



Low Voltage Directive Report



鼎安科技股份有限公司

SUPERIOR PRODUCT CONSULTING, INC

**3F, NO. 10, ALLEY 6, LANE 235, PAO CHIAO
RD., HSIEN TIEN, TAIPEI, TAIWAN R.O.C.**

**台北縣新店市寶僑路235巷6弄10號3F
TEL: 886-2-29174137 FAX: 886-2-29184517**

The test results of this report relate only to the tested sample identified in this report.
此份報告之測試結果只適用於報告中所述之那台測試樣機

*This report shall not be reproduced, except in full, or with the written approval of
Superior Product Consulting, Inc.*

此份報告未經鼎安科技股份有限公司書面同意不得部分複製

TÜV Rheinland Taiwan Ltd.



Certificate of Appointment

for

Superior Product Consulting, Inc.
3F, No. 10, Alley 6, Lane 235, Pao Chiao Road,
Hsien Tien, Taipei, Taiwan, R.O.C.


has been authorized to carry out Safety tests by order and under supervision of
TÜV Rheinland. It has successfully demonstrated capability to conduct
measurements and to process test data according to:

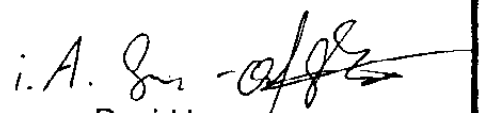
**European and International Safety Standards as listed in the
Scope of Authorization on the attachment to this certificate**

An assessment of the facility was conducted according to ISO 17025 by a TÜV
Rheinland auditor

The certificate is valid until the next scheduled inspection or up to 15 month,
at the discretion of TÜV Rheinland

TÜV Rheinland Taiwan Ltd.
Taipei, 6 November 2001


Dipl.-Ing. A. Klinker


David Lee



Attachment to

Certificate

of Appointment

SCOPE OF AUTHORIZATION

for

Superior Product Consulting, Inc.
3F, No. 10, Alley 6, Lane 235, Pao Chiao Road,
Hsien Tien, Taipei, Taiwan, R.O.C.

European Standards

EN 60 950: 1992+A1+A2+A3+A4+A11	EN 60 065:1998 EN 60 065:1993+A11
---------------------------------	--------------------------------------

International Standards

IEC 60 950: 1991+A1+A2+A3+A4	IEC 60 065:1998 IEC 60 065:1985 +A1+A2+A3
------------------------------	--

Taipei, 6 November 2001

i. A. M. Lee
David C. M. Lee, Auditor



QUALIFIED INDEPENDENT LABORATORY

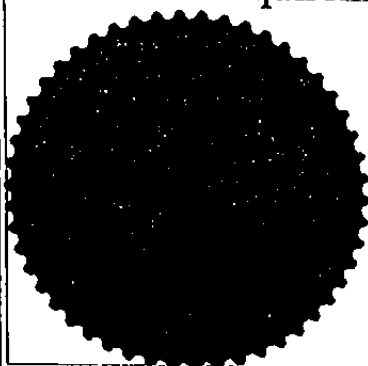
This is to confirm that:

Superior Product Consulting Inc.
(Taipei, TAIWAN)

has in the course of current cooperation projects with Nemko
shown to be qualified in safety testing of electrical equipment to
the following standards:

IEC 60950 / EN 60950

This statement is also supported by our assessment of the
laboratory testing equipment, -facilities and -procedures relative
to the requirements of EN 45001 and ISO/IEC Guide 25.



Jon Ivar Tidemann

Jon Ivar Tidemann
Head of dept. Data and Electronics

NEMKO
IT and Electronics Division

DECLARATION OF CONFORMITY

According to the Low Voltage Directive 73/23/EEC and
the Amendment Directive 93/68/EEC

Type of Product.....: **Industrial Computer**

Model Designation.....: **MBPC-400-XXXXX. Where the X can be
any alphanumeric character or blank.**

Manufacturer' s Name: **Advantech Co., Ltd.**

Manufacturer' s Address: **4th Fl, No. 108-3, Ming-Chung Rd,
Shing-Tien City, Taipei Hsien, Taiwan**

Is herewith confirmed to comply with the requirements set out in the
Council Directive 73/23/EEC for electrical equipment used within
certain voltage limits and the Amendment Directive 93/68/EEC. For
the evaluation of the compliance with these Directive, the following
standard was applied:

IEC 60950, 3rd Edition (1999)

EN 60950, 3rd Edition (2000)

Person responsible for making this declaration

Name, Surname.....:


Position/Title.....:



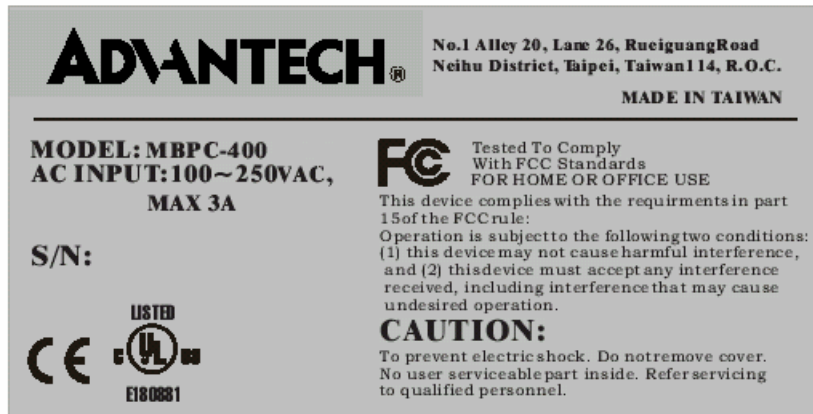
(Place)

(Date)

(Company stamp and signature)

<p align="center">TEST REPORT IEC 60950 Safety of information technology equipment</p>	
Report Reference No..... :	SPCLVD21239
Compiled by (+ signature)..... :	Peter Lai Group Leader
Reviewed by (+ signature)	Allen Huang Manager
Date of issue	December 30, 2002
This report is based on a blank test report that was prepared by FIMKO using information obtained from the TRF originator (see below).	
Testing laboratory name..... :	Superior Product Consulting, INC.
Address..... :	3F, No. 10, Alley 6, Lane 235, Pao Chiao Rd., Hsien Tien, Taipei, Taiwan, R.O.C.
Testing location	Superior Product Consulting, INC.
Address..... :	3F, No. 10, Alley 6, Lane 235, Pao Chiao Rd., Hsien Tien, Taipei, Taiwan, R.O.C.
Client name..... :	Advantech Co., Ltd.
Address..... :	4th Fl, No. 108-3, Ming-Chuan Rd, Shing-Tien City, Taipei Hsien, Taiwan.
Standard	IEC 60950, 3 rd Edition (1999) EN 60950, 3 rd Edition (2000)
Test procedure	Informative Test Report
Procedure deviation	N/A
Non-standard test method	N/A
Test Report Form/blank test report	
Test Report Form No. :	I950__F/00-03
TRF originator..... :	FIMKO
Master TRF..... :	dated 00-02
Copyright reserved to the bodies participating in the IECEE Schemes (CB and CB-FCS) and/or the bodies participating in the C.I.G (CCA-ENEC).	
Test item description	Server
Trademark..... :	
Model and/or type reference	MBPC-400-XXXXX. Where the X can be any alphanumeric character or blank.
Manufacturer	Same as Applicant
Rating(s)	100-250 Vac, 50/60 Hz, 3 A maximum

Copy of marking plate and summary of test results (information/comments):



Particulars: test item vs. test requirements

Equipment mobility : movable
 Operating condition : continuous
 Mains supply tolerance (%) : +10%, -10%
 Tested for IT power systems : No
 IT testing, phase-phase voltage (V) : N/A
 Class of equipment : Class I (earthed).
 Mass of equipment (kg) : 3.75 Kg
 Protection against ingress of water : IPXO

Possible test case verdicts:

- test case does not apply to the test object : N / A
- test object does meet the requirement : Pass
- test object does not meet the requirement : Fail

General remarks:

- "(see Enclosure #)" refers to additional information appended to the Report.
- "(see appended table)" refers to a table appended to the Report.
- Throughout this report a point is used as the decimal separator.

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
 This report is not valid as a CB Test Report unless appended to a CB Test Certificate issued by a NCB in accordance with IECEE 02.

General product information:

This product is a industrial computer. It is specified for use in a Tmra of 50°C maximum.

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict


1	GENERAL		Pass
---	----------------	--	------

1.5	Components		Pass
1.5.1	Comply with IEC 950 or relevant component standard	(see appended table)	Pass
1.5.2	Evaluation and testing of components	<p>Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950 and the relevant component Standard.</p> <p>Components, for which no relevant IEC-Standard exist, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950.</p> <p>Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard.</p>	Pass
	Dimensions (mm) of mains plug for direct plug-in..... :	Not direct plug-in equipment.	N/A
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N) :	Not direct plug-in equipment.	N/A
1.5.3	Thermal controls	There are no thermal controls.	N/A
1.5.4	Transformers	Evaluated during separate certification of power supply.	N/A
1.5.5	Interconnecting cables	Interconnecting cables comply with the relevant requirements of this standard.	Pass
1.5.6	Capacitors in primary circuits :	Evaluated during separate certification of power supply.	N/A
1.5.7	Double or reinforced insulation bridged by components	Evaluated during separate certification of power supply.	N/A
1.5.7.1	Bridging capacitors	Evaluated during separate certification of power supply.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.7.2	Bridging resistors	Evaluated during separate certification of power supply.	N/A
1.5.7.3	Accessible parts	Evaluated as part of the power supply.	Pass
1.5.8	Components in equipment for IT power systems	Not for use on IT systems.	N/A

1.6	Power interface		Pass
1.6.1	AC power distribution systems	AC power distribution systems are classify as TN.	Pass
1.6.2	Input current	The steady state input current of the equipment did not exceed the RATED CURRENT by more than 10% under NORMAL LOAD. (see appended table1.6.2)	Pass
1.6.3	Voltage limit of hand-held equipment	The unit is not a hand-held equipment.	N/A
1.6.4	Neutral conductor	Neutral insulation is provided in the approval power supply.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

1.7	Marking and instructions		Pass
1.7.1	Power rating	Rating marking readily visible to operator. See below for details.	Pass
	Rated voltage(s) or voltage range(s) (V)	100 - 250 Vac.	Pass
	Symbol for nature of supply for d.c.	AC Source.	N/A
	Rated frequency or frequency range (Hz)	50 - 60 Hz.	Pass
	Rated current (A)	3 A maximum.	Pass
	Manufacturer' s name/Trademark		Pass
	Type/model	MBPC-400-XXXXX. Where the X can be any alphanumeric character or blank.	Pass
	Symbol of Class II	Class I equipment.	Pass
	Other symbols	Additional symbols may be provided when submitted for national approval.	N/A
	Certification marks	CE, UL, c-UL.	Pass
1.7.2	Safety instructions	Safety instruction in English. Other languages will be provided when submitted for national approval.	Pass
1.7.3	Short duty cycles	The equipment is intended for continuous operation.	N/A
1.7.4	Supply voltage adjustment	Equipment is auto-ranging.	N/A
1.7.5	Power outlets on the equipment	No standard power outlets are provided.	N/A
1.7.6	Fuse identification	Fuse marking on the approved power supply.	Pass
1.7.7	Wiring terminals	See below.	Pass
1.7.7.1	Protective earthing and bonding terminals	The earth terminal is marked with the standard earth symbol (60417-2-IEC-5019) near the terminal.	Pass
1.7.7.2	Terminal for a.c. mains supply conductors	The equipment with appliance inlet is intended to be use the detachable type power supply cord.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.8	Controls and indicators	Safety clearly not involved.	Pass
1.7.8.1	Identification, location and marking	The function of controls affecting safety is obvious regardless of language.	Pass
1.7.8.2	Colours	No indicators with colours.	N/A
1.7.8.3	Symbols according to IEC 60417.....	The mains switch is marked with the symbols: "0" and "I" (60417-1-IEC-5007 and IEC-5008).	Pass
1.7.8.4	Markings using figures	Figures are not used for indicating different positions of controls.	N/A
1.7.9	Isolation of multiple power sources	There is only one connection to hazardous voltages.	N/A
1.7.10	IT power system	Not intended for use on IT power systems.	N/A
1.7.11	Thermostats and other regulating devices	No thermostats or similar regulating devices.	N/A
1.7.12	Language	Reviewed only English markings/instructions. May be provided in other languages when the equipment will be applied for other national certificated.	—
1.7.13	Durability	The marking(s) withstood the required test.	Pass
1.7.14	Removable parts	No marking is located on (a) removable part(s).	Pass
1.7.15	Replaceable batteries	The lithium battery is not located in an Operator Access Area.	Pass
	Language		—
1.7.16	Operator access with a tool	No operator access areas require the use of a tool.	Pass
1.7.17	Equipment for restricted access locations.....	Equipment not intended for installation in a RESTRICTED ACCESS LOCATION.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2	PROTECTION FROM HAZARDS		Pass
2.1	Protection from electric shock and energy hazards		Pass
2.1.1	Protection in OPERATOR access areas	The construction of this metal enclosure prevents the accessibility to any parts with only basic insulation to ELV or hazardous voltage with test pin or test finger.	Pass
2.1.1.1	Access to energized parts	The operator has access to bare parts of SELV CIRCUITS. No operator access to energized parts.	Pass
	Test by inspection	Operator cannot contact with any parts with only basic insulation to ELV or hazardous voltage.	Pass
	Test with test finger	The test finger was unable to contact bare hazardous parts, basic insulation, or ELV circuits.	Pass
	Test with test pin	The test pin was unable to contact bare hazardous parts.	Pass
	Test with test probe	No TNV present.	Pass
2.1.1.2	Battery compartments	No battery components.	N/A
2.1.1.3	Access to ELV wiring	Internal wiring in an ELV circuit is not user accessible.	N/A
	Working voltage (V); distance (mm) through insulation		—
2.1.1.4	Access to hazardous voltage circuit wiring	No internal wiring accessible to the user.	N/A
2.1.1.5	Energy hazards	No hazardous voltage wiring in operator accessible area.	Pass
2.1.1.6	Manual controls	No shafts or knobs, etc. at ELV, TNV or hazardous voltage.	Pass
2.1.1.7	Discharge of capacitors in the primary circuit	The capacitance of the input circuit is >0.1 uF with the mains switch in both "ON" and "OFF" position, measurements are required.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
	Time-constant (s); measured voltage (V) :	Time constant less than 1 second.	—
2.1.2	Protection in service access areas	No bare parts operating at HAZARDOUS VOLTAGES in a service access area.	N/A
2.1.3	Protection in restricted access locations	The unit not intended to be used in restricted locations.	N/A

2.2	SELV circuits		Pass
2.2.1	General requirements	SELV levels are maintained after single fault condition.	Pass
2.2.2	Voltages under normal conditions (V) :	All accessible voltages are less than 42.4 Vp or 60 V dc and are classified as SELV.	Pass
2.2.3	Voltages under fault conditions (V) :	<p>Evaluated during separate certification of power supply.</p> <p>Under fault conditions voltages never exceed 71V peak and 120Vdc and do not exceed 42.4V peak or 60V dc for more than 0.2 sec.</p>	Pass
2.2.3.1	Separation by double or reinforced insulation (method 1)	Evaluates in switching power supply.	Pass
2.2.3.2	Separation by earthed screen (method 2)	Method 1 used.	N/A
2.2.3.3	Protection by earthing of the SELV circuit (method 3)	Method 1 used.	N/A
2.2.4	Connection of SELV circuits to other circuits.....:	<p>SELV circuit and all interconnected circuits separated from primary by Reinforced/Double insulation.</p> <p>The SELV circuit does not exceed the SELV limits under normal and fault conditions.</p> <p>SELV circuits are only connected to other secondary circuits.</p>	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2.3	TNV circuits No TNV circuits in the equipment.		N/A
2.3.1	Limits		N/A
	Type of TNV circuits		—
2.3.2	Separation from other circuits and from accessible parts		N/A
	Insulation employed		—
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed		—
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed		—
2.3.5	Test for operating voltages generated externally		N/A

2.4	Limited current circuits No limited current circuits.		N/A
2.4.1	General requirements		N/A
2.4.2	Limit values		N/A
	Frequency (Hz)		—
	Measured current (mA)		—
	Measured voltage (V)		—
	Measured capacitance (μF)		—
2.4.3	Connection of limited current circuits to other circuits		N/A

2.5	Limited power sources		Pass
	Inherently limited output		N/A
	Impedance limited output	See Table 1.5.1 for PTC specifications.	Pass
	Overcurrent protective device limited output		N/A
	Regulating network limited output under normal operating and single fault condition		N/A
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition		N/A
	Output voltage (V), output current (A), apparent power (VA)	See enclosed test record.	—
	Current rating of overcurrent protective device (A)		—

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2.6	Provisions for earthing and bonding		Pass
2.6.1	Protective earthing	Accessible parts are earthed.	Pass
2.6.2	Functional earthing	The functional earthing (SELV ground) have separated from hazardous part by Double/Reinforce Insulation and connect to protective earth terminal.	Pass
2.6.3	Protective earthing and protective bonding conductors	See below.	Pass
2.6.3.1	Size of protective earthing conductors	Power supply cord suitable for application and subject to country's national code and regulations to be provided by the manufacturer.	N/A
	Rated current (A), cross-sectional area (mm ²), AWG..... :		—
2.6.3.2	Size of protective bonding conductors	Protective bonding conductors evaluated based on 2.6.3.3.	Pass
	Rated current (A), cross-sectional area (mm ²), AWG..... :		—
2.6.3.3	Rated current (A), type and nominal thread diameter (mm)..... :		Pass
	Resistance (Ω) of earthing conductors and their terminations, test current (A) :	See enclosed test record.	Pass
2.6.3.4	Colour of insulation..... :	Protective earthing conductor is green with yellow stripe.	Pass
2.6.4	Terminals	Appliance inlet used.	N/A
2.6.4.1	Protective earthing and bonding terminals	Appliance inlet used and the unit meet the test requirement of 2.6.3.3.	N/A
	Rated current (A), type and nominal thread diameter (mm)..... :		—
2.6.4.2	Separation of the protective earthing conductor from protective bonding conductors	Appliance inlet used.	Pass
2.6.5	Integrity of protective earthing	See below.	Pass
2.6.5.1	Interconnection of equipment	No interconnection of hazardous voltage.	N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switches or fuses in earthing conductors.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.3	Disconnection of protective earth	It is not possible to disconnect protective earth without disconnecting mains; an appliance inlet is used as disconnect device.	Pass
2.6.5.4	Parts that can be removed by an operator	It is not possible to disconnect earth without disconnecting mains and protective earth required makes earlier and breaks later than the supply connectors. No other operator removable parts with safety critical earth connection.	Pass
2.6.5.5	Parts removed during servicing	Connections to protective earthing cannot be removed unless hazardous voltage is removed from the part simultaneously.	Pass
2.6.5.6	Corrosion resistance	No risk of corrosion. Complies with Annex J.	Pass
2.6.5.7	Screws for protective bonding	Metal thickness at least twice the pitch of the screw.	Pass
2.6.5.8	Reliance on telecommunication network		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2.7	Overcurrent and earth fault protection in primary circuits		Pass
2.7.1	Basic requirements	Protective devices are integrated in the equipment.	Pass
	Instructions when protection relies on building installation		N/A
2.7.2	Faults not covered in 5.3	The protective devices are well dimensioned and mounted.	Pass
2.7.3	Short-circuit backup protection	The equipment is pluggable Type A.	Pass
2.7.4	Number and location of protective devices :	One fuse in the "LIVE" phase.	Pass
2.7.5	Protection by several devices	Only one protective device is provided.	N/A
2.7.6	Warning to service personnel :	No service work necessary.	N/A

2.8	Safety interlocks No safety interlocks in the equipment.		N/A
2.8.1	General principles		N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
2.8.5	Interlocks with moving parts		N/A
2.8.6	Overriding an interlock		N/A
2.8.7	Switches and relays in interlock systems		N/A
2.8.7.1	Contact gaps (mm) :		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test (V)		N/A
2.8.8	Mechanical actuators		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.9	Electrical insulation		Pass
2.9.1	Properties of insulating materials	Electric strength test was conducted after the humidity treatment. See 2.9.2.	Pass
2.9.2	Humidity conditioning	Humidity treatment performed to 120 hrs in condition: 91-95%, 40° C.	Pass
2.9.3	Requirements for insulation	Electric strength test was conducted after the humidity treatment. No flash over or breakdown of insulation. (see sub-clause 2.10, 4.5.1 and 5.2)	Pass
2.9.4	Insulation parameters	Both parameters were considered.	Pass
2.9.5	Categories of insulation	The adequate level of safety insulation is provided and maintained to comply with the requirements of this standard.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2.10	Clearances, creepage distances and distances through insulation		Pass
2.10.1	General	Pollution degree 2 applicable.	Pass
2.10.2	Determination of working voltage	Considered in approved power supply.	Pass
2.10.3	Clearances	Considered in approved power supply.	Pass
2.10.3.1	General	Considered in approved power supply.	Pass
2.10.3.2	Clearances in primary circuit	(see appended table 2.10.3 and 2.10.4)	Pass
2.10.3.3	Clearances in secondary circuits	Functional insulation only. Waived by short circuit fault test per Sub-clause 5.3.4. Considered in approved power supply.	Pass
2.10.3.4	Measurement of transient levels	Considered in approved power supply.	Pass
2.10.4	Creepage distances	Creepages in primary circuits covered in power supply evaluation.	Pass
	CTI tests..... :	Group IIIb values used. Material group IIIb; 100 ≤ CTI < 175.	—
2.10.5	Solid insulation	See below.	N/A
2.10.5.1	Minimum distance through insulation	All critical distances through insulation are covered in power supply evaluation.	Pass
2.10.5.2	Thin sheet material	All critical distances through insulation are covered in power supply evaluation.	Pass
	Number of layers (pcs) :		—
	Electric strength test		—
2.10.5.3	Printed boards	PWB is not used as reinforced or supplementary insulation.	N/A
	Distance through insulation		N/A
	Electric strength test for thin sheet insulating material		—
	Number of layers (pcs) :		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.4	Wound components		N/A
	Number of layers (pcs) :		N/A
	Two wires in contact inside component; angle between 45° and 90°		N/A
2.10.6	Coated printed boards		N/A
2.10.6.1	General		N/A
2.10.6.2	Sample preparation and preliminary inspection		N/A
2.10.6.3	Thermal cycling		N/A
2.10.6.4	Thermal ageing (°C) :		N/A
2.10.6.5	Electric strength test		—
2.10.6.6	Abrasion resistance test		N/A
	Electric strength test		—
2.10.7	Enclosed and sealed parts :		N/A
	Temperature $T_1 = T_2 + T_{mra} - T_{amb} + 10K$ (°C) :		N/A
2.10.8	Spacings filled by insulating compound :		N/A
	Electric strength test		—
2.10.9	Component external terminations		N/A
2.10.10	Insulation with varying dimensions		N/A

3	WIRING, CONNECTIONS AND SUPPLY		Pass
3.1	General		Pass
3.1.1	Current rating and overcurrent protection	All internal wiring used in the distribution of primary power protected against overcurrent and short circuit by suitably rated protective devices.	Pass
3.1.2	Protection against mechanical damage	The wires are routed away from sharp edges and parts which could damage insulation.	Pass
3.1.3	Securing of internal wiring	All wiring is reliably routed or separated and secured. The wires are positioned in such a manner that prevents excessive strain, loosening of terminal connections and damage of conductor insulation.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
3.1.4	Insulation of conductors	Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltage involved. All internal wirings are UL Recognized and rated minimum 300 Vac.	Pass
3.1.5	Beads and ceramic insulators	The equipment does not have any beads or similar insulators.	N/A
3.1.6	Screws for electrical contact pressure	Electrical screw connection is not used.	N/A
3.1.7	Non-metallic materials in electrical connections	No contact pressure through insulating material.	N/A
3.1.8	Self-tapping and spaced thread screws	Thread-cutting or space thread screws are not used for electrical connections. Machine screws only.	N/A
3.1.9	Termination of conductors	Ref. to 3.3.2.	Pass
	10 N pull test	Considered.	Pass
3.1.10	Sleeving on wiring	Sleeving on wiring reliable kept in position by cable ties or by the use of heat shrunk sleeving.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
3.2	Connection to a.c. mains supplies		Pass
3.2.1	Means of connection	The unit is provided with an appliance inlet.	Pass
3.2.2	Multiple supply connections	Single mains supply.	N/A
3.2.3	Permanently connected equipment	The equipment is not permanently connected.	N/A
	Number of conductors, diameter (mm) of cable and conduits		—
3.2.4	Appliance inlets	The appliance inlet complies with IEC 60320. Appliance inlet can be inserted without difficulty and so placed that, after insertion of the connector, the equipment is not supported by the connector for any position of normal use on a flat surface.	Pass
3.2.5	Power supply cords	Power supply cord suitable for application and subject to country's national code and regulations to be provided by the manufacturer.	Pass
	Type.....		—
	Rated current (A), cross-sectional area (mm ²), AWG.....		—
3.2.6	Cord anchorages and strain relief	Appliance inlet is used.	N/A
	Mass of equipment (kg), pull (N)		—
	Longitudinal displacement (mm)		—
3.2.7	Protection against mechanical damage	No parts under this unit likely to damage the power supply cord. No sharp edges.	Pass
3.2.8	Cord guards	The equipment does not use a non-detachable power supply cord.	N/A
	D (mm); test mass (g)		—
	Radius of curvature of cord (mm)		—
3.2.9	Supply wiring space	Equipment provided with an appliance inlet.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
3.3	Wiring terminals for connection of external conductors		N/A
3.3.1	Wiring terminals	Equipment with detachable power supply cord, connected on appliance inlet.	N/A
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals		N/A
3.3.4	Rated current (A), cord/cable type, cross-sectional area (mm ²)..... :		N/A
3.3.5	Rated current (A), type and nominal thread diameter (mm)..... :		N/A
3.3.6	Wiring terminals design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

3.4	Disconnection from the a.c. mains supply		Pass
3.4.1	General requirement	The appliance inlet is considered to be the disconnect device.	Pass
3.4.2	Disconnect devices	The equipment is provided with an appliance coupler.	Pass
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N/A
3.4.4	Parts which remain energized	No parts remain energized when the disconnect device is removed.	N/A
3.4.5	Switches in flexible cords	No isolating switch in the cord set.	N/A
3.4.6	Single-phase equipment	Disconnect device disconnects all poles simultaneously.	Pass
3.4.7	Three-phase equipment	The unit is single-phase equipment.	N/A
3.4.8	Switches as disconnect devices	A switch is not considered the disconnect device.	N/A
3.4.9	Plugs as disconnect devices	The appliance inlet is considered to be the disconnect device.	N/A
3.4.10	Interconnected equipment	No interconnection of hazardous voltages or energy levels.	N/A
3.4.11	Multiple power sources	The equipment only receives power from one source.	N/A

3.5	Interconnection of equipment		Pass
3.5.1	General requirements		Pass
3.5.2	Types of interconnection circuits:	SELV.	Pass
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
4	PHYSICAL REQUIREMENTS		Pass
4.1	Stability		N/A
	Angle of 10°	The equipment is not floor-standing. Test was waived.	N/A
	Test: force (N)	Equipment is not a floor-standing unit.	N/A
4.2	Mechanical strength		Pass
4.2.1	General	See below.	Pass
4.2.2	Steady force test, 10 N	10N were applied to components. No energy or other hazards.	Pass
4.2.3	Steady force test, 30 N	The equipment does not have any internal enclosures.	N/A
4.2.4	Steady force test, 250 N	250N were applied to other outer enclosure. No energy or other hazards.	Pass
4.2.5	Impact test	500g steel sphere ball fall, from 1.3m height onto outer enclosure. The test was done with all enclosure. No safety relevant damaged.	Pass
4.2.6	Drop test	Unit is not hand-held, direct plug-in, or transportable.	N/A
4.2.7	Stress relief	Enclosure is metal.	N/A
4.2.8	Cathode ray tubes	The equipment does not have any CRT.	N/A
	Picture tube separately certified		N/A
4.2.9	High pressure lamps	The equipment does not have any high pressure lamps.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N) ... :	Mounting means withstands four times unit weight or 50N minimum. See enclosed test record.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
4.3	Design and construction		Pass
4.3.1	Edges and corners	All edges and corners are judged to be sufficiently well rounded so as not to constitute a hazard.	Pass
4.3.2	Handles and manual controls; force (N)		N/A
4.3.3	Adjustable controls	The equipment does not have a voltage selector. The equipment is auto-ranging.	N/A
4.3.4	Securing of parts	No loosening of parts impairing creepage distances or clearances over supplementary or reinforced insulation is likely to occur.	Pass
4.3.5	Connection of plugs and sockets	The equipment does not have any interchangeable plugs/sockets.	N/A
4.3.6	Direct plug-in equipment	Not direct plug-in equipment.	N/A
	Torque (Nm)		—
4.3.7	Heating elements in earthed equipment	The equipment does not have any heating elements.	N/A
4.3.8	Batteries	Battery is protected against charging current by multiple components within the system clock integrated circuit package. See Critical Components List.	Pass
4.3.9	Oil and grease	The insulation of the internal wiring is not exposed to oil, grease, etc.	N/A
4.3.10	Dust, powders, liquids and gases	The equipment does not produce dust or employ powders, liquids or gases.	N/A
4.3.11	Containers for liquids or gases	The equipment does not contain liquids.	N/A
4.3.12	Flammable liquids	The equipment does not use any flammable liquids.	N/A
	Quantity of liquid (l)		N/A
	Flash point (°C)		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.13	Radiation; type of radiation	The equipment does not generate ionizing radiation or contain flammable liquids or gases.	N/A
	Equipment using lasers		N/A

4.4	Protection against hazardous moving parts		N/A
4.4.1	General	Equipment does not have any hazardous moving parts.	N/A
4.4.2	Protection in operator access areas	Equipment does not have any hazardous moving parts.	N/A
4.4.3	Protection in restricted access locations	Equipment does not have any hazardous moving parts.	N/A
4.4.4	Protection in service access areas	Unintentional contact with hazardous moving parts by service personnel is unlikely.	N/A

4.5	Thermal requirements		Pass
4.5.1	Temperature rises	(see appended table).	Pass
	Normal load condition per Annex L..... :	Operated in the most unfavorable way of operation given in the operating instructions until steady conditions established.	Pass
4.5.2	Resistance to abnormal heat	No parts at hazardous voltage are directly mounted on thermoplastic parts.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

4.6	Openings in enclosures		Pass
4.6.1	Top and side openings	Foreign objects entering the enclosure will not contact bare parts at hazardous voltage or energy. (No hazardous parts within 5° projection).	Pass
	Dimensions (mm)	<p>Top side: Provided with 96 slots openings, each measures 17.8 mm by 2 mm maximum.</p> <p>Front Side: Provided with fan guard. Fan guard is metal screen, maximum 2 mm openings. Guard secured by fit between chassis and fan.</p> <p>May be provided with wall mount brackets, metal, 2 mm thick, with 4 key slot type openings, secured to chassis by screws.</p>	—
4.6.2	Bottoms of fire enclosures	No openings.	N/A
	Construction of the bottom.....		—
4.6.3	Doors or covers in fire enclosures	The equipment does not have any doors or covers.	N/A
4.6.4	Openings in transportable equipment	Unit not transportable.	N/A
4.6.5	Adhesives for constructional purposes	Adhesives not used for securement of internal barriers or screens.	N/A
	Conditioning temperature/time		—

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

4.7	Resistance to fire		Pass
4.7.1	Reducing the risk of ignition and spread of flame	Method 1: Selection and application of components and materials which minimize the possibility of ignition and spread of flame.	Pass
4.7.2	Conditions for a fire enclosure	With having the following components: - approved power supply - wiring - integrated circuit - DC Fan - Lithium Battery - Hard Disk Drive The fire enclosure is required.	Pass
4.7.2.1	Parts requiring a fire enclosure	A fire enclosure covers all parts.	Pass
4.7.2.2	Parts not requiring a fire enclosure	Fire enclosure covers all parts.	Pass
4.7.3	Materials		Pass
4.7.3.1	General	See below.	Pass
4.7.3.2	Materials for fire enclosures	The fire enclosure is metal.	N/A
4.7.3.3	Materials for components and other parts outside fire enclosures	Fire enclosure covers all parts.	N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	All internal materials are rated V-2 or better or are mounted on a PWB rated V-1 or better. Internal wiring is UL Recognized, marked VW-1 or FT-1 and strapped by individual cable ties (where needed). See Table 1.5 for material information.	Pass
4.7.3.5	Materials for air filter assemblies	The equipment does not have any air filters.	N/A
4.7.3.6	Materials used in high-voltage components	No high-voltage components.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		Pass
5.1	Touch current and protective conductor current		Pass
5.1.1	General	See below.	Pass
5.1.2	Equipment under test (EUT)	Equipment designed for connection to only one power source.	Pass
5.1.3	Test circuit	Single phase equipment intended only for connection to star TN or TT system.	Pass
5.1.4	Application of measuring instrument	The fire enclosure is metal.	Pass
5.1.5	Test procedure		Pass
5.1.6	Test measurements	See appended table.	Pass
	Test voltage (V)	275 Vac.	—
	Measured current (mA)	See appended table.	—
	Max. allowed current (mA)	3.5 mA. (Class I movable)	—
5.1.7	Equipment with touch current exceeding 3.5 mA	Touch current is < 3.5 mA.	N/A
5.1.8	Touch currents to and from telecommunication networks		N/A
5.1.8.1	Limitation of the touch current to a telecommunication network		N/A
	Test voltage (V)		—
	Measured current (mA)		—
	Max. allowed current (mA)		—
5.1.8.2	Summation of touch currents from telecommunication networks		N/A

