Certificate

Issue Date: 2009/04/21
Ref. Report No. ISL-09HE107CE

Product Name:	:	Network Attached Storage
Model Number(s)	:	**TS-239 Pro; TS-239; TS-239 Pro II; TS-239 II; TS-239 Pro-G; TS-239-G; TS-239 Pro II-G; TS-239 II-G; TS-239 Pro-M; TS-239 M; VioStor-2004; VioStor-2008; VioStor-2012; VioStor-2016; NVR-2004; NVR-2008; NVR-2012; NVR-2016; NV-2004; NV-2008; NV-2012; NV-2016**
Responsible Party	:	**QNAP Systems, Inc.**
Address	:	21F, No.77, Sec. 1, Xintai 5th Rd. Xizhi City,Taipei Country, 221 Taiwan
Contact Person	:	

We, **International Standards Laboratory**, hereby certify that:

The device bearing the trade name and model specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in European Council Directive- EMC Directive 2004/108/EC. The device was passed the test performed according to :

Standards:

EN55022: 2006 / CISPR 22:2005; AS/NZS CISPR 22: 2006: Limits and methods of measurement of Radio Interference characteristics of Information Technology Equipment. (* Remarks: Testing radiated emissions above 1 GHz is not yet required in Australia.)
EN55024: 1998/A1:2001/A2: 2003; AS/NZS CISPR 24: 2002: Information technology equipment-Immunity characteristics-Limits and methods of measurement.
EN61000-3-2: 2006; AS/NZS 61000.3.2: 2007: Limits for harmonics current emissions
EN61000-3-3: 1995/A1: 2001/A2:2005; AS/NZS 61000.3.3: 2006: Limits for voltage fluctuations and flicker in low-voltage supply systems.

I attest to the accuracy of data and all measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Jim Chu/ Director

International Standards laboratory
Lung-Tan LAB:
No. 120, Lane 180, San Ho Tsuen, Hsin Ho Rd.
Lung-Tan Hsiang, Tao Yuan County 325, Taiwan
Tel: 886-3-407-1718; Fax: 886-3407-1738
His-Chih LAB:
No. 65, Gu Dai Keng St.. Hsichih, Taipei Hsien 22117, Taiwan.
Tel: 886-2-2646-2550; Fax: 886-2-2646-4641

ISL International Standards Laboratory http://www.isl.com.tw

CE MARK TECHNICAL FILE

AS/NZS EMC CONSTRUCTION FILE

of

Product Name

Network Attached Storage

Model

TS-239 Pro; TS-239; TS-239 Pro II; TS-239 II; TS-239 Pro-G; TS-239-G; TS-239 Pro II-G; TS-239 II-G; TS-239 Pro-M; TS-239 M; VioStor-2004; VioStor-2008; VioStor-2012; VioStor-2016; NVR-2004; NVR-2008; NVR-2012; NVR-2016; NV-2004; NV-2008; NV-2012; NV-2016

Contains:

1. Declaration of Conformity
2. EN55022/CISPR 22, AS/NZS CISPR 22 EMI test report
3. EN55024, AS/NZS CISPR 24, EN61000-3-2 / AS/NZS 61000.3.2, and EN61000-3-3 / AS/NZS 61000.3.3 test report
4. Certificate of EN60950-1
5. Block Diagram and Schematics
6. Users' manual

Declaration of Conformity

Name of Responsible Party:	QNAP Systems, Inc.
Address of Responsible Party:	21F, No.77, Sec. 1, Xintai 5th Rd. Xizhi City, Taipei Country, 221 Taiwan
Declares that product:	Network Attached Storage
Model:	TS-239 Pro; TS-239; TS-239 Pro II; TS-239 II; TS-239 Pro-G; TS-239-G; TS-239 Pro II-G; TS-239 II-G; TS-239 Pro-M; TS-239 M; VioStor-2004; VioStor-2008; VioStor-2012; VioStor-2016; NVR-2004; NVR-2008; NVR-2012; NVR-2016; NV-2004; NV-2008; NV-2012; NV-2016
Assembled by: Address:	Same as above Same as above

Conforms to the EMC Directive 2004/108/EC as attested by conformity with the following harmonized standards:

EN55022: 2006 / CISPR 22:2005; AS/NZS CISPR 22: 2006: Limits and methods of measurement of Radio Interference characteristics of Information Technology Equipment. (* Remarks: Testing radiated emissions above 1 GHz is not yet required in Australia.)
EN55024: 1998/A1: 2001/A2: 2003; AS/NZS CISPR 24: 2002: Information technology equipment-Immunity characteristics-Limits and methods of measurement.

Standard	Description	Results	Criteria
EN61000-4-2: 1995/A1: 1998/A2: 2001 AS/NZS 61000.4.2: 2002	Electrostatic Discharge	Pass	B
EN61000-4-3: 2006 AS/NZS 61000.4.3: 2006	Radio-Frequency, Electromagnetic Field	Pass	A
EN61000-4-4: 2004 AS/NZS 61000.4.4: 2006	Electrical Fast Transient/Burst	Pass	B
EN61000-4-5: 2006 AS/NZS 61000.4.5: 2006	Surge	Pass	B
EN61000-4-6: 1996/A1: 2001 AS/NZS 61000.4.6: 2006	Conductive Disturbance	Pass	A
EN61000-4-8: 1993/A1: 2001 AS/NZS 61000.4.8: 2002	Power Frequency Magnetic Field	Pass	A
EN61000-4-11: 2004 AS/NZS 61000.4.11: 2005	Voltage Dips / Short Interruption and Voltage Variation		
	>95% in 0.5 period	Pass	B
	30% in 25 period	Pass	C
	>95% in 250 period	Pass	C

<to be continued>

Standard	Description	Results
EN61000-3-2: 2006 AS/NZS 61000.3.2: 2007	Limits for harmonics current emissions	Pass
EN61000-3-3: 1995/A1: 2001/A2:2005 AS/NZS 61000.3.3: 2006	Limits for voltage fluctuations and flicker in low-voltage supply systems.	Pass

Conforms to the Low Voltage Directive 2006/95/EC, 93/68/EEC as attested by conformity with the following harmonized standard:

EN60950-1: 2006: Safety of Information Technology Equipment Including electrical business equipment

We, QNAP Systems, Inc., hereby declare that the equipment bearing the trade name and model number specified above was tested conforming to the applicable Rules under the most accurate measurement standards possible, and that all the necessary steps have been taken and are in force to assure that production units of the same equipment will continue to comply with the requirements.

QNAP Systems, Inc.

Date: 2009/04/21

Declaration of Conformity

Name of Responsible Party:	QNAP Systems, Inc.
Address of Responsible Party:	21F, No.77, Sec. 1, Xintai 5th Rd. Xizhi City, Taipei Country, 221 Taiwan
Declares that product:	Network Attached Storage
Model:	TS-239 Pro; TS-239; TS-239 Pro II; TS-239 II; TS-239 Pro-G; TS-239-G; TS-239 Pro II-G; TS-239 II-G; TS-239 Pro-M; TS-239 M; VioStor-2004; VioStor-2008; VioStor-2012; VioStor-2016; NVR-2004; NVR-2008; NVR-2012; NVR-2016; NV-2004; NV-2008; NV-2012; NV-2016
Assembled by:	Same as above
Address:	Same as above

Conforms to the C-Tick Mark requirement as attested by conformity with the following standards:

EN55022: 2006 / CISPR 22:2005; AS/NZS CISPR 22: 2006: Limits and methods of measurement of Radio Interference characteristics of Information Technology Equipment. (* Remarks: Testing radiated emissions above 1 GHz is not yet required in Australia.)
EN55024: 1998/A1: 2001/A2: 2003; AS/NZS CISPR 24: 2002: Information technology equipment-Immunity characteristics-Limits and methods of measurement.

Standard	Description	Results	Criteria
EN61000-4-2: 1995/A1: 1998/A2: 2001 AS/NZS 61000.4.2: 2002	Electrostatic Discharge	Pass	B
EN61000-4-3: 2006 AS/NZS 61000.4.3: 2006	Radio-Frequency, Electromagnetic Field	Pass	A
EN61000-4-4: 2004 AS/NZS 61000.4.4: 2006	Electrical Fast Transient/Burst	Pass	B
EN61000-4-5: 2006 AS/NZS 61000.4.5: 2006	Surge	Pass	B
EN61000-4-6: 1996/A1: 2001 AS/NZS 61000.4.6: 2006	Conductive Disturbance	Pass	A
EN61000-4-8: 1993/A1: 2001 AS/NZS 61000.4.8: 2002	Power Frequency Magnetic Field	Pass	A

<*to be continued*>

EN61000-4-11: 2004 AS/NZS 61000.4.11: 2005	Voltage Dips / Short Interruption and Voltage Variation		
	>95% in 0.5 period	Pass	B
	30% in 25 period	Pass	C
	>95% in 250 period	Pass	C

Standard	Description	Results
EN61000-3-2: 2006 AS/NZS 61000.3.2: 2007	Limits for harmonics current emissions	Pass
EN61000-3-3: 1995/A1: 2001/A2:2005 AS/NZS 61000.3.3: 2006	Limits for voltage fluctuations and flicker in low-voltage supply systems.	Pass

We, QNAP Systems, Inc., hereby declare that the equipment bearing the trade name and model number specified above was tested conforming to the applicable Rules under the most accurate measurement standards possible, and that all the necessary steps have been taken and are in force to assure that production units of the same equipment will continue to comply with the requirements.

QNAP Systems, Inc.

Date: 2009/04/21

CE TEST REPORT

of

EN55022 / CISPR 22 / AS/NZS CISPR 22
Class B
EN55024 / AS/NZS CISPR 24 / IMMUNITY
EN61000-3-2 / EN61000-3-3

Product : **Network Attached Storage**

Model(s): **TS-239 Pro; TS-239; TS-239 Pro II; TS-239 II; TS-239 Pro-G; TS-239-G; TS-239 Pro II-G; TS-239 II-G; TS-239 Pro-M; TS-239 M; VioStor-2004; VioStor-2008; VioStor-2012; VioStor-2016; NVR-2004; NVR-2008; NVR-2012; NVR-2016; NV-2004; NV-2008; NV-2012; NV-2016**

Applicant: **QNAP Systems, Inc.**

Address: **21F, No. 77, Sec. 1, Xintai 5th Rd.**
Xizhi City, Taipei Country, 221
Taiwan

Test Performed by:

International Standards Laboratory
<HC LAB>
*Site Registration No.
BSMI:SL2-IN-E-0037; SL2-R1/R2-E-0037; TAF: 1178;
IC: IC4067; VCCI: R-341,C-354, T-313; NEMKO: ELA 113A
*Address:
No. 65, Gu Dai Keng St.
Hsichih, Taipei Hsien 22117, Taiwan
*Tel: 886-2-2646-2550; Fax: 886-2-2646-4641

Report No.: **ISL-09HE107CE**
Issue Date : **2009/04/21**

Contents of Report

1. General

1.1 Certification of Accuracy of Test Data

Standards:	Please refer to 2.2
Equipment Tested:	Network Attached Storage
Model:	TS-239 Pro; TS-239; TS-239 Pro II; TS-239 II; TS-239 Pro-G; TS-239-G; TS-239 Pro II-G; TS-239 II-G; TS-239 Pro-M; TS-239 M; VioStor-2004; VioStor-2008; VioStor-2012; VioStor-2016; NVR-2004; NVR-2008; NVR-2012; NVR-2016; NV-2004; NV-2008; NV-2012; NV-2016
Applied by	QNAP Systems, Inc.
Sample received Date:	2009/04/21
Final test Date :	2009/04/20
Test Site:	OATS 01, Conduction 01; HC Test Site
Test Result:	**PASS**
Report Engineer:	Lily L.C. Tseng
Test Engineer:	Jason Tsai

Approve & Signature

Jim Chu / Director

2. Summary

2.1 Operation Environment

Test Distance 10M (EMI test)

Temperature refer to each site test data
Humidity: refer to each site test data

input power: Conduction input power: AC 230 V / 50 Hz
Radiation input power: AC 230 V / 50 Hz
Immunity input power: AC 230 V / 50 Hz

2.2 Test Standards

The tests which this report describes were conducted by an independent electromagnetic compatibility consultant, International Standards Laboratory in accordance with the following

EN55022: 2006 / CISPR 22:2005; AS/NZS CISPR 22: 2006: Class B: Limits and methods of measurement of Radio Interference characteristics of Information Technology Equipment. (* Remarks: Testing radiated emissions above 1 GHz is not yet required in Australia.)
EN55024: 1998/A1: 2001/A2: 2003; AS/NZS CISPR 24: 2002: Information technology equipment-Immunity characteristics-Limits and methods of measurement.

Standard	Description	Results	Criteria
EN61000-4-2: 1995/A1: 1998/A2: 2001 AS/NZS 61000.4.2: 2002	Electrostatic Discharge	Pass	B
EN61000-4-3: 2006 AS/NZS 61000.4.3: 2006	Radio-Frequency, Electromagnetic Field	Pass	A
EN61000-4-4: 2004 AS/NZS 61000.4.4: 2006	Electrical Fast Transient/Burst	Pass	B
EN61000-4-5: 2006 AS/NZS 61000.4.5: 2006	Surge	Pass	B
EN61000-4-6: 1996/A1: 2001 AS/NZS 61000.4.6: 2006	Conductive Disturbance	Pass	A
EN61000-4-8: 1993/A1: 2001 AS/NZS 61000.4.8: 2002	Power Frequency Magnetic Field	Pass	A
EN61000-4-11: 2004 AS/NZS 61000.4.11: 2005	Voltage Dips / Short Interruption and Voltage Variation		
	>95% in 0.5 period	Pass	B
	30% in 25 period	Pass	C
	>95% in 250 period	Pass	C

Standard	Description	Results
EN61000-3-2: 2006 AS/NZS 61000.3.2: 2007	Limits for harmonics current emissions	Pass
EN61000-3-3: 1995/A1: 2001/A2:2005 AS/NZS 61000.3.3: 2006	Limits for voltage fluctuations and flicker in low-voltage supply systems.	Pass

3. Description of EUT

EUT

Description:	Network Attached Storage
Condition:	Pre-Production
Model:	**TS-239 Pro; TS-239; TS-239 Pro II; TS-239 II; TS-239 Pro-G; TS-239-G; TS-239 Pro II-G; TS-239 II-G; TS-239 Pro-M; TS-239 M; VioStor-2004; VioStor-2008; VioStor-2012; VioStor-2016; NVR-2004; NVR-2008; NVR-2012; NVR-2016; NV-2004; NV-2008; NV-2012; NV-2016**
Serial Number:	N/A
Power Supply Type1:	FSP (Model: FSP060-DBAB1) AC INPUT: 100-240V, 1.5A, 50-60Hz DC OUTPUT: 12.0V, 5A MAX 60W (MAX)
Power Supply Type2:	Seasonic (Model: SSA-0651-1) AC INPUT: 100-240V, 2A, 50/60Hz DC OUTPUT: +12V, 5A 60W (MAX)
CPU:	Intel Atom Processor N270 1.6GHz (FSB: 533MHz)
DIMM Memory:	Transcend (Model: 509077-5094) 1GB DDR2-667MHz
ATA Disk Module:	Apacer (Model: AP-FM0128EA4S5S-J) 128MB
DC-In:	one
Power Switch Button:	one
USB 2.0 Port:	three (4-pins)
E-SATA Port:	two (7-pins)
VGA Port:	one (15-pins)
RJ45 Connector:	two (8-pins) (10/100/1000Mbps)
Hard Disk:	Western Digital (Model: WD7501AALS-22J7B0)*2 750GB (Option)

All types of EUT Connect have been tested. The worst data listed in this test report.

Test Configuration:

Configuration	Power Supply Type	LAN1	LAN2	Hard Disk
1	FSP (Model:FSP060-DBAB1) 60W	1000Mbps	1000Mbps	Western Digital (Model:WD7501AALS-22J7B0)*2
2	Seasonic (Model:SSA-0651-1) 60W	1000Mbps	1000Mbps	Western Digital (Model:WD7501AALS-22J7B0)*2

EMI Noise Source
Crystal: 25MHz (Y1), 25MHz (Y2), 25MHz (Y3), 14.318MHz (X2), 32.768 kHz (X3)
Clock Generator: ICS 9618488 (U29)

EMI Solution:

N/A

4. Description of Support Equipment

4.1 Description of Support Equipment

Unit	Model Serial No.	Brand	Power Cord	FCC ID
Notebook Personal Computer	Latitude D400 S/N: N/A	DELL	Non-shielded, Detachable	FCC DOC
17” LCD Monitor	VA703B	View Sonic	Non-shielded, Detachable	FCC DOC
External HDD Enclosure*3	OT-201 S/N: NA	A-TEC	N/A	FCC DOC
E-SATA External Hard Disk*2	QBack-35S	QNAP	Non-shielded, Detachable	FCC DOC
Rack mountable Switch	DGS-1008D	D-Link	D-Link (Model:AF-1205-B)	FCC DOC

4.2 Software for Controlling Support Unit

Test programs exercising various part of EUT were used. The programs were executed as follows:

A. Read and write to the disk drives.
B. Send package to the Router LAN port (Router).
C. Receive and transmit package of EUT to the Rack mountable Switch HUB through LAN port.
D. Read and write data in the E-SATA Hard Disk through EUT E-SATA port.
E. R/W External HDD Enclosure from USB Port.
F. Send signal from EUT to server through LAN port.
G. Repeat the above steps.

