



Shenzhen CTL Electromagnetic Technology Co., Ltd.  
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**TEST REPORT**

**EN 60950-1:2006+A11:2009+A1:2010+A12:2011  
Information technology equipment – Safety –  
Part 1: General requirements**

<b>Report reference No.</b> .....	CTL1307101096-S
Tested by (name + signature) .....	Tony Li <i>Tony Li</i>
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Approved by (name + signature) .....	Tracy Qi <i>Tracy Qi</i>
Date of issue .....	2013-07-18
<b>Testing Laboratory Name</b> .....	<b>Shenzhen CTL Electromagnetic Technology Co., Ltd.</b>
Address .....	Zone B, 4/F, Block 20, Guangqian Industrial Park, Longzhu Road, Nanshan, Shenzhen 518055 China.
<b>Applicant's Name</b> .....	<b>Acrel Co., Ltd.</b>
Address .....	No. 253 YuLv Rd. Jiading District, Shanghai, China
<b>Test specification</b>	
Standard .....	EN 60950-1:2006+A11:2009+A1:2010+ A12:2011
Test procedure .....	CE Attestation
Non-standard test method .....	N/A
<b>Test Report Form No.</b>	IECEN60950_1B
TRF originator.....	SGS Fimko Ltd
Master TRF .....	Dated 2010-04
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<b>This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.</b>	
<b>Test item description</b> .....	Multi-loop monitoring device
Trademark .....	<b>Acrel</b>
Manufacturer.....	Acrel Co., Ltd. No. 253 YuLv Rd. Jiading District, Shanghai, China
Model and/or type reference .....	AMC16MA, AMC16MD, AMC16Z, AMC16K
Ratings.....	230VAC/ 48Vdc, 45-60Hz

**Summary of testing:****Testing location:**

Shenzhen CTL Electromagnetic Technology Co., Ltd.

Zone B, 4/F, Block 20, Guangqian Industrial Park, Longzhu Road, Nanshan, Shenzhen 518055 China.

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

Tests performed (name of test and test clause):

The sample(s) tested complies with the requirements of EN 60950-1.

These tests fulfil the requirements of standard ISO/IEC 17025.

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

Heating test (4.5):

T<sub>ma</sub> = 25 °C (declared by manufacturer)T<sub>amb</sub>: 24.2 °C – 25.4 °C

J-type thermocouple used for temperature measurement.

This test report includes:

Annex 1: Photos.

**Summary of compliance with National Differences:**

Compliance with the National requirements of CENELEC common modification.

**Copy of marking plate:**

AMC16MA

1	2	11	12	13	10	30	31	50	51	CE			
L	N	VA	VB	VC	VN	A1	B1	DO output					
power supply AC		voltage input				RS485 com1							
4	5	6	7	8	9	14	15	16	17	18	19	I1	I36
IA1*	IA1	TB1*	TB1	IC1*	IC1	IA2*	IA2	TB2*	TB2	IC2*	IC2	outlet current input	
inlet current input													
Item:	variable1					Power supply:	variable2						
SN:	number					Date:	date						
In voltage:	variable3					In current: in 5A, out XXXA/20mA							
Class: in 1.0 , out 2.0													
Acrel						ACREL CO., LTD			www.acrel.cn				

<b>Test item particulars</b> .....	
Equipment mobility .....	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input checked="" type="checkbox"/> direct plug-in
Connection to the mains.....	<input type="checkbox"/> pluggable equipment <input checked="" type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input type="checkbox"/> not directly connected to the mains
Operating condition .....	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location .....	<input checked="" type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
Over voltage category (OVC) .....	<input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other: No direct connection with mains.
Mains supply tolerance (%) or absolute mains supply values .....	+6%, -10%
Tested for IT power systems .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V) .....	N/A
Class of equipment .....	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified
Considered current rating (A) .....	--
Pollution degree (PD) .....	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class .....	IP X0
Altitude during operation (m) .....	< 2000 m
Altitude of test laboratory (m) .....	Shenzhen < 2000 m
<b>Possible test case verdicts:</b>	
- 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)
<b>Testing</b> .....	
Date of receipt of test item.....	July 12, 2013
Date(s) of performance of tests.....	July 12, 2013 to July 18, 2013

**General remarks:**

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

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

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

**Note: This TRF includes EN Group Differences together with National Differences and Special National Conditions, if any. All Differences are located in the Appendix to the main body of this TRF.**

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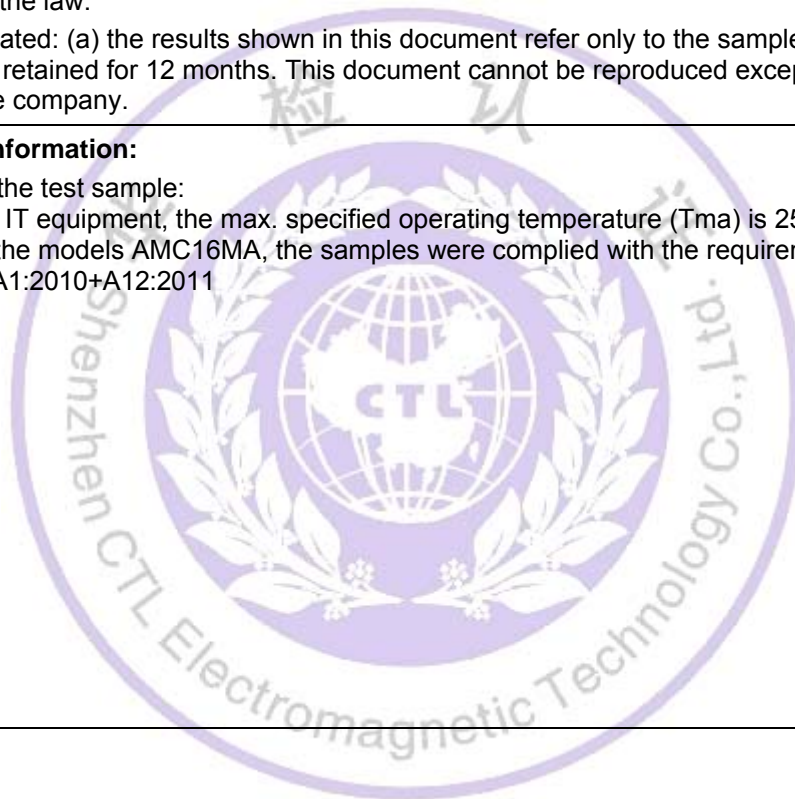
Unless otherwise stated: (a) the results shown in this document refer only to the sample(s) tested and (b) such sample(s) are retained for 12 months. This document cannot be reproduced except in full, without prior approval of the company.

