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.	:	W2246PMW
FCC ID	:	BEJW2246PMW
Trade Name	:	LG

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of ***Cerpass Technology Corp.*** the test report shall not be reproduced except in full.
- 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
SEFD0912082	Dec 31, 2009	First issue

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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 Dec 28, 2009 at ***Cerpass Technology Corp.***

Documented By:

Sophie Li

Sophie Li/ Administration

Approved By:

John Wang

John Wang/ 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:	W2246PMW
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	
Audio Cable	Non-Shielded, 1.5m, with one ferrite core bonded	
Power Supply	Non-Shielded, 1.8m	
Note: The VGA Cable and DVI Cable are alternative on selling.		

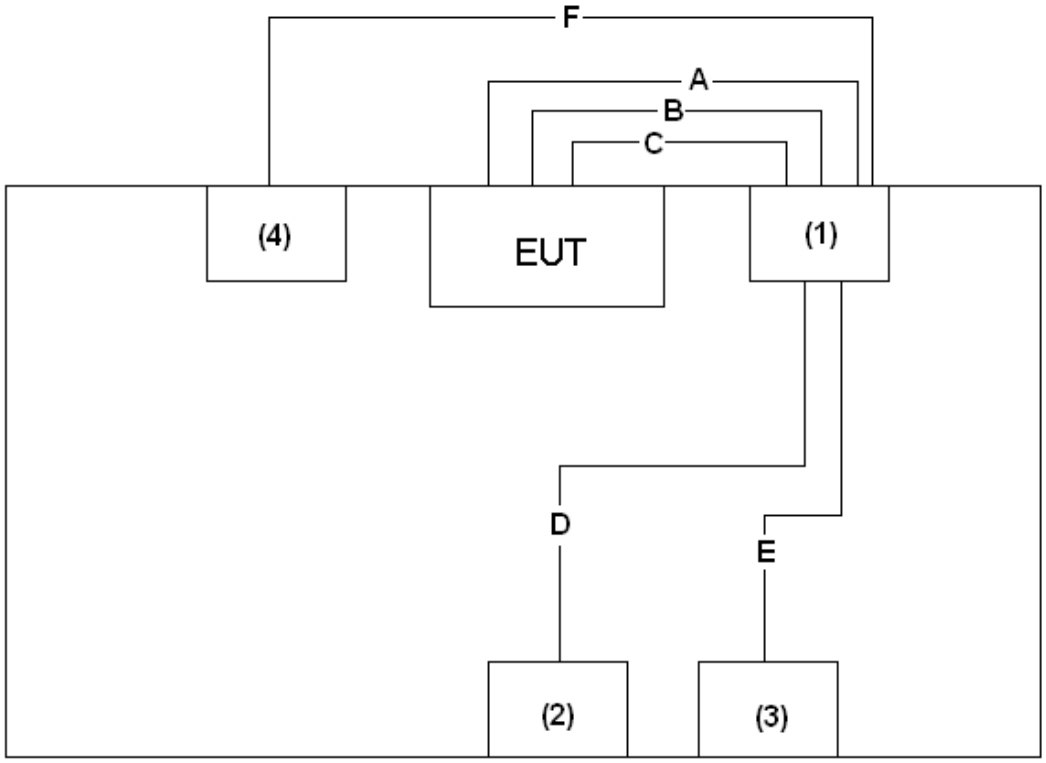
2.2. Test Manner

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 PC, USB Keyboard, USB Mouse, Printer, 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 1280*800@75Hz)
	Test Mode 3: Full system (VGA mode 800*600@70Hz)
	Test Mode 4: Full system (DVI mode 1920*1080@60Hz)
	Test Mode 5: Full system (DVI mode 1280*800@75Hz)
	Test Mode 6: Full system (DVI mode 800*600@70Hz)
Select the worst case of the pre-test modes as the final test mode	
	Test Mode 4: Full system (DVI mode 1920*1080@60Hz)