5.2	Electric strength		Pass
5.2.1	General	Based on the electric strength test the use of the insulating materials within the equipment is satisfactory. (See appended table 5.2)	Pass
5.2.2	Test procedure	No insulation breakdown detected during the test. (see appended table 5.2)	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

5.3	Abnormal operating and fault conditions		Pass
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	Pass
5.3.2	Motors	Approval DC Fan. All disk drive motors evaluated as part of component evaluation.	Pass
5.3.3	Transformers	The protection of the SPS and transformer are approved with the approval of the SPS.	Pass
5.3.4	Functional insulation	Functional insulation complies with the requirements (a), (b), or (c). Considered in approved SPS.	Pass
5.3.5	Electromechanical components	The equipment does not have any electromechanical components in the secondary.	N/A
5.3.6	Simulation of faults	Faults in primary and secondary components and functional insulation were already considered during the approval of the SPS. See enclosed test record for abnormal operation tests.	Pass
5.3.7	Unattended equipment	The equipment does not have any thermostats, temperature limiters, or thermal cut-outs.	N/A
5.3.8	Compliance criteria for abnormal operating and fault conditions	No fire, emission of molten metal or deformation was noted during the tests. Electric strength tests performed after abnormal and fault tests.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

6	CONNECTION TO TELECOMMUNICATION NETWORKS No TNV circuits in the equipment.		N/A
6.1	Protection of telecommunication network service personnel, and users of other equipment connected to the network, from hazards in the equipment		N/A
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements		N/A
	Test voltage (V)		—
	Current in the test circuit (mA)		—
6.1.2.2	Exclusions		N/A

6.2	Protection of equipment users from overvoltages on telecommunication networks No TNV circuits in the equipment.		N/A
6.2.1	Separation requirements		N/A
6.2.2	Electric strength test procedure		N/A
6.2.2.1	Impulse test		N/A
6.2.2.2	Steady-state test		N/A
6.2.2.3	Compliance criteria		N/A

6.3	Protection of telecommunication wiring system from overheating No TNV circuits in the equipment.		N/A
	Max. output current (A)		—
	Current limiting method		—

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N/A
A.1.1	Samples, material		—
	Wall thickness (mm)		—
A.1.2	Conditioning of samples; temperature (°C)		N/A
A.1.3	Mounting of samples		N/A
A.1.4	Test flame		N/A
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s)		—
	Sample 2 burning time (s)		—
	Sample 3 burning time (s)		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N/A
A.2.1	Samples, material		—
	Wall thickness (mm)		—
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s)		—
	Sample 2 burning time (s)		—
	Sample 3 burning time (s)		—
A.2.7	Alternative test acc. to IEC 60695-2-2, cl. 4, 8		N/A
	Sample 1 burning time (s)		—
	Sample 2 burning time (s)		—
	Sample 3 burning time (s)		—
A.3	High current arcing ignition test (see 4.7.3.2)		N/A
A.3.1	Samples, material		—
	Wall thickness (mm)		—
A.3.5	Compliance criteria		N/A
	Sample 1 number of arcs to ignition (pcs)		—
	Sample 2 number of arcs to ignition (pcs)		—
	Sample 3 number of arcs to ignition (pcs)		—
	Sample 4 number of arcs to ignition (pcs)		—
	Sample 5 number of arcs to ignition (pcs)		—

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
A.4	Hot wire ignition test (see 4.7.3.2)		N/A
A.4.1	Samples, material		—
	Wall thickness (mm)		—
A.4.5	Compliance criteria		N/A
	Sample 1 ignition time (s)		—
	Sample 2 ignition time (s)		—
	Sample 3 ignition time (s)		—
	Sample 4 ignition time (s)		—
	Sample 5 ignition time (s)		—
A.5	Hot flaming oil test (see 4.6.2)		N/A
A.6	Flammability tests for classifying materials V-0, V-1 or V-2		N/A
A.6.1	Samples, material		—
	Wall thickness (mm)		—
A.6.5	Compliance criteria		N/A
A.6.6	Permitted re-test		N/A
A.7	Flammability test for classifying foamed materials HF-1, HF-2 or HFB		N/A
A.7.1	Sample, material		—
	Wall thickness (mm)		—
A.7.4	Compliance criteria		N/A
A.7.5	Compliance criteria, HF-2		N/A
A.7.6	Compliance criteria, HF-1		N/A
A.7.7	Compliance criteria, HBF		N/A
A.7.8	Permitted re-test, HF-1 or HF-2		N/A
A.7.9	Permitted re-test, HBF		N/A
A.8	Flammability test for classifying materials HB		N/A
A.8.1	Samples, material		—
	Sample thickness (mm)		—
A.8.2	Conditioning of samples; temperature (°C)		N/A
A.8.4	Test procedure		N/A
A.8.5	Compliance criteria		N/A
A.8.6	Permitted re-test		N/A
A.9	Flammability test for classifying materials 5V		N/A
A.9.1	Samples, material		—
	Sample thickness (mm)		—
A.9.4	Test procedure, test bars		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
A.9.5	Test procedure, test plaques		N/A
A.9.6	Compliance criteria		N/A
A.9.7	Permitted re-test		N/A
A.10	Stress relief conditioning (see 4.2.7)		N/A
	Temperature (°C) :		—

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2) Provided with DC fan.		N/A
B.1	General requirements		N/A
	Position		—
	Manufacturer		—
	Type		—
	Rated values		—
B.2	Test conditions		N/A
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days)		—
	Electric strength test: test voltage (V)		—
B.6	Running overload test for DC motors in secondary circuits		N/A
B.7	Locked-rotor overload test for DC motors in secondary circuits		N/A
B.7.1	Test procedure		N/A
B.7.2	Alternative test procedure; test time (h).....		N/A
B.7.3	Electric strength test		N/A
B.8	Test for motors with capacitors		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Operating voltage (V)		—

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		N/A
	Position		—
	Manufacturer		—
	Type		—
	Rated values		—
	Method of protection		—
C.1	Overload test		N/A
C.2	Insulation		N/A
	Protection from displacement of windings		N/A

G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N/A
G.1	Summary of the procedure for determining minimum clearances		N/A
G.2	Determination of mains transient voltage (V) :		N/A
G.3	Determination of telecommunication network transient voltage (V)		N/A
G.4	Determination of required withstand voltage (V)		N/A
G.5	Measurement of transient levels (V)		N/A
G.6	Determination of minimum clearances		N/A

H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N/A
	Ionizing radiation		N/A
	Measured radiation (mR/h)		—
	Measured high-voltage (kV)		—
	Measured focus voltage (kV)		—
	CRT markings		—

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N/A
	Metal used		—

K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7)		N/A
K.1	Making and breaking capacity		N/A
K.2	Thermostat reliability; operating voltage (V).. :		N/A
K.3	Thermostat endurance test; operating voltage (V)		N/A
K.4	Temperature limiter endurance; operating voltage (V)		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation		N/A

M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N/A
M.2	Method A		N/A
M.3	Method B		N/A
M.3.1	Ringing signal		N/A
M.3.1.1	Frequency (f)..... :		—
M.3.1.2	Voltage (V)		—
M.3.1.3	Cadence; time (s), voltage (V)		—
M.3.1.4	Single fault current (mA)		—
M.3.2	Tripping device and monitoring voltage..... :		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V)		N/A

U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N/A
	Separate test report		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

1.5.1	TABLE: list of critical components					Pass
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾	
DC Fans (For system)	Sunonwealth	KD1206PHB2	12Vdc, 1.9 W, 18.5 CFM	UL 507	UL	
Power supply	Skynet	SNP-8086	I/p: 100-240Vac, 47-63Hz O/p: +5V/16A, +12V/1.5A.	EN 60950 UL 60950	TÜV, UL	
Lithium Battery	Toshiba	CR2032	3 V, 220 mAh. Max. Abnormal Charging Current 10mA	UL 1642	UL	
	Rayovac	BR2032	3 V, 195 mAh. Max. Abnormal Charging Current 4 mA	UL 1642	UL	
Power Switch	Swann	33 series	min. 16/6 A, 125/250 Vac.	IEC 61058-1	VDE, UL	
Appliance inlet	Gwo Yuh	SL-3	Rated 250 Vac, 10A.	VDE 0565	VDE	
	Supercom	SC-8	Rated 250 Vac, 10 A.	VDE 0565	VDE	
HDD Drive (Optional)	--	--	5Vdc, 1A max.	EN 60950 UL 60950	TÜV, UL	
Polyswitch (FS3)	Raychem Corp.	miniSMDC110	6V, 1.1A.	UL 8730-1	UL	
	POLYTRONICS	SMD1218 series	6V, 1.1A.	UL 8730-1	UL	
PCB	--	--	V-1 or better, 105°C min.	UL94	UL	
¹⁾ an asterisk indicates a mark which assures the agreed level of surveillance						

1.6.2	TABLE: electrical data (in normal conditions)					Pass
fuse #	I rated (A)	U (V)	P (W)	I (mA)	I fuse (mA)	condition/status
						See enclosed test record.
supplementary information:						

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements					N/A
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)

2.10.5	TABLE: distance through insulation measurements				N/A
distance through insulation di at/of:	U r.m.s. (V)	test voltage (V)	required di (mm)	di (mm)	
supplementary information:					

4.5	TABLE: temperature rise measurements					Pass
	test voltage (V)	See enclosed test record.				—
	t1 (°C)	--				—
	t2 (°C)	--				—
temperature rise dT of part/at:		dT (K)		required dT (K)		
See enclosed test record.						
temperature rise dT of winding:	R ₁ (Ω)	R ₂ (Ω)	dT (K)	required dT (K)	insulation class	
supplementary information:						

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

4.5.2	TABLE: ball pressure test of thermoplastics		N/A
	allowed impression diameter (mm)		—
part		test temperature (°C)	impression diameter (mm)
supplementary information:			

5.2	TABLE: electric strength tests and impulse tests		Pass
test voltage applied between:		test voltage (V)	breakdown Yes / No
See enclosed test record.			
supplementary information:			

5.3	TABLE: fault condition tests					Pass
	ambient temperature (°C)	25°C				—
	model/type of power supply	See Table 1.5.1				—
	manufacturer of power supply	ditto.				—
	rated markings of power supply	ditto.				—
component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
						See enclosed test record.
supplementary information:						

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

A.6.5	TABLE: flammability test for classifying materials V-0, V-1 or V-2		N/A
sample No. / ref.	afterflame time (s) t_1 or t_2	afterflame + afterglow (s) after 2nd flame application $t_2 + t_3$	
1/A			
2/A			
3/A			
4/A			
5/A			
6/B			
7/B			
8/B			
9/B			
10/B			

A.6.6	TABLE: flammability re-test for classifying materials V-0, V-1 or V-2		N/A
sample No.	afterflame time (s) t_1 or t_2	afterflame + afterglow (s) after 2nd flame application $t_2 + t_3$	
11			
12			
13			
14			
15			

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

A.7.4, A.7.5, A.7.6 and A.7.7	TABLE: flammability test for classifying foam materials HF-1, HF-2 or HBF			N/A
sample No. / ref.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment (for A.7.7 burning rate mm/min)
1/A				
2/A				
3/A				
4/A				
5/A				
6/B				
7/B				
8/B				
9/B				
10/B				

A.7.8	TABLE: flammability re-test for classifying foam materials HF-1 or HF-2			N/A
sample No.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment
11				
12				
13				
14				
15				

A.7.9	TABLE: flammability re-test for classifying foam materials HBF			N/A
sample No.	flame time (s)	glow time (s)	flaming/glowing distance from the end (mm)	comment (for A.7.7 burning rate mm/min)
11				
12				
13				
14				
15				

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

A.8.5	TABLE: flammability test for classifying materials HB		N/A
sample No.	flaming/glowing rate mm/min	flaming/glowing distance from reference mark (mm)	
1			
2			
3			

A.8.6	TABLE: flammability re-test for classifying materials HB		N/A
sample No.	flaming/glowing rate mm/min	flaming/glowing distance from reference mark (mm)	
4			
5			
6			

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

A.9.6	TABLE: flammability test for classifying materials 5V				N/A
sample	test bars		test plaques		
No./ref.	flaming + glowing time (s)	burning distance (mm)	position	flaming + glowing time (s)	burning distance (mm)
1/A			A		
2/A			B		
3/A			C		
4/A			D		
5/A					
6/B			A		
7/B			B		
8/B			C		
9/B			D		
10/B					

A.9.7	TABLE: flammability re-test for classifying materials 5V				N/A
sample	test bars		test plaques		
No.	flaming + glowing time (s)	burning distance (mm)	position	flaming + glowing time (s)	burning distance (mm)
11			A		
12			B		
13			C		
14			D		
15					
supplementary information:					

ENCLOSURE No. 1

Photographs

(Total 4 Pages including this Cover Page)

Model MBPC-400



Model MBPC-400



Model MBPC-400



ENCLOSURE No. 2

Additional Test Data

(Total 36 Pages including this Cover Page)

Dept :

Applicant: Advantech Co., Ltd.

File No.: F 180881

Proj. Handler/Ext.:

Proj. No.: ΦZSC 12668

Resp. Engr./Ext.:

Product: ~~Love~~ ² Servey

Test Technician/Ext.: Zero Lee Zero Lee

Model Test: MBPC - $\varphi\phi\phi$

Standard(s) No.: DL64954

SPC Reviewed by: Terry Wang / Terry Wang

Data Sheets Reviewed by:

Testing Facility: Superior Product Consulting, INC.

Testing Location: Taipei, Taiwan, R.O.C.

_____ on ____/____/____
Prior to Factory Trip

Completed Test Results Reviewed by: _____ on ____/____/____

Test	Pg #
1. Input Test	6
2. Limited Power Source Measurement	7-8
3. Earthing Test II	9
4. Humidity Test	
5. Enclosure Push Test	10
6. Loading Test	11-12
7. Lithium Battery Reverse Current Measurement Test	13
8. Heating Test	14-19
9. Touch Current Test	20-21
10. Electric Strength Test	22
11. Abnormal Operation Test.	23-25
12. Overload of Operator Accessible	26-34

[illegible]

Page 1 of 34

TB:bd - UL 60950, 3rd Data Sheets
Document: 002.Eng

Form Issued: 10-02
Revised: 00-00

Form Page 8

Form Copyright © 2000 Underwriters Laboratories Inc.

Only those products bearing the UL Mark should be considered as being covered by UL.

SPC PROJECT NO.: 21239

2/34

Applied For Safety Inspection

Company/Test Institute: Superior Products Consulting, Inc.

Address of Test Site: 3F, No. 10, Min Sheng Lane 135, Pao Chiao Road, Hsin Tien City, Taipei, Taiwan, R.O.C.

Person responsible for:

Maintenance & Calibration: Terry Wang, Team Leader

Division/Department: Test Lab

Date and Signature:

Terry Wang 11/29/02

REV: A

DATE: NOV. 29, 2002

Item	Kind of Instrument/Specs on Class SPC Property No.	Manufacturer	Model Serial No.	Range Used & Function	Calibrated until
1	AC Power Meter SPC029	YOKOGAWA	2433 68LD0039	20A 600V	24, JUN. 2003 25, JUN. 2002
2	AC Power Meter SPC009	YOKOGAWA	2433 61LD0248	20A 600V	24, JUN. 2003 25, JUN. 2002
4	LEAKAGE CURRENT METER SPC103	SIMPSON	228 20433	0-100mA	14, APR. 2003 15, APR. 2002
5	PUSH/PULL SCALE SPC004	IMADA	FB-30 207330	30KG	24, JUN. 2003 25, JUN. 2002
7	X-RAY METER SPC026	VICTOREEN	440RF/D 597	0-100mR/h	07, FEB. 2002 08, FEB. 2001
8	DC ELECTRONIC LOAD SPC069	PRODIGIT	3301A 80201A011	60V/60A	05, FEB. 2003 06, FEB. 2002
9	CALIPER SPC019	MITUTOYO	500-321 7217225	150mm	03, FEB. 2003 04, FEB. 2002
10	TEMP. RECORDER SPC014	YOKOGAWA	UR180 48YP0718	-200°C TO 400°C	17, OCT. 2003 18, OCT. 2002
11	TEMP. RECORDER SPC012	YOKOGAWA	UR180 48YP0719	-200°C TO 400°C	19, NOV. 2003 20, NOV. 2002
12	TEMP. RECORDER SPC033	YOKOGAWA	UR180 42YS0028	-200°C TO 400°C	14, AUG. 2003 15, AUG. 2002
13	TEMP. RECORDER SPC099	FLUKE	52 4795005	-200°C TO 760°C	25, JUL. 2003 26, JUL. 2002
14	DIGITIZING OSCILLOSCOPE SPC047	TEKTRONIX	TDS410 B010359	150MHz 100MS/s	07, JAN. 2003 08, JAN. 2002
15	DUAL DISPLAY MULTIMETER SPC018	FLUKE	45 5120082	750Vac 10A	29, JAN. 2003 30, JAN. 2002
16	HIGH VOLTAGE PROBE SPC104	FLUKE	80K-40 72940016	40KVpk	28, MAY. 2002 29, MAY. 2001
17	THERMO-HYGROMETER SPC067	ISUZU	3-3122 80660571	-15°C - +40°C 0-100% RH	03, FEB. 2003 04, FEB. 2002
18	DC ELECTRONIC LOAD SPC028	PRODIGIT	3301 205010035	60V/60A 250V/10A	03, MAY. 2003 04, MAY. 2002
19	DC ELECTRONIC LOAD SPC033	PRODIGIT	3301 210010074	60V/60A 250V/10A	03, MAY. 2003 04, MAY. 2002
20	AC/DC CURRENT PROBE SPC047	TEKTRONIX	A622 06-14-94	70Arms 100Apk	05, MAY. 2003 06, MAY. 2002
21	DC ELECTRONIC LOAD SPC057	PRODIGIT	3321 607020098	60V/60A	25, JUL. 2003 26, JUL. 2002
22	DC ELECTRONIC LOAD SPC089	PRODIGIT	3321 607020097	60V/60A	25, JUL. 2003 26, JUL. 2002
23	DIGITIZING POWER METER SPC059	PRODIGIT	4011 964011133	600V/20A	25, JUL. 2003 26, JUL. 2002
24	STOP WATCH SPC068	CASIO	HS-20 ----	0 S-10 HOURS	11, APR. 2003 12, APR. 2002
25	DIGITIZING MULTIMETER SPC060	GOOD WILL	GDM-8055 6040254	750Vac 2A 20MΩ	24, JUN. 2003 25, JUN. 2002
27	POWER ANALYSER SPC063	AVPOWER	PA2100 621-0597	650Vrms 20A	11, APR. 2003 12, APR. 2002
28	DC ELECTRONIC LOAD SPC066	PRODIGIT	3301A 70601A022	60V/60A 250V/10A	16, OCT. 2003 17, OCT. 2002

3134

Item	Kind of Instrument Precision Class	Manufacturer	Model Serial No.	Range Used & Function	Calibrated until
29	TEST FINGER SPC039	UL	SM471 S002	UL1950 FIG. 19	21, MAR. 2004 22, MAR. 2002
30	BALL PRESSURE SPC041	UL	S1598 S004	UL1950 FIG. 21	21, MAR. 2004 22, MAR. 2002
31	IMPACT BALL ----	UL	---- S003	50mm 500g	21, MAR. 2004 22, MAR. 2002
32	TEST PIN SPC040	UL	S2962 S001	UL1950 FIG. 20	21, MAR. 2004 22, MAR. 2002
33	DC ELECTRONIC LOAD SPC077	PRODIGIT	3301A 80701A043	60V/60A	16, AUG. 2003 17, AUG. 2002
34	DC ELECTRONIC LOAD SPC079	PRODIGIT	3301A 80701A042	60V/60A	28, AUG. 2003 29, AUG. 2002
35	DC ELECTRONIC LOAD SPC080	PRODIGIT	3302A 808020375	60V/30A	16, AUG. 2003 17, AUG. 2002
36	DC ELECTRONIC LOAD SPC081	PRODIGIT	3302 808020378	60V/30A	16, OCT. 2003 17, OCT. 2002
37	DC ELECTRONIC LOAD SPC078	ZENTECH	2600R 809055	60V/60A 300V/10A	16, AUG. 2003 17, AUG. 2002
38	TEMP. RECORDER SPC082	YOKOGAWA	UR1800 4370GE038	-200°C TO 400	03, JAN. 2003 04, JAN. 2002
39	TEMP. RECORDER SPC083	YOKOGAWA	UR1800 4370GE037	-200°C TO 400	03, JAN. 2003 04, JAN. 2002
40	TEMP. RECORDER SPC090	YOKOGAWA	UR1800 4370GE046	-200°C TO 400	03, JAN. 2003 04, JAN. 2002
41	DC ELECTRONIC LOAD SPC091	PRODIGIT	3302A 811020578	60V/30A	16, OCT. 2003 17, OCT. 2002
42	DC ELECTRONIC LOAD SPC088	PRODIGIT	3302A 811020580	60V/30A	16, OCT. 2003 17, OCT. 2002
43	DC ELECTRONIC LOAD SPC098	PRODIGIT	3301A 80901A045	60V/60A	13, NOV. 2003 14, NOV. 2002
44	TEST FINGER SPC070	UL	FIGURE 19 2346	UL1950 FIG. 19	21, MAR. 2004 22, MAR. 2002
45	DC ELECTRONIC LOAD SPC092	PRODIGIT	3301A 80901A046	60V/60A	16, OCT. 2003 17, OCT. 2002
46	DIGITIZING OSCILLOSCOPE SPC093	TEKTRONIX	TDS360 B019983	200MHz 1GS/s	26, AUG. 2003 27, AUG. 2002
47	DUAL DISPLAY MULTIMETER SPC094	FLUKE	45 7079032	750Vac 10A	07, JAN. 2003 08, JAN. 2002
48	HI-POT TESTER SPC095	ZENTECH	ZT9072A 809549	10mA 5KV	28, AUG. 2003 29, AUG. 2002
49	GROUNDING TESTER SPC096	ZENTECH	ZT9570 807786	12V 40A	26, NOV. 2003 27, NOV. 2002
50	LEAKAGE CURRENT METER SPC097	SIMPSON	228 20988	0-100mA	17, OCT. 2003 18, OCT. 2002
51	DIGITIZING POWER METER SPC094	PRODIGIT	4011 984011034	600V/20A	04, FEB. 2003 05, FEB. 2002
52	CALIPER SPC084	MITUTOYO	CD-6"CS 0305366	150mm	19, NOV. 2003 20, NOV. 2002
53	TEMP. RECORDER SPC072	YOKOGAWA	UR1800 4370GC179	-200°C TO 400	19, NOV. 2003 20, NOV. 2002
54	AC POWER METER SPC101	YOKOGAWA	2433 68LD0040	20A 600V	06, JAN. 2003 07, JAN. 2002
56	TEMP. RECORDER SPC104	YOKOGAWA	UR1800 12W732059	-200°C TO 400	04, FEB. 2003 05, FEB. 2002
57	TEMP. RECORDER SPC106	FLUKE	52 73990047	-200°C TO 760°C	26, FEB. 2003 27, FEB. 2002
58	DIGITIZING POWER METER SPC107	CHYNG HONG	CP-350 355952	500V/50A	03, MAR. 2003 04, MAR. 2002
59	DIGITIZING POWER METER SPC105	CHYNG HONG	CP-350 355953	500V/50A	03, MAR. 2003 04, MAR. 2002
60	Temperature/Humidity Test Chamber SPC005	KAOTIEH	KT-7005-A 72867	25°C to 40°C 93%R.H. to 95%R.H.	07, OCT. 2003 08, OCT. 2002

File E180881

Project _____

Page 4 of 34Advantech Co., Ltd

TEST RECORD NO. _____

Vol. 2

Sec. _____

Issued: _____

TEST PROGRAM DETAILS:

The manufacturer submitted

- () a sample representing production of _____
- (X) representative production samples of Server ⁽¹⁹⁾ Server

Model(s) MBPC-400

- () employing the alternate _____

- (X) The following tests were conducted in accordance with
- (X) the Standard for Safety of Information Technology Equipment.
- (X) CSA C22.2, No. 60950/UL60950, Third Edition.
- (X) IEC 60950, Third Edition () Including Amendments _____
- () Including National Deviations from _____

() VDE 0805/05.90

() AS 3260

() EN 41 003

() TS 001-1990

() _____

- () Only the following tests were deemed necessary.

- (X) Tests were conducted by (co. name & location) Superior Product Consulting, Inc,
Taipei, Taiwan, R.O.C.

- () and witnessed by a member of the UL staff.

- (X) Tests were conducted under WTFDP/CTDP/COMPASS Program/TCP/CAP.

- () Tests noted by the initials "UL" were conducted at UL/witnessed by UL staff
member.

- () The following tests were conducted by _____ under:
the Memorandum of Understanding (MOU)/CB Scheme _____;
(CB Certificate No. _____; Tracking No. _____)

File E180881 Project 02SC12668 Page 5 of 34

The test methods and results of the following tests have been reviewed and found to be in accordance with the requirements in the Standards noted above. Test results are valid only for the tested equipment.

() The following D3 Deviations from UL 1950, Second Edition, were used for testing:

(X) The card cage contained 1 boards and had 0 empty slots.

(X) The CPU was Model PIII 540 MHz

(X) The unit was configured as follows: Hard Disk Power Supply

"Maximum normal load" was defined as follows:

Max. ² Two provided maximum, each rated 5VA, max. 0.5A.
Hard Disk was seeking, USB port load 0.5A.

() Horizontal scanning frequency: _____ KHz

Vertical scanning frequency: _____ Hz

The unit weighs approximately 3.75 kg and was considered transportable/
Building in/Direct plug-in/handheld/movable/fixed/stationary with exposed/unexposed
SELV/secondary low voltage/TNV circuits.

() The unit was considered rack-mountable.

(X) Tmra _____ °C.

(X) Unless otherwise indicated, all tests were conducted on

Model MBPC-400

() Tests performed on Model _____ were considered to be representative
of Model(s) _____

File E 180881

Tested by: Zero Lee

(Printed Name)

02801487

Zero Lee

(Signature)

6/34
12/24/02

Sample # 1/1 Instr Code/Range: 59. 18

1.6.2 - INPUT TEST:
SINGLE-PHASE

METHOD

The unit was connected to a variable voltage as indicated and then operated normally under the conditions noted below until well warmed. The input current and average power were measured.

(X) RESULTS

Operating Condition	Input Condition		Input Current, A		Average Power Watts
	Volts	Hz	Rated	Measured	
Max. Normal Load	90	47	-	0.49	29
"	90	63	-	0.48	29
"	100	47	3	0.45	29
"	100	63	3	0.45	29
"	250	47	3	0.25	30
"	250	63	3	0.24	30
"	275	47	-	0.23	31
"	275	63	-	0.23	31

The steady-state input current did/did not exceed the rated current at the rated voltage by more than 10% under the maximum normal load.

Comments: () Test on model:

Power Supply: Skyner, Type SNP-8086

File # E180881

Tested by: Zero Lee

(Printed Name)

02SC12668

Zero Lee

(Signature)

7/34
12/26/02

Sample # _____ Instr Code/Range: _____

2.5 - LIMITED POWER SOURCE MEASUREMENTS:

☒ METHOD (Inherently Limited)

A sample of the ~~power supply/transformer~~ ^{Server} Model MBPC-600 /operator Accessible Connector was connected to 275 V ac, 63 Hz/dc. After each of the following output measurements, the values were compared with the appropriate tables:

- The open circuit voltage (U_{oc}), with all load circuits disconnected.
- The output current (I_{sc}) after 60 seconds of operation with the load adjusted to maintain the I_{sc} current limit (8.0 A or $150/U_{oc}$, as applicable). Output circuits other than the circuit under test were unloaded during the I_{sc} measurements.
- The maximum output Volt-Ampere (VA), after 60 seconds of operation with the load adjusted to maintain the VA limit ($5 \times U_{oc}$, or 100, as applicable). Output circuits other than the circuit under test were unloaded during the VA measurement.

☒ If a regulating network limited the output in compliance with Table 2B under normal operating conditions, then measurements (A), (B), and (C) were repeated under single fault conditions. The faults were placed in any part of the regulating network, including power supply pulse width modulation circuitry.

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E180881 Project 02SC12668 Page 8/34
 Tested by: Zero Lee Zero Lee Date 12/26/02
 (Printed Name) (Signature)

Sample # 1 Instr Code/Range: 27.33.59

RESULTS

[illegible]

(X) The following/All output(s) complied with the limited power source requirements:

Comments: () Test on model:

SUPERIOR PRODUCT CONSULTING, INC.

Data Sheet

File E 184881

Project

02SC12668

Page

9/34

Tested by:

Zero Lee

Zero Lee

Date

12/26/02

(Printed Name)

(Signature)

Sample #

1

Instr. Code/Range:

99

2.6.3.3, 2.6.1 - EARTHING TEST II:

METHOD II - For circuit under test with a current rating exceeding 16 A.

Using a maximum 12 V ac ~~dc~~ power source, a current of 25, 40 A, was passed between the equipment earthing terminal and the part in the equipment that is required by 2.6.1 to be earthed listed below for a period of 1, 2 minutes. The voltage drop from the earthing terminal to the accessible metal part required to be earthed was recorded.

RESULTS II

Accessible Conductive Part	Current (Amps)	Voltage Drop (Volts)
<u>Earth Pin of AC Inlet to Chassis</u>	<u>25</u>	<u>0.295</u>
<u>"</u>	<u>40</u>	<u>0.483</u>

The voltage drop ~~did~~/did not exceed 2.5 V from any accessible conductive part and earth.

Comments: () Test on model:

NOTES TO ENGINEER:

- The test current was two times the current rating of the circuit under test.
- The time was as specified in Subclause 2.6.3.3.

Revised: UL 60950, 3rd Data Sheets
Document: 010.Eng

Form Issued: 10-02-00
Revised: 00-00-00

Copyright © 2000

Superior Product Consulting, Inc. 3060 Underwriters Laboratories, Inc.
All rights reserved. No part of this document should be reproduced without written permission.

21638

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E 180881 Project 02SC12668 Page 10/34
Tested by: Zero Lee Zero Lee Date 12/24/02
(Printed Name) (Signature)

Sample # X Instr Code/Range: 5.52

4.2.3, 4.2.4, 4.2.1 - ENCLOSURE PUSH TEST:

METHOD

() Using the unjointed probe in the shape of the standard test finger which incorporates the force gauge, a steady force of 30 ± 3 N (6-3/4 lbs) was applied to internal covers or guards for a period of 5 seconds. After the application of the test force, clearances were measured with the internal covers or guards deflected.

(X) Using a test tool having a 30 mm (1.2 in.) circular diameter contact surface, a force of 250 ± 10 N (56 lbs) was applied to external covers or guards for a period of 5 seconds. After the application of the test force, clearances were measured with the external covers or guards deflected. During the application of the test force, clearances behind earthed or unearthed, conductive enclosures ~~were~~/were not reduced to a level that would result in an energy hazard.

RESULTS

Part/Location	Thickness	Force	Observations
Enclosure / Top	$\phi 9$ mm	250 N	NO crack
Enclosure / Bottom	$\phi 9$ mm	250 N	NO crack
Enclosure / Side	$\phi 9$ mm	250 N	NO crack

During the application of the test force, clearances behind earthed or unearthed conductive enclosures ~~were~~/were not reduced to a level that would result in an energy hazard.

NOTES TO LAB:

- Describe under Observations any openings created, or if the unit, any accessory, or any part suffered permanent distortion, damage, or became unsuitable for reuse as a result of this test. Contact Engineer for further evaluation.

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E 184881 Project 02SC12668 Page 11/34
Tested by: Zero Lee Zero Lee Date 12/26/02
(Printed Name) (Signature)

Sample # _____ Instr Code/Range: _____

4.2.10 - LOADING TESTS:

METHOD

After filling any containers to rated capacity and attaching any accessories, the equipment, Model MBPC-444 and its mounting means were secured to the ~~wall/ceiling~~ in accordance with the manufacturer's instructions, using the hardware and construction as described. Adjustable equipment was adjusted to the position that gives the maximum projection from the wall.

