CNLA
0363

CE

EMC COMPLIANCE TEST REPORT

for

IPC

Trade Name : N/A
Model Number : PPC-668
Serial Number : N/A
Report Number : 990595-E
Date : December 16, 1999
Regulations : See below

Standards	Results (Pass/Fail)
EN 55022: 1994 + A1: 1995 + A2: 1997 (Class A)	PASS
EN 61000-3-2: 1995 +A1: 1998 + A2: 1998	PASS
EN 61000-3-3 :1995	PASS
EN 50082-2: 1995	PASS
- EN 61000-4-2: 1995	PASS
- ENV 50140: 1994	PASS
- ENV 50204: 1996	PASS
- EN 61000-4-4:1995	PASS
- ENV 50141: 1994	PASS

Prepared for :

AAEON Technology Inc.

1F, No. 6, Alley 6, Lane 45, Pao-Hsin Rd., Hsin-Tien City (231),
Taipei, Taiwan, R.O.C.

Prepared by :

C & C Laboratory Co., Ltd.

1st Fl., No. 344, Fu Ching Street
Taipei, Taiwan, R.O.C.
TEL: (02)27468584
FAX: (02)27632154

0363

CE

EC-Declaration of Conformity

For the following equipment:

IPC

(Product Name)

PPC-668 / N/A

(Model Designation / Trade name)

AAEON Technology Inc.

(Manufacturer Name)

1F, No. 6, Alley 6, Lane 45, Pao-Hsin Rd., Hsin-Tien City (231), 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), For the evaluation regarding the Electromagnetic Compatibility (89/336/EEC, Amended by 92/31/EEC & 93/68/EEC), the following standards are applied:

- ■ EN 55022: 1994 + A1: 1995 + A2: 1997 (Class A)
- ■ EN 61000-3-2: 1995 +A1: 1998 + A2: 1998
- ■ EN 61000-3-3: 1995
- ■ EN 50082-2: 1995
  EN 61000-4-2: 1995 ; ENV 50140: 1994 ; ENV 50204: 1996 ; EN 61000-4-4: 1995
  ENV 50141: 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:	IPC
Trade Name:	N/A
Model Number:	PPC-668
Serial Number:	N/A
EUT Powered during test:	230VAC/50Hz
Applicant:	**AAEON Technology Inc.** 1F, No. 6, Alley 6, Lane 45, Pao-Hsin Rd., Hsin-Tien City (231), Taipei, Taiwan, R.O.C.
Manufacturer:	**AAEON Technology Inc.** 1F, No. 6, Alley 6, Lane 45, Pao-Hsin Rd., Hsin-Tien City (231), 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 (Class A) EN 61000-3-2: 1995 + A1: 1998 + A2: 1998, EN 61000-3-3: 1995 EN 50082-2: 1995 (EN 61000-4-2: 1995 ; ENV 50140: 1994 ; ENV 50204: 1996 ; EN 61000-4-4: 1995 : ENV 50141: 1994)
File Number:	990595-E
Date of test:	December 14, 1999
Tested by:	Michael Chen
Deviation:	According applicant declaration this EUT is a class A product, and to 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: Kurt Chen

Kurt Chen / Q.A. Manager

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GENERAL INFORMATION

Applicant:	**AAEON Technology Inc.** 1F, No. 6, Alley 6, Lane 45, Pao-Hsin Rd., Hsin-Tien City (231), Taipei, Taiwan, R.O.C.
Contact Person:	Gaven Tsai
Manufacturer:	**AAEON Technology Inc.** 1F, No. 6, Alley 6, Lane 45, Pao-Hsin Rd., Hsin-Tien City (231), Taipei, Taiwan, R.O.C.
File Number:	990595-E
Date of Test:	December 14, 1999
Equipment Under Test:	IPC
Model Number:	PPC-668
Serial Number:	N/A
Technical Standards:	EN 55022: 1994 + A1: 1995 + A2: 1997 (Class A) EN 61000-3-2: 1995 + A1: 1998 + A2: 1998, EN 61000-3-3: 1995 EN 50082-2: 1995 (EN 61000-4-2: 1995 ; ENV 50140: 1994 ; ENV 50204: 1996 ; EN 61000-4-4: 1995 : ENV 50141: 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. 15, 14 Lin, Chi Twu Chi, Lu-Chu Hsiang Taoyuan, Taiwan, R. O. C.

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SYSTEM DESCRIPTION

EUT Test Program:

1. EMI test program was loaded and executed in Windows 98 mode.
2. Data was sent to Monitor and LCD Panel of EUT and filling the screens with upper case of "H" patterns.
3. Test program sequentially exercised all related I/O's and accessories of EUT, and sent "H" patterns to all applicable output ports of EUT.
4. Repeat 2 to 3. Test program is self-repeating throughout the test.

PRODUCT INFORMATION

Housing Type:	Metal		
EUT Power Rating:	90-240VAC, 47-63Hz, 3.15A		
AC power during Test:	230VAC/50Hz		
Power Supply Manufacturer:	POWER ADD		
Power Supply Model Number:	PPS100-31(71A)		
AC Power Cord Type:	Shielded, 1.5m (Non-Detachable)		
DC Power Cable:	N/A		
CPU Manufacturer:	Intel	**Model:**	Celeron 400MHz
OSC/Clock Frequencies:	66MHz		
Memory Capacity:		**Installed:**	32MB
15.1" LCD Panel Manufacturer:	Toshiba	**Model:**	LM15C151A
Hard Desk Drive Manufacturer:	FUJITSU	**Model:**	MHA2021AT
Floppy Desk Drive Manufacturer:	NEC	**Model:**	FD1238T

I/O Port of EUT:

I/O PORT TYPES	Q'TY	TESTED WITH
1). Parallel Port	1	1
2). Serial Port (RS 232)	3	3
3). Serial Port (RS 422)	2	0
4). Video Port	1	1
5). PS/2 Keyboard	1	1
6). PS/2 Mouse Port	1	1
7). LAN Port	1	1
8). USB Port	2	2

Note: 1.According to the declaration of client, the two RS 422 Serial ports are not applicable for EUT.

2. LAN Port was connected a unshielded cable (1.0m) to form an open loop cable.

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SUPPORT EQUIPMENT

No.	Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
1	Monitor	GDM-17SE2T	7139819	AK8GDM17SE2T	SONY	Shielded, 1.8m with two cores	Unshielded, 1.8m
2	Printer	C2642A	TH86K1M14P	B94C2642X	HP	Shielded, 1.8m	AC I/P: Unshielded, 0.9m DC O/P: Unshielded, 1.9m
3	Modem	2400	94-364-176277	DK467GSM24	Computer Peripheral	Shielded, 1.8m	Unshielded, 1.8m
4	Modem	2400	94-364-176280	DK467GSM24	Computer Peripheral	Shielded, 1.8m	Unshielded, 1.8m
5	Modem	2400	94-364-176267	DK467GSM24	Computer Peripheral	Shielded, 1.8m	Unshielded, 1.8m
6	PS/2 Keyboard	SK-2502C	M990543832	DoC	HP	Shielded, 1.8m with a core	N/A
7	PS2 Mouse	M-S34	LZA74658668	DZL211029	HP	Shielded, 1.8m	N/A
8	USB Mouse	SL-A 799111	U4-1	E6QMOUSE X31	JOW DAIN	Shielded, 1.8m	N/A
9	USB Keyboard	PDA-4251	FDKB84100149	DoC	WINIC	Shielded, 1.8m	N/A

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.

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TEST FACILITY

Location: No. 15, 14 Line, Chin Twu Chi, Lu Chu Hsiang, Taoyuan, Taiwan, R.O.C.

Description: There are three 3/10m open area test sites and three line conducted labs for final test, and one 3/10m open area test site for engineering lab.
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 # 1 & # 3 Line Conducted Test Site: Vertical ground plane (2.2m x 2.2m)
Horizontal ground plane (2.5m x 2.5m)

Site # 4 Line Conducted Test Site: At Shielding Room

THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

C & C LABORATORY CO., LTD
Taoyuan, 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 25-1990 "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 7th day of November, 1997.

President
For the Accreditation Council
Certificate Number 824.01
Valid to January 31, 2000

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

American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25-1990 and EN 45001-1989

C & C LABORATORY CO., LTD
No. 15, 14 Lin, Chin Twu Chi
Lu Chu Hsiang, Taoyuan, TAIWAN, R.O.C.
Charles Wang Phone: 002 886 3 324 5966
Fax: 002 886 3 324 5235

ELECTRICAL (EMC)

Valid to: January 31, 2000 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 tests:

Electrical Emissions – Enclosure – 3 & 10 Meters; to 6.5 GHz (Sites 1, 3 and 4)
Electrical Emissions – AC Power – 0 - 300 V; 50 - 400 Hz (Sites 1, 3 and 4)
Electrical Immunity – Enclosure – 27 - 80 MHz / 3V/m; 80 MHz - 1 GHz / 10V/m
Electrical Immunity – AC Power, DC Power, Signal & Control
Electrical Fast Transient (EFT)
Electrostatic Discharge (ESD) to 16 kV
Electrical Power Surge
Power Magnetic Field Immunity
Voltage Dips, Shots, 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/specifications/standards:

Code of Federal Regulations (CFR) 47, FCC Part 15 using ANSI C63.4
AS/NZS 3548
BSMI CNS: 13438, 13439, 13783, 13803
CISPR: 11, 14, 22
EN: 50081-1, 50082-1, 55011, 55022, 55014, 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-8, 61000-4-11
VCCI V3
IEC: 801-2, 801-3, 801-4

Revised 03/05/99

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 on 14 and 15 May, 1999, 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 30 September, 2000.

Oslo, 29 September 1999

For Nemko AS:

Kjell Bergh

Kjell Bergh, Nemko Group EMC Co-ordinator

Postal address: P.O.Box 73 Blindern
Telephone: +47 22 96 03 30
Fax: +47 22 96 05 50

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 on 14 and 15 May, 1999, 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 30 September, 2000.

Oslo, 29 September 1999

For Nemko AS:

Kjell Bergh

Kjell Bergh, Nemko Group EMC Co-ordinator

Postal address: P.O.Box 73 Blindern N-0314 OSLO, NORWAY

Telephone: +47 22 96 03 30
Fax: +47 22 96 05 50

EMC Laboratory Authorisation

Aut. No. : ELA 124

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SCOPE OF AUTHORIZATION

GENERIC & PRODUCT-FAMILY STANDARDS

EN 50081-1(1992)	EN 50081-2(1994)	EN 50082-1(1992), EN 50082-1(1997)
EN 50082-2(1995)	EN 50091-2(1995)	EN 50130-4(1995)
CISPR 11(1990), CISPR 11(1997), EN 55011(1991), EN 55011(1998)	CISPR 13(1975)+ A1(1983) EN55013(1990) +A12(1994) + A13(1996)	CISPR 14(1993) + A1(1993) + Corrigendum(1996) [Excluding Clause 4.2] EN 55014-1(1993) + A1(1997) [Excluding Clause 4.2]
CISPR 14-2(1997), EN 55014-2(1997) EN 55104(1995)	CISPR 15(1992), CISPR 15(1996) +A1(1997), EN 55015(1996) + A1(1997)	CISPR 24(1997), EN 55024(1998)
CISPR 22(1993) +A1(1995) +A2(1997), EN 55022(1994) + A1(195) + A2(1997) CISPR 22(1997) [Excluding Clause 9.5] EN 55022(1998) [Excluding Clause 9.5]	EN 60555-2(1987), EN 61000-3-2(1995)+A1(1998) + A2 (1998)	EN 60555-3(1987) + A1(1991), EN 61000-3-3(1995)
IEC 61326-1(1997), EN 61326-1(1997)		

BASIC STANDARDS

IEC 801-2(1984), IEC 61000-4-2(1991) IEC/EN 61000-4-2(1995)	IEC 801-3(1984), IEC/EN 61000-4-3(1995) ENV 50204(1995)	IEC 801.4(1988), IEC/EN 61000-4-4(1995)
IEC/EN 61000-4-5(1995) [Including Corrigendum]	IEC/EN 61000-4-6(1996)	IEC/EN 61000-4-8(1993/94)
IEC/EN 61000-4-11(1994)		

Oslo, 29 September 1999

Kjell Bergh, Nemko Group EMC Co-ordinator

Postal address:
P.O.Box 73 Blindern
N-0314 OSLO, NORWAY

Telephone: +47 22 96 03 30
Fax: +47 22 96 05 50

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.
Tel: 886-2-23431700 FAX: 886-2-23932324

To: C&C Laboratory Co., Ltd

1 Fl.No.344,Fu Ching St., Taipei, Taiwan

IN REPLY REFER TO
87-2-01386

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 "Operation Guidelines of the Approval and Management of Designated EMC 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 CNS13438-1994 / CISPR22-1993, CNS13783-1-1996/ CISPR14 - 1993, CNS13439-1997 / CISPR13-1990 for Information Technology Equipment、household appliances/tools、broadcast receivers and related equipments.

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 **EMI Testing Lab**, use reference " **SL2-IN-E-001[illegible]2-A1-E-0014, SL2-R1-E-0014, SL2-R2-E-0014** "

Note that this filing must be updated for any changes [illegible] 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, 2001.

Taipei, October 5, 1999
For BSMI, MOEA

Chen Tso-Chen

FEDERAL COMMUNICATIONS COMMISSION

7435 Oakland Mills Road
Columbia, MD 21046
Telephone: 301-725-1585 (ext-218)
Facsimile: 301-344-2050

March 13, 1998

IN REPLY REFER TO
31040/SIT
1300F2

C & C Laboratory Co., Ltd.
1st Fl., No. 344, Fu Ching Street
Taipei, Taiwan

Attention: Ceres Lin

Re: Measurement facility located at Taoyuan
(3 and 10 meter site)

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 or notification under Parts 15 or 18 of the Commission's Rules. Our list will also indicate that the facility complies with the radiated and AC line conducted test site criteria in ANSI C63.4-1992. Please note that this filing must be updated for any changes made to the facility, and at least every three years the data on file must be certified as current.

Per your request, the above mentioned facility has been also added to our list of those who perform these measurement services for the public on a fee basis. This list is updated monthly and is available on the Laboratory's Public Access Link (PAL) at 301-725-1072, and also on the Internet at the FCC Website www.fcc.gov/oet/info/database/testsite/.

Sincerely,

Thomas W. Phillips
Electronics Engineer
Customer Service Branch

FEDERAL COMMUNICATIONS COMMISSION

7435 Oakland Mills Road
Columbia, MD 21046
Telephone: 301-725-1585 (ext-218)
Facsimile: 301-344-2050

April 20, 1998

IN REPLY REFER TO
31040/SIT
1300F2

C&C Laboratory Co., Ltd.
1st Fl., No. 344, Fu Ching Street
Taipei, Taiwan

Attention: Charles Wang

Re: Measurement facility located at Taoyuan, Site No. 3
(3 and 10 meter site)

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 or notification under Parts 15 or 18 of the Commission's Rules. Our list will also indicate that the facility complies with the radiated and AC line conducted test site criteria in ANSI C63.4-1992. Please note that this filing must be updated for any changes made to the facility, and at least every three years the data on file must be certified as current.

Per your request, the above mentioned facility has been also added to our list of those who perform these measurement services for the public on a fee basis. This list is updated monthly and is available on the Laboratory's Public Access Link (PAL) at 301-725-1072, and also on the Internet at the FCC Website www.fcc.gov/oet/info/database/testsite/.

Sincerely,

Thomas W. Phillips
Electronics Engineer
Customer Service Branch

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

February 01, 1999

Registration Number: 93105

C & C Laboratory Co., Ltd.
1st Fl., No. 344, Fu Ching Street
Taipei
Taiwan, R.O.C.

Attention: Charles Wang

Re: Measurement facility located at Taoyuan, Site No. 4
3 & 10 meters
Date of Listing: February 01, 1999

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, Electronic Filing, OET Equipment Authorization Electronic Filing.

