



## EMC TEST REPORT

For

Mixtile Limited

Mixtile Blade 3

Test Model: SBC-BLADE3-16128

Additional Model No.: Please Refer To Page 9

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.  
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Date of receipt of test sample : October 14, 2022  
Number of tested samples : 2  
Sample No. : A101222019-1, A101222019-2  
Date of Test : October 14, 2022 ~ November 03, 2022  
Date of Report : November 08, 2022





<b>EMC TEST REPORT</b>	
<b>BS EN 55032:2015+A11:2020</b> Electromagnetic compatibility of multimedia equipment - Emission Requirements	
<b>BS EN 55035:2017+A11:2020</b> Electromagnetic compatibility of multimedia equipment – Immunity requirements	
<b>Report Reference No.</b> .....	: <b>LCSA101222018E</b>
<b>Date of Issue</b> .....	: November 08, 2022
<b>Testing Laboratory Name</b> .....	: <b>Shenzhen LCS Compliance Testing Laboratory Ltd.</b>
<b>Address</b> .....	: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
<b>Testing Location/ Procedure</b> ...	: Full application of Harmonised standards <input checked="" type="checkbox"/> Partial application of Harmonised standards <input type="checkbox"/> Other standard testing method <input type="checkbox"/>
<b>Applicant's Name</b> .....	: <b>Mixtile Limited</b>
<b>Address</b> .....	: Haisong Building Tower B Suite 1101, Tairan 9th Road, Futian District, Shenzhen
<b>Test Specification</b>	
<b>Standard</b> .....	: BS EN 55032:2015+A11:2020 BS EN 55035:2017+A11:2020 BS EN IEC 61000-3-2:2019+A1:2021 BS EN 61000-3-3:2013+A1:2019
<b>Test Report Form No.</b> .....	: LCSEMC-1.0
<b>TRF Originator</b> .....	: Shenzhen LCS Compliance Testing Laboratory Ltd.
<b>Master TRF</b> .....	: Dated 2011-03
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<b>Test Item Description.</b> .....	: <b>Mixtile Blade 3</b>
<b>Trade Mark</b> .....	: N/A
<b>Test Model</b> .....	: SBC-BLADE3-16128
<b>Ratings</b> .....	: Please Refer To Page 9
<b>Result</b> .....	: <b>Positive</b>

**Compiled by:***Coco Song***Supervised by:***Baron Wen***Approved by:***Gavin Liang*

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# EMC -- TEST REPORT

<b>Test Report No. :</b> LCSA101222018E	<u>November 08, 2022</u> Date of issue
---	---

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

<b>Test Result</b>	<b>Positive</b>
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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.





### Revision History

Revision	Issue Date	Revisions Content	Revised By
000	November 08, 2022	Initial Issue	--

This report is based on the test raw-data of test original report “LCSA101222018E”. Test standard from “EN 55032:2015/A11:2020, EN 55035:2017/A11: 2020, EN IEC 61000-3-2:2019/A1:2021, EN 61000-3-3:2013/A1:2019” to “BS EN 55032:2015+A11:2020, BS EN 55035:2017+A11: 2020, BS EN IEC 61000-3-2:2019+A1:2021, BS EN 61000-3-3:2013+A1:2019”. other information and results contained in this report are not changed, after information review and verification, no additional tests were considered necessary.





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## 1. TEST STANDARDS

The tests were performed according to following standards:

BS EN 55032:2015+A11:2020 Electromagnetic compatibility of multimedia equipment - Emission Requirements

BS EN 55035:2017+A11:2020 Information technology equipment – Immunity characteristics

BS EN IEC 61000-3-2:2019+A1:2021 Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)

BS EN 61000-3-3:2013+A1:2019 Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current  $\leq 16$  A per phase and not subject to conditional connection



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## 2.SUMMARY OF STANDARDS AND RESULTS

### 2.1. Description of Standards and Results

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

<b>Emission (BS EN 55032:2015+A11:2020)</b>			
<b>Description of Test Item</b>	<b>Standard</b>	<b>Limits</b>	<b>Results</b>
Conducted disturbance at mains terminals	BS EN 55032:2015+A11:2020	Class B	PASS
Conducted disturbance at telecommunication port	BS EN 55032:2015+A11:2020	Class B	PASS
Radiated disturbance	BS EN 55032:2015+A11:2020	Class B	PASS
Harmonic current emissions	BS EN IEC 61000-3-2:2019+A1:2021	Class A	N/A
Voltage fluctuations & flicker	BS EN 61000-3-3:2013+A1:2019	-----	PASS
<b>Immunity (BS EN 55035:2017+A11:2020)</b>			
<b>Description of Test Item</b>	<b>Basic Standard</b>	<b>Performance Criteria</b>	<b>Results</b>
Electrostatic discharge (ESD)	BS EN 61000-4-2: 2009	B	PASS
Radio-frequency, Continuous radiated disturbance	BS EN IEC 61000-4-3:2020	A	PASS
Electrical fast transient (EFT)	BS EN 61000-4-4: 2012	B	PASS
Surge (Input a.c. power ports)	BS EN 61000-4-5:2014+A1:2017	B	PASS
Surge (Telecommunication ports)		B	N/A
Radio-frequency, Continuous conducted disturbance	BS EN 61000-4-6: 2014	A	PASS
Power frequency magnetic field	BS EN 61000-4-8: 2010	A	PASS
Voltage dips, >95% reduction	BS EN IEC 61000-4-11:2020	B	PASS
Voltage dips, 30% reduction		C	PASS
Voltage interruptions		C	PASS

\*\*\*Note: N/A is an abbreviation for Not Applicable.

<b>Test mode:</b>		
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.



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## 2.2. Description of Performance Criteria

### General Performance Criteria

Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

- essential operational modes and states;
- tests of all peripheral access (hard disks, floppy disks, printers, keyboard, mouse, etc.);
- quality of software execution;
- quality of data display and transmission;
- quality of speech transmission.

#### 2.2.1. Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacture when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

#### 2.2.2. Performance criterion B

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacture, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operation state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

#### 2.2.3. Performance criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacture's instructions.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.



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### 3. GENERAL INFORMATION

#### 3.1. Description of Device (EUT)

EUT	: Mixtile Blade 3
Trade Mark	: N/A
Test Model	: SBC-BLADE3-16128
Additional Model	: 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 frequency (Fx)	Highest measured frequency
$F_x \leq 108 \text{ MHz}$ $108 \text{ MHz} < F_x \leq 500 \text{ MHz}$ $500 \text{ MHz} < F_x \leq 1 \text{ GHz}$ $F_x > 1 \text{ GHz}$	1 GHz 2 GHz 5 GHz 5 x Fx up to a maximum of 6 GHz
NOTE 1 For FM and TV broadcast receivers, Fx is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies. NOTE 2 Fx is defined in EN 55032 Section 3.1.19. Where Fx is unknown, the radiated emission measurements shall be performed up to 6 GHz	

#### 3.2. Description of Test Facility

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

#### 3.3. Support Equipment List

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



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### 3.4. 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.

### 3.5. Measurement Uncertainty

Test	Parameters	Expanded uncertainty ( $U_{lab}$ )	Expanded uncertainty ( $U_{cisp}$ )
Conducted Emission	Level accuracy (9kHz to 150kHz)	$\pm 2.63$ dB	$\pm 3.8$ dB
	(150kHz to 30MHz)	$\pm 2.35$ dB	$\pm 3.4$ dB
Power Disturbance	Level accuracy (30MHz to 300MHz)	$\pm 2.90$ dB	$\pm 4.5$ dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	$\pm 3.60$ dB	$\pm 3.3$ dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	$\pm 3.68$ dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	$\pm 3.48$ dB	$\pm 5.3$ dB
Radiated Emission	Level accuracy (above 1000MHz)	$\pm 3.90$ dB	$\pm 5.2$ dB
Mains Harmonic	Voltage	$\pm 0.510\%$	N/A
Voltage Fluctuations & Flicker	Voltage	$\pm 0.510\%$	N/A
EMF	/	$\pm 21.59\%$	N/A
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%.			



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## 4. MEASURING DEVICES AND TEST EQUIPMENT

### LINE CONDUCTED EMISSION

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
5	Impedance Stabilization Network	TESEQ	ISN T800	45130	2021-11-16	2022-11-15

### RADIATED DISTURBANCE

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

### VOLTAGE FLUCTUATION AND FLICKER/HARMONIC CURRENT EMISSIONS

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	HARMONICS&FLICKER MEASUREMENT SYSTEM	EVERFINE	HFM-3000	P630850CD 1411116	2022-02-08	2023-02-07
2	HARMONICS&FLICKER TESTING POWER SOURCE	EVERFINE	HFS-4000	P624486CD 1411124	2022-02-08	2023-02-07

### ELECTROSTATIC DISCHARGE

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	ESD Simulator	SCHLODER	SESD 230	604035	2022-07-18	2023-07-17

### RF ELECTROMAGNETIC FIELD)

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	MXG Vector Signal Generator	Agilent	E4438C	MY42081396(6 G)	2022-06-16	2023-06-15
2	RF POWER AMPLIFIER	SKET	HAP_0306G-50W	/	2022-06-16	2023-06-15
3	RF POWER AMPLIFIER	OPHIR	5225R	1052	2022-06-16	2023-06-15
4	RF POWER AMPLIFIER	OPHIR	5273F	1019	2022-06-16	2023-06-15
5	Stacked Broadband Log Periodic Antenna	SCHWARZBECK	STLP 9128	9128ES-145	NCR	NCR
6	Stacked Mikrowellen Log.-Per Antenna	SCHWARZBECK	STLP 9149	9149-484	NCR	NCR
7	RS Electric field probe	narda	EP601	611WX80208	2022-06-16	2023-06-15

Note: NCR means no calibration requirement

### ELECTRICAL FAST TRANSIENT IMMUNITY

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Immunity Simulative Generator	EM TEST	UCS500-M4	0101-34	2022-08-17	2023-08-16
2	Electric fast pulse group generator	3ctest	EFT-4001G	EC0461044	2021-11-16	2022-11-15
3	Capacitive coupling clamp	3CTEST	EFTC	EC0441098	2022-06-16	2023-06-15



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## SURGES, LINE TO LINE AND LINE TO GROUND

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Immunity Simulative Generator	EM TEST	UCS500-M4	0101-34	2022-08-17	2023-08-16
2	Communication wave lightning generator	HTEC	HTSG 70	181701	2021-11-15	2022-11-14
3	Symmetrical data line coupling network	HTEC	HCN 8	182701	2021-11-15	2022-11-14
4	Data line decoupling network	HTEC	HDEC 8	182702	2021-11-15	2022-11-14

## RF COMMON MODE

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Simulator	FRANKONIA	CIT-10/75	A126A1195	2022-08-17	2023-08-16
2	CDN	FRANKONIA	CDN-M2+M3	A2210177	2022-06-16	2023-06-15
3	6dB Attenuator	FRANKONIA	DAM25W	1172040	2022-06-16	2023-06-15
4	Electromagnetic coupling injection clamp	ZHINAN	ZN23203	14017	2022-06-16	2023-06-15

## MAGNETIC FIELD SUSCEPTIBILITY TEST

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Power frequency mag-field generator System	EVERFINE	EMS61000-8K	906003	2022-06-16	2023-06-15

## VOLTAGE DIPS/INTERRUPTIONS IMMUNITY TEST

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2022-06-16	2023-06-15



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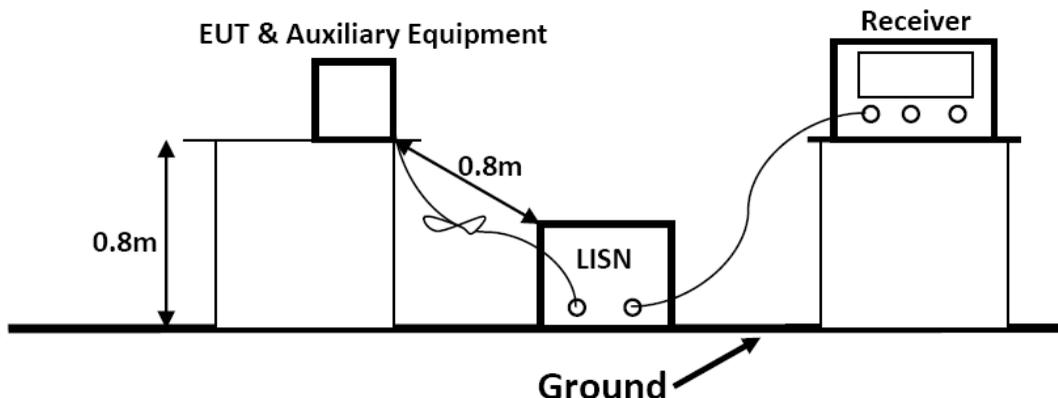
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## 5. TEST RESULTS

### 5.1. POWER LINE CONDUCTED EMISSION MEASUREMENT

#### 5.1.1. Block Diagram of Test Setup



#### 5.1.2. Test Standard

BS EN 55032:2015+A11:2020 Class B

Power Line Conducted Emission Limits (Class B)		
Frequency (MHz)	Limit (dB $\mu$ 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.

