



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

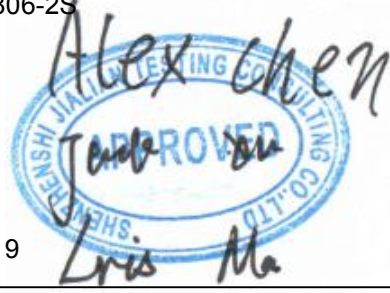
**Report Reference No**.....: JQL190923806-2S

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**Approved by (name + signature)**.....: Lris Ma

**Date of issue**.....: Sep. 30, 2019



**Testing Laboratory**.....: Shenzhen Jialian Testing Consulting Co., Ltd.

**Address**.....: 5/F, 7 Building, XinYuan Industrial Park, Xili Town, NanShan District, ShenZhen City

**Testing location / address**.....: As above

**Applicant's name**.....: Shenzhen BCZW Technology Co.Ltd

**Address**.....: 3F, BlockA3.Silicon Valley Industrial Park.Guanlan, Longhua District, Shenzhen China

**Test specification:**

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

**Test procedure**.....: CE Attestation

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

**Test Report Form No**.....: IEC60950\_1F

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

**Master TRF**.....: Dated 2014-02

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**Test item description**.....: Industrial Switch

**Trade Mark**.....: BCZW

**Manufacturer**.....: Shenzhen BCZW Technology Co.Ltd  
3F, BlockA3.Silicon Valley Industrial Park.Guanlan, Longhua District, Shenzhen China



Model/Type reference.....	: SP5220-8PGE2GE2GF, SP5200-4PFE2FE, SP5200-8PFE2FE, SP5200-4PGE1GE1GF, SP5200-8PFE2GE, SP5220-8PFE2GE1GF, SP5220-16PFE2GE2GF, SP5220-24PFE2GE2GF, SP5220-16PGE4GC, SP5220-24PGE4GC, S5220-48GE4GF, SP5220-48PGE4GF, IS3210-4GE2GF-DC, IS3210-8GE2GF-DC, IS3210-8GE4GF-DC, ISP3210-4PGE2GF-DC, ISP3210-8PGE2GF-DC, ISP3210-8PGE4GF-DC, IS7210-5FE-DC, IS7210-8FE-DC, IS7210-16FE-DC, IS7210-2FE1FX-DC, IS7210-4FE1FX-DC, IS7210-6FE2FX-DC, IS7210-8FE2GC-I-DC, IS7210-8FE2GF-L-DC, IS7210-8GE-DC, IS7210-2GE1GF-DC, IS7210-5GE1GF-DC, IS7210-4GE2GF-DC, IS7210-8GE2GF-DC, IS7510-4GE2GF-DC, IS7510-8GE3GF-DC, IS7510-8GE4GF-DC, IS7510-16GE4GF-DC, IS7510-8GE8GF-DC, IS7220-16FE1GE1GF-AC, IS7220-16FE4GC-AC, IS7220-24FE4GC-AC, IS7520-20GE4GC2GF-AC, IS7520-12GE12GF-AC, ISP7210-8PFE2GC-DC, ISP7210-8PFE2GF-L-DC, ISP7210-4PGE1GE1GF-DC, ISP7210-4PGE2GF-DC, ISP7210-4PGE2GF-BT-DC, ISP7210-8PGE2GF-DC, ISP7510-4PGE2GF-DC, ISP7510-4PGE2GF-BT-DC, ISP7510-8PGE4GF-DC, ISP7220-8PFE2GC-AC, ISP7220-16PFE4GC-AC, ISP7220-24PFE4GC-AC, ISP7520-20PGE4GC2GF-AC
Ratings.....	: 100-240V~, 50/60Hz, 5A

**Summary of testing:**

The test object has been assessed for safety with respect to the above test specifications and found to comply with the requirements of EN 60950-1: 2006+A11: 2009+A1: 2010+A12:2011+A2:2013.

