



FCC SDoC TEST REPORT

Mixtile Limited

Mixtile Blade 3

Test Model: SBC-BLADE3-16128

Additional Model No.: Please Refer to Page 7

Prepared for : Mixtile Limited
Address : Haisong Building Tower B Suite 1101, Tairan 9th Road, Futian District, Shenzhen

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
Address : Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

Tel : (+86)755-82591330
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Web : www.LCS-cert.com
Mail : webmaster@LCS-cert.com

Date of receipt of test sample : October 14, 2022
Number of tested samples : 1
Sample No. : A101222020
Date of Test : October 14, 2022 ~ November 03, 2022
Date of Report : November 04, 2022





FCC SDoC TEST REPORT

FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014

Report Reference No. : **LCSA101222020E**

Date Of Issue : November 04, 2022

Testing Laboratory Name..... : **Shenzhen LCS Compliance Testing Laboratory Ltd.**

Address : Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

Testing Location/ Procedure ... : Full application of Harmonised standards
 Partial application of Harmonised standards
 Other standard testing method

Applicant's Name..... : **Mixtile Limited**

Address : Haisong Building Tower B Suite 1101, Tairan 9th Road, Futian District, Shenzhen

Test Specification

Standard : FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014

Test Report Form No. : LCSEMC-1.0

TRF Originator..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF..... : Dated 2011-03

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Test Item Description. : **Mixtile Blade 3**

Test Model : SBC-BLADE3-16128

Trade Mark : N/A

Ratings : Please Refer to Page 7

Result : **Positive**

Compiled by:

Coco Song

Supervised by:

Baron Wen

Approved by:

Gavin Liang

Coco Song/ File administrators

Baron wen/Technique principal

Gavin Liang/ Manager



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 Scan code to check authenticity



FCC -- TEST REPORT

Test Report No. : LCSA101222020E	<u>November 04, 2022</u> Date of issue
---	---

Test Model	: SBC-BLADE3-16128
EUT.....	: Mixtile Blade 3
Applicant.....	: Mixtile Limited
Address.....	: Haisong Building Tower B Suite 1101, Tairan 9th Road, Futian District, Shenzhen
Telephone.....	: /
Fax.....	: /
Manufacturer.....	: Mixtile Limited
Address.....	: Haisong Building Tower B Suite 1101, Tairan 9th Road, Futian District, Shenzhen
Telephone.....	: /
Fax.....	: /
Factory.....	: Mixtile Limited
Address.....	: Haisong Building Tower B Suite 1101, Tairan 9th Road, Futian District, Shenzhen
Telephone.....	: /
Fax.....	: /

Test Result according to the standards on page 6: **Positive**

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.





Revision History

Revision	Issue Date	Revisions Content	Revised By
000	November 04, 2022	Initial Issue	--





TABLE OF CONTENTS

Test Report Description	Page
1.1. Description of Standards and Results	6
2.1. Description of Device (EUT)	7
2.2. Support equipment List	7
2.3. Description of Test Facility	7
2.4. Statement of the Measurement Uncertainty	8
2.5. Measurement Uncertainty	8
3.1. POWER LINE CONDUCTED EMISSION MEASUREMENT	9
3.2. Radiated emission Measurement	13
5. EXTERNAL AND INTERNAL PHOTOS OF THE EUT	21





1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014	---	PASS
Radiated disturbance	FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014	---	PASS
N/A is an abbreviation for Not Applicable.			

Test mode:		
Mode 1	Working	Record
Mode 2	Charging	Pre-scan
***Note: All test modes were tested, but we only recorded the worst case in this report.		





2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	: Mixtile Blade 3
Trade Mark	: N/A
Test Model	: SBC-BLADE3-16128
Model Lists	: SBC-BLADE3-0432, SBC-BLADE3-0864, SBC-BLADE3-32256
Model Declaration	: PCB board, structure and internal of these model(s) are the same, So no additional models were tested
Power Supply	: Input: 20V $\overline{=}$ 1A
Highest internal freq.	: Fx \leq 108MHz

Highest internal frequency (Fx)	Highest measured frequency
Fx \leq 1.705 MHz	30 MHz
1.705 MHz < Fx \leq 108 MHz	1 GHz
108 MHz < Fx \leq 500 MHz	2 GHz
500 MHz < Fx \leq 1000 MHz	5 GHz
Fx > 1 GHz	5 x Fx up to a maximum of 40 GHz

2.2. Support equipment List

Name	Manufacturers	M/N	S/N
Color TV Pattern Generator	PHILIPS	PM5418	L06252353
Adapter	OPPO	OP52KAUH	--

2.3. Description of Test Facility

Site Description

EMC Lab.	: NVLAP Accreditation Code is 600167-0. FCC Designation Number is CN5024. CAB identifier is CN0071. CNAS Registration Number is L4595.
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2.4. Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.5. Measurement Uncertainty

Test	Parameters	Expanded Uncertainty (U _{lab})	Expanded Uncertainty (U _{cispr})
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB

- (1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.
- (2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.



3. TEST RESULTS

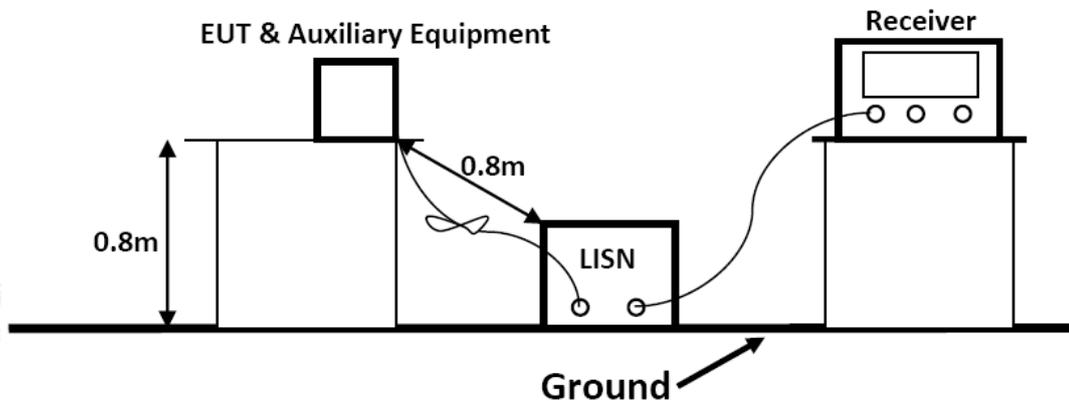
3.1. POWER LINE CONDUCTED EMISSION MEASUREMENT

3.1.1. Test Equipment

The following test equipments are used during the power line conducted measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	Farad	EZ	/	N/A	N/A
2	EMI Test Receiver	R&S	ESR3	102312	2022-02-18	2023-02-17
3	Artificial Mains	R&S	ENV216	101288	2022-06-16	2023-06-15
4	Pulse Limiter	R&S	ESH3-Z2	102750-NB	2022-08-17	2023-08-16

3.1.2. Block Diagram of Test Setup



3.1.3. Test Standard

Power Line Conducted Emission Limits

Frequency (MHz)			Limit (dB μ V)	
			Quasi-peak Level	Average Level
0.15	~	0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50	~	5.00	56.0	46.0
5.00	~	30.00	60.0	50.0

NOTE1-The lower limit shall apply at the transition frequencies.

NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

3.1.4. EUT Configuration on Test

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.





3.1.5. Operating Condition of EUT

3.1.5.1. Setup the EUT as shown on Section 3.1.2

3.1.5.2. Turn on the power of all equipments.

3.1.5.3. Let the EUT work in measuring Mode 1 and measure it.

3.1.6. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC/ANSI C63.4-2014 on Conducted Emission Measurement.

The bandwidth of the test receiver is set at 9kHz.

The frequency range from 150kHz to 30MHz is investigated

3.1.7. Test Results

PASS.

The test result please refer to the next page.



Shenzhen LCS Compliance Testing Laboratory Ltd.

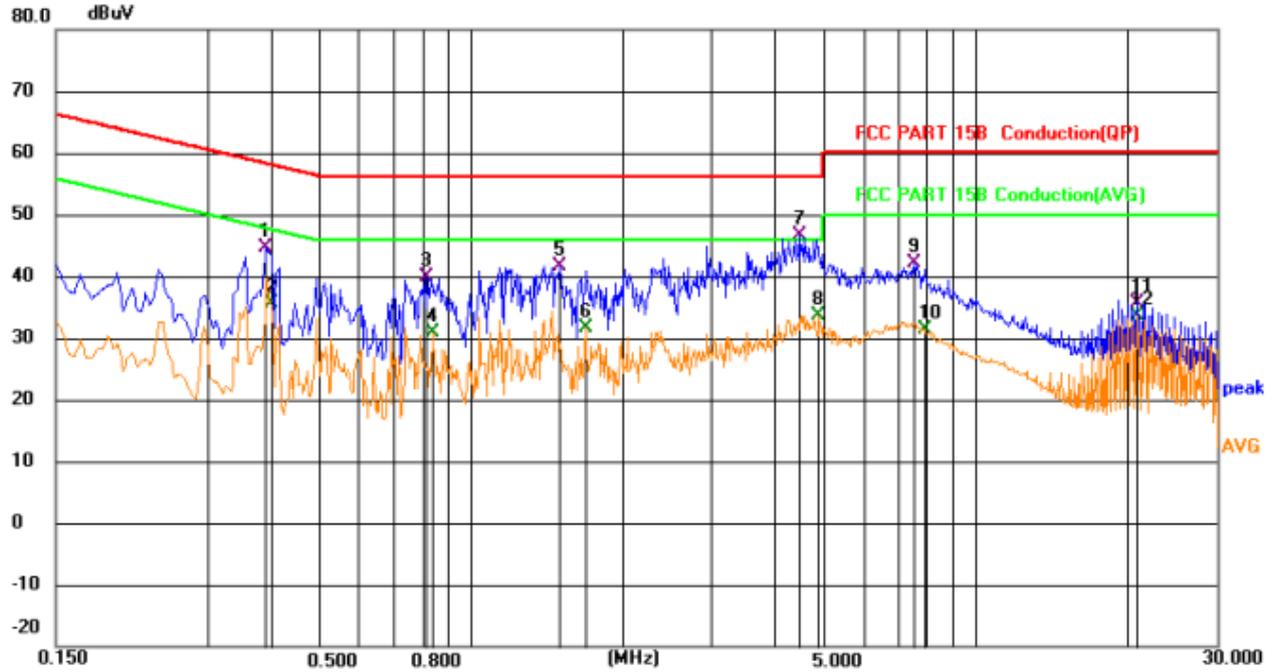
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

Scan code to check authenticity



Test Model	SBC-BLADE3-16128	Test Mode	Mode 1
Environmental Conditions	23.5°C, 53.2% RH	Test Engineer	Hy Luo
Pol	Line	Test Voltage	AC 120V/60Hz

