



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:

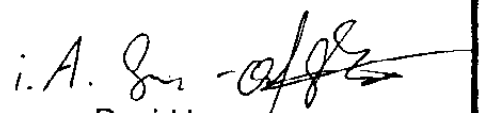
**European and International Safety Standards as listed in the
Scope of Authorization on the attachment to this certificate**

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
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International Standards

IEC 60 950: 1991+A1+A2+A3+A4	IEC 60 065:1998 IEC 60 065:1985 +A1+A2+A3
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Taipei, 6 November 2001

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



QUALIFIED INDEPENDENT LABORATORY

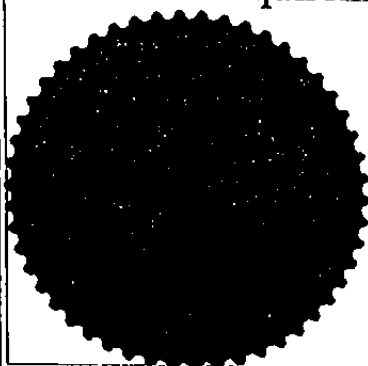
This is to confirm that:

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.....: **Server**

Model Designation: **SG-2103-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)

TEST REPORT IEC 60950 Safety of information technology equipment	
Report Reference No.....:	SPCLVD30317
Compiled by (+ signature).....:	Peter Lai Supervisor
Reviewed by (+ signature)	Allen Huang Manager
Date of issue.....:	April 3, 2003
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.....:	SG-2103-XXXXX, Where the X can be any alphanumeric character or blank.
Manufacturer.....:	Same as Applicant.
Rating(s)	100-127/200-240 Vac, 50/60 Hz, 5/2.5 A

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) : 5.25 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 IEC 60335-1.

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
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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 IEC 60950.</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
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

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
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 - 127 V / 200 - 240 V.	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)	5 / 2.5 A.	Pass
	Manufacturer's name/Trademark		Pass
	Type/model	SG-2103-XXXXX, Where the X can be any alphanumeric character or blank.	Pass
	Symbol of Class II	Class I equipment.	N/A
	Other symbols	Additional symbols may be provided when submitted for national approval.	N/A
	Certification marks	CE.	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
1.7.8	Controls and indicators	Safety clearly not involved.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
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	Only functional indicators use colour. However, this LED is not involved with safety, therefore, it is acceptable.	Pass
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.	N/A
1.7.17	Equipment for restricted access locations.....	Equipment not intended for installation in a RESTRICTED ACCESS LOCATION.	N/A
2	PROTECTION FROM HAZARDS		Pass
2.1	Protection from electric shock and energy hazards		Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
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
	Time-constant (s); measured voltage (V).....	See enclosed test record.	—
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

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

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 V pk 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		N/A
	Inherently limited output		N/A
	Impedance limited output		N/A
	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)		—
	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	See 2.6.1.	Pass
2.6.4.1	Protective earthing and bonding terminals	Appliance inlet used and the unit meet the test requirement of 2.6.3.3.	Pass
	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. See enclosed test record.	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	Considered in approved power supply.	Pass
	CTI tests	Group IIIb values used. Material group IIIb; $100 \leq \text{CTI} < 175$.	—
2.10.5	Solid insulation	See below.	N/A
2.10.5.1	Minimum distance through insulation	Considered in approved power supply.	Pass
2.10.5.2	Thin sheet material	Considered in approved power supply.	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
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

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
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	<p>All wiring is reliably routed or separated and secured.</p> <p>The wires are positioned in such a manner that prevents excessive strain, loosening of terminal connections and damage of conductor insulation.</p>	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.	Pass
3.1.8	Self-tapping and spaced thread screws	Thread-cutting or space thread screws are not used for electrical connections. Machine screws only.	Pass
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	<p>The appliance inlet complies with IEC 60320.</p> <p>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.</p>	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	<p>No parts under this unit likely to damage the power supply cord.</p> <p>No sharp edges.</p>	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		Pass
	Angle of 10°	This unit is of a stable mechanical construction and does not overbalance when tilted to an angle of 10° from its normal upright position.	Pass
	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)	Not wall mounted equipment.	N/A

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		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	There are no openings in the top of the enclosure. Foreign objects entering the enclosure will not contact bare parts at hazardous voltage or energy. (No hazardous parts within 5° projection).	Pass
	Dimensions (mm)	Side: Provided with 35 openings, cover area 100 mm by 23 mm, each measures 10 mm by 3 mm.	—
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. Connectors are made of materials of Class V-2 minimum.	Pass
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	Test made to 10X20 cm metal foil in contact with accessible non-conductive part.	Pass
5.1.5	Test procedure		Pass
5.1.6	Test measurements	See appended table.	Pass
	Test voltage (V)	264 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

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
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 between the phases before the fuse complies with method (a), other operation insulation complies with method (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 Equipment is not intended to be connected to TNV. 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	(see appended table 5.3)	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) No transformer used.		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) No ionizing radiation.		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	Ring 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)	ACT-RX Technology Corporation	FD1240-A3010D	12Vdc, 0.13, 6.28CFM	UL 507	UL	
Power supply	Enhance Electronics Co., Ltd.	ENP-1815	I/p: 100-127/200- 240Vac, 5/2.5A, 60/50Hz O/p: +3.3V/7A, +5V/12A, +12V/5A, -12V/1A, -5Vdc/0.2A, +5Vsb/2.0A; total 150W	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	
HDD Drive (Optional)	--	--	5Vdc, 0.85A max., 12Vdc, 0.75A max.	EN 60950 UL 60950	TÜV, UL, CSA	
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)	90V ac, 264V ac				—
	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 below				—
	manufacturer of power supply	See below				—
	rated markings of power supply	See Table 1.5.1				—
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				

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

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				

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

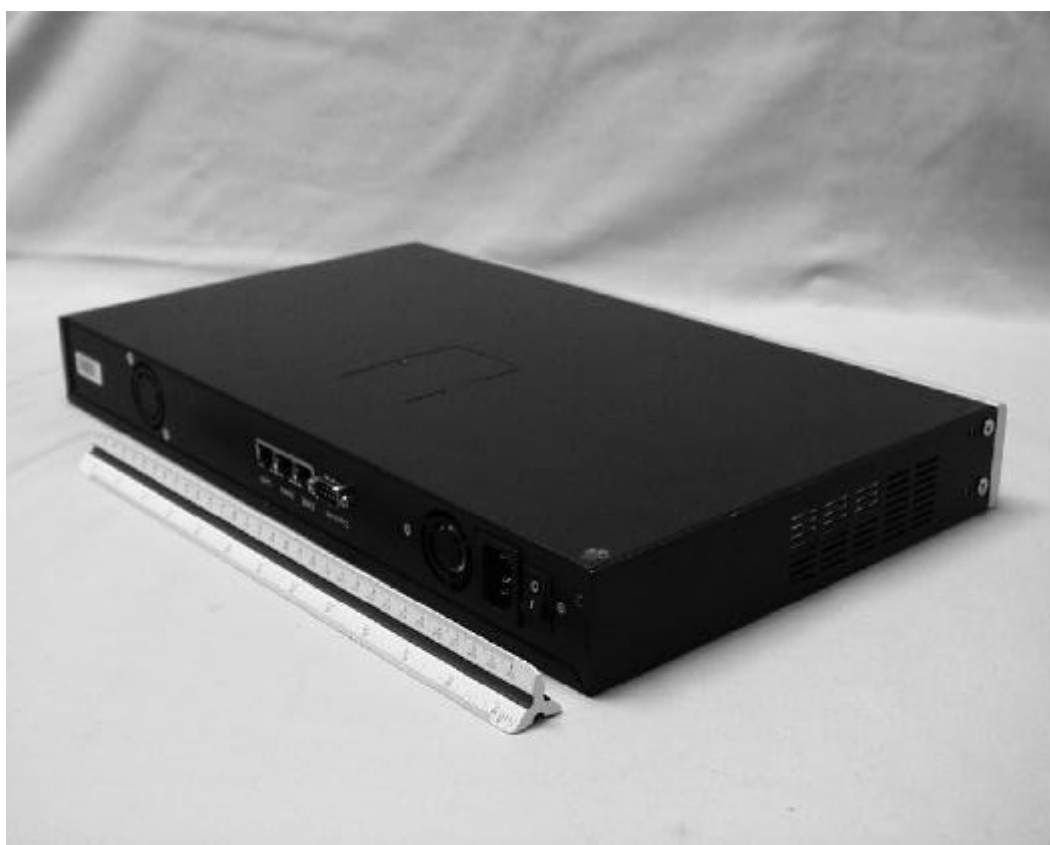
Photographs

(Total 4 Pages including this Cover Page)

Model SG-2103



Model SG-2103



Model SG-2103



ENCLOSURE No. 2

Additional Test Data

(Total 33 Pages including this Cover Page)

Dept: _____
Applicant: Advanced File No.: _____
Proj. Handler/Ext.: _____ Proj. No.: SPCLWD30011
Resp. Engr./Ext.: _____ Product: Server
Test Technician/Ext.: _____ / Ricky Lee Model(s): SG-Z103
Standard(s) No.: UL60950
SPC Reviewed by: Peter Lai / Peter Lai
Data Sheets Reviewed by: _____

Testing Facility: Superior Product Consulting, INC.
Testing Location: Taipei, Taiwan, R.O.C.

Completed Test Results Reviewed by: _____ on / /

[illegible]

Page 1 of 32

Applied For Safety Inspection

Company/Test Institute: Superior Product Consulting, Inc.

Address of Test Site: 3FL, No. 10, Alley 6, Lane 235, 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 3/13/03

REV: A

DATE: Mar.13, 2003

Item	Kind of Instrument Precision Class SPC Property No.	Manufacturer	Model Serial No.	Range Used & Function	Calibrated until
1	AC Power Meter SPC029	YOKOGAWA	2433	20A	24, JUN. 2003
			68LD0039	600V	25, JUN. 2002
2	AC Power Meter SPC009	YOKOGAWA	2433	20A	24, JUN. 2003
			61LD0248	600V	25, JUN. 2002
4	LEAKAGE CURRENT METER SPC103	SIMPSON	228	0-100mA	14, APR. 2003
			20433		15, APR. 2002
5	PUSH/PULL SCALE SPC004	IMADA	FB-30	30KG	24, JUN. 2003
			207330		25, JUN. 2002
7	X-RAY METER SPC026	VICTOREEN	440RF/D	0-100mR/h	07, FEB. 2002
			597		08, FEB. 2001
8	DC ELECTRONIC LOAD SPC069	PRODIGIT	3301A	60V/60A	04, MAR. 2004
			80201A011		05, MAR. 2003
9	CALIPER SPC019	MITUTOYO	500-321	150mm	10, FEB. 2004
			7217225		11, FEB. 2003
10	TEMP. RECORDER SPC014	YOKOGAWA	UR180	-200°C TO	17, OCT. 2003
			48YP0718	400°C	18, OCT. 2002
11	TEMP. RECORDER SPC012	YOKOGAWA	UR180	-200°C TO	19, NOV. 2003
			48YP0719	400°C	20, NOV. 2002
12	TEMP. RECORDER SPC033	YOKOGAWA	UR180	-200°C TO	14, AUG. 2003
			42YS0028	400°C	15, AUG. 2002
13	TEMP. RECORDER SPC099	FLUKE	52	-200°C TO	25, JUL. 2003
			4795005	760°C	26, JUL. 2002
14	DIGITIZING OSCILLOSCOPE SPC047	TEKTRONIX	TDS410	150MHz	08, JAN. 2004
			B010359	100MS/s	09, JAN. 2003
15	DUAL DISPLAY MULTIMETER SPC018	FLUKE	45	750Vac	10, FEB. 2004
			5120082	10A	11, FEB. 2003
16	HIGH VOLTAGE PROBE SPC104	FLUKE	80K-40	40KVpk	28, MAY. 2002
			72940016		29, MAY. 2001
17	THERMO-HYGROMETER SPC067	ISUZU	3-3122	-15°C - +40°C	25, JUN. 2003
			80660571	0-100% RH	26, JUN. 2002
18	DC ELECTRONIC LOAD SPC028	PRODIGIT	3301	60V/60A	03, MAY. 2003
			205010035	250V/10A	04, MAY. 2002
19	DC ELECTRONIC LOAD SPC035	PRODIGIT	3301	60V/60A	03, MAY. 2003
			210010074	250V/10A	04, MAY. 2002
20	AC/DC CURRENT PROBE SPC047	TEKTRONIX	A622	70Arms	05, MAY. 2003
			06-14-94	100Apk	06, MAY. 2002
21	DC ELECTRONIC LOAD SPC057	PRODIGIT	3321	60V/60A	25, JUL. 2003
			607020098		26, JUL. 2002
22	DC ELECTRONIC LOAD SPC089	PRODIGIT	3321	60V/60A	25, JUL. 2003
			607020097		26, JUL. 2002
23	DIGITIZING POWER METER SPC059	PRODIGIT	4011	600V/20A	25, JUL. 2003
			964011133		26, JUL. 2002
24	STOP WATCH SPC068	CASIO	HS-20	0 S-10 HOURS	11, APR. 2003
			----		12, APR. 2002
25	DIGITIZING MUTIMETER SPC060	GOOD WILL	GDM-8055	750Vac	24, JUN. 2003
			6040254	2A 20MΩ	25, JUN. 2002
27	POWER ANALYSER SPC063	AVPOWER	PA2100	650Vrms	11, APR. 2003
			621-0597	20A	12, APR. 2002
28	DC ELECTRONIC LOAD SPC066	PRODIGIT	3301A	60V/60A	16, OCT. 2003
			70601A022	250V/10A	17, OCT. 2002

3 of 32

Item	Kind of Instrument Precision Class SPC Property No.	Manufacturer	Model Serial No.	Range Used & Function	Calibrated until
29	TEST FINGER SPC039	UL	SM471	UL1950	21, MAR. 2004
			S002	FIG. 19	22, MAR. 2002
30	BALL PRESSURE SPC041	UL	S1598	UL1950	21, MAR. 2004
			S904	FIG. 21	22, MAR. 2002
31	IMPACT BALL ----	UL	----	50mm	21, MAR. 2004
			S003	500g	22, MAR. 2002
32	TEST PIN SPC040	UL	S2962	UL1950	21, MAR. 2004
			S001	FIG. 20	22, MAR. 2002
33	DC ELECTRONIC LOAD SPC077	PRODIGIT	3301A	60V/60A	16, AUG. 2003
			80701A043		17, AUG. 2002
34	DC ELECTRONIC LOAD SPC079	PRODIGIT	3301A	60V/60A	28, AUG. 2003
			80701A042		29, AUG. 2002
35	DC ELECTRONIC LOAD SPC080	PRODIGIT	3302A	60V/30A	16, AUG. 2003
			808020375		17, AUG. 2002
36	DC ELECTRONIC LOAD SPC081	PRODIGIT	3302	60V/30A	16, OCT. 2003
			808020378		17, OCT. 2002
37	DC ELECTRONIC LOAD SPC078	ZENTECH	2600R	60V/60A	16, AUG. 2003
			809055	300V/10A	17, AUG. 2002
38	TEMP. RECORDER SPC082	YOKOGAWA	UR1800	-200°C TO	11, FEB. 2004
			4370GE038	400	12, FEB. 2003
39	TEMP. RECORDER SPC083	YOKOGAWA	UR1800	-200°C TO	07, JAN. 2004
			4370GE037	400	08, JAN. 2003
40	TEMP. RECORDER SPC090	YOKOGAWA	UR1800	-200°C TO	07, JAN. 2004
			4370GE046	400	08, JAN. 2003
41	DC ELECTRONIC LOAD SPC091	PRODIGIT	3302A	60V/30A	16, OCT. 2003
			811020578		17, OCT. 2002
42	DC ELECTRONIC LOAD SPC088	PRODIGIT	3302A	60V/30A	16, OCT. 2003
			811020580		17, OCT. 2002
43	DC ELECTRONIC LOAD SPC098	PRODIGIT	3301A	60V/60A	13, NOV. 2003
			80901A045		14, NOV. 2002
44	TEST FINGER SPC070	UL	FIGURE 19	UL1950	21, MAR. 2004
			2346	FIG. 19	22, MAR. 2002
45	DC ELECTRONIC LOAD SPC092	PRODIGIT	3301A	60V/60A	16, OCT. 2003
			80901A046		17, OCT. 2002
46	DIGITIZING OSCILLOSCOPE SPC093	TEKTRONIX	TDS360	200MHz	26, AUG. 2003
			B019983	1GS/s	27, AUG. 2002
47	DUAL DISPLAY MULTIMETER SPC094	FLUKE	45	750Vac	07, JAN. 2004
			7079032	10A	08, JAN. 2003
48	HI-POT TESTER SPC095	ZENTECH	ZT9072A	10mA	28, AUG. 2003
			809549	5KV	29, AUG. 2002
49	GROUNDING TESTER SPC096	ZENTECH	ZT9570	12V	26, NOV. 2003
			807786	40A	27, NOV. 2002
50	LEAKAGE CURRENT METER SPC097	SIMPSON	228	0-100mA	17, OCT. 2003
			20988		18, OCT. 2002
51	DIGITIZING POWER METER SPC094	PRODIGIT	4011	600V/20A	11, FEB. 2004
			984011034		12, FEB. 2003
52	CALIPER SPC084	MITUTOYO	CD-6"CS	150mm	19, NOV. 2003
			0305366		20, NOV. 2002
53	TEMP. RECORDER SPC072	YOKOGAWA	UR1800	-200°C TO	19, NOV. 2003
			4370GC179	400	20, NOV. 2002
54	AC POWER METER SPC101	YOKOGAWA	2433	20A	07, JAN. 2004
			68LD0040	600V	08, JAN. 2003
56	TEMP. RECORDER SPC104	YOKOGAWA	UR1800	-200°C TO	11, FEB. 2004
			12W732059	400	12, FEB. 2003
57	TEMP. RECORDER SPC106	FLUKE	52	-200°C TO	06, MAR. 2004
			73990047	760°C	07, MAR. 2003
58	DIGITIZING POWER METER SPC107	CHYNG HONG	CP-350	500V/50A	09, MAR. 2004
			355952		10, MAR. 2003
59	DIGITIZING POWER METER SPC105	CHYNG HONG	CP-350	500V/50A	09, MAR. 2004
			355953		10, MAR. 2003
60	Temperature/Humidity Test Chamber SPC005	KAOTIEH	KT-7005-A	25°C to 40°C	07, OCT. 2003
			72867	93%R.H. to 95%R.H.	08, OCT. 2002

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPCLVD30317 Page 4 of 32

Advantech.

TEST RECORD NO. _____ Vol. _____ Sec. _____ Issued: _____

TEST PROGRAM DETAILS:

The manufacturer submitted

() a sample representing production of _____

(X) representative production samples of Server.

Model(s) SG-2103

() 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.
() 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 WTDP/CTDP/COMPASS-Program/TCP/CAP.

(X) 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. _____)

TB:bd - UL 60950, 3rd Data Sheets
Document: 005.Eng

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

Form Page 10

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SPC PROJECT NO.: 30317

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:

() The card cage contained _____ boards and had _____ empty slots.

() The CPU was Model _____.

() The unit was configured as follows: _____

"Maximum normal load" was defined as follows: _____

() Horizontal scanning frequency: _____ KHz

Vertical scanning frequency: _____ Hz

The unit weighs approximately 5.25 kg and was considered ~~/Transportable/~~
~~Building-in/Direct plug-in/handheld/movable/fixed/stationary~~ with ~~exposed/unexposed~~
~~SELV/secondary low voltage/TW~~ circuits.

() The unit was considered rack-mountable.

(X) Tmra 50 °C.

() Unless otherwise indicated, all tests were conducted on

Model _____

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

File E
Tested by: Rich LioProject SPCLVD30317
Greg Lou
(Printed Name) (Signature)6/32
4/12/03Sample # 212 Instr. Code/Range: 581.6.2 - 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	50	—	0.68	33
=	90	60	—	0.59	29
=	100	50	5	0.56	29
=	100	60	5	0.56	30
=	127	50	5	0.51	33
=	127	60	5	0.50	32
=	140	50	—	0.48	34
=	140	60	—	0.48	34

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:

File ETested by: Richy LiuProject: SPCLVD 30317Page: 7/32

(Printed Name)

(Signature) Richy LiuDate: 4/12/03Sample # 2/2Instr. Code/Range: 581.6.2 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	180	50	—	0.32	28
=	180	60	—	0.31	28
=	200	50	2.5	0.29	30
=	200	60	2.5	0.30	29
=	240	50	2.5	0.28	32
=	240	60	2.5	0.28	32
=	264	50	—	0.31	38
=	264	60	—	0.32	36

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:

UL 60950 PRODUCT EVALUATION
Data Sheet

Unit: E Project: SPCLVD30317 Date: 8/32
 Tested by: Ricky Liu Ricky Liu Date: 4/2/03
 (Printed Name) (Signature)

Sample #: 2 Instr. Code/Range: 46

2.1.1.7 - CAPACITANCE DISCHARGE TEST:

METHOD

The unit was connected to 264 V ac, 60 Hz. A storage oscilloscope was connected across the external point of disconnection of the mains supply. With all switches in the unit initially set to the "OFF" position, the unit was disconnected from the supply source. The voltage at the time of disconnection, V_i , and the voltage, V_o , at 1.0/10.0 second(s) was/were recorded.

- ☒ A photograph or printout of the scope waveform was provided.
☐ The test was repeated with the primary fuse removed.
☐ The test was repeated with all switches in all possible positions.

RESULTS

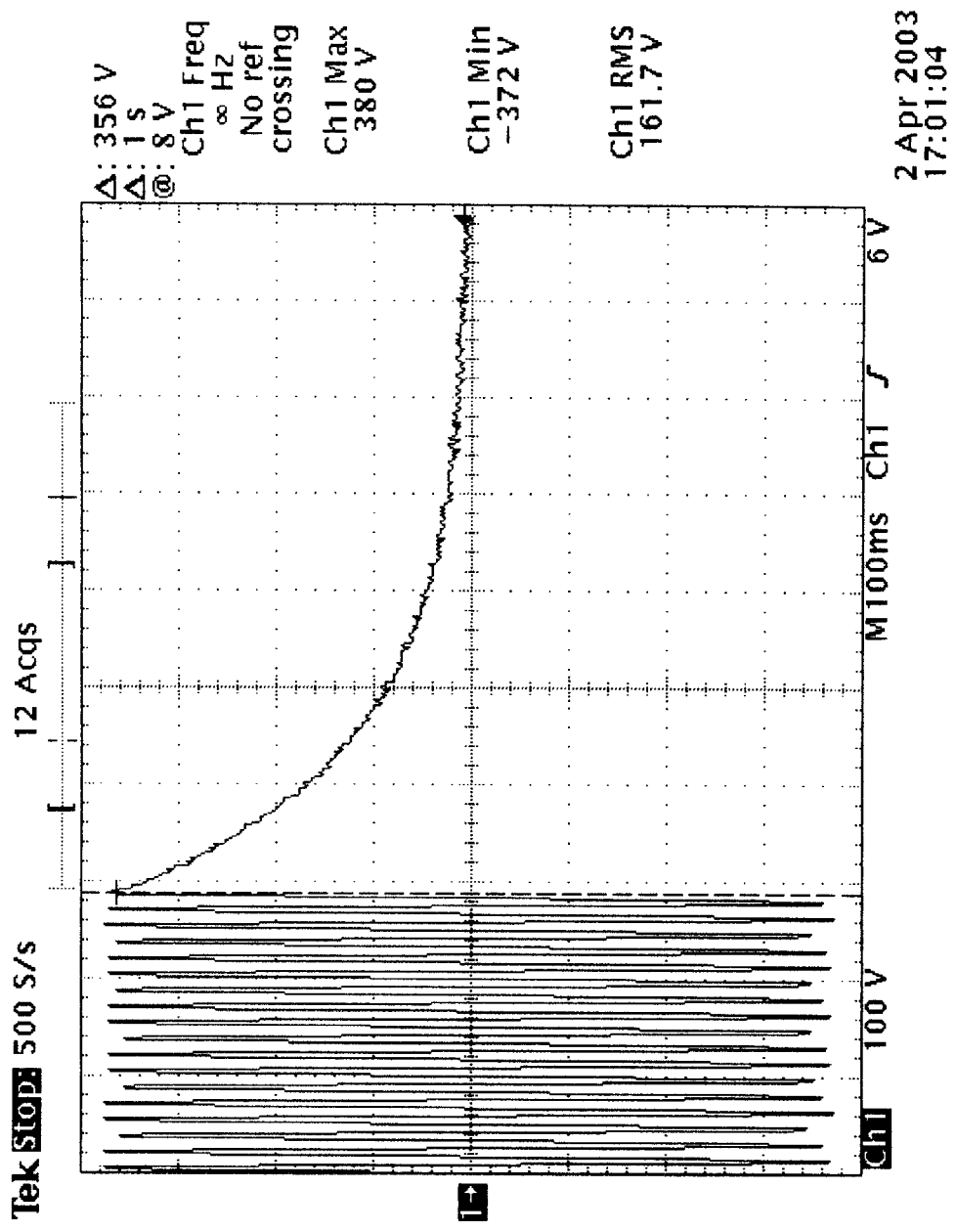
Measurement	Fuse	Switch	V_i	37% V_i	V_o	time at 37% V_o
Locations	In/Out	Position	(V pk)	(V pk)	(V pk)	(second)
<u>Line-Neutral</u>	<u>In</u>	<u>OFF</u>	<u>376</u>	<u>139.12</u>	<u>8</u>	<u>142m</u>
<u>Line-Neutral</u>	<u>In</u>	<u>ON</u>	<u>364</u>	<u>134.68</u>	<u>8</u>	<u>152m</u>

The voltage across-line capacitors did/did not decay to less than 37 percent of its original value in 1.0/10.0 second(s).

