

Certificate of Test

March 2001

ASUSTeK COMPUTER INC.

Product Type : PC System
Model Number : T1000-120P
Test Report Number : GTK-0103042E
Date of test : March 07, 2001 – March 14, 2001

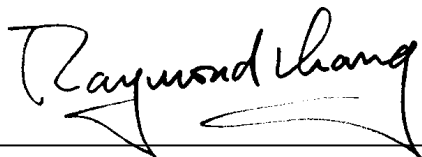
This Product was tested to the following standards at the laboratories of Global EMC Standard Tech. Corp., and found Compliance.

Standards :

EN 55022 :1998 , CISPR 22, Class B
EN 55024 :1998 IEC 61000-4 Series
EN 61000-3-2; -3 / 1995 + A1, A2 / 1998; 1995

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Raymond Chang, President

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Date: March 14, 2001



**European Union [EU]
EMC Directive [89/336/EEC, As Amended]**

**EMC Test Report
For:
ASUSTeK COMPUTER INC.**

PC System

Model Number : T1000-120P

**Prepared for:
ASUSTeK COMPUTER INC.
4F., No. 150, Li-Te Rd, Peitou, Taipei, Taiwan, R.O.C.**

**Report By : Global EMC Standard Tech. Corp.
No.3 Pau-Tou-Tsuo Valley, Chia-Pau
Tsuen, Lin Kou Hsiang, Taipei County,
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Tel : (02) 2603-5321
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Test results given in this report only relate to the specimen(s) tested, calibrated or measured.
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1. STATEMENT OF RESULTS:

Applicant : **ASUSTeK COMPUTER INC.**
 EUT Description : PC System
 Model Number : T1000-120P
 Serial Number : N/A
 Tested Power Supply : 230V/50Hz

MEASUREMENT PROCEDURES USED :

EN 55022 / 1998 AND EN 61000-3-2 : -3 / 1995 + A1, A2 / 1998 ; 1995
EN 55024 / 1998 AND IEC 61000-4 SERIES REGULATIONS

For EN 55022 / 1998:

The measurements shown in the attachment were made in accordance with the procedures indicated, and the maximum emissions from the equipment were found to be within the applicable EN 55022 / 1998 limits.

For EN 55024 / 1998:

The measurement results are contained in this test report and show that the EUT to be technically compliant with the EN 55024 / 1998 Immunity regulations.

GENERAL REMARKS:

The tests were performed according to the technical requirement of EUT .

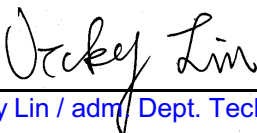
- Electro-magnetic Radiation** Emission Interference (CISPR 22 / EN 55022)
- Electro-magnetic Conduction** Emission Interference (CISPR 22 / EN 55022)
- Disturbance Measurement (EN 61000-3-2,-3)
- ESD Measurement (IEC 61000-4-2 / EN 61000-4-2)
- RF Field strength Susceptibility Measurement**(IEC 61000-4-3 / EN 61000-4-3)
- Electrical Fast Transient/Burst Measurement (IEC 61000-4-4 / EN 61000-4-4)
- Surge Measurement (IEC 61000-4-5 / EN 61000-4-5)
- CS Measurement (IEC 61000-4-6 / EN 61000-4-6)
- Low Frequency Signals Immunity (IEC 1000-2-2)
- Magnetic Field Measurement (IEC 61000-4-8 / EN 61000-4-8)
- Voltage Dips/Interruption Measurement (IEC 61000-4-11 / EN 61000-4-11)

Sample Received Date : March 07, 2001

Final Test Date : March 14, 2001

In order to ensure the quality and accuracy of this document, the contents have been thoroughly reviewed by the following qualified personnel from GesTek Lab.

Documented By :



Vicky Lin / adm. Dept. Technical Report Author

Administrative Review By :



Joan Chein / adm. Dept. Supervisor

Technical Review By :



Jason Chang / eng. Dept. Engineer

Approved By :



Terry Chung / Manager

2. General Information

2.1 Production Description

Description : PC System
 Model Number : T1000-120P
 Applicant : ASUSTeK COMPUTER INC.
 Address : 4F., No. 150, Li-Te Rd, Peitou, Taipei, Taiwan, R.O.C.
 Power Supply : 100-120V, 3.0A; 200-240V, 1.5A; 50-60Hz.
 Power Cord : 1.8m, 3Pin, Non-Shielded, Detachable

2.2 Results:

The EUT(s) met the EN 55022 / CISPR 22 Class B requirements.
 This Class B digital apparatus complies with Canadian ICES-003.
 The Worst Emission data was found as following:

EMI Test Results:

	Worst Emission Frequency (MHz)	Emission Level	Limit	Height of Antenna, Angle of
Conduction (Mode 1)	10.22546	42.2 dB μ V Line 2, AV.	50.0 dB μ V	N/A
Radiation (Mode 1)	134.050	26.12 [dB(μ V/m)] Veritical	30.00 [dB(μ V/m)]	1M, 90°

EMS Test Results:

Immunity	Requested	Passed	passed with modification	not passed
Electrostatic Discharge (ESD)	2,4,6,8KV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RF field strength Susceptibility	3V/m	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electrical fast transients (Burst)	0.25, 0.5, 1KV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surge Immunity	0.5, 1, 2KV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducted Susceptibility	3V	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Magnetic Field Measurement	1A(rms)/m	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Voltage Dips and Interruptions	30-95% Reduction	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- The EUT did not require modification during testing to achieve compliance.
- The EUT required modification during testing in order to achieve compliance. Please refer to attached section of this report for details.

Test Mode:

Tested By : <u>Allen Chen</u> (Allen Chen)
<u>Jason Chang</u> (Jason Chang)

Test Mode :

Mode 1	CPU: Intel Pentium III 1000MHz, Clock:133MHz. Resolution: 1600 x 1200, H-sync: 106KHz, V-sync: 85Hz. S.P.S.:Bestec, M/N:ATX-120 C, Rev.:A3
---------------	--

Note:

1. According to pre-scan data , we determine the data shows in this test report reflects the worst-case data for each operation mode.

2.3 Configuration of the Tested System

The FCC IDs/TYPES for all equipment, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

Product: PC System		M/N:T1000-120P
	Mode 1	
CPU	Intel Pentium III 1000MHz / clock:133MHz	
Mother Board	ASUS, M/M:CUSC, Rev.:1.05	
Chassis	ASUS	
SDRAM	SEC 64M PC133 x1 LGS 64M PC133 x1	
H.D.D.	Quantum, HP P/N:P2812-60105, BSMI ID:3892A639 S/N:89210377488	
F.D.D.	NEC, M/N:FD1231H	
DVD-ROM	Panasonic, M/N:SR-8586-B, FCC ID:IUO9TB081CRB (8X DVD; 40X CD)	
Game & Com 1 Connector Board	ASUS, M/N: CGAEX, Rev.:1.02	
USB & Audio Connector Board	ASUS, M/N:UAEX, Rev.:1.01	
VGA Card	On Board	
Audio	On Board	
Resolution	1600 x 1200, H-Sync:106KHz, V-Sync:85Hz	
S.P.S.	Bestec, M/N:ATX-120 C, Rev.:A3	

Far End Network Server

Model Number : Targa PC-2
 Motherboard : Asus,P/I-P55T2P4
 Manufacturer : ACTEBIS
 Power Cord : Non-Shielded, Detachable, 1.5m
 Data Cable to HUB : Type:RJ45(UTP/8P8C)Twisted Pairs, Non-Shielded. 12m

HUB H01-001

Model Number : DE-816TP (10BASE-T Ethernet Hub)
 Serial Number : AN68900072
 FCC ID : KA2OPCH16
 Manufacturer : D-Link.
 Data Cable to EUT : Type:RJ45(UTP/8P8C), Detachable, 12 m, Twisted Pairs
 Power Cord : Non-Shielded, Detachable, 1.5m

Monitor M01-014

Model Number : CM814U
Serial Number : G8K001775
Manufacturer : HITACHI
Data Cable : Shielded, Detachable, 1.5m, VGA Cable
Power Cord : Non-Shielded, Detachable, 1.8m

 Printer P01-022

Model Number : 2225C
Serial Number : 2441S63748
FCC ID : BS46XU2225C
Manufacturer : HP
Data Cable : Shielded, Detachable, 1.5m, Parallel Cable
Power Cord : Non-Shielded, Detachable, 1.8m

+

 Modem M03-016

Model Number : 1414
Serial Number : 960011392
FCC ID : IFAXDM1414
Manufacturer : ACEEX
Power Cord : Non-Shielded, Detachable, 1.5m
Data Cable : Type:RS232, Shielded, Detachable, 1.2m
Line : Type:RJ11(4P2C), Detachable, 1.8m
Phone : Type:RJ11(4P2C), Detachable, 1.8m

 Mouse M02-058 (USB)

Model Number : M-BB48
Serial Number : LZE93050386
Manufacturer : Logitech Inc
Data Cable : Shielded, Undetachable, 1.5m

 KeyBoard H02-005

Model Number : SK-2502
Serial Number : M980264045
FCC ID : GYUR41SK
Manufacturer : HP
Data Cable : Non-Shielded, UnDetachable, 1.5m

Mouse M02-104 (USB)

Model Number : M-BB48
Serial Number : LZE01550081
BSMI ID : 4872A221
Manufacturer : Logitech Inc
Data Cable : Shielded, Undetachable, 1.5m

 Mouse M02-103 (USB)

Model Number : M-BB48
Serial Number : LZE01550004
BSMI ID : 4872A221
Manufacturer : Logitech Inc
Data Cable : Shielded, Undetachable, 1.5m

 Headset & Microphone E01-047

Model Number : SX-M1
Serial Number : N/A
Manufacturer : TOKYO
Power Cord : N/A
Data Cable : Non-Shielded, Undetachable, 1.8 m
Purchase Date : 2/22/1999

 Headset & Microphone E01-044

Model Number : SX-M1
Serial Number : N/A
Manufacturer : TOKYO
Power Cord : N/A
Data Cable : Non-Shielded, Undetachable, 1.8 m
Purchase Date : 2/22/1999

 Joystick J01-019 (USB)

Serial Number : H504010F
FCC ID : DoC
Manufacturer : CREATIVE
Data Cable : Non-Shielded, Undetachable, 1.8m
BSMI ID : 3872A903

Joystick J01-013

Model Number : Side Winder
Serial Number : 02571510
FCC ID : C3KMGP1
Manufacturer : MicroSoft
Data Cable : Shielded, Undetachable, 2m

 Cassette Player R02-018

Model Number : HS-TA166
Serial Number : S34LI03R0276
FCC ID : N/A
Manufacturer : AIWA CO., LTD
Power Cord : N/A (Battery)
Date Cable : Shielded, Detachable, 1.5m, Coaxial Cable

 Mouse (PS2)

Manufacturer : Hewlett Packard
Model Number : M-S35
FCC ID : DZL211029
HP P/N : C4728-60101
BSMI ID : 4862A011
Data Cable : Shielded, Undetachable, 1.5m

2.4 Test Methodology

EMI Tests:

Both conducted and radiated testing were performed according to the procedures in EN 55022 / 1998.

Radiated testing was performed at an antenna to EUT distance of **10** meters.

EMS Tests:

Performed according to procedures in the EN 55024 / 1998 and IEC 61000-4 Series Regulations.

2.5 Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	25-29
Humidity (%RH)	25-75 (45-75 for ESD, 1 st ed.) (30-60 for ESD, 2 nd Ed)	50-60 for ESD 52-63 for others
Barometric pressure (mbar)	860-1060	950-1000

Site Description : September 30, 2000 File on NEMKO EMC Laboratory Authorization
 Gaustadalleen 30, Postboks 73 Blindern, 0314 Oslo, Aut. No.: ELA 126
 Aug. 15, 1997 Recognition on Det Norske Veritas AS
 Statement No:510-96-1017
 Accreditation on NVLAP effective through September 30, 2001
 For CISPR22, FCC Method and AS/NZS 3548 Measurement.
 NVLAP Lab Code: 200085-0
 Registration on VCCI effective through March 31, 2002.
 Registration No.: R-291 and C-305

Name of firm : Global EMC Standard Tech. Corp.

Site location : No. 3 Pau-Tou-Tsuo Valley, Chia-Pau Tsuen, Lin Kou Hsiang,
 Taipei County, Taiwan, R.O.C.



3. Conducted Emission Test

3.1 Test Equipments

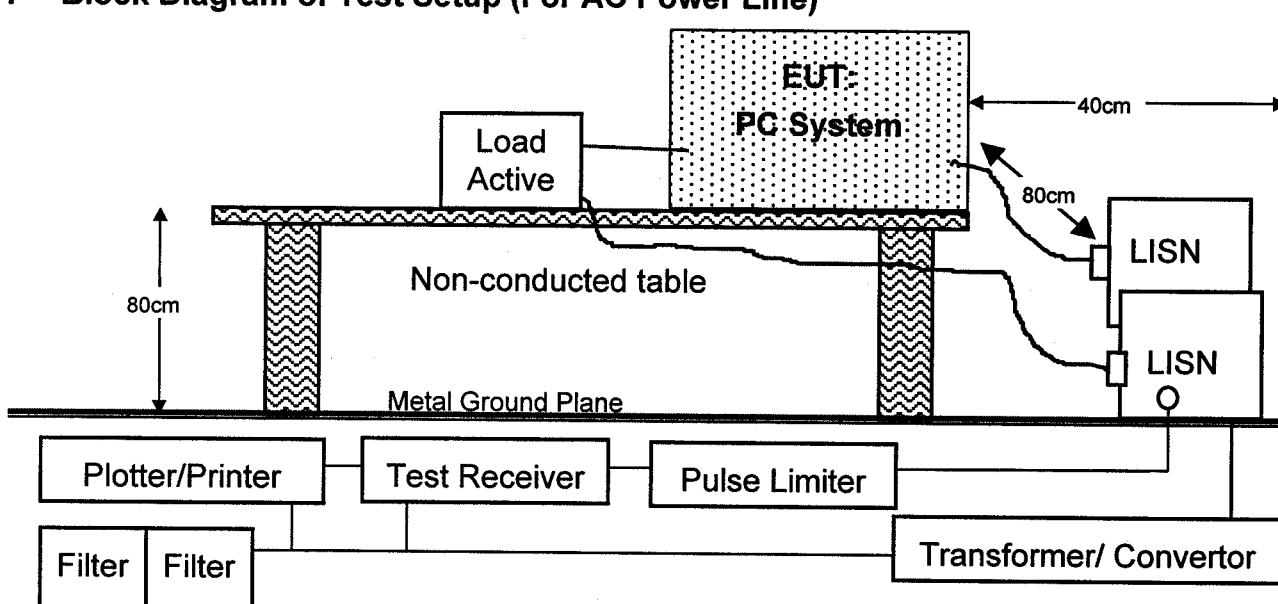
The following test equipments are used during the conducted power line tests:

Item	Instrument	Manufacturer	Type / Serial No.	Last Cal. Date
1	Test Receiver	Rohde & Schwarz	ESHS 30 / 828109/010	Jan. 18, 2001
2	L.I.S.N.	KYORITSU	KNW-407	Nov. 08, 2000
3	L.I.S.N.	Schwarzbeck	NNLK 8121/8121358	Aug. 07, 2000
4	Pulse Limiter	Rohde & Schwarz	ESH3-Z2/357.8810.52	Aug. 25, 2000
5	RF CABLE	GesTek	GTK-RF-C05	Aug. 25, 2000
6	50 Ohm Terminator	GesTek	GTK-RF-T01	Nov. 08, 2000
7	Shielded Room	GesTek	GTK-RF-S04	Aug. 25, 2000
8	I.S.N.	Rohde & Schwarz	ENY-41 / 838119/006	Jan. 09, 2001

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

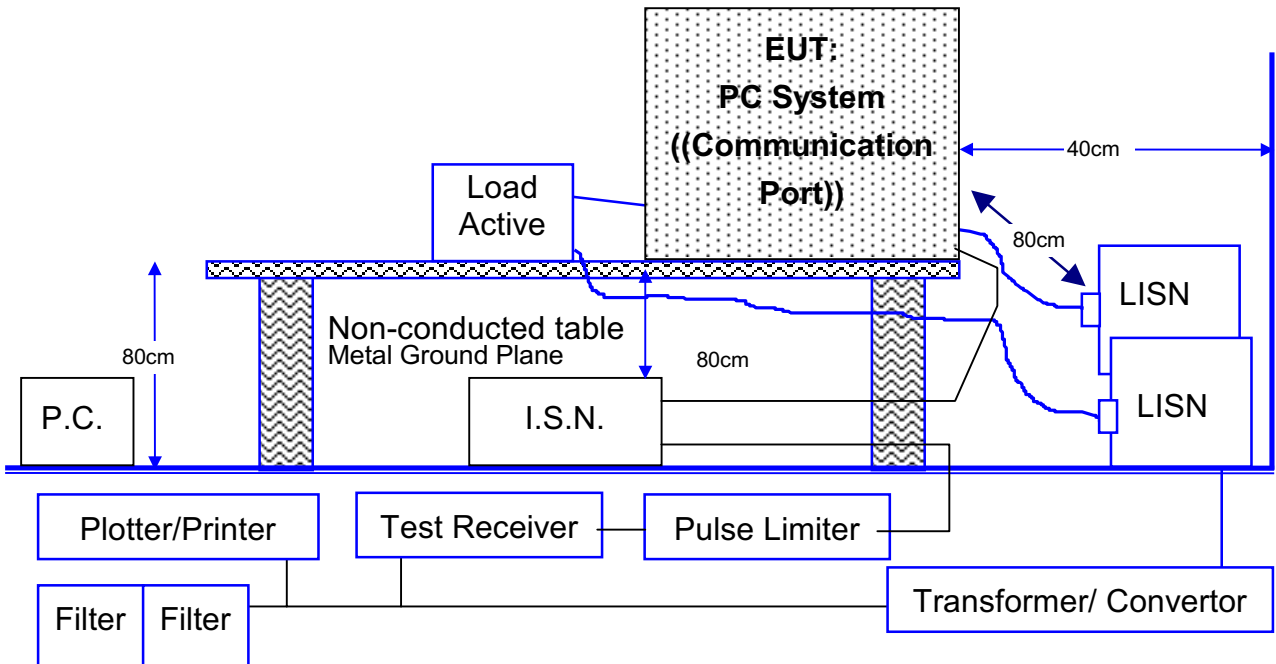
3.2 Block Diagram of Test Setup

3.2.1 Block Diagram of Test Setup (For AC Power Line)



Note: This is a representative setup diagram for Table-top EUT.
For Floor-standing EUT, the table will be removed with all others setup condition remain the same.

