TRC

Certificate of Compliance

Training Research Co., Ltd.

hereby certifies that

EMC TEST

24Port 10/100+2Port 10/100/1000 Ethernet Switch
Model No.: DES-1026G

Made by

D-Link Corp.

2F, No. 233-2, Pao-Chiao Rd., Hsin-Tien, Taipei, R.O.C.

is fulfilled

EMI: EN 55022:1998, EN61000-3-2: 2000, EN61000-3-3: 1995+A1: 2001
EMS: EN 61000-6-1/2001→ EN 61000-4-2/1995, EN 61000-4-3/1996, EN 61000-4-4/1995
EN 61000-4-5/1995, EN 61000-4-6/1996, EN 61000-4-8/1993, EN 61000-4-11/1994

Test Date: September 17, 2003
Verification Registration No.: D18CE216

October 22, 2003

Jacob Lin

V. General Manager, Jacob Lin

CE CE CE CE CE

Training Research Co., Ltd. (NVLAP LAB CODE: 200174-0)

Report No.	D18CE216
Directives	89/336/EEC EMC, Class A
Standard	EN 50081-1/EN 55024 (CE), ICES-003 (Canada)
Applicant	D-Link Corp.
Applicant address	2F, No. 233-2, Pao-Chiao Rd., Hsin-Tien, Taipei, R.O.C.
Items tested	24Port 10/100+2Port 10/100/1000 Ethernet Switch
Model No.	DES-1026G (Sample # C51064)
Results	**Compliance** (As detailed within this report)
Date	09/05/2003 (month / day / year)(Sample received) 09/17/2003 (month / day / year)(Tested)
Prepared by	Project Engineer
Authorized by	V. General Manager (Jacob Lin)
Issue date	October 22, 2003 (month / day / year)
Modifications	**None**
Tested by	Training Research Co., Ltd. **(Accredited by NVLAP)**
Office at	1F, No. 255, Nan Yang Street, Hsichih, Taipei Hsien 221, Taiwan
Open site at	No. 15, Lane 530, Pa-Lian RD., Sec. 1, Hsichih City, Taipei Hsien, Taiwan, R.O.C..

Conditions of issue :

- ***This test report shall not be reproduced except in full, without written approval of TRC. And the test result contained within this report only relate to the sample submitted for testing.***
- ***The test data in this test report are following the procedures in accordance with the terms of accreditation.***
- ***This test report and measurements made by TRC are traceable to the NIST only Conducted and Radiated Method (TRC is accredited by NVLAP, code No.: 200174-0).***
- ***The device has been tested is fully complied with the requirements the Directive 89/336/EEC (CE), AS/NZS CISPR 22: 2002 (C-Tick) and ICES-003 (Canada).***

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Chapter 0 Emission and Susceptibility Standards

Emission Standards

Emission Standard	European Standard	International Standard
(X)	EN 50081-1/1992	
( )	EN 50081-1/8.93	
( )	EN 55014/4.93	CISPR 14: 1993
( )	EN 55015/12.93	CISPR 15: 1992
( )	EN 55011/91	CISPR 11: 1990
(X)	EN 55022/1998	CISPR 22: 1997
(X)	EN61000-3-2:1995+A1:1998 +A2:1998	IEC 61000-3-2: 1995 /A1:1997/A2:1998
(X)	EN 61000-3-3/1995	IEC 61000-3-3: 1994

Susceptibility Standards

Susceptibility Standard	European Standard	International Standard
( )	EN 50082-1/1997	
(X)	EN 55024/1998	
( )	EN 50082-2/1994	
( )		IEC 801-2/1984
( )		IEC 801-3/1984
( )		IEC 801-4/1988
( )		IEC 804-5
(X)	EN 61000-4-2:1995	IEC 61000-4-2:1995
(X)	EN 61000-4-3:1996	IEC 61000-4-3:1995(mod)
(X)	EN 61000-4-4:1995	IEC 61000-4-4:1995
(X)	EN 61000-4-5:1995	IEC 61000-4-5:1995
(X)	EN 61000-4-6:1996	IEC 61000-4-6:1996
(X)	EN 61000-4-8:1993	IEC 61000-4-8:1993
(X)	EN 61000-4-11:1994	IEC 61000-4-11:1994
( )	EN 55014-2:1993	CISPR/F (Sec) 159
( )		

Chapter 1 Introduction

Description of EUT:

This EUT is a data transmission / receiving facility. It was connected to LAN card installed in the PC or compatible computer and makes your data equipment available to transmit / receive data via the EUT.

Test method:

Pretest was found that the emission of operating mode is worse than standby mode. So, The final test is made at the operating mode.

This EUT has two kinds of Power Supply, one is "UMEC UP0131A-05", the other is "DVE DSO-15W-05".

During testing, the EUT was operated at "transmitting" and "receiving" mode simultaneously. The test voltage is 230Vac / 50Hz.

During testing, there are ten modes were tested:

- UMEC UP0131A-05 10 x 10 Mbps
- UMEC UP0131A-05 100 x 100 Mbps
- UMEC UP0131A-05 1000 x 1000 Mbps
- UMEC UP0131A-05 1000 x 10 Mbps
- UMEC UP0131A-05 1000 x 100 Mbps
- DVE DSO-15W-05 10 x 10 Mbps
- DVE DSO-15W-05 100 x 100 Mbps
- DVE DSO-15W-05 1000 x 1000 Mbps
- DVE DSO-15W-05 1000 x 10 Mbps
- DVE DSO-15W-05 1000 x 100 Mbps

The conduction pretest was found out the testing mode: "UMEC UP0131A-05 100 x 100 Mbps" was the worst cases.

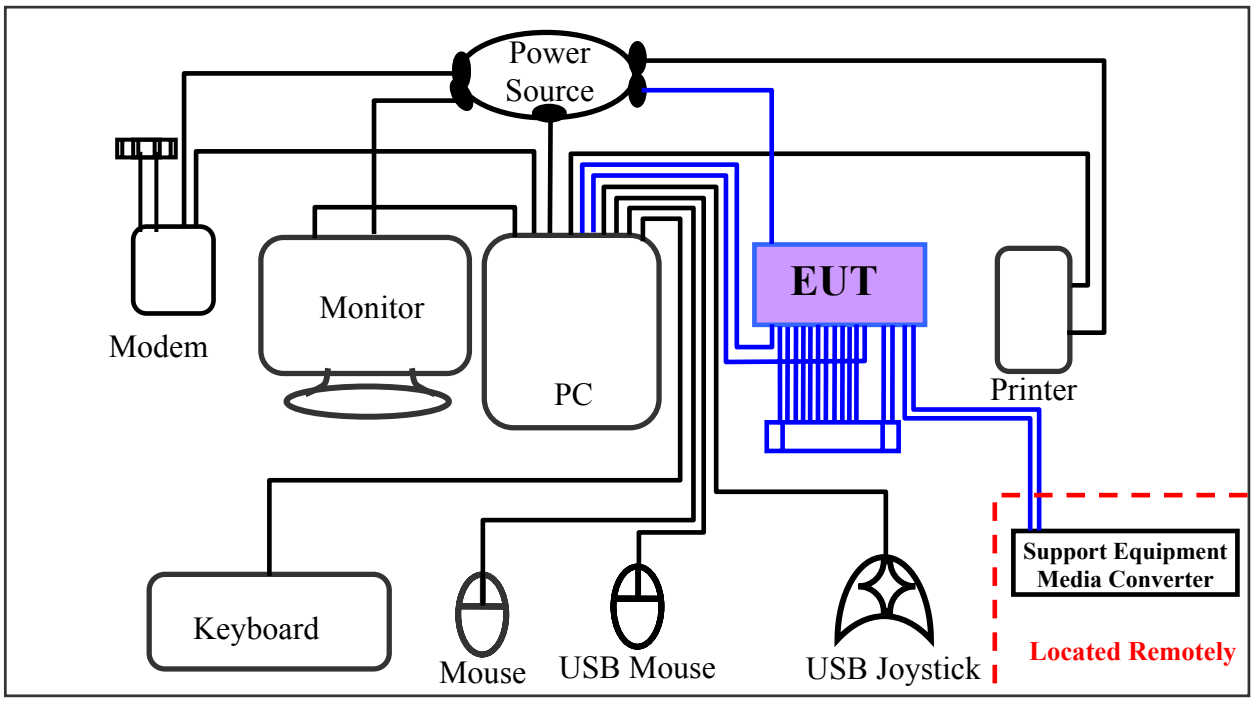
The radiation pretest was found out the testing mode: "UMEC UP0131A-05 1000 x 1000 Mbps" was the worst cases.

We only recorded the worst case in this report.

The test placement as the photographs showed is the worst case emission placed. (If the emission is close to the ambient, the resolution BW and view resolution will be reduced and the data will be recorded by detection of maximum hold peak mode.)

The testing configuration of test setup is showing in the next page.

Configuration of test setup (Test Mode: 10 x 10 Mbps & 100 x 100 Mbps)



Connections:

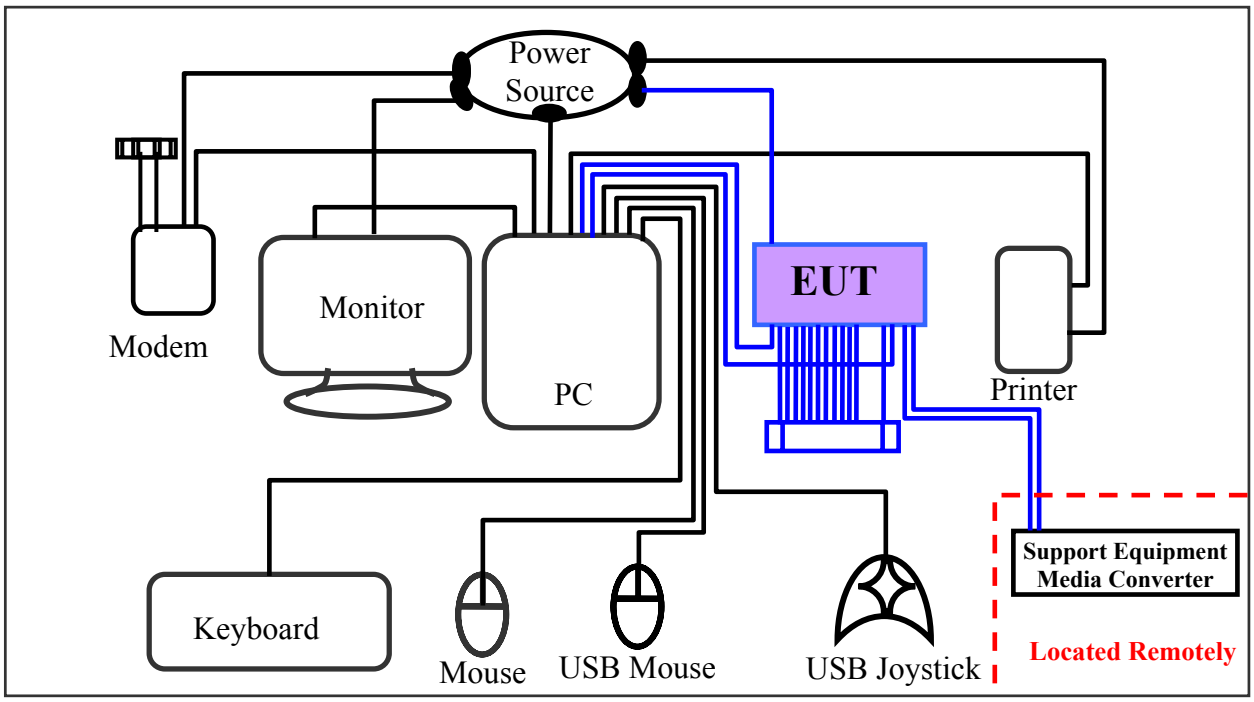
PC:

*Serial Port --- via a 110cm shielded RS-232 cable to modem.
*Monitor Port --- a monitor with 1.5m length data cable.
*Keyboard port --- a keyboard with 1.50m length data cable.
*Mouse port --- a mouse with 1.50m length data cable.
*USB port A --- a USB joystick with 1.5m long, shielded, no ferrite bead data cable.
*USB port B --- a USB mouse with 1.8m long, shielded, no ferrite bead data cable.
*Printer port --- a printer with 1.80m length data cable.

EUT:

*UTP port 1 --- via a 1m length RJ-45 cable to the RJ-45 jack of the LAN card that installed in nearby PC.
*UTP port 2~23 --- connect with a 2m length RJ-45 cable that terminated with 200ohm.
*UTP port 24 --- via a 10m long, non-shielded, no ferrite bead, RJ-45 cable to the RJ-45 jack of the LAN card that installed in nearby PC.
*Gigabit UTP port 1, 2 --- connect with a 2m length RJ-45 cable that terminated with 200ohm.
*Fiber port 1, 2 --- with a Gigabit module and via a 5m length fiber cable to the support equipment media converter..
*Power port --- via a 1.80m length power cable with a power adaptor to the power source.
*Power module --- Trade: DVE; Model: DSO-15W-05; I/P: 100-240Vac; O/P: 5Vdc 3.0A
*Power module --- Trade: UMEC; Model: UP0131A-05; I/P: 100-240Vac; O/P: 5Vdc 3.0A

Configuration of test setup (Test Mode: 1000 x 100 Mbps & 1000 x 10 Mbps)



Connections:

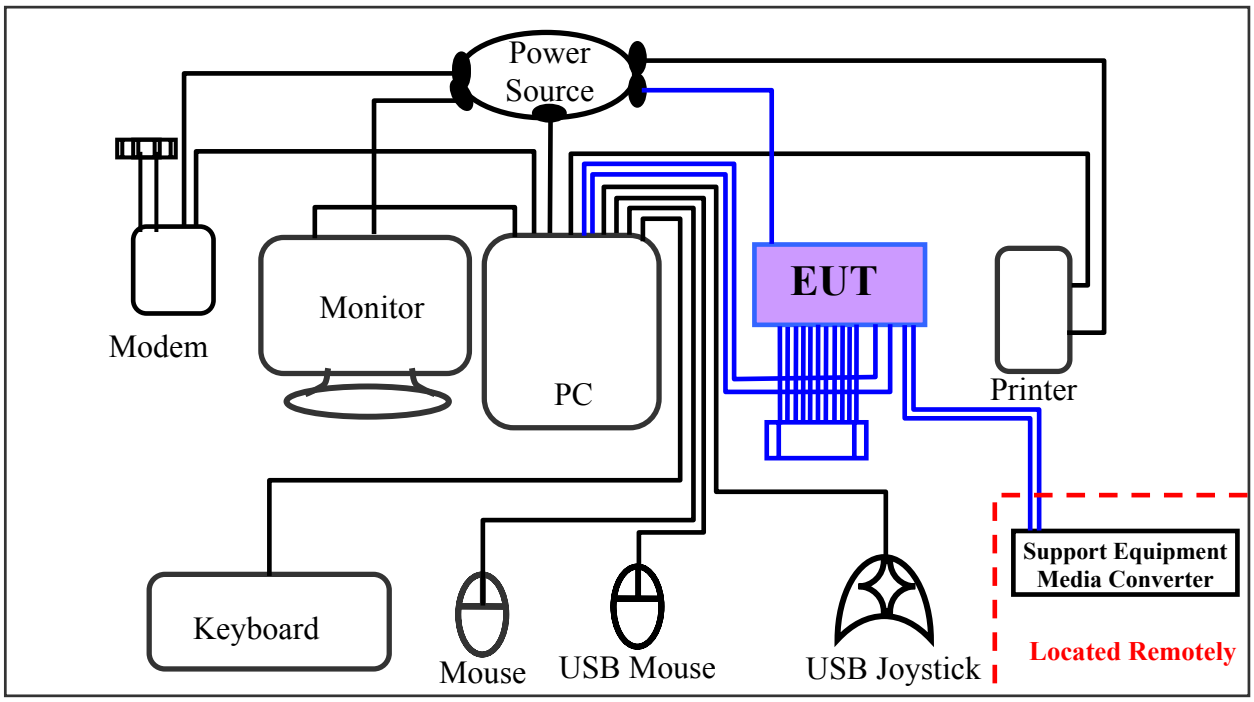
PC:

*Serial Port --- via a 110cm shielded RS-232 cable to modem.
*Monitor Port --- a monitor with 1.5m length data cable.
*Keyboard port --- a keyboard with 1.50m length data cable.
*Mouse port --- a mouse with 1.50m length data cable.
*USB port A --- a USB joystick with 1.5m long, shielded, no ferrite bead data cable.
*USB port B --- a USB mouse with 1.8m long, shielded, no ferrite bead data cable.
*Printer port --- a printer with 1.80m length data cable.

