



FCC TEST REPORT

For

NAMTSO TECHNOLOGY CO., LTD.

Industrial Single Board Computer

Test Model: A10-3588

Additional Model No.: Please Refer to Page 8

Prepared for : NAMTSO TECHNOLOGY CO., LTD.
Address : 2702 QIANCHENG CENTER, HAICHENG ROAD,
XIXIANG STREET, BAO'AN DISTRICT, SHENZHEN

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
Address : Room 101, 201, Building A and Room 301, Building C,
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Date of receipt of test sample : March 21, 2024
Number of tested samples : 1
Serial number : Prototype
Date of Test : March 21, 2024 to April 3, 2024
Date of Report : April 10, 2024



**TEST REPORT****Report No.** : **LCSA03214041E****Date of Issue** : April 10, 2024**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** : **NAMTSO TECHNOLOGY CO., LTD.****Address** : 2702 QIANCHENG CENTER, HAICHENG ROAD, XIXIANG STREET, BAO'AN DISTRICT, SHENZHEN**Test Specification****Standard** : FCC 47 CFR Part 15, Subpart B
ANSI C63.4-2014**Test Report Form No.** : LCSEMC-1.0**TRF Originator** : Shenzhen LCS Compliance Testing Laboratory Ltd.**Master TRF** : Dated 2011-03**Shenzhen LCS Compliance Testing Laboratory Ltd. All rights reserved.**

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Test Item Description : **Industrial Single Board Computer****Trade Mark** : NAMTSO**Test Model** : A10-3588**Result** : **Positive****Compiled by:**

Brody Xiong / File Administrator

Supervised by:

Baron Wen / Technique principal

Approved by:

Gavin Liang / Manager



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TEST REPORT

Test Report No.:	LCSA03214041E	April 10, 2024 Date of issue
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Test Model.....	: A10-3588
EUT.....	: Industrial Single Board Computer
Applicant.....	: NAMTSO TECHNOLOGY CO., LTD.
Address.....	: 2702 QIANCHENG CENTER, HAICHENG ROAD, XIXIANG STREET, BAO'AN DISTRICT, SHENZHEN
Telephone.....	: /
Fax.....	: /
Manufacturer.....	: SHENZHEN WESION TECHNOLOGY CO., LTD.
Address.....	: 2701 QIANCHENG CENTER, HAICHENG ROAD,XIXIANG STREET,BAO'AN DISTRICT,SHENZHEN
Telephone.....	: /
Fax.....	: /
Factory.....	: SHENZHEN WESION TECHNOLOGY CO., LTD.
Address.....	: 2701 QIANCHENG CENTER, HAICHENG ROAD,XIXIANG STREET,BAO'AN DISTRICT,SHENZHEN
Telephone.....	: /
Fax.....	: /

Test Result	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.



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Revision History

Report Version	Issue Date	Revision Content	Revised By
000	April 10, 2024	Initial Issue	/





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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.

Description of Test Item	Standard	Limits	Result
Conducted emissions on AC mains	FCC 47 CFR Part 15, Subpart B ANSI C63.4-2014	15.107, Class B	Pass
Radiated emissions (Below 1GHz)	FCC 47 CFR Part 15, Subpart B ANSI C63.4-2014	15.109, Class B	Pass
Radiated emissions (Above 1GHz)	FCC 47 CFR Part 15, Subpart B ANSI C63.4-2014	15.109, Class B	Pass





1.2 Description of Test Modes

No	Title	Description
TM1	Working	Record





2. GENERAL INFORMATION

2.1 Description of Device (EUT)

EUT	: Industrial Single Board Computer
Test Model	: A10-3588
Additional Model No.	: A10-3588 Active Cooling Kit
Power Supply	: Input: 12V 3A or 20V 3A Output: 5V 1A
Highest Internal Frequency	: Above 1GHz
Classification of Equipment	: Class B

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

2.2 Support equipment List

Manufacturer	Description	Model	Serial Number	Certificate
Xiaomi Communication Technology Co., LTD	Power adapter	MDY-13-EF	VA62309A903141J	/

2.3 Description of Test Facility

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.

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

2.4 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emission (150kHz to 30MHz)	$\pm 2.35\text{ dB}$
Radiated Emission (30MHz to 1000MHz)	$\pm 3.48\text{ dB}$
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	





3. MEASURING DEVICES AND TEST EQUIPMENT

Conducted emissions on AC mains

Equipment	Manufacturer	Model No	Serial No.	Cal Date	Due Date
EMI Test Software	Farad	EZ	/	/	/
Artificial Mains	R&S	ENV216	101288	2023-06-09	2024-06-08
Pulse Limiter	R&S	ESH3-Z2	102750-NB	2023-08-15	2024-08-14
EMI Test Receiver	R&S	ESR3	102312	2024-03-02	2025-03-01

Radiated emissions (Below 1GHz)

Equipment	Manufacturer	Model No	Serial No.	Cal Date	Due Date
EMI Test Software	Farad	EZ	/	/	/
EMI Test Software	AUDIX	E3	/	/	/
By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-09-12	2024-09-11
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-09-05	2024-09-04
EMI Test Receiver	R&S	ESR3	102311	2023-08-15	2024-08-14
Broadband Preamplifier	/	BP-01M18G	P190501	2023-06-09	2024-06-08
EMI Test Receiver	R&S	ESCI7	101173	2023-10-25	2024-10-24
By-log Antenna	SchwarzZBECK	VULB9163	01428	2023-09-05	2024-09-04

