

**TEST REPORT****EN 60950-1****Information technology equipment – Safety –  
Part 1: General requirements**

Report Number .....: LST181168050LR-1

Tested by (name + signature).....:

Reviewed by (name + signature).....:

Approved by (name+ signature) .....:

Date of issue .....: Oct. 26, 2018

Total number of pages .....: 70 pages

**Testing laboratory** .....: **Shenzhen LST Technology Co., Ltd.**Address .....: Huichao Building, Yintian Industry zone, Baoan District, Shenzhen,  
Guangdong P.R. China

Testing location .....: As above

**Applicant's name** .....: HUAUZHONGBO TRAVEL ELECTRONIC TECHNOLOGY CO.LTD.

Address .....: Room 418, No.39 Keji Dong Lu, Zhongshan Torch Development Zone

**Test specification:**

Standard.....: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011+A2:2013

Test procedure .....: CE Attestation

Non-standard test method.....: N/A

**Test Report Form No.** .....: EU\_GD\_IEC60950\_1F

Test Report Form(s) Originator .....: SGS Fimko Ltd

Master TRF .....: Date 2018-05

**Test item description** .....: 3D Printer

TradeMark.....: JuXinAdditive

Manufacturer .....: Same as applicant

Model/Type reference .....: JX215, LD180S, LD180R, JX130, LD180S+, LD180R+, JX215+

Ratings.....: Input: DC 24, 6A, 144W

**List of Attachments (including a total number of pages in each attachment):**

Attachment 1: Photo documentation from page 67 to 70.

**Tests performed (name of test and test clause):**

—EN 60950-1:2006 + A11:2009 + A1:2010  
+A12:2011+A2:2013;

The submitted samples were found to comply with the requirements of above specification.

**Testing location:**

Huichao Building, Yintian Industry zone,  
Baoan District, Shenzhen, Guangdong P.R.  
China.

**Copy of marking plate**

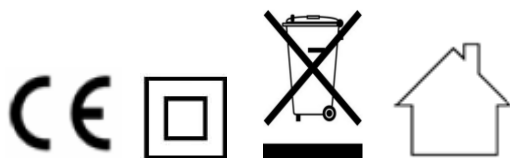
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

(Additional requirements for markings. See 1.7 NOTE)

3D Printer

MODEL: JX215

INPUT:DC24V, 6A, 144W



HUAUHONGBO TRAVEL ELECTRONIC TECHNOLOGY CO.LTD.

Made in China

Remark on above marking:

1, The height of CE symbols is more than 5 mm;

**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

Operating condition ..... ☒ continuous  
☐ rated operating / resting time:

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 ..... +10%, -10%

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

Pollution degree (PD) ..... ☐ PD 1 ☒ PD 2 ☐ PD 3

Altitude during operation (m) ..... <2000m

Altitude of test laboratory (m) ..... <2000m

Mass of equipment (kg) ..... <1Kg

**Possible test case verdicts:**

- test case does not apply to the test object..... N (N/A)
- test object does meet the requirement..... P (Pass)
- test object does not meet the requirement ..... F (Fail)

This test report is specially limited to the above client company and product model only. It may not be duplicated without prior written consent of LST Test.

The test results in the report only apply to the tested sample.

**General remarks:**

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

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

"(see appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

**Abbreviations used in the report:**

- normal conditions	N.C.	- single fault conditions	S.F.C
- functional insulation	OP	- basic insulation	BI
- double insulation	DI	- supplementary insulation	SI
- between parts of opposite polarity	BOP	- reinforced insulation	RI

Indicate used abbreviations (if any)

EN 60950-1			
Clause	Requirement	Remark	Result
1	GENERAL		P

1.5	Components		P
1.5.1	General	Complies	P
	Comply with IEC 60950-1 or relevant component standard	(see appended table 1.5.1)	P
1.5.2	Evaluation and testing of 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
1.5.3	Thermal controls	No thermal controls.	N
1.5.4	Transformers	Transformer used are suitable for their intended applications and comply with relevant parts of this standard and particularly Annex C, see Annex C – Transformers	P
1.5.5	Interconnecting cables	The interconnecting cables contain only SELV.	P
1.5.6	Capacitors bridging insulation	Y1 capacitors according to IEC 60384-14.	P
1.5.7	Resistors bridging insulation	Refer below	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	No 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	No resistors bridging double or reinforced insulation between a.c mains and antenna or coaxial cable.	N

EN 60950-1			
Clause	Requirement	Remark	Result
1.5.8	Components in equipment for IT power systems		N
1.5.9	Surge suppressors		N
1.5.9.1	General		N
1.5.9.2	Protection of VDRs		N
1.5.9.3	Bridging of functional insulation by a VDR		N
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	This appliance is not hand-held equipment.	N
1.6.4	Neutral conductor	Neutral is insulated from body with reinforced insulation through the equipment.	P

1.7	Marking and instructions		P
1.7.1	Power rating	Complies	P
	Rated voltage(s) or voltage range(s) (V) .....	See the marking label	P
	Symbol for nature of supply, for d.c. only.....		N
	Rated frequency or rated frequency range (Hz) ...	See the marking label	P
	Rated current (mA or A) .....	See the marking label	P
	Manufacturer's name or trade-mark or identification mark .....	See the marking label	P
	Model identification or type reference .....	Refer to cover page of test report	P
	Symbol for Class II equipment only .....	See the marking label	P
	Other markings and symbols .....	The additional marking does not give rise to misunderstandings.	P

EN 60950-1			
Clause	Requirement	Remark	Result
1.7.2	Safety instructions and marking	Safety instructions in English. Other languages will be provided when submitted for national approval.	P
1.7.2.1	General	Instructions are available.	P
1.7.2.2	Disconnect devices	The equipment is provided with a plug.	P
1.7.2.3	Overcurrent protective device	Not type B pluggable equipment or permanently connected equipment.	N
1.7.2.4	IT power distribution systems		N
1.7.2.5	Operator access with a tool	All areas containing hazard(s) are inaccessible to the operator.	P
1.7.2.6	Ozone	The equipment does not produce Ozone.	N
1.7.3	Short duty cycles	The equipment is intended for continuous operation.	N
1.7.4	Supply voltage adjustment .....	No voltage selector.	N
	Methods and means of adjustment; reference to installation instructions .....		N
1.7.5	Power outlets on the equipment .....	No standard power outlet.	N
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....	Current Fuse locations and markings: T1AL, 250V	P
1.7.7	Wiring terminals	Refer below:	N
1.7.7.1	Protective earthing and bonding terminals .....	Class II equipment.	N
1.7.7.2	Terminals for a.c. mains supply conductors	The equipment is not permanently connected or provided with a non detachable power supply cord.	N
1.7.7.3	Terminals for d.c. mains supply conductors	The equipment is not supplied from d.c mains.	N
1.7.8	Controls and indicators	Refer below	N

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Clause	Requirement	Remark	Result
1.7.8.1	Identification, location and marking .....	No control.	N
1.7.8.2	Colours .....	No controls and indicators provided.	N
1.7.8.3	Symbols according to IEC 60417 .....	There are no switches in the equipment.	N
1.7.8.4	Markings using figures .....	No indicators for different positions.	N
1.7.9	Isolation of multiple power sources .....	Only one connection supplying hazardous voltages and energy levels to the equipment.	N
1.7.10	Thermostats and other regulating devices .....	No thermostats or other regulating devices.	N
1.7.11	Durability	The marking withstands required tests.	P
1.7.12	Removable parts		P
1.7.13	Replaceable batteries .....	No replaceable batteries in the equipment.	N
	Language(s) .....		—
1.7.14	Equipment for restricted access locations.....	Not for installation in restricted access locations	N

