

**Prüfbericht - Nr.: E 9763829 E01**

*Test Report No.*

Seite 1 von 48

Page 1 of 48

**Auftraggeber:**

**Advantech Co., Ltd.**

*Client:*

**Fl. 4, No.108-3, Ming-Chuan Rd., Shing Tien City, Taipei, Taiwan, R.O.C.**

**Gegenstand der Prüfung: Industrial Workstation with 10.4" LCD**

*Test item:*

**Bezeichnung:**

**AWS-842X, OPTI112-842X**

**Serien-Nr.:**

**N/A**

*Identification:*

**X = T, TP, M, MP, T/MB, M/MB**

*Serial No.:*

**Wareneingangs-Nr.:**

**N/A**

**Eingangsdatum:**

**N/A**

*Receipt No.:*

*Date of receipt:*

**Prüfart:**

**ADT**

*Testing location:*

**Taipei Hsien, Taiwan, R.O.C.**

**Prüfgrundlage:**

**EN 60 950:1992+A1+A2+A3+A4**

*Test specification:*

**Prüfergebnis:**

**Der vorstehend beschriebene Prüfgegenstand wurde geprüft und entspricht oben genannter Prüfgrundlage.**

*Test Result*

**The a. m. test item passed.**

**geprüft/tested by:**

**kontrolliert/checked by**

Oct. 7, 1997

David C. M. Lee

Max H. C. Lyou

Oct. 14, 1997



Datum  
Date

Name  
Name

Unterschrift  
Signature



Datum  
Date

Name  
Name

Unterschrift  
Signature

**Sonstiges/Other Aspects:**

Per application letter dated 03.10.1996, project order: T9632963.

The completed test report includes the following documents:

- EN 60 950 report ( 46 pages)
- Questionnaire: acceptability of second- and manufacturer laboratory ( 2 pages)

Abkürzungen:

OK,  
Fail  
N/A

= entspricht Prüfgrundlage  
= entspricht nicht Prüfgrundlage  
= nicht anwendbar

Abbreviations:

OK,  
Fail  
N/A

= passed  
= failed  
= not applicable

**Dieser Prüfbericht bezieht sich nur auf den o.g. Prüfgegenstand und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.**

This test report relates to the a. m. test item. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

<p align="center"><b>TEST REPORT</b></p> <p align="center"><b>IEC 950</b></p> <p align="center"><b>Safety of information technology equipment</b></p>	
Report reference No.....	E 9763829 E01
Compiled by (+ signature).....	See cover sheet .....
Approved by (+ signature) .....	See cover sheet .....
Date of issue .....	See cover sheet
Testing laboratory.....	TÜV Rheinland Taiwan Ltd.
Address.....	14F, No. 6 Min Chuan E. Rd., Sec. 3, Taipei 104, Taiwan, R.O.C.
Testing location.....	ADT Corp. in Taipei, Taiwan, R.O.C.
Applicant.....	Advantech Co., Ltd.
Address.....	Fl. 4, No. 108-3, Ming-Chuuan Rd., Shing-Tien City, Taipei, Taiwan, R.O.C.
Standard .....	IEC 950:1991 + A1:1992 + A2:1993 + A3:1995 + A4:1996 EN 60 950:1992 + A1:1993 + A2:1993 + A3:1995 + A4:1997
Test Report Form No.....	I950__D/97-06
TRF originator. ....	FIMKO
Master TRF.....	reference No. I950 D, dated 97-02
Copyright blank test report .....	the bodies participating in the Committee of Certification Bodies (CCB) and/or the CENELEC Certification Agreement (CCA). This report is based on a blank test report that was prepared by KEMA using information obtained from the TRF originator.
Test procedure .....	Service of CE Marking in LVD
Procedure deviation .....	Germany
Non-standard test method .....	N.A.
Type of test object .....	Industrial Workstation with 10.4" LCD
Trademark .....	ADVANTECH
Model/type reference .....	AWS-842x, OPTI112-842x, x = T, TP, M, MP, T/MB, M/MB
Manufacturer .....	Advantech Co., Ltd. Fl. 4, No. 108-3, Ming-Chuuan Rd., Shing-Tien City, Taipei, Taiwan, R.O.C.
Rating .....	AC 100-120/200-240V, 50/60Hz, 6/4A

## Test item particulars:

Equipment mobility .....: movable  
 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).....: < 10kg  
 Protection against ingress of water .....: IPX0

## Possible test case verdicts:

- test case does not apply to the test object .....: N(.A.)
- test object does meet the requirement .....: P(ass)
- test object does not meet the requirement.....: F(ail)

## General remarks:

"(see remark #)" refers to a remark 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 testing laboratory.

Comments:*Brief description of the test sample:*

The equipment is a LCD panel type workstation for industrial use. The test sample were preproduction sample without serial numbers.

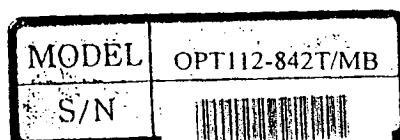
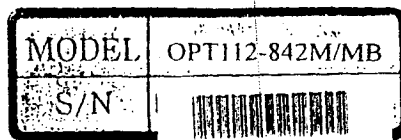
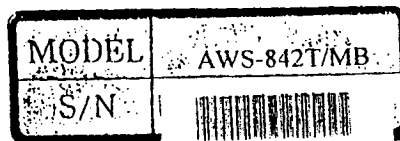
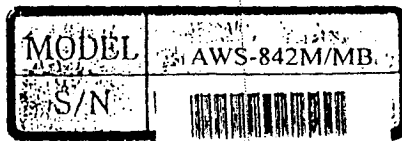
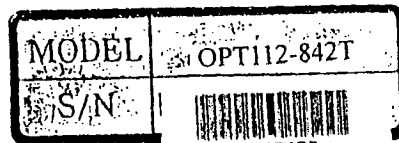
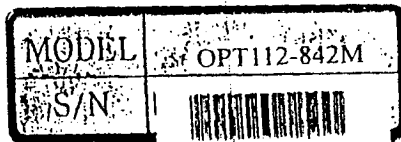
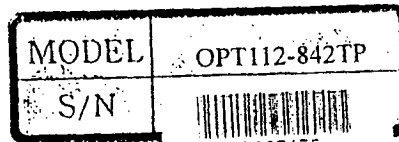
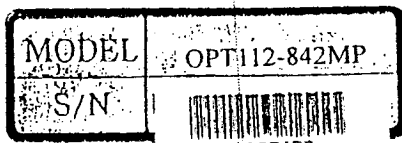
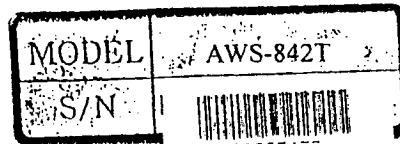
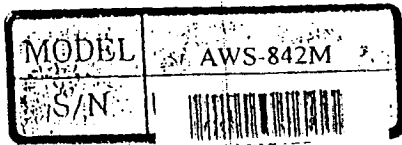
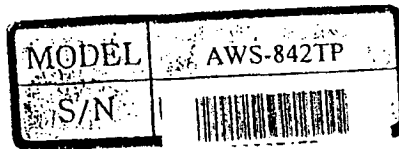
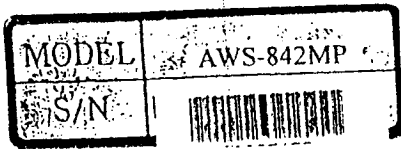
The internal building-in switching power supply is approved according to EN 60950. See appended table of clause 1.5.1.

All models are identical to each other except for type of LCD panel, D/A inverter, backplane, CPU card and model designation.

Therefore all tests were conducted by model AWS-842T to represent other similar models.

The type number of CPU board is PCA-6147 or PCA-6157.

