

COVER PAGE FOR TEST REPORT

Product Category:	Information Technology Equipment Including Electrical Business Equipment
Product Category CCN:	NWQQ, NWQQ7
Test Procedure:	Listing
Product:	Industrial Computer
Model/Type Reference:	IPC-623XXX-XXXXX, where X may be any alphanumeric character or blank.
Rating(s):	I/P : 115/230Vac, 50/60 Hz, 10/5A
Standards:	UL60950, Third Edition (2000)
Applicant Name and Address:	ADVANTECH CO LTD 4TH FL 108-3 MING-CHUAN RD SHING-TIEN CITY TAIPEI HSIEN TAIWAN
This Report includes the following parts, in addition to this cover page: 1. Specific Inspection Criteria 2. Specific Technical Criteria 3. Clause Verdicts 4. Critical Components 5. Test Results 6. National Differences 7. Enclosures	

This is to certify that representative samples of the products covered by this Test Report have been investigated by Underwriters Laboratories Inc. ('UL') in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

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Pursuant to the Corporate Services Agreement between UL International Services Limited and UL, UL hereby accepts and issues this Test Report.

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SPECIFIC INSPECTION CRITERIA

BA1.0	Special Instructions to UL Representative
BA1.1	N/A

BB1.0	Supporting Documentation
BB1.1	The following documents located at the beginning of this Procedure supplement the requirements of this Test Report: A. Authorization - The Authorization page may include additional Factory Identification Code markings. B. Generic Inspection Instructions - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report. ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report. ii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

BC1.0	Markings and instructions	
BC1.1	The following markings and instructions are provided as indicated.	
BC1.2	All clause references are from UL60950, Third Edition (2000).	
Standard Clause	Clause Title	Marking or Instruction Details
1.5.5	Inter-connecting cables - External detachable	Listee's Name and Part number (Marking or Instruction)
1.7.1	Power rating - Ratings	Ratings (voltage, frequency/dc, current)
	Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File
	Power rating - Model	Model Number
1.7.4	Supply Voltage Adjustment	See Installation Instructions Before Connecting to the Supply.
1.7.8.3	Symbols - On/Off switch	All other controls to be marked with  for "ON" (60417-2-IEC-5007) and  for "OFF" (60417-2-IEC-5008)
1.7.15	Replaceable batteries	"CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions."
Other	High power wattage	"CAUTION - Due to high power wattage on this system, users are not allowed to remove the top cover. If users need to install/remove any device into/from the system, please contact your technical support people."
	1.7.16	The marking for electric shock hazard (ISO 3864, No. 5036) is readily visible on outside enclosure or chassis of power supply inside the equipment after assembly.

BD1.0	Production-Line Testing Requirements						
BD1.1	Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.						
	Model	Component	Removable Parts	Test probe location	Test Potential		
					V rms	V dc	Test Time, s
	N/A						
BD1.2	Earthing Continuity Test Exemptions - This test is not required for the following models:						
BD1.3	Electric Strength Test Exemptions - This test is not required for the following models:						
BD1.4	Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:						

BE1.0	Sample and Test Specifics for Follow-Up Tests at UL						
BE1.1	Model	Component	Material	Test	Sample(s)	Test Specifics	
	N/A						

SPECIFIC TECHNICAL CRITERIA

UL 60950 Safety of information technology equipment	
Report Reference No	E180881-A17-UL-1
Compiled by	Sam Hsu
Reviewed by	Andy Tsai
Date of issue	2003-06-30
Standards	UL60950, Third Edition (2000)
Test procedure	Listing
Non-standard test method	N/A
Test item description	Industrial Computer
Trademark	ADVANTECH
	
Model and/or type reference	IPC-623XXX-XXXXX, where X may be any alphanumeric character or blank.
Rating(s)	I/P : 115/230Vac, 50/60 Hz, 10/5A

Particulars: test item vs. test requirements

Equipment mobility: stationary
Operating condition: continuous
Mains supply tolerance (%): +10%, -10%
Test for IT power systems: No
IT testing, phase-phase voltage (V): N/A
Class of equipment: Class I (earthed).
Mass of equipment (kg): 23.0Kg
Protection against ingress of water: IP 20

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 (acceptable only if a corresponding, less stringent national requirement is "Pass")

General remarks:

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

General Product Information:		
CA1.0	Report Summary	
CA1.1	N/A	
CB1.0	Product Description	
CB1.1	Power Supply, motherboard and optional provided HDD with CPU housed in metal enclosures.	
CC1.0	Model Differences	
CC1.1	N/A	
CD1.0	Additional Information	
CD1.1	N/A	
CE1.0	Engineering Consideration	
CE1.2	The product was submitted and tested for use at the manufacturer's recommended ambient temperature (T _{mra}) of	45°C
CE1.3	The power supply means are	Pluggable A or B, Detachable power cord
CE1.4	The product is intended for use on the following systems	TN
CE1.5	The equipment disconnect device is considered to be	Appliance inlet
CE1.9	The following circuit locations (with circuit/schematic designation) were investigated as a limited power source	PS/2 port.

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 1.5.1)	Pass
1.5.2	Evaluation and testing of components		Pass
	Dimensions (mm) of mains plug for direct plug-in .:	The equipment is not direct plug-in type.	N/A
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N)	The equipment is not direct plug-in type.	N/A
1.5.3	Thermal controls	No thermal control.	N/A
1.5.4	Transformers		N/A
1.5.5	Interconnecting cables	Interconnecting cables comply with the relevant requirements of IEC 60950.	Pass
1.5.6	Capacitors in primary circuits.....:	Investigated as an element of power supply certification.	N/A
1.5.7	Double or reinforced insulation bridged by components	Investigated as an element of power supply certification.	N/A
1.5.7.1	Bridging capacitors		N/A
1.5.7.2	Bridging resistors		N/A
1.5.7.3	Accessible parts		N/A
1.5.8	Components in equipment for IT power 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 table 1.6.2)	Pass
1.6.3	Voltage limit of hand-held equipment	This appliance is not a hand-held equipment.	N/A
1.6.4	Neutral conductor		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)	150/230 Vac	Pass
	Symbol for nature of supply for d.c.	AC source	Pass
	Rated frequency or frequency range (Hz)	50/60Hz	Pass
	Rated current (A)	10/5 A	Pass
	Manufacturer's name/Trademark.....	Advantech Co., Ltd. / ADVANTECH	Pass
	Type/model	IPC-623XXX-XXXXX, where X may 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	UL, cUL	Pass
1.7.2	Safety instructions	Operating/safety instructions made available to the user.	Pass
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N/A
1.7.4	Supply voltage adjustment.....	Voltage selector selects between 115 V and 230 V and is a simple control near the inlet.	Pass
1.7.5	Power outlets on the equipment	No outlet.	N/A
1.7.6	Fuse identification	Investigated as an element of power supply certification.	N/A
1.7.7	Wiring terminals		N/A
1.7.7.1	Protective earthing and bonding terminals	Investigated during separate certification of power supply.	Pass
1.7.7.2	Terminal for a.c. mains supply conductors	Appliance inlet used.	N/A
1.7.8	Controls and indicators	See below.	Pass
1.7.8.1	Identification, location and marking	The marking and indication of the power switch is located that indication of function is clear.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.8.2	Colours.....:	A green LED is illuminated when the unit is operation.	Pass
1.7.8.3	Symbols according to IEC 60417	Marking for see-saw switch with line I for "ON" and circle O for "OFF". (60417-1-IEC-5007 and 60417-1-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.....:		N/A
1.7.10	IT power system	Investigated during separate certification of power supply.	N/A
1.7.11	Thermostats and other regulating devices		N/A
1.7.12	Language	Reviewed only English markings/instructions. May be provided in other languages upon request from the manufacturer.	
1.7.13	Durability	The marking(s) withstood the required test.	Pass
1.7.14	Removable parts	No removable part.	N/A
1.7.15	Replaceable batteries	The equipment is provided with a replaceable lithium battery. The statement is marking close to the battery or in the serving instructions.	Pass
	Language	Reviewed only English markings/instructions. May be provided in other languages upon request from the manufacturer.	
1.7.16	Operator access with a tool	A marking for an electric shock hazard (ISO 3864, No. 5036) is marked on such hazardous compartments	Pass
1.7.17	Equipment for restricted access locations	No restricted access location.	N/A
2	PROTECTION FROM HAZARDS		Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.1	Protection from electric shock and energy hazards		Pass
2.1.1	Protection in OPERATOR access areas	As the installation guide specifies directions for the operator how to add additional memory cards or add-on cards inside the enclosure, the inside of this INDUSTRIAL COMPUTER is considered as operator accessible area. Even the INDUSTRIAL COMPUTER enclosure is disassembled, the hazardous part is covered by earthed metal chassis. The construction of this metal enclosure prevents the access, using test finger, test pin or test probe to any parts having only basic insulation to ELV or hazardous voltage.	Pass
2.1.1.1	Access to energized parts	See below	Pass
	Test by inspection	Operator cannot contact with any parts with only basic insulation to ELV or hazardous voltage.	Pass
	Test with test finger	No access with test finger to any parts with only basic insulation to ELV or hazardous voltage.	Pass
	Test with test pin	The test pin cannot touch hazardous voltage through and openings or seams of the whole enclosure.	Pass
	Test with test probe	No TNV circuits.	N/A
2.1.1.2	Battery compartments	No TNV circuits.	N/A
2.1.1.3	Access to ELV wiring		N/A
	Working voltage (V); distance (mm) through insulation		
2.1.1.4	Access to hazardous voltage circuit wiring		N/A
2.1.1.5	Energy hazards		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.1.1.6	Manual controls	The equipment does not contain any knobs, handles, levers, or the like.	N/A
2.1.1.7	Discharge of capacitors in the primary circuit	No risk of electric shock.	Pass
	Time-constant (s); measured voltage (V):	Time constant less than 1 second. ($0.37V_o = 126 \text{ Vpk}$ T of $0.37V_o = 80 \text{ ms}$)	
2.1.2	Protection in service access areas	No maintenance work in operation mode necessary.	N/A
2.1.3	Protection in restricted access locations	It is not intended to be used in restricted locations.	N/A