	Filename	Issued Date
LAN	Tfgen.exe	06/23/1999
E-SATA	Intel EMCTEST.exe	9/04/2000
EUT Hard Disk	InterEMC.exe	5/21/1996
External Hard Disk	InterEMC.exe	5/21/1996

4.3 I/O Cable Condition of EUT and Support Units

Description	Path	Cable Length	Cable Type	Connector Type
AC Power Cord	110V (~240V) to EUT SPS	1.8M	Nonshielded, Detachable	Plastic Head
LAN Data Cable	Server to EUT RJ 45 Connector	33 feet	Non-shielded, Detachable	RJ-45, with Plastic Head
LCD Monitor Data Cable	LCD Monitor D-Sub Port to EUT D-Sub Port	1.88M	Non-shielded, Detachable	Metal Head Plastic Head
USB Data Cable*3	External HDD Enclosure USB Port to EUT USB Port	0.98M	Non-shielded, Detachable (With Core)	Metal Head
E-SATA Data Cable*2	External Hard disk E-S ATA Port to EUT E-SATA Port	1.0M	Shielded, Detachable	Metal Head
LAN Data Cable*2	EUT RJ45 Port to Router LAN Port.	1.0M	Nonshielded, Detachable	RJ-45, with Plastic Head

5. Power Main Port Conducted Emissions

5.1 Configuration and Procedure

5.1.1 EUT Configuration

The EUT was set up on the non-conductive table that is 1.0 by 1.5 meter, 80cm above ground. The wall was 40cm to the rear of the EUT.

Power to the EUT was provided through the LISN. The impedance vs. frequency characteristic of the LISN is complied with the limit of standards used.

Both lines (neutral and hot) were connected to the LISN in series at testing. A coaxial-type connector which provides one 50 ohms impedance termination was connected to the test instrument. The excess length of the power cord was folded back and forth at the center of the lead to form a bundle 30cm to 40cm in length.

Any changes made to the configuration or modifications made to EUT during testing, are noted in the following test record.

If EUT has an extra auxiliary AC outlet which can provide power to an external monitor, all measurements will be made with the monitor power from EUT-mounted AC outlet and then from floor-mounted AC outlet.

5.1.2 Test Procedure

The system was set up as described above, with the EMI diagnostic software running. The main power line conducted EMI tests were run on both hot and neutral conductors of the power cord and the results were recorded. The effect of varying the position of the interface cables has been investigated to find the configuration that produces maximum emission.

At the frequencies where the peak values of the emissions were higher than 6dß below the applicable limits, the emissions were also measured with the quasi-peak detectors. At the frequencies where the quasi-peak values of the emissions were higher than 6dß below the applicable average limits, the emissions were also measured with the average detectors.

The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

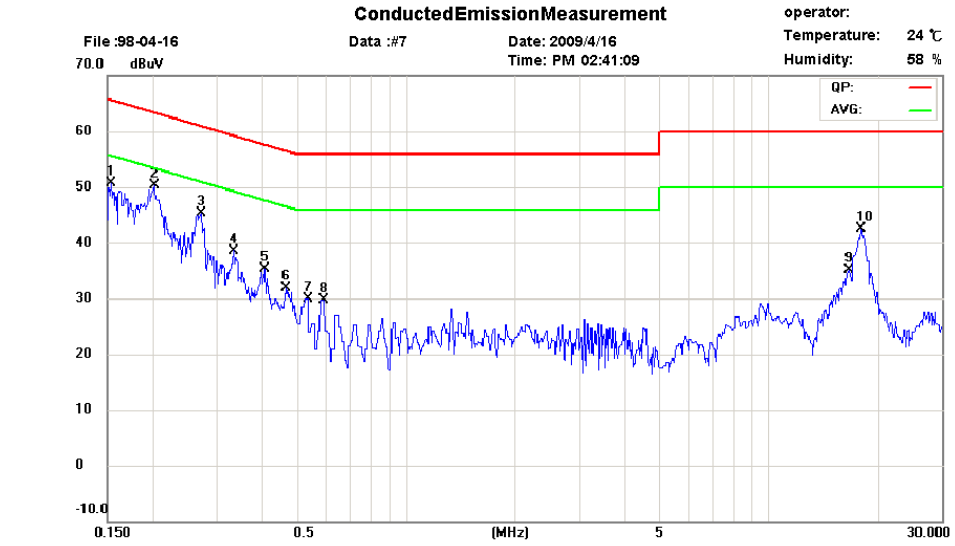
5.1.3 EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range:	150KHz--30MHz
Detector Function:	Quasi-Peak / Average Mode
Resolution Bandwidth:	9KHz

5.2 Conduction Test Data: Configuration 1

Table 5.2.1 Power Line Conducted Emissions (Hot)

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641



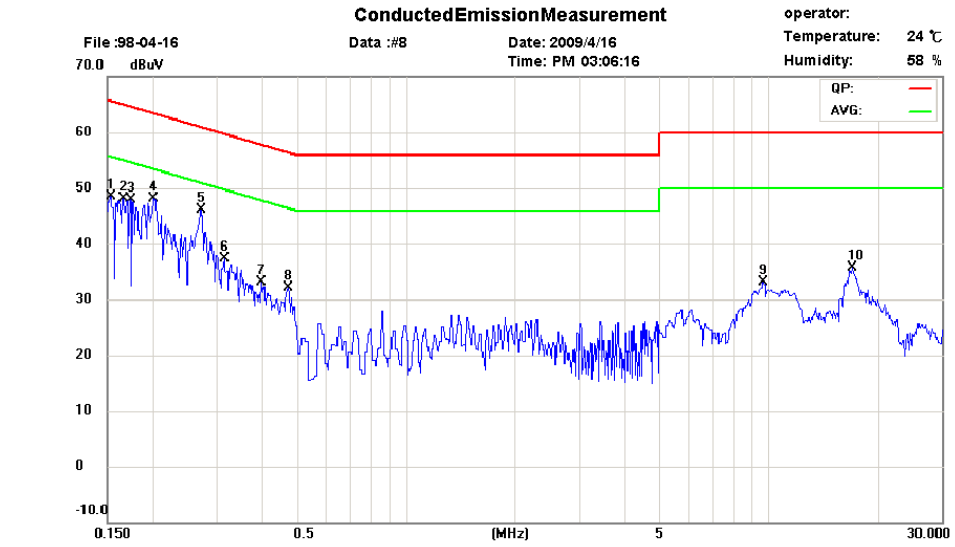
Site: Conduction 01 Phase: L1
Limit: CISPR22 Class B Conduction Power:
Company: Witness:
EUT Model:
Execute Program:
Note:

No.	Frequency MHz	LISN Loss dB	Cable Loss dB	QP Correct dBuV	QP Limit dBuV	QP Margin dB	AVG Correct dBuV	AVG Limit dBuV	AVG Margin dB	Note
1	0.1535	0.18	0.07	35.90	65.8	-29.9	33.60	55.8	-22.2	
2	0.2016	0.18	0.08	47.90	63.5	-15.6	37.00	53.5	-16.5	
3	0.2716	0.18	0.09	47.80	61.0	-13.2	36.90	51.0	-14.1	
4	0.3337	0.19	0.09	34.80	59.3	-24.5	29.80	49.3	-19.5	
5	0.4073	0.19	0.1	30.80	57.7	-26.9	28.50	47.7	-19.2	
6	0.4660	0.19	0.11	26.90	56.5	-29.6	24.20	46.5	-22.3	
7	0.5336	0.19	0.11	30.60	56.0	-25.4	28.50	46.0	-17.5	
8	0.5900	0.2	0.12	29.67	56.0	-26.3	24.80	46.0	-21.2	
9	16.6250	0.6	0.77	36.80	60.0	-23.2	28.60	50.0	-21.4	
10	17.9375	0.61	0.8	39.30	60.0	-20.7	35.00	50.0	-15.0	

Note:
Margin = Corrected Amplitude - Limit
Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result. If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.

Table 5.2.2 Power Line Conducted Emissions (Neutral)

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641



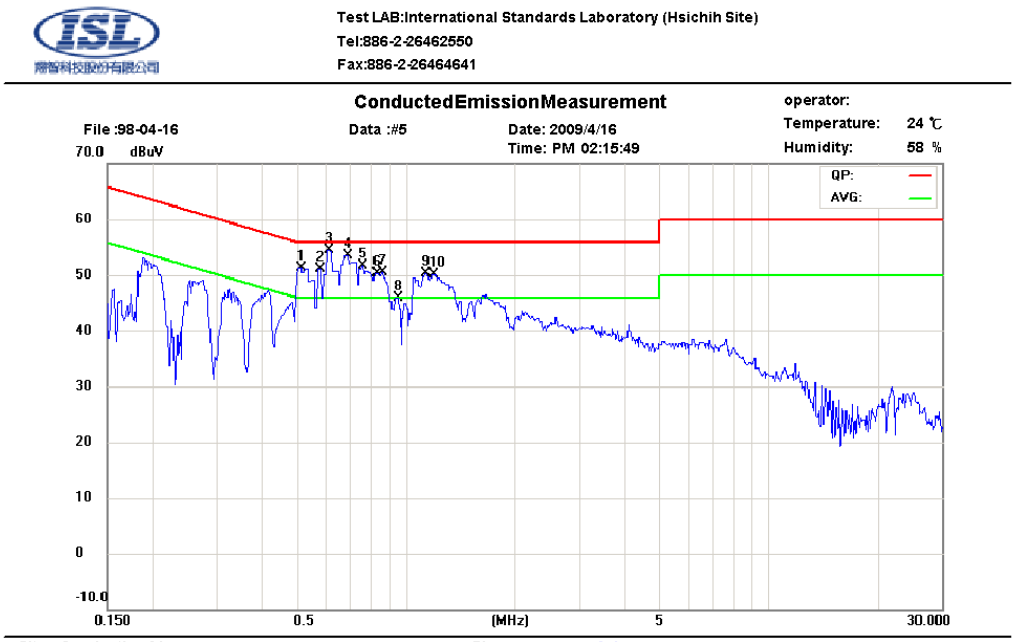
Site: Conduction 01 Phase: N
Limit: CISPR22 Class B Conduction Power:
Company: Witness:
EUT Model:
Execute Program:
Note:

No.	Frequency MHz	LISN Loss dB	Cable Loss dB	QP Correct dBuV	QP Limit dBuV	QP Margin dB	AVG Correct dBuV	AVG Limit dBuV	AVG Margin dB	Note
1	0.1526	0.2	0.07	38.94	65.8	-26.9	34.74	55.8	-21.1	
2	0.1657	0.2	0.07	44.60	65.1	-20.5	37.10	55.1	-18.0	
3	0.1736	0.2	0.07	44.80	64.7	-19.9	37.50	54.7	-17.2	
4	0.2007	0.2	0.08	39.00	63.5	-24.5	36.00	53.5	-17.5	
5	0.2707	0.2	0.09	42.90	61.1	-18.2	39.10	51.1	-12.0	
6	0.3144	0.2	0.09	42.80	59.8	-17.0	39.10	49.8	-10.7	
7	0.3976	0.2	0.1	31.60	57.9	-26.3	23.50	47.9	-24.4	
8	0.4711	0.2	0.11	30.40	56.4	-26.0	25.10	46.4	-21.3	
9	9.6250	0.54	0.58	32.20	60.0	-27.8	30.10	50.0	-19.9	
10	16.9375	0.81	0.78	34.20	60.0	-25.8	28.50	50.0	-21.5	

Note:
Margin = Corrected Amplitude - Limit
Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result. If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.

5.3 Conduction Test Data: Configuration 2

Table 5.3.1 Power Line Conducted Emissions (Hot)

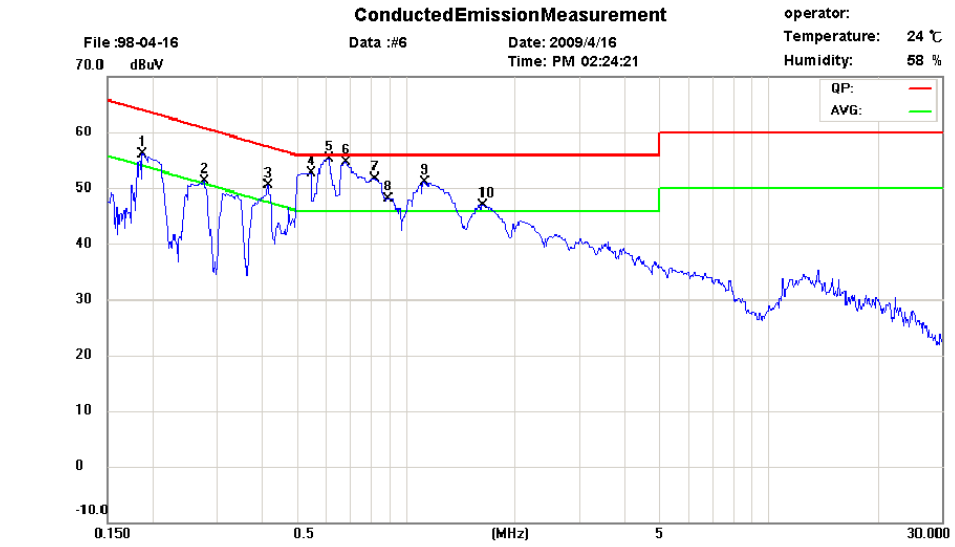


No.	Frequency MHz	LISN Loss dB	Cable Loss dB	QP Correct dBuV	QP Limit dBuV	QP Margin dB	AVG Correct dBuV	AVG Limit dBuV	AVG Margin dB	Note
1	0.5112	0.19	0.11	52.50	56.0	-3.50	36.80	46.0	-9.20	
2	0.5787	0.2	0.12	51.40	56.0	-4.60	36.80	46.0	-9.20	
3	0.6125	0.2	0.12	52.10	56.0	-3.90	36.70	46.0	-9.30	
4	0.6912	0.2	0.13	52.30	56.0	-3.70	36.70	46.0	-9.30	
5	0.7587	0.2	0.14	50.80	56.0	-5.20	36.30	46.0	-9.70	
6	0.8262	0.2	0.14	52.10	56.0	-3.90	37.90	46.0	-8.10	
7	0.8600	0.21	0.15	52.30	56.0	-3.70	38.20	46.0	-7.80	
8	0.9500	0.21	0.15	48.10	56.0	-7.90	36.30	46.0	-9.70	
9	1.1300	0.21	0.17	47.60	56.0	-8.40	35.80	46.0	-10.2	
10	1.1861	0.21	0.17	48.50	56.0	-7.50	35.50	46.0	-10.5	

Note:
Margin = Corrected Amplitude - Limit
Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result. If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.

Table 5.3.2 Power Line Conducted Emissions (Neutral)

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641



Site: Conduction 01
Limit: CISPR22 Class B Conduction
Company:
EUT Model:
Execute Program:
Note:

Phase: N
Power:
Witness:

No.	Frequency MHz	LISN Loss dB	Cable Loss dB	QP Correct dBuV	QP Limit dBuV	QP Margin dB	AVG Correct dBuV	AVG Limit dBuV	AVG Margin dB	Note
1	0.1867	0.2	0.07	52.70	64.1	-11.4	37.50	54.1	-16.6	
2	0.2760	0.2	0.09	48.70	60.9	-12.2	38.50	50.9	-12.4	
3	0.4134	0.2	0.1	47.10	57.5	-10.4	34.10	47.5	-13.4	
4	0.5450	0.21	0.11	52.90	56.0	-3.10	37.30	46.0	-8.70	
5	0.6125	0.21	0.12	52.70	56.0	-3.30	37.60	46.0	-8.40	
6	0.6800	0.21	0.13	53.00	56.0	-3.00	39.70	46.0	-6.30	
7	0.8150	0.22	0.14	52.30	56.0	-3.70	37.40	46.0	-8.60	
8	0.8937	0.22	0.15	50.10	56.0	-5.90	38.20	46.0	-7.80	
9	1.1187	0.23	0.17	47.80	56.0	-8.20	34.60	46.0	-11.4	
10	1.6250	0.24	0.21	43.10	56.0	-12.9	33.50	46.0	-12.5	

Note:
Margin = Corrected Amplitude - Limit
Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result. If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.

6. Telecommunication Port Conducted Emissions

6.1 Configuration and Procedure

6.1.1 EUT Configuration

The EUT was set up on the non-conductive table that is 1.0 by 1.5 meter, 80cm above ground. The wall was 40cm to the rear of the EUT. The excess length of the power cord was folded back and forth at the center of the lead to form a bundle 30cm to 40cm in length. The distance between EUT and CDN is 80cm. CDN is connected to the reference ground plane. Any changes made to the configuration, or modifications made to the EUT, during testing are noted in the following test record.

