CE

EMC COMPLIANCE TEST REPORT

FOR

Industrial Panel PC

MODEL: AMB-2023HTT

REPORT NUMBER: 02E9956

ISSUE DATE: February 21, 2002

Prepared for

AAEON Technology Inc.
5F, No. 135, Lane 235, Pao Chiao Rd.,
Hsin-Tien City, Taipei,
Taiwan, R. O. C.

Prepared by

COMPLIANCE ENGINEERING SERVICES, INC.
No. 199, CHUNG SHENG ROAD
HSIN TIEN CITY, TAIPEI, TAIWAN R.O.C.
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NVLAP®

LAB CODE: SL2-IN-E-0005

COMPLIANCE
Engineering Services, Inc.
FCC, VCCI, CISPR, CE
UL, CSA, TÜV, VDE
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TAIPEI : P.O.BOX 17-82, HSIN TIEN, TAIWAN, R.O.C.

CE

EC-Declaration of Conformity

For the following equipment:

Industrial Panel PC

(Product Name)

AMB-2023HTT

(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:

V	EN 55022: 1997
V	EN 61000-3-2: 1995 + A1: 1998 + A2: 1998 + A14: 2000
V	EN 61000-3-3: 1995
V	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 61000-4-8: 1993, 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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COMPLIANCE ENGINEERING SERVICES, INC. DOCUMENT NO:CCSTP4003C
NO.199, CHUNG SHENG ROAD, HSIN TIEN, TAIPEI, TAIWAN R.O.C. TEL:(02)2217-0894/FAX:2217-1254

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VERIFICATION OF COMPLIANCE

Equipment Under Test:	Industrial Panel PC
Trade Name:	N/A
Model Number:	AMB-2023HTT
Agency Series:	N/A
Applicant:	**AAEON Technology Inc.** 5F, No. 135, Lane 235, Pao Chiao Rd., Hsin-Tien City, Taipei, Taiwan, R. O. C.
Manufacturer:	**AAEON 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: 1997 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:	02E9956
Date of test:	February 06, 2002 ~ February 21, 2002
Deviation:	N/A
Condition of Test Sample:	Normal

The above equipment was tested by Compliance Engineering Services, Inc. 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: Rick Yeo

RICK YEO / EMC MANAGER

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GENERAL INFORMATION

Applicant:	**AAEON Technology Inc.** 5F, No. 135, Lane 235, Pao Chiao Rd., Hsin-Tien City, Taipei, Taiwan, R. O. C.
Contact Person:	Milo Wang / Q. E. Dept. Engineer
Manufacturer:	**AAEON Technology Inc.** 5F, No. 135, Lane 235, Pao Chiao Rd., Hsin-Tien City, Taipei, Taiwan, R. O. C.
File Number:	02E9956
Date of Test:	February 06, 2002 ~ February 21, 2002
Equipment Under Test:	Industrial Panel PC
Model Number:	AMB-2023HTT
Agency Series:	N/A
Type of Test:	EMC Directive 89/336/EEC for CE Marking
Technical Standards:	EN 55022: 1997 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:	**Compliance Engineering Services, Inc.** No. 199, Chung Sheng Road Hsin Tien City, Taipei Taiwan, R. O. C.

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SYSTEM DESCRIPTION

EUT Test Procedure:

1. Windows 98 Boots System.
2. Run Winemc.Exe To Activate All Peripherals And Display “H” Pattern On Monitor Screen.
3. Data Through the EUT and Transmit Between Server Notebook and EUT Via RJ45 Cable.

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PRODUCT INFORMATION

Housing Type:	METAL
EUT Power Rating:	DC 5V/12 to AC / DC Power Supply
AC power during Test:	230VAC / 50Hz From AC Power Supply
AC / DC Power Supply Manufacturer:	SKY NET / Magic Power Technology Co., Ltd.
AC / DC Power Supply Model Number:	SNP-8071-A / MDP-8071-S
AC Power Cord Type:	Un-shielded, 1.8m (Detachable)
DC Cable Type:	Un-Shielded, 0.7m (Detachable)
EUT I/O Cable:	Shielded, 1.1m (Detachable W/ a core)
OSC/Clock Frequencies：	Y1= 14.318MHz ; OSC1= 25MHz ; OCS2= 14.318MHz; OSC3 = 24MHz

I/O Port of EUT:

I/O PORT TYPES	Q' TY	TESTED WITH
1). PS/2 Port	1	1
2). RJ45 Port	1	1
3). DB9 Port (Serial)	2	2
4). DB50 Port (LCD Panel)	1	1
5). DB25 Port (Parallel)	1	1
6). DB15 (VGA)	1	1

Note: N/A

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SUPPORT EQUIPMENT

Host Computer:

Equipment	Model#	Serial#	Trade Name
CPU	CELERON-366	N/A	INTEL
Main Board	SBC-658	N/A	N/A
LCD Board	TB-901E	N/A	N/A
LCD Panel (12")	LTM12C289	N/A	Toshiba
BackPlane	HP5352	N/A	N/A
CD-ROM	CD-2800E	N/A	NEC
HDD (20G)	MHK2060AT	N/A	FUJITSU
FDD	FD1238T	N/A	NEC
AC Power Supply	SNP-8071-A	N/A	SKY NET
DC Power Supply	MPD-8071-S	N/A	Magic Powr Technology co., Ltd.

External Peripheral Devices:

No	Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
1.	Mouse	M-M35	LZA73204122	DZL210365	LOGITECH	Shielded, 1.9m	N/A
2.	Mouse	M-S34	LZED1303050	DZL211029	LOGITECH	Shielded, 1.9m	N/A
3.	Keyboard	6311-TW4C/6	N/A	DoC	ACER	Shielded, 1.7m	N/A
4.	Modem	2496CF	N/A	DoC	DATATRONICS	Shielded, 1.4 m	Unshielded, 1.8m
5.	Server Notebook	PS181L-03T08	12089097J	N/A	Toshiba	Unshielded, 30m (RJ45)	Unshielded, 1.8m
6.	Monitor	PH19HS	N/A	DoC	SAMSUNG	Shielded, 1. 8m With a core	Unshielded, 1.8m
7.	Printer	2225C	2550540697	BS46XU2225C	HP	Shielded, 1.8 m	Unshielded, 1.8m

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals.
Grounding: Grounding was in accordance with the manufacturer' s requirements and conditions for the intended use.

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TEST EQUIPMENT LIST (EMISSION)

Instrumentation: The following list contains equipment used at Compliance Engineering Services, Inc.. 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:** #E

Equipment	Manuf.	Model No.	Serial No.	Cal Date	Due Date
SPECTRUM ANALYZER	**H.P.**	**8566B**	**2937A06102**	**06/06/01**	**06/05/02**
SPECTRUM DISPLAY	**H.P.**	**85662A**	**2848A18276**	**06/06/01**	**06/05/02**
QUASI-PEAK DETECTOR	**H.P.**	**85650A**	**2811A01439**	**06/07/01**	**06/06/02**
AMPLIFIER	**H.P.**	**8447D B**	**1644A02328**	**05/07/01**	**05/06/02**
ANTENNA	**EMCO**	**3142**	**1310**	**06/30/01**	**06/29/02**
CABLE	**BELDEN**	**9913**	**N-TYPE07**	**01/02/02**	**01/01/03**
CABLE (1-18GHz)	**JYEBAO**	**N30-L142-1 / 9**	**N/A**	**05/02/01**	**05/01/02**
AMPLIFIER (1-26GHz)	**MITEQ**	**NSP2600-44**	**646455**	**10/24/01**	**10/23/02**

☒ **Conducted Area Test Site:** Conducted Room

Equipment	Manuf.	Model No.	Serial No.	Cal Date	Due Date
TEST RECEIVER	**R&S**	**ESHS20**	**840455/006**	**03/15/01**	**03/14/02**
LISN	**SOLAR**	**8012-50-R-24-BNC**	**8305114**	**07/23/01**	**07/22/02**
LISN(EUT)	**EMCO**	**3825/2**	**1435**	**01/16/02**	**01/15/03**

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
HP / Harmonic & Flicker Tester	6842A	3531A-000142	06/15/2001	06/14/2002

For ESD test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
HAEFELY TRENCH / ESD Generator	PESD 1600	H710203	09/01/2001	08/31/2002

For Radiated Electromagnetic Field immunity Measurement:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
R&S / Signal Generator	SMY 02	DE13751	01/10/2002	01/09/2003
IFI / "E" Field sensor/ Light Modulator Transmitter	EFS-5	713-0695	06/29/2001	06/28/2002
IFI / Combination Amplifier	SMX100	2067-1196	06/28/2001	06/27/2002
IFI / Leveling Pre-Amplifier	LPA-5B	714-0695	05/01/2001	04/30/2002
EMCO / Biconilog Antenna	3142	9609-1087	No Calibration Required	No Calibration Required

For Fast Transients/Burst test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
KeyTek Instruments / EFT Generator	E421	9502326	11/01/2001	10/31/2002
KeyTek Instruments / Capacitive Clamp	CCL-4	9503290	No Calibration Required	No Calibration Required
HAEFELY TRENCH / Fast Transients/Burst Generator	PEFT- JUNIOR	583 333-117	08/21/2001	08/20/2002
HAEFELY TRENCH / Clamp	093 506.1	080 421.13	N/A	N/A

For Surge Immunity test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
Surger Generator KeyTek Instruments	E501	9502324	11/01/2001	10/31/2002
Telecom Lines Coupler DECOUPLER KeyTek Instruments	CM-TELCD	0104399	05/01/2001	04/30/2002
I/O Signal Line DECOUPLER KeyTek Instruments	CM-I/OCD	0103234	05/01/2001	04/30/2002
HAEFELY TRENCH / Surge Tester	PSUGER 4010	583 334-71	09/01/2001	08/31/2002

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For CS test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
R&S / Signal Generator	SMY 02	DE13751	01/10/2002	01/09/2003
IFI / Combination Amplifier	SMX100	2067-1196	06/28/2001	06/27/2002
IFI / Leveling Pre-Amplifier	LPA-5B	714-0695	05/01/2001	04/30/2002
FISCHER / Power Line Coupling Decoupling Network	FCC-801-M3-16A	99122	10/27/2001	10/26/2002
FISCHER / Bulk Current Injection Probe	F-120-9B	54	10/30/2001	10/29/2002
Narda / High Power Attenuator	769-6	02541	10/26/2001	10/25/2002

For Power Frequency Magnetic Field test :

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
Haefely / Magic Field Tester	MAG 100.1	081436-02	No Calibration Required	No Calibration Required
Extech Electronics / Frequency Converter	CFC-105	810390	No Calibration Required	No Calibration Required
CHY/ AC/DC Clamp Meter	932C	2K0900285	10/25/2001	10/24/2002

For Voltage Dips/Short Interruption and Voltage Variation Immunity test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
Haefely / Dips/Inerruption/Variations Tester	PLINE 1610	081568-06	08/06/2001	08/05/2002
FLUKE / 79 Series Ii Multimeter	79-II	66400868	07/03/2001	07/02/2002

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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 (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 DC 5V/12V power through AC Power Supply and 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, 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 were scanned during the preliminary test:

Mode:

No.	Mode of operation	Date	Data Report/Plot No.
1	**LCD Panel Separate / 800X600**	**02/06/2002**	**9956E#(47, 76)**
2	**LCD Panel Separate / 1024X768**	**02/06/2002**	**9956E#(56)**
3	**LCD Panel Separate / 1600X1200**	**02/06/2002**	**9956E#(65)**
4	**LCD Panel Combine with PC / 800X600**	**02/07/2002**	**956E#(85, 112)**
5	**LCD Panel Combine with PC / 1024X768**	**02/06/2002**	**9956E#(94)**
6	**LCD Panel Combine with PC / 1600X1200**	**02/07/2002**	**9956E#(103)**

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.

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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 A.V. detector.

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

Data Sample:

Freq (MHz)	Meter Reading (dBuV)	C.F. (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Margin (dB)	Reading Type (P/Q/A)	Line (L1/L2)
x.xx	**x.xx**	**x.xx**	**48.38**	**66.00**	**-17.62**	**A**	**L1**

C.F.(Correction Factor)=Insertion Loss + Cable Loss
Corrected Reading = Metering Reading + C.F.
Margin=Corrected Reading - Limits

P=Peak Reading L1=Hot
Q=Quasi-peak L2=Neutral
A=Average Reading

Comments: **N/A**

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.

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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 (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 DC 5V/12V power source from AC Power Supply (AC 230V/50Hz) to 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 were scanned during the preliminary test:

Mode:

No.	Mode of operation	Date	Data Report/ Plot No.
1	**DC Power/ LCD Panel Separate / 800X600**	**02/08/2002**	**9462F#(26, 27)**
2	**DC Power/ LCD Panel Separate / 1024X768**	**02/08/2002**	**9462F#(28)**
3	**DC Power/ LCD Panel Separate / 1600X1200**	**02/08/2002**	**9462F#(29)**
4	**DC Power/ LCD Panel Combine with PC / 800X600**	**02/07/2002**	**9462F#(15, 19)**
5	**AC Power/ LCD Panel Combine with PC / 800X600**	**02/07/2002**	**9462F#(06, 08)**
6	**AC Power/ LCD Panel Combine with PC / 1024X768**	**02/07/2002**	**9462F#(11)**
7	**AC Power/ LCD Panel Combine with PC / 1600X1200**	**02/07/2002**	**9462F#(14)**
8	**AC Power/ LCD Panel Separate / 800X600**	**02/07/2002**	**9462F#(02, 03)**

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.

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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 Peak reading is presented. If EUT emission level was less-2dB to the limit, then the emission signal was re-checked using a Q.P. detector.

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

Data Sample:

Freq (MHz)	Meter Reading (dBuV)	C.F. (dB/m)	Corrected Reading (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading Type P/Q/A	Pol. H/V
x.xx	**x.xx**	**x.xx**	**40.82**	**47.00**	**-6.18**	**P**	**V**

C.F.(Correction Factor)=Antenna Factor + Cable Loss + Attenuator(6dB) - Amplifier Gain
Corrected Reading = Metering Reading + C.F.
Margin=Corrected Reading – Limits

P=Peak Reading
Q=Quasi-peak
A=Average Reading

H=Horizontal Polarization/Antenna
V=Vertical Polarization/Antenna

Comments: **N/A**

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.

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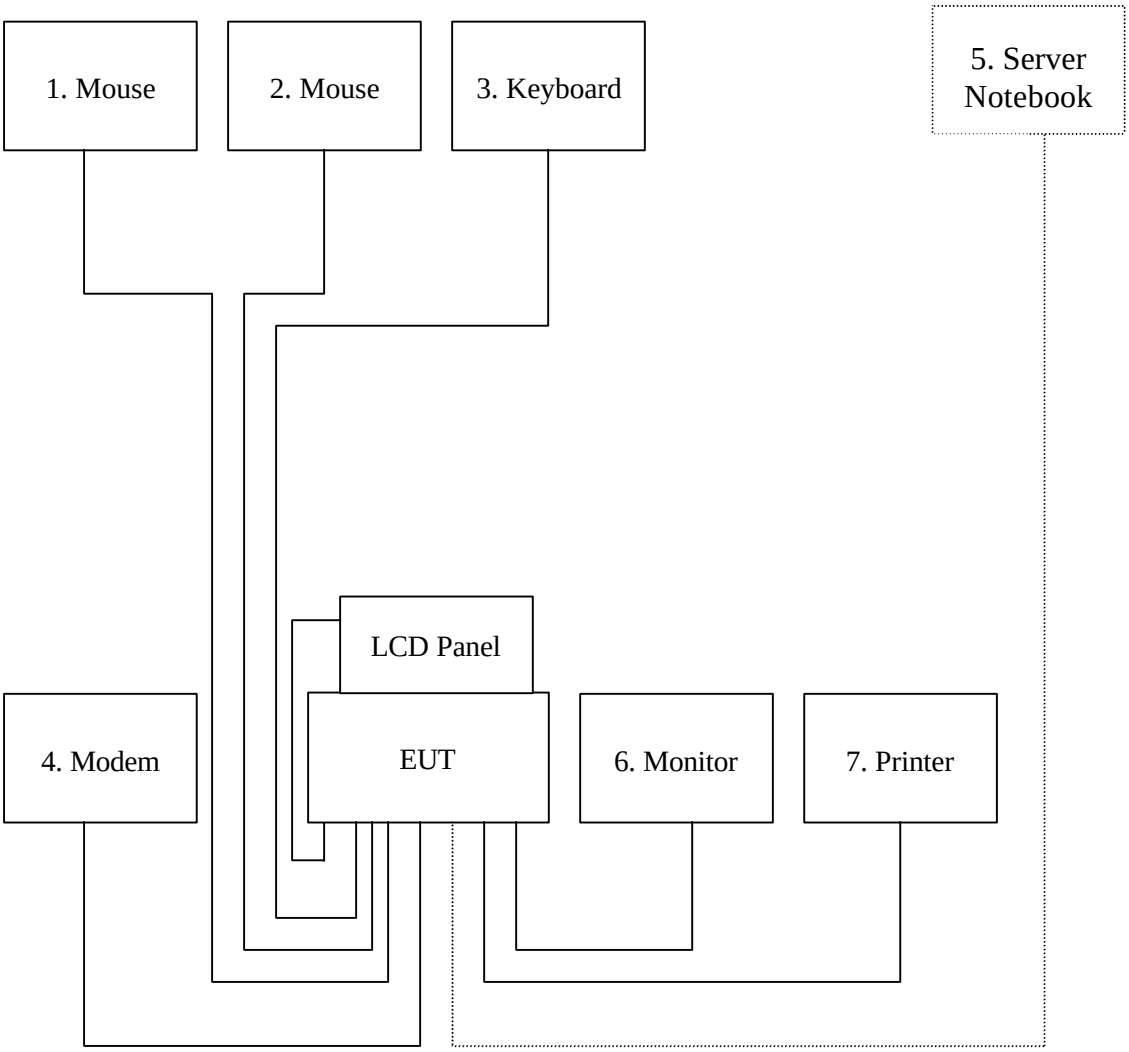
BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators

EUT: Industrial Panel PC

Model Number: AMB-2023HTT



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SUMMARY DATA

(LINE CONDUCTED TEST)

Model Number: AMB-2023HTT **Location:** Conducted Room

Tested by: Cliff Lai

Test Model: Mode 1

Test Results: Passed

Temperature: 17℃ **Humidity:** 79%RH

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

Six Highest Conducted Emission Readings							
Frequency Range Investigated				150 kHz TO 30 MHz			
Freq (MHz)	Meter Reading (dBuV)	C.F. (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Margin (dB)	Reading Type (P/Q/A)	Line (L1/L2)
0.152	**55.43**	**0.02**	**55.45**	**79.00**	**-23.55**	**P**	**L1**
0.188	**51.07**	**0.02**	**51.09**	**79.00**	**-27.91**	**P**	**L1**
24.790	**42.86**	**0.50**	**43.36**	**73.00**	**-29.64**	**P**	**L1**
0.155	**51.82**	**0.02**	**51.84**	**79.00**	**-27.16**	**P**	**L2**
0.188	**50.49**	**0.02**	**50.51**	**79.00**	**-28.49**	**P**	**L2**
24.790	**52.97**	**0.50**	**53.47**	**73.00**	**-19.53**	**P**	**L2**

C.F.(Correction Factor)=Insertion Loss + Cable Loss

Corrected Reading = Metering Reading + C.F.

