Certification of Compliance

CFR 47 Part 15 Subpart B

Test Report File No. : 05-IST-0290 **Date of Issue** : September 15, 2005

FCC ID : RY8EFL0622WHT

Model(s) : EFL-0622WHT

Kind of Product : 6.2inches VGA LCD Monitor

Applicant : Effinet Systems, Inc.
Address : #801 KICOX Venture Center, 188-5, Guro-dong Guro-gu, Seoul, Korea

Manufacturer : Effinet Systems, Inc.
Address : 92, Chogok-ri, Nam-myun, Kimcheon City, Kyungbuk, Korea

Test Result ■ **Positive** ☐ **Negative**

Reviewed By

S.J.CHO / EMC Group Manager

Approved By

J.H.LEE / Chief

Comment(s)

- Investigations requested : Measurement to the relevant clauses of FCC rules and regulations Part 15 Subpart B - Unintentional Radiators, Class B.
- The test report with appendix consists of 17 pages.
- The test result only responds to the tested sample.
- It is not allowed to copy this report even partly without the allowance of IST EMC Laboratory.
- This equipment as for has been shown to be capable of continued compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4 2003.

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INFORMATIONS OF TEST LABORATORY

EMC LABORATORY of IST Co., Ltd. ***(FCC Filing Lab.)***
San 21-8, Goan-Ri, Baekam-Myun, Yongin-City
Kyonggi-Do, 449-860, Korea
TEL : +82 31 333 4093 FAX : +82 31 333 4094

ENVIRONMENTAL CONDITIONS

Temperature	24.1 ℃
Humidity	56 %
Atmospheric pressure	1014 mbar

POWER SUPPLY SYSTEM USED

Power supply system	AC 120Vac, 60Hz (Refer to the product information)

PRODUCT INFORMATION

Model(s)	:	EFL-0622WHT
FCC ID	:	RY8EFL0622WHT
Panel	:	Type No. - TX16D11VM2CAA / Hitachi Size - 6.2" Diagonal Active Display Area - 148.8(W) X 53.76(H) mm Number of Pixels - 640(H) X 240(V) Pixel Pitch - 0.2325(W) X 0.224(H) mm Color Depth - 262K Color Panel Dimension - 173.0(W) X 70.0(H) X 8.6(D) mm Response Time - 45ms(Typ.)
Input signal interface	:	15pin D-sub(RGB)
Scanning Frequency	:	Horizontal - 25.3 ~ 36.1KHz, Vertical - 52 ~ 68Hz
Resolution	:	640X480, 60Hz
Power Supply Adapter	:	Model - LSE0107A1240(Suzhou Li Shin Electronic Co., Ltd.) Input - 100~240Vac, 50/60Hz 1.0A Output - 12Vdc, 3.3A
Power dissipation	:	20Watts
Touch Screen	:	Touch Panel - 4Wire Resistive Type Controller - HT-EBU4-1 Controller Interface - USB

- EMC suppression device is not used during the test.
- Please refer to user's manual.

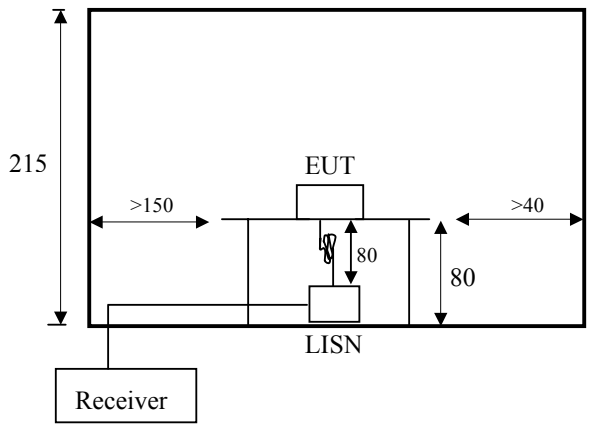
DESCRIPTIONS OF TEST

Conducted Emissions:

