

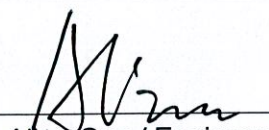
EMC TEST REPORT

The device described below is tested by Dongguan Nore Testing Center Co., Ltd. to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and E.U.T.'s performance criterion. The test results are contained in this test report. Dongguan Nore Testing Center Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

Applicant : Boardcon Technology Limited
Address : Room 702, HuaFeng XinAn Business Building, 45Zone, BaoAn District, Shenzhen, GuangDong Province, China
Manufacturer : Boardcon Technology Limited
Address : Room 702, HuaFeng XinAn Business Building, 45Zone, BaoAn District, Shenzhen, GuangDong Province, China
E.U.T. : MINI3288 Computer on Module
Brand name : N/A
Model No. : MINI3288
Measurement Standard : CFR 47 FCC Part 15, Subpart B, Class B 2016
Date of Receiver : November 19, 2016
Date of Test : November 21, 2016 to November 26, 2016
Date of Report : November 26, 2016

This Test Report is Issued Under the Authority of :

Prepared by



Alma Guo / Engineer

Approved & Authorized Signer



Lori Fan / Authorized Signatory

This report shows that the E.U.T. is technically compliant with the CFR 47 FCC Part 15, Subpart B, Class B. This report applies to above tested sample only and shall not be reproduced in part without written approval of Dongguan Nore Testing Center Co., Ltd.

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Appendix I (Photos of E.U.T.) (1 page)

Revision History of This Test Report

Report Number	Description	Issued Date
NTC1611287F	Initial Issue	2016-11-26

1. SUMMARY OF TEST RESULTS

The E.U.T. has been tested according to the following specifications:

EMISSION			
Standard	Test Type	Result	Remarks
CFR 47 FCC Part 15, Subpart B, Class B 2016	Mains Terminal Disturbance Voltage Test	PASS	Uncertainty: 2.7dB
	Radiated Emission Test	PASS	Uncertainty: 3.4dB

2. GENERAL INFORMATION

2.1 Details of E.U.T.

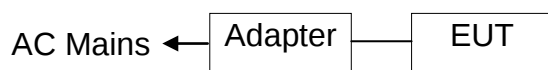
E.U.T.	: MINI3288 Computer on Module
Model No.	: MINI3288
Brand name	: N/A
Rating	: DC 5V From Adapter
E.U.T. Type	: Class B
Operation Frequency	: Below 108MHz (Declaration by manufacturer)
Test Voltage	: AC 120V 60Hz
Cable	: None
Description of model difference	: None
Remark	: None

2.2 Description of Support Device

Adapter	: M/N: GDP30A-0503000-EU Input: AC 100-240V, 50/60Hz, 0.8A Output: DC 5V, 3.0A
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2.3 Block Diagram of Test Setup

Block diagram of connection between the E.U.T. and simulators



2.4 Test Facility

Site Description

- EMC Lab : Listed by CNAS, August 14, 2015
The certificate is valid until August 13, 2018
The Laboratory has been assessed and proved to be in compliance with CNAS/CL01
The Certificate Registration Number is L5795.
- Listed by FCC, July 03, 2014
The Certificate Number is 665078.
- Listed by Industry Canada, June 18, 2014
The Certificate Registration Number. Is 46405-9743
- Name of Firm : Dongguan Nore Testing Center Co., Ltd.
(Dongguan NTC Co., Ltd.)
- Site Location : Building D, Gaosheng Science & Technology Park,
Zhouxi Longxi Road, Nancheng District, Dongguan,
Guangdong, China.

2.5 Abnormalities from Standard Conditions

None

3. MEASURING DEVICES AND TEST EQUIPMENT

3.1 For Mains terminals Disturbance voltage Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI	101152	Mar. 07, 2016	1 Year
2.	L.I.S.N	Rohde & Schwarz	ENV 216	101317	Mar. 07, 2016	1 Year
3.	L.I.S.N	Schwarzbeck	NNLK8129	8129-212	Mar. 07, 2016	1 Year
4.	RF Switching Unit	Compliance Direction Systems Inc.	RSU-M2	38311	Mar. 07, 2016	1 Year

