TYPE TEST REPORT FOR

Switching Power Supply

Model: HS-150B-5, HS-150B-7.5, HS-150B-12, HS-150B-15, HS-150B-24, HS-150B-48

Prepared For : Shanghai Mingwei Electronic Co., Ltd.
No.1, Fengpu West Road, Nanqiao, Fengxian District,
Shanghai, China
Tel: +86-21-63504377
Fax: +86-21-63504478

Prepared By : WALTEK SERVICES (SHENZHEN) CO ., LTD.
12B, West Tower, Aidi Building, No.5003 Binhe Rd.,
Futian District, Shenzhen 518045, China
Tel: +86-755-83551033
Fax: +86-755-83552400

Date of Test: May 02, 2011 to May 20, 2011
Date of Report: June 01, 2011
Report Number: WT10083495R1-U-U-L

TEST REPORT

EN 60950-1

Information technology equipment – Safety – Part 1: General requirements

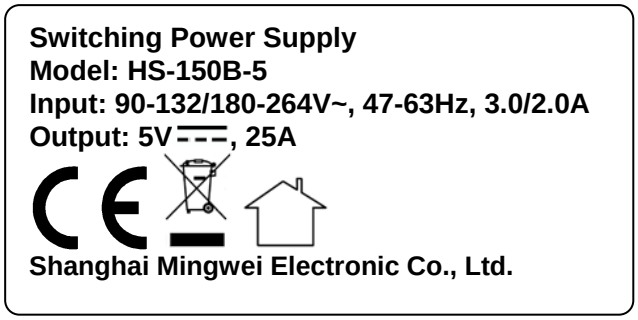
Report reference No. .....:	WT10083495R1-U-U-L	
Tested by (printed name and signature) .....:	Dannel Wang	Dannel Wang .....
Approved by (printed name and signature) .....:	Henry Lee	Henry Lee .....
Date of issue .....:	June 01, 2011	
Total pages ..... :	41 +3 pages of photo documents	
Testing Laboratory Name .....:	WALTEK SERVICES (SHENZHEN) CO., LTD.	
Address .....:	12B, West Tower, Aidi Building, No.5003 Binhe Rd, Futian District, Shenzhen, China	
Testing location .....:	No.102, Testing Center, Boji Science Park, No.2 Taishan Rd., SND. Suzhou, 215011, Jiangsu, China	
Applicant's Name .....:	Shanghai Mingwei Electronic Co., Ltd.	
Address .....:	No.1, Fengpu West Road, Nanqiao, Fengxian District, Shanghai, China	
Manufacturer's Name.....:	Shanghai Mingwei Electronic Co., Ltd.	
Address .....:	No.1, Fengpu West Road, Nanqiao, Fengxian District, Shanghai, China	
Test specification		
Standard .....:	EN 60950-1:2006+A11:2009	
Test procedure .....:	CB/CCA–scheme	
Non-standard test method .....:	N/A	
Test Report Form No.....:	EN60950_1C	
TRF originator .....:	SGS Fimko Ltd	
Master TRF .....:	dated 2007-06	

Copyright © 2007 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test item description .....:	Switching Power Supply
Trademark .....:	N/A
Model and/or type reference .....:	HS-150B-5, HS-150B-7.5, HS-150B-12, HS-150B-15, HS-150B-24, HS-150B-48
Serial number .....:	N/A
Rating(s) .....:	Rated input: 90-132/180-264Vac, 47-63Hz, 3.0/2.0A Rated output: 5Vdc, 25A for model HS-150B-5 7.5Vdc, 18A for model HS-150B-7.5 12Vdc, 12.5A for model HS-150B-12 15Vdc, 10A for model HS-150B-15 24Vdc, 6.3A for model HS-150B-24 48Vdc, 3.2A for model HS-150B-48

Copy of marking plate:



Note: 1. This is a reference label, and the final label shall include its content.
2. All models rating label are in the same designation except for model designation and output rating, above label is shown for representing the others model and output rating.

Summary of testing:

The test subject has been assessed for safety with respect to the above test specifications and found to comply with the requirements of the standards.

Test item particulars……..:	
Equipment mobility ..... :	☐ movable ☐ hand-held ☐ transportable ☐ stationary ☒ for building-in ☐ direct plug-in
Connection to the mains..... :	☐ pluggable equipment ☐ type A ☐ type B ☐ permanent connection ☐ detachable power supply cord ☐ non-detachable power supply cord ☐ not directly connected to the mains ☒ Considered in end product
Operating condition ..... :	☒ continuous ☐ rated operating / resting time: 90 sec ON / 30 min OFF
Access location..... :	☒ operator accessible ☐ restricted access location
Over voltage category (OVC)..... :	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other:
Mains supply tolerance (%) or absolute mains supply values ..... :	Declared by the manufacturer
Tested for IT power systems ..... :	☐ Yes ☒ No
IT testing, phase-phase voltage (V) ..... :	N/A
Class of equipment ..... :	☒ Class I ☐ Class II ☐ Class III ☐ Not classified
Considered current rating (A)..... :	Refer to marking plate
Pollution degree (PD)..... :	☐ PD 1 ☒ PD 2 ☐ PD 3
IP protection class ..... :	IPX0
Altitude during operation (m)..... :	2000
Altitude of test laboratory (m) ..... :	100
Mass of equipment (kg)..... :	0.658
Test case verdicts	
Test case does not apply to the test object :	N (N/A)
Test item does meet the requirement ..... :	P (Pass)
Test item does not meet the requirement ..:	F (Fail)
Testing	
Date of receipt of test item ..... :	May 02, 2011
Date(s) of performance of test ..... :	May 02, 2011 to May 20, 2011

General remarks

The test result presented in this report relate only to the object(s) tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

”(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

General product information:
- The equipment with models HS-150B-5, HS-150B-7.5, HS-150B-12, HS-150B-15, HS-150B-24, HS-150B-48 are switching power supply for household or similar use in scope of ITE.
- The equipment is secured to the enclosure with screws.
- The all output of the equipment could not comply with the requirements of sub-clause 2.5 Limited power source.
- All models are similar except for model designation, output rating, transformer secondary winding and the rating of some secondary components.
- Unless otherwise specified, all tests were performed on models HS-150B-5 (5Vdc/25A), HS-150B-48 (48Vdc/3.2A) to represent other similar models.

Remark:
Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test items:

Lab information:

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1	GENERAL		P
1.5	Components		P
1.5.1	General		P
	Comply with IEC 60950 or relevant component standard	(See appended table 1.5.1)	P
1.5.2	Evaluation and testing of components		P
1.5.3	Thermal controls	No thermal controls device	N
1.5.4	Transformers	See annex C	P
1.5.5	Interconnecting cables		P
1.5.6	Capacitors bridging insulation	Approved X2 type capacitors according to IEC 60384-14:1993. Approved Y1 or Y2 type capacitor according to IEC 60384-14:1993. (See appended table 1.5.1)	P
1.5.7	Resistors bridging insulation	No such component	N
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N
1.5.8	Components in equipment for IT power systems		N
1.5.9	Surge suppressors	Varistor ZNR1 used	P
1.5.9.1	General	(See appended table 1.5.1)	P
1.5.9.2	Protection of VDRs		P
1.5.9.3	Bridging of functional insulation by a VDR		P
1.5.9.4	Bridging of basic insulation by a VDR		N
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N
1.6	Power interface		P
1.6.1	AC power distribution systems	TN power distribution system	P
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	Not hand-held equipment	N
1.6.4	Neutral conductor		P
1.7	Marking and instructions		P