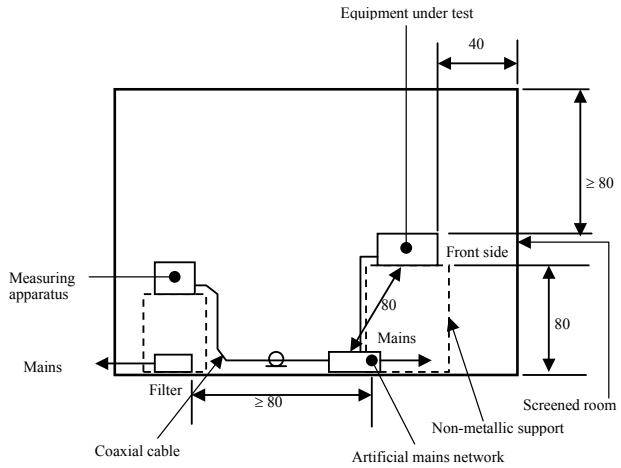
The measurement were performed over the frequency range of 0.15MHz to 30MHz using a 50Ω/50uH LISN as the input transducer to a Spectrum Analyzer or a Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within a bandwidth of 10KHz or for "quasi-peak" & "Average" within a bandwidth of 9KHz.

-Procedure of Test

The line-conducted facility is located inside a shielded room No.1. A 1m X 1.5m wooden table 80cm height is placed 40cm away from the vertical wall and 1.5m away from the other wall of the shielded room. The R/S ESH3-Z5 and Hyup-Rip KNW-407 LISN are bonded to bottom of the shielded room. The EUT is located on the wooden table with distance more than 80cm from the LISN and powered from the Hyup-Rip LISN .The peripheral equipment is powered from the other LISN. Power to the LISNs are filtered by a noise cut power line filters. All electrical cables are shielded by braided tinned steel tubing with inner ϕ 1.2cm. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the Hyup-Rip LISN. All interconnecting cables more than 1m were shortened by non-inductive bundling to a 1m length. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating conditions. The RF output of the LISN was connected to the R/S receiver to determine the frequency producing the maximum emission from the EUT. The frequency producing the maximum level was reexamined using Quasi-Peak mode by manual measurement, after scanned by automatic Peak mode for frequency range from 0.15 to 30MHz. The bandwidth of the receiver was set to 10kHz. The EUT, peripheral equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission.



< Side View >



< Concept Drawing >

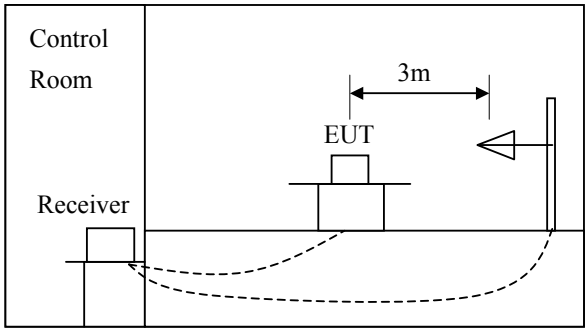
DESCRIPTION OF TEST

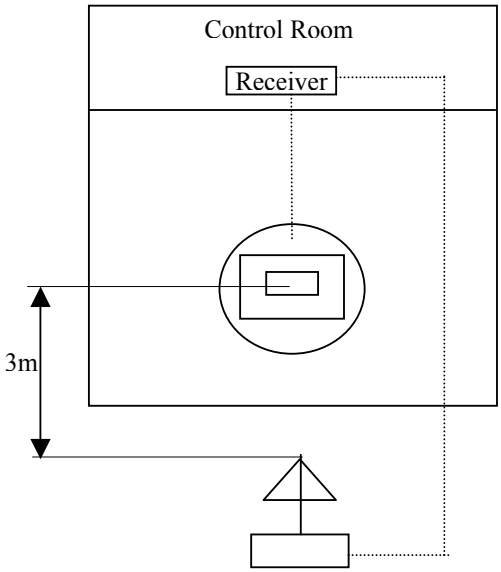
Radiated Emissions:

The measurement was performed over the frequency range of 30MHz to 1GHz using antenna as the input transducer to a Spectrum analyzer or a Field Intensity Meter. The measurement was made with the detector set for "quasi-peak" within a bandwidth of 120KHz.

-Procedure of Test

Preliminary measurements were made at 3 meter using bi-conical and log-periodic antennas, and spectrum analyzer to determine the frequency producing the max. emission in anechoic chamber. Appropriate precaution was taken to ensure that all emission from the EUT were maximized and investigated. The system configuration, mode of operation, turn-table azimuth and height with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30MHz to 300MHz using S/B bi-conical antenna and 300 to 1000MHz using S/B log-periodic antenna. Above 1GHz, linearly polarized double ridge horn antennas were used. Final measurements were made at open site with 3-meters test distance using S/B bi-log antenna or horn antenna. The OATS have been verified in regular for its normalized site attenuation. The test equipment was placed on a wooden table. Sufficient time for the EUT, peripheral equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined by manual. The detector function was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 120kHz or 1MHz depending on the frequency of type of signal. The EUT, peripheral equipment and interconnecting cables were re-configured to the set-up producing the max. emission for the frequency and were placed on top of a 0.8-meter high nonmetallic 1 x 1.5 meter table. The EUT, peripheral equipment, and interconnecting cables were re-arranged and manipulated to maximize each emission. The turntable containing the system was rotated; the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by: varying the mode of operation to the EUT and/or peripheral equipment and changing the polarity of the antenna, whichever determined the worst-case emission.