2.3. Description of Test System

No	Device	Manufacturer	Model No.	Description
1	PC	Dell	DCTA	N/A
2	USB Keyboard	DELL	SK-8115	N/A
3	USB Mouse	DELL	G0K02XYK	N/A
4	Printer	Epson	EX3	N/A

2.4. Connection Diagram of Test System



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

2.5. General Information of Test

Test Site :	Cerpass Technology Corp.
Performed Location	No.66, Tangzhuang Road, Suzhou Industrial Park, Jiangsu, China
NVLAP LAB Code ：	200814-0
FCC Registration Number :	916572
VCCI Registration Number :	T-343 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test
Test in Compliance with:	ANSI C63.4-2003 FCC Part 15 Subpart B
Frequency Range Investigated :	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 1,000 MHz Radiation: from 1GHz to18GHz
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

2.6. 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

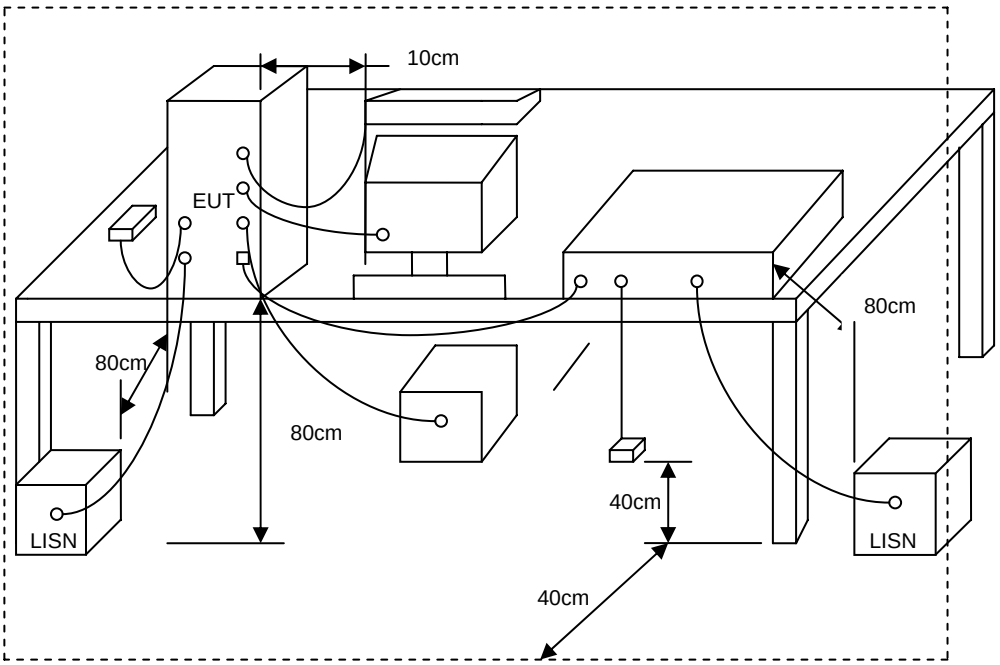
Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2003 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown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

