

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

**EMC Test Report
For:**

ASUSTeK Computer Inc.

Terminator TF2

Model Number: T1100-150P

Prepared for:

ASUSTeK Computer Inc.

4F., No. 150, Li-Te Rd, Peitou, Taipei, Taiwan, R.O.C.

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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. CERTIFICATION

Applicant : ASUSTeK Computer Inc.

EUT Description : Terminator TF2
 Model Number : T1100-150P
 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 : Jul. 06, 2001

Final Test Date : Jul. 19, 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.

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2. SUMMARY OF TEST RESULTS

STANDARD	TEST ITEM	TEST RESULT	REMARKS	TESTED BY
EN 55022 CISPR 22 Class B Canadian ICES-003 Class B	Conducted emission Test (Mode 1)	PASS	The worst emission frequency is <u>10.24388</u> MHz. And minimum passing margin is <u>-1.4</u> dB.	Vienda Lue
	Radiated emission Test (Mode 1)	PASS	The worst emission frequency is <u>200.795</u> MHz at <u>Horizontal</u> . And minimum passing margin is <u>-5.64</u> dB. Height of antenna is <u>4m</u> , Angle of turntable is <u>90°</u> .	Allen Chen
EN 55024 / 1998 IEC 61000-4-2	Electrostatic Discharge(ESD)	PASS	Contact discharge up to <u>4KV</u> . Air discharge up to <u>8KV</u> .	Vienda Lue
EN 55024 / 1998 IEC 61000-4-3	RF field strength Susceptibility	PASS	80-1000MHz (AM 80% @ 1KHz)3V/m	Vienda Lue
EN 55024 / 1998 IEC 61000-4-4	Electrical fast transients (Burst)	PASS	$\pm 0.5, \pm 1$ KV (AC Input) ± 0.25 KV, ± 0.5 KV(signals, telecom)	Jeff Tseng
EN 55024 / 1998 IEC 61000-4-5	Surge Immunity	PASS	$\pm 0.5, \pm 1, \pm 2$ KV (AC Input)	Vienda Lue
EN 55024 / 1998 IEC 61000-4-6	Conducted Susceptibility	PASS	0.15-80MHz (AM 80% @ 1KHz)3V/m	Vienda Lue
EN 55024 / 1998 IEC 61000-4-8	Magnetic Field Measurement	PASS	1A(rms) at 50Hz	Vienda Lue
EN 55024 / 1998 IEC 61000-4-11	Voltage Dips and Interruptions	PASS	>95% reduction, 10 ms 30% reduction, 500 ms >95% reduction, 5000 ms	Vienda Lue

3. GENERAL INFORMATION

3.1 PRODUCTION DESCRIPTION

Product Name : Terminator TF2
Model Number : T1100-150P
Serial Number : N/A
Applicant : ASUSTeK Computer Inc.
Address : 4F., No. 150, Li-Te Rd, Peitou, Taipei, Taiwan, R.O.C.
Manufacturer : ASUSTeK Computer Inc.
Address : 4F., No. 150, Li-Te Rd, Peitou, Taipei, Taiwan, R.O.C.
Power Supply : 100-127V / 4A; 200-240V / 2A, 47-63Hz
Power Cord : 1.8m, 3Pins, Non-Shielded, Detachable

3.2 TEST MODES & EUT COMPONENTS DESCRIPTION

(EUT) Terminator TF2		M/N: T1100-150P
Test Mode	Mode 1	
CPU	AMD 1400MHz, clock:133MHz	
Mother Board	ASUS, M/N:A7VC, Rev:1.02	
VGA	On Board	
Audio	On Board	
LAN	On Board	
Modem Card	None	
Game & COM 1 Port Board	ASUS, M/N:CGAEX, Rev:1.02	
USB & Audio Port Board	ASUS, M/N:UAEX, Rev:1.01	
SDRAM	Winbond, 128MB x 1, PC133	
H.D.D.	Maxtor, M/N:32049H2, BSMI ID:3892C064 (20G)	
F.D.D.	MITSUMI, M/N:D353M3D	
CD-ROM	ASUS, M/N:CD-S400/A (40X)	
Resolution	1600 x 1200, H-Sync:94KHz, V-Sync:75Hz	
S.P.S. (PFC)	ASUS, M/N:ATP-1505 100-127V / 4A; 200-240V / 2A, 47-63Hz	
Power Cord	1.8m, 3Pin,Non-Shielded, Detachable	

Note:

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

3.3 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:

Far End Network Server

Model Number : Targa PC-2, Mother Board: Asus,P/I-P55T2P4
 Serial Number : AC644101338
 Manufacturer : ACTEBIS
 F. D.D. : Manufacturer: Panasonic, Model: JU-257A606P
 H.D.D. : Manufacturer: Seagate, Model No.: ST31621A
 CD-ROM : Sony, Model No.: CDU311, Serial No.: 5004428
 Disk Ctrl Card : On Board
 I/O Card : On Board
 Graphic Card : Diamond, Model No.: Staelth 64Video 2MB Dram
 Serial No.: 3160300002342
 S. P. S. : Manufacturer: Enhance
 Model: V520, Serial No.: 96035126
 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

Modem M03-018

Model Number : 1414V
 Serial Number : 0046171
 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

Monitor M01-021

Model Number : P1100
Serial Number : 2400737
BSMI ID : 3882A692
Manufacturer : Dell
Data Cable : Non-Shielded, Undetachable, 1.8m, VGA Cable
Power Cord : Non-Shielded, Detachable, 2m

 Printer P01-014

Model Number : 2225C
Serial Number : 2440S60679
FCC ID : BS46XU2225C
Manufacturer : HP
Data Cable : Shielded, Detachable, 1.2m, Parallel Cable
Power Cord : Non-Shielded, Detachable, 1.8m

 Cassette Player R02-021

Model Number : HS-TA166
Serial Number : S34LI03R0959
FCC ID : N/A
Manufacturer : AIWA CO., LTD
Power Cord : N/A (Battery)
Date Cable : Shielded, Detachable, 1.5m, Coaxial Cable

 Keyboard H02-001

Model Number : SK-2502C
Serial Number : M000956950
BSMI ID : 3872F107
Manufacturer : HP
Data Cable : Non-Shielded, UnDetachable, 1.5m

 Mouse M02-085 (PS2)

Manufacturer : TARGA
Model Number : TM5PG
FCC ID : JKGMUS2SO1
Data Cable : Shielded, Undetachable, 1.5m

Mouse M02-088 (USB)

Model Number : M-BB48
Serial Number : LZE94150189
FCC ID : DZL211137
Manufacturer : Logitech Inc
Data Cable : Shielded, Undetachable, 1.5m

 Mouse M02-096 (USB)

Model Number : M-UB48
Serial Number : LZE93651302
FCC ID : DZL211137
Manufacturer : Logitech Inc
Data Cable : Shielded, Undetachable, 1.5m

 Headset & Microphone E01-023

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 E01-069

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 J01-014 (USB)

Serial Number : H987088E
FCC ID : DOC
Manufacturer : CREATIVE
Data Cable : Non-Shielded, Undetachable, 1.8m

Joystick J01-017 (USB)

Serial Number : H504006F
 FCC ID : DoC
 Manufacturer : CREATIVE
 Data Cable : Non-Shielded, Undetachable, 1.8m
 BSMI ID : 3872A903

Joystick J01-023

Model Number : G-YE2
 Serial Number : AE03900277
 BSMI ID : 4892A037
 Manufacturer : Logitech
 Data Cable : Non-Shielded, Undetachable, 1.8m

3.4 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, Postbox 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 CISPR 22, 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.



4. CONDUCTED EMISSION TEST

4.1 TEST EQUIPMENTS

Item	Instrument	Manufacturer	Type / Serial No.	Last Cal. Date
1	Test Receiver	Rohde & Schwarz	ESCS 30 / 1102.4500.30	Jun. 06, 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.	SCHAFFNER	ISN T400 / 16006	Sep. 11, 2000

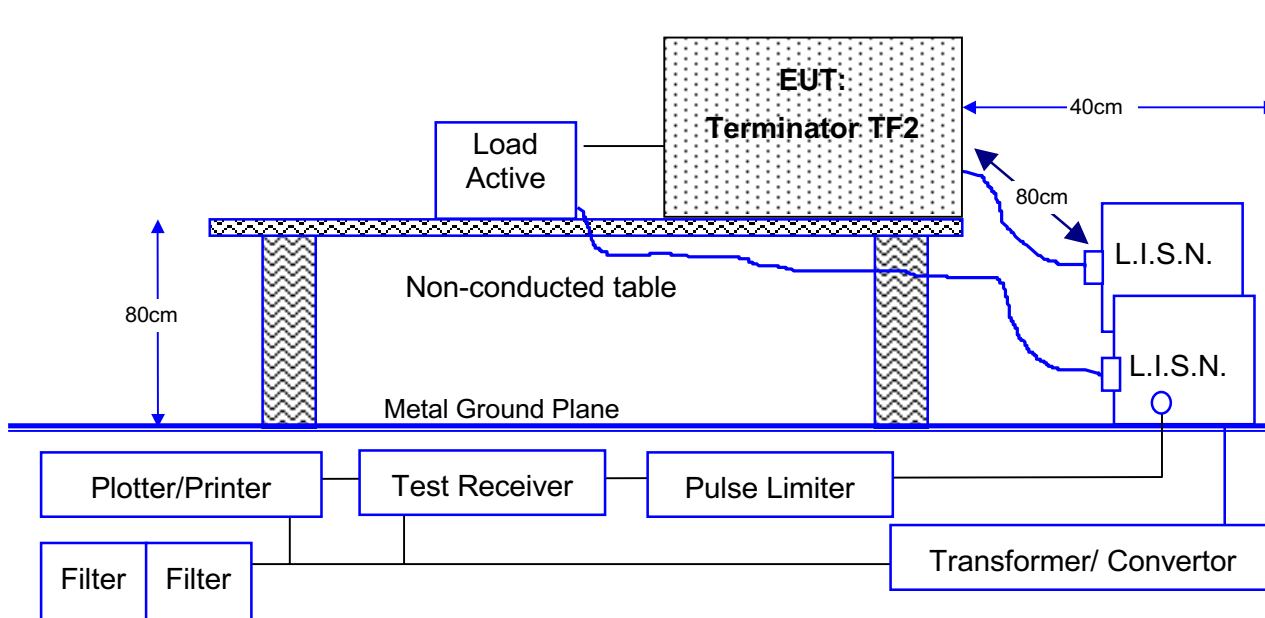
Note: All equipment upon which need to calibrated are with calibration period of 1 year.

4.2 TEST METHOD

According to EN 55022 / 1998.

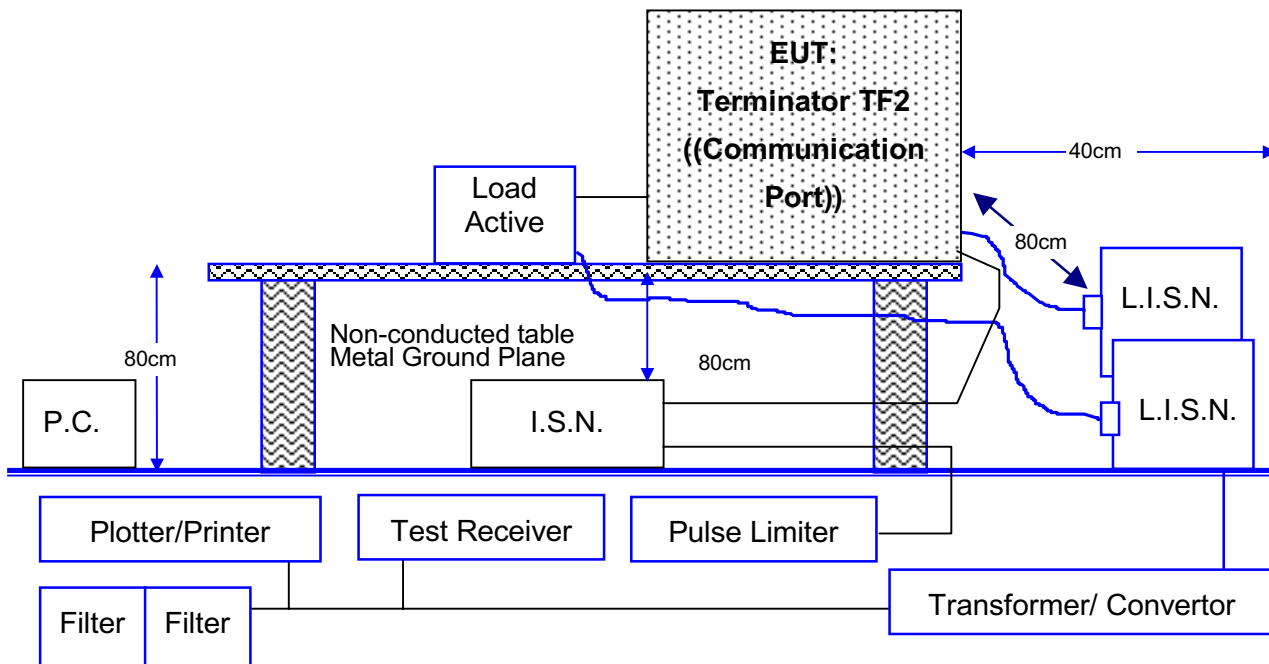
4.3 BLOCK DIAGRAM OF TEST SETUP

4.3.1 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.

