Declaration of Conformity

Best Laboratory Co., Ltd.

No. 336, Ba Lian RD., Sec. 1, Hsi Chih City, Taipei Hsien, Taiwan, R.O.C.
Telephone: 886-2-2646-2899 Facsimile: 886-2-2646-2870

Hereby That

Applicant : Advantech Co., Ltd.
Address : Fl.4, No. 108-3, Ming-Chuan Road,
Shing-Tien City, Taipei, Taiwan, R.O.C.
Equipment : Industrial PC
Model : IPC-610

Has fully complied with the requirements of FCC Part 15 Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

The result of electromagnetic emission has been evaluated by Best Laboratory Co., Ltd. and shown in the test report.

It is understood that each unit marketed is identical to the device as tested and any changes to the device that could adversely affect the emission characteristics will be requested retest.

The date of the measurement: Mar. 04, 2002
The date of the Declaration of Conformity sighed: Aug. 20, 2002
The number of this Declaration of Conformity: CER-A01-FC-837

Test Laboratory

Aug. 20, 2002

Quality Department Manager: Jeff Chiu

NVLAP CODE: 200484-0
The file number of the open area test site of Best Laboratory listed on FCC is 97341

FC FC FC FC FC FC FC

This DoC is based on a single evaluation of one sample of above-mentioned products. It does not imply any assessment of the whole production and does not permit the use of the logo of the test laboratory.

FCC PART 15
TEST REPORT

Applicant : Advantech Co., Ltd.
Equipment : Industrial PC
Model : IPC-610

Contain

Exhibit A
LABEL

Size of Label

Long x Wide = 5.0 cm x 2.5 cm

Trade Name **Model Number**

Tested To Comply With FCC Standards

For Home or Office Use

Position of Label

Exhibit B
Test Report

Test Report Certification

Best Laboratory Co., Ltd.

No. 336, Ba Lian Rd., Sec. 1, Hsi Chih City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2646-2899 Fax: 886-2-2646-2870

Applicant	: Advantech Co., Ltd.
Address	: Fl.4, No. 108-3, Ming-Chuan Road, Shing-Tien City, Taipei, Taiwan, R.O.C.
Equipment	: Industrial PC
Model	: IPC-610
Device's Class	: Class B Device
Measurement Standard	: FCC Part 15.109(g)
Measurement Procedure	: CISPR 22: 1997
Operating Voltage	: 120VAC, 60Hz
Test Result	: **Compliance** (Detail showed in the test report)
Sample Received	: Feb. 20, 2002
Test Date	: Mar. 04, 2002
Report Number	: RE-A01-FC-837
Test Firm	: No. 336, Ba Lian Rd., Sec. 1, Hsi Chih City, Taipei Hsien, Taiwan, R.O.C.

Remark:

(1) The test report is only relating to the sample tested

(2) The test report shall not be reproduced except in full, without the written approval of Best Laboratory Co., Ltd.

Prepared : _____
IVAN HSIEH

Approved : _____ (Title: Quality Department Manager)
JEFF CHIU

Date Issued : Aug. 20, 2002

Contain

1. General Information

1.1 EUT Description

Applicant : Advantech Co., Ltd.

Address : Fl.4, No. 108-3, Ming-Chuan Road,
Shing-Tien City, Taipei, Taiwan, R.O.C.

Equipment : Industrial PC

Model : IPC-610

Device's Class : Class B Device

Operation Voltage : 120VAC, 60Hz

Output Ports :

Monitor Port : Connected with one monitor which data cable is 1.8 meters long, shielded, with ferrite core.

USB Ports : The two USB ports are each connected with one USB mouse which data cable is 120 cm long, shielded, no ferrite bead.

Serial#1 Port : Serial#1 port is connected with one external modem, via one RS-232 cable which data cable is 180cm long, non-shielded, no ferrite bead.

Serial#2 Port : Serial#2 port is connected with connected with one RS-232 cable, 3 meters long, non-shielded, no ferrite bead.

Parallel Port : Connected with one printer with data cable is 1.8 meters long, shielded, no ferrite bead.

LAN#1 Port : Via one RJ-45 cable, 30 meters long, non-shielded, no ferrite bead, to the far-end HUB.

LAN#2, #3 Port : The other ports are each connected with a 30 meters long, non-shielded, no ferrite bead, RJ-45 cable, to the far-end PC.

PS/2 Port : Connected with one PS/2 keyboard and PS/2 mouse which length is 120 cm long, non-shielded, no ferrite bead, via a Y data cable which length is 30 cm long, non-shielded, no ferrite bead.

Power Port : Via a 180 cm long, non-shielded, with ferrite bead, power cable to the AC power source.

1.2 Test System Detail

Monitor : HITACHI
Model No. : CM771U
Serial No. : V0E001074
FCC ID : DoC Approval
BSMI : 3882A707
Power Type : 100-240VAC, 50/60Hz, 1.5A, Switching
Power Cord : 180cm long, non-shielded, no ferrite bead.
Data Cable : 120cm long, shielded, with ferrite bead
Backshell : Metal
Connected Port : VGA Port

Keyboard : Logitec
Model No. : SK-720
Serial No. : N/A
FCC ID : GYUR49SK
BSMI : 3872A806
Power Type : By PC
Data Cable : 180cm long, shielded, no ferrite bead
Backshell : Metal
Connected Port : PS/2 Keyboard Port

Mouse : Logitech
Model No : M-S48a
Serial No. : N/A
FCC ID : JNZ201213
BSMI : 4882A001
Power Type : By PC
Data Cable : 120cm long, non-shielded, no ferrite bead
Backshell : Metal
Connected Port : PS/2 Mouse Port

Modem : ACEEX
Model No. : XDM-9624
Serial No. : 0017884
FCC ID : IFAXDM-9624
Power Type : 120VAC, 60Hz / 9VAC, 1A
Power Core : 1.9meters long, non-shielded, no ferrite bead
Data Cable : RS-232, shielded, 1.2meters long, no ferrite bead
RJ11C x 2, 7’ long, non-shielded, no ferrite bead
Backshell : Metal
Connected Port : Serial Port.

Printer : Acps
Model No. : MD-1000
Serial No. : BW9Y100928
FCC ID : DoC approved
BSMI : 3812P082
Power Type : 120VAC, 60Hz, 0.4A
Power Cord : 165cm long, non-shielded, no ferrite bead
Data Cable : 120cm long, shielded, no ferrite bead
Backshell : Metal
Connected Port : Parall Port

Case : Advantech
Model No. : IPC-610
Power Cord : 180cm long, non-shielded, no ferrite bead.

Hard disk driver : Seagate
Model No. : ST33221A
Serial No. : VTE70863
FCC ID : DoC Approval
Power Type : 115/230VAC, 60/50Hz, 7/4A, Switching
Power Cord : 26cm long, non-shielded, no ferrite bead.