Radiated emissions (Above 1GHz)

Equipment	Manufacturer	Model No	Serial No.	Cal Date	Due Date
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4. EMISSION TEST RESULTS (EMI)

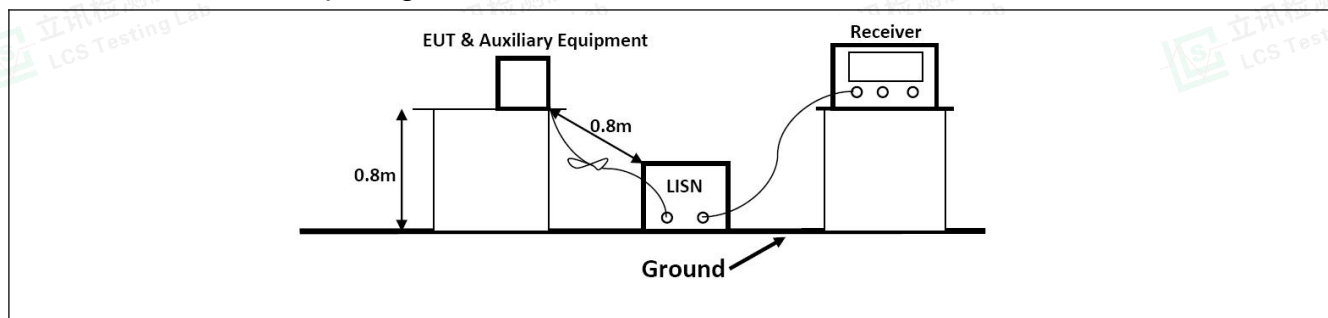
4.1 Conducted emissions on AC mains

Test Requirement:	15.107, Class B		
Test Limit:	Frequency of emission (MHz)	Conducted limit (dBμV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
	*Decreases with the logarithm of the frequency.		
Test Method:	ANSI C63.4-2014		
Procedure:	An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected. Remark: Level= Read Level+ Cable Loss+ LISN Factor		

4.1.1 E.U.T. Operation:

Operating Environment:			
Temperature:	24.4 °C	Humidity:	53 %
Pre test mode:	TM1		
Final test mode:	TM1		

4.1.2 Test Setup Diagram:





4.1.3 Test Data:

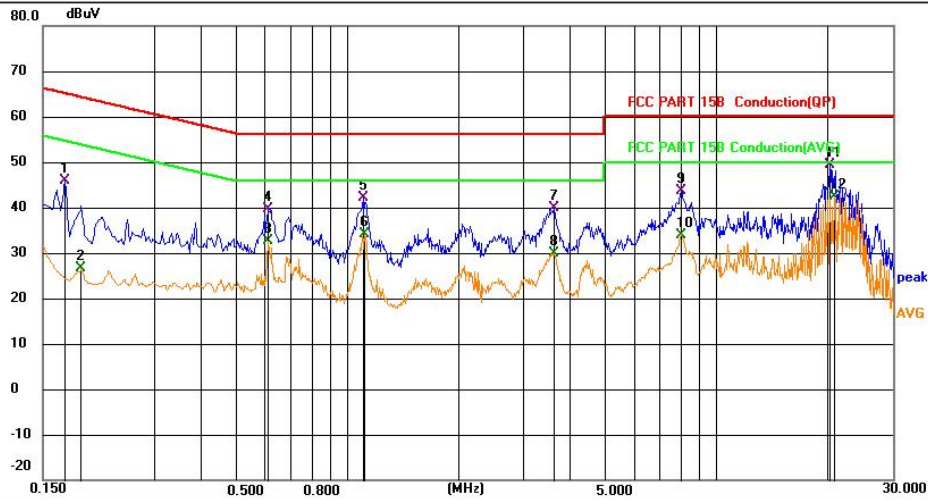
TM1 / Line: Line



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Conducted Emission Measurement

File :主机 Data :#12 Date: 2024/3/29 Time: 18:20:21
Site LAB Phase: **L1** Temperature: 24.4(C)
Limit: FCC PART 15B Conduction(QP) Power: AC 120V/60Hz Humidity: 53.0 %RH
EUT: Industrial PC
M/N: A10-3588
Mode: Working
Note:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1726	26.36	19.63	45.99	64.83	-18.84	QP	
2		0.1905	6.99	19.63	26.62	54.01	-27.39	AVG	
3		0.6088	13.00	19.66	32.66	46.00	-13.34	AVG	
4		0.6134	20.00	19.66	39.66	56.00	-16.34	QP	
5		1.1040	22.38	19.65	42.03	56.00	-13.97	QP	
6		1.1129	14.36	19.65	34.01	46.00	-11.99	AVG	
7		3.6465	20.22	19.70	39.92	56.00	-16.08	QP	
8		3.6465	10.09	19.70	29.79	46.00	-16.21	AVG	
9		8.0386	23.92	19.77	43.69	60.00	-16.31	QP	
10		8.0386	14.23	19.77	34.00	50.00	-16.00	AVG	
11		20.3048	29.08	20.19	49.27	60.00	-10.73	QP	
12	*	20.8546	22.21	20.16	42.37	50.00	-7.63	AVG	