#### 5.1.3. EUT Configuration on Test

The following equipments are installed on Power Line Conducted Emission Measurement to meet the EN 55032 requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

#### 5.1.4. Operating Condition of EUT

- 5.1.4.1. Setup the EUT as shown on Section 5.1.1
- 5.1.4.2. Turn on the power of all equipments.
- 5.1.4.3. Let the EUT work in measuring Mode 1 and measure it.





### 5.1.5. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.

The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz.

The frequency range from 150kHz to 30MHz is investigated.

### 5.1.6. Test Results

**PASS.**

The test result please refer to the next page.



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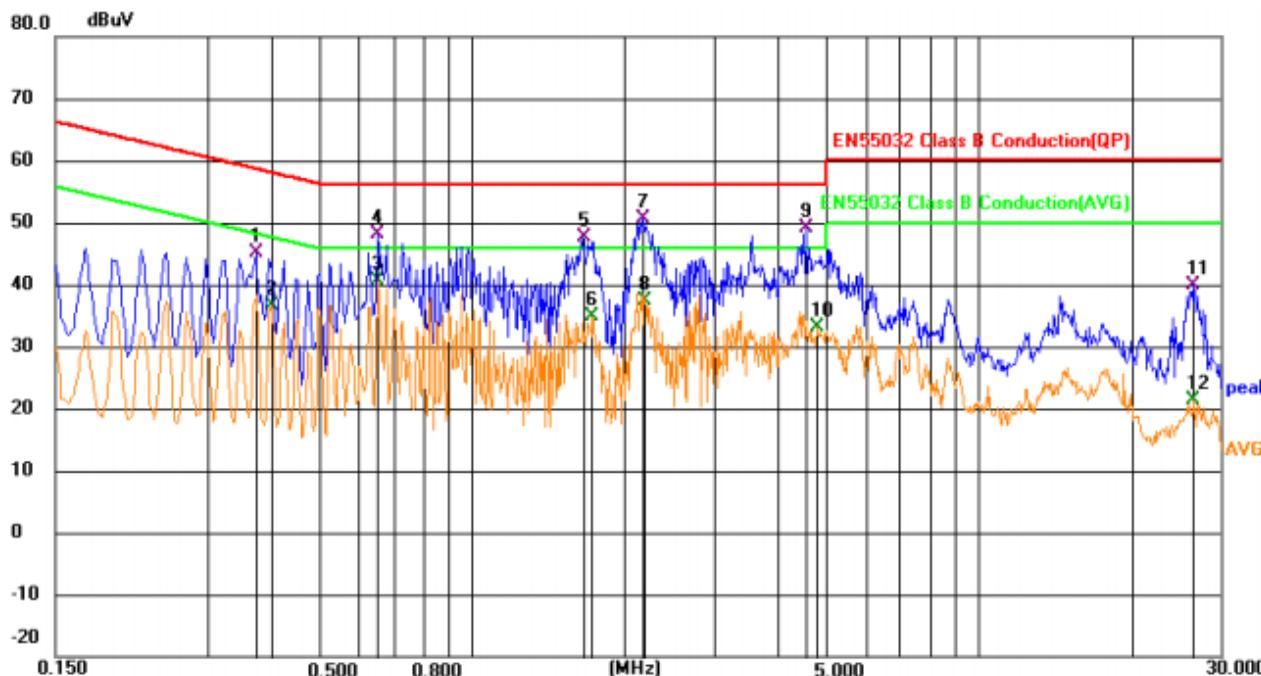
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<b>Test Model</b>	SBC-BLADE3-16128	<b>Test Mode</b>	Mode 1
<b>Environmental Conditions</b>	23.5°C, 53.2% RH	<b>Test Engineer</b>	Paul Xie
<b>Pol.</b>	Line	<b>Test Voltage</b>	AC 230V/50Hz



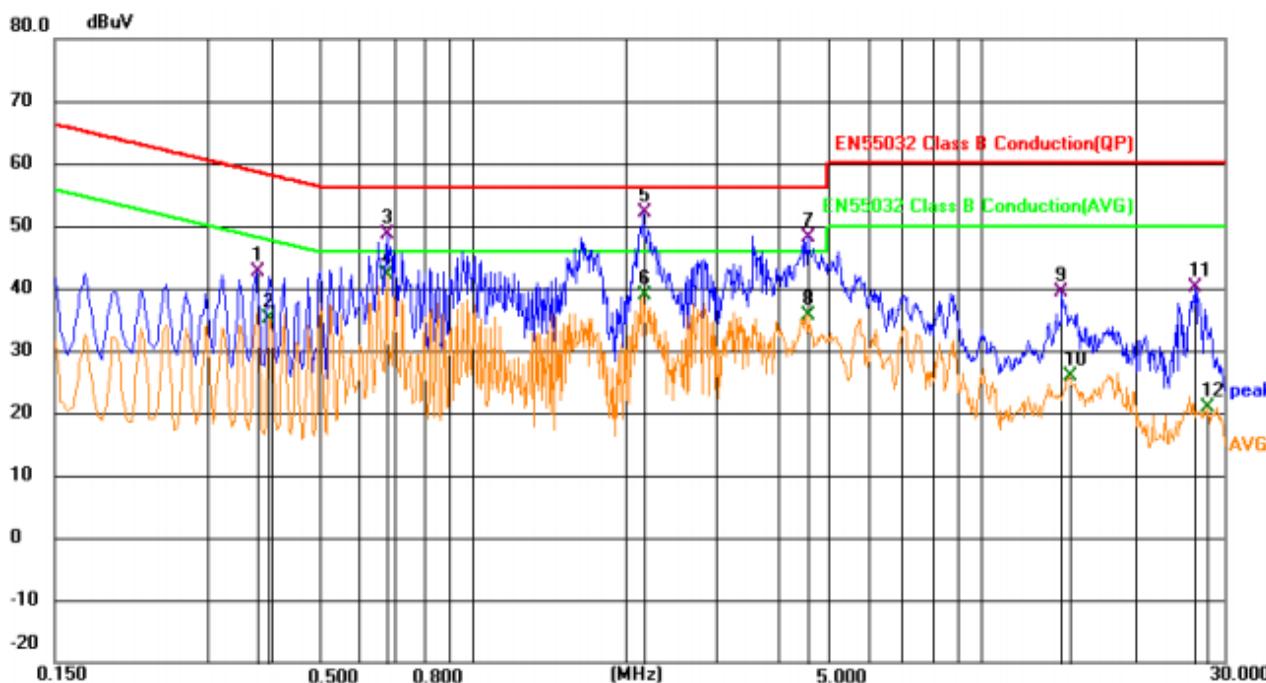
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.3750	25.41	19.63	45.04	58.39	-13.35	QP	
2		0.4021	16.99	19.63	36.62	47.81	-11.19	AVG	
3		0.6491	20.90	19.65	40.55	46.00	-5.45	AVG	
4		0.6540	28.37	19.65	48.02	56.00	-7.98	QP	
5		1.6616	28.07	19.67	47.74	56.00	-8.26	QP	
6		1.7338	15.22	19.67	34.89	46.00	-11.11	AVG	
7	*	2.1884	30.90	19.68	50.58	56.00	-5.42	QP	
8		2.1929	17.59	19.68	37.27	46.00	-8.73	AVG	
9		4.5601	29.47	19.70	49.17	56.00	-6.83	QP	
10		4.8120	13.38	19.70	33.08	46.00	-12.92	AVG	
11		26.5741	19.76	20.03	39.79	60.00	-20.21	QP	
12		26.5741	1.45	20.03	21.48	50.00	-28.52	AVG	



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<b>Test Model</b>	SBC-BLADE3-16128	<b>Test Mode</b>	Mode 1
<b>Environmental Conditions</b>	23.5°C, 53.2% RH	<b>Test Engineer</b>	Paul Xie
<b>Pol.</b>	Neutral	<b>Test Voltage</b>	AC 230V/50Hz



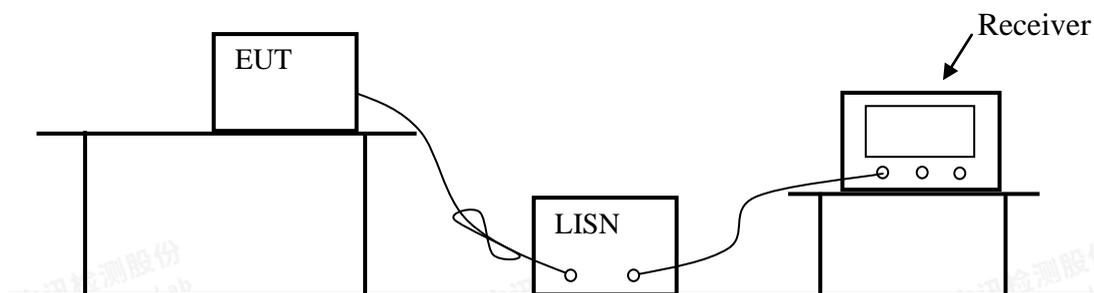
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.3751	22.89	19.63	42.52	58.39	-15.87	QP	
2		0.3976	15.58	19.63	35.21	47.90	-12.69	AVG	
3		0.6764	28.98	19.65	48.63	56.00	-7.37	QP	
4		0.6764	22.43	19.65	42.08	46.00	-3.92	AVG	
5	*	2.1660	32.50	19.68	52.18	56.00	-3.82	QP	
6		2.1660	19.30	19.68	38.98	46.00	-7.02	AVG	
7		4.5601	28.55	19.70	48.25	56.00	-7.75	QP	
8		4.5601	15.99	19.70	35.69	46.00	-10.31	AVG	
9		14.4061	19.61	19.86	39.47	60.00	-20.53	QP	
10		14.8966	5.91	19.87	25.78	50.00	-24.22	AVG	
11		26.2951	20.09	20.03	40.12	60.00	-19.88	QP	
12		27.8656	0.80	20.06	20.86	50.00	-29.14	AVG	peak

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



## 5.2. TELECOMMUNICATION LINE CONDUCTED EMISSION MEASUREMENT

### 5.2.1. Block Diagram of Test Setup



### 5.2.2. Test Standard

BS EN 55032:2015+A11:2020

Telecommunication Line Conducted Emission Limits (Class B)

Frequency (MHz)	Voltage Limit (dB $\mu$ V)		Current Limit (dB $\mu$ V)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 ~ 0.50	84.0 ~ 74	74 ~ 64	40 ~ 30	30 ~ 20
0.50 ~ 30.00	74	64	30	20

NOTE 1-The limits decrease linearly with the logarithm of the frequency in the range 0,15 MHz to 0,5 MHz.

NOTE 2-The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150  $\Omega$  to the telecommunication port under test (conversion factor is  $20 \log_{10} 150 / 1 = 44$  dB).

### 5.2.3. EUT Configuration on Test

The following equipments are installed on Conducted Emission Measurement to see EN 55032 requirements and operating in a manner which tends to maximize its emission characteristics in normal application.

### 5.2.4. Operating Condition of EUT

5.2.4.1. Setup the EUT as shown on Section 5.2.1.

5.2.4.2. Turn on the power of all equipments.

5.2.4.3. Let the EUT work in measuring Mode (1) and measure it.





### 5.2.5. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the ISN through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of ISN are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.

The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz.

