TEST REPORT

EN 60950 : 1992
EN 60950 A1 + A2 : 1993
EN 60950 A3 : 1995

Safety of information technology equipment including electrical business equipment

Applicant: Advantech Co., Ltd.
4F, No. 108-3, Ming Chhuan Road, Hsin Tien City,
Taipei Hsien, Taiwan, R.O.C.

Contact Person:. Ms. Lizzy Kao

Production Site:. Same as Applicant

Equipment:. Industrial Personal Computer

Model: IPC-620XX-350 **Serial No.:** N/A

Rated Voltage: 100-120/200-240 Vac **Rated Frequency:** 60/50 Hz

Rated Current/Power: 8/5.2A **Protection Class:** I

Protection against moisture: Ordinary

Place: Taipei

Prepared by: Steve Wu **Date:** April 11, 1997

Test Report Checked: Bill Xin **Date:** April 11, 1997

SAFETY SERVICES INTERNATIONAL INC.
7F, No. 758, Chung-Cheng Road, Chungho City, Taipei Hsien, Taiwan, R.O.C.
Tel : (+886-2)225-1600
Fax: (+886-2)226-9540

Fax Message

April 10, 1997

TÜV Product Service Taiwan Ltd.
5F, No. 4, Lane 609, Chung Hsin Rd.,
Sec. 5, San Chung City, Taipei Hsien
Taiwan, R.O.C.

Attention: Mr. Steve Wu, Assistant Manager (ITE Dept.)

Fax No.: (02)999-3949

Reference: Advantech Co., Ltd.

Subject: Confirm Letter For Industrial Personal Computer, Model - IPC-620XX-XXX

Dear Steve:

We are the authorized agent of Advantech Co., Ltd.. On their behalf, we would like to confirm that total power switch with tubing.

If there is any question regarding to subject matter, please do not hesitate to contact with me. Your best help to this matter will be appreciated.

With Best Regards,

Jason Chuang

Jason Chuang
Engineering Deputy Manager

Equipment mobility	movable [ ] hand-held [ ] stationary [X] fixed [ ] permanent connection [ ] for building-in [ ]
Operating condition	continuous [X] short-time [ ] intermittent [ ]
Tested for IT power system YES [ ]	_____ V phase-phase NO [ ]
Class of equipment	Class I [X] Class II [ ] Class III [ ]
Mass of equipment	25 kg
Protection against ingress of water:	IP 20 .

SUMMARY OF TESTING

Clause	Information/Comments
1.6.1	Input current - Pass
2.1.10	Discharge - Pass
2.2.3	Humidity treatment - Pass
2.5.11	Grounding - Pass
5.1	Heating - Pass
5.2	Leakage - Pass
5.3	Electric Strength - Pass
5.4	Abnormal - Pass

1.5.1 LIST OF CRITICAL COMPONENTS

Part No.	Component	Manufacturer, type, ratings	Tested by/ Publication

Refer to Construction Data Form

Aufbauübersicht für Elektro-und Medizingeräte
Data form for electrical and medical equipment

TÜV PRODUCT SERVICE

Zertifikat Nr./
Certificate No.

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Prüfbericht Nr./
Test Report No. 61210721301

Auftraggeber / Applicant: **Advantech Co., Ltd.**
4F, No. 108-3, Ming Chuan Road, Hsin Tien City, Taipei Hsien, Taiwan

Fertigungsstätte / Production facility: **Advantech Co., Ltd.**
4F, No. 108-3, Ming Chuan Road, Hsin Tien City, Taipei Hsien, Taiwan

Geräteart / Type of equipment: **Industrial Personal Computer**

Typenbezeichnung / Type/model: **IPC-620XX-350**

Nennspannung/Frequenz / Rated voltage/frequency: **100-240/200-240 Vac, 60/50**

Nennaufnahme/Nennstrom / Rated input power/current: **8/5.2 A**

Ausführung/ Construction:	Ortsfest	Stationary	☒
	Ortsveränderlich	Portable	☐
	Handgerät	Hand-held	☐
	Einbauger	Open-frame	☐
Schutzklasse / Protection class: Schutzklasse I:	Schutzleiteranschluß	PE-connection	☒
Schutzklasse II:	Schutzisoliert	Double insulation	☐
Schutzklasse III:	Schutzkleinspannung/ nterne Stromversorgung	SELV/internally powered	☐
Schutzart / Degree of protection against liquids:	Abgedeckt	Ordinary	☒
	Tropfwassergeschützt	Drip proof	☐
	Spritzwassergeschützt	Splash proof	☐
	Wasserdicht	Water tight	☐
Anschlußart / Supply connection:	Feste Anschlußleitung	Nondetachable cord	☒
	Fester Anschluß	Permanent connection	☐
	Gerätesteckvorrichtung	Appliance inlet	☐
Neebetriebsart / Rated operation:	Dauerbetrieb	Continuous operation	☒
	Aussetzbetrieb	ntermittent operation	☐
	Kurzzeitbetrieb	Short time operation	☐

Material: **a) Gehäuse /** Enclosure **Metal**

b) Leiterplatten / p.c.b. **Rated UL 94V-0.**

Zusätzliche Angaben für elektromedizinisches Gerät nach DIN IEC 601 / VDE 0750 Teil 1
Additional information for electromedical equipment according to DIN IEC 601 / VDE 0750 part 1

Gerätetyp / Type: B ☐ Anwendung in Gegenwart von brennbaren Anästhetika/Reinigungsmitteln? J/N
BF ☐ Usage in presence of inflammable anaesthetica and/or detergents? Y/N
CF ☐ Anästhesiesicher / Anaesthetic proof: AP ☐ APG ☐

Zusätzliche Angaben für Laser, klassifizierung nach DIN VDE 0837 (IEC 825/84)
Additional information for Laser equipment, classification according to DIN VDE 0837 (IEC 825/84)

Klasse / Class:
Wellenlänge / Wavelength:
Pulsdauer / Pulse duration:

Zusätzliche Information siehe Rückseite / Additional information see overleaf

Ort / place **Taipei, Taiwan** **Datum /** date **May 29, 1997**

Stempel und Unterschrift des Auftraggebers / Stamp and signature of applicant

Steve Wu

Jason

Aufbauübersicht für Elektro-und Medizingeräte
Data form for electrical and medical equipment

TÜV PRODUCT SERVICE

Zertifikat Nr./
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Prüfbericht Nr./
Test Report No. 61210721301

Im Gerät eingebaute Einzelteile: (Schalter, Temperaturregler, Heizkörper, Stecker, Fassungen, Leitungen, kondensatoren, Motoren und sonstige Wicklungen z. B. Transformatoren, Magnetspulen)
Built-in component: (switch, temperature regulator, heating element, plug, socket, wiring, capacitor, motors and other components with windings e. g. transformers, coils)

