



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.	: E2240VV
FCC ID	: BEJE2240VV
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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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 Mar 06, 2010 at **CerpPASS Technology Corp.**

Documented By:

Approved By:

Sophie Li/ Administration

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:	E2240VV
Adatper1#	Manufacturer:	LG
	Model No:	FSP036-DGAA1
	Input:	100-240V~,1.3A(1,3A),50-60Hz
	Output:	12.0V(12,0V)---3.0A(3,0A) MAX
DC Cable	Non-Shielded, 1.5m, with one ferrite core bonded	
Adatper2#	Manufacturer:	LG
	Model No:	LCAP07F
	Input:	100-240V~ 50-60Hz 1.0A(1,0A) Max
	Output:	12V---3.0A(3,0A)
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,DVD, 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) with Adapter 1#
	Test Mode 2: Full system (VGA mode 1024*768@75Hz) with Adapter 1#
	Test Mode 3: Full system (VGA mode 720*400@70Hz) with Adapter 1#
	Test Mode 4: Full system (DVI mode 1920*1080@60Hz) with Adapter 1#
	Test Mode 5: Full system (DVI mode 1024*768@75Hz) with Adapter 1#



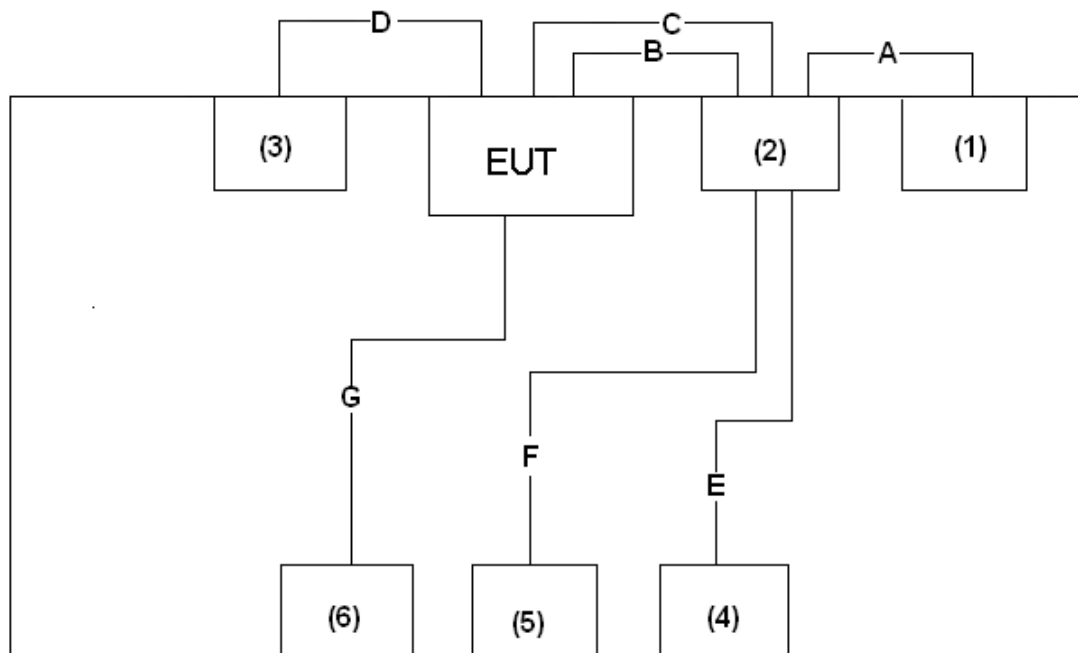
	Test Mode 6: Full system (DVI mode 720*400@70Hz) with Adapter 1#
	Test Mode 7: Full system HDMI In with AC Adapter 1#
	Test Mode 8: Full system (VGA mode 1920*1080@60Hz) with Adapter 2#
	Test Mode 9: Full system (VGA mode 1024*768@75Hz) with Adapter 2#
	Test Mode 10: Full system (VGA mode 720*400@70Hz) with Adapter 2#
	Test Mode 11: Full system (DVI mode 1920*1080@60Hz) with Adapter 2#
	Test Mode 12: Full system (DVI mode 1024*768@75Hz) with Adapter 2#
	Test Mode 13: Full system (DVI mode 720*400@70Hz) with Adapter 2#
	Test Mode 14: Full system HDMI In with AC Adapter 2#
Select the worst case of the pre-test modes as the final test mode	
	Test Mode 8: Full system (VGA mode 1920*1080@60Hz) with Adapter 2#