Floppy disk driver : TEAC
Model No. : FD-235HF
Serial No. : 7031705
FCC ID : DoC Approval
BSMI : 3892A889
Power Type : 115/230VAC, 60/50Hz, 7/4A, Switching
Power Cord : 26cm long, non-shielded, no ferrite bead.

CPU : VIA
Model No. : Cyrix III 533MHz

RAM : Armas
Model No. : DTN133 64MB
Serial No. : 010800567

CPU Board : Advantech
Model No. : PCA-6772
Serial No. : 1906677200

Back Plane : Advantech
Model No. : PCA-6114P4
Serial No. : 96383393

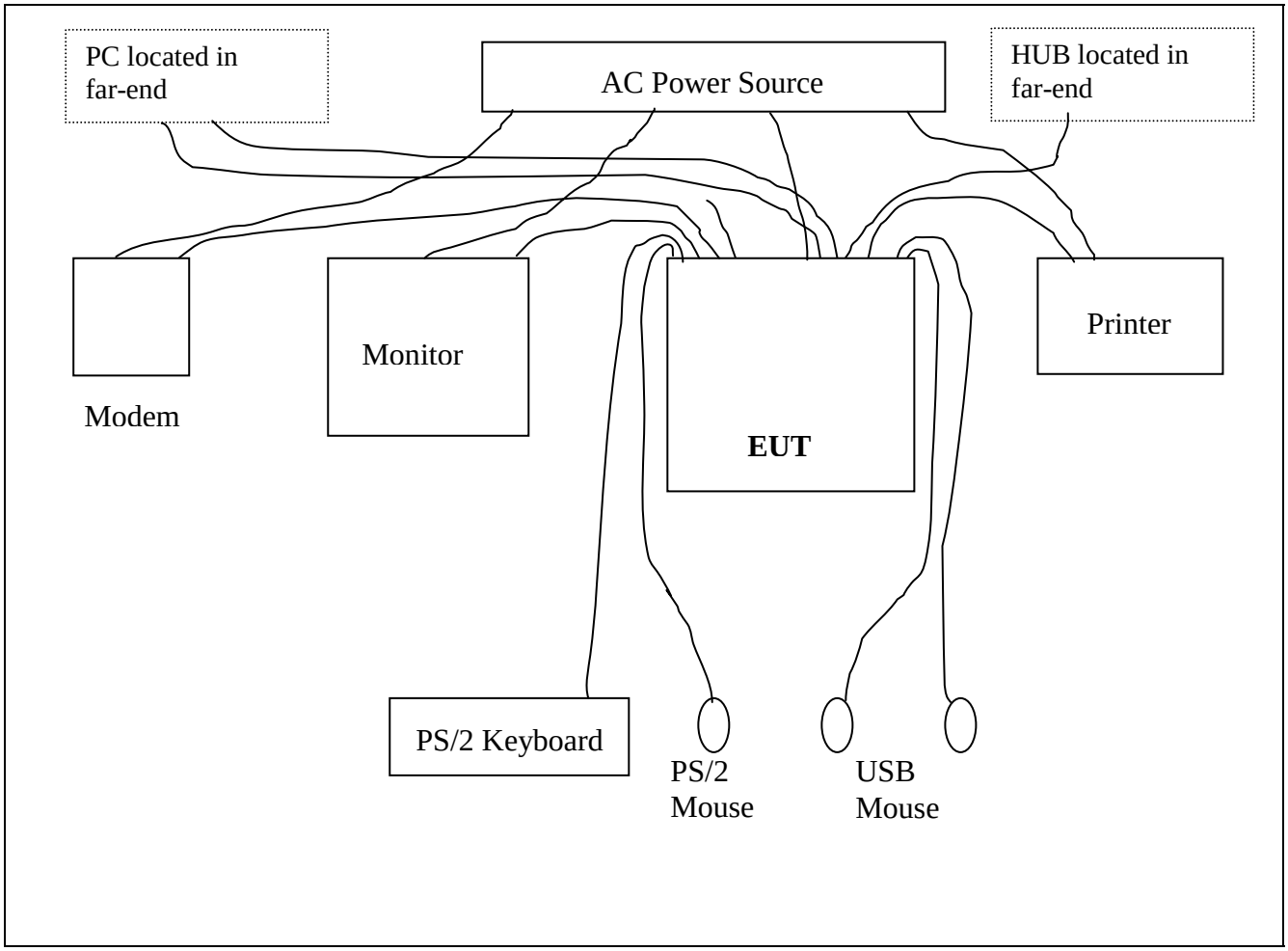
Power : Seasonic
Model No. : SSH-250G
Serial No. : C03024251
FCC ID : DoC Approval
Power Type : 100/240VAC, 60/50Hz, 6/4A, Switching
Power Cord : 40cm long, non-shielded, no ferrite bead.

1.3 EUT Configuration

(1) The PS/2 port of EUT is connected with one PS/2 keyboard and PS/2 mouse, via a Y data cable.
(2) The serial#1 port of EUT is connected with an external modem.
(3) The serial#2 port of EUT is connected with a RS-232 cable.
(4) The monitor port of EUT is connected with one monitor.
(5) The LAN#1 port of EUT is connected with the HUB located in far-end.
(6) The LAN#2, #3 ports of EUT are each connected with the PC located in far-end.
(7) The parallel port of EUT is connected with one printer.
(8) The two USB ports of EUT are each connected with one USB mouse.
(9) The power port of EUT is connected with the AC power source via one power cable.

(***PS: Please refers to the Photograph***)

Drawing of Configuration



1.4 EUT Exercise Software

The testing software is provided by the applicant.

It is designed to exercise the EUT in a manner similar to a typical use. The testing software will link two LAN cards to transmit data, via two RJ-45 jacks. The software will send an " H " pattern to the monitor and the " H " pattern will be shown on the monitor. The software will also send an " H " pattern to the printer and the " H " pattern will be printer out at the printer. The software will also send the data to the modem and the modem will response to the EUT. The HDD will continuously working sequence in the " Write-Read-Delete " mode. At the same time, the mouse and keyboard will be in continuously self-test mode and responded to the EUT. The software will enable all functions of EUT.

1.5 Test Performed

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver which bandwidth is set at 9KHz.

Radiated emissions were invested over the frequency range from 30MHz to 1000MHz using a receiver which bandwidth is set at 120KHz. Radiated measurement was performed at distance that from an antenna to EUT is 10 meters.

The testing result of pretest was shown out that the "Transmitting/Receiving" mode is worse than the " Standby " mode. So, the final measurement was made on the "Transmitting/Receiving" mode.

Because of the specification of the LAN port of EUT, there are two testing modes when the measurements were taken: 10Mbps and 100Mbps.

There is one video resolution testing modes when the tests and the measurements was performed: "800 X 600 ".

