

# 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-HMI2100
Trade Mark:	
Product Model (S):	ED-HMI2120-101C, ED-HMI2120-050C, ED-HMI2120-070C, ED-HMI2120-050R, ED-HMI2120-070R, ED-HMI2120-101R
Date of Test:	Nov. 20, 2023 - Nov. 30, 2023
Date of Report:	Nov. 30, 2023
Report Number:	HK2311205574-1ER

#### Prepared By :

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# TEST REPORT VERIFICATION

EDA Technology Shanghai Co., Ltd. Applicant Building 24, Shengchuang Enterprise Park, No.1661 Jialuo Road, Address Jiading District, Shanghai, PRC EDA Technology Shanghai Co., Ltd. Manufacturer Building 24, Shengchuang Enterprise Park, No.1661 Jialuo Road, Address Jiading District, Shanghai, PRC Product Name ED-HMI2100 ED-HMI2120-101C Product Model : (A) ED-HMI2120-050C, ED-HMI2120-070C, ED-HMI2120-050R, Series Model (B) ED-HMI2120-070R, ED-HMI2120-101R DC9-36V Power Supply (C)

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

This device described above has been tested by HUAK, 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:

Testing Engineer:

Technical Manager:

Nov. 20, 2023 - Nov. 30, 2023

(Gary Qian)

(Eden Hu)

Authorized Signatory:

(Jason Zhou)

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Т 691

# \*\* Modified History \*\*

Revision	Description	Issued Data	Remark	
Revision 1.0	Initial Test Report Release	2023/11/30	Jason Zhou	
AKTESTIN.	KTESIN.	AK TESTIN	AKTESTIN.	
HUM	HUM	A HOL	HOL HOL	

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# 1. TEST SUMMARY

Test procedures according to the technical standards:

	EMC Emission					
P	Standard	Test Item	Limit	Judgment	Remark	
- m	FCC Part 15 Subpart B	Conducted Emission	Class B	PASS	9	
	ANSI C63.4:2019	Radiated Emission	Class B	PASS	resting	

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.

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FICATION

### 1.1 TEST FACILITY

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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  $\mathbf{y} \pm \mathbf{U}$  where expended uncertainty  $\mathbf{U}$  is based on a standard uncertainty multiplied by a coverage factor of  $\mathbf{k=2}$  providing a level of confidence of approximately **95** %.

A. Conducted Measurement :

1.05	105	1037
Measurement Frequency Range	Uncertainty	NOTE
150 KHz ~ 30MHz	±2.71dB	TESTING

B. Radiated Measurement :

Measurement Frequency Range	Uncertainty	NOTE
		HOTE
30MHz ~ 1000MHz	±3.90dB	9
1GHz ~6GHz	±4.28dB	0 "

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# 2. GENERAL INFORMATION

# 2.1 GENERAL DESCRIPTION OF EUT

Equipment	ED-HMI2100	(		0.
Product Model	ED-HMI2120-101C		AK TESTING	.6
Series Model	ED-HMI2120-050C, ED- ED-HMI2120-070R, ED-		,	20-050R,
Model Difference	The main difference between different models is that the size of the LCD screen is not the same, and the maximum size is tested			
	The EUT is a ED-HMI2 <sup>-</sup> Operating frequency:	100.	HUAKTESTING	HUAK TESTING
Product Description	Connecting I/O port:	N/A		
	Based on the applicatio exhibited in User's Man ITE/Computing Device. specification, please ref	ual, the EUT is More details o	s considered a of EUT technic	
Power Source	DC Voltage	C H	JAK 1	V TESTING
Power Rating	DC9-36V		. 0	HUP
	TIME	4	That	

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### 2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible 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
AL	