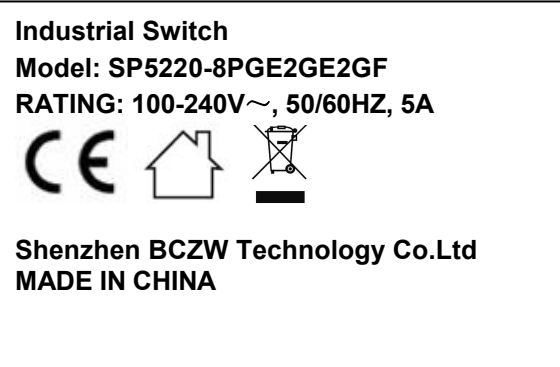


<b>Tests performed (name of test and test clause):</b> Following tests performed during evaluation:		<b>Testing location:</b> Shenzhen Jialian Testing Consulting Co., Ltd. 5/F, 7 Building, XinYuan Industrial Park, Xili Town, NanShan District, ShenZhen City
Clause(s)	Test(s)	
1.6.2	Input Current Test	
1.7.11	Durability of Marking Test	
2.1.1.1	Access to energized parts	
2.6.3.4	Ground Continue Test	
2.9.2	Humidity Conditioning	
2.10.2	Working Voltage over Insulation	
2.10.3 & 2.10.4	Clearance and creepage distance measurements	
4.2.2	Steady force test 10N	
4.2.4	Steady force test 250N	
4.2.7	Impact test	
4.2.7	Stress relief test	
4.5.2	Maximum Temperature Test	
5.1.6	Touch Current Test	
5.2	Electric Strength Test	
5.3	Fault Condition Test	
The EUTs passed the test.		
<b>Summary of compliance with National Differences</b> EU Group Differences, EU Special National Conditions.		



**Copy of marking plate:**

The artwork below may be only a draft.





<b>Test item particulars</b> ..... :	
Equipment mobility..... :	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input checked="" type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
Connection to the mains..... :	<input checked="" type="checkbox"/> pluggable equipment <input checked="" type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> direct plug-in <input type="checkbox"/> permanent connection <input type="checkbox"/> for building-in <input checked="" type="checkbox"/> detachable power supply cord <input type="checkbox"/> other:
Operating condition..... :	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> short-time <input type="checkbox"/> intermittent
Access location..... :	<input checked="" type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
Over voltage category .....	<input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV
Mains supply tolerance (%)..... :	+10%, -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 of protective device as part of the building installation(A)..... :	16A
Altitude during operation(m)..... :	<2000m
Altitude of test laboratory (m)..... :	<2000m
Pollution degree .....	<input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class .....	IPX0
<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..... :	Sep. 23, 2019
Date(s) of performance of tests..... :	Sep. 23, 2019 to Sep. 30, 2019

**General remarks:**

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

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

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

**General product information:**

The equipment is Class I Industrial Switch which is used for information technology equipment, powered by mains, for indoor use only.

**Model difference:**

All models are no other difference except for model no., except otherwise specified, tests carried out on SP5220-8PGE2GE2GF were condition representative.

Maximum recommended ambient (Tmra):40°C

The product has been tested according to standard EN 60950-1:  
2006+A11:2009+A1:2010+A12:2011+A2:2013 and those deviations taken into account of

<input checked="" type="checkbox"/> CENELEC common modifications	<input checked="" type="checkbox"/> United Kingdom	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Finland	<input checked="" type="checkbox"/> Denmark	<input checked="" type="checkbox"/> Ireland	<input type="checkbox"/>
<input checked="" type="checkbox"/> Sweden	<input checked="" type="checkbox"/> Germany	<input checked="" type="checkbox"/> Spain	<input type="checkbox"/>
<input checked="" type="checkbox"/> Norway	<input checked="" type="checkbox"/> Switzerland	<input type="checkbox"/>	<input type="checkbox"/>



EN60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

<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 certified to IEC standards and/or their harmonized standards, are used within their ratings and are checked for correct application	P
1.5.3	Thermal controls	No thermal controls	N/A
1.5.4	Transformers	Transformers used are suitable for their intended applications and comply with relevant parts of this standard and particularly Annex C. See Annex C-Transformers.	P
1.5.5	Interconnecting cables	Interconnecting cables comply with the relevant requirements of this standard.	P
1.5.6	Capacitors bridging insulation	No such capacitors used	N/A
1.5.7	Resistors bridging insulation	No such resistors used	N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N/A
1.5.8	Components in equipment for IT power systems		N/A
1.5.9	Surge suppressors		N/A
1.5.9.1	General		N/A
1.5.9.2	Protection of VDRs		N/A
1.5.9.3	Bridging of functional insulation by a VDR		N/A
1.5.9.4	Bridging of basic insulation by a VDR		N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A

<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



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Clause	Requirement + Test	Result - Remark	Verdict
1.6.3	Voltage limit of hand-held equipment		N/A
1.6.4	Neutral conductor	Neutral insulation is provided in the power supply	P

