FCC TEST REPORT

According to

47 CFR, Part 2, Part 15 and CISPR PUB. 22

Applicant	:	LG Electronics USA
Address	:	1000 Sylvan Avenue Englewood Cliffs New Jersey United States
Manufacturer	:	LG Electronics Nanjing Display Co., Ltd.
Address	:	No.346,Yaoxin Road Economic & Technical Development Zone Nanjing China
Equipment	:	LCD Monitor
Model No.	:	IPS226VX
FCC ID	:	BEJIPS226VX
Trade Name	:	LG

- The test result refers exclusively to the test presented test model / sample.
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- The test report must not be used by the clients to claim product certification approval by ***NVLAP*** or any agency of the Government.

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Document history

Attachment No.	Date	Description
SEFD1008065	Aug 30, 2010	First issue

FCC TEST REPORT

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I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 – 2003** and the energy emitted by this equipment was ***passed*** **CISPR PUB. 22 and FCC Part 15 in** both radiated and conducted emission class B limits. Testing was carried out on Aug 21, 2010 at ***Cerpass Technology Corp.***

Documented By: Approved By:

Cathy Chen/ Administration Hill Chen/ Technical director

1. Summary of Test Procedure and Test Result

Test Item	Normative References	Test Result
Conducted Emission	ANSI C63.4-2003 FCC Part 15 Subpart B	PASS
Radiated Emission	ANSI C63.4-2003 FCC Part 15 Subpart B	PASS

2. Test Configuration of Equipment under Test

2.1. Feature of Equipment under Test

LCD Monitor	Model No:	IPS226VX
ADAPTER #1	Manufacturer:	DELTA
	Model No:	EADP-40LB B
	Input:	100-240v~1.3A 50-60Hz
	Output:	19V⎓2.1A
DC Cable	Non-Shielded, 1.5m	
ADAPTER #2	Manufacturer:	LG
	Model No:	PA-1650-68
	Input:	100-240V~, 50-60Hz 2.0A
	Output:	19V⎓3.42A
DC Cable	Non-Shielded, 1.5m, with one ferrite core bonded	
VGA Cable	Shielded, 1.8m, with two ferrite cores bonded	
VGA Cable	Shielded, 1.8m	
DVI Cable	Shielded, 1.8m, with two ferrite cores bonded	
DVI Cable	Shielded, 1.8m	
Power Supply cable	Non-Shielded, 1.8m	
Note：The VGA Cable and DVI Cable are alternative on selling.		