2.3. Description of Test System

No	Device	Manufacturer	Model No.	Description
1	Printer	Epson	EX3	N/A
2	PC	Dell	DCTA	N/A
3	DVD	PIONEER	DV-600AV-S	N/A
4	USB Mouse	DELL	G0K02XYK	N/A
5	USB Keyboard	DELL	SK-8115	N/A
6	Microphone&Earphone	SALAR	N/A	N/A



2.4. Connection Diagram of Test System



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



2.5. General Information of Test

Test Site :	CerpPASS 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 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



2.6. Measurement Uncertainty

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

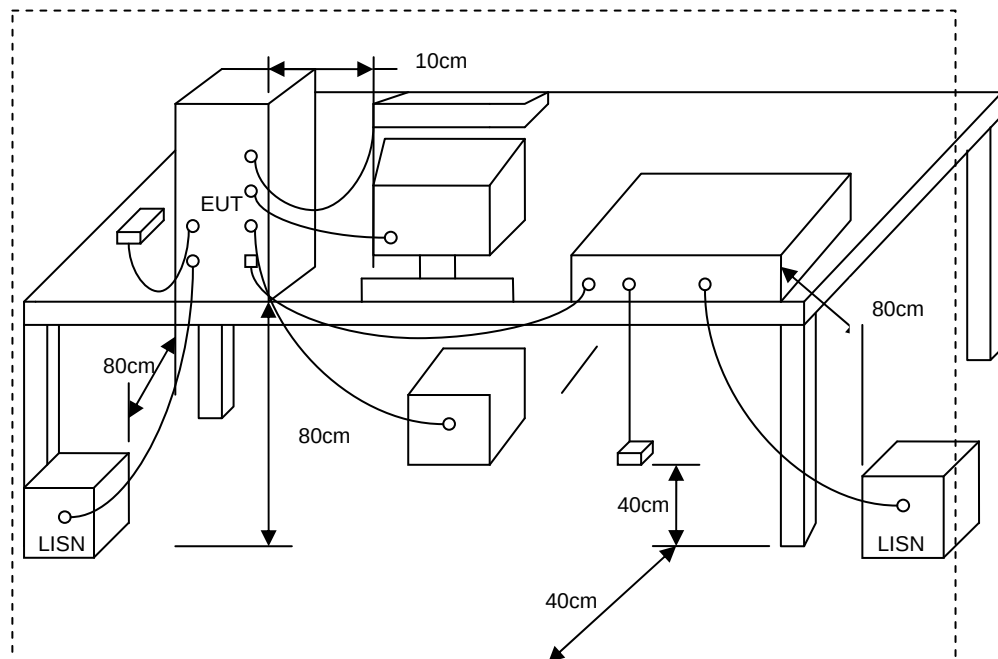
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

