



EMC COMPLIANCE TEST REPORT

for

CPU BOARD

Trade Name : ADVANTECH
Model Number : MIC-3357
Serial Number : N/A
Report Number : 010367-E
Date : May 24, 2001
Regulations : See below

Standards	Results (Pass/Fail)
EN 55022: 1998(Class A)	PASS
EN 55011:1998(Group 1, Class A)	PASS
EN 61000-3-2: 1995 + A1: 1998 + A2: 1998	PASS
EN 61000-3-3: 1995	PASS
EN 55024: 1998(following EN 61000-6-2:1999 test level)	PASS
- IEC 61000-4-2: 1995(EN 61000-4-2:1995)	PASS
- IEC 61000-4-3: 1995(EN 61000-4-3:1996)	PASS
- IEC 61000-4-4: 1995(EN 61000-4-4:1995)	PASS
- IEC 61000-4-5: 1995(EN 61000-4-5:1995)	PASS
- IEC 61000-4-6: 1996(EN 61000-4-6:1996)	PASS
- IEC 61000-4-8: 1993(EN 61000-4-8:1993)	PASS
- IEC 61000-4-11: 1994(EN 61000-4-11:1994)	PASS

Prepared for :

Advantech Co., Ltd.

**4th FL., No. 108-3 Ming-Chuan Road, Hsin-Tien City,
Taipei Hsien, Taiwan, R.O.C.**

Prepared by :

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C&C Laboratory Co., Ltd.



EC-Declaration of Conformity

For the following equipment:

CPU BOARD

(Product Name)

MIC-3357 / ADVANTECH

(Model Designation / Trade name)

Advantech Co., Ltd.

(Manufacturer Name)

4th FL., No. 108-3 Ming-Chuan Road, Hsin-Tien City, Taipei Hsien, Taiwan, R.O.C.

(Manufacturer Address)

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

- EN 55022: 1998 (Class A) ; EN55011:1998(Group1, Class A)
- EN 61000-3-2: 1995 + A1: 1998 + A2: 1998
- EN 61000-3-3: 1995
- EN55024: 1998 (following EN61000-6-2:1999 test level)
 - IEC 61000-4-2: 1995(EN 61000-4-2:1995); IEC 61000-4-3: 1995(EN 61000-4-3:1996);
 - IEC 61000-4-4: 1995(EN 61000-4-4:1995); IEC 61000-4-5: 1995(EN 61000-4-5:1995);
 - IEC 61000-4-6: 1996(EN 61000-4-6:1996); IEC 61000-4-8: 1993(EN 61000-4-8:1993);
 - IEC 61000-4-11:1994(EN 61000-4-11:1994)

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

(Company Name)

(Company Address)

Person responsible for making this declaration:

(Name, Surname)

(Position / Title)

(Place)

(Date)

(Legal Signature)

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VERIFICATION OF COMPLIANCE

Equipment Under Test: CPU BOARD

Trade Name: ADVANTECH

Model Number: MIC-3357

Serial Number: N/A

Applicant: **Advantech Co., Ltd.**
4th FL., No. 108-3 Ming-Chuan Road, Hsin-Tien City,
Taipei Hsien, Taiwan, R.O.C.

Manufacturer: **Advantech Co., Ltd.**
4th FL., No. 108-3 Ming-Chuan Road, Hsin-Tien City,
Taipei Hsien, Taiwan, R.O.C.

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

Technical Standards: EN 55022: 1998 (Class A) ; EN55011:1998(Group1, Class A)
EN 61000-3-2: 1995 + A1: 1998 + A2: 1998
EN 61000-3-3: 1995
EN55024: 1998 (following EN61000-6-2:1999 test level)
IEC 61000-4-2: 1995(EN 61000-4-2:1995);
IEC 61000-4-3: 1995(EN 61000-4-3:1996);
IEC 61000-4-4: 1995(EN 61000-4-4:1995);
IEC 61000-4-5: 1995(EN 61000-4-5:1995);
IEC 61000-4-6: 1996(EN 61000-4-6:1996);
IEC 61000-4-8: 1993(EN 61000-4-8:1993);
IEC 61000-4-11:1994(EN 61000-4-11:1994)

File Number: 010367-E

Date of test: May 18, 2001

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

Condition of Test Sample: Normal

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

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

Approved by Authorized Signatory: Kurt Chen

Kurt Chen / Q.A. Manager



GENERAL INFORMATION

Applicant: **Advantech Co., Ltd.**
4th FL., No. 108-3 Ming-Chuan Road, Hsin-Tien City,
Taipei Hsien, Taiwan, R.O.C.

Contact Person: John Chou

Manufacturer: **Advantech Co., Ltd.**
4th FL., No. 108-3 Ming-Chuan Road, Hsin-Tien City,
Taipei Hsien, Taiwan, R.O.C.

File Number: 010367-E

Date of Test: May 18, 2001

Equipment Under Test: CPU BOARD

Model Number: MIC-3357

Serial Number: N/A

Technical Standards: EN 55022: 1998 (Class A) ; EN55011:1998(Group1, Class A)
EN 61000-3-2: 1995 + A1: 1998 + A2: 1998
EN 61000-3-3: 1995
EN55024: 1998 (following EN61000-6-2:1999 test level)
IEC 61000-4-2: 1995(EN 61000-4-2:1995);
IEC 61000-4-3: 1995(EN 61000-4-3:1996);
IEC 61000-4-4: 1995(EN 61000-4-4:1995);
IEC 61000-4-5: 1995(EN 61000-4-5:1995);
IEC 61000-4-6: 1996(EN 61000-4-6:1996);
IEC 61000-4-8: 1993(EN 61000-4-8:1993);
IEC 61000-4-11:1994(EN 61000-4-11:1994)

**Frequency Range
(EN 55022):** 150kHz to 30MHz for Line Conducted Test
30MHz to 1000MHz for Radiated Emission Test

Test Site **C & C LABORATORY CO., LTD.**
No. 81-1, 210 Lane, Pa-de 2nd Road, Lu-Chu Hsiang
Taoyuan, Taiwan, R. O. C.



SYSTEM DESCRIPTION

EUT Test Program:

1. EMI test program was loaded and executed under Windows environment.
2. The EMI test program sequentially exercised all I/O's of EUT.
3. A communicated software was loaded and executed to communicate between EUT and remote side.
4. The EUT sends to and receives message from remote side, and filling the screen of monitor with upper case of "H" patterns.
5. Repeat 2. to 4. Throughout the test.



PRODUCT INFORMATION

Housing Type: N/A
EUT Power Rating: DCV from Power Supply
AC Power during Test 230VAC/50Hz
Power Supply Manufacturer: EMACS
Power Supply Model Number: P1U-6200P
AC Power Cord Type: Unshielded, 1.8m (Detachable) to Power Supply
CPU Manufacture: Intel **Type:** PII 266 MHz
OSC/Clock Frequencies: 66MHz
Memory Capacity: **Install:** 64MB
Chassis Manufacturer: Advantech **Model:** MIC-3035
HDD Manufacturer : Quantum **Model:** SQ-035NTD-12547-127-166T(20.5G)
VGA Card Type: On Board

I/O Port of EUT

I/O PORT TYPES	Q'TY	TESTED WITH
1) Serial Port	2	2
2) Video Port	1	1
3) PS/2 Keyboard Port	1	1
4) LAN Port	3	3
5) USB Port	1	1



SUPPORT EQUIPMENT

No.	Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
1.	Monitor	CPD-G200	N/A	N/A	Sony	Shielded, 1.8m (with one core)	Unshielded, 1.8m
2.	Modem	2400	94-364-176284	DK467GSM24	Computer Peripherals	Shielded, 1.8m	Unshielded, 1.8m
3.	PS/2 Keyboard	SK-2502C	M990543850	FCC DoC	HP	Shielded, 1.8m	N/A
4.	USB Mouese	M-BB48	LZE92400259	FCC DoC	Logitech	Shielded, 1.8m	N/A
5.	Mouse	N/A	KT456	IOWCM 290F	N/A	Shielded, 1.8m	N/A
6.	Hub	N/A	N/A	N/A	ISHI	LAN Cable: Unshielded, 1.4 m x 3	N/A
7.	Notebook PC (Remote)	Valiant 6380Iptd	N/A	N/A	KDS	LAN Cable: Unshielded, 10 m x 1	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.



TEST FACILITY

- Location:** No. 15, 14 Line, Chin Twu Chi, Lu Chu Hsiang, Taoyuan, Taiwan, R.O.C.
- Description:** There are Four 3/10m open area test sites and three line conducted labs for final test The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 1992 and CISPR 22/EN 55022 requirements.
- Site Filing:** A site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
- Registration also was made with Voluntary Control Council for Interference (VCCI).
- Site Accreditation:** Accredited by NEMKO (Authorization #: ELA 124) for EMC & A2LA (Certificate #: 824.01) for Emission
- Also accredited by BSMI for the product category of Information Technology Equipment.
- Instrument Tolerance:** All measuring equipment is in accord with ANSI C63.4 and CISPR 22 requirements that meet industry regulatory agency and accreditation agency requirement.
- Ground Plane:** Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

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



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:

Open Area Test Site # 4					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
Spectrum Analyzer	ADVANTEST	R3132	91700456	02/21/2001	02/20/2002
EMI Test Receiver	R&S	ESVS10	846285/016	04/16/2001	04/15/2002
Precision Dipole	R&S	HZ-12	846932/0004	07/14/2000	07/13/2001
Precision Dipole	R&S	HZ-13	846556/0008	07/14/2000	07/13/2001
Bilog Antenna	CHASE	CBL 6112B	2462	01/16/2001	01/15/2002
Turn Table	Chance most	N/A	N/A	N.C.R	N.C.R
Antenna Tower	Chance most	N/A	N/A	N.C.R	N.C.R
Controller	Chance most	N/A	N/A	N.C.R	N.C.R
RF Switch	ANRITSU	MP59B	M51067	N.C.R	N.C.R
Site NSA	C&C Lab.	N/A	N/A	11/24/2000	11/23/2001
Spectrum Analyzer	ADVANTEST	R3132	91700456	02/21/2001	02/20/2002
EMI Test Receiver	R&S	ESVS10	846285/016	04/16/2001	04/15/2002

Conducted Emission Test Site: # 4

Conducted Emission Test Site # 4					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL. DUE
EMI Test Receiver	R&S	ESHS10	843743/015	12/15/2000	12/14/2001
LISN	R&S	ENV 4200	8303261016	11/18/2000	11/17/2001
LISN	EMCO	3825/2	9003/1382	02/08/2001	02/07/2002
ISN	R & S	ENY41	830663/024	04/04/2001	04/03/2002

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



TEST EQUIPMENT LIST

For Power Harmonic & Voltage Fluctuation/Flicker Measurement:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
HAEFELY TRENCH Harmonic & Flicker Tester	PHF 555	080 419-25	Oct. 16, 2000	Oct. 15, 2001

