

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

LCD Monitor

Model No.: W2361TV

Serial No.: E2009020501

FCC ID : BEJW2361TV

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

Prepared By : Audix Technology (Shanghai) Co., Ltd.
3F 34Bldg 680 Guiping Rd,
Caohejing Hi-Tech Park,
Shanghai 200233, China

Tel: +86-21-64955500
Fax: +86-21-64955491

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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. : W2361TV

Serial No. : E2009020501

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 : LG Display
M/N : LM230WF1 (TL) (A3)

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

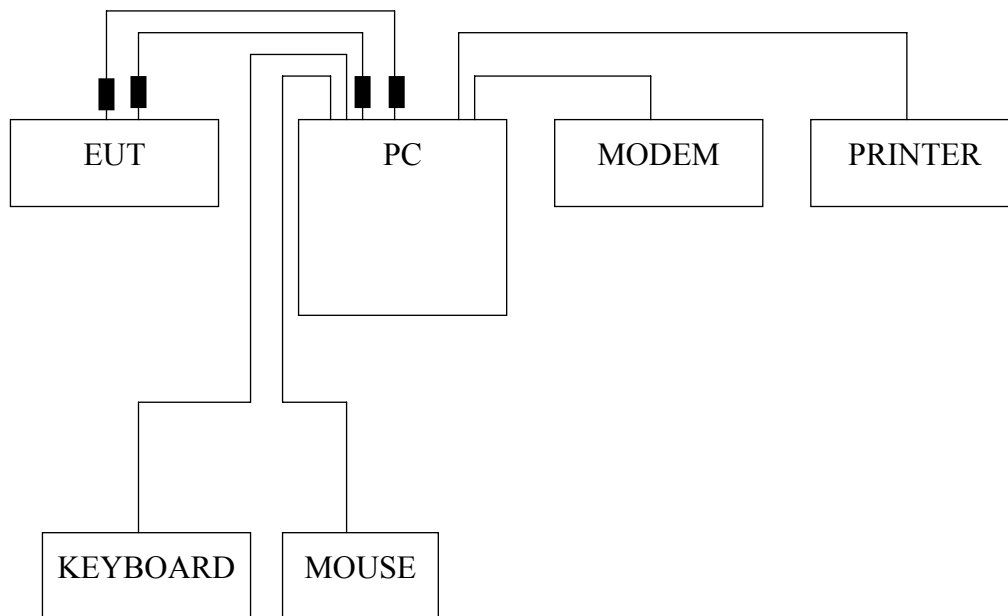
3.1.1 Test Equipment

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.	50Ω Terminator	Anritsu	BNC	001	Apr 02, 2008	Apr 02, 2009
6.	Software	Audix	E3	SET00200 9804M592	--	--

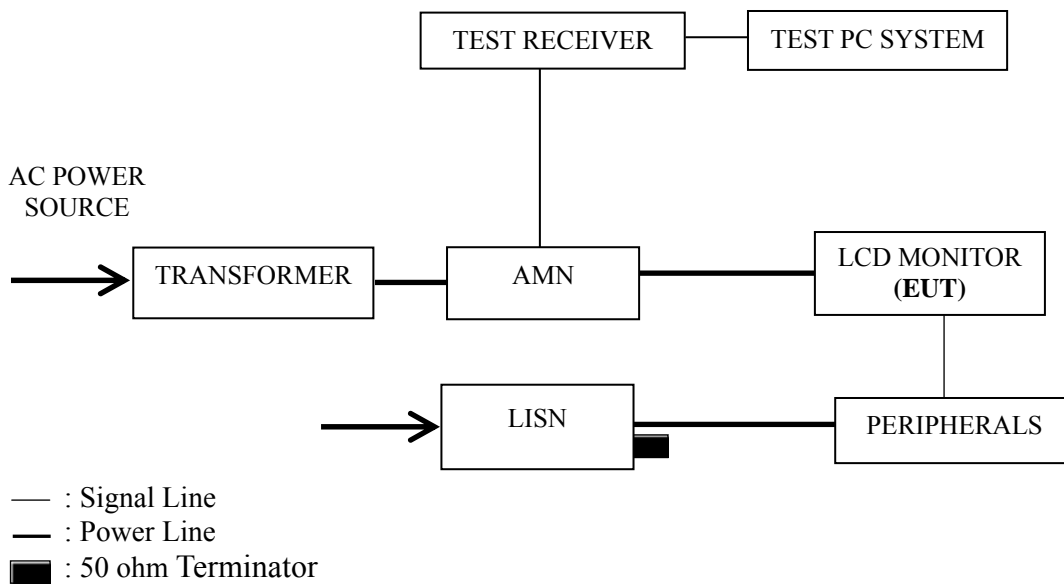
3.2 Block Diagram of Test Setup

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 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 640*480@60Hz test mode. The worst emission is detected at 0.155 MHz (Average) with corrected signal level of 48.51 dB (μ V) (limit is 55.74 dB (μ V)), when the Line of the EUT is connected to AMN.