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



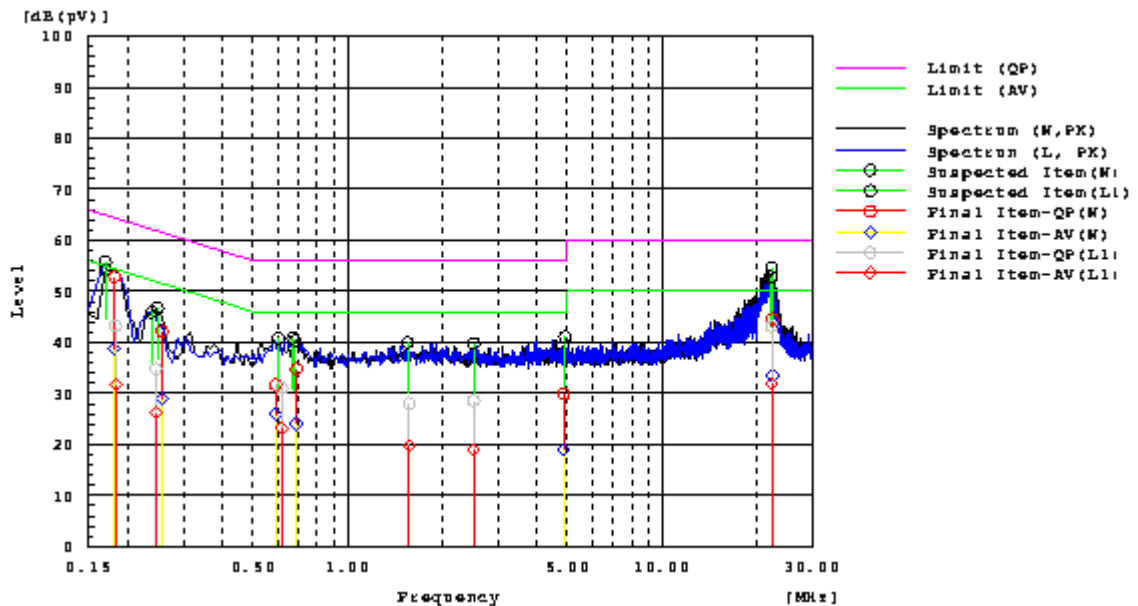
3.4. Measurement equipment

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date
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	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	2010.01.11
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2009.10.19



3.5. Test Result and Data

Test Mode :	Mode 8: Full system (VGA mode 1920*1080@60Hz) with Adapter 2#		
AC Power :	AC 120V/60Hz	Phase :	L&N
EUT :	LCD Monitor	Model No.:	E2240VV
Temperature :	20°C	Humidity :	43%
Pressur(mbar) :	1002	Date :	2010/03/05



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
0.18269	L1	33.2	21.8	10.0	43.2	31.8	64.4	54.4	21.2	22.6	Pass
0.24489	L1	24.8	16.3	10.0	34.8	26.3	61.9	51.9	27.1	25.6	Pass
0.6159	L1	21.2	13.3	9.9	31.1	23.2	56.0	46.0	24.9	22.8	Pass
1.56782	L1	18.2	9.8	9.9	28.1	19.7	56.0	46.0	27.9	26.3	Pass
2.51596	L1	18.6	9.1	10.0	28.6	19.1	56.0	46.0	27.4	26.9	Pass
22.3152	L1	32.5	21.2	10.6	43.1	31.8	60.0	50.0	16.9	18.2	Pass
0.18162	N	33.3	19.2	19.6	52.9	38.8	64.4	54.4	11.5	15.6	Pass
0.25638	N	32.2	18.9	10.0	42.2	28.9	61.5	51.5	19.3	22.6	Pass
0.58964	N	21.8	16.0	9.9	31.7	25.9	56.0	46.0	24.3	20.1	Pass
0.68567	N	24.9	14.2	9.9	34.8	24.1	56.0	46.0	21.2	21.9	Pass
4.85639	N	19.8	9.0	10.1	29.9	19.1	56.0	46.0	26.1	26.9	Pass
22.4268	N	34.0	22.9	10.6	44.6	33.5	60.0	50.0	15.4	16.5	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