Equipment Under Test

EUT Type :

■ Table-Top. ☐ Floor-Standing.

☐ Table-Top and Floor-Standing(Combination).

Operation – mode of the E.U.T. :

The equipment under test was operated during the measurement under following conditions :

☐ Standby Mode

■ Operational Condition : Scrolling 'H' character mode (640X480, 60Hz)

Configuration of the equipment under test :

Following peripheral devices and interface cables were connected during the measurement :

Equipment	Type	Brand	Serial No.
6.2inches VGA LCD Monitor	EFL-0622WHT	Effinet Systems, Inc.	-
PC	dx6120 MT	HEWLETT-PACKARD COMPANY	CNG5210N2R
Keyboard	SK-2880C	HEWLETT-PACKARD COMPANY	-
USB Mouse	M-UV69a	HEWLETT-PACKARD COMPANY	-
Printer	A0302384	Northern Telecom	26633S60168
Serial Mouse	M-M28	Logitech	LCA53305547

Connecting Interface Cables :
Unshielded USB Mouse cable : 1.6 m
Unshielded Keyboard(PS/2) cable : 1.6 m
Unshielded Serial Mouse cable : 1.4 m
Unshielded Adapter DC power cable(with one ferrite core) : 1.5 m
Shielded monitor's signal cable(with two ferrite core) : 1.8 m
Shielded Printer's signal cable(with one ferrite core) : 1.8 m
Unshielded USB cable(for Touch screen controller interface) : 1.6 m

Note :

SUMMARY

Emissions

■ Conducted Emission

The requirements are ● MET ○ Not MET

Minimum limit margin 9.0 dB at 0.540 MHz

Maximum limit exceeding

Remarks : Limits are kept with more than 3dB margin.

Find the test data in following pages 9 to 10.

■ Radiated Emission

The requirements are ● MET ○ Not MET

Minimum limit margin 5.4 dB at 71.9 MHz

Maximum limit exceeding

Remarks : Limits are kept with more than 3dB margin.

Find the test data in following page 12 to 13.

Test Date

Begin of Testing : September 07, 2005

End of Testing : September 09, 2005

Note :

- ■ means the test is applicable,
- ☐ is not applicable.

Prepared By

S.M.Kim / Senior Engineer

TEST CONDITIONS AND DATA

Conducted Emissions

[Applicable]

◆ Test Equipment Used

Model Name	Description	Manufacture	Calibration Date	Serial Number
ESH3	Test Receiver	Rohde & Schwarz	Jul. 12, 2005	892108/018
3725/2	LISN	EMCO	Jul. 12, 2005	9101-2068
KNW-407	LISN	Hyup-Rip	Jul. 12, 2005	8-883-10
ESH3-Z2	Pulse Limiter	Rohde & Schwarz	Jul. 12, 2005	357.8810.52

