

Certificate of Test

October 2004

CHROMA ATE INC

Product Type : 4U Form Factor PXI 18-Slots Chassis

Model Number : 52105

Test Report Number : GTK-0410034

Date of Test : October 13, 2004 – October 19, 2004

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

This report was modified as revision 2, which modified the model number for the requirement of marketing.

Standards:

EN 55022 :1998 , CISPR 22, Class A

EN 55024 :1998 IEC 61000-4 Series

EN 61000-3-2 / 2000 & EN 61000-3-3 / 1995 + A1 / 2001

<http://www.gestek.com.tw>



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Date: October 21, 2004



Declaration of Conformity

We, Manufacturer/Importer
(full address)

declare that the product
(description of the apparatus, system, installation to which it refers)

EUT:
4U Form Factor PXI 18-Slots Chassis

Model Number:
52105

is in conformity with
(reference to the specification under which conformity is declared)
in accordance with 89/336 EEC-EMC Directive

- | | | | |
|--|--|---|---|
| <input type="checkbox"/> EN 55011 | Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) high frequency equipment | <input checked="" type="checkbox"/> EN 61000-3-2 | Disturbances in supply systems caused |
| <input type="checkbox"/> EN 55013 | Limits and methods of measurement Information Technology of radio disturbance characteristics of broadcast receivers and associated equipment | <input checked="" type="checkbox"/> EN 61000-3-3 | Disturbances in supply systems caused by household appliances and similar electrical equipment "Voltage fluctuations" |
| <input type="checkbox"/> EN 55014-1 | Limits and methods of measurement of radio disturbance characteristics of household electrical appliances, portable tools and similar electrical apparatus | <input checked="" type="checkbox"/> EN 55024 | Information Technology equipment-Immunity characteristics-Limits and methods of measurement |
| <input type="checkbox"/> EN 61000-6-3 | Generic standards-Emission standard for residential, commercial and light-industrial environments | <input type="checkbox"/> EN 61000-6-1 | Generic standards-Immunity for residential, commercial and light-industrial environments |
| <input type="checkbox"/> EN 61000-6-4 | Generic standards-Emission standard for industrial environments | <input type="checkbox"/> EN 61000-6-2 | Generic standards-Immunity for industrial environments |
| <input type="checkbox"/> EN 55015 | Limits and methods of measurement of radio disturbance characteristics of fluorescent lamps and luminaries | <input type="checkbox"/> EN 55014-2 | Immunity requirements for household appliances tools and similar apparatus |
| <input checked="" type="checkbox"/> EN 55022 | Limits and methods of measurement of radio disturbance characteristics of information technology equipment | <input type="checkbox"/> EN 50091- 2 | EMC requirements for uninterruptible power systems (UPS) |
| <input type="checkbox"/> DIN VDE 0855 part 10 part 12 | Cabled distribution systems; Equipment for receiving and/or distribution from sound and television signals | <input type="checkbox"/> EN 55020 | Immunity from radio interference of broadcast receivers and associated equipment |

CE marking



The manufacturer also declares the conformity of above mentioned product with the actual required safety standards in accordance with LVD 73/23 EEC

- | | | | |
|--|---|--|---|
| <input type="checkbox"/> EN 60065 | Safety requirements for mains operated electronic and related apparatus for household and similar general use | <input type="checkbox"/> EN 60950 | Safety for information technology equipment including electrical business equipment |
| <input type="checkbox"/> EN 60335 | Safety of household and similar electrical appliances | <input type="checkbox"/> EN 50091-1 | General and Safety requirements for uninterruptible power systems (UPS) |


Manufacturer/Importer

Signature: _____

(Stamp)

Date:

Name: _____



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

**EMC Test Report
For:**

CHROMA ATE INC

EUT : 4U Form Factor PXI 18-Slots Chassis

Model Number: 52105

Prepared for:

CHROM ATE INC

43 Wu-Chuan Rd., Wu-Ku Ind. Park, Wu-Ku, Taipei Hsien 248, Taiwan, R.O.C.

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Test results given in this report only relate to the specimen(s) tested, measured.

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All data in this report are traceable to national standard or international standard.

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1. CERTIFICATION

Applicant : CHROMA ATE INC

EUT Description : 4U Form Factor PXI 18-Slots Chassis
 Model Number : 52105
 Serial Number : N/A
 Tested Power Supply : 230Vac/50Hz

MEASUREMENT PROCEDURES USED :

EN 55022 / 1998 AND EN 61000-3-2 / 2000 & EN 61000-3-3 / 1995 + A1 / 2001
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 Radiated Emission Interference Measurement (CISPR 22 / EN 55022)
- Electro-magnetic Conducted Emission Interference Measurement (CISPR 22 / EN 55022)
- Powerline Harmonic Current Emissions (EN 61000-3-2)
- Fluctuation/Flicker Measurement (EN 61000-3-3)
- ESD Immunity Test (IEC 61000-4-2 / EN 61000-4-2)
- RF Field strength Susceptibility Test (IEC 61000-4-3 / EN 61000-4-3)
- Electrical Fast Transient/Burst Immunity Test (IEC 61000-4-4 / EN 61000-4-4)
- Surge Immunity Test (IEC 61000-4-5 / EN 61000-4-5)
- Conducted disturbance Susceptibility Test (IEC 61000-4-6 / EN 61000-4-6)
- Low Frequency Signals Immunity Test (IEC 1000-2-2)
- Power Frequency Magnetic Field Immunity Test (IEC 61000-4-8 / EN 61000-4-8)
- Voltage Dips/Short Interruptions Test (IEC 61000-4-11 / EN 61000-4-11)

Sample Received Date : **October 13, 2004**

Final Test Date : **October 19, 2004**

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
EN 55022 CISPR 22 Class A Canadian ICES-003 Class A	Conducted emission (Mode 1)	PASS	The worst emission frequency is <u>0.1984</u> MHz. And minimum passing margin is <u>-4.93</u> dB.
	Radiated emission (Mode 1)	PASS	The worst emission frequency is <u>219.9999</u> MHz at <u>Vertical</u> . And minimum passing margin is <u>-2.07</u> dB. Height of antenna is <u>4.0</u> M. Angle of turntable is <u>38°</u> .
EN 61000-3-2 / 2000 EN 61000-3-3 / 1995 + A1 / 2001	Powerline Harmonic Current Emissions	PASS	With regards to the EN 61000-3-2, the PC must be tested at full load in order to reach the assigned current of the Power supply. With Dummy Load Active Power > 75W
	Voltage Fluctuation and Flicker	PASS	
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> .
EN 55024 / 1998 IEC 61000-4-3	RF field strength Susceptibility	PASS	80-1000MHz (AM 80% @ 1KHz): 3V/m 80, 120, 160, 230, 434, 460, 600, 863 and 900MHz: 3V/m
EN 55024 / 1998 IEC 61000-4-4	Electrical Fast Transients/Burst	PASS	±0.5kV, ±1kV(AC Input) ±0.5kV(LAN)
EN 55024 / 1998 IEC 61000-4-5	Surge	PASS	±0.5kV, ±1kV, ±2kV(AC Input)
EN 55024 / 1998 IEC 61000-4-6	Conducted Disturbance Susceptibility	PASS	0.15-80MHz (AM 80% @ 1KHz): 3V(rms) 0.2, 1, 7.1, 13.56, 21, 27.12 and 40.68MHz: 3V(rms)
EN 55024 / 1998 IEC 61000-4-8	Power Frequency Magnetic Field	PASS	1A(rms)/m at 50Hz
EN 55024 / 1998 IEC 61000-4-11	Voltage short Interruptions	PASS	>95% reduction, 5s
	Voltage Dips		>95% reduction, 10 ms 30% reduction, 500 ms

3. GENERAL INFORMATION

3.1 PRODUCT DESCRIPTION

Product Name : 4U Form Factor PXI 18-Slots Chassis
Model Number : 52105
Serial Number : N/A
Applicant : CHROMA ATE INC
Address : 43 Wu-Chuan Rd., Wu-Ku Ind. Park, Wu-Ku, Taipei Hsien 248, Taiwan, R.O.C.
Manufacture : CHROMA ATE INC
Address : 66 Hwa-Ya 1Rd., Hwa-Ya Technical Park, Kuei-Shan Hsiang, Taoyuan Hsien, Taiwan. R.O.C.
Power Supply : Voltage from PC's S.P.S.
 Input: 100-240V, 50-60Hz, 5A MAX

3.2 TEST MODES & EUT COMPONENTS DESCRIPTION

Test Mode	Mode 1
Model Number	CHROMA ATE INC. M/N: 52105

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.
2. This report was modified as revision 2, which modified the model number for the requirement of marketing.

3.3 CONFIGURATION OF THE SYSTEM UNDER TEST

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

Device	No.	Configuration
D-Sub Monitor	M01-029	Manufacturer : ADI Model Number : MICRO SCAN G1000 Serial Number : N/A BSMI ID : 3892A351 FCC ID : N/A Data Cable : Shielded, detachable, 1.5m, VGA Cable Power Cord : 3Pin, Shielded, Detachable, 1.5m
Modem	M03-023	Manufacturer : ACEEX Model Number : 1414V Serial Number : 0046177 BSMI ID : N/A FCC ID : IFAXDM1414 Data Cable : T Type:RS232, Shielded, Detachable, 1.2m Power Cord : Non-Shielded, Detachable, 1.5m Line : Type:RJ11(4P2C), Detachable, 1.8m Phone : Type:RJ11(4P2C), Detachable, 1.8m
Printer	P01-015	Manufacturer : Hewlett Packard Model Number : 2225C Serial Number : 2512S40942 BSMI ID : 3892A957 FCC ID : BS46XU2225C Data Cable : Shielded, Detachable, 1.2m, Parallel Cable Power Cord : Non-Shielded, Detachable, 1.8m
PC System	----	Manufacturer : Chroma Model Number : PXI 52941
PXI 52642 Relay Card	----	Manufacturer : Chroma Model Number : PXI 52642
External USB 2.0 Hard Disk	U02-023	Manufacturer : TERASYS Model Number : F12-UF Serial Number : A0100215-34P0017 BSMI ID : 4912A002 Data Cable : Shielded, detachable, 1.5m AC Power Adaptor : YHI, M/N:YS-1015-U12A, BSMI ID:4872A185 Input:AC IN:100V, 50/60Hz, 35VA Output: DC +12V,1.25A
External USB 2.0 Hard Disk	U02-024	Manufacturer : TERASYS Model Number : F12-UF Serial Number : A0100215-39H008 BSMI ID : 4912A002 Data Cable : Shielded, detachable, 1.5m AC Power Adaptor : YHI, M/N:YS-1015-U12A, BSMI ID:4872A185 Input:AC IN:100V, 50/60Hz, 35VA Output: DC +12V, 1.25A

Device	No.	Configuration
HUB x 2	-----	Manufacturer : D-Link Model Number : DES-1008D (10/100BASE-T Ethernet Hub) Data Cable to EUT : Type:RJ45(UTP/8P8C), Detachable, 12 m, Twisted Pairs Power Cord : Non-Shielded, Detachable, 1.5m
Far End Network Server x 2	-----	Mother Board : ASUS, M/N: TUSL2-C F.D.D. : Panasonic, M/N: JU-257A606P H.D.D. : Seagate, M/N: ST330621A CD-ROM : MITSUMI, M/N: CRMC-FX4830T VGA Card : On Board Sound : On Board LAN : On Board SDRAM : 32MB PC100 CPU : Intel,733M/133MHz S. P. S. : DELTA, M/N: DTPS-200PB-109C Power Cord : Non-Shielded, Detachable, 1.8m
PS2 Keyboard	K01-033	Manufacturer : TATUNG Model Number : KB-5923 Serial Number : 8060032215 BSMI ID : 3862A177 FCC ID : E8HKB-5923 Data Cable : Shielded, Undetachable, 2 m Purchase Date : 8/6/1998
PS2 Mouse	M02-116	Manufacturer : Logitech Model Number : M-S48A Serial Number : HCA11803174 BSMI ID : 4882A001 FCC ID : JNZ201213 Data Cable : Shielded, Undetachable, 1.5m

3.4 TEST FACILITY

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 : December 31, 2005 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, 2005.
 For CISPR 22, FCC Method and AS/NZS 3548 Measurement.
 NVLAP Lab Code: 200085-0
 Registration on VCCI effective through June 28, 2007.
 Registration No.: R-291 and C-305
 Recognized by the Council of Chinese National Laboratory Accreditation
 As an accredited laboratory and registration No.:1082.
 Registration on CNLA effective through April 30, 2006.

