EMC COMPLIANCE TEST REPORT

for

Mother Board

Trade Name : N/A
Model Number : 886LCD-ATX
Serial Number : N/A
Report Number : 020656-E
Date : June 12, 2002
Regulations : See below

Standards	Results (Pass/Fail)
EN 55022: 1994 + A1: 1995 + A2: 1997	PASS
EN 61000-3-2: 1995 + A1: 1998 + A2: 1998 + A14: 2000	PASS
EN 61000-3-3: 1995	PASS
EN 55024: 1998	PASS
- IEC 61000-4-2: 2001	PASS
- IEC 61000-4-3: 1995	PASS
- IEC 61000-4-4: 1995	PASS
- IEC 61000-4-5: 1995	PASS
- IEC 61000-4-6: 1996	PASS
- IEC 61000-4-8: 1993	N/A
- IEC 61000-4-11: 1994	PASS

Prepared for:

Firstech Technology Co., Ltd.
7F, No. 50, Chou-Tze Street, Nei-Hu District,
Taipei, Taiwan, R.O.C.

Prepared by:

C&C LABORATORY, CO., LTD.
#B1, 1st Fl., Universal Center,
No. 183, Sec. 1, Tatung Rd., Hsi Chih,
Taipei Hsien, Taiwan, R.O.C.
TEL: (02)8642-2071~3
FAX: (02)8642-2256

This report shall not be reproduced, except in full, without the written approval of C&C Laboratory Co., Ltd.

EC-Declaration of Conformity

For the following equipment:
Mother Board

(Product Name)
886LCD-ATX / N/A

(Model Designation / Trade Name)
Firstech Technology Co., Ltd.

(Manufacturer Name)
7F, No. 50, Chou-Tze Street, Nei-Hu District, Taipei, Taiwan, R.O.C.

(Manufacturer Address)
is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive (89/336/EEC, Amended by 92/31/EEC, 93/68/EEC & 98/13/EC), For the evaluation regarding the Electromagnetic Compatibility (89/336/EEC, Amended by 92/31/EEC, 93/68/EEC & 98/13/EC), the following standards are applied:

☑ EN 55022: 1994 + A1: 1995 + A2: 1997
☑ EN 61000-3-2: 1995 + A1: 1998 + A2: 1998 + A14: 2000
☑ EN 61000-3-3: 1995
☑ EN 55024: 1998
IEC 61000-4-2: 2001; IEC 61000-4-3: 1995; IEC 61000-4-4: 1995;
IEC 61000-4-5: 1995; IEC 61000-4-6: 1996; IEC 61000-4-11: 1994

The following manufacturer / importer or authorized representative established within the EUT is responsible for this declaration:

(Company Name)

(Company Address)

Person responsible for making this declaration:

(Name, Surname)

(Position / Title)

(Place) (Date) (Legal Signature)

TABLE OF CONTENTS

VERIFICATION OF COMPLIANCE

Equipment Under Test:	Mother Board
Trade Name:	N/A
Model Number:	886LCD-ATX
Serial Number:	N/A
Applicant:	**Firstech Technology Co., Ltd.** 7F, No. 50, Chou-Tze Street, Nei-Hu District, Taipei, Taiwan, R.O.C.
Manufacturer:	**Firstech Technology Co., Ltd.** 7F, No. 50, Chou-Tze Street, Nei-Hu District, Taipei, Taiwan, R.O.C.
Type of Test:	EMC Directive 89/336/EEC for CE Marking
Technical Standards:	EN 55022: 1994 + A1: 1995 + A2: 1997 EN 61000-3-2: 1995 + A1: 1998 + A2: 1998 + A14: 2000 EN 61000-3-3: 1995 EN 55024: 1998 (IEC 61000-4-2: 2001, IEC 61000-4-3: 1995, IEC 61000-4-4: 1995, IEC 61000-4-5: 1995, IEC 61000-4-6: 1996, IEC 61000-4-11: 1994)
File Number:	020656-E
Date of test:	June 7 ~ 10, 2002
Deviation:	N/A
Condition of Test Sample:	Normal

The above equipment was tested by C&C Laboratory Co., Ltd. for compliance with the requirements set forth in EMC Directive 89/336/EEC and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

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

Lucky Chen

Approved by Authorized Signatory: ________________________________

Lucky Chen / EMC Director

GENERAL INFORMATION

Applicant:	**Firstech Technology Co., Ltd.** 7F, No. 50, Chou-Tze Street, Nei-Hu District, Taipei, Taiwan, R.O.C.
Contact Person:	Brian Lee
Manufacturer:	**Firstech Technology Co., Ltd.** 7F, No. 50, Chou-Tze Street, Nei-Hu District, Taipei, Taiwan, R.O.C.
File Number:	020656-E
Date of Test:	June 7 ~ 10, 2002
Equipment Under Test:	Mother Board
Model Number:	886LCD-ATX
Serial Number:	N/A
Type of Test:	EMC Directive 89/336/EEC for CE Marking
Technical Standards:	EN 55022: 1994 + A1: 1995 + A2: 1997 EN 61000-3-2: 1995 + A1: 1998 + A2: 1998 + A14: 2000 EN 61000-3-3: 1995 EN 55024: 1998 (IEC 61000-4-2: 2001, IEC 61000-4-3: 1995, IEC 61000-4-4: 1995, IEC 61000-4-5: 1995, IEC 61000-4-6: 1996, IEC 61000-4-11: 1994)
Frequency Range (EN 55022):	150kHz to 30MHz for Line Conducted Test 30MHz to 1000MHz for Radiated Emission Test
Test Site	**C&C LABORATORY CO., LTD.** No. 81-1, 210 Lane, Pa-de 2nd Road, Lu-Chu Hsiang Taoyuan, Taiwan, R. O. C.

SYSTEM DESCRIPTION

EUT Test Program:

1. EUT was installed at internal of PC.
2. EMI test program (file name: EMCTEST. EXE) was loaded and executed in “Window” mode.
3. The EMI test program sequentially exercised all I/O’s of EUT.
4. Communicated software was loaded and executed to communicate between EUT and remote side via LAN cable.
5. The EUT sends and receives message from remote side, and filling the screen of monitor with upper case of “H” patterns.
6. Repeat 3 to 5. Test program is self-repeating throughout the test.

PRODUCT INFORMATION

Housing Type:	N/A		
EUT Power Rating:	DCV from Power Supply		
AC Power during test	230VAC, 50Hz to Power Supply		
AC Power Cord Type:	Unshielded, 1.8m (Detachable) to Power Supply		
Power Supply Manufacturer:	DELTA		
Power Supply Model Number:	DPS-250KB-3		
CPU Manufacturer:	Intel	**Type:**	P4 2.4GHz
OSC/Clock Frequencies:	100MHz/133MHz		
Memory Capacity:		**Installed:**	256MB
Floppy Drive Manufacturer:	CHINON	**Model:**	FZ-357
Hard Drive Manufacturer:	Maxtor	**Model:**	33073H3
CD-ROM Manufacturer:	LITE-ON	**Model:**	LTN-486S
LAN Card Manufacturer:	On Board		
VGA Card Manufacturer:	On Board		

I/O Port of EUT

I/O PORT TYPES	Q'TY	TESTED WITH
1). Parallel Port	1	1
2). Serial Port	1	1
3). PS/2 Keyboard	1	1
4). PS/2 Mouse Port	1	1
5). Microphone Port	1	1
6). Line-in Port	1	1
7). Line-out Port	1	1
8). LAN Port	1	1
9). USB Port	4	4
10). Video Port (On VGA Card)	1	1

SUPPORT EQUIPMENT

No.	Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
1.	Monitor	CPD-G200	2715884	FCC DoC	SONY	Shielded, 1.8m with a core	Unshielded, 1.8m
2.	Modem	231AA	A08431083982	BFJ9D93108US	Hayes	Shielded, 1.8m	Unshielded, 1.8m
3.	Printer (For EMI Test)	EPSON STYLUS C20SX	DW4E126664	FCC DoC	EPSON	Shielded, 1.8m	Unshielded, 1.8m
	Printer (For EMS Test)	2225C	3137S01428	DSI6XU2225	HP	Shielded, 1.8m	Unshielded, 1.8m
4.	PS/2 Keyboard	SK-2800C	B1C790BCPJ73JQ	GYUR79SK	Compaq	Shielded, 1.8m	N/A
5.	PS/2 Mouse	M-CAA43	LZA11752129	FCC DoC	Logitech	Shielded, 1.8m	N/A
6.	USB 2.0 External HDD	FSP024-1ADA21	N/A	FCC DoC	TSE	Shielded, 1.8m	N/A
7.	USB 2.0 External HDD	FSP024-1ADA21	N/A	FCC DoC	TSE	Shielded, 1.8m	N/A
8.	USB 2.0 External HDD	FSP024-1ADA21	N/A	FCC DoC	TSE	Shielded, 1.8m	N/A
9.	USB 2.0 External HDD	FSP024-1ADA21	N/A	FCC DoC	TSE	Shielded, 1.8m	N/A
10.	Earphone	GT-2004V	N/A	N/A	GITON	Unshielded, 1.8m	N/A
11.	Walkman	RQ-L10	HB004469	FCC DoC	Panasonic	Unshielded, 1.8m	N/A
12.	Microphone	DM-510	I3-0	N/A	KOKA	Unshielded, 1.8m	N/A
13.	HUB	J2600A	SG43801953	N/A	HP	LAN Cable: Unshielded, 20m	Unshielded, 1.8m
14.	Notebook PC (Remote)	Valiant 6380i9TD	N/A	FCC DoC	KDS	LAN Cable: Unshielded, 1.5m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core

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

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

TEST FACILITY

Location:	No. 81-1, 210 Lane, Pa-de 2nd Road, Lu-Chu Hsiang, Taoyuan, Taiwan, R. O. C.
Description:	There are four 3/10m open area test sites and three line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4 and CISPR 16 requirements.
Site Filing:	A site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046. Registration also was made with Voluntary Control Council for Interference (VCCI).
Site Accreditation:	Accredited by NEMKO (Authorization #: ELA 124) for EMC & A2LA (Certificate #: 824.01) for Emission Also accredited by BSMI for the product category of Information Technology Equipment.
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4 and CISPR 22 requirements that meet industry regulatory agency and accreditation agency requirement.

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

Site # 3 & # 4 Line Conducted Test Site: At Shielding Room

THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

C & C LABORATORY CO., LTD
Hsi Chin, Taipei Hsien, Taiwan, R.O.C

for technical competence in the field of

Electrical Testing

The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 - 1999 "General Requirements for the Competence of Testing and Calibration Laboratories" and any additional program requirements in the identified field of testing. Testing and calibration laboratories that comply with this International Standard also operate in accordance with ISO 9001 or ISO 9002 (1994).

Presented this 30th day of January, 2002.

SEAL

President
For the Accreditation Council
Certificate Number 824.01
Valid to January 31, 2004

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation

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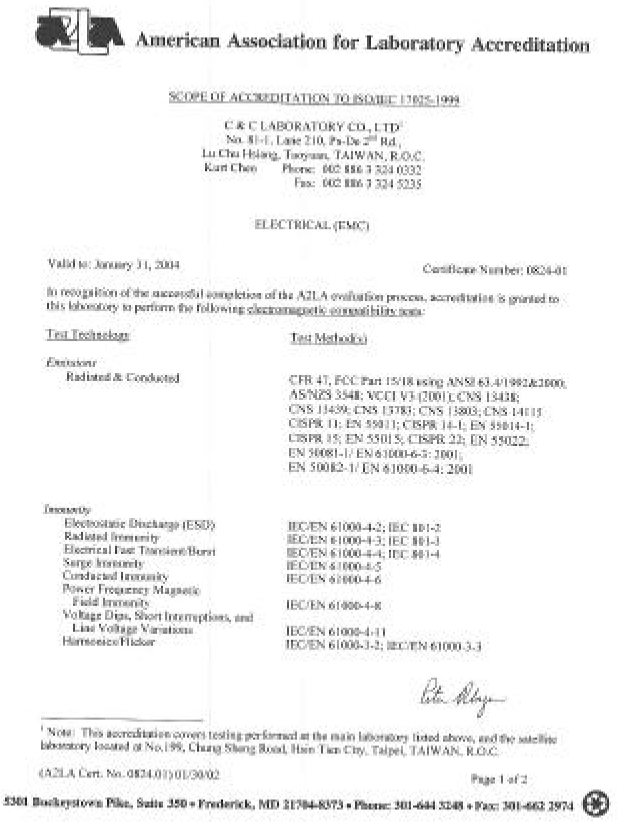

American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025-1999

C & C LABORATORY CO., LTD[1]
No. 81-1, Lane 210, Pa-De 2nd Rd.,
Lu Chu Hsiang, Taoyuan, TAIWAN, R.O.C.
Kurt Chen Phone: 002 886 3 324 0332
Fax: 002 886 3 324 5235

ELECTRICAL (EMC)

Valid to: January 31, 2004

Certificate Number: 0824-01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following electromagnetic compatibility tests:

Test Technology	Test Method(s)
Emissions	
Radiated & Conducted	CFR 47, FCC Part 15/18 using ANSI 63.4/1992&2000; AS/NZS 3548; VCCI V3 (2001); CNS 13438; CNS 13439; CNS 13783; CNS 13803; CNS 14115 CISPR 11; EN 55011; CISPR 14-1; EN 55014-1; CISPR 15; EN 55015; CISPR 22; EN 55022; EN 50081-1/ EN 61000-6-3: 2001; EN 50082-1/ EN 61000-6-4: 2001
Immunity	
Electrostatic Discharge (ESD)	IEC/EN 61000-4-2; IEC 801-2
Radiated Immunity	IEC/EN 61000-4-3; IEC 801-3
Electrical Fast Transient/Burst	IEC/EN 61000-4-4; IEC 801-4
Surge Immunity	IEC/EN 61000-4-5
Conducted Immunity	IEC/EN 61000-4-6
Power Frequency Magnetic Field Immunity	IEC/EN 61000-4-8
Voltage Dips, Short Interruptions, and Line Voltage Variations	IEC/EN 61000-4-11
Harmonics/Flicker	IEC/EN 61000-3-2; IEC/EN 61000-3-3

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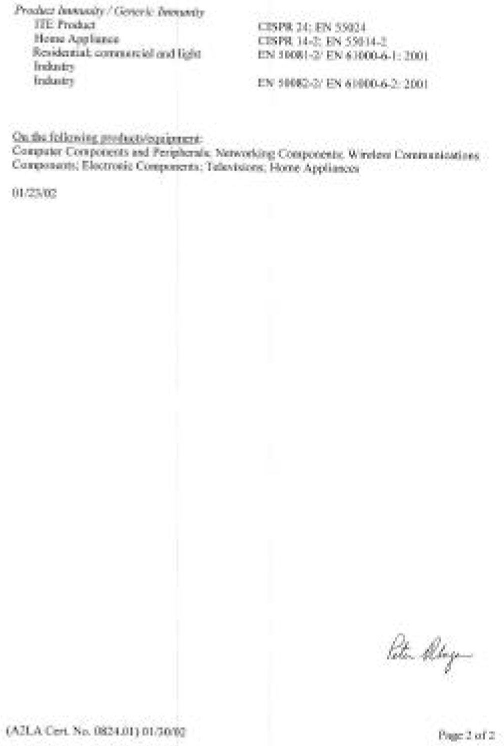
[1] Note: This accreditation covers testing performed at the main laboratory listed above, and the satellite laboratory located at No.199, Chung Sheng Road, Hsin Tien City, Taipei, TAIWAN, R.O.C.

(A2LA Cert. No. 0824.01) 01/30/02

Page 1 of 2

5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8373 • Phone: 301-644 3248 • Fax: 301-662 2974



Test Technology	Test Method(s)
Product Immunity / Generic Immunity	
ITE Product	CISPR 24; EN 55024
Home Appliance	CISPR 14-2; EN 55014-2
Residential, commercial and light Industry	EN 50081-2/ EN 61000-6-1: 2001
Industry	EN 50082-2/ EN 61000-6-2: 2001

On the following products/equipment:
Computer Components and Peripherals; Networking Components; Wireless Communications Components; Electronic Components; Televisions; Home Appliances

01/23/02

(A2LA Cert. No. 0824.01) 01/30/02

Page 2 of 2

FEDERAL COMMUNICATIONS COMMISSION
Laboratory Division
7435 Oakland Mills Road
Columbia, MD. 21046

March 06, 2002

Registration Number: 93105

C & C Laboratory Co., Ltd.
No. 81-1, 210 Lane,
Pa-de 2nd Road, Lu-Chu Hsiang
Taoyuan
Taiwan
Attention: Kurt Chen

Re: Measurement facility located at Taoyuan
Site No. 4 (3 & 10 meters)
Date of Listing: March 06, 2002

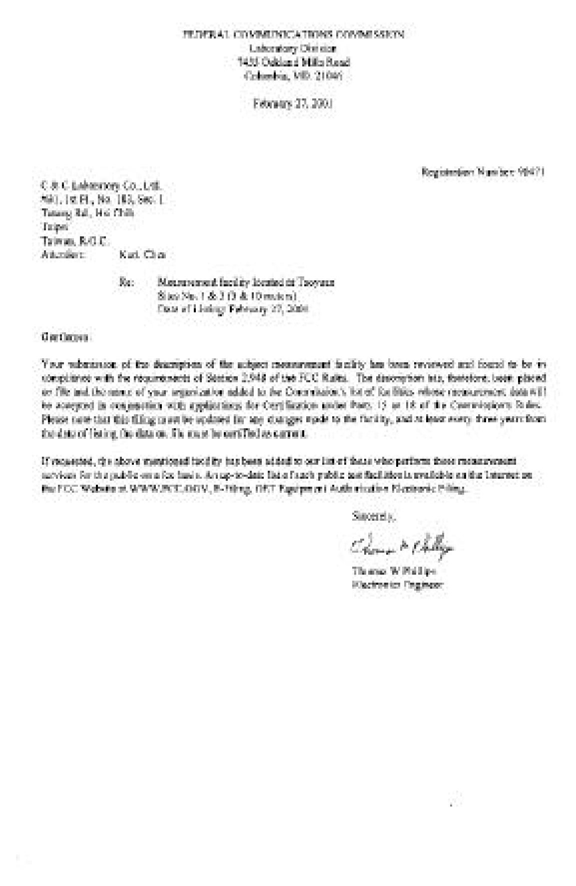
Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing the data on file must be certified as current.