4.3.2 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.

4.4 CONDUCTED EMISSION LIMITS

4.4.1 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 to 0.50	79	66	66 to 56	56 to 46
0.50 to 5.0	73	60	56	46
5.0 to 30	73	60	60	50

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

4.4.2 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 to 0.50	84 to 74	74 to 64	40 to 30	30 to 20
0.50 to 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. Provisionally, a relaxation of 10 dB over the frequency range of 5MHz to 30MHz is allowed for high-speed services having significant spectral density in this band. However, this relaxation is restricted to the common mode disturbance converted by the cable from the wanted signal. The provisional relaxation of 10dB will be reviewed no later than three years after the dated of withdrawal based on the results and interference caused seen in this period. Wherever possible it is recommended to comply with the limits without the provisional relaxation.

◆When the High-Speed Service can be verified and with applicant’s agreement, the relaxation of 10dB will be implemented, which cover the frequency range of 5MHz to 30MHz. ◆

4.5 EUT CONFIGURATION ON MEASUREMENT

4.5.1 FOR POWER LINE

The equipments, which are listed 4.3, 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 4.3, 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.

4.5.2 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.

4.6 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.

4.7 EUT OPERATING CONDITIONS

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 4.3.
2. Turn on the power of all equipments.
3. Run windows ME OS.
4. Adjust to appropriate video resolution.
5. Connect the Far End Network Server and run test program "test.bat".
6. The EUT exchange the information with the GesTek server via HUB.
7. Run test program "EMITEST.EXE".
8. CD-ROM playing a film.
9. Active other internal devices such as network function.
10. F.D.D. keeping data file transfer between H.D.D.
11. P.C. sent "H Pattern" to monitor.
12. P.C. sent "H" pattern to parallel and serial port.
13. Repeat above steps.

4.8 CONDUCTED EMISSION MEASUREMENT RESULTS

Date of Test	July 12, 2001	Temperature	27 °C
EUT	Terminator TF2	Humidity	33 %
Test Mode	Mode 1	Display Pattern	H Pattern

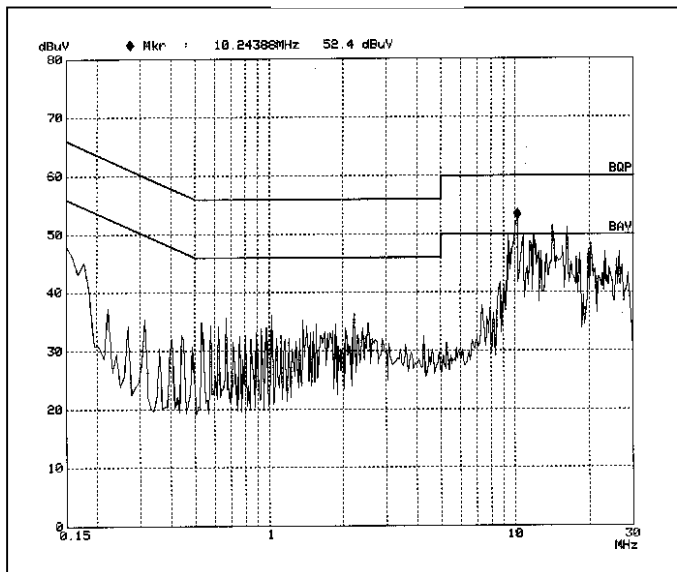
For AC Power Line

No.	FREQUENCY MHz	READING LEVEL dB μ V				LIMIT	
		LINE1 Q.P.	LINE1 AV.	LINE2 Q.P.	LINE2 AV.	Q.P.	AV.
1	0.17733	41.5	38.4	40.3	36.8	64.6	54.6
2	0.31398	35.0	34.7	34.2	33.8	59.8	49.8
3	0.66927	34.0	33.1	34.0	32.7	56.0	46.0
4	**10.24388	51.6	48.3	51.8	48.6	60.0	50.0
5	16.22915	50.2	47.1	50.4	47.2	60.0	50.0
6	23.13000	46.8	43.7	47.3	43.9	60.0	50.0

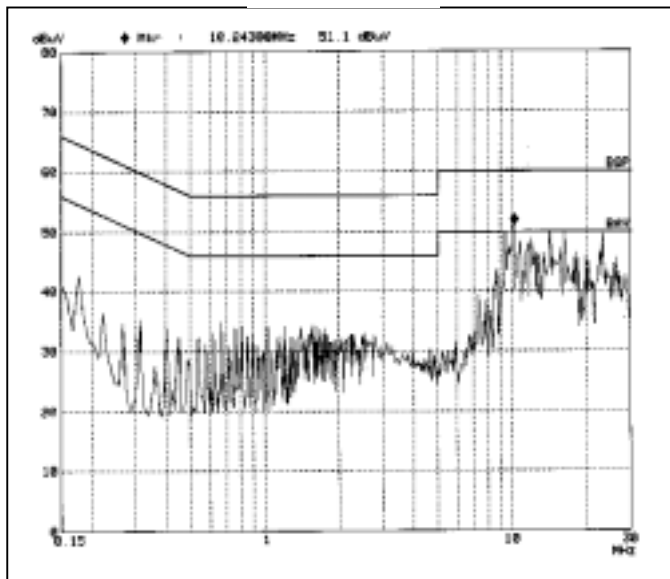
Remarks :

1. All readings are Quasi-peak and Averagel 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).

Line 1



Line 2



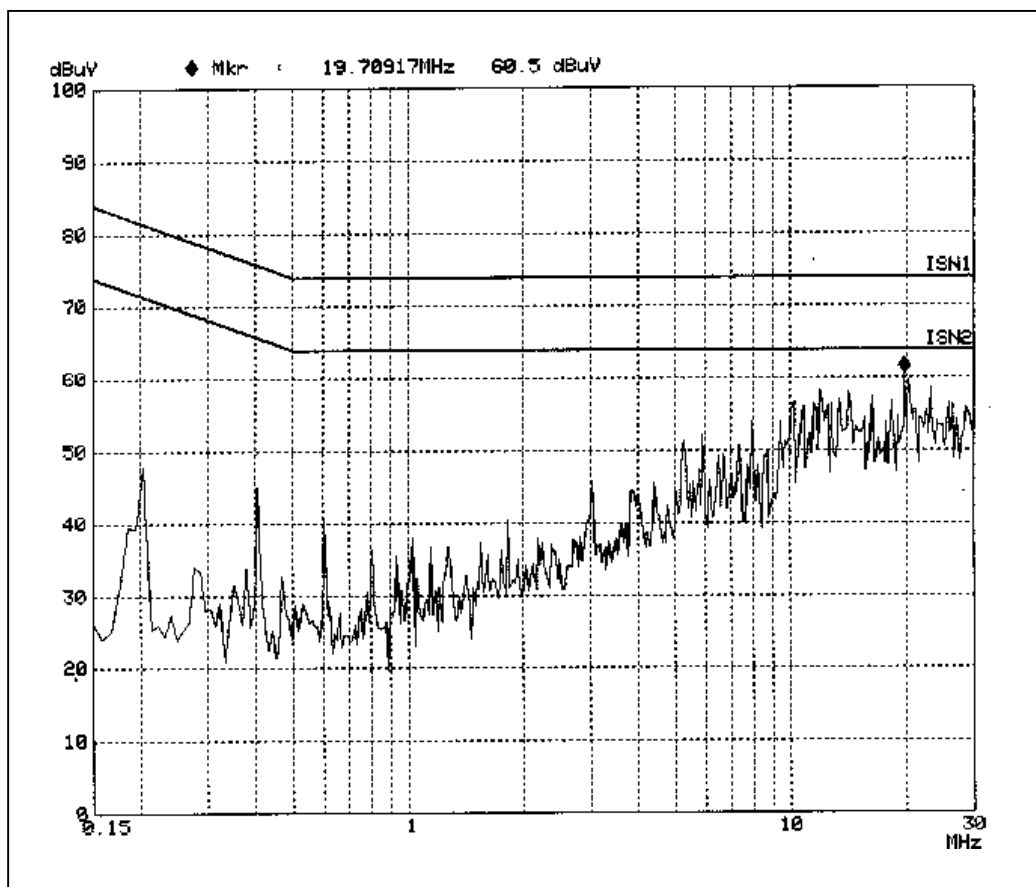
Date of Test	July 12, 2001	Temperature	25 °C
EUT	Terminator TF2	Humidity	47 %
Test Mode	ISN (LAN:On Board)	Display Pattern	H Pattern

For Mains Terminals and Telecommunication Ports

No.	FREQUENCY MHz	CORR. FACTOR dBμV	READING LEVEL dBμV		EMISSION LEVEL dBμV		LIMIT	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20465	10.45	46.2	46.1	56.65	56.55	83.03	73.03
2	0.40508	10.45	43.7	43.7	54.15	54.15	77.99	67.99
3	10.24388	10.35	55.8	52.4	66.15	62.75	74.00	64.00
4	11.89279	10.35	57.4	53.9	67.75	64.25	74.00	64.00
5	19.70917	10.36	59.6	56.4	69.96	66.76	74.00	64.00
6	23.12994	10.38	59.4	56.2	69.78	66.58	74.00	64.00

Remarks :

1. All readings are Quasi-peak and Average values.
2. Final measurement = (Receiver reading) + (Correction factor if available).
3. Provisionally, a relaxation of 10 dB over the frequency range of 5MHz to 30MHz is allowed for high-speed services having significant spectral density in this band. However, this relaxation is restricted to the common mode disturbance converted by the cable from the wanted signal. The provisional relaxation of 10dB will be reviewed no later than three years after the dated of withdrawal based on the results and interference cased seen in this period. Wherever possible it is recommended to comply with the limits without the provisional relaxation.



4.9 TEST PHOTOGRAPHS FOR CONDUCTION

Mode 1



5. RADIATED EMISSION TEST

5.1 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 / 825022/003	Jul. 28, 2001
2	Spectrum Analyzer	ADVANTEST	R3272 / 82420372	N/A
3	Pre-Amplifier	HP	8447D / 2944A08273	N/A
4	Pre Amplifier	HP	8347A / 3307A01401	N/A
5	Pre Amplifier	HP	8449B / 3008A01264	Jul. 26, 2001
6	BILOG ANTENNA	Chase	CBL6112B/2620	Sep. 07, 2000
7	Horn Antenna	Electro-Metrics	EM-6961 / 103329	Jul. 31, 2001
8	RF Cable	GesTek	GTK-RF-C03	Dec. 16, 2000
9	Open Site	GesTek	GTK-RF-SA2	Dec. 16, 2000
10	Test Program Software	GesTek	GTK-RF-P02	N/A

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

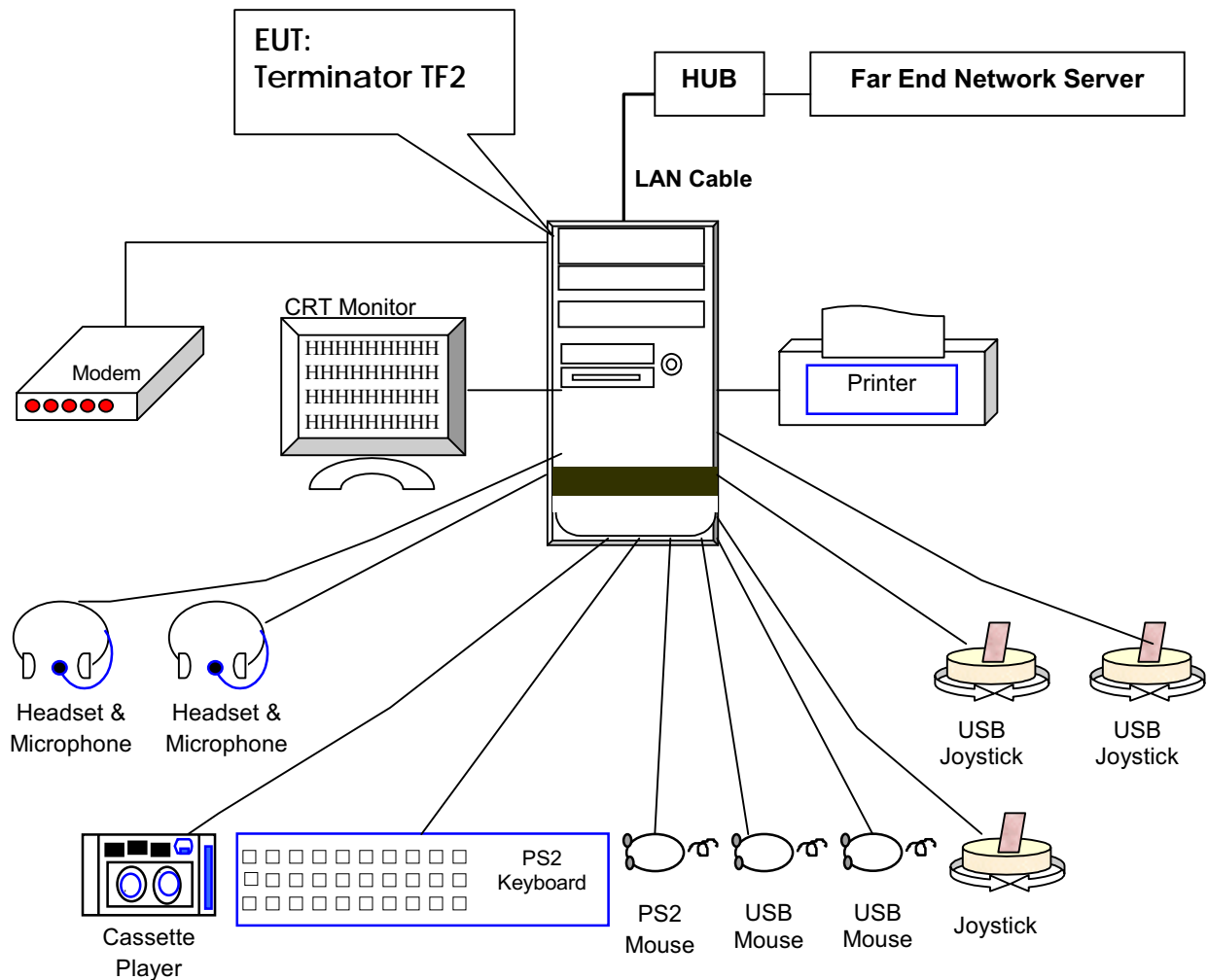
5.2 TEST METHOD

According to EN 55022 / 1998.