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 MEASUREMENT

4.1 TEST EQUIPMENTS

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal. Date
1	Test Receiver	R & S	ESCS30	825022/003	06/26/04
2	L.I.S.N.(EUT)	KYORISTU	KNW-407	8-1345-10	11/20/03
3	L.I.S.N.(AE)	ROLF HEINE	NNB-2/16Z	98091	12/08/03
4	Pulse Limiter	R & S	ESH3-Z2	357.8810.52	08/06/04
5	RF CABLE	GTK	N/A	GTK-E-A154-01	12/02/03
6	50 Ohm Terminator	GTK	N/A	GTK-E-A130-01	10/09/04
7	Shielded Room	GTK	N/A	B5	N/A

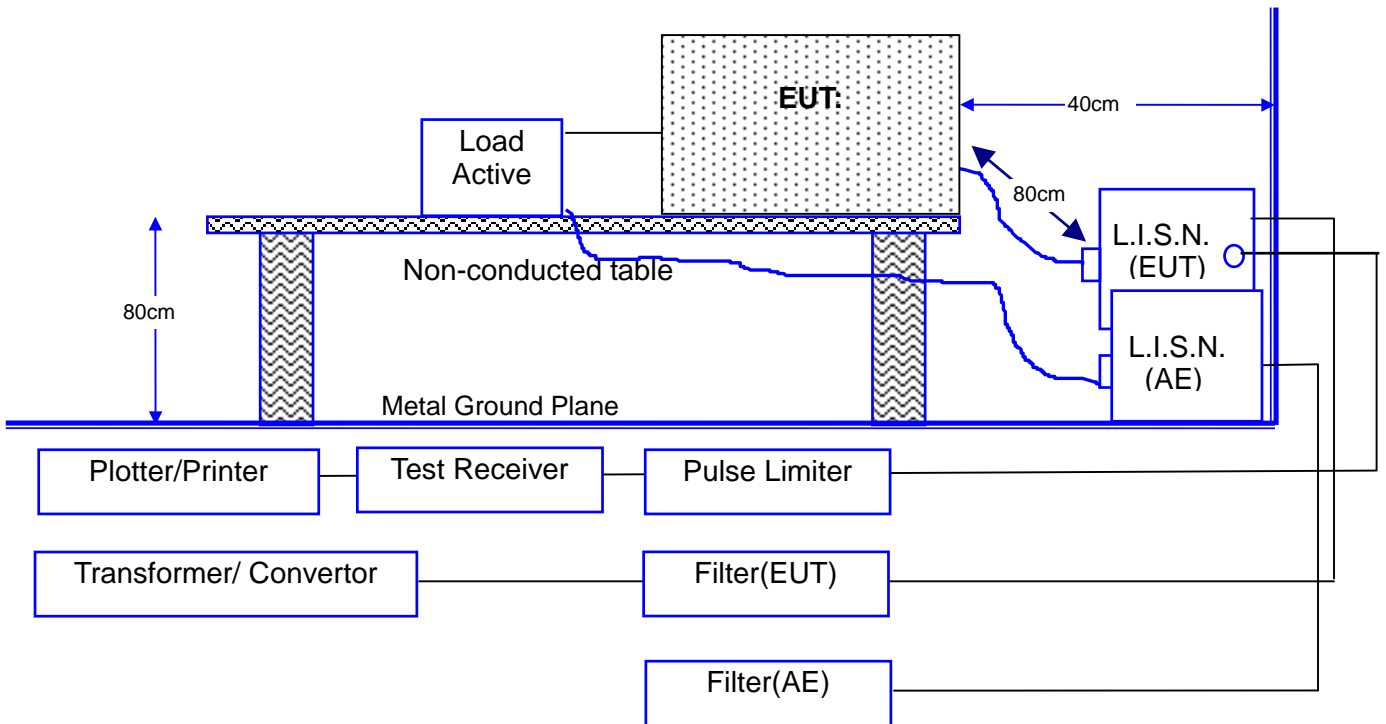
Note: All equipment upon which need to calibrated are with calibration period of 1 year.

4.2 TEST METHOD

According to EN 55022 / 1998.

4.3 BLOCK DIAGRAM OF TEST SETUP

4.3.1 TEST SETUP FOR EMISSION MEASUREMENT AT MAINS TERMINAL



Note: This is a comprehensive 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

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.

4.5 EUT CONFIGURATION ON MEASUREMENT

The equipments, which are listed at 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 terminator.

4.6 CONDUCTED EMISSION DATA

The measurement range of conducted emission, which is from [0.15 MHz 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.

4.7 OPERATING CONDITIONS OF THE EUT

The exercise program used during conducted emission measurement 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. Boot the P.C. from Hard Disk and setup the video to windows XP OS, active all devices.
4. Adjust to appropriate video resolution.
5. Running "PXI 52642 Relay Card" test program.
6. P.C. sent "H" pattern to monitor, make the "H" pattern full in the screen.
7. P.C. sent "H" pattern to parallel and serial port.
8. Repeat above steps.

4.8 CONDUCTED EMISSION MEASUREMENT RESULTS

Date of Test	October 18, 2004	Temperature	25
EUT	4U Form Factor PXI 18-Slots Chassis	Humidity	63 %
Test Mode	Mode 1	Display Pattern	H Pattern

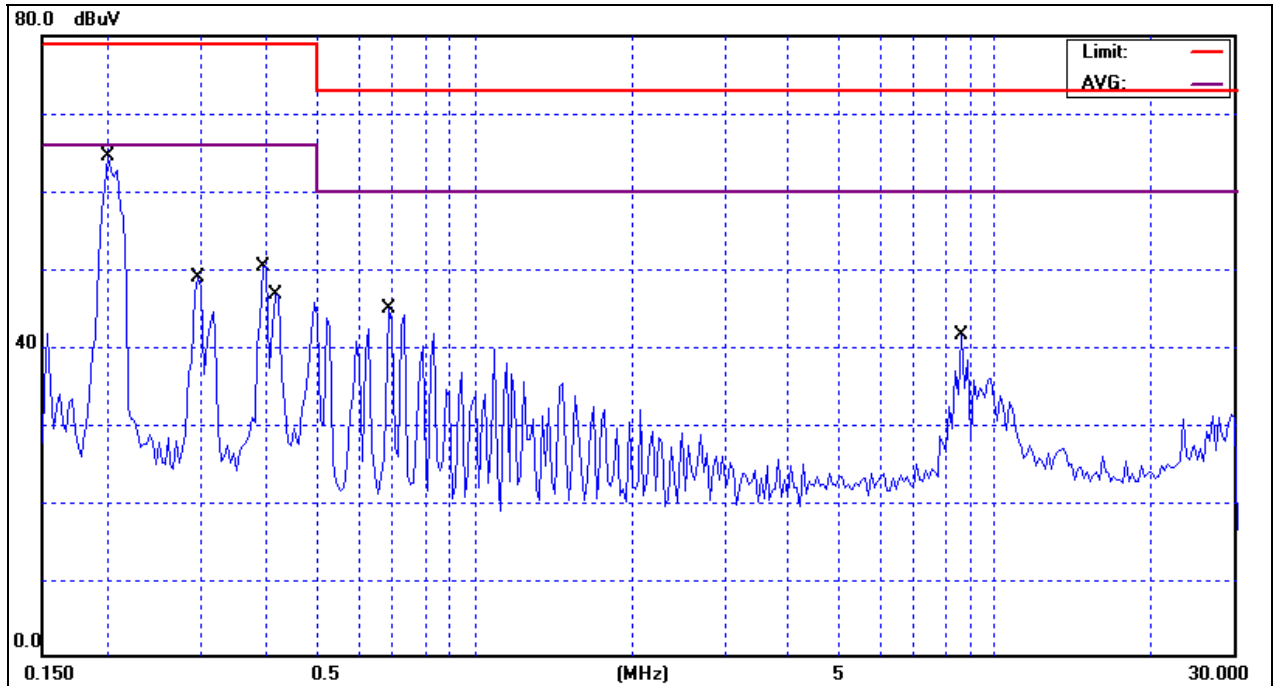
Line

No .	Frequency MHz	Reading Level dBµV	Factor dB	Measurement dBµV	Limit dBµV	Over Limit dB	Detector
1	0.1984	54.4	10.21	64.61	79	-14.39	QP
2	0.1984	50.86	10.21	61.07	66	-4.93	AVG
3	0.2972	39.17	10.15	49.32	79	-29.68	QP
4	0.2972	34.56	10.15	44.71	66	-21.29	AVG
5	0.3971	39.47	10.1	49.57	79	-29.43	QP
6	0.3971	34.99	10.1	45.09	66	-20.91	AVG
7	0.4218	39.54	10.1	49.64	79	-29.36	QP
8	0.4218	36.49	10.1	46.59	66	-19.41	AVG
9	0.7001	34.72	10.1	44.82	73	-28.18	QP
10	0.7001	31.69	10.1	41.79	60	-18.21	AVG
11	8.7253	26.71	10.26	36.97	73	-36.03	QP
12	8.7253	23.15	10.26	33.41	60	-26.59	AVG

Remarks :

- 1 All readings are Quasi-peak and Average values.
- 2 " " means that this data is the worse case emission level.
- 3 Final measurement = (Receiver reading) + (Factor if available).

Line



Date of Test	October 18, 2004	Temperature	25
EUT	4U Form Factor PXI 18-Slots Chassis	Humidity	63 %
Test Mode	Mode 1	Display Pattern	H Pattern

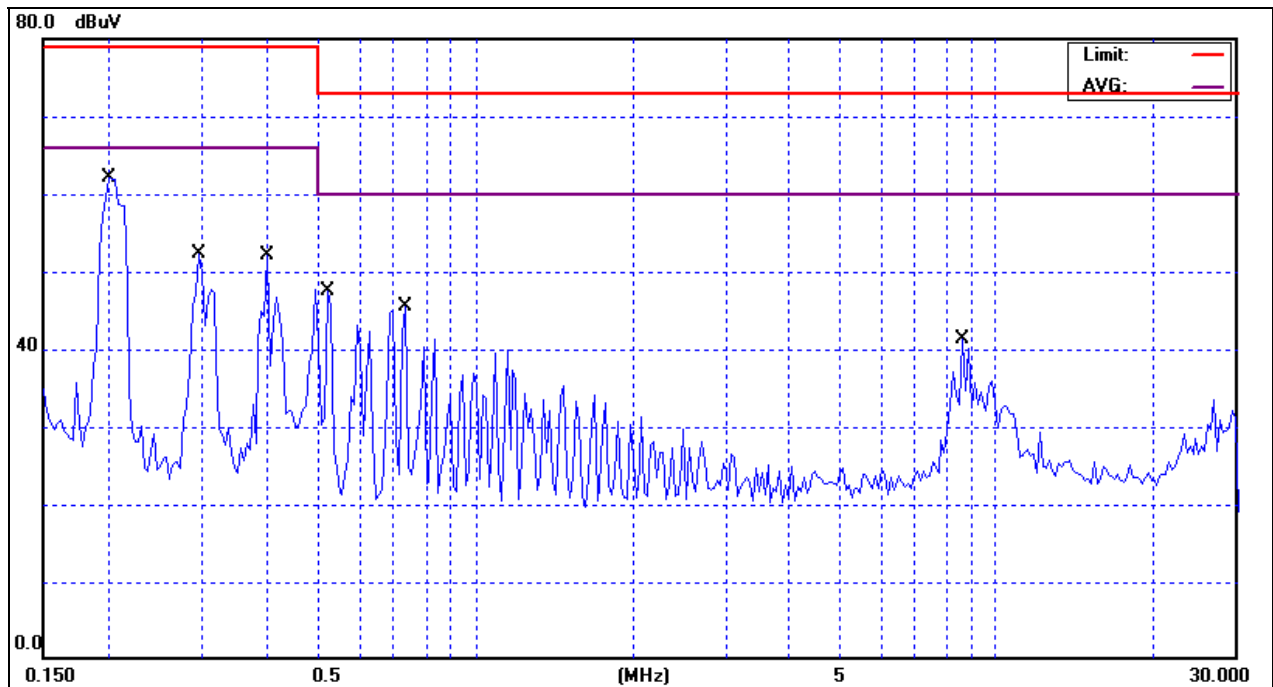
Neutral

No.	Frequency MHz	Reading Level dB μ V	Factor dB	Measurement dB μ V	Limit dB μ V	Over Limit dB	Detector
1	0.2033	50.93	10.2	61.13	79	-17.87	QP
2	0.2033	47.53	10.2	57.73	66	-8.27	AVG
3	0.2963	39.17	10.15	49.32	79	-29.68	QP
4	0.2963	34.65	10.15	44.8	66	-21.2	AVG
5	0.3992	41.01	10.1	51.11	79	-27.89	QP
6	0.3992	36.44	10.1	46.54	66	-19.46	AVG
7	0.5268	37.28	10.1	47.38	73	-25.62	QP
8	0.5268	34.66	10.1	44.76	60	-15.24	AVG
9	0.7368	34.68	10.1	44.78	73	-28.22	QP
10	0.7368	32.8	10.1	42.9	60	-17.1	AVG
11	8.7246	26.33	10.26	36.59	73	-36.41	QP
12	8.7246	22.54	10.26	32.8	60	-27.2	AVG

Remarks :

- 1 All readings are Quasi-peak and Average values.
- 2 " " means that this data is the worse case emission level.
- 3 Final measurement = (Receiver reading) + (Factor if available).

