FCC CLASS B COMPLIANCE REPORT

(DoC)

for

Electromagnetic Emissions

of

LCD MONITOR

Trade Name	**:** PIXSTORM
Model Number	**:** M170T
Serial Number	**:** N/A
Report Number	**:** SZ0211011
Date	**:** November 29, 2002

Prepared for **:**
SHENZHEN GODWING ELECTRONICS CO., LTD
2/F, 706 BLDG, PENGJI INDUSTRIAL PARK, LIANTANG,
SHENZHEN, CHINA

Prepared by **:**
COMPLIANCE ENGINEERING SERVICES (CHINA)

d.b.a.
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LAB CODE: 200577-0

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NVLAP®
LAB CODE: 200577-0

VERIFICATION OF COMPLIANCE

Equipment Under Test:	LCD MONITOR
Trade Name:	PIXSTORM
Model Number:	M170T
Serial Number:	N/A
Applicant:	SHENZHEN GODWING ELECTRONICS CO., LTD 2/F, 706 BLDG, PENGJI INDUSTRIAL PARK, LIANTANG, SHENZHEN, CHINA
Manufacturer:	SHENZHEN GODWING ELECTRONICS CO., LTD 2/F, 706 BLDG, PENGJI INDUSTRIAL PARK, LIANTANG, SHENZHEN, CHINA
Type of Test:	FCC Class B (DoC)
Measurement Procedure:	ANSI C63.4: 1992
File Number:	SZ0211011
Date of test:	November 17~28, 2002
Deviation:	None
Condition of Test Sample:	Normal

The above equipment was tested by Compliance Engineering Services (China) for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, Subpart B and the measurement procedure according to ANSI C63.4. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Responsible Party

Avin Jam / Q. A. Manager

Officer of the Responsible Party

SYSTEM DESCRIPTION

EUT Test Program:

1. EMC test program was loaded and executed in Windows 2000 mode.
2. PC send Video signal to EUT and monitor is full of "H" patterns on the screen.
3. Test program sequentially exercised printer and modem, then sent "H" patterns to them individually.
4. DVD player send video, audio and s-video signal to EUT, and display on the screen.
5. Repeat 2 to 4. Test program is self-repeating throughout the test.

PRODUCT INFORMATION

Housing Type:	Plastic
EUT Power Rating:	AC 100~230V 50/60Hz
Power during Test:	120VAC/60Hz changed to DC 12V by adaptor
Adaptor Manufacture:	FSP GROUP INC.
Adaptor Model Mame:	FSP048-1AD101C
Power Cord Type:	Unshielded, 1.8 m
OSC/Clock Frequencies:	Y1=24MHz, Y2==24.576MHz

I/O Port of EUT:

I/O Port Type	Q'TY	Tested with
1) Video in	1	1
2) Digital Video in	1	1
3) S-Video in	1	1
4) VGA in	1	1
5) TV in	N/A	N/A
6) Audio in	1	1
7) Audio out	1	1
8) Power	1	1

1) **Difference between model numbers as below:**

	Model Number	Trade Name
1.	M170T	GODWING

2) **Note:** The trade name (list on this report) is different, (Please refer list as above) just for marketing only.

SUPPORT EQUIPMENT

No.	Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
1.	PC	PC1	N/A	DoC	N/A	N/A	Unshielded, 1.8m
2.	Modem	SUPERFAX6.0	9013593	IFAXDM1414	ACCEX	Shielded, 1.8m	Unshielded, 1.8m
3.	Printer	P310B	N/A	DoC	EPSON	Shielded, 1.8m	Unshielded, 1.8m
4.	Mouse	MUS9J N	298792-007	EMJMUSJR	COMPAQ	Unshielded, 1.8m	N/A
5.	Keyboard	E06333KUS221-C	D8597-63001	DoC	HP	Unshielded, 1.8m	N/A
6.	DVD	DVP-500	N/A	DoC	MALATA	Unshielded, 1.8m	Unshielded, 1.5m
7.	Earphone	N/A	N/A	DoC	N/A	Unshielded 1.2m	N/A

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

SECTION 1 LINE CONDUCTED AND RADIATED EMISSION

MEASUREMENT PROCEDURE (PRELIMINARY LINE CONDUCTED EMISSION TEST)

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN55022 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

2) Support equipment, if needed, was placed as per EN55022.

3) All I/O cables were positioned to simulate typical actual usage as per EN55022.