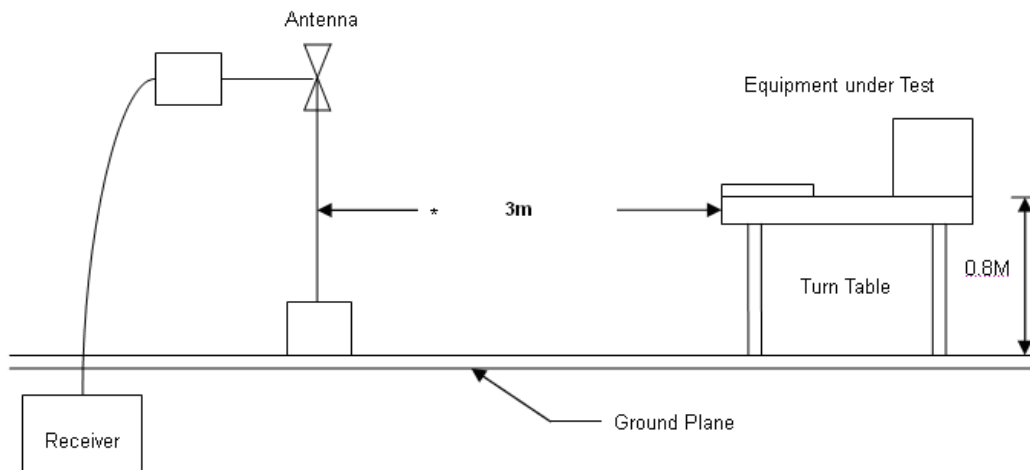


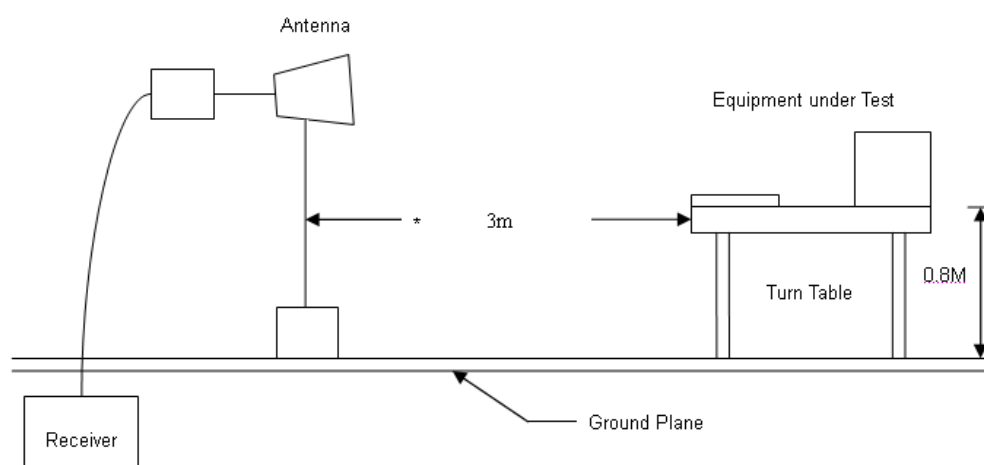
4.2. Test Procedures

- 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 or 1 meter.
- 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**

