Shenzhen Global Test Service Co.,Ltd.
1F, Building No. 13A, Zhonghaixin Science and Technology City, No.12,6 Road, Ganli Industrial Park, Buji Street, Longgang District, Shenzhen, Guangdong

TEST REPORT

47 CFR FCC Part 15 Subpart B (Class B)
Radio Frequency Devices – Unintentional Radiators – Limits and methods of measurement
ANSI C63.4: 2014
American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

Report Reference No.....:	**GTSR16050041**
FCC ID. ..... **:**	**2AIOU-MINIPC**
Compiled by (position+printed name+signature)..:	File administrators Jimmy Wang
Supervised by (position+printed name+signature)..:	Test Engineer Peter Xiao
Approved by (printed name + signature) .....:	Manager Sam Wang
Date of issue .....:	Jun. 6, 2016

Representative Laboratory Name :	**Shenzhen Global Test Service Co.,Ltd.**
Address .....:	1F, Building No. 13A, Zhonghaixin Science and Technology City, No.12,6 Road, Ganli Industrial Park, Buji Street, Longgang District, Shenzhen, Guangdong

Applicant's name.....:	**Shenzhen Cenovo Technology Co.,Ltd.**
Address .....:	No.103, the first alley, 108# Buyong South Road, Shajing Street, Bao'an District, Shenzhen City, Guangdong

Test specification:	
Standard.....:	**47 CFR FCC Part 15 Subpart B (Class B)**
	ANSI C63.4: 2014
TRF Originator.....:	Shenzhen Global Test Service Co.,Ltd.
Master TRF .....:	Dated 2014-12

Test item description ..... :	**Cenovo**
Trade Mark.....:	/
Manufacturer..... :	**Shenzhen Cenovo Technology Co.,Ltd.**
Model/Type reference .....:	MiniPC1
Listed Models .....:	MiniPC2,king, MiniPCS,storg
Ratings.....:	Input:AC100-240V,50/60Hz,0.6A
	Output:DC5V,4A
Result.....:	**Pass**

T E S T R E P O R T

Test Report No. : **GTSR16050041**	Jun. 6, 2016 Date of issue

Equipment under Test	:	**Cenovo**
Model /Type	:	MiniPC1
Listed Models	:	MiniPC2,king, MiniPCS,storg
Applicant	:	**Shenzhen Cenovo Technology Co.,Ltd.**
Address	:	No.103, the first alley, 108# Buyong South Road, Shajing Street, Bao'an District, Shenzhen City, Guangdong
Manufacturer		**Shenzhen Cenovo Technology Co.,Ltd.**
Address		NO.202A,2F,Building A, Jiepeng Commerce Square, Fuyong Town, Bao'an District, Shenzhen City, Guangdong

Test Result	**Pass**

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.

Contents

1. TEST STANDARDS 4

2. SUMMARY 5

2.1. General Remarks 5
2.2. Equipment Under Test 5
2.3. Short description of the Equipment under Test (EUT) 5
2.4. EUT operation mode 5
2.5. EUT configuration 5

3. TEST ENVIRONMENT 6

3.1. Address of the test laboratory 6
3.2. Test Facility 6
3.3. Environmental conditions 6
3.4. Test Description 6
3.5. Statement of the measurement uncertainty 7
3.6. Equipments Used during the Test 7

4. TEST CONDITIONS AND RESULTS 8

4.1. Radiated Emission 8
4.2. Conducted disturbance 13

5. TEST SETUP PHOTOS OF THE EUT 16

6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT 18

1. TEST STANDARDS

The tests were performed according to following standards:

47 CFR FCC Part 15 Subpart B (Class B) Radio Frequency Devices – Unintentional Radiators – Limits and methods of measurement
ANSI C63.4: 2014 American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

2 . SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	May 15, 2016
Testing commenced on	:	May 15, 2016
Testing concluded on	:	Jun. 6, 2016

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	120V / 60 Hz	○	230V / 50Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 5.0V from Adapter AC 120V/60Hz

2.3. Short description of the Equipment under Test (EUT)

The EUT is a Cenovo.

2.4. EUT operation mode

Operation mode	
Mode 1	Running BurnInTest

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - Supplied by the lab

○	COMPUTER	M/N:	AH-IPS
		Manufacturer:	HP
○	LCD	M/N:	8115
		Manufacturer:	DELL
○	Mouse	M/N:	KB212
		Manufacturer:	DELL

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.
1F, Building No. 13A, Zhonghaixin Science and Technology City, No.12,6 Road, Ganli Industrial Park, Buji Street, Longgang District, Shenzhen, Guangdong

Shenzhen CTL Testing Technology Co.,Ltd.
1/F.-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, Guangdong, China

3.2. Test Facility

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

FCC-Registration No.: 964637

Shenzhen Global Test Service Co.,Ltd EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 964637, Jul 24, 2015.

CNAS-Lab Code: L8169

Shenzhen Global Test Service Co.,Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories. Date of Registration: Dec. 11, 2015. Valid time is until Dec. 10, 2018.

FCC-Registration No.: 970318

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 970318, December 19, 2013.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4. Test Description

Emission Measurement		
Radiated Emission	47 CFR FCC Part 15 Subpart B Class B ANSI C63.4 2014	PASS
Conducted Disturbance	47 CFR FCC Part 15 Subpart B Class B ANSI C63.4 2014	PASS

Remark: N/A means “not applicable”.
The measurement uncertainty is not included in the test result.

3.5. 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 Shenzhen Global Test Service Co.,Ltd. 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.

Hereafter the best measurement capability for Shenzhen GTS laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	1~18GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.12dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	R&S	ENV216	3560.6550.08	2016/05/28	2017/05/27
LISN	R&S	ESH2-Z5	893606/008	2016/05/27	2017/05/26
Bilog Antenna	Sunol Sciences Corp.	JB1	A061713	2016/06/02	2017/06/01
EMI Test Receiver	R&S	ESCI	101102	2015/06/26	2016/06/25
Controller	EM Electronics	Controller EM 1000	N/A	2016/05/21	2017/05/20
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2016/05/19	2017/05/18
Amplifier	Agilent	8349B	3008A02306	2016/05/19	2017/05/18
Amplifier	Agilent	8447D	2944A10176	2016/05/19	2017/05/18
Temperature/Humidity Meter	Gangxing	CTH-608	02	2016/05/20	2017/05/19
RF Cable	HUBER+SUHNER	RG214	N/A	2016/05/20	2017/05/19

The calibration interval was one year.

