



EMC COMPLIANCE TEST REPORT

for

Industrial Display Monitor

Trade Name : AAEON
Model Number : AMB-270; OPD-217
Serial Number : N/A
Report Number : 020039-E
Date : January 16, 2002
Regulations : See below

Standards	Results (Pass/Fail)
EN 55022: 1998 (Class A)	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: 1995 + A2: 2000	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:

AAEON TECHNOLOGY INC.
5F, No. 135, Lane 235, Pao Chiao Rd., Hsin-Tien City,
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

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C&C Laboratory Co., Ltd.**



EC-Declaration of Conformity

For the following equipment:

Industrial Display Monitor

(Product Name)

AMB-270; OPD-217 / AAEON

(Model Designation / Trade name)

AAEON TECHNOLOGY INC.

(Manufacturer Name)

5F, No. 135, Lane 235, Pao Chiao Rd., Hsin-Tien City, 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: 1998 (Class A)

EN 61000-3-2: 1995 + A1: 1998 + A2: 1998 + A14: 2000

EN 61000-3-3: 1995

EN55024: 1998

IEC 61000-4-2: 1995 + A2: 2000; 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)



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VERIFICATION OF COMPLIANCE

Equipment Under Test: Industrial Display Monitor

Trade Name: AAEMON

Model Number: AMB-270; OPD-217

Serial Number: N/A

Applicant: **AAEMON TECHNOLOGY INC.**
5F, No. 135, Lane 235, Pao Chiao Rd., Hsin-Tien City,
Taipei, Taiwan, R.O.C.

Manufacturer: **AAEMON TECHNOLOGY INC.**
5F, No. 135, Lane 235, Pao Chiao Rd., Hsin-Tien City,
Taipei, Taiwan, R.O.C.

Type of Test: EMC Directive 89/336/EEC for CE Marking

Technical Standards: EN 55022: 1998 (Class A)
EN 61000-3-2: 1995 + A1: 1998 + A2: 1998 + A14: 2000
EN 61000-3-3: 1995
EN 55024: 1998 (IEC 61000-4-2: 1995 + A2: 2000, 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: 020039-E

Date of test: January 11 ~ 14, 2002

Deviation: According to applicant's declaration this EUT is a class A product, and to be market in industrial environment only.

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.

Approved by Authorized Signatory: _____

A handwritten signature in black ink that reads 'Kurt Chen'.

Kurt Chen / Q.A. Manager



GENERAL INFORMATION

Applicant: **AAEON TECHNOLOGY INC.**
5F, No. 135, Lane 235, Pao Chiao Rd., Hsin-Tien City,
Taipei, Taiwan, R.O.C.

Contact Person: Millo Wang

Manufacturer: **AAEON TECHNOLOGY INC.**
5F, No. 135, Lane 235, Pao Chiao Rd., Hsin-Tien City,
Taipei, Taiwan, R.O.C.

File Number: 020039-E

Date of Test: January 11 ~ 14, 2002

Equipment Under Test: Industrial Display Monitor

Model Number: AMB-270; OPD-217

Serial Number: N/A

Type of Test: EMC Directive 89/336/EEC for CE Marking

Technical Standards: EN 55022: 1998 (Class A)
EN 61000-3-2: 1995 + A1: 1998 + A2: 1998 + A14: 2000
EN 61000-3-3: 1995
EN 55024: 1998 (IEC 61000-4-2: 1995 + A2: 2000, 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. EMI test program was loaded and executed in Windows mode.
2. Data was sent to EUT filling the screen with upper case of “H” patterns.
3. Test program sequentially exercised printer and modem, then sent “H” patterns to them individually.
4. Repeat 2 to 3. Test program is self-repeating throughout the test.



PRODUCT INFORMATION

Housing Type:	Metal Case		
EUT Power Rating:	DCV from to Power Adapter		
AC Power during test:	230VAC, 50Hz to Power Adapter		
Power Adapter Manufacturer:	EDAC	Model:	EA1050A
Power Adapter Power Rating:	I/P: 100-240VAC, 50/60Hz, 1.8A O/P: 12VDC, 5A		
AC Power Cord Type:	Unshielded, 1.8m (Detachable) to Power Adapter		
DC Power Cord Type:	Unshielded, 1.2m (Non-detachable) at Power Adapter with a core		
17" LCD Panel Manufacturer:	CHI MEI	Model:	M170E1
A/D Board Manufacturer:	AAEON	Model:	MTC-V03
LVDS Board Manufacturer:	AAEON	Model:	MTC-LVDS83A
VGA Cable Type:	Shielded, 1.8m (Detachable) with two cores		
RS232 Cable Type:	Shielded, 1.8m (Detachable)		

I/O Port of EUT:

I/O PORT TYPES	Q'TY	TESTED WITH
1). Video Port	1	1
2). RS232 Port	1	1
3). S-Video Port	1	1
4). AV Terminal Port	1	1

- Note:** 1. The difference between two models number as below: AMB-270 with faceplate and OPD-217 without faceplate (Please refer to External Photographs).
2. Client consigns only one model sample to test (Model Number: AMB-270), Therefore, the testing Lab. just guarantees the units, which have been tested.



SUPPORT EQUIPMENT

No.	Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
1.	PC	GA-8IDXH	N/A	N/A	GIGABYTE	N/A	Unshielded, 1.8m
2.	Modem	231AA	A08631083930	BFJ9D93108US	Hayes	Shielded, 1.8m	Unshielded, 1.8m
3.	Printer	2225C	2909S40149	DSI6XU2225	HP	Shielded, 1.8m	Unshielded, 1.8m
4.	PS/2 Keyboard	SK-2800C	B1C790BCPJCN6L	GYUR79SK	Compaq	Shielded, 1.8m	N/A
5.	PS/2 Mouse	M-CAA43	LZA11750827	FCC DoC	Logitech	Shielded, 1.8m	N/A
6.	VCR	HR-S3600U	N/A	N/A	JVC	S-Video Cable: Shielded, 1.8m AV Terminal Cable: Shielded, 1.8m	Unshielded, 1.8m

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: 1992 and CISPR 22/EN 55022 requirements.
- Site Filing:** A site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
- 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
Taipei, Taiwan, R.O.C

for technical competence in the field of

Electrical (EMC) 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 Guide 25:1996 "General Requirements for the Competence of Calibration and Testing Laboratories" (equivalent to relevant requirements of the ISO 9000 series of standards) and any additional program requirements in the identified field of testing.

Presented this 26th day of April, 2000.



John M. Ryan
President
For the Accreditation Council
Certificate Number 824.01
Valid to January 31, 2002

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



American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25:1996 and IEC 60311-1:1991

C & C LABORATORY CO., LTD
No. 15, 1st Fl., Chia Tzu Chai
Lu Chen Village, Tainan, TAIWAN, R.O.C.
Charles Wang Phone: 002 884 334 9846
Fax: 882 884 334 5293

ELECTRICAL (EMC)

Valid to: January 31, 2002

Certificate Number: 824-01

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

- Electrical Emissions - Enclosure - 5 & 18 Meter; to 26.5 GHz (Sites 1, 2, 3 and 4)
- Electrical Emissions - AC Power - 0 - 100 V, 50 - 600 Hz (Sites 1, 2, 3 and 4)
- Electrical Immunity - Enclosure - 27 - 80 MHz / 27 Hz; 90 MHz - 1 GHz / 150 Hz
- Electrical Immunity - AC Power, DC Power, Signal & Control
- Electro. Fast Transient (EFT)
- Electrostatic Discharge (ESD) to 21 kV
- Electrical Power Surge
- Power Magnetic Field Immunity
- Voltage Dips, Swells, Variations

On the following products/equipment:

Computer Components and Peripherals; Networking Components; Wireless Communications Components; Electronic Components; Televisions; Home Appliances

Using the following test methods/series/standards:

- Code of Federal Regulations (CFR) 47, FCC Part 15 using ANSI C63.4
- ANSI C63.10A
- BSMI CNS: 13418, 13408, 13381, 13600
- CISPR 11, 14, 22
- EN: 50081-1, 50082-1, 55811, 55822, 55814, 61008-4-2, 61000-6-0, 61008-4-0, 61000-4-0, 61000-4-0, 61000-4-0
- VCCI V3 (1999)
- IEC: 800-2, 801-1, 801-4

591 Rockycove Pkwy, Suite 208 - Frederick, MD 21704-8373 • Phone: 301 464 3348 • Fax: 301 464 2974

FEDERAL COMMUNICATIONS COMMISSION
Equipment Authorization Division
1417 Oakland Mills Road
Columbia, MD 21046

February 01, 1999

Registration Number: 80125

C & C Laboratory Co., Ltd.
14-F1, No. 144, Lu-Ching Street
Tainan, R.O.C.