A force equal to four times the weight of the unit (the equipment plus three times its weight), but not less than 50 N, was applied through a strap approximately 75 mm wide at the dimensional center of the appliance and was increased in 5 - 10 second intervals until the maximum load was applied to the mounting system. The full load was sustained for 1 minute.

TB:bd - UL 60950, 3rd Data Sheets
Document: 010.Eng

Form Issued: 10-02-00
Revised: 00-00-00

Form Page 62

Form Copyright © 2000 Superior Product Consulting, Inc.

Only those products bearing the UL Mark are covered by this document.

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E180881 Project 02SC12668 Page 12/134
Tested by: Zero Lee Zero Lee Date 12/26/02
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 5.24

RESULTS

Weight of the equipment: 3.75 kg

Force applied: 15 kg, which was 3 times the weight of the equipment.

☒ The mounting means did/did not withstand the force applied without breaking or damaging the mounting bracket, its securing means, or that portion of the unit to which it was attached.

Comments: _____

NOTES TO LAB:

1. If no mounting surface is specified, use a wall construction of 1.3 cm (1/2 in.) thick plasterboard mounted on a 4-5 by 8-10 cm wood, 41 cm on center (2 by 4's - 16 in. on center).
2. If any of the mounting material is plastic, perform this test after conducting Stress Relief Test.

NOTES TO ENGINEER:

1. The force applied to the mounting means is four times the weight of the equipment. Therefore, when the equipment is mounted, the weight of the equipment times three will equal a force of four times the weight of the unit.

File E180881Tested by: Zero Lee

02SC12668

Zero Lee

12/26/02

(Printed Name)

(Signature)

Sample # 1/1 Instr Code/Range: 15.59

4.3.8 - LITHIUM BATTERY REVERSE CURRENT MEASUREMENT TEST:

METHOD

With the lithium battery removed from the circuit, the sample was connected to 215 V ac, 63 Hz/dc. A dc ammeter replaced the battery in the circuit and the normal reverse (charging) current was measured. The reverse current protection component was shorted and the abnormal reverse (charging) current was measured.

RESULTS

Battery Type	Normal Reverse (Charging) Current (mA)	Abnormal Condition	Abnormal Reverse Current (mA)
<u>Rayovac, Type: BR7037</u>	<u>0.004</u>	<u>-</u>	<u>-</u>
<u>=</u>	<u>0.004</u>	<u>R293 Short</u>	<u>0.023</u>
<u>=</u>	<u>0.004</u>	<u>D10(2-3) Short</u>	<u>0.093</u>

Comments:

NOTES TO LAB:

- CAUTION: Risk of explosion. Remove battery before performing this test.
- Notify engineer if maximum abnormal charging current exceeds 4 mA.

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E-180881 Project 02SC12658 Page 14/134
Tested by: Zero Lee Zero Lee Date 12/24/02
(Printed Name) (Signature)

Sample # _____ Instr Code/Range: _____

4.5.1, 1.4.12, 1.4.13 - HEATING TEST:

METHOD

The sample was connected to a source of supply, as noted below, and operated until temperatures became stable. Temperatures were measured using the thermocouple method. () Rise in temperature of windings of motors and transformers were additionally determined by the change-of-resistance method.

() Before starting the Heating Test, each special non-detachable power supply cord connection was pulled with a force of 5 N (1.12 lbs) for one minute. During the Heating Test, the temperature of its connections were recorded. (Maximum 60°C rise per 3.3.2.)

The sample operated under normal load as follows:

- (X) Continuous operation, until steady conditions were established.
- () Rated intermittent operation of _____ on _____ off, until steady conditions were established.
- () Rated short-time operation of _____.

(X) The test conditions were as follows:

Max. normal load

Tmra was ② 94.5°C.

(X) #Note:

Cooling fan CFM (min): 18.5

Junon, Type KD1206PHB2

Case E 16088.1 Project 32SC12568
Submitted by: Zero Lee Zero Lee 12/24/02.
(Printed Name) (Signature)

Sample # 1/1 Instr Code/Range: 33.48.59.53.24.

RESULTS

Test	Operating Condition	Input Conditions		Duration
		Volts	Hz	
A	Max. normal load	90	63	3hrs
B	=	275	47	1.5hrs
C	= (Fan Lock)	240	60	2.5hrs
D	= (Block openings)	240	60	2hrs
E				
F				

Thermocouple Locations	Maximum Temperature °C					
	Test A	Test B	Test C	Test D	Test E	Test F
1. LI coil	47	33	52	32		
2. L6 coil	33	32	50	32		
3. T1 coil	42	44	66	44		
4. C8 Body	33	36	54	33		
5. PCB near CPU	34	34	64	35		
6. Hard Disk Body	28	26	43	25		
7. Motel (outside)	24	23	41	24		
8. Ambient	22	21	23	20		

Note: () Test on model:
Location 1 to 4 for Power Supply (Skynet Type: SWP-8086).
5 to 7 for System

SPC PROJECT NO.:

21239

SHENYANG ELECTRIC CONSULTING CO., INC.

Data Sheet

02SC12668

File E (80881

Project

Tested by:

Zero Lee

Pew Lee

Page

16/34

Date

12/24/02

(Printed Name)

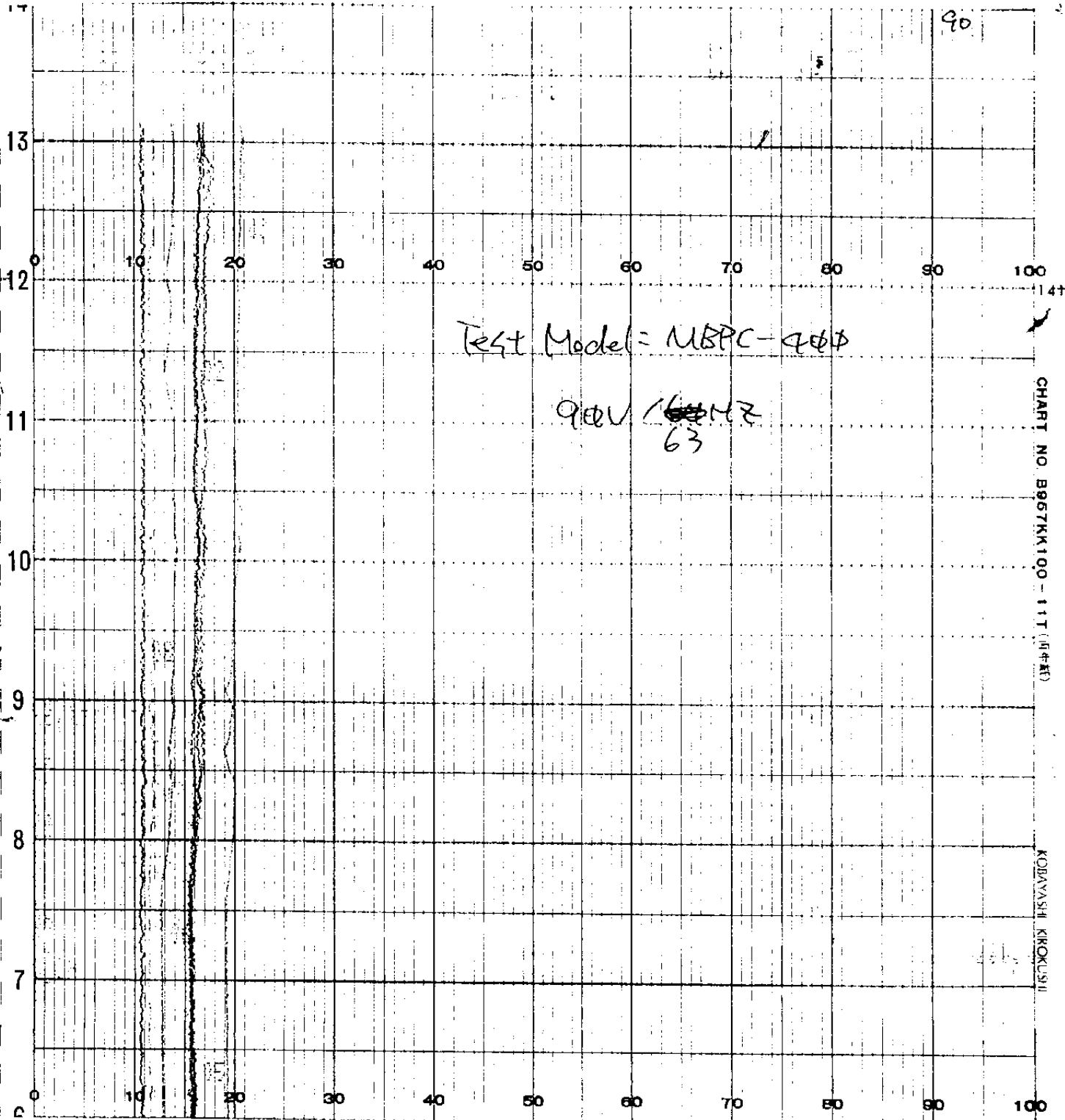
(Signature)

Sample #

11

Instr Code/Range:

33.48.59.53.24



SPC PROJECT NO.:

21239

PROTECTOR AND SONS CONSULTING, INC.
Data Sheet

File E180881

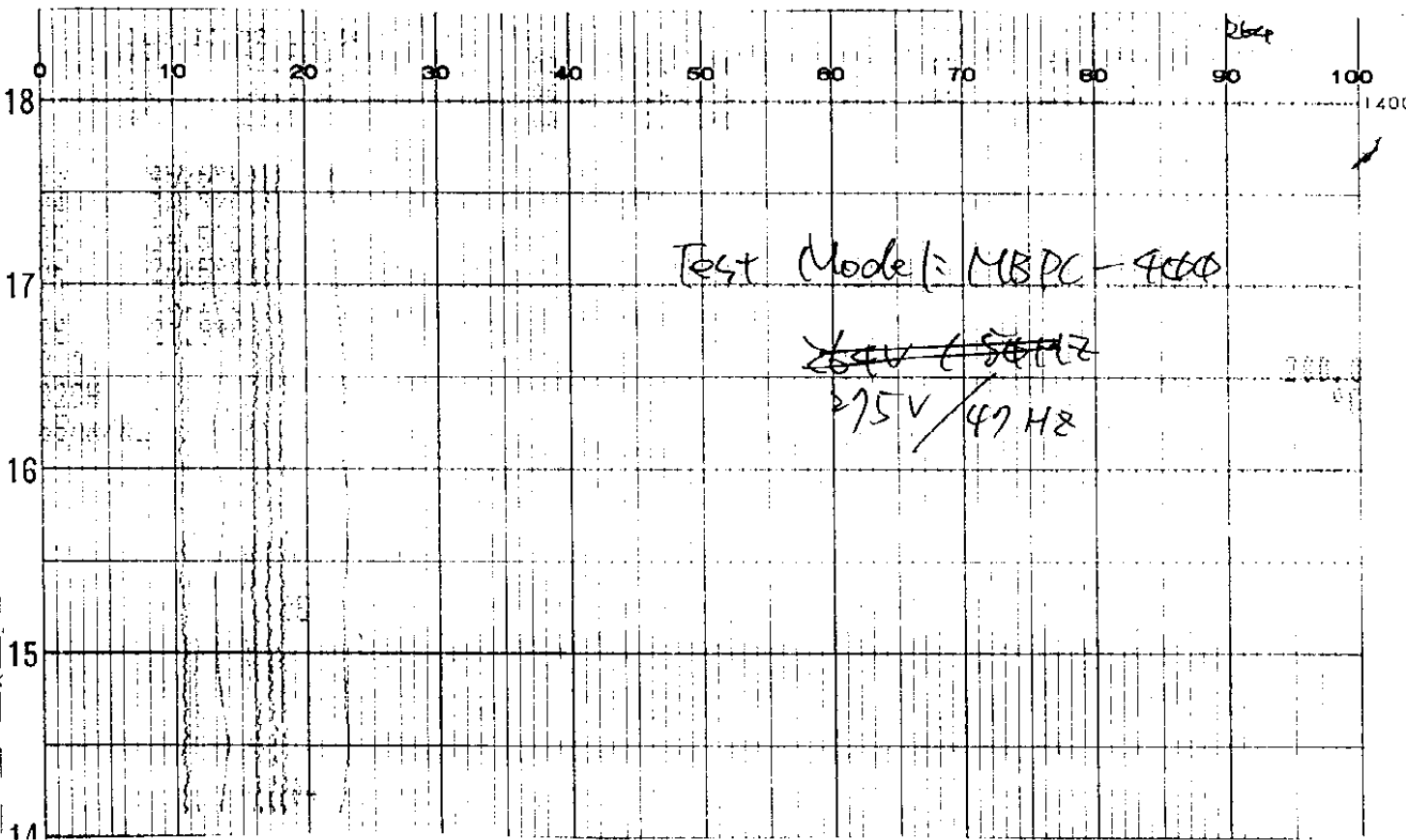
Project 02SC12668

Page 17/34
Date 12/24/02

Tested by: Zero Lee
(Printed Name)

Zero Lee
(Signature)

Sample # 1 Instr Code/Range: 23.48.24.59.53



File E (8488)

Project

02SC12668

Tested by:

Zero Lee

Zero Lee

Page

18/34

Date

12/24/02

(Printed Name)

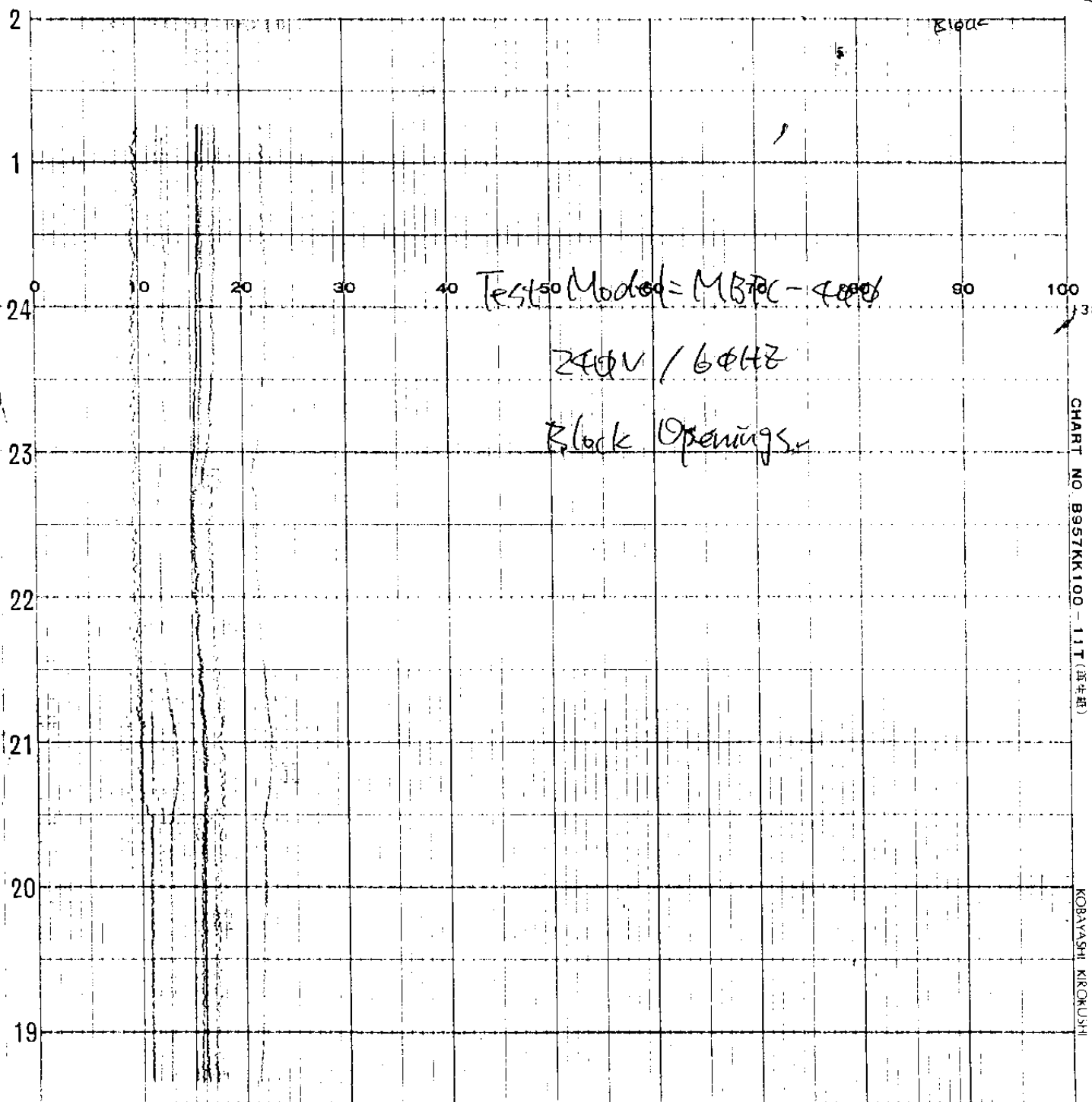
(Signature)

Sample #

1

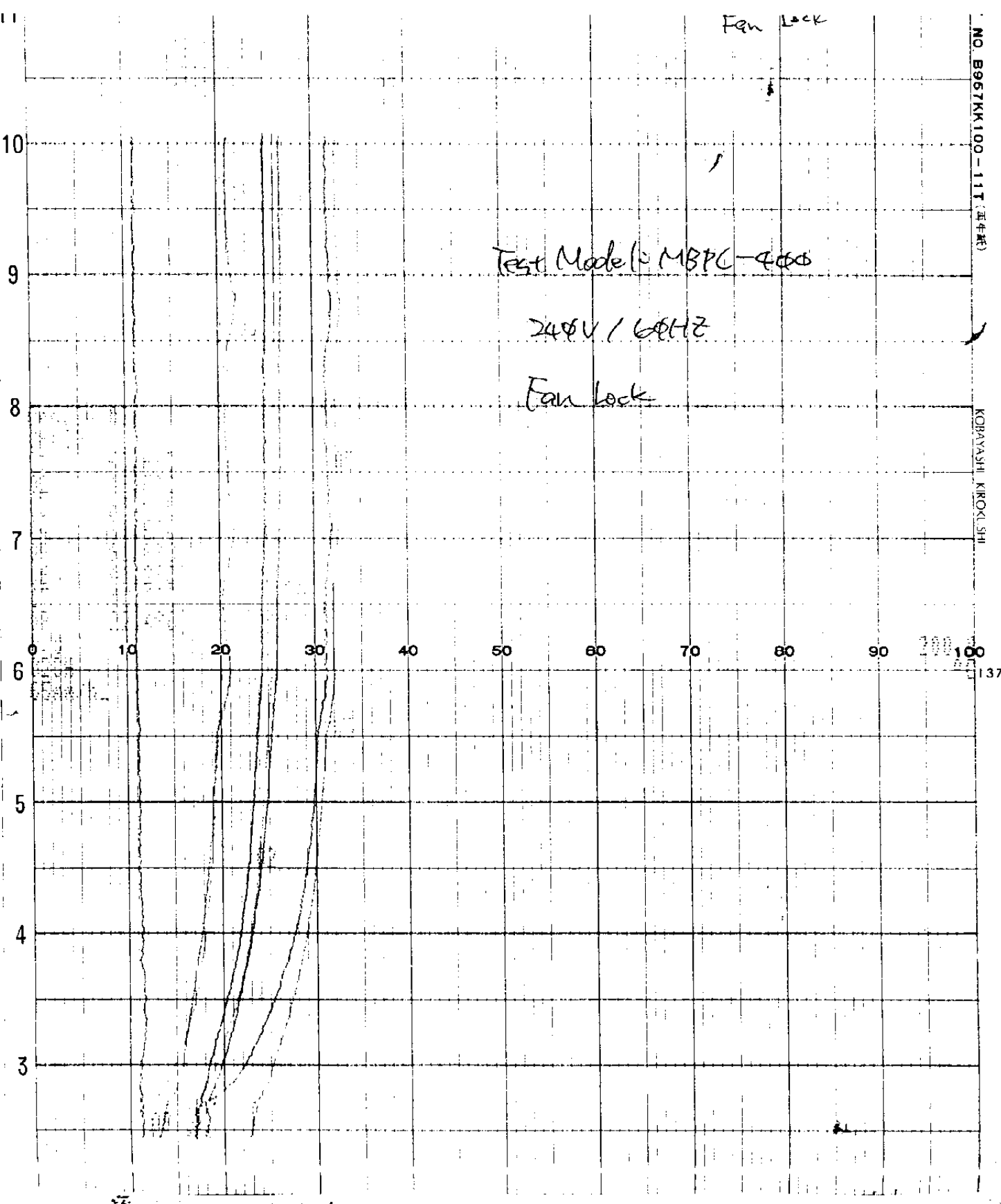
Instr Code/Range:

33.48.53.59.24



File # E180881 Project 02SC12668 Page 19/34
Tested by: Zero Lee Zero Lee Date 12/24/02
(Printed Name) (Signature)

Sample # 1/1 Instr. Code/Range: 33.48.53.59.24-



File # E-180881

Tested by: Zero Lee

028012868

Date 12/24/02

(Printed Name)

(Signature)

Sample # _____ Instr. Code/Range: _____

5.1, ANNEX D - TOUCH CURRENT TEST:
(Single-Phase/Polyphase; TN/TT System)

METHOD

The equipment was connected to 215 V ac, 63 Hz. The equipment was placed on an insulating surface and all connections to external equipment were disconnected to prevent stray leakage paths. The unit protective earthing connection was broken during the test. () An isolating transformer was used.

The tests were conducted using the measuring instrument for touch current tests (meter), described in Annex D of UL 60950, Third Edition. Terminal B of the measuring instrument was connected to the earthed (neutral) conductor of the supply (see Figure 5A or 5B).

Primary power switches (i.e., "ON/OFF" switches and voltage selector switches) which can be operated during normal use, were opened and closed in all possible combinations.

For an accessible non conductive part, the test was made to metal foil having dimensions of 10 by 20 cm in contact with the part. If the area of the foil is smaller than the surface under test, the foil was moved so as to test all parts of the surface. Where adhesive metal foil was used, the adhesive was conductive. Precautions were taken to prevent the metal foil from affecting the heat dissipation of the equipment.

Accessible conductive parts that are incidentally connected to other parts were tested both as connected and disconnected parts.

☒ For equipment having a protective earthing connection or a functional earthing connection, terminal A of the measuring instrument was connected via measurement switch "s" to the equipment earthing terminal of the EUT, with the earthing conductor switch "e" open.

() The test was conducted on all equipment, with terminal A of the measuring network connected via measurement switch "s" to each unearthed or non-conductive accessible part and each unearthed accessible circuit, in turn, with the earthing conductor switch "e" closed.

Measuring instrument used:

☒ Annex D.1 ☒ Simpson Meter 228
() _____

() Annex D.2 () Simpson Meter 229-2
() _____

File E180881 Project 02SC12668 Page 21/34
 Tested by: Zero Lee Zero Lee Date 12/26/02
 (Printed Name) (Signature)

Sample # 1 Instr Code/Range: 50.59.

(X) For single-phase equipment, the test circuit of Fig. 5A was used.

The test was made in all combinations to the normal and reverse polarity of the supply circuit (Polarity Switch Pl).

Terminal A of Measuring Instrument Connected to:	Switch "e" Position	Touch Current (mA r.m.s.) Polarity Pl/Primary Switch Condition			
		Normal/On	Normal/Off	Reverse/On	Reverse/Off
Earth	open	1.25	0.045	1.25	0.035
Metal	open	1.25	0.045	1.25	0.035
Connector	open	1.25	0.095	1.25	0.040

The touch current did/did not exceed 3.5 mA r.m.s.

() For three-phase equipment, the test circuit of Fig. 5B was used.

Any components used for EMC purposes and connected between line and earth were disconnected one at a time; for this purpose, groups of components in parallel connection through a single connection were treated as single components. Each time a line-to-earth component was disconnected, the sequence of switch operations was repeated.

Terminal A of Measuring Instrument Connected to:	Switch "e" Position	Component Disconnected	Touch Current (mA r.m.s.) Polarity Pl/Primary Switch Condition			
			Normal/ On	Normal/ Off	Reverse /On	Reverse /Off

The touch current did/did not exceed _____ mA r.m.s.

Note: Y-Cap. () pF; () pF
 Y-Cap. () pF; () pF
 Bridging-Cap. () pF; () pF

Power Supply: Skywet, Type SNP-8086

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E180881 Project 02SC12668 Page 22/34
 Tested by: Zero Lee Zao Lee Date 12/24/02
 (Printed Name) (Signature)

Sample # 1 Instr Code/Range: 48

5.2.2 - ELECTRIC STRENGTH TEST:

METHOD

While the unit was in a well heated condition, an ac or dc potential was gradually increased from zero to the test potential given below. The voltage was applied and maintained for a period of one minute between the points indicated. All switches, relays, contactors, triacs or equivalent in the test circuit were closed or shunted.

Product/ Component	<u>Unit</u>	<u>Unit</u>			
From	<u>Primary</u>	<u>Primary</u>			
To	<u>Secondary</u>	<u>Earth</u>			
Insl. Type (O, B, S, R)	<u>R</u>	<u>B</u>			
() Working Voltage					
Test Voltage	<u>4242</u>	<u>3000</u>			
ac/dc	<u>dc</u>	<u>dc</u>			

RESULTS

Breakdown?	<u>NO</u>	<u>NO</u>			
If yes,					
Voltage					
Location					
Time					

(X) There was no indication of breakdown.

Comments: Power Supply: Skyner, Type SNP-8086

File E184881 Project 02SC12668 Page 23/34
Tested by: Zero Lee Zero Lee Date 12/25/02
(Printed Name) (Signature)

Sample # _____ Instr Code/Range: _____

5.3.1 - 5.3.8.2 - ABNORMAL OPERATION TESTS:

METHOD

The unit was operated continuously under the abnormal condition(s) noted below.
☒ The unit was placed on a tissue paper covered softwood surface and covered with cheesecloth.

☐ The following unreliable controls, thermostats and/or thermal cutouts were short-circuited: _____

☐ If a wire or printed wiring board trace in the primary circuit opened, the gap was electrically shorted and the test continued until ultimate results occurred.

☐ If a trace in a secondary circuit designed to intentionally open in a reliable manner operated during the test, the test was repeated two times (three times total).

Test No.

- ☐ _____ Mechanical movement disabled.
- ☐ _____ Misloaded unit.
- ☐ _____ Drive motor stalled or overloaded (i.e., paper jam).
- ☒ 1 Stalled fan or blower.
- ☐ _____ Disconnected fan or blower.
- ☐ _____ Foreseeable misuse of operating devices (knobs, levers, keys, etc.).
- ☒ 2 Blocked ventilation openings.
- ☐ _____ Disabled timer switch.
- ☐ _____ Contact(s) malfunctioned.
- ☐ _____ Thermostat(s) malfunctioned.
- ☐ _____ Thermal cutout(s) malfunctioned.
- ☐ _____ Solenoid plunger locked.
- ☐ _____ Clutch - continuous operation.
- ☐ _____ Voltage mismatch.
- ☐ _____

File E180881

Project _____

Page 24 / 34Tested by: Zero LeeZero LeeDate 12/25/62

(Printed Name)

(Signature)

Sample # _____ Instr Code/Range: _____

(X) At the end of the test, an Electric Strength (ES) potential was applied as indicated below for one minute.

ES Code	Location		Potential Used (V)
	From	To	
A	<u>Primary</u>	<u>Secondary</u> ()	ac (X) <u>4292</u> dc
B	<u>Primary</u>	<u>Earth</u> ()	ac (X) <u>3000</u> dc

The following key and corresponding comments may be used to describe the final results.

Comments Key:

- NB - No indication of dielectric breakdown
- YB - Dielectric breakdown (indicate time and location)
- NC - Cheesecloth remained intact
- YC - Cheesecloth charred or flamed
- NT - Tissue paper remained intact
- YT - Tissue paper charred or flamed

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E180881 Project 02SC12668 Page 25/34
Tested by: Zero Lee Zero Lee Date 12/25/02
(Printed Name) (Signature)

Sample # 1 Instr Code/Range: 33.48.59.53.24

RESULTS

Test	Component	Abnormal Condition	Input V/Hz	Duration	ES Code
1	Unit	Fan Lock	240/60	2.5 hrs	A/B

Comments: Temp. was stable, input current = 0.23A, Temp. See Heating Test Result for Details. NB. NL NT.

2	Unit	Block Opening	240/60	2 hrs	A/B
---	------	---------------	--------	-------	-----

Comments: Temp. was stable, input current = 0.29A, Temp. See Heating Test Result for Details. NB. NL NT.

Comments: _____

Comments: _____

Comments: _____

Comments: _____

Power Supply: Skyenet, Type SNP-8086

Form E 130681

Tested by: Zero Lee

(Printed Name)

025012668

Zero Lee

(Signature)

12/24/02

Sample # _____ Instr Code/Range: _____

5.3.6 - OVERLOAD OF OPERATOR ACCESSIBLE CONNECTOR TEST:

METHOD

The sample was covered with one layer of cheesecloth and placed on a pinewood board covered with one layer of tissue paper. The sample had a complete enclosure.

The sample was connected to 275 V ac, 63 Hz ~~dc~~.

(X) The voltage potential was measured on the connector pins. Circuits that measured 0 V were not tested.

() The impedance was measured between each accessible connector pin that had greater than 0 V and its power supply voltage source. Where there was 10,000 ohm or more of series impedance between the output connector pin and the power supply voltage source of 125 V or less, the circuit was not tested. Where there was 20,000 ohm or more of series impedance between the output connector pin and the power supply voltage source, was greater than 125 V, but not greater than 250 V, the circuit was not tested.

(X) A suitable variable resistor was connected between the connector pin tested and ground. The maximum available current was measured at each pin. If the current was less than or equal to 12.5 mA, the circuit was not tested. When the maximum available current was greater than 12.5 mA, the load was adjusted for maximum available current and maintained for one hour.

() Output circuits, which exceeded LPS limits in Clause 2.5 testing, were subjected to this test for at least one hour. The non-LPS output was loaded to draw the maximum current.

The maximum available current was considered to be the lower of (1) the short-circuit current, (2) that current just below the trip point of any overcurrent or overtemperature protective device, or (3) that current that was just below the point at which the power supply circuitry limited the output current. The trip point of overcurrent protective devices was considered to be 110 percent of their current rating.

SUPERIOR PRODUCT CONSULTING, INC.

Data Sheet

02SC12668

File E184881

Project

Page

27/34

Tested by:

Zero LeeZero Lee

Date

12/24/82

(Printed Name)

(Signature)

Sample # _____ Instr Code/Range: _____

If the circuit was interrupted by the opening of an unreliable component, the test was repeated twice (three times total) using new components as necessary. If a wire or printed wiring board trace in the primary circuit opened, the gap was electrically shorted and the test continued until ultimate results occurred.

() If a trace in a secondary circuit designed to intentionally open in a repeatable manner operated during the test, the test was repeated two time (three times total).

If after one hour there was no indication of an abnormal condition, but it appeared possible that a condition of risk would result, the test was continued for 7 hours.

(X) At the end of the test, an Electric Strength (ES) potential was applied as indicated below for one minute.

ES Code	From	Location	To	Potential Used (V)
A	<u>Primary</u>	<u>Secondary</u>	()	ac (X) <u>4242</u> dc
B	<u>Primary</u>	<u>Earth</u>	()	ac (X) <u>3000</u> dc

The following key and corresponding comments may be used to describe the final results.

Comments Key:

- NB - No indication of dielectric breakdown
- YB - Dielectric breakdown (indicate time and location)
- NC - Cheesecloth remained intact
- YC - Cheesecloth charred or flamed
- NT - Tissue paper remained intact
- YT - Tissue paper charred or flamed
- A - Circuit measures 10 KS or more series impedance
- B - Circuit measures less than 12.5 mA
- C - Circuit measures 0 Volts
- D - Other. Please explain.

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

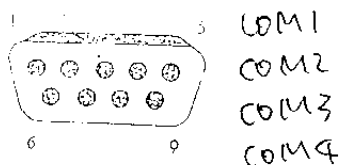
File E 184881 Project 02SC12668 Page 28/34
 Tested by: Zero Lee Zero Lee Date 12/24/02
 (Printed Name) (Signature)

Sample # 1 Instr Code/Range: 15.59.48

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
COM1	1	Ø	-	-	C
"	2	Ø	-	-	C
"	3	-9.515	19.415	1hr	NB. NC. NT
"	4	-9.515	19.412	1hr	NB. NC. NT
"	5	Ø	-	-	C
"	6	Ø	-	-	C
"	7	-9.515	18.935	1hr	NB. NC. NT
"	8	Ø	-	-	C
"	9	Ø	-	-	C
COM2	1	Ø	-	-	C
"	2	Ø	-	-	C
"	3	-9.525	18.993	1hr	NB. NC. NT
"	4	-9.525	19.123	1hr	NB. NC. NT
"	5	Ø	-	-	C
"	6	Ø	-	-	C
"	7	-9.526	16.899	1hr	NB. NC. NT
"	8	Ø	-	-	C

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)



Trdbd - UL 60950, 3rd Data Sheets
 Document: 010.Eng

Form Issued: 10-02-00
 Revised: 00-00-00

Form Code: 02

When supplied with the appropriate information, the user should be able to use the UL Data Sheet to determine the appropriate test results.