3.2 For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI7	100837	Mar. 07, 2016	1 Year
2.	Antenna	Schwarzbeck	VULB9162	9162-010	Apr. 25, 2016	1 Year
3.	Positioning Controller	UC	UC 3000	N/A	N/A	N/A
4.	Color Monitor	SUNSPO	SP-140A	N/A	N/A	N/A
5.	Single Phase Power Line Filter	SAEMC	PF201A-32	110210	N/A	N/A
6.	3 Phase Power Line Filter	SAEMC	PF401A-200	110318	N/A	N/A
7.	DC Power Filter	SAEMC	PF301A-200	110245	N/A	N/A
8.	Cable	Huber+Suhner	CBL3-NN-9M	21490001	Mar. 07, 2016	1 Year
9.	Cable	Huber+Suhner	RG223U	N/A	Mar. 07, 2016	1 Year
10.	Power Amplifier	HP	HP 8447D	1145A00203	Mar. 07, 2016	1 Year

4.3 Test Procedure

The E.U.T. is put on the 0.8 m high table and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the FCC ANSI C63.4-2016 regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 9 KHz.

4.4 Operating Condition of E.U.T.

4.4.1 Setup the E.U.T. and simulators as shown in Section 2.3.

4.4.2 Turn on the power of all equipments.

4.4.3 Let the E.U.T. work in test mode (Empty Load) and test it.

4.5 Mains Terminal Disturbance Voltage Test Results

PASS.

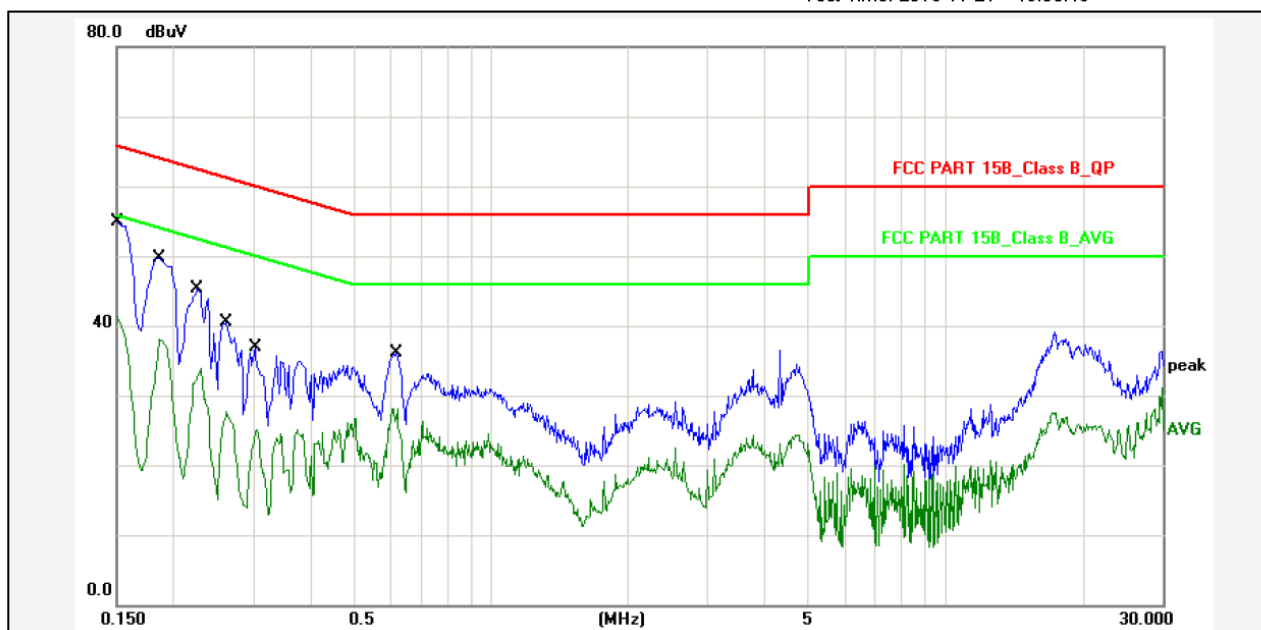
Please refer to the following pages.



