

Application for FCC Certificate
On Behalf of
LG Electronics U.S.A., Inc.

LCD Monitor

Model No.: E2210TW

Serial No.: E2010081701

FCC ID : BEJE2210TW

Prepared For : LG Electronics U.S.A., Inc.
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NJ 07632, United States

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Date of Test : Aug 19 – 21, 2010
Date of Report : Sep 02, 2010

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TEST REPORT FOR FCC CERTIFICATE

Applicant : LG Electronics U.S.A., Inc.
Manufacturer : LG Electronics Nanjing Display Co., Ltd.
EUT Description : LCD Monitor
(A) Model No. : E2210TW
(B) Serial No. : E2010081701
(C) Power Supply : 120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2009
AND ANSI C63.4-2003*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B (Class B) and ICES-003, Issue 4 February 2004 (CISPR 22:2002) limits both radiated and conducted emissions.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report shows that the EUT (M/N: E2210TW; S/N: E2010081701) which was tested in 3m anechoic chamber Aug 19 – 21, 2010 is technically compliance with the FCC official limits also.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report contains data that are not covered by the NVLAP accreditation.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Aug 19 – 21, 2010 Date of Report : Sep 02, 2010

Producer : Kathy Wang
KATHY WANG / Assistant

Review : Dio Yang
DIO YANG / Deputy Assistant Manager

AUDIX[®] For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : Byron Kwo
Authorized Signature EMC BYRON KWO / Manager

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Description of Test Item	Standard	Limits	Results
EMISSION			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2009 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2009 AND ANSI C63.4-2003	15.109(a) Class B	Pass

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description	: LCD Monitor
Type of EUT	: ☒ Production ☐ Pre-product ☐ Pro-type
Model No.	: E2210TW
Serial No.	: E2010081701
Real Power	: 29.10W
Applicant	: LG Electronics U.S.A., Inc. 1000 Sylvan Avenue, Englewood Cliffs, NJ 07632, United States
Manufacturer	: LG Electronics Nanjing Display Co., Ltd. No.346, Yao Xin Road, Economic & Technical Development Zone, Nanjing, China
LCD Panel	: Manufacturer: LG Display M/N : LM220WE5 (TL) (C1)
Max Resolution	: 1680*1050@60Hz
D-Sub Cable #1	: Shielded, Detachable, 1.85m, with two cores on cable
D-Sub Cable #2	: Shielded, Detachable, 1.85m, with two cores in connector
DVI Cable #1	: Shielded, Detachable, 1.85m, with two cores on cable
DVI Cable #2	: Shielded, Detachable, 1.85m, with two cores in connector
Power Cord	: Unshielded, Detachable, 1.80m
Note	: After evaluation, the D-Sub cable#1 and DVI cable#1 were used in the test for they will cause the maximum emission.

Remark:

The EUT is a LCD Monitor which input/output ports as follows:

- (1) One D-Sub Port : Connected with PC
- (2) One DVI Port : Connected with PC
- (3) One AC In Port : Connected with Power

2.2 Peripherals

2.2.1 PC

Manufacturer : HP
Model Number : dx7200MT
Serial Number : CNG622017W
Power Cord : Unshielded, Detachable, 1.8m
Certificate : FCC DoC; CE/EMC; VCCI; C-Tick; UL
BSMI (R33001) 3C (A000111)
MIC (E-A011-04-2659(B))

2.2.2 Printer

Manufacturer : HP
Model Number : C3990A
Serial Number : JPZX020487
Data Cable : Shielded, Detachable, 1.5m
Certificate : GS, CE/EMC, C-Tick, FCC DoC

2.2.3 Keyboard

Manufacturer : Microsoft
Model Number : RT2300
Serial Number : 7668200662248
Data Cable : Shielded, Undetachable, 1.8m
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick,
BSMI

2.2.4 Mouse

Manufacturer : Microsoft
Model Number : RT2300
Serial Number : 6965712071551
Data Cable : Shielded, Undetachable, 1.85m.
Certificate : FCC DoC, VCCI, CE/EMC, MIC, GS

2.2.5 Modem

Manufacturer : TP-LINK
Model Number : TM-EC5658V
Serial Number : 07123301053
Data Cable : Shielded, Detachable, 1.8m
Certificate : FCC DoC, CE/EMC, CCC

2.3 Description of Test Facility

Site Description (Semi-Anechoic Chamber) : Sept. 17, 1998 file on
Apr 29, 2009 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3F 34Bldg 680 Guiping Rd,
Caohejing Hi-Tech Park,
Shanghai 200233, China

NVLAP Lab Code : 200371-0

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 1.26 dB
Radiated Emission Expanded Uncertainty : U = 3.02 dB

