



HUAKE TESTING

FCC TEST REPORT

Prepared for :

EDA Technology Shanghai Co., Ltd.

**Building 24, Shengchuang Enterprise Park, No.1661 Jialuo Road, Jiading
District, Shanghai, PRC**

Product Name: ED-IPC2100

Trade Mark: 

Product Model (S): ED-IPC2110, ED-IPC2120, ED-IPC2130, ED-IPC2140

Date of Test: Nov. 20, 2023 - Nov. 28, 2023

Date of Report: Nov. 28, 2023

Report Number: HK2311205572-1ER

Prepared By :

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The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

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TEST REPORT VERIFICATION

Applicant : EDA Technology Shanghai Co., Ltd.
Address : Building 24, Shengchuang Enterprise Park, No.1661 Jialuo Road,
Jiading District, Shanghai, PRC
Manufacturer : EDA Technology Shanghai Co., Ltd.
Address : Building 24, Shengchuang Enterprise Park, No.1661 Jialuo Road,
Jiading District, Shanghai, PRC
Product Name : ED-IPC2100
(A) Product Model : ED-IPC2110
(B) Series Model : ED-IPC2120, ED-IPC2130, ED-IPC2140
(C) Power Supply : DC9-36V

Standards..... FCC Part 15 Subpart B
ANSI C63.4:2019

This device described above has been tested by HUAKE, and the test results show that the equipment under test (EUT) is in compliance with Part 15 of FCC Rules. And it is applicable only to the tested sample identified in the report.

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Test Result..... **Pass**

Date of Test: Nov. 20, 2023 - Nov. 28, 2023

Testing Engineer:

Gary Qian

(Gary Qian)

Technical Manager:

Zden Hu

(Eden Hu)

Authorized Signatory:

Jason Zhou

(Jason Zhou)



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**** Modified History ****

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	2023/11/28	Jason Zhou



1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
FCC Part 15 Subpart B ANSI C63.4:2019	Conducted Emission	Class B	PASS	
	Radiated Emission	Class B	PASS	

NOTE:

(1) 'N/A' denotes test is not applicable in this Test Report

(2) For client's request and manual description, the test will not be executed.



1.1 TEST FACILITY

Shenzhen HUAKE Testing Technology Co., Ltd.

Add. : 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization :

A2LA Accreditation Code is 4781.01.

FCC Designation Number is CN1229.

Canada IC CAB identifier is CN0045.

CNAS Registration Number is L9589.

1.2 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 %**.

A. Conducted Measurement :

Measurement Frequency Range	Uncertainty	NOTE
150 KHz ~ 30MHz	$\pm 2.71\text{dB}$	

B. Radiated Measurement :

Measurement Frequency Range	Uncertainty	NOTE
30MHz ~ 1000MHz	$\pm 3.90\text{dB}$	
1GHz ~6GHz	$\pm 4.28\text{dB}$	



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	ED-IPC2100	
Product Model	ED-IPC2110	
Series Model	ED-IPC2120, ED-IPC2130, ED-IPC2140	
Model Difference	The main difference between different models is the number of RS232 and RS485 interfaces, and the model with the most interfaces is ED-IPC2110.	
Product Description	The EUT is a ED-IPC2100.	
	Operating frequency:	N/A
	Connecting I/O port:	N/A
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.	
Power Source	DC Voltage	
Power Rating	DC9-36V	



2.2 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	Working

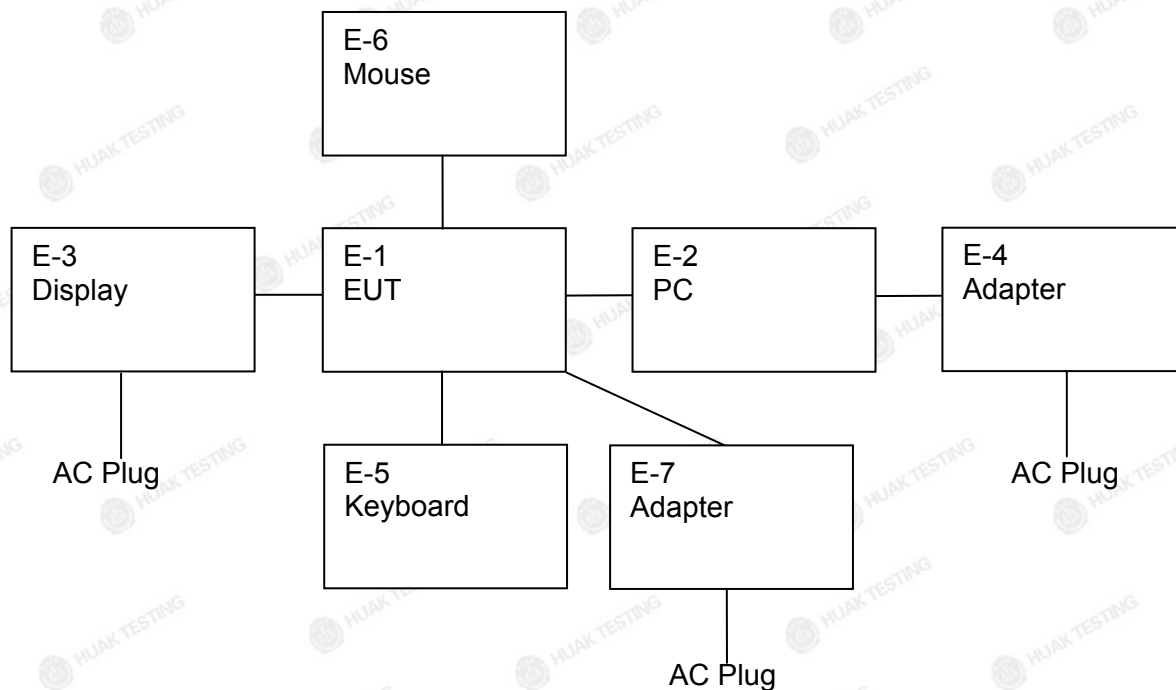
For Conducted Test	
Final Test Mode	Description
Mode 1	Working

For Radiated Test	
Final Test Mode	Description
Mode 1	Working



2.3 DESCRIPTION OF TEST SETUP

Mode 1:





2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

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/Type No.	Series No.	Note
E-1	ED-IPC2100		ED-IPC2110	N/A	EUT
E-2	PC	Lenovo	ThinkpadE450	N/A	
E-3	Display	DELL	SE2417HGc	N/A	
E-4	Adapter	Lenovo	ADLX65NLC3A	N/A	
E-5	Keyboard	N/A	N/A	N/A	
E-6	Mouse	N/A	N/A	N/A	
E-7	Adapter	N/A	KSASB0241200200D5	N/A	

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”.