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.1	Power rating		P
	Rated voltage(s) or voltage range(s) (V)	Refer to the rating label	P
	Symbol for nature of supply, for d.c. only		N
	Rated frequency or rated frequency range (Hz)	Refer to the rating label	P
	Rated current (mA or A)	Refer to the rating label	P
	Manufacturer's name or trademark or identification mark	Refer to the rating label	P
	Model identification or type reference	Refer to the rating label	P
	Symbol for Class II equipment only		N
	Other markings and symbols	Symbols are used according to IEC 60417-1.	P
1.7.2	Safety instructions and marking	User's manual provided.	P
1.7.2.1	General	Instructions are available.	P
1.7.2.2	Disconnect devices		P
1.7.2.3	Overcurrent protective device		N
1.7.2.4	IT power distribution systems		N
1.7.2.5	Operator access with a tool		N
1.7.2.6	Ozone		N
1.7.3	Short duty cycles	Continuous operation	N
1.7.4	Supply voltage adjustment	No voltage adjustment	N
	Methods and means of adjustment; reference to installation instructions		N
1.7.5	Power outlets on the equipment	No standard power outlets	N
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference	Marking adjacent to fuse on PCB as: F1, F5A/250VAC	P
1.7.7	Wiring terminals	See below.	N
1.7.7.1	Protective earthing and bonding terminals	Appliance terminal block used.	N
1.7.7.2	Terminals for a.c. mains supply conductors	The equipment with appliance terminal block is intended to use the power supply cord.	N
1.7.7.3	Terminals for d.c. mains supply conductors	Mains from AC source only.	N
1.7.8	Controls and indicators		N
1.7.8.1	Identification, location and marking		N
1.7.8.2	Colours		N
1.7.8.3	Symbols according to IEC 60417		N
1.7.8.4	Markings using figures	No figures used.	N
1.7.9	Isolation of multiple power sources	No multiple power sources	N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.10	Thermostats and other regulating devices	No thermostats and similar regulating devices	N
1.7.11	Durability	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 sec. and then again for 15 sec. with the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was no curling or lifting of the label edge.	P
1.7.12	Removable parts	No removable parts	N
1.7.13	Replaceable batteries	No batteries	N
	Language.....		N
1.7.14	Equipment for restricted access locations.....		N
2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	Only has access to bare parts of SELV circuits	P
2.1.1.1	Access to energized parts	See below.	P
	Test by inspection	Cannot touch live part or basic insulation	P
	Test with test finger (Figure 2A)	No access to any energized parts or hazardous voltage with test finger.	P
	Test with test pin (Figure 2B).....	No access to any energized parts or hazardous voltage with test pin.	P
	Test with test probe (Figure 2C).....	No TNV present	N
2.1.1.2	Battery compartments	No battery compartments	N
2.1.1.3	Access to ELV wiring	No ELV circuit	N
	Working voltage (V); minimum distance (mm) through insulation		N
2.1.1.4	Access to hazardous voltage circuit wiring		N
2.1.1.5	Energy hazards	No accessible energy hazards	P
2.1.1.6	Manual controls		N
2.1.1.7	Discharge of capacitors in equipment		P
	Time-constant (s); measured voltage (V).....	1s, 33.4V	P
2.1.1.8	Energy hazards – d.c. mains supply		N
	a) Capacitor connected to the d.c. mains supply		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	b) Internal battery connected to the d.c. mains supply		N
2.1.1.9	Audio amplifiers ……:		N
2.1.2	Protection in service access areas		N
2.1.3	Protection in restricted access locations		N
2.2	SELV circuits		P
2.2.1	General requirements	See below.	P
2.2.2	Voltages under normal conditions (V)	<42.4Vp or 60V d.c.	P
2.2.3	Voltages under fault conditions (V)	<42.4Vp or 60V d.c.	P
2.2.4	Connection of SELV circuits to other circuits ..	Connect to SELV circuit only	P
2.3	TNV circuits		N
2.3.1	Limits	No TNV circuits	N
	Type of TNV circuits		N
2.3.2	Separation from other circuits and from accessible parts		N
2.3.2.1	General requirements		N
2.3.2.2	Protection by basic insulation		N
2.3.2.3	Protection by earthing		N
2.3.2.4	Protection by other constructions		N
2.3.3	Separation from hazardous voltages		N
	Insulation employed.....		N
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed.....		N
2.3.5	Test for operating voltages generated externally		N
2.4	Limited current circuits		P
2.4.1	General requirements	See below.	P
2.4.2	Limit values	0.7mA	—
	Frequency (Hz).....	60Hz	—
	Measured current (mA).....	0.62mA	P
	Measured voltage (V)	1.24V	—
	Measured circuit capacitance (nF or μF).....	C24=4700pF	P
2.4.3	Connection of limited current circuits to other circuits		P

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.5	Limited power sources		N
	a) Inherently limited output		N
	b) Impedance limited output		N
	c) Regulating network limited output under normal operating and single fault condition		N
	d) Overcurrent protective device limited output		N
	Max. output voltage (V), max. output current (A), max. apparent power (VA).....		N
	Current rating of overcurrent protective device (A)		N
2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing		P
2.6.2	Functional earthing		P
2.6.3	Protective earthing and protective bonding conductors		P
2.6.3.1	General	See below	P
2.6.3.2	Size of protective earthing conductors		N
	Rated current (A), cross-sectional area (mm^2), AWG		N
2.6.3.3	Size of protective bonding conductors		N
	Rated current (A), cross-sectional area (mm^2), AWG		N
2.6.3.4	Resistance of earthing conductors and their terminations, resistance (Ω), voltage drop (V), test current (A), duration (min).....	72mΩ (32A/120s)	P
2.6.3.5	Colour of insulation.....		N
2.6.4	Terminals		P
2.6.4.1	General		P
2.6.4.2	Protective earthing and bonding terminals		P
	Rated current (A), type, nominal thread diameter (mm)		N
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		P
2.6.5	Integrity of protective earthing		P
2.6.5.1	Interconnection of equipment		P
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		P

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.6.5.3	Disconnection of protective earth		P
2.6.5.4	Parts that can be removed by an operator		P
2.6.5.5	Parts removed during servicing		P
2.6.5.6	Corrosion resistance		P
2.6.5.7	Screws for protective bonding		N
2.6.5.8	Reliance on telecommunication network or cable distribution system		N
2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements		P
	Instructions when protection relies on building installation		N
2.7.2	Faults not simulated in 5.3.7		P
2.7.3	Short-circuit backup protection		P
2.7.4	Number and location of protective devices	One fuse “F1” is located in Line conductor.	P
2.7.5	Protection by several devices		N
2.7.6	Warning to service personnel.....	No service work necessary.	N
2.8	Safety interlocks		N
2.8.1	General principles	No safety interlocks	N
2.8.2	Protection requirements		N
2.8.3	Inadvertent reactivation		N
2.8.4	Fail-safe operation		N
2.8.5	Moving parts		N
2.8.6	Overriding		N
2.8.7	Switches and relays		N
2.8.7.1	Contact gaps (mm)		N
2.8.7.2	Overload test		N
2.8.7.3	Endurance test		N
2.8.7.4	Electric strength test		N
2.8.8	Mechanical actuators		N
2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials are not used.	P
2.9.2	Humidity conditioning	48h	P
	Relative humidity (%), temperature (°C).....	93%, 25°C	P

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.9.3	Grade of insulation	Reinforced, double, supplementary, basic and functional insulation	P
2.9.4	Separation from hazardous voltages	See below.	P
	Method(s) used	Method 1	P
2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General		P
2.10.1.1	Frequency		P
2.10.1.2	Pollution degrees	Pollution Degree 2.	P
2.10.1.3	Reduced values for functional insulation		N
2.10.1.4	Intervening unconnected conductive parts		N
2.10.1.5	Insulation with varying dimensions		N
2.10.1.6	Special separation requirements	Special separation is not used.	N
2.10.1.7	Insulation in circuits generating starting pulses		N
2.10.2	Determination of working voltage	See below	P
2.10.2.1	General		P
2.10.2.2	RMS working voltage		P
2.10.2.3	Peak working voltage		P
2.10.3	Clearances		P
2.10.3.1	General	Alternate method of Annex G was not considered.	P
2.10.3.2	Mains transient voltages		P
	a) AC mains supply		P
	b) Earthed d.c. mains supplies		N
	c) Unearthed d.c. mains supplies		N
	d) Battery operation		N
2.10.3.3	Clearances in primary circuits	See appended table 2.10.3 and 2.10.4.	P
2.10.3.4	Clearances in secondary circuits		N
2.10.3.5	Clearances in circuits having starting pulses		N
2.10.3.6	Transients from a.c. mains supply	Considered.	P
2.10.3.7	Transients from d.c. mains supply	Not connected to d.c. mains supply.	N
2.10.3.8	Transients from telecommunication networks and cable distribution systems		N
2.10.3.9	Measurement of transient voltage levels	Measurement not relevant.	N
	a) Transients from a mains supply		N
	For an a.c. mains supply		N
	For a d.c. mains supply		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	b) Transients from a telecommunication network		N
2.10.4	Creepage distances		P
2.10.4.1	General		P
2.10.4.2	Material group and comparative tracking index		P
	CTI tests	Material group IIIb are assumed to be used	P
2.10.4.3	Minimum creepage distances	(see appended table 2.10.3 and 2.10.4)	P
2.10.5	Solid insulation		P
2.10.5.1	General		P
2.10.5.2	Distances through insulation	(see appended table 2.10.5)	P
2.10.5.3	Insulating compound as solid insulation	No such construction used.	N
2.10.5.4	Semiconductor devices	No such device.	N
2.10.5.5	Cemented joints	Not used.	N
2.10.5.6	Thin sheet material - General	The thin sheet materials of polyester tape used in and around transformer T1.	P
2.10.5.7	Separable thin sheet material	Transformer primary and secondary separable by two layers polyester tape.	P
	Number of layers (pcs)	3 layers	P
2.10.5.8	Non-separable thin sheet material	Not used.	N
2.10.5.9	Thin sheet material – standard test procedure	Not used.	N
	Electric strength test		N
2.10.5.10	Thin sheet material – alternative test procedure	See below.	P
	Electric strength test	See appended table 5.2.	P
2.10.5.11	Insulation in wound components	See clause 2.10.5.12.	P
2.10.5.12	Wire in wound components	Certified source of margin tape is used in T1. (See appended table 1.5.1.)	P
	Working voltage		P
	a) Basic insulation not under stress		N
	b) Basic, supplementary, reinforced insulation	Reinforced insulation	P
	c) Compliance with Annex U	(See appended table 1.5.1.)	P
	Two wires in contact inside wound components; angle between 45° and 90°	Protection against mechanical stress is provided by insulation tape and tubing.	P