4) The EUT received DC power from adaptor ,and adaptor received AC power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.

5) All support equipment received power from a second LISN supplying power of 120VAC/60Hz, if any.

6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.

7) Analyzer / Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.

8) During the above scans, the emissions were maximized by cable manipulation.

9) The following test mode(s) were scanned during the preliminary test:

Preliminary Conducted Emission Test			
Frequency Range Investigated		150KHz TO 30 MHz	
Mode of operation	Date	Data Report No.	Worst Mode
1280x1024VF75Hz(DVI)	11/17/2002	M170T(120v)-1(L) M170T(120v)-2(N)	☒
1280x1024VF75Hz(VGA)	11/17/2002	M170T(120v)-3(L) M170T(120v)-4N)	☐
1024x768VF75Hz(DVI)	11/17/2002	M170T (120v)-5(L) M170T(120v)-6(N)	☐
1024x768VF75Hz(VGA)	11/17/2002	M170T (120v)-7(L) M170T(120v)-8(N)	☐
800x600VF75Hz(DVI)	11/17/2002	M170T (120v)-9(L) M170T(120v)-10(N)	☐
800x600VF75Hz(VGA)	11/17/2002	M170T (120v)-11(L) M170T(120v)-12(N)	☐
DVD	11/17/2002	M170T (120v)-13(L) M170T(120v)-14(N)	☐

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

MEASUREMENT PROCEDURE
(FINAL LINE CONDUCTED EMISSION TEST)

1) EUT and support equipment was set up on the test bench as per step 9 of the preliminary test.

2) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the average limit in peak mode, then the emission signal was re-checked using an average. detector.

3) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. MHz	Peak Raw dBuV	Q.P. Raw dBuV	Average Raw dBuV	Q.P. Limit dBuV	Average Limit dBuV	Q.P. Margin dB	Average Margin dB	Note
x.xx	43.95	---	---	56.0	46.0	---	-2.05	L1

Freq.	= Emission frequency in MHz
Raw dBuV	= Uncorrected Analyzer/Receiver reading
Limit dBuV	= Limit stated in standard
Margin dB	= Reading in reference to limit
Note	= Current carrying line of reading
"---"	= The emission level complied with the Average limits, with at least 2 dB margin, so no further recheck.

LINE CONDUCTED EMISSION LIMIT

Frequency	Maximum RF Line Voltage	
	Q.P.	AVERAGE
150kHz-500kHz	66-56dBuV	56-46dBuV
500kHz-5MHz	56dBuV	46dBuV
5MHz-30MHz	60dBuV	50dBuV

Note: The lower limit shall apply at the transition frequency.

MEASUREMENT PROCEDURE
(PRELIMINARY RADIATED EMISSION TEST)

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per EN 55022 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

2) Support equipment, if needed, was placed as per EN 55022.

3) All I/O cables were positioned to simulate typical actual usage as per EN 55022.

4) The EUT received DC power from adaptor ,and adaptor received AC power from the outlet socket under the turntable. All support equipment received 120VAC/60Hz power from socket under the turntable, if any.

5) The antenna was placed at 10 meter away from the EUT as stated in EN 55022. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.

6) The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

7) The following test mode(s) were scanned during the preliminary test:

Preliminary Radiated Emission Test			
Frequency Range Investigated		30 MHz TO 1000 MHz	
Mode of operation	Date	Data Report No.	Worst Mode
1280x1024VF75Hz(DVI)	11/18/2002	M170T (120v)-1(V) M170T (120v)-2(H)	☒
1280x1024VF75Hz(VGA)	11/18/2002	M170T (120v)-3(V) M170T (120v)-4(H)	☐
1024x768VF75Hz(DVI)	11/18/2002	M170T (120v)-5(V) M170T (120v)-6(H)	☐
1024x768VF75Hz(VGA)	11/18/2002	M170T (120v)-7(V) M170T (120v)-8(H)	☐
800x600VF75Hz(DVI)	11/18/2002	M170T (120v)-9(V) M170T (120v)-10(H)	☐
800x600VF75Hz(VGA)	11/18/2002	M170T (120v)-11(V) M170T (120v)-12(H)	☐
DVD	11/18/2002	M170T (120v)-13(V) M170T (120v)-14(H)	☐

Then, the EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for final testing.

MEASUREMENT PROCEDURE
(FINAL RADIATED EMISSION TEST)

1) EUT and support equipment were set up on the turntable as per step 7 of the preliminary test.