Copy of the marking plate :



**ADVANTECH**

Selectable Input  
100-120V~ /200-240V~  
6.0/4.0A 50/60Hz

Output  
100-120V~ /200-240V~  
2.0/1.0A

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict

1	GENERAL		P
---	---------	--	---

1.5	Components		P
1.5.1	Comply with IEC 950 or relevant component standard	Components which were found to affect safety aspects comply with the requirements of this standard or within the safety aspects of the relevant IEC component standards. (see appended tables)	P
1.5.2	Evaluation and testing components	Components which are certified to IEC and /or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
	Dimensions (mm) of mains plug for direct plug-in .....	The equipment is not plug-in type	N
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N)		N
1.5.3	Transformers	Transformer used are suitable for their intended application and comply with the relevant requirements of the standard.	P
1.5.4	High voltage components (component; manufacturer; flammability) .....	No high voltage components used.	N
1.5.5	Interconnecting cables	Interconnection cable for signal output to monitor and signal from keyboard is carrying only SELV voltages on an energy level below 240VA.  → Except for the insulation material, there are no further requirements to the interconnection cable.	P
1.5.6	Mains Capacitors	X-capacitor in approved SPS.	P

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict

1.6	Power interface		P
1.6.1	Steady state input current	Highest load according to 1.2.2.1 for this equipment is the HDD permanently access. (see appended table)	P
	Current deviation during normal operating cycle	< + 10%	P
1.6.2	Voltage limit of hand-held equipment	This appliance is not a hand-held equipment.	N
1.6.3	Neutral conductor insulated from earth and body	The neutral is not identified in the equipment. Basic insulation for rated voltage between earthed parts and primary phases.	P
1.6.4	Components in equipment intended for IT power system	Equipment was not applied for the IT power system.	N
1.6.5	Mains supply tolerance (V) .....	+ 6%, -10%  Documentation specifies a rating of AC 100-120/200-240V at 50/60Hz. Relevant tests were done with the range of 90-127/180-254V at 50/60Hz.	P

1.7	Marking and instructions		P
1.7.1	Rated voltage (V) .....	100-120/200-240V	P
	Symbol of nature of supply for d.c. ....	mains from AC source	N
	Rated frequency (Hz) .....	50/60 Hz	P
	Rated current (A) .....	6A/4A	P
	Manufacturer .....	Not shown	N
	Trademark .....	ADVANTECH	P
	Type/model .....	AWS-842x, OPTI112-842x, x = T, TP, M, MP, T/MB, M/MB	P
	Symbol of Class II .....	Class I equipment	N
	Certification marks .....		N

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
1.7.2	Safety instructions	The users manual contains information for operation, installation, servicing, transport, storage and technical data.	P
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N
1.7.4	Marking for voltage setting/frequency setting ...:	The voltage range need to be adjusted by a selector switch. The adjusted voltage is visible on the switch.  No instruction is required on the equipment.	P
1.7.5	Marking at power outlets .....	Marking printed on label and near to outlet which reads 100-120/200-240V~, 2.0/1.0A	P
1.7.6	Marking at fuseholders .....	Fuse marking in the approved power supply.	N
1.7.7.1	Protective earthing terminals	Appliance inlet used.	N
1.7.7.2	Terminal for external primary power supply conductors	No terminal.	N
1.7.8.1	Identification and location of switches and controls .....	The marking and indication of the power switch is located that indication of function clearly.	P
1.7.8.2	Colours of controls and indicators .....	No safety relevant indicators.	N
1.7.8.3	Symbols according to IEC 417 .....	Marking for rocker type switch according to IEC417, No. 5007-a (line) and 5008-a (circle).	P
1.7.8.4	Figures used for marking .....	No indicators for different positions.	N
1.7.8.5	Location of markings and indications for switches and controls .....	The marking for the switch is located adjacent to the switch.	P
1.7.9	Isolation of multiple power sources .....	Only one supply from the mains.	N
1.7.10	Instructions for installation to IT power system	Equipment was not applied for IT power system.	N
1.7.11	Instructions when protection relies on building installation	Connected to the mains by pluggable type A.	N
1.7.12	Marking when leakage current exceeds 3,5 mA	Leakage current does not exceed 3.5mA.	N

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
1.7.13	Indication at thermostats and regulating devices	No adjustable thermostats.	<b>N</b>
1.7.14	Language of safety markings/instructions	Instruction and marking in English.	<b>P</b>
	Language .....	English	—
1.7.15	Durability and legibility	The label was subjected to the permanence of marking test. The label was rubbed with cloth for 15 sec. and then again for 15 sec. with the cloth soaked with HEXANE. After this test there was no damage to the label. The marking on the label did not fade. There was no curling nor lifting of the label edge.	<b>P</b>
1.7.16	Removable parts	No required markings placed on removable parts.	<b>P</b>
1.7.17	Warning text for replaceable lithium batteries	No replaceable lithium battery used. The Dallas RTC battery IC include the lithium battery cell.	<b>N</b>
	Language .....		—
1.7.18	Operator access with a tool .....	The inside of the equipment is regarded to be operator access area. This area is accessible when enclosure of workstation is be disassembled with a screwdriver.  When the enclosure is disassembled, the earthed metal enclosure of SPS is accessible.  However, the SPS enclosure can be opened with the same screw driver as the screw head is in same construction. Therefore, the SPS provided with warning marking according to ISO 3864, No. 5036 or warning sentence to discourage the user to access.	<b>P</b>



IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict

1.7.19	Equipment for restricted access locations .....:	No restricted access location.	N
--------	--	--------------------------------	---

2	FUNDAMENTAL DESIGN REQUIREMENTS		P
---	---------------------------------	--	---

2.1	Protection against electric shock and energy hazards		P
2.1.1	Access to energized parts	See below	P
2.1.2	Protection in operator access areas	As the user's manual specifies directions for the operator how to add additional interface cards inside the enclosure, the inside of this workstation is regarded to be operator access area. With the disassembled workstation enclosure, the accessible SPS is covered with an earthed metal enclosure.  The construction of this metal enclosure prevents the accessibility to any parts with only basic insulation to ELV or hazardous voltage with test pin or test finger.	P
	Test by inspection .....	dto	P
	Test with test finger .....	dto	P
	Test with test pin .....	dto	P
2.1.3.1	Insulation of internal wiring in an ELV circuit accessible to operator	No ELV wiring in operator accessible area.	N
	Working voltage (V); distance (mm) through insulation .....		N
2.1.3.2	Operator accessible insulation of internal wiring at hazardous voltage	No hazardous voltage wiring in operator accessible area.	N

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
2.1.4.1	Protection in service access areas	Hazardous voltage only in the inside of the SPS and the cable to the power switch. At circuits of SPS is no service work in operation mode necessary. Contact points for switch are further covered by two layers of shrinkable tube.	<b>P</b>
2.1.4.2	Protection in restricted access locations	It is not intended to be used in restricted locations	<b>N</b>
2.1.5	Energy hazard in operator access area	The overall output of the SPS is below 240VA.	<b>P</b>
2.1.6	Clearances behind conductive enclosures	Refer to 4.2.3.	<b>P</b>
2.1.7	Shafts of manual controls	None at ELV or hazardous voltage	<b>N</b>
2.1.8	Isolation of manual controls	None at ELV or hazardous voltage	<b>N</b>
2.1.9	Conductive casings of capacitors	Casings of capacitors are considered as if directly connected to the respective circuitry. None at hazardous voltage accessible	<b>P</b>
2.1.10	Risk of electric shock from stored charge on capacitors connected to mains circuit	< 1 sec. No risk of electric shock.	<b>P</b>
	Time-constant (s); measured voltage (V) .....	See appended table.	—

2.2	Insulation		<b>P</b>
2.2.1	Methods of insulation	The insulation materials provided in the equipment with adequate thickness and adequate creepage distance over their surface and clearance distance through air.	<b>P</b>
2. 2.2	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials are not used	<b>P</b>
2.2.3	Humidity treatment	Total time elapsed: 48 hours	<b>P</b>
	Humidity (%) .....	93% R.H.	—
	Temperature (°C) .....	25°C	—

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
2.2.4	Requirements for insulation	Please refer to 5.3, 2.9 and 5.1.	P
2.2.5	Insulation parameters	Both parameters were considered.	P
2.2.6	Categories of insulation	The adequate levels of safety insulation is provided and maintained to comply with the requirements of this standard.	P
2.2.7	Determination of Working voltage	The measurements were done in the approval of the SPS.	P
2.2.7.1	General rules for working voltages	Considered	P
2.2.7.2	Clearances in primary circuits	Considered	P
2.2.7.3	Clearances in secondary circuits	Considered	P
2.2.7.4	Creepage distances	Considered	P
2.2.7.5	Electric strength tests	Considered	P
2.2.8	Double or reinforced insulation bridged by components	No component bridged reinforced or double insulation.	N
2.2.8.1	Bridging capacitors		N
2.2.8.2	Bridging resistors		N
2.2.8.3	Accessible parts		N