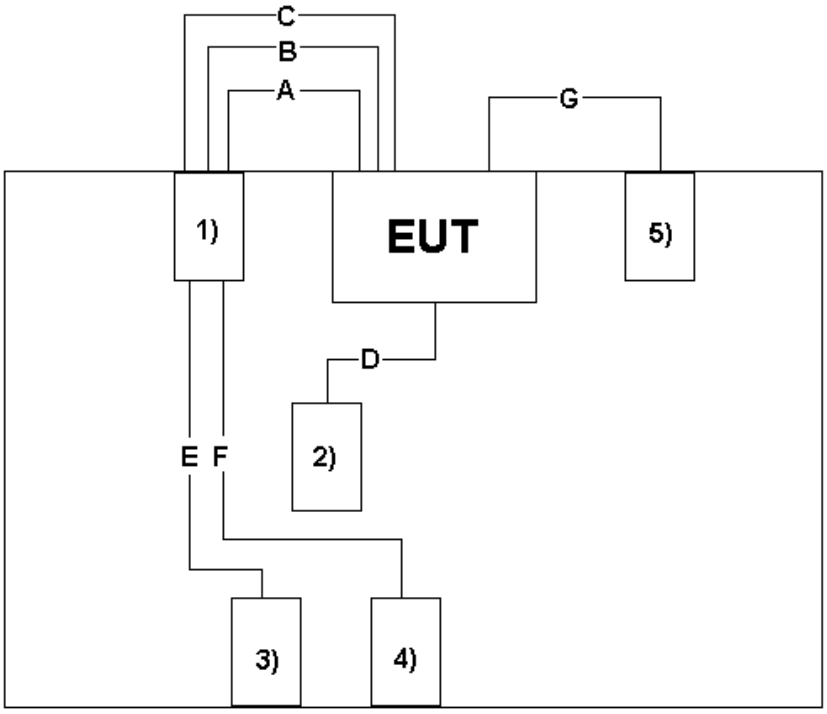
2.2. Test Manner

Test Software	
a	During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
b	The complete test system included the Printer, PC, USB Mouse, USB Keyboard, Microphone&Earphone and EUT for EMI test.
c	During the test, setup up the EUT and all system, turn on the power of all Equipments, run the EMC test software “H”, set the contrast control to maximum, set the brightness control to maximum, use white letters on a black background to represent all colors, make the EUT at the test mode and it is normal operation, and then test.
The pre-test modes	
	Test Mode 1: Full system (DVI mode 1920*1080@60Hz) with ADAPTER 1#
	Test Mode 2: Full system (DVI mode 1024*768@75Hz) with ADAPTER 1#
	Test Mode 3: Full system (DVI mode 720*400@70Hz) with ADAPTER 1#
	Test Mode 4: Full system (VGA mode 1920*1080@60Hz) with ADAPTER 1#
	Test Mode 5: Full system (VGA mode 1024*768@75Hz) with ADAPTER 1#
	Test Mode 6: Full system (VGA mode 720*400@70Hz) with ADAPTER 1#
	Test Mode 7: Full system HDMI In with ADAPTER 1#
	Test Mode 8: Full system (DVI mode 1920*1080@60Hz) with ADAPTER 2#
	Test Mode 9: Full system (DVI mode 1024*768@75Hz) with ADAPTER 2#
	Test Mode 10: Full system (DVI mode 720*400@70Hz) with ADAPTER 2#
	Test Mode 11: Full system (VGA mode 1920*1080@60Hz) with ADAPTER 2#
	Test Mode 12: Full system (VGA mode 1024*768@75Hz) with ADAPTER 2#
	Test Mode 13: Full system (VGA mode 720*400@70Hz) with ADAPTER 2#
	Test Mode 14: Full system HDMI In with ADAPTER 2#
Select the worst case of the pre-test modes as the final test mode	
	Test Mode 1: Full system (DVI mode 1920*1080@60Hz) with ADAPTER 1#

2.3. Description of Test System

No	Device	Manufacturer	Model No.	Description
1	PC	Dell	DCSM	N/A
2	Microphone&Earphone	SALAR	N/A	N/A
3	USB Keyboard	DELL	SK-8115	N/A
4	USB Mouse	DELL	G0K02XYK	N/A
5	Printer	Epson	EX3	N/A

2.4. Connection Diagram of Test System



No	Cable	Quantity	Description
A	VGA Cable	1	Shielded, 1.8m, with two ferrite cores bonded
B	DVI Cable	1	Shielded, 1.8m
C	HDMI Cable		Shielded, 1.8m
D	Audio Cable		Non-Shielded, 1.2m
E	USB Cable	1	Shielded, 1.8m, with one ferrite core bonded
F	USB Cable	1	Shielded, 1.5m
G	Parallel Cable	1	Shielded, 1.8m

2.5. General Information of Test

Test Site:	Cerpass Technology Corp.
Performand Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-343 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz
Frequency Range Investigated :	Conducted Emission Test: from 150kHz to 30 MHz Radiated Emission Test: from 30 MHz to 1,000 MHz Radiated Emission Test: from 1GHz to 18GHz
Test Distance :	The test distance of radiated emission below 1GHz from antenna to EUT is 3 M. The test distance of radiated emission above 1GHz from antenna to EUT is 3 M.

Laboratory accreditation

NVLAP LAB CODE 200814-0

2.6. Measurement Uncertainty

Conducted Emission		
The measurement uncertainty is evaluated as ± 2.71 dB.		
Radiated Emission		
(30MHz -1000MHz)	Horizontal	The measurement uncertainty is evaluated as ±3.89dB.
	Vertical	The measurement uncertainty is evaluated as ± 3.59 dB.
(1G-18GHz)	Horizontal	The measurement uncertainty is evaluated as ± 2.31 dB.
	Vertical	The measurement uncertainty is evaluated as ± 2.15 dB.