For ESD test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
HAEFELY/TRENCH ESD Generator	PESD 1600	H710203	Sep. 02, 2000	Sep. 01, 2001

For Radiated Electromagnetic Field immunity Measurement:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
Maconi /Signal Generator	2022D	119246/003	Aug. 21, 2000	Aug. 20, 2001
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	Mar. 16, 2001	Mar. 15, 2002
EMCO Power Antenna	93141	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. 21, 2000	Aug. 20, 2001

For CS test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
Maconi /Signal Generator	2022D	119246/003	Aug. 21, 2000	Aug. 20, 2001
MEB / CDN M3	M3	3683	Sep. 11, 2000	Sep. 10, 2001
C.D.N / CDN M2	CDN-M2	A3002010	Apr. 17, 2001	Apr. 16, 2002
M2S / Power Amplifier	A00181/1000	9801-112	N/A	N/A

For Surge Immunity test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
HAEFELY TRENCH/ Surge Tester	PSURGE 4010	583 334-71	Sep. 01, 2000	Aug. 31, 2001

For Power Frequency Magnetic Field Immunity test:

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
F.W.BELL/ TRIAX ELF Magnetic Field Meter	4090	9711	Oct, 20,2000	Oct.19, 2001
HAEFELY TRENCH/ Magnetic Field Tester	MAG 100.1	080 938-01	N/A	N/A

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

Manufacturer/Type	Model No.	Serial No.	Last Cal.	Cal. Due
HAEFELY TRENCH/ Dips/Interruption and Variations Simulator	PLINE 1610	080 344-05	Feb. 08, 2001	Feb. 07, 2002

SECTION 1 EN 55022 (LINE CONDUCTED & RADIATED EMISSION)

MEASUREMENT PROCEDURE (PRELIMINARY LINE CONDUCTED EMISSION TEST)

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN 55022 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per EN 55022.
- 3) All I/O cables were positioned to simulate typical actual usage as per EN 55022.
- 4) The EUT received AC power through a Line Impedance Stabilization Network (LISN) which supplied power source 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. **1024 x 768 Resolution + LAN 3**
2. **800 x 600 Resolution + LAN 3**
3. **640 x 480 Resolution + LAN 3**
4. **1024 x 768 Resolution + LAN 1**
5. **1024 x 768 Resolution + LAN 2**

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

Mode: 1.

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



MEASUREMENT PROCEDURE (FINAL LINE CONDUCTED EMISSION TEST)

- 1) EUT and support equipment was set up on the test bench as per step 10 of the preliminary test.
- 2) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.
- 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.



MEASUREMENT PROCEDURE

(COMMON MODE CONDUCTED EMISSION MEASUREMENT)

- 1) Selecting ISN for unscreened cable or a current probe for screened cable to take measurement.
- 2) The port of the EUT was connected to the remote side support equipment through the ISN/Current Probe and communication in normal condition.
- 3) Making a overall range scan by using the test receiver controlled by controller and record at least six highest emissions for showing in the test report.
- 4) 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.
- 5) In case of measuring on the screened cable, the current limit shall be applied, otherwise the voltage limit be applied.
- 6) The following test mode(s) were scanned during the preliminary test:

Mode:

1. LAN 1
2. LAN 2
3. LAN 3

- 7) After the preliminary scan, found the following test mode is worst case.

Mode: 1

- 8) 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	---	87	74	-43.05	---	

- 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.

COMMON MODE CONDUCTED EMISSION LIMIT AT TELECOMMUNICATION PORTS

<input checked="" type="checkbox"/> CE-Mark (EN 55022:1998)					
CLASS	Measuring Band	Voltage limit dB(uV)		Current limit dB(uA)	
		Q.P.	AV	Q.P.	AV
A	150kHz-500kHz	97-87	84-74	53-43	40-30
	500kHz-30MHz	87	74	43	30

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

MEASUREMENT PROCEDURE (PRELIMINARY RADIATED EMISSION TEST)

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per EN 55022 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per EN 55022.
- 3) All I/O cables were positioned to simulate typical actual usage as per EN 55022.
- 4) The EUT received AC power source from the outlet socket under the turntable. All support equipment received 110VAC/60Hz power from another socket under the turntable.
- 5) The antenna was placed at some given distance 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 quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- 7) The following test mode(s) were scanned during the preliminary test:

Mode(s):

- 1. 1024 x 768 Resolution + LAN 3**
- 2. 800 x 600 Resolution + LAN 3**
- 3. 640 x 480 Resolution + LAN 3**
- 4. 1024 x 768 Resolution + LAN 1**
- 5. 1024 x 768 Resolution + LAN 2**

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

Mode: 1.

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



MEASUREMENT PROCEDURE (FINAL RADIATED EMISSION TEST)

- 1) EUT and support equipment were set up on the turntable as per step 8 of the preliminary test.
- 2) The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- 3) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.
- 4) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

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

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



RADIATED EMISSION LIMIT

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (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

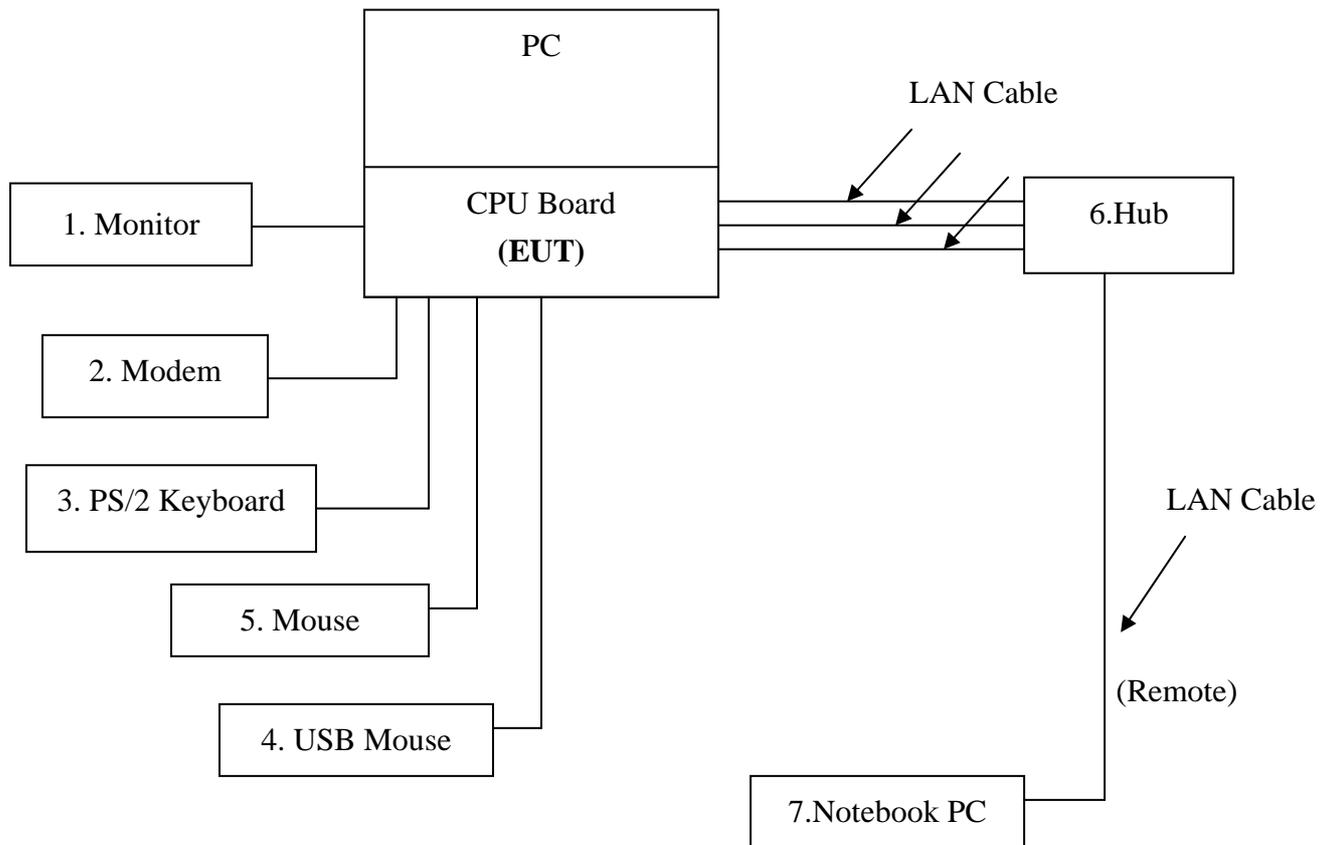
SYSTEM DIAGRAM OF CONNECTIONS BETWEEN EUT AND SIMULATORS

EUT: CPU BOARD

Trade Name: ADVANTECH

Model Number: MIC-3357

Power Cord: Unshielded, 1.8m(to Power Supply)





SUMMARY DATA

(COMMON Mode)

(LAN Port)

Model Number: MIC-3357

Location: Site # 4

Tested by: Tommy Lin

Test Mode: Mode 1

Test Results: Passed

Temperature: 23°C

Humidity: 70%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
4.980	57.80	---	87.00	74.00	-29.2	---	
6.302	54.60	---	87.00	74.00	-32.4	---	
7.514	59.60	---	87.00	74.00	-27.4	---	
10.331	57.10	---	87.00	74.00	-29.9	---	
11.893	53.40	---	87.00	74.00	-33.6	---	
20.000	54.00	---	87.00	74.00	-33.0	---	

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

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



SUMMARY DATA (LINE CONDUCTED TEST)

Model Number: MIC-3357

Location: Site # 4

Tested by: Tommy Lin

Test Mode: Mode 1

Test Results: Passed

Temperature: 23°C

Humidity: 70%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
10.002	42.7	---	73.0	60.0	-30.3	---	L1
10.314	42.4	---	73.0	60.0	-30.6	---	L1
11.738	44.5	---	73.0	60.0	-28.5	---	L1
14.384	46.3	---	73.0	60.0	-26.7	---	L1
15.090	43.4	---	73.0	60.0	-29.6	---	L1
20.002	42.3	---	73.0	60.0	-30.7	---	L1
10.000	43.6	---	73.0	60.0	-29.4	---	L2
10.412	45.8	---	73.0	60.0	-27.2	---	L2
12.989	46.4	---	73.0	60.0	-26.6	---	L2
14.390	43.1	---	73.0	60.0	-29.9	---	L2
15.018	44.3	---	73.0	60.0	-28.7	---	L2
20.000	44.5	---	73.0	60.0	-28.5	---	L2