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

5.3 TEST SETUP

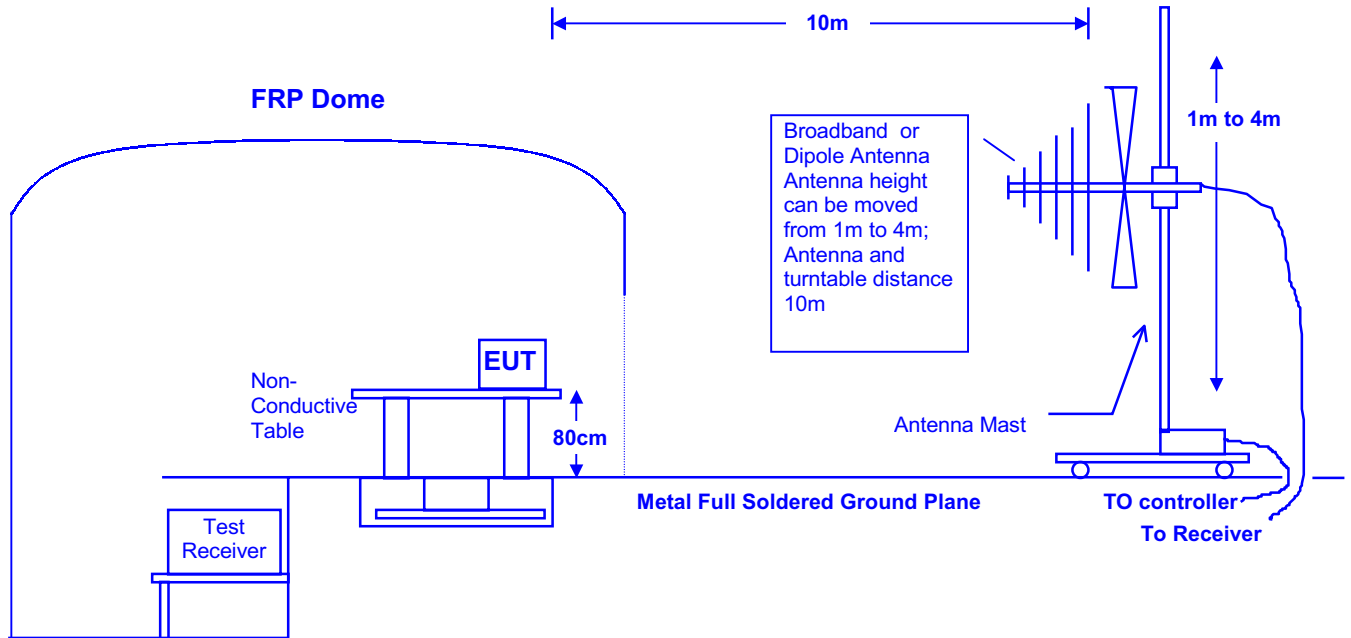
5.3.1 BLOCK DIAGRAM OF CONNECTIONS BETWEEN EUT AND SIMULATORS



5.3.2 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.



5.4 RADIATED EMISSION LIMIT

Class B Limits

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

Class A Limits

Frequency	Distance	Field Strength
MHz	Meter	dB(uV/M)
30 to 230	10	40
230 to 1000	10	47

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.

5.5 EUT CONFIGURATION

The EUT, which is listed on 5.3.1, 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 5.3.2, 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.

5.6 OPERATING CONDITION OF EUT

Same as Conducted Emission Test, which is listed in 4.7

5.7 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): $< \pm 4.0$ dB
- Uncertainty in the field strength measured (10m antenna distance): $< \pm 4.0$ dB

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

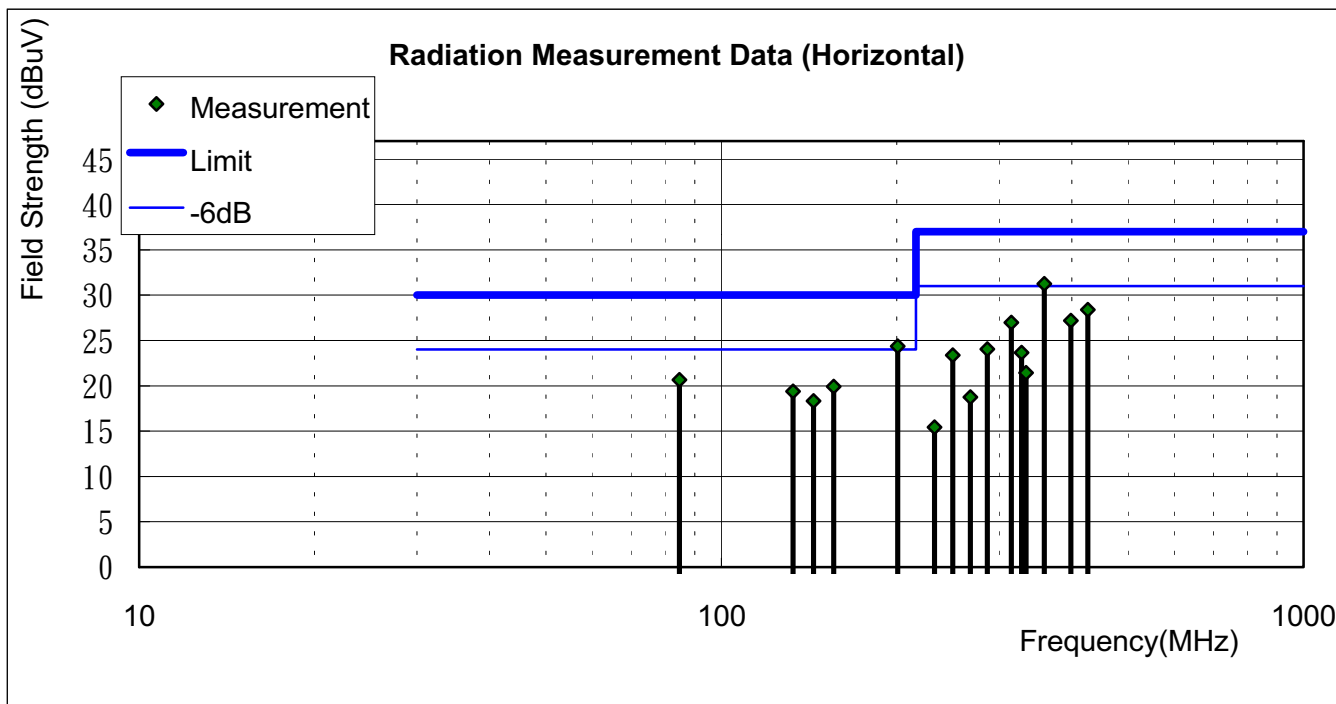
5.8 RADIATED EMISSIONS MEASUREMENT RESULTS

Date of Test	July 11, 2001	Temperature	27 deg/C
EUT	Terminator TF2	Humidity	33 %RH
Working Cond.	Mode 1	Display Pattern	H Pattern
Antenna distance	10m at Horizontal	Frequency Range	30-1000MHz

No.	Frequency [MHz]	Cable Loss [dB]	Antenna Factor [dB/m]	Reading Level [dB(uV)]	Emission Level [dB(uV/m)]	Amp. Factor [dB]	Limit [dB(uV/m)]	Margin [dB]
1	84.770	2.32	7.62	10.70	20.64	0.00	30.00	-9.36
2	132.855	2.55	11.32	5.50	19.38	0.00	30.00	-10.62
3	144.001	2.64	10.36	5.33	18.33	0.00	30.00	-11.67
4	155.989	2.70	9.53	7.68	19.91	0.00	30.00	-10.09
5	200.795	3.12	8.56	12.68	24.36	0.00	30.00	-5.64
6	232.415	3.42	9.60	2.42	15.44	0.00	37.00	-21.56
7	249.714	3.59	11.67	8.10	23.36	0.00	37.00	-13.64
8	267.880	3.71	12.45	2.59	18.74	0.00	37.00	-18.26
9	286.379	3.81	12.42	7.80	24.03	0.00	37.00	-12.97
10	315.020	4.04	13.23	9.72	26.99	0.00	37.00	-10.01
11	327.660	4.18	13.56	5.93	23.67	0.00	37.00	-13.33
12	333.770	4.23	13.70	3.50	21.44	0.00	37.00	-15.56
13	358.841	4.49	14.43	12.31	31.24	0.00	37.00	-5.76
14	398.640	4.89	15.77	6.52	27.18	0.00	37.00	-9.82
15	425.861	5.13	16.06	7.20	28.39	0.00	37.00	-8.61

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have ± 0.01 tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The "gray shadow" means this data is worst-case emission level.

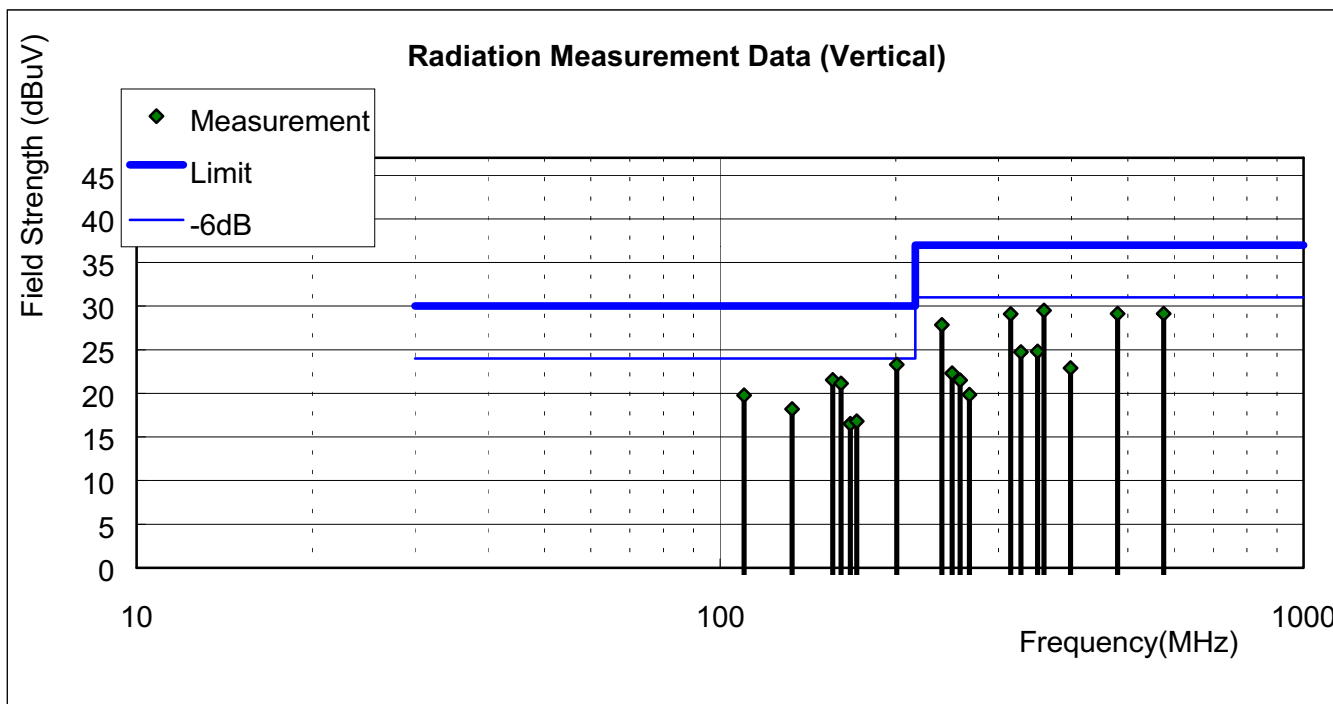


Date of Test	July 11, 2001	Temperature	27 deg/C
EUT	Terminator TF2	Humidity	33 %RH
Working Cond.	Mode 1	Display Pattern	H Pattern
Antenna distance	10m at Vertical	Frequency Range	30-1000MHz