Attention: Charles Wang

Re: Measurement facility located at Tainan, Site No. 4
1.8 GHz series
Date of Listing: February 25, 1999

Comments:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.949 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 compliance with applications for Certificates under Part 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 use facilities is available on the Internet on the FCC Website at WWW.FCC.EDN. Electronic filing, OET Equipment Authorization Electronic Filing.

Sincerely,

Thomas W Phillips
Thomas W Phillips
Electronic Engineer

FEDERAL COMMUNICATIONS COMMISSION
Laboratory Division
1417 Oakland Mills Road
Columbia, MD 21046

February 27, 2001

Registration Number: 80671

C & C Laboratory Co., Ltd.
15-L, 1st Fl., No. 142, Sec. 1
Yung-Kang Rd, Tainan
Tainan, R.O.C.

Attention: Ken Chen

Re: Measurement facility located at Tainan
Site No. 1A, 1.0 & 18 MHz
Date of Listing: February 27, 2001

Comments:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.949 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 compliance with applications for Certificates under Part 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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Sincerely,

Thomas W Phillips
Thomas W Phillips
Electronic Engineer



ENG 39
A/D

22 January 1998

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

Attention: Mr Tony Huang

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, DP16, 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, 14 Sun Yat-sen, Tai-Ping, Sun Yat-sen
PO Box 2047, Tai-Ping, 10420, Taipei, Tel: 261-4731 Fax: 261-4731



ENG 39
A/D

22 January 1998

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

Attention: Mr Tony Huang

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.

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Yours faithfully

Andrew Dyke
Senior Technical Officer(Regulatory)

Operations and Risk Management Branch, Ministry of Commerce Building, 14 Sun Yat-sen, Tai-Ping, Sun Yat-sen
PO Box 2047, Tai-Ping, 10420, Taipei, Tel: 261-4731 Fax: 261-4731

Technischer Überwachungs-Verein Rheinland

Certificate

of

Appointment

No. 1 9564142-9986

The applicant:

C & C Laboratory Co., Ltd.

No. 15, 14 Lin, Chin-wei Chi, Le-Chu District, Tainan, Tainan, R.O.C.

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

EN 55011:1991, EN 55014:1991, EN 55022:1994, EN 55024:1997,
EN 55025:1997, EN 55032:1995, EN 61000-3-2:1995, EN 61000-3-3:1995,
EN 55035:1995, IEC 61010-1:1996, IEC 61010-2-01:1995, IEC 61010-2-020:
IEC 61010-2-030, IEC 61010-2-1000, EN 61010-2-1000, ENV 80:140:1994, ENV 80:141:1994
ENV 80:142:1994, EN 61010-4:3:1994, EN 61010-4:4:1994, EN 61010-4:5:1994
EN 61010-4:6:1994, EN 61010-4:8:1993, EN 61010-4:11:1994

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 9661142EH, Rev.-

This certificate is valid until the next scheduled inspection or up to 35 months, at the discretion of TÜV Rheinland.

TÜV Rheinland Taiwan Ltd.
Taipei, 24. June 1999

Dipl.-Ing. A. Klessler

Dipl.-Ing. R. Chertan
Auditor

中華民國經濟部標準檢驗局
BUREAU OF STANDARDS, METROLOGY AND INSPECTION
MINISTRY OF ECONOMIC AFFAIRS, REPUBLIC OF CHINA
1, FUXING RD., HIS CHIL, TAIPEI, TAIWAN, R.O.C.
TEL: (886) 2672 1400 FAX: (886) 2672 1401

To: C&C Laboratory Co., Ltd. IN REPLY REFER TO: 98-3-308015

#B1, 1st Fl., Universal Center, No. 183, Sec. 1, Xinying Rd., His Chik, Taipei Office, Taiwan, R.O.C.

This Designation Document certifies that your subject measurement facility has been validated according to the BSMI's Guide 25-0986 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 where measurement data and test reports will be accepted as a basis for issuing conformity to CNS13803-1997, CNS13438-1997, CNS13783-1-1998, CNS13439-1997, CNS14115-1998 for Industrial, Scientific and Medical Instrument - Integration Technology Equipment - household appliances/tools - broadcast receiver and related equipments and fluorescent light/luminaires.

It is located at: <http://www.bsml.gov.tw>

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

For your EMC Testing Lab, use reference: *NE2-15-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 of the site information characteristics will be required within 2 weeks.

The Designation is valid through January 16, 2004.

Taipei, January 5, 2000
Fu BSML, MOEA

Ning-Jung Lin



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, Chia Tzu Chai, Lu Chu Hsiang,
Taoyuan 338, Taiwan R.O.C.

Scope of Authorisation: All CENELEC and ETSI standards (ENs and ETEs 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 (RATTE) Directive (i.e. 1990/39/EEC).

NOTE: This authorisation also covers EMC-related testing and documentation that is within the scope of Article 18.5 of the EMC Directive (i.e. 1989/39/EEC as amended by 2004/108/EC).

This Authorisation Document confirms that the above mentioned EMC Laboratory has been validated against EN 45001 and found to be compliant. The laboratory also fulfills 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 Directive specified above.

For Type Examination Certification(s) to be issued by Nemko, your EMC Laboratory's test reports 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-EMPs (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.

Date 26 April 2001

For Nemko AS:
Kjell Bergh
Kjell Bergh, Nemko Group EMC Co-ordinator

Postal address: Nemko AS, P.O. Box 116, NO-2007 Kjeller, Norway
Telephone: +47 23 00 00 00
Fax: +47 23 00 00 00

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, RATTE

EN 501 524-010 + A1/A2	EN 501 524-1-010	EN 501 609-06-2000
EN 501 524-2-010	EN 501 609-07-2000	
EN 501 432-2-010	EN 501 611-1996 + A1/A2	EN 501 694-2-010
	EN 501 609-10-2000	
EN 501 603-1997	EN 501 611-1997	EN 501 307-0-010
EN 501 404-03-2000	EN 501 404-1-2000	
EN 501 413-0200	EN 501 405-21-000	EN 501 413-0100
EN 501 404-01-2000		

Basic standards

EN 61010-1:2001 + A1:01	EN 61010-2:2001 + A1:01	EN 61010-4:2001
IEC 61010-2:2001 + A1:01	IEC 61010-3:2001 + A1:01	IEC 61010-4:2001
EN 60950:2000	IEC 60335-1:1994	IEC 60335-2-1:1994
IEC 60335-2:1994	IEC 60335-2-1:1994	IEC 60335-2-2:1994
EN 60950-1:2000	EN 60950-2:2000	EN 60950-3:2000
IEC 60950-4:2000	IEC 60950-4:2000	IEC 60950-4:2000
EN 60950-1:2000	EN 60950-1:2000	EN 60950-1:2000
EN 60950-1:2000	EN 60950-1:2000	EN 60950-1:2000

Date 26 April 2001
Kjell Bergh, Nemko Group EMC Co-ordinator

Postal address: Nemko AS, P.O. Box 116, NO-2007 Kjeller, Norway
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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, Chia Tzu Chai, Lu Chu Hsiang,
Taoyuan 338, Taiwan R.O.C.

Scope of Authorisation: 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 fulfills 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 [89/369/EEC as amended by 93/91/EEC and 98/1/EEC].

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

In order to maintain this Authorisation, the information given in the enclosed ELA-EMPs (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.

Date 26 April 2001

For Nemko AS:
Kjell Bergh
Kjell Bergh, Nemko Group EMC Co-ordinator

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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, Chia Tzu Chai, Lu Chu Hsiang,
Taoyuan 338, Taiwan R.O.C.

Scope of Authorisation: EN 60601-1-2 and IEC 60601-1-2, the Colateral Standards for electro-medical 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 fulfills 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], 90/269/EEC, (as applicable).