Dongguan NTC Co., Ltd.
Tel: +86-769-22022444 Fax: +86-769-22022799
Web: [Http://www.ntc-c.com](http://www.ntc-c.com)

Site: Conduction

Test Time: 2016-11-21 19:30:46



Report No.: MINI3288

Test Standard: FCC PART 15B_Class B_QP

Test item: Conducted Emission

Phase: L1

Applicant: Boardcon

Temp.()/Hum.(%): 22(C) / 52 %

Product: MINI3288 Computer on Module

Power Rating: AC 120V/60Hz

Model No.: MINI3288

Test Engineer: Ryan

Test Mode: Empty Load

Remark:

No.	Frequency (MHz)	Factor (dBuV)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1500	10.80	42.10	52.90	65.99	-13.09	QP	P	
2	0.1500	10.80	28.50	39.30	55.99	-16.69	AVG	P	
3	0.1860	10.80	36.90	47.70	64.21	-16.51	QP	P	
4	0.1860	10.80	25.40	36.20	54.21	-18.01	AVG	P	
5	0.2260	10.80	32.70	43.50	62.59	-19.09	QP	P	
6	0.2260	10.80	21.10	31.90	52.59	-20.69	AVG	P	
7	0.2620	10.80	27.60	38.40	61.36	-22.96	QP	P	
8	0.2620	10.80	14.80	25.60	51.36	-25.76	AVG	P	
9	0.3020	10.80	23.50	34.30	60.19	-25.89	QP	P	
10	0.3020	10.80	12.70	23.50	50.19	-26.69	AVG	P	
11	0.6180	10.80	23.90	34.70	56.00	-21.30	QP	P	
12	0.6180	10.80	15.40	26.20	46.00	-19.80	AVG	P	

Note: Level=Reading+Factor.

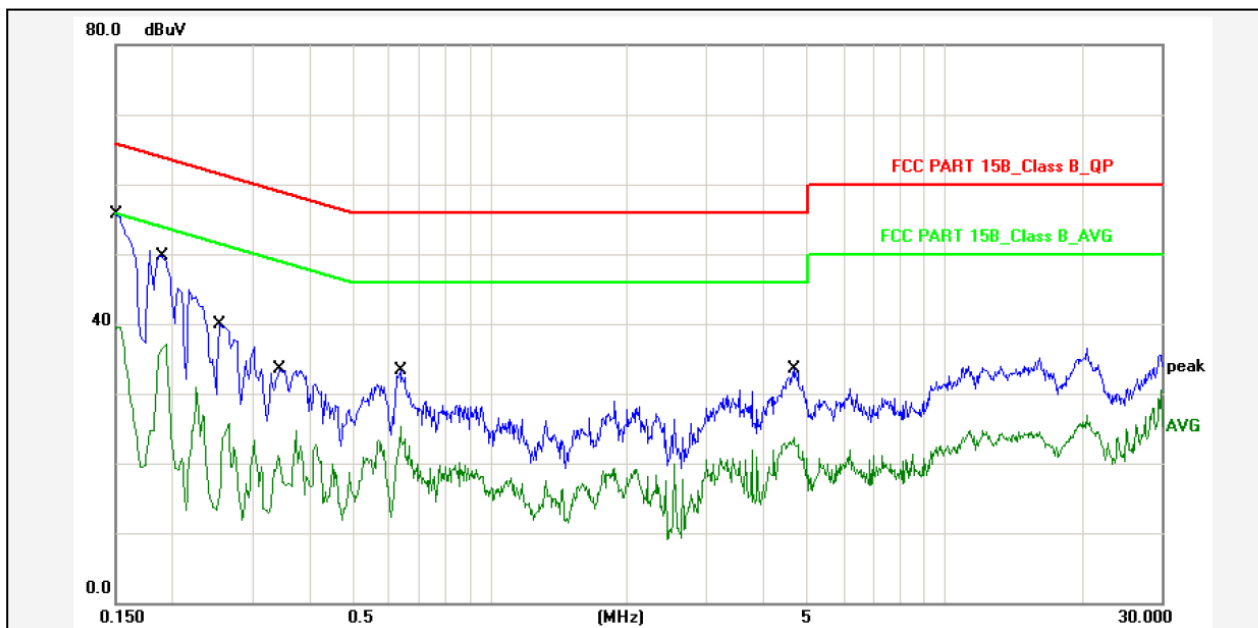
Margin=Limit-Level.