◆ Test Accessories Used

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

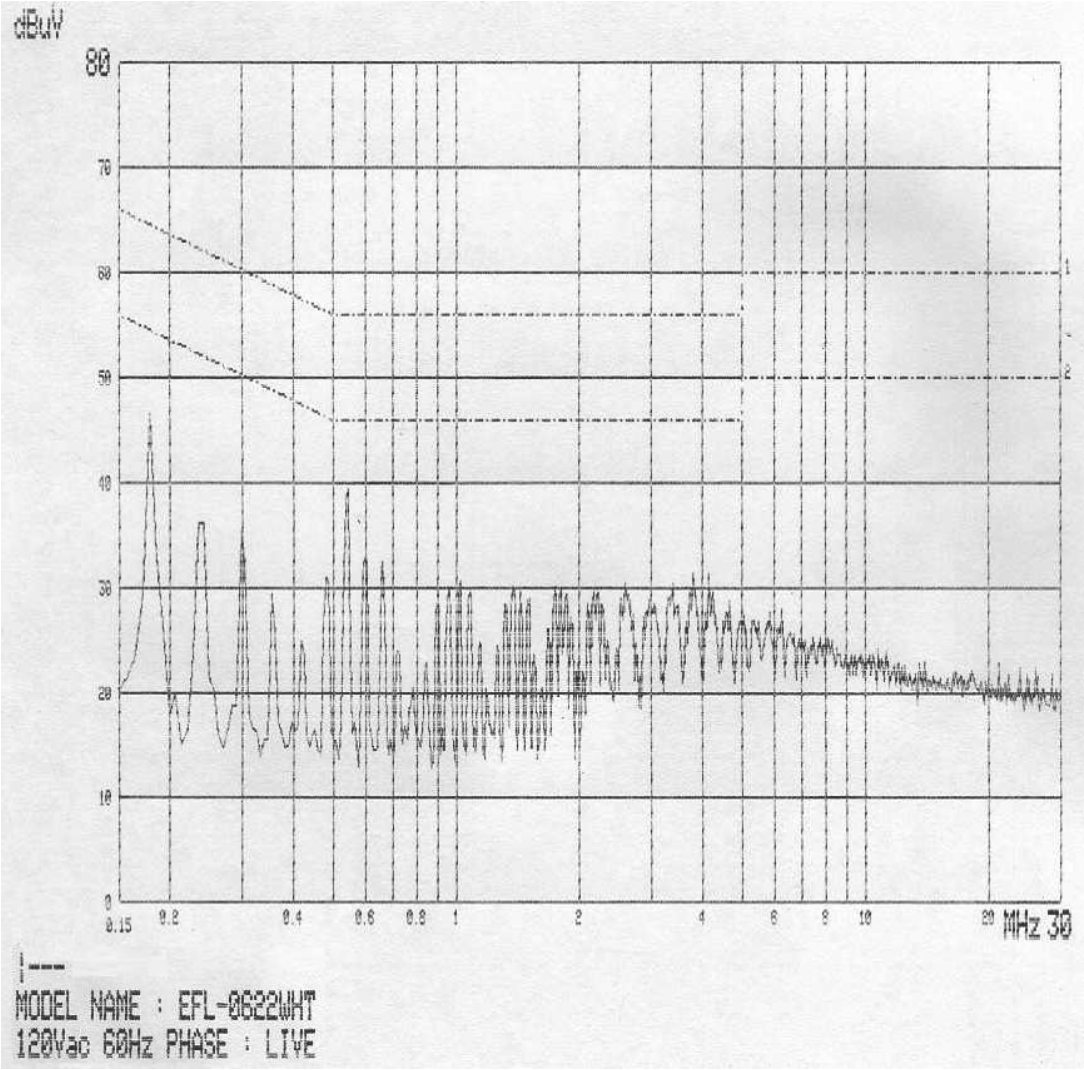
◆ Test Program Scrolling 'H' character mode

◆ Test Date September 07, 2005

◆ Test Area Conducted room No.1

Note : The equipment used is calibrated in regular for every year.