4. TEST CONDITIONS AND RESULTS

4.1. Radiated Emission

4.1.1. LIMITS OF DISTURBANCE (Class B)

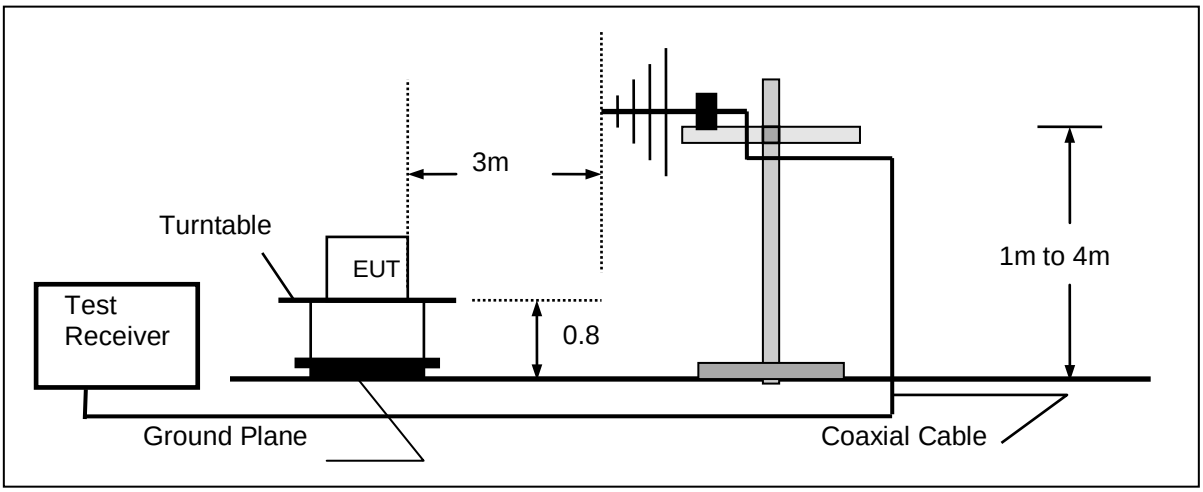
Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dBμV/m)
30 ~ 88	3	40
88~216	3	43.5
216 ~ 960	3	46
Above 960 PK	3	74
Above 960 AV	3	54

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

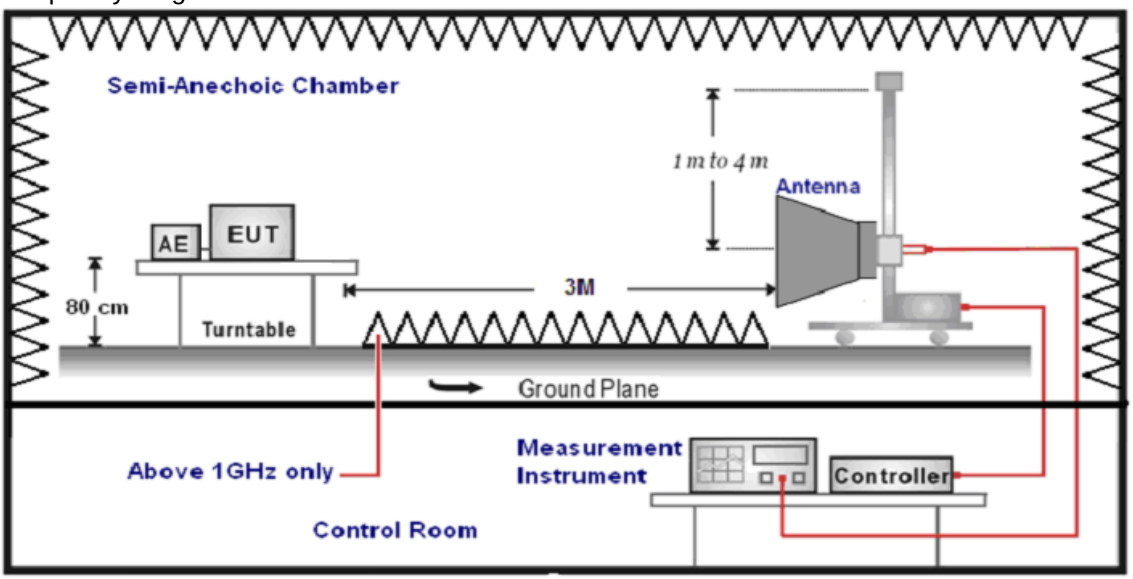
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

4.1.2. TEST CONFIGURATION

Frequency range 30MHz – 1000MHz



Frequency range above 1GHz



4.1.3. TEST PROCEDURE

EUT is tested in Semi-Anechoic Chamber. EUT is placed on a nonmetal table which is 0.8 meter above a grounded turntable. The turntable can rotate 360 degrees to determine the azimuth of the maximum emission level. EUT is set 3 meters away from the center of receiving antenna. The antenna can move up and down from 1 to 4 meter to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna are set on the test.

4.1.4. CLIMATIC CONDITIONS

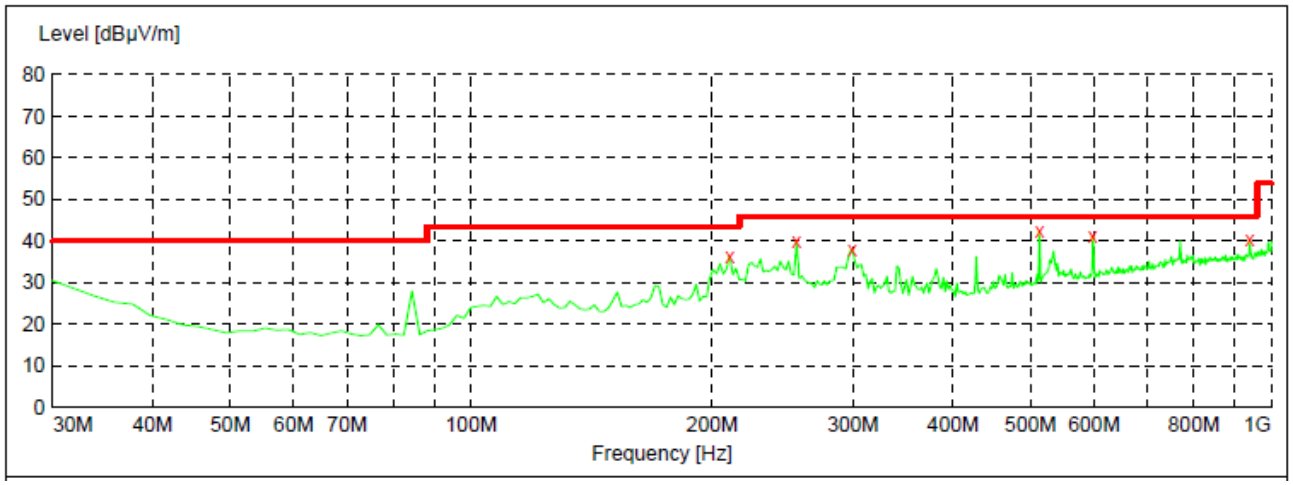
- ambient temperature : 24 ℃
- relative humidity: 48%
- atmospheric pressure: 960 mbar