Margin=Corrected Reading - Limits

P=Peak Reading L1=Hot

Q=Quasi-peak L2=Neutral

A=Average Reading

Comments: **N/A**

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SUMMARY DATA
(RADIATED EMISSION TEST)

Model Number: AMB-2023HTT **Location:** Site # D

Tested by: Cliff Lai **Polar:** Vertical / Horizontal– 10m

Test Mode: Mode 1

Test Results: Passed

Temperature: 17℃ **Humidity:** 79%RH

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

Frequency Range Investigated (30 MHz TO 1000 MHz)							
Freq (MHz)	Meter Reading (dBuV)	C.F. (dB/m)	Corrected Reading (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Reading Type P/Q/A	Pol. H/V
33.038	**46.36**	**-8.76**	**37.60**	**40.00**	**-2.40**	**Q**	**V**
173.290	**50.43**	**-13.00**	**37.43**	**40.00**	**-2.57**	**Q**	**V**
189.820	**50.90**	**-12.02**	**38.88**	**40.00**	**-1.12**	**Q**	**V**
388.000	**51.10**	**-4.76**	**46.34**	**47.00**	**-0.66**	**Q**	**V**
404.700	**49.78**	**-4.40**	**45.38**	**47.00**	**-1.62**	**Q**	**V**
189.800	**51.80**	**-12.02**	**39.78**	**40.00**	**-0.22**	**Q**	**H**

C.F.(Correction Factor)=Antenna Factor + Cable Loss - Amplifier Gain (+ Attenuator 3dB)

Corrected Reading = Metering Reading + C.F.

Margin=Corrected Reading - Limits

P=Peak Reading H=Horizontal Polarization/Antenna

Q=Quasi-peak V=Vertical Polarization/Antenna

A=Average Reading

Comments: **N/A**

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

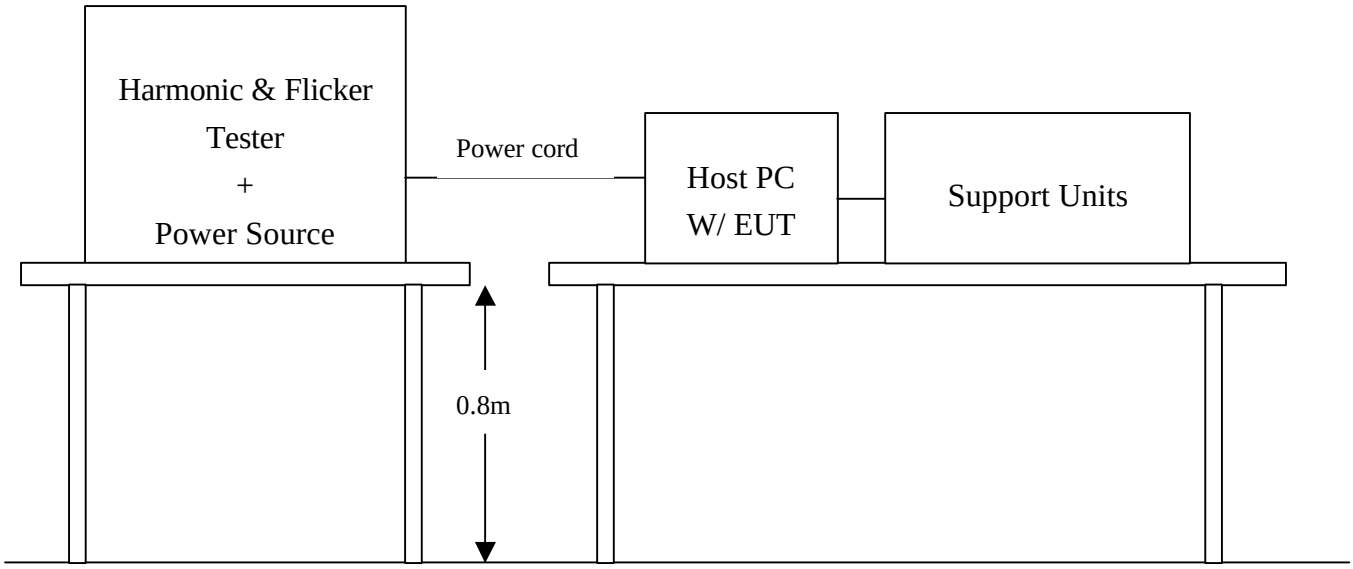
POWER HARMONICS MEASUREMENT

Mode Type : AC Power Source
Port : AC mains
Basic Standard : EN 61000-3-2: 1995 + A1: 1998 + A2: 1998 + A14: 2000
Limits : CLASS D
Tester : Bill Huang
Temperature : 23℃
Humidity : 60 %

VOLTAGE FLUCTUATION/FLICKER MEASUREMENT

Mode Type : AC Power Source
Port : AC mains
Basic Standard : EN 61000-3-3 : 1995
Limits : Section 5 of EN 61000-3-3
Tester : Bill Huang
Temperature : 23℃
Humidity : 60 %

Block Diagram of Test Setup:



Result: Please see the attached test data.

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Approved by: 蔣政忠

Signature: James Date: 2/21/02

Final Test Result: PASS

Settings and Test Conditions Compliant to the Standard: Yes

Test Equipment Used:

Agilent 6842A Harmonic/Flicker Test System with serial number:
HFTS Software Version: A.05.03
Date Last Calibrated:

Test Equipment Settings:

Line Voltage: 230.00 V	Current Measurement Range: High
Line Frequency: 50 Hz	Measurement Window Type: Rectangular
Device Class: D	Measurement Delay: 10 seconds
RMS Current Limit: 13.1 A	Quasi-stationary Test Duration: 30.00 minutes
Peak Current Limit: 80.8 A	Class Determination Pre-test Duration: 10.00 seconds
Number of Records: 5625	

Overrides:

Test Limit Source (Power Measurements/Statistics): Maximum
Power Overrides: None
Test Limit Overrides: None

Pre-test Results for Class Determination:

Percent in Envelope: 100.0%	Voltage THD Out-of-Specification?: No
Class D Equipment?: Yes	Fundamental Current: 0.161 A

RMS Voltage: 229.9 V	RMS Current: 0.4 A	Real Power: 43.4 W
Frequency: 50.0 Hz	Peak Current: 1.7 A	Apparent Power: 96.3 VA
Voltage THD: 0.03%	Current THD: 87.86%	Power Factor: 0.451
Maximum Power: 43.4 W	Mean Power: 43.4 W	

Active Power Statistics:

100th Percentile: 43.4 W	99th Percentile: 43.4 W	95th Percentile: 43.4
90th Percentile: 43.4 W	50th Percentile: 43.4 W	

Total Number of Failures:	Total Number of Errors:
None	None

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Pre-Test Source Voltage Harmonics Data:

Harmonic Number	Limit (%)	Limit (Volts)	Max (%)	Max (Volts)
Fund.			100.0	229.865
2	0.20	0.460	0.004	0.010
3	0.90	2.069	0.008	0.018
4	0.20	0.460	0.004	0.008
5	0.40	0.919	0.010	0.023
6	0.20	0.460	0.001	0.002
7	0.30	0.690	0.010	0.023
8	0.20	0.460	0.001	0.002
9	0.20	0.460	0.011	0.026
10	0.20	0.460	0.002	0.004
11	0.10	0.230	0.011	0.025
12	0.10	0.230	0.002	0.004
13	0.10	0.230	0.012	0.028
14	0.10	0.230	0.001	0.001
15	0.10	0.230	0.007	0.015
16	0.10	0.230	0.000	0.001
17	0.10	0.230	0.009	0.022
18	0.10	0.230	0.001	0.002
19	0.10	0.230	0.007	0.015
20	0.10	0.230	0.002	0.006
21	0.10	0.230	0.006	0.013
22	0.10	0.230	0.003	0.006
23	0.10	0.230	0.004	0.008
24	0.10	0.230	0.002	0.005
25	0.10	0.230	0.002	0.004
26	0.10	0.230	0.001	0.002
27	0.10	0.230	0.005	0.012
28	0.10	0.230	0.001	0.003
29	0.10	0.230	0.003	0.008
30	0.10	0.230	0.001	0.002
31	0.10	0.230	0.005	0.012
32	0.10	0.230	0.001	0.002
33	0.10	0.230	0.004	0.009
34	0.10	0.230	0.002	0.004
35	0.10	0.230	0.003	0.008
36	0.10	0.230	0.001	0.002
37	0.10	0.230	0.002	0.006
38	0.10	0.230	0.002	0.004
39	0.10	0.230	0.003	0.007
40	0.10	0.230	0.001	0.002

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Final Test Data:

Harmonic Number	Standard Limit (A rms)	Maximum Value (A rms)	Maximum Value (% Limit)	Mean Value (A rms)	Mean Value (% Limit)	Standard Deviation (A rms)	Standard Deviation (% Limit)	Pass (P) or Fail (F)
Fund.		0.2182		0.2049		0.0014		
2		0.0015		0.0006		0.0003		
3	2.3000	0.2023	8.8	0.1898	8.3	0.0013	0.1	P
4		0.0015		0.0008		0.0002		
5	1.1400	0.1898	16.6	0.1790	15.7	0.0010	0.1	P
6		0.0011		0.0006		0.0001		
7	0.7700	0.1717	22.3	0.1634	21.2	0.0007	0.1	P
8		0.0010		0.0005		0.0002		
9	0.4000	0.1498	37.4	0.1443	36.1	0.0006	0.2	P
10		0.0009		0.0004		0.0002		
11	0.3300	0.1265	38.3	0.1228	37.2	0.0009	0.3	P
12		0.0008		0.0003		0.0002		
13	0.2100	0.1027	48.9	0.1001	47.7	0.0013	0.6	P
14		0.0006		0.0003		0.0001		
15	0.1500	0.0800	53.3	0.0775	51.6	0.0016	1.1	P
16		0.0006		0.0002		0.0001		
17	0.1324	0.0589	44.5	0.0561	42.4	0.0019	1.4	P
18		0.0006		0.0002		0.0001		
19	0.1184	0.0398	33.6	0.0370	31.2	0.0019	1.6	P
20		0.0007		0.0002		0.0001		
21	0.1071	0.0238	22.2	0.0213	19.8	0.0017	1.6	P
22		0.0008		0.0003		0.0001		
23	0.0978	0.0125	12.8	0.0111	11.4	0.0008	0.8	P
24		0.0007		0.0003		0.0001		
25	0.0900	0.0137	15.2	0.0105	11.6	0.0006	0.6	P
26		0.0008		0.0004		0.0001		
27	0.0833	0.0174	20.9	0.0143	17.1	0.0007	0.8	P
28		0.0009		0.0004		0.0001		
29	0.0776	0.0183	23.6	0.0166	21.4	0.0003	0.4	P
30		0.0009		0.0004		0.0002		
31	0.0726	0.0174	24.0	0.0168	23.2	0.0002	0.2	P
32		0.0009		0.0004		0.0002		
33	0.0682	0.0159	23.2	0.0151	22.1	0.0005	0.7	P
34		0.0008		0.0004		0.0001		
35	0.0643	0.0130	20.2	0.0120	18.6	0.0007	1.1	P
36		0.0006		0.0003		0.0001		
37	0.0608	0.0095	15.6	0.0082	13.6	0.0008	1.4	P
38		0.0006		0.0003		0.0001		
39	0.0577	0.0058	10.1	0.0046	8.0	0.0007	1.2	P
40		0.0005		0.0002		0.0001		

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Final Test Statistics:

Harmonic Number	Standard Limit (A rms)	Maximum Value (A rms)	Maximum Value (% Limit)	>50% of Limit (Count)	>75% of Limit (Count)	>90% of Limit (Count)	>95% of Limit (Count)	>100% of Limit (Count)	Pass (P) or Fail (F)
Fund.		0.2182							
2		0.0015		0	0	0	0	0	
3	2.3000	0.2023	8.8	0	0	0	0	0	P
4		0.0015		0	0	0	0	0	
5	1.1400	0.1898	16.6	0	0	0	0	0	P
6		0.0011		0	0	0	0	0	
7	0.7700	0.1717	22.3	0	0	0	0	0	P
8		0.0010		0	0	0	0	0	
9	0.4000	0.1498	37.4	0	0	0	0	0	P
10		0.0009		0	0	0	0	0	
11	0.3300	0.1265	38.3	0	0	0	0	0	P
12		0.0008		0	0	0	0	0	
13	0.2100	0.1027	48.9	0	0	0	0	0	P
14		0.0006		0	0	0	0	0	
15	0.1500	0.0800	53.3	4935	0	0	0	0	P
16		0.0006		0	0	0	0	0	
17	0.1324	0.0589	44.5	0	0	0	0	0	P
18		0.0006		0	0	0	0	0	
19	0.1184	0.0398	33.6	0	0	0	0	0	P
20		0.0007		0	0	0	0	0	
21	0.1071	0.0238	22.2	0	0	0	0	0	P
22		0.0008		0	0	0	0	0	
23	0.0978	0.0125	12.8	0	0	0	0	0	P
24		0.0007		0	0	0	0	0	
25	0.0900	0.0137	15.2	0	0	0	0	0	P
26		0.0008		0	0	0	0	0	
27	0.0833	0.0174	20.9	0	0	0	0	0	P
28		0.0009		0	0	0	0	0	
29	0.0776	0.0183	23.6	0	0	0	0	0	P
30		0.0009		0	0	0	0	0	
31	0.0726	0.0174	24.0	0	0	0	0	0	P
32		0.0009		0	0	0	0	0	
33	0.0682	0.0159	23.2	0	0	0	0	0	P
34		0.0008		0	0	0	0	0	
35	0.0643	0.0130	20.2	0	0	0	0	0	P
36		0.0006		0	0	0	0	0	
37	0.0608	0.0095	15.6	0	0	0	0	0	P
38		0.0006		0	0	0	0	0	
39	0.0577	0.0058	10.1	0	0	0	0	0	P
40		0.0005		0	0	0	0	0	

Remarks

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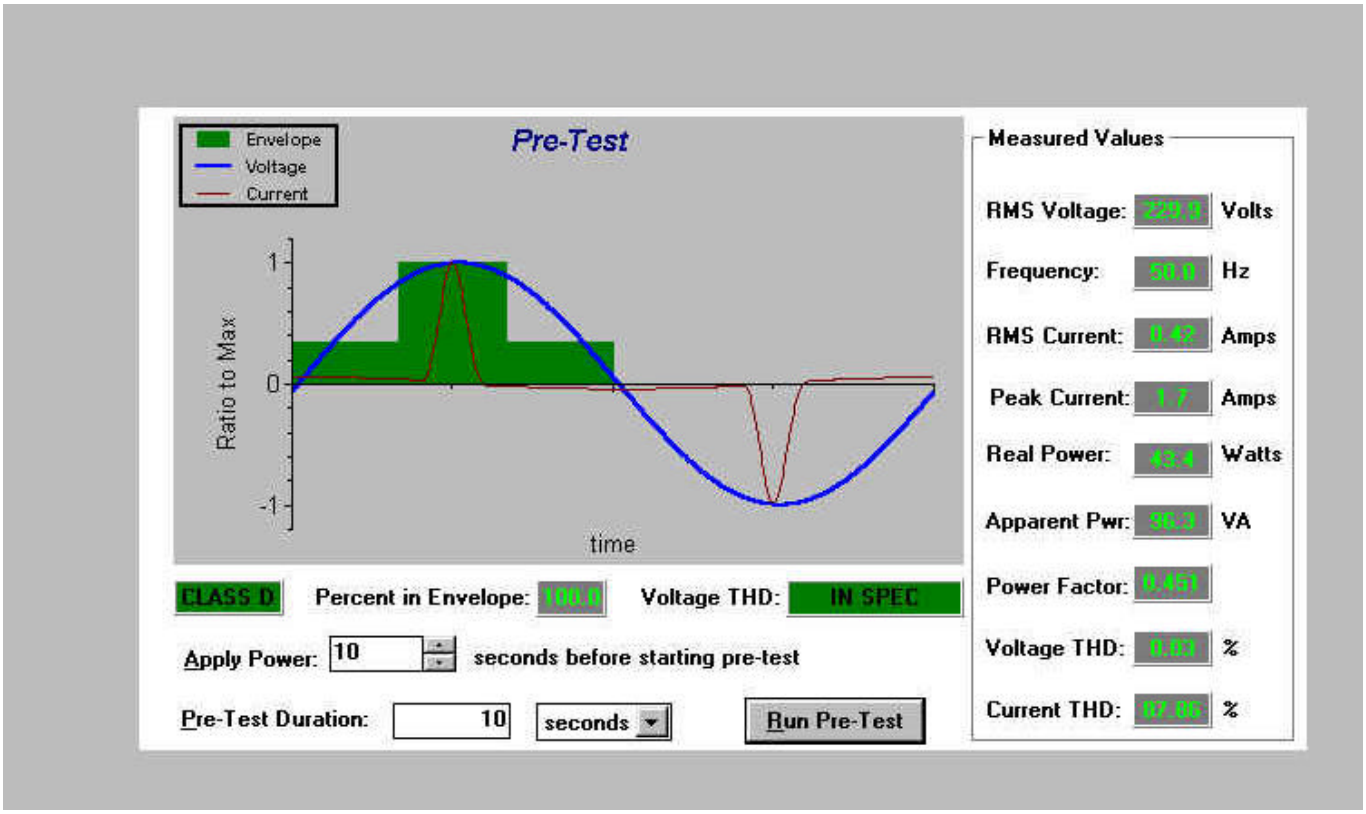

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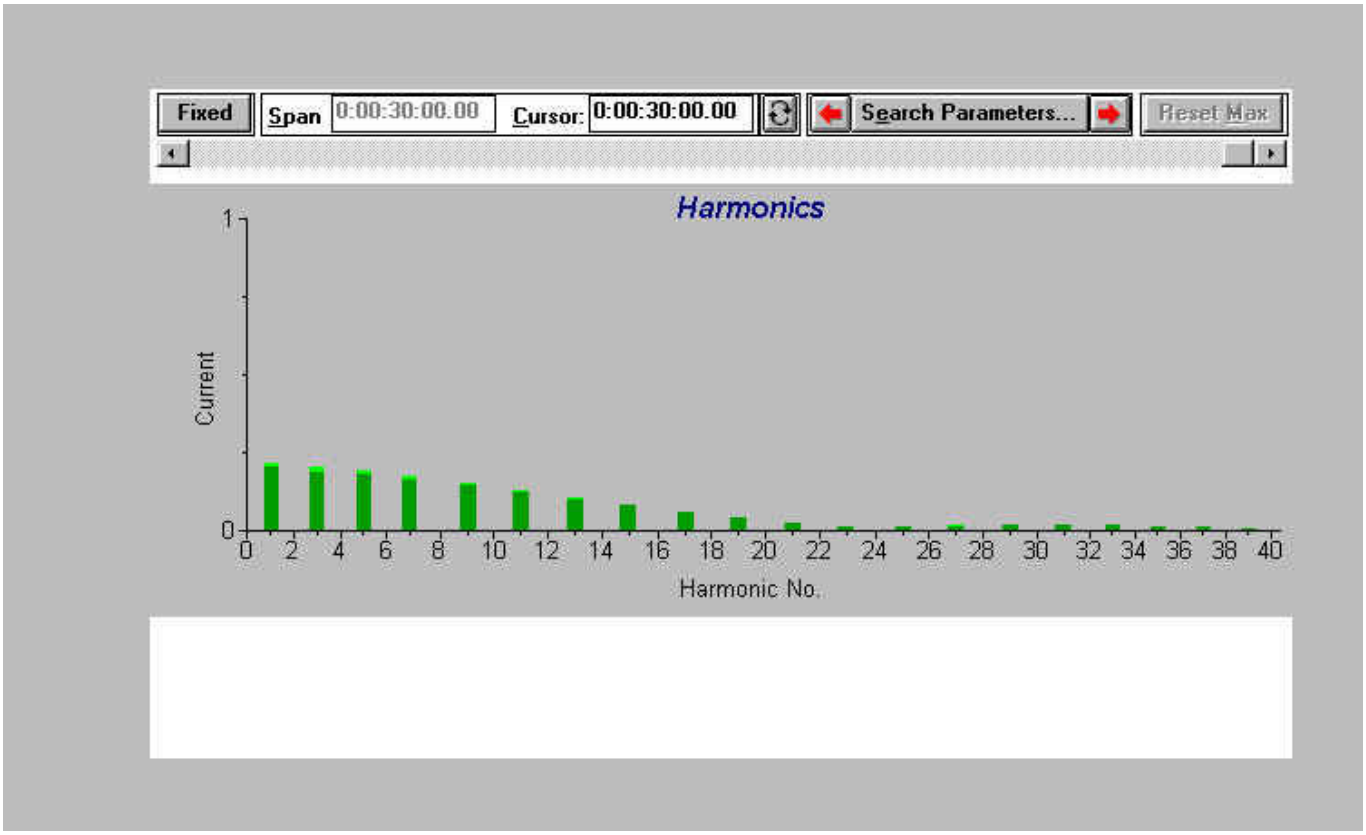