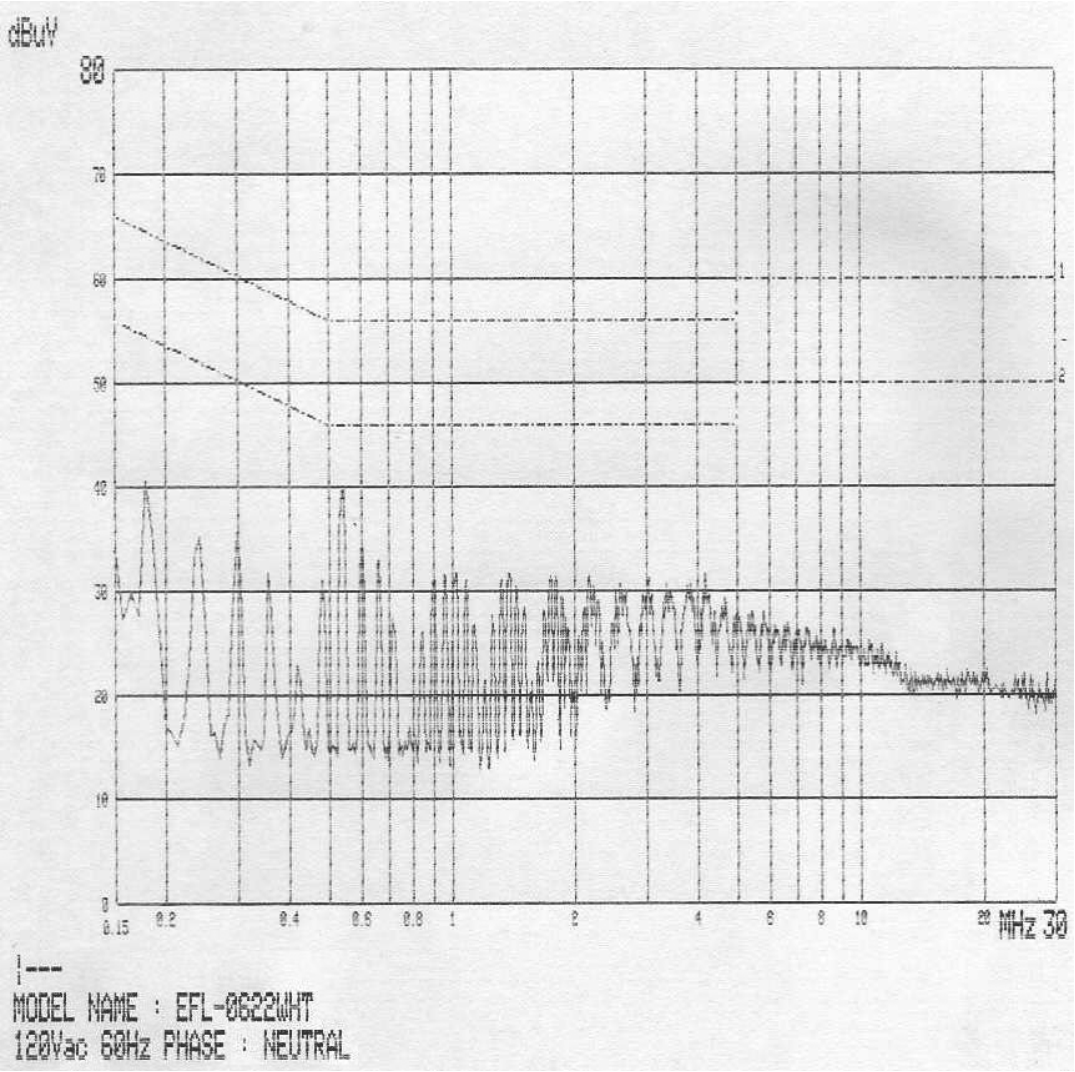
Conducted Emissions



Freq. [MHz]	Measurement [dB μV]		Limit [dB μV]		Insertion Loss	Cable Loss	Result [dB μV]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	[dB]	[dB μV]	Q-peak	Average	Q-peak	Average
0.180	44.5	36.6	64.5	54.5	0.3	0.5	45.3	37.4	19.2	17.1
0.239	37.5	29.9	62.1	52.1	0.3	0.5	38.3	30.7	23.8	21.4
0.540	36.5	35.1	56.0	46.0	0.3	0.4	37.2	35.8	18.8	10.2
0.603	31.6	25.8	56.0	46.0	0.3	0.4	32.3	26.5	23.7	19.5
5.842	23.0	15.6	60.0	50.0	0.4	0.6	24.0	16.6	36.0	33.4
6.216	22.5	15.8	60.0	50.0	0.4	0.6	23.5	16.8	36.5	33.2

Note :

Conducted Emissions



Freq. [MHz]	Measurement [dB μV]		Limit [dB μV]		Insertion Loss	Cable Loss	Result [dB μV]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	[dB]	[dB μV]	Q-peak	Average	Q-peak	Average
0.180	44.7	36.9	64.5	54.5	0.3	0.5	45.5	37.7	19.0	16.8
0.300	34.3	30.4	60.2	50.2	0.3	0.5	35.1	31.2	25.1	19.0
0.540	37.7	36.2	56.0	46.0	0.4	0.4	38.5	37.0	17.5	9.0
0.601	33.2	29.6	56.0	46.0	0.3	0.4	33.9	30.3	22.1	15.7
5.428	23.7	16.3	60.0	50.0	0.4	0.6	24.7	17.3	35.3	32.7
5.792	23.6	16.3	60.0	50.0	0.4	0.6	24.6	17.3	35.4	32.7

Note :

TEST CONDITIONS AND DATA

Radiated Emission

[Applicable]

◆ Test Equipment Used

Name	Type	Manufacturer	Calibration. Date	Serial Number
ESVS 10	Test Receiver	Rohde & Schwarz	Aug. 16, 2005	839049/004
VULB 9160	Antenna	Schwarzbeck	Jul. 19, 2005	3047

◆ Test Accessories Used

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

◆ Test Program Scrolling 'H' character mode

◆ Test Date September 09, 2005

◆ Test Area Open site No.2

Note : The equipment used is calibrated in regular for every year.