3.2.2 Block Diagram of Test Setup (For mains terminals and telecommunication ports)



Note: This is a representative setup diagram for Table-top EUT.
For Floor-standing EUT, the table will be removed with all others setup condition remain the same.

3.3 Conducted Emission Limits

3.3.1 Limits for AC power line

Frequency	Maximum RF Line Voltage dB(uV)			
	Class A		Class B	
MHz	QUASI-PEAK	AVERAGE	QUASI-PEAK	AVERAGE
0.15 - 0.50	79	66	66-56	56-46
0.50-5.0	73	60	56	46
5.0 – 30	73	60	60	50

Remarks : In the Above Table, the tighter limit applies at the band edges.

3.3.2 Limits for mains terminals and telecommunication ports

Frequency	Voltage limits dB(uV)		Current limits dB(uV)	
	Class B		Class B	
MHz	QUASI-PEAK	AVERAGE	QUASI-PEAK	AVERAGE
0.15 - 0.50	84 to 74	74 to 64	40 to 30	30-20
0.50 – 30	74	64	30	20

Remarks :

1. In the Above Table, the tighter limit applies at the band edges.
2. Either the voltage limits or the current limits in table 3 or 4, as applicable, shall be met.

3.4 EUT Configuration on Measurement

3.4.1 For Power Line

The equipments which is listed 3.2 are installed on Conducted Emission Test to meet the Commission requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

The device under test, installed in a representative system as described in section 3.2, was placed on a non-conductive table whose total height equaled 80 cm. The EUT was powered through one L.I.S.N. whose the signal output was terminated to the receiver. The other peripherals were powered from another L.I.S.N. whose the signal output was terminated by 50 Ohms.

3.4.2 For mains terminals and telecommunication ports

The Current and voltage disturbance limits are derived for use with an impedance stabilization network(I.S.N.)which presents a common mode(asymmetric mode) impedance of 150 Ω to the telecommunication port under test.

3.5 EUT Exercise Software

The EUT exercise program used during conducted testing was designed to exercise the EUT in a manner similar to a typical use. The exercise sequence is listed as below:

1. Setup the EUT and simulators as shown on 3.2.
2. Turn on the power of all equipments.
3. Run Windows ME.
4. Adjust to appropriate video resolution.
5. Active LAN function, data transfer between EUT and Far End Network Server.
6. Connect the Far End Network Server and run test program "test.bat".
7. The EUT exchange the information with the GesTek server via HUB.
8. Run test program "EMITEST.EXE" and run "CD-Player" program.
9. DVD-ROM playing a film.
10. Active other internal devices such as network function.
11. F.D.D. keeping data file transfer between H.D.D.
12. P.C. sent "H Pattern" to monitor.
13. P.C. sent "H" pattern to parallel and serial port.
14. Repeat above steps.

3.6 Conducted Emission Data

The measurement range of conducted emission which is from [0.15 to 30 MHz](#) was investigated. The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range for all the test modes. Then the worst modes were reported the following data pages .

The final measurement equal to Receiver reading plus a Correction factor when AMN insertion loss bigger than 0.5dB, the receiver added the correction factor to the reading level automatically.

The total uncertainty for this test is as follows:

- Uncertainty in the field strength measured: $< \pm 2.0$ dB

The uncertainty is calculated in accordance with NAMAS document NIS 81, and is given as 2 standard deviations.

CONDUCTED EMISSION DATA

Date of Test	: <u>March 09, 2001</u>	Temperature	: <u>23.5 °C</u>
EUT	: <u>PC System</u>	Humidity	: <u>53 %</u>
Test Mode	: <u>Mode 1</u>	Display Pattern	: <u>H Pattern</u>

For AC Power Line

FREQUENCY MHz	READING LEVEL dBuV				LIMIT	
	LINE1 Q.P.	LINE1 AV.	LINE2 Q.P.	LINE2 AV.	Q.P.	AV.
0.18577	40.5	34.6	38.1	31.4	64.2	54.2
0.36973	33.7	31.5	31.2	30.2	58.5	48.5
0.46043	34.5	32.3	34.0	31.8	56.6	46.6
** 10.22546	43.6	41.6	43.8	42.2	60.0	50.0
15.47596	33.4	28.2	35.0	30.1	60.0	50.0
22.92854	24.7	21.5	24.8	23.0	60.0	50.0

Remarks :

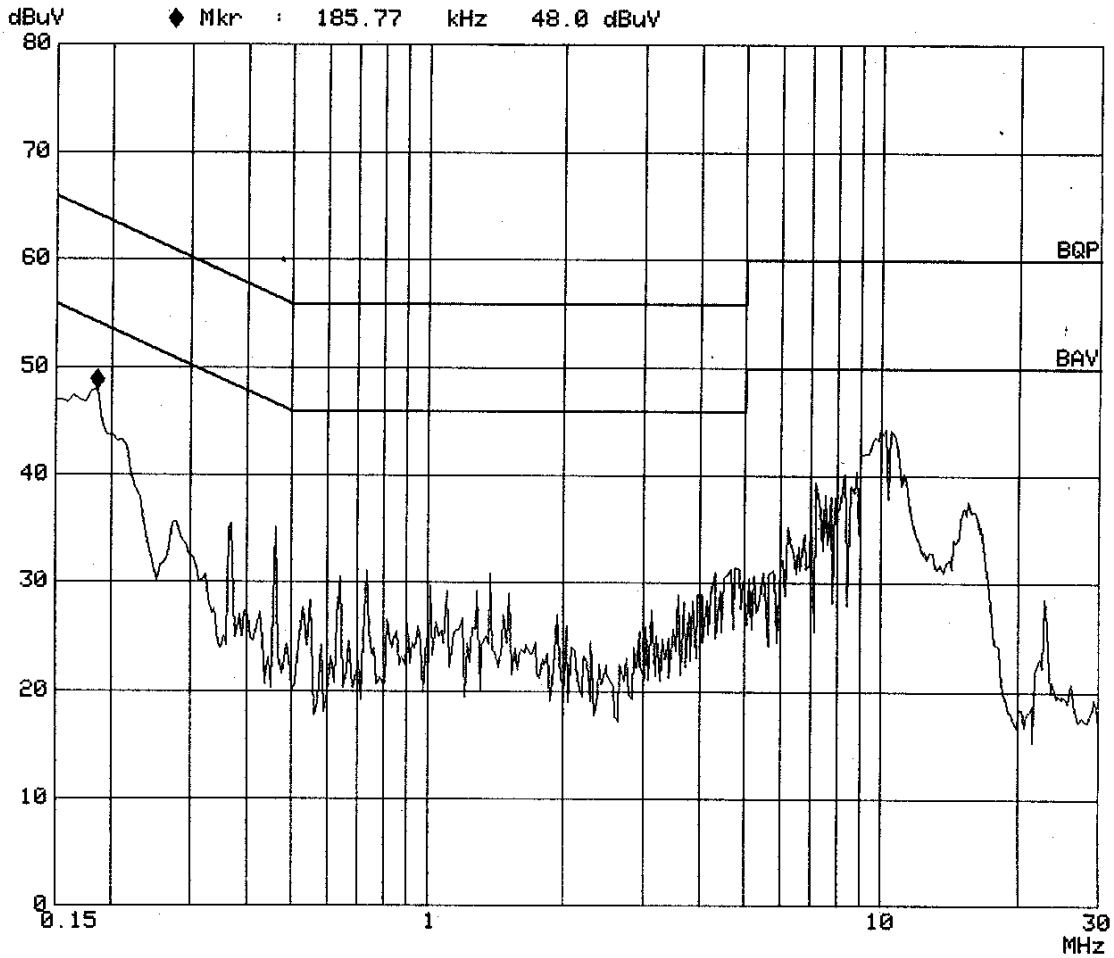
1. All readings are Quasi-peak and Average values.
2. “ * ” means that the quasi-peak reading level is lower than the average limits, it is not necessary to measure the average level.
3. “ ** ” means that this data is the worse case emission level.
4. Final measurement = (Receiver reading) + (Correction factor if available).

Attached 2 individual pages of peak scan curve data sheets.

GESTEK CONDUCTED EMISSION TEST RHODE & SCHWARZ ESHS30

EUT: PC SYSTEM
Manuf: ASUS
Op Cond: 1600*1200 106K 85Hz
Operator: JASON
Test Spec: EN55022 CLASS B
Comment: LINE 1

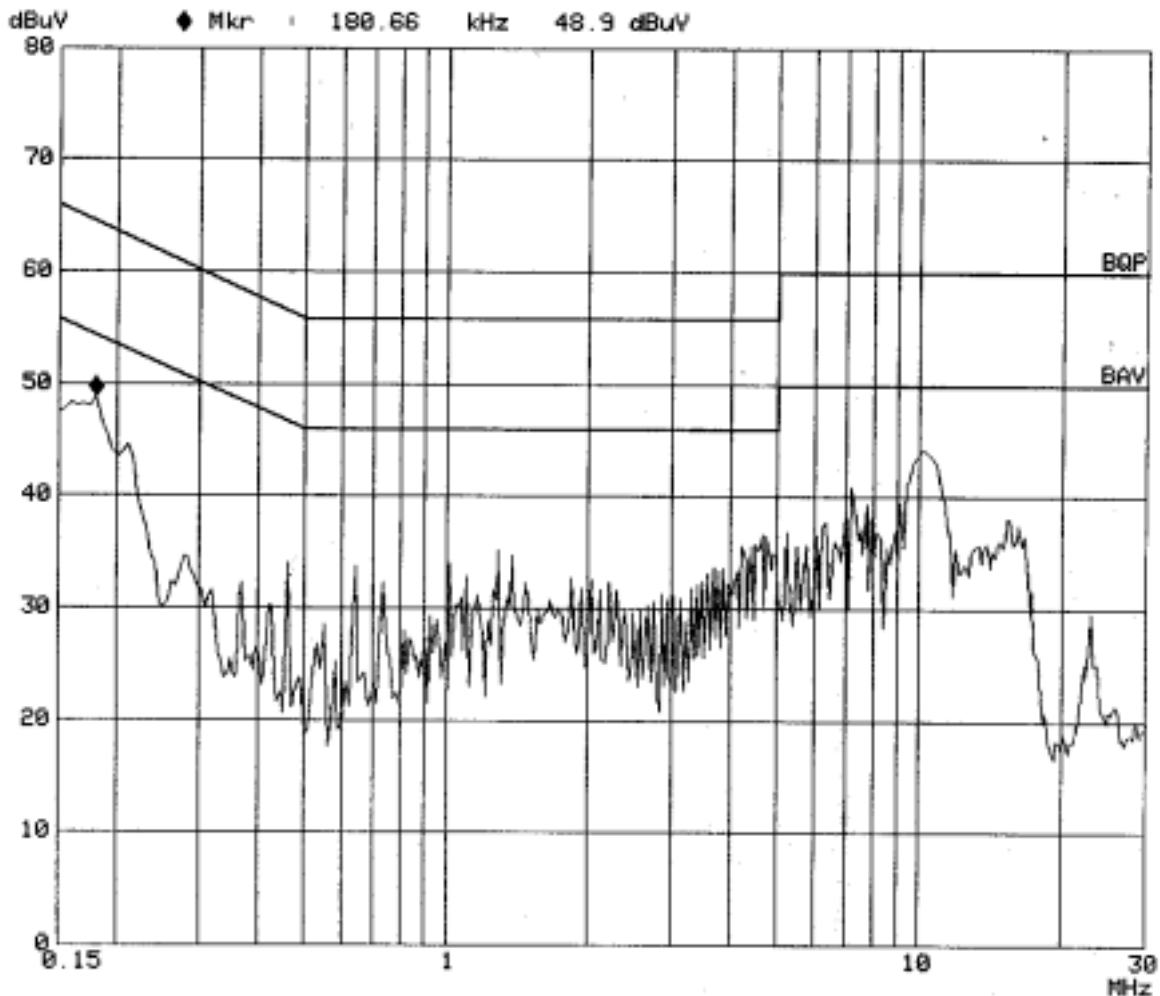
Date: 09. Mar 01 20:19



GESTEK CONDUCTED EMISSION TEST RHODE & SCHWARZ ESHS30

EUT: PC SYSTEM
Manuf: ASUS
Op Cond: 1600*1200 106K 85Hz
Operator: JASON
Test Spec: EN55022 CLASS B
Comment: LINE 2

Date: 09. Mar 01 20:30



CONDUCTED EMISSION DATA

Date of Test : March 09, 2001 Temperature : 24.3 °C
 EUT : PC System Humidity : 53 %
 Test Mode : Mode 1 Display Pattern : H Pattern

For mains terminals and telecommunication ports

FREQUENCY MHz	Corr. Factor	READING dBμV		EMISSION dBμV		LIMIT	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.21256	10.45	41.50	41.10	51.95	51.55	82.87	72.87
0.31863	10.45	37.80	37.10	48.25	47.55	80.53	70.53
5.00863	10.35	47.40	33.40	57.75	43.75	74.00	64.00
8.45605	10.35	50.40	39.40	60.75	49.75	74.00	64.00
14.99378	10.35	48.30	29.60	58.65	39.95	74.00	64.00
30.00000	10.42	33.80	14.60	44.22	25.02	74.00	64.00

Remarks :

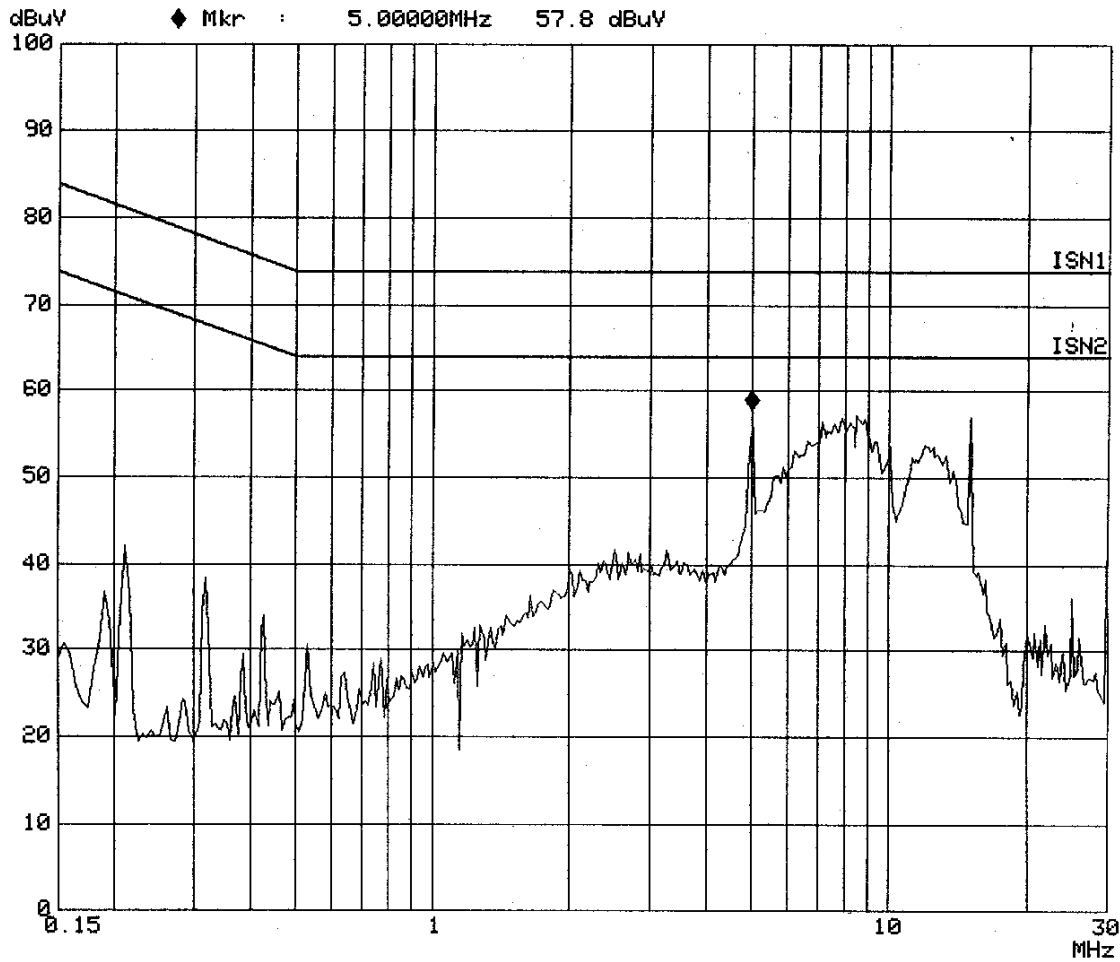
1. All readings are Quasi-peak and Average values.
2. Final measurement = (Receiver reading) + (Correction factor if available).

