

**TRC**  
***Certificate of Compliance***

*Training Research Co., Ltd.*  
hereby certifies that

**EMC TEST**  
**Socket 370 CPU Board**  
**Model No.: PCA-6770F, PCA-6770N, PCA-6770P, PCA-6770**

**Made by**  
**Advantech Co., Ltd.**  
**Fl.2, No.108-3, Ming-Chuan Road,**  
**Shing-Tien City, Taipei, Taiwan**

**is fulfilled**

**EMI: EN50081-1/1994→EN55022/1997, EN 61000-3-2/1995, EN 61000-3-3/1995**  
**EMS: EN50082-1/1994→IEC1000-4-2/1995, IEC 1000-4-3/1995, ENV 50204/1996, I**  
**EC1000-4-4/1995, IEC 1000-4-5/1995, IEC 1000-4-6/1996,**  
**IEC 1000-4-8/1994, IEC 1000-4-11/1996**

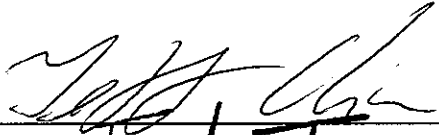

**Test Date: AUG. 31, 1999**  
**Certificate Registration No.: A55CE706**

**SEP. 06, 1999**

*Frank Tsai*

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**General Manager, Frank Tsai**

**Training Research Co., Ltd. (NVLAP LAB CODE: 200174-0)**

Report No.	A55CE706
Specifications	EMC
Applicant address	Fl.2, No.108-3, Ming-Chuan Road, Shing-Tien City, Taipei, Taiwan
Applicant Items tested	Advantech Co., Ltd. Socket 370 CPU Board
Model No.	PCA-6770F, PCA-6770N, PCA-6770P, PCA-6770 (Sample # A55706)
Results	<b>Compliance</b> (As detailed within this report)
Sample received date	08/27/1999 (month / day / year)
Prepared by	 project engineer
Authorized by	 General Manager (Frank Tsai)
Issue date	Sep. 06, 1999 (month / day / year)
Modifications	None
Tested by	Training Research Co., Ltd.
Office at	2, Lane 194, Huan-Ho Street, Hsichih, Taipei Hsien 221, Taiwan
Open site at	No. 5-3, Lane 21, Yen Chiu Yuan Rd., Sec. 4, Taipei, Taiwan

**Conditions of issue:**

- (1) *This test report shall not be reproduced except in full, without written approval of TRC. And the test result contained within this report only relate to the sample submitted for testing.*
- (2) *This report must not be used by the client to claim product endorsement by NVLAP or any agency of U.S. Government.*
- (3) *This test report, measurements made by TRC are traceable to the NIST only Conducted and Radiated Method.*

★ NVLAP LAB CODE: 200174-0

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## *Chapter 0 Emission and Susceptibility Standards*

### *Emission Standards*

Emission Standard	European Standard	International Standard
(X)	EN 50081-1/1994	
( )	EN 50081-1/8.93	
( )	EN 55014/4.93	CISPR 14: 1993
( )	EN 55015/12.93	CISPR 15: 1992
( )	EN 55011/91	CISPR 11: 1990
(X)	EN 55022/95	CISPR 22: 1993
(X)	EN 61000-3-2/1995	IEC 1000-3-2: 1995
(X)	EN 61000-3-3/1995	IEC 1000-3-3: 1994

### *Susceptibility Standards*

Susceptibility Standard	European Standard	International Standard
( X )	EN 50082-1/1994	
( )	EN 50082-1/1992	
( )	EN 50082-2/1994	
( )		IEC 801-2/1984
( )		IEC 801-3/1984
( )		IEC 801-4/1988
( )		IEC 804-5
( X )	ENV 50140/50204:1993/1996	IEC 1000-4-3
( X )	EN 61000-4-2:1995	IEC 1000-4-2
( X )	EN 61000-4-4:1995	IEC 1000-4-4
( X )	ENV 50142:1995	IEC 1000-4-5
( X )	ENV 50141:1996	IEC 1000-4-6
( X )	EN 61000-4-8:1994	IEC 1000-4-8
( X )	EN 61000-4-11:1996	IEC 1000-4-11
( )	EN 55014-2:1993	CISPR/F (Sec) 159
( )		

## ***Chapter 1 Introduction***

### ***Description of EUT:***

The EUT is designed for use in the industrial environment. The CPU of EUT is Intel Celeron 366. It has two USB connectors, one Ethernet connector, one RS-232 connector, one keyboard connector, one mouse connector, one printer port and one VGA connector. For more information, please refer to the user's manual.

The difference around the models: PCA-6770 is half size SKT370 CPU card with SSD, PCA-6770F is PCA-6770 with VGA/LCD/LAN, PCA-6770N is PCA-6770 with LAN, PCA-6770P is PCA-6770 with VGA/LCD.

### ***Connections of EUT:***

- (1) Put the EUT into the NLX bus of the backplane that installed in a metal IPC case and screw it.
- (2) FDD jack of EUT connects with a 3.5' floppy disk.
- (3) HDD jack of EUT connects with a hard disk.
- (4) Power port of backplane is connected with a power supply.
- (5) DIMM jack of EUT is connected with a 168pin SDRAM.
- (6) A Intel Celeron 366 CPU is plugged into the CPU socket of EUT.
- (7) Keyboard port of EUT is connected with a keyboard.
- (8) Serial A port of EUT is connected with a serial mouse.
- (9) Ethernet connector is connected with a RJ-45 cable left terminated.
- (10) Serial B port of EUT is connected with one external modem.
- (11) USB A port of EUT is connected with a USB joystick.
- (12) USB B port of EUT is connected with a USB mouse.
- (13) The VGA connector of EUT is connected with a monitor.
- (14) The printer port of EUT is connected with a printer.

### ***Test method:***

During the measurement, only the model: PCA-6770 was tested.

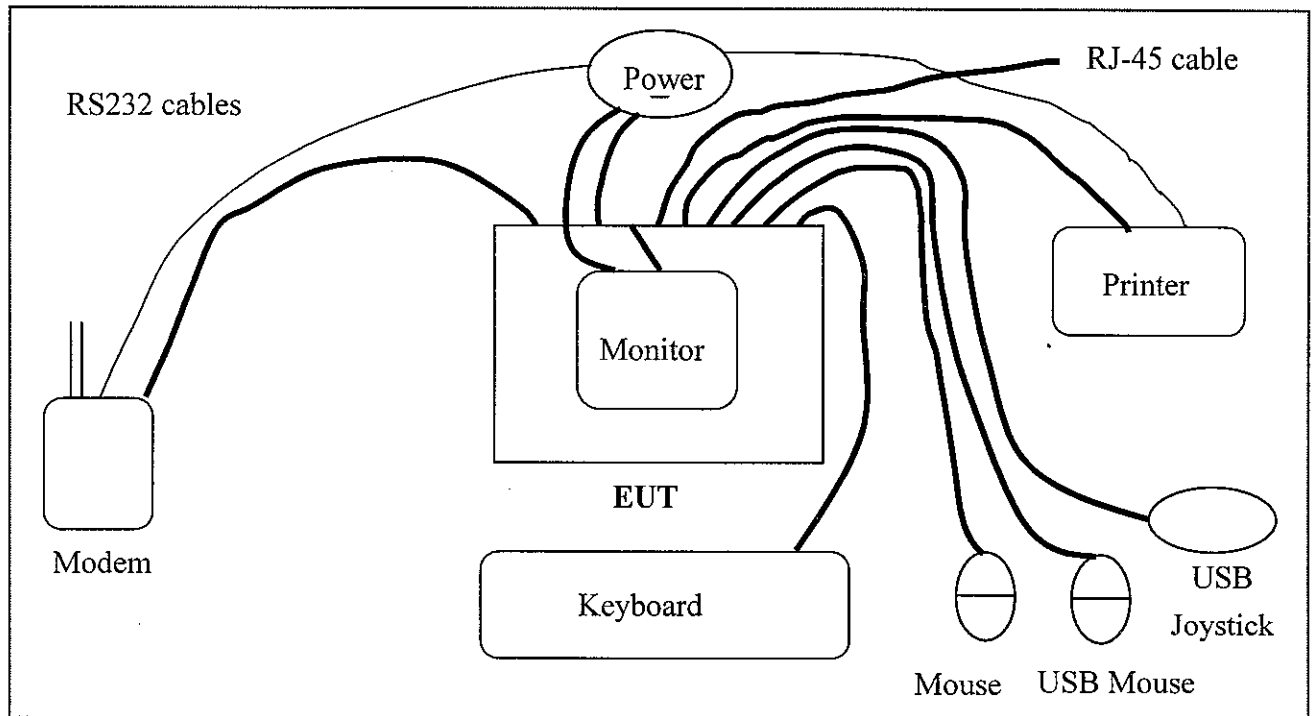
Pretest was found that the emission of operating mode is worse than standby mode. So, The final test is made at the operating mode.