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

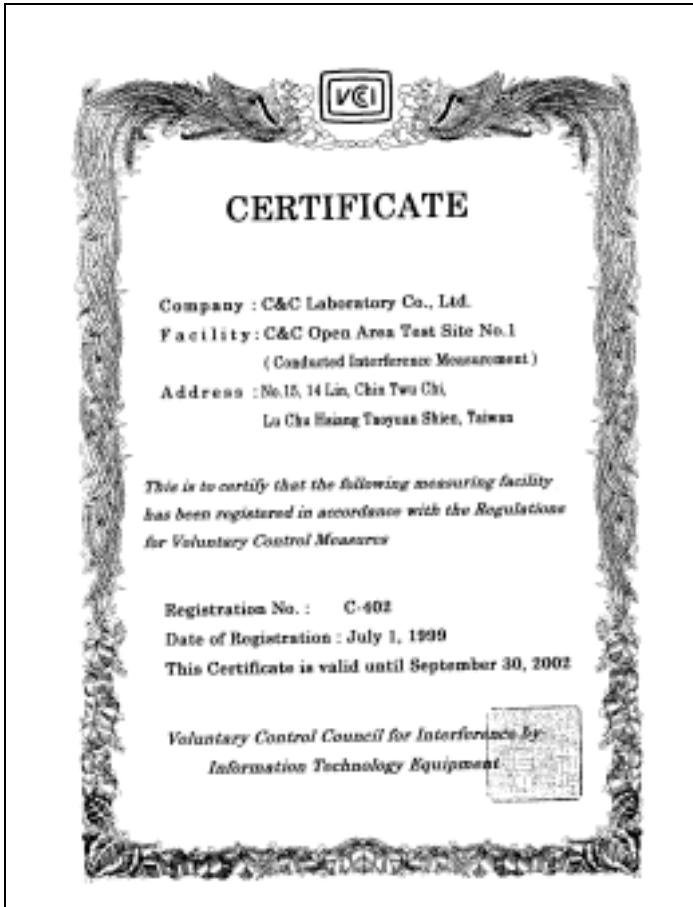
In order to maintain the Authorisation, the information given in the enclosed ELA-EMPs (if any) must be carefully followed. Nemko is to be promptly notified about any changes in the situation at your EMC Laboratory which may affect the basis for this Authorisation. The Authorisation may at any time be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

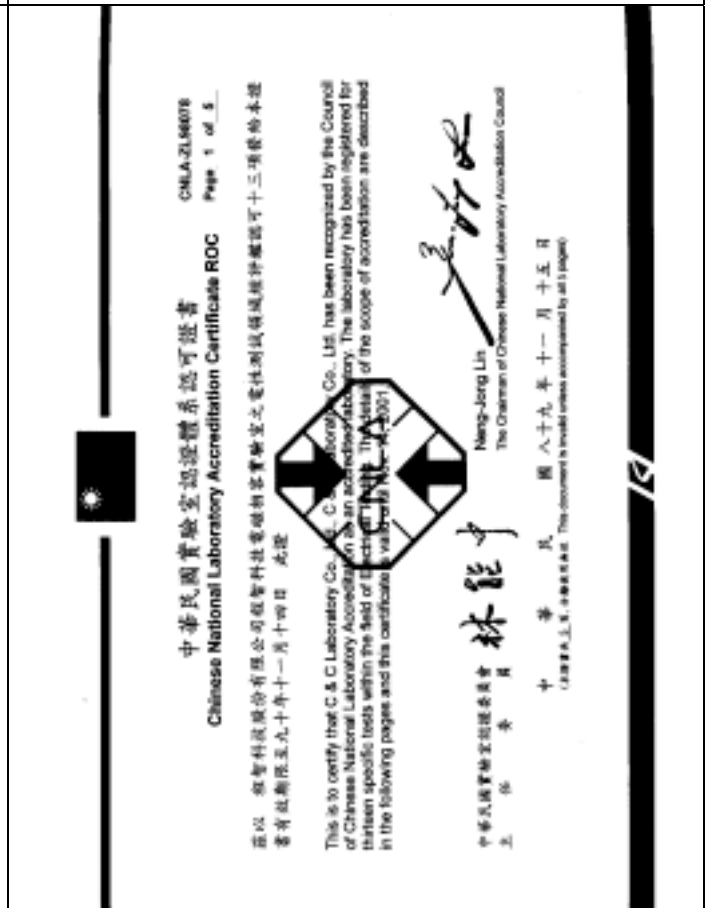
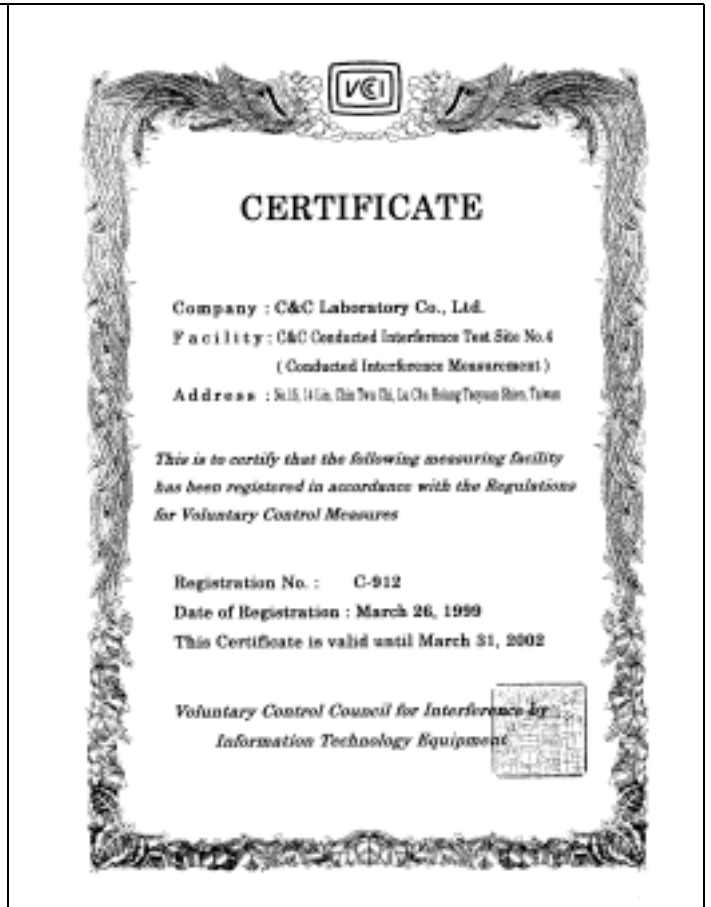
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Kjell Bergh, Nemko Group EMC Co-ordinator

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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: # 1

Open Area Test Site # 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Q.P Adaptor	HP	85650A	2811A01399	06/19/2001	06/18/2002
RF Pre-selector	HP	85685A	2947A01064	06/19/2001	06/18/2002
Spectrum Analyzer	HP	8568B	3001A05004	06/19/2001	06/18/2002
S.P.A Display	HP	8568B	3014A18846	06/19/2001	06/18/2002
Precision Dipole	SCHWAZBECK	VHAP	998/999	05/17/2001	05/16/2002
Precision Dipole	SCHWAZBECK	UHAP	981/982	05/17/2001	05/16/2002
Bilog Antenna	CHASE	CBL6112A	2309	02/11/2001	02/10/2002
Turn Table	EMCO	2081-1.21	N/A	N.C.R	N.C.R
Antenna Tower	EMCO	2075-2	9707-2604	N.C.R	N.C.R
Controller	EMCO	2090	N/A	N.C.R	N.C.R
RF Switch	ANRITSU	MP59B	M54367	N.C.R	N.C.R
Site NSA	C&C	N/A	N/A	11/03/2001	11/02/2002
Spectrum Analyzer	ADVANTEST	R3261A	21070279	08/16/2001	08/15/2002

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	ESHS10	843743/015	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	HAEFELY TRENCH	PESD 1600	H710203	09/01/2001	08/31/2002
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	08/20/2001	08/19/2002
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	03/13/2001	03/12/2002
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
CDN	HAEFELY TRENCH	IP6.2	148342	03/22/2001	03/21/2002
CDN	HAEFELY TRENCH	DEC1A	148050	01/17/2001	01/16/2002
For CS test (61000-4-6)					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Signal Generator	Maconi	2022D	119246/003	08/20/2001	08/19/2002
CDN	MEB	M3	3683	09/14/2001	09/13/2002
CDN	Lüthi	801-M3	1879	03/05/2001	03/04/2002
CDN	MEB	M2	A3002010	04/17/2001	04/16/2002
Power Amplifier	M2S	A00181/ 1000	9801-112	N/A	N/A
Clamp	MEB	KEMZ-801	13 602	N/A	N/A
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	02/08/2001	02/07/2002



