

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

LCD Monitor

Model No.: W2443TV

Serial No.: E2009021601

FCC ID : BEJW2443TV

Prepared For : LG Electronics U.S.A., Inc.
1000 Sylvan Avenue, Englewood Cliffs,
NJ 07632, United States

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Report No. : ACI-F09017
Date of Test : Feb 18-23, 2009
Date of Report : Feb 24, 2009

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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. : W2443TV
(B) Serial No. : E2009021601
(C) Power Supply : 120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2008
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: W2443TV; S/N: E2009021601) which was tested in 3m anechoic chamber Feb 18-23, 2009 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 : Feb 18-23, 2009 Date of Report : Feb 24, 2009

Producer : Alan He
ALAN HE / Assistant

Review : Dio Yang
DIO YANG / Supervisor

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 2008 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2008 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.	:	W2443TV
Serial No.	:	E2009021601
Real Power	:	43.00W
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 : CHI MEI OPTOELECTRONICS M/N : M236H1 -L01
Max Resolution	:	1920*1080@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 : dx6120MT
Serial Number : CNG53004J2
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 July 26, 2006 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

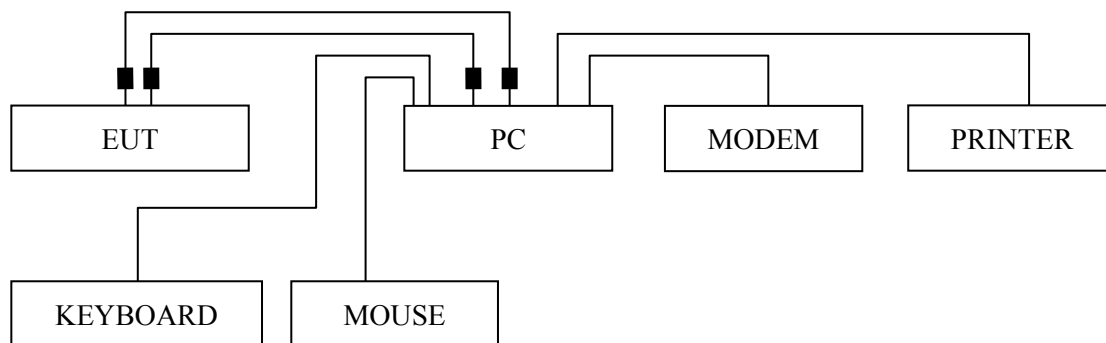
3.1.1 Test Equipment

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	ESHS10	830223/007	Apr 02, 2008	Apr 02, 2009
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Apr 02, 2008	Apr 02, 2009
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Apr 02, 2008	Apr 02, 2009
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Sep 19, 2008	Mar 19, 2009
5.	50 Ω Terminator	Anritsu	BNC	001	Apr 02, 2008	Apr 02, 2009
6.	Software	Audix	E3	SET00200 9804M592	--	--

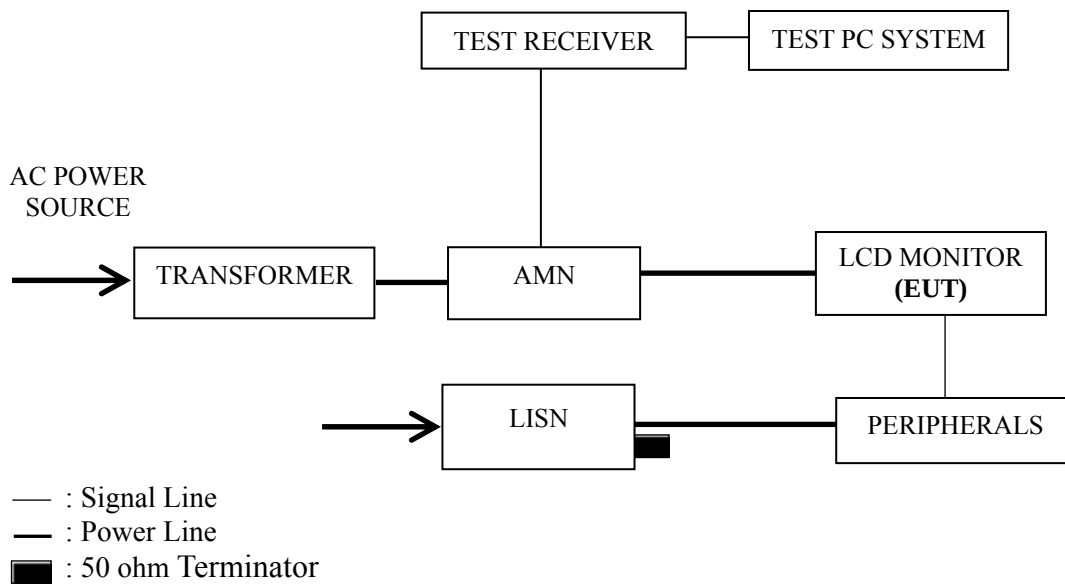
3.2 Block Diagram of Test Setup

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 Set the EUT on the test mode, and then test.

