

**ACREL CO.,LTD.****CE LVD REPORT**

Prepared For :	ACREL CO.,LTD. No.253, Yulv Road, Jiading District, Shanghai China
Product Name:	AC SMART POWER ANALYZERS
Main Test Model :	ACREL
Additional Model	PZ80L-E4/HKZC, PZ80L-E4/K1C, PZ80L-E4/P2C, PZ80L-E4/K2P1C; PZ72(L)-P3/*;PZ72(L)-P4/*;PZ72(L)-E3/*;PZ72(L)-E4/*; PZ80(L)-P3/*;PZ80(L)-P4/*;PZ80(L)-E3/*;PZ80(L)-E4/*; PZ96(L)-P3/*;PZ96(L)-P4/*;PZ96(L)-E3/*;PZ96(L)-E4/*; PZ42(L)-P3/*;PZ42(L)-P4/*;PZ42(L)-E3/*;PZ42(L)-E4/* (* indicates K, M, C, MD,KC,MC)
Prepared By :	BST Technology(Shenzhen)Co., Ltd No.7,New Era Industrial Zone, Guantian, Bao'an District, Shenzhen, Guangdong, China
Test Date:	Jun 01-10, 2019
Date of Report :	Jun 10, 2019
Report No.:	BSTXD1906116974053SR



LVD Report EN 60950-1 Information technology equipment - Safety - Part 1: General requirements	
Testing laboratory	: BST Technology(Shenzhen)Co., Ltd
Address	: No.7,New Era Industrial Zone, Guantian, Bao'an District, Shenzhen, Guangdong, China
Testing location	: BST Technology(Shenzhen)Co., Ltd
Applicant	: ACREL CO.,LTD.
Address	: No.253, Yulv Road, Jiading District, Shanghai China
Standard	: EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013
Procedure deviation	: N/A.
Non-standard test method	: N/A.
Type of test object	: AC SMART POWER ANALYZERS
Trademark	: N/A.
Model/type reference	: ACREL
Rating	: AC380V, 5A
Manufacturer	: JIANGSU ACREL ELECTRIC MFG. CO., LTD.
Address	: No.5, Dongmeng Road, Nanzha Street, Jiangyin City Jiangsu Province, China
Test item particulars :	
Equipment mobility	: Desktop
Operation condition	: Continuous
Class of equipment	: Class II
Protection against ingress of water ..	: N/A.

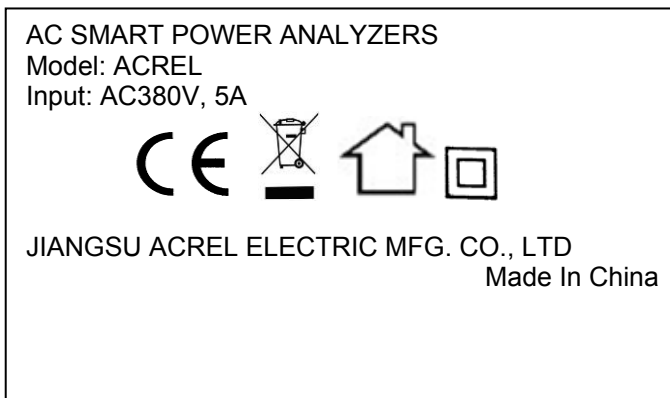
Possible test case verdicts :

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



<p>General remarks:</p> <p>"(see remark #)" refers to a remark appended to the report.</p> <p>"(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p> <p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced except in full without the written approval of the testing laboratory.</p>	<p>Attached with:</p> <p>A. photo documentation</p>
<p>1.</p>	

Artwork of Marking Labe



Jade Zhan

Prepared by :

Engineer

Jacky Zhang

Reviewer :

Approved & Authorized Signer :



Manager



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5	Components		P
1.5.1	General		N
	Comply with IEC 60950-1 or relevant component standard		N
1.5.2	Evaluation and testing of components		P
1.5.3	Thermal controls	No such part	N
1.5.4	Transformers	Safety isolation transformer	P
1.5.5	Interconnecting cables	No the cables	N
1.5.6	Capacitors bridging insulation	Approved Y capacitor provided(see appended table 1.5.1)	P
1.5.7	Resistors bridging insulation	No such part	N
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	No such part	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	Not for IT power systems	N
1.5.9	Surge suppressors		N
1.5.9.1	General		N
1.5.9.2	Protection of VDRs	No VDRs used	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, TT power system	P
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	Not hand-held equipment	N
1.6.4	Neutral conductor		P
1.7	Marking and instructions		P



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.1	Power rating and identification markings		P
1.7.1.1	Power rating marking	See below	P
	Multiple mains supply connections.....:	Only one AC mains supply connection	N
	Rated voltage(s) or voltage range(s) (V)	380V~	P
	Symbol for nature of supply, for d.c. only		N
	Rated frequency or rated frequency range (Hz) ...:		P
	Rated current (mA or A)	5mA	P
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark		P
	Model identification or type reference		P
	Symbol for Class II equipment only	<input type="checkbox"/>	P
	Other markings and symbols	Symbols are used according to IEC 60417-1	P
1.7.2	Safety instructions and marking	See the user manual	P
1.7.2.1	General		P
1.7.2.2	Disconnect devices	PLUGGABLE EQUIPMENT	P
1.7.2.3	Overcurrent protective device		N
1.7.2.4	IT power distribution systems		N
1.7.2.5	Operator access with a tool	No such areas	N
1.2.7.6	Ozone	No such parts	N
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N
1.7.4	Supply voltage adjustment	No such devices used	N
	Methods and means of adjustment; reference to installation instructions		N
1.7.5	Power outlets on the equipment	No such devices used	N
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	T3.15A/250V are marked adjacent to the main fuse	P
1.7.7	Wiring terminals	No such part	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	PLUGGABLE EQUIPMENT	N
1.7.7.3	Terminals for d.c. mains supply conductors		N