**2.5 MEASUREMENT INSTRUMENTS LIST**

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Feb. 17, 2023	1 Year
2.	Receiver	R&S	ESR-7	HKE-010	Feb. 17, 2023	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 17, 2023	1 Year
4.	Spectrum analyzer	R&S	FSP40	HKE-025	Feb. 17, 2023	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 17, 2023	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Feb. 17, 2023	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESR-7	HKE-010	Feb. 17, 2023	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Feb. 17, 2023	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Feb. 17, 2023	1 Year
10.	Horn Antenna	Schwarzbeck	9120D	HKE-013	Feb. 17, 2023	1 Year
11.	Pre-amplifier	Schwarzbeck	EMC05184 5SE	HKE-015	Feb. 17, 2023	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Feb. 17, 2023	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JS1120-B Version	HKE-083	Feb. 17, 2023	1 Year
14.	Power Sensor	Agilent	E9300A	HKE-086	Feb. 17, 2023	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 17, 2023	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Feb. 17, 2023	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Feb. 17, 2023	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Feb. 17, 2023	1 Year



3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

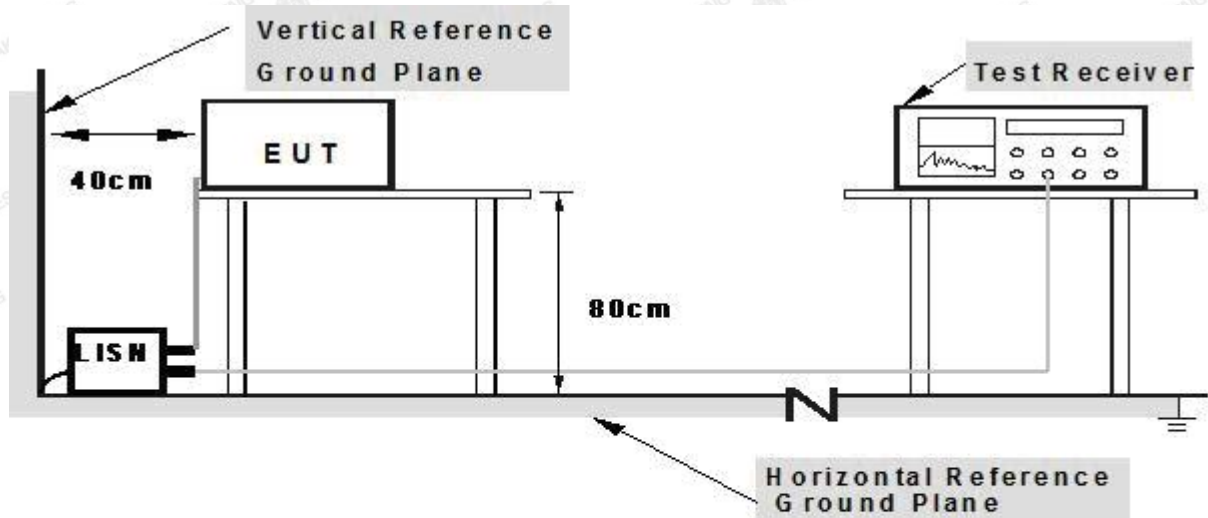
Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz



3.1.2 TEST PROCEDURE

- The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

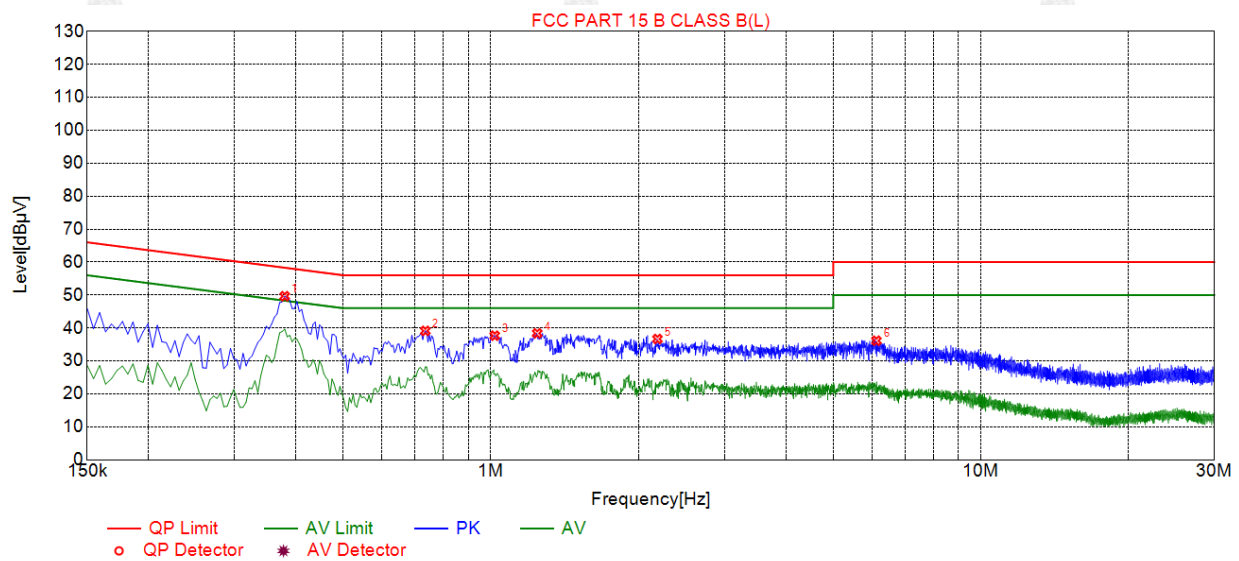
3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.



3.1.5 TEST RESULTS

EUT :	ED-IPC2100	Model Name. :	ED-IPC2110
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2023-11-22
Test Mode :	Mode 1	Phase :	L
Test Voltage :	DC12V From Adapter		



Suspected List

NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.3795	49.65	20.05	58.29	8.64	29.60	PK	L
2	0.7350	39.12	20.06	58.00	16.88	19.06	PK	L
3	1.0185	37.66	20.07	58.00	18.34	17.59	PK	L
4	1.2435	38.37	20.09	58.00	17.63	18.28	PK	L
5	2.1885	36.66	20.16	58.00	19.34	16.50	PK	L
6	6.1260	36.13	20.23	60.00	23.87	15.90	PK	L

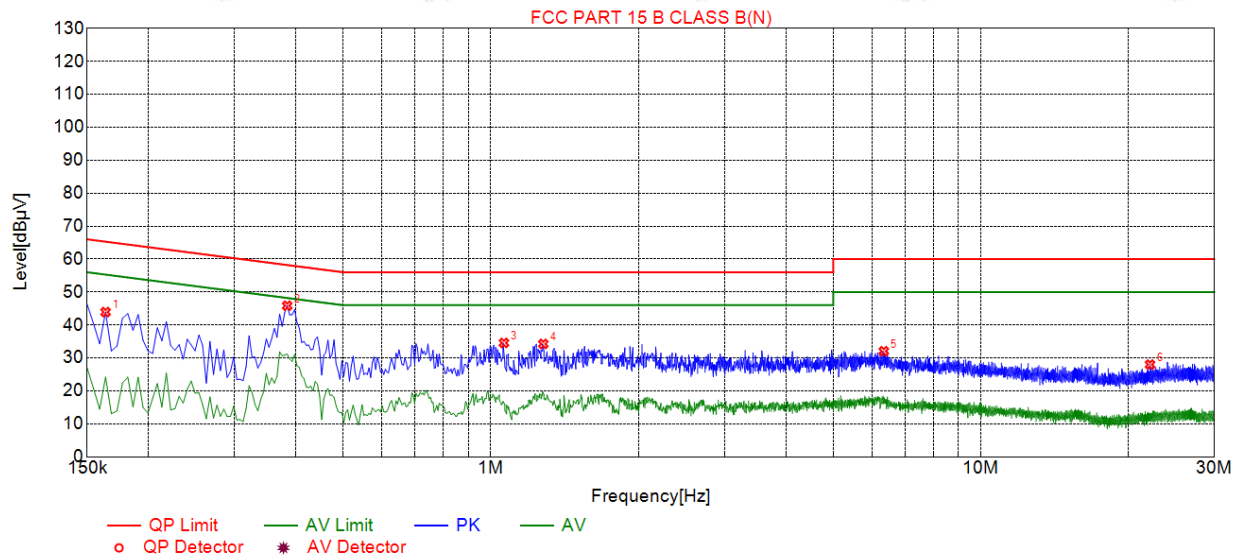
Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor



EUT :	ED-IPC2100	Model Name. :	ED-IPC2110
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2023-11-22
Test Mode :	Mode 1	Phase :	N
Test Voltage :	DC12V From Adapter		



Suspected List								
NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.1635	43.92	19.98	65.28	21.36	23.94	PK	N
2	0.3840	45.85	20.04	58.19	12.34	25.81	PK	N
3	1.0635	34.55	20.07	56.00	21.45	14.48	PK	N
4	1.2795	34.25	20.09	56.00	21.75	14.16	PK	N
5	6.3420	32.04	20.22	60.00	27.96	11.82	PK	N
6	22.1685	27.98	20.16	60.00	32.02	7.82	PK	N

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

Notes:

- (1) The limit for radiated test was performed according to as following:
FCC PART 15B /ICES-003.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

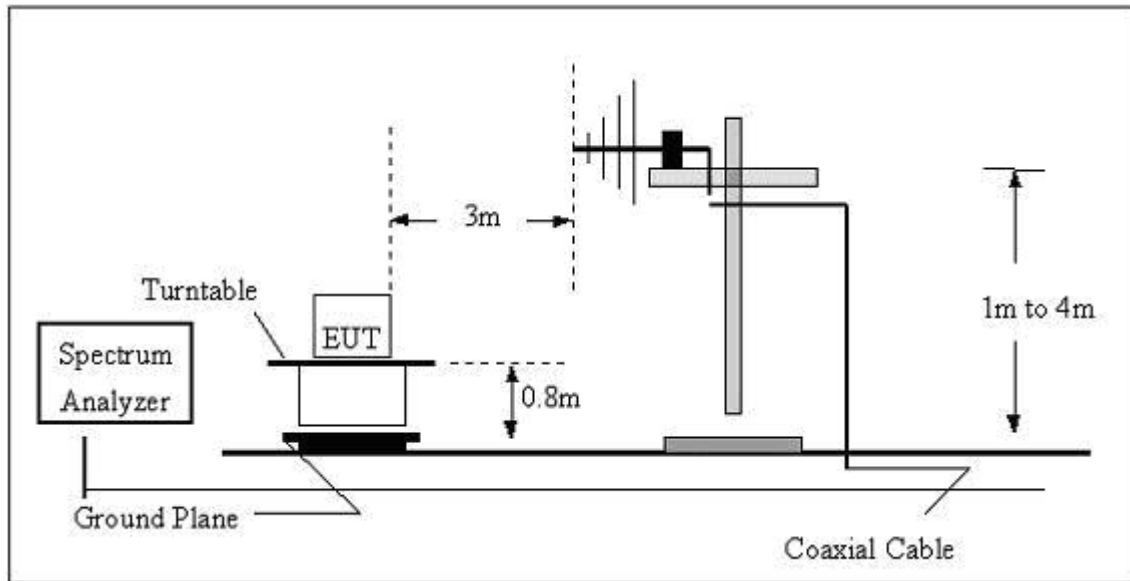
3.2.2 TEST PROCEDURE

- a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

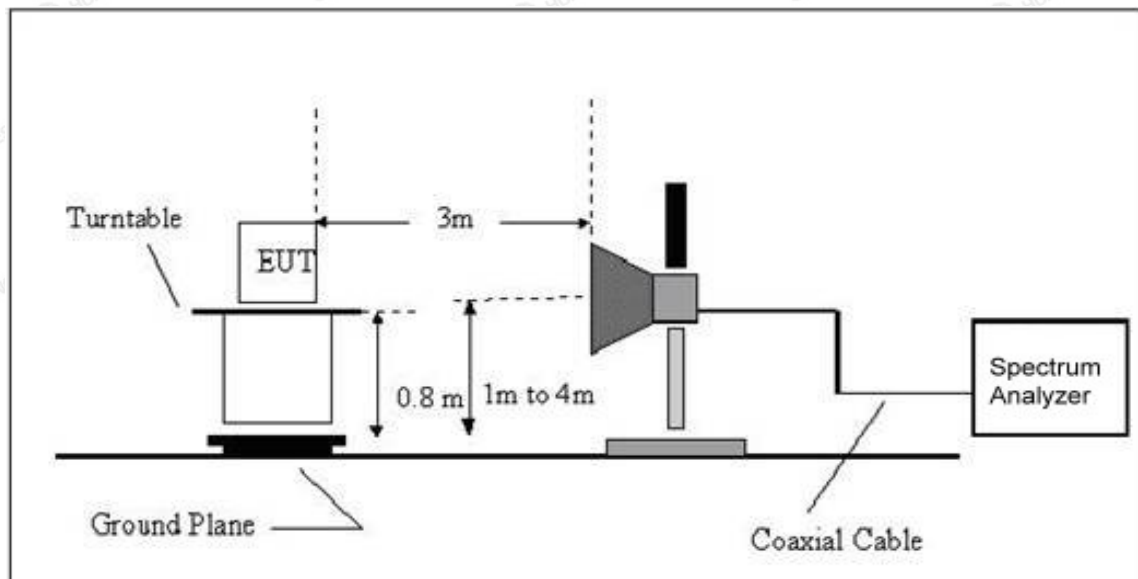


3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1GHz



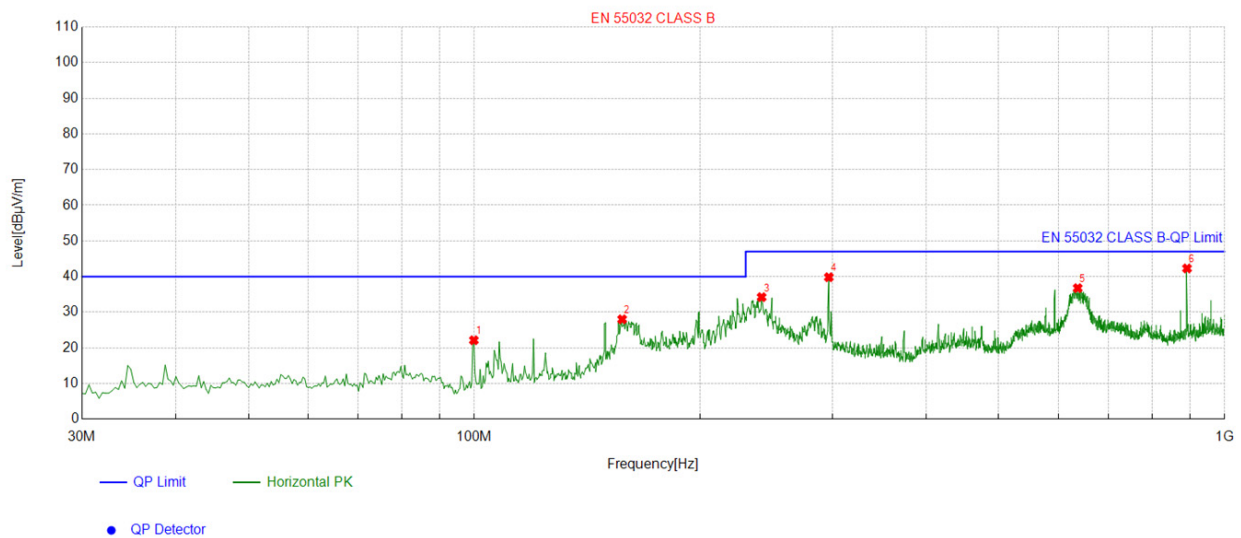
3.2.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.