3.5.8 The test modes are as follows:

Test Mode
D-Sub 640*480@60Hz
D-Sub 1024*768@60Hz
D-Sub 1680*1050@60Hz
D-Sub 1920*1080@60Hz
DVI 640*480@60Hz
DVI 1024*768@60Hz
DVI 1680*1050@60Hz
DVI 1920*1080@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 ESHS10 was set at 10 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	Data Page
D-Sub 640*480@60Hz	P12
D-Sub 1024*768@60Hz	P13
D-Sub 1680*1050@60Hz	P14
D-Sub 1920*1080@60Hz	P15
DVI 640*480@60Hz	P16
DVI 1024*768@60Hz	P17
DVI 1680*1050@60Hz	P18
DVI 1920*1080@60Hz	P19

NOTE 1 – Factor = Cable Loss + AMN Factor.

NOTE 2 – Emission Level = Meter Reading + Factor.

NOTE 3 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

NOTE 4 – The worst case is for DVI 1920*1080@60Hz test mode. The worst emission is detected at 0.152 MHz (Average) with corrected signal level of 43.90 dB (μV) (limit is 55.91 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LCD Monitor Temperature : 20°C

Model No. : W2443TV Humidity : 46%RH

Serial No. : E2009021601 Date of Test : Feb 18, 2009

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	46.60	0.23	46.83	65.91	19.08	QP
	0.213	47.44	0.21	47.65	63.10	15.45	
	0.611	35.75	0.22	35.97	56.00	20.03	
	1.991	34.94	0.27	35.21	56.00	20.79	
	8.148	34.58	0.58	35.16	60.00	24.84	
	10.564	33.45	0.62	34.07	60.00	25.93	
	0.152	36.59	0.23	36.82	55.91	19.09	AV
	0.213	37.46	0.21	37.67	53.10	15.43	
	0.611	25.40	0.22	25.62	46.00	20.38	
	1.991	24.82	0.27	25.09	46.00	20.91	
	8.148	24.59	0.58	25.17	50.00	24.83	
	10.564	23.56	0.62	24.18	50.00	25.82	
Neutral	0.155	53.00	0.19	53.19	65.74	12.55	QP
	0.213	47.86	0.21	48.07	63.10	15.03	
	0.984	30.76	0.23	30.99	56.00	25.01	
	2.133	29.56	0.25	29.81	56.00	26.19	
	6.186	34.67	0.42	35.09	60.00	24.91	
	10.342	34.06	0.60	34.66	60.00	25.34	
	0.155	43.35	0.19	43.54	55.74	12.20	AV
	0.213	37.28	0.21	37.49	53.10	15.61	
	0.984	20.38	0.23	20.61	46.00	25.39	
	2.133	19.48	0.25	19.73	46.00	26.27	
	6.186	24.06	0.42	24.48	50.00	25.52	
	10.342	24.16	0.60	24.76	50.00	25.24	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C

Model No. : W2443TV Humidity : 46%RH

Serial No. : E2009021601 Date of Test : Feb 18, 2009

Test Mode : D-Sub 1024*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	52.45	0.23	52.68	65.91	13.23	QP
	0.213	47.87	0.21	48.08	63.10	15.02	
	1.991	33.90	0.27	34.17	56.00	21.83	
	2.622	32.47	0.31	32.78	56.00	23.22	
	5.535	33.64	0.43	34.07	60.00	25.93	
	10.564	33.47	0.62	34.09	60.00	25.91	
	0.152	42.04	0.23	42.27	55.91	13.64	AV
	0.213	37.41	0.21	37.62	53.10	15.48	
	1.991	23.87	0.27	24.14	46.00	21.86	
	2.622	22.86	0.31	23.17	46.00	22.83	
	5.535	23.78	0.43	24.21	50.00	25.79	
	10.564	23.86	0.62	24.48	50.00	25.52	
Neutral	0.153	52.85	0.19	53.04	65.82	12.78	QP
	0.215	48.21	0.21	48.42	63.01	14.59	
	2.201	31.02	0.26	31.28	56.00	24.72	
	3.840	27.27	0.33	27.60	56.00	28.40	
	6.186	33.72	0.42	34.14	60.00	25.86	
	10.790	34.25	0.59	34.84	60.00	25.16	
	0.153	42.85	0.19	43.04	55.82	12.78	AV
	0.215	38.75	0.21	38.96	53.01	14.05	
	2.201	21.05	0.26	21.31	46.00	24.69	
	3.840	17.48	0.33	17.81	46.00	28.19	
	6.186	23.55	0.42	23.97	50.00	26.03	
	10.790	24.64	0.59	25.23	50.00	24.77	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C