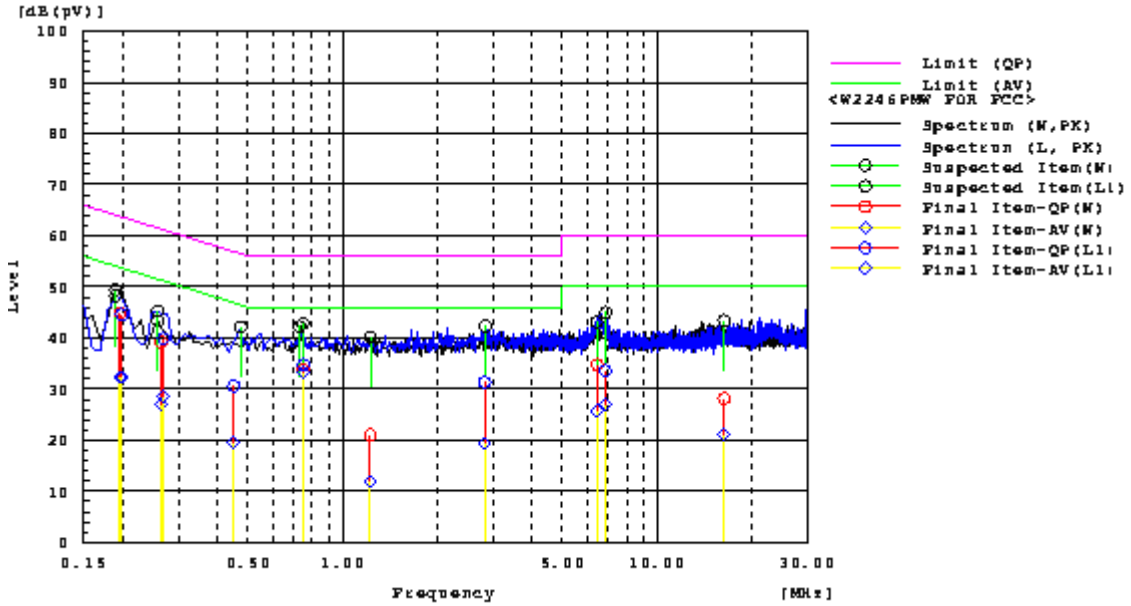


3.4. Measurement equipment

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date
EMC Emission Tester	EMCPARTNER	Harmonics-1000	159	2009.09.08
Test Receiver	R&S	ESCI	100565	2009.06.30
AMN	R&S	ESH2-Z5	100182	2009.06.23
Two-Line V-Network	R&S	ENV216	100325	2009.06.23
ISN	FCC	FCC-TLISN-T2-02	20379	2009.06.23
ISN	FCC	FCC-TLISN-T4-02	20380	2009.06.23
ISN	FCC	FCC-TLISN-T8-02	20381	2009.06.23
Attenuator	R&S	ESH3-Z2	100529	2009.01.12
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2009.10.19

3.5. Test Result and Data

Test Mode :	Mode 4: Full system (DVI mode 1920*1080@60Hz)		
AC Power :	AC 120V/60Hz	Phase :	L&N
EUT :	LCD Monitor	Model No.	W2246PMW
Temperature :	26℃	Humidity	50%
Pressur(mbar) :	1002	Date:	2009/12/24



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
0.19821	L1	25.1	12.9	19.5	44.6	32.4	63.7	53.7	19.1	21.3	Pass
0.26912	L1	20.4	9.0	19.5	39.9	28.5	61.1	51.1	21.2	22.6	Pass
6.8386	L1	13.7	7.2	19.9	33.6	27.1	60.0	50.0	26.4	22.9	Pass
0.45041	L1	10.9	-0.1	19.7	30.6	19.6	56.9	46.9	26.3	27.3	Pass
0.74956	L1	15.2	13.7	19.6	34.8	33.3	56.0	46.0	21.2	12.7	Pass
2.82196	L1	11.8	-0.3	19.6	31.4	19.3	56.0	46.0	24.6	26.7	Pass
0.19598	N	25.0	12.6	19.8	44.8	32.4	63.8	53.8	19.0	21.4	Pass
0.74917	N	14.1	13.6	19.6	33.7	33.2	56.0	46.0	22.3	12.8	Pass
6.4481	N	14.8	5.8	19.9	34.7	25.7	60.0	50.0	25.3	24.3	Pass
16.3255	N	7.8	0.8	20.4	28.2	21.2	60.0	50.0	31.8	28.8	Pass
1.22379	N	1.6	-7.5	19.5	21.1	12.0	56.0	46.0	34.9	34.0	Pass
0.26446	N	19.4	7.2	19.8	39.2	27.0	61.3	51.3	22.1	24.3	Pass

Note: Measurement Level = Reading Level + Correct Factor

Test engineer:

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.