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) were scanned during the preliminary test:

Mode(s):

1. 1024 x 768 Resolution
2. 800 x 600 Resolution
3. 640 x 480 Resolution

- 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	---	73	60	-29.09	---	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	79dBuV	66dBuV
500kHz-5MHz	73dBuV	60dBuV
5MHz-30MHz	73dBuV	60dBuV

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) were scanned during the preliminary test:

Mode(s):

1. **1024 x 768 Resolution (75Hz)**
2. **800 x 600 Resolution (75Hz)**
3. **640 x 480 Resolution (75Hz)**

- 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	Margin (dB)
xx.xx	14.0	11.2	26.2	40	-13.8

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	40
230-1000	10	47

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

BLOCK DIAGRAM OF TEST SETUP

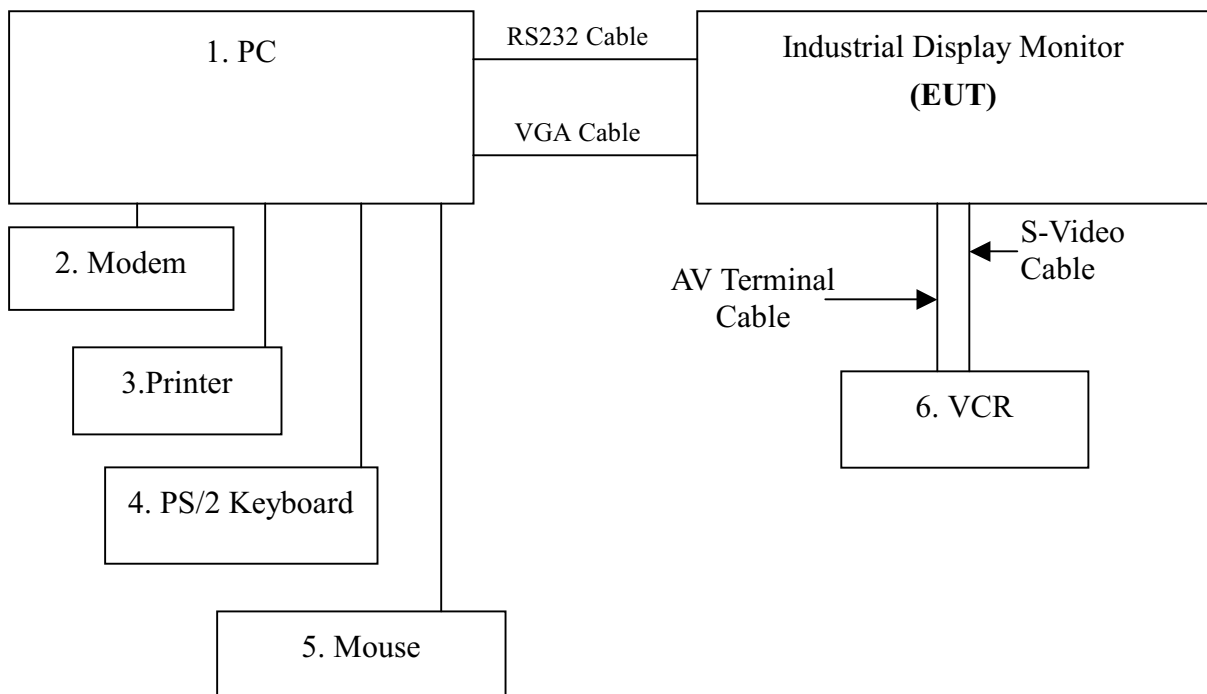
System Diagram of Connections between EUT and Simulators

EUT: Industrial Display Monitor

Trade Name: AAEMON

Model Number: AMB-270

AC Power Cord: Unshielded, 1.8m to Power Adapter





SUMMARY DATA

(LINE CONDUCTED TEST)

Model Number: AMB-270

Location: Site # 3

Tested by: Tommy Lin

Test Mode: Mode 1

Test Results: Passed

Temperature: 23°C

Humidity: 65%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
0.643	47.60	---	73.00	60.00	-25.40	---	L1
2.180	50.30	---	73.00	60.00	-22.70	---	L1
2.502	48.60	---	73.00	60.00	-24.40	---	L1
3.909	39.20	---	73.00	60.00	-33.80	---	L1
9.038	40.00	---	73.00	60.00	-33.00	---	L1
13.275	36.20	---	73.00	60.00	-36.80	---	L1
0.195	46.50	---	79.00	66.00	-32.50	---	L2
0.963	47.50	---	73.00	60.00	-25.50	---	L2
2.508	46.80	---	73.00	60.00	-26.20	---	L2
4.049	37.40	---	73.00	60.00	-35.60	---	L2
8.744	35.00	---	73.00	60.00	-38.00	---	L2
14.710	35.20	---	73.00	60.00	-37.80	---	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: AMB-270

Location: Site # 1

Tested by: Tommy Lin

Polar: Vertical--10m

Test Mode: Mode 1

Test Results: Passed

Detector Function: Quasi-Peak

Temperature: 19°C

Humidity: 67%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	Margin (dB)
144.37	16.5	11.7	28.2	40.0	-11.8
172.04	16.1	11.2	27.3	40.0	-12.7
184.26	14.7	11.0	25.7	40.0	-14.3
192.51	22.1	10.9	33.0	40.0	-7.0
336.88	24.4	17.0	41.4	47.0	-5.6
673.77	16.3	23.9	40.2	47.0	-6.8



SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: AMB-270

Location: Site # 1

Tested by: Tommy Lin

Polar: Horizontal--10m

Test Mode: Mode 1

Test Results: Passed

Detector Function: Quasi-Peak

Temperature: 19°C

Humidity: 67%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	Margin (dB)
184.26	13.8	11.0	24.8	40.0	-15.2
192.52	18.6	10.9	29.5	40.0	-10.5
216.58	15.9	11.4	27.3	40.0	-12.7
344.63	11.6	17.2	28.8	47.0	-18.2
577.52	13.2	23.0	36.2	47.0	-10.8
673.80	14.8	23.9	38.7	47.0	-8.3

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

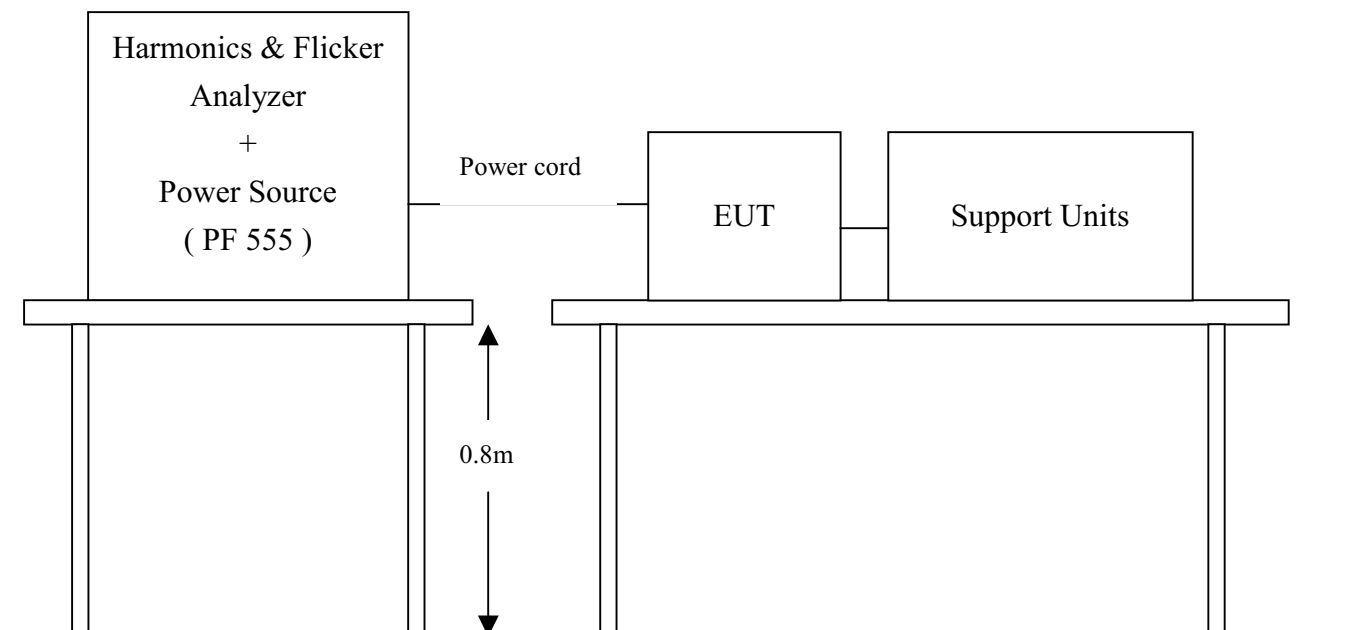
POWER HARMONICS MEASUREMENT

Port : AC mains
Basic Standard : EN 61000-3-2 (1995 + A1: 1998 + A2: 1998 + A14: 2000)
Limits : CLASS A ; CLASS D
Tester : Tommy Lin
Temperature : 20°C
Humidity : 51%

VOLTAGE FLUCTUATION/FLICKER MEASUREMENT

Port : AC mains
Basic Standard : EN 61000-3-3 (1995)
Limits : §5 of EN 61000-3-3
Tester : Tommy Lin
Temperature : 20°C
Humidity : 51%

Block Diagram of Test Setup:



Result:

Please see the attached test data.