No.	Frequency [MHz]	Cable Loss [dB]	Antenna Factor [dB/m]	Reading Level [dB(uV)]	Emission Level [dB(uV/m)]	Amp. Factor [dB]	Limit [dB(uV/m)]	Margin [dB]
1	110.003	2.38	11.17	6.24	19.79	0.00	30.00	-10.21
2	132.872	2.55	11.32	4.32	18.20	0.00	30.00	-11.80
3	155.988	2.70	9.53	9.32	21.55	0.00	30.00	-8.45
4	161.101	2.70	9.20	9.25	21.15	0.00	30.00	-8.85
5	167.107	2.82	8.90	4.80	16.52	0.00	30.00	-13.48
6	171.577	2.90	8.70	5.20	16.80	0.00	30.00	-13.20
7	200.742	3.12	8.56	11.63	23.31	0.00	30.00	-6.69
8	240.031	3.49	10.55	13.79	27.83	0.00	37.00	-9.17
9	249.713	3.59	11.67	7.05	22.31	0.00	37.00	-14.69
10	257.737	3.64	12.55	5.30	21.49	0.00	37.00	-15.51
11	267.412	3.69	12.59	3.58	19.86	0.00	37.00	-17.14
12	315.017	4.04	13.23	11.83	29.10	0.00	37.00	-7.90
13	327.753	4.18	13.56	7.00	24.74	0.00	37.00	-12.26
14	350.003	4.39	14.10	6.30	24.79	0.00	37.00	-12.21
15	358.937	4.49	14.43	10.56	29.49	0.00	37.00	-7.51
16	398.720	4.89	15.77	2.22	22.88	0.00	37.00	-14.12
17	480.007	5.61	16.89	6.62	29.12	0.00	37.00	-7.88
18	575.999	6.32	18.69	4.10	29.12	0.00	37.00	-7.88

Remarks:

1. All Readings below 1GHz are Quasi-Peak.
2. Emission Level= Reading + Antenna Factor + Cable loss (Could have ± 0.01 tolerance due to computer automatically round off calculation).
3. Margin Value=Emission level-Limit value.
4. The "gray shadow" means this data is worst-case emission level.



5.9 TEST PHOTOGRAPHS FOR RADIATION

Mode 1



6. POWERLINE HARMOINC AND VOLTAGE FLUCTUATION/FLICKER MEASUREMENT

6.1 TEST EQUIPMENT

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.

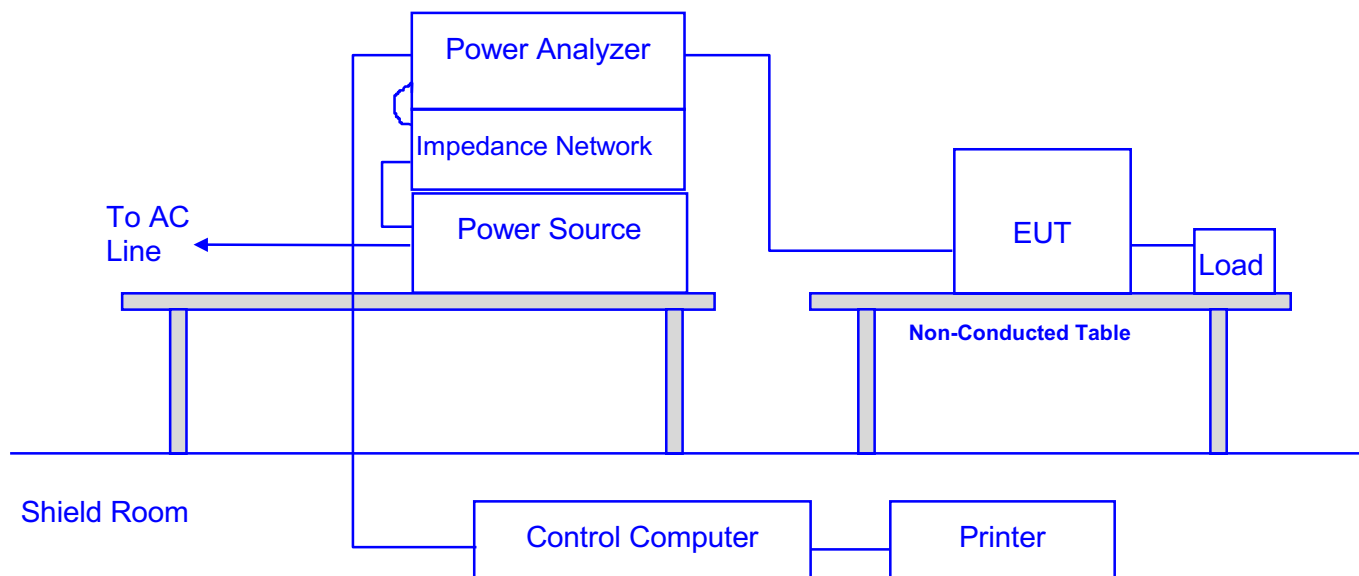
6.2 TEST METHOD

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

6.3 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.



6.4 LIMITS OF HARMOINCS 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.

6.5 EUT OPERATING CONDITION

1. Setup the EUT and Test Equipment as shown on 6.3.
2. Power on. Active performance checking program to allow EUT execute its usual operation mode during test.

6.6 TEST PROCEDURE

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.

6.7 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 complying to limit of Class D.

Item	With Dummy Load (W)	Power Factor	Irms (mA)	Vrms (V)	Active Power (W)	Observation Time
Mode 1	N/A	0.757	527.1	229.0	94.3	Long cyclic 3 min

Attached 2 individual pages of peak scan curve data sheets.

The total uncertainty for this test is as follows:

- Uncertainty in the current measured: < ± 10%

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

Harmonics Test : Mode 1

Product: ASUS.	2001 Jul 6 2:18pm
Serial no: N/A	Page 1 of 1
Description: PC SYSTEM	
Voltech IEC1000-3 Windows Software 2.07	
Test Date: 2001 Jul 6 2:15pm	
Result: ASUS.	
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	94.3 W

Harmonic	Reading	Limit	Result	Harmonic	Reading	Limit	Result
2	0.60mA	None	N/A	3	295mA	321mA	Pass
4	0.33mA	None	N/A	5	124mA	179mA	Pass
6	0.38mA	None	N/A	7	39.10mA	94mA	Pass
8	0.11mA	None	N/A	9	25.23mA	47mA	Pass
10	0.22mA	None	N/A	11	14.22mA	33mA	Pass
12	0.12mA	None	N/A	13	11.41mA	28mA	Pass
14	0.13mA	None	N/A	15	7.52mA	24mA	Pass
16	0.06mA	None	N/A	17	7.64mA	21mA	Pass
18	0.07mA	None	N/A	19	4.90mA	19mA	N/A
20	0.12mA	None	N/A	21	4.57mA	17mA	N/A
22	0.09mA	None	N/A	23	3.46mA	16mA	N/A
24	0.14mA	None	N/A	25	3.01mA	15mA	N/A
26	0.09mA	None	N/A	27	2.30mA	13mA	N/A
28	0.04mA	None	N/A	29	2.43mA	13mA	N/A
30	0.04mA	None	N/A	31	1.62mA	12mA	N/A
32	0.10mA	None	N/A	33	1.62mA	11mA	N/A
34	0.06mA	None	N/A	35	1.39mA	10mA	N/A
36	0.04mA	None	N/A	37	1.33mA	10mA	N/A
38	0.03mA	None	N/A	39	1.06mA	9mA	N/A
40	0.06mA	None	N/A				

Flickermeter Test : Mode 1

Product: ASUS PC SYSTEM		2001 Jul 13 6:06pm		
Serial no: NA		Page 1 of 1		
Description: M/N:				
Voltech IEC1000-3 Windows Software 2.07		Test Date: 2001 Jul 13 2:13pm		
Result: MODE 1				
Type of Test: Flickermeter Test - Table				
Power Analyzer: Voltech PM3000A v1.67 s/n 9016				
AC Source: Mains / Manual Source				
PASS	Pft test duration 120 minutes			
	Measurement method - Voltage			

	Pft
Limit	0.650
Reading	0.071

	Pst	dc (%)	dmax (%)	d(t) > 3%(ms)
Limit	1.000	3.000	4.000	200
Reading 1	0.071	0.009	0.046	0
Reading 2	0.071	0.009	0.052	0
Reading 3	0.071	0.009	0.046	0
Reading 4	0.071	0.009	0.046	0
Reading 5	0.071	0.009	0.052	0
Reading 6	0.071	0.009	0.046	0
Reading 7	0.071	0.009	0.052	0
Reading 8	0.071	0.009	0.052	0
Reading 9	0.071	0.009	0.052	0
Reading 10	0.071	0.009	0.052	0
Reading 11	0.071	0.009	0.046	0
Reading 12	0.071	0.009	0.046	0

6.8 TEST PHOTOGRAPHS FOR HARMONIC

Mode 1



7. ESD MEASUREMENT

7.1 TEST EQUIPMENT

Item	Instrument	Manufacturer	Type No.	Last Calibration
1	ESD Simulator System	EM TEST	ESD 30C S/N:0201-03	May 23, 2001
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.

7.2 TEST METHOD

According to EN 55024 :1998/ CISPR 24 :1997

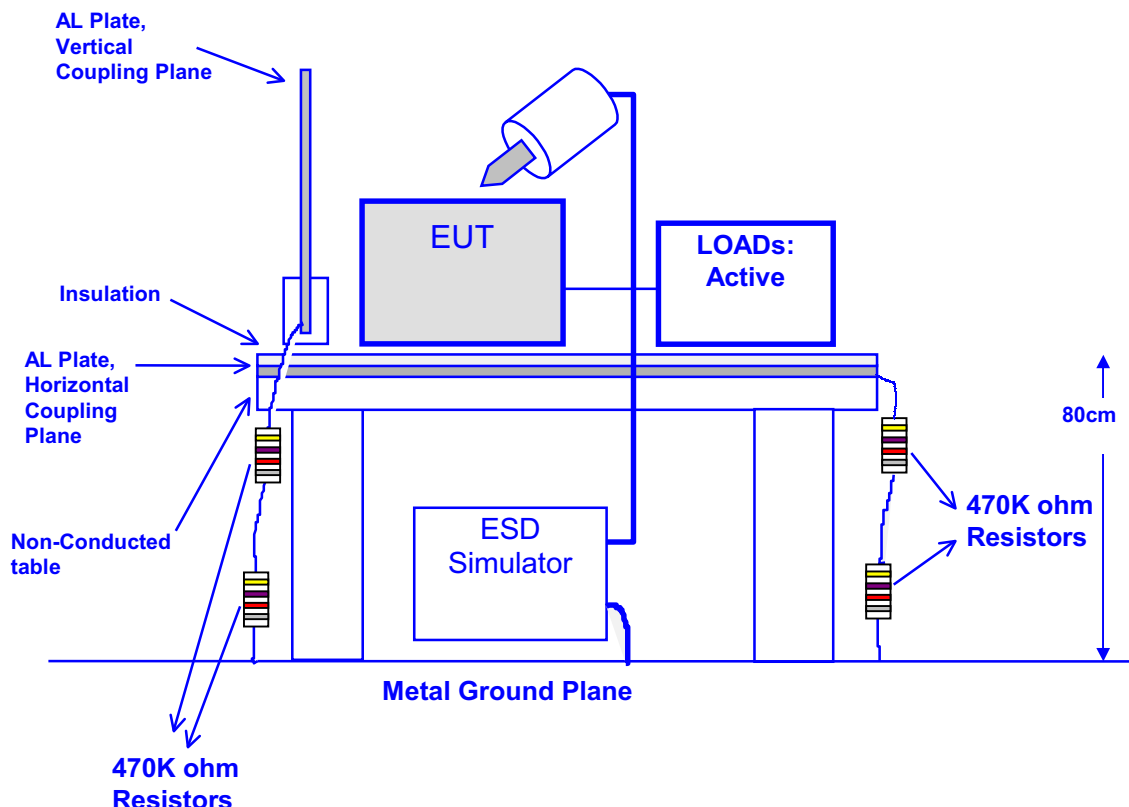
IEC 61000-4-2/1995 (EN 61000-4-2/1995).

7.3 TEST SETUP

7.3.1 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.



7.4 SEVERITY LEVELS

Required Performance Criteria : B
 Limit : ±8KV and lower levels (Air Discharge)
 ±4KV and lower levels (Contact Discharge)

7.5 EUT OPERATING CONDITION

1. Setup the EUT and Test Equipment as shown on 7.3.
2. Power on. Active performance checking program to allow EUT execute its usual operation mode during test.

