



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.	: W2453TQV
FCC ID	: BEJW2453HQV
Trade Name	: LG

Laboratory accreditation



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- The test report must not be used by the clients to claim product certification approval by **TAF, NVLAP, NIST** or any agency of the Government.



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Document history

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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 Mar. 05, 2009 at Cerpass Technology Corp.

Signature

Alex Chiu/ Supervisor



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:	W2453TQV
	Serial No:	N/A
	Rating:	AC 100-240 ~ 50/60 Hz, 1.2A
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	Non-shielded, 1.8m	
Note: The VGA cable is alternative on selling.		

2.2. Test Manner

- a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
- b. The complete test system included the PC, Earphone, iPod, USB Keyboard, USB Mouse and EUT.
- c. During the test, Setup up the EUT and all system, turn on the power of all Equipment, run the test software "H" by the software EMC Test, using the software WINTHRAX make all the iPod at the working station, and then test.
- d. The following test includes six pre-test modes:
 - Mode 1: Full system (DVI 800* 600@60Hz)
 - Mode 2: Full system (DVI 1280* 1024@75Hz)
 - Mode 3: Full system (DVI 1920*1080@60Hz)
 - Mode 4: Full system (VGA 800* 600@60Hz)
 - Mode 5: Full system (VGA1280* 1024@75Hz)
 - Mode 6: Full system (VGA1920*1080@60Hz)
- e. Select the worst case of the pre-test modes as the final test mode:
 - Mode 6: Full system (VGA1920*1080@60Hz)



2.3. Description of Test System

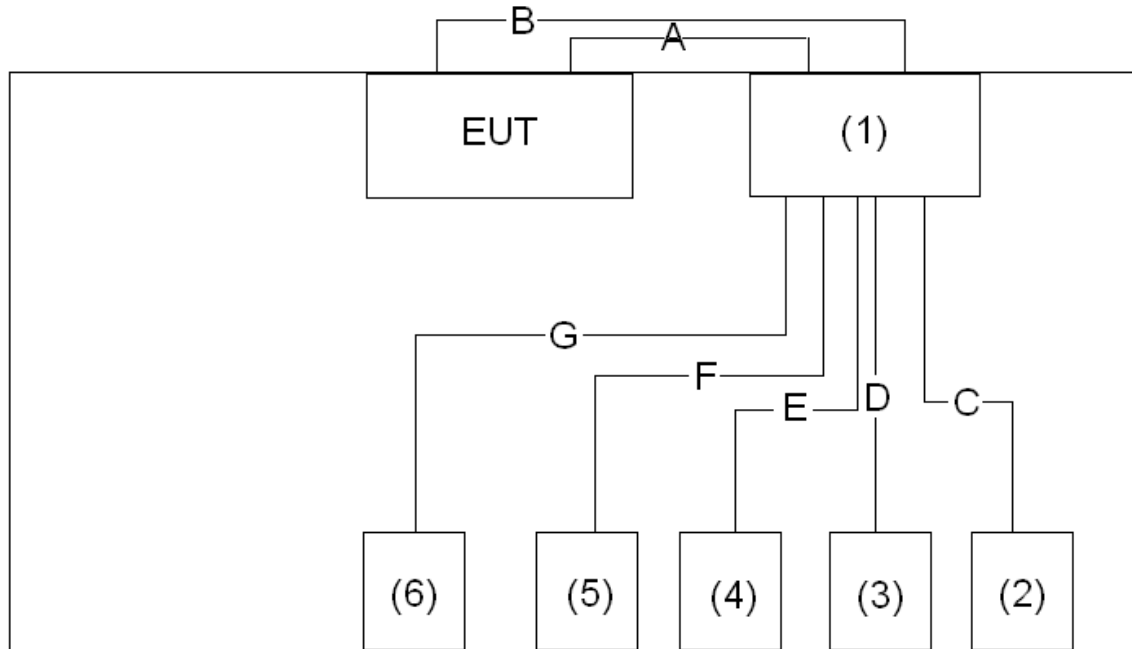
EMI

Device	Manufacturer	Model No.	Description
PC	DELL	DCTA	N/A
Earphone	SALAR	N/A	N/A
iPod	APPLE	MA477TA/A	N/A
iPod	APPLE	MA477TA/A	N/A
USB Keyboard	DELL	SK-8115	N/A
USB Mouse	DELL	G0K02XZQ	0CJ339

