



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

This is a series report. The original report No. is SEFD1008065.

- The test result refers exclusively to the test presented test model / sample.
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Document history

Attachment No.	Date	Description
SEFD1008065	Aug 30, 2010	First edition
SEFD1008065-C	Jun 09, 2011	Second edition(Add a adapter, and the shielding shell of the EUT is smaller than original)



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Trade Name	: LG

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 May 29, 2011 at **CerpPASS Technology Corp.**

Documented By:

Cathy Chen/ Administration

Approved By:

Clinton Kao/ 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 $\overline{\text{---}}$ 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 $\overline{\text{---}}$ 3.42A
DC Cable	Non-Shielded, 1.5m, with one ferrite core bonded	
VGA Cable	Shielded, 1.5m	
DVI Cable	Shielded, 1.5m, with two ferrite cores bonded	

The add adapter:

ADAPTER 1#	Manufacturer:	LG
	Model No:	ADS-40SG-19-3 19032G
	Input:	100-240V~50/60Hz 1.0A max
	Output:	19V $\overline{\text{---}}$ 1.7A
DC Cable	Non-Shielded, 1.5m	



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 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 (VGA mode 1920*1080@60Hz)
	Test Mode 2: Full system (VGA mode 1024*768@75Hz)
	Test Mode 3: Full system (VGA mode 720*400@70Hz)
	Test Mode 4: Full system (DVI mode 1920*1080@60Hz)
	Test Mode 5: Full system (DVI mode 1024*768@75Hz)
	Test Mode 6: Full system (DVI mode 720*400@70Hz)
	Test Mode 7: Full system HDMI In
Select the worst case of the pre-test modes as the final test mode	
	Test Mode 1: Full system (VGA mode 1920*1080@60Hz)



2.3. Description of Support Unit

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

No	Cable	Quantity	Description
A	VGA Cable	1	Shielded, 1.5m
B	DVI Cable	1	Shielded, 1.5m, with two ferrite cores bonded
C	HDMI Cable	1	Shielded, 1.8m
D	Audio Cable	1	Non-Shielded, 2.0m
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



2.4. General Information of Test

Test Site:	CerpPASS 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



2.5. Measurement Uncertainty

Conducted Emission		
The measurement uncertainty is evaluated as ± 2.71 dB.		
Radiated Emission		
(30MHz -1000MHz)	Horizontal	The measurement uncertainty is evaluated as ± 3.89 dB.
	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

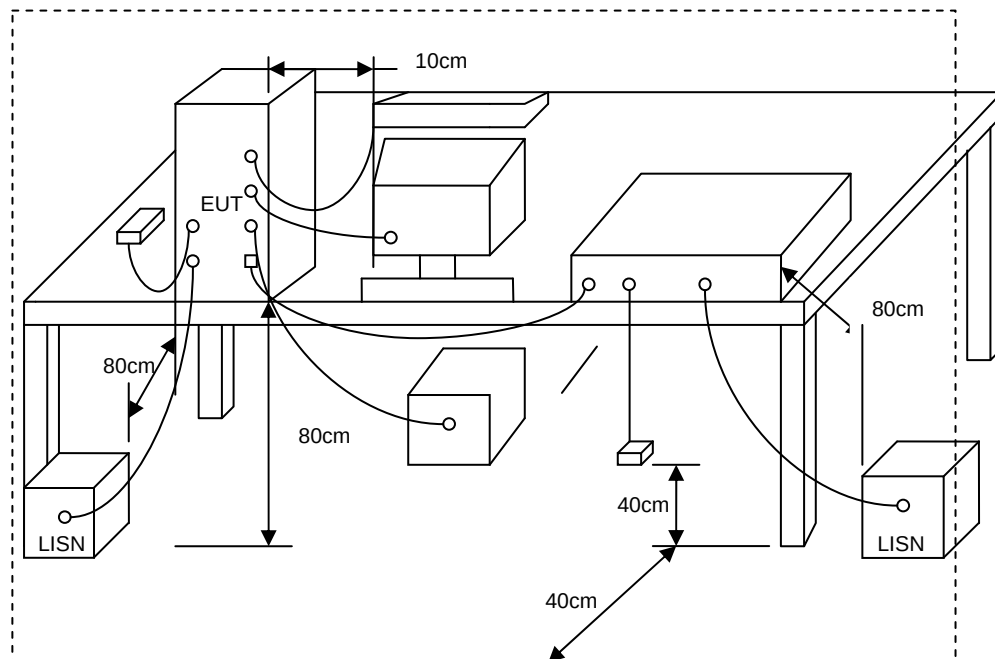
Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2003 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown 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