EN 61000-3-2 TEST REPORT 2002/1/11 05:03 PM

Unit: INDUSTRIAL DISPLAY MONITOR

Model No.: AMB-270

Remarks: TEMP:20°C HUM:51%

Operator: TOMMY LIN

=====

TEST SETUP

Test Freq.:	50.00 Hz.	Test Voltage:	230.0 vac
Waveform :	SINE	Test Time:	2.5 min.
Classification :	CLASS A	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:32.4W



TEST DATA

Result: PASS

Harmonic Current Results

Hn	AMPS	LO Limit	HI Limit	Result
0	0.000	0.000	0.000	PASS
1	0.142	NaN	NaN	PASS
2	0.001	1.080	1.080	PASS
3	0.119	2.300	2.300	PASS
4	0.001	0.430	0.430	PASS
5	0.111	1.140	1.140	PASS
6	0.001	0.300	0.300	PASS
7	0.105	0.770	0.770	PASS
8	0.001	0.230	0.230	PASS
9	0.096	0.400	0.400	PASS
10	0.001	0.184	0.184	PASS
11	0.087	0.330	0.330	PASS
12	0.001	0.153	0.153	PASS
13	0.077	0.210	0.210	PASS
14	0.001	0.131	0.131	PASS
15	0.066	0.150	0.150	PASS
16	0.001	0.115	0.115	PASS
17	0.055	0.132	0.132	PASS
18	0.001	0.102	0.102	PASS
19	0.045	0.118	0.118	PASS
20	0.001	0.092	0.092	PASS
21	0.035	0.107	0.107	PASS
22	0.001	0.084	0.084	PASS
23	0.026	0.098	0.098	PASS
24	0.001	0.077	0.077	PASS
25	0.019	0.090	0.090	PASS



26	0.001	0.071	0.071	PASS
27	0.014	0.083	0.083	PASS
28	0.001	0.066	0.066	PASS
29	0.011	0.078	0.078	PASS
30	0.001	0.061	0.061	PASS
31	0.011	0.073	0.073	PASS
32	0.001	0.058	0.058	PASS
33	0.011	0.068	0.068	PASS
34	0.001	0.054	0.054	PASS
35	0.011	0.064	0.064	PASS
36	0.001	0.051	0.051	PASS
37	0.011	0.061	0.061	PASS
38	0.001	0.048	0.048	PASS
39	0.010	0.058	0.058	PASS
40	0.001	0.046	0.046	PASS

END OF REPORT



EN 61000-3-3 TEST REPORT 2002/1/11 05:35 PM

Unit: INDUSTRIAL DISPLAY MONITOR

Model No.: AMB-270 (Continue)

Remarks: TEMP:20°C HUM:51%

Operator: TOMMY LIN

=====

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 %	0.00	3.00	PASS	true
dmax %	0.00	4.00	PASS	true
d(t) sec.	0.00	0.20	PASS	true

Power Source Data

Source Pst max	0.020	0.400	PASS	true
% THD	0.03	3.00	PASS	true

END OF REPORT



EN 61000-3-3 TEST REPORT 2002/1/11 05:23 PM

Unit: INDUSTRIAL DISPLAY MONITOR

Model No.: AMB-270 (Manual Switch)

Remarks: TEMP:20°C HUM:51%

Operator: TOMMY LIN

=====

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 %	0.00	3.00	PASS	true
dmax %	0.00	4.00	PASS	true
d(t) sec.	0.00	0.20	PASS	true

Power Source Data

Source Pst max	0.020	0.400	PASS	true
% THD	0.03	3.00	PASS	true

END OF REPORT

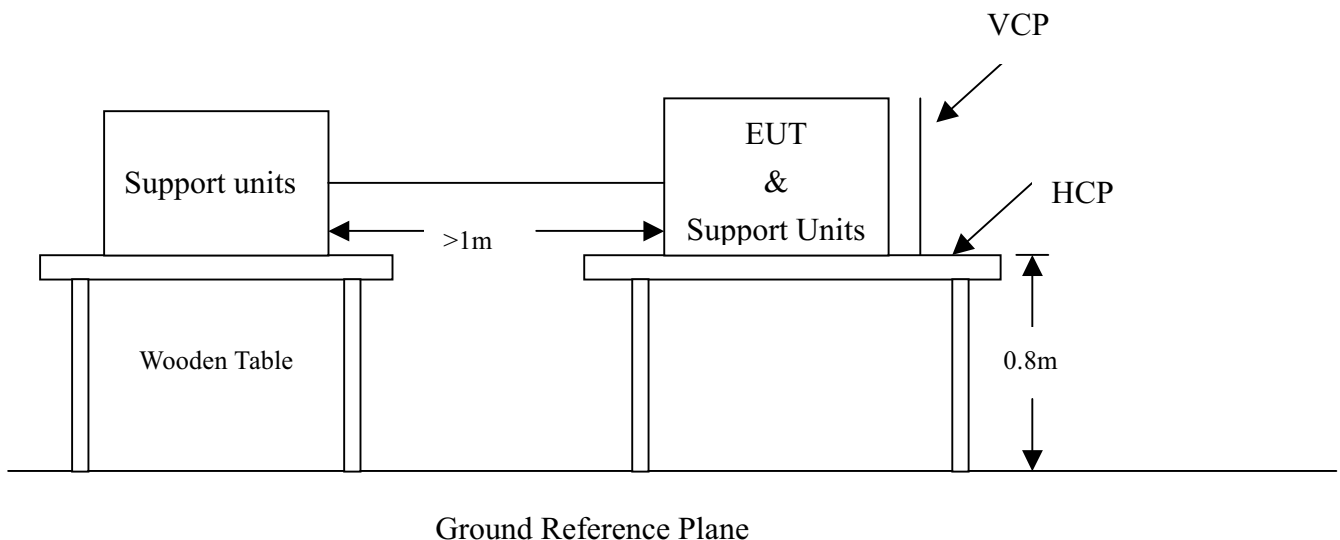
SECTION 3 IEC 61000-4-2 (ELECTROSTATIC DISCHARGE)

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 :Tommy Lin
Temperature/Humidity:20°C/51%

Block Diagram of Test Setup:

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





Test Procedure:

1. The EUT was located in 0.1 m minimum away from all side of the HCP.
2. The support units were located 1 m minimum away from the EUT.
3. A scroll H test program was loaded and executed in Windows mode.
4. The Host PC sent above message to EUT and related peripherals through the test.
5. Selecting appropriate points of EUT for Contact discharge and put a mark on EUT to show tested point(s).
6. Other than contact discharge point(s); the Air discharge was scanned and put a mark on EUT to show tested point(s).
7. The following test condition was followed during the tests.

Note: As per the A2 to IEC61000-4-2, a bleed resistor cable is connected between the EUT and HCP during the test.