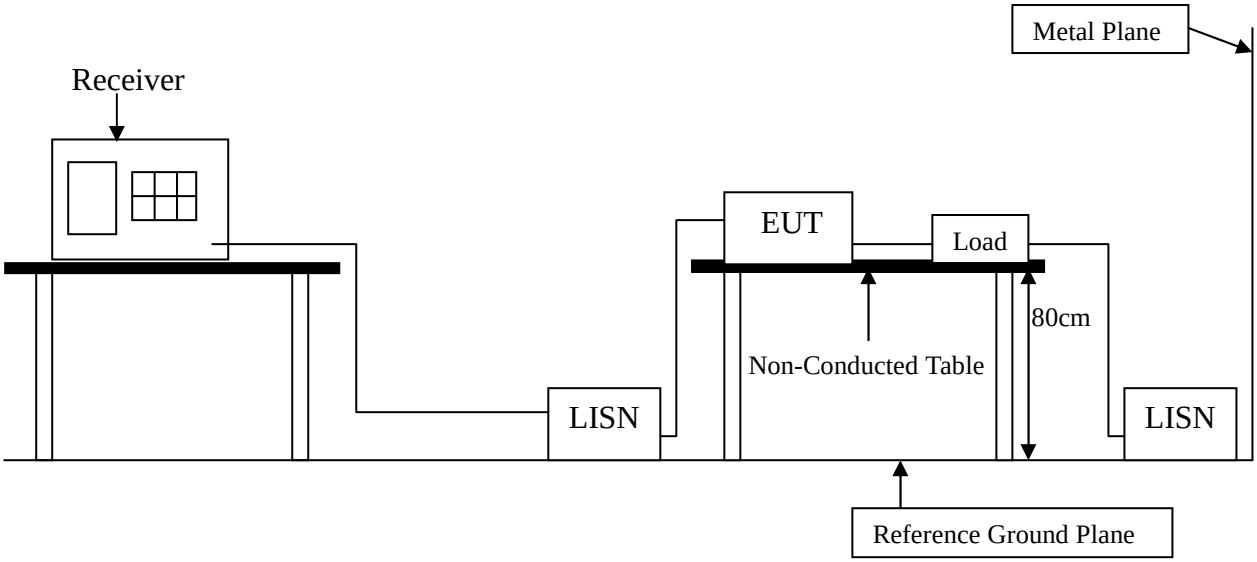
2 Conducted Emission Measurement

2.1 Test Equipment

No.	Instrument	Manufacture	Model	Serial No.	Last Calibrate
1.	LISN (EUT)	Rolf Heine	NNB-2/16Z	99084	May 14, 2001
2.	LISN (AXE)	Rolf Heine	NNB-2/16Z	99086	May 14, 2001
3.	EMI Receiver	Rohde & Schwarz	ESI 7	830154/001	June 27, 2001
4.	50Ω Terminator	Amphenol	46650-51	N/A	Dec. 10, 2001
5.	RF Cable	Belden	M17/158	MIL-C-17	Jan. 20, 2002

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

2.2 Test Set-Up



2.3 Limit

CISPR 22

Frequency	Limit (dBμV)			
	Class A		Class B	
MHz	QP	Avg.	QP	Avg.
0.15 ~ 0.50	79	66	66 ~ 56	56 ~ 46
0.50 ~ 5.0	73	60	56	46
5.0 ~ 30.0	73	60	60	50

FCC Part 15

Frequency	Limit (dBμV)	
	Class A	Class B
MHz	QP	QP
0.50 ~ 1.705	60	48.0
1.705 ~ 30	69.5	48.0

Remark: In the above table, the tighter limit applies at the band edges.

2.4 Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). It provides a 50 ohm / 50 μH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm / 50 μH coupling impedance with 50 ohm termination. (Please refers to the block diagram of the test setup and photograph.)

Both sides of AC line are checked for the maximum conducted emission interference. In order to find the maximum emissions, the relating positions of equipment and all of the interference cables must be changed according to CISPR 22: 1997 regulation: The measurement procedure on conducted emission interference.

The resolution bandwidth of the field strength meter (Rohde & Schwarz) is set at 9KHz.

2.5 Test Specification

According to the CISPR 22: 1997

2.6 Test Result

The emissions that come from the EUT were below the specified limits. The worst case of conducted emissions measurement are shown in the appendix A. The acceptance criterion was met and the EUT has pass the measurement.

2.7 Deviation from the Test Method

No Deviation

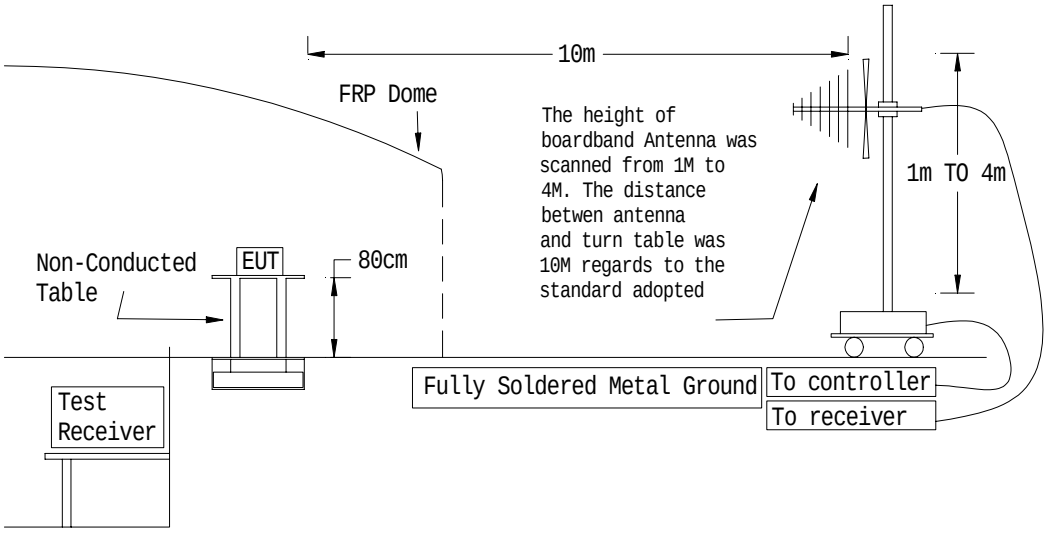
3. Radiated Emission Measurement

3.1 Test Equipment List

No.	Instrument	Manufacture	Model	Serial No.	Last Calibrate
1.	Antenna	Mess-Elektronik	VULB 9160	9160-3078	Jan. 19, 2002
2.	EMI Receiver	Rohde & Schwarz	ESI 7	830154/001	June 22, 2001
3.	RF Cable	Adventest	AD-N-CA-01	2000-0220	Jan. 20, 2002
4.	OATS	Bestlab	N/A	OATS#1	May 28, 2001

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

3.2 Test Setup



3.3 Limit

CISPR 22

Frequency	Class A		Class B	
MHz	Distance (Meter)	Limit (dBμV/m)	Distance (Meter)	Limit (dBμV/m)
30 ~ 230	10	40	10	30
230 ~ 1000	10	47	10	37

FCC Part 15

Frequency	Class A		Class B	
MHz	Distance (Meter)	Limit (dBμV/m)	Distance (Meter)	Limit (dBμV/m)
30 ~ 88	10	39	3	40
88 ~ 216	10	43.5	3	43.5
216 ~ 960	10	46.5	3	46
960 Above	10	49.5	3	54

Remark: In the above table, the tighter limit applies at the band edges

3.4 Test Procedure

The EUT and its simulators are placed on turn table, non-ducted and wooden, which is 0.8 meter above ground. The turn table rotates 360 degree to determine the position of the maximum emission level. The EUT was positioned such that distance from antenna to the EUT is 10 meters. The antenna is moved up and down between 1 meter to 4 meter to receive the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interference cables must be manipulated according to CISPR 22: 1997 regulation: the test procedure of the radiated emission measurement.