- 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.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

3.3. Typical test Setup



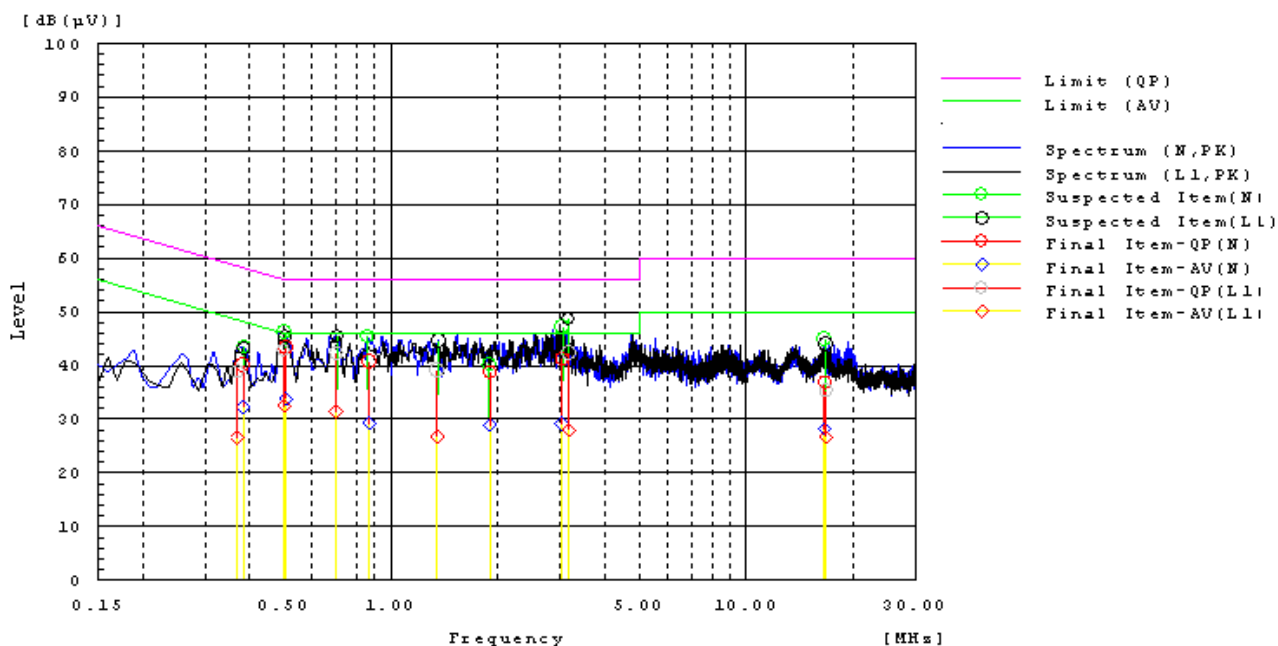
3.4. Measurement equipment

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date
Test Receiver	R&S	ESCI	100565	2011.01.15
AMN	R&S	ESH2-Z5	100182	2011.03.14
Two-Line V-Network	R&S	ENV216	100325	2011.03.14
ISN	FCC	FCC-TLISN-T2-02	20379	2011.03.14
ISN	FCC	FCC-TLISN-T4-02	20380	2011.03.14
ISN	FCC	FCC-TLISN-T8-02	20381	2011.03.14
Current Probe	R&S	EZ-17	100303	2011.03.14
Passive Voltage Probe	R&S	ESH2-Z3	100026	2011.03.14
Attenuator	R&S	ESH3-Z2	100529	2011.01.11
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2010.08.14



3.5. Test Result and Data

Test Mode :	Mode 1: Full system (VGA mode 1920*1080@60Hz)		
AC Power :	AC 120V/60Hz	Phase :	L&N
Temperature :	22°C	Humidity :	50%
Pressur(mbar) :	1002	Date :	2011/05/29