EUT : LCD Monitor Temperature : 20°C

Model No. : W2361TV Humidity : 46%RH

Serial No. : E2009020501 Date of Test : Feb 17, 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	0.157	54.25	0.22	54.47	65.60	11.13	QP	
	0.234	40.81	0.21	41.02	62.30	21.28		
	0.634	29.99	0.22	30.21	56.00	25.79		
	4.454	31.55	0.37	31.92	56.00	24.08		
	18.232	39.94	0.72	40.66	60.00	19.34		
	20.924	41.32	0.76	42.08	60.00	17.92		
		0.157	47.30	0.22	47.52	55.60	8.08	AV
		0.234	30.35	0.21	30.56	52.30	21.74	
		0.634	19.72	0.22	19.94	46.00	26.06	
		4.454	21.53	0.37	21.90	46.00	24.10	
		18.232	29.46	0.72	30.18	50.00	19.82	
		20.924	31.09	0.76	31.85	50.00	18.15	
Neutral	0.156	54.58	0.19	54.77	65.65	10.88	QP	
	0.234	42.50	0.21	42.71	62.30	19.59		
	0.634	30.22	0.22	30.44	56.00	25.56		
	4.926	35.54	0.35	35.89	56.00	20.11		
	11.021	40.64	0.59	41.23	60.00	18.77		
	22.063	42.61	0.61	43.22	60.00	16.78		
		0.156	47.36	0.19	47.55	55.65	8.10	AV
		0.234	32.56	0.21	32.77	52.30	19.53	
		0.634	20.42	0.22	20.64	46.00	25.36	
		4.926	25.46	0.35	25.81	46.00	20.19	
		11.021	30.72	0.59	31.31	50.00	18.69	
		22.063	32.59	0.61	33.20	50.00	16.80	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C
 Model No. : W2361TV Humidity : 46%RH
 Serial No. : E2009020501 Date of Test : Feb 17, 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	0.156	54.31	0.22	54.53	65.65	11.12	QP	
	0.237	42.41	0.21	42.62	62.22	19.60		
	0.627	30.55	0.22	30.77	56.00	25.23		
	4.549	34.47	0.37	34.84	56.00	21.16		
	11.080	39.99	0.62	40.61	60.00	19.39		
	22.298	41.92	0.80	42.72	60.00	17.28		
		0.156	47.15	0.22	47.37	55.65	8.28	AV
		0.237	32.64	0.21	32.85	52.22	19.37	
		0.627	20.48	0.22	20.70	46.00	25.30	
		4.549	24.35	0.37	24.72	46.00	21.28	
		11.080	29.68	0.62	30.30	50.00	19.70	
		22.298	32.38	0.80	33.18	50.00	16.82	
Neutral	0.156	54.22	0.19	54.41	65.65	11.24	QP	
	0.237	42.00	0.21	42.21	62.22	20.01		
	0.634	30.44	0.22	30.66	56.00	25.34		
	4.549	32.22	0.34	32.56	56.00	23.44		
	10.564	40.08	0.60	40.68	60.00	19.32		
	20.594	39.87	0.57	40.44	60.00	19.56		
		0.156	47.09	0.19	47.28	55.65	8.37	AV
		0.237	32.68	0.21	32.89	52.22	19.33	
		0.634	20.68	0.22	20.90	46.00	25.10	
		4.549	22.75	0.34	23.09	46.00	22.91	
		10.564	30.48	0.60	31.08	50.00	18.92	
		20.594	29.67	0.57	30.24	50.00	19.76	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C