### 5.2.6. Test Results

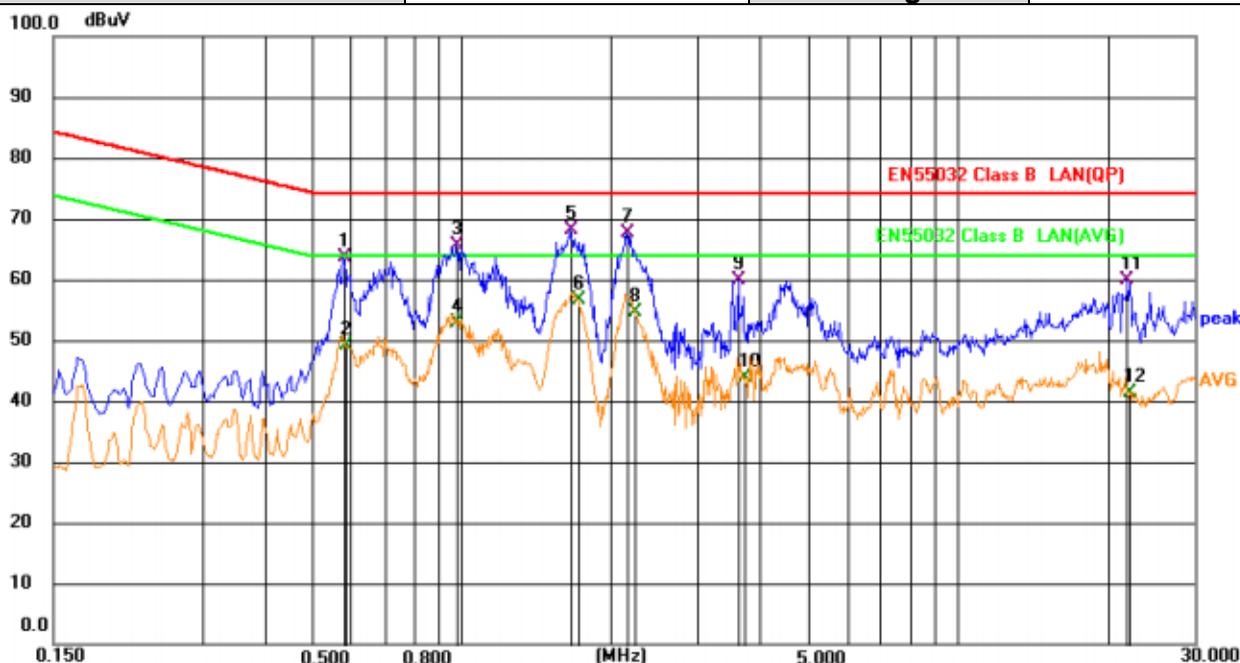
**PASS**

The frequency range from 150kHz to 30MHz is investigated.  
The test result please refer to the next page.

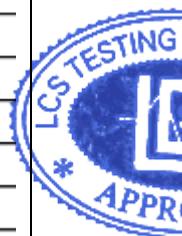




Test Model	SBC-BLADE3-16128	Test Mode	Mode 1
Environmental Conditions	23.5°C, 53.2% RH	Test Engineer	Paul Xie
Pol.	/	Test Voltage	AC 230V/50Hz



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.5776	43.56	20.12	63.68	74.00	-10.32	QP	
2		0.5821	29.05	20.12	49.17	64.00	-14.83	AVG	
3		0.9736	45.55	20.05	65.60	74.00	-8.40	QP	
4		0.9736	32.93	20.05	52.98	64.00	-11.02	AVG	
5	*	1.6621	48.05	20.04	68.09	74.00	-5.91	QP	
6		1.7116	36.64	20.04	56.68	64.00	-7.32	AVG	
7		2.1526	47.51	20.04	67.55	74.00	-6.45	QP	
8		2.2291	34.60	20.04	54.64	64.00	-9.36	AVG	
9		3.6061	39.81	20.04	59.85	74.00	-14.15	QP	
10		3.7276	23.77	20.04	43.81	64.00	-20.19	AVG	
11		21.9841	39.74	20.05	59.79	74.00	-14.21	QP	
12		22.2316	21.42	20.05	41.47	64.00	-22.53	AVG	



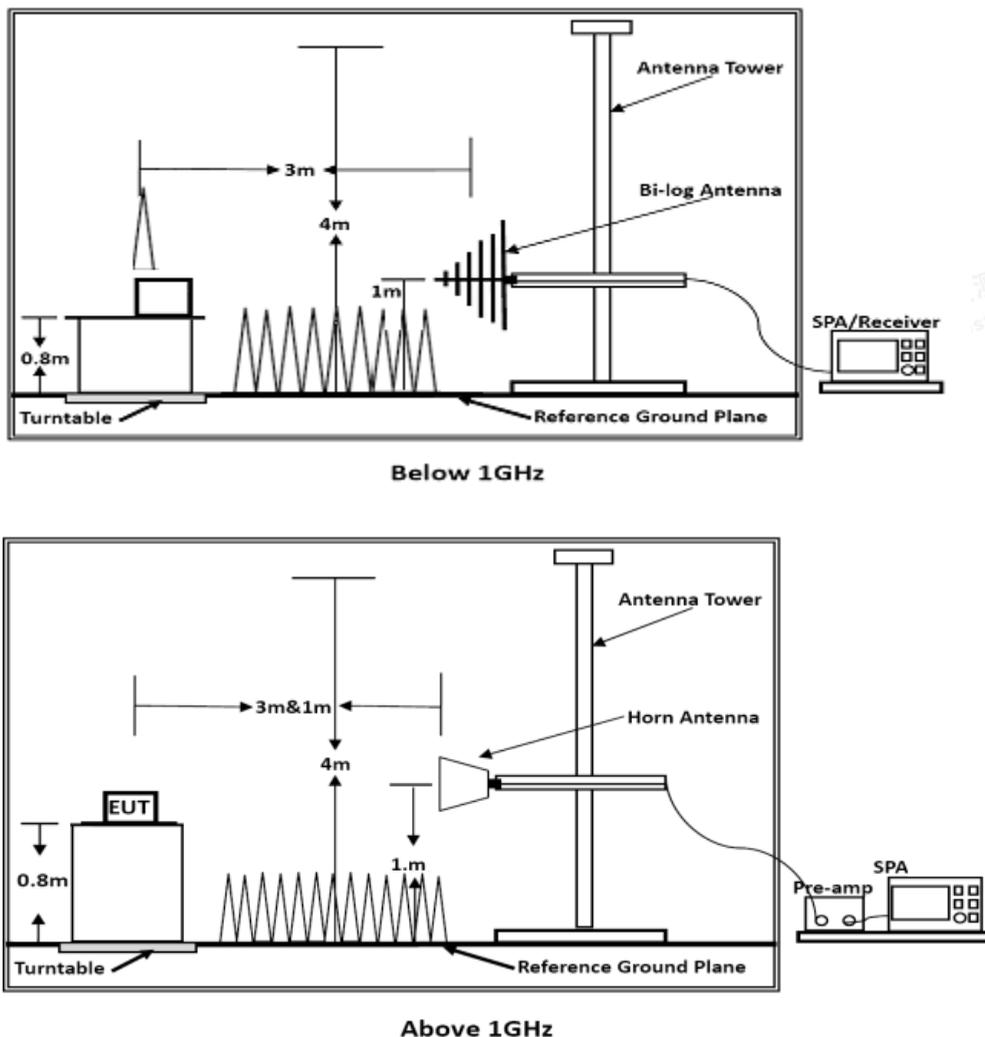
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### 5.3. RADIATED EMISSION MEASUREMENT

#### 5.3.1. Block Diagram of Test Setup



#### 5.3.2. Test Standard

BS EN 55032:2015+A11:2020 Class B

All emanations from a class B device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:





Limits for Radiated Emission Below 1GHz			
Frequency (MHz)	Distance (Meters)	Field Strengths Limit (dB $\mu$ V/m)	
30 ~ 230	3	42-35	
230 ~ 1000	3	42	
***Note: (1) The smaller limit shall apply at the combination point between two frequency bands. (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.			
Limits for Radiated Emission Above 1GHz			
Frequency (MHz)	Distance (Meters)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)
1000 ~ 3000	3	70	50
3000 ~ 6000	3	74	54
***Note: The lower limit applies at the transition frequency.			

### 5.3.3. EUT Configuration on Test

The EN 55032 regulations test method must be used to find the maximum emission during radiated emission measurement.

### 5.3.4. Operating Condition of EUT

5.2.4.1. Turn on the power.

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

### 5.3.5. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the EMI test receiver is set at RBW/VBW=120kHz/300kHz.

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

The bandwidth of the Spectrum analyzer is set at RBW/VBW=1MHz/3MHz.

The frequency range from 1GHz to the frequency which about 5th carrier harmonic or 6GHz is checked.

### 5.3.6. Test Results

**PASS.**

The test result please refer to the next page.



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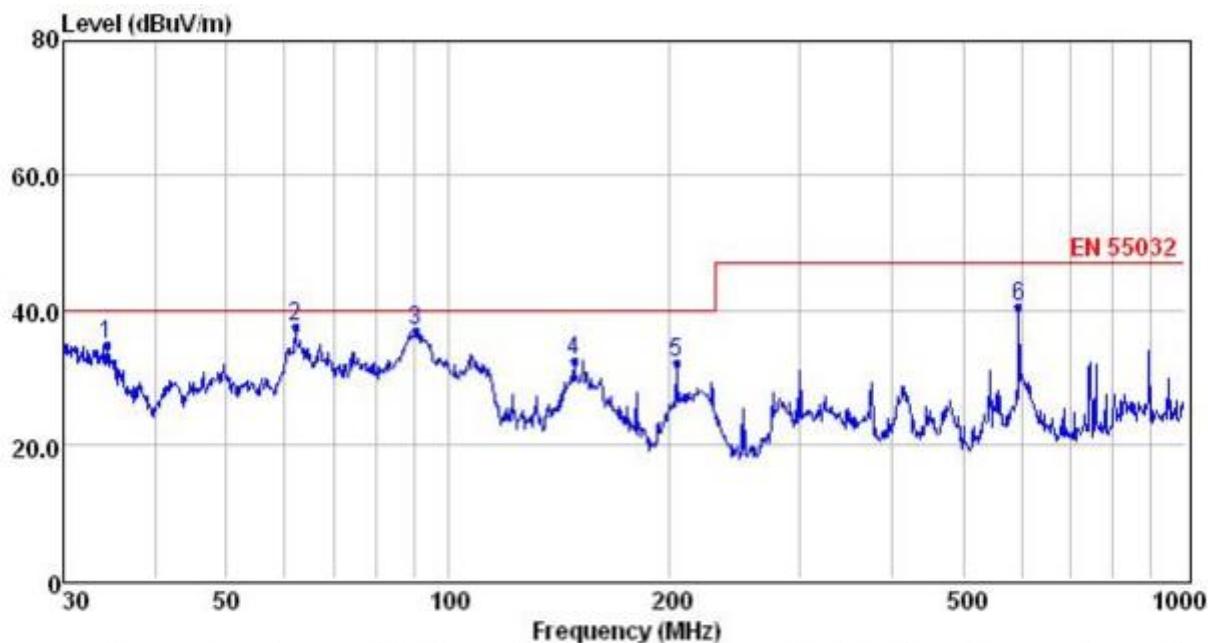
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Test Model	SBC-BLADE3-16128	Test Mode	Mode 1
Environmental Conditions	22.3°C, 53% RH	Detector Function	Quasi-peak
Pol.	Vertical	Distance	3m
Test Engineer	Paul Xie	Test Voltage	AC 230V/50Hz



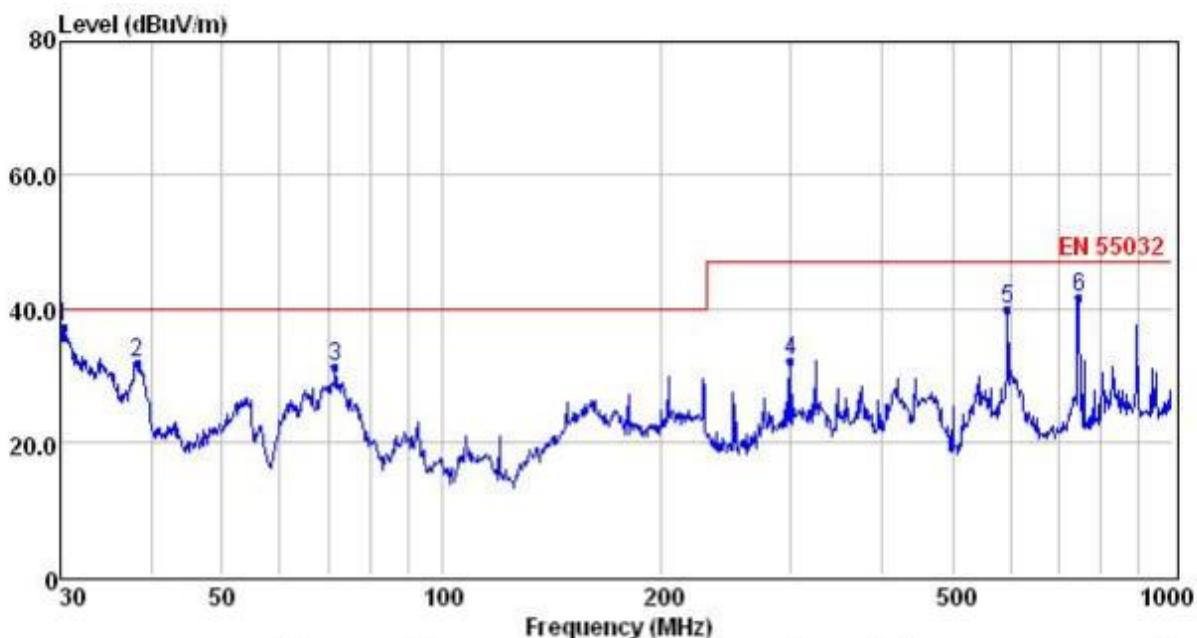
	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	34.40	23.47	0.45	10.87	34.79	40.00	-5.21	QP
2	62.00	24.95	0.66	12.01	37.62	40.00	-2.38	QP
3	90.22	26.69	0.77	9.53	36.99	40.00	-3.01	QP
4	148.44	22.84	1.03	8.67	32.54	40.00	-7.46	QP
5	204.24	19.90	1.21	11.00	32.11	40.00	-7.89	QP
6	595.13	19.93	1.50	19.15	40.58	47.00	-6.42	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-BLADE3-16128	Test Mode	Mode 1
Environmental Conditions	22.3°C, 53% RH	Detector Function	Quasi-peak
Pol.	Horizontal	Distance	3m
Test Engineer	Paul Xie	Test Voltage	AC 230V/50Hz



	Freq MHz	Reading dBuV	CabLos dB	Antfac dB/m	Measured dBuV/m	Limit dBuV/m	Over dB	Remark
1	30.32	26.05	0.40	10.62	37.07	40.00	-2.93	QP
2	38.21	19.94	0.49	11.29	31.72	40.00	-8.28	QP
3	71.33	20.34	0.70	10.14	31.18	40.00	-8.82	QP
4	300.37	17.08	1.32	13.70	32.10	47.00	-14.90	QP
5	595.13	19.21	1.50	19.15	39.86	47.00	-7.14	QP
6	744.87	20.15	1.89	19.60	41.64	47.00	-5.36	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.