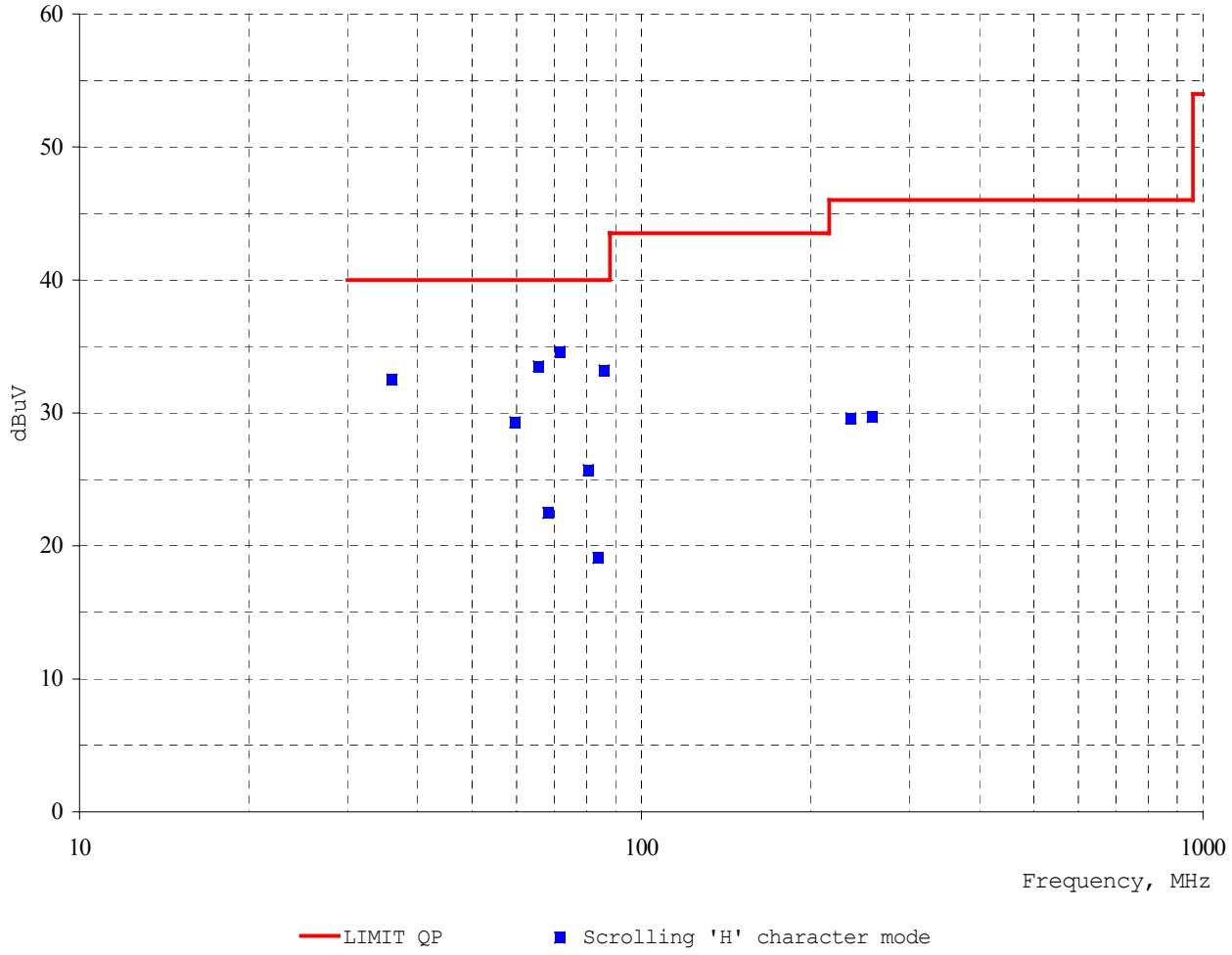
Radiated Emissions

Mode	Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB/m]	Cable Loss [dB]	Polar. [H/V]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]
Scrolling 'H'	36.0	19.8	11.5	1.2	V	32.5	40.0	7.5
Character mode	59.6	16.4	11.3	1.6	V	29.3	40.0	10.7
	65.6	21.3	10.4	1.8	V	33.5	40.0	6.5
	68.2	10.8	9.9	1.8	V	22.5	40.0	17.5
	71.6	23.2	9.5	1.9	V	34.6	40.0	5.4
	80.5	16.2	7.5	2.0	V	25.7	40.0	14.3
	83.8	9.2	7.9	2.0	V	19.1	40.0	20.9
	85.9	23.0	8.1	2.1	V	33.2	40.0	6.8
	236.2	15.4	10.4	3.8	H	29.6	46.0	16.4
	257.7	14.7	11.1	3.9	H	29.7	46.0	16.3