Bautell/ Kind of Component	**Hertelle/** Manufacturer	**Angaben über Typ, Stromstäke, Leistung, Transformatorspezifikationsnummer, Isolationsklasse/** Information about type, current, power, transformer specification number, insulating class	**Püfzeichen von** Test mark from **(VDE, BSI, UL etc.)**
1. Power Supply	Sea Sonic	SSH-350G, Input : 100-120/200-240 V, 60/50 Hz 8/5.2 A Output : 5 V/35 A, 12 V/14.2 A, -5 V/0.3 A, -12 V/0.3 A	TÜV
2. Power Switch	Firma J. u. J. Miarquardt	1852, 4 A/250 V	VDE
3. Fan	1. Delta Electronic	DFB0912H, 12 Vdc, 0.30 A, 49.79 CFM	VDE
	2. ADDA Corporation	AD0912HB-A70GL, 12 Vdc, 0.34 A, 48.4 CFM	TUV
	3. Nidec Taiwan	D09T-12PH, 12 Vdc, 0.17 A, 42.4 CFM	UL
4. Floppy Dirve	Teac Corporation	FD-235 XX, 5 Vdc, 0.8 A	TUV
5. Hard Dirve	Seagate	ST3XXXXY, 5/12 Vdc, 0.3/0.7 A	TUV
6. Power Cord Connector & Plug	1. I Sheng	IS-011, 10 A, 250 V	VDE
	2. I Sheng	IS-14, 10 A, 250 V	VDE
7. Power Cord Cable	1. I Sheng	H05VV-F 3G 0.75 mm², the length max. 2 m	VDE
	2. Walsin	H05VV-F 3G 0.75 mm², the length max. 2 m	VDE
	3 Longwell	H05VV-F 3G 0.75 mm², the length max. 2 m	VDE
8. CPU Fan	Innvoative	BP401212M, 12 Vdc, 0.06 A, 0.11m³/min	UL/CSA
9. Lithum Battery	Dallas	DS12887	UL
10. Pico Fuse	1. Bel	MQ, rated 125 V, 3A	UL
	2. Littelfuse	251, rated 125 V, 3A	UL
	3. Cooper	MCR, rated 125 V, 3A	UL

Model Description :
IPC-620XX-350
XX : first X - P : 20-solt backplane (15ISA/4PCI/IPICMG)
— : 20-slot ISA-bus backplane
D : Dual system backplane
Q : Quad system backplane
Second X - CPU board type number may be 0-9

Total solt load can't excessed +5V/20A, +12V/4A

The total power switch should be with tubing.

Ort / place **Taipei, Taiwan** | **Datum /** data **May 29, 1997**

Stempel und Unterschrift des Auftraggebers / Signature of applicant

Jason

TÜV PRODUCT SERVICE

Steve Wu

DEUTSCHLAND	Zertifizierstelle /			Fax
	Frankfurt	Mergenthaleralee 27, D-65760 Eschborn	0049/6196/6901-0	0049/6196/9601-99
	Hannover	Masurenweg 1 -3, D-30163 Hannover	0049/511/96359-0	0049/511/69359-39
	München	Ridlerstraße 31, D-80339 München	0049/89/50084-0	0049/89/50084-222
	Strasskirchen, MIKES	Ohmstraße 2-4, D-94342 Strasskirchen	0049/9424/1031	0049/9424/8533

1.5 COMPONENTS

		RESULTS			
		PASS	FAIL	N/A	ENCL.
1.5.1	Comply with EN60950 or relevant component standard	[X]	[ ]	[ ]	[ ]
1.5.2	Correct application	[X]	[ ]	[ ]	[ ]
1.5.3	Transformers	[ ]	[ ]	[X]	[ ]
1.5.4	Flammability class of high-voltage components	[ ]	[ ]	[X]	[ ]
1.5.5	Interconnecting cables	[X]	[ ]	[ ]	[ ]
1.5.6	X capacitors	[ ]	[ ]	[X]	[ ]

Comments:

1.5.1: Refer to Construction Data Form.

1.5.2: Components are used within their specified operating voltage, current, and temperature ranges.

1.6 POWER INTERFACE

		RESULTS PASS	FAIL	N/A	ENCL.
1.6.1	Test Voltage: 100/200 V				
	Rated current: 8/5.2 A .				
	Measured current: 3.65/1.97 A .				
	Deviation < 10 %	[X]	[ ]	[ ]	[ ]
1.6.2	Rated voltage of hand-held equipment	[ ]	[ ]	[X]	[ ]
1.6.3	Neutral conductor insulated from earth	[ ]	[ ]	[X]	[ ]
1.6.4	Components connected between phase and earth in equipment intended for IT power system	[ ]	[ ]	[X]	[ ]
1.6.5	Rated supply tolerance				
	+6% and -10%	[X]	[ ]	[ ]	[ ]

Comments:

1.7 MARKING AND INSTRUCTIONS

		RESULTS PASS	FAIL	N/A	ENCL.
1.7.1	Rated voltage 100-120/200-240 Vac	[X]	[ ]	[ ]	[ ]
	Rated current 8/5.2 A	[X]	[ ]	[ ]	[ ]
	Rated frequency 60/50 Hz	[X]	[ ]	[ ]	[ ]
	Manufacturer Advantech	[X]	[ ]	[ ]	[ ]
	Trade mark see marking plate	[X]	[ ]	[ ]	[ ]
	Type/Model IPC-620XX-350	[X]	[ ]	[ ]	[ ]
	Symbol of Class II	[ ]	[ ]	[X]	[ ]
	Certification marks	[ ]	[ ]	[X]	[ ]
1.7.2	Special safety precautions	[X]	[ ]	[ ]	[ ]
1.7.3	Short time/intermittent operation	[ ]	[ ]	[X]	[ ]
1.7.4	Marking for voltage/frequency setting	[ ]	[ ]	[X]	[ ]
1.7.5	Marking at outlets	[ ]	[ ]	[X]	[ ]
1.7.6	Marking at fuseholders	[ ]	[ ]	[X]	[ ]
1.7.7.1	Protective earthing terminals	[ ]	[ ]	[X]	[ ]
1.7.7.2	Terminals for external conductors	[ ]	[ ]	[X]	[ ]
1.7.8.1	Clear indication of switches and other controls Power switch 1, 0	[X]	[ ]	[ ]	[ ]
1.7.8.2	Colours of controls and indicators Green for on	[X]	[ ]	[ ]	[ ]
1.7.8.3	Symbols according to IEC 417	[X]	[ ]	[ ]	[ ]
1.7.8.4	Figures used for indicating positions of controls	[ ]	[ ]	[X]	[ ]

