TEST REPORT

Applicant:	Cubietech Co., Ltd.
Address of Applicant:	303,1st Bldg, A Zone, Baoan Internet Industry Base, No.1009, Baoyuan Road, Baoan District, Shenzhen, China.

Equipment Under Test (EUT)

Product Name:	Cubieboard2
Model No.:	Cubieboard2

Applicable standards:	FCC CFR Title 47 Part 15 Subpart B:2012
Date of sample receipt:	February. 13, 2014
Date of Test:	Feb. 13-19, 2014
Date of report issued:	Feb. 19, 2014
Test Result :	Pass *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Lo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*Feb. 19, 2013*	*Original*

Prepared By: Sam. Gao ***Date:*** *February 19, 2014*

Project Engineer

Check By: Hans.Hu ***Date:*** *February 19, 2014*

Reviewer

3 Contents

4 Test Summary

Test Item	Section in CFR 47	Result
Conducted Emission	Part15.107	Pass
Radiated Emissions	Part15.109	Pass

Pass: The EUT comply with the essential requirements in the standard.

5 General Information

5.1 Client Information

Applicant:	Cubietech Co., Ltd.
Address of Applicant:	303,1st Bldg, A Zone, Baoan Internet Industry Base, No.1009, Baoyuan Road, Baoan District, Shenzhen, China.
Manufacturer/ Factory:	Cubietech Co., Ltd.
Address of Manufacturer / Factory:	303,1st Bldg, A Zone, Baoan Internet Industry Base, No.1009, Baoyuan Road, Baoan District, Shenzhen, China.

5.2 General Description of E.U.T.

Product Name:	Cubieboard2
Model No.:	Cubieboard2
Test model No.:	Cubieboard2
Remark:	N/A
Trade Mark	Cubieboard
Power supply:	DC5V,2A(Power by AC/DC Adapter)

5.3 Test mode and Test voltage

Test mode:	
Normal mode	USB playing 1kHz color bar
Normal mode	Removable disk playing 1kHz color bar
/	/
/	/
/	/
Test voltage: AC:120V/60Hz for AC/DC adapter	
The USB Playing mode is the worst emission mode.	

5.4 Description of Support Units

Description	Manufacturer	Model	Serial Number
TV	AOC	TFT24660AG	T49A5JA000660B9

5.5 Deviation from Standards

None.

5.6 Abnormalities from Standard Conditions

None.

5.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **CNAS —Registration No.: CNAS L5775**

CNAS has accredited Global United Technology Services Co., Ltd. to ISO/IEC 17025 General Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

● **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter
from the FCC is maintained in files. Registration 600491, July 20, 2010.

● **Industry Canada (IC) —Registration No.: 9079A-1**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by
Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-1.

5.8 Test Location

Tests were performed at:

Global United Technology Services Co., Ltd.
Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China
Tel: 0755-27798480
Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	Mar. 30 2013	Mar. 29 2015
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Jul. 03 2013	Jul. 02 2014
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 26 2013	Feb. 25 2014
5	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 03 2013	Jul. 02 2014
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Coaxial cable	GTS	N/A	GTS210	Jul. 03 2013	Jul. 02 2014
8	Coaxial Cable	GTS	N/A	GTS211	Jul. 03 2013	Jul. 02 2014
9	Thermo meter	KTJ	TA328	GTS256	Jul. 03 2013	Jul. 02 2014

Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Shielding Room	ZhongYu Electron	7.0(L)x3.0(W)x3.0(H)	GTS252	Sep. 08 2013	Sep. 07 2015
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS223	Jul. 03 2013	Jul. 02 2014
3	10dB Pulse Limita	Rohde & Schwarz	N/A	GTS224	Jul. 03 2013	Jul. 02 2014
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	Jul. 03 2013	Jul. 02 2014
5	LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS226	Jul. 03 2013	Jul. 02 2014
6	Coaxial Cable	GTS	N/A	GTS227	Jul. 03 2013	Jul. 02 2014
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Thermo meter	KTJ	TA328	GTS233	Jul. 03 2013	Jul. 02 2014