7.6 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 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

7.7 TEST RESULT

Date of Test	July 17, 2001	Temperature	25 °C
Test Mode	Mode 1	Humidity	48 %

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

- 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
 - The USB mouse will slow response slightly.
 - No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

7.8 TEST PHOTOGRAPHS FOR ESD SET UP

Mode 1



7.9 TEST PHOTOGRAPHS FOR ESD POINT

Mode 1



8. RF FIELD STRENGTH SUSCEPTIBILITY MEASUREMENT

8.1 TEST EQUIPMENT

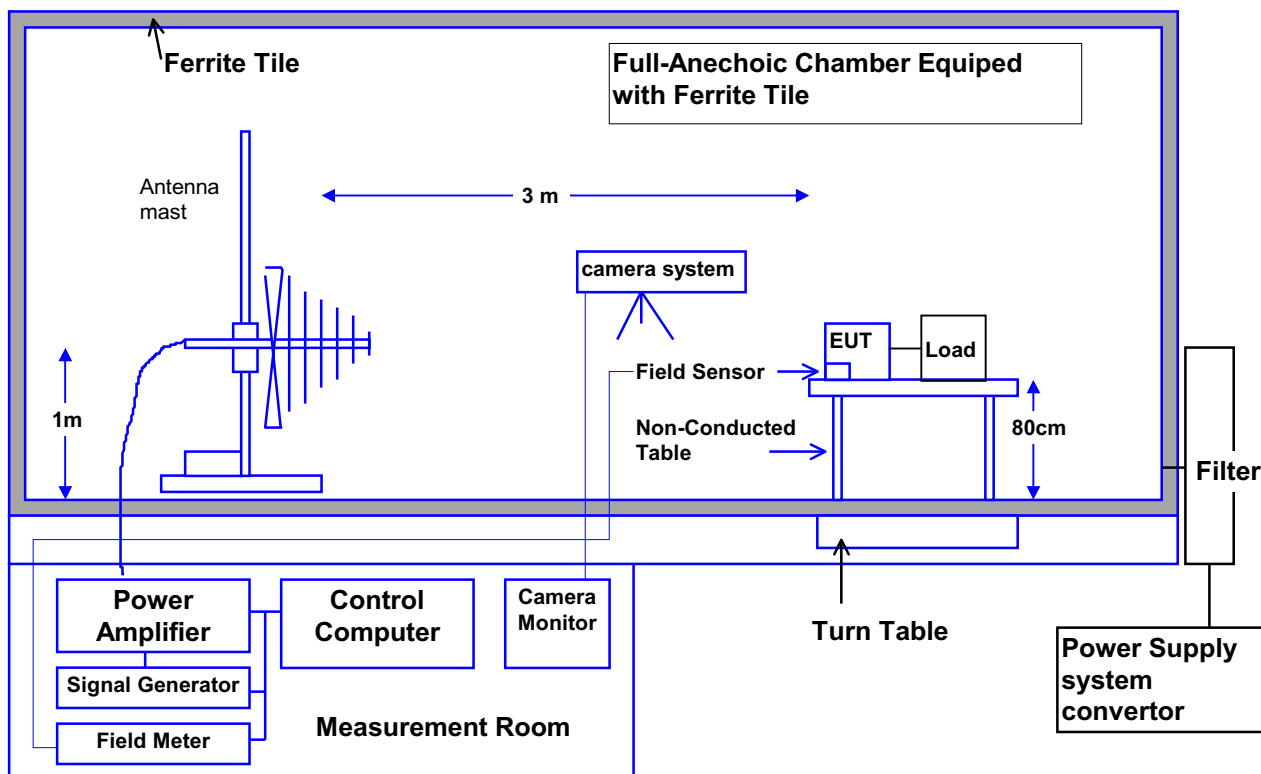
Item	Instrument	Manufacturer	Type No.	Last Calibration
1	Signal Generator	Marconi	2030/3110196	Sep. 04,2000
2	Power Amplifier	A & R	100W1000M1/17108	N/A
3	Field Strength Meter	A & R	FM2000/16837	N/A
4	Field Strength Sensor	A & R	FP2000/16895	Oct. 17, 2000
5	Broadband Antenna	Chase	CBL6111A/1620	Dec. 02, 2000
6	Shielded Room	GesTek	GTK-RF-S03	Feb. 12, 2001
7	EMI & EMS Program Software	GesTek	GTK-RF-P03	N/A
8	Power Amplifier	A & R	150A100A/25056	Sep. 03, 2000

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

8.2 TEST METHOD

According to EN 55024 : 1998 / CISPR 24 : 1997 / ENV 50204/1995
IEC 61000-4-3/1995 (EN 61000-4-3/1995).

8.3 BLOCK DIAGRAM OF TEST SETUP



8.4 SEVERITY LEVELS

Required Performance Criteria :A
 Limit :80~1000MHz(AM 80% @ 1KHz):3V/m.
 80,120,160,230,434,460,600,863,900 MHz: 3V/m

8.5 EUT OPERATING CONDITION

1. Setup the EUT and Test Equipment as shown on 8.3.
2. Power on. Active performance checking program to allow EUT execute its usual operation mode during test.

8.6 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 meter 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
Field Strength	3 V/m Level 3
Radiated Signal	80~1000MHz(AM 80% @ 1KHz)
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

8.7 TEST RESULT

Date of Test	July 17, 2001	Temperature	25 °C
Test Mode	Mode 1	Humidity	48%

Freq. Range (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/M)	Performance Criteria Complied to	Results
80-1000	0	H / V	3	A	PASS
80-1000	90	H / V	3	A	PASS
80-1000	180	H / V	3	A	PASS
80-1000	270	H / V	3	A	PASS

EN 55024 Additional comprehensive functional test selected frequencies are:

80; 120; 160; 230; 4354; 460; 600; 863; 900 MHz

ENV 50204 the test shall be carried out at one frequency within the indicated range.

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

- 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.

8.8 TEST PHOTOGRAPHS FOR RS

Mode 1



9. ELECTRICAL FAST TRANSIENT/BURST MEASUREMENT

9.1 TEST EQUIPMENT

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.

9.2 TEST METHOD

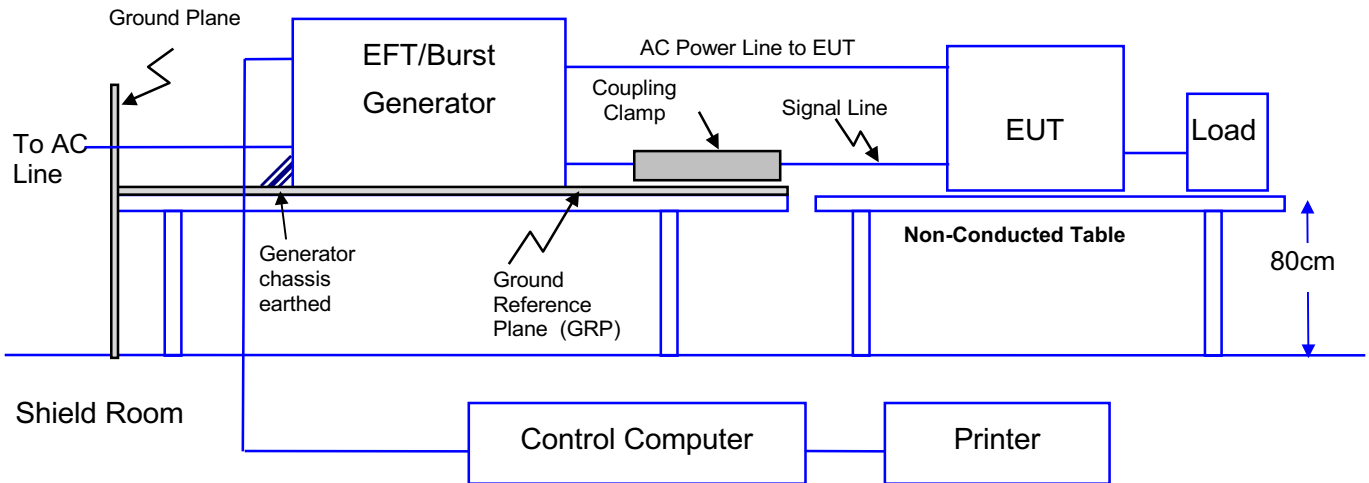
According to EN 55024 : 1998 / CISPR 24 : 1997

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

9.3 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.



9.4 SEVERITY LEVELS

Required Performance Criteria
Limit

: B
: ± 0.25 , ± 0.5 KV for Signal Lines and Control Lines
: ± 0.5 , ± 1 for Power Lines and protective earth terminal

9.5 EUT OPERATION CONDITION

1. Setup the EUT and Test Equipment as shown on 9.3.
2. Power on. Active performance checking program to allow EUT execute its 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. More than 0.5 meters separated the EUT from the walls of the shielded room.

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 0.25KV and 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.

9.6 TEST RESULT

Date of Test	July 6, 2001	Temperature	26 °C
Test Mode	Mode 1	Humidity	43 %

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

- 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.

Note: LAN Cable : 3m

9.7 TEST PHOTOGRAPHS FOR EFT

Mode 1



10. SURGE MEASUREMENT

10.1 TEST EQUIPMENT

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.

10.2 TEST METHOD

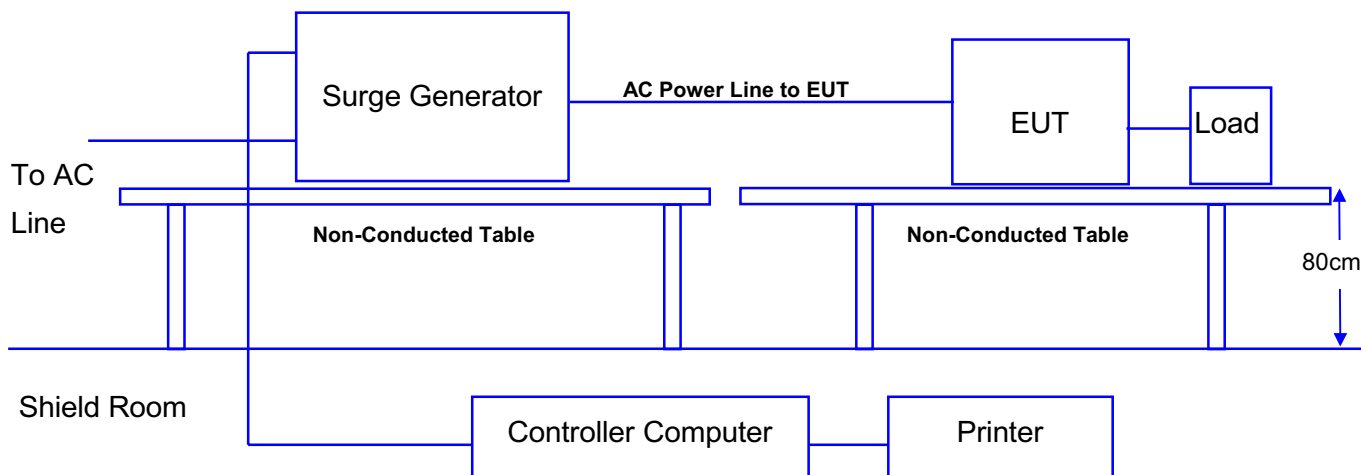
According to EN 55024:1998 / CISPR 24 : 1997

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

10.3 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.



10.4 SEVERITY LEVELS

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

10.5 EUT OPERATION CONDITION

1. Setup the EUT and Test Equipment as shown on 10.3.
2. Power on. Active performance checking program to allow EUT execute its usual operation mode during test.

10.6 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 angles. 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.

10.7 TEST RESULT

Date of Test	July 13 2001	Temperature	40 °C
Test Mode	Mode 1	Humidity	25 %

Inject Line		Voltage KV	Repetiti on 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	B	PASS
L-PE		±1	1	Coupling	5	B	B	PASS
L-PE		±2	1	Coupling	5	B	B	PASS
N-PE	Common mode	±0.5	1	Coupling	5	B	B	PASS
N-PE		±1	1	Coupling	5	B	B	PASS
N-PE		±2	1	Coupling	5	B	B	PASS

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

- 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
 - The monitor general appearance will flash during the test.
 - No false alarms or other malfunctions were observed during or after the test. The acceptance criteria were met, and the EUT passed the test.