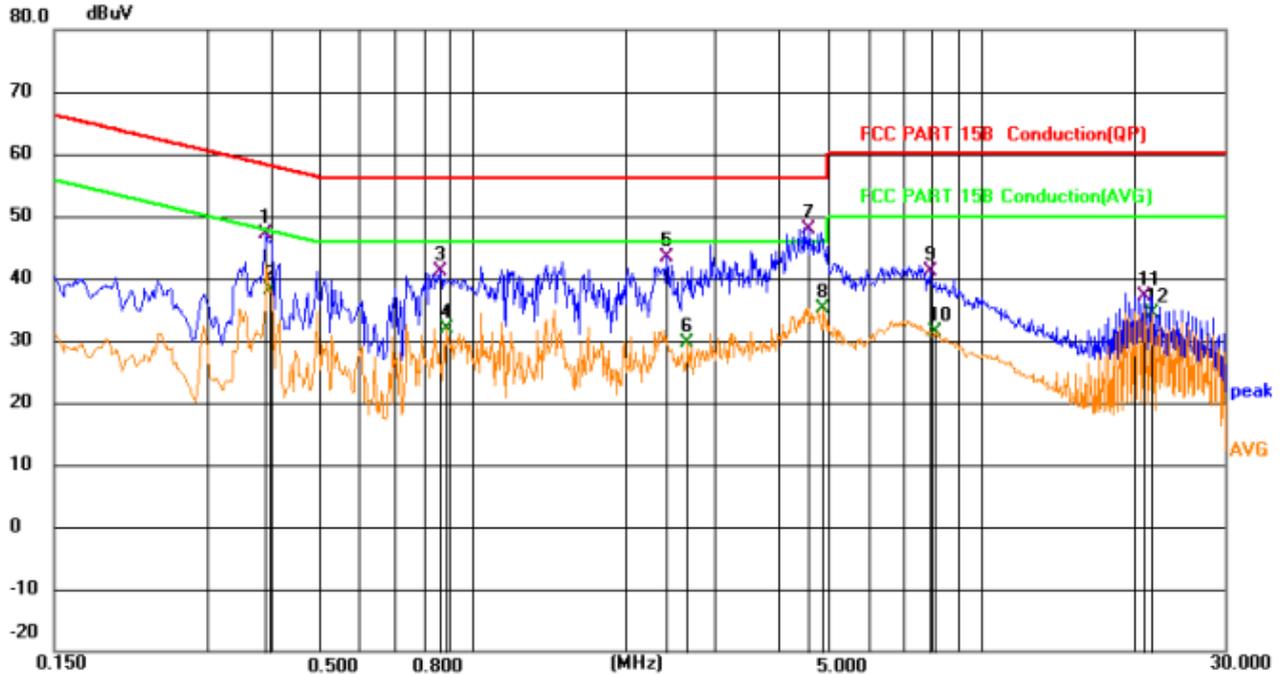


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.3930	25.08	19.63	44.71	58.00	-13.29	QP	
2		0.3997	15.90	19.63	35.53	47.86	-12.33	AVG	
3		0.8116	20.14	19.64	39.78	56.00	-16.22	QP	
4		0.8386	11.32	19.64	30.96	46.00	-15.04	AVG	
5		1.4955	22.06	19.66	41.72	56.00	-14.28	QP	
6		1.6891	12.06	19.67	31.73	46.00	-14.27	AVG	
7	*	4.4701	26.98	19.70	46.68	56.00	-9.32	QP	
8		4.8841	14.02	19.70	33.72	46.00	-12.28	AVG	
9		7.5346	22.45	19.75	42.20	60.00	-17.80	QP	
10		7.8991	11.72	19.77	31.49	50.00	-18.51	AVG	
11		20.8546	15.59	20.16	35.75	60.00	-24.25	QP	
12		20.8546	13.36	20.16	33.52	50.00	-16.48	AVG	





Test Model	SBC-BLADE3-16128	Test Mode	Mode 1
Environmental Conditions	23.5°C, 53.2% RH	Test Engineer	Hy Luo
Pol	Neutral	Test Voltage	AC 120V/60Hz



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.3930	27.58	19.63	47.21	58.00	-10.79	QP	
2		0.3996	18.40	19.63	38.03	47.86	-9.83	AVG	
3		0.8655	21.54	19.64	41.18	56.00	-14.82	QP	
4		0.8880	12.30	19.64	31.94	46.00	-14.06	AVG	
5		2.4000	23.82	19.68	43.50	56.00	-12.50	QP	
6		2.6431	9.83	19.68	29.51	46.00	-16.49	AVG	
7	*	4.5734	28.14	19.70	47.84	56.00	-8.16	QP	
8		4.8841	15.52	19.70	35.22	46.00	-10.78	AVG	
9		7.8990	21.38	19.77	41.15	60.00	-18.85	QP	
10		8.1286	11.70	19.78	31.48	50.00	-18.52	AVG	
11		20.8546	17.09	20.16	37.25	60.00	-22.75	QP	
12		21.6781	14.27	20.11	34.38	50.00	-15.62	AVG	

Note: Pre-Scan all mode, Thus record worse case mode result in this report.





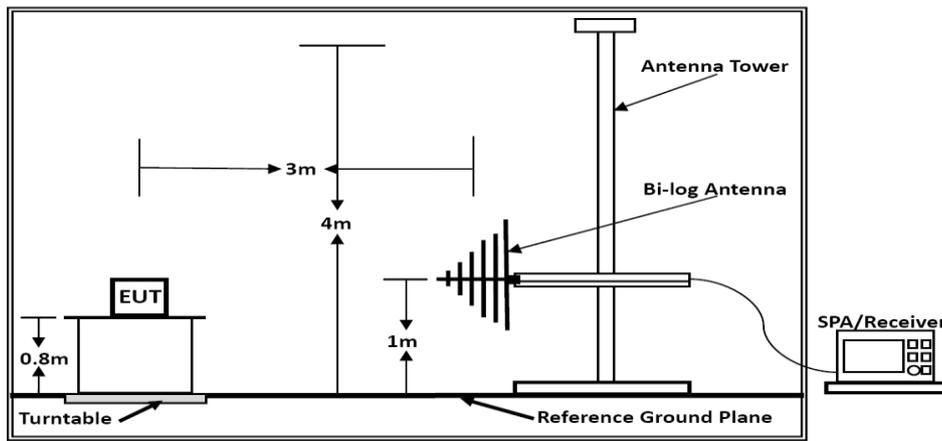
3.2. Radiated emission Measurement

3.2.1. Test Equipment

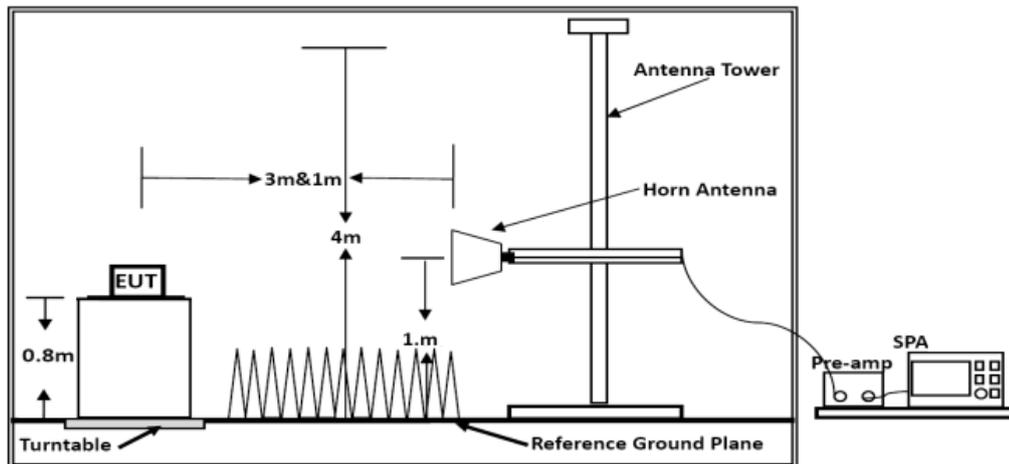
The following test equipments are used during the radiated emission measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	AUDIX	E3	/	N/A	N/A
2	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-09-12	2024-09-11
3	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-09-05	2024-09-04
4	EMI Test Receiver	R&S	ESR3	102311	2022-08-17	2023-08-16
5	Broadband Preamplifier	/	BP-01M18G	P190501	2022-06-16	2023-06-15

3.2.2. Block Diagram of Test Setup



Below 1GHz



Above 1GHz





3.2.3. Radiated Emission Limit

Limits for Radiated Disturbance Below 1GHz

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46
960 ~ 1000	3	500	54

Remark : (1) Emission level $(\text{dB})\mu\text{V} = 20 \log$ Emission level $\mu\text{V}/\text{m}$
 (2) The smaller limit shall apply at the cross point between two frequency bands.
 (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Limits for Radiated Emission Above 1GHz

Frequency (MHz)	Distance (Meters)	Peak Limit ($\text{dB}\mu\text{V}/\text{m}$)	Average Limit ($\text{dB}\mu\text{V}/\text{m}$)
Above 1000	3	74	54

***Note: The lower limit applies at the transition frequency.

3.2.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.2.5. Operating Condition of EUT

3.2.5.1. Setup the EUT as shown in Section 3.2.2.

3.2.5.2. Let the EUT work in test Mode 1 and measure it.

3.2.6. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2014 on radiated emission measurement.