2) The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

3) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and Q.P./peak reading is presented.

4) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)	Reading Type P/Q
xx.xx	14.0	12.2	26.2	30.0	-3.8	P

Freq. = Emission frequency in MHz
Raw Data (dBuV/m) = Uncorrected Analyzer / Receiver reading
Corr. Factor (dB) = Correction factors of antenna factor and cable loss
Emiss. Level = Raw reading converted to dBuV and CF added
Limit dBuV/m = Limit stated in standard
Margin dB = Reading in reference to limit
P =Peak Reading
Q =Quasi-peak

RADIATED EMISSION LIMIT

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBu V/m/ Q.P.)
30~230	10	30.0
230~1000	10	37.0

Note: The lower limit shall apply at the transition frequency.

SUMMARY DATA

(LINE CONDUCTED TEST)

Model Number: M170T **Location: G-site**

Tested by: Lisia

Test Mode: 1280x1024VF75Hz(DVI)

Test Results: Pass

Temperature: 25°C **Humidity:** 65%RH

(The chart below shows the highest readings taken from the final data)

FREQ MHz	Peak RAW dBuV	Q.P. RAW dBuV	AVG RAW dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.178	43.3	---	---	65.2	55.2	---	-11.9	L1
0.243	39.5	---	---	63.4	53.4	---	-13.9	L1
0.613	31.7	---	---	56.0	46.0	---	-14.3	L1
2.180	29.5	---	---	56.0	46.0	---	-16.5	L1
22.020	42.5	---	---	60.0	50.0	---	-7.5	L1
23.420	42.7	---	---	60.0	50.0	---	-7.3	L1
0.178	43.8	---	---	65.2	55.2	---	-11.4	L2
0.303	31.5	---	---	61.6	51.6	---	-20.1	L2
0.617	29.3	---	---	56.0	46.0	---	-16.7	L2
1.292	30.6	---	---	56.0	46.0	---	-15.4	L2
5.200	35.9	---	---	60.0	50.0	---	-14.1	L2
23.700	43.5	---	---	60.0	50.0	---	-6.5	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

****NOTE: "---" denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.**

SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: M170T **Location:** G-site

Tested by: Lisia **Polar:** Vertical--10m

Test Mode: 1280x1024VF75Hz(DVI) **Test Results:** Pass

Detector Function: Quasi-Peak/Peak

Temperature: 25°C **Humidity:** 65%RH

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Reading Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Type (P/Q)
210.40	14.70	13.51	28.21	30.00	-1.79	Q
315.65	12.97	15.93	28.90	37.00	-8.10	P
420.80	8.73	19.80	28.53	37.00	-8.47	P
600.63	8.08	24.32	32.40	37.00	-4.60	P
810.85	6.57	27.26	33.83	37.00	-3.17	P
886.05	4.00	28.22	32.22	37.00	-4.78	Q

LAB CODE: 200577-0

SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: M170T **Location:** G-Site

Tested by: Lisia **Polar:** Horizontal--10m

Test Mode: 1280x1024VF75Hz(DVI) **Test Results:** Pass

Detector Function: Quasi-Peak/Peak

Temperature: 25°C **Humidity:** 65%RH

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Level (dBuV/m)	Emiss. Limits (dBuV/m)	Margin (dB)	Reading Type (P/Q)
210.42	15.20	13.51	28.71	30.00	-1.29	Q
263.03	19.46	14.92	34.38	37.00	-2.62	P
315.75	11.28	15.94	27.22	37.00	-9.78	P
368.20	17.40	17.73	35.13	37.00	-1.87	Q
674.50	8.10	25.84	33..94	37.00	-3.06	P
885.90	7.80	28.22	36.02	37.00	-0.98	Q

TEST FACILITY

Location: No. 6, Jinao industry park, No. 35 Jukeng Road, Dashuikeng Village, Guanlan Town, Baoan District, Shenzhen, China

Description: There is one 3/10m open area test sites and one line conducted labs for final test.
The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.

Site Filing: A site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.

Site Accreditation: Accredited by NVLAP (Lab code: 200577-0) for EMC.

Instrument Tolerance: All measuring equipment is in accord with ANSI C63.4 and CISPR 22 requirements that meet industry regulatory agency and accreditation agency requirement.

Ground Plane: Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used at Compliance Engineering Services (China) for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2-1988 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10kHz to 1.0GHz or above.