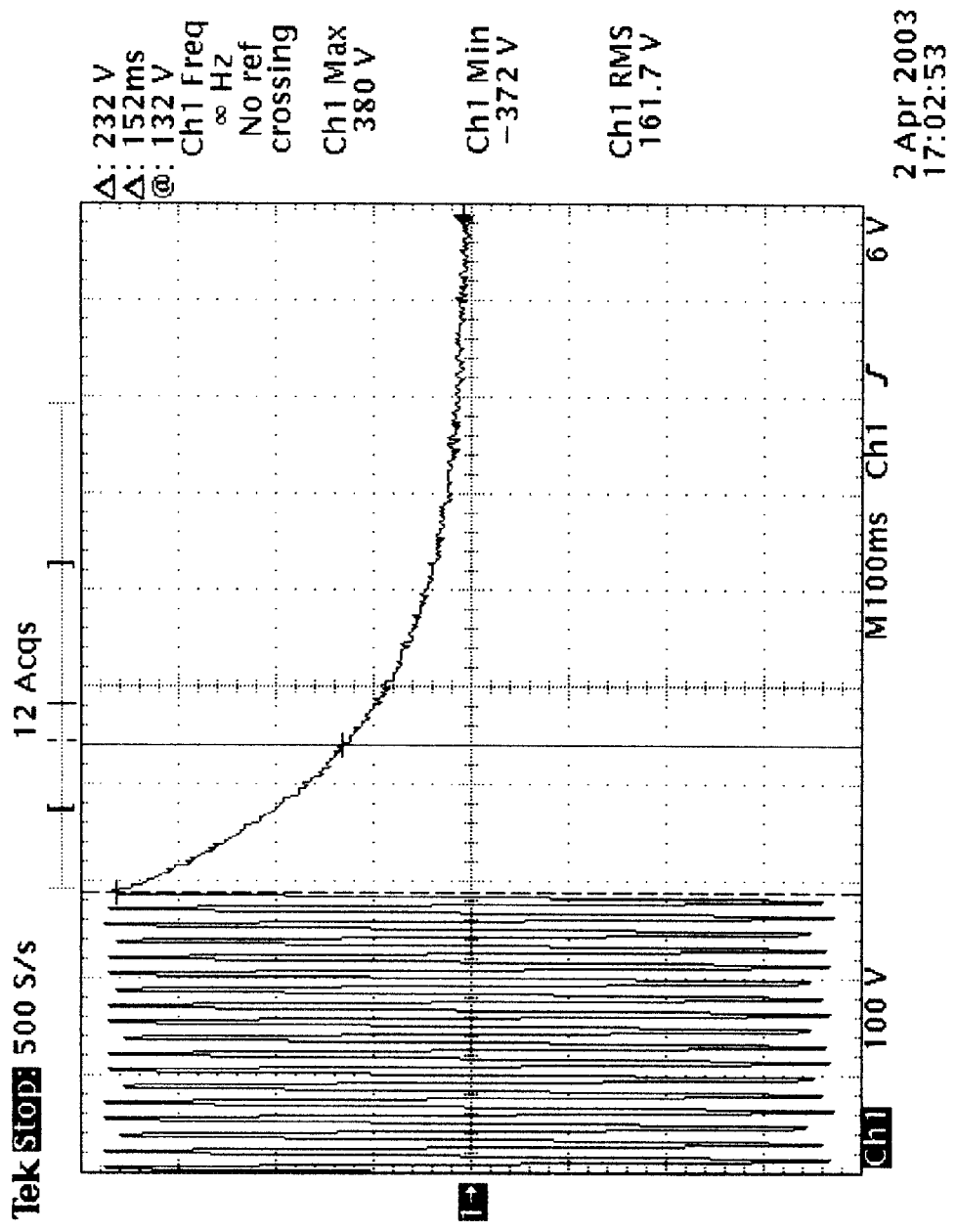
NOTES TO LAB:

- Discharge through the test probe should be minimized. One possible action is to use a high impedance probe.
- X-Cap. () uF; () uF
 X-Cap. () uF; () uF
- Bleeder resistor () Ω
- Power Supply = Enhance, Type = ENP-1815.

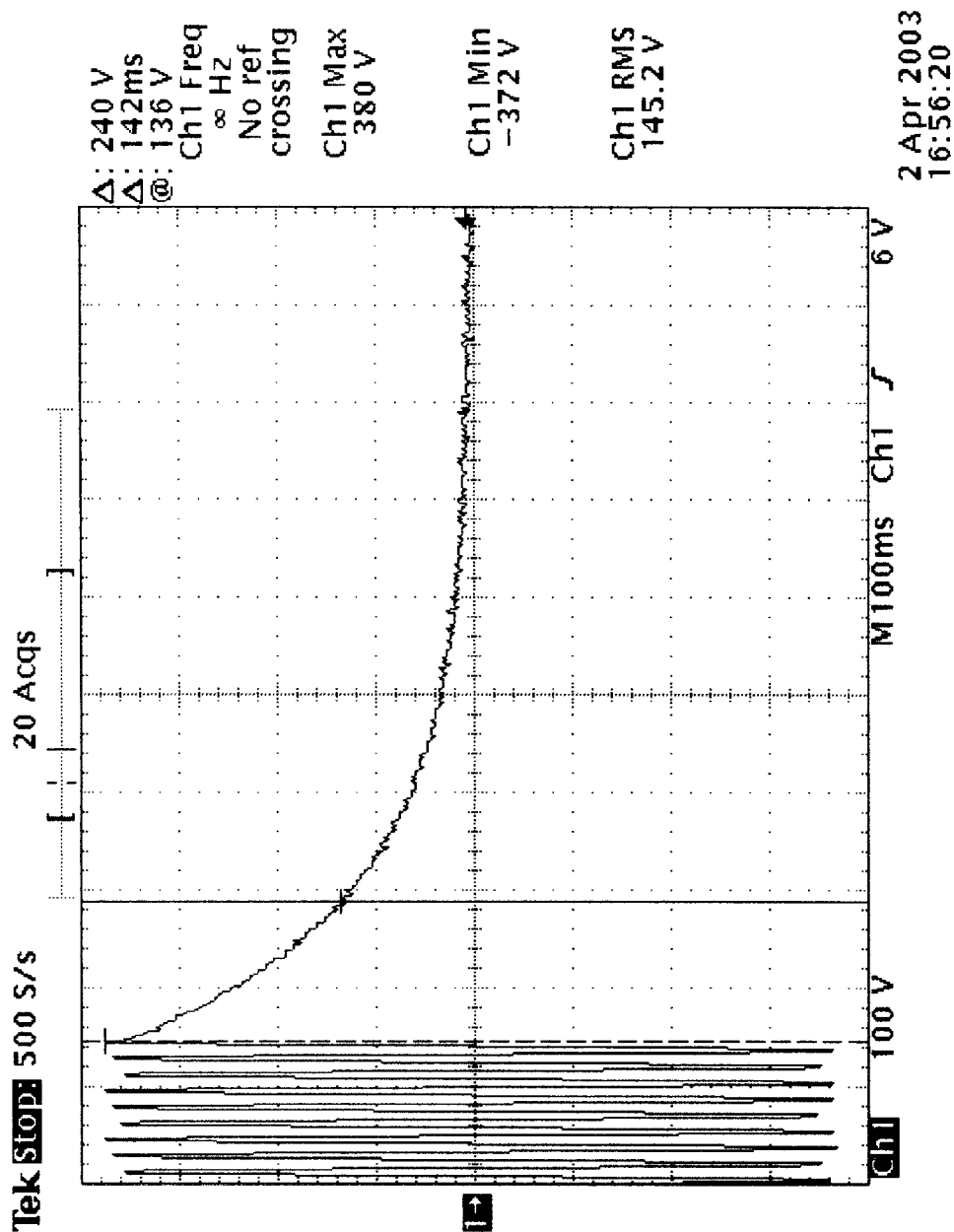
SPC PROJECT NO.: 30317



Switch ON at one sec. of time.



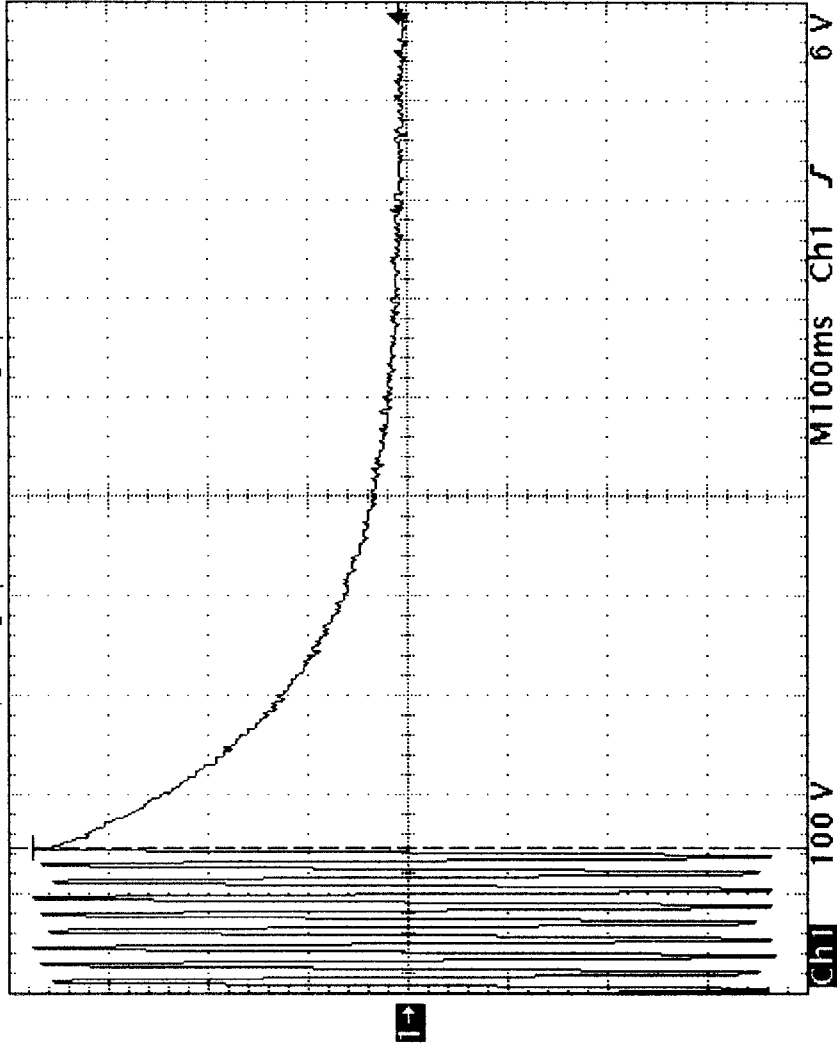
Switch ON at 27% V_0 of time.



Switch OFF at 37% V_0 ~~one sec.~~ of time. (20)

Tek Stop: 500 S/s

20 Acqs



Δ: 368 V
Δ: 1 s
@: 8 V
Ch1 Freq
∞ Hz
No ref
crossing
Ch1 Max
380 V
Ch1 Min
-372 V
Ch1 RMS
145.2 V
2 Apr 2003
16:58:10

Switch OFF at one sec. of time.

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File E Project SPCLW30317 Page 13/32
 Tested by: BD Date 3/31/03
 (Printed Name) (Signature)

Sample # 1/3 Instr Code/Range: 49

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 ~~etc~~ 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)
Earth pin of ac inlet to chassis	25	0.314
"	40	0.498

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.

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

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

Form Page 41

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SPC PROJECT NO.: 30317

14/32

SPCLVD 30317
 Rocky Liu
 (Printed Name) (Signature)

3/17/03 ~ 3/22/03

Sample # _____ Instr Code/Range : _____

2.9.1, 2.9.3, 5.3.2 - HUMIDITY TEST:

METHOD

A humidity chamber was maintained within 1°C of temperature ~~"t"~~ between ~~59 and 80°C~~ at a temperature of 40 °C. The unit and any other separate components were brought to a temperature between t°C and t°C + 4°C. They were then placed in the chamber and held at a relative humidity of 93 ± 2 percent for a period of ~~40 hours~~ 120 hours. Prior to conditioning, parts of the unit (covers) which could be removed without the use of tools were removed and separately placed in the chamber. During conditioning, cable entrances and/or a conduit opening were left open. During this treatment, the unit was not energized.

While still in the humidity chamber, but after all parts have been placed back on the unit, a dielectric potential was applied and maintained for a period of one minute between the points indicated below. During this test, all switching devices (switches, relays, triacs, etc.) in the primary circuit were closed.

	From	Location	To	Potential Used, (V)
A	Primary	Secondary	() _____ ac	X) <u>4242</u> dc
B	Primary	Earth	() _____ ac	X) <u>2414</u> dc
C	_____	_____	() _____ ac	() _____ dc
D	_____	_____	() _____ ac	() _____ dc

File: _____
Tested by: _____
(Printed Name) _____
Sample #: V2 Instr. Code/Range: 60-48
SPCLVD30317
Ticky Lin
15/32
3/17/03 ~ 3/22/03

RESULTS

The chamber temperature was 40 °C.

The relative humidity was 93 ± 2 percent.

☒ There was no indication of dielectric breakdown.

☐ There was breakdown between the following points.

Location	Voltage	Breakdown	Time
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

NOTES TO LAB:

1. If circuit capacitance causes false breakdowns, a dc potential equal to 1.414 times the ac potential may be applied.
2. Components providing a dc path in parallel with the insulation being tested may be disconnected prior to testing.

NOTES TO ENGINEER:

1. National Deviations for Singapore require the Humidity Test to be conducted per Clause 10.2 of IEC60065. The humidity treatment is to be conducted for 120 hrs (5 days) at 40°C, relative humidity 90 to 95%, to comply with this deviation.

16/32

Product Name: SPCLVD 30317 Page: 4/1/03
 Manufacturer: Rayovac Date: 4/1/03
 (Printed Name) (Signature)

Sample # 2, 5 Initial Value/Range: 47.

4.3.1 LITHIUM BATTERY REVERSE CURRENT MEASUREMENT TEST:

METHOD

264 With the lithium battery removed from the circuit, the sample was connected to 60 Hz. 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)
Rayovac, type BR2032	0.001	R281 short	0.001
"	0.001	D13 short	3.073

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 _____ Project SPCLW 10-11 Page 17/32
Tested by: _____ Date 3/28/03
(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 50 °C.

(X) #Note: Cooling fan CFM (min): 0.28 (system)
ACT-RX, type FD124φ-A3φ1φD

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPCLVD 30317 Page 18/32
 Tested by: Mike Liu Date 3/28/03
 (Printed Name) (Signature)

Sample # 2/2 Instr Code/Range: 10, 24, 58, 24

RESULTS

Test	Operating Condition	Input Conditions		Duration
		Volts	Hz	
A	Max. normal load	90	60	2hrs.
B	=	264	50	2hrs.
C	= (Blocked openings)	240	60	70mins.
D	= (Locked Fan)	240	60	40mins.
E				
F				

Thermocouple Locations	Maximum Temperature °C					
	Test A	Test B	Test C	Test D	Test E	Test F
1. L8 coil	36	38	39	41		
2. L9 coil	35	38	39	41		
3. T1 coil	38	40	41	44		
4. T2 coil	31	32	35	36		
5. T3 coil	30	35	38	38		
6. PCB near U11	41	32	32	39		
7. PCB near U4	44	36	35	42		
8. PCB near U9	40	36	34	41		
9. HDD Body	28	29	31	35		
10. Enclosure (out side)	25	24	27	29		
11. Ambient	22	22	26	25		

Note: () Test on model:

Thermocouple Locations 1~5 is Power Supply
 6~10 is System.

Thermocouple Locations		dT (K)				Required dT (K)
		90 V/60 Hz	264 V/50 Hz	V/ Hz	V/ Hz	
See Heating Test.	1.	14	16			55
	2.	13	16			55
	3.	16	18			40
	4.	9	10			40
	5.	8	13			40
	6.	19	10			55
	7.	22	14			55
	8.	18	14			55
	9.	16	5			-
	10.	3	2			20
Room ambient		22 °C	22 °C	°C	°C	

Max. ambient temperature: 50 °C (Manufacturer's specification)

Insulating winding component s(Transformer):

☒ Class A (T 1.2.3): 75K - 10K - (50 - 25)K = 40 K

☐ Class B (T): 95K - 10K - (..... - 25)K = K

*變壓器使用Triple wire且用UL R/C (OBJY2) Insulation System時, 須確認是否只有Class 120 °(E)?

☐ Class E (T): 90K - 10K - (..... - 25)K = K

Components:

☒ PCB (105 °C): (105 - 50)K = 55 K

☒ Choke (105 °C): (105 - 50)K = 55 K

* 如Choke之溫度等級(Class)於120°C以上, 必須量測PCB之溫度。

☐ Electrolyte cap. (..... °C): (..... -)K = K

☐ FBT (120°C): (120°C -)K = K

☐ Yoke coil (105°C): (105°C -)K = K

User Touchable Surface:

☐ Plastic: 70K - (..... - 25)K = K

☒ Metal: 45K - (50 - 25)K = 20 K

Notes:

1. For plastic Enclosure (Stress Relief Test)

☐ The oven temperature is °C (ΔT + 10°C + max ambient °C) or

☐ 70°C

2. 如果Heat Sink量測得之溫度超過PCB之限制值, 則必須量測PCB之溫度。

Prepared by: Peter Lau

W:\SERVER\實驗室\Lab 常用表格\Temp_dt (06-06-2001).doc

Reviewed by:

Peter Lau

SPC PROJECT NO.: 30317

DATA SHEET

20/32

File E

Project SPCLVD 30317

Page

Date 3/28/03

Tested by:

(Printed Name)

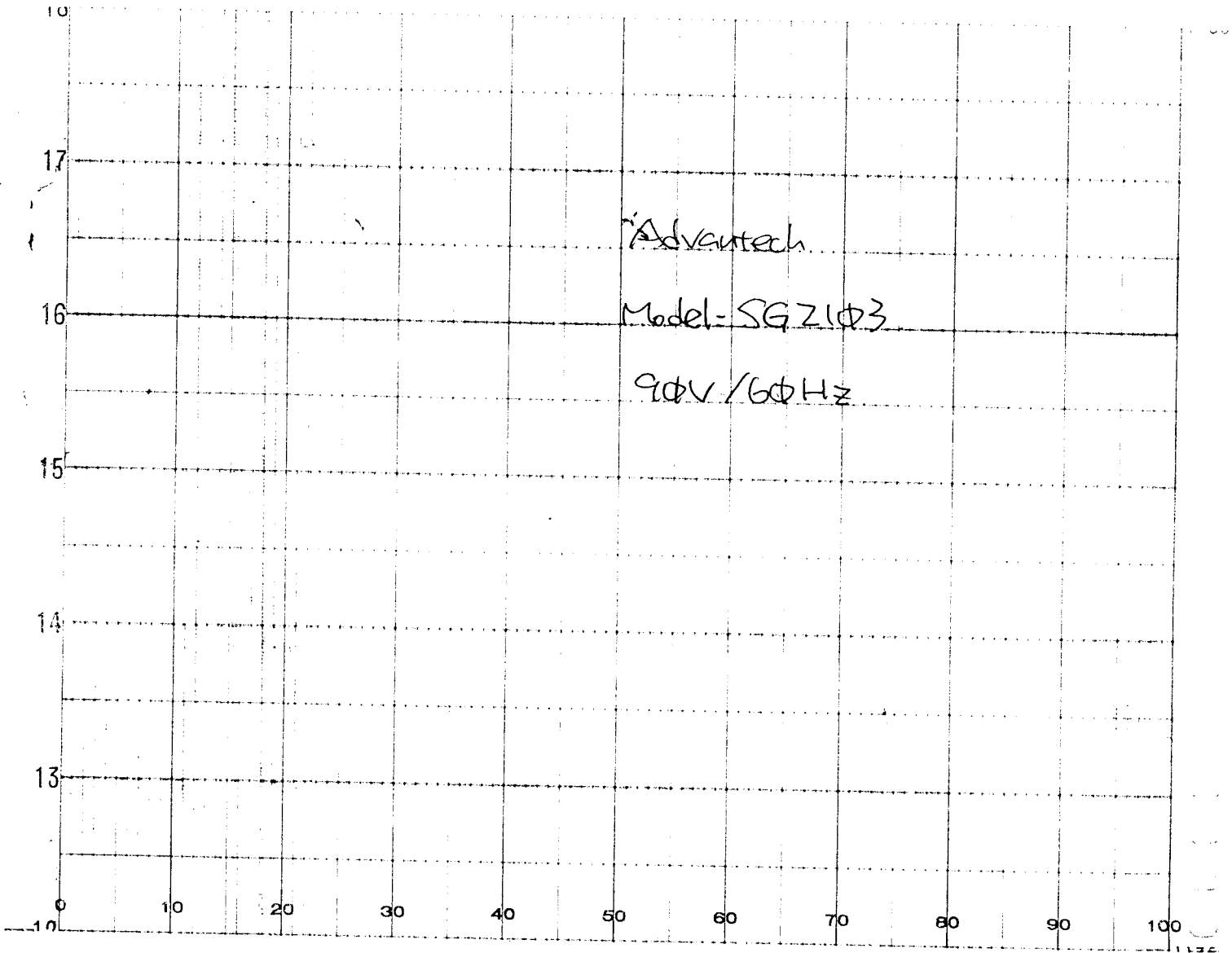
(Signature)

Sample #

2/2

Instr Code/Range:

10, 24, 58, 24



SPC PROJECT NO.: 30317

DATA SHEET

File E

tested by:

Wally Liu

(Printed Name)

Project

SPCLVD 30317

Picky Lin

(Signature)

Page

Date

21/32
3/28/03

Sample #

2/2

Instr Code/Range:

10.24.58.24

Advantech

Model: SG2103

Locked Fan

Advantech

Model: SG2103

Blocked Openings

CHART NO. B95TK100-11T (H)

SPC PROJECT NO.: 80211

SPC PROJECT NO. 80211
Data Sheet

File E

tested by: W. S. S. S.

Project

SPCLVD

Backup

Page

Date

3/28/03

(Printed Name)

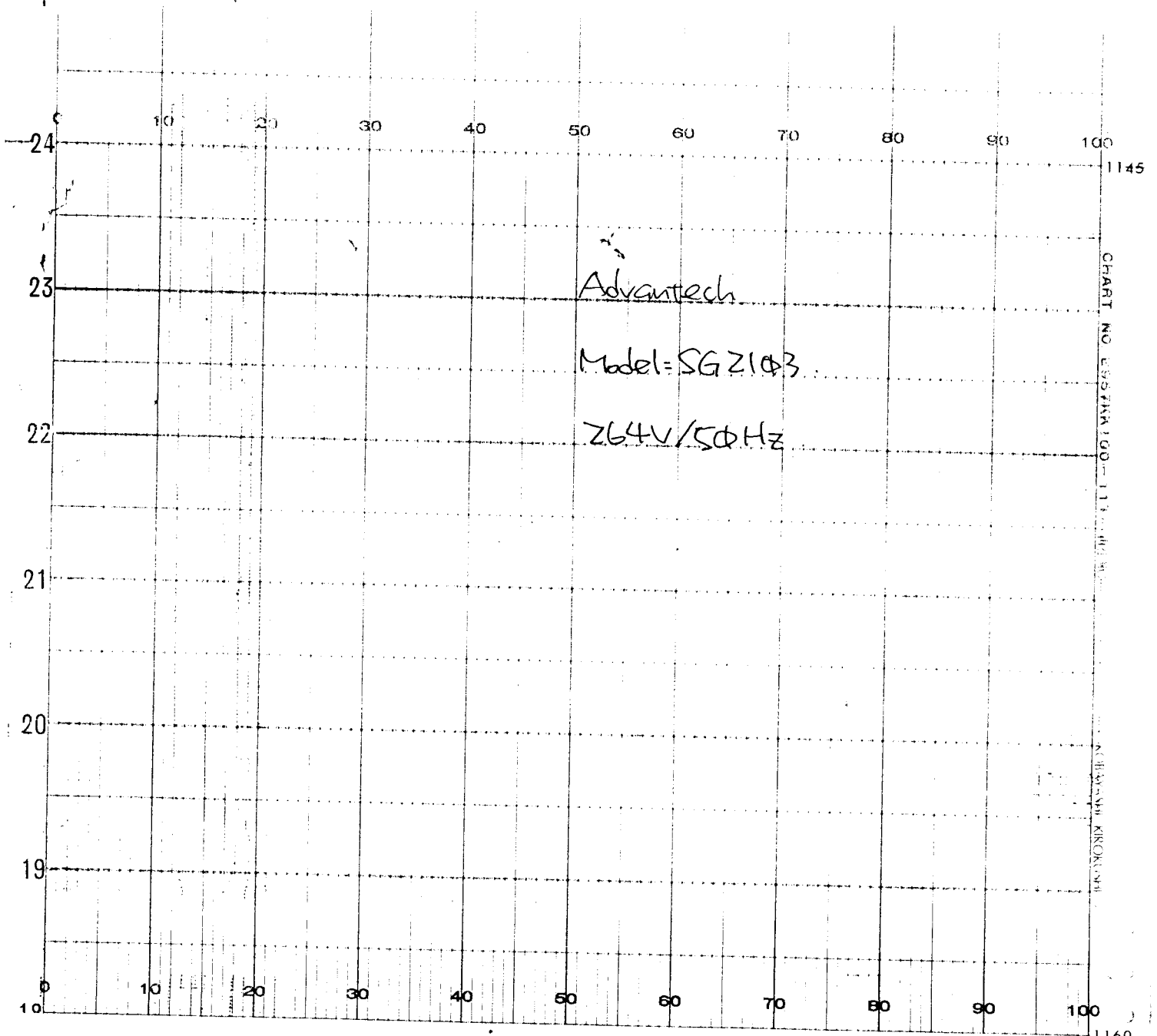
(Signature)

Sample #

2/2

Instr Code/Range:

10, 24, 58, 24



SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPCLWD 30317 Page _____
Tested by: DAVID LIU Daly Lu Date 4/2/03
(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 264 V ac, 60 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
() _____

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Form Page 74

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Data Sheet

24/32

File _____ Project SPC LVD 30317 Page _____
 Tested by: John J. B Date 4/2/03
 (Printed Name) (Signature)

Sample # 2/2 Instr Code/Range: 46. 50

(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 P1).

Touch Current (mA r.m.s.)

Terminal A of Measuring	Switch	Polarity P1/Primary Switch Condition			
	"e"				
Instrument Connected to:	Position	Normal/On	Normal/Off	Reverse/On	Reverse/Off

Earth.	open	0.75	0.76	0.80	0.79

The touch current ~~did~~/did not exceed 35 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.

Touch Current (mA r.m.s.)

Terminal A of Measuring	Switch	Component	Polarity P1/Primary Switch Condition			
	"e"					
Instrument Connected to:	Position	Disconnected	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: Enhance Type=ENP-1815.

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 Revised: 00-00-00

Form Page 75

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Data Sheet

25/32

File _____ Project SPCLVD 30317 Page _____
Tested by: ALVIN LIU Edgar L Date 3/28/03
(Printed Name) (Signature)

Sample # 2/2 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>2414</u>	_____	_____	_____
ac/dc	<u>dc</u>	<u>dc</u>	_____	_____	_____

RESULTS

Breakdown? No No _____
If yes,
Voltage _____
Location _____
Time _____

☒ There was no indication of breakdown.

Comments: _____

SUPERIOR PRODUCT CONSULTING, INC.
Data Sheet

File _____ Project SPCLVD303 Page _____
Tested by: Bill Lin Date 3/28/03
(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.
- ☐ _____

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Revised: 00-00-00

Form Page 81

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27/32

File _____ Project SPCLVD 30317 Page _____
Tested by: Michael L. L... Randy L... Date 3/28/03
(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>4242</u> dc
B	<u>Primary</u>	<u>Earth</u>	()	ac (X)	<u>2414</u> dc

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

Comments Key:

- HB - 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

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Form Page 82

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Data Sheet

File _____ Project SPCLVD Page _____
 Tested by: Mike Ricky Ln Date 3/28/03
 (Printed Name) (Signature)

Sample # 2/3 Instr Code/Range: 10.24.58.24.48

RESULTS

Test	Component	Abnormal Condition	Input V/Hz	Duration	ES Code
1.	Unit	Locked Fan	240/60	40mins	A.B

Comments: Temp. was stable. Input Current = 0.29A. Temp. see Heating.
Test results for details. NB, NC, NT.