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

*** 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

Front View of AMB-270

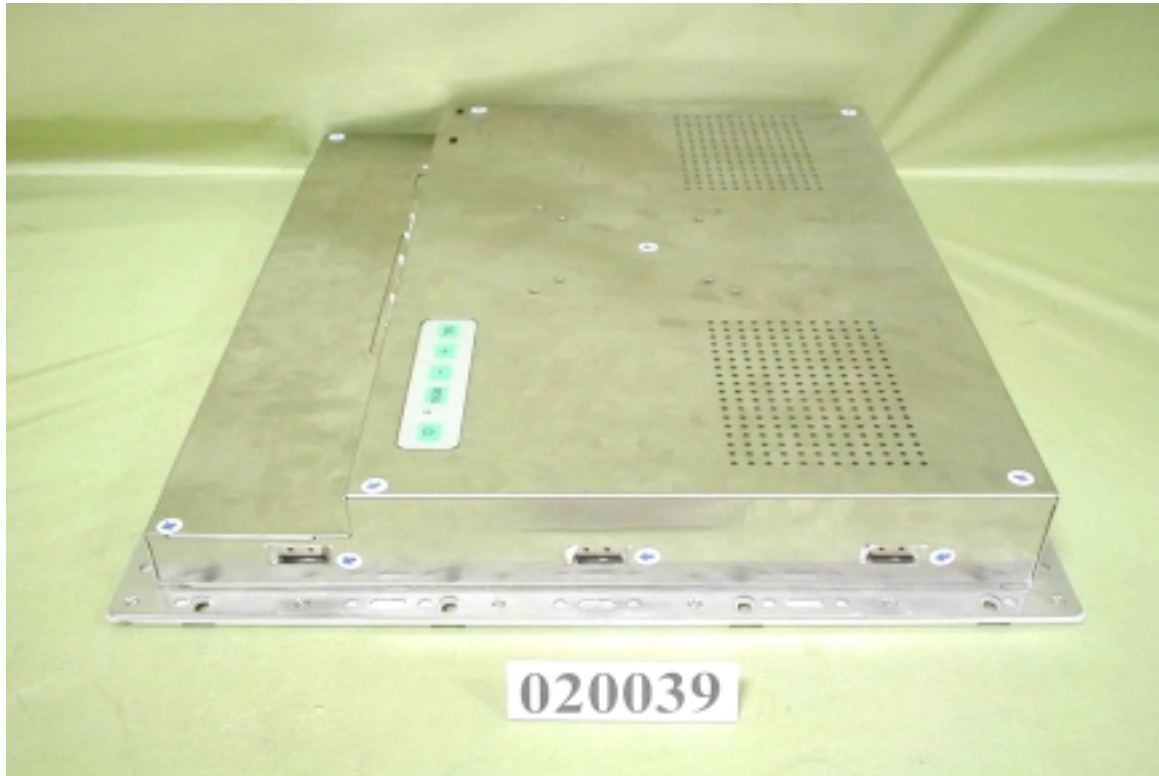


Back View of AMB-270

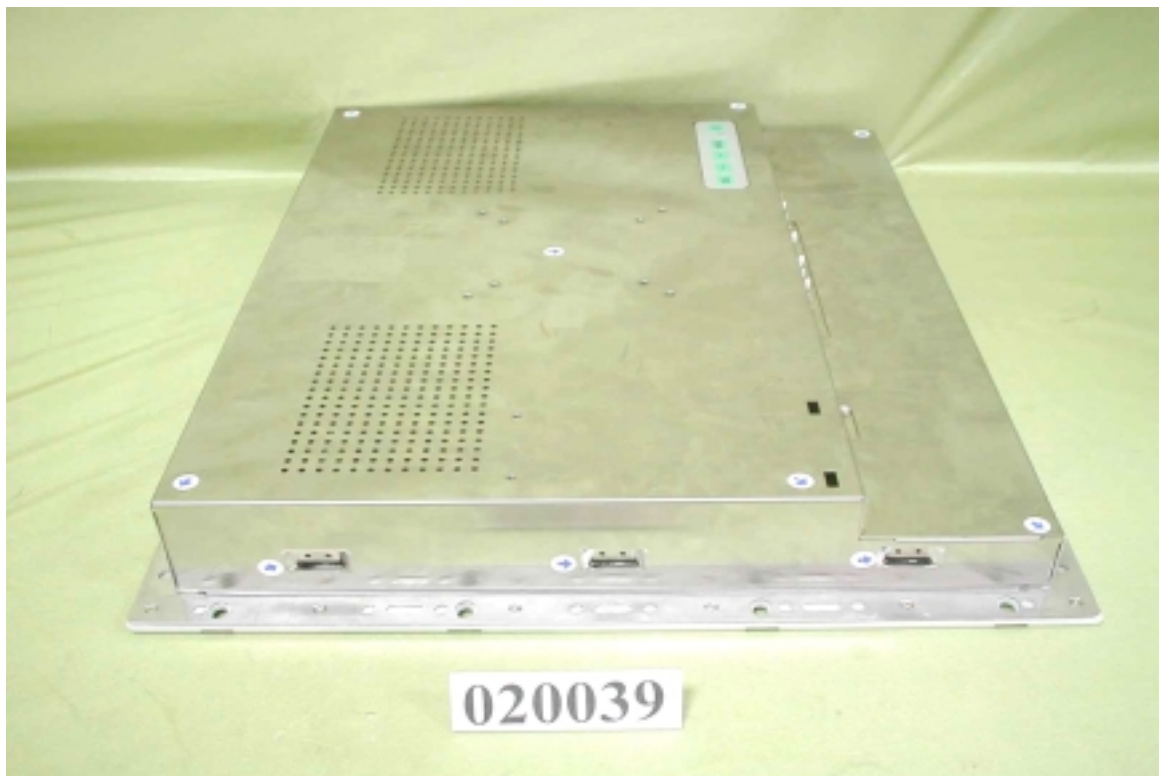


The Tested Points of EUT

Right View of AMB-270



Left View of AMB-270

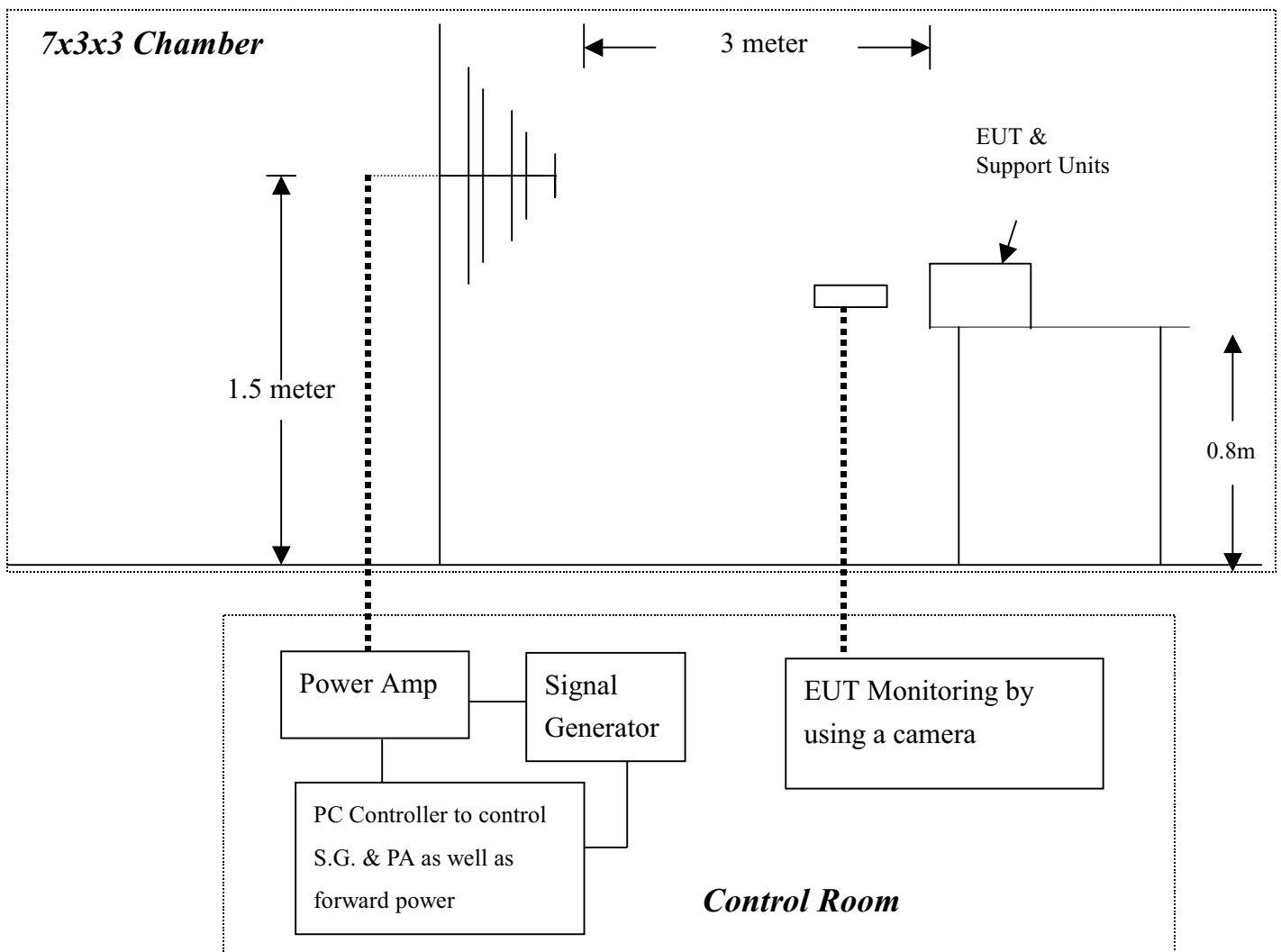


SECTION 4 IEC 61000-4-3 (RADIATED ELECTROMAGNETIC FIELD)