Attached 1 individual pages of peak scan curve data sheets.

GESTEK CONDUCTED EMISSION TEST RHODE & SCHWARZ ESHS30

EUT: PC SYSTEM
Manuf: ASUS
Op Cond: 1600*1200 106K 85Hz
Operator: JASON
Test Spec: EN55022 CLASS B
Comment: LINE:LAN

Date: 09. Mar 01 20:43



4. Radiation Emission Test

4.1 Test Equipment

The following test equipments are used during the radiated emission tests:

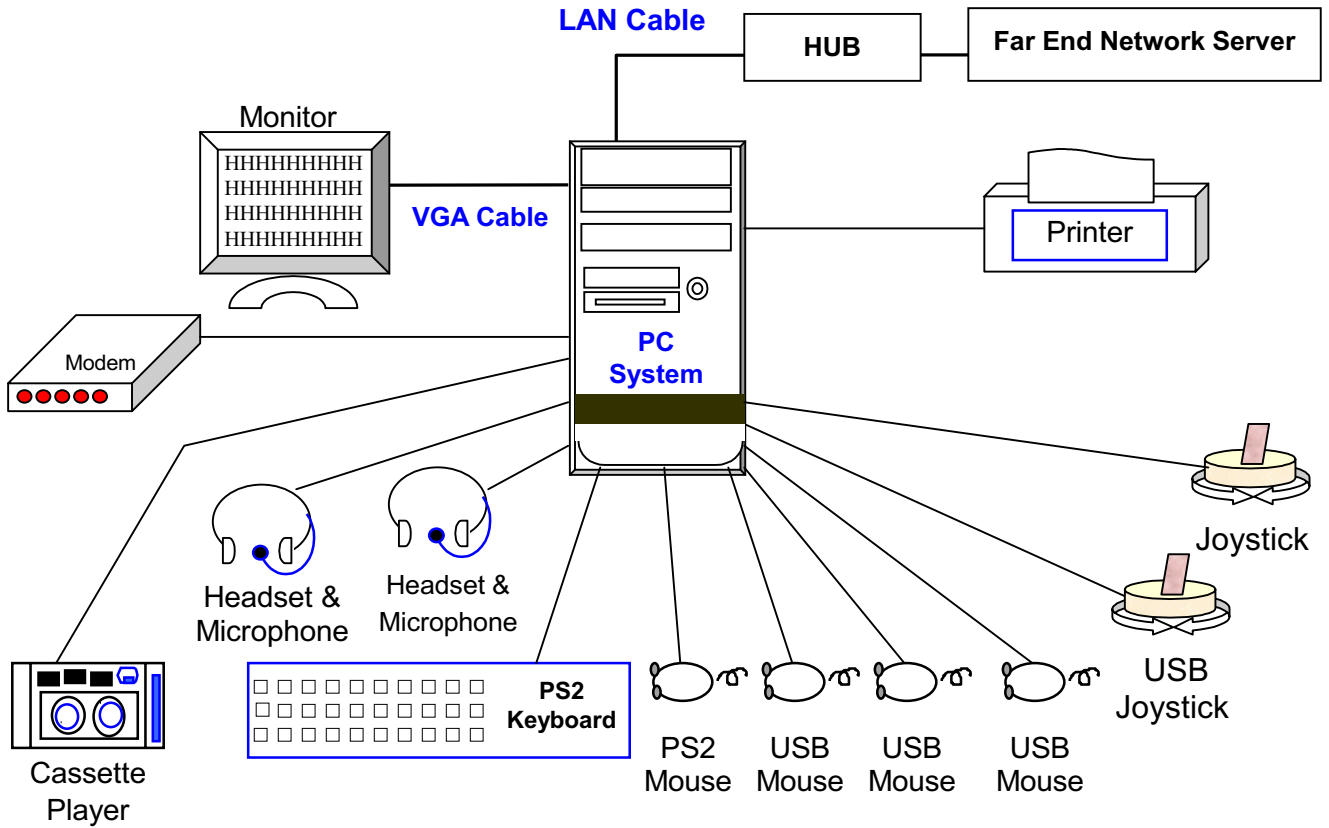
Radiated test was performed on : Site #1 Site #2 Site #3 Site #4

Item	Instrument	Manufacturer	Type / Serial No.	Last Cal.
1	Test Receiver	Rohde & Schwarz	ESCS 30 / 849650/023	Nov. 16, 2000
2	Spectrum Analyzer	ADVANTEST	R3162 / 91700161	N/A
3	Pre-Amplifier	HP	8347A / 3307A01401	N/A
4	Pre Amplifier	HP	8449B / 3008A01264	Aug. 05, 2000
5	BILOG ANTENNA	Chase	CBL6112B/2620	Aug. 16, 2000
6	RF Cable	GesTek	GTK-RF-C04	Nov. 27, 2000
7	Open Site	GesTek	GTK-RF-SB2	Nov. 27, 2000
8	Test Program Software	GesTek	GTK-RF-P07	N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

4.2 Test Setup

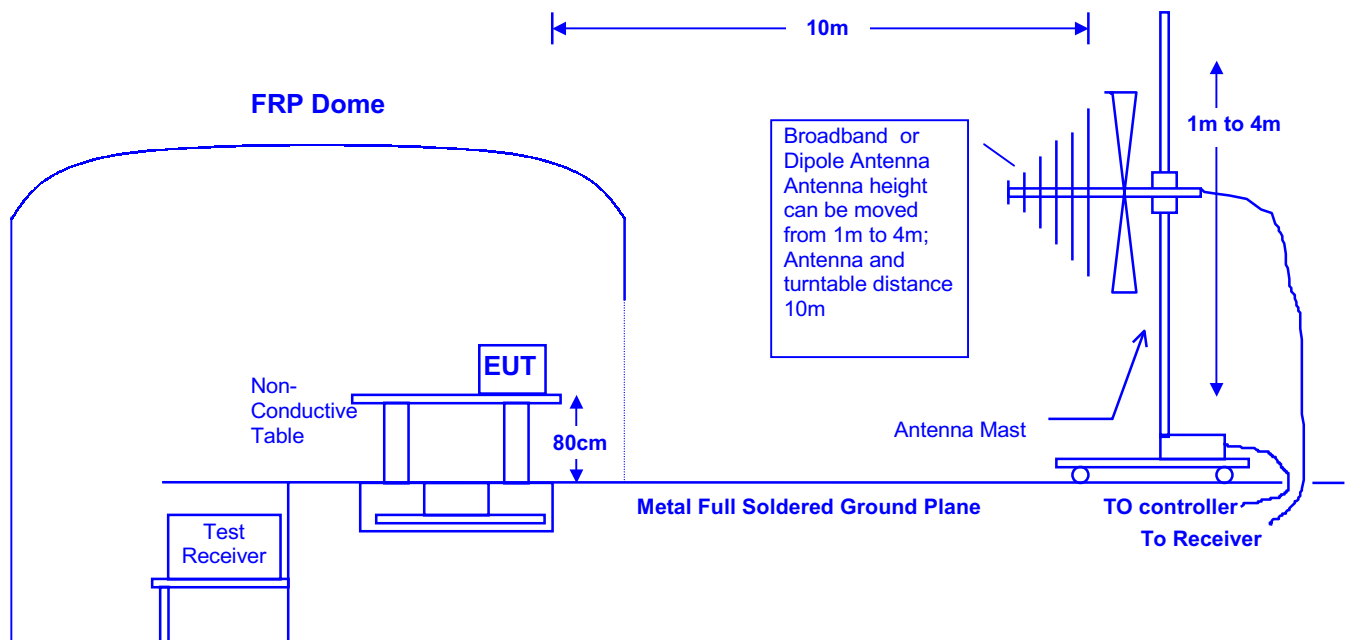
4.2.1 Block Diagram of Connections between EUT and simulators



4.2.2 Open Test Site & Anechoic Chamber Setup Diagram

Note: This is a representative setup diagram for Table-top EUT.

For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



4.3 Radiated Emission Limit

Class B Limits

Frequency	Distance	Field Strength
MHz	Meter	dB(uV/M)
30 - 230	10	30
230 - 1000	10	37

Class A Limits

Frequency	Distance	Field Strength
MHz	Meter	dB(uV/M)
30 - 230	30	30
230 - 1000	30	37

Remark: 1. The tighter limit shall apply at the edge between two frequency bands.

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4 EUT Configuration

The EUT which is listed on 4.2.1. was installed on Radiated Emission Test site to meet the Commission requirements and operated in a manner which tends to maximize its emission characteristics in a normal application.

The EUT, installed in a representative system as described in section 4.2.2, was placed on a non-conductive table whose total height equaled 80 cm. This table can be rotated 360 degrees. The measurement antenna was mounted to a non-conductive mast capable of moving the antenna vertically. Antenna height was varied from 1 meter to 4 meters and the system under test was rotated from 0 degree through 360 degrees relative to the antenna position and polarization (Horizontal and Vertical). Also the I/O cable positions were investigated to find the maximum emission condition.

4.5 Operating Condition of EUT

Same as Conducted Emission Test which is listed in 3.5

4.6 Radiated Emission Data

The measurement range of radiated emissions from **30 MHz to 1 GHz**, was investigated. The initial step in collecting conducted data was a spectrum analyzer peak scan of the measurement range for all the test modes. Then the worst modes were reported the following data pages .

The total uncertainty for this test is as follows:

- Uncertainty in the field strength measured (3m antenna distance): < ± 4.0 dB
- Uncertainty in the field strength measured (10m antenna distance): < ± 4.0 dB

The uncertainty is calculated in accordance with NAMAS document NIS 81, and is given as 2 standard deviations.

Radiated Emission Data

Date of Test :March 13,2001

Temperature :23 deg/C

EUT :PC System

Humidity :53 %RH

Working Cond.:Mode 1

Display Pattern :H Pattern

Frequency [MHz]	Cable Loss [dB]	Antenna Factor [dB/m]	Reading Level Horizontal [dB(uV)]	Emission Level Horizontal [dB(uV/m)]	Limit [dB(uV/m)]
57.150	1.04	8.09	7.15	16.28	30.00
65.150	1.10	6.69	6.58	14.37	30.00
134.020	1.86	11.76	10.75	24.37	30.00
165.250	2.00	9.91	13.24	25.14	30.00
233.510	2.83	11.51	14.02	28.36	37.00
240.510	2.91	12.05	13.25	28.21	37.00
* 299.540	3.39	13.28	15.87	32.54	37.00
398.310	4.18	16.13	11.02	31.33	37.00

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. " * ", means this data is worse case emission level.
3. Emission Level = Reading Level + Antenna Factor + Cable loss.
4. Deviations from the specifications: None.

Radiated Emission Data

Date of Test :March 13,2001

Temperature :23 deg/C

EUT :PC System

Humidity :53 %RH

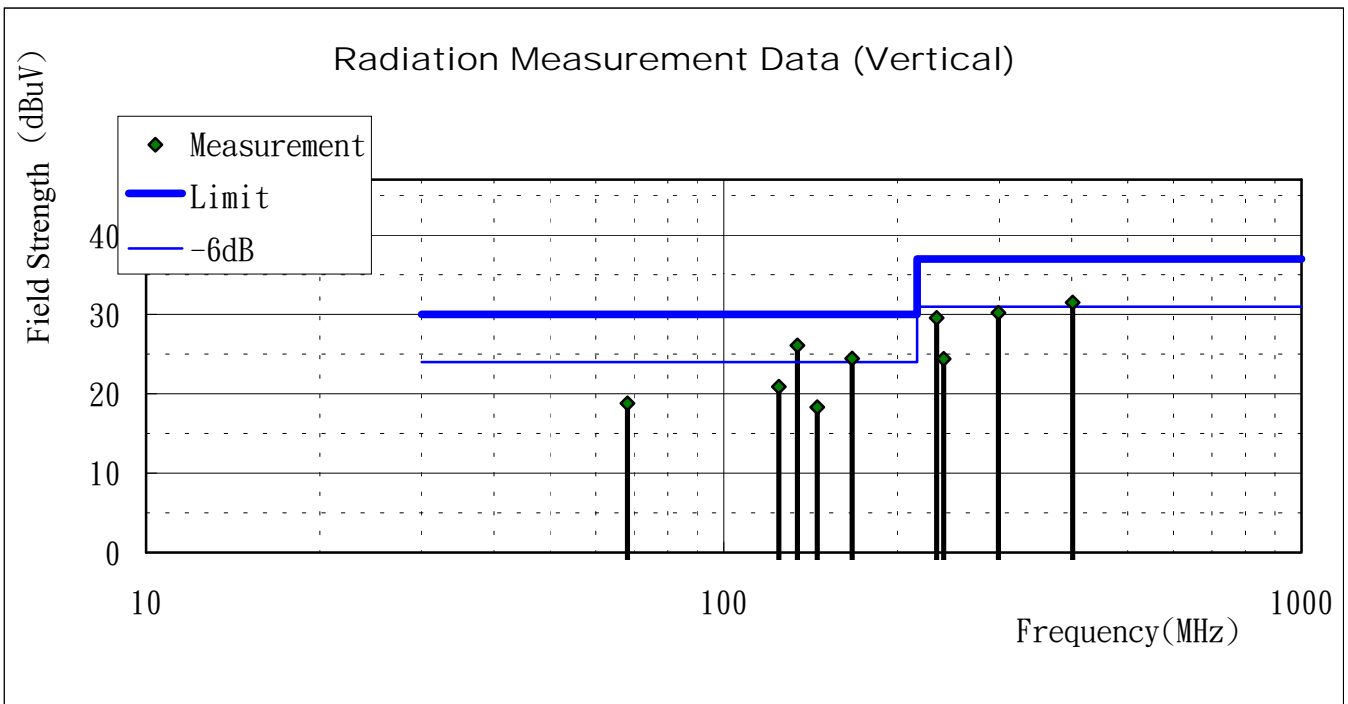
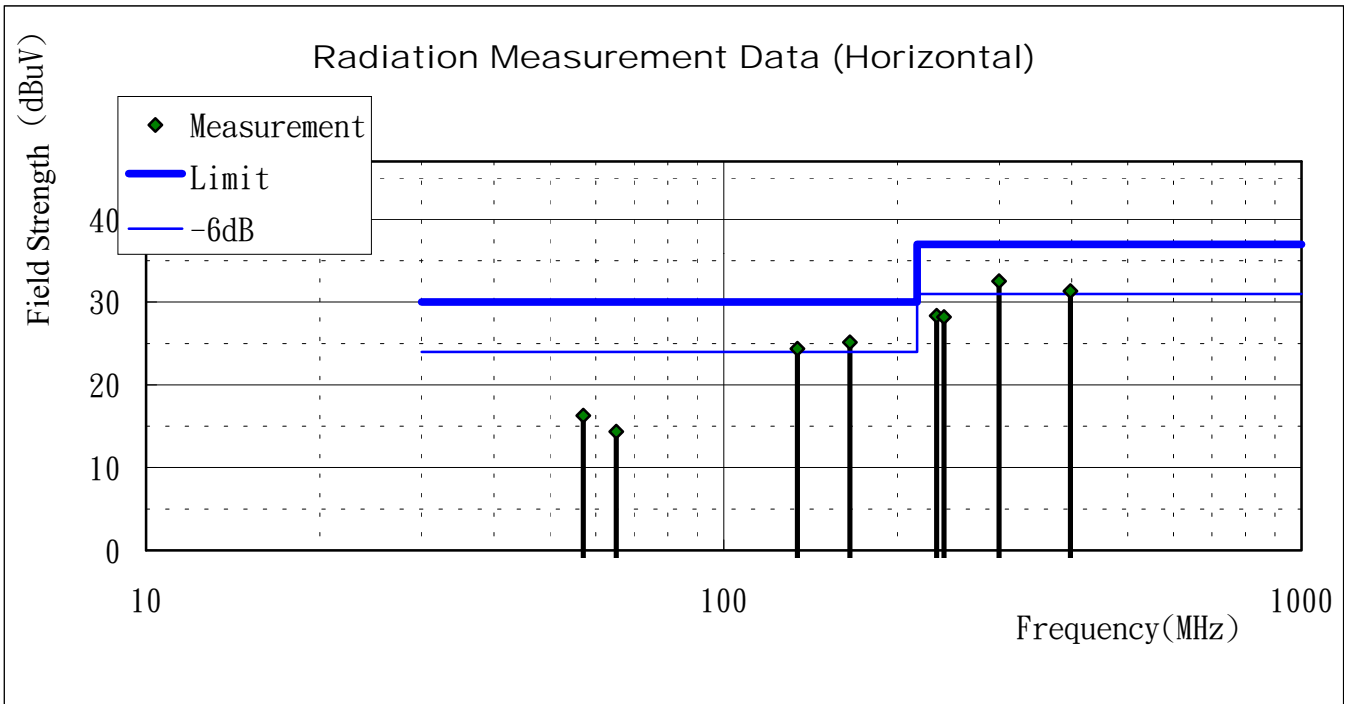
Working Cond.:Mode 1

Display Pattern :H Pattern

Frequency [MHz]	Cable Loss [dB]	Antenna Factor [dB/m]	Reading Level Vertical [dB(uV)]	Emission Level Vertical [dB(uV/m)]	Limit [dB(uV/m)]
68.150	1.16	6.81	10.85	18.82	30.00
124.510	1.80	12.14	6.95	20.89	30.00
* 134.050	1.86	11.76	12.50	26.12	30.00
145.150	1.90	11.16	5.27	18.33	30.00
166.770	2.04	9.83	12.57	24.43	30.00
233.510	2.83	11.51	15.24	29.58	37.00
240.150	2.90	11.98	9.54	24.42	37.00
298.725	3.39	13.28	13.54	30.21	37.00
401.790	4.22	16.23	11.05	31.49	37.00

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. " * ", means this data is worse case emission level.
3. Emission Level = Reading Level + Antenna Factor + Cable loss.
4. Deviations from the specifications: None.