If requested, the above mentioned facility has been added to our list of those who perform these measurement services for the public on a fee basis. An up-to-date list of such public test facilities is available on the Internet on the FCC Website at WWW.FCC.GOV, E-Filing, OET Equipment Authorization Electronic Filing.

Sincerely,

Thomas W Phillips
Electronics Engineer



FEDERAL COMMUNICATIONS COMMISSION
Laboratory Division
7435 Oakland Mills Road
Columbia, MD. 21046

February 27, 2001

Registration Number: 90471

C & C Laboratory Co., Ltd.
[illegible], 1st Fl., No. 183, Sec. 1
Tatung Rd., Hsi Chih
Taipei
Taiwan, R.O.C.
Attention: Kurt Chen

Re: Measurement facility located at Taoyuan
Sites No. 1 & 3 (3 & 10 meters)
Date of Listing: February 27, 2001

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing the data on file must be certified as current.

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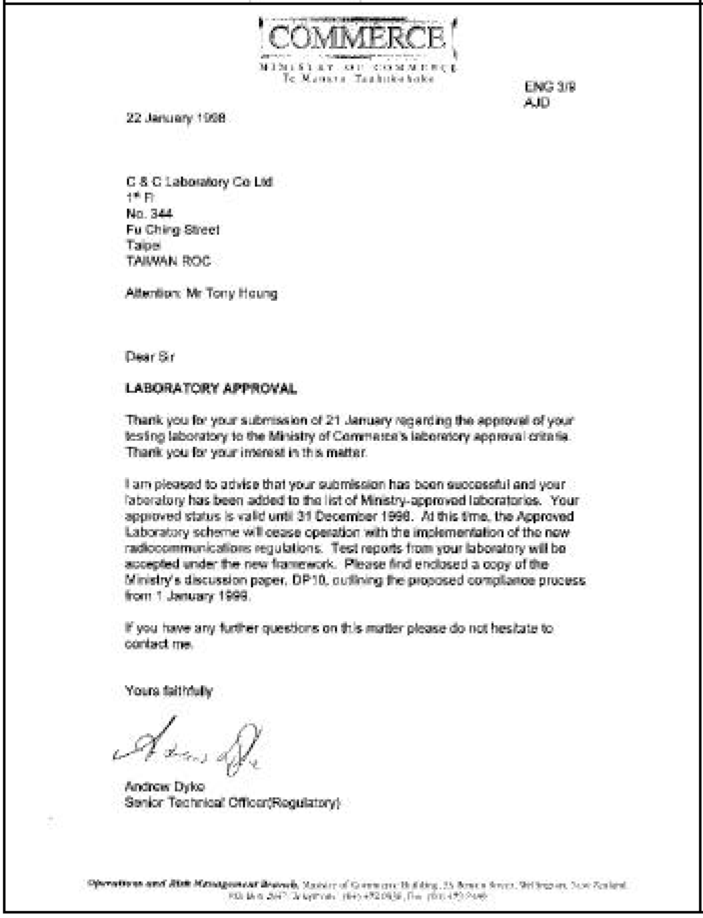

COMMERCE
MINISTRY OF COMMERCE
Te Manatu Tauhokohoko

ENG 3/9
AJD

22 January 1998

C & C Laboratory Co Ltd
1st Fl
No. 344
Fu Ching Street
Taipei
TAIWAN ROC

Attention: Mr Tony Houng

Dear Sir

LABORATORY APPROVAL

Thank you for your submission of 21 January regarding the approval of your testing laboratory to the Ministry of Commerce's laboratory approval criteria. Thank you for your interest in this matter.

I am pleased to advise that your submission has been successful and your laboratory has been added to the list of Ministry-approved laboratories. Your approved status is valid until 31 December 1998. At this time, the Approved Laboratory scheme will cease operation with the implementation of the new radiocommunications regulations. Test reports from your laboratory will be accepted under the new framework. Please find enclosed a copy of the Ministry's discussion paper, DP10, outlining the proposed compliance process from 1 January 1999.

If you have any further questions on this matter please do not hesitate to contact me.

Yours faithfully

Andrew Dyke
Senior Technical Officer(Regulatory)

Operations and Risk Management Branch, Ministry of Commerce Building, 33 Bowen Street, Wellington, New Zealand.
[illegible]

COMMERCE
MINISTRY OF COMMERCE
Te Manatu Tauhokohoko

ENG 3/9
AJD

22 January 1998

C & C Laboratory Co Ltd
1st Fl
No. 344
Fu Ching Street
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TAIWAN ROC

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Yours faithfully

Andrew Dyke
Senior Technical Officer(Regulatory)

Operations and Risk Management Branch, Ministry of Commerce Building, 33 Bowen Street, Wellington, New Zealand.
[illegible]

Nemko World-wide Testing and Certification

ELA 4RTTE

EMC Laboratory Authorisation

Aut. No. : ELA 192

Testing of
Radio & Telecommunications Terminal Equipment

EMC Laboratory: **C & C Laboratory Co., Ltd.**
No. 15, 14 Lin, Chin Twu Chi, Lu Chu Hsiang,
Taoyuan 338, Taiwan R.O.C.

Scope of Authorisation: **All CENELEC and ETSI standards [ENs and ETSs that are listed on the accompanying page, and, all of the corresponding CISPR, IEC, and ISO EMC standards]. This authorisation covers all of the EMC-related testing and documentation within the scope of the *Radio and Telecommunications Terminal Equipment [R&TTE] Directive [i.e. 1999/5/EC].***

NOTE: This authorisation also covers EMC-related testing and documentation that is within the scope of Article 10.5 of the *EMC Directive [i.e. 89/336/EEC as amended by 92/31/EEC]*

This Authorisation Document confirms that the above mentioned EMC Laboratory has been validated against EN 45001 and found to be compliant. The laboratory also fulfils the conditions described in Nemko Document ELA 10. During Nemko's visit to the laboratory, an assessment was made of the relevant parts of your organisation - i.e. facilities, personnel qualifications, test equipment, and testing practices. It was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation given on the accompanying page. Accordingly, Nemko will accept your test reports as a basis for attesting conformity to these EMC Standards for the products in question under the European Union's Directives specified above.

For Type Examination Certificate(s) to be issued by Nemko, your EMC Laboratory's test report(s) will be accepted by Nemko if they are enclosed with the Application Form submitted by the manufacturer.

In order to maintain the Authorisation, the information given in the enclosed ELA-INFOs (if any) must be carefully followed. Nemko is to be promptly notified about any changes in the situation at your EMC Laboratory which may affect the basis for this Authorisation. The Authorisation may at any time be withdrawn if the conditions are no longer considered to be fulfilled.

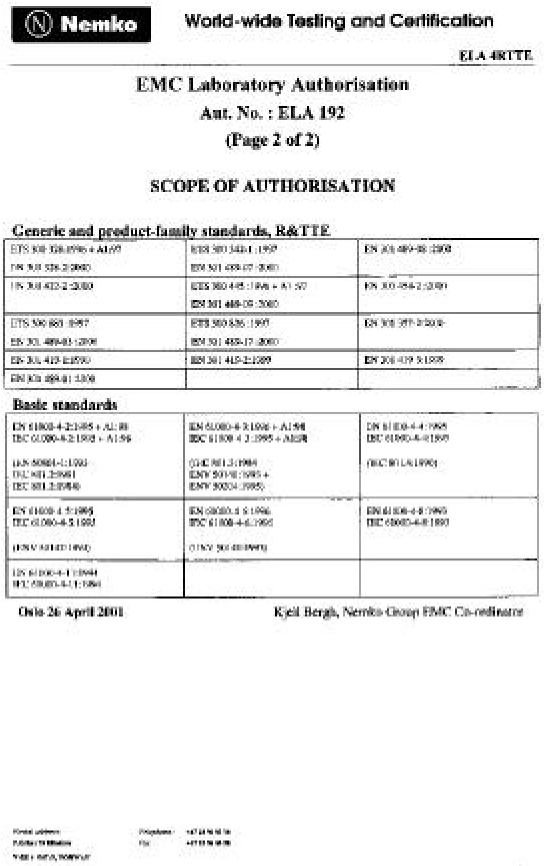
The Authorisation is valid through **31. December 2003.**

Oslo 26 April 2001

For Nemko AS:

Kjell Bergh

Kjell Bergh, Nemko Group EMC Co-ordinator



Nemko World-wide Testing and Certification

ELA 4RTTE

EMC Laboratory Authorisation

Aut. No. : ELA 192

(Page 2 of 2)

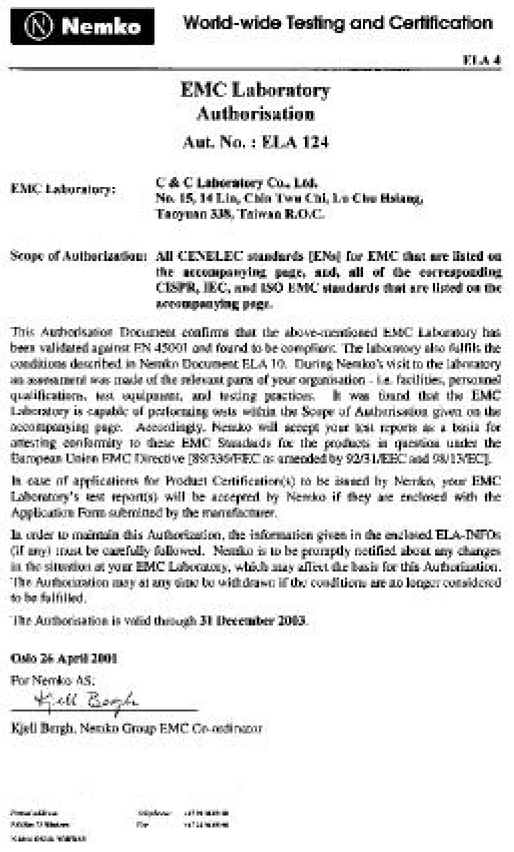
SCOPE OF AUTHORISATION

Generic and product-family standards, R&TTE

Basic standards

Oslo 26 April 2001

Kjell Bergh, Nemko Group EMC Co-ordinator



Nemko World-wide Testing and Certification

ELA 4

EMC Laboratory Authorisation

Aut. No. : ELA 124

EMC Laboratory: **C & C Laboratory Co., Ltd.**
No. 15, 14 Lin, Chin Twu Chi, Lu Chu Hsiang,
Taoyuan 338, Taiwan R.O.C.

Scope of Authorization: **All CENELEC standards [ENs] for EMC that are listed on the accompanying page, and, all of the corresponding CISPR, IEC, and ISO EMC standards that are listed on the accompanying page.**

This Authorisation Document confirms that the above-mentioned EMC Laboratory has been validated against EN 45001 and found to be compliant. The laboratory also fulfils the conditions described in Nemko Document ELA 10. During Nemko's visit to the laboratory an assessment was made of the relevant parts of your organisation - i.e. facilities, personnel qualifications, test equipment, and testing practices. It was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation given on the accompanying page. Accordingly, Nemko will accept your test reports as a basis for attesting conformity to these EMC Standards for the products in question under the European Union EMC Directive [89/336/EEC as amended by 92/31/EEC and 98/13/EC].

In case of applications for Product Certification(s) to be issued by Nemko, your EMC Laboratory's test report(s) will be accepted by Nemko if they are enclosed with the Application Form submitted by the manufacturer.

In order to maintain this Authorization, the information given in the enclosed ELA-INFOs (if any) must be carefully followed. Nemko is to be promptly notified about any changes in the situation at your EMC Laboratory, which may affect the basis for this Authorization. The Authorization may at any time be withdrawn if the conditions are no longer considered to be fulfilled.

The Authorisation is valid through **31 December 2003**.

Oslo 26 April 2001

For Nemko AS:

Kjell Bergh

Kjell Bergh, Nemko Group EMC Co-ordinator

Nemko World-wide Testing and Certification

ELA 4

EMC Laboratory Authorisation

Aut. No. : ELA 160

EMC Laboratory: **C & C Laboratory Co., Ltd.**
No. 15, 14 Lin, Chin Twu Chi, Lu Chu Hsiang,
Taoyuan 338, Taiwan R.O.C.

Scope of Authorization: **EN 60601-1-2 and IEC 60601-1-2, the Collateral Standards for electromedical products, with particular application to EMC requirements only.**

This Authorisation Document confirms that the above mentioned EMC Laboratory has been validated against EN 45001 and found to be compliant. The laboratory also fulfils the conditions described in Nemko Document ELA 10. During Nemko's visit to the laboratory an assessment was made of the relevant parts of your organisation - i.e. facilities, personnel qualifications, test equipment, and testing practices. It was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation listed above. Accordingly, Nemko will accept your test reports as a basis for attesting conformity to these EMC Standards for the products in question under either the European Union Medical Device Directive [MDD], 93/42/EEC, or the European Union Active Implantable Medical Device Directive [AIMD], 90/385/EEC, (as applicable).

In case of applications for Product Certification(s) to be issued by Nemko, your EMC Laboratory's test report(s) will be accepted by Nemko if they are enclosed with the Application Form submitted by the manufacturer.

In order to maintain the Authorisation, the information given in the enclosed ELA-INFOs (if any) must be carefully followed. Nemko is to be promptly notified about any changes in the situation at your EMC Laboratory which may affect the basis for this Authorisation. The Authorisation may at any time be withdrawn if the conditions are no longer considered to be fulfilled.

The Authorisation is valid through **31. December 2003**.

Oslo 26 April 2001

For Nemko AS:

Kjell Bergh

Kjell Bergh, Nemko Group EMC Co-ordinator

CERTIFICATE

Company : C&C Laboratory Co., Ltd.
Facility : C&C Open Area Test Site No.1
(Conducted Interference Measurement)
Address : No.15, 14 Lin, Chin Twu Chi,
Lu Chu Hsiang Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : C-402
Date of Registration : July 1, 1999
This Certificate is valid until September 30, 2002

Voluntary Control Council for Interference by Information Technology Equipment

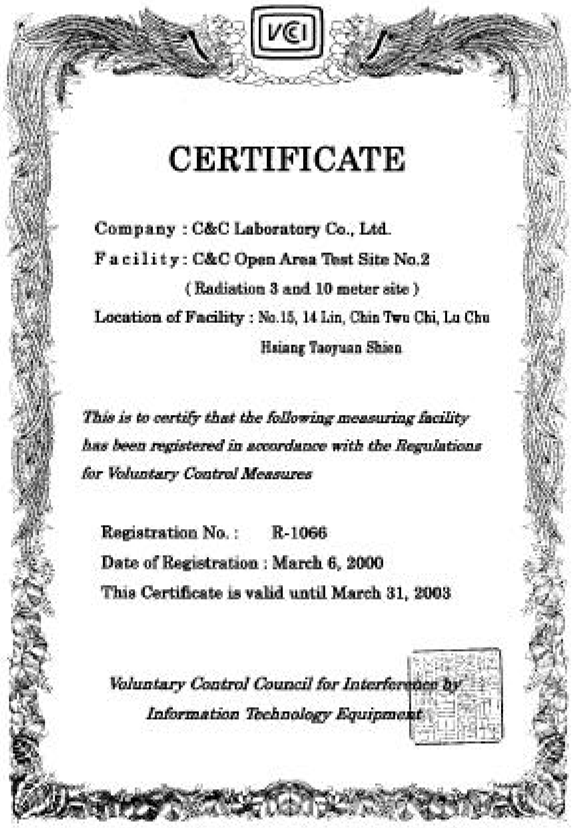
CERTIFICATE

Company : C&C Laboratory Co., Ltd.
Facility : C&C Open Area Test Site No.1
(Radiation 3 and 10 meter site)
Address : No.15, 14 Lin, Chin Twu Chi,
Lu Chu Hsiang Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : R-393
Date of Registration : July 1, 1999
This Certificate is valid until September 30, 2002

Voluntary Control Council for Interference by Information Technology Equipment



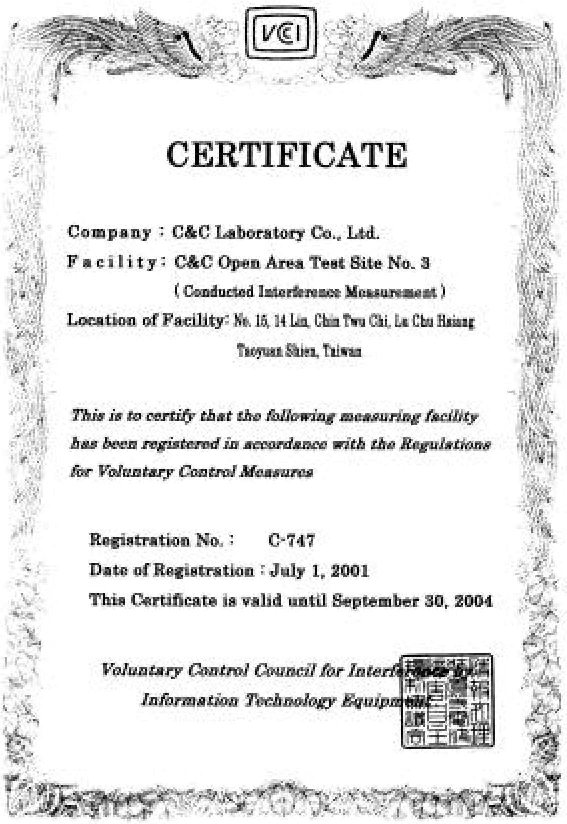
CERTIFICATE

Company : C&C Laboratory Co., Ltd.
Facility : C&C Open Area Test Site No.2
(Radiation 3 and 10 meter site)
Location of Facility : No.15, 14 Lin, Chin Twu Chi, Lu Chu Hsiang Taoyuan Shien