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.8	Controls and indicators	No such parts	N
1.7.8.1	Identification, location and marking		N
1.7.8.2	Colours		N
1.7.8.3	Symbols according to IEC 60417	No such symbols	N
1.7.8.4	Markings using figures	No figures are used.	N
1.7.9	Isolation of multiple power sources		N
1.7.10	Thermostats and other regulating devices		N
1.7.11	Durability	After test, the label is legible, no curling, no possible to remove marking plates easily.	P
1.7.12	Removable parts	No removable parts	N
1.7.13	Replaceable batteries	No battery used	N
	Language(s)		—
1.7.14	Equipment for restricted access locations.....	No such access location	N

2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	No hazardous parts in operator access areas	P
2.1.1.1	Access to energized parts	Energized parts are not accessible.	P
	Test by inspection	The concerned hazardous parts are not accessible	P
	Test with test finger (Figure 2A)	The concerned hazardous parts are not accessible	P
	Test with test pin (Figure 2B)	Hazards live parts are not accessible	P
	Test with test probe (Figure 2C)	No TNV circuit within the EUT	N
2.1.1.2	Battery compartments	No battery used	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)		—
2.1.1.4	Access to hazardous voltage circuit wiring		N



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.1.1.5	Energy hazards		N
2.1.1.6	Manual controls	No such part	N
2.1.1.7	Discharge of capacitors in equipment	No such devices	N
	Measured voltage (V); time-constant (s).....		—
2.1.1.8	Energy hazards – d.c. mains supply		N
	a) Capacitor connected to the d.c. mains supply ...		—
	b) Internal battery connected to the d.c. mains supply		—
2.1.1.9	Audio amplifiers	No such parts	N
2.1.2	Protection in service access areas		P
2.1.3	Protection in restricted access locations	The equipment is not intended to be used in restricted locations	N

2.2	SELV circuits		P
2.2.1	General requirements	The sec. circuit were tseted as SELV. See 2.2.2 to 2.2.4	P
2.2.2	Voltages under normal conditions (V)	Between any conductors of the SELV circuits 42.4V peak or 60V d.c. are not exceeded.(See appended table 2.2.2)	P
2.2.3	Voltages under fault conditions (V)		P
2.2.4	Connection of SELV circuits to other circuits		P

2.3	TNV circuits		N
2.3.1	Limits	No TNV circuits	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



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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	Measuring instrument of Figure D.2 used	P
2.4.2	Limit values	0.7mA peak	
	Frequency (Hz).....	--	—
	Measured current (mA)	0.14mA peak	—
	Measured voltage (V).....	--	—
	Measured circuit capacitance (nF or μF)	CY1: max. 2200pF	—
2.4.3	Connection of limited current circuits to other circuits		P
2.5	Limited power sources		P
	a) Inherently limited output	No such output	N
	b) Impedance limited output	No such 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. (See appended table 2.5)	P
	d) Overcurrent protective device limited output	No such device	N
	Max. output voltage (V), max. output current (A), max. apparent power (VA)		—
	Current rating of overcurrent protective device (A) .:		—
	Use of integrated circuit (IC) current limiters		—
2.6	Provisions for earthing and bonding		N
2.6.1	Protective earthing	Class II equipment	N
2.6.2	Functional earthing		N



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Clause	Requirement + Test	Result - Remark	Verdict
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 (mm ²), AWG		—
2.6.3.3	Size of protective bonding conductors		N
	Rated current (A), cross-sectional area (mm ²), AWG		—
	Protective current rating (A), cross-sectional area (mm ²), AWG		—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), 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		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		N
2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	Integral part of equipment	P



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Clause	Requirement + Test	Result - Remark	Verdict
	Instructions when protection relies on building installation		N
2.7.2	Faults not simulated in 5.3.7		N
2.7.3	Short-circuit backup protection		N
2.7.4	Number and location of protective devices	One fusible resistor (F1) is located in the line pole of primary circuit	P
2.7.5	Protection by several devices	Only one protection devie	N
2.7.6	Warning to service personnel.....	No such design	N

2.8	Safety interlocks		N
2.8.1	General principles	No such device	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		N
2.8.8	Mechanical actuators		N

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Neither natural rubber, Asbestos or hygroscopic materials are used.	P
2.9.2	Humidity conditioning	The tropical climate was considered and complied	P
	Relative humidity (%), temperature (°C)	93% R.H 28°C 48Hrs	—
2.9.3	Grade of insulation	double insulation and reinforced insulation	P



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.9.4	Separation from hazardous voltages	double insulation and reinforced insulation	P
	Method(s) used	Method 1	—