Model No. : W2443TV Humidity : 46%RH

Serial No. : E2009021601 Date of Test : Feb 18, 2009

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	0.152	52.95	0.23	53.18	65.91	12.73	QP
	0.213	46.65	0.21	46.86	63.10	16.24	
	0.611	33.67	0.22	33.89	56.00	22.11	
	1.991	34.23	0.27	34.50	56.00	21.50	
	5.535	34.21	0.43	34.64	60.00	25.36	
	8.148	33.45	0.58	34.03	60.00	25.97	
	0.152	42.31	0.23	42.54	55.91	13.37	AV
	0.213	36.57	0.21	36.78	53.10	16.32	
	0.611	23.67	0.22	23.89	46.00	22.11	
	1.991	24.46	0.27	24.73	46.00	21.27	
	5.535	24.21	0.43	24.64	50.00	25.36	
	8.148	23.02	0.58	23.60	50.00	26.40	
Neutral	0.153	53.18	0.19	53.37	65.82	12.45	QP
	0.213	48.62	0.21	48.83	63.10	14.27	
	0.984	30.55	0.23	30.78	56.00	25.22	
	2.201	30.57	0.26	30.83	56.00	25.17	
	6.186	33.53	0.42	33.95	60.00	26.05	
	10.790	34.04	0.59	34.63	60.00	25.37	
	0.153	43.25	0.19	43.44	55.82	12.38	AV
	0.213	38.75	0.21	38.96	53.10	14.14	
	0.984	20.14	0.23	20.37	46.00	25.63	
	2.201	20.48	0.26	20.74	46.00	25.26	
	6.186	23.48	0.42	23.90	50.00	26.10	
	10.790	24.18	0.59	24.77	50.00	25.23	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C

Model No. : W2443TV Humidity : 46%RH

Serial No. : E2009021601 Date of Test : Feb 18, 2009

Test Mode : D-Sub 1920*1080@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	52.47	0.23	52.70	65.91	13.21	QP
	0.215	47.00	0.21	47.21	63.01	15.80	
	1.991	34.15	0.27	34.42	56.00	21.58	
	2.622	32.37	0.31	32.68	56.00	23.32	
	5.333	34.96	0.40	35.36	60.00	24.64	
	10.564	32.95	0.62	33.57	60.00	26.43	
	0.152	42.01	0.23	42.24	55.91	13.67	AV
	0.215	37.24	0.21	37.45	53.01	15.56	
	1.991	24.68	0.27	24.95	46.00	21.05	
	2.622	22.31	0.31	22.62	46.00	23.38	
	5.333	24.68	0.40	25.08	50.00	24.92	
	10.564	22.05	0.62	22.67	50.00	27.33	
Neutral	0.152	52.69	0.19	52.88	65.91	13.03	QP
	0.213	48.83	0.21	49.04	63.10	14.06	
	2.201	31.08	0.26	31.34	56.00	24.66	
	4.549	30.09	0.34	30.43	56.00	25.57	
	6.252	32.29	0.42	32.71	60.00	27.29	
	10.790	34.61	0.59	35.20	60.00	24.80	
	0.152	42.56	0.19	42.75	55.91	13.16	AV
	0.213	38.41	0.21	38.62	53.10	14.48	
	2.201	21.57	0.26	21.83	46.00	24.17	
	4.549	20.49	0.34	20.83	46.00	25.17	
	6.252	22.87	0.42	23.29	50.00	26.71	
	10.790	24.66	0.59	25.25	50.00	24.75	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C

Model No. : W2443TV Humidity : 46%RH

Serial No. : E2009021601 Date of Test : Feb 18, 2009

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	0.152	53.51	0.23	53.74	65.91	12.17	QP
	0.211	47.12	0.20	47.32	63.18	15.86	
	2.133	29.80	0.28	30.08	56.00	25.92	
	3.840	28.08	0.36	28.44	56.00	27.56	
	6.186	34.07	0.46	34.53	60.00	25.47	
	10.790	34.28	0.62	34.90	60.00	25.10	
	0.152	43.38	0.23	43.61	55.91	12.30	AV
	0.211	37.68	0.20	37.88	53.18	15.30	
	2.133	19.79	0.28	20.07	46.00	25.93	
	3.840	18.34	0.36	18.70	46.00	27.30	
	6.186	24.32	0.46	24.78	50.00	25.22	
	10.790	24.69	0.62	25.31	50.00	24.69	
Neutral	0.153	50.54	0.19	50.73	65.82	15.09	QP
	0.215	46.31	0.21	46.52	63.01	16.49	
	2.201	29.58	0.26	29.84	56.00	26.16	
	4.549	30.15	0.34	30.49	56.00	25.51	
	6.252	32.28	0.42	32.70	60.00	27.30	
	10.564	32.87	0.60	33.47	60.00	26.53	
	0.153	40.21	0.19	40.40	55.82	15.42	AV
	0.215	36.49	0.21	36.70	53.01	16.31	
	2.201	19.67	0.26	19.93	46.00	26.07	
	4.549	20.34	0.34	20.68	46.00	25.32	
	6.252	22.15	0.42	22.57	50.00	27.43	
	10.564	22.64	0.60	23.24	50.00	26.76	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C