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : R-1066
Date of Registration : March 6, 2000
This Certificate is valid until March 31, 2003

Voluntary Control Council for Interference by Information Technology Equipment



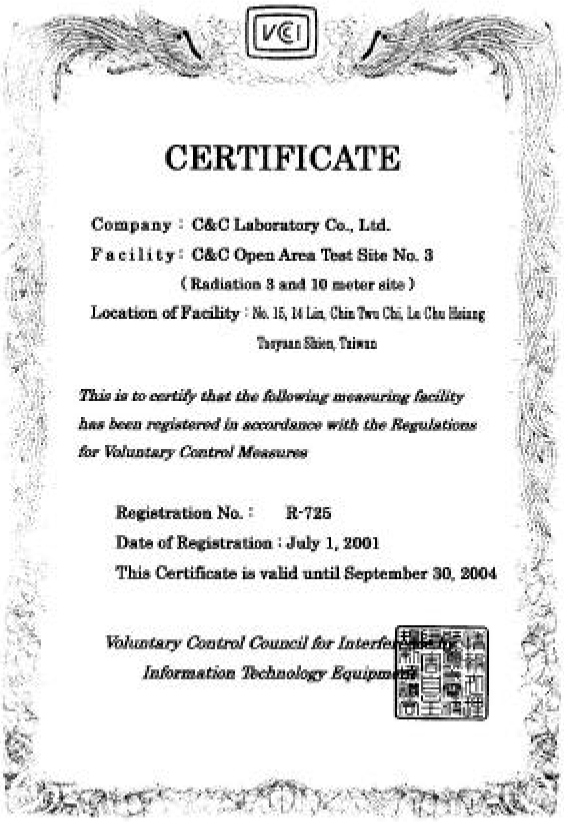
CERTIFICATE

Company : C&C Laboratory Co., Ltd.
Facility : C&C Open Area Test Site No. 3
(Conducted Interference Measurement)
Location of Facility: No. 15, 14 Lin, Chin Twu Chi, Lu Chu Hsiang Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : C-747
Date of Registration : July 1, 2001
This Certificate is valid until September 30, 2004

Voluntary Control Council for Interference by Information Technology Equipment



CERTIFICATE

Company : C&C Laboratory Co., Ltd.
Facility : C&C Open Area Test Site No. 3
(Radiation 3 and 10 meter site)
Location of Facility : No. 15, 14 Lin, Chin Two Chi, Lu Chu Hsiang
Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : R-725
Date of Registration : July 1, 2001
This Certificate is valid until September 30, 2004

Voluntary Control Council for Interference by
Information Technology Equipment

CERTIFICATE

Company: C & C Laboratory Co., Ltd.
<Member No. 710 >
Facility: C & C Laboratory Co.,Ltd
Conducted Interference Test Site No. 4
(Mains Ports Conducted Interference Measurement)

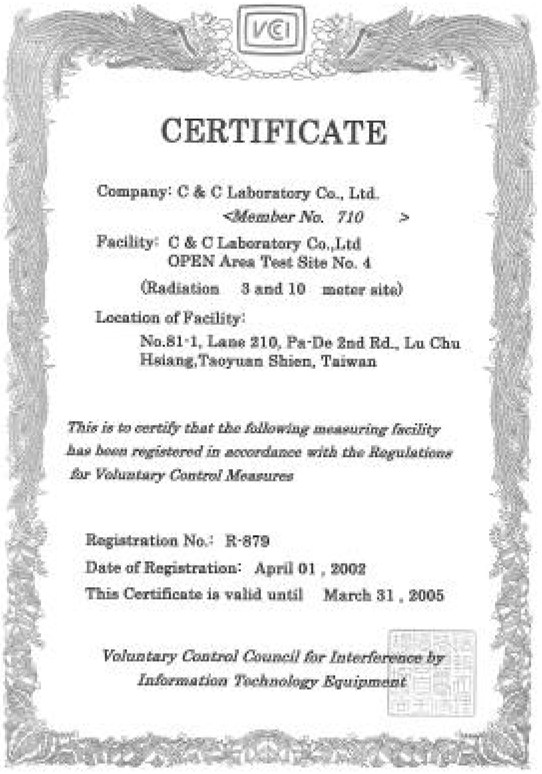
Limited Conditions: A table top EUT can be measured only with the vertical reference plane.

Location of Facility:
No.81-1, Lane 210, Pa-De 2nd Rd., Lu Chu Hsiang,Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No.: C-912
Date of Registration: April 01 , 2002
This Certificate is valid until March 31 , 2005

Voluntary Control Council for Interference by
Information Technology Equipment



CERTIFICATE

Company: C & C Laboratory Co., Ltd.
<Member No. 710 >
Facility: C & C Laboratory Co.,Ltd
OPEN Area Test Site No. 4
(Radiation 3 and 10 meter site)
Location of Facility:
No.81-1, Lane 210, Pa-De 2nd Rd., Lu Chu Hsiang,Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No.: R-879
Date of Registration: April 01 , 2002
This Certificate is valid until March 31 , 2005

Voluntary Control Council for Interference by
Information Technology Equipment

TÜV Rheinland

Technischer Überwachungs-Verein Rheinland

Certificate

of

Appointment

No. 19964142-9906

The applicant:

C & C Laboratory Co., Ltd.

No. 15, 14 Lin, Chin twu Chi, Lu Chu Hsiang, Taoyuan, Taiwan, R.O.C.

has been authorized to carry out EMC tests by order and under supervision of TÜV Rheinland according to

[illegible]

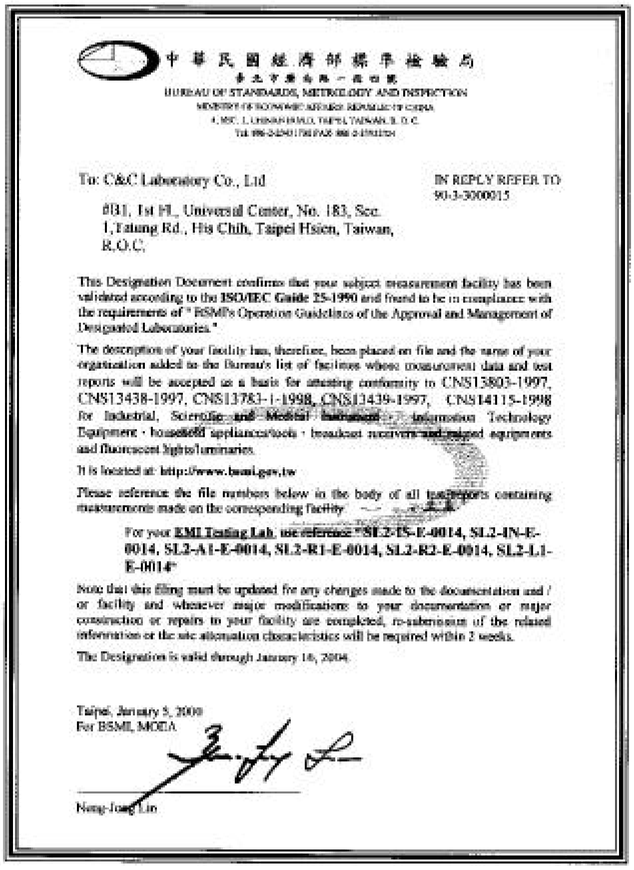
An inspection of the facility was conducted according to the Document "Approval of Test Site" with reference to EN 45 001 by a TÜV Rheinland inspector.

Audit Report No. P 9964142E01, Rev.-
This certificate is valid until the next scheduled inspection or up to 15 month, at the discretion of TÜV Rheinland.

TÜV Rheinland Taiwan Ltd.
Taipei, 24. June 1999

Dipl.-Ing. A. Klaiker

Dipl.-Ing. R. Charton
Auditor



中華民國經濟部標準檢驗局
臺北市濟南路一段四號
BUREAU OF STANDARDS, METROLOGY AND INSPECTION
MINISTRY OF ECONOMIC AFFAIRS, REPUBLIC OF CHINA
4, SEC. 1, CHINAN ROAD, TAIPEI, TAIWAN, R.O.C.
[illegible]

To: C&C Laboratory Co., Ltd

#B1, 1st Fl., Universal Center, No. 183, Sec. 1,Tatung Rd., His Chih, Taipei Hsien, Taiwan, R.O.C.

IN REPLY REFER TO
90-3-3000015

This Designation Document confirms that your subject measurement facility has been validated according to the **ISO/IEC Guide 25-1990** and found to be in compliance with the requirements of " BSMI's Operation Guidelines of the Approval and Management of Designated Laboratories."

The description of your facility has, therefore, been placed on file and the name of your organization added to the Bureau's list of facilities whose measurement data and test reports will be accepted as a basis for attesting conformity to CNS13803-1997, CNS13438-1997, CNS13783-1-1998, CNS13439-1997, CNS14115-1998 for Industrial, Scientific and Medical instrument · information Technology Equipment · household appliances/tools · broadcast receivers and related equipments and fluorescent lights/luminaries.

It is located at: **http://www.bsmi.gov.tw**

Please reference the file numbers below in the body of all test reports containing measurements made on the corresponding facility.

For your <u>EMI Testing Lab</u>, use reference "SL2-IS-E-0014, SL2-IN-E-0014, SL2-A1-E-0014, SL2-R1-E-0014, SL2-R2-E-0014, SL2-L1-E-0014"

Note that this filing must be updated for any changes made to the documentation and / or facility and whenever major modifications to your documentation or major construction or repairs to your facility are completed, re-submission of the related information or the site attenuation characteristics will be required within 2 weeks.

The Designation is valid through January 16, 2004.

Taipei, January 5, 2000
For BSMI, MOEA

Neng-Jong Lin

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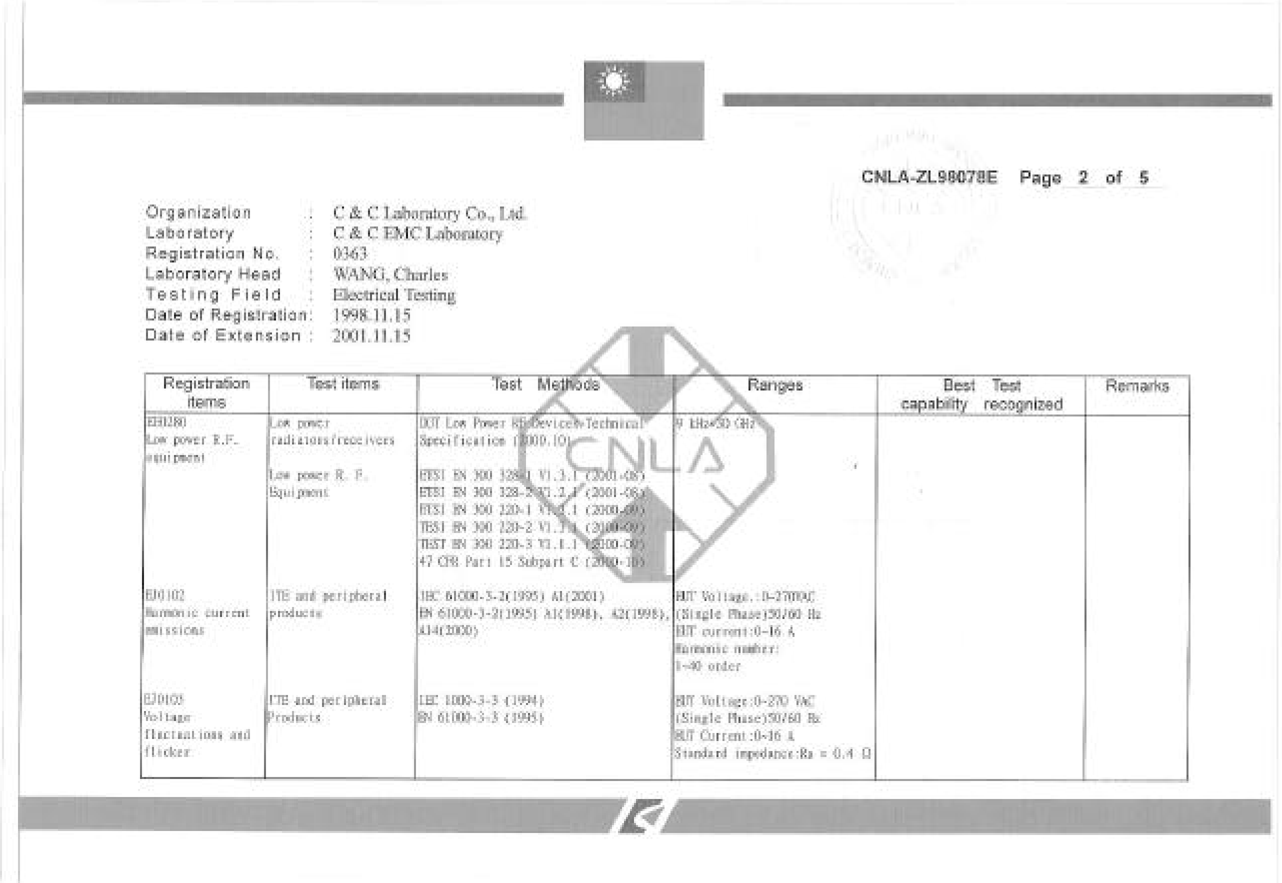
Chinese National Laboratory Accreditation Certificate ROC

This is to certify that C & C EMC Laboratory, C & C Laboratory Co., Ltd.(Registration No.:0363) has been recognized by the Council of Chinese National Laboratory Accreditation as an accredited laboratory. The laboratory has been registered for fourteen items within the field of Electrical Testing and confirmed to meet the requirements of ISO/IEC 17025. The details of the scope of accreditation are described in the following pages and this certificate is valid until November 14, 2004.

Neng-Jong Lin
Chairman of Chinese National Laboratory Accreditation Council

on May 15, 2002
(This document is invalid unless accompanied by all 5 pages)



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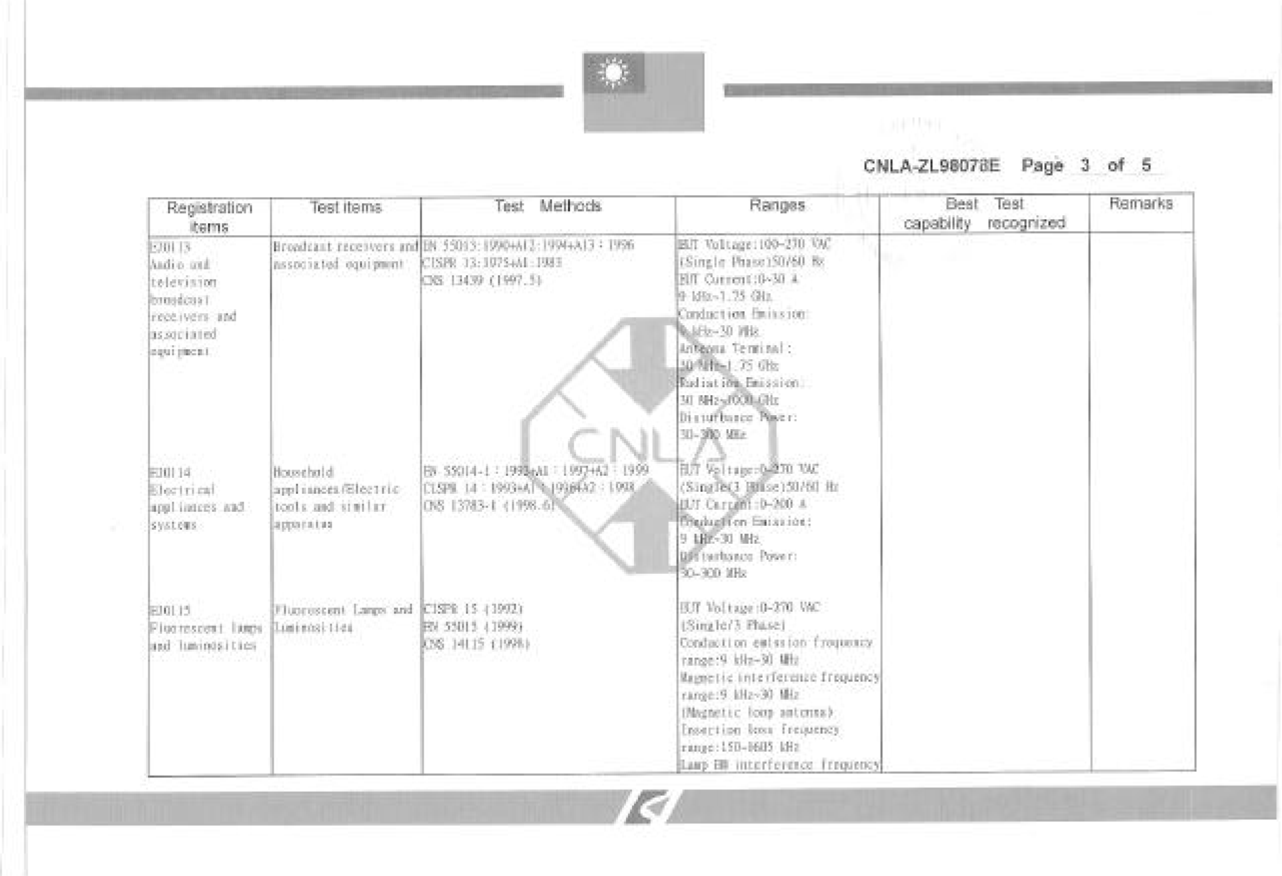
Organization : C & C Laboratory Co., Ltd.
Laboratory : C & C EMC Laboratory
Registration No. : 0363
Laboratory Head : WANG, Charles
Testing Field : Electrical Testing
Date of Registration: 1998.11.15
Date of Extension : 2001.11.15