4.1.5. TEST RESULTS

Remark: The highest frequency of the internal sources of the EUT is more than 108 MHz, the measurement shall only be made up to 18GHz. (Work frequency: 2.3GHz)

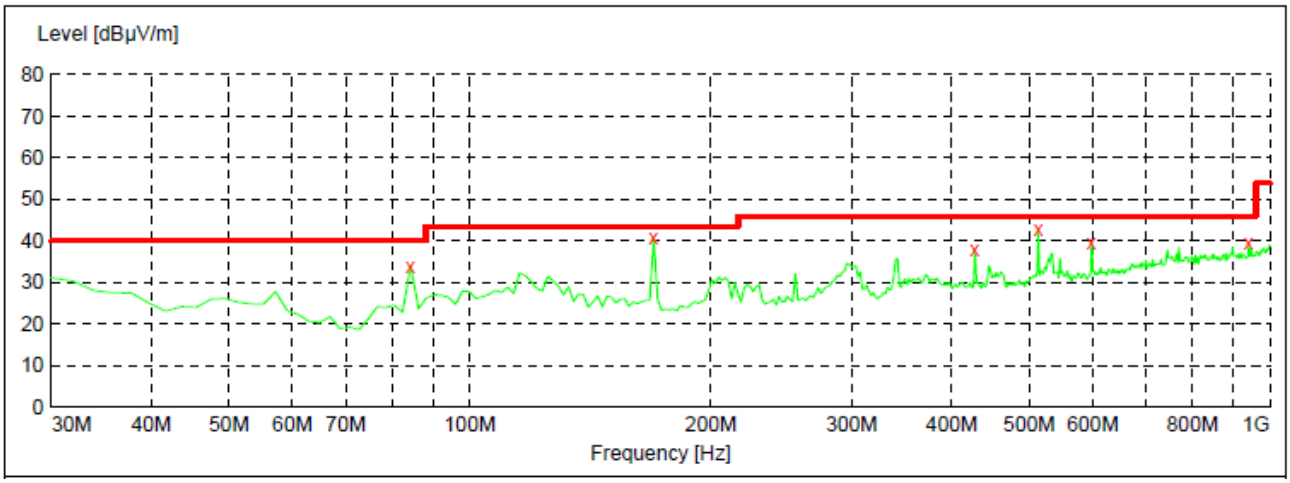
Test site: Shenzhen CTL Testing Technology Co., Ltd

Horizontal



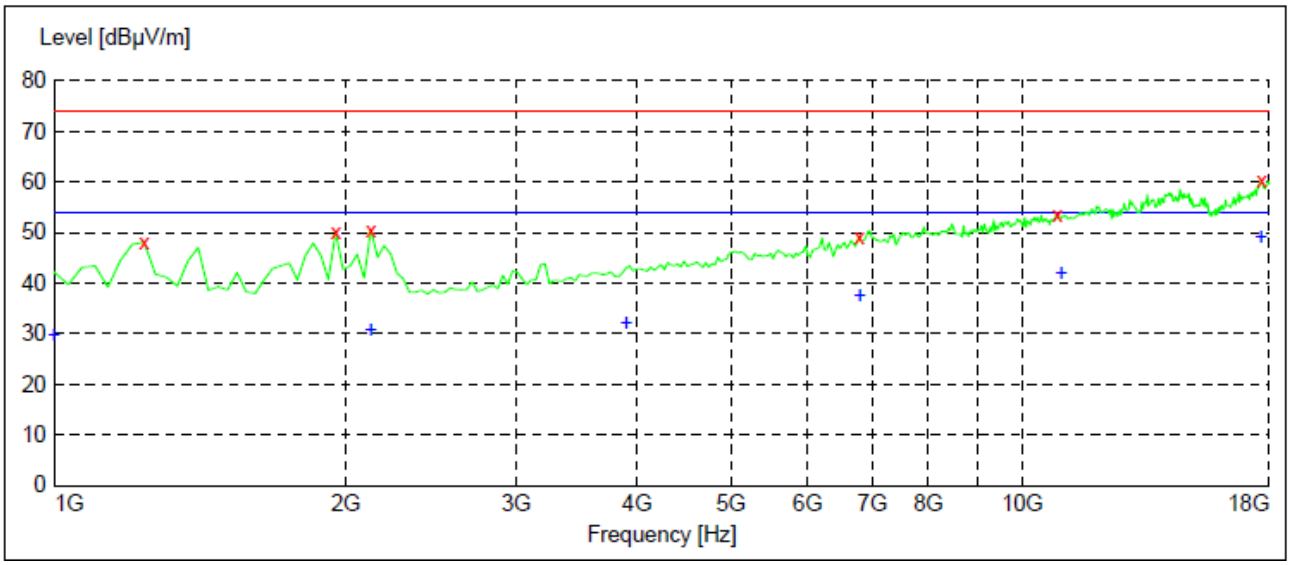
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
210.420000	36.40	14.0	43.5	7.1	PK	100	66.0	HORIZONTAL
255.040000	39.90	14.3	46.0	6.1	PK	100	154.0	HORIZONTAL
299.660000	38.00	15.2	46.0	8.0	PK	100	186.0	HORIZONTAL
513.060000	42.40	20.3	46.0	3.6	PK	300	214.0	HORIZONTAL
598.420000	41.00	21.7	46.0	5.0	PK	300	236.0	HORIZONTAL
939.860000	40.30	26.4	46.0	5.7	PK	300	288.0	HORIZONTAL