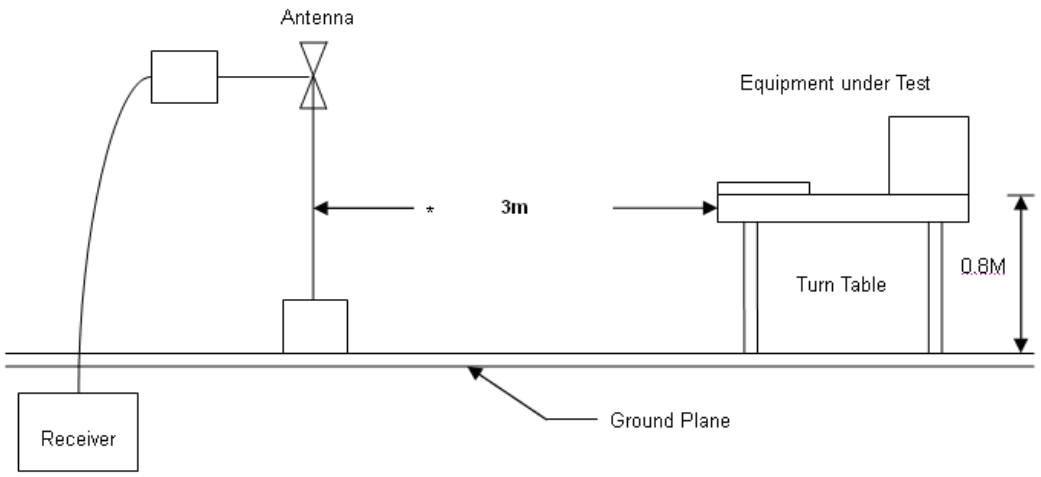
Frequency (MHz)	Distance Meters	Radiated (dB μ V/ M)
30-230	10	30
230-1000	10	37

4.2. Test Procedures

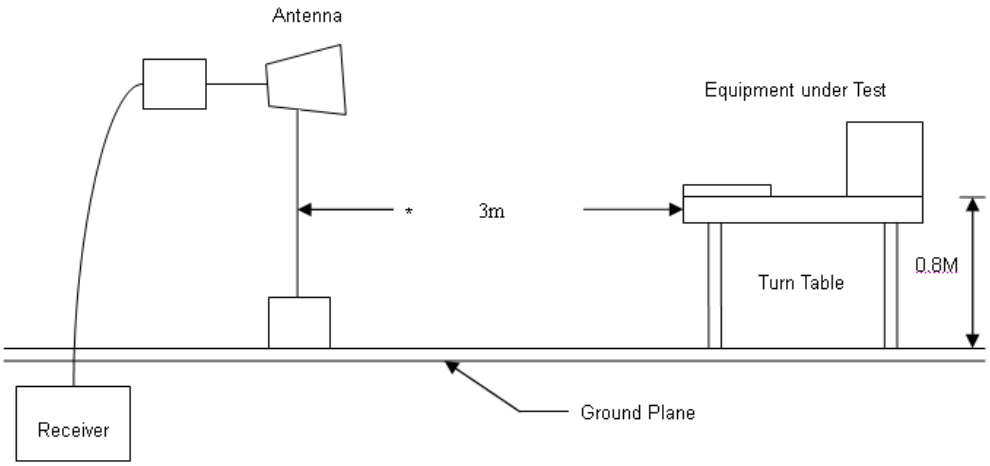
a. The EUT was placed on a Rota table top 0.8 meter above ground.
b. The EUT and its simulators are placed on the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters or 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