2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1.1	Access to energized parts	See below	P
	Test by inspection .....	Operator can not contact with any parts with only basic insulation to ELV or hazardous voltage	P
	Test with test finger (Figure 2A) .....	No access with test finger to any parts with only basic insulation to ELV or hazardous voltage	P

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Clause	Requirement	Remark	Result
	Test with test pin (Figure 2B) .....	The test pin can not touch hazardous voltage through any openings or seams of the whole enclosure	P
	Test with test probe (Figure 2C) .....	No TNV circuit.	N
2.1.1.2	Battery compartments	Not battery compartments	N
2.1.1.3	Access to ELV wiring	No internal wiring at ELV accessible to the operator.	N
	Working voltage ( $V_{peak}$ or $V_{rms}$ ); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage wiring in operator accessible area	N
2.1.1.5	Energy hazards .....	(see appended table 2.1.1.5.)	P
2.1.1.6	Manual controls	No shafts of knobs etc. at ELV or hazardous voltage or TNV.	N
2.1.1.7	Discharge of capacitors in equipment	No X-capacitor:	N
	Measured voltage (V); time-constant (s) .....		N
2.1.1.8	Energy hazards – d.c. mains supply	Not connected to DC mains supply.	N
	a) Capacitor connected to the d.c. mains supply ..		N
	b) Internal battery connected to the d.c. mains supply .....		N
2.1.1.9	Audio amplifiers .....	No audio amplifier.	N
2.1.2	Protection in service access areas	Checked by inspection unintentional contact is unlikely during service operations.	P
2.1.3	Protection in restricted access locations	Equipment not intended for installation in RAL.	N
2.2	SELV circuits		P

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Clause	Requirement	Remark	Result
2.2.1	General requirements	SELV limits are not exceeded under normal condition and after a single fault.	P
2.2.2	Voltages under normal conditions (V) .....	Within SELV limits.	P
2.2.3	Voltages under fault conditions (V) .....	Within SELV limits.	P
2.2.4	Connection of SELV circuits to other circuits .....	SELV circuits are only connected to other SELV circuits.	P

2.3	TNV circuits		N
2.3.1	Limits		N
	Type of TNV circuits .....		—
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 .....		—
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed .....		—
2.3.5	Test for operating voltages generated externally		N

2.4	Limited current circuits		P
2.4.1	General requirements	Limited are not exceeded. (Refer to table 2.4)	P
2.4.2	Limit values	Limited are not exceeded. (Refer to table 2.4)	—
	Frequency (Hz) .....	(see appended table 2.4.2)	—
	Measured current (mA) .....	(see appended table 2.4.2)	—
	Measured voltage (V) .....	(see appended table 2.4.2)	—

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Clause	Requirement	Remark	Result
	Measured circuit capacitance (nF or $\mu$ F).....:	Max. 2200pF (CY1)	—
2.4.3	Connection of limited current circuits to other circuits	Under normal operating condition, no fault condition can cause higher current.	P

2.5	Limited power sources		P
	a) Inherently limited output		N
	b) Impedance limited output		N
	c) Regulating network limited output under normal operating and single fault condition	A regulating network limits the output in compliance with table 2B both under normal operating conditions and after any single fault.	P
	d) Overcurrent protective device limited output		N
	Max. Output voltage (V), max. Output current (A), max. Apparent power (VA) .....	(see appended table 2.5)	—
	Current rating of overcurrent protective device (A) ..		—

2.6	Provisions for earthing and bonding		N
2.6.1	Protective earthing		N
2.6.2	Functional earthing		N
2.6.3	Protective earthing and protective bonding conductors		N
2.6.3.1	General		N
2.6.3.2	Size of protective earthing conductors		N
	Rated current (A), cross-sectional area ( $\text{mm}^2$ ), AWG .....		—
2.6.3.3	Size of protective bonding conductors		N
	Rated current (A), cross-sectional area ( $\text{mm}^2$ ), AWG .....		—
	Protective current rating (A), cross-sectional area ( $\text{mm}^2$ ), AWG .....		—

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Clause	Requirement	Remark	Result
2.6.3.4	Resistance of earthing conductors and their terminations; resistance ( $\Omega$ ), voltage drop (V), test current (A), duration (min) .....		N
2.6.3.5	Colour of insulation.....		N
2.6.4	Terminals		N
2.6.4.1	General		N
2.6.4.2	Protective earthing and bonding terminals		N
	Rated current (A), type, nominal thread diameter (mm) .....		—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N
2.6.5	Integrity of protective earthing		N
2.6.5.1	Interconnection of equipment		N
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N
2.6.5.3	Disconnection of protective earth		N
2.6.5.4	Parts that can be removed by an operator	None	N
2.6.5.5	Parts removed during servicing	No protective earth connection needs to be removed for servicing	N
2.6.5.6	Corrosion resistance		N
2.6.5.7	Screws for protective bonding		N
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV	N

2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	The equipment relies on fuse or circuit breaker of the wall outlet protection of the building installation in regard to L to N short-circuits. Over-current protection is provided by current fuse.	P

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Clause	Requirement	Remark	Result
	Instructions when protection relies on building installation	Pluggable equipment type A.	N
2.7.2	Faults not simulated in 5.3.7	The protection devices are well dimensioned and mounted.	P
2.7.3	Short-circuit backup protection	Building installation is considered as providing short circuit backup protection.	P
2.7.4	Number and location of protective devices .....	Over current protection by one built-in current fuse.	P
2.7.5	Protection by several devices	Only one current fuse provided	N
2.7.6	Warning to service personnel.....	No service work necessary.	N
2.8	Safety interlocks		N
2.8.1	General principles		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	No natural rubber, hygroscopic materials and materials containing asbestos used as Insulation.	P

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Clause	Requirement	Remark	Result
2.9.2	Humidity conditioning	Humidity treatment performed for 48 hrs.	P
	Relative humidity (%), temperature (°C) .....:	93%, 25°C	—
2.9.3	Grade of insulation	Insulation is considered to be functional, basic, supplementary, reinforced or double insulation.	P
2.9.4	Separation from hazardous voltages	The adequate levels of safety insulation provided and maintained to comply with the requirements of this standard.	P
	Method(s) used .....:	Method 1 used	—

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	See sub-clauses 2.10.3, 2.10.4 and 2.10.5.	P
2.10.1.1	Frequency .....:		P
2.10.1.2	Pollution degrees .....:	Pollution degrees 2.	P
2.10.1.3	Reduced values for functional insulation	Considered	P
2.10.1.4	Intervening unconnected conductive parts	Considered	P
2.10.1.5	Insulation with varying dimensions	Insulation kept homogenous.	N
2.10.1.6	Special separation requirements	Not applied.	N
2.10.1.7	Insulation in circuits generating starting pulses	The circuit will not generate starting pulse.	N
2.10.2	Determination of working voltage	(see appended table 2.10.3 and 2.10.4)	P