Vertical



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
84.320000	34.00	8.8	40.0	6.0	PK	100	46.0	VERTICAL
169.680000	40.90	13.3	43.5	2.6	PK	100	98.0	VERTICAL
427.700000	38.10	18.7	46.0	7.9	PK	100	157.0	VERTICAL
513.060000	42.90	20.3	46.0	3.1	PK	300	198.0	VERTICAL
598.420000	39.70	21.7	46.0	6.3	PK	300	234.0	VERTICAL
939.860000	39.50	26.4	46.0	6.5	PK	300	269.0	VERTICAL

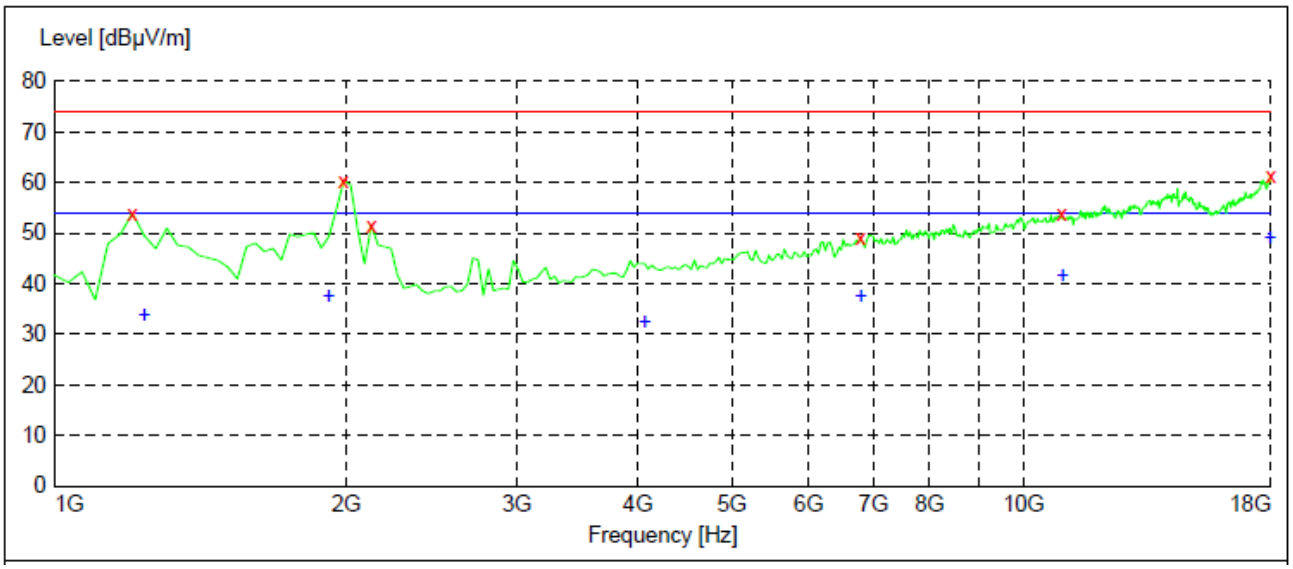
Horizontal



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1238.476954	48.10	-8.2	74.0	25.9	PK	100.0	94.00	HORIZONTAL
1953.907816	50.10	-5.0	74.0	23.9	PK	100.0	94.00	HORIZONTAL
2124.248497	50.60	-4.5	74.0	23.4	PK	100.0	151.00	HORIZONTAL
6791.583166	49.20	8.2	74.0	24.8	PK	100.0	94.00	HORIZONTAL
10879.759519	53.50	14.1	74.0	20.5	PK	100.0	42.00	HORIZONTAL
17693.386774	60.30	21.9	74.0	13.7	PK	100.0	20.00	HORIZONTAL

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1000.000000	29.70	-10.3	54.0	24.3	AV	100.0	133.00	HORIZONTAL
2124.248497	30.70	-4.5	54.0	23.3	AV	100.0	151.00	HORIZONTAL
3895.791583	32.10	1.4	54.0	21.9	AV	100.0	264.00	HORIZONTAL
6791.583166	37.60	8.2	54.0	16.4	AV	100.0	360.00	HORIZONTAL
10981.963928	42.10	14.3	54.0	11.9	AV	100.0	0.00	HORIZONTAL
17659.318637	49.00	21.9	54.0	5.0	AV	100.0	99.00	HORIZONTAL

Vertical



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1204.408818	53.90	-8.3	74.0	20.1	PK	100.0	211.00	VERTICAL
1987.975952	60.20	-4.7	74.0	13.8	PK	100.0	281.00	VERTICAL
2124.248497	51.60	-4.5	74.0	22.4	PK	100.0	178.00	VERTICAL
6791.583166	49.00	8.2	74.0	25.0	PK	100.0	178.00	VERTICAL
10947.895792	53.70	14.2	74.0	20.3	PK	100.0	73.00	VERTICAL
18000.000000	61.30	23.3	74.0	12.7	PK	100.0	73.00	VERTICAL

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1238.476954	33.90	-8.2	54.0	20.1	AV	100.0	211.00	VERTICAL
1919.839679	37.50	-5.2	54.0	16.5	AV	100.0	178.00	VERTICAL
4066.132265	32.40	1.8	54.0	21.6	AV	100.0	336.00	VERTICAL
6791.583166	37.60	8.2	54.0	16.4	AV	100.0	271.00	VERTICAL
10981.963928	41.60	14.3	54.0	12.4	AV	100.0	315.00	VERTICAL
17965.931864	49.10	23.1	54.0	4.9	AV	100.0	127.00	VERTICAL