3 CONDUCTED EMISSION TEST

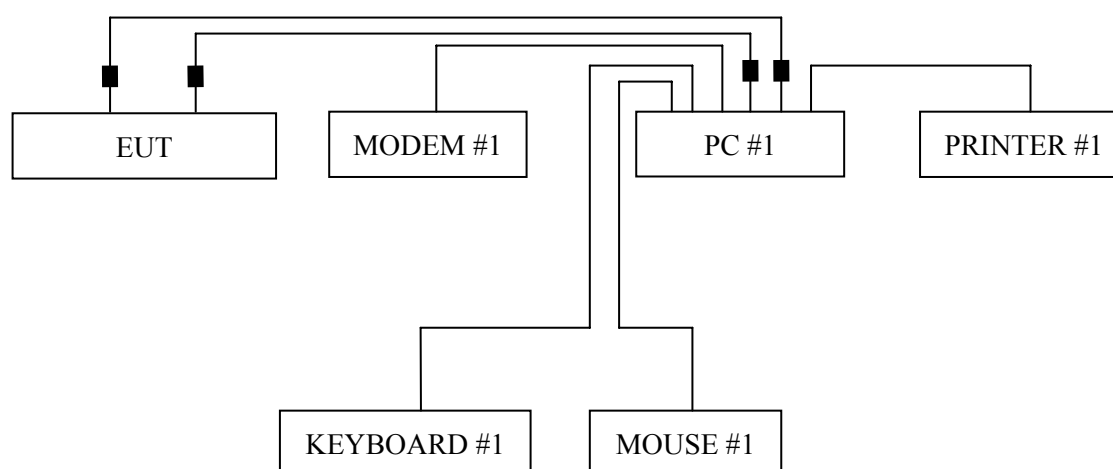
3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Oct 15, 2009	Oct 15, 2010
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Apr 02, 2010	Apr 02, 2011
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Apr 02, 2010	Apr 02, 2011
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Mar 19, 2010	Sep 19, 2010
5.	50 Ω Terminator	Anritsu	BNC	001	Apr 02, 2010	Apr 02, 2011
6.	Software	Audix	E3	SET00200 9804M592	--	--

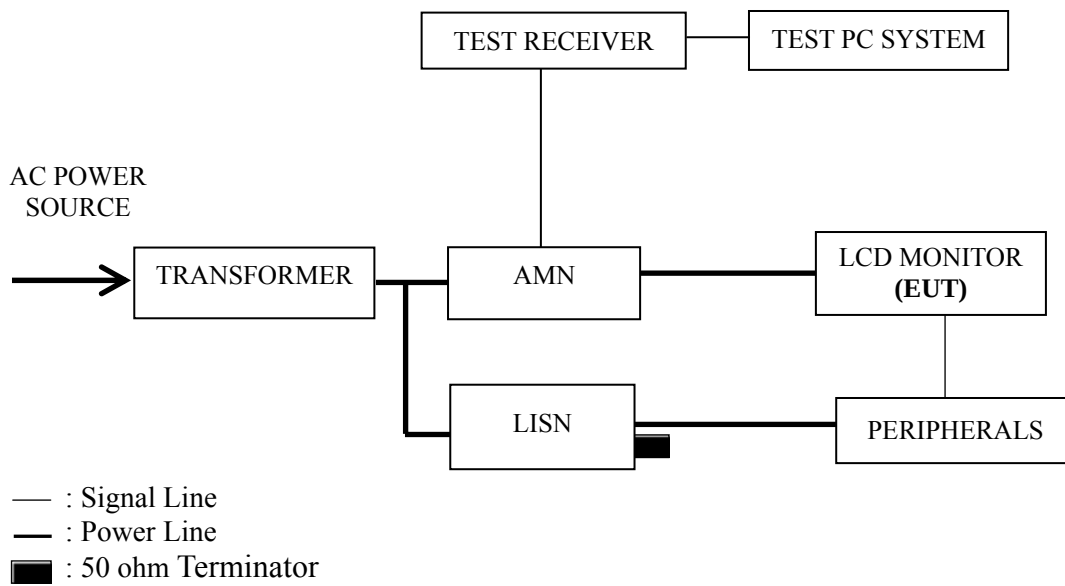
3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



■ : Ferrite core

3.2.2 Conducted Disturbance Test Setup



3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)]

Frequency Range (MHz)	Limits dB (μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50
NOTE 1 – The lower limit shall apply at the transition frequencies. NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz		

3.4 Test Configuration

The EUT (listed in Sec.2.1) and the peripherals (listed in Sec 2.2) were installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT and peripherals as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 Set the contrast & brightness of EUT to maximum.

3.5.4 PC system ran the self-test program “EMC Test” by windows XP and sent “H” characters to EUT through graphic card, the EUT’s screen displayed and filled with “H” pattern by its resolution (Via D-Sub & DVI Input).

3.5.5 Repeat above procedure from 3.5.3 to 3.5.4 for difference test mode.

3.5.6 The other peripherals devices were driven and operated during the test.

3.5.7 The test modes are as follows:

Test Mode
D-Sub 640*480@60Hz
D-Sub 1280*1024@75Hz
D-Sub 1680*1050@60Hz
DVI 640*480@60Hz
DVI 1280*1024@75Hz
DVI 1680*1050@60Hz

3.6 Test Procedures

The EUT and peripherals were connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

3.7 Test Results

< PASS >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

Test Mode	Page
D-Sub 640*480@60Hz	P12
D-Sub 1280*1024@75Hz	P13
D-Sub 1680*1050@60Hz	P14
DVI 640*480@60Hz	P15
DVI 1280*1024@75Hz	P16
DVI 1680*1050@60Hz	P17

NOTE 1 – The **bold test mode** listed above means the worst test mode.

NOTE 2 – Factor = Cable Loss + AMN Factor.

NOTE 3 – Emission Level = Meter Reading + Factor.