2.2	SELV Circuits		Pass
2.2.1	General requirements	42.4V peak or 60VDC are not exceeded in SELV circuit under normal operation or single fault condition.	Pass
2.2.2	Voltages under normal conditions (V).....:	Between any SELV circuits 42.4V peak or 60VDC are not exceeded.	Pass
2.2.3	Voltages under fault conditions (V).....:	Critical fault condition in SELV reliability is investigation in separate power supply evaluation.	Pass
2.2.3.1	Separation by double or reinforced insulation (method 1)	Investigated during separate certification of power supply.	N/A
2.2.3.2	Separation by earthed screen (method 2)		N/A
2.2.3.3	Protection by earthing of the SELV circuit (method 3)		N/A
2.2.4	Connection of SELV circuits to other circuits.....:	See 2.2.2 and 2.2.3.No direct connection between SELV and any primary circuits.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2.3	TNV Circuits		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		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

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.5	Limited Power Sources		Pass
	Inherently limited output		N/A
	Impedance limited output		N/A
	Overcurrent protective device limited output	The PS/2 output comply with table 2B under normal operation condition and the Polyswitch used in PS/2 connector.	Pass
	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)	5.04V, 2.1A, 10.5 VA	-
	Current rating of overcurrent protective device (A) :	See table 1.5.1.	-

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.6	Provisions for Earthing and Bonding		Pass
2.6.1	Protective earthing		Pass
2.6.2	Functional earthing	Secondary functional earthing is connected to protectively earthed conductive part that separated from primary by basic insulation.	Pass
2.6.3	Protective earthing and protective bonding conductors	See below.	Pass
2.6.3.1	Size of protective earthing conductors		Pass
	Rated current (A), cross-sectional area (mm ²), AWG.....:	10 A, min. 1.0 mm square/16 AWG required.	-
2.6.3.2	Size of protective bonding conductors	Evaluated as part of the power supply.	N/A
	Rated current (A), cross-sectional area (mm ²), AWG.....:		-
2.6.3.3	Rated current (A), type and nominal thread diameter (mm).....:	See below.	Pass
	Resistance (Ohm) of earthing conductors and their terminations, test current (A).....:	Test current = 40 A. 0.053 ohm.	Pass
2.6.3.4	Colour of insulation	Evaluated as part of the power supply.	N/A
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 voltages.	N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switches or fuses in earthing conductors.	Pass
2.6.5.3	Disconnection of protective earth	Appliance inlet provided.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
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 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		N/A
2.6.5.7	Screws for protective bonding	In approved power supply.	Pass
2.6.5.8	Reliance on telecommunication network	No TNV	N/A

2.7	Overcurrent and Earth Fault Protection in Primary Circuits		Pass
2.7.1	Basic requirements	Approved power supply used.	Pass
	Instructions when protection relies on building installation		N/A
2.7.2	Faults not covered in 5.3		N/A
2.7.3	Short-circuit backup protection	The equipment is pluggable type A.	N/A
2.7.4	Number and location of protective devices.....:	Investigated as an element of power supply certification.	N/A
2.7.5	Protection by several devices		N/A
2.7.6	Warning to service personnel		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2.8	Safety Interlocks		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

2.9	Electrical Insulation		Pass
2.9.1	Properties of insulating materials	Critical insulation investigation is investigated as an element of power supply certification.	Pass
2.9.2	Humidity conditioning		N/A
2.9.3	Requirements for insulation		N/A
2.9.4	Insulation parameters		Pass
2.9.5	Categories of insulation	Functional	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.10	Clearances, Creepage Distances and Distances Through Insulation		Pass
2.10.1	General		Pass
2.10.2	Determination of working voltage		N/A
2.10.3	Clearances	All critical clearance in primary circuits are considered in separate power supply evaluation.	Pass
2.10.3.1	General		Pass
2.10.3.2	Clearances in primary circuit		N/A
2.10.3.3	Clearances in secondary circuits	(see appended table)	Pass
2.10.3.4	Measurement of transient levels		Pass
2.10.4	Creepage distances	(see appended table)	Pass
	CTI tests.....:	Material group IIIb; $100 \leq CTI < 175$.	-
2.10.5	Solid insulation	Investigated during separate certification of power supply.	N/A
2.10.5.1	Minimum distance through insulation		N/A
2.10.5.2	Thin sheet material	Investigated during separate certification of power supply.	N/A
	Number of layers (pcs).....:		-
	Electric strength test		-
2.10.5.3	Printed boards		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	Investigated during separate certification of power supply.	N/A
	Number of layers (pcs).....:		N/A
	Two wires in contact inside component; angle between 45° and 90°		N/A
2.10.6	Coated printed boards		N/A
2.10.6.1	General		N/A
2.10.6.2	Sample preparation and preliminary inspection		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
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

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

3.1	General		Pass
3.1.1	Current rating and overcurrent protection	All wires/conductors possess adequate cross-sectional areas for their intended application and Internal wiring are adequately insulated.	Pass
3.1.2	Protection against mechanical damage	The wires are well routed away from sharp edges, etc. and are adequately fixed to prevent excessive strain on wire and terminals.	Pass
3.1.3	Securing of internal wiring	The wires are positioned in such a manner that prevents excessive strain, loosening of terminal connections and damage of conductor insulation.	Pass
3.1.4	Insulation of conductors		N/A
3.1.5	Beads and ceramic insulators		N/A
3.1.6	Screws for electrical contact pressure		N/A
3.1.7	Non-metallic materials in electrical connections		N/A
3.1.8	Self-tapping and spaced thread screws		N/A
3.1.9	Termination of conductors		N/A
	10 N pull test		N/A
3.1.10	Sleeving on wiring		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
3.2	Connection to A.C. Mains Supplies		Pass
3.2.1	Means of connection	Appliance inlet used.	Pass
3.2.2	Multiple supply connections	Single mains supply.	N/A
3.2.3	Permanently connected equipment	The equipment is not permanently connected.	N/A
	Number of conductors, diameter (mm) of cable and conduits		-
3.2.4	Appliance inlets	The appliance inlet complies with IEC 60320. The power cord can be inserted without difficulties and does not support the unit.	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	N/A
	Type		-
	Rated current (A), cross-sectional area (mm ²), AWG	10 A maximum, min. 1.0 mm square/16 AWG required.	-
3.2.6	Cord anchorages and strain relief	Strain relief test conducted.	Pass
	Mass of equipment (kg), pull (N)	23 kg, 100N	-
	Longitudinal displacement (mm)	Max. 0.8mm	-
3.2.7	Protection against mechanical damage	No parts under this unit likely to damage the power supply cord. No sharp edges.	N/A
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		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		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

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	Ref. to 3.4.1	Pass
3.4.3	Permanently connected equipment		N/A
3.4.4	Parts which remain energized		N/A
3.4.5	Switches in flexible cords		N/A
3.4.6	Single-phase equipment	Disconnect device disconnects both poles simultaneously.	Pass
3.4.7	Three-phase equipment		N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices		N/A
3.4.10	Interconnected equipment		N/A
3.4.11	Multiple power sources		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

3.5	Interconnection of Equipment		Pass
3.5.1	General requirements		Pass
3.5.2	Types of interconnection circuits.....:	The power supply is considered for connection to SELV only.	Pass
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection circuits.	N/A

4	PHYSICAL REQUIREMENTS		Pass
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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 degrees from its normal upright position.	Pass
	Test: force (N)	Equipment is not a floor standing unit.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