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Approved by: 蔣政忠

Signature: James Date: 2/1.02

Final Test Result: PASS

Settings and Test Conditions Compliant to the Standard: Yes

Test Equipment Used:

Agilent 6842A Harmonic/Flicker Test System with serial number:
HFTS Software Version: A.05.03
Date Last Calibrated:

Test Equipment Settings:

Line Voltage: 230.00 V
Line Frequency: 50 Hz
Measurement Delay: 10.0 seconds
RMS Current Limit: 13.1 A
Pst Integration Time: 10 minutes
Pst Integration Periods: 3
Test Duration: 00:30:00
Peak Current Limit: 80.8 A

Overrides:

Pst/Plt Test Limit Overrides: None
RMS Test Limit Overrides: None

Equipment Under Test Pre-test Results:

RMS Voltage: 229.9 V
Frequency: 50.0 Hz
Voltage THD: 0.04%
RMS Current: 0.4 A
Peak Current: 1.8 A
Current THD: 88.63%
Real Power: 43.6 W
Apparent Power: 100.1 VA
Power Factor: 0.436

Total Number of Failures:

Pst: 0
Plt: 0
Dc: 0
Dmax: 0
Dt: 0

Total Number of Errors:

None

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Final Test Summary:

Dmax:	0.0	Pst:	0.07	P_0.1:	0.01
Dc:	0.0	Plt:	0.07	P_1s:	0.01
Dt:	0.00	Plt Threshold:	0.65	P_3s:	0.01
				P_10s:	0.01
				P_50s:	0.01

Final Test Data by Integration Period:

Number of Integration Periods: 3

Integration Periods	Pst (P.U.)	P_0.1 (P.U.)	P_1.0s (P.U.)	P_3.0s (P.U.)	P_10s (P.U.)	P_50s (P.U.)	Dc (%)	Dmax (%)	Dt (seconds)	Pass(P) or Fail(F)
1	0.07	0.01	0.01	0.01	0.01	0.01	-----	-----	--------	N/A
2	0.07	0.01	0.01	0.01	0.01	0.01	-----	-----	--------	N/A
3	0.07	0.01	0.01	0.01	0.01	0.01	-----	-----	--------	N/A

Remarks

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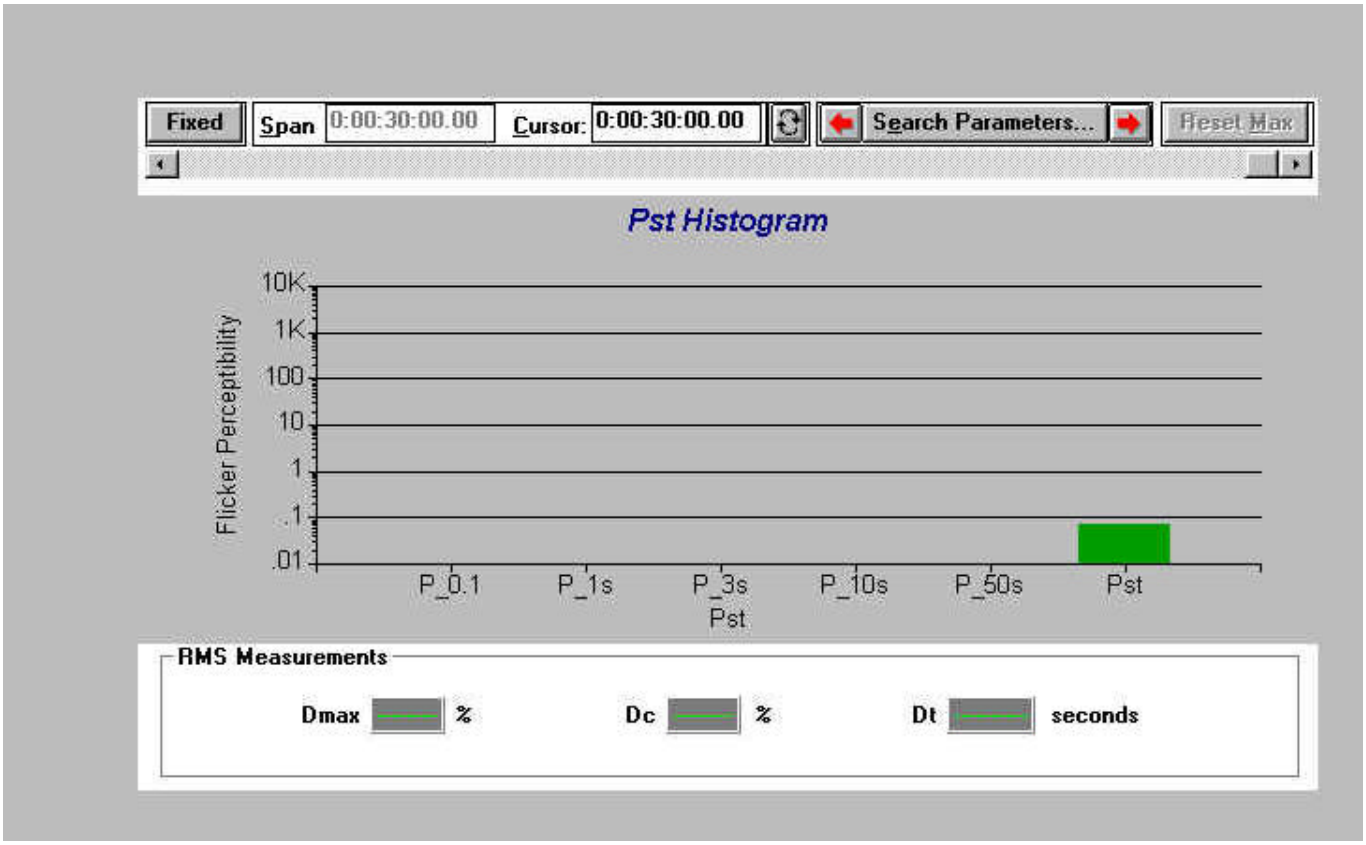

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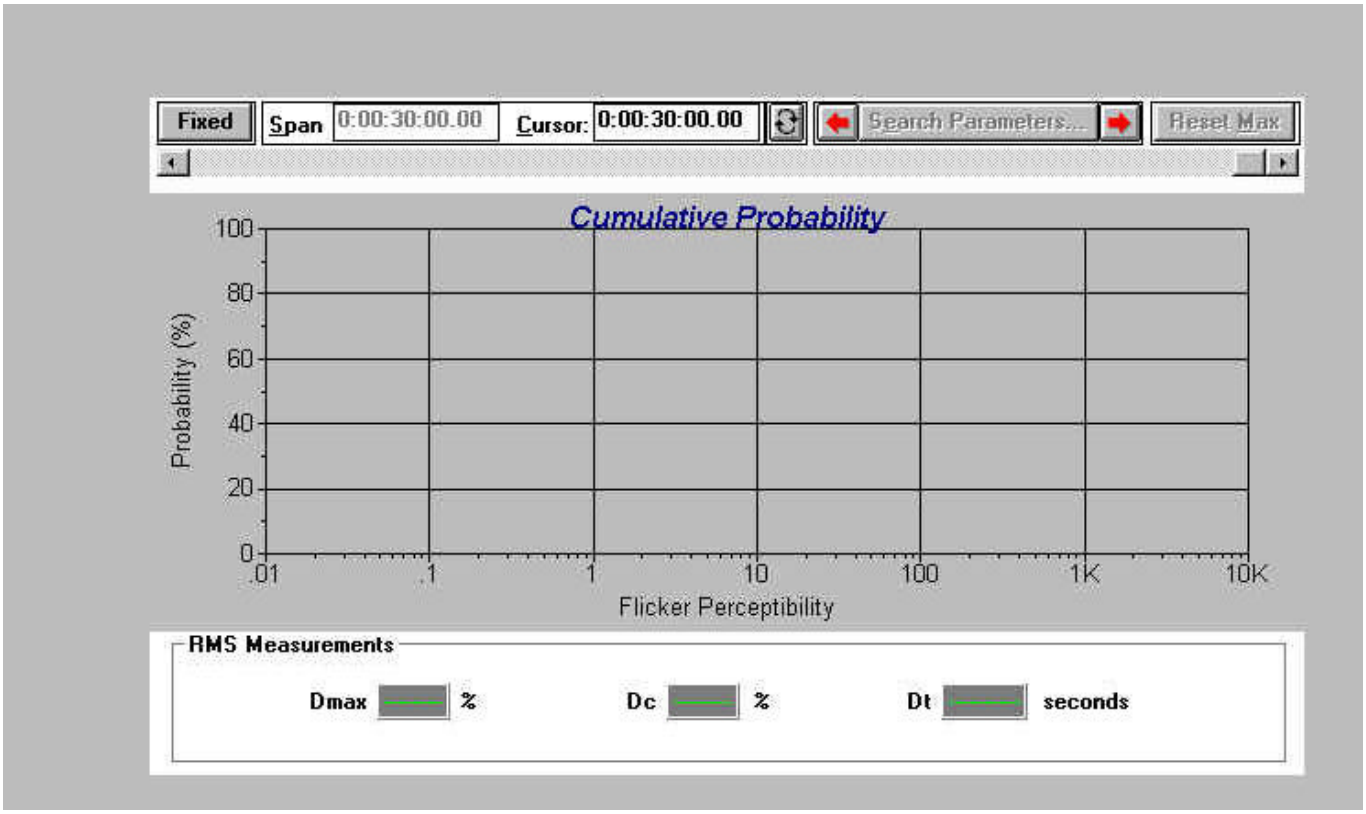

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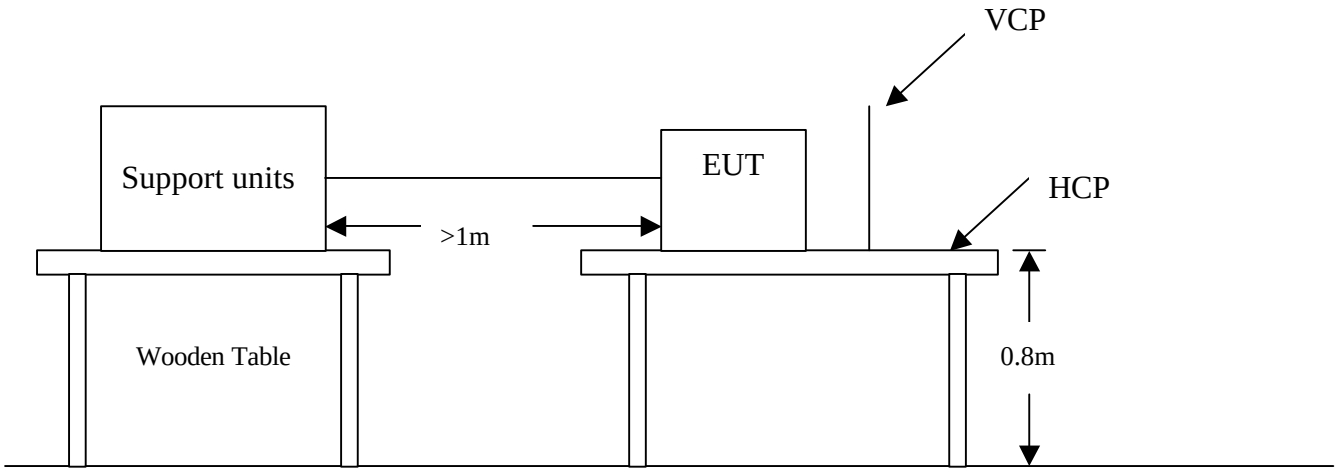
SECTION 3 IEC 61000-4-2 (ELECTROSTATIC DISCHARGE)

ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

Mode Type	**:**	AC Power Source & DC Power Source
Port	**:**	Enclosure
Basic Standard	**:**	IEC 61000-4-2
Requirements	**:**	±8kV (Air Discharge)
		±4kV (Contact Discharge)
		±4kV (Indirect Discharge)
Performance Criteria	**:**	B (Standard require)
Tested by	**:**	Lung Tsai
Temperature/Humidity:		18°C / 47%

Block Diagram of Test Setup:

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



Ground Reference Plane

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Test Procedure:

1. The EUT was located 0.1 m minimum from all side of the HCP.
2. The support units were located 1 m minimum away from the EUT.
3. A communication test program was loaded and executed in Windows mode.
4. PC sent transmit data to remote side via EUT.
5. As per the requirement of EN 55024; applying direct contact discharge at the sides other than front of EUT at minimum 50 discharges (25 positive and 25 negative) if applicable, can't be applied direct contact discharge side of EUT then the indirect discharge shall be applied. One of the test points shall be subjected to at least 50 indirect discharge (contact) to the front edge of horizontal coupling plane.
6. Other parts of EUT where it is not possible to perform contact discharge then selecting appropriate points of EUT for air discharge, a minimum of 10 single air discharges shall be applied.
7. The application of ESD to the contact of open connectors is not required.
8. Putting a mark on EUT to show tested points. The following test condition was followed during the tests.

The electrostatic discharges were applied as follows:

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

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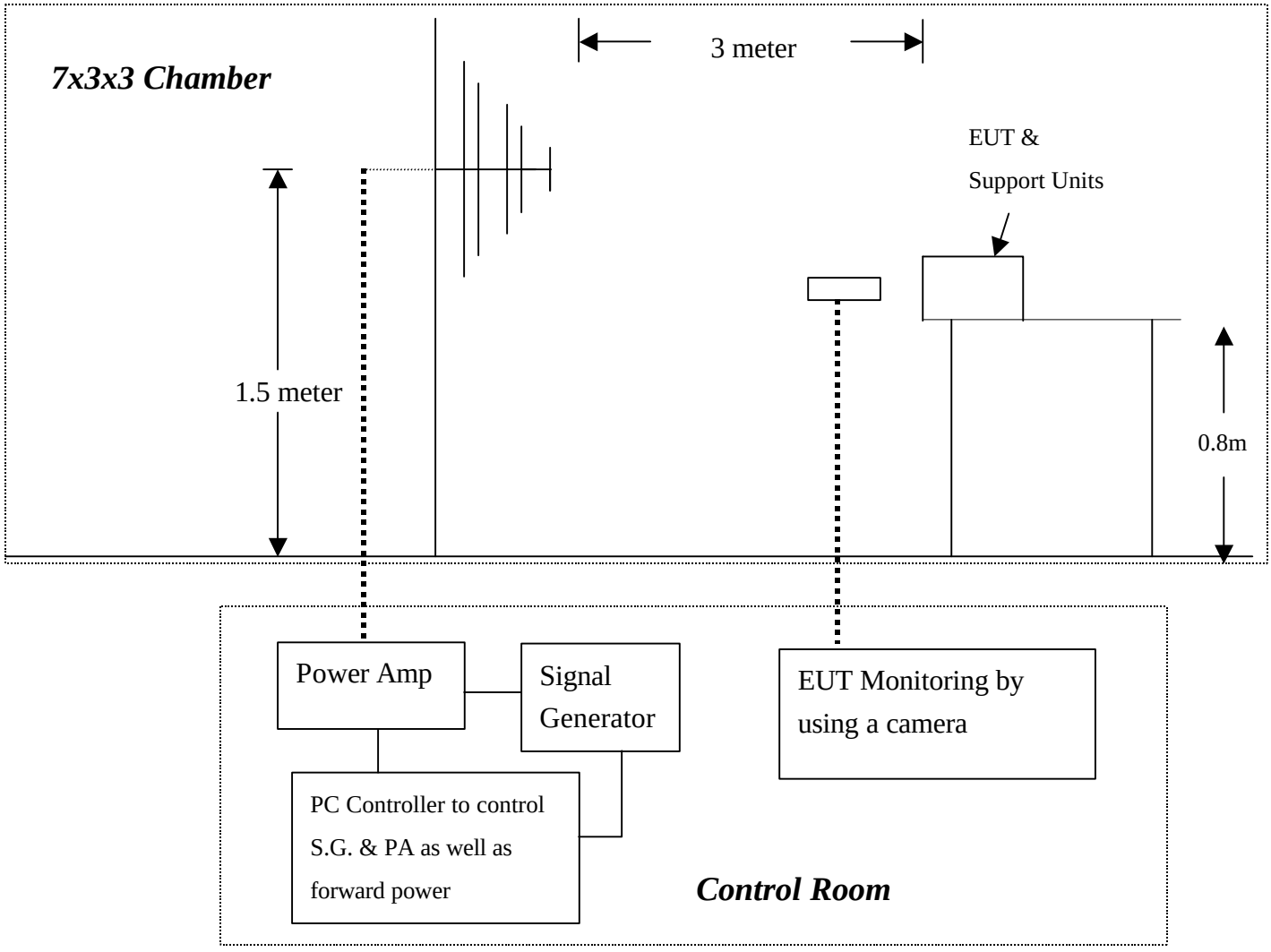
SECTION 4 IEC 61000-4-3 (RADIATED ELECTROMAGNETIC FIELD)

RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Mode Type	**:**	AC Power Source & DC Power Source
Port	**:**	Enclosure
Basic Standard	**:**	IEC 61000-4-3
Requirements	**:**	3 V/m / with 80% AM. 1kHz Modulation
Performance Criteria	**:**	A (Standard require)
Tester	**:**	James Liao
Temperature	**:**	18℃
Humidity	**:**	74%
Note	**:**	The EUT not have acoustic interfaces, the annex A of EN 55024 should not be applied.

Block Diagram of Test Setup:



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Test Procedure:

1. The EUT and support units were located at the edge of supporting table keep 3 meter away from transmitting antenna, it just the calibrated square area of field uniformity.
2. Adjusting the cables to be exposed to the electromagnetic filed as possible.
3. Performing a Radiated Emission Scan in range of 30 to 1000 MHz prior to do RS test and records the more higher emission frequencies for the reference of RS test, due to antenna effectiveness.
4. Adjusting the monitoring camera to monitor the "H" message as clear as possible.
5. Setting the testing parameters of RS test software per IEC 61000-4-3.
6. Referring to the tested data of step 3 to performing the RS test from 80 to 1000 MHz.
7. Recording the test result in following table.
8. Changing the EUT to the other side and repeat step 3 to 6, until 4 sides of EUT were verified.

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
80-1000	3V	Yes	H	Right	Pass
80-1000	3V	Yes	V	Right	Pass
80-1000	3V	Yes	H	Back	Pass
80-1000	3V	Yes	V	Back	Pass
80-1000	3V	Yes	H	Left	Pass
80-1000	3V	Yes	V	Left	Pass

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Performance & Result:

[V] **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.

[V] ***PASS***	[ ] ***FAILED***
Observation: No any function degraded during the tests.	