3. Test of Conducted Emission

3.1. Test Limit

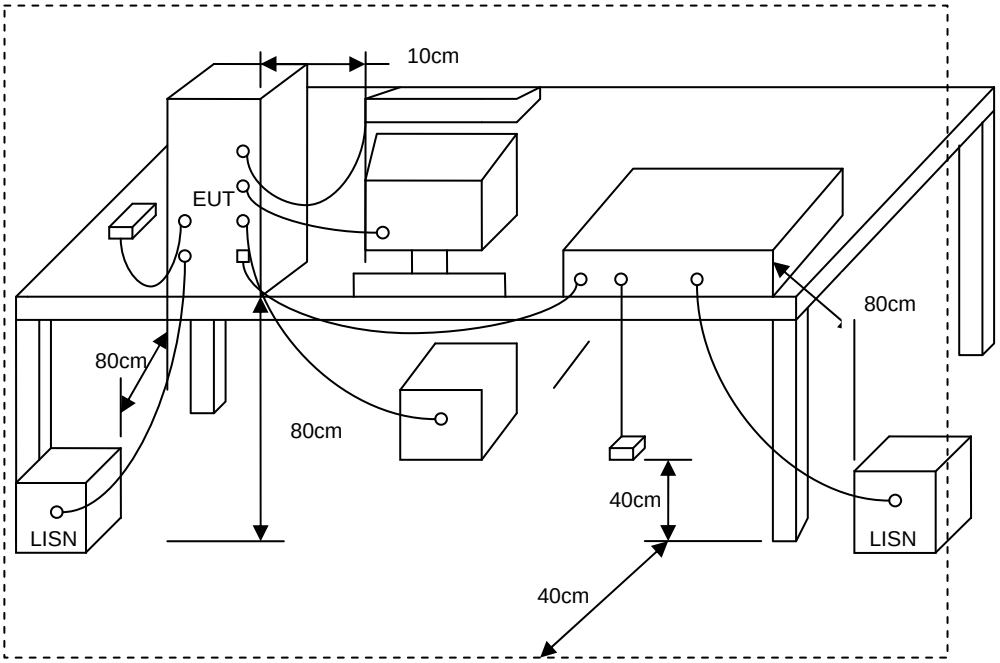
Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2003 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

3.2. Test Procedures

a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connecting to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

3.3. Typical test Setup

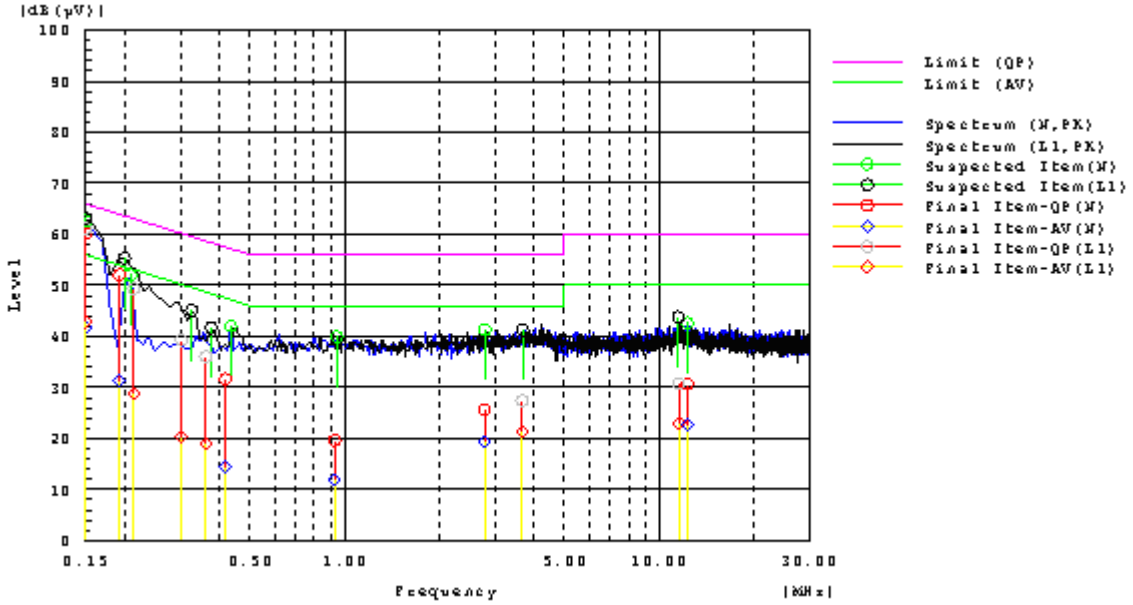


3.4. Measurement equipment

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date
EMC Emission Tester	EMCPARTNER	Harmonics-1000	159	2009.09.08
Test Receiver	R&S	ESCI	100565	2010.01.15
AMN	R&S	ESH2-Z5	100182	2010.06.23
Two-Line V-Network	R&S	ENV216	100325	2010.04.18
ISN	FCC	FCC-TLISN-T2-02	20379	2010.06.23
ISN	FCC	FCC-TLISN-T4-02	20380	2010.06.23
ISN	FCC	FCC-TLISN-T8-02	20381	2010.06.23
Current Probe	R&S	EZ-17	100303	2010.06.23
Attenuator	R&S	ESH3-Z2	100529	2010.01.11
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2009.10.19

3.5. Test Result and Data

Test Mode :	Mode 1: Full system (DVI mode 1920*1080@60Hz) with ADAPTER 1#		
AC Power :	AC 120V/60Hz	Phase :	L&N
EUT :	LCD Monitor	Model No.:	IPS226VX
Temperature :	22℃	Humidity :	50%
Pressur(mbar) :	1002	Date :	2010/08/20



