

FCC TEST REPORT

FCC ID : RF8-HS8086
Applicant : Hansun Technologies Inc.
Address : 209 Zhuyuan Road, New District, Suzhou, Jiangsu, China
Manufacturer : Hansun Technologies Inc.
Address : 209 Zhuyuan Road, New District, Suzhou, Jiangsu, China

Equipment Under Test (EUT) :

Product Name : TurboTV Bar&AnjoyTV Bar
Model No. : HS8086II, HS8086A
Rules : FCC CFR47 Part15 B Section 15.109:2010

Date of Test : Nov. 30 ~ Dec. 10, 2012

Date of Issue : Dec. 13, 2012

Test Result : PASS*

Remark:

* The sample detailed above has been tested to the requirements of FCC rules mentioned above.

The test results have been reviewed against the directives above and found to meet their essential requirements.

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

PERPARED BY:

Waltek Services (Shenzhen) Co., Ltd.

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Shenzhen, China

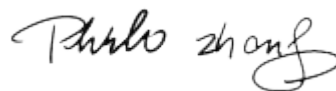
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Compiled by:



Zero Zhou / Project Engineer

Approved by:



Philo Zhong / Manager

Report No.: WT12085651-U-S-F

2 Test Summary

Test Items	Test Requirement	Result
Conducted Emissions	15.107	PASS
Radiated Emissions	15.109	PASS

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4 General Information

4.1 General Description of E.U.T.

Product Name	: TurboTV Bar&AnjoyTV Bar
Model No.	: HS8086II,HS8086A
Model Description	: only model name is different, the other circuit principle and PCB wiring are all the same.
Oscillator	: Crystal 32.768kHz, 38.4MHz, 24MHz and 27MHz
Remark	:This device working with two kinds of remote: IR remote(Exempted device) RF remote(Contains two granted FCC ID QZVCZ-SRC-AF100 and QZVCZ-DG-AF100)

4.2 Details of E.U.T.

Technical Data	: DC12V, 1A powered from adapter
Remark	:This device can use with 3 kinds of adapter optionally.Only the worst data when using with adapter 2 were shown in this report.
Adapter1	:Ktec Model:KSAS0101200100HU INPUT:100-240V~50/60Hz 0.4A
Adapter2	:Mass Power Model:SEF1200100A1BA INPUT:100-240V~50/60Hz 0.3A
Adapter3	:APD Model:WA-12L12FU INPUT:100-240V~50/60Hz 0.5A Max.

4.3 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: IC7760A**

Waltek Services (Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A, July 12, 2012.

- **FCC – Registration No.: 880581**

Waltek Services (Shenzhen) 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 880581, May 26, 2011.

4.4 Test Location

All the tests were performed at:

Waltek Services (Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd., Songgang Street, Baoan District, Shenzhen, China

5 Equipment Used during Test

5.1 Equipments List

Conducted Emissions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	101178	Aug. 13,2012	Aug. 13,2013
2.	LISN	R&S	ENV216	101215	Aug. 13,2012	Aug. 13,2013
3.	Cable	HUBER+SUHNER	CBL2-NN-3M	2230300	Aug.14,2012	Aug. 14,2013
3m Semi-anechoic Chamber for Radiation Emissions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer	Agilent	E7405A	MY45114943	Aug. 13,2012	Aug. 13,2013
2.	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Aug. 13,2012	Aug. 13,2013
3.	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Aug. 13,2012	Aug. 13,2013
4.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Aug. 13,2012	Aug. 13,2013
5.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	399	Aug. 13,2012	Aug. 13,2013
6.	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Feb .23,2012	Feb .23,2013
7.	Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-148	Aug. 13,2012	Aug. 13,2013
8.	10m Coaxial Cable with N- plug	SCHWARZBECK	AK 9515 H	-	Aug. 13,2012	Aug. 13,2013
9.	10m 50 Ohm Coaxial Cable with N-plug	SCHWARZBECK	AK 9513	-	Aug. 13,2012	Aug. 13,2013
Associated Equipment						
1	Computer	Acer	Aspire AG1720	1300148096	-	-
2	Mouse	shuangfeiyan	OP-220		-	-
3	Keyboard	shuangfeiyan	KB-8620D		-	-
4	LCD	MAG	EV527	W11W061001477	-	-

5.2 Measurement Uncertainty

Parameter	Uncertainty
Radiated Spurious Emissions test	± 5.03 dB (Bilog antenna 30M~1000MHz)
	± 4.74 dB (Horn antenna 1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

5.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

6 Conducted Emissions

Test Requirement:	FCC CFR 47 Part 15 Section 15.107
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class:	Class B
Limit:	66-56 dBμV between 0.15MHz & 0.5MHz 56 dBμV between 0.5MHz & 5MHz 60 dBμV between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 E.U.T. Test Condition

Operating Environment:

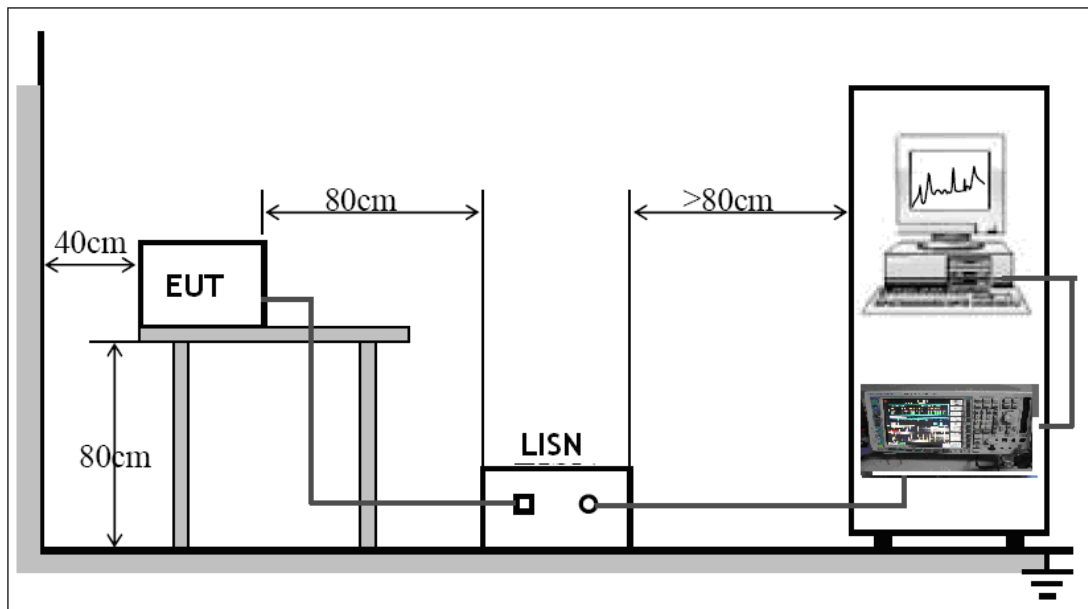
Temperature: 25.5 °C
Humidity: 51 % RH
Atmospheric Pressure: 1012 mbar

Operation Mode and Spectrum Setup:

The EUT was tested in Ethernet linking mode and connected with PC. The worst data were shown as follow.

6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, the specification used in this report was the FCC Part15.207 limits.



The EUT was placed on the test table in shielding room

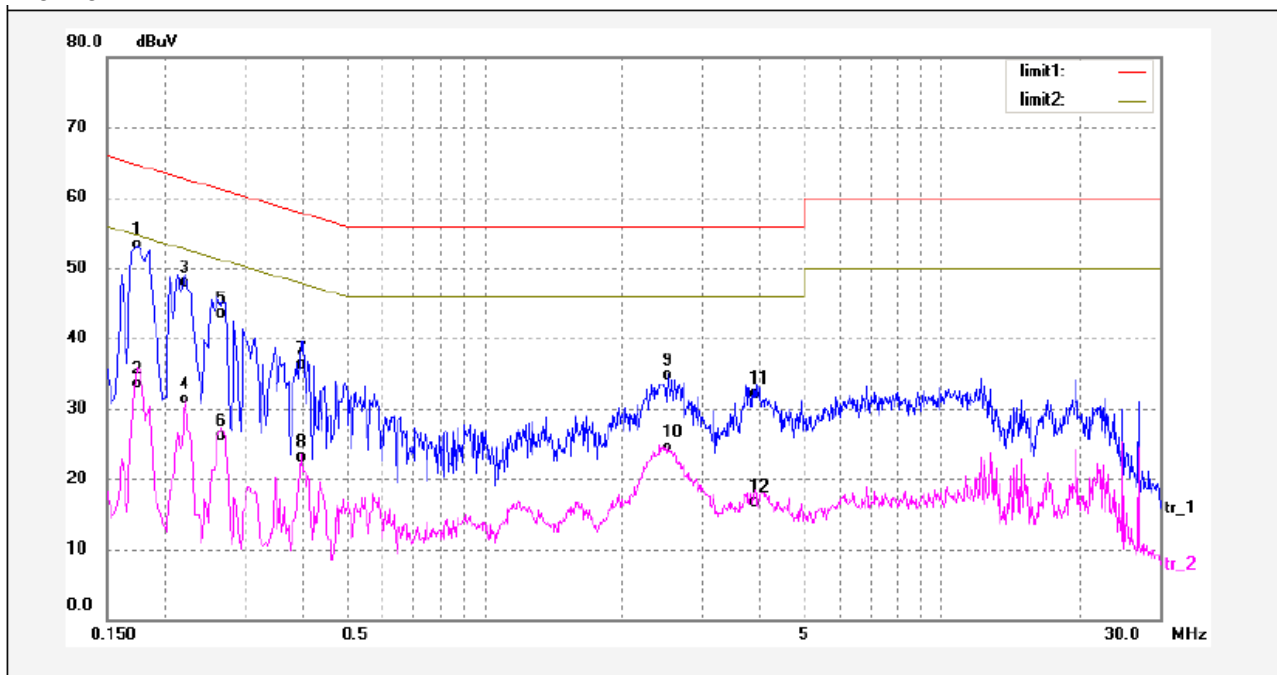
6.3 Conducted Emission Test Result

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

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Test Mode: Ethernet linking and connected with PC