The bandwidth set on the field strength is 120KHz when the frequency range is below 1GHz

3.5 Test Specification

According to CISPR 22: 1997

3.6 Test Result

The emissions that come from the EUT was below the specified limits. The worst case of conducted emissions measurement are shown in the appendix A. The acceptance criterion was met and the EUT has pass the measurement.

3.7 Deviation from the Test Method

N/A

4. Modification List for EMC Complying Test

The modification is solely made by the applicant

5. Appendix

Appendix A: Summary of Test Result

Appendix B: The test photograph of EUT

Appendix C: The Detail Photograph of EUT

Appendix A: Summary of Test Result

The test result in the emission and immunity were performed according to the requirement of measurement standard and procedures. Best Laboratory is assumed full responsibility for the accuracy and completeness of these measurements. The Test data of the emissions and immunity are listed as the appendix data.

All these tests are were carried out with the EUT in normal operation, which was defined as:

******* EMC Test Result: The EUT has been pass the all measurements. *******

The uncertainty is calculated in accordance with NAMAS NIS 81, the total uncertainty for this test is as follows:

⇒ Emission Test

- Uncertainty in the Conducted Emission Test: <±2.0dB
- Uncertainty in the Field Strength measurement: <±4.0dB

Conducted Emission Test

Date Measurement Performed: Feb. 25, 2002
EUT : Industrial PC
Testing Mode : 800 X 600, LAN=10Mbps
Temperature : 24°C
Humidity : 60%RH

Line 1:

Frequency	Corrected Amplitude (dBμV)			Limit (dBμV)		Margin
(KHz)	Peak	QP	Avg.	QP	Avg.	dB
185.7000	44.14	*.**	*.**	64.98	54.98	-10.84
444.1000	31.18	*.**	*.**	57.60	47.60	-16.42
1585.0000	37.13	*.**	*.**	56.00	46.00	-8.87
1980.0000	40.16	*.**	*.**	56.00	46.00	-5.84
2570.0000	42.44	*.**	*.**	56.00	46.00	-3.56
2770.0000	41.62	*.**	*.**	56.00	46.00	-4.38
3170.0000	42.41	*.**	*.**	56.00	46.00	-3.59
4945.0000	40.66	*.**	*.**	56.00	46.00	-5.34
6328.0000	39.81	*.**	*.**	60.00	50.00	-10.19
20776.0000	35.42	*.**	*.**	60.00	50.00	-14.58

Line 2:

Frequency	Corrected Amplitude (dBμV)			Limit (dBμV)		Margin
(KHz)	Peak	QP	Avg.	QP	Avg.	dB
187.4000	47.32	*.**	*.**	64.93	54.93	-7.61
222.2500	35.24	*.**	*.**	63.94	53.94	-18.70
467.0500	34.72	*.**	*.**	56.94	46.94	-12.22
1980.0000	40.41	*.**	*.**	56.00	46.00	-5.59
2575.0000	42.22	*.**	*.**	56.00	46.00	-3.78
3165.0000	42.16	*.**	*.**	56.00	46.00	-3.84
3760.0000	41.16	*.**	*.**	56.00	46.00	-4.84
4950.0000	40.53	*.**	*.**	56.00	46.00	-5.47
6328.0000	39.69	*.**	*.**	60.00	50.00	-10.31
20872.0000	35.71	*.**	*.**	60.00	50.00	-14.29

*** Remark: The above corrected amplitudes are all under the average limit. ***

Conducted Emission Test

Date Measurement Performed: Feb. 25, 2002
EUT : Industrial PC
Testing Mode : 800 X 600, LAN=100Mbps
Temperature : 24°C
Humidity : 60%RH

Line 1:

Frequency	Corrected Amplitude (dBμV)			Limit (dBμV)		Margin
(KHz)	Peak	QP	Avg.	QP	Avg.	dB
187.4000	43.66	*.**	*.**	64.93	54.93	-11.27
1980.0000	40.78	*.**	*.**	56.00	46.00	-5.22
2570.0000	42.57	*.**	*.**	56.00	46.00	-3.43
3165.0000	43.11	*.**	*.**	56.00	46.00	-2.89
3760.0000	41.20	*.**	*.**	56.00	46.00	-4.80
4550.0000	40.31	*.**	*.**	56.00	46.00	-5.69
6336.0000	40.39	*.**	*.**	60.00	50.00	-9.61
7312.0000	39.64	*.**	*.**	60.00	50.00	-10.36
14208.0000	39.12	*.**	*.**	60.00	50.00	-10.88
20776.0000	35.39	*.**	*.**	60.00	50.00	-14.61

Line 2:

Frequency	Corrected Amplitude (dBμV)			Limit (dBμV)		Margin
(KHz)	Peak	QP	Avg.	QP	Avg.	dB
188.2500	46.29	*.**	*.**	64.91	54.91	-8.62
467.0500	34.33	*.**	*.**	56.94	46.94	-12.61
561.4000	33.34	*.**	*.**	56.00	46.00	-12.66
1980.0000	40.25	*.**	*.**	56.00	46.00	-5.75
2570.0000	41.94	*.**	*.**	56.00	46.00	-4.06
2770.0000	41.40	*.**	*.**	56.00	46.00	-4.60
3165.0000	41.96	*.**	*.**	56.00	46.00	-4.04
4550.0000	40.14	*.**	*.**	56.00	46.00	-5.86
14272.0000	38.51	*.**	*.**	60.00	50.00	-11.49
20776.0000	34.87	*.**	*.**	60.00	50.00	-15.13

*** Remark: The above corrected amplitudes are all under the average limit. ***

Field Strength Test

Date Measurement Performed: Feb. 25, 2002
EUT : Industrial PC
Testing Mode : 800 X 600, LAN=10Mbps
Polarity : Vertical
Temperature : 27°C
Humidity : 74%RH

Frequency (MHz)	Reading Amplitude (dBμV/m)	Table Degree (°)	Antenna Height (Meter)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
50.007	16.91	147	1.00	7.85	24.76	30.00	-5.24
82.895	11.78	68	1.00	8.90	20.68	30.00	-9.32
210.253	12.11	175	1.00	10.13	22.24	30.00	-7.76
329.326	16.86	281	1.00	14.72	31.58	37.00	-5.42
***							

Remark:
1. The " Correction Factor " contains antenna factor, cable loss.
2. The formula of " Corrected Amplitude " is as follow"
   Reading Amplitude + Correction Factor = Corrected Amplitude.