Equipment used during the tests:

Open Area Test Site: G

Open Area Test Site G					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
SPECTRUM ANALYER	HP	8566B	2747A05503	06/01/2002	05/31/2003
SPECTRUM DISPLAY	HP	85662A	2848A17058	06/01/2002	05/31/2003
QUASI-PEAK DETECTOR	HP	85650A	2412A00411	06/01/2002	05/31/2003
EMI Test Receiver	HP	8546A	3448A00232	06/01/2002	05/31/2003
AMPLIFIER	HP	8447D	2944A07999	06/01/2002	05/31/2003
ANTENNA	EMCO	3142	9910-1436	06/01/2002	05/31/2003
CABLE	TIME MICROWAVE	LMR-400	N-TYPE04	06/01/2002	05/31/2003

Conducted Emission Test Site: G

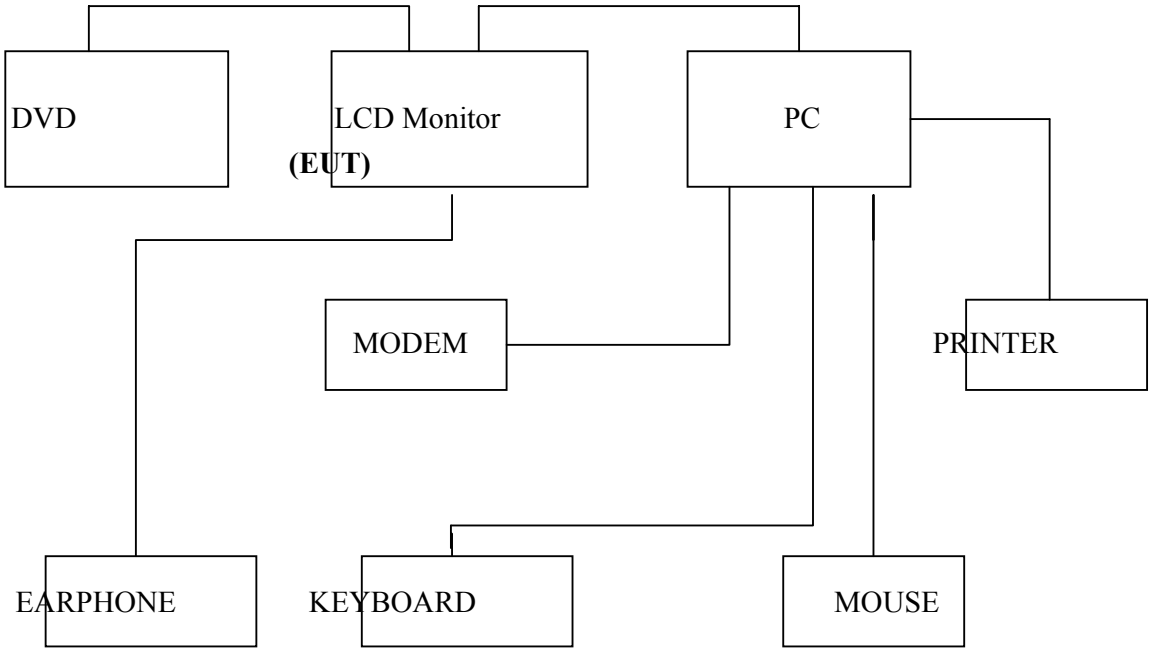
Conducted Emission Test Site G					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
EMI Test Receiver	HP	8546A	3448A00232	06/01/2002	05/31/2003
EMI Measuring Receiver	SCHAFFNER	SCR3501	1001021293	06/01/2002	05/31/2003
LISN (EUT)	EMCO	3825/2	1371	06/01/2002	05/31/2003
LISN	EMCO	3825/2	8901-1459	06/01/2002	05/31/2003

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators

EUT: LCD MONITOR
Trade Name: PIXSTORM
Model Number: M170T
Power Cord: Unshielded, 1.8m



APPENDIX 1

PHOTOGRAPHS OF TEST SETUP

(TEST SETUP OF LINE CONDUCTED EMISSION)