EMI use cable		
Cable	Quantity	Description
VGA Cable	1	Shielded, 1.8m
DVI Cable	1	Shielded, 1.8m
Earphone Cable	1	Non-Shielded, 2.0m
USB Cable	1	Shielded, 0.8m
USB Cable	1	Shielded, 0.8m
USB Cable	1	Shielded, 1.8m
USB Cable	1	Shielded, with one ferrite core bonded, 2.1m



2.4. Connection Diagram of Test System



- A. The VGA Cable is connected from PC to the EUT.
- B. The DVI Cable is connected from PC to EUT.
- C. The Earphone cable is connected from PC to Earphone.
- D. The USB Cable is connected from PC to the IPOD .
- E. The USB Cable is connected from PC to the IPOD.
- F. The USB Cable is connected from PC to the USB Mouse.
- G. The USB Cable is connected from PC to the USB Keyboard.



2.5. General Information of Test

Test Site :	Cerpass Technology Corp. No.66, Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
Test Site Location (OATS1-SD):	No.68-1, Shihbachongsi, shihding Township, Taipei City 223, Taiwan
FCC Registration Number :	632249 (Taipei) 916572 (SuZhou)
IC Registration Number :	6597A-1 (Taipei) 7290A-1 (SuZhou)
VCCI Registration Number :	T-338 for Telecommunication Test (Taipei) C-2188 for Conducted emission test (Taipei) R-1902 for Radiated emission test (Taipei)
	T-343 for Telecommunication Test (Suzhou) C-2919 for Conducted emission test (Suzhou) R-2670 for Radiated emission test (Suzhou)
Test Voltage:	AC 120V/ 60Hz
Test in Compliance with:	Normative References : CISPR22:2006 Class B ANSI C63.4-2003 FCC Part 15 Subpart B
Frequency Range Investigated :	Conducted: from 150kHz to 30 MHz Radiated: from 30 MHz to 1,000 MHz Radiated: from 1G to 18G
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.

2.6. Measurement Uncertainty

Conducted Emission
The measurement uncertainty is evaluated as ± 2.24 dB.
Radiated Emission
(30MHz -1000MHz) The measurement uncertainty is evaluated as ± 2.98 dB.
(1G-18GHz) The measurement uncertainty is evaluated as ± 2.15 dB.



3. Test of Conducted Emission

3.1. Test Limit

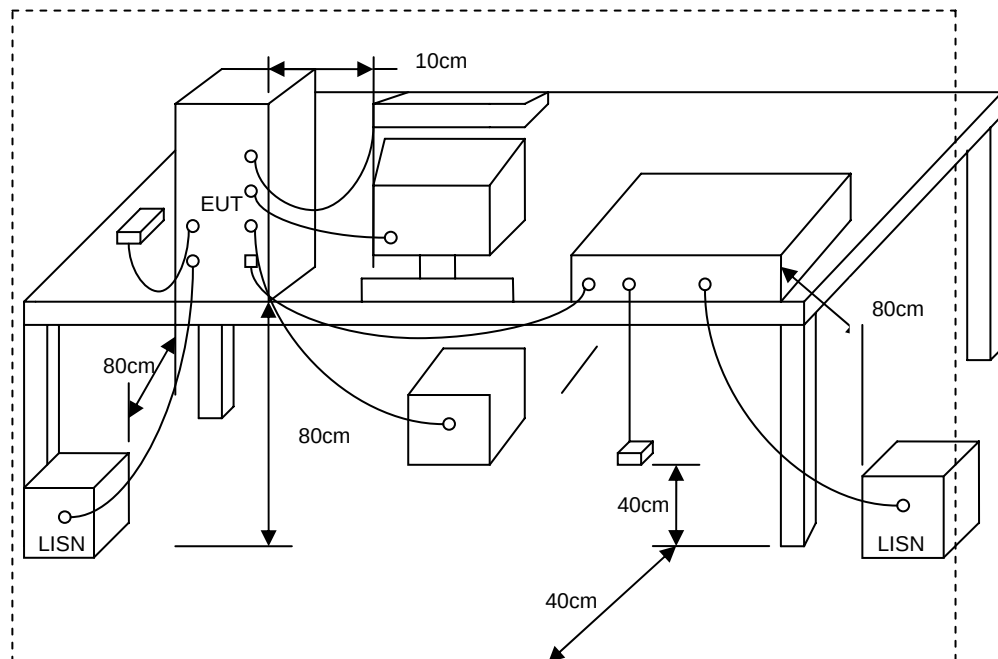
Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2003 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown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