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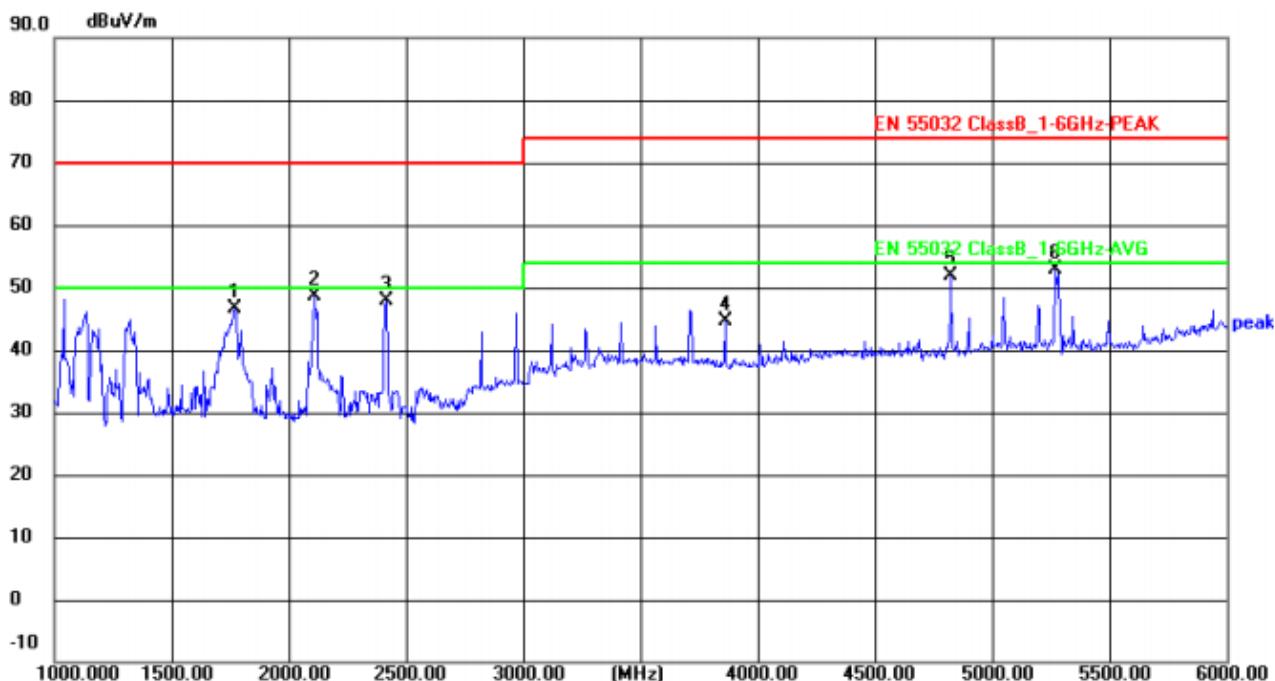
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Test Model	SBC-BLADE3-16128	Test Mode	Mode 1
Environmental Conditions	23.5°C, 52.1% RH	Detector Function	Peak+AV
Pol.	Vertical	Distance	3m
Test Engineer	Paul Xie	Test Voltage	AC 230V/50Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	1770.000	60.81	-14.22	46.59	70.00	-23.41	peak	P	
2	2110.000	61.44	-12.72	48.72	70.00	-21.28	peak	P	
3	2415.000	59.50	-11.64	47.86	70.00	-22.14	peak	P	
4	3860.000	53.30	-8.79	44.51	74.00	-29.49	peak	P	
5	4825.000	56.89	-4.98	51.91	74.00	-22.09	peak	P	
6	5270.000	56.40	-3.63	52.77	74.00	-21.23	peak	P	



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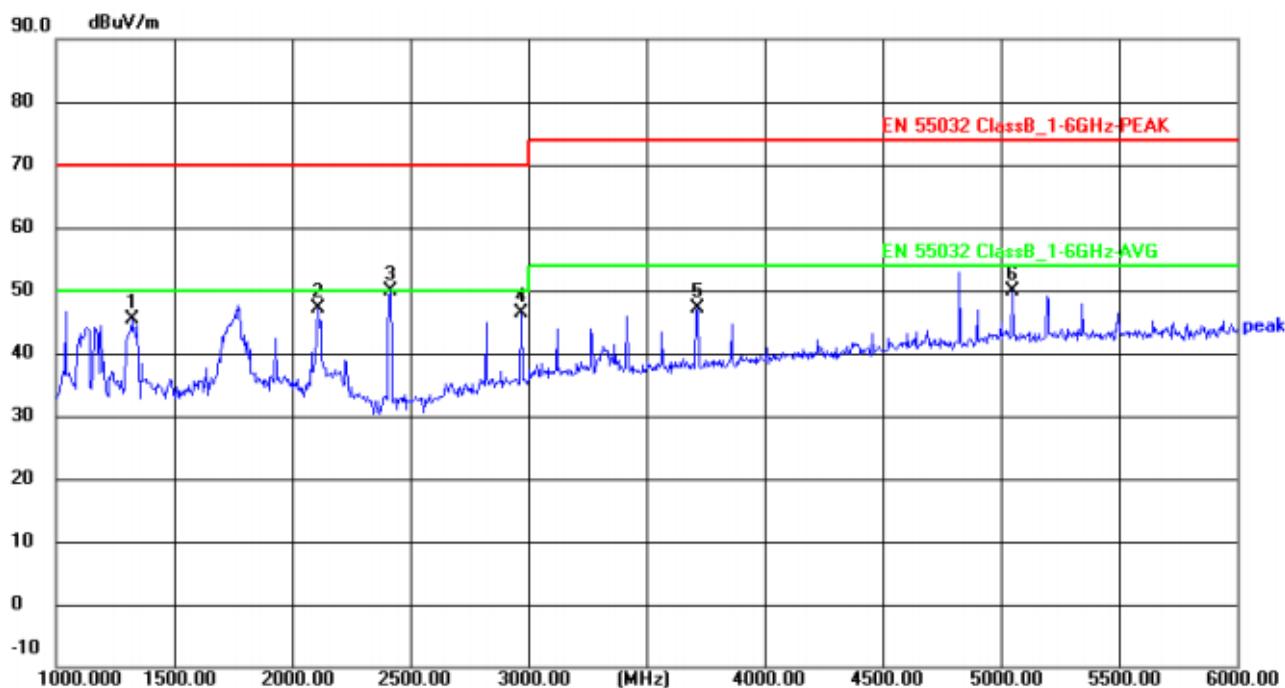
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<b>Test Model</b>	SBC-BLADE3-16128	<b>Test Mode</b>	Mode 1
<b>Environmental Conditions</b>	23.5°C, 52.1% RH	<b>Detector Function</b>	Peak+AV
<b>Pol.</b>	Horizontal	<b>Distance</b>	3m
<b>Test Engineer</b>	Paul Xie	<b>Test Voltage</b>	AC 230V/50Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	1320.000	60.59	-15.23	45.36	70.00	-24.64	peak	P	
2	2110.000	59.79	-12.72	47.07	70.00	-22.93	peak	P	
3	2415.000	61.58	-11.64	49.94	70.00	-20.06	peak	P	
4	2970.000	55.96	-9.70	46.26	70.00	-23.74	peak	P	
5	3715.000	56.18	-9.04	47.14	74.00	-26.86	peak	P	
6	5050.000	53.89	-4.03	49.86	74.00	-24.14	peak	P	

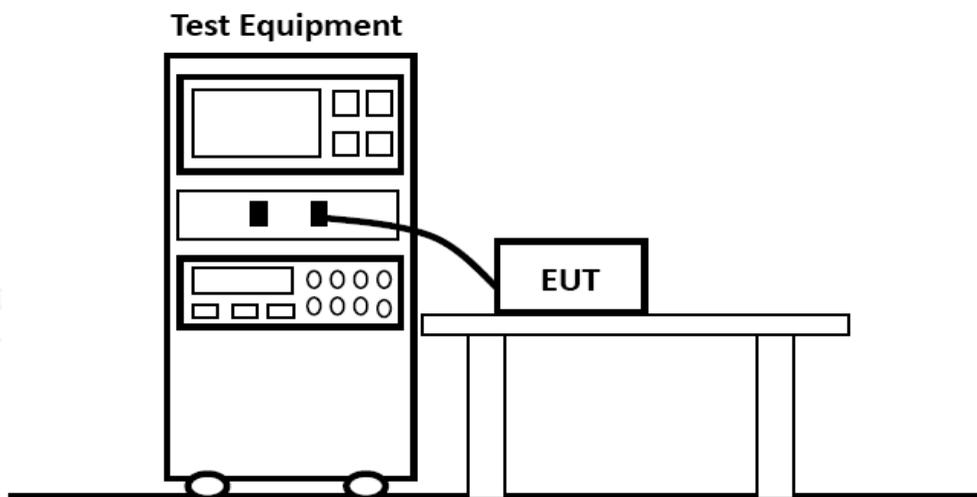
Note: Pre-Scan all mode, Thus record worse case mode result in this report.





## 5.4. HARMONIC CURRENT EMISSION MEASUREMENT

### 5.4.1. Block Diagram of Test Setup



### 5.4.2. Test Standard

BS EN IEC 61000-3-2:2019+A1:2021

### 5.4.3. Operating Condition of EUT

Same as Section 5.2.4, except the test setup replaced as Section 5.4.1.

### 5.4.4. Test Results

N/A

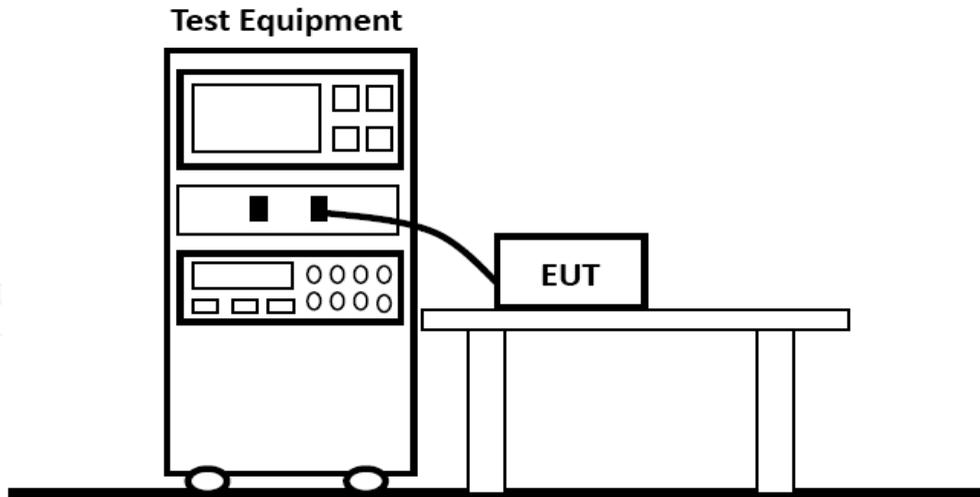
Because the power of EUT is less than 75W, according to standard EN 61000-3-2, harmonic current unnecessary to test.





## 5.5. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

### 5.5.1. Block Diagram of Test Setup



### 5.5.2. Test Standard

BS EN 61000-3-3:2013+A1:2019

### 5.5.3. Operating Condition of EUT

Same as Section 5.2.4, except the test setup replaced as Section 5.5.1.

### 5.5.4. Test Results

**PASS.**

The test result please refer to the next page.