02SC12668

File E 180881

Project

Page

29/34

Tested by:

Zero LeeZero Lee

Date

12/24/02

(Printed Name)

(Signature)

Sample #

1/1

Instr Code/Range:

15-59.48

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
COM2	9	0	0	-	C
COM3	1	0	-	-	C
"	2	0	-	-	C
"	3	-9.510	18.339	1hr	NB. NC. NT
"	4	-9.510	18.429	1hr	NB. NC. NT
"	5	0	-	-	C
"	6	0	-	-	C
"	7	-9.511	19.123	1hr	NB. NC. NT
"	8	0	-	-	C
"	9	0	-	-	C
COM4	1	0	-	-	C
"	2	0	-	-	C
"	3	-9.502	19.329	1hr	NB. NC. NT
"	4	-9.502	19.315	1hr	NB. NC. NT
"	5	0	-	-	C
"	6	0	-	-	C

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)

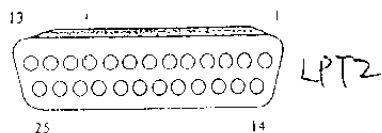
File E 180881 Project 02SC12608 Page 30/34
 Tested by: Zero Lee Zero Lee Date 12/24/02
 (Printed Name) (Signature)

Sample # X Instr Code/Range: 15-59.48

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
COM4	7	-9.501	19.322	1hr	NB. NC. NT
"	8	0	-	-	C
"	9	0	-	-	C
LPT2	1	5.015	5.725	-	B
"	2	5.016	42.45	1hr	NB. NC. NT
"	3	5.016	42.33	1hr	NB. NC. NT
"	4	5.016	43.37	1hr	NB. NC. NT
"	5	5.015	42.37	1hr	NB. NC. NT
"	6	5.016	42.40	1hr	NB. NC. NT
"	7	5.016	43.42	1hr	NB. NC. NT
"	8	5.017	41.49	1hr	NB. NC. NT
"	9	5.016	42.38	1hr	NB. NC. NT
"	10	5.016	5.758	-	B
"	11	5.017	5.762	-	B
"	12	5.017	5.760	-	B
"	13	5.017	4.993	-	B
"	14	5.015	4.995	-	B

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)



SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E180881 Project 02SC12668 Page 31/34
 Tested by: Zero Lee Zero Lee Date 12/24/02
 (Printed Name) (Signature)

Sample # X Instr Code/Range: 15.59.48

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
<u>LP12</u>	<u>15</u>	<u>5.015</u>	<u>9.933</u>	<u>-</u>	<u>B</u>
<u>"</u>	<u>16</u>	<u>5.015</u>	<u>9.432</u>	<u>-</u>	<u>B</u>
<u>"</u>	<u>17</u>	<u>φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>18</u>	<u>φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>19</u>	<u>φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>20</u>	<u>φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>21</u>	<u>φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>22</u>	<u>φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>23</u>	<u>φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>24</u>	<u>φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>25</u>	<u>φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>VGA</u>	<u>1</u>	<u>0.59</u>	<u>6.815</u>	<u>-</u>	<u>B</u>
<u>"</u>	<u>2</u>	<u>0.67</u>	<u>7.686</u>	<u>-</u>	<u>B</u>
<u>"</u>	<u>3</u>	<u>0.75</u>	<u>8.519</u>	<u>-</u>	<u>B</u>
<u>"</u>	<u>4</u>	<u>φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>5</u>	<u>φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>6</u>	<u>φ</u>	<u>-</u>	<u>-</u>	<u>C</u>

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)

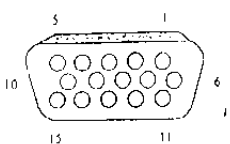


Table: EN-0050, 3rd Data Sheets
 Document: 1. File

Form Issued: 10-22-00
 Revised: 10-26-00

File E180881

Project

02SC12668

Tested by:

Zero LeeZero Lee

Page

32/34

Date

12/24/02

(Printed Name)

(Signature)

Sample #

1

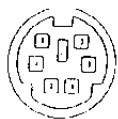
Instr. Code/Range:

15.59.48-

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
<u>VGA</u>	<u>1</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>8</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>9</u>	<u>5.013</u>	<u>0.158</u>	<u>-</u>	<u>B</u>
<u>"</u>	<u>10</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>11</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>12</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>13</u>	<u>0.71</u>	<u>6.293</u>	<u>-</u>	<u>B</u>
<u>"</u>	<u>14</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>15</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>K/B</u>	<u>1</u>	<u>4.936</u>	<u>0.34</u>	<u>-</u>	<u>B</u>
<u>"</u>	<u>2</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>3</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>"</u>	<u>4</u>	<u>5.020</u>	<u>0.272</u>	<u>1hr</u>	<u>NB. N.C. NT</u>
<u>"</u>	<u>5</u>	<u>4.936</u>	<u>0.35</u>	<u>-</u>	<u>B</u>
<u>"</u>	<u>6</u>	<u>0</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>Mouse</u>	<u>1</u>	<u>4.935</u>	<u>0.32</u>	<u>-</u>	<u>B</u>

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)

MouseK/B

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E180881 Project 02SC12668 Page 33/34
 Tested by: Zero Lee Zero Lee Date 12/24/02
 (Printed Name) (Signature)

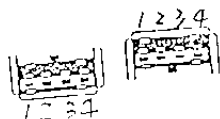
Sample # 1 Instr Code/Range: 15.59.48

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
M/S	2	0	-	-	C
"	3	0	-	-	C
"	4	5.020	2.69 ^{2.69}	chr	NB. NC. NT
"	5	4.935	0.33	-	B
"	6	0	-	-	C
USB1	1	4.993	780	1hr	NB. NC. NT
"	2	0	-	-	C
"	3	0	-	-	C
"	4	0	-	-	C
USB2	1	4.995	783	1hr	NB. NC. NT
"	2	0	-	-	C
"	3	0	-	-	C
"	4	0	-	-	C
Audio 1	1	0	-	-	C
"	2	0	-	-	C

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)

USB1 USB2



Audio1, 2, 3, 4

TB:bd - UL 60950, 3rd Data Sheets
Document: 010.Eng

Form Issued: 10-02-00
Revised: 00-00-00

Form 100-000

For information, all Underwriters Laboratories Inc.

products bearing the UL Mark should be tested in accordance with the following

02SC12668

File E184881

Project

Tested by:

Zero LeeZero Lee

Page

Date

34/3412/54/02

(Printed Name)

(Signature)

Sample #

X

Instr Code/Range:

15.59.48-

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
Audio 2	1	ϕ	-	-	C
:	2	ϕ	-	-	C
Audio 3	1	ϕ	-	-	C
:	2	ϕ	-	-	C
Audio 4	1	ϕ	-	-	C
:	2	ϕ	-	-	C
LAN	1	ϕ	-	-	C
"	2	ϕ	-	-	C
"	3	ϕ	-	-	C
"	4	ϕ	-	-	C
"	5	ϕ	-	-	C
"	6	ϕ	-	-	C
"	7	ϕ	-	-	C
"	8	ϕ	-	-	C

Note: Not describe parts were not tested. Because the results were comply wit not tested rules in this test. (The results refer to Energy Hazard Measurements)



LAN

Revised - UL 60950, 3rd Data Sheets

Comment: 11/1/02

Form Issued: 10-02-00

Revised: 00-00-00

Copyright © 2002 Superior Product Consulting, Inc.

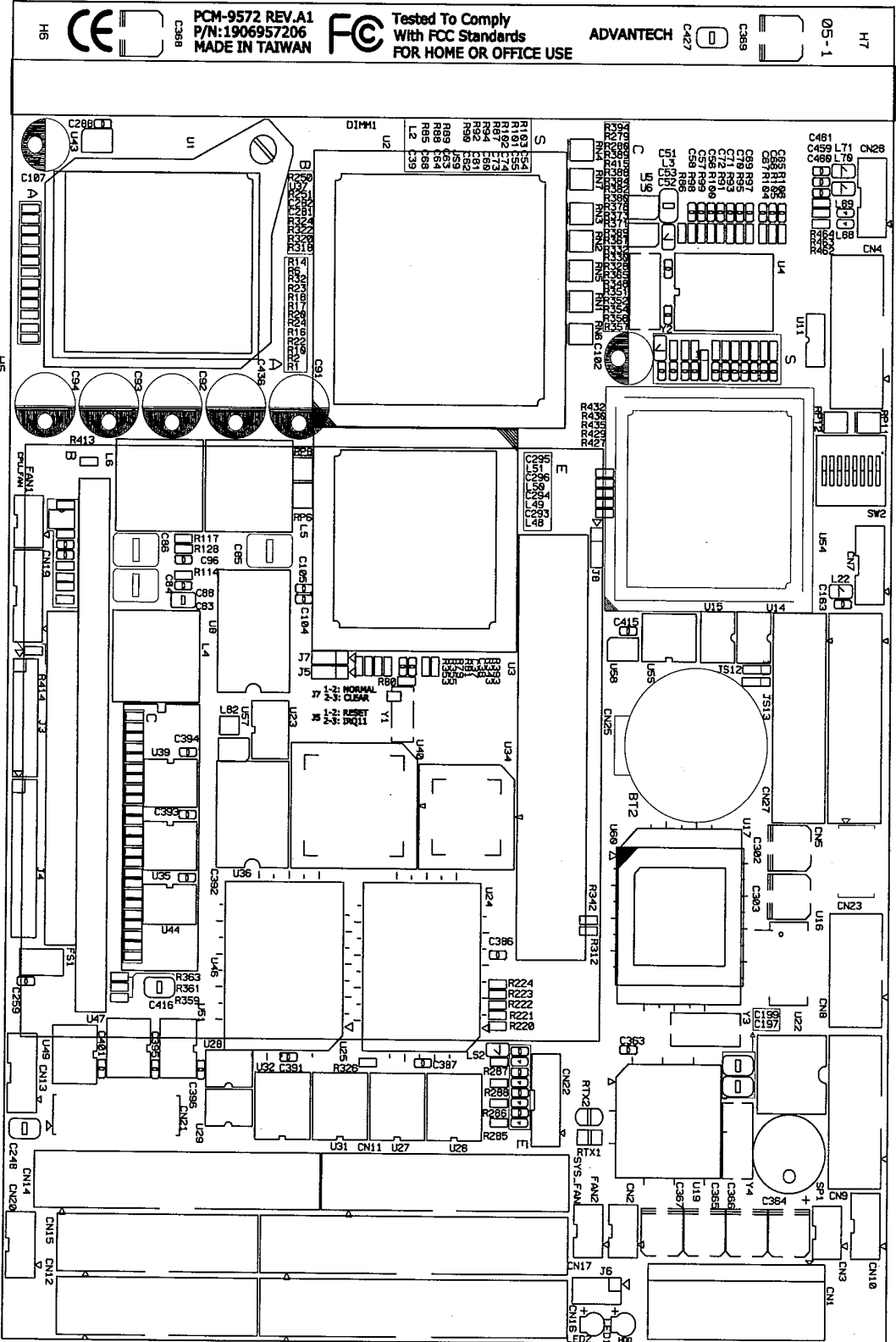
All rights reserved. The UL Mark and logo are registered as trademarks of Underwriters Laboratories, Inc.

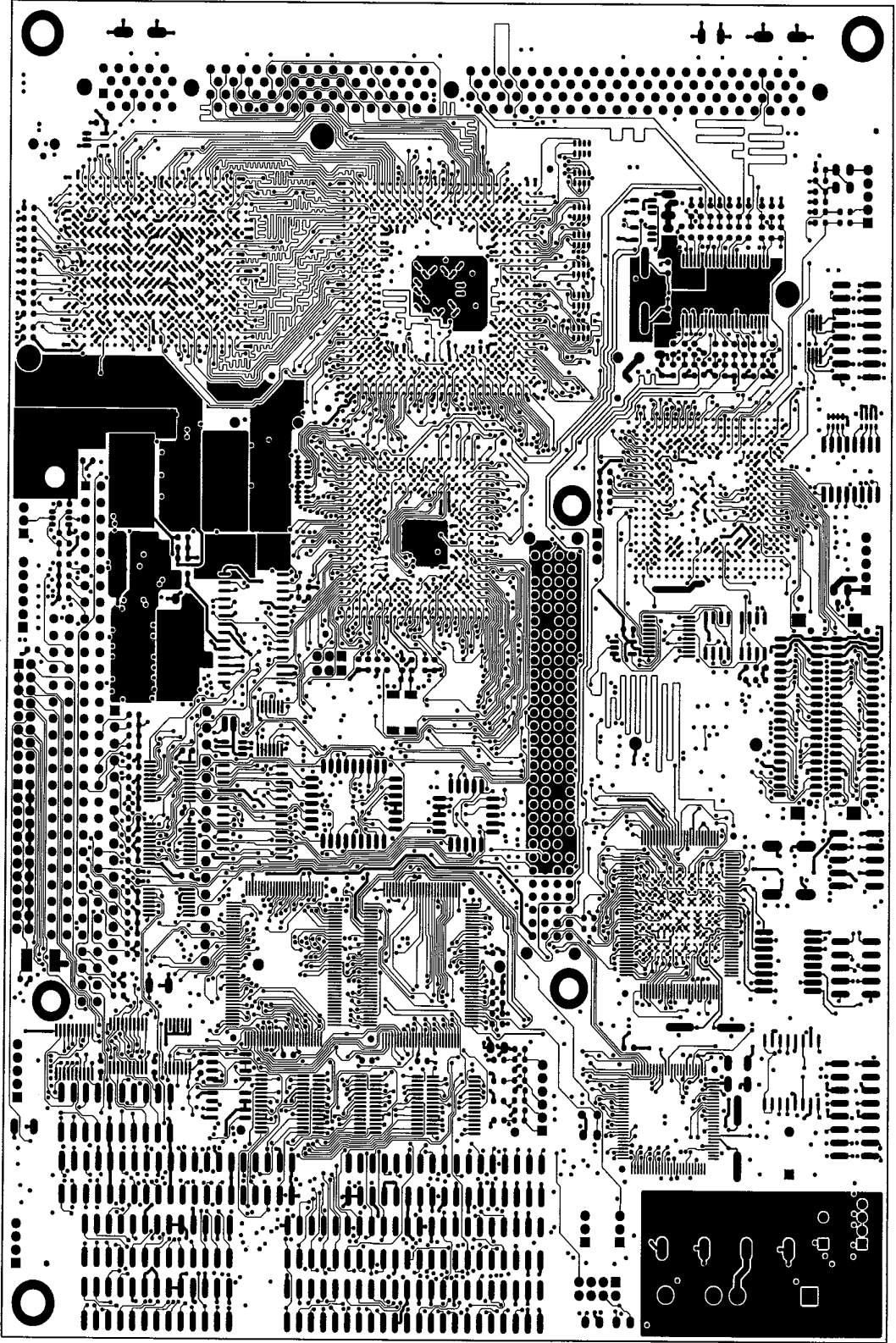
21258

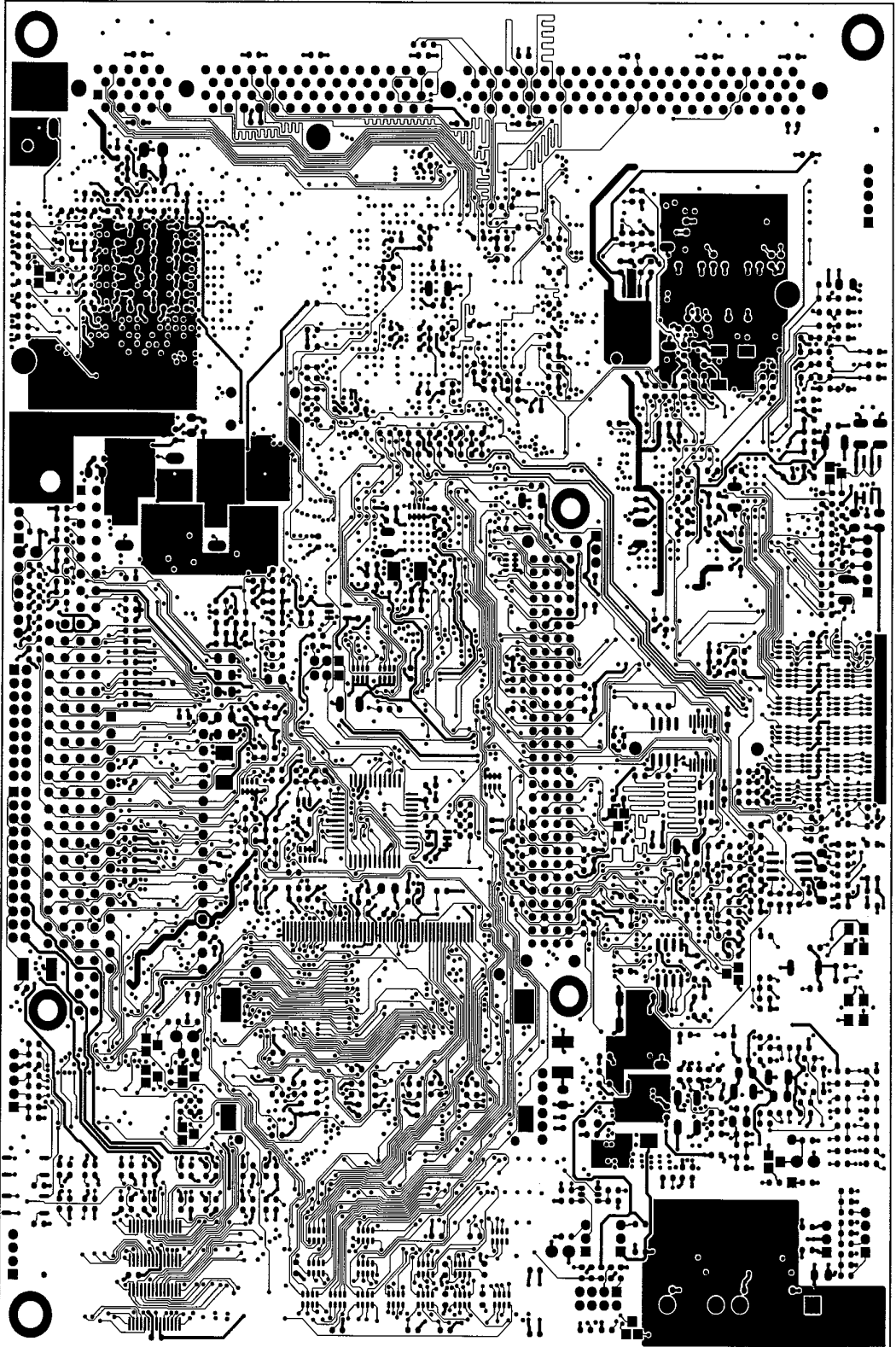
ENCLOSURE No. 3

Component Layouts

(Total 5 Pages including this Cover Page)







ENCLOSURE No. 4

Schematics

(Total 36 Pages including this Cover Page)

PCM-9572 Revision History

PCM-9572 REV.A1 03-1 Date: 2001/4/19

1. Page 20 - Modify R218 pull up from 5VSB TO VSB.
2. Page 12 - Modify U8 US3007 PWM circuit . (Support Intel Ultra low power CPU.)
3. PCB version: A1 03-1 P/N: 1906957204

PCM-9572 REV.A1 04-1 Date: 2001/7/6

1. Page 5 - Add JS27 , (According INTEL PCN:1131-00 following:).
- a. Core processor stepping change from C-0 to D-0.
- b. CPUID change (C-0 step CPUID: 0686h; D-0 step CPUID: 068Ah).
- c. Pin P1 must be connected to Vcc for any D-step parts.
3. PCB version: A1 04-1 P/N: 1906957205

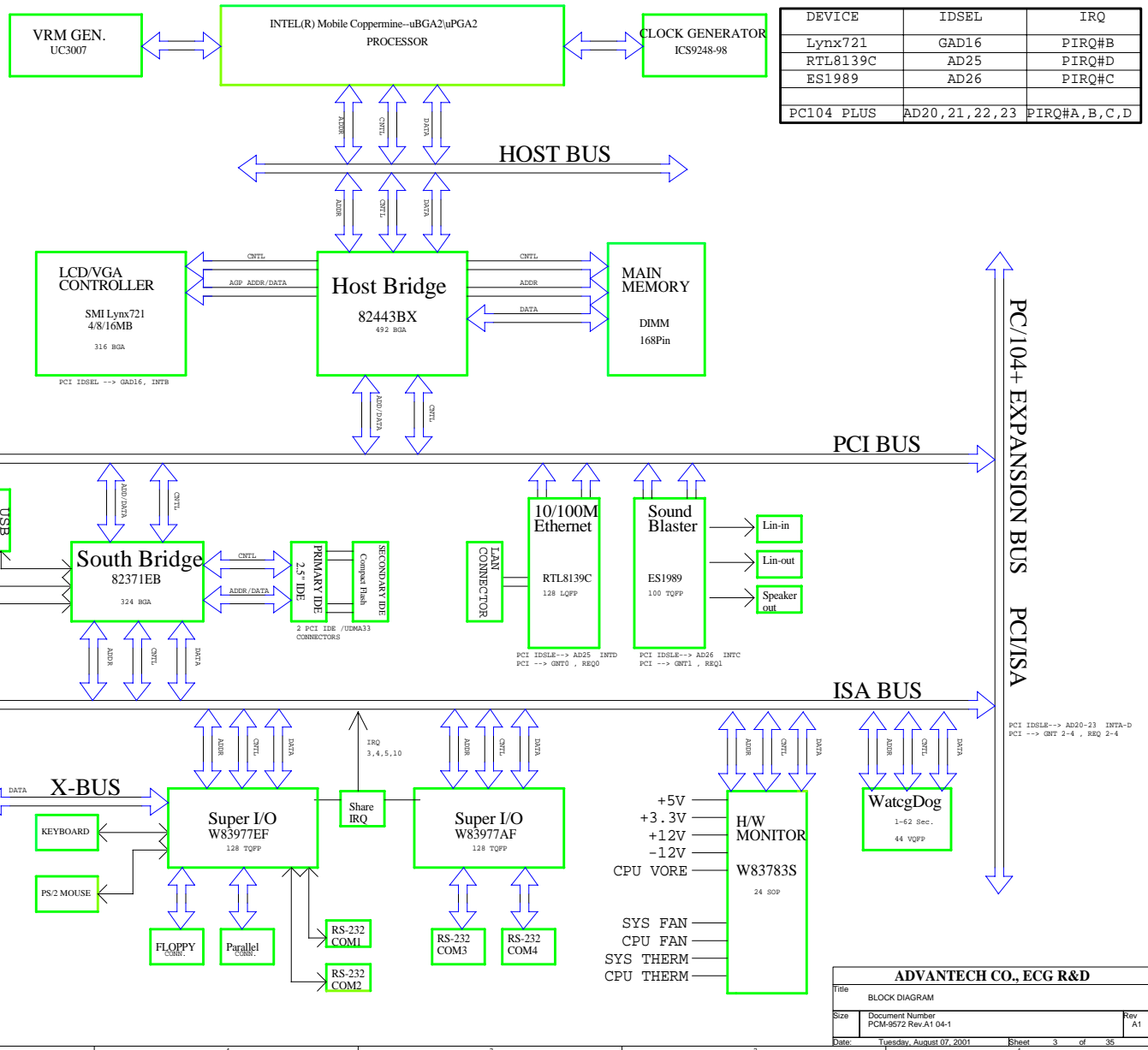
P/N:1906957205			
ADVANTECH CO., ECG R&D			
Title Revision History			
Size	Document Number		
	PCM-9572 Rev.A1 04-1		
Date			Rev
Tuesday, August 07, 2001			A1
Sheet 1 of 35			

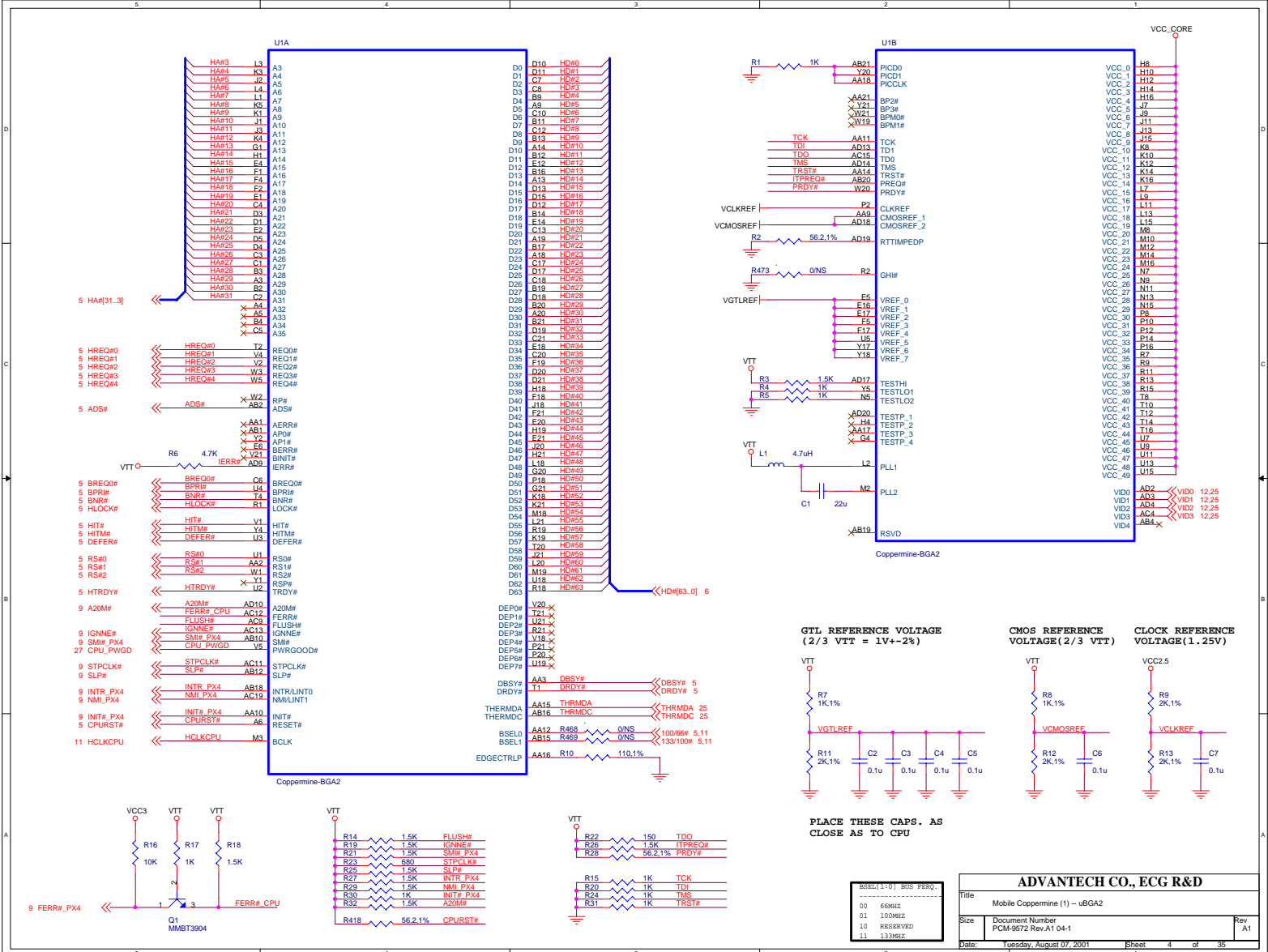
PCM-9572 Mobile CuMine(uBGA2) EBX with 10/100 Ethernet and Audio

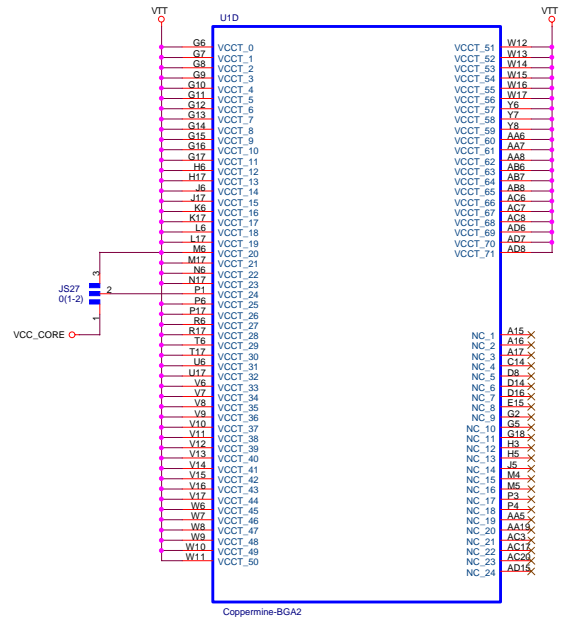
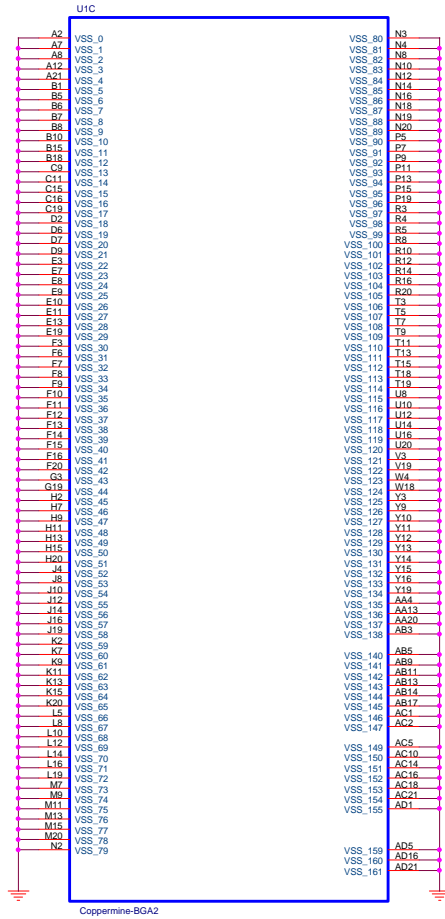
- 01. Cover Page
- 02. Block Diagram
- 03. CuMine (1) -- uBGA2
- 04. CuMine (2) -- uBGA2
- 05. North Bridge(1)-82443BX
- 06. North Bridge(2)-82443BX
- 07. North Bridge(3)-82443BX
- 08. South Bridge(1)-82371EB
- 09. South Bridge(2)-82371EB
- 10. Main Memory - SDRAM 168P x 1
- 11. Clock Generator -- ICS9248-98
- 12. DC-DC Converter - UC3007
- 13. Display Controller(1) - SMI721 3DM4/8
- 14. CRT/TV Interface
- 15. LCD Interface (48Bits)
- 16. 10/100M Ethernet LAN -- RTL8139C
- 17. Audio Controller - ES1989
- 18. Audio Amplifier - LM4863
- 19. Super I/O-(1) -- W83977EF
- 20. Super I/O-(2) -- W83977AF
- 21. Super I/O-(3) -- COM1/2, LPT1, FDD, IR
- 22. Super I/O-(4) -- COM3/4, LPT2, Ring-UP
- 23. Share IRQ (For COM1/2/3/4)
- 24. Hardware Monitor - W83783S
- 25. IDE & Compact Flash
- 26. BIOS, Watchdog, Reset
- 27. DOC2000
- 28. Digital I/O -- 8 in / 8 out (2 isolated)
- 29. Micellaneous -- USB, KBD/PS2, Battery, PanelControl
- 30. PC/104 Plus -- PCI
- 31. PC/104 Plus -- ISA
- 32. PULL UP/DOWN (ISA/PCI/PIIX4)
- 33. Bypass Capacitor & Unused device.