General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
1	Barometer	ChangChun	DYM3	GTS257	Jul. 03 2013	Jul. 02 2014

7 Test results and Measurement Data

7.1 Radiated Emission

Test Requirement:	FCC Part15 B Section 15.109
Test Method:	ANSI C63.4:2009
Test Frequency Range:	30MHz to 1000MHz
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)

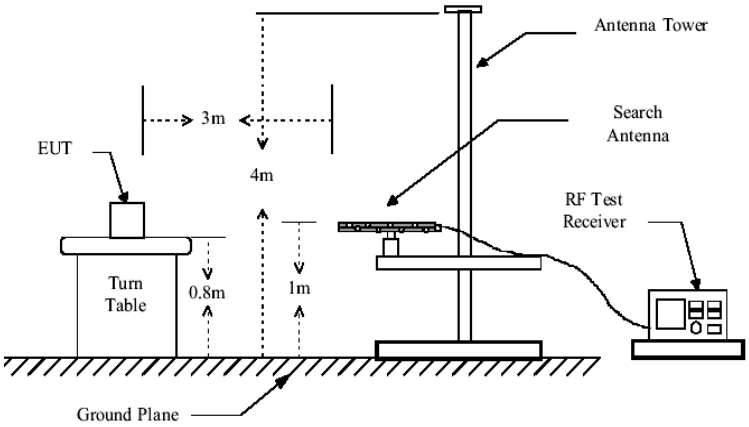
Receiver setup:

Frequency	Detector	RBW	VBW	Value
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak

Limit:

Frequency	Limit (dBµV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak

Test setup:



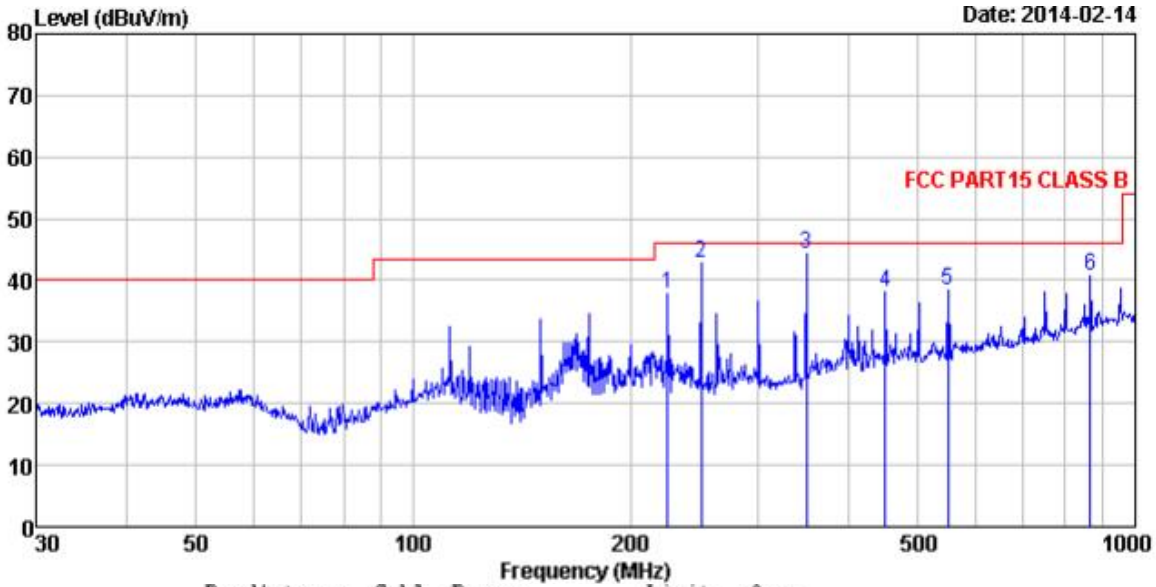
Test Procedure:

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak

	values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar
Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.3 for details, found the Full load mode which it is worst case mode, so only show the test data of the worst case mode.					
Test results:	Pass					