Model No. : W2361TV Humidity : 46%RH

Serial No. : E2009020501 Date of Test : Feb 17, 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	0.157	54.13	0.22	54.35	65.60	11.25	QP
	0.237	41.87	0.21	42.08	62.22	20.14	
	0.634	30.63	0.22	30.85	56.00	25.15	
	4.622	33.55	0.37	33.92	56.00	22.08	
	11.438	38.74	0.64	39.38	60.00	20.62	
	22.655	41.71	0.82	42.53	60.00	17.47	
	0.157	47.03	0.22	47.25	55.60	8.35	AV
	0.237	31.38	0.21	31.59	52.22	20.63	
	0.634	20.82	0.22	21.04	46.00	24.96	
	4.622	23.67	0.37	24.04	46.00	21.96	
	11.438	28.45	0.64	29.09	50.00	20.91	
	22.655	31.59	0.82	32.41	50.00	17.59	
Neutral	0.157	54.19	0.19	54.38	65.60	11.22	QP
	0.234	42.15	0.21	42.36	62.30	19.94	
	0.552	30.83	0.22	31.05	56.00	24.95	
	4.622	32.63	0.34	32.97	56.00	23.03	
	6.420	36.38	0.43	36.81	60.00	23.19	
	11.438	40.65	0.59	41.24	60.00	18.76	
	0.157	47.16	0.19	47.35	55.60	8.25	AV
	0.234	32.00	0.21	32.21	52.30	20.09	
	0.552	20.48	0.22	20.70	46.00	25.30	
	4.622	22.64	0.34	22.98	46.00	23.02	
	6.420	26.67	0.43	27.10	50.00	22.90	
	11.438	30.38	0.59	30.97	50.00	19.03	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C

Model No. : W2361TV Humidity : 46%RH

Serial No. : E2009020501 Date of Test : Feb 17, 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	0.157	53.89	0.22	54.11	65.60	11.49	QP
	0.234	42.16	0.21	42.37	62.30	19.93	
	0.634	31.19	0.22	31.41	56.00	24.59	
	4.874	35.13	0.38	35.51	56.00	20.49	
	11.198	40.21	0.63	40.84	60.00	19.16	
	22.535	41.84	0.82	42.66	60.00	17.34	
	0.157	45.38	0.22	45.60	55.60	10.00	AV
	0.234	32.77	0.21	32.98	52.30	19.32	
	0.634	21.67	0.22	21.89	46.00	24.11	
	4.874	25.69	0.38	26.07	46.00	19.93	
	11.198	30.67	0.63	31.30	50.00	18.70	
	22.535	31.26	0.82	32.08	50.00	17.92	
Neutral	0.157	53.76	0.19	53.95	65.60	11.65	QP
	0.237	40.50	0.21	40.71	62.22	21.51	
	0.634	29.25	0.22	29.47	56.00	26.53	
	3.603	29.64	0.32	29.96	56.00	26.04	
	10.676	30.23	0.59	30.82	60.00	29.18	
	22.298	29.64	0.62	30.26	60.00	29.74	
	0.157	46.52	0.19	46.71	55.60	8.89	AV
	0.237	31.06	0.21	31.27	52.22	20.95	
	0.634	19.98	0.22	20.20	46.00	25.80	
	3.603	19.67	0.32	19.99	46.00	26.01	
	10.676	20.50	0.59	21.09	50.00	28.91	
	22.298	19.67	0.62	20.29	50.00	29.71	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C
 Model No. : W2361TV Humidity : 46%RH
 Serial No. : E2009020501 Date of Test : Feb 17, 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	0.155	55.57	0.22	55.79	65.74	9.95	QP	
	0.233	41.98	0.21	42.19	62.35	20.16		
	0.541	30.90	0.22	31.12	56.00	24.88		
	3.472	29.58	0.34	29.92	56.00	26.08		
	10.564	31.44	0.62	32.06	60.00	27.94		
	27.708	34.05	1.03	35.08	60.00	24.92		
		0.155	48.29	0.22	48.51	55.74	7.23	AV
		0.233	31.28	0.21	31.49	52.35	20.86	
		0.541	29.67	0.22	29.89	46.00	16.11	
		3.472	19.43	0.34	19.77	46.00	26.23	
		10.564	21.56	0.62	22.18	50.00	27.82	
		27.708	24.59	1.03	25.62	50.00	24.38	
Neutral	0.155	54.45	0.19	54.64	65.74	11.10	QP	
	0.230	42.36	0.21	42.57	62.44	19.87		
	0.541	30.94	0.22	31.16	56.00	24.84		
	3.472	29.56	0.31	29.87	56.00	26.13		
	11.559	29.11	0.59	29.70	60.00	30.30		
	23.387	30.82	0.65	31.47	60.00	28.53		
		0.155	44.36	0.19	44.55	55.74	11.19	AV
		0.230	32.68	0.21	32.89	52.44	19.55	
		0.541	20.35	0.22	20.57	46.00	25.43	
		3.472	19.68	0.31	19.99	46.00	26.01	
		11.559	19.67	0.59	20.26	50.00	29.74	
		23.387	29.67	0.65	30.32	50.00	19.68	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C
 Model No. : W2361TV Humidity : 46%RH
 Serial No. : E2009020501 Date of Test : Feb 17, 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	0.155	55.21	0.22	55.43	65.74	10.31	QP
	0.234	41.47	0.21	41.68	62.30	20.62	
	0.541	30.30	0.22	30.52	56.00	25.48	
	3.799	30.46	0.35	30.81	56.00	25.19	
	11.021	31.11	0.62	31.73	60.00	28.27	
	29.684	34.39	1.12	35.51	60.00	24.49	
	0.155	47.96	0.22	48.18	55.74	7.56	AV
	0.234	31.42	0.21	31.63	52.30	20.67	
	0.541	20.88	0.22	21.10	46.00	24.90	
	3.799	20.46	0.35	20.81	46.00	25.19	
	11.021	21.40	0.62	22.02	50.00	27.98	
	29.684	24.56	1.12	25.68	50.00	24.32	
Neutral	0.156	55.18	0.19	55.37	65.65	10.28	QP
	0.234	41.05	0.21	41.26	62.30	21.04	
	0.541	29.87	0.22	30.09	56.00	25.91	
	3.642	30.87	0.32	31.19	56.00	24.81	
	11.317	29.12	0.59	29.71	60.00	30.29	
	24.142	32.15	0.67	32.82	60.00	27.18	
	0.156	47.93	0.19	48.12	55.65	7.53	AV
	0.234	31.28	0.21	31.49	52.30	20.81	
	0.541	19.88	0.22	20.10	46.00	25.90	
	3.642	20.42	0.32	20.74	46.00	25.26	
	11.317	19.83	0.59	20.42	50.00	29.58	
	24.142	22.48	0.67	23.15	50.00	26.85	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C