6.1.2 Test Procedure

The system was set up as described above, with the EMI diagnostic software running. The content of the software consist of both periodic and pseudo-random messages. The effect of varying the position of the interface cables has been investigated to find the configuration that produces maximum emission. The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

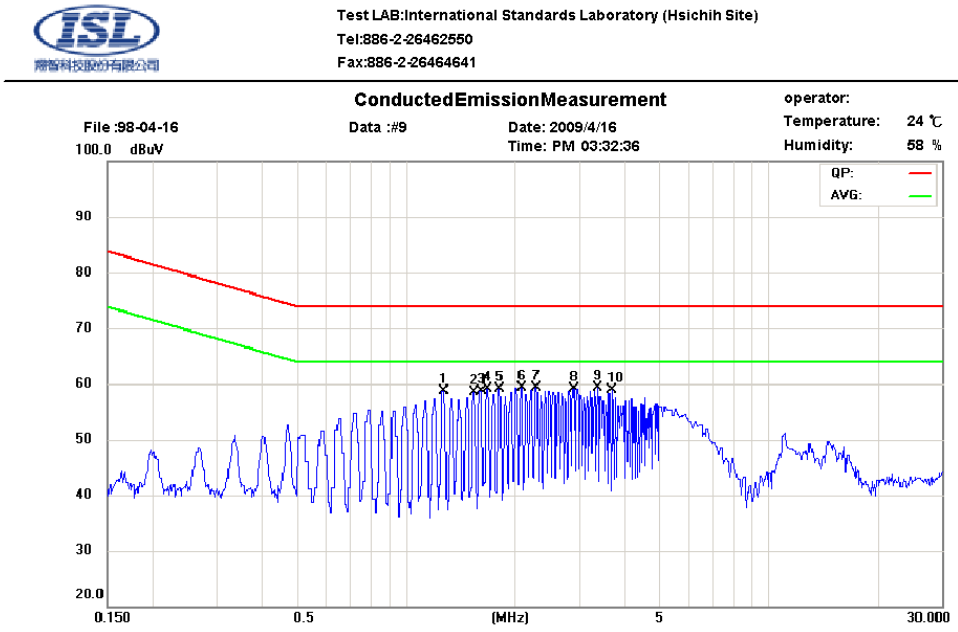
6.1.3 EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range:	150KHz--30MHz
Detector Function:	Quasi-Peak / Average Mode
Resolution Bandwidth:	9KHz

6.2 Test Data: LAN 1--GIGA (Voltage)

Table 6.2.1 Telecommunication Port Conducted Emission

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641



Site: Conduction 01
Limit: ISN RJ-45 Giga Class B Conduction
Company:
EUT Model:
Execute Program:
Note:

Phase: L2
Power:
Witness:

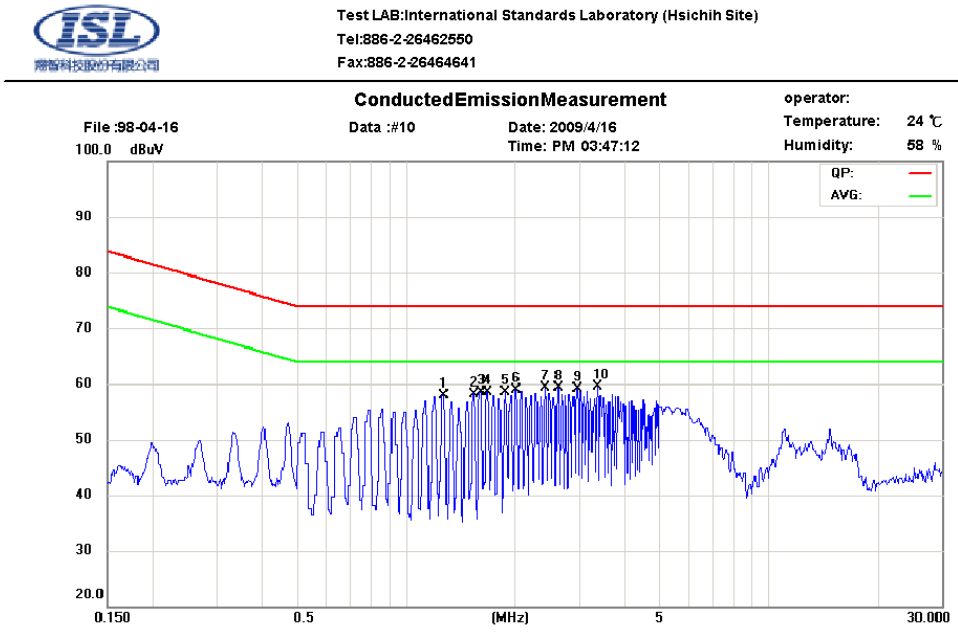
No.	Frequency MHz	LISN Loss dB	Cable Loss dB	QP Correct dBuV	QP Limit dBuV	QP Margin dB	AVG Correct dBuV	AVG Limit dBuV	AVG Margin dB	Note
1	1.2650	9.89	0.18	57.90	74.0	-16.1	57.10	64.0	-6.90	
2	1.5350	9.9	0.2	58.50	74.0	-15.5	57.70	64.0	-6.30	
3	1.6025	9.9	0.21	58.60	74.0	-15.4	57.80	64.0	-6.20	
4	1.6700	9.9	0.21	58.30	74.0	-15.7	57.40	64.0	-6.60	
5	1.8050	9.9	0.22	58.50	74.0	-15.5	57.70	64.0	-6.30	
6	2.0750	9.91	0.24	59.30	74.0	-14.7	58.30	64.0	-5.70	
7	2.2775	9.91	0.26	58.50	74.0	-15.5	57.40	64.0	-6.60	
8	2.8850	9.92	0.29	58.80	74.0	-15.2	57.90	64.0	-6.10	
9	3.3575	9.92	0.32	58.20	74.0	-15.8	57.30	64.0	-6.70	
10	3.6950	9.93	0.34	57.50	74.0	-16.5	56.50	64.0	-7.50	

Note :
Margin = Corrected Amplitude - Limit
Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result.
If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.

6.3 Test Data: LAN 2--GIGA (Voltage)

Table 6.3.1 Telecommunication Port Conducted Emission

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641



Site: Conduction 01
Limit: ISN RJ-45 Giga Class B Conduction
Company:
EUT Model:
Execute Program:
Note:

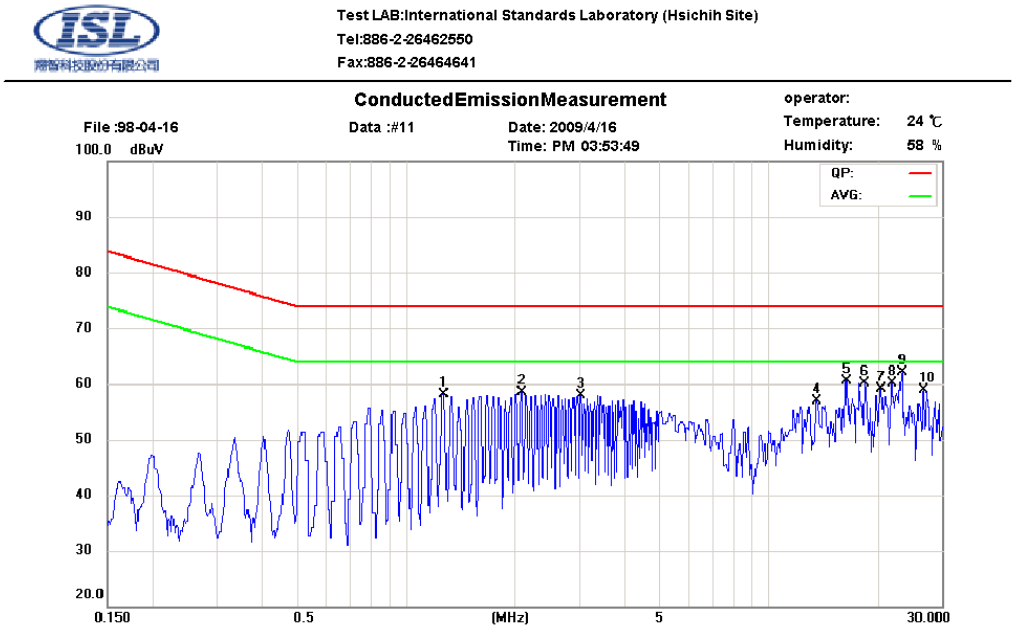
Phase: L2
Power:
Witness:

No.	Frequency MHz	LISN Loss dB	Cable Loss dB	QP Correct dBuV	QP Limit dBuV	QP Margin dB	AVG Correct dBuV	AVG Limit dBuV	AVG Margin dB	Note
1	1.2650	9.89	0.18	58.00	74.0	-16.0	57.20	64.0	-6.80	
2	1.5350	9.9	0.2	58.60	74.0	-15.4	57.70	64.0	-6.30	
3	1.6025	9.9	0.21	58.60	74.0	-15.4	57.80	64.0	-6.20	
4	1.6700	9.9	0.21	58.40	74.0	-15.6	57.50	64.0	-6.50	
5	1.8725	9.9	0.23	58.00	74.0	-16.0	56.90	64.0	-7.10	
6	2.0075	9.9	0.24	59.10	74.0	-14.9	58.20	64.0	-5.80	
7	2.4125	9.91	0.26	59.10	74.0	-14.9	58.10	64.0	-5.90	
8	2.6150	9.91	0.28	59.00	74.0	-15.0	58.00	64.0	-6.00	
9	2.9525	9.92	0.3	58.80	74.0	-15.2	57.90	64.0	-6.10	
10	3.3575	9.92	0.32	58.70	74.0	-15.3	57.30	64.0	-6.70	

Note :
Margin = Corrected Amplitude - Limit
Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result.
If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.

6.4 Test Data: LAN 1--100M

Table 6.4.1 Telecommunication Port Conducted Emission



Site: Conduction 01 Phase: L2

Limit: ISN RJ-45 Class B Conduction Power:

Company: Witness:

EUT Model:

Execute Program:

Note:

No.	Frequency MHz	LISN Loss dB	Cable Loss dB	QP Correct dBuV	QP Limit dBuV	QP Margin dB	AVG Correct dBuV	AVG Limit dBuV	AVG Margin dB	Note
1	1.2650	9.84	0.18	56.90	74.0	-17.1	56.10	64.0	-7.90	
2	2.0750	9.83	0.24	57.70	74.0	-16.3	56.80	64.0	-7.20	
3	3.0200	9.83	0.3	57.40	74.0	-16.6	56.50	64.0	-7.50	
4	13.5000	9.79	0.69	56.90	74.0	-17.1	53.30	64.0	-10.7	
5	16.3125	9.78	0.76	61.60	74.0	-12.4	58.80	64.0	-5.20	
6	18.3125	9.78	0.81	61.10	74.0	-12.9	58.70	64.0	-5.30	
7	20.3125	9.78	0.86	59.80	74.0	-14.2	57.50	64.0	-6.50	
8	21.7500	9.79	0.89	61.00	74.0	-13.0	58.80	64.0	-5.20	
9	23.2500	9.8	0.92	63.30	74.0	-10.7	60.60	64.0	-3.40	
10	26.6875	9.82	0.99	60.40	74.0	-13.6	58.80	64.0	-5.20	

Note :

Margin = Corrected Amplitude - Limit

Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss

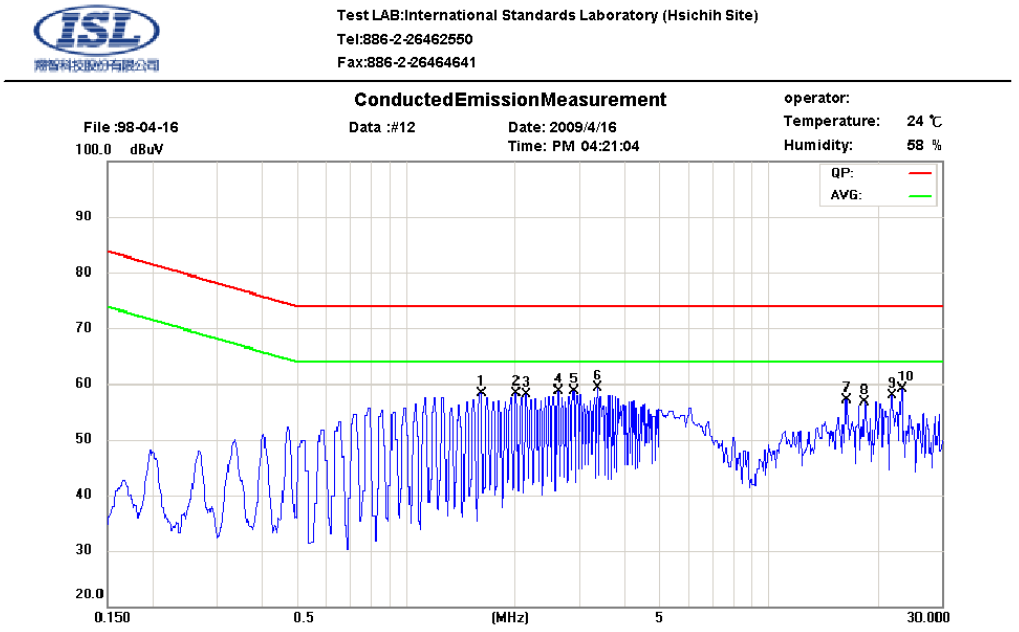
A margin of -8dB means that the emission is 8dB below the limit

The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result.

If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.

6.5 Test Data: LAN 2--100M

Table 6.5.1 Telecommunication Port Conducted Emission



Site: Conduction 01 Phase: L2

Limit: ISN RJ-45 Class B Conduction Power:

Company: Witness:

EUT Model:

Execute Program:

Note:

No.	Frequency MHz	LISN Loss dB	Cable Loss dB	QP Correct dBuV	QP Limit dBuV	QP Margin dB	AVG Correct dBuV	AVG Limit dBuV	AVG Margin dB	Note
1	1.6025	9.84	0.21	57.50	74.0	-16.5	56.70	64.0	-7.30	
2	2.0075	9.83	0.24	57.50	74.0	-16.5	56.70	64.0	-7.30	
3	2.1425	9.83	0.25	57.70	74.0	-16.3	56.90	64.0	-7.10	
4	2.6150	9.83	0.28	57.80	74.0	-16.2	57.00	64.0	-7.00	
5	2.8850	9.83	0.29	57.90	74.0	-16.1	57.00	64.0	-7.00	
6	3.3575	9.83	0.32	57.60	74.0	-16.4	56.60	64.0	-7.40	
7	16.3125	9.78	0.76	56.70	74.0	-17.3	53.30	64.0	-10.7	
8	18.3125	9.78	0.81	57.30	74.0	-16.7	53.90	64.0	-10.1	
9	21.7500	9.79	0.89	58.30	74.0	-15.7	54.80	64.0	-9.20	
10	23.1875	9.8	0.92	60.20	74.0	-13.8	56.60	64.0	-7.40	

Note :

Margin = Corrected Amplitude - Limit

Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss

A margin of -8dB means that the emission is 8dB below the limit

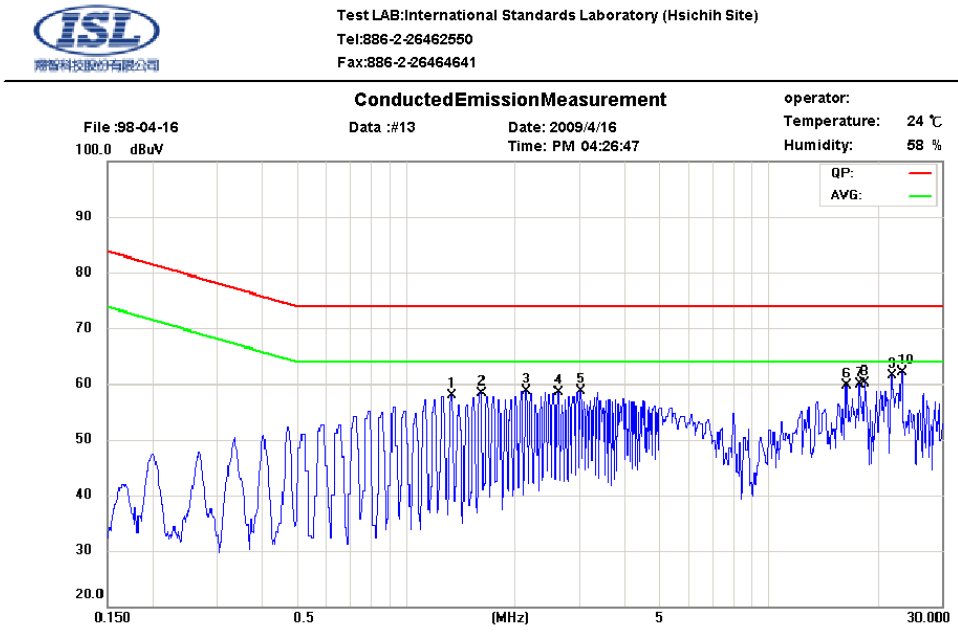
The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result.

If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.

6.6 Test Data: LAN 1--10M

Table 6.6.1 Telecommunication Port Conducted Emission

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641



Site: Conduction 01
Limit: ISN RJ-45 Class B Conduction
Company:
EUT Model:
Execute Program:
Note:

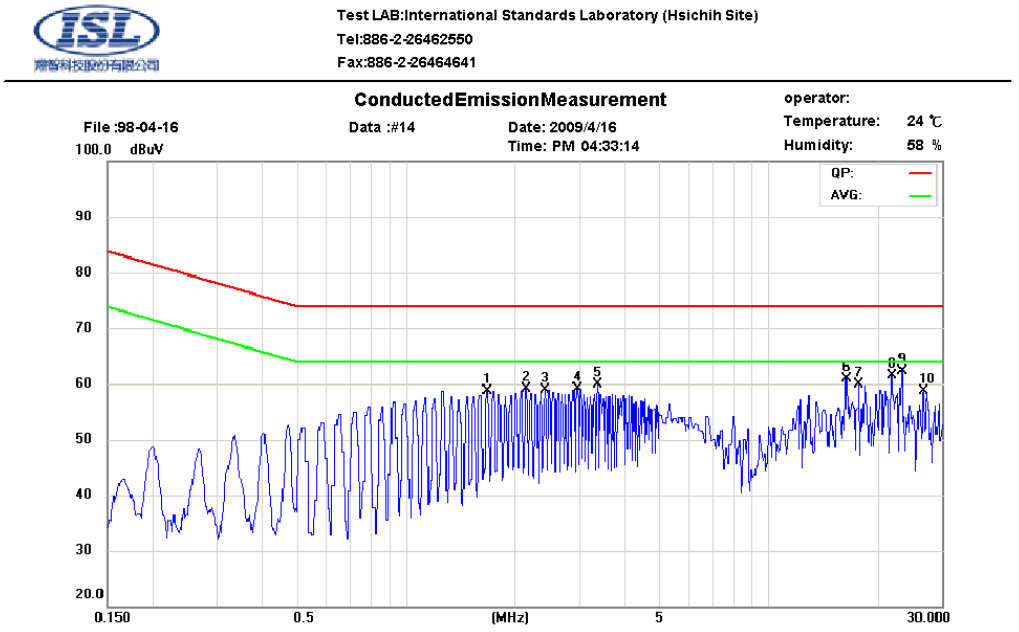
Phase: L2
Power:
Witness:

No.	Frequency MHz	LISN Loss dB	Cable Loss dB	QP Correct dBuV	QP Limit dBuV	QP Margin dB	AVG Correct dBuV	AVG Limit dBuV	AVG Margin dB	Note
1	1.3325	9.84	0.19	56.10	74.0	-17.9	54.90	64.0	-9.10	
2	1.6025	9.84	0.21	57.20	74.0	-16.8	56.30	64.0	-7.70	
3	2.1425	9.83	0.25	57.70	74.0	-16.3	56.90	64.0	-7.10	
4	2.6150	9.83	0.28	57.70	74.0	-16.3	57.00	64.0	-7.00	
5	3.0200	9.83	0.3	58.00	74.0	-16.0	56.90	64.0	-7.10	
6	16.3125	9.78	0.76	61.60	74.0	-12.4	59.00	64.0	-5.00	
7	17.8125	9.78	0.8	60.80	74.0	-13.2	58.70	64.0	-5.30	
8	18.3125	9.78	0.81	61.30	74.0	-12.7	59.00	64.0	-5.00	
9	21.7500	9.79	0.89	62.80	74.0	-11.2	60.90	64.0	-3.10	
10	23.1875	9.8	0.92	63.20	74.0	-10.8	59.20	64.0	-4.80	

Note :
Margin = Corrected Amplitude - Limit
Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result.
If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.