While testing, the system board was operated by the software that applicant provides. The system sends " H " pattern to monitor and monitor display " H " pattern on screen. It also sends " H " pattern to two modems. This software will enable all functions.

The test placement as the photographs showed is the worst case emission placed. (If the emission is close to the ambient, the resolution BW and view resolution will be reduced and the data will be recorded by detection of maximum hold peak mode.)

***The testing configuration of test setup is showing in the next page.***

### Configuration of test setup



### Connections:

#### EUT:

- \* Serial B port --- via a 76 cm long, non-shielded, RS-232 cable to external modem.
- \* Printer port --- via a 1.2m long, non-shielded, no ferrite bead, printer cable to a printer
- \* Keyboard port --- a keyboard with 1m length data cable.
- \* Serial A port --- a mouse with 1m length data cable.
- \* Monitor port --- a monitor with 0.7m long data cable, with ferrite core.
- \* RJ-45 port --- a RJ-45 cable with 1m long, non-shielded, no ferrite core.
- \* USB A port --- the joystick with 1.7m long, shielded and no ferrite bead data cable
- \* USB B port --- the mouse with 1m long, shielded and no ferrite bead data cable
- \* Power port --- via a 1.8m long, non-shielded, no ferrite bead power cable to the AC power source.

(Each port on PC is connected with suitable device)

**List of support equipment:****Conducted (Radiated) test:**

**Monitor : CHUNTEX ELECTRONIC CO., LTD.**

Model No. : 1792UA

Serial No. : 0S0-84300157

FCC ID : DBL1792UA

Power type : 110VAC, Switching

Power cord : Non-Shielded, 3m long , no ferrite core

Data cable : Shielded, 1.8m long , with 2 ferrite cores

**Keyboard : HP**

Model No. : SK-2501K

Serial No. : M981236131 (M981216213)

FCC ID : GYUR38SK

檢磁 : 3862A621

Power type : By PC

Data cable : Shielded, 1.70m long, with ferrite core

**Printer : EPSON**

Model No. : P78PA (P70RA)

Serial No. : 0EE0014030 (10010386)

FCC ID : BKM9A8P70RA

Power type : Linear

Power cord : Non-shielded, 2m long, No ferrite core

Data cable : Shielded, 1.84m long, No ferrite core (1.7m)

**Modem** : **ACEEX 9624 External Fax / Modem**  
Model No. : XDM-9624  
Serial No. : N / A  
FCC ID : IFAXDM-9624  
Power Type : Linear  
Power Cord : Non-shielded, 5.5' long, Plastic hoods, and no ferrite bead  
Data Cable : RS-232→Shielded, 3' long, Metal hoods , No bead  
RJ-11C→Non-shielded, 7'long, Plastic hoods, No bead

**Mouse** : **HP**  
Model No. : M-S34  
Serial No. : LZC84446151 (LZB90910462)  
FCC ID : DZL211029  
檢磁 : 4862A011  
Power type : By PC  
Power cord : Non-shielded, 1.80m long, No ferrite core

**USB Joystick** : **Padix**  
Model No. : QF-305U, QF-307U, QF-606U, QF-707U (Doc Approval)  
Power type : Powered by PC  
Power Cable : Shielded, 1.5M long, No ferrite bead data cable

**USB Mouse** : **Chic Technology Corporation (Logitech)**  
Model No. : CM-USB (M-BA47)  
Serial No. : N/A (LZE92250027)  
FCC ID : IOWCM-USB (Doc Approved)  
Power type : Powered by PC  
Power Cable : Shielded. 1.8M long, Plastic hoods, No ferrite bead

**IPC case** : **Advantech**  
Model No. : IPC-610

**Backplane** : **Advantech**  
Serial No. : 1906610401



**F.D.D.** : **TEAC**  
Model No. : FD-235HF  
Serial No. : 0794968  
Power type : By PC  
Data cable : Non-shielded, 45cm long, with no ferrite core

**H.D.D.** : **Quantum**  
Model No. : Fireball  
Serial No. : 822611390950M  
Power type : By PC  
Data cable : Non-shielded, 45cm long, with no ferrite core

**Power Supply:** **SKYNET**  
Model No. : ADT-925C  
Serial No. : 3913879

## Chapter 2 Conducted emission test

### Test condition and setup:

All the equipment is placed and setup according to the EN 55022.

The EUT is assembled on a wooden table which is 80 cm high, is placed 40 cm from the back-wall which is a vertical conducting plane. One LISN is for EUT, the other LISN is for support equipment. They are all placed on the conductive ground. The EUT's LISN connect a line switch box for selecting L1 or L2, then connect to a preamplifier and spectrum.

The spectrum scans from 150KHz to 30MHz. Conducted emission levels are detected at max. peak mode. But if the max. peak mode failed or over average limit, it will be measured by average detection mode.

While testing, there is the worst-emission plot printed at peak detection mode, and there are more than 6 highest emissions relative to limit recorded. The plot is kept as the original data, not included in test report.