3.2.7. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB/VB 120kHz/1MHz for QP

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10 th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average

The frequency range from 30MHz to 1000MHz and above 1000MHz is checked.

3.2.8. Radiated Emission Noise Measurement Result

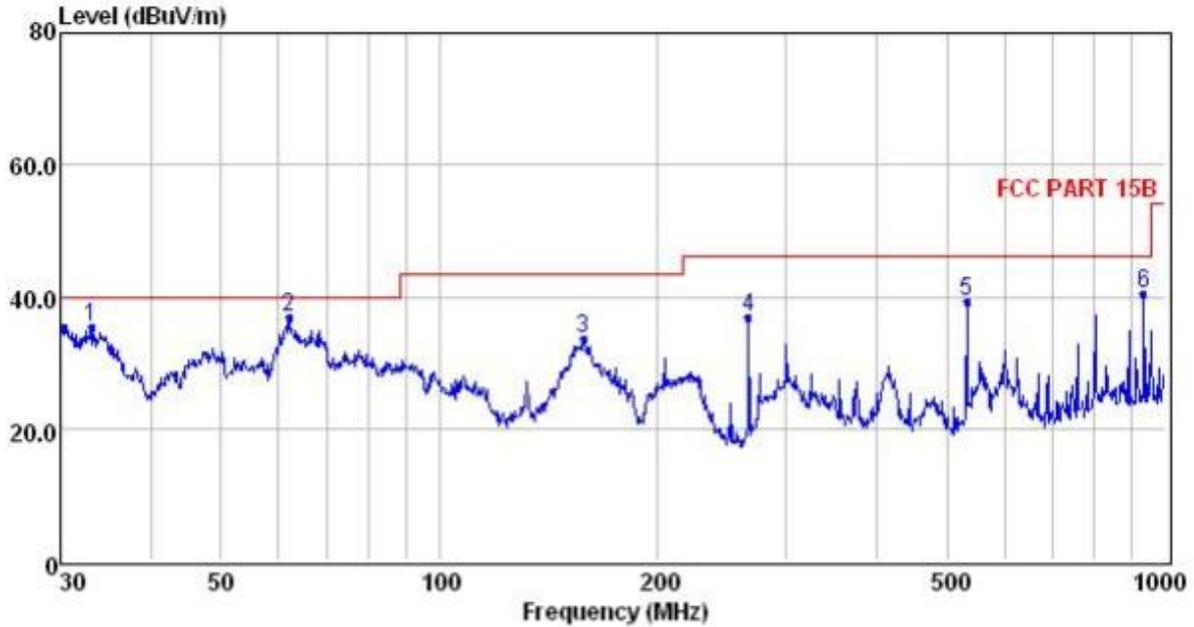
PASS.

The scanning waveforms please refer to the next page.





Test Model	SBC-BLADE3-16128	Test Mode	Mode 1
Environmental Conditions	22.3°C, 53% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Hy Luo	Test Voltage	AC 120V/60Hz



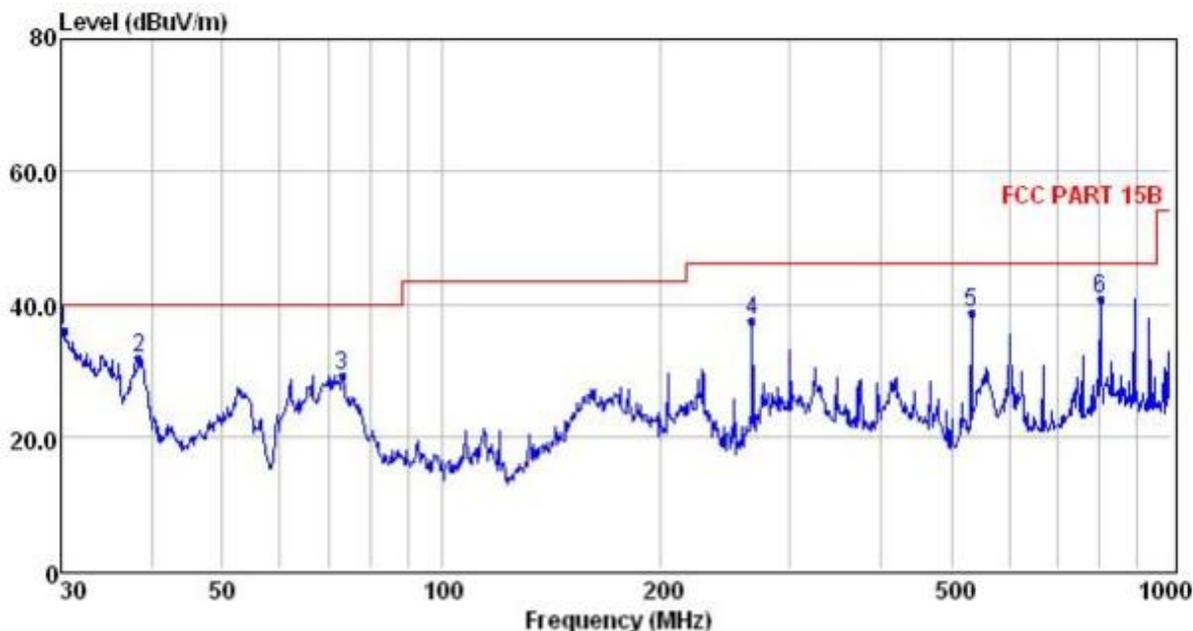
	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	33.09	24.10	0.44	10.79	35.33	40.00	-4.67	QP
2	62.00	24.23	0.66	12.01	36.90	40.00	-3.10	QP
3	158.11	23.45	1.06	9.11	33.62	43.50	-9.88	QP
4	266.61	22.61	1.28	12.94	36.83	46.00	-9.17	QP
5	533.83	20.31	1.50	17.42	39.23	46.00	-6.77	QP
6	935.55	16.73	2.14	21.67	40.54	46.00	-5.46	QP

- Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that are 20db below the official limit are not reported





Test Model	SBC-BLADE3-161 28	Test Mode	Mode 1
Environmental Conditions	22.3°C, 53% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Hy Luo	Test Voltage	AC 120V/60Hz