Sincerely,

Thomas W. Phillips

Thomas W Phillips
Electronics Engineer

COMMERCE

MINISTRY OF COMMERCE
Te Manatū 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)

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.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

Facility : C&C Open Area Test Site No.3

(Radiation 3 and 10 meter site)

Company : C&C Laboratory Co., Ltd.

Address : No.15, 14Lin, 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-725

Date of Registration : May 1, 1998

This Certificate is valid until June 30, 2001

Voluntary Control Council for Interference by Information Technology Equipment

CERTIFICATE

Facility: C&C Conducted Interference Test Site No.3
(Conducted Interference Measurement)

Company : C&C Laboratory Co., Ltd.

Address : No.15, 14Lin, 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. : C-747

Date of Registration : May 1, 1998

This Certificate is valid until June 30, 2001

Voluntary Control Council for Interference by
Information Technology Equipment

CERTIFICATE

Company : C&C Laboratory Co., Ltd.

Facility: C&C Open Area Test Site No.4

(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-879

Date of Registration : March 26, 1999

This Certificate is valid until March 31, 2002

Voluntary Control Council for Interference by Information Technology Equipment

CERTIFICATE

Company : C&C Laboratory Co., Ltd.

Facility : C&C Conducted Interference Test Site No.4

(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-912

Date of Registration : March 26, 1999

This Certificate is valid until March 31, 2002

Voluntary Control Council for Interference by
Information Technology Equipment

中華民國實驗室認證體系認可證書

Chinese National Laboratory Accreditation Certificate ROC

茲以　程智科技股份有限公司程智科技電磁相容實驗室之電性測試領域經評鑑認可

十項發給本證書有效期限至九十年十一月十四日　此證

This is to certify that C & C Laboratory Co., Ltd. has been recognized by the Council of Chinese National Laboratory Accreditation as an accredited laboratory. The laboratory has been registered for ten specific tests within the field of Electrical Testing. The details of the scope of accreditation is described in the following pages and this Certificate is valid until Nov. 14, 2001.

CNLA

中華民國實驗室認證委員會
主　任　委　員

Chen, Ming-Bang

The Chairman of Chinese National Laboratory Accreditation Council

中　華　民　國　八十七　年 十一 月 十五 日

(本證書共 4 頁分離使用無效This document is invalid unless accompanied by all 4 pages.)

機構名稱 : 理智科技股份有限公司
實驗室名稱 : 理智科技電磁相容實驗室
認可編號 : 0363
實驗室負責人 : 王順發
測試領域 : 電性測試
登證日期 : 1998.11.15

Organization : C & C Laboratory Co., Ltd.
Laboratory : C & C Laboratory Co., Ltd.
Registration : 0363
Laboratory Head : WANG, Charles
Testing Field : Electrical Testing
Date of Registration: 1998.11.15

認可項目 Registration items	測試件 Test items	測試方法 Test methods	範圍 Range	認可之最佳測試能力 Best test capability recognized	備註 Remarks
EJ0102 諧波電流干擾 Harmonic current emissions	資訊類及其週邊產品 ITE and peripheral Products	IEC 1000-3-2(1995) EN 61000-3-2(1995)	輸入電源:100～240VAC(單相) 輸入電流:0～16 A 諧波階數:1～40		
EJ0103 電壓變動與閃爍干擾 Voltage fluctuations and flicker	資訊類及其週邊產品 ITE and peripheral Products	IEC 1000-3-3(1994) EN 61000-3-3(1995)	輸入電源:100～270VAC(單相) 輸入電流:0～16 A		
EJ0122 電信及資訊技術系統及儀器 Systems and apparatus of the telecommunication and	資訊類及其週邊產品 ITE and peripheral Products	CISPR 22(1986) EN 55022(1995) CNS 13438(1997) AS/NZS 3548(1995) VCCI(1997) FCC Part 15(1996)	傳導干擾:150 kHz～30 MHz 輻射干擾:30 MHz～1.0 GHz 傳導干擾:450 kHz～30 MHz 輻射干擾:30 MHz～2.0 GHz		

認可項目 Registration items	測試件 Test items	測試方法 Test methods	範圍 Range	認可之最佳測試能力 Best test capability recognized	備註 Remarks
information technology					
EJ0202 靜電放電測試 Electrostatic discharge tests	資訊類及其週邊產品 ITE and peripheral Products	IEC 1000-4-2(1995) EN 61000-4-2(1995) CNS 13022-4(1992)	空間放電: 0.2 kV~16.5 kV(+/-) 接觸放電:0.2 kV~8.0 kV(+/-)		
EJ0203 輻射耐受測試 Radiated susceptibility tests	資訊類及其週邊產品 ITE and peripheral Products	IEC 801-3(1984) IEC 1000-4-3(1995) EN 61000-4-3(1996) ENV 50204(1995)	[illegible]:26MHz~1.0 GHz [illegible]0 V/m,AM調變)		
EJ0204 電性快速突波測試 Electrical fast transient/burst tests	資訊類及其週邊產品 ITE and peripheral Products	IEC 801-4(1988) IEC 1000-4-4(1995) EN 61000-4-4(1995) CNS 13022-2(1992)	[illegible]±5MHz [illegible]:100~[illegible] [illegible]:0~10[illegible] [illegible]:0.[illegible]~4.5 kV		
EJ0205 突波/雷擊測試 Surge/lightening tests	資訊類及其週邊產品 ITE and peripheral Products	IEC 1000-4-5(1995) ENV 50142(1994) CNS 13022-3(1992)	[illegible]00~270 [illegible]DC 100V [illegible]:16 A(AC/DC) [illegible]: 0~4.2 kV [illegible]: 電源線		
EJ0206 傳導耐受測試 Conducted susceptibility tests	資訊類及其週邊產品 ITE and peripheral Products	IEC 1000-4-6(1993) EN 61000-4-6(1996)	[illegible]:150 kHz~230 MHz [illegible]: 10 V,AM調變)		
EJ0208 電源頻率磁場耐受	資訊類及其週邊產品 ITE and peripheral	IEC 1000-4-8(1993) EN 61000-4-8(1993)	[illegible]場 [illegible] A/m~100 A/m		

認可項目 Registration items	測試件 Test items	測試方法 Test methods	範圍 Range	認可之最佳測試能力 Best test capability recognized	備註 Remarks
測試 Power frequency magnetic field immunity test EI0211 電壓下降、瞬斷和授變耐受測試 Voltage dips, short interruptions and voltage variations immunity tests (以下空白)	Products 資訊類及其週邊設備 ITE and peripheral Products	IEC 61000-4-11(1994) BSN 61000-4-11(1994)	頻率:100% 下降:0~100%		

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TEST EQUIPMENT LIST

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 10kHz to 1.0 / 2.0 GHz.

Equipment used during the tests:

Open Area Test Site: ☐ # 1 ; ☐ # 3 ; ■ # 4

Open Area Test Site # 1					
EQUIPMENT TYPE	*** MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
Spectrum Analyzer	HP	8568B	3001A05004	04/16/1999	04/15/2000
S.P.A Display	HP	85662A	3104A18846	04/16/1999	04/15/2000
RF Pre-selector	HP	85685A	2947A01064	04/16/1999	04/15/2000
Q.P Adaptor	HP	85650A	2811A01399	04/16/1999	04/15/2000
Precision Dipole	R&S	HZ-12	846932/0004	06/16/1999	06/16/2000
Precision Dipole	R&S	HZ-13	846556/0008	06/16/1999	06/16/2000
Horn Antenna	EMCO	3115	9602-4659	04/04/1999	04/04/2000
Bilog Antenna	CHASE	CBL6112A	2309	04/05/1999	04/05/2000
Turn Table	EMCO	2081-1.21	N/A	N/A	N/A
Antenna Tower	EMCO	2075-2	9707-2604	N/A	N/A
Controller	EMCO	2090	N/A	N/A	N/A
RF Switch	ANRITSU	MP59B	N/A	N/A	N/A
Site NSA	C&C	N/A	N/A	11/10/1999	11/09/2000

Open Area Test Site # 3					
EQUIPMENT TYPE	*** MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
Spectrum Analyzer	ADVANTEST	R3261C	71720533	10/25/1999	10/24/2000
Pre-Amplifier	HP	8447D	2944A09173	01/28/1999	01/27/2000
EMI Test Receiver	R&S	ESVS20	838804/004	12/12/1999	12/11/2000
Precision Dipole	R&S	HZ-12	846932/0004	06/16/1999	06/16/2000
Precision Dipole	R&S	HZ-13	846556/0008	06/16/1999	06/16/2000
Horn Antenna	EMCO	3115	9602-4659	04/04/1999	04/04/2000
Bilog Antenna	CHASE	CBL6112A	2179	11/27/1999	11/26/2000
Turn Table	EMCO	2081-1.21	9709-1885	N/A	N/A
Antenna Tower	EMCO	2075-2	9707-2060	N/A	N/A
Controller	EMCO	2090	9709-1256	N/A	N/A
RF Switch	ANRITSU	MP59B	N/A	N/A	N/A
Site NSA	C&C	N/A	N/A	01/31/1999	01/31/2000

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Open Area Test Site # 4					
EQUIPMENT TYPE	*** MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
Spectrum Analyzer	ADVANTEST	R3261C	81720301	09/02/1999	09/01/2000
Pre-Amplifier	HP	8447F	2944A03748	10/22/1999	10/21/2000
EMI Test Receiver	R&S	ESVS10	846285/016	12/19/1998	12/18/1999
Precision Dipole	R&S	HZ-12	846932/0004	06/16/1999	06/16/2000
Precision Dipole	R&S	HZ-13	846556/0008	06/16/1999	06/16/2000
Horn Antenna	EMCO	3115	9602-4659	04/04/1999	04/04/2000
Bilog Antenna	CHASE	CBL 6112B	2462	01/01/1999	01/01/2000
Turn Table	Chance most	N/A	N/A	N/A	N/A
Antenna Tower	Chance most	N/A	N/A	N/A	N/A
Controller	Chance most	N/A	N/A	N/A	N/A
RF Switch	ANRITSU	MP59B	N/A	N/A	N/A
Site NSA	C&C Lab.	N/A	N/A	12/27/1998	12/27/1999

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Conducted Emission Test Site: ☐ # 1 ; ☐ # 3 ; ■ # 4

Conducted Emission Test Site # 1					
EQUIPMENT TYPE	*** MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
Spectrum Analyzer	HP	8568B	3001A05004	04/16/1999	04/15/2000
S.P.A Display	HP	85662A	3104A18846	04/16/1999	04/15/2000
RF Pre-selector	HP	85685A	2947A01064	04/16/1999	04/15/2000
Q.P Adaptor	HP	85650A	2811A01399	04/16/1999	04/15/2000
LISN	R&S	ESH3-Z5	848773/014	10/22/1999	10/21/2000
LISN	EMCO	3825/2	9106-1810	08/14/1999	08/14/2000

Conducted Emission Test Site # 3					
EQUIPMENT TYPE	*** MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
EMI Test Receiver	R&S	ESCS30	847793/012	11/06/1999	11/05/2000
LISN	EMCO	3825/2	9003-1628	04/29/1999	04/28/2000
LISN	R&S	ESH3-Z5	848773/014	10/22/1999	10/21/2000

Conducted Emission Test Site # 4					
EQUIPMENT TYPE	*** MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
EMI Test Receiver	R&S	ESCS30	847793/012	11/06/1999	11/05/2000
LISN	EMCO	3825/2	1382	01/09/1999	01/08/2000
LISN	R&S	ESH3-Z5	848773/014	10/22/1999	10/21/2000

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.

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TEST EQUIPMENT LIST

For Power Harmonic & Voltage Fluctuation/Flicker Measurement:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
HAEFELY TRENCH Harmonic & Flicker Tester	PHF 555	080 419-25	Oct. 05, 1999	Oct.04, 2000

For ESD test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
EMV SYSTEME/ ESD Generator	SESD 2000	812006	Nov. 19, 1999	Nov. 18, 2000

For Radiated Electromagnetic Field immunity Measurement:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
Maconi /Signal Generator	2022D	119246/003	Aug. 17, 1999	Aug. 16, 2000
M2S / Power Amplifier	A00181/1000	9801-112	N/A	N/A
M2S / Power Amplifier	AC8113/800-250A	9801-179	N/A	N/A
Wandel & Goltormann/ EM-Radiation Meter	EMR-30	L-0013	Jan. 13, 1999	Jan. 12, 2000
EMCO Power Antenna	3141	9712-1083	N/A	N/A

For Fast Transients/Burst test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
HAEFELY TRENCH/ Fast Transients/Burst Generator	PEFT-JUNIOR	583 333-117	Aug. 18, 1999	Aug. 18, 2000

For CS test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
Maconi /Signal Generator	2022D	119246/003	Aug. 17, 1999	Aug. 16, 2000

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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: 1994 (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: 1994.

3) All I/O cables were positioned to simulate typical actual usage as per EN 55022: 1994.

4) The EUT received AC power through a Line Impedance Stabilization Network (LISN) which supplied power source of 230VAC/50Hz and was grounded to the ground plane.

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

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. **Full System + 640 x 480 Resolution**
2. **Full System + 800 x 600 Resolution**
3. **Full System + 1024 x 768 Resolution**

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

Mode(s): 3.

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

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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 Average 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	-2.05	L 1

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 2 dB margin, so no further recheck.

LINE CONDUCTED EMISSION LIMIT

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.

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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: 1994 (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: 1994.

3) All I/O cables were positioned to simulate typical actual usage as per EN 55022: 1994.

4) The EUT received 230VAC/50Hz power source from the outlet socket under the turntable. All support equipment received 110VAC/60Hz power from another socket under the turntable.

5) The antenna was placed at some given distance away from the EUT as stated in EN 55022: 1994. The antenna connected to the analyzer via a cable and at times a pre-amplifier would be used.

6) The Analyzer 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 model(s) were scanned during the preliminary test:

Model(s):

1. **Full System + 640 x 480 Resolution**
2. **Full System + 800 x 600 Resolution**
3. **Full System + 1024 x 768 Resolution**

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

Model(s): 3.

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

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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	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

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RADIATED EMISSION LIMIT

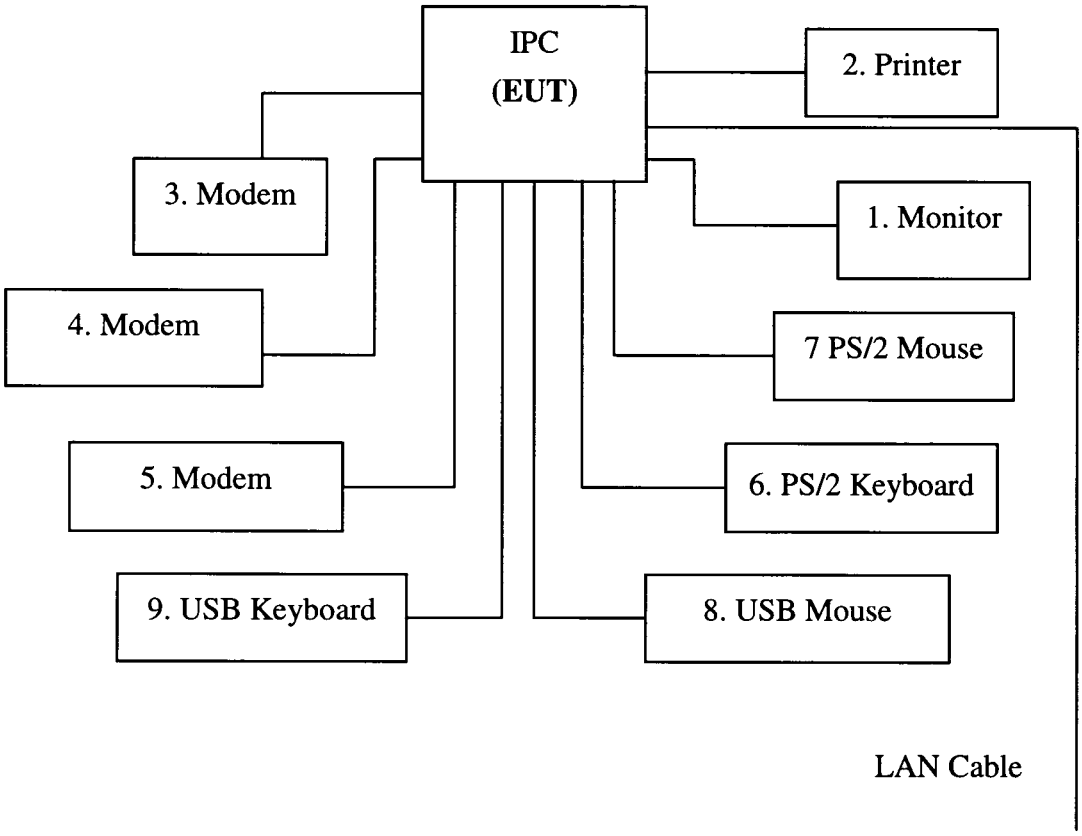
Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m/ Q.P.)
30-230	10	40
230-1000	10	47

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

BLOCK DIAGRAM OF TEST SETUP

SYSTEM DIAGRAM OF CONNECTIONS BETWEEN EUT AND SIMULATORS

EUT: IPC
Trade Name: N/A
Model Number: PPC-668
Power Cord: Shielded, 1.5m



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SUMMARY DATA

(LINE CONDUCTED TEST)

Model Number: PPC-668 **Location:** Site # 4

Tested by: Michael Chen

Test Mode: Mode 3.