6.7 Test Data: LAN 2--10M

Table 6.7.1 Telecommunication Port Conducted Emission



Site: Conduction 01
Limit: ISN RJ-45 Class B Conduction
Company:
EUT Model:
Execute Program:
Note:

Phase: L2
Power:
Witness:

No.	Frequency MHz	LISN Loss dB	Cable Loss dB	QP Correct dBuV	QP Limit dBuV	QP Margin dB	AVG Correct dBuV	AVG Limit dBuV	AVG Margin dB	Note
1	1.6700	9.84	0.21	57.20	74.0	-16.8	56.30	64.0	-7.70	
2	2.1425	9.83	0.25	57.50	74.0	-16.5	56.70	64.0	-7.30	
3	2.4125	9.83	0.26	57.80	74.0	-16.2	57.00	64.0	-7.00	
4	2.9525	9.83	0.3	58.00	74.0	-16.0	57.00	64.0	-7.00	
5	3.3575	9.83	0.32	57.50	74.0	-16.5	56.40	64.0	-7.60	
6	16.3125	9.78	0.76	61.00	74.0	-13.0	58.60	64.0	-5.40	
7	17.7500	9.78	0.8	60.80	74.0	-13.2	58.70	64.0	-5.30	
8	21.7500	9.79	0.89	62.80	74.0	-11.2	60.80	64.0	-3.20	
9	23.1875	9.8	0.92	61.50	74.0	-12.5	60.30	64.0	-3.70	
10	26.6875	9.82	0.99	59.80	74.0	-14.2	58.20	64.0	-5.80	

Note :
Margin = Corrected Amplitude - Limit
Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit
The frequency spectrum graph is for final peak graph, and the attached table is for QP/AVG test result.
If peak data can pass, it will be shown in "QP/AVG Correct" column, if not, QP/AVG data will instead.

7. Radiated Disturbance Emissions

7.1 Configuration and Procedure

7.1.1 EUT Configuration

The equipment under test was set up on a non-conductive table 80cm above ground, on open field or chamber. The excess length of the power cord was folded back and forth at the center of the lead to form a bundle 30cm to 40cm in length. Any changes made to the configuration, or modifications made to the EUT, during testing are noted in the following test record.

If EUT has an extra auxiliary AC outlet which can provide power to an external monitor, all measurements will be made with the monitor power from EUT-mounted AC outlet and then from floor-mounted AC outlet.

7.1.2 Test Procedure

The system was set up as described above, with the EMI diagnostic software running. The maximum emission was measured by varying the height of antenna and then by rotating the turntable. Both polarization of antenna, horizontal and vertical, were measured.

The highest emissions between 30 MHz to 1000 MHz were analyzed in details by operating the spectrum analyzer and/or EMI receiver in quasi-peak mode to determine the precise amplitude of the emissions. While doing so, the interconnecting cables and major parts of the system were moved around, the antenna height was varied between one and four meters, its polarization was varied between vertical and horizontal, and the turntable was slowly rotated, to maximize the emission.

7.1.3 Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range:	30MHz--1000MHz
Detector Function:	Quasi-Peak Mode
Resolution Bandwidth:	120KHz

7.2 Radiation Test Data: Configuration 1

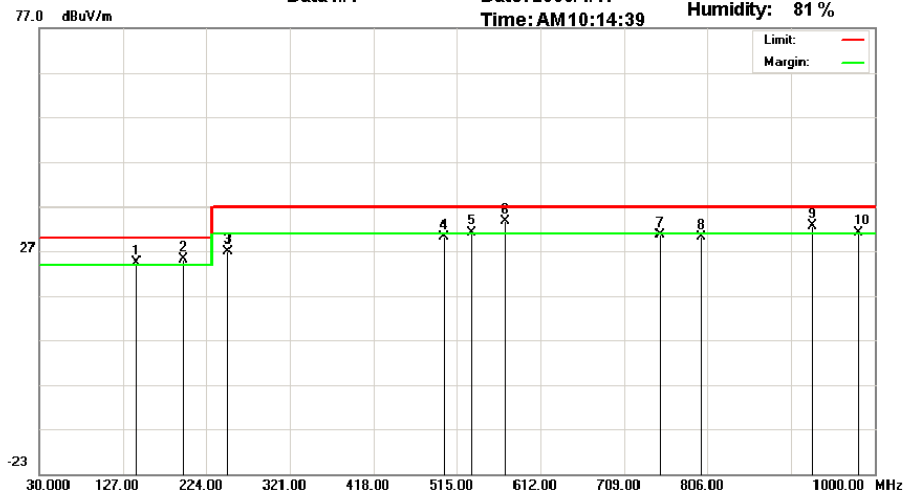
Table 7.2.1 Radiated Emissions (Horizontal)

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641

RadiatedEmissionMeasurement

Operator:
Temperature: 19 ℃
Humidity: 81 %

File :98-04-17
Data :#1
Date: 2009/4/17
Time: AM10:14:39



Site : OATS 01
Condition : CISPR22 ClassB 10M Radiation
Company:
EUT Model:
Execute Program:
Note :

Polarization: *Horizontal*
Power:
Witness:

No.	Frequency (MHz)	RX_R (dBuV/m)	Ant_F (dB)	Cab_L (dB)	PreAmp (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	143.2455	9.91	12.64	1.92	0	24.47	30.00	-5.53	400	192	QP
2	196.7812	10.70	12.22	2.26	0	25.18	30.00	-4.82	99	53	QP
3	249.1250	13.11	11.19	2.56	0	26.86	37.00	-10.14	202	186	QP
4	499.5750	8.68	17.69	3.82	0	30.19	37.00	-6.81	199	256	QP
5	532.3280	9.23	18.02	3.96	0	31.21	37.00	-5.79	400	174	QP
6	571.1040	11.22	18.41	4.12	0	33.75	37.00	-3.25	100	152	QP
7	750.0350	5.33	20.6	4.82	0	30.75	37.00	-6.25	99	360	QP
8	798.8790	3.62	21.38	5.01	0	30.01	37.00	-6.99	351	204	QP
9	927.4080	4.24	22.97	5.48	0	32.69	37.00	-4.31	200	231	QP
10	980.9800	2.02	23.51	5.61	0	31.14	37.00	-5.86	100	185	QP

* Note:
Margin = Corrected Amplitude – Limit
Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
BILOG Antenna Distance: 10 meter, Frequency: under 1000MHz
Horn Antenna Distance: 3 meter, Frequency: 1000MHz—18GHz

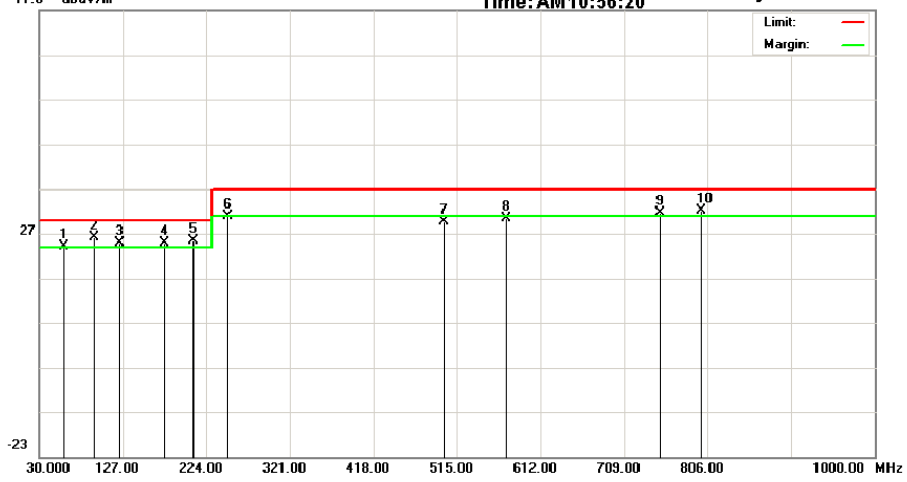
Table 7.2.1 Radiated Emissions (Vertical)

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641

RadiatedEmissionMeasurement

Operator:
Temperature: 19 ℃
Humidity: 81 %

File :98-04-17 Data :#2 Date: 2009/4/17 Time: AM10:56:20



Site : OATS 01
Condition : CISPR22 ClassB 10M Radiation
Company:
EUT Model:
Execute Program:
Note :

Polarization: Vertical
Power:
Witness:

No.	Frequency (MHz)	RX_R (dBuV/m)	Ant_F (dB)	Cab_L (dB)	PreAmp (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	58.5950	15.37	7.47	1.29	0	24.13	30.00	-5.87	350	178	QP
2	93.9276	16.27	8.3	1.58	0	26.15	30.00	-3.85	149	259	QP
3	124.0440	9.67	13.5	1.81	0	24.98	30.00	-5.02	100	325	QP
4	174.5455	11.20	11.51	2.12	0	24.83	30.00	-5.17	100	291	QP
5	207.5660	12.28	10.68	2.32	0	25.28	30.00	-4.72	150	276	QP
6	249.1460	17.24	11.19	2.56	0	30.99	37.00	-6.01	100	105	QP
7	499.9420	8.07	17.7	3.82	0	29.59	37.00	-7.41	100	12	QP
8	571.4785	7.79	18.41	4.12	0	30.32	37.00	-6.68	202	175	QP
9	750.0500	6.12	20.6	4.82	0	31.54	37.00	-5.46	100	246	QP
10	799.2090	5.67	21.39	5.01	0	32.07	37.00	-4.93	100	301	QP

* Note:
Margin = Corrected Amplitude – Limit
Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
BILOG Antenna Distance: 10 meter, Frequency: under 1000MHz
Horn Antenna Distance: 3 meter, Frequency: 1000MHz—18GHz

7.3 Radiation Test Data: Configuration 2

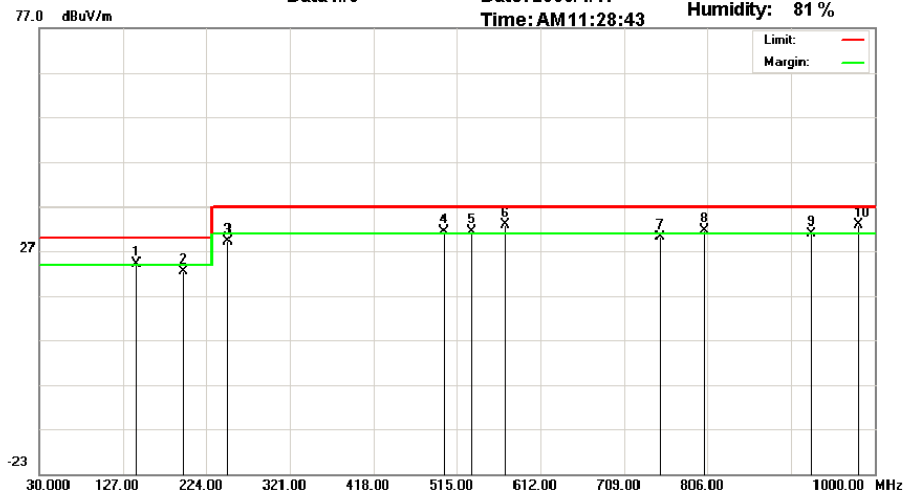
Table 7.3.1 Radiated Emissions (Horizontal)

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641

RadiatedEmissionMeasurement

Operator:
Temperature: 19 ℃
Humidity: 81 %

File:98-04-17 Data:#3 Date:2009/4/17 Time:AM11:28:43



Site : OATS 01
Condition : CISPR22 ClassB 10M Radiation
Company:
EUT Model:
Execute Program:
Note :

Polarization: *Horizontal*
Power:
Witness:

No.	Frequency (MHz)	RX_R (dBuV/m)	Ant_F (dB)	Cab_L (dB)	PreAmp (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	143.2055	9.45	12.64	1.92	0	24.01	30.00	-5.99	200	241	QP
2	196.8646	7.95	12.24	2.26	0	22.45	30.00	-7.55	299	175	QP
3	249.1574	15.32	11.19	2.56	0	29.07	37.00	-7.93	400	352	QP
4	499.5422	9.87	17.69	3.82	0	31.38	37.00	-5.62	100	254	QP
5	532.3341	9.45	18.02	3.96	0	31.43	37.00	-5.57	200	139	QP
6	571.0684	10.43	18.41	4.12	0	32.96	37.00	-4.04	254	25	QP
7	750.0100	4.59	20.6	4.82	0	30.01	37.00	-6.99	158	157	QP
8	801.3740	5.21	21.42	5.02	0	31.65	37.00	-5.35	200	246	QP
9	925.7780	2.37	22.96	5.47	0	30.80	37.00	-6.20	400	217	QP
10	980.9750	3.66	23.51	5.61	0	32.78	37.00	-4.22	100	198	QP

* Note:
Margin = Corrected Amplitude – Limit
Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
BILOG Antenna Distance: 10 meter, Frequency: under 1000MHz
Horn Antenna Distance: 3 meter, Frequency: 1000MHz—18GHz

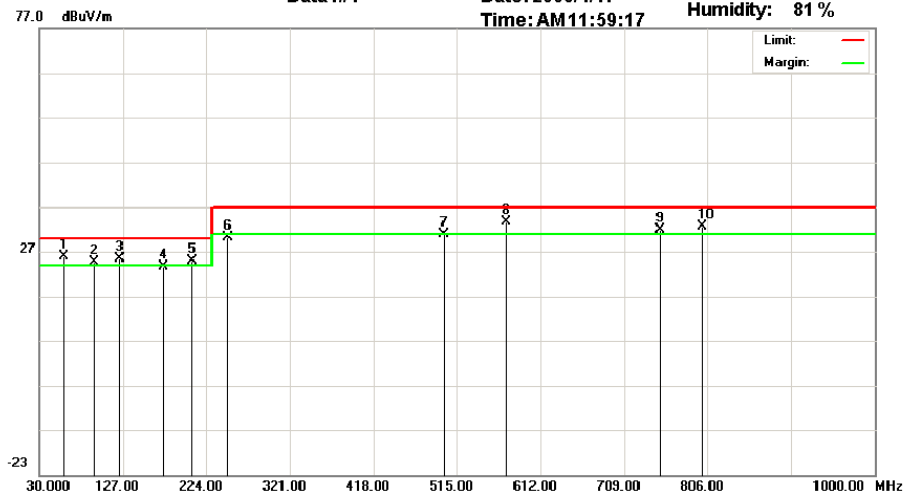
Table 7.3.1 Radiated Emissions (Vertical)

Test LAB:International Standards Laboratory (Hsichih Site)
Tel:886-2-26462550
Fax:886-2-26464641

Radiated Emission Measurement

Operator:
Temperature: 19 ℃
Humidity: 81 %

File :98-04-17 Data :#4 Date: 2009/4/17 Time: AM11:59:17



Site : OATS 01
Condition : CISPR22 ClassB 10M Radiation
Company:
EUT Model:
Execute Program:
Note :

Polarization: Vertical
Power:
Witness:

No.	Frequency (MHz)	RX_R (dBuV/m)	Ant_F (dB)	Cab_L (dB)	PreAmp (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	58.6335	17.08	7.47	1.29	0	25.84	30.00	-4.16	100	254	QP
2	93.9133	14.87	8.3	1.58	0	24.75	30.00	-5.25	200	152	QP
3	123.5890	10.19	13.5	1.8	0	25.49	30.00	-4.51	129	286	QP
4	174.4485	10.04	11.51	2.12	0	23.67	30.00	-6.33	100	243	QP
5	207.3410	11.83	10.74	2.32	0	24.89	30.00	-5.11	202	124	QP
6	249.1610	16.32	11.19	2.56	0	30.07	37.00	-6.93	154	191	QP
7	499.9840	9.45	17.7	3.82	0	30.97	37.00	-6.03	200	300	QP
8	571.6920	11.13	18.42	4.12	0	33.67	37.00	-3.33	100	299	QP
9	750.0550	6.44	20.6	4.82	0	31.86	37.00	-5.14	320	216	QP
10	799.6580	6.22	21.39	5.01	0	32.62	37.00	-4.38	150	83	QP

* Note:
Margin = Corrected Amplitude – Limit
Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
BILOG Antenna Distance: 10 meter, Frequency: under 1000MHz
Horn Antenna Distance: 3 meter, Frequency: 1000MHz—18GHz

8. Electrostatic discharge (ESD) immunity

8.1 Electrostatic discharge (ESD) immunity test

Port:	Enclosure
Basic Standard:	EN61000-4-2/ AS/NZS 61000.4.2 (details referred to Sec 2.2)
Test Level:	Air +/- 2 kV, +/- 4 kV, +/- 8 kV Contact +/- 2 kV, +/- 4 kV
Criteria:	B
Test Procedure	refer to ISL QA T04-S03
Temperature:	20 °C
Humidity:	52%

Selected Test Point

Air: discharges were applied to slots, aperture or insulating surfaces. 10 single air discharges were applied to each selected points.