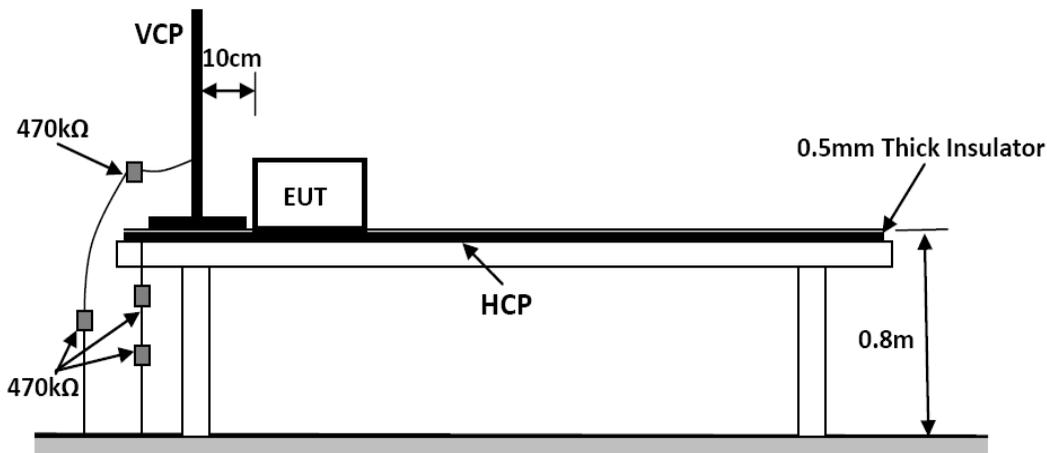


<b>Test Model</b>	SBC-BLADE3-16128	<b>Test Engineer</b>	Hy Luo																																			
<b>Test Voltage</b>	AC 230V/50Hz																																					
Customer : xxx		Result : PASS																																				
<p>Pst and Limit</p>																																						
<p>Plt and Limit</p>																																						
<p>Relevant Parameter and Judgement During Test Period</p> <table border="1"> <tr> <td>Vrms at the end of test (V)</td> <td>229.73</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Error Max(%)</td> <td></td> <td>Test Limit(%)</td> <td></td> <td></td> </tr> <tr> <td>T-max (ms)</td> <td>0.00</td> <td>Test Limit (ms)</td> <td>500</td> <td>Pass</td> </tr> <tr> <td>dc (%)</td> <td>0.00</td> <td>Test Limit (%)</td> <td>3.30</td> <td>Pass</td> </tr> <tr> <td>dmax (%)</td> <td>0.00</td> <td>Test Limit (%)</td> <td>4.00</td> <td>Pass</td> </tr> <tr> <td>Pst</td> <td>0.000</td> <td>Test Limit</td> <td>1.000</td> <td>Pass</td> </tr> <tr> <td>Plt</td> <td>0.000</td> <td>Test Limit</td> <td>0.650</td> <td>Pass</td> </tr> </table>				Vrms at the end of test (V)	229.73				Error Max(%)		Test Limit(%)			T-max (ms)	0.00	Test Limit (ms)	500	Pass	dc (%)	0.00	Test Limit (%)	3.30	Pass	dmax (%)	0.00	Test Limit (%)	4.00	Pass	Pst	0.000	Test Limit	1.000	Pass	Plt	0.000	Test Limit	0.650	Pass
Vrms at the end of test (V)	229.73																																					
Error Max(%)		Test Limit(%)																																				
T-max (ms)	0.00	Test Limit (ms)	500	Pass																																		
dc (%)	0.00	Test Limit (%)	3.30	Pass																																		
dmax (%)	0.00	Test Limit (%)	4.00	Pass																																		
Pst	0.000	Test Limit	1.000	Pass																																		
Plt	0.000	Test Limit	0.650	Pass																																		



## 5.6. ELECTROSTATIC DISCHARGE IMMUNITY TEST

### 5.6.1. Block Diagram of Test Setup



### 5.6.2. Test Standard

BS EN 55035:2017+A11:2020 (BS EN 61000-4-2: 2009, Severity Level: 3 / Air Discharge:  $\pm 8\text{KV}$ , Level: 2 / Contact Discharge:  $\pm 4\text{KV}$ )

### 5.6.3. Severity Levels and Performance Criterion

#### 5.6.3.1. Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1	$\pm 2$	$\pm 2$
2	$\pm 4$	$\pm 4$
3	$\pm 6$	$\pm 8$
4	$\pm 8$	$\pm 15$
X	Special	Special

#### 5.6.3.2. Performance Criterion

Performance Criterion: B

### 5.6.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4.

### 5.6.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 5.1.4. Except the test set up replaced by Section 5.6.1.





## 5.6.6. Test Procedure

### 5.6.6.1. Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

### 5.6.6.2. Contact Discharge

All the procedure shall be same as Section 5.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

### 5.6.6.3. Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

### 5.6.6.4. Indirect Discharge For Vertical Coupling Plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

## 5.6.7. Test Results

**PASS.**

The test result please refer to the next page.



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# Electrostatic Discharge Test Results

<b>Standard</b>	<input type="checkbox"/> IEC 61000-4-2 <input checked="" type="checkbox"/> BS EN 61000-4-2		
<b>Applicant</b>	Mixtile Limited		
<b>EUT</b>	Mixtile Blade 3	<b>Temperature</b>	23.5°C
<b>M/N</b>	SBC-BLADE3-16128	<b>Humidity</b>	52.8%
<b>Criterion</b>	B	<b>Pressure</b>	1021mbar
<b>Test Mode</b>	Working	<b>Test Engineer</b>	Hy Luo

## Air Discharge

Test Points	Test Levels			Results		
	± 2kV	± 4kV	± 8kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

## Contact Discharge

Test Points	Test Levels		Results		
	± 2 kV	±4 kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

## Discharge To Horizontal Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

## Discharge To Vertical Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B



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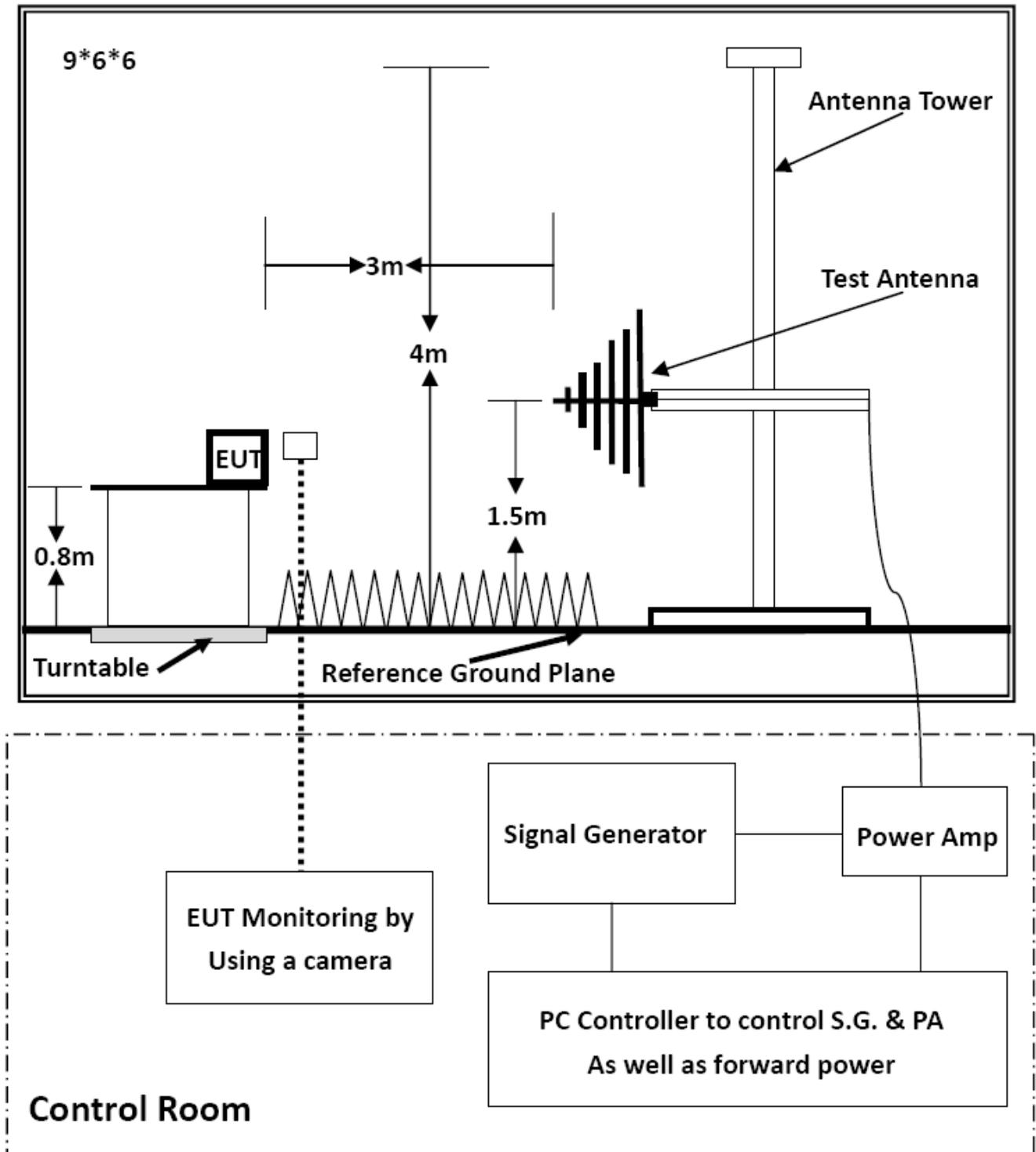
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### 5.7. RF FIELD STRENGTH SUSCEPTIBILITY TEST

#### 5.7.1. Block Diagram of Test Setup





### 5.7.2. Test Standard

BS EN 55035:2017+A11:2020 (BS EN IEC 61000-4-3:2020 Severity Level: 2, 3V/m)

### 5.7.3. Severity Levels and Performance Criterion

#### 5.7.3.1. Severity level

Level	Field Strength (V/m)
1	1
2	3
3	10
X	Special

#### 5.7.3.2. Performance Criterion

Performance Criterion: A

### 5.7.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4

### 5.7.5. Operating Condition of EUT

Same as radiated emission measurement, which is listed in Section 5.3.4, except the test setup replaced as Section 5.7.1.

### 5.7.6. Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD Recording is used to monitor its screen. All the scanning conditions are as following:

Condition of Test	Remark
Fielded Strength	3 V/m (Severity Level 2)
Radiated Signal	Unmodulated
Test Frequency Range (swept test)	80-1000MHz
Test Frequency (spot test)	1800MHz, 2600MHz, 3500MHz, 5000MHz
Dwell time of radiated	0.0015 decade/s
Waiting Time	3 Sec.

### 5.7.7. Test Results

**PASS.**

The test result please refer to the next page.



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# RF Field Strength Susceptibility Test Results

<b>Standard</b>	<input type="checkbox"/> IEC 61000-4-3 <input checked="" type="checkbox"/> BS EN 61000-4-3		
<b>Applicant</b>	Mixtile Limited		
<b>EUT</b>	Mixtile Blade 3	<b>Temperature</b>	23.6°C
<b>M/N</b>	SBC-BLADE3-16128	<b>Humidity</b>	53.4%
<b>Field Strength</b>	3 V/m	<b>Criterion</b>	A
<b>Test Mode</b>	Working	<b>Test Engineer</b>	Hy Luo
<b>Test Frequency</b>	80MHz to 1000MHz (swept test) 1800MHz, 2600MHz, 3500MHz, 5000MHz (spot test)		
<b>Modulation</b>	<input type="checkbox"/> None <input type="checkbox"/> Pulse <input checked="" type="checkbox"/> AM 1KHz 80%		
<b>Steps</b>	1%		

	Horizontal	Vertical
<b>Front</b>	PASS	PASS
<b>Right</b>	PASS	PASS
<b>Rear</b>	PASS	PASS
<b>Left</b>	PASS	PASS

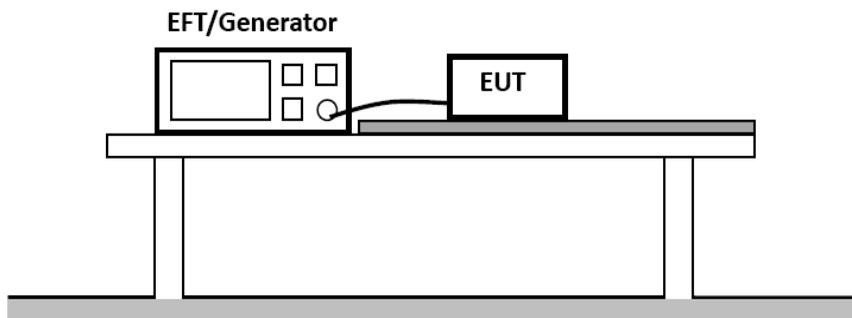
Note:





### 5.8. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

#### 5.8.1. Block Diagram of Test Setup



#### 5.8.2. Test Standard

BS EN 55035:2017+A11:2020 (BS EN 61000-4-4: 2012, Severity Level, Level 2: 1KV)

#### 5.8.3. Severity Levels and Performance Criterion

##### 5.8.3.1. Severity level

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1	0.5 KV	0.25 KV
2	1 KV	0.5 KV
3	2 KV	1 KV
4	4 KV	2 KV
X	Special	Special

##### 5.8.3.2. Performance Criterion

Performance Criterion: B

#### 5.8.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4

#### 5.8.5. Operating Condition of EUT

5.8.5.1. Setup the EUT as shown in Section 5.8.1.

5.8.5.2. Turn on the power of all equipments.

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





### 5.8.6. Test Procedure

The EUT is put on the table, which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

#### 5.8.6.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device, which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 1 mins.