Model No. : W2443TV Humidity : 46%RH

Serial No. : E2009021601 Date of Test : Feb 18, 2009

Test Mode : DVI 1024*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	53.06	0.23	53.29	65.91	12.62	QP
	0.213	47.30	0.21	47.51	63.10	15.59	
	2.201	31.37	0.29	31.66	56.00	24.34	
	4.549	29.71	0.37	30.08	56.00	25.92	
	6.252	33.48	0.46	33.94	60.00	26.06	
	10.564	32.84	0.62	33.46	60.00	26.54	
	0.152	43.25	0.23	43.48	55.91	12.43	AV
	0.213	37.67	0.21	37.88	53.10	15.22	
	2.201	20.23	0.29	20.52	46.00	25.48	
	4.549	19.67	0.37	20.04	46.00	25.96	
	6.252	23.36	0.46	23.82	50.00	26.18	
	10.564	22.14	0.62	22.76	50.00	27.24	
Neutral	0.152	53.01	0.19	53.20	65.91	12.71	QP
	0.213	48.21	0.21	48.42	63.10	14.68	
	0.611	33.68	0.22	33.90	56.00	22.10	
	2.201	30.13	0.26	30.39	56.00	25.61	
	6.252	32.62	0.42	33.04	60.00	26.96	
	10.564	33.02	0.60	33.62	60.00	26.38	
	0.152	43.25	0.19	43.44	55.91	12.47	AV
	0.213	38.46	0.21	38.67	53.10	14.43	
	0.611	23.05	0.22	23.27	46.00	22.73	
	2.201	20.64	0.26	20.90	46.00	25.10	
	6.252	23.05	0.42	23.47	50.00	26.53	
	10.564	23.46	0.60	24.06	50.00	25.94	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C

Model No. : W2443TV Humidity : 46%RH

Serial No. : E2009021601 Date of Test : Feb 18, 2009

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	0.152	52.87	0.23	53.10	65.91	12.81	QP
	0.213	48.20	0.21	48.41	63.10	14.69	
	0.611	33.52	0.22	33.74	56.00	22.26	
	2.201	31.07	0.29	31.36	56.00	24.64	
	6.252	33.33	0.46	33.79	60.00	26.21	
	10.564	33.22	0.62	33.84	60.00	26.16	
	0.152	42.16	0.23	42.39	55.91	13.52	AV
	0.213	38.48	0.21	38.69	53.10	14.41	
	0.611	23.64	0.22	23.86	46.00	22.14	
	2.201	21.67	0.29	21.96	46.00	24.04	
	6.252	23.65	0.46	24.11	50.00	25.89	
	10.564	23.48	0.62	24.10	50.00	25.90	
Neutral	0.152	52.58	0.19	52.77	65.91	13.14	QP
	0.213	47.48	0.21	47.69	63.10	15.41	
	2.201	30.63	0.26	30.89	56.00	25.11	
	4.549	29.85	0.34	30.19	56.00	25.81	
	6.252	33.42	0.42	33.84	60.00	26.16	
	10.790	32.71	0.59	33.30	60.00	26.70	
	0.152	42.15	0.19	42.34	55.91	13.57	AV
	0.213	37.98	0.21	38.19	53.10	14.91	
	2.201	20.64	0.26	20.90	46.00	25.10	
	4.549	19.64	0.34	19.98	46.00	26.02	
	6.252	23.68	0.42	24.10	50.00	25.90	
	10.790	22.45	0.59	23.04	50.00	26.96	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C

Model No. : W2443TV Humidity : 46%RH

Serial No. : E2009021601 Date of Test : Feb 18, 2009

Test Mode : DVI 1920*1080@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	53.27	0.23	53.50	65.91	12.41	QP
	0.213	47.94	0.21	48.15	63.10	14.95	
	0.611	33.83	0.22	34.05	56.00	21.95	
	2.201	29.81	0.29	30.10	56.00	25.90	
	6.252	33.34	0.46	33.80	60.00	26.20	
	10.790	33.97	0.62	34.59	60.00	25.41	
	0.152	43.67	0.23	43.90	55.91	12.01	AV
	0.213	37.94	0.21	38.15	53.10	14.95	
	0.611	23.64	0.22	23.86	46.00	22.14	
	2.201	19.76	0.29	20.05	46.00	25.95	
	6.252	23.69	0.46	24.15	50.00	25.85	
	10.790	23.19	0.62	23.81	50.00	26.19	
Neutral	0.152	52.30	0.19	52.49	65.91	13.42	QP
	0.215	47.64	0.21	47.85	63.01	15.16	
	0.564	33.27	0.22	33.49	56.00	22.51	
	2.201	29.75	0.26	30.01	56.00	25.99	
	6.186	33.64	0.42	34.06	60.00	25.94	
	10.564	32.95	0.60	33.55	60.00	26.45	
	0.152	42.86	0.19	43.05	55.91	12.86	AV
	0.215	37.94	0.21	38.15	53.01	14.86	
	0.564	23.67	0.22	23.89	46.00	22.11	
	2.201	19.64	0.26	19.90	46.00	26.10	
	6.186	23.67	0.42	24.09	50.00	25.91	
	10.564	22.67	0.60	23.27	50.00	26.73	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