EUT:

*UTP port 1 --- via a 1m length RJ-45 cable to the RJ-45 jack of the LAN card that installed in nearby PC.
*UTP port 2~24 --- connect with a 2m length RJ-45 cable that terminated with 200ohm.
*Gigabit UTP port 1 --- connect with a 2m length RJ-45 cable that terminated with 200ohm.
*Gigabit UTP port 2 --- via a 10m long, non-shielded, no ferrite bead, RJ-45 cable to the RJ-45 jack of the LAN card that installed in nearby PC.
*Fiber port 1, 2 --- with a Gigabit module and via a 5m length fiber cable to the support equipment media converter..
*Power port --- via a 1.80m length power cable with a power adaptor to the power source.
*Power module --- Trade: DVE; Model: DSO-15W-05; I/P: 100-240Vac; O/P: 5Vdc 3.0A
*Power module --- Trade: UMEC; Model: UP0131A-05; I/P: 100-240Vac; O/P: 5Vdc 3.0A

Configuration of test setup (Test Mode: 1000 x 1000 Mbps)



Connections:

PC:

*Serial Port --- via a 110cm shielded RS-232 cable to modem.

*Monitor Port --- a monitor with 1.5m length data cable.

*Keyboard port --- a keyboard with 1.50m length data cable.

*Mouse port --- a mouse with 1.50m length data cable.

*USB port A --- a USB joystick with 1.5m long, shielded, no ferrite bead data cable.

*USB port B --- a USB mouse with 1.8m long, shielded, no ferrite bead data cable.

*Printer port --- a printer with 1.80m length data cable.

EUT:

*UTP port 1~24 --- connect with a 2m length RJ-45 cable that terminated with 200ohm.

*Gigabit UTP port 1, 2 --- via a 10m long, non-shielded, no ferrite bead, RJ-45 cable to the RJ-45 jack of the LAN card that installed in nearby PC.

*Fiber port 1, 2 --- with a Gigabit module and via a 5m length fiber cable to the support equipment media converter..

*Power port --- via a 1.80m length power cable with a power adaptor to the power source.

*Power module --- Trade: DVE; Model: DSO-15W-05; I/P: 100-240Vac; O/P: 5Vdc 3.0A

*Power module --- Trade: UMEC; Model: UP0131A-05; I/P: 100-240Vac; O/P: 5Vdc 3.0A

List of support equipment

Conducted (Radiated) test:

PC	:	**HP Brio 85xx 6/350**
Model No.	:	D6928A
Serial No.	:	SG91801432; SG91801552
FCC ID	:	Doc Approved
Power type	:	100 ~ 230VAC / 50 ~ 60Hz, 5A, Switching
Power cord	:	Non-shielded, 2.33m long, Plastic, No ferrite core

Monitor	:	**HP 15' Color Monitor**
Model No.	:	D2827A
Serial No.	:	KR91161719
FCC ID	:	C5F7NFCMC1518X
Power type	:	110 ~ 240 VAC / 50 ~ 60 Hz, Switching
Power cord	:	Shielded, 1.83m long, No ferrite core
Data cable	:	Shielded, 1.46m long, with two ferrite cores

Keyboard	:	**HP**
Model No.	:	SK-2501K
Serial No.	:	MR80700789
FCC ID	:	GYUR38SK
Power type	:	By PC
Data cable	:	Shielded, 1.73m long, with ferrite core

Mouse	:	**HP**
Model No.	:	M-S34
Serial No.	:	LZB90714106
FCC ID	:	DZL211029
Power type	:	By PC
Power cord	:	Non-shielded, 1.88m long, No ferrite core

USB Mouse	:	**Logitech Wheel Mouse**
Model No.	:	M-BJ-58
Serial No.	:	LN20901985
FCC ID	:	Doc Approved
Power type	:	By PC
Power cord	:	Non-shielded, 1.88m long, No ferrite core

Modem	:	**ACEEX**
Model No.	:	XDM-9624
FCC ID	:	IFAXDM-9624
Power type	:	220VAC, 50Hz / 9VAC, 1A
Power cord	:	Non-shielded, 1.9m long, No ferrite cord
Data cable	:	RS232, Shielded, 1.2m long, No ferrite core RJ11C x 2, 7' long non-shielded, No ferrite core

Printer	:	**HP**
Model No.	:	C2642A
Serial No.	:	SG69A196GV
FCC ID	:	B94C2642X
Power type	:	220 VAC, 50Hz
Power cord	:	Non-shielded, 2m long, no ferrite core
Data cable	:	Shielded, 1.84m (1.7m) long, no ferrite core

USB Joystick	:	**Rockfire**
Model No.	:	QF-337uv
Serial No.	:	10600545
FCC ID	:	CE Approval
Power type	:	Powered by PC
Power cable	:	Shielded, 1.8m long, No ferrite bead data cable

PC	:	**HP Vectra VE**
Model No.	:	D6970A
Serial No.	:	SG53000707
FCC ID	:	Doc Approved
Power type	:	100 ~ 230VAC / 50 ~ 60Hz, 5A, Switching
Power cord	:	Non-shielded, 2.30m long, Plastic, No ferrite core

Chapter 2 Conducted Emission Test

Test condition and setup:

(1) Mains:

All the equipment is placed and setup according to the EN 55022.

The EUT is assembled on a wooden table that is 80 cm high, is placed 40 cm from the back-wall that is a vertical conducting plane. One LISN is for EUT, the other LISN is for support equipment. They are all placed on the conductive ground. The EUT's LISN connect a line switch box for selecting L1 or L2, then connect to a preamplifier and spectrum for pretest.

The spectrum measured from 150KHz to 30MHz. Conducted emission levels are detected at max. peak mode. But if the max. peak mode failed or over average limit, it will be measured by QP and average detection mode using the Receiver.

While testing, there is the worst-emission plot printed at peak detection mode, and there are more than 6 highest emissions relative to limit recorded. The plot is kept as the original data, not included in test report.

(2) Telecommunication ports:

The EUT is placed as mains disturbance test. The communication line connected to the ISN and then the measuring receiver connected to the ISN to measured the level of voltage disturbance.

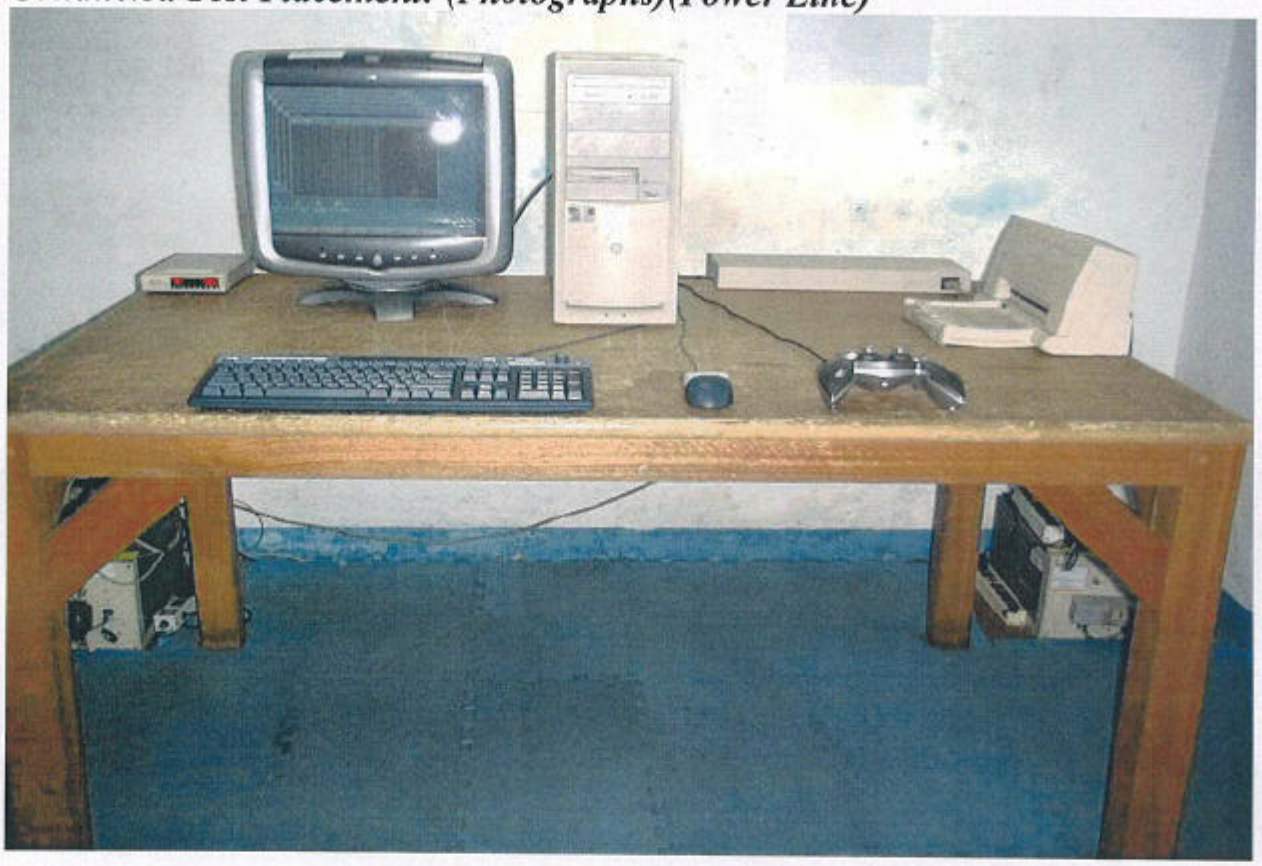
List of test Instrument :

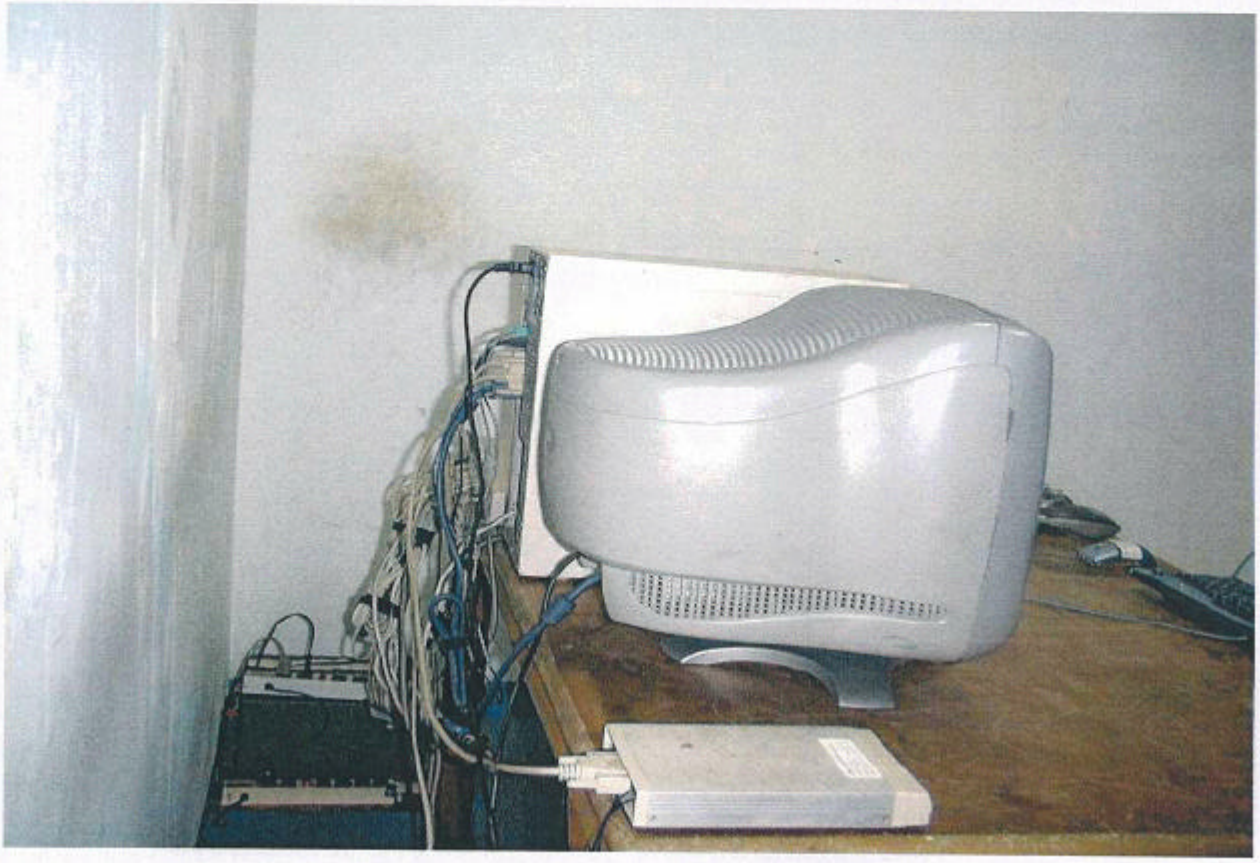
				Calibration Date	
Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
Receiver	SCR3102	SCHAFFNER	012	04/22/03	04/21/04
LISN (EUT)	3825/2	EMCO	9411-2284	07/21/03	07/20/04
LISN (Support E.)	3825/2	EMCO	9210-2007	09/03/03	09/02/04
Preamplifier	CB-001	TRC	98-02	05/29/03	05/28/04
Line switch box	CB-01	TRC	98-04	05/29/03	05/28/04
1dB Attenuator	CAT-1	mini-circuits	---------	05/29/03	05/28/04
FTB-1-6 Attenuator	15542	mini-circuits	9620 03	05/29/03	05/28/04
20dB Attenuator	CAT-20	mini-circuits	9620 13	05/29/03	05/28/04
3dB Attenuator	CAT-3	mini-circuits	9620 14	05/29/03	05/28/04
Coixal Cable	BNC3200B-0058	Jyebao	CL-05	05/29/03	05/28/04
Coixal Cable	BNC31VB-0316	Jyebao	IF-01ca0069-036	05/29/03	05/28/04
50ohm terminator	370BNM	NARDA	PWR5W	07/21/03	07/20/04
50ohm terminator	370BNM	NARDA	PWR5W	07/21/03	07/20/04
50ohm terminator	370BNM	NARDA	PWR5W	09/03/03	09/02/04
50ohm terminator	370BNM	NARDA	PWR5W	09/03/03	09/02/04

The level of confidence of 95% , the uncertainty of measurement of conducted emission is +3.1/-4.84 dB .