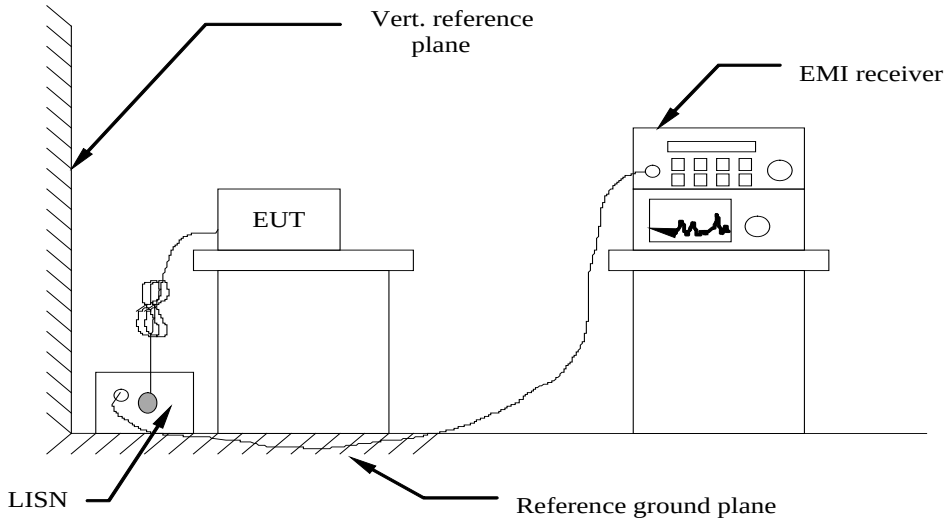
4.2. Conducted disturbance

4.2.1. LIMITS OF DISTURBANCE (Class B)

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150～0.500	66~56	56~46
0.500～5.000	56	46
5.000~30.000	60	50

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

4.2.2. TEST CONFIGURATION



4.2.3. TEST PROCEDURE

EUT is placed on a nonmetal table which is 0.8 meter (or 0.1 meter for floor-stood equipments) above the grounded reference plane. Connect the power line of the EUT to the LISN. Voltage of the power supply is varied over a range of 0.9 to 1.1 times of the rated voltage in order to check whether the level of disturbance varies considerably with the supply voltage at the selected frequency about 160KHz. Perform an initial measurement on each line with peak detector to identify the frequencies where the maximum disturbances may occur. Then measure and record the maximum disturbances with quasi-peak and average detector.

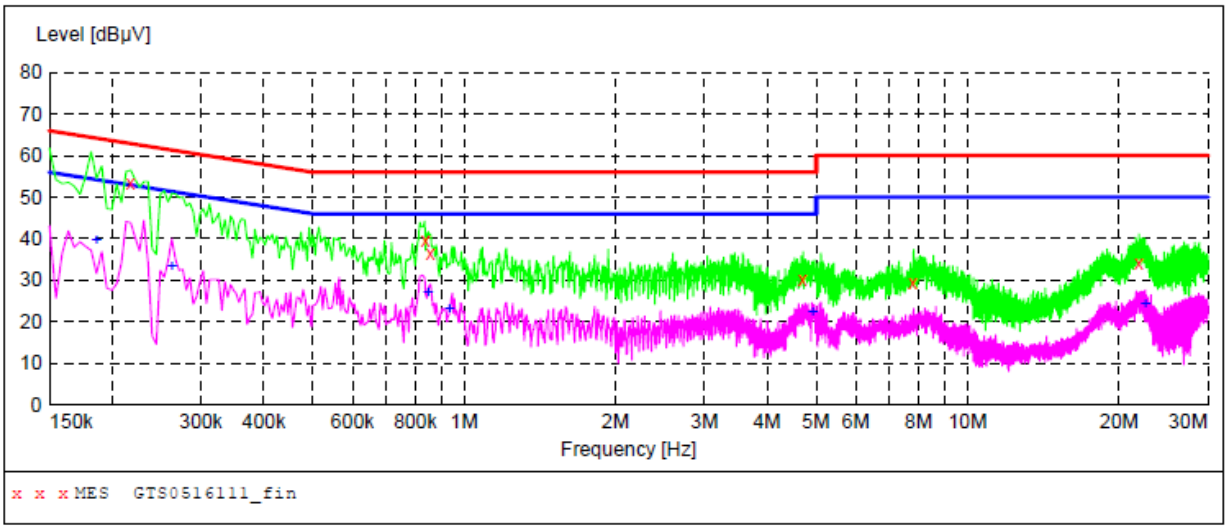
4.2.4. CLIMATIC CONDITIONS

- ambient temperature : 25 ℃
- relative humidity: 52%
- atmospheric pressure: 960 mbar

4.2.5. TEST RESULTS

Remark:We tested in AC 120V/60Hz and AC 240V/60Hz, the worst case was recorded .

Power supply:	DC 5V from Adapter	Polarization	L



MEASUREMENT RESULT: "GTS0516111_fin"

5/16/2016 10:53AM

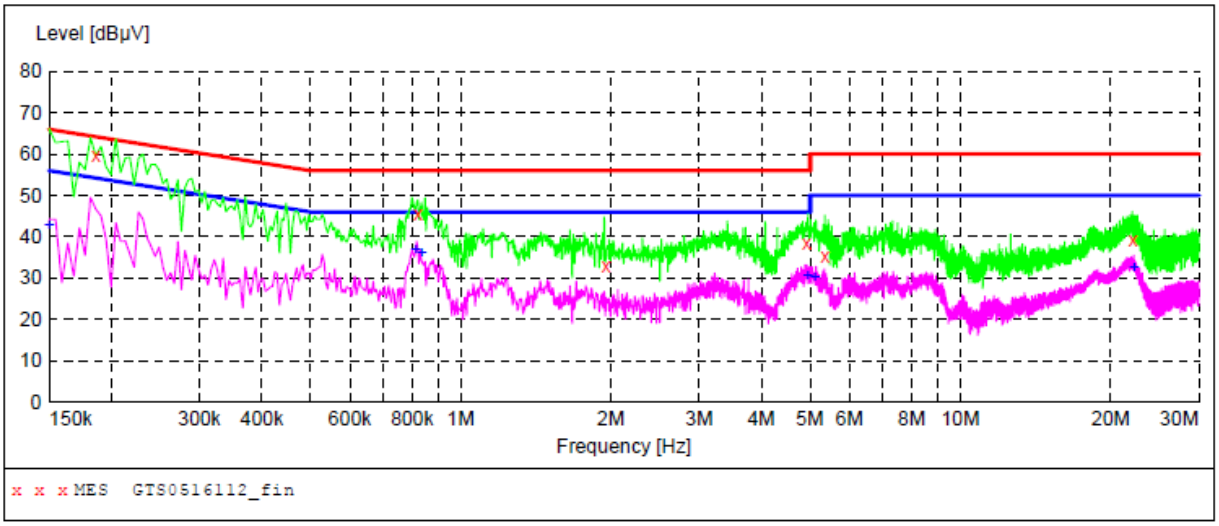
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.217500	53.30	10.0	63	9.6	QP	L1	GND
0.838500	39.60	9.6	56	16.4	QP	L1	GND
0.856500	36.50	9.6	56	19.5	QP	L1	GND
4.695000	30.20	9.3	56	25.8	QP	L1	GND
7.777500	29.30	9.1	60	30.7	QP	L1	GND
21.889500	34.10	7.0	60	25.9	QP	L1	GND