3.2.5 TEST RESULTS

EUT :	ED-IPC2100	Model Name :	ED-IPC2110
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2023-11-22
Test Mode :	Mode 1	Polarization :	Horizontal
Test Power :	DC12V From Adapter		



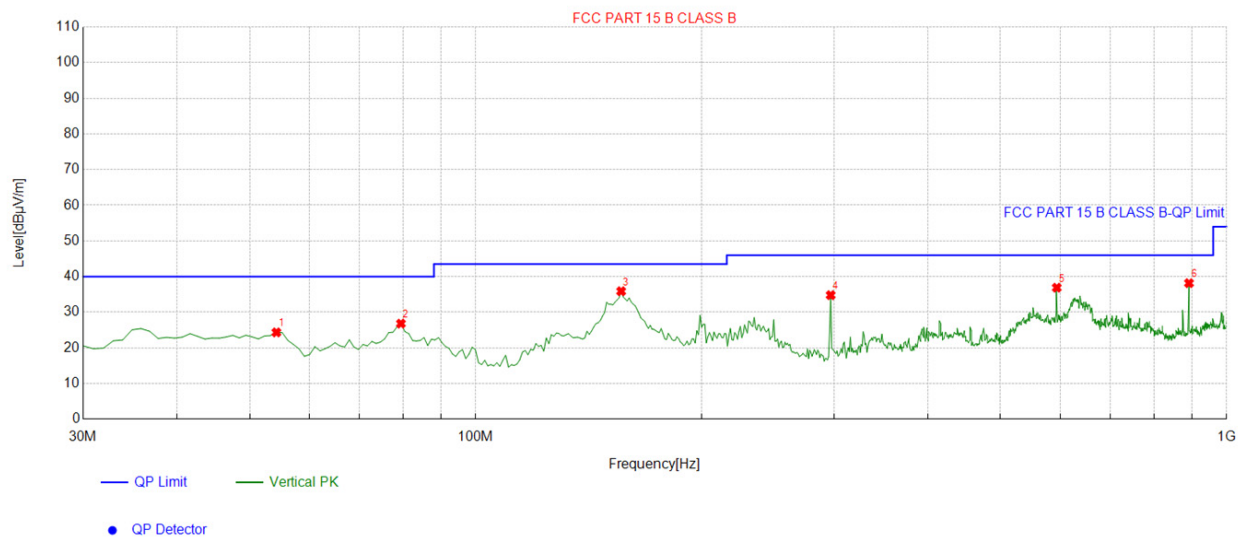
Suspected List

NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	149.42942	-18.78	51.52	32.74	43.50	10.76	100	258	Horizontal
2	198.94894	-15.85	49.29	33.44	43.50	10.06	100	226	Horizontal
3	248.46846	-13.18	47.04	33.86	46.00	12.14	100	234	Horizontal
4	297.01701	-12.04	50.68	38.64	46.00	7.36	100	121	Horizontal
5	627.14714	-4.36	40.13	35.77	46.00	10.23	100	157	Horizontal
6	891.25125	-0.67	40.26	39.59	46.00	6.41	100	72	Horizontal

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;



EUT :	ED-IPC2100	Model Name :	ED-IPC2110
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2023-11-22
Test Mode :	Mode 1	Polarization :	Vertical
Test Power :	DC12V From Adapter		



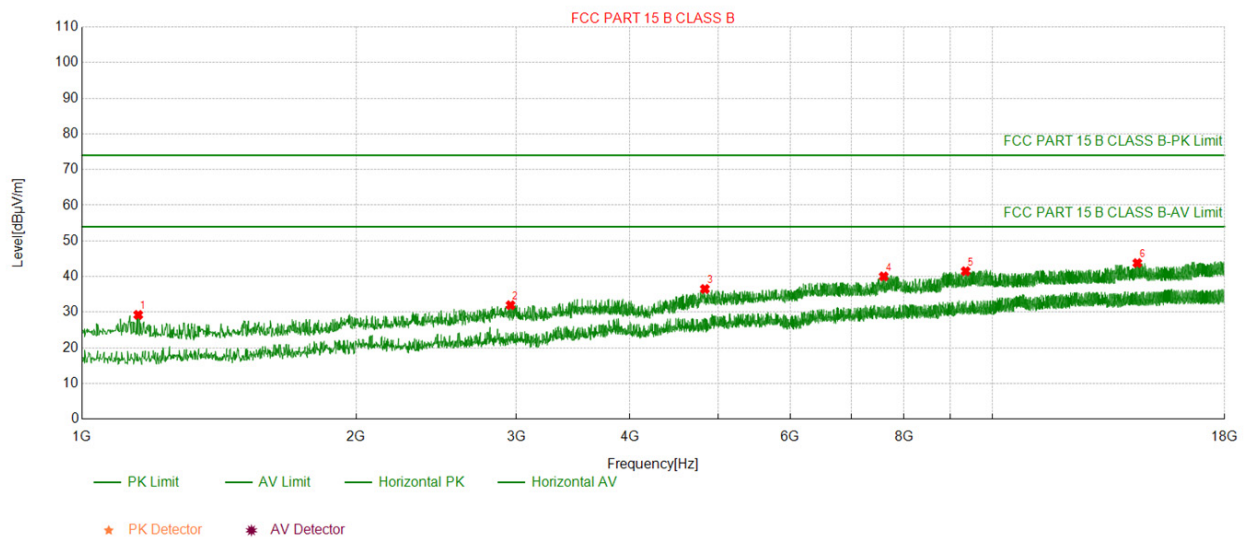
Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	54.274274	-14.46	38.80	24.34	40.00	15.66	100	225	Vertical
2	79.51952	-17.40	44.21	26.81	40.00	13.19	100	55	Vertical
3	156.22622	-18.26	54.15	35.89	43.50	7.61	100	99	Vertical
4	297.01701	-12.04	46.83	34.79	46.00	11.21	100	140	Vertical
5	594.13413	-5.30	42.18	36.88	46.00	9.12	100	214	Vertical
6	891.25125	-0.67	38.82	38.15	46.00	7.85	100	93	Vertical

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;



3.2.6 TEST RESULTS(Above 1GHz)

EUT :	ED-IPC2100	Model Name :	ED-IPC2110
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2023-11-22
Test Mode :	Mode 1	Polarization :	Horizontal
Test Power :	DC12V From Adapter		