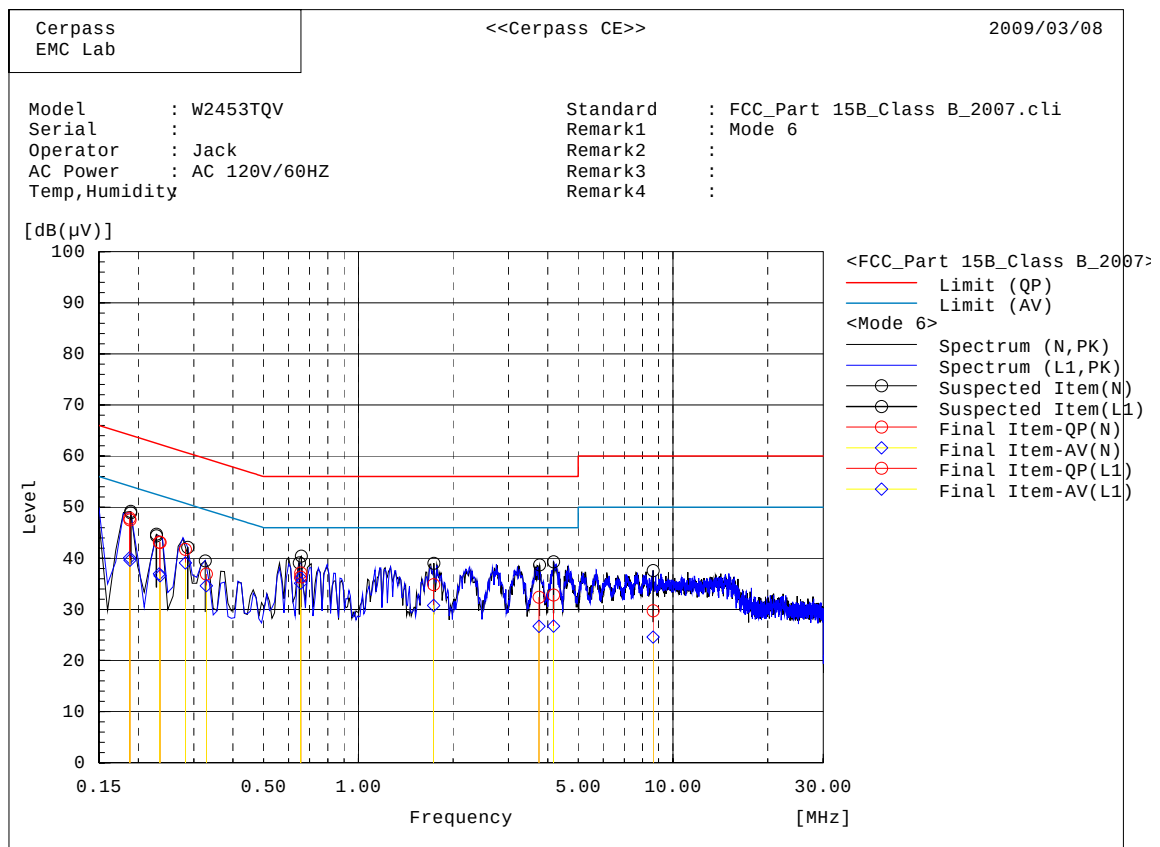
3.4. Measurement equipment

Instrument	Manufacturer	Model No.	Serial No.	Calibration Data
EMC Emission Tester	EMCPARTNER	Harmonics-1000	159	2008.06.30
Test Receiver	R&S	ESCI	100565	2008.06.30
AMN	R&S	ESH2-Z5	100182	2008.06.30
Two-Line V-Network	R&S	ENV216	100325	2008.06.30
ISN	FCC	FCC-TLISN-T2-02	20379	2008.06.30
ISN	FCC	FCC-TLISN-T4-02	20380	2008.06.30
ISN	FCC	FCC-TLISN-T8-02	20381	2008.06.30
Current Probe	R&S	EZ-17	100303	2008.06.30
Passive Voltage Probe	R&S	ESH2-Z3	100026	2008.06.30
Decoupling Clamp	LUTHI	FTC 40 X 15 E	5685	2008.11.01
Absorbing Clamp	Schwarzbeck	MDS21	3753	2008.11.01
Minimum Loss Pad	Agilent	11852B	61650	2008.06.30
Attenuator	R&S	ESH3-Z2	100529	2009.01.12
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2008.09.24



