TEST REPORT
IEC 60 950
Safety of information technology equipment

Report Reference No. ..... :	SPCLVD10750
Compiled by (+ signature) ..... :	Allen Huang
	Assistant Manager .....
Reviewed by (+ signature) ..... :	Frank Hsu
	President .....
Date of issue ..... :	September 12, 2001

This report is based on a blank test report that was prepared by KEMA 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 ..... :	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 Ciyt, Taipei Hsien, Taiwan

Standard ..... :	IEC 60 950:1991 + A1:1992 + A2:1993 + A3:1995 + A4:1996
	EN 60 950:1992 + A1:1993 + A2:1993 + A3:1995 +A4:1997 + A11:1997
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___D/97-06
TRF originator. ..... :	FIMKO
Master TRF ..... :	reference No. I950 D, dated 97-02

Test item description ..... :	Industrial Computer
Trademark ..... :	**BAM** HUAWEI TECHNOLOGIES CO., LTD.
Model and/or type reference ..... :	T-IPC-610XX-XXX, BAM-610XX-XXX T-IPC-615XX-XXX, BAM-615XX-XXX (Where the X may be 0-9, A-Z or blank)
Manufacturer ..... :	Advantech Co., Ltd
Rating(s) ..... :	DC -38.4 to -56.5 V, 9A to 6A

Copy of marking plate

BAM

HUAWEI TECHNOLOGIES CO., LTD.

Model: T-IPC-610

VOLTAGE: DC -38.4 to -56.5 V
CURRENT: 9A to 6A

Model: BAM-610P7-25D

VOLTAGE: DC -38.4 to -56.5 V
CURRENT: 9A to 6A

BAM

HUAWEI TECHNOLOGIES CO., LTD.

Model: T-IPC-615

VOLTAGE: DC -38.4 to -56.5 V
CURRENT: 9A to 6A

Model: BAM-615P4-25D

VOLTAGE: DC -38.4 to -56.5 V
CURRENT: 9A to 6A

Test item particulars:	
Equipment mobility..... :	movable (for models T-IPC-610XX-XXX and BAM-610XX-XXX)
	stationery (for models T-IPC-615XX-XXX and BAM-615XX-XXX)
Operating condition..... :	Continuous
Tested for IT power systems..... :	No
IT testing, phase-phase voltage (V) ..... :	N/A
Class of equipment ..... :	Class I
Mass of equipment (kg) ..... :	15.9 kg (for models T-IPC-610XX-XXX and BAM-610XX-XXX)
	19.7 kg (for models T-IPC-615XX-XXX and BAM-615XX-XXX)
Protection against ingress of water ..... :	IPXO

Possible test case verdicts:

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

General remarks:

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

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

General product information:

Model difference: All models are identical, except for enclosure shaped, secondary control board and model designation.

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
1	**GENERAL**		Pass
1.5	**Components**		Pass
1.5.1	Comply with IEC 60950 or relevant component standard	(see appended table)	Pass
1.5.2	Evaluation and testing components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this Standard.	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)		N/A
1.5.3	Transformers	Evaluated as part of power supply.	Pass
1.5.4	Flammability class of high voltage components (component; manufacturer; flammability) ..... :	No high-voltage components.	N/A
1.5.5	Interconnecting cables	Interconnecting cables comply with the relevant requirements of this standard.	Pass
1.5.6	Mains capacitors	No X capacitors provided.	N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
1.6	**Power interface**		N/A
1.6.1	Steady state input current	No mains connection. See enclosed test record.	N/A
	Current deviation during normal operating cycle	The current deviation during the normal operating cycle did not exceed 10 %.	N/A
1.6.2	Voltage limit of hand-held equipment	The unit is not a hand-held equipment.	N/A
1.6.3	Neutral conductor insulated from earth and body	No mains connection.	N/A
1.6.4	Components in equipment intended for IT power system	No mains connection.	N/A
1.6.5	Mains supply tolerance (V) ..... :	No mains connection.	N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
1.7	**Marking and instructions**		Pass
1.7.1	Rated voltage (V) ..... :	DC -38.4 to -56.5 V (No mains connection.)	N/A
	Symbol of nature of supply for d.c. ..... :	No mains connection.	N/A
	Rated frequency (Hz) ..... :	dc (no mains connection.)	N/A
	Rated current (A) ..... :	9A to 6A (no mains connection)	N/A
	Manufacturer ..... :	Advantech Co., Ltd	Pass
	Trademark ..... :	**BAM** HUAWEI TECHNOLOGIES CO., LTD.	Pass
	Type/model ..... :	T-IPC-610XX-XXX, BAM-610XX-XXX T-IPC-615XX-XXX, BAM-615XX-XXX (Where the X may be 0-9, A-Z or blank)	Pass
	Symbol of Class II ..... :	Class I equipment.	N/A
	Certification marks ..... :		N/A
1.7.2	Safety instructions	Marking for laser class 1 type CD-ROM Driver, with the following wording: CLASS 1 LASER PRODUCT.	Pass
1.7.3	Short duty cycles	The equipment is intended for continuous operation.	N/A
1.7.4	Marking for voltage setting/frequency setting ..... :	No adjustment. No instructions are required on the equipment.	N/A
1.7.5	Marking at power outlets ..... :	No standard power outlets are provided.	N/A
1.7.6	Marking at fuseholders ..... :	No fuses are provided.	N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.7.1	Protective earthing terminals	The earth terminal is marked with the standard earth symbol (IEC 60417) near the terminal.	Pass
1.7.7.2	Terminal for external primary power supply conductors	No mains connection. (The terminals are marked with - and GND or 0)	N/A
1.7.8.1	Identification and location of switches and controls :	The marking and indication of the front panel controls is located that indication of function is clearly.	Pass
1.7.8.2	Colours of controls and indicators ..... :	A green LED is illuminated when the unit is operating. Others functional indicators use color.	Pass
1.7.8.3	Symbols according to IEC 60417 ..... :	The mains switch is marked with the symbols: "0" and "I" (IEC 60417, Nos. 5008 and 5007).	Pass
1.7.8.4	Figures used for marking ..... :	No color indicators provided which affect safety.	N/A
1.7.8.5	Location of markings and indications for switches and controls ..... :	Markings for switches and other controls located on the switch and control.	Pass
1.7.9	Isolation of multiple power sources ..... :	No connection from the means.	N/A
1.7.10	Instructions for installation to IT power system	No connection from the means.	N/A
1.7.11	Instructions when protection relies on building installation		N/A
1.7.12	Marking when leakage current exceeds 3.5 mA		N/A
1.7.13	Indication at thermostats and regulating devices	No thermostats or similar regulating devices.	N/A
1.7.14	Language of safety markings/instructions	Only English reviewed.	Pass
	Language ..... :	English.	—
1.7.15	Durability and legibility	The marking(s) withstood the required test.	Pass
1.7.16	Removable parts	No marking is located on (a) removable part(s).	Pass