**General product information:**

Brief description of the test sample:

Advertising Bins for IT equipment, the max. specified operating temperature (T<sub>ma</sub>) is 25°C.

Testing applied on the models AMC16MA, the samples were complied with the requirement of EN 60950-1:2006+A11:2009+A1:2010+A12:2011



EN 60950-1			
Clause	Requirement	Remark	Result

<b>1</b>	<b>GENERAL</b>		P
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<b>1.5</b>	<b>Components</b>		P
1.5.1	General		P
	Comply with IEC 60950-1 or relevant component standard	(see appended tables 1.5.1)	P
1.5.2	Evaluation and testing of components	Components that 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		N
1.5.4	Transformers	Transformer is suitable for its intended application and comply with the relevant requirements of the standard and particularly Annex C.	P
1.5.5	Interconnecting cables		P
1.5.6	Capacitors bridging insulation	(See appended table 1.5.1).	P
1.5.7	Resistors bridging insulation	No bridging resistors.	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	TN systems only.	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

<b>1.6</b>	<b>Power interface</b>		P
1.6.1	AC power distribution systems	TN power 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 a hand-held equipment.	N
1.6.4	Neutral conductor		P

EN 60950-1			
Clause	Requirement	Remark	Result

<b>1.7</b>	<b>Marking and instructions</b>		P
1.7.1	Power rating and identification markings		P
1.7.1.1	Power rating marking		P
	Multiple mains supply connections.....:		N
	Rated voltage(s) or voltage range(s) (V) .....	230V	P
	Symbol for nature of supply, for d.c. only .....		P
	Rated frequency or rated frequency range (Hz) ....	45-60Hz	P
	Rated current (mA or A) .....		P
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark .....	Acrel Co.Ltd.	P
	Model identification or type reference .....	AMC16MA, AMC16MD, AMC16Z, AMC16K	P
	Symbol for Class II equipment only .....		P
	Other markings and symbols .....	Additional symbols or marking does not give rise to misunderstanding.	P
1.7.2	Safety instructions and marking	Safety instruction provided.	P
1.7.2.1	General		P
1.7.2.2	Disconnect devices	Plug is intended to serve as the disconnect device	P
1.7.2.3	Overcurrent protective device	Pluggable equipment type A	N
1.7.2.4	IT power distribution systems	For TN system only.	N
1.7.2.5	Operator access with a tool	No operator accessible area which needs to be accessed by the use of a tool.	N
1.7.2.6	Ozone	No ozone produced.	N
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N
1.7.4	Supply voltage adjustment .....	Full range voltage design, no necessary adjustment.	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) .....		P
1.7.7	Wiring terminals		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		N
1.7.7.3	Terminals for d.c. mains supply conductors	No such terminals provided.	N
1.7.8	Controls and indicators		N

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Clause	Requirement	Remark	Result
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 .....		N
1.7.9	Isolation of multiple power sources .....	Single power source.	N
1.7.10	Thermostats and other regulating devices .....	Not used.	N
1.7.11	Durability	After rubbing test there was no damage to the label. The marking on the label did not fade. There was neither curling nor lifting of the label edge.	P
1.7.12	Removable parts	No removable parts provided.	N
1.7.13	Replaceable batteries .....	No battery.	N
	Language(s) .....		—
1.7.14	Equipment for restricted access locations .....	Not limited for use in restricted access locations.	N

<b>2</b>	<b>PROTECTION FROM HAZARDS</b>		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	See below.	P
2.1.1.1	Access to energized parts	No access with test finger and test pin to any parts with only basic insulation to ELV or hazardous voltage. Any hazardous parts accessible are unlikely.	P
	Test by inspection .....		P
	Test with test finger (Figure 2A) .....		P
	Test with test pin (Figure 2B) .....		P
	Test with test probe (Figure 2C) .....	No TNV circuits.	N
2.1.1.2	Battery compartments	No battery compartments	N
2.1.1.3	Access to ELV wiring	No ELV wiring in operator accessible area.	N
	Working voltage ( $V_{peak}$ or $V_{rms}$ ); minimum distance through insulation (mm)	(see appended tables 2.10.2 and 2.10.5)	—
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 tables 2.1.1.5)	P
2.1.1.6	Manual controls	No manual controls	N
2.1.1.7	Discharge of capacitors in equipment		N
	Measured voltage (V); time-constant (s).....		—

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Clause	Requirement	Remark	Result
2.1.1.8	Energy hazards – d.c. mains supply	Equipment is not connected to d.c. 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 .....	See cl. 2.1.1.1 See separate test report IEC/EN 60065	N
2.1.2	Protection in service access areas	No maintenance work in operation mode necessary.	N
2.1.3	Protection in restricted access locations	The unit is not limited to be used in restricted access locations.	N