3.5. Test Result and Data

Standard	: FCC_Part 15B_Class B_2007	Date/Time	: 2009/03/08
Model	: W2453TQV	Serial	: N/A
Operator	: Jack	AC Power	: AC 120V/60HZ
Temp	: 20'	Humidity	: 50%
Remark	: Mode 6: Full system (VGA1920*1080@60Hz)		





Final Data List

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
0.18822	L1	38.0	30.2	9.5	47.5	39.7	64.1	54.1	16.6	14.4	Pass
0.23439	L1	33.5	27.0	9.6	43.1	36.6	62.3	52.3	19.2	15.7	Pass
0.28211	L1	32.1	29.5	9.6	41.7	39.1	60.8	50.8	19.1	11.7	Pass
0.65537	L1	26.6	25.4	9.7	36.3	35.1	56.0	46.0	19.7	10.9	Pass
4.17181	L1	23.1	17.0	9.7	32.8	26.7	56.0	46.0	23.2	19.3	Pass
8.6473	L1	19.9	14.8	9.8	29.7	24.6	60.0	50.0	30.3	25.4	Pass
0.18773	N	38.1	30.3	9.8	47.9	40.1	64.1	54.1	16.2	14.0	Pass
0.23313	N	33.3	27.1	9.9	43.2	37.0	62.3	52.3	19.1	15.3	Pass
0.32887	N	27.1	24.8	9.8	36.9	34.6	59.5	49.5	22.6	14.9	Pass
0.65624	N	27.4	26.4	9.7	37.1	36.1	56.0	46.0	18.9	9.9	Pass
1.73595	N	25.1	21.1	9.7	34.8	30.8	56.0	46.0	21.2	15.2	Pass
3.75384	N	22.7	17.0	9.7	32.4	26.7	56.0	46.0	23.6	19.3	Pass

Test engineer: Jack Li



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 (dB μ V/m)	Level (dB μ V/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)
18000-40000	1	84(PK)	64(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

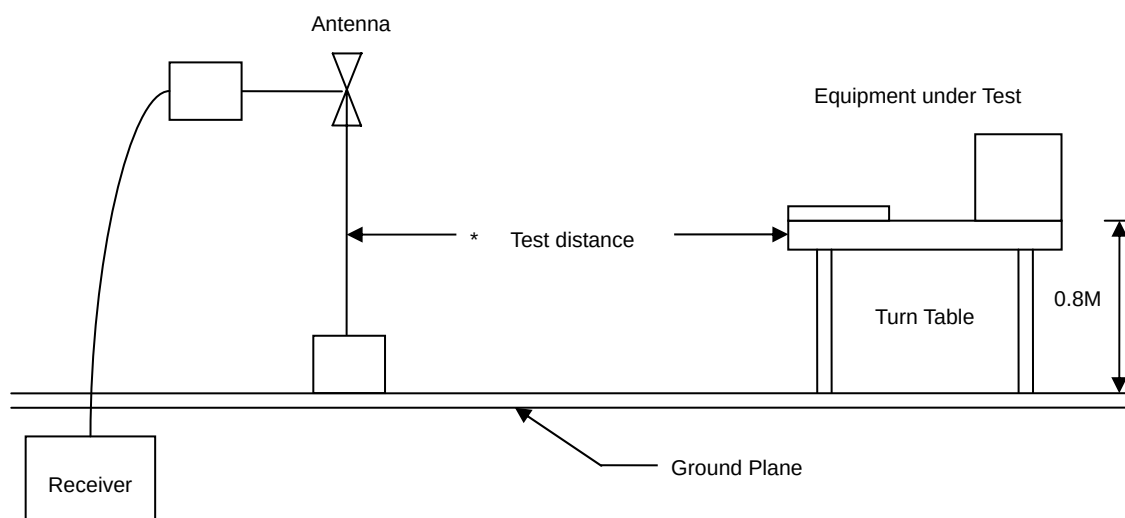


4.2. Test Procedures

- 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 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. Radiated was performed at an antenna to EUT distance of 3 meters .