1.7 MARKING AND INSTRUCTIONS (continued)

		RESULTS			
		PASS	FAIL	N/A	ENCL.
1.7.8.5	Location of markings and indications for switches and controls _____	[X]	[ ]	[ ]	[ ]
1.7.9	Marking when more than one power supply _____	[ ]	[ ]	[X]	[ ]
1.7.10	Instructions for installation to IT power system	[ ]	[ ]	[X]	[ ]
1.7.11	Instructions when protection relies on building installation	[ ]	[ ]	[X]	[ ]
1.7.12	Marking when leakage current is more than 3.5 mA	[ ]	[ ]	[X]	[ ]
1.7.13	Marking at thermostats/regulating devices	[ ]	[ ]	[X]	[ ]
1.7.14	Language of safety markings/instructions	[X]	[ ]	[ ]	[ ]
	Language: English/German.				
1.7.15	Durability and legibility	[X]	[ ]	[ ]	[ ]
1.7.16	Placing of markings	[X]	[ ]	[ ]	[ ]
1.7.17	Warning text for replaceable lithium batteries	[ ]	[ ]	[X]	[ ]
	Language: _____.				
1.7.18	Operator access with a tool _____	[ ]	[ ]	[X]	[ ]

Copy of the marking plate:

See attacted marking plate

MODEL IPC-620XX-350

CE

Input:
100 - 120 / 200 - 240 V~, 60/50 Hz
8 / 5.2 A

Lizzy Kao
97.4.30.

2.1 PROTECTION AGAINST ELECTRIC SHOCK AND ENERGY HAZARDS

		RESULTS			
		PASS	FAIL	N/A	ENCL.
2.1.2	Protection against electric shock	[X]	[ ]	[ ]	[ ]
2.1.3.1	Internal wiring at ELV	[ ]	[ ]	[X]	[ ]
2.1.3.2	Internal wiring at hazardous voltage	[ ]	[ ]	[X]	[ ]
2.1.4	Service access area	[X]	[ ]	[ ]	[ ]
2.1.5	Energy hazard	[X]	[ ]	[ ]	[ ]
2.1.6	Clearances behind conductive enclosures	[ ]	[ ]	[X]	[ ]
2.1.7	Knobs, handles, etc.	[X]	[ ]	[ ]	[ ]
2.1.8	Insulation of conductive handles, knobs, etc.	[ ]	[ ]	[X]	[ ]
2.1.9	Insulation of capacitors	[ ]	[ ]	[X]	[ ]
2.1.10	Risk of electric shock from the pins of a plug	[X]	[ ]	[ ]	[ ]

Measured voltage: 0 V.

Comments:

2.1.3: No ELV wiring is accessible to operator.

2.1.5: No energy hazard in operator access area.

2.1.7: No shafts of knobs etc. at ELV or hazardous voltage.

2.1.8: No conductive handles, knobs etc.

2.1.10: Time constant < 1S by measurement.

2.2 INSULATION

		RESULTS			
		PASS	FAIL	N/A	ENCL.
2.2.2	Insulating materials	[X]	[ ]	[ ]	[ ]
2.2.3	Humidity treatment	[X]	[ ]	[ ]	[ ]
2.2.4	Requirements for insulation	[X]	[ ]	[ ]	[ ]
2.2.8	Doubled or reinforced insulation bridged by components	[X]	[ ]	[ ]	[ ]

Comments:

2.2.2: Neither natural rubber, materials containing asbestors nor hygroscopic materials are used as insulation.

2.2.3: Humidity treatment performed for 48h, 93% at 25 °C.

2.2.4: Electric strength test conducted after the humidity treatment. No flash over or breakdown of insulation.

2.3 SELV CIRCUITS

		RESULTS			
		PASS	FAIL	N/A	ENCL.
2.3.2	Voltage between any two parts of SELV circuit(s) and for Class I equipment between any part of SELV circuit and protective earthing terminal				
	< 42.4Vpk	[X]	[ ]	[ ]	[ ]
2.3.3	Voltage in accessible parts of SELV in the event of a single fault condition				
	_____.				
	Method used for separation _____	[X]	[ ]	[ ]	[ ]
2.3.8	Construction of SELV circuits	[X]	[ ]	[ ]	[ ]
2.3.9	SELV circuits connected to other circuits	[X]	[ ]	[ ]	[ ]

Comments:

2.3.2: Only SELV circuit are accessible to operator.

2.3.3: No accessible voltage exceeds the SELV limit even after a single fault.

2.3.9: SELV circuits are only connected to other SELV circuits.

2.4 LIMITED CURRENT CIRCUITS

		RESULTS			
		PASS	FAIL	N/A	ENCL.
2.4.1	Design of limited current circuits	[ ]	[ ]	[X]	[ ]
2.4.2	Measured current _____ mA	[ ]	[ ]	[X]	[ ]
2.4.3	Measured capacitance _____ µF	[ ]	[ ]	[X]	[ ]
2.4.4	Measured charge _____ µC	[ ]	[ ]	[X]	[ ]
2.4.5	Measured energy _____ mJ	[ ]	[ ]	[X]	[ ]
2.4.6	Connection to other circuits	[ ]	[ ]	[X]	[ ]

Comments:

2.4.X No limited current circuit.

2.5 PROVISIONS FOR PROTECTIVE EARTHING

		RESULTS			
		PASS	FAIL	N/A	ENCL.
2.5.1	Reliable connection	[X]	[ ]	[ ]	[ ]
2.5.2	Earthing in Class II equipment	[ ]	[ ]	[X]	[ ]
2.5.3	Switches/fuses in earthing conductors	[ ]	[ ]	[X]	[ ]
2.5.4	Assured earth connection in systems made up of Class I and II	[ ]	[ ]	[X]	[ ]
2.5.5	Green/yellow insulation	[X]	[ ]	[ ]	[ ]
2.5.6	Continuity of earth connections	[X]	[ ]	[ ]	[ ]
2.5.7	Operator-removable parts with earth connections	[ ]	[ ]	[X]	[ ]
2.5.8	Disconnection of P.E. connection	[X]	[ ]	[ ]	[ ]
2.5.9	P.E. terminals for fixed conductors or non-detachable cords	[X]	[ ]	[ ]	[ ]
2.5.10	Risk of corrosion	[ ]	[ ]	[X]	[ ]
2.5.11	Earth connector resistance ≤ 0.1 Ω	[X]	[ ]	[ ]	[ ]

Test current ____25_____ A

Comments:

2.5.11: Measured with 25A/1min from the GND pin on the appliance inlet to Metal chassis - 38 mΩ