Frequency MHz	Line Phase	Reading dB(uV) QP	Reading dB(uV) AV	Factor dB	Level dB(uV) QP	Level dB(uV) AV	Limit dB(uV) QP	Limit dB(uV) AV	Margin dB QP	Margin dB AV	Pass/Fail
0.150	L1	41.2	22.9	19.9	61.1	42.8	66.0	56.0	4.9	13.2	Pass
0.36165	L1	16.1	-0.9	19.9	36.0	19.0	58.7	48.7	22.7	29.7	Pass
0.30229	L1	19.3	0.4	19.9	39.2	20.3	60.2	50.2	21.0	29.9	Pass
0.21334	L1	29.4	9.0	19.9	49.3	28.9	63.1	53.1	13.8	24.2	Pass
11.5344	L1	10.9	3.3	19.8	30.7	23.1	60.0	50.0	29.3	26.9	Pass
3.66644	L1	7.7	1.6	19.7	27.4	21.3	56.0	46.0	28.6	24.7	Pass
0.150	N	40.6	22.1	19.5	60.1	41.6	66.0	56.0	5.9	14.4	Pass
0.1921	N	32.6	11.9	19.5	52.1	31.4	63.9	53.9	11.8	22.5	Pass
0.41723	N	12.2	-5.1	19.5	31.7	14.4	57.5	47.5	25.8	33.1	Pass
2.78384	N	6.1	-0.2	19.6	25.7	19.4	56.0	46.0	30.3	26.6	Pass
12.2962	N	10.7	2.9	19.9	30.6	22.8	60.0	50.0	29.4	27.2	Pass
0.92881	N	0.2	-7.4	19.4	19.6	12.0	56.0	46.0	36.4	34.0	Pass

Note: Measurement Level = Reading Level + Correct Factor

Test engineer: cheney yan

4. Test of Radiated Emission

4.1. Test Limit

Radiated emissions from 30 MHz to 1,000 MHz were measured with a bandwidth of 120 kHz according to the methods defines in ANSI C63.4-2003. The EUT was placed on a nonmetallic stand in the open-field site, 0.8 meter above the ground plane, as shown in section 3.2. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

For unintentional device, according to § 15.109(a), 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 (MHz)	Distance (m)	Level (dBuV/m)	Level (dBuV/m)
30 - 88	3	40(QP)	N/A
88 - 216	3	43(QP)	N/A
216-960	3	46(QP)	N/A
960-1000	3	54(QP)	N/A
1000-18000	3	74(PK)	54(AV)

For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the below table.

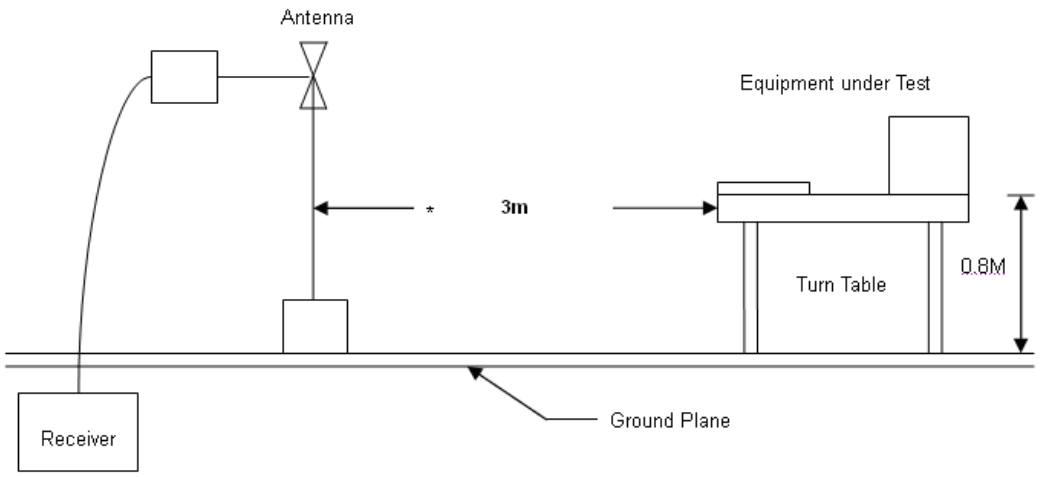
Frequency (MHz)	Distance Meters	Radiated (dB μ V/ M)
30-230	10	30
230-1000	10	37