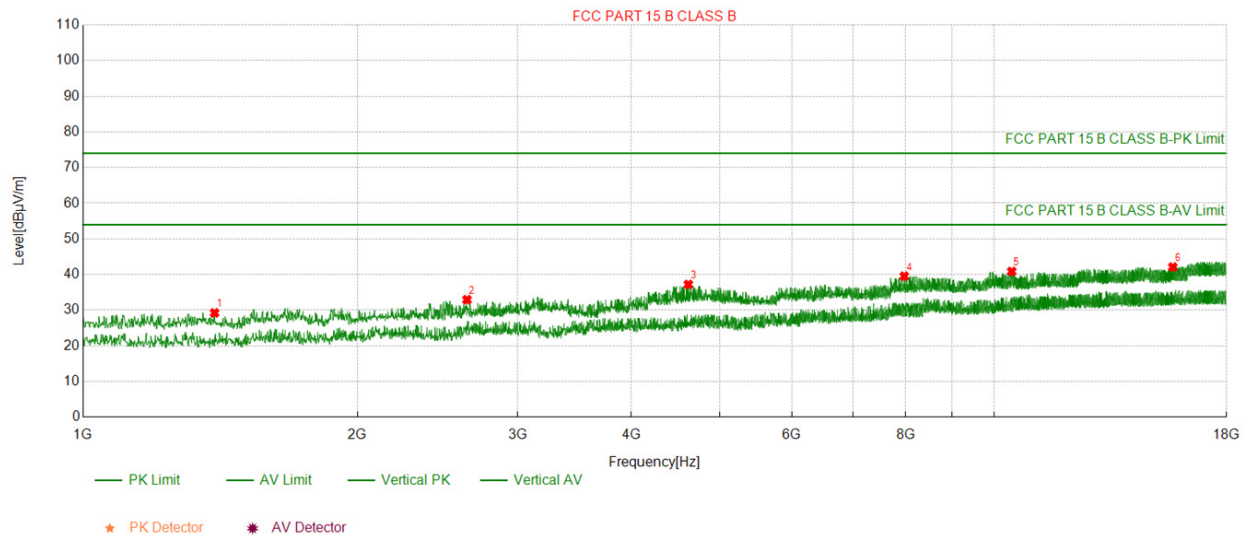


Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1153.0153	-21.61	50.87	29.26	74.00	44.74	100	40	Horizontal
2	2956.8956	-15.26	47.24	31.98	74.00	42.02	100	170	Horizontal
3	4833.8833	-9.66	46.17	36.51	74.00	37.49	100	320	Horizontal
4	7598.3598	-4.53	44.57	40.04	74.00	33.96	100	70	Horizontal
5	9349.5349	-1.80	43.29	41.49	74.00	32.51	100	210	Horizontal
6	14433.043	6.10	37.69	43.79	74.00	30.21	100	200	Horizontal

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;



EUT :	ED-IPC2100	Model Name :	ED-IPC2110
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2023-11-22
Test Mode :	Mode 1	Polarization :	Vertical
Test Power :	DC12V From Adapter		



Suspected List

NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1394.4394	-20.51	49.77	29.26	74.00	44.74	100	110	Vertical
2	2638.9638	-16.11	49.06	32.95	74.00	41.05	100	330	Vertical
3	4617.9617	-9.90	47.12	37.22	74.00	36.78	100	190	Vertical
4	7970.6970	-2.91	42.44	39.53	74.00	34.47	100	90	Vertical
5	10458.045	-0.25	41.11	40.86	74.00	33.14	100	180	Vertical
6	15713.271	4.21	37.90	42.11	74.00	31.89	100	100	Vertical

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;