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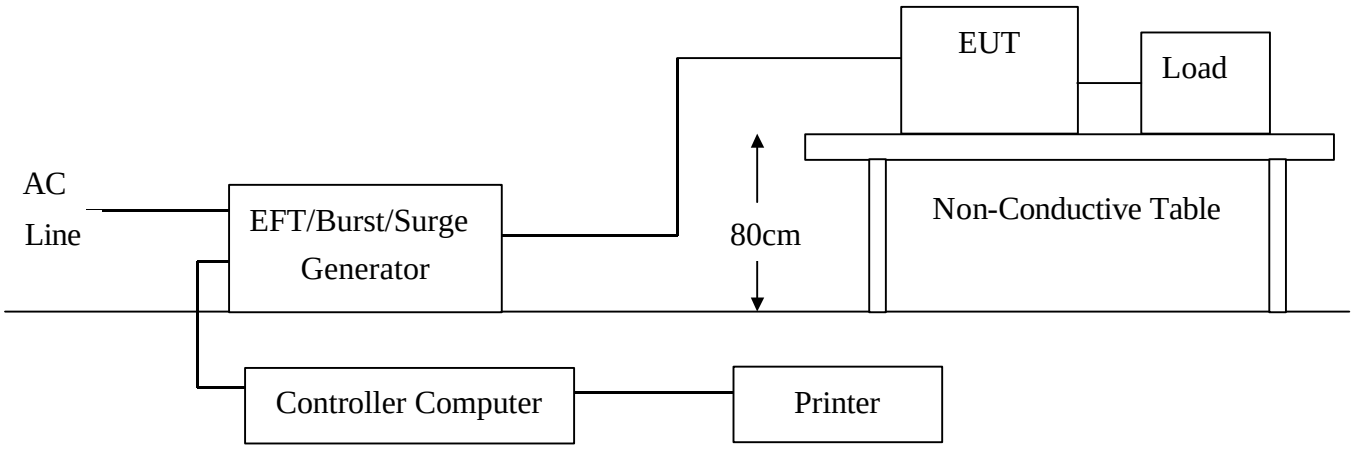
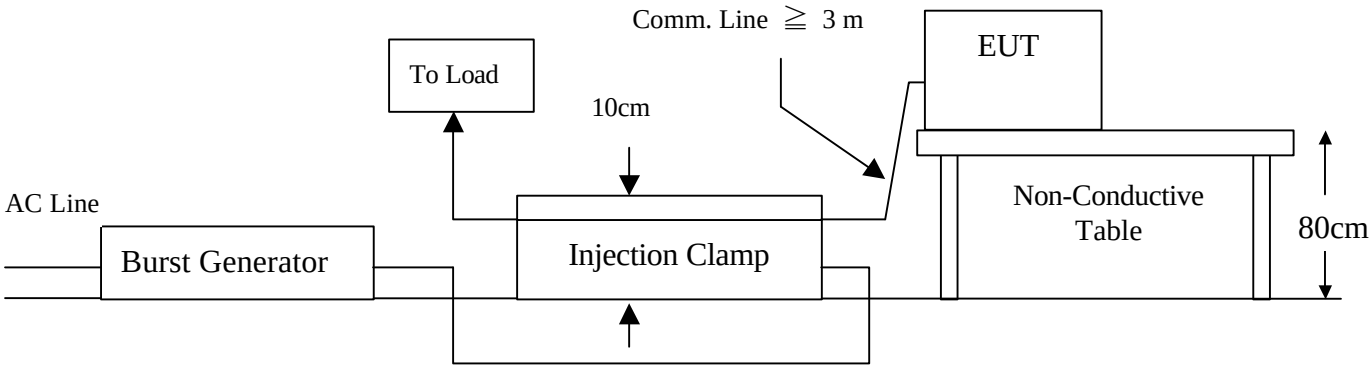
SECTION 5 IEC 61000-4-4 (FAST TRANSIENTS/BURST)

FAST TRANSIENTS/BURST IMMUNITY TEST

Mode Type	**:** AC Power Source & DC Power Source
Port	**:** On Power Lines and Data Line
Basic Standard	**:** IEC 61000-4-4
Requirements	**:** ±1kV for Power Supply Lines ±0.5kV to Data Line & DC Power Lines
Performance Criteria	**:** B (Standard require)
Tested by	**:** James Liao
Temperature	**:** 18℃
Humidity	**:** 74%

Block Diagram of Test Setup:





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Test Procedure:

1. The EUT and support units were located on a wooden table 0.8 m away from ground reference plane.
2. A 1.0 meter long power cord was attached to EUT during the test.
3. The length of communication cable between communication port and clamp was keeping within 1 meter.
4. A test program was loaded and executed in Windows mode.
5. The data was display on the monitor and filling the screens.
6. The test program exercised related support units sequentially.
7. Repeating step 3 to 6 through the test.
8. Recording the test result as shown in following table.

Impulse Frequency: 5kHz
Tr/Th: 5/50ns
Burst Duration: 15ms
Burst Period: 300mS
Mode Type: AC Power Source

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
RJ11	±0.5	Clamp	Pass

Mode Type: DC Power Source

Inject Line	Voltage kV	Inject Method	Result (Pass/Fail)
L1	±0.5	Direct	Pass
N	±0.5	Direct	N/A
PE	±0.5	Direct	N/A
L1+N	±0.5	Direct	Pass
L1+PE	±0.5	Direct	N/A
N+PE	±0.5	Direct	N/A
L1 + N + PE	±0.5	Direct	N/A
RJ11	±0.5	Clamp	Pass

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Performance & Result:

[V] **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.

[V] ***PASS***	[ ] ***FAILED***
Observation: No any function degraded during the tests.	

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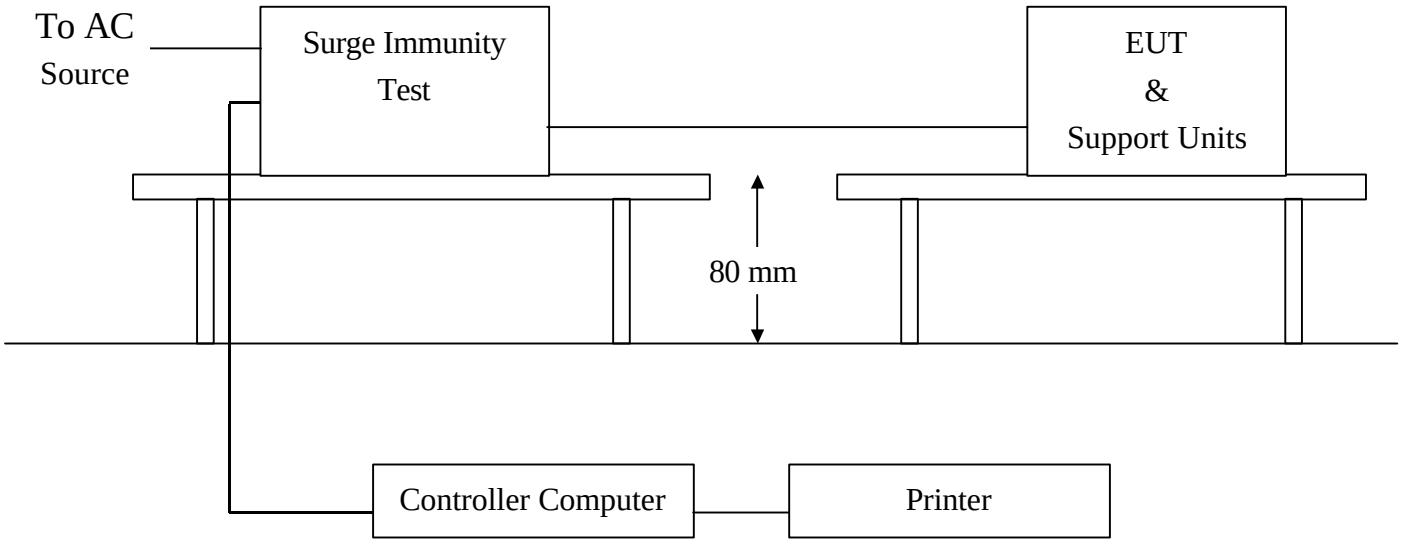
SECTION 6 IEC 61000-4-5 (SURGE IMMUNITY)

SURGE IMMUNITY TEST

Mode Type	**:**	AC Power Source & DC Power Source
Port	**:**	Power Cord
Basic Standard	**:**	IEC 61000-4-5
Requirements	**:**	+/- 0.5kV (Line to Line of DC Power)
		+/- 1kV (Line to Line of AC Power)
		+/- 2kV (Line to Eatrth of AC Power)
Performance Criteria	**:**	B (Standard require)
Tester	**:**	James Liao
Temperature	**:**	18℃
Humidity	**:**	74%

Block Diagram of Test Setup:



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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 display on the monitor and filling the screens.
4. The test program exercised related support units sequentially.
5. Repeating step 3 to 4 through the test.
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
Mode Type: AC Power Source

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

Mode Type: DC Power Source

Coupling Line	Voltage (kV)	Polarity	Coupling Method	Result (Pass/Fail)
+、 – 、G	0.5	Positive	Capacitive	Pass
+、 – 、G	0.5	Negative	Capacitive	Pass

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Performance & Result:

[V] **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.

[V] ***PASS***	[ ] ***FAILED***
Observation: No any function degraded during the tests.	

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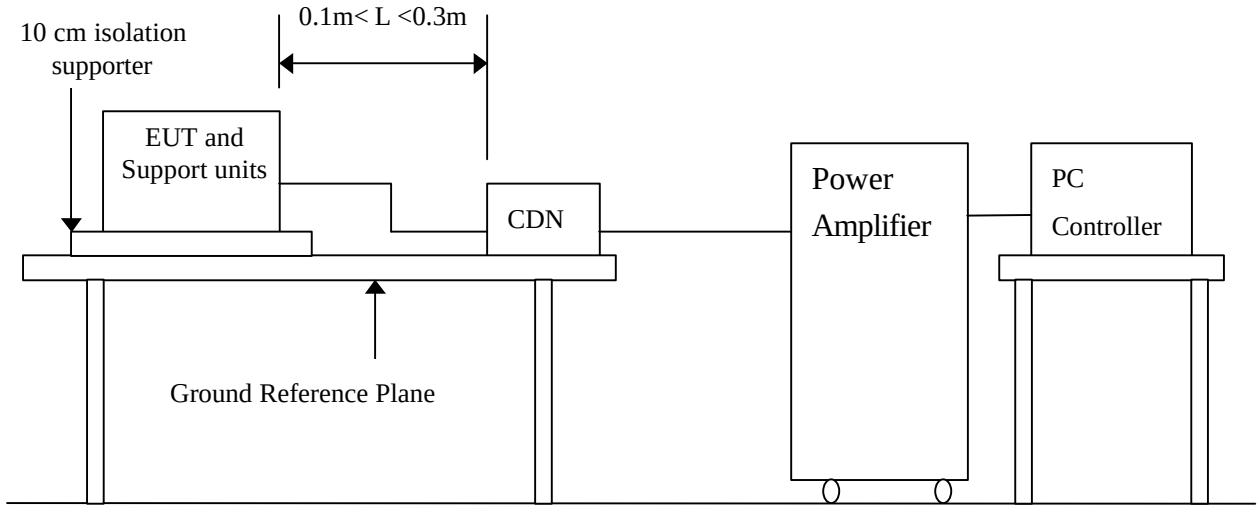
SECTION 7 IEC 61000-4-6 (CONDUCTED DISTRBANCE/INDUCED BY RADIO-FREQUENCY FIELD)

Mode Type	**:** AC Power Source & DC Power Source
Port	**:** Power Port and Line Cable
Base Standard	**:** IEC 61000-4-6
Requirements	**:** 3 V with 80% AM. Modulation
Injection Method	**:** CDN for Power Cord Bulk Current Injection Probe for Line Cable
Deviation	**:**None
Performance Criteria	**:** A (Standard require)
Tester	**:** James Liao
Temperature	**:** 18℃
Humidity	**:** 74%
Note	**:** The EUT not have acoustic interfaces, the annex A of EN 55024 should not be applied.

Block Diagram of Test Setup:

Side view:



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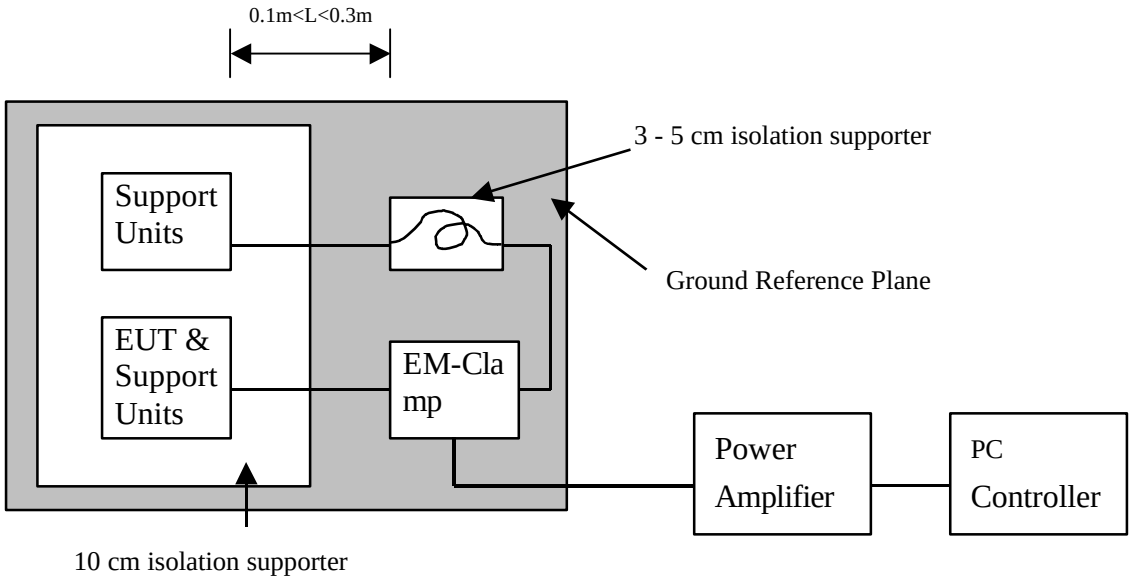
Top view:



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. Transmit data messages were displayed on screen of Monitor.
3. Adjusting the monitoring camera to monitor the transmit data message as clear as possible.
4. Setting the testing parameters of CS test software per EN 61000-4-6.
5. Recording the test result in following table.

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Test conditions:

Frequency Range : 0.15MHz-80MHz

Frequency Step : 1% of fundamental

Dwell Time : 3 sec

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

Performance & Result:

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

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

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

☑ ***PASS*** ☐ ***FAILED***
Observation: No any function degraded during the tests.

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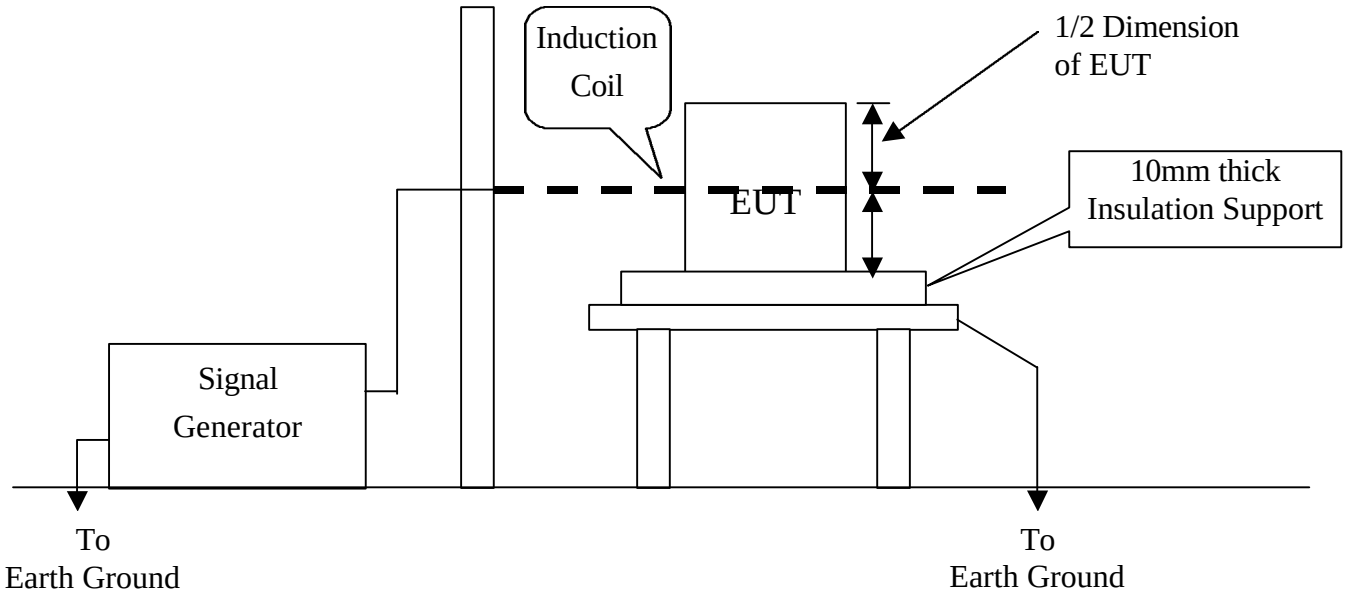
SECTION 8 IEC 61000-4-8 (POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST)

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

Block Diagram of Test Setup:



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Test Procedure:

1. The EUT and support units were located on Ground Reference Plane with the interposition of a 0.1 m thickness insulation support.
2. Putting the induction coil on horizontal direction.(X direction)
3. A test program was loaded and executed in Windows mode.
4. The data was displayed on the screen of Monitor and filling the screen.
5. The test program exercised related support units sequentially.
6. Repeating step 3 to 5 through the test.
7. Recording the test result as shown in following table.
8. Rotating the induction coil by 90^{o} (Y direction) then repeat step 3 to 7.
9. Rotating the induction coil by 90^{o} again (Z direction) then repeat step 3 to 7.

*. Test conditions:
Field Strength: 1A/m
Power Freq.: 50Hz
Orientation: X, Y, Z

Orientation	Field	Result (Pass/Fail)	Remark

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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: N/A(EUT Without any magnetic component)

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

VOLTAGE DIPS / SHORT INTERRUPTIONS

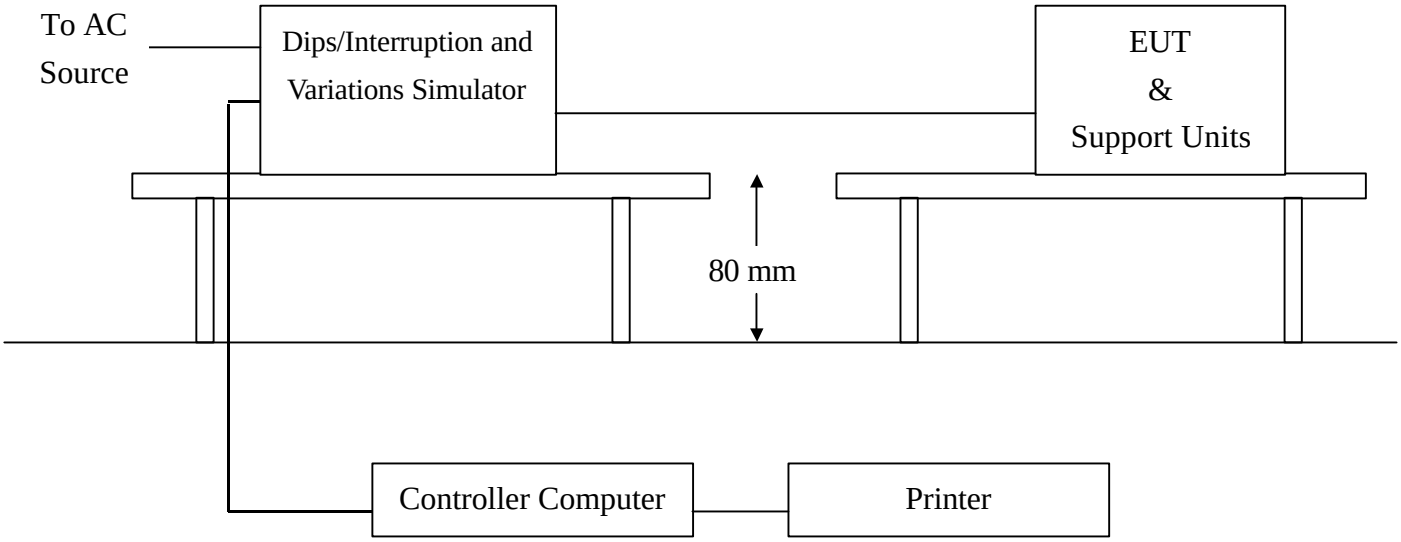
Mode Type : AC Power Source
Port : AC mains
Basic Standard : IEC 61000-4-11 (1994)
Requirement : Phase angles 0, 45, 90, 135, 180, 225, 270, 315 degrees.