Registration items	Test items	Test Methods	Ranges	Best Test capability recognized	Remarks
EH0280 Low power R.F. equipment	Low power radiators/receivers	DOT Low Power RF Devices Technical Specification (2000.10)	9 kHz~30 GHz		
	Low power R. F. Equipment	ETSI EN 300 328-1 V1.3.1 (2001-08) ETSI EN 300 328-2 V1.2.1 (2001-08) ETSI EN 300 220-1 V1.3.1 (2000-09) TESI EN 300 220-2 V1.3.1 (2000-09) TEST EN 300 220-3 V1.1.1 (2000-09) 47 CFR Part 15 Subpart C (2000-10)			
EJ0102 Harmonic current emissions	ITE and peripheral products	IEC 61000-3-2(1995) A1(2001) EN 61000-3-2(1995) A1(1998), A2(1998), A14(2000)	EUT Voltage.:0~270VAC (Single Phase)50/60 Hz EUT current:0~16 A Harmonic number: 1~40 order		
EJ0103 Voltage fluctuations and flicker	ITE and peripheral Products	IEC 1000-3-3 (1994) EN 61000-3-3 (1995)	EUT Voltage:0~270 VAC (Single Phase)50/60 Hz EUT Current:0~16 A Standard impedance:Ra = 0.4 Ω		



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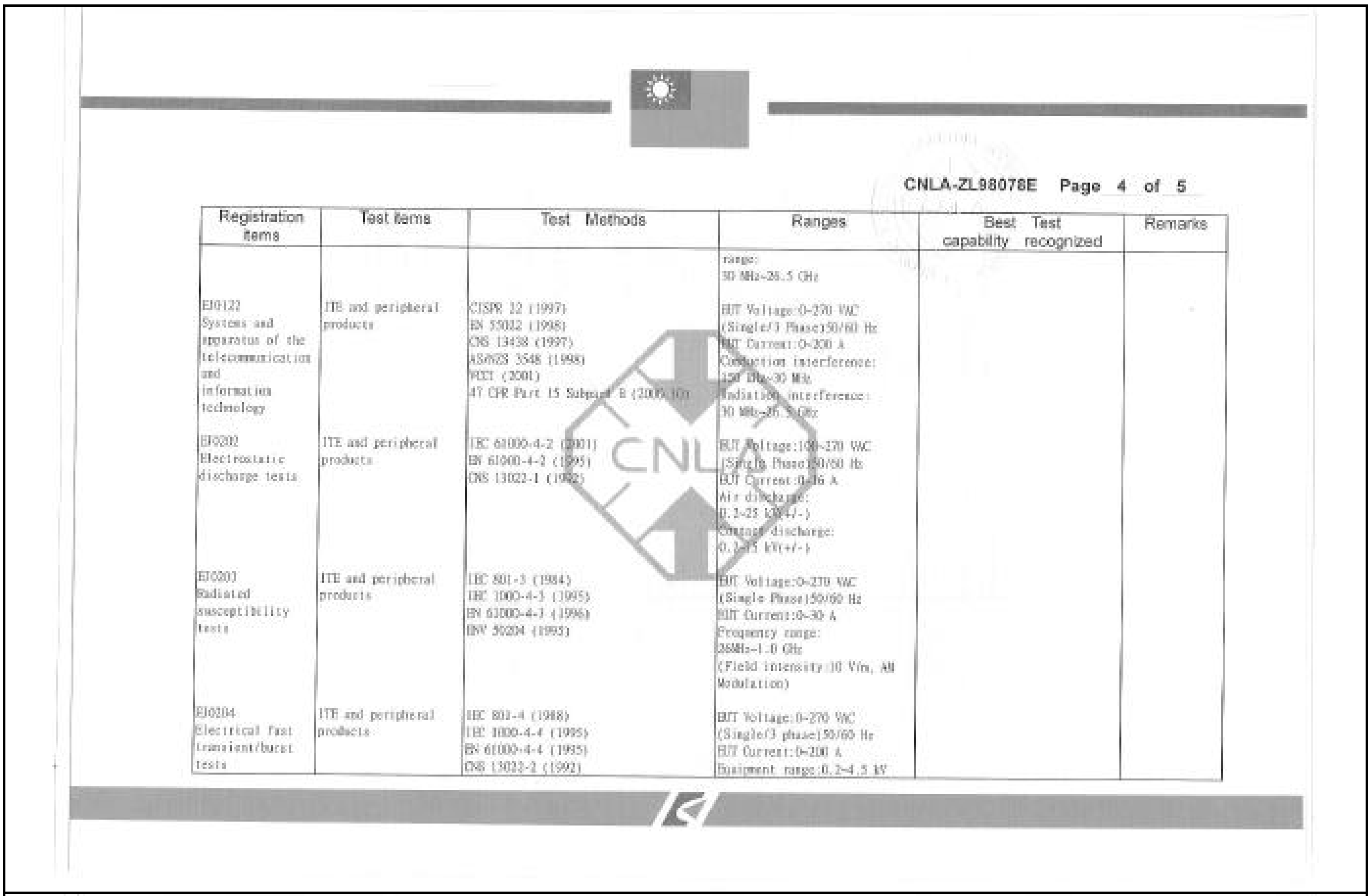
Registration items	Test items	Test Methods	Ranges	Best Test capability recognized	Remarks
EJ0113 Audio and television broadcast receivers and associated equipment	Broadcast receivers and associated equipment	EN 55013:1990+A12:1994+A13:1996 CISPR 13:1975+A1:1983 CNS 13439 (1997.5)	EUT Voltage:100~270 VAC (Single Phase)50/60 Hz EUT Current:0~30 A 9 kHz~1.75 GHz Conduction Emission: 9 kHz~30 MHz Antenna Terminal: 30 MHz~1.75 GHz Radiation Emission: 30 MHz~1000 GHz Disturbance Power: 30~300 MHz		
EJ0114 Electrical appliances and systems	Household appliances/Electric tools and similar apparatus	EN 55014-1:1993+A1:1997+A2:1999 CISPR 14:1993+A1:1996+A2:1998 CNS 13783-1 (1998.6)	EUT Voltage:0~270 VAC (Single/3 Phase)50/60 Hz EUT Current:0~200 A Conduction Emission: 9 kHz~30 MHz Disturbance Power: 30~300 MHz		
EJ0115 Fluorescent lamps and luminosities	Fluorescent Lamps and Luminosities	CISPR 15 (1992) EN 55015 (1999) CNS 14115 (1998)	EUT Voltage:0~270 VAC (Single/3 Phase) Conduction emission frequency range:9 kHz~30 MHz Magnetic interference frequency range:9 kHz~30 MHz (Magnetic loop antenna) Insertion loss frequency range:150~1605 kHz Lamp EM interference frequency		



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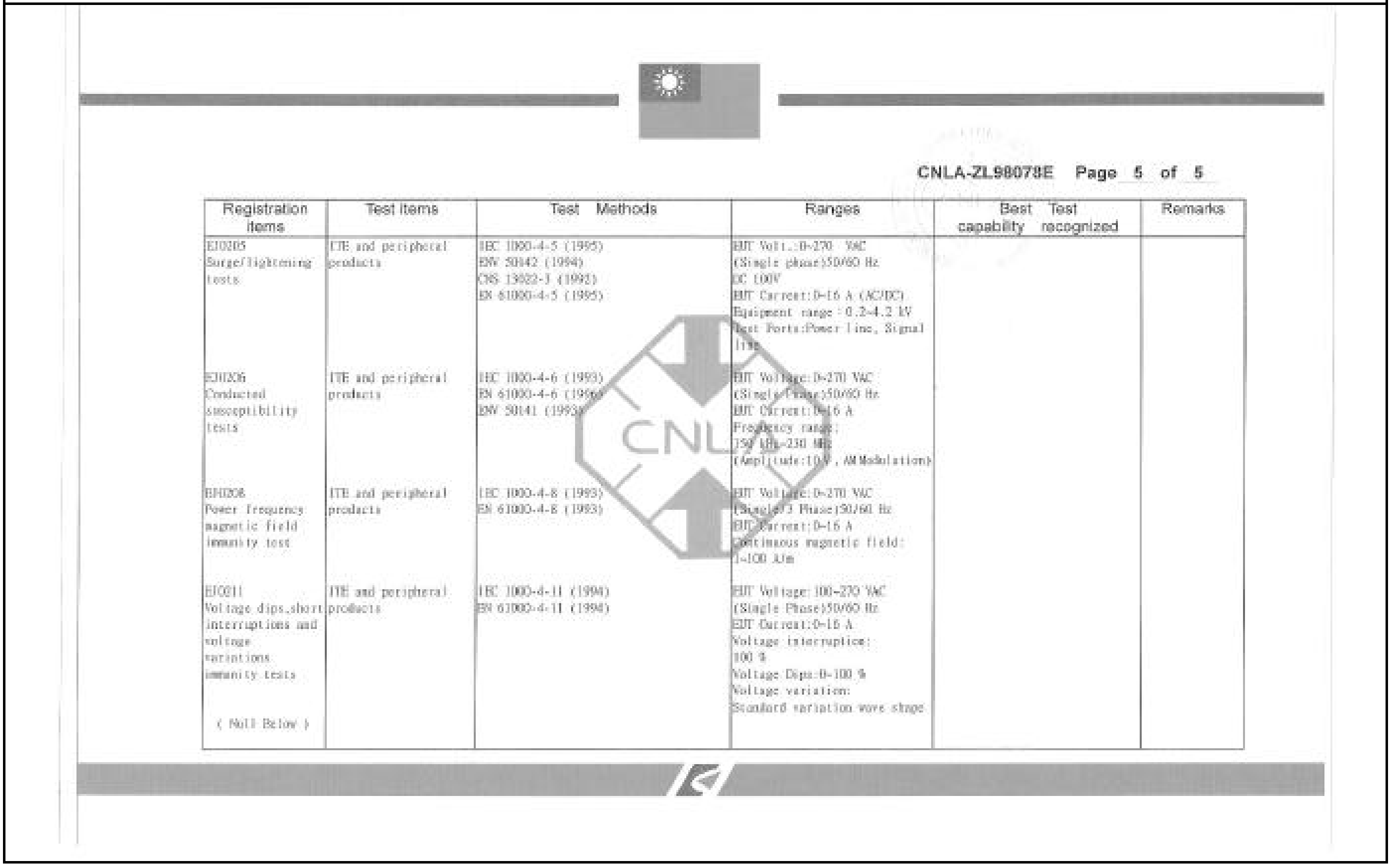
Registration items	Test items	Test Methods	Ranges	Best Test capability recognized	Remarks
			range: 30 MHz-26.5 GHz		
EJ0122 Systems and apparatus of the telecommunication and information technology	ITE and peripheral products	CISPR 22 (1997) EN 55022 (1998) CNS 13438 (1997) AS/NZS 3548 (1998) VCCI (2001) 47 CFR Part 15 Subpart B (2000.10)	EUT Voltage:0-270 VAC (Single/3 Phase)50/60 Hz EUT Current:0-200 A Conduction interference: 150 kHz-30 MHz Radiation interference: 30 MHz-26.5 GHz		
EJ0202 Electrostatic discharge tests	ITE and peripheral products	IEC 61000-4-2 (2001) EN 61000-4-2 (1995) CNS 13022-1 (1992)	EUT Voltage:100-270 VAC (Single Phase)50/60 Hz EUT Current:0-16 A Air discharge: 0.2-25 kV(+/-) Contact discharge: 0.2-15 kV(+/-)		
EJ0203 Radiated susceptibility tests	ITE and peripheral products	IEC 801-3 (1984) IEC 1000-4-3 (1995) EN 61000-4-3 (1996) ENV 50204 (1995)	EUT Voltage:0-270 VAC (Single Phase)50/60 Hz EUT Current:0-30 A Frequency range: 26MHz-1.0 GHz (Field intensity:10 V/m, AM Modulation)		
EJ0204 Electrical fast transient/burst tests	ITE and peripheral products	IEC 801-4 (1988) IEC 1000-4-4 (1995) EN 61000-4-4 (1995) CNS 13022-2 (1992)	EUT Voltage:0-270 VAC (Single/3 phase)50/60 Hz EUT Current:0-200 A Equipment range:0.2-4.5 kV		



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Registration items	Test items	Test Methods	Ranges	Best Test capability recognized	Remarks
EJ0205 Surge/lightening tests	ITE and peripheral products	IEC 1000-4-5 (1995) ENV 50142 (1994) CNS 13022-3 (1992) EN 61000-4-5 (1995)	EUT Volt.:0-270 VAC (Single phase)50/60 Hz DC 100V EUT Current:0-16 A (AC/DC) Equipment range : 0.2-4.2 kV Test Ports:Power line, Signal line		
EJ0206 Conducted susceptibility tests	ITE and peripheral products	IEC 1000-4-6 (1993) EN 61000-4-6 (1996) ENV 50141 (1993)	EUT Voltage:0-270 VAC (Single Phase)50/60 Hz EUT Current:0-16 A Frequency range: 150 kHz-230 MHz (Amplitude:10V, AM Modulation)		
EJ0208 Power frequency magnetic field immunity test	ITE and peripheral products	IEC 1000-4-8 (1993) EN 61000-4-8 (1993)	EUT Voltage:0-270 VAC (Single/3 Phase)50/60 Hz EUT Current:0-16 A Continuous magnetic field: 1-100 A/m		
EJ0211 Voltage dips,short interruptions and voltage variations immunity tests (Null Below)	ITE and peripheral products	IEC 1000-4-11 (1994) EN 61000-4-11 (1994)	EUT Voltage: 100-270 VAC (Single Phase)50/60 Hz EUT Current:0-16 A Voltage interruption: 100 % Voltage Dips:0-100 % Voltage variation: Standard variation wave shape		

TEST EQUIPMENT LIST (EMISSION)

Instrumentation: The following list contains equipment used at C & C Laboratory, Co., Ltd. for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2-1988 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 9kHz to 1.0 / 2.0 GHz.

Equipment used during the tests:

Open Area Test Site: # 4

Open Area Test Site # 4

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
Spectrum Analyzer	ADVANTEST	R3132	91700456	02/22/2002	02/21/2003
EMI Test Receiver	R&S	ESVS10	846285/016	04/18/2002	04/17/2003
Bilog Antenna	CHASE	CBL 6112B	2462	01/12/2002	01/11/2003
Turn Table	Chance most	N/A	N/A	N.C.R	N.C.R
Antenna Tower	Chance most	N/A	N/A	N.C.R	N.C.R
Controller	Chance most	N/A	N/A	N.C.R	N.C.R
RF Switch	ANRITSU	MP59B	M51067	N.C.R	N.C.R
Site NSA	C&C Lab.	N/A	N/A	11/24/2001	11/23/2002

Conducted Emission Test Site: # 3

Conducted Emission Test Site # 3

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
EMI Test Receiver	R&S	ESCS30	847793/012	12/19/2001	12/18/2002
LISN	R&S	ESH2-Z5	843285/010	12/10/2001	12/09/2002
LISN	EMCO	3825/2	9003-1628	07/16/2001	07/15/2002

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

TEST EQUIPMENT LIST

For Power Harmonic & Voltage Fluctuation/Flicker Measurement (61000-3-2&-3-3)

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Harmonic & Flicker Tester	HAEFELY TRENCH	PHF555	080 419-25	10/12/2001	10/11/2002

For ESD test (61000-4-2)

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
ESD Generator	EMV	SESD 2000	812006	02/08/2002	02/07/2003

For Radiated Electromagnetic Field immunity Measurement (61000-4-3)

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Signal Generator	Maconi	2022D	119246/003	08/03/2001	08/02/2002
Power Amplifier	M2S	A00181/ 1000	9801-112	N/A	N/A
Power Amplifier	M2S	AC8113/ 800-250A	9801-179	N/A	N/A
Power Antenna	EMCO	93141	9712-1083	N/A	N/A
EM PROBE	GW	EMR-30	L-0013	06/28/2001	06/27/2002

For Fast Transients/Burst test (61000-4-4)

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Fast Transients/Burst Generator	HAEFELY TRENCH	PEFT-JUNIOR	583 333-117	08/21/2001	08/20/2002
Clamp	HAEFELY TRENCH	093 506.1	080 421.13	N/A	N/A

For Surge Immunity test (61000-4-5)

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Surge Tester	HAEFELY TRENCH	PSUGER 4010	583 334-71	09/01/2001	08/31/2002

For CS test (61000-4-6)

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
S.G.	R&S	SMY02	100094	08/03/2001	08/02/2002
Power Amplifier	ar	500A100A	300299	N/A	N/A
CDN	MEB	M3	3683	09/14/2001	09/13/2002
CDN	Lüthi	801-M3	1879	03/05/2002	03/04/2003
CDN	MEB	M2	A3002010	04/24/2002	04/23/2003
CDN	SCHAFFNER	T200	16892	10/12/2001	10/11/2002

For Voltage Dips/Short Interruption and Voltage Variation Immunity test (61000-4-11)

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Dips/Interruption and Variations Simulator	HAEFELY TRENCH	PLINE 1610	080 344-05	02/18/2002	02/17/2003

SECTION 1 EN 55022 (LINE CONDUCTED & RADIATED EMISSION)

MEASUREMENT PROCEDURE

(PRELIMINARY LINE CONDUCTED EMISSION TEST)

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

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

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

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

5) All support equipment received power from a second LISN supplying power of 110VAC/60Hz, if any.

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

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

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

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

Mode(s):

1. **2048 x 1536 Resolution + Intel P4 2.4GHz CPU + 100MHz External Clock (100Mbps)**
2. **2048 x 1536 Resolution + Intel P4 2.4GHz CPU + 100MHz External Clock (10Mbps)**
3. **1920 x 1440 Resolution + Intel P4 2.4GHz CPU + 100MHz External Clock (100Mbps)**
4. **1600 x 1200 Resolution + Intel P4 2.4GHz CPU + 100MHz External Clock (100Mbps)**
5. **1280 x 1024 Resolution + Intel P4 2.4GHz CPU + 100MHz External Clock (100Mbps)**
6. **2048 x 1536 Resolution + Intel P4 2.4GHz CPU + 133MHz External Clock (100Mbps)**

10) After the preliminary scan, we found the following test mode producing the highest emission level.