NOTE 4 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

NOTE 5 – The worst case is for D-Sub 1680*1050@60Hz test mode. The worst emission is detected at 19.950 MHz (Quasi-Peak Value) with corrected signal level of 48.07 dB (μV) (limit is 60.00 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 48%RH

Serial No. : E2010081701 Date of Test : Aug 19, 2010

Test Mode : D-Sub 640*480@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	45.36	0.37	44.99	65.91	20.55	QP
	0.313	41.70	0.46	41.24	59.88	18.18	
	2.201	28.78	0.63	28.15	56.00	27.22	
	8.062	35.26	0.96	34.30	60.00	24.74	
	10.676	40.93	1.09	39.84	60.00	19.07	
	20.162	47.31	1.62	45.69	60.00	12.69	
	0.152	24.53	0.37	24.16	55.91	31.38	AV
	0.313	30.74	0.46	30.28	49.88	19.14	
	2.201	19.20	0.63	18.57	46.00	26.80	
	8.062	25.11	0.96	24.15	50.00	24.89	
	10.676	27.66	1.09	26.57	50.00	22.34	
	20.162	27.80	1.62	26.18	50.00	22.20	
Neutral	0.157	46.33	0.32	46.01	65.60	19.27	QP
	0.313	40.14	0.40	39.74	59.88	19.74	
	2.594	37.90	0.63	37.27	56.00	18.10	
	8.062	39.47	0.92	38.55	60.00	20.53	
	10.676	41.01	1.09	39.92	60.00	18.99	
	20.162	47.94	1.77	46.17	60.00	12.06	
	0.157	35.58	0.32	35.26	55.60	20.02	AV
	0.313	26.86	0.40	26.46	49.88	23.02	
	2.594	27.78	0.63	27.15	46.00	18.22	
	8.062	29.49	0.92	28.57	50.00	20.51	
	10.676	28.24	1.09	27.15	50.00	21.76	
	20.162	28.11	1.77	26.34	50.00	21.89	

TEST ENGINEER: TED ZHU

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 48%RH

Serial No. : E2010081701 Date of Test : Aug 19, 2010

Test Mode : D-Sub 1280*1024@75Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	45.07	0.37	44.70	65.91	20.84	QP
	0.313	42.08	0.46	41.62	59.88	17.80	
	3.025	31.80	0.70	31.10	56.00	24.20	
	8.062	35.85	0.96	34.89	60.00	24.15	
	10.676	41.58	1.09	40.49	60.00	18.42	
	19.950	47.18	1.62	45.56	60.00	12.82	
	0.152	32.53	0.37	32.16	55.91	23.38	AV
	0.313	30.65	0.46	30.19	49.88	19.23	
	3.025	20.85	0.70	20.15	46.00	25.15	
	8.062	24.14	0.96	23.18	50.00	25.86	
	10.676	31.80	1.09	30.71	50.00	18.20	
	19.950	34.26	1.62	32.64	50.00	15.74	
Neutral	0.150	46.74	0.32	46.42	66.00	19.26	QP
	0.313	40.06	0.40	39.66	59.88	19.82	
	2.794	36.76	0.64	36.12	56.00	19.24	
	8.062	38.39	0.92	37.47	60.00	21.61	
	10.676	41.05	1.09	39.96	60.00	18.95	
	19.950	48.33	1.77	46.56	60.00	11.67	
	0.150	32.47	0.32	32.15	56.00	23.53	AV
	0.313	26.87	0.40	26.47	49.88	23.01	
	2.794	27.22	0.64	26.58	46.00	18.78	
	8.062	26.39	0.92	25.47	50.00	23.61	
	10.676	30.27	1.09	29.18	50.00	19.73	
	19.950	23.35	1.77	21.58	50.00	26.65	

TEST ENGINEER: TED ZHU

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 48%RH

Serial No. : E2010081701 Date of Test : Aug 19, 2010

Test Mode : D-Sub 1680*1050@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	45.80	0.37	45.43	66.00	20.20	QP
	0.317	42.12	0.45	41.67	59.80	17.68	
	2.993	32.22	0.70	31.52	56.00	23.78	
	8.062	37.20	0.96	36.24	60.00	22.80	
	10.676	40.32	1.09	39.23	60.00	19.68	
	20.162	49.33	1.62	47.71	60.00	10.67	
	0.150	33.01	0.37	32.64	56.00	22.99	AV
	0.317	30.72	0.45	30.27	49.80	19.08	
	2.993	21.28	0.70	20.58	46.00	24.72	
	8.062	26.14	0.96	25.18	50.00	23.86	
	10.676	29.23	1.09	28.14	50.00	20.77	
	20.162	35.78	1.62	34.16	50.00	14.22	
Neutral	0.152	47.88	0.32	47.56	65.91	18.03	QP
	0.313	40.69	0.40	40.29	59.88	19.19	
	2.900	37.56	0.65	36.91	56.00	18.44	
	8.062	38.24	0.92	37.32	60.00	21.76	
	10.676	40.21	1.09	39.12	60.00	19.79	
	19.950	49.84	1.77	48.07	60.00	10.16	
	0.152	35.47	0.32	35.15	55.91	20.44	AV
	0.313	30.67	0.40	30.27	49.88	19.21	
	2.900	25.82	0.65	25.17	46.00	20.18	
	8.062	28.10	0.92	27.18	50.00	21.90	
	10.676	26.26	1.09	25.17	50.00	23.74	
	19.950	30.34	1.77	28.57	50.00	19.66	

TEST ENGINEER: TED ZHU

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 48%RH

Serial No. : E2010081701 Date of Test : Aug 19, 2010

Test Mode : DVI 640*480@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	44.46	0.37	44.09	66.00	21.54	QP
	0.317	41.39	0.45	40.94	59.80	18.41	
	3.025	29.84	0.70	29.14	56.00	26.16	
	8.062	37.39	0.96	36.43	60.00	22.61	
	10.676	39.55	1.09	38.46	60.00	20.45	
	20.162	49.03	1.62	47.41	60.00	10.97	
	0.150	34.63	0.37	34.26	56.00	21.37	AV
	0.317	20.81	0.45	20.36	49.80	28.99	
	3.025	16.95	0.70	16.25	46.00	29.05	
	8.062	27.30	0.96	26.34	50.00	22.70	
	10.676	29.24	1.09	28.15	50.00	20.76	
	20.162	30.57	1.62	28.95	50.00	19.43	
Neutral	0.150	47.94	0.32	47.62	66.00	18.06	QP
	0.313	42.59	0.40	42.19	59.88	17.29	
	3.025	36.60	0.66	35.94	56.00	19.40	
	8.062	40.43	0.92	39.51	60.00	19.57	
	10.676	40.57	1.09	39.48	60.00	19.43	
	19.740	48.53	1.76	46.77	60.00	11.47	
	0.150	31.47	0.32	31.15	56.00	24.53	AV
	0.313	32.54	0.40	32.14	49.88	17.34	
	3.025	26.12	0.66	25.46	46.00	19.88	
	8.062	29.49	0.92	28.57	50.00	20.51	
	10.676	25.24	1.09	24.15	50.00	24.76	
	19.740	27.93	1.76	26.17	50.00	22.07	

