/MHz (10 dBm/MHz), So the test item will not be applied to the transmission antenna which has a gain of 2.14dBi or less	

4.6.2 Measuring Instruments and Setting

Please refer to section 5 in this report. The following table is the setting of spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB/VB	1 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

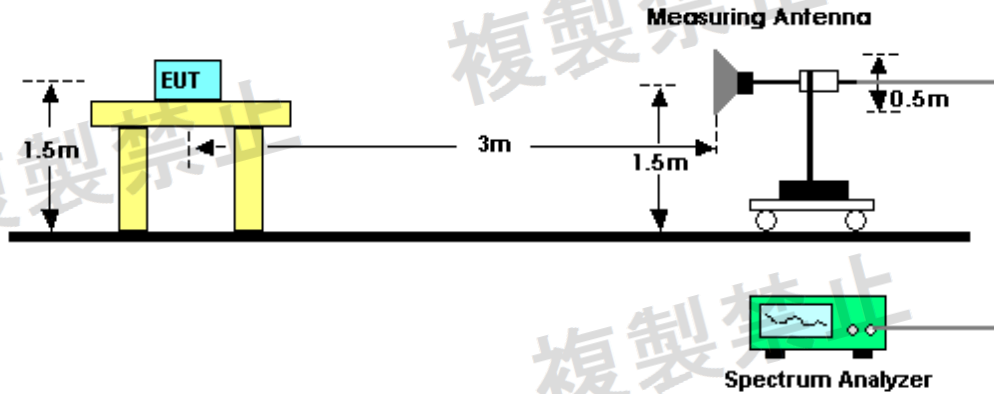
4.6.3 Test Procedures

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Move the measuring antenna height up and down within $\pm 50\text{cm}$ of EUT height and swing it to find the maximum output of the measuring antenna. The output level at the spectrum analyzer is read as "E".
3. Remove the EUT from the turn table and put the replacing antenna facing to measuring antenna at same height. Set the standard signal generator (SSG) at same frequency and transmit on then receive the signal
4. Swing the replacing antenna give a maximum receiving level.
5. Move the measuring antenna height up and down within $\pm 50\text{cm}$ of replacing antenna height and swing it to find the maximum receiving level.
6. Set SSG output power at Pt to give the equivalent output level of "E" or calculate Pt with SSG output which gives the nearest of "E" and difference ($\pm 1\text{dB}$). Record the Pt.
7. Calculate EIRP by the formula below $\text{EIRP} = G_t - L + P_t$.
Gt: gain of replacing antenna (dBi)
L: feeder loss between SSG and replacing antenna
Pt: Output power of the SSG
8. If the antenna for the EUT has circular polarization, sum of V-field and H-field will be result if measuring antenna is linear polarization.

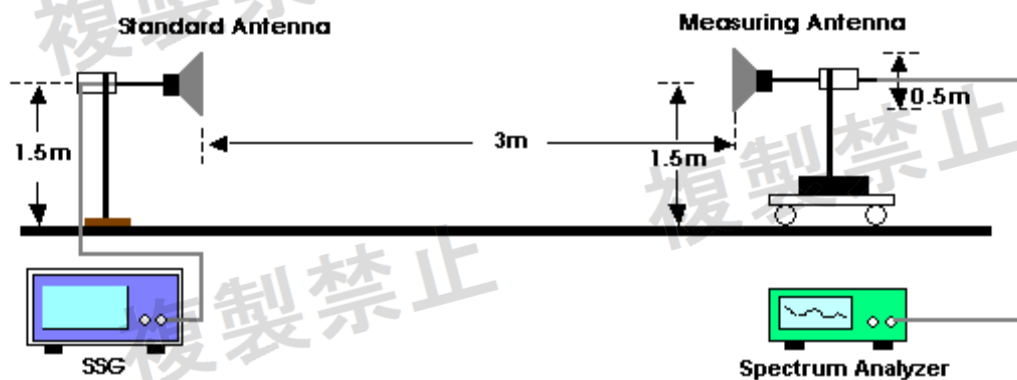


4.6.4 Test Setup Layout

For EUT Radiation Measurement



For Standard Antenna Measurement



4.6.5 Test Deviation

There is no deviation with the original standard.

4.6.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.6.7 Results of Transmission Antenna Gain

Note: This test item is not applied for radio equipment with equivalent isotropic radiation power lower than 12.14dBm/MHz.