4.2. Test Procedures

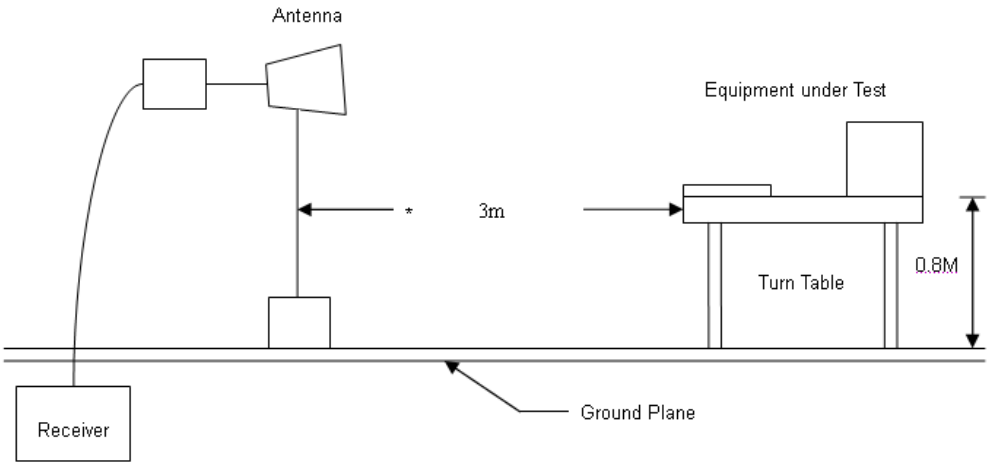
a. The EUT was placed on a Rota table top 0.8 meter above ground.
b. The EUT and its simulators are placed on the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters or 1 meter.
c. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
d. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.
e. Radiated emissions were invested over the frequency range from 30MHz to1GHz using a receiver bandwidth of 120KHz and the frequency range from 1GHz to 18GHz using a receiver bandwidth of 1MHz.

4.3. Typical test Setup

Below 1GHz Test Setup



Above 1GHz Test Setup



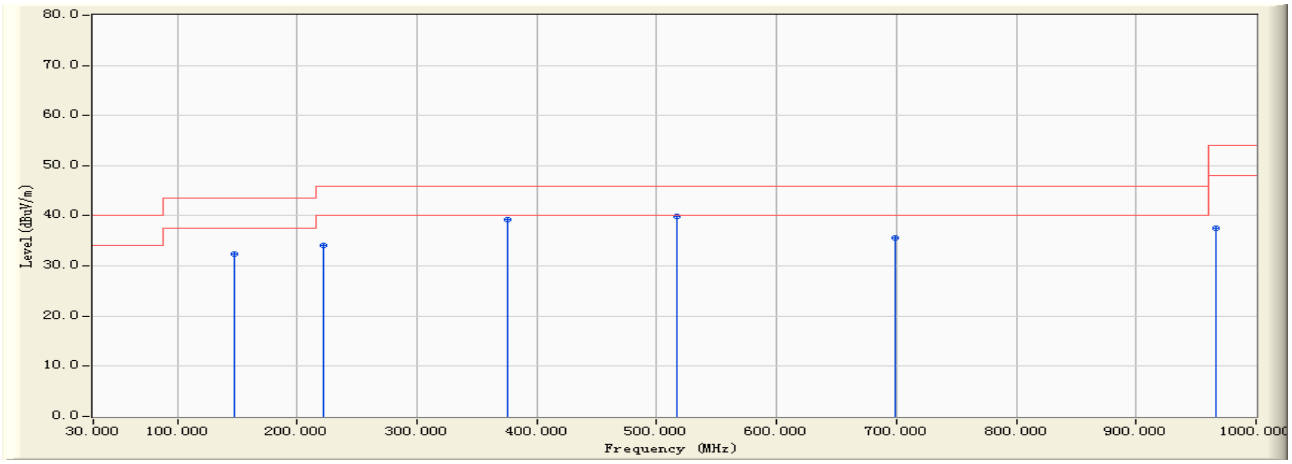
4.4. Measurement equipment

Instrument	Model No.	Manufacturer	Serial No.	Calibration Date
EMI Test Receiver	R&S	ESCI	100564	2010.06.23
H64 Amplifier	HP	8447F	3113A05582	2009.12.01
Preamplifier	Agilent	8449B	ED-HE-EMI-077	2010.02.10
Ultra Broadband Antenna	R&S	HL562	100362	2009.11.25
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2009.11.10
Spectrum Analyzer	R&S	FSP40	100324	2009.11.02
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-001	2009.10.19

4.5. Test Result and Data

Under 1G

Engineer : Fred	
Site : EMC Lab AC 102	**Time : 2010/08/21 - 15:23**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
EUT : LCD Monitor	**Probe : HL562(30-1000MHz) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : Mode 1: Full system (DVI mode 1920*1080@60Hz) with ADAPTER 1#**