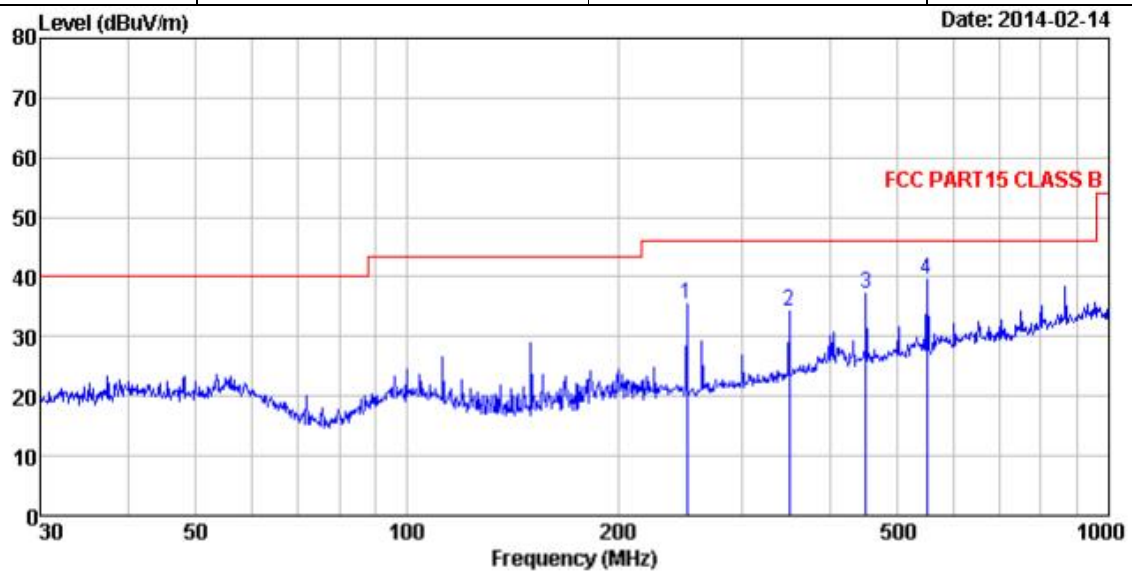
Measurement Data

Test mode:	USB playing1kHz color bar	Antenna Polarity:	Horizontal



	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	225.308	54.41	13.41	1.99	32.15	37.66	46.00	-8.34	Peak
2	250.301	58.75	14.07	2.12	32.16	42.78	46.00	-3.22	Peak
3	350.477	57.40	16.27	2.62	32.02	44.27	46.00	-1.73	Peak
4	451.135	49.24	17.58	3.09	31.71	38.20	46.00	-7.80	Peak
5	550.948	46.50	19.57	3.53	31.28	38.32	46.00	-7.68	Peak
6	866.088	44.60	22.78	4.73	31.23	40.88	46.00	-5.12	Peak

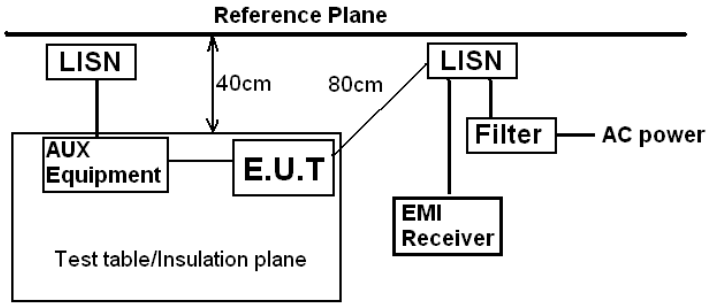
Test mode:	USB playing1kHz color bar	Antenna Polarity:	Vertical



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	250.301	51.47	14.07	2.12	32.16	35.50	46.00	-10.50	Peak
2	350.477	47.50	16.27	2.62	32.02	34.37	46.00	-11.63	Peak
3	451.135	48.24	17.58	3.09	31.71	37.20	46.00	-8.80	Peak
4	550.948	47.72	19.57	3.53	31.28	39.54	46.00	-6.46	Peak