2.3	Safety extra-low voltage (SELV) circuits		P
2.3.1	Voltage (V) of SELV circuits under normal operating conditions and after a single fault ....:	42.4V peak or 60VDC are not exceeded in SELV circuit under normal operation or 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 .....	Between any SELV circuits 42.4V peak or 60VDC are not exceeded	P

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
2.3.3	Voltage (V) of SELV in the event of a single failure of basic or supplementary insulation or of a component .....	Single fault did not cause excessive voltage in accessible SELV circuits. Limits of 71V peak and 120V DC were not exceed and SELV limits not for longer than 0.2 seconds, see abnormal results 5.4.6.	
	Method used for separation .....	Method 1	P

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict

2.3.4	Additional constructional requirements	In multiway connectors and other cable ties prevent contact to hazardous parts in case of loosening of connection or conductor breakage.  IEC 83 and IEC 320 connectors are not used in SELV.	<b>P</b>
2.3.5	Connection of SELV circuits to other circuits	See 2.3.2 and 2.3.3. No direct connection between SELV and any primary circuits.	<b>N</b>

2.4	Limited current circuits		<b>P</b>
2.4.2	Frequency (Hz) .....	see below	—

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
	Measured current (mA) .....	<p>Secondary winding of DC-AC inverter for backlight circuit with voltage &lt; 1200V (TFT type) and &lt; 1000V (Mono type). The peak drop voltage was measured with a scope at a 2k<math>\Omega</math> resistor. The max. measured voltages are listed below:</p> <p>- <u>For D/A inverter TDK type TAD143 (TFT type):</u></p> <p>Measured at D/A inverter o/p pin <math>\rightarrow</math> pin:</p> <p>* Normal conditions Up = 19.2V at 29kHz <math>\Rightarrow</math> 9.6mA (limit = 20.3mA)</p> <p>* LCD disconnected Up = 19.2V at 31.5KHz <math>\Rightarrow</math> 9.6mA (limit = 22.05mA)</p> <p>* Q1 pin C-E shorted Up = 2.4V at 120KHz <math>\Rightarrow</math> 1.2mA (limit = 70mA)</p> <p>- <u>For D/A inverter Yuntek type YN9101(Mono type):</u></p> <p>Measured at D/A inverter o/p pin <math>\rightarrow</math> pin:</p> <p>* Normal conditions Up = 37.2V at 59kHz <math>\Rightarrow</math> 18.6mA (limit = 41.3mA)</p> <p>* LCD disconnected Up = 38V at 60.8KHz <math>\Rightarrow</math> 19mA (limit = 42.56mA)</p> <p>* Q1 pin C-E shorted Up = 56.8V at 63.9KHz <math>\Rightarrow</math> 28.4mA (limit = 44.73mA)</p>	P
2.4.3	Measured voltage (V) .....		
	Measured capacitance ( $\mu$ F) .....	< 0.1 $\mu$ F	P
2.4.4	Measured voltage (V) .....		

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
	Measured charge ( $\mu\text{C}$ ) .....	< 45 $\mu\text{C}$	P
2.4.5	Measured voltage (V) .....		—
	Measured energy (mJ) .....		N
2.4.6	Limited current circuit supplied from or connected to other circuits .....		P

2.5	Provisions for earthing		P
2.5.1	Class I equipment	Basic insulated conductive parts touchable in operator area earthed reliably.	P
	Warning label for service personnel		N
2.5.2	Protective earthing in Class II equipment	Class I equipment	N
2.5.3	Switches/fuses in earthing conductors	No switches or fuses in earthing conductor.	P
2.5.4	Assured earthing connection for Class I equipment in systems comprising Class I and Class II equipment	This unit has its own earthing connection. Any other units connected via the interconnecting cable to other unit shall provide SELV only. The equipment does not comprise class I and class II	P
2.5.5	Green/yellow insulation	Green/yellow wire from inlet to chassis in the approved SPS.	P
2.5.6	Continuity of earth connections	It is not possible to disconnect earth without disconnecting mains as an appliance inlet is used.	P
2.5.7	Making and breaking of protective earthing connections	Plug or inlet, earthing connected before and disconnected after hazardous voltage. No other operator removable parts.	P
2.5.8	Disconnection protective earthing connections	It is not necessary to disconnect earthing except for the removing of the earthed parts itself	P
2.5.9	Protective earthing terminals for fixed supply conductors or for non-detachable power supply cords		N

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
2.5.10	Corrosion resistance	All safety earthing connections in compliance with Annex J.	P
2.5.11	Resistance ( $\Omega$ ) of protective earthing conductors $\leq 0,1 \Omega$	$\leq 0,1 \Omega$ (see attached table)	P
	Test current (A) .....	(see appended table)	—

2.6	Primary power isolation		P
2.6.1	General requirements	The appliance inlet is considered to be the disconnect device	P
2.6.2	Type of disconnect device .....	Appliance inlet	P
2.6.3	Disconnect device in permanently connected equipment	Pluggable equipment type A.	N
2.6.4	Parts of disconnect device which remain energized	When plug or inlet is disconnected no remaining parts with hazardous voltage in the equipment	P
2.6.5	Switches in flexible cords	No isolation switch provided.	N
2.6.6	Disconnection of both poles simultaneously for single-phase equipment	The plug or inlet disconnects both poles simultaneously.	P
2.6.7	Disconnection of all phase conductors of supply in three-phase equipment	Single phase	N
2.6.8	Marking of switch acting as disconnect device	See 1.7.8	P
2.6.9	Installation instructions if plug on power supply cord acts as disconnect device	See 1.7.2	N
	Language .....		—
2.6.11	Interconnected equipment	Certified plug or inlet, earthing connected before phases are connected	P
2.6.12	Multiple power sources	Only one supply connection provided.	N



IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict

2.7	Overcurrent and earth fault protection in primary circuits		P
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	P
2.7.2	Protection against faults not covered in 5.4	The protection devices are well dimensioned and mounted.	P
2.7.3	Short-circuit backup protection	Pluggable equipment type A, the building installation is considered as providing short circuit protection	P
2.7.4	Number and location of protective devices .....	Overcurrent protection by one built-in fuse.	P
2.7.5	Protection by several devices	Only one fuse	N
2.7.6	Warning to service personnel	With reversible type plug to the mains, hazardous voltage may be still presented in the equipment after the internal fuse opens. However, as it is considered that the plug to the mains will be disconnected during service work, no marking were requested.	P

2.8	Safety interlock <i>No operator accessible areas which presents hazards in the meaning of this standard.</i>		N
2.8.2	Design		N
2.8.3	Protection against inadvertent reactivation		N
2.8.4	Reliability		N
2.8.5	Overriding an interlock		N
2.8.6.1	Contact gap (m) .....		N
2.8.6.2	Switch performing 50 cycles		N

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
2.8.6.3	Electric strength test: test voltage (V) .....		N
2.8.7	Protection against overstress		N

2.9	Clearances, creepage distances and distances through insulation		P
	Nominal voltage (V) .....	AC 240V	—
	General		P
2.9.2	Clearances	See below	P
2.9.2.1	Clearances in primary circuits	(see appended table 2.9.2 and 2.9.3)	P
2.9.2.2	Clearances in secondary circuits	(see appended table 2.9.2 and 2.9.3)	P
2.9.3	Creepage distances	(see appended table 2.9.2 and 2.9.3)	P
	CTI tests .....	CTI rating for all materials of min. 100.	—
2.9.4.1	Minimum distances through insulation	(see appended table 2.9.4)	P
2.9.4.2	Thin sheet material	The thin material used in main transformer of the approved power supply	N
	Number of layers (pcs) .....		N
	Electrical strength test: test voltage (V) .....		N
2.9.4.3	Printed boards	Not applied for	N
	Distance through insulation .....	(see appended table 2.9.4)	N
	Electric strength test at voltage (V) for thin sheet insulating material .....	(see appended table 5.3)	N
	Number of layers (pcs) .....		N
2.9.4.4	Wound components without interleaved insulation	No wound components without interleaved insulation. (see appended table 2.9.4 and Annex U)	N
	Number of layers (pcs) .....		N
	Two wires in contact inside component; angle between 45° and 90°		N
	Routine testing for finished component		N
2.9.5	Distances (mm) on coated printed boards .....	No coated printed wiring boards. (see appended table 2.9.4)	N
	Routine testing for electric strength		N