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

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



SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: MIC-3357

Location: Site # 4

Tested by: Tommy Lin

Test Mode: Mode 1

Polar: Vertical -- 10m

Detector Function: Quasi-Peak

Test Results: Passed

Temperature: 24°C

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)
83.74	18.5	8.6	27.1	40.0	-12.9
136.01	20.4	12.0	32.4	40.0	-7.6
204.81	17.0	10.8	27.8	40.0	-12.2
220.82	15.9	11.3	27.2	40.0	-12.8
240.02	22.1	13.0	35.1	47.0	-11.9
750.04	11.9	23.2	35.1	47.0	-11.9



SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: MIC-3357

Location: Site # 4

Tested by: Tommy Lin

Test Mode: Mode 1

Polar: Horizontal -- 10m

Detector Function: Quasi-Peak

Test Results: Passed

Temperature: 24°C

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)
137.72	10.6	11.9	22.5	40.0	-17.5
204.10	11.4	10.7	22.1	40.0	-17.9
218.02	12.5	11.2	23.7	40.0	-16.3
407.20	13.8	18.9	32.7	47.0	-14.3
682.27	12.4	21.8	34.2	47.0	-12.8
750.95	12.9	23.2	36.1	47.0	-10.9

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

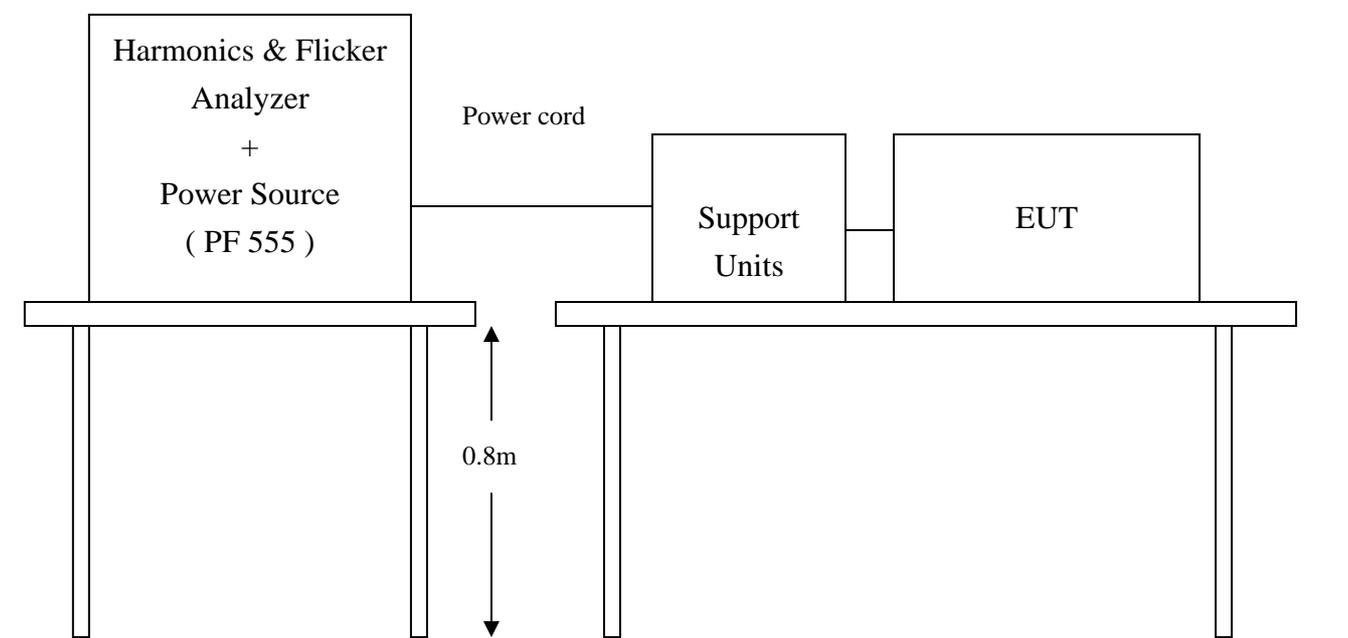
POWER HARMONICS MEASUREMENT

Port : AC mains
Basic Standard : EN 61000-3-2 (1995 + A1: 1998 + A2: 1998)
Limits : CLASS A ; CLASS D
Tester : Tommy Lin
Temperature : 22°C
Humidity : 55%

VOLTAGE FLUCTUATION/FLICKER MEASUREMENT

Port : AC mains
Basic Standard : EN 61000-3-3 (1995)
Limits : §5 of EN 61000-3-3
Tester : Tommy Lin
Temperature : 22°C
Humidity : 55%

Block Diagram of Test Setup:



Result:

Please see the attached test data.



EN 61000-3-2 TEST REPORT 2001/5/18 07:57 PM

Unit: CPU BOARD

Serial No.: MIC-3357

Remarks: TEMP:22°C HUM:55%

Operator: TOMMY LIN

=====

TEST SETUP

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

Prog. Zo Enabled: YES Prog. Zo: 0.000

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

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

MAX WATTS:37.6W



TEST DATA

Result: PASS

Harmonic Current Results

Harmonic Voltage Results

Hn	AMPS	LO Limit	HI Limit	Result
0	0.000	0.000	0.000	PASS
1	0.207	NaN	NaN	PASS
2	0.000	1.080	1.080	PASS
3	0.015	2.300	2.300	PASS
4	0.001	0.430	0.430	PASS
5	0.010	1.140	1.140	PASS
6	0.000	0.300	0.300	PASS
7	0.009	0.770	0.770	PASS
8	0.000	0.230	0.230	PASS
9	0.005	0.400	0.400	PASS
10	0.000	0.184	0.184	PASS
11	0.003	0.330	0.330	PASS
12	0.000	0.153	0.153	PASS
13	0.005	0.210	0.210	PASS
14	0.000	0.131	0.131	PASS
15	0.003	0.150	0.150	PASS
16	0.000	0.115	0.115	PASS
17	0.002	0.132	0.132	PASS
18	0.000	0.102	0.102	PASS
19	0.001	0.118	0.118	PASS
20	0.000	0.092	0.092	PASS
21	0.004	0.107	0.107	PASS
22	0.000	0.084	0.084	PASS
23	0.002	0.098	0.098	PASS



24	0.000	0.077	0.077	PASS
25	0.004	0.090	0.090	PASS
26	0.000	0.071	0.071	PASS
27	0.003	0.083	0.083	PASS
28	0.000	0.066	0.066	PASS
29	0.003	0.078	0.078	PASS
30	0.000	0.061	0.061	PASS
31	0.002	0.073	0.073	PASS
32	0.000	0.058	0.058	PASS
33	0.001	0.068	0.068	PASS
34	0.000	0.054	0.054	PASS
35	0.001	0.064	0.064	PASS
36	0.000	0.051	0.051	PASS
37	0.001	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 2001/5/18 08:45 PM

Unit: CPU BOARD

Serial No.: MIC-3357 (CONTINUE)

Remarks: TEMP:22°C HUM:55%

Operator: TOMMY LIN

=====

TEST SETUP

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

Prog. Zo Enabled: YES Prog. Zo: 0.000

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

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



TEST DATA

Result: PASS

EUT Data	Limit	Result	Test Enabled
Pst max	0.008	1.00	PASS true
Plt max	0.008	0.65	PASS true
dc %	0.00	3.00	PASS true
dmax %	0.00	4.00	PASS true
d(t) sec.	0.00	0.20	PASS true

Power Source Data

Source Pst max	0.025	0.400	PASS true
% THD	0.03	3.00	PASS true

END OF REPORT



EN 61000-3-3 TEST REPORT 2001/5/18 09:01 PM

Unit: CPU BOARD

Serial No.: MIC-3357 (Switch Manual)

Remarks: TEMP:22°C HUM:55%

Operator: TOMMY LIN

=====

TEST SETUP

Test Freq.: 50.00 Hz. Test Voltage: 230.0 vac
Waveform : SINE
Test Time: 3.0 min. Tshort: 3.0 min.

Prog. Zo Enabled: YES Prog. Zo: 0.000

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

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



TEST DATA

Result: PASS

EUT Data	Limit	Result	Test Enabled
Pst max	0.011	1.00	PASS true
Plt max	0.011	0.65	PASS true
dc %	0.00	3.00	PASS true
dmax %	0.00	4.00	PASS true
d(t) sec.	0.00	0.20	PASS true

Power Source Data			
Source Pst max	0.025	0.400	PASS true
% THD	0.03	3.00	PASS true

END OF REPORT

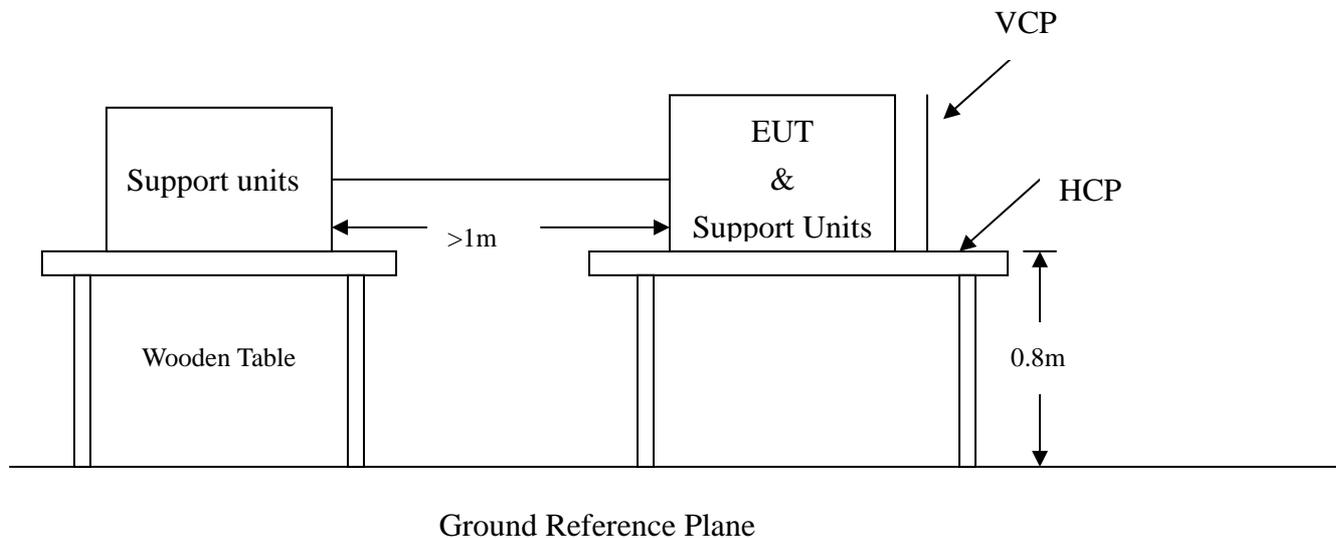
SECTION 3 EN 61000-4-2 (ELECTROSTATIC DISCHARGE)

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)
Tested by : Tommy Lin
Temperature/Humidity: 22⁰C /55%

Block Diagram of Test Setup:

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





Test Procedure:

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

The electrostatic discharges were applied as follows:

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

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

(Blue arrow mark for contact discharge, red arrow mark for air discharge.)