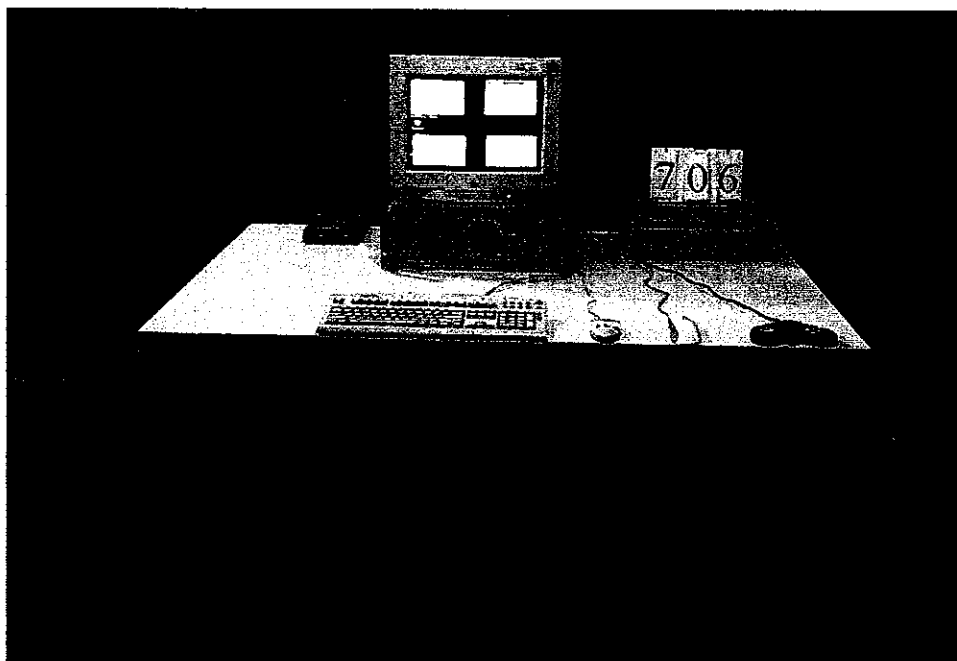
### List of test Instrument:

Instrument Name	Model No.	Brand	Serial No.	<u>Calibration Date</u>	
				Last time	Next time
Spectrum analyzer	8591EM	H P	3619A00821	10/29/98	10/29/99
LISN (EUT)	3825/2	EMCO	9411-2284	05/20/99	05/20/00
LISN (Support E.)	3825/2	EMCO	9210-2007	05/20/99	05/20/00
Preamplifier	8447F	H P	2944A03706	05/20/99	05/20/00
Line switch box	AC1-003	TRC	-----	05/20/99	05/20/00
Line selector	AC1-002	TRC	-----	05/20/99	05/20/00

The level of confidence of 95%, the uncertainty of measurement of conducted emission is  $\pm 2.4$  dB.

**Test Result: Pass (Appendix A)**

***Conducted Test Placement: (Photographs)***



### Chapter 3 Radiated emission test

#### Test condition and setup:

**Pretest:** Prior to the final test (OATS test), the EUT is placed in a shielded enclosure, and scan from 30MHz to 1GHz. This is done to ensure the radiation is exactly emitted from the EUT.

**Final test:** Final radiation measurement is made on a **10 – meter**, open-field test site. The EUT is placed on a nonconductive table that is 0.8m height, the top surface is 1.0 x 1.5 meter. The placement is according to EN 55022.

The spectrum is examined from 30 MHz to 1000 MHz measured by HP spectrum.

The M.E. whole range Antenna is used to measure frequency from 30 MHz to 1GHz. The final test is used the spectrum analyzer.

Measure more than six top marked frequencies generated form pretest by computer step by step at each frequency. The EUT is rotated 360 degrees, and antenna is raised and lowered from 1 to 4 meters to find the maximum emission levels. The antenna is used with both horizontal and vertical polarization.

Appropriated preamplifier which is made by TRC is used for improving sensitivity and precautions is taken to avoid overloading .The spectrum analyzer's 6dB bandwidth is set to 120 K Hz, and the EUT is measured at quasi-peak mode.

If the emission is close to the frequency band of ambient, the tester will recheck the data and the corrected data will be written in the test data sheet. If the emission is just within the ambient, the data from shielded room will be taken as the final data.

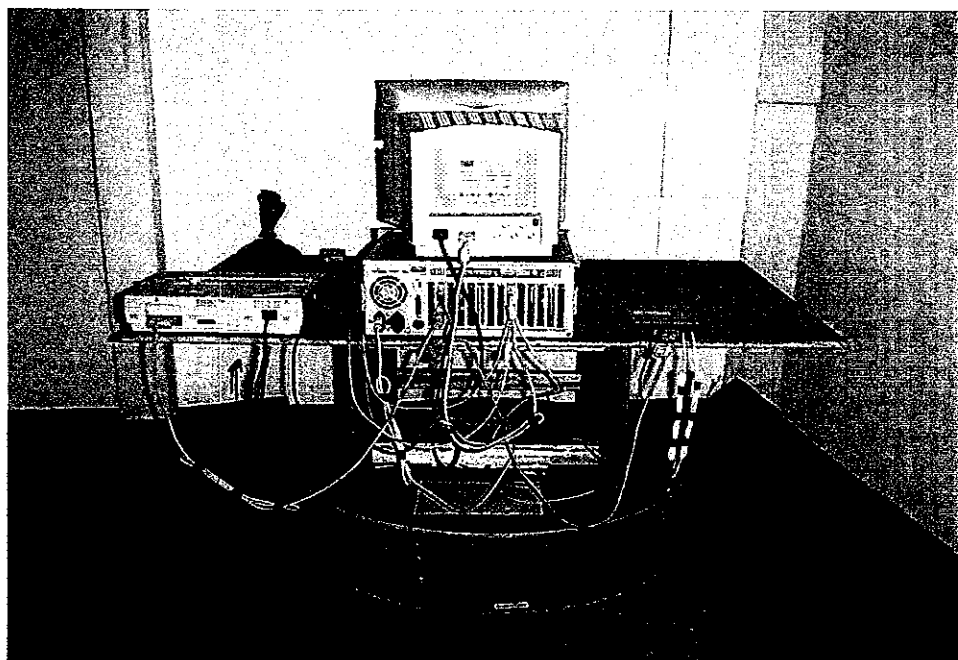
#### List of test Instrument:

Instrument name	Model No.	Brand	Serial No.	<u>Calibration Date</u>	
				Last	Next
Spectrum analyzer	8591EM	H P	3710A01203	01/29/99	01/29/00
Spectrum analyzer	8568B	H P	3004A18617	05/18/99	05/18/00
Quasi-peak Adapter	85650A	H P	2521A00984	05/18/99	05/18/00
RF Pre-selector	85685A	H P	2947A01011	05/18/99	05/18/00
Antenna (30M-1.5G Hz) VULB 9160	M.E.	3064		01/20/99	01/20/00
Open test side (Antenna, Amplify, cable calibrated together)				05/20/99	05/20/00

The level of confidence of 95%, the uncertainty of measurement of radiated emission is  $\pm 4.96$  dB.

#### Test Result: Pass (Appendix B)

***Radiated Test Placement: (Photographs)***



## Chapter 4 Radio Frequency Immunity Test (RS)

### Test information:

Test setup: According to IEC 1000-4-3 / ENV 50204

Test Frequency: ( X ) 80 ~ 1000 MHz

( ) 27 ~ 500 MHz Without Modulation

Modulation: ( ) FM %

( X ) 80% AM Modulation with 1KHz

( X ) 900 MHz  $\pm$  5 MHz with PM 200 Hz and 50% duty cycle

Step size: (X)  $\leq$  1% step size

Sweep time: (X) 2.5 Second

Field strength: ( ) 1V/m (X) 3V/m ( ) 10V/m

Test mode: Ref. Test method of Chapter 1

Test instruments:

Name	Model Number	Serial Number	Selected
EMCO GTEM	5317	9411-1123	X
EMCO Probe	7122	9406-1194	X
EMCO METERING UNIT	7122	9406-1194	X
EMCO data interface	7110	9410-1273	X
HP Personal Computer	D3178A	3438S00486	X
HP Signal Generator	8657B	2928U00286	X
IFI Wideband Amplifier	SMX50	467-0795	X

Comment:

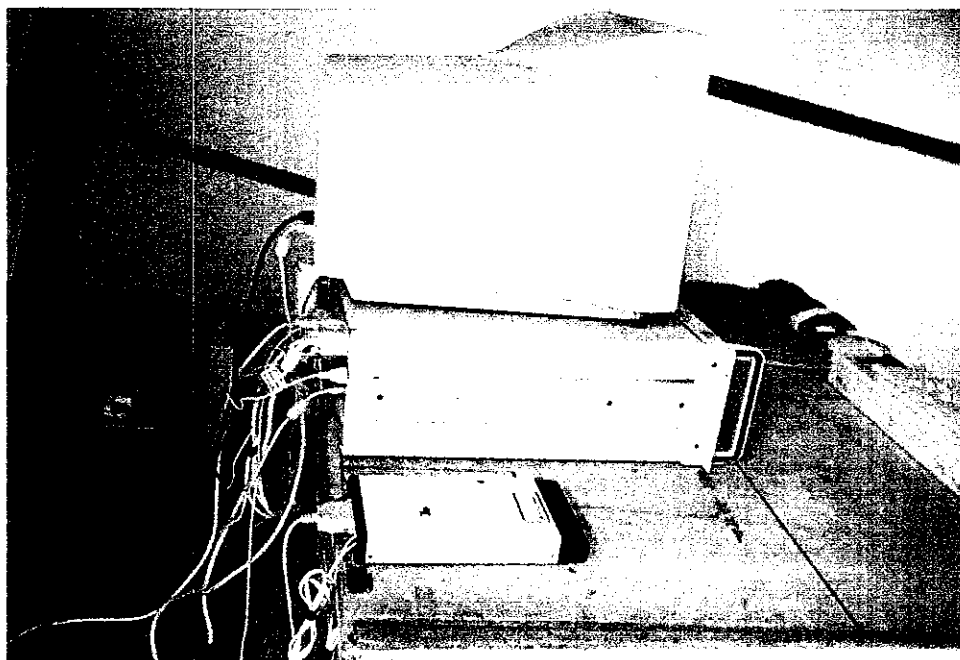
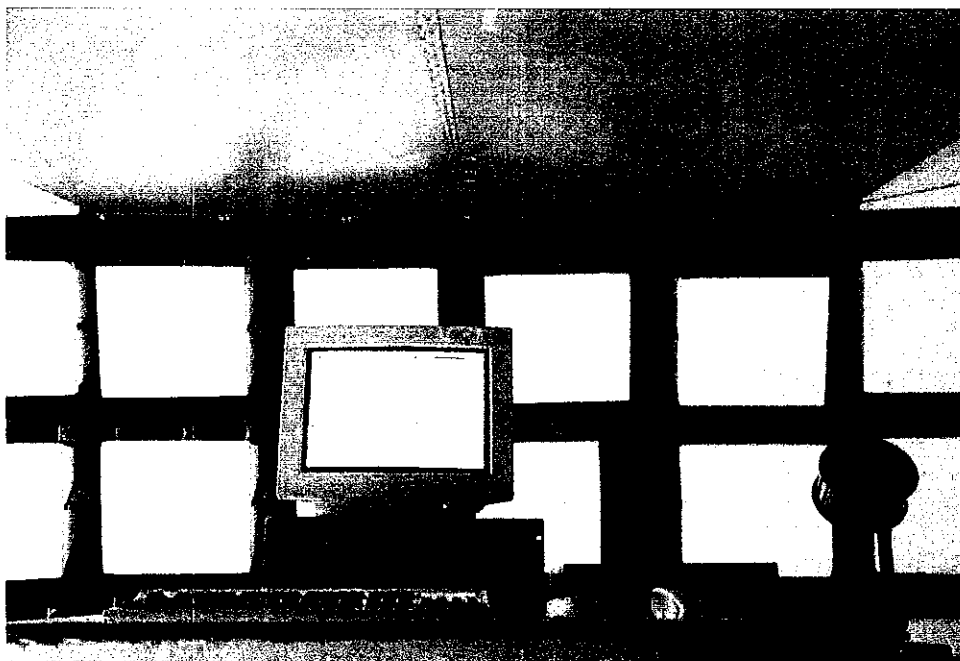
Performance Criteria ( X ) A ( ) B ( ) C

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**IEC 1000-4-3/ ENV 50204 PHOTO OF TEST SET-UP**



**Chapter 5 Electric Fast Transient/Burst Requirements Test****Test information:**

Test setup: According to IEC 1000-4-4

Test Voltage: DC Power line ( ) 0.5 KV, 5 KH

AC Power line (X) 1 KV, 5 KHz

Signal &amp; Control line ( ) 0.5 KV, 5 KHz

( ) 1 KV, 5 KHz

Polarity: (X) Positive (X) Negative

Test Duration: ( X ) 1 minute ( ) 3 minutes

Connected lines: ( ) Power line shielded (X) Power line nonshielded

( ) Signal &amp; Control line nonshielded ( ) Signal &amp; Control line shielded

Test mode: Ref. Test method of Chapter 1.

Test instrument:

Name	Model Number	Serial Number	Selected
Best Plus BURST ESD SURGE TRANSIENTS	Best Plus V6.2	199749-019SC	X

Comment:

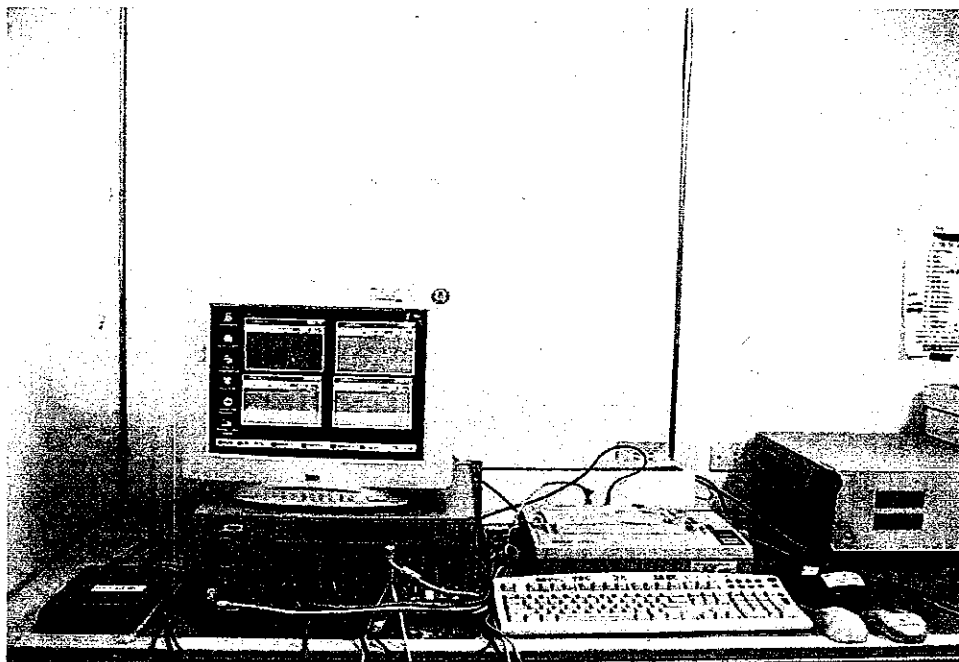
Performance Criteria ( ) A (X) B ( ) C

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**IEC 1000-4-4 PHOTO OF TEST SET-UP**



## Chapter 6 Electrostatic Discharges Immunity Test

### Test information:

Test setup: According to IEC 1000-4-2

Test Voltage: (X) 4KV contact discharge

(X) 8KV air discharge

Indirect Discharges: (X) HCP

(X) VCP

Polarity: (X) positive (X) negative

Test mode: Ref. Test method of Chapter 1

Test points: Each port of EUT, Case and Screw.