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Clause	Requirement	Remark	Result
2.10.2.1	General	The rms and the peak voltage were measured with unit connected to a 240V TN power system. The input neutral and secondary minus pole were connected during measurement. Pollution Degree 2 and Overvoltage Category II considered.	P
2.10.2.2	RMS working voltage	(see appended table 2.10.3 and 2.10.4)	P
2.10.2.3	Peak working voltage	(see appended table 2.10.3 and 2.10.4)	P
2.10.3	Clearances	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.1	General	Considered.	P
2.10.3.2	Mains transient voltages	See below	P
	a) AC mains supply .....	240V a.c. and Overvoltage Category II	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	Sub-clause 5.3.4 considered.	P
2.10.3.5	Clearances in circuits having starting pulses	The circuit will not generate starting pulse.	N
2.10.3.6	Transients from a.c. mains supply .....	Normal transient voltage considered (overvoltage category II for primary circuit).	P
2.10.3.7	Transients from d.c. mains supply .....	Not connected to d.c mains supply.	N

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Clause	Requirement	Remark	Result
2.10.3.8	Transients from telecommunication networks and cable distribution systems .....	Not connected to telecommunication networks and cable distribution systems.	N
2.10.3.9	Measurement of transient voltage levels		N
	a) Transients from a mains supply	Measurement not relevant.	N
	For an a.c. mains supply .....		N
	For a d.c. mains supply .....		N
	b) Transients from a telecommunication network :	Not connected to telecommunication networks.	N
2.10.4	Creepage distances	See below.	P
2.10.4.1	General	Considered.	P
2.10.4.2	Material group and comparative tracking index	See below.	P
	CTI tests .....	Material group IIIb is assumed to be used	—
2.10.4.3	Minimum creepage distances	(see appended table 2.10.3 and 2.10.4)	N
2.10.5	Solid insulation	See below	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		N
2.10.5.4	Semiconductor devices		N
2.10.5.5	Cemented joints	Not applied.	N
2.10.5.6	Thin sheet material – General	Considered	P
2.10.5.7	Separable thin sheet material	Insulation tape providing supplementary or reinforced insulation	P
	Number of layers (pcs) .....	2 layers for reinforced insulation.	—
2.10.5.8	Non-separable thin sheet material		N
2.10.5.9	Thin sheet material – standard test procedure		N
	Electric strength test		—

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Clause	Requirement	Remark	Result
2.10.5.10	Thin sheet material – alternative test procedure		P
	Electric strength test		—
2.10.5.11	Insulation in wound components	Electric strength test applied to each one layer	P
2.10.5.12	Wire in wound components		P
	Working voltage .....	Triple insulated wire used as secondary winding of transformer T1.	P
	a) Basic insulation not under stress .....		N
	b) Basic, supplementary, reinforced insulation .....	Wire complies to Annex U, three layers insulation.	P
	c) Compliance with Annex U .....		P
	Two wires in contact inside wound component; angle between 45° and 90° .....	Physical separation provided by insulated tube.	P
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		—
	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		P
2.10.6.1	Uncoated printed boards	(see appended table 2.10.3 and 2.10.4)	P
2.10.6.2	Coated printed boards	No special coating in order to reduce distances.	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

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Clause	Requirement	Remark	Result
	Number of insulation layers (pcs).....:		N
2.10.7	Component external terminations	Coatings not used over terminations to increase effective creepage and clearance distances.	N
2.10.8	Tests on coated printed boards and coated components	No special coating in order to reduce distance.	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	Pollution Degree 2	P
2.10.11	Tests for semiconductor devices and cemented joints		N
2.10.12	Enclosed and sealed parts	No hermetically sealed component.	N

3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	Internal wires are UL recognized and having gauge suitable for current intended to be carried	P
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges which could damage the insulation and cause hazard.	P
3.1.3	Securing of internal wiring	The wires are secured by solder pins or glue so that a loosening of the terminal connection is unlikely.	P

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Clause	Requirement	Remark	Result
3.1.4	Insulation of conductors	The insulation of the individual conductors is suitable for the application and the working voltage.	P
3.1.5	Beads and ceramic insulators	No beads or similar ceramic insulators on conductors.	N
3.1.6	Screws for electrical contact pressure	No screw for electrical contact.	N
3.1.7	Insulating materials in electrical connections	Contact pressure is not transmitted through insulating material.	N
3.1.8	Self-tapping and spaced thread screws	Thread-cutting or space thread screws are not used for electrical connections.	N
3.1.9	Termination of conductors	All conductors are secured by solder and hooking-in construction.	P
	10 N pull test	10 N pull tests performed for all relevant conductors. No hazards caused hereby.	P
3.1.10	Sleeving on wiring		P

3.2	Connection to a mains supply		P
3.2.1	Means of connection	Refer below:	P
3.2.1.1	Connection to an a.c. mains supply	The adaptor provided with a mains plug which is integral with the adaptor.	P
3.2.1.2	Connection to a d.c. mains supply	The equipment is not for connection to a d.c. mains supply.	N
3.2.2	Multiple supply connections	Only one supply connection.	N
3.2.3	Permanently connected equipment	The equipment is not intended for permanent connection to the mains.	N
	Number of conductors, diameter of cable and conduits (mm) .....		—
3.2.4	Appliance inlets		N

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Clause	Requirement	Remark	Result
3.2.5	Power supply cords		N
3.2.5.1	AC power supply cords		N
	Type .....		—
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....		—
3.2.5.2	DC power supply cords	The equipment is not for connecting to d.c. mains.	N
3.2.6	Cord anchorages and strain relief		N
	Mass of equipment (kg), pull (N) .....		—
	Longitudinal displacement (mm) .....		—
3.2.7	Protection against mechanical damage		N
3.2.8	Cord guards	Not used	N
	Diameter or minor dimension D (mm); test mass (g) .....		—
	Radius of curvature of cord (mm).....		—
3.2.9	Supply wiring space	Not permanent connection or non-detachable power cord type.	N

3.3	Wiring terminals for connection of external conductors		N
3.3.1	Wiring terminals	Direct plug-in equipment	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
	Rated current (A), cord/cable type, cross-sectional area (mm <sup>2</sup> ).....		—
3.3.5	Wiring terminal sizes		N
	Rated current (A), type, nominal thread diameter (mm) .....		—
3.3.6	Wiring terminal design		N
3.3.7	Grouping of wiring terminals		N
3.3.8	Stranded wire		N

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Clause	Requirement	Remark	Result
3.4	Disconnection from the mains supply		P
3.4.1	General requirement	See below	P
3.4.2	Disconnect devices	Plug used as disconnect device	P
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N
3.4.4	Parts which remain energized	No parts remain energized after the disconnect device.	N
3.4.5	Switches in flexible cords	No isolating switch in the cord set.	N
3.4.6	Number of poles – single-phase and d.c. equipment	Plug disconnects both poles simultaneously.	P
3.4.7	Number of poles – three-phase equipment	Single phase equipment.	N
3.4.8	Switches as disconnect devices		N
3.4.9	Plugs as disconnect devices		P
3.4.10	Interconnected equipment	Not interconnected equipment.	N
3.4.11	Multiple power sources	Only one supply connection provided.	N
3.5	Interconnection of equipment		P
3.5.1	General requirements	Considered	P
3.5.2	Types of interconnection circuits .....	Interconnection circuits of SELV through the connector. No ELV interconnection circuits.	P
3.5.3	ELV circuits as interconnection circuits	No ELV	N
3.5.4	Data ports for additional equipment	No data ports.	N
4	PHYSICAL REQUIREMENTS		P
4.1	Stability		N
	Angle of 10°	Mass < 7kg	N
	Test force (N) .....	The unit is not floor-standing.	N