2.	Unit	Blocked Openings	240/60	70mins	A.B.
----	------	------------------	--------	--------	------

Comments: Temp. was stable. Input Current = 0.27A. Temp. see Heating.
Test results for details. NB, NC, NT.

Comments: _____

Comments: _____

Comments: _____

Comments: _____

UL PRODUCT / INSULATION TEST
Data Sheet

File _____ Project SPCLVD 30317 Page 29/32
Tested by: TB:bd Bzley Ln Date 4/3/03

(Printed Name) (Signature)

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 264 V ac, 60 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.

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Form Page 91

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SPC PROJECT NO.: 30317

SUPERIOR PRODUCT TECHNOLOGIES, INC.
Data Sheet

File _____ Project SPCLVD3001 Page 30/32
 Tested by: Wally Liu Date 4/3/03
 _____ (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	Primary	Secondary	()	ac (X) 4242 dc
B	Primary	Earth	()	ac (X) 2414 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.

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Form Page 92

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Data Sheet

File: _____ Project: SPCLVD 30317 Page: 31/32
 Tested by: Paul, Liu Date: 4/3/03
 (Printed Name) (Signature)

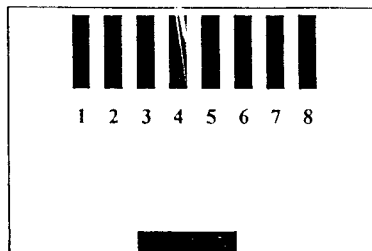
Sample # 2/2 Instr. Code/Range: 47.58.24.48

RESULTS

Connector	Pin #s	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
<u>WAN</u>	<u>1</u>	<u>Φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>=</u>	<u>2</u>	<u>Φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>=</u>	<u>3</u>	<u>Φ</u>	<u>-</u>	<u>-</u>	<u>C</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>
<u>=</u>	<u>7</u>	<u>Φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>=</u>	<u>8</u>	<u>Φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>LAN</u>	<u>1</u>	<u>Φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>=</u>	<u>2</u>	<u>Φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>=</u>	<u>3</u>	<u>Φ</u>	<u>-</u>	<u>-</u>	<u>C</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>
<u>=</u>	<u>7</u>	<u>Φ</u>	<u>-</u>	<u>-</u>	<u>C</u>
<u>=</u>	<u>8</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)

WAN
LAN



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Form Page 93

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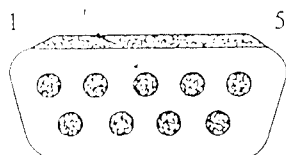
Project: SPCLVD 47517
 Part: Becky Ln
 Date: 32/32
 4/3/03
 Sample #: 2/2 In Use: 47.58.24.48.

RESULTS

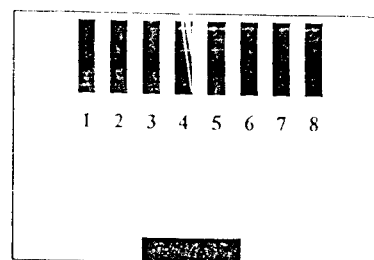
Connection	Pin #	Open Circuit Voltage (V)	Maximum Available Current (mA)	Length of Test	Comments
Console	1	Φ	—	—	C
=	2	Φ	—	—	C
=	3	-9.19	13.20	1hr	NB.NC.NT
=	4	-9.19	13.15	1hr	NB.NC.NT
=	5	Φ	—	—	C
=	6	Φ	—	—	C
=	7	-9.19	13.21	1hr	NB.NC.NT
=	8	Φ	—	—	C
=	9	Φ	—	—	C
DMZ	1	Φ	—	—	C
=	2	Φ	—	—	C
=	3	Φ	—	—	C
=	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)

Console



DMZ



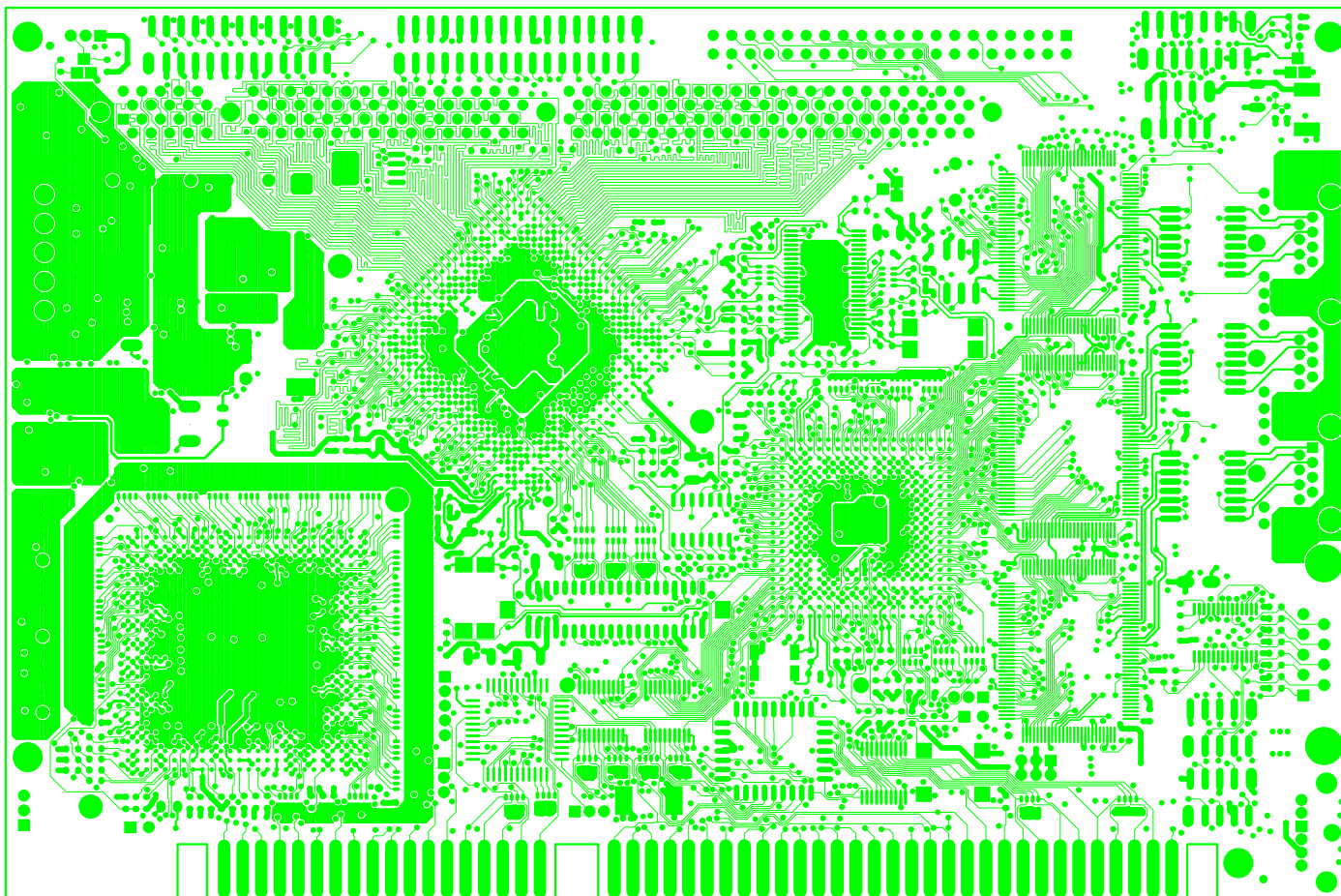
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Document: 010.Eng

sued: 10-02-00
: 00-00-00

ENCLOSURE No. 3

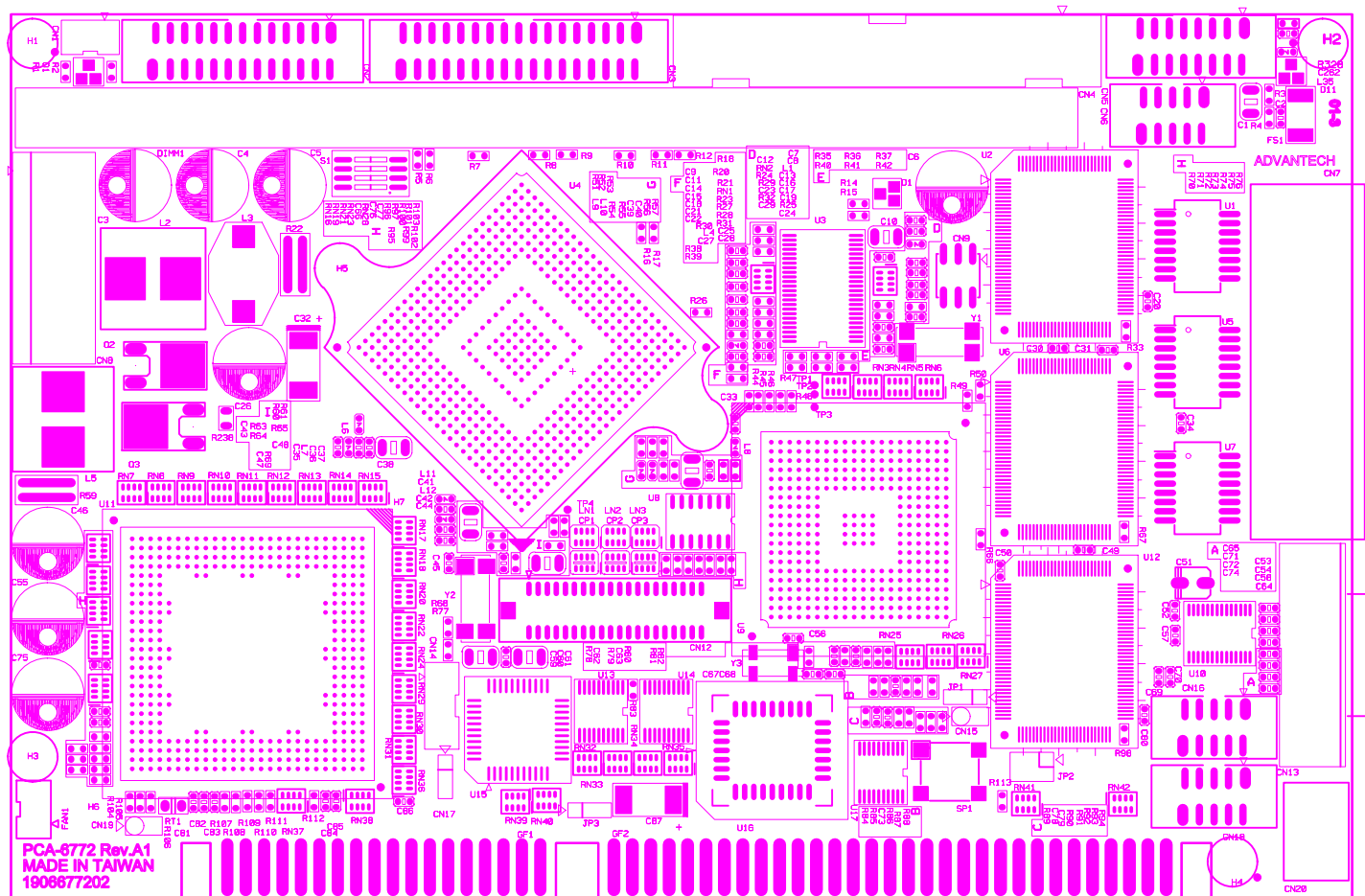
Component Layouts

(Total 5 Pages including this Cover Page)



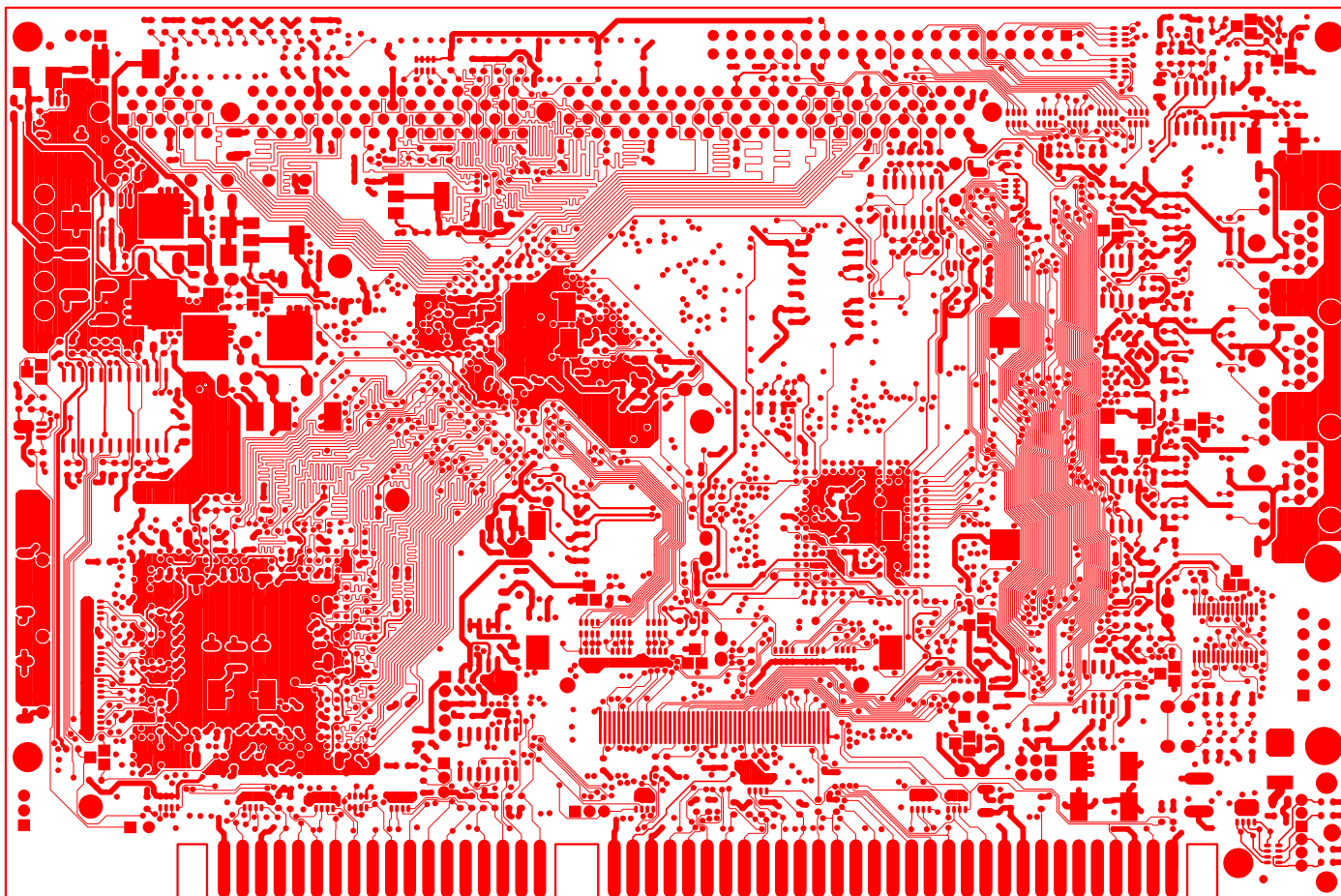
Advantech		
Project name	REV	LAYER STACK
SOM-6772	A1	COMPONENT SIDE

<h1 style="text-align: center;">Advantech</h1>		
Project name	REV	LAYER STACK
SOM-6772	A1	ASSEMBLY BOT



Advantech

Project name	REV	LAYER STACK
SOM-6772	A1	ASSEMBLY TOP



Advantech

Project name	REV	LAYER STACK
SOM-6772	A1	SOLDER SIDE

ENCLOSURE No. 4

Schematic

(Total 21 Pages including this Cover Page)

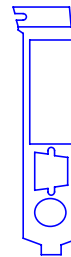
PCA-6772 A1 01-2

1. CPU fan connector change package to 2.0mm wafer box
2. LAN chip change to RTL-8139C+
3. Fixed the KB/MS connector layout placement bug

PCA-6772 A1 01-3

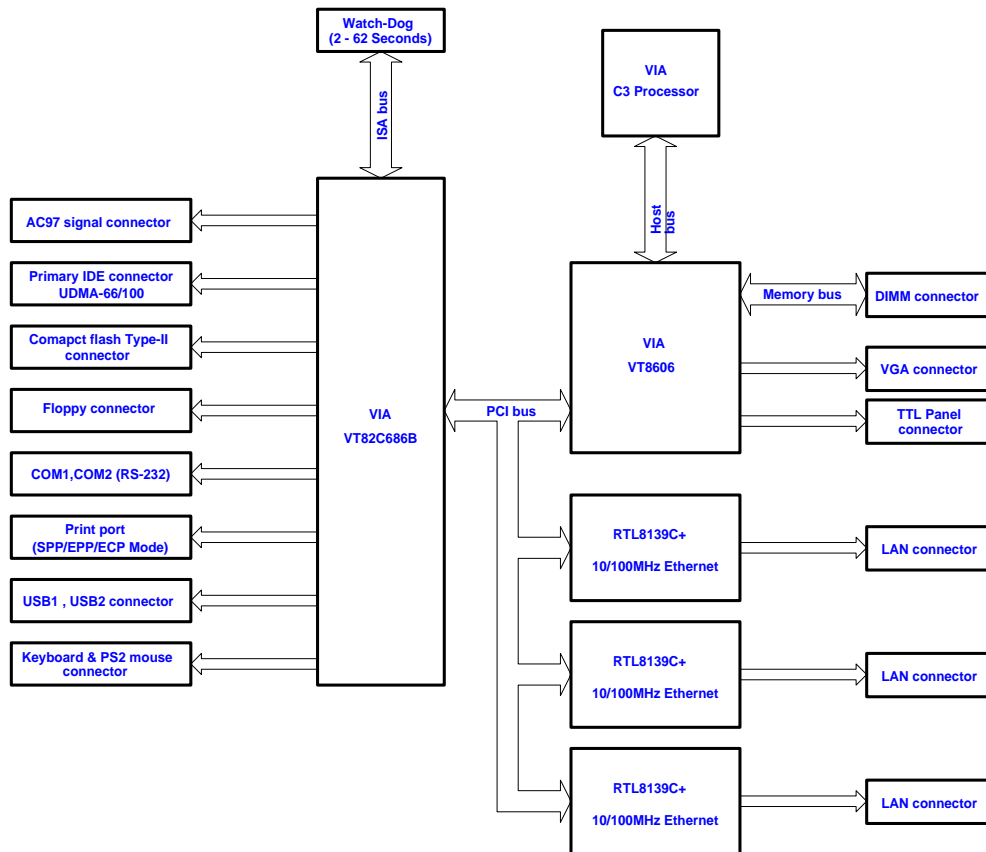
1. modify the H6,H7,H8 size
2. Change MOS Q6,U24,U25 package to TO-252

BK1
1962677200



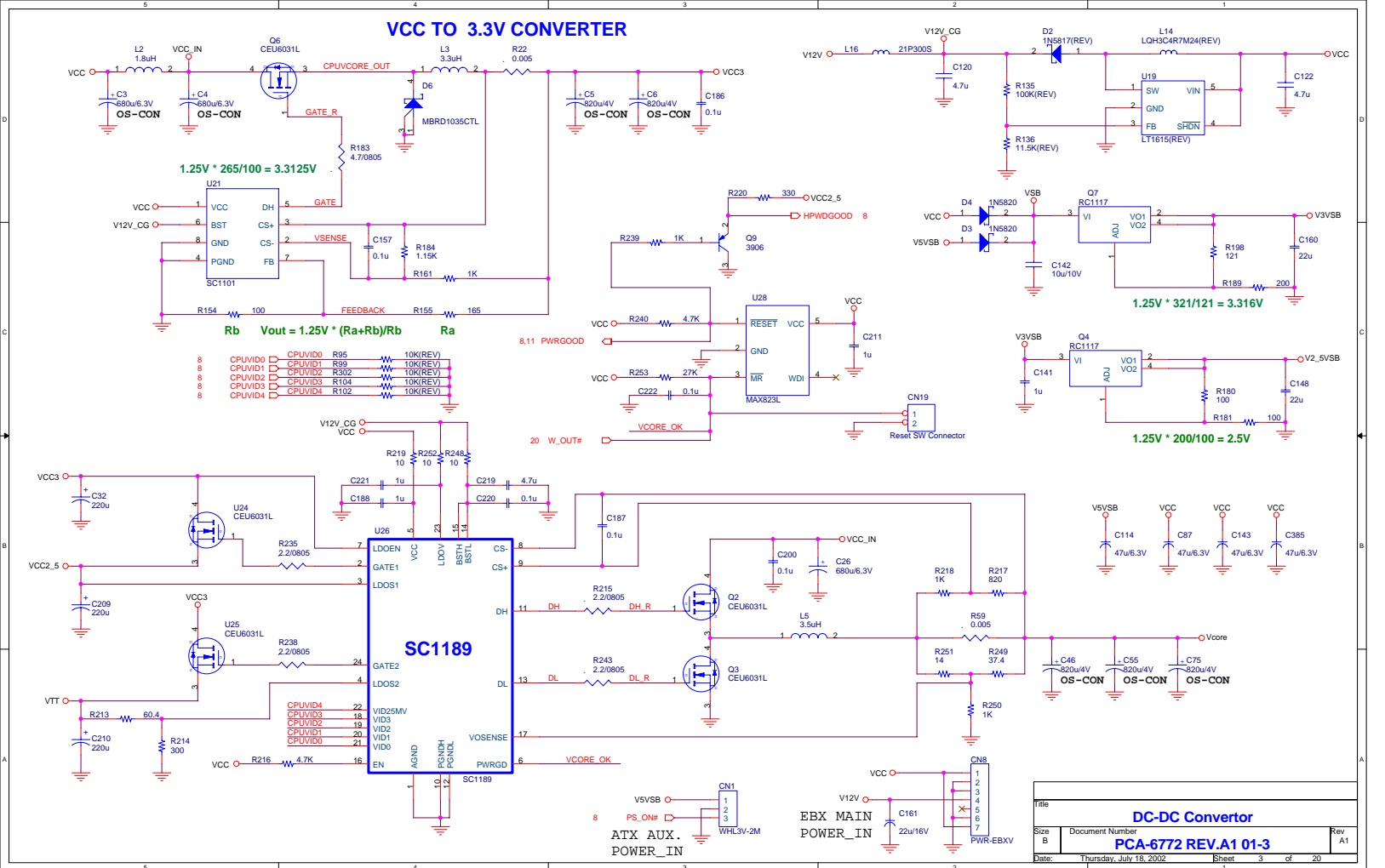
PCB1
PCB
1906677202

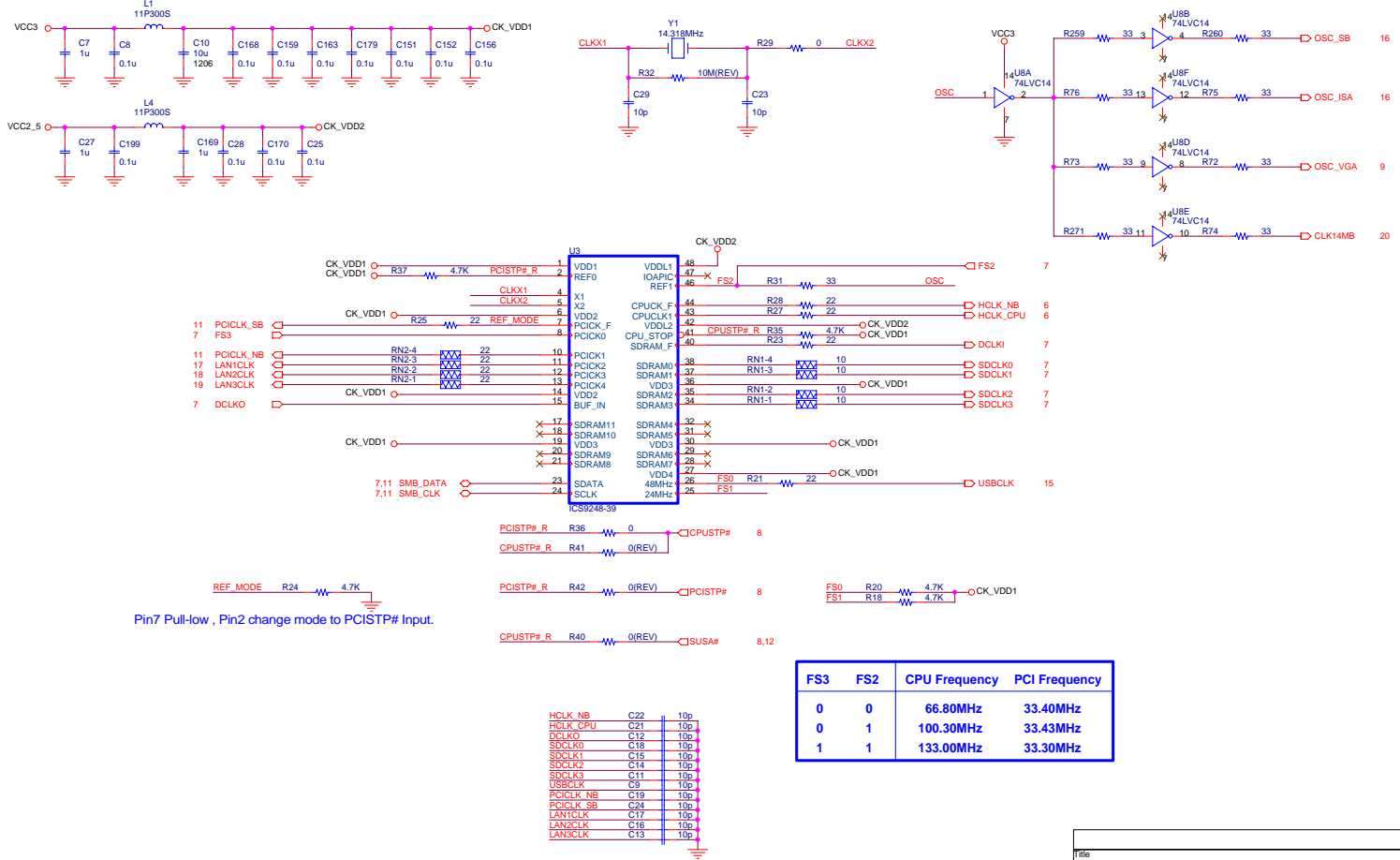
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History Page		
Size A	Document Number PCA-6772 REV.A1 01-3	Rev A1
Date:	Thursday, July 18, 2002	Sheet 1 of 20