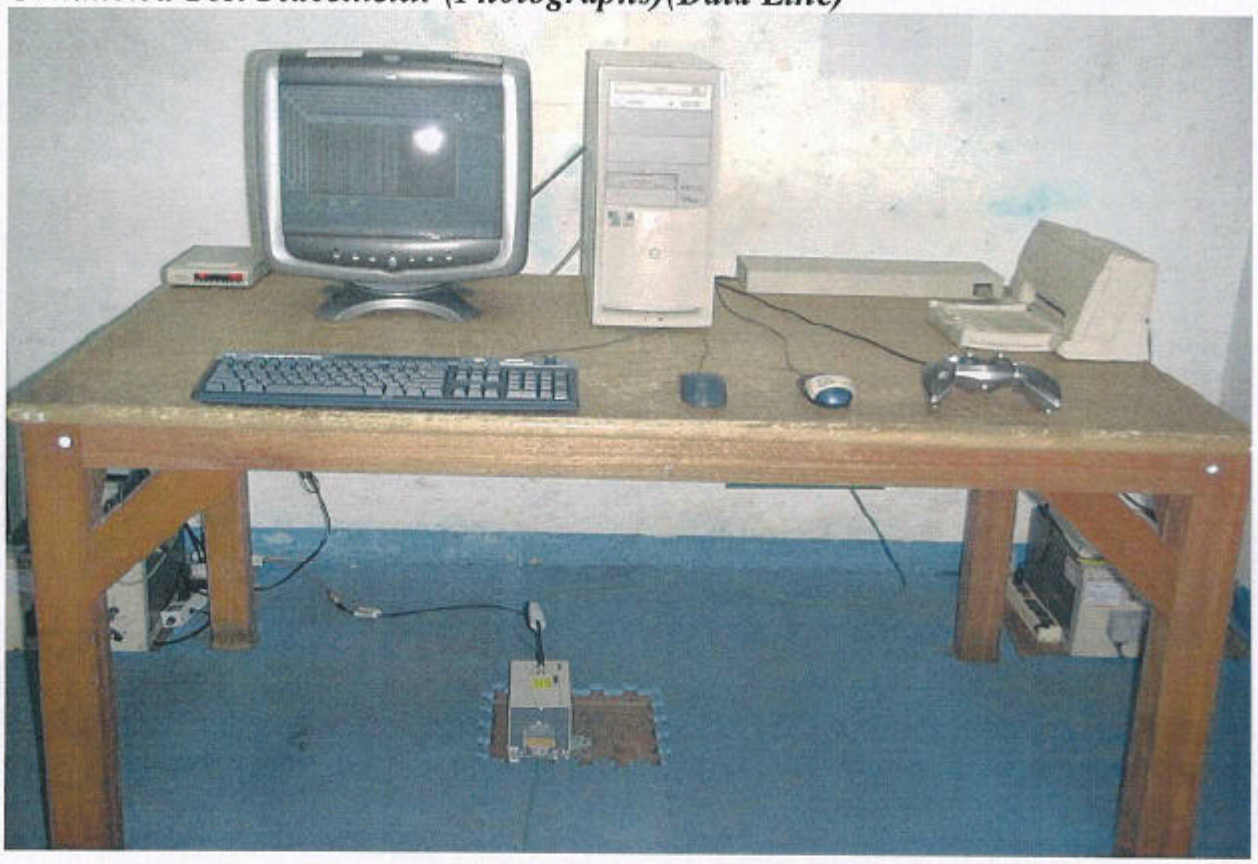
Test Result : Pass (Appendix A)

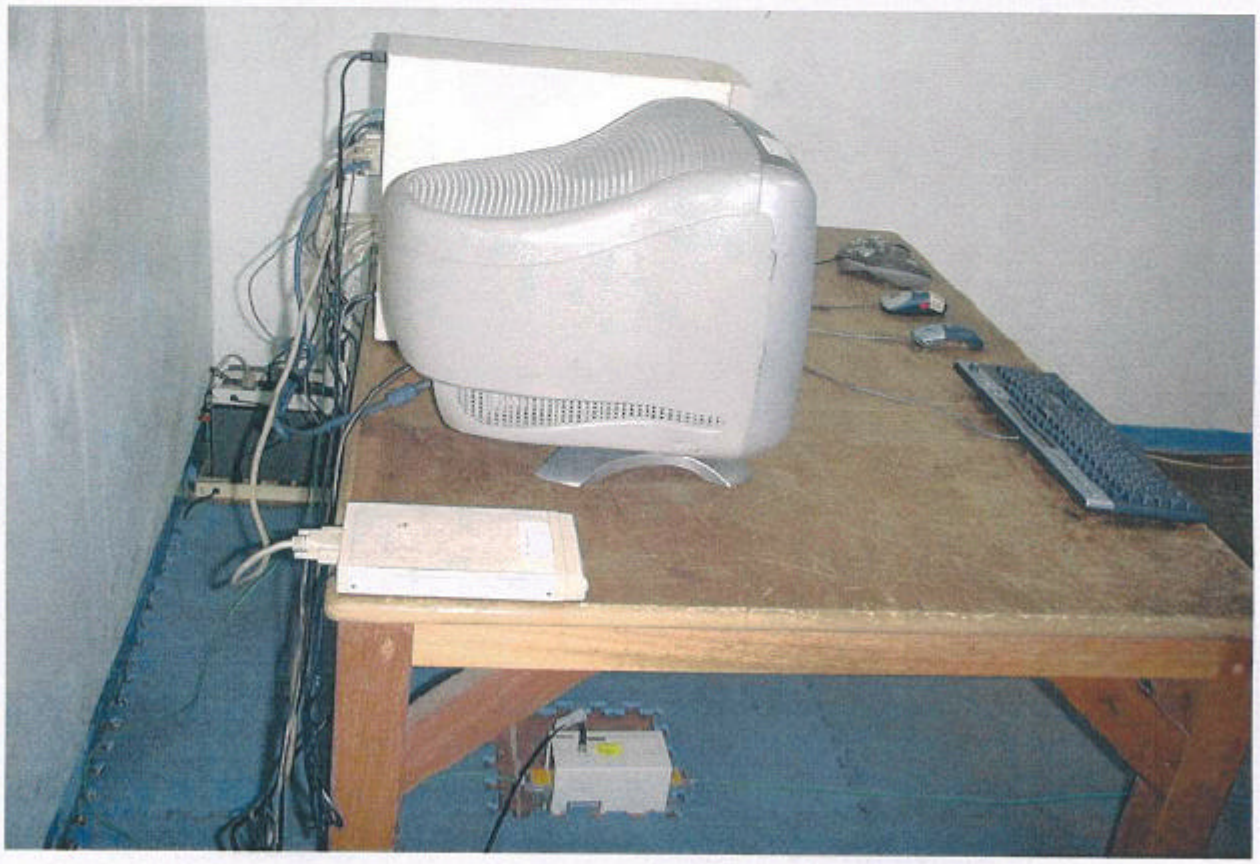
Conducted Test Placement: (Photographs)(Power Line)





Conducted Test Placement: (Photographs)(Data Line)





Chapter 3 Radiated emission test

Test condition and setup :

Pretest: Prior to the final test (OATS test), the EUT is placed in a shielded enclosure, and scan from 30MHz to 1GHz. This is done to ensure the radiation is exactly emitted from the EUT.

Final test : Final radiation measurements is made on a **10 – meter,** open-field test site. The EUT is placed on a nonconductive table, which is 0.8m height, the top surface is 1.0 x 1.5 meter. The placement is according to EN 55022.

The M. E. whole range Antenna is used to measure frequency from 30 MHz to 1GHz. The final test is used the Receiver.

Measure more than six top marked frequencies generated form pretest by computer step by step at each frequency. The EUT is rotated 360 degrees, and antenna is raised and lowered from 1 to 4 meters to find the maximum emission levels. The antenna is used with both horizontal and vertical polarization.

Appropriated preamplifier that is made by TRC is used for improving sensitivity and precaution is taken to avoid overloading. The spectrum analyzer's 6dB bandwidth is set to 120 K Hz, and the EUT is measured at quasi-peak mode.

If the emission is close to the frequency band of ambient, the tester will recheck the data and the corrected data will be written in the test data sheet. If the emission is just within the ambient, the data from shielded room will be taken as the final data.

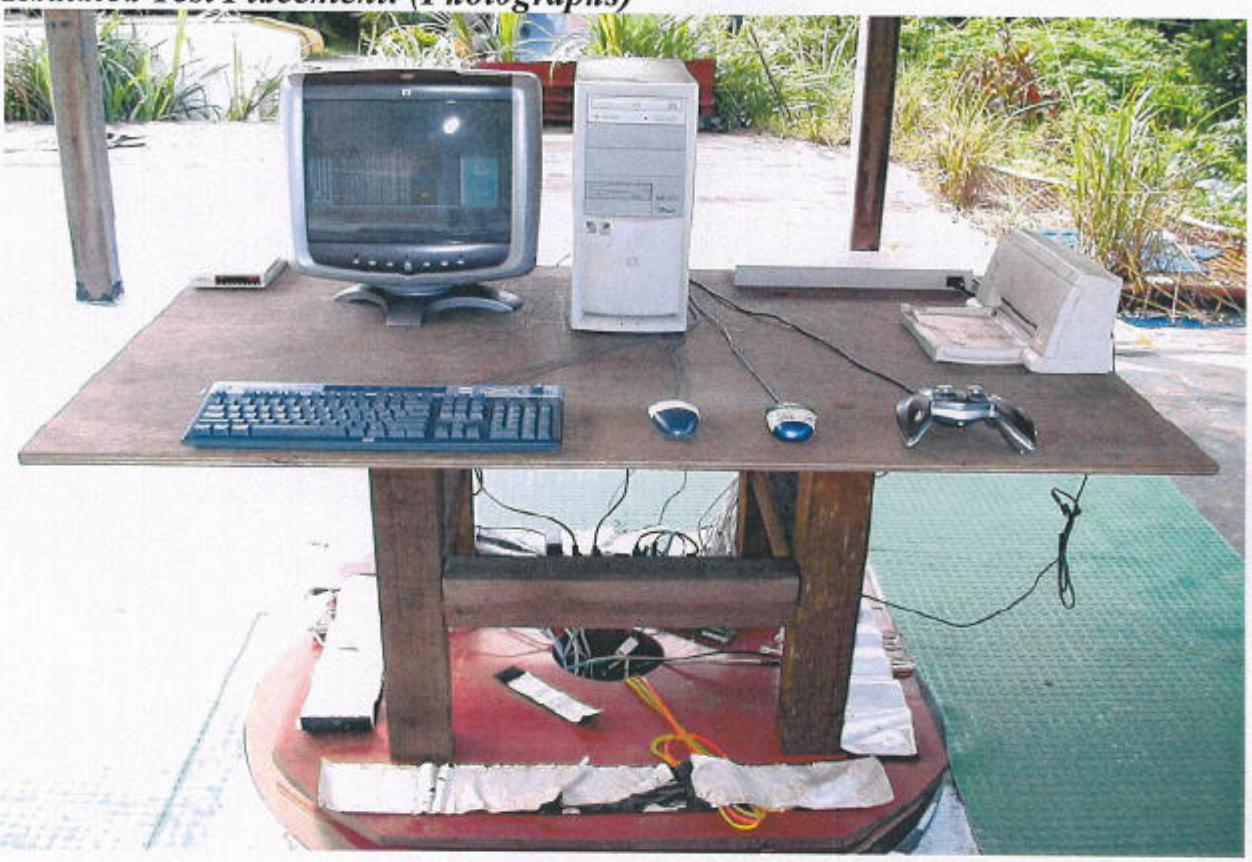
List of test Instrument :

				Calibration Date	
Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
Receiver	SCR3102	SCHAFFNER	012	04/22/03	04/21/04
Control Box	TWR95-4	TRC	C9001-2	N/A	N/A
Antenna	CBL6141A	SCHAFFNER	4206	05/27/03	05/26/04
Open test side (Antenna, Amplify, cable calibrated together)				05/29/03	05/28/04
Pre-amplifier	TRC-CB-2	TRC	CB-002	05/29/03	05/28/04
Coixal Cable(20meter)	RG-214/U	Jyebao	CL-002	05/29/03	05/28/04
Coixal Cable(50cm)	BNC31VB-0316	Jyebao	CL-002	05/29/03	05/28/04
Coixal Cable(20cm)	BNC31VB-0318	Jyebao	CL-007	05/29/03	05/28/04
Coixal Cable(55cm)	BNC31VB-0316	Jyebao	CL-006	05/29/03	05/28/04
Coixal Cable(55cm)	BNC31VB-0316	Jyebao	CL-005	05/29/03	05/28/04

The level of confidence of 95%, the uncertainty of measurement of radiated emission is +2.85/-2.77 dB.