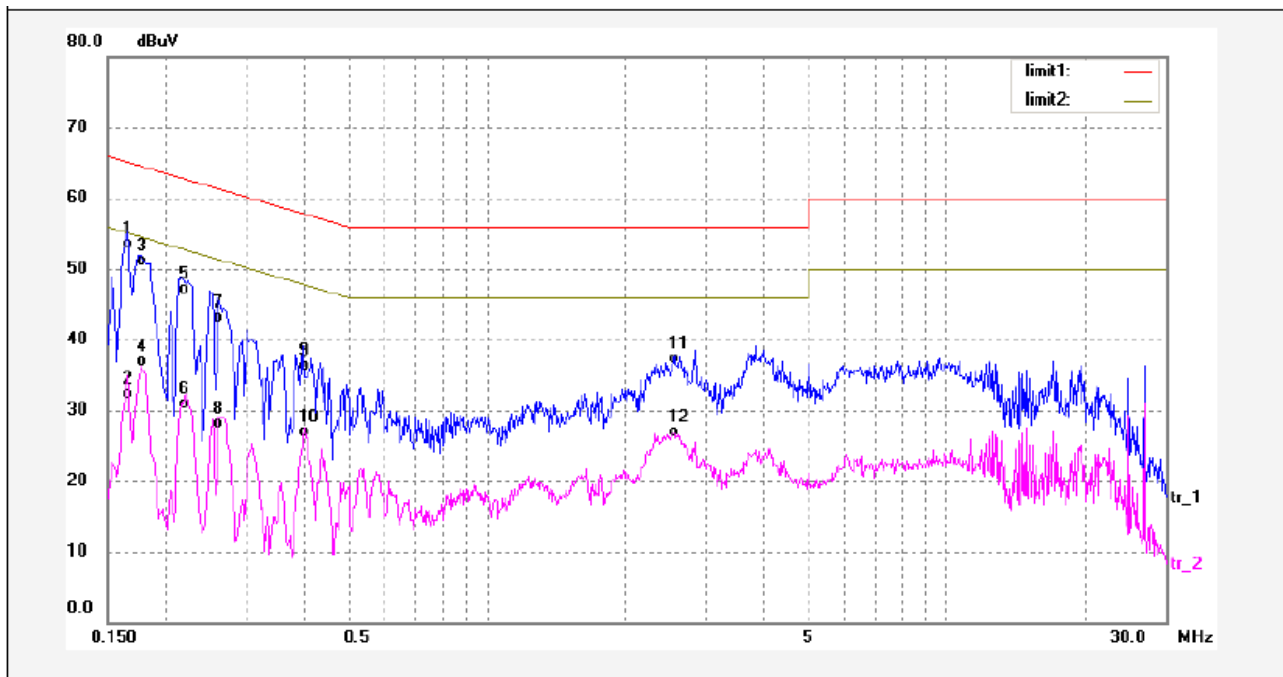
Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1740	42.17	10.35	52.52	64.76	-12.24	QP	
2	0.1740	22.38	10.35	32.73	54.76	-22.03	AVG	
3	0.2208	36.72	10.35	47.07	62.79	-15.72	QP	
4	0.2208	20.16	10.35	30.51	52.79	-22.28	AVG	
5	0.2620	32.42	10.35	42.77	61.36	-18.59	QP	
6	0.2620	15.01	10.35	25.36	51.36	-26.00	AVG	
7	0.4020	25.12	10.35	35.47	57.81	-22.34	QP	
8	0.4020	12.05	10.35	22.40	47.81	-25.41	AVG	
9	2.5260	23.51	10.38	33.89	56.00	-22.11	QP	
10	2.5260	13.42	10.38	23.80	46.00	-22.20	AVG	
11	3.9300	20.88	10.39	31.27	56.00	-24.73	QP	
12	3.9300	5.43	10.39	15.82	46.00	-30.18	AVG	

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Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1660	42.26	10.35	52.61	65.15	-12.54	QP	
2	0.1660	21.11	10.35	31.46	55.15	-23.69	AVG	
3	0.1787	39.99	10.35	50.34	64.54	-14.20	QP	
4	0.1787	25.79	10.35	36.14	54.54	-18.40	AVG	
5	0.2180	35.93	10.35	46.28	62.89	-16.61	QP	
6	0.2180	19.76	10.35	30.11	52.89	-22.78	AVG	
7	0.2620	31.98	10.35	42.33	61.36	-19.03	QP	
8	0.2620	16.92	10.35	27.27	51.36	-24.09	AVG	
9	0.3980	25.20	10.35	35.55	57.89	-22.34	QP	
10	0.3980	15.73	10.35	26.08	47.89	-21.81	AVG	
11	2.5740	26.18	10.38	36.56	56.00	-19.44	QP	
12	2.5740	15.78	10.38	26.16	46.00	-19.84	AVG	

7 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.109

Test Method: ANSI C63.4:2003

Test Result: PASS

Frequency Range: 32.768 KHz to 13 GHz

Except as otherwise indicated in paragraphs (b)(2) or (b)(3), for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to 5th harmonic of the highest frequency .

Measurement Distance: 3m

15.109 Limit:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 -0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

7.1 EUT Operation:

Operating Environment:

Temperature: 25.5 °C

Humidity: 51 % RH

Atmospheric Pressure: 1012 mbar

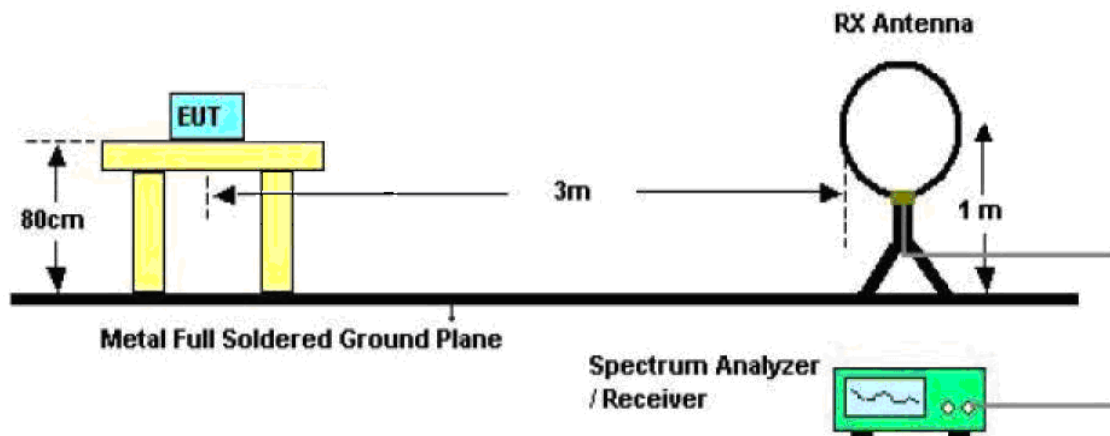
Operation Mode:

The EUT was tested in Ethernet linking mode and connected with PC. The worst data were shown as follow.

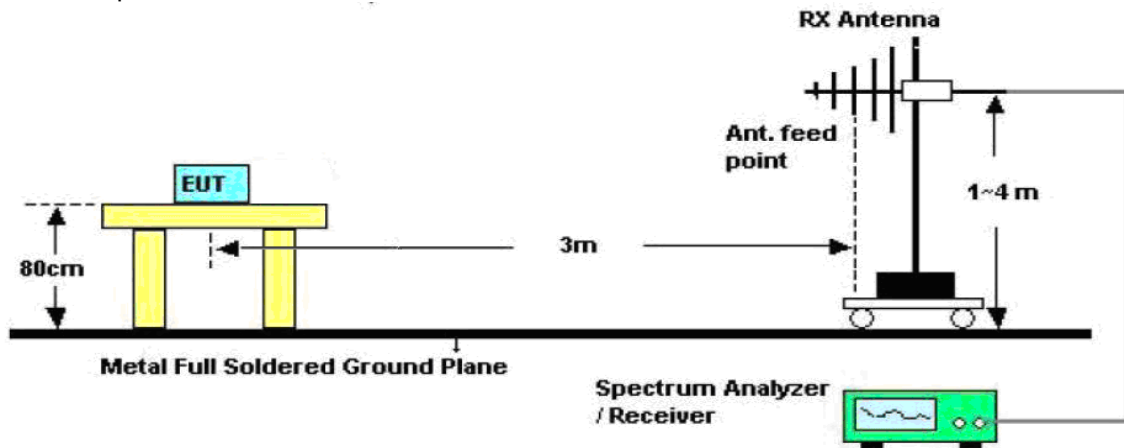
7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4: 2003.

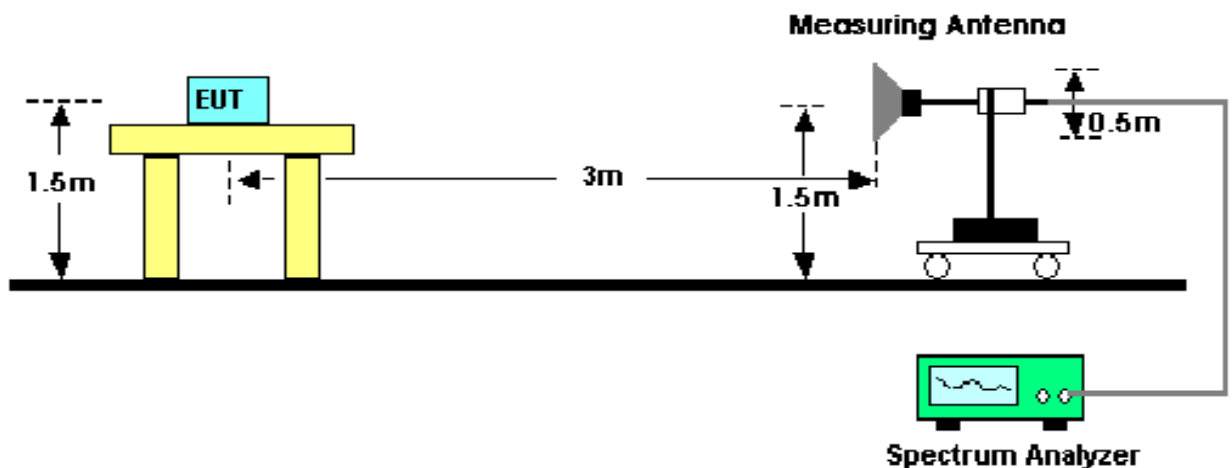
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



7.3 Spectrum Analyzer Setup

According to FCC Part15 Rules, the system was tested from 32.768KHz to 13 GHz.

Below 30MHz

Sweep SpeedAuto
 IF Bandwidth.....10KHz
 Video Bandwidth.....10KHz
 Resolution Bandwidth.....10KHz

30 MHz to 1 GHz.

Sweep SpeedAuto
 IF Bandwidth.....120 KHz
 Video Bandwidth.....100KHz
 Quasi-Peak Adapter Bandwidth120 KHz
 Quasi-Peak Adapter ModeNormal
 Resolution Bandwidth.....100KHz

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Above 1GHz

Sweep Speed	Auto
IF Bandwidth.....	120 KHz
Video Bandwidth.....	3MHz
Quasi-Peak Adapter Bandwidth	120 KHz
Quasi-Peak Adapter Mode	Normal
Resolution Bandwidth.....	1MHz

7.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under X-axis. The worst data were shown as follow.