ADVANTECH CO., ECG R&D			
Title		Cover Page	
Size	Document Number		Rev
	PCM-9572 Rev.A1 04-1		A1
Date	Tuesday, August 07, 2001		Sheet 2 of 35

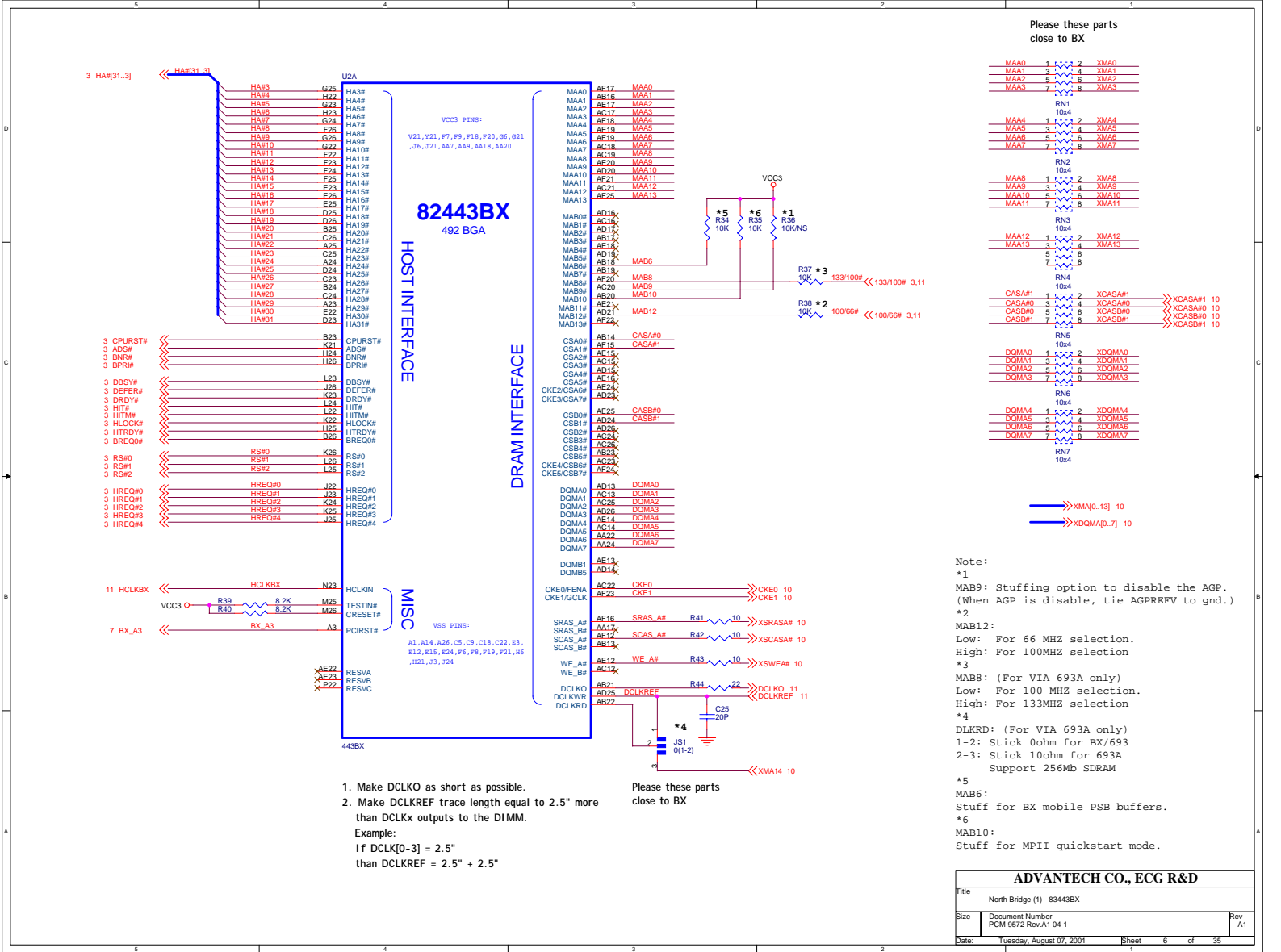
PCM-9572 Block Diagram

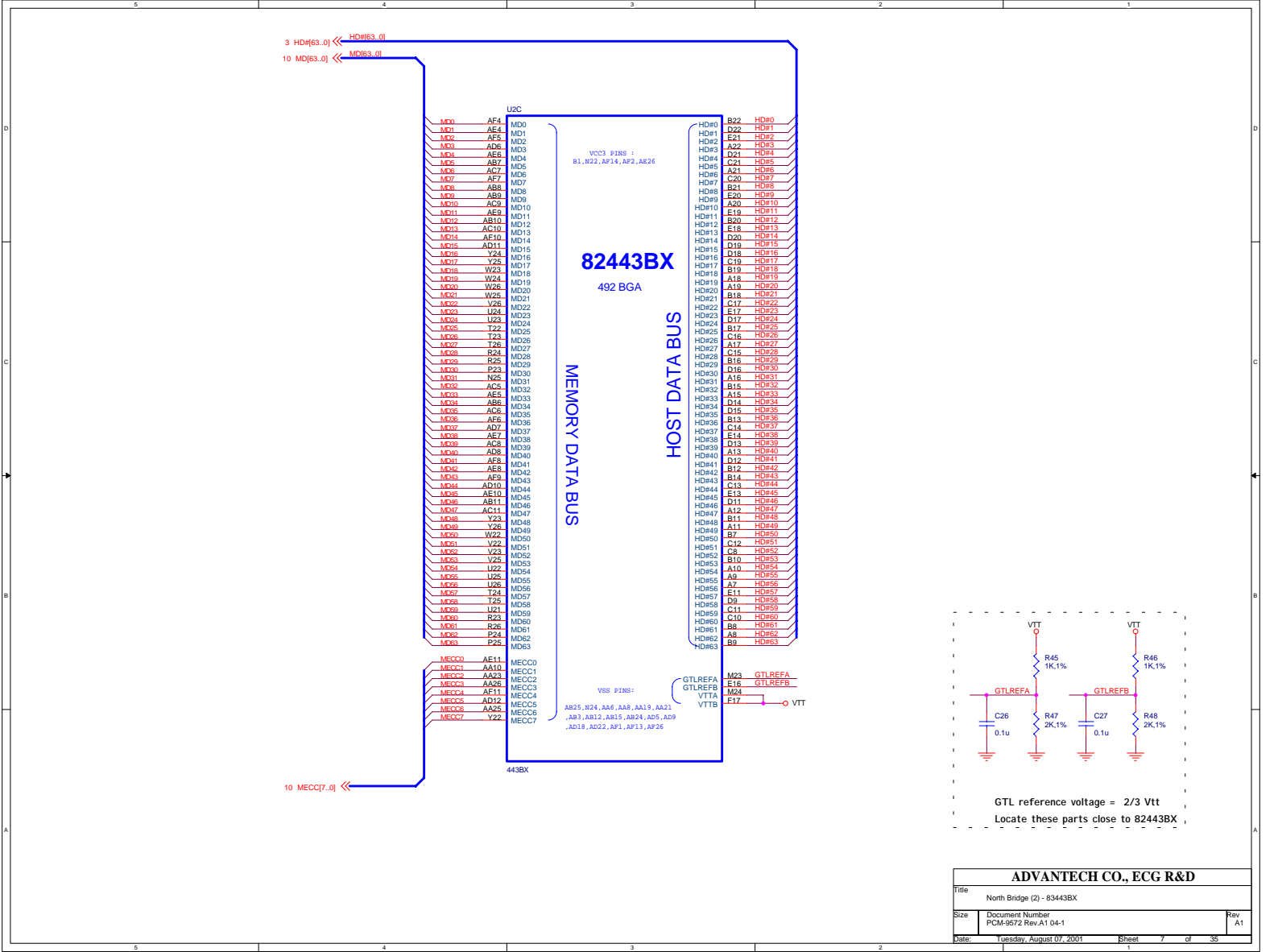


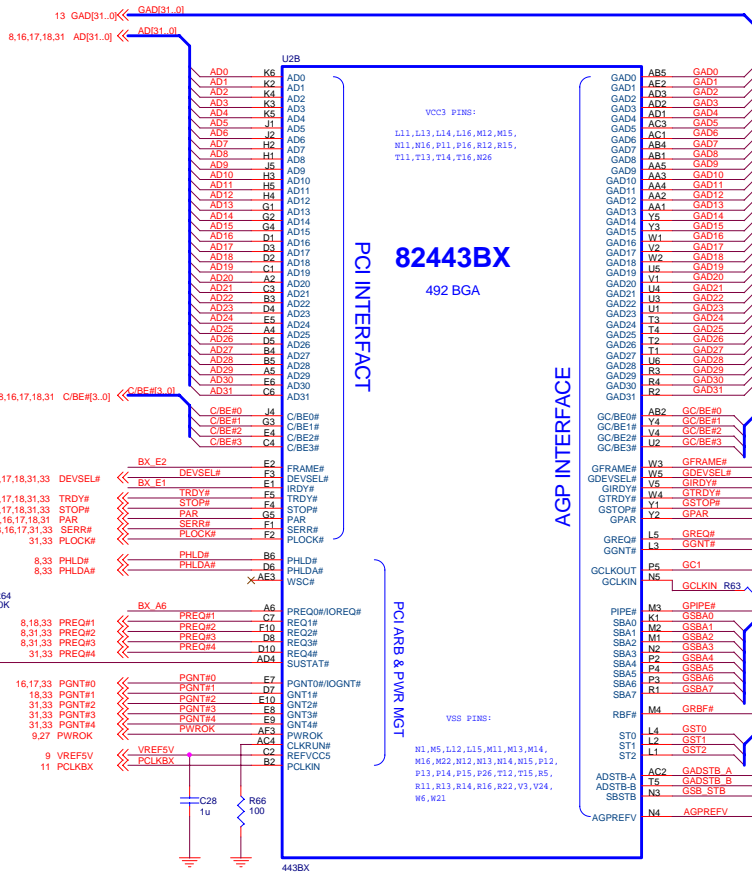




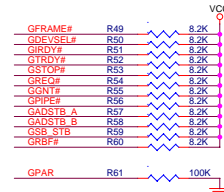
ADVANTECH CO., ECG R&D			
Title			
Mobile Coppermine (2) -- uBGA2			
Size	Document Number PCM-9572 Rev.A104-1		Rev A1
Date:	Tuesday, August 07, 2001	Sheet 5 of 35	



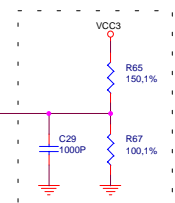




AGP PULL-UP

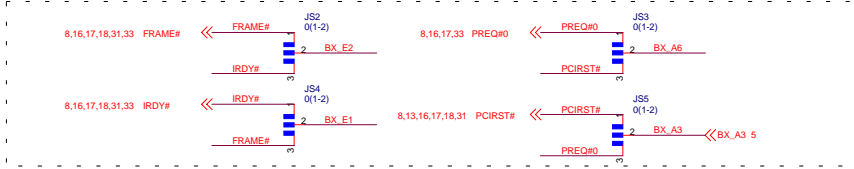


Please make the GCLKIN trace length and the GCLKOUT trace length will both be the same length.
Stub(GC1) to less should be 1" Max.

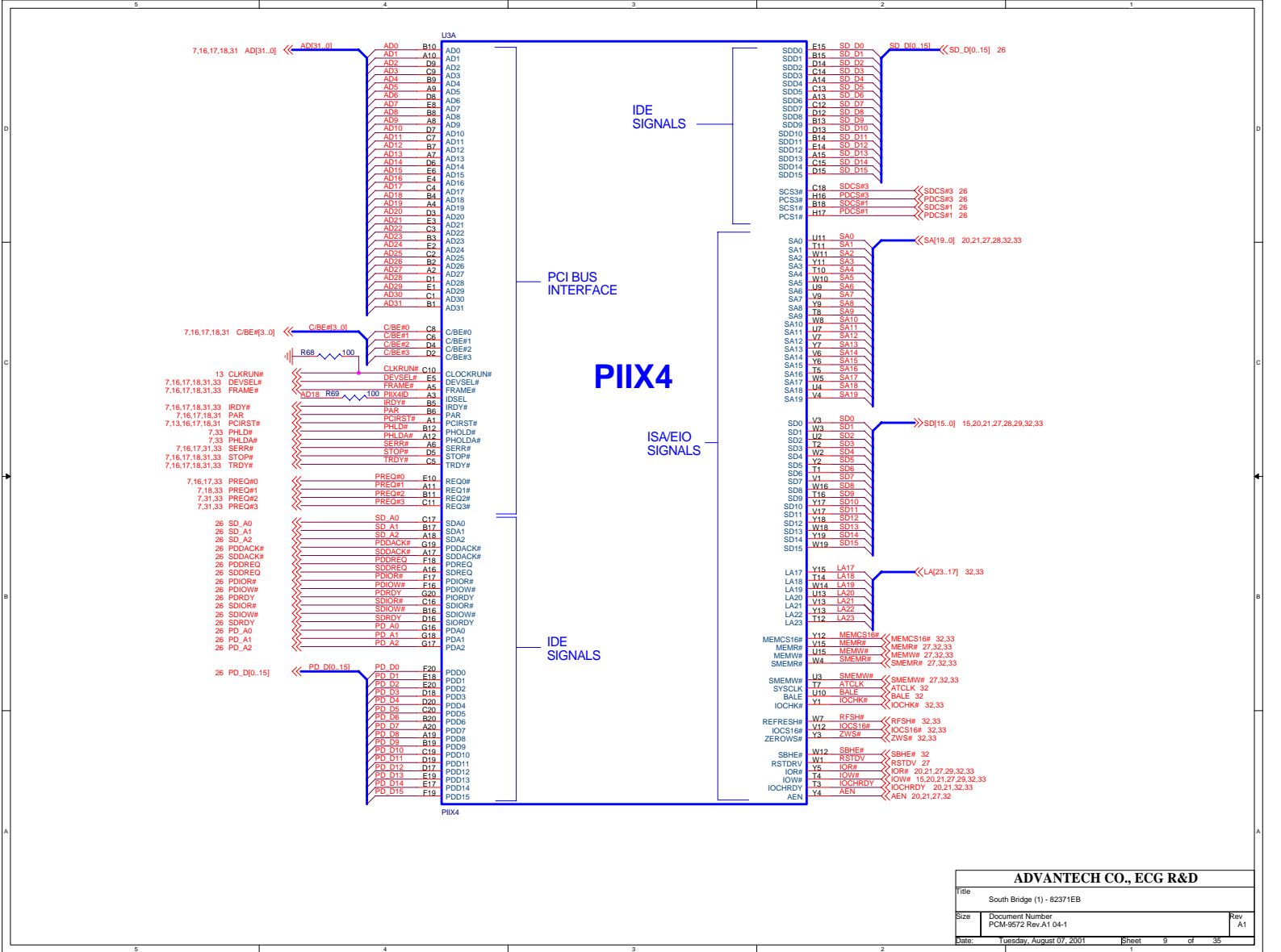


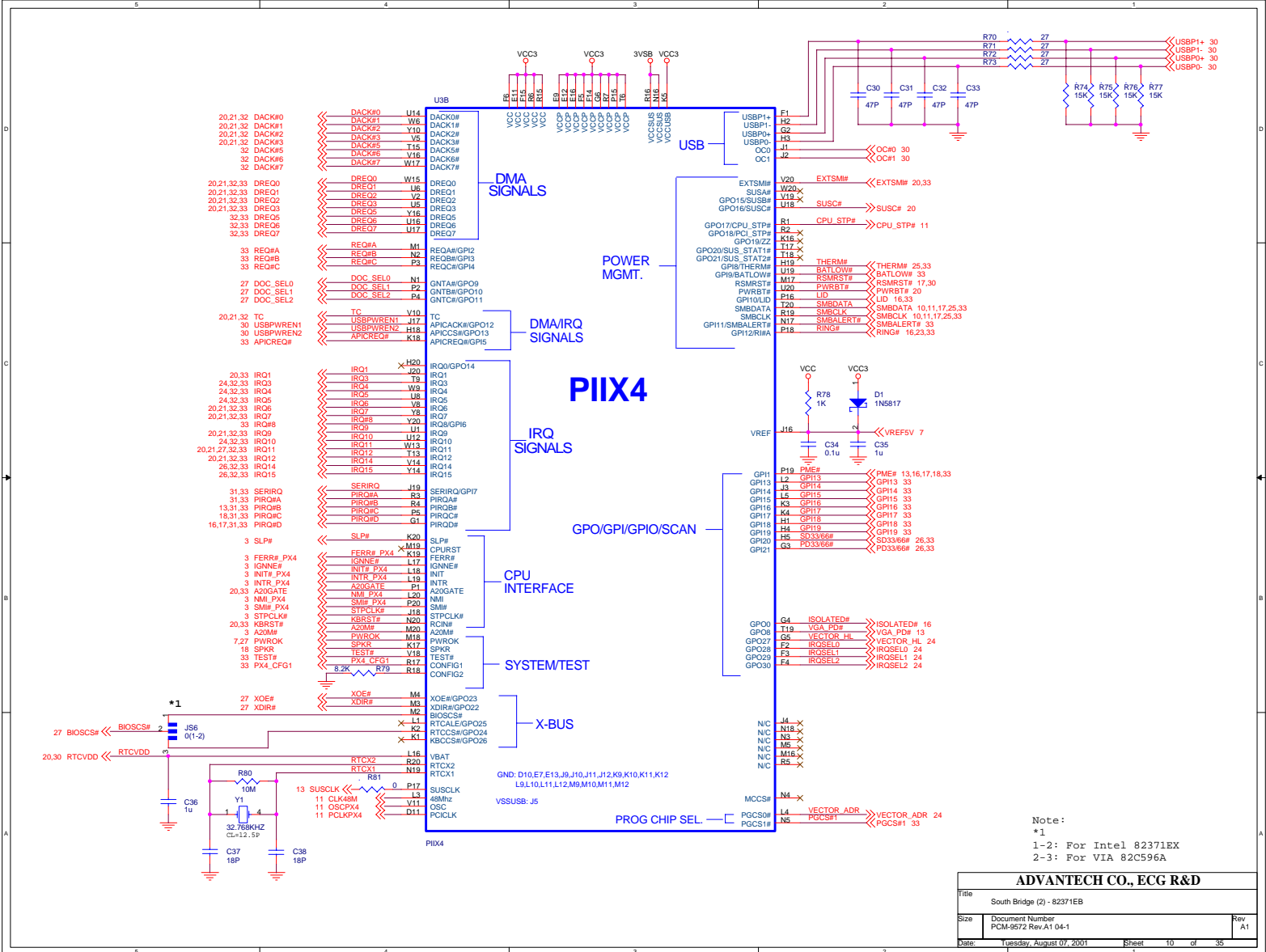
Place as close to 443BX as possible.

Note:
1-2: For Intel 82443BX
2-3: For VIA 82C693

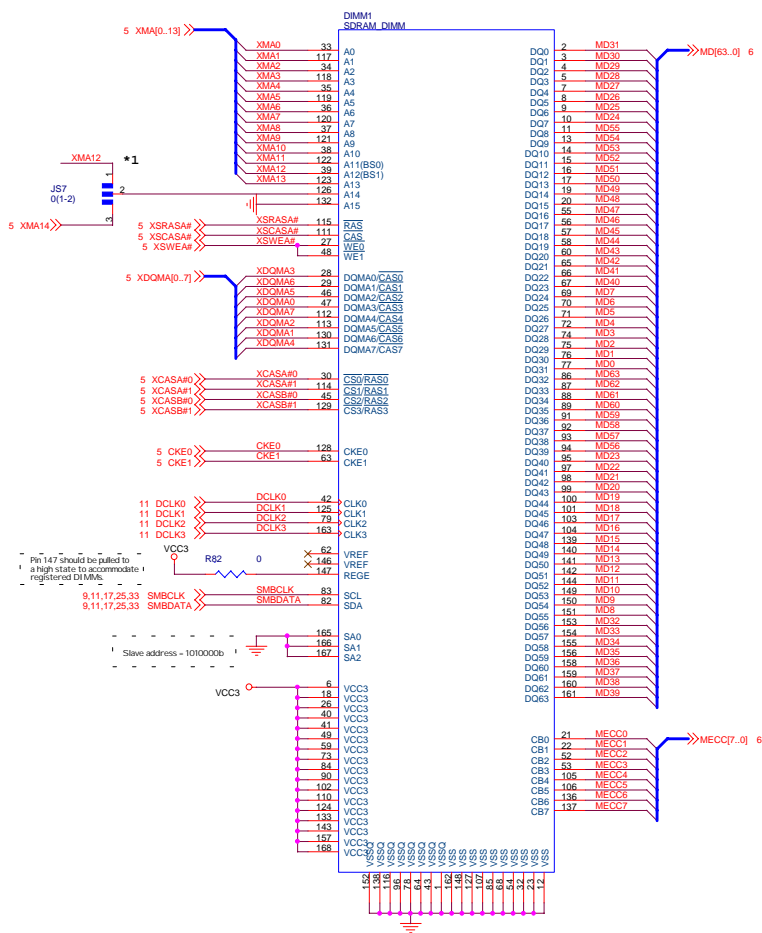


ADVANTECH CO., ECG R&D			
Title	North Bridge (3) - 83443BX		
Size	Document Number	PCM-9572 Rev.A1 04-1	Rev A1
Date	Tuesday, August 07, 2001	Sheet 8 of 35	1





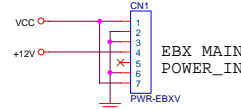
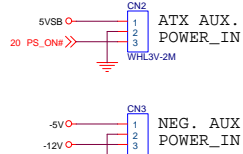
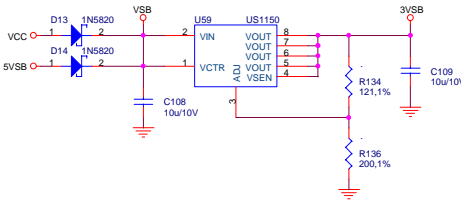
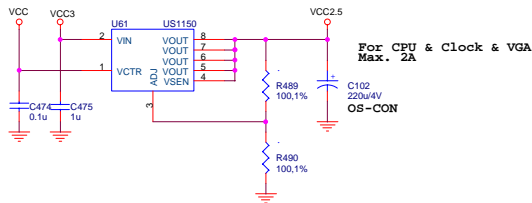
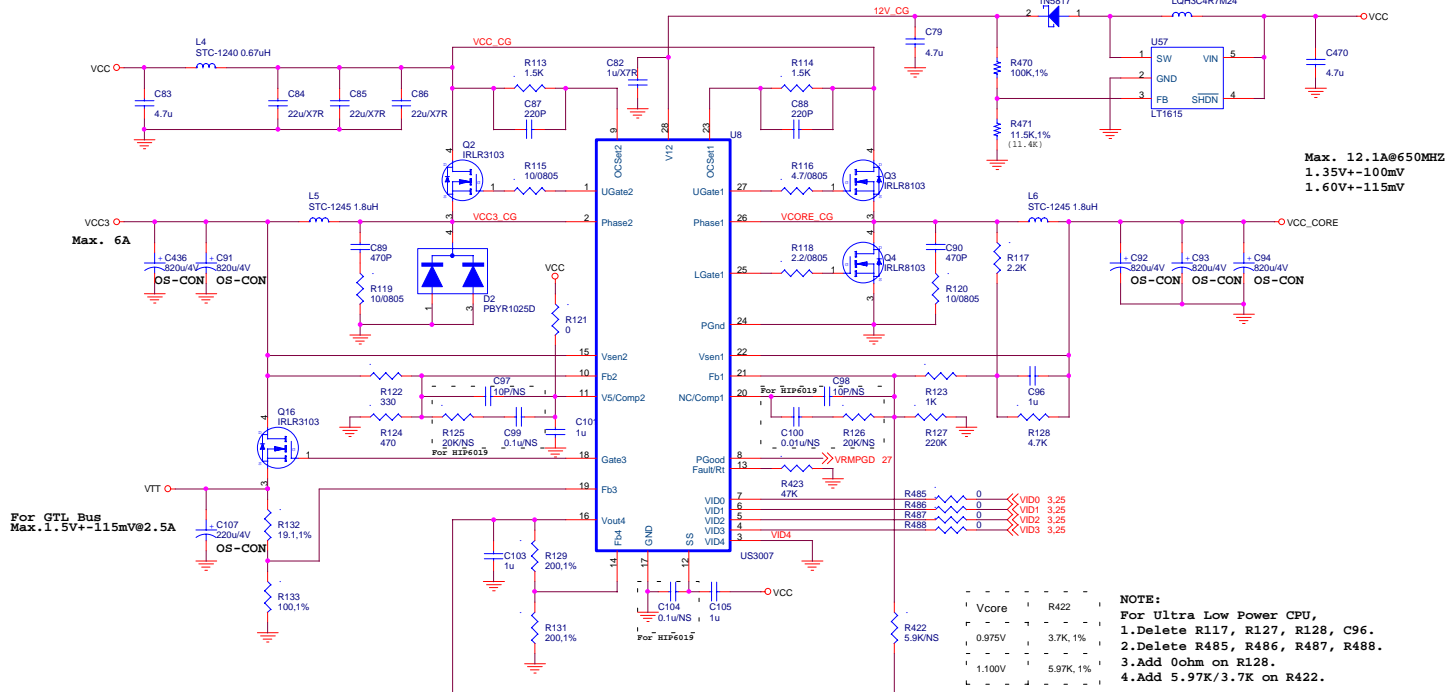
DIMM CONNECTOR



Note:
*1. XMA_14 (Support 256Mb)
1-2: For INTEL BX / VIA 82C693
2-3: For VIA 82C693A

ADVANTECH CO., ECG R&D			
Title	Main Memory - SDRAM 168P		
Size	Document Number	PCM-9572 Rev.A1 04-1	Rev A1
Date	Tuesday, August 07, 2001	Sheet 11 of 35	

[illegible]



Need input power(Min.):
 +5V : 12A
 +12V: 1.5A
 5VSB: 700mA(Optional)
 -5V : 300mA(Optional)
 -12V: 300mA(Optional)

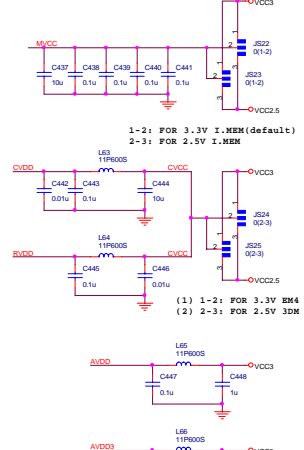
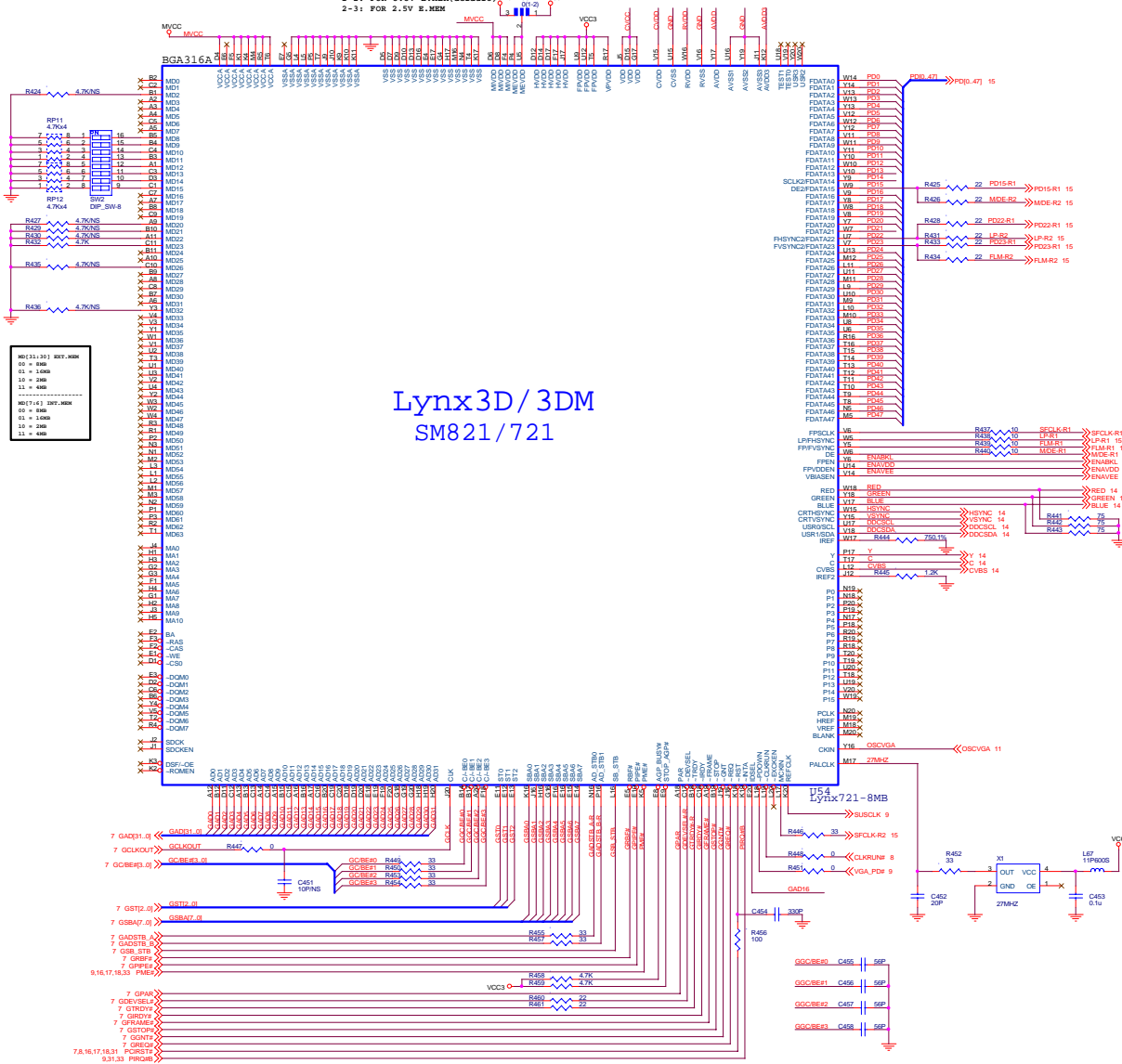
Voltage Identification Definition

VID3	VID2	VID1	VID0	VCC_CORE
1	1	1	1	1.30V
1	1	1	0	1.35V
1	1	0	1	1.40V
1	1	0	0	1.45V
1	0	1	1	1.50V
1	0	1	0	1.55V
1	0	0	1	1.60V
1	0	0	0	1.65V
0	1	1	1	1.70V
0	1	1	0	1.75V
0	1	0	1	1.80V
0	1	0	0	1.85V
0	0	1	1	1.90V
0	0	1	0	1.95V
0	0	0	1	2.00V*
0	0	0	0	2.50V

ADVANTECH CO., ECG R&D

Title	DC - DC Converter			Rev	A1
Size	Document Number				
	PCM-9572 Rev.A1 04-1				
Date	Tuesday, August 07, 2001			Sheet	13 of 35

1-2: FOR 3.3V E.NEM(default)
2-3: FOR 2.5V E.NEM

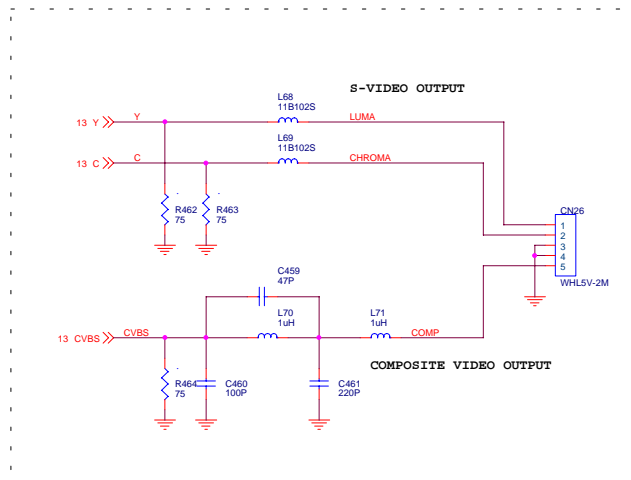
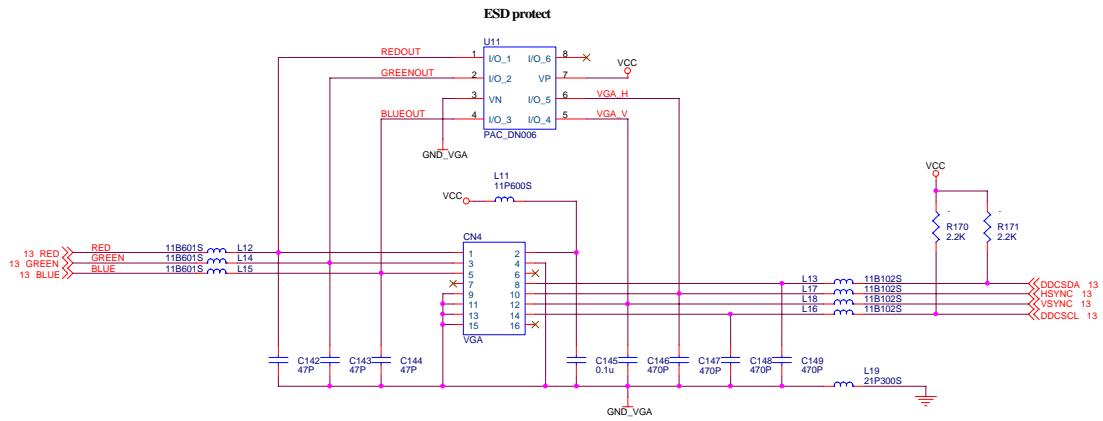


Panel Display Settings:

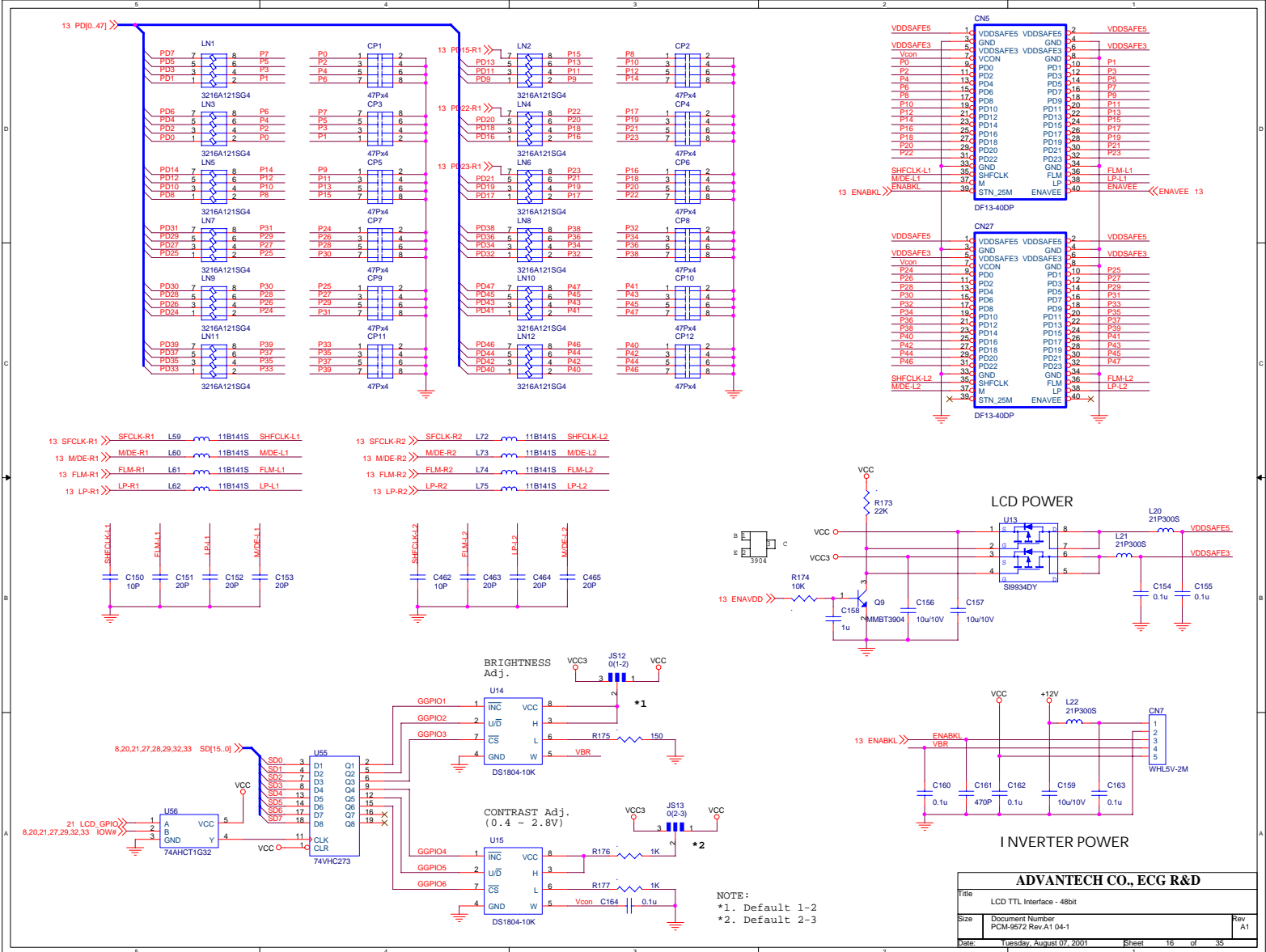
SW	MD Bits	STATE	SETTING
1	MD8	0	TFT
		1	DSTN
2	MD9	0	FPCLK Normal
		1	FPCLK Inverted
4:3	MD[11:10]	0 0	640 x 480
		0 1	800 x 600
		1 0	1024 x 768
		1 1	1280 x 1024
7:6:5	MD[14:12]	0 0 0	9-BIT TFT
		0 0 1	12-BIT TFT
		0 1 0	18-BIT TFT
		0 1 1	24-BIT TFT
		1 0 0	12x2 - TFT
		1 0 1	ANALOGTFT
		1 1 0	18x2 - TFT
		1 1 1	24x2 - TFT
8	MD15	0	16-BIT DSTN
		1	24-BIT DSTN

Notes:
(1) MD pins have internal pull-up resistors
(2) 0 = Switch is SHORTED; 1 = Switch is OPEN

ADVANTECH CO., LTD
File: Display Controller - SM721(8MB)
Size: Document Number
Rev: PCM-9572 Rev A1 04-1
Rev: A1



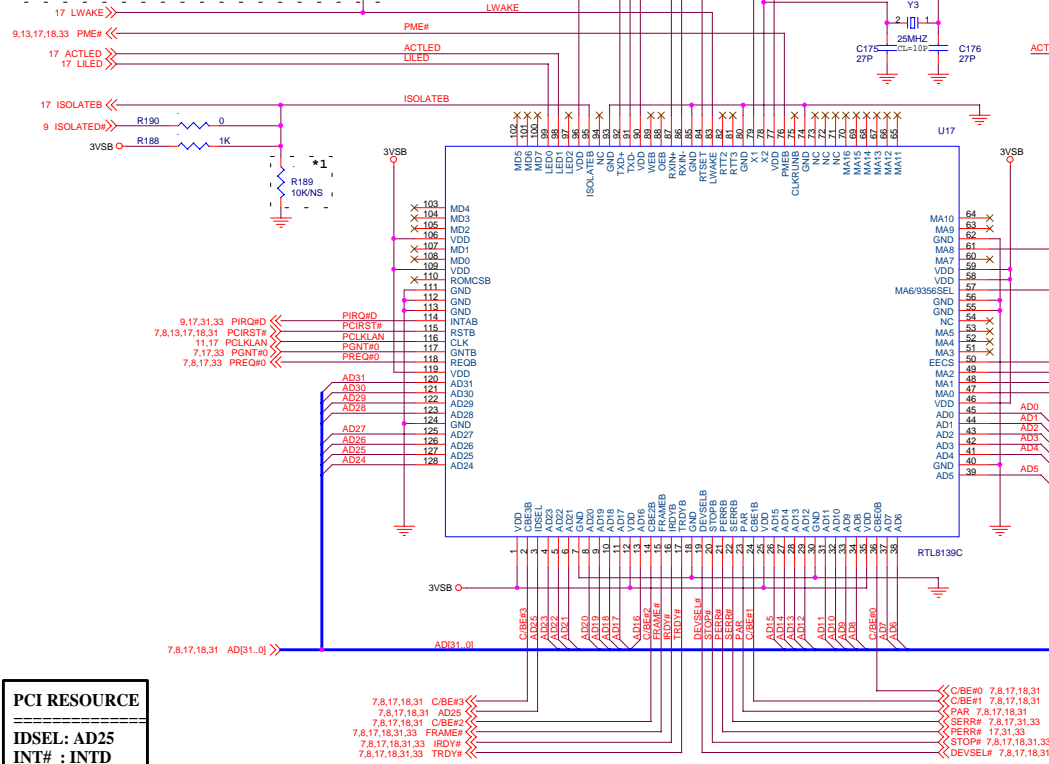
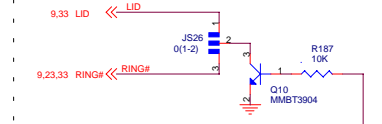
ADVANTECH CO., ECG R&D			
Title	CRT & TV INTERFACE		
Size	Document Number PCM-9572 Rev.A1 04-1		
Date	Tuesday, August 07, 2001	Sheet	15 of 35
			Rev A1



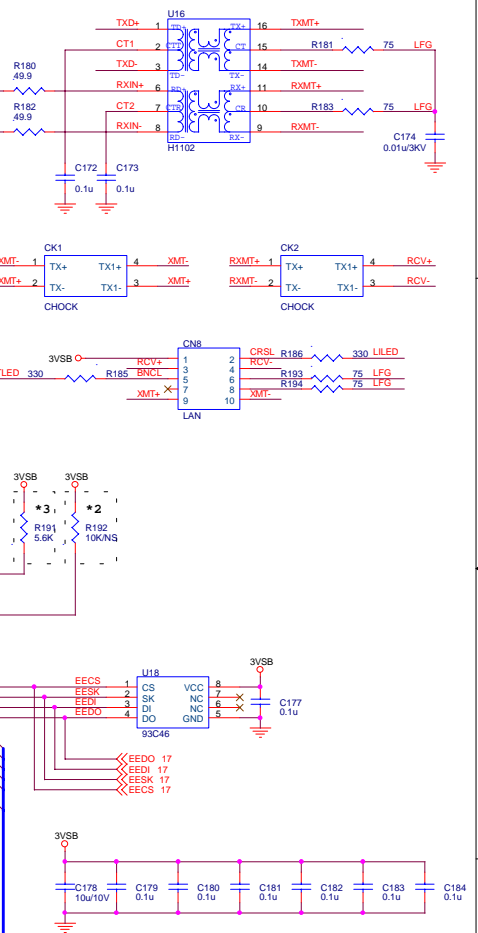
Note:
1. RTL8139's power plane should be isolated from other component's power.
2. Decoupling caps. should be placed as close as possible to RTL8139.
3. All ferrite bead are BLM11P600S in this.

LED0: TX/6X
LED1: 10/100
LED2: FULL

Wake On Lan



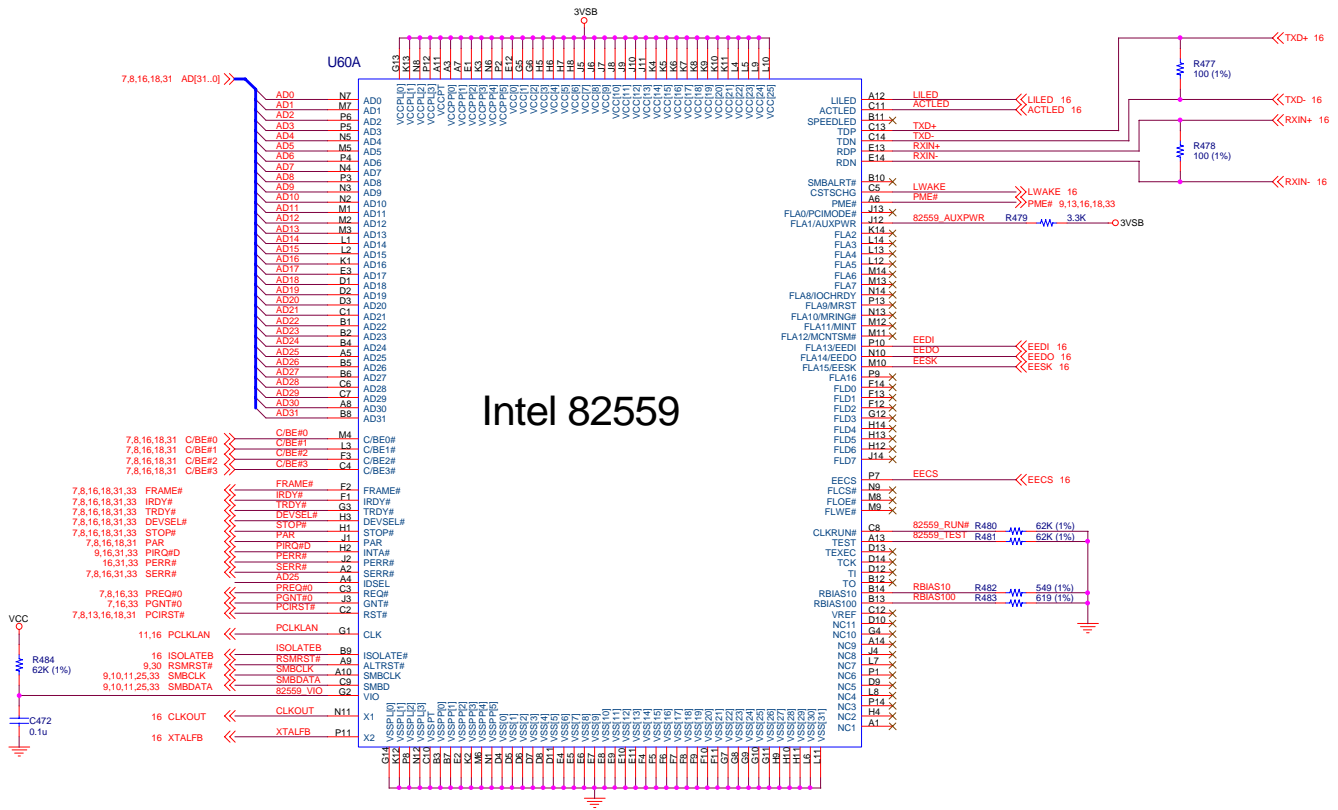
PCI RESOURCE
IDSEL: AD25
INT# : INTD
REQ# : 0



Note:
*1. Force RTL8139C disable.
*2. Stick pin57 Res. support 9356. remove pin57 Res. support 9346(default).
*3. Stick 5.6K support the RTL8139C into ACPI mode.

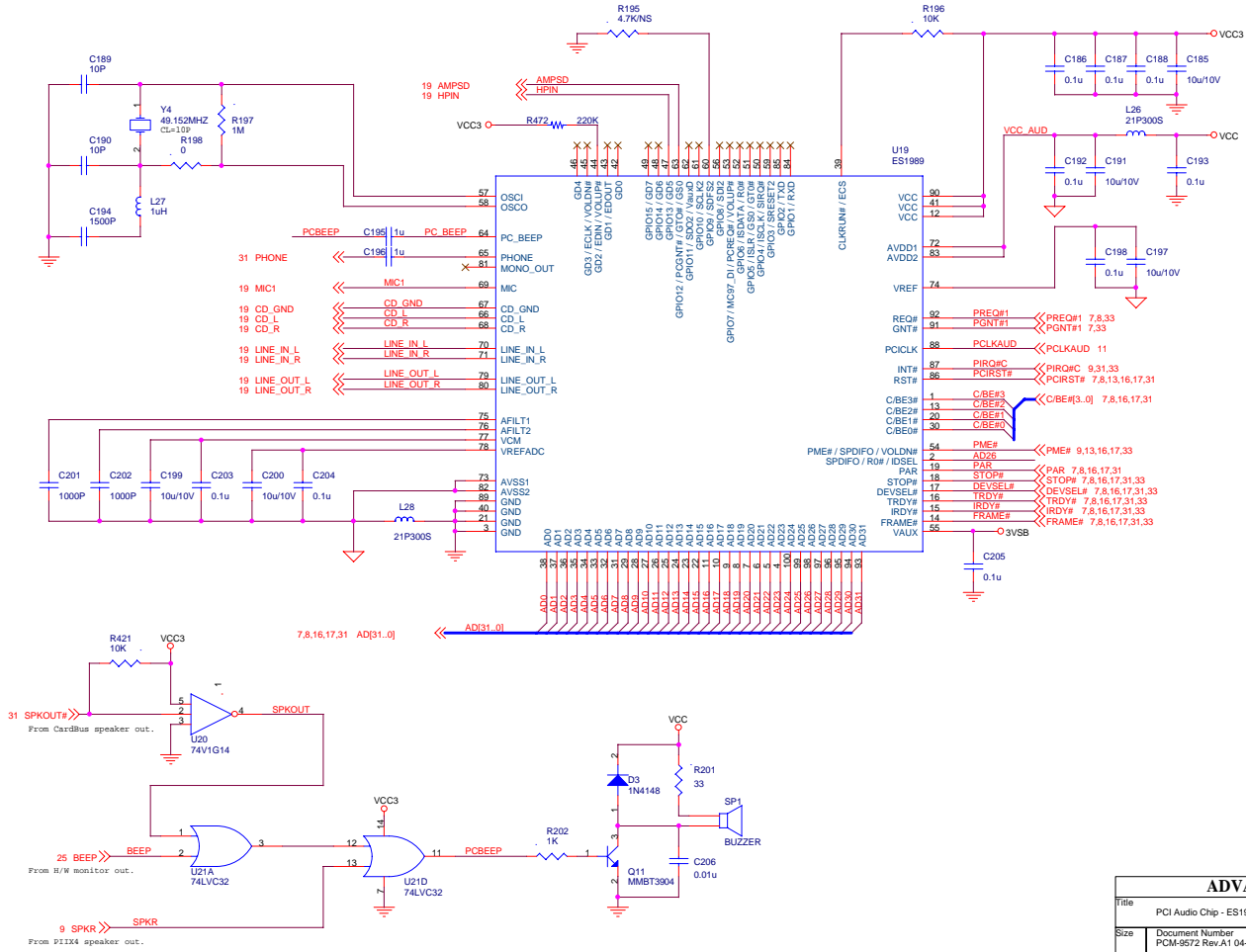
ADVANTECH CO., ECG R&D			
Title	10/100M Ethernet Controller - RTL8139C		
Size	Document Number	PCM-9572 Rev.A1 04-1	Rev A1
Date	Tuesday, August 07, 2001		
Sheet	17	of	35

Intel 82559



ADVANTECH CO., ECG R&D			
Title		10/100M Ethernet Controller - Intel 82559/ER	
Size		Document Number	Rev
		PCM-9572 Rev.A1 04-1	A1
Date		Tuesday, August 07, 2001	Sheet 18 of 35

Enable multi-codec(AC-link) interface.

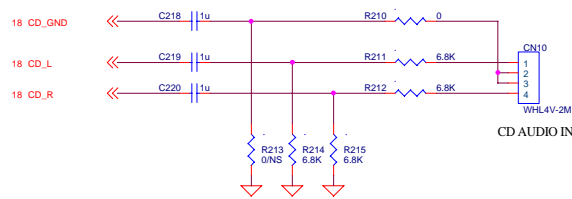
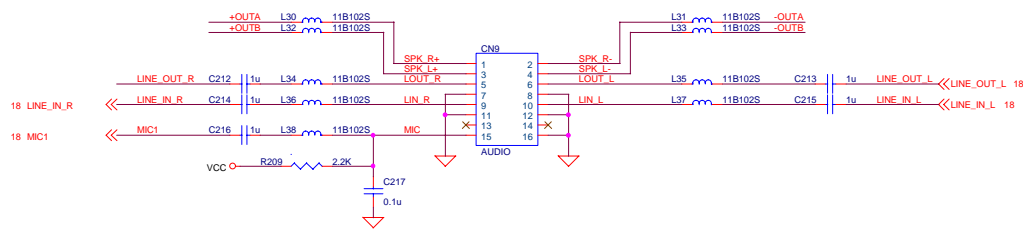
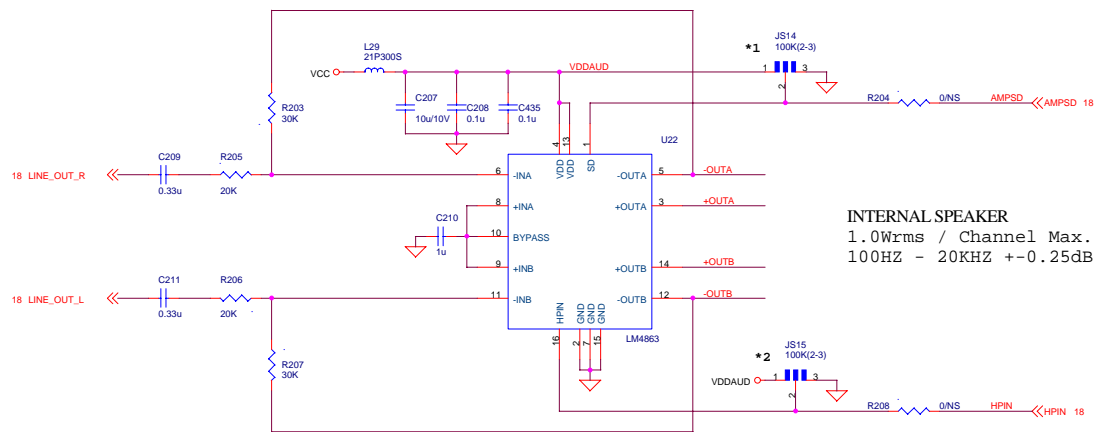


PCI RESOURCE
=====

I2SEL: AD26
INT#: INTC
REQ#: 1

ADVANTECH CO., ECG R&D

Title		PCI Audio Chip - ES1989
Size		Document Number PCM-9572 Rev.A1 04-1
Date	Tuesday, August 07, 2001	Sheet 19 of 35
		Rev A1



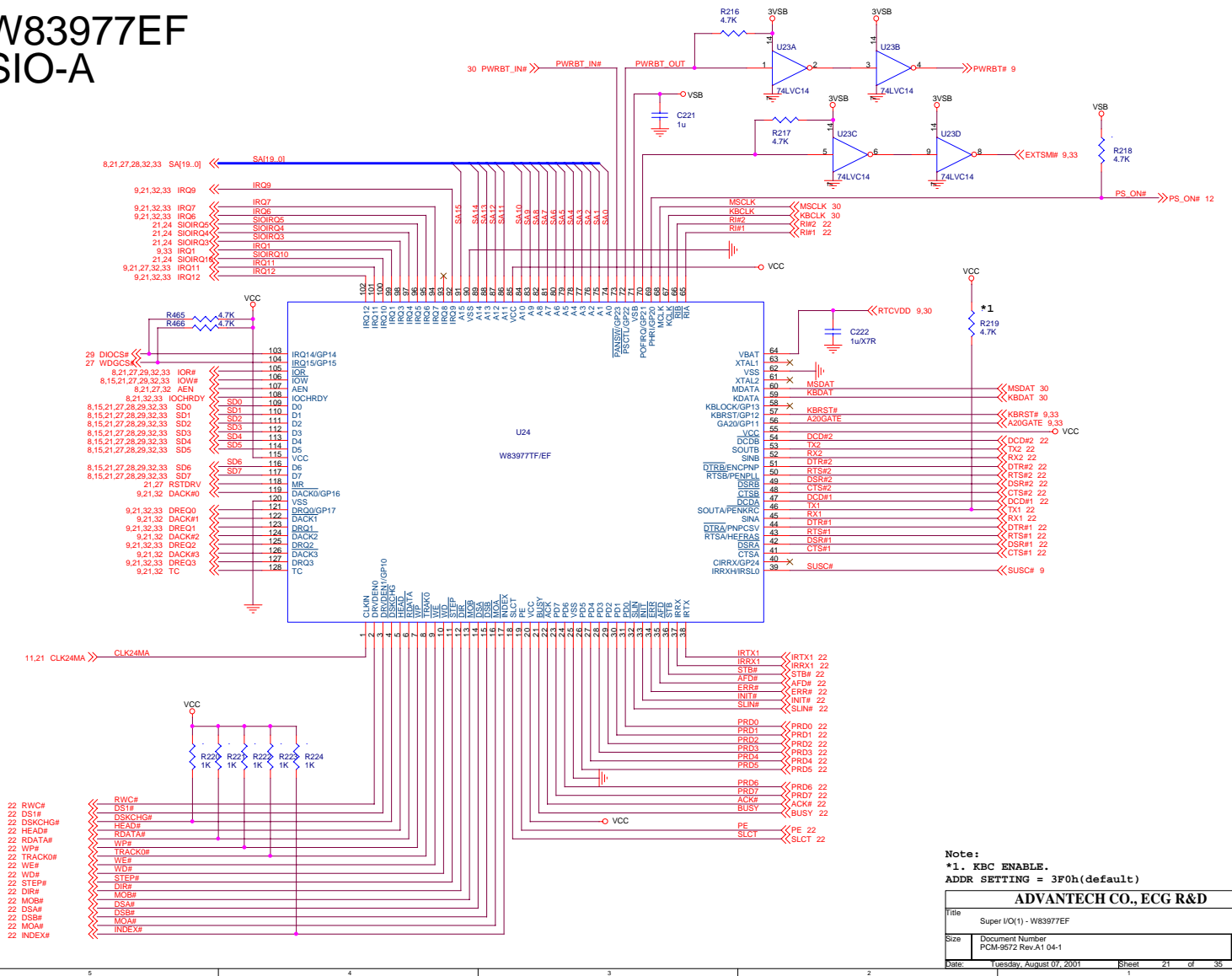
Note:

- *1. Default stick 100K on 2-3.
- *2. Default stick 100K on 2-3.

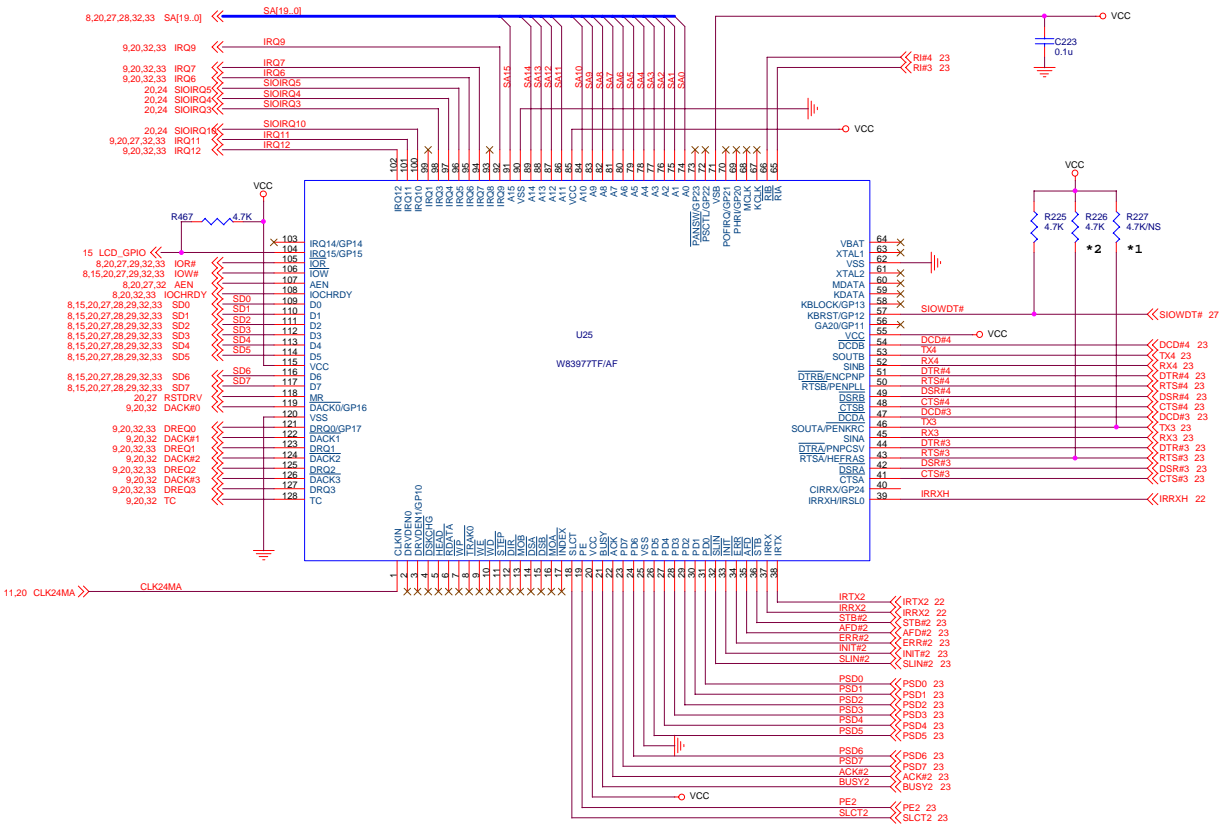
ADVANTECH CO., ECG R&D			
Title	Audio Amplifier - LM4863		
Size	Document Number	PCM-9572 Rev.A1 04-1	Rev A1
Date	Tuesday, August 07, 2001	Sheet 20 of 35	1

W83977EF

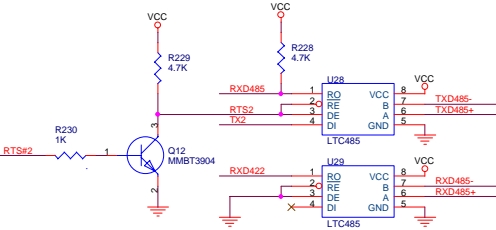
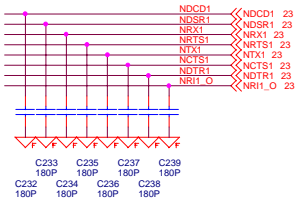
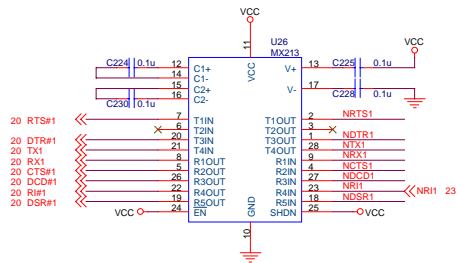
SIO-A



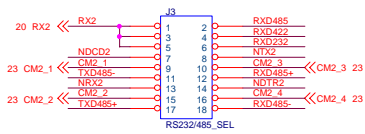
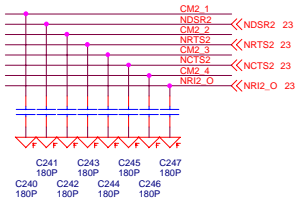
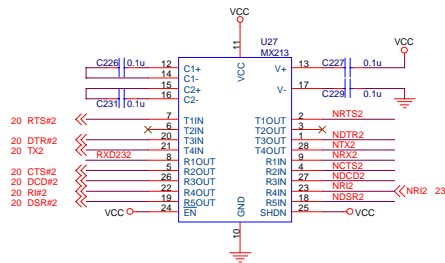
W83977AF
SIO-B



COM1

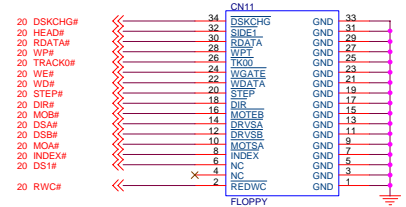


COM2

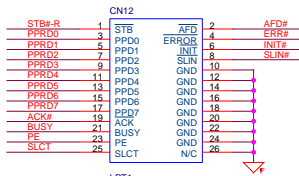
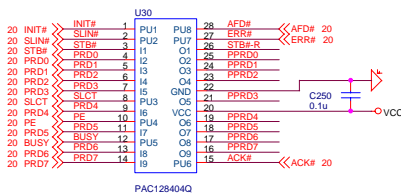
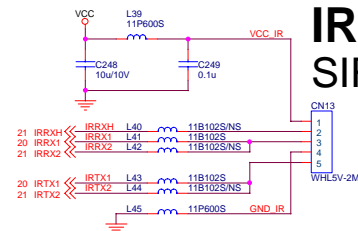


COM2-RS232/485
SEL JUMPER

FDD CNT

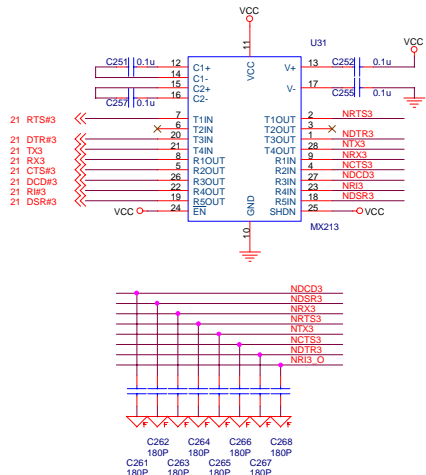


PRINT PORT

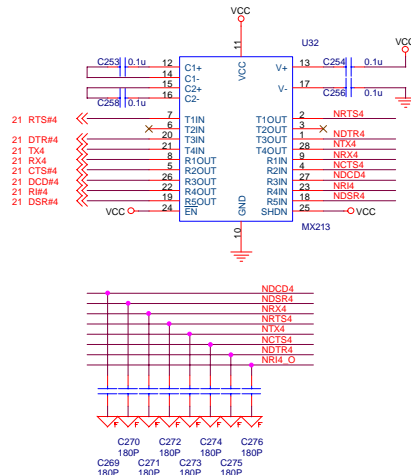
IR CNT
SIR/FIR

ADVANTECH CO., ECG R&D			
Title	Super I/O(3) - COM1,COM2,LPT1,SIR		
Size	Document Number	PCM-9572 Rev.A1 04-1	Rev A1
Date	Tuesday, August 07, 2001	Sheet 23 of 35	