2.6 PRIMARY POWER ISOLATION

		RESULTS			
		PASS	FAIL	N/A	ENCL.
2.6.1	Disconnect device	[X]	[ ]	[ ]	[ ]
2.6.2	Type of disconnect device				
	the plug on the power cord	[X]	[ ]	[ ]	[ ]
2.6.3	Disconnect device in permanently connected equipment	[ ]	[ ]	[X]	[ ]
2.6.4	Protection, guards	[X]	[ ]	[ ]	[ ]
2.6.5	Placing of isolating switch	[ ]	[ ]	[X]	[ ]
2.6.6	Disconnection of both poles simultaneously	[X]	[ ]	[ ]	[ ]
2.6.7	Disconnection of all phases	[ ]	[ ]	[X]	[ ]
2.6.8	Marking for switch (disconnect device)	[ ]	[ ]	[X]	[ ]
2.6.9	Plug as the disconnect device - Installation instructions	[X]	[ ]	[ ]	[ ]
	Language: German.				
2.6.11	Disconnection of group of units	[ ]	[ ]	[X]	[ ]
2.6.12	Marking at each disconnect device	[ ]	[ ]	[X]	[ ]

Comments:

2.6.6: The mains cord disconnects both poles simultaneously

2.6.7: Equipment is single phase

2.6.11: Interconnection to other devices by signal cable only.

2.6.12: Only one supply from main.

2.7 OVERCURRENT AND EARTH FAULT PROTECTION IN PRIMARY CIRCUITS

		RESULTS			
		PASS	FAIL	N/A	ENCL.
2.7.1	Type of protective device _____				
	fuse	[X]	[ ]	[ ]	[ ]
2.7.2	Protection against faults not covered in sub-clause 5.4	[X]	[ ]	[ ]	[ ]
2.7.3	Adequate breaking capacity				
	Adequate protective device	[X]	[ ]	[ ]	[ ]
2.7.4	Number and location _____				
	One fuse in the "Live" phase	[X]	[ ]	[ ]	[ ]
2.7.5	Protection by several devices	[ ]	[ ]	[X]	[ ]
2.7.6	Warning to service personnel	[ ]	[ ]	[X]	[ ]

Comments:

2. 7 Protective device is integrated in the approved SPS.

2.8 SAFETY INTERLOCKS

		RESULTS			
		PASS	FAIL	N/A	ENCL.
2.8.2	Design	[ ]	[ ]	[X]	[ ]
2.8.3	Protection against inadvertent reactivation	[ ]	[ ]	[X]	[ ]
2.8.4	Reliability	[ ]	[ ]	[X]	[ ]
2.8.5	Override system	[ ]	[ ]	[X]	[ ]
2.8.6.1	Contact gap	[ ]	[ ]	[X]	[ ]
2.8.6.2	Switch performing 50 cycles	[ ]	[ ]	[X]	[ ]
2.8.6.3	Electric strength test				
	Test voltage _____ V	[ ]	[ ]	[X]	[ ]
2.8.7	Protection against overstress	[ ]	[ ]	[X]	[ ]

Comments:

2.8.X: No safety interlock.

2.9 CLEARANCES, CREEPAGE DISTANCES AND DISTANCES THROUGH INSULATION

		RESULTS			
		PASS	FAIL	N/A	ENCL.
	Max. Working voltage 240 V				
2.9.2.1	Clearances in primary circuits	[ ]	[ ]	[X]	[ ]
2.9.2.2	Clearances in secondary circuits	[X]	[ ]	[ ]	[ ]
2.9.3	Creepage distances	[ ]	[ ]	[X]	[ ]
	CTI Classification:				
2.9.4	Solid insulation				
2.9.4.1	Minimum distances thru insulation	[ ]	[ ]	[X]	[ ]
2.9.4.2	Thin sheet material	[ ]	[ ]	[X]	[ ]
2.9.4.3	Printed boards	[ ]	[ ]	[X]	[ ]
2.9.4.4	Wound components without interleaved insulation	[ ]	[ ]	[X]	[ ]
2.9.5	Separation distances on coated printed boards	[ ]	[ ]	[X]	[ ]
2.9.6	Internal creepage distances in hermetically sealed components	[ ]	[ ]	[X]	[ ]
2.9.7	Internal distances in potted comp.	[ ]	[ ]	[X]	[ ]
2.9.8	Spacings between external terminations of components	[ ]	[ ]	[X]	[ ]

Comments:

2.9: The personal computer includes an approved SPS.

2.9 CLEARANCES, CREEPAGE DISTANCES AND DISTANCES THROUGH INSULATION ON PCB
(continued)

2.9.2, 2.9.3 Location/ insulation	Up/V	Urms/V	Creepage dist.		Clearance	
			Req/mm	Meas/mm	Req/mm	Meas/mm

2.9.4 Solid Insulation	Urms/V	Test voltage/V	Dist.thr Req/mm	insul. Meas/mm

Req = Requirement, Meas = Measured,
Dist thr insulat = Distance through insulation

Comments:

N/A

2.10 CONNECTION TO OTHER EQUIPMENT and 2.11 LIMITED POWER SOURCE

		RESULTS			
		PASS	FAIL	N/A	ENCL.
2.10.1	Connection of SELV and TNV circuits _____. _____	[X]	[ ]	[ ]	[ ]
2.10.2	Type of interconnection circuits _____. _____	[X]	[ ]	[ ]	[ ]
2.10.3	ELV interconnection to host equipment	[ ]	[ ]	[X]	[ ]
2.11	Use of limited power source _____	[ ]	[ ]	[X]	[ ]

Comments:

2.10.2: SELV is only connected to SELV and Safety Earth.

2.10.3: No ELV interconnections.

2.11: Supply from main circuit.

3.1 WIRING, CONNECTIONS AND SUPPLY

		RESULTS PASS	FAIL	N/A	ENCL.
3.1.1	Cross-sectional area and protection	[X]	[ ]	[ ]	[ ]
3.1.2	Wireways	[X]	[ ]	[ ]	[ ]
3.1.3	Fixing of internal wiring	[X]	[ ]	[ ]	[ ]
3.1.4	Fixing of uninsulated conductors	[ ]	[ ]	[X]	[ ]
3.1.5	Suitable insulation _____				
	_____	[X]	[ ]	[ ]	[ ]
3.1.6	Wire coloured green/yellow (only for protective earth connection)	[ ]	[ ]	[X]	[ ]
3.1.7	Fixing of beads and similar insulators	[ ]	[ ]	[X]	[ ]
3.1.8	Required electrical contact pressure	[X]	[ ]	[ ]	[ ]
3.1.9	Reliable electrical connections	[X]	[ ]	[ ]	[ ]
3.1.10	End of stranded conductor	[ ]	[ ]	[X]	[ ]
3.1.11	Use of spaced thread screws	[ ]	[ ]	[X]	[ ]

Comments:

3.1.1: Adequate cross sectional areas on interal wiring.