Field Strength Measurement

Date Measurement Performed: Feb. 25, 2002
EUT : Industrial PC
Testing Mode : 800 X 600, LAN=100Mbps
Polarity : Horizontal
Temperature : 25°C
Humidity : 51%RH

Frequency (MHz)	Reading Amplitude (dBμV/m)	Table Degree (°)	Antenna Height (Meter)	Correction Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
329.328	20.97	248	2.50	14.72	35.69	37.00	-1.31
528.102	17.48	342	2.15	19.05	36.53	37.00	-0.47
624.121	8.26	255	1.75	20.89	29.15	37.00	-7.85
***							

Remark:
1. The “ Correction Factor “ contains antenna factor, cable loss.
2. The formula of “ Corrected Amplitude “ is as follow”
   Reading Amplitude + Correction Factor = Corrected Amplitude.

Appendix B: The Test Photograph of EUT

The Photograph of Conducted Emission Test

The Photograph of Radiated Emission Test

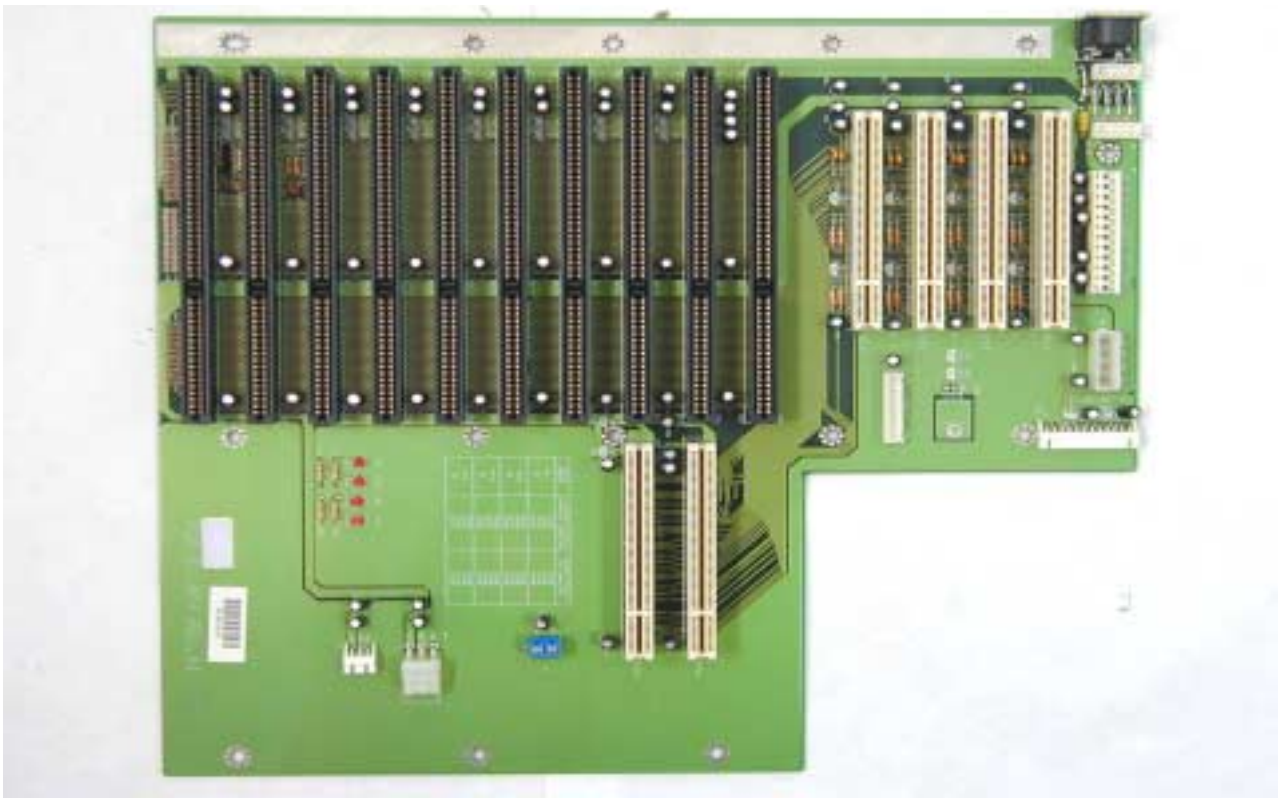
Exhibit C
User Manual

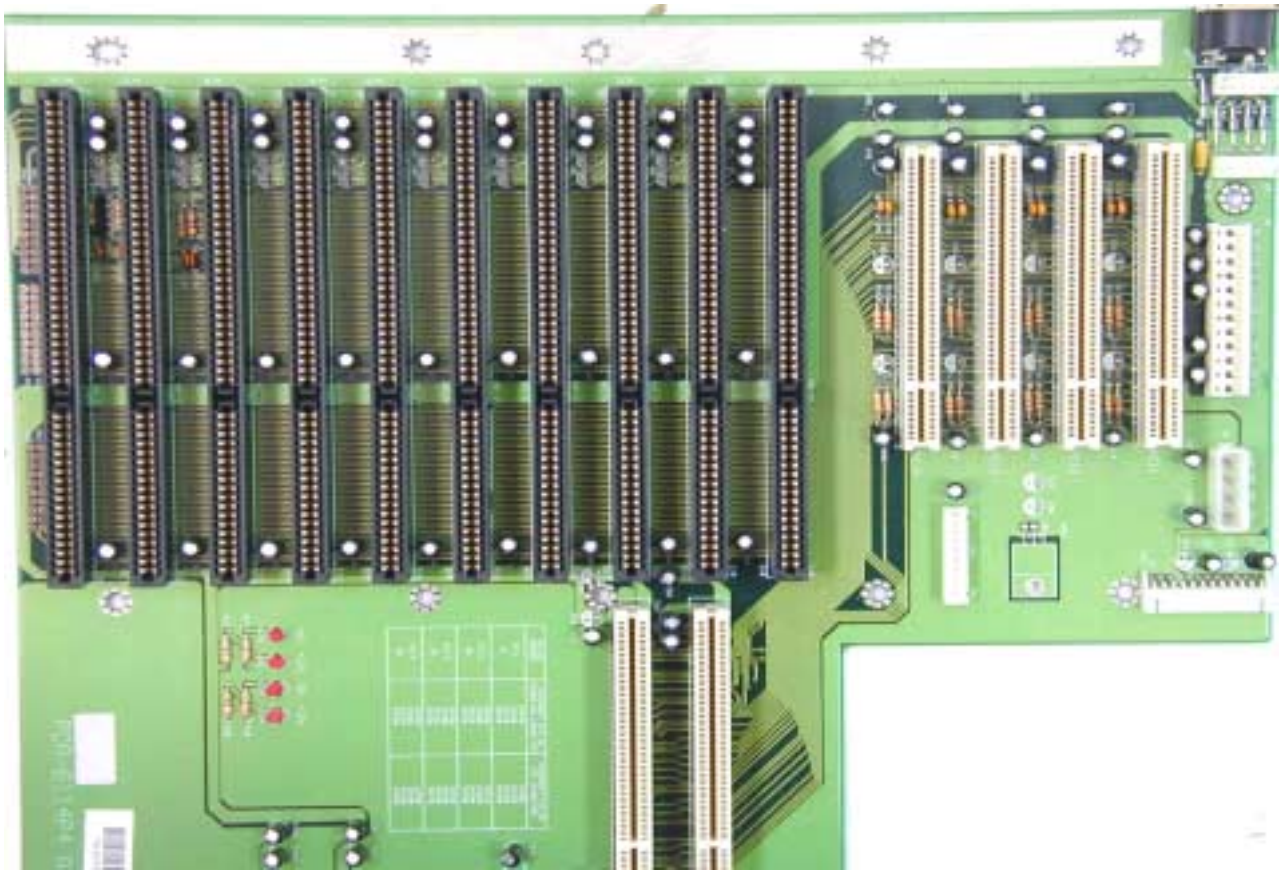
Exhibit D
Block Diagram

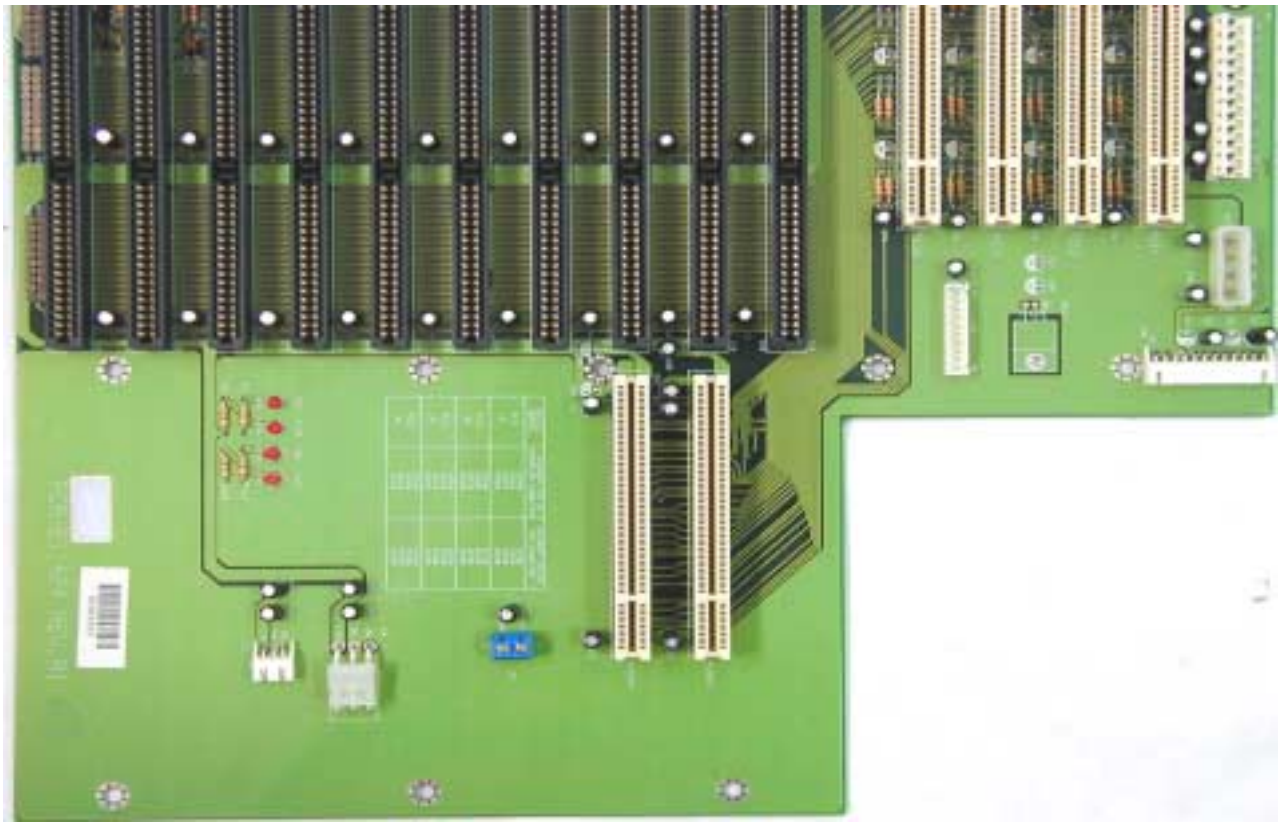
Exhibit E
Circuit Diagram

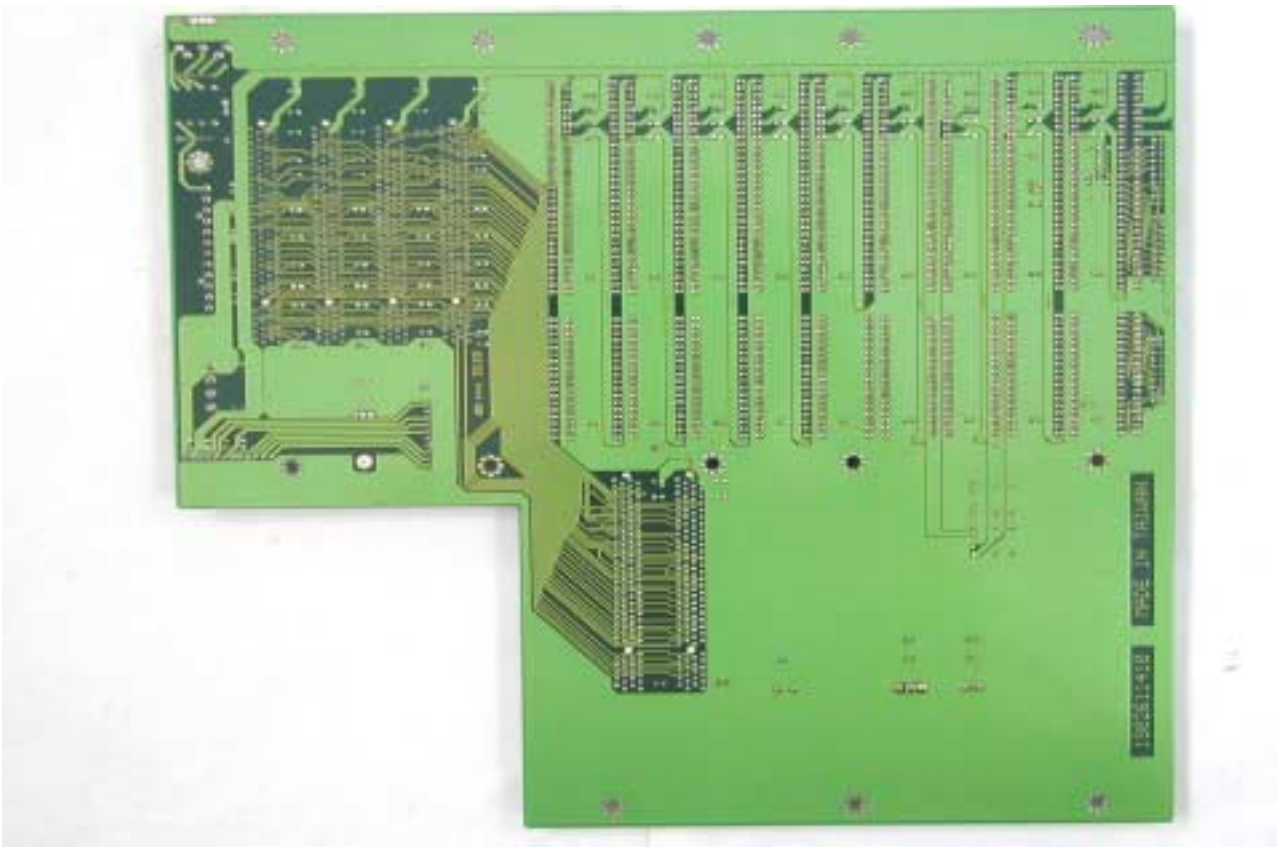
Exhibit F
Photograph of EUT

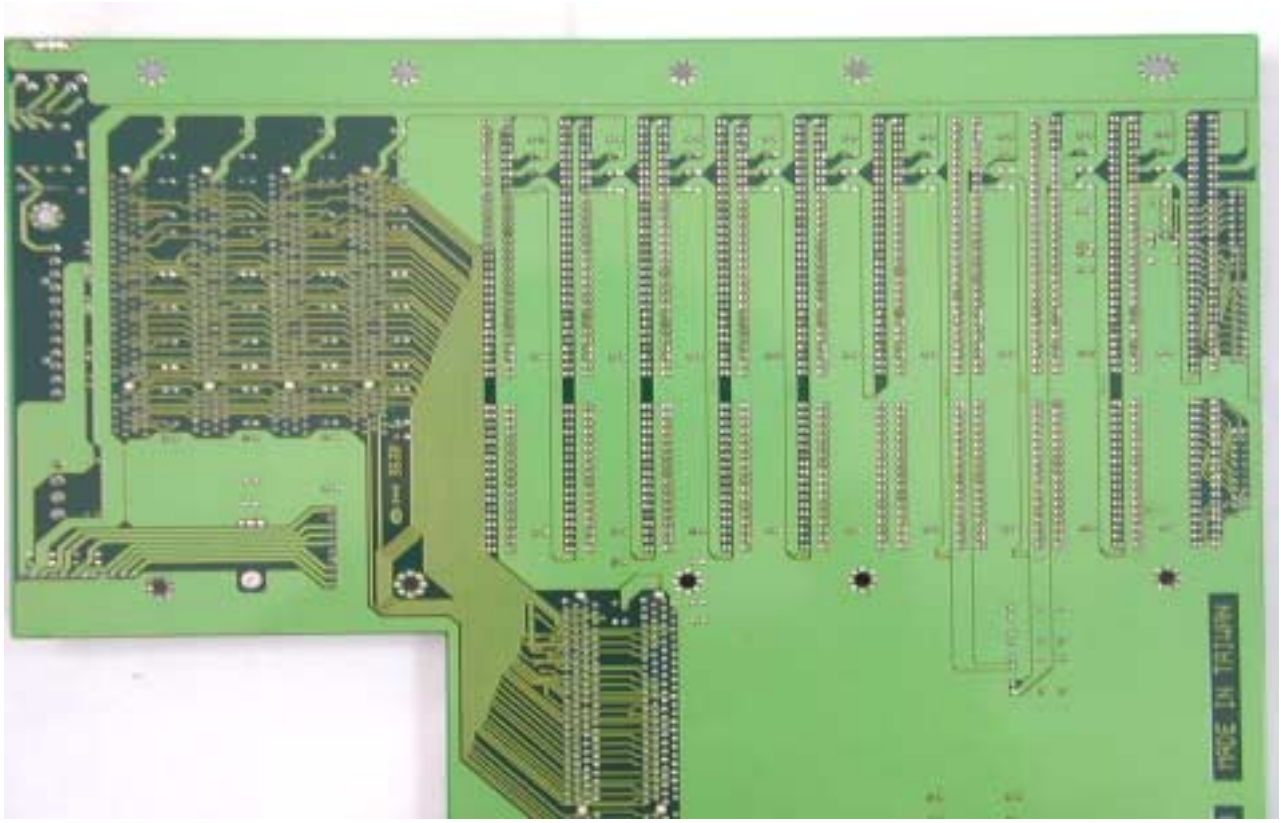

INDUSTRIAL COMPUTER
ADVANTECH

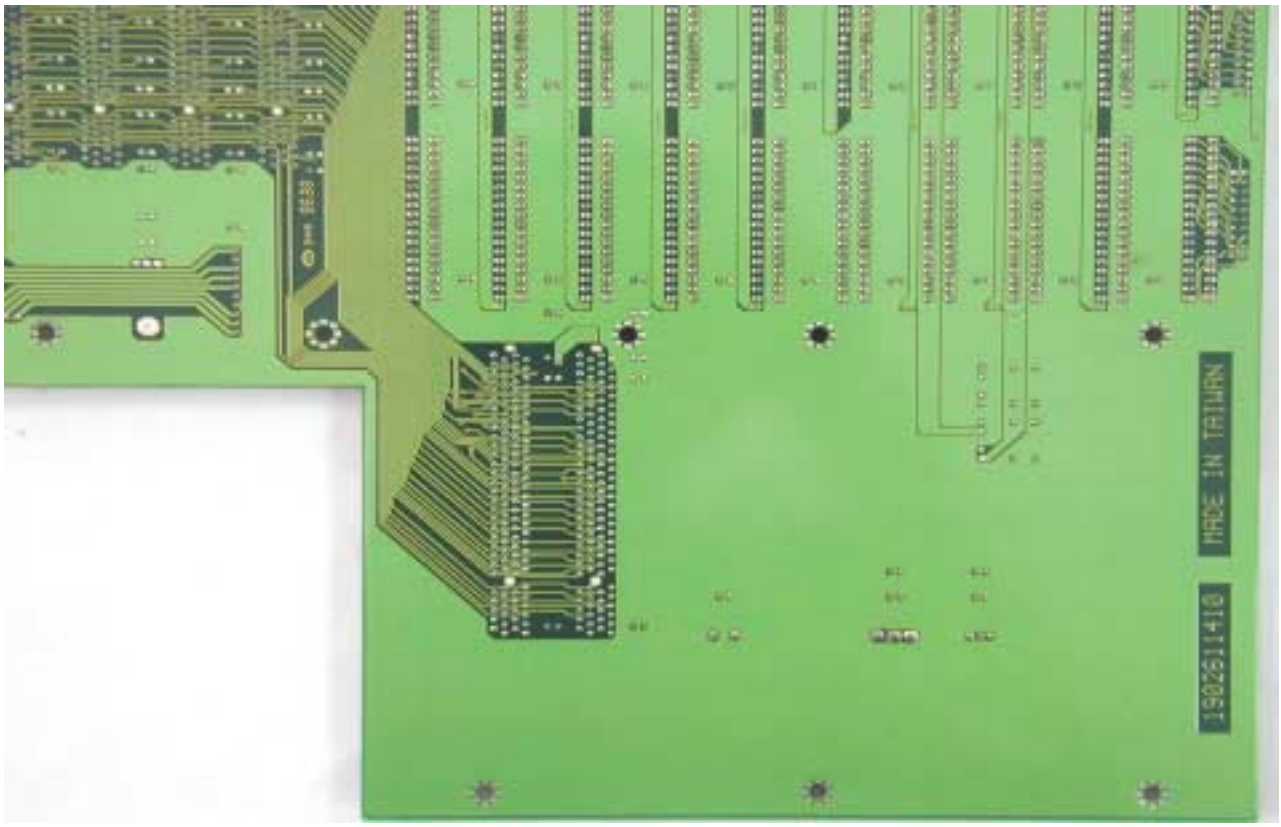


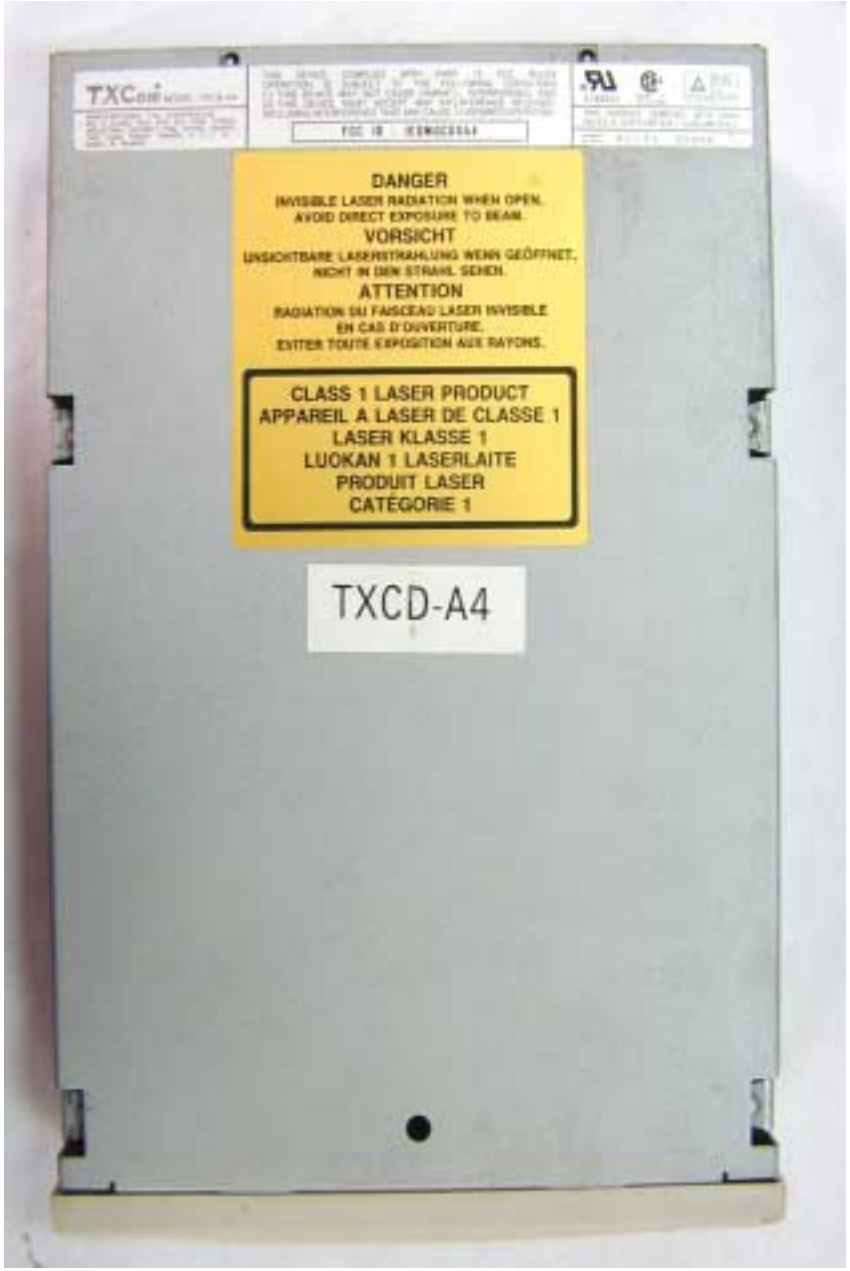







MADE IN TAIWAN


MADE IN TAIWAN
1502611410


TXCom