Model No. : W2361TV Humidity : 46%RH

Serial No. : E2009020501 Date of Test : Feb 17, 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	0.156	54.59	0.22	54.81	65.65	10.84	QP
	0.234	41.75	0.21	41.96	62.30	20.34	
	0.541	29.04	0.22	29.26	56.00	26.74	
	3.436	28.16	0.34	28.50	56.00	27.50	
	11.021	30.03	0.62	30.65	60.00	29.35	
	27.708	32.48	1.03	33.51	60.00	26.49	
	0.156	44.98	0.22	45.20	55.65	10.45	AV
	0.234	31.28	0.21	31.49	52.30	20.81	
	0.541	19.72	0.22	19.94	46.00	26.06	
	3.436	18.56	0.34	18.90	46.00	27.10	
	11.021	20.42	0.62	21.04	50.00	28.96	
	27.708	22.05	1.03	23.08	50.00	26.92	
Neutral	0.156	55.02	0.19	55.21	65.65	10.44	QP
	0.234	41.42	0.21	41.63	62.30	20.67	
	0.541	29.03	0.22	29.25	56.00	26.75	
	3.509	28.84	0.31	29.15	56.00	26.85	
	11.198	30.78	0.59	31.37	60.00	28.63	
	27.708	33.05	0.72	33.77	60.00	26.23	
	0.156	47.78	0.19	47.97	55.65	7.68	AV
	0.234	31.52	0.21	31.73	52.30	20.57	
	0.541	19.52	0.22	19.74	46.00	26.26	
	3.509	18.75	0.31	19.06	46.00	26.94	
	11.198	20.77	0.59	21.36	50.00	28.64	
	27.708	23.09	0.72	23.81	50.00	26.19	

TEST ENGINEER: WENCY YANG

EUT : LCD Monitor Temperature : 20°C
 Model No. : W2361TV Humidity : 46%RH
 Serial No. : E2009020501 Date of Test : Feb 17, 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	0.156	54.66	0.22	54.88	65.65	10.77	QP
	0.234	41.59	0.21	41.80	62.30	20.50	
	0.634	28.20	0.22	28.42	56.00	27.58	
	3.207	28.81	0.33	29.14	56.00	26.86	
	10.790	32.25	0.62	32.87	60.00	27.13	
	27.708	33.89	1.03	34.92	60.00	25.08	
	0.156	47.41	0.22	47.63	55.65	8.02	AV
	0.234	31.38	0.21	31.59	52.30	20.71	
	0.634	18.75	0.22	18.97	46.00	27.03	
	3.207	18.72	0.33	19.05	46.00	26.95	
	10.790	22.51	0.62	23.13	50.00	26.87	
	27.708	23.50	1.03	24.53	50.00	25.47	
Neutral	0.156	54.54	0.19	54.73	65.65	10.92	QP
	0.234	41.87	0.21	42.08	62.30	20.22	
	0.546	29.81	0.22	30.03	56.00	25.97	
	4.549	33.27	0.34	33.61	56.00	22.39	
	11.080	39.12	0.59	39.71	60.00	20.29	
	22.063	42.74	0.61	43.35	60.00	16.65	
	0.156	47.46	0.19	47.65	55.65	8.00	AV
	0.234	31.05	0.21	31.26	52.30	21.04	
	0.546	19.25	0.22	19.47	46.00	26.53	
	4.549	23.64	0.34	23.98	46.00	22.02	
	11.080	29.57	0.59	30.16	50.00	19.84	
	22.063	32.15	0.61	32.76	50.00	17.24	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