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General		P
2.10.1.1	Frequency	The frequency does not exceed 100 k Hz	P
2.10.1.2	Pollution degrees	Pollution degrees 2	P
2.10.1.3	Reduced values for functional insulation		P
2.10.1.4	Intervening unconnected conductive parts	No such device	N
2.10.1.5	Insulation with varying dimensions	Not applicable	N
2.10.1.6	Special separation requirements	No TNV circuit	N
2.10.1.7	Insulation in circuits generating starting pulses		N
2.10.2	Determination of working voltage		P
2.10.2.1	General	The rms and the peak voltage were measured with unit connected to a 240V TN power system. Pollution Degree 2 and Overvoltage Category II considered.	P
2.10.2.2	RMS working voltage	See appened table 2.10.2	P
2.10.2.3	Peak working voltage	See appened table 2.10.2	P
2.10.3	Clearances	See appened table 2.10.3 and 2.10.4	P
2.10.3.1	General		P
2.10.3.2	Mains transient voltages		P
	a) AC mains supply	2500V peak	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 appened table 2.10.3 and 2.10.4	P
2.10.3.4	Clearances in secondary circuits		N



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Clause	Requirement + Test	Result - Remark	Verdict
2.10.3.5	Clearances in circuits having starting pulses	No such device	N
2.10.3.6	Transients from a.c. mains supply	2500V peak	P
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		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		P
2.10.4.1	General		P
2.10.4.2	Material group and comparative tracking index		P
	CTI tests		N
2.10.4.3	Minimum creepage distances	See appened table 2.10.3 and 2.10.4	P
2.10.5	Solid insulation		P
2.10.5.1	General	See below	P
2.10.5.2	Distances through insulation	See appened table 2.10.5	P
2.10.5.3	Insulating compound as solid insulation	No insulation compound	N
2.10.5.4	Semiconductor devices	No such device	N
2.10.5.5.	Cemented joints	No such device	N
2.10.5.6	Thin sheet material – General	Insulation tape provided reinforced insulation on the core of transformer	P
2.10.5.7	Separable thin sheet material	See appened table 2.10.5	P
	Number of layers (pcs)	See appened table 2.10.5	—
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 appened table 2.10.5	—
2.10.5.10	Thin sheet material – alternative test procedure		P
	Electric strength test	See appened table 2.10.5	—
2.10.5.11	Insulation in wound components	See Annex U	P



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Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.12	Wire in wound components	Approved triple insulated wire for T1 secondary winding	P
	Working voltage	See appended table 2.10.2	P
	a) Basic insulation not under stress		N
	b) Basic, supplementary, reinforced insulation		N
	c) Compliance with Annex U		P
	Two wires in contact inside wound component; angle between 45° and 90°	Physical separation in the form of insulating sleeving provided to relieve mechanical stress at the crossover point	P
2.10.5.13	Wire with solvent-based enamel in wound components	No such device	N
	Electric strength test		N
	Routine test		—
2.10.5.14	Additional insulation in wound components		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		N
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N
2.10.6.4	Insulation between conductors on different layers of a printed board		N
	Distance through insulation		N
	Number of insulation layers (pcs).....		N
2.10.7	Component external terminations	No such device	N
2.10.8	Tests on coated printed boards and coated components	No such device	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



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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	No such device	N
2.10.12	Enclosed and sealed parts		N
3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and overcurrent protection		P
3.1.2	Protection against mechanical damage		P
3.1.3	Securing of internal wiring		N
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	Not used	N
3.1.6	Screws for electrical contact pressure	No such part	N
3.1.7	Insulating materials in electrical connections	No such material	N
3.1.8	Self-tapping and spaced thread screws	No such components used	N
3.1.9	Termination of conductors	All conductors are reliably secured (hooked or fixed by glue after soldering through hole)	P
	10 N pull test	Considered	P
3.1.10	Sleeving on wiring	No such device	N
3.2	Connection to a mains supply		P
3.2.1	Means of connection	Direct plug-in appliance	P
3.2.1.1	Connection to an a.c. mains supply	Approved EU plug provided	P
3.2.1.2	Connection to a d.c. mains supply		N
3.2.2	Multiple supply connections	Only one supply connection for the EUT	N
3.2.3	Permanently connected equipment	Not such type	N
	Number of conductors, diameter of cable and conduits (mm)		—



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.4	Appliance inlets	No such device	N
3.2.5	USB CHARGER cords	No such device	N
3.2.5.1	AC USB CHARGER cords		N
	Type		—
	Rated current (A), cross-sectional area (mm ²), AWG		—
3.2.5.2	DC USB CHARGER cords		N
3.2.6	Cord anchorages and strain relief	No such cord	N
	Mass of equipment (kg), pull (N)		—
	Longitudinal displacement (mm)		—
3.2.7	Protection against mechanical damage		N
3.2.8	Cord guards	No such device	N
	Diameter or minor dimension D (mm); test mass (g)		—
	Radius of curvature of cord (mm)		—
3.2.9	Supply wiring space	No such device	N
3.3	Wiring terminals for connection of external conductors		N
3.3.1	Wiring terminals	No such device	N
3.3.2	Connection of non-detachable USB CHARGER 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 ²)		—
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
3.4	Disconnection from the mains supply		P
3.4.1	General requirement		P