TEST ENGINEER: TED ZHU

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 48%RH

Serial No. : E2010081701 Date of Test : Aug 19, 2010

Test Mode : DVI 1280*1024@75Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.159	43.32	0.38	42.94	65.52	22.20	QP
	0.313	41.54	0.46	41.08	59.88	18.34	
	2.946	31.04	0.69	30.35	56.00	24.96	
	8.062	36.63	0.96	35.67	60.00	23.37	
	10.676	39.32	1.09	38.23	60.00	20.68	
	20.162	48.56	1.62	46.94	60.00	11.44	
	0.159	32.53	0.38	32.15	55.52	22.99	AV
	0.313	30.69	0.46	30.23	49.88	19.19	
	2.946	21.05	0.69	20.36	46.00	24.95	
	8.062	26.43	0.96	25.47	50.00	23.57	
	10.676	29.24	1.09	28.15	50.00	20.76	
	20.162	32.87	1.62	31.25	50.00	17.13	
Neutral	0.156	45.23	0.32	44.91	65.65	20.42	QP
	0.313	41.77	0.40	41.37	59.88	18.11	
	2.839	36.35	0.65	35.70	56.00	19.65	
	8.062	38.18	0.92	37.26	60.00	21.82	
	10.676	39.42	1.09	38.33	60.00	20.58	
	20.162	46.99	1.77	45.22	60.00	13.01	
	0.156	31.57	0.32	31.25	55.65	24.08	AV
	0.313	21.86	0.40	21.46	49.88	28.02	
	2.839	25.81	0.65	25.16	46.00	20.19	
	8.062	22.39	0.92	21.47	50.00	27.61	
	10.676	29.65	1.09	28.56	50.00	20.35	
	20.162	28.31	1.77	26.54	50.00	21.69	

TEST ENGINEER: TED ZHU

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 48%RH

Serial No. : E2010081701 Date of Test : Aug 19, 2010

Test Mode : DVI 1680*1050@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.155	44.81	0.37	44.44	65.74	20.93	QP
	0.313	41.25	0.46	40.79	59.88	18.63	
	0.627	31.36	0.52	30.84	56.00	24.64	
	8.062	35.36	0.96	34.40	60.00	24.64	
	10.676	39.47	1.09	38.38	60.00	20.53	
	20.162	48.55	1.62	46.93	60.00	11.45	
	0.155	32.53	0.37	32.16	55.74	23.21	AV
	0.313	20.92	0.46	20.46	49.88	28.96	
	0.627	21.09	0.52	20.57	46.00	24.91	
	8.062	22.43	0.96	21.47	50.00	27.57	
	10.676	29.66	1.09	28.57	50.00	20.34	
	20.162	27.78	1.62	26.16	50.00	22.22	
Neutral	0.153	46.04	0.32	45.72	65.82	19.78	QP
	0.313	40.91	0.40	40.51	59.88	18.97	
	0.767	32.59	0.50	32.09	56.00	23.41	
	2.900	36.75	0.65	36.10	56.00	19.25	
	8.062	39.35	0.92	38.43	60.00	20.65	
	20.377	47.44	1.77	45.67	60.00	12.56	
	0.153	32.46	0.32	32.14	55.82	23.36	AV
	0.313	30.65	0.40	30.25	49.88	19.23	
	0.767	20.64	0.50	20.14	46.00	25.36	
	2.900	22.10	0.65	21.45	46.00	23.90	
	8.062	29.39	0.92	28.47	50.00	20.61	
	20.377	27.52	1.77	25.75	50.00	22.48	