For Conducted Test					
Description					
Working	IAK TESIN				
	Description				

For Radiated Test				
Final Test Mode	Description			
Mode 1	Working			

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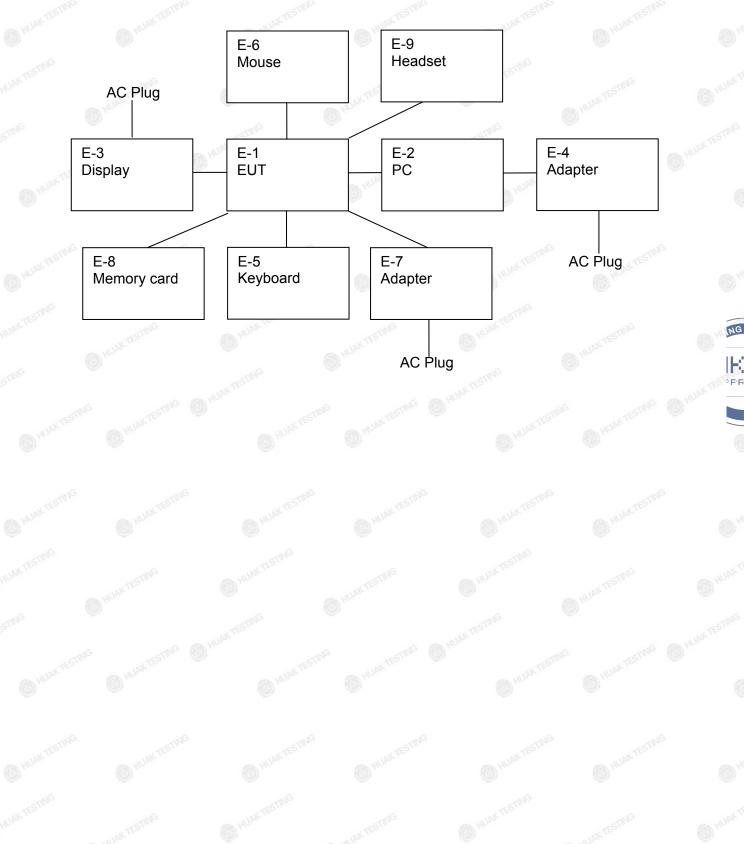


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Report No.: HK2311205574-1ER

# 2.3 DESCRIPTION OF TEST SETUP

### Mode 1:



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# 2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

**HUAK TESTING** 

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-HMI2100		ED-HMI2120-101C	N/A	EUT
E-2	PC	Lenovo	ThinkpadE450	N/A	
E-3	Display	DELL	SE2417HGc	N/A	
E-4	Adapter	Lenovo	ADLX65NLC3A	N/A	CSTING (
E-5	Keyboard	N/A	N/A	N/A	NAKIL
E-6	Mouse	N/A	N/A	N/A	
E-7	Adapter	N/A	KSASB0241200200D5	N/A	
E-8	Memory card	N/A	N/A	N/A	NAK TESTING
E-9	Headset	N/A	N/A	N/A	0

Item	Shielded Type	Ferrite Core	Length	Note
	HUAN	HUAK		HUAX
	TEST	ß	TESTING	
	NG STING HUAN	and	STING HUPAN	ING STING
NAKTES	HUAKIL	HUAKTES	UAKIL	HUAK TEST
	<i>w</i>		0	
TESTING	AK TESTING	AKTESTING	AK TESTING	AK TESTING
	0 ****	hur (	Ho. OH	O HOM

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".

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# 2.5 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interva
x testine 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	6 HKE-012	Feb. 17, 2023	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Feb. 17, 2023	1 Year
10.	Horn Antenna	Schewarzbeck	9120D	HKE-013	Feb. 17, 2023	1 Year
11.	Pre-amplifier	Schwarzbeck	EMC05184 5SE	HKE-015	Feb. 17, 2023	<sup>©</sup> 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

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# **3. EMC EMISSION TEST**

3.1 CONDUCTED EMISSION MEASUREMENT

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

	Class A	(dBuV)	Class B (dBuV)			
FREQUENCY (MHz)	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	0	Setting	0
Attenuation		10 dB	
Start Frequency	TING	0.15 MHz	TING
Stop Frequency	KTE	30 MHz	HUAKTE
IF Bandwidth		9 kHz	9
		(Fa)	

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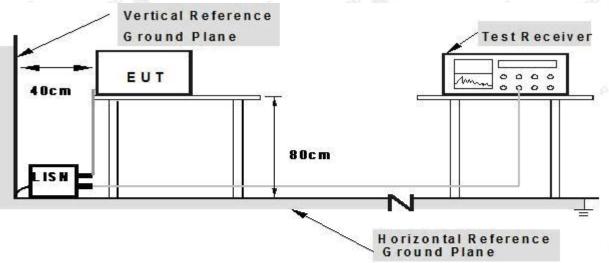
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#### 3.1.2 TEST PROCEDURE

- a. 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.
- b. 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.
- c. 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. 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.