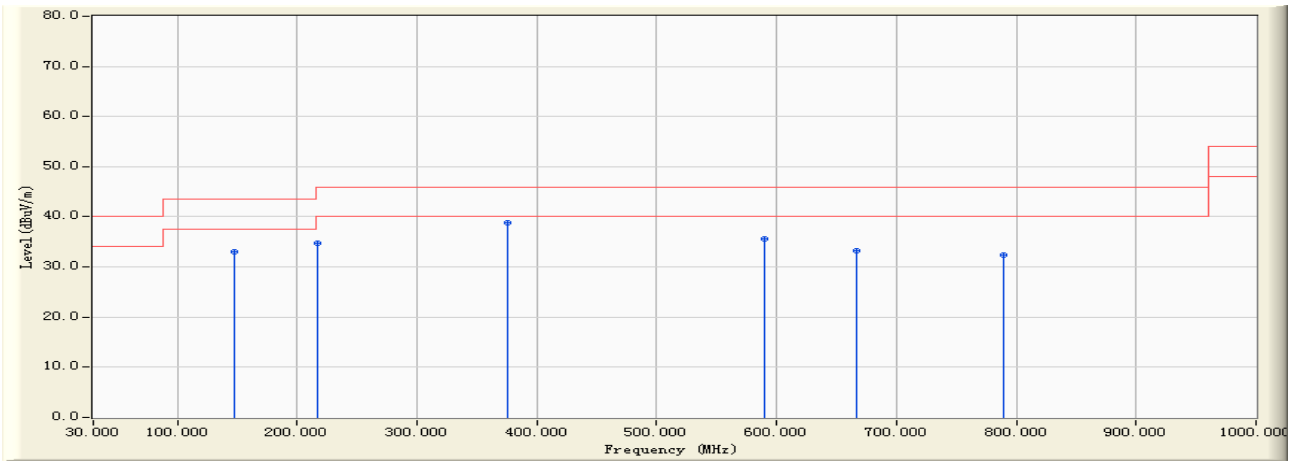


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		147.680	-17.856	50.240	32.384	-11.116	43.500	QUASIPEAK	200.000	216.900
2	*	222.570	-16.324	50.480	34.156	-11.844	46.000	QUASIPEAK	400.000	143.200
3		375.510	-11.287	50.480	39.193	-6.807	46.000	QUASIPEAK	200.000	314.900
4	*	516.580	-8.491	48.350	39.860	-6.140	46.000	QUASIPEAK	200.000	246.200
5		698.540	-5.167	40.840	35.673	-10.327	46.000	QUASIPEAK	200.000	143.200
6		966.450	-0.883	38.470	37.587	-16.413	54.000	QUASIPEAK	400.000	342.600

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Fred	
Site : EMC Lab AC 102	**Time : 2010/08/21 - 15:23**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
EUT : LCD Monitor	**Probe : HL562(30-1000MHz) - VERTICAL**
Power : AC 120V/60Hz	**Note : Mode 1: Full system (DVI mode 1920*1080@60Hz) with ADAPTER 1#**



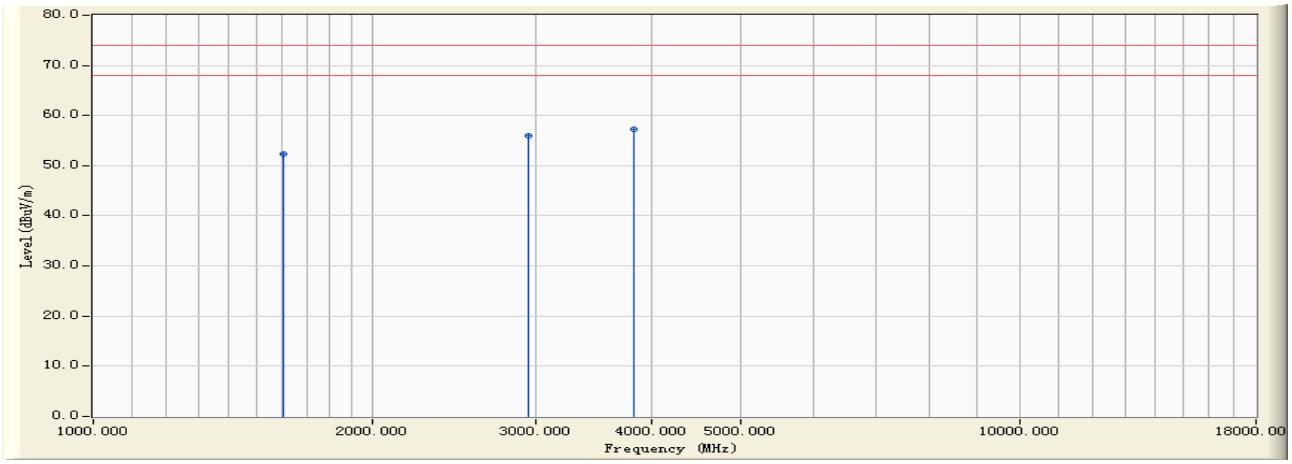
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		147.580	-17.852	50.840	32.988	-10.512	43.500	QUASIPEAK	100.000	245.900
2	*	216.580	-16.770	51.450	34.680	-11.320	46.000	QUASIPEAK	100.000	147.900
3	*	375.860	-11.285	50.150	38.865	-7.135	46.000	QUASIPEAK	100.000	46.500
4		589.610	-6.990	42.573	35.582	-10.418	46.000	QUASIPEAK	200.000	216.800
5		666.350	-5.413	38.640	33.227	-12.773	46.000	QUASIPEAK	100.000	345.900
6		789.520	-3.035	35.460	32.425	-13.575	46.000	QUASIPEAK	100.000	318.400