TEST ENGINEER: TED ZHU

4 RADIATED EMISSION TEST

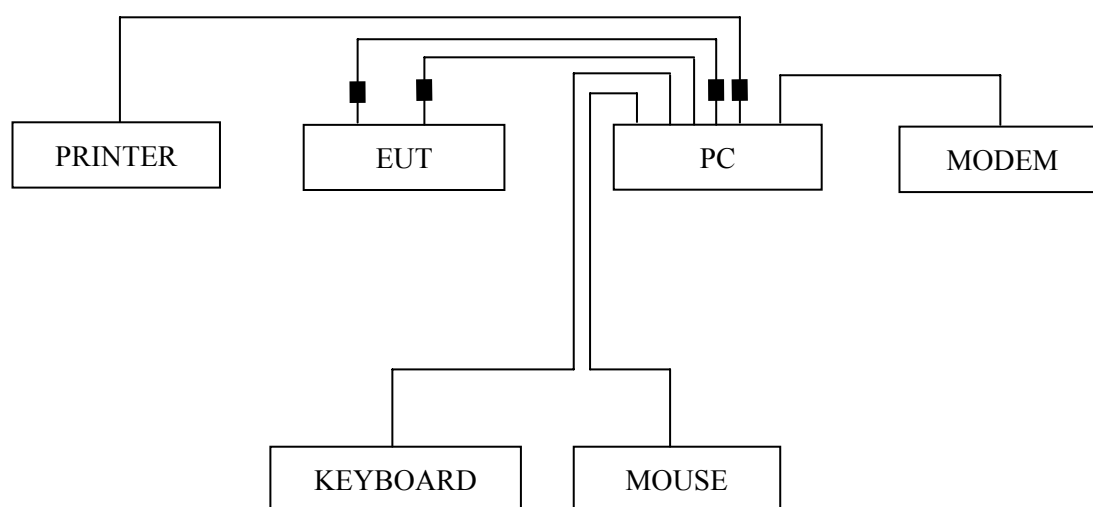
4.1 Test Equipment

The following test equipments are used during the radiated emission test in a semi-anechoic chamber:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESVS10	844594/001	Mar 07, 2010	Mar 07, 2011
2.	Preamplifier	Agilent	8447D	2944A10548	Mar 19, 2009	Sep 19, 2010
3.	Preamplifier	HP	8449B	3008A00864	Apr 29, 2010	Apr 29, 2011
4.	Bi-log Antenna	TESEQ	CBL6112D	23192	Dec 01, 2009	Dec 01, 2010
5.	Spectrum	Agilent	E7405A	MY45106600	May 19, 2010	May 19, 2011
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

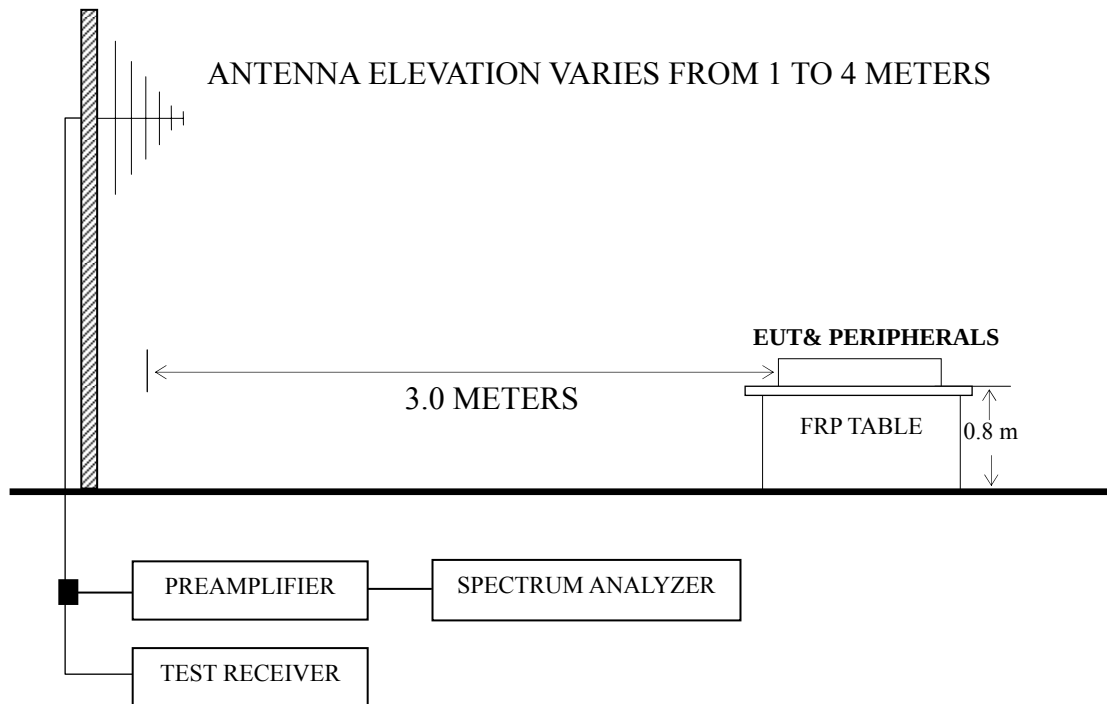
4.2 Block Diagram of Test Setup

4.2.1 EUT and Peripherals



■: Ferrite core

4.2.2 Radiated emission test setup



■ : 50 ohm Coaxial Switch

4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)]

Frequency (MHz)	Distance (m)	Field strength limits	
		($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB ($\mu\text{V/m}$) = 20 log Emission Level ($\mu\text{V/m}$)

NOTE 2 - The tighter limit applies at the band edges.

NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

NOTE 4 - The limits shown are based on Quasi-peak value detector below or equal to 1GHz and Average value detector above 1GHz.

NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT.

4.4 Test Configuration

The configuration of the EUT and peripherals are same as those used in conducted emission test.

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

Same as conducted emission test which is listed in Sec.3.5, except for the test setup replaced by Sec.4.2.

4.6 Test Procedures

The EUT and peripherals were placed on a FRP turntable that is 0.8 meter above ground. The FRP turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Broadband antenna (Calibrated Bilog Antenna) was used as receiving antenna. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The I.F. bandwidth of Test Receiver R&S ESVS10 was set at 120 kHz below 1GHz and The Spectrum Agilent E7405A was set at 1MHz above 1GHz.

The frequency range from 30 MHz to 1000MHz was checked for all test modes.

The frequency range from 1 GHz to 2 GHz was checked for D-Sub/DVI 1280*1024@75Hz and 1680*1050@60Hz modes.

The test modes were done on radiated disturbance test and all the test results are listed in Sec.4.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Test Mode	Page
D-Sub 640*480@60Hz	P22
D-Sub 1280*1024@75Hz	P23 – P24
D-Sub 1680*1050@60Hz	P25 – P26
DVI 640*480@60Hz	P27
DVI 1280*1024@75Hz	P28 – P29
DVI 1680*1050@60Hz	P30 – P31

NOTE 1 – **The bold test mode** listed above means the worst test mode.