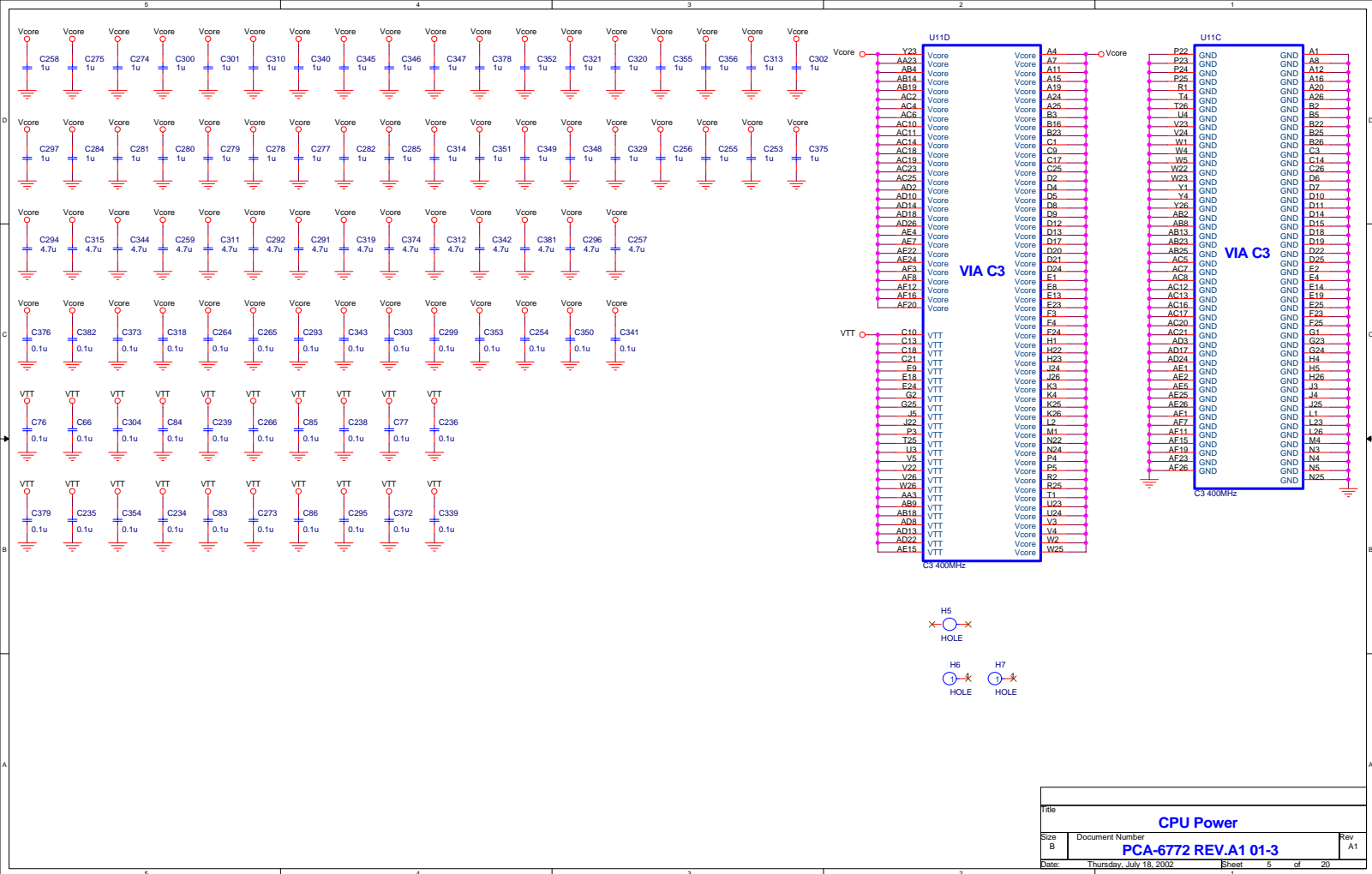


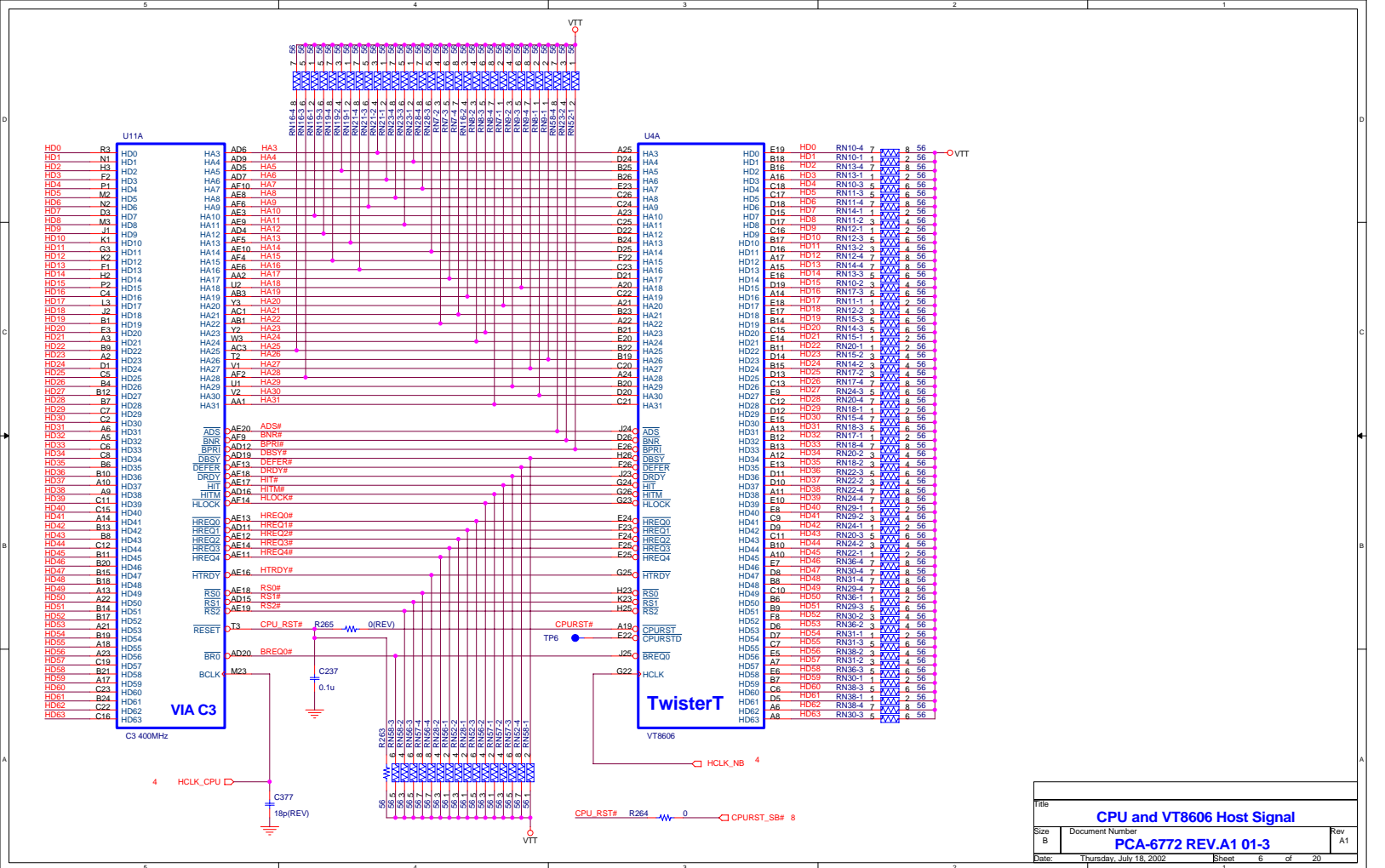
Title			Block Diagram	
Size	Document Number		PCA-6772 REV.A1 01-3	
B			Rev A1	
Date:	Thursday, July 18, 2002	Sheet	2	of 20

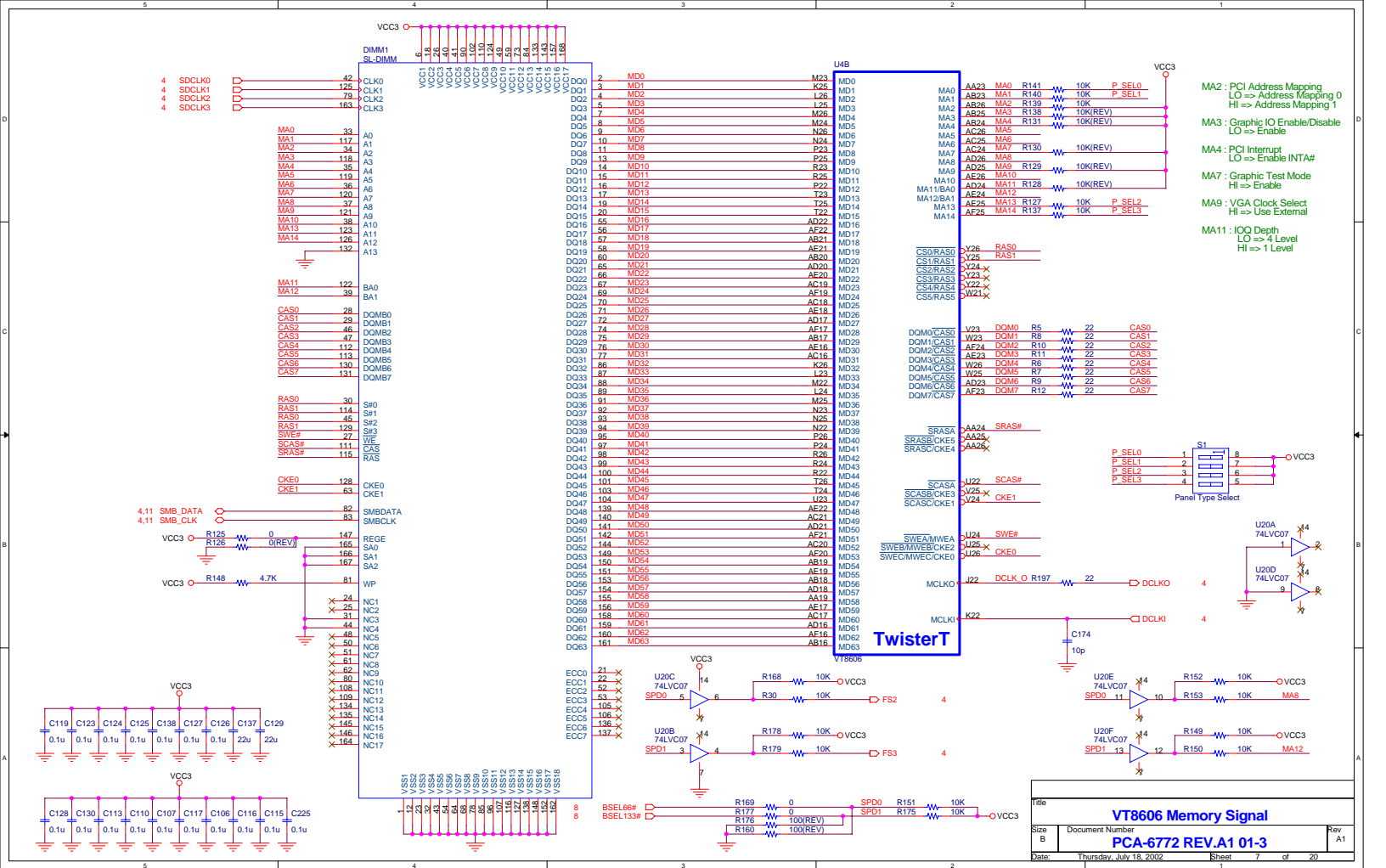
VCC TO 3.3V CONVERTER

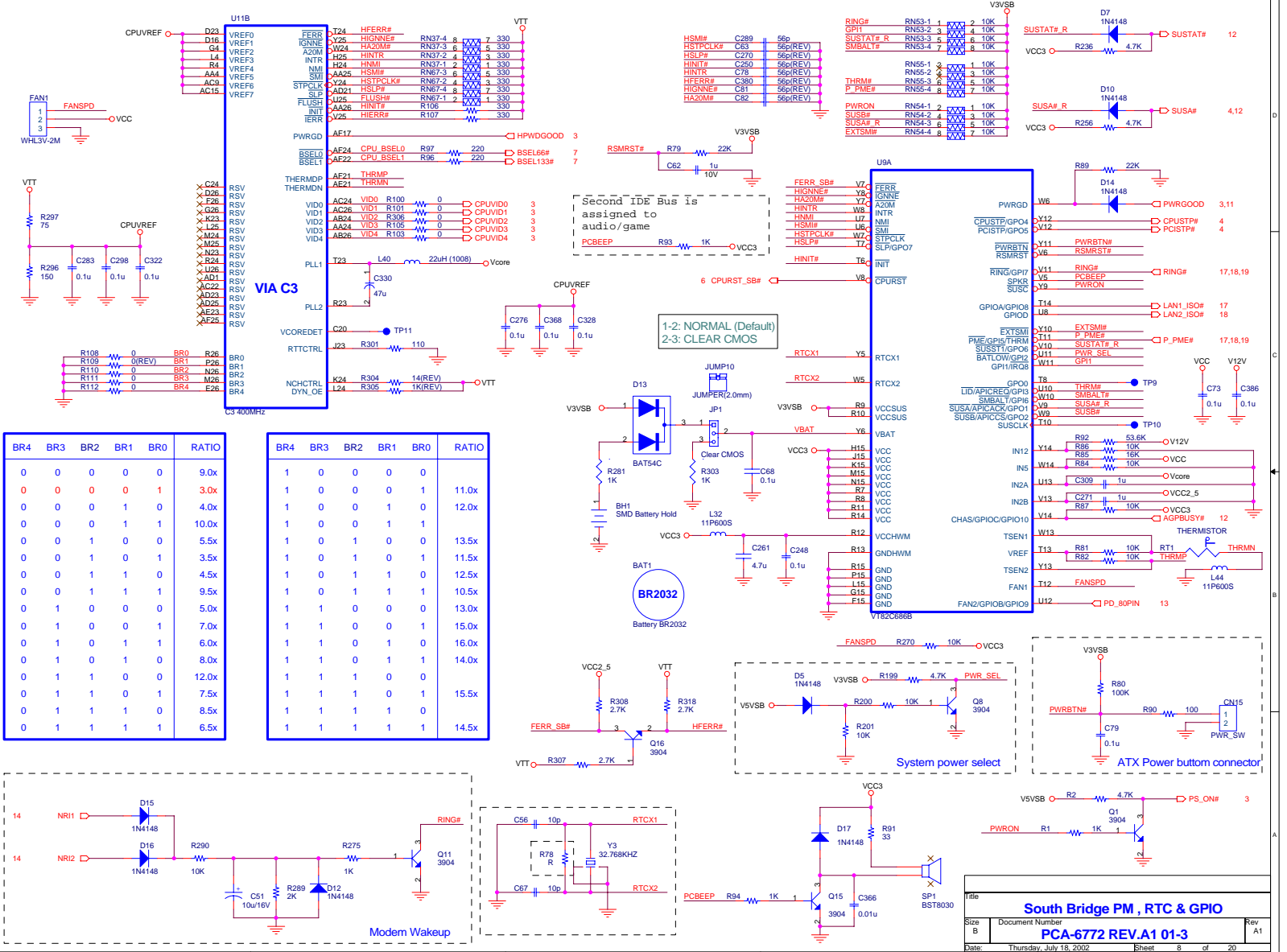






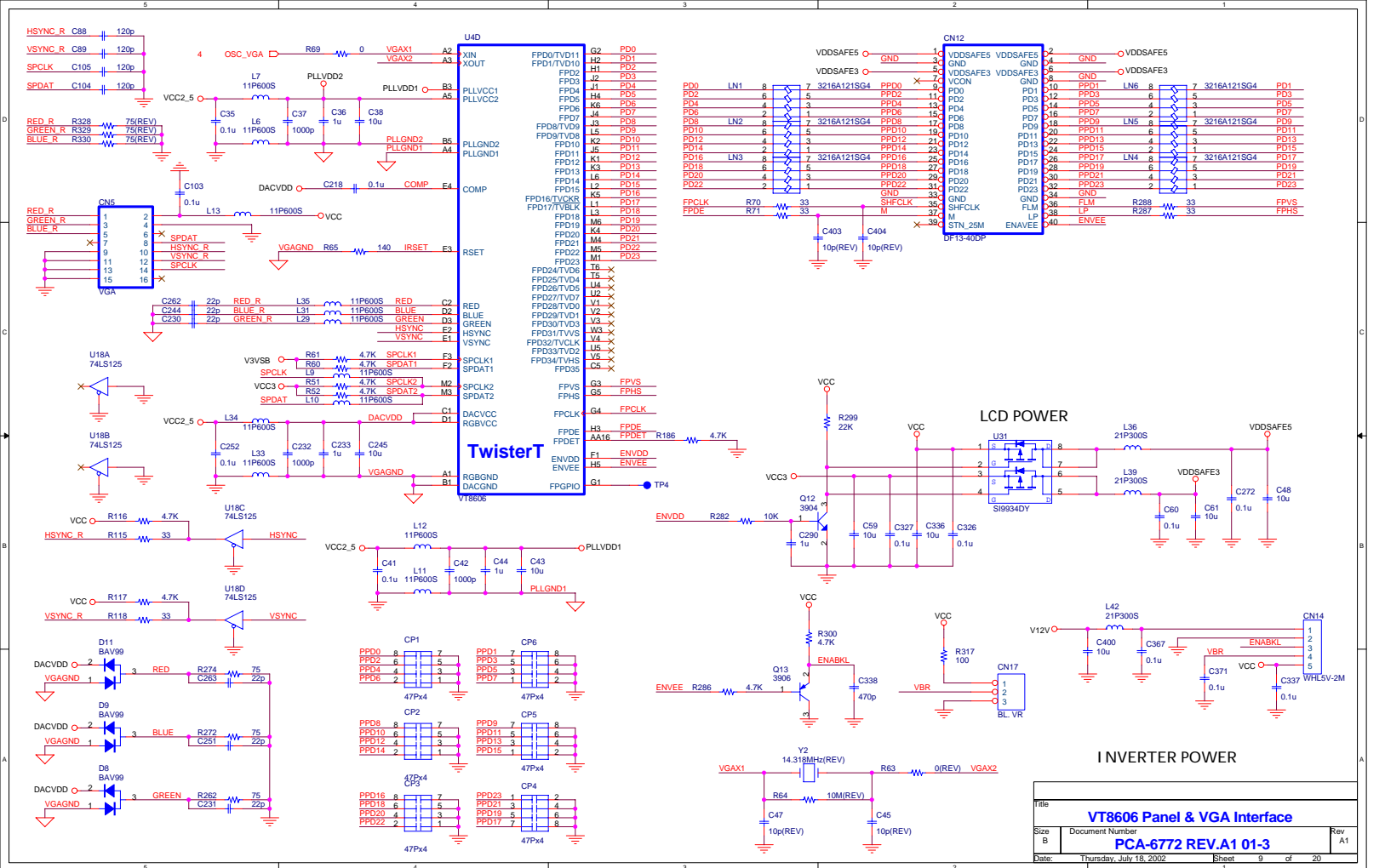


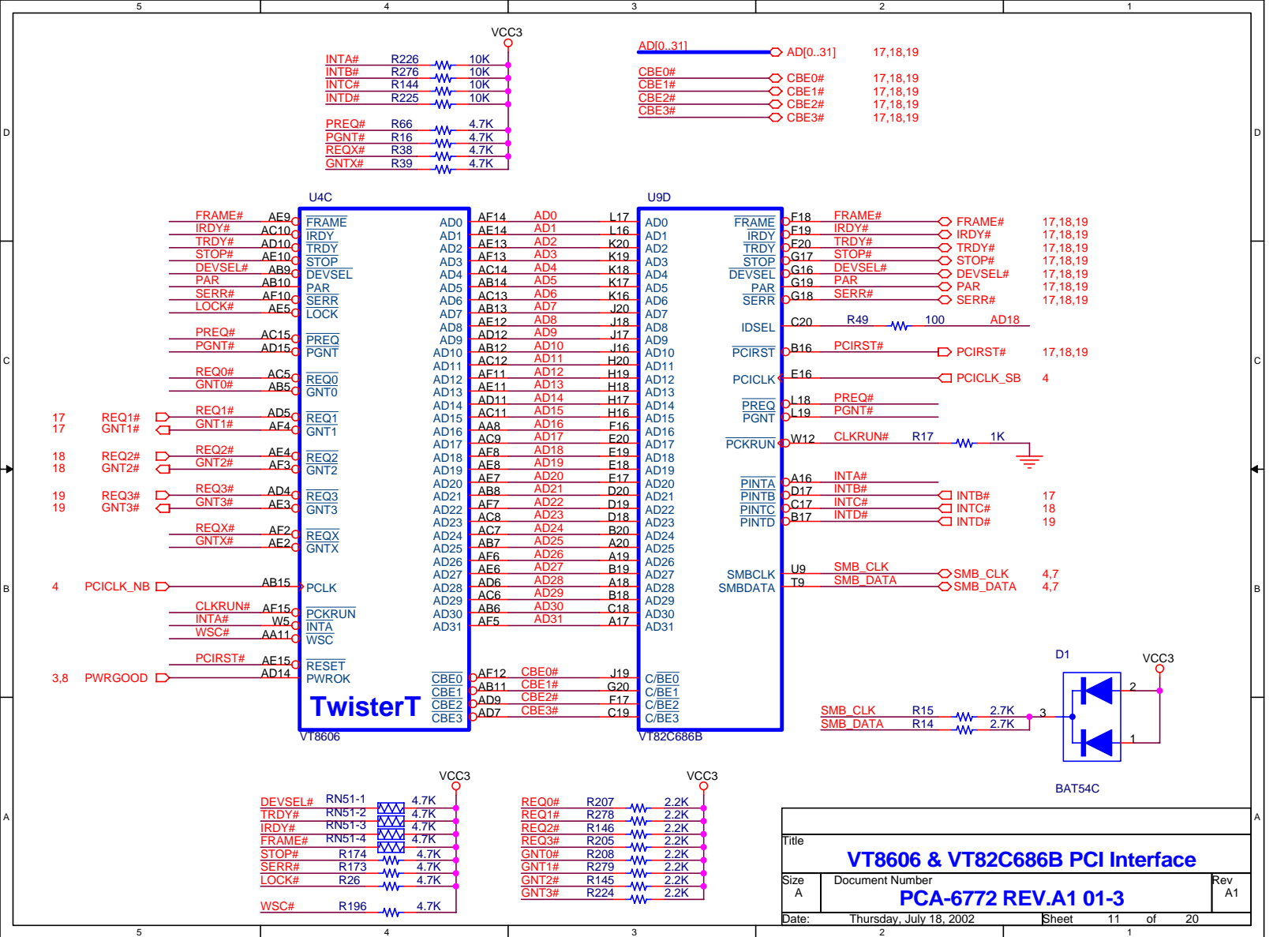


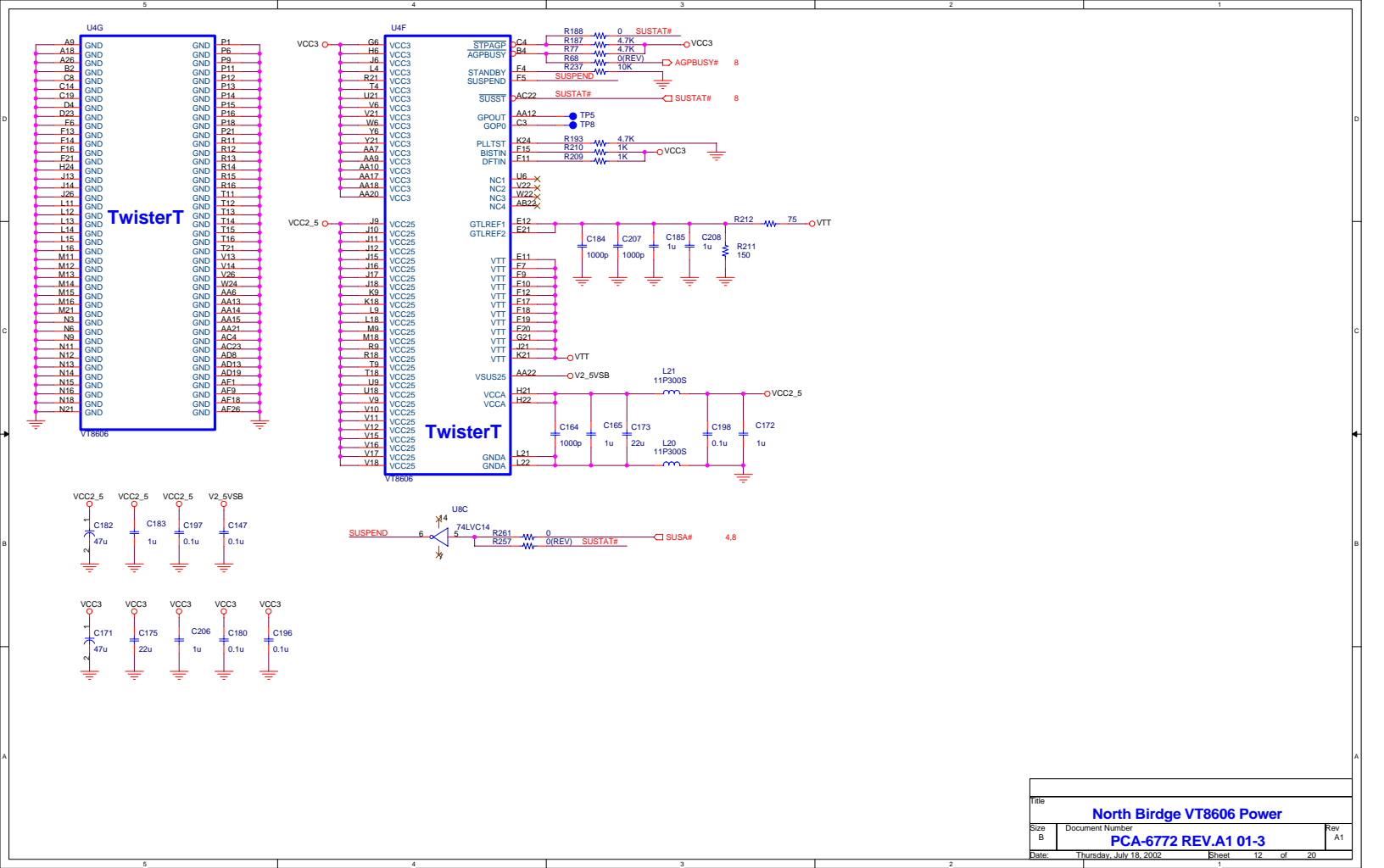


BR4	BR3	BR2	BR1	BR0	RATIO
0	0	0	0	0	9.0x
0	0	0	0	1	3.0x
0	0	0	1	0	4.0x
0	0	0	1	1	10.0x
0	0	1	0	0	5.5x
0	0	1	0	1	3.5x
0	0	1	1	0	4.5x
0	0	1	1	1	9.5x
0	1	0	0	0	5.0x
0	1	0	0	1	7.0x
0	1	0	1	0	6.0x
0	1	0	1	1	8.0x
0	1	1	0	0	12.0x
0	1	1	0	1	7.5x
0	1	1	1	0	8.5x
0	1	1	1	1	6.5x