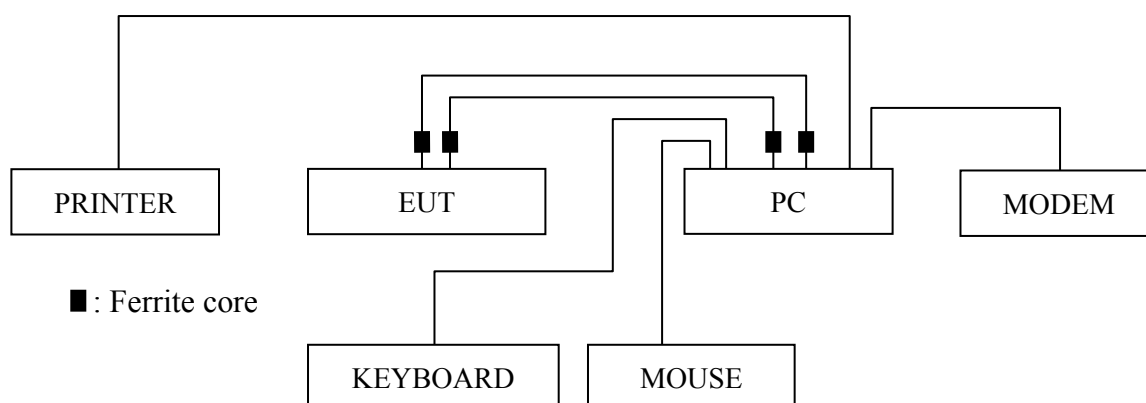
4.1 Test Equipment

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

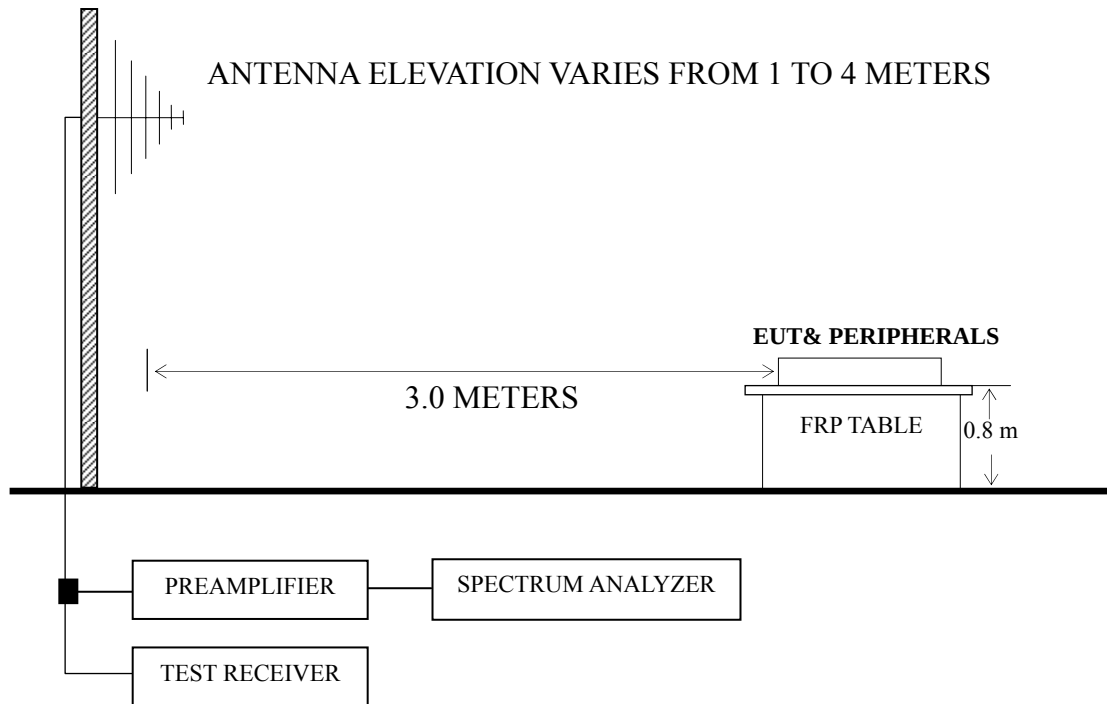
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESVS10	844594/001	Mar 07, 2008	Mar 07, 2009
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 19, 2008	Mar 19, 2009
3.	Preamplifier	HP	8449B	3008A00864	May 19, 2008	May 19, 2009
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 14, 2008	May 14, 2009
5.	Spectrum	Agilent	E7405A	MY45106600	May 19, 2008	May 19, 2009
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

4.2 Block Diagram of Test Setup

4.2.1 EUT and Peripherals



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 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 1680*1050@60Hz and 1920*1080@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	Data Page
D-Sub 640*480@60Hz	P24
D-Sub 1024*768@60Hz	P25
D-Sub 1680*1050@60Hz	P26
D-Sub 1920*1080@60Hz	P27
DVI 640*480@60Hz	P28
DVI 1024*768@60Hz	P29
DVI 1680*1050@60Hz	P30
DVI 1920*1080@60Hz	P31

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

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

NOTE 3 – The emission levels that are 20dB below the official limit are not reported.