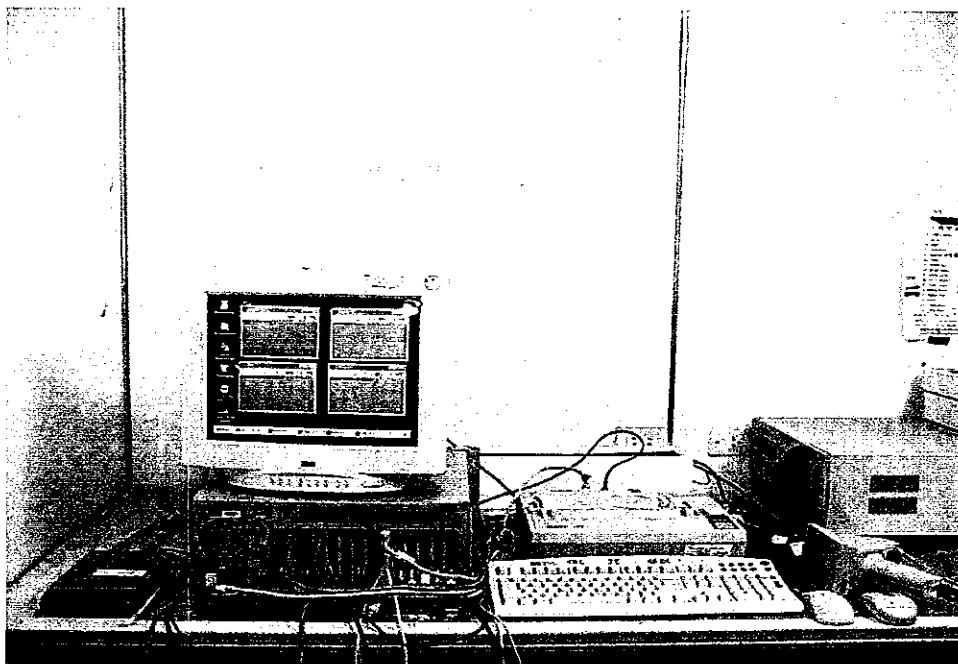
### Test instruments:

Name	Model Number	Serial Number	Selected
Best Plus BURST ESD SURGE TRANSIENTS	Best Plus V6.2	199749-019SC	X

### Comment:

Performance Criteria ( ) A (X) B ( ) C

**IEC 1000-4-2 PHOTO OF TEST SET-UP**



## Chapter 7 Surge Immunity Test

### Test information:

Test setup: According to IEC 1000-4-5

Test Voltage: DC Power line ( ) 0.5 KV

AC Power line (X) 1 KV

Control line ( ) 0.5 KV

Signal ( ) 1 KV

Time : ( X ) 1.2/50 $\mu$ s (8/20 $\mu$ s)

Polarity: (X) Positive (X) Negative

Connected lines: ( ) Power line shielded (X) Power line nonshielded

( ) Signal & Control line nonshielded ( ) Signal & Control line shielded

Test mode: Ref. Test method of Chapter 1.

Test instrument:

Name	Model Number	Serial Number	Selected
BEST EMC Test Instrument	BEST EMC V2.3 (-8, -9)	199918-006SC	X
Induction Coil	INA 701 BEST	199922-001SC	X

Comment:

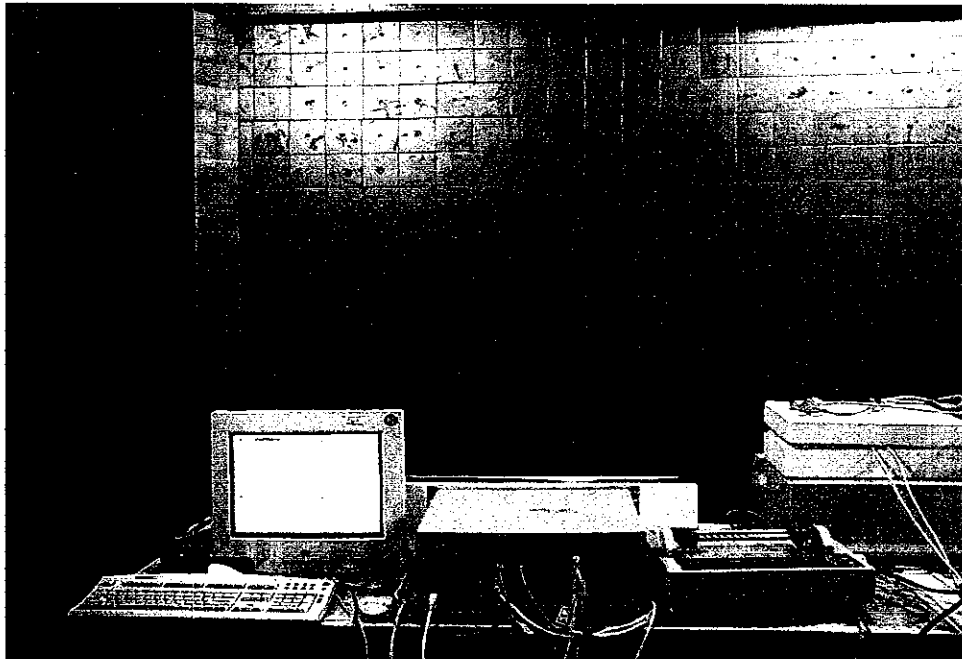
Performance Criteria ( ) A (X) B ( ) C

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**IEC 1000-4-5 PHOTO OF TEST SET-UP**



## Chapter 8 Continuous Wave Voltage Immunity Test

### Test information:

Test setup: According to EN 61000-4-6

Test Frequency: ( X ) 0.15 ~ 80MHz

Modulation:     ( ) FM     %  
                  ( X ) 80% AM Modulation with 1KHz  
                  ( ) 900 MHz  $\pm$  5 MHz with PM 200 Hz and 50% duty cycle

Step size:        (X)  $\leq$  1% step size

Field strength:    ( ) 1V/m        ( X ) 3V/m        ( ) 10V/m

Test mode: Ref. Test method of Chapter 1

Test instruments:

Name	Model Number	Serial Number	Selected
Signal Generator	HP 8648A	3531	X
Amplifier	ComTest	Switch sub-system	X
CDN	3pin	N/A	X