Test Results: Passed

Temperature: 19℃ **Humidity:** 68%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
0.190	42.0	---	79.0	66.0	-37.0	---	L1
0.250	34.3	---	79.0	66.0	-44.7	---	L1
0.375	30.0	---	79.0	66.0	-49.0	---	L1
0.502	35.8	---	73.0	60.0	-37.2	---	L1
0.815	35.3	---	73.0	60.0	-37.7	---	L1
1.130	35.1	---	73.0	60.0	-37.9	---	L1
0.190	44.7	---	79.0	66.0	-34.3	---	L2
0.375	41.5	---	79.0	66.0	-37.5	---	L2
0.440	44.7	---	79.0	66.0	-34.3	---	L2
0.501	45.6	---	73.0	60.0	-27.4	---	L2
0.815	44.4	---	73.0	60.0	-28.6	---	L2
1.820	45.1	---	73.0	60.0	-27.9	---	L2

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

****NOTE: "---" denotes the emission level was less –2 dB to the Average limit, so no re-check anymore.**

0363

SUMMARY DATA

(LINE CONDUCTED TEST)

Model Number: PPC-668 **Location:** Site # 4

Tested by: Michael Chen

Test Mode: Mode 3.

Test Results: Passed

Temperature: 19℃ **Humidity:** 68%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
0.190	42.0	---	79.0	66.0	-37.0	---	L1
0.250	34.3	---	79.0	66.0	-44.7	---	L1
0.375	30.0	---	79.0	66.0	-49.0	---	L1
0.502	35.8	---	73.0	60.0	-37.2	---	L1
0.815	35.3	---	73.0	60.0	-37.7	---	L1
1.130	35.1	---	73.0	60.0	-37.9	---	L1
0.190	44.7	---	79.0	66.0	-34.3	---	L2
0.375	41.5	---	79.0	66.0	-37.5	---	L2
0.440	44.7	---	79.0	66.0	-34.3	---	L2
0.501	45.6	---	73.0	60.0	-27.4	---	L2
0.815	44.4	---	73.0	60.0	-28.6	---	L2
1.820	45.1	---	73.0	60.0	-27.9	---	L2

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

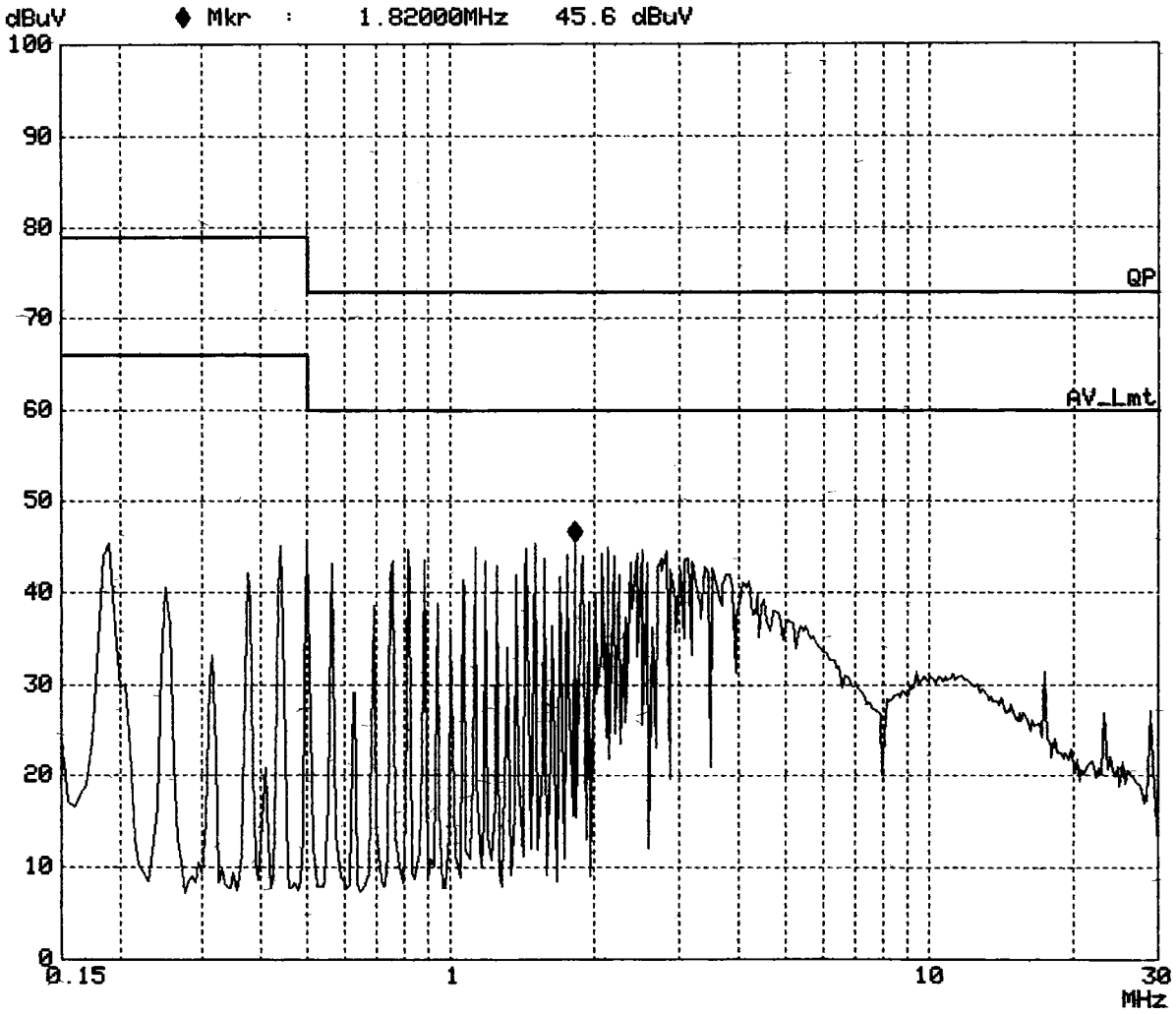
****NOTE: "---" denotes the emission level was less –2 dB to the Average limit, so no re-check anymore.**

C&C Lab. Conduction Test Site 4
EN 55022 Class A

EUT: PPC-668
Manuf: AAEON
Op Cond: 1024*768 FULL SYSTEM
Operator: Michael Chen
Test Spec: LISN=L2
Comment: 230VAC/50HZ
File name: EN55022A.RES
Date: 14. Dec 99 13:12

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK	20ms	0dBLN	OFF



C&C Lab. Co.
File No.: 990595-E
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SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: PPC-668 **Location:** Site # 4

Tested by: Michael Chen

Test Mode: Mode 3. **Polar:** Vertical -- 10m

Detector Function: Quasi-Peak **Test Results:** Passed

Temperature: 19℃ **Humidity:** 69%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)
64.00	24.3	6.0	30.3	40.0	-9.7
138.00	17.9	14.5	32.4	40.0	-7.6
165.00	18.8	12.9	31.7	40.0	-8.3
194.05	21.2	11.7	32.9	40.0	-7.1
203.02	24.5	11.7	36.2	40.0	-3.8
334.02	22.6	15.7	38.3	47.0	-8.7
532.03	17.7	20.3	38.0	47.0	-9.0
599.96	15.6	20.8	36.4	47.0	-10.6

0363

SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: PPC-668 **Location:** Site # 4

Tested by: Michael Chen

Test Mode: Mode 3. **Polar:** Horizontal -- 10m

Detector Function: Quasi-Peak **Test Results:** Passed

Temperature: 19℃ **Humidity:** 69%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)
78.29	16.8	8.3	25.1	40.0	-14.9
136.43	17.4	12.4	29.8	40.0	-10.2
165.01	20.8	11.5	32.3	40.0	-7.7
203.51	21.8	10.7	32.5	40.0	-7.5
214.61	17.0	10.8	27.8	40.0	-12.2
333.05	20.5	16.4	36.9	47.0	-10.1
497.05	16.2	21.1	37.3	47.0	-9.7
631.07	11.4	22.5	33.9	47.0	-13.1

0363

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

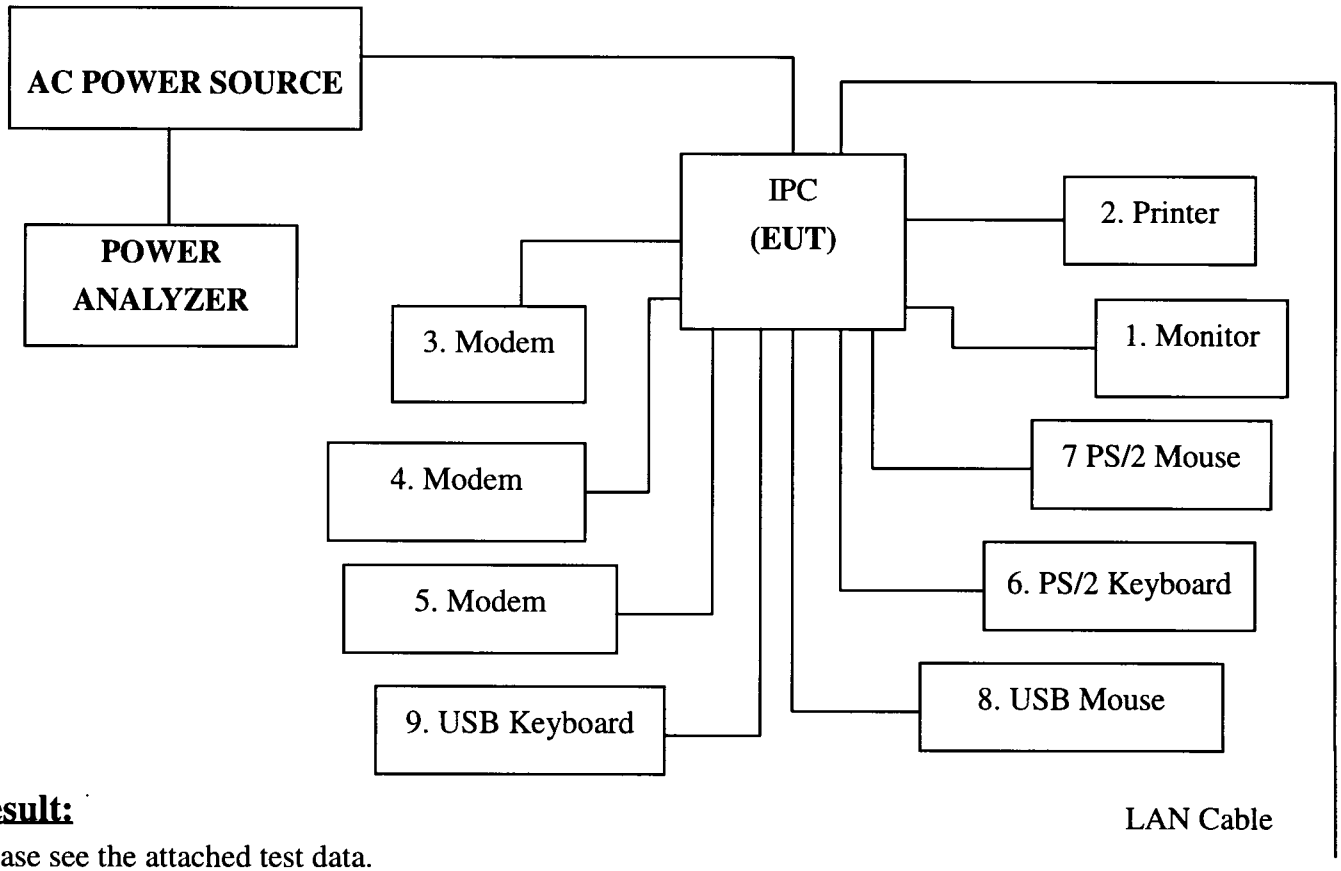
POWER HARMONICS MEASUREMENT

Port	:	AC mains
Basic Standard	:	EN 61000-3-2: 1995 +A1: 1998 + A2: 1998
Limits	:	■ Class A, □ Class D
Temperature	:	19℃
Humidity	:	67%

VOLTAGE FLUCTUATION/FLICKER MEASUREMENT

Port	:	AC mains
Basic Standard	:	EN 61000-3-3 (1995)
Limits	:	§ 5 of EN 61000-3-3
Temperature	:	19℃
Humidity	:	67%

Block Diagram of Test Setup:



Result:

Please see the attached test data.

EN 61000-3-2 TEST REPORT 1999年12月14日 10:33 AM

Unit: INDUSTRIAL PC

Model No.: PPC-668

Remarks: Temp: 19℃ Humidity: 67%

Operator: Michael Chen

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: IEC-725 STD. REF.

Synthetic R+L Enabled: NO
Resistance: 0.400 Ohms Inductance: 795.775 uH
Max Watts: 72.8W

C&C Lab. Co.
File No: 990595-E
Page: 4-1

TEST DATA

Result: PASS

Harmonic Current Results

Hn	AMPS	LO Limit	HI Limit	Result
0	0.000	0.000	0.000	PASS
1	0.674	NaN	NaN	PASS
2	0.003	1.080	1.080	PASS
3	0.614	2.300	2.300	PASS
4	0.003	0.430	0.430	PASS
5	0.502	1.140	1.140	PASS
6	0.002	0.300	0.300	PASS
7	0.360	0.770	0.770	PASS
8	0.002	0.230	0.230	PASS
9	0.220	0.400	0.400	PASS
10	0.001	0.184	0.184	PASS
11	0.108	0.330	0.330	PASS
12	0.001	0.153	0.153	PASS
13	0.044	0.210	0.210	PASS
14	0.001	0.131	0.131	PASS
15	0.047	0.150	0.150	PASS
16	0.001	0.115	0.115	PASS
17	0.047	0.132	0.132	PASS
18	0.001	0.102	0.102	PASS
19	0.032	0.118	0.118	PASS
20	0.001	0.092	0.092	PASS
21	0.013	0.107	0.107	PASS
22	0.001	0.084	0.084	PASS
23	0.010	0.098	0.098	PASS
24	0.001	0.077	0.077	PASS

25	0.016	0.090	0.090	PASS
26	0.000	0.071	0.071	PASS
27	0.014	0.083	0.083	PASS
28	0.000	0.066	0.066	PASS
29	0.007	0.078	0.078	PASS
30	0.000	0.061	0.061	PASS
31	0.003	0.073	0.073	PASS
32	0.000	0.058	0.058	PASS
33	0.007	0.068	0.068	PASS
34	0.000	0.054	0.054	PASS
35	0.007	0.064	0.064	PASS
36	0.000	0.051	0.051	PASS
37	0.005	0.061	0.061	PASS
38	0.000	0.048	0.048	PASS
39	0.001	0.058	0.058	PASS
40	0.000	0.046	0.046	PASS

END OF REPORT

EN 61000-3-3 TEST REPORT 1999年12月14日 10:49 AM

Unit: INDUSTRIAL PC

Model No.: PPC-668

Remarks: Temp: 19℃ Humidity: 67%

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: IEC-725 STD. REF.