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Above 1G:

Engineer : Fred	
Site : EMC Lab AC 102	**Time : 2010/08/21 - 15:25**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : LCD Monitor	**Probe : BBHA9120D(1-18GHz) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : Mode 1: Full system (DVI mode 1920*1080@60Hz) with ADAPTER 1#**

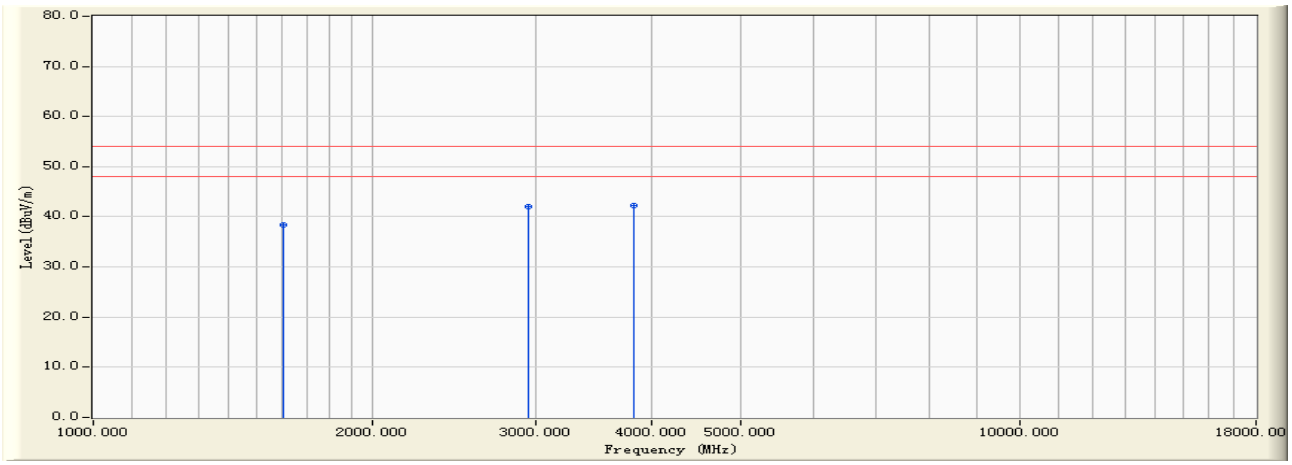


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1605.380	-4.160	56.520	52.360	-21.640	74.000	PEAK	200.000	216.500
2		2950.240	0.534	55.520	56.054	-17.946	74.000	PEAK	200.000	146.800
3	*	3829.560	3.799	53.520	57.320	-16.680	74.000	PEAK	400.000	149.500

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Fred	
Site : EMC Lab AC 102	**Time : 2010/08/21 - 15:25**
Limit : FCC_15_03M_AV	**Margin : 6**
EUT : LCD Monitor	**Probe : BBHA9120D(1-18GHz) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : Mode 1: Full system (DVI mode 1920*1080@60Hz) with ADAPTER 1#**