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	:Tommy Lin
Temperature	:20°C
Humidity	:51%

Block Diagram of Test Setup:





Test Procedure:

1. The EUT was located at the edge of supporting table keep 3 meter away from transmitting antenna, it just the calibrated square area of field uniformity. The support units were located outside of the uniformity area, but the cable(s) connected with EUT were exposed to the calibrated field as per IEC 61000-4-3.
2. A scroll 'H' messages were displayed on part on screen of EUT and an enlarged 'H' characters were displayed on the other part on screen EUT.
3. Adjusting the monitoring camera to monitor the 'H' message as clear as possible.
4. Setting the testing parameters of RS test software per IEC 61000-4-3.
5. Performing the pre-test at each side of with double specified level (6V/m) at 4% steps.
6. From the result of pre-test in step 5, choice the worst side of EUT for final test from 80 MHz to 1000 MHz at 1% steps.
7. Recording the test result in following table.
8. It is not necessary to perform test as per annex A of EN 55024 if the EUT doesn't belong to TTE 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	Front	Pass
80-1000	3V	Yes	V	Front	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**

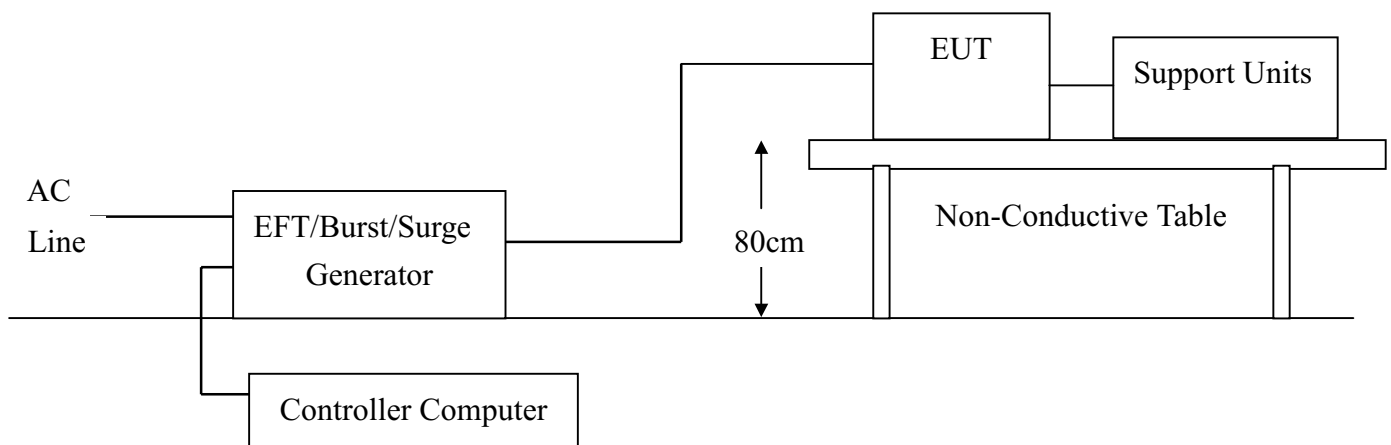
Observation: No any function degraded during the tests.

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

FAST TRANSIENTS/BURST IMMUNITY TEST

Port	:On Power Supply Lines
Basic Standard	:IEC 61000-4-4
Requirements	:+/- 1kV for Power Supply Lines
Performance Criteria	:B (Standard require)
Tester	:Tommy Lin
Temperature	:20°C
Humidity	:51%

Block Diagram of Test Setup:





Test Procedure:

1. The 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 EUT filling the screens 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 form 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

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**

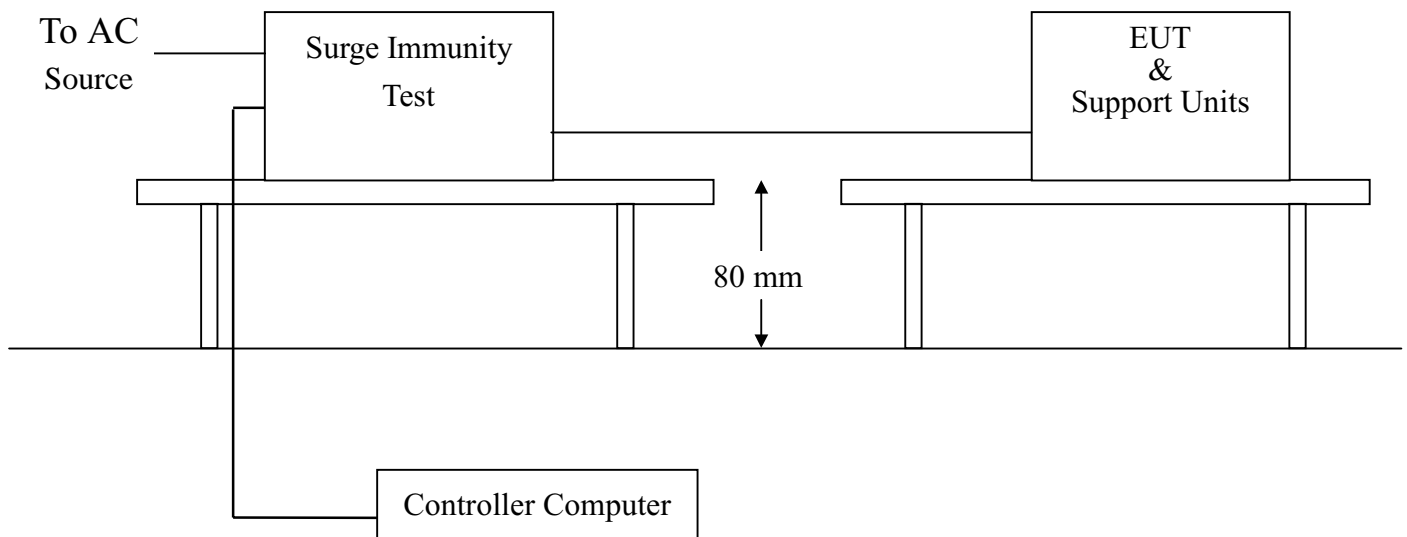
Observation: No any function degraded during the tests.

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	: Tommy Lin
Temperature	:20°C
Humidity	:51%

Block Diagram of Test Setup:





Test Procedure:

1. The 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 EUT filling the screens 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 form minimum to standard request or client request.
6. Recording the test result as shown in following table.

Test conditions:

Voltage Waveform : 1.2/50 us
 Current Waveform : 8/20 us
 Polarity : Positive/Negative
 Phase angle : 0°, 90°, 270°
 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.