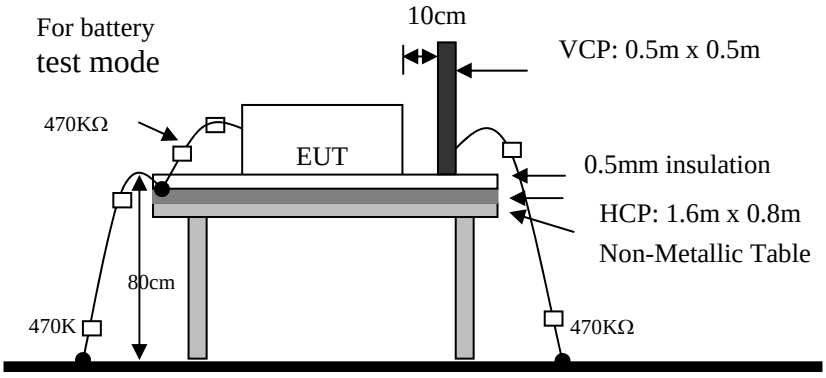
Contact: Total 200 discharges minimum were to the selected contact points.

Indirect Contact Points: 25 discharges were applied to center of one edge of VCP and each EUT side of HCP with 10 cm away from EUT.

For final test points, please refer to EUT 21 to EUT 22 of "Appendix: Photographs of EUT". Red arrow lines indicate the contact points, and blue arrow lines indicate the air points.

Test Setup

EUT is 1m from the wall and other metallic structure. When Battery test mode is needed, a cable with one 470KΩ resister at two rare ends is connected from metallic part of EUT and screwed to HCP.



Ground reference Plane

Test Result

Performance of EUT complies with the given specification.

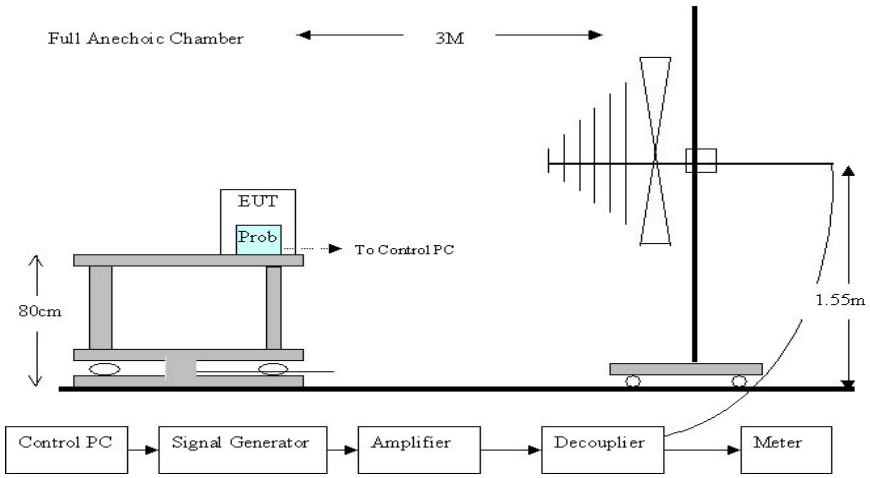
9. Radio-Frequency, Electromagnetic Field immunity

9.1 Radio-Frequency, Electromagnetic Field immunity test

Port:	Enclosure
Basic Standard:	EN61000-4-3/ AS/NZS 61000.4.3 (details referred to Sec 2.2)
Test Level::	3 V/m
Modulation:	AM 1KHz 80%
Frequency range:	80 MHz~1 GHz
Frequency Step:	1% of last step frequency
Dwell time:	3s
Polarization:	Vertical and Horizontal
EUT Azimuth Angle	☒0° ☒90° ☒180° ☒270°
Criteria:	A
Test Procedure	refer to ISL QA T04-S107
Temperature:	19°C
Humidity:	66%

Test Setup

The field sensor is placed at one calibration grid point to check the intensity of the established fields on both polarizations. EUT is adjusted to have each side of EUT face coincident with the calibration plane. A CCD camera and speakers are used to monitor the condition of EUT for the performance judgment.



Test Result

Performance of EUT complies with the given specification.

10. Electrical Fast transients/burst immunity

10.1 Electrical Fast transient/burst immunity test

Port:	AC mains; Twisted Pair LAN Port
Basic Standard:	EN61000-4-4/ AS/NZS 61000.4.4 (details referred to Sec 2.2)
Test Level:	**AC Power Port**: +/- 1 kV **Twisted Pair LAN Port** (I/O Cables): +/- 0.5 kV
Rise Time:	5ns
Hold Time:	50ns
Repetition Frequency:	5KHz
Criteria:	B
Test Procedure	refer to ISL QA T04-S05
Temperature:	20 °C
Humidity:	52%

Test Procedure

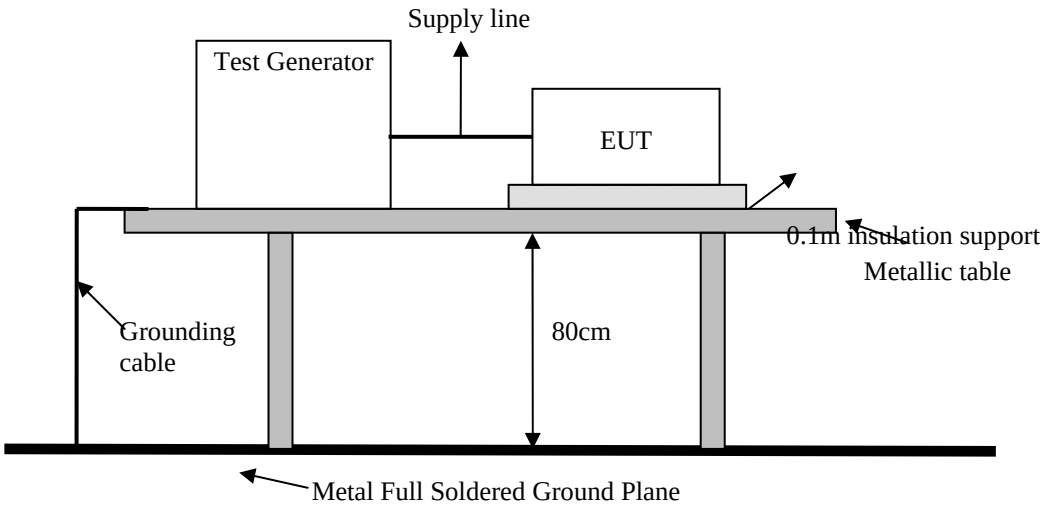
The EUT was setup on a nonconductive table 0.8 m above a reference ground plane.

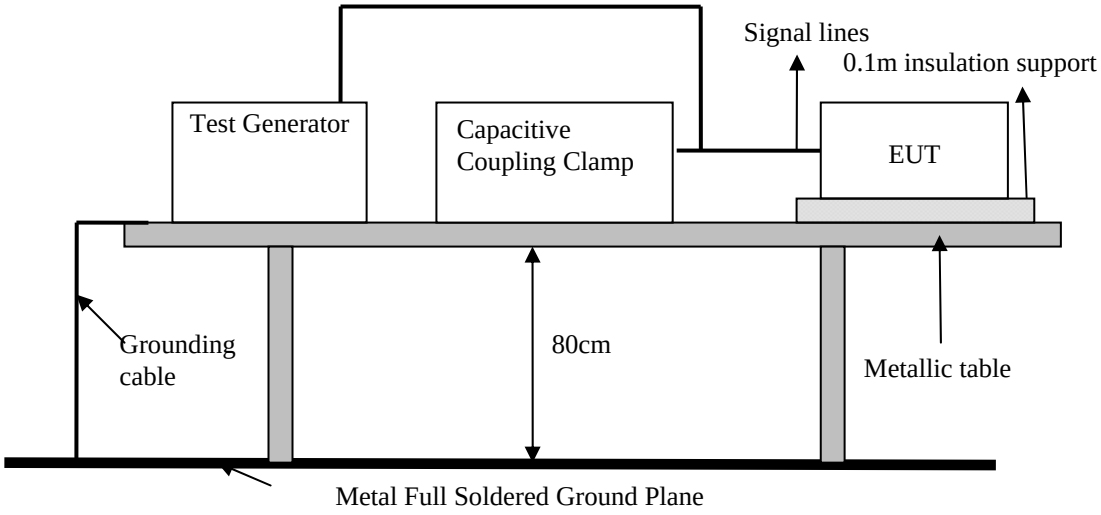
Test Points	Polarity	Result	Comment
Line	+	N	60 sec
	-	N	60 sec
Neutral	+	N	60 sec
	-	N	60 sec
Ground	+	N	60 sec
	-	N	60 sec
Line to Neutral	+	N	60 sec
	-	N	60 sec
Line to Ground	+	N	60 sec
	-	N	60 sec
Neutral to Ground	+	N	60 sec
	-	N	60 sec
Line to Neutral to Ground	+	N	60 sec
	-	N	60 sec
Capacitive coupling clamp	+	N	60 sec
	-	N	60 sec

Note: 'N' means normal, the EUT function is correct during the test.

Test Setup

EUT is at least 50cm from the conductive structure.





Test Result

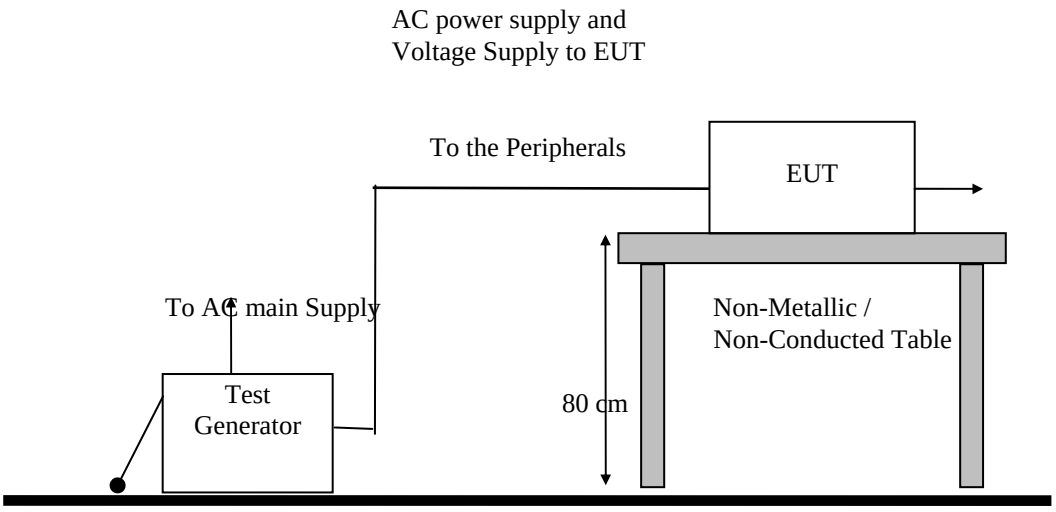
Performance of EUT complies with the given specification.

11. Surge Immunity

11.1 Surge immunity test

Port:	AC mains
Basic Standard:	EN61000-4-5/ AS/NZS 61000.4.5 (details referred to Sec 2.2)
Test Level:	**AC Power Port:** Line to Line: +/- 0.5 kV, +/- 1 kV Line to Earth: +/- 0.5 kV, +/- 1 kV, +/- 2kV
Rise Time:	1.2us
Hold Time:	50us
Repetition Rate:	30 second
Angle:	☒0° ☒90° ☒180° ☒270°
Criteria:	B
Test Procedure	refer to ISL QA T04-S04
Temperature:	20°C
Humidity:	52%

Test Setup



Metal Full Soldered Ground Plane

Test Result

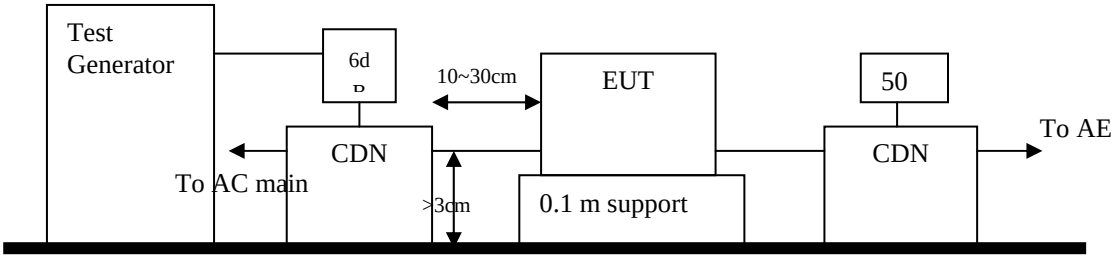
Performance of EUT complies with the given specification.

12. Immunity to Conductive Disturbance

12.1 Immunity to Conductive Disturbance

Port:	AC mains; Twisted Pair LAN Port
Basic Standard:	EN61000-4-6/ AS/NZS 61000.4.6 (details referred to Sec 2.2)
Test Level::	3 V
Modulation:	AM 1KHz 80%
Frequency range:	0.15 MHz - 80MHz
Frequency Step:	1% of last Frequency
Dwell time:	3s
Criteria:	A
Test Procedure	refer to ISL QA T04-S08
Temperature:	20°C
Humidity:	52%

Test Setup



Reference Ground Plane

Test Result

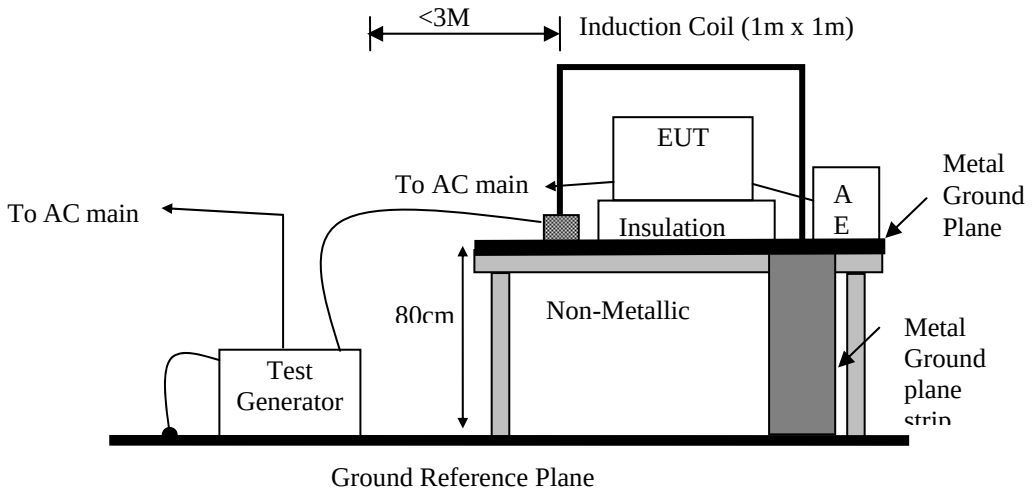
Performance of EUT complies with the given specification.

13. Power Frequency Magnetic Field immunity

13.1 Power Frequency Magnetic field immunity test

Port:	Enclosure
Basic Standard:	EN61000-4-8/ AS/NZS 61000.4.8 (details referred to Sec 2.2)
Test Level:	1A/m
Polarization:	X, Y, Z
Criteria:	A
Test Procedure	refer to ISL QA T04-S02
Temperature:	20°C
Humidity:	52%

Test Setup



Test Result

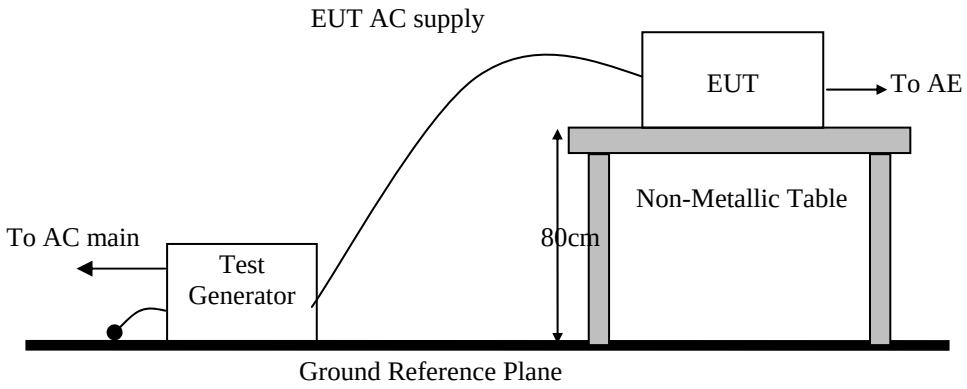
Performance of EUT complies with the given specification.

14. Voltage Dips, Short Interruption and Voltage Variation immunity

14.1 Voltage Dips, Short Interruption and Voltage Variation immunity test

Port:	AC mains
Basic Standard:	EN61000-4-11/ AS/NZS 61000.4.11 (details referred to Sec 2.2)
Test Level: Criteria:	>95% in 0.5 period B
Test Level: Criteria:	30% in 25 period C
Test Level: Criteria:	>95% in 250 period C
Phase:	0°; 180°
Test intervals:	3 times with 10s each
Test Procedure	refer to ISL QA T04-S108
Temperature:	20°C
Humidity:	52%

Test Setup



Test Result

Performance of EUT complies with the given specification.

15. Harmonics

15.1 Harmonics test

Port:	AC mains
Active Input Power:	<75W
Basic Standard:	EN61000-3-2/AS/NZS61000.3.2 (details referred to Sec 2.2)
Test Duration:	2.5min
Class:	D
Test Procedure	refer to ISL QA T04-S32
Temperature:	19°C
Humidity:	68%

Test Procedure

The EUT is supplied in series with shunts or current transformers from a source having the same nominal voltage and frequency as the rated supply voltage and frequency of the EUT. The EUT is configured to its rated current with additional resistive load when the testing is performed.

Equipment having more than one rated voltage shall be tested at the rated voltage producing the highest harmonics as compared with the limits.

Result

Active input power under 75W, no limit apply, declare compliance

16. Voltage Fluctuations

16.1 Voltage Fluctuations test

Port:	AC mains
Basic Standard:	EN61000-3-3/AS/NZS61000.3.3 (details referred to Sec 2.2)
Test Procedure	refer to ISL QA T04-S32
Observation period:	For Pst 10min
	For Plt 2 hours
Temperature:	19°C
Humidity:	68%

Test Procedure

The EUT is supplied in series with reference impedance from a power source with the voltage and frequency as the nominal supply voltage and frequency of the EUT.