Dongguan NTC Co., Ltd.
Tel: +86-769-22022444 Fax: +86-769-22022799
Web: [Http://www.ntc-c.com](http://www.ntc-c.com)

Site: Conduction

Test Time: 2016-11-21 19:23:02



Report No.: MINI3288

Test Standard: FCC PART 15B_Class B_QP

Test item: Conducted Emission

Phase: N

Applicant: Boardcon

Temp.()/Hum.(%): 22(C) / 52 %

Product: MINI3288 Computer on Module

Power Rating: AC 120V/60Hz

Model No.: MINI3288

Test Engineer: Ryan

Test Mode: Empty Load

Remark:

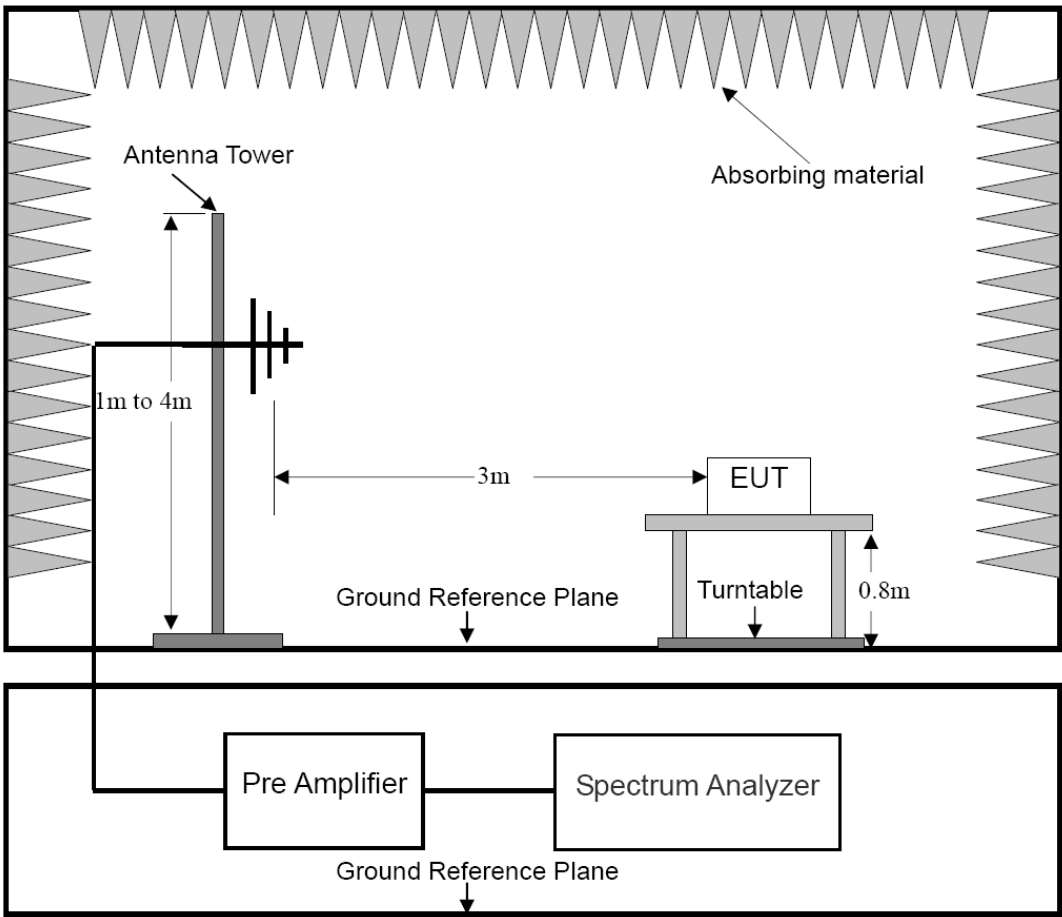
No.	Frequency (MHz)	Factor (dBuV)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1500	10.80	42.80	53.60	65.99	-12.39	QP	P	
2	0.1500	10.80	26.70	37.50	55.99	-18.49	AVG	P	
3	0.1900	10.80	36.90	47.70	64.03	-16.33	QP	P	
4	0.1900	10.80	24.40	35.20	54.03	-18.83	AVG	P	
5	0.2540	10.80	27.10	37.90	61.62	-23.72	QP	P	
6	0.2540	10.80	18.00	28.80	51.62	-22.82	AVG	P	
7	0.3460	10.80	20.60	31.40	59.06	-27.66	QP	P	
8	0.3460	10.80	11.80	22.60	49.06	-26.46	AVG	P	
9	0.6340	10.80	20.40	31.20	56.00	-24.80	QP	P	
10	0.6340	10.80	12.60	23.40	46.00	-22.60	AVG	P	
11	4.6539	10.80	20.90	31.70	56.00	-24.30	QP	P	
12	4.6539	10.80	10.40	21.20	46.00	-24.80	AVG	P	

Note: Level=Reading+Factor.