NOTE 4 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 5 – All reading are Quasi-Peak values below or equal to 1GHz and Peak values above 1GHz. For measurements above 1 GHz, the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.

NOTE 6 – The worst case is for D-Sub 640*480@60Hz test mode. The worst emission at horizontal polarization was detected at 216.240 MHz with corrected signal level of 35.71 dB ($\mu\text{V/m}$) (limit is 46.00dB ($\mu\text{V/m}$)), when the antenna was 1.10 m height and the turntable was at 330° . The worst emission at vertical polarization was detected at 30.970 MHz with corrected signal level of 36.77 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 50° .

EUT : LCD Monitor Temperature : 22°C

Model No. : W2443TV Humidity : 60%RH

Serial No. : E2009021601 Date of Test : Feb 23, 2009

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	30.970	5.26	19.03	0.57	24.86	40.00	15.14
	72.680	18.09	6.85	0.87	25.81	40.00	14.19
	148.340	16.36	11.41	0.92	28.69	43.50	14.81
	216.240	23.14	11.43	1.14	35.71	46.00	10.29
	450.010	12.72	17.23	2.22	32.17	46.00	13.83
	730.340	5.49	20.00	3.14	28.63	46.00	17.37
Vertical	30.970	17.17	19.03	0.57	36.77	40.00	3.23
	58.130	22.40	6.96	0.82	30.18	40.00	9.82
	72.680	19.38	6.85	0.87	27.10	40.00	12.90
	126.030	16.85	12.71	0.89	30.45	43.50	13.05
	213.330	20.03	11.30	1.13	32.46	43.50	11.04
	346.220	16.62	15.20	1.77	33.59	46.00	12.41

TEST ENGINEER: TOM SI

EUT : LCD Monitor Temperature : 22°C

Model No. : W2443TV Humidity : 60%RH

Serial No. : E2009021601 Date of Test : Feb 23, 2009

Test Mode : D-Sub 1024*768@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	30.970	4.56	19.03	0.57	24.16	40.00	15.84
	73.650	19.88	6.98	0.87	27.73	40.00	12.27
	128.940	15.32	12.58	0.90	28.80	43.50	14.70
	149.310	16.91	11.35	0.92	29.18	43.50	14.32
	212.360	19.68	11.26	1.13	32.07	43.50	11.43
	470.380	9.75	17.52	2.30	29.57	46.00	16.43
Vertical	30.970	14.30	19.03	0.57	33.90	40.00	6.10
	72.680	22.37	6.85	0.87	30.09	40.00	9.91
	127.970	16.90	12.63	0.89	30.42	43.50	13.08
	200.720	19.88	10.74	1.08	31.70	43.50	11.80
	250.190	15.55	12.90	1.27	29.72	46.00	16.28
	420.910	11.57	16.79	2.12	30.48	46.00	15.52

TEST ENGINEER: TOM SI

EUT : LCD Monitor Temperature : 22°C

Model No. : W2443TV Humidity : 60%RH

Serial No. : E2009021601 Date of Test : Feb 23, 2009

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	30.970	5.08	19.03	0.57	--	24.68	40.00	15.32	QP
	73.650	17.80	6.98	0.87	--	25.65	40.00	14.35	
	115.360	15.09	12.71	0.88	--	28.68	43.50	14.82	
	147.370	16.65	11.51	0.92	--	29.08	43.50	14.42	
	214.300	23.13	11.35	1.14	--	35.62	43.50	7.88	
	437.400	8.62	17.03	2.18	--	27.83	46.00	18.17	
	1170.000	51.23	23.54	4.16	37.25	41.68	74.00	32.32	PK
	1296.000	55.72	24.49	4.36	36.95	47.62	74.00	26.38	
	1339.000	52.47	24.78	4.45	36.86	44.84	74.00	29.16	
	1497.000	49.93	25.80	4.71	36.53	43.91	74.00	30.09	
	1598.000	53.07	26.40	4.92	36.35	48.04	74.00	25.96	
	1744.000	50.20	26.76	5.18	36.09	46.05	74.00	27.95	
Vertical	30.970	42.35	19.03	0.57	--	33.66	40.00	6.34	QP
	58.130	49.25	6.96	0.82	--	28.79	40.00	11.21	
	72.680	47.87	6.85	0.87	--	27.28	40.00	12.72	
	149.310	43.70	11.35	0.92	--	28.01	43.50	15.49	
	214.300	46.73	11.35	1.14	--	31.78	43.50	11.72	
	373.380	41.04	15.92	1.91	--	30.83	46.00	15.17	
	1042.000	51.36	22.69	3.93	37.58	40.40	74.00	33.60	PK
	1244.000	52.14	24.06	4.27	37.07	43.40	74.00	30.60	
	1411.000	47.74	25.27	4.57	36.70	40.88	74.00	33.12	
	1533.000	45.69	26.04	4.78	36.46	40.05	74.00	33.95	
	1648.000	46.33	26.52	5.02	36.25	41.62	74.00	32.38	
	1838.000	42.14	27.12	5.22	35.94	38.54	74.00	35.46	