<b>2.2</b>	<b>SELV circuits</b>		P
2.2.1	General requirements	(see appended table 2.2)	P
2.2.2	Voltages under normal conditions (V) .....	Between any conductor of the SELV circuits 42.4V peak or 60Vd.c. are not exceeded.	P
2.2.3	Voltages under fault conditions (V) .....	Single fault did not cause excessive voltage in accessible SELV circuits. Limits of 71V peak and 120Vd.c. were not exceeded and SELV limits not for longer than 0.2 seconds. Result see appended table 2.2.3	P
2.2.4	Connection of SELV circuits to other circuits .....	See 1.5.7, 2.2.2 and 2.2.3. SELV circuit connected to primary circuit via isolating transformers TR1, and bridging components of CY1.	P

<b>2.3</b>	<b>TNV circuits</b> <i>No TNV circuits.</i>		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



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Clause	Requirement	Remark	Result
	Insulation employed .....		—
2.3.5	Test for operating voltages generated externally		N
<b>2.4</b>	<b>Limited current circuits</b>		N
2.4.1	General requirements	See below.	N
2.4.2	Limit values		N
	Frequency (Hz).....		—
	Measured current (mA) .....		—
	Measured voltage (V) .....		—
	Measured circuit capacitance (nF or $\mu$ F) .....		—
2.4.3	Connection of limited current circuits to other circuits		N
<b>2.5</b>	<b>Limited power sources</b>		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) .....	(see appended table 2.5)	—
	Current rating of overcurrent protective device (A) ..		—
	Use of integrated circuit (IC) current limiters	(See Annex CC)	N
<b>2.6</b>	<b>Provisions for earthing and bonding</b>		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		P
2.6.3.2	Size of protective earthing conductors		P
	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 .....		—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance ( $\Omega$ ), voltage drop (V), test current (A), duration (min) .....		P

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Clause	Requirement	Remark	Result
2.6.3.5	Colour of insulation.....:		P
2.6.4	Terminals		N
2.6.4.1	General		N
2.6.4.2	Protective earthing and bonding terminals		P
	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		P
2.6.5.4	Parts that can be removed by an operator		N
2.6.5.5	Parts removed during 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		P
<b>2.7</b>	<b>Overcurrent and earth fault protection in primary circuits</b>		<b>P</b>
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. A build-in fuse or fusible resistor provided as overcurrent protection device (see 5.3).	P
	Instructions when protection relies on building installation	Not applicable for pluggable equipment type A.	N
2.7.2	Faults not simulated in 5.3.7		P
2.7.3	Short-circuit backup protection	Pluggable equipment type A, the 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 fuse.	P
2.7.5	Protection by several devices	Single fuse only.	N
2.7.6	Warning to service personnel.....:	No service work in operation mode necessary.	N
<b>2.8</b>	<b>Safety interlocks</b> <i>No safety interlock.</i>		<b>N</b>

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Clause	Requirement	Remark	Result
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
	Protection against extreme hazard		N
2.8.5	Moving parts		N
2.8.6	Overriding		N
2.8.7	Switches, relays and their related circuits		N
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) .....		N
2.8.7.2	Overload test		N
2.8.7.3	Endurance test		N
2.8.7.4	Electric strength test	(see appended table 5.2)	N
2.8.8	Mechanical actuators		N

<b>2.9</b>	<b>Electrical insulation</b>		
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) .....	30°C, 95%	—
2.9.3	Grade of insulation	The adequate levels of safety insulation is provided and maintained to comply with the requirements of this standard.	P
2.9.4	Separation from hazardous voltages	SELV output circuit separated from hazardous voltages by double insulation or reinforced insulation	P
	Method(s) used .....	Method 1	—

<b>2.10</b>	<b>Clearances, creepage distances and distances through insulation</b>		P
2.10.1	General	See 2.10.3, 2.10.4, 2.10.5.	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	See cl. 5.3.4	P
2.10.1.4	Intervening unconnected conductive parts	Considered	P
2.10.1.5	Insulation with varying dimensions		N
2.10.1.6	Special separation requirements		N
2.10.1.7	Insulation in circuits generating starting pulses		N
2.10.2	Determination of working voltage	(see appended table 2.10.2)	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 above	P
2.10.2.3	Peak working voltage	See above	P
2.10.3	Clearances	See below, Annex G was not considered.	P
2.10.3.1	General	Annex F and minimum clearances considered.	P
2.10.3.2	Mains transient voltages		P
	a) AC mains supply .....	Cat.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		N
2.10.3.6	Transients from a.c. mains supply .....		N
2.10.3.7	Transients from 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	Clearance lower than normal is not considered	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
2.10.4	Creepage distances	(see appended table 2.10.3 and 2.10.4)	P
2.10.4.1	General		P
2.10.4.2	Material group and comparative tracking index		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)	P
<b>2.10.5</b>	<b>Solid insulation</b>		P

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Clause	Requirement	Remark	Result
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		P
2.10.5.5	Cemented joints		N
2.10.5.6	Thin sheet material – General	Insulation tapes provided which mounted on transformer.	P
2.10.5.7	Separable thin sheet material	Used in transformer	P
	Number of layers (pcs) .....	2 layers wrapped on bottom core and around external transformer 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	(see appended table 2.10.5)	—
2.10.5.10	Thin sheet material – alternative test procedure		P
	Electric strength test	(see appended table 2.10.5)	—
2.10.5.11	Insulation in wound components		P
2.10.5.12	Wire in wound components		P
	Working voltage .....	>71V peak	P
	a) Basic insulation not under stress .....		N
	b) Basic, supplementary, reinforced insulation .....		N
	c) Compliance with Annex U .....	Triple insulated sec. winding wire used.	P
	Two wires in contact inside wound component; angle between 45° and 90° .....	Physical separation in the form of insulating sheet material to relieve mechanical stress at the crossover point.	P
2.10.5.13	Wire with solvent-based enamel in wound components		N
	Electric strength test	(see appended table 2.10.5)	—
	Routine test		N
2.10.5.14	Additional insulation in wound components		N
	Working voltage .....		N
	- Basic insulation not under stress .....		N
	- Supplementary, reinforced insulation .....		N
<b>2.10.6</b>	<b>Construction of printed boards</b>		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		N
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N