Margin=Limit-Level.

5. RADIATED EMISSION MEASUREMENT

5.1 Block Diagram of Test



5.2 Limit of Radiated Emission Measurement

Test Standard: CFR 47 FCC Part 15, Class B

Frequency range MHz	Distance Meters	Field Strengths Limit	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0

- Remark :
- (1) Emission level $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
 - (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.

5.3 Test Procedure

E.U.T. 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. E.U.T. 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 bilog 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 FCC ANSI C63.4-2014 on radiated emission measurement.

The bandwidth of the EMI test receiver (R&S ESCI7) is set at 120 KHz.

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

5.4 Operating Condition of E.U.T.

5.4.1 Setup the E.U.T. and simulators as shown in Section 2.3.

5.4.2 Turn on the power of all equipments.

5.4.3 Let the E.U.T. work in test mode (Empty Load) and test it.

5.5 Radiated Emission Measurement Result

PASS.

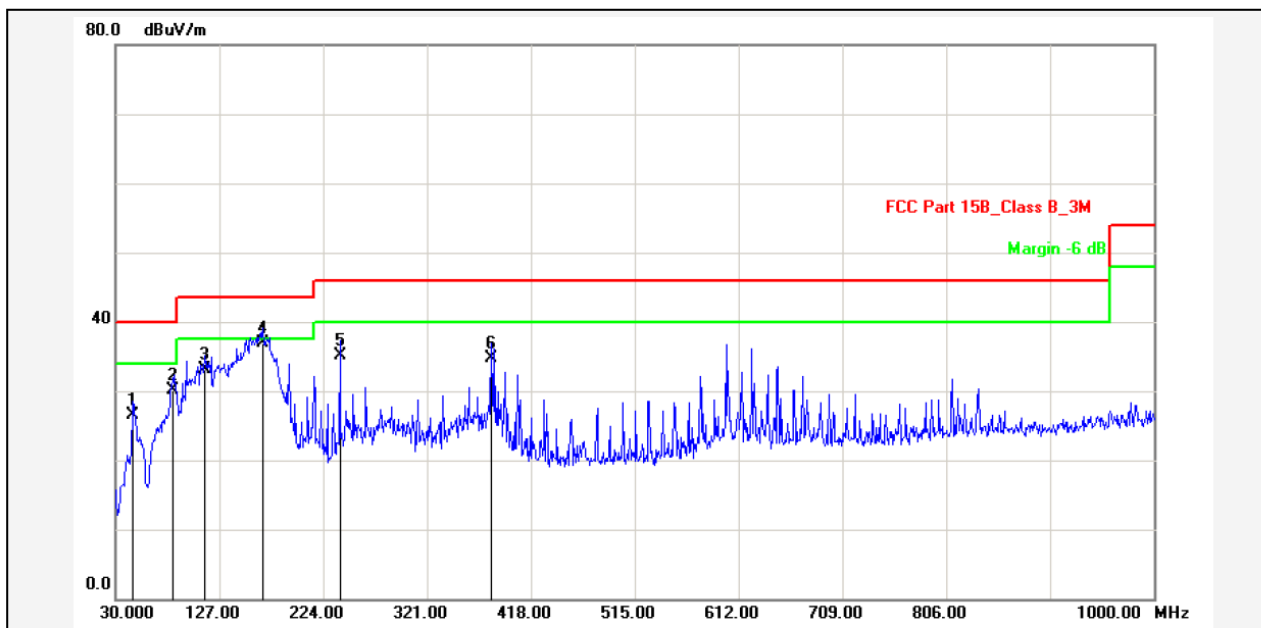
Please refer to the following pages.