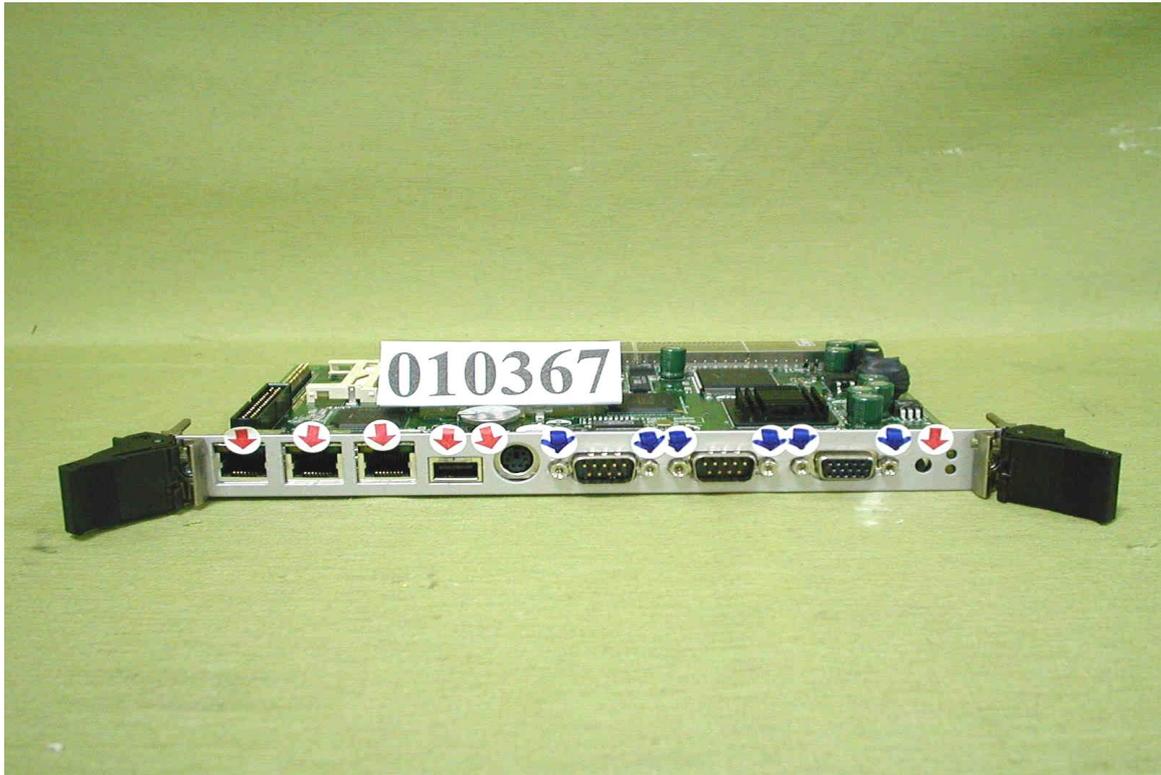
Performance & Result:

- Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
- Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

PASS **FAILED**

Observation: No any function degraded during the tests.

The Tested Points of EUT

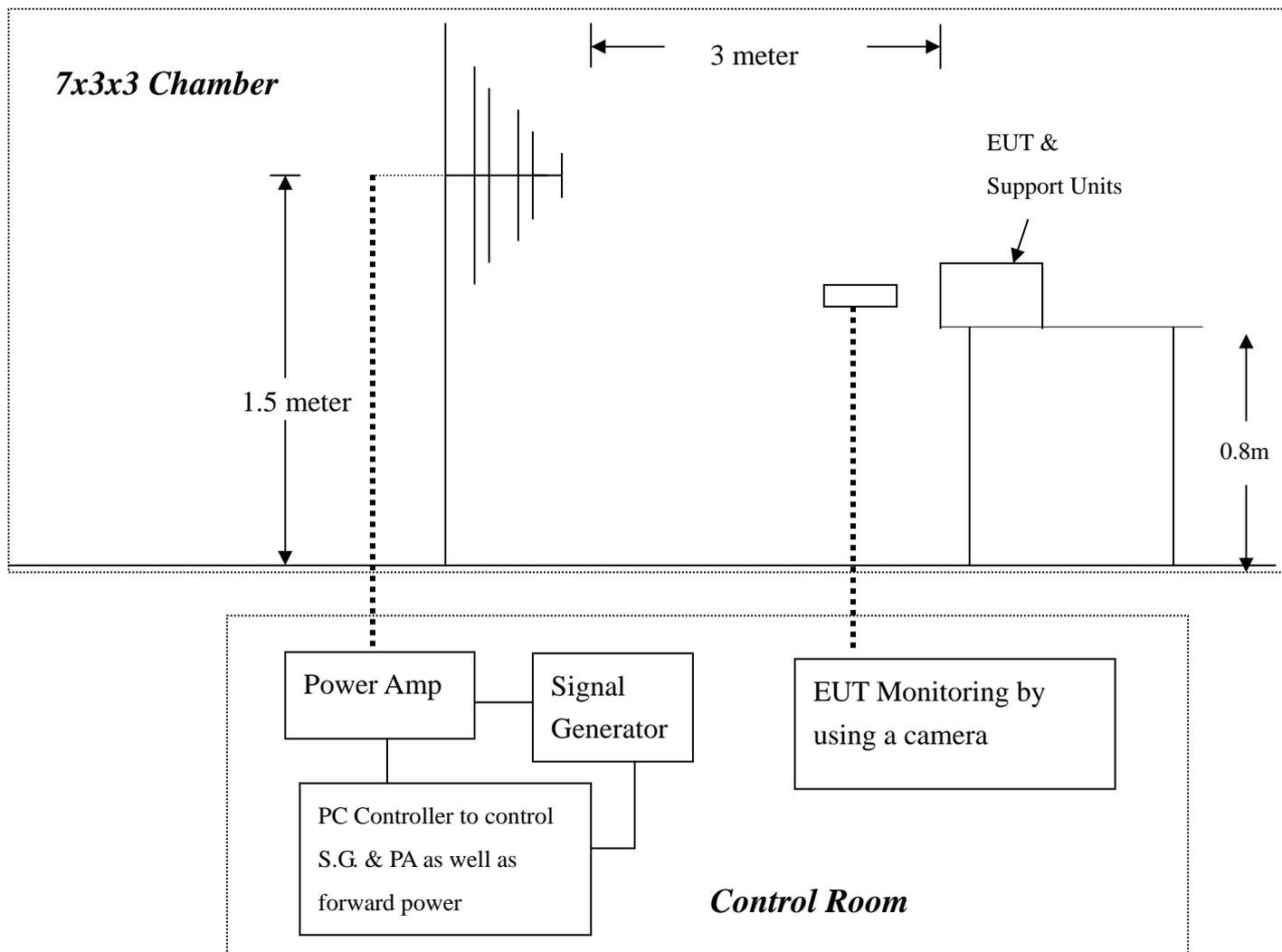


SECTION 4 IEC 61000-4-3 (RADIATED ELECTROMAGNETIC FIELD)

RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Port : Enclosure
Basic Standard : IEC 61000-4-3
Requirements : 10 V/m, with 80% AM. 1kHz Modulation
Performance Criteria : A (Standard Required)
Tested by : Tommy Lin
Temperature : 22⁰C
Humidity : 55%

Block Diagram of Test Setup:





Test Procedure:

1. The EUT was located at the edge of supporting table keep 3 meter away from transmitting antenna, it just the calibrated square area of field uniformity. The support units were located outside of the uniformity area, but the cable(s) connected with EUT were exposed to the calibrated field as per IEC 61000-4-3.
2. A scroll 'H' messages were displayed on part of screen of EUT and an enlarged 'H' characters were displayed on the other part of screen of EUT.
3. Adjusting the monitoring camera to monitor the 'H' message as clear as possible.
4. Setting the testing parameters of RS test software per IEC 61000-4-3.
5. Performing the test at each side of with specified level from 80MHz to 1000MHz at 1% steps.
6. Recording the test result in following table.
7. It is not necessary to perform test as per annex A of EN 55024:1998 if the EUT doesn't belong to TTE product.

IEC 61000-4-3 test conditions:

Test level : 10V/m
Steps : 1 % of fundamental;
Dwell Time : 3 sec

Range (MHz)	Field	Modulation	Polarity	Position (°)	Result (Pass/Fail)
80-1000	10V	Yes	H	Front	Pass
80-1000	10V	Yes	V	Front	Pass
80-1000	10V	Yes	H	Right	Pass
80-1000	10V	Yes	V	Right	Pass
80-1000	10V	Yes	H	Back	Pass
80-1000	10V	Yes	V	Back	Pass
80-1000	10V	Yes	H	Left	Pass
80-1000	10V	Yes	V	Left	Pass



Performance & Result:

- Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
- Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- Criteria C:** Temporary loss of function is allowed, provided the functions self-recoverable or can be restored by the operation of controls.

PASS **FAILED**

Observation: No any function degraded during the tests.