Synthetic R+L Enabled: NO
Resistance: 0.400 Ohms Inductance: 795.775 uH

C&C Lab. Co.
File No: 9905J5-E
Page: 54 - 4

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 %	0.005	4.00	PASS	true
d(t) sec.	0.006	0.20	PASS	true
Power Source Data				
Source Pst max	0.009	0.400	PASS	true
% THD	0.050	3.000	PASS	true

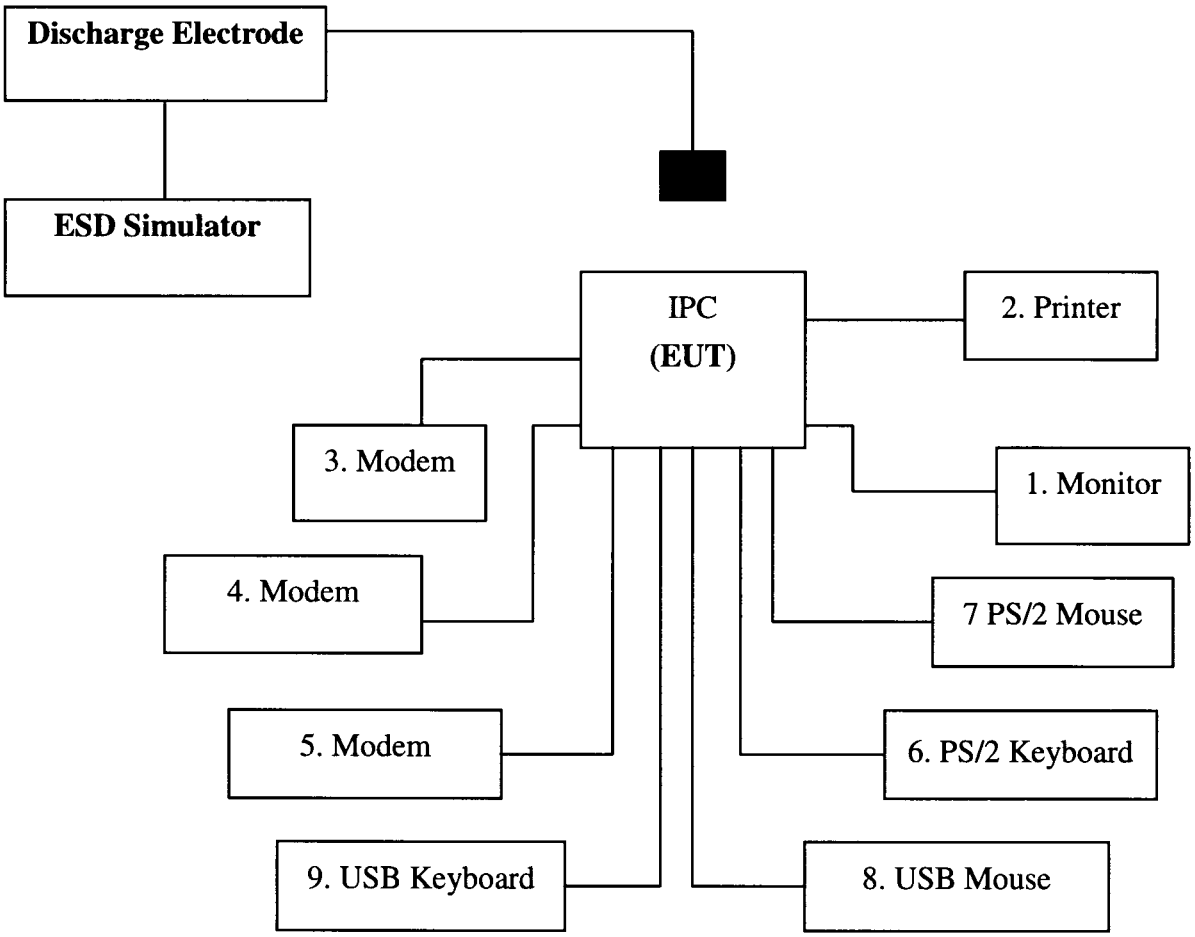
END OF REPORT

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

ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

Port : Enclosure
Basic Standard : EN 61000-4-2
Requirements : ± 8kV (Air Discharge)
± 4kV (Contact Discharge)
± 4kV (Indirect Discharge)
Performance Criteria : B (Standard Required)
Temperature/Humidity: 20℃ / 58%

Block Diagram of Test Setup:



Test Procedure:

The electrostatic discharges were applied as follows:

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

**** The tested points to EUT, please refer to attached pages.**

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.

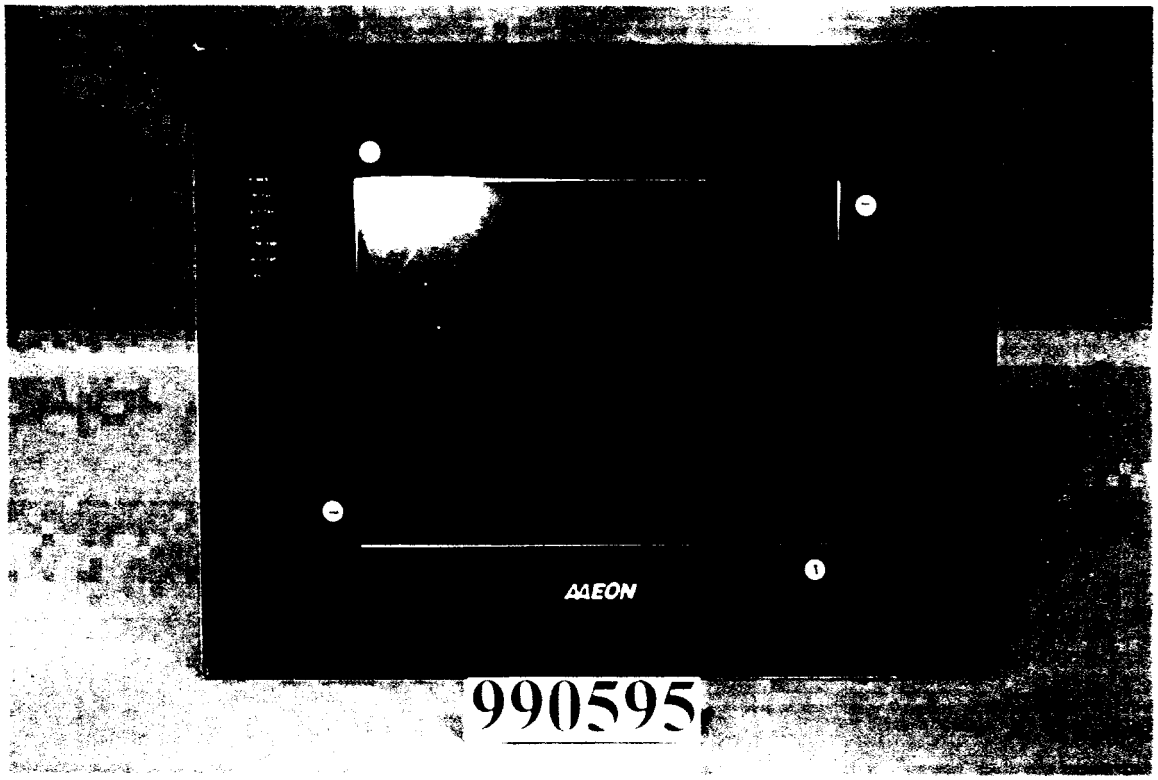
☐ **Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

****Observation:** No any function degraded during the tests.

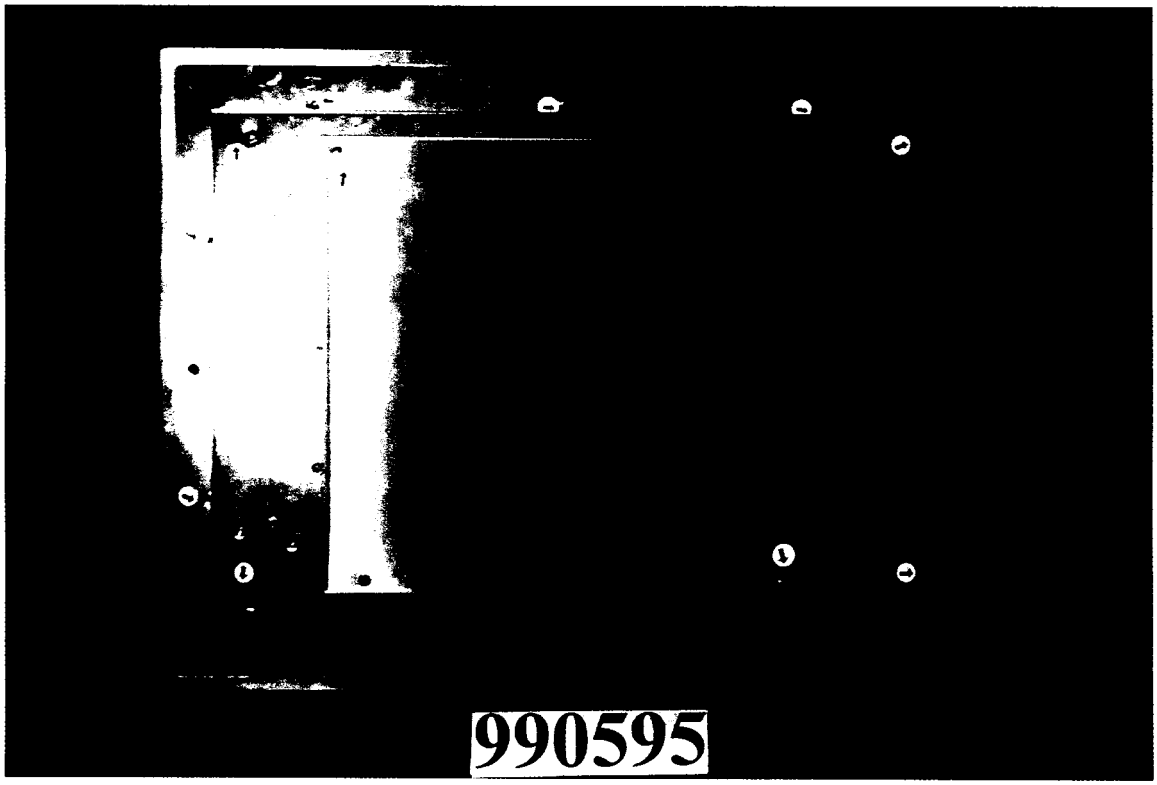
0363

The Tested Points of EUT

(Photo 1 of 5)



(Photo 2 of 5)



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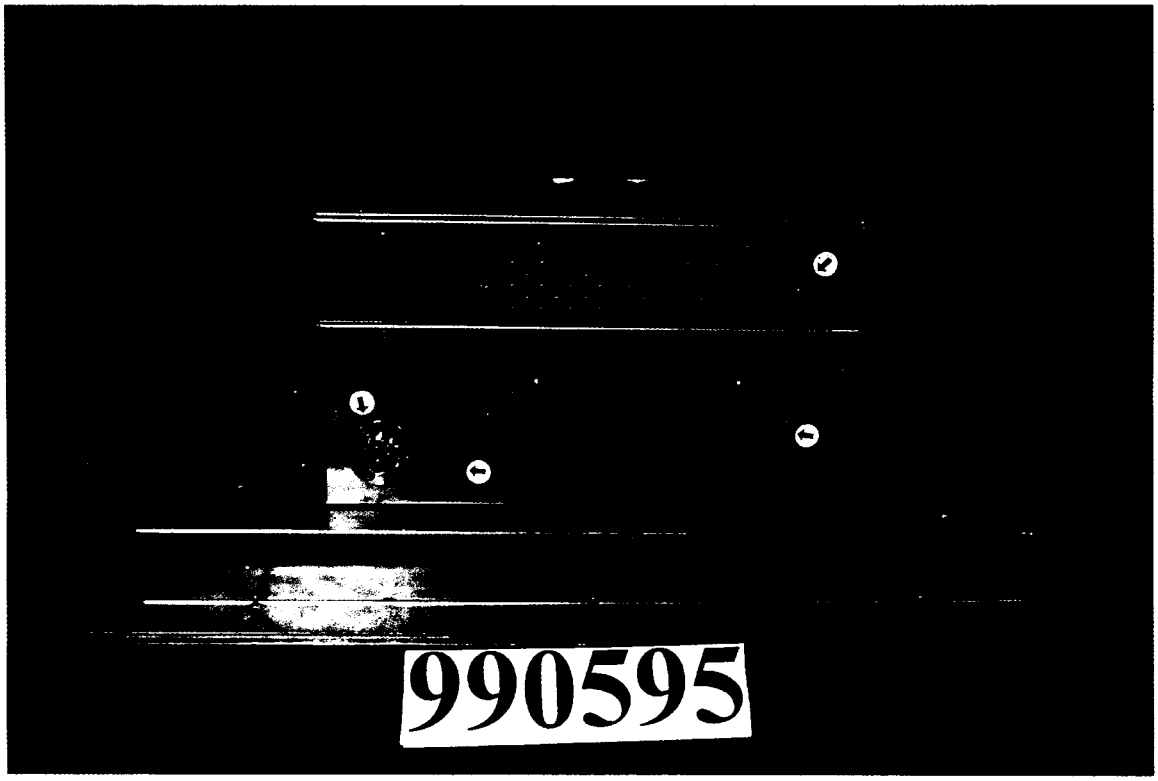
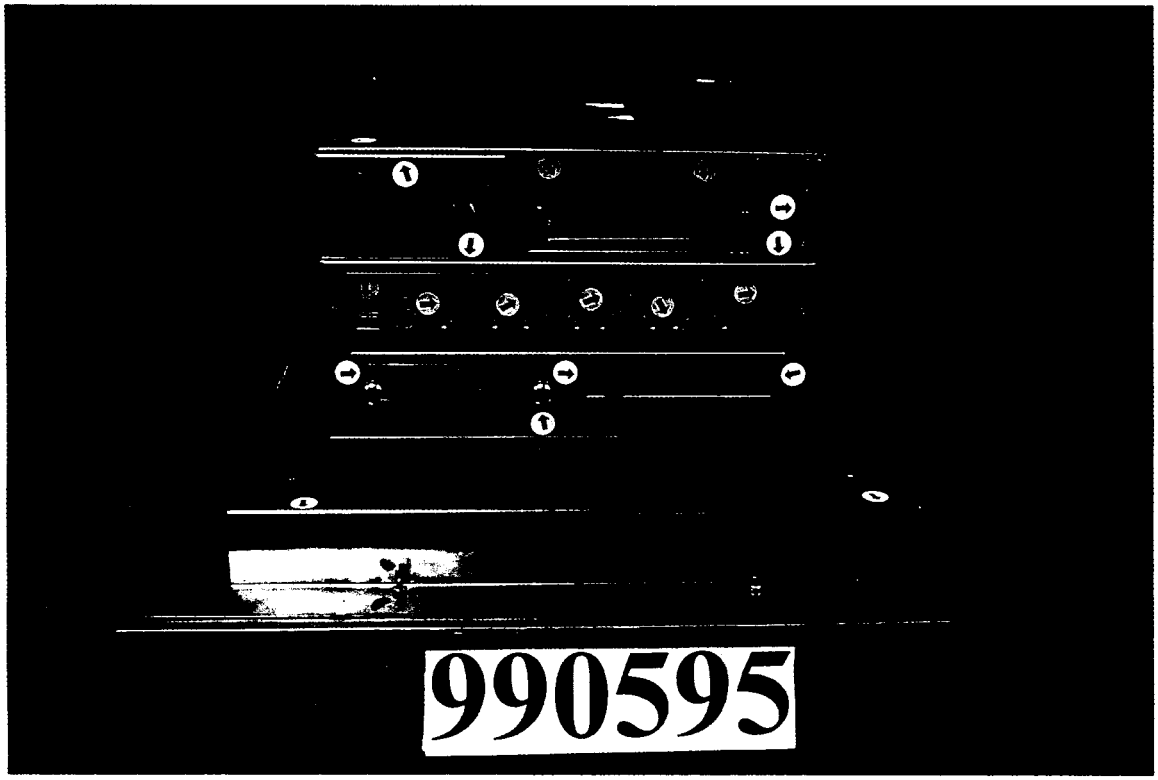
(Photo 3 of 5)