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.10.5.13	Wire with solvent-based enamel in wound components	No wire with solvent-based enamel in wound components.	N
	Electric strength test		N
	Routine test		N
2.10.5.14	Additional insulation in wound components	No additional insulation used.	N
	Working voltage		N
	- Basic insulation not under stress		N
	- Supplementary, reinforced insulation		N
2.10.6	Construction of printed boards	See below.	P
2.10.6.1	Uncoated printed boards		P
2.10.6.2	Coated printed boards		N
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N
2.10.6.4	Insulation between conductors on different layers of a printed board		N
	Distance through insulation		N
	Number of insulation layers (pcs)		N
2.10.7	Component external terminations		N
2.10.8	Tests on coated printed boards and coated components		N
2.10.8.1	Sample preparation and preliminary inspection		N
2.10.8.2	Thermal conditioning		N
2.10.8.3	Electric strength test		N
2.10.8.4	Abrasion resistance test		N
2.10.9	Thermal cycling		N
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N
2.10.11	Tests for semiconductor devices and cemented joints		N
2.10.12	Enclosed and sealed parts:		N
3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	No internal wiring	N
3.1.2	Protection against mechanical damage		N
3.1.3	Securing of internal wiring		N
3.1.4	Insulation of conductors		N
3.1.5	Beads and ceramic insulators	Not used.	N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
3.1.6	Screws for electrical contact pressure	No such screws provided.	N
3.1.7	Insulating materials in electrical connections		N
3.1.8	Self-tapping and spaced thread screws	No self tapping screws are used.	N
3.1.9	Termination of conductors	All conductors are reliable secured.	P
	10 N pull test	Complied.	P
3.1.10	Sleeving on wiring		N
3.2	Connection to a mains supply		N
3.2.1	Means of connection	The unit is provided with a connector	N
3.2.1.1	Connection to an a.c. mains supply	Considered in end product	N
3.2.1.2	Connection to a d.c. mains supply		N
3.2.2	Multiple supply connections		N
3.2.3	Permanently connected equipment		N
	Number of conductors, diameter of cable and conduits (mm)		N
3.2.4	Appliance inlets		N
3.2.5	Power supply cords		N
3.2.5.1	AC power supply cords		N
	Type		N
	Rated current (A), cross-sectional area (mm^2), AWG		N
3.2.5.2	DC power supply cords		N
3.2.6	Cord anchorages and strain relief		N
	Mass of equipment (kg), pull (N)		N
	Longitudinal displacement (mm)		N
3.2.7	Protection against mechanical damage		N
3.2.8	Cord guards		N
	Diameter or minor dimension D (mm); test mass (g)		N
	Radius of curvature of cord (mm)		N
3.2.9	Supply wiring space		N
3.3	Wiring terminals for connection of external conductors		N
3.3.1	Wiring terminals		N
3.3.2	Connection of non-detachable power supply cords		N
3.3.3	Screw terminals		N
3.3.4	Conductor sizes to be connected		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	Rated current (A), cord/cable type, cross-sectional area (mm^2)		N
3.3.5	Wiring terminal sizes		N
	Rated current (A), type, nominal thread diameter (mm)		N
3.3.6	Wiring terminals design		N
3.3.7	Grouping of wiring terminals		N
3.3.8	Stranded wire		N
3.4	Disconnection from the mains supply		N
3.4.1	General requirement	Determined in the end product	N
3.4.2	Disconnect devices		N
3.4.3	Permanently connected equipment		N
3.4.4	Parts which remain energized		N
3.4.5	Switches in flexible cords		N
3.4.6	Number of poles – single-phase and d.c. equipment		N
3.4.7	Number of poles – three-phase equipment		N
3.4.8	Switches as disconnect devices		N
3.4.9	Plugs as disconnect devices		N
3.4.10	Interconnected equipment		N
3.4.11	Multiple power sources		N
3.5	Interconnection of equipment		P
3.5.1	General requirements	See below.	P
3.5.2	Types of interconnection circuits	SELV circuit only	P
3.5.3	ELV circuits as interconnection circuits	No ELV circuit	N
3.5.4	Data ports for additional equipment		N
4	PHYSICAL REQUIREMENTS		P
4.1	Stability		N
	Angle of 10°	Test not considered necessary according to construction of equipment	N
	Test force (N)		N
4.2	Mechanical strength		P
4.2.1	General	See below.	P

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
4.2.2	Steady force test, 10 N	Considered.	P
4.2.3	Steady force test, 30 N	No internal enclosure.	N
4.2.4	Steady force test, 250 N	250N applied to outer enclosure for surface of enclosure. No energy or other hazards. Force applied at various locations of: - top enclosure - bottom enclosure - side enclosure	P
4.2.5	Impact test		P
	Fall test		P
	Swing test		P
4.2.6	Drop test; height (mm)		N
4.2.7	Stress relief test		N
4.2.8	Cathode ray tubes	No CRT in the unit.	N
	Picture tube separately certified		N
4.2.9	High pressure lamps	No high pressure lamp.	N
4.2.10	Wall or ceiling mounted equipment; force (N)	Not wall or ceiling mounted.	N
4.3	Design and construction		P
4.3.1	Edges and corners	All edges and corners are judged to be sufficiently well rounded so as not to constitute a hazard.	P
4.3.2	Handles and manual controls; force (N)	No handle or manual control.	N
4.3.3	Adjustable controls	No control device.	N
4.3.4	Securing of parts	No connection likely to be exposed to mechanical stress.	P
4.3.5	Connection by plugs and sockets		N
4.3.6	Direct plug-in equipment		N
	Torque		N
	Compliance with the relevant mains plug standard		N
4.3.7	Heating elements in earthed equipment	No heating element.	N
4.3.8	Batteries	No battery.	N
	- Overcharging of a rechargeable battery		N
	- Unintentional charging of a non-rechargeable battery		N
	- Reverse charging of a rechargeable battery		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	- Excessive discharging rate for any battery		N
4.3.9	Oil and grease	No oil or grease.	N
4.3.10	Dust, powders, liquids and gases	The equipment in intended use not considered to be exposed to dust, powers, liquids and gases.	N
4.3.11	Containers for liquids or gases	No container for liquid or gas.	N
4.3.12	Flammable liquids	No flammable liquid.	N
	Quantity of liquid (l)		N
	Flash point (°C)		N
4.3.13	Radiation		P
4.3.13.1	General	See below.	P
4.3.13.2	Ionizing radiation		N
	Measured radiation (pA/kg)		N
	Measured high-voltage (kV)		N
	Measured focus voltage (kV)		N
	CRT markings		N
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N
	Part, property, retention after test, flammability classification		N
4.3.13.4	Human exposure to ultraviolet (UV) radiation		N
4.3.13.5	Laser (including LEDs)	The AEL of indication LED used is far below the limit for LED Class 1 equipment.	P
	Laser class	Class 1	—
4.3.13.6	Other types		N
4.4	Protection against hazardous moving parts		N
4.4.1	General		N
4.4.2	Protection in operator access areas		N
4.4.3	Protection in restricted access locations		N
4.4.4	Protection in service access areas		N
4.5	Thermal requirements		P
4.5.1	General	No exceeding temperature.	P
4.5.2	Temperature tests	(See appended table 4.5)	P
	Normal load condition per Annex L	(See Annex L)	P
4.5.3	Temperature limits for materials	(See appended table 4.5)	P