5. PowerLine Harmonic and Voltage Fluctuation/Flicker Measurement

5.1 Test Equipment

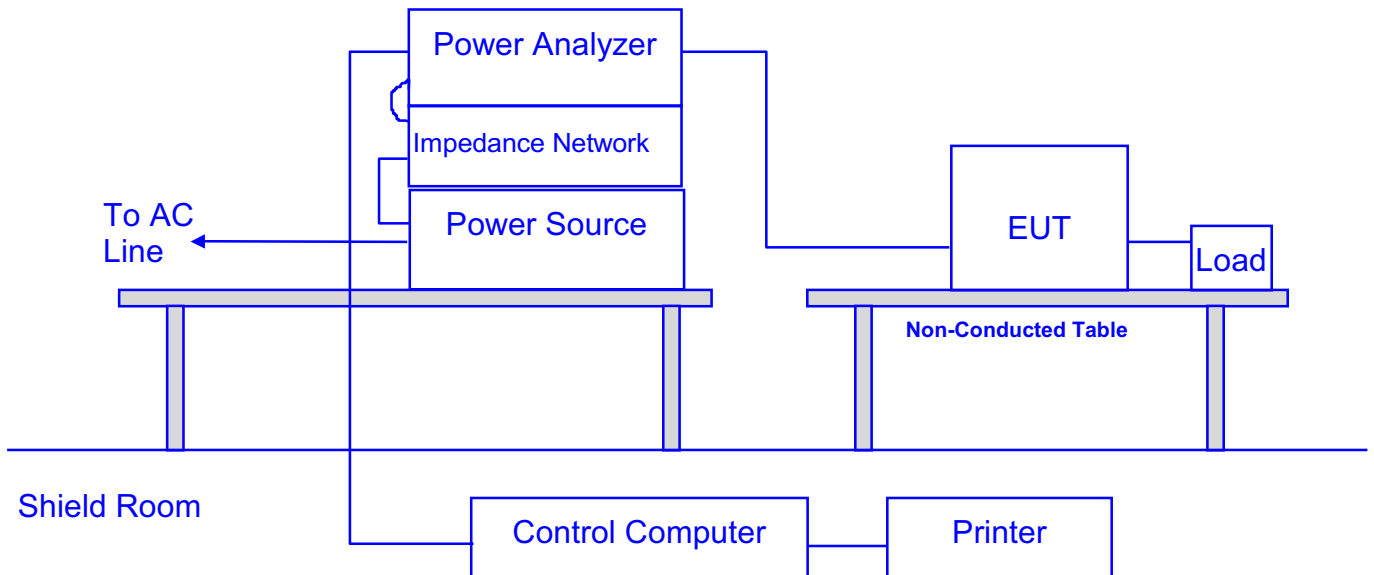
The following test equipments are used during the Disturbance tests:

Item	Instrument	Manufacturer	Type No.	Last Calibration
1	Power Analyzer	Voltech	PM 3000A S/N:AH07/9016	Sep. 25, 2000
2	Power Source	Pacific	345AMX/UPC32 S/N: 270	Dec. 02, 2000
3	Impedance Network	Voltech	IEC STANDARD 555 S/N:IB0718921	Sep. 22, 2000
4	Test Program	GeTek	GTK-RF-P11	N/A

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

5.2 Test Setup of EUT

Note: This is a representative setup diagram for Table-top EUT.
For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



5.2.1 Limits of Harmonics Currents

Class D

Harmonics Order	Maximum Permissible harmonic current Per watt (mA/W)	Maximum Permissible harmonic current A
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
13 ≤ n ≤ 39 (odd harmonics only)	3.85	See table 1

Note: Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5mA, whichever is greater, are disregarded.

5.2.2 Limits of voltage fluctuation/ Flicker Measurement

The following limits apply:

- The value of P_{st} shall not be greater than 1.0.
- The value of P_{it} shall not be greater than 0.65.
- The relative steady-state voltage change, d_c , shall not exceed 3%.
- The maximum relative voltage change, d_{max} , shall not exceed 4%.
- The value of $d(f)$ during a voltage change shall not exceed 3% for more than 200ms.

If voltage changes are caused by manual switching or occur less frequently than once per hour, the P_{st} and P_{it} requirements shall not be applicable. The three requirements related to voltage changes shall be applicable with the previously mentioned voltage values, multiplied by a factor of 1.33.

5.3 EUT Operating Condition

1. Setup the EUT and Test Equipment as shown on 5.2.
2. Power on. Active performance checking program to allow EUT execute its usual operation mode during test.

5.3.1 Test Procedure for Power Line Harmonics:

Power Line Harmonics:

The EUT was supplied in series with power analyzer from a power source having the same nominal voltage and frequency as the rated supply voltage of the equipment under test. The supply voltage of the EUT was varied over the voltage range of 0.94 times to 1.06 times the nominal voltage to produce worst-case emission.

5.4 Test Method

According to EN 61000-3-2 / 1995 + A1, A2 / 1998 & EN 61000-3-3 / 1995

5.5 Test Result

1. The measurement of the power harmonics which test at the extremes of EUT's supply range was investigated, and the test result are reported the following data pages. The measurement limits were met, and the EUT **passed** the test.
2. The EUT was comply to limit of Class D.

Item	With Dummy Load (W)	Power Factor	Irms (mA)	Vrms (V)	Active Power (W)	Observation Time
Mode 1	30	0.753	465.3	230.8	85.3	Long cyclic 3 min

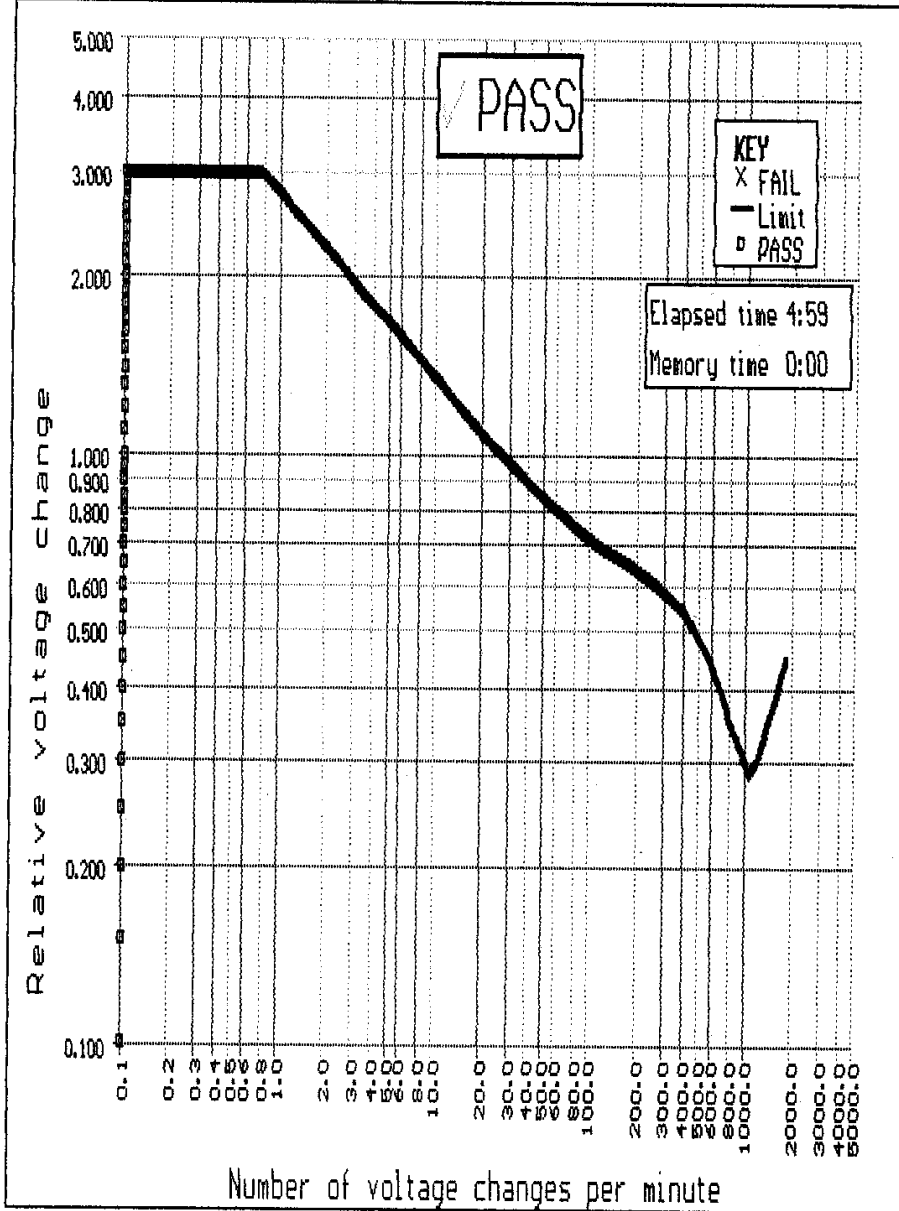
Attached 3 individual pages of peak scan curve data sheets.

The total uncertainty for this test is as follows:
 • Uncertainty in the current measured: $< \pm 10\%$
 The uncertainty is calculated in accordance with NAMAS document NIS 81, and is given as 2 standard deviations.

Manufacturer:ASUS
EUT:PC SYSTEM

NOTE:1600*1200 106K 85Hz

CH1 Changing Voltage Mon Mar 12 21:09:42 2001



Product: PC SYSTEM	2001 Mar 12 8:58pm
Serial no:	Page 1 of 1
Description:	
Voltech IEC1000-3 Windows Software 2.07	Test Date: 2001 Mar 12 8:55pm
Result: SPS:ATX-120 C	
Type of Test: Steady State Harmonics Test - Table	
Power Analyzer: Voltech PM3000A v1.67 s/n 9016	
AC Source: Mains / Manual Source	
PASS	

Class	D
Class Multiplier	1
Power	85.3 W

Harmonic	Reading	Limit	Result	Harmonic	Reading	Limit	Result
2	1.03mA	None	N/A	3	273mA	290mA	Pass
4	0.61mA	None	N/A	5	126mA	162mA	Pass
6	0.44mA	None	N/A	7	38.15mA	85mA	Pass
8	0.37mA	None	N/A	9	27.53mA	43mA	Pass
10	0.33mA	None	N/A	11	14.24mA	30mA	Pass
12	0.10mA	None	N/A	13	12.56mA	25mA	Pass
14	0.28mA	None	N/A	15	8.42mA	22mA	Pass
16	0.25mA	None	N/A	17	6.42mA	19mA	Pass
18	0.03mA	None	N/A	19	5.48mA	17mA	Pass
20	0.08mA	None	N/A	21	3.97mA	16mA	N/A
22	0.02mA	None	N/A	23	3.72mA	14mA	N/A
24	0.04mA	None	N/A	25	2.71mA	13mA	N/A
26	0.08mA	None	N/A	27	2.85mA	12mA	N/A
28	0.06mA	None	N/A	29	2.01mA	11mA	N/A
30	0.08mA	None	N/A	31	2.11mA	11mA	N/A
32	0.15mA	None	N/A	33	1.65mA	10mA	N/A
34	0.01mA	None	N/A	35	1.70mA	9mA	N/A
36	0.16mA	None	N/A	37	1.24mA	9mA	N/A
38	0.13mA	None	N/A	39	1.31mA	8mA	N/A
40	0.03mA	None	N/A				

Product:	PC SYSTEM (ASUS)	2001 Mar 14 12:19am
Serial no:		Page 1 of 1
Description:	1600*1200 106K 85Hz	
Voltech IEC1000-3 Windows Software 2.07		Test Date: 2001 Mar 13 9:56pm
Result:	ASUS0315	
Type of Test:	Flickermeter Test - Table	
Power Analyzer:	Voltech PM3000A v1.67 s/n 9016	
AC Source:	Mains / Manual Source	
PASS	Plt test duration 120 minutes Measurement method - Voltage	

	Plt
Limit	0.650
Reading	0.072

	Pst	dc (%)	dmax (%)	d(t) > 3%(ms)
Limit	1.000	3.000	4.000	200
Reading 1	0.071	0.145	0.153	0
Reading 2	0.071	0.102	0.116	0
Reading 3	0.071	0.102	0.116	0
Reading 4	0.071	0.110	0.116	0
Reading 5	0.071	0.102	0.116	0
Reading 6	0.071	0.110	0.116	0
Reading 7	0.071	0.102	0.124	0
Reading 8	0.074	0.145	0.159	0
Reading 9	0.071	0.110	0.124	0
Reading 10	0.074	0.145	0.153	0
Reading 11	0.076	0.145	0.159	0
Reading 12	0.074	0.153	0.159	0

6. ESD Measurement

6.1 Test Equipment

The following test equipments are used during the ESD tests:

Item	Instrument	Manufacturer	Type No.	Last Calibration
1	ESD Simulator System	HAEFELY	PESD 1600	Dec. 22, 2000
2	Shielded Room	GesTek	GTK-RF-SA5	N/A

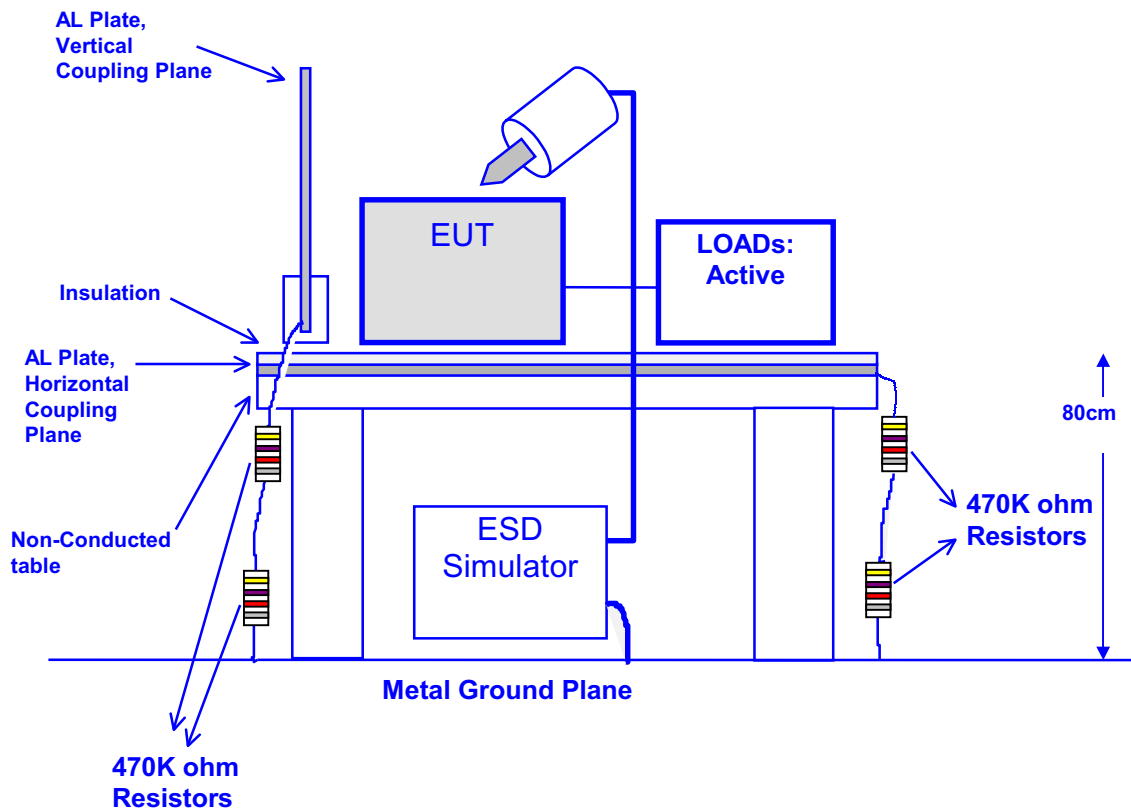
Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

6.2 Test Setup

6.2.1 Block Diagram of Connections between EUT and simulators

Note: This is a representative setup diagram for Table-top EUT.