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	No hazards as result of the 30N test.	Pass
4.2.4	Steady force test, 250 N	250N applied to all outer enclosure. No energy or other hazards.	Pass
4.2.5	Impact test	No hazard as result from impact test.	Pass
4.2.6	Drop test		N/A
4.2.7	Stress relief	Metal enclosure used.	N/A
4.2.8	Cathode ray tubes		N/A
	Picture tube separately certified.....:		N/A
4.2.9	High pressure lamps		N/A
4.2.10	Wall or ceiling mounted equipment; force (N).....:	Force applied: 78 Kg, which was three times the weight of the equipment. The mounting means did withstand the force applied without breaking or damaging.	Pass

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
4.3	Design and Construction		Pass
4.3.1	Edges and corners	All edges and corners judged to be sufficiently well rounded so as not to constitute a hazard.	Pass
4.3.2	Handles and manual controls; force (N)	Force applied to each handle: 78 kg. The handles did support the weight.	Pass
4.3.3	Adjustable controls	Investigated during separate certification of power supply.	N/A
4.3.4	Securing of parts	Electrical and mechanical connections can be expected to withstand usual mechanical stress. For the protection, solder pins, cable ties and heat shrunk tubing are used.	Pass
4.3.5	Connection of plugs and sockets	No 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	No heating element.	N/A
4.3.8	Batteries	A replaceable lithium battery provided with diode, D9, in series to prevent the reverse charging current.	Pass
4.3.9	Oil and grease		N/A
4.3.10	Dust, powders, liquids and gases		N/A
4.3.11	Containers for liquids or gases		N/A
4.3.12	Flammable liquids		N/A
	Quantity of liquid (l)		N/A
	Flash point (°C)		N/A
4.3.13	Radiation; type of radiation		N/A
	Equipment using lasers	Evaluated as an element of component evaluation.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

4.4	Protection Against Hazardous Moving Parts		Pass
4.4.1	General	Equipment does not have any hazardous moving parts.	N/A
4.4.2	Protection in operator access areas		Pass
4.4.3	Protection in restricted access locations		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	Investigated as an element of power supply certification.	N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
4.6	Openings in Enclosures		Pass
4.6.1	Top and side openings	Foreign objects entering the enclosure will not contact bare parts at hazardous voltage or energy (No hazardous parts within 5° projection).	Pass
	Dimensions (mm).....:	Front: Four rows of 22 openings, each opening measures 40 mm by 2 mm. Rear: 40 openings, each opening measures 20 mm by 2 mm. Left side: Two rows of 25 openings, each opening measures 40 mm by 2 mm. Right side: 17 openings, each opening measures 30 mm by 2 mm.	-
4.6.2	Bottoms of fire enclosures	No bottom opening provided.	N/A
	Construction of the bottom.....:		-
4.6.3	Doors or covers in fire enclosures	Only decorative front Door provided with key-lock, steel, overall 405 by 155, 2.0 mm thick.	N/A
4.6.4	Openings in transportable equipment	Not transportable equipment.	N/A
4.6.5	Adhesives for constructional purposes		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: - components with windings - wiring - semiconductor devices, transistors, diodes, integrated circuits - resistors, capacitors, inductors. The fire enclosure is required.	Pass
4.7.2.1	Parts requiring a fire enclosure	Fire enclosure covers all hazardous parts.	Pass
4.7.2.2	Parts not requiring a fire enclosure	See 4.7.2	N/A
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		N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	All internal materials are rated V-2 or better or are mounted on a PWB rated V-1 or better. Internal wiring is UL Recognized, rated VW-1 or FT-1. See Table 1.5.1 for material information.	Pass
4.7.3.5	Materials for air filter assemblies		N/A
4.7.3.6	Materials used in high-voltage components		N/A

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS	Pass
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IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

5.1	Touch current and protective conductor current		Pass
5.1.1	General	See below.	Pass
5.1.2	Equipment under test (EUT)		Pass
5.1.3	Test circuit		Pass
5.1.4	Application of measuring instrument	Using measuring instrument in annex D.	Pass
5.1.5	Test procedure	The touch current was measured from primary to metal enclosure.	Pass
5.1.6	Test measurements	See below.	Pass
	Test voltage (V)	253 Vac / 60 Hz	-
	Measured current (mA)	Max. 3.2mA	-
	Max. allowed current (mA)	3.5mA.	-
5.1.7	Equipment with touch current exceeding 3.5 mA ..	Touch current does not exceed 3.5 mA.	Pass
5.1.8	Touch currents to and from telecommunication networks	No TNV	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network	No TNV	N/A
	Test voltage (V)	No TNV	-
	Measured current (mA)	No TNV	-
	Max. allowed current (mA)	No TNV	-
5.1.8.2	Summation of touch currents from telecommunication networks	No TNV	N/A

5.2	Electric Strength		Pass
5.2.1	General	Based on the electric strength test the use of the insulating materials within the equipment is satisfactory.	Pass
5.2.2	Test procedure	No insulation breakdown detected during the test. (see appended table)	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		N/A
5.3.3	Transformers	The protection of the power supply and transformer are approved with the approval of the power supply.	Pass
5.3.4	Functional insulation	Functional insulation complies with the requirements (a), (b), or (c).	Pass
5.3.5	Electromechanical components		N/A
5.3.6	Simulation of faults	Blocked ventilation openings test: Result see appended table. Fan stalled test: Result see appended table. Connector overload test: Result see appended table.	Pass
5.3.7	Unattended equipment		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.	Pass

6	CONNECTION TO TELECOMMUNICATION NETWORKS		N/A
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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

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

6.2	Protection of Equipment Users From Overvoltages on Telecommunication Networks		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		N/A
	Max. output current (A)		-
	Current limiting method.....		-

A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
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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)		-

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

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
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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 retest		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 retest, HF-1 or HF-2		N/A
A.7.9	Permitted retest, HBF		N/A

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

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 retest		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
A.9.5	Test procedure, test plaques		N/A
A.9.6	Compliance criteria		N/A
A.9.7	Permitted retest		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)		N/A
B.1	General requirements		N/A
	Position		-
	Manufacturer		-
	Type		-
	Rated values		-
B.2	Test conditions		N/A
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days)		-
	Electric strength test: test voltage (V)		-
B.6	Running overload test for DC motors in secondary circuits		N/A
B.7	Locked-rotor overload test for DC motors in secondary circuits		N/A
B.7.1	Test procedure		N/A
B.7.2	Alternative test procedure; test time (h)		N/A
B.7.3	Electric strength test		N/A
B.8	Test for motors with capacitors		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Operating voltage (V)		-

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

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

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

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

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

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

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

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

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

IEC 60950		
Clause	Requirement + Test	Result - Remark
		Verdict

1.5.1	TABLE: list of critical components						Pass
Object/part No.	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID	
Power Supply	Power Research Technology Co., Ltd. (PRT)	PRM400	I/P: 100-240Vac, 50/60Hz, 8/5A. O/P: +5V/50A, -5V/1.0A, +12V/27A, -12V/3.0A, 3.3V/30A, +5Vsb/1.0A	QQGQ2	UL		
Hard Drive (Optional)	Various	--	+5/+12Vdc, 1.5/1.8A maximum.	NWGGQ2	UL		
Floppy Drive (Optional) (two provided)	Various	--	+5/+12Vdc, 1.5/1.8A maximum.	NWGGQ2	UL		
CD-ROM Drive (Optional)	Various	--	+5/+12Vdc, 1.5/1.8A maximum.	NWGGQ2	UL		
RTC Battery	Rayovac Corp.	BR2335, BR2032, BF2325	3.0Vdc, 300mAh	BBCV2	UL		
RTC Battery	Mitsubishi Chemical Corp.	CR2032	3.0Vdc, 300mAh	BBCV2	UL		
RTC Battery	Sanyo Energy (U.S.A) Corp.	CR2032	3.0Vdc, 300mAh	BBCV2	UL		
Protective device (Polyswitch) for PS/2 port	Raychem Corp.	SMD-150-2018	5Vdc, 1.1A	XGPU2	UL		
Protective device (Pigtail Fuse) for PS/2 port	Littelfuse Inc.	251	125V, 3A	JDYX2	UL		
System Fan	Delta Electronics Inc.	EFB1212HH-F00	+12Vdc, 0.5A, 93.58 CFM	GPWV2	UL		
System Fan	Delta Electronics Inc.	EFB1212VH-F00	+12Vdc, 0.5A, 114.07 CFM	GPWV2	UL		
System Fan	Delta Electronics Inc.	EFB1212SH-F00	+12Vdc, 0.5A, 114.07 CFM	GPWV2	UL		
System Fan	Adda Corp.	AD0812HB- A70GL	+12Vdc, 0.25A, 40.1CFM	GPWV2	UL		
System Fan	Delta electronics inc	AFB0812SH-F00	+12Vdc, 0.34A, 46.62CFM	GPWV2	UL		
CPU Fan	Nidec Corp.	F06G-12B1S1	+12Vdc, 0.07A	GPWV2	UL		