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.17	Warning text for replaceable lithium batteries	The lithium battery is not located in an Operator Access Area.	Pass
	Language ..... :	English.	—
1.7.18	Operator access with a tool ..... :	A tool is not needed to gain access to an operator access area.	N/A
1.7.19	Equipment for restricted access locations ..... :	Equipment not intended for installation in a RESTRICTED ACCESS LOCATION.	N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
2	**PROTECTION FROM HAZARDS**		Pass
2.1	**Protection against electric shock and energy hazards**		Pass
2.1.1	Access to energized parts	No operator access to energized parts.	Pass
2.1.2	Protection against operator contact	No parts of ELV or hazardous voltages are accessible. Only SELV signal voltages are accessible.	Pass
	Test by inspection ..... :		Pass
	Test with test finger ..... :		Pass
	Test with test pin ..... :		Pass
2.1.3.1	Insulation of internal wiring in an ELV circuit accessible to operator	No internal wiring in an ELV cicuits is accessible to the operator.	N/A
	Working voltage (V); distance (mm) through insulation ..... :		N/A
2.1.3.2	Operator accessible insulation of internal wiring at hazardous voltage	No internal wiring accessible to the user.	N/A
2.1.4.1	Protection in service access areas	No bare parts operating at HAZARDOUS VOLTAGES in a service access area.	N/A
2.1.4.2	Protection in restricted access locations	The unit is not intended to be used in restricted locations.	N/A
2.1.5	Energy hazard in operator access area	No hazardous energy circuits are accessible.	Pass
2.1.6	Clearances behind conductive enclosures	Clearances behind conductive enclosure complies during the 250N test of Sub-clause 4.2.	Pass
2.1.7	Shafts of manual controls	No shafts or knobs, etc. at ELV or hazardous voltage.	Pass
2.1.8	Isolation of manual controls		N/A
2.1.9	Conductive casings of capacitors		N/A
2.1.10	Risk of electric shock from stored charge on capacitors connected to mains circuit	No mains connection.	N/A
	Time-constant (s); measured voltage (V) ..... :		—

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
2.2	**Insulation**		N/A
2.2.1	Methods of insulation	Adequate clearances through air, and creepages over the surface are provided.	N/A
2.2.2	Properties of insulating materials	Natural rubber, materials containing asbestos and hygroscopic materials are not used as insulation.	N/A
2.2.3	Humidity treatment	Total time elapsed: 48 hours	N/A
	Humidity (%) ..... :	93% R.H.	—
	Temperature (°C) ..... :	25 °C.	—
2.2.4	Requirements for insulation	Refer to 5.3, 2.9 and 5.1	N/A
2.2.5	Insulation parameters	Considered.	N/A
2.2.6	Categories of insulation	The adequate levels of safety insulation is provided and maintained to comply with the requirements of the standard.	N/A
2.2.7.1	General rules for working voltages	Considered.	N/A
2.2.7.2	Clearances in primary circuits	Considered.	N/A
2.2.7.3	Clearances in secondary circuits	Considered.	N/A
2.2.7.4	Creepage distances	Considered.	N/A
2.2.7.5	Electric strength tests	Considered.	N/A
2.2.8.1	Bridging capacitors .....:	No bridging capacitors.	N/A
2.2.8.2	Bridging resistors		N/A
2.2.8.3	Accessible parts		N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
2.3	**Safety extra-low voltage (SELV) circuits**		Pass
2.3.1	Voltage (V) of SELV circuits under normal operating conditions and after a single fault ..... :	SELV levels are maintained after single fault condition.	—
2.3.2	Voltage (V) between any two conductors of SELV circuit(s) and for Class I equipment between any conductor of SELV circuit and equipment protective earthing terminal under normal operating conditions ..... :	Only SELV circuits are accessible to the user.	Pass
2.3.3	Voltage (V) of SELV in the event of a single failure of basic or supplementary insulation or of a component ..... :	<= 42.4 Vpk, 60 V d.c.	—
	Method used for separation ..... :	Method 1.	Pass
2.3.4	Additional constructional requirements	The SELV circuit is adequately constructed in order to prevent reduction of distances, loosening of terminals, breaking of wiring at terminals, accidental shorting to hazardous voltages and the improper use of connectors.	Pass
2.3.5	Connection of SELV circuits to other circuits		N/A