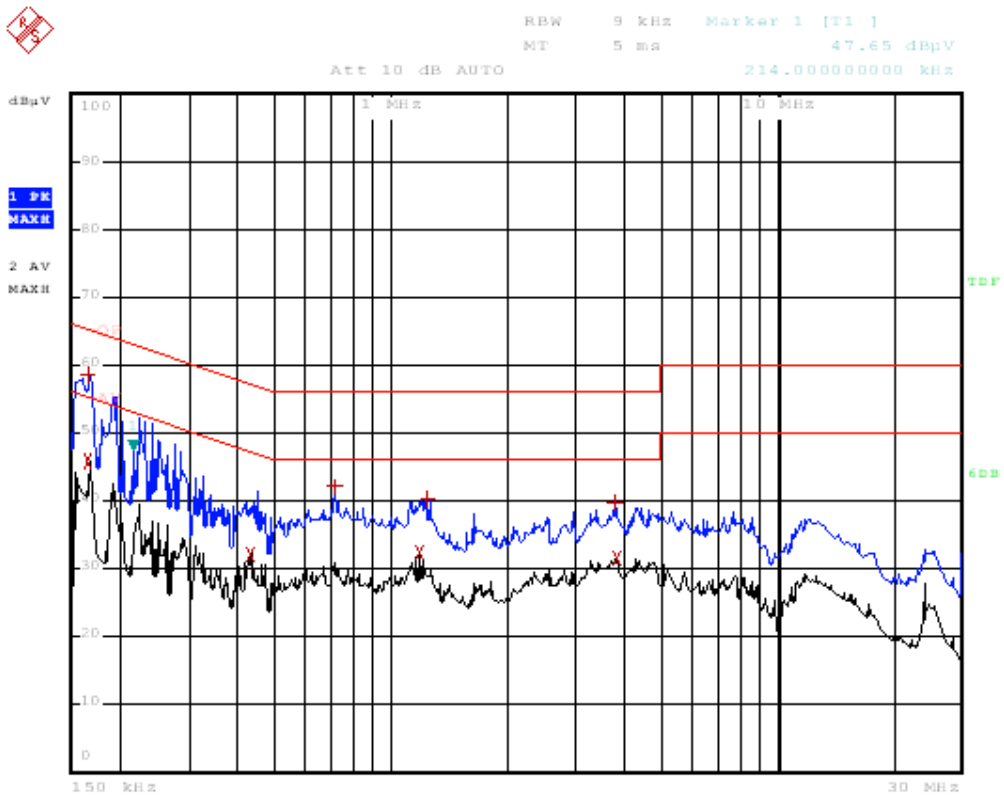
Note:
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
The USB Playing mode is the worst emission mode.

7.2 Conducted Emissions

Test Requirement:	FCC Part15 B Section 15.107
Test Method:	ANSI C63.4:2009
Test Frequency Range:	150kHz to 30MHz
Class / Severity:	Class B
Receiver setup:	RBW=9kHz, VBW=30kHz
Limit:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBµV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>0.5-30</td><td>60</td><td>50</td></tr></table>
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement.
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.3 for details, found the Full load mode which it is worst case mode, so only show the test data of the worst case mode.
Test results:	Pass