10.8 TEST PHOTOGRAPHS FOR SURGE

Mode 1



11. CONDUCTED SUSCEPTIBILITY MEASUREMENT

11.1 TEST EQUIPMENT

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	Sep. 04,2000
5	Voltmeter	BOONTON	9200C/361501AA	Oct. 04,2000
6	Dual Directional Couplor	A & R	DC-2600 / 20193	Sep. 04, 2000
7	Absorbing Clamp	Chase	EM101 / 35260	Sep. 06, 2000

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

11.2 TEST METHOD

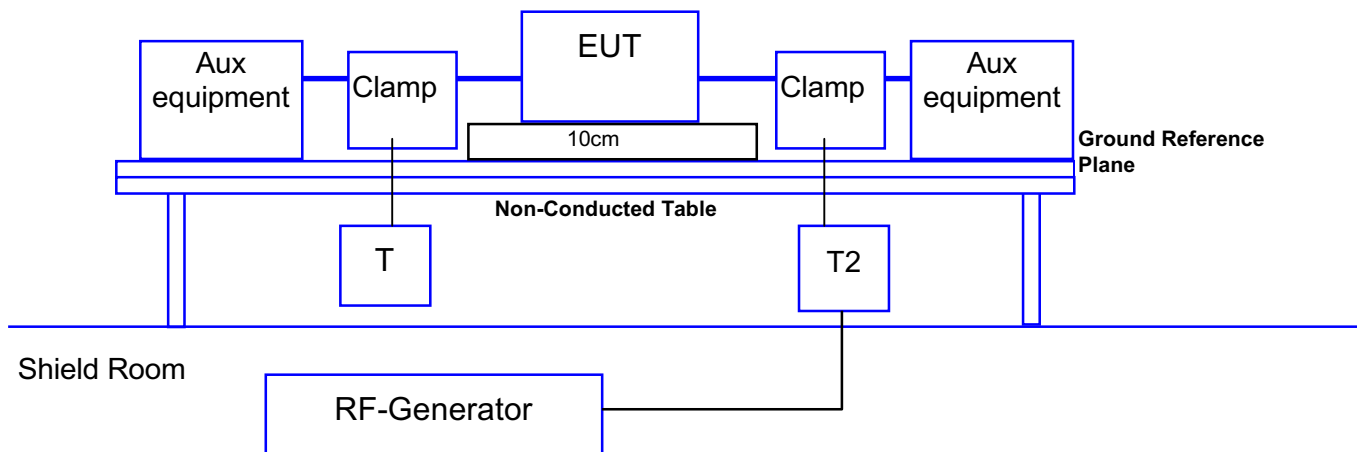
According to EN 55024 : 1998 / CISPR 24 : 1997

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

11.3 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.



11.4 SEVERITY LEVELS

Test specification

Required Performance Criteria : A
Common mode : 3V/m, 80% AM (1KHz)
Radio-frequency : 0.15-80MHz

According to EN 55024 / 1998 (CISPR 24 / 1997), an additional functional test shall be carried out at the following frequencies: 0.2, 1, 7.1, 13.56, 21, 27, 12 and 40.68MHz.

11.5 EUT OPERATION CONDITION

1. Setup the EUT and Test Equipment as shown on 11.3.
2. Power on. Active performance checking program to allow EUT execute its usual operation mode during test.

11.6 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.

11.7 TEST RESULT

Date of Test	July 16, 2001	Temperature	28 °C
Test Mode	Mode 1	Humidity	42 %

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

Additional comprehensive functional test selected frequencies are:
0.2、1、7.1、13.56、21、27.12、40.68

Frequency Range (MHz)	Injected Position	Strength (V/M)	Results Meet Criteria	Remark
0.2、1	CLAMP	3	A	PASS
7.1、13.56	CLAMP	3	A	PASS
21、27.12	CLAMP	3	A	PASS
40.68	CLAMP	3	A	PASS

- 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.

11.8 TEST PHOTOGRAPHS FOR CS

Mode 1



12. MAGNETIC FIELD IMMUNITY MEASUREMENT

12.1 TEST EQUIPMENT

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

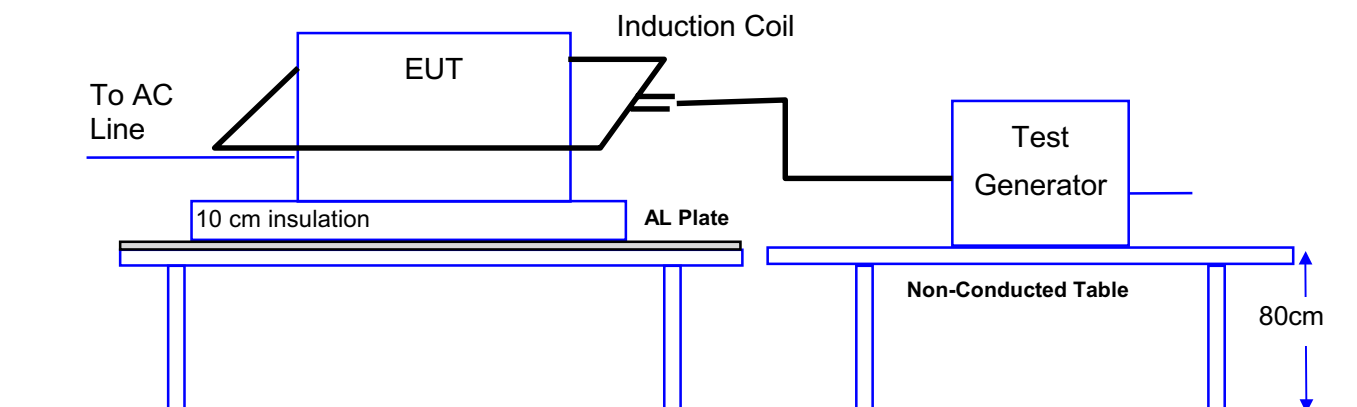
Note: All equipment upon which need to be calibrated are with calibration period of 1 year.

12.2 TEST METHOD

According to EN 55024 : 1998 / CISPR 24 : 1997

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

12.3 BLOCK DIAGRAM OF TEST SETUP



Shield Room

12.4 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.		"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	

12.5 EUT OPERATION CONDITION

1. Setup the EUT and Test Equipment as shown on 12.3.
2. Power on. Active performance checking program to allow EUT execute its usual operation mode during test.

12.6 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 90 shall rotate the induction coil° in order to expose the EUT to the test field with different orientation.

12.7 TEST RESULT

Date of Test	July 17, 2001	Temperature	25 °C
Test Mode	Mode 1	Humidity	48 %

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

- 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.

12.8 TEST PHOTOGRAPHS FOR MAGNETIC

Mode 1



13. VOLTAGE DIPS AND INTERRUPTION MEASUREMENT

13.1 TEST EQUIPMENT

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

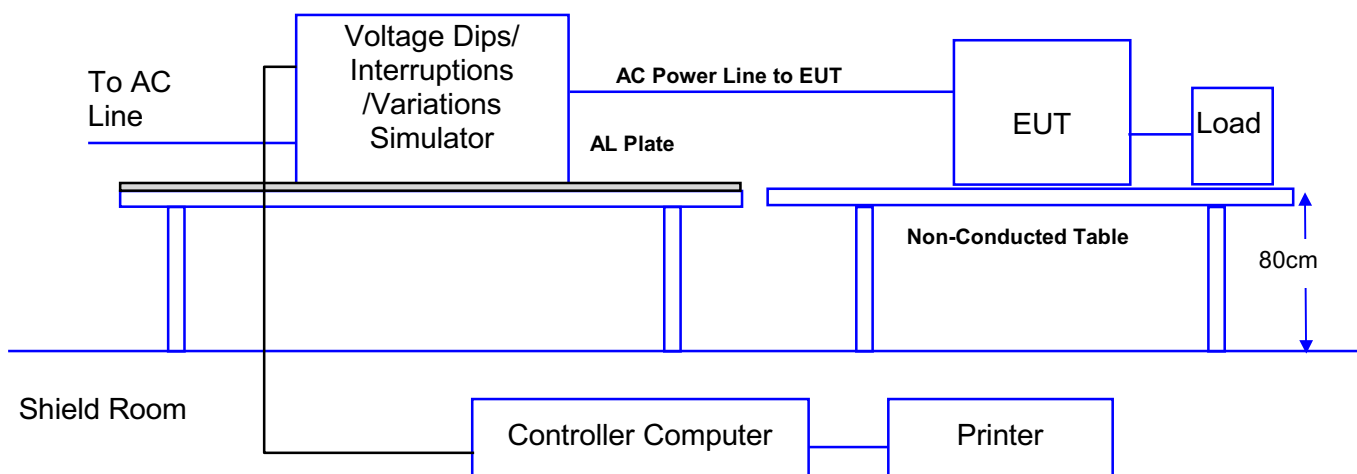
Note: All equipment upon which need to be calibrated are with calibration period of 1 year.

13.2 TEST METHOD

According to Pursuant to EN 55024 : 1998 / CISPR 24 : 1997
IEC 61000-4-11/1994 (EN 61000-4-11/1994).

13.3 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.



13.4 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

13.5 EUT OPERATION CONDITION

1. Setup the EUT and Test Equipment as shown on 13.3.
2. Power on. Active performance checking program to allow EUT execute its usual operation mode during test.

13.6 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.

13.7 TEST RESULT

Date of Test	July 13, 2001	Temperature	40 °C
Test Mode	Mode 1	Humidity	25 %

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

- 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.

13.8 TEST PHOTOGRAPHS FOR VOLTAGE DIPS

Mode 1



14. PHOTOGRAPHS FOR PRODUCT

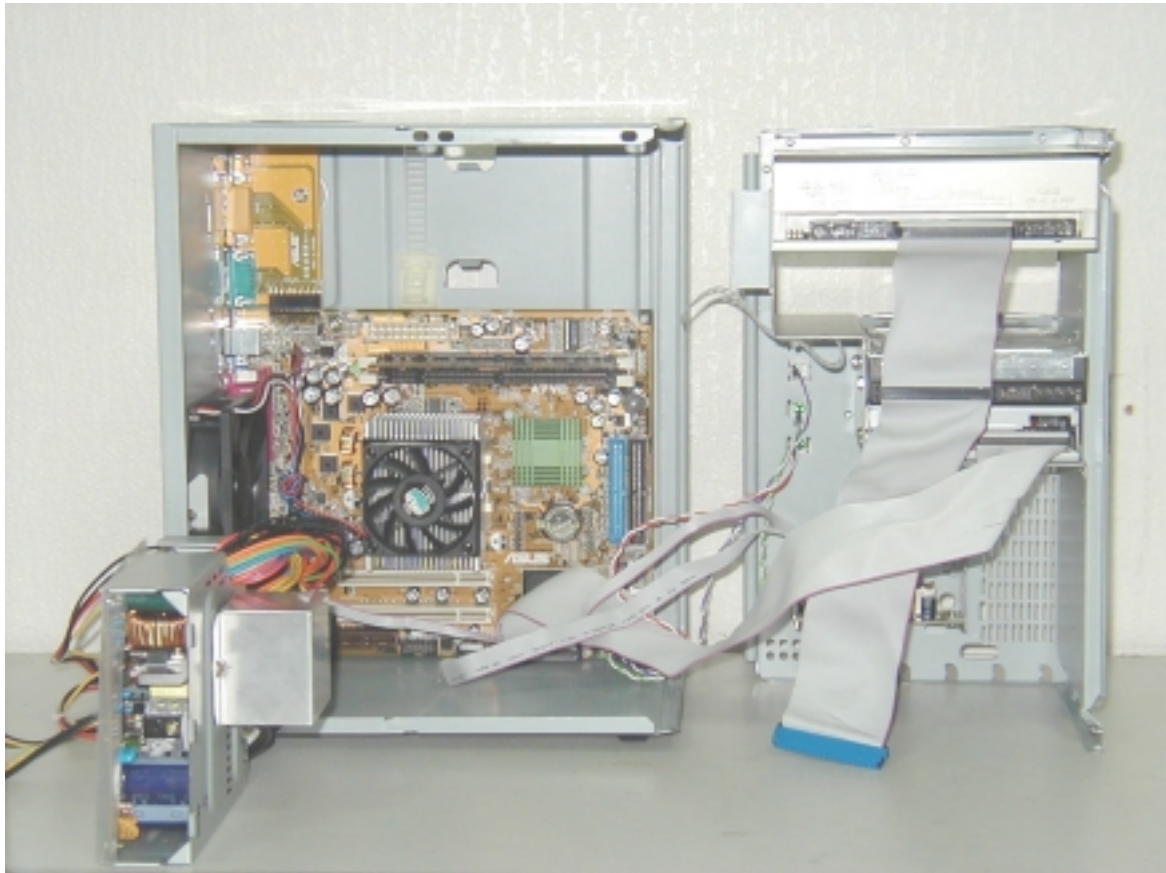
1. Front View Of Terminator TF2 (EUT)
2. Back View Of Terminator TF2 (EUT)