Dongguan NTC Co., Ltd.
Tel: +86-769-22022444 Fax: +86-769-22022799
Web: [Http://www.ntc-c.com](http://www.ntc-c.com)

Site: Radiation

Test Time: 2016-11-22 14:35:06



Report No.: MINI3288

Test Standard: FCC Part 15B_Class B_3M

Test item: Radiation Emission

Applicant: Boardcon

Product: MINI3288 Computer on Module

Model No.: MINI3288

Test Distance: 3m

Ant. Polarization: Horizontal

Temp.(C)/Hum.(%): 22(C) / 54 %

Power Rating: AC 120V/60Hz

Test Engineer: Ryan

Test Mode: Empty Load

Remark:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	46.4900	-19.60	46.10	26.50	40.00	-13.50	QP			P	
2	84.3198	-15.31	45.51	30.20	40.00	-9.80	QP			P	
3	113.4200	-12.72	45.92	33.20	43.50	-10.30	QP			P	
4	167.7400	-14.89	51.89	37.00	43.50	-6.50	QP			P	
5	239.5200	-12.06	47.26	35.20	46.00	-10.80	QP			P	
6	381.1399	-9.20	44.00	34.80	46.00	-11.20	QP			P	

Note: Level=Reading+Factor.

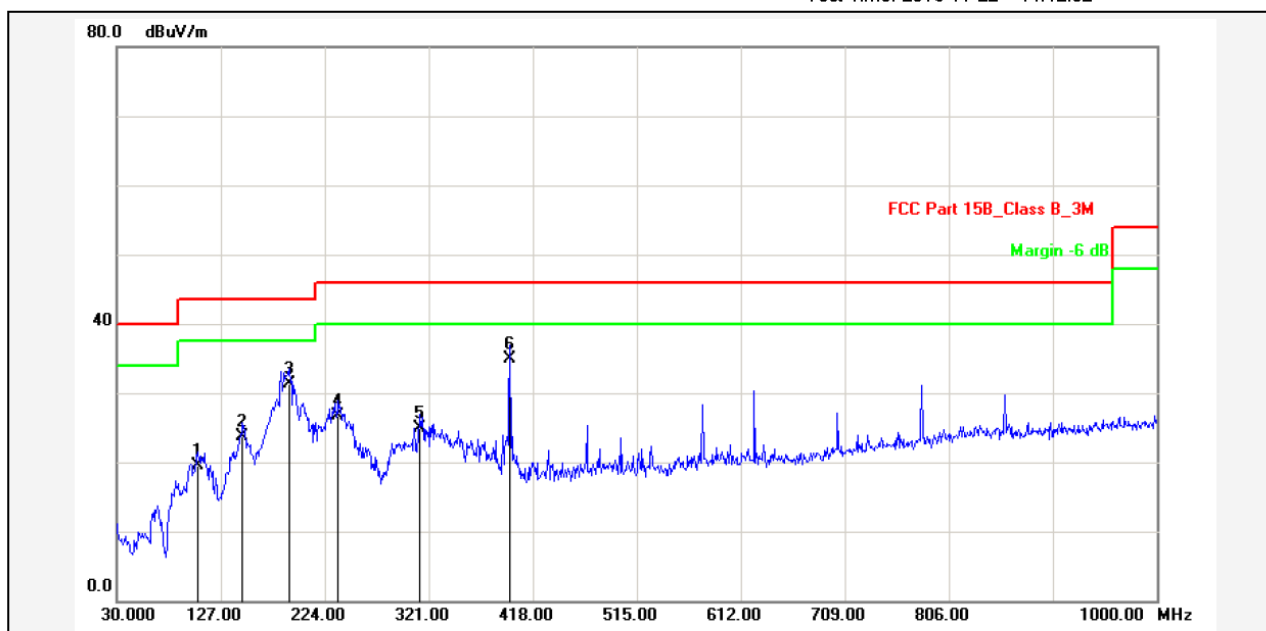
Margin=Limit-Level.