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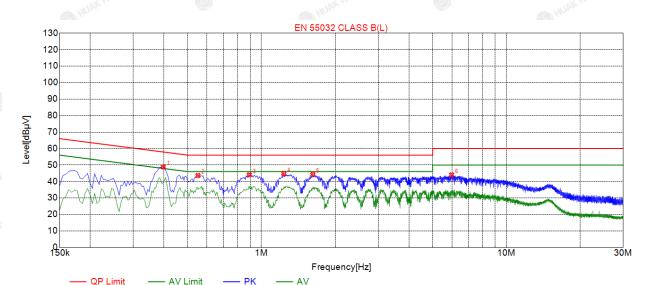


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## 3.1.5 TEST RESULTS

QP Detector

V- (650)	ASIN *** (633)		ASIN 11 (650)
EUT :	ED-HMI2100	Model Name. :	ED-HMI2120-101C
Temperature :	<b>24</b> ℃	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2023-11-22
Test Mode :	Mode 1	Phase :	Ľ O
Test Voltage :	DC12V From Adapter		TESTING



Sus	spected	l List						
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре
1	0.3975	48.85	20.04	57.91	9.06	28.81	PK	L
2	0.5505	43.62	20.06	56.00	12.38	23.56	PK	L
3	0.8925	44.04	20.06	56.00	11.96	23.98	PK	L
4	1.2345	44.90	20.09	56.00	11.10	24.81	PK	L
5	1.6215	44.29	20.11	56.00	11.71	24.18	PK	L
6	5.9775	44.01	20.23	60.00	15.99	23.78	PK	L

Remark: Margin = Limit – Level Correction factor = Cable lose + LISN insertion loss Level=Test receiver reading + correction factor

AV Detector

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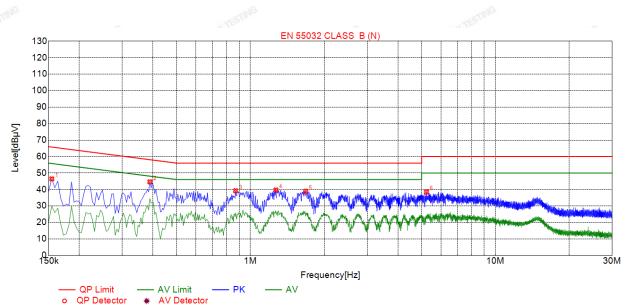
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		ALC ARRENT	
EUT :	ED-HMI2100	Model Name. :	ED-HMI2120-101C
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2023-11-22
Test Mode :	Mode 1	Phase :	N TESTING
Test Voltage :	DC12V From Adapter	HUM	HUM. OHUM.



Sus	spected	l List						
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре
1	0.1545	46.42	20.03	65.75	19.33	26.39	PK	N
2	0.3885	44.66	20.04	58.10	13.44	24.62	PK	N
3	0.8700	39.23	20.06	56.00	16.77	19.17	PK	N
4	1.2705	39.68	20.09	56.00	16.32	19.59	PK	N
5	1.6800	38.95	20.13	56.00	17.05	18.82	PK	N
6	5.2350	38.46	20.26	60.00	21.54	18.20	PK	N

Remark: Margin = Limit – Level Correction factor = Cable lose + LISN insertion loss Level=Test receiver reading + correction factor

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### 3.2 RADIATED EMISSION MEASUREMENT

## 3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

	Class A (at 10m)	Class B (at 3m) dBuV/m			
FREQUENCY (MHz)	dBuV/m				
<sub>so</sub> 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:

**HUAK TESTING** 

- (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

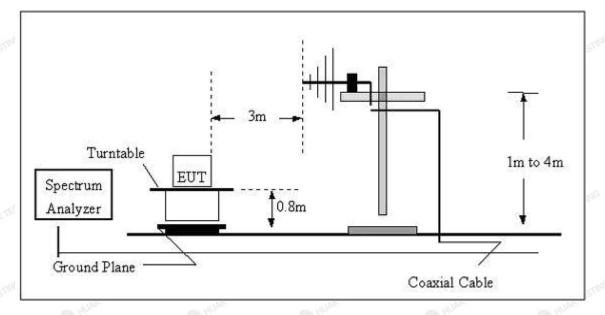
- a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 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.