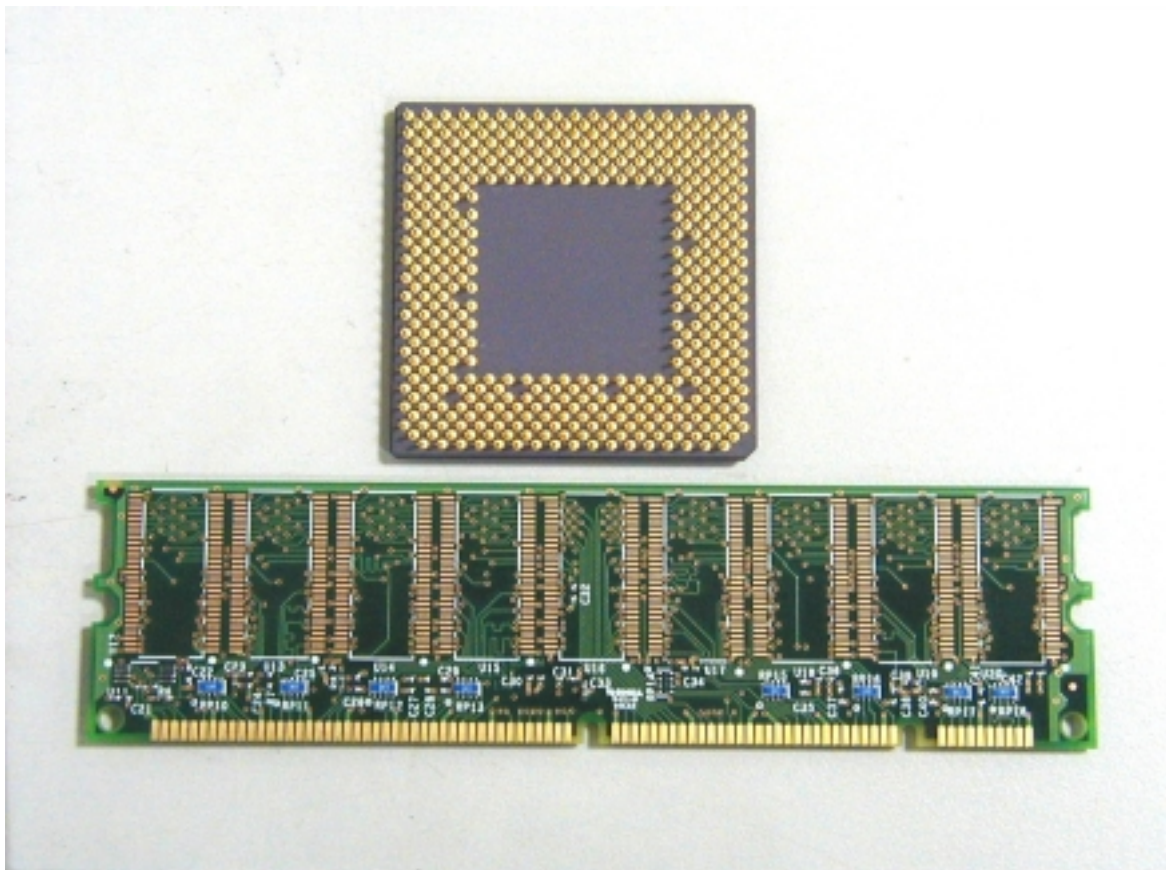
- 3. Inner View Of Terminator TF2
- 4. Inner View Of Terminator TF2



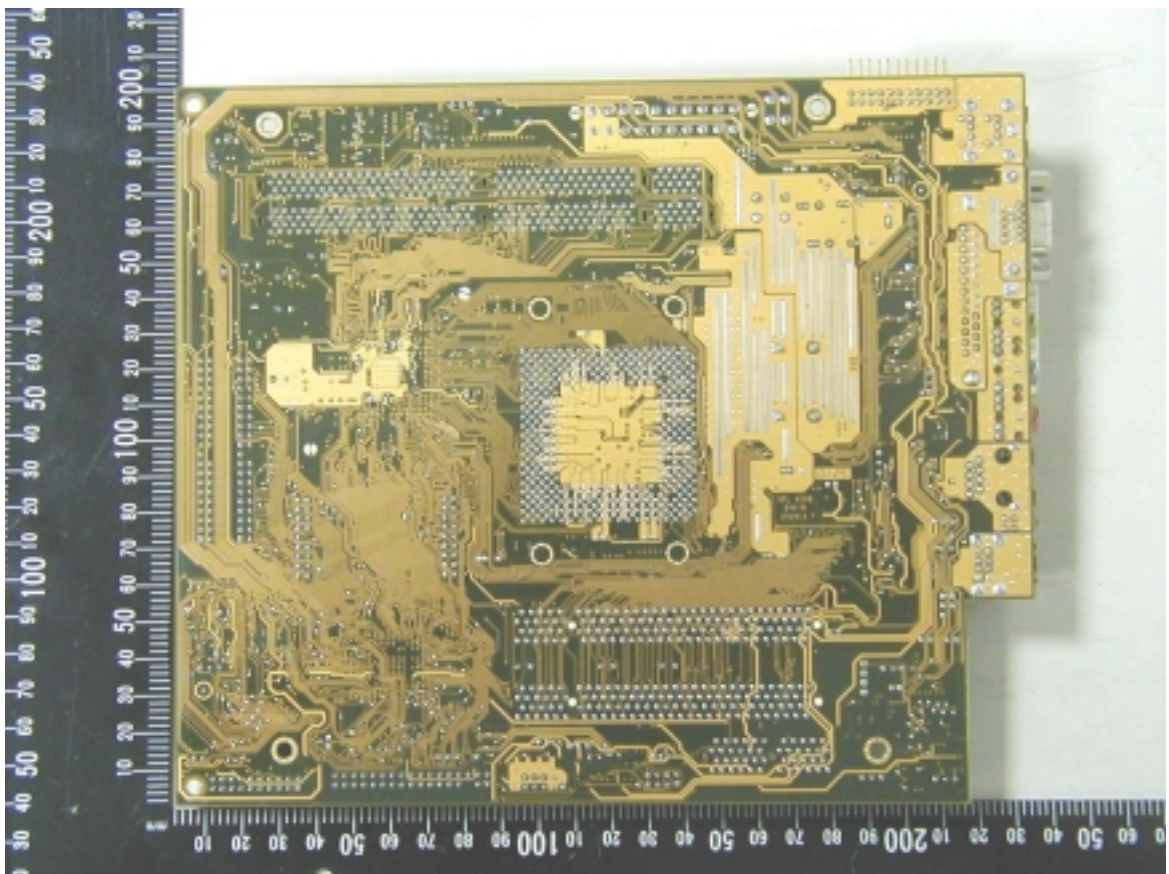
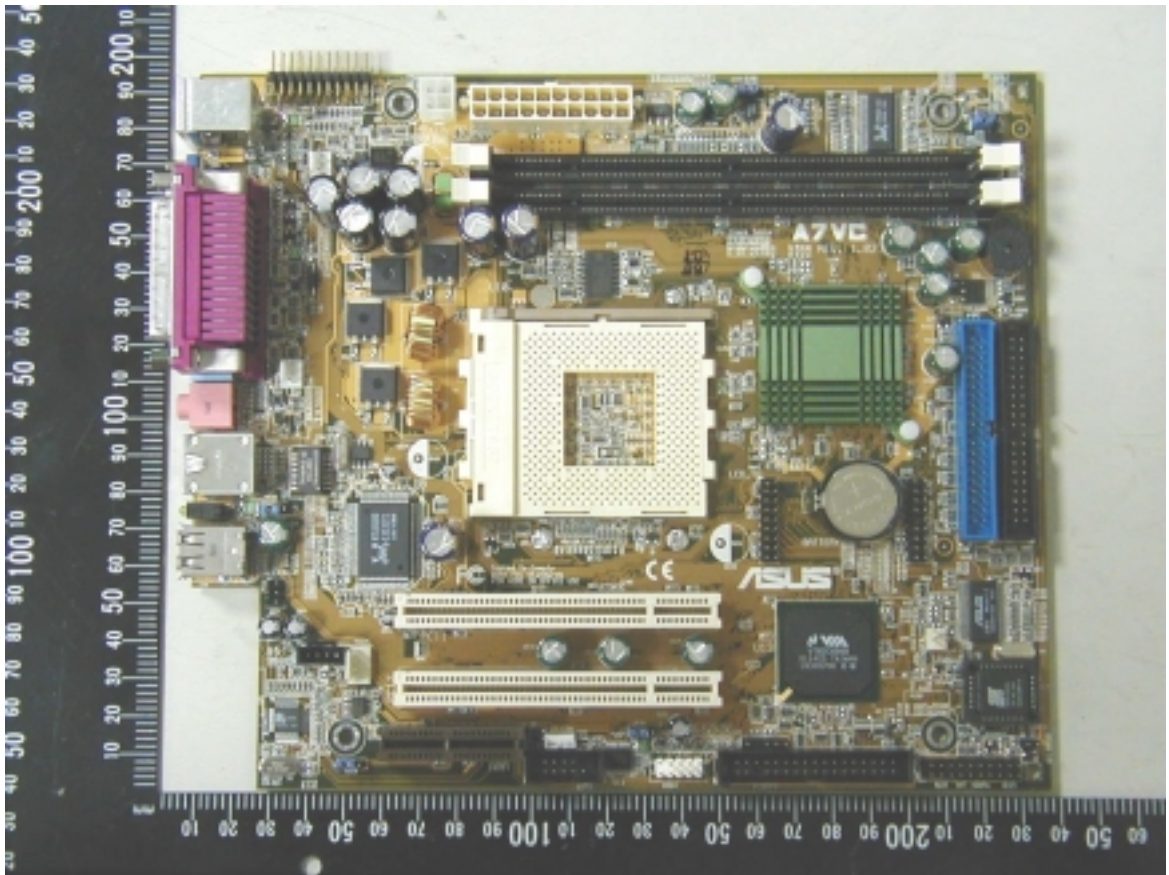
- 5. Inner View Of Terminator TF2
- 6. Inner View Of Terminator TF2



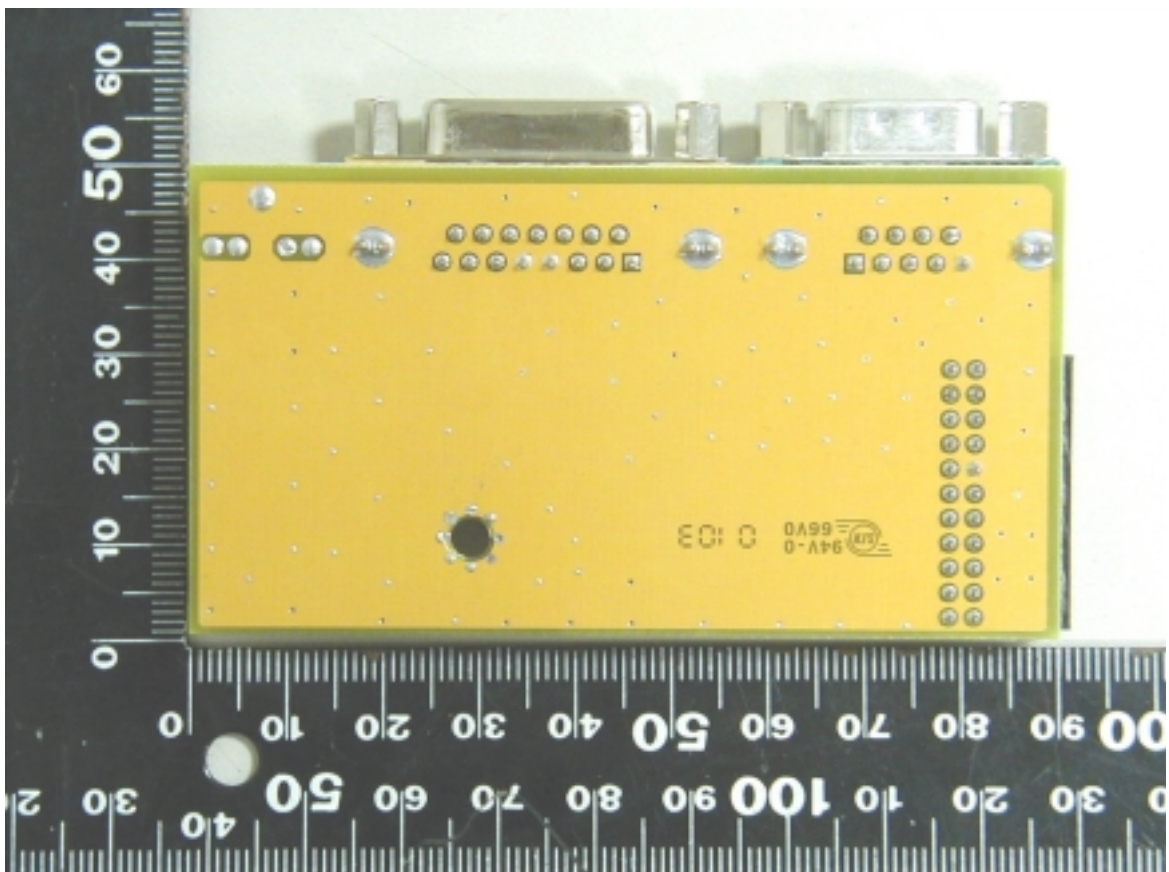
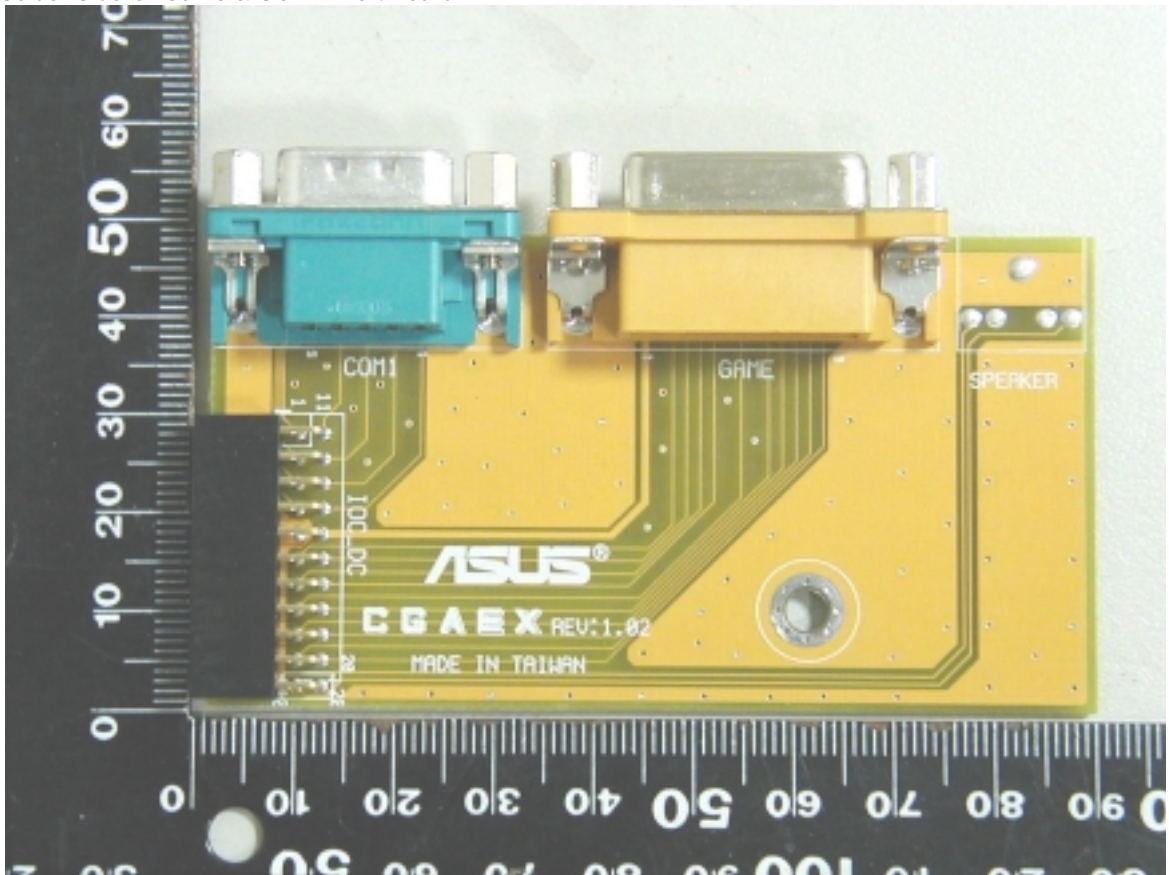
- 7. Front View Of CPU & SDRAM
- 8. Back View Of CPU & SDRAM