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Clause	Requirement	Remark	Result
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
<b>2.10.7</b>	<b>Component external terminations</b>		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	(see appended table 5.2)	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	Photo couplers are approved components. No other components applied for.	P
2.10.12	Enclosed and sealed parts		N

<b>3</b>	<b>WIRING, CONNECTIONS AND SUPPLY</b>		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	All internal wires are PVC insulated, and the cross-section area of which are adequate for the current they are intended to carry. (See appended table 4.5.1)	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	Ends of primary internal wires soldering on the PCB and additional glue. The other ends soldering and hooking in the plug. The length of internal secondary wires was controlled by manufacturer not to reduce clearance and creepage distance when the wires are loosing.	P
3.1.4	Insulation of conductors	(see appended table 5.2)	P
3.1.5	Beads and ceramic insulators	Not used	N
3.1.6	Screws for electrical contact pressure	No screws used.	N
3.1.7	Insulating materials in electrical connections	Contact pressure is not transmitted through insulating material.	N

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Clause	Requirement	Remark	Result
3.1.8	Self-tapping and spaced thread screws	No screws used.	N
3.1.9	Termination of conductors	All conductors are reliably secured. See also CI 3.1.3.	P
	10 N pull test	Complied.	P
3.1.10	Sleeving on wiring		N

<b>3.2</b>	<b>Connection to a mains supply</b>		P
3.2.1	Means of connection		P
3.2.1.1	Connection to an a.c. mains supply		P
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) .....		—
3.2.4	Appliance inlets		N
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		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		N
	Diameter or minor dimension D (mm); test mass (g) .....		—
	Radius of curvature of cord (mm).....		—
3.2.9	Supply wiring space		N

<b>3.3</b>	<b>Wiring terminals for connection of external conductors</b>		N
	<i>No wiring terminals for supply connection.</i>		
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
	Rated current (A), cord/cable type, cross-sectional area (mm <sup>2</sup> ).....		—
3.3.5	Wiring terminal sizes		N

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Clause	Requirement	Remark	Result
	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
<b>3.4</b>	<b>Disconnection from the mains supply</b>		P
3.4.1	General requirement		P
3.4.2	Disconnect devices		P
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N
3.4.4	Parts which remain energized	No parts remain energized after plug removed.	P
3.4.5	Switches in flexible cords	No switch used.	N
3.4.6	Number of poles - single-phase and d.c. equipment		P
3.4.7	Number of poles - three-phase equipment	Single phase.	N
3.4.8	Switches as disconnect devices		N
3.4.9	Plugs as disconnect devices		N
3.4.10	Interconnected equipment	Interconnection to other devices by secondary output only, which comply with SELV and LPS requirements.	N
3.4.11	Multiple power sources		N
<b>3.5</b>	<b>Interconnection of equipment</b>		P
3.5.1	General requirements	See below.	P
3.5.2	Types of interconnection circuits .....	SELV circuits and limited current circuits	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N
3.5.4	Data ports for additional equipment		N
<b>4</b>	<b>PHYSICAL REQUIREMENTS</b>		P
4.1	Stability		N
	Angle of 10°	Direct plug-in type adaptor	N
	Test force (N) .....		N
<b>4.2</b>	<b>Mechanical strength</b>		P
4.2.1	General	See below. After tests, unit complies with the requirements of sub-clauses 2.1.1, and 2.10.	P
	Rack-mounted equipment.	(see Annex DD)	N



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Clause	Requirement	Remark	Result
4.2.2	Steady force test, 10 N	10 N applied to all components other than enclosure.	P
4.2.3	Steady force test, 30 N	No internal enclosure.	N
4.2.4	Steady force test, 250 N	250 N applied to outer enclosure. No energy or other hazards.	P
4.2.5	Impact test		N
	Fall test		N
	Swing test		N
4.2.6	Drop test; height (mm) .....	Drop for four corner of the joint. The adaptor has been subjected to 3 drops from 1 m height on a hard wooden surface.	P
4.2.7	Stress relief test	After the test at temperature of 75° C, no shrinkage, distortion or loosening of any enclosure part was noticeable on the equipment.	P
4.2.8	Cathode ray tubes	No CRT provided.	N
	Picture tube separately certified .....	(see separate test report or attached certificate)	N
4.2.9	High pressure lamps	No high pressure lamps provided.	N
4.2.10	Wall or ceiling mounted equipment; force (N) .....	Not wall or ceiling mounted equipment.	N
4.2.11	Rotating solid media		N
	Test to cover on the door.....		N

<b>4.3</b>	<b>Design and construction</b>		P
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded.	P
4.3.2	Handles and manual controls; force (N).....		N
4.3.3	Adjustable controls	Full range voltage design, no controls provided.	N
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		N
4.3.6	Direct plug-in equipment		N
	Torque .....		—
	Compliance with the relevant mains plug standard .....		N