MEASUREMENT RESULT: "GTS0516111_fin2"

5/16/2016 10:53AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.186000	39.70	10.0	54	14.5	AV	L1	GND
0.262500	33.20	9.9	51	18.2	AV	L1	GND
0.847500	27.20	9.6	46	18.8	AV	L1	GND
0.933000	23.10	9.6	46	22.9	AV	L1	GND
4.920000	22.30	9.3	46	23.7	AV	L1	GND
22.510500	24.30	7.0	50	25.7	AV	L1	GND

Power supply:	DC 5V from Adapter	Polarization	N



MEASUREMENT RESULT: "GTS0516112_fin"

5/16/2016 10:56AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.186000	59.90	10.0	64	4.3	QP	N	GND
0.820500	45.60	9.7	56	10.4	QP	N	GND
1.954500	33.00	9.5	56	23.0	QP	N	GND
4.920000	38.50	9.3	56	17.5	QP	N	GND
5.361000	35.40	9.3	60	24.6	QP	N	GND
22.123500	39.40	7.0	60	20.6	QP	N	GND

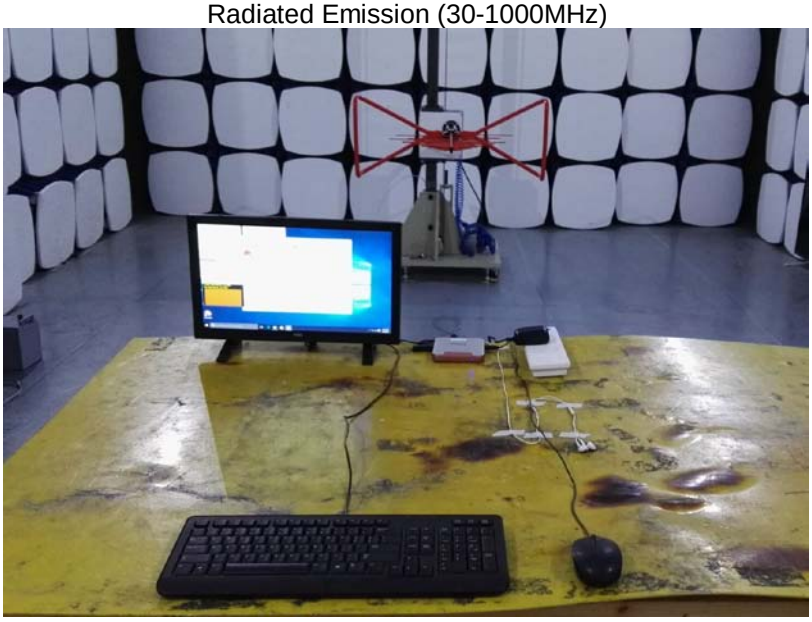
MEASUREMENT RESULT: "GTS0516112_fin2"

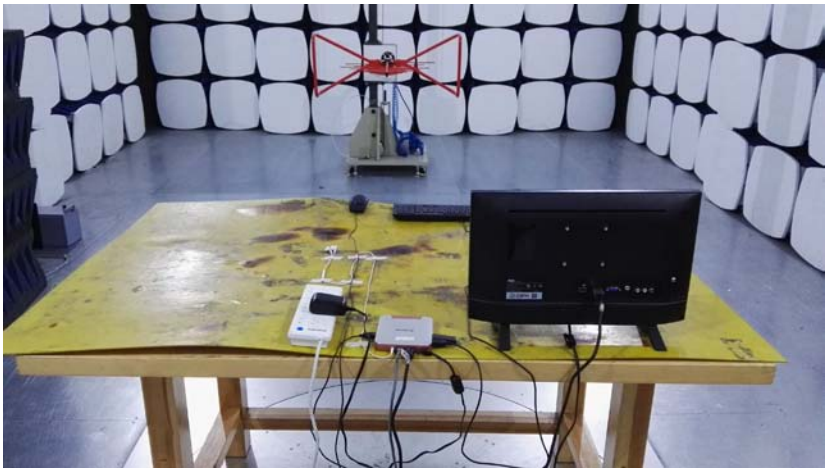
5/16/2016 10:56AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	42.90	10.1	56	13.1	AV	N	GND
0.811500	36.70	9.7	46	9.3	AV	N	GND
0.834000	36.20	9.6	46	9.8	AV	N	GND
4.947000	30.50	9.3	46	15.5	AV	N	GND
5.113500	30.30	9.3	50	19.7	AV	N	GND
22.267500	32.70	7.0	50	17.3	AV	N	GND