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
2.9.6	Enclosed and sealed parts	No hermetically sealed components. (see appended table 5.3)	N
	Temperature T1 (°C) .....		N
	Humidity % .....		N
2.9.7	Spacings filled by insulating compound	No component applied for	N
	Temperature T1 (°C) .....		N
	Humidity % .....		N
2.9.8	Component external terminations	(see appended table 2.9.2 and 2.9.3)	P
2.9.9	Insulation with varying dimensions	Insulation kept homogenous. (see appended table 2.9.2, 2.9.3 and 2.9.4)	N

2.10	Interconnection of equipment		P
2.10.1	General requirements	See below.	N
2.10.2	Type of interconnection circuits .....	Interconnection circuits of SELV through the output connectors. No ELV interconnection circuits.	P
2.10.3	ELV circuits as interconnection circuits	No ELV interconnection.	N

2.11	Limited power source		N
	Use of limited power source .....	Supplied from the mains.	N

3	WIRING, CONNECTIONS AND SUPPLY		P
---	--------------------------------	--	---

3.1	General		P
3.1.1	Cross-sectional area of internal wiring/interconnecting cables	All internal wires are UL recognized wiring that is PVC insulated, rated VW-1, min. 80°C, 300V. Internal wiring gauge is suitable for current intended to be carried. (see appended table 5.1)	P
	Protection of internal wiring and interconnecting cables	No internal wire for primary power distribution.	N

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
3.1.2	Wireways	Wires do not touch sharp edges and heatsinks which could damage the insulation and cause hazard.	<b>P</b>
3.1.3	Fixing of internal wiring	Internal wires with only basic isolation are routed so that they are not close to any live bare components. The wires are secured by solder pins and quick connect terminals so that a loosening of the terminal connection is unlikely.	<b>P</b>
3.1.4	Fixing of uninsulated conductors	Securely held on PCB. No hazard.	<b>P</b>
3.1.5	Insulation of internal wiring	The insulation of the individual conductors are suitable for the application and the working voltage. For the insulation material see 3.1.1.	<b>P</b>
3.1.6	Wires coloured green/yellow only for protective earth connection	See 2.5.5.	<b>P</b>
3.1.7	Fixing of beads and similar ceramic insulators	Not used.	<b>N</b>
3.1.8	Required electrical contact pressure	Electrical and earthing connections screwed two or more complete threads into metal. No screws of insulating material for electrical and earthing connections, or where supplementary or reinforced insulation could be impaired by a metal replacement.	<b>P</b>
3.1.9	Reliable electrical connections	All current carrying and safety earthing connections are metal to metal	<b>P</b>
3.1.10	End of stranded conductor	No risk of stranded conductors coming loose.	<b>P</b>
3.1.11	Use of spaced thread screws/thread-cutting screws	No self tapping screws are used.	<b>P</b>

3.2	Connection to primary power		<b>P</b>
3.2.1	Type of connection .....	Appliance inlet.	<b>P</b>

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
	Design of product with more than one supply connection .....	Only one mains supply.	N
3.2.2	Provision for permanent connection .....	Not permanently connected.	N
	Size (mm) of cables and conduits .....		N
3.2.3	Appliance inlet	The appliance inlet complies with IEC 320 and is located at the rear of the unit.	P
3.2.4	Type and cross-sectional area (mm <sup>2</sup> ) of power supply cord .....	H05VV-F, 0.75mm <sup>2</sup>	P
3.2.5	Cord anchorage		N
	Test: 25 times; 1 s; pull (N) .....		—
	Longitudinal displacement ≤ 2 mm .....		N
3.2.6	Protection of power supply cord	No parts under this unit likely to damage the power supply cord. No sharp edges	P
3.2.7	Cord guard	<i>see clause 3.2.1</i>	N
	D (mm) .....		—
	Test: mass (g) .....		—
	Radius of curvature of the cord ≤ 1,5 D		N
3.2.8	Supply wiring space		N

3.3	Wiring terminals for external power supply conductors <i>Unit with detachable power supply cord, connected on appliance inlet.</i>		N
3.3.1	Terminals		N
3.3.2	Special non-detachable cord		N
	Type of connection .....		—
	Pull test at 5 N		N
3.3.3	Screws and nuts		N
3.3.4	Fixing of conductors		N
3.3.5	Connection of connectors		N
3.3.6	Size of terminals		N
	Nominal thread diameter (mm) .....		N
3.3.7	Protection against damage of conductors		N
3.3.8	Terminal location		N

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict

3.3.9	Test with 8 mm stranded wire		N
-------	------------------------------	--	---

4	PHYSICAL REQUIREMENTS		P
---	-----------------------	--	---

4.1	Stability and mechanical hazards		P
4.1.1	Stability tests		P
	Angle of 10°	This appliance is of a stable mechanical construction and does not overbalance when tilted to an angle of 10° from its normal upright position.	P
	Test: force (N) .....		N
4.1.2	Protection against personal injury	Fan of SPS, accessible at the rear panel is covered by metal grid.	P
4.1.3	Warning and means provided for stopping the moving part .....	No hazardous moving parts.	N
4.1.4	Edges and corners	Edges and corners of the enclosure are rounded	P
4.1.5	Enclosure of a high pressure lamp	No lamp with cold pressure of 0.2MPa or hot pressure 0.4MPa.	N

4.2	Mechanical strength and stress relief		P
4.2.1	General		P
4.2.2	Internal enclosures 30 N ± 3 N; 5 s	30N force tested on internal enclosure (SPS).	P
4.2.3	External enclosures 250 N ± 10 N; 5 s	250N applied to outer enclosure.	P
4.2.4	Steel ball tests <i>Hazardous voltages are contained in the approved SPS and in the cable to the power switch. As the SPS is complete enclosed by an earthed metal enclosure which meets the requirements of 2.1.2 and the cable is reinforced isolated, no hazardous parts would be accessible with damaged Workstation's enclosure. The steel sphere fall test and swung test are therefore not considered to be necessary for the Workstation enclosure.</i>		N
	Fall test		N
	Swing test		N

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
4.2.5	Drop test		<b>N</b>
4.2.6	Heat test for enclosures of moulded or formed thermoplastic materials: 7 h; T (°C) .....	Hazardous voltages are contained in the approved SPS and in the cable to the power switch. As the SPS is complete enclosed by an earthed metal enclosure which meets the requirements of 2.1.2, the oven test is not considered to be necessary.	<b>N</b>
4.2.7	Compliance criteria	No safety relevant damages to impact the requirements of 2.1.2, 2.1.5, 2.5.1, 2.5.2, 2.9 and 4.1.2. .	<b>P</b>
4.2.8	Mechanical strength of cathode ray tubes	Unit does not employ a cathode ray tube	<b>N</b>

4.3	Construction details		<b>P</b>
4.3.1	Changing of setting for different power supply voltages	Voltage range switchable by user accessible selector switch, wrongly adjustment was tested under approval of SPS.	<b>P</b>
4.3.2	Adjustment of accessible control devices	None that would cause hazard	<b>P</b>
4.3.4	Prevention of dangerous concentration of dust, powder, liquid and gas	Equipment in intended use not considered to be exposed to these.	<b>N</b>
4.3.5	Fixing of knobs, grips, handles, levers		<b>P</b>
	Test: force (N) .....	30N on front panel switch.	<b>P</b>
4.3.6	Driving belts/couplings shall not ensure electrical insulation	Not used for insulation.	<b>N</b>
4.3.7	Retaining of sleeves	Sleeving on wiring reliable kept in position by cable ties or by the use of heatshrink sleeving	<b>P</b>