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Clause	Requirement	Remark	Result
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	No oil or grease provided.	N
4.3.10	Dust, powders, liquids and gases		N
4.3.11	Containers for liquids or gases	No container for liquids or gases provided.	N
4.3.12	Flammable liquids .....	No flammable liquids provided.	N
	Quantity of liquid (l) .....		N
	Flash point (°C) .....		N
4.3.13	Radiation	No radiation.	N
4.3.13.1	General		N
4.3.13.2	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		N
	Part, property, retention after test, flammability classification .....		N
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....		N
4.3.13.5	Lasers (including laser diodes) and LEDs		N
4.3.13.5.1	Lasers (including laser diodes)	(see separate test report of IEC/EN 60825-1 / IEC/EN 60825-2)	N
	Laser class .....		—
4.3.13.5.2	Light emitting diodes (LEDs)		N
4.3.13.6	Other types .....		N
<b>4.4</b>	<b>Protection against hazardous moving parts</b> <i>No hazardous moving parts.</i>		N
4.4.1	General		N
4.4.2	Protection in operator access areas .....		N
	Household and home/office document/media shredders	(see Annex EE)	N

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Clause	Requirement	Remark	Result
4.4.3	Protection in restricted access locations .....		N
4.4.4	Protection 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
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
<b>4.5</b>	<b>Thermal requirements</b>		P
4.5.1	General		P
4.5.2	Temperature tests		P
	Normal load condition per Annex L .....		—
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
<b>4.6</b>	<b>Openings in enclosures</b>		N
	<i>No openings in enclosure.</i>		
4.6.1	Top and side openings		N
	Dimensions (mm) .....		—
4.6.2	Bottoms of fire enclosures		N
	Construction of the bottom, dimensions (mm) ...:		—
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) .....		—
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).....:		—
<b>4.7</b>	<b>Resistance to fire</b>		P
4.7.1	Reducing the risk of ignition and spread of flame		P

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Clause	Requirement	Remark	Result
	Method 1, selection and application of components wiring and materials	(see appended table 4.7)	P
	Method 2, application of all of simulated fault condition tests	(see appended table 5.3)	N
4.7.2	Conditions for a fire enclosure		P
4.7.2.1	Parts requiring a fire enclosure	Fire enclosure used, and it covers all parts.	P
4.7.2.2	Parts not requiring a fire enclosure		N
4.7.3	Materials		P
4.7.3.1	General	PCB rated accordingly. See appended table 1.5.1 for details	P
4.7.3.2	Materials for fire enclosures	V-0.	P
4.7.3.3	Materials for components and other parts outside fire enclosures		N
4.7.3.4	Materials for components and other parts inside fire enclosures	PCB rated V-0. See appended table 1.5.1 for details. Internal components except small parts are V-2 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filters assemblies.	N
4.7.3.6	Materials used in high-voltage components	No high voltage component.	N
<b>5</b>	<b>ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS</b>		<b>P</b>
5.1	<b>Touch current and protective conductor current</b>		P
5.1.1	General	(see appended Table 5.1)	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	Equipment of figure 5A used.	P
5.1.4	Application of measuring instrument	Using measuring instrument in annex D.	P
5.1.5	Test procedure	The touch current was measured from mains to DC output connector and to a 10 cm × 20 cm metal foil wrapped on plastic enclosure.	P
5.1.6	Test measurements	See appended table 5.1.6	P
	Supply voltage (V) .....		—
	Measured touch current (mA) .....		—
	Max. allowed touch current (mA) .....		—
	Measured protective conductor current (mA) .....		—

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Clause	Requirement	Remark	Result
	Max. allowed protective conductor current (mA)....:		—
5.1.7	Equipment with touch current exceeding 3,5 mA	Pluggable equipment type A equipment.	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) .....		—
	Measured touch current (mA) .....		—
	Max. allowed touch current (mA) .....		—
5.1.8.2	Summation of touch currents from telecommunication networks	No TNV circuits.	N
	a) EUT with earthed telecommunication ports .....		N
	b) EUT whose telecommunication ports have no reference to protective earth		N
<b>5.2</b>	<b>Electric strength</b>		P
5.2.1	General	(see appended table 5.2)	P
5.2.2	Test procedure		P
<b>5.3</b>	<b>Abnormal operating and fault conditions</b>		P
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	P
5.3.2	Motors	(see appended Annex B)	N
5.3.3	Transformers	(see appended Annex C)	P
5.3.4	Functional insulation.....	Method c). Test results see appended table 5.3.	P
5.3.5	Electromechanical components	No electromechanical component provided.	N
5.3.6	Audio amplifiers in ITE .....	See separate test report IEC/EN 60065	N
5.3.7	Simulation of faults		P
5.3.8	Unattended equipment	None of the listed components was provided.	N
5.3.9	Compliance criteria for abnormal operating and fault conditions	No fire propagated beyond the equipment. No molten metal was emitted. Electric Strength tests performed after abnormal and fault tests.	P

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Clause	Requirement	Remark	Result
5.3.9.1	During the tests	No fire, emission of molten metal or deformation was noted during the tests.	P
5.3.9.2	After the tests	Electric Strength tests performed after abnormal and fault tests.	P
<b>6</b>	<b>CONNECTION TO TELECOMMUNICATION NETWORKS</b> <i>No connection to telecommunication networks</i>		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	(see appended table 5.2)	N
	Supply voltage (V) .....		—
	Current in the test circuit (mA) .....		—
6.1.2.2	Exclusions .....		N
<b>6.2</b>	<b>Protection of equipment users from overvoltages on telecommunication networks</b>		N
6.2.1	Separation requirements		N
6.2.2	Electric strength test procedure		N
6.2.2.1	Impulse test	(see appended table 5.2)	N
6.2.2.2	Steady-state test	(see appended table 5.2)	N
6.2.2.3	Compliance criteria		N
<b>6.3</b>	<b>Protection of the telecommunication wiring system from overheating</b>		N
	Max. output current (A) .....		—
	Current limiting method .....		—
<b>7</b>	<b>CONNECTION TO CABLE DISTRIBUTION SYSTEMS</b> <i>No connection to cable distribution systems</i>		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	(see appended table 5.2)	N