Test Result : Pass (Appendix B)

Radiated Test Placement: (Photographs)



Chapter 4 Radio Frequency Immunity Test (RS)

Test information:

Test setup: Anechoic Chamber

Test Frequency: (X) 80 ~ 1000 MHz
( ) 27 ~ 500 MHz Without Modulation

Modulation: ( ) FM %
(X) 80% AM Modulation with 1KHz
( ) 900 KHz ± 5 KHz with PM 200 Hz and 100% depth

Step size: (X) ≤ 1% step size

Sweep time: (X) 2.5 Second

Field strength: ( ) 1V/m (X) 3V/m ( ) 10V/m

Test mode: Ref. Test method of Chapter 1

Test instruments:

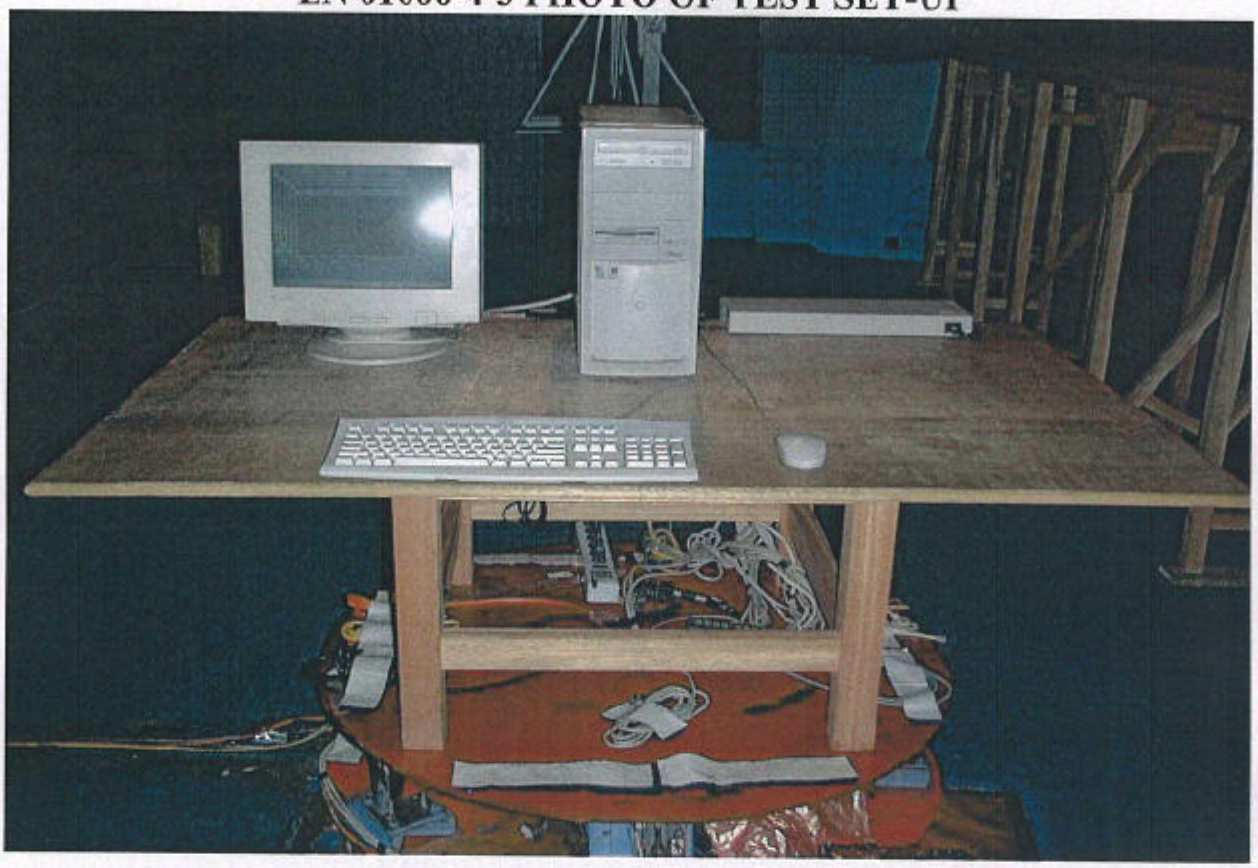
Name	Model Number	Serial Number	Selected
Shielding Room	AC5-001	N / A	X
DC Power Supply	GPR-3520H	7090069	X
Signal Generator	900	287104	X
Amplifier	AC5-002	N / A	X
Power Meter	1219-D-007	157	X
Spectrum Analyzer	8594EM	3710A00198	X
Preamplifier	AC3-002	N / A	X

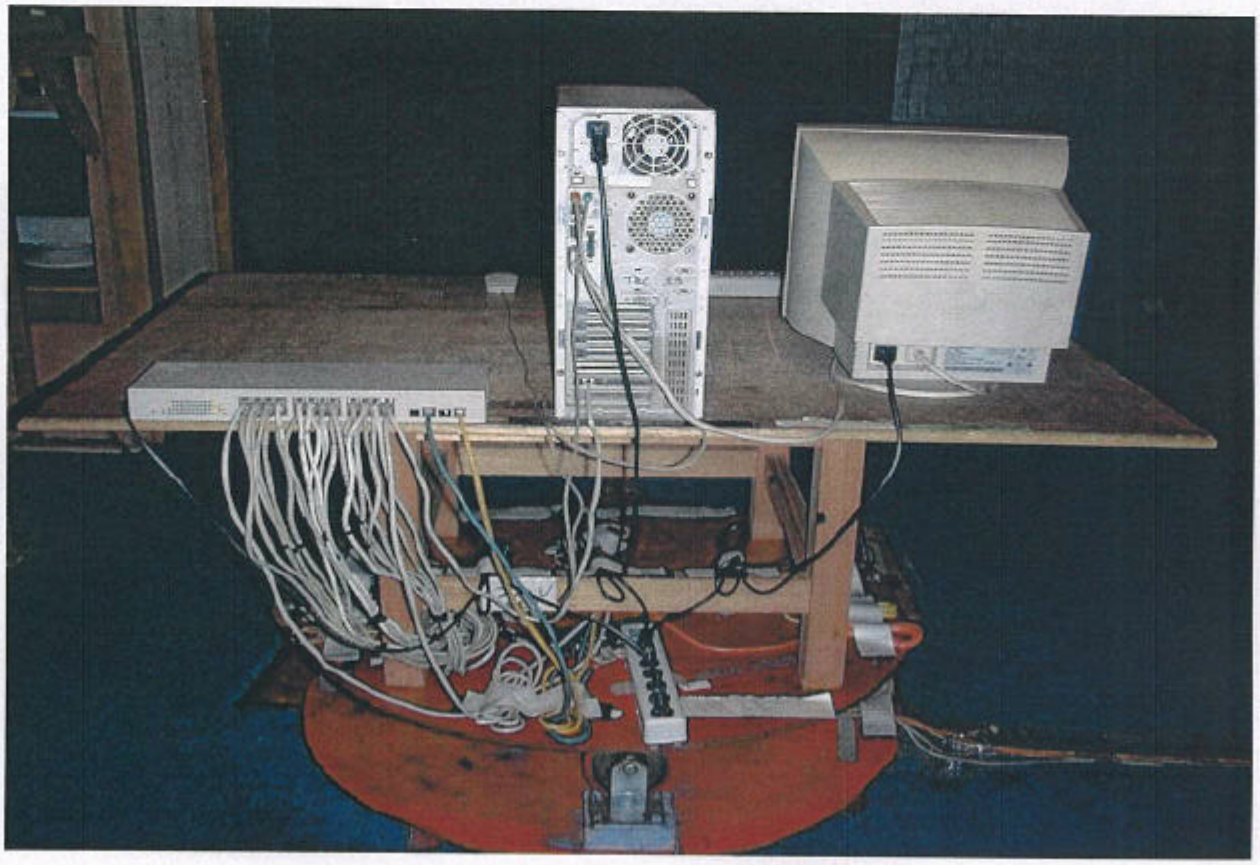
Comment:

Performance Criteria (X) A ( ) B ( ) C

Test Result : Pass

EN 61000-4-3 PHOTO OF TEST SET-UP





Chapter 5 Electric Fast Transient/Burst Requirements Test

Test information:

Test setup: According to EN 61000-4-4

Test Voltage: DC Power line ( ) 0.5 KV, 5 KH

AC Power line (X) 1 KV, 5 KHz

Signal & Control line (X) 0.5 KV, 5 KHz

( ) 1 KV, 5 KHz

Polarity: (X) Positive (X) Negative

Test Duration: ( ) 1 minute (X) 3 minutes

Connected lines: ( ) Power line shielded

(X) Power line non-shielded

(X) Signal & Control line non-shielded

( ) Signal & Control line shielded

Test mode: Ref. Test method of Chapter 1.

Test instruments:

Name	Model Number	Serial Number	Selected
BEST EMC Test Instrument	BEST EMC V2.3 (-8, -9)	199918-006SC	X
Induction Coil	INA 701 BEST	199922-001SC	X

Comment:

Performance Criteria ( ) A (X) B ( ) C

Test Result : Pass

EN 61000-4-4 PHOTO OF TEST SET-UP

Chapter 6 Electrostatic Discharges Immunity Test

Test information:

Test setup: Shielded Room

Test Voltage: (X) 4KV contact discharge
(X) 8KV air discharge

Indirect Discharges: (X) HCP
(X) VCP

Polarity: (X) positive (X) negative

Test mode: Ref. Test method of Chapter 1

Test points: Each Port of EUT

Test instruments:

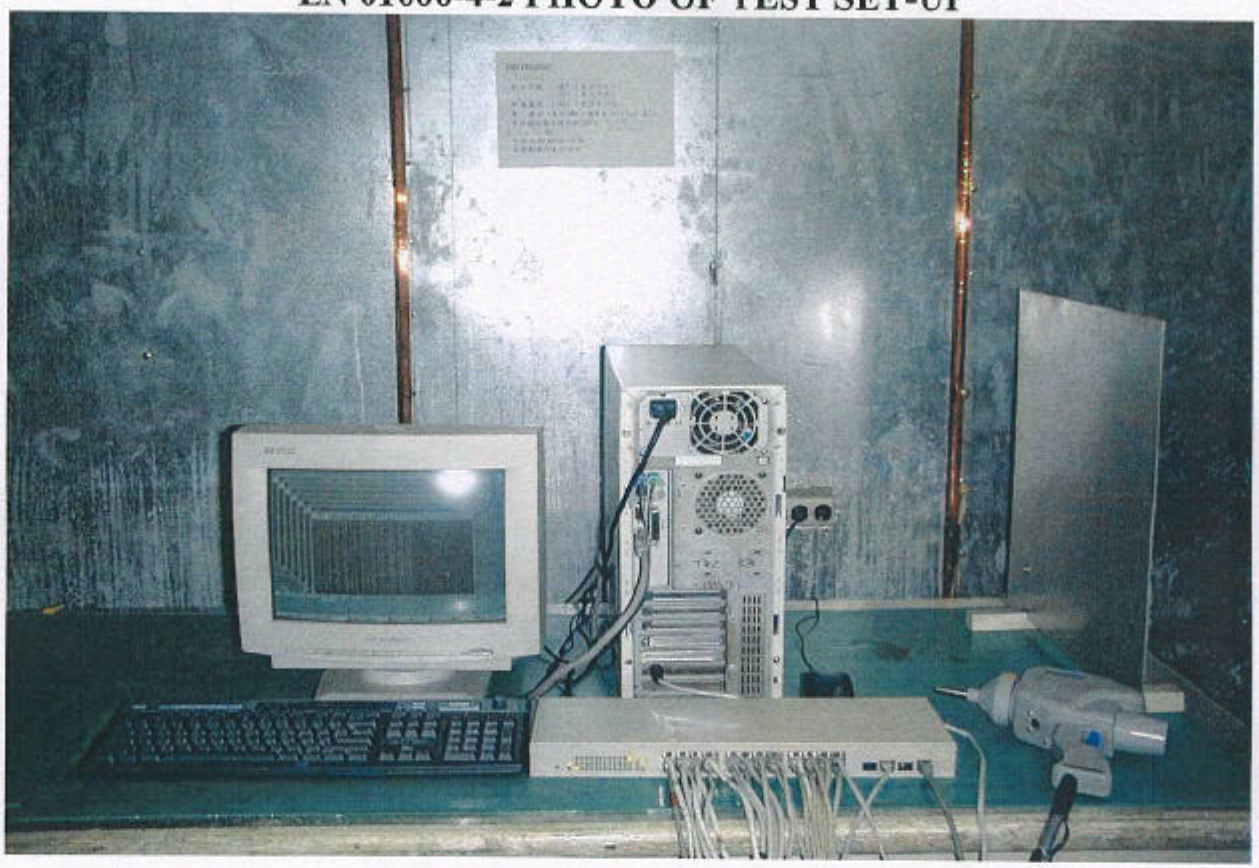
Name	Model Number	Serial Number	Selected
NoiseKen Electrostatic Discharge Simulator	ESS-100L(A)	2100C03605	X
NoiseKen Electrostatic Discharge Gun	TC-815P	2100C03566	X

Comment:

Performance Criteria ( ) A (X) B ( ) C

Test Result : Pass

EN 61000-4-2 PHOTO OF TEST SET-UP



Chapter 7 Surge Immunity Test

Test information:

Test setup: According to EN 61000-4-5

Test Voltage: DC Power line ( ) 0.5 KV
AC Power line (X) 2 KV
Control line ( ) 0.5 KV
Signal ( ) 2 KV

Time : (X) 1.2/50μs (8/20μs)

Polarity: (X) Positive (X) Negative

Connected lines: ( ) Power line shielded (X) Power line non-shielded
( ) Signal & Control line non-shielded ( ) Signal & Control line shielded

Test mode: Ref. Test method of Chapter 1.