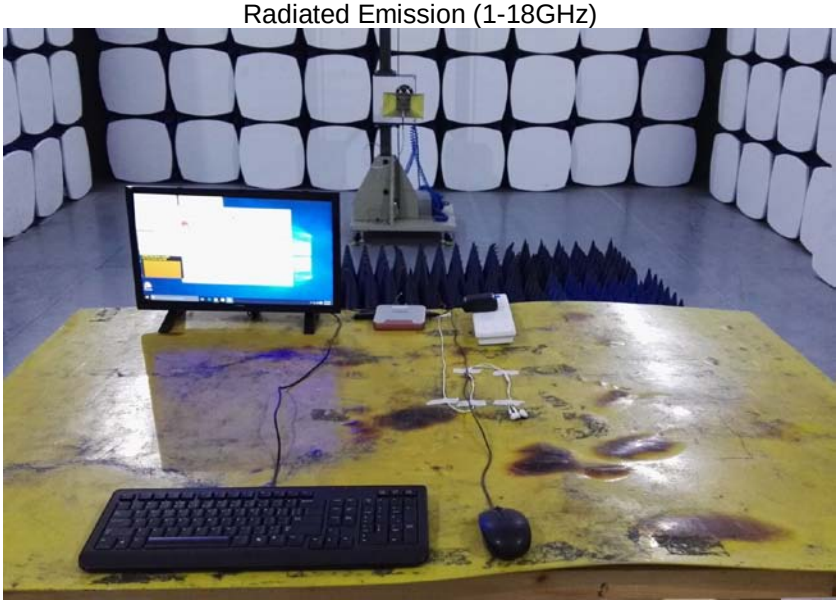
5. Test Setup Photos of the EUT

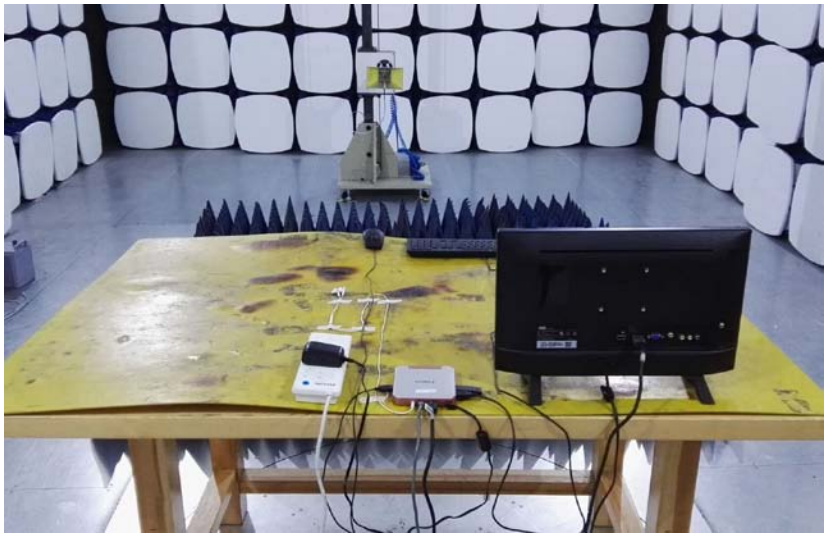
Radiated Emission (30-1000MHz)





Radiated Emission (1-18GHz)