#### 4.6.6.2. For signal lines and control lines ports:

The EUT is connected to the power mains by using a coupling device, which Couples the EFT interference signal to Signal lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 1 mins.

#### 5.8.6.3. For DC output line ports:

It's unnecessary to test.

### 5.8.7. Test Results

**PASS.**

The test result please refer to the next page.





# Electrical Fast Transient/Burst Test Results

<b>Standard</b>	<input type="checkbox"/> IEC 61000-4-4 <input checked="" type="checkbox"/> BS EN 61000-4-4		
<b>Applicant</b>	Mixtile Limited		
<b>EUT</b>	Mixtile Blade 3	<b>Temperature</b>	22.7°C
<b>M/N</b>	SBC-BLADE3-16128	<b>Humidity</b>	52.2%
<b>Test Mode</b>	Working	<b>Criterion</b>	B
<b>Test Engineer</b>	Hy Luo		

Line	Test Voltage	Result (+)	Result (-)
L	1KV	PASS	PASS
N	1KV	PASS	PASS
PE			
L-N	1KV	PASS	PASS
L-PE	1KV	PASS	PASS
N-PE			
L-N-PE			
Signal Line	0.5KV	PASS	PASS
I/O Cable			

Note:

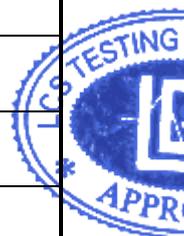


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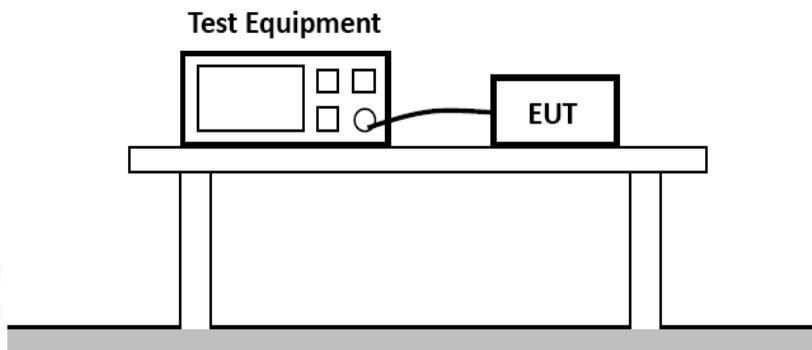
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## 5.9. SURGE IMMUNITY TEST

### 5.9.1. Block Diagram of Test Setup



### 5.9.2. Test Standard

BS EN 55035:2017+A11:2020 (BS EN 61000-4-5:2014+A1:2017, Severity Level: Line to Line: Level 2, 1.0KV, Line to Earth: Level 3, 2.0KV)

### 5.9.3. Severity Levels and Performance Criterion

#### 5.9.3.1. Severity level

Severity Level	Open-Circuit Test Voltage (KV)
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

#### 5.9.3.2. Performance Criterion

Performance Criterion: B

### 5.9.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4

### 5.9.5. Operating Condition of EUT

5.9.5.1. Setup the EUT as shown in Section 5.9.1.

5.9.5.1. Turn on the power of all equipments.

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





### 5.9.6. Test Procedure

5.9.6.1. Set up the EUT and test generator as shown on Section 5.9.1.

5.9.6.2. For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.

4.7.6.3. For Signal ports coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.

5.8.6.4. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.

5.8.6.5. Different phase angles are done individually.

5.8.6.6. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

### 5.9.7. Test Results

**PASS.**

The test result please refer to the next page.





# Surge Immunity Test Result

<b>Standard</b>	<input type="checkbox"/> IEC 61000-4-5 <input checked="" type="checkbox"/> BS EN 61000-4-5		
<b>Applicant</b>	Mixtile Limited		
<b>EUT</b>	Mixtile Blade 3	<b>Temperature</b>	23.7°C
<b>M/N</b>	SBC-BLADE3-16128	<b>Humidity</b>	54.1%
<b>Test Mode</b>	Working	<b>Criterion</b>	B
<b>Test Engineer</b>	Hy Luo		

Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L-N	+	90°	5	1.0	PASS
	-	270°	5	1.0	PASS
L-PE					
N-PE					
Signal Line	+	/	5	0.5	PASS
	-	/	5	0.5	PASS
Note					



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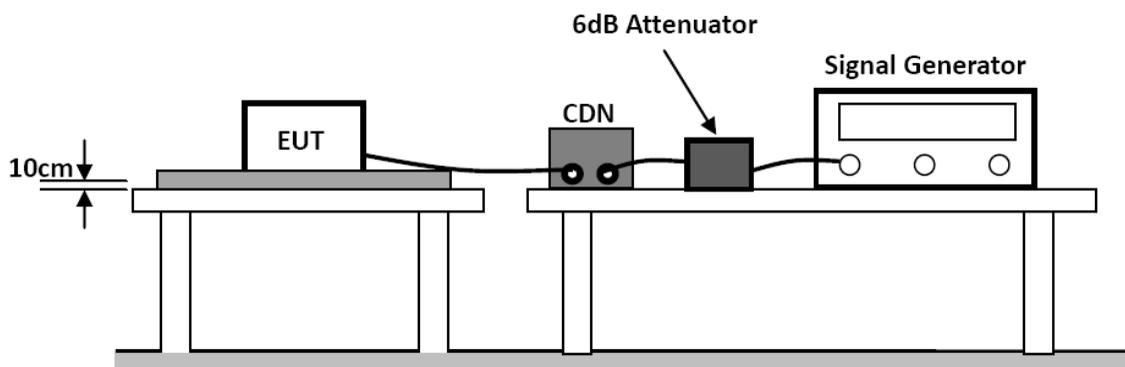
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## 5.10. INJECTED CURRENTS SUSCEPTIBILITY TEST

### 5.10.1. Block Diagram of Test Setup



### 5.10.2. Test Standard

BS EN 55035:2017+A11:2020(BS EN 61000-4-6: 2014, Severity Level: Level 2, (0.15MHz ~ 80MHz))

### 5.10.3. Severity Levels and Performance Criterion

#### 5.10.3.1. Severity level

Level	Field Strength (V)
1	1
2	3
3	10
X	Special

#### 5.10.3.2. Performance Criterion

Performance Criterion: A

### 5.10.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4

### 5.10.5. Operating Condition of EUT

5.10.5.1. Setup the EUT as shown in Section 5.10.1.

5.10.5.2. Turn on the power of all equipments.

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





### 5.10.6. Test Procedure

- 5.10.6.1. Set up the EUT, CDN and test generators as shown on Section 5.10.1.
- 5.10.6.2. Let the EUT work in test mode and measure it.
- 5.10.6.3. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 5.10.6.4. The disturbance signal described below is injected to EUT through CDN.
- 5.10.6.5. The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 5.10.6.6. The frequency range is swept from 150kHz to 10MHz using 3V signal level, 10MHz to 30MHz using 3V to 1V signal level, 30MHz to 80MHz using 1V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
- 5.10.6.7. The rate of sweep shall not exceed  $1.5 \times 10^{-3}$  decades/s. where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 5.10.6.8. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

### 5.10.7. Test Results

**PASS.**

The test result please refer to the next page.





# Injected Currents Susceptibility Test Results

<b>Standard</b>	<input type="checkbox"/> IEC 61000-4-6 <input checked="" type="checkbox"/> BS EN 61000-4-6		
<b>Applicant</b>	Mixtile Limited		
<b>EUT</b>	Mixtile Blade 3	<b>Temperature</b>	24.2°C
<b>M/N</b>	SBC-BLADE3-16128	<b>Humidity</b>	53.8%
<b>Test Mode</b>	Working	<b>Criterion</b>	A
<b>Test Engineer</b>	Hy Luo		

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 10	AC Mains	3V	A	PASS
10 ~ 30		3V ~ 1V		
30 ~ 80		1V		
0.15 ~ 10	Signal Line	3V	A	PASS
10 ~ 30		3V ~ 1V		
30 ~ 80		1V		

Note:



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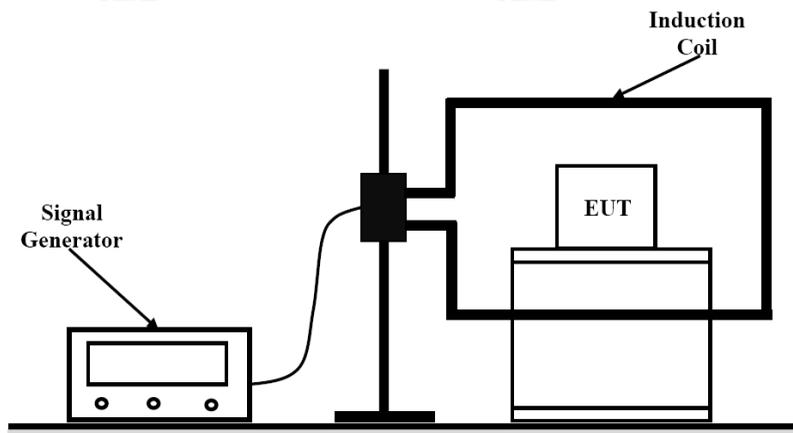
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## 5.11. MAGNETIC FIELD SUSCEPTIBILITY TEST

### 5.11.1. Block Diagram of Test Setup



### 5.11.2. Test Standard

BS EN 55035:2017+A11:2020 (BS EN 61000-4-8: 2010, Severity Level: Level 1, 1A/m)

### 5.11.3. Severity Levels and Performance Criterion

#### 5.11.3.1. Severity level

Level	Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X	Special

#### 5.11.3.2. Performance Criterion

Performance Criterion: A

### 5.11.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4

### 5.11.5. Test Procedure

The EUT is placed in the middle of a induction coil (1\*1m), under which is a 1\*1\*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

### 5.11.6. Test Results

**PASS.**

The test result please refer to the next page.





# Magnetic Field Immunity Test Result

<b>Standard</b>	<input type="checkbox"/> IEC 61000-4-8 <input checked="" type="checkbox"/> BS EN 61000-4-8		
<b>Applicant</b>	Mixtile Limited		
<b>EUT</b>	Mixtile Blade 3	<b>Temperature</b>	23.7°C
<b>M/N</b>	SBC-BLADE3-16128	<b>Humidity</b>	54.6%
<b>Test Mode</b>	Working	<b>Criterion</b>	A
<b>Test Engineer</b>	Hy Luo		

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
1	5 mins	X	A	PASS
1	5 mins	Y	A	PASS
1	5 mins	Z	A	PASS

Note:



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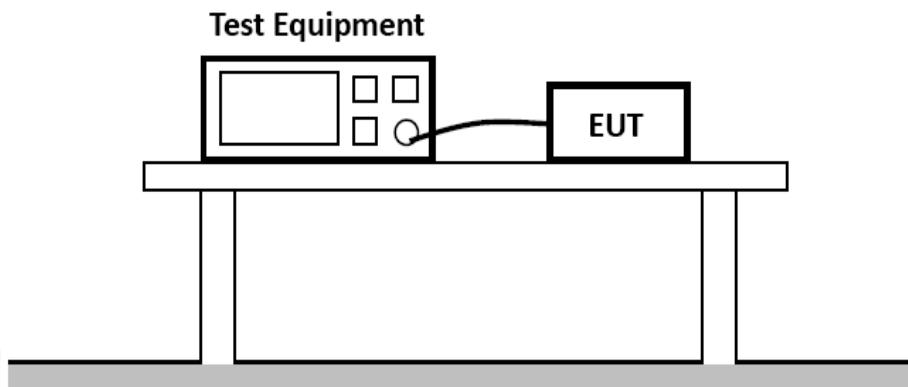
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## 5.12. VOLTAGE DIPS AND INTERRUPTIONS TEST

### 5.12.1. Block Diagram of Test Setup



### 5.12.2. Test Standard

BS EN 55035:2017+A11:2020 (BS EN IEC 61000-4-11:2020)

### 5.12.3. Severity Levels and Performance Criterion

#### 5.12.3.1. Severity level

Test Level		
Voltage Reduction %U <sub>T</sub>	Voltage Dips %U <sub>T</sub>	Duration (in Period)
100	0	0.5
30	70	25
Voltage Reduction %U <sub>T</sub>	Voltage Dips %U <sub>T</sub>	Duration (in Period)
100	0	250

#### 5.12.3.2. Performance Criterion

Performance Criterion: B&C

### 5.12.4. EUT Configuration on Test

The configuration of EUT is listed in Section 4

### 5.12.5. Operating Condition of EUT

5.12.5.1. Setup the EUT as shown in Section 5.12.1.

5.12.5.2. Turn on the power of all equipments.

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

### 5.12.6. Test Procedure

5.12.6.1. Set up the EUT and test generator as shown on Section 5.12.1.

5.12.6.2. The interruptions are introduced at selected phase angles with specified duration.

5.12.6.3. Record any degradation of performance.





### 5.12.7. Test Results

**PASS.**

The test result please refer to the next page.