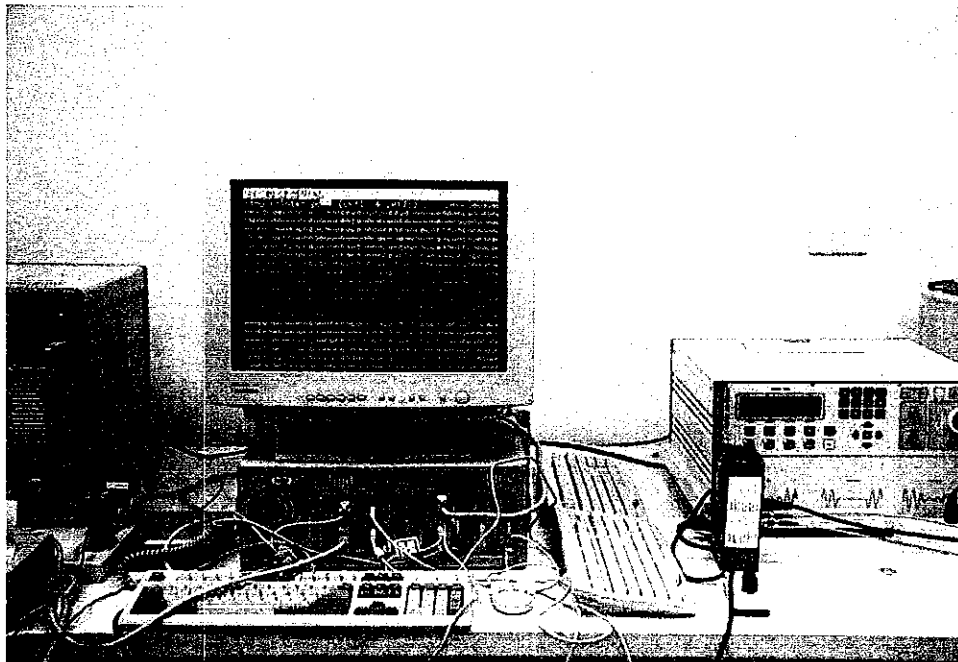
Comment:

Performance Criteria    (X) A    ( ) B    ( ) C

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## **IEC 1000-4-6 PHOTO OF TEST SET-UP**



## Chapter 9 Power Frequency Magnetic Field Immunity Test

### Test information:

Test setup: According to IEC 1000-4-8

Test method : ( X ) Continuous ( ) Short duration

Magnetic Field Strength: ( X ) 3A/m

Frequency: 50Hz

polarization: ( X ) X polarization ( X ) Y polarization ( X ) Z polarization

Test mode: Ref. Test method of Chapter 1

Test Duration: ( X ) 30 seconds ( ) 1~3 seconds

Connected lines: ( ) Power line shielded ( X ) Power line non-shielded

( ) Signal & Control line non-shielded ( ) Signal & Control line shielded

**\*\* Power Frequency Magnetic Field in the horizontal and vertical polarity.\*\***

Test instruments:

Name	Model Number	Serial Number	Selected
BEST EMC Test Instrument	BEST EMC V2.3 (-8, -9)	199918-006SC	X
Induction Coil	INA 701 BEST	199922-001SC	X

Comment:

Performance Criteria ( X ) A ( ) B ( ) C

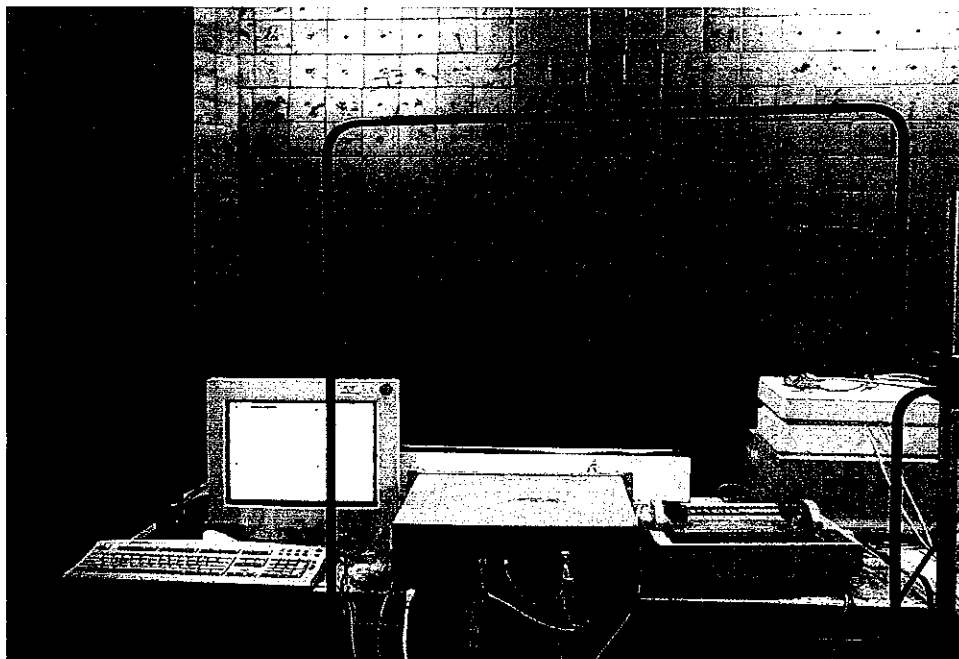
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**IEC 1000-4-8 PHOTO OF TEST SET-UP**



## **Chapter 10 Voltage DIP / Interruption Test**

**Test information:**

Test setup: According to IEC 1000-4-11

Voltage Reduction / Duration:    ( X ) 100 %, 0.5  
                                                       ( X ) 60%, 10  
                                                       ( X ) 30%, 50

Test mode: Ref. Test method of Chapter 1

Test instruments:

Name	Model Number	Serial Number	Selected
BEST EMC Test Instrument	BEST EMC V2.3 (-8, -9)	199918-006SC	X
Induction Coil	INA 701 BEST	199922-001SC	X

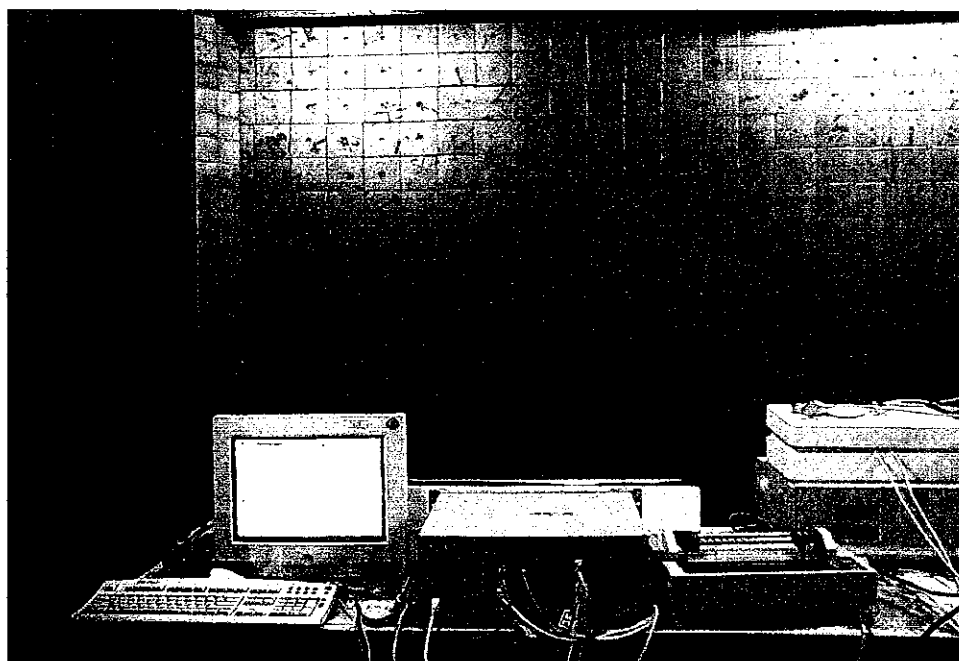
Comment:

Performance Criteria: (1) 100% → ( ) A    ( ) B    ( X ) C

(2) 60% → ( ) A    ( X ) B    ( ) C

(3) 30% → ( ) A    ( X ) B    ( ) C

**IEC 1000-4-11 PHOTO OF TEST SET-UP**



## ***Chapter 11 Harmonics Test***

### **Test information:**

Test setup: According to EN 61000-2-2

Test Item: Quasi – stationary & Fluctuating Current Harmonics Test.