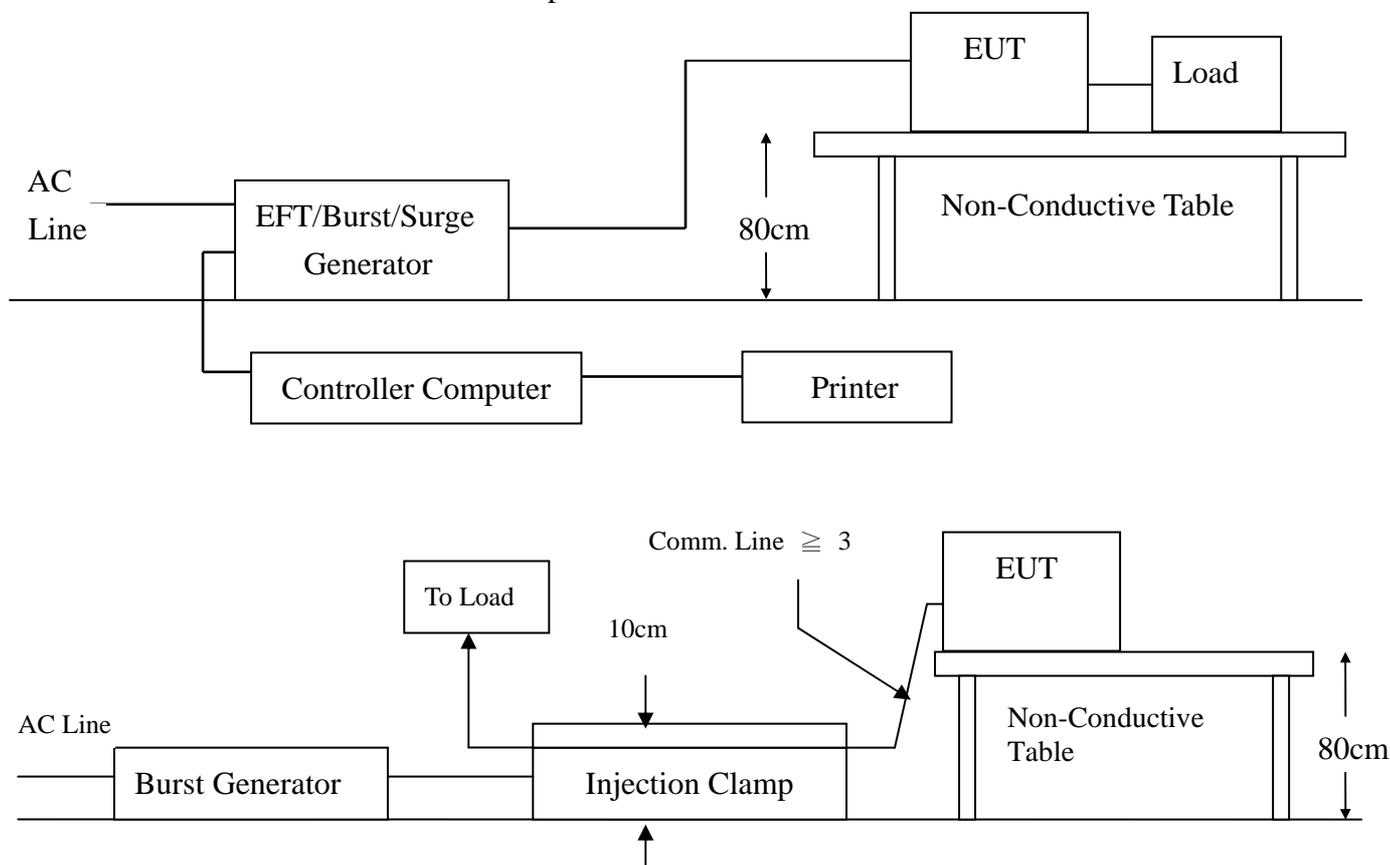
SECTION 5 IEC 61000-4-4 (FAST TRANSIENTS/BURST)

FAST TRANSIENTS/BURST IMMUNITY TEST

Port	: On Power Supply Lines and Data Cable
Basic Standard	: IEC 61000-4-4
Requirements	: $\pm 2\text{kV}$ for Power Supply Line $\pm 1\text{kV}$ for LAN Cable
Performance Criteria	: B (Standard require)
Tested by	: Tommy Lin
Temperature	: 22°C
Humidity	: 55%

Block Diagram of Test Setup:

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





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 sent to and monitor (via EUT), filling the screens with upper case of “H” patterns.
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.

Test conditions:

Impulse Frequency: 5kHz

Tr/Th: 5/50ns

Burst Duration: 15ms

Burst Period: 3Hz

Inject Line	Voltage kV	Inject Method	Result (Pass/Fail)
L1	±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.

PASS **FAILED**

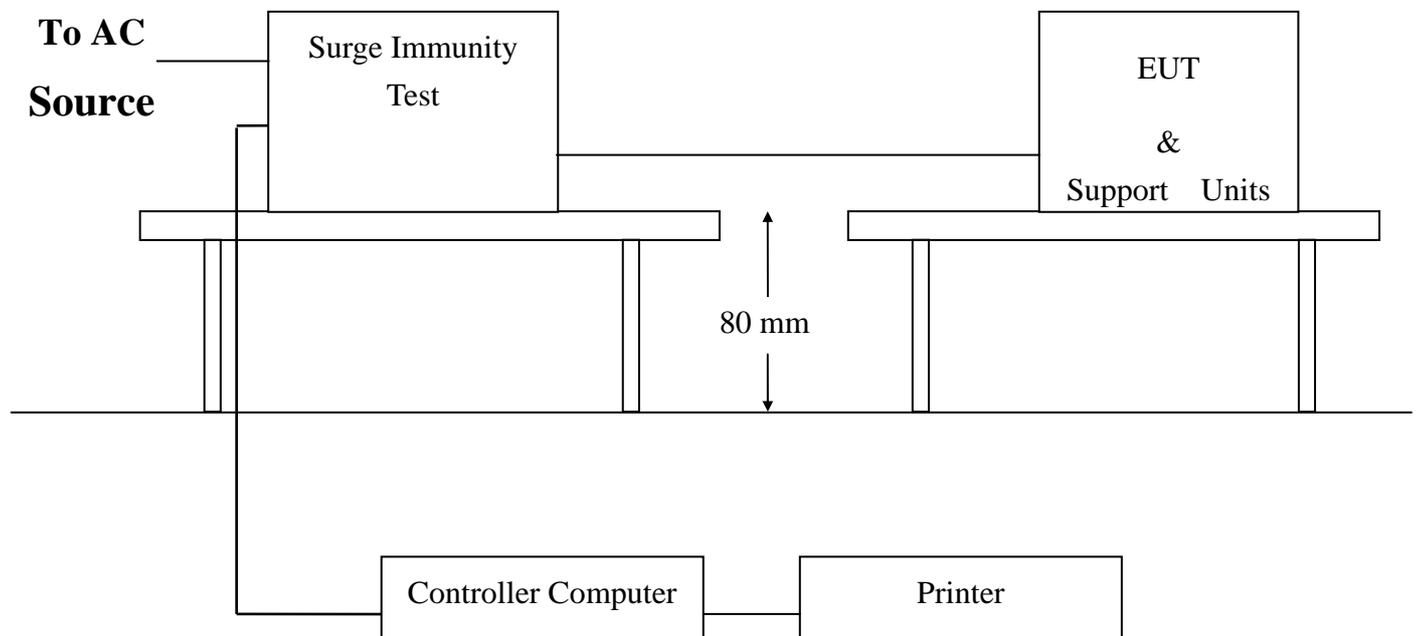
Observation: No any function degraded during the tests.

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

SURGE IMMUNITY TEST

Port	: Power Cord
Basic Standard	: IEC 61000-4-5
Requirements	: +/- 1kV (Line to Line) : +/- 2kV (Line to Ground)
Performance Criteria	: B (Standard require)
Tester	: Tommy Lin
Temperature	: 22°C
Humidity	: 55%

Block Diagram of Test Setup:





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 scroll H test program was loaded and executed in Windows mode.
4. The PC sent above message to EUT and related peripherals through the test.
5. Selecting appropriate points of EUT for discharge and put a mark on EUT to show tested points.
6. The following test condition was followed during the tests.

Test conditions:

Voltage Waveform : 1.2/50 us
 Current Waveform : 8/20 us
 Polarity : Positive/Negative
 Phase angle : 0°, 90°, 270°
 Number of Test : 5

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

Performance & Result:

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

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

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

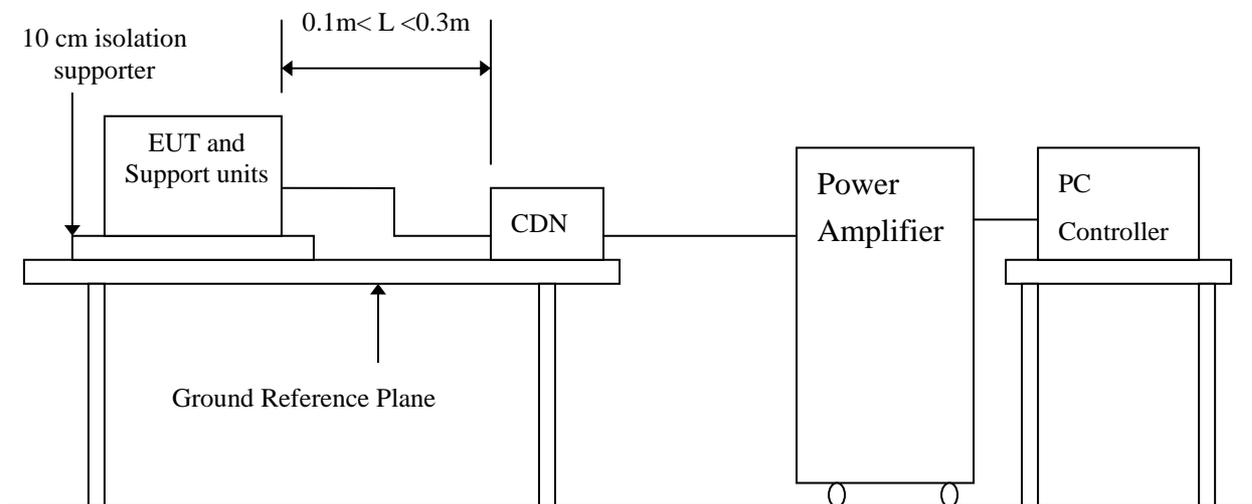
PASS **FAILED**

Observation: No any function degraded during the tests.

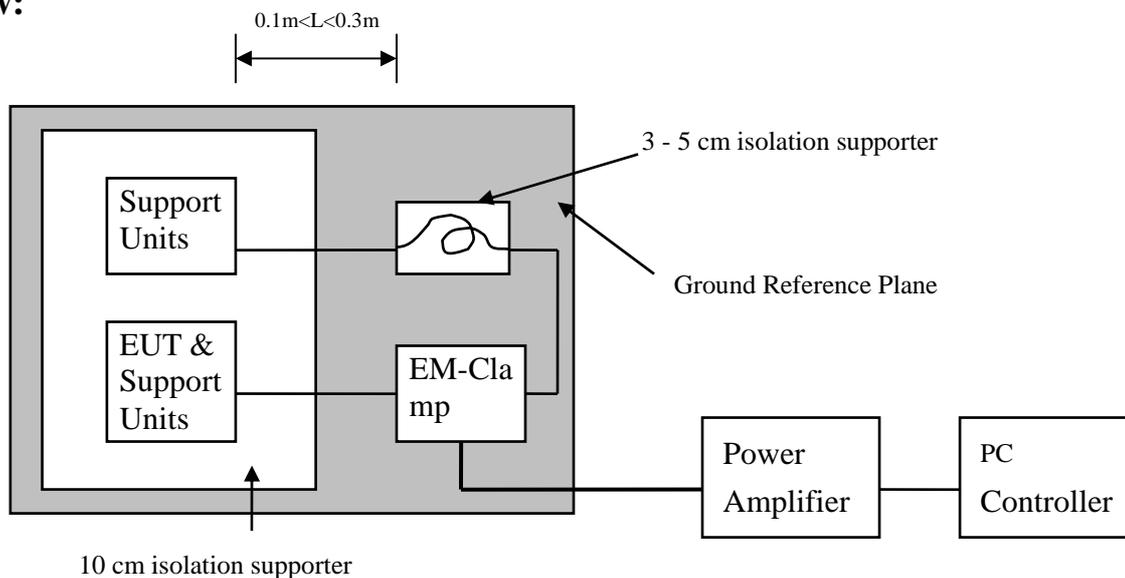
SECTION 7 IEC 61000-4-6 (CONDUCTED DISTURBANCE/INDUCED BY RADIO-FREQUENCY FIELD)

Port : Power cord and Data Cable
Basic Standard : IEC 61000-4-6
Requirements : 10 V with Modulated
Injection Method : CDN-M3 for Power Cord
 EM-Clamp for LAN Cable
Tested by : Tommy Lin
Performance Criteria : A
Temperature : 22°C
Humidity : 55%

Block Diagram of Test Setup:



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. A 'H' messages were displayed on EUT.
3. Adjusting the monitoring camera to monitor the H message as clear as possible.
4. Setting the testing parameters of CS test software per IEC 61000-4-6.
5. Recording the test result in following table.