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Clause	Requirement	Remark	Result
4.2	Mechanical strength		P
4.2.1	General	Complies with the requirement also after tests described below are applied.	P
4.2.2	Steady force test, 10 N	No hazard.	P
4.2.3	Steady force test, 30 N	No internal enclosure.	N
4.2.4	Steady force test, 250 N	No hazard. Enclosure withstands 250N	P
4.2.5	Impact test		N
	Fall test		N
	Swing test		N
4.2.6	Drop test; height (mm) .....	No hazard as result from the drop test at 1000mm height.	P
4.2.7	Stress relief test	Test is carried out at 72°C / 7hrs. No risk of shrinkage or distortion on enclosures due to release of internal stresses.	P
4.2.8	Cathode ray tubes	None provided	N
	Picture tube separately certified .....		N
4.2.9	High pressure lamps	No high pressure lamps in the equipment.	N
4.2.10	Wall or ceiling mounted equipment; force (N) .....	Not intended to be mounted on a wall or ceiling.	N

4.3	Design and construction		P
4.3.1	Edges and corners	All edges and corners are rounded and/or smoothed.	P
4.3.2	Handles and manual controls; force (N)..... :	No knobs, grips, handles, lever etc.	N
4.3.3	Adjustable controls	No hazardous adjustable controls.	N

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Clause	Requirement	Remark	Result
4.3.4	Securing of parts	Mechanical fixings in such a way designed that they will withstand mechanical stress occurring in normal use.	P
4.3.5	Connection by plugs and sockets	Mismatch of connectors either not possible or does not result in any hazard.	P
4.3.6	Direct plug-in equipment	See below	P
	Torque .....	0.02Nm for EU plug	—
	Compliance with the relevant mains plug standard .....	The dimension of the injection part of plug portion for EU was tested and in compliance with EN 50075.	P
4.3.7	Heating elements in earthed equipment	No heating elements provided.	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
	- Excessive discharging rate for any battery		N
4.3.9	Oil and grease	Insulation is not exposed to oil, grease etc.	N
4.3.10	Dust, powders, liquids and gases	The equipment does not generate ionizing radiation or use a laser, and does not contain flammable liquids or gases.	N
4.3.11	Containers for liquids or gases	No containers for liquids or gases in the equipment.	N
4.3.12	Flammable liquids .....	The equipment does not contain flammable liquid.	N
	Quantity of liquid (l) .....		N
	Flash point (°C) .....		N
4.3.13	Radiation	Refer below:	N

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Clause	Requirement	Remark	Result
4.3.13.1	General	Refer below:	N
4.3.13.2	Ionizing radiation	The equipment does not generate ionizing radiation.	N
	Measured radiation (pA/kg) .....		—
	Measured high-voltage (kV) .....		—
	Measured focus voltage (kV) .....		—
	CRT markings .....		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	The equipment does not produce significant UV radiation.	N
	Part, property, retention after test, flammability classification .....		N
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....	The equipment does not produce significant UV radiation.	N
4.3.13.5	Laser (including LEDs)		P
	Laser class .....		—
4.3.13.6	Other types .....	The equipment does not generate other types of radiation.	N

4.4	Protection against hazardous moving parts		N
4.4.1	General	No moving parts.	N
4.4.2	Protection in operator access areas .....	No moving parts.	N
4.4.3	Protection in restricted access locations .....	Not evaluated for restricted access locations	N
4.4.4	Protection in service access areas	Unintentional contact is not likely in service access areas.	N
4.4.5	Protection against moving fan blades		N
4.4.5.1	General		N
	Not considered to cause pain or injury. a).....		N
	Is considered to cause pain, not injury. b) .....		N
	Considered to cause injury. c) .....		N

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Clause	Requirement	Remark	Result
4.4.5.2	Protection for users		N
	Use of symbol or warning .....		N
4.4.5.3	Protection for service persons		N
	Use of symbol or warning .....		N

4.5	Thermal requirements		P
4.5.1	General	See below	P
4.5.2	Temperature tests		P
	Normal load condition per Annex L .....	Equipment loaded with rated output current.	—
4.5.3	Temperature limits for materials	(see appended table 4.5)	P
4.5.4	Touch temperature limits	(see appended table 4.5)	P
4.5.5	Resistance to abnormal heat .....	(see appended table 4.5.5)	P

4.6	Openings in enclosures		N
4.6.1	Top and side openings	No openings.	N
	Dimensions (mm) .....		—
4.6.2	Bottoms of fire enclosures	No openings.	N
	Construction of the bottom, dimensions (mm) ...:		—
4.6.3	Doors or covers in fire enclosures	No doors or covers.	N
4.6.4	Openings in transportable equipment	No openings in the equipment.	N
4.6.4.1	Constructional design measures	No openings in the equipment.	N
	Dimensions (mm) .....		—
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	No adhesives for constructional purposes used	N
	Conditioning temperature (°C), time (weeks) .....		—

4.7	Resistance to fire		P
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Clause	Requirement	Remark	Result
4.7.1	Reducing the risk of ignition and spread of flame	No excessive temperatures, no easily burning materials employed	P
	Method 1, selection and application of components wiring and materials		P
	Method 2, application of all of simulated fault condition tests		N
4.7.2	Conditions for a fire enclosure	With having the following parts: - Components in primary - Insulated wiring The fire enclosure is required.	P
4.7.2.1	Parts requiring a fire enclosure	See above	P
4.7.2.2	Parts not requiring a fire enclosure		N
4.7.3	Materials		P
4.7.3.1	General	Components and materials have adequate flammability classification.	P
4.7.3.2	Materials for fire enclosures	The fire enclosure is min. V-1 material.	P
4.7.3.3	Materials for components and other parts outside fire enclosures	No parts outside the fire enclosure.	N
4.7.3.4	Materials for components and other parts inside fire enclosures	Other materials inside fire enclosure are minimum V-2 material.	P
4.7.3.5	Materials for air filter assemblies	No air filters in the equipment.	N
4.7.3.6	Materials used in high-voltage components	No parts exceeding 4kV.	N

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)	See below.	P
5.1.2.1	Single connection to an a.c. mains supply		P
5.1.2.2			N

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Clause	Requirement	Remark	Result
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply	No multiple power sources.	N
5.1.3	Test circuit	Tested for connection to IT power distribution system	P
5.1.4	Application of measuring instrument	Measuring instrument D1 is used.	P
5.1.5	Test procedure	Considered.	P
5.1.6	Test measurements	Considered.	—
	Supply voltage (V) .....	264V	—
	Measured touch current (mA) .....	(see appended table 5.1.6)	—
	Max. Allowed touch current (mA) .....	Primary to sec. O/P: 0.25mA	—
	Measured protective conductor current (mA) .....		—
	Max. Allowed protective conductor current (mA) ..		—
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	Not connected to a telecommunication network nor a cable distribution system.	N
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system	Not connected to a telecommunication network.	N
	Supply voltage (V) .....		—
	Measured touch current (mA) .....		—
	Max. Allowed touch current (mA) .....		—
5.1.8.2	Summation of touch currents from telecommunication networks	Not connected to a telecommunication network.	N
	a) EUT with earthed telecommunication ports .....		N
	b) EUT whose telecommunication ports have no reference to protective earth		N