## Voltage Dips And Interruptions Test Results

<b>Standard</b>	<input type="checkbox"/> IEC 61000-4-11 <input checked="" type="checkbox"/> BS EN 61000-4-11		
<b>Applicant</b>	Mixtile Limited		
<b>EUT</b>	Mixtile Blade 3	<b>Temperature</b>	23.3°C
<b>M/N</b>	SBC-BLADE3-16128	<b>Humidity</b>	52.8%
<b>Test Mode</b>	Working	<b>Criterion</b>	B&C
<b>Test Engineer</b>	Hy Luo		

Test Level % U <sub>T</sub>	Voltage Dips & Short Interruptions % U <sub>T</sub>	Duration (in periods)	Criterion	Result
0	100	0.5P	B	PASS
70	30	25P	C	PASS
0	100	250P	C	PASS

Note:



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## 6. PHOTOGRAPHS OF TEST SETUP

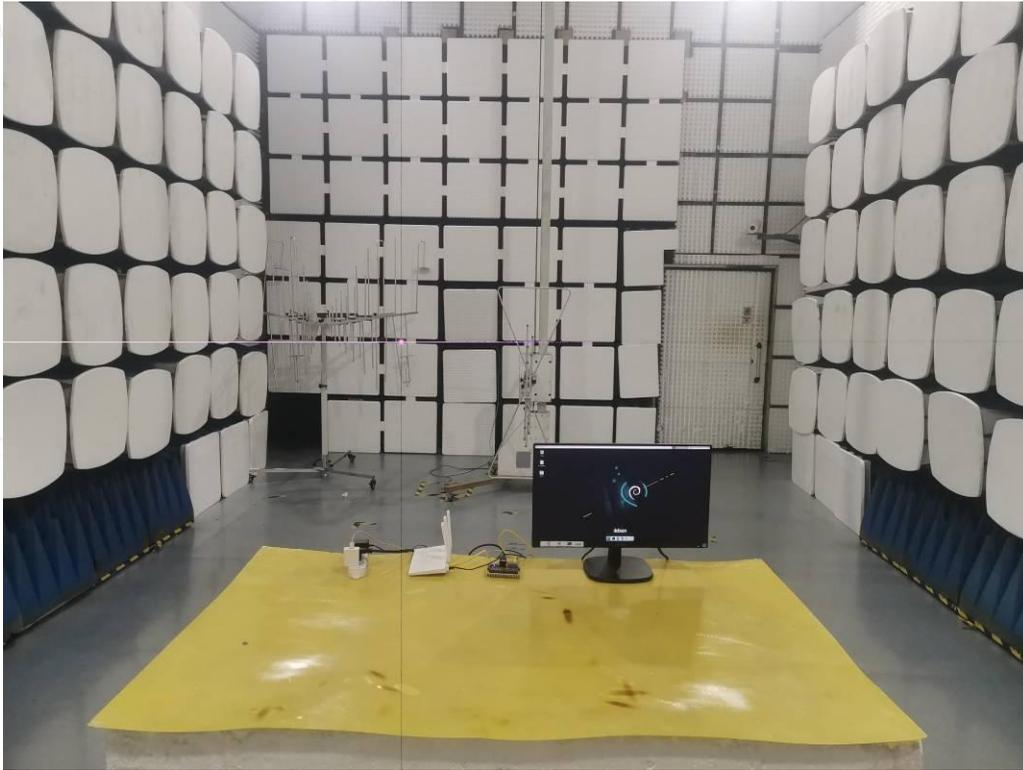


Test Setup Photo of Power Line Conducted Measurement



Test Setup Photo of Conducted disturbance at telecommunication port





Test Setup Photo of Radiated Measurement (30MHz~1GHz)