2.4	**Limited current circuits**		N/A
2.4.2	Frequency (Hz) ..... :		—
	Measured current (mA) ..... :		N/A
2.4.3	Measured voltage (V) ..... :		—
	Measured capacitance (µF) ..... :		N/A
2.4.4	Measured voltage (V) ..... :		—
	Measured charge (µC) ..... :		N/A
2.4.5	Measured voltage (V) ..... :		—
	Measured energy (mJ) ..... :		N/A
2.4.6	Limited current circuit supplied from or connected to other circuits ..... :		N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
2.5	**Provisions for earthing**		Pass
2.5.1	Class I equipment	Accessible parts are earthed. No insulation required.	Pass
	Warning label for service personnel		N/A
2.5.2	Protective earthing in Class II equipment	The equipment is not Class II.	N/A
2.5.3	Switches/fuses in earthing conductors	No switch or fuse in earthing conductor.	Pass
2.5.4	Assured earthing connection for Class I equipment in systems comprising Class I and Class II equipment	The equipment is not comprised of Class I and Class II assemblies.	N/A
2.5.5	Green/yellow insulation	Main earth conductor is green with yellow stripe from inlet reliable fixed to switching power supply chassis.	Pass
2.5.6	Continuity of earth connections	Disconnection of the protective earth at one assembly does not break the protective earthing connection to other assemblies.	Pass
2.5.7	Making and breaking of protective earthing connections	No required.	Pass
2.5.8	Disconnection protective earthing connections	Connections to protective earthing cannot be removed unless hazardous voltage is removed from the part simultaneously.	Pass
2.5.9	Protective earthing terminals for fixed supply conductors or for non-detachable power supply cords		N/A
2.5.10	Corrosion resistance	The protective earthing terminal has adequate plating.	Pass
2.5.11	Resistance (Ohm) of protective earthing conductors ≤ 0.1 Ohm	The resistance from the appliance inlet to the chassis is < 0.1 ohms. See enclosed test record.	Pass
	Test current (A) ..... :	See enclosed test record.	—

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
2.6	**Disconnection from primary power**		N/A
2.6.1	General requirements	The appliance inlet is considered to be the disconnect device.	N/A
2.6.2	Type of disconnect device ..... :	Unit employs an appliance inlet.	N/A
2.6.3	Disconnect device in permanently connected equipment	Not permanently connected equipment.	N/A
2.6.4	Parts of disconnect device which remain energized	No accessible parts on the supply side of the disconnect device.	N/A
2.6.5	Switches in flexible cords		N/A
2.6.6	Disconnection of both poles simultaneously for single-phase equipment	Disconnect device disconnects all poles simultaneously.	N/A
2.6.7	Disconnection of all phase conductors of supply in three-phase equipment	The un is a single-phase equipment.	N/A
2.6.8	Marking of switch acting as disconnect device	A switch is not considered the disconnect device.	N/A
2.6.9	Installation instructions if plug on power supply cord acts as disconnect device		N/A
	Language ..... :		—
2.6.11	Interconnected equipment	No interconnection of hazardous voltages.	N/A
2.6.12	Multiple power sources	The equipment only receives power from one source.	N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
2.7	**Overcurrent and earth fault protection in primary circuits**		N/A
2.7.1	Basic requirements	Equipment relies on 16A rated fuse or circuit breaker of the wall outlet installation protection of the building installation in regard to L to N short circuit. Overcurrent protection is provided by the built-in device fuse is SPS.	N/A
2.7.2	Protection against faults not covered in 5.4	The protection devices are well dimensioned and mounted.	N/A
2.7.3	Short-circuit backup protection	Pluggable Type A. The building installation is considered as providing short-circuit backup protection.	N/A
2.7.4	Number and location of protective devices ..... :	Overcurrent protection by one built-in fuse in approval S.P.S.	N/A
2.7.5	Protection by several devices	Only one protective device is provided.	N/A
2.7.6	Warning to service personnel		N/A
2.8	**Safety interlock**		N/A
2.8.2	Design		N/A
2.8.3	Protection against inadvertent reactivation		N/A
2.8.4	Reliability		N/A
2.8.5	Override an interlock		N/A
2.8.6.1	Contact gap (mm) ..... :		N/A
2.8.6.2	Switch performing 50 cycles		N/A
2.8.6.3	Electric strength test: test voltage (V) ..... :		N/A
2.8.7	Protection against overstress		N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
2.9	**Clearances, creepage distances and distances through insulation**		N/A
	Nominal voltage (V) ..... :	115 / 230 V	—
	General		N/A
2.9.2	Clearances	(see appended table)	N/A
2.9.2.1	Clearances in primary circuits	(see appended table 2.9.2 and 2.9.3)	N/A
2.9.2.2	Clearances in secondary circuits	See 5.4.4.	N/A
2.9.3	Creepage distances	(see appended table)	N/A
	CTI tests ..... :	Material group IIIb; 100 <=CTI minimum	—
2.9.4.1	Minimum distances through insulation	(see appended table)	N/A
2.9.4.2	Thin sheet material	All critical distances through insulation are covered in power supply evaluation.	N/A
	Number of layers (pcs) ..... :		N/A
	Electrical strength test: test voltage (V) ..... :		N/A
2.9.4.3	Printed boards		N/A
	Distance through insulation		N/A
	Electric strength test at voltage (V) for thin sheet insulating material		N/A
	Number of layers (pcs) ..... :		N/A
2.9.4.4	Wound components without interleaved insulation	(see Annex U).	N/A
	Number of layers (pcs) ..... :		N/A
	Two wires in contact inside component; angle between 45° and 90°		N/A
	Routine testing for finished component		N/A
2.9.5	Distances on coated printed boards		N/A
	Routine testing for electric strength		N/A
2.9.6	Enclosed and sealed parts	(see appended table 2.9.2. and 2.9.3)	N/A
	Temperature T1 (°C) .....:		N/A
	Humidity % .....:		N/A
2.9.7	Spacings filled by insulating compound	(see appended table 2.9.4.1)	N/A
	Temperature T1 (°C) .....:		N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
	Humidity % .....:		N/A
2.9.8	Component external terminations	(see appended table 2.9.2 and 2.9.3)	N/A
2.9.9	Insulation with varying dimensions	(see appended table 2.9.2 and 2.9.3 and 2.9.4)	N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
2.10	**Interconnection of equipment**		Pass
2.10.1	General requirements	SELV is only connected to SELV and Safety Earth.	Pass
2.10.2	Type of interconnection circuits ..... :	SELV to SELV.	Pass
2.10.3	ELV circuits as interconnection circuits	No other equipment.	N/A
2.11	**Limited power source**		N/A
	Use of limited power source ..... :		N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
3	**WIRING, CONNECTIONS AND SUPPLY**		Pass
3.1	**General**		Pass
3.1.1	Cross-sectional area of internal wiring/interconnecting cables	All internal wiring is rated for the application.	Pass
	Protection of internal wiring and interconnecting cables	No required. No primary.	N/A
3.1.2	Wireways	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	Fixing of internal wiring	All wiring is reliably routed or seperated and secured.	Pass
3.1.4	Fixing of uninsulated conductors	Securely held on PCB. No hazard.	Pass
3.1.5	Insulation of internal wiring	No insulation required.	Pass
3.1.6	Wires coloured green/yellow only for protective earth connection	See 2.5.5	Pass
3.1.7	Fixing of beads and similar ceramic insulators		N/A
3.1.8	Required electrical contact pressure	All electrical screw connections are by metal screw with more than 2 threads into a metal plate.	Pass
3.1.9	Reliable electrical connections	All current carrying and safety earthimg connections are metal to metal.	Pass
3.1.10	End of stranded conductor	No risk of stranded conductor becoming unfixed.	Pass
3.1.11	Use of spaced thread screws/thread-cutting screws	Thread-cutting or space thread screws are not used for electrical connections. Machine screws only.	Pass