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

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

Test Interval : Min. 10 sec.
Tester : James Liao
Temperature : 18°C
Humidity : 74%

Block Diagram of Test Setup:



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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 displayed on the monitor and filling the screens.
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 10s minimum (between each test events)

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 EUT can be auto recovered after EUT restart.	C

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

Performance & Result:

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

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

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

[V] ***PASS***	[ ] ***FAILED***
Observation: No any function degraded during the tests.	

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APPENDIX 1

PHOTOGRAPHS OF TEST SETUP

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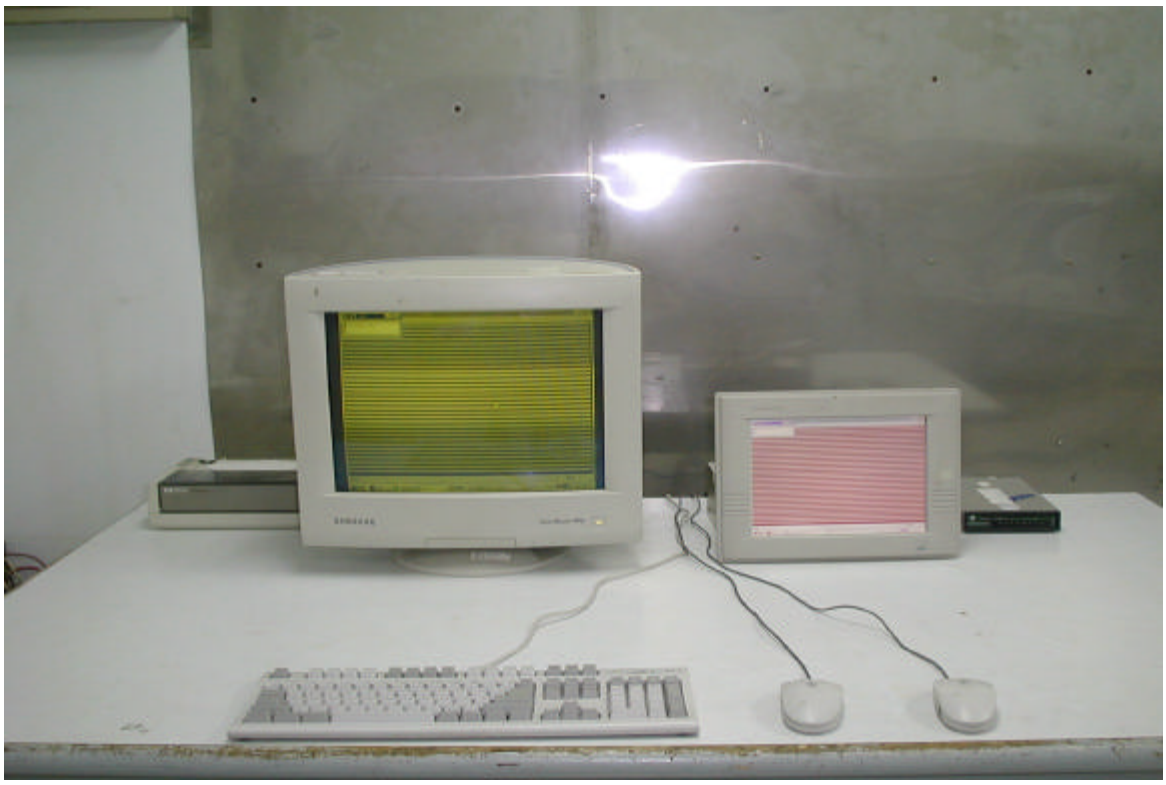
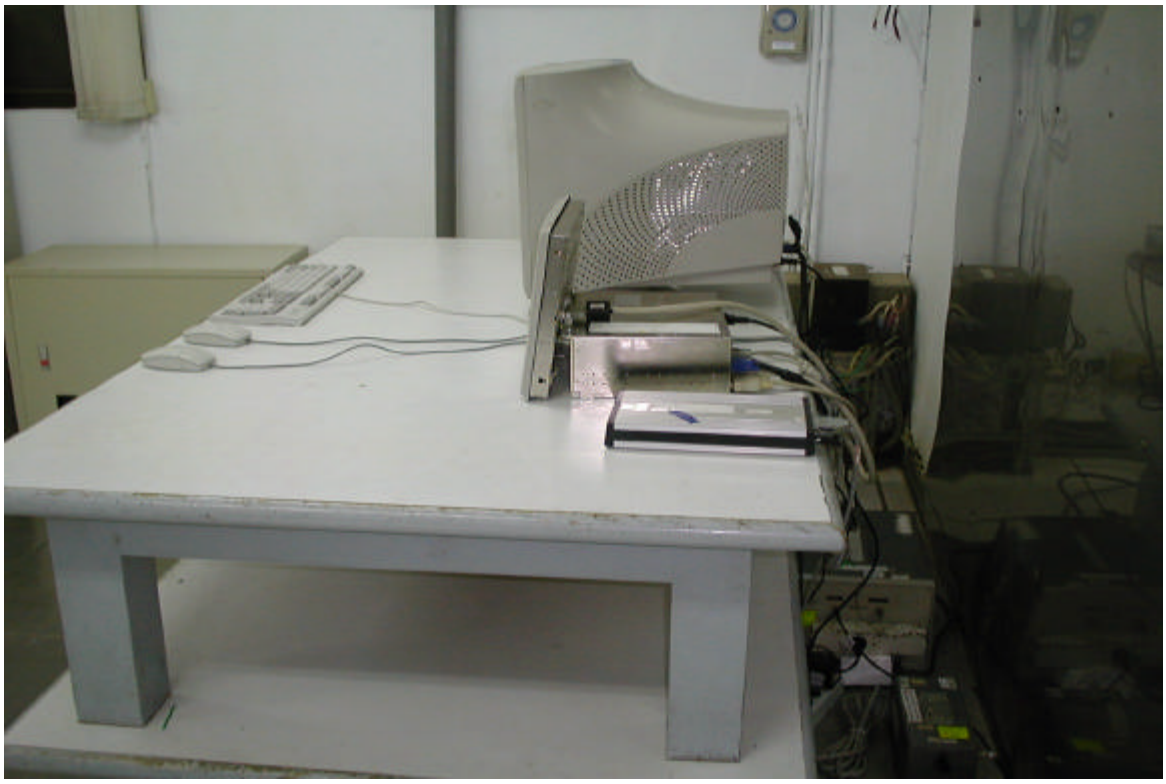
LINE CONDUCTED EMISSION TEST (EN 55022)
AC Power Source (Worst)





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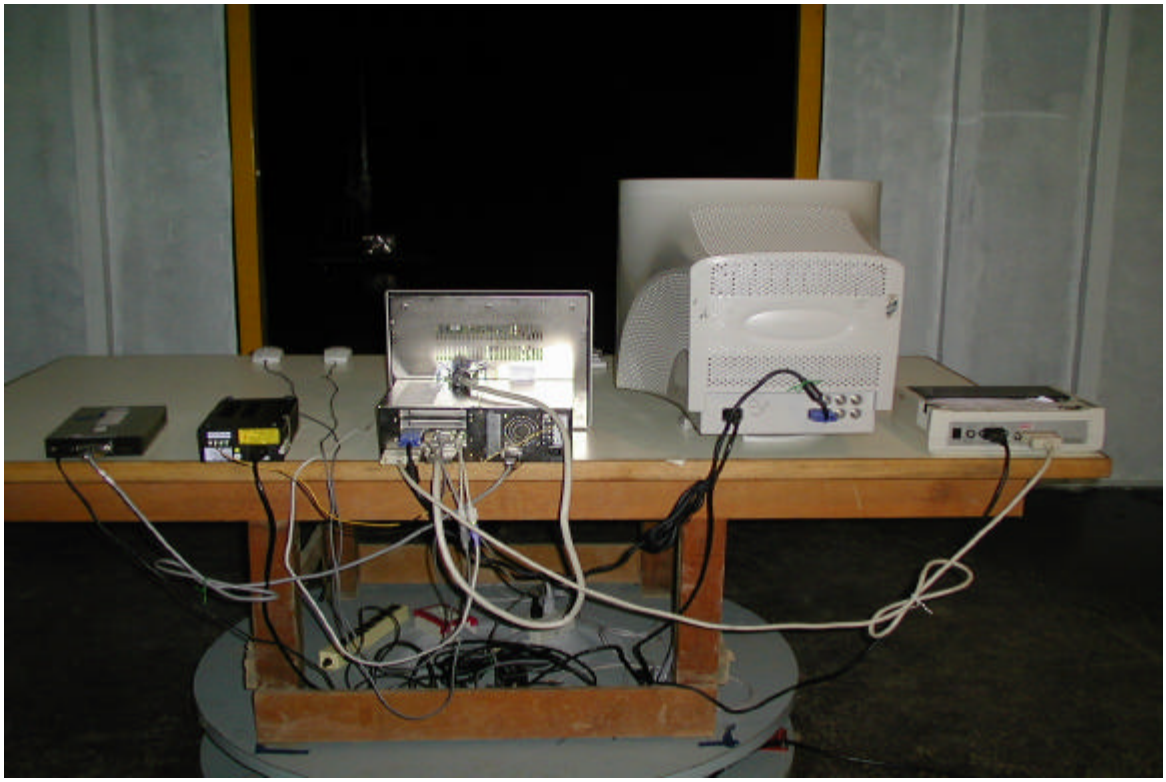
RADIATED EMISSION TEST (EN 55022)
DC Power Source (Worst)



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

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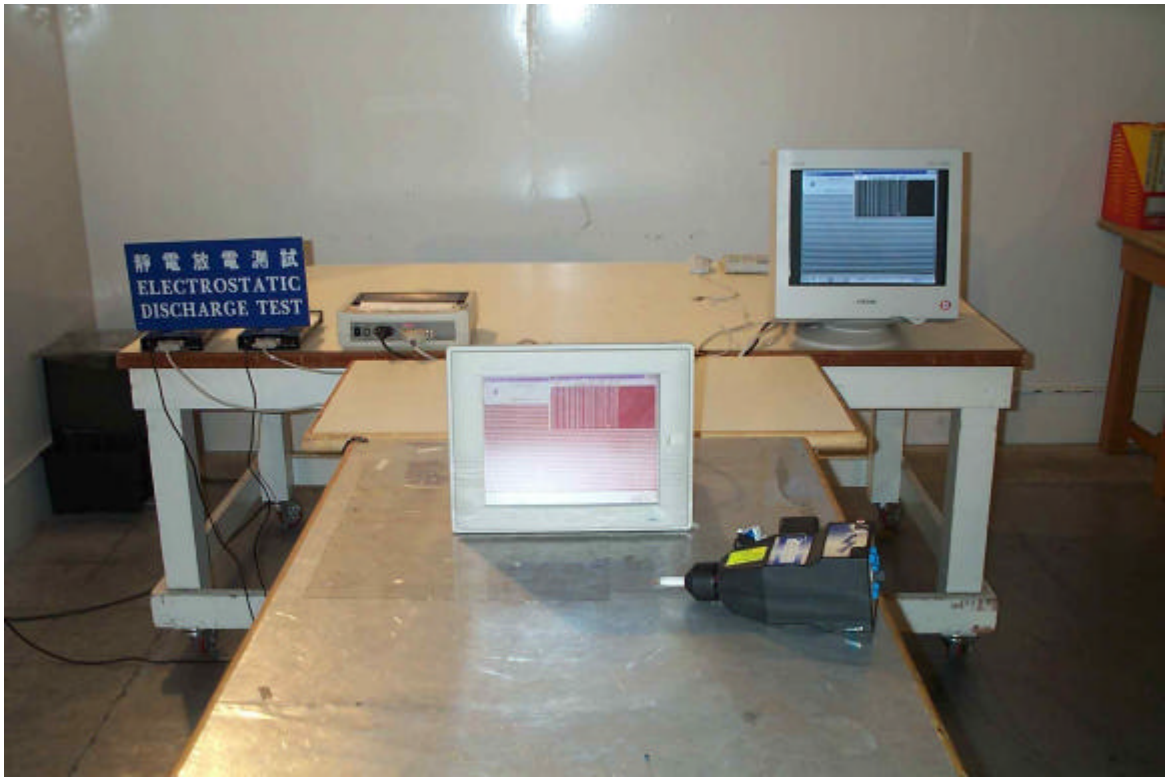
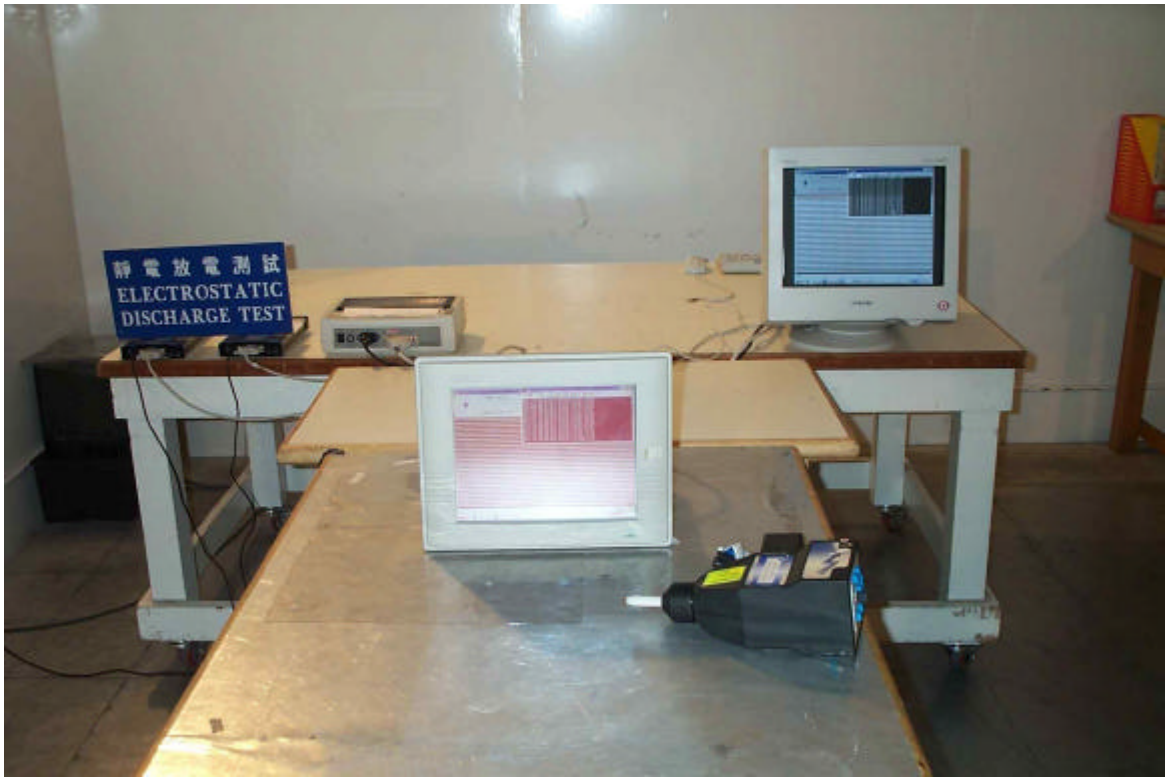
ELECTROSTATIC DISCHARGE TEST (IEC 61000-4-2)
AC Power Source





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NO.199, CHUNG SHENG ROAD, HSIN TIEN, TAIPEI, TAIWAN R.O.C. TEL:(02)2217-0894/FAX:2217-1254
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DC Power Source

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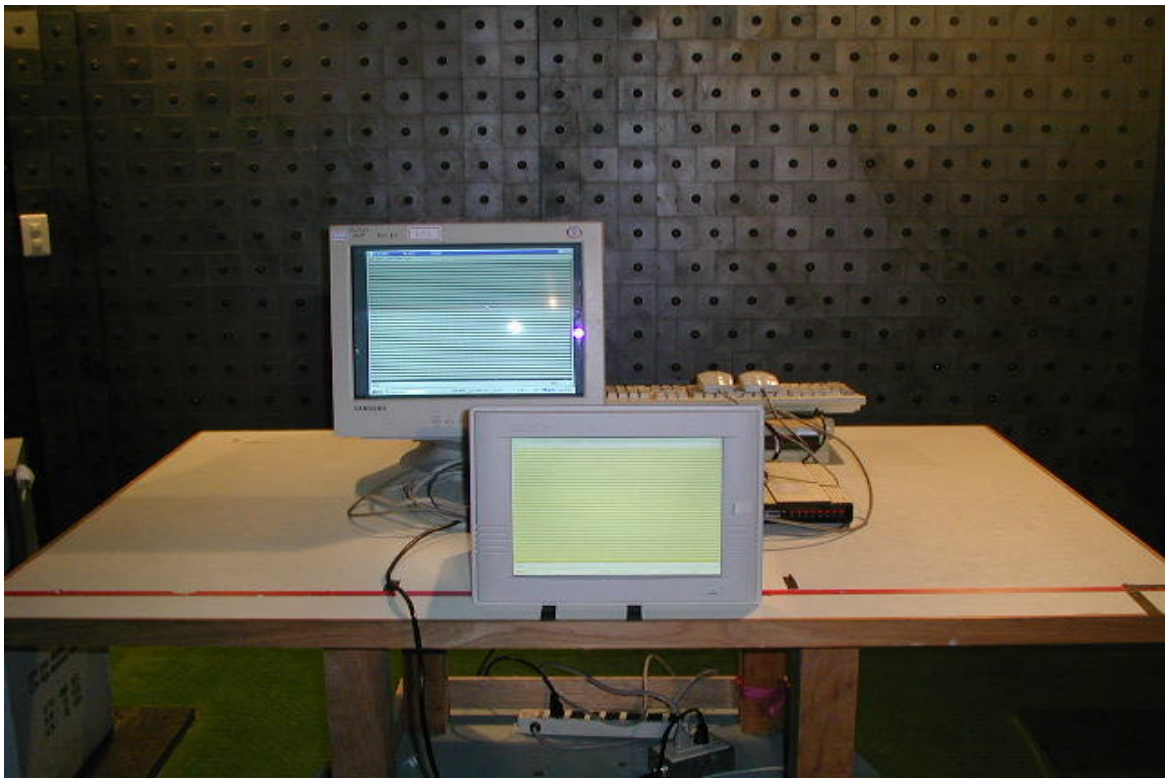
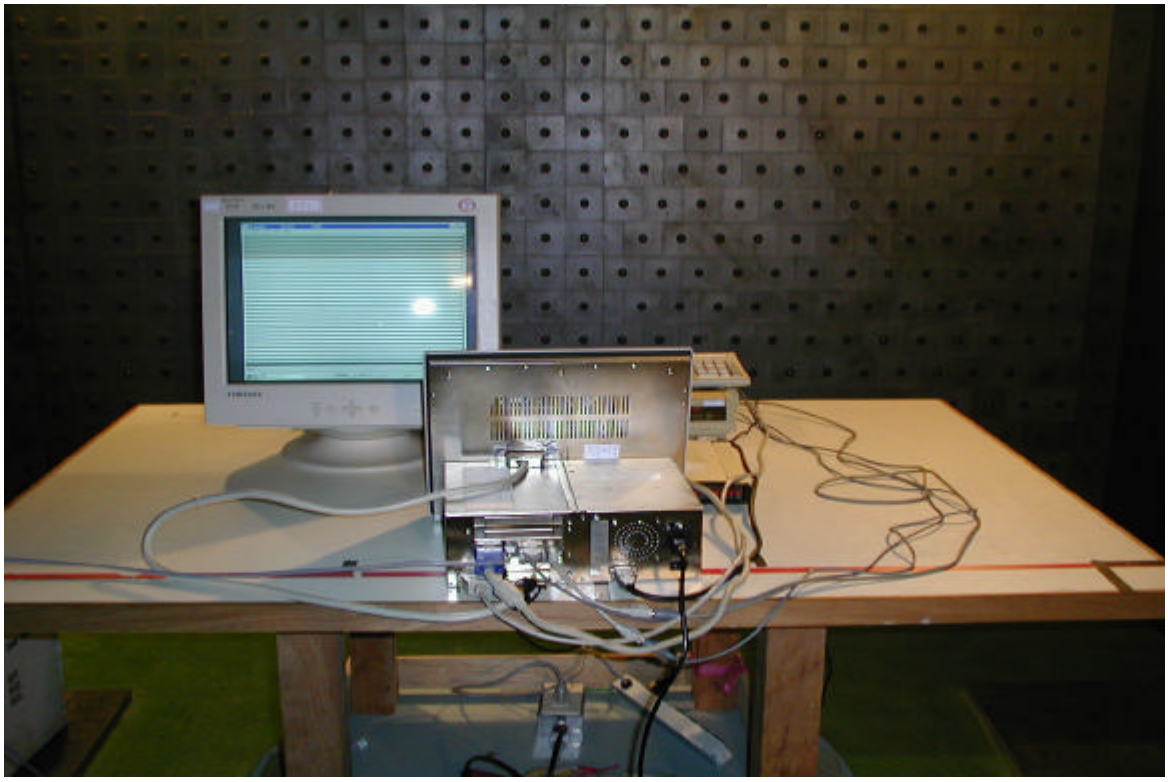
RADIATED ELECTROMAGNETIC FIELD (IEC 61000-4-3)
AC Power Source