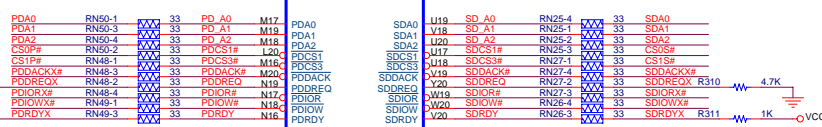
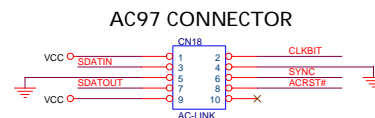
BR4	BR3	BR2	BR1	BR0	RATIO
1	0	0	0	0	11.0x
1	0	0	0	1	12.0x
1	0	0	1	0	13.5x
1	0	0	1	1	11.5x
1	0	1	0	0	12.5x
1	0	1	0	1	10.5x
1	0	1	1	0	13.0x
1	1	0	0	0	15.0x
1	1	0	0	1	16.0x
1	1	0	1	0	14.0x
1	1	0	1	1	15.5x
1	1	1	0	0	14.5x
1	1	1	0	1	15.0x
1	1	1	1	0	14.0x
1	1	1	1	1	15.5x



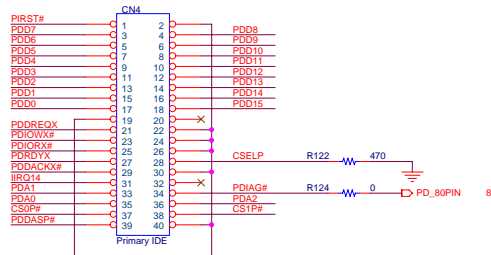
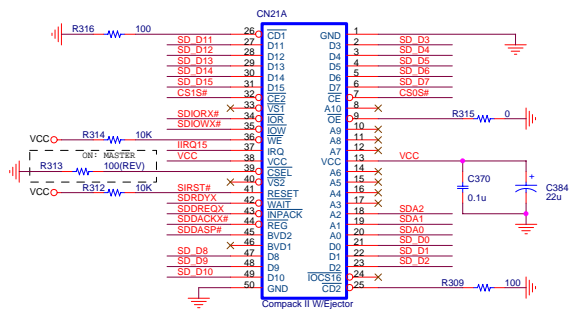




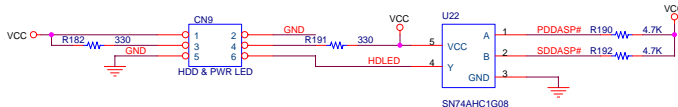
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North Bidge VT8606 Power		
Size	Document Number	Rev
B	PCA-6772 REV.A1 01-3	A1
Date:	Thursday, July 18, 2002	Sheet 12 of 20



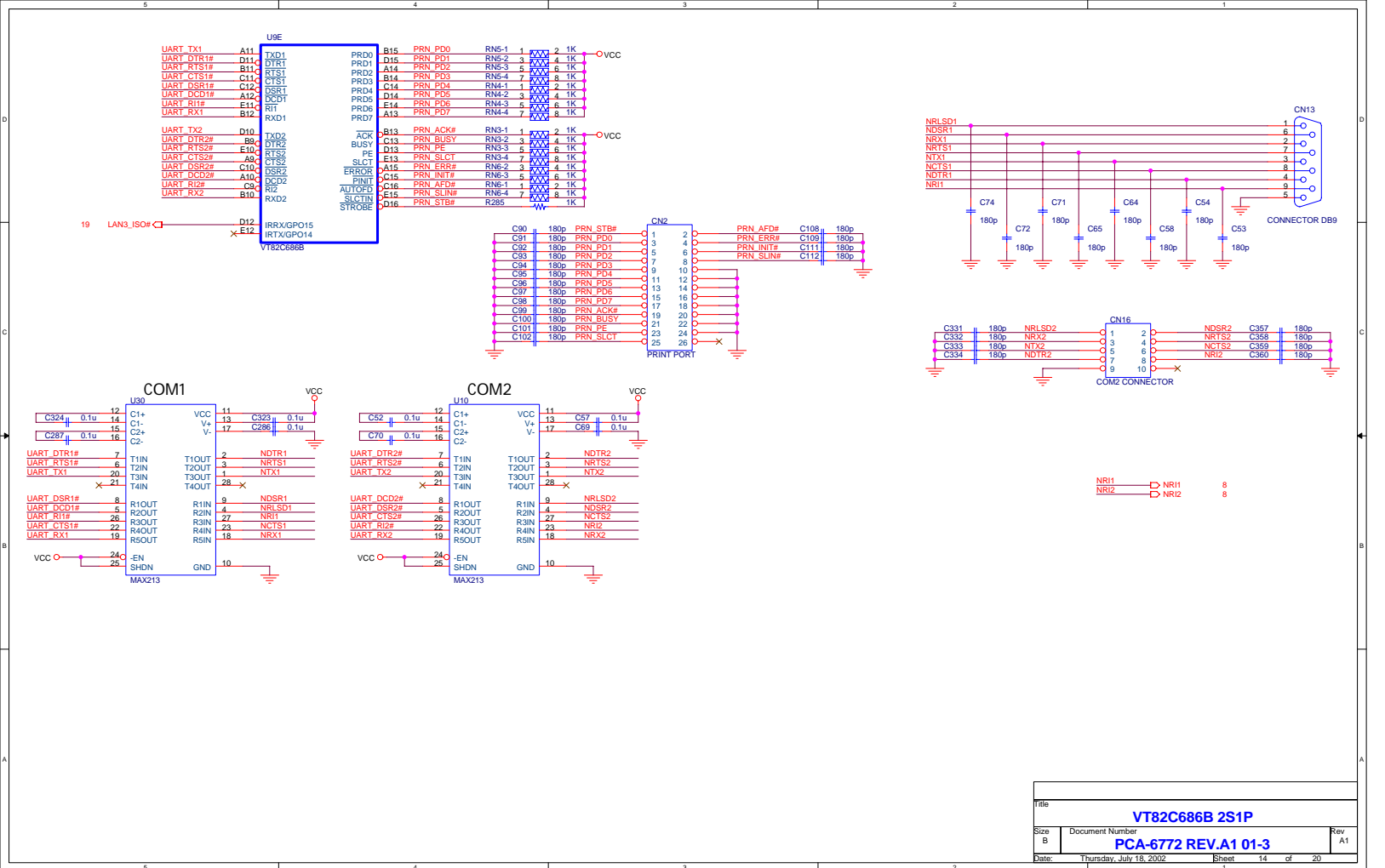
COMPACT FLASH DISK



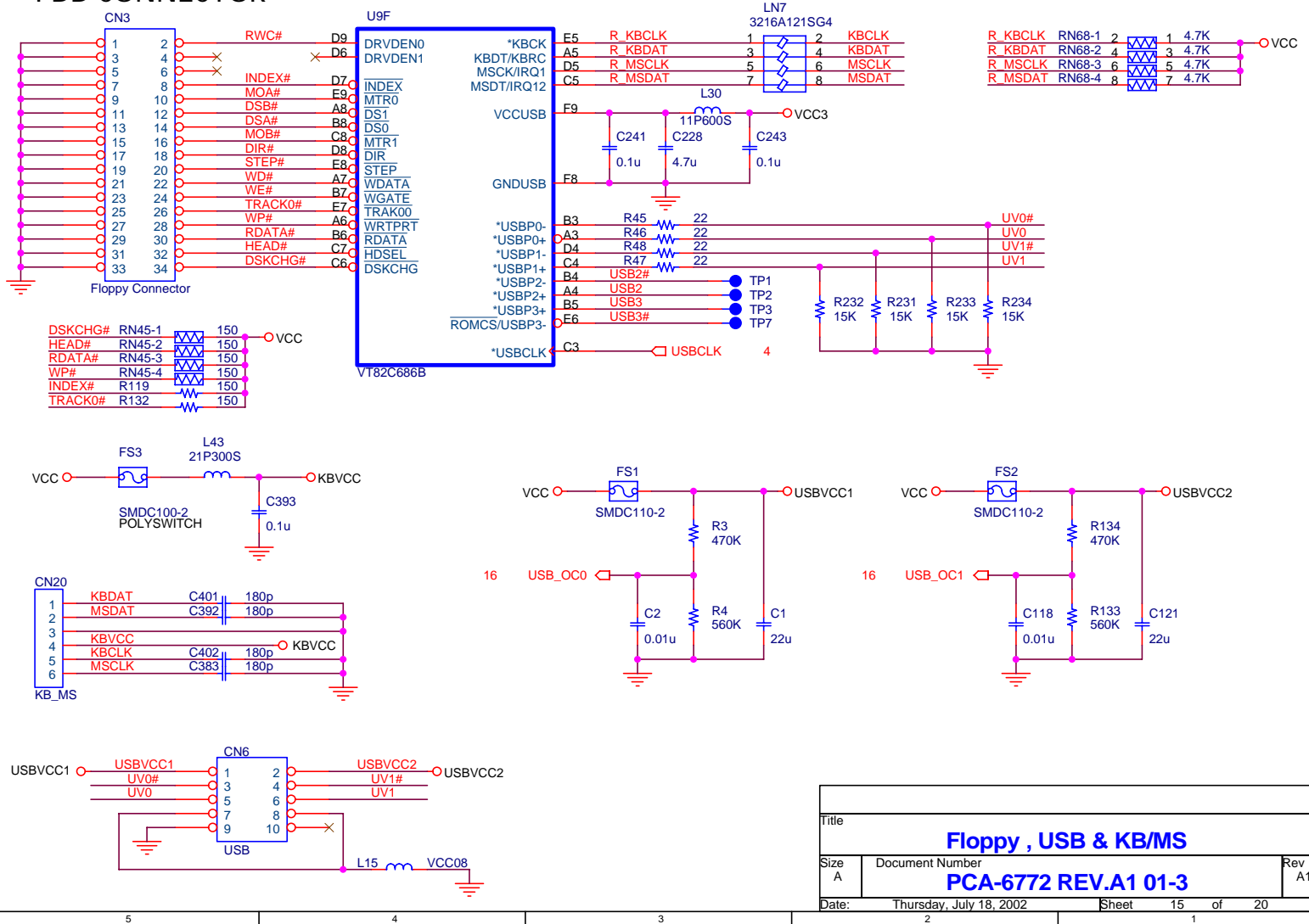
HD LED & Power LED



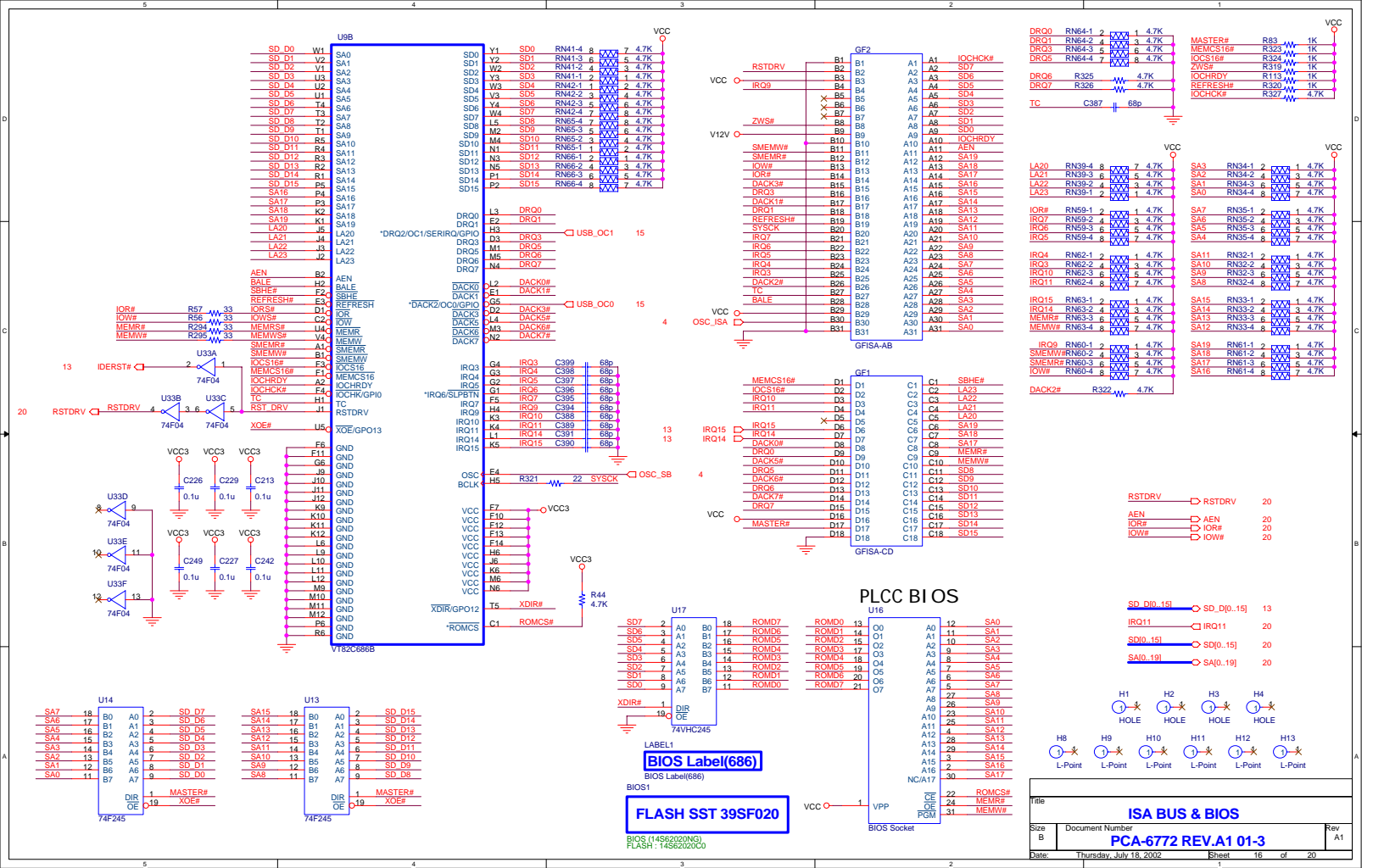
Title			
IDE & AC97 Interface			
Size B	Document Number PCA-6772 REV.A1 01-3		Rev A1
Date:	Thursday, July 18, 2002	Sheet	13 of 20



FDD CONNECTOR



Title		
Floppy , USB & KB/MS		
Size	Document Number	Rev
A	PCA-6772 REV.A1 01-3	A1
Date:	Thursday, July 18, 2002	Sheet 15 of 20

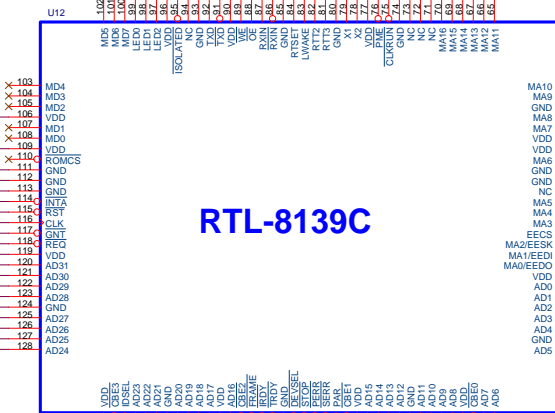
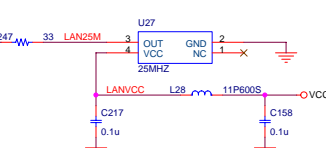
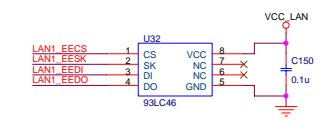
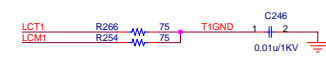
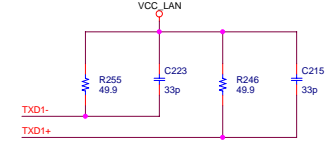
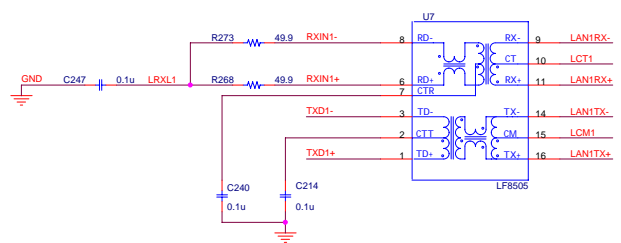
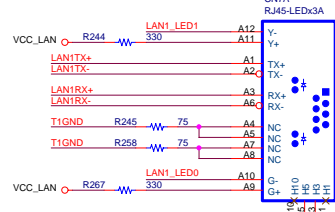
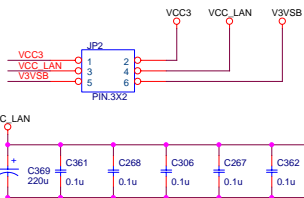


PCI RESOURCE

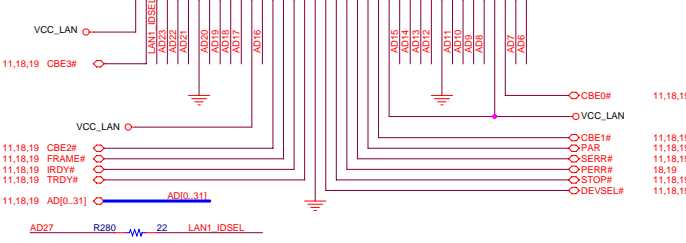
IDSEL: AD27
INT# : INTB
REQ# : 1

Power type of LAN:

1. Normal Power : 1-3, 2-4
2. WOL Power : 3-5, 4-6



RTL8139C

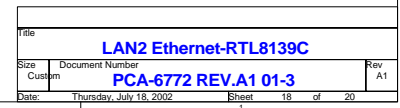


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LAN1 Ethernet-RTL8139C			
Size	Document Number	Rev	
Custom	PCA-6772 REV.A1 01-3	A1	
Date:	Thursday, July 18, 2002	Sheet	17 of 20

```

IDSEL: AD26
INT#  : INTC
REQ#  : 2

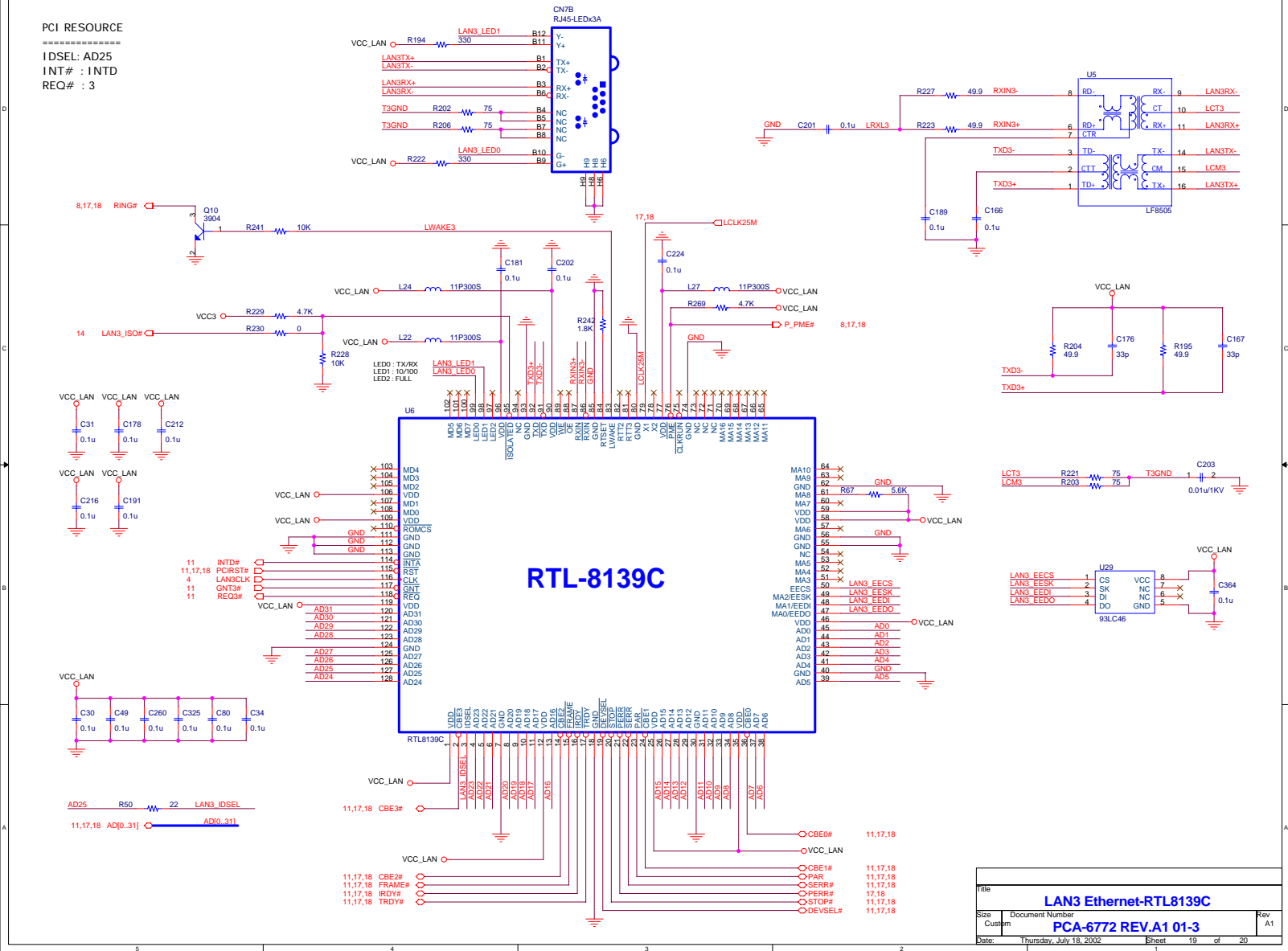
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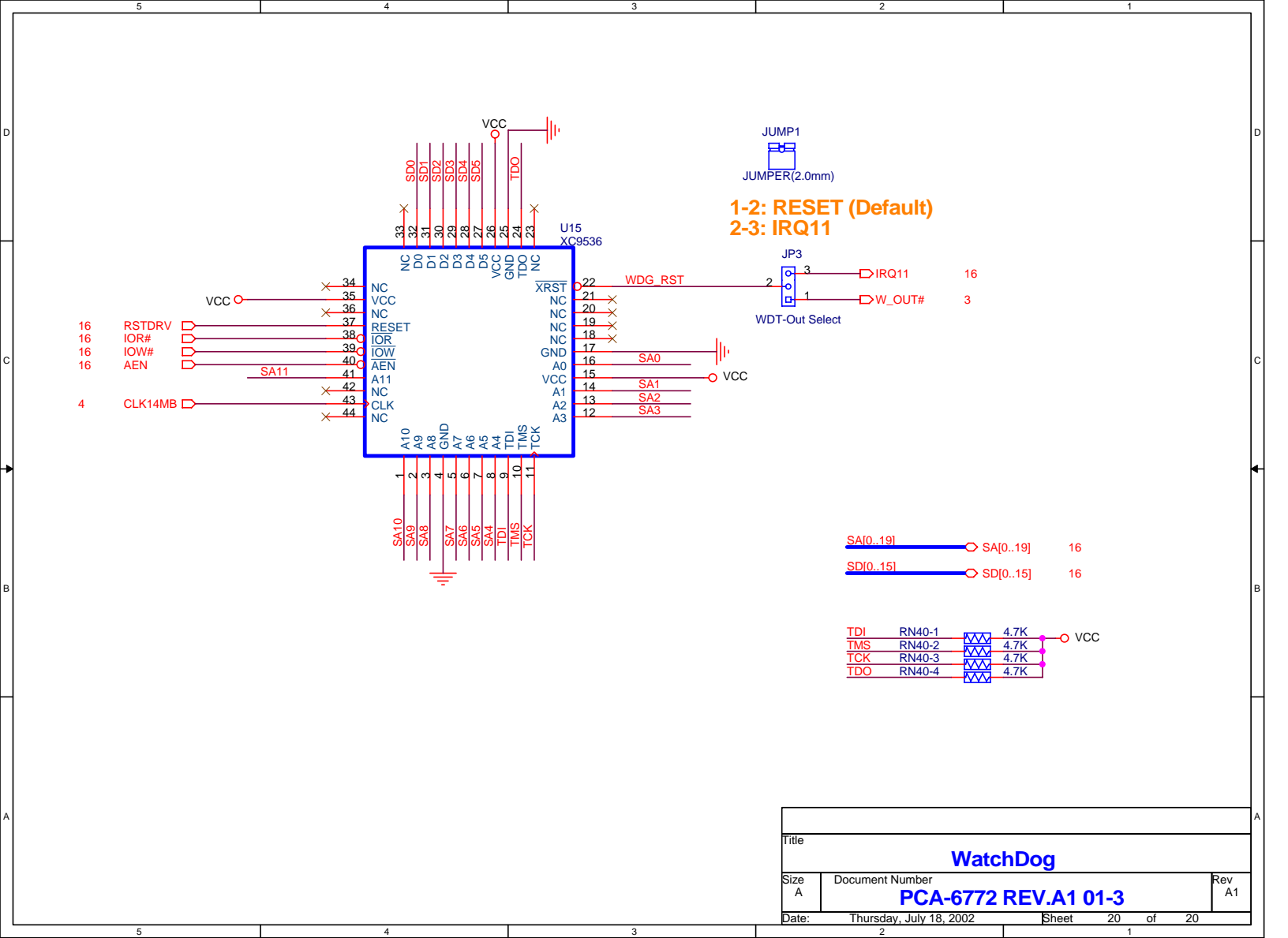


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IDSEL: AD25
INT#  : INTD
REQ#   : 3

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ENCLOSURE No. 5

User Manual & Instructions

(Total 5 pages including this Cover Page)

1. Safety instructions

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 cloth 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.

Quick Guide for SG-2103 series

Introduction

The SG-2103 is a Firewall/VPN/IDS platform suitable for SME security gateway. The platform provides one CompactFlash to store OS and AP, and an optional IDE HDD allows users to store event logs in the local site. The system provides 3 fast Ethernet ports for Network security solution. In addition, also provides RS-232 port and PS2 port for local management, maintenance, and diagnostic.

The SG-2103 with industrial grade rack-mount chassis and high performance Ezra/Eden CPU, gives network security system integrators and software vendors the choice to integrate their security application. Applied in any network environment, the SG-2103 has the processing power and reliability to handle your mission critical, network security applications. Advantech also depend on customer's requirements to provide OEM/ODM service.

Features

- Support VIA Eden 400/Ezra 800 MHz CPU
- 3 fast Ethernet (RTL 8139C plus) for SME Firewall/VPN/IDS platform
- Support CompactFlash and IDE HDD space for storage

Packing list

The SG-2103 package consists of the following items:

- The SG-2103 machine
- Accessory Box: PS2 keyboard/mouse cable, VGA cable, IDE flat cable, Rack-mount kit.

Specifications

- **CPU:** Embedded VIA low power Ezra 800/Eden 400 CPU
- **VGA Chipset:** VIA Twister chip with integrated Savage4 2D/3D/Video Accelerator
- **BIOS:** Award 256KB flash memory
- **Memory:** One DIMM sockets support up to Max. 512MB
- **LAN:** Triple RTL 8139C Plus, IEEE 802.3u 100BASE-T, built-in boot ROM
- **Storage:** One 3.5" HDD drive option and one Compact Flash Type I/II option
- **I/O:** 1 x RS-232 port (Console), 3 x RJ-45 LAN ports, 1 PS2 port
- **Watchdog timer:** 62 level timer intervals
- **AC power:** 150W, 100V-127V / 200V-240V
- **Operating temperature:** 0 ~ 50°C (32 ~ 122°F)

- **Storage temperature:** -20 ~ 75°C (-4 ~ 167°F)
- **Operating humidity:** 5 ~ 95% @ 50°C, non-condensing
- **Storage humidity:** 5 ~ 95%
- **Dimension:** 426 x 50 x 270 mm (W x H x D)
- **EMI/EMC:** FCC Class A

Ordering Information

Part No.	Description
SG-2103-A	SME Security Gateway with 3LAN, (Ezra 800)
SG-2103-B	SME Security Gateway with 3LAN, (Eden 400)

ENCLOSURE No. 6

Licenses and Information for Critical Components

(Total 56 Pages including this Cover Page)

- 1. Specification and Certificate for power supply: Enhance Electronics Co., Ltd, model ENP-1815 (page 2 – 29)**
- 2. Certificate and Specification for DC fan (page 30 – 40)**
- 3. Certificate and Specification for lithium battery (page 41 - 47)**

MODEL NO. ENP-1815 (AT)

This specification describes the requirements of 150 watts switching power supply with an Flex-ATX form-factor, +5V standby voltage,remote on/off,dual line input capability.

☞ 1.0 INPUT REQUIREMENTS**1.1 AC input requirements**

The input voltage, current, and frequency requirements for continuous operation are stated below.

Parameter	Min	Nom.	Max	Unit
V _{in} (115VAC)	90	115	132	VACrms
V _{in} (230VAC)	180	230	265	VACrms
V _{in} Frequency	47	--	63	Hz
I _{in} (115VAC)			5	Arms
I _{in} (230VAC)			2.5	Arms

A manual switch or auto switch shall be provided to select the appropriate voltage range.

1.2 Inrush current

35 A @ 115Vrms

70 A @ 230Vrms (at 25°C ambient cold start).

☞ 2.0 OUTPUT REQUIREMENTS**2.1 Voltage**

Parameter	Range	Min	Nom.	Max	Unit
+3.3V	+/-5%	+3.14	+3.3	+3.47	Volts
+5V	+/-5%	+4.75	+5	+5.25	Volts
+12V	+/-5%	+11.4	+12.0	+12.6	Volts
-5V	+/-10%	-4.5	-5.0	-5.5	Volts
-12V	+/-10%	-10.8	-12.0	-13.2	Volts
+5VSB	+/-5%	+4.75	+5	+5.25	Volts

1.At no load,3.3V output +/-5% regulation limits do not apply.

2.At +12V surge, regulation can go to +/-10%.

2.2 DC output current load ranges

2.2.1 RANGES:

Parameter	Min	Nom.	Max	Peak	Unit
+3.3V	0.5	-	7.0	14.0 8.0	Amps
+5V	1.0	-	12.0		Amps
+12V	0.5	-	5.0		Amps
-5V	0.0	-	0.2		Amps
-12V	0.0	-	1		Amps
+5VSB	0.0	-	2		Amps

Notes:

- (1) +5VSB is a SELV standby voltage that is always present when AC mains voltage is present.
- (2) The maximum continuous average DC output power shall not exceed 150 watts.
- (3) The maximum combined load on +5V and +3.3V outputs shall not exceed 83 watts.
- (4) The maximum peak total DC output power shall not exceed 155W.
The power supply shall be capable of supplying 155W peak output power for 15 seconds under all specified conditions.
- (5) Peak +12 VDC output power not to exceed 15 seconds in duration.

2.3 Output Ripple

2.3.1 RANGES

Parameter	Ripple	Ripple+Noise	Unit
+3.3V	50	100	mVp-p
+5V	50	100	mVp-p
+12V	120	150	mVp-p
-5V	100	200	mVp-p
-12V	150	200	mVp-p
+5VSB	100	100	mVp-p

2.3.2 Definition

The ripple voltage of the output shall be measured at the pins of the output connector when terminated in the load impedance specified in Figure 1. Ripple and noise are measured at the connectors with a 0.1uF ceramic capacitor and A 10uF electrolytic capacitor to simulate system loading. Ripple shall be measured under any condition of line voltage, output load, line frequency, operation temperature.

2.3.3 Ripple voltage test circuit

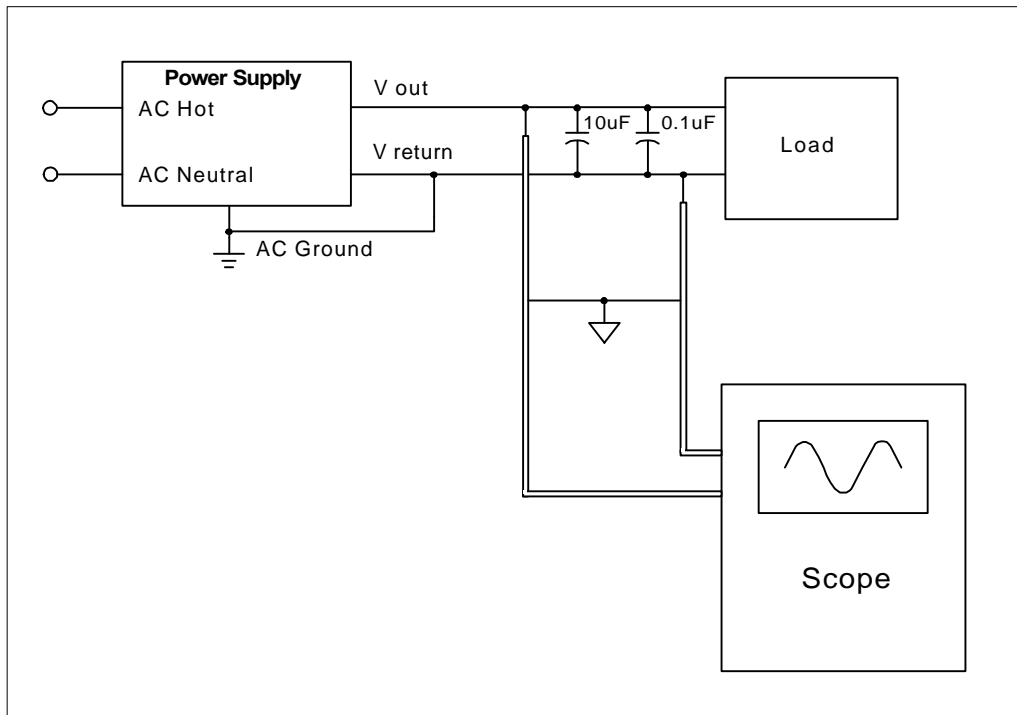


Figure 1. Ripple voltage test circuit

2.4 Overshoot

Any overshoot at turn on or turn off shall be less 10% of The nominal voltage value, all output shall be within the regulation limit of section 2.0 before issuing the power good signal of section 5.0.

2.5 Efficiency

Power supply efficiency typical 65% at normal AC main voltage and full load on all outputs.

2.6 Remote ON/OFF control

When the logic level "PS-ON" is low, the DC outputs are to be enabled.
When the logic level is high or open collector, the DC outputs are to be disabled.

☞ 3.0 PROTECTION

3.1 Over-power protection

The power supply will be shutdown and latch off when output power over 150% of rated DC output.

NOTES: 5Vsb will be auto-recovery when the fault removed.

3.2 Over voltage protection

In an over voltage fault occurs, the supply will latch all DC output into a shutdown state when +3.3V outputs exceed 130% of its maximum value +12V outputs exceed 140% of its maximum value. +5V outputs exceed 160% of its normal value.

3.3 Short circuit

The power supply shall shutdown and latch off for shorting +3.3V, +5V,-5V or +12V, -12V rails. The main output short circuit of any impedance shall less than 0.1ohms. The maximum short circuit current in any output shall not exceed 240VA.

3.4 No load operation

No damage or hazardous will occur with any output disconnected from load.

☞ 4.0 POWER SUPPLY SEQUENCING

4.1 Power On

Figure 2 is a reference for signal timing for main power connector signals and rails.

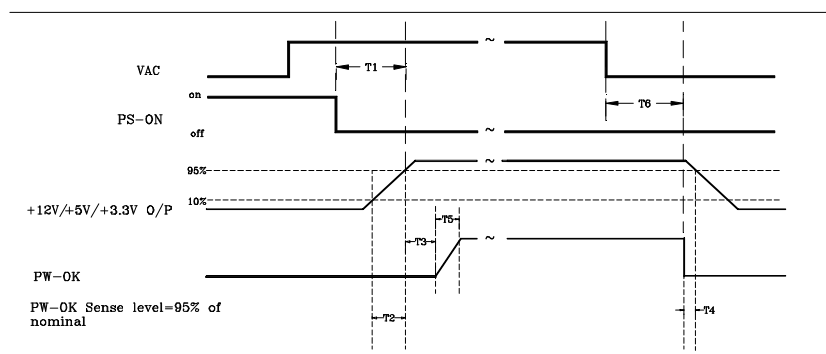


Figure 2. PS-OK Timing Sequence

- (1)T2:Rise time(2ms~20ms)
- (2)T3:Power good signal turn on delay time(100ms~500ms)
- (3)T4:Power good signal turn off delay time(1ms min)
- (4)T5:Rise time(10ms max)

4.2 Hold up time

When the power loss its input power, it shall maintain 14ms in regulation limit at nominal input voltage.(AC 115V OR 230V)

☞ 5.0 ENVIRONMENT

5.1 Operation

Temperature	0 to 50°C
Relative Humidity	10 to 85%,on-condensing

5.2 Shipping and Storage

Temperature	-20 to 60°C
Relative Humidity	5 to 95%,non-condensing

5.3 Altitude

Operating	10,000FT max.
Storage	50,000FT max.

☞ 6.0 SAFETY

6.1 Underwriters Laboratory (UL) recognition.

The power supply designed to meet UL 1950.

6.2 Canadian Standards Association(CSA) approval.

The power supply designed to meet CSA C22.2 NO. 950.

6.3 CB test report to meet the IEC 950 2ND.

6.4 The power supply must bear the German Bauart Mark from TUV.

7.0 ELECTROMAGNETIC COMPATIBILITY (EMC)

- ☞
- 7.1 IEC 801-2 ESD (IEC 1004-4-2)
 - 7.2 IEC 801-3 Radiated electrical field requirement (IEC 1004-4-3)
 - 7.3 IEC 801-4 BURST (IEC 1004-4-4)
 - 7.4 IEC 801-5 Surge Voltages
 - 7.5 EN60555-2 harmonic current emissions
 - 7.6 EN55022 Class B Radio interference (CISPR 22)
 - 7.7 FCC Part 15, Subpart J class B 115VAC operation.

8.0 MTBF



8.1 MTBF (MEAN TIME BETWEEN FAILURES)CALCULATION

The demonstrated MTBF shall be 100,000 hours of continuous operation at 25°C,full load, 80% confidence limit and nominal line. The MTBF of the power supple be calculated in accordance with MIL-STD-217D/E. The DC FAN is not included.

9.2 Connectors

P1,P2,P3,(AMP 1-480424 or
Molex 8981-049 or Equivalent)

20 AWG wire	Signal	Pin	Pin	Signal	22AWG wire
Yellow	+12VDC	1	1	+5VDC	Red
Black	COM	2	2	COM	Black
Black	COM	3	3	COM	Black
Red	+5VDC	4	4	+12VDC	Yellow

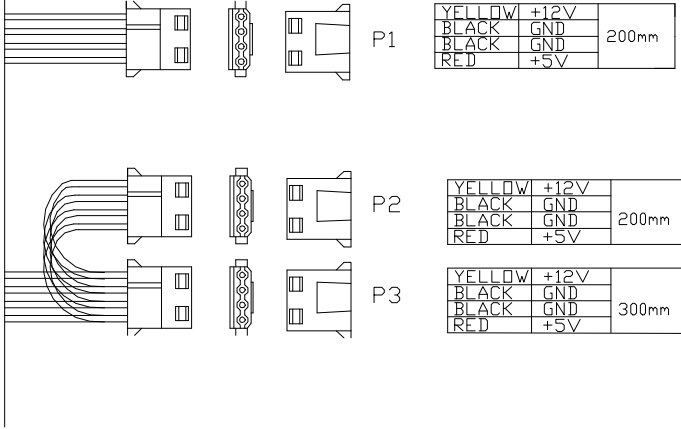
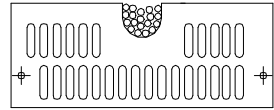
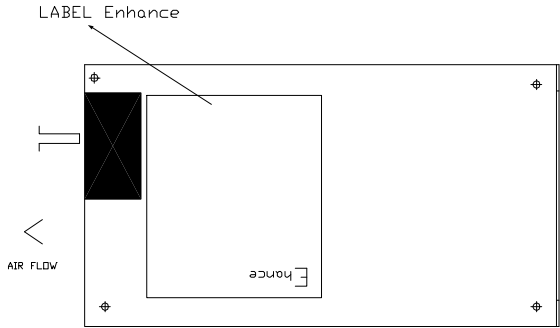
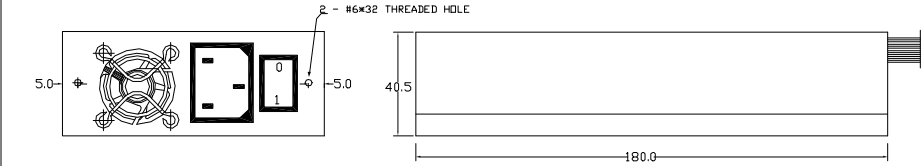


FIG-4(A) MECHANICAL DIAGRAM

ENHANCE
ELECTRONICS CO., LTD

TEXT: ENP-1815

DRAWING NO:

RD-M121-5

REVISION:				DATE:	SHEET
A	B	C		00/06/25	

DRAWN BY: CHECKED BY: APPROVED BY:

SCALE:

1 OF 1



Canadian Standards Association
Association canadienne de normalisation

CERTIFICATION RECORD

The company named below has been authorized by Canadian Standards Association to represent the products listed in this record as "CSA Certified" or "CSA Accepted", as applicable, and to affix the CSA Mark to these products according to the terms and conditions of the CSA Service Agreement and applicable CSA program requirements (including additional Markings).

NUMBER 082009U0000 January 29, 1996 (Replaces: June 2, 1995)

CLASS 5854 01 (Label/Licensing Service)

EVERTOP WIRE CABLE CORP.

82009

No 1, Lane 91

Jen-Ai Road, Sec. 2

Taipei, Taiwan

FACTORIES

F1 No 32, Lane 363

Chung-Cheng Rd., Sec. 2

Chung Li, Taiwan

F2 EVERTOP (DONGGUAN) WIRE CABLE PLANT

Long Yean Industrial District

Dongguan City

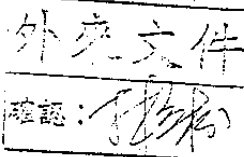
Guang Dong, China

PRODUCT RETEST FACILITY

No 32, Lane 363

Chung-Cheng Rd., Sec. 2

Chung Li, Taiwan



WIRES - Radio-Circuit Wires

- Max temperature rating change 80C: Twin Lead

- Max temperature rating 90C: TR-64 (single and multi conductors)

Notes:

1. Twin lead constructions are Certified using polyethylene insulation.
2. Twin lead construction may or may not include PVC jacketing.
3. Twin lead construction above is Certified in all applicable sizes and colours except clear and transparent (dark colours only for non-jacketed constructions).
4. The single conductor Type TR-64 is Certified with optional shielding and/or optional covering. The multi conductor is Certified with optional shielding.

FAXED





PROFILE OF CERTIFICATION REPORTS

File No: 082118 0 000

SUBMITTOR

Carol Wiring Harnesses Co. Ltd.
No. 1st Lane 292, Sec. 1,
Ta Tung Rd.
Hsi Chi
Taipei Hsien, Taiwan
Attention: Mr. James Lee
Telephone: 886-206416125
 886-2-6470654

Date: December 19, 1997
Replaces: January 25, 1995
Main File: Central Region

FACTORIES

F1 No. 1, Lane 292, Sec. 1
Ta Tung Rd.
Hsi Chi
Taipei Hsien, Taiwan

Xin Cheng Qu
Shi Jie Zhen
Dong Guan City
Guang Dong Province, China

INSPECTION OFFICE

CTG

CCIC

FILE NO

LR 82118

LR 82118

REPORT NO-APPL. NO FACTORY NOS

-1

-2

-3

-4

SUBJECT

May 19, 1988 - Certification of wiring harnesses.

August 22, 1990 - Update to Report
LR 82118-1 to cover reinstatement.

September 12, 1994 - Addition of factory
F2 in China (Xin Cheng Qu, Shi Jie
No report issued.

December 29, 1994 - Wiring harnesses made
up of components assembled in accordance
with the component manufacturer's
instructions. Harnesses within this
certification may be made up of the
following terminations methods and
components:

DQD No. 554-Rev A



No: 082118 G 000

- discrete wires No 32 to No 6 AWG;
- flexible cord or cable No 32 to No 6 AWG;
- flat ribbon cable;
- crimp-on connections;
- soldered connections;
- insulation displacement connections;
- single and multi-contact connectors;
- sleeving and wraps;
- certified components such as switches (for PART A only).

PART A: All components are CSA (NRTL/C) Certified or CSA Certified and UL Recognized.

PART B: Harnesses for use in Extra-Low-Voltage (ELV) Class 2 Circuits only.

-5

F1, F2

January 25, 1995 - Special-use connectors, Cat Nos CL2001XXX-XX, CL2501XXX-XX, CL2502XXX-XX, CL2503XXX-XX, CL2505XXX-XX, CL2540XXX-XX, CL2510XXX-XX, CL3960XXX-XX, CL3961XXX-XX, CL3962XXX-XX, CL1561XXX-XX, CL2361XXX-XX, CL2011XXX-XX, CL2511XXX-XX, CL2512XXX-XX, CL2513XXX-XX, CL5080XXX-XX, CL5081XXX-XX, CL5082XXX-XX. (NRTL/C).

-6

All

December 19, 1997 - Special-use connectors, Cat No CL4201XXX-XX, CL4202XXX-XX. (NRTL/C)



1655 Scott Boulevard
Santa Clara, CA 95050-4169
United States Country Code (1)
(408) 965-2400
FAX No. (408) 296-3256
http://www.ul.com

Underwriters Laboratories Inc.

117873

Vol. 2

Issued: 12-09-96
Revised: 12-02-98



FOLLOW-UP SERVICE PROCEDURE

(TYPE L)

COMPONENT - APPLIANCE WIRING MATERIAL
(AVLV2, AVLV8)

Manufacturer:
(320641-001)

* Evertop (Dongguan) Wire Cable Plant
Hsin Lien Hi-Tech Industrial District
Hu-Men, Dongguan, Guangdong, China

Applicant:
(364181-001)

* Evertop Wire Cable Corp.
3rd Fl.
15-1 Hang Coo S. Rd.
Taipei, Taiwan

Recognized
Company:

Same as Applicant

This Procedure authorizes the above Manufacturer to use the marking specified by Underwriters Laboratories Inc. only on products covered by this Procedure, in accordance with the applicable Follow-Up Service Agreement.

The Prescribed Mark or Marking shall be used only at the above manufacturing location on such products which comply with this Procedure and any other applicable requirements.

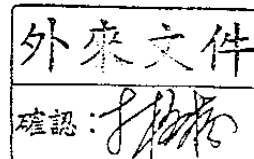
The Procedure contains information for the use of the above named Manufacturer and the representatives of Underwriters Laboratories Inc. and is not used for any other purpose. It is lent to the Manufacturer with the understanding that it is not to be copied, either wholly or in part, and that it will be returned to Underwriters Laboratories Inc. upon request.

The PROCEDURE, and any subsequent revisions, is the property of UNDERWRITERS LABORATORIES INC., and is not transferable.

UNDERWRITERS LABORATORIES INC.

S. Joe Bhatia

S. JOE BHATIA
Vice-President, Follow-Up Services



FAXED



AP/CH:fm
SCDLS

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

IEC SYSTEM FOR CONFORMITY TESTING
AND CERTIFICATION OF ELECTRICAL
EQUIPMENT (IECEE)
CB SCHEME

SYSTÈME CEI D'ESSAIS DE CONFORMITÉ
ET DE CERTIFICATION DES ÉQUIPEMENTS
ÉLECTRIQUE (IECEE)
METHODE OC

CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC

Product
Produit

Name and address of the applicant
Nom et adresse du demandeur

Name and address of the manufacturer
Nom et adresse du fabricant

Name and address of the factory
Nom et adresse de l'usine

Rating and principal characteristics
Valeurs nominales et caractéristiques principales

Trade mark (if any)
Marque de fabrique (si elle existe)

Model/type Ref.
Ref. de type

Additional information (if necessary)
Information complémentaire (si nécessaire)

A sample of the product was tested and found
to be in conformity with
Un échantillon de ce produit a été essayé et a été
considéré conforme à la

as shown in the Test Report Ref. No.
which form part of this certificate
comme indiqué dans le Rapport d'essais numéro
de référence
qui constitue une partie de ce certificat

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

Switching Power Supply

Enhance Electronics Co., Ltd.
6F., No. 3, Alley 6, Lane 235, Pao-Chiao Rd., Hsin Tien
Taipei Hsien 231, TAIWAN, R.O.C.

Enhance Electronics Co., Ltd.
6F., No. 3, Alley 6, Lane 235, Pao-Chiao Rd., Hsin Tien
Taipei Hsien 231, TAIWAN, R.O.C.
(further factories may be listed on appendices to this certificate)
Enhance Electronics Co., Ltd.
6F., No. 3, Alley 6, Lane 235, Pao-Chiao Rd., Hsin Tien
Taipei Hsien 231, TAIWAN, R.O.C.

Input rating : AC 100V-127V/60Hz/5A.
AC 200V-240V/50Hz/2.5A
Output rating : refer to the test report
Protection class : I
Trade mark of Enhance

ENP-1815

PUBLICATION

EDITION

IEC 60950:1991+A1+A2+A3+A4
inclusive CENELEC Common Modifications
(refer also to the appendix)

E 2061109 E 01



TÜV Rheinland Japan Ltd.
3-19-5 Shin-Yokohama
222-0033 Japan

Date 02.06.2000

Signature

Dipl.-Ing. M. Borgmann

Zertifikat Certificate



Zertifikat Nr. Certificate No.
R 2055145

Blatt Page
01

Ihr Zeichen Client Reference
00-0430/PSE

Unser Zeichen Our Reference
00060-PSS/RH- E2064835E01

Ausstellungsdatum Date of Issue
31.05.2000 (day/mo/yr)

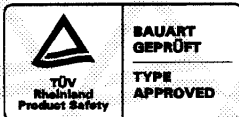
Genehmigungsinhaber License Holder
Enhance Electronics Co., Ltd.
6F, No. 3, Alley 6