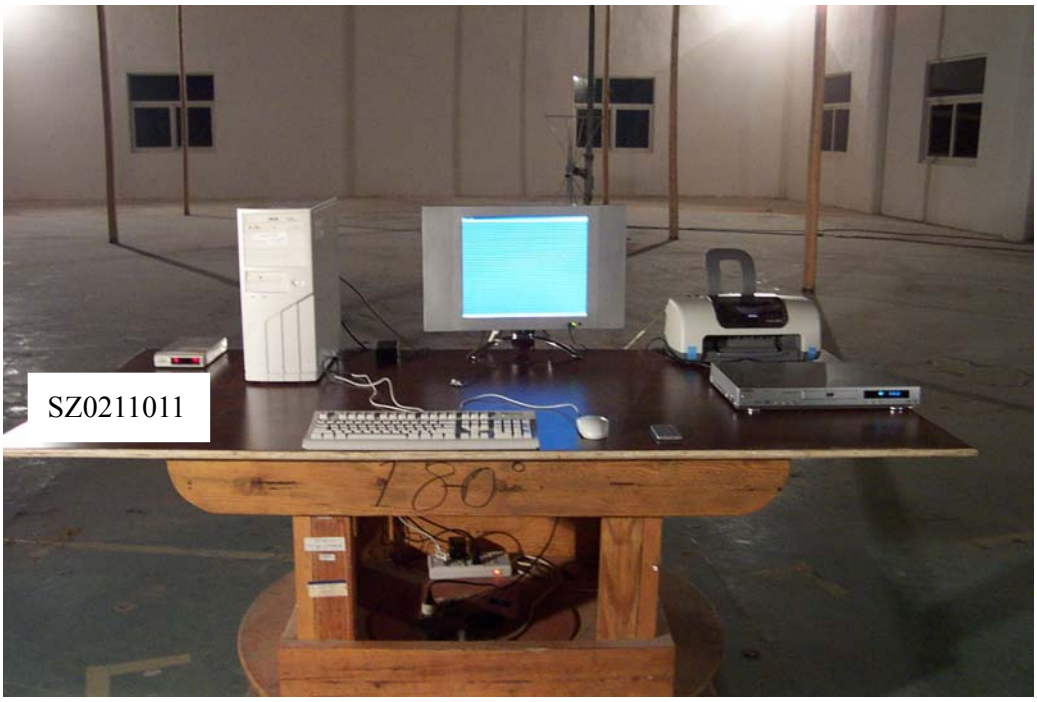
LINE CONDUCTED EMISSION TEST

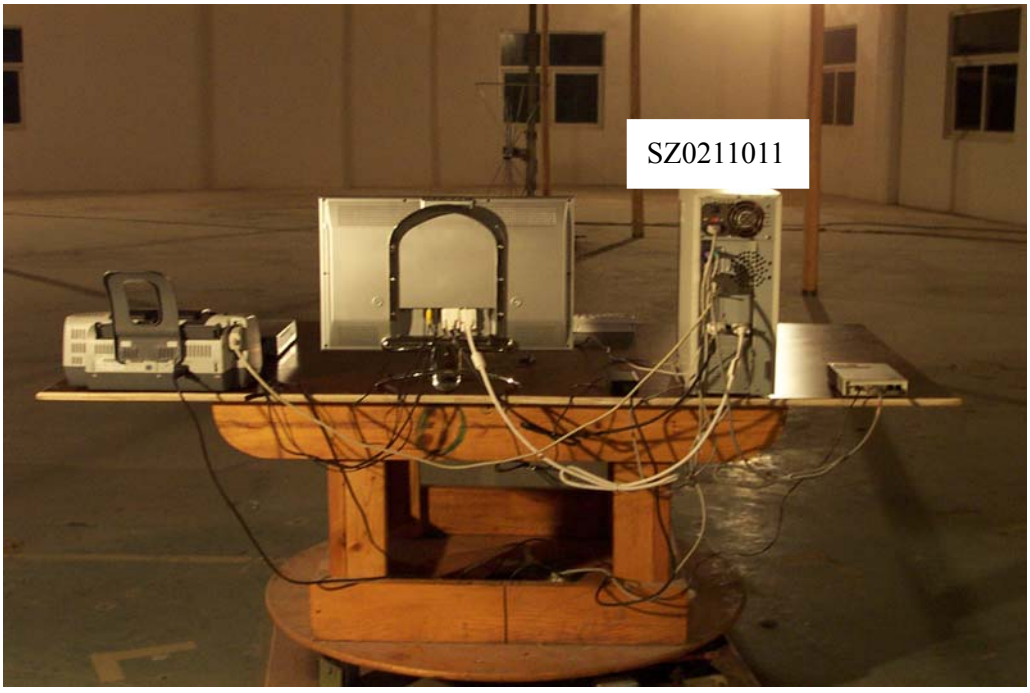
APPENDIX 2

PHOTOGRAPHS OF TEST SETUP

(TEST SETUP OF RADIATED EMISSION)