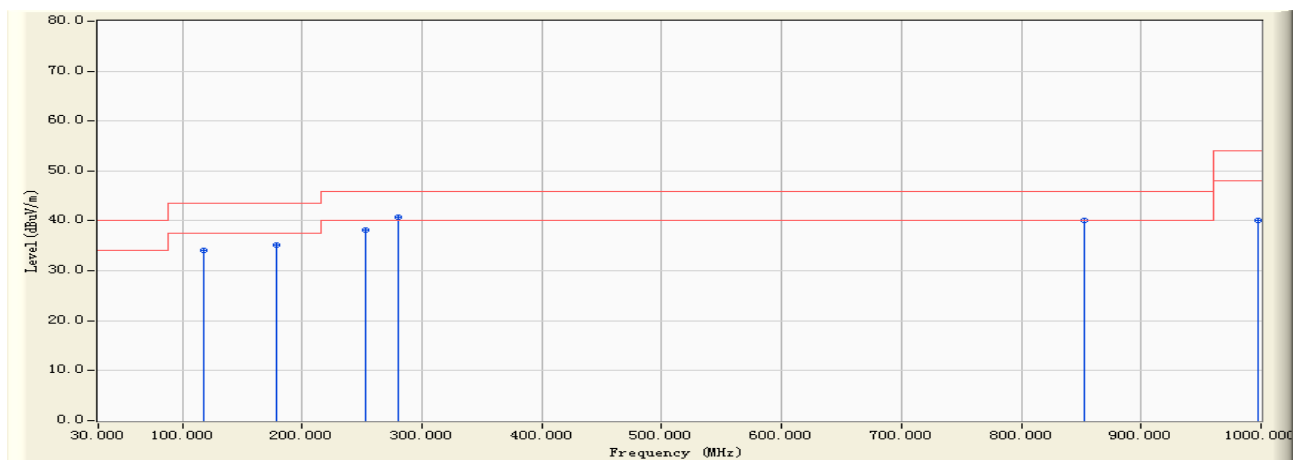
Instrument	Model No.	Manufacturer	Serial No.	Calibration Date
EMI Test Receiver	R&S	ESCI	100564	2009.06.23
H64 Amplifier	HP	8447F	3113A05582	2009.12.01
Preamplifier	Agilent	8449B	ED-HE-EMI-077	2010.02.10
Ultra Broadband Antenna	R&S	HL562	100362	2009.11.25
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	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 : 2010/03/05 - 18:50
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : LCD Monitor	Probe : HL562(30-1000MHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 8: Full system (VGA mode 1920*1080@60Hz) with Adapter 2#



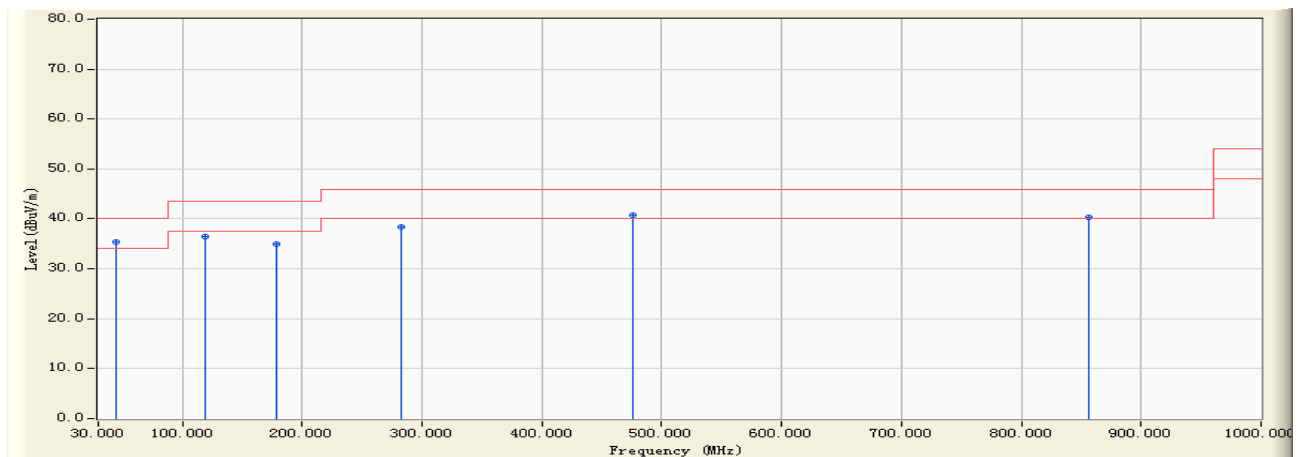
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		118.260	-16.163	50.220	34.057	-9.443	43.500	QUASIPeAK	156.900	244.800
2	*	178.200	-17.040	52.200	35.160	-8.340	43.500	QUASIPeAK	203.600	77.900
3		252.480	-15.056	53.200	38.144	-7.856	46.000	QUASIPeAK	166.900	316.800
4	*	280.692	-13.699	54.380	40.680	-5.320	46.000	QUASIPeAK	144.900	228.300
5		852.697	-1.934	41.990	40.056	-5.944	46.000	QUASIPeAK	200.000	314.700
6		997.344	-0.079	40.260	40.181	-13.819	54.000	QUASIPeAK	100.000	255.600