Mode: 1.

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

MEASUREMENT PROCEDURE

(FINAL LINE CONDUCTED EMISSION TEST)

1) EUT and support equipment was set up on the test bench as per step 10 of the preliminary test.

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

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

Data Sample:

Freq. MHz	Q.P. Raw dBuV	Average Raw dBuV	Q.P. Limit dBuV	Average Limit dBuV	Q.P. Margin dB	Average Margin dB	Note
x.xx	43.95	---	56	46	-12.05	---	L1

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

LINE CONDUCTED EMISSION LIMIT (EN 55022)

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

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

MEASUREMENT PROCEDURE
(PRELIMINARY RADIATED EMISSION TEST)

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

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

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

4) The EUT received AC power source from the outlet socket under the turntable. All support equipment received 110VAC/60Hz power from another socket under the turntable, if any.

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

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

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

Mode(s):

1. **2048 x 1536 Resolution + Intel P4 2.4GHz CPU + 100MHz External Clock (100Mbps)**
2. **2048 x 1536 Resolution + Intel P4 2.4GHz CPU + 100MHz External Clock (10Mbps)**
3. **1920 x 1440 Resolution + Intel P4 2.4GHz CPU + 100MHz External Clock (100Mbps)**
4. **1600 x 1200 Resolution + Intel P4 2.4GHz CPU + 100MHz External Clock (100Mbps)**
5. **1280 x 1024 Resolution + Intel P4 2.4GHz CPU + 100MHz External Clock (100Mbps)**
6. **2048 x 1536 Resolution + Intel P4 2.4GHz CPU + 133MHz External Clock (100Mbps)**

8) After the preliminary scan, we found the following test mode producing the highest emission level.

Mode: 1.

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

MEASUREMENT PROCEDURE
(FINAL RADIATED EMISSION TEST)

1) EUT and support equipment were set up on the turntable as per step 8 of the preliminary test.

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

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

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

Data Sample:

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
xx.xx	14.0	11.2	26.2	30	-3.8

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

RADIATED EMISSION LIMIT

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBu V/m/ Q.P.)
30-230	10	30
230-1000	10	37

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

BLOCK DIAGRAM OF TEST SETUP

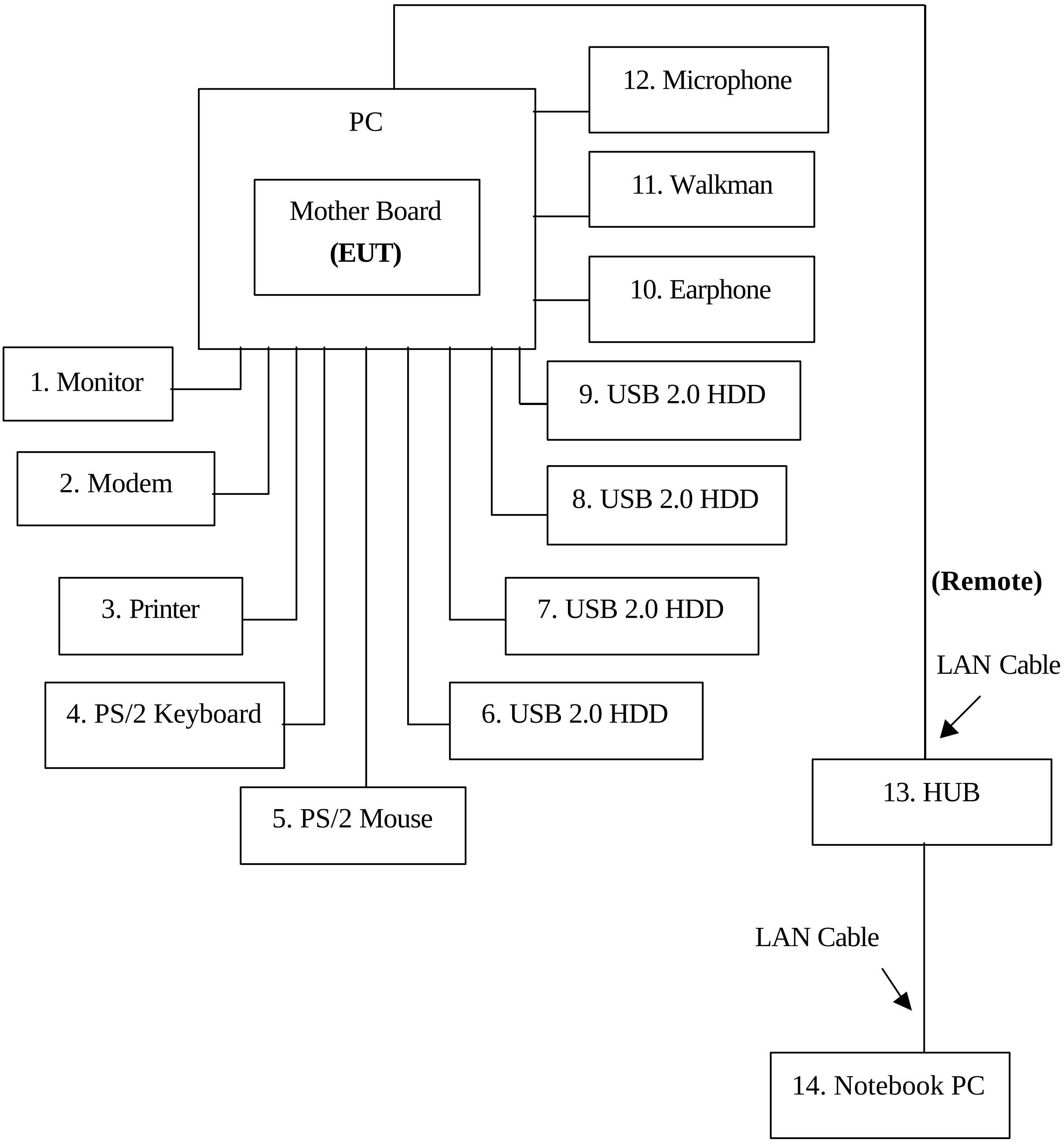
System Diagram of Connections between EUT and Simulators

EUT: Mother Board

Trade Name: N/A

Model Number: 886LCD-ATX

AC Power Cord: Unshielded, 1.8m to Power Supply



SUMMARY DATA

(LINE CONDUCTED TEST)

Model Number: 886LCD-ATX **Location:** Site # 3

Tested by: Michael Chen

Test Mode: Mode 1

Test Results: Passed

Temperature: 28°C **Humidity:** 64%RH

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

FREQ MHz	Q.P. RAW dBuV	AVG RAW dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.195	47.60	---	63.80	53.80	-16.20	---	L1
1.100	24.50	---	56.00	46.00	-31.50	---	L1
2.400	21.30	---	56.00	46.00	-34.70	---	L1
8.720	30.30	---	60.00	50.00	-29.70	---	L1
16.230	33.40	---	60.00	50.00	-26.60	---	L1
23.400	32.90	---	60.00	50.00	-27.10	---	L1
0.195	47.80	---	63.80	53.80	-16.00	---	L2
1.600	22.90	---	56.00	46.00	-33.10	---	L2
2.900	22.70	---	56.00	46.00	-33.30	---	L2
14.150	31.00	---	60.00	50.00	-29.00	---	L2
16.230	33.60	---	60.00	50.00	-26.40	---	L2
23.400	30.40	---	60.00	50.00	-29.60	---	L2

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

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

SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: 886LCD-ATX

Location: Site # 4

Tested by: Michael Chen

Polar: Vertical--10m

Test Mode: Mode 1

Test Results: Passed

Detector Function: Quasi-Peak

Temperature: 28°C

Humidity: 66%RH

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

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
47.84	15.6	11.1	26.7	30.0	-3.3
133.08	12.7	14.2	26.9	30.0	-3.1
160.01	13.3	13.5	26.8	30.0	-3.2
165.58	11.2	13.1	24.3	30.0	-5.7
186.97	12.6	12.3	24.9	30.0	-5.1
200.27	12.6	12.7	25.3	30.0	-4.7
213.07	14.4	12.8	27.2	30.0	-2.8
852.63	1.6	26.9	28.5	37.0	-8.5
880.06	3.6	27.4	31.0	37.0	-6.0

```
------
   900.06        2.7         27.8        30.5        37.0        -6.5
---------------------------------------------------------------------
------
```

SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: 886LCD-ATX **Location:** Site # 4

Tested by: Michael Chen **Polar:** Horizontal--10m

Test Mode: Mode 1 **Test Results:** Passed

Detector Function: Quasi-Peak

Temperature: 28°C **Humidity:** 66%RH

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

Freq.	Raw Data	Corr. Factor	Emiss. Level	Limits	Margin
(MHz)	(dBuV/m)	(dB)	(dBuV/m	)	(dB)
76.94	14.3	9.0	23.3	30.0	-6.7
111.18	12.5	14.1	26.6	30.0	-3.4
123.61	7.8	14.5	22.3	30.0	-7.7
145.48	11.9	13.9	25.8	30.0	-4.2
191.24	12.5	12.5	25.0	30.0	-5.0
200.30	13.1	12.7	25.8	30.0	-4.2
213.17	12.4	12.8	25.2	30.0	-4.8
573.91	6.5	24.7	31.2	37.0	-5.8
698.49	5.2	25.2	30.4	37.0	-6.6
880.91	2.0	27.4	29.4	37.0	-7.6

SECTION 2 EN 61000-3-2 & EN 61000-3-3 (POWER HARMONICS & VOLTAGE FLUCTUATION / FLICKER)

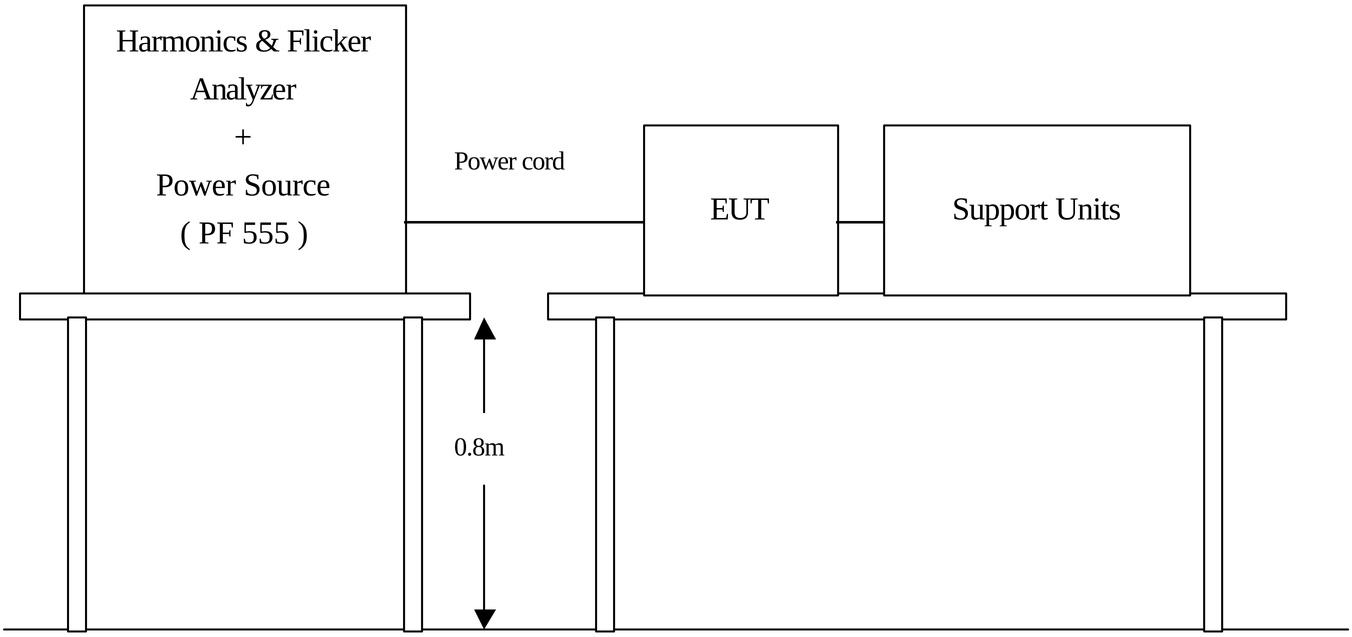
POWER HARMONICS MEASUREMENT

Port : AC mains
Basic Standard : EN 61000-3-2 (1995 + A1: 1998 + A2: 1998 + A14: 2000)
Limits : ☐ CLASS A ; ☑ CLASS D
Tester : Michael Chen
Temperature : 26°C
Humidity : 55%

VOLTAGE FLUCTUATION/FLICKER MEASUREMENT

Port : AC mains
Basic Standard : EN 61000-3-3 (1995)
Limits : §5 of EN 61000-3-3
Tester : Michael Chen
Temperature : 26°C
Humidity : 55%

Block Diagram of Test Setup:



Result:

Please see the attached test data.

```
----------------------------------------------------------------------

EN 61000-3-2 TEST REPORT  2002/6/7  06:45 PM
----------------------------------------------------------------------

Unit:         Mother Board

Model No.:    886LCD-ATX

Remarks:      Temp:26         Humid:55%

Operator:     Michael Chen

=====================================================================


                              TEST SETUP
                              ----------

Test Freq.:           50.00 Hz.     Test Voltage:          230.0 vac
Waveform :            SINE          Test Time:               2.5 min.
Classification :      CLASS D       Test Type:           STEADY-STATE

Prog. Zo Enabled:    YES            Prog. Zo:                0.000

Motor Driven with Phase Angle Control:   NO
Impedance selected:                      DIRECT

Synthetic R+L Enabled:                   NO
Resistance:   0.380 Ohms     Inductance: 460.000 uH


Max Watts:112W
```

```
                 TEST DATA
                 ---------



           Result:      PASS



         Harmonic Current Results
  ----------------------------------------

   Hn      AMPS  LO Limit  HI Limit   Result

     0    0.000    0.000    0.000      PASS
     1    0.511      NaN      NaN      PASS
     2    0.002      NaN      NaN      PASS
     3    0.315    0.360    0.360      PASS
     4    0.001      NaN      NaN      PASS
     5    0.104    0.203    0.203      PASS
     6    0.000      NaN      NaN      PASS
     7    0.043    0.110    0.110      PASS
     8    0.000      NaN      NaN      PASS
     9    0.026    0.055    0.055      PASS
    10    0.000      NaN      NaN      PASS
    11    0.017    0.039    0.039      PASS
    12    0.000      NaN      NaN      PASS
    13    0.012    0.031    0.031      PASS
    14    0.000      NaN      NaN      PASS
    15    0.010    0.028    0.028      PASS
    16    0.000      NaN      NaN      PASS
    17    0.007    0.024    0.024      PASS
    18    0.000      NaN      NaN      PASS
    19    0.005    0.022    0.022      PASS
    20    0.000      NaN      NaN      PASS
    21    0.005    0.019    0.019      PASS
    22    0.000      NaN      NaN      PASS
    23    0.004    0.018    0.018      PASS
    24    0.000      NaN      NaN      PASS
```

25	0.003	0.017	0.017	PASS
26	0.000	NaN	NaN	PASS
27	0.003	0.016	0.016	PASS
28	0.000	NaN	NaN	PASS
29	0.002	0.014	0.014	PASS
30	0.000	NaN	NaN	PASS
31	0.004	0.014	0.014	PASS
32	0.000	NaN	NaN	PASS
33	0.002	0.012	0.012	PASS
34	0.000	NaN	NaN	PASS
35	0.003	0.012	0.012	PASS
36	0.000	NaN	NaN	PASS
37	0.002	0.011	0.011	PASS
38	0.000	NaN	NaN	PASS
39	0.001	0.011	0.011	PASS
40	0.000	NaN	NaN	PASS

END OF REPORT

```
----------------------------------------------------------------------

EN 61000-3-3 TEST REPORT  2002/6/7  07:14 PM
----------------------------------------------------------------------

Unit:         Mother Board

Model No.:    886LCD-ATX (CONTINUE)

Remarks:      Temp: 26             Humid: 55%

Operator:     Michael Chen

=====================================================================


                              TEST SETUP
                              ----------

Test Freq.:          50.00 Hz.     Test Voltage:          230.0 vac
Waveform :            SINE
Test Time:           10.0 min.        Tshort:              10.0 min.

Prog. Zo Enabled:    YES            Prog. Zo:                0.000

Voltage Change less than once per Hour:     NO
Impedance selected:                      DIRECT

Synthetic R+L Enabled:                   NO
Resistance:   0.380 Ohms     Inductance: 460.000 uH
```

```
                             TEST DATA
                             ---------


                          Result:      PASS

                  EUT Data           Limit          Result    Test
Enabled

Pst max             0.001              1.00           PASS
true
Plt max             0.001              0.65           PASS
true
dc %                0.004              3.00           PASS
true
dmax %              0.002              4.00           PASS
true
d(t) sec.           0.002              0.20           PASS
true

               Power Source Data
Source Pst max    0.020              0.400         PASS           true
% THD               0.030              3.000          PASS
true



                              END OF REPORT
```

```
----------------------------------------------------------------------

EN 61000-3-3 TEST REPORT  2002/6/7  06:58 PM
----------------------------------------------------------------------

Unit:         Mother Board

Model No.:    886LCD-ATX (MANUAL SWITCH)

Remarks:      Temp: 26             Humid: 55%

Operator:     Michael Chen

=====================================================================


                              TEST SETUP
                              ----------

Test Freq.:          50.00 Hz.     Test Voltage:          230.0 vac
Waveform :            SINE
Test Time:           10.0 min.        Tshort:              10.0 min.

Prog. Zo Enabled:    YES            Prog. Zo:                0.000

Voltage Change less than once per Hour:     NO
Impedance selected:                      DIRECT

Synthetic R+L Enabled:                   NO
Resistance:   0.380 Ohms     Inductance: 460.000 uH
```

```
                             TEST DATA
                             ---------


                          Result:      PASS

                  EUT Data           Limit          Result    Test
Enabled

Pst max             0.009              1.00           PASS
true
Plt max             0.009              0.65           PASS
true
dc %                0.007              3.00           PASS
true
dmax %              0.008              4.00           PASS
true
d(t) sec.           0.009              0.20           PASS
true

               Power Source Data
Source Pst max    0.022              0.400          PASS          true
% THD               0.032              3.000          PASS
true



                              END OF REPORT
```