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Clause	Requirement	Remark	Result
7.4.3	Impulse test	(see appended table 5.2)	N
<b>A</b>	<b>ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE</b> <i>See appended table 1.5.1</i>		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).....		—
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		
A.3.3	Compliance criterion		N

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Clause	Requirement	Remark	Result

<b>B</b>	<b>ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)</b> <i>No motor used.</i>		N
B.1	General requirements		N
	Position .....		—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
B.2	Test conditions		N
B.3	Maximum temperatures	(see appended table 5.3)	N
B.4	Running overload test	(see appended table 5.3)	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
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	(see appended table 5.3)	N
B.9	Test for three-phase motors	(see appended table 5.3)	N
B.10	Test for series motors		N
	Operating voltage (V) .....		—

<b>C</b>	<b>ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)</b>		P
	Position .....		—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
	Method of protection .....		—
C.1	Overload test	(see appended table 5.3)	P



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Clause	Requirement	Remark	Result
C.2	Insulation	(see appended tables 5.2 and C2)	P
	Protection from displacement of windings .....		P
<b>D</b>	<b>ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)</b>		P
D.1	Measuring instrument	Figure D.1 used	P
D.2	Alternative measuring instrument		N
<b>E</b>	<b>ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)</b>		N
<b>F</b>	<b>ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)</b>		P
<b>G</b>	<b>ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES</b>		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
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
<b>H</b>	<b>ANNEX H, IONIZING RADIATION (see 4.3.13)</b>		N

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Clause	Requirement	Remark	Result

<b>J</b>	<b>ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)</b>		P
	Metal(s) used .....		—

<b>K</b>	<b>ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)</b> <i>No thermal control used.</i>		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	(see appended table 5.3)	N

<b>L</b>	<b>ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)</b>		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

<b>M</b>	<b>ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)</b>		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) .....		—
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
<b>N</b>	<b>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)</b>		N
N.1	ITU-T impulse test generators		N
N.2	IEC 60065 impulse test generator		N
<b>P</b>	<b>ANNEX P, NORMATIVE REFERENCES</b>		—
<b>Q</b>	<b>ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)</b>		N
	a) Preferred climatic categories .....		N
	b) Maximum continuous voltage .....		N
	c) Pulse current .....		N
<b>R</b>	<b>ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES</b>		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
<b>S</b>	<b>ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)</b>		N
S.1	Test equipment		N
S.2	Test procedure		N
S.3	Examples of waveforms during impulse testing		N
<b>T</b>	<b>ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)</b>		N
		See separate test report	—
<b>U</b>	<b>ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)</b>		P
		See separate test report	—
<b>V</b>	<b>ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)</b>		P
V.1	Introduction	See below.	P
V.2	TN power distribution systems	TN power considered.	P
<b>W</b>	<b>ANNEX W, SUMMATION OF TOUCH CURRENTS</b>		P
W.1	Touch current from electronic circuits		P
W.1.1	Floating circuits		P
W.1.2	Earthed circuits		N
W.2	Interconnection of several equipments		N

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Clause	Requirement	Remark	Result
W.2.1	Isolation		N
W.2.2	Common return, isolated from earth		N
W.2.3	Common return, connected to protective earth		N
<b>X</b>	<b>ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)</b>		<b>P</b>
X.1	Determination of maximum input current		P
X.2	Overload test procedure		P
<b>Y</b>	<b>ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)</b>		<b>N</b>
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
<b>Z</b>	<b>ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)</b>		<b>P</b>
<b>AA</b>	<b>ANNEX AA, MANDREL TEST (see 2.10.5.8)</b>		<b>N</b>
<b>BB</b>	<b>ANNEX BB, CHANGES IN THE SECOND EDITION</b>		<b>—</b>
<b>CC</b>	<b>ANNEX CC, Evaluation of integrated circuit (IC) current limiters</b>		<b>N</b>
CC.1	General		N
CC.2	Test program 1.....		N
CC.3	Test program 2.....		N
<b>DD</b>	<b>ANNEX DD, Requirements for the mounting means of rack-mounted equipment</b>		<b>N</b>
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
<b>EE</b>	<b>ANNEX EE, Household and home/office document/media shredders</b>		<b>N</b>
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

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Clause	Requirement	Remark	Result
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



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Clause	Requirement	Remark	Result