NOTE 2 – Emission Level = Antenna Factor + Cable Loss + Meter Reading.($< 1\text{GHz}$)

NOTE 3 – Emission Level = Antenna Factor + Cable Loss – Preamp Factor + Meter Reading.($> 1\text{GHz}$)

NOTE 4 – The emission levels that are 20dB below the official limit are not reported.

NOTE 5 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 6 – The worst case is for D-Sub 1680*1050@60Hz test mode. The worst emission at horizontal polarization was detected at 159.980 MHz with corrected signal level of 35.77 dB ($\mu\text{V/m}$) (limit is 43.50dB ($\mu\text{V/m}$)), when the antenna was 1.00 m height and the turntable was at 70° . The worst emission at vertical polarization was detected at 87.230MHz with corrected signal level of 38.21 dB ($\mu\text{V/m}$) (limit is 40.00 dB ($\mu\text{V/m}$)), when the antenna was 1.00 m height and the turntable was at 300° .

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 60%RH

Serial No. : E2010081701 Date of Test : Aug 21, 2010

Test Mode : D-Sub 640*480@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	30.000	6.68	19.60	0.63	26.91	40.00	13.09
	106.630	18.92	12.02	1.07	32.01	43.50	11.49
	162.890	24.13	10.42	1.30	35.85	43.50	7.65
	193.930	20.19	10.44	1.43	32.06	43.50	11.44
	261.830	15.13	13.15	1.64	29.92	46.00	16.08
	599.390	6.47	19.20	2.46	28.13	46.00	17.87
Vertical	30.000	13.78	19.60	0.63	34.01	40.00	5.99
	56.190	25.15	7.46	0.82	33.43	40.00	6.57
	126.030	15.93	12.71	1.16	29.80	43.50	13.70
	162.890	16.23	10.42	1.30	27.95	43.50	15.55
	245.340	18.28	12.72	1.59	32.59	46.00	13.41
	349.130	11.51	15.29	1.91	28.71	46.00	17.29

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 60%RH

Serial No. : E2010081701 Date of Test : Aug 21, 2010

Test Mode : D-Sub 1280*1024@75Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	30.000	3.96	19.60	0.63	--	24.19	40.00	15.81	QP
	62.980	9.54	6.57	0.86	--	16.97	40.00	23.03	
	87.230	8.94	8.96	0.98	--	18.88	40.00	21.12	
	140.580	18.45	12.05	1.21	--	31.71	43.50	11.79	
	162.890	23.75	10.42	1.30	--	35.47	43.50	8.03	
	240.490	15.94	12.56	1.58	--	30.08	46.00	15.92	
	1024.000	46.03	25.00	4.49	37.36	38.16	74.00	35.84	PK
	1174.000	46.14	25.69	4.51	37.06	39.28	74.00	34.72	
	1444.000	46.21	26.84	4.55	36.42	41.18	74.00	32.82	
	1594.000	44.24	27.07	4.56	36.11	39.76	74.00	34.24	
	1762.000	45.14	27.23	4.58	35.86	41.09	74.00	32.91	
	1992.000	48.98	27.39	4.78	35.61	45.54	74.00	28.46	
	1024.000	37.95	25.00	4.49	37.36	30.08	54.00	23.92	AV
	1174.000	32.84	25.69	4.51	37.06	25.98	54.00	28.02	
	1444.000	29.54	26.84	4.55	36.42	24.51	54.00	29.49	
	1594.000	31.25	27.07	4.56	36.11	26.77	54.00	27.23	
	1762.000	29.68	27.23	4.58	35.86	25.63	54.00	28.37	
	1992.000	29.69	27.39	4.78	35.61	26.25	54.00	27.75	

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 60%RH

Serial No. : E2010081701 Date of Test : Aug 21, 2010

Test Mode : D-Sub 1280*1024@75Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	30.000	14.57	19.60	0.63	--	34.80	40.00	5.20	QP
	43.580	16.63	11.88	0.74	--	29.25	40.00	10.75	
	87.230	20.96	8.96	0.98	--	30.90	40.00	9.10	
	143.490	17.63	11.81	1.22	--	30.66	43.50	12.84	
	240.490	13.80	12.56	1.58	--	27.94	46.00	18.06	
	363.680	9.84	15.69	1.96	--	27.49	46.00	18.51	
	1057.000	45.11	25.13	4.50	37.29	37.45	74.00	36.55	PK
	1174.000	45.62	25.69	4.51	37.06	38.76	74.00	35.24	
	1447.000	46.49	26.86	4.55	36.42	41.48	74.00	32.52	
	1597.000	45.65	27.08	4.56	36.10	41.19	74.00	32.81	
	1792.000	45.31	27.26	4.58	35.82	41.33	74.00	32.67	
	1995.000	47.06	27.40	4.78	35.61	43.63	74.00	30.37	
	1057.000	35.64	25.13	4.50	37.29	27.98	54.00	26.02	AV
	1174.000	34.65	25.69	4.51	37.06	27.79	54.00	26.21	
	1447.000	31.28	26.86	4.55	36.42	26.27	54.00	27.73	
	1597.000	31.29	27.08	4.56	36.10	26.83	54.00	27.17	
	1792.000	29.63	27.26	4.58	35.82	25.65	54.00	28.35	
	1995.000	31.29	27.40	4.78	35.61	27.86	54.00	26.14	