Neutral



5. RADIATED EMISSION MEASUREMENT

5.1 TEST EQUIPMENT

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

Radiated emission measurement was performed at: Site #1 Site #2 Site #3 Site #4

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal. Date
1	Test Receiver	R & S	ESCS30	825022/003	06/26/04
2	Spectrum Analyzer	HP	8542E	3520A00123/ 3427A00118	07/21/04
3	Pre-Amplifier	HP	8447F OPT H64	3113A04487	110/09/04
4	BILOG Antenna	Chase	CBL6112B	2580	12/01/03
5	RF Cable	GTK-E-A150-01	N/A	12/22/03	12/22/03
6	Open Site	GesTek	B2	N/A	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.

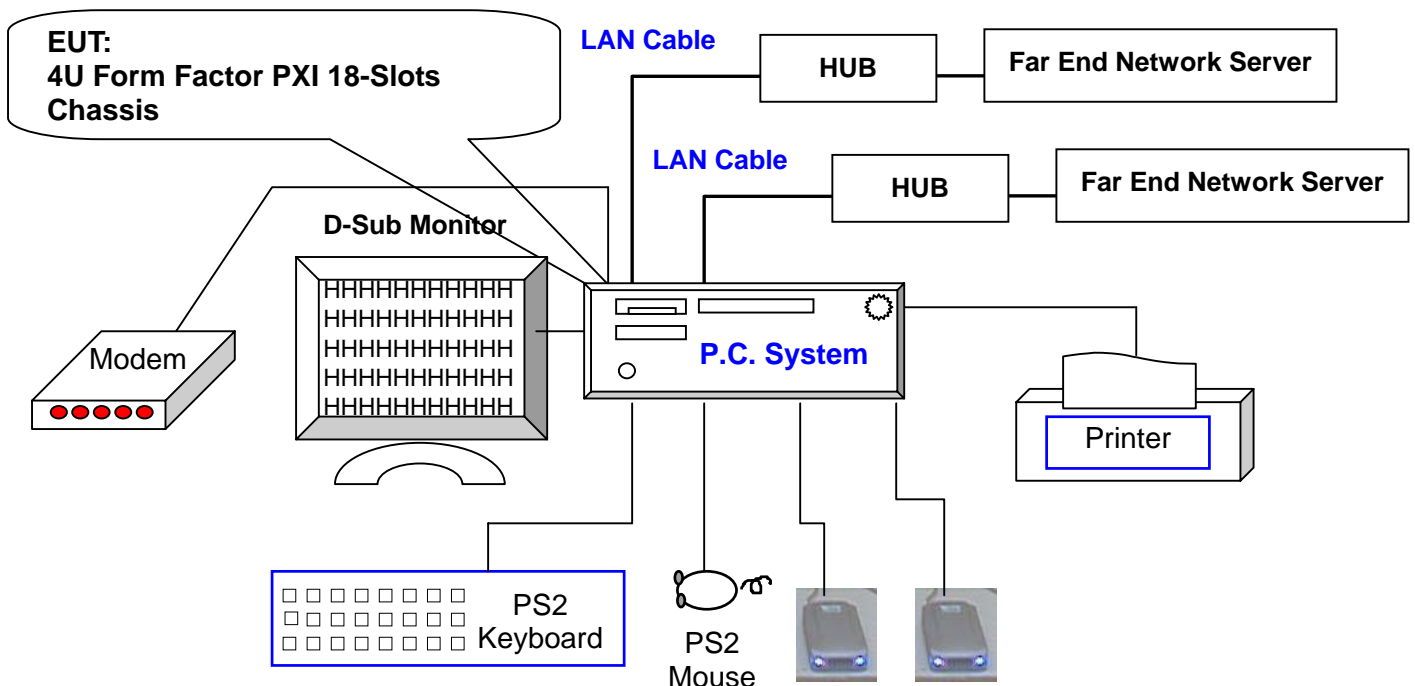
Radiated emission measurement was performed at the antenna to EUT distance of 10 meters.

5.3 BLOCK DIAGRAM OF TEST SETUP

5.3.1 BLOCK DIAGRAM OF CONNECTIONS BETWEEN EUT AND SIMULATORS

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

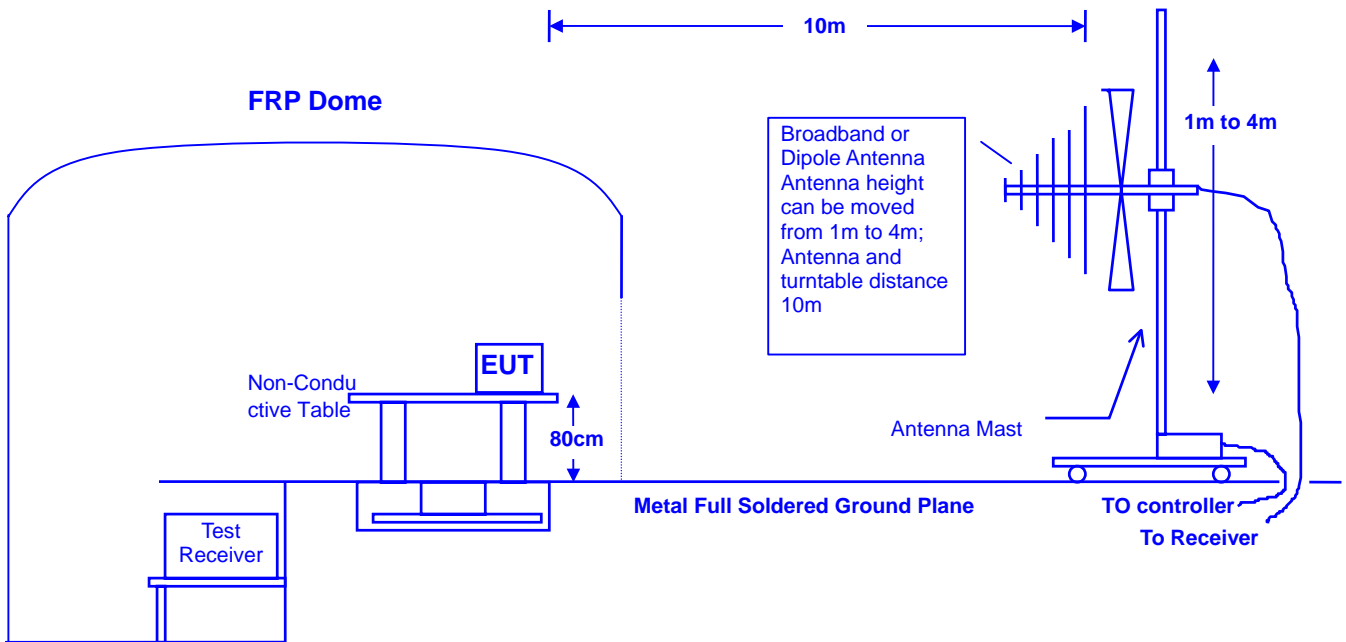
For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



5.3.2 OPEN AREA 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 LIMITS

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 antenna and the closest point of any part of the device or system.

5.5 EUT CONFIGURATION

The EUT, which is listed at 5.3.1. , was installed at the 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 CONDITIONS OF THE EUT

Same as conducted emission measurement, which is listed in 4.7

5.7 RADIATED EMISSION DATA

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

5.8 RADIATED EMISSIONS MEASUREMENT RESULTS

Date of Test	October 13, 2004	Temperature	26 deg/C
EUT	4U Form Factor PXI 18-Slots Chassis	Humidity	59 %RH
Working Cond.	Mode 1	Display Pattern	H Pattern
Antenna distance	10m at Horizontal	Frequency Range	30-1000MHz

No.	Frequency MHz	Reading Level dBuV/m	Factor dB	Measurement dBuV/m	Limit dBuV/m	Over Limit dB	Detector
1	165.9123	49.64	-15.44	34.2	40	-5.8	QP
2	186.1631	44.41	-15.81	28.6	40	-11.4	QP
3	198.79	46	-15.84	30.16	40	-9.84	QP
4	214.77	41.72	-14.27	27.45	40	-12.55	QP
5	239.99	41.7	-12.77	28.93	47	-18.07	QP
6	239.9983	41.09	-12.77	28.32	47	-18.68	QP
7	265.36	38.1	-11.55	26.55	47	-20.45	QP
8	286.3619	41.69	-10.67	31.02	47	-15.98	QP
9	298.3431	33.32	-10.34	22.98	47	-24.02	QP
10	326.133	43.76	-9.44	34.32	47	-12.68	QP
11	331.7754	32.21	-9.4	22.81	47	-24.19	QP
12	358	36.4	-8.53	27.87	47	-19.13	QP
13	398.1926	42.05	-7.83	34.22	47	-12.78	QP
14	497.74	32.67	-6.21	26.46	47	-20.54	QP
15	597.2388	42.9	-4.23	38.67	47	-8.33	QP
16	696.385	33.95	-2.53	31.42	47	-15.58	QP
17	729.9198	29.68	-1.89	27.79	47	-19.21	QP
18	768.12	28.22	-1.48	26.74	47	-20.26	QP
19	796.4335	30.58	-0.94	29.64	47	-17.36	QP
20	898.1958	33.54	1.11	34.65	47	-12.35	QP

Remarks:

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

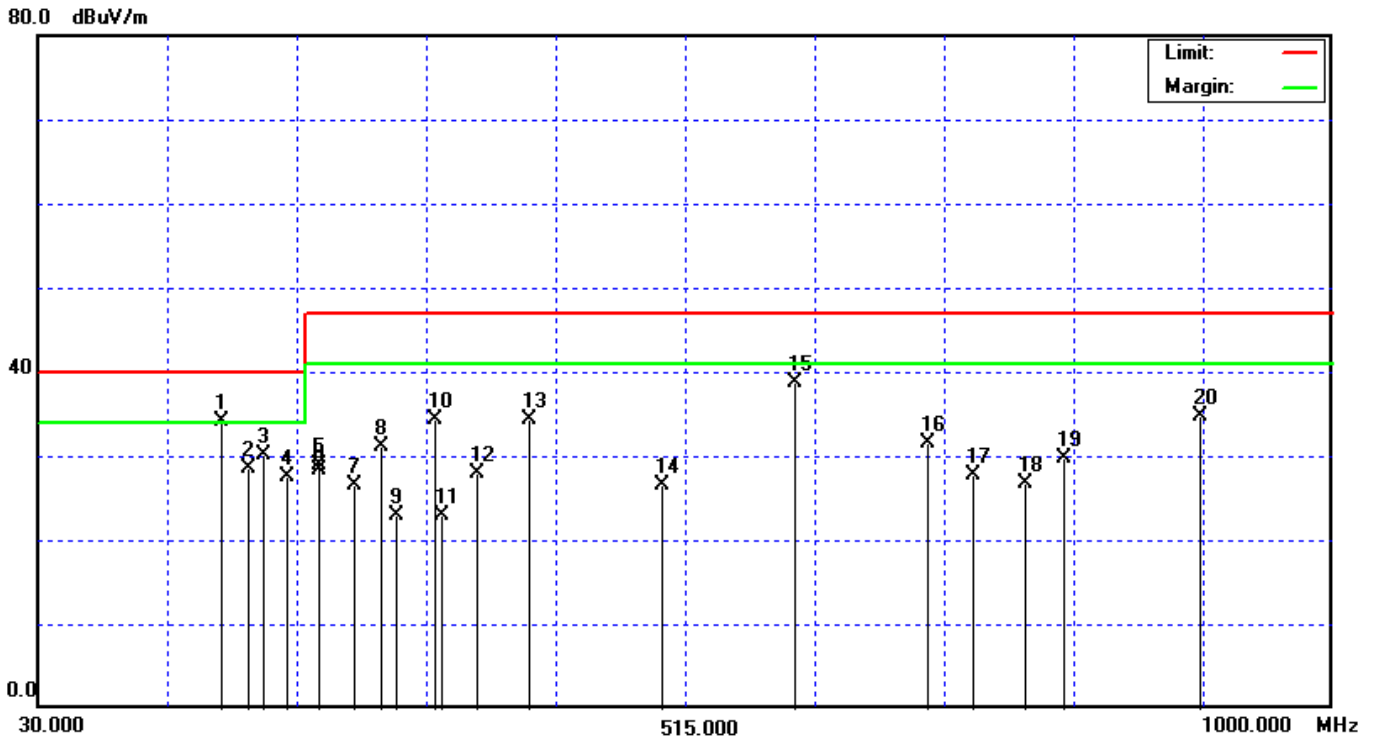
Date of Test	October 13, 2004	Temperature	26 deg/C
EUT	4U Form Factor PXI 18-Slots Chassis	Humidity	59 %RH
Working Cond.	Mode 1	Display Pattern	H Pattern
Antenna distance	10m at Vertical	Frequency Range	30-1000MHz