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

CPU Fan	Dynaeon Industrial Co., Ltd.	DF1206BH	+12Vdc, 0.30A	GPWV2	UL	
Enclosure	Various	--	Plated steel, overall 660 by 426 by 177 mm, minimum 2 mm thick	--	--	
PWB	Various	--	Rated V-1 or better, 105°C	ZPMV2	UL	
Handles (Two provided)	Various	--	Steel, each overall 102 by 33 by 10 mm, spaced 465 mm apart.	--	--	
Connectors and Receptacles (primary)	--	--	Min. 250 V	ECBT2, RTRT2	UL	
Insulating Tubing/Sleeving	--	--	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; 105°C, 300 V	UZFT2, YDPU2, YDRY2, YDTU2	UL	
Interconnecting Cable (primary)	--	--	Min. 105°C, 300 V, max 3.05 m long, jacketed, VW-1 or FT-1	AVLV2	UL	
Label	--	--	40°C if max. surface temperature not specified.	PGDQ2 or PGJ12	UL	
Power supply cord (Optional)	--	--	Type SVT or SPT-2, min 125 V, 10 A, with NEMA 5-15P or 250 V, 10 A, with NEMA 6-15P. Other end (connected to unit) (with cord-connected body, grounding type, suitable for cord size, rating not less than that of attachment plug)	ZJCZ and RTRT and AXUT	UL	
Wiring, internal primary	--	--	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; min 300 V, 80°C.	AVLV2	UL	

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict
Part of non-detachable Power supply cord	--	Type SVT or SPT-2, connected to unit. Other end min 125 V, 10 A, with NEMA 5-15R or 250 V, 10 A, with NEMA 6-15R, grounding type, suitable for cord size 18AWG.	ZJCZ and RTRT and AXUT UL

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

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	
-	-	90v/50Hz	142	1580	-	Maximum normal load	
-	-	90v/60Hz	142	1580	-	Maximum normal load	
-	10	115v/50Hz	141	1410	-	Maximum normal load	
-	10	115v/60Hz	141	1410	-	Maximum normal load	
-	5	240v/50Hz	134	600	-	Maximum normal load	
-	5	240/60Hz	133	610	-	Maximum normal load	
-	-	253v/50Hz	132	590	-	Maximum normal load	
-	-	253v/60Hz	133	590	-	Maximum normal load	
supplementary information:							
The unit continuously crossed reading and writing data between HDD and working continuously.							

2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements						Pass
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)	
--	--	--	--	--	--	--	
supplementary information:							
All critical clearance and creepage distances in primary circuit are considered in separate power supply evaluation. Only functional insulation is required.							

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:					

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: temperature rise measurements		Pass
	test voltage (V)	See below.	—
	t1 (°C)	--	—
	t2 (°C)	--	—
temperature rise dT of part/at:		dT (K)	required dT (K)
--		103.5V/253V	--
Ambient		24.9°/25.4°	--
PWB near Q8		18.6/16.6	60
RTC Battery body		13.1/11.8	--
U19 body		15.3/13.9	--
CPU body		14.3/13.0	--
L16 coil		21.2/19.8	60
L6 coil		8.9/7.8	60
C51 body		12.6/11.2	40
PWB Q25 body		11.9/10.5	60
HDD body		4.6/3.6	--
CDROM body		6.8/5.2	--
FDD body		8.1/6.3	--
Power 1		--	--
L1 coil		9.8/7.7	60
L1 coil for 540060-A board		6.7/3.9	60
PWB near the BD1 on 540060-A board		10.7/6.2	60
T1 coil		8.1/6.4	45
T1 core		13.5/11.7	45
T2 coil		12.2/10.6	45
T2 core		11.3/9.7	45
C1 body		5.6/3.8	40
Power 2		--	--
L1 coil		11.2/9.2	60
L1 coil for 540060-A board		12.5/7.2	60
PWB near the BD1 on 540060-A board		12.6/7.7	60
T1 coil		11.8/10.1	45
T1 core		13.0/11.2	45
T2 coil		14.4/12.7	45
T2 core		13.3/11.5	45
C1 body		7.0/5.1	40
Enclosure inside near the power		3.7/2.3	--
Enclosure outside near the power		3.4/2.0	25

IEC 60950					
Clause	Requirement + Test			Result - Remark	Verdict
--				230v ventilation openings blocked/230v stall system fan/230v stall power fan/230v Removed one power supply kid	--
Ambient				26°/25.5°/26.3°/26.2°	--
PWB near Q8				30.9/20.4/15.9/14.8	--
RTC Battery body				26.1/10.6/10.1/9.7	--
U19 body				28.4/19.5/13.0/12.2	--
CPU body				28.9/27.3/11.7/11.3	--
L16 coil				34.7/24.8/19.3/18.4	--
L6 coil				25.4/7.4/6.7/6.2	--
C51 body				25.9/13.3/10.9/7.6/	--
PWB Q25 body				25.4/11.2/10.3/9.1	--
HDD body				18.5/2.5/2.3/1.9	--
CDROM body				17.6/3.3/2.8/2.4	--
FDD body				18.2/5.0/3.3/2.6	--
Power 1				--	--
L1 coil				21.1/6.4/4.1/8.0	--
L1 coil for 540060-A board				16.8/2.7/13.0/3.7	--
PWB near the BD1 on 540060-A board				18.7/4.7/7.4/5.4	--
T1 coil				19.7/5.1/17.6/6.2	105
T1 core				25.0/10.4/21.5/11.7/	105
T2 coil				24.3/9.5/17.9/12.4	105
T2 core				23.3/8.6/19.1/9.0	105
C1 body				16.1/2.5/12.6/3.0	--
Power 2				--	--
L1 coil				22.9/8.0/2.5/2.9	--
L1 coil for 540060-A board				21.6/6.4/12.5/2.3	--
PWB near the BD1 on 540060-A board				21.4/6.4/5.5/2.4	--
T1 coil				23.7/8.8/16.8/2.8	105
T1 core				24.6/10.0/19.9/3.0	105
T2 coil				26.1/11.3/15.9/3.1	105
T2 core				25.1/10.3/17.6/3.2	105
C1 body				18.8/3.8/11.3/2.6	--
Enclosure inside near the power				11.6/0.9/7.6/1.8	--
Enclosure outside near the power				8.1/0.9/1.5/0.6	--
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

The temperatures were measured under worst case normal mode defined in 1.2.2.1 and described in 1.6.2 at voltages as described in 1.4.5

Without specified ambient temperature in users manual, therefore the ambient temperature assumed as 45°C, the max. temperature rise is calculated as follows:

Winding components:

- Transformer, Class A: $dT_{max} = 75K - 10K - (45-25)K = 45 K$

Components with:

- max. absolute temp. of 85°C (Electrolyte capacitor): $dT_{max} = (85-45)K = 40 K$

- max. absolute temp. of 105°C (Cap., Line choke, PWB): $dT_{max} = (105-45)K = 60 K$

User Accessible Area:

- material is metal (45K) $dT_{mx} = 45K - (45-25)K = 25K$

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
Primary to SELV		DC 4242	No
Primary to Earth		DC 3000	No
supplementary information:			
N/A			

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

5.3	TABLE: fault condition tests					Pass
	ambient temperature (°C) : 25					—
	model/type of power supply : --					—
	manufacturer of power supply : --					—
	rated markings of power supply : --					—
component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
Ventilation openings	Blocked	230 / 60Hz	3.0 hrs	--	--	NB, NC, NT, (see 4.5.1 Heating Test for details)
System fan	Stalled	230 / 60Hz	2.5 hrs	--	--	NB, NC, NT, (see 4.5.1 Heating Test for details)
One power supply kid	Removed	230 / 60Hz	3.0 hrs	--	--	NB, NC, NT, (see 4.5.1 Heating Test for details)
Power fan	Stalled	230 / 60Hz	2.5 hrs	--	--	NB, NC, NT, (see 4.5.1 Heating Test for details)
PS/2 pin 1, 5, 6	Overload	240 / 60Hz	--	--	--	Circuit measures 0 volts.
PS/2 pin 2	Overload	240 / 60Hz	1 hr	--	--	NB, NC, NT, open circuit 5.04V, Max. available current 2100 mA
PS/2 pin 3, 4	Overload	240 / 60Hz	--	--	--	Circuit measures less than 12.5mA
VGA pin 1, 6~8, 10, 11	Overload	240 / 60Hz	--	--	--	Circuit measures 0 volts.
VGA pin 12~15	Overload	240 / 60Hz	--	--	--	Circuit measures less than 12.5mA
VGA pin 9	Overload	240 / 60Hz	1 hr	--	--	NB, NC, NT, open circuit 5.04V, Max. available current 2000 mA
RJ-45 pin 1~8	Overload	240 / 60Hz	--	--	--	Circuit measures 0 volts.
COM1 pin 1~9	Overload	240 / 60Hz	--	--	--	Circuit measures 0 volts.
supplementary information:						
NB - No indication of dielectric breakdown; NC - Cheesecloth remained intact; NT - Tissue paper remained intact B - Circuit measures less than 12.5 mA C - Circuit measures 0 Volts						