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.4.2	Disconnect devices	EU plug	P
3.4.3	Permanently connected equipment		N
3.4.4	Parts which remain energized		N
3.4.5	Switches in flexible cords		N
3.4.6	Number of poles - single-phase and d.c. equipment		N
3.4.7	Number of poles - three-phase equipment		N
3.4.8	Switches as disconnect devices		N
3.4.9	Plugs as disconnect devices		P
3.4.10	Interconnected equipment		N
3.4.11	Multiple power sources	Only one supply source	N
3.5	Interconnection of equipment		P
3.5.1	General requirements		P
3.5.2	Types of interconnection circuits	SELV to SELV	P
3.5.3	ELV circuits as interconnection circuits	No ELV circuits	N
3.5.4	Data ports for additional equipment	No such device	N
4	PHYSICAL REQUIREMENTS		P
4.1	Stability		N
	Angle of 10°	< 7kg	N
	Test force (N)		N
4.2	Mechanical strength		P
4.2.1	General		P
	Rack-mounted equipment.	The EUT is not such type equipment	N
4.2.2	Steady force test, 10 N	The EUT is still complying with relevant requirement of this standard	P
4.2.3	Steady force test, 30 N		N
4.2.4	Steady force test, 250 N	The EUT is still complying with relevant requirement of this standard	P



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.2.5	Impact test	The EUT is still complying with relevant requirement of this standard	P
	Fall test	The EUT is still complying with relevant requirement of this standard	P
	Swing test		N
4.2.6	Drop test; height (mm)	1000mm The EUT is still complying with relevant requirement of this standard	P
4.2.7	Stress relief test	85DegC 7h	P
4.2.8	Cathode ray tubes		N
	Picture tube separately certified		N
4.2.9	High pressure lamps	No such part	N
4.2.10	Wall or ceiling mounted equipment; force (N)	No such part	N

4.3	Design and construction		P
4.3.1	Edges and corners	Enclosure is smooth	P
4.3.2	Handles and manual controls; force (N)		N
4.3.3	Adjustable controls	No such device	N
4.3.4	Securing of parts	Enclosure fixed by ultrasonic-wave welding	N
4.3.5	Connection by plugs and sockets		P
4.3.6	Direct plug-in equipment		P
	Torque		P
	Compliance with the relevant mains plug standard	EU plug complying with EN 50075	P
4.3.7	Heating elements in earthed equipment	No such device	N
4.3.8	Batteries	No battery used	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



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.9	Oil and grease	No such material used	N
4.3.10	Dust, powders, liquids and gases		N
4.3.11	Containers for liquids or gases	No such device	N
4.3.12	Flammable liquids	No such material used	N
	Quantity of liquid (l)		N
	Flash point (°C)		N
4.3.13	Radiation	No such device	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)		N
	Laser class		—
4.3.13.5.2	Light emitting diodes (LEDs)	No such part	N
4.3.13.6	Other types	No such part	N
4.4	Protection against hazardous moving parts		N
4.4.1	General	No hazardous moving parts with the equipment	N
4.4.2	Protection in operator access areas		N
	Household and home/office document/media shredders		N
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



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Clause	Requirement + Test	Result - Remark	Verdict
	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

4.5	Thermal requirements		P
4.5.1	General		P
4.5.2	Temperature tests		P
	Normal load condition per Annex L	Operated in the most unfavorable way of operation given in the operating instructions until steady conditions established	P
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 within the EUT	N
	Dimensions (mm)		—
4.6.2	Bottoms of fire enclosures	No openings within the EUT	N
	Construction of the bottom, dimensions (mm) ...:		—
4.6.3	Doors or covers in fire enclosures	No such doors and covers	N
4.6.4	Openings in transportable equipment	No 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	No adhesive used	N
	Conditioning temperature (°C), time (weeks).....:		—



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Clause	Requirement + Test	Result - Remark	Verdict
4.7	Resistance to fire		N
4.7.1	Reducing the risk of ignition and spread of flame		N
	Method 1, selection and application of components wiring and materials		N
	Method 2, application of all of simulated fault condition tests		N
4.7.2	Conditions for a fire enclosure		N
4.7.2.1	Parts requiring a fire enclosure		N
4.7.2.2	Parts not requiring a fire enclosure		N
4.7.3	Materials		P
4.7.3.1	General		P
4.7.3.2	Materials for fire enclosures		N
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-1 or better, see appended table 1.5.1 for details.	P
4.7.3.5	Materials for air filter assemblies	No air filter assemblies	N
4.7.3.6	Materials used in high-voltage components	No high-voltage components used	N
5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		P
5.1.1	General	See appended table 5.1	P
5.1.2	Configuration of equipment under test (EUT)	EUT designed for connection to only one power source	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	Single connection to a.c. mains supply	N
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply	Single connection to a.c. mains supply	N
5.1.3	Test circuit	Test circuit as in figure 5A is used	P
5.1.4	Application of measuring instrument	Measuring instrument as in annex D.1 is used	P
5.1.5	Test procedure		P