Test conditions:

Frequency Range : 0.15MHz-80MHz

Frequency Step : 1% of fundamental

Dwell Time : 3 sec

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

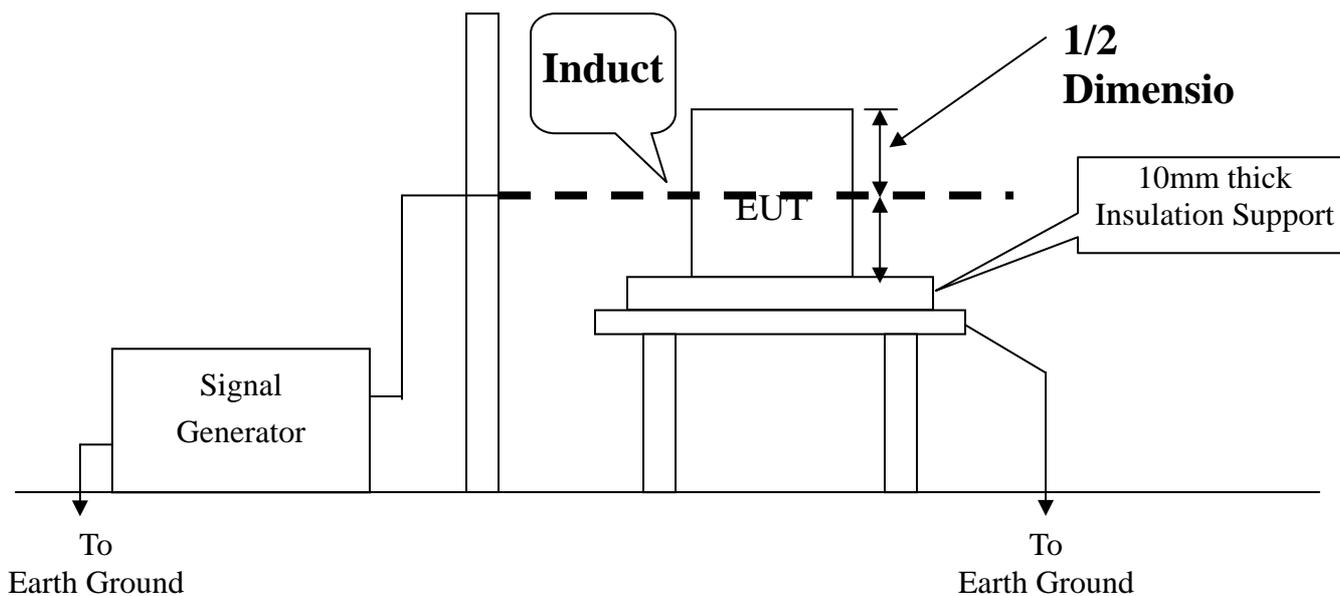
PASS **FAILED**

Observation: No any function degraded during the tests.

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

Port : Enclosure
Basic Standard : IEC 61000-4-8
Requirements : 30 A/m
Performance Criteria : A (Standard Required)
Temperature : N/A
Humidity : N/A
Tested by : Tommy Lin

Block Diagram of Test Setup:





Test Procedure:

Field Strength: 30A/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

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

VOLTAGE DIPS / SHORT INTERRUPTIONS

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

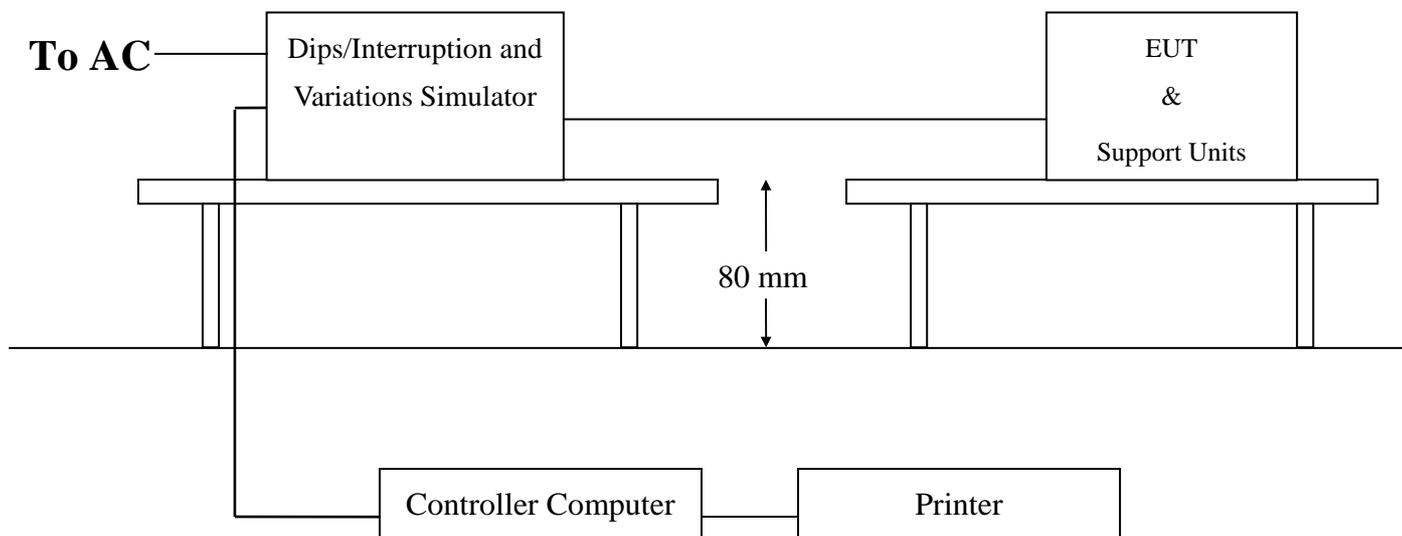
Voltage Dips (EN55024)	Test Level % U_T	Reduction (%)	Duration	Performance Criteria
	<5	>95	0.5(periods)	B
	70	30	25(periods)	C

Voltage Dips (EN61000-6-2)	Test Level % U_T	Reduction (%)	Duration	Performance Criteria
	70	30	10ms	B
	40	60	100 and 1000ms	C

Voltage Interceptions (EN55024) (EN61000-6-2)	Test Level % U_T	Reduction (%)	Duration	Performance Criteria
	<5	>95	250(periods) 5000ms	C

Test Interval : Min. 10 sec.
Tester : Tommy Lin
Temperature : 22°C
Humidity : 55%

Block Diagram of Test Setup:



Test Procedure:

1. The EUT and support units were located on a wooden table, 0.8 m away from ground floor.
2. A test program was loaded and executed in Windows mode.
3. The test program exercised related support units sequentially.
4. Setting the parameter of tests and then executed the test software of test simulator.
5. Repeating step 3 to 4 through the test.
6. Recording the test result in test record form.

Test conditions:

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

Voltage Dips:

Test Level % U _T	Reduction (%)	Duration (periods)	Observation	Meet Performance Criteria
0	100	0.5	Normal	A
70	30	25	Normal	A
70	30	0.5(10ms)	Normal	A
40	60	5(100ms)	Normal	A
40	60	50(1000ms)	Normal	A

Voltage Interruptions:

Test Level % U _T	Reduction (%)	Duration (periods)	Observation	Meet Performance Criteria
0	100	250 (5000ms)	EUT shut down, but can be recovered by manual as the evens disappear.	C

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

Performance & Result:

- Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
- Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