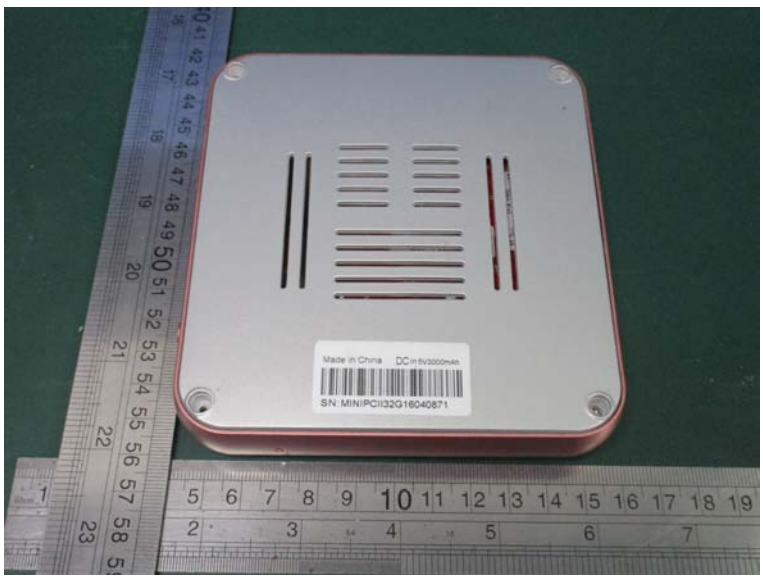




Conducted Emission

6. External and Internal Photos of the EUT

External Photos

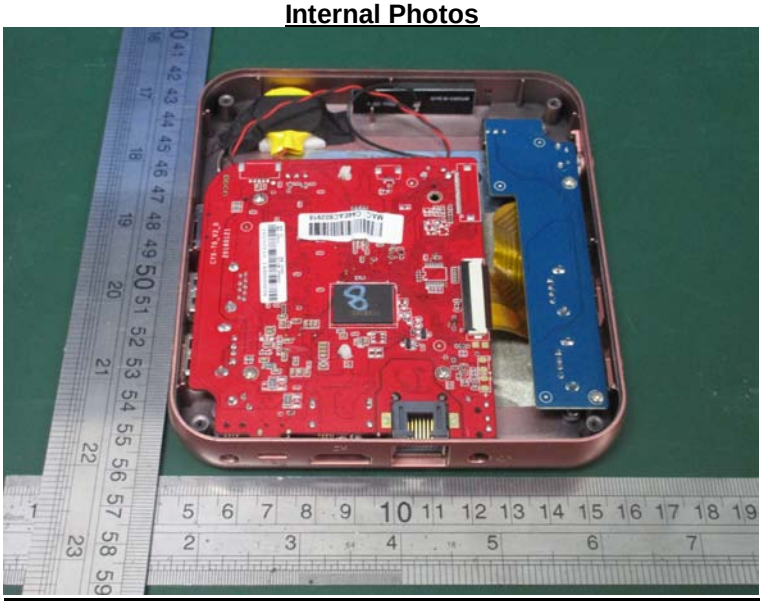


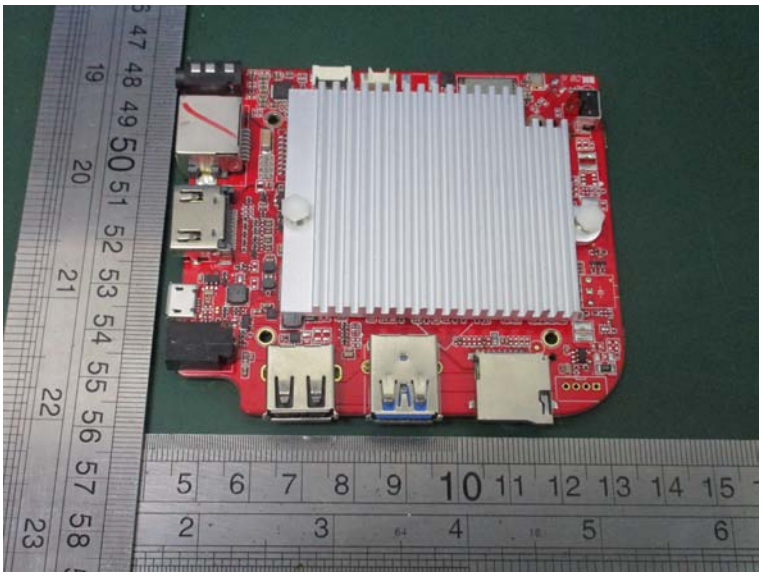

Lenovo

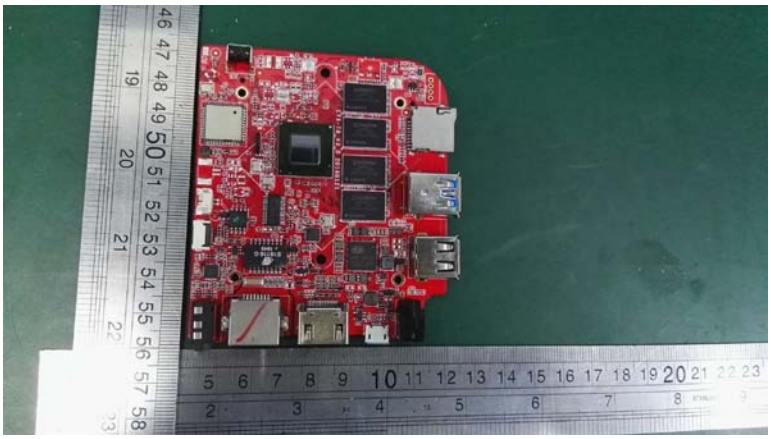

Lenovo

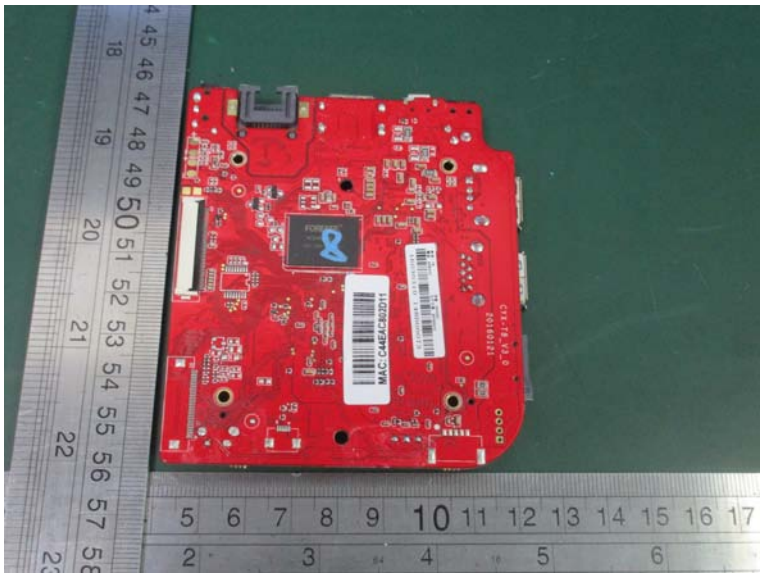

AC ADAPTER 1620
MODEL:K25V050400U
INPUT:100-240V~50/60Hz 0.6A
OUTPUT: 5.0V 4.0A
I.T.E. power supply
CONFORMS TO UL STD.60950-1
CERTIFIED TO CSA STD. C22.2 No. 60950-1
C ETL US
Intertek
LPS
4006448
MADE IN CHINA
Dongguan Guanjin Electronics Technology Co.,Ltd

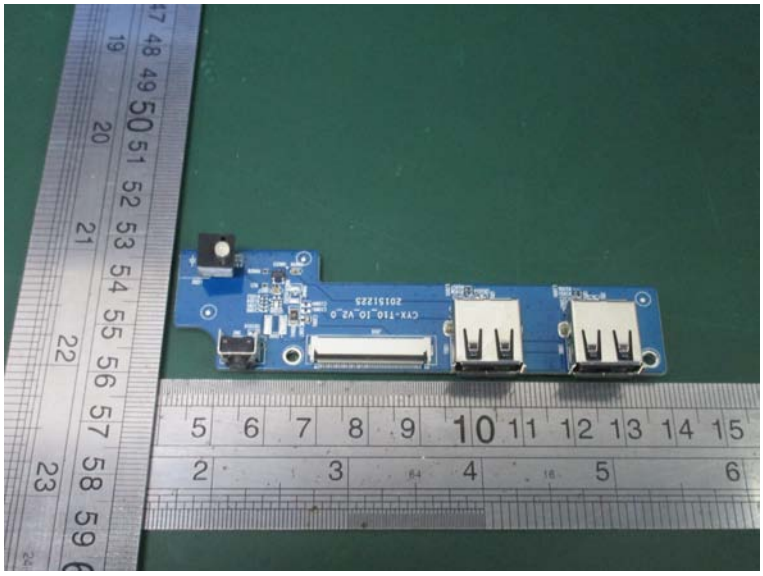
Internal Photos

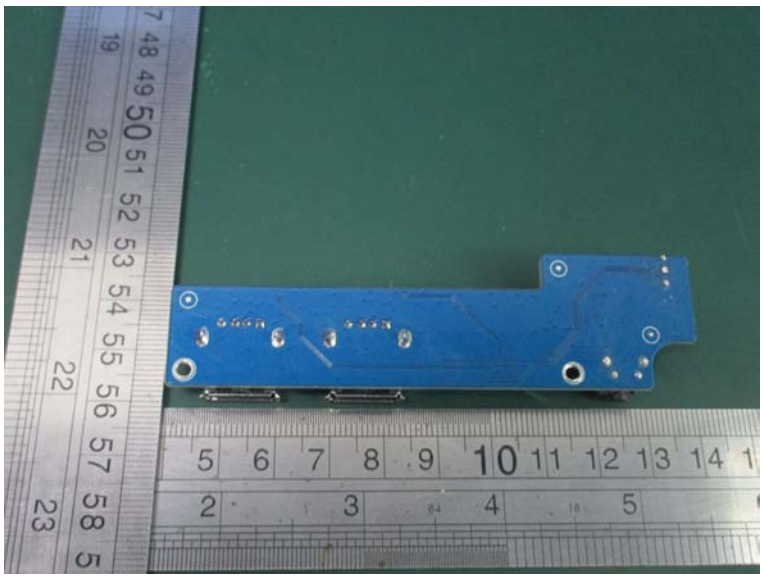












.....End of Report.....