(Photo 4 of 5)

(Photo 5 of 5)



0363

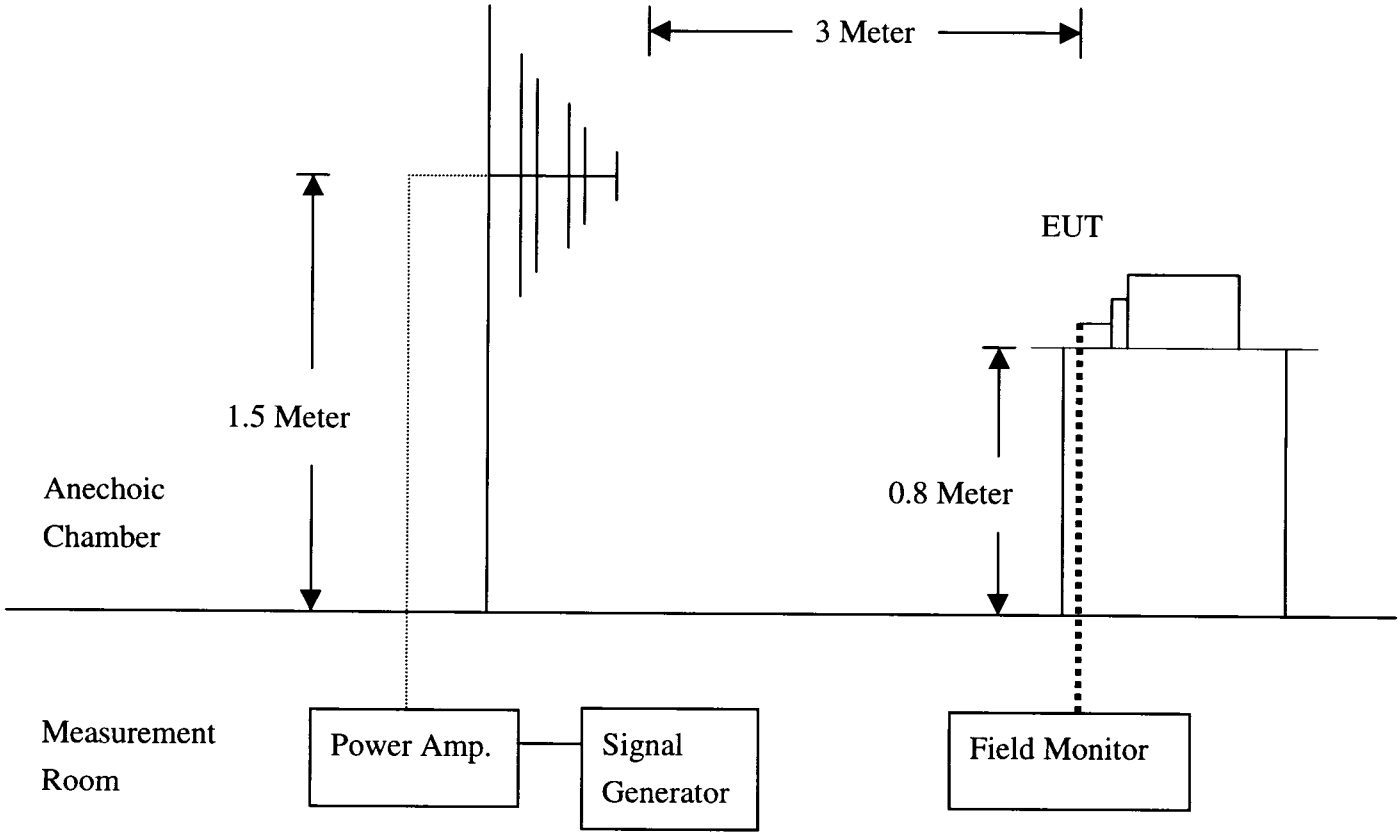
SECTION 4 ENV 50140 (RADIATED ELECTROMAGNETIC FIELD)

RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Port	: Enclosure
Basic Standard	: ENV 50140
Requirements	: 10 V/m / Modulated
Performance Criteria	: A (Standard Required)
Temperature	: 20℃
Humidity	: 69%

Block Diagram of Test Setup:

Same as Section 3 EN61000-4-2 Test Setup:



0363

Test Procedure:

Frequency Range : 80MHz-1000MHz
Frequency Step : 1% of fundamental
Dwell Time : 1 sec

Range (MHz)	Field	Modulation	Polarity	Position (°)	Result (Pass/Fail)
80-1000	10V	Yes	H	0	Pass
80-1000	10V	Yes	V	0	Pass
80-1000	10V	Yes	H	90	Pass
80-1000	10V	Yes	V	90	Pass
80-1000	10V	Yes	H	180	Pass
80-1000	10V	Yes	V	180	Pass
80-1000	10V	Yes	H	270	Pass
80-1000	10V	Yes	V	270	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.

****Observation:** No any function degraded during the tests.

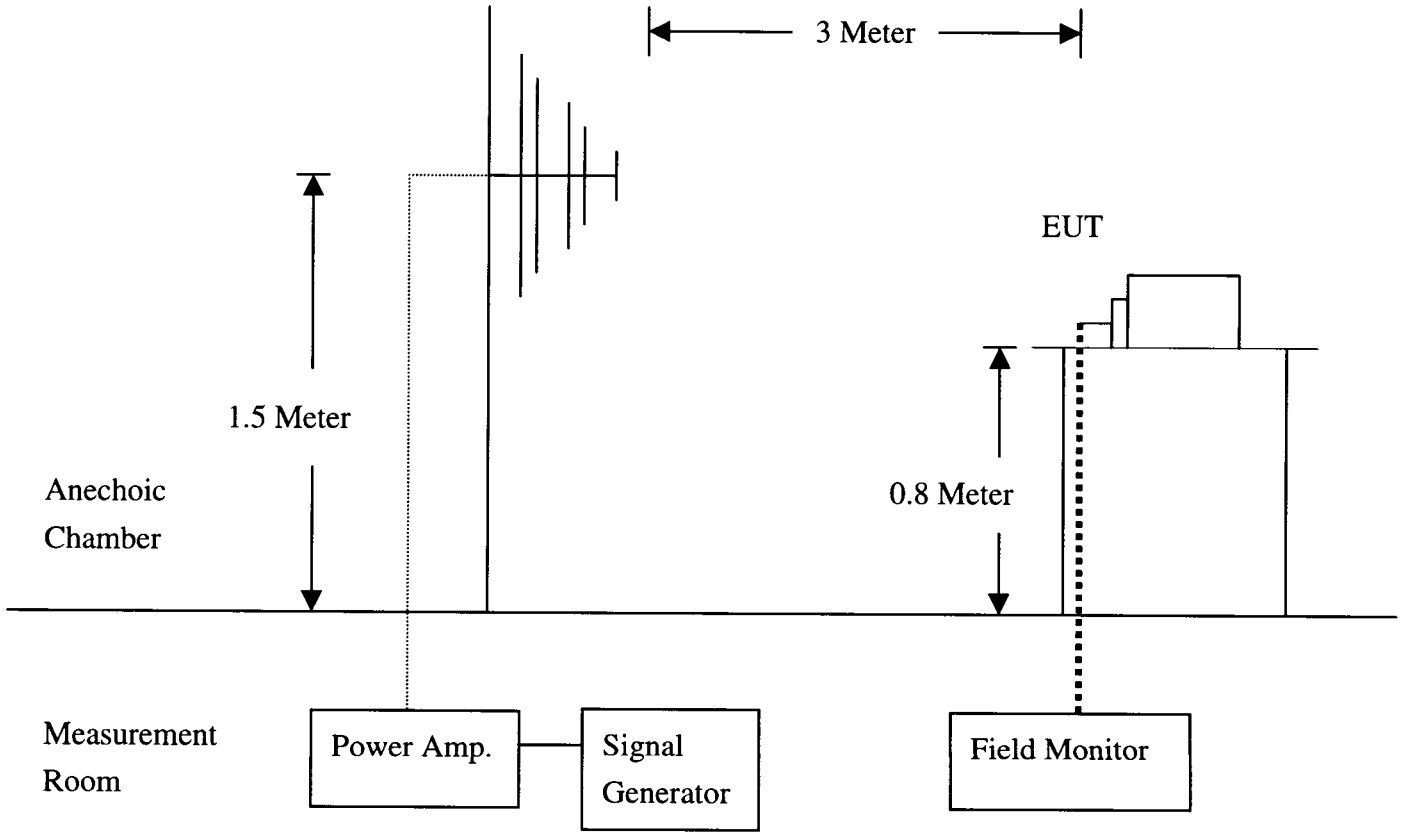
SECTION 5 ENV 50204 (RADIATED ELECTROMAGNETIC FIELD FROM DIGITAL TELEPHONES)

RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Port	: Enclosure
Basic Standard	: ENV 50204
Requirements	: 10 V/m, with modulated
Performance Criteria	: A (Standard Required)
Temperature	: 19℃
Humidity	: 69%

Block Diagram of Test Setup:

Same as Section 3 EN61000-4-2 Test Setup:



0363

Test Procedure:

Spot Frequency : 900 MHz ± 5MHz
Modulated Frequency : 200 Hz
Duty cycle : 50%

Range (MHz)	Field	Modulation	Polarity	Position (°)	Result (Pass/Fail)
900	10V	Yes	H	0	Pass
900	10V	Yes	V	0	Pass
900	10V	Yes	H	90	Pass
900	10V	Yes	V	90	Pass
900	10V	Yes	H	180	Pass
900	10V	Yes	V	180	Pass
900	10V	Yes	H	270	Pass
900	10V	Yes	V	270	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.

****Observation:** No any function degraded during the tests.

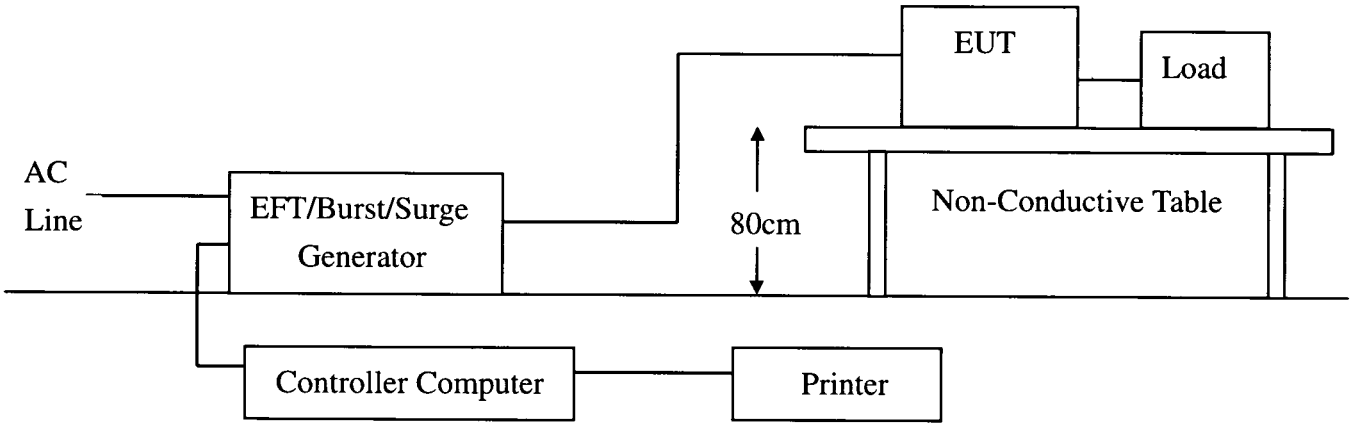
SECTION 6 EN 61000-4-4 (FAST TRANSIENTS/BURST)

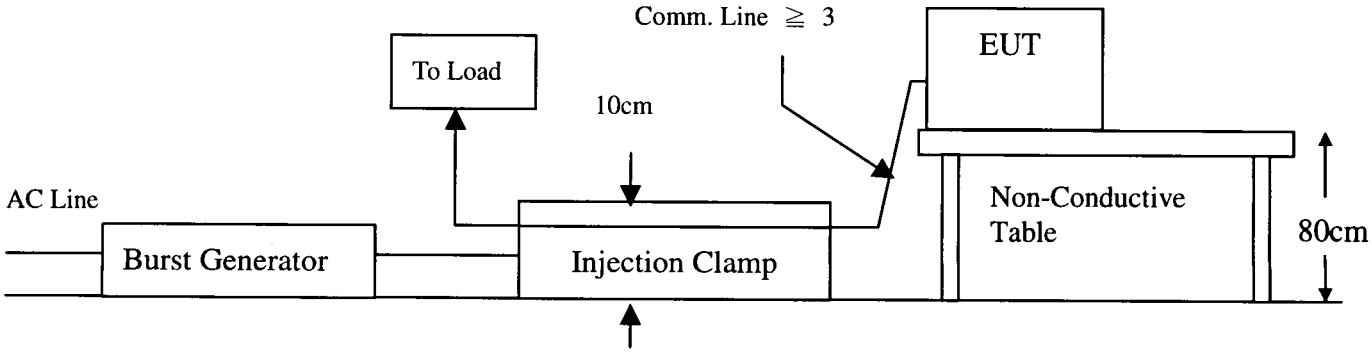
FAST TRANSIENTS/BURST IMMUNITY TEST

Port	:	On Power Port
Basic Standard	:	EN 61000-4-4
Requirements	:	± 2kV for Power Supply Line
		± 1kV for Data Cable
Performance Criteria	:	B (Standard require)
Temperature	:	20℃
Humidity	:	68%

Block Diagram of Test Setup:

Same as Section 3 EN 61000-4-2 Test Setup:





Test Procedure:

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

Inject Line	Voltage kV	Inject Method	Result (Pass/Fail)
L1	± 2	Direct	Pass
N	± 2	Direct	Pass
PE	± 2	Direct	Pass
L1 + N	± 2	Direct	Pass
L1 + PE	± 2	Direct	Pass
N + PE	± 2	Direct	Pass
L1 + N + PE	± 2	Direct	Pass
LAN Cable	± 1	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.

****Observation:** No any function degraded during the tests.

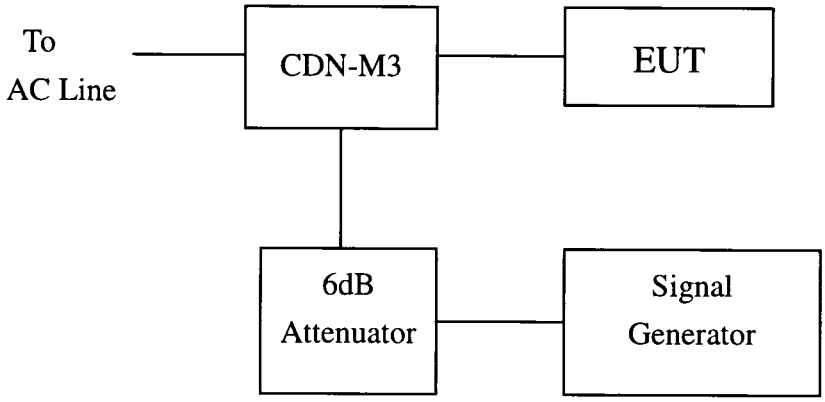
0363

SECTION 7 ENV 50141 (CONDUCTED DISTURBANCE/INDUCED BY RADIO-FREQUENCY FIELD)

Port	: Power cord
Basic Standard	: ENV 50141
Requirements	: 10 V with Modulated
Injection Method	: CDN-M3
Performance Criteria	: A
Temperature	: 20℃
Humidity	: 70%

Block Diagram of Test Setup:

Same as Section 3 EN 61000-4-2 Test Setup:



Test Procedure:

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

Range (MHz)	Field	Modulation	Result (Pass/Fail)
0.15-80	10V	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.