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
3.16883	L1	22.6	8.3	19.7	42.3	28.0	56.0	46.0	13.7	18.0	Pass
0.50036	L1	22.9	12.6	19.9	42.8	32.5	56.0	46.0	13.2	13.5	Pass
0.3699	L1	19.1	6.7	19.9	39.0	26.6	58.5	48.5	19.5	21.9	Pass
0.70028	L1	22.5	11.7	19.8	42.3	31.5	56.0	46.0	13.7	14.5	Pass
16.7086	L1	15.7	7.0	19.7	35.4	26.7	60.0	50.0	24.6	23.3	Pass
1.35183	L1	19.4	7.0	19.7	39.1	26.7	56.0	46.0	16.9	19.3	Pass
0.50764	N	23.8	14.3	19.5	43.3	33.8	56.0	46.0	12.7	12.2	Pass
1.89668	N	19.3	9.4	19.5	38.8	28.9	56.0	46.0	17.2	17.1	Pass
0.38387	N	20.5	12.7	19.5	40.0	32.2	58.2	48.2	18.2	16.0	Pass
3.02479	N	21.7	9.6	19.6	41.3	29.2	56.0	46.0	14.7	16.8	Pass
16.5922	N	17.0	8.3	19.9	36.9	28.2	60.0	50.0	23.1	21.8	Pass
0.87061	N	21.2	9.7	19.5	40.7	29.2	56.0	46.0	15.3	16.8	Pass