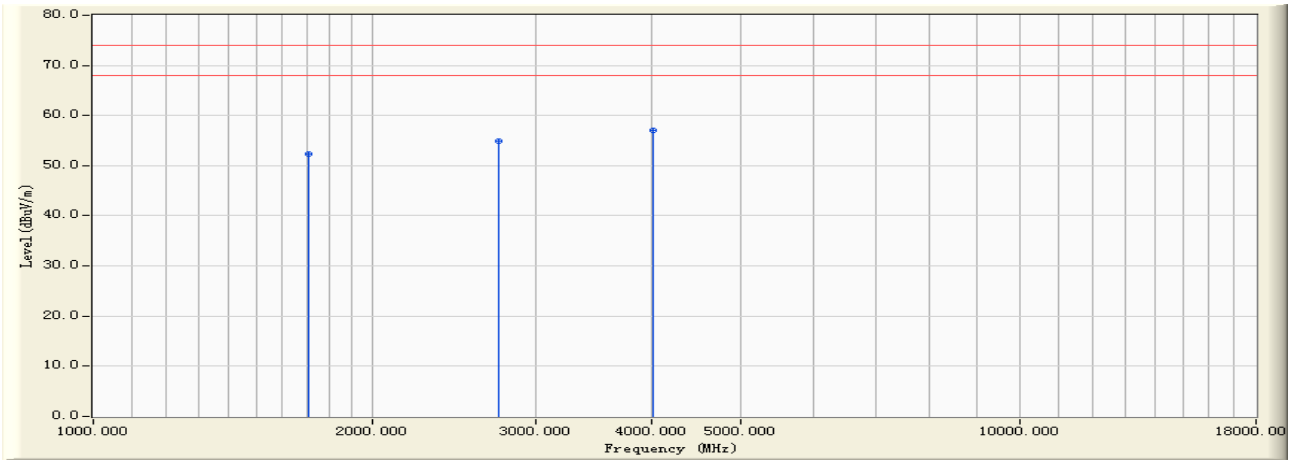


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1605.380	-4.160	42.590	38.430	-15.570	54.000	AVERAGE	200.000	216.500
2		2950.240	0.534	41.570	42.104	-11.896	54.000	AVERAGE	200.000	146.800
3	*	3829.560	3.799	38.540	42.340	-11.660	54.000	AVERAGE	400.000	149.500

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Fred	
Site : EMC Lab AC 102	**Time : 2010/08/21 - 15:26**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : LCD Monitor	**Probe : BBHA9120D(1-18GHz) - VERTICAL**
Power : AC 120V/60Hz	**Note : Mode 1: Full system (DVI mode 1920*1080@60Hz) with ADAPTER 1#**

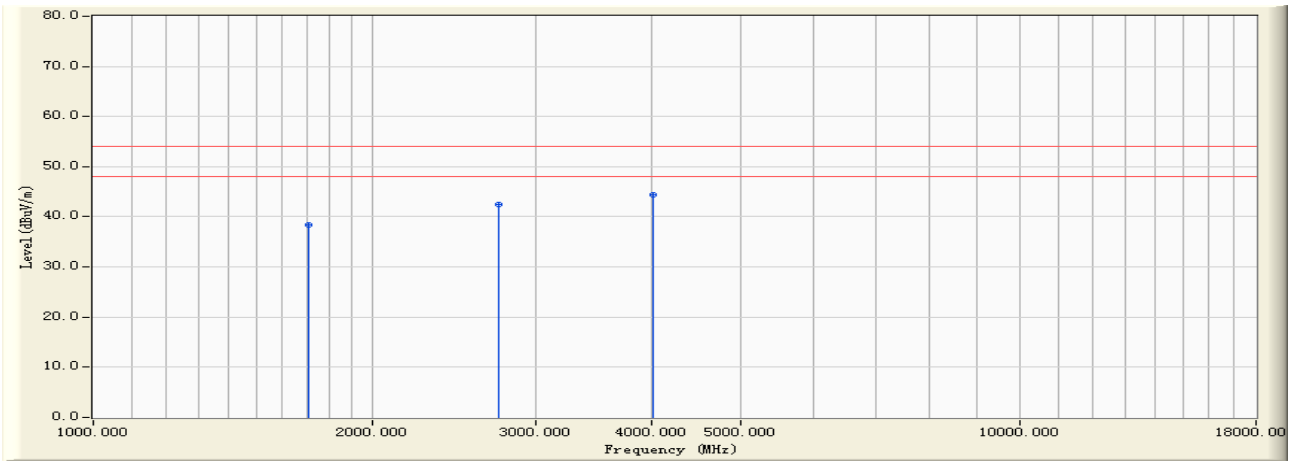


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1705.680	-4.243	56.520	52.278	-21.722	74.000	PEAK	100.000	284.600
2		2735.640	0.656	54.250	54.907	-19.093	74.000	PEAK	100.000	285.300
3	*	4028.540	4.658	52.370	57.028	-16.972	74.000	PEAK	100.000	342.900

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Fred	
Site : EMC Lab AC 102	**Time : 2010/08/21 - 15:26**
Limit : FCC_15_03M_AV	**Margin : 6**
EUT : LCD Monitor	**Probe : BBHA9120D(1-18GHz) - VERTICAL**
Power : AC 120V/60Hz	**Note : Mode 1: Full system (DVI mode 1920*1080@60Hz) with ADAPTER 1#**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1705.680	-4.243	42.570	38.328	-15.672	54.000	AVERAGE	100.000	284.600
2		2735.640	0.656	41.850	42.507	-11.493	54.000	AVERAGE	100.000	285.300
3	*	4028.540	4.658	39.670	44.328	-9.672	54.000	AVERAGE	100.000	342.900

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Test engineer: Fred Guo