7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:
 Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain the "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

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7.6 Summary of Test Results

Test mode: Ethernet linking and connected with PC

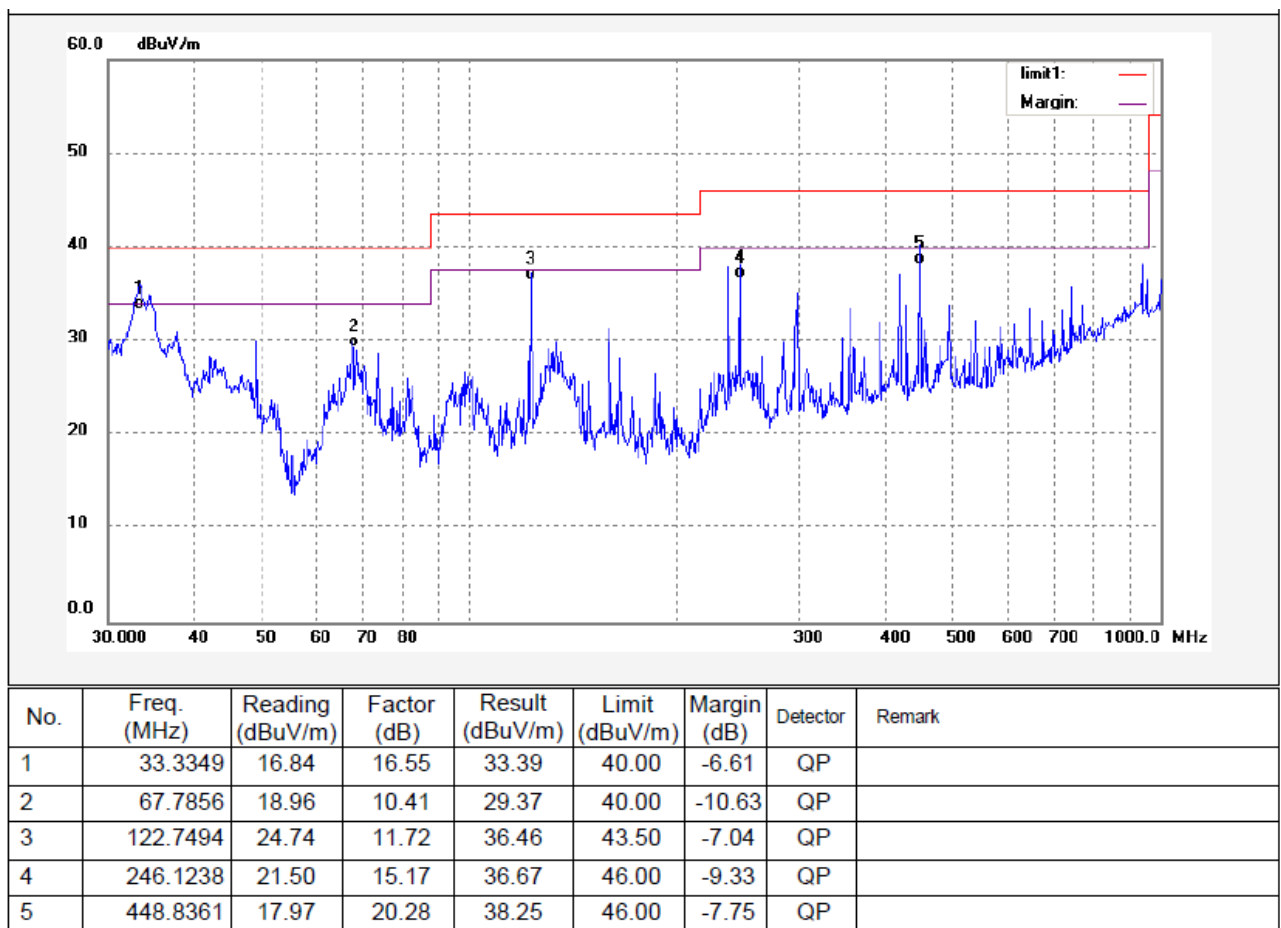
Test Frequency : Below 30MHz

Remark: After pretested, the emission below 30MHz is no more than background level, the data do not show in the report.