<b>ATTACHMENT TO TEST REPORT IEC 60950-1</b> <b>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b> Information technology equipment – Safety – PART 1: GENERAL REQUIREMENTS
<b>Differences according to</b> .....: EN 60950-1:2006+A11:2009+A1:2010+A12:2011
<b>Attachment Form No</b> .....: EU_GD_IEC60950_1B_II
<b>Attachment Originator</b> .....: SGS Fimko Ltd
<b>Master Attachment</b> .....: Date (2011-08)
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<b>EN 60950-1:2006/A11:2009/A1:2010/A12:2011 – CENELEC COMMON MODIFICATIONS</b>
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Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions	P																																				
A12:2011	A12 is only covering requirements regarding excessive sound pressure from personal music players (See Zx.1).	P																																				
General	Delete all the “country” notes in the reference document (IEC 60950-1:2005) according to the following list: <table style="width: 100%; border: none;"> <tr> <td>1.4.8 Note 2</td> <td>1.5.1 Note 2 &amp; 3</td> <td>1.5.7.1 Note</td> </tr> <tr> <td>1.5.8 Note 2</td> <td>1.5.9.4 Note</td> <td>1.7.2.1 Note 4, 5 &amp; 6</td> </tr> <tr> <td>2.2.3 Note</td> <td>2.2.4 Note</td> <td>2.3.2 Note</td> </tr> <tr> <td>2.3.2.1 Note 2</td> <td>2.3.4 Note 2</td> <td>2.6.3.3 Note 2 &amp; 3</td> </tr> <tr> <td>2.7.1 Note</td> <td>2.10.3.2 Note 2</td> <td>2.10.5.13 Note 3</td> </tr> <tr> <td>3.2.1.1 Note</td> <td>3.2.4 Note 3</td> <td>2.5.1 Note 2</td> </tr> <tr> <td>4.3.6 Note 1 &amp; 2</td> <td>4.7 Note 4</td> <td>4.7.2.2 Note</td> </tr> <tr> <td>4.7.3.1 Note 2</td> <td>5.1.7.1 Note 3 &amp; 4</td> <td>5.3.7 Note 1</td> </tr> <tr> <td>6 Note 2 &amp; 5</td> <td>6.1.2.1 Note 2</td> <td>6.1.2.2 Note</td> </tr> <tr> <td>6.2.2 Note</td> <td>6.2.2.1 Note 2</td> <td>6.2.2.2 Note</td> </tr> <tr> <td>7.1 Note 3</td> <td>7.2 Note</td> <td>7.3 Note 1 &amp; 2</td> </tr> <tr> <td>G.2.1 Note 2</td> <td>Annex H Note 2</td> <td></td> </tr> </table>	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
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6.2.2.1 Note 2	EE.3 Note																																					

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Clause	Requirement	Remark	Result
1.3.Z1	<p>Add the following subclause:</p> <p>1.3.Z1 Exposure to excessive sound pressure</p> <p>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.</p> <p>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.</p>		N
1.5.1	<p>Add the following NOTE:</p> <p>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC</p>	Considered.	P
1.7.2.1 (A1:2010)	<p>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.</p>		P
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

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Clause	Requirement	Remark	Result						
	<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>								
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	<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 border="0"> <tr> <td>Up to and including 6  </td> <td>0,75<sup>a)</sup>  </td> </tr> <tr> <td>Over 6 up to and including 10  </td> <td>(0,75)<sup>b)</sup> 1,0  </td> </tr> <tr> <td>Over 10 up to and including 16  </td> <td>(1,0)<sup>c)</sup> 1,5  </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								
3.3.4	<p>In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:</p> <table border="0"> <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						
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N						



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Clause	Requirement	Remark	Result
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>	The unit does not emit X-ray radiation.	N
Bibliography	Additional EN standards.		—
<b>ZA</b>	<b>NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS</b>		—
<b>ZB</b>	<b>ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)</b>		—
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	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	In <b>Finland, 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, 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
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 Finland: "Laitte on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p>		N

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Clause	Requirement	Remark	Result
	<p>In Norway: "Apparatet må tilkoples jordet stikkontakt" In Sweden: "Apparaten skall anslutas till jordat uttag" 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 Projector 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: "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> <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>		N
	<p>Translation to Norwegian (the Swedish text will also be accepted in Norway): "Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplede utstyr – og er tilkoplede 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: "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

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Clause	Requirement	Remark	Result
1.7.5	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 CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		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
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

EN 60950-1			
Clause	Requirement	Remark	Result
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	<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>		N
	<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

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Clause	Requirement	Remark	Result
3.2.1.1	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.		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
3.3.4	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: • 1,25 mm <sup>2</sup> to 1,5 mm <sup>2</sup> nominal cross-sectional area.		N
4.3.6	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.		N
4.3.6	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.		N

EN 60950-1			
Clause	Requirement	Remark	Result
5.1.7.1	<p>In <b>Finland, Norway and 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 <ul style="list-style-type: none"> <li>○ 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> </ul> </li> <li>• STATIONARY PLUGGABLE EQUIPMENT TYPE B;</li> <li>• STATIONARY PERMANENTLY CONNECTED EQUIPMENT.</li> </ul>		N
6.1.2.1	<p>In <b>Finland, Norway and 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> </ul>		N
6.1.2.1	<ul style="list-style-type: none"> <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>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</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 2.10.10 shall be performed using 1,5 kV), and</li> <li>- is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.</li> </ul>		N

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Clause	Requirement	Remark	Result
6.1.2.1	<p>It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 132400:1994, 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 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;</li> <li>- the additional testing shall be performed on all the test specimens as described in EN 132400;</li> <li>- 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.</li> </ul>		N
6.1.2.2	<p>In <b>Finland, Norway</b> and <b>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</b> and <b>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	<p>In <b>Norway</b> and <b>Sweden</b>, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.</p>		N
7.3	<p>In <b>Norway</b>, for installation conditions see EN 60728-11:2005.</p>		N

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Clause	Requirement	Remark	Result

1.5.1	TABLE: List of critical components				
Object/part No.	Manufacturer/trademark	Type/model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
PWB	Various	Various	V-0 or better, minimum 130°C.	UL 796	UL
Input wire	Various	Various	Min. 80 °C, 300V, VW-1, 22AWG	--	UL

Supplementary information:  
<sup>1)</sup> Provided evidence ensures the agreed level of compliance.

2.1.1.5 c) 1)	TABLE: max. V, A, VA test					N
Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)		
--	--	--	--	--		

Note: Input voltage: AC--V/--Hz.

2.1.1.5 c) 2)	TABLE: stored energy			N
Capacitance C (µF)	Voltage U (V)		Energy E (J)	
--	--		--	
--	--		--	

supplementary information:

2.1.1.7	TABLE: discharge test				N
Condition	$\tau$ Calculated (s)	$\tau$ Measured (s)	$t_{u \rightarrow 0V}$	Comments	
L-N	--	--	--	--	

Notes: supply with --V/--Hz  
 $C1 = \text{--}\mu\text{F}$ ,  $R1 = \text{--}M\Omega$

2.2.2	TABLE: Hazardous voltage measurement				N
Transformer	Location	max. Voltage		Voltage Limitation Component	
		V peak	V d.c.		
--	--	--	--	--	

Note: Input voltage: --VAC/--Hz. No load.