	Freq MHz	Reading dBuV	CabLos dB	Antfac dB/m	Measured dBuV/m	Limit dBuV/m	Over dB	Remark
1	30.32	24.93	0.40	10.62	35.95	40.00	-4.05	QP
2	38.35	19.99	0.50	11.31	31.80	40.00	-8.20	QP
3	73.10	18.40	0.71	10.07	29.18	40.00	-10.82	QP
4	266.61	23.18	1.28	12.94	37.40	46.00	-8.60	QP
5	533.83	19.70	1.50	17.42	38.62	46.00	-7.38	QP
6	801.79	18.81	2.00	19.85	40.66	46.00	-5.34	QP

- Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that are 20db below the official limit are not reported

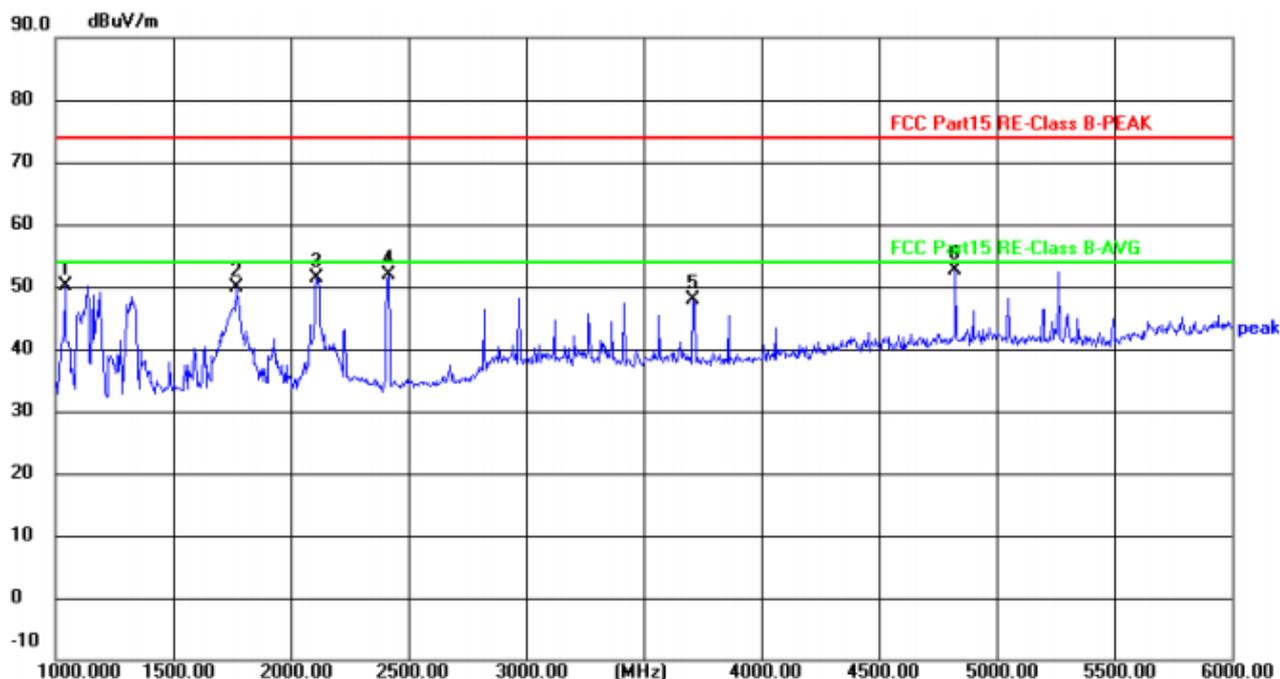
Note: Pre-Scan all mode, Thus record worse case mode result in this report.

Remark: For above 1000MHz, Because the emission it too low to be reported.





Test Model	SBC-BLADE3-16128	Test Mode	Mode 1
Environmental Conditions	23.9°C, 52.0% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Hy Luo	Test Voltage	AC 120V/60Hz

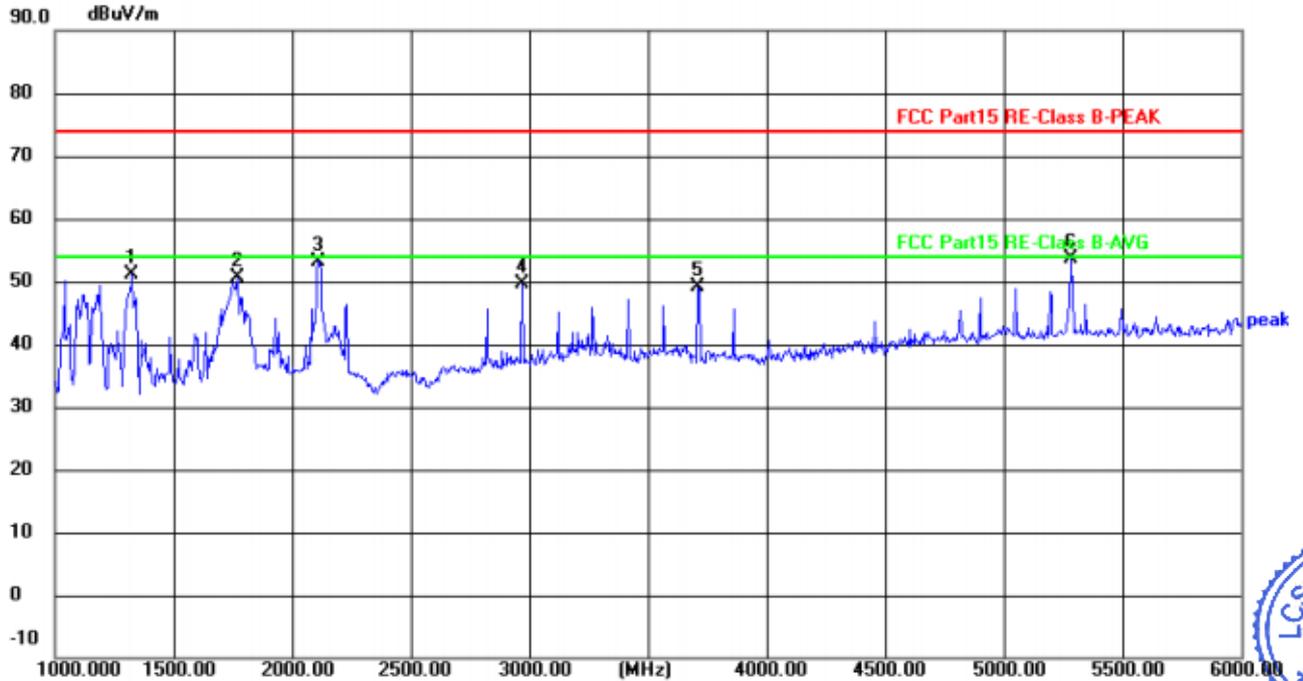


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	1040.000	65.62	-15.41	50.21	74.00	-23.79	peak	P	
2	1770.000	64.08	-14.22	49.86	74.00	-24.14	peak	P	
3	2110.000	64.04	-12.72	51.32	74.00	-22.68	peak	P	
4	2415.000	63.51	-11.64	51.87	74.00	-22.13	peak	P	
5	3710.000	56.89	-9.05	47.84	74.00	-26.16	peak	P	
6	4825.000	57.53	-4.98	52.55	74.00	-21.45	peak	P	