Front View



Back View



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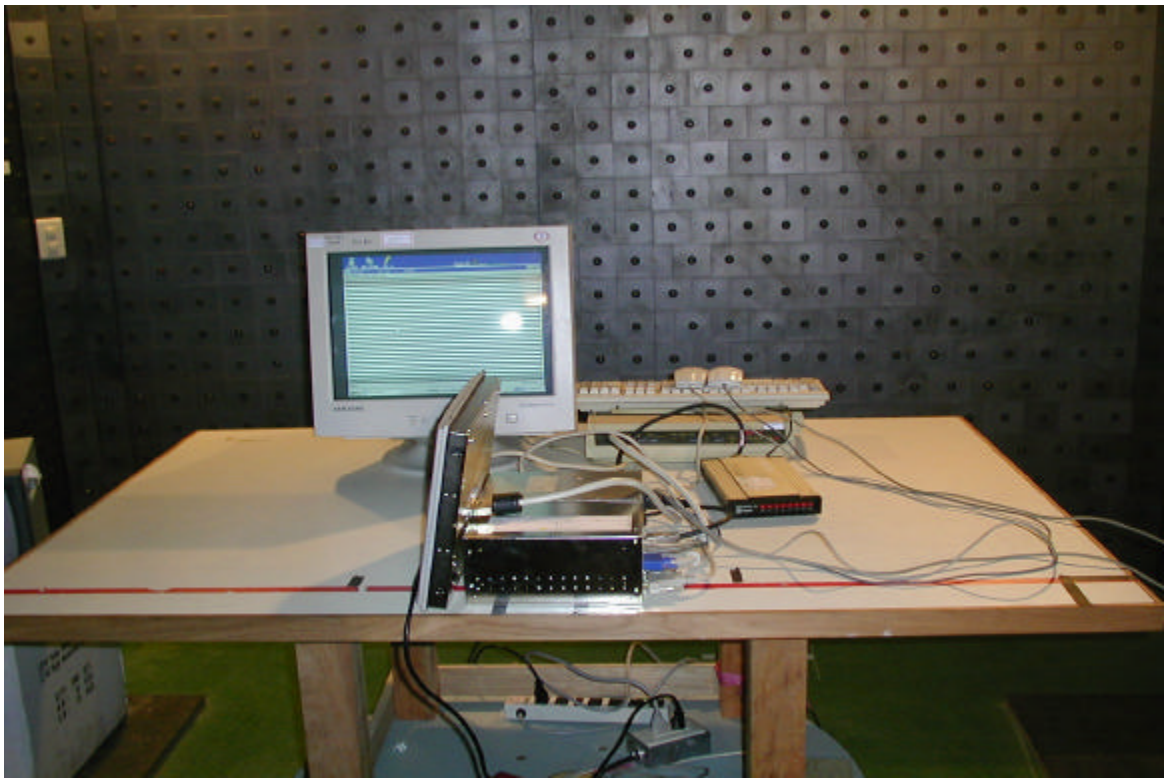
Right View

Left View



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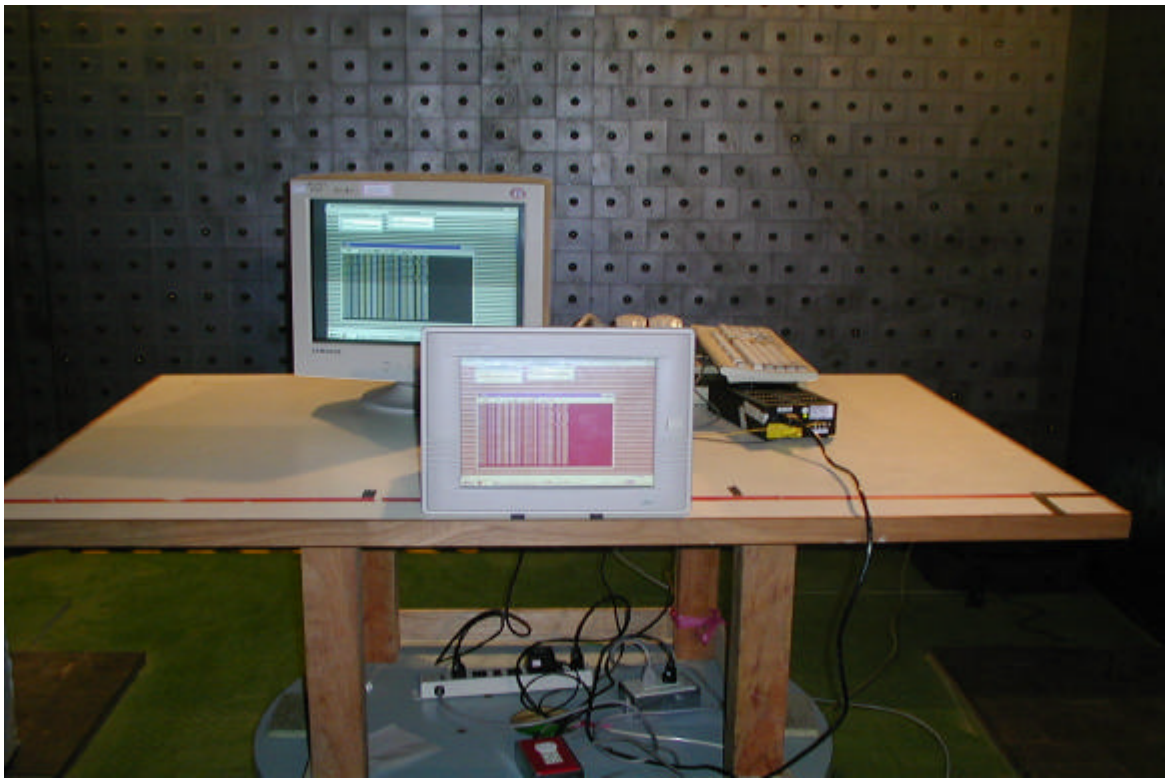
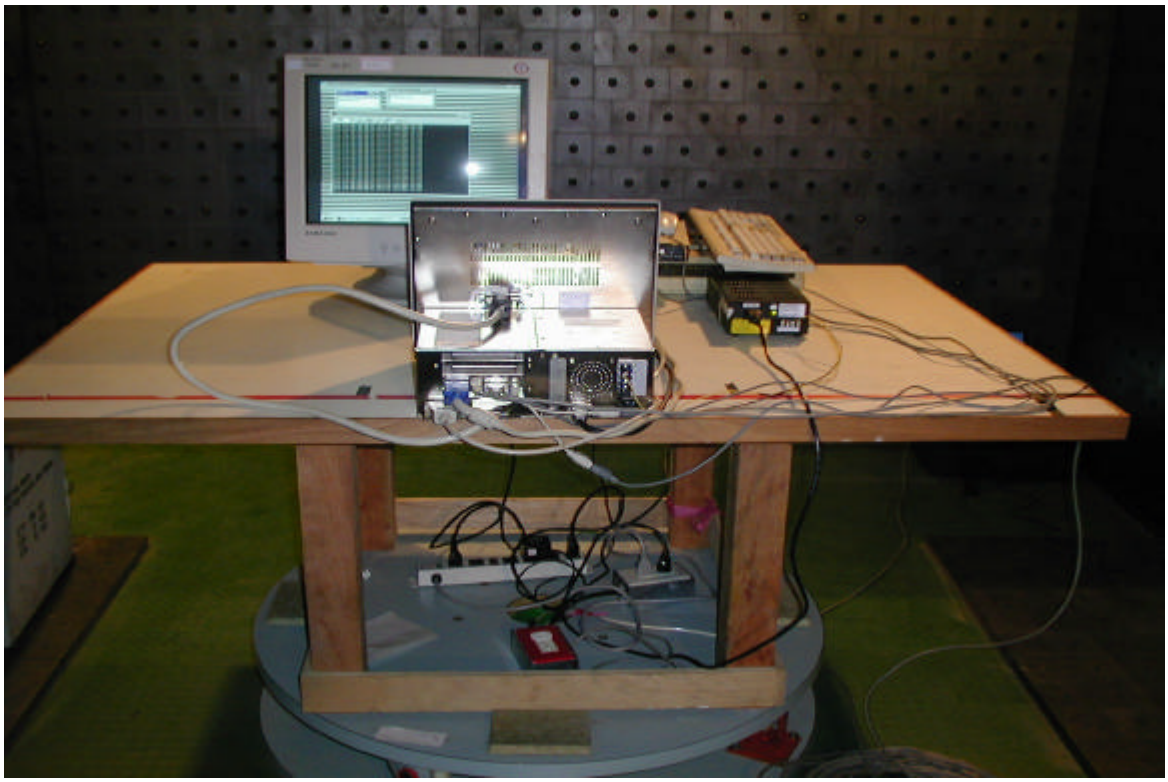
DC Power Source

Front View



Back View



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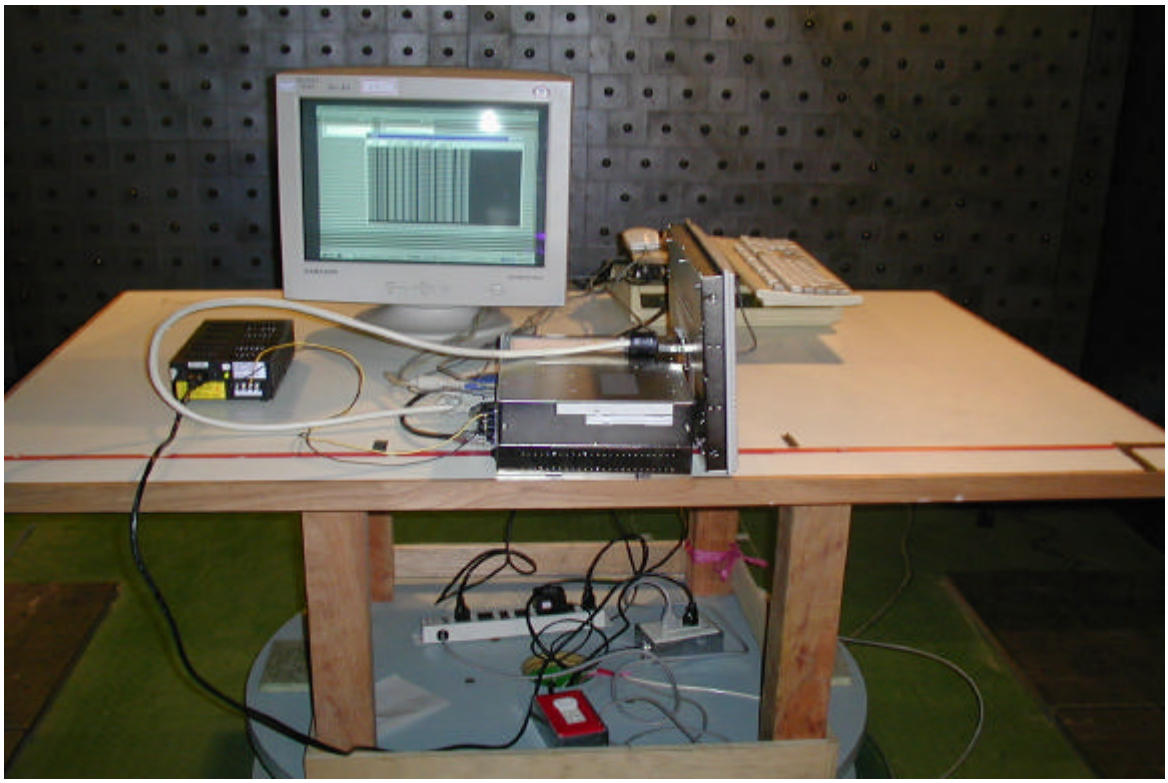
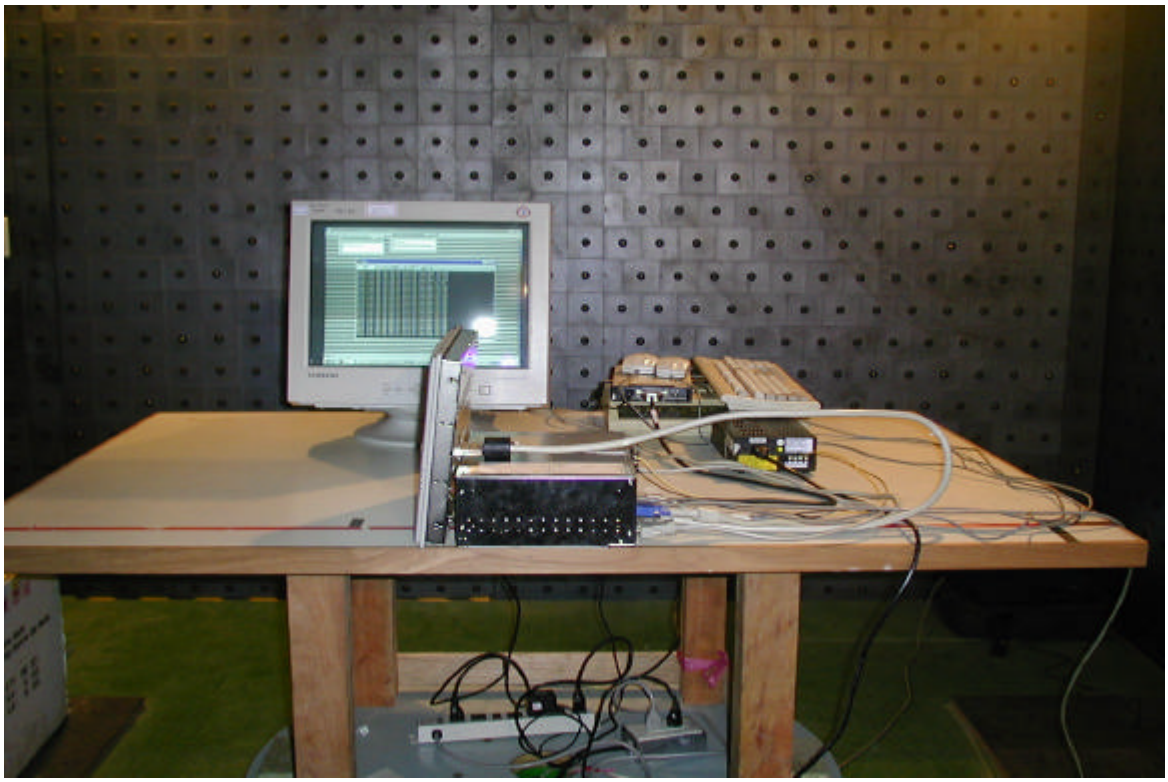
Right View



Left View



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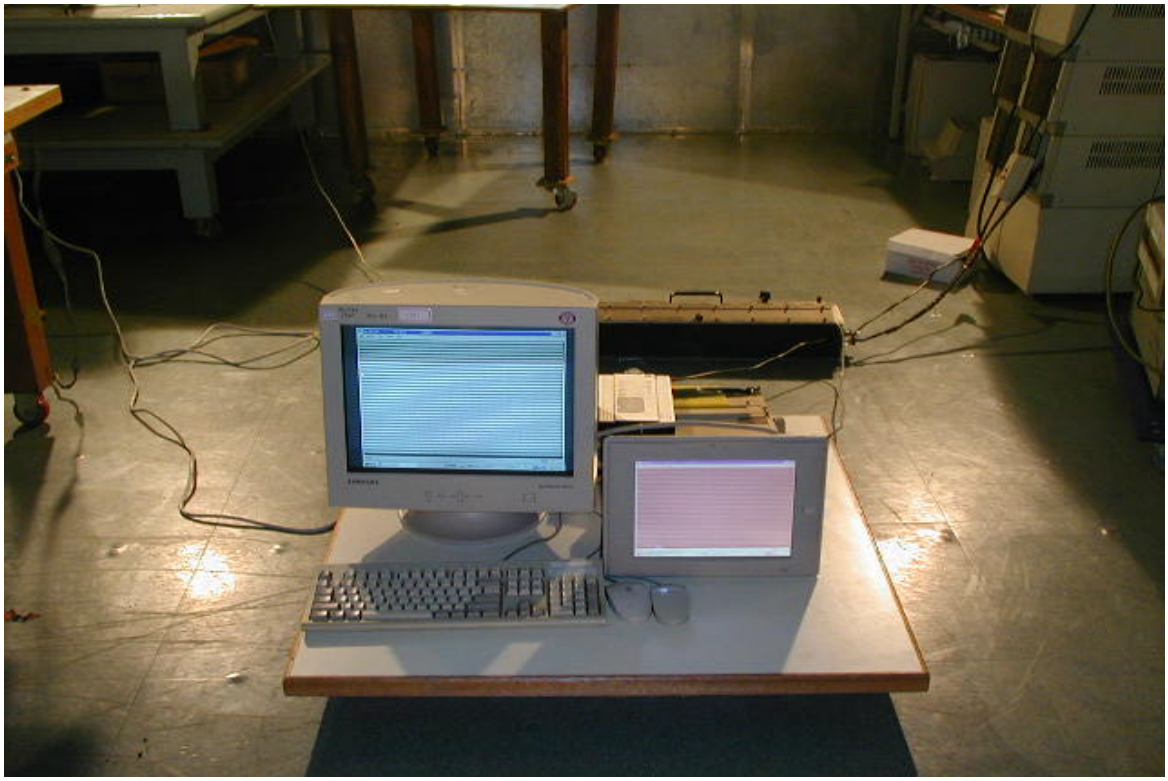
FAST TRANSIENTS/BURST TEST & SURGE IMMUNITY TEST (IEC 61000-4-4/5 For Power) / AC Power Source

FAST TRANSIENTS/BURST TEST(IEC 61000-4-4 For I/O)



COMPLIANCE ENGINEERING SERVICES, INC. DOCUMENT NO:CCSTP4003C
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FAST TRANSIENTS/BURST TEST(IEC 61000-4-4 For Power)
DC Power Source

FAST TRANSIENTS/BURST TEST(IEC 61000-4-4 For I/O)

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SURGE IMMUNITY TEST (IEC 61000-4-5)