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 $t_2 + t_3$	
supplementary information:			

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 $t_2 + t_3$	
supplementary information:			

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)
supplementary information:				

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
supplementary information:				

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

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)
supplementary information:				

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)	
supplementary information:			

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)	
supplementary information:			

A.9.6	TABLE: flammability test for classifying materials 5V				N/A
sample No./ref.	test bars		test plaques		
	flaming + glowing time (s)	burning distance (mm)	position	flaming + glowing time (s)	burning distance (mm)
supplementary information:					

IEC 60950			
Clause	Requirement + Test	Result - Remark	Verdict

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)	
supplementary information:						

Enclosure

National Differences

(Total 10 Pages including this Cover Page)

USA / Canada

- * No National Differences Declared
- ** Only Group Differences

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict

USA / Canada - Differences to IEC60950, Third Edition (1999)			
1.1	Equipment able to be installed in accordance with the National Electrical Code ANSI/NFPA 70 and the Canadian Electrical Code, Part1.		Pass
1.1.1	Equipment able to be installed in accordance with ANSI/NFPA 75 and NEC Art. 645 unless intended for use outside of computer room and provided with such instructions		Pass
1.1.2	Equipment in wire-line communication facilities serving high-voltage electric power stations operating at greater than 1kV are excluded		N/A
1.1.2	Special requirements apply to equipment intended for use outdoors		N/A
1.5.1	All IEC standards for components identified in Annex P.1 replaced by the relevant requirements of CSA and UL component standards in Annex P.1		Pass
1.5.1	All IEC standards for components identified in Annex P.2 alternatively satisfied by the relevant requirements of CSA and UL component standards in Annex P.2		Pass
1.5.5	Interconnecting cables acceptable for the application regarding voltage, current, temperature, flammability, mechanical serviceability and the like	Interconnecting cables comply with the relevant requirements.	Pass
1.5.5	For other than limited power and TNV circuits, the type of output circuit identified for output connector		N/A
1.5.5	External cable assemblies which exceed 3.05 m in length to be types specified in the NEC and CEC		N/A
1.5.5	Detachable external interconnecting cables 3.05 m or less in length and provided with equipment marked to identify the responsible organization and the designation for the cable		Pass
1.5.5	Building wiring and cable for use in ducts, plenums and other air handling space subject to special requirements and excluded from scope		N/A
1.5.5	Telephone line and extension cords and the like comply with UL 1863 and CSA C22.2 No. 233		N/A
1.7.1	Special marking format for equipment intended for use on a supply system with an earthed neutral and more than one phase conductor		N/A
1.7.1	Equipment voltage rating not higher than rating of the plug except under special conditions		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
1.7.2	Wiring terminals supplying Class 2 outputs marked with voltage rating and "Class 2" or equivalent		N/A
1.7.6	Special fuse replacement marking for operator accessible fuses		N/A
1.7.6	Lamp replacement information indicated on lampholder in operator access area		N/A
1.7.7	Identification of terminal connection of the equipment earthing conductor		N/A
2.1.1	Screw shell of Edison-base lampholder tied to the neutral conductor		N/A
2.1.1.1	Bare TNV conductive parts in the interior of equipment normally protected against contact by a cover intended for occasional removal are exempt provided instructions include directions for disconnection of TNV prior to removal of the cover		N/A
2.3.1.b	Other telecommunication signaling systems (e.g., message waiting) than described in 2.3.1(b) are subject to M.4.		N/A
2.3.1.b	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vp or 60 V d.c., the maximum current limit through the 2000 Ohm resistor with loads disconnected is 7.1 mA peak or 30 mA d.c. under normal conditions		N/A
2.3.1.b	Limits for measurements across 5000 Ohm resistor in the event of a single fault are replaced after 200 ms with the limits of M.3.1.4		N/A
2.3.2	Enamel coating on signal transformer winding wire allowed as an alternative to Basic insulation in specific telecommunication applications when subjected to special construction requirements and routine testing		N/A
2.5	Overcurrent protection device required for Class 2 and Class 3 limiting in accordance with the NEC, or the Limited Power Source definition, not interchangeable with devices of higher ratings if operator replaceable		N/A
2.5	VA for limited power source measured after 60 s of operation		N/A
2.6	Protective earthing terms applied per CEC, Part 1, Sec. 0 and NEC Art. 100		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
2.6	Units having receptacles for output a.c. power connectors which are generated from an internal separately derived source have the grounded circuit conductor suitably bonded to earth		N/A
2.6.3.3	Capacity of connection between earthing terminal and parts required to be earthed subject to special conditions based on the current rating of the circuit		N/A
2.6.3.3	Protective bonding conductors and their terminals of non-standard constructions (e.g. PWB traces) evaluated to limited short-circuit test of CSA C22.2 No.4		N/A
2.6.4.1	Field wiring terminals for earthing conductors must be suitable for wire sizes (gauge) used in US and Canada		Pass
2.7.1	Data for selection of special external branch circuit overcurrent devices marked on the appliance		N/A
2.7.1	Standard supply outlets protected by overcurrent device in accordance with the NEC, and CEC, Part 1		N/A
2.7.1	Overcurrent protection for individual transformers that distribute power to other units over branch circuit wiring		N/A
2.7.1	Additional requirements for overcurrent protection apply to equipment provided with panelboards		N/A
2.7.1	Non-motor-operated equipment requiring special overcurrent protective device marked with device rating		N/A
2.10.5.4	Multi-layer winding wire subject to UL wire requirements in addition to 2.10.5.4 and Annex U		N/A
3.1.1	Permissible combinations of internal wiring/external cable sizes for overcurrent and short circuit protection		N/A
3.1.1	All interconnecting cables protected against overcurrent and short circuit		N/A
3.2	Wiring methods permit connection of equipment to primary power supply in accordance with the NEC and CEC, Part 1		N/A
3.2.1	Permitted use for flexible cords and plugs		Pass
3.2.1	Flexible cords provided with attachment plug rated 125% of equipment current rating		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
3.2.1	Class II equipment provided with 15 or 20 A standard supply outlets, Edison-base lampholders or single pole disconnect device provided with a polarized type attachment plug		N/A
3.2.3	Permanently connected equipment has provision for connecting and securing a field wiring system (i.e. conduit, or leads etc.) per the NEC and CEC, Part 1		N/A
3.2.3	Permanently connected equipment may have terminals or leads not smaller than No. 18 AWG (0.82 mm ²) and not less than 152 mm in length for connection of field installed wiring		N/A
3.2.3	If supply wires exceed 60 °C, marking indicates use of 75 °C or 90 °C wiring for supply connection as appropriate		N/A
3.2.3	Equipment intended solely for installation in Restricted Access Locations using low voltage d.c. systems may not need provision for connecting and securing a field wiring system. A method of securing wiring or instructions must be provided to ensure the wiring is protected from abuse		N/A
3.2.3	Equipment compatible with suitable trade sizes of conduits and cables		N/A
3.2.5	Length of power supply cord 1.5 to 4.5 m unless shorter length used when intended for a special installation		Pass
3.2.5	Conductors in power supply cords sized according to NEC and CEC, Part I		Pass
3.2.5	Power supply cords and cord sets incorporate flexible cords suitable for the particular application		N/A
3.2.6	Strain relief provided for non-detachable interconnecting cables not supplied by a limited power source		N/A
3.2.9	Adequate wire bending space and volume of field wiring compartment to properly make the field connections		N/A
3.3	Field wiring terminals provided for interconnection of units for other than LPS or Class 2 circuits also comply with 3.3		N/A
3.3	Interconnection of units by LPS or Class 2 conductors may have field wiring connectors other than those specified in 3.3 if wiring is reliably separated		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
3.3.1	Terminals for the connection of neutral conductor identified by a distinctive white marking or other equally effective means		N/A
3.3.3	Wire binding screw terminal permitted for connection of No. 10 AWG (5.3 mm ²) or smaller conductor if provided with upturned lugs, cupped washer or equivalent retention		N/A
3.3.4	Terminals suitable to accept wire sizes (gauge) used in the U.S. and Canada		N/A
3.3.4	Terminals accept current-carrying conductors rated 125% of the equipment current rating		N/A
3.3.6	Field wiring terminals marked to indicate the material(s) of the conductor appropriate for the terminals used		N/A
3.3.6	Connection of an aluminum conductor not permitted to terminal for equipment earthing conductor		N/A
3.3.6	Field wiring connections made through the use of suitable pressure connectors (including set screw type), solder lugs or splices to flexible leads		N/A
3.3.8	Connectors and field wiring terminals involving external Class 2 or Class 3 circuits provided with marking indicating minimum Class of wiring to be used		N/A
3.3.8	Marking located adjacent to terminals and visible during wiring		N/A
3.4.2	Separate motor control device(s) required for cord-connected equipment rated more than 12 A, or with motor rated more than 1/3 hp or more than 120 V		N/A
3.4.8	Vertically mounted disconnect devices, oriented so up position of handle is "on"		N/A
3.4.10	For computer-room applications, equipment with battery systems capable of supplying 750 VA for 5 min require battery disconnect means		N/A
3.6	Connections to a centralized DC power system comply with requirements for branch circuits in Sub-clause 3.2	Not connect to centralized DC power system.	N/A
3.6	Earthing of d.c. powered equipment provided		N/A
3.6	Overcurrent and earth fault protection in accordance with 2.7 either provided in equipment or as part of building installation		N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
3.6	Equipment with earthed terminal (terminal for the grounded conductor) of power source connected to frame of the unit provided with special instructions and provision for earthing		N/A
3.6	Equipment with means for connecting supply to earthing electrode conductor has no switches or protective devices between supply connection and earthing electrode connection		N/A
3.6	Special markings and instructions for equipment with provisions to connect earthed conductor of a DC supply circuit to earthing conductor at the equipment		N/A
3.6	Special markings and instructions for equipment with earthed conductor of a DC supply circuit connected to the earthing conductor at the equipment		N/A
3.6	Terminals and leads provided for permanent connection of DC powered equipment to supply marked to indicate polarity if reverse polarity may result in a hazard		N/A
4.2.8.1	Special opening restrictions for enclosures around CRTs with face dimension of 160 mm or more		N/A
4.2.9	Compartment housing high-pressure lamp marked to indicate risk of explosion		N/A
4.3.2	Loading test for equipment with handle(s) used to support more than 9 kg tested at four times the weight of the unit	Force applied to each handle: 78 kg. The handles did support the weight.	Pass
4.3.6	In addition to the IEC requirements, Direct Plug-in Equipment comply with UL 1310 or CSA 223 mechanical assembly requirements		N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment comply with ANSI/NFPA 30(Table NAE. 7)		N/A
4.3.12	Equipment using replenishable liquids marked to indicate type of liquid to be used		N/A
4.3.13	Equipment which produces x-radiation and does not comply with 4.3.12 under all conditions of servicing marked to indicate the presence of radiation where readily visible		N/A
4.3.13	Requirements contained in the applicable national codes and regulations apply to lasers (21 CFR 1040 and REDR C1370)	Evaluated in separate component evaluation.	N/A

IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
4.7.1	Automated information storage equipment intended to contain more than 0.76 mm ³ of combustible media requires provision for automatic sprinklers or a gaseous agent extinguishing system		N/A
4.7.3	Equipment for use in environmental air space other than ducts or plenums provided with metal enclosure or with non-metallic enclosure having adequate fire-resistance and low smoke producing characteristics		N/A
4.7.3	Low smoke-producing characteristics evaluated according to UL 2043		N/A
4.7.3	Equipment for installation in space used for environmental air as described in Sec. 300-22(c) of the NEC provided with instructions indicating suitability for installation in such locations		N/A
4.7.3.1	Flame spread rating for external surface of combustible material with exposed area greater than 0.93 m ² or a single dimension greater than 1.8 m; 50 or less for computer room applications or 200 or less for other applications		N/A
4.7.3.4	Wire marked "VW-1" or "FT-1" considered equivalent	Internal wiring is UL Recognized, rated VW-1 or FT-1(where needed).	Pass
5.1.8.1.1	Touch current due to ringing voltage for equipment containing telecommunication network leads		N/A
5.1.8.2	When multiple ports receive ringing voltage, simulated ringing applied to 3 % if ports in excess of 3		N/A
5.1.8.2	Special earthing provisions and instructions for equipment with high touch current due to telecommunication network connections		N/A
5.3.6	Overloading of SELV connectors and printed wiring board receptacles accessible to the operator	(see appended table)	Pass
5.3.6	Tests interrupted by opening of a component repeated two additional times		N/A
5.3.8.1	Test interrupted by opening of wire or trace continued by shorting gap		N/A
6	Specialized instructions, as appropriate, provided for equipment which may be connected to a telecommunications network		N/A

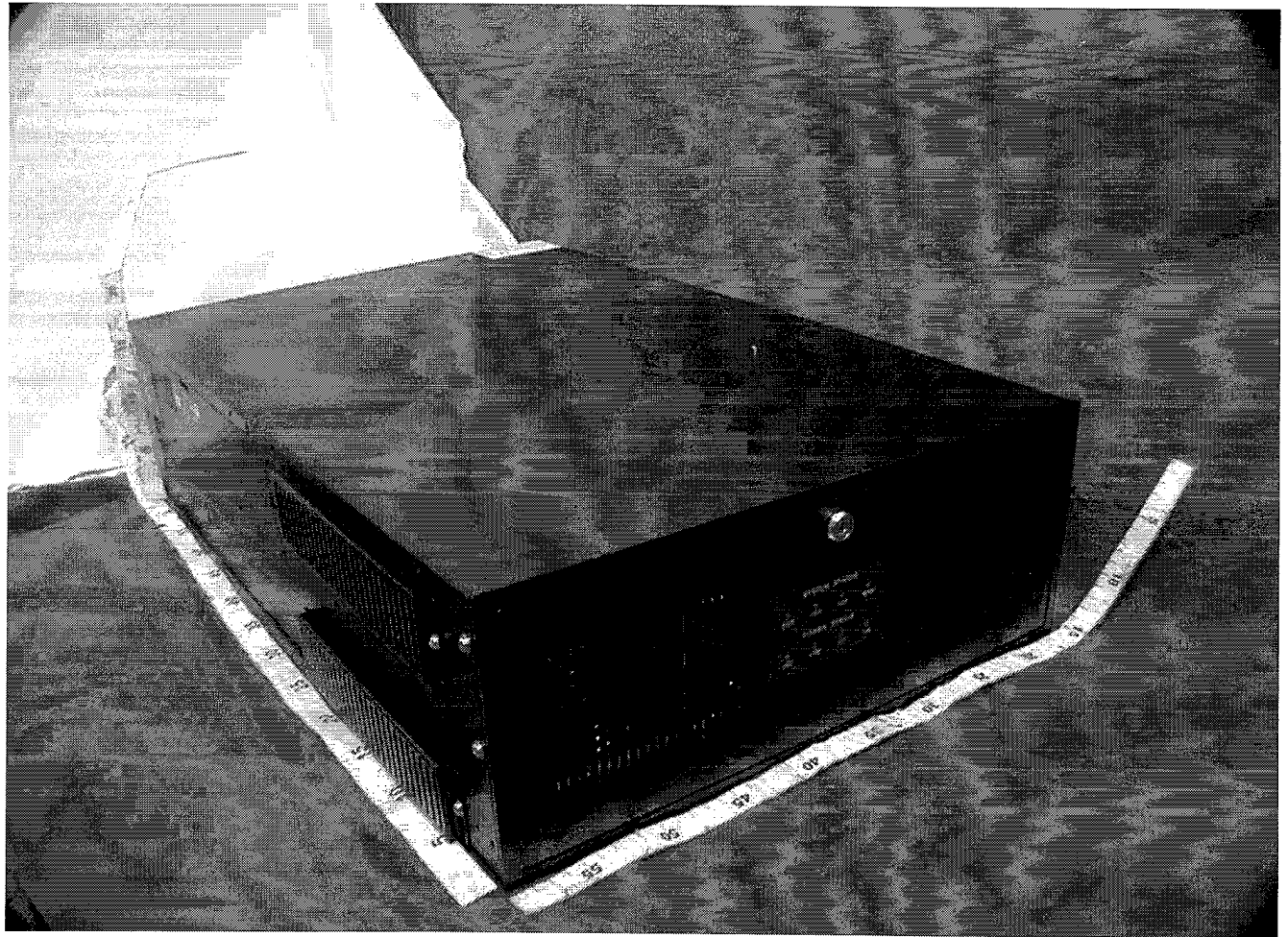
IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
6	Marking identifying function of telecommunication type connectors not used for connection to a telecommunication network		N/A
6.2.1	Special requirements for enameled wiring used as electrical separation provided between parts connected to telecommunication network and telecommunication circuitry intentionally isolated from network		N/A
6.2.1	Digital line termination equipment (e.g., NCTE) subject to separation requirements.		N/A
6.3	Equipment remotely powered over telecommunication wiring systems provided with specialized markings adjacent to the connection		N/A
6.3	Overcurrent protection incorporated into equipment to provide power over telecommunication wiring system not interchangeable with devices of higher ratings if operator replaceable		N/A
6.4	Additional requirements for equipment intended for connection to a telecommunication network using cable subject to overvoltage from power line failures (Fig. 6C)		N/A
6.4	Where 26 AWG line cord required by Fig. 6C, either the cord is provided with the equipment or described in the safety instructions		N/A
6.5	Acoustic pressure from an ear piece less than 136 dBA for short duration disturbances, and less than 125 dBA for handsets, 118 dBA for headsets, and 121 dBA for insert earphones, for long duration disturbances		N/A
Annex NAB	Equipment intended for connection to centralized d.c. power systems is required to comply with special earthing, wiring, and supply voltage tolerance requirements		N/A
Annex NAC	Equipment intended for use with a generic secondary protector marked with suitable instructions		N/A
Annex NAC	Equipment intended for use with a specific primary or secondary protector marked with suitable instructions		N/A