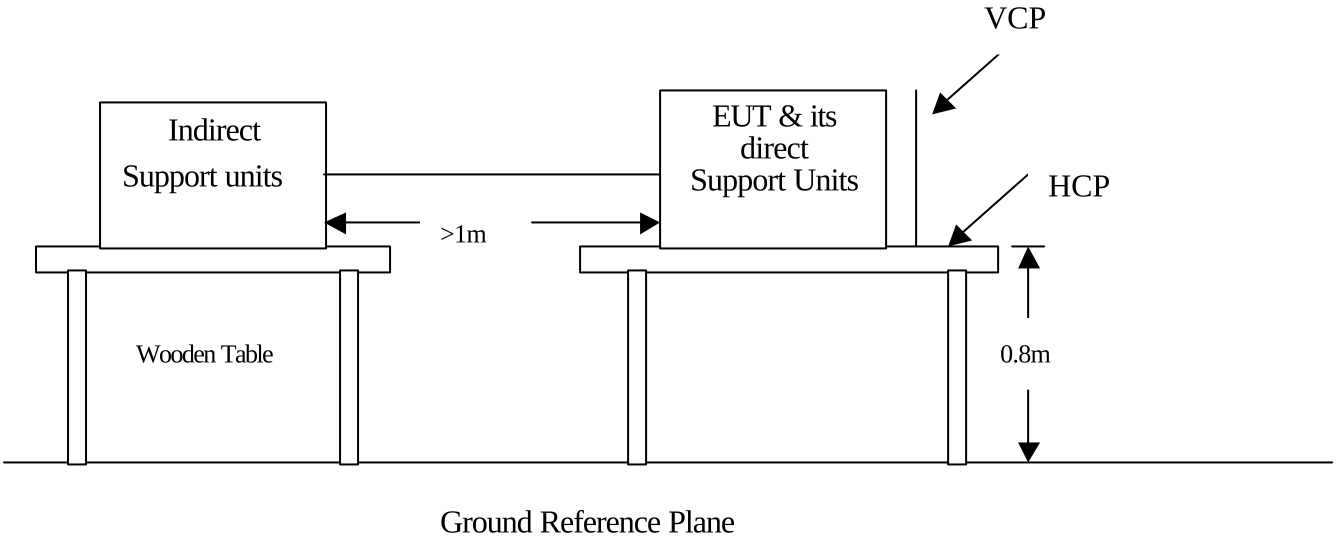
SECTION 3 IEC 61000-4-2 (ELECTROSTATIC DISCHARGE)

ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

Port : Enclosure
Basic Standard : IEC 61000-4-2
Test Level : ± 8 kV (Air Discharge)
± 4 kV (Contact Discharge)
± 4 kV (Indirect Discharge)
Performance Criteria : B (Standard require)
Tester : Michael Chen
Temperature/Humidity: 27°C/51%

Block Diagram of Test Setup:

(The 470 k ohm resistors are installed per standard requirement)



Test Procedure:

1. The Host PC (included EUT) was located 0.1 m minimum from all side of the HCP.
2. The indirect support units were located 1m minimum away from the EUT, but direct support unit was/ were located at same location as EUT on the HCP and keep at a distance of 10 cm with EUT.
3. A scroll 'H' test program was loaded and executed in Windows mode.
4. The Host PC (included EUT) sent above message to EUT Panel and monitor and related peripherals through the test.
5. Active the communication function if the EUT with such port(s).
6. As per the requirement of EN 55024; applying direct contact discharge at the sides other than front of EUT at minimum 50 discharges (25 positive and 25 negative) if applicable, can't be applied direct contact discharge side of EUT then the indirect discharge shall be applied. One of the test points shall be subjected to at least 50 indirect discharge (contact) to the front edge of horizontal coupling plane.
7. Other parts of EUT where it is not possible to perform contact discharge then selecting appropriate points of EUT for air discharge, a minimum of 10 single air discharges shall be applied.
8. The application of ESD to the contact of open connectors is not required.
9. The EUT direct connection units also need to be applied ESD at the port of EUT cable connected
10. Putting a mark on EUT to show tested points. The following test condition was followed during the tests.

Note: As per IEC 61000-4-2: 2001, with two 470k bleed resistors cable is connected between the EUT and HCP during the test applicable for power ungrounded or battery operating unit only.

The electrostatic discharges were applied as follows:

Amount of Discharges	Voltage	Coupling	Result (Pass/Fail)
Mini 10 /Point	±8kV	Air Discharge	Pass
Mini 25 /Point	±4kV	Contact Discharge	Pass
Mini 25 /Point	±4kV	Indirect Discharge HCP (Front)	Pass
Mini 25 /Point	±4kV	Indirect Discharge VCP (Left)	Pass
Mini 25 /Point	±4kV	Indirect Discharge VCP (Back)	N/A
Mini 25 /Point	±4kV	Indirect Discharge VCP (Right)	Pass

***** The tested points to EUT, please refer to attached pages.**
(Blue arrow mark for contact discharge, red arrow mark for air discharge.)

Performance & Result:

☑ **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

☐ **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

☐ **Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

☑ ***PASS*** ☐ ***FAILED***

Observation: No any function degraded during the tests.

The Tested Points of EUT

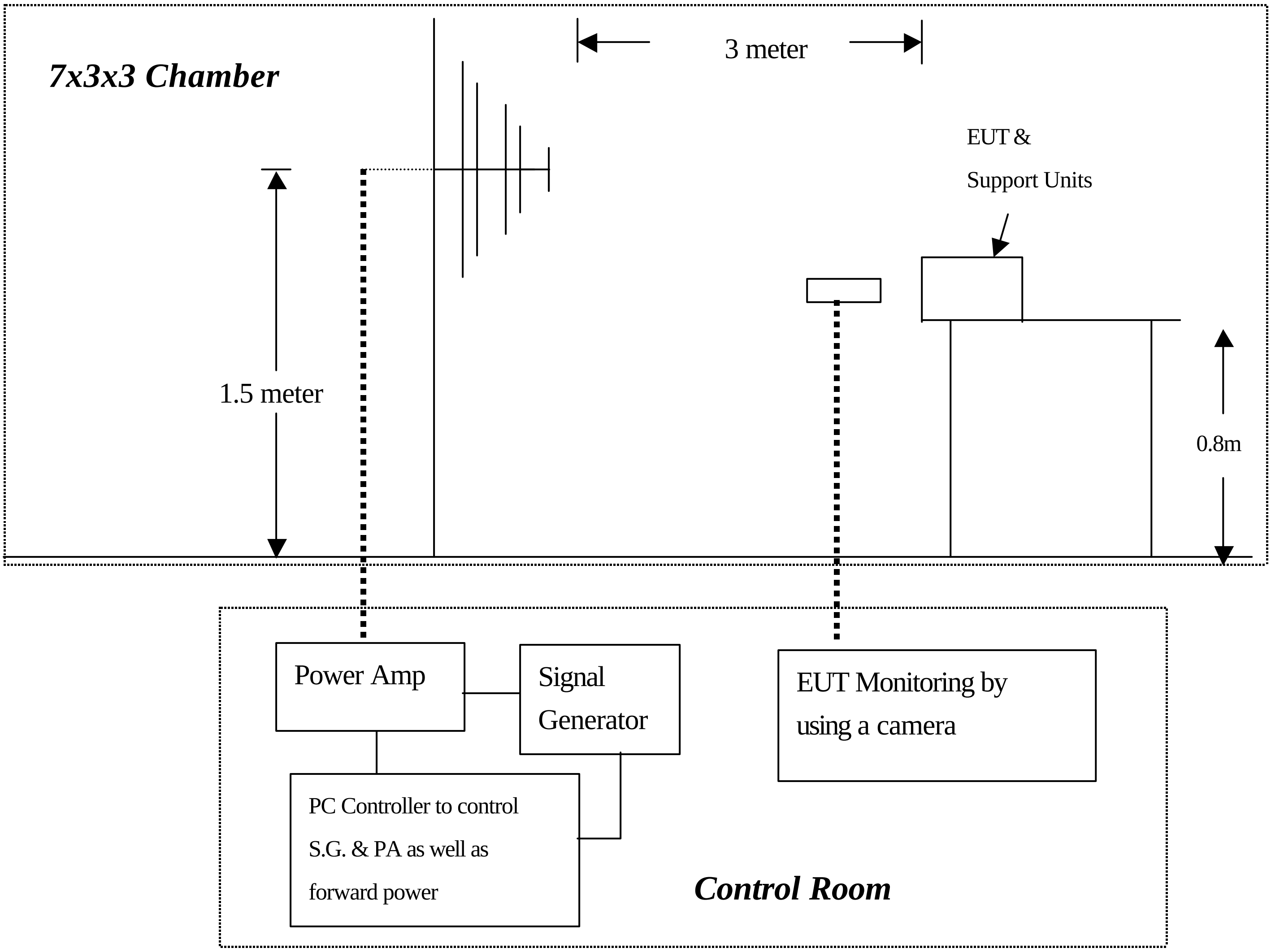
(Photo 1 of 1)

SECTION 4 IEC 61000-4-3 (RADIATED ELECTROMAGNETIC FIELD)

RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Port	: Enclosure
Basic Standard	: IEC 61000-4-3
Requirements	: 3 V/m / with 80% AM. 1kHz Modulation
Performance Criteria	: A (Standard require)
Tester	: Michael Chen
Temperature	: 29°C
Humidity	: 59%

Block Diagram of Test Setup:



Test Procedure:

1. The Host PC (included EUT) and support units were located at the edge of supporting table keep 3 meter away from transmitting antenna, it just the calibrated square area of field uniformity.
2. Adjusting the cables to be exposed to the electromagnetic filed as possible.
3. Performing a Radiated Emission Scan in range of 30 to 1000 MHz prior to do RS test and records the more higher emission frequencies for the reference of RS test, due to antenna effectiveness.
4. A ‘H’ messages were displayed on screen of monitor.
5. Adjusting the monitoring camera to monitor the ‘H’ message as clear as possible.
6. Setting the testing parameters of RS test software per IEC 61000-4-3.
7. Referring to the tested data of step 3 to performing the RS test from 80 to 1000 MHz.
8. Recording the test result in following table.
9. Changing the Host PC (included EUT) to the other side and repeat step 3 to 7, until 4 sides of EUT were verified.
10. It is not necessary to perform test as per annex A of EN 55024 if the EUT doesn’t belong to ITE product.

IEC 61000-4-3 Preliminary test conditions:

Test level : 6V/m
Steps : 4 % of fundamental
Dwell Time : 3 sec

Range (MHz)	Field	Modulation	Polarity	Position (°)	Result (Pass/Fail)
80-1000	6V	Yes	H	Front	Pass
80-1000	6V	Yes	V	Front	Pass
80-1000	6V	Yes	H	Right	Pass
80-1000	6V	Yes	V	Right	Pass
80-1000	6V	Yes	H	Back	Pass
80-1000	6V	Yes	V	Back	Pass
80-1000	6V	Yes	H	Left	Pass
80-1000	6V	Yes	V	Left	Pass

IEC 61000-4-3 Final test conditions:

Test level : 3V/m
Steps : 1 % of fundamental
Dwell Time : 3 sec

Range (MHz)	Field	Modulation	Polarity	Position (°)	Result (Pass/Fail)
80-1000	3V	Yes	H	Back	Pass
80-1000	3V	Yes	V	Back	Pass

Performance & Result:

☑ **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

☐ **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

☐ **Criteria C:** Temporary loss of function is allowed, provided the functions self-recoverable or can be restored by the operation of controls.

☑ ***PASS***	☐ ***FAILED***

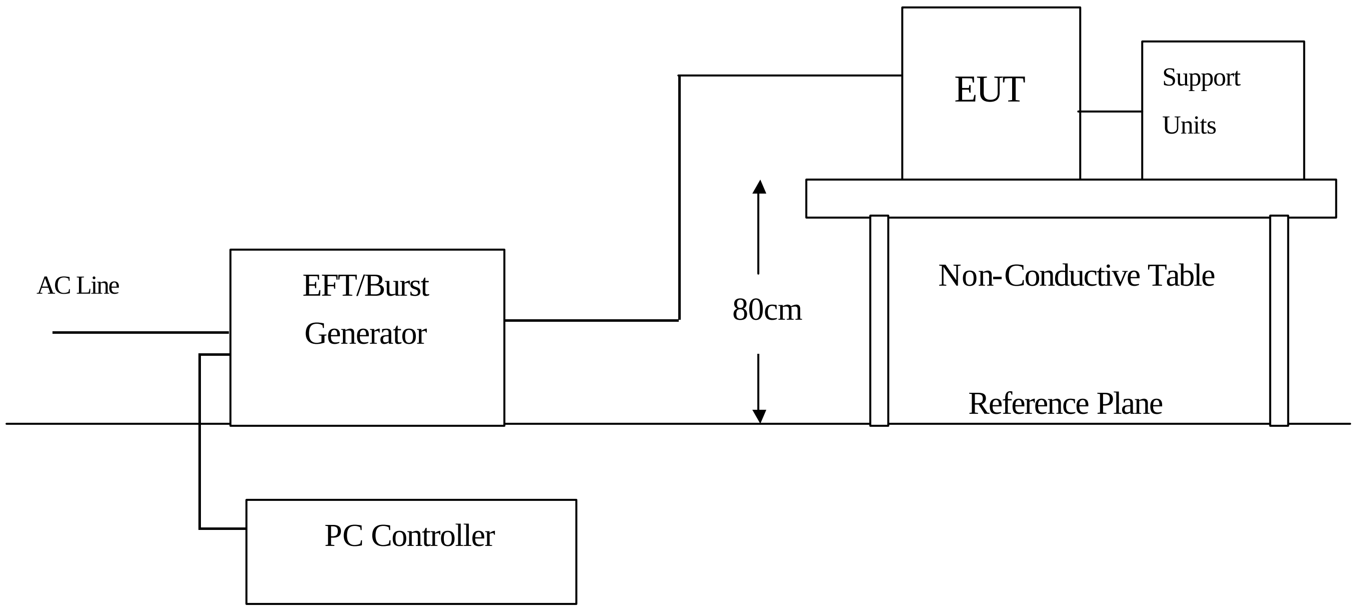
Observation: No any function degraded during the tests.

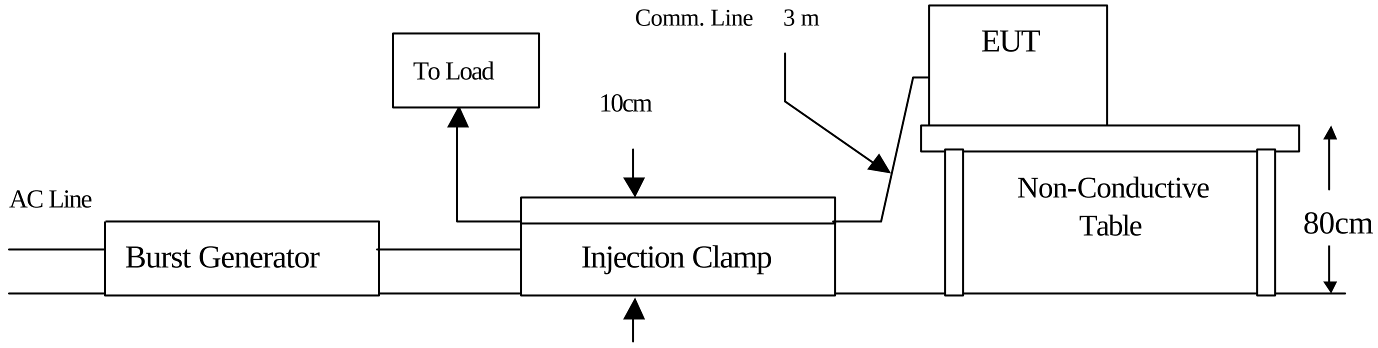
SECTION 5 IEC 61000-4-4 (FAST TRANSIENTS/BURST)

FAST TRANSIENTS/BURST IMMUNITY TEST

Port : On Power Supply Lines and Data Cable
Basic Standard : IEC 61000-4-4
Requirements : ±1kV for Power Supply Line
± 0.5kV for LAN Cable
Performance Criteria : B (Standard require)
Tester : Michael Chen
Temperature : 28°C
Humidity : 53%

Block Diagram of Test Setup:





Test Procedure:

1. The Host PC (included EUT) and support units were located on a wooden table 0.8 m away from ground reference plane.
2. A test program was loaded and executed in Windows mode.
3. The data was sent to the screen of monitor and filling the screen with upper case of “H” patterns.
4. The test program exercised related support units sequentially.
5. Repeating step 3 to 4 through the test and increase test voltage to the EUT ports from minimum to standard request or client request.
6. Recording the test result as shown in following table.