3.1.2, 3.1.3:
The wires are well routed away from sharp edges, etc. and are adequately fixed to prevent excessive strain on wire and terminals and avoiding damage to the insulation of the conductors.

3.1.5: The insulation of the idividual conductors are suitable for the applicationand the working voltage.

3.2 CONNECTION TO PRIMARY POWER

		RESULTS			
		PASS	FAIL	N/A	ENCL.
3.2.1	Type of connection _____				
	the plug on power cord	[X]	[ ]	[ ]	[ ]
3.2.2	Provision for permanent connection				
	_____	[ ]	[ ]	[X]	[ ]
3.2.3	Appliance inlet	[ ]	[ ]	[X]	[ ]
3.2.4	Type and cross-sectional area of power supply cord				
	3G/0.75 mm2	[X]	[ ]	[ ]	[ ]
3.2.5	Cord anchorage				
	Test at 25 x _____ N/1 second				
	Longitudinal displacement ≤ 2 mm	[ ]	[ ]	[X]	[ ]
3.2.6	Protection of power supply cord	[X]	[ ]	[ ]	[ ]
3.2.7	Cord guard				
	D = _____ mm				
	Test with mass of _____ g				
	r of curvature of the cord ≤ 1.5 D	[ ]	[ ]	[X]	[ ]
3.2.8	Supply wiring space	[ ]	[ ]	[X]	[ ]

Comments:

3.2.4: The power supply cord is a H05VV-F 3G/0.75 mm² type certified component.

3.3 WIRING TERMINALS FOR EXTERNAL POWER SUPPLY CONDUCTORS

		RESULTS			
		PASS	FAIL	N/A	ENCL.
3.3.1	Terminals	[ ]	[ ]	[X]	[ ]
3.3.2	Special non-detachable cord				
	Type of connection _____				
	_____	[ ]	[ ]	[X]	[ ]
	Pull test at 5 N	[ ]	[ ]	[X]	[ ]
3.3.3	Screws and nuts	[ ]	[ ]	[X]	[ ]
3.3.4	Fixing of conductors	[ ]	[ ]	[X]	[ ]
3.3.5	Connection of conductors	[ ]	[ ]	[X]	[ ]
3.3.6	Size of terminals	[ ]	[ ]	[X]	[ ]
	Nominal thread diameter _____ mm	[ ]	[ ]	[X]	[ ]
3.3.7	Protection against damage of conductors	[ ]	[ ]	[X]	[ ]
3.3.8	Terminal location	[ ]	[ ]	[X]	[ ]
3.3.9	Test with 8 mm stranded wire	[ ]	[ ]	[X]	[ ]

Comments:

4.1 STABILITY AND MECHANICAL HAZARDS

		RESULTS			
		PASS	FAIL	N/A	ENCL.
4.1.1	Stability tests				
	Angle of 10°	[X]	[ ]	[ ]	[ ]
	Floor standing unit (>25kg)				
	Tip Test at force of _____ N	[ ]	[ ]	[X]	[ ]
	Floor standing unit - overbalance	[ ]	[ ]	[X]	[ ]
4.1.2	Protection against personal injury from moving parts	[ ]	[ ]	[X]	[ ]
4.1.3	Warning and means provided for stopping hazardous moving parts				
	_____	[ ]	[ ]	[X]	[ ]
4.1.4	Edges and corners	[X]	[ ]	[ ]	[ ]
4.1.5	Enclosure of a high pressure lamp	[ ]	[ ]	[X]	[ ]

Comments:

4.1.1: The equipment does not overbalance at 10°.

4.1.3: The equipment does not contain any moving parts.

4.1.4: No edges or corners on the equipment represent any hazard to the operator.

4.1.5: No high pressure lamps in this equipment.

4.2 MECHANICAL STRENGTH AND STRESS RELIEF

		RESULTS			
		PASS	FAIL	N/A	ENCL.
4.2.2	Internal enclosures 30 N ± 3 N/5 s	[X]	[ ]	[ ]	[ ]
4.2.3	External enclosures 250 N ± 10 N/5 s	[X]	[ ]	[ ]	[ ]
4.2.4	Steel sphere Test				
	Vertical Impact	[ ]	[ ]	[X]	[ ]
	Horizontal Impact	[ ]	[ ]	[X]	[ ]
4.2.5	Drop Test	[ ]	[ ]	[X]	[ ]
	Height:				
4.2.6	Heat Test T = _____ °C/7 h	[ ]	[ ]	[X]	[ ]
4.2.7	Compliance	[ ]	[ ]	[X]	[ ]
4.2.8	Mechanical strength of cathode ray tubes	[ ]	[ ]	[X]	[ ]

Comments:

4.2.3: No hazard as result from the 250N test.

4.2.5: Not a hand held equipment.

4.3 CONSTRUCTION DETAILS

		RESULTS PASS	FAIL	N/A	ENCL.
4.3.1	Changing of setting for different power supply voltages	[ ]	[ ]	[X]	[ ]
4.3.2	Adjustment of accessible control devices	[ ]	[ ]	[X]	[ ]
4.3.4	Prevention of dangerous concentration of dust, liquid and gas	[ ]	[ ]	[X]	[ ]
4.3.5	Fixing of knobs, grips, handles, levers				
	Test at _____ N	[ ]	[ ]	[X]	[ ]
4.3.6	Driving belts/couplings shall not ensure electrical insulation	[ ]	[ ]	[X]	[ ]
4.3.7	Retaining of sleeves	[X]	[ ]	[ ]	[ ]
4.3.9	Protection of loosening parts	[X]	[ ]	[ ]	[ ]
4.3.11	Resistance to oil and grease	[ ]	[ ]	[X]	[ ]
4.3.12	Protection against harmful concentration of ionizing radiation or ultraviolent light or laser	[ ]	[ ]	[X]	[ ]
4.3.13	Securing of screwed connections	[X]	[ ]	[ ]	[ ]

Comments:

4.3.4: The equipment does not generate dust or employ liquids or gases.

4.3.7: Sleeving on wiring reliable kept in position.

4.3.9: No loosening of parts impairing creepage distances or clearance are likely to occur.

4.3.11: Insulation is not exposed to oil, grease etc.