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 : 2010/03/05 - 18:50
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : LCD Monitor	Probe : HL562(30-1000MHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 8: Full system (VGA mode 1920*1080@60Hz) with Adapter 2#



		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	*	44.570	-15.712	51.000	35.288	-4.712	40.000	QUASIPeAK	100.000	343.100
2	*	118.800	-16.132	52.700	36.568	-6.932	43.500	QUASIPeAK	100.000	70.000
3		178.220	-17.040	52.100	35.060	-8.440	43.500	QUASIPeAK	100.000	155.900
4		282.920	-13.649	52.000	38.352	-7.648	46.000	QUASIPeAK	100.000	360.000
5		476.200	-9.236	50.000	40.764	-5.236	46.000	QUASIPeAK	100.000	333.400
6		855.900	-1.730	41.990	40.260	-5.740	46.000	QUASIPeAK	100.000	298.300

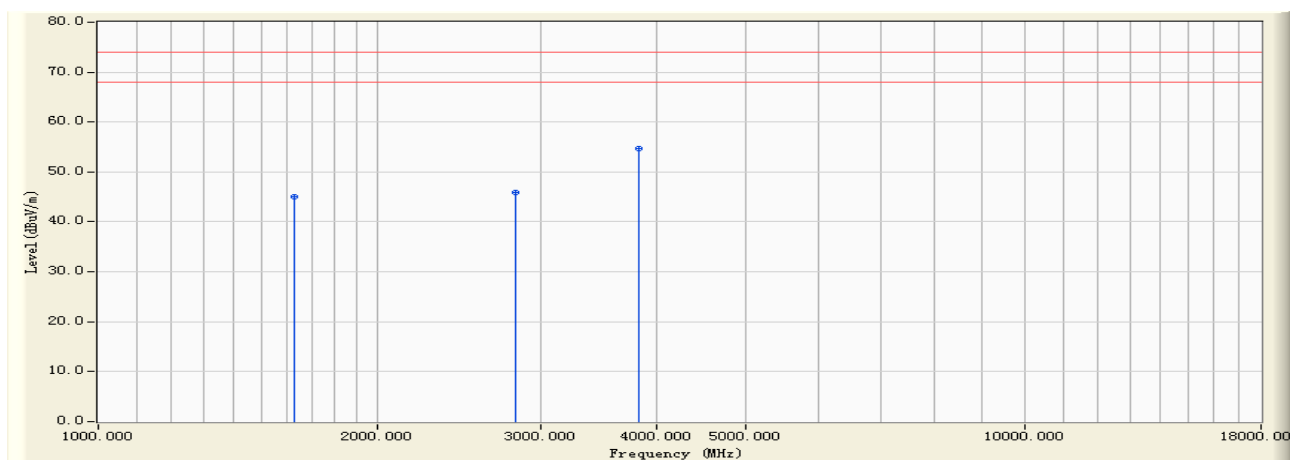
Note:

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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 : 2010/03/07 - 13:40
Limit : FCC_15_03M_PK	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 8: Full system (VGA mode 1920*1080@60Hz) with Adapter 2#