Test conditions:

Impulse Frequency: 5kHz
Tr/Th: 5/50ns
Burst Duration: 15ms
Burst Period: 3Hz

Inject Line	Voltage kV	Inject Method	Result (Pass/Fail)
L1	±1	Direct	Pass
N	±1	Direct	Pass
PE	±1	Direct	Pass
L1+N	±1	Direct	Pass
L1+PE	±1	Direct	Pass
N+PE	±1	Direct	Pass
L1 + N + PE	±1	Direct	Pass
LAN Cable	±0.5	Clamp	Pass

Performance & Result:

☑ **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

☐ **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

☐ **Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

☑ ***PASS*** ☐ ***FAILED***

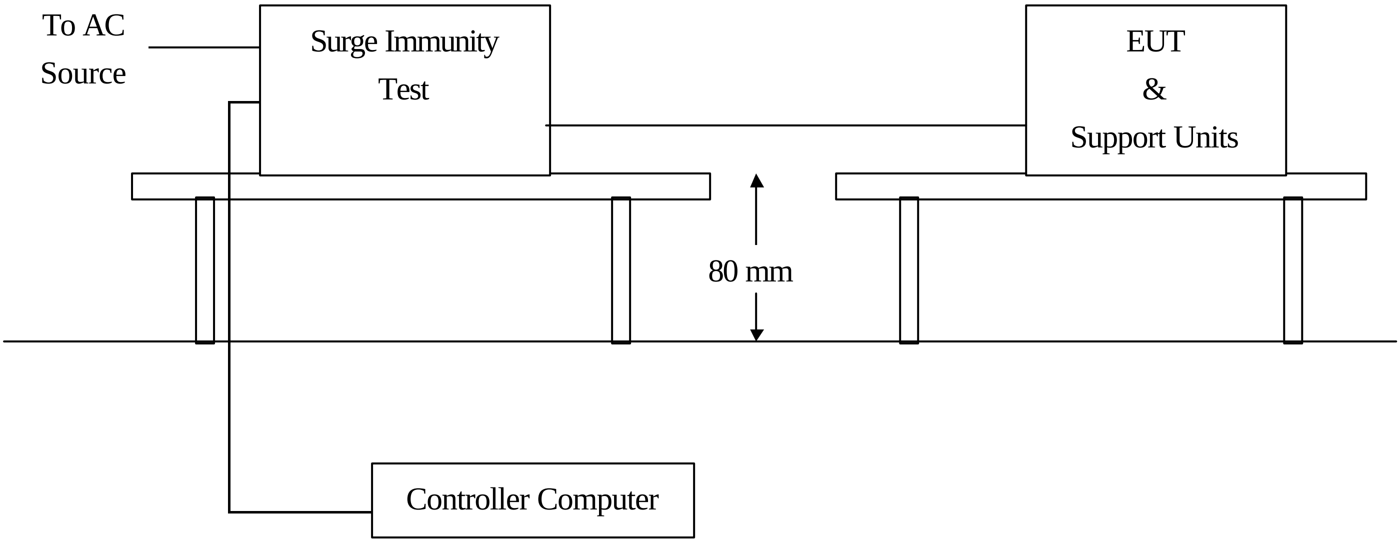
Observation: No any function degraded during the tests.

SECTION 6 IEC 61000-4-5 (SURGE IMMUNITY)

SURGE IMMUNITY TEST

Port	**:** Power Cord
Basic Standard	**:** IEC 61000-4-5
Requirements	**:** ± 1kV (Line to Line) ± 2kV (Line to Ground)
Performance Criteria	**:** B (Standard require)
Tester	**:** Michael Chen
Temperature	**:** 27°C
Humidity	**:** 52%

<u>Block Diagram of Test Setup:</u>



Test Procedure:

1. The Host PC (included EUT) and support units were located on a wooden table 0.8 m away from ground floor.
2. A test program was loaded and executed in Windows mode.
3. The data was sent to the screen of monitor and filling the screen with upper case of “H” patterns.
4. The test program exercised related support units sequentially.
5. Repeating step 3 to 4 through the test and increase test voltage to the EUT ports from minimum to standard request or client request.
6. Recording the test result as shown in following table.

Test conditions:

Voltage Waveform : 1.2/50 *u*s
Current Waveform : 8/20 *u*s
Polarity : Positive/Negative
Phase angle : 0^o, 90^o, 270^o
Number of Test : 5

Coupling Line	Voltage (kV)	Polarity	Coupling Method	Result (Pass/Fail)
L1-L2	1	Positive	Capacitive	Pass
L1-PE	2	Positive	Capacitive	Pass
L2-PE	2	Positive	Capacitive	Pass
L1-L2	1	Negative	Capacitive	Pass
L1-PE	2	Negative	Capacitive	Pass
L2-PE	2	Negative	Capacitive	Pass

Performance & Result:

☑ **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

☐ **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

☐ **Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

☑ ***PASS*** ☐ ***FAILED***

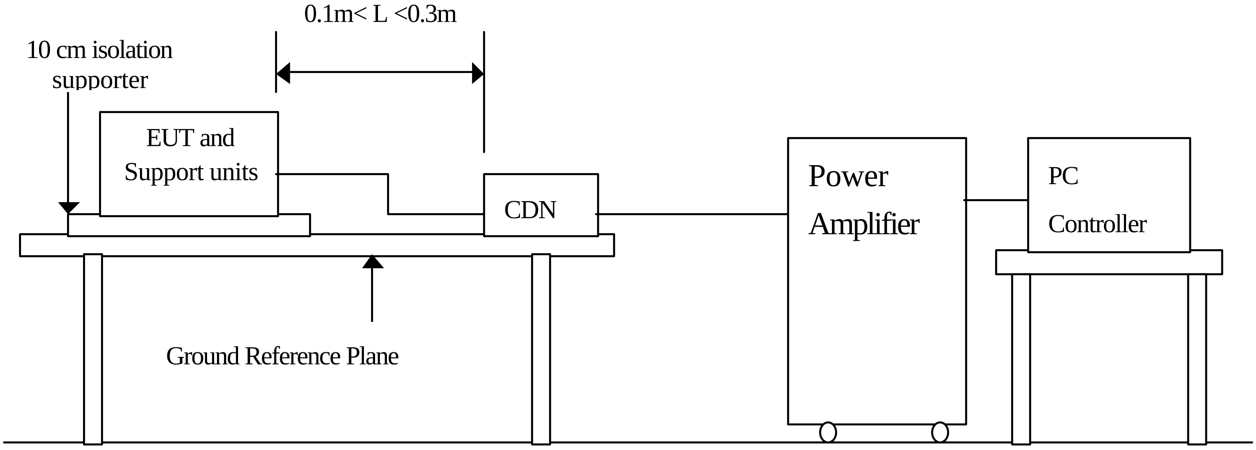
Observation: No any function degraded during the tests.

SECTION 7 IEC 61000-4-6 (CONDUCTED DISTRBANCE/INDUCED BY RADIO-FREQUENCY FIELD)

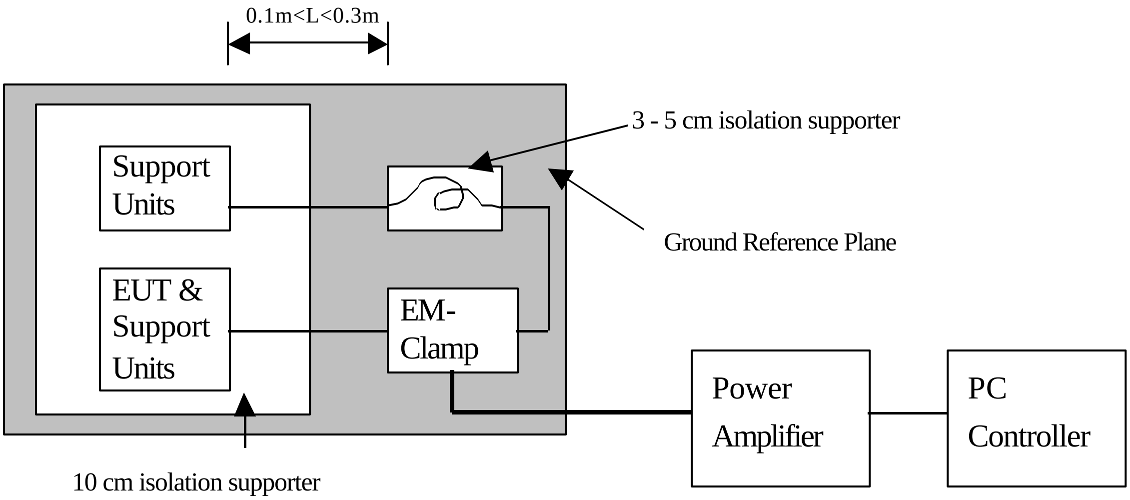
Port : AC Port and LAN Cable
Basic Standard : IEC 61000-4-6
Requirements : 3V with modulated
Injection Method : CDN-M3 for Power Cord
EM-Clamp for LAN Cable
Performance Criteria : A (Standard require)
Tester : Michael Chen
Temperature : 29°C
Humidity : 59%

Block Diagram of Test Setup:

Side view:



Top view:



Test Procedure:

1. The Host PC (included EUT) and support units were located at a ground reference plane with the interposition of a 0.1 m thickness insulating support and the CDN was located on GRP directly.
2. A ‘H’ messages were displayed on screen of monitor.
3. Adjusting the monitoring camera to monitor the ‘H’ message as clear as possible.
4. Setting the testing parameters of CS test software per IEC 61000-4-6.
5. Recording the test result in following table.

Test conditions:

Frequency Range : 0.15MHz-80MHz
Frequency Step : 1% of fundamental
Dwell Time : 3 sec

Range (MHz)	Field	Modulation	Result (Pass/Fail)
0.15-80	3V	Yes	Pass

Performance & Result:

☑ **Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

☐ **Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

☐ **Criteria C:** Temporary loss of function is allowed, provided the functions self-recoverable or can be restored by the operation of controls.

☑ ***PASS*** ☐ ***FAILED***

Observation: No any function degraded during the tests.

SECTION 8 IEC 61000-4-8 (POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST)

Port	**:** Enclosure
Basic Standard	**:** IEC 61000-4-8
Requirements	**:** 1 A/m
Performance Criteria	**:** A (Standard Required)
Temperature	**:** N/A
Humidity	**:** N/A

Note: Not applicable, Because no any component can be influenced by power magnetic filds.

SECTION 9 IEC 61000-4-11 (VOLTAGE DIPS, SHORT INTERRUPTIONS AND VOLTAGE VARIATIONS)

VOLTAGE DIPS / SHORT INTERRUPTIONS

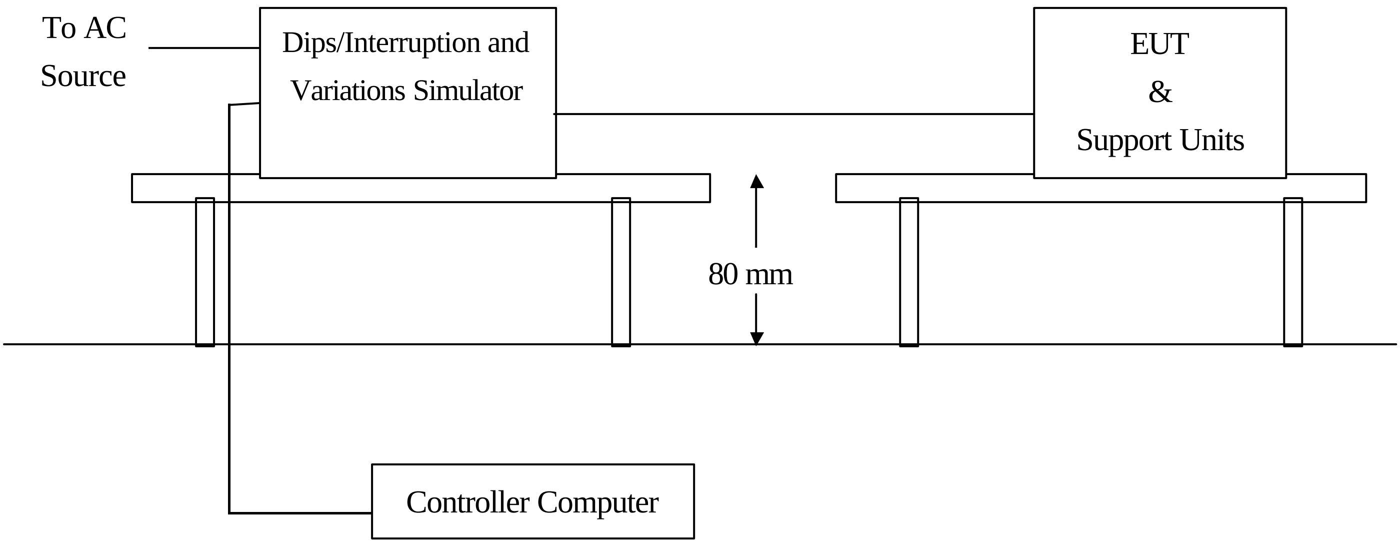
Port : AC mains
Basic Standard : IEC 61000-4-11 (1994)
Requirement : PHASE ANGLE 0, 45, 90, 135, 180, 225, 270, 315 degrees

Voltage Dips	Test Level % U_T	Reduction (%)	Duration (periods)	Performance Criteria
	<5	>95	0.5	B
	70	30	25	C

Voltage Interceptions	Test Level % U_T	Reduction (%)	Duration (periods)	Performance Criteria
	<5	>95	250	C

Test Interval : Min. 10 sec.
Tester : Michael Chen
Temperature : 27°C
Humidity : 53%

Block Diagram of Test Setup:



Test Procedure:

1. The Host PC (included EUT) and support units were located on a wooden table, 0.8 m away from ground floor.
2. A test program was loaded and executed in Windows mode.
3. The data was sent to the screen of monitor and filling the screen with upper case of "H" patterns.
4. The test program exercised related support units sequentially.
5. Setting the parameter of tests and then Perform the test software of test simulator.
6. Repeating step 3 to 4 through the test.
7. Recording the test result in test record form.

Test conditions:

The duration with a sequence of three dips/interruptions with interval of 10 s minimum
(Between each test event)

Voltage Dips:

Test Level % U_T	Reduction (%)	Duration (periods)	Observation	Meet Performance Criteria
0	100	0.5	Normal	A
70	30	25	Normal	A

Voltage Interruptions:

Test Level % U_T	Reduction (%)	Duration (periods)	Observation	Meet Performance Criteria
0	100	250	EUT shut down, but can be recovered by manual, as the events disappear.	C

Normal: No any functions degrade during and after the test.

Performance & Result:

Criteria A: The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

Criteria B: The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

Criteria C: Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

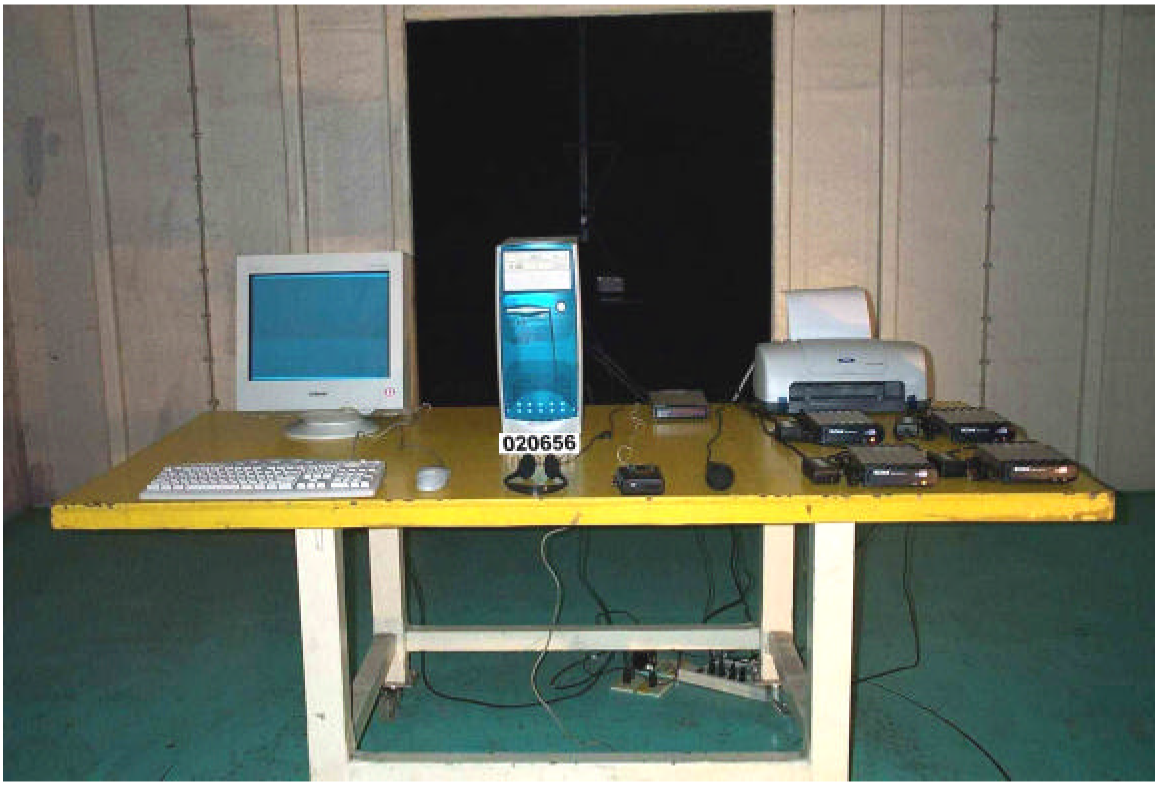
☑ ***PASS*** ☐ ***FAILED***

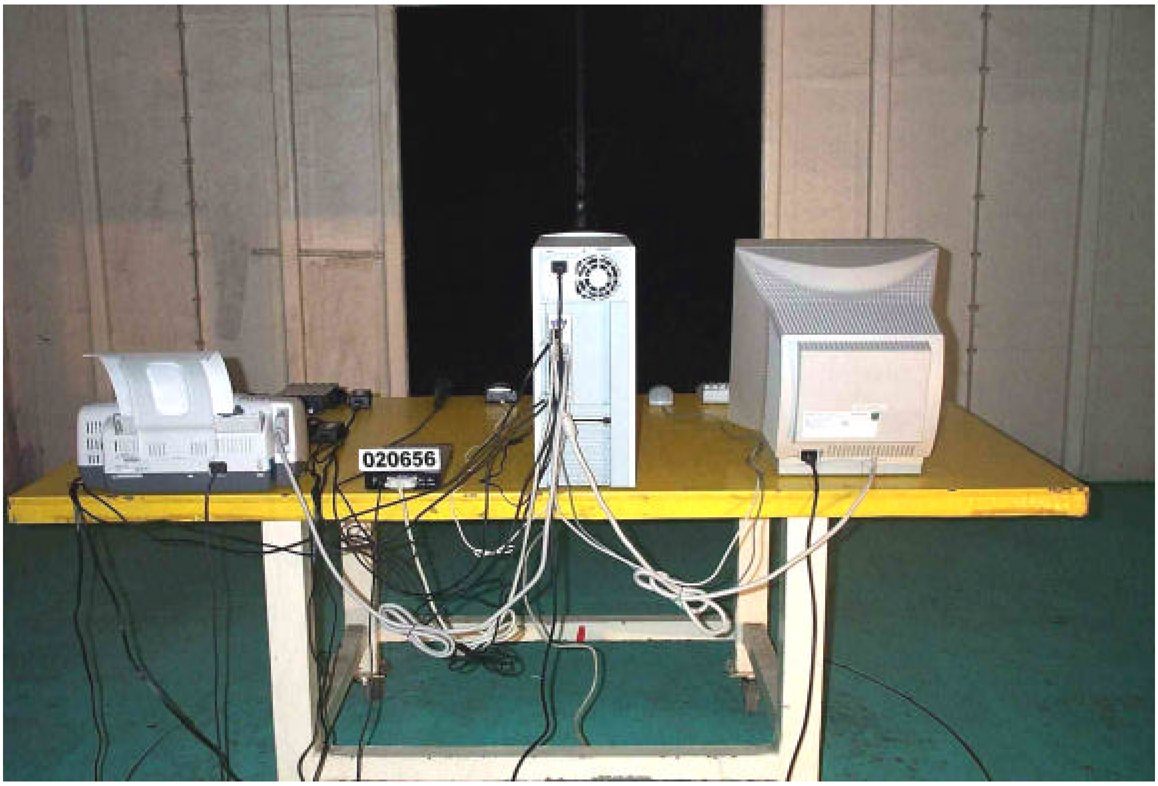
APPENDIX 1

PHOTOGRAPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST (EN 55022)