Dongguan NTC Co., Ltd.
Tel: +86-769-22022444 Fax: +86-769-22022799
Web: <http://www.ntc-c.com>

Site: Radiation

Test Time: 2016-11-22 14:42:52



Report No.: MINI3288

Test Standard: FCC Part 15B_Class B_3M

Test item: Radiation Emission

Applicant: Boardcon

Product: MINI3288 Computer on Module

Model No.: MINI3288

Test Distance: 3m

Ant. Polarization: Vertical

Temp.(C)/Hum.(%): 22(C) / 54 %

Power Rating: AC 120V/60Hz

Test Engineer: Ryan

Test Mode: Empty Load

Remark:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBUV)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	105.6599	-11.97	31.47	19.50	43.50	-24.00	QP			P	
2	147.3700	-15.55	39.25	23.70	43.50	-19.80	QP			P	
3	191.0200	-13.54	44.94	31.40	43.50	-12.10	QP			P	
4	236.6100	-12.18	38.98	26.80	46.00	-19.20	QP			P	
5	312.2699	-10.13	35.03	24.90	46.00	-21.10	QP			P	
6	396.6600	-9.13	44.03	34.90	46.00	-11.10	QP			P	

Note: Level=Reading+Factor.

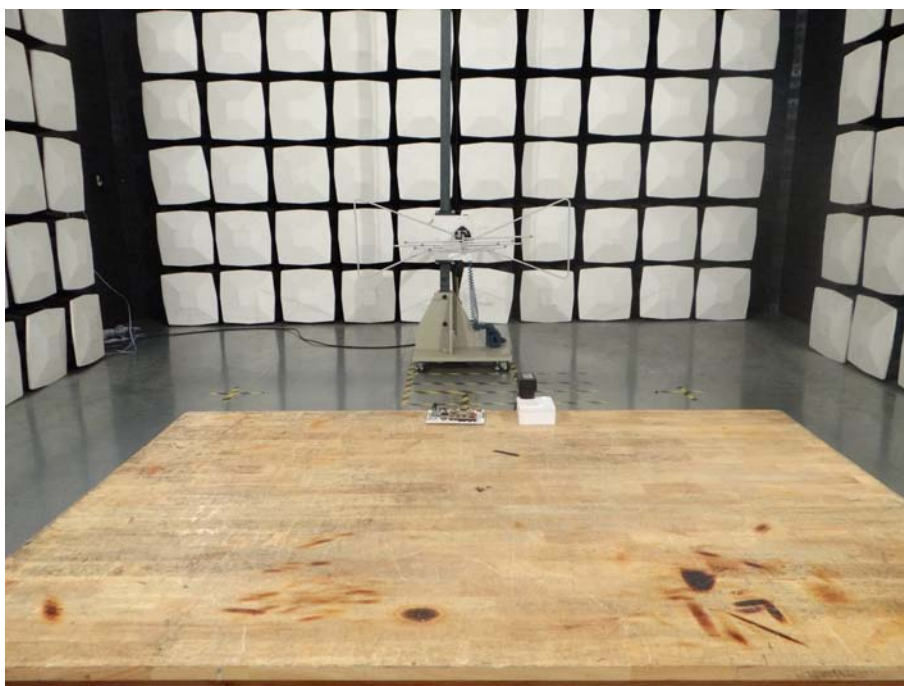
Margin=Limit-Level.

6. PHOTOGRAPH

6.1 Photo of Conducted Emission Measurement



6.2 Photo of Radiation Emission Measurement



APPENDIX I

(Photos of E.U.T.)

Figure 1
General Appearance of the E.U.T.