RADIATED EMISSION TEST (EN 55022)



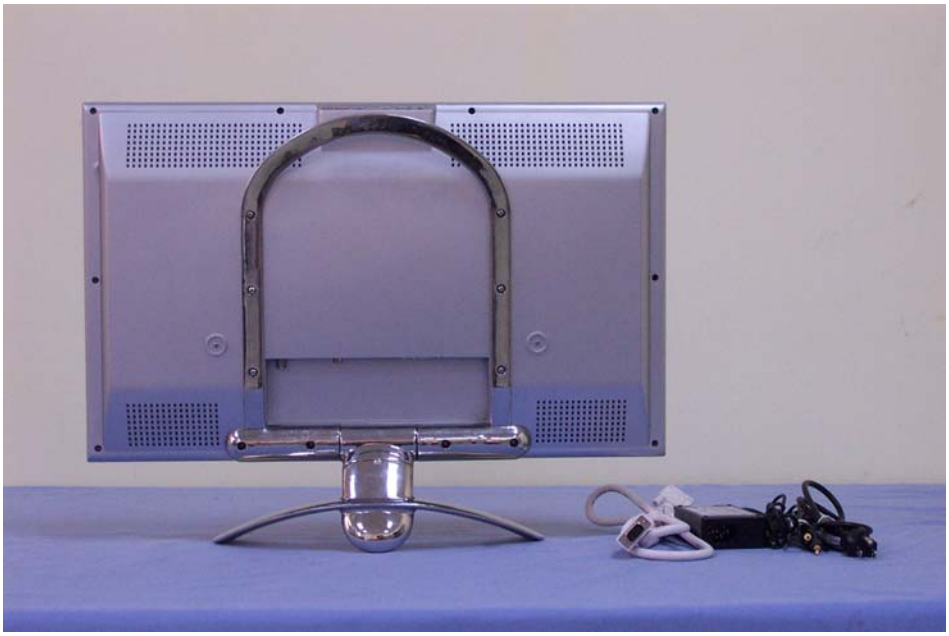


APPENDIX 3

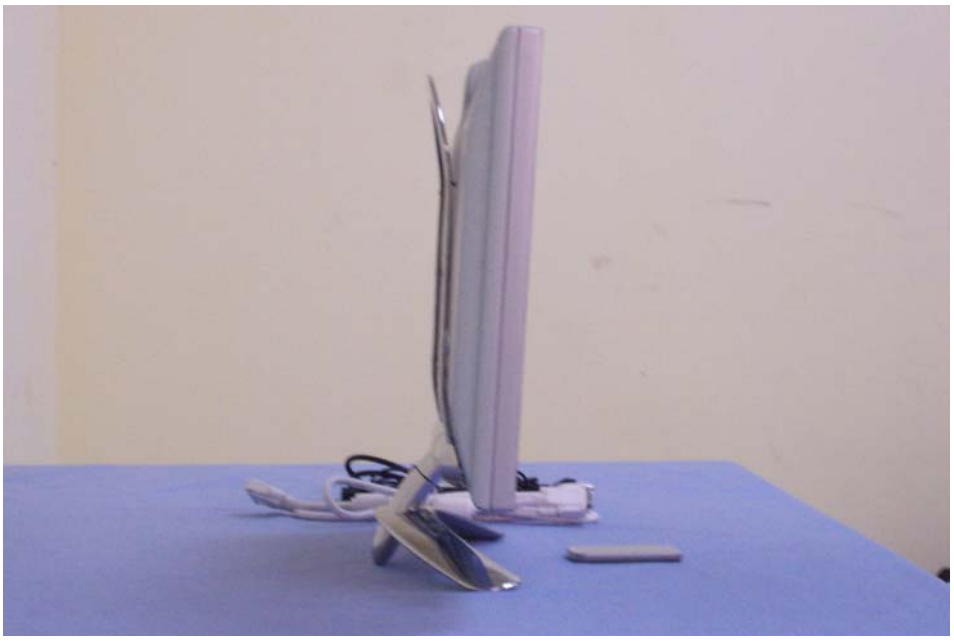
PHOTOGRAPHS OF EUT

Front view of EUT

Back view of EUT



Left view of EUT



Right view of EUT