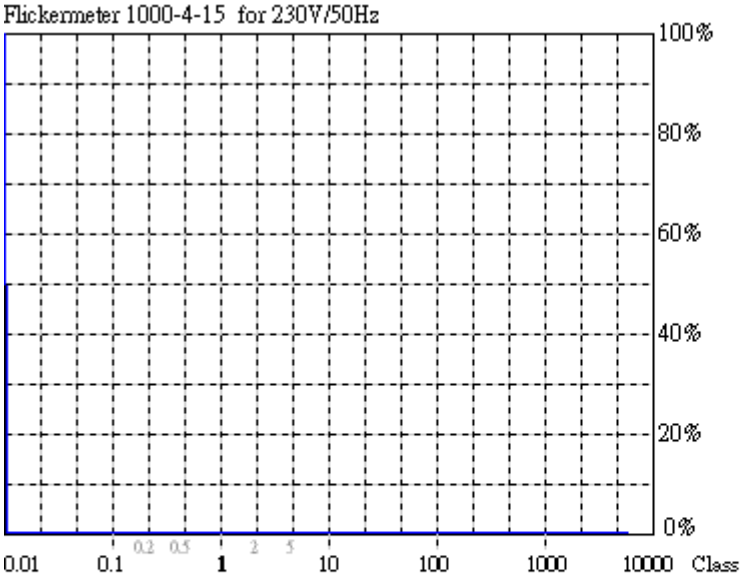
Result

Performance of EUT complies with the given specification.

Test Data

10Min

Flickermeter 1000-4-15 for 230V/50Hz



Actual Flicker (Fli):	**0.00**
Short-term Flicker (Pst):	**0.07**
Limit (Pst):	1.00
Long-term Flicker (Plt):	**0.07**
Limit (Plt):	0.65
Maximum Relative Volt. Change (dmax):	**OFL**
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	**0.06%**
Limit (dc):	3.30%
Maximum Interval exceeding 3.30% (dt):	**0.00ms**
Limit (dt>Lim):	500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

2009/4/20 PM 02:44:0

Urms =	229.9	V	P =	39.76	W
Irms =	0.395	A	pf =	0.438	

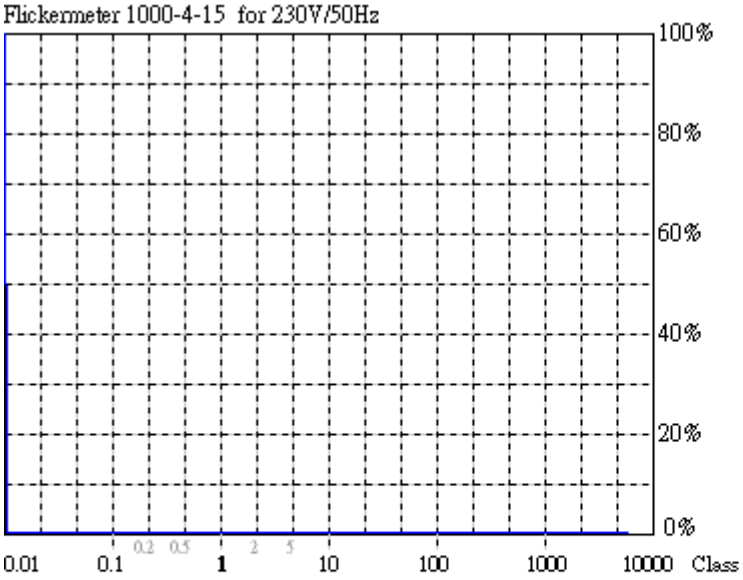
Range:	2 A
V-nom:	230 V
TestTime:	10 min (100%)

Test completed, Result: PASSED

HAR-1000 EMC-Retur

120Min

Flickermeter 1000-4-15 for 230V/50Hz



Actual Flicker (Fli):	**0.00**
Short-term Flicker (Pst):	**0.07**
Limit (Pst):	1.00
Long-term Flicker (Plt):	**0.07**
Limit (Plt):	0.65
Maximum Relative Volt. Change (dmax):	**0.00%**
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	**0.02%**
Limit (dc):	3.30%
Maximum Interval exceeding 3.30% (dt):	**0.00ms**
Limit (dt>Lim):	500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

2009/4/20 PM 04:50:0

Urms =	229.9	V	P =	24.93	W
Irms =	0.260	A	pf =	0.418	

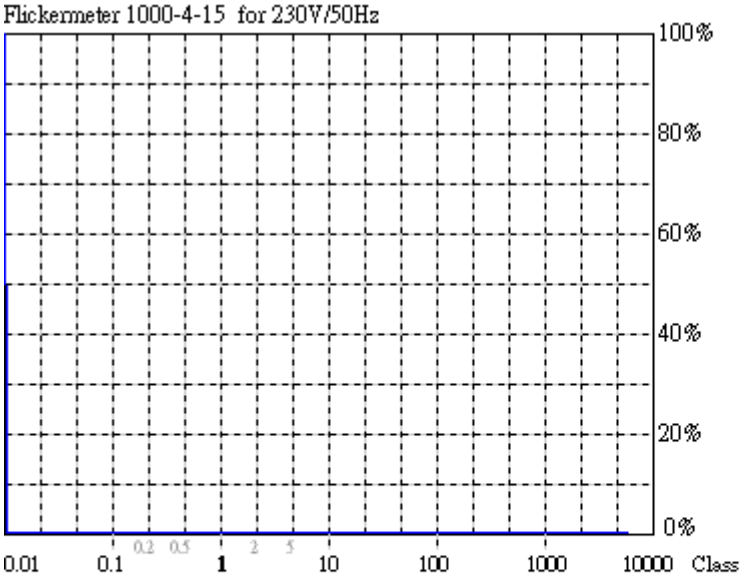
Range:	2 A
V-nom:	230 V
TestTime:	120 min (10000%)

Test completed, Result: PASSED

HAR-1000 EMC-Retur

10Min

Flickermeter 1000-4-15 for 230V/50Hz



Actual Flicker (Fli):	**0.00**
Short-term Flicker (Pst):	**0.07**
Limit (Pst):	1.00
Long-term Flicker (Plt):	**0.07**
Limit (Plt):	0.65
Maximum Relative Volt. Change (dmax):	**OFL**
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	**0.11%**
Limit (dc):	3.30%
Maximum Interval exceeding 3.30% (dt):	**0.00ms**
Limit (dt>Lim):	500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

2009/4/20 PM 05:11:0

Urms =	229.9	V	P =	39.91	W
Irms =	0.387	A	pf =	0.449	

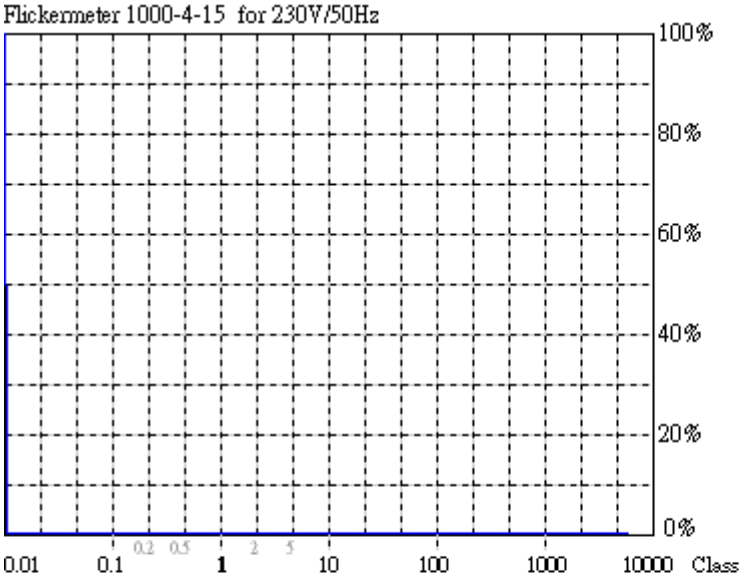
Range:	2 A
V-nom:	230 V
TestTime:	10 min (100%)

Test completed, Result: PASSED

HAR-1000 EMC-Retur

120Min

Flickermeter 1000-4-15 for 230V/50Hz



Actual Flicker (Fli):	**0.00**
Short-term Flicker (Pst):	**0.07**
Limit (Pst):	1.00
Long-term Flicker (Plt):	**0.07**
Limit (Plt):	0.65
Maximum Relative Volt. Change (dmax):	**0.00%**
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	**0.05%**
Limit (dc):	3.30%
Maximum Interval exceeding 3.30% (dt):	**0.00ms**
Limit (dt>Lim):	500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

2009/4/20 PM 07:15:3

Urms =	229.7	V	P =	38.87	W
Irms =	0.383	A	pf =	0.442	

Range:	2 A
V-nom:	230 V
TestTime:	120 min (10000%)

Test completed, Result: PASSED

HAR-1000 EMC-Retur

17. Appendix

17.1 Appendix A: Measurement Procedure for Main Power Port Conducted Emissions

The measurements are performed in a 3.5m x 3.4m x 2.5m shielded room, which referred as Conduction 01 test site, or a 3m x 3m x 2.3m test site, which referred as Conduction 02 test site. The EUT was placed on non-conduction 1.0m x 1.5m table, which is 0.8 meters above an earth-grounded.

Power to the EUT was provided through the LISN which has the Impedance (50ohm/50uH) vs. Frequency Characteristic in accordance with the standard. Power to the LISNs were filtered to eliminate ambient signal interference and these filters were bonded to the ground plane. Peripheral equipment required to provide a functional system (support equipment) for EUT testing was powered from the second LISN through a ganged, metal power outlet box which is bonded to the ground plane at the LISN.

If the EUT is supplied with a flexible power cord, the power cord length in excess of the distance separating the EUT from the LISN shall be folded back and forth at the center of the lead so as to form a bundle not exceeding 40cm in length. If the EUT is provided with a permanently coiled power cord, bundling of the cord is not required. If the EUT is supplied without a power cord, the EUT shall be connected to the LISN by a power cord of the type specified by the manufacturer which shall not be longer than 1 meter. The excess power cord shall be bundled as described above. If a non-flexible power cord is provided with the EUT, it shall be cut to the length necessary to attach the EUT to the LISN and shall not be bundled.

The interconnecting cables were arranged and moved to get the maximum measurement. Both the line of power cord, hot and neutral, were measured.

The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

17.2 Appendix B: Measurement Procedure for Telecommunication Port Conducted Emissions

The measurements are performed in a 3.5m x 3.4m x 2.5m shielded room, which referred as Conduction 01 test site, or a 3m x 3m x 2.3m test site, which referred as Conduction 02 test site. The EUT was placed on non-conduction 1.0m x 1.5m table, which is 0.8 meters above an earth-grounded.

The EUT, any support equipment, and any interconnecting cables were arranged and moved to get the maximum measurement.

Power to the EUT was provided through the LISN which has the Impedance (50 Ohm/50uH) vs. Frequency Characteristic in accordance with the standard. Power to the LISN was filtered to eliminate ambient signal interference and this filter was bonded to ground. Peripheral equipment to provide a functional system (support equipment) for EUT testing was powered through a ganged, metal power outlet box bonded to the ground. AC input power for the auxiliary power outlets was obtained from the same filtered source that provides input power to the LISN.

If the EUT is supplied with a flexible power cord, if the power cord length in excess of 1 m, the excess cable shall be bundled at approximate center of the power cord with the bundles 30 cm to 40 cm in length. If the EUT is provided with a permanently coiled power cord, bundling of the cord is not required. If the EUT is supplied without a power cord, the EUT shall be connected to the LISN by a power cord of the type specified by the manufacturer which shall be 1 meter in length. If a non-flexible power cord is provided with the EUT, it shall be cut to the length necessary to attach the EUT to the LISN and shall not be bundled.

The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information could be useful in reducing their amplitude.

17.3 Appendix C: Test Procedure for Radiated Emissions

Preliminary Measurements in the Anechoic Chamber

The radiated emissions are initially measured in the anechoic chamber at a measurement distance of 3 meters. Desktop EUT are placed on a wooden stand 0.8 meter in height. The measurement antenna is 3 meters from the EUT. The test setup in anechoic chamber is the same as open site. The turntable rotated 360°. The antenna height is varied from 1-2.5m. The primary objective of the radiated measurements in the anechoic chamber is to identify the frequency spectrum in the absence of the electromagnetic environment existing on the open test site. The frequencies can then be pre-selected on the open test site to obtain the corresponding amplitude. The initial scan is made with the spectrum analyzer in automatic sweep mode. The spectrum peaks are then measured manually to determine the exact frequencies.

Measurements on the Open Site or Chamber

The radiated emissions test will then be repeated on the open site or chamber to measure the amplitudes accurately and without the multiple reflections existing in the shielded room. The EUT and support equipment are set up on the turntable of one of 10 meter open field sites. Desktop EUT are set up on a wooden stand 0.8 meter above the ground.

For the initial measurements, the receiving antenna is varied from 1-4 meter height and is changed in the vertical plane from vertical to horizontal polarization at each frequency. Both reading are recorded with the quasi-peak detector with 120KHz bandwidth. For frequency between 30 MHz and 1000MHz, the reading is recorded with peak detector or quasi-peak detector.

At the highest amplitudes observed, the EUT is rotated in the horizontal plane while changing the antenna polarization in the vertical plane to maximize the reading. The interconnecting cables were arranged and moved to get the maximum measurement. Once the maximum reading is obtained, the antenna elevation and polarization will be varied between specified limits to maximize the readings.

17.4 Appendix D: Test Equipment

17.4.1 Test Equipment List

Location	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Conduction	Coaxial Cable 1F-C1	Harbourindustries	RG400	1F-C1	10/23/2008	10/23/2009
Conduction	Hygro-Thermo Meter 11	N/A	TH-400	ISL-002	02/23/2009	02/23/2010
Conduction	LISN 02	EMCO	3825/2	1407	07/07/2008	07/07/2009
Conduction	LISN 03	R&S	ESH3-Z5 831.5518.52	828874/010	07/07/2008	07/07/2009
Conduction	ISN T2 03	FCC	FCC-TLISN-T2-02	20618	08/05/2008	08/05/2009
Conduction	ISN T4 05	FCC	FCC-TLISN-T4-02	20619	08/06/2008	08/06/2009
Conduction	ISN T8 03	FCC	FCC-TLINS-T8-02	20620	08/05/2008	08/05/2009
Conduction	EMI Receiver 08	Schwarzbeck Mess-Elektronik	FCKL 1528	1528-202	09/05/2008	09/05/2009
Conduction	Spectrum Analyzer 05	HP	8594EM	3619A00192	02/23/2009	02/23/2010
Radiation	BILOG Antenna 10	Sumol Sciences	JB1	A013004-1	07/24/2008	07/24/2009
Radiation	Coaxial Cable 3F-10M	MIYAZAKI	8D-8F	10M-1	10/23/2008	10/23/2009
Radiation	Coaxial Cable 3F-3M	BELDEN	RG-8/U	3F-3M	10/23/2008	10/23/2009
Radiation	Spectrum Analyzer 12	Advantest	R3132	130200208	03/05/2009	03/05/2010
Radiation	Hygro-Thermo Meter 10	N/A	TH-400	ISL-001	02/23/2009	02/23/2010
Rad. above 1Ghz	Horn Antenna 01	EMCO	3115	9504-4462	11/04/2008	11/04/2009
Rad. above 1Ghz	Horn Antenna 03	COM-Power	AH-826	100A	02/27/2009	02/27/2010
Rad. above 1Ghz	Microwave Cable RF07-3	HUBER+SUHNER AG.	Sucoflex 103	42728/3	07/17/2008	07/17/2009
Rad. above 1Ghz	Preamplifier 01	R&S	ESMI-Z7	1045.502	07/17/2008	07/17/2009
Radiation	Signal Generator 01	HP	8656B	2635A04675	08/21/2008	08/21/2009
Radiation	EMI Receiver 09	Schwarzbeck Mess-Elektronik	FCVU 1534	1534-150	05/08/2008	05/08/2009