No.	Frequency MHz	Reading Level dBuV/m	Factor dB	Measurement dBuV/m	Limit dBuV/m	Over Limit dB	Detector
1	165.9628	44.19	-15.44	28.75	40	-11.25	QP
2	199.2495	46.12	-15.87	30.25	40	-9.75	QP
3	219.9999	51.79	-13.86	37.93	40	-2.07	QP
4	232.2807	33.17	-13.21	19.96	47	-27.04	QP
5	239.9996	41.79	-12.77	29.02	47	-17.98	QP
6	257.7232	37.32	-11.82	25.5	47	-21.5	QP
7	265.2604	36.95	-11.56	25.39	47	-21.61	QP
8	299.999	46.04	-10.22	35.82	47	-11.18	QP
9	314.9965	41.16	-9.73	31.43	47	-15.57	QP
10	339.999	35.42	-9.12	26.3	47	-20.7	QP
11	398.3441	38.03	-7.83	30.2	47	-16.8	QP
12	597.4405	33.43	-4.22	29.21	47	-17.79	QP
13	696.8857	30.1	-2.52	27.58	47	-19.42	QP
14	796.4351	32.41	-0.94	31.47	47	-15.53	QP

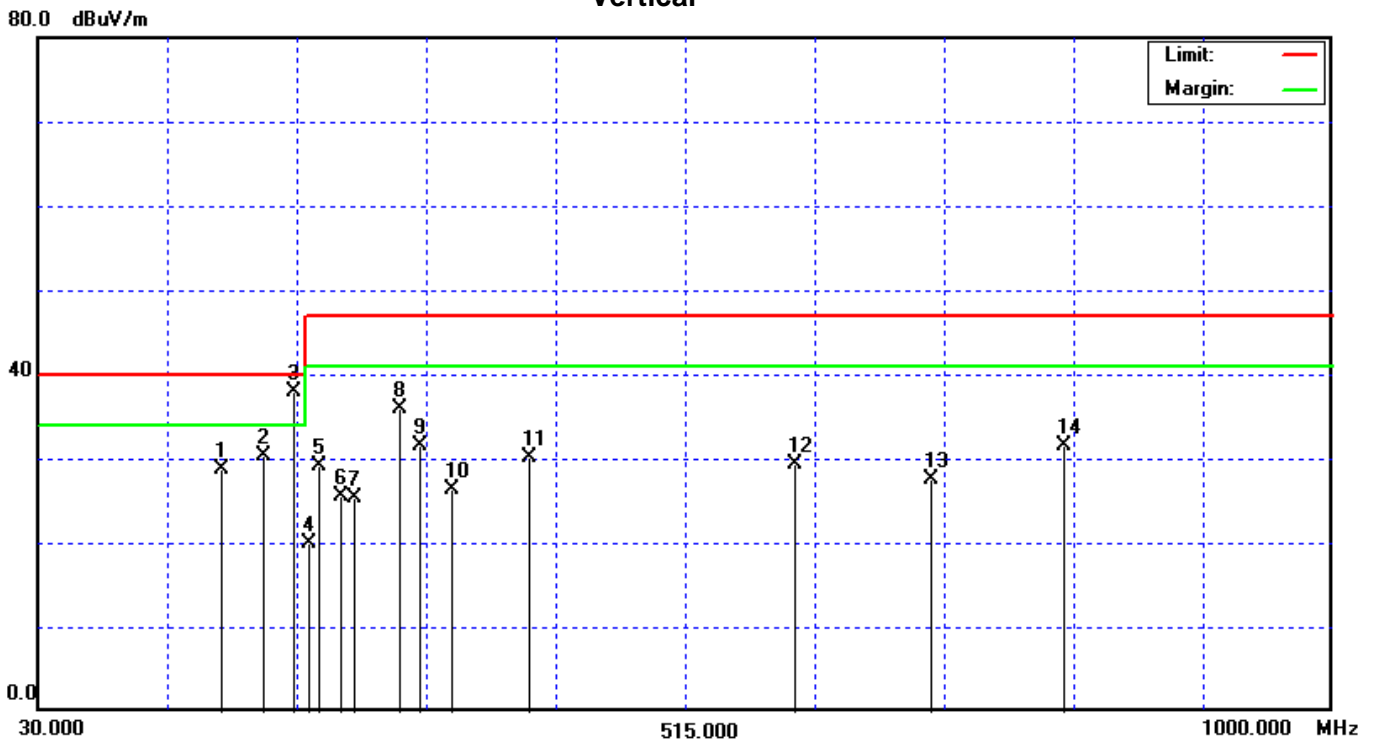
Remarks:

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

Horizontal



Vertical



6. POWERLINE HARMONIC CURRENT EMISSIONS AND VOLTAGE FLUCTUATION/FLICKER MEASUREMENT

6.1 TEST EQUIPMENT

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal. Date
1	Power Analyzer	Voltech	PM3000A	AH07/9016	08/02/04
2	Power Source	PACIFIC	345AMX/UPC32	270	12/18/03
3	Impedance Network	Voltech	IEC STANDARD 555	IB0718921	08/04/04
4	Test Program	GeSTek	GTK-E-S002-01	N/A	N/A

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

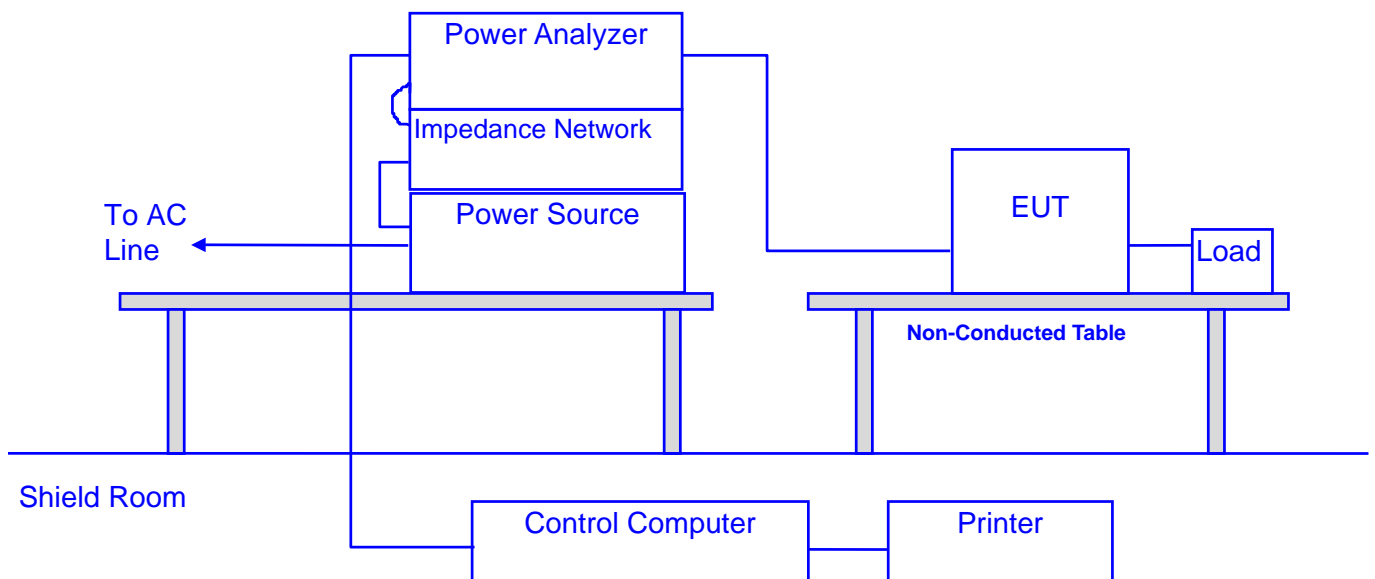
6.2 TEST METHOD

According to EN 61000-3-2 / 2000 & EN 61000-3-3 / 1995 + A1 / 2001.

6.3 BLOCK DIAGRAM OF TEST SETUP

Note: This is a comprehensive 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 HARMONIC CURRENT EMISSIONS

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 OPERATING CONDITIONS OF THE EUT

1. Setup the EUT and Test Equipment as shown on 6.3.
2. Power on the EUT. Acting performance checking program to allow EUT executing 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.

Current Test Result Summary (Run time)

EUT: 4U Form Factor PXI 18-Slots Chassis

Tested by: Paul

Test category: Class-D per A-14 (European limits)

Test Margin: 100

Test date: 2004/10/18

Start time: AM 11:18:46

End time: AM 11:19:56

Test duration (min): 1

Data file name: H-000484.cts_data

Comment: M/N: PXI-52105

Customer: FULL SYSTEM

Test Result: Pass Source qualification: Normal

THC(A): 0.05

I-THD(pk%): 10.88

POHC(A): 0.007

POHC Limit(A): 0.037

Highest parameter values during test:

V_RMS (Volts): 228.41

Frequency(Hz): 50.00

I_Peak (Amps): 0.988

I_RMS (Amps): 0.477

I_Fund (Amps): 0.472

Crest Factor: 2.122

Power (Watts): 86

Power Factor: 0.791

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.000						
3	0.028	0.292	9.6	0.030	0.429	6.88	Pass
4	0.000						
5	0.018	0.163	10.8	0.019	0.239	7.77	Pass
6	0.000						
7	0.025	0.086	29.3	0.026	0.126	20.69	Pass
8	0.000						
9	0.007	0.043	16.1	0.008	0.064	12.31	Pass
10	0.000						
11	0.009	0.030	29.9	0.010	0.045	21.52	Pass
12	0.000						
13	0.014	0.026	54.2	0.015	0.038	39.46	Pass
14	0.000						
15	0.006	0.022	28.4	0.007	0.032	20.68	Pass
16	0.000						
17	0.010	0.020	48.5	0.010	0.029	35.13	Pass
18	0.000						
19	0.004	0.017	23.4	0.004	0.026	17.16	Pass
20	0.000						
21	0.002	0.016	15.5	0.003	0.023	11.60	Pass
22	0.000						
23	0.003	0.014	18.4	0.003	0.021	13.69	Pass
24	0.000						
25	0.004	0.013	28.3	0.004	0.020	20.79	Pass
26	0.000						
27	0.003	0.012	26.3	0.004	0.018	19.64	Pass
28	0.000						
29	0.001	0.011	8.0	0.001	0.017	6.78	Pass
30	0.000						
31	0.002	0.011	15.5	0.002	0.016	11.48	Pass
32	0.000						
33	0.002	0.010	21.0	0.002	0.015	15.25	Pass
34	0.000						
35	0.001	0.009	13.4	0.002	0.014	10.83	Pass
36	0.000						
37	0.001	0.009	11.3	0.001	0.013	8.85	Pass
38	0.000						
39	0.002	0.009	20.1	0.002	0.012	15.19	Pass
40	0.000						