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
4.3.9	Protection of loosening parts	Electrical and mechanical connections can be expected to withstand usual mechanical stress. For the protection, solder pins, cable ties and heatshrink tubing are used	P
4.3.11	Resistance to oil and grease	Insulation not in contact with oil or grease	N
4.3.12	Protection against harmful concentration of ionizing radiation, ultraviolet light, laser or flammable gases (for laser see IEC 825-1)	No ionizing radiation or flammable liquids presents.	N
4.3.13	Securing of screwed connections	No connection likely to be exposed to mechanical stress are provided in unit.	P
4.3.15	Openings in the top of enclosure	No top opening.	P
	Dimensions (mm) .....	See appended table.	—
4.3.16	Openings in the sides of enclosure	No parts at hazardous voltage within 5 degrees projection area of openings	P
	Dimensions (mm) .....	See appended table.	—
4.3.17	Interchangeable plugs and sockets	In operator and service area, mismatch of connectors were prevented by incompatible form or location.	P
4.3.18	Torque test for direct plug-in equipment		N
	Additional torque (Nm) .....		N
4.3.19	Protection against excessive pressure		N
4.3.20	Protection of heating elements in Class I equipment	No heating elements.	N
4.3.21	Protection of lithium batteries <i>Non-rechargeable lithium battery used inside fo Dallas IC and soldered onto PCB.</i>		N
	Construction of protection circuit .....		N
4.3.22	Ageing of barrier/screen secured with adhesive		N
	Day 1: temperature (°C); time (weeks) .....		N
	Day 8/22/57: a) temperature (°C) for 1 h b) temperature (°C) for 4 h c) temperature (°C) over 8 h .....		N



IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
	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

4.4	Resistance to fire		P
4.4.1	Methods of achieving resistance to fire	Use of materials with the required flammability classes.	P
4.4.2	Minimizing the risk of ignition	Electrical parts are not likely to ignite nearby materials. Parts not protected against overheating under fault conditions. Temperatures see 5.1	P
	Printed board: manufacturer; type; flammability :	See 1.5.1 appended table	P
4.4.3.2	Material and component: manufacturer; type; flammability .....	Internal components except small parts are V-2, HF-2 or better.	P
4.4.3.3	Exemptions .....	Considered.	P
4.4.3.4	Wiring harnesses: manufacturer; flammability ...	Insulating material consists of PVC.	P
4.4.3.5	Cord anchorage bushings: manufacturer; flammability .....	No cord anchorage.	N
4.4.3.6	Air filter assemblies: manufacturer; flammability :	No air filter assemblies	N
4.4.4	Enclosures and decorative parts: manufacturer; flammability .....	Protective enclosure with no decorative parts. Enclosure of this unit is metal.	P
4.4.5	Conditions for fire enclosures	See 4.4.5.1	P
4.4.5.1	Components which require fire enclosure: manufacturer; flammability .....	With having the following components: <ul style="list-style-type: none"> <li>■ components with windings</li> <li>■ wiring</li> <li>■ semiconductor devices, transistors, diodes, integrated circuits</li> <li>■ resistors, capacitors, inductors</li> </ul> The fire enclosure is required.	P

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
4.4.5.2	Components not requiring fire enclosure .....	See 4.4.5.1	N
4.4.6	Fire enclosure construction	Protection against emission of flame, molten metal, flaming or glowing particles or drops by the fire enclosure with no bottom opening.	P
4.4.7	Doors and covers	No door or cover within fire enclosure.	N
4.4.8	Flammable liquids	No flammable liquids in this unit.	N

5	THERMAL AND ELECTRICAL REQUIREMENTS		P
---	-------------------------------------	--	---

5.1	Heating		P
	Heating tests	(see appended table)	P

5.2	Earth leakage current		P
5.2.1	General	The leakage current was measured from primary to chassis.	P
5.2.2	Leakage current	(see attached tables)	P
	Test voltage (V) .....	(see attached table)	—
	Measured current (mA) .....	(see attached table)	—
	Max. allowed current (mA) .....	3.5mA	—
5.2.3	Single-phase equipment	See 5.2.2	P
	Test voltage (V) .....		—
	Measured current (mA) .....		—
	Max. allowed current (mA) .....		—
5.2.4	Three-phase equipment	Single phase equipment	N
	Test voltage (V) .....		—
	Measured current (mA) .....		—
	Max. allowed current (mA) .....		—
5.2.5	Equipment with earth leakage current exceeding 3,5 mA	Leakage current does not exceed 3.5mA	N
	Test voltage (V) .....		—

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
	Measured current (mA) .....		—
	Max. allowed current (mA) .....		—
	Cross-sectional area (mm <sup>2</sup> ) of internal protective earthing conductor .....		—
	Warning label		N

5.3	Electric strength		P
5.3.1	General	<p>All tests voltages were applied for 1minute in the chamber after the humidity test of 2.3.2 and in warm conditions after the heating test of 5.1.</p> <p>No isolation breakdown was observed (results see appended tables).</p>	P
5.3.2	Test procedure	(see appended table)	P

5.4	Abnormal operating and fault conditions		P
5.4.2	Motors	<p>The cooling fan is provided with an internal overcurrent protection which interrupts the supply to the rotor if the max. current is exceeded. With the locked rotor, this protection turns in cycling mode in which the temp. is kept below the temp. under normal conditions.</p> <p>Other motors are used in the appliance which are certified HDD.</p> <p>(see appended table)</p>	P
5.4.3	Transformers	<p>The protection of the SPS and transformer are approved with the approval of the SPS.</p> <p>(see appended table)</p>	P

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
5.4.4	Compliance of operational insulation <i>Power supply is approved component, the over-current protection of the power supply ensures that there occur no hazard if there is short circuit in the SELV circuit.</i>		P
	Method used .....		P
5.4.5	Electromechanical components in secondary circuits	No electromechanical components.	N
5.4.6	Other components and circuits	Faults in primary and secondary components and operational insulation were already considered during the approval of the SPS.  No other component fault test necessary.	P
5.4.7	Test in any expected condition and foreseeable misuse	No hazard by operating buttons and controls not in accordance with the instructions.  Cooling fan for unit locked: Results see appended table.  No hazards	P
5.4.8	Unattended use of equipment having thermostats, temperature limiters etc.	None of them are used.	N
5.4.9	Compliance	No fire propagated beyond the equipment. No molten metal was emitted. Electric strength test primary → SELV and primary → PE were passed.  (see appended table)	P
5.4.10	Ball-pressure test of thermoplastic parts; impression shall not exceed 2 mm	None of them outside the approved power supply.	N

6	CONNECTION TO TELECOMMUNICATION NETWORKS <i>Equipment is not intended to be connected to TNV.</i>	N
---	--	---

6.1	General	N
6.2	TNV circuits	N
6.2.1.1	Limits of the TNV circuits	N

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

6.3	Protection of telecommunication network service personnel, and users of other equipment connected to the telecommunication network, from hazards in the equipment		N
6.3.1	Protection from hazardous voltages		N
6.3.2	Use of protective earthing		N
	Language of installation instructions .....		N

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
6.3.3.1	Insulation between TNV circuit and parts or circuitry that may be earthed	(see appended table 5.3)	N
6.3.3.2	Exclusions .....		N
6.3.4.1	Limitation of leakage current (mA) to telecommunication network .....		N
6.3.4.2	Summation of leakage currents from telecommunication network .....		N

6.4	Protection of the equipment user from voltages on the telecommunication network		N
6.4.1	Separation requirements		N
6.4.2	Test procedure		N
6.4.2.1	Impulse test: separation between TNV-1 circuits/TNV-3 circuits and:		N
6.4.2.1 a)	unearthed conductive parts/non-conductive parts of the equipment expected to be held or touched during normal use; test at 2,5 kV		N
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
6.4.2.1 c)	circuitry which is provided for connection of other equipment; test at 1,5 kV		N
6.4.2.2	Electric strength test: separation between TNV-1 circuits/TNV-3 circuits and:		N
6.4.2.2 a)	unearthed conductive parts/non-conductive parts of the equipment expected to be held or touched during normal use; test at 1,5 kV		N
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
6.4.2.2 c)	circuitry which is provided for connection of other equipment; test at 1,0 kV		N
6.4.2.3	Compliance criteria		N