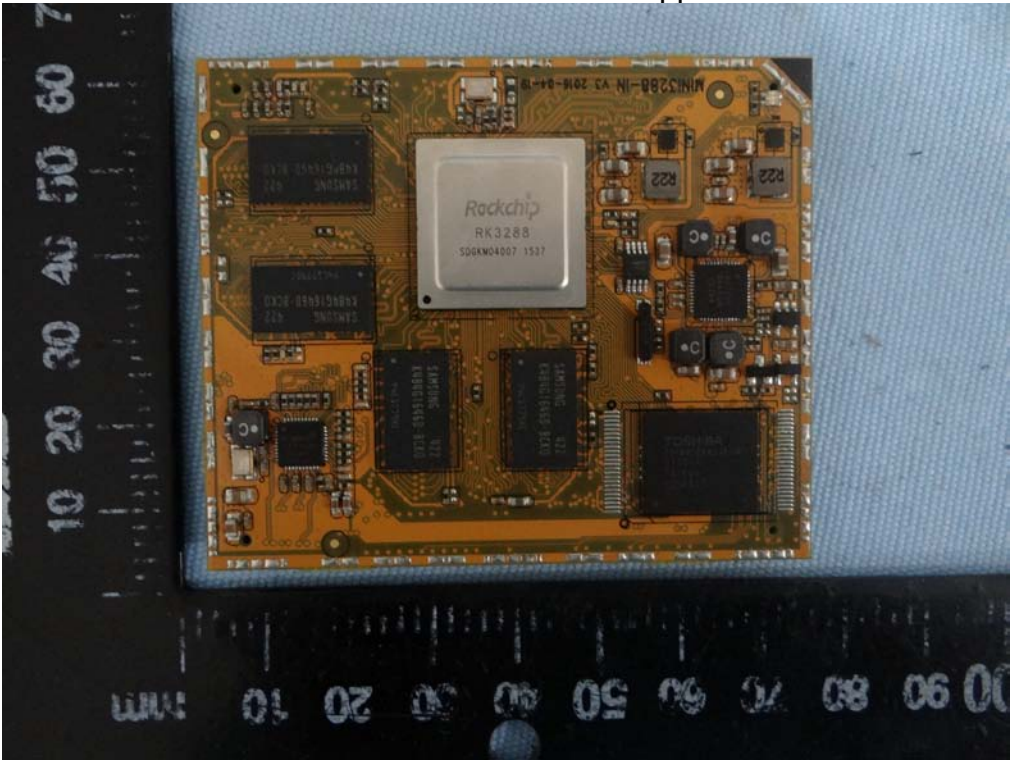
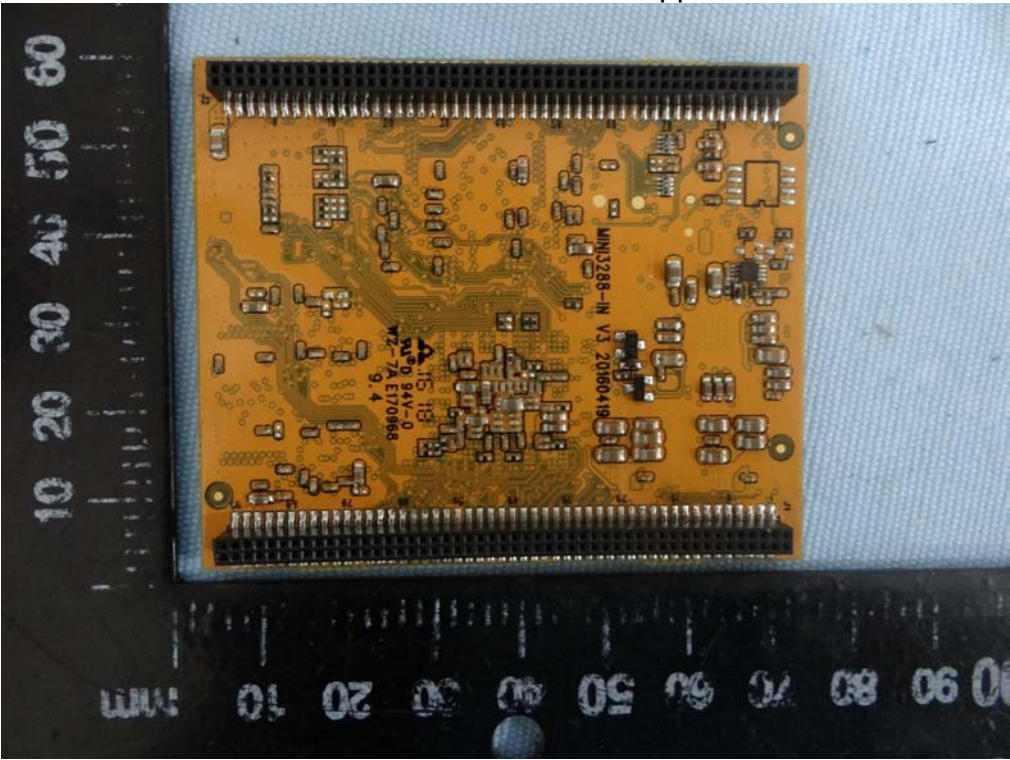


Figure 2
General Appearance of the E.U.T.



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