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
4.5.4	Touch temperature limits	(See appended table 4.5)	P
4.5.5	Resistance to abnormal heat		N
4.6	Openings in enclosures		N
4.6.1	Top and side openings	Determined in the end product	N
	Dimensions (mm)		N
4.6.2	Bottoms of fire enclosures		N
	Construction of the bottom, dimensions (mm)		N
4.6.3	Doors or covers in fire enclosures		N
4.6.4	Openings in transportable equipment		N
4.6.4.1	Constructional design measures		N
	Dimensions (mm)		N
4.6.4.2	Evaluation measures for larger openings		N
4.6.4.3	Use of metallized parts		N
4.6.5	Adhesives for constructional purposes		N
	Conditioning temperature (°C), time (weeks)		N
4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	Use of materials with the required flammability classed.	P
	Method 1, selection and application of components wiring and materials	Selection and application of components and materials which minimize the possibility or ignition and spread of flame.	P
	Method 2, application of all of simulated fault condition tests		N
4.7.2	Conditions for a fire enclosure		P
4.7.2.1	Parts requiring a fire enclosure		P
4.7.2.2	Parts not requiring a fire enclosure		N
4.7.3	Materials		P
4.7.3.1	General	PCB rated V-1 or better.	P
4.7.3.2	Materials for fire enclosures	V-1 or better.	P
4.7.3.3	Materials for components and other parts outside fire enclosures	No such component.	N
4.7.3.4	Materials for components and other parts inside fire enclosures		P
4.7.3.5	Materials for air filter assemblies	No air filter provided.	N
4.7.3.6	Materials used in high-voltage components	No high voltage component.	N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		P
5.1.1	General	See sub-clauses 5.1.2 to 5.1.6.	P
5.1.2	Configuration of equipment under test (EUT)		P
5.1.2.1	Single connection to an a.c. mains supply		P
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N
5.1.3	Test circuit	Using figure 5A.	P
5.1.4	Application of measuring instrument	Using measuring instrument in annex D.	P
5.1.5	Test procedure		P
5.1.6	Test measurements	See below.	P
	Supply voltage (V)	279.8V	P
	Measured touch current (mA)	0.20mA	P
	Max. allowed touch current (mA)	0.25mA	P
	Measured protective conductor current (mA)		N
	Max. allowed protective conductor current (mA)		N
5.1.7	Equipment with touch current exceeding 3.5 mA		N
5.1.7.1	General		N
5.1.7.2	Simultaneous multiple connections to the supply		N
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	No TNV circuits.	N
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N
	Supply voltage (V)		N
	Measured touch current (mA)		N
	Max. allowed touch current (mA)		N
5.1.8.2	Summation of touch currents from telecommunication networks		N
	a) EUT with earthed telecommunication ports		N
	b) EUT whose telecommunication ports have no reference to protective earth		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
5.2	Electric strength		P
5.2.1	General	(See appended table 5.2)	P
5.2.2	Test procedure	(See appended table 5.2)	P
5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	(See appended table 5.3)	P
5.3.2	Motors	No motor.	N
5.3.3	Transformers		P
5.3.4	Functional insulation	Functional insulation complies with the requirements.	P
5.3.5	Electromechanical components	No electromechanical component.	N
5.3.6	Audio amplifiers in ITE		N
5.3.7	Simulation of faults	(See appended table 5.3)	P
5.3.8	Unattended equipment		N
5.3.9	Compliance criteria for abnormal operating and fault conditions	See below.	P
5.3.9.1	During the tests		P
5.3.9.2	After the tests	No reduction of clearance and creepage distances. Electric strength test is made on reinforced insulation after tests.	P
6	CONNECTION TO TELECOMMUNICATION NETWORKS		N
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N
6.1.1	Protection from hazardous voltages		N
6.1.2	Separation of the telecommunication network from earth		N
6.1.2.1	Requirements		N
	Supply voltage (V) ……:		N
	Current in the test circuit (mA)		N
6.1.2.2	Exclusions		N
6.2	Protection of equipment users from overvoltages on telecommunication networks		N
6.2.1	Separation requirements		N
6.2.2	Electric strength test procedure		N
6.2.2.1	Impulse test		N
6.2.2.2	Steady-state test		N
6.2.2.3	Compliance criteria		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
6.3	Protection of the telecommunication wiring system from overheating		N
	Max. output current (A)		N
	Current limiting method		N
7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N
7.1	General		N
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N
7.3	Protection of equipment users from overvoltages on the cable distribution system		N
7.4	Insulation between primary circuits and cable distribution systems		N
7.4.1	General		N
7.4.2	Voltage surge test		N
7.4.3	Impulse test		N
A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N
A.1.1	Samples		N
	Wall thickness (mm)		N
A.1.2	Conditioning of samples; temperature (°C)		N
A.1.3	Mounting of samples		N
A.1.4	Test flame (see IEC 60695-11-3)		N
	Flame A, B, C or D		N
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	Sample 1 burning time (s)		N
	Sample 2 burning time (s)		N
	Sample 3 burning time (s)		N
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N
A.2.1	Samples, material		N
	Wall thickness (mm)		N
A.2.2	Conditioning of samples; temperature (^{o}C)		N
A.2.3	Mounting of samples		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
A.2.4	Test flame (see IEC 60695-11-4)		N
	Flame A, B or C		N
A.2.5	Test procedure		N
A.2.6	Compliance criteria		N
	Sample 1 burning time (s)		N
	Sample 2 burning time (s)		N
	Sample 3 burning time (s)		N
A.2.7	Alternative test acc. to IEC 60695-11-5, cl. 5 and 9		N
	Sample 1 burning time (s)		N
	Sample 2 burning time (s)		N
	Sample 3 burning time (s)		N
A.3	Hot flaming oil test (see 4.6.2)		N
A.3.1	Mounting of samples		N
A.3.2	Test procedure		N
A.3.3	Compliance criterion		N
B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		N
B.1	General requirements		N
	Position		N
	Manufacturer		N
	Type		N
	Rated values		N
B.2	Test conditions		N
B.3	Maximum temperatures		N
B.4	Running overload test		N
B.5	Locked-rotor overload test		N
	Test duration (days)		N
	Electric strength test: test voltage (V)		N
B.6	Running overload test for d.c. motors in secondary circuits		N
B.6.1	General		N
B.6.2	Test procedure		N
B.6.3	Alternative test procedure		N
B.6.4	Electric strength test; test voltage (V)		N
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N
B.7.1	General		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
B.7.2	Test procedure		N
B.7.3	Alternative test procedure		N
B.7.4	Electric strength test; test voltage (V)		N
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Operating voltage (V)		N
C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position	T1	P
	Manufacturer	(see appended table 1.5.1)	P
	Type	(see appended table 1.5.1)	P
	Rated values	(see appended table 1.5.1)	P
	Method of protection		P
C.1	Overload test	(see appended table 5.3)	P
C.2	Insulation		P
	Protection from displacement of windings		P
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		P
D.1	Measuring instrument	Figure D.1 used.	P
D.2	Alternative measuring instrument		N
E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N
F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		P
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N
G.1	Clearances		N
G.1.1	General		N
G.1.2	Summary of the procedure for determining minimum clearances		N
G.2	Determination of mains transient voltage (V)		N
G.2.1	AC mains supply ……...:		N
G.2.2	Earthed d.c. mains supplies ……:		N
G.2.3	Unearthed d.c. mains supplies ……..…:		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
G.2.4	Battery operation ……..:		N
G.3	Determination of telecommunication network transient voltage (V) ……..:		N
G.4	Determination of required withstand voltage (V)		N
G.4.1	Mains transients and internal repetitive peaks		N
G.4.2	Transients from telecommunication networks		N
G.4.3	Combination of transients		N
G.4.4	Transients from cable distribution systems		N
G.5	Measurement of transient voltages (V)		N
	a) Transients from a mains supply		N
	For an a.c. mains supply		N
	For a d.c. mains supply		N
	b) Transients from a telecommunication network		N
G.6	Determination of minimum clearances		N
H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N
	Metal(s) used		N
K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)		N
K.1	Making and breaking capacity		N
K.2	Thermostat reliability; operating voltage (V)		N
K.3	Thermostat endurance test; operating voltage (V)		N
K.4	Temperature limiter endurance; operating voltage (V)		N
K.5	Thermal cut-out reliability		N
K.6	Stability of operation		N
L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.1)		P
L.1	Typewriters		N
L.2	Adding machines and cash registers		N
L.3	Erasers		N
L.4	Pencil sharpeners		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
L.5	Duplicators and copy machines		N
L.6	Motor-operated files		N
L.7	Other business equipment	Maximum normal load.	P
M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N
M.1	Introduction		N
M.2	Method A		N
M.3	Method B		N
M.3.1	Ringing signal		N
M.3.1.1	Frequency (Hz) ……:		N
M.3.1.2	Voltage (V) .....:		N
M.3.1.3	Cadence; time (s), voltage (V) ……:		N
M.3.1.4	Single fault current (mA) ……..:		N
M.3.2	Tripping device and monitoring voltage ……:		N
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N
M.3.2.2	Tripping device		N
M.3.2.3	Monitoring voltage (V) .....:		N
P	ANNEXP, NORMATIVE REFERENCES		P
N	ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)		N
N.1	ITU-T impulse test generators		N
N.2	IEC 60065 impulse test generator		N
Q	ANNEX Q, VOLTAGE DEPENDENT RESISTORS (VDRS) (see 1.5.9.1)		N
	a) Preferred climatic categories .....:		N
	b) Maximum continuous voltage ……:		N
	c) Pulse current ……:		N
R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		N
R.2	Reduced clearances (see 2.10.3)		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N
S.1	Test equipment		N
S.2	Test procedure		N
S.3	Examples of waveforms during impulse testing		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N
		See separate test report	N
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		P
		Approved triple insulated wire used.	P
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		P
V.1	Introduction		P
V.2	TN power distribution systems		P
W	ANNEX W, SUMMATION OF TOUCH CURRENTS		N
W.1	Touch current from electronic circuits		N
W.1.1	Floating circuits		N
W.1.2	Earthed circuits		N
W.2	Interconnection of several equipments		N
W.2.1	Isolation		N
W.2.2	Common return, isolated from earth		N
W.2.3	Common return, connected to protective earth		N
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		P
X.1	Determination of maximum input current		N
X.2	Overload test procedure		P
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		N
Y.1	Test apparatus ……..:		N
Y.2	Mounting of test samples ……..:		N
Y.3	Carbon-arc light-exposure apparatus …….:		N
Y.4	Xenon-arc light exposure apparatus ……..:		N
Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		P
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

BB	ANNEX BB, CHANGES IN THE SECOND EDITION	P

EN 60950-1:2006 – CENELEC COMMON MODIFICATIONS		
Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations	P
General	Delete all the “country” notes in the reference document according to the following list: 1.4.8 Note 2; 1.5.1 Note 2 & 3; 1.5.7.1 Note 1.5.8 Note 2; 1.5.9.4 Note; 1.7.2.1 Note 4, 5 & 6 2.2.3 Note; 2.2.4 Note; 2.3.2 Note 2.3.2.1 Note 2; 2.3.4 Note 2; 2.6.3.3 Note 2 & 3 2.7.1 Note; 2.10.3.2 Note 2; 2.10.5.13 Note 3 3.2.1.1 Note; 3.2.4 Note 3.; 2.5.1 Note 2 4.3.6 Note 1 & 2; 4.7 Note 4; 4.7.2.2 Note 4.7.3.1 Note 2; 5.1.7.1 Note 3 & 4; 5.3.7 Note 1 6 Note 2 & 5; 6.1.2.1 Note 2; 6.1.2.2 Note 6.2.2 Note 6.; 2.2.1 Note 2; 6.2.2.2 Note 7.1 Note 3; 7.2 Note; 7.3 Note 1 & 2 G.2.1 Note 2; Annex H Note 2	P
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for “one package equipment”, and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.	N
1.5.1	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC	P
1.7.2.1	Add the following NOTE: NOTE Z1 In addition, the instructions shall include, as far as applicable, a warning that excessive sound pressure from earphones and headphones can cause hearing loss	N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