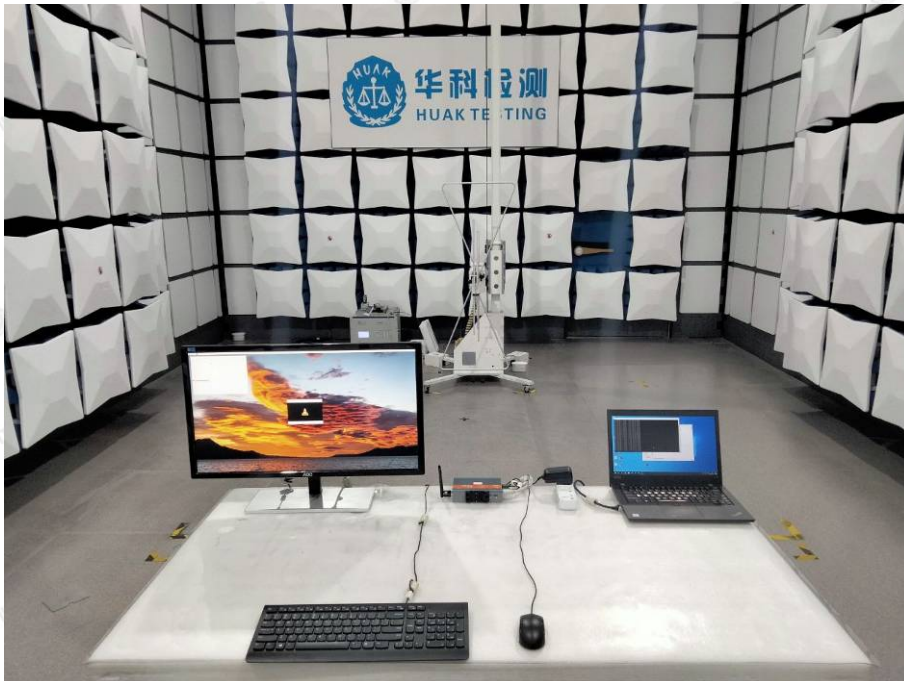


4. EUT TEST PHOTO

Conducted Emission



Radiated Emission





ATTACHMENT PHOTOGRAPHS OF EUT

Photo 1



Photo 2

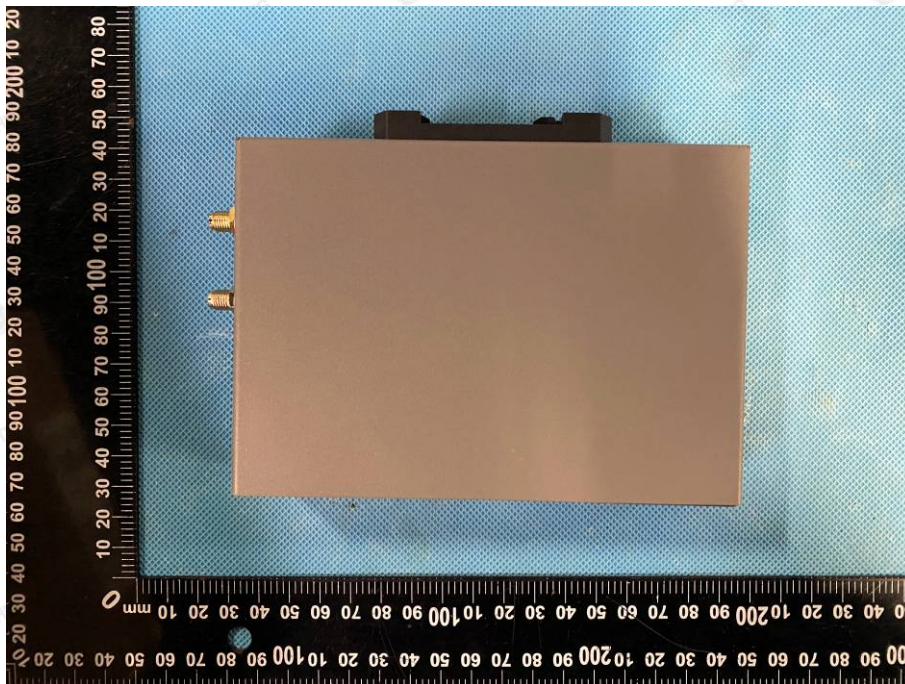




Photo 3



Photo 4





Photo 5



Photo 6





Photo 7

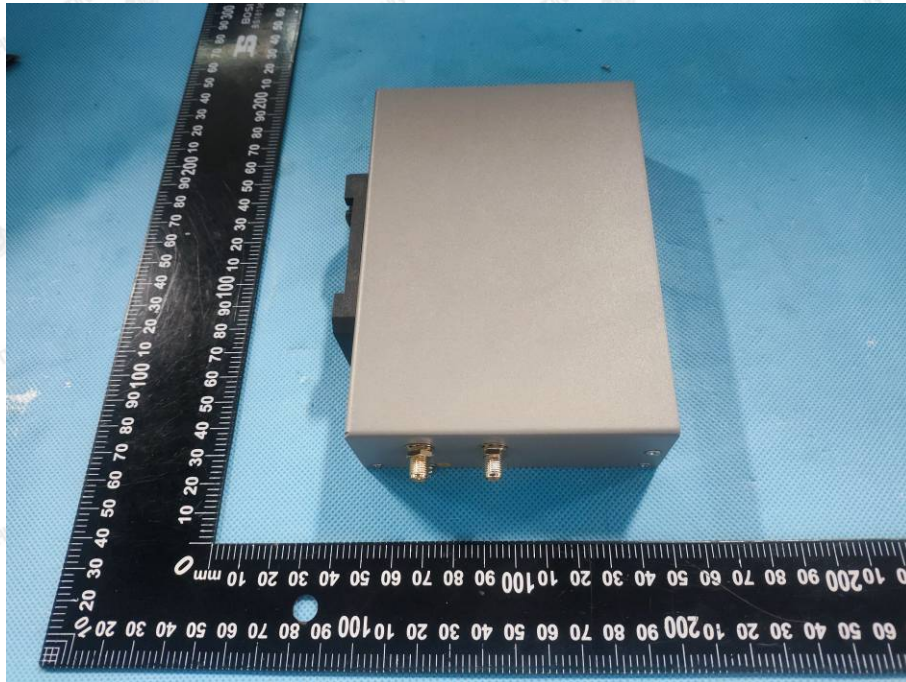