PASS **FAILED**



APPENDIX 1

PHOTOGRAPHS OF TEST SETUP

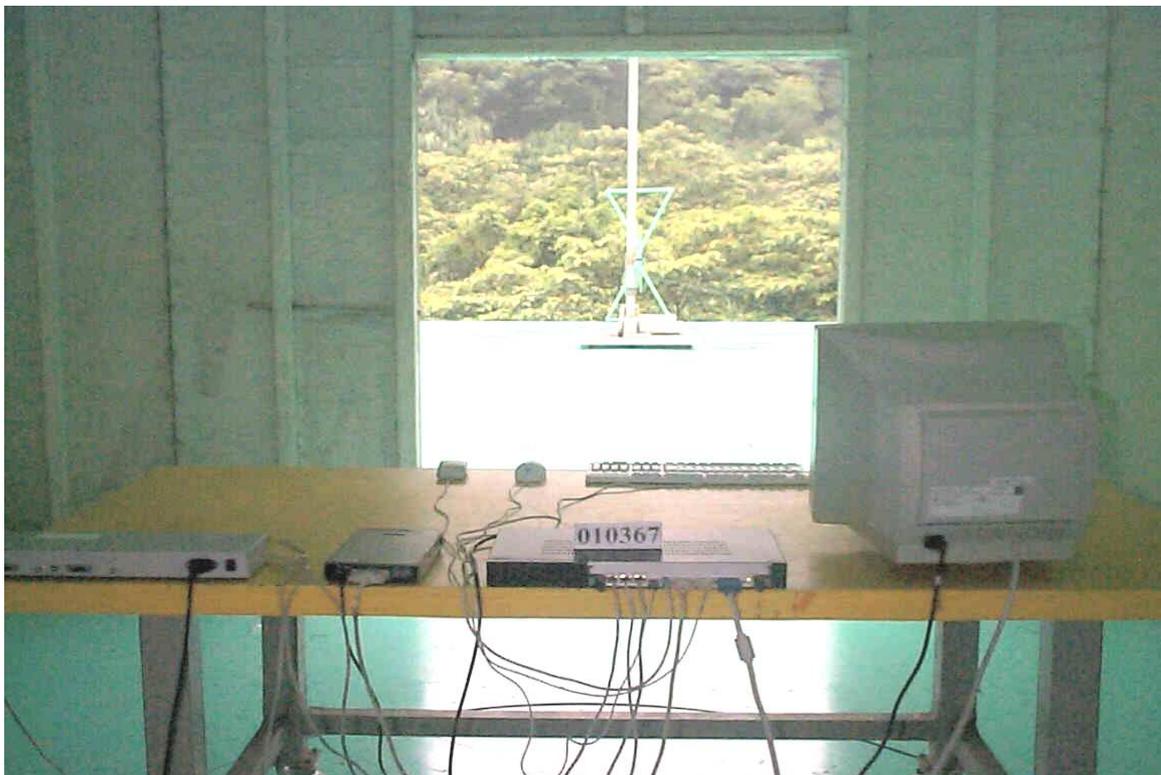
LINE CONDUCTED EMISSION TEST



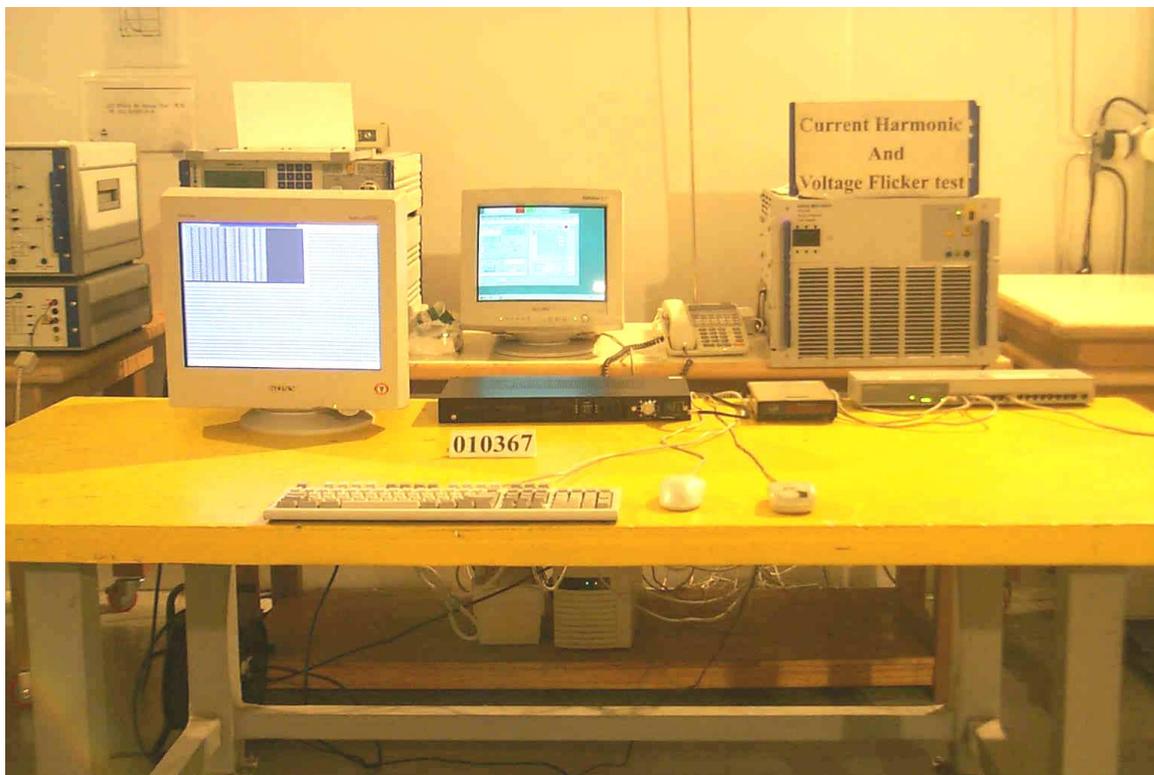
COMMON MODE CONDUCTED EMISSION TEST



RADIATED EMISSION TEST



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



ELECTROSTATIC DISCHARGE TEST (IEC 61000-4-2)



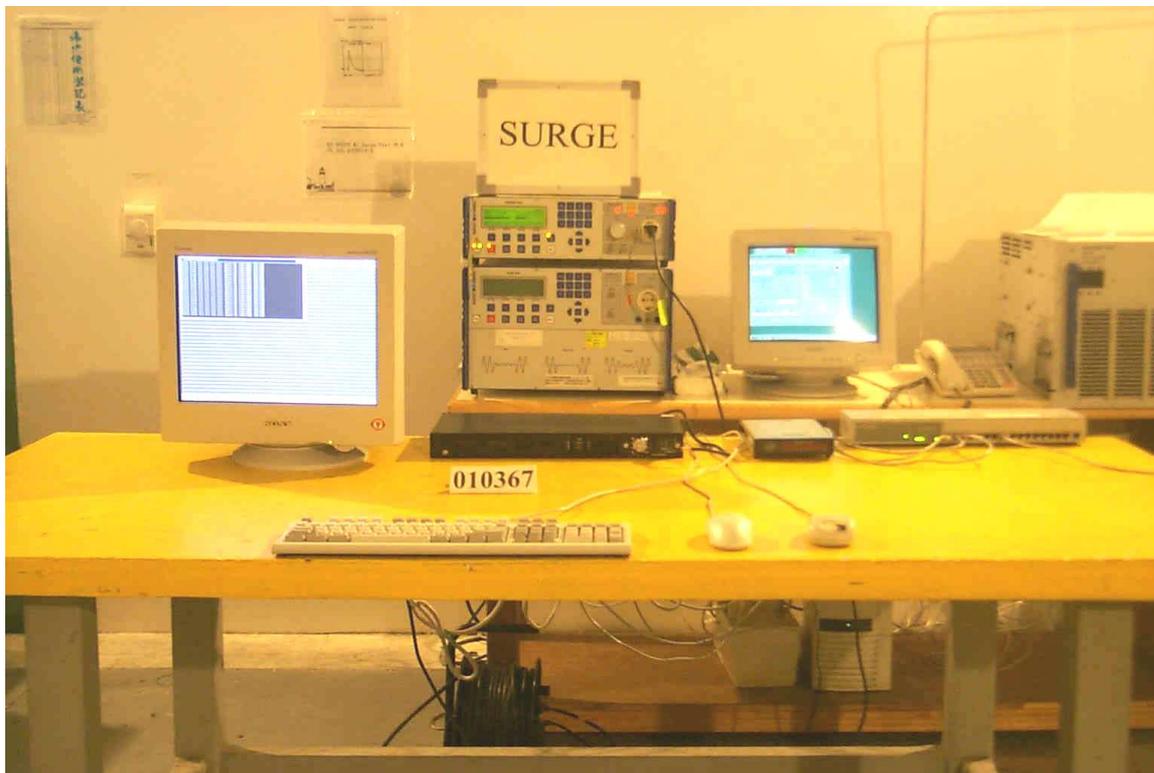
RADIATED ELECTROMAGNETIC FIELD (IEC 61000-4-3)



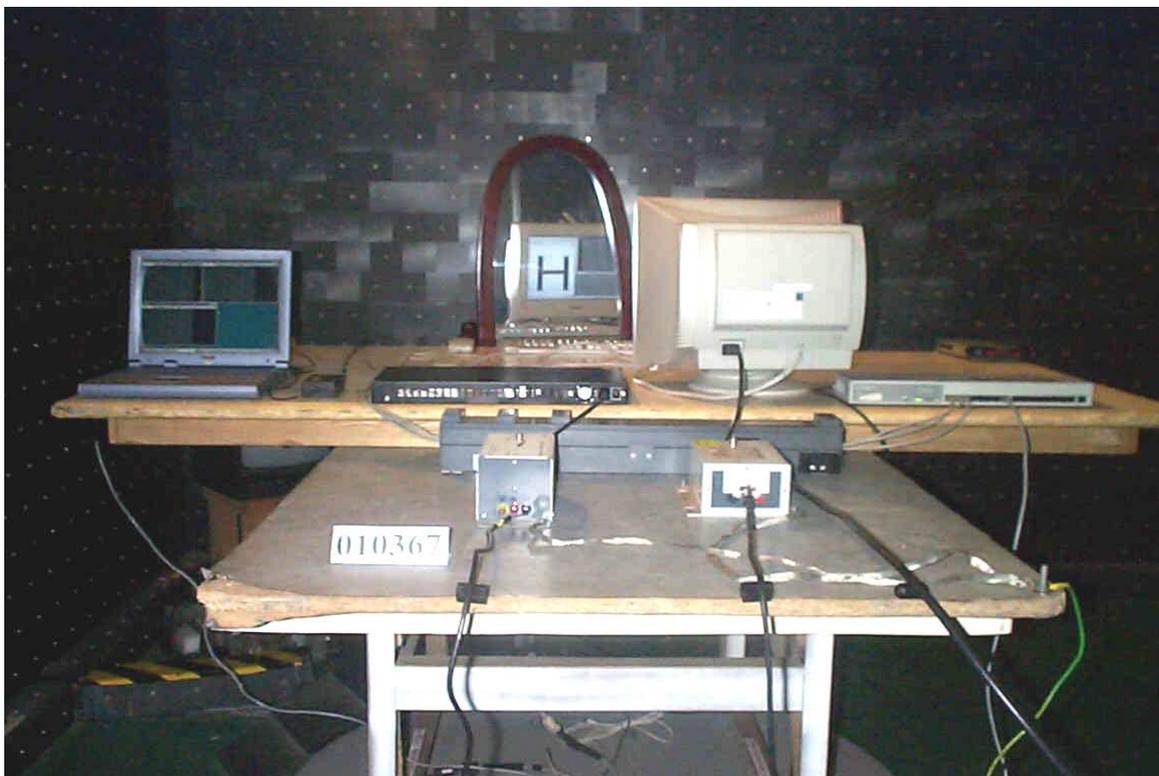
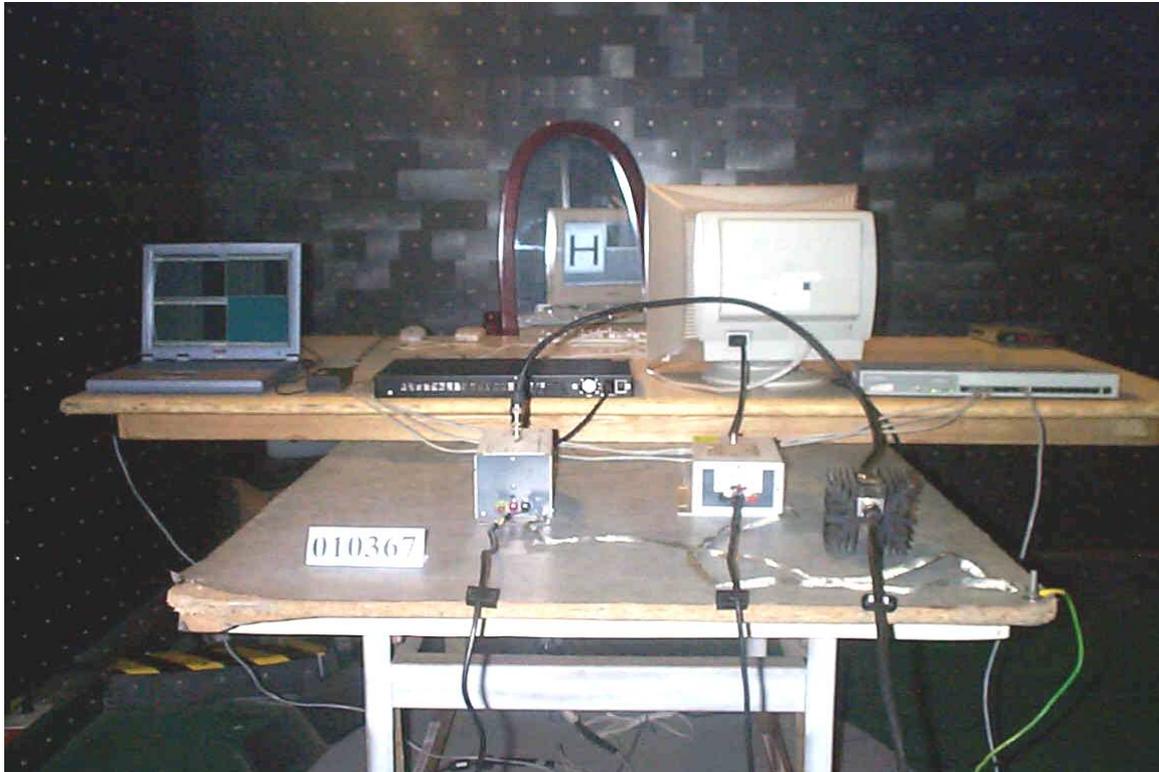
FAST TRANSIENTS/BURST TEST (IEC 61000-4-4)