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Clause	Requirement	Remark	Result
5.2	Electric strength		P
5.2.1	General	All tests voltages were applied for 1 minute in the chamber after the humidity test of 2.9.2 and in warm conditions after the heating test of 4.5.2. No isolation breakdown was observed.	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	There is no motor in the equipment.	N
5.3.3	Transformers	See appended Annex C.	P
5.3.4	Functional insulation.....:	Complies with a) and c).	P
5.3.5	Electromechanical components	No electromechanical components	N
5.3.6	Audio amplifiers in ITE .....:	No audio amplifier in equipment.	N
5.3.7	Simulation of faults	(see appended table 5.3)	P
5.3.8	Unattended equipment	No such equipment.	N
5.3.9	Compliance criteria for abnormal operating and fault conditions	See below.	P
5.3.9.1	During the tests	No fire or molten metal occurred and no deformation of enclosure during the tests.	P
5.3.9.2	After the tests	No reduction of clearance and creepage distance. Electric strength test is made on basic, supplementary and reinforced insulation after test.	P
6	CONNECTION TO TELECOMMUNICATION NETWORKS		N

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Clause	Requirement	Remark	Result
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) .....		—
	Current in the test circuit (mA) .....		—
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

6.3	Protection of the telecommunication wiring system from overheating		N
	Max. Output current (A) .....		—
	Current limiting method .....		—

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

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Clause	Requirement	Remark	Result
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.....:		—
	Wall thickness (mm).....:		—
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 .....		—
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	Sample 1 burning time (s) .....		—
	Sample 2 burning time (s) .....		—
	Sample 3 burning time (s) .....		—
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.....:		—
	Wall thickness (mm).....:		—
A.2.2	Conditioning of samples; temperature (°C) .....		N
A.2.3	Mounting of samples .....		N
A.2.4	Test flame (see IEC 60695-11-4)		N
	Flame A, B or C .....		—
A.2.5	Test procedure		N
A.2.6	Compliance criteria		N
	Sample 1 burning time (s) .....		—
	Sample 2 burning time (s) .....		—
	Sample 3 burning time (s) .....		—

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Clause	Requirement	Remark	Result
A.2.7	Alternative test acc. To IEC 60695-11-5, cl. 5 and 9		N
	Sample 1 burning time (s) .....		—
	Sample 2 burning time (s) .....		—
	Sample 3 burning time (s) .....		—
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 .....		—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
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) .....		—
	Electric strength test: test voltage (V) .....		—
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

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Clause	Requirement	Remark	Result
B.7.1	General		N
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) .....		—

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position .....	Primary to Secondary	—
	Manufacturer .....	(see appended table 1.5.1)	—
	Type .....	(see appended table 1.5.1)	—
	Rated values .....	(see appended table 1.5.1)	—
	Method of protection.....	Inherent protection	—
C.1	Overload test	(see appended table 5.3)	P
C.2	Insulation	(see appended table 5.2)	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		P
D.2	Alternative measuring instrument		N

E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N
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F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		P
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G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N
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Clause	Requirement	Remark	Result
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
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 .....		—

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

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Clause	Requirement	Remark	Result
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 4.5.2)		P
L.1	Typewriters		N
L.2	Adding machines and cash registers		N
L.3	Erasers		N
L.4	Pencil sharpeners		N
L.5	Duplicators and copy machines		N
L.6	Motor-operated files		N
L.7	Other business equipment		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	Ringling signal		N
M.3.1.1	Frequency (Hz) .....:		—
M.3.1.2	Voltage (V) .....:		—
M.3.1.3	Cadence; time (s), voltage (V) .....:		—
M.3.1.4	Single fault current (mA) .....:		—
M.3.2	Tripping device and monitoring voltage .....:		N
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

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Clause	Requirement	Remark	Result
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
P	ANNEX P, NORMATIVE REFERENCES		—
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
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
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N
		See separate test report	—
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		P
		VDE approved triple insulated wire used.	—

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Clause	Requirement	Remark	Result
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)		N
X.1	Determination of maximum input current		N
X.2	Overload test procedure		N

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
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AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N
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BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—
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CC	Annex CC, Evaluation of integrated circuit (IC) current limiters		N
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Clause	Requirement	Remark	Result
CC.1	General		N
CC.2	Test program 1.....:		N
CC.3	Test program 2.....:		N

DD	Annex DD, Requirements for the mounting means of rack-mounted equipment		N
DD.1	General		N
DD.2	Mechanical strength test, variable N.....:		N
DD.3	Mechanical strength test, 250N, including end stops.....:		N
DD.4	Compliance.....:		N

EE	Annex EE, Household and home/office document/media shredders		N
EE.1	General		N
EE.2	Markings and instructions		N
	Use of markings or symbols.....:		N
	Information of user instructions, maintenance and/or servicing instructions.....:		N
EE.3	Inadvertent reactivation test.....:		N
EE.4	Disconnection of power to hazardous moving parts:		N
	Use of markings or symbols.....:		N
EE.5	Protection against hazardous moving parts		N
	Test with test finger (Figure 2A) .....:		N
	Test with wedge probe (Figure EE1 and EE2) .....:		N

## ATTACHMENT TO TEST REPORT IEC 60950-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

Information technology equipment – Safety –

Part 1: General requirements

**Differences according to** .....: EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013

**Attachment Form No.** .....: EU\_GD\_IEC60950\_1F

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**Master Attachment** .....: Date 2014-02

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### EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Clauses, subclauses, notes, tables and figures which are additional to those in IEC60950-1 and it's amendmets are prefixed "Z"		P
Contents  (A2:2013)	<p>Add the following annexes:</p> <p>Annex ZA (normative)      Normative references to international publications with their corresponding European publications</p> <p>Annex ZB (normative)      Special national conditions</p> <p>Annex ZD (informative)      IEC and CENELEC code designations for flexible cords</p>		P
General	<p>Delete all the "country" notes in the reference document (IEC 60950-1:2005) according to the following list:</p> <p>1.4.8    Note 2      1.5.1      Note 2 &amp; 3      1.5.7.1    Note</p> <p>1.5.8    Note 2    1.5.9.4   Note      1.7.2.1    Note 4, 5 &amp; 6</p> <p>2.2.3    Note      2.2.4      Note      2.3.2      Note</p> <p>2.3.2.1 Note 2    2.3.4      Note 2    2.6.3.3    Note 2 &amp; 3</p> <p>2.7.1    Note      2.10.3.2 Note 2    2.10.5.13 Note 3</p> <p>3.2.1.1 Note    3.2.4      Note 3.    2.5.1      Note 2</p> <p>4.3.6    Note 1 &amp; 2    4.7      Note 4    4.7.2.2    Note</p> <p>4.7.3.1 Note 2    5.1.7.1    Note 3 &amp; 4    5.3.7      Note 1</p> <p>6    Note 2 &amp; 5    6.1.2.1    Note 2    6.1.2.2    Note</p> <p>6.2.2    Note      6.2.2.1    Note 2    6.2.2.2    Note</p> <p>7.1    Note 3    7.2      Note      7.3      Note 1 &amp; 2</p> <p>G.2.1    Note 2    Annex H Note 2</p>		P

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
General (A1:2010)	Delete all the "country" notes in the reference document (IEC 60950-1:2005/A1:2010) according to the following list: 1.5.7.1 Note                      6.1.2.1 Note 2 6.2.2.1 Note 2                      EE.3 Note		P
General (A2:2013)	Delete all the "country" notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list: 2.7.1 Note *                      2.10.3.1 Note 2 6.2.2. Note * Note of secretary: Text of Common Modification remains unchanged.		P
1.1.1 (A1:2010)	<b>Replace</b> the text of NOTE 3 by the following. NOTE 3 The requirements of EN 60065 may also be used to meet safety requirements for multimedia equipment. See IEC Guide 112, Guide on the safety of multimedia equipment. For television sets EN 60065 applies.		N
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
(A12:2011)	In EN 60950-1:2006/A12:2011 Delete the addition of 1.3.Z1 / EN 60950-1:2006 Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010		N