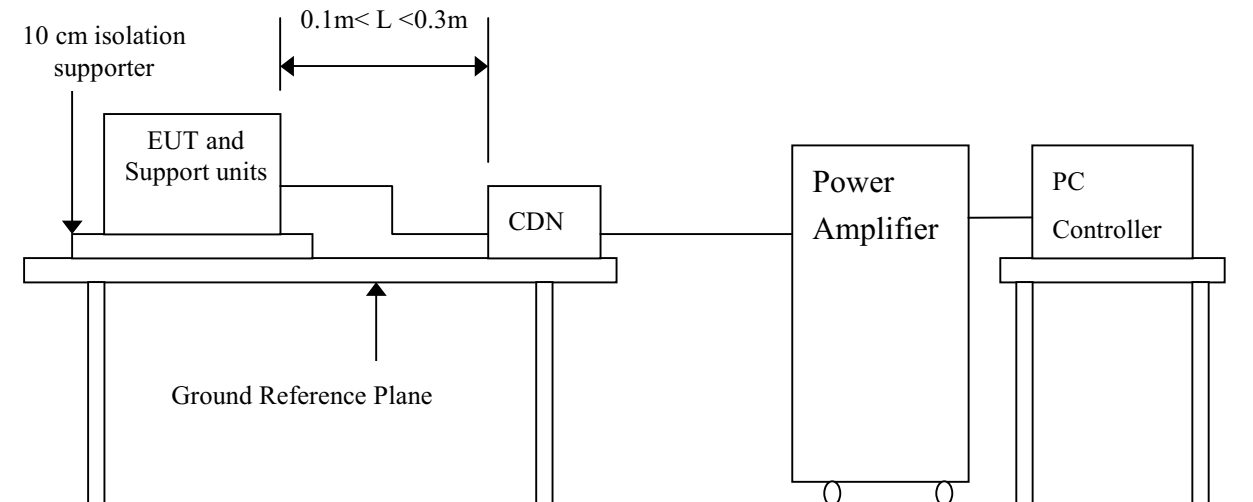
PASS **FAILED**

Observation: No any function degraded during the tests.

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

Port	:AC Port
Basic Standard	:IEC 61000-4-6
Requirements	:3V with modulated
Injection Method	:CDN-M3 for Power cord
Performance Criteria	:A (Standard require)
Tester	:Tommy Lin
Temperature	:20°C
Humidity	:51%

Block Diagram of Test Setup:





Test Procedure:

1. The 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 EUT.
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.

<input checked="" type="checkbox"/> PASS <input type="checkbox"/> 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)
Tester	:N/A
Temperature	:N/A
Humidity	:N/A

****Note:** Not applicable, because no any component can be influenced by power magnetic fields.

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

VOLTAGE DIPS / SHORT INTERRUPTIONS

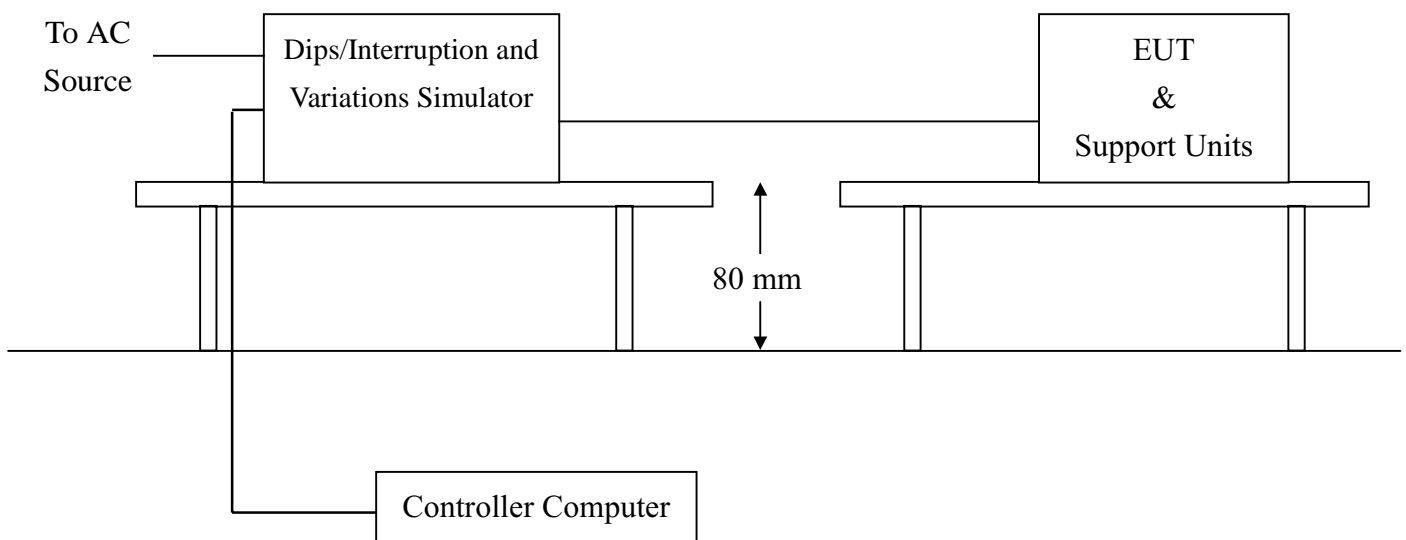
Port :AC mains
Basic Standard :IEC 61000-4-11 (1994)
Requirement :PHASE ANGLE 0, 45, 90, 135, 180, 225, 270, 315 degrees

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

Voltage Interruptions	Test Level % U _T	Reduction (%)	Duration (periods)	Performance Criteria
	<5	>95	250	C

Test Interval : Min. 10 sec.
Tester : Tommy Lin
Temperature : 20°C
Humidity : 51%

Block Diagram of Test Setup:





Test Procedure:

1. The 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 EUT filling the screens 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. Conditions changes to occur at 0 degree crossover point of the voltage waveform.
7. Repeating step 3 to 4 through the test.
8. 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 auto recovered as the events disappear.	B

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.

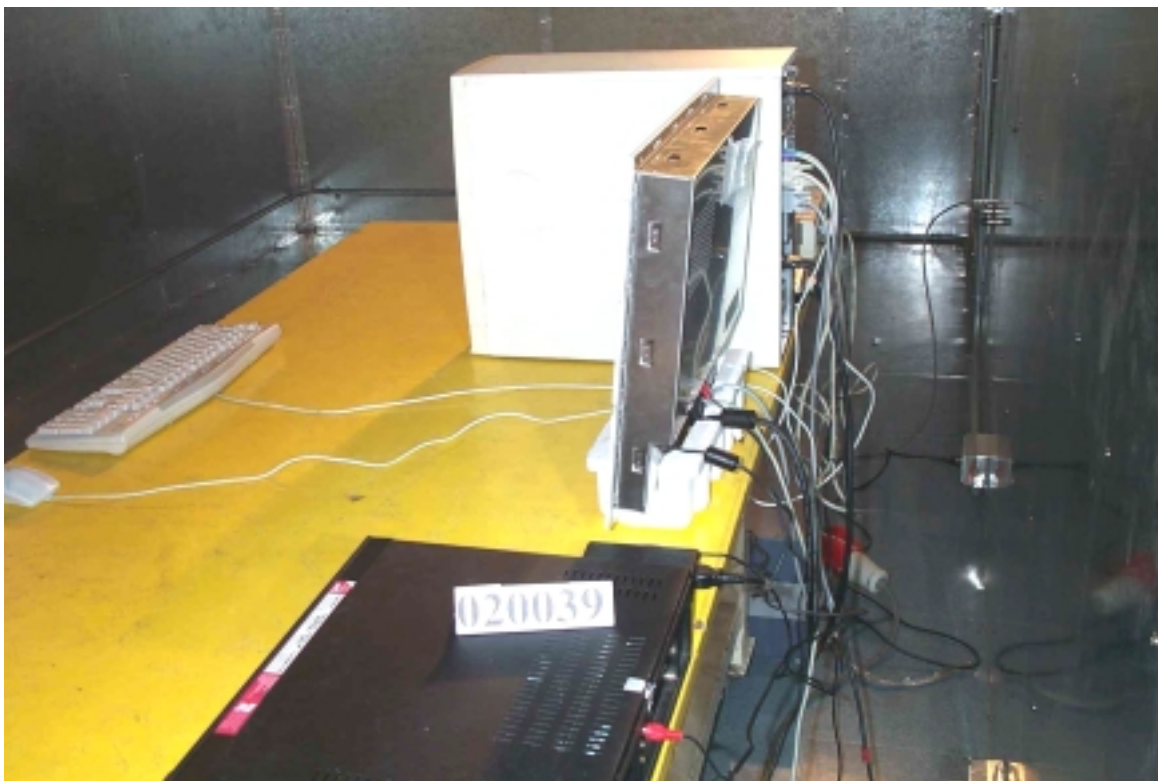
<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAILED
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APPENDIX 1

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 AMB-270



Front View of OPD-217



Back View of EUT



I/O Port of EUT



Front View of Power Adapter



Back View of Power Adapter



Cable