Test mode: Ethernet linking and connected with PC

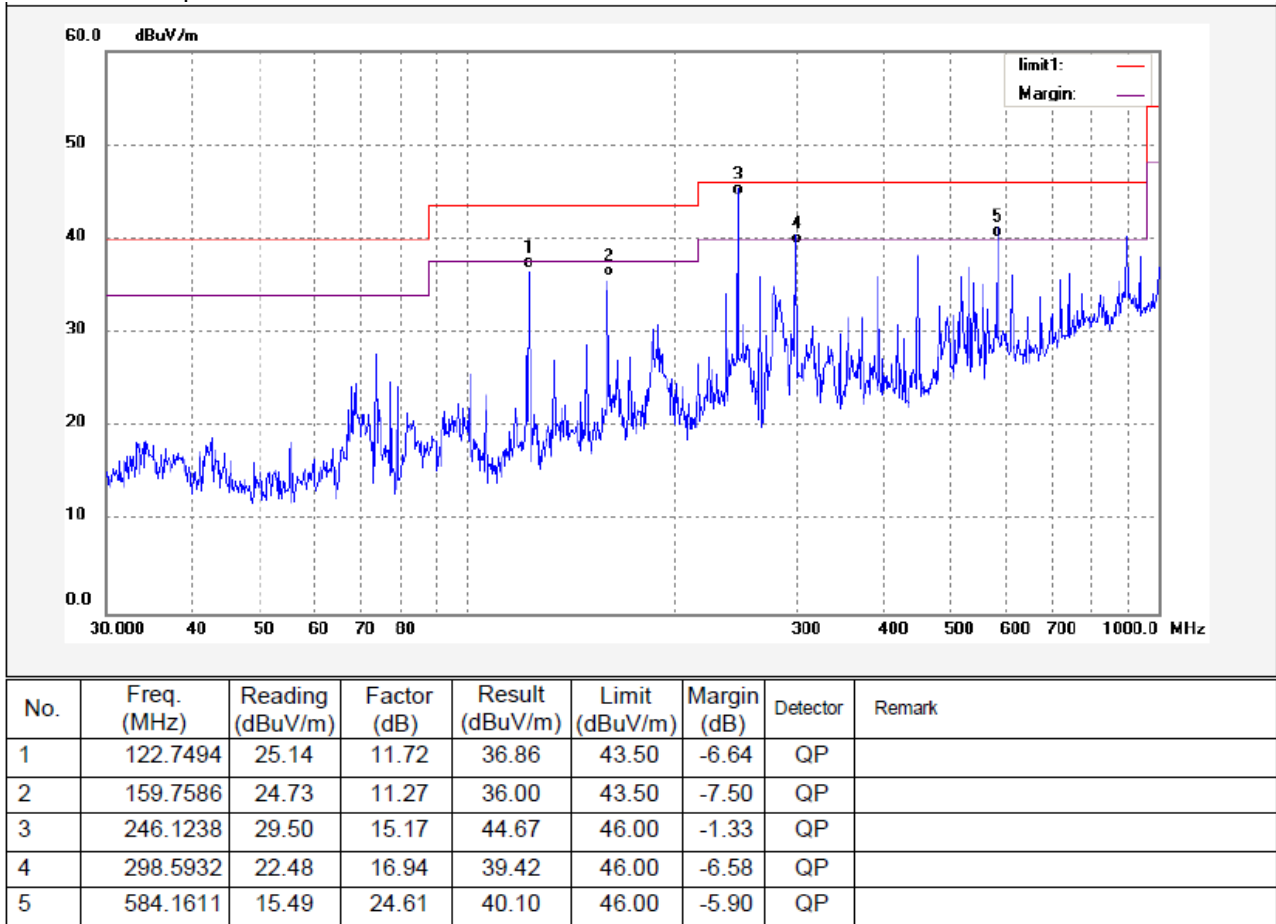
Test Frequency : 30MHz ~ 1000MHz

Antenna polarization: Vertical



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Antenna polarization: Horizontal