6.5	Protection of telecommunication wiring system from overheating		N
	Maximum continuous output current (A) .....		N

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

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
A.1	Flammability test for fire enclosures of moveable equipment having a total mass exceeding 18 kg, and of stationary equipment		N
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.3	High current arcing ignition test		N
A.3.6	Number of arcs .....		N
A.4	Hot wire ignition test		N
A.4.6	Ignition time (s) .....		N
A.5	Hot flaming oil test		N
A.6	Flammability test for classifying materials V-0, V-1 or V-2		N
A.7	Flammability test for classifying foamed materials HF-1, HF-2 or HBF		N
A.8	Flammability test for classifying materials HB		N
A.9	Flammability test for classifying materials 5V		N
A	Tested material		N
	Preconditioning: 7 days (168 h); temperature (°C) .....		—
	Mounting of samples during test .....		—
	Wall thickness .....		—
	Sample 1 burning time .....		N
	Sample 2 burning time .....		N
	Sample 3 burning time .....		N
	Material: compliance with the requirements		N
	Manufacturer of tested material .....		—
	Type of tested material .....		—
	Additional information .....		—

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS		N
B.1	General requirements		N
	Position .....		—
	Manufacturer .....		—
	Type .....		—
	Rated voltage (V) or current (A) .....		—

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
B.2	Test conditions		N
B.3	Maximum temperatures	(see appended table 5.4)	N
B.4	Running overload test		N
B.5	Locked-rotor overload test		N
	Test duration (days) .....		—
	Electric strength test: test voltage (V) .....		—
B.6	Running overload test for DC motor in secondary circuits		N
B.7	Locked-rotor overload test for DC motor in secondary circuits		N
B.7.2	Test time (h) .....		N
B.7.3	Test time (h) .....		N
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Test voltage (V) .....		—

C	ANNEX C, TRANSFORMERS		N
	Position .....		—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
	Temperatures	(see appended table 5.4)	N
	Thermal cut-out	(see appended table 5.1)	N
C.1	Overload test	(see 5.4.3)	N
	Conventional transformer		N
C.2	Insulation		N
	Precautions .....	(see transformer construction check next page)	N
	Retaining of end turns of all windings	dto	N
	Earthing test at 25 A	dto	N
C.3	Electric strength test	(see 5.3)	N



IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict

H	ANNEX H, IONIZING RADIATION		N
	Ionizing radiation		N
	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
	See separate test report		N

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict

1.5.1	TABLE: list of critical components					P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity <sup>1)</sup>	
Switching Power Supply	Sea Sonic	SSH-250G, SSH-250A	i/p: 100- 120/200-240V, 60/50Hz, 6/4A, Class I;  o/p: DC 5V/25A, 12V/10A, -5V/0.3A, -12V/0.3A	IEC 950	VDE	
Power Plug	Well Shin	WS-010	10A, 250V	IEC 320	VDE	
optional	I Sheng	SP-023	10A, 250V	IEC 320	VDE	
	Well Shin	WS-010A	10A, 250V	IEC 320	VDE	
Power Cord	Wonderful	H05VV-F	3G, 0.75mm <sup>2</sup>	VDE 0281	VDE	
optional	I Sheng	H05VV-F	3G, 0.75mm <sup>2</sup>	VDE 0281	VDE	
	Da Tung	H05VV-F	3G, 0.75mm <sup>2</sup>	VDE 0281	VDE	
	Yeh Yung	H05VV-F	3G, 0.75mm <sup>2</sup>	VDE 0281	VDE	
	Well Shin	H05VV-F	3G, 0.75mm <sup>2</sup>	VDE 0281	VDE	
	Tri Ace	H05VV-F	3G, 0.75mm <sup>2</sup>	VDE 0281	VDE	
	Standard	H05VV-F	3G, 0.75mm <sup>2</sup>	VDE 0281	VDE	
Power Connector	Well Shin	WS-002A	10A, 250V	IEC 320	VDE	
optional	I Sheng	IS-15	10A, 250V	IEC 320	VDE	
	Well Shin	WS-002	10A, 250V	IEC 320	VDE	
Power Switch	Arcoelectric	T8650VB	10A, 250V	IEC 1058-1	VDE	
Floppy Disk Drive (optional)	TEAC	FD-55XX, FD- 235XX	--	IEC 950	TÜV	
Hard Disk Drive	Seagate	ST3XXXXY	--	IEC 950	TÜV	
(optional)	Seagate	ST-5XXXXY	--	IEC 950	TÜV	
DC Fan	Delta	DFB0912H	DC 12V, 0.3A, 49.79CFM	IEC 950	VDE	
	ADDA	AD0912HB- A70	DC 12V, 0.22A, 35.53CFM	IEC 950	VDE	

IEC 950					
Clause	Requirement – Test		Result - Remark		Verdict
DC Fan for CPU	INNOVATIVE	BP401212M	DC 12V, 0.06A, 0.11m³/min.	--	--
Appliance Inlet	Rong Feng	SS-7B	AC 250V, 10A	IEC 320	VDE
RTC battery IC	Dallas	DS12B887	--	--	UL
LCD Display	Sharp	Monochrome type, LM64P89	--	--	--
	Toshiba	TFT type, LTM10C042	--	--	--
D/A inverter (for TFT)	TDK	TAD143	--	--	--
D/A inverter (for Mono)	Yuntek	YN9101	--	--	--
D/A transformer (for Mono)	Yuntek	D0101	class 105°C	--	--
D/A transformer (for TFT)	TDK	TAD143	class 105°C	--	--
PCB	various	various	94V-0, 105°C		UL
Enclosure	--	metal	--	--	--

1.6		TABLE: electrical data (in normal conditions)				P
fuse #	I <sub>rated</sub> (A)	U (V)	P (W)	I (A)	I <sub>fuse</sub> (A)	condition/status
--	6	100V/ 50Hz	53.5	0.82 + 2	0.82	at normal AC + DC load
--	6	100V/ 60Hz	53.5	0.83 + 2	0.83	dto
--	6	120V/ 50Hz	54.2	0.79 + 2	0.79	at normal AC + DC load
--	6	120V/ 60Hz	54.1	0.81 + 2	0.81	dto
--	4	200V/ 50Hz	51.8	0.5 + 1	0.5	dto
--	4	200V/ 60Hz	51.7	0.51 + 1	0.51	dto
--	4	240V/ 50Hz	52.8	0.47 + 1	0.47	dto

IEC 950						
Clause	Requirement – Test				Result - Remark	Verdict
--	4	240V/ 60Hz	52.7	0.47 + 1	0.47	dto

2.1.10	TABLE: discharge test				P
Condition	$\tau$ calculated (s)	$\tau$ measured (s)	t u → 0V (s)	comments	
Switch ON	--	0.23	< 1		
Overall capacity : in approved SPS					
Discharge resistor : in approved SPS					

2.5.11	TABLE: ground continue test		P
Location	Resistant measured (Ω)	Comments	
inlet ground pin to metal enclosure	0.01		
Test current = 25A			

2.9.2 and 2.9.3	TABLE: clearance and creepage distance measurements					P
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)
Solder pin at power switch → user accessible surface	< 420	< 250	4.0	> 5.0	5.0	> 5.0
Note: Creepage distances and clearances between primary and secondary are all in approved switching power supply.						

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict

2.9.4.1	TABLE: distance through insulation measurements			P
distance through insulation di at/of:	U r.m.s. (V)	test voltage (V)	required di (mm)	di (mm)
Heatshunk tube above power switch (reinforced insulation)	240	3000	0.4	>0.7
Note: In approved switching power supply.				