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 60%RH

Serial No. : E2010081701 Date of Test : Aug 21, 2010

Test Mode : D-Sub 1680*1050@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	30.000	4.68	19.60	0.63	--	24.91	40.00	15.09	QP
	62.980	18.68	6.57	0.86	--	26.11	40.00	13.89	
	106.630	15.92	12.02	1.07	--	29.01	43.50	14.49	
	159.980	23.99	10.50	1.28	--	35.77	43.50	7.73	
	235.640	16.48	12.36	1.56		30.40	46.00	15.60	
	366.590	6.90	15.77	1.98	--	24.65	46.00	21.35	
	599.390	10.13	19.20	2.46	--	31.79	46.00	14.21	
	1034.000	46.66	25.04	4.49	37.34	38.85	74.00	35.15	PK
	1174.000	45.21	25.69	4.51	37.06	38.35	74.00	35.65	
	1277.000	45.58	26.23	4.53	36.84	39.50	74.00	34.50	
	1394.000	45.36	26.69	4.54	36.55	40.04	74.00	33.96	
	1444.000	46.12	26.84	4.55	36.42	41.09	74.00	32.91	
	1594.000	44.97	27.07	4.56	36.11	40.49	74.00	33.51	AV
	1034.000	32.52	25.04	4.49	37.34	24.71	54.00	29.29	
	1174.000	29.58	25.69	4.51	37.06	22.72	54.00	31.28	
	1277.000	30.28	26.23	4.53	36.84	24.20	54.00	29.80	
	1394.000	32.84	26.69	4.54	36.55	27.52	54.00	26.48	
	1444.000	31.74	26.84	4.55	36.42	26.71	54.00	27.29	
	1594.000	32.17	27.07	4.56	36.11	27.69	54.00	26.31	

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 60%RH

Serial No. : E2010081701 Date of Test : Aug 21, 2010

Test Mode : D-Sub 1680*1050@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	30.000	16.34	19.60	0.63	--	36.57	40.00	3.43	QP
	43.580	18.00	11.88	0.74	--	30.62	40.00	9.38	
	87.230	28.27	8.96	0.98	--	38.21	40.00	1.79	
	128.940	23.64	12.58	1.17	--	37.39	43.50	6.11	
	162.890	18.54	10.42	1.30	--	30.26	43.50	13.24	
	240.490	16.82	12.56	1.58	--	30.96	46.00	15.04	
	1069.000	45.28	25.19	4.50	37.27	37.70	74.00	36.30	PK
	1174.000	45.72	25.69	4.51	37.06	38.86	74.00	35.14	
	1292.000	44.99	26.29	4.53	36.80	39.01	74.00	34.99	
	1549.000	44.23	27.04	4.56	36.19	39.64	74.00	34.36	
	1637.000	45.04	27.11	4.57	36.04	40.68	74.00	33.32	
	1792.000	44.64	27.26	4.58	35.82	40.66	74.00	33.34	
	1069.000	31.28	25.19	4.50	37.27	23.70	54.00	30.30	AV
	1174.000	29.84	25.69	4.51	37.06	22.98	54.00	31.02	
	1292.000	29.64	26.29	4.53	36.80	23.66	54.00	30.34	
	1549.000	29.63	27.04	4.56	36.19	25.04	54.00	28.96	
	1637.000	34.57	27.11	4.57	36.04	30.21	54.00	23.79	
	1792.000	35.57	27.26	4.58	35.82	31.59	54.00	22.41	

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 60%RH

Serial No. : E2010081701 Date of Test : Aug 21, 2010

Test Mode : DVI 640*480@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	30.000	3.13	19.60	0.63	23.36	40.00	16.64
	140.580	11.95	12.05	1.21	25.21	43.50	18.29
	158.040	21.24	10.64	1.28	33.16	43.50	10.34
	182.290	19.22	9.99	1.38	30.59	43.50	12.91
	247.280	9.19	12.79	1.59	23.57	46.00	22.43
	541.190	2.22	18.45	2.33	23.00	46.00	23.00
Vertical	30.000	13.87	19.60	0.63	34.10	40.00	5.90
	43.580	15.78	11.88	0.74	28.40	40.00	11.60
	87.230	18.17	8.96	0.98	28.11	40.00	11.89
	143.490	15.99	11.81	1.22	29.02	43.50	14.48
	162.890	18.66	10.42	1.30	30.38	43.50	13.12
	240.490	13.47	12.56	1.58	27.61	46.00	18.39

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 60%RH

Serial No. : E2010081701 Date of Test : Aug 21, 2010

Test Mode : DVI 1280*1024@75Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	30.000	6.93	19.60	0.63	--	27.16	40.00	12.84	QP
	143.490	14.31	11.81	1.22	--	27.34	43.50	16.16	
	159.980	23.10	10.50	1.28	--	34.88	43.50	8.62	
	184.230	19.48	10.05	1.39	--	30.92	43.50	12.58	
	218.180	11.54	11.52	1.51	--	24.57	46.00	21.43	
	606.180	3.88	19.24	2.46	--	25.58	46.00	20.42	
	1019.000	45.18	24.98	4.49	37.36	37.29	74.00	36.71	PK
	1167.000	45.67	25.64	4.51	37.08	38.74	74.00	35.26	
	1394.000	44.49	26.69	4.54	36.55	39.17	74.00	34.83	
	1624.000	45.01	27.10	4.56	36.06	40.61	74.00	33.39	
	1792.000	47.22	27.26	4.58	35.82	43.24	74.00	30.76	
	1992.000	47.62	27.39	4.78	35.61	44.18	74.00	29.82	
	1019.000	32.64	24.98	4.49	37.36	24.75	54.00	29.25	AV
	1167.000	34.54	25.64	4.51	37.08	27.61	54.00	26.39	
	1394.000	29.64	26.69	4.54	36.55	24.32	54.00	29.68	
	1624.000	31.69	27.10	4.56	36.06	27.29	54.00	26.71	
	1792.000	31.96	27.26	4.58	35.82	27.98	54.00	26.02	
	1992.000	38.95	27.39	4.78	35.61	35.51	54.00	18.49	