Test instrument:

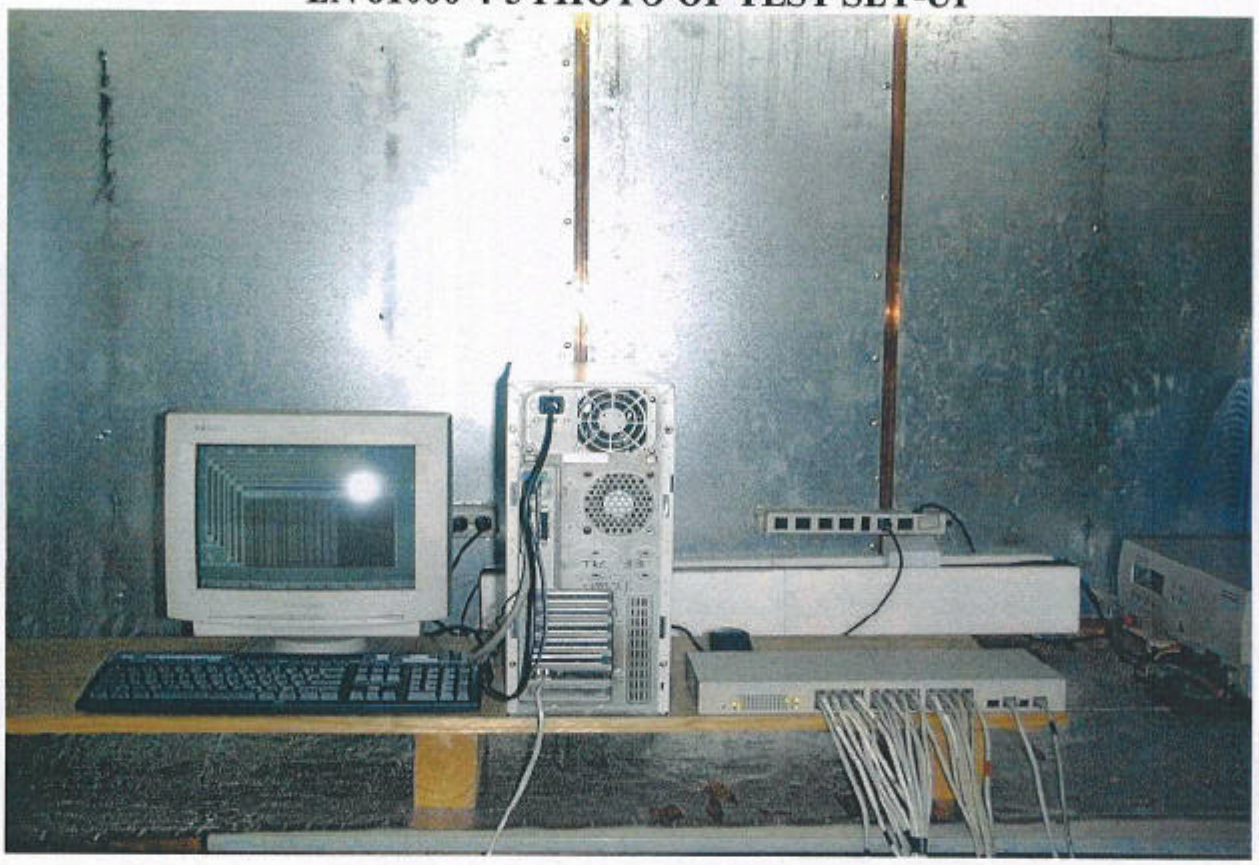
Name	Model Number	Serial Number	Selected
BEST EMC Test Instrument	BEST EMC V2.3 (-8, -9)	199918-006SC	X
Induction Coil	INA 701 BEST	199922-001SC	X
KeyTek Pulsed-EMI Test System	E103, E501B, E502B, E503, E505A, E4552A	0008260 ~0008264, 0008254	

Comment:

Performance Criteria: ( ) A (X) B ( ) C

Test Result : Pass

EN 61000-4-5 PHOTO OF TEST SET-UP



Chapter 8 Continuous Wave Voltage Immunity Test

Test information:

Test setup: According to EN 61000-4-6

Test Frequency: (X) 0.15 ~ 80MHz

Modulation: ( ) FM %
(X) 80% AM Modulation with 1KHz
( ) 900 MHz ± 5 MHz with PM 200 Hz and 50% duty cycle

Step size: (X) ≤ 1% step size
Field strength: ( ) 1V (X) 3V ( ) 10V

Test mode: Ref. Test method of Chapter 1
Test instruments:

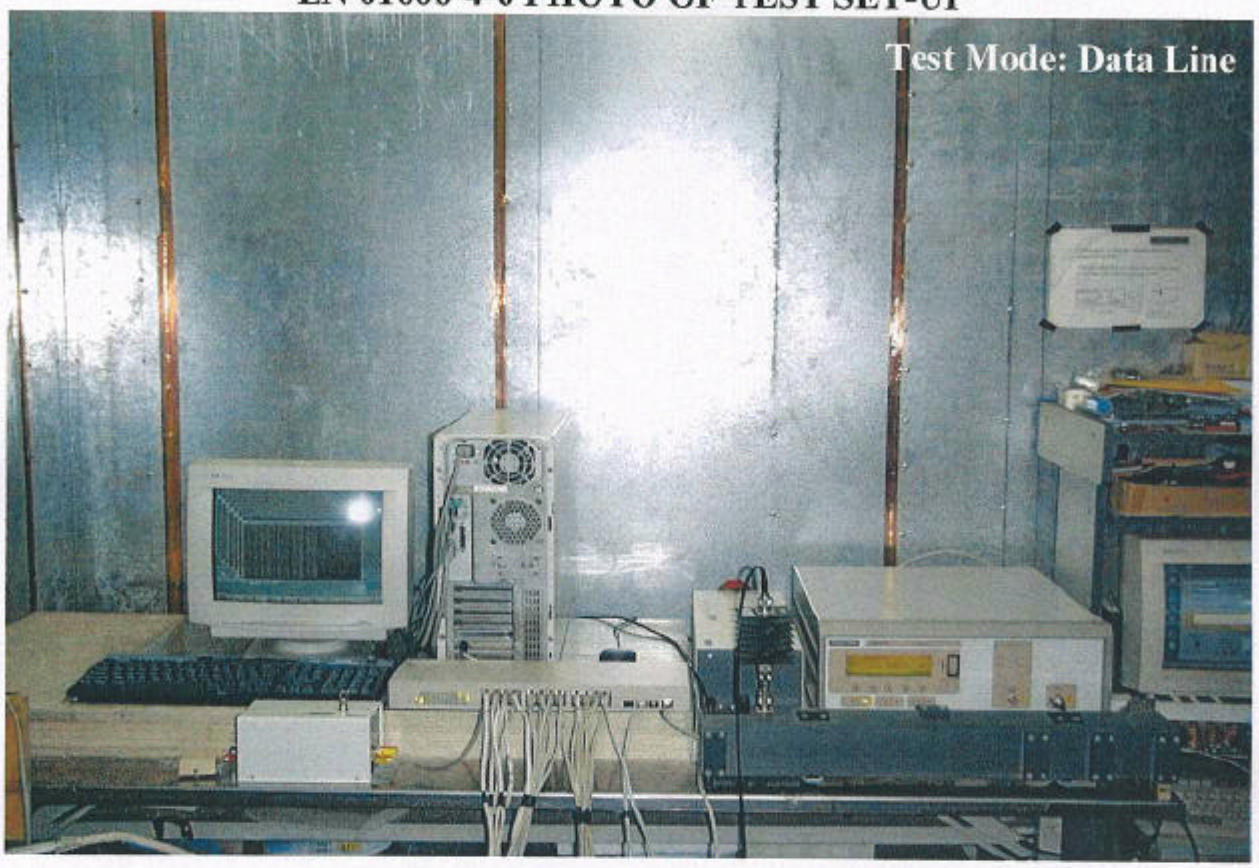
Name	Model Number	Serial Number	Selected
SCHAFFNER RF-SYNTHE SIZERIAMP2IFIER	NSG 2070-1	1020	X
SCHAFFNER CDN	M325	13773	X
SCHAFFNER CDN	M216	15604	
SCHAFFNER CDN	T004	15230	X
SCHAFFNER CDN	S501	15167	
SCHAFFNER FM-Koppelzange	KEMZ 801	14301	

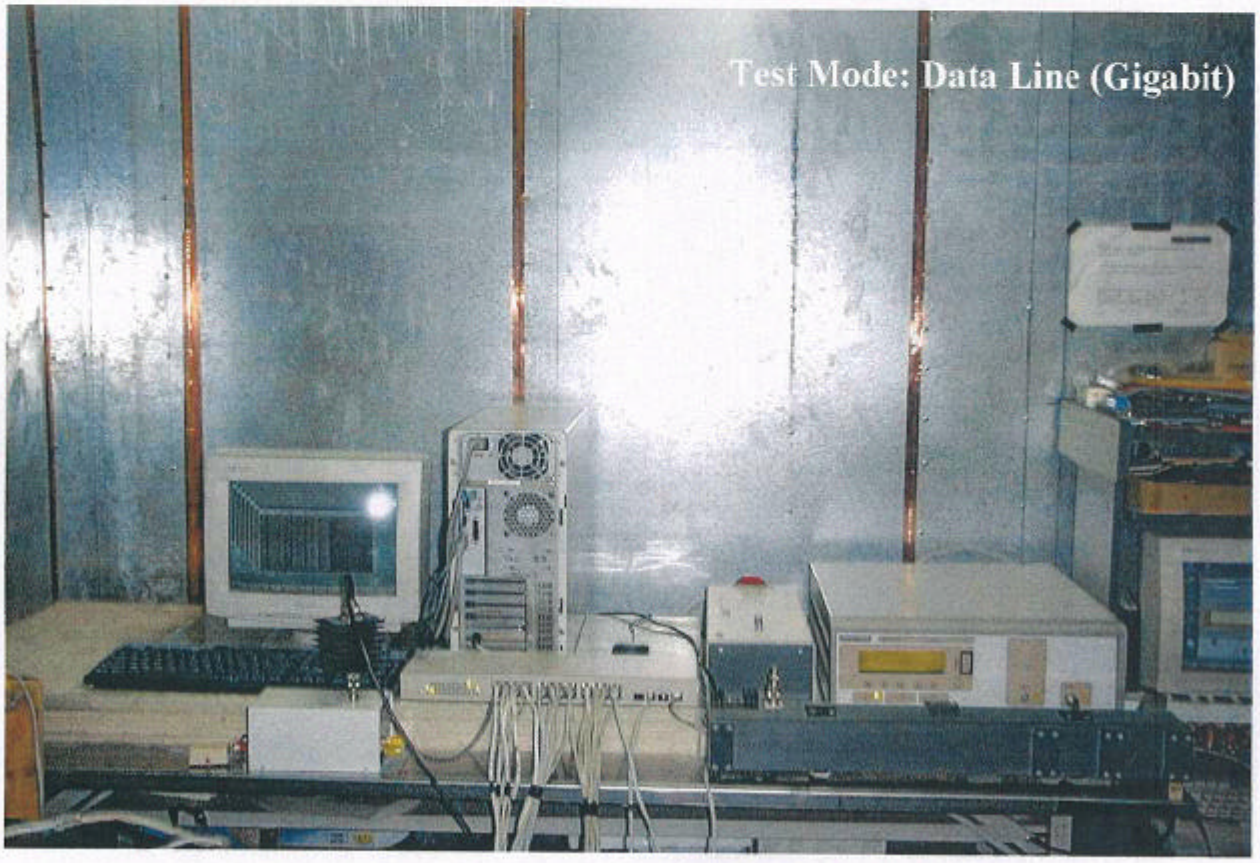
Comment:

Performance Criteria: (X) A ( ) B ( ) C

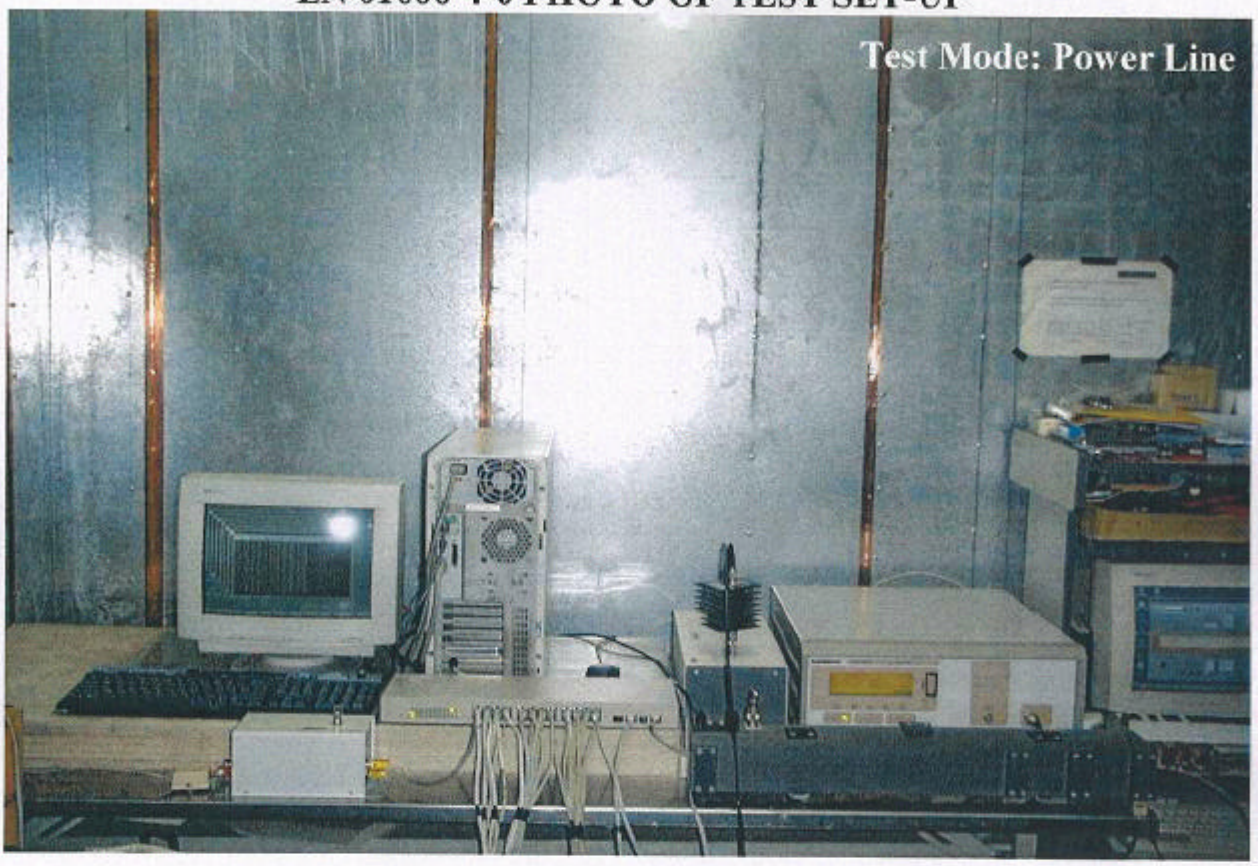
Test Result : Pass

EN 61000-4-6 PHOTO OF TEST SET-UP





EN 61000-4-6 PHOTO OF TEST SET-UP



Chapter 9 Power Frequency Magnetic Field Immunity Test

Test information:

Test setup: According to EN 61000-4-8

Test method : (X) Continuous ( ) Short duration

Magnetic Field Strength:(X) 1A/m

Frequency: 50Hz

polarization: (X) X polarization (X) Y polarization (X) Z polarization

Test mode: Ref. Test method of Chapter 1

Test Duration: (X) 30 seconds ( ) 1~3 seconds

Connected lines: ( ) Power line shielded (X) Power line non-shielded

(X) Signal & Control line non-shielded ( ) Signal & Control line shielded

** Power Frequency Magnetic Field in the horizontal and vertical polarity.**

Test instruments:

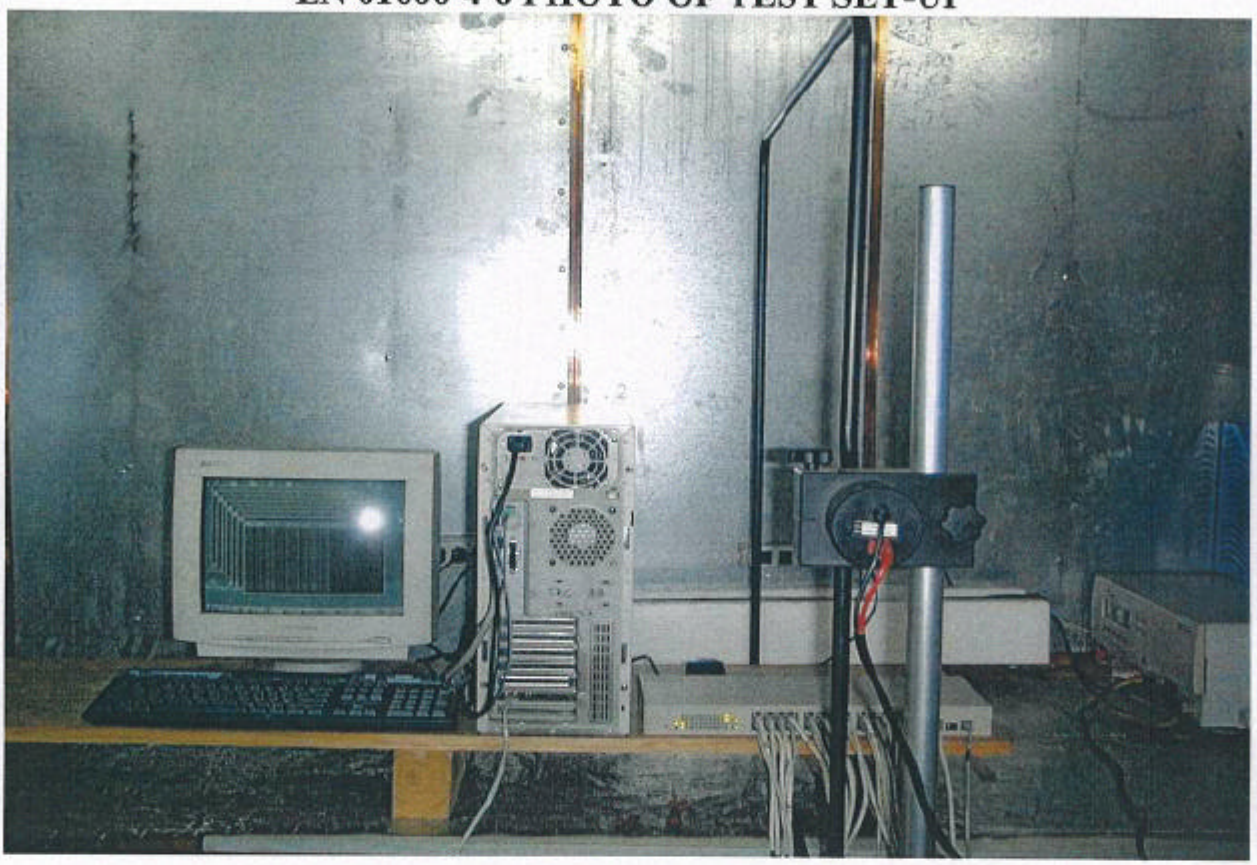
Name	Model Number	Serial Number	Selected
BEST EMC Test Instrument	BEST EMC V2.3 (-8, -9)	199918-006SC	X
Induction Coil	INA 701 BEST	199922-001SC	X

Comment:

Performance Criteria: (X) A ( ) B ( ) C

Test Result : Pass

EN 61000-4-8 PHOTO OF TEST SET-UP



Chapter 10 Voltage DIP / Interruption Test

Test information:

Test setup: According to EN 61000-4-11

Voltage dips / Test specification / Units: (X) > 95%, 0.5period
(X) 30%, 25periods
Voltage interruptions/ Test specification / Units: (X) > 95%, 250periods

Test mode: Ref. Test method of Chapter 1

Test instruments:

Name	Model Number	Serial Number	Selected
BEST EMC Test Instrument	BEST EMC V2.3 (-8, -9)	199918-006SC	X
Induction Coil	INA 701 BEST	199922-001SC	X

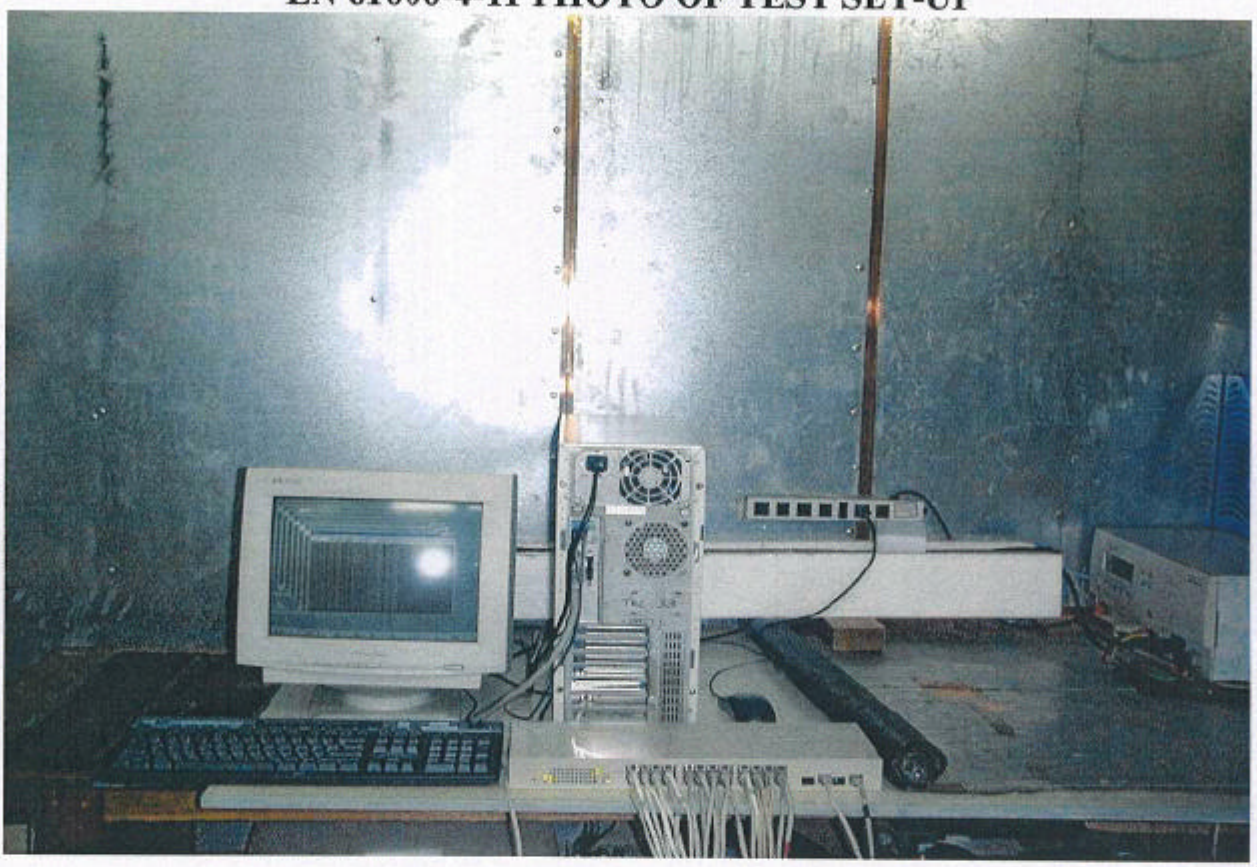
Comment:

Performance Criteria:

Dips: (1) >95% →	( ) A	(X) B	( ) C
Interruptions : (2) >95% →	( ) A	( ) B	(X) C
Dips : (3) 30% →	( ) A	( ) B	(X) C

Test Result : Pass

EN 61000-4-11 PHOTO OF TEST SET-UP



Chapter 11 Harmonics Test

Test information:

Test setup: According to EN 61000-3-2

Test Item: Quasi – stationary & Fluctuating Current Harmonics Test

Test mode: Ref. Test method of Chapter 1

Test instrument:

Name	Model Number	Serial Number	Selected
Harmonic/Flicker Test System	HP 6842A	3531A-00102	X

Test Equipment Settings:	Quasi-stationary Current Harmonics Test	Fluctuating Current Harmonics Test
Line Voltage	230VAC	230VAC
Line Frequency	50Hz	50Hz
Device Class	D	D
Test Limit Overrides	None	None
Total Number of Failures:	None	None
Total Number of Errors:	None	None

Test Result: PASS

Chapter 12 Voltage Fluctuation and Flicker Test

Test information:

Test setup: According to EN 61000-3-3

Test mode: Ref. Test method of Chapter 1

Test instrument:

Name	Model Number	Serial Number	Selected
Harmonic/Flicker Test System	HP 6842A	3531A-00102	X

Test Equipment Settings:	
Line Voltage	230VAC
Line Frequency	50Hz
Test Limit Overrides	None
Total Number of Failures:	Pst: (0), Plt: (0)
	Dc: (0), Dmax (0), Dt (0)
Total Number of Errors:	None

Test Result: PASS

Appendix A

Conducted Emission Test Result: (Power Line)(UMEC UP0131A-05 10 x 10 Mbps)

Testing room : Temperature : 25 ° C Humidity : 60 % RH

Line 1

Frequency (KHz)	*READING AMPLITUDE*			*LIMIT*		*Margin (dB)*
	Peak (dBμV)	*Quasi-Peak (dBμV*	*Average (dBμV)*	*Quasi-Peak (dBμV)*	*Average (dBμV)*	
191.00	49.71	***.**	***.**	79.00	66.00	-16.29
198.00	49.12	***.**	***.**	79.00	66.00	-16.88
502.00	44.13	***.**	***.**	73.00	60.00	-15.87
783.00	43.44	***.**	***.**	73.00	60.00	-16.56
886.00	45.65	***.**	***.**	73.00	60.00	-14.35
947.00	45.13	***.**	***.**	73.00	60.00	-14.87
991.00	46.48	***.**	***.**	73.00	60.00	-13.52
1063.00	44.34	***.**	***.**	73.00	60.00	-15.66
1583.00	41.88	***.**	***.**	73.00	60.00	-18.12
1646.00	43.94	***.**	***.**	73.00	60.00	-16.06

Line 2

Frequency (KHz)	*READING AMPLITUDE*			*LIMIT*		*Margin (dB)*
	Peak (dBμV)	*Quasi-Peak (dBμV)*	*Average (dBμV)*	*Quasi-Peak (dBμV)*	*Average (dBμV)*	
186.00	44.05	***.**	***.**	79.00	66.00	-21.95
192.00	49.96	***.**	***.**	79.00	66.00	-16.04
291.00	42.43	***.**	***.**	79.00	66.00	-23.57
299.00	40.54	***.**	***.**	79.00	66.00	-25.46
1439.00	34.29	***.**	***.**	73.00	60.00	-25.71
2130.00	36.37	***.**	***.**	73.00	60.00	-13.63
16260.00	37.10	***.**	***.**	73.00	60.00	-22.90
17130.00	35.20	***.**	***.**	73.00	60.00	-24.80
17700.00	34.22	***.**	***.**	73.00	60.00	-25.78
24120.00	37.53	***.**	***.**	73.00	60.00	-22.47

*The reading amplitudes are all under limit.

Conducted Emission Test Result: (Data Line) (UMEC UP0131A-05 1000 x 10 Mbps)

Testing room : Temperature : 23 ° C Humidity : 56 % RH

Line 1

Frequency (KHz)	READING AMPLITUDE			LIMIT		Margin (dB)
	Peak (dBμV)	Quasi-Peak (dBμV	Average (dBμV)	Quasi-Peak (dBμV)	Average (dBμV)	
851.00	57.59	***.**	***.**	87.00	74.00	-16.41
880.00	60.14	***.**	***.**	87.00	74.00	-13.86
904.00	62.00	***.**	***.**	87.00	74.00	-12.00
972.00	65.29	***.**	***.**	87.00	74.00	-8.71
1034.00	65.10	***.**	***.**	87.00	74.00	-8.90
1084.00	64.08	***.**	***.**	87.00	74.00	-9.92
16260.00	56.40	***.**	***.**	87.00	74.00	-17.60
17700.00	55.12	***.**	***.**	87.00	74.00	-18.88
18210.00	55.86	***.**	***.**	87.00	74.00	-18.14
23050.00	56.90	***.**	***.**	87.00	74.00	-17.10

Line 2

Frequency (KHz)	READING AMPLITUDE			LIMIT		Margin (dB)
	Peak (dBμV)	Quasi-Peak (dBμV)	Average (dBμV)	Quasi-Peak (dBμV)	Average (dBμV)	
845.00	57.80	***.**	***.**	87.00	74.00	-16.20
874.00	58.86	***.**	***.**	87.00	74.00	-15.14
898.00	62.31	***.**	***.**	87.00	74.00	-11.69
978.00	65.31	***.**	***.**	87.00	74.00	-8.69
997.00	64.70	***.**	***.**	87.00	74.00	-9.30
1027.00	65.05	***.**	***.**	87.00	74.00	-8.95
1070.00	65.08	***.**	***.**	87.00	74.00	-8.92
1091.00	64.40	***.**	***.**	87.00	74.00	-9.60
1120.00	62.21	***.**	***.**	87.00	74.00	-11.79
16260.00	56.58	***.**	***.**	87.00	74.00	-17.42

*The reading amplitudes are all under limit.