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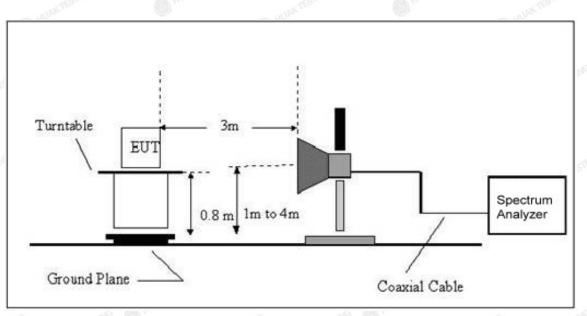


### 3.2.3 TEST SETUP

(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.

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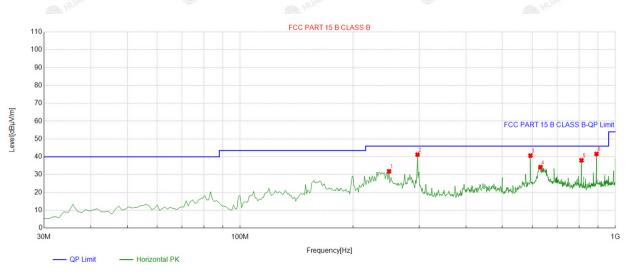
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## 3.2.5 TEST RESULTS

V- (650)			ASIN 11 (150)
EUT :	ED-HMI2100	Model Name :	ED-HMI2120-101C
Temperature :	<b>24</b> ℃	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2023-11-22
Test Mode :	Mode 1	Polarization :	Horizontal
Test Power :	DC12V From Adapter		TESTING



QP Detector

	Suspe	cted List								
1000		Freq.	Factor	Reading	Level	Limit	Margin	Height	Angle	
	NO.	[MHz]	[dB]	[dBµV/m]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity
	1	249.43943	-13.15	45.01	31.86	46.00	14.14	100	149	Horizontal
2	2	297.01701	-12.04	53.26	41.22	46.00	4.78	100	228	Horizontal
	3	594.13413	-5.30	45.97	40.67	46.00	5.33	100	204	Horizontal
5	4	632.00200	-4.35	38.57	34.22	46.00	11.78	100	52	Horizontal
	5	812.60260	-1.54	39.57	38.03	46.00	7.97	100	290	Horizontal
	6	891.25125	-0.67	42.26	41.59	46.00	4.41	100	235	Horizontal

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

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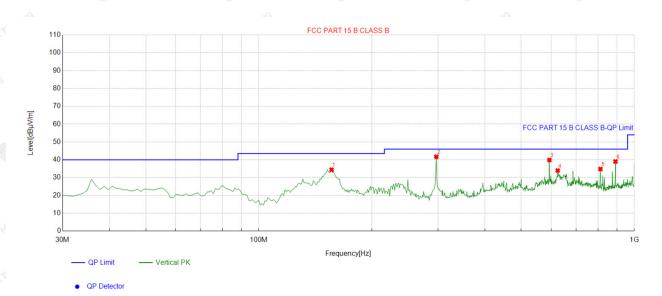


# HUAK TESTING

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Report No.: HK2311205574-1ER

EUT :	ED-HMI2100	Model Name :	ED-HMI2120-101C
Temperature :	<b>24</b> ℃	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2023-11-22
Test Mode :	Mode 1	Polarization :	Vertical
Test Power :	DC12V From Adapter	WARTESTIN'	WAKTESTING - WAKTESTING



	Suspe	cted List								
		Freq.	Factor	Reading	Level	Limit	Margin	Height	Angle	
1	NO.	[MHz]	[dB]	[dBµV/m]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity
	1	156.22622	-18.26	52.68	34.42	43.50	9.08	100	127	Vertical
	2	297.01701	-12.04	53.73	41.69	46.00	4.31	100	95	Vertical
	3	594.13413	-5.30	45.19	39.89	46.00	6.11	100	358	Vertical
ž.	4	625.20520	-4.37	38.33	33.96	46.00	12.04	100	350	Vertical
	5	812.60260	-1.54	36.37	34.83	46.00	11.17	100	32	Vertical
2	6	891.25125	-0.67	39.72	39.05	46.00	6.95	100	253	Vertical