Lane 235, Pao-Chiao Rd.
Hsin Tien, Taipei Hsien 231
TAIWAN

Fertigungsstätte Manufacturing Plant
Enhance Electronics Co., Ltd.
6F, No. 3, Alley 6
Lane 235, Pao-Chiao Rd.
Hsin Tien, Taipei Hsien 231
TAIWAN

Prüfzeichen Test Mark

Geprüft nach Tested acc. to

EN 60950:1992+A1+A2+A3+A4+A11



Zertifiziertes Produkt (Geräteidentifikation)
Certified Product (Product Identification)

Lizenzentgelte - Einheit
License Fee - Unit

EINBAU-SCHALTNETZTEIL (Switching Power Supply)

Bezeichnung (Type Designation) : ENP-1815 10

Nennspannung (Rated Voltage) : AC 100-127/200-240V, 60/50Hz

Nennstrom (Rated Current) : 5/2.5A

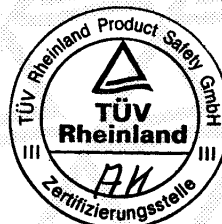
max. Umgebungstemperatur (max. Ambient Temperature) : 25°C

Schutzklasse (Protection Class) : I

Verschmutzungsgrad (Pollution Degree) : 2

Fortsetzung Blatt (continued on page) 02

ANLAGE (Appendix): 1



10

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

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

Dipl.-Ing. A. Klinker

Zertifikat Certificate



Zertifikat Nr. Certificate No.
R 2055145

Blatt Page
02

Ihr Zeichen Client Reference
00-0430/PSE

Unser Zeichen Our Reference
00060-PSS/RH- E2064835E01

Ausstellungsdatum Date of Issue
31.05.2000 (day/mo/yr)

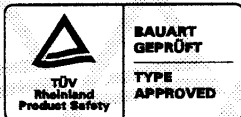
Genehmigungsinhaber License Holder
Enhance Electronics Co., Ltd.
6F, No. 3, Alley 6
Lane 235, Pao-Chiao Rd.
Hsin Tien, Taipei Hsien 231
TAIWAN

Fertigungsstätte Manufacturing Plant
Enhance Electronics Co., Ltd.
6F, No. 3, Alley 6
Lane 235, Pao-Chiao Rd.
Hsin Tien, Taipei Hsien 231
TAIWAN

Prüfzeichen Test Mark

Geprüft nach Tested acc. to

EN 60950:1992+A1+A2+A3+A4+A11



Zertifiziertes Produkt (Geräteidentifikation)
Certified Product (Product Identification)

Lizenzentgelte - Einheit
License Fee - Unit

EINBAU-SCHALTNETZTEIL (Switching Power Supply)

wie Blatt (as page) 01
Fortsetzung (Continuation)

Ausgangsspannungen : DC +3.3V +5V +12V -5V -12V +5Vsb
(Output Voltages)

Ausgangsströme : 7A 12A 5A 0.2A 1A 2A
(Output Currents)

max. Ausgangsleistung : 150W
(max. Output Power)

Vermerke : Primär-und Sekundärkreise sind gemäß
Verfahren 1 und 2 nach Abschnitt 2.3 getrennt.
Der Einbau muß gemäß der zugehörigen Einbauanweisung
erfolgen. (Remarks : Primary and secondary circuits are
separated according to method 1 and 2 of clause 2.3.
The installation has to be carried out according to the
attached installation instruction.)



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

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

Dipl.-Ing. A. Klinker

Zertifikat Certificate



Zertifikat Nr. Certificate No.
R 2055145

Blatt Page
03

Ihr Zeichen Client Reference
00-0430/PSE

Unser Zeichen Our Reference
00060-PSS/RH- E2064835E01

Ausstellungsdatum Date of Issue
31.05.2000 (day/mo/yr)

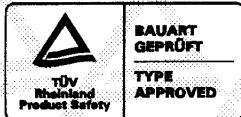
Genehmigungsinhaber License Holder
Enhance Electronics Co., Ltd.
6F, No. 3, Alley 6
Lane 235, Pao-Chiao Rd.
Hsin Tien, Taipei Hsien 231
TAIWAN

Fertigungsstätte Manufacturing Plant
Focus Asset International Ltd.
San Land Industrial Area
Fong Kang Town, Dong Kuang
Guang Dong
P.R. CHINA

rufzeichen Test Mark

Geprüft nach Tested acc. to

EN 60950:1992+A1+A2+A3+A4+A11



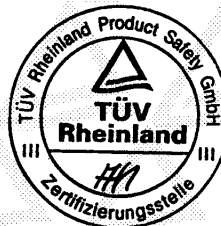
Zertifiziertes Produkt (Geräteidentifikation)
Certified Product (Product Identification)

Lizenzentgelte - Einheit
License Fee - Unit

EINBAU-SCHALTNETZTEIL (Switching Power Supply)
wie Blatt (as page) 01

Ergänzung
(Addition)

Fertigungsstätte : siehe oben
(Factory) (see above)



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

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

Dipl.-Ing. A. Klinker

Northbrook, Illinois • (847) 272-8800
 Melville, New York • (631) 271-6200
 Santa Clara, California • (408) 985-2400
 Research Triangle Park,
 North Carolina • (919) 549-4400
 Camas, Washington • (360) 817-5500



ENHANCE ELECTRONICS CO LTD
 MR T YEH
 6TH FL
 3 ALLEY 6 LANE 235 PAO CHIAO RD
 HSIN TIEN
 TAIPEI TAIWAN

RE: Project Number(s) - 01NK94886

Your most recent Certification is shown below. You may also view this information, or a portion of this information (depending on the product category), on UL's Online Certifications Directory at www.ul.com/database. Please review the text and contact the Conformity Assessment Services staff member who handled your project if revisions are required. For instructions on placing an order for this information in a 3 x 5-inch format, you may refer to the enclosed order form for UL Card Service.

QQGQ8 December 14, 2001
 Power Supplies, Information Technology Equipment Including Electrical Business Equipment Certified for Canada - Component

ENHANCE ELECTRONICS CO LTD
 6TH FL 3 ALLEY 6 LANE 235 PAO CHIAO RD HSIN TIEN,
 TAIPEI TAIWAN

E166947

Model No.	Rated Input		SC	Max V	Output		OC	SP	EP	FC	GC
	V	Hz			Max A	Max VA					
E515	115/230	60/50	0	5	24	114	3	950	20B	0	1
				12	14	153					
				-5	1.5	7					
				-12	1.3	13					
				5	27	128					
E520	115/230	60/50	0	12	15	165	3	950	20B	0	1
				-5	1.1	4.5					
				-12	1.2	13					
				5	37	159					
				12	20	216					
E525	115/230	60/60	0	-5	1.4	6.6	3	950	20B	0	1
				-12	1.6	17					
				5	37	159					
				12	20	216					
				-5	1.4	6.6					
ENH-0620	100-240	50-60	0	-12	1.6	17	3	950	15B	2.6	1
				+5.20	39.4	158					
				+12.19	19.9	203					
				+3.35	30.2	67.6					
				-5.06	1.5	6.03					
				-12.31	1.4	12.03					
				+5.10	6.41	30.5					
ENP-0136	100/127/ 200-240	60/50	0	3.3	4	136Wmax	3	950	20B	0	1
				5	18						
				12	2.1						
				-12	0.3						
				5Vsb	0.8						
V515(*)	115/230	60/50	0	+5	16	—	3	950	20B	0	1
				+12	6.0	—					

235806003

Page 1 of 5

A not-for-profit organization
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 committed to quality service

Underwriters Laboratories Inc. [®]

Model No.	Rated Input		SC	Max V	Output		OC	SP	EP	FC	GC
	V	Hz			Max A	Max VA					
V520(*)	115/230	60/50	0	-5	0.3	—	3	950	20B	0	1
				-12	0.3	—					
				+5	20	—					
				+12	8.0	—					
				-5	0.3	—					
V525(*)	115/230	60/50	0	-12	0.3	—	3	950	20B	0	1
				+5	26	—					
				+12	9.0	—					
				-5	0.3	—					
				-12	0.3	—					
E825U(*)	115/230	60/50	0	+5	38.0	158.4	2	234	20B	6.2	1
				+12	16.0	184.0					
				-5	5.0	18.6					
				-12	5.2	56.0					
				+5	28.0	127.4					
E820U(*)	115/230	60/50	0	+12	13.0	154.0	2	234	20B	6.2	1
				-5	6.0	20.4					
				-12	4.0	42.8					
				+5	26	200					
				+12	9	—					
ATX-720A(*) ATX-720B	100-127 200-240	60/50	0	-5	0.5	—	3	950	20B	6.2	1
				-12	0.8	—					
				+3.3	14	—					
				+5	0.1	—					
				+5	22	230					
ATX-723A(*) ATX-723B	100-127 200-240	60/50	0	+12	8	—	3	950	20B	6.2	1
				-5	0.5	—					
				-12	0.8	—					
				+3.3	14	—					
				+5	0.1-1.0	—					
ATX-725A(*) ATX-725B	100-127 200-240	60/50	0	+5	26	250	3	950	20B	6.2	1
				+12	9	—					
				-5	0.5	—					
				-12	0.8	—					
				+3.3	14	—					
ATX-730	100-127 200-240	60/50	0	+5	48	208	3	950	20B	6.2	1
				+12	22	227					
				+3.3	24	62					
				-5	1.65	7.2					
				-12	7.5	63					
ATX-1020(*)	100-127 200-240	60/50	0	+5	1.5	6.31	3	950	20B	0	1
				Vsb	—	—					
				+5	20	250					
				+12	8	—					
				-5	0.5	—					
ATX-1023(*)	100-127 200-240	60/50	0	-12	1	—	3	950	20B	0	1
				+3.3	14	—					
				+5	0.1	—					
				+5	22	250					
				+12	8	—					
ATX-1025(*)	100-127 200-240	60/50	0	-5	0.5	—	3	950	20B	0	1
				-12	1	—					
				+3.3	14	—					
				+5	0.1	—					
				+5	26	250					
ATX-1120A(*),	100-127	60/50	0	+12	9	—	3	950	20B	0	1
				-5	0.5	—					
				-12	1	—					
				+3.3	14	—					
				+5	0.1	—					
ATX-1120A(*),	100-127	60/50	0	+5	20	200	3	950	20B	0	1
				+5	20	200					

Underwriters Laboratories Inc.®

Model No.	Rated Input V	Hz	SC	Max V	Output Max A	Max VA	OC	SP	EP	FC	GC
ATX-1120A REV.02, ATX-1120B, ATX-1120B REV.02, ATX-1120C, ATX-1120C REV.02, ATX-1120D, ATX-1120D REV.02	100-240	60/50	0	-5 +12 -12 +3.3 +5 +5	0.5 8 0.8 14 1 22	230	3	950	20B	0	1
ATX-1123A(*), ATX-1123A REV.02, ATX-1123B, ATX-1123B REV.02, ATX-1123C, ATX-1123C REV.02, ATX-1123D, ATX-1123D REV.02	100-240	60/50	0	-5 +12 -12 +3.3 +5 +5.24	0.5 8 0.8 14 1 33.0	230	3	950	20B	0	1
ATX-1125A ATX-1125A REV.02, ATX-1125B, ATX-1125B REV.02, ATX-1125C, ATX-1125C REV.02, ATX-1125D, ATX-1125D REV.02	100-240	60/50	0	-5.23 +12.7 -12.8 +3.35 +5.14	0.5 8 0.8 14 1 33.0	70.5	3	950	20B	0	1
ATX-1125BTA	115/230	60/50	0	6 -5.1 13.3 -12.9 3.4 5.1	59 1.6 20 7.8 43 3.5	225	3	950	20B	0	1
NE4080	100-240	60/50	0	5.04 12.13 4.95 -12.07	35 10.4 8.27 2.1	89.44	3	950	20B	0	1
SFX-1209E, WP610S11	100-127/ 200-240	60/50	0	5.14 3.36 11.78 11.51 5	33.8 20 14.30 4.5 2.6	121	3	950	20B	0	1
SFX-1212G, WP610S21	100-127/ 200-240	60/50	0	5.3 12.2 3.4 12.9	39.2 29.3 61 4.9	140	3	950	20B	0	1
SFX-2015	100-127/ 200-240	50/60	0	5.3 5.28 12.11 3.37 -5.14 -12.15 4.96	2.9 52 23.2 23 1.47 6 1.56	14.6	3	950	20B	2.6	1
EN-8156903(*), SFX-1215A(*), SFX-1215D(*), SFX-1215H(*)	100-127 200-240	60/50	0	+3.3 +5 +12 -12 +5Vsb	7 12 5 0.3 0.8	150	3	950	20B	0	1
SFX-1211A(*), SFX-1211B(*), SFX-1211C(*), SFX-1211D(*), SFX-1211H(*)	100-127 200-240	60/50	0	+3.3 +5 +12 -12 +5Vsb	7 10 2.5 0.3 0.8	110	3	950	20B	0	1

Underwriters Laboratories Inc. ®


Model No.	Rated Input		SC	Output			OC	SP	EP	FC	GC
	V	Hz		Max V	Max A	Max VA					
SFX-1211J	100-127/	60	0	5.18	46.7	179	3	950	20B	2,6	1
ENP-21XXY	200-240	/50		12.12	21.7	225					
where											
XX											
can be 15				3.37	24.5	59.4					
or 20, Y				5.01	1.4	6.2					
can be A				12.39	1.5	12.6					
or D				5.08	2.9	13.5					
ENP-0615A,	100-127/	50/60	0	5.18	26.0	88.4	3	950	20B	2,6	0
ENP-0615B	200-240			12.25	12.4	139.25					
				3.26	26.0	66.04					
				-5.17	1.35	6.41					
				-18.83	8.0	69.92					
				5.09	2.3	10.69					
ENP-0730,	100-127/	60	0	5.2	50	201	3	950	20B	2,6	1
ENP-0735	200-240	/50									
				13.0	34	340					
				3.3	47	128					
				10.3	1.9	9.8					
				13.0	3.3	24					
				5.0	2.9	13					
ENP-1712	100-127/	60/50	0	5.3	32.3	87.3	3	950	20B	2,6	1
	200-240			12.3	15.3	163					
				3.48	17.3	33					
				12.4	9.4	73					
				5.2	3.1	15.2					
ENP-1815	100-127/	60/50	0	5.2	46.3	89.3	3	950	20B	2,6	1
	200-240			12.5	21.3	236					
				3.33	25.9	54.9					
				5.2	1.2	3.9					
				13.4	11.8	69.3					
				5.1	2.9	13.2					
*ENP-1712	100-127/	60/50	0	5.7	32.3	132	3	950	20B	2,6	1
	200-240			12.3	15.3	167					
				3.48	33.1	126					
				12.4	9.4	73					
				5.2	3.1	15.2					
ENP-1815	100-127/	60/50	0	5.2	46.3	89.3	3	950	20B	2,6	1
	200-240			12.5	21.3	236					
				3.33	25.9	54.9					
				5.2	1.2	3.9					
				13.4	11.8	69.3					
				5.1	2.9	13.2					
*ENP-0812	100-127	60/50	0	+3.3	6	3		950	20B	0	1
	200-240			+5	10						
				+12	3						
				-5	0.2						
				-12	0.3						
				+5Vsb	2						
ENP-0812A,	@100-127/	60/50	0	+5.18	45	174	3	950	20B	0	1
ENP-0815B,	200-240			+3.3g	25.8	60					
ENP-0815U,				+12.18	19.8	217					
ENP-0815T				-5.06	1.4	6					
				-13.13	6.6	58					
				+5.13	2.9	13					
				+5.13	5.1	13					
ATX-1125BTz,	100-127/	60/50	0	5.19	35	161	3	950	20B	0	1
-1123BTz,	200-240			12.13	22	217	3				
-1120BTz,				3.36	24	69	3				
where z				12.60	3.3	39	3				
can be				5.2	1.6	9.3	3				
"REV.02"											

Underwriters Laboratories Inc. ®

Model No. or blank	Rated Input		SC	Max V	Output		OC	SP	EP	FC	GC
	V	Hz			Max A	Max VA					
ENS-0330	100-240	60-50	0	+3.3 +5 +12 -12 -5 +5Vsb	22 30 15 1 0.7 2	200 200 300 300 300 300	3	950	20B	0	1
ENP-2120H(*)	100-127/ 200-240	60/50	0	+3.3 +5 +12 -12 -5 +5 V sb	17 21 10 0.8 0.5 2	—	3	1950	20B	2,6	1
ENP-2116B(*)	100-127/ 200-240	60/50	0	+3.3 +5 +12 -12 +5 Vsb	17 15 8 0.8 2	—	3	1950	20B	2,6	1
ENP-2116H(*)	100-127/ 200-240	60/50	0	+3.3 +5 +12 -12 -5 +5 V sb	17 15 8 0.8 0.5 2	—	3	1950	20B	2,6	1

(*)Output V and A are rated value.

@ - Where Voltage Selector Switch is not provided, the input voltage range is 100-127 or 200-240.

Marking: Company name, model designation and Recognized Component Mark for Canada .

See General Information Preceding These Recognitions

For use only in equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.



333 Plingsten Road
Northbrook, Illinois 60062-2096
United States Country Code (1)
(847) 272-8800
FAX No. (847) 272-8129
<http://www.ul.com>

ENHANCE ELECTRONICS CO LTD
MR T YEH
6TH FL
3 ALLEY 6 LANE 235 PAO CHIAO RD
HSIN TIEN
TAIPEI TAIWAN

RE: Project Number(s) - 01NK30626

Your most recent Certification is shown below. You may also view this information, or a portion of this information (depending on the product category), on UL's Online Certifications Directory at www.ul.com/database. Please review the text and contact the Conformity Assessment Services staff member who handled your project if revisions are required. For instructions on placing an order for this information in a 3 x 5-inch format, you may refer to the enclosed order form for UL Card Service.

QQGQ2 November 19, 2001
Power Supplies, Information Technology Equipment Including Electrical Business Equipment - Component

ENHANCE ELECTRONICS CO LTD **E166947**
6TH FL 3 ALLEY 6 LANE 235 PAO CHIAO RD HSIN TIEN,
TAIPEI TAIWAN

Model No.	Rated Input		SC	Max V	Output		OC	SP	EP	FC	GC
	V	Hz			Max A	Max VA					
E515	115/230	60/50	0	5	24	114	3	1950	20B	0	1
				12	14	153					
				-5	1.5	7					
				-12	1.3	13					
E520	115/230	60/50	0	5	27	128	3	1950	20B	0	1
				12	15	165					
				-5	1.1	4.5					
				-12	1.2	13					
E525	115/230	60/60	0	5	37	159	3	1950	20B	0	1
				12	20	216					
				-5	1.4	6.6					
				-12	1.6	17					
V515(*)	115/230	60/50	0	+5	16	—	3	1950	20B	0	1
				+12	6.0	—					
				-5	0.3	—					
				-12	0.3	—					
V520(*)	115/230	60/50	0	+5	20	—	3	1950	20B	0	1
				+12	8.0	—					
				-5	0.3	—					
				-12	0.3	—					
V525(*)	115/230	60/50	0	+5	26	—	3	1950	20B	0	1
				+12	9.0	—					
				-5	0.3	—					
				-12	0.3	—					
E825U(*)	115/230	60/50	0	+5	38.0	158.4	2	1950	20B	6.2	1
				+12	16.0	184.0					

Underwriters Laboratories Inc. ®

Model No.	Rated Input		SC	Output			OC	SP	EP	FC	GC
	V	Hz		Max V	Max A	Max VA					
E820U(*)	115/230	60/50	0	-5	5.0	18.6	2	1950	20B	6,2	1
				-12	5.2	56.0					
				+5	28.0	127.4					
				+12	13.0	154.0					
				-5	6.0	20.4					
ATX-720A(*) ATX-720B	100-127 200-240	60/50	0	-12	4.0	42.8	3	1950	20B	6,2	1
				+5	26	200					
				+12	9						
				-5	0.5						
				-12	0.8						
ATX-723A(*) ATX-723B	100-127 200-240	60/50	0	+3.3	14		3	1950	20B	6,2	1
				+5	0.1-1.0						
				+5	22	230					
				+12	8						
				-5	0.5						
ATX-725A(*) ATX-725B	100-127 200-240	60/50	0	-12	0.8		3	1950	20B	6,2	1
				+3.3	14						
				+5	0.1-1.0						
				+5	26	250					
				+12	9						
ATX-730	100-127 200-240	60/50	0	-5	0.5		3	1950	20B	6,2	1
				-12	0.8						
				+3.3	14						
				+5	0.1-1.0						
				+5	48	208					
ATX-1020(*)	100-127 200-240	60/50	0	+12	22	227	3	1950	20B	0	1
				+3.3	24	62					
				-5	1.65	7.2					
				-12	7.5	63					
				+5	1.5	6.31					
ATX-1023(*)	100-127 200-240	60/50	0	Vsb			3	1950	20B	0	1
				+5	20	250					
				+12	8						
				-5	0.5						
				-12	1						
ATX-1025(*)	100-127 200-240	60/50	0	+3.3	14		3	1950	20B	0	1
				+5	0.1						
				+5	22	250					
				+12	8						
				-5	0.5						
ATX-1120A(*), ATX-1120A REV.02, ATX-1120B, ATX-1120B- REV.02, ATX-1120C, ATX-1120C REV.02, ATX-1120D, ATX-1120D REV.02	100-127 200-240	60/50	0	+3.3	14		3	1950	20B	0	1
				+5	0.1						
				+5	26	250					
				+12	9						
				-5	0.5						
ATX-1123A(*), ATX-1123A REV.02, ATX-1123B, ATX-1123B REV.02,	100-127 200-240	60/50	0	-12	1		3	1950	20B	0	1
				+3.3	14						
				+5	0.1						
				+5	20	200					
				-5	0.5						

Underwriters Laboratories Inc.

Model No.	Rated Input		SC	Output			OC	SP	EP	FC	GC
	V	Hz		Max V	Max A	Max VA					
ATX-1123C, ATX-1123C REV.02, ATX-1123D, ATX-1123D REV.02				+12 -12 +3.3 +5	8 0.8 14 1						
ATX-1125A, ATX-1125A REV.02, ATX-1125B, ATX-1125B REV.02, ATX-1125C, ATX-1125C REV.02, ATX-1125D, ATX-1125D REV.02	100-127 200-240	60/50	0	+5.24 -5.23 +12.7 -12.8 +3.35 +5.14	33.0 2.7 23.0 3.4 19.0 3.0	158 70.5 229 39.7 54.5 13.5	3	1950	20B	0	1
ATX-1125BTA	115/230	60/50	0	6 -5.1 13.3 -12.9 3.4 5.1	59 1.6 20 7.8 43 3.5	225 6.7 235 81 97 13	3	1950	20B	0	1
NE4080	100-240	60/50	0	5.04 12.13 4.95 -12.07	35 10.4 1.82 2.1	89.44 101.02 8.27 20.69	3	1950	20B	0	1
SFX-1209F, WP610S11	100-127/ 200-240	60/50	0	5.14 3.36 11.78 11.51	33.8 20 14.30 4.5	121 50 166 35	3	1950	20B	0	1
SFX-1212G, WP610S21	100-127/ 200-240	60/50	0	5 5.3 12.2 3.4 12.9 5.3	2.6 39.2 29.3 27.2 4.9 2.9	9.3 140 189 61 41 14.6	3	1950	20B	0	1
SFX-2015	100-127 200-240	50/60	0	5.28 12.11 3.37 -5.14 -12.15 4.96	52 23.2 23 1.47 6 1.56	168.8 213.4 58.6 5.8 59.6 6.6	3 3 3 3 3 3	1950	20B	2,6	1
EN-8156903(*), SFX-1215A(*), SFX-1215B(*), SFX-1215C(*), SFX-1215D(*), SFX-1215H(*)	100-127 200-240 200-240	60/50	0	+3.3 +5 +5 +12 -12 +5Vsb	7 12 12 5 0.3 0.8	150	3	1950	20B	0	1
SFX-1211A(*), SFX-1211B(*), SFX-1211C(*), SFX-1211D(*), SFX-1211H(*), SFX-1211J	100-127 200-240	60/50	0	+3.3 +5 +12 -12 +5Vsb	7 10 2.5 0.3 0.8	110	3	1950	20B	0	1
ENH-0620	100-240	50-60	0	+5.20 +12.19 +3.35 -5.06 -12.31 +5.10	39.4 19.9 30.2 1.5 1.4 6.41	158 203 67.6 6.03 12.03 30.5	3	1950	15B	2,6	1
ENP-0136	100-127/ 200-240	60/50	0	3.3 5 12 -12	4 18 2.1 0.3	136	3	1950	20B	0	1

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Model No.	Rated Input		SC	Output			OC	SP	EP	FC	GC
	V	Hz		Max V	Max A	Max VA					
ENP-0615A, ENP-0615B	100-127/ 200-240	50/60	0	5Vsb 5.18 12.25 3.26 -5.17 -18.83 5.09	0.8 26.0 12.4 26.0 1.35 8.0 2.3	88.4 139.25 66.04 6.41 69.92 10.69	3	1950	20B	2,6	0