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
3.2	**Connection to primary power**		N/A
3.2.1	Type of connection ..... :	Unit employs an appliance inlet.	N/A
	Design of product with more than one supply connection ..... :		N/A
3.2.2	Provision for permanent connection ..... :	The equipment is not permanently connected.	N/A
	Size (mm) of cables and conduits ..... :		N/A
3.2.3	Appliance inlet	The appliance inlet complies with IEC 60320. Appliance inlet can be inserted without difficulty and so placed that, after insertion of the connector, the equipment is not supported by the connector for any position of normal use on a flat surface.	N/A
3.2.4	Type and cross-sectional area (mm²) of power supply cord ..... :	Power supply cord suitable for the application and subject to country's national code and regulations is to be provided by the manufacturer; to be determined by the country's local certification body.	N/A
3.2.5	Cord anchorage		N/A
	Test: 25 times; 1 s; pull (N) ..... :		—
	Longitudinal displacement ≤ 2 mm ..... :		N/A
3.2.6	Protection of power supply cord	No sharp points or cutting edges on the equipment surfaces	N/A
3.2.7	Cord guard		N/A
	D (mm) ..... :		—
	Test: mass (g) ..... :		—
	Radius of curvature of the cord ≤ 1.5 D		N/A
3.2.8	Supply wiring space		N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
3.3	**Wiring terminals for external power supply conductors**		Pass
3.3.1	Terminals	Terminals with screws, nuts or equally effective devices are used	Pass
3.3.2	Special non-detachable cord		N/A
	Type of connection ..... :		—
	Pull test at 5 N		N/A
3.3.3	Screws and nuts	M 3.5 ISO thread used.	Pass
3.3.4	Fixing of conductors	No power supply cord.	N/A
3.3.5	Connection of connectors	Terminals are sized accordingly to allow the connection of conductors having nominal cross-sectional areas.	Pass
3.3.6	Size of terminals	No mains connection.	N/A
	Nominal thread diameter (mm) ..... :		N/A
3.3.7	Protection against damage of conductors	Clamping means (washer) is constructed for clamping.	Pass
3.3.8	Terminal location	No power supply cord.	N/A
3.3.9	Test with 8 mm stranded wire	The required test with an 8 mm wire has been conducted.	Pass