2.2.3	TABLE: SELV voltage measurement			N
-------	---------------------------------	--	--	---



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Clause	Requirement	Remark	Result

Location	Voltage measured (V)	Comments
Output + and –	--	--
Output + and -	--	--

Note: input voltage: 240Vac/50Hz

2.4.2	TABLE: limited current circuit measurement					P
Location	Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	Comments	
Y-cap. secondary pin to neutral	6.8	3.4	60.08	42.1	The peak drop voltage was measured with a oscilloscope at a 2k $\Omega$ non-inductive resistor.	

Notes:  
Input voltage: AC 264V/50Hz, Y-cap.=2200pF

2.5	TABLE: limited power sources				N
Circuit output tested:					
Measured Uoc (V) with all load circuits disconnected: --					
		I <sub>sc</sub> (A)		VA	
		Meas.	Limit	Meas.	Limit
Normal condition		--	8	--	100
Single fault: ..... Sec. diode Sc		--	8	--	100
supplementary information:					
Sc=Short circuit, Oc=Open circuit					

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)	
Line and Neutral(before Fuse) (BI)	420	250	2.0	2.8	2.5	2.8	
Different polarity of F1 (BI)	420	250	2.0	3.0	2.5	3.0	
Primary trace of L/N outside of enclosure (RI)	420	250	4.0	7.3	5.0	7.3	
Primary trace to secondary trace under transformer (RI)	480	226	4.4	7.6	5.0	7.6	
Primary winding of transformer to secondary cap. (10N applied) (RI)	480	226	4.4	6.6	5.0	6.6	
Primary winding to secondary winding of transformer (RI)	480	226	4.4	>10.0	5.0	>10.0	
Supplementary information: --							

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Clause	Requirement	Remark	Result

4.3.8	TABLE: Batteries								N
The tests of 4.3.8 are applicable only when appropriate battery data is not available									
Is it possible to install the battery in a reverse polarity position?									
	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:									
- Chemical leaks									
- Explosion of the battery									
- Emission of flame or expulsion of molten metal									
- Electric strength tests of equipment after completion of tests									
Supplementary information:									
Verdict									

4.5	TABLE: maximum temperatures					P
test voltage (V~).....:	243.8V/60 Hz	--	--	--	--	---
t <sub>amb1</sub> (°C) .....	--	--	--	--	--	---
t <sub>amb2</sub> (°C) .....	--	--	--	--	--	---
maximum temperature T of part/at::	T (°C)				allowed T <sub>max</sub> (°C)	
Location	Horizontal	Vertical	Horizontal	Vertical		
Input wire	42.9		--	--	80	
PCB near bridge diode	46.1		--	--	130	
Enclosure inside near transformer	52.7		--	--	Ref.	
Enclosure outside near transformer	46.1		--	--	81	
Ambient	25.8		--	--	--	
temperature T of winding:	R <sub>1</sub> (Ω)	R <sub>2</sub> (Ω)	T (°C)	allowed T <sub>max</sub> (°C)	insulation class	
--	--	--	--	--	--	

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Clause	Requirement	Remark	Result

temperature T of winding:	R <sub>1</sub> (Ω)	R <sub>2</sub> (Ω)	T (°C)	allowed T <sub>max</sub> (°C)	insulation class
Supplementary information: Max. operation ambient is considered as 25°C.					

4.5.2	TABLE: ball pressure test of thermoplastic parts			<b>P</b>
	allowed impression diameter (mm)	:	≤ 2 mm	—
Part			Test temperature (°C)	Impression diameter (mm)
Plastic enclosure			125	1.1
Note: transformer bobbin material is phenolic, no test required.				

4.7	TABLE: Resistance to fire				<b>P</b>
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
Outer plastic enclosure	See appended table 1.5.1	See appended table 1.5.1	Min. 2.0	V-0	UL
--	--	--	--	--	--
Supplementary information: plastic enclosure approved with UL mark, classification: V-0					

5.1	TABLE: touch current measurement			<b>P</b>
Condition	L → terminal A (mA)	N → terminal A (mA)	Limit (mA)	Comments
Normal	0.03	0.03	0.25	To output terminal
Normal	0.005	0.005	0.25	To enclosure (with metal foil)
Notes: Input voltage: 264Vac Input frequency: 60Hz				

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests		<b>P</b>
Test voltage applied between:		Test voltage (V)	Breakdown
Line and neutral after fuse disconnected (BI)		AC 1500	No
Input and output (RI)		AC 3000	No
Input and enclosure wrapped with metal foil (RI)		AC 3000	No
Note: Test voltage a.c. / d.c.			

5.3	TABLE: Fault condition tests		<b>P</b>
	ambient temperature (°C) .....	See below	—
	model/type of power supply .....	--	—

EN 60950-1							
Clause	Requirement					Remark	Result
	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	Bridge diode	s-c	240	1s	F1	0	Fuse (F1) opened immediately, D2, D3, D4 damage. No hazard.
2	E-cap.	s-c	240	1s	F1	0	Fuse (F1) opened immediately, D1, D2, damage. No hazard.
Supplementary information							
Notes: The unit passed 3000V hi-pot test between primary and accessible output connector after single fault test above.							
1, s-c = short-circuited. o-c = open-circuited. o-l=overloaded.							
2, For transformer winding overload, each winding was individually loaded after the rectifier.							
3, Transformer winding: limit temperature is 150°C (175-10-(40-25))							

-----End of the report-----