For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



6.3 Severity Levels

Pursuant to EN 55024 : 1998 / CISPR 24 : 1997

Required Performance Criteria : B

Limit : ±8KV and lower levels (Air Discharge)
±4KV and lower levels (Contact Discharge)

6.4 EUT Operating Condition

1. Setup the EUT and Test Equipment as shown on 6.2.
2. Power on. Active performance checking program to allow EUT execute it's usual operation mode during test.

6.5 Test Procedure

Direct ESD :

Single discharge at > 1 second interval, 10 positive & 10 negative.

Air discharges to surfaces of the EUT.

Air Discharge:

This test was performed on a non-conductive surfaces in accordance with IEC 61000-4-2.

Contact Discharge:

Indirect ESD : (Horizontal Coupling Plane under the EUT & Vertical Coupling Plane beside EUT)

Vertical Coupling Plane was positioned at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

Apply ESD was applied to the earth reference plane on each accessible side of the EUT.

Single discharge at > 1 second interval, 10 positive & 10 negative

6.6 Test Method

According to IEC 61000-4-2/1995 (EN 61000-4-2/1995).

6.7 Test Result

Mode 1

Date of Test : March 12, 2001 Temperature : 24.3°C

EUT : PC System Humidity : 51 %

ITEM	AMOUNT OF DISCHARGE	VOLTAGE	REQUIRED CRITERIA	COMPLIED TO CRITERIA (A,B,C)	RESULTS
Direct Discharge Air	10	+2KV, -2KV	B	A	PASS
	10	+4KV, -4KV	B	A	
	10	+6KV, -6KV	B	A	
	10	+8KV, -8KV	B	A	
Direct Discharge Contact	10	+2KV, -2KV	B	A	PASS
	10	+4KV, -4KV	B	A	
Indirect Discharge VCP	10	+2KV, -2KV	B	A	PASS
	10	+4KV, -4KV	B	A	
Indirect Discharge HCP	10	+2KV, -2KV	B	A	PASS
	10	+4KV, -4KV	B	A	

NR: No Requirement

- Meet criteria A: Operate as intended during and after the test
- Meet criteria B: Operate as intended after the test
- Meet criteria C: Loss/Error of function
- Additional Information
 - EUT stopped operation and could / could not be reset by operator at _____KV of mode _____.
 - No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

Note: ESD Point location as page 55.

7. RF Field Strength Susceptibility Measurement

7.1 Test Equipment

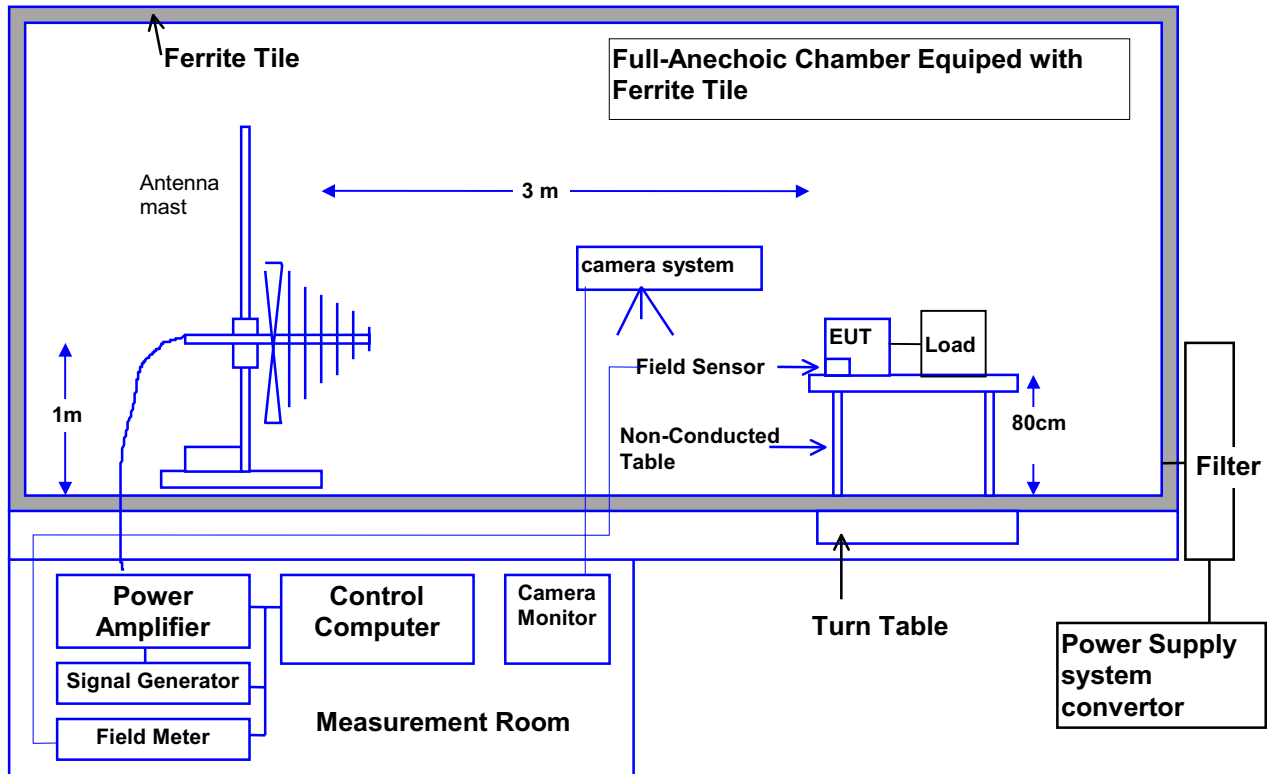
The following test equipments are used during the RS tests:

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

Item	Instrument	Manufacturer	Type No.	Last Calibration
1	Signal Generator	Marconi	2030/3110196	Sep. 04,2000
2	Power Amplifier	A & R	100W1000M1/17108	Jul. 08, 2000
3	Field Strength Meter	A & R	FM2000/16837	N/A
4	Field Strength Sensor	A & R	FP2000/16895	Oct. 17, 2000
5	Broadband Antenna	Chase	CBL6111A/1620	Dec. 02, 2000
6	Shielded Room	GesTek	GTK-RF-S03	Feb. 12, 2001
7	EMI & EMS Program Software	GesTek	GTK-RF-P03	N/A
8	RF Cable	GesTek	GTK-RF-C04	Apr. 11,2000
9	RF Cable	GesTek	GTK-RF-C05	Apr. 11,2000
10	RF Cable	GesTek	GTK-RF-C06	Apr. 11, 2000
11	Power Amplifier	A & R	150A100A/25056	Mar. 31, 2000

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

7.2 Block Diagram of Test Setup



7.3 Severity Levels

Pursuant to EN 55024 : 1998 / CISPR 24 : 1997

Required Performance Criteria :A

Limit :3.0V/m, 80MHz to 1000MHz

Modulated

7.4 EUT Operating Condition

1. Setup the EUT and Test Equipment as shown on 7.2.
2. Power on. Active performance checking program to allow EUT execute it's usual operation mode during test.

7.5 Test Procedure

The EUT and load were placed on a table which was 0.8 meters high. The field sensor was also placed on the same table to monitor field strength from transmitting antenna. EUT was set 3 meters away from the transmitting antenna. The transmitting antenna was fixed at 1 metres above ground. Both horizontal and vertical polarizations of the antenna were used during testing. In order to judge the EUT performance, a CCD camera was used to monitor the EUT screen.

All the scanning conditions are as follows:

	Condition of Test	Remarks
A	1. Field Strength	3 V/m Level 3
	2. Radiated Signal	1KHz AM 80% Modulation
	3. Scanning Frequency	80MHz-1000MHz
	4. Frequency step size Δf :	$\Delta f = f_n - f_{(n-1)} = \frac{1}{Q} f_{(n-1)}$

where:	Δf	= frequency step size
	$f_{(n-1)}$	= previous test frequency
	f_n	= next test frequency
	Q	= ratio center frequency to bandwidth

7.6 Test Method

According to IEC 61000-4-3/1995 (EN 61000-4-3/1995)

7.7 Test Result

Mode 1

Freq. Range (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/M)	Performance Criteria Complied to	Results
80-1000	0~270	H / V	3	A	PASS

Freq. Range (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/M)	Performance Criteria Complied to	Results
80	0~270	H / V	3	A	PASS
120	0~270	H / V	3	A	PASS
160	0~270	H / V	3	A	PASS
230	0~270	H / V	3	A	PASS
434	0~270	H / V	3	A	PASS
460	0~270	H / V	3	A	PASS
600	0~270	H / V	3	A	PASS
863	0~270	H / V	3	A	PASS
900	0~270	H / V	3	A	PASS

NR: No Requirement

- Meet criteria A: Operate as intended during and after the test
- Meet criteria B: Operate as intended after the test
- Meet criteria C: Loss/Error of function
- Additional Information
 - There was no observable degradation in performance.
 - EUT stopped operation and could / could not be reset by operator at _____ V/m at frequency _____ MHz.
 - No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

The total uncertainty for this test is as follows:

- Uncertainty in applied field strength (3m antenna distance): -2.1/+2.9 dB

The uncertainty is calculated in accordance with NAMAS document NIS 81, and is given as 2 standard deviations.

8. Electrical Fast Transient/Burst Measurement

8.1 Test Equipment

The following test equipments are used during the EFT tests:

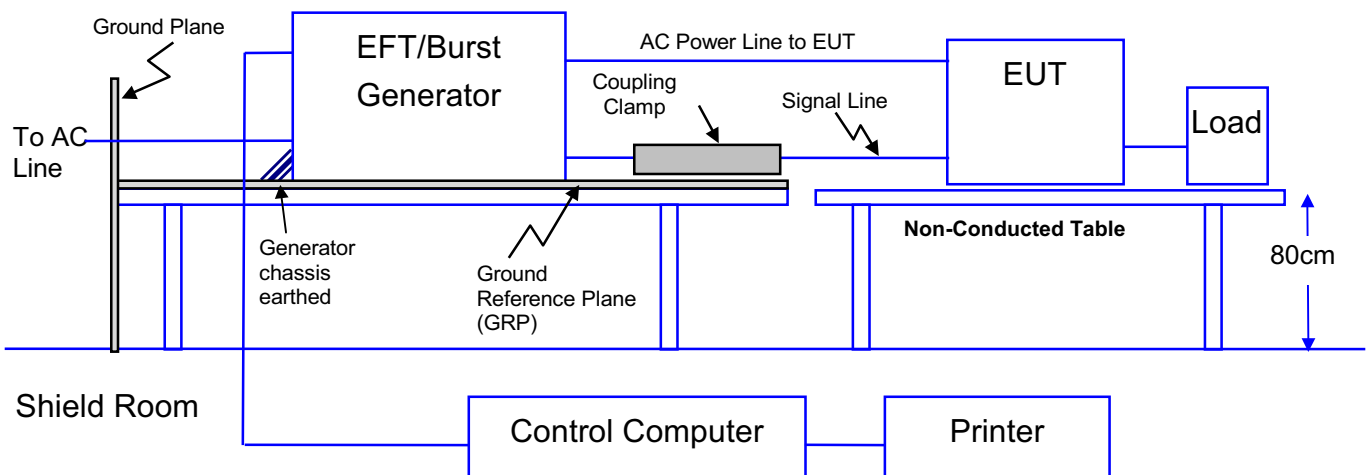
Item	Instrument	Manufacturer	Type No.	Last Calibration
1	Fast Transient/Burst Generator	HAEFELY	PEFT-J/083315-31	Sep. 27, 2000
2	EFT Absorbing Clamp	HAEFELY	N/A / 083593-07	Sep. 27, 2000

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

8.2 Block Diagram of Test Setup

Note: This is a representative setup diagram for Table-top EUT.

For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



8.3 Severity Levels

Pursuant to EN 55024 : 1998 / CISPR 24 : 1997

Required Performance Criteria : B

Limit

: ± 0.25 ; ± 0.5 K V for Signal Lines and Control Lines
 ± 0.5 ; ± 1.0 K V for Power Lines and protective earth terminal

8.4 EUT Operation Condition

1. Setup the EUT and Test Equipment as shown on 8.2.
2. Power on. Active performance checking program to allow EUT execute it's usual operation mode during test.

The EUT and its load were placed on a table which was 0.8 meters above a metal ground plane measuring 1.4m by 1m and 0.65mm thick min, and projecting beyond the EUT by at least 0.1m on all sides. The EUT was separated from the walls of the shielded room by more then 0.5 meters.

Prior to the start of the test, a functional test was performed on the EUT to ensure proper operation. The EUT was also monitored during the test for any degradation of performance.

For AC Power lines test:

The EUT is connected to the power mains through a coupling/decoupling network that directly injected the transient energy. Bursts of pulse trains were injected onto the power line, in both positive and negative polarities. The test level was 0.5kV and 1.0kV. The Line, Neutral, and protective earth conductors were impressed with burst noise for one minute.

For Signal Lines and Control Lines test:

The EFT interference signal was looped through a capacitive coupling clamp device to the signal and control lines of the EUT. The clamp meets the requirements of IEC 61000-4-4:1995. The clamp was placed on the ground plane, and the data lines were placed inside the clamp. Bursts of pulse trains were injected onto the data lines, in both positive and negative polarities. The test level was 0.25V, 0.5kV, run for one minute for each polarity on each cable.

After completion of the test, a functional test was performed on the EUT to ensure proper operation.

8.5 Test Method

According to IEC 61000-4-4/1995 (EN 61000-4-4/1995).

8.6 Test Result

Mode 1

Inject Line	Voltage KV	Inject time (minute)	Inject Method	Required Criteria	Complied to Criteria	Result
L	±0.5, ±1.0	1	DIRECT	B	B	PASS
N	±0.5, ±1.0	1	DIRECT	B	B	PASS
PE	±0.5, ±1.0	1	DIRECT	B	B	PASS
L+N	±0.5, ±1.0	1	DIRECT	B	B	PASS
N+PE	±0.5, ±1.0	1	DIRECT	B	B	PASS
L+PE	±0.5, ±1.0	1	DIRECT	B	B	PASS
L+N+PE	±0.5, ±1.0	1	DIRECT	B	B	PASS
LAN	±0.25, ±0.5	1	CLAMP	B	A	PASS

NR: No Requirement

- Meet criteria A : Operate as intended during and after the test
- Meet criteria B : Operate as intended after the test
- Meet criteria C : Loss/Error of function
- Additional Information
 - EUT stopped operation and could / could not be reset by operator at ___ KV of Line _____.
 - No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

The total uncertainty for this test is as follows:

- Uncertainty in risetime (10%/90%) in of the pulse: < ±30%
- Uncertainty in half width (50%/50%) in of the pulse: < ±30%
- Uncertainty in pulse repetition: < ±20%
- Uncertainty in the amplitude of the pulse: < ±10.8%

The uncertainty is calculated in accordance with NAMAS document NIS 81, and is given as 2 standard deviations.