Location	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
EN61K-3-2/3	DC Burn-In Load 02	D-RAM	DBS-2100	2100-910027	N/A	N/A
EN61K-3-2/3	Harmonic/Flicker Test System 03	EMC Partner	HARMONICS-1000	178	03/27/2009	03/27/2010
EN61K-3-2/3	Hygro-Thermo Meter 15	N/A	TH-400	ISL-006	02/23/2009	02/23/2010
EN61K-4	Hygro-Thermo Meter 14	N/A	TH-400	ISL-005	02/23/2009	02/23/2010
EN61K-4-,4,5, 8,11	TRANSIENT 2000 01	EMC Partner	TRANSIENT-2000	950	10/23/2008	10/23/2009
EN61K-4-2	ESD GUN 04	Schaffner	NSG 438	489	03/09/2009	03/09/2010
EN61K-4-3	BILOG Antenna 06	Schaffner	CBL6112B	2754	N/A	N/A
EN61K-4-3	Amplifier 80Mz~1GHz 250W	AR	250W1000A	312494	N/A	N/A
EN61K-4-3	Amplifier 800MHz~3.0GHz 60W	AR	60S1G3	312762	N/A	N/A
EN61K-4-3	Broadband coupler 10K~220Mhz	Amplifier Research	DC2500	19810	N/A	N/A
EN61K-4-3	Broadband Coupler 80M~1GHz	Amplifier Research	DC6180	20364	N/A	N/A
EN61K-4-3	Broadband Coupler 1~4GHz	Werlatone	C5291	6516	N/A	N/A
EN61K-4-3	Coaxial Cable Chmb 04-3M-2	Belden	RG-8/U	Chmb 04-3M-2	N/A	N/A
EN61K-4-3	Signal Generator 03	Anritsu	MG3642A	6200162550	02/27/2009	02/27/2010
EN61K-4-4	Digital Oscilloscope	Tektronix	TDS 684A	B010761	N/A	N/A
EN61K-4-4	EFT Clamp	Precision	1604242	CNEFT1000-103	N/A	N/A
EN61K-4-5	CDN-UTP8 01	EMC Partner	CDN-UTP8	032	08/20/2008	08/20/2009
EN61K-4-5	SURGE-TESTER 01	EMC Partner	MIG0603IN3	778	10/14/2008	10/14/2009
EN61K-4-6	6dB Attenuator	Weinschel Corp	33-6-34	BC5975	N/A	N/A
EN61K-4-6	Amplifier 4-6	Amplifier Research	150A100	1-1-R-02157	N/A	N/A
EN61K-4-6	Attenuator 6dB 4-6	BIRO	100-A-FFN-06	0123	N/A	N/A
EN61K-4-6	CDN M2+M3	Frankonia	M2+M3	A3011016	07/08/2008	07/08/2009
EN61K-4-6	CDN T2 01	Frankonia	T2	A3010003	07/08/2008	07/08/2009
EN61K-4-6	CDN T4 05	FCC Inc.	FCC-801-T4-RJ45	08020	08/06/2008	08/06/2009
EN61K-4-6	CDN T8 01	FCC Inc.	FCC-801-T8-RJ45	08021	08/06/2008	08/06/2009
EN61K-4-6	EM-Clamp 01	FCC	F-203I-23MM	539	N/A	N/A
EN61K-4-6	Coaxial Cable 4-6 01-1	Harbour Industries	M17/128-RG400	4-6 01-1	N/A	N/A
EN61K-4-6	Coaxial Cable 4-6 01-2	Harbour Industries	M17/128-RG400	4-6 01-2	N/A	N/A
EN61K-4-6	Coaxial Cable 4-6 01-3	Harbour Industries	M17/128-RG400	4-6 01-3	N/A	N/A
EN61K-4-6	KAL-AD RJ45S	BIRO			N/A	N/A
EN61K-4-6	KAL-AD T2	BIRO			N/A	N/A
EN61K-4-6	Passive Impedance Adaptor 4-6	FCC	FCC-801-150-50-CDN	9758;9759	N/A	N/A
EN61K-4-6, CISPR 13, Antenna	Signal Generator 01	HP	8656B	2635A04675	08/21/2008	08/21/2009
EN61K-4-8	Clamp Meter 4-8	TES	3090	990900322	07/11/2008	07/11/2009
EN61K-4-8	Magnetic Field Antenna	Precision	TRAIZ44B	MF1000-23	N/A	N/A

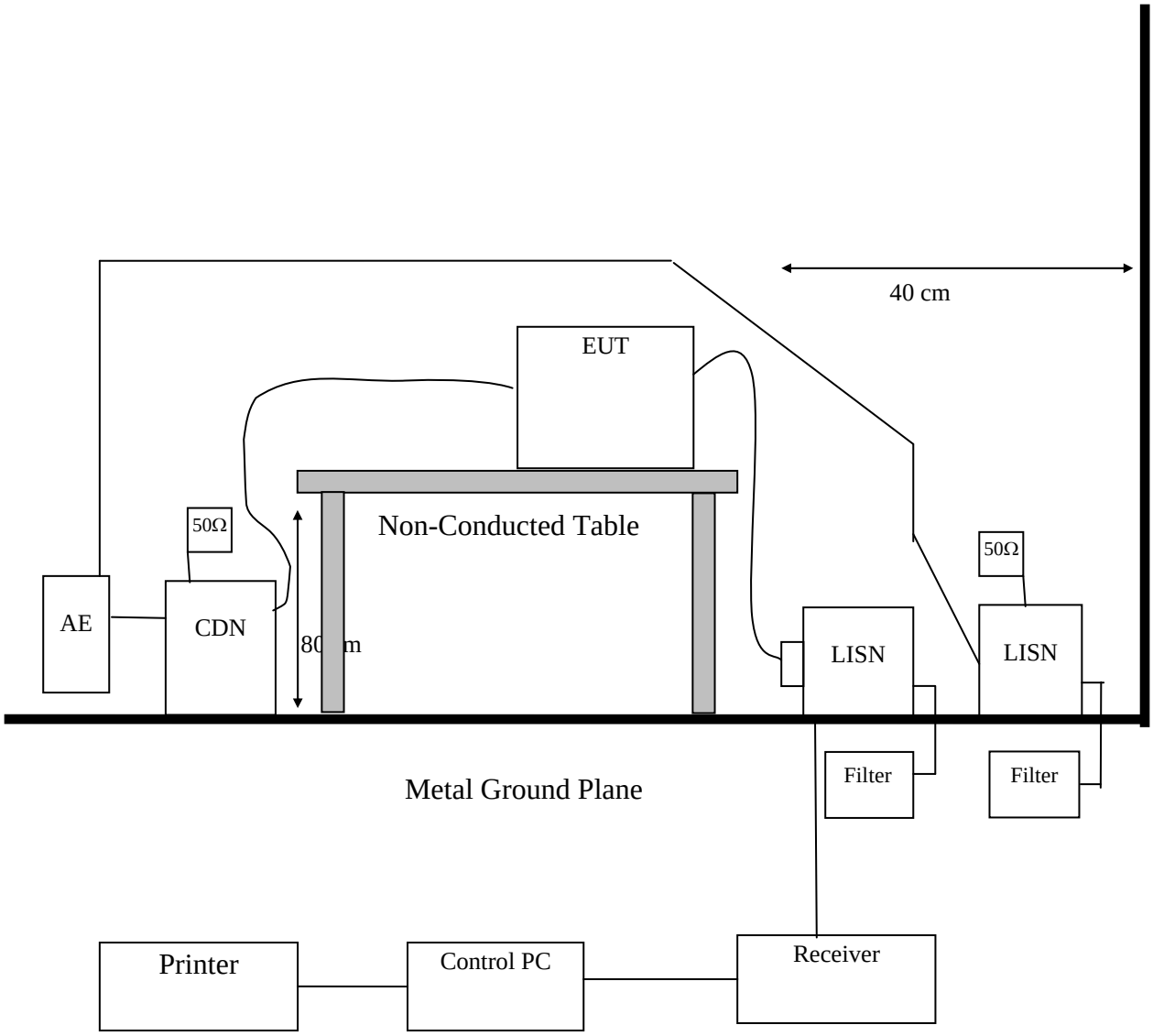
17.5 Software for Controlling Spectrum/Receiver and Calculating Test Data

Test Item	Filename	Version
EN61000-3-2	HARCS.EXE	4.16
EN61000-3-3	HARCS.EXE	4.16
EN61000-4-3	Tile.Exe	2.0.P
EN61000-4-6	EN61000-4-6 Application Software	1.13.e
EN61000-4-2	N/A	2.0
EN61000-4-4	Tema.EXE	1.69
EN61000-4-5	Tema.EXE	1.69
EN61000-4-8	N/A	
EN61000-4-11	VDS-2002Rs.EXE	2.00

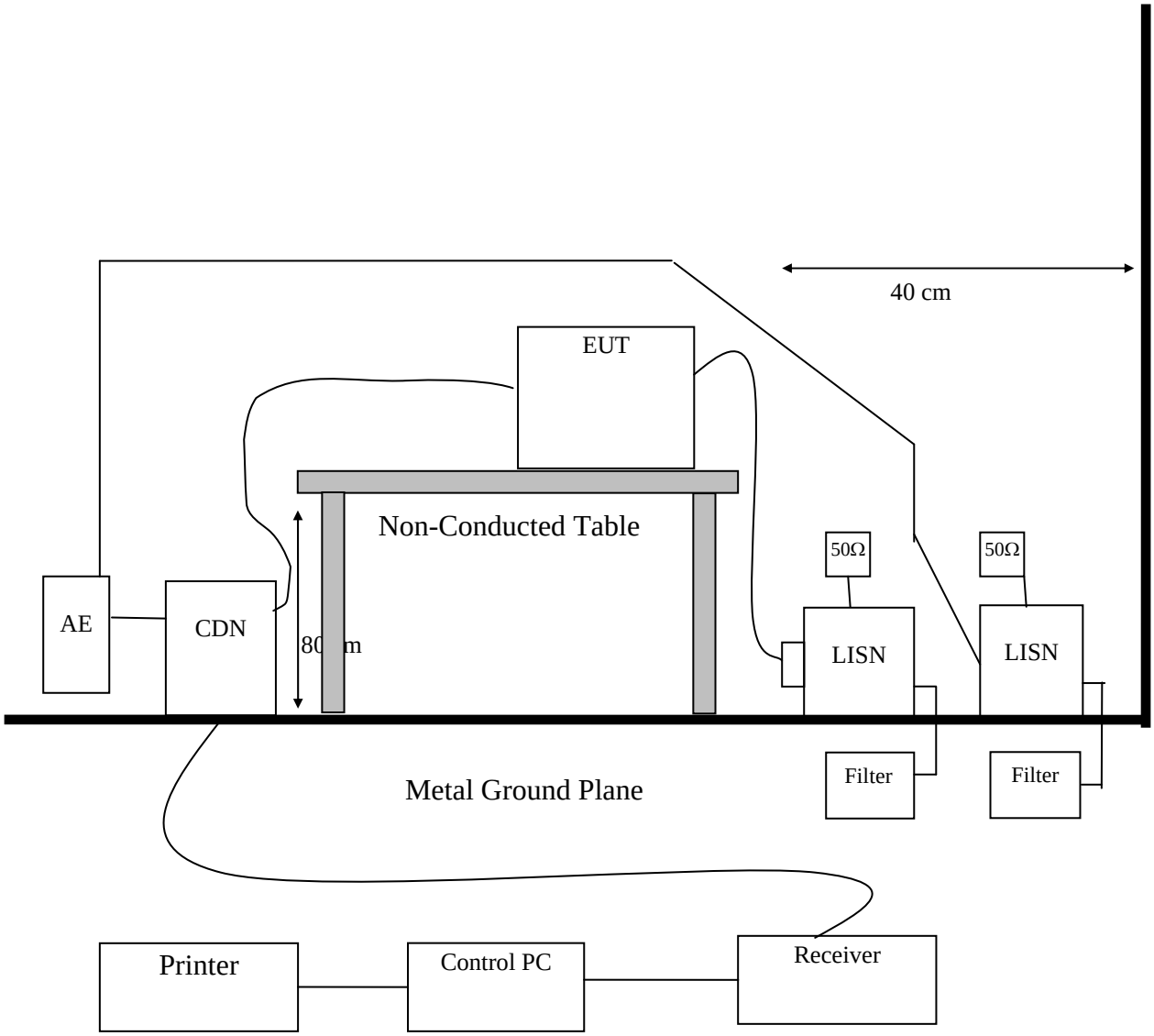
Radiation/Conduction	Filename	Version	Issued Date
Hsichih Conduction	EZ EMC	1.1.4.2	2/10/2007
Hsichih Radiation	EZ EMC	1.1.4.2	1/24/2007

17.6 Appendix E: Layout of EUT and Support Equipment

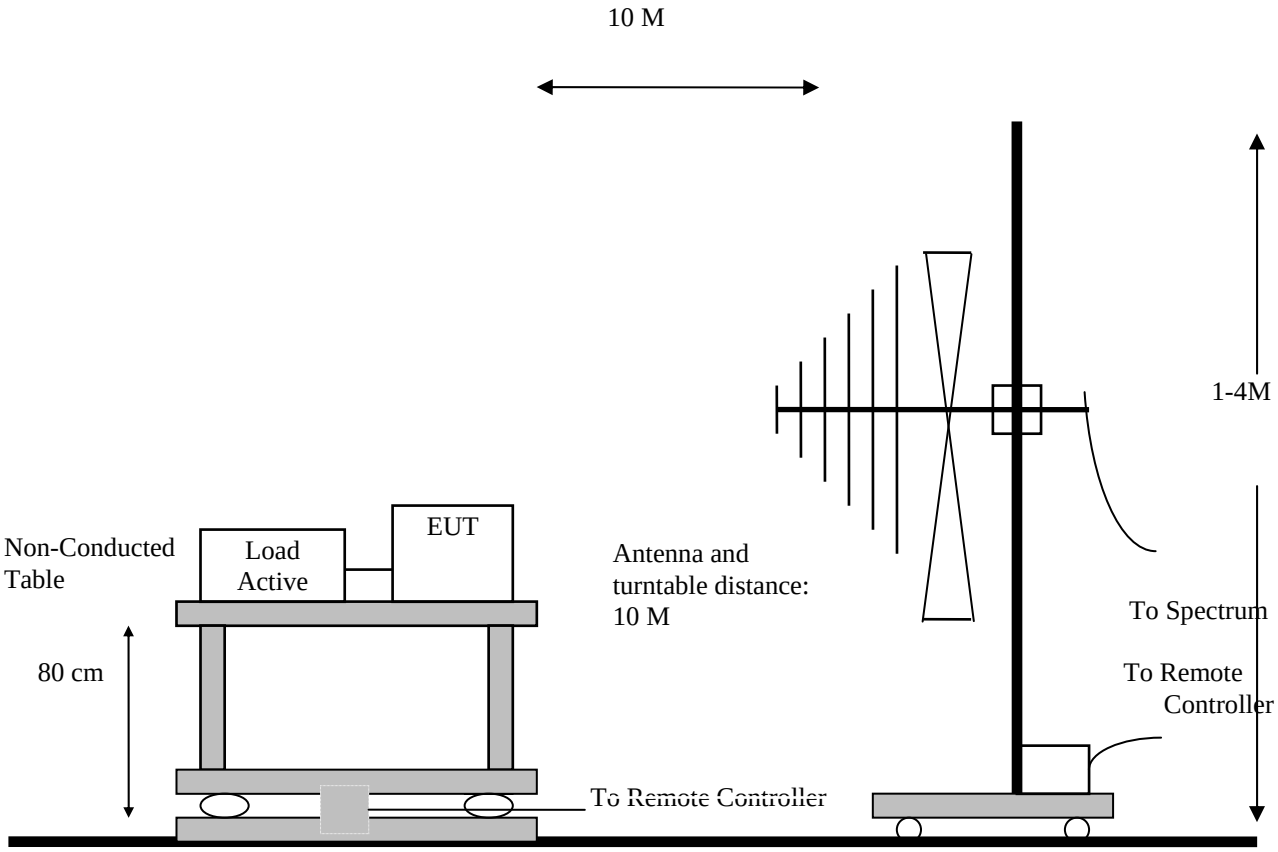
17.6.1 General Power Main Port Conducted Test Configuration

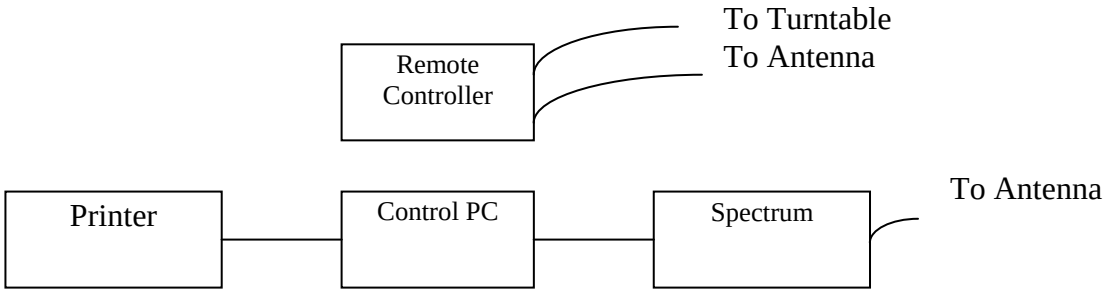


17.6.2 General Telecommunication Port Conducted Emission Test Configuration



17.6.3 General Radiation Test Configuration





17.7 Appendix F: Uncertainty of Measurement

The measurement uncertainty refers to CISPR 16-4-2:2003. The coverage factor k = 2 yields approximately a 95 % level of confidence.