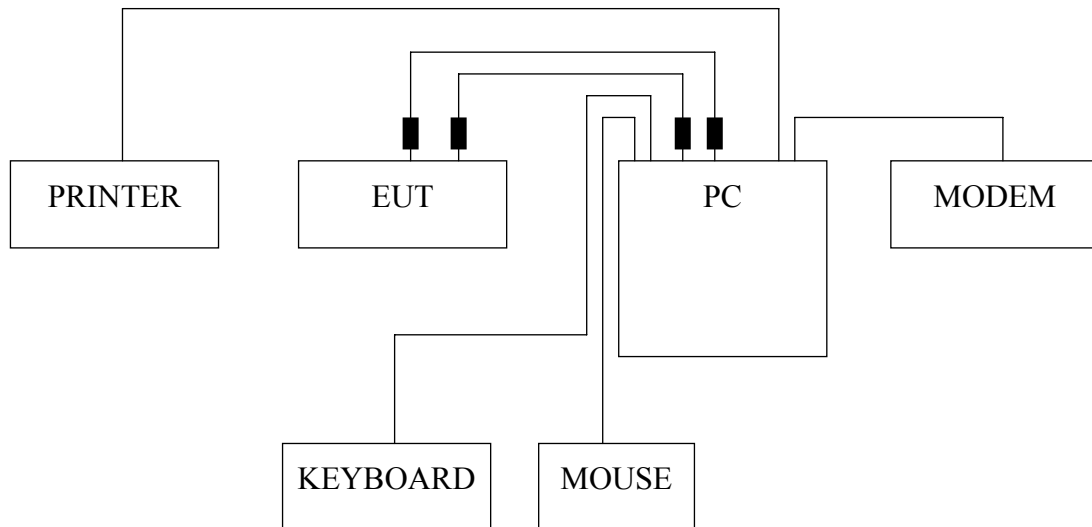
4.1 Test Equipment

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	--	--

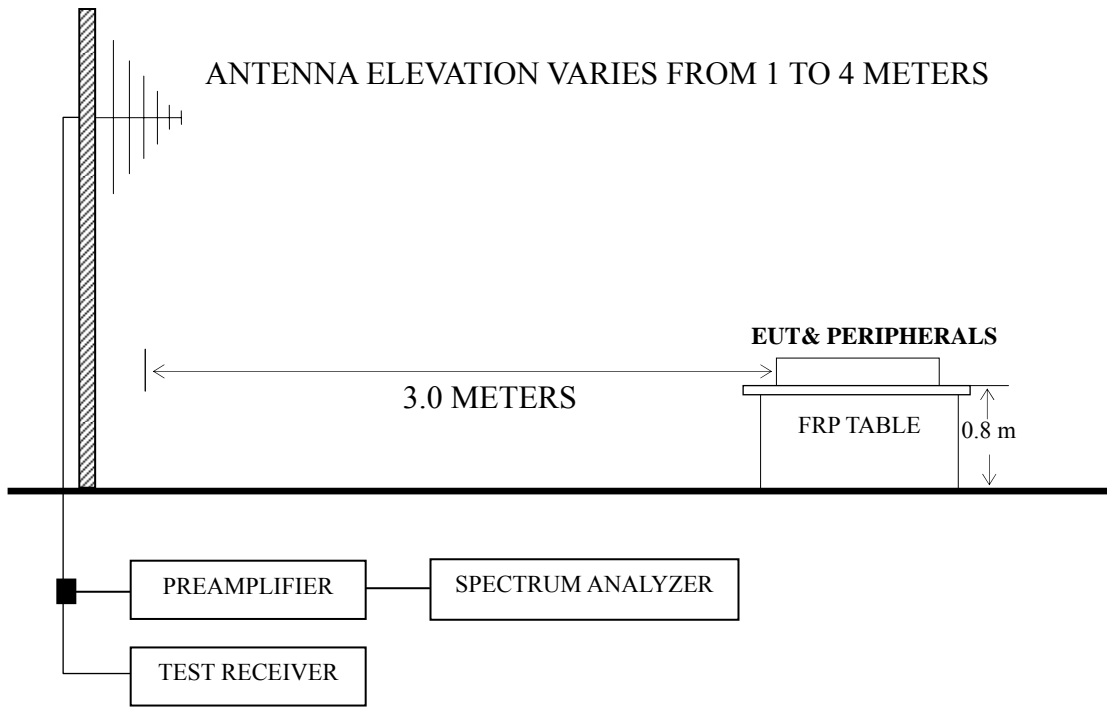
4.2 Block Diagram of Test Setup

4.2.1 EUT and Peripherals



■ : 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 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 DVI 1920*1080@60Hz test mode. The worst emission at horizontal polarization was detected at 859.350 MHz with corrected signal level of 39.88 dB ($\mu\text{V/m}$) (limit is 46.00dB ($\mu\text{V/m}$)), when the antenna was 1.00 m height and the turntable was at 290° . The worst emission at vertical polarization was detected at 30.970 MHz with corrected signal level of 36.93 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 40° .

EUT : LCD Monitor Temperature : 22°C

Model No. : W2361TV Humidity : 60%RH

Serial No. : E2009020501 Date of Test : Feb 19, 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	41.640	5.39	13.02	0.70	19.11	40.00	20.89
	139.610	18.23	12.12	0.91	31.26	43.50	12.24
	180.350	18.41	9.90	1.02	29.33	43.50	14.17
	249.220	20.69	12.86	1.27	34.82	46.00	11.18
	451.950	15.38	17.26	2.22	34.86	46.00	11.14
	540.220	13.50	18.42	2.48	34.40	46.00	11.60
Vertical	30.970	16.47	19.03	0.57	36.07	40.00	3.93
	40.670	19.99	13.62	0.69	34.30	40.00	5.70
	139.610	17.24	12.12	0.91	30.27	43.50	13.23
	232.730	19.97	12.24	1.21	33.42	46.00	12.58
	451.950	20.66	17.26	2.22	40.14	46.00	5.86
	540.220	18.94	18.42	2.48	39.84	46.00	6.16

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : W2361TV Humidity : 60%RH

Serial No. : E2009020501 Date of Test : Feb 19, 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	3.95	19.03	0.57	23.55	40.00	16.45
	139.610	16.65	12.12	0.91	29.68	43.50	13.82
	250.190	22.80	12.90	1.27	36.97	46.00	9.03
	297.720	19.81	13.86	1.54	35.21	46.00	10.79