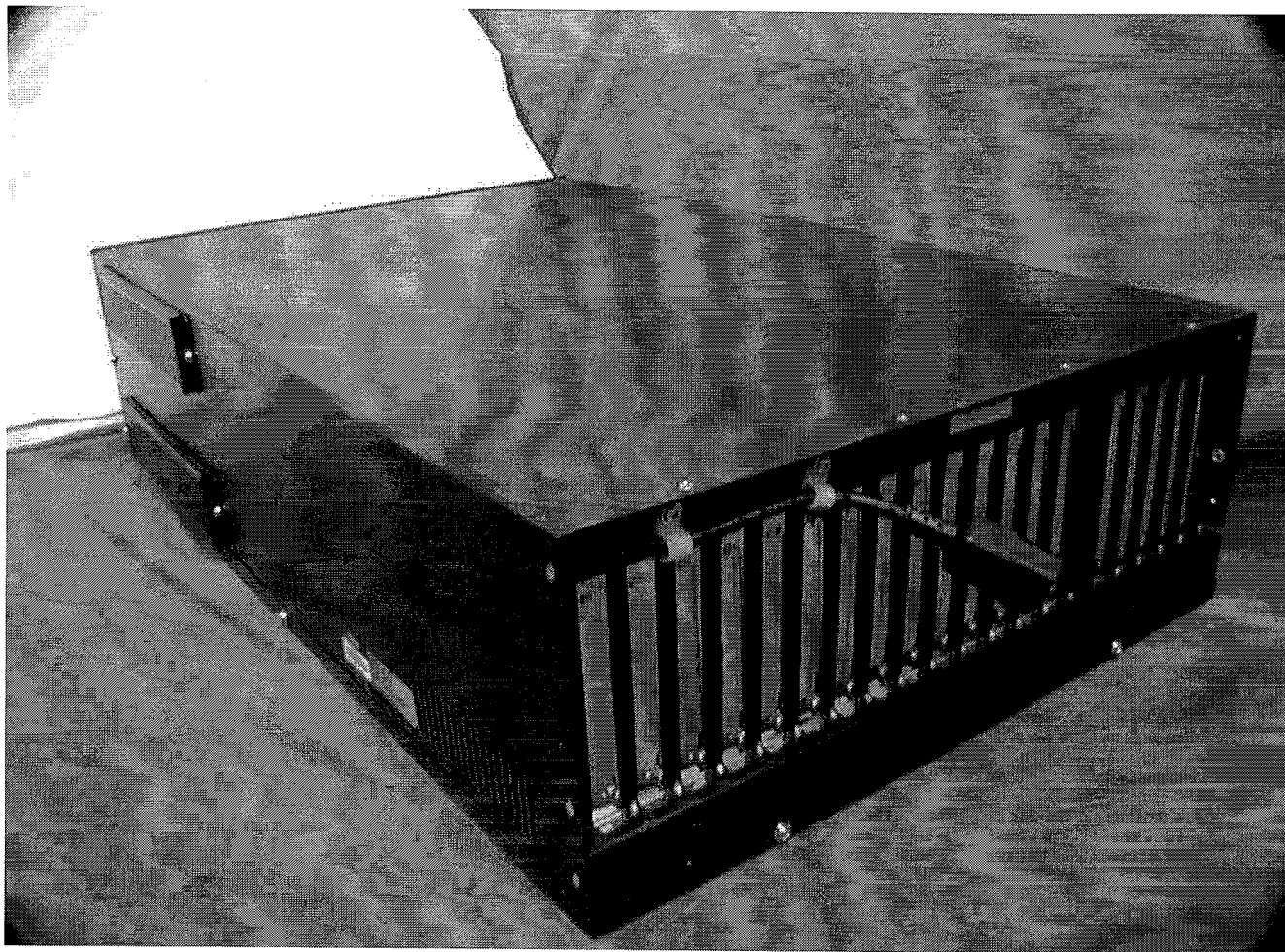
IEC 60950			
SubClause	Difference + Test	Result - Remark	Verdict
H	Ionizing radiation measurements are made under single fault conditions in accordance with the requirements of the Code of Federal Regulations 21 CFR 1020 and the Canadian Radiation Emitting Devices Act, REDR C1370		N/A
M.2	Continuous ringing signals evaluated to Method A subjected to special accessibility considerations		N/A
M.4	Special requirements for message waiting and similar telecommunications signals		N/A

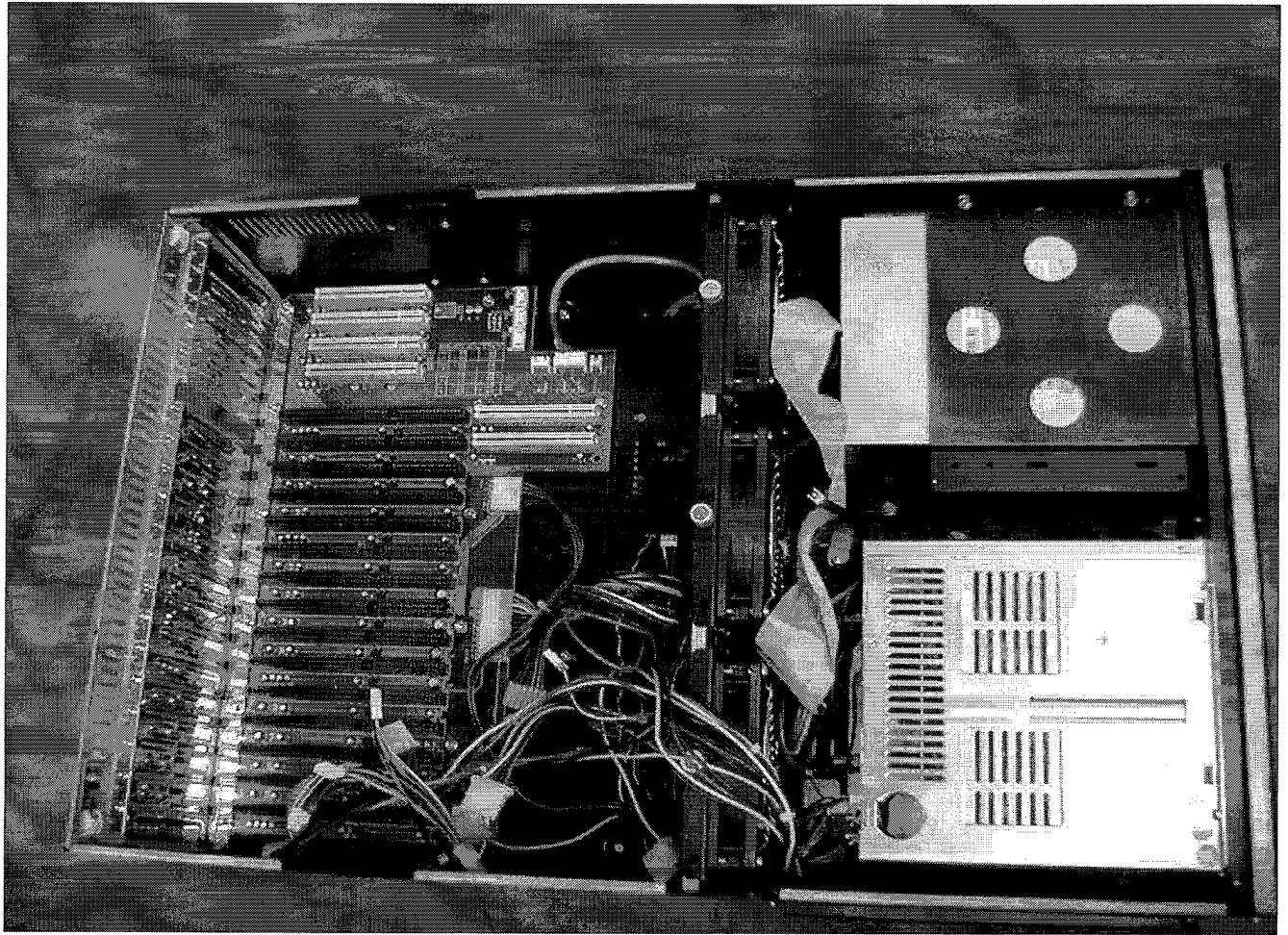
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Photographs