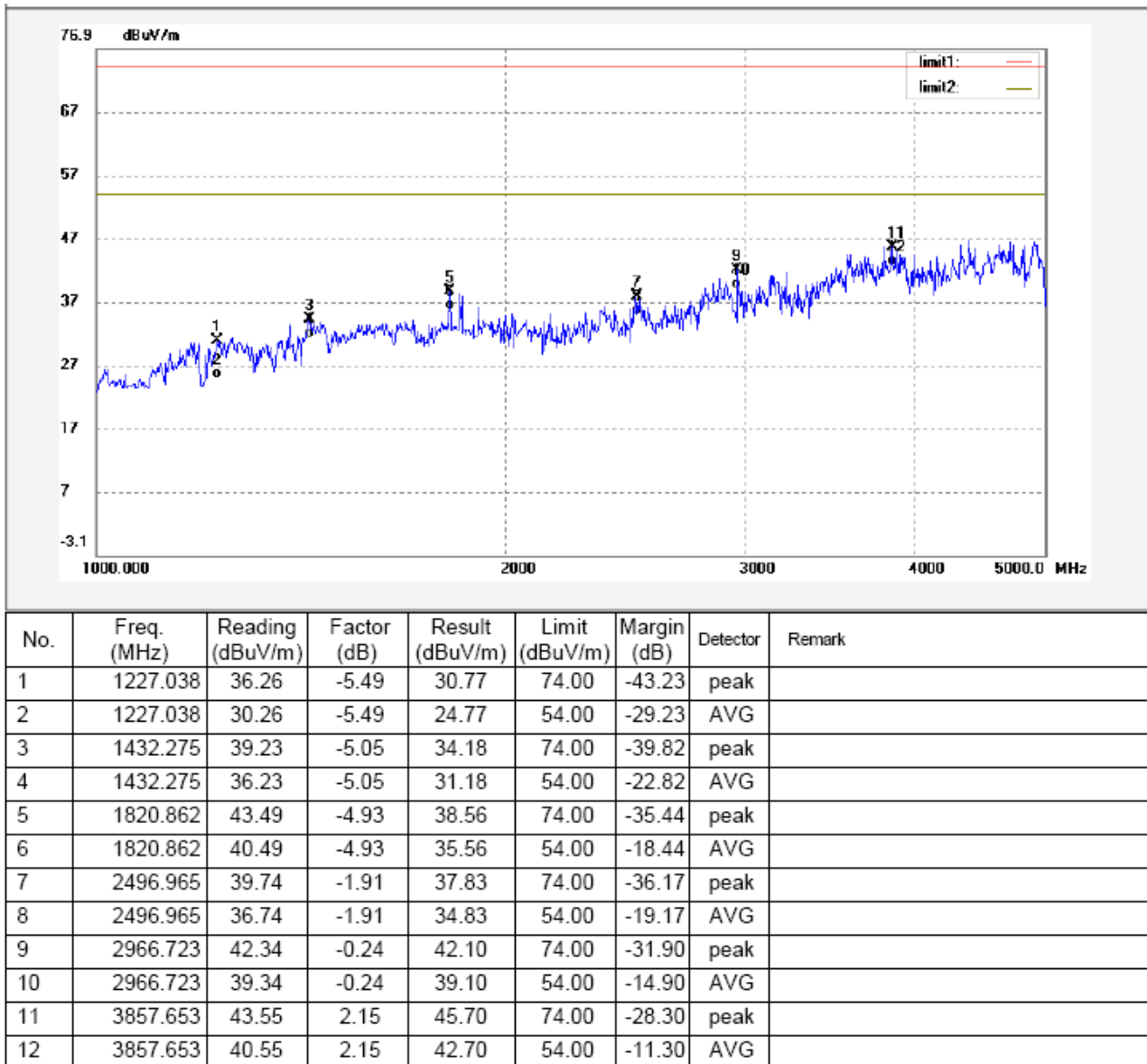


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Test mode: Ethernet linking and connected with PC

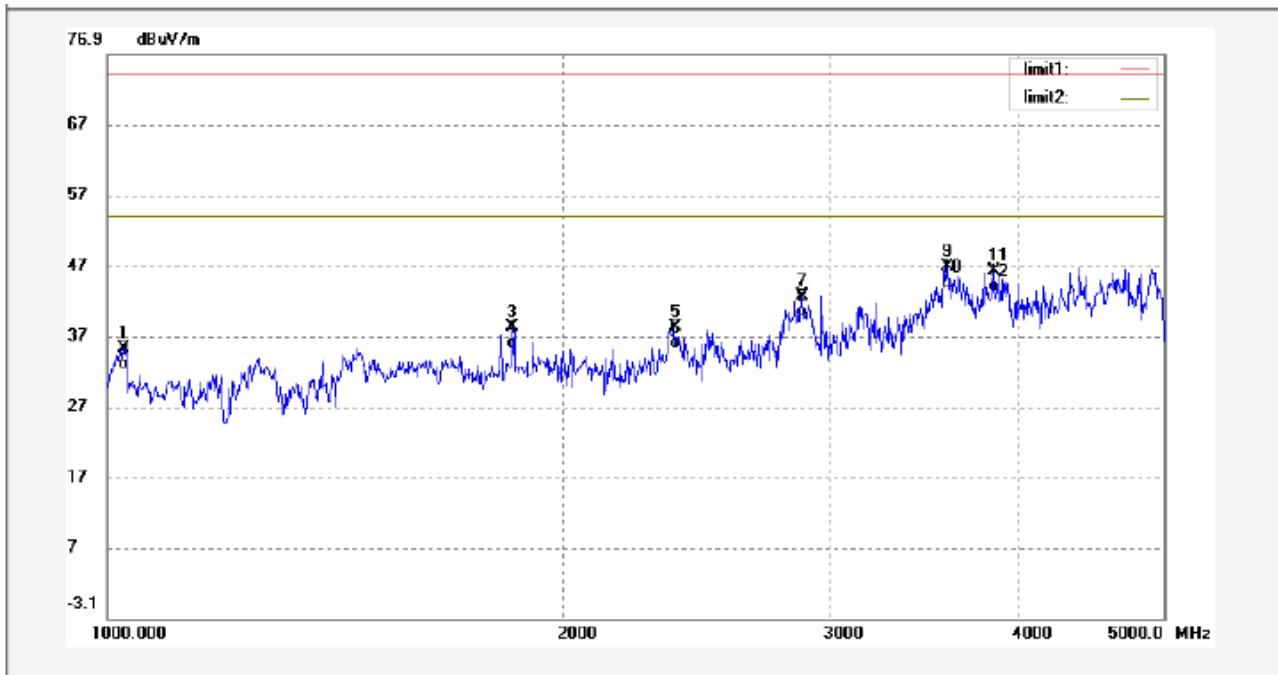
Test Frequency : from 1GHz to 5GHz

Antenna polarization: Vertical



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Antenna polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1024.460	41.88	-6.66	35.22	74.00	-38.78	peak	
2	1024.460	38.88	-6.66	32.22	54.00	-21.78	AVG	
3	1853.418	43.04	-4.75	38.29	74.00	-35.71	peak	
4	1853.418	40.04	-4.75	35.29	54.00	-18.71	AVG	
5	2371.499	40.25	-2.00	38.25	74.00	-35.75	peak	
6	2371.499	37.25	-2.00	35.25	54.00	-18.75	AVG	
7	2877.288	43.07	-0.42	42.65	74.00	-31.35	peak	
8	2877.288	40.07	-0.42	39.65	54.00	-14.35	AVG	
9	3593.666	45.59	1.27	46.86	74.00	-27.14	peak	
10	3593.666	42.59	1.27	43.86	54.00	-10.14	AVG	
11	3857.653	44.05	2.15	46.20	74.00	-27.80	peak	
12	3857.653	41.05	2.15	43.20	54.00	-10.80	AVG	

Test mode: Ethernet linking and connected with PC

Test Frequency : above 5GHz

Remark: After pretested, the emissions above 5GHz is no more than background level, the data do not show in the report.