4.7 Transmission Radiation Angle Width (3dB Beam width) Measurement

4.7.1 Limit

Item	Limits
3dB antenna beam width	$360/A$ (If $A < 1$; then $A = 1$) $A = \{\text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM}\}$ or $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$
Note: This test item is not applied for radio equipment with equivalent isotropic radiation power lower than 12.14dBm/MHz, but Antenna Power(Conducted) limit is 10 mW/MHz (10 dBm/MHz), So the test item will not be applied to the transmission antenna which has a gain of 2.14dBi or less	

4.7.2 Measuring Instruments and Setting

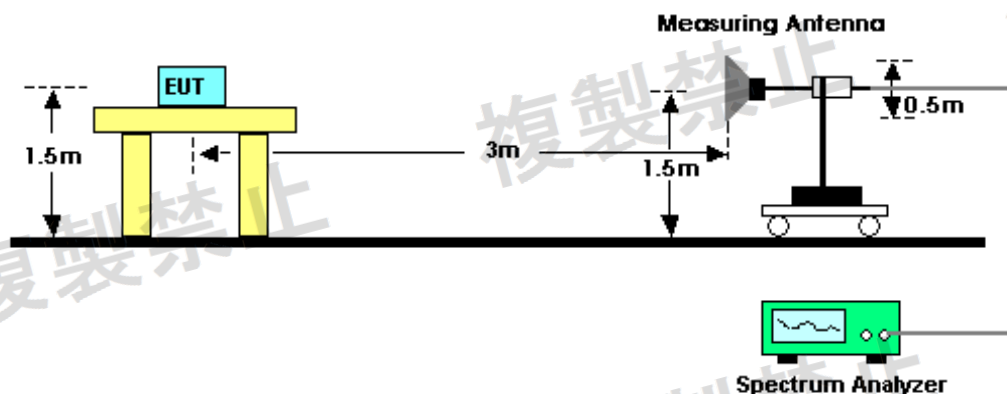
Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	0 MHz
RB	1 MHz
VB	1 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.7.3 Test Procedures

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Set spectrum analyzer with condition in section 4.7.2 and tune reference level to observe receiving signal position.
3. Rotate directions of the EUT horizontally and vertically to find the maximum receiving power.
4. Move the measuring antenna height up and down within $\pm 50\text{cm}$ of EUT height and swing it to find the maximum output of measuring antenna. The output level at the spectrum analyzer is read as "E"
5. Calculate permitted radiation angle in horizontal and vertical using EIRP measured in another test method.
6. Calculate 3dB antenna beam width by the formula below $360/A$ (If $A < 1$; then $A = 1$).
 $A = \{\text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM}\}$ or
 $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$



4.7.4 Test Setup Layout



4.7.5 Test Deviation

There is no deviation with the original standard.

4.7.6 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.7.7 Test Result of Transmission Radiation Angle Width (3dB Beam width)

This test item is not applied for radio equipment with equivalent isotropic radiation power lower than 12.14dBm/MHz.



4.8 Radio Interference Prevention Capability Measurement

4.8.1 Limit

Item	Limits
Identification code	≥ 48 bits

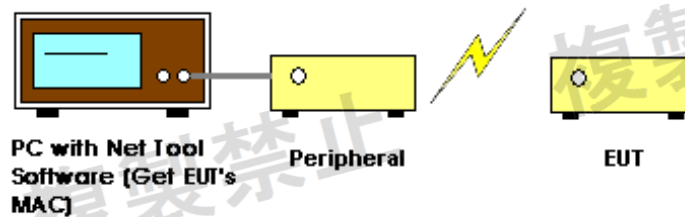
4.8.2 Measuring ID Code Software

Item	Limits
MAC IP List	MAC Scan

4.8.3 Test Procedures

1. In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes form EUT. b. Check the transmitted identification codes with the demodulator.
2. In the case of receiving the identification code:
 - a. Transmit the predetermined identification codes form the counterpart.
 - b. Check if communication is normal.
 - c. Transmit the signals other than predetermined ID codes form the counterpart.
 - d. check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

4.8.4 Test Setup Layout



4.8.5 Test Deviation

There is no deviation with the original standard.

4.8.6 EUT Operation during Test

The EUT was programmed to be in normal transmitting mode.