TEST ENGINEER: TOM SI

EUT : LCD Monitor Temperature : 22°C

Model No. : W2443TV Humidity : 60%RH

Serial No. : E2009021601 Date of Test : Feb 23, 2009

Test Mode : D-Sub 1920*1080@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	6.06	19.03	0.57	--	25.66	40.00	14.34	QP
	73.650	15.77	6.98	0.87	--	23.62	40.00	16.38	
	146.400	15.98	11.61	0.92	--	28.51	43.50	14.99	
	212.360	20.30	11.26	1.13	--	32.69	43.50	10.81	
	250.190	15.52	12.90	1.27	--	29.69	46.00	16.31	
	515.970	7.98	18.09	2.42	--	28.49	46.00	17.51	
	1133.000	46.09	23.33	4.10	37.34	36.18	74.00	37.82	PK
	1234.000	43.13	23.98	4.27	37.09	34.29	74.00	39.71	
	1353.000	50.25	24.90	4.48	36.83	42.80	74.00	31.20	
	1529.000	47.09	26.00	4.78	36.47	41.40	74.00	32.60	
	1686.000	46.03	26.61	5.08	36.19	41.53	74.00	32.47	
	1786.000	48.32	26.87	5.20	36.02	44.37	74.00	29.63	
Vertical	30.970	15.25	19.03	0.57	--	34.85	40.00	5.15	QP
	58.130	20.47	6.96	0.82	--	28.25	40.00	11.75	
	72.680	20.46	6.85	0.87	--	28.18	40.00	11.82	
	126.030	16.36	12.71	0.89	--	29.96	43.50	13.54	
	212.360	20.04	11.26	1.13	--	32.43	43.50	11.07	
	372.410	15.06	15.92	1.91	--	32.89	46.00	13.11	
	1082.000	49.35	22.98	4.02	37.47	38.88	74.00	35.12	PK
	1248.000	52.93	24.10	4.30	37.06	44.27	74.00	29.73	
	1365.000	55.48	24.98	4.48	36.80	48.14	74.00	25.86	
	1435.000	56.20	25.41	4.63	36.65	49.59	74.00	24.41	
	1533.000	46.69	26.04	4.78	36.46	41.05	74.00	32.95	
	1673.000	50.05	26.58	5.08	36.21	45.50	74.00	28.50	

TEST ENGINEER: TOM SI

EUT : LCD Monitor Temperature : 22°C

Model No. : W2443TV Humidity : 60%RH

Serial No. : E2009021601 Date of Test : Feb 23, 2009

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	30.970	14.11	19.03	0.57	33.71	40.00	6.29
	57.160	23.59	7.18	0.81	31.58	40.00	8.42
	127.000	18.87	12.66	0.89	32.42	43.50	11.08
	212.360	22.79	11.26	1.13	35.18	43.50	8.32
	459.710	15.18	17.38	2.26	34.82	46.00	11.18
	687.660	9.98	19.65	3.03	32.66	46.00	13.34
Vertical	30.970	5.96	19.03	0.57	25.56	40.00	14.44
	128.940	15.79	12.58	0.90	29.27	43.50	14.23
	211.390	25.50	11.22	1.13	37.85	43.50	5.65
	372.410	12.84	15.92	1.91	30.67	46.00	15.33
	547.980	13.90	18.55	2.49	34.94	46.00	11.06
	702.210	10.73	19.73	3.07	33.53	46.00	12.47

TEST ENGINEER: TOM SI

EUT : LCD Monitor Temperature : 22°C

Model No. : W2443TV Humidity : 60%RH

Serial No. : E2009021601 Date of Test : Feb 23, 2009

Test Mode : DVI 1024*768@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	30.970	6.32	19.03	0.57	25.92	40.00	14.08
	72.680	14.96	6.85	0.87	22.68	40.00	17.32
	182.290	18.92	9.99	1.03	29.94	43.50	13.56
	212.360	24.03	11.26	1.13	36.42	43.50	7.08
	475.230	11.05	17.60	2.30	30.95	46.00	15.05
	742.950	14.94	20.13	3.19	38.26	46.00	7.74
Vertical	30.970	13.01	19.03	0.57	32.61	40.00	7.39
	53.280	22.07	8.14	0.79	31.00	40.00	9.00
	127.970	18.28	12.63	0.89	31.80	43.50	11.70
	204.600	22.44	10.89	1.10	34.43	43.50	9.07
	372.410	9.67	15.92	1.91	27.50	46.00	18.50
	515.970	7.46	18.09	2.42	27.97	46.00	18.03