ENP-0730, ENP-0735	100-127/ 200-240	60/50	0	5.2 13.0 3.3 10.3 13.0 5.0	50 34 47 1.9 3.3 2.9	201 340 128 9.8 24 13	3	1950	20B	2,6	1
ENP-21XXY where XX can be 15 or 20, Y can be A or D	100-127/ 200-240	60 /50	0	5.18 12.12 3.37 5.01 12.39 5.08	46.7 21.7 24.5 1.4 1.5 2.9	179 225 59.4 6.2 12.6 13.5	3	1950	20B	2,6	1
ENP-1712	100-127/ 200-240	60/50	0	5.3 12.3 3.48 12.4 5.2	32.3 15.3 17.3 9.4 3.1	87.3 163 33 73 15.2	3	1950	20B	2,6	1
ENP-1815	100-127/ 200-240	60/50	0	5.2 12.5 3.33 5.2 13.4 5.1	46.3 21.3 25.9 1.2 11.8 2.9	89.3 236 54.9 3.9 69.3 13.2	3	1950	20B	2,6	1
*ENP-1712	100-127/ 200-240	60/50	0	5.7 12.3 3.48 12.4 5.2	32.3 15.3 33.1 9.4 3.1	132 167 126 73 15.2	3	1950	20B	2,6	1
ENP-1815	100-127/ 200-240	60/50	0	5.2 12.5 3.33 5.2 13.4 5.1	46.3 21.3 25.9 1.2 11.8 2.9	89.3 236 54.9 3.9 69.3 13.2	3	1950	20B	2,6	1
*ENP-0812	100-127 200-240	60/50	0	+3.3 +5 +12 -5 -12 +5Vsb	6 10 3 0.2 0.3 2	3 174		1950	20B	0	1
ENP-0812A, ENP-0815B, ENP-0815U, ENP-0815T	@100-127/ 200-240	60/50	0	+5.18 +3.3g +12.18 -5.06 -13.13 +5.13 +5.13	45 25.8 19.8 1.4 6.6 2.9 5.1	60 217 6 58 13 1.3	3	1950	20B	0	1
ATX-1125BTz, -1123BTz, -1120BTz, where z can be "REV.02"	100-127/ 200-240	60/50	0	5.19 12.13 3.36 12.60 5.2	35 22 24 3.3 1.6	161 217 69 39 9.3	3 3 3 3	1950	20B	0	1

Underwriters Laboratories Inc.

Model No. or blank	Rated Input		SC	Max V	Output			OC	SP	EP	FC	GC
	V	Hz			Max A	Max VA						

(*)Output V and A rated value.

@ - Where Voltage Selector Switch is not provided, the input voltage range is 100-127 or 200-240.

Marking: Company name and model designation.

See General Information Preceding These Recognitions

For use only in equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.



SPORTON LAB.

Certificate No: **C062906**

CERTIFICATE

● **EQUIPMENT : Switching Power Supply**
MODEL NO. : ENP-1815
APPLICANT : ENHANCE ELECTRONICS CO., LTD
6F, No. 3, Alley 6, Lane 235, Pao-Chiao RD., Hsin-Tien,
Taipei, Taiwan, R.O.C.



CERTIFY THAT:

THE MEASUREMENTS SHOWN IN THIS TEST REPORT WERE MADE IN
ACCORDANCE WITH THE PROCEDURES GIVEN IN **EUROPEAN COUNCIL**
DIRECTIVE 89/336/EEC. THE EQUIPMENT WAS **PASSED** THE TEST
PERFORMED ACCORDING TO **EUROPEAN STANDARD**
EN 55022:1994/A1:1995/A2:1997 Class B, EN 60555-2:1987,
EN 61000-3-3:1995 and EN 50 082-1:1997 (EN 61 000-4-2:1995, EN 61
000-4-3:1996, EN 61 000-4-4:1995, EN 61 000-4-5:1995). THE TEST WAS
CARRIED OUT ON Jul. 21, 2000 AT **SPORTON INTERNATIONAL INC. LAB.**


Lenore Chang
President



SPORTON LAB.

Certificate No: **D062906**

CERTIFICATE OF COMPLIANCE

Authorized under Declaration of Conformity
according to

47 CFR, Part 2 and Part 15 of the FCC Rules



Equipment Under Test : Switching Power Supply

Model No. : ENP-1815


Applicant : ENHANCE ELECTRONICS CO., LTD

6F, No.3, Alley 6, Lane 235, Pao-Chiao RD.,
Hsin-Tien, Taipei, Taiwan, R.O.C.



THEREBY CERTIFY THAT:

THE MEASUREMENTS SHOWN IN THIS TEST REPORT WERE MADE IN
ACCORDANCE WITH THE PROCEDURES GIVEN IN **ANSI C63.4 - 1992** AND
THE ENERGY EMITTED BY THIS EQUIPMENT WAS **PASSED** CISPR PUB. 22
and FCC Part 15 in BOTH RADIATED AND CONDUCTED EMISSIONS CLASS B
LIMITS. THE TESTING WAS COMPLETED ON **Jul. 25, 2000** AT **SPORTON
INTERNATIONAL INC. LAB. IN Lin Kou.**


Lenore Chang
President

SPORTON INTERNATIONAL INC.



Declaration of Conformity

According to 47 CFR, Part 2 , 15 of the FCC Rules and CISPR PUB.22

Declaration No. : D062906

2000/7/29

The following designated product

**EQUIPMENT: Switching Power Supply
MODEL NO.: ENP-1815**

which is the Class B digital device complies with 47 CFR Parts 2,15 of the FCC rules and CISPR PUB. 22.

Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The product was tested with the following configuration :

Monitor: SONY / AK8GDM17SE2T
PS/2 Mouse: PRIMAX / EMJMUSJQ
Modem: ACEEX / IFAXDM1414

PS/2 Keyboard: DELL / GYUM92SK
Printer: HP / B94C2642X
Personal Computer: REDUNDANT / R131

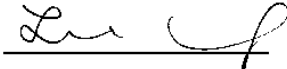
This declaration is given for the manufacturer

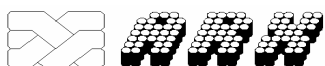
ENHANCE ELECTRONICS CO., LTD
6F, No.3, Alley 6, Lane 235, Pao-Chiao RD.,
Hsin-Tien, Taipei, Taiwan, R.O.C.

The test was carried out by

SPORTON INTERNATIONAL INC.
6F, No. 106, Hsin Tai Wu Rd., Sec. 1, Hsi Chih,
Taipei Hsien, Taiwan, R.O.C.

Manufacturer Signature


SPORTON LAB. Signature



SPECIFICATION FOR APPROVAL

CUSTOMER: 研華

MODEL NO: 4020(CeraDynaFAN)

PART NO: FD1240-A3010D

DATE : Apr . 18 . 2002

CUSTOMER APPROVAL

TAIWAN

ACT-RX. TECHNOLOGY CORPORATION

2F, No. 192, Lien Chen Road, Chug HO,

Taipei Hsien, Taiwan, R.O.C.

TEL: 886-2-82421111

FAX: 886-2-82452200

MAINLAND

Yang Mei Ling Chu Keng Village,
Dong Keng Town, Dong Guan City,
Guang Dong Province, China

TEL: 0769-3380481 3380482

FAX: 0769-3389116

Approval By:	Mars	Checker:	馮俊	Engineer:	Coco
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CONTENTS

Contents Clause :

1. <u>SCOPE</u>	3
2. <u>ELECTRICAL</u>	3
3. <u>MATERIAL</u>	4
4. <u>MECHANICAL</u>	4
5. <u>MTBF</u>	4
6. <u>ORDERING AND OPERATING REMARKS</u>	4
7. <u>NOISE</u>	5
8. <u>RELIABILITY</u>	6
9. <u>PRODUCT LABEL</u>	7
10. <u>PERFORMANCE CHART</u>	7
11. <u>ASSEMBLY DIAGRAM</u>	8
12. <u>NOTES</u>	9



1.SCOPE

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

2.ELECTRICAL

	Item	Specification	Test Condition
1	Rated Voltage	12V	DC power supply
2	Rated Current	0.12 Amp	DC power supply
3	Max. Current	0.13 Amp	DC power supply
4	Stall Current	0.20 Amp (Max.)	Fan stalled with power on
5	Rated Power	1.44 W	Under at rated voltage and rated current
6	Starting Voltage	7 V (Max.)	Connect DC power supply
7	Insulation Resistance	10 M Ω (Min.)	Input 500V(DC) between Lead wire(+) and housing
8	Speed (L)	6000 RPM (typical) $\pm 15\%$	Measured at 10 minutes after starting under 25°C 65%RH ambient
9	Acoustical Noise	25.50 dB(A)	Measured with an acoustic microphone standing 1m away from the running fan in a test chamber with background noise level below 20dB(A)
10	Static Pressure (H.M.L)	3.17 mm-H ₂ O (0.12inch-H ₂ O)	At zero airflow ; rated voltage
11	Air Flow (H.M.L)	6.28 CFM (0.1777CMM)	At zero static pressure ; rated voltage
12	Direction of rotation	Clockwise view from Name plate side	N/A
13	Surge Voltage	N/A	
14	Operating Voltage	N/A	



3. MATERIAL

Impeller	PBT UL 94V-1
Frame	PBT UL 94V-1
Bobbin	PBT UL 94V-1
Lead Wire <input checked="" type="checkbox"/> + : Red <input checked="" type="checkbox"/> - : Black <input type="checkbox"/> O/P: <input type="checkbox"/> White <input type="checkbox"/> Yellow	24 <input type="checkbox"/> UL 1007 AWG26 <input checked="" type="checkbox"/> or Equivalent 28 <input type="checkbox"/>

4. MECHANICAL

Dimensions	L * W * H = 40*40*20(mm)
Weight	40 grams
Operating temperature range	-10 °C ~ 75 °C
Storage temperature	-20 °C ~ 80 °C
Bearing system	<input type="checkbox"/> Two Ball Bearing <input type="checkbox"/> One Ball One Sleeve Bearing <input type="checkbox"/> Sleeve Bearing <input checked="" type="checkbox"/> Alloy Sleeve with Ceramic Shaft

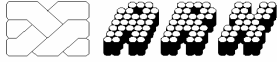
5. MEAN TIME BETWEEN FAILURE

At a common operating condition of +25°C, the expected reliability (expressed as Mean Time Between Failure) of fans are evaluated under the MIL-STD-781 Documentation Standard as below :

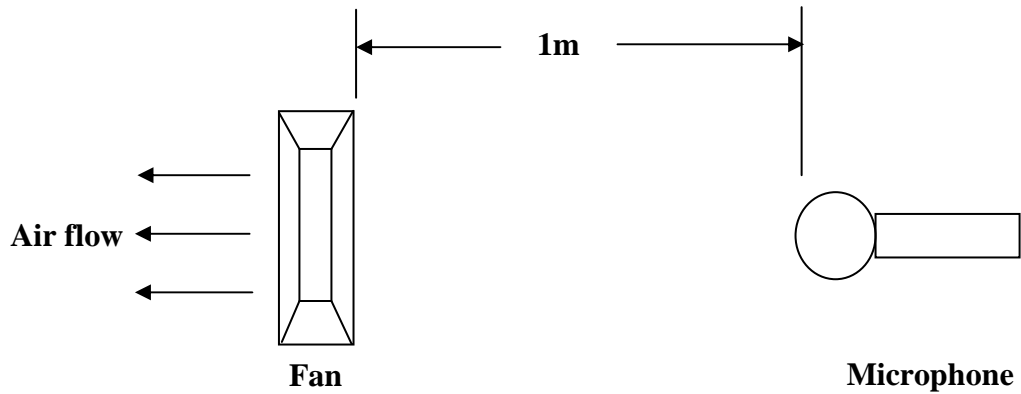
- ☐ Two Ball Bearing : 65000 hrs , Continuous operating under 25°C 65%RH
- ☐ One Ball One Sleeve Bearing : 65000 hrs , Continuous operating under 25°C 65%RH
- ☐ Sleeve Bearing : 50000 hrs , Continuous operating under 25°C 65%RH
- ☒ Alloy Sleeve with Ceramic Shaft : 300000 hrs , Continuous operating under 25°C 65%RH

6. ORDERING AND OPERATING REMARKS

- 6.1 For those not specified but vital to your requirement, ACT-RX is in full position to supply qualified substitutes.
- 6.2 Improper use may lead to malfunction. To ensure operation, avoid dipping into watery and oily liquid, or exposure to heat, etc.
- 6.3 All specification subject to change without prior notice.
- 6.4 Customized products on request.
- 6.5 ACT-RX does not guarantee the product if applications exceed specified limitations.



7. NOISE IS MEASURED AT RATED VOLTAGE IN ANECHOIC CHAMBER IN FREE AIR AS BELOW :



Noise is measured rated voltage in free air in anechoic chamber with B & K Sound level meter with microphone at a distance of one meter from the fan intake. The background noise is 20dBA max.



8.RELIABILITY

	Item	Specification	Test Condition
1	Locked Rotor Test	Flameproof and damage free	Rotor locked for 72 hrs with power on
2	Reverse Volt Protection	Yes	Reverse voltage with 12V
3	Balance Test	No protruding beyond the circle within 10 seconds	The fan runs in a circle, scaled by fan radius plus 10mm, on a perfectly smooth plate for 10 seconds
4	Drop Test	All specified characteristics remain unchanged	Free drop in minimum package to an oak board of 10mm thickness at 30cm below. Individual X, Y, Z face tested
5	Vibration Test	All specified characteristics remain unchanged	Ambient temp. : 25 °C±5 °C with 12V power supply Amplitude : 0.4-2.5 mm Acceleration : 14.7 m ² /s Frequency : 10HZ-60HZ Sweeping period : 1 min 10HZ-60HZ : 30 seconds 60HZ-10HZ : 30 seconds Total : 10 cycles
6	High/Low Temperature Cycling	All specified characteristics remain unchanged	20 minutes slew rate +75 °C (1 hr) , -20 °C (1 hr) Total : 36 cycles
7	Low Temp. Storage	All specified characteristics remain unchanged	Tested under -20 °C for 500 hrs without power supply
8	High Temp. Storage	All specified characteristics remain unchanged	Tested under +80 °C for 500 hrs without power supply
9	Dielectric Strength	Max 1mA of leakage current	Input 500V(AC) for 1 min between lead (+/-) and cabinet



ARX CeraDyna FAN

FD1240-A3010A

DC 12V 0.13A

CE

ID : F1

MADE IN CHINA

mm-H2O inch-H2O

Static pressure(P)

6
4
2
0

0.24
0.16
0.08

0 5 10 CFM

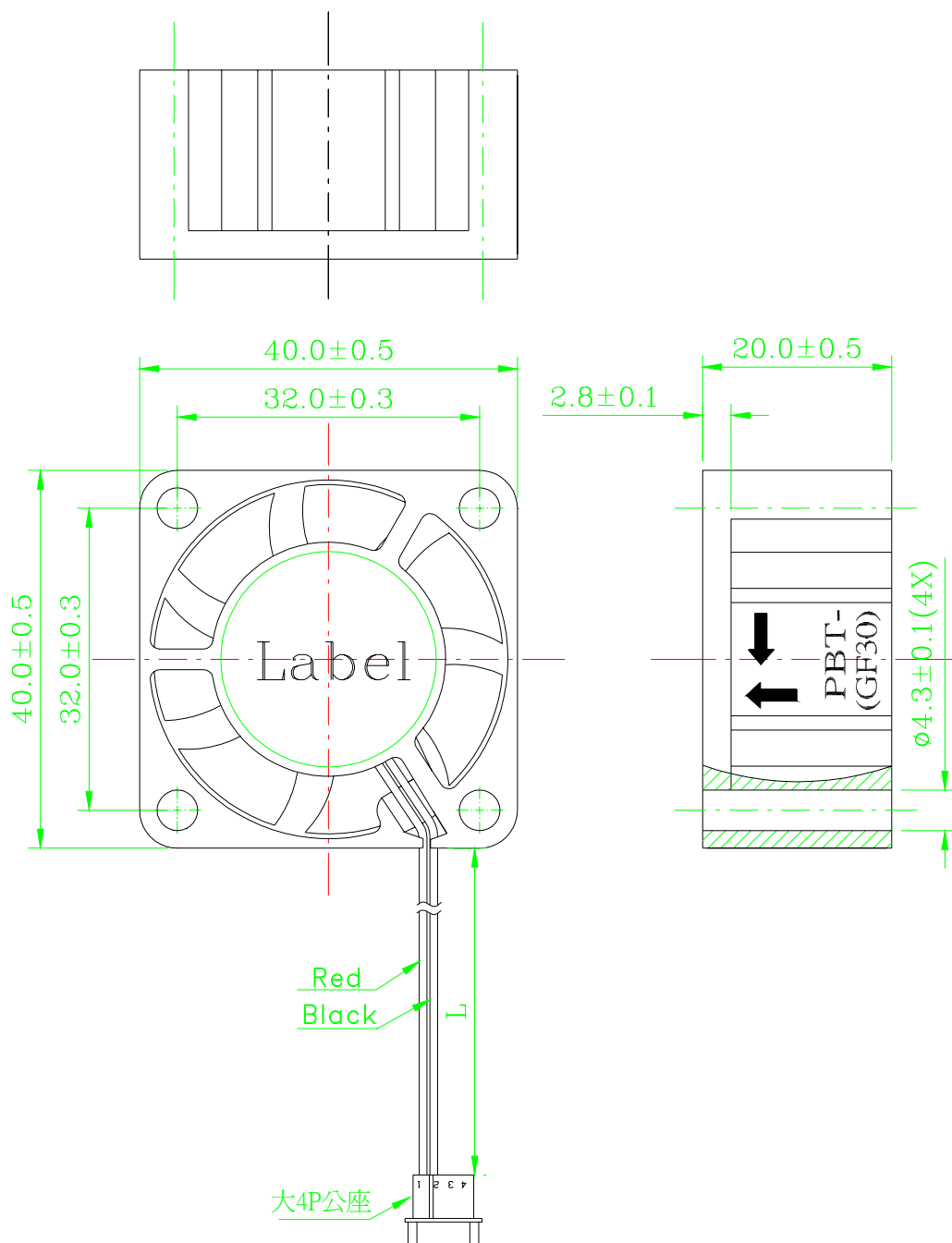
0 0.14 0.28 CMM

H(8000RPM)
M(7000RPM)
L(6000RPM)

Air flow(Q)

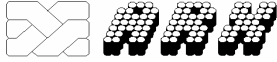


11. ASSEMBLY DIAGRAM



1. L: Frame out: 100 ± 10 mm

2. Unit: mm



12. NOTES

- 12.1 Please do not touch the impeller and never carry the fan the lead wires. The bearings and the lead wires may be damaged.
- 12.2 For the purpose of MIS, please specify the Model No. on every order.
- 12.3 For the purpose of MIS, please indicate SPEC No. on every order.
- 12.4 Please do not use the fan in the environment of corrosive gas or liquid.
- 12.5 Please do not store the fan in the environment of high humidity. Please avoid storage of the fan over 6 months. For long term storage, please connect power to the fan shortly every 6 months even through the fan is stored in room temperature.
- 12.6 While the fan is in operation, please do not lock the fan intentionally for a long period of time to prevent over heating which may cause permanent damage.



Online Certifications Directory

GPWV2.E145724 Fans, Electric - Component

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Fans, Electric - Component

Guide Information

ACT-RX TECHNOLOGY CORP

E145724

2ND FL

192 LIEN CHEN RD

CHUNG HO CITY

TAIPEI HSIEN 235, TAIWAN

Model BP or SP followed by 1245, followed by L, followed by 2 or 3, followed by P or V, BP or SP, followed by 1250, followed by L, followed by 1 or 2, followed by P or V; Model ACC6060-xxxxx.

Models FD1240, -1250, -1260 followed by X1, X2, X3, followed by XXX, followed by AX or CX, followed by G.

Model FD followed by 0525, 0530, 1225, 1230, followed by S, B, D, followed by 100, 200, 300, followed by 1A.

Models CH40 followed by S or B, followed by 05 or 12, followed by L, M or H; Model CH90 followed by S or B, followed by 12 or 24, followed by L, M or H; Model CH60 followed by S or B, followed by 12, followed by L, M or H; Model F(a)(b)(c)-(d)(e)(f)(g)(h). Where the (a) can be D, E; the (b) can be 05, 12, 24; the (c) can be 40, 60, 70, 80, 90; (d) = A, B, D, S; the (e) can be 0, 1, 2, 3; the (f) can be 00-99, AA-ZZ; the (g) can be 0-9, A-Z; the (h) can be A, C, E, J. Model CH80 followed by S or B, followed by 12, followed by L, M or H; Model FD0525-a3cdef, -a2cdef, -a1cdef, FD0530-a3cdef, -a2cdef, -a1cdef, FD1250-a3cdef, -a2cdef, -a1cdef, SP0535SA8, BP0535SA8, AP0535SA8, CP0535SA8, DP0503SA8, where the suffix a may be A, C, S, B or D, b may be 1-3, c may be 0 or 1, d may be 0-4, e may be 0-9 or blank, f may be C, A; Models FD1250-(a)(b)(c)(d)C, FC1250-(a)(b)(c)(d)C, FD2450-(a)(b)(c)(d)A, where (a) may be B, D or S, (b) may be 1, 2 or 3, (c) may be 00-99 or AA-ZZ incl., (d) may be 0-9 incl. or A-Z incl.; Model FDxx12-yzuu1E, where xx may be 12, 24 or 48, y may be A, C, D or S, z may be 1, 2 or 3, uu may be any two alphanumeric characters.

Models FD0525 - (c) (d) (e) (f) A, FD0530 - (c) (d) (e) (f) A, FD1240 - (c) (d) (e) (f) D, FD4812 - (c) (d) (e) (f) G, FD1212 - (c) (d) (e) (f) G, FD2412 - (c) (d) (e) (f) G, where (c) may be A, B, C, D or S; (d) may be 1, 2 or 3; (e) may be 00-99 or AA-ZZ incl.; (f) may be 0-9 incl. or A-Z incl.; (g) may be A, D, G.

Models FD1280 - (c) (d) (e) (f) D, FD1260 - (c) (d) (e) (f) C, FD1260 - (c) (d) (e) (f) D, FE0540 - (c)

<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/showpage.html?name=GP...> 2002/8/29

(d) (e) (f) J, FS0540 - (c) (d) (e) (f) J, FE1240 - (c) (d) (e) (f) J, FW1275 - (c) (d) (e) (f) E, FD2460 - (c) (d) (e) (f) C, FD2475-(c)(d)(e)(f)E, FD2480-(c)(d)(e)(f)D, where (c) may be A, B, C, D or S; (d) may be 1, 2 or 3; (e) may be 00-99 incl. or AA-ZZ incl.; (f) may be 00-99 incl. or AA-ZZ incl.; (g) may be C, D, E or J.

Model FBDC-X(b) (c) (d) (e) (f), where B = 05, 12, 24; C = 40, 60, 80, 90; X = A, B, C, D, S; (b) = 1, 2, 3; (c), (d), (e) = 0-9 incl., A-Z incl.; (f) = A or E.

Models FD0570-(d)(e)(f)(g)C, FD0580-(d)(e)(f)(g)C, where (d) = D, S, B, A; (e) = 1, 2, 3; (f) = 00-99 incl., AA-ZZ incl.; (g) = 0-9 incl. or A-Z incl.

Marking: Company name or trademark "Craft Fan", "E145724" and model designation.

[Page Top](#)

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[Previous Page](#)

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[UL Recognized
Components](#)

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台灣廣登電子股份有限公司

QuadRep Electronics [T] Ltd.

TEL : (2)6989933

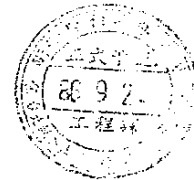
FAX : (2)6989911

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 = 1750199011

EL-971320

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

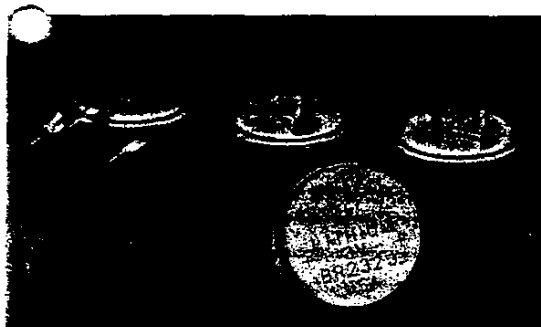
林清進

Chris Lin

RAYOVAC

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

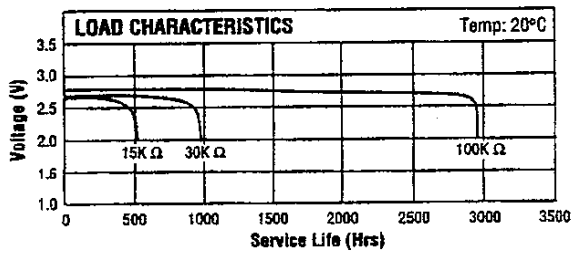
RAYOVAC®**3R2016**

Figure 19

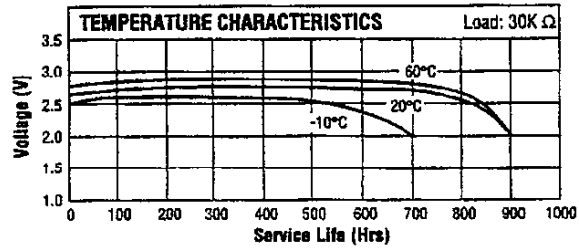


Figure 20

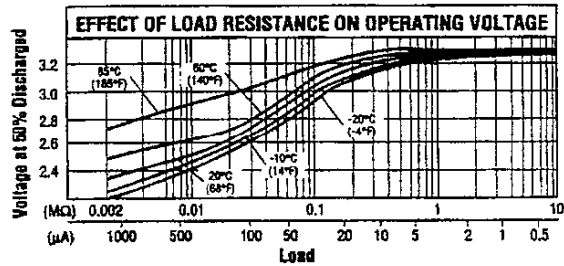


Figure 21

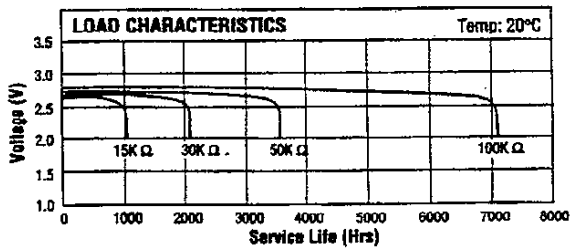
BR2032

Figure 22

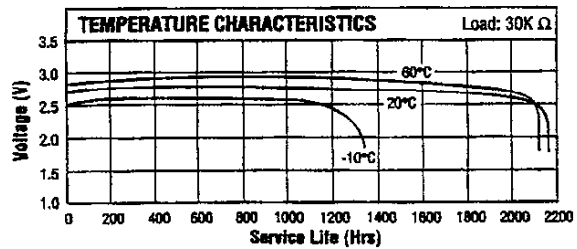


Figure 23

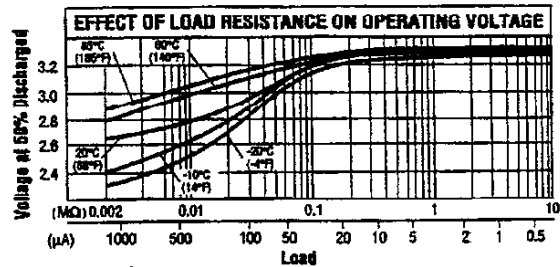
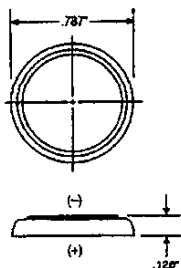
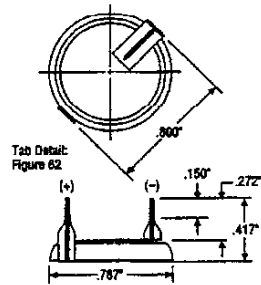
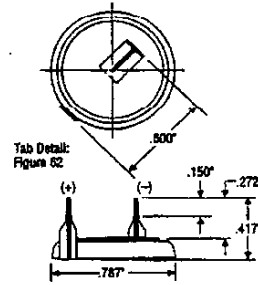
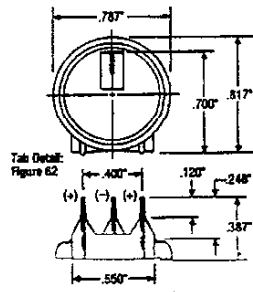
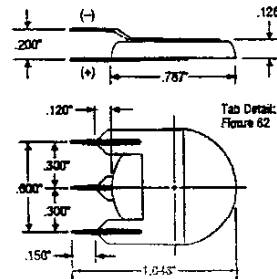
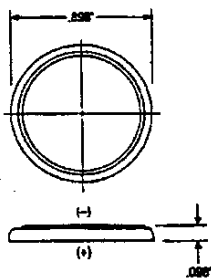
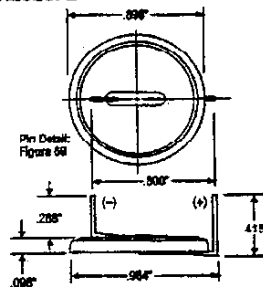
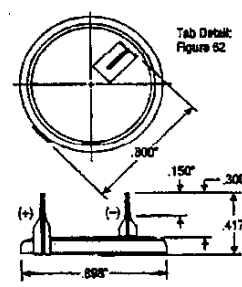


Figure 24

RAYOVAC**BR2032****Figure 47****BR2032T2****Figure 48****BR2032T2K****Figure 49****BR2032T3L****Figure 50****Conversion Chart**

INCHES	MILLIMETERS	INCHES	MILLIMETERS
0.020	0.51	0.300	7.62
0.063	1.60	0.357	9.08
0.066	1.65	0.400	10.16
0.098	2.48	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	0.625	15.99
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
0.250	6.35	0.848	21.61
0.270	6.86	0.934	23.81
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**



Online Certifications Directory

BBCV2.MH12542 Lithium Batteries - Component

[Page Bottom](#)
[Questions?](#)
[Previous Page](#)

Lithium Batteries - Component

Guide Information

RAYOVAC CORP
601 RAYOVAC DR
MADISON, WI 53711 USA

MH12542

Model No.	Max Abnormal Charging Current mA (a)	User Replaceable
Lithium/polycarbon monofluoride cells.		
BR1225	3.0	Yes(b)
BR1225E	6.0	No
BR1225HT	3.0	No
BR1225R	3.0	No
BR1632	4.0	No
BR1632R	4.0	No
BR2016	4.0	No
BR2032	4.0	No
BR2032R	4.0	No
BR2032U	4.0	Yes(b)
BR2320	5.0	No
BR2325	5.0	No
BR2325R	5.0	No
BR2335	5.0	No
BR2335R	5.0	No
FB1225(c)	3.0	No
FB2325(c)	5.0	No

Lithium/manganese dioxide coin cells(d).		
CR1025	2.0	Yes(b)
CR1216	3.0	Yes(b)
CR1220	3.0	Yes(b)
CR1616	4.0	Yes(b)
CR1620	4.0	Yes(b)
CR2012	4.0	Yes(b)
CR2016	4.0	Yes(b)
CR2025	5.0	Yes(b)
CR2032	5.0	Yes(b)
CR2320	5.0	No



Online Certifications Directory

BBCV2.MH12828 Lithium Batteries - Component

[Page Bottom](#)
[Questions?](#)
[Previous Page](#)

Lithium Batteries - Component

Guide Information

TOSHIBA BATTERY CO LTD
4-10 MINAMI-SHINAGAWA 3-CHOME
SHINAGAWA-KU
TOKYO 140-0004, JAPAN

MH12828

Model No.	Max Abnormal Charging Current mA (a)	User Replaceable
Primary Lithium/manganese dioxide coin cells.		
CR1216	2.5	Yes (b)
CR1616	2.5	Yes (b)
CR2032	10.0	Yes (b)
CR2016	8.0	Yes (b)
CR2025	8.0	Yes (b)
CR2032	10.0	Yes (b)
CR2430	5.0	Yes (b)
CR2450	5.0	Yes (b)
CR1616	2.5	Yes (b)
CR1220	10.0	Yes (b)
Lithium/manganese dioxide cells or batteries.		
CR2	20.0	Yes (b)
Lithium/thionyl chloride cells(d) and battery packs.		
ER3	15	No
ER3S	20	No
ER4	15	No