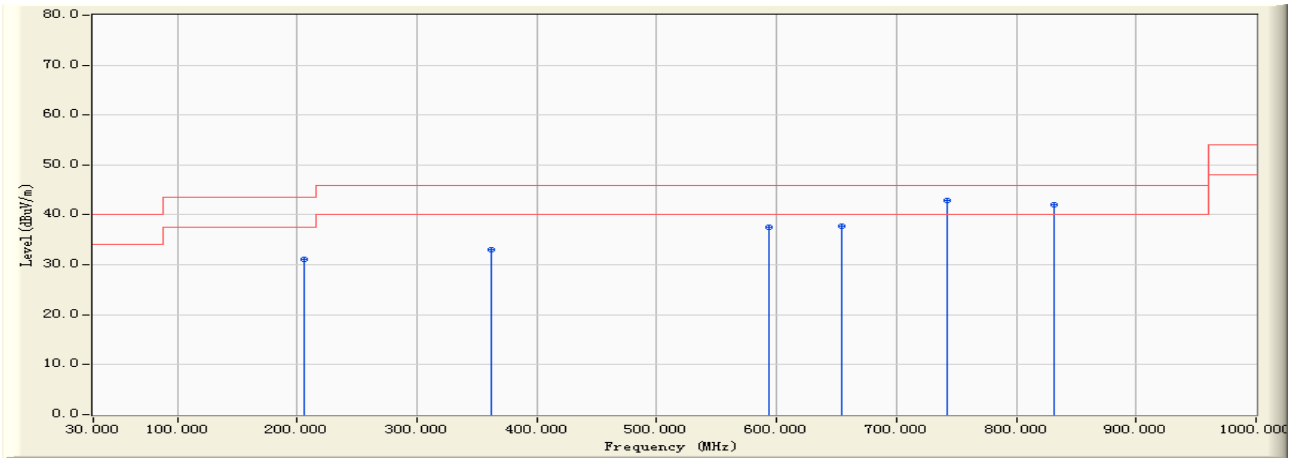
4.4. Measurement equipment

Instrument	Model No.	Manufacturer	Serial No.	Calibration Date
EMI Test Receiver	R&S	ESCI	100564	2009.06.23
H64 Amplifier	HP	8447F	3113A05582	2009.12.01
Preamplifier	Agilent	8449B	ED-HE-EMI-077	2009.02.18
Ultra Broadband Antenna	R&S	HL562	100362	2009.11.03
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2009.09.26
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 : 2009/12/26 - 15:54**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
EUT : LCD Monitor	**Probe : HL562(30-1000MHz) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : Mode4: Full system (DVI mode 1920*1080@60Hz)**