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.1  (Added info*)	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.  New Directive 2011/65/11 *		N
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.		N
1.7.2.1 (A12:2011)	In EN 60950-1:2006/A12:2011  Delete NOTE Z1 and the addition for Portable Sound System.  Add the following clause and annex to the existing standard and amendments.		N
	<b>Zx Protection against excessive sound pressure from personal music players</b>		N

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p><b>Zx.1 General</b></p> <p>This sub-clause specifies requirements for protection against excessive sound pressure from personal music players that are closely coupled to the ear. It also specifies requirements for earphones and headphones intended for use with personal music players.</p> <p>A personal music player is a portable equipment for personal use, that:</p> <ul style="list-style-type: none"><li>– is designed to allow the user to listen to recorded or broadcast sound or video; and</li><li>– primarily uses headphones or earphones that can be worn in or on or around the ears; and</li><li>– allows the user to walk around while in use.</li></ul> <p>NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment.</p> <p>A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause.</p> <p>The requirements in this sub-clause are valid for music or video mode only.</p> <p>The requirements do not apply:</p> <ul style="list-style-type: none"><li>– while the personal music player is connected to an external amplifier; or</li><li>– while the headphones or earphones are not used.</li></ul> <p>NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player.</p> <p>The requirements do not apply to:</p> <ul style="list-style-type: none"><li>– hearing aid equipment and professional equipment;</li></ul> <p>NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.</p>		N

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>– analogue personal music players (personal music players without any kind of digital processing of the sound signal) that are brought to the market before the end of 2015.</p> <p>NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.</p> <p>For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.</p>		N
	<p><b>Zx.2 Equipment requirements</b></p> <p>No safety provision is required for equipment that complies with the following:</p> <p>– equipment provided as a package (personal music player with its listening device), where the acoustic output <math>L_{Aeq,T}</math> is <math>\leq 85</math> dBA measured while playing the fixed “programme simulation noise” as described in EN 50332-1; and</p> <p>– a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is <math>\leq 27</math> mV measured as described in EN 50332-2, while playing the fixed “programme simulation noise” as described in EN 50332-1.</p> <p>NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level <math>L_{Aeq,T}</math> is meant. See also Zx.5 and Annex Zx.</p> <p>All other equipment shall:</p> <p>a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and</p> <p>b) have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; and</p>		N

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and</p> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always required.</p> <p>NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off.</p> <p>d) have a warning as specified in Zx.3; and</p> <p>e) not exceed the following:</p> <p>1) equipment provided as a package (player with its listening device), the acoustic output shall be <math>\leq 100</math> dBA measured while playing the fixed "programme simulation noise" described in EN 50332-1; and</p> <p>2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be <math>\leq 150</math> mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" described in EN 50332-1.</p> <p>For music where the average sound pressure (long term <math>L_{Aeq,T}</math>) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song.</p>		N

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>NOTE 4 Classical music typically has an average sound pressure (long term <math>L_{Aeq,T}</math>) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA.</p> <p>For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dBA.</p>		N
	<p><b>Zx.3 Warning</b></p> <p>The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following:</p> <ul style="list-style-type: none"> <li>– the symbol of Figure 1 with a minimum height of 5 mm; and</li> <li>– the following wording, or similar:</li> </ul> <p>“To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p> <div data-bbox="438 1276 702 1538" data-label="Image"> </div> <p>Figure 1 – Warning label (IEC 60417-6044)</p> <p>Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.</p>		N
	<b>Zx.4 Requirements for listening devices (headphones and earphones)</b>		N

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.4.1 Wired listening devices with analogue input</p> <p>With 94 dBA sound pressure output <math>L_{Aeq,T}</math>, the input voltage of the fixed “programme simulation noise” described in EN 50332-2 shall be <math>\geq 75</math> mV.</p> <p>This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control).</p> <p>NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.</p>		N
	<p><b>Zx.4.2 Wired listening devices with digital input</b></p> <p><b>With any playing device playing the fixed</b> “programme simulation noise” described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output <math>L_{Aeq,T}</math> of the listening device shall be <math>\leq 100</math> dBA.</p> <p>This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.).</p> <p>NOTE An example of a wired listening device with digital input is a USB headphone.</p>		N

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p><b>Zx.4.3 Wireless listening devices</b></p> <p>In wireless mode:</p> <ul style="list-style-type: none"><li>– with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and</li><li>– respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and</li><li>– with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output <math>L_{Aeq,T}</math> of the listening device shall be <math>\leq 100</math> dBA.</li></ul> <p>NOTE An example of a wireless listening device is a Bluetooth headphone.</p>		N
	<p><b>Zx.5 Measurement methods</b></p> <p>Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s.</p> <p>NOTE Test method for wireless equipment provided without listening device should be defined.</p>		N

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	<p>Replace the subclause as follows:</p> <p>Basic requirements</p> <p>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):</p> <p>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;</p> <p>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;</p>		N
	<p>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.</p> <p>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>		N
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

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)															
Clause	Requirement + Test	Result - Remark	Verdict												
3.2.5.1	<p>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”.</p> <p>In Table 3B, replace the first four lines by the following:</p> <table><tr><td>Up to and including 6  </td><td>0,75 <sup>a)</sup>  </td><td>Over</td></tr><tr><td>6 up to and including 10  </td><td>(0,75) <sup>b)</sup> 1,0  </td><td></td></tr><tr><td>Over 10 up to and including 16  </td><td>(1,0) <sup>c)</sup> 1,5</td><td></td></tr><tr><td></td><td> </td><td></td></tr></table> <p>In the conditions applicable to Table 3B delete the words “in some countries” in condition <sup>a)</sup>.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p>	Up to and including 6	0,75 <sup>a)</sup>	Over	6 up to and including 10	(0,75) <sup>b)</sup> 1,0		Over 10 up to and including 16	(1,0) <sup>c)</sup> 1,5						N
Up to and including 6	0,75 <sup>a)</sup>	Over													
6 up to and including 10	(0,75) <sup>b)</sup> 1,0														
Over 10 up to and including 16	(1,0) <sup>c)</sup> 1,5														
3.2.5.1 (A2:2013)	NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD		N												
3.3.4	<p>In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:</p> <table><tr><td>Over 10 up to and including 16  </td><td>1,5 to 2,5  </td><td>1,5 to 4  </td></tr></table> <p>Delete the fifth line: conductor sizes for 13 to 16 A</p>	Over 10 up to and including 16	1,5 to 2,5	1,5 to 4		N									
Over 10 up to and including 16	1,5 to 2,5	1,5 to 4													
4.3.13.6 (A1:2010)	<p>Replace the existing NOTE by the following:</p> <p>NOTE Z1 Attention is drawn to:</p> <p>1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and</p> <p>2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation).</p>		N												
	<p>Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.</p>		N												

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
Annex H	<p>Replace the last paragraph of this annex by:</p> <p>At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 <math>\mu</math>Sv/h (0,1 mR/h) (see NOTE). Account is taken of the background level.</p> <p>Replace the notes as follows:</p> <p>NOTE These values appear in Directive 96/29/Euratom.</p> <p>Delete NOTE 2.</p>		N
Bibliography	Additional EN standards.		—