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

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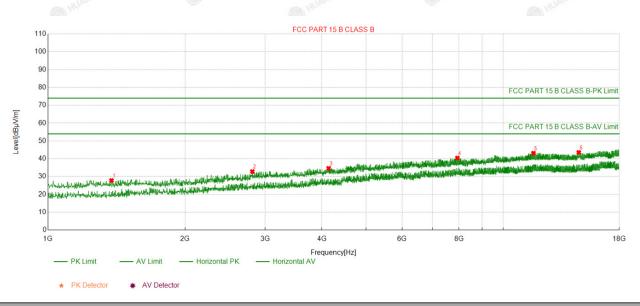
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### 3.2.6 TEST RESULTS(Above 1GHz)

	V. ((633)	(CB) (*** (KD)		(60)
	EUT :	ED-HMI2100	Model Name :	ED-HMI2120-101C
	Temperature :	<b>24</b> ℃	Relative Humidity :	54%
	Pressure :	1010 hPa	Test Date :	2023-11-22
	Test Mode :	Mode 1	Polarization :	Horizontal
UP	Test Power :	DC12V From Adapter		CTESTING



Suspe	ected List								
NO	Freq.	Factor	Reading	Level	Limit	Margin	Height	Angle	Delecity
NO.	[MHz]	[dB]	[dBµV/m]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity
1	1379.1379	-20.58	48.42	27.84	74.00	46.16	100	280	Horizontal
2	2812.3812	-15.82	48.67	32.85	74.00	41.15	100	190	Horizontal
3	4136.8136	-11.70	46.34	34.64	74.00	39.36	100	330	Horizontal
4	7933.2933	-3.31	43.73	40.42	74.00	33.58	100	150	Horizontal
5	11654.965	1.36	41.77	43.13	74.00	30.87	100	210	Horizontal
6	14662.566	5.97	37.61	43.58	74.00	30.42	100	110	Horizontal

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

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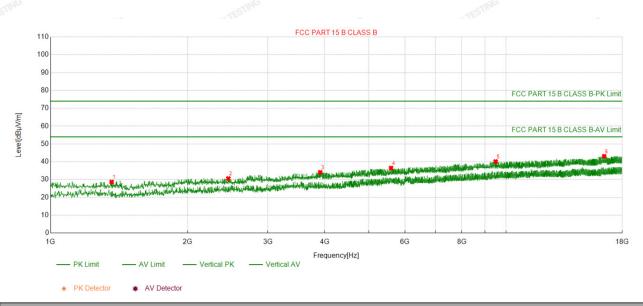
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EUT :	ED-HMI2100	Model Name :	ED-HMI2120-101C
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2023-11-22
Test Mode :	Mode 1	Polarization :	Vertical
Test Power :	DC12V From Adapter	HULL	HUNN O HUNN



Suspe	Suspected List								
NG	Freq.	Factor	Reading	Level	Limit	Margin	Height	Angle	
NO.	[MHz]	[dB]	[dBµV/m]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity
1	1362.1362	-20.67	49.34	28.67	74.00	45.33	100	220	Vertical
2	2457.0457	-16.76	47.37	30.61	74.00	43.39	100	140	Vertical
3	3908.9908	-12.47	46.55	34.08	74.00	39.92	100	290	Vertical
4	5592.1592	-9.16	45.67	36.51	74.00	37.49	100	160	Vertical
5	9490.6490	-1.10	41.26	40.16	74.00	33.84	100	210	Vertical
6	16427.342	5. <mark>1</mark> 8	37.92	43.10	74.00	30.90	100	260	Vertical

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

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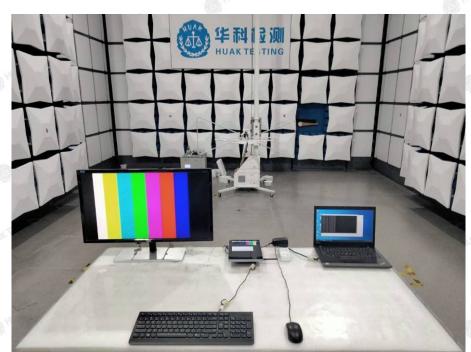
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# 4. EUT TEST PHOTO