DANGER
INVISIBLE LASER RADIATION WHEN OPEN.
AVOID DIRECT EXPOSURE TO BEAM.
VORSICHT
UNSICHTBARE LASERSTRAHLUNG WENN GEÖFFNET,
NICHT IN DEN STRAHL SEHEN.
ATTENTION
RADIATION DU FAISCEAU LASER INVISIBLE
EN CAS D'OUVERTURE,
EVITER TOUTE EXPOSITION AUX RAYONS.
CLASS 1 LASER PRODUCT
APPAREIL A LASER DE CLASSE 1
LASER KLASSE 1
LUOKAN 1 LASERLAITE
PRODUIT LASER
CATÉGORIE 1
TXCD-A4


Seagate
Medalist 3221
Model ST33221A
MEDALIST
ULTRA ATA
EPC
RD
MADE IN MALAYSIA


FD-235HF 6291
19307762-91
7031705


ARMAS
DTN133 64ME
SAMPLE
請勿外借
SYNNEX 0107
EPC RD


Seasonic
C03024251
SSH-250G
SWITCHING POWER SUPPLY
INPUT:
~100-120VAC/ 6A 50/60Hz
~200-240VAC/ 4A 50/60Hz
OUTPUT:
DC
+5V
+12V
-5V
-12V
250W
25A
10A
0.3A
0.3A
AC Outlet Receptacle (Switched)
~100-120VAC 1A max
~200-240VAC 1A max
E104405
LR88830
LEVEL 6
TÜV Rheinland
HIPOT
CONT
OK
Umgebungs - Temperatur: 50 C max
Ambient Temperature: 50 C max
ACHTUNG Gefahrliche Spannungen !
CAUTION Hazardous Area !
*Gehäuse nicht öffnen.
*Do not remove this cover.
*Vor Anschluss Eingangsspannung überprüfen.
*Check input voltage before plug in.
*Lüftungsöffnung nicht abdecken.
*Air opening should not be covered.
Comply to EN60950 IEC950
Sea Sonic Electronics Co., Ltd. (DF)
Better Quality with
Temperature Controlled Fan &
Conform to DBP Vfg. 243 (B)