<b>ZA</b>	<b>NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS</b>	—
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ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.2.4.1	In <b>Denmark</b> , 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
1.2.13.14 (A11:2009)	In <b>Norway</b> and <b>Sweden</b> , for requirements see 1.7.2.1 and 7.3 of this annex.		N
1.5.7.1 (A11:2009)	In <b>Finland</b> , <b>Norway</b> and <b>Sweden</b> , resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.		N
1.5.8	In <b>Norway</b> , 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 <b>Finland</b> , <b>Norway</b> and <b>Sweden</b> , the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N

<b>ZB ANNEX (normative)</b> <b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1	<p>In <b>Finland, Norway</b> and <b>Sweden</b>, 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.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In <b>Finland</b>: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In <b>Norway</b>: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In <b>Sweden</b>: "Apparaten skall anslutas till jordat uttag"</p> <p>In <b>Norway</b> and <b>Sweden</b>, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>"Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)."</p>		N
1.7.2.1 (A11:2009)			

<b>ZB ANNEX (normative)</b> <b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet.”</p> <p>Translation to Swedish:</p> <p>”Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.”</p>		N
1.7.2.1 (A2:2013)	<p>In <b>Denmark</b>, 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.</p> <p>The marking text in <b>Denmark</b> shall be as follows:  In <b>Denmark</b>: “Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.”</p>		N

<b>ZB ANNEX (normative)</b> <b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.5  1.7.5 (A11:2009)	In <b>Denmark</b> , 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.  For <b>CLASS II EQUIPMENT</b> the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		N
1.7.5 (A2:2013)	In <b>Denmark</b> , socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011. For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a. Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with by DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b. Justification the Heavy Current Regulations, 6c		N
2.2.4	In <b>Norway</b> , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N
2.3.2	In <b>Finland, Norway and Sweden</b> 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 <b>Norway</b> , 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 <b>United Kingdom</b> , the current rating of the circuit shall be taken as 13 A, not 16 A.		N

<b>ZB ANNEX (normative)</b> <b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	In the <b>United Kingdom</b> , 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 <b>Finland, Norway and Sweden</b> , 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 <b>Switzerland</b> , 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		N
	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, 16A  SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 16 A		N

<b>ZB ANNEX (normative)</b> <b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	<p>In <b>Denmark</b>, supply cords of single-phase equipment having a rated current not exceeding 13 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 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.</p>		N
3.2.1.1 (A2:2013)	<p>In <b>Denmark</b>, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-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 a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Justification the Heavy Current Regulations, 6c</p>		N

<b>ZB ANNEX (normative)</b> <b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	<p>In <b>Spain</b>, 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.</p> <p>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.</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 UNE 20315:1994.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p>		N
3.2.1.1	<p>In the <b>United Kingdom</b>, 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.</p> <p>NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N
3.2.1.1	<p>In <b>Ireland</b>, 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.</p>		N
3.2.4	In <b>Switzerland</b> , for requirements see 3.2.1.1 of this annex.		N
3.2.5.1	In the <b>United Kingdom</b> , a power supply cord with conductor of 1,25 mm <sup>2</sup> is allowed for equipment with a rated current over 10 A and up to and including 13 A.		N

<b>ZB ANNEX (normative)</b> <b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.4	<p>In the <b>United Kingdom</b>, 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:</p> <ul style="list-style-type: none"> <li>• 1,25 mm<sup>2</sup> to 1,5 mm<sup>2</sup> nominal cross-sectional area.</li> </ul>		N
4.3.6	<p>In the <b>United Kingdom</b>, 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.</p>		N
4.3.6	<p>In <b>Ireland</b>, 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.</p>		N
5.1.7.1	<p>In <b>Finland</b>, <b>Norway</b> and <b>Sweden</b> TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment:</p> <ul style="list-style-type: none"> <li>• 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</li> <li>has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and</li> <li>is provided with instructions for the installation of that conductor by a SERVICE PERSON;</li> <li>• STATIONARY PLUGGABLE EQUIPMENT TYPE B;</li> <li>• STATIONARY PERMANENTLY CONNECTED EQUIPMENT.</li> </ul>		N

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.1 (A1:2010)	<p>In <b>Finland, Norway</b> and <b>Sweden</b>, add the following text between the first and second paragraph of the compliance clause:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"><li>- two layers of thin sheet material, each of which shall pass the electric strength test below, or</li><li>- one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li></ul> <p>Alternatively for components, there is no distance through insulation requirements 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</p> <ul style="list-style-type: none"><li>- 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</li></ul> <p>2.10.10 shall be performed using 1,5 kV), and</p> <ul style="list-style-type: none"><li>- is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.</li></ul>		N

<b>ZB ANNEX (normative)</b> <b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b).</p> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <li>- the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, 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;</li> <li>- the additional testing shall be performed on all the test specimens as described in EN 60384-14:</li> <li>- the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.</li> </ul>		N
6.1.2.2	<p>In <b>Finland, Norway and Sweden</b>, 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.</p>		N
7.2	<p>In <b>Finland, Norway and Sweden</b>, for requirements see 6.1.2.1 and 6.1.2.2 of this annex.</p> <p>The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.</p>		N
7.3 (A11:2009)	<p>In <b>Norway and Sweden</b>, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.</p>		N

**Annex ZD**  
**(informative)**

**IEC and CENELEC code designations for flexible cords**

Type of flexible cord	Code designations	
	IEC	CENELEC
<b>PVC insulated cords</b>		
Flat twin tinsel cord	60227 IEC 41	H03VH-Y
Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F
Ordinary polyvinyl chloride sheathed flexible cord	60277 IEC 53	H05VV-F H05VVH2-F
<b>Rubber insulated cords</b>		
Braided cord	60245 IEC 51	H03RT-F
Ordinary tough rubber sheathed flexible cord	60245 IEC 53	H05RR-F
Ordinary polychloroprene sheathed flexible cord	60245 IEC 57	H05RN-F
Heavy polychloroprene sheathed flexible cord	60245 IEC 66	H07RN-F
<b>Cords having high flexibility</b>		
Rubber insulated and sheathed cord	60245 IEC 86	H03RR-H
Rubber insulated, crosslinked PVC sheathed cord	60245 IEC 87	H03RV4-H
Crosslinked PVC insulated and sheathed cord	60245 IEC 88	H03V4V4-H

1.5.1	TABLE: List of critical components					P
Object/part no.	Manufacturer/ trademark	Type/model	Value/rating	Standard	Mark(s) of conformity <sup>1)</sup>	
Enclosure/ Plug Hold	STYRON (HONG KONG) LTD	EMERGE PC 4800(w)	PC94V-0, 125°C, Min thickness: 1.3mm	UL 746	UL E206114	
PCB	CHEERFUL INDUSTRIAL(HK) LTD	CC-6, KF-8719E	V-0,130°C	UL 94 UL 796	UL E134893	
Internal wire	Interchangeable	Interchangeable	RateD: Min300vac Min80°C Min22AWG	UL758	UL E465814	
Current Fuse F1	ZHIZHONG	500mA-10A	T1AL 250V	UL1412	UL E253675	
Y capacitor CY1	JYA-NAY	JN222M	AC250V, Max.2200pF, Y1, 125°C	IEC/EN60384-14 UL 1414	UL E201384	
Transformer T1	SHENSEN	TRC-00-17	Class B	EN60950-1	Tested with appliance	
--Bobbin of T1	CHANG CHUN PLASTICS CO LTD	T375J	V-0, 130°C	UL 94	UL	
--Magnet wire of T1	Interchangeable	Interchangeable	130°C	--	UL	
--Insulation tape of T1	--	PZ, CT	130°C	UL 510	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
U (V/Hz)	I (A)	I <sub>rated</sub> (A)	P (W)	Fuse #	I <sub>fuse</sub> (A)	Condition/status
99/50	0.124	--	7.37	F1	0.124	Normal load
99/60	0.123	---	7.37	F1	0.123	Normal load
110/50	0.114	0.15	7.33	F1	0.114	Normal load
110/60	0.115	0.15	7.34	F1	0.115	Normal load
240/50	0.069	0.15	7.61	F1	0.069	Normal load
240/60	0.070	0.15	7.61	F1	0.070	Normal load
264/50	0.067	--	7.73	F1	0.067	Normal load
264/60	0.067	--	7.73	F1	0.067	Normal load
Supplementary information:						