*:Maximum data x:Over limit !:over margin

〈Reference Only

File :主机\Data :#12

Page: 1

Engineer Signature:



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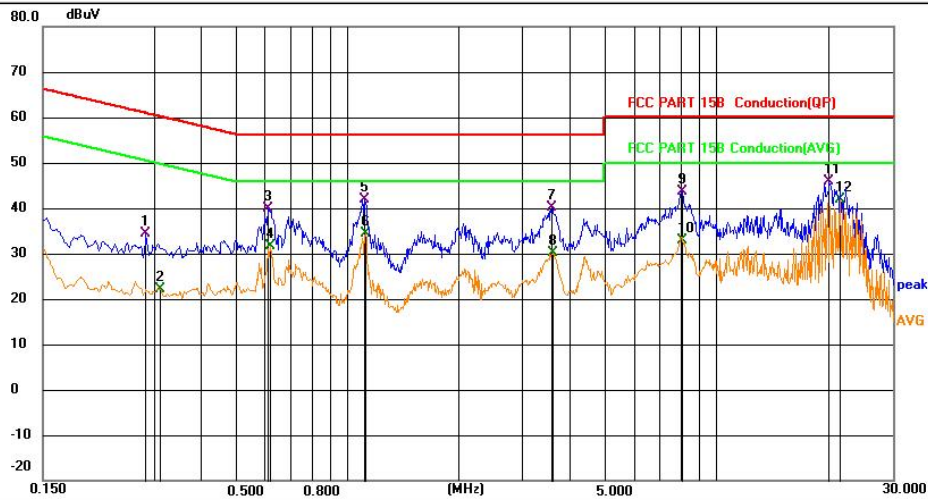
TM1 / Line: Neutral



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Conducted Emission Measurement

File :主机 Data :#13 Date: 2024/3/29 Time: 18:22:37
Site LAB Phase: N Temperature: 24.4(C)
Limit: FCC PART 15B Conduction(QP) Power: AC 120V/60Hz Humidity: 53.0 %RH
EUT: Industrial PC
M/N: A10-3588
Mode: Working
Note:



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.2850	14.80	19.63	34.43	60.67	-26.24	QP	
2		0.3119	2.62	19.63	22.25	49.92	-27.67	AVG	
3		0.6088	20.21	19.66	39.87	56.00	-16.13	QP	
4		0.6179	11.85	19.66	31.51	46.00	-14.49	AVG	
5		1.1129	22.25	19.65	41.90	56.00	-14.10	QP	
6		1.1169	14.75	19.65	34.40	46.00	-11.60	AVG	
7		3.5926	20.23	19.78	40.01	56.00	-15.99	QP	
8		3.6240	10.31	19.78	30.09	46.00	-15.91	AVG	
9		8.1241	23.69	19.84	43.53	60.00	-16.47	QP	
10		8.1241	13.07	19.84	32.91	50.00	-17.09	AVG	
11		20.2560	25.71	20.19	45.90	60.00	-14.10	QP	
12	*	21.6509	21.75	20.12	41.87	50.00	-8.13	AVG	

*:Maximum data x:Over limit !:over margin

〈Reference Only

File :主机\Data :#13

Page: 1

Engineer Signature:



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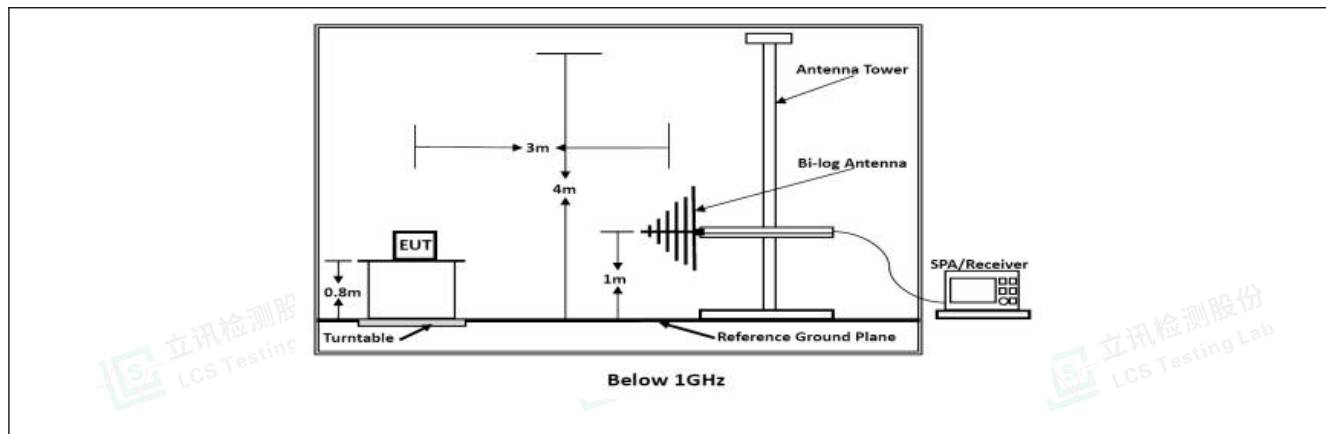
4.2 Radiated emissions (Below 1GHz)