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
4	**PHYSICAL REQUIREMENTS**		Pass
4.1	**Stability and mechanical hazards**		Pass
4.1.1	Stability tests		Pass
	Angle of 10°	Unit does not overbalance at 10° angle	Pass
	Test: force (N) ..... :	Unit does not overbalance.	Pass
4.1.2	Protection against personal injury	Equipment does not have any hazardous moving parts	N/A
4.1.3	Warning and means provided for stopping the moving part ..... :	The equipment does not have any hazardous moving parts.	N/A
4.1.4	Edges and corners	All edges and corners are rounded and smooth.	Pass
4.1.5	Enclosure of a high pressure lamp	The equipment does not have any high pressure lamps.	N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
4.2	**Mechanical strength and stress relief**		Pass
4.2.1	General		Pass
4.2.2	Internal enclosures 30 N ± 3 N; 5 s	No hazard as a result of the 30 N test.	Pass
4.2.3	External enclosures 250 N ± 10 N; 5 s	No hazards as a result of the 250 N test.	Pass
4.2.4	Steel ball tests		N/A
	Fall test	All metal enclosure.	N/A
	Swing test		N/A
4.2.5	Drop test		N/A
4.2.6	Heat test for enclosures of moulded or formed thermoplastic materials: 7 h; T (°C) ..... :	The equipment has metal enclosure, test was waived	N/A
4.2.7	Compliance criteria		N/A
4.2.8	Mechanical strength of cathode ray tubes		N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
4.3	**Construction details**		Pass
4.3.1	Changing of setting for different power supply voltages	The equipment does not have a voltage selector	N/A
4.3.2	Adjustment of accessible control devices	Adjustment of accessible control devices which may create a hazard require the use of a tool.	Pass
4.3.4	Prevention of dangerous concentration of dust, powder, liquid and gas	The equipment does not produce dust or employ powders, liquids or gases.	N/A
4.3.5	Fixing of knobs, grips, handles, levers		N/A
	Test: force (N) ..... :		N/A
4.3.6	Driving belts/couplings shall not ensure electrical insulation	Electrical insulation does not rely upon driving belts or couplings.	Pass
4.3.7	Retaining of sleeves	Sleeving is not used as supplementary insulation.	N/A
4.3.9	Protection of loosening parts	No loosening of parts impairing creepage distances or clearances over supplementary or reinforced insulation is likely to occur.	Pass
4.3.11	Resistance to oil and grease	The insulation of the internal wiring is not exposed to oil, grease, etc.	N/A
4.3.12	Protection against harmful concentration of ionizing radiation, ultraviolet light, laser or flammable gases (for laser see IEC 60825-1)	CLASS 1 Laser under normal operation. Compliance checked according to IEC 60825.	Pass
4.3.13	Securing of screwed connections	Screwed connections are reliably secured.	Pass
4.3.15	Openings in the top of enclosure	No openings above hazardous parts.	Pass
	Dimensions (mm) ..... :		—
4.3.16	Openings in the sides of enclosure	Foreign objects entering the enclosure will not contact bare parts at hazardous voltage. (No hazardous parts within 5°arc)	Pass
	Dimensions (mm) ..... :		—
4.3.17	Interchangeable plugs and sockets		N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.18	Torque test for direct plug-in equipment		N/A
	Additional torque (Nm) ..... :		N/A
4.3.19	Protection against excessive pressure	The equipment does not contain liquids.	N/A
4.3.20	Protection of heating elements in Class I equipment	The equipment does not have any heating elements.	N/A
4.3.21	Protection of lithium batteries		Pass
	Construction of protection circuit ..... :	Lithium battery in approval CPU card. (See appended table)	Pass
4.3.22	Ageing of barrier/screen secured with adhesive		N/A
	Day 1: temperature (°C); time (weeks) ..... :		N/A
	Day 8/22/57: a) temperature (°C) for 1 h b) temperature (°C) for 4 h c) temperature (°C) over 8 h ..... :		N/A
	Day 9/23/58: a) relative humidity (%) for 72 h b) temperature (°C) for 1 h c) temperature (°C) for 4 h d) temperature (°C) over 8 h ..... :		N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
4.4	**Resistance to fire**		Pass
4.4.1	Methods of achieving resistance to fire	Method 1: Selection and application of components and materials which minimize the possibility of ignition and spread of flame.	Pass
4.4.2	Minimizing the risk of ignition	Components rated at least 94V-2 are mounted on PWB rated at least 94V-1.	Pass
	Printed board: manufacturer; type; flammability ... :	min. 94V-1.	Pass
4.4.3	Flammability of materials and components	The propagation of fire is minimized through the fire enclosure construction.	Pass
4.4.3.2	Material and component: manufacturer; type; flammability ..... :	Internal plastic parts are rated 94V-2 min.	Pass
4.4.3.3	Exemptions ..... :	Integrated circuits, capacitors, etc. mounted on V-1 printed	Pass
4.4.3.4	Wiring harnesses: manufacturer; flammability ..... :	Wiring is PVC, TFE, PTFE, FEP or neoprene.	Pass
4.4.3.5	Cord anchorage bushings: manufacturer; flammability ..... :	The equipment does not have a non-detachable power supply cord.	Pass
4.4.3.6	Air filter assemblies: manufacturer; flammability .. :		N/A
4.4.4	Enclosures and decorative parts: manufacturer; flammability ..... :	The fire enclosure is metal.	Pass

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
4.4.5	Conditions for fire enclosures	All components having unenclosed arcing parts, such as open switch and relay contacts, and commutators are placed in a fire enclosure. All components having windings, such as transformers, solenoids and relays are located in a fire enclosure. All semiconductor devices, such as transistors, diodes and integrated circuits are located in a fire enclosure. All resistors, capacitors and inductors are located in a fire enclosure.	Pass
4.4.5.1	Components which require fire enclosure: manufacturer; flammability ..... :	A fire enclosure covers all parts.	Pass
4.4.5.2	Components not requiring fire enclosure .....:	Fire enclosure covers all parts.	Pass
4.4.6	Fire enclosure construction	Openings under PVC, TFE, PTFE, FEP and neoprene insulated conductors and their connectors,	Pass
4.4.7	Doors and covers in fire enclosures	Outer fire enclosure for decorative part. No hazard.	Pass
4.4.8	Flammable liquids	The equipment does not use any flammable liquids.	N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
5	**THERMAL AND ELECTRICAL REQUIREMENTS**		Pass
5.1	**Heating**		Pass
	Heating tests	(see appended table)	Pass
5.2	**Earth leakage current**		N/A
5.2.1	General	Investigated and measured on the certified switching power supply. Equipment intended to be connected to TT or TN POWER SYSTEMS.	N/A
5.2.2	Leakage current	See enclosed test record.	N/A
	Test voltage (V) ..... :		—
	Measured current (mA) ..... :		—
	Max. allowed current (mA) ..... :	3.5 mA (Class I movable)	—
5.2.3	Single-phase equipment	See 5.2.2	N/A
	Test voltage (V) .....:		—
	Measured current (mA) .....:		—
	Max. allowed current (mA) .....:		—
5.2.4	Three-phase equipment		N/A
	Test voltage (V) ..... :		—
	Measured current (mA) ..... :		—
	Max. allowed current (mA) ..... :		—
5.2.5	Equipment with earth leakage current exceeding 3.5 mA		N/A
	Test voltage (V) ..... :		—
	Measured current (mA) ..... :		—
	Max. allowed current (mA) ..... :		—