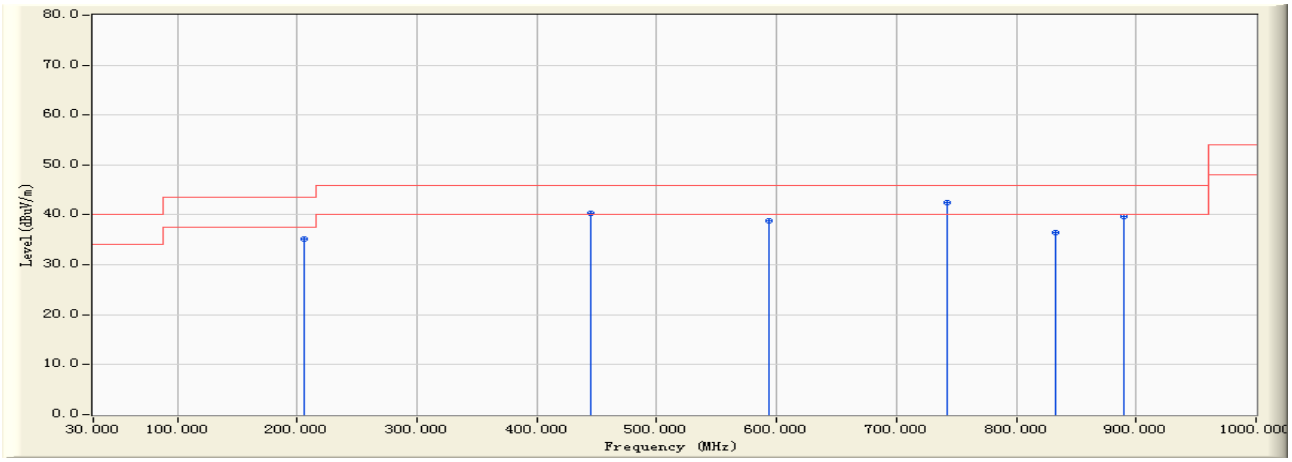


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		206.520	-17.315	48.500	31.185	-12.315	43.500	QUASIPEAK	250.000	100.000
2		361.820	-11.489	44.600	33.112	-12.888	46.000	QUASIPEAK	139.500	195.600
3		593.931	-6.733	44.200	37.468	-8.532	46.000	QUASIPEAK	100.000	230.000
4		654.220	-5.799	43.500	37.701	-8.299	46.000	QUASIPEAK	135.400	128.400
5	*	742.535	-4.310	47.100	42.791	-3.209	46.000	QUASIPEAK	100.000	0.000
6		831.620	-3.048	45.100	42.052	-3.948	46.000	QUASIPEAK	100.000	24.300

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 : 2009/12/26 - 15:55**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
EUT : LCD Monitor	**Probe : HL562(30-1000MHz) - VERTICAL**
Power : AC 120V/60Hz	**Note : Mode4: Full system (DVI mode 1920*1080@60Hz)**



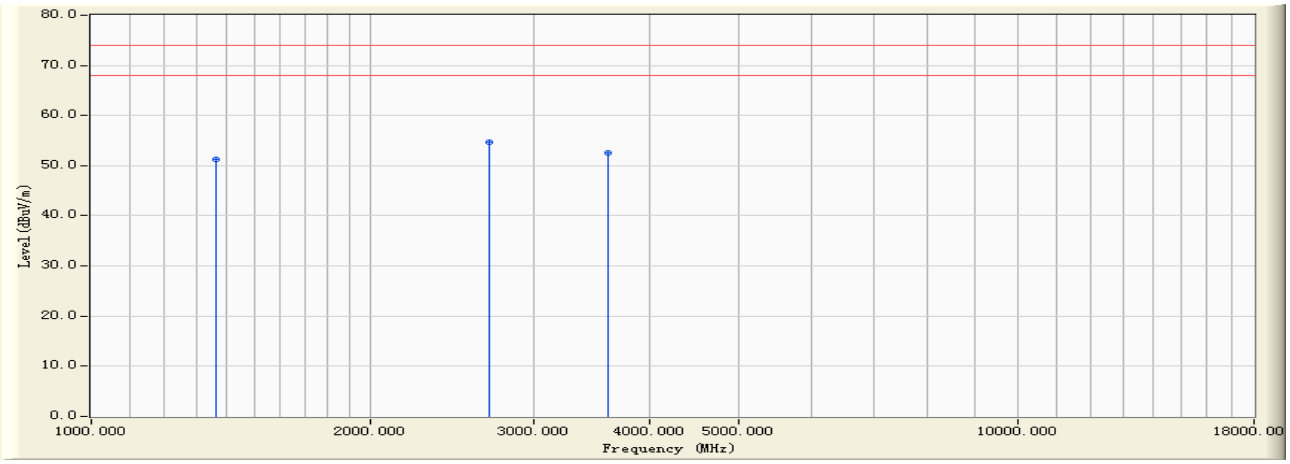
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		206.441	-17.321	52.400	35.079	-8.421	43.500	QUASIPEAK	100.000	120.000
2		445.500	-10.047	50.300	40.253	-5.747	46.000	QUASIPEAK	100.000	325.800
3		593.807	-6.735	45.600	38.864	-7.136	46.000	QUASIPEAK	100.000	360.000
4	*	742.520	-4.310	46.800	42.491	-3.509	46.000	QUASIPEAK	100.000	203.800
5		832.450	-2.996	39.500	36.504	-9.496	46.000	QUASIPEAK	195.400	166.400
6		889.240	-2.303	42.000	39.698	-6.302	46.000	QUASIPEAK	200.000	135.400

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 : 2009/12/28 - 10:42**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : LCD Monitor	**Probe : BBHA9120D(1-18GHz) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : Mode4: Full system (DVI mode 1920*1080@60Hz)**