Test mode: Ref. Test method of Chapter 1

Test instrument:

Name	Model Number	Serial Number	Selected
Harmonic/Flicker Test System	HP 6842A	3531A-00102	×

Test Equipment Settings:	Quasi-stationary Current Harmonics Test	Fluctuating Current Harmonics Test
Line Voltage	230VAC	230VAC
Line Frequency	50Hz	50Hz
Device Class	D	D
Test Limit Overrides	None	None
Total Number of Failures:	None	None
Total Number of Errors:	None	None

Test Result: PASS

## ***Chapter 12 Voltage Fluctuation and Flicker Test***

**Test information:**

Test setup: According to EN 61000-2-3

Test mode: Ref. Test method of Chapter 1

Test instrument:

Name	Model Number	Serial Number	Selected
Harmonic/Flicker Test System	HP 6842A	3531A-00102	×

Test Equipment Settings:	
Line Voltage	230VAC
Line Frequency	50Hz
Test Limit Overrides	None
Total Number of Failures:	Pst: (0), Plt: (0)
	Dc: (0), Dmax (0), Dt (0)
Total Number of Errors:	None

Test Result: PASS

**Appendix A****Conducted Emission Test Result - 640 X480:**

Testing room : Temperature : 23 ° C Humidity : 63 % RH

**Line 1**

FREQUENCY ( KHz)	READING AMPLITUDE			LIMIT		MARGIN ( dB )
	Peak (dB $\mu$ V/m)	Quasi-peak (dB $\mu$ V/m)	Average (dB $\mu$ V/m)	Quasi-Peak (dB $\mu$ V/m)	Average (dB $\mu$ V/m)	
155.00	48.96	***.***	***.***	79.00	66.00	-17.04
163.00	47.54	***.***	***.***	79.00	66.00	-18.46
172.00	46.09	***.***	***.***	79.00	66.00	-19.91
184.00	46.20	***.***	***.***	79.00	66.00	-19.80
190.00	44.44	***.***	***.***	79.00	66.00	-21.56
202.00	42.57	***.***	***.***	79.00	66.00	-23.43
211.00	41.53	***.***	***.***	79.00	66.00	-24.47
220.00	40.80	***.***	***.***	79.00	66.00	-25.20
1307.00	34.27	***.***	***.***	73.00	60.00	-25.73
2040.00	34.77	***.***	***.***	73.00	60.00	-25.23

**Line 2**

FREQUENCY ( KHz)	READING AMPLITUDE			LIMIT		MARGIN ( dB )
	Peak (dB $\mu$ V/m)	Quasi-peak (dB $\mu$ V/m)	Average (dB $\mu$ V/m)	Quasi-Peak (dB $\mu$ V/m)	Average (dB $\mu$ V/m)	
151.00	49.62	***.***	***.***	79.00	66.00	-16.38
159.00	47.67	***.***	***.***	79.00	66.00	-18.33
163.00	47.54	***.***	***.***	79.00	66.00	-18.46
170.00	47.20	***.***	***.***	79.00	66.00	-18.80
175.00	46.51	***.***	***.***	79.00	66.00	-19.49
186.00	47.77	***.***	***.***	79.00	66.00	-18.23
196.00	43.61	***.***	***.***	79.00	66.00	-22.39
203.00	43.60	***.***	***.***	79.00	66.00	-22.40
209.00	42.08	***.***	***.***	79.00	66.00	-23.92
215.00	41.63	***.***	***.***	79.00	66.00	-24.37

\* The reading amplitudes are all under average limit.

**Conducted Emission Test Result - 1024 × 768:**

Testing room : Temperature : 23 ° C Humidity : 63 % RH

**Line 1**

FREQUENCY ( KHz)	READING AMPLITUDE			LIMIT		MARGIN ( dB )
	Peak (dBμV/m)	Quasi-peak (dBμV/m)	Average (dBμV/m)	Quasi-Peak (dBμV/m)	Average (dBμV/m)	
154.00	48.23	***.***	***.***	79.00	66.00	-17.77
162.00	47.90	***.***	***.***	79.00	66.00	-18.10
167.00	46.69	***.***	***.***	79.00	66.00	-19.31
171.00	46.81	***.***	***.***	79.00	66.00	-19.19
178.00	46.01	***.***	***.***	79.00	66.00	-19.99
184.00	46.32	***.***	***.***	79.00	66.00	-19.68
190.00	45.42	***.***	***.***	79.00	66.00	-20.58
196.00	44.24	***.***	***.***	79.00	66.00	-21.76
203.00	42.56	***.***	***.***	79.00	66.00	-23.44
215.00	41.53	***.***	***.***	79.00	66.00	-24.47

**Line 2**

FREQUENCY ( KHz)	READING AMPLITUDE			LIMIT		MARGIN ( dB )
	Peak (dBμV/m)	Quasi-peak (dBμV/m)	Average (dBμV/m)	Quasi-Peak (dBμV/m)	Average (dBμV/m)	
154.00	49.31	***.***	***.***	79.00	66.00	-16.69
163.00	46.41	***.***	***.***	79.00	66.00	-19.59
166.00	47.44	***.***	***.***	79.00	66.00	-18.56
174.00	47.04	***.***	***.***	79.00	66.00	-18.96
180.00	45.07	***.***	***.***	79.00	66.00	-20.93
185.00	48.40	***.***	***.***	79.00	66.00	-17.60
190.00	45.18	***.***	***.***	79.00	66.00	-20.82
197.00	43.97	***.***	***.***	79.00	66.00	-22.03
212.00	42.33	***.***	***.***	79.00	66.00	-23.67
223.00	42.20	***.***	***.***	79.00	66.00	-23.80

\* The reading amplitudes are all under average limit.

**Conducted Emission Test Result - 1600 X1200:**

Testing room : Temperature : 23 ° C Humidity : 63 % RH

**Line 1**

FREQUENCY ( KHz)	READING AMPLITUDE			LIMIT		MARGIN ( dB )
	Peak (dBμV/m)	Quasi-peak (dBμV/m)	Average (dBμV/m)	Quasi-Peak (dBμV/m)	Average (dBμV/m)	
152.00	50.18	***.***	***.***	79.00	66.00	-15.82
156.00	49.25	***.***	***.***	79.00	66.00	-16.75
170.00	47.23	***.***	***.***	79.00	66.00	-18.77
181.00	45.29	***.***	***.***	79.00	66.00	-20.71
186.00	46.08	***.***	***.***	79.00	66.00	-19.92
191.00	42.99	***.***	***.***	79.00	66.00	-23.01
197.00	43.67	***.***	***.***	79.00	66.00	-22.33
203.00	42.88	***.***	***.***	79.00	66.00	-23.12
208.00	42.70	***.***	***.***	79.00	66.00	-23.30
219.00	41.97	***.***	***.***	79.00	66.00	-24.03

**Line 2**

FREQUENCY ( KHz)	READING AMPLITUDE			LIMIT		MARGIN ( dB )
	Peak (dBμV/m)	Quasi-peak (dBμV/m)	Average (dBμV/m)	Quasi-Peak (dBμV/m)	Average (dBμV/m)	
151.00	49.45	***.***	***.***	79.00	66.00	-16.55
159.00	48.39	***.***	***.***	79.00	66.00	-17.61
167.00	47.34	***.***	***.***	79.00	66.00	-18.66
175.00	45.24	***.***	***.***	79.00	66.00	-20.76
183.00	46.61	***.***	***.***	79.00	66.00	-19.39
191.00	46.17	***.***	***.***	79.00	66.00	-19.83
195.00	43.83	***.***	***.***	79.00	66.00	-22.17
206.00	42.50	***.***	***.***	79.00	66.00	-23.50
211.00	41.55	***.***	***.***	79.00	66.00	-24.45
223.00	41.14	***.***	***.***	79.00	66.00	-24.86

\* The reading amplitudes are all under average limit.