2.1.1.5	TABLE: max. V, A, VA test				P
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)	
5.0	1	5.03	1.22	6.19	
Supplementary information:					

2.2	TABLE: evaluation of voltage limiting components in SELV circuits			P
Component (measured between)		max. voltage (V) (normal operation)		Voltage Limiting Components
		V peak	V d.c.	
T1 pin1-2		30.1	--	--
Fault test performed on voltage limiting components		Voltage measured (V) in SELV circuits (V peak or V d.c.)		
--		--	--	--
supplementary information:				

2.4.2 Limited Current Circuits Test					P
Condition	Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	Comments
CY1 secondary pin to neutral	12.7	6.35	50	35	The peak drop voltage was measured with an oscilloscope at a 2k $\Omega$ noninductive resistor.
supplementary information: CY1=2200pF					

2.5	TABLE: limited power sources			P
Circuit output tested:				
Uoc= 5.05 V (measured under no load conditions)				
Measuring position	I <sub>sc</sub> (A)		VA	
	Meas.	Limit	Meas.	Limit
Normal condition	1.22	≤8	6.21	≤100
Single fault:U1 Pin3-6 S-C	0	≤8	0	≤100
Single fault:U1 Pin3-8 S-C	0	≤8	0	≤100
Single fault: R7 S-C	0	≤8	0	≤100
supplementary information:				

2.10.2	TABLE: determination of operating voltage measurement				P
Component	Location		Peak Voltage (Vac)	RMS Voltage (Vac)	Comments
	From	To			
T1	Pin 1	Pin 5	365	216	
T1	Pin 1	Pin 6	376	216	
T1	Pin 2	Pin 5	422	249	
T1	Pin 2	Pin 6	412	241	
T1	Pin 3	Pin 5	396	210	
T1	Pin 3	Pin 6	387	210	
T1	Pin 4	Pin 5	449	210	

T1	Pin 4	Pin 6	350	213			
CY1	Pri	Sec	353	210			
Supplementary information:							
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)
L to N		420	240	2.0	>2.0	2.5	>2.5
T1 primary to secondary		449	249	4.2	>4.2	5.0	>5.4
CY1 primary to secondary		353	210	4.0	>4.0	5.0	>5.0
Componet (C2) to transformer core.		449	249	2.1	>2.1	2.5	>2.5
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)
Plastic enclosure		469	245	3000Vac	≥0.4	1.1
Supplementary information:						

4.5	TABLE: Thermal requirements						P
	Supply voltage (V) .....	99V		264V		-	—
	Ambient T <sub>min</sub> (°C) .....	24.0	24.1	24.3	24.1-	-	—
	Ambient T <sub>max</sub> (°C) .....	24.6	24.5	24.5	24.6	-	—
		Vertical	Horizontal	Vertical	Horizontal		
Maximum measured temperature T of part/at::		T (°C)					Allowed T <sub>max</sub> (°C)
Internal wire		58.1	58.2	43.8	43.1		80
C2 body		90.0	92.3	80.2	81.2	-	105
C5 body		95.1	94.8	82.4	81.9		105
CY1 body		96.2	94.9	84.5	83.1	-	125
PCB near DB1		92.2	92.3	80.6	81.1		100
PCB under T1		98.0	94.3	87.1	88.8	-	130
T1 coil		101.3	102.6	92.4	93.7	-	110

T1 core	98.3	99.8	87.2	86.3	-	Ref.	
Enclosure inside near T1	61.3	60.9	52.1	51.9	-	95	
Enclosure outside near T1	59.3	60.2	50.2	49.8	-	95	
Supplementary information:							
Temperature T of winding:	t <sub>1</sub> (°C)	R <sub>1</sub> (Ω)	t <sub>2</sub> (°C)	R <sub>2</sub> (Ω)	T (°C)	Allowed T <sub>max</sub> (°C)	Insulation class
--	--	--	--	--	--	--	--
Supplementary information:							

4.5.5	TABLE: Ball pressure test of thermoplastic parts			P
	Allowed impression diameter (mm) .....	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	
T1 bobbin		125	0.9	
Supplementary information:				

5.1.6	Table: touch current measurement				P
Measured between:		Measured (mA)	Limit (mA)	Comments/conditions	
L/N	Output (P1 ON)	0.13	0.25	--	
L/N	Output (P1 OFF)	0.13	0.25	--	
L/N	Enclosure (P1 ON)	0.005	0.25	--	
L/N	Enclosure (P1 OFF)	0.005	0.25	--	
Note(s): Input Voltage:264V    Input frequency:60Hz					
Overall capacity: CY1: 2200pF					

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
L/N before fuse F1		AC	1500	No
L/N to enclosure		AC	3000	No
L/N to output terminal		AC	3000	No
T1 primary to secondary		AC	3000	No
Supplementary information:				

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) ..... :				See below	—
	Power source for EUT: Manufacturer, model/type, output rating ..... :				-	—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Output +,-	S-C	264	30mins	F1	0.001	Unit shutdown, no hazard.
Overload	O-L	264	7hour	F1	0.13	Unit shutdown while the current add to 1.22A,no hazard The max temperature is T1 coil:109℃ T1 core:103℃ Ambient: 25.0℃
D1	S-C	264	1S	F1	0	F1 opened immediately, no hazard
C1	S-C	264	1S	F1	0	F1 opened immediately, no hazard
U1 Pin 3-6	S-C	264	30mins	F1	0.01	Unit shutdown immediately and recoverable, no damaged,no hazard.
U1 Pin 3-8	S-C	264	30mins	F1	0.001	Unit shutdown immediately and recoverable, no damaged,no hazard.
R2	S-C	264	1S	F1	0	F1 opened immediately, no hazard
T1 pin1-2	S-C	264	30mins	F1	0.001	Unit shutdown immediately and recoverable, no damaged,no hazard.
T1 pin3-4	S-C	264	30mins	F1	0.001	Unit shutdown immediately and recoverable, no damaged,no hazard.
T1 pin5-6	S-C	264	30mins	F1	0.001	Unit shutdown immediately and recoverable, no damaged,no hazard.

T1 Output	O-L	264	7hour	F1	0.15	Unit shutdown while the current add to 1.25A,no hazard The max temperature is T1 coil:113℃ T1 core:110.2℃ Ambient: 25.0℃
C5	S-C	264	30mins	F1	0.001	Unit shutdown immediately and recoverable , no damaged,no hazard.
Supplementary information:S-C=short circuit, O-C=open circuit, O-L=over load.						

## ANNEX A:

### Photo-documentation

EUT Photo 1



EUT Photo 2



**EUT Photo 3****EUT Photo 4 : JX130**

**EUT Photo 5 : LD180R****EUT Photo 6 : LD180S**

**\*\*\*\*\* END OF REPORT \*\*\*\*\***