TEST ENGINEER: TOM SI

EUT : LCD Monitor Temperature : 22°C

Model No. : W2443TV Humidity : 60%RH

Serial No. : E2009021601 Date of Test : Feb 23, 2009

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	6.22	19.03	0.57	--	25.82	40.00	14.18	QP
	72.680	16.75	6.85	0.87	--	24.47	40.00	15.53	
	150.280	15.36	11.25	0.93	--	27.54	43.50	15.96	
	211.390	20.35	11.22	1.13	--	32.70	43.50	10.80	
	341.370	14.53	15.07	1.75	--	31.35	46.00	14.65	
	607.150	13.97	19.24	2.63	--	35.84	46.00	10.16	PK
	1099.000	48.85	23.08	4.04	37.42	38.55	74.00	35.45	
	1252.000	48.45	24.10	4.30	37.05	39.80	74.00	34.20	
	1400.000	49.08	25.20	4.57	36.73	42.12	74.00	31.88	
	1496.000	52.35	25.80	4.71	36.54	46.32	74.00	27.68	
	1597.000	43.50	26.36	4.92	36.35	38.43	74.00	35.57	
	1745.000	47.51	26.78	5.18	36.09	43.38	74.00	30.62	
Vertical	30.970	16.98	19.03	0.57	--	36.58	40.00	3.42	QP
	53.280	22.38	8.14	0.79	--	31.31	40.00	8.69	
	72.680	20.47	6.85	0.87	--	28.19	40.00	11.81	
	130.880	17.39	12.47	0.90	--	30.76	43.50	12.74	
	203.630	22.01	10.85	1.10	--	33.96	43.50	9.54	
	459.710	16.87	17.38	2.26	--	36.51	46.00	9.49	PK
	1059.000	48.51	22.82	3.96	37.54	37.75	74.00	36.25	
	1246.000	44.69	24.06	4.27	37.07	35.95	74.00	38.05	
	1417.000	42.85	25.31	4.60	36.70	36.06	74.00	37.94	
	1543.000	47.91	26.07	4.81	36.44	42.35	74.00	31.65	
	1673.000	47.05	26.58	5.08	36.21	42.50	74.00	31.50	
	1721.000	44.60	26.71	5.14	36.13	40.32	74.00	33.68	

TEST ENGINEER: TOM SI

EUT : LCD Monitor Temperature : 22°C

Model No. : W2443TV Humidity : 60%RH

Serial No. : E2009021601 Date of Test : Feb 23, 2009

Test Mode : DVI 1920*1080@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	7.32	19.03	0.57	--	26.92	40.00	13.08	QP
	73.650	17.55	6.98	0.87	--	25.40	40.00	14.60	
	115.360	15.74	12.71	0.88	--	29.33	43.50	14.17	
	149.310	16.94	11.35	0.92	--	29.21	43.50	14.29	
	214.300	23.34	11.35	1.14	--	35.83	43.50	7.67	
	528.580	10.23	18.27	2.45	--	30.95	46.00	15.05	PK
	1090.000	54.98	23.02	4.02	37.45	44.57	74.00	29.43	
	1255.000	58.86	24.14	4.30	37.04	50.26	74.00	23.74	
	1435.000	50.20	25.41	4.63	36.65	43.59	74.00	30.41	
	1581.000	48.48	26.29	4.88	36.38	43.27	74.00	30.73	
	1633.000	48.07	26.49	4.99	36.28	43.27	74.00	30.73	
	1811.000	48.64	26.94	5.21	35.99	44.80	74.00	29.20	
Vertical	30.970	13.91	19.03	0.57	--	33.51	40.00	6.49	QP
	73.650	21.11	6.98	0.87	--	28.96	40.00	11.04	
	115.360	19.00	12.71	0.88	--	32.59	43.50	10.91	
	215.270	20.73	11.39	1.14	--	33.26	43.50	10.24	
	373.380	15.13	15.92	1.91	--	32.96	46.00	13.04	
	450.010	17.54	17.23	2.22	--	36.99	46.00	9.01	PK
	1117.000	47.28	23.21	4.07	37.38	37.18	74.00	36.82	
	1222.000	45.74	23.90	4.24	37.12	36.76	74.00	37.24	
	1298.000	45.85	24.49	4.39	36.95	37.78	74.00	36.22	
	1470.000	45.39	25.64	4.68	36.58	39.13	74.00	34.87	
	1686.000	43.03	26.61	5.08	36.19	38.53	74.00	35.47	
	1870.000	41.79	27.31	5.23	35.89	38.44	74.00	35.56	

TEST ENGINEER: TOM SI

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
Aluminum foil	T-308	50*30	DAEHUNG SUBSIDIARY MATERIALS.	See Internal Photos 14