4.3.14/15 & 4.4.6	Table: enclosure openings		P
Location	Size (mm)	Comments	
Top	None		
Side	20mm x 3mm	numerous openings at side	
	10mm x 3mm	numerous openings at side	
Bottom	None		

5.1	TABLE: temperature rise measurements		P
test voltage (V) .....	100V-10%, 120V + 6%, 200V-10%, 240V + 6%		—
t1 (°C) .....	:		—
t2 (°C) .....	:		—
temperature rise dT of part/at:	dT (K)	required dT (K)	
Power transformer coil	3/4/3/4	50	
Power transformer core	7/9/8/9	50	
FDD	2/2/2/2	--	
HDD	2/2/2/2	--	
CPU	7/7/7/7	--	
U19	7/7/7/7	--	
U28	5/5/5/6	--	
U1 (VGA)	33/33/33/33	--	

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict

enclosure	2/2/2/2			35	
room ambient at	25°C/25°C/25°C/25°C			--	
temperature rise dT of winding:	R <sub>1</sub> (Ω)	R <sub>2</sub> (Ω)	dT (K)	required dT (K)	insulation class
Comments:					
The temperatures were measured under worst case normal mode defined in 1.2.2.1 and as described in 1.6.1 at voltages as described in 1.6.5.					
With specified ambient temperature max. 35°C in users manual, the max. temperature rise is calculated as follows:					
Winding components:					
- class A → dTmax = 75K - 10K - (35-25) K = 55K					
Electrolyte capacitor or components with:					
- max. absolute temp. of 85°C → dTmax = (85-35) K = 50K					
- max. absolute temp. of 105°C → dTmax = (105-35) K = 70K					

5.2	TABLE: leakage current measurement			P
Condition	current L→PE (mA)	current N→PE (mA)	comments	
Switch on	0.8	0.8		
Switch off	0.4	0.4		
Input voltage	:	254V		
Input frequency	:	60Hz		
Overall capacity	:	in approved SPS		

5.3	TABLE: electric strength measurements		P
test voltage applied between:	test voltage (V)	breakdown	

IEC 950			
Clause	Requirement – Test	Result - Remark	Verdict
	primary and secondary	DC 4242V	No
	primary and ground	AC 1500V	No

5.4	TABLE: fault condition tests <i>For SPS, test were done in the approval of switching power supply, others see below.</i>						P
	ambient temperature (°C) .....: 25°C						—
	model/type of power supply .....: See below						—
	manufacturer of power supply .....: See below						—
	rated markings of power supply .....: See appended table 1.5.1						—
No.	component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
1	Fan Disable Test	--	240	40 min	--	--	No excessive temperature for all parts. Max. temp. for T1 coil = 13°C, no hazards
2	Ventilation openings covered	--	240	40 min	--	--	No excessive temperature for all parts. Max. temp. for T1 coil = 34°C, no hazards

5.4.10	TABLE: ball pressure test of thermoplastics			N
	Done in the approval of switching power supply. No other test item necessary.			
	required impression diameter (mm) .....: ≤ 2 mm			—
part	test temperature (°C)		impression diameter (mm)	

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
APPENDIX	<p>EN 60950:1992 + A1:1993: + A2:1993 + A3:1995 + A4:1997 TEST REPORT</p> <p>(IEC Publication 950 2nd edition, 1991 + Amd.1, 1992 + Amd.2, 1993 + Amd.3, 1995 + Amd.4, 1996)</p> <p>CENELEC common modification, Special National condition, Nation deviation and other information</p>		P
<p><b>EXPLANATION FOR ABBREVIATIONS</b></p> <p>C = CENELEC common modification, S = Special National condition, D = National deviation, F = Other information, AT = Austria, GB = Great Britain, CH = Switzerland, DE = Germany, DK = Denmark, FI = Finland, FR = France, NO = Norway, SE = Sweden.</p> <p>P = Pass, F = Fail, N = Not applicable. place in the column to the right.</p>			
1.2.4.1 S	(DK). Certain types of Class I appliances (see § 3.2.1) may be provided with a plug not establishing earthing continuity when inserted into Danish socket-outlets.	Not applied for.	N
1.5.1 D	(SE). Add the following: NOTE: Switches containing mercury such as thermostats, relay and level controllers are not allowed.	Not applied for.	N
1.7.2 S	(NO). If separation between the mains and a communication system/network, other than public telecommunication networks, relies upon connection to safety earth, the equipment shall have a marking stating that it must be connected to an earthed mains socket-outlet. NOTE: For requirements for equipment to be connected to a public telecommunication network: See 6.2.1.4.	Not applied for.	N
1.7.2 S	(SE). If the separation between the mains and a SELV terminal relies upon connection to the safety earth, the apparatus shall have a marking stating that it must be connected to an earthed mains socket-outlet when a SELV circuit is connected to network passing both unearthed and earthed electrical environment. The marking text shall be in Swedish and as follows: "Apparaten skall anslutas till jordat uttag när den ansluts till ett nätverk".	Not applied for.	N



National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
1.7.2 D	(DK). Supply cords of Class I appliances, which are delivered without a plug, must be provided with a visible tag with the following text: "Vigtigt. Lederen med grøn/gul isolation må Kun tilsluttes en klemme mærket eller". If essential for the safety of the appliance, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text: "For tilslutning af de øvrige ledere, se medfølgende installationsvejledning".	Not applied for.	N
1.7.2 C	Delete note 4.	Deleted	N
1.7.5 S	(DK). Socket-outlets for providing power to other appliances shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a when used on appliances of Class I.	Not applied for.	N
1.7.5 D	(DK). Class II appliances shall not be fitted with socket-outlets for providing power to other appliances.	Not applied for.	N
1.7.14 D	(DE). Directions for use with rules to prevent certain hazards for (among others) maintenance of the technical labor equipment, also for imported technical labor equipment shall be written in German language. NOTE: Of this requirement, rules for use even only by service personnel are not exempted.	Not applicable.	N
1.7.17 D	(CH). Annex 4.10 of SR 814.013 (ordinance on environmentally hazardous substances) applies for batteries.	Not applied for.	N
2.1.3.1 C	Table 0, first column, replace "Over 50" by "Over 350".	Replaced.	P
2.3.3 C	Delete Method 4 and the line in note 1 relating to this method	Deleted.	N
2.3.6 S	(FR). Method 3 is not acceptable.	Not applied for.	N
2.3.6 C	Delete the note.	Deleted.	N
2.3.7 C	Replace the text of this sub-clause by: Void.	Replaced.	N
2.3.9 S	(NO). Marking and insulation requirements according to this annex, subclauses 1.7.02 and 6.2.01.4 b) apply.	Not applied for.	N
2.5.2 S	(DK, NO) add after the first paragraph: " The above exception is not acceptable in Pluggable equipment type A "	Not applied for.	N
2.5.2 C	Delete the note.	Deleted.	N

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
2.7.1 C	<p>Replace the text of this sub-clause by: Basic requirements: To protect against excess current, short-circuits and earth faults in primary circuits, protective devices shall be included either as integral parts of the equipment or as a part of the building installation, subject to all of the following a), b), c) and d):</p> <p>(a) Except as detailed in (b) and (c), protective devices necessary to comply with the requirements of Sub-clause 5.4 shall be included as integral parts of the equipment.</p> <p>(b) For components in series with the mains input to the equipment such as the supply cord, appliance coupler, RFI filter and switch, short circuit and earth fault protection may be provided with protective devices in the installation.</p> <p>(c) It is permitted for equipment with rated current exceeding 16A, which is pluggable equipment type B or permanently connected equipment, to rely on dedicated overcurrent and short circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breaker, is fully specified in the installation instruction</p> <p>(d) If reliance is placed on protection in the building installation, the installation instructions shall comply with Sub-clause 1.7.11 except that for pluggable equipment Type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet and 1.7.11 does not apply.</p>	Replaced.	P
2.7.2 C	Replace the text of this sub-clause by: Void.	Replaced.	N
2.8.4 C	Delete the note.	Deleted.	N
2.9.1 S	(NO). Due to the IT power systems used, the mains supply voltage is considered to be equal to the phase-to-phase voltage.	Not applied for.	N
2.11 C	Delete notes 1,2 and 3.	Deleted.	N