SURGE IMMUNITY TEST (IEC 61000-4-5)



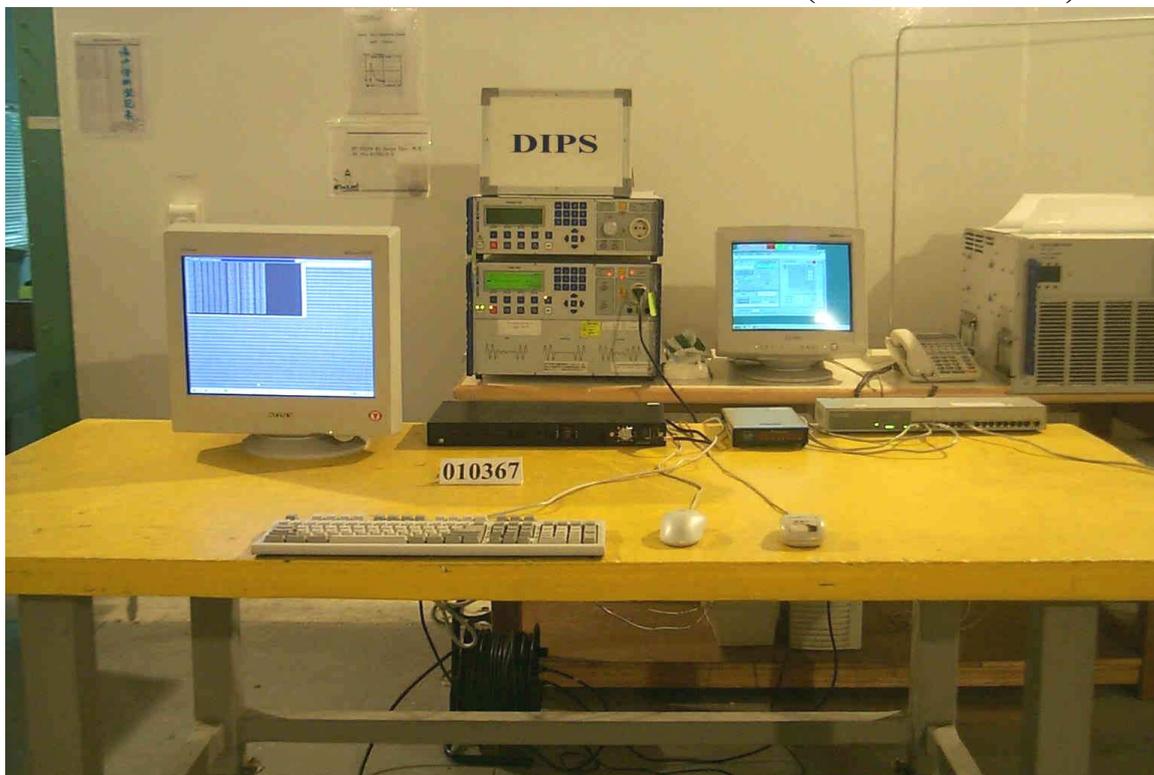
CONDUCTED DISTURBANCE, INDUCED BY RADIO-FREQUENCY FIELDS TEST (IEC 61000-4-6)



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



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

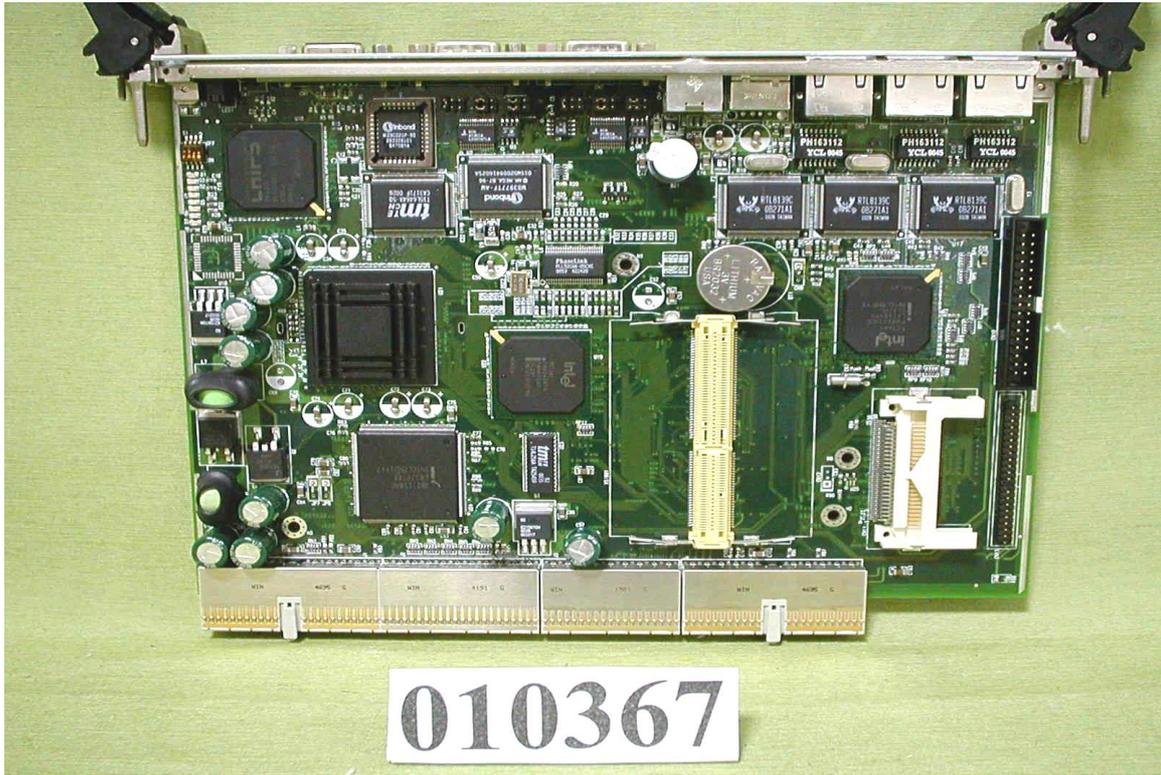




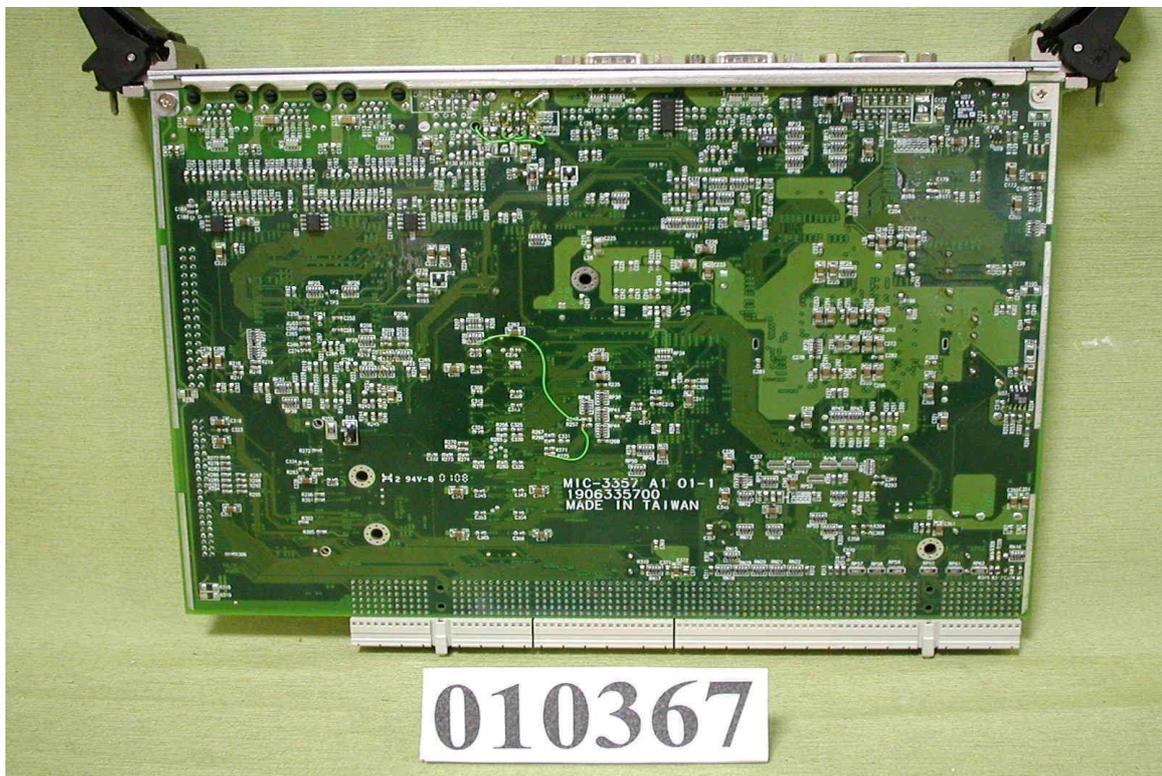
APPENDIX 2

PHOTOGRAPHS OF EUT

Front view of EUT



Back view of EUT



I/O Port