Photo 8

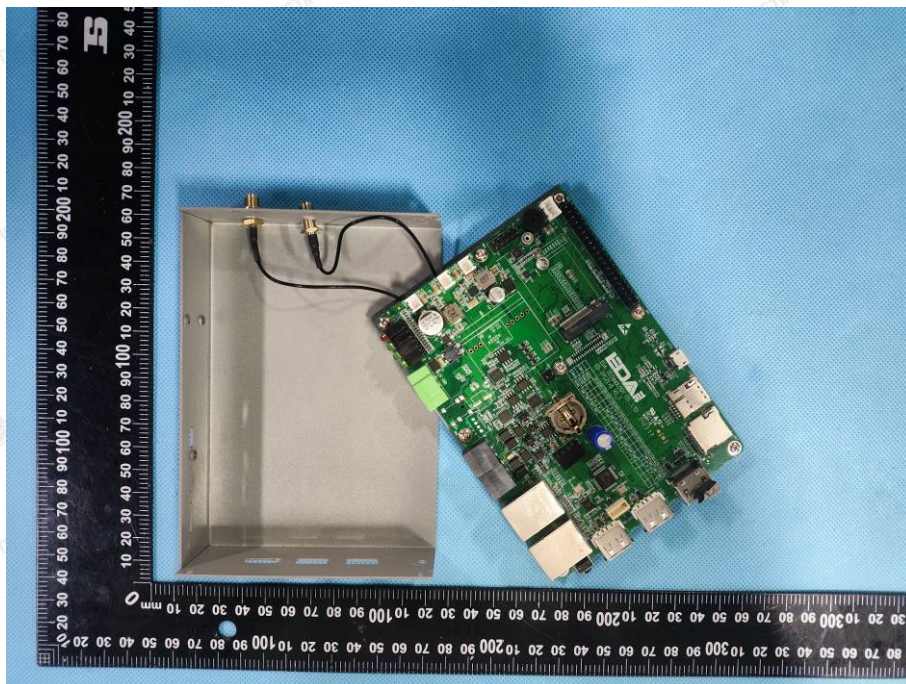




Photo 9

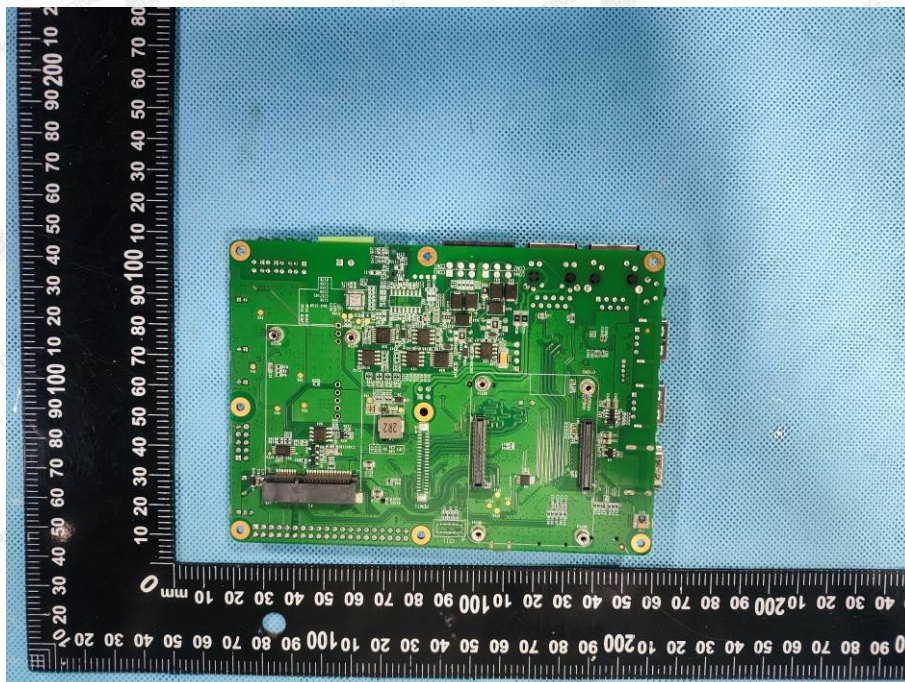


Photo 10

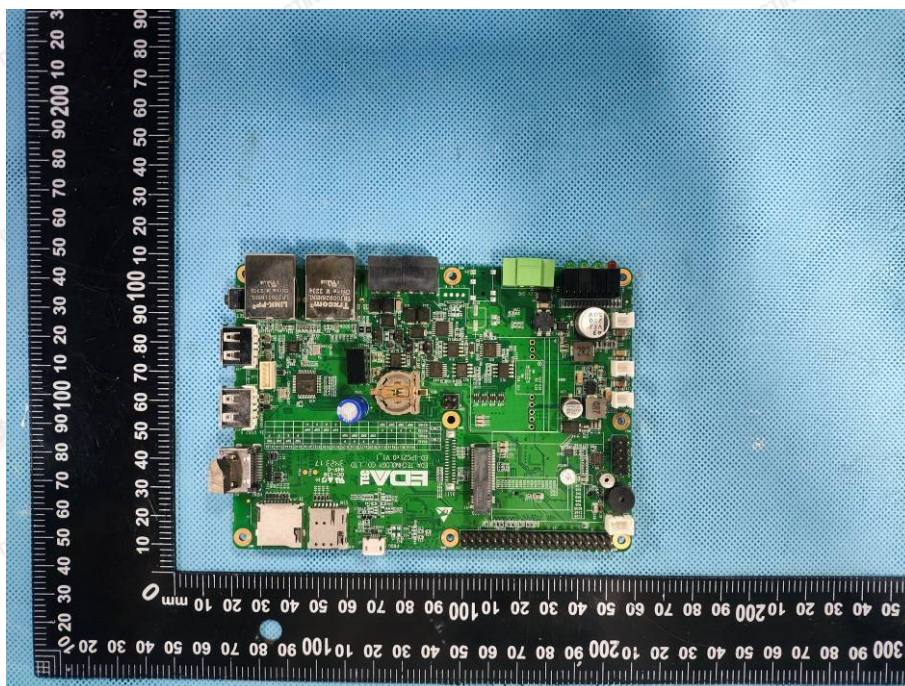




Photo 11

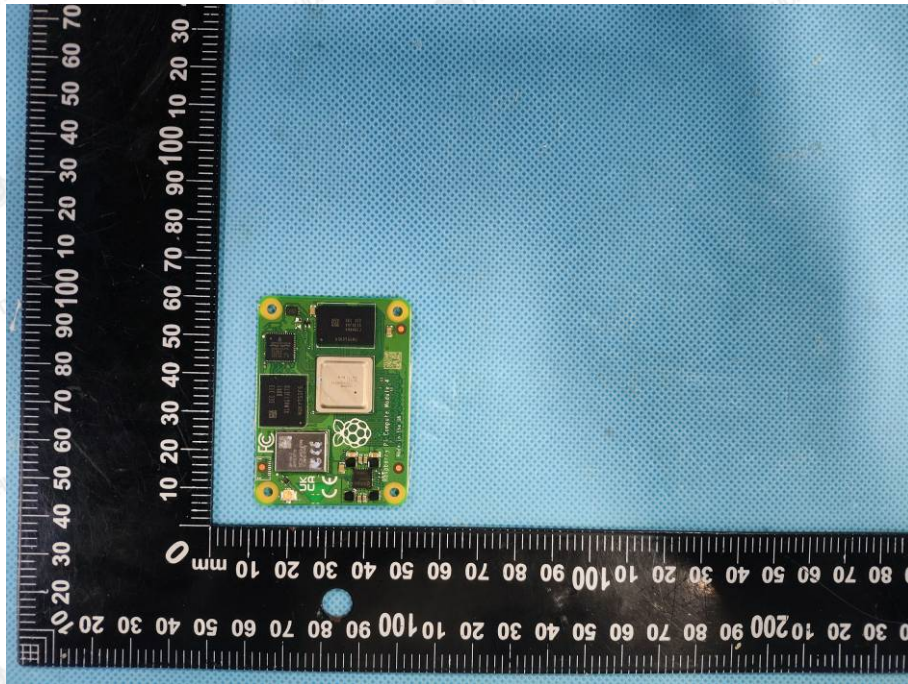


Photo 12

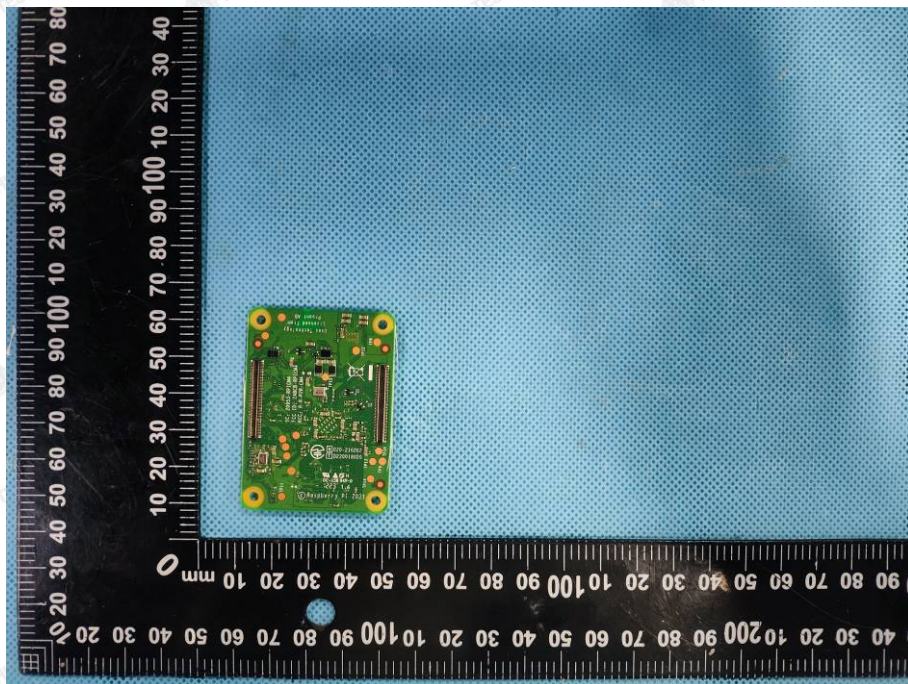