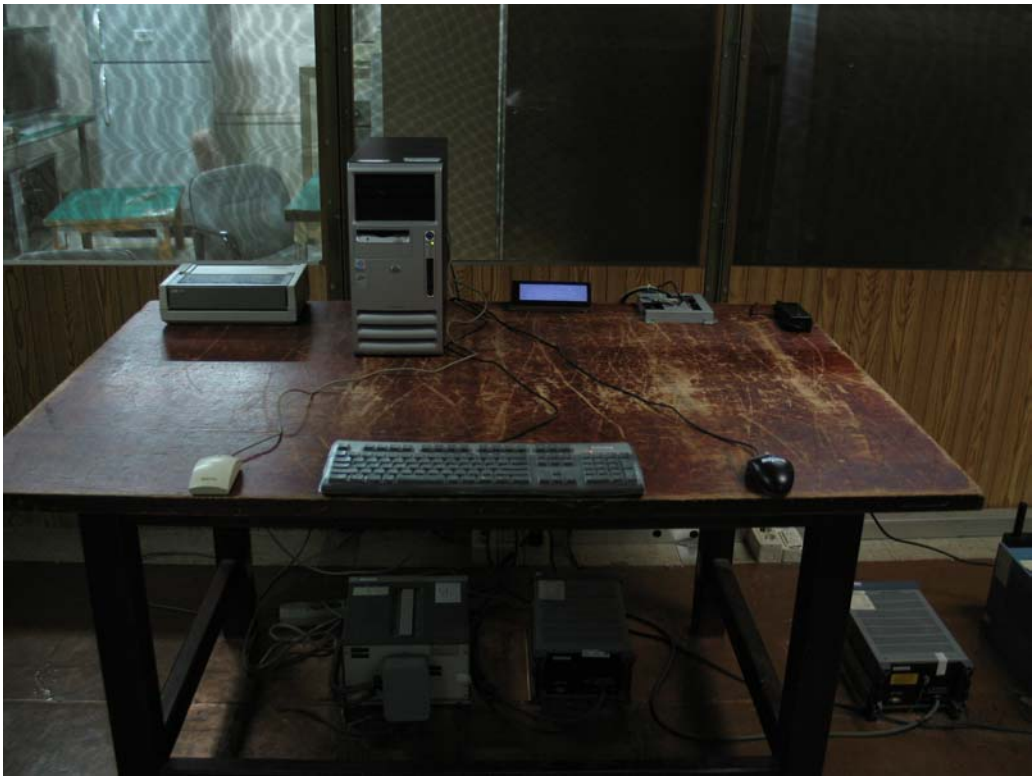
End of data.

Note:

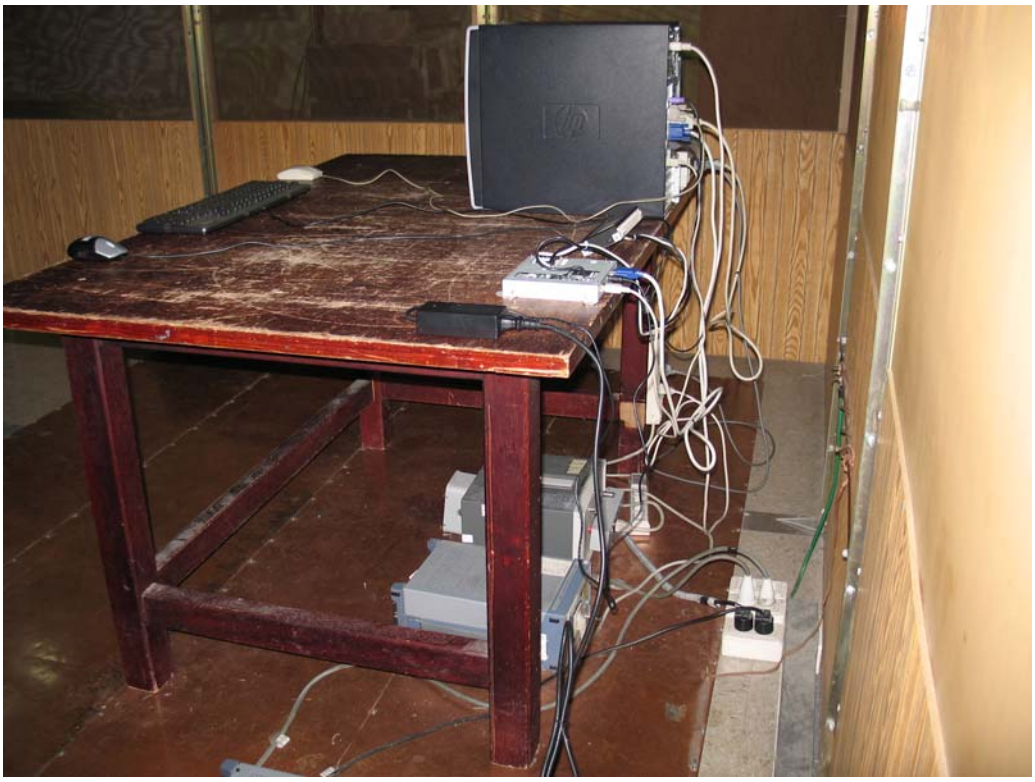
MEASUREMENT OF DISTURBANCE RADIATION



Appendix A. The Photos of Test Setup



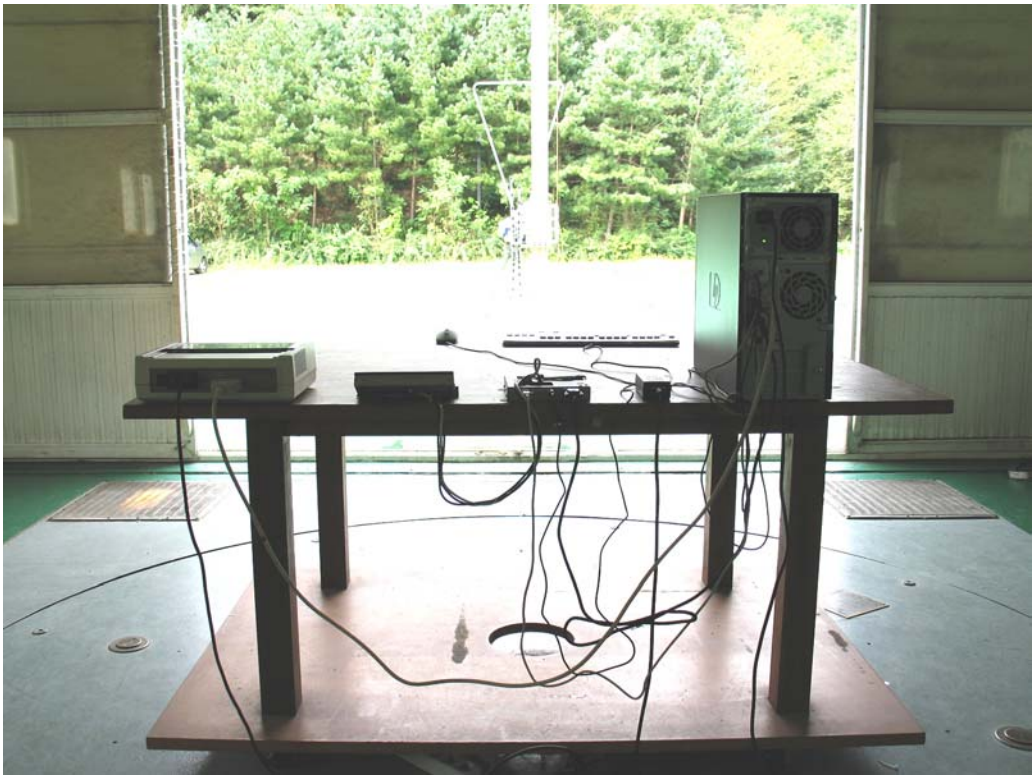
Conducted Emissions - Front View



Conducted Emissions - Rear View

Appendix A. The Photos of Test Setup

Radiated Emissions – Front View



Radiated Emissions – Rear View

Appendix B. The Photos of Equipment Under Test

Front View

Rear View

Appendix B. The Photos of Equipment Under Test

Adapter

Adapter label