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
	Cross-sectional area (mm²) of internal protective earthing conductor ..... :		—
	Warning label		N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
5.3	**Electric strength**		N/A
5.3.1	General	Based on the electric strength test the use of the insulating materials within the equipment is satisfactory.	N/A
5.3.2	Test procedure	(see appended table)	N/A
5.4	**Abnormal operating and fault conditions**		Pass
5.4.2	Motors	Cooling fans for unit and used in the appliance which are certified HDD, FDD and CD-ROM. (See appended table)	Pass
5.4.3	Transformers	Evaluated as part of power supply.	Pass
5.4.4	Compliance of operational insulation		Pass
	Method used ..... :	Method C.	Pass
5.4.5	Electromechanical components in secondary circuits		N/A
5.4.6	Other components and circuits	(see appended table)	Pass
5.4.7	Test in any expected condition and foreseeable misuse	(see appended table)	Pass
5.4.8	Unattended use of equipment having thermostats, temperature limiters etc.		N/A
5.4.9	Compliance	No fire, emission of molten metal or deformation was noted during the tests.	Pass
5.4.10	Ball-pressure test of thermoplastic parts; impression shall not exceed 2 mm	In approved SPS.	N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
6	**CONNECTION TO TELECOMMUNICATION NETWORKS**		N/A
6.1	**General**		N/A
6.2	TNV circuits		N/A
6.2.1.1	Limits of the TNV circuits		N/A
6.2.1.1 a)	TNV-1 circuits		N/A
6.2.1.1 b)	TNV-2 and TNV-3 circuits		N/A
6.2.1.2	Separation from other circuits and from accessible parts	(see appended table 2.9.2, 2.9.3 and 2.9.4)	N/A
	Voltage (V) in SELV circuits, TNV-1 circuits and accessible conductive parts in event of single insulation fault or component failure ..... :		N/A
6.2.1.3	Operating voltages generated externally		N/A
	Voltage (V) in SELV circuit, TNV-1 circuit or accessible conductive part ..... :		N/A
6.2.1.4	Separation from hazardous voltages ..... :		N/A
	Insulation between TNV circuit and circuit at hazardous voltage		N/A
	Method used ..... :		N/A
6.2.1.5	Connection of TNV circuits to other circuits	(see appended table 5.4)	N/A
	Insulation (mm) between TNV circuit supplied conductively from secondary circuit and hazardous voltage circuit ..... :		N/A
6.2.2.1	Protection against contact with bare conductive parts of TNV-2 and TNV-3 circuits		N/A
	Test with test finger		N/A
	Test with test probe		N/A
6.2.2.2	Battery compartments		N/A
	Marking next to door/on door		N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
6.3	**Protection of telecommunication network service personnel, and users of other equipment connected to the telecommunication network, from hazards in the equipment**		N/A
6.3.1	Protection from hazardous voltages		N/A
6.3.2	Use of protective earthing		N/A
	Language of installation instructions ..... :		N/A
6.3.3.1	Insulation between TNV circuit and parts or circuitry that may be earthed	(see appended table 5.3)	N/A
6.3.3.2	Exclusions ..... :		N/A
6.3.4.1	Limitation of leakage current (mA) to telecommunication network ..... :		N/A
6.3.4.2	Summation of leakage currents from telecommunication network ..... :		N/A
6.4	**Protection of the equipment user from voltages on the telecommunication network**		N/A
6.4.1	Separation requirements		N/A
6.4.2	Test procedure		N/A
6.4.2.1	Impulse test: separation between TNV-1 circuits/TNV-3 circuits and:		N/A
6.4.2.1 a)	unearthed conductive parts/non-conductive parts of the equipment which are held or touched during normal use; test at 2.5 kV		N/A
6.4.2.1 b)	parts and circuitry that can be touched by the test finger except contacts of connectors that cannot be touched by test probe; test at 1.5 kV		N/A
6.4.2.1 c)	circuitry which is provided for connection of other equipment; test at 1.5 kV		N/A
6.4.2.2	Electric strength test: separation between TNV-1 circuits/TNV-3 circuits and:		N/A
6.4.2.2 a)	unearthed conductive parts/non-conductive parts of the equipment which are held or touched during normal use; test at 1.5 kV		N/A
6.4.2.2 b)	parts and circuitry that can be touched by the test finger except contacts of connectors that cannot be touched by test probe; test at 1.0 kV		N/A
6.4.2.2 c)	circuitry which is provided for connection of other equipment; test at 1.0 kV		N/A
6.4.2.3	Compliance criteria		N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
6.5	**Protection of telecommunication wiring system from overheating**		N/A
	Maximum continuous output current (A) ..... :		N/A

IEC 60 950			
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 moveable equipment having a total mass exceeding 18 kg, and of stationary equipment		N/A
A.2	Flammability test for fire enclosures of moveable equipment having a total mass not exceeding 18 kg, and for materials located within fire enclosures		N/A
A.3	High current arcing ignition test		N/A
A.3.6	Number of arcs .....:		N/A
A.4	Hot wire ignition test		N/A
A.4.6	Ignition time (s) .....:		N/A
A.5	Hot flaming oil test		N/A
A.6	Flammability test for classifying materials V-0, V-1 or V-2		N/A
A.7	Flammability test for classifying foamed materials HF-1, HF-2 or HBF		N/A
A.8	Flammability test for classifying materials HB		N/A
A.9	Flammability test for classifying materials 5V		N/A
A	Tested material		N/A
	Preconditioning: 7 days (168 h); temperature (°C) :		—
	Mounting of samples during test ..... :		—
	Wall thickness ..... :		—
	Sample 1 burning time ..... :		N/A
	Sample 2 burning time ..... :		N/A
	Sample 3 burning time ..... :		N/A
	Material: compliance with the requirements		N/A
	Manufacturer of tested material ..... :		—
	Type of tested material ..... :		—
	Additional information ..... :		—