	451.950	15.21	17.26	2.22	34.69	46.00	11.31
	859.350	15.03	21.31	3.44	39.78	46.00	6.22
Vertical	30.970	16.37	19.03	0.57	35.97	40.00	4.03
	40.670	19.27	13.62	0.69	33.58	40.00	6.42
	55.220	19.49	7.69	0.80	27.98	40.00	12.02
	151.250	18.39	11.19	0.93	30.51	43.50	12.99
	296.750	22.04	13.86	1.52	37.42	46.00	8.58
	451.950	20.29	17.26	2.22	39.77	46.00	6.23

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : W2361TV Humidity : 60%RH

Serial No. : E2009020501 Date of Test : Feb 19, 2009

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

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
Horizontal	30.000	2.11	19.60	0.56	--	22.27	40.00	17.73	QP
	139.610	18.28	12.12	0.91	--	31.31	43.50	12.19	
	253.100	22.79	12.97	1.29	--	37.05	46.00	8.95	
	284.140	20.65	13.62	1.46	--	35.73	46.00	10.27	
	647.890	12.00	19.45	2.83	--	34.28	46.00	11.72	
	859.350	14.42	21.31	3.44	--	39.17	46.00	6.83	PK
	1122.000	58.10	23.24	4.07	37.37	48.04	74.00	25.96	
	1196.000	58.09	23.70	4.21	37.18	48.82	74.00	25.18	
	1533.000	54.33	26.04	4.78	36.46	48.69	74.00	25.31	
	1560.000	53.16	26.19	4.85	36.42	47.78	74.00	26.22	
	1644.000	55.07	26.50	5.02	36.26	50.33	74.00	23.67	
1720.000	52.51	26.71	5.14	36.13	48.23	74.00	25.77		
Vertical	31.940	17.03	18.49	0.59	--	36.11	40.00	3.89	QP
	40.670	20.50	13.62	0.69	--	34.81	40.00	5.19	
	93.050	18.48	10.09	0.85	--	29.42	43.50	14.08	
	250.190	20.90	12.90	1.27	--	35.07	46.00	10.93	
	297.720	20.55	13.86	1.54	--	35.95	46.00	10.05	
	859.350	15.30	21.31	3.44	--	40.05	46.00	5.95	PK
	1043.000	53.40	22.69	3.96	37.58	42.47	74.00	31.53	
	1122.000	61.88	23.24	4.07	37.37	51.82	74.00	22.18	
	1196.000	54.82	23.70	4.21	37.18	45.55	74.00	28.45	
	1498.000	57.87	25.80	4.71	36.53	51.85	74.00	22.15	
	1690.000	56.92	26.63	5.11	36.18	52.48	74.00	21.52	
1756.000	49.66	26.80	5.18	36.07	45.57	74.00	28.43		