2.7.1	Replace the subclause as follows: Basic requirements To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for 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 breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, 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.	P
2.7.2	This subclause has been declared 'void'.	N
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.	N
3.2.5.1	Replace "60245 IEC 53" by "H05 RR-F"; "60227 IEC 52" by "H03 VV-F or H03 VVH2-F"; "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2". In Table 3B, replace the first four lines by the following: | Up to and including 6 | 0,75 [a)] | | Over 6 up to and including 10| (0,75) [b)] 1,0 | | Over 10 up to and including 16 | (1,0) [c)] 1,5 | In the conditions applicable to Table 3B delete the words "in some countries" in condition [a)]. In NOTE 1, applicable to Table 3B, delete the second sentence.	N
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: | Over 10 up to and including 16 | 1,5 to 2,5 | 1,5 to 4 | Delete the fifth line: conductor sizes for 13 to 16 A.	N
4.3.13.6	Add the following NOTE: NOTE Z1 Attention is drawn to 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz. Standards taking into account this Recommendation which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.	N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
Annex H	Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2.		N
Biblio-graphy	Additional EN standards.		—
ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		—
ZB	SPECIAL NATIONAL CONDITIONS		N
1.2.4.1	In **Denmark**, certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.		N
1.5.7.1	In **Finland**, **Norway** and **Sweden**, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.2.		N
1.5.8	In **Norway**, due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N
1.5.9.4	In **Finland**, **Norway** and **Sweden**, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N
1.7.2.1	In **Finland**, **Norway** and **Sweden**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan" In Norway: “Apparatet må tilkoples jordet stikkontakt” In Sweden: “Apparaten skall anslutas till jordat uttag”		N
1.7.5	In **Denmark**, socket-outlets for providing power to other equipment 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 Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.		N
2.2.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N
2.3.2	In **Finland**, **Norway** and **Sweden** there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N
2.3.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N
2.6.3.3	In the **United Kingdom**, the current rating of the circuit shall be taken as 13 A, not 16 A.		N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.	N
2.10.5.13	In **Finland**, **Norway** and **Sweden**, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.	N
3.2.1.1	In **Switzerland**, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998 Plug Type 25 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998 Plug Type 21 L+N 250 V, 16 A SEV 5934-2.1998 Plug Type 23 L+N+PE 250 V, 16 A	N
3.2.1.1	In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. 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. If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.	N
3.2.1.1	In **Spain**, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993. 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 UNE 20315:1994. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.	N
3.2.1.1	In the **United Kingdom**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations. NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.	N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

3.2.1.1	In **Ireland**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.	N
3.2.4	In **Switzerland**, for requirements see 3.2.1.1 of this annex.	N
3.2.5.1	In the **United Kingdom**, a power supply cord with conductor of 1,25 mm2 is allowed for equipment with a rated current over 10 A and up to and including 13 A.	N
3.3.4	In the **United Kingdom**, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm^2 to 1,5 mm^2 nominal cross-sectional area.	N
4.3.6	In the **United Kingdom**, the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.	N
4.3.6	In **Ireland**, DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.	N
5.1.7.1	In **Finland**, **Norway** and **Sweden** TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that ○ is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and ○ has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and ○ is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.	N

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
6.1.2.1	In **Finland**, **Norway** and **Sweden**, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2. A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 132400; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.		N
6.1.2.2	In **Finland**, **Norway** and **Sweden**, the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.		N
7.2	In **Finland**, **Norway** and **Sweden**, for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		N
7.3	In **Norway** and **Sweden**, there are many buildings where the screen of the coaxial cable is normally not connected to the earth in the building installation.		N
7.3	In **Norway**, for installation conditions see EN 60728-11:2005.		N
ZC	A-DEVIATIONS (informative)		P

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

1.5.1	**Sweden** (Ordinance 1990:944) Add the following: NOTE In Sweden, switches containing mercury are not permitted.	N
1.5.1	**Switzerland** (Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7, Mercury - Annex 1.7 of SR 814.81 applies for mercury.) Add the following: NOTE In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.	N
1.7.2.1	**Denmark** (Heavy Current Regulations) Supply cords of CLASS I EQUIPMENT, which is 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 equipment, 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.”	N
1.7.2.1	**Germany** (Gesetz über technische Arbeitsmittel und Verbraucherprodukte (Geräte- und Produktsicherheitsgesetz – GPSG) [Law on technical labour equipment and consumer products], of 6th January 2004, Section 2, Article 4, Clause (4), Item 2). If for the assurance of safety and health certain rules during use, amending or maintenance of a technical labour equipment or readymade consumer product are to be followed, a manual in German language has to be delivered when placing the product on the market. Of this requirement, rules for use even only by SERVICE PERSONS are not exempted.	P
1.7.5	**Denmark** (Heavy Current Regulations) With the exception of CLASS II EQUIPMENT provided with a socket outlet in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-4a, CLASS II EQUIPMENT shall not be fitted with socket-outlets for providing power to other equipment.	N
1.7.13	**Switzerland** (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries) Annex 2.15 of SR 814.81 applies for batteries.	N
5.1.7.1	**Denmark** (Heavy Current Regulations, Chapter 707, clause 707.4) TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B.	N

EN 60950-1			
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 (Edition/year)	mark(s) of conformity[1])
Metal enclosure	--	--	Min. 0.6 mm thickness	--	--
PCB	Various	Various	V-1 or better, min.105°C	UL 796	UL
Primary terminal block (TB1)	JITE INDUSTRIAL (SHENZHEN) CO LTD	BTB-654	20A, 300V	UL 1059	UL E183240
Fuse (FS1)	XC Electronics (Shen Zhen) Corp. Ltd.	5F, 5T	F5AL, 250Vac	EN 60127	VDE
	Various	Various	F5AL, 250Vac	EN 60127	VDE
Thermistor (RTH1)	Various	Various	Min.5Ω, 4A at 25 °C	EN 60950-1	Tested with appliance
Varistor (ZNR1)	Kunshan Micro Capacitors Electronic Co., Ltd.	14D471K	Min. 300V, 85°C	EN 61051-1 EN 61051-2	VDE 40029901
	Various	Various	Min. 300V, 85°C	EN 61051-1 EN 61051-2	VDE
X-capacitor (C1, C2)	Carli Electronics Co., Ltd.	MPX	Max. 0.47uF, min. 250V, min. 85°C, X2 type.	IEC 60384-14	VDE 40008520
Bleeder resistor (R1)	--	--	0.68MΩ, 1/2W, DIP type	--	--
Chock (LF1)	Various	Various	Min. 105°C	EN 60950-1	Tested with appliance
-Insulation tape	JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD	JY25-2	130°C	UL 510	UL E246950
-Winding	NINGBO JINTIAN NEW MATERIAL CO LTD	UEW	155°C	UL 1446	UL E227047
-Bobbin	ZHEJIANG JIAMIN PLASTIC CO LTD	PF2A4-161J	Phenolic, V-0, 150°C	UL 94	UL E231508
-Varnish	JIANGYIN CITY DENGFENG ELECTRICAL MATERIAL CO LTD	319-5(a)	155°C	UL 1446	UL E236421
Bridge diode (BD1)	--	--	Min. 4A, Min. 800V	--	--
Electrolytic Capacitor (C5, C6)	--	--	Min. 200V, 330uF, min. 85°C.	--	--
Transistor (Q1)	--	--	Min. 2A, min. 600V	--	--
Current sense resistor (R15)	--	--	0.25Ω, 2W, DIP type	--	--

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

object/part No.	manufacturer/ trademark	type/model	technical data	Standard (Edition/year)	mark(s) of conformity[1])
Bridge capacitor (C3, C4)	Jyh Chung Electronic Co., Ltd.	JD	Max. 4700pF, 250V min., 85°C min. Y1 or Y2 type	IEC 60384-14	VDE 40016598
Bridge capacitor (C24)	Jyh Chung Electronic Co., Ltd.	JD	Max. 4700pF, 250V min., 85°C min. Y1 type	IEC 60384-14	VDE 137027
Optical Isolator (U3)	Sharp Corporation	PC817	Di ≥ 0.4mm, 100°C	EN 60747-5-2	VDE 40008087
Transformer (T1)	DONGHUA ELECTRIC STOCK CO.,LTD OF ZHE JIANG	Various	Class B	EN60950-1	Tested with appliance
-Bobbin	ZHEJIANG JIAMIN PLASTIC CO LTD	PF2A4-161J	Phenolic, V-0, 150°C	UL 94	UL E231508
-Winding	NINGBO JINTIAN NEW MATERIAL CO LTD	UEW	155°C	UL 1446	UL E227047
-Tube	CHANGYUAN ELECTRONICS (SHENZHEN) CO LTD	CB-TT-S	600V, 200°C	UL 224	UL E180908
-Varnish	JIANGYIN CITY DENGFENG ELECTRICAL MATERIAL CO LTD	319-5(a)	155°C	UL 1446	UL E236421
-Insulation tape	JINGJIANG JINGYANG INSULATING PRODUCT CO LTD	JY-133	130°C	UL 510	UL E309872
	JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD	JY25-2	130°C	UL 510	UL E246950
- Margin tape	JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD	WF310	130°C	UL 510	UL E246950
Mylar insulation sheet	Various	Various	Min. V-2, min. 0.2 mm	UL 94	UL
[1]) An asterisk indicates a mark which assures the agreed level of surveillance					
Supplementary information:					

1.6.2	TABLE: electrical data (in normal conditions)					P
Fuse #	Irated (A)	U (V)/F(Hz)	P (W)	I (A)	Ifuse (A)	Condition/status
Model: HS-150B-5						
F1	--	81/50	158.4	2.332	2.332	Maximum normal load.
F1	--	81/60	158.4	2.335	2.335	Maximum normal load.
F1	3.0	90/50	157.7	2.212	2.212	Maximum normal load.
F1	3.0	90/60	157.7	2.214	2.214	Maximum normal load.