<b>1.7</b>	<b>Marking and instructions</b>		P
1.7.1	Power rating and identification markings	Rating marking readily visible to operator	P
1.7.1.1	Power rating marking	See below	P
	Multiple mains supply connections.....:	Single power source	N/A
	Rated voltage(s) or voltage range(s) (V) .....	100-240 Vac	P
	Symbol for nature of supply, for d.c. only.....:		N/A
	Rated frequency or rated frequency range (Hz) ....:	50/60 Hz	P
	Rated current (mA or A) .....	5A	P
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark .....	See rating marking	P
	Model identification or type reference .....	See page 1	P
	Symbol for Class II equipment only .....	Class I equipment	N/A
	Other markings and symbols .....	Other markings and symbols do not give rise to misunderstanding	P
1.7.1.3	Use of graphical symbols		P
1.7.2	Safety instructions and marking	See below	P
1.7.2.1	General	English version provided	P
1.7.2.2	Disconnect devices		N/A
1.7.2.3	Overcurrent protective device		N/A
1.7.2.4	IT power distribution systems		N/A
1.7.2.5	Operator access with a tool	No operator accessible area that needs to be accessed by the use of a tool.	N/A
1.7.2.6	Ozone	Not such equipment	N/A
1.7.3	Short duty cycles	Equipment is designed for continuous operation	N/A
1.7.4	Supply voltage adjustment .....	No voltage selector.	N/A
	Methods and means of adjustment; reference to installation instructions .....		N/A
1.7.5	Power outlets on the equipment .....	No Power outlets	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....		P





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Clause	Requirement + Test	Result - Remark	Verdict
1.7.7	Wiring terminals	See below	N/A
1.7.7.1	Protective earthing and bonding terminals .....		P
1.7.7.2	Terminals for a.c. mains supply conductors		N/A
1.7.7.3	Terminals for d.c. mains supply conductors		N/A
1.7.8	Controls and indicators	No safety relevant controls or indicators	N/A
1.7.8.1	Identification, location and marking .....		N/A
1.7.8.2	Colours .....		N/A
1.7.8.3	Symbols according to IEC 60417.....		N/A
1.7.8.4	Markings using figures .....		N/A
1.7.9	Isolation of multiple power sources .....	Single power source	N/A
1.7.10	Thermostats and other regulating devices .....	No such devices	N/A
1.7.11	Durability	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 sec. And then again for 15 sec. With the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade.	P
1.7.12	Removable parts	No such parts	N/A
1.7.13	Replaceable batteries .....	No batteries	N/A
	Language(s) .....		—
1.7.14	Equipment for restricted access locations.....	Not intended for use in a restricted access location	N/A

<b>2</b>	<b>PROTECTION FROM HAZARDS</b>		P
<b>2.1</b>	<b>Protection from electric shock and energy hazards</b>		P
2.1.1	Protection in operator access areas	No access with test finger to any parts with only basic insulation to ELV or hazardous voltage.  The test pin can't touch hazardous voltage.  There are no openings within the whole enclosure	P
2.1.1.1	Access to energized parts	Checked	P
	Test by inspection .....		P
	Test with test finger (Figure 2A) .....		P



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Clause	Requirement + Test	Result - Remark	Verdict

	Test with test pin (Figure 2B) .....	No TNV	N/A
	Test with test probe (Figure 2C) .....	No battery compartments	N/A
2.1.1.2	Battery compartments	No ELV wiring in operator accessible area	N/A
2.1.1.3	Access to ELV wiring		—
	Working voltage ( $V_{peak}$ or $V_{rms}$ ); minimum distance through insulation (mm)	No such wiring in operator accessible area	N/A
2.1.1.4	Access to hazardous voltage circuit wiring		N/A
2.1.1.5	Energy hazards .....	(see appended table 2.1.1.5)	P
2.1.1.6	Manual controls	No manual controls	N/A
2.1.1.7	Discharge of capacitors in equipment	Not connected to mains supply.	N/A
	Measured voltage (V); time-constant (s).....		—
2.1.1.8	Energy hazards – d.c. mains supply	No connection to d.c. mains	N/A
	a) Capacitor connected to the d.c. mains supply ...:		N/A
	b) Internal battery connected to the d.c. mains supply :		N/A
2.1.1.9	Audio amplifiers .....	No audio amplifiers	N/A
2.1.2	Protection in service access areas		N/A
2.1.3	Protection in restricted access locations		N/A

<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) .....	42.4V <sub>peak</sub> or 60V <sub>dc</sub> are not exceeded in SELV circuit under normal condition	P
2.2.3	Voltages under fault conditions (V) .....	Under fault conditions voltages never exceed 71V peak and 120V <sub>dc</sub> and do not exceed 42.4V peak or 60V dc for more than 0.2 sec.	P
2.2.4	Connection of SELV circuits to other circuits .....	SELV circuits are only connected to other secondary circuits. SELV circuit and all interconnected circuits separated from primary by reinforced insulation. The SELV circuit does not exceed the SELV limits under normal and fault conditions.	P

<b>2.3</b>	<b>TNV circuits</b>		N/A
2.3.1	Limits		N/A



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Clause	Requirement + Test	Result - Remark	Verdict