Test Requirement:	15.109, Class B				
Test Limit:	Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:				
	Frequency of emission (MHz)	Field strength @3m		Field strength @10m	
		(uV/m)	(dBuV/m)	(uV/m)	(dBuV/m)
	30 – 88	100	40	30	29.5
	88 – 216	150	43.5	45	33.1
	216 – 960	200	46	60	35.6
	Above 960	500	54	150	43.5
Test Method:	ANSI C63.4-2014				
Procedure:	An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities. Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor				

4.2.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.3 °C	Humidity:	53 %
Pre test mode:	TM1		
Final test mode:	TM1		

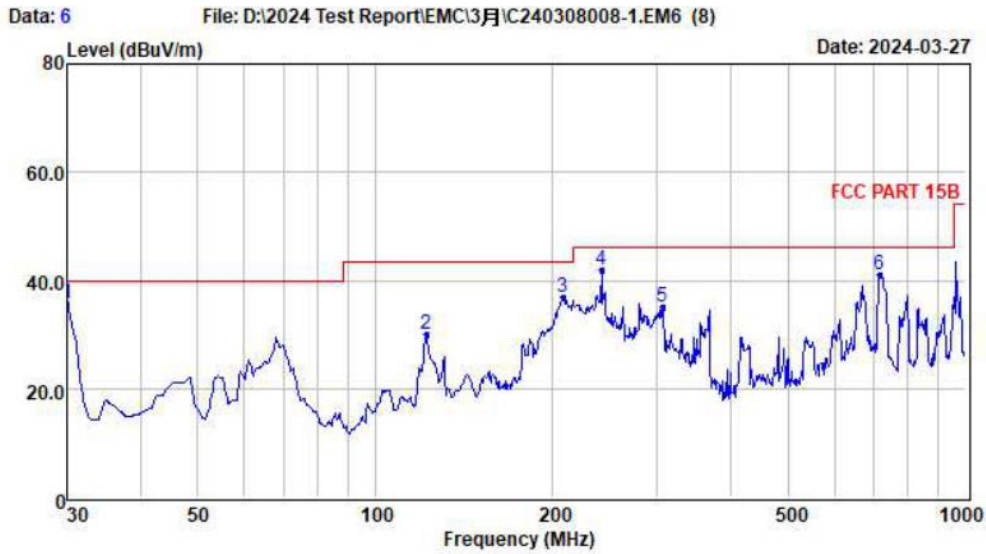
4.2.2 Test Setup Diagram:





4.2.3 Test Data:

TM1 / Polarization: Horizontal



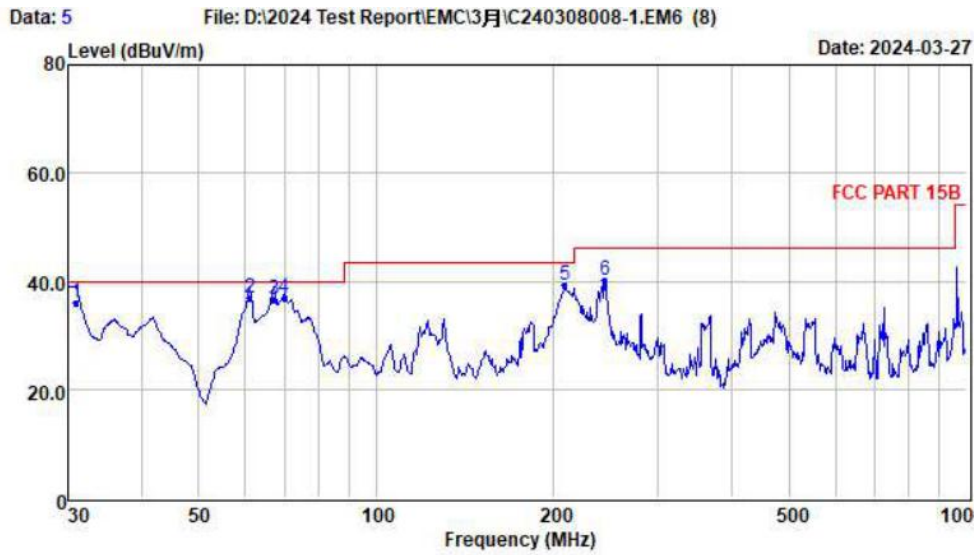
	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	30.00	24.73	0.40	10.60	35.73	40.00	-4.27	QP
2	121.98	18.78	0.91	10.36	30.05	43.50	-13.45	QP
3	207.85	24.50	1.21	11.16	36.87	43.50	-6.63	QP
4	241.68	28.35	1.25	12.24	41.84	46.00	-4.16	QP
5	306.75	20.13	1.32	13.64	35.09	46.00	-10.91	QP
6	716.68	20.26	1.84	19.04	41.14	46.00	-4.86	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