Appendix B

Radiated Emission Test Result: (Test mode: UMEC UP0131A-05 1000 x 1000 Mbps)

Test Conditions:

Testing site : Temperature : 28° C Humidity : 70 % RH

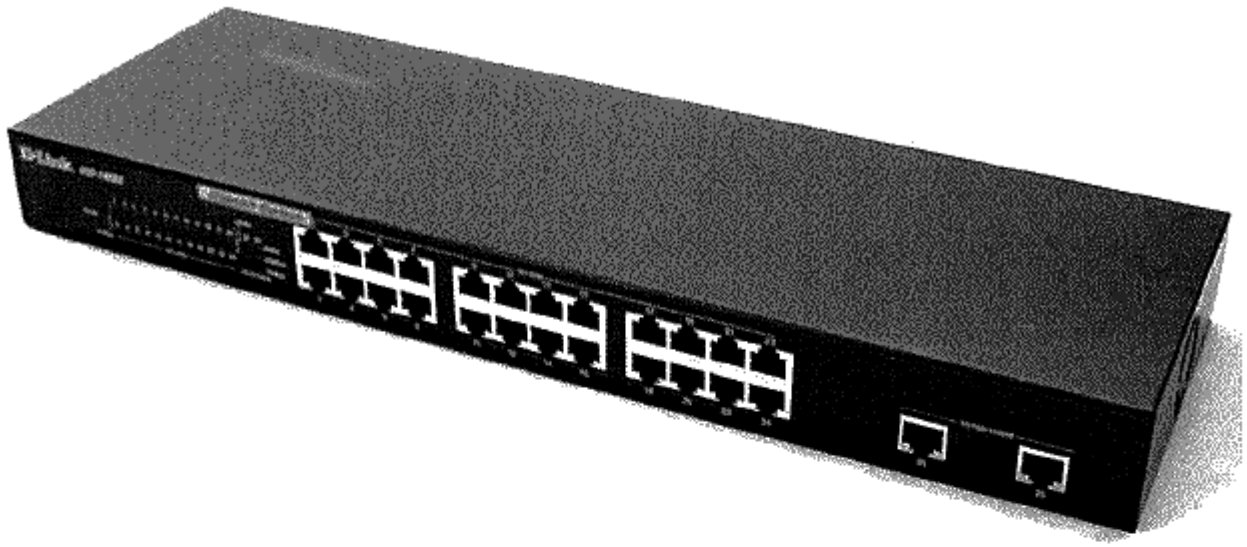
Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class A Limit	Margin
MHz	dBμV/m	m	degree	dB	dBμV/m	dBμV/m	dB
(Horizontal)							
125.0050	28.45	3.99	359	-4.70	23.75	40.00	-16.25
375.0088	38.35	2.50	37	3.15	41.50	47.00	-5.50
500.0075	30.88	3.99	313	6.80	37.68	47.00	-9.32
625.0000	33.20	3.99	271	10.40	43.60	47.00	-3.40
750.0100	26.23	2.50	297	14.30	40.53	47.00	-6.47
875.0084	25.16	1.00	29	15.65	40.81	47.00	-6.19
***							
(Vertical)							
125.0038	27.02	2.49	326	-4.70	22.32	40.00	-17.68
375.0050	33.21	2.49	206	3.15	36.36	47.00	-10.64
500.0063	30.36	1.00	88	6.80	37.16	47.00	-9.84
625.0088	27.61	1.00	294	10.40	38.01	47.00	-8.99
750.0088	25.70	1.00	315	14.30	40.00	47.00	-7.00
***							

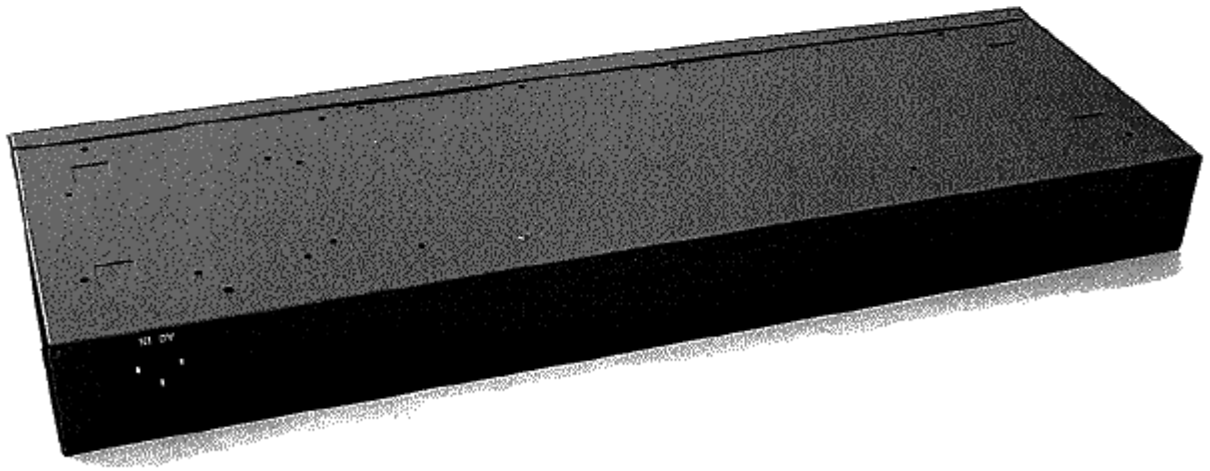
Note:

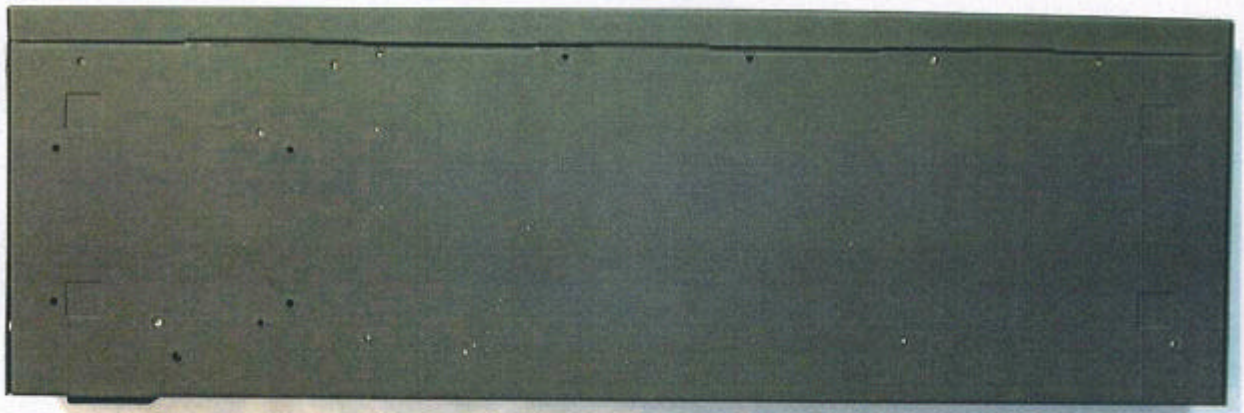
1. Margin = Amplitude - limit, *if margin is minus means under limit.*
2. Corrected Amplitude = Reading Amplitude + Correction Factors
3. Correction factor = Antenna factor + (Cable Loss - Amplitude gain)
   (For example : 30MHz correction factor = 15.5 + (-15.26) = 0.24 dB/m)