****Observation:** No any function degraded during the tests.

Test Procedure:

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

Range (MHz)	Field	Modulation	Result (Pass/Fail)
0.15-80	10V	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.

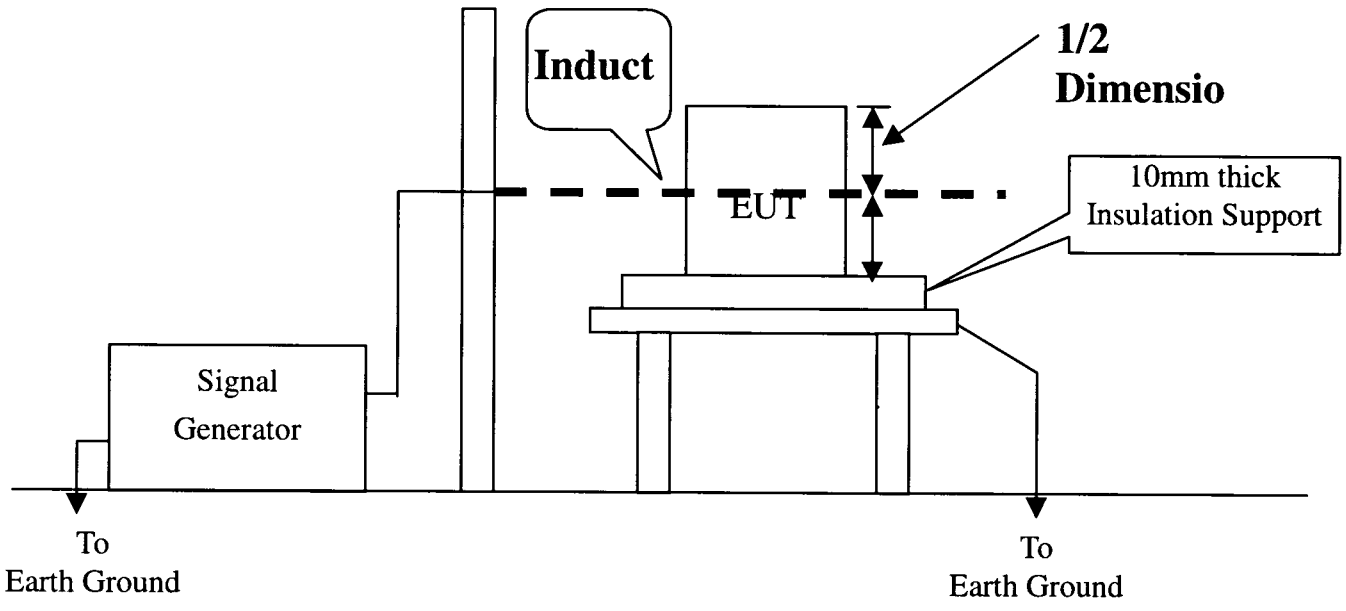
****Observation:** No any function degraded during the tests.

0363

SECTION 9 EN 61000-4-8 (POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST)

Port	: Enclosure
Basic Standard	: EN 61000-4-8
Requirements	: 3 A/m
Performance Criteria	: A (Standard Required)
Temperature	: N/A
Humidity	: N/A

Block Diagram of Test Setup:



Test Procedure:

Field Strength: 3A/m
Power Freq.: 50Hz
Orientation: X, Y, Z

Orientation	Field	Result (Pass/Fail)	Remark

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

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.

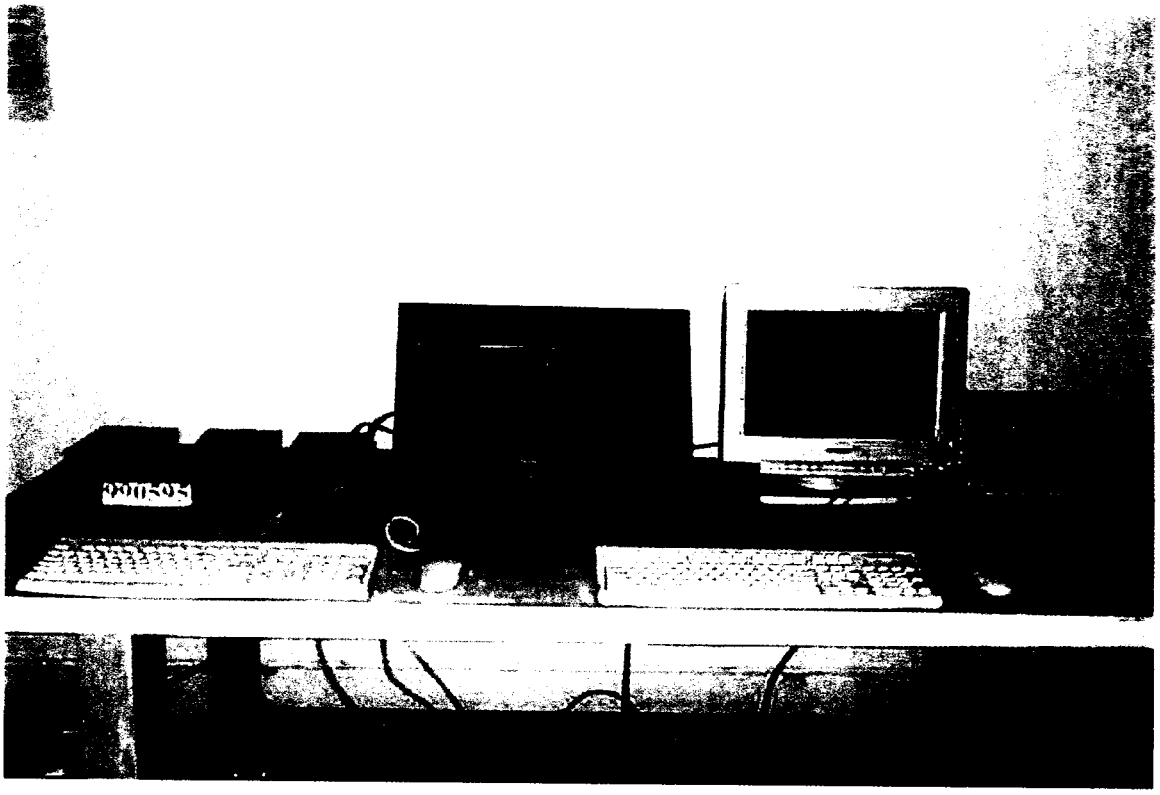
****Observation:** N/A

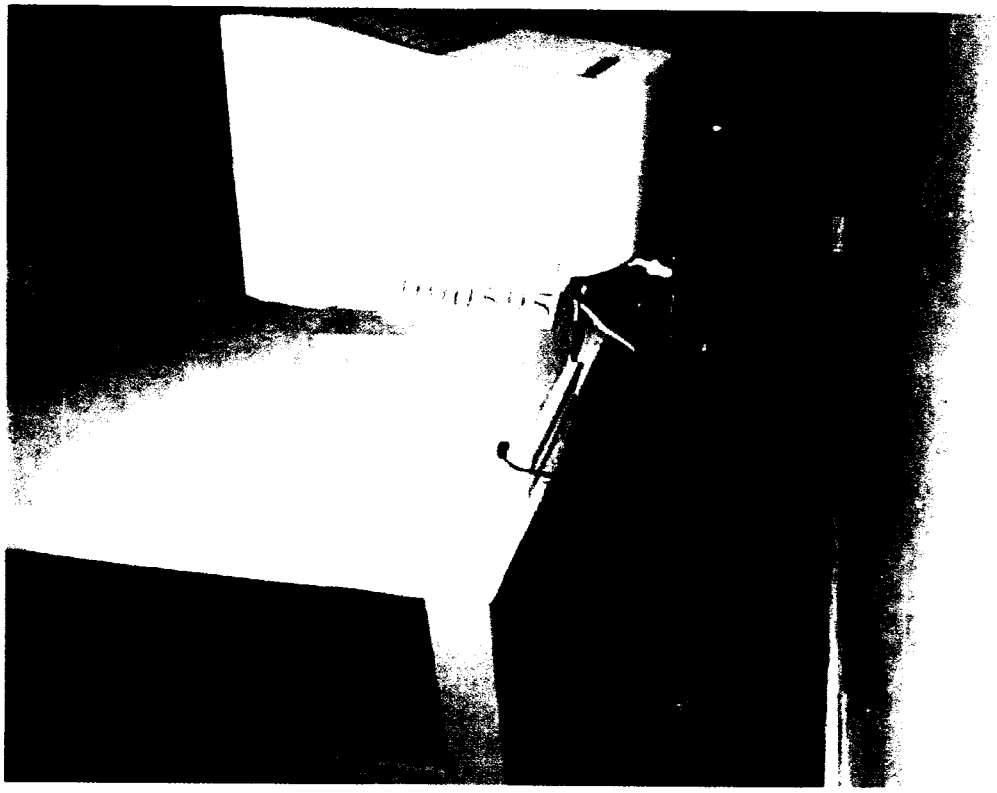
APPENDIX 1

PHOTOGRAPHS OF TEST SETUP

0363

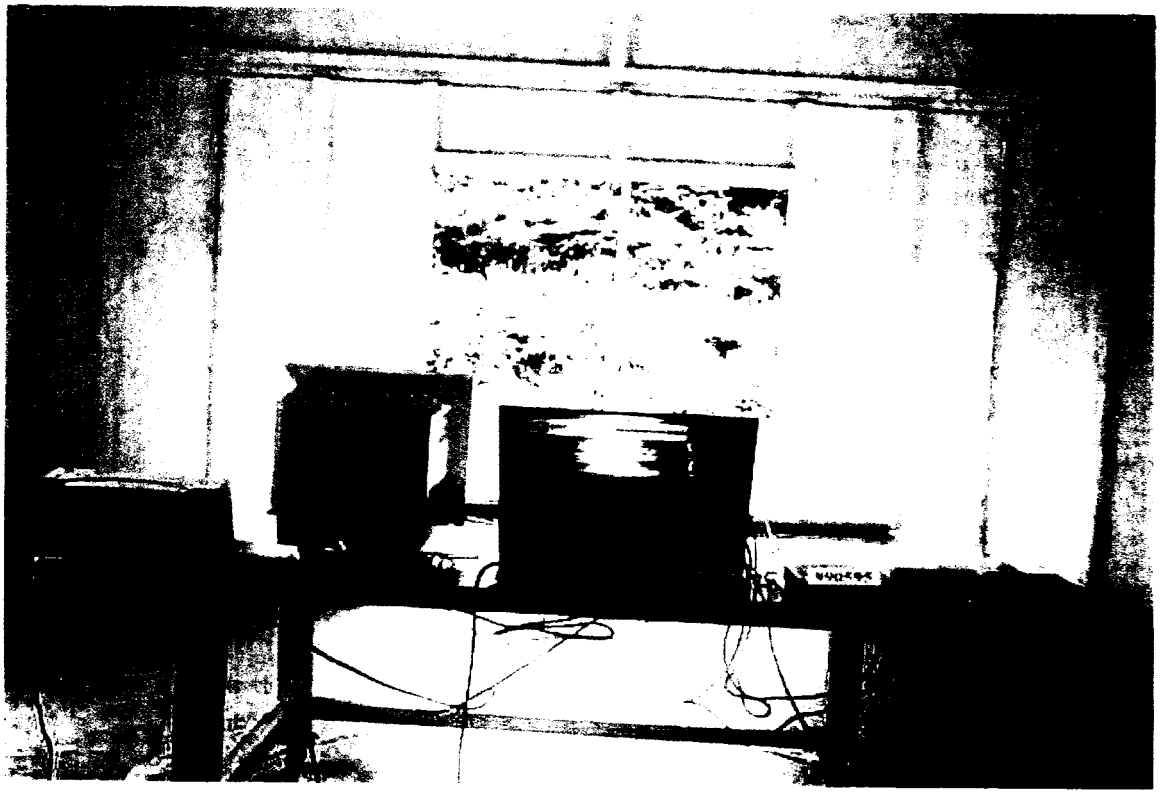
LINE CONDUCTED EMISSION TEST (EN 55022)





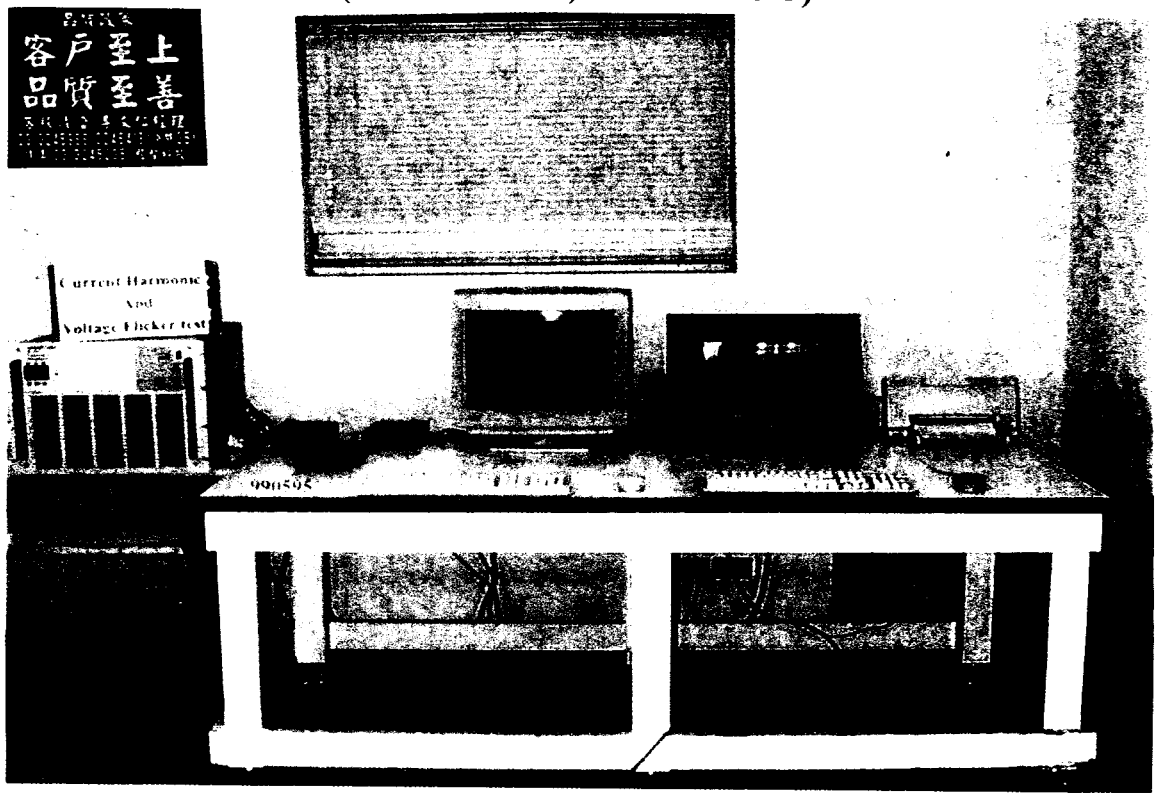
0363

RADIATED EMISSION TEST (EN 55022)