TM1 / Polarization: Vertical



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	30.96	25.03	0.41	10.66	36.10	40.00	-3.90	QP
2	61.13	23.94	0.66	12.22	36.82	40.00	-3.18	QP
3	66.97	25.18	0.68	10.86	36.72	40.00	-3.28	QP
4	69.84	25.98	0.70	10.23	36.91	40.00	-3.09	QP
5	208.58	26.91	1.21	11.19	39.31	43.50	-4.19	QP
6	244.23	26.71	1.26	12.29	40.26	46.00	-5.74	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





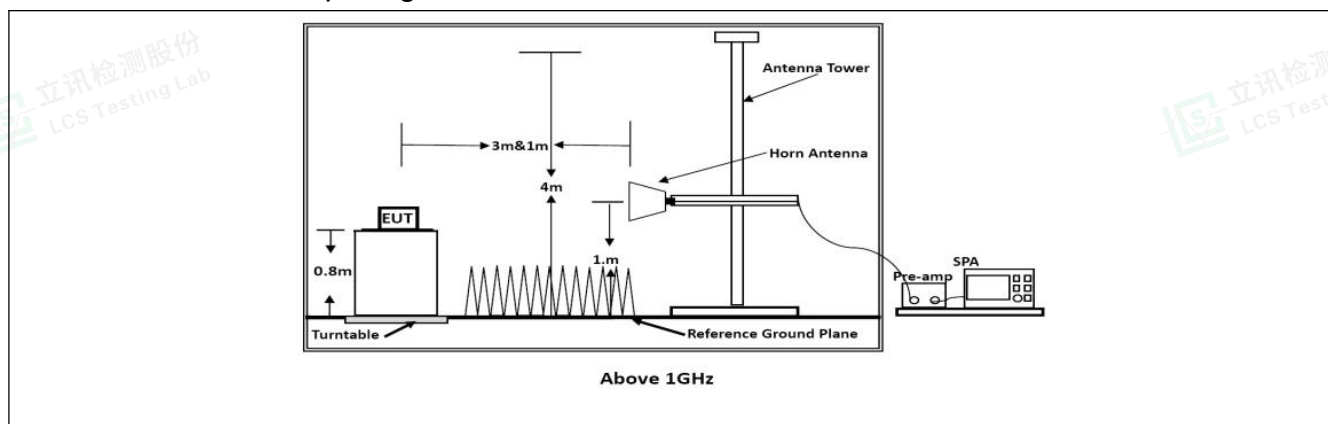
4.3 Radiated emissions (Above 1GHz)

Test Requirement:	15.109, Class B			
Test Limit:	Frequency of emission (MHz)	Field strength @3m		
		Average (uV/m)	Average(d BuV/m)	Peak (dBuV/m)
	Above 1GHz	500	54	74
Test Method:	ANSI C63.4-2014			
Procedure:	<p>An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. For below 1GHz test, Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities. For above 1GHz test, Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.</p> <p>Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor</p>			

4.3.1 E.U.T. Operation:

Operating Environment:			
Temperature:	23.8 °C	Humidity:	52.1 %
Pre test mode:	TM1		
Final test mode:	TM1		

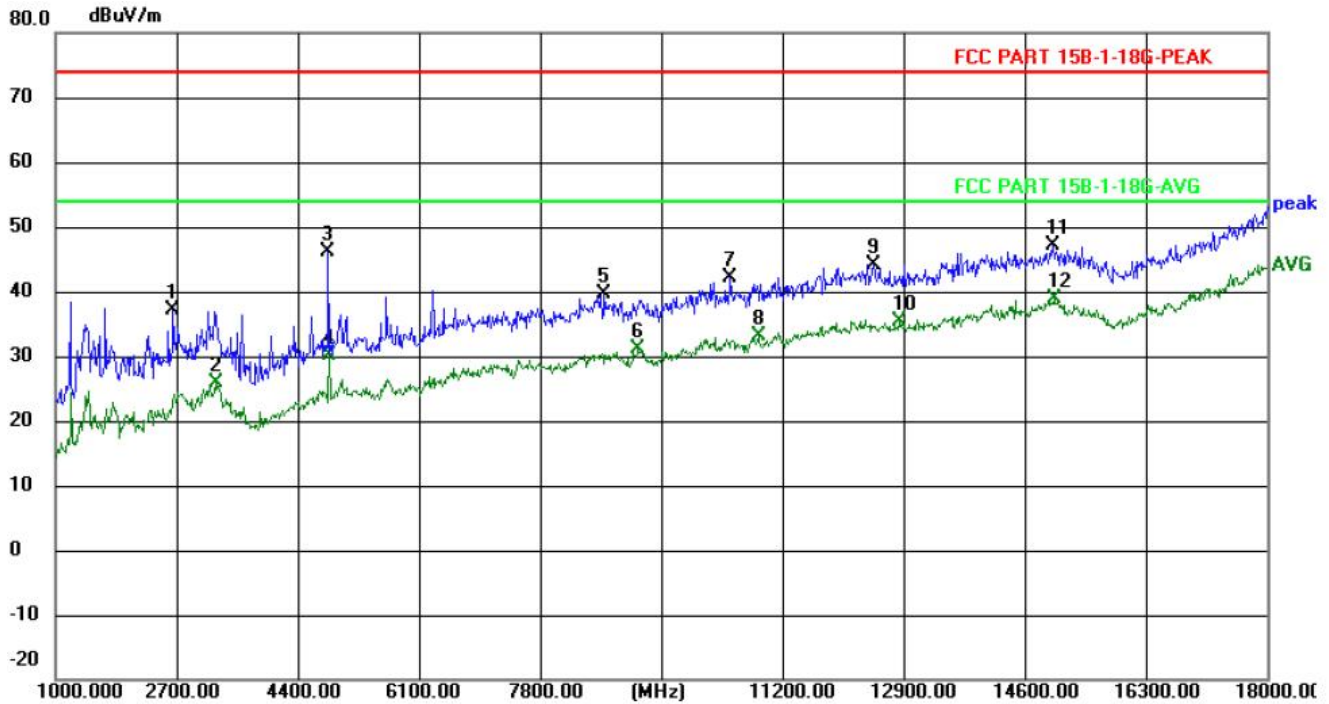
4.3.2 Test Setup Diagram:





4.3.3 Test Data:

TM1 / Polarization: Horizontal



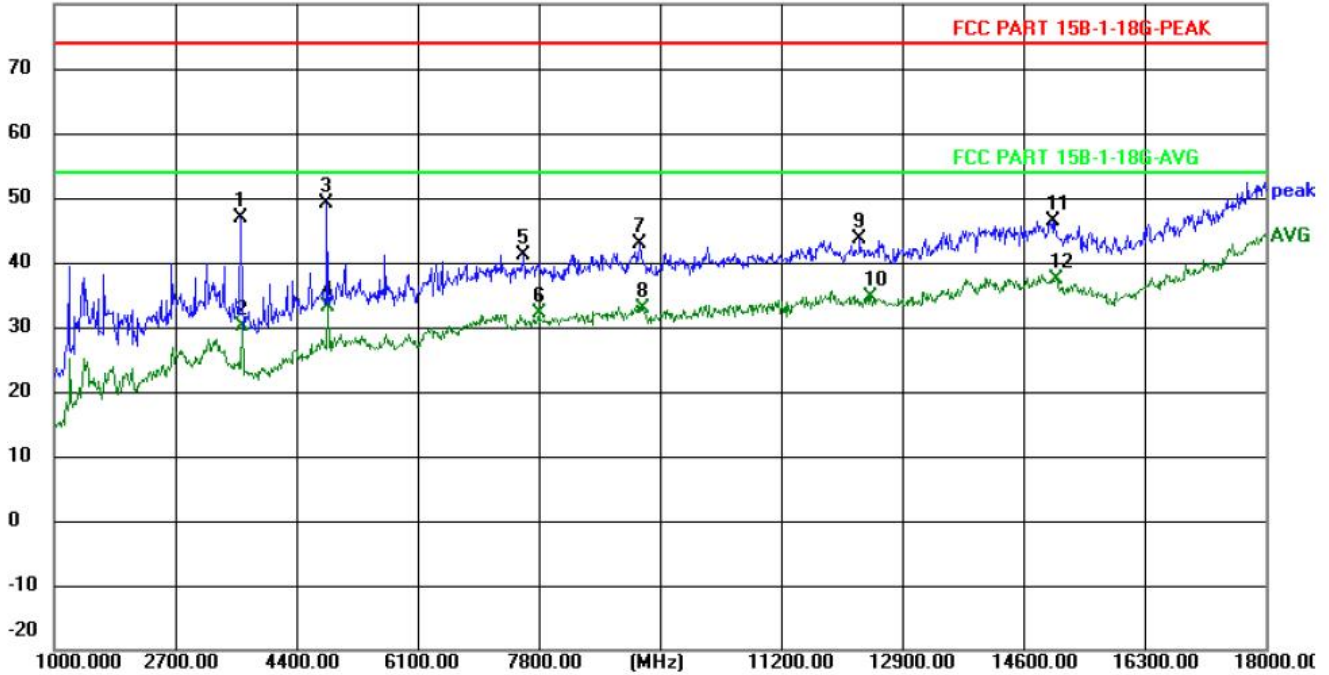
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	2649.000	48.06	-10.82	37.24	74.00	-36.76	peak	P	
2	3244.000	35.30	-9.51	25.79	54.00	-28.21	AVG	P	
3	4825.000	51.20	-4.98	46.22	74.00	-27.78	peak	P	
4	4842.000	35.09	-4.90	30.19	54.00	-23.81	AVG	P	
5	8701.000	38.04	1.59	39.63	74.00	-34.37	peak	P	
6	9177.000	28.89	2.18	31.07	54.00	-22.93	AVG	P	
7	10469.000	37.81	4.39	42.20	74.00	-31.80	peak	P	
8	10860.000	28.02	5.10	33.12	54.00	-20.88	AVG	P	
9	12475.000	37.65	6.46	44.11	74.00	-29.89	peak	P	
10	12832.000	28.94	6.32	35.26	54.00	-18.74	AVG	P	
11	14991.000	37.16	9.99	47.15	74.00	-26.85	peak	P	
12	15008.000	28.82	9.97	38.79	54.00	-15.21	AVG	P	