Note: Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

Flicker Test Summary per EN/IEC61000-3-3 (Run time)

EUT: 4U Form Factor PXI 18-Slots Chassis
 Test category: All parameters (European limits)
 Test date: 2004/10/18
 Test duration (min): 10
 Comment: M/N: PXI-52105
 Customer: FULL SYSTEM

Tested by: Paul
 Test Margin: 100
 Start time: AM 11:24:48 End time: AM 11:35:01
 Data file name: F-000485.cts_data

Test Result: Pass Status: Test Completed

Psti and limit line European Limits



Time is too short for Plt plot

Parameter values recorded during the test:

Vrms at the end of test (Volt):	228.19	
Highest dt (%):	0.00	Test limit (%): 3.30 Pass
Time(mS) > dt:	0.0	Test limit (mS): 500.0 Pass
Highest dc (%):	0.00	Test limit (%): 3.30 Pass
Highest dmax (%):	0.00	Test limit (%): 4.00 Pass
Highest Pst (10 min. period):	0.001	Test limit: 1.000 Pass
Highest Plt (2 hr. period):	0.001	Test limit: 0.650 Pass

7. ESD IMMUNITY TEST

7.1 TEST EQUIPMENT

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal. Date
1	ESD SIMULATOR SYSTEM	HAEFELY	PESD 1600	H 107 335	12/15/03
2	Shielded Room	GesTek	B4	N/A	N/A

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

7.2 TEST METHOD

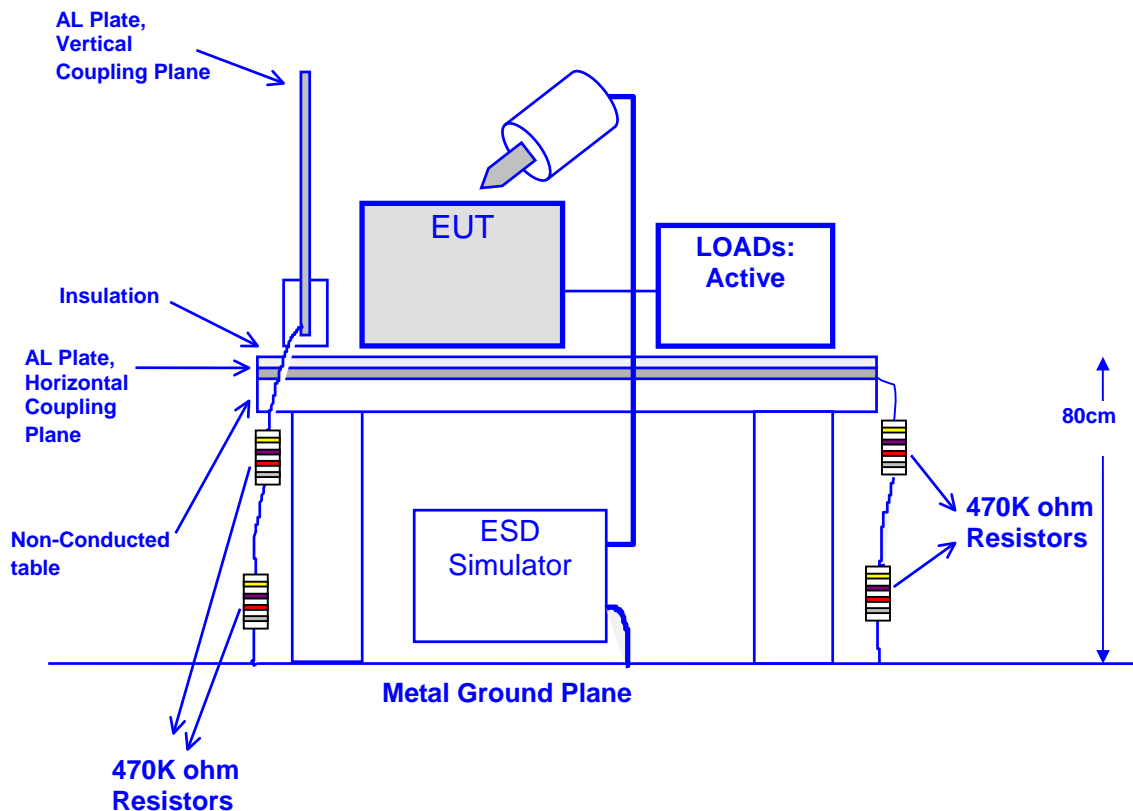
According to EN 55024 :1998/ CISPR 24 :1997

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

7.3 BLOCK DIAGRAM OF TEST SETUP

Note: This is a comprehensive 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
Level : $\pm 8\text{kV}$ and lower levels (Air Discharge)
 $\pm 4\text{kV}$ and lower levels (Contact Discharge)

7.5 OPERATING CONDITIONS OF THE EUT

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

7.6 TEST PROCEDURE

Direct ESD:

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

Air discharges to surfaces of the EUT.

Air Discharge:

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

Contact Discharge:

Single discharge at > 1-second interval, at least 25 positive & 25 negative discharges.

Indirect ESD:

Horizontal Coupling Plane (HCP) under the EUT & Vertical Coupling Plane (VCP) beside the 4 sides of the EUT, with the sharp discharge electrode touching the coupling plane.

HCP discharge:

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

VCP discharge:

Vertical Coupling Plane was positioned at a distance of 0.1m from the EUT.

7.7 TEST RESULT

Date of Test	October 19, 2004	Temperature	22.6
Test Mode	Mode 1	Humidity	66 %

Item	Amount of Discharge	Voltage	Required Criteria	Complied to Criteria (A, B, C)	Result
Air Direct Discharge	10	<input checked="" type="checkbox"/> +2kV <input checked="" type="checkbox"/> +4kV <input checked="" type="checkbox"/> +8kV <input type="checkbox"/> +15kV	B	A	PASS
	10	<input checked="" type="checkbox"/> -2kV <input checked="" type="checkbox"/> -4kV <input checked="" type="checkbox"/> -8kV <input type="checkbox"/> -15kV	B	A	PASS
Contact Direct Discharge	25	<input checked="" type="checkbox"/> +2kV <input checked="" type="checkbox"/> +4kV <input type="checkbox"/> +6kV <input type="checkbox"/> +8kV	B	A	PASS
	25	<input checked="" type="checkbox"/> -2kV <input checked="" type="checkbox"/> -4kV <input type="checkbox"/> -6kV <input type="checkbox"/> -8kV	B	A	PASS
Indirect Discharge (HCP)	25	<input checked="" type="checkbox"/> +2kV <input checked="" type="checkbox"/> +4kV <input type="checkbox"/> +6kV <input type="checkbox"/> +8kV	B	A	PASS
	25	<input checked="" type="checkbox"/> -2kV <input checked="" type="checkbox"/> -4kV <input type="checkbox"/> -6kV <input type="checkbox"/> -8kV	B	A	PASS
Indirect Discharge (VCP) (Front)	25	<input checked="" type="checkbox"/> +2kV <input checked="" type="checkbox"/> +4kV <input type="checkbox"/> +6kV <input type="checkbox"/> +8kV	B	A	PASS
	25	<input checked="" type="checkbox"/> -2kV <input checked="" type="checkbox"/> -4kV <input type="checkbox"/> -6kV <input type="checkbox"/> -8kV	B	A	PASS
Indirect Discharge (VCP) (Left)	25	<input checked="" type="checkbox"/> +2kV <input checked="" type="checkbox"/> +4kV <input type="checkbox"/> +6kV <input type="checkbox"/> +8kV	B	A	PASS
	25	<input checked="" type="checkbox"/> -2kV <input checked="" type="checkbox"/> -4kV <input type="checkbox"/> -6kV <input type="checkbox"/> -8kV	B	A	PASS
Indirect Discharge (VCP) (Back)	25	<input checked="" type="checkbox"/> +2kV <input checked="" type="checkbox"/> +4kV <input type="checkbox"/> +6kV <input type="checkbox"/> +8kV	B	A	PASS
	25	<input checked="" type="checkbox"/> -2kV <input checked="" type="checkbox"/> -4kV <input type="checkbox"/> -6kV <input type="checkbox"/> -8kV	B	A	PASS
Indirect Discharge (VCP) (Right)	25	<input checked="" type="checkbox"/> +2kV <input checked="" type="checkbox"/> +4kV <input type="checkbox"/> +6kV <input type="checkbox"/> +8kV	B	A	PASS
	25	<input checked="" type="checkbox"/> -2kV <input checked="" type="checkbox"/> -4kV <input type="checkbox"/> -6kV <input type="checkbox"/> -8kV	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
 - There was no observable degradation in performance.
 - No false alarms or other malfunctions were observed during or after the test. The
 - The blue tag means the air discharge point .**
 - The rad tag means the contact point .**

8. RF FIELD STRENGTH SUSCEPTIBILITY TEST

8.1 TEST EQUIPMENT

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal. Date
1	Signal Generator	MARCONI	2030	3110196	06/29/04
2	Power Amplifier	A & R	150W1000	304198	N/A
3	Field Strength Meter	A & R	FM2000	16837	N/A
4	BILOG Antenna	SCHAFFNER	CBL6111	1383	10/09/04
5	Shielded Room	GesTek	B3	N/A	12/04/03
6	EMI & EMS Program Software	GesTek	GTK-E-S001-01 GTK-E-S004-01	N/A	N/A

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

8.2 TEST METHOD

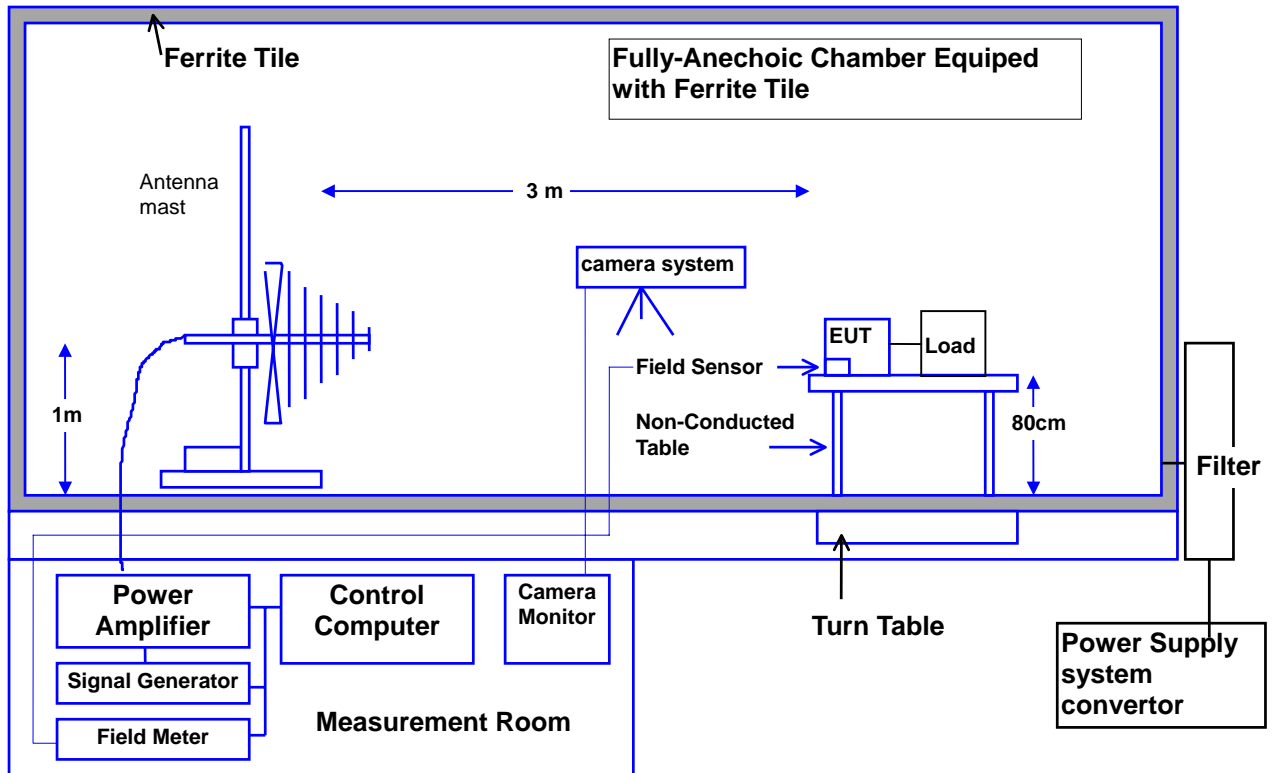
According to EN 55024 : 1998 / CISPR 24 : 1997

IEC 61000-4-3/1995+A1/1998+A2:2000 (EN 61000-4-3/1995+A1/1998+A2:2000).