Test Setup Photo of Harmonic & Flicker Measurement





Test Setup Photo of Electrostatic Discharge Test



Photo of Electrical Fast Transient/Burst Test & Surge Immunity Test





Photo of Signal port Electrical Fast Transient Test Immunity Test

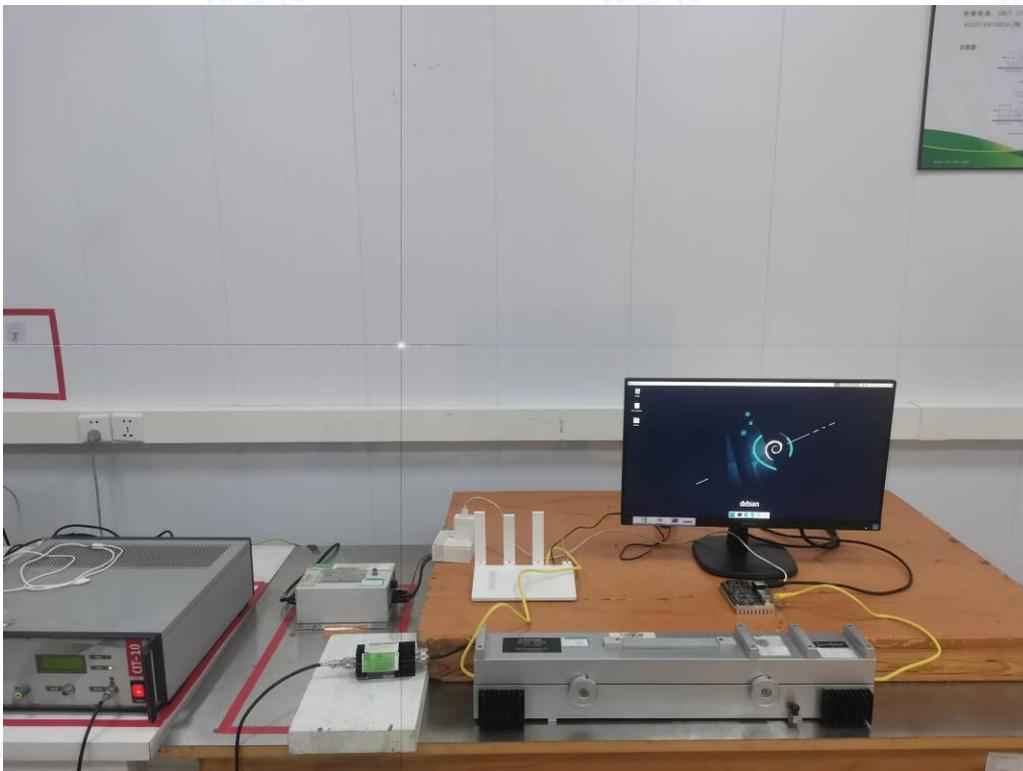


Photo of Signal port Burst Surge Test Immunity Test





Test Setup Photo of Injected Currents Susceptibility Test

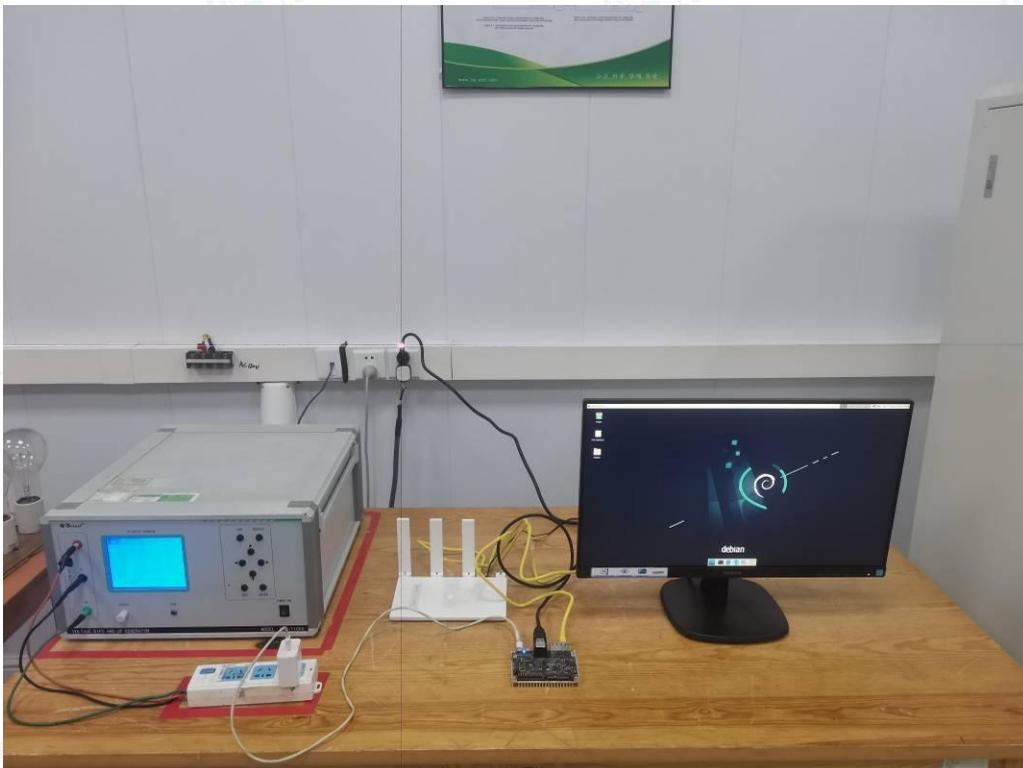


Signal port Photo of Injected Currents Susceptibility Test





Test Setup Photo of Magnetic Field Immunity Test



Test Setup Photo of Voltage Dips and Interruptions Test





### 7. PHOTOGRAPHS OF THE EUT

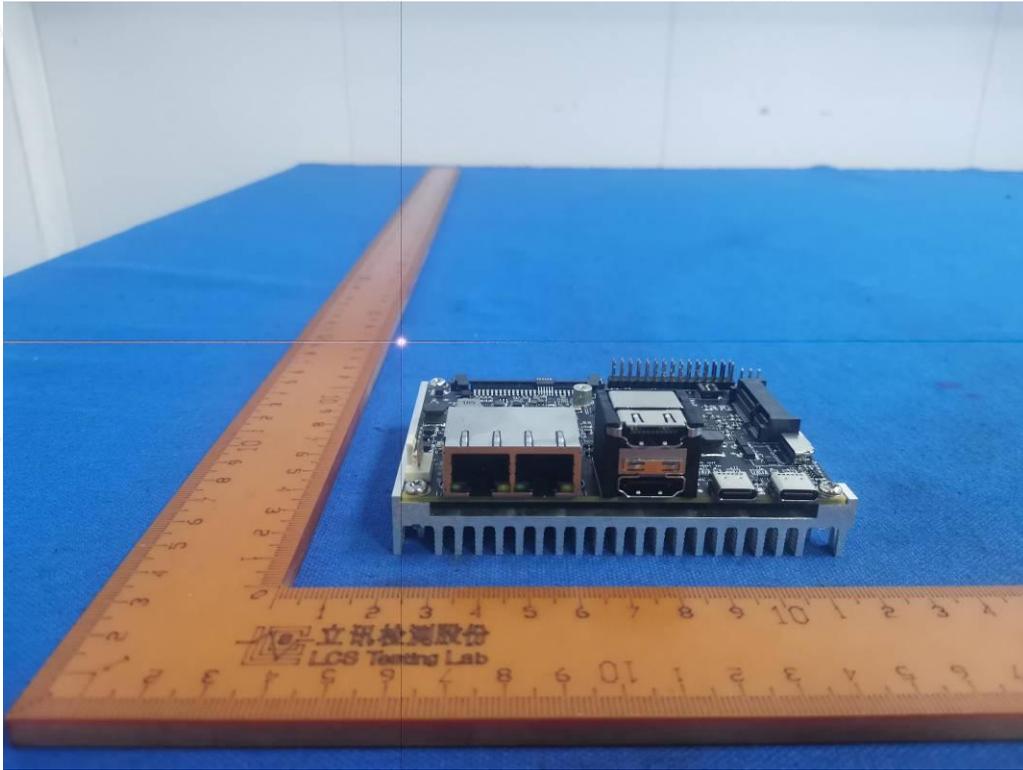


Fig. 1

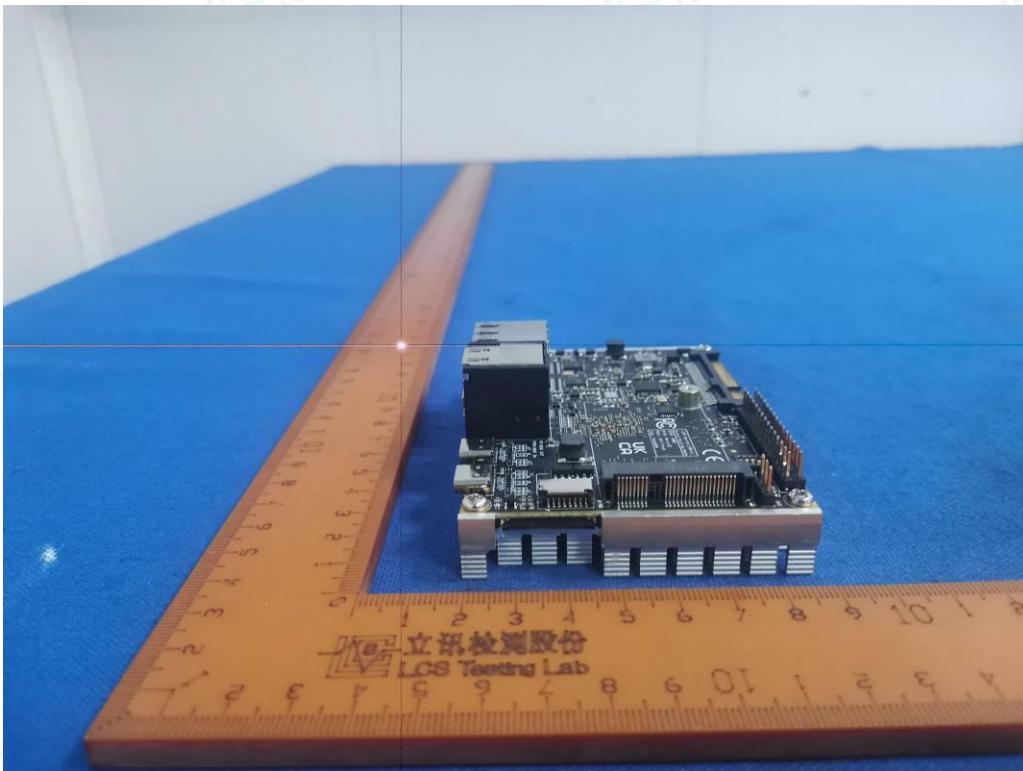


Fig. 2



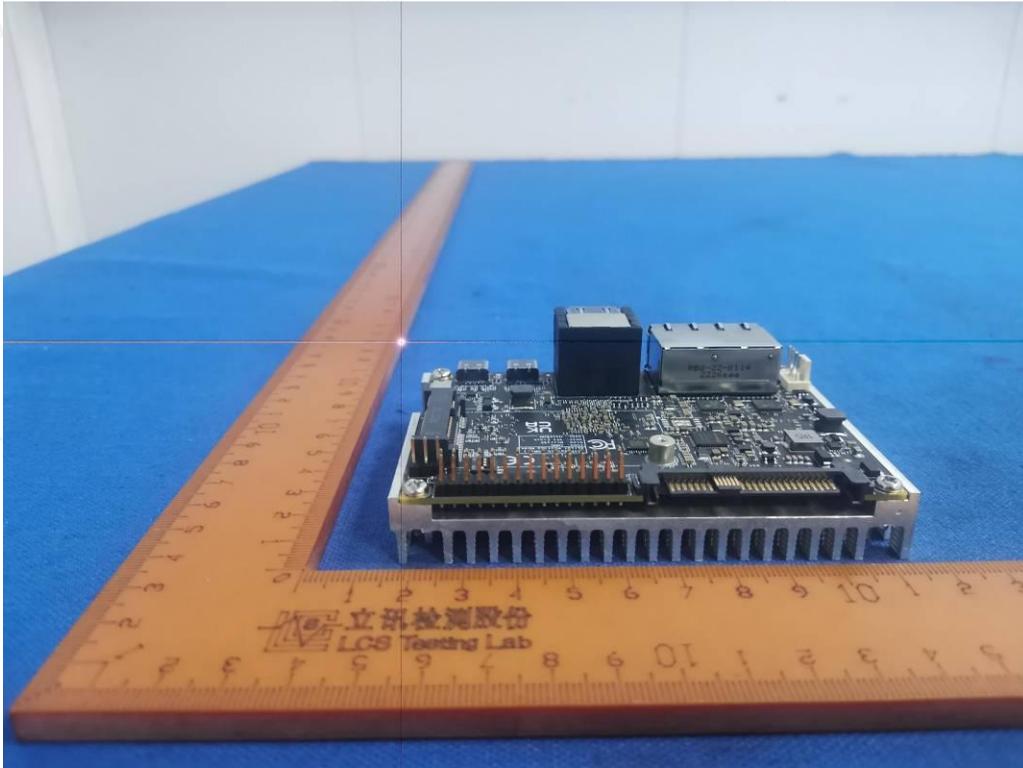


Fig. 3

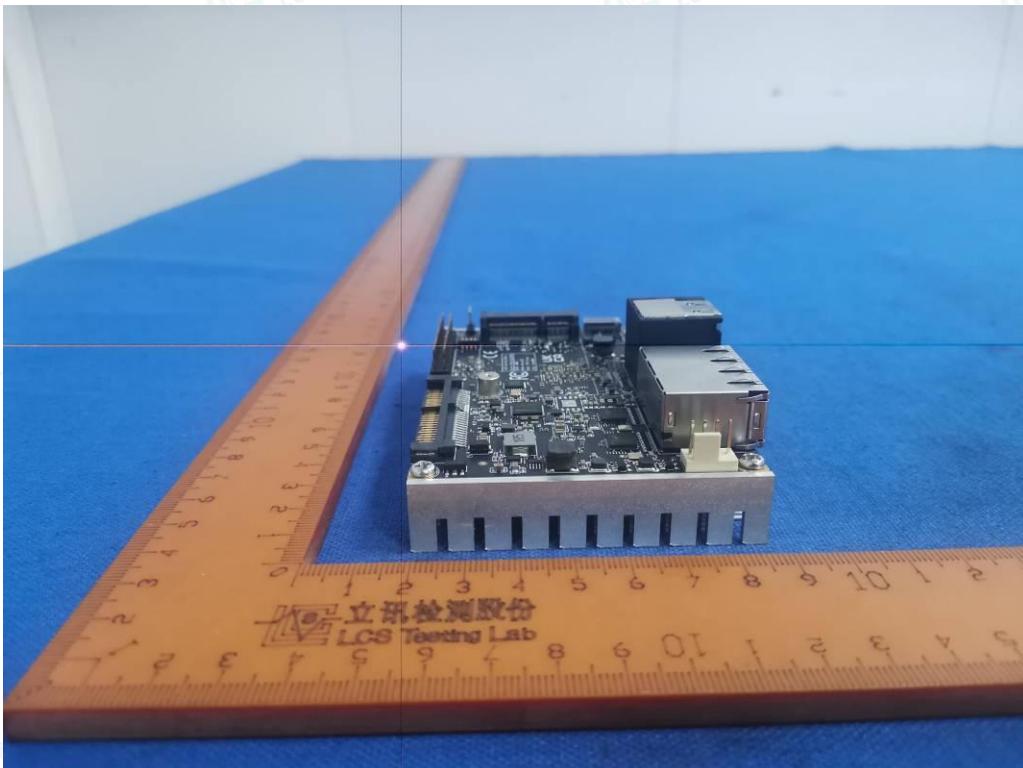


Fig. 4



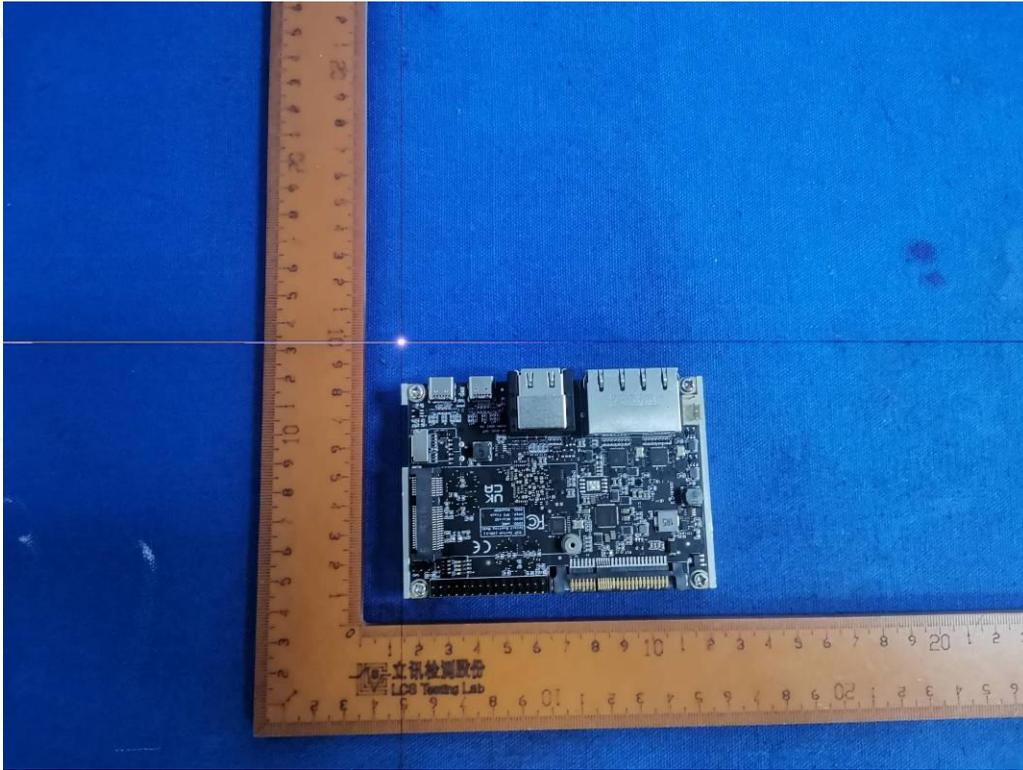


Fig. 5

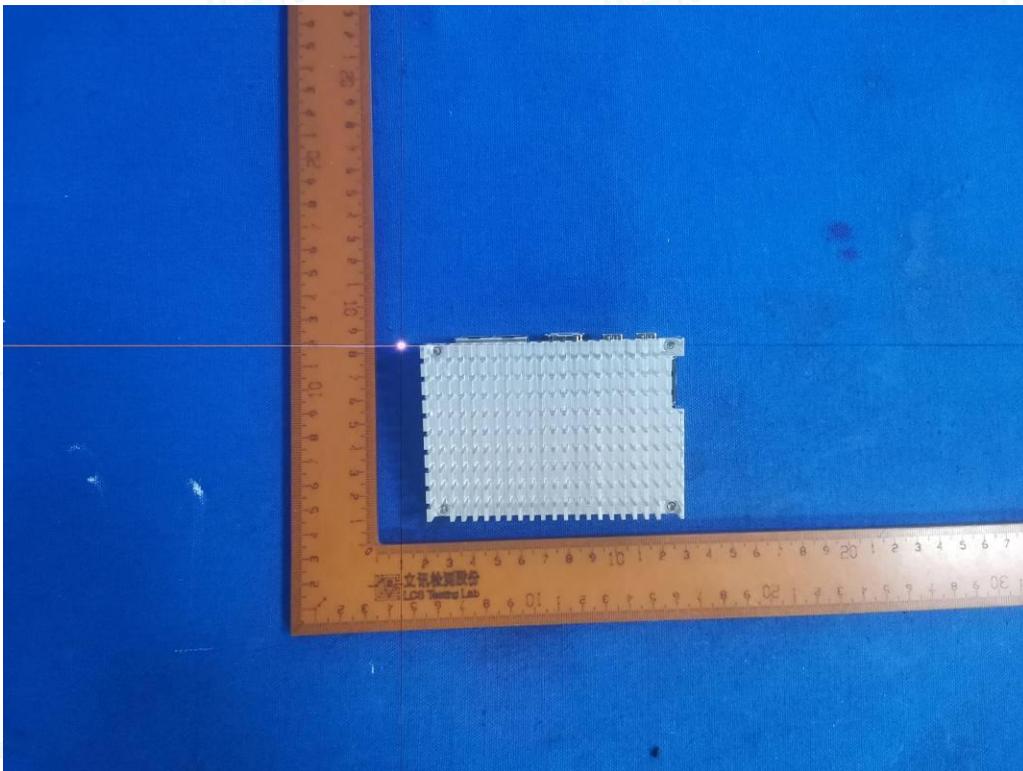


Fig. 6

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