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.6	Test measurements		P
	Supply voltage (V)	AC 264V, 60Hz	—
	Measured touch current (mA)	See appended table 5.1	—
	Max. allowed touch current (mA)	0.25	—
	Measured protective conductor current (mA)		—
	Max. allowed protective conductor current (mA)....		—
5.1.7	Equipment with touch current exceeding 3,5 mA	Class II 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 such network used	N
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system	No TNV circuit within the equipment	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 circuit within the equipment	N
	a) EUT with earthed telecommunication ports		—
	b) EUT whose telecommunication ports have no reference to protective earth		—
5.2	Electric strength		P
5.2.1	General	See appended table 5.2	P
5.2.2	Test procedure		P
5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	See appended table 5.3	P
5.3.2	Motors	No such device	N
5.3.3	Transformers	See appended Annex C	P
5.3.4	Functional insulation.....	Methods a), b) and c)	P



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.5	Electromechanical components	No such components	N
5.3.6	Audio amplifiers in ITE	No such device	N
5.3.7	Simulation of faults	See appended table 5.3	P
5.3.8	Unattended equipment	No such components	N
5.3.9	Compliance criteria for abnormal operating and fault conditions	See appended table 5.3	P
5.3.9.1	During the tests		P
5.3.9.2	After the tests		P
6	CONNECTION TO TELECOMMUNICATION NETWORKS		N
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N
6.1.1	Protection from hazardous voltages		N
6.1.2	Separation of the telecommunication network from earth		N
6.1.2.1	Requirements	No such networks	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	No such systems	N



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Clause	Requirement + Test	Result - Remark	Verdict
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N
7.3	Protection of equipment users from overvoltages on the cable distribution system		N
7.4	Insulation between primary circuits and cable distribution systems		N
7.4.1	General		N
7.4.2	Voltage surge test		N
7.4.3	Impulse test		N



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		P
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)	The EUT is not such equipment	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).....		—



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Clause	Requirement + Test	Result - Remark	Verdict
	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	No such device within EUT	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
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



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Clause	Requirement + Test	Result - Remark	Verdict
B.10	Test for series motors		N
	Operating voltage (V)		—
C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position	T1	—
	Manufacturer	See appended table 1.5.1	—
	Type	See appended table 1.5.1	—
	Rated values	Class F	—
	Method of protection	With external overcurrent 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	Bobbin and insulation tape used for fixing	P
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		P
D.1	Measuring instrument	Figure D.1 used	P
D.2	Alternative measuring instrument		N
E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N
F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		P
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N
G.1	Clearances		N
G.1.1	General		N
G.1.2	Summary of the procedure for determining minimum clearances		N
G.2	Determination of mains transient voltage (V)		N
G.2.1	AC mains supply		N
G.2.2	Earthed d.c. mains supplies		N
G.2.3	Unearthed d.c. mains supplies		N



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Clause	Requirement + Test	Result - Remark	Verdict
G.2.4	Battery operation		N
G.3	Determination of telecommunication network transient voltage (V)		N
G.4	Determination of required withstand voltage (V)		N
G.4.1	Mains transients and internal repetitive peaks		N
G.4.2	Transients from telecommunication networks		N
G.4.3	Combination of transients		N
G.4.4	Transients from cable distribution systems		N
G.5	Measurement of transient voltages (V)		P
	a) Transients from a mains supply		P
	For an a.c. mains supply		P
	For a d.c. mains supply		N
	b) Transients from a telecommunication network		N
G.6	Determination of minimum clearances		P
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
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



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Clause	Requirement + Test	Result - Remark	Verdict
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	Maximum normal operation	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

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		N
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Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		N
	a) Preferred climatic categories		—
	b) Maximum continuous voltage		—
	c) Pulse current		—



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Clause	Requirement + Test	Result - Remark	Verdict
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
	Protection against ingress of water	IPX0	—
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		P
		Approved triple insulated wire provided	—
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		P
V.1	Introduction	See below	P
V.2	TN power distribution systems	TN power considered	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



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		P
X.1	Determination of maximum input current		P
X.2	Overload test procedure		P
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		N
Y.1	Test apparatus		N
Y.2	Mounting of test samples		N
Y.3	Carbon-arc light-exposure apparatus		N
Y.4	Xenon-arc light exposure apparatus		N
Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		N
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N
BB	ANNEX BB, CHANGES IN THE SECOND EDITION		N
CC	ANNEX CC, Evaluation of integrated circuit (IC) current limiters		N
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



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



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

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			
Attachment Form No. : EU_GD_IEC60950_1C_II			
Attachment Originator : SGS Fimko Ltd			
Master Attachment : Date 2011-08			
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EN 60950-1:2006/A11:2009/A1:2010/A12:2011 – CENELEC COMMON MODIFICATIONS

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
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
General	Delete all the “country” notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2 1.5.1 Note 2 & 3 1.5.7.1 Note 1.5.8 Note 2 1.5.9.4 Note 1.7.2.1 Note 4, 5 & 6 2.2.3 Note 2.2.4 Note 2.3.2 Note 2.3.2.1 Note 2 2.3.4 Note 2 2.6.3.3 Note 2 & 3 2.7.1 Note 2.10.3.2 Note 2 2.10.5.13 Note 3 3.2.1.1 Note 3.2.4 Note 3 2.5.1 Note 2 4.3.6 Note 1 & 2 4.7 Note 4 4.7.2.2 Note 4.7.3.1 Note 2 5.1.7.1 Note 3 & 4 5.3.7 Note 1 6 Note 2 & 5 6.1.2.1 Note 2 6.1.2.2 Note 6.2.2 Note 6.2.2.1 Note 2 6.2.2.2 Note 7.1 Note 3 7.2 Note 7.3 Note 1 & 2 G.2.1 Note 2 Annex H Note 2		P
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		N