**4.8.7 Test Result of Radio Interference Prevention Capability**

EUT:	Cyber-stage	Test Date:	July 06, 2026
Temperature:	25°C	Tested by:	Jones Pan
Humidity:	55 % RH		
Test result:	CONFORM (MAC: c8:47:8c:2a:32:a7)		



4.9 Carrier Sensing Function

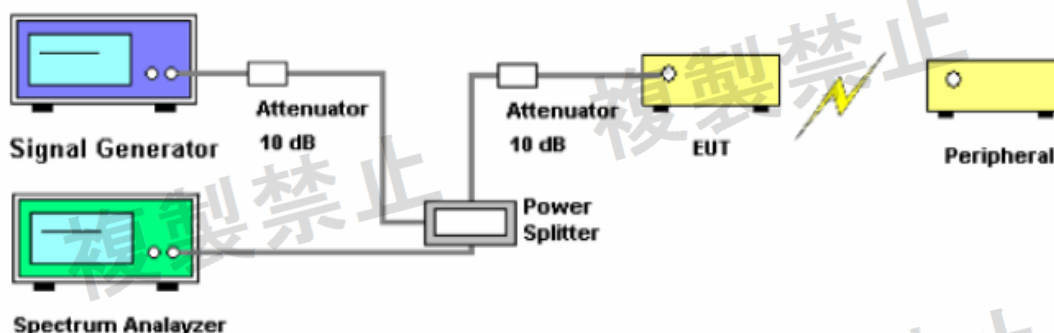
4.9.1 Test Requirement

MIC Notice No.88 Appendix No.43

Article 2, Paragraph 1, Item 19 Rules Section 10

4.9.2 Block Diagram of Test Setup

❖ Measurement System Diagram



❖ Conditions of Application Equipment (EUT)

- The EUT state shall be “normal mode link with wireless router”.

4.9.3 Test Procedure

1. SG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SG and power level is $(on\ 22.79 + G - 20 \cdot \log(f) \text{ dBm})$ (G is the antenna gain, f is the test frequency).
2. Turn off the RF signal of the SG.
3. EUT have transmitted the maximum modulation signal and fixed channelize.
4. Setting of SA: RBW/VBW=1MHz/1MHz, Span=50MHz, Sweep time=auto, Sweep mode=continuous, Detect mode=positive peak
5. SG RF signal on.
6. EUT shall be stop the transmitted any signal and SG RF signal off, the EUT will be continuous

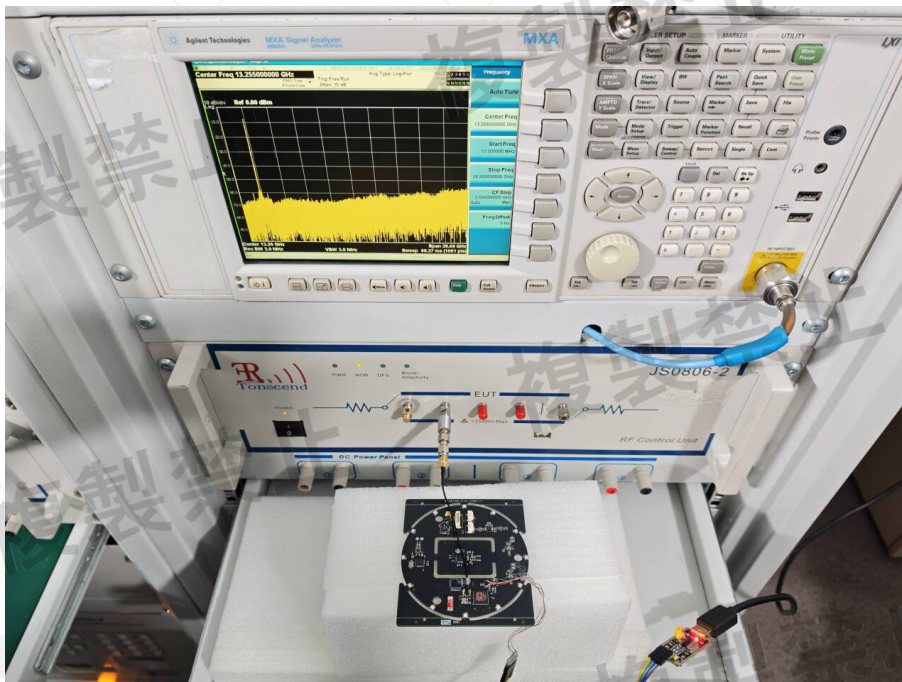
4.9.4 Test Result

EUT:	Cyber-stage	Test Date:	/
Temperature:	25°C	Tested by:	/
Humidity:	55 % RH		
Test result:	Not applicable other than OFDM modulation.		



5. Test Setup Photos of the EUT

Measurement Photos





6. Photos of the EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos

-----End of report-----