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 60%RH

Serial No. : E2010081701 Date of Test : Aug 21, 2010

Test Mode : DVI 1280*1024@75Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	30.000	13.98	19.60	0.63	--	34.21	40.00	5.79	QP
	43.580	15.98	11.88	0.74	--	28.60	40.00	11.40	
	87.230	15.23	8.96	0.98	--	25.17	40.00	14.83	
	140.580	17.20	12.05	1.21	--	30.46	43.50	13.04	
	247.280	12.80	12.79	1.59	--	27.18	46.00	18.82	
	363.680	8.77	15.69	1.96	--	26.42	46.00	19.58	
	1039.000	46.41	25.06	4.49	37.33	38.63	74.00	35.37	PK
	1174.000	46.16	25.69	4.51	37.06	39.30	74.00	34.70	
	1447.000	45.68	26.86	4.55	36.42	40.67	74.00	33.33	
	1562.000	44.86	27.05	4.56	36.17	40.30	74.00	33.70	
	1762.000	46.15	27.23	4.58	35.86	42.10	74.00	31.90	
	1994.000	48.67	27.40	4.78	35.61	45.24	74.00	28.76	
	1039.000	29.65	25.06	4.49	37.33	21.87	54.00	32.13	AV
	1174.000	36.25	25.69	4.51	37.06	29.39	54.00	24.61	
	1447.000	28.56	26.86	4.55	36.42	23.55	54.00	30.45	
	1562.000	29.64	27.05	4.56	36.17	25.08	54.00	28.92	
	1762.000	31.27	27.23	4.58	35.86	27.22	54.00	26.78	
	1994.000	29.54	27.40	4.78	35.61	26.11	54.00	27.89	

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 60%RH

Serial No. : E2010081701 Date of Test : Aug 21, 2010

Test Mode : DVI 1680*1050@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	30.970	4.09	19.03	0.64	--	23.76	40.00	16.24	QP
	140.580	19.63	12.05	1.21	--	32.89	43.50	10.61	
	162.890	22.97	10.42	1.30	--	34.69	43.50	8.81	
	182.290	19.33	9.99	1.38	--	30.70	43.50	12.80	
	235.640	15.36	12.36	1.56	--	29.28	46.00	16.72	
	846.740	1.73	21.16	2.95	--	25.84	46.00	20.16	
	1064.000	45.48	25.16	4.50	37.28	37.86	74.00	36.14	PK
	1197.000	45.42	25.80	4.51	37.01	38.72	74.00	35.28	
	1444.000	46.84	26.84	4.55	36.42	41.81	74.00	32.19	
	1612.000	45.08	27.09	4.56	36.07	40.66	74.00	33.34	
	1687.000	44.60	27.16	4.57	35.96	40.37	74.00	33.63	
	1992.000	48.66	27.39	4.78	35.61	45.22	74.00	28.78	
	1064.000	36.94	25.16	4.50	37.28	29.32	54.00	24.68	QP
	1197.000	29.63	25.80	4.51	37.01	22.93	54.00	31.07	
	1444.000	31.64	26.84	4.55	36.42	26.61	54.00	27.39	
	1612.000	29.68	27.09	4.56	36.07	25.26	54.00	28.74	
	1687.000	31.68	27.16	4.57	35.96	27.45	54.00	26.55	
	1992.000	37.65	27.39	4.78	35.61	34.21	54.00	19.79	

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : E2210TW Humidity : 60%RH

Serial No. : E2010081701 Date of Test : Aug 21, 2010

Test Mode : DVI 1680*1050@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	30.000	14.88	19.60	0.63	--	35.11	40.00	4.89	QP
	43.580	15.48	11.88	0.74	--	28.10	40.00	11.90	
	87.230	27.82	8.96	0.98	--	37.76	40.00	2.24	
	126.030	17.86	12.71	1.16	--	31.73	43.50	11.77	
	167.740	17.20	10.27	1.32	--	28.79	43.50	14.71	
	361.740	12.29	15.65	1.96	--	29.90	46.00	16.10	
	1039.000	45.59	25.06	4.49	37.33	37.81	74.00	36.19	PK
	1142.000	45.00	25.52	4.51	37.12	37.91	74.00	36.09	
	1252.000	44.01	26.10	4.52	36.89	37.74	74.00	36.26	
	1444.000	44.80	26.84	4.55	36.42	39.77	74.00	34.23	
	1597.000	43.73	27.08	4.56	36.10	39.27	74.00	34.73	
	1994.000	46.78	27.40	4.78	35.61	43.35	74.00	30.65	
	1039.000	29.65	25.06	4.49	37.33	21.87	54.00	32.13	QP
	1142.000	29.64	25.52	4.51	37.12	22.55	54.00	31.45	
	1252.000	31.68	26.10	4.52	36.89	25.41	54.00	28.59	
	1444.000	32.65	26.84	4.55	36.42	27.62	54.00	26.38	
	1597.000	30.68	27.08	4.56	36.10	26.22	54.00	27.78	
	1994.000	30.56	27.40	4.78	35.61	27.13	54.00	26.87	

TEST ENGINEER: RAVEN JIN

5 DEVIATION TO TEST SPECIFICATIONS

None.

6 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Specifications (mm)	Manufacturer	Location
Adhesive Tape	T-308	50*30	DAEHUNG SUBSIDIARY MATERIALS.	See Internal Photo Figure 10, 11

Note: We had required the applicant and manufacturer that all electrical and mechanical devices employed for spurious radiation suppression, including any modifications made during certification testing, must be incorporated in each unit marked

TEST ENGINEER:



(RAVEN JIN)