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

F1	3.0	132/50	157.1	1.912	1.912	Maximum normal load.
F1	3.0	132/60	157.1	1.916	1.916	Maximum normal load.
F1	--	139.9/50	156.3	1.821	1.821	Maximum normal load.
F1	--	139.9/60	156.3	1.825	1.825	Maximum normal load.
F1	--	162/50	157.1	1.532	1.532	Maximum normal load.
F1	--	162/60	157.1	1.535	1.535	Maximum normal load.
F1	2.0	180/50	156.0	1.483	1.483	Maximum normal load.
F1	2.0	180/60	156.0	1.485	1.485	Maximum normal load.
F1	2.0	264/50	155.4	1.355	1.355	Maximum normal load.
F1	2.0	264/60	155.4	1.357	1.357	Maximum normal load.
F1	--	279.8/50	155.1	1.301	1.301	Maximum normal load.
F1	--	279.8/60	155.1	1.303	1.303	Maximum normal load.
HS-150B-48						
F1	--	81/50	175.9	2.452	2.452	Maximum normal load.
F1	--	81/60	175.9	2.455	2.455	Maximum normal load.
F1	3.0	90/50	174.6	2.221	2.221	Maximum normal load.
F1	3.0	90/60	174.6	2.223	2.223	Maximum normal load.
F1	3.0	132/50	171.3	2.001	2.001	Maximum normal load.
F1	3.0	132/60	171.3	2.004	2.004	Maximum normal load.
F1	--	139.9/50	171.2	1.988	1.988	Maximum normal load.
F1	--	139.9/60	171.2	1.990	1.990	Maximum normal load.
F1	--	162/50	168.9	1.002	1.002	Maximum normal load.
F1	--	162/60	168.9	1.005	1.005	Maximum normal load.
F1	2.0	180/50	168.1	1.882	1.882	Maximum normal load.
F1	2.0	180/60	168.1	1.884	1.884	Maximum normal load.
F1	2.0	264/50	167.9	1.843	1.843	Maximum normal load.
F1	2.0	264/60	167.9	1.846	1.846	Maximum normal load.
F1	--	279.8/50	167.6	1.833	1.833	Maximum normal load.
F1	--	279.8/60	167.6	1.836	1.836	Maximum normal load.

Remarks: The measured input current at rated voltage shall be ≤ 110% of rated current.

	V1	A1	V2	A2	V3	A3	V4	A4	V5	A5	V6	A6	V7	A7
Condition A														
Condition B														
Condition C														
Condition														

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

D															

2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements					P
clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required cr (mm)	cr (mm)
Primary trace to secondary trace				See below		See below
-UnderT1	490	231	4.4	7.4	5.0	7.4
-Under U3	351	213	4.0	7.6	5.0	7.6
-C24 primary pin to secondary pin	350	218	4.0	6.8	5.0	6.8
Different polarity	<420	<250	2.0	4.3	2.5	4.3
Two terminals of fuse (FS1)	<420	<250	2.0	3.3	2.5	3.3
L to earthing	<420	<250	2.0	3.9	2.5	3.9
N to earthing	<420	<250	2.0	4.2	2.5	4.2
Supplementary information:						

2.10.5	TABLE: distance through insulation measurements	P

distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	test voltage (V)	required DTI (mm)	DTI (mm)
Transformer bobbin (reinforced insulation)	490	231	3000	0.4	0.8
Photocoupler (reinforced insulation)	351	213	3000	0.4	>0.4
Supplementary information:					

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

4.3.8	TABLE: batteries								N
The tests of 4.3.8 are applicable only when appropriate battery data is not available						--			N
Is it possible to install the battery in a reverse polarity position?						--			N
--	Non-rechargeable batteries			Rechargeable batteries					
--	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
--	Meas. current	Manuf. Specs.	--	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during normal condition	--	--	--	--	--	--	--	--	--
Max. current during fault condition	--	--	--	--	--	--	--	--	--
Test results:						--			Verdict
- Chemical leaks						--			N
- Explosion of the battery						--			N
- Emission of flame or expulsion of molten metal						--			N
- Electric strength tests of equipment after completion of tests						--			N
Supplementary information:									

4.5.1	TABLE: temperature rise measurements (Continued)				P
Model	HS-150B-5, HS-150B-48	Input Conditions			
Test	Operating Condition	Volts	Hz	Duration	
A	Maximum normal Load	81	60	1.8hrs	
B	Maximum normal Load	279.8	60	1.8hrs	
C	Maximum normal Load	81	60	1.8hrs	
D	Maximum normal Load	279.8	60	1.8hrs	

Locations	Maximum Temperature °C				
	Test A	Test B	Test C	Test D	Allow Tmax.
--	HS-150B-5		HS-150B-48		--
TB1 body	56.1	53.5	58.4	55.4	--
PCB near RTH1	65.5	59.9	67.4	61.3	105

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

C1 body	67.3	64.4	72.1	65.4	85
ZNR1 body	62.4	60.2	68.5	66.3	85
LF1 coil	91.3	87.1	98.3	93.2	105
C2 body	70.3	69.4	74.5	73.2	85
PCB near BD1	93.3	91.1	98.4	95.4	105
C5 body	73.5	71.2	79.4	75.3	85
PCB near Q1	100.2	99.1	101.4	100.0	105
C4 body	80.2	78.3	83.2	80.1	85
C24 body	81.5	78.4	83.2	80.1	85
U3 body	88.5	83.5	91.3	86.4	100
T1 winding	105.2	101.4	107.3	104.2	110
T1 core	99.1	95.2	100.0	96.5	--
PCB near D8	101.3	98.3	103.2	100.3	105
L1 coil	102.5	99.9	104.0	102.1	105
C25 body	89.3	86.6	93.2	90.1	105
Outer enclosure near T1	67.5	64.3	69.3	66.3	70
Ambient	25.0	25.0	25.0	25.0	--

Winding:	R1 (Ω)	R2 (Ω)	T (°C)	allowed Tmax (°C)	insulation class
Remarks:					

4.5.5	TABLE: ball pressure test of thermoplastic parts		P
	allowed impression diameter (mm) ..... :	≤ 2 mm	—

part	test temperature (°C)	impression diameter (mm)
TB1 body	125	1.1
Supplementary information:		

4.7	TABLE: resistance to fire				P
part	manufacturer of material	type of material	thickness (mm)	flammability class	evidence
PCB	Various	Various	Min.1.5 mm	V-1 or better	UL
Supplementary information:					

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

5.2	TABLE: electric strength tests, impulse tests and voltage surge tests	P

test voltage applied between:	voltage shape (AC, DC, impulse, surge)	test voltage (V)	breakdown Yes / No
Unit primary to secondary	AC	3000	No
Unit primary to metal enclosure	AC	1500	No
Transformer (T1) Primary winding to secondary winding	AC	3000	No
Transformer (T1) primary winding to core	AC	1500	No
Transformer (T1) secondary winding to core	AC	1500	No
One layer of insulation tape used in T1	AC	3000	No

5.3	TABLE: fault condition tests		P
	ambient temperature (°C) .....:	25°C, if no else specified	—
	model/type of power supply .....:	264V	—
	manufacturer of power supply .....:		—
	rated markings of power supply .....:		—

No.	component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
1	BD1	s-c	264	1s	FS1	1.85 -> 0	FS1 opened immediately, No hazards.
2	C5	s-c	264	1s	FS1	1.85 -> 0	FS1 opened and BD1 damaged immediately, No hazards.
3	Q1 pin G-S	s-c	264	10min	FS1	1.85 -> 0.026	Unit protected, the unit can restore well after the fault was removed, no hazards, no damage.
4	Q1 pin G-D	s-c	264	1s	FS1	1.85 -> 0	FS1 opened and Q1 damaged immediately, No hazards.
5	Q1 pin D-S	s-c	264	1s	FS1	1.85 -> 0	FS1 opened and Q1 damaged immediately, No hazards.
6	R15	s-c	264	1s	FS1	1.85 ->0	FS1 opened and Q1, R15 damaged immediately, No hazards.
7	U3 pin 1-2	s-c	264	10min	FS1	1.85 -> 0.027	Unit protected, the unit can restore well after the fault was removed, no hazards, no damage.
8	U3 pin 3-4	s-c	264	10min	FS1	1.85 -> 0.026	Unit protected, the unit can restore well after the fault was removed, no hazards, no damage.

EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

9	T1 pin 3-4	s-c	264	10min	FS1	1.85 -> 0.027	Unit protected, the unit can restore well after the fault was removed, no hazards, no damage.
10	T1 pin 5-8	s-c	264	10min	FS1	1.85 -> 0.027	Unit protected, the unit can restore well after the fault was removed, no hazards, no damage.
11	T1 pin 10-14	s-c	264	10min	FS1	1.85 -> 0.027	Unit protected, the unit can restore well after the fault was removed, no hazards, no damage.
12	T1 pin 10-14 (after D8)	o-l	264	5.9hrs	FS1	1.85 -> 0.027	Unit into protection when T1 pin 10-14 (after D8) overload to 1.8A. T1 winding=150.1°C T1 core=138.1°C U2 body=100.3°C Ambient=25.0°C No hazards, no damage.
13	Output	s-c	264	10min	FS1	1.85 -> 0.027	Unit protected, the unit can restore well after the fault was removed, no hazards, no damage.
14	Output	o-l	264	6.9hrs	FS1	1.85 -> 0.027	Unit into protection when output overload to 5A. T1 winding=149.5°C T1 core=142.1°C U2 body=101.2°C Ambient=25.0°C No hazards, no damage.
supplementary information							
Note: Same results came out for all sources of fuse.							
In fault column, where s-c=short-circuited, o-c=open-circuited, o-l=over-loaded a = Unit shutdown instantly. b = Unit operated normally. c = unit into cycle protection. d = Fuse open instantly. e = Repeat two more times. f = other							

========== End of Test Report ==========

ATTACHMENT-

Photo Documentation

Photo 1

Model: HS-150B-5, HS-150B-7.5, HS-150B-12, HS-150B-15, HS-150B-24, HS-150B-48

View:

☒ general

☐ front

☐ rear

☐ right side

☐ left side

☐ top

☐ bottom

☐ internal

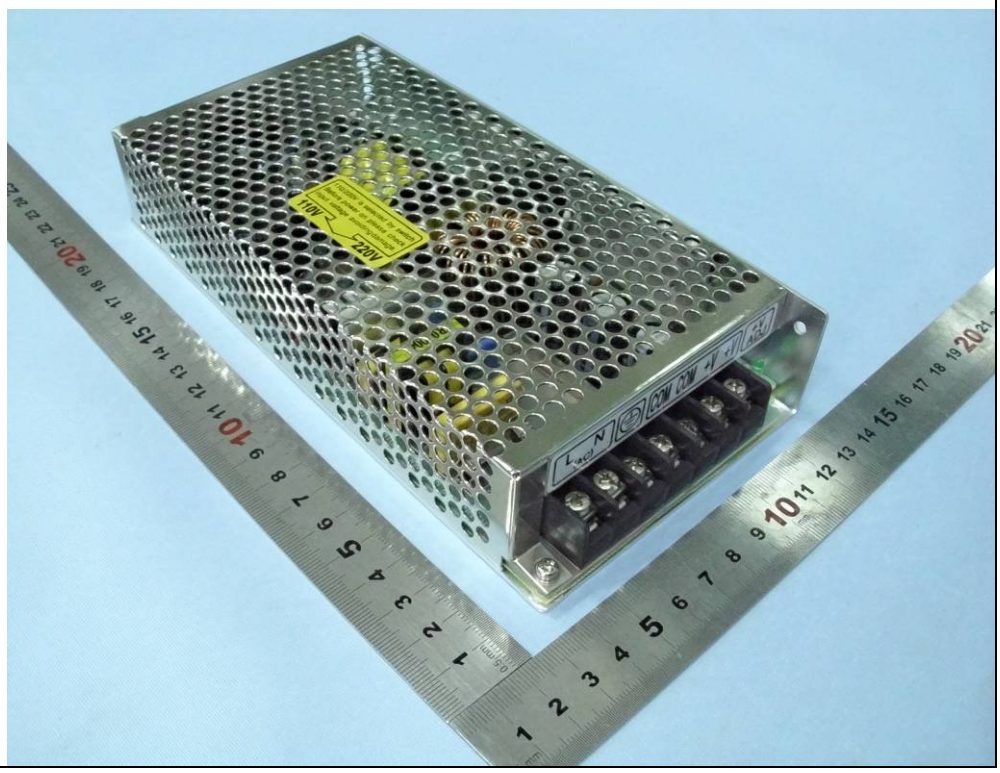


Photo 2

Model: HS-150B-5, HS-150B-7.5, HS-150B-12, HS-150B-15, HS-150B-24, HS-150B-48

View:

☒ general

☐ front

☐ rear

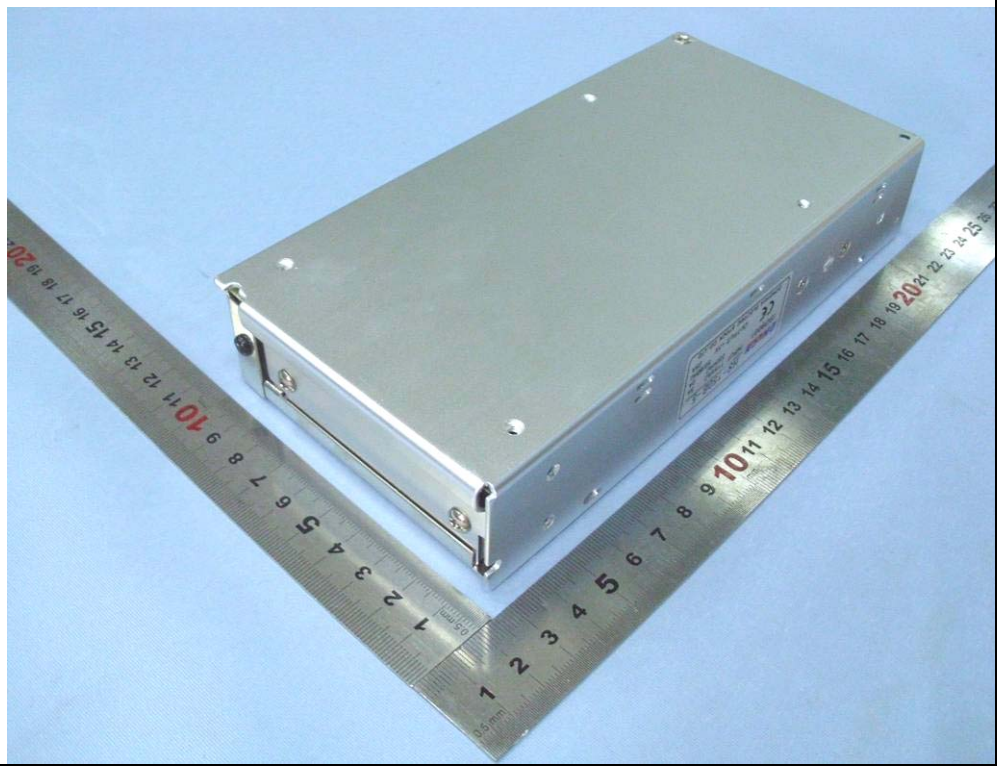
☐ right side

☐ left side

☐ top

☐ bottom

☐ internal



ATTACHMENT-

Photo Documentation

Photo 3

Model: HS-150B-5, HS-150B-7.5, HS-150B-12, HS-150B-15, HS-150B-24, HS-150B-48

View:

☐ general

☐ front

☐ rear

☐ right side

☐ left side

☐ top

☐ bottom

☒ internal

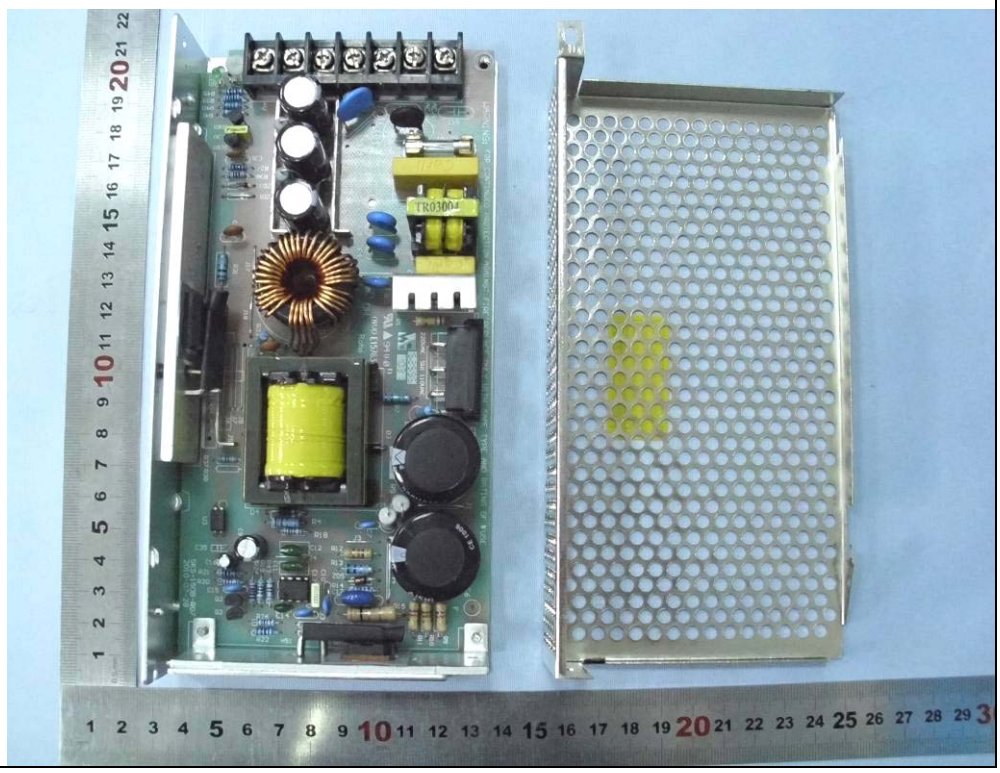


Photo 4

Model: HS-150B-5, HS-150B-7.5, HS-150B-12, HS-150B-15, HS-150B-24, HS-150B-48

View:

☐ general

☐ front

☐ rear

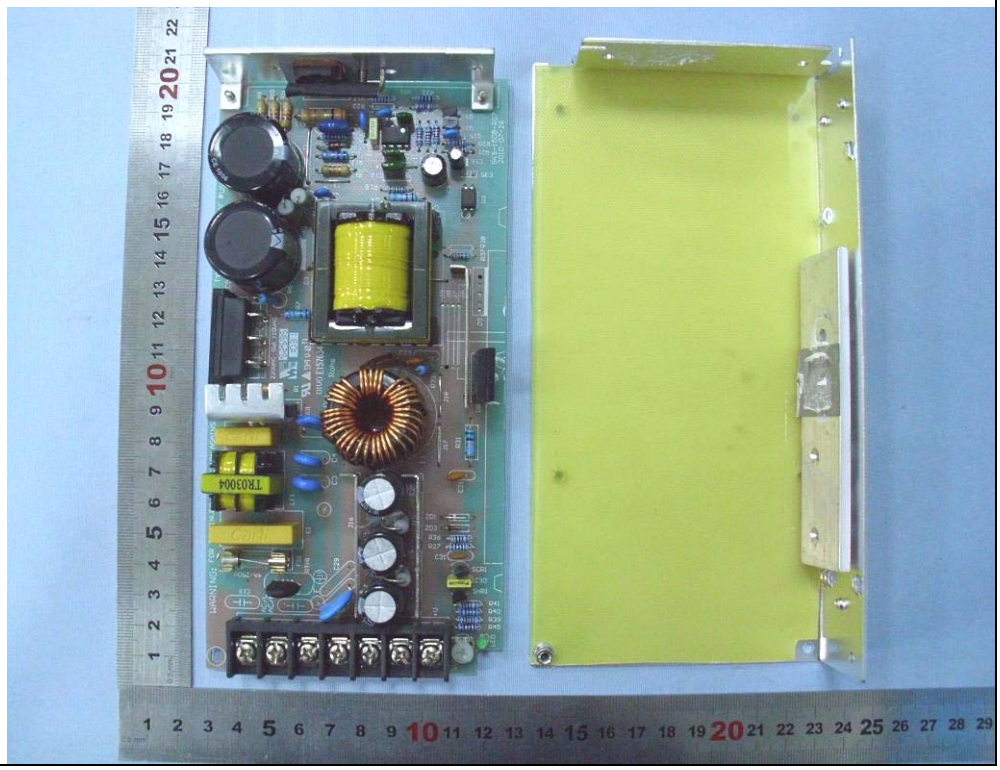
☐ right side

☐ left side

☐ top

☐ bottom

☒ internal



ATTACHMENT-

Photo Documentation

Photo 5

Model: HS-150B-5, HS-150B-7.5, HS-150B-12, HS-150B-15, HS-150B-24, HS-150B-48

View:

☐ general

☐ front

☐ rear

☐ right side

☐ left side

☐ top

☐ bottom

☒ internal

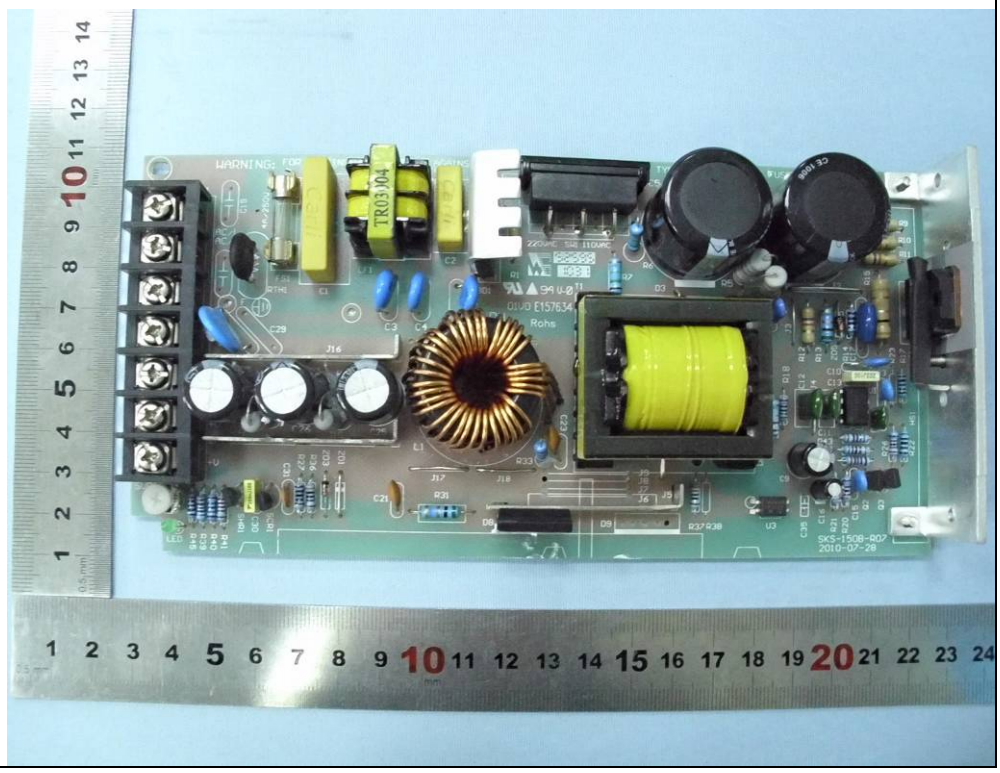


Photo 6

Model: HS-150B-5, HS-150B-7.5, HS-150B-12, HS-150B-15, HS-150B-24, HS-150B-48

View:

☐ general

☐ front

☐ rear

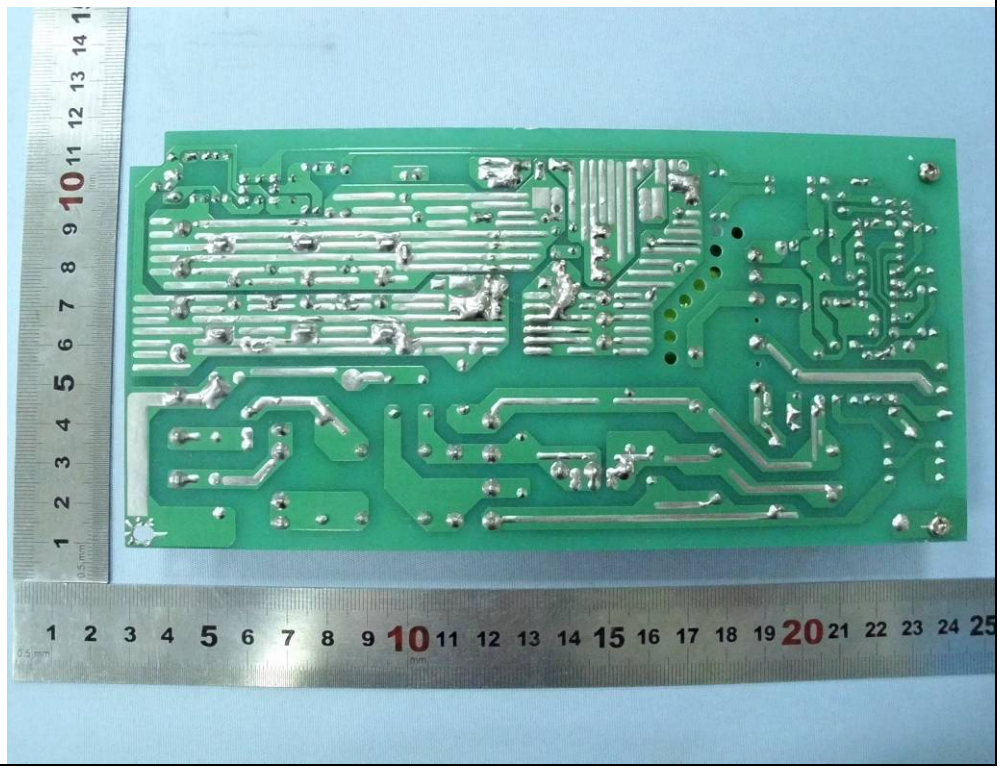
☐ right side

☐ left side

☐ top

☐ bottom

☒ internal



WALTEK SERVICES
Project Engineer: Dannel Wang
Reference No.: WT10083495R1-U-U-L