4.3. Typical test Setup



4.4. Measurement equipment

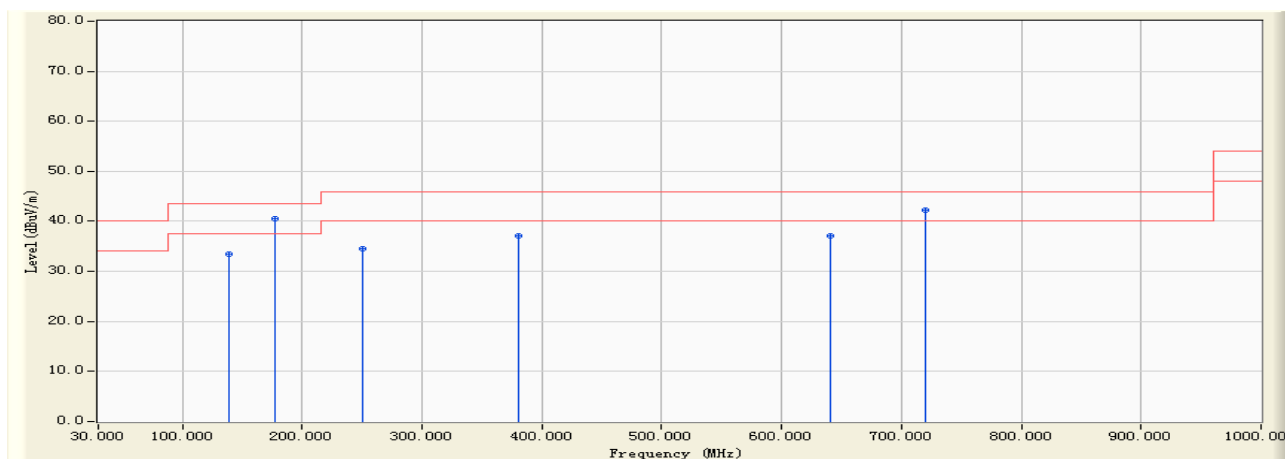
Instrument	Model No.	Manufacturer	Serial No.	Calibration Date
EMI Test Receiver	R&S	ESCI	100564	2008.06.30
Preamplifier	Agilent	87405B	My39500554	2008.11.04
Preamplifier	R&S	PR-AMP26	1248791	2008.06.30
Ultra Broadband Antenna	R&S	HL562	100362	2008.11.04
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2008.09.26
Spectrum Analyzer	R&S	FSP40	100324	2008.09.28
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-001	2008.09.24



4.5. Test Result and Data

Under 1G:

Site : EMC Lab AC 102	Time : 2009/03/08 - 15:43
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : LCD Monitor	Probe : HL562(30-1000MHz) - HORIZONTAL
Power : AC120V/60Hz	Note : Mode 6: Full system (VGA1920*1080@60Hz)