## Appendix B

### Radiated Emission Test Result: (Horizontal) – 480 × 648

Test Conditions:

Testing room : Temperature : 28 ° C Humidity : 70 % RH

Testing site : Temperature : 32 ° C Humidity : 81 % RH

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class A limit	Margin
MHz	dBμV	m	degree	dB/m	dBμV /m	dBμV/m	dB

300.679	31.80	4.00	12	-7.97	23.83	47.00	-23.17
312.055	29.50	2.57	283	-7.52	21.98	47.00	-25.02
319.993	33.00	4.00	257	-7.20	25.80	47.00	-21.20
336.055	34.60	2.57	286	-6.37	28.23	47.00	-18.77
399.008	26.00	4.00	324	-4.10	21.90	47.00	-25.10
453.851	30.90	2.57	310	-2.48	28.42	47.00	-18.58
528.098	29.40	1.00	274	-0.08	29.32	47.00	-17.68
***							

Note:

1. Margin = Amplitude - limit, *if margin is minus means under limit.*

2. Corrected Amplitude = Reading Amplitude + Correction Factors

3. Correction factor = Antenna factor + ( Cable Loss - Amplitude gain)

(For example: 30MHz correction factor = 15.5 + (-15.26) = 0.24 dB/m)

**Radiated Emission Test Result: (Vertical)**

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class A limit	Margin
MHz	dB $\mu$ V	m	degree	dB/m	dB $\mu$ V /m	dB $\mu$ V/m	dB

66.823	41.80	2.57	218	-17.01	24.79	40.00	-15.21
71.594	37.00	1.00	171	-17.24	19.76	40.00	-20.24
167.050	37.00	1.00	174	-13.75	23.25	40.00	-16.75
264.048	32.40	1.00	160	-9.47	22.93	47.00	-24.07
290.437	28.10	1.00	1338	-8.27	19.83	47.00	-27.17
299.995	31.10	1.00	161	-8.00	23.10	47.00	-23.90
312.054	29.90	1.00	145	-7.52	22.38	47.00	-24.62
319.995	35.50	1.00	35	-7.20	28.30	47.00	-18.70
384.995	25.20	1.00	296	-4.11	21.09	47.00	-25.91
400.000	30.60	1.00	147	-4.10	26.50	47.00	-20.50
***							

***Radiated Emission Test Result: (Horizontal) – 1024 × 768***

Test Conditions:

Testing room : Temperature : 28 ° C Humidity : 69 % RH

Testing site : Temperature : 33 ° C Humidity : 82 % RH

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class A limit	Margin
MHz	dBμV	m	degree	dB/m	dBμV /m	dBμV/m	dB

267.270	29.00	4.00	22	-9.34	19.66	47.00	-27.34
300.680	32.20	4.00	0	-7.97	24.23	47.00	-22.77
319.990	32.90	4.00	260	-7.20	25.70	47.00	-21.30
334.090	32.60	4.00	79	-6.44	26.16	47.00	-20.84
391.500	27.30	2.57	65	-4.13	23.17	47.00	-23.83
441.970	28.30	2.57	267	-2.92	25.38	47.00	-21.62
466.660	26.00	4.00	334	-1.77	24.23	47.00	-22.77
492.480	26.10	2.57	59	-1.18	24.92	47.00	-22.08
528.090	30.20	1.00	301	-0.08	30.12	47.00	-16.88
***							

Note:

4. Margin = Amplitude - limit, *if margin is minus means under limit.*

5. Corrected Amplitude = Reading Amplitude + Correction Factors

6. Correction factor = Antenna factor + ( Cable Loss - Amplitude gain)

(For example : 30MHz correction factor = 15.5 + (-15.26) = 0.24 dB/m)

**Radiated Emission Test Result: (Vertical)**

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class A limit	Margin
MHz	dB $\mu$ V	m	degree	dB/m	dB $\mu$ V /m	dB $\mu$ V/m	dB

59.250	39.30	2.56	231	-16.24	23.06	40.00	-16.94
64.010	35.70	1.00	0	-16.76	18.94	40.00	-21.06
66.820	42.50	2.56	203	-17.01	25.49	40.00	-14.51
72.010	34.60	2.56	222	-17.22	17.38	40.00	-22.62
144.360	37.50	1.00	123	-14.99	22.51	40.00	-17.49
240.040	30.10	4.00	207	-10.30	19.80	47.00	-27.20
264.040	32.20	1.00	160	-9.47	22.73	47.00	-24.27
290.410	27.60	2.56	180	-8.27	19.33	47.00	-27.67
320.000	35.60	2.56	287	-7.20	28.40	47.00	-18.60
***							

**Radiated Emission Test Result: (Horizontal) – 1280 × 1024**

Test Conditions:

Testing room : Temperature : 28 ° C Humidity : 70 % RH

Testing site : Temperature : 33 ° C Humidity : 80 % RH

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class A limit	Margin
MHz	dB $\mu$ V	m	degree	dB/m	dB $\mu$ V /m	dB $\mu$ V/m	dB

290.400	33.80	4.00	290	-8.27	25.53	47.00	-21.47
320.000	33.00	4.00	68	-7.20	25.80	47.00	-21.20
333.880	32.30	4.00	254	-6.45	25.85	47.00	-21.15
391.500	28.00	2.57	64	-4.13	23.87	47.00	-23.13
441.940	27.10	2.57	264	-2.93	24.17	47.00	-22.83
466.660	25.90	2.57	27	-1.77	24.13	47.00	-22.87
504.080	26.90	4.00	320	-0.88	26.02	47.00	-20.98
528.090	30.50	2.57	24	-0.08	30.42	47.00	-16.58
***							

Note:

7. Margin = Amplitude - limit, *if margin is minus means under limit.*

8. Corrected Amplitude = Reading Amplitude + Correction Factors

9. Correction factor = Antenna factor + ( Cable Loss - Amplitude gain)

(For example : 30MHz correction factor = 15.5 + (-15.26) = 0.24 dB/m)

***Radiated Emission Test Result: (Vertical)***

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class A limit	Margin
MHz	dB $\mu$ V	m	degree	dB/m	dB $\mu$ V /m	dB $\mu$ V/m	dB

64.000	36.70	2.57	0	-16.76	19.94	40.00	-20.06
66.820	42.30	2.57	229	-17.01	25.29	40.00	-14.71
133.640	41.00	1.00	276	-15.94	25.06	40.00	-14.94
144.020	32.10	2.57	53	-15.02	17.08	40.00	-22.92
167.050	35.10	1.00	276	-13.75	21.35	40.00	-18.65
240.040	36.80	1.00	297	-10.30	26.50	47.00	-20.50
267.270	38.40	1.00	175	-9.34	29.06	47.00	-17.94
290.430	39.70	1.00	182	-8.27	31.43	47.00	-15.57
300.000	40.20	1.00	292	-8.00	32.20	47.00	-14.80
320.000	36.50	1.00	40	-7.20	29.30	47.00	-17.70

*Appendix C*

*Photographs of EUT*