Note: Measurement Level = Reading Level + Correct Factor

Test engineer: River



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

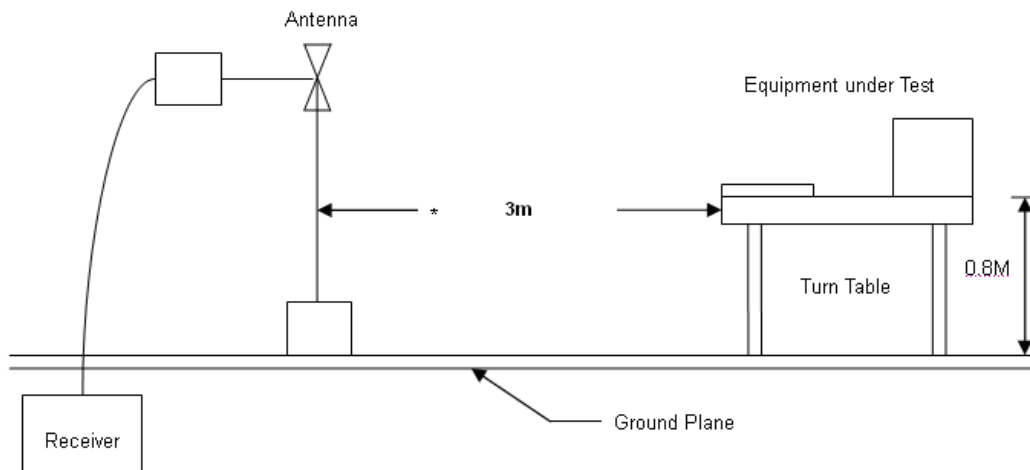


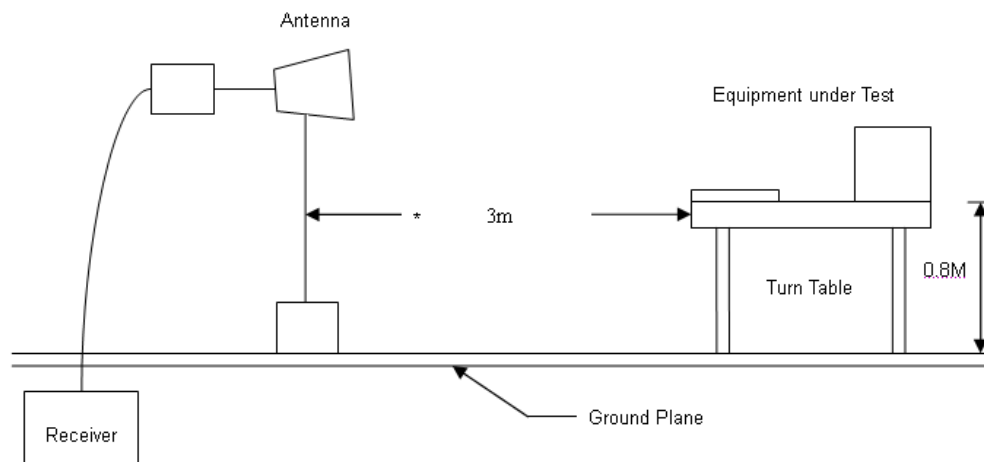
4.2. Test Procedures

- The EUT was placed on a Rota table top 0.8 meter above ground.
- 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.
- The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
- 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.
- Radiated emissions were investigated over the frequency range from 30MHz to 1GHz 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**

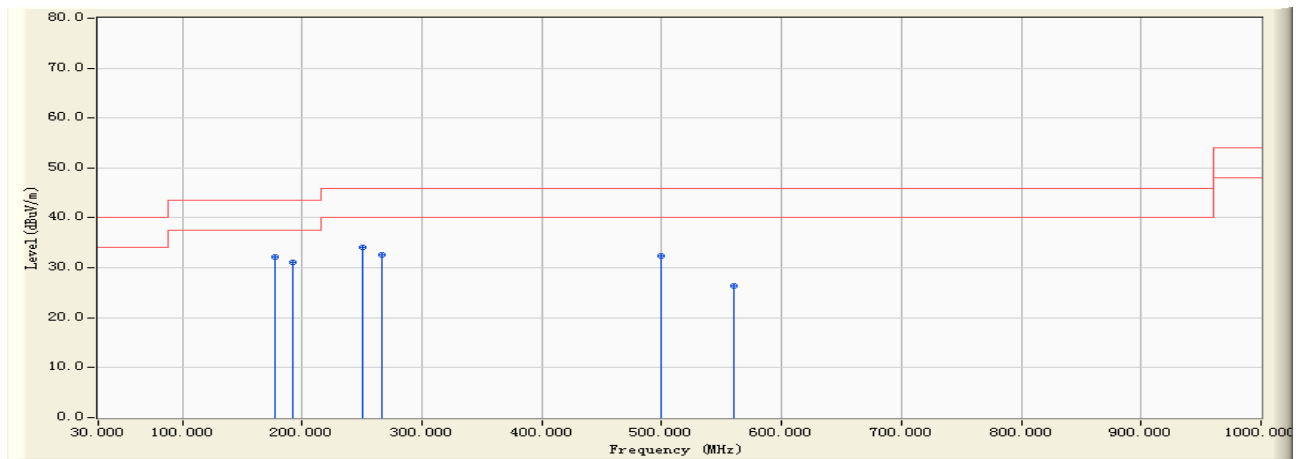
Instrument	Model No.	Manufacturer	Serial No.	Calibration Date
EMI Test Receiver	R&S	ESCI	100563	2011.03.14
H64 Amplifier	HP	8447F	3113A05582	2010.08.14
Preamplifier	Agilent	8449B	3008A02342	2011.02.10
Ultra Broadband Antenna	R&S	HL562	100363	2011.08.14
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2011.08.14
Spectrum Analyzer	R&S	FSP40	100324	2010.08.14
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-002	2010.08.17



4.5. Test Result and Data

Under 1G

Engineer : River	
Site : EMC Lab AC 102	Time : 2011/05/29 - 15:04
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 (VGA mode 1920*1080@60Hz)