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
B	**ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS**		N/A
B.1	General requirements		N/A
	Position ..... :		—
	Manufacturer ..... :		—
	Type ..... :		—
	Rated voltage (V) or current (A) ..... :		—
B.2	Test conditions	(see appended table 5.4)	N/A
B.3	Maximum temperatures	(see appended table 5.4)	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 motor in secondary circuits		N/A
B.7	Locked-rotor overload test for DC motor in secondary circuits		N/A
B.7.2	Test time (h) ..... :		N/A
B.7.3	Test time (h) ..... :		N/A
B.8	Test for motors with capacitor		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Test voltage (V) ..... :		—

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
C	**ANNEX C, TRANSFORMERS**		N/A
	Position ..... :	Insulation transformers used in certified switching power supply were investigated.	—
	Manufacturer ..... :		—
	Type ..... :		—
	Rated values ..... :		—
	Temperatures	(see appended table 5.1)	N/A
	Thermal cut-out		N/A
C.1	Overload test	Insulation transformers used in certified switching power supply were investigated.	N/A
	Conventional transformer		N/A
C.2	Insulation		N/A
	Precautions ..... :	Insulation transformers used in certified switching power supply were investigated.	N/A
	Retaining of end turns of all windings	Insulation transformers used in certified switching power supply were investigated.	N/A
	Earthing test at 25 A		N/A
C.3	Electric strength test	Insulation transformers used in certified switching power supply were investigated.	N/A

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict
H	**ANNEX H, IONIZING RADIATION**		N/A
	Ionizing radiation		N/A
	Measured radiation ..... :		—
	Measured high-voltage (kV) ..... :		—
	Measured focus voltage (kV) ..... :		—
	CRT markings ..... :		—
	Certified by ..... :		—
	Standard used ..... :		—
U	**ANNEX U, INSULATED WINDING WIRES FOR USE AS MULTIPLE LAYER INSULATION**		N/A
	See separate test report		N/A

IEC 60 950			
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])
Power Supply	Levin Technology Inc.	LV-48V-250D	Class I i/p: DC -38.4V~-56.5V, 9A~6A o/p: +5Vdc/5A~28A +12Vdc/1A~8A -5Vdc/0.2A~1A -12Vdc/ 0.2A~0.75A Total 250W	IEC 60950 EN 60950	CE (Refer to report no. SPCLVD10809)
CPU Card (Optional)	Advantech Co., Ltd.	PCA-6276XX	PIII, 850MHz Rated: 5 V, 5VSB, 3.3V, 12V, -12V dc	UL 60950 (IEC 60950)	UL (E180881)
System Fan (Secured front enclosure.) (For model 610 series)	ADDA CORP.	AD1212HB-A71G	12Vdc, 0.37A	EN 60950	UL, TÜV
Drive (CD-ROM) (Optional)	AFREEY INC. Or equal	CD-2052E	5/12Vdc, 0.9A/1.6A	EN 60950 EN 60825-1	UL, TÜV
H.D.D (Optional) (For model with 610 series)	IBM Corp. Or equal	DTLA-307020	5Vdc/0.3A, 12Vdc/0.5A,	EN 60950	TÜV, UL
(For model with 615 series)	Seaget Or equal	ST320423A	5Vdc/0.3A, 12Vdc/0.5A	EN 60950	TÜV, UL
Floppy Disk Drive (Optional)	TEAC Corp. Or equal	FD-235HF	5Vdc/1.2A max.	IEC 60950	TÜV, UL
All PCB	--	--	V-0 or better, min. 105°C	UL 94	UL
[1]) an asterisk indicates a mark which assures the agreed level of surveillance					

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict

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

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict

2.9.2 and 2.9.3	**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)
supplementary information:						

2.9.4.1	**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 60 950			
Clause	Requirement + Test	Result - Remark	Verdict

5.1	**TABLE: temperature rise measurements**		Pass
	test voltage (V) ..... :	DC 38.4 / 56.5 V	—
	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 60 950			
Clause	Requirement + Test	Result - Remark	Verdict

5.3	**TABLE: electric strength measurements**		N/A
test voltage applied between:		test voltage (V)	breakdown
supplementary information:			

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict

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

IEC 60 950			
Clause	Requirement + Test	Result - Remark	Verdict

5.4.10	**TABLE: ball pressure test of thermoplastics**		N/A
	required impression diameter (mm) ..... :	<= 2 mm	—
part		test temperature (°C)	impression diameter (mm)
supplementary information:			