4.3 CONSTRUCTION DETAILS (continued)

		RESULTS			
		PASS	FAIL	N/A	ENCL.
4.3.15	Openings in the top of enclosure	[X]	[ ]	[ ]	[ ]
	Dimensions:				
4.3.16	Openings in the sides of enclosure	[X]	[ ]	[ ]	[ ]
	Dimensions:				
4.3.17	Interchangeable plugs and sockets	[X]	[ ]	[ ]	[ ]
4.3.18	Torque test of equipment with built-in plug (Direct plug-in equipment)				
	Additional torque _____ N-m	[ ]	[ ]	[X]	[ ]
4.3.19	Protection against excessive pressure	[ ]	[ ]	[X]	[ ]
4.3.20	Protection of heating elements in Class I equipment	[ ]	[ ]	[X]	[ ]
4.3.21	Protection of lithium batteries				
	Construction of protection circuit				
	_____	[ ]	[ ]	[X]	[ ]
4.3.22	Adhesive for barrier or screen	[ ]	[ ]	[X]	[ ]

Comments:

RESISTANCE TO FIRE

		RESULTS			
		PASS	FAIL	N/A	ENCL.
4.4.2	Minimizing the risk of ignition	[X]	[ ]	[ ]	[ ]
4.4.3.2	Flammability of materials and components	[X]	[ ]	[ ]	[ ]
4.4.3.3	Exemptions	[X]	[ ]	[ ]	[ ]
4.4.3.4	Wiring harnesses	[X]	[ ]	[ ]	[ ]
4.4.3.5	Cord anchorage bushings	[ ]	[ ]	[X]	[ ]
4.4.3.6	Air filter assemblies	[ ]	[ ]	[X]	[ ]
4.4.4	Flammability of outer enclosures and decorative parts	[ ]	[ ]	[X]	[ ]
4.4.5.1	Components which require fire enclosure	[ ]	[ ]	[X]	[ ]
4.4.6	Fire enclosure construction	[ ]	[ ]	[X]	[ ]
4.4.7	Doors and covers	[X]	[ ]	[ ]	[ ]
4.4.8	Protection against spreading of flammable liquids	[ ]	[ ]	[X]	[ ]

Comments:

4.3.18: Equipment is not a direct plug in type.

4.3.19: Liquids are not used in this equipment.

4.3.21: No lithum battery.

5.1 HEATING

	RESULTS			
t1 = _____°C	PASS	FAIL	N/A	ENCL.
t2 = _____°C				
Test voltage 90/254 V	[X]	[ ]	[ ]	[ ]

Winding	R1/Ω	R2/Ω	dt measured	dt allowed	Insulation Class

No.	Measured Part	Temperature (°C)			
		90 V 60 Hz	254 V 50 Hz	240V50Hz Vent. Closed	dt allowed
1.	LF1(SPS)	41	38		
2.	Q1 Heatsink(SPS)	37	38		
3.	T1 Coil(SPS)	42	42		
4.	T1 Core(SPS)	41	41		
5.	HDD	29	30		
6.	FDD	27	27		
7.	CPU	35	35		
8.	Top of Enclosure	26	27		
9.	Ambient	23	24		
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					

Comments:
Test condition: Copy files from FDD to HDD and external loading as following: +5V 20A, +12V 4A.

5.2 EARTH LEAKAGE CURRENT

		RESULTS			
		PASS	FAIL	N/A	ENCL.
5.2.2	Leakage current (maximum measured)	[X]	[ ]	[ ]	[ ]
	Test voltage ___254___ V 60Hz				
	Measured current ___max 1___ mA				
	Max. allowed current ___3.5___ mA				
5.2.5	Equipment with earth leakage current exceeding 3.5mA	[ ]	[ ]	[X]	[ ]

Comments:

5.2.2 The leakage current when measured at the worst case line voltage tolerance of 254 vac 60Hz was well below the allowable 3.5 mA limit.

5.2.5 The leakage current do not exceed 3.5 mA.

5.3 ELECTRIC STRENGTH

RESULTS			
PASS	FAIL	N/A	ENCL.
[X]	[ ]	[ ]	[ ]

Location	Test voltage	Result
Primary to Ground	2121 Vdc	OK
Primary to Secondary	4242 Vdc	OK

Comments:

1. All test voltages applied for 1 min. after humidity test.

2. No arcing or breakdown of insulation after the electric strength test.

5.4 ABNORMAL OPERATING AND FAULT CONDITIONS

		RESULTS			
		PASS	FAIL	N/A	ENCL.
5.4.2	Motors	[ ]	[ ]	[X]	[ ]
5.4.3	Transformers	[ ]	[ ]	[X]	[ ]
5.4.4	Compliance of operational insulation				
	Used method _____	[ ]	[ ]	[X]	[ ]
5.4.5	Electromechanical components in secondary circuits	[ ]	[ ]	[X]	[ ]
5.4.6	Other components and circuits	[ ]	[ ]	[X]	[ ]
5.4.7	Test in any expected condition and foreseeable misuse	[ ]	[ ]	[X]	[ ]
5.4.8	Unattended use of equipment having thermostats, temperature limiters etc.	[ ]	[ ]	[X]	[ ]
5.4.9	Compliance	[ ]	[ ]	[X]	[ ]
5.4.10	Ball-pressure test of thermoplastics	[ ]	[ ]	[X]	[ ]

Tested part	t/°C	Impress.	Requir.	Result
			≤ 2 mm	OK
			≤ 2 mm	
			≤ 2 mm	
			≤ 2 mm	
			≤ 2 mm	

Comments:

Impress. = Impression, Requir. = Requirement

FAULT CONDITION TESTS

Ambient temperature _____°C

Model/type of power supply:

Manufacturer of power supply:

Rated markings of power supply Input:

F No	Comp. No	Fault	Test V	Test time	Fuse No	Current through fuse	Mains power/temperatures/ results

F No = Fault Number, S-c = Short-circuit, Dis = Disconnection

FAULT CONDITION TESTS (continued)

F No	Comp. No	Fault	Test V	Test time	Fuse No	Current through fuse	Mains power/temperatures/ results

F No = Fault Number, S-c = Short-circuit, Dis = Disconnection

ELECTRICAL DATA (in normal conditions)

Fuse No.	I rated A	U in V	P in W	I in A	I thru fuse/ A	Conditions/status
	8	90	231	4.02	4.02	
	8	100	230	3.65	3.65	
	8	120	228	3.16	3.16	
	8	127	228	3.02	3.02	
	5.2	180	222	2.14	2.14	
	5.2	200	222	1.97	1.97	
	5.2	240	223	1.70	1.70	
	5.2	254	222	1.63	1.63	

Comments:

Test condition: Copy files from FDD to HDD and external loading as following: +5V 20A, +12V 4A.