9. Surge Measurement

9.1 Test Equipment

The following test equipments are used during the SURGE tests:

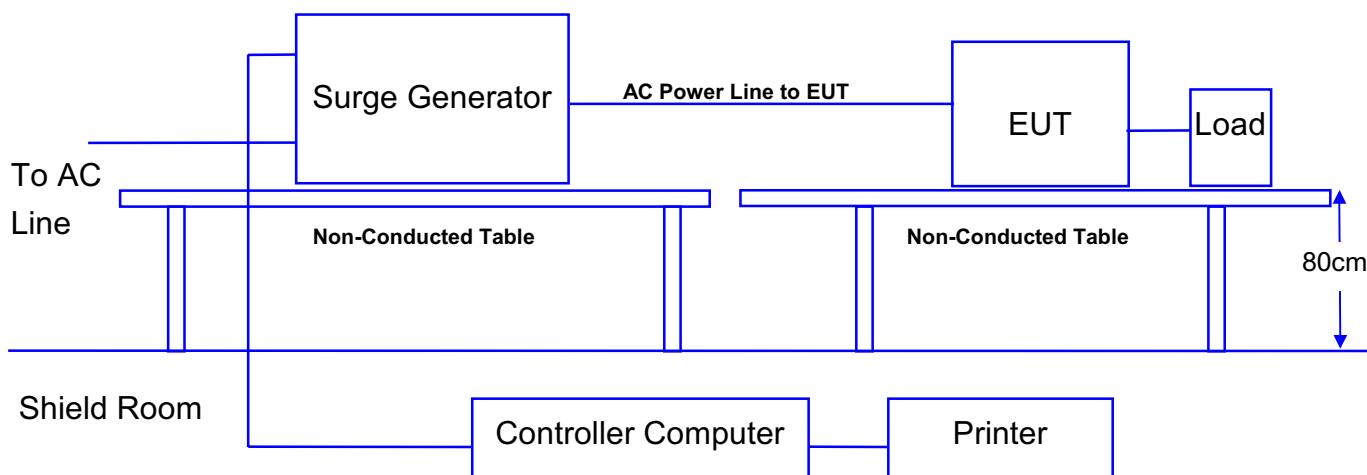
Item	Instrument	Manufacturer	Type No.	Last Calibration
1	Surge Generator	HAEFELY	Psurge 4.1 S/N:083070-16	Sep. 22, 2000

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

9.2 Block Diagram of Test Setup

Note: This is a representative setup diagram for Table-top EUT.

For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



9.3 Severity Levels

Open Circuit Output Test Voltage +/- 10%	
Level	On power supply lines
1	0.5KV
2	1KV
3	2KV
4	4KV
X	Special

❖For Information technology equipment: Pursuant to EN 55024:1998 / CISPR 24 : 1997

9.4 EUT Operation Condition

1. Setup the EUT and Test Equipment as shown on 9.2.
2. Power on. Active performance checking program to allow EUT execute it's usual operation mode during test.

9.5 Test Procedure

A “combination wave” as specified in IEC 61000-4-5:1995 was applied to the EUT. The amplitude was gradually increased using control software. Surges were initiated line synced. One surge per polarity and voltage level was applied in common and differential mode to the EUT at 0, 90, 180, 270, and 0 degree phase angels. The surges were applied at a rate of 1 surge per minute. The EUT was monitored for any degradation of performance. The AC test was conducted for differential mode at 0.5kV and 1.0kV and common mode at 0.5kV, 1.0kV and 2.0kV. All tests were run in both the positive and negative polarity for differential and common modes.

9.6 Test Method

According to IEC 61000-4-5/1995 (EN 61000-4-5/1995).

9.7 Test Result

Mode 1

Inject Line		Voltage KV	Repetition Rate (minute)	Surge applied Method	Number of tests	Required Criteria	Complied to Criteria	Result
L-N	Differential mode	±0.5	1	Coupling	5	B	A	PASS
L-N		±1	1	Coupling	5	B	A	PASS
L-PE	Common mode	±0.5	1	Coupling	5	B	A	PASS
L-PE		±1	1	Coupling	5	B	A	PASS
L-PE		±2	1	Coupling	5	B	A	PASS
N-PE	Common mode	±0.5	1	Coupling	5	B	A	PASS
N-PE		±1	1	Coupling	5	B	A	PASS
N-PE		±2	1	Coupling	5	B	A	PASS

✧ Phase Angle: 0° / 90° / 180° / 270° / 0°

NR: No Requirement

- Meet criteria A: Operate as intended during and after the test
- Meet criteria B: Operate as intended after the test
- Meet criteria C: Loss/Error of function
- Additional Information
 - EUT stopped operation and could / could not be reset by operator at ___ KV of Line _____.
 - No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

10. Conducted Susceptibility Measurement

10.1 Test Equipment

The following test equipments are used during the CS tests:

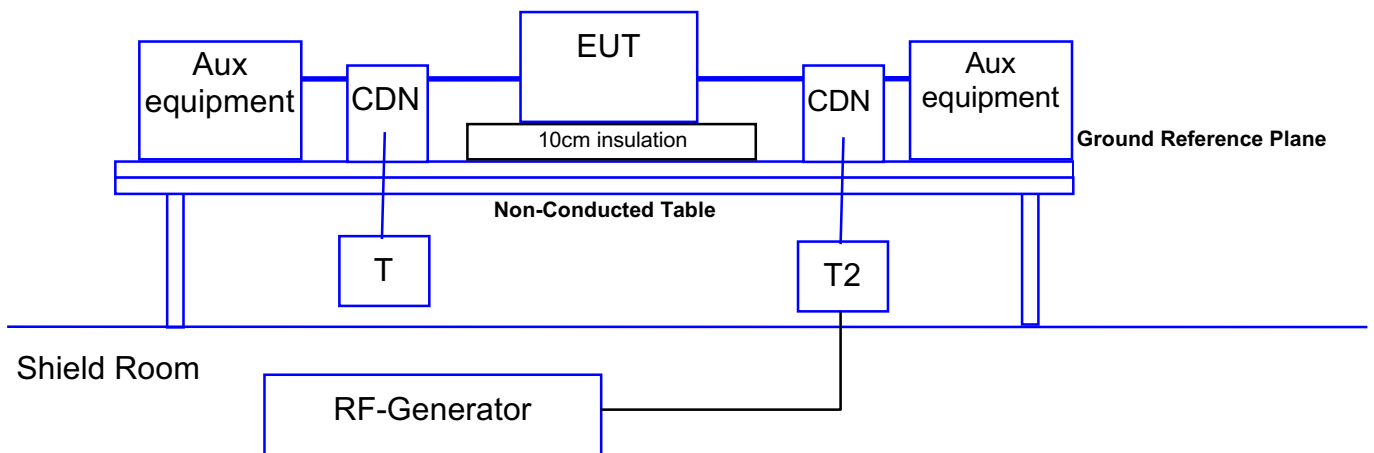
Item	Instrument	Manufacturer	Type No.	Last Calibration
1	Signal Generator	MARCONI	2030 S/N:119848/014	Sep. 04, 2000
2	Power Amplifier	A & R	150A100A/25056	Sep. 04, 2000
3	CDN	MEB Knorr-Bremse Elect. GmbH	KAL-M3,M2,S15,S9,S25	Sep. 05,2000
4	RF Attenuator	BNOS Elect.	50 Ohm 6dB 250W	Aug. 03,2000
5	Voltmeter	BOONTON	9200C/361501AA	Oct. 04,2000
6	Dual Directional Couplor	A & R	DC-2600 / 20193	Sep. 04, 2000
7	Absorbing Clamp	Chase	MDS21 / 2822	Sep. 04, 2000

Note: All equipment upon which need to be calibrated are with calibration period of 1 year.

10.2 Block Diagram of Test Setup

Note: This is a representative setup diagram for Table-top EUT.

For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



10.3 Severity Levels

Pursuant to EN 55024 : 1998 / CISPR 24 : 1997

Test specification

Required Performance Criteria : A

Common mode : 3V, 80% AM 1KHz Modulated

Radio-frequency : 0.15-80MHz

10.4 EUT Operation Condition

1. Setup the EUT and Test Equipment as shown on 10.2.
2. Power on. Active performance checking program to allow EUT execute it's usual operation mode during test.

10.5 Test Procedure

The EUT and load were placed on a table which was 0.1 meters high from a Ground reference plane. Prior to the start of the test, a functional test was performed on the EUT to ensure proper operation. The EUT was also monitored during the test for any degradation of performance. Also, prior to the start of the test, clamp injection (RF current probe) calibration measurements were performed as described in IEC 61000-4-6:1996.

For AC Power line test:

The EUT is connected to the power mains through a coupling and decoupling networks for power supply lines. And directly couples the disturbance signal into EUT.

Used CDN-M1 for single wire, CDN-M2 for two wires, or CDN-M3 for three wires.

For Signal Lines and Control Lines test:

The disturbance signal is through a coupling and decoupling networks(CDN) or EM-clamp device couples to the signal and control lines of the EUT.

After completion of the test, a functional test was performed on the EUT to ensure proper operation.

10.6 Test Method

According to IEC 61000-4-6/1996 (EN 61000-4-6/1996).

10.7 Test Result

Mode 1

Frequency Range (MHz)	Inject Line	Field Strength	Inject Method	Required Criteria	Performance Criteria Complied To	Result
0.15-80	AC Line	3V(rms)	CDN-M3	A	A	PASS
0.15-80	LAN	3V(rms)	CLAMP	A	A	PASS

Frequency Range (MHz)	Inject Line	Field Strength	Inject Method	Required Criteria	Performance Criteria Complied To	Result
0.2	AC Line	3V(rms)	CDN-M3	A	A	PASS
1.0	AC Line	3V(rms)	CDN-M3	A	A	PASS
7.1	AC Line	3V(rms)	CDN-M3	A	A	PASS
13.56	AC Line	3V(rms)	CDN-M3	A	A	PASS
21.00	AC Line	3V(rms)	CDN-M3	A	A	PASS
27.12	AC Line	3V(rms)	CDN-M3	A	A	PASS
40.68	AC Line	3V(rms)	CDN-M3	A	A	PASS

Frequency Range (MHz)	Inject Line	Field Strength	Inject Method	Required Criteria	Performance Criteria Complied To	Result
0.2	LAN	3V(rms)	CLAMP	A	A	PASS
1.0	LAN	3V(rms)	CLAMP	A	A	PASS
7.1	LAN	3V(rms)	CLAMP	A	A	PASS
13.56	LAN	3V(rms)	CLAMP	A	A	PASS
21.00	LAN	3V(rms)	CLAMP	A	A	PASS
27.12	LAN	3V(rms)	CLAMP	A	A	PASS
40.68	LAN	3V(rms)	CLAMP	A	A	PASS

NR: No Requirement

- Meet criteria A: Operate as intended during and after the test
- Meet criteria B: Operate as intended after the test
- Meet criteria C: Loss/Error of function
- Additional Information
 - EUT stopped operation and could / could not be reset by operator at ___ KV of Line _____.
 - No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

11. Magnetic Field Immunity Measurement

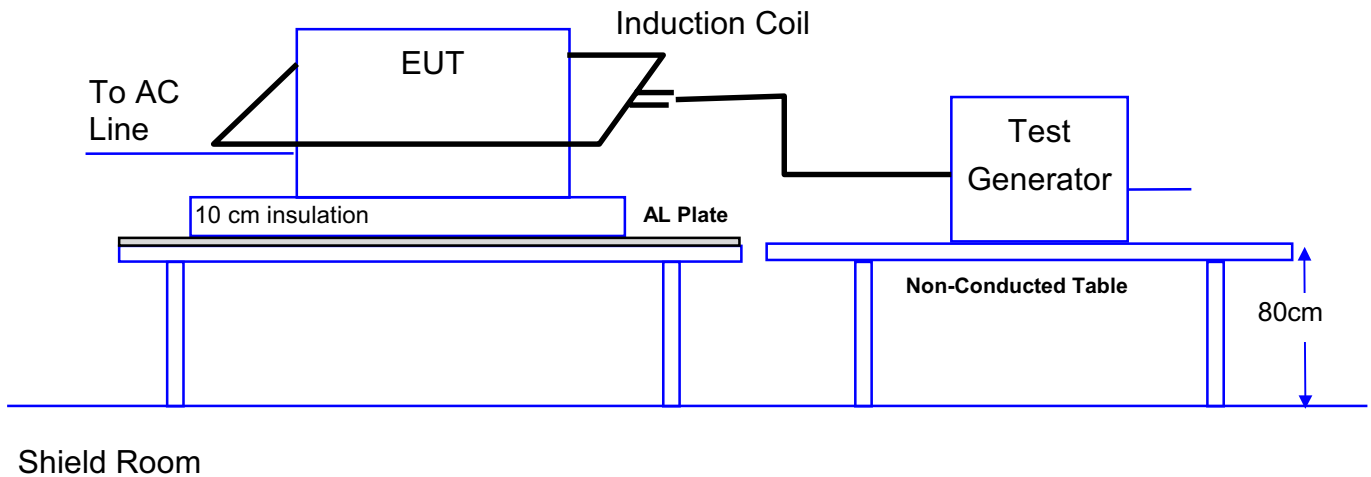
11.1 Test Equipment

The following test equipments are used during the Power Frequency Magnetic Field Immunity Tests:

Item	Instrument	Manufacturer	Type No.	Last Calibration
1	Induction Coil	HAEFELY	244 214/10	Oct. 13, 2000
2	Magnetic Field Tester	HAEFELY	MAG 100.1 S/N: 080 015-10	Oct. 13, 2000

Note: All equipment upon which need to be calibrated are with calibration period of 1 year.

11.2 Block Diagram of Test Setup



11.3 Severity Levels

Test level for continuous field		Test levels for short duration:1to3s	
Level	Magnetic Field Strength A/m	Level	Magnetic Field Strength A/m
1	1	1	n.a.
2	3	2	n.a.
3	10	3	n.a.
4	30	4	300
5	100	5	1000
X	Special	X	Special

"X" is an open level. n.a.= not application

Test level (Magnetic Field Strength A/m)	Required Performance Criteria	Test Duration
1	A	Continued Field

Pursuant to EN 55024 : 1998 / CISPR 24 : 1997

11.4 EUT Operation Condition

1. Setup the EUT and Test Equipment as shown on 11.2.
2. Power on. Active performance checking program to allow EUT execute it's usual operation mode during test.

11.5 Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured at least 1m*1m min. The test magnetic Field shall be applied by the immersion method to the EUT, previously set-up as specified in 12.2. And the induction coil shall be rotated by 90° in order to expose the EUT to the test field with different orientation.

11.6 Test Method

According to IEC 61000-4-8/1993 (EN 61000-4-8/1993).

11.7 Test Result

Magnetic Field Strength A(rms)/m	Induction Coil Orientation	Required Performance Criteria	Performance Criteria Complied To	Test Result
1	X	A	A	PASS
1	Y	A	A	PASS
1	Z	A	A	PASS

NR: No Requirement

- Meet criteria A: Operate as intended during and after the test
- Meet criteria B: Operate as intended after the test
- Meet criteria C: Loss/Error of function
- Additional Information
 - EUT stopped operation and could / could not be reset by operator at ___ KV of Line _____.
 - No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

12. Voltage Dips and Interruption Measurement

12.1 Test Equipment

The following test equipments are used during the Dips/Interruptions tests:

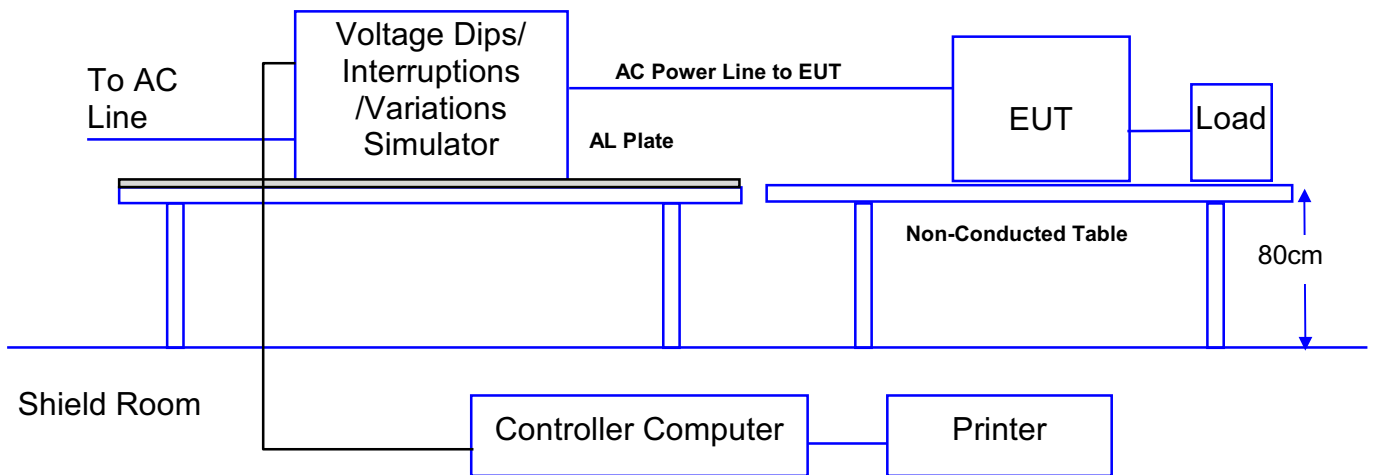
Item	Instrument	Manufacturer	Type No.	Last Calibration
1	Dips / Interruption & Variation	HAEFELY	PLING 1610/083690-07	Oct. 03, 2000

Note: All equipment upon which need to be calibrated are with calibration period of 1 year.