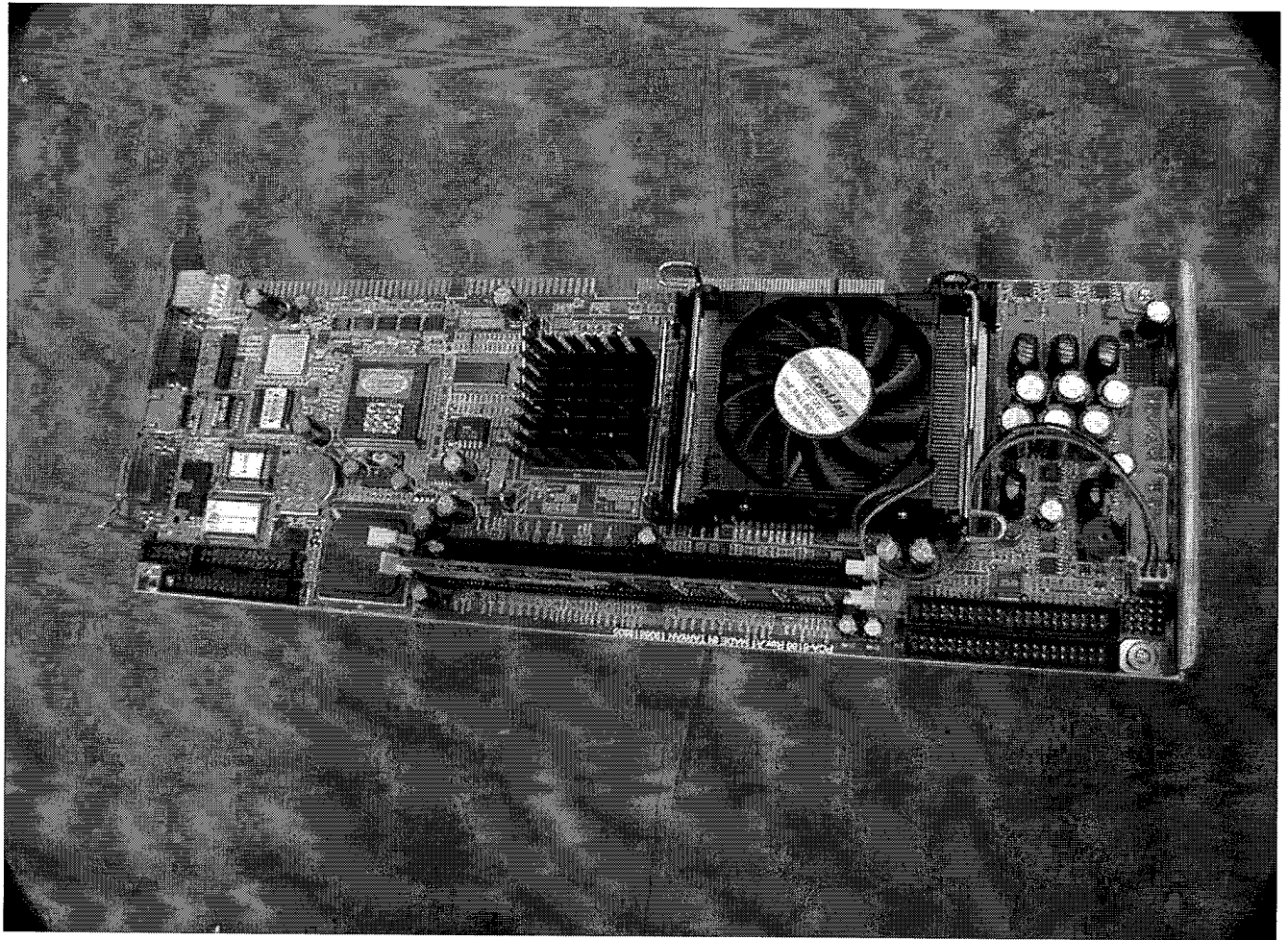
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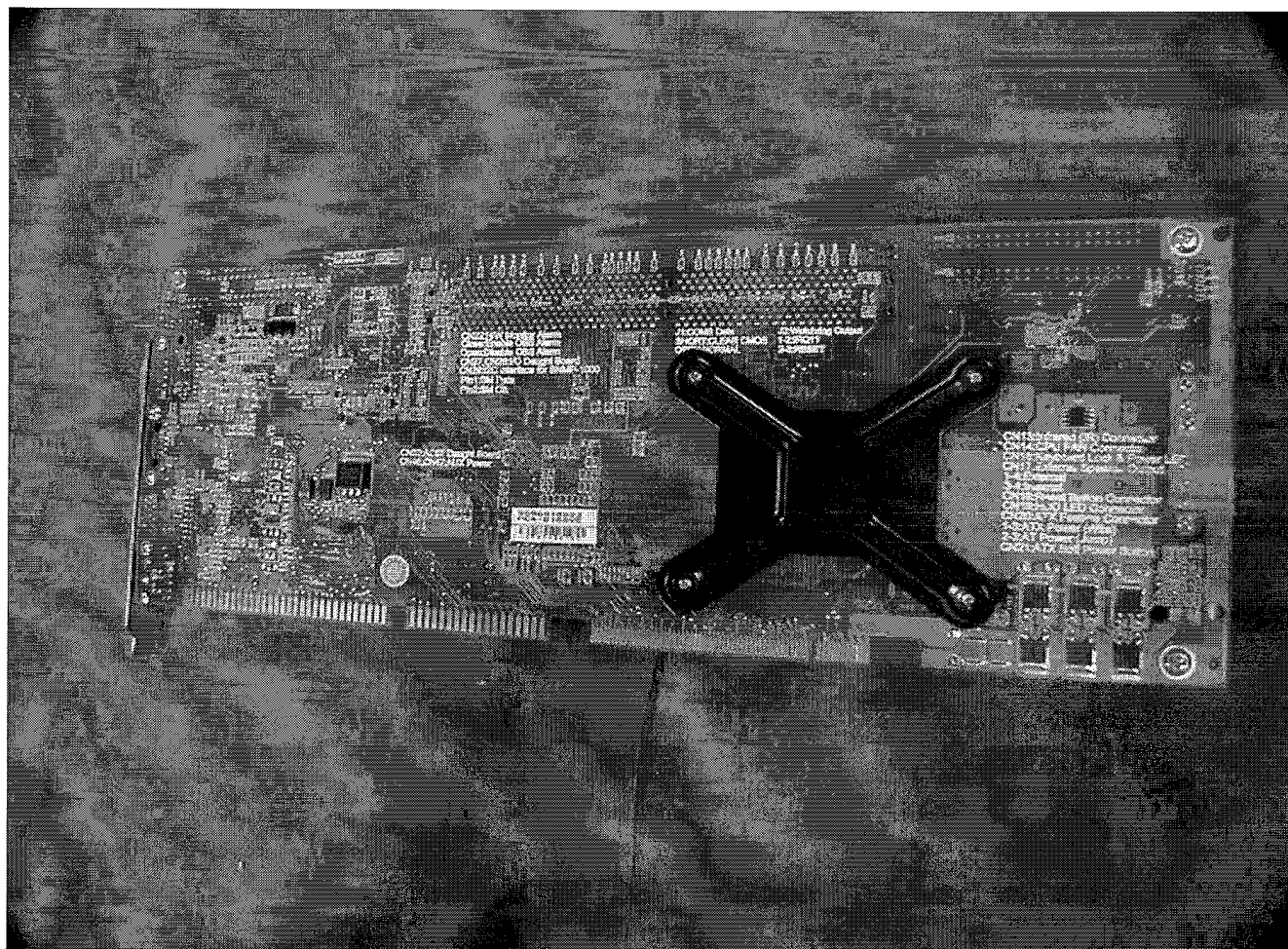
Supplement Id	Description
3-01	Front View
3-02	Rear View
3-03	Interior View
3-05	Interior mainboard-1
3-06	Interior mainboard-2











Enclosure
Test Record

(Total 2 Pages including this Cover Page)

Supplement Id	Description
-	Test Record 1

Test Record No. 1

The following tests were conducted:

Test	Comments
Input Test - Single-Phase (1.6.2)	
Capacitance Discharge Test (2.1.1.7)	"UL"
Earthing Test I (2.6.3.3, 2.6.1)	"UL"
Heating (Temperature) Test (4.5.1, 1.4.12, 1.4.13, 3.3.2)	
Touch Current Test (Single-Phase / Polyphase; TN/TT System) (5.1, D)	"UL"
Electric Strength Test (5.2.2)	
Abnormal Operation Tests (5.3.1-5.3.8.2)	
Overload of Operator Accessible Connector Test (5.3.6)	

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard.

- The manufacturer submitted representative production samples of Industrial Computer, Model IPC-623XXX-XXXXX.
- CAP: Unless otherwise noted in the above list of tests, all tests were conducted by Advance Data Technology Corp., located at Linkou, under the CAP program.
- Tests noted by the initials "UL" were witness by UL staff.
- Limited testing of Model IPC-623XXX-XXXXX was considered necessary based on the results of previous investigations, see Report dated 1999-12-01