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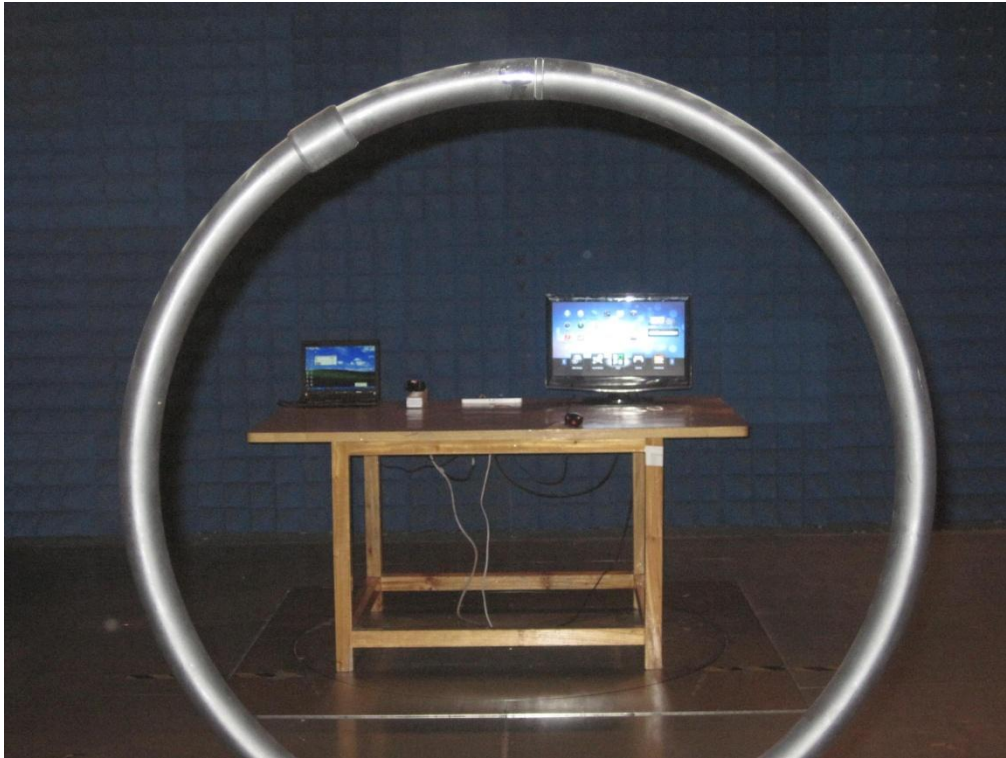
8 Photographs –Test Setup

8.1 Conducted Emissions

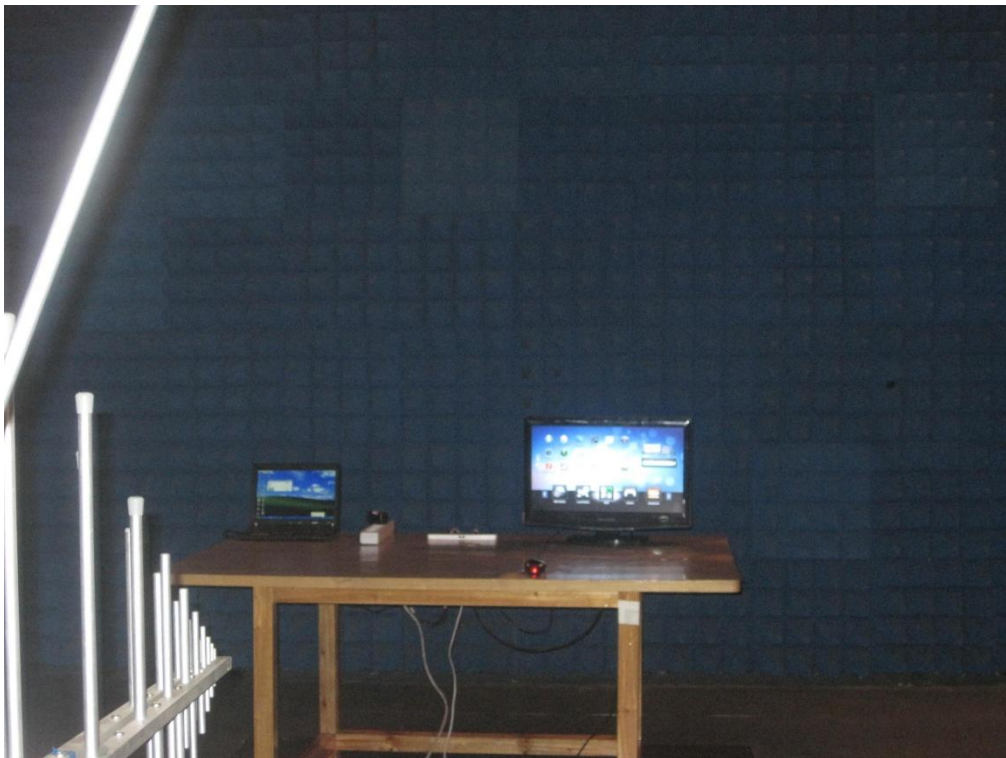


8.2 Radiated Emissions

Below 30MHz



From 30-1000MHz



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Above 1000MHz



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9 Photographs - Constructional Details

9.1 EUT – External View

Refer to test report No.: WT12085649-U-S-F

9.2 EUT- Internal View

Refer to test report No.: WT12085649-U-S-F

==End of test report==