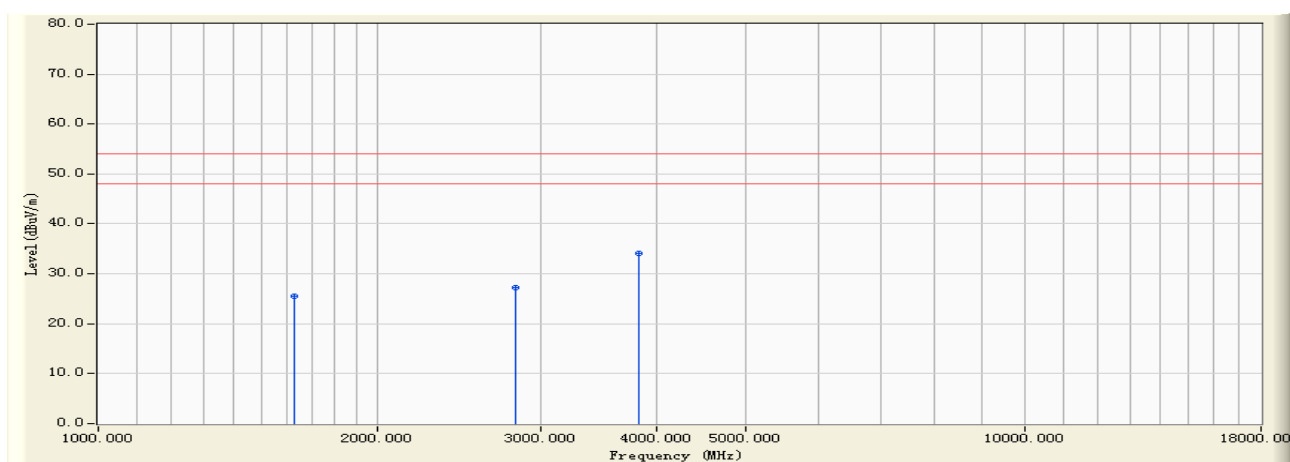
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1625.984	-4.180	49.230	45.051	-28.949	74.000	PEAK	266.900	177.200
2		2826.180	0.551	45.361	45.912	-28.088	74.000	PEAK	188.700	336.200
3	*	3826.152	3.786	51.000	54.786	-19.214	74.000	PEAK	210.600	255.800

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 : 2010/03/07 - 13:40
Limit : FCC_15_03M_AV	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 8: Full system (VGA mode 1920*1080@60Hz) with Adapter 2#



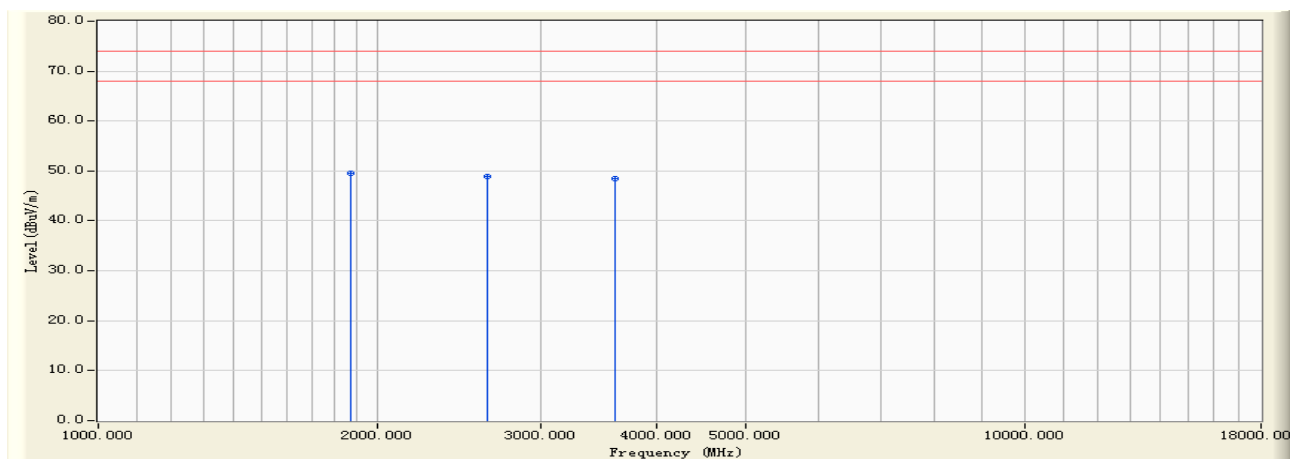
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1625.984	-4.180	29.674	25.495	-28.505	54.000	AVERAGE	266.900	177.200
2		2826.180	0.551	26.740	27.291	-26.709	54.000	AVERAGE	188.700	336.200
3	*	3826.152	3.786	30.221	34.007	-19.993	54.000	AVERAGE	210.600	255.800