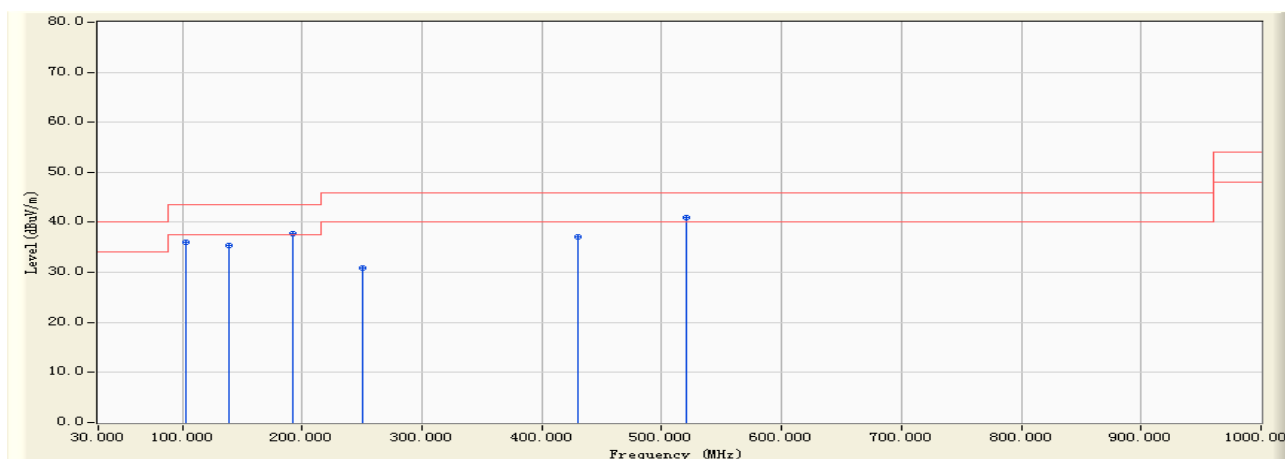
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		138.640	-14.899	48.350	33.451	-10.049	43.500	QUASIPeAK	300.000	120.000
2	*	177.440	-14.729	55.300	40.571	-2.929	43.500	QUASIPeAK	350.000	100.000
3		250.350	-12.779	47.300	34.521	-11.479	46.000	QUASIPeAK	200.000	250.000
4		381.140	-8.116	45.300	37.184	-8.816	46.000	QUASIPeAK	200.000	300.000
5		640.350	-1.725	38.750	37.025	-8.975	46.000	QUASIPeAK	400.000	360.000
6		720.350	-0.126	42.300	42.174	-3.826	46.000	QUASIPeAK	200.000	235.000

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



Site : EMC Lab AC 102	Time : 2009/03/08 - 15:45
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : LCD Monitor	Probe : HL562(30-1000MHz) - VERTICAL
Power : AC120V/60Hz	Note : Mode 6: Full system (VGA1920*1080@60Hz)



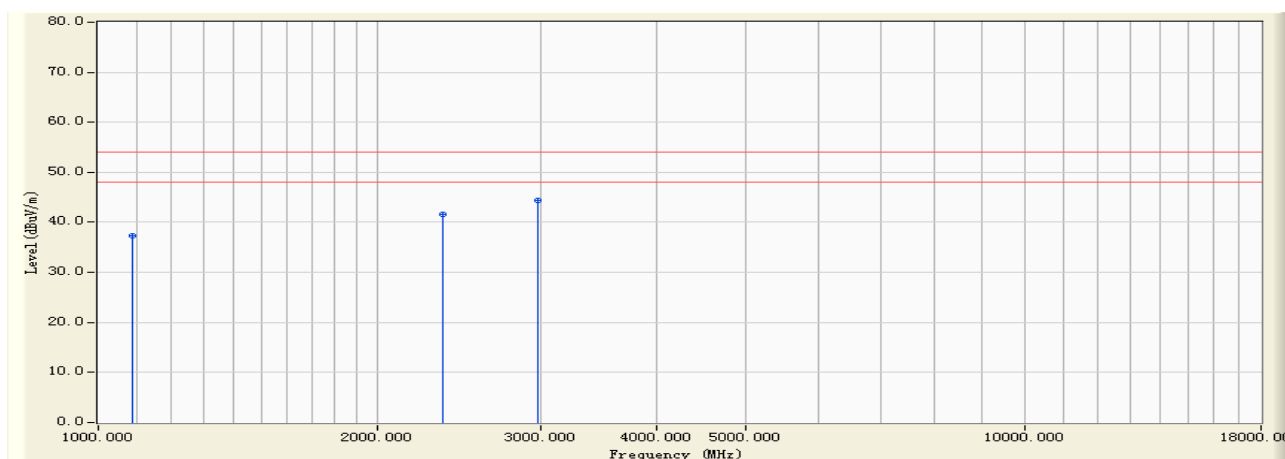
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		102.500	-14.344	50.300	35.955	-7.545	43.500	QUASIPeAK	100.000	35.000
2		138.750	-14.906	50.350	35.444	-8.056	43.500	QUASIPeAK	100.000	0.000
3		192.600	-15.526	53.200	37.674	-5.826	43.500	QUASIPeAK	100.000	150.000
4		250.350	-12.779	43.750	30.971	-15.029	46.000	QUASIPeAK	100.000	360.000
5		430.350	-6.762	43.964	37.202	-8.798	46.000	QUASIPeAK	150.000	0.000
6	*	520.000	-4.393	45.300	40.908	-5.092	46.000	QUASIPeAK	100.000	300.000