8.3 BLOCK DIAGRAM OF TEST SETUP

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

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



8.4 SEVERITY LEVELS

Required Performance Criteria : A
 Level : 80~1000MHz(AM 80/% @ 1KHz): 3V/m.
 According to EN 55024 / CISPR 24, an additional functional test shall be carried out at
 The following frequencies: 80, 120, 160, 230, 434, 460, 600, 863 and 900(+/- 1%)MHz.

8.5 OPERATING CONDITIONS OF THE EUT

1. Setup the EUT and Test Equipment as shown on 8.3.
2. Power on the EUT. Acting performance checking program to allow EUT executing 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	3V/m
Radiated Signal	80MHz-1000MHz (1KHz carrier wave with 80% Amplitude modulation)
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	October 18, 2004	Temperature	22.9
Test Mode	Mode 1	Humidity	66 %

Freq. Range (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/M)	Performance Criteria Complied to	Results
<input type="checkbox"/> 26-80 MHz	0	H / V	3	A	PASS
<input checked="" type="checkbox"/> 80-1000 MHz	90	H / V	3	A	PASS
<input type="checkbox"/> 900 ± 5 MHz	180	H / V	3	A	PASS
	270	H / V	3	A	PASS

Additional comprehensive functional test selected frequencies are:

80, 120, 160, 230, 434, 460, 600, 863 and 900(+/- 1%)MHz.

Freq. Range (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Performance Criteria Complied to	Results
80	0;90;180;270	H / V	3	A	PASS
120	0;90;180;270	H / V	3	A	PASS
160	0;90;180;270	H / V	3	A	PASS
230	0;90;180;270	H / V	3	A	PASS
434	0;90;180;270	H / V	3	A	PASS
460	0;90;180;270	H / V	3	A	PASS
600	0;90;180;270	H / V	3	A	PASS
863	0;90;180;270	H / V	3	A	PASS
900	0;90;180;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.

9. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

9.1 TEST EQUIPMENT

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal. Date
1	ULTRA COMPACT GENERATOR	EM TEST	UCS 500-M	0500-15	07/10/04

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

9.2 TEST METHOD

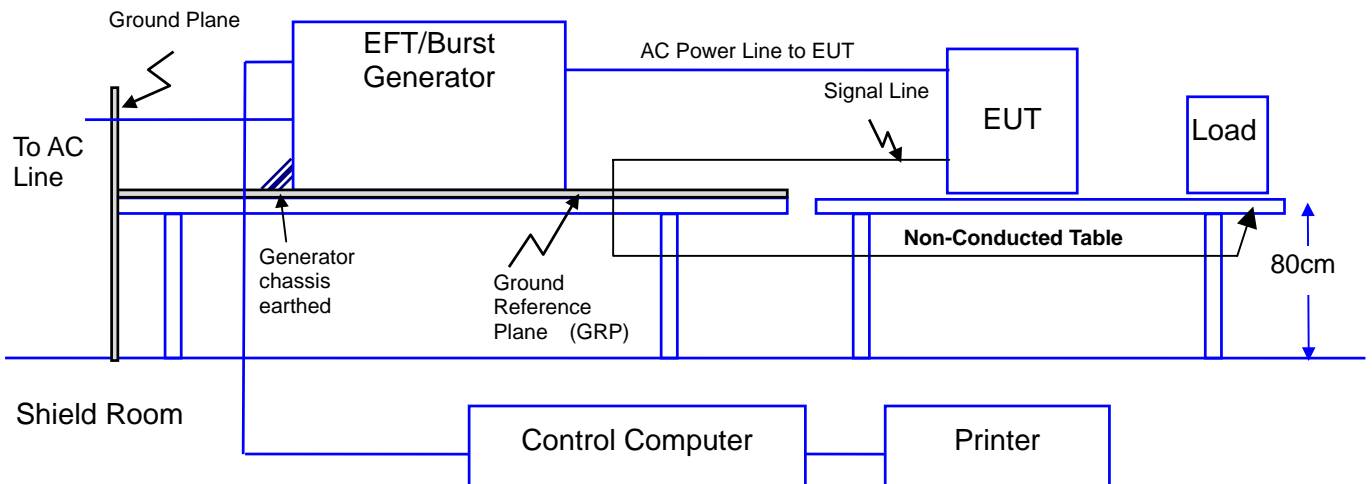
According to EN 55024 : 1998 / CISPR 24 : 1997

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

9.3 BLOCK DIAGRAM OF TEST SETUP

Note: This is a comprehensive 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	: B
Level	: $\pm 0.5\text{kV}$ for Signal Lines and Control Lines $\pm 0.5\text{kV}, \pm 1.0\text{kV}$ for Power Lines and protective earth terminal

9.5 OPERATING CONDITIONS OF THE EUT

1. Setup the EUT and Test Equipment as shown on 9.3.
2. Power on the EUT. Acting performance checking program to allow EUT executing 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 2m by 2m 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 0.5kV 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	October 18, 2004	Temperature	22.4
Test Mode	Mode 1	Humidity	68 %

Inject Place: Power Supply Line							
Inject Line	Polarity	Voltage KV	Inject time (minute)	Inject Method	Required Criteria	Complied to Criteria	Result
L	+	<input checked="" type="checkbox"/> 0.5 <input checked="" type="checkbox"/> 1.0 <input type="checkbox"/> 2.0	1	DIRECT	B	A	PASS
N			1	DIRECT	B	A	PASS
PE			1	DIRECT	B	A	PASS
L+N			1	DIRECT	B	A	PASS
N+PE			1	DIRECT	B	A	PASS
L+PE			1	DIRECT	B	A	PASS
L+N+PE			1	DIRECT	B	A	PASS
L	-	<input checked="" type="checkbox"/> 0.5 <input checked="" type="checkbox"/> 1.0 <input type="checkbox"/> 2.0	1	DIRECT	B	A	PASS
N			1	DIRECT	B	A	PASS
PE			1	DIRECT	B	A	PASS
L+N			1	DIRECT	B	A	PASS
N+PE			1	DIRECT	B	A	PASS
L+PE			1	DIRECT	B	A	PASS
L+N+PE			1	DIRECT	B	A	PASS
Inject Place: I/O Cable (Capacitive Clamp Used)							
LAN	+	<input checked="" type="checkbox"/> 0.5	1	Clamp	B	A	PASS
LAN	-	<input type="checkbox"/> 1.0	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
 - 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.

10. SURGE IMMUNITY TEST

10.1 TEST EQUIPMENT

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal. Date
1	ULTRA COMPACT GENERATOR	EM TEST	UCS 500-M	0500-15	07/10/04

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

10.2 TEST METHOD

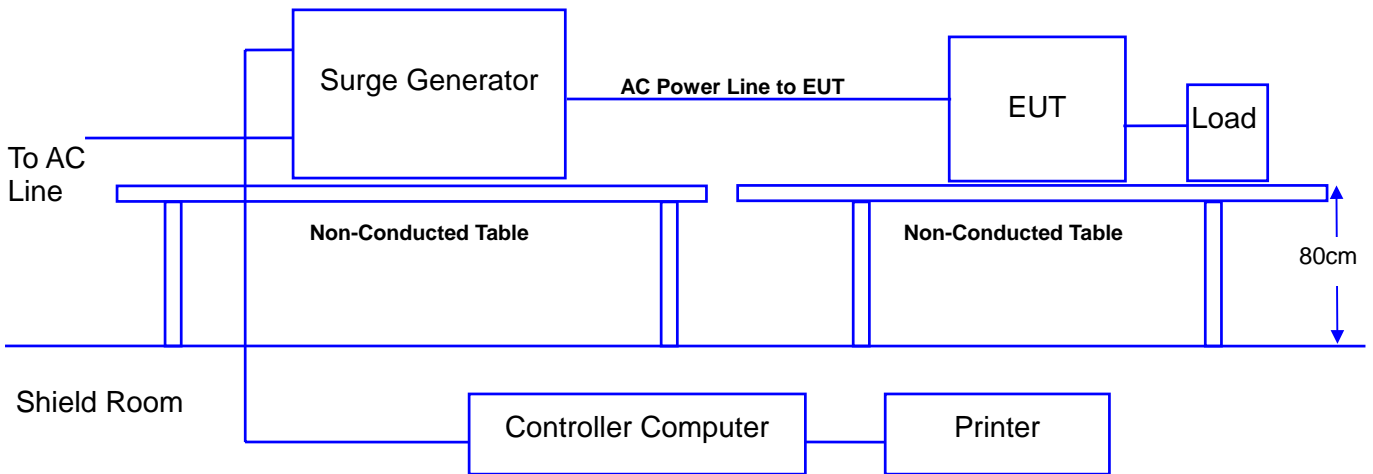
According to EN 55024:1998 / CISPR 24 : 1997

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

10.3 BLOCK DIAGRAM OF TEST SETUP

Note: This is a reprehensive 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 OPERATING CONDITIONS OF THE EUT

1. Setup the EUT and Test Equipment as shown on 10.3.
2. Power on the EUT. Acting performance checking program to allow EUT executing 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 1.0kV and common mode at 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	October 18, 2004	Temperature	22.7
Test Mode	Mode 1	Humidity	67 %

Inject Line	Voltage KV	Repetition Rate (minute)	Phase Angle	Surge applied Method	Number of tests	Required Criteria	Complied to Criteria	Result	
L-N	Differential mode	<input checked="" type="checkbox"/> +0.5 <input checked="" type="checkbox"/> +1.0	1	0°	Coupling	5	B	A	PASS
			1	90°	Coupling	5	B	A	PASS
			1	180°	Coupling	5	B	A	PASS
			1	270°	Coupling	5	B	A	PASS
	Differential mode	<input checked="" type="checkbox"/> -0.5 <input checked="" type="checkbox"/> -1.0	1	0°	Coupling	5	B	A	PASS
			1	90°	Coupling	5	B	A	PASS
			1	180°	Coupling	5	B	A	PASS
			1	270°	Coupling	5	B	A	PASS
L-PE	Common mode	<input checked="" type="checkbox"/> +0.5 <input checked="" type="checkbox"/> +1.0 <input checked="" type="checkbox"/> +2.0	1	0°	Coupling	5	B	A	PASS
			1	90°	Coupling	5	B	A	PASS
			1	180°	Coupling	5	B	A	PASS
			1	270°	Coupling	5	B	A	PASS
	Common mode	<input checked="" type="checkbox"/> -0.5 <input checked="" type="checkbox"/> -1.0 <input checked="" type="checkbox"/> -2.0	1	0°	Coupling	5	B	A	PASS
			1	90°	Coupling	5	B	A	PASS
			1	180°	Coupling	5	B	A	PASS
			1	270°	Coupling	5	B	A	PASS
N-PE	Common mode	<input checked="" type="checkbox"/> +0.5 <input checked="" type="checkbox"/> +1.0 <input checked="" type="checkbox"/> +2.0	1	0°	Coupling	5	B	A	PASS
			1	90°	Coupling	5	B	A	PASS
			1	180°	Coupling	5	B	A	PASS
			1	270°	Coupling	5	B	A	PASS
	Common mode	<input checked="" type="checkbox"/> -0.5 <input checked="" type="checkbox"/> -1.0 <input checked="" type="checkbox"/> -2.0	1	0°	Coupling	5	B	A	PASS
			1	90°	Coupling	5	B	A	PASS
			1	180°	Coupling	5	B	A	PASS
			1	270°	Coupling	5	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
 - 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.