Test Model	SBC-BLADE3-161 28	Test Mode	Mode 1
Environmental Conditions	23.9°C, 52.0% RH	Detector Function	Peak+AV
Pol	Horizontal	Distance	3m
Test Engineer	Hy Luo	Test Voltage	AC 120V/60Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	1325.000	66.30	-15.23	51.07	74.00	-22.93	peak	P	
2	1770.000	64.79	-14.22	50.57	74.00	-23.43	peak	P	
3	2110.000	65.96	-12.72	53.24	74.00	-20.76	peak	P	
4	2970.000	59.30	-9.70	49.60	74.00	-24.40	peak	P	
5	3710.000	58.18	-9.05	49.13	74.00	-24.87	peak	P	
6	5285.000	57.26	-3.60	53.66	74.00	-20.34	peak	P	

Note: Pre-Scan all mode, Thus record worse case mode result in this report.

Remark: For above 1000MHz, Because the emission it too low to be reported.





4. PHOTOGRAPH



Photo of Power Line Conducted Measurement

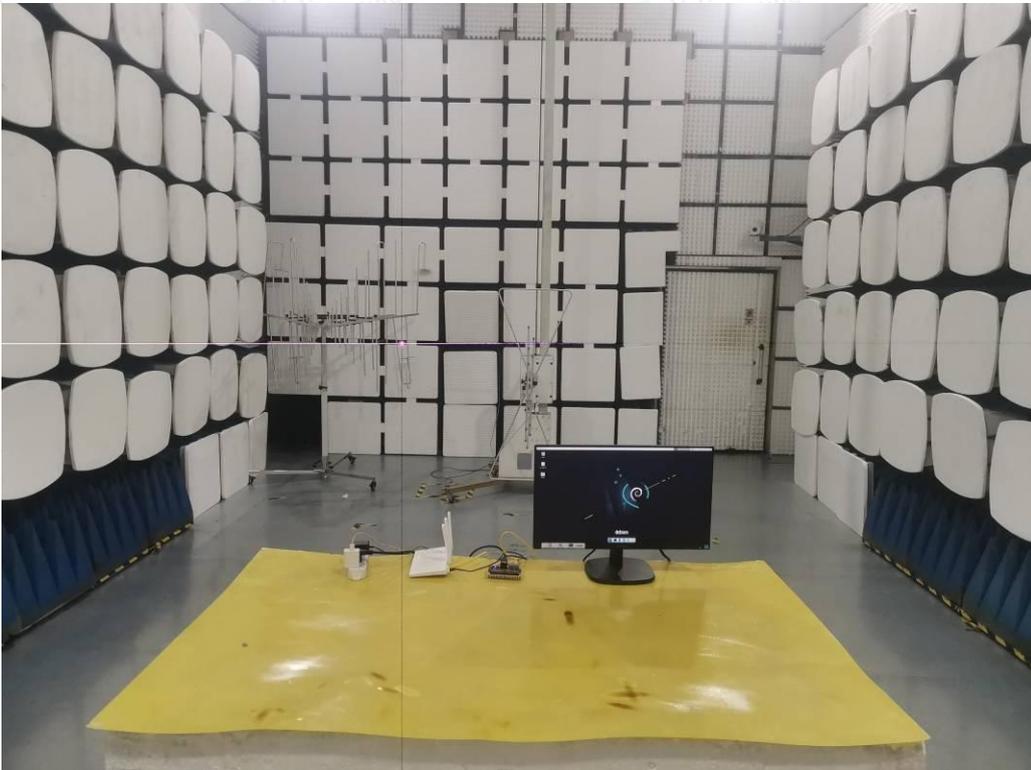


Photo of Radiated emission Measurement(Below 1GHz)





Photo of Radiated emission Measurement(Above 1GHz)





5. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

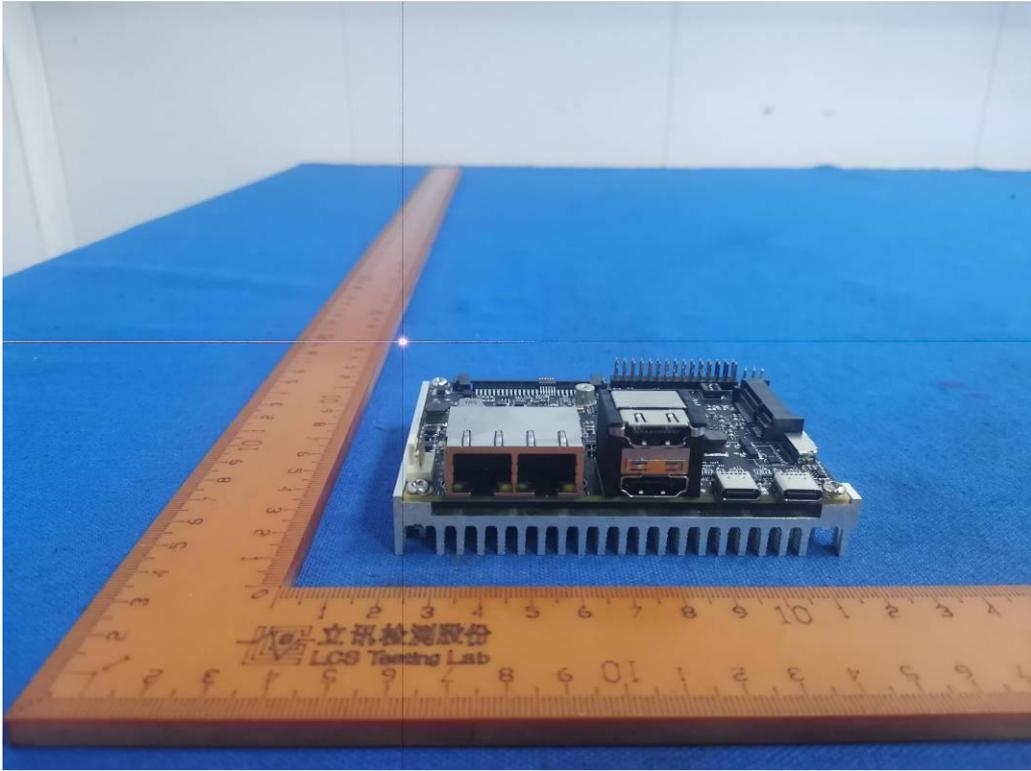


Fig. 1

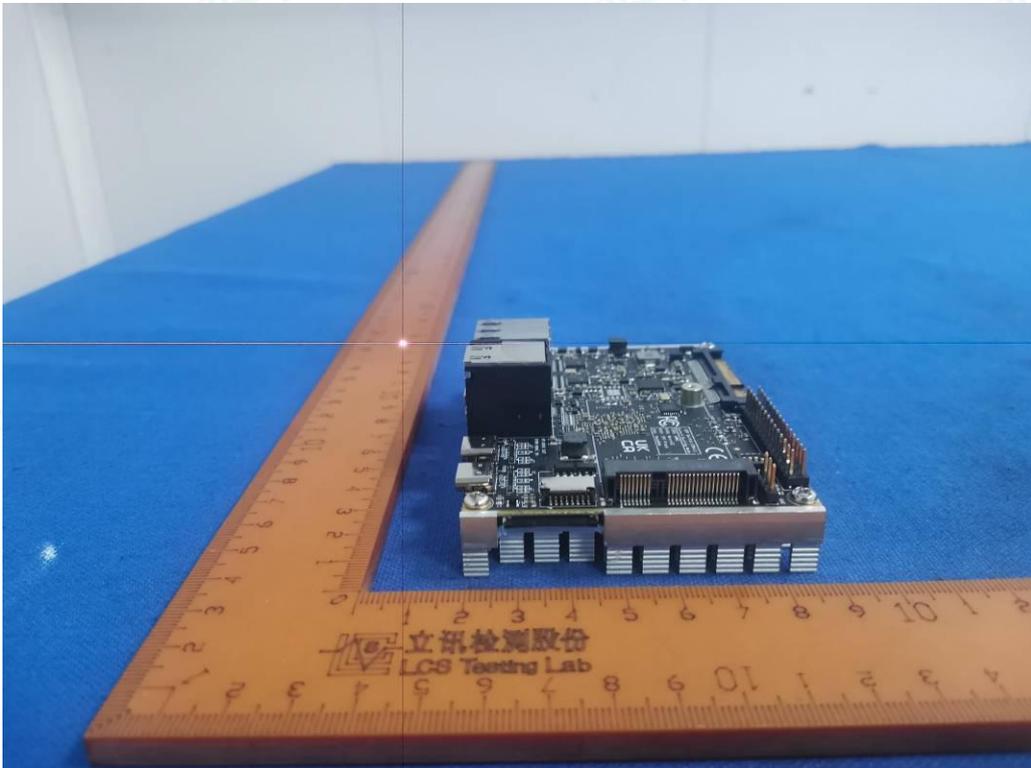


Fig. 2



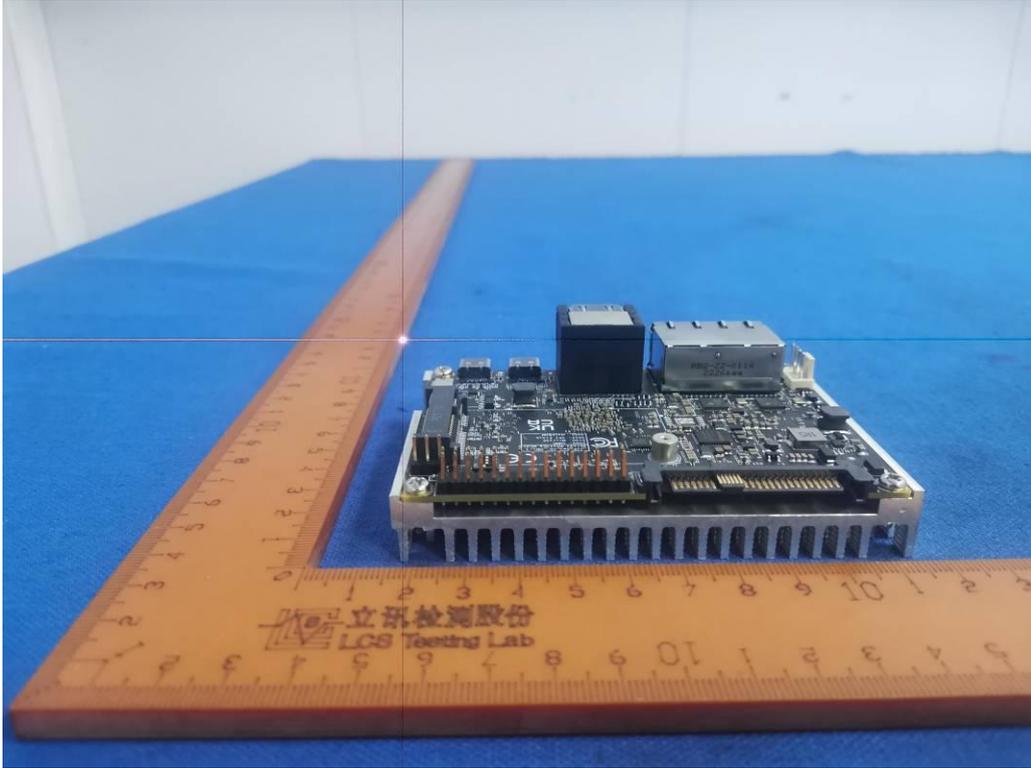