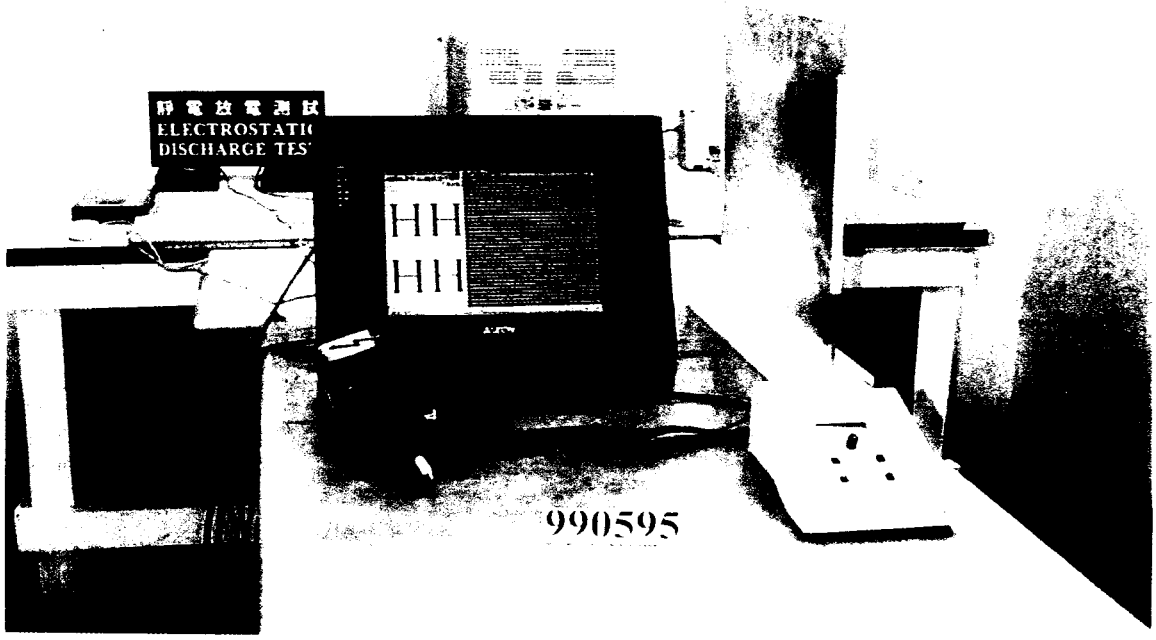
0363

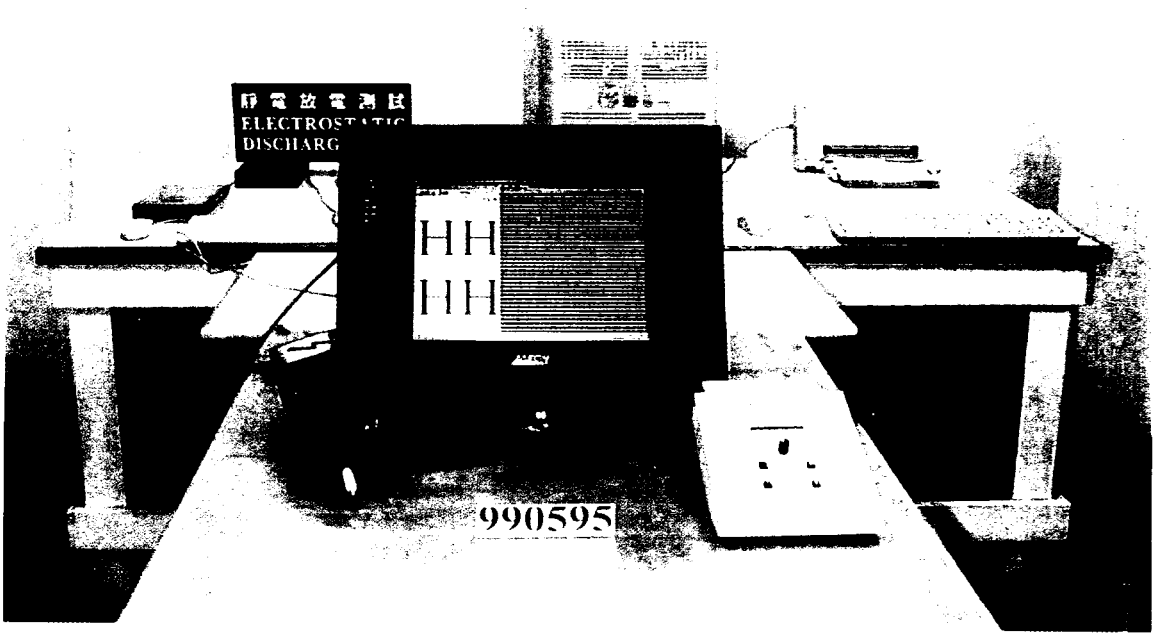
POWER HARMONIC & VOLTAGE FLUCTUATION / FLICKER TEST
(EN 61000-3-2, EN 61000-3-3)



0363

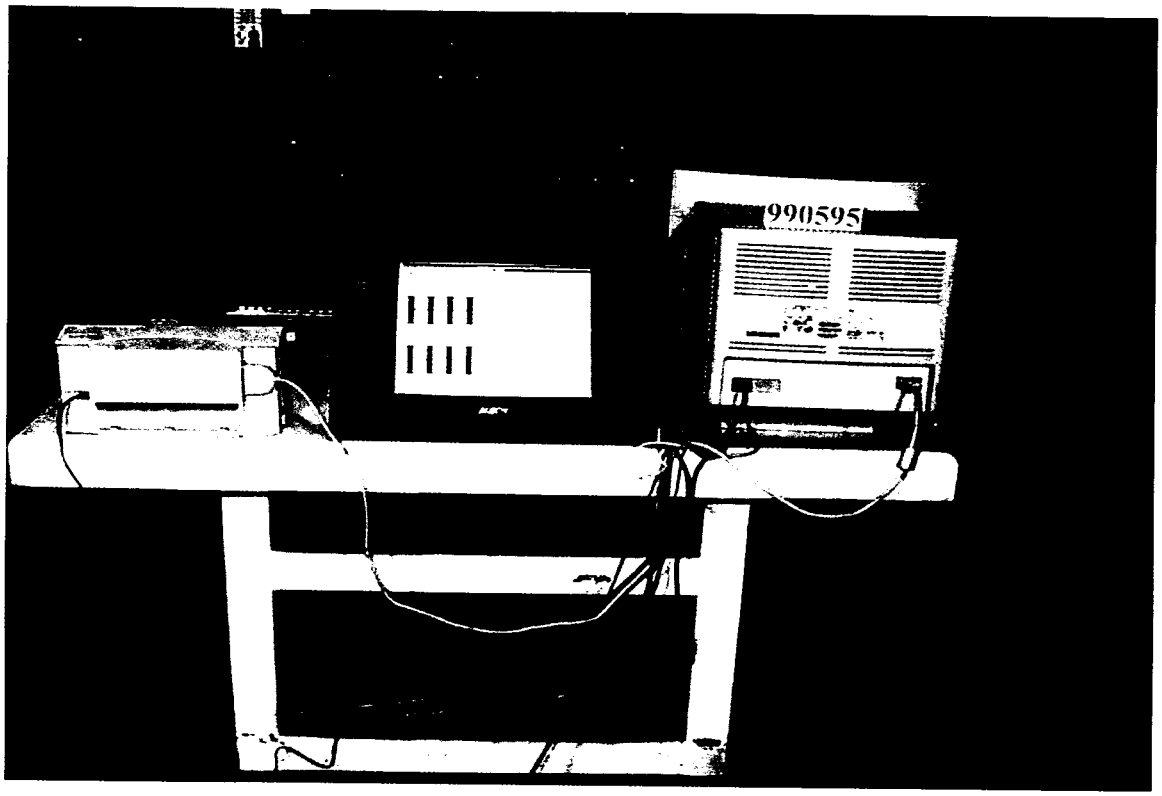
ELECTROSTATIC DISCHARGE TEST (EN 61000-4-2)





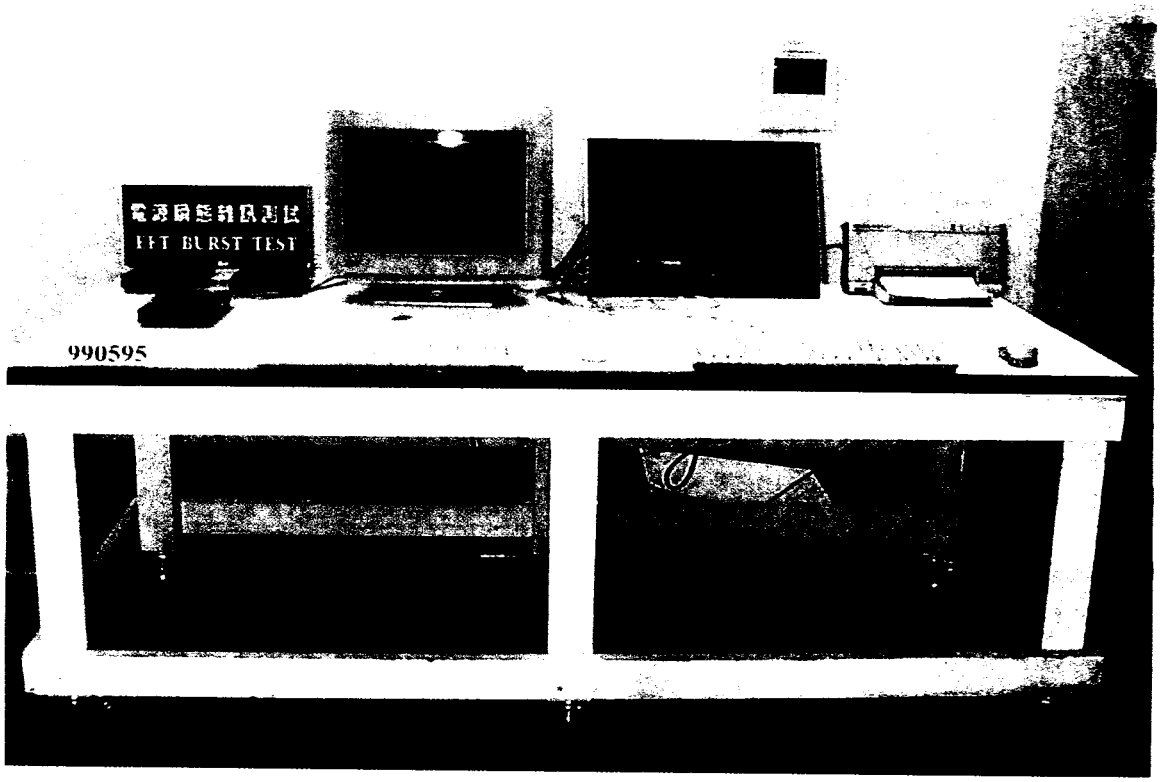
0363

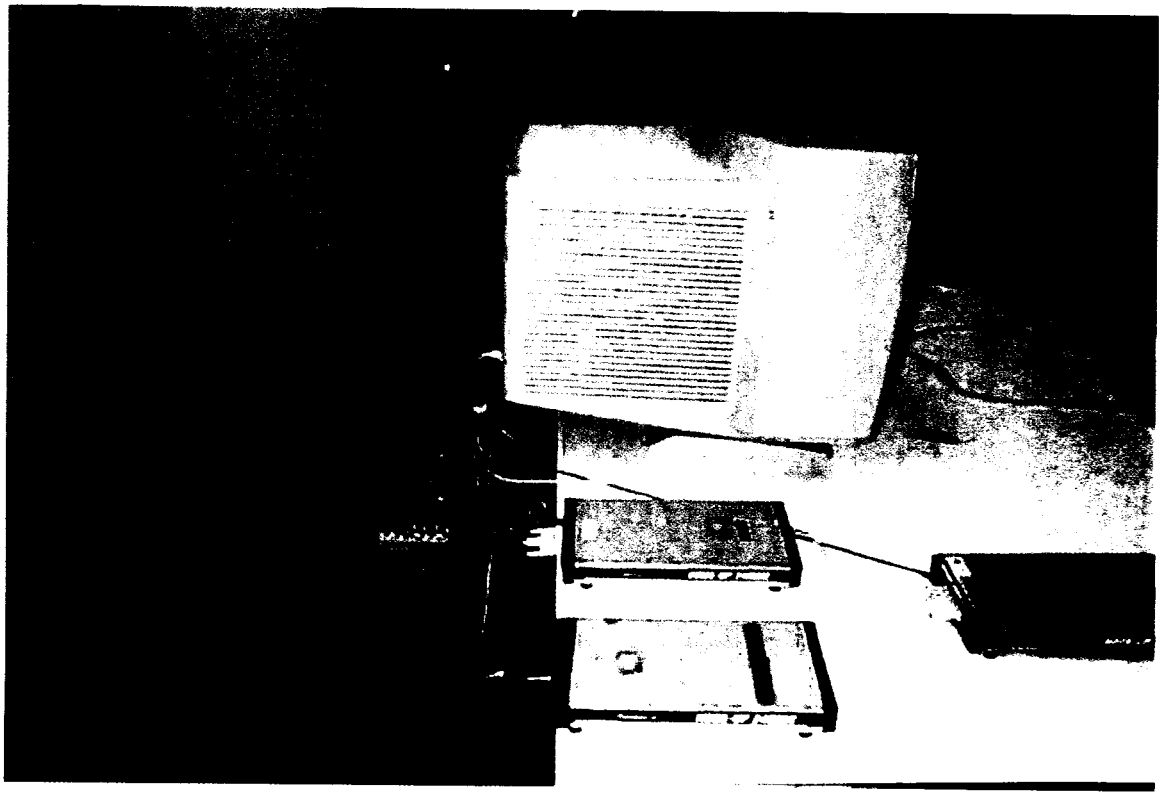
RADIATED ELECTROMAGNETIC FIELD
(ENV 50140 & ENV 50204)



0363

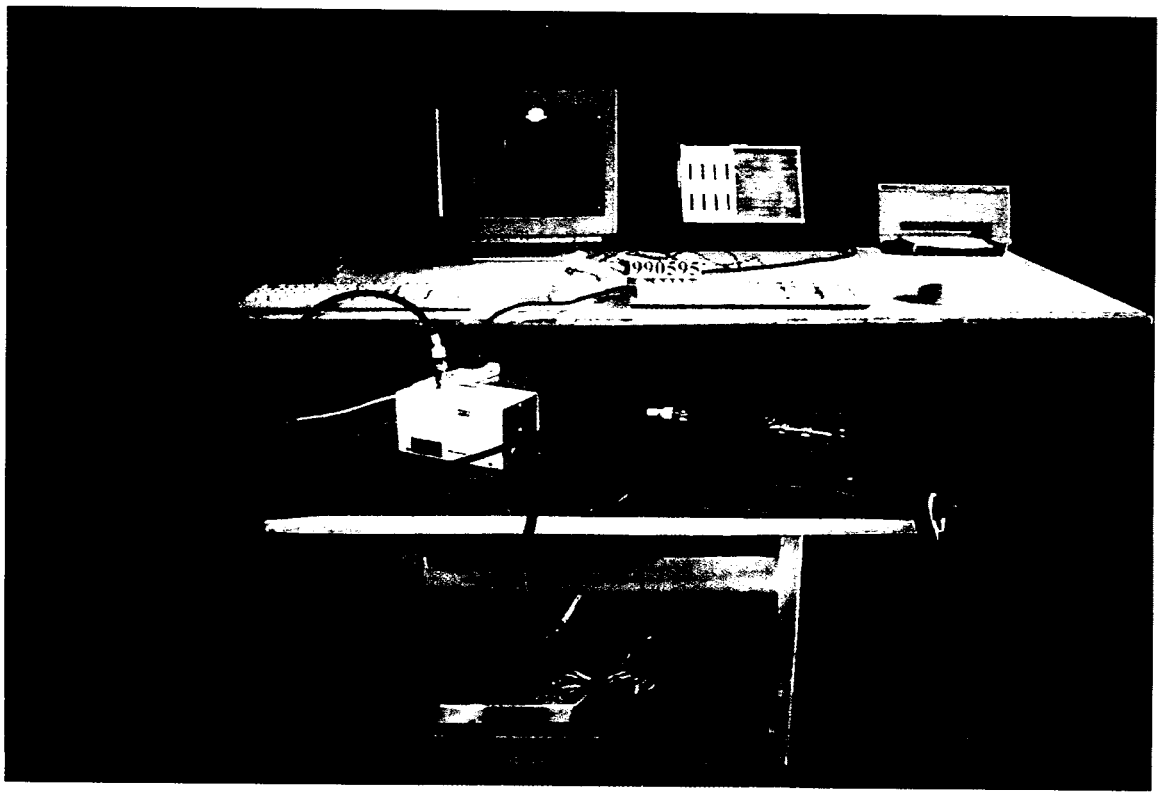
FAST TRANSIENTS/BURST TEST (EN 61000-4-4)