6.2 TNV CIRCUITS AND PROTECTION AGAINST ELECTRIC SHOCK

		RESULTS			
		PASS	FAIL	N/A	ENCL.
6.2.1.1	Limits of the TNV circuits				
a)	Continuous voltages	[ ]	[ ]	[X]	[ ]
b)	Telephone ringing signals	[ ]	[ ]	[X]	[ ]
6.2.1.2	Insulation between TNV circuits and unearthed operator-accessible conductive parts				
	_____	[ ]	[ ]	[X]	[ ]
	Insulation between TNV circuits and unearthed SELV circuits				
	_____	[ ]	[ ]	[X]	[ ]
	Voltages on accessible parts in the event of a single insulation fault or component failure				
	_____	[ ]	[ ]	[X]	[ ]
6.2.1.3	TNV circuit connected to an SELV circuit that has one pole connected to earth				
	_____	[ ]	[ ]	[X]	[ ]
6.2.1.4	TNV circuit separated from circuits at hazardous voltages				
	Used method _____	[ ]	[ ]	[X]	[ ]
6.2.1.5	Connection of TNV to other circuits				
	_____	[ ]	[ ]	[X]	[ ]
6.2.2.1	TNV circuits contact protection Accessibility	[ ]	[ ]	[X]	[ ]
6.2.2.2	Battery compartments	[ ]	[ ]	[X]	[ ]

6.3 PROTECTION OF TELECOMMUNICATION NETWORK SERVICE PERSONNEL, AND OTHER USERS OF THE TELECOMMUNICATION NETWORK, FROM HAZARDS IN THE EQUIPMENT

		RESULTS			
		PASS	FAIL	N/A	ENCL.
6.3.1	Protection from hazardous voltages	[ ]	[ ]	[X]	[ ]
6.3.2	Use of protective earthing				
	Language of installation instructions				
	_____	[ ]	[ ]	[X]	[ ]
6.3.3	Particular requirements for pluggable equipment type A				
	Insulation between TNV circuit and circuitry that may be earthed	[ ]	[ ]	[X]	[ ]
	Components bridging insulation	[ ]	[ ]	[X]	[ ]

Comments:

No TNV circuitry in the equipment.

6.4 PROTECTION OF THE EQUIPMENT USER FROM VOLTAGES ON THE TELECOMMUNICATION NETWORK

		RESULTS			
		PASS	FAIL	N/A	ENCL.
6.4.2.1	Impulse Test				
	Separation between telecommunication network conductors and				
a)	Unearthed conductive parts/ non-conductive parts of the equipment which are held or touched during normal use				
	Test at 2.5 kV	[ ]	[ ]	[X]	[ ]
b)	Parts and circuitry that can be touched by the test finger				
	Test at 1.5 kV	[ ]	[ ]	[X]	[ ]
c)	Circuitry which is provided for connection of other equipment				
	Test at 1.5 kV	[ ]	[ ]	[X]	[ ]
6.4.2.2	Electric Strength Test				
	Separation between telecommunication network conductors and				
a)	Unearthed conductive parts/ non-conductive parts of the equipment which are held or touched during normal use				
	Test at 1.5 kV	[ ]	[ ]	[X]	[ ]
b)	Parts and circuitry that can be touched by the test finger				
	Test at 1.0 kV	[ ]	[ ]	[X]	[ ]
c)	Circuitry which is provided for connection of other equipment				
	Test at 1.0 kV	[ ]	[ ]	[X]	[ ]

Comments:

No TNV circuitry in the equipment.

APPENDIX A
TESTS FOR RESISTANCE TO HEAT AND FIRE
[ ]A1 [ ]A2

Preconditioning at _____°C for 7 days (168 h)

Mounting of samples during test _____

Wall thickness _____

Sample	Burning time	Comments
1		
2		
3		

	YES	NO
Material complies with the requirement	[ ]	[ ]

INFORMATION ABOUT TESTED MATERIAL

Manufacturer

Type _____

Additional information:

ANNEX B
MOTOR TESTS UNDER ABNORMAL CONDITIONS

	RESULTS			
	PASS	FAIL	N/A	ENCL.
Manufacturer:				
Type:				
Rated voltage/current				
B.3 Maximum Temperatures	[ ]	[ ]	[X]	[ ]
B.4 Running overload test	[ ]	[ ]	[X]	[ ]
B.5 Locked-rotor overload test	[ ]	[ ]	[X]	[ ]
Duration of test _____ days				
Electric strength test at _____ V				
B.6 Running overload test for DC motor in secondary circuits	[ ]	[ ]	[X]	[ ]
B.7 Locked-rotor overload test for DC motor in secondary circuits	[ ]	[ ]	[X]	[ ]
B.7.2 Test time ____ h	[ ]	[ ]	[X]	[ ]
B.7.3 Test time _____ h	[ ]	[ ]	[X]	[ ]
B.8 Test for motors with capacitors	[ ]	[ ]	[X]	[ ]
B.9 Test for three-phase motors	[ ]	[ ]	[X]	[ ]
B.10 Test for series motors	[ ]	[ ]	[X]	[ ]

Comments:

ANNEX C
TRANSFORMER

		RESULTS			
		PASS	FAIL	N/A	ENCL.
		[X]	[ ]	[ ]	[ ]

Position: _____.

Manufacturer: _____.

Type: _____.

Rated values: _____.

C.1 Overload test

Type of transformer	conventional	[ ]	[ ]	[X]	[ ]
	safety isolating	[ ]	[ ]	[X]	[ ]
	ferro-resonant	[ ]	[ ]	[X]	[ ]
Maximum temperature of windings		[ ]	[ ]	[X]	[ ]
Type of thermal cut-out _____					
Secondary windings		[ ]	[ ]	[X]	[ ]

C.2 Insulation

Precautions	[ ]	[ ]	[X]	[ ]
Retaining of end turns of all windings	[ ]	[ ]	[X]	[ ]
Earthing test at 25 A	[ ]	[ ]	[X]	[ ]

Comments:

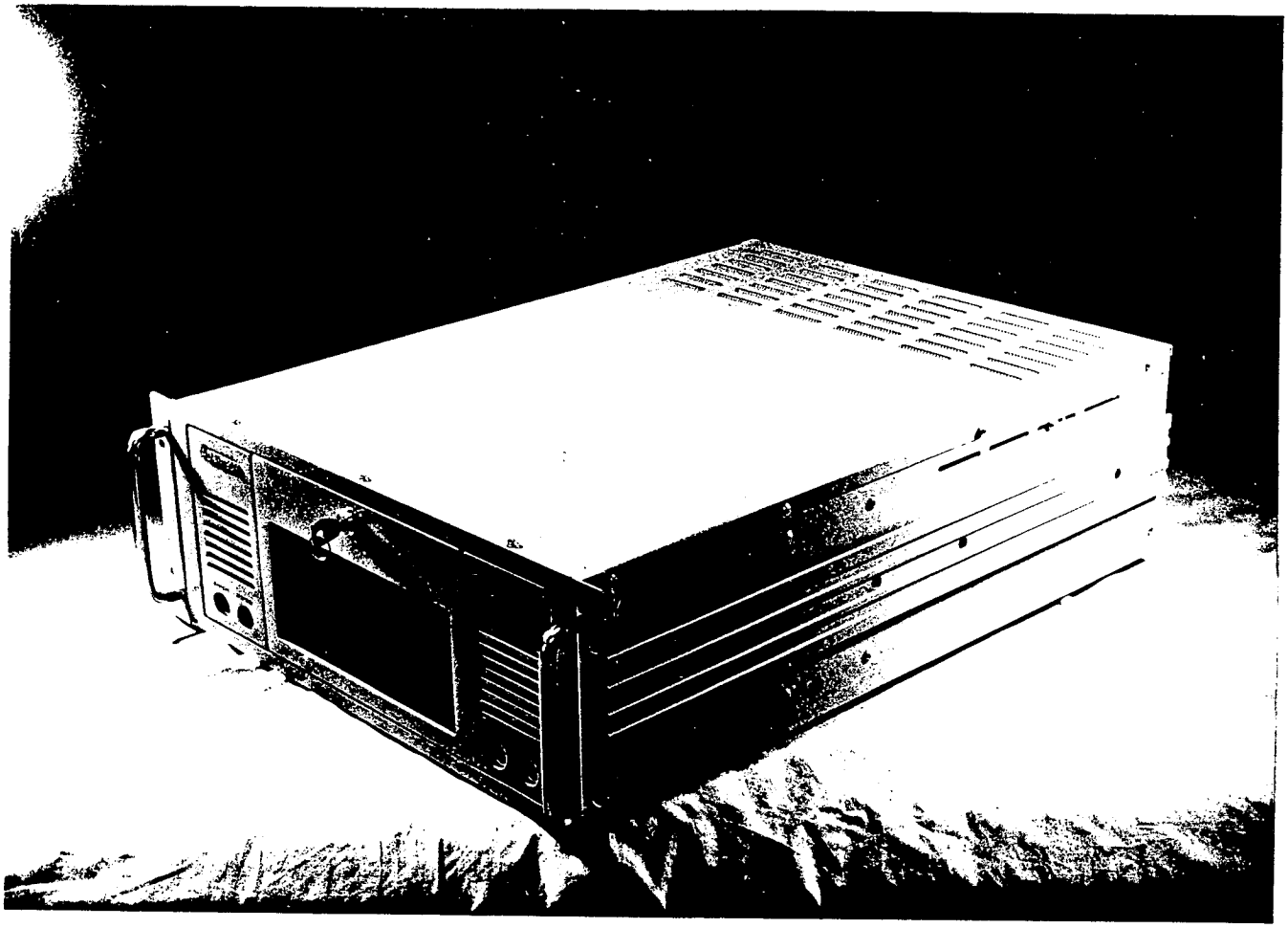
ANNEX C

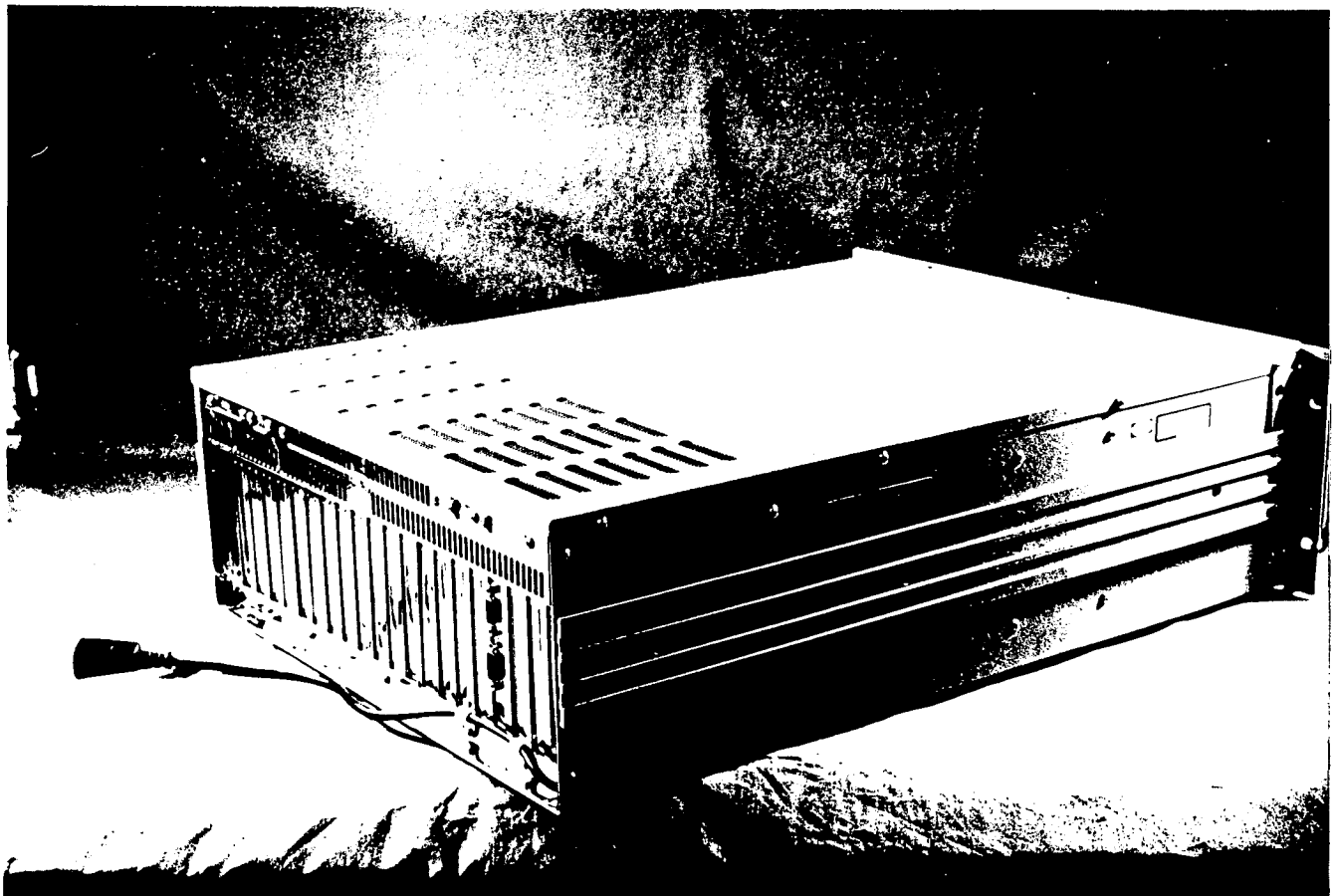
TRANSFORMER (continued)

APPENDIX H IONIZING RADIATION

	RESULTS			
	PASS	FAIL	N/A	ENCL.
	[ ]	[ ]	[X]	[ ]
Measured radiation				
Measured high-voltage				
Measured focus voltage				
CRT Markings				
Approved by				
Used publication				

Comments:





TECH
COMPUTER