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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>	Not such equipment.	N
(A12:2011)	<p>In EN 60950-1:2006/A12:2011</p> <p>Delete the addition of 1.3.Z1 / EN 60950-1:2006</p> <p>Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010</p>	Deleted.	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>	Added.	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>	Added.	N
1.7.2.1 (A12:2011)	<p>In EN 60950-1:2006/A12:2011</p> <p>Delete NOTE Z1 and the addition for Portable Sound System.</p> <p>Add the following clause and annex to the existing standard and amendments.</p>	Replaced.	N
	<p>Zx Protection against excessive sound pressure from personal music players</p>		N




EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.1 General 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: is designed to allow the user to listen to recorded or broadcast sound or video; and primarily uses headphones or earphones that can be worn in or on or around the ears; and allows the user to walk around while in use.</p> <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: while the personal music player is connected to an external amplifier; or while the headphones or earphones are not used.</p> <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: hearing aid equipment and professional equipment;</p> <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>	Not such equipment.	N
	<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



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.2 Equipment requirements No safety provision is required for equipment that complies with the following: equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T}$ is ≤ 85 dBA measured while playing the fixed “programme simulation noise” as described in EN 50332-1; and a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 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 $L_{Aeq,T}$ is meant. See also Zx.5 and Annex Zx.</p> <p>All other equipment shall: a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and 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>	Not such equipment.	N



EN 60950-1			
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 NOTE 2 Examples of means include visual or audible signals. Action from the user is always required. 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> <ol style="list-style-type: none"> 1) equipment provided as a package (player with its listening device), the acoustic output shall be ≤ 100 dBA measured while playing the fixed "programme simulation noise" described in EN 50332-1; and 2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" described in EN 50332-1. <p>For music where the average sound pressure (long term $L_{Aeq,T}$) 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> <p>NOTE 4 Classical music typically has an average sound pressure (long term $L_{Aeq,T}$) 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>	Not such equipment.	N

EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.3 Warning The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following: the symbol of Figure 1 with a minimum height of 5 mm; and the following wording, or similar: “To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p> <div style="text-align: center;">  </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>	Not such equipment.	N
	<p>Zx.4 Requirements for listening devices (headphones and earphones)</p>		N
	<p>Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output LAeq,T, the input voltage of the fixed “programme simulation noise” described in EN 50332-2 shall be ≥ 75 mV. 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). NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.</p>	Not such equipment.	N



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.4.2 Wired listening devices with digital input With any playing device playing the fixed “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 $L_{Aeq,T}$ of the listening device shall be ≤ 100 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>	Not such equipment.	N
	<p>Zx.4.3 Wireless listening devices In wireless mode: with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and 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 $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA.</p> <p>NOTE An example of a wireless listening device is a Bluetooth headphone.</p>	Not such equipment.	N
	<p>Zx.5 Measurement methods 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>	Not such equipment.	N



EN 60950-1			
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>	Replaced.	P
	<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.	Deleted.	N



EN 60950-1									
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 border="0"> <tr> <td>Up to and including 6 </td> <td>0,75^{a)} </td> </tr> <tr> <td>Over 6 up to and including 10 (0,75)^{b)}</td> <td>1,0 </td> </tr> <tr> <td>Over 10 up to and including 16 (1,0)^{c)}</td> <td>1,5 </td> </tr> </table> <p>In the conditions applicable to Table 3B delete the words “in some countries” in condition^{a)}.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p>	Up to and including 6	0,75 ^{a)}	Over 6 up to and including 10 (0,75) ^{b)}	1,0	Over 10 up to and including 16 (1,0) ^{c)}	1,5	Replaced.	N
Up to and including 6	0,75 ^{a)}								
Over 6 up to and including 10 (0,75) ^{b)}	1,0								
Over 10 up to and including 16 (1,0) ^{c)}	1,5								
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	Deleted.	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>	Added.	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						
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 µSv/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>	Replaced.	N						



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
Bibliography	Additional EN standards.		—

ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.2.4.1	In Denmark , certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.		N
1.2.13.14	In Norway and Sweden , for requirements see 1.7.2.1 and 7.3 of this annex.		N
1.5.7.1	In Finland, Norway and Sweden , resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. 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 Norway , due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		P
1.5.9.4	In Finland, Norway and Sweden , the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1	<p>In Finland, Norway and Sweden, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Finland: "Laitte on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p> <p>In Norway and Sweden, 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



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
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>		
1.7.5	<p>In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.</p> <p>For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.</p>	No socket-outlet provided.	N
2.2.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	No TNV.	N
2.3.2	In Finland, Norway and Sweden there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.	No TNV.	N
2.3.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	No TNV.	N
2.6.3.3	In the United Kingdom , the current rating of the circuit shall be taken as 13 A, not 16 A.		N



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	<p>In Denmark, 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 Spain, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.</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



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In the United Kingdom , apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations. NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.		N
3.2.1.1	In Ireland , apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.		N
3.2.4	In Switzerland , for requirements see 3.2.1.1 of this annex.		N
3.2.5.1	In the United Kingdom , a USB CHARGER cord with conductor of 1,25 mm ² is allowed for equipment with a rated current over 10 A and up to and including 13 A.		N
3.3.4	In the United Kingdom , the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm ² to 1,5 mm ² nominal cross-sectional area.		N