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



Site : EMC Lab AC 102	Time : 2009/03/08 - 14:49
Limit : FCC 15_03M_AV	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - HORIZONTAL
Power : AC120V/60Hz	Note : Note : Mode 6: Full system (VGA1920*1080@60Hz)



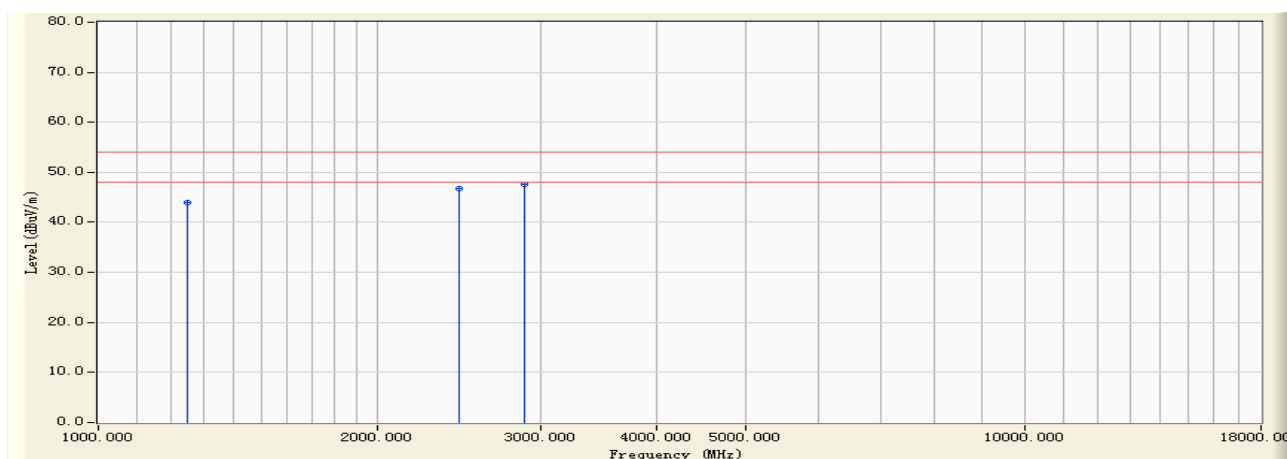
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1087.500	-12.511	49.750	37.239	-16.761	54.000	AVERAGE	200.000	175.000
2		1089.750	-12.498	49.870	37.372	-16.628	54.000	AVERAGE	200.000	175.000
3		2354.770	-7.094	48.751	41.657	-12.343	54.000	AVERAGE	200.000	100.000
4	*	2987.350	-5.400	49.750	44.350	-9.650	54.000	AVERAGE	200.000	240.000

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



Site : EMC Lab AC 102	Time : 2009/03/08 - 14:51
Limit : FCC_15_03M_AV	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - VERTICAL
Power : AC120V/60Hz	Note : Note : Mode 6: Full system (VGA1920*1080@60Hz)



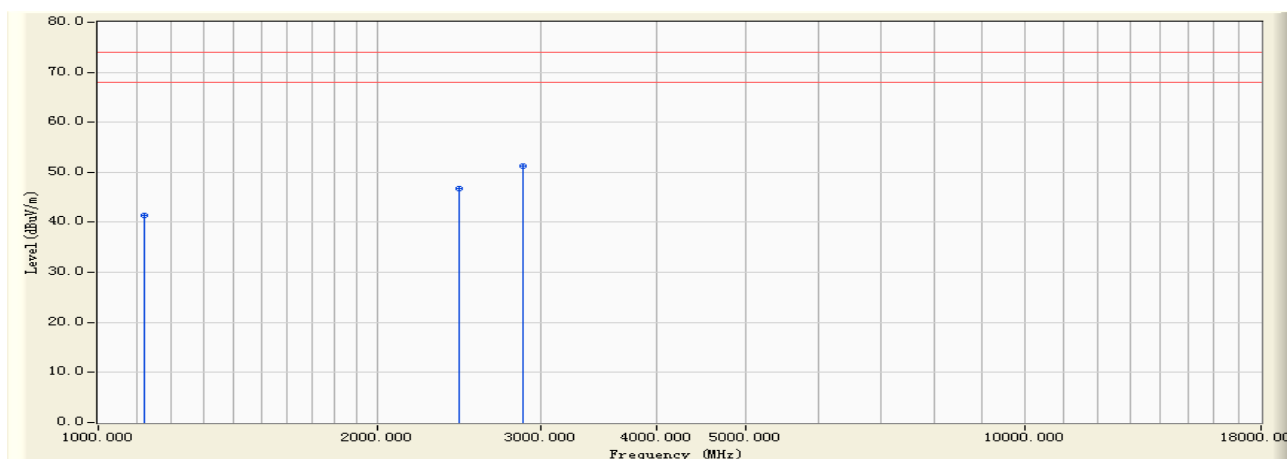
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1247.500	-11.825	55.730	43.905	-10.095	54.000	AVERAGE	100.000	150.000
2		2455.750	-7.043	53.750	46.708	-7.292	54.000	AVERAGE	100.000	200.000
3	*	2885.000	-5.512	53.200	47.688	-6.312	54.000	AVERAGE	100.000	250.000