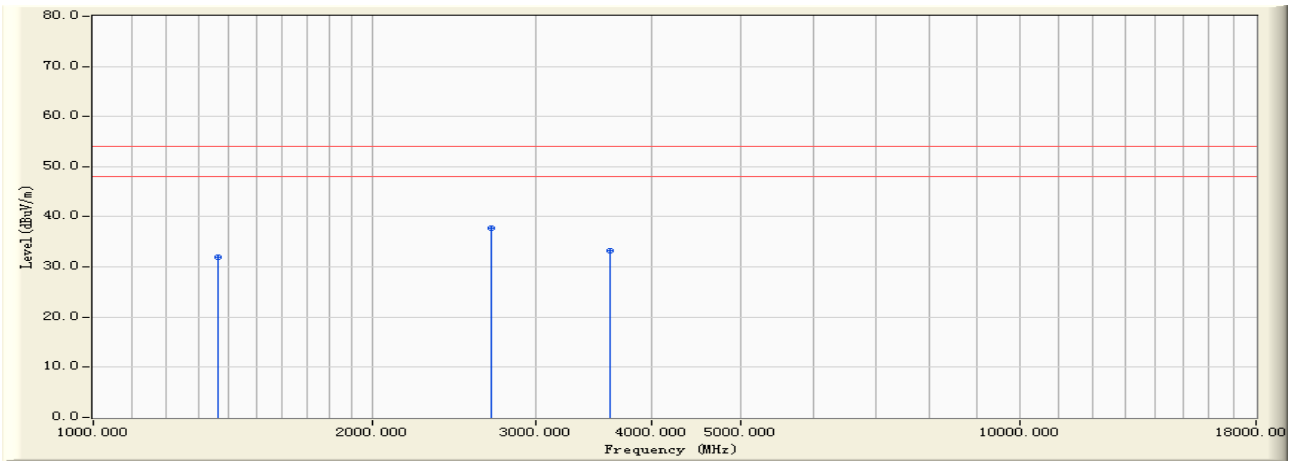


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1364.280	-4.530	55.863	51.333	-22.667	74.000	PEAK	250.000	258.700
2	*	2684.600	0.709	53.900	54.610	-19.390	74.000	PEAK	236.400	312.800
3		3612.800	3.119	49.500	52.620	-21.380	74.000	PEAK	175.600	215.800

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 : 2009/12/28 - 10:42**
Limit : FCC_15_03M_AV	**Margin : 6**
EUT : LCD Monitor	**Probe : BBHA9120D(1-18GHz) - HORIZONTAL**
Power : AC 120V/60Hz	**Note : Mode4: Full system (DVI mode 1920*1080@60Hz)**