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : W2361TV Humidity : 60%RH

Serial No. : E2009020501 Date of Test : Feb 19, 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	139.610	16.92	12.12	0.91	--	29.95	43.50	13.55	QP
	250.190	27.73	12.90	1.27	--	41.90	46.00	4.10	
	295.780	23.01	13.84	1.52	--	38.37	46.00	7.63	
	451.950	14.38	17.26	2.22	--	33.86	46.00	12.14	
	540.220	12.49	18.42	2.48	--	33.39	46.00	12.61	
	859.350	16.41	21.31	3.44	--	41.16	46.00	4.84	
	1046.000	60.54	22.72	3.96	37.57	49.65	74.00	24.35	PK
	1122.000	63.80	23.24	4.07	37.37	53.74	74.00	20.26	
	1271.000	57.56	24.27	4.33	37.01	49.15	74.00	24.85	
	1386.000	55.90	25.13	4.54	36.76	48.81	74.00	25.19	
	1544.000	58.31	26.07	4.81	36.44	52.75	74.00	21.25	
1704.000	56.08	26.67	5.11	36.16	51.70	74.00	22.30		
Vertical	30.970	16.97	19.03	0.57	--	36.57	40.00	3.43	QP
	40.670	22.22	13.62	0.69	--	36.53	40.00	3.47	
	55.220	20.61	7.69	0.80	--	29.10	40.00	10.90	
	151.250	15.41	11.19	0.93	--	27.53	43.50	15.97	
	297.720	20.20	13.86	1.54	--	35.60	46.00	10.40	
	856.440	14.67	21.28	3.44	--	39.39	46.00	6.61	
	1046.000	55.41	22.72	3.96	37.57	44.52	74.00	29.48	PK
	1122.000	52.35	23.24	4.07	37.37	42.29	74.00	31.71	
	1181.000	53.00	23.62	4.18	37.22	43.58	74.00	30.42	
	1495.000	58.77	25.80	4.71	36.54	52.74	74.00	21.26	
	1644.000	53.14	26.50	5.02	36.26	48.40	74.00	25.60	
1679.000	57.59	26.59	5.08	36.20	53.06	74.00	20.94		

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : W2361TV Humidity : 60%RH

Serial No. : E2009020501 Date of Test : Feb 19, 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	138.640	19.70	12.17	0.91	32.78	43.50	10.72
	249.220	21.19	12.86	1.27	35.32	46.00	10.68
	298.690	20.39	13.88	1.54	35.81	46.00	10.19
	540.220	13.77	18.42	2.48	34.67	46.00	11.33
	647.890	11.91	19.45	2.83	34.19	46.00	11.81
	755.560	9.14	20.27	3.22	32.63	46.00	13.37
Vertical	31.940	17.45	18.49	0.59	36.53	40.00	3.47
	41.640	21.49	13.02	0.70	35.21	40.00	4.79
	55.220	19.79	7.69	0.80	28.28	40.00	11.72
	138.640	16.10	12.17	0.91	29.18	43.50	14.32
	249.220	22.48	12.86	1.27	36.61	46.00	9.39
	540.220	19.10	18.42	2.48	40.00	46.00	6.00

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : W2361TV Humidity : 60%RH

Serial No. : E2009020501 Date of Test : Feb 19, 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	139.610	18.47	12.12	0.91	31.50	43.50	12.00
	180.350	17.85	9.90	1.02	28.77	43.50	14.73
	252.130	26.27	12.94	1.27	40.48	46.00	5.52
	283.170	23.09	13.62	1.46	38.17	46.00	7.83
	451.950	15.27	17.26	2.22	34.75	46.00	11.25
	540.220	13.66	18.42	2.48	34.56	46.00	11.44
Vertical	30.970	16.91	19.03	0.57	36.51	40.00	3.49
	40.670	20.43	13.62	0.69	34.74	40.00	5.26
	55.220	19.67	7.69	0.80	28.16	40.00	11.84
	136.700	17.30	12.23	0.91	30.44	43.50	13.06
	243.400	19.49	12.64	1.25	33.38	46.00	12.62
	540.220	19.40	18.42	2.48	40.30	46.00	5.70