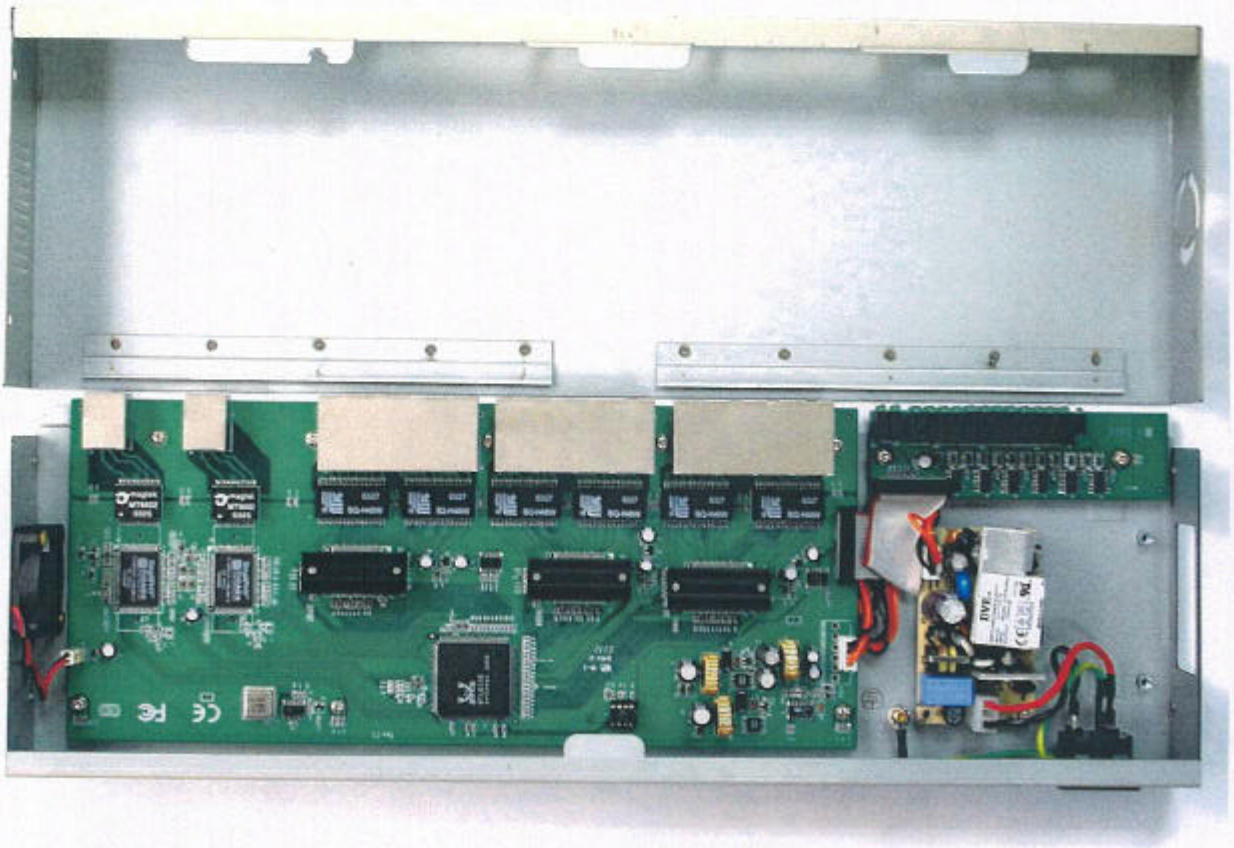
Appendix C

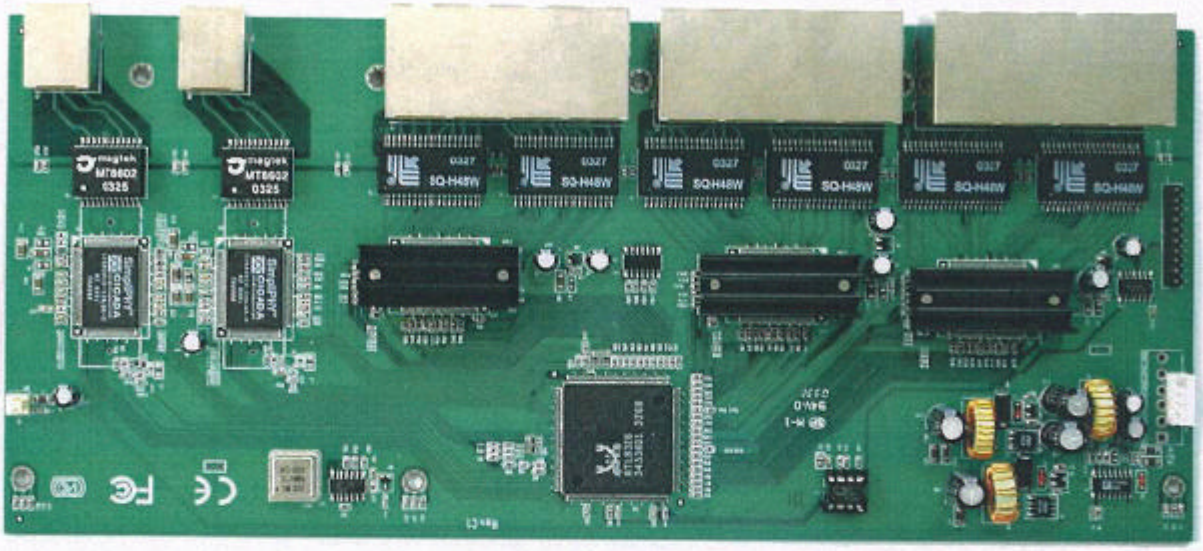
Photographs of EUT

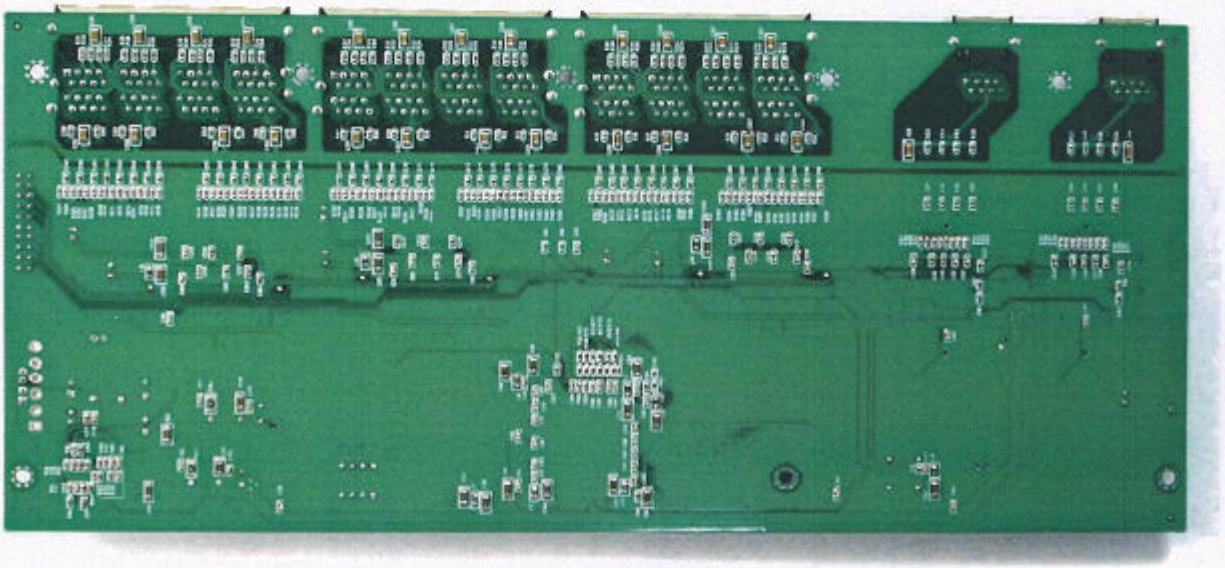


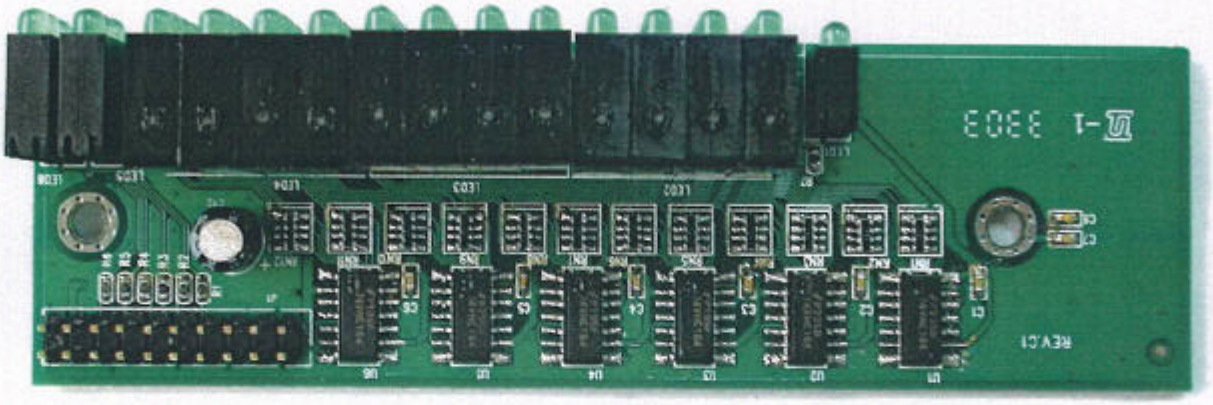


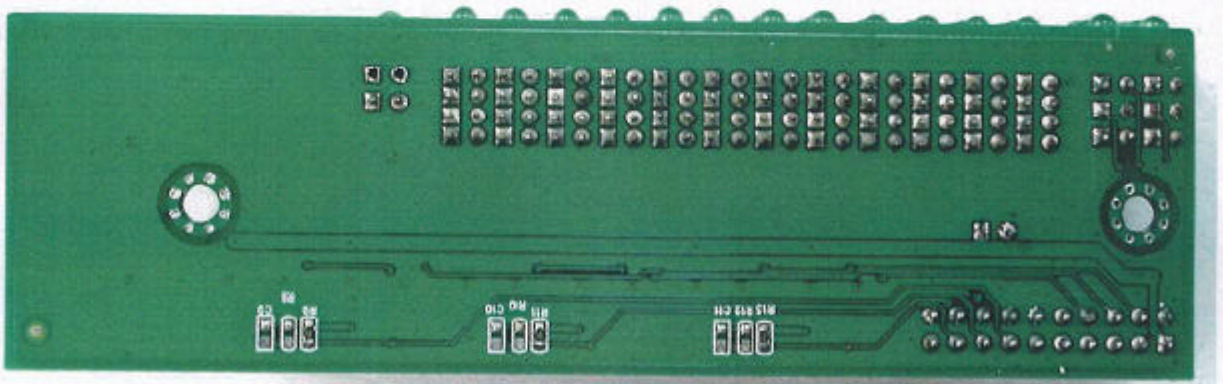


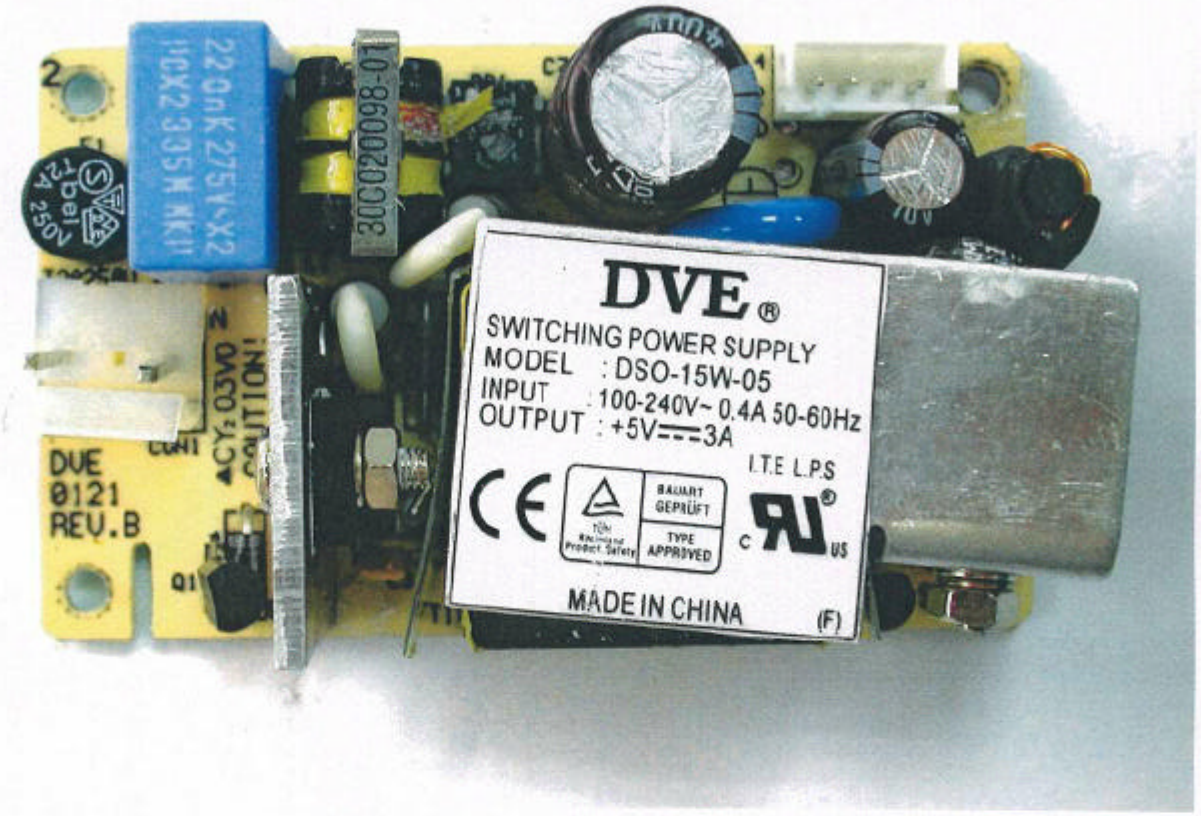


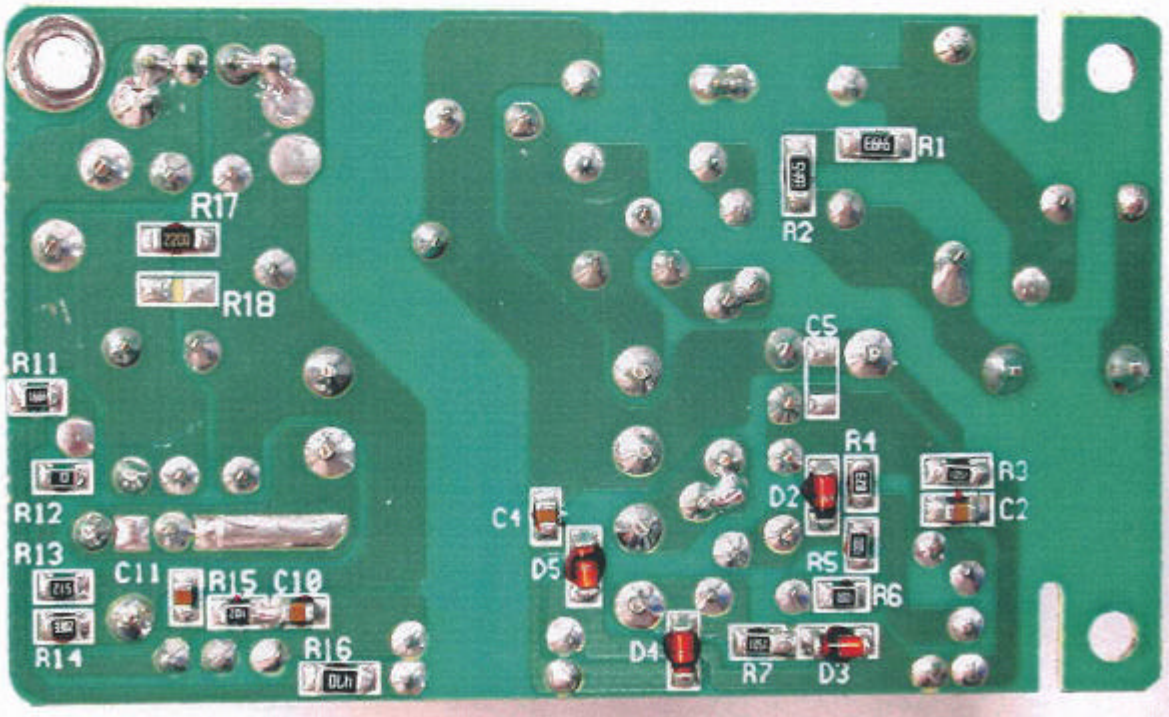

SQ-H48W
SQ-H48W
SQ-H48W
SQ-H48W
SQ-H48W
SQ-H48W








DVE ®
SWITCHING POWER SUPPLY
MODEL : DSO-15W-05
INPUT : 100-240V~ 0.4A 50-60Hz
OUTPUT : +5V⎓3A
I.T.E L.P.S
MADE IN CHINA
(F)
DVE
0121
REV.B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R18
R11
R12
R13
R14
C11
R15
C10
R16
C4
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D4
R7
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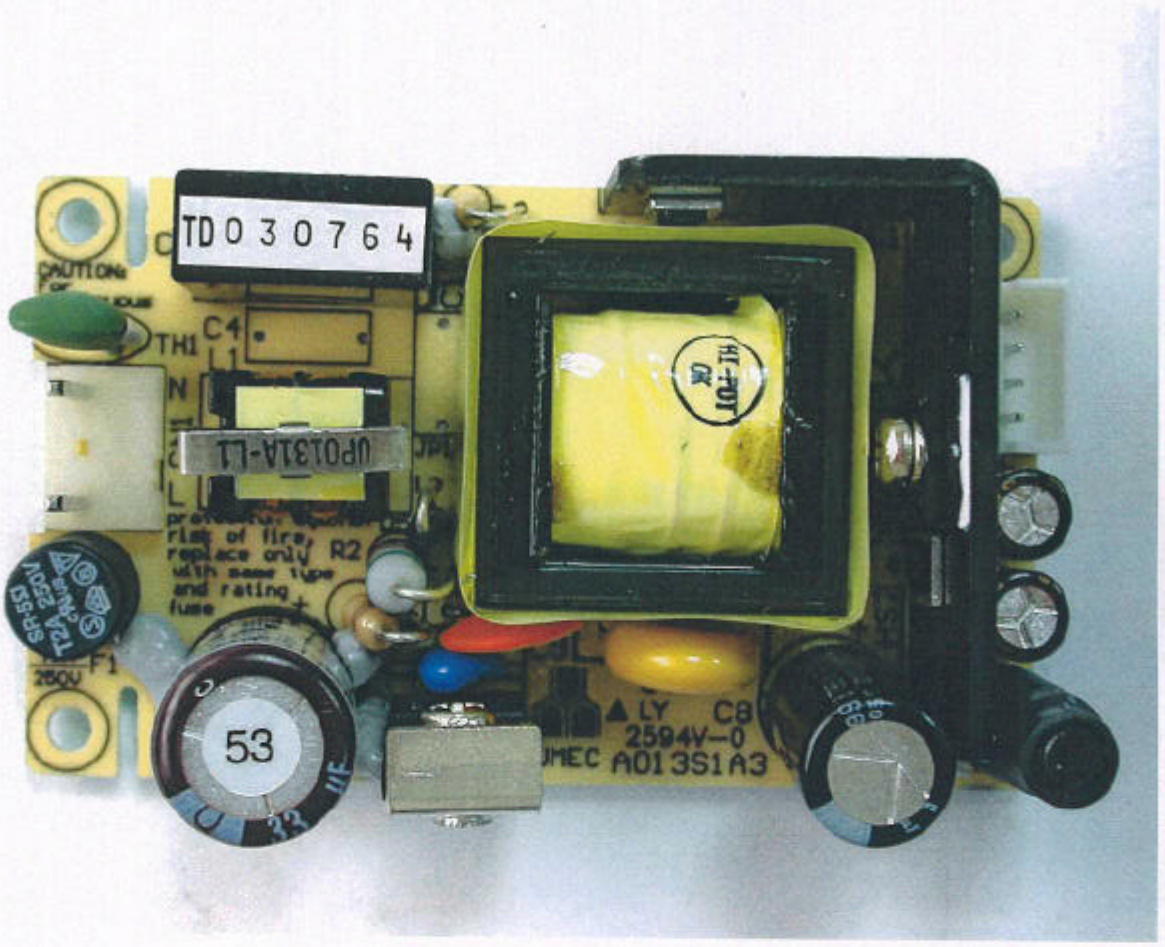
D2
R4
C5
R2
R1
R3
C2


TD030764
CAUTION
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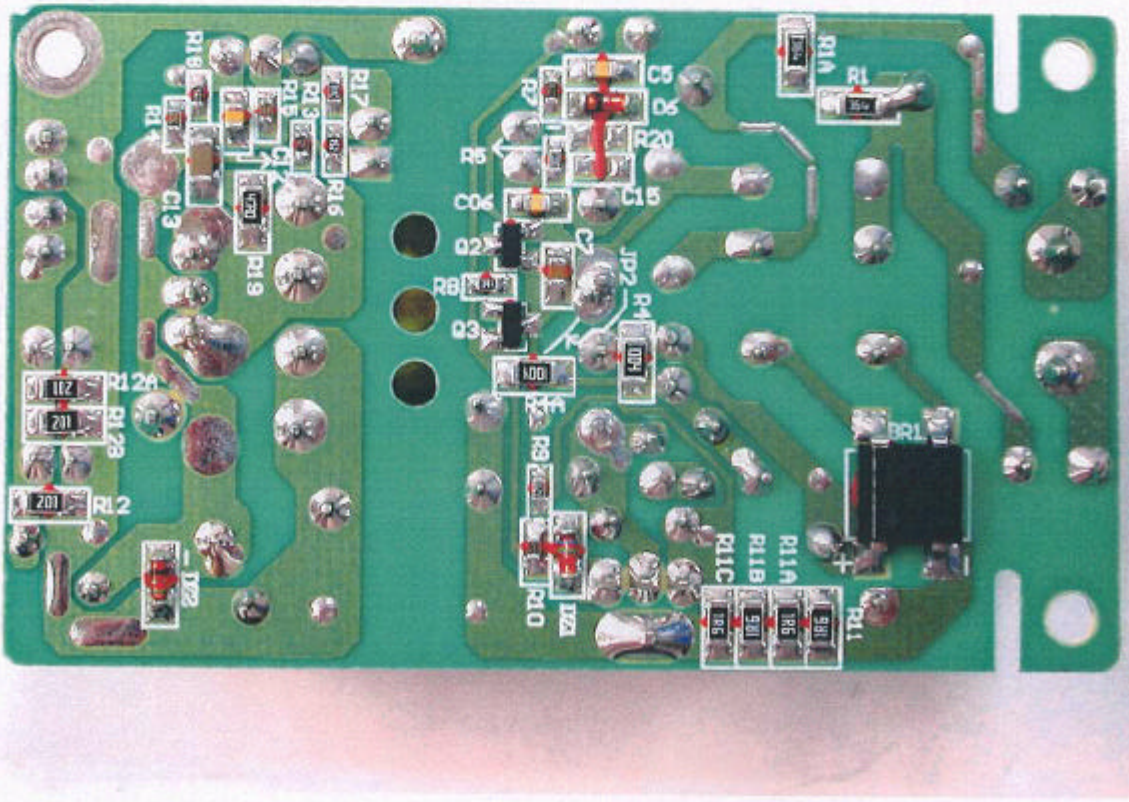
C4
L1
N
L
UP0131A-LL
F1
250V
53
C8
2594V-0
A013S1A3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Q6
R20
C15
C06
Q2
R8
Q3
JP2
R4
R9
R10
R11C
R11B
R11A
R11
BR1
R12A
R12B
R12
R1