Fig. 3

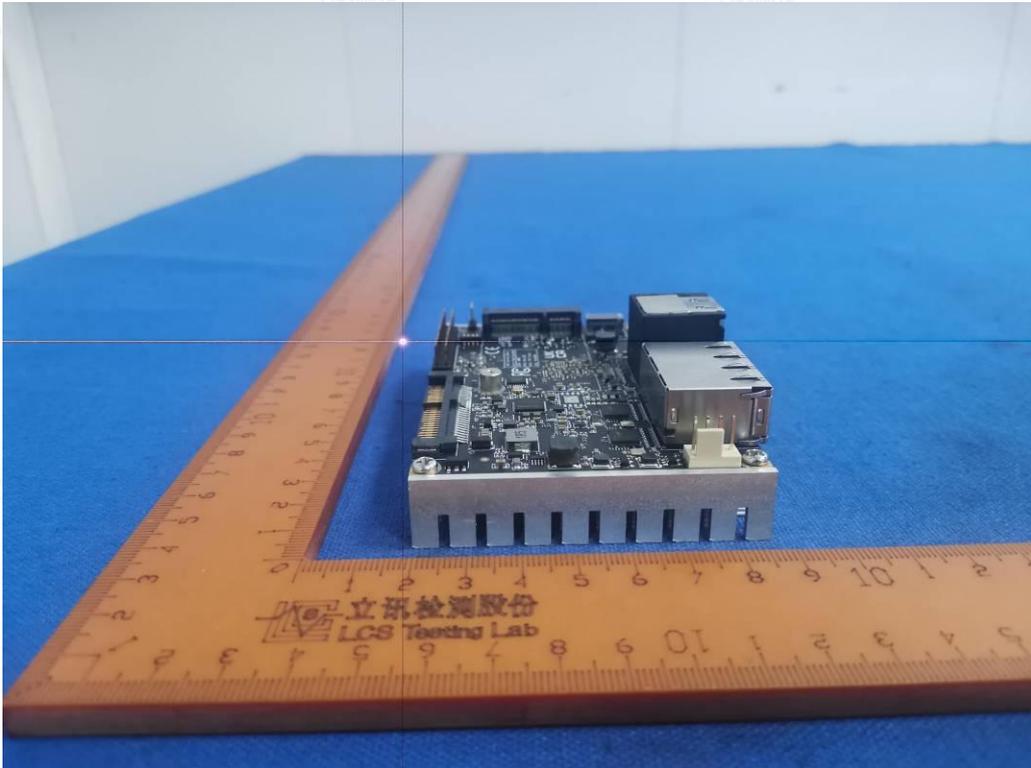


Fig. 4



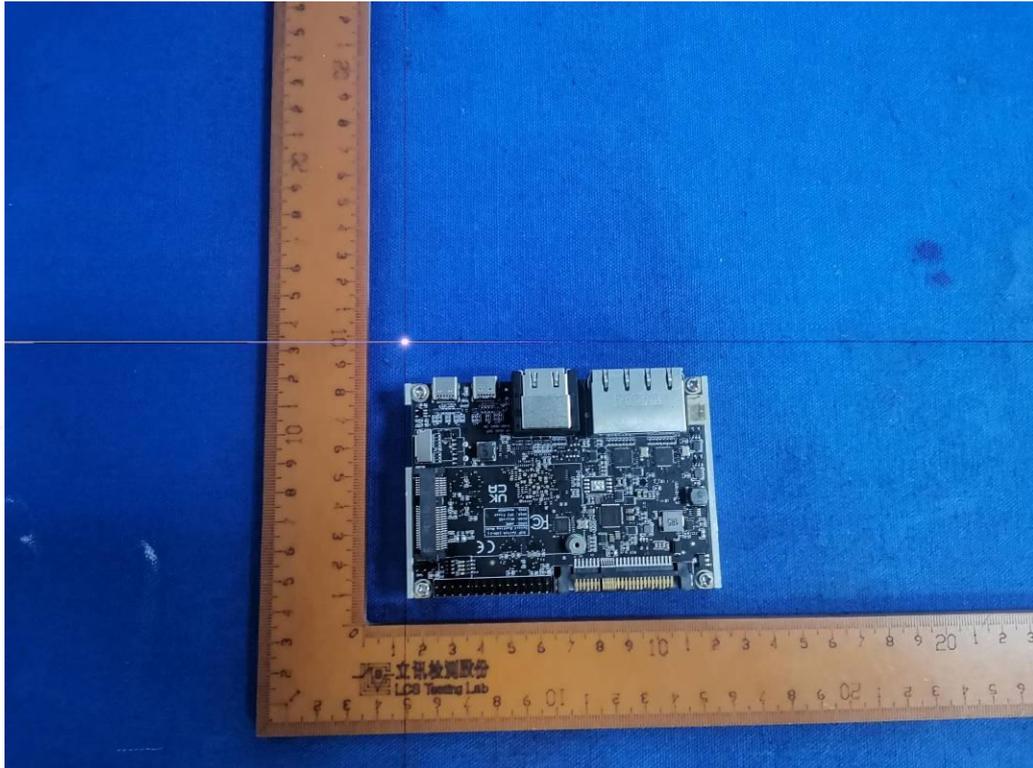


Fig. 5

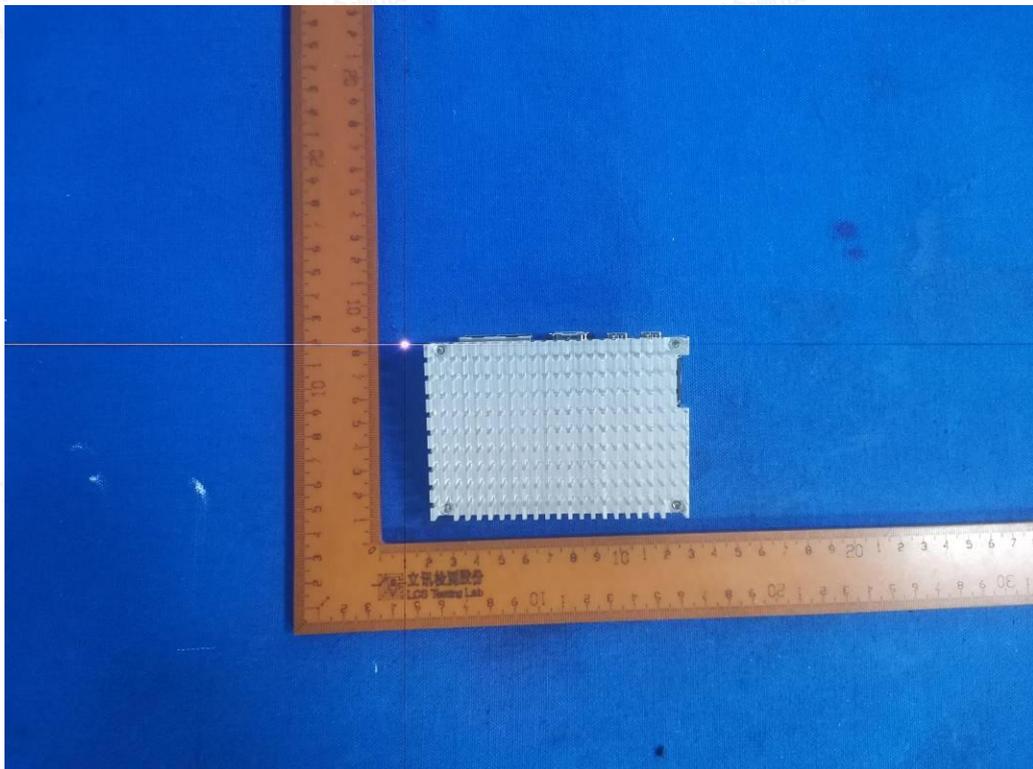


Fig. 6

-----THE END OF TEST REPORT-----