RADIATED EMISSION TEST (EN 55022)





POWER HARMONIC & VOLTAGE FLUCTUATION / FLICKER TEST
(EN 61000-3-2, EN 61000-3-3)

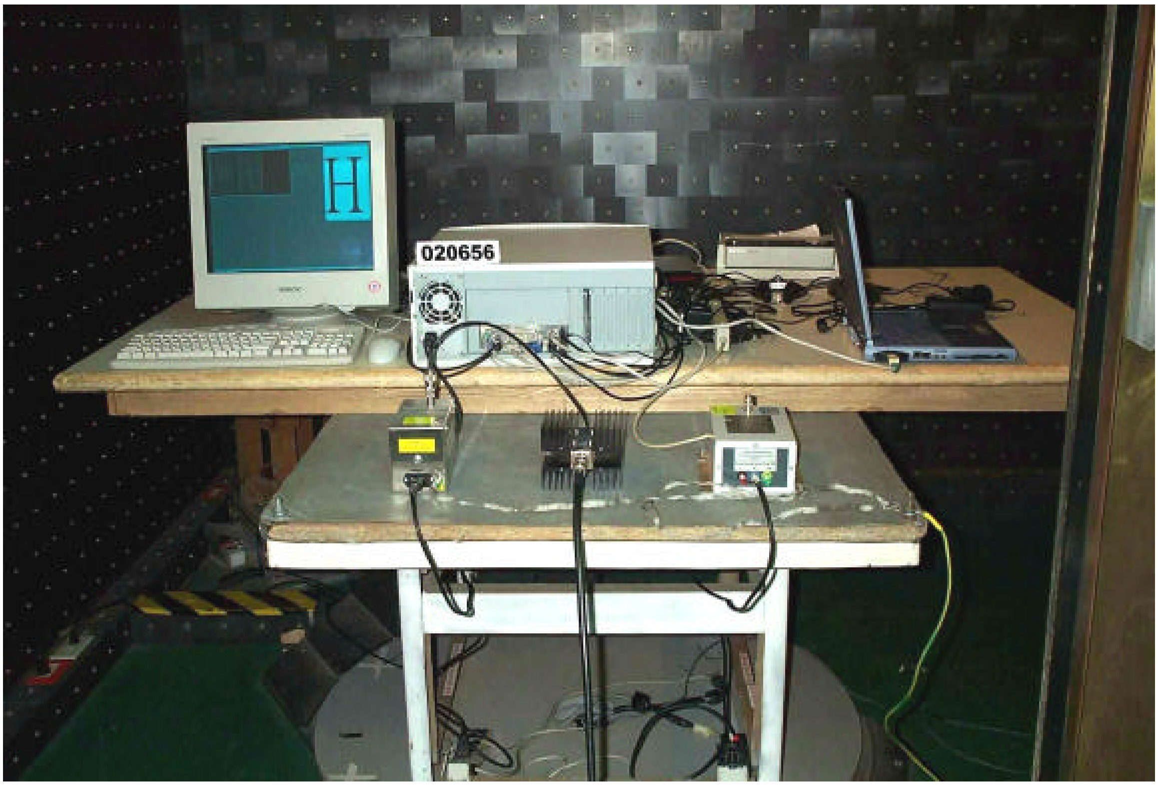
ELECTROSTATIC DISCHARGE TEST (IEC 61000-4-2)

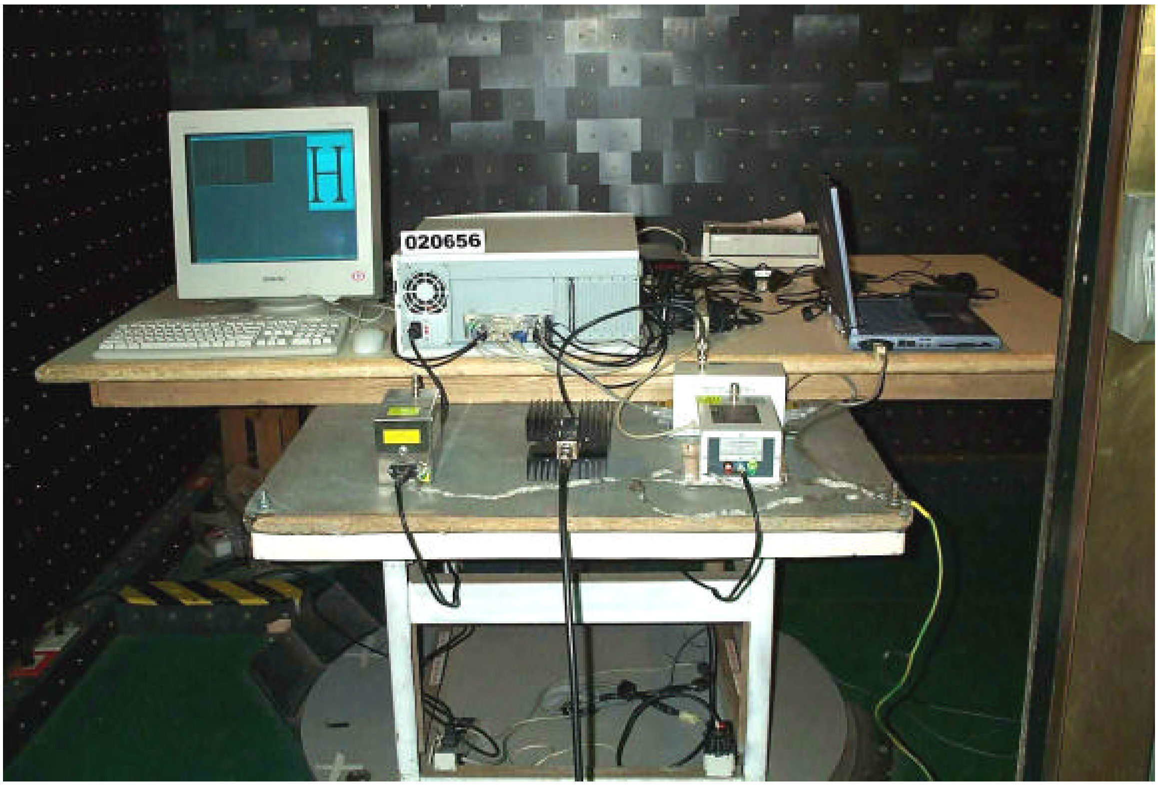
RADIATED ELECTROMAGNETIC FIELD (IEC 61000-4-3)

FAST TRANSIENTS/BURST TEST (IEC 61000-4-4)

SURGE IMMUNITY TEST (IEC 61000-4-5)

CONDUCTED DISTURBANCE, INDUCED BY RADIO-FREQUENCY FIELDS TEST (IEC 61000-4-6)





VOLTAGE DIPS / INTERRUPTION TEST (IEC 61000-4-11)

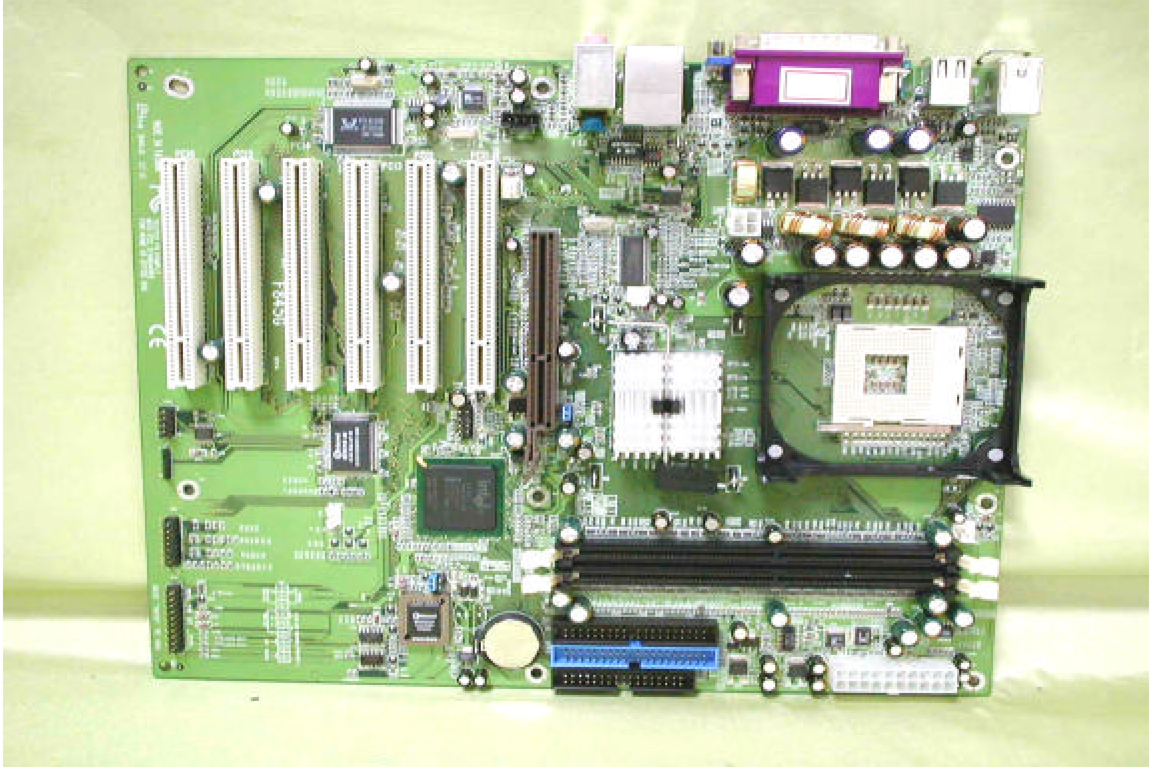
APPENDIX 2

PHOTOGRAPHS OF EUT

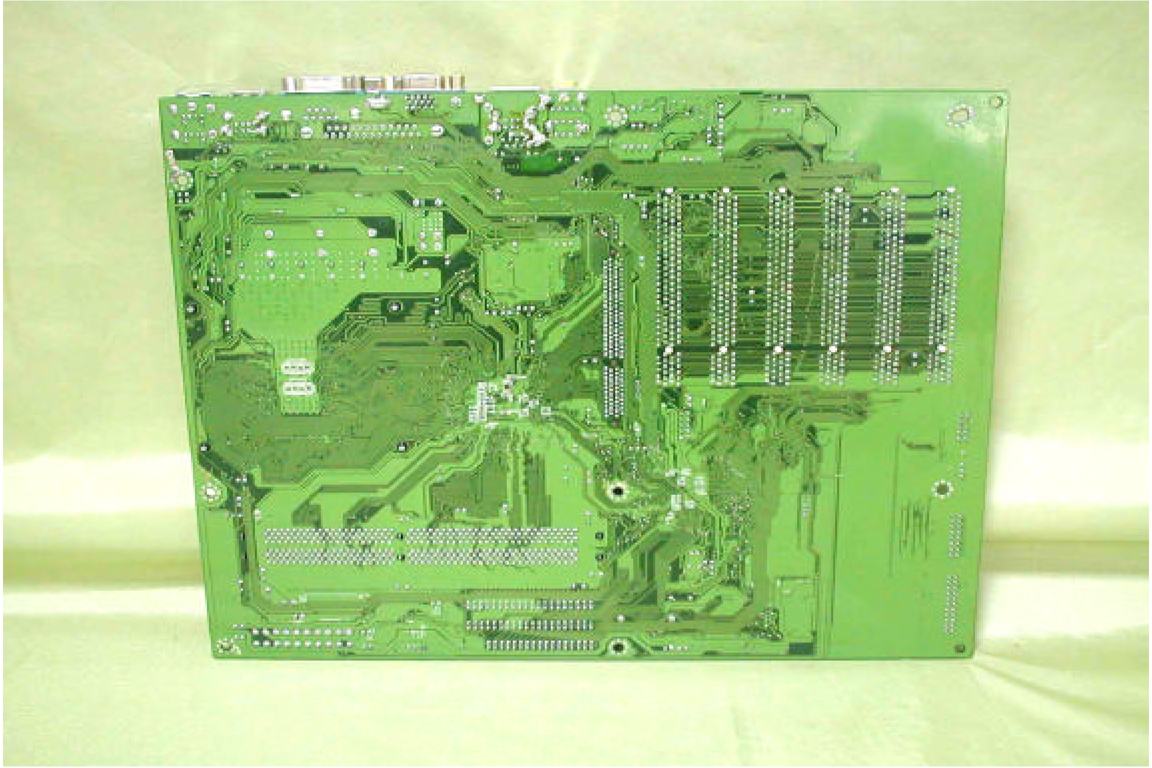
Front View of PC

Back View of PC

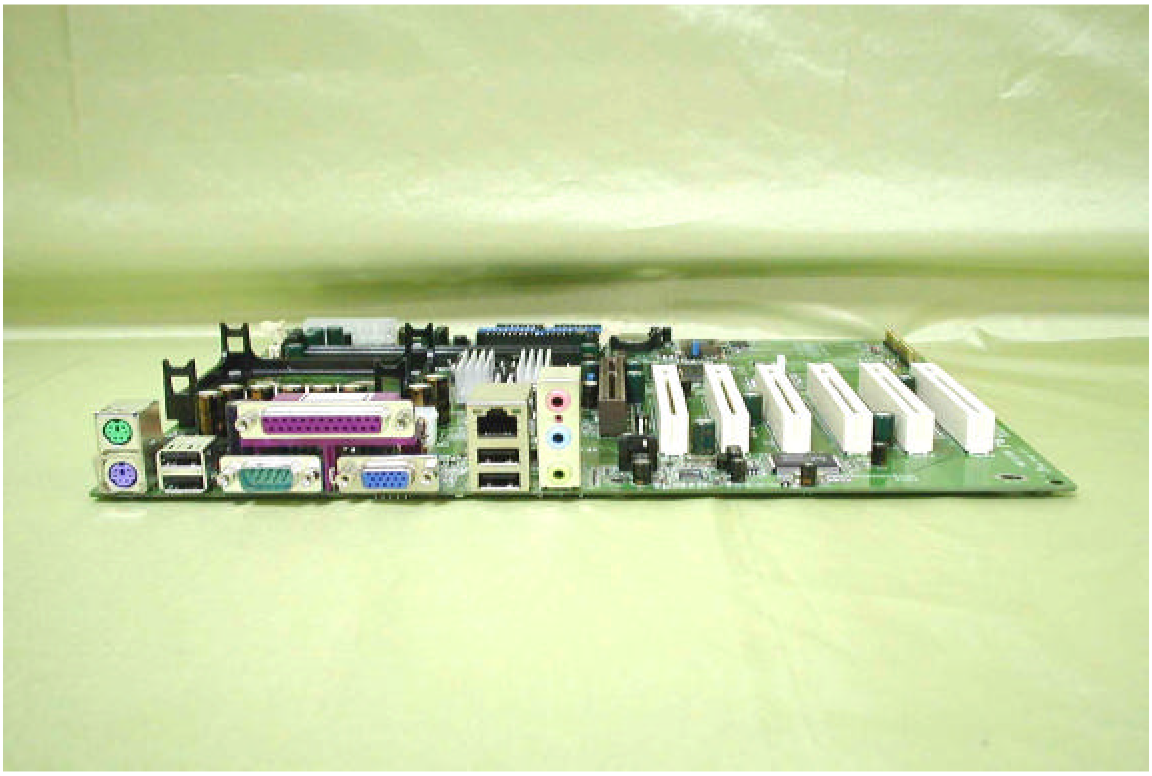
Front View of EUT



Back View of EUT



I/O Port of EUT



Internal View of PC