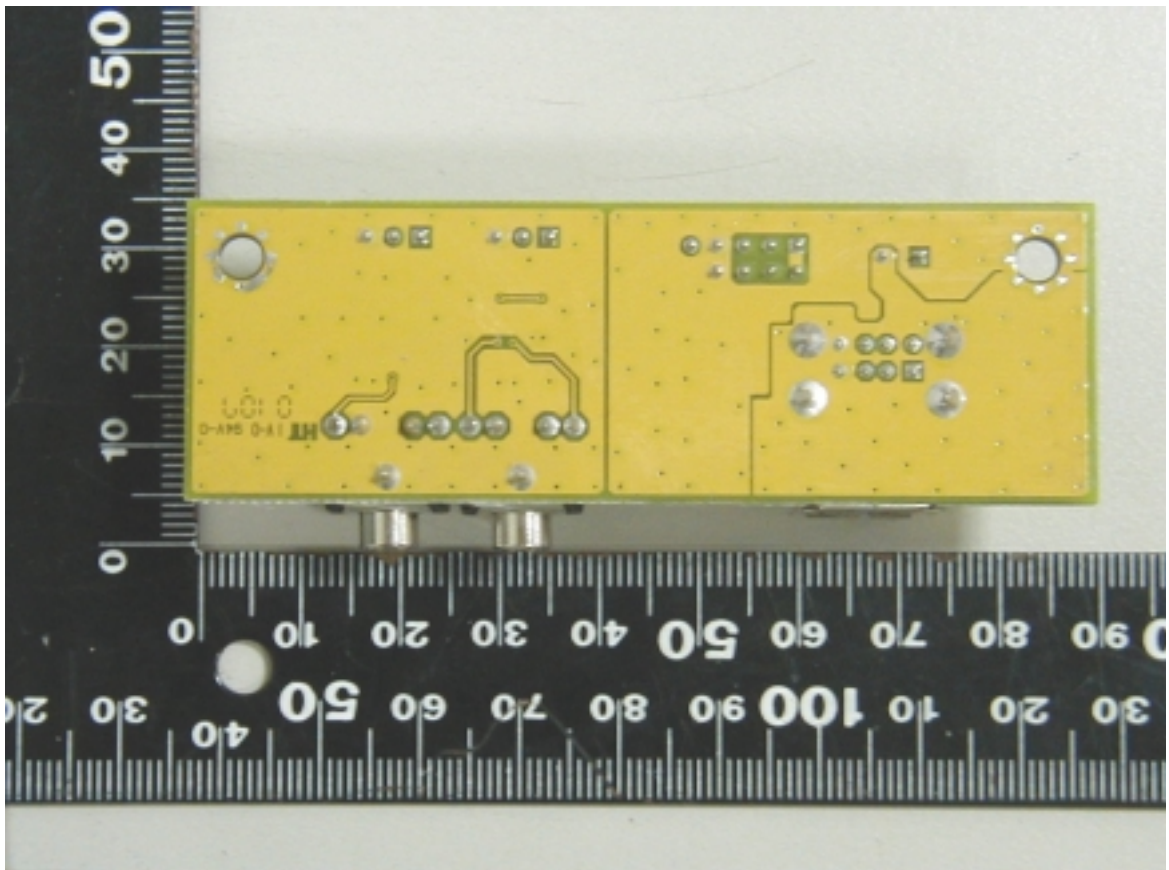
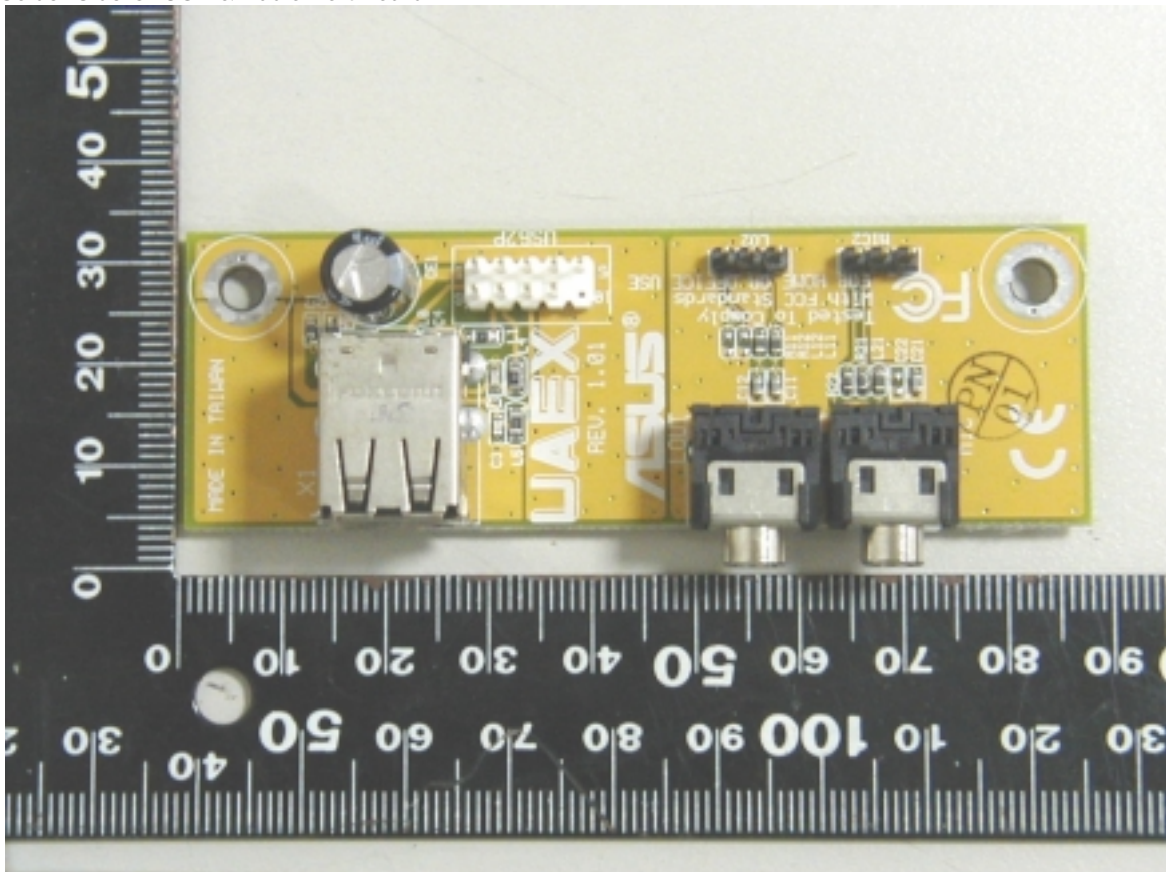
- 9. Component Side Of Mother Board
- 10. Solder Side Of Mother Board



- 11. Component Side Of Game & COM 1 Port Board
- 12. Solder Side Of Game & COM 1 Port Board



- 13. Component Side Of USB & Audio Port Board
- 14. Solder Side Of USB & Audio Port Board



- 15. Front View Of F.D.D.
- 16. Back View Of F.D.D.



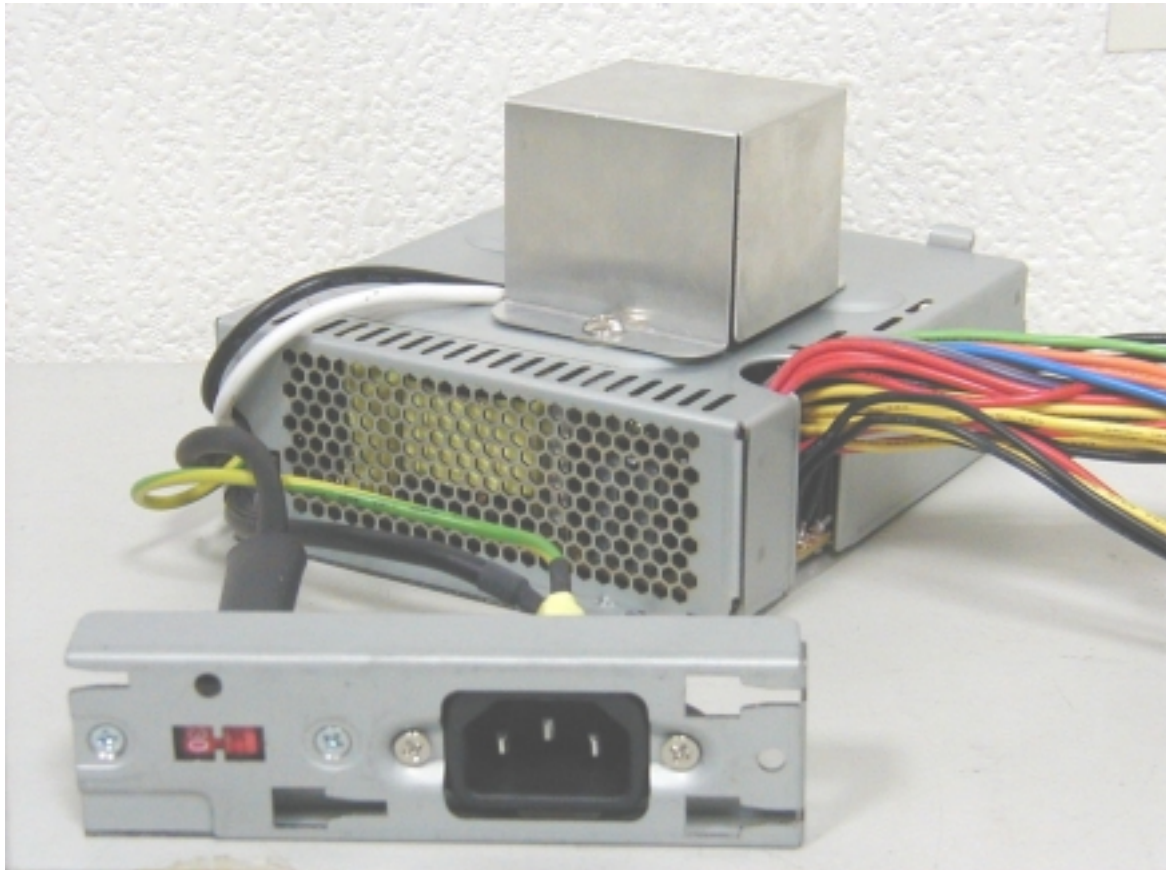
- 17. Front View Of H.D.D.
- 18. Back View Of H.D.D.



- 19. Front View Of CD-ROM
- 20. Back View Of CD-ROM



- 21. Front View Of S.P.S.
- 22. Back View Of S.P.S.



15. EMI/EMS REDUCTION METHOD DURING COMPLIANCE TESTING

No modification was made during testing.