TM1 / Polarization: Vertical

80.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	3618.000	56.15	-9.21	46.94	74.00	-27.06	peak	P	
2	3635.000	39.25	-9.18	30.07	54.00	-23.93	AVG	P	
3	4825.000	54.09	-4.98	49.11	74.00	-24.89	peak	P	
4	4842.000	38.09	-4.90	33.19	54.00	-20.81	AVG	P	
5	7579.000	40.53	0.65	41.18	74.00	-32.82	peak	P	
6	7800.000	31.43	0.66	32.09	54.00	-21.91	AVG	P	
7	9211.000	40.57	2.25	42.82	74.00	-31.18	peak	P	
8	9262.000	30.51	2.32	32.83	54.00	-21.17	AVG	P	
9	12305.000	37.20	6.55	43.75	74.00	-30.25	peak	P	
10	12458.000	28.18	6.48	34.66	54.00	-19.34	AVG	P	
11	15008.000	36.48	9.97	46.45	74.00	-27.55	peak	P	
12	15059.000	27.50	9.85	37.35	54.00	-16.65	AVG	P	



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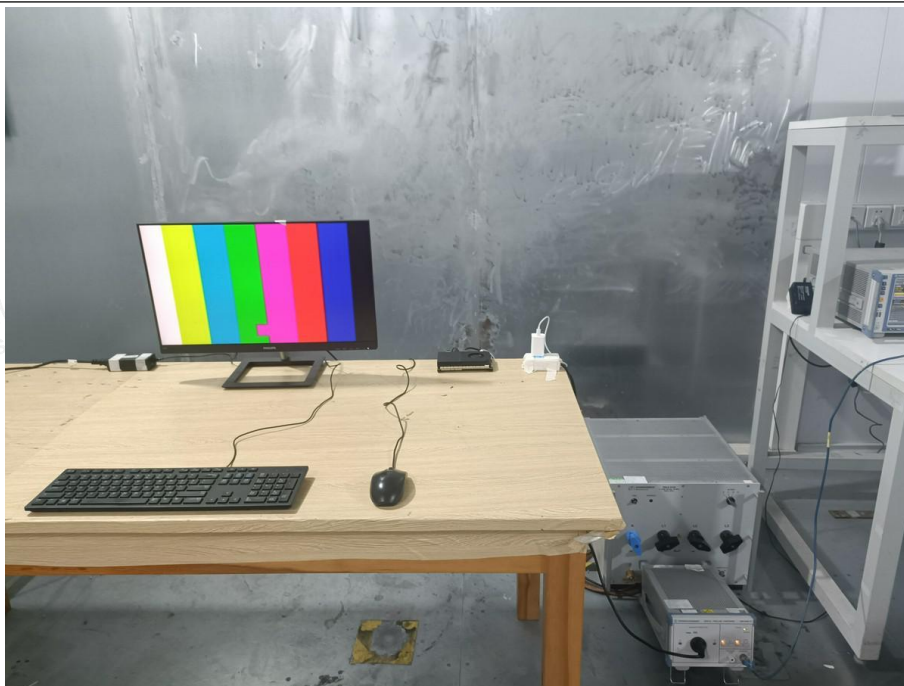
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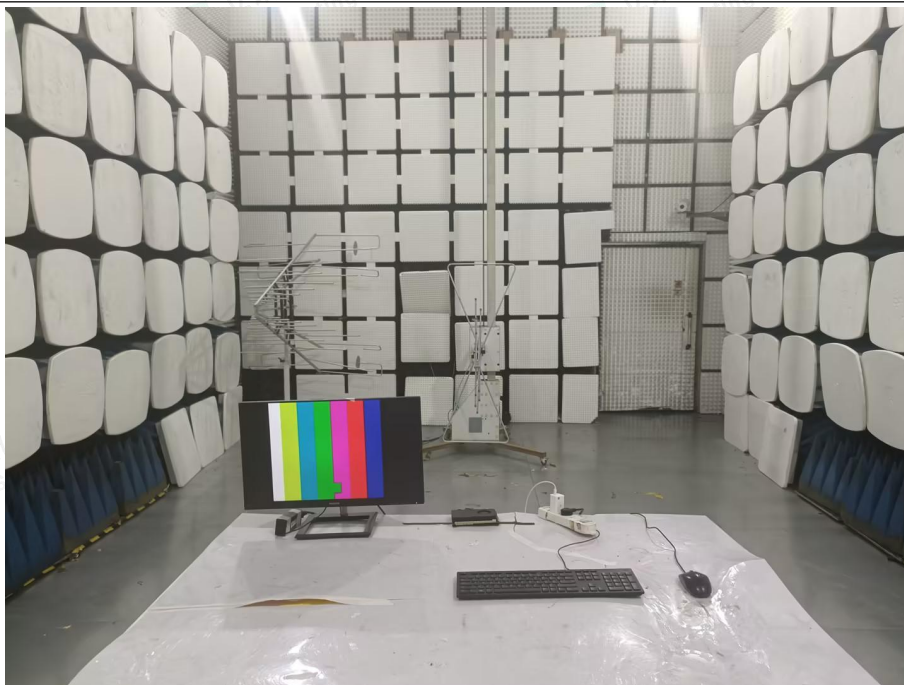