Measurement Data

Test mode:	USB playing1kHz color bar	Phase Polarity:	Line

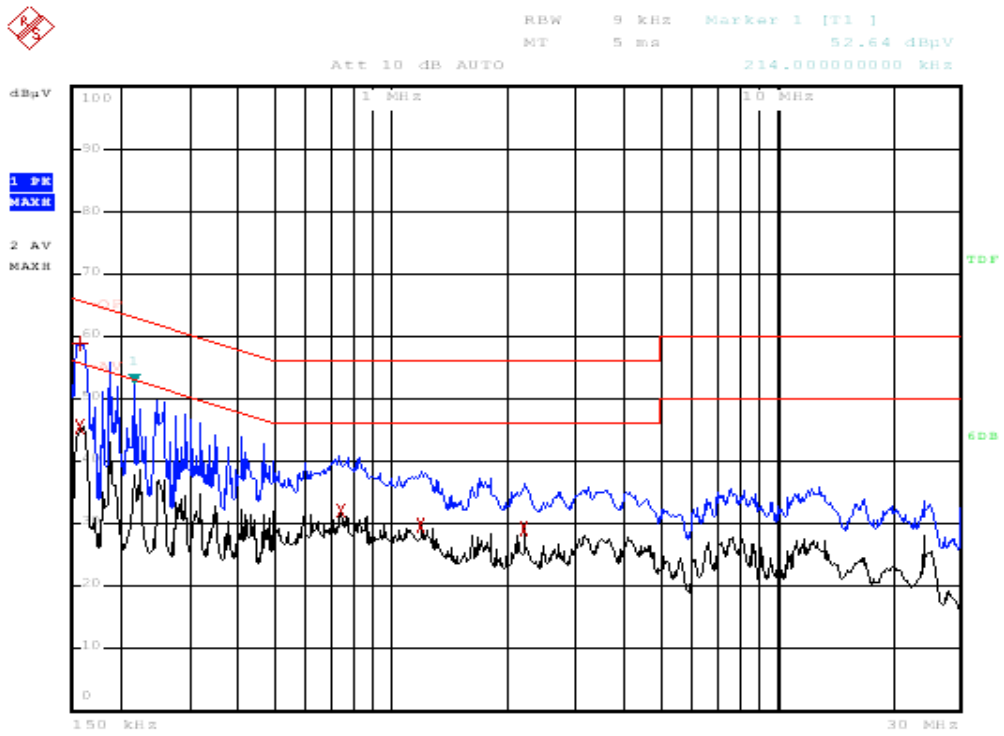


EDIT PEAK LIST (Prescan Results)

Trace1: -QP
Trace2: -AV
Trace3: ---

TRACE		FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1	Max Peak	166 kHz	58.73	-6.42
2	Average	166 kHz	45.76	-9.39
2	Average	430 kHz	32.28	-14.97
1	Max Peak	714 kHz	42.10	-13.89
2	Average	1.186 MHz	32.51	-13.48
1	Max Peak	1.242 MHz	40.23	-15.77
1	Max Peak	3.802 MHz	39.67	-16.32
2	Average	3.846 MHz	31.73	-14.26

Test mode:	USB playing1kHz color bar	Phase Polarity:	Neutral



EDIT PEAK LIST (Prescan Results)

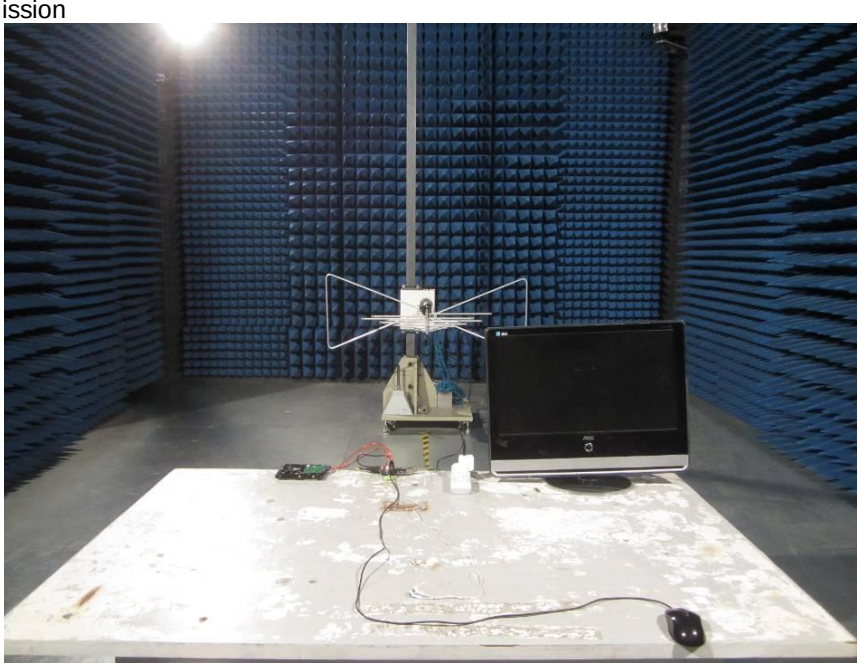
Trace1: -QP
Trace2: -AV
Trace3: ---

TRACE		FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1	Max Peak	158 kHz	58.95	-6.61
2	Average	158 kHz	45.54	-10.02
2	Average	738 kHz	32.12	-13.87
2	Average	1.198 MHz	29.83	-16.16
2	Average	2.214 MHz	29.28	-16.71

Notes:
1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
The USB Playing mode is the worst emission mode.