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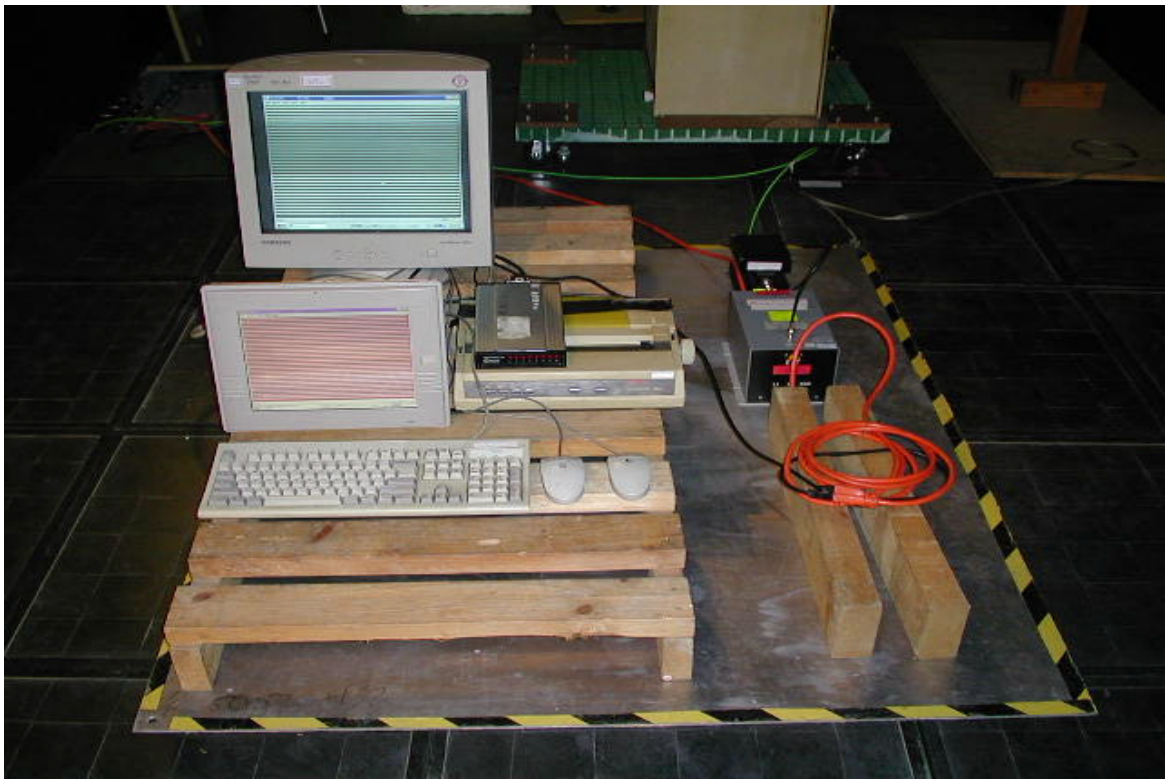
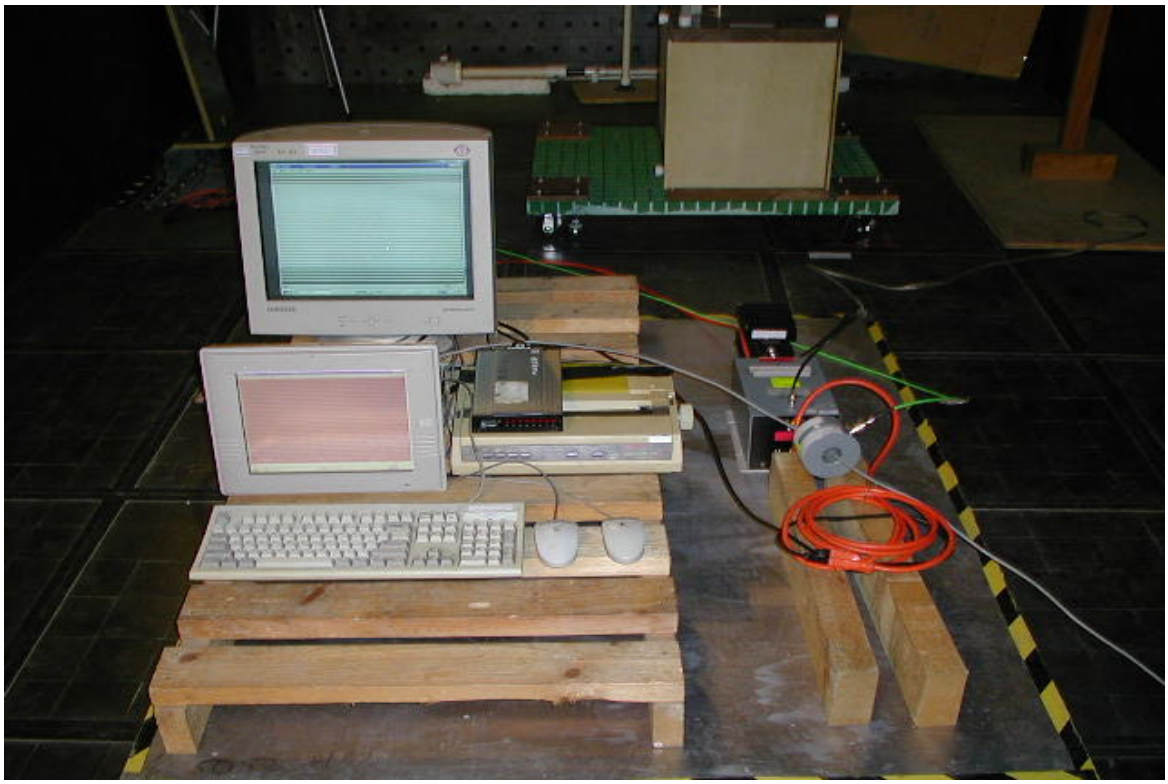
CONDUCTED DISTURBANCE, INDUCED BY RADIO-FREQUENCY FIELDS TEST (IEC 61000-4-6 For Power)

AC Power Source



(IEC 61000-4-6 For I/O)



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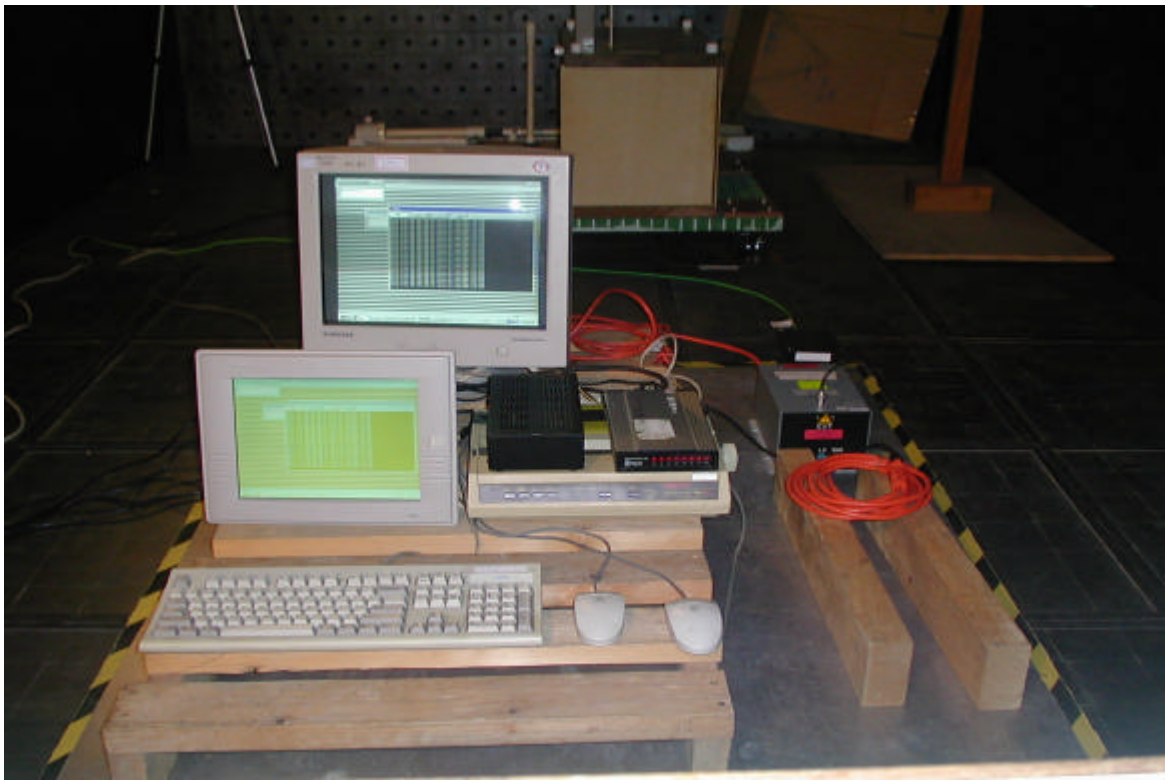
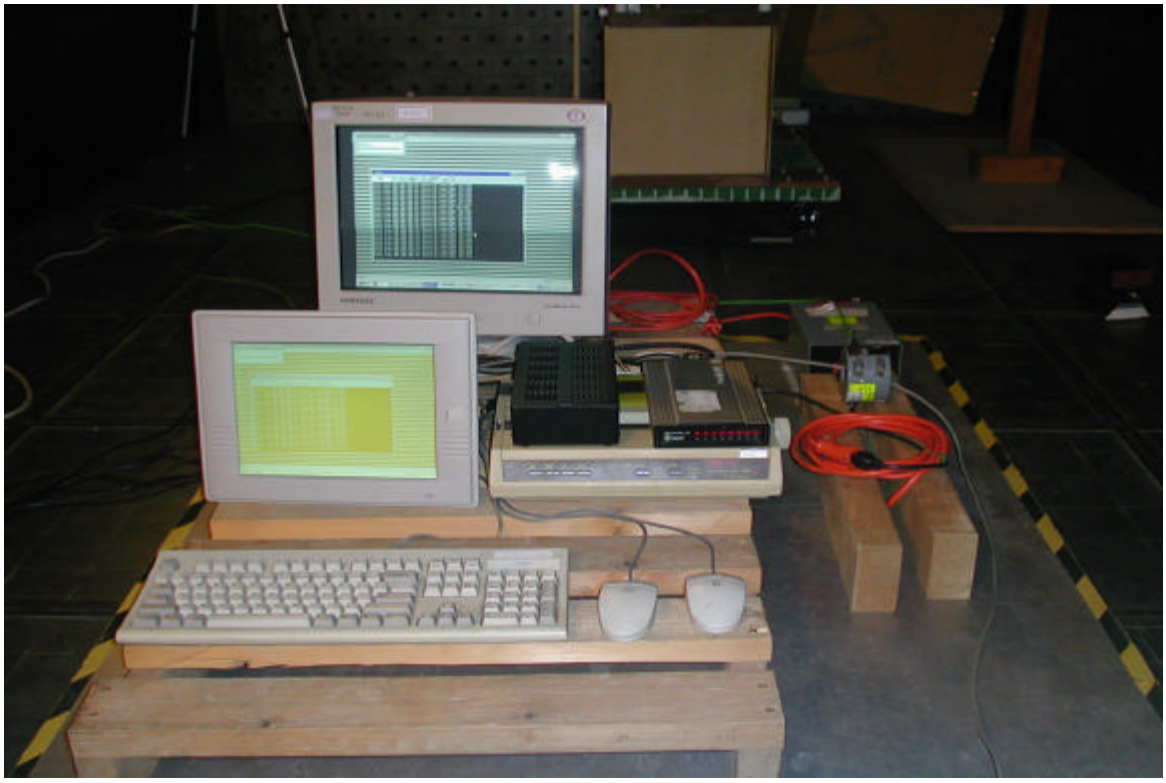
(IEC 61000-4-6 For Power)
DC Power Source



(IEC 61000-4-6 For I/O)



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

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APPENDIX 2

PHOTOGRAPHS OF EUT

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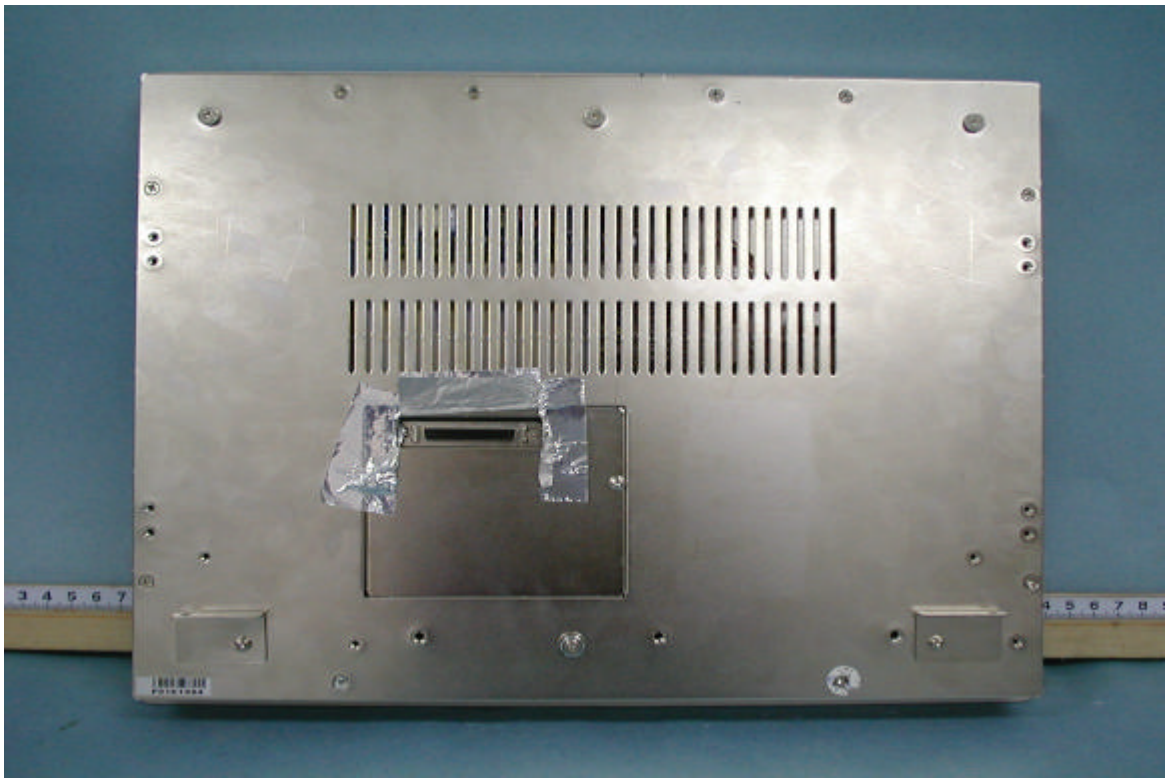

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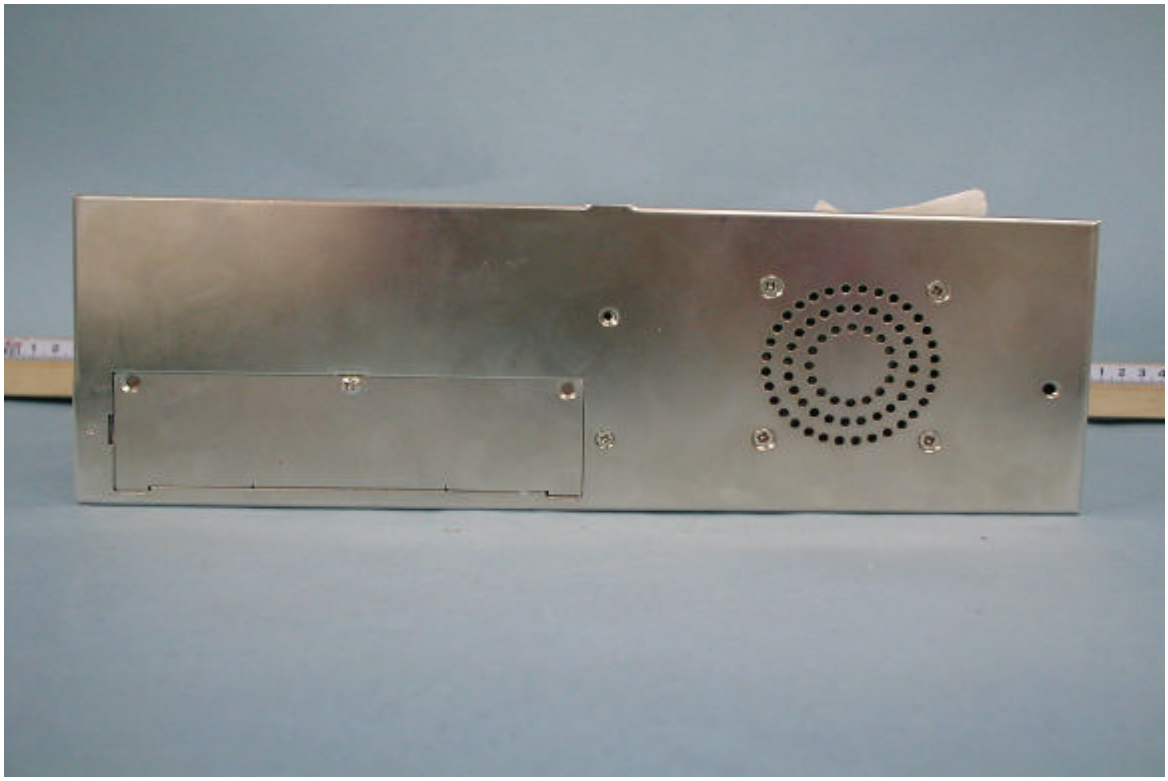

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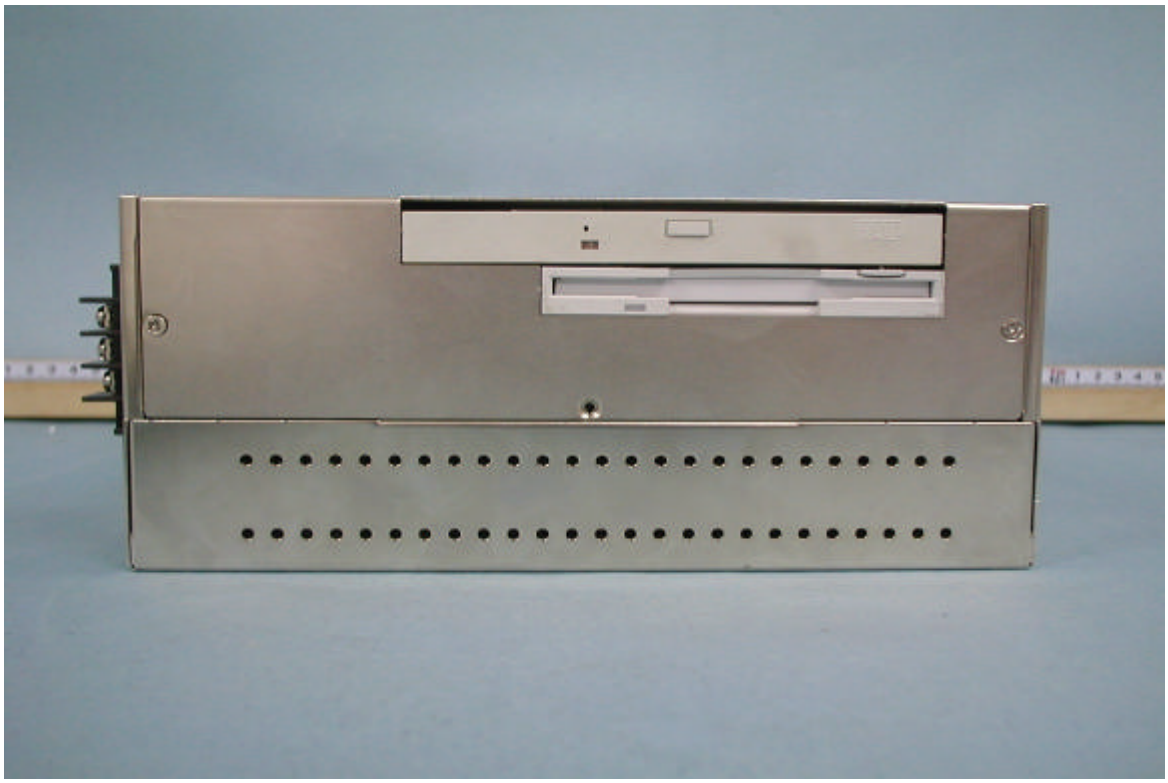