5. TEST SETUP PHOTOS

Conducted emissions on AC mains

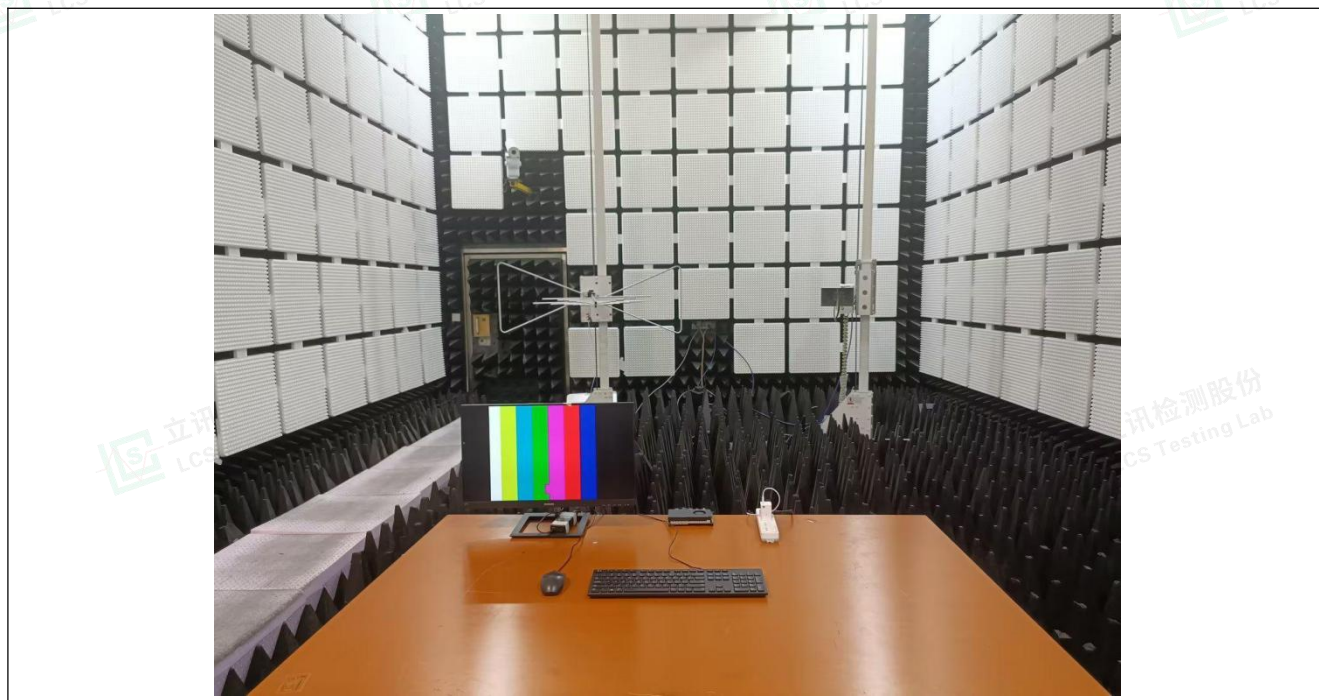


Radiated emissions (Below 1GHz)



Radiated emissions (Above 1GHz)

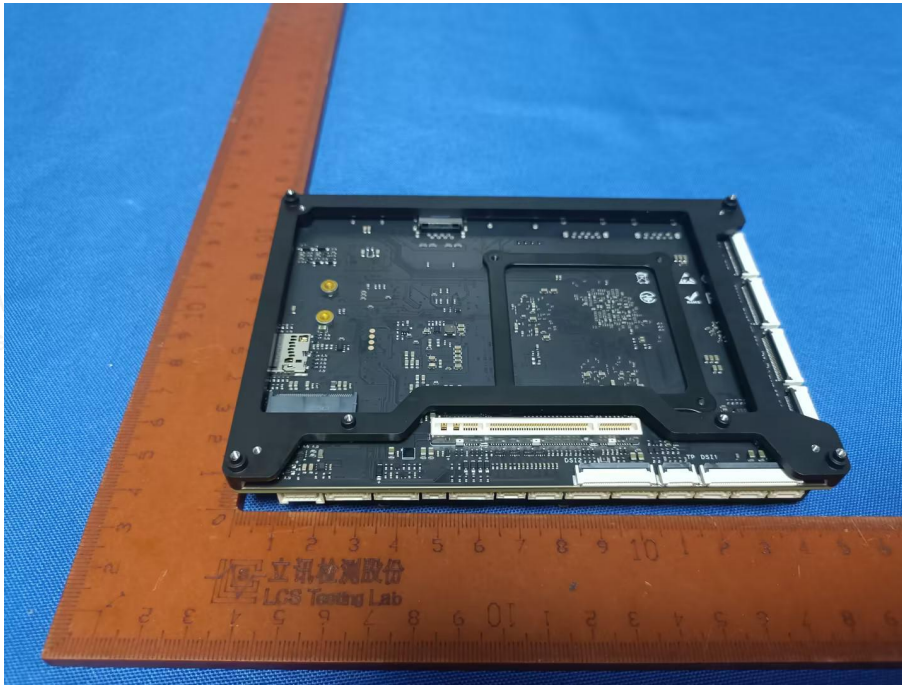






6. EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS)

External







--- End of Report ---