12.2 Block Diagram of Test Setup

Note: This is a representative setup diagram for Table-top EUT.

For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



12.3 Severity Levels

Voltage Dips and Interruption Reduction(%)	Test Duration (ms)	Required Performance Criteria
>95	10 (0.5 period)	B
30	500 (25 period)	C
>95	5000 (250 period)	C

Pursuant to EN 55024 : 1998 / CISPR 24 : 1997

12.4 EUT Operation Condition

1. Setup the EUT and Test Equipment as shown on 12.2.
2. Power on. Active performance checking program to allow EUT execute it's usual operation mode during test.

12.5 Test Procedure

The EUT and its load were placed on a table which was 0.8 meters above a metal ground plane measuring 1.4m by 1m and 0.65mm thick min, and projecting beyond the EUT by at least 0.1m on all sides. The EUT was separated from the walls of the shielded room by more than 0.5 meters

For AC Power line test:

The EUT was connected to the power mains through a coupling device that directly couples to the Voltage Dips and Interruption Generator.

Voltage dips of >95% for 10ms and 30% for 500ms were applied to the EUT three times with 10 sec intervals between dips. A power interruption of 100% for 5000ms (5 sec) was applied to the EUT three times with 60 second intervals between interruptions.

12.6 Test Method

According to IEC 61000-4-11/1994 (EN 61000-4-11/1994).

12.7 Test Result

Voltage Dips and Interruption Reduction(%)	Test Duration (ms)	Required Performance Criteria	Performance Criteria Complied To	Test Result
>95	10	B	A	PASS
30	500	C	A	PASS
>95	5000	C	C	PASS

NR: No Requirement

- Meet criteria A: Operate as intended during and after the test
- Meet criteria B: Operate as intended after the test
- Meet criteria C: Loss/Error of function
- Additional Information
 - EUT stopped operation and could / could not be reset by operator at ___ KV of Line _____.
 - No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

13. Photographs

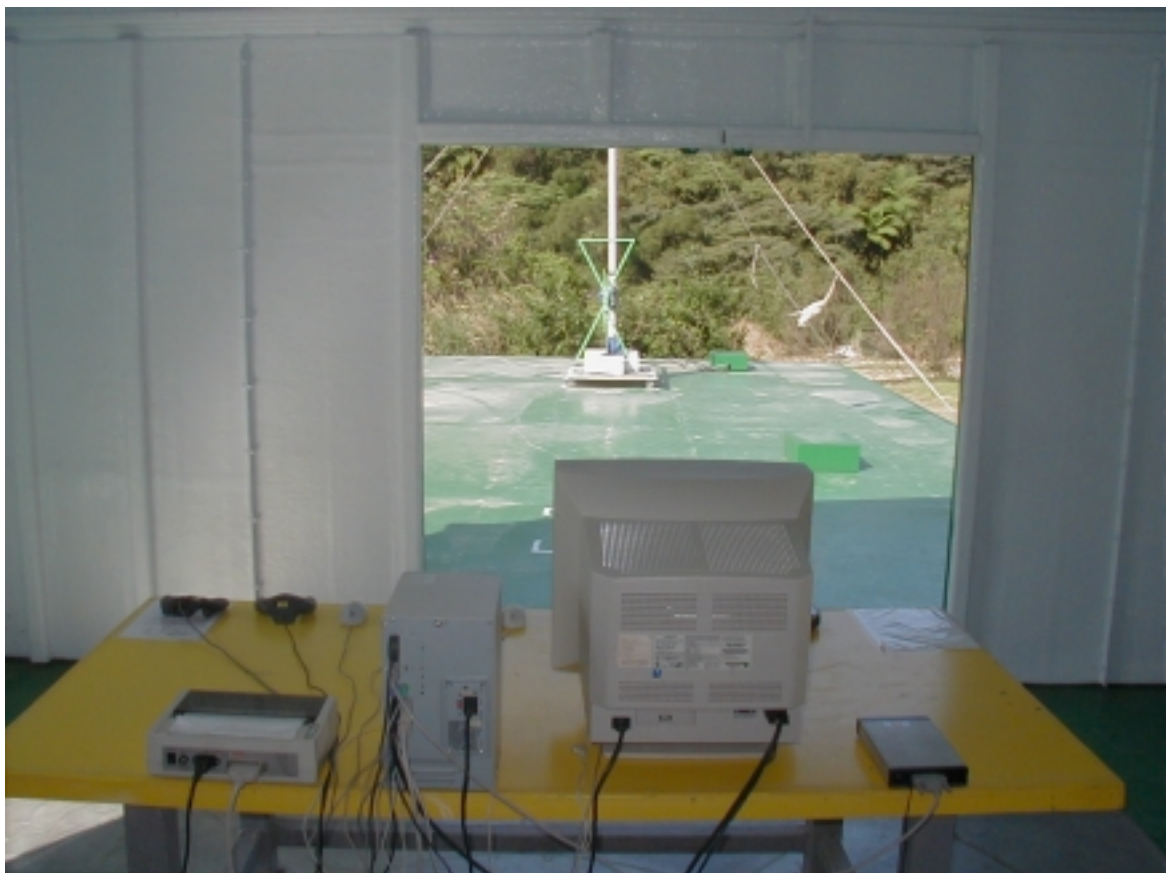
The following test photographs shown maximum emission configuration condition for each test mode.

13.1 Test Photographs

1. Front View Of Conducted Test Setup (Mode 1)
2. Back View Of Conducted Test Setup (Mode 1)



- 3. Front View Of Radiated Test Setup (Mode 1)
- 4. Back View Of Radiated Test Setup (Mode 1)



- 5. Front View Of Harmonic Test Setup (Mode 1)
- 6. Back View Of Harmonic Test Setup (Mode 1)



- 7. Front View Of ESD Test Setup (Mode 1)
- 8. Back View Of ESD Test Setup (Mode 1)



- 9. Front View Of ESD Test Point (Mode 1)
- 10. Back View Of ESD Test Point (Mode 1)



- 11. Front View Of RS Test Setup (Mode 1)
- 12. Back View Of RS Test Setup (Mode 1)



13. Front View Of EFT Test Setup (Mode 1)

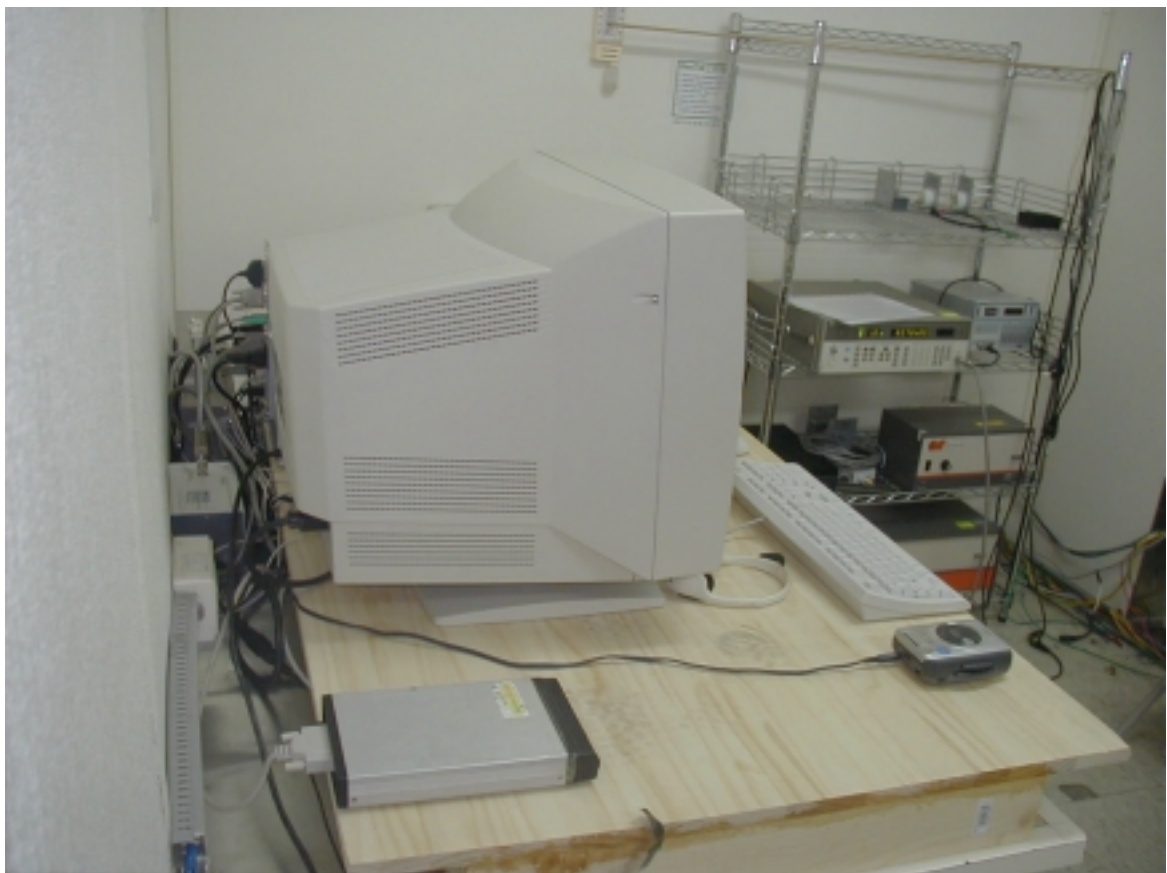
14. Back View Of EFT Test Setup (Mode 1)



- 15. Front View Of SURGE Test Setup (Mode 1)
- 16. Back View Of SURGE Test Setup (Mode 1)



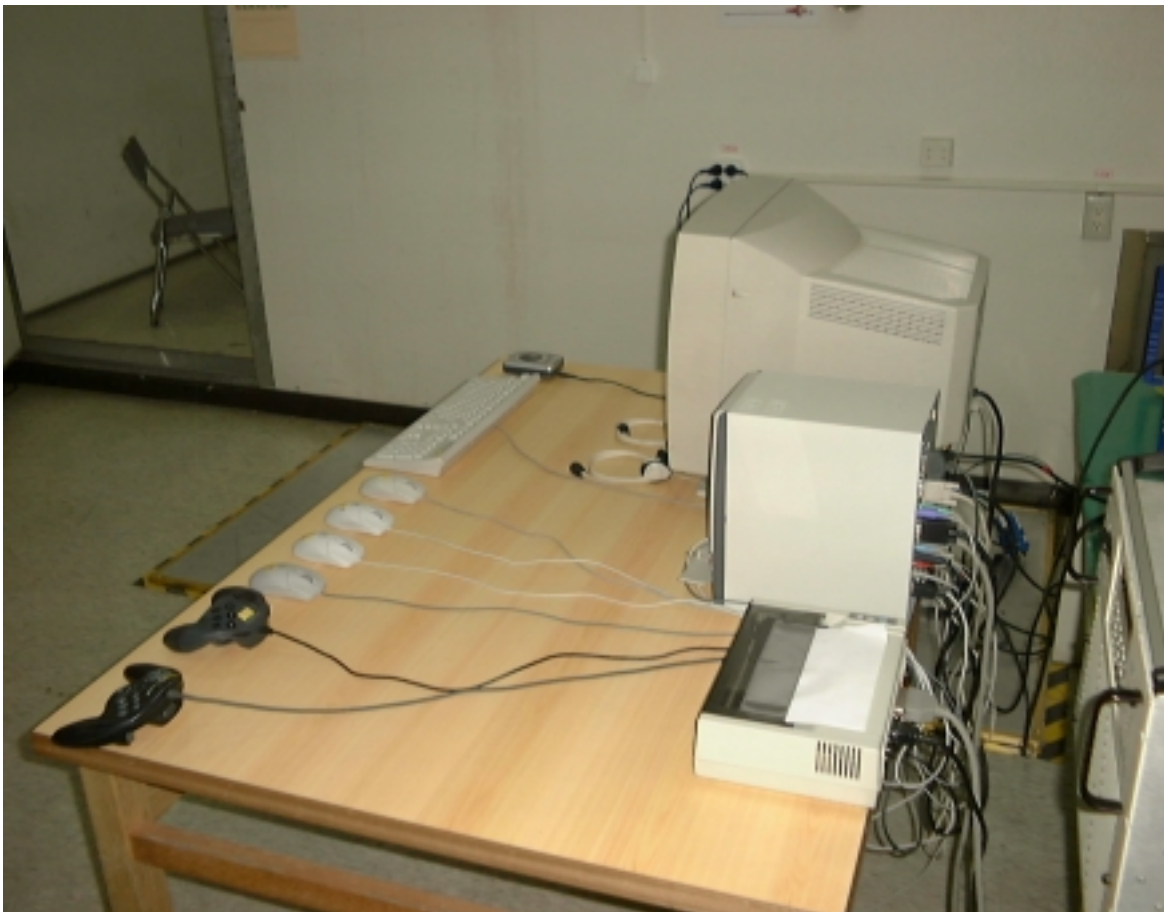
- 17. Front View Of CS Test Setup (Mode 1)
- 18. Back View Of CS Test Setup (Mode 1)



- 19. Front View Of Magnetic Field Test Setup (Mode 1)
- 20. Back View Of Magnetic Field Test Setup (Mode 1)



- 21. Front View Of DIPS Test Setup (Mode 1)
- 22. Back View Of DIPS Test Setup (Mode 1)