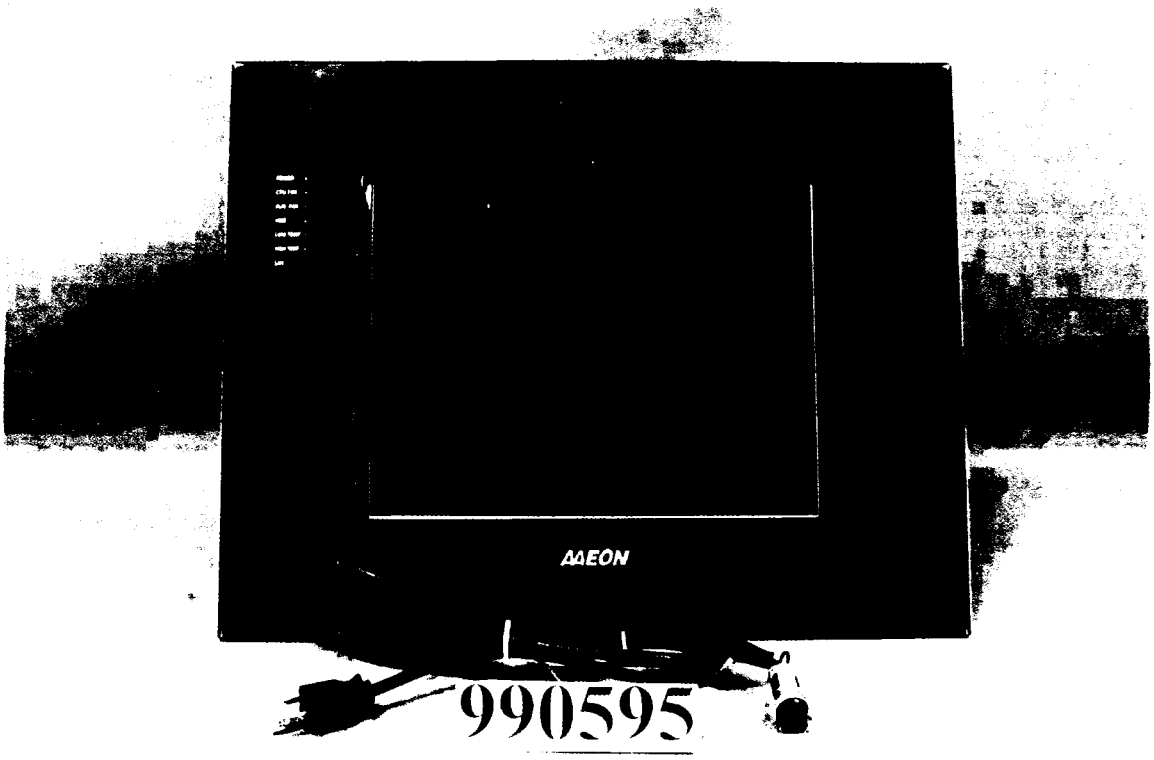
0363

CONDUCTED DISTURBANCE, INDUCED BY RADIO-FREQUENCY FIELDS TEST (ENV 50141)



APPENDIX 2

PHOTOGRAPHS OF EUT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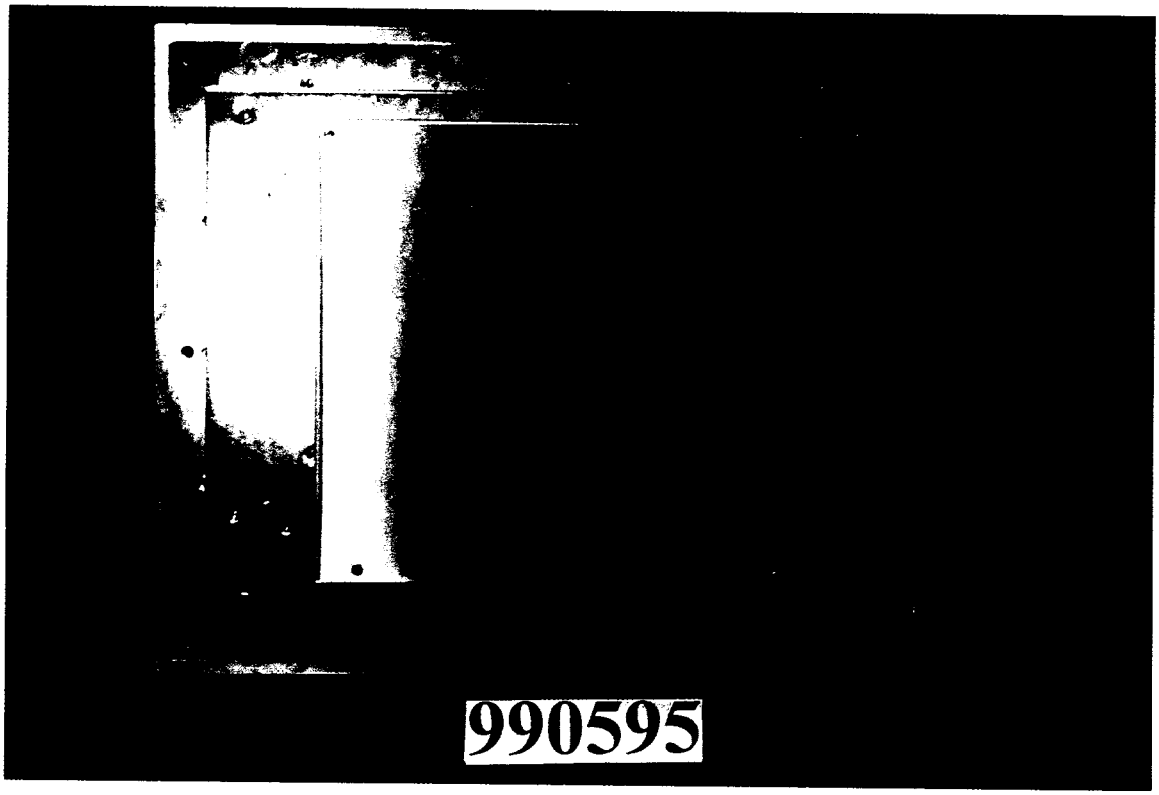
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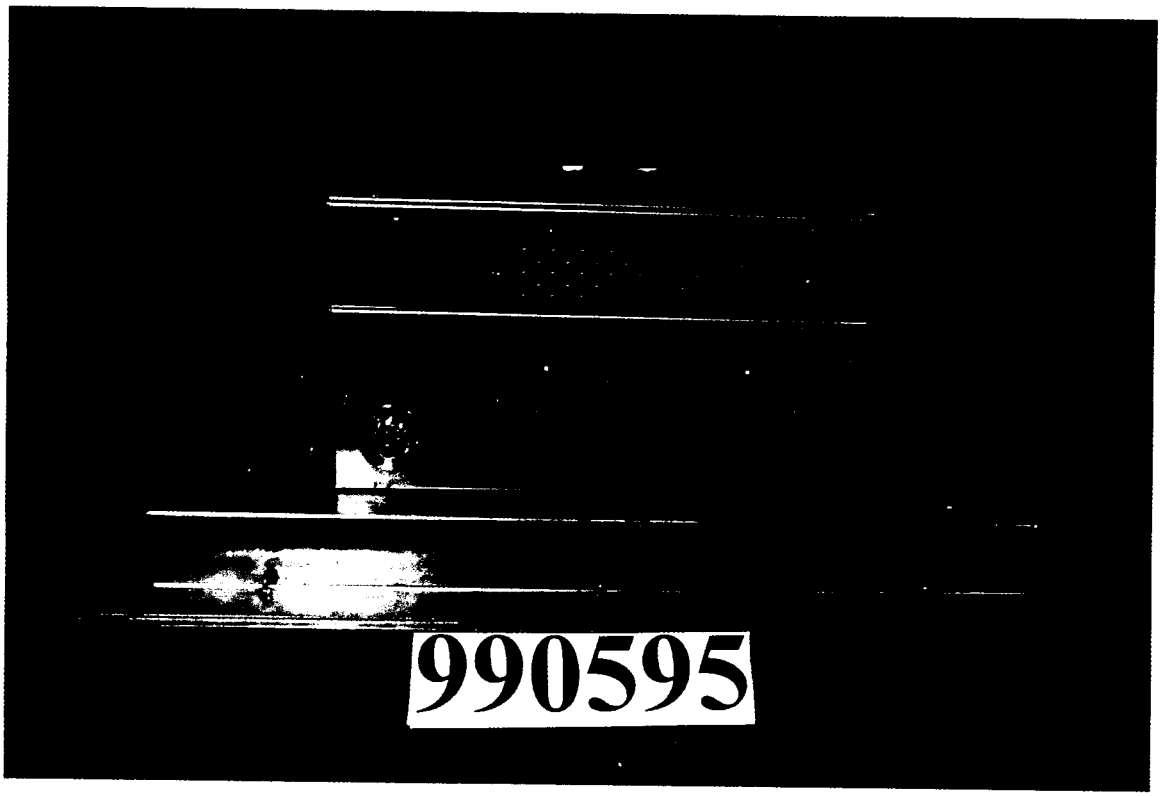
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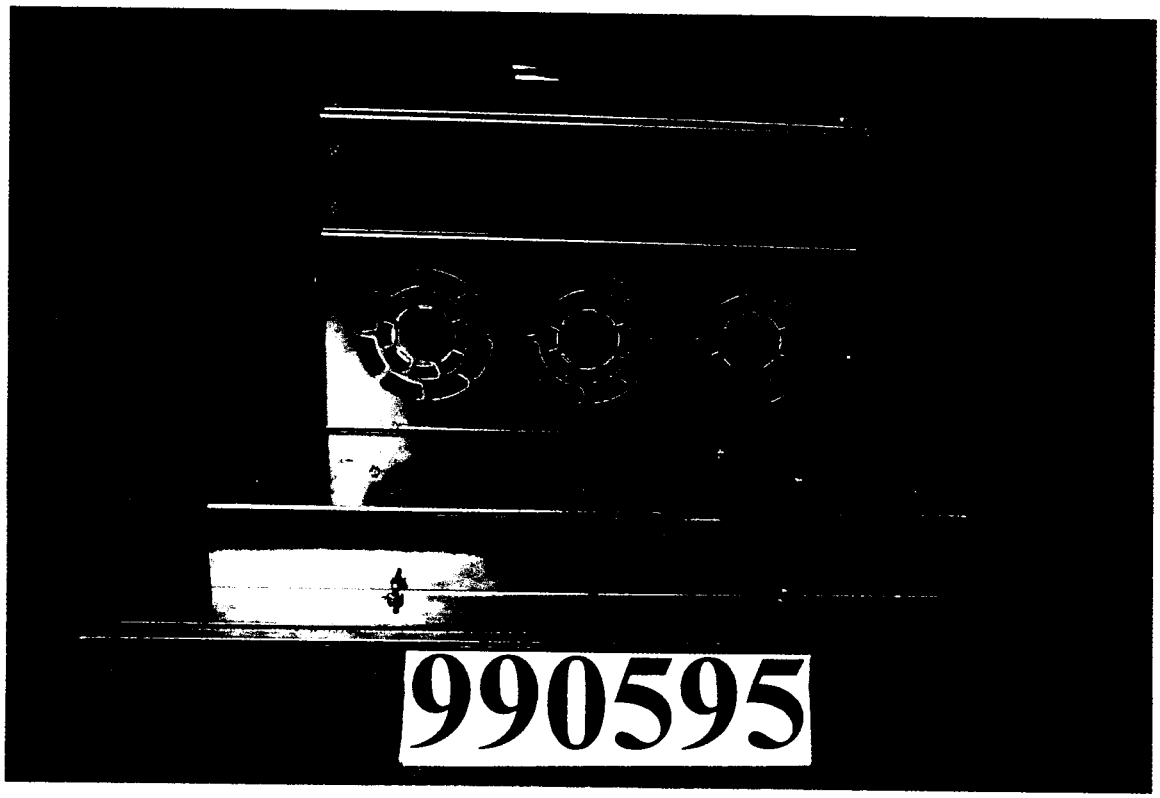
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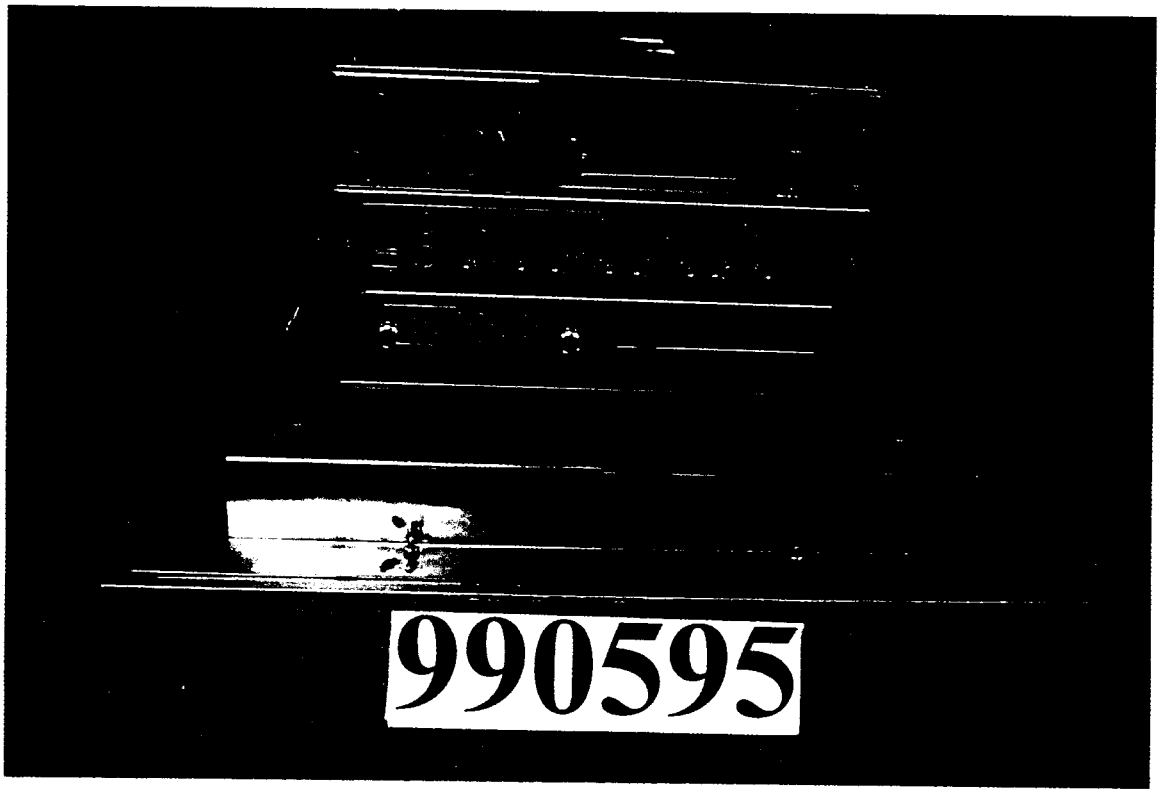
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