Photo 13

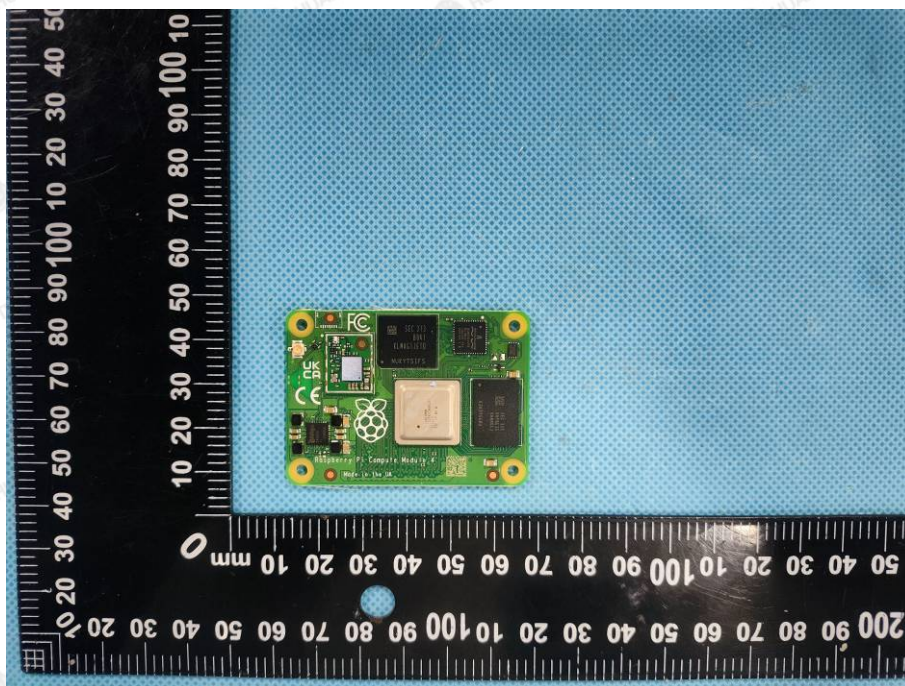


Photo 14

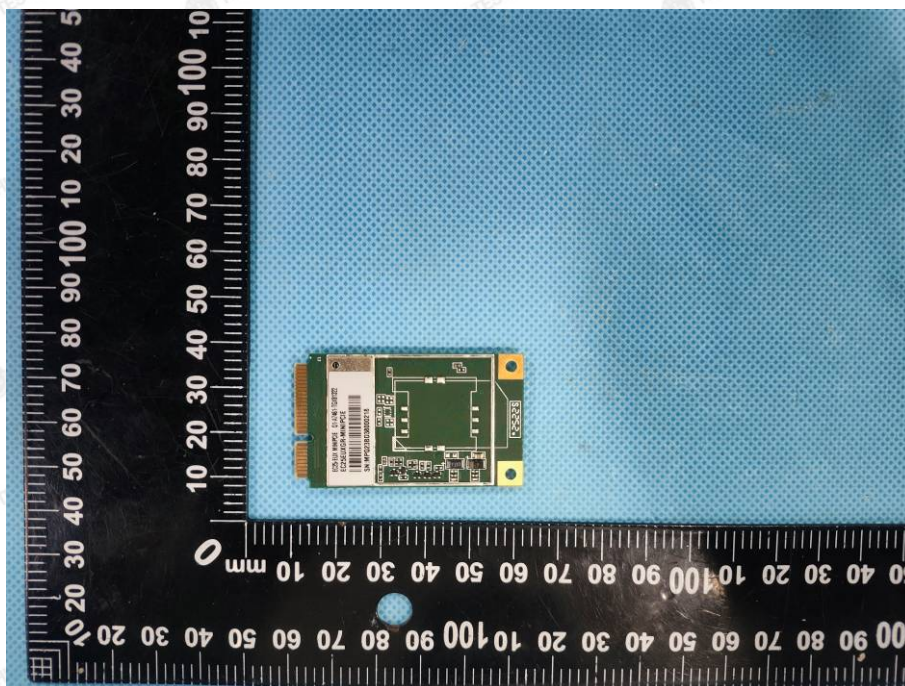




Photo 15

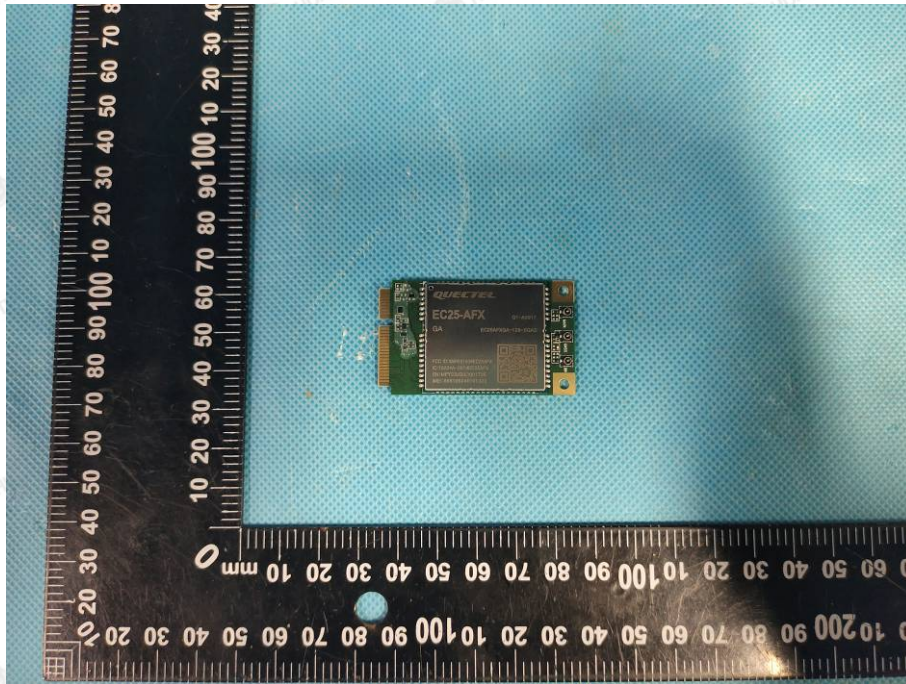


Photo 16

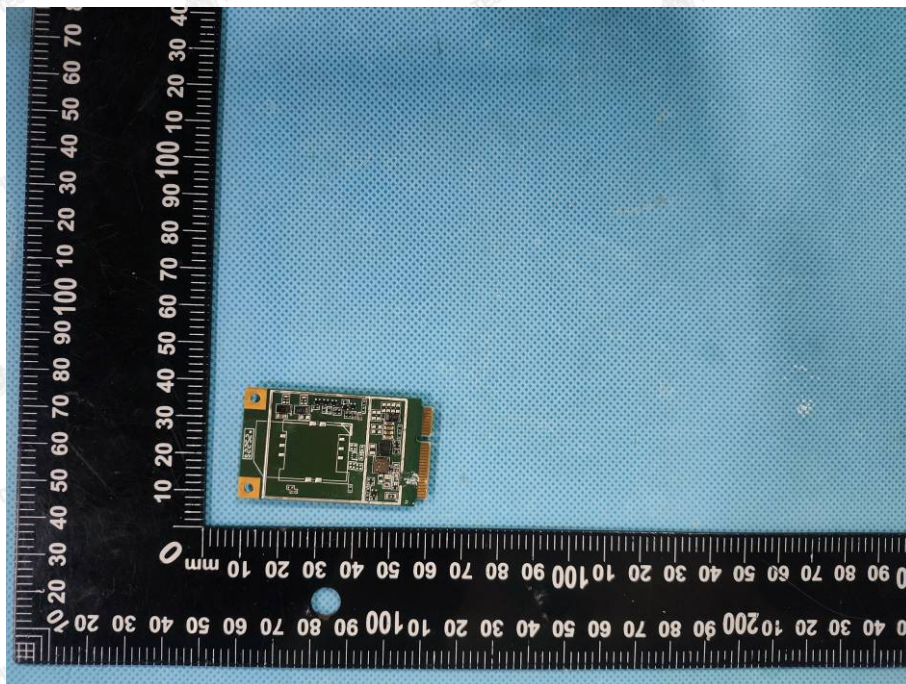
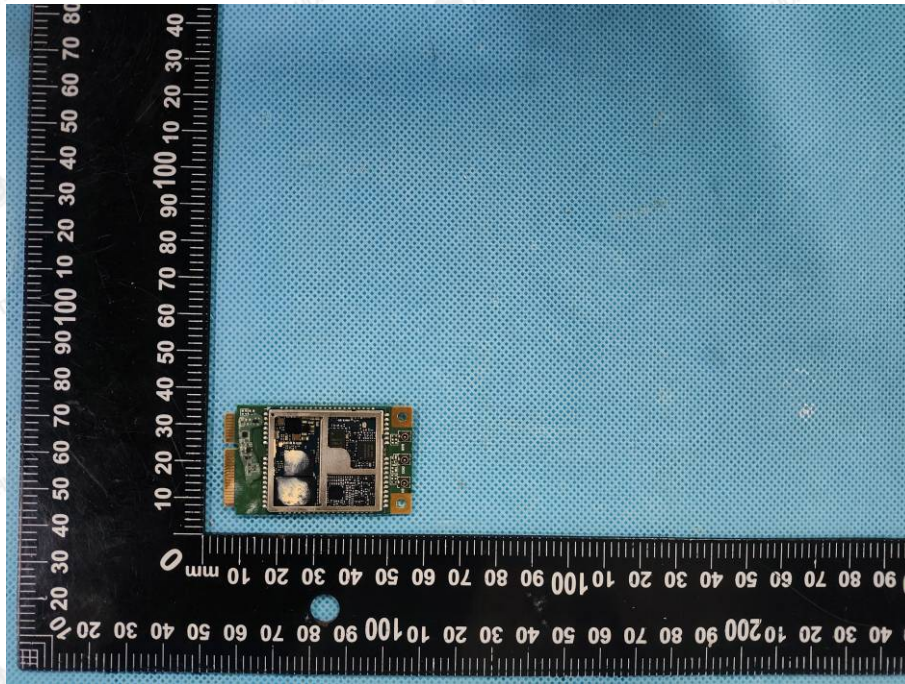




Photo 17



.....End of Report.....