11. CONDUCTED DISTURBANCE SUSCEPTIBILITY TEST

11.1 TEST EQUIPMENT

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal. Date
1	SINGNAL GENERATOR	HP	8657A	3250A05164	11/01/03
2	Power Amplifier	A & R	150A100A	25056	N/A
3	Dual Directional Couplor	A & R	DC-2600	20193	08/04/06
4	VOLTMETER	BOONTON	9200C	361501AA	11/15/03

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

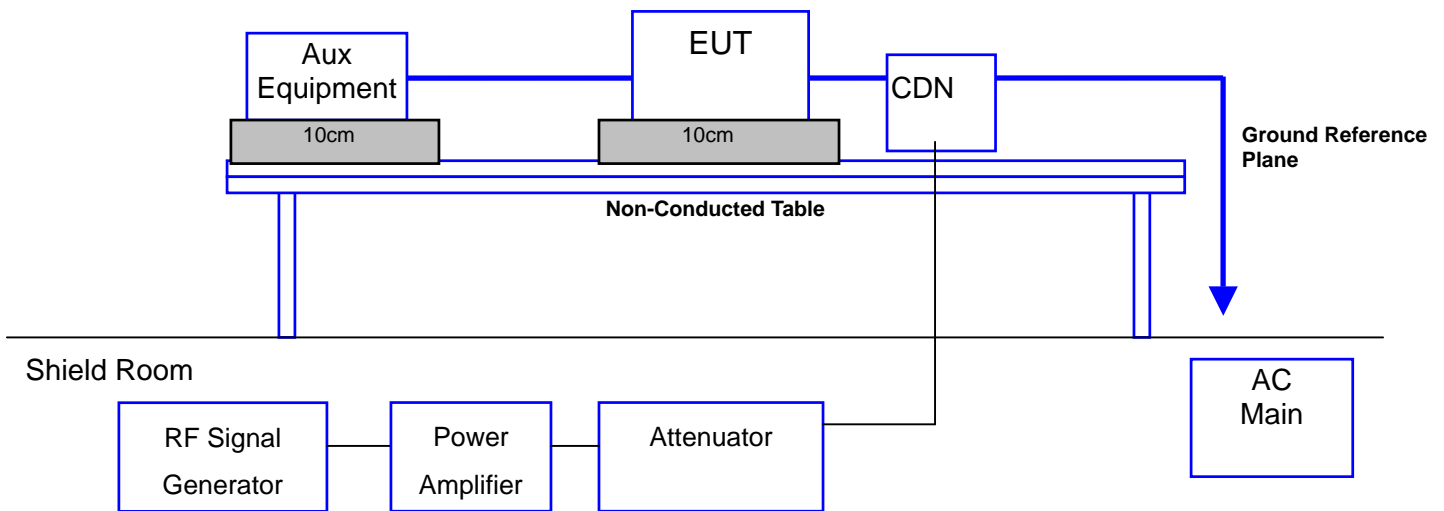
11.2 TEST METHOD

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 reprehensive 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

Level : 3V(rms),1KHz carrier wave with 80/% Amplitude modulation

Frequency range : 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, 21.0, 27.12 and 40.68MHz. (+/- 1%)

11.5 OPERATING CONDITIONS OF THE EUT

1. Setup the EUT and Test Equipment as shown on 11.3.
2. Power on the EUT. Acting performance checking program to allow EUT executing 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	October 18, 2004	Temperature	22.7
Test Mode	Mode 1	Humidity	68 %

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)	CDN-M3	A	A	PASS

**Additional comprehensive functional test selected frequencies are:
0.2, 1., 7.1, 13.56, 21.0, 27.12 and 40.68MHz. (+/- 1%)**

Frequency Range (MHz)	Inject Line	Field Strength	Inject Method	Required Criteria	Performance Criteria Complied To	Remark
0.2	AC Line	3V(rms)	DIRECT	A	A	PASS
1	AC Line	3V(rms)	DIRECT	A	A	PASS
7.1	AC Line	3V(rms)	DIRECT	A	A	PASS
13.56	AC Line	3V(rms)	DIRECT	A	A	PASS
21	AC Line	3V(rms)	DIRECT	A	A	PASS
27.12	AC Line	3V(rms)	DIRECT	A	A	PASS
40.68	AC Line	3V(rms)	DIRECT	A	A	PASS
0.2	LAN	3V(rms)	CLAMP	A	A	PASS
1	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	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

- 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 _____ 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. POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST

12.1 TEST EQUIPMENT

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal. Date
1	MAGNETIC FIELD ANTENNA	HAEFELY	MAG100.1	080015-10	06/23/04

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

12.2 TEST METHOD

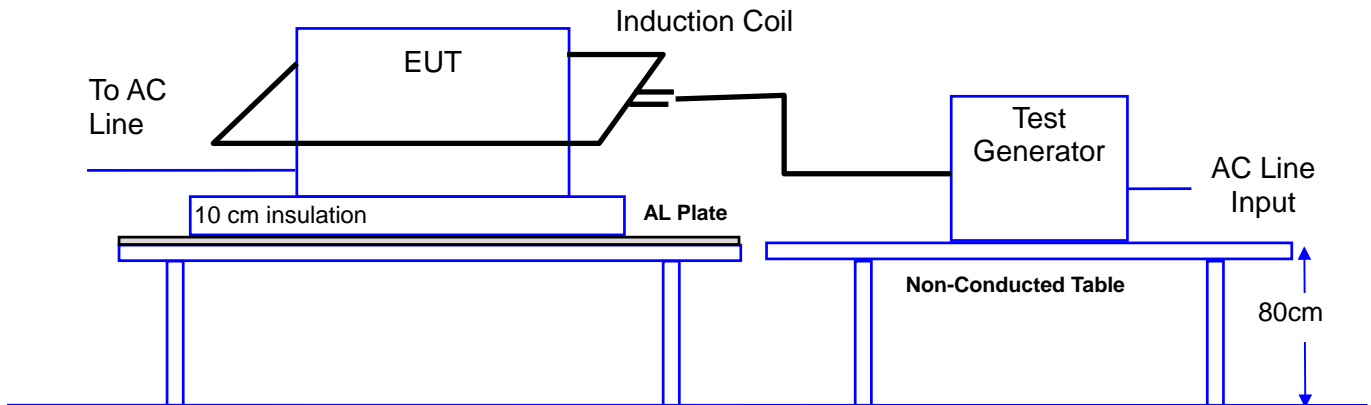
According to EN 55024 : 1998 / CISPR 24 : 1997

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

12.3 BLOCK DIAGRAM OF TEST SETUP

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

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



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 OPERATING CONDITIONS OF THE EUT

1. Setup the EUT and Test Equipment as shown on 12.3.
2. Power on the EUT. Acting performance checking program to allow EUT executing 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 12.3. 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	October 17, 2004	Temperature	22.8
Test Mode	Mode 1	Humidity	66 %

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
 - There was no observable degradation in performance.
 - 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. VOLTAGE DIPS AND SHORT INTERRUPTIONS TEST

13.1 TEST EQUIPMENT

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal. Date
1	DIPS GENERATOR	HAEFFELY	PLING1601	083690-07	09/02/04

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

13.2 TEST METHOD

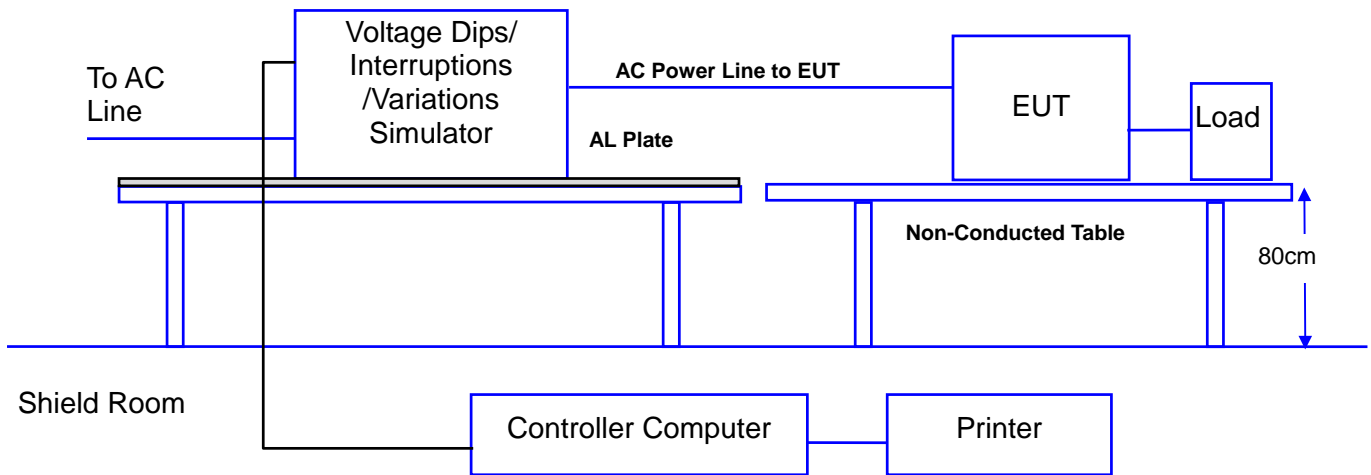
According to EN 55024 : 1998 / CISPR 24 : 1997

IEC 61000-4-11/1994+A1/2000 (EN 61000-4-11/1994+A1/2000).

13.3 BLOCK DIAGRAM OF TEST SETUP

Note: This is a comprehensive 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	Required Performance Criteria
>95	10 ms	B
30	500 ms	C
>95	5s	C

13.5 OPERATING CONDITIONS OF THE EUT

1. Setup the EUT and Test Equipment as shown on 13.3.
2. Power on the EUT. Acting performance checking program to allow EUT executing 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 height.

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	October 18, 2004	Temperature	22.7
Test Mode	Mode 1	Humidity	66 %

Item	Phase Angle	Reduction (%)	Test Duration (ms)	Required Criteria	Complied to Criteria	Result
Voltage Short Interruptions	<input checked="" type="checkbox"/> 0	>95	5000	C	C	PASS
	<input type="checkbox"/> 45			C	*	*
	<input type="checkbox"/> 90			C	*	*
	<input type="checkbox"/> 135			C	*	*
	<input checked="" type="checkbox"/> 180			C	C	PASS
	<input type="checkbox"/> 225			C	*	*
	<input type="checkbox"/> 270			C	*	*
	<input type="checkbox"/> 315			C	*	*
Voltage Dips	<input checked="" type="checkbox"/> 0	>95	10	B	A	PASS
	<input type="checkbox"/> 45			B	*	*
	<input type="checkbox"/> 90			B	*	*
	<input type="checkbox"/> 135			B	*	*
	<input checked="" type="checkbox"/> 180			B	A	PASS
	<input type="checkbox"/> 225			B	*	*
	<input type="checkbox"/> 270			B	*	*
	<input type="checkbox"/> 315			B	*	*
	<input checked="" type="checkbox"/> 0	30	500	C	A	PASS
	<input type="checkbox"/> 45			C	*	*
	<input type="checkbox"/> 90			C	*	*
	<input type="checkbox"/> 135			C	*	*
	<input checked="" type="checkbox"/> 180			C	A	PASS
	<input type="checkbox"/> 225			C	*	*
	<input type="checkbox"/> 270			C	*	*
	<input type="checkbox"/> 315			C	*	*

- Meet criteria A: Operate as intended during and after the test
- Meet criteria B: Operate as intended after the test
- Meet criteria C: Loss of function, provided the function is self-recoverable, or can be restored by the operation of the controls
- Additional Information
 - There was no observable degradation in performance.
 - 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.