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : W2361TV Humidity : 60%RH

Serial No. : E2009020501 Date of Test : Feb 19, 2009

Test Mode : DVI 1680*1050@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
Horizontal	139.610	18.09	12.12	0.91	--	31.12	43.50	12.38	QP
	250.190	21.38	12.90	1.27	--	35.55	46.00	10.45	
	298.690	19.94	13.88	1.54	--	35.36	46.00	10.64	
	451.950	16.13	17.26	2.22	--	35.61	46.00	10.39	
	540.220	14.00	18.42	2.48	--	34.90	46.00	11.10	
	859.350	14.28	21.31	3.44	--	39.03	46.00	6.97	
	1046.000	60.67	22.72	3.96	37.57	49.78	74.00	24.22	PK
	1122.000	59.10	23.24	4.07	37.37	49.04	74.00	24.96	
	1196.000	57.09	23.70	4.21	37.18	47.82	74.00	26.18	
	1533.000	55.33	26.04	4.78	36.46	49.69	74.00	24.31	
	1644.000	55.07	26.50	5.02	36.26	50.33	74.00	23.67	
1720.000	52.51	26.71	5.14	36.13	48.23	74.00	25.77		
Vertical	32.910	17.56	17.95	0.60	--	36.11	40.00	3.89	QP
	40.670	20.50	13.62	0.69	--	34.81	40.00	5.19	
	55.220	20.31	7.69	0.80	--	28.80	40.00	11.20	
	253.100	22.17	12.97	1.29	--	36.43	46.00	9.57	
	451.950	21.20	17.26	2.22	--	40.68	46.00	5.32	
	540.220	20.36	18.42	2.48	--	41.26	46.00	4.74	PK
	1043.000	63.40	22.69	3.96	37.58	52.47	74.00	21.53	
	1122.000	62.88	23.24	4.07	37.37	52.82	74.00	21.18	
	1196.000	60.82	23.70	4.21	37.18	51.55	74.00	22.45	
	1498.000	58.87	25.80	4.71	36.53	52.85	74.00	21.15	
	1690.000	56.92	26.63	5.11	36.18	52.48	74.00	21.52	
1756.000	56.66	26.80	5.18	36.07	52.57	74.00	21.43		

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : W2361TV Humidity : 60%RH

Serial No. : E2009020501 Date of Test : Feb 19, 2009

Test Mode : DVI 1920*1080@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
Horizontal	138.640	18.10	12.17	0.91	--	31.18	43.50	12.32	QP
	245.340	22.02	12.72	1.25	--	35.99	46.00	10.01	
	296.750	19.87	13.86	1.52	--	35.25	46.00	10.75	
	451.950	15.47	17.26	2.22	--	34.95	46.00	11.05	
	540.220	12.57	18.42	2.48	--	33.47	46.00	12.53	
	859.350	15.13	21.31	3.44	--	39.88	46.00	6.12	
	1122.000	56.80	23.24	4.07	37.37	46.74	74.00	27.26	PK
	1201.000	61.87	23.74	4.21	37.17	52.65	74.00	21.35	
	1271.000	51.56	24.27	4.33	37.01	43.15	74.00	30.85	
	1386.000	49.90	25.13	4.54	36.76	42.81	74.00	31.19	
	1544.000	52.31	26.07	4.81	36.44	46.75	74.00	27.25	
1704.000	50.08	26.67	5.11	36.16	45.70	74.00	28.30		
Vertical	30.970	17.33	19.03	0.57	--	36.93	40.00	3.07	QP
	40.670	20.66	13.62	0.69	--	34.97	40.00	5.03	
	56.190	20.37	7.46	0.80	--	28.63	40.00	11.37	
	248.250	21.76	12.83	1.26	--	35.85	46.00	10.15	
	295.780	22.97	13.84	1.52	--	38.33	46.00	7.67	
	451.950	21.42	17.26	2.22	--	40.90	46.00	5.10	
	1046.000	58.41	22.72	3.96	37.57	47.52	74.00	26.48	PK
	1122.000	62.35	23.24	4.07	37.37	52.29	74.00	21.71	
	1181.000	62.00	23.62	4.18	37.22	52.58	74.00	21.42	
	1495.000	58.77	25.80	4.71	36.54	52.74	74.00	21.26	
	1644.000	58.14	26.50	5.02	36.26	53.40	74.00	20.60	
1679.000	56.59	26.59	5.08	36.20	52.06	74.00	21.94		

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
Aluminum foil	T-308	50*30	DAEHUNG SUBSIDIARY MATERIALS.	See Internal Photo Figure 16, 17
Sponge	--	--	Huibang	See Internal Photo Figure 4
Sponge	--	85mm*10mm*2T	EXPAN	See Internal Photo Figure 18
Sponge	--	95mm*10mm*1T	EXPAN	See Internal Photo Figure 18