Note:

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2. " * ", means this data is the worst emission level.
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Engineer : Fred	
Site : EMC Lab AC 102	Time : 2010/03/07 - 13:40
Limit : FCC_15_03M_PK	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 8: Full system (VGA mode 1920*1080@60Hz) with Adapter 2#



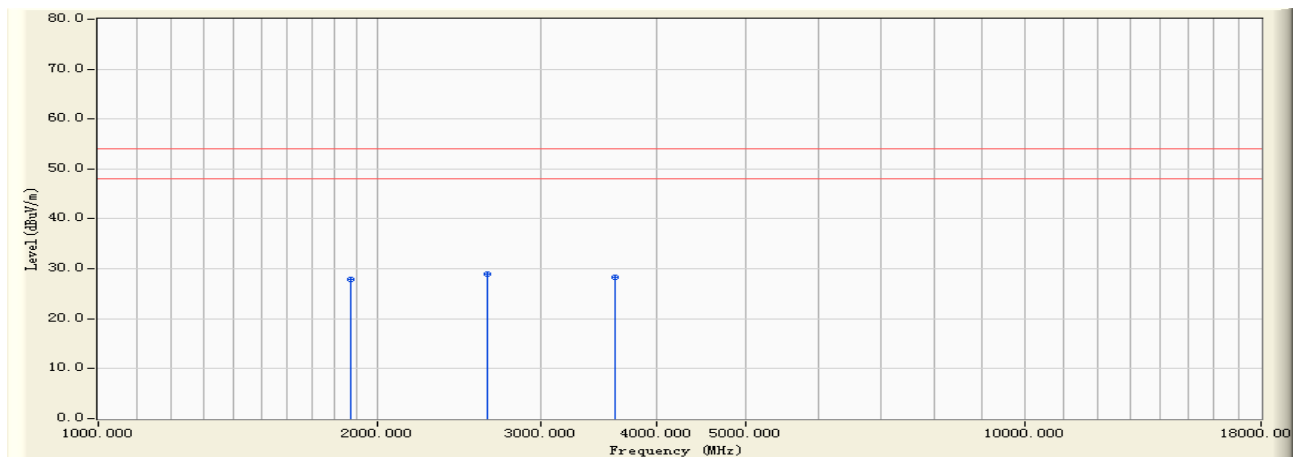
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	*	1872.630	-3.626	53.210	49.584	-24.416	74.000	PEAK	100.000	267.200
2		2633.980	0.720	48.263	48.984	-25.016	74.000	PEAK	154.200	332.500
3		3614.320	3.124	45.312	48.435	-25.565	74.000	PEAK	100.000	155.900

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 : 2010/03/07 - 13:40
Limit : FCC_15_03M_AV	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 8: Full system (VGA mode 1920*1080@60Hz) with Adapter 2#



		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		1872.630	-3.626	31.550	27.924	-26.076	54.000	AVERAGE	100.000	267.200
2	*	2633.980	0.720	28.174	28.895	-25.105	54.000	AVERAGE	154.200	332.500
3		3614.320	3.124	25.198	28.321	-25.679	54.000	AVERAGE	100.000	155.900

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

Fred Guo

Test engineer: _____