14. PHOTOGRAPHS FOR TEST

14.1 TEST PHOTOGRAPHS FOR CONDUCTION

Mode 1



14.2 TEST PHOTOGRAPHS FOR RADIATED

Mode 1



14.3 TEST PHOTOGRAPHS FOR HARMONIC/FLICKER

Mode 1



14.4 TEST PHOTOGRAPHS FOR ESD

Mode 1



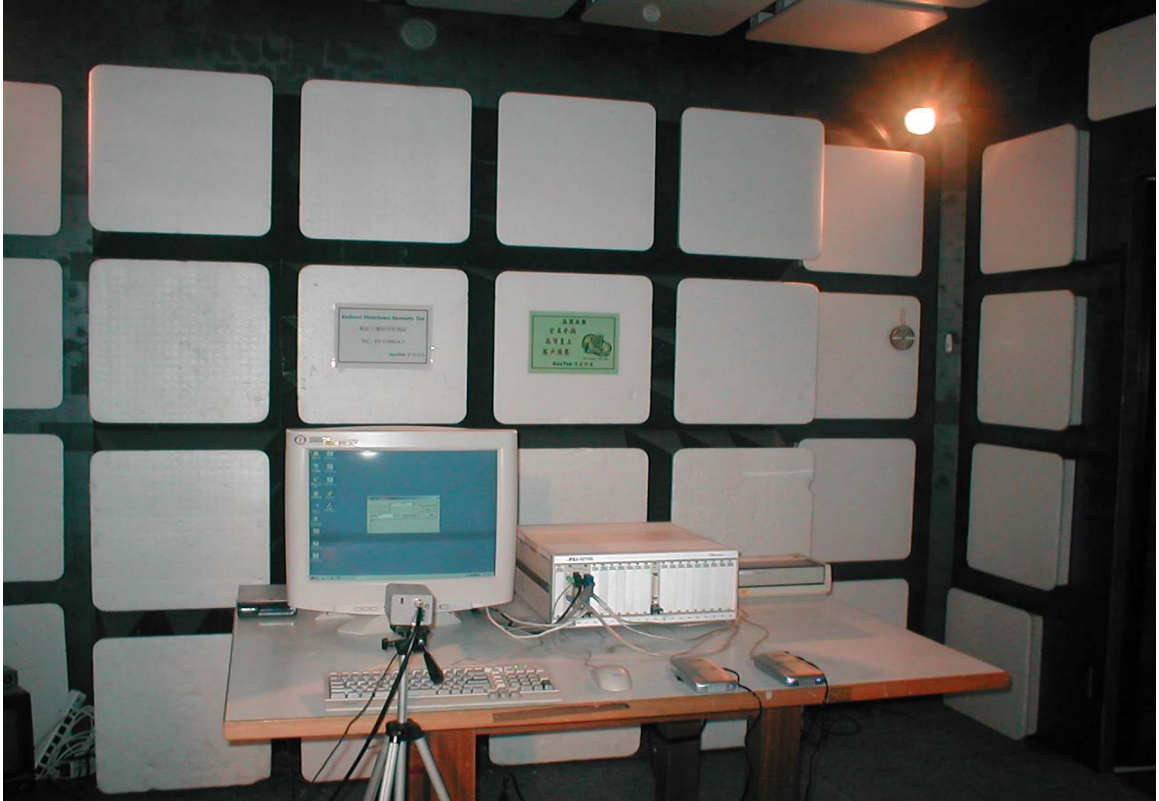
14.5 TEST PHOTOGRAPHS FOR ESD TEST POINTS

Mode 1



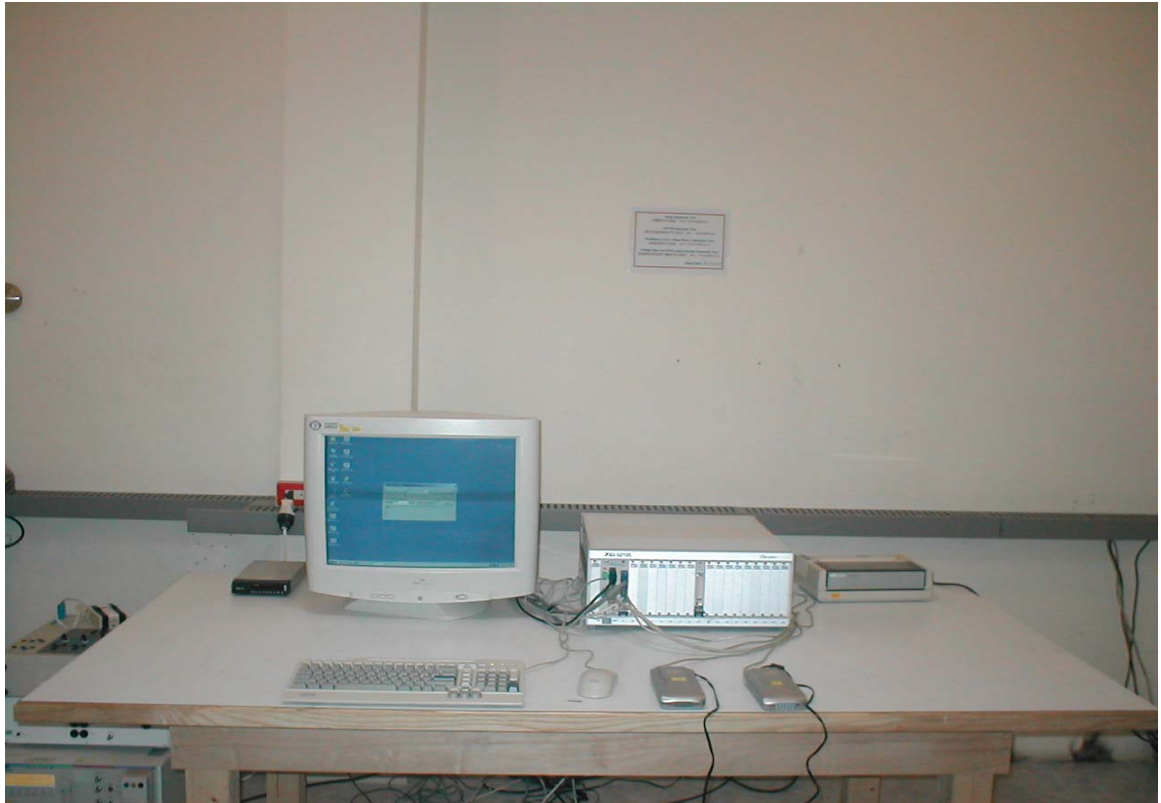
14.6 TEST PHOTOGRAPHS FOR RS

Mode 1



14.7 TEST PHOTOGRAPHS FOR EFT

Mode 1



14.8 TEST PHOTOGRAPHS FOR SURGE

Mode 1



14.9 TEST PHOTOGRAPHS FOR CS

Mode 1



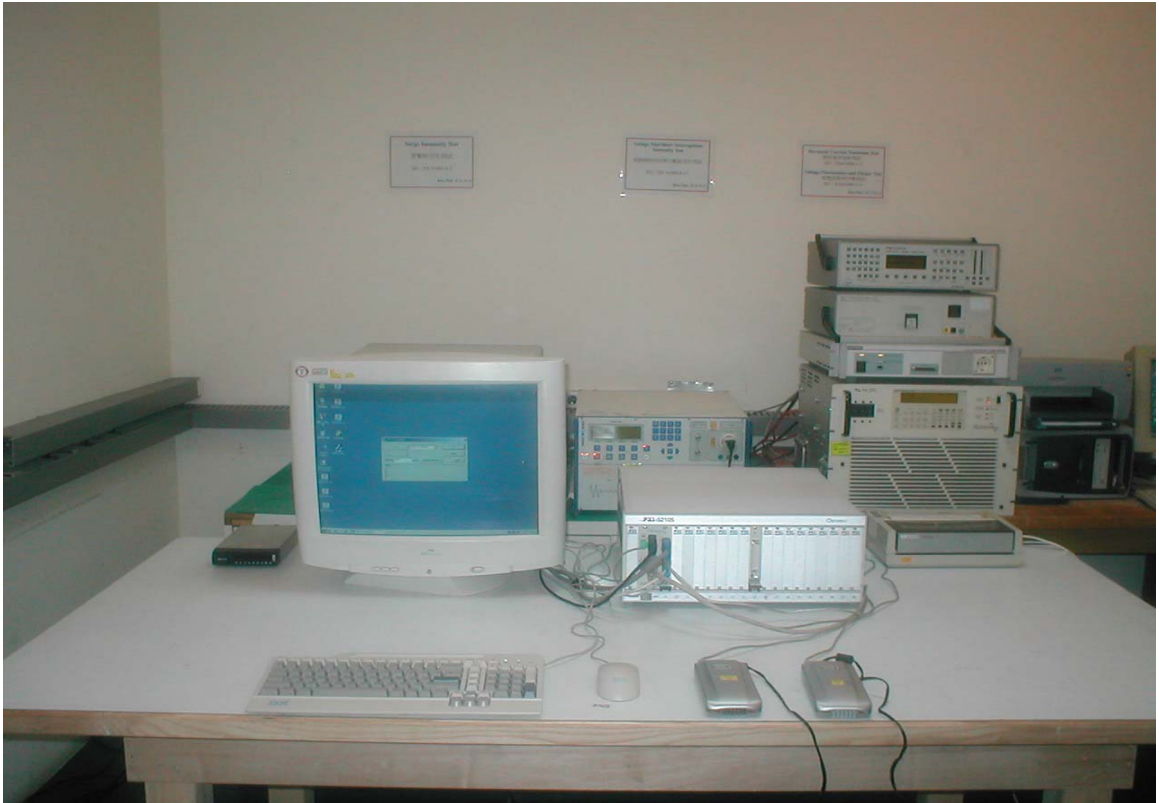
14.10 TEST PHOTOGRAPHS FOR MAGNETIC

Mode 1



14.11 TEST PHOTOGRAPHS FOR DIPS

Mode 1

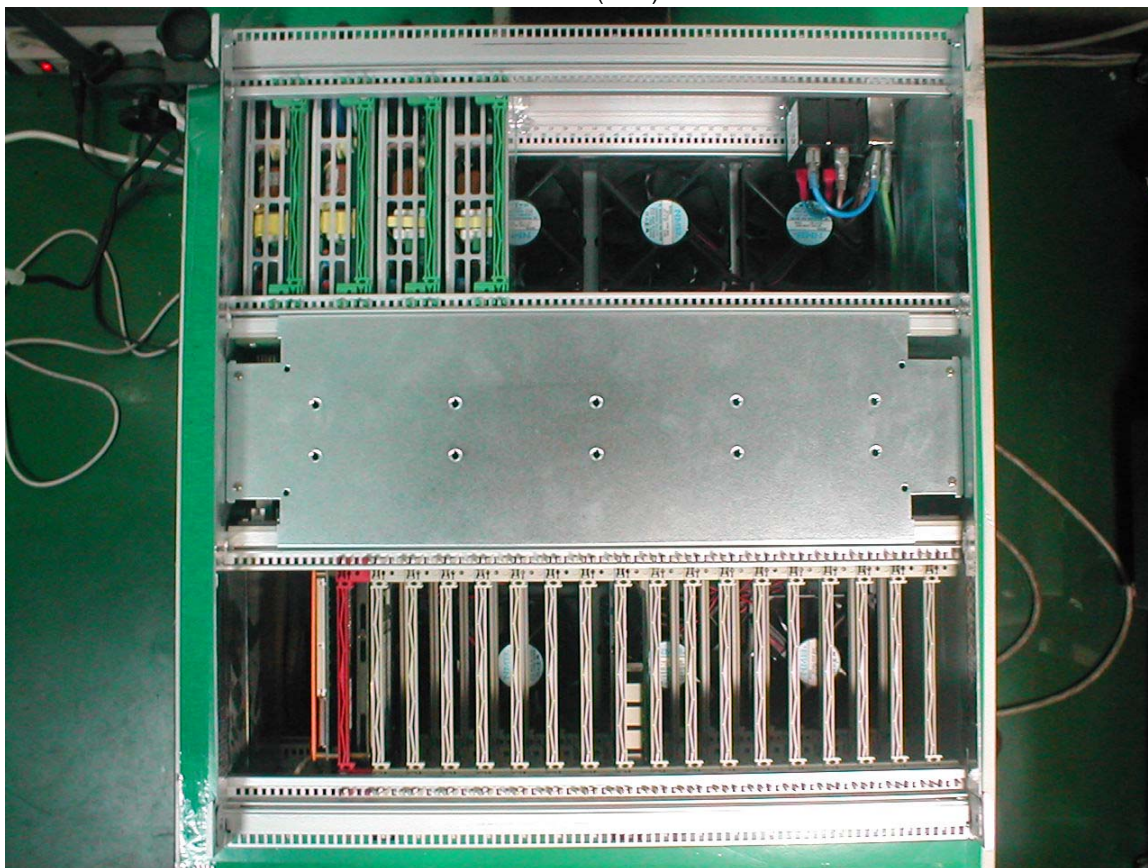


15. PHOTOGRAPHS FOR PRODUCT

1. Front View Of 4U Form Factor PXI 18-Slots Chassis (EUT)
2. Back View Of 4U Form Factor PXI 18-Slots Chassis (EUT)



3. Inner View Of 4U Form Factor PXI 18-Slots Chassis (EUT)



16. EMI/EMS REDUCTION METHOD DURING COMPLIANCE TESTING

No modification was made during testing.