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



Site : EMC Lab AC 102	Time : 2009/03/08 - 14:56
Limit : FCC 15_03M_PK	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - VERTICAL
Power : AC120V/60Hz	Note : Note : Mode 6: Full system (VGA1920*1080@60Hz)



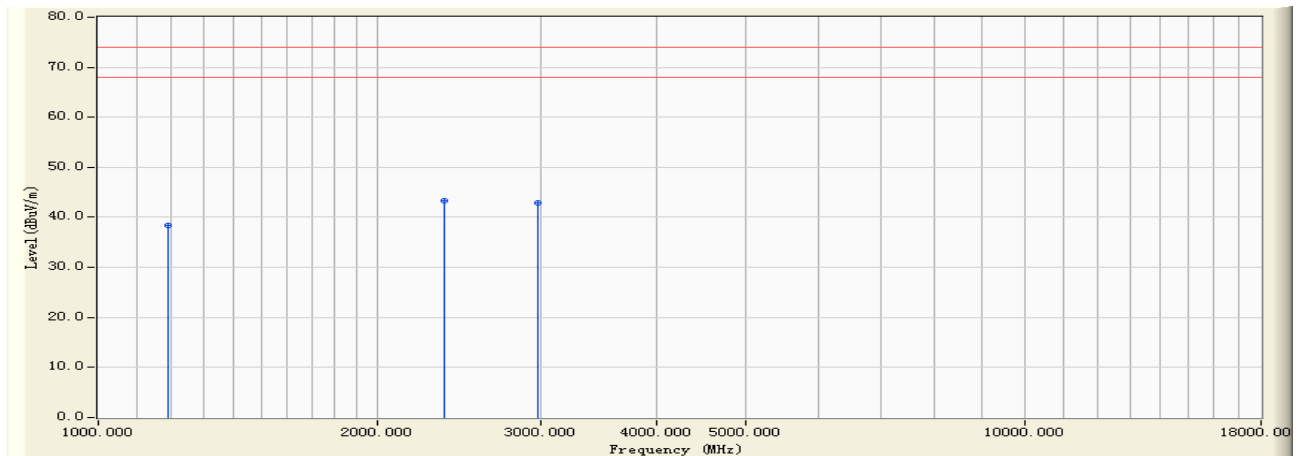
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1120.300	-12.292	53.750	41.458	-32.542	74.000	PEAK	100.000	150.000
2		2450.751	-7.067	53.770	46.704	-27.296	74.000	PEAK	100.000	130.000
3	*	2875.350	-5.486	56.750	51.265	-22.735	74.000	PEAK	100.000	179.000

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



Site : EMC Lab AC 102	Time : 2009/03/08 - 14:59
Limit : FCC 15_03M_PK	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - HORIZONTAL
Power : AC120V/60Hz	Note : Mode 6: Full system (VGA1920*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		1187.750	-12.034	50.340	38.307	-35.693	74.000	PEAK	200.000	150.000
2	*	2359.785	-7.075	50.350	43.275	-30.725	74.000	PEAK	200.000	120.000
3		2987.300	-5.400	48.300	42.900	-31.100	74.000	PEAK	200.000	265.000

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: Jack Li