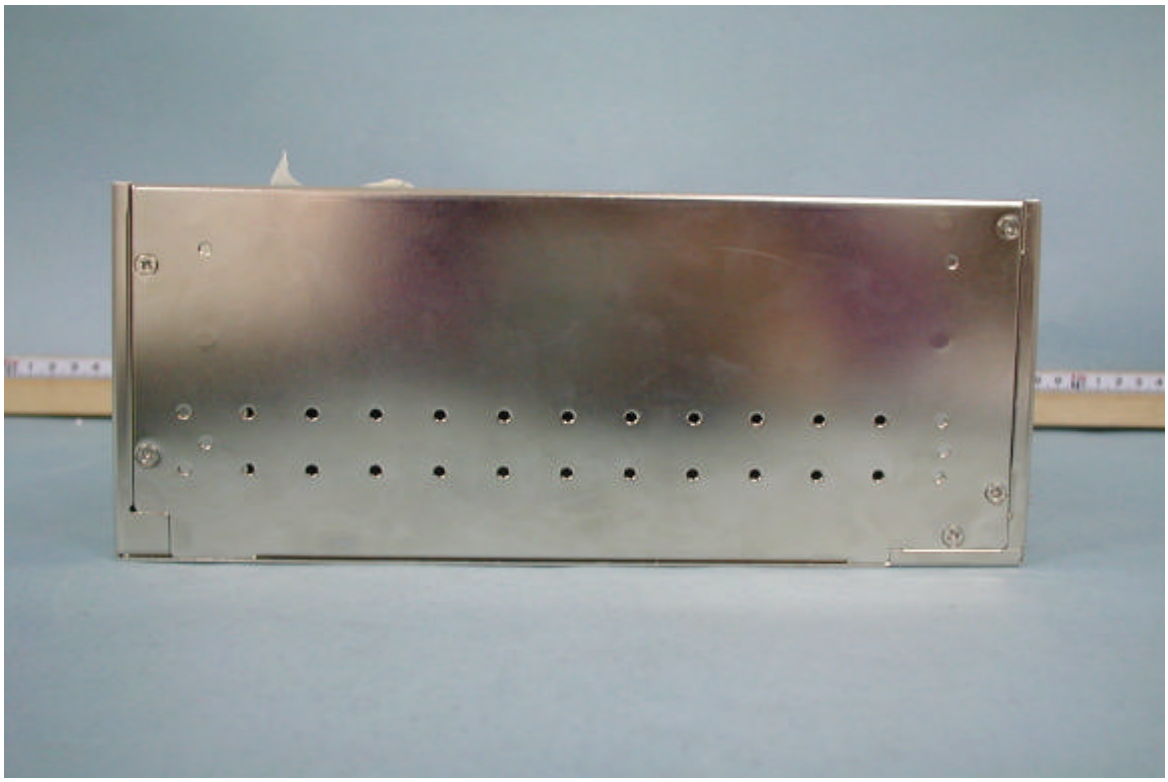

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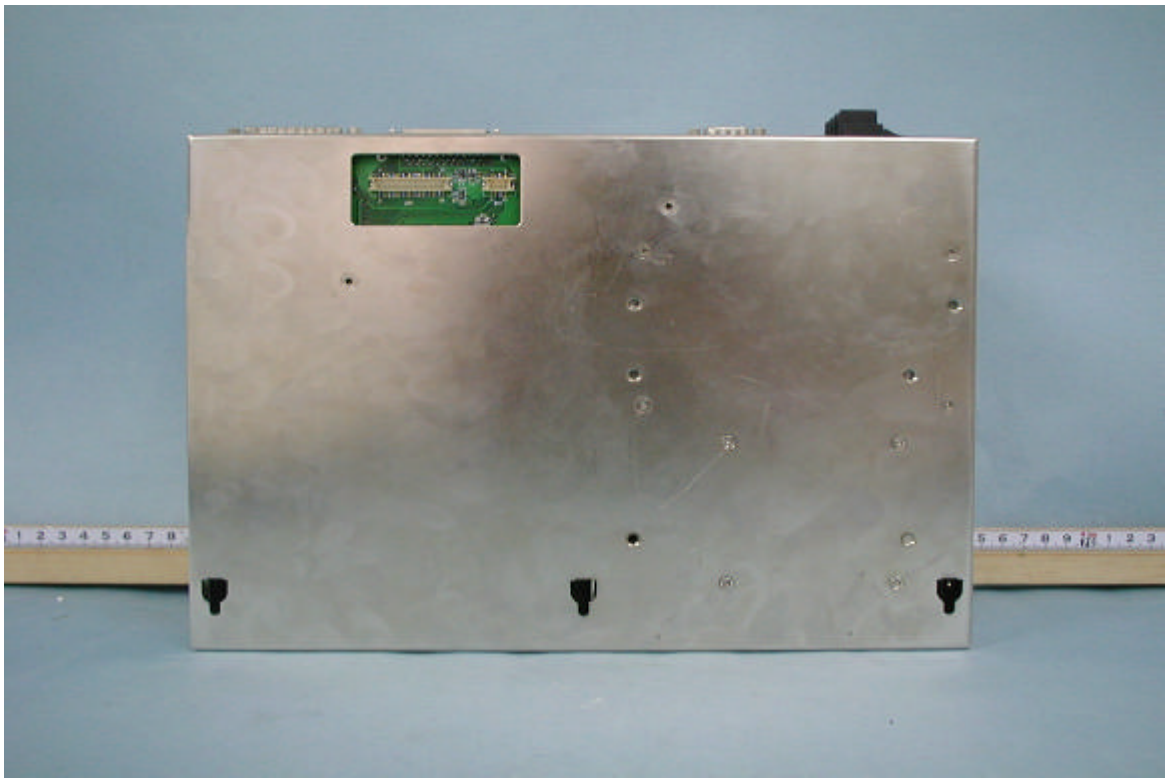

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APPENDIX 3

CONDUCTED EMISSION PLOT
RADIATED EMISSION DATA

COMPLIANCE ENGINEERING SERVICES, INC. DOCUMENT NO:CCSTP4003C
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COMPLIANCE Engineering Service, Inc.
FCC,VCCI,CISPR,CE
UL,CSA,TUV

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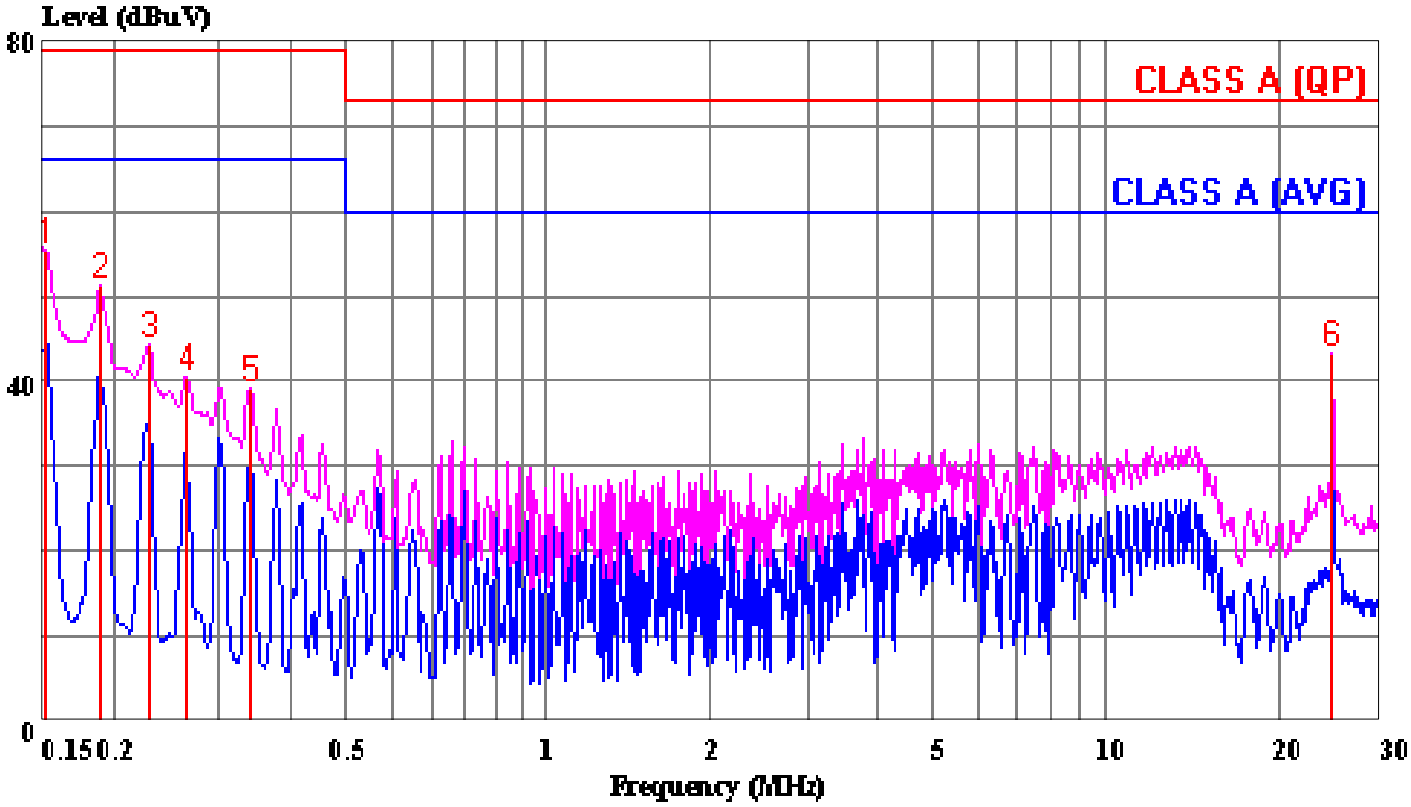
Taiwan, R.O.C.
Tel:02-2217-0894 Fax:02-2217-1254

Data#: 47 File#: 9956e.emi Date: 2002-02-06 Time: 22:46:14



(CES Conducted)

Trace: 45 46 Ref Trace:

Condition: LINE
Report No. : 02E9956
Test Engr. : CLIFF LAI
Company : AAEON Technlogy Inc.
EUT : AMB-2023HTT
Test Config : EUT/ALL PERIPHERALS
Type of Test: EN 55022 CLASS A
Mode of Op. : LCD Panel Separate/800X600(Worst)

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.152	55.43	0.02	55.45	79.00	-23.55	Peak
2	0.188	51.07	0.02	51.09	79.00	-27.91	Peak
3	0.229	44.17	0.02	44.19	79.00	-34.81	Peak
4	0.266	40.38	0.02	40.40	79.00	-38.60	Peak
5	0.343	39.03	0.03	39.06	79.00	-39.94	Peak
6	24.790	42.86	0.50	43.36	73.00	-29.64	Peak

COMPLIANCE Engineering Service, Inc.
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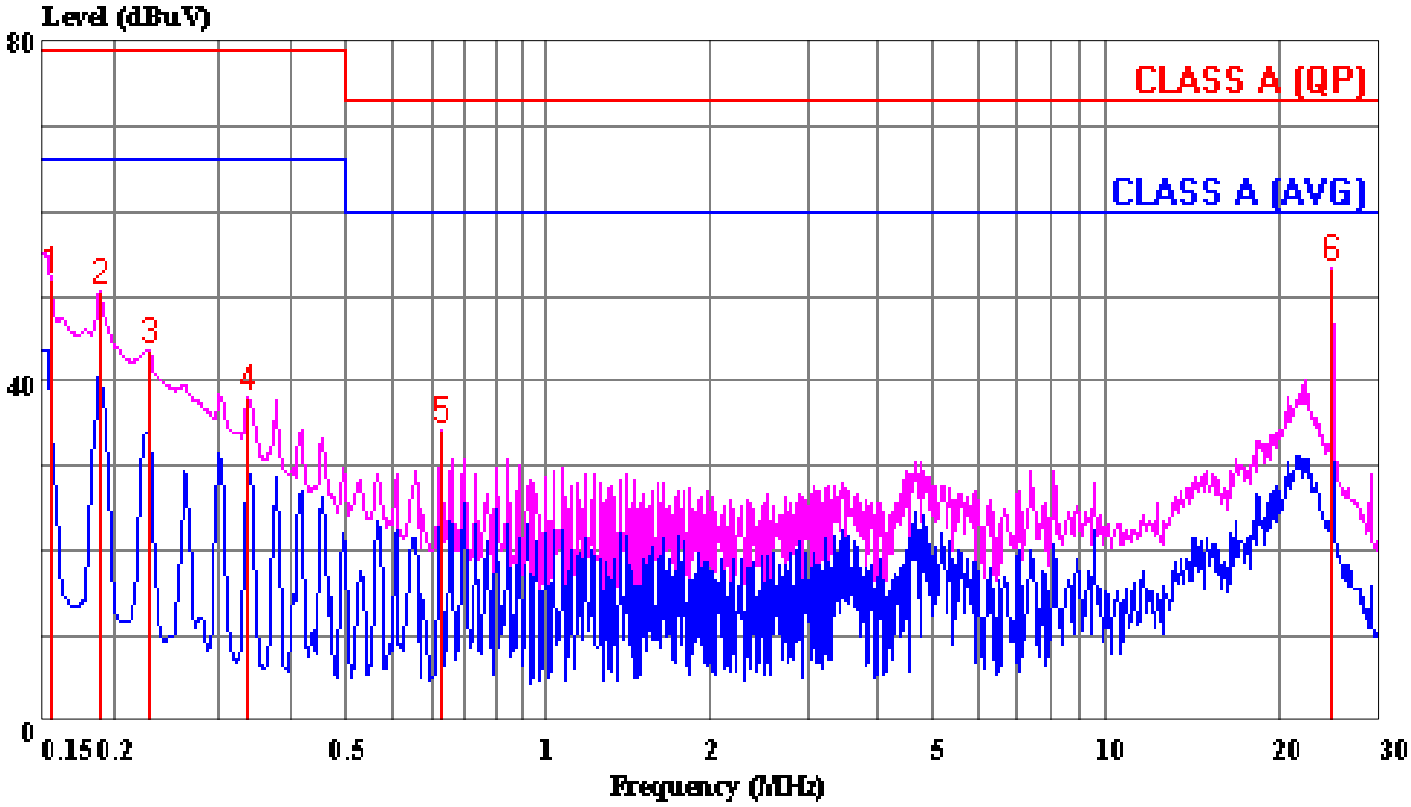
Taiwan, R.O.C.
Tel:02-2217-0894 Fax:02-2217-1254

Data#: 76 File#: 9956e.emi Date: 2002-02-06 Time: 23:17:54



(CES Conducted)

Trace: 72 73 Ref Trace:

Condition: NEUTRAL
Report No. : 02E9956
Test Engr. : CLIFF LAI
Company : AAEON Technology Inc.
EUT : AMB-2023HTT
Test Config : EUT/ALL PERIPHERALS
Type of Test: EN 55022 CLASS A
Mode of Op. : LCD Panel Separate/800X600(Worst)

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.155	51.82	0.02	51.84	79.00	-27.16	Peak
2	0.188	50.49	0.02	50.51	79.00	-28.49	Peak
3	0.229	43.57	0.02	43.59	79.00	-35.41	Peak
4	0.337	38.12	0.03	38.15	79.00	-40.85	Peak
5	0.724	34.29	0.07	34.36	73.00	-38.64	Peak
6	24.790	52.97	0.50	53.47	73.00	-19.53	Peak

COMPLIANCE Engineering Service, Inc.
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Taiwan, R.O.C.
Tel:02-2217-0894 Fax:02-2217-1254

Data#: 26 File#: 9462f.EMI Date: 2002-02-08 Time: 06:23:06
Compliance E-Site

Condition: VERTICAL / 10m
Report No. : 02E9956
Test Engr. : CLIFF LAI
Company   : AAEON Technology Inc.
EUT   : AMB-2023HTT
Test Config : EUT / ALL PERIPHERALS
Type of Test: EN 55022 CLASS A
Mode of Op. : LCD Panel Separate/800X600(Worst)
            : DC Power

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	33.038	46.36	-8.76	37.60	40.00	-2.40	QP
2	40.090	46.20	-10.89	35.31	40.00	-4.69	Peak
3	42.930	44.50	-12.51	31.99	40.00	-8.01	Peak
4	50.300	46.90	-14.17	32.73	40.00	-7.27	Peak
5	59.750	46.10	-16.35	29.75	40.00	-10.25	Peak
6	72.050	43.90	-17.48	26.42	40.00	-13.58	Peak
7	111.420	42.60	-15.50	27.10	40.00	-12.90	Peak
8	119.700	47.40	-15.90	31.50	40.00	-8.50	Peak
9	123.760	53.50	-16.39	37.11	40.00	-2.89	Peak
10	132.100	48.40	-16.08	32.32	40.00	-7.68	Peak
11	140.340	53.10	-15.36	37.74	40.00	-2.26	Peak
12	160.950	44.50	-13.65	30.85	40.00	-9.15	Peak
13	165.050	49.10	-13.41	35.69	40.00	-4.31	Peak
14	173.290	50.43	-13.00	37.43	40.00	-2.57	QP
15	189.820	50.90	-12.02	38.88	40.00	-1.12	QP
16	206.330	45.70	-11.31	34.39	40.00	-5.61	Peak
17	233.680	49.00	-9.25	39.75	47.00	-7.25	Peak
18	255.840	47.80	-7.85	39.95	47.00	-7.05	Peak
19	272.320	48.30	-7.61	40.69	47.00	-6.31	Peak
20	288.880	49.70	-7.36	42.34	47.00	-4.66	Peak
21	297.120	50.50	-7.23	43.27	47.00	-3.73	Peak
22	371.400	50.00	-5.23	44.77	47.00	-2.23	Peak
23	388.000	51.10	-4.76	46.34	47.00	-0.66	QP
24	404.700	49.78	-4.40	45.38	47.00	-1.62	QP
25	718.100	39.30	2.10	41.40	47.00	-5.60	Peak

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Tel:02-2217-0894 Fax:02-2217-1254

Data#: 27 File#: 9462f.EMI Date: 2002-02-08 Time: 04:51:31
Compliance E-Site

Condition: HORIZONTAL / 10m
Report No. : 02E9956
Test Engr. : CLIFF LAI
Company   : AAEON Technology Inc.
EUT   : AMB-2023HTT
Test Config : EUT / ALL PERIPHERALS
Type of Test: EN 55022 CLASS A
Mode of Op. : LCD Panel Separate/800X600(Worst)
            : DC Power

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	33.480	37.30	-8.76	28.54	40.00	-11.46	Peak
2	40.140	41.70	-10.89	30.81	40.00	-9.19	Peak
3	123.810	47.70	-16.39	31.31	40.00	-8.69	Peak
4	132.050	43.90	-16.08	27.82	40.00	-12.18	Peak
5	140.310	43.70	-15.36	28.34	40.00	-11.66	Peak
6	165.070	46.40	-13.41	32.99	40.00	-7.01	Peak
7	173.320	48.70	-13.00	35.70	40.00	-4.30	Peak
8	189.800	51.80	-12.02	39.78	40.00	-0.22	QP
9	206.330	49.19	-11.31	37.88	40.00	-2.12	QP
10	233.900	49.50	-9.18	40.32	47.00	-6.68	Peak
11	255.840	49.30	-7.85	41.45	47.00	-5.55	Peak
12	288.870	46.10	-7.36	38.74	47.00	-8.26	Peak
13	297.110	47.90	-7.23	40.67	47.00	-6.33	Peak
14	371.400	40.50	-5.23	35.27	47.00	-11.73	Peak
15	387.900	45.90	-4.79	41.11	47.00	-5.89	Peak
16	404.420	45.40	-4.40	41.00	47.00	-6.00	Peak
17	718.010	32.10	2.10	34.20	47.00	-12.80	Peak