**Conducted Emission** 



**Radiated Emission** 



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Report No.: HK2311205574-1ER

# ATTACHMENT PHOTOGRAPHS OF EUT

Photo 1



Photo 2



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Photo 4



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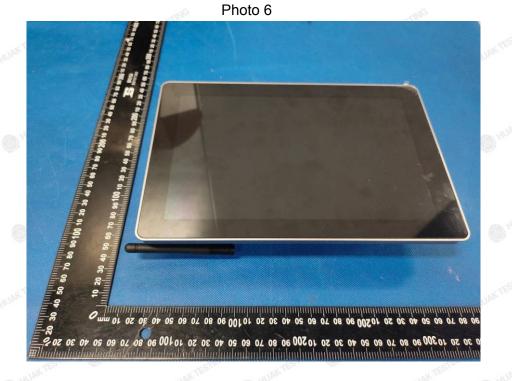


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Photo 5





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#### Report No.: HK2311205574-1ER

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Photo 7



Photo 8



eo 40 30 50 10 300 80 80 10 90 20 40 30 50 10 500 80 80 10 90 20 40 30 50 10 100 80 80 10 20 50 50 10 100 20

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#### Report No.: HK2311205574-1ER

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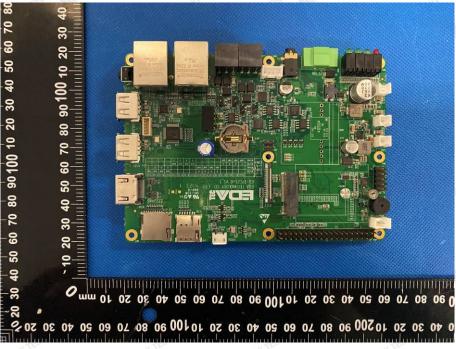


Photo 10



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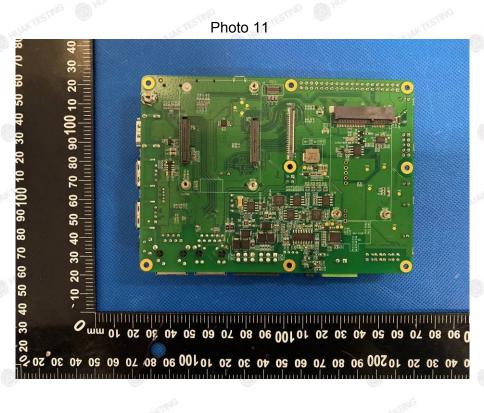


Photo 12



0 60 50 40 30 20 10100 30 80 10 60 50 40 30 20 %

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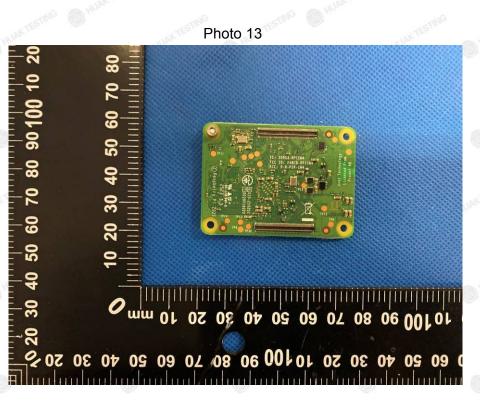


Photo 14



ο 20 10100 90 80 70 60 50 40 30 20 10 mm

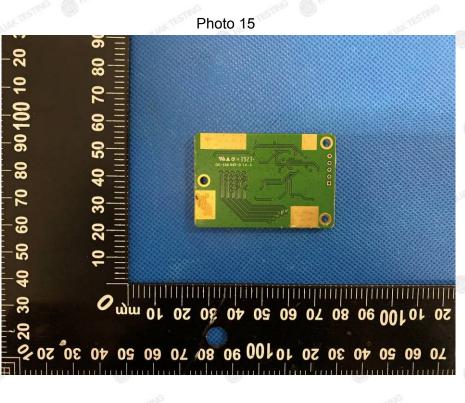
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.....End of Report.....

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