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
3.2.1 S	<p>(DK). Supply cords of single phase appliances having a rated current not exceeding 10 A shall be provided with a plug according to the Heavy Current Regulations Section 107-2-D1.</p> <p>Class I equipment provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a rated current exceeding 10A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations Section 107-1-D1 or EN 60309-2.</p>	Not applied for.	N
3.2.1 S	<p>(CH). Supply cords of equipment having a rated current not exceeding 10A shall be provided with a plug complying with SEV 1011 or IEC 884-1 and one of the following dimension sheets</p> <p><u>SEV 6532-2,1991</u> Plug type 15 3P+N+PE 250/400V, 10A</p> <p><u>SEV 6533-2,1991</u> Plug type 11 L+N 250V, 10A</p> <p><u>SEV 6534-2,1991</u> Plug type 12 L+N+PE 250V, 10A</p> <p>EN 60 309 applies for plugs for currents exceeding 10A</p>	Not applied for.	N
3.2.1 S	<p>(GB). Apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS1363 by means of that flexible cable or cord and plug, shall be fitted with a "standard plug" in accordance with Statutory Instrument 1788:1994 - The Plugs and Sockets etc. (safety) Regulations 1994, unless exempted by those regulations.</p>	Not applied for.	N
3.2.2 C	Delete the note and in table 10, delete the value in parentheses.	Deleted.	N
3.2.4 S	<p>(GB). A power supply cord with conductor of 1.25 mm<sup>2</sup> is allowed for equipment with rated current over 10 A and up to and including 13 A.</p>	Not applied for.	N

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
3.2.4 C	<p>Replace</p> <p>"245 IEC 53" by "H05 RR-F",</p> <p>"227 IEC 52" by "H03 VV-F or H03 VVH2-F" and</p> <p>"227 IEC 53" by "H05 VV-F or H05 VVH2-F".</p> <p>In table 11, replace the first four lines by the following:</p> <p>Up to and including 6 0.75"</p> <p>Over 6 up to and including 10 1.0 (0.75)"</p> <p>Over 10 up to and including 16 1.5 (1.0)"</p> <p>In the conditions applicable to table 11, delete the words "in some countries" in condition 1).</p> <p>In the note delete the second sentence.</p>	Replaced.	N
3.2.5 S	(GB). The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current of over 10 A and up to and including 13 A is: 1.25 mm <sup>2</sup> to 1.5 mm <sup>2</sup> nominal cross-sectional area.	Not applied for.	N
3.3.5 C	<p>In table 13, replace the fourth and the fifth lines by :</p> <p>Over 10 up to and including 16 1.5 to 2.5 1.5 to by 4</p>	Replaced.	N
4.3.18 S	(GB). This test should be performed using an appropriate socket-outlet with an earthing contact.	Not applied for.	N
4.4.4 C	Delete note 2.	Deleted.	N
5.4.9 S	(NO). The electric strength test after the tests of 5.4.4, 5.4.5, 5.4.6, 5.4.7 and 5.4.8 includes testing of basic insulation in Class I equipment.	Not applied for.	N
6.1 S	(CH).Protective means in the equipment shall not prevent transient surge protection in the telecommunication network from operating properly (d.c. spark-over voltage of the surge suppressor installed in the telecommunication network: approx. 245V.)	Not applied for.	N
6.2.1.2 C 6.2.1.3 C	Add at the end of each sub-clause: This sub-clause only applies to TNV circuits normally operating in excess of the limits of SELV circuits.	No TNV.	N
6.2.1.4b S	(NO). Insulation between parts conductively connected to the supply mains and parts connected to a public telecommunication network shall comply with the requirements for double or reinforced insulation.	Not applied for.	N

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
6.2.1.4b S	(FI). This method is only permitted for permanently connected equipment or for pluggable equipment type B.	Not applied for.	N
6.2.1.4 C	Delete notes.	Deleted.	N
6.2.1.5 S	(NO). Requirements in 6.2.1.4, Note 2, apply	Not applied for.	N
6.3.3. S	(NO). 6.3.3 is applicable for pluggable equipment type A and B and for permanently connected equipment	Not applied for.	N
6.4.1 C	Delete note 2.		N
6.4.2.1 C	Delete note 2.		N
6.4.2.1 D	(AT). Equipment shall comply with $U_c = 2.0\text{KV}$ in cases b) and c).	Not applied for.	N
Annex H. D	(DE) a) A license is required by those who operate an X-ray emission source. b) A license in accordance with clause 1 is not required by those who operate an X-ray emission source on which the electron acceleration voltage does not exceed 20 KV, if 1) the local dose rate at a distance of 0.1m from the surface does not exceed 1MSv/h and 2) it is adequately indicated on the X-ray emission source that i) X-rays are generated and ii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer.	No CRT.	N

National Deviation			
Clause	Requirement – Test	Result - Remark	Verdict
	<p>c) A license in accordance with clause 1 is also not required by persons who operate an X-ray emission source on which the electron acceleration voltage exceeds 20 KV , if</p> <p>1) the X-ray emission source has been granted a type approval and</p> <p>2) it is adequately indicated on the X-ray emission source that</p> <p>i) X-ray are generated</p> <p>ii) the device stipulated by the manufacturer or importer guarantees that the maximum permissible local dose rate in accordance with the type approval is not exceeded and</p> <p>iii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer.</p> <p>d) Furthermore, a license in accordance with clause 1 is also not required by persons who operate X-ray emission sources on which the electron acceleration voltage does not exceed 30 KV, if</p> <p>1) the X-rays are generated only intrinsically safety CRTs complying with Enclosure III, No.6,</p> <p>2) the values stipulated in accordance with Enclosure III, bi, 6.2 are limited by technical</p>		
Annex P C	<p>Replace the text of this annex by:</p> <p>See annex ZA.</p>	Replaced.	N
Annex Q C	<p>Add for IEC 529:</p> <p>Note: Endorsed by EN 60529:1991 (not modified)</p> <p>Add for IEC 707</p> <p>Note: Endorsed by HD441:1983 (not modified)</p> <p>Add for IEC 1058-1:</p> <p>Note: Endorsed by EN 61058:1992 (not modified).</p>	Added.	N

**Questionnaire: Acceptability of second- and manufacturer laboratories.**

(This questionnaire has to be filled out in case the laboratory has no accreditation according EN 45 001/2)



Name of inspector: David C. M. Lee

Reference (report-no.): E 9763829 E01

Questions (except of QSA 3.105.12):

1. Is there an evidence for the qualification of the staff who is are charge of testing?  
Yes
2. Is the special competence of the staff sufficient for the testing purpose?  
Yes
3. Is there a training program for the staff and the leading personal?  
Yes
4. Is the laboratory equipped with all instruments for testing and measuring?  
Yes
5. Are the test rooms applied with all equipment needed for testing and are these ready for operation?  
Yes
6. Is the necessary cleanliness and neatness kept?  
Yes
7. Is all equipment under regular maintenance and are the maintenance periods and extend defined in a written form?  
Yes
8. Are all used test and measurement instruments registered?  
Yes, see measurement equipment list.
  - File of all test and measurement instrument.  
See measurement equipment list.
  - Which data is included in the file?  
See measurement equipment list.
9. Are all test and measurement instruments calibrated and adjusted in a sufficient way?  
Yes, see measurement equipment list.
  - Are periods for calibration and adjustment defined (lists, QA-support)?  
See measurement equipment list.
  - Are adjustment and calibration recorded (marking of the equipment, registration in lists)?  
See measurement equipment list.
  - Is the adjustment and calibration done with gauges equipment?  
Yes



- Is it guaranteed that overstressed, wrong handled or defective equipment is put out of service, marked and if necessary stored at certain locations until repair?

Yes

- Is there a procedure to check the impact on previous tests caused by defective equipment?

Yes

- Are there instructions for the handling of defective measurement instruments? (measures also regarding the tested materials?)

Yes

- Are calibration and adjustment also handled by other institutions (equipment manufacturers)?

Yes, by ITRI or ETC.

10. Is the mother equipment only used for adjustment/calibration and is it stored sufficiently?

Yes

11. Does the test laboratory take part in comparison tests with other test laboratories in case there is no trace to a standard unit, in order to prove the accuracy of test results?

Yes

12. Where are mother equipment calibrated?

ETC or ITRI.

13. Which standard units and master equipment are provided in the test laboratory, is the traceability to national or international standard units guaranteed?

Yes

Place, date

The inspector signature

Taipei, 20.06.1997

A handwritten signature in black ink, appearing to read "David C. J. V.", written over a horizontal line.