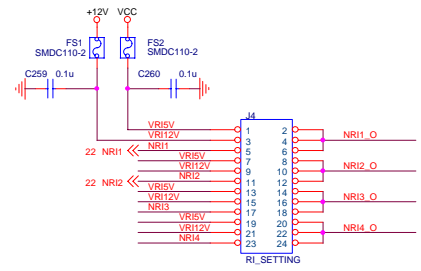
COM3



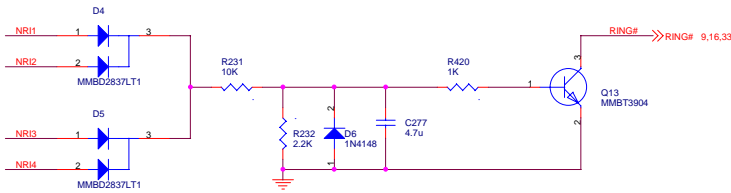
COM4

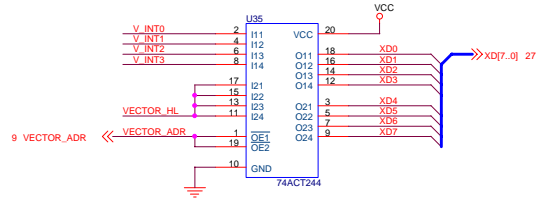
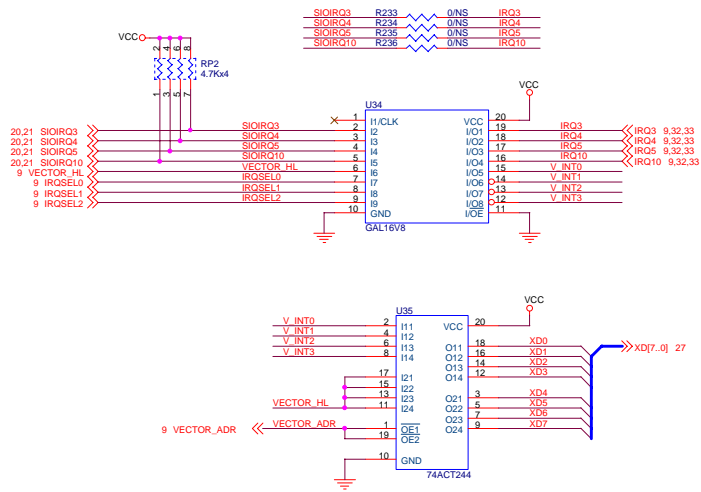


COM1 - 4 RI SETTING

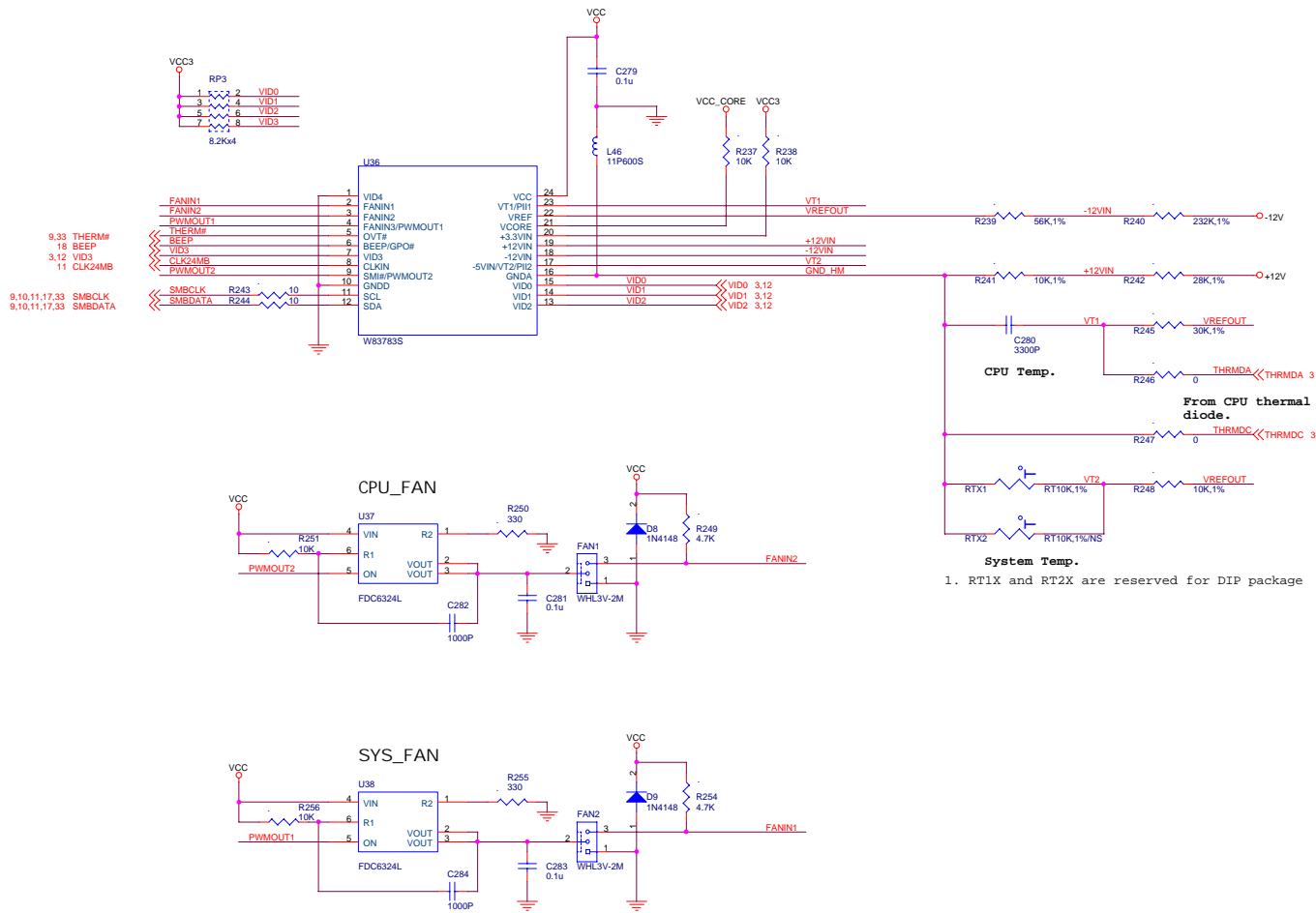


WAKE UP ON MODEM

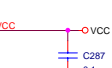
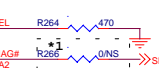
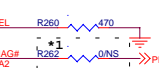
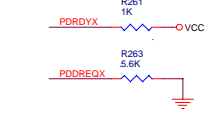




ADVANTECH CO., ECG R&D			
Title		Share IRQ	
Size	Document Number		Rev
	PCM-9572 Rev.A1 04-1		A1
Date	Tuesday, August 07, 2001		Sheet 25 of 35

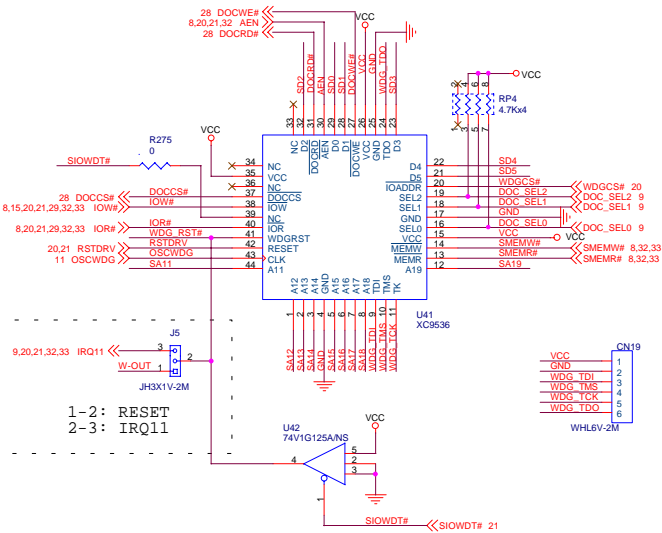


ADVANTECH CO., ECG R&D			
Title	Hardware Monitor - W83783S		
Size	Document Number	PCM-9572 Rev.A1 04-1	Rev A1
Date	Tuesday, August 07, 2001	Sheet 26 of 35	1

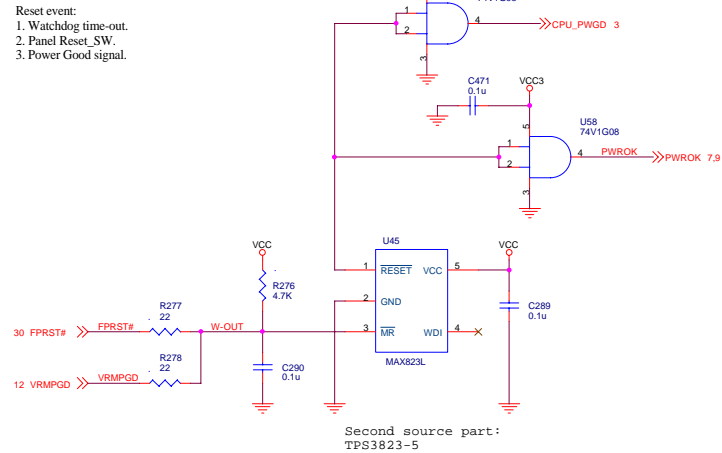


Note:
*1. For VIA 82C596B UDMA66 only

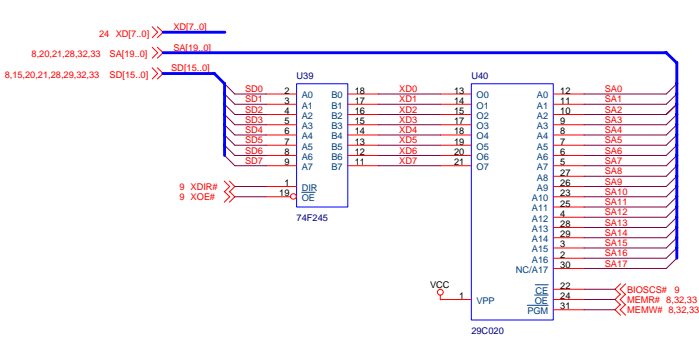
WATCHDOG



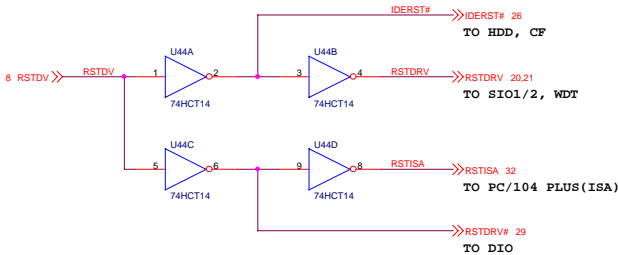
RESET CKT



PLCC BIOS

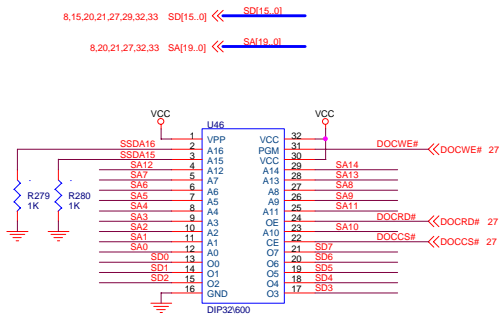


ISA RESET



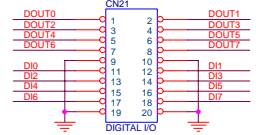
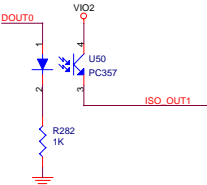
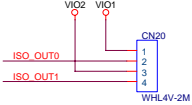
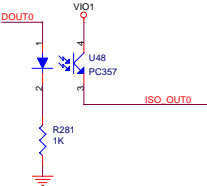
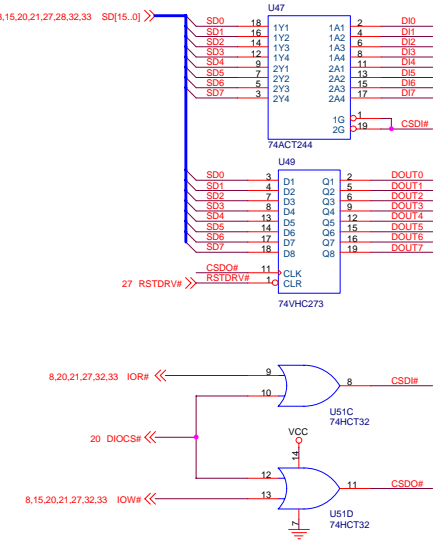
ADVANTECH CO., ECG R&D			
Title	BIOS, WatchDog, Reset		
Size	Document Number	PCM-9572 Rev.A1 04-1	Rev A1
Date	Tuesday, August 07, 2001	Sheet 28 of 35	

DOC-2000



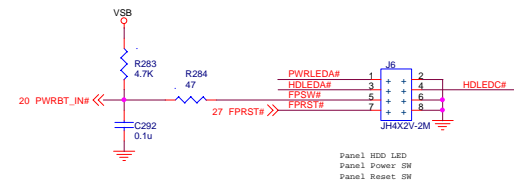
MEMORY ADR.	SEL2	SEL1	SEL0
DISABLE	0	0	0
CC000	0	0	1
D0000	0	1	0
D4000	0	1	1
D8000	1	0	0
DC000	1	0	1

DIGITAL I/O
I/O Address: 550h

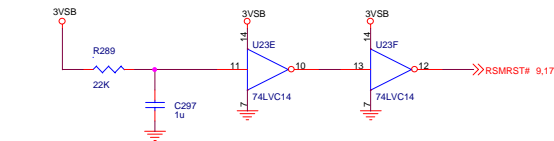


ADVANTECH CO., ECG R&D			
Title Digital I/O			
Size Document Number PCM-9572 Rev.A1 04-1			
Date Tuesday, August 07, 2001 Sheet 30 of 35			
			Rev A1

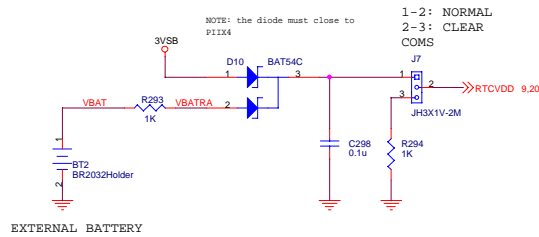
PANEL CONTROL ATX PWBT



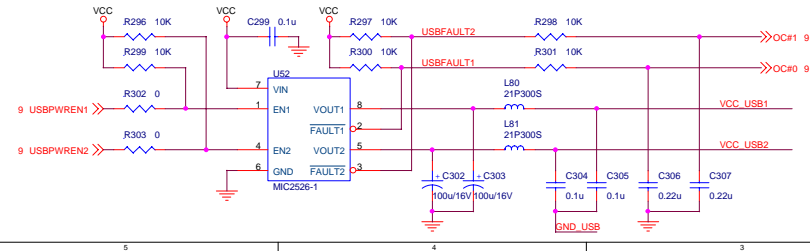
RSMRST Resume Reset circuitry using a 22 msec delay and Schmitt trigger logic.



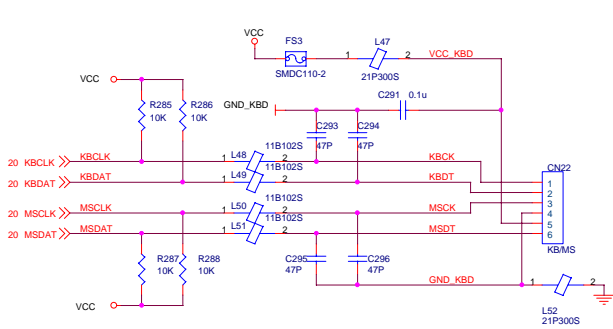
RTC VBAT



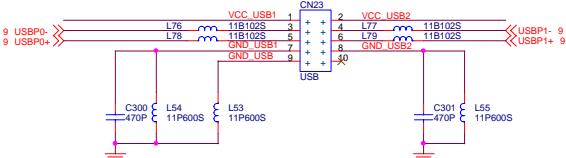
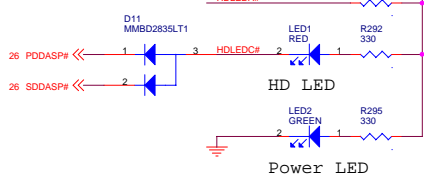
USB POWER



PS/2 KB+MS PORT

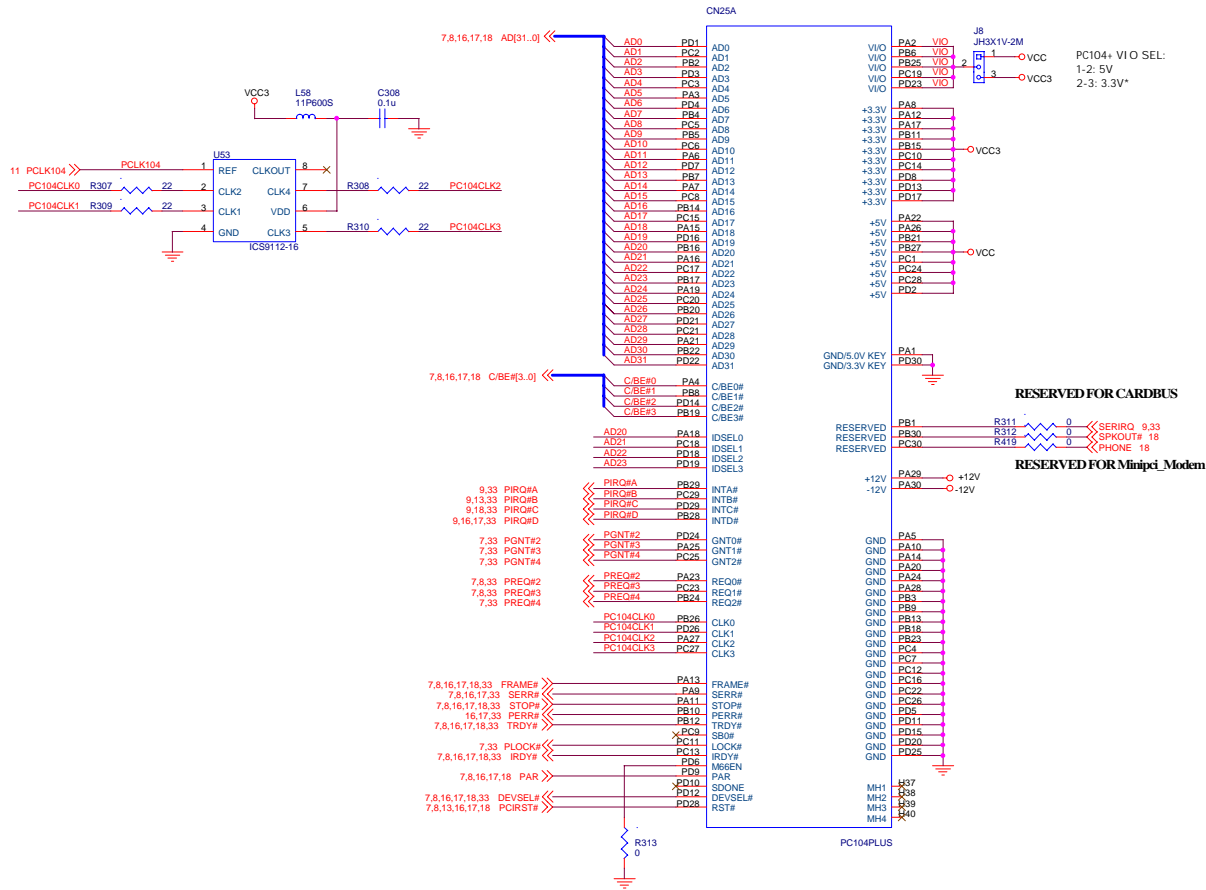


HDLED PWRLD



ADVANTECH CO., ECG R&D			
Title	Miscellaneous		
Size	Document Number PCM-9572 Rev.A1 04-1		
Date	Tuesday, August 07, 2001	Sheet	31 of 35

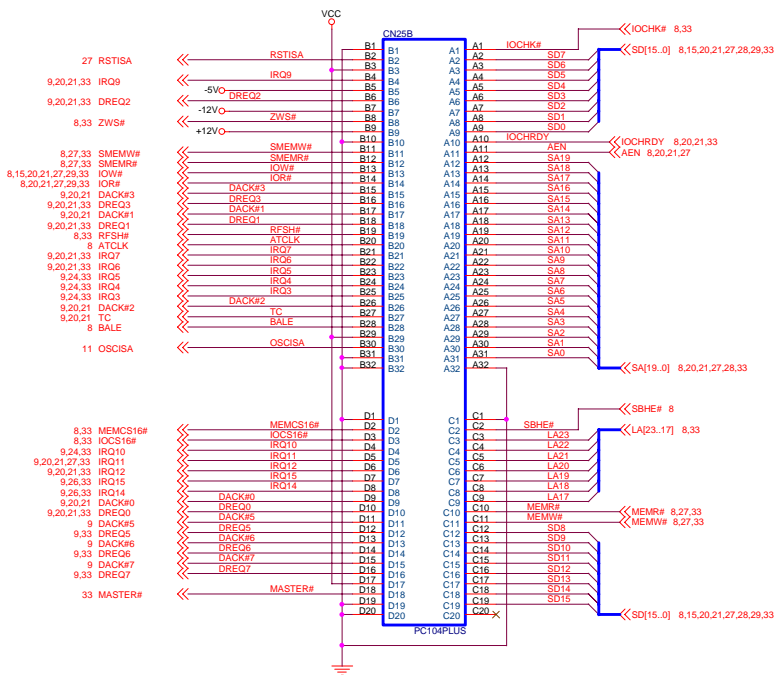
PC/104 PLUS - PCI



PC104+ SLOT	REQ	GNT	CLK	IDSEL	INT0	INT1	INT2	INT3
1	REQ#0	PGNT#0	CLK0	AD20	PIRQ#A	PIRQ#B	PIRQ#C	PIRQ#D
2	REQ#1	PGNT#1	CLK1	AD21	PIRQ#B	PIRQ#C	PIRQ#D	PIRQ#A
3	REQ#2	PGNT#2	CLK2	AD22	PIRQ#C	PIRQ#D	PIRQ#A	PIRQ#B
4	REQ#2	PGNT#2	CLK3	AD23	PIRQ#D	PIRQ#A	PIRQ#B	PIRQ#C

ADVANTECH CO., ECG R&D			
Title PCM-9572 Rev.A1 04-1			
Size	Document Number PC104+ Expansion (PCI)		Rev A1
Date:	Tuesday, August 07, 2001	Sheet	32 of 35

PC/104 PLUS - ISA

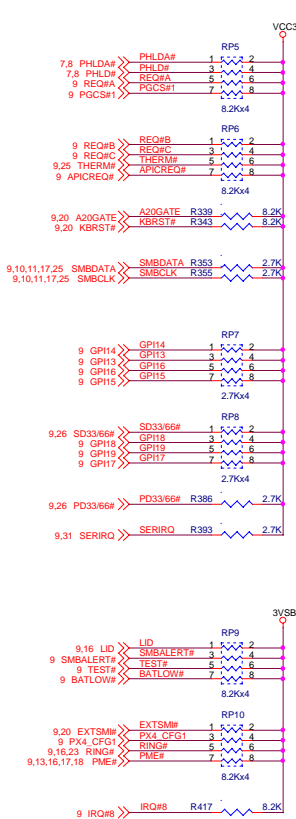


ADVANTECH CO., ECG R&D			
Title	PC104+ Expansion (ISA)		
Size	Document Number	PCM-9572 Rev.A1 04-1	Rev A1
Date	Tuesday, August 07, 2001	Sheet 33 of 35	

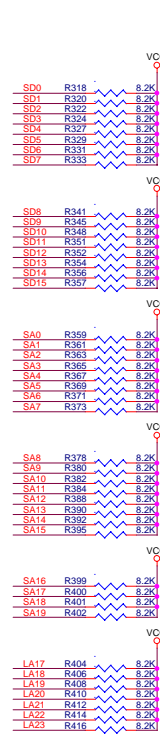
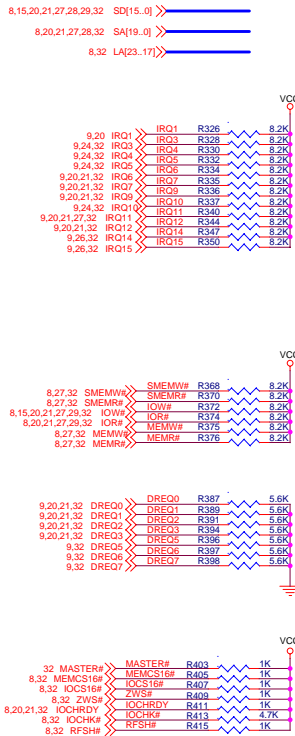
PLACE CLOSE TO PIIX4

NEAR PISA SLOT

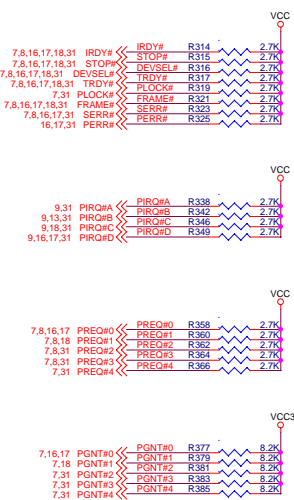
NEAR PISA SLOT



PIIX4

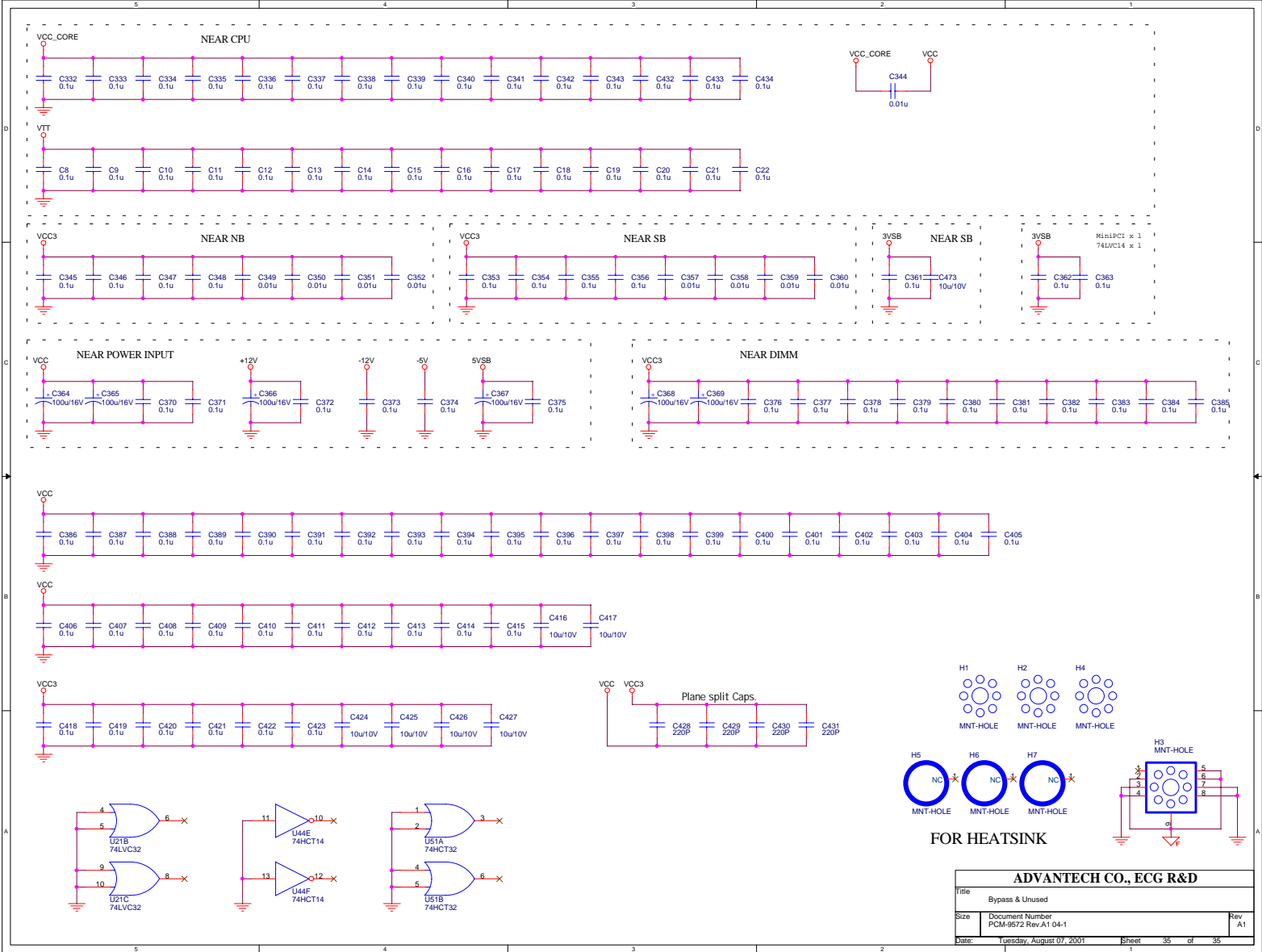


ISA BUS



PCI BUS

ADVANTECH CO., ECG R&D				
Title	PCM-9572 Rev.A1 04-1			
Size	Document Number	Pull UP / Pull Down (PCI, ISA)		Rev A1
Date	Tuesday, August 07, 2001	Sheet	34	of 35



ENCLOSURE No. 5

User Manual & Instructions

(Total 9 Pages including this Cover Page)

MBPC-400 chassis kit series

Installation's Guide

1st Edition December 2002
Document No. 200A040000

Important Safety Information

SAFETY INSTRUCTIONS

1. Please read these safety instructions carefully.
2. Please keep this User' s Manual for later reference.
3. Please disconnect this equipment from AC outlet before cleaning. Don' t use liquid or sprayed detergent for cleaning. Use moisture sheet or clothe for cleaning.
4. For pluggable equipment, the socket-outlet shall be installed near the equipment and shall be easily accessible.
5. Please keep this equipment from humidity.
6. Lay this equipment on a reliable surface when install. A drop or fall could cause injury.
7. Do not leave this equipment in an environment unconditioned, storage temperature above 50°C, it may damage the equipment.
 8. The openings on the enclosure are for air convection hence protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
 9. Make sure the voltage of the power source when connect the equipment to the power outlet.
10. Place the power cord such a way that people can not step on it. Do not place anything over the power cord. The power cord must be rated for the product and for the voltage and current marked on the product' s electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product.
11. All cautions and warnings on the equipment should be noted.
12. If the equipment is not use for long time, disconnect the equipment from mains to avoid being damaged by transient over-voltage.
13. Never pour any liquid into ventilation openings, this could cause fire or electrical shock.
14. Never open the equipment. For safety reason, qualified service personnel should only open the equipment.
15. If one of the following situations arises, get the equipment checked by service personnel:
 - a. The Power cord or plug is damaged.

- b. Liquid has penetrated into the equipment.
 - c. The equipment has been exposed to moisture.
 - d. The equipment has not work well or you can not get it work according to user' s manual.
 - e. The equipment has dropped and damaged.
 - f. If the equipment has obvious sign of breakage
16. Never open the equipment. For safety reason, qualified service personnel should only open the equipment.
17. **CAUTION:** THE COMPUTER IS PROVIDED WITH A BATTERY-POWERED REAL-TIME CLOCK CIRCUIT. THERE IS A DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH SAME OR EQUIVLENT TYPE RECOMMENDED BY THE MANUFACTURE. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER' S INSTRUCTIONS.

Packing List

Please review your package has fulfilled with the parts as following

- MBPC-400 assembled Chassis kit
- Accessory box, it regularly includes
 - MBPC-400 User's Manual
 - An I/O port individual distinction sticker
 - A Power cord included for AC power supply.
 - Two mounting plates to connect the system to other devices
 - Hard disk harness, 2.0/2.54 mm

Specification

■ AC Power supply

- Output** ----- 5V/12A, 12V/1A
- Input** -----100-240 VAC, 50~60 Hz
- Temperature** -----0-45 Deg/C
- Operating Humidity**----0%-85%
- Safety** -----UL, CE **LVD** certificated.

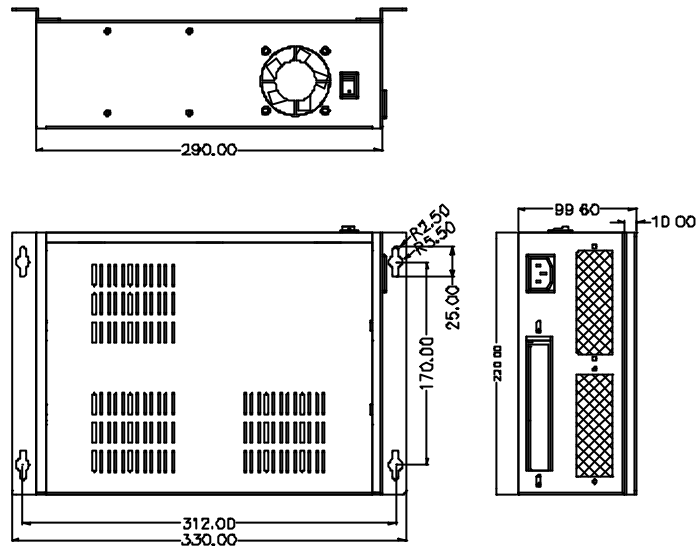
■ Cooling Fan

- Dimension** -----60x60x15 mm
- operation voltage** --- 12V
- Input power** -----1.9 W Max.
- Air-flow** -----18.5 CFM(at zero static pressure)

■ Adaptable with Advantech SBC No.