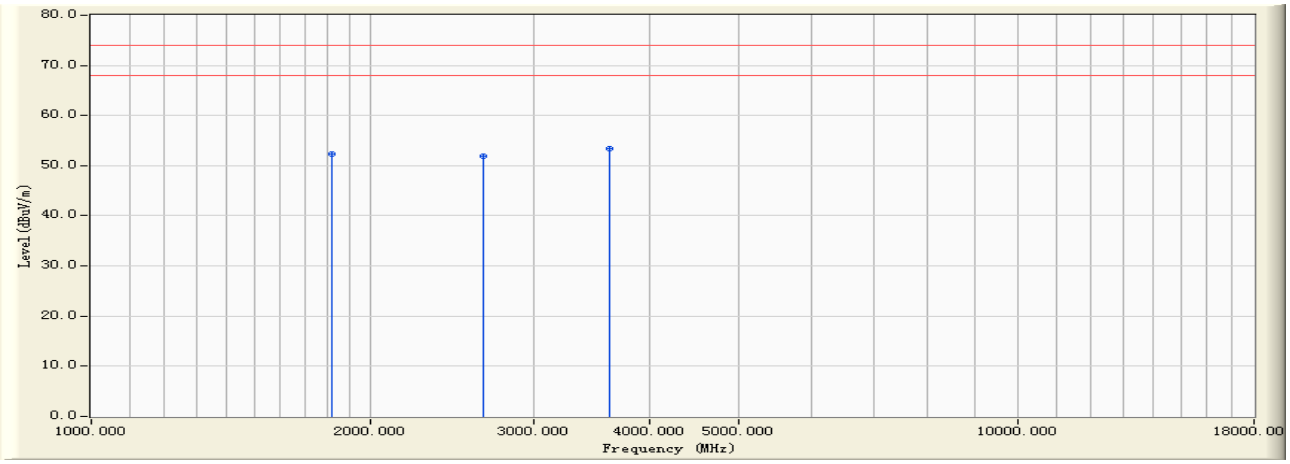


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1364.280	-4.530	36.510	31.980	-22.020	54.000	AVERAGE	250.000	258.700
2	*	2684.600	0.709	37.110	37.820	-16.180	54.000	AVERAGE	236.400	312.800
3		3612.800	3.119	30.190	33.310	-20.690	54.000	AVERAGE	175.600	215.800

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 : 2009/12/28 - 10:42**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : LCD Monitor	**Probe : BBHA9120D(1-18GHz) - VERTICAL**
Power : AC 120V/60Hz	**Note : Mode4: Full system (DVI mode 1920*1080@60Hz)**

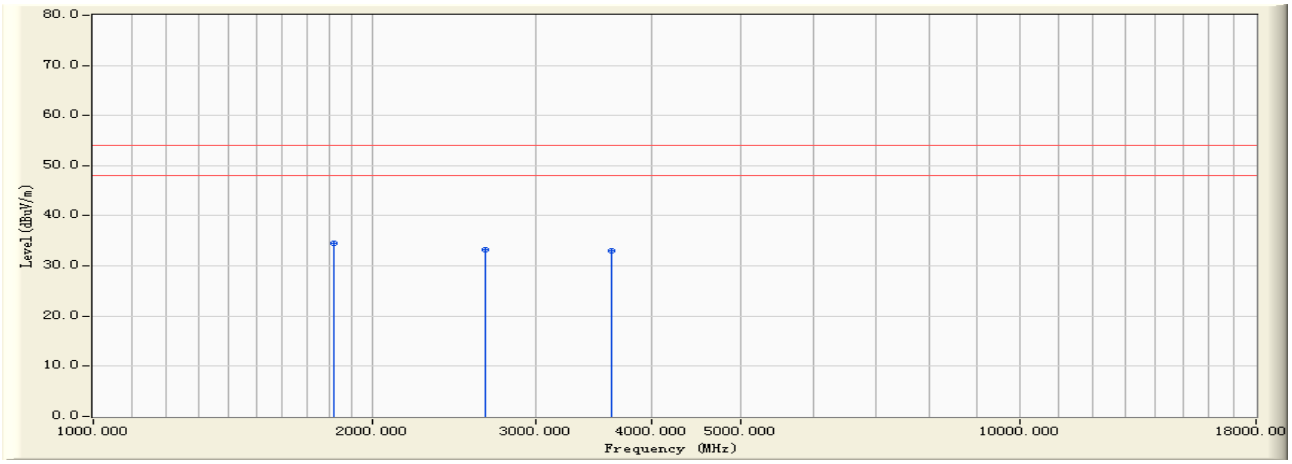


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1815.690	-3.871	56.230	52.359	-21.641	74.000	PEAK	100.000	341.200
2		2651.800	0.715	51.260	51.975	-22.025	74.000	PEAK	100.000	269.400
3	*	3621.800	3.141	50.270	53.411	-20.589	74.000	PEAK	100.000	258.100

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 : 2009/12/28 - 10:42**
Limit : FCC_15_03M_AV	**Margin : 6**
EUT : LCD Monitor	**Probe : BBHA9120D(1-18GHz) - VERTICAL**
Power : AC 120V/60Hz	**Note : Mode4: Full system (DVI mode 1920*1080@60Hz)**



		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	*	1815.690	-3.871	38.360	34.489	-19.511	54.000	AVERAGE	100.000	341.200
2		2651.800	0.715	32.590	33.305	-20.695	54.000	AVERAGE	100.000	369.400
3		3621.800	3.141	29.880	33.021	-20.979	54.000	AVERAGE	100.000	258.100

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