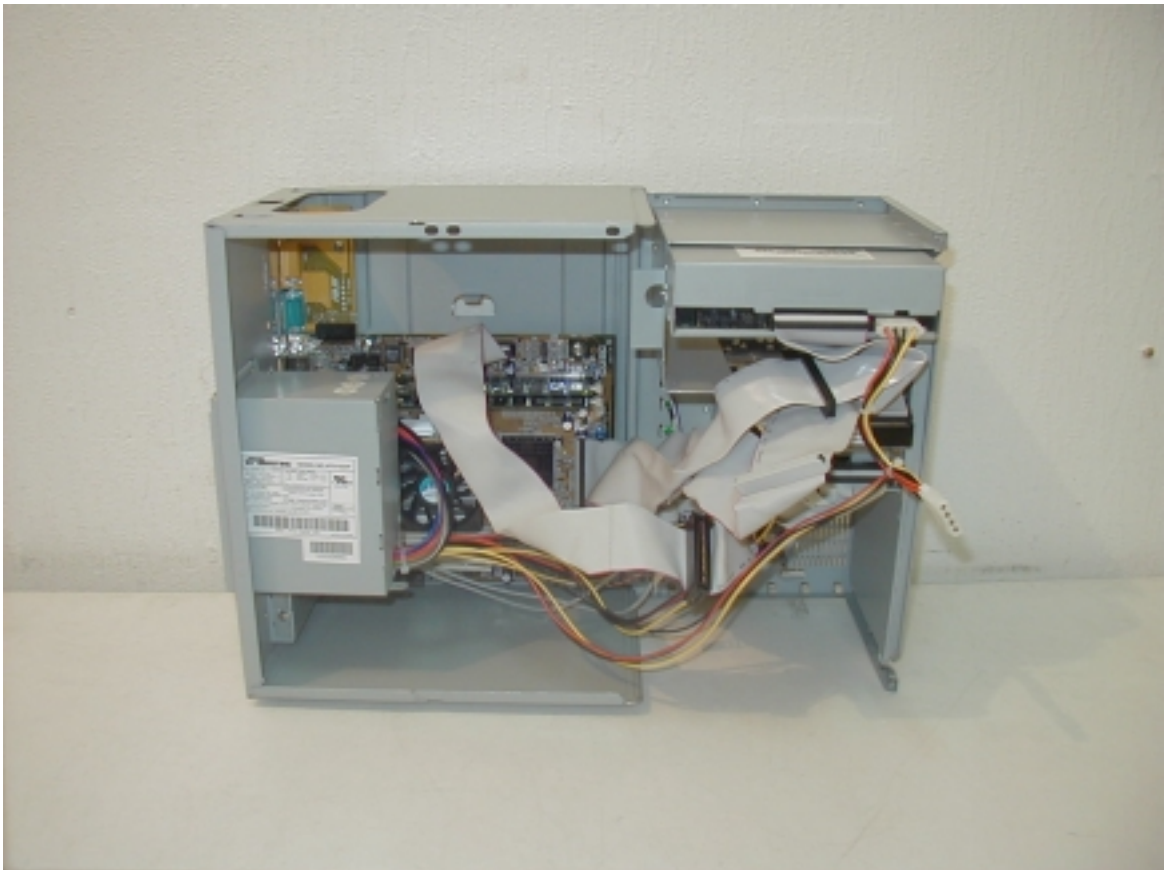


13.2 EUT Detail Photographs

1. Front View Of PC System (Mode 1)
2. Back View Of PC System (Mode 1)



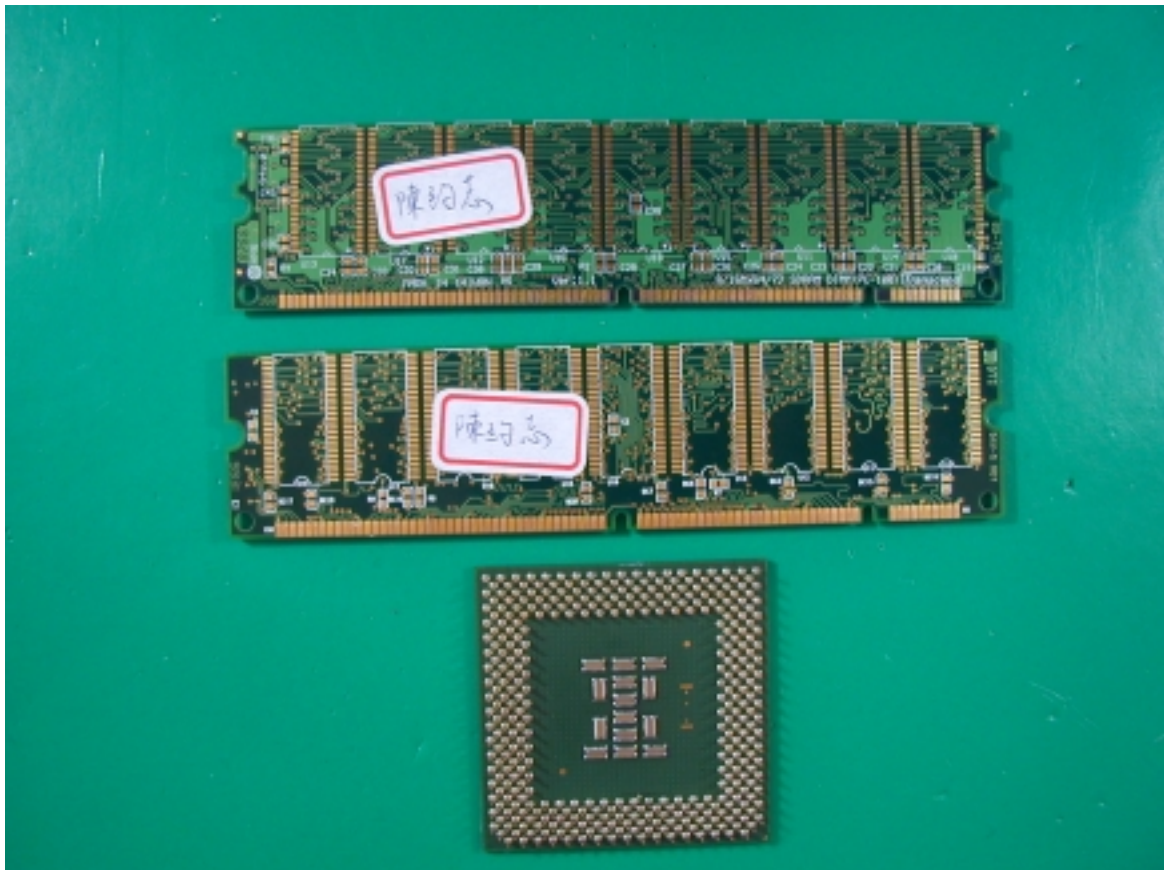
- 3. Inner View Of PC System (Mode 1)
- 4. Inner View Of PC System (Mode 1)



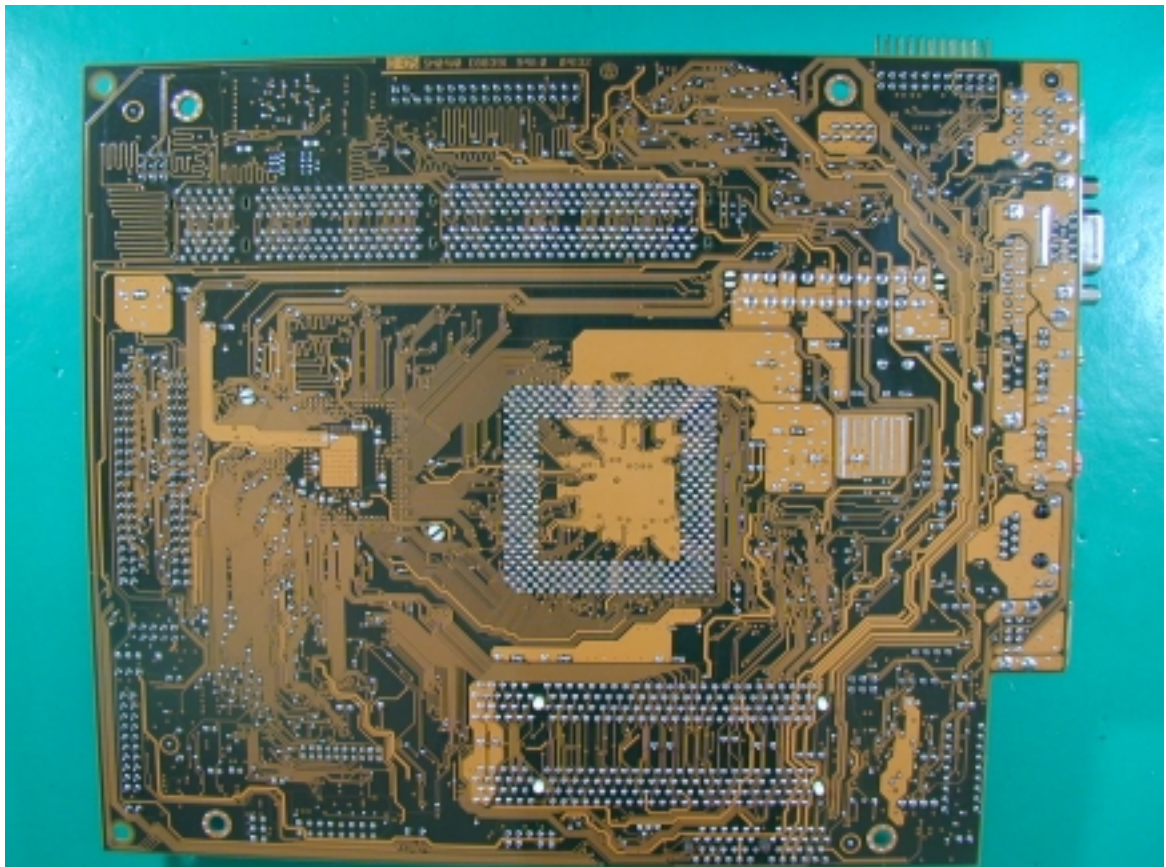
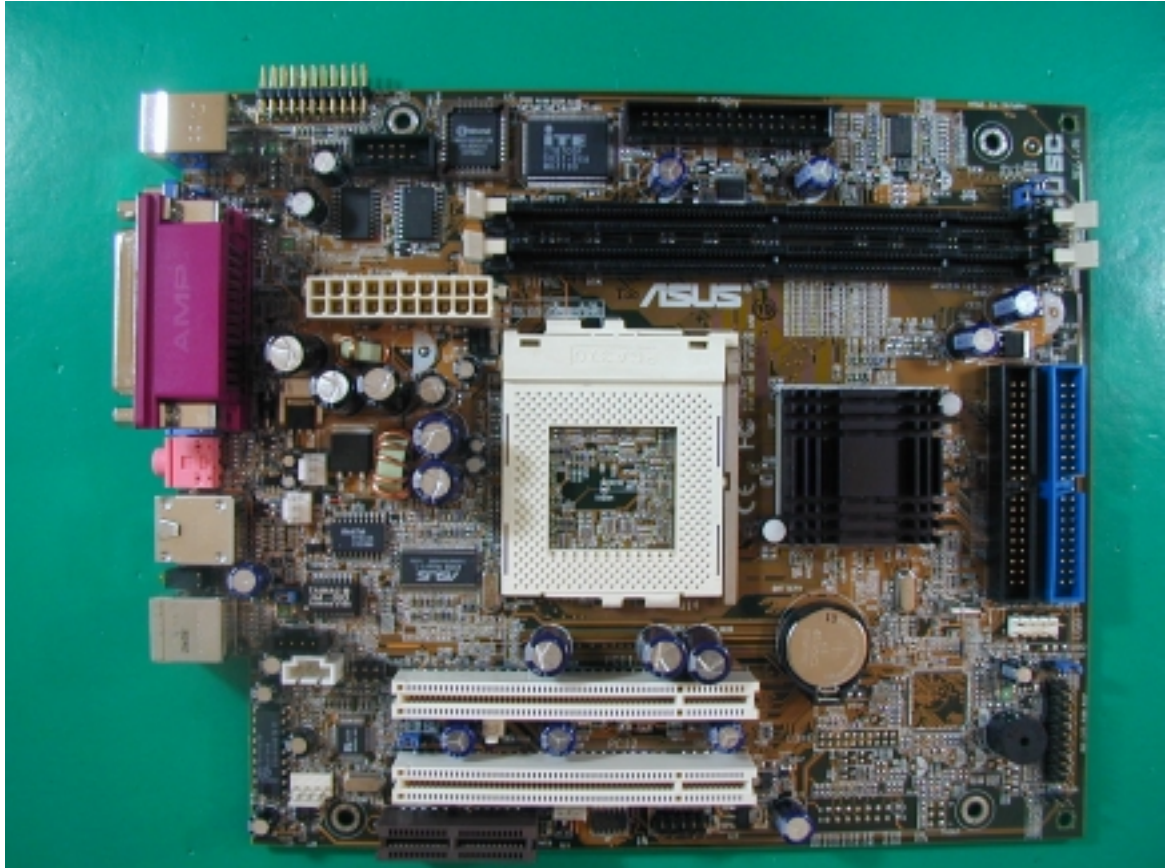
- 5. Inner View Of PC System (Mode 1)
- 6. Inner View Of PC System (Mode 1)



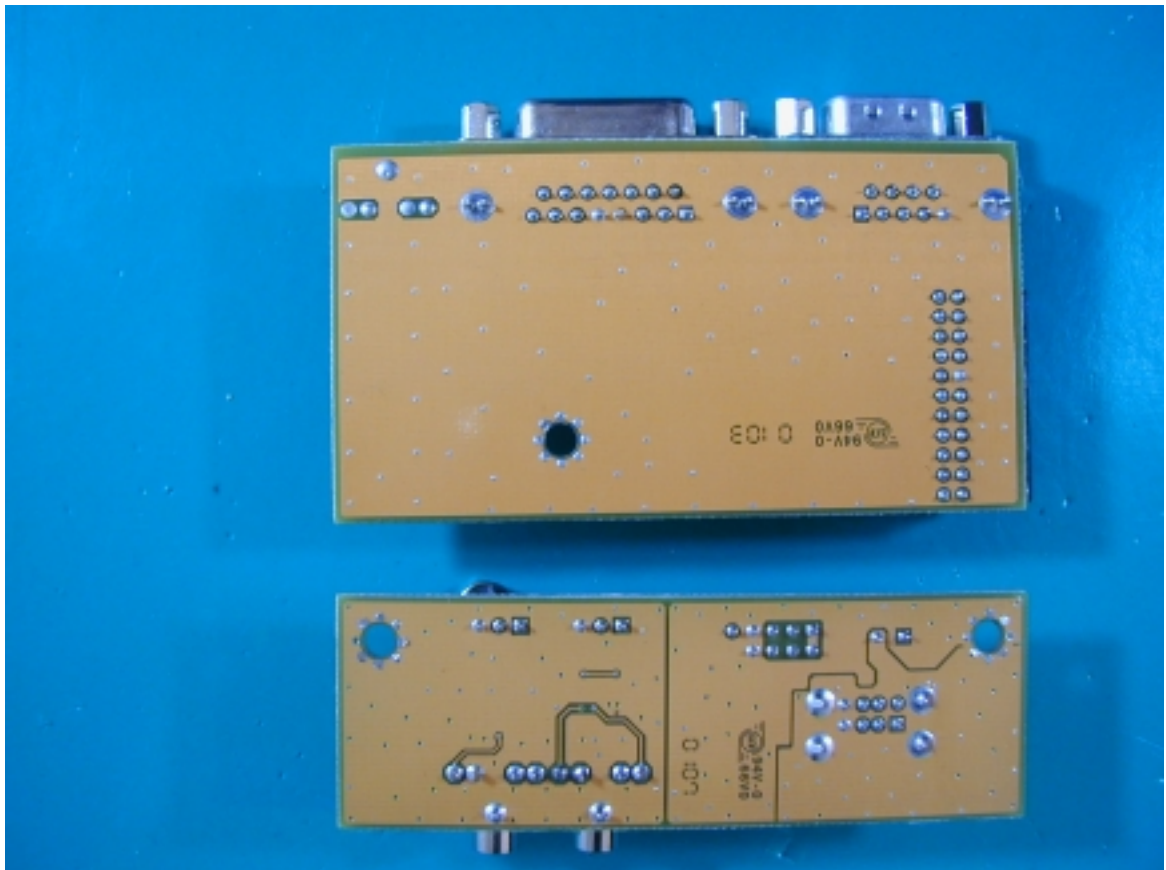
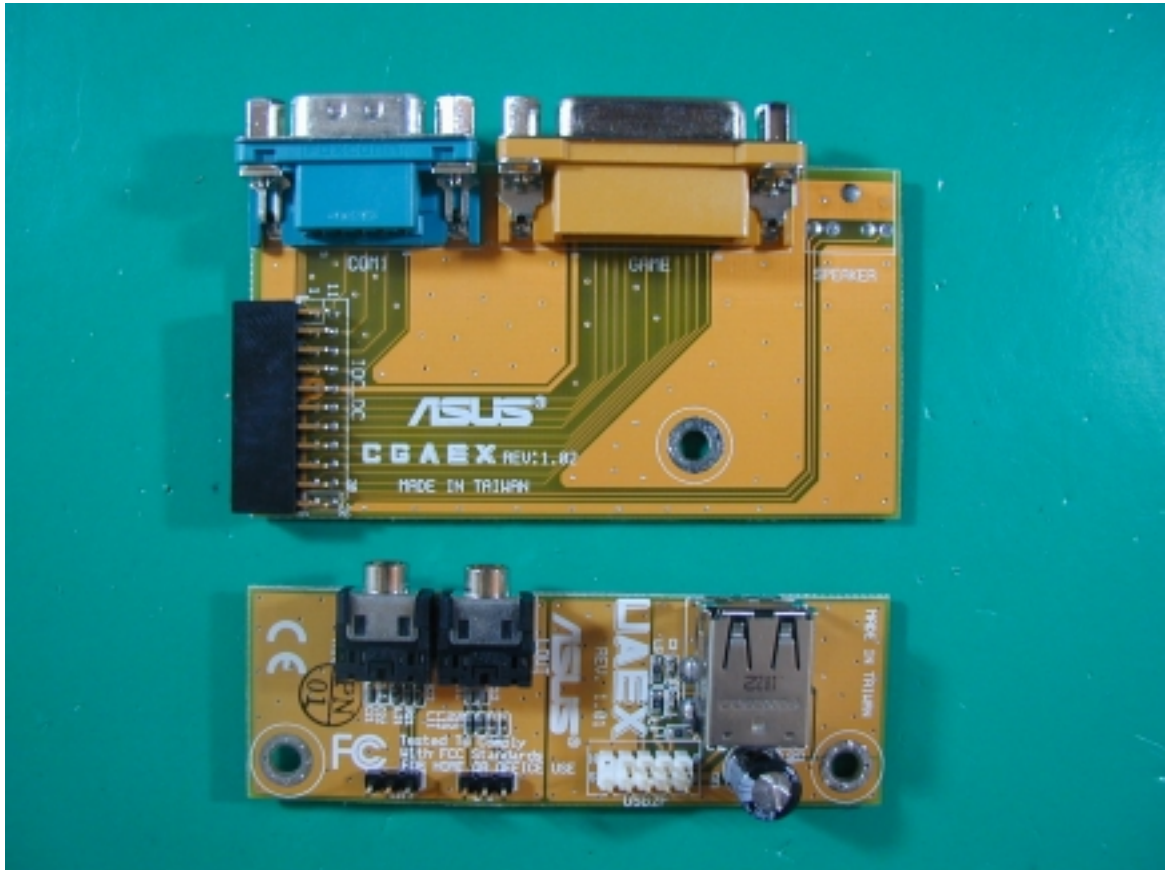
- 7. Front View Of CPU & SDRAM
- 8. Back View Of CPU & SDRAM



- 9. Component Side Of Mother Board
- 10. Solder Side Of Mother Board



- 11. Component Side Of Game & Com 1 Connector Board / USB & Audio Connector Board
- 12. Solder Side Of Game & Com 1 Connector Board / USB & Audio Connector Board



- 13. Front View Of H.D.D.
- 14. Back View Of H.D.D.



15. Front View Of F.D.D.

16. Back View Of F.D.D.



- 17. Front View Of DVD-ROM
- 18. Back View Of DVD-ROM



- 19. Front View Of S.P.S.
- 20. Back View Of S.P.S.



14. EMI/EMS Reduction Method During Compliance Testing

No modification was made during testing.