<Conduction 01>: ±2.946dB

<OATS 01 (10M)>
30MHz~1GHz: ±2.547dB

<Immunity 01>

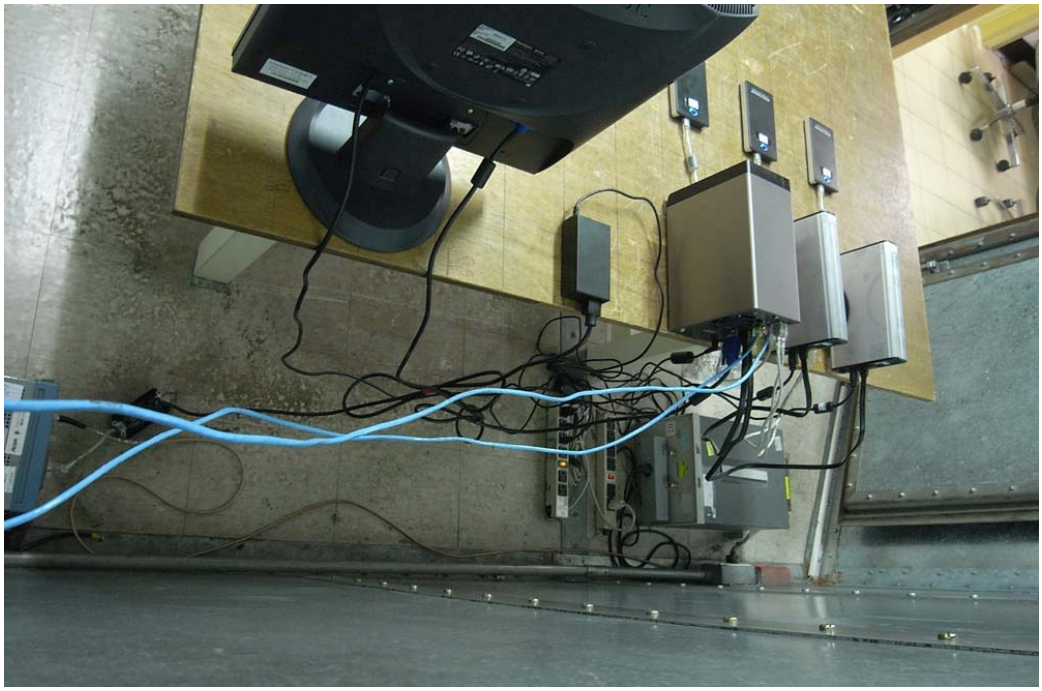
Test item	Uncertainty
EN61000-4-2 (ESD)	
Voltage	±1.848%
First Peak current	±3.233%
current at 30ns	±0.5%
current at 60ns	±0.970%
EN61000-4-3 (RS)	±1.776dB
EN61000-4-4 (EFT)	
Time	±3.162%
Voltage	±4.624%
EN61000-4-5 (Surge)	
Time	±0.200%
Voltage	±4.041%
Current	±3.464%
EN61000-4-6 (CS)	±1.892dB
EN61000-4-8 (Magnetic)	±0.099%
EN61000-4-11 (Dips)	
Time	±0.115%
Voltage	±4.041%
Current	±3.646%
EN61000-3-2 (Harmonics)	±0.320%
EN61000-3-3 (Fluctuations and Flicker)	±0.320%

17.8 Appendix G: Photographs of EUT Configuration Test Set Up

17.8.1 Photo of Main Power Port Conducted Emission and Telecommunication Port Conducted Emission Measurement

Front View

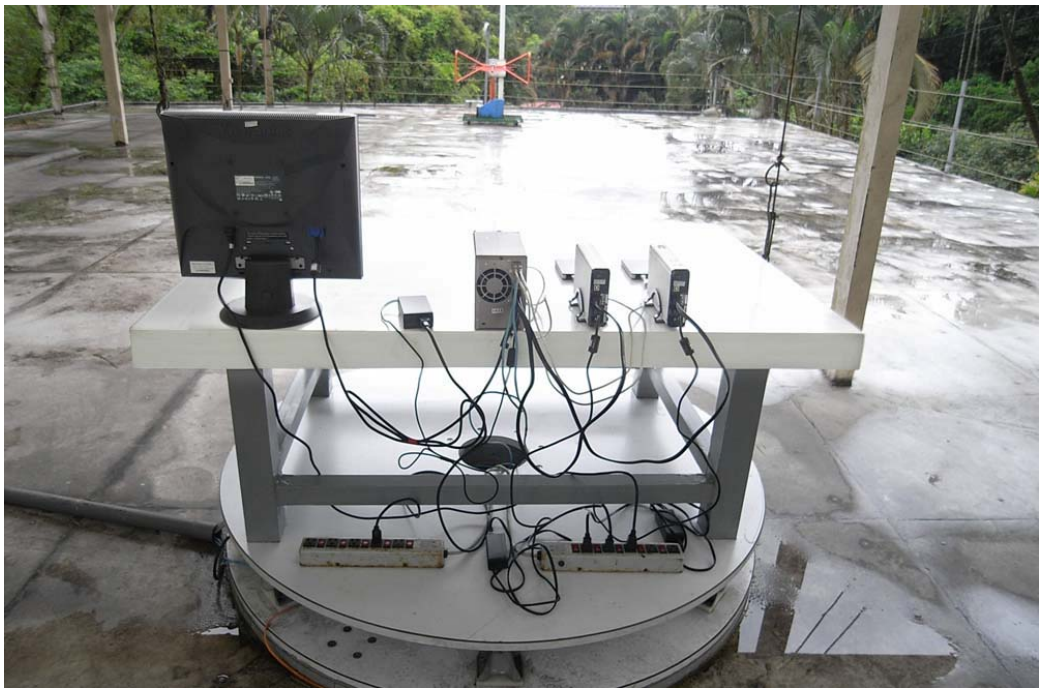
Back View



17.8.2 Photo of Radiated Emission Measurement

Front View

Back View

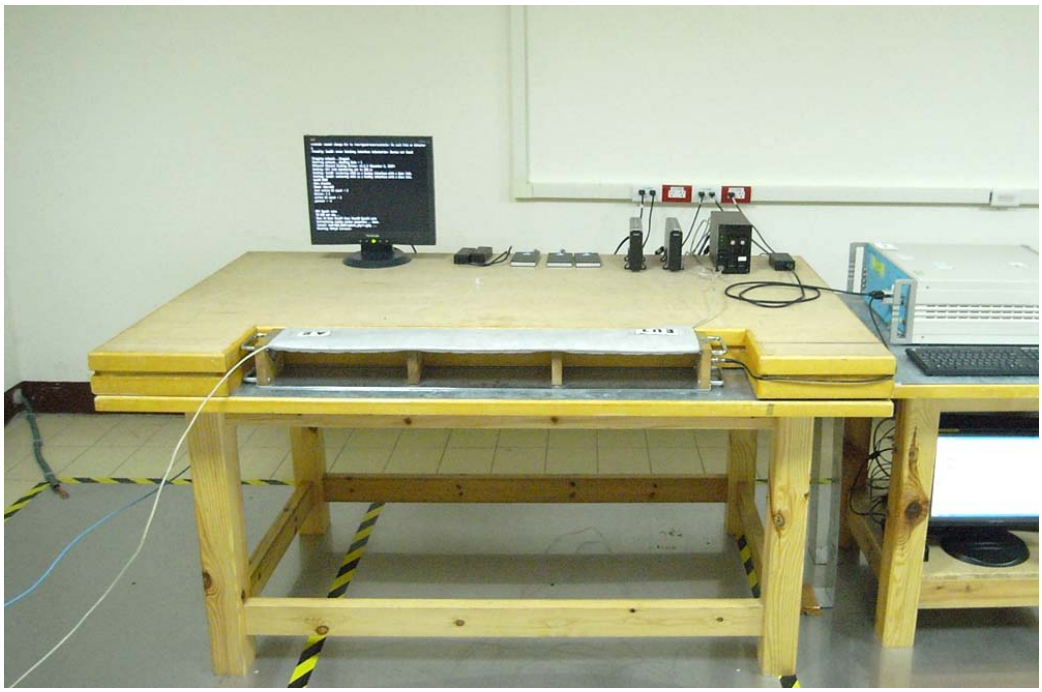


17.8.3 Photo of ESD Measurement

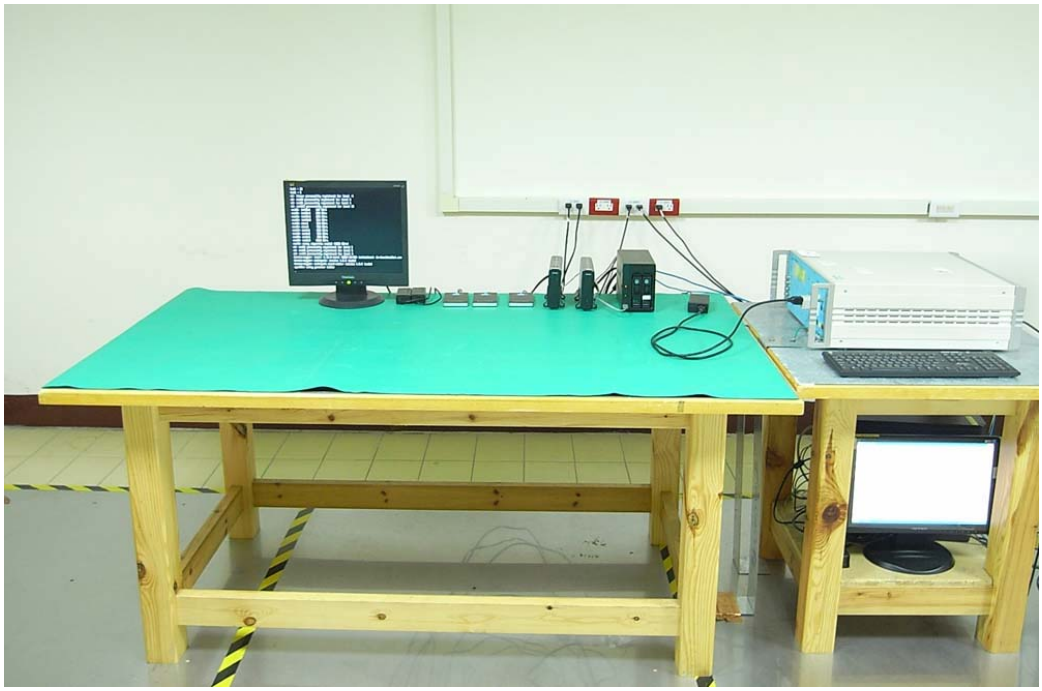
17.8.4 Photo of RF Field Strength Susceptibility Measurement

.

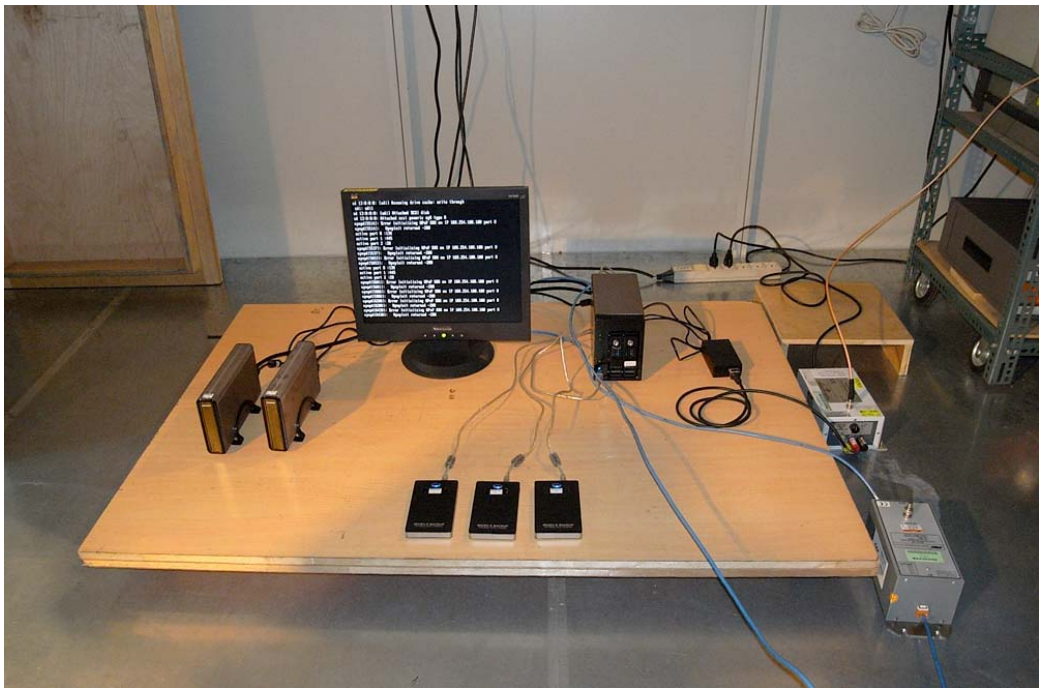
17.8.5 Photo of Electrical Fast Transient/Burst Measurement



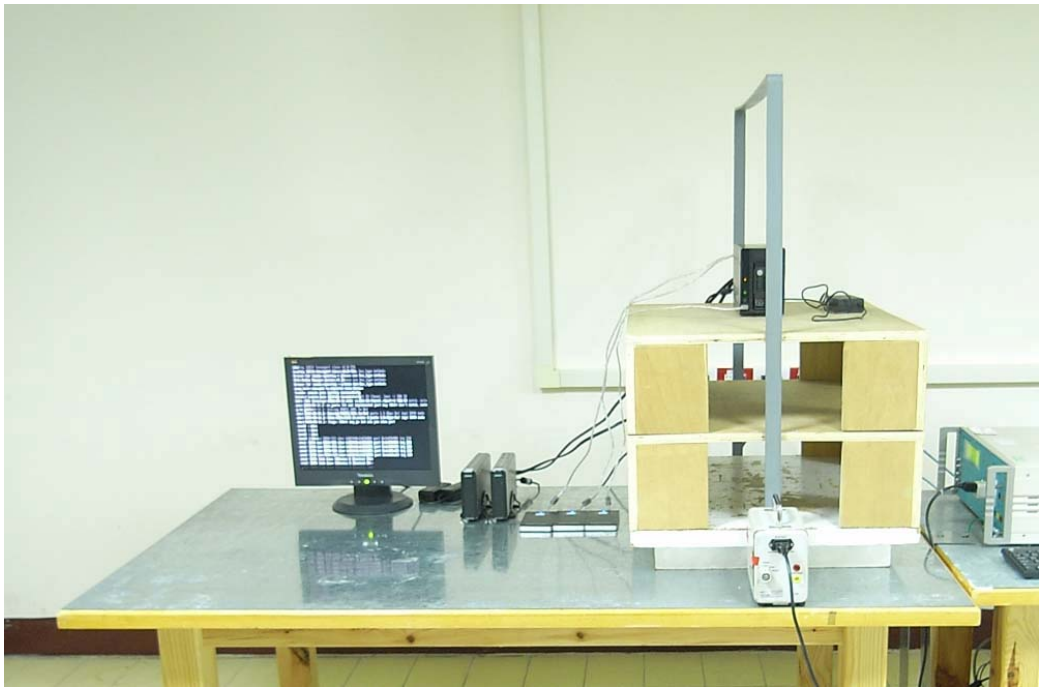
17.8.6 Photo of Surge Measurement



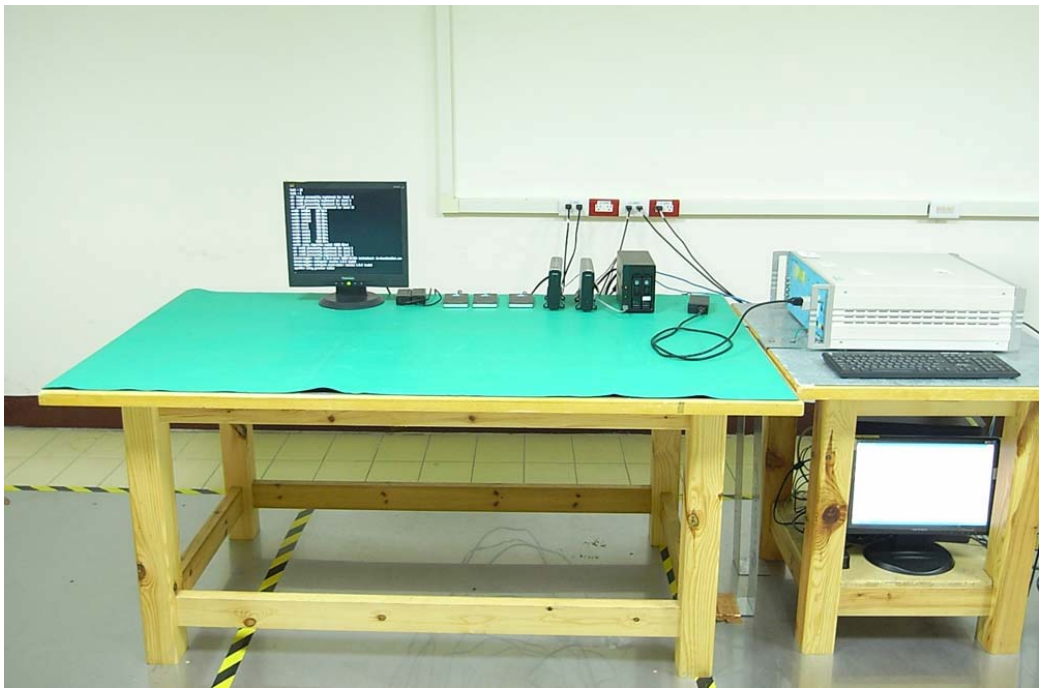
17.8.7 Photo of Conductive Measurement



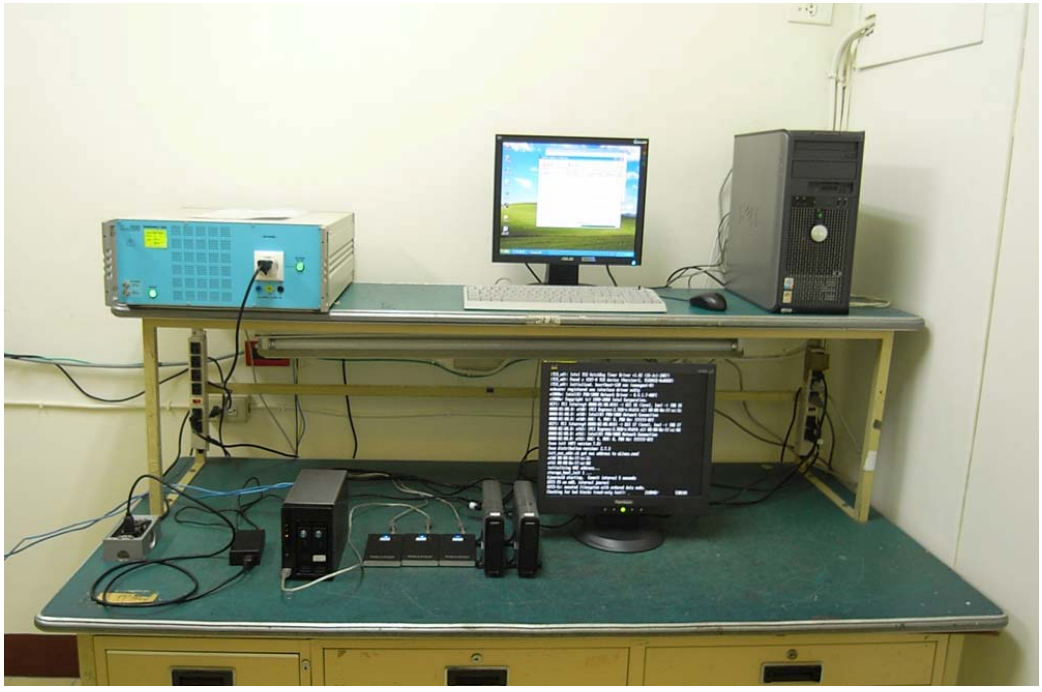
17.8.8 Photo of Magnetic field Measurement



17.8.9 Photo of Voltage Dips Measurement



17.8.10 Photo of Harmonics and Voltage Fluctuations



17.9 Photographs of EUT

Please refer to the File of **ISL-*09HE107*P**