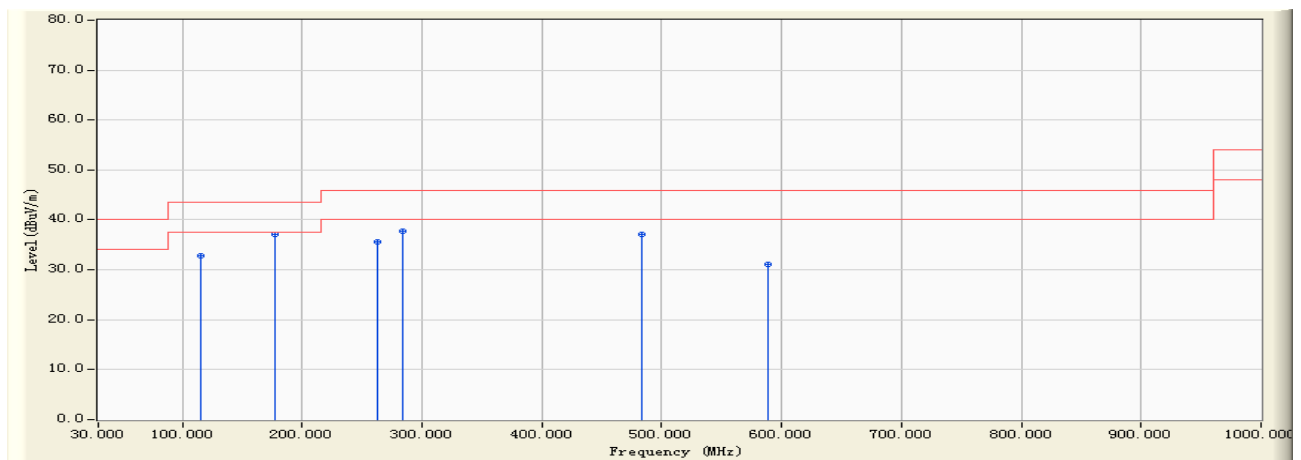
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	177.146	-17.079	49.320	32.240	-11.260	43.500	QUASIPeak
2		192.635	-17.889	48.930	31.040	-12.460	43.500	QUASIPeak
3		250.719	-15.189	49.320	34.131	-11.869	46.000	QUASIPeak
4		266.208	-14.197	46.830	32.634	-13.366	46.000	QUASIPeak
5		499.350	-8.891	41.230	32.340	-13.660	46.000	QUASIPeak
6		560.310	-7.879	34.250	26.371	-19.629	46.000	QUASIPeak

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 : River	
Site : EMC Lab AC 102	Time : 2011/05/29 - 15:05
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 (VGA mode 1920*1080@60Hz)



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		115.350	-16.292	49.200	32.908	-10.592	43.500	QUASIPeAK
2	*	177.146	-17.079	54.240	37.160	-6.340	43.500	QUASIPeAK
3		262.732	-14.438	50.140	35.702	-10.298	46.000	QUASIPeAK
4		284.340	-13.620	51.320	37.700	-8.300	46.000	QUASIPeAK
5		483.250	-9.089	46.240	37.151	-8.849	46.000	QUASIPeAK
6		588.930	-7.100	38.250	31.150	-14.850	46.000	QUASIPeAK

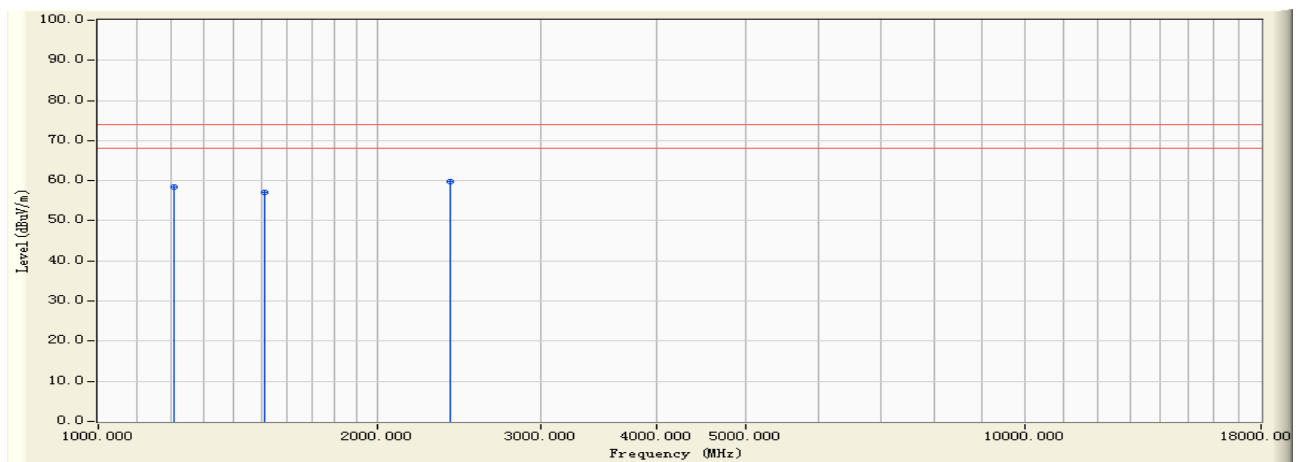
Note:

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2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor



Above 1G:

Engineer : River	
Site : EMC Lab AC 102	Time : 2011/05/29 - 12:59
Limit : FCC_15_03M_PK	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 1: Full system (VGA mode 1920*1080@60Hz)



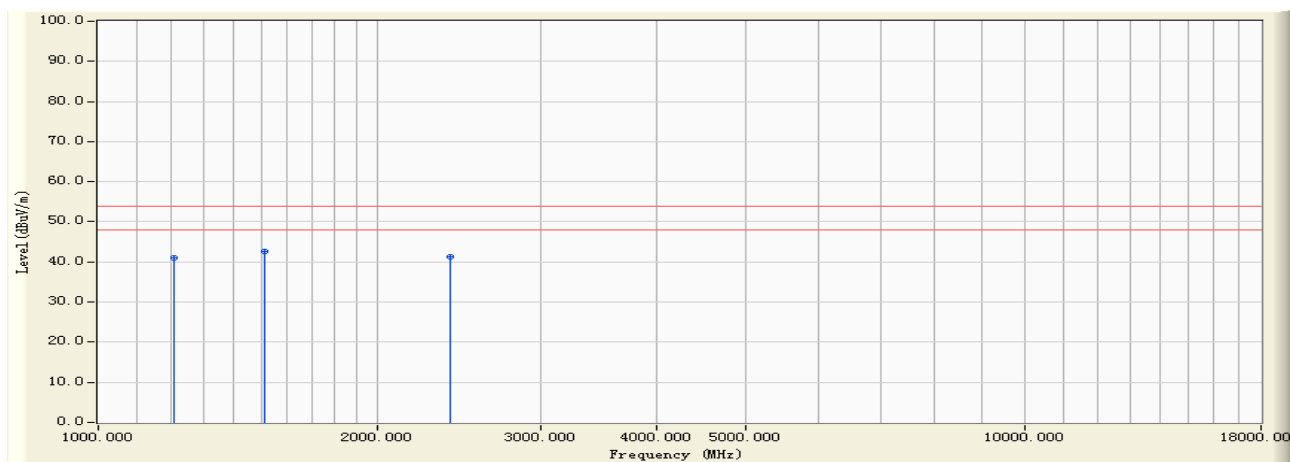
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		1206.380	-5.894	64.350	58.456	-15.544	74.000	PEAK
2		1514.250	-4.155	61.350	57.195	-16.805	74.000	PEAK
3	*	2396.580	0.375	59.410	59.786	-14.214	74.000	PEAK

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 : River	
Site : EMC Lab AC 102	Time : 2011/05/29 - 12:59
Limit : FCC_15_03M_AV	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 1: Full system (VGA mode 1920*1080@60Hz)