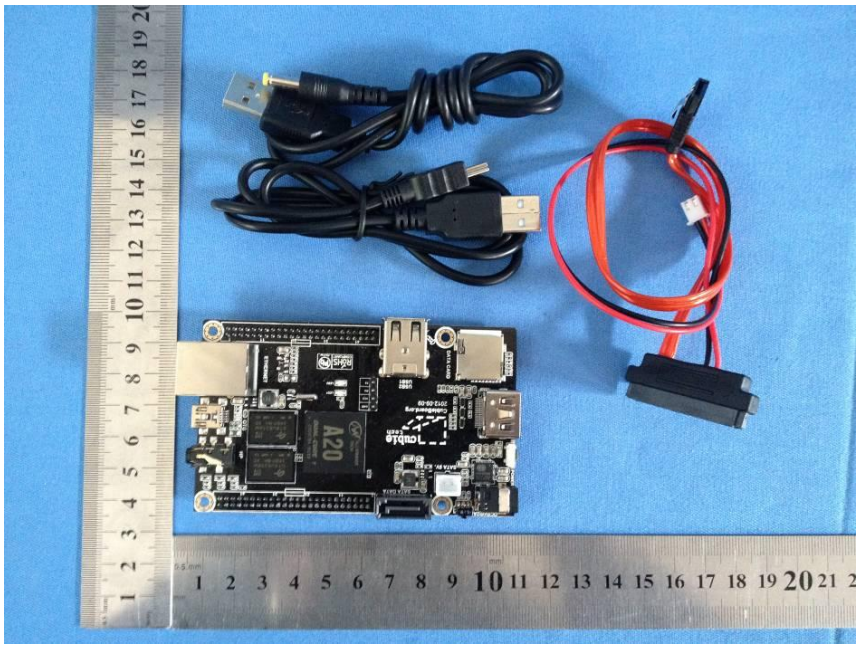
8 Test Setup Photo

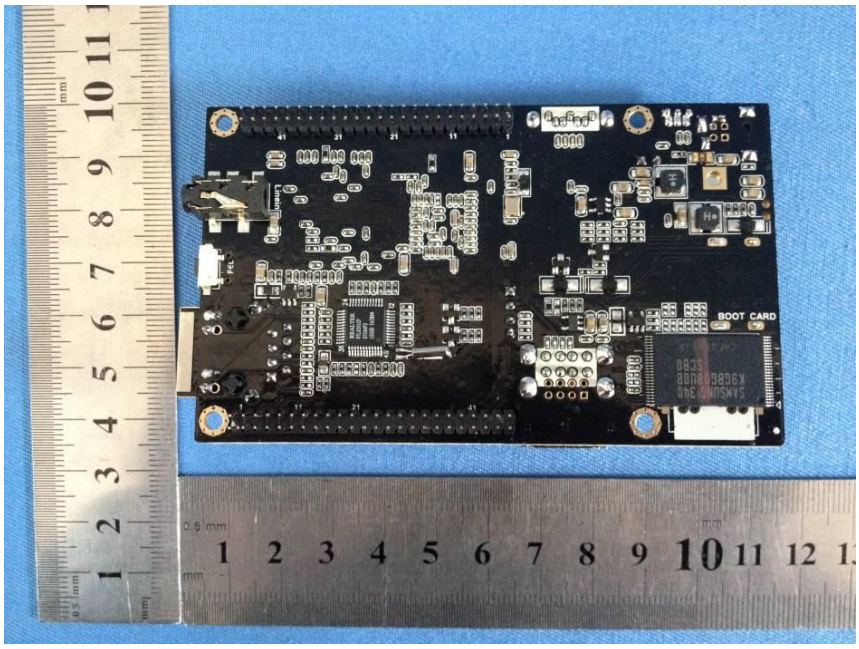
Radiated Emission

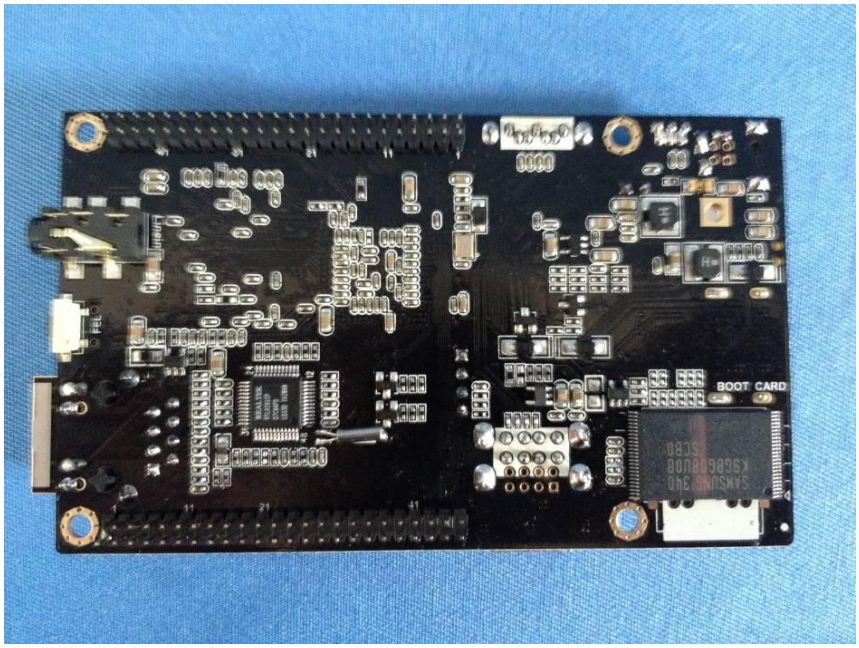


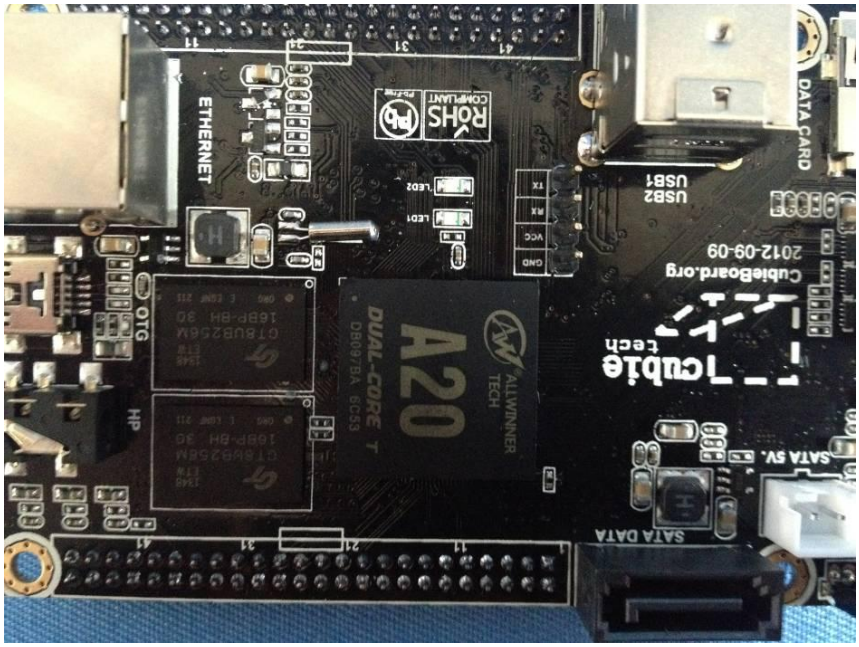
Conducted Emission

9 EUT Constructional Details






BOOT CARD


ETHERNET
RoHS
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USB1
2012-09-09
CubieBoard.org
OTG
HP
A20
DUAL-CORE
ALLWINNER
TECH
SATA 5V
SATA DATA

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