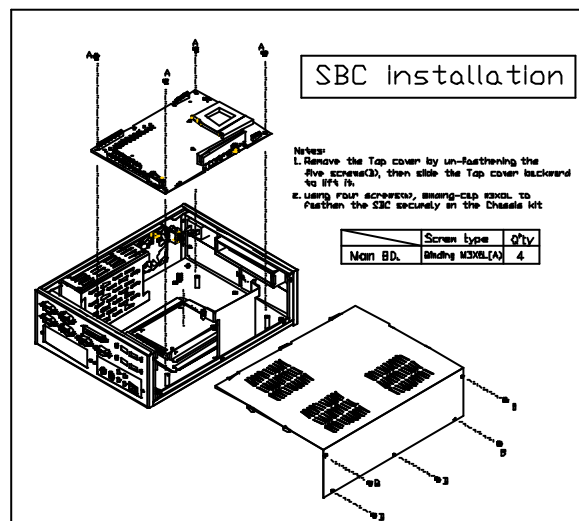
PCM-9577 PCM-9576 PCM-9575 PCM-9572 PCM-9550 series.

■ Mechanical Dimension

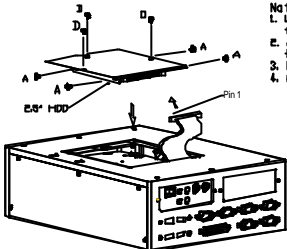


Installation Guide

A. SBC Installation



B. HDD Installation



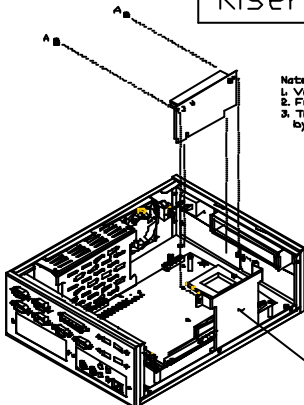
HDD installation

Notes:

1. Lift the HDD Cover by unfastening the three screws (D).
2. Attach the 2.5" HDD under the cover then fastening the HDD by four screws (A).
3. Connect the HDD Harness with pin 1 verification.
4. re-fastening the four screws (D) back.

	Screw type	Q'ty
HDD door	Flat M3X5 (D)	3
HDD box	Binding M3X5 (A)	4

C. Riser-Card installation



Riser-card installation

Notes:

1. Vertically slot the riser card in to the slot on PCB.
2. Fasten the riser card with two screws (A).
3. The riser card holding brackets can be fixed Left or right by the different connector position on PCB.

	Screw type	Q'ty
Riser card	Binding M3X4 (A)	2

D. Riser-card holding bracket

Riser-card holding Bracket

Notes:
1. The riser card bracket can be fixed either on position '1' or position '2', depends on the SBC slot-type connector position for PCN-9576 and PCN-9577, it is fixed on position '1'.
2. The I/O window bracket is also fixed accordingly with the Riser card bracket.

Table:

	Screw type	q'ty
PCI window	Flat M3X5	2
Riser b'kt	Binding M3X5	2

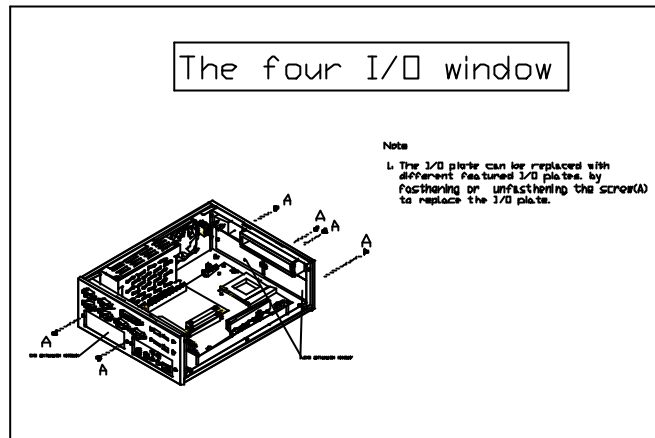
E. Fixing the PC-104

Fixing the PC-104

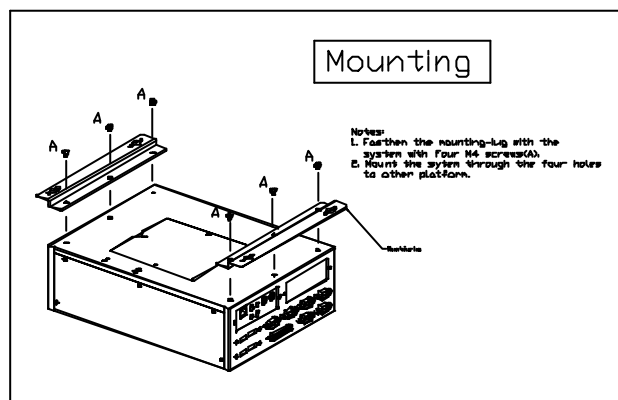
Notes:
1. Fasten the Hex-stud(B) onto the SBC with a Hex. Nut(C). This fastening could be easier done through the bottom side of HDD cover.
2. Install the PC-104 card onto the position.
3. Fix the PC-104 card with screws(A).

	Screw type	q'ty
	Stud M3X16(B)	4
PCN-104 BD	HEX NUT M3X16(C)	4
	Binding M3X5(A)	4

F. The four I/O windows



G. Mounting



ENCLOSURE No. 6

Licenses and Information for Critical Components

(Total 19 Pages including this Cover Page)

- 1. Certificate and Specification for DC fan (Page 2 - 12)**
- 2. Certificate and Specification for lithium battery (Page 13 - 19)**

ADVANTECH**APPROVAL SHEET**NO. EE-961244

研華股份有限公司

☒合格

APPROVED

☐不合格

REJECTED

☐試用

LIMITED QTY _____ PCS

送樣次數

☒ ☐ ☐

1 2 3

品名規格

Part Description

Fan 60 x 60 x 15mm (SUNON)

研華料號

Part No.

1159200600

使用機種

PPC-100

製造商/代理商 SUNON

廠商型號 KD1206PHB2

備註

Remark



SIGNATURE OK/CA/NG DATE

檢驗者	曾正利	OK	85.10.22
審核(電子)	李	OK	85.10.22
審核(機構)	李	OK	85.10.24
工程課	徐勤修 蔣麗雲	OK	85.10.24

圖樣底打 GERBER
面品片孔 FILE

採購	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
廠商	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
品管	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
產品部	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
工程課	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

註：1. 以上所記，已經檢驗過，並給予承認。

2. 本單不能代替採購單及其他用途。

3. 如涉及專利及法律之問題，應由送樣廠商負全責。

測試報告

研華料號：1759200600

檢驗者：曾正利

品名規格：Fan 60x60x15mm

使用機種：PPC-100

日期：85.10.22

測試項目	A	B	C	G	H	L			
測試規格	標示 破壞	Plastic UL 94V-0	Spec.	black	Spec.	UL CSA			
測試條件									
NO 1	OK	OK	OK	OK	OK	OK			
2									
3									
4									
5									
6									
7									
8									
9									
10									



使用儀器：

備註：

測試項目：A.外觀 B.材質 C.電氣特性 D.機械強度 E.實裝動作 F.破壞實驗
G.顏色 H.尺寸 J.沾錫性 K.壽命實驗 L.安規

QD4-047





SPECIFICATION FOR APPROVAL

CUSTOMER ADVANTECH CO., LTD.

DESCRIPTION _____

PART NUMBER KD1206PHB2 1749200600 EE 961244

REVISION NO. _____

OUR SAMPLE NO. _____

DATE Oct. 18, 1996

OUR MODEL _____

APPROVED BY



黄金山

曾正利

8.10.22

PRODUCTS SPECIFICATION


PRODUCT : BRUSHLESS DC FAN

MODEL NO : KD1206PHB2

This specification covers the requirements for
SHARP cooler with +12V DC input voltage.

僅供參考



A		E		TITLE BRUSHLESS DC FAN	P/N KD1206PHB2
B		F			
		G			
D		H			
 ACT-RX TECHNOLOGY CORPORATION					PAGE 1 OF 4

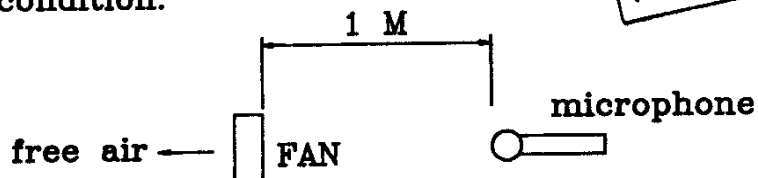
1. SCOPE :

This document is a specification defining the electrical and mechanical characteristics of the DC brushless fan.

2. ELECTRICAL

- 2-1 Operation voltage: +12V, $\pm 15\%$
- 2-2 Maximum current drain: 0.16 Amp. max
- 2-3 Air flow : 18.5 C.F.M (at rated voltage)
(at zero static pressure)
- 2-4 Static pressure : 0.15 inch-H₂O (at rated voltage)
(at zero airflow)
- 2-5 Input power : 1.9 W max.(in free air rated voltage)
- 2-6 Insulation resistance : 500 Meg Ohm min. at 500V DC
(between frame and \oplus terminal)
- 2-7 Dielectric strength : at 500VAC 60HZ 1 minute
(between frame and \oplus terminal)
- 2-8 Lead wire : UL1007 AWG26 \oplus : Red
 \ominus : Black
- 2-9 Speed : 4200 \pm 400 RPM Ref.
- 2-10 Acoustical noise : 31.5 dB(A)

Measuring condition:



at rated voltage in Semi-Anechoic chamber equipment
B&K sound level meter.

2-11 Locked rotor protection

Impedance of motor winding protects motor from damage in 72hours of locked rotor condition at the rated voltage.

2-12 Polarity protection

Be capable of withstanding if reverse connection for positive and negative leads.

僅供參考

3. MECHANICAL AND ENVIRONMENT

3-1 Size (Body) : $L * W * H = 60 * 60 * 15$

3-2 Air flow curves

Air flow V.S Air pressure (See Figure 1 below.)

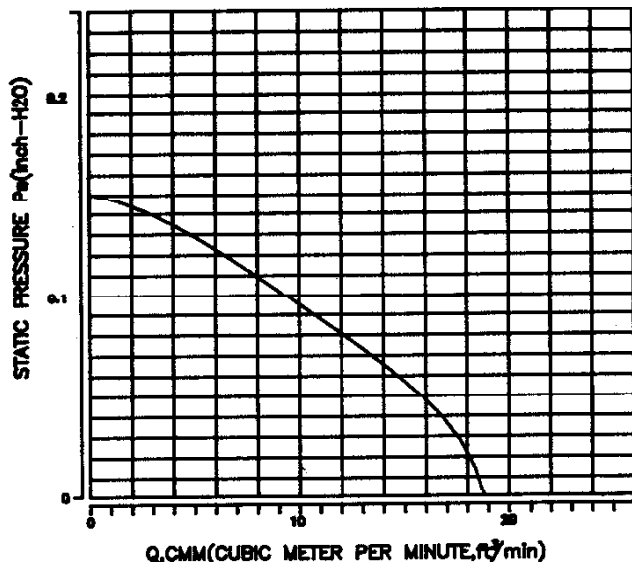


Figure 1

僅供參考

3-3 Weight : 45 grams

3-4 Operating temperature range : -20°C To 80°C

3-5 Frame : plastic UL 94V-0

3-6 Fan blade : plastic UL 94V-0

3-7 Bearing system : KD1206PHB2 ball bearing.

3-8 Mean Time Between Failure (MTBF) :

65,000 Hrs (KD1206PHB2)

at Ambient Temp. : 25°C , $65\% \pm 20\%$ RH

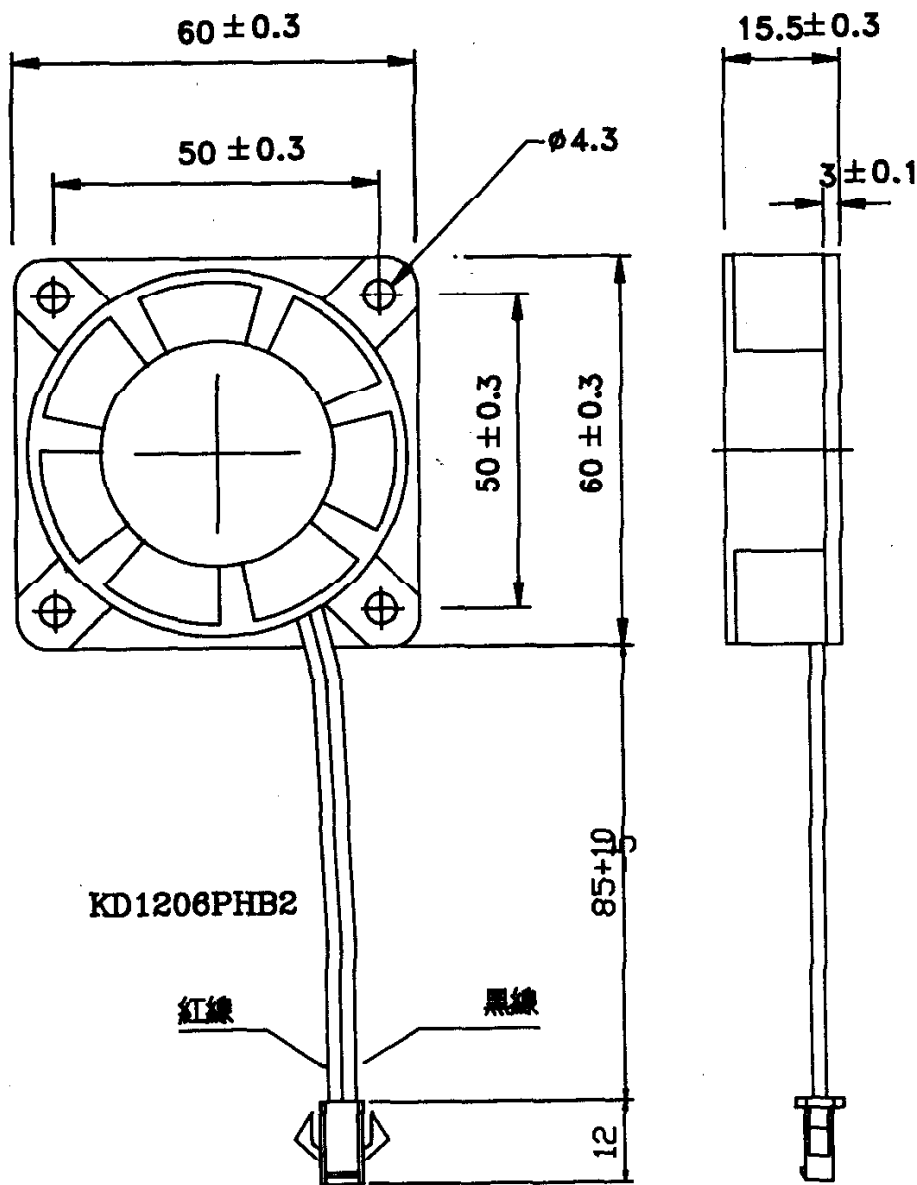
3-9 Vibration test

Motor withstands 2mm amplitude 1000cpm vibration for 30minutes each toward up-down, right-left and backforth.

3-10 Drop test

In minimum packaging condition motor withstands each one drop of three faces from 30cm distance height onto 10mm thickness of wooden board.

4. FAN ASSEMBLY AND DIMENSION



僅供參考



EC-Conformity Declaration

For the following equipment:

BRUSHLESS DC FANS

(Product Name)

KD1206PHB2

(Model Designation)

SUNONWEALTH ELECTRIC MACHINE INDUSTRY CO., LTD.

(Manufacturer Name)

FL 12, NO. 120, CHUNG CHENG 1ST RD., KAOHSIUNG, TAIWAN, R.O.C.

(Manufacturer Address)

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility (89/336/EEC). For the evaluation regarding the electromagnetic compatibility, the following standards were applied:

EN 60 082-1:1992 EN 50 081-1:1992

IEC 801-2:1984

IEC 801-3:1984

The following manufacturer/importer is responsible for this declaration:

SUNONWEALTH ELECTRIC MACHINE INDUSTRY CO., LTD.

(Company Name)

FL 12, NO. 120, CHUNG CHENG 1ST RD., KAOHSIUNG, TAIWAN, R.O.C.

(Company Address)

Person responsible for making this declaration:

ALEX HORNG

(Name, Surname)

PRESIDENT

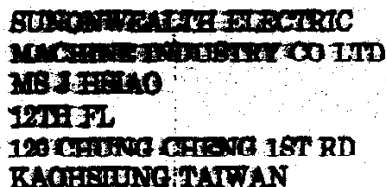
(Position/Title)

KAOHSIUNG
TAIWAN, R.O.C.

(Place)

(Date)

(Legal Signature)



Your most recent listing is shown below. Please review this information and report any inaccuracies to the UL Engineering staff member who handled your Assignment.

GFVVZ
Component - Fara. Electric

SUNONWEALTH ELECTRIC MACHINE INDUSTRY
CO LTD

E77881 (R)
E-enum. from D card

[illegible][illegible]

Reports: October 7, 1962; November 22, 1962; May 31, 1968.

Replaces E77551E dated June 10, 1996.
512781002 Underwriters Labor

Underwriters Laboratories Inc.*

(Cont. on F card)
214028932
191

For information on placing an order for UL Listing Cards in a 3 x 5 inch card format, please refer to the enclosed ordering information.

發行

353 Pilingham Road
Northbrook, Illinois 60062-2092, USA
708 272-8800
Telex: 8902543343
FAX No 1708; 272-8128

A not-for-profit organization dedicated to public safety and committed to quality service

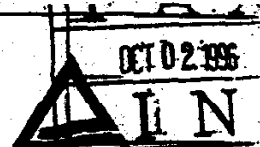
1285 West Wharman Road
Melville L.I., New York 11747-3555, USA
516/271-5500
Telex No. 8852315
FAX No. (516) 271-8258

1633 Scott Blvd
Santa Clara California 95050-4199, USA
408-985-2400
FAX No. (408) 298-3255

12 Laboratory Drive
P.O. Box 13095
Research Triangle Park,
North Carolina 27709-3095, USA
919/549-1400
Telex No. 483792Z
FAX No. 919/549-1843

法律/技術保存

Zertifikat Certificate



**TÜV
Rheinland**

Zertifikat Nr. Certificate No. Blatt Page

C 9552995

04

Das Zeichen Client Reference	Unser Zeichen Our Reference	Ausstellungsdatum Date of Issue
MYH	941-CD/WJ-P 9552995E01	02.11.1995 (day/month/yr)

Genehmigungsinhaber License Holder

Sunonwealth Electric Machine Industry Co., Ltd.

12F1., No 120
Chung Cheng 1st Rd.
Kaohsiung 802
Taiwan, R.O.C.

Fertigungsstätte Manufacturing Plant

Sunonwealth Electric Machine Industry Co., Ltd.

(Kaohsiung Factory)
No. 149, Yi Yung Rd.
Ling Ya District
Kaohsiung 802
Taiwan, R.O.C.

Prüfzeichen Test Mark

Geprüft nach Tested acc. to



EN 50 082-1:1992
IEC 801-2:1984
IEC 801-3:1984

EN 50 081-1:1992

Zertifiziertes Produkt (Geräteidentifikation)
Certified Product (Product Identification)

Lizenzentgelte - Einheit
License Fee - Unit

LÜFTER (Brushless DC Fan), wie Blatt 1 (as page 1)

Ergänzung (Addition)

Bezeichnung (Type Designation)	: KDX ₁ X ₄ 06PHX ₃	1
X ₁ steht für (stands for): E oder (or) freibleibend (blank)		1
X ₄ steht für (stands for): 12, 24, 05		1
X ₃ steht für (stands for): S1, S2, S3, B1, B2, B3		1

Ergänzung (Addition)

Bezeichnung (Type Designation)	: KDX ₁ X ₄ 05PHX ₅	1
X ₁ steht für (stands for): E oder (or) freibleibend (blank)		1
X ₄ steht für (stands for): 12, 24, 05		1
X ₅ steht für (stands for): S2, S3, B2, B3		1

法律/技術保存
銷毀應經核准

文件管制中心
84.11.15
發行



ANLAGE (Appendix): 1

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde.
Das Produkt entspricht den o.g. Anforderungen, die Herstellung wird überwacht.
This certificate is based on our Testing and Certification Regulation. The product fulfills above-mentioned requirements, the production is subject to surveillance.

Zertifizierungsstelle
Der Stellvertreter

K. Feing

TÜV Rheinland Product Safety GmbH, Am Grauen Stein, D-51105 Köln

Print - Imo. K. Heinz

ADVANTECH

APPROVAL SHEET

NO. EE-971330

研華科技股份有限公司

☒ 合格

APPROVED

☐ 不合格

REJECTED

☐ 試用

LIMITED QTY _____ PCS

送樣次數

☒ ☐ ☐
1 2 3

品名規格

Part Description

BATTERY 3V/195mAh BK2032

研華料號

Part No.

11750199011

使用機種

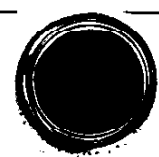
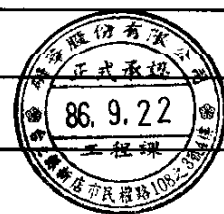
ALL

製造商/代理商 RAYOVAC/廣登

廠商型號 BK2032

備註

Remark



SIGNATURE OK/CA/NG DATE

檢驗者		OK	97.9/2
審核(電子)	子經	OK	97.9/2
審核(機構)	王淑君		
工程課	王淑君	OK	86.9.19

圖樣底打 GERBER
面品片孔 FILE

採購	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
廠商	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
品保	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
產品部	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
工程課	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 註：1. 以上所記，已經檢驗過、並給予承認。
2. 本單不能代替採購單及其他用途。
3. 如涉及專利及法律之問題，應由送樣廠商負全責。

測試報告

研華料號： 1750199011

檢驗者：

26/11

品名規格： BATTERY 3V/195mAh
BR2032

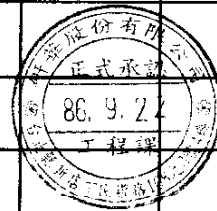
使用機種：

ALL

日期：

97.9/5

測試項目	實測								
測試規格	電壓值 測試3V								
測試條件	實測								
NO 1	3.432								
2	3.425								
3	3.433								
4									
5									
6									
7									
8									
9									
10									



使用儀器：

備註：廠商提供測試方式，為電壓值必需落在3.3V~3.45V，否則視為合格

測試項目：A.外觀 B.材質 C.電氣特性 D.機械強度 E.實裝動作 F.破壞實驗
G.顏色 H.尺寸 J.沾錫性 K.壽命實驗 L.安規

QD4-047



台灣廣登電子股份有限公司

QuadRep Electronics [T] Ltd.

TEL : (2)6989933

FAX : (2)6989911

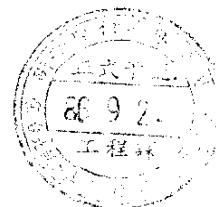
APPROVED SHEET 承認書

86-08-13 AVT

CUSTOMER : 研華股份有限公司

台北縣新店市民權路108之3號4樓

代碼	VENDER	VENDER P/N	Description	CUSTOMER P/N
1424	Rayovac	BR2032		



APPROVED BY :

P/N = 1750'99011

EE-971330

APPLIED BY :

台灣廣登電子股份有限公司

台北縣汐止鎮新台五路一段79號4樓之10

林清進

Chris Lin

IX. Product Specifications

Lifex™ Lithium Coin Cells



A. Specification Table

Rayovac Lifex Lithium coin cells are available in a wide variety of tab and pin mounting configurations. See Product Availability Table (pages 18 and 19) for a list of the most popular items.

Part Number	Rated Nominal Capacity (mAh)	Nominal Pulse Capability (mA*)	Dimensions				NEDA Number	IEC Number
			Diameter (mm)	Height (mm)	Weight (g)	Volume (cc)		
BR1225	50	5	12.5	2.5	0.8	0.30	5020LB	BR1225
BR1632	130	10	16.0	3.2	1.6	0.63	Not Assigned	BR1632
BR2016	70	10	20.0	1.6	1.5	0.50	5000LB	BR2016
BR2032	195	10	20.0	3.2	2.4	1.00	5004LB	BR2032
BR2325	180	10	23.0	2.5	3.1	1.04	5002LB	BR2325
BR2335	300	10	23.0	3.5	4.3	1.45	Not Assigned	BR2335

*Consult Rayovac Applications Engineering for assistance in determining pulse capability for your application.

Figure 12

3R2016

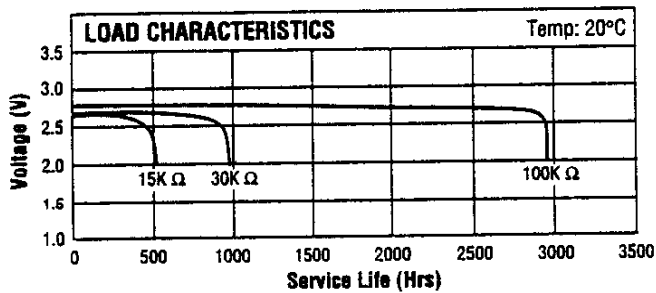


Figure 19

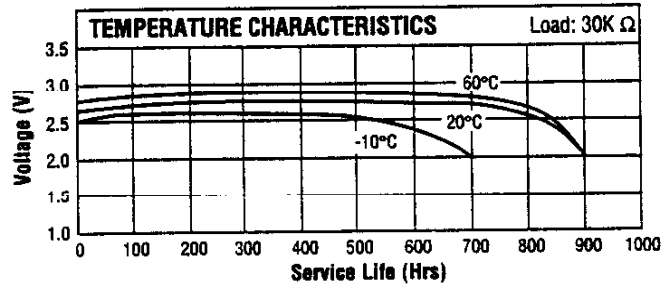


Figure 20

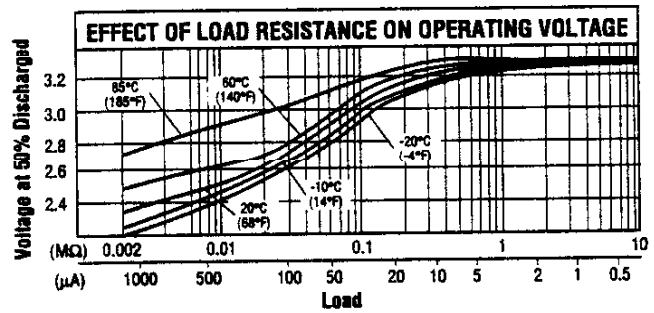


Figure 21

BR2032

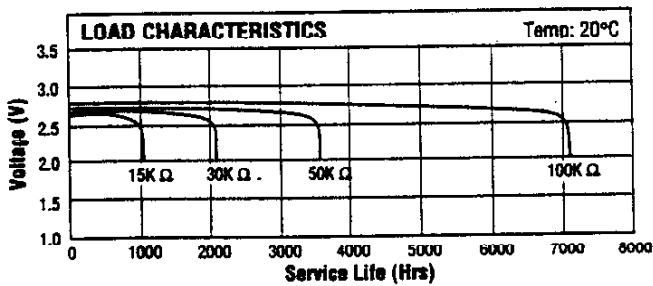


Figure 22

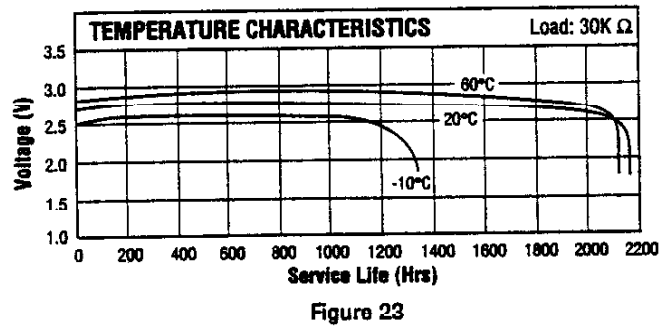


Figure 23

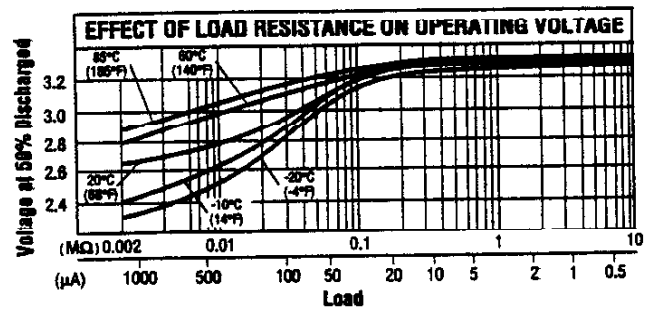


Figure 24

BR2032

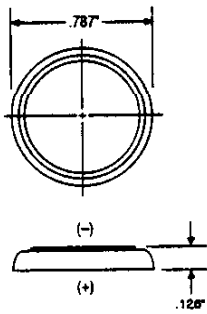


Figure 47

BR2032T2

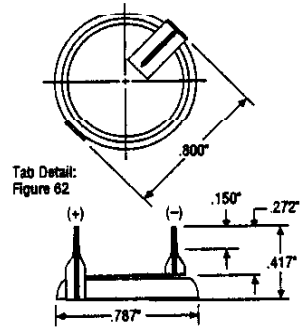


Figure 48

BR2032T2K

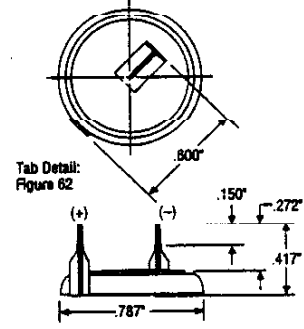


Figure 49

BR2032T3L

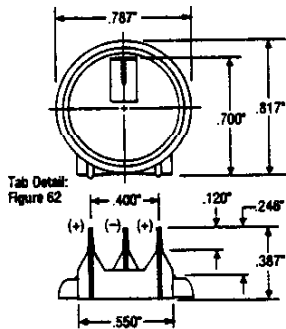


Figure 50

INCHES	MILLIMETERS	INCHES	MILLIMETERS
0.020	0.51	0.300	7.62
0.063	1.60	0.387	9.83
0.065	1.65	0.400	10.16
0.096	2.49	0.415	10.54
0.110	2.79	0.417	10.59
0.115	2.92	0.492	12.50
0.120	3.05	0.550	13.97
0.125	3.18	0.600	15.24
0.126	3.20	0.626	15.90
0.130	3.30	0.630	16.00
0.150	3.81	0.684	17.37
0.200	5.08	0.712	18.08
0.220	5.59	0.787	19.99
0.244	6.20	0.800	20.32
0.266	6.76	0.896	22.81
0.270	6.86	0.984	24.99
0.272	6.91	1.048	26.62
0.274	6.96	1.270	32.26
0.288	7.32	2.048	51.82

BR2032T3V

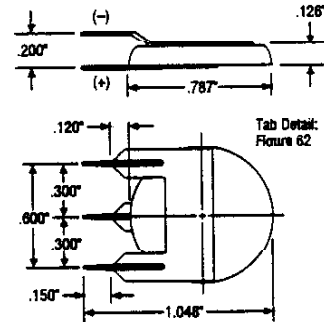


Figure 51

BR2325

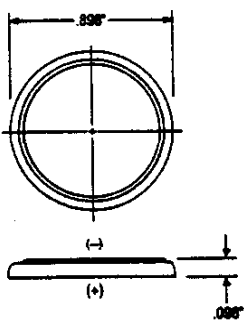


Figure 52

BR2325P2

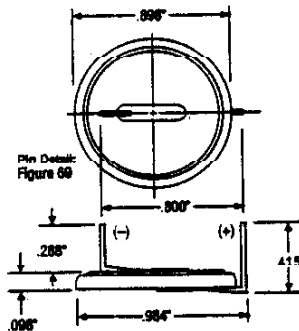


Figure 53

BR2325T2

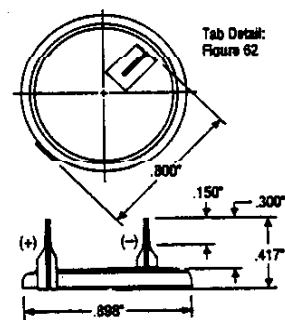


Figure 54

771

July 5, 1991

RAYOVAC CORP

601 RAYOVAC DR , MADISON WI 53711

MH125A2 (M)

12

SECRET

[illegible]

Charging Currents, mA (m)

With letters/numbers/characters/characters/characters

001228

801220E

BN122815

0001032

01020

812032

812120

3.0

0.0

3.0

A.D.

A. O.

A, D

B.0

Washburn

五

ON

2

2

22

20

Imports APRIL 12, 1983 APRIL 12, 1983 APRIL 12, 1983 APRIL 12, 1983
APRIL 12, 1983 APRIL 12, 1983

Replaces MH12542A dated March 2, 1993.

217004004

UNDERSTATIONS LABORATORIES, INC.

(Cont'd)

100