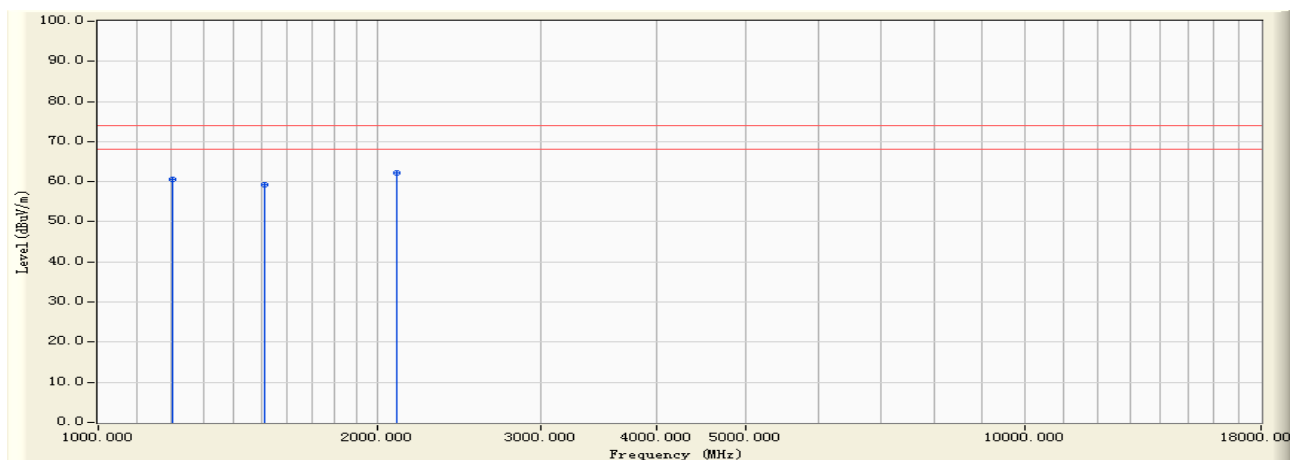
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		1206.380	-5.894	46.820	40.926	-13.074	54.000	AVERAGE
2	*	1514.250	-4.155	46.880	42.725	-11.275	54.000	AVERAGE
3		2396.580	0.375	40.950	41.326	-12.674	54.000	AVERAGE

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 : River	
Site : EMC Lab AC 102	Time : 2011/05/29 - 13:03
Limit : FCC_15_03M_PK	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 1: Full system (VGA mode 1920*1080@60Hz)



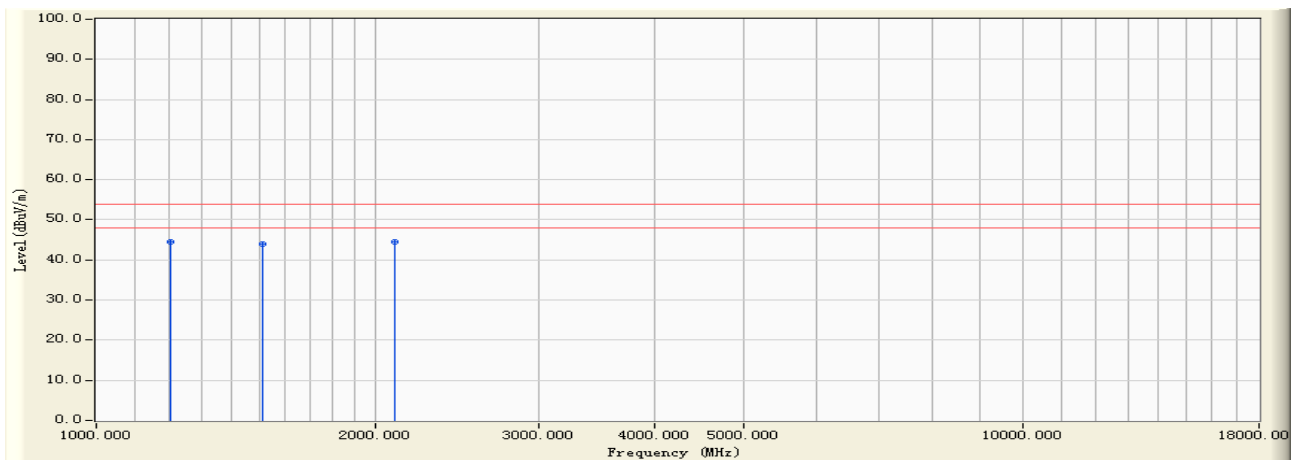
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		1204.580	-5.912	66.440	60.527	-13.473	74.000	PEAK
2		1512.480	-4.155	63.450	59.295	-14.705	74.000	PEAK
3	*	2102.450	-1.258	63.540	62.281	-11.719	74.000	PEAK

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 : River	
Site : EMC Lab AC 102	Time : 2011/05/29 - 13:03
Limit : FCC_15_03M_AV	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 1: Full system (VGA mode 1920*1080@60Hz)



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		1204.580	-5.912	50.310	44.397	-9.603	54.000	AVERAGE
2		1512.480	-4.155	48.020	43.865	-10.135	54.000	AVERAGE
3	*	2102.450	-1.258	45.850	44.591	-9.409	54.000	AVERAGE

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: River