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.6	In the United Kingdom , the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N
4.3.6	In Ireland , DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.		N
5.1.7.1	In Finland, Norway and Sweden TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: <ul style="list-style-type: none"> • STATIONARY PLUGGABLE EQUIPMENT TYPE A that is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT. 	Not exceed 3.5mA.	N



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.1 (A1:2010)	<p>In Finland, Norway and Sweden, 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"> - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. <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"> - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. 	No TNV	N



EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative)			
SPECIAL NATIONAL CONDITIONS (EN)			
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"> - 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; - the additional testing shall be performed on all the test specimens as described in EN 60384-14; - 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. 		N
6.1.2.2	In Finland, Norway and Sweden , the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.	No TNV	N
7.2	In Finland, Norway and Sweden , for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	Not connected to cable distribution system.	N
7.3	In Norway and Sweden , for requirements see 1.2.13.14 and 1.7.2.1 of this annex.	Not connected to cable distribution system.	N
7.3	In Norway , for installation conditions see EN 60728-11:2005.	Not connected to cable distribution system	N



1.6.2		TABLE: Electrical Data (In Normal Conditions)					P
fuse #	Irated (A)	U (V/Hz)	F(Hz)	P (W)	I (A)	Ifuse(A)	condition/status
F1	--	99	50	45.3	0.022	0.022	Maximum normal load
F1	0.05	110	50	46.2	0.021	0.021	Maximum normal load
F1	0.05	240	50	49.7	0.015	0.015	Maximum normal load
F1	--	264	50	49.7	0.017	0.017	Maximum normal load
F1	--	99	60	44.8	0.026	0.026	Maximum normal load
F1	0.05	110	60	46.5	0.024	0.024	Maximum normal load
F1	0.05	240	60	49.3	0.012	0.012	Maximum normal load
F1	--	264	60	49.4	0.013	0.013	Maximum normal load
Supplementary information:							
Load with rated value.							

2.1.1.5 c1)	TABLE:max.V,A,VA test				N
Voltage(rated) (V)	Current(rated) (A)	Voltage(max.) (V)	Current(max.) (A)	VA(max.) (VA)	
Supplementary information:					
The above measurements are the maximum values(max.V and max.A not obtained at the same time)					

2.2	TABLE: evaluation of voltage limiting component in SELV circuits			P
Component(measured between)	Max.voltage(V) (normal operation)		Voltage Limiting Components	
	V peak	V d.c		
Pin a-b	25.2	--		
Fault test performed on voltage limiting components	Voltage measured(V) in SELV circuits (V peak or V d.c.)			
Supplementary information:s-c=short circuit.				
Vin=240Vac,60Hz. S-c=short circuit.				

2.5	TABLE: Limited power sources	P
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Circuit output tested:				
Measured Uoc(V) with all load circuits		5.2		
Disconnected:				
	Isc(A)		VA	
	Meas.	Limit	Meas.	Limit
Normal condition	4.2	8	21.5	100
U1 Pin 3 - Pin 4 s-c*	0	8	0	100
Supplementary information:				
s-c=short circuit Vin=240Vac,60Hz *)Unit shutdown,recoverable. **)Unit shutdown,un-recoverable;unit damaged.				

2.9.2	Humidity Condition Test	P
Test condition: 28 °C, 93 %, 48 hrs		
Test voltage applied between:		Test voltage (V) Breakdown
Input to output		AC 3000 No
T1 primary winding to secondary winding		AC 3000 No
T1 secondary winding to core		AC 3000 No
One layer of insulating tape of T1		AC 3000 No
BI : Basic insulation SI : Supplementary insulation RI : Reinforced insulation; FI : Functional Insulation		
Humidity Chamber: ; Stop watch: ; Withstanding Voltage Tester:		

2.10.2	TABLE: working voltage measurement			P
Location	RMS voltage(V)	Peak voltage(V)	Comments	
T1 pin 1 to pin a	224	376		
T1 pin 5 to pin a	252	496		
T1 pin 1 to pin b	224	352		
T1 pin 5 to pin b	256	504	Maximum	
Y-cap pri. to sec.	225	356		
Supplementary information:				
The highest measured working voltages in transformer are indicated with bold character. Vin=240Vac,60Hz				

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)	Measured cl (mm)	Required cr (mm)	Measured cr (mm)	



T1 primary winding to secondary winding	504	256	4.8	>7.5	5.4	>7.5
T1 core to secondary winding	504	256	4.8	>7.5	5.4	>7.5
T1 core to secondary component	504	256	4.8	>7.5	5.4	>7.5
CY1 Pri.-Sec. on PWB	504	256	4.8	>7.0	5.4	>7.0
Functional:						
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)
--	--	--	--	--	--	---
Basic/supplementary:						
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)
--	--	--	--	--	--	---
Reinforced:						
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)
--	--	--	--	--	--	---
Supplementary information:						