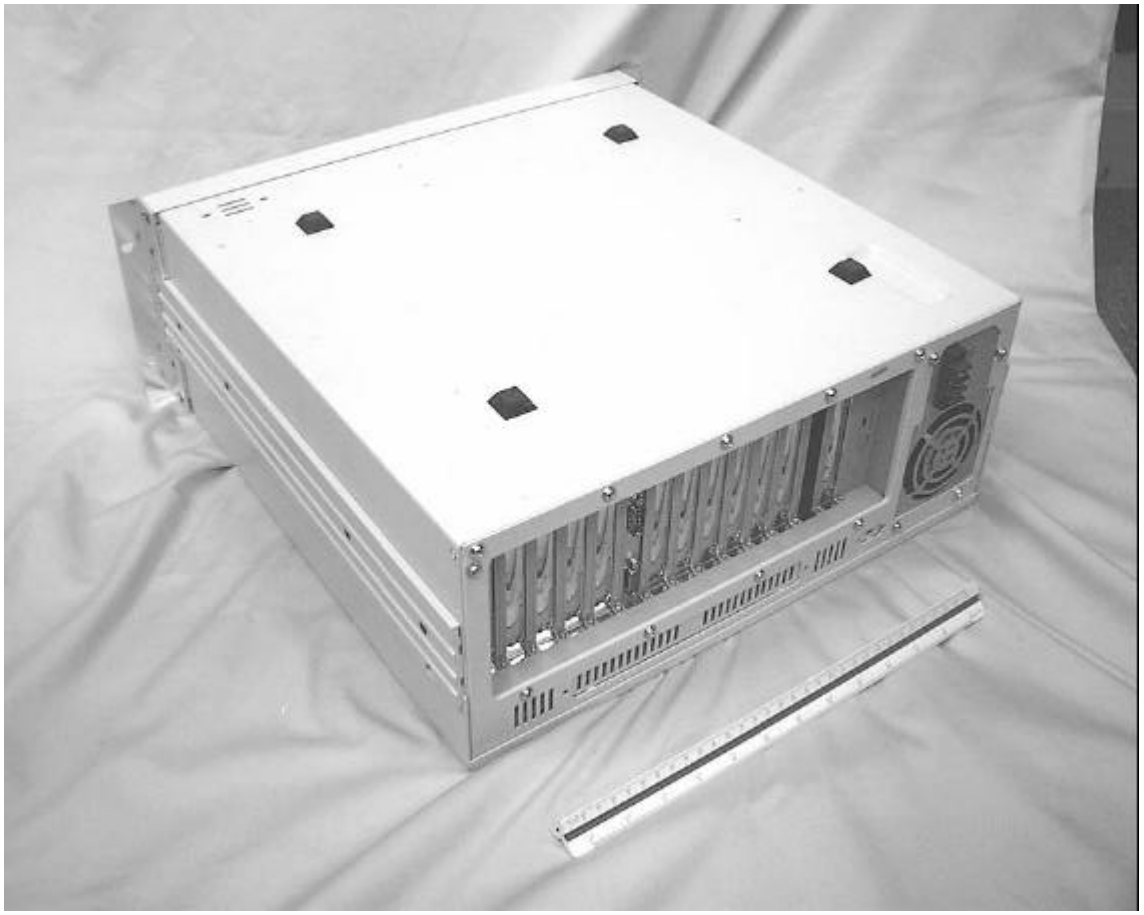
ENCLOSURE No. 1

Photographs

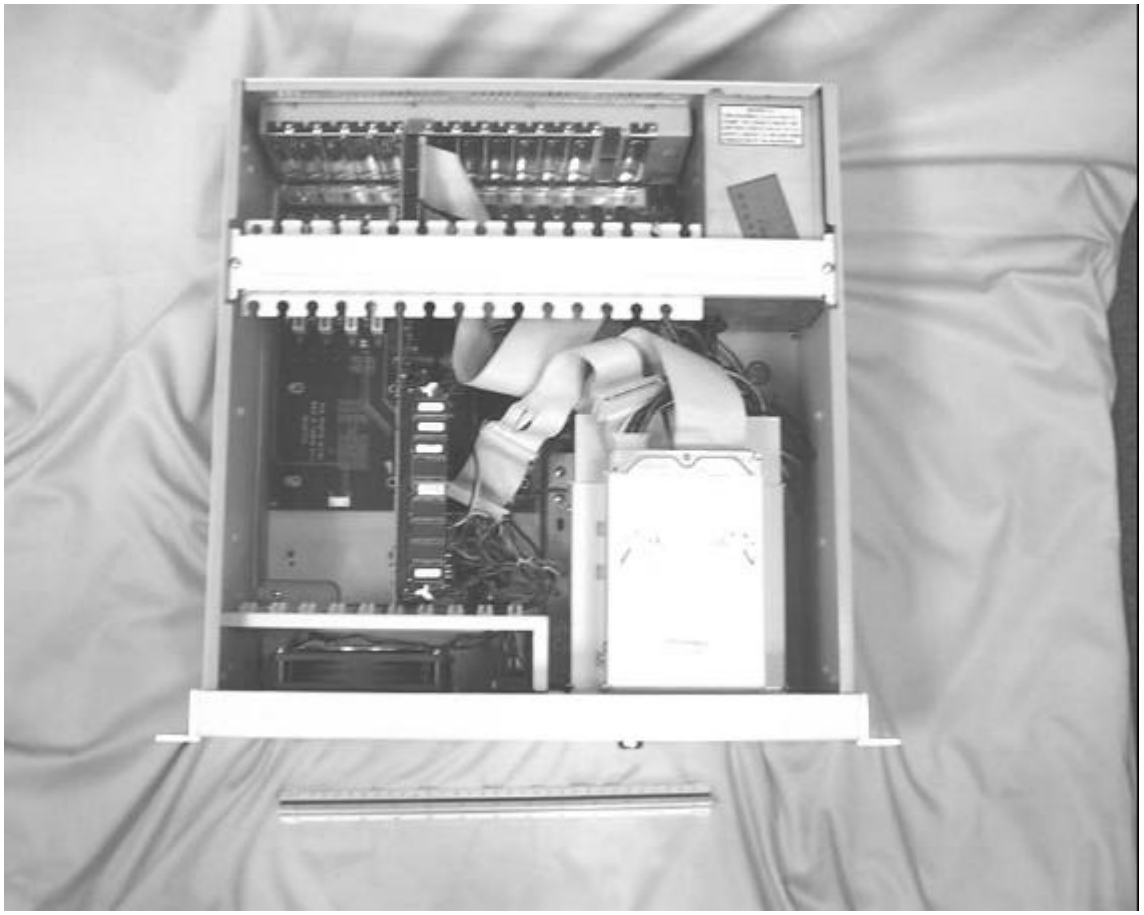
(Total 7 Pages including this Cover Page)

Models T-IPC-610XX-XXX and BAM-610XX-XXX

Models T-IPC-610XX-XXX and BAM-610XX-XXX



Models T-IPC-610XX-XXX and BAM-610XX-XXX



Models T-IPC-615XX-XXX and BAM-615XX-XXX

Models T-IPC-615XX-XXX and BAM-615XX-XXX

Models T-IPC-615XX-XXX and BAM-615XX-XXX