2.10.5	TABLE: distance through insulation measurements			P
distance through insulation di at/of:	Up (V)	test voltage (V)	required dti (mm)	dti (mm)
Reinforced: plastic enclosure(RI)	504	3000Vac	0.4	2.0
The sheet material at/of:	Up (V)	test voltage (V)	required dti (mm)	Layers
Insulation tape wrapped the core of transformer(RI)	504	3000Vac /layer	≥2	2
Supplementary information:				
No flash over or insulation breakdown after test. RI: reinforced insulation				

4.2.6	Drop Test	Height: 1000mm	P
Impact Area	Drop Times	Drop No.	Observation
Front enclosure	3	--	No visible defect
Bottom enclosure	3	--	No visible defect



4.2.7	Stress relief test	<input type="checkbox"/> Temp. equal to 10°C plus max. temp measured on enclosure during test of 4.5.1: $T-T_{amb}+T_{ma}+10^{\circ}\text{C} = 83.3^{\circ}\text{C}, 7\text{h}$ <input checked="" type="checkbox"/> 85.0°C, 7h	P
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Pass: If any cracks or damages occur which do not change the normal shape or allow reduction of protection against electric shock then they are disregarded. Otherwise the pass verdict will be established by the Project Engineer.

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?																																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="3" style="text-align: left;">Non-rechargeable batteries</th> <th colspan="7" style="text-align: left;">Rechargeable batteries</th> </tr> <tr> <th colspan="2" style="text-align: left;">Discharging</th> <th rowspan="2" style="text-align: left;">Un-intentional charging</th> <th colspan="2" style="text-align: left;">Charging</th> <th colspan="2" style="text-align: left;">Discharging</th> <th colspan="2" style="text-align: left;">Reversed charging</th> </tr> <tr> <th style="text-align: left;">Meas. current</th> <th style="text-align: left;">Manuf. Specs.</th> <th style="text-align: left;">Meas. current</th> <th style="text-align: left;">Manuf. Specs.</th> <th style="text-align: left;">Meas. current</th> <th style="text-align: left;">Manuf. Specs.</th> <th style="text-align: left;">Meas. current</th> <th style="text-align: left;">Manuf. Specs.</th> </tr> </table>										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.
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:																																				

4.3.8	TABLE: Batteries							N	
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Battery category.....	(Lithium, NiMh, NiCad, Lithium Ion ...)
Manufacturer.....	
Type / model	
Voltage.....	
Capacity.....	mAh
Tested and Certified by (incl. Ref. No.)	
Circuit protection diagram:	



MARKINGS AND INSTRUCTIONS (1.7.13)	
Location of replaceable battery	
Language(s)	
Close to the battery	
In the servicing instructions	
In the operating instructions	

4.5.1	TABLE: Temperature Rise Measurements		P
Location	Test voltage (V)		Allowed Temperature(°C)
	99V/50Hz Temperature(°C)	264V/60Hz Temperature(°C)	
Plug holder, outside	43.2	47.2	95
Input Line	61.9	56.4	Ref
Output Line	43.9	49.5	Ref
PCB near T1	76.2	72.1	130
T1 winding	89.2	88.3	130
CX1 capacitor	71.5	67.9	125
CY1 capacitor	65.8	64.3	125
T1 bobbin	83.3	78.9	130
Ambient	25.3	25.1	-

Comments:

The temperatures were measured by thermal couple (type K) method under worst case normal mode defined in 1.2.2.1 load as described in 1.6.2 at voltage described in 1.4.5. The worst case at normal mode is defined with max load of the adaptor.

With max. ambient temperature specified as 40°C, therefore, the maximum temperature rise is calculated as follows:

Winding components:

- winding of 130°C (Class F or better)

Components with:

4.7	TABLE: Resistance to fire				N
Part	Manufacturer of material	Type of material	Thickness(mm)	Flammability class	Evidence
Supplementary information:					



5.1.6	Table: touch current measurement			P
Measured between:	Measured (mA)	Limit (mA)	Comments	
Live – Enclosure (with metal foil)	0.021	0.25	Normal load condition	
Neutral – Enclosure (with metal foil)	0.022	0.25	Normal load condition	
Live – Terminal output	0.022	0.25	Load / No load condition	
Neutral –Terminal output	0.023	0.25	Load / No load condition	
supplementary information:				
Note(s):				
Supply voltage: 240V/60Hz				

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests		P
Test voltage applied between:	Test voltage (V)		Breakdown
Input to Output	AC 3000		No
Input to Enclosure with Plastic Enclosure	AC 3000		No
Supplementary information:			
BI: Basic insulation SI: Supplementary insulation RI: Reinforced insulation; FI: Functional Insulation			
Withstanding Voltage Tester:			

5.3	TABLE: Fault Condition Tests						P
--	Ambient temperature (°C)				25°C, if not otherwise stated		--
	Power source for EUT: Manufacturer, model/type,output,rating				Refer to page 2.		--
No.	Component No.	Fault	Test Voltage (V)	Test Time	Fuse No.	Fuse Current (A)	Result
1	BD1(pint+ to pin-)	S-C	264	1s	F1	0	Unit shut down immediately, F1 opened.
2	C1	S-C	264	1s	F1	0	Unit shut down immediately, F1 opened.
Supplementary information							
Fault: S-C=short circuit, O-L =overload, B-L = blocked, O-C =open circuit.							
Note: for fuse-opened conditions, same results came out for all sources of fuse. If fuse not open have repeat test three times.							



ANNEX A:
Photo-documentation