	Type of TNV circuits..... :		—
2.3.2	Separation from other circuits and from accessible parts		N/A
2.3.2.1	General requirements		N/A
2.3.2.2	Protection by basic insulation		N/A
2.3.2.3	Protection by earthing		N/A
2.3.2.4	Protection by other constructions .....		N/A
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed..... :		—
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed..... :		—
2.3.5	Test for operating voltages generated externally		N/A

<b>2.4</b>	<b>Limited current circuits</b>		P
2.4.1	General requirements		P
2.4.2	Limit values	0.7mA	P
	Frequency (Hz)..... :	60Hz	—
	Measured current (mA)..... :	0.21mA	—
	Measured voltage (V)..... :	0.42V	—
	Measured circuit capacitance (nF or μF)..... :	2200pF	—
2.4.3	Connection of limited current circuits to other circuits		N/A

<b>2.5</b>	<b>Limited power sources</b>		N/A
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network or IC current limiter, limits output under normal operating and single fault condition		N/A
	Use of integrated circuit (IC) current limiters		N/A
	d) Overcurrent protective device limited output		N/A
	Max. output voltage (V), max. output current (A), max. apparent power (VA)..... :		—
	Current rating of overcurrent protective device (A) .:		—

<b>2.6</b>	<b>Provisions for earthing and bonding</b>		P
2.6.1	Protective earthing		P



EN60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.2	Functional earthing		P
	Use of symbol for 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 (mm <sup>2</sup> ), AWG.....		—
2.6.3.3	Size of protective bonding conductors		N/A
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG.....		—
	Protective current rating (A), cross-sectional area (mm <sup>2</sup> ), AWG.....		
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min).....	32A, 0.12mΩ	P
2.6.3.5	Colour of insulation.....	Green/yellow	P
2.6.4	Terminals		P
2.6.4.1	General		P
2.6.4.2	Protective earthing and bonding terminals		P
	Rated current (A), type, nominal thread diameter (mm).....		—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		P
2.6.5	Integrity of protective earthing		P
2.6.5.1	Interconnection of equipment		P
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		P
2.6.5.3	Disconnection of protective earth		P
2.6.5.4	Parts that can be removed by an operator		P
2.6.5.5	Parts removed during servicing		P
2.6.5.6	Corrosion resistance		P
2.6.5.7	Screws for protective bonding		N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system		N/A
<b>2.7</b>	<b>Overcurrent and earth fault protection in primary circuits</b>		P
2.7.1	Basic requirements	Protective device FUSE1 are integrated in the equipment.	P



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Clause	Requirement + Test	Result - Remark	Verdict

	Instructions when protection relies on building installation	Pluggable equipment type A	N/A
2.7.2	Faults not simulated in 5.3.7		P
2.7.3	Short-circuit backup protection	The building installation is considered as providing short-circuit backup protection.	P
2.7.4	Number and location of protective devices ..... :	One protective device in the "LIVE" phase.	P
2.7.5	Protection by several devices	Only one protective device. See Sub-clause 2.7.4.	N/A
2.7.6	Warning to service personnel..... :		N/A

<b>2.8</b>	<b>Safety interlocks</b>		N/A
2.8.1	General principles	No safety interlocks	N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
	Protection against extreme hazard		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches, relays and their related circuits		N/A
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) ..... :		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A

<b>2.9</b>	<b>Electrical insulation</b>		P
2.9.1	Properties of insulating materials	Natural rubber, materials containing asbestos and hygroscopic materials are not used as insulation.	P
2.9.2	Humidity conditioning	Tested for 120hrs	P
	Relative humidity (%), temperature (°C) ..... :	95%, 25°C	—
2.9.3	Grade of insulation	No flash over or breakdown of insulation.	P
2.9.4	Separation from hazardous voltages	See below	P



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Clause	Requirement + Test	Result - Remark	Verdict

	Method(s) used .....	SELV separated from primary by reinforced or double insulation	—
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<b>2.10</b>	<b>Clearances, creepage distances and distances through insulation</b>		<b>P</b>
2.10.1	General		P
2.10.1.1	Frequency .....	Considered	P
2.10.1.2	Pollution degrees .....	2	P
2.10.1.3	Reduced values for functional insulation	See 5.3.4	P
2.10.1.4	Intervening unconnected conductive parts	No such parts	N/A
2.10.1.5	Insulation with varying dimensions		N/A
2.10.1.6	Special separation requirements		N/A
2.10.1.7	Insulation in circuits generating starting pulses		N/A
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 appended table 2.10.2)	P
2.10.2.3	Peak working voltage	(see appended table 2.10.2)	P
2.10.3	Clearances	(see appended 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 .....		P
	b) Earthed d.c. mains supplies .....		N/A
	c) Unearthed d.c. mains supplies .....		N/A
	d) Battery operation .....		N/A
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	See sub-clause 5.3.4	N/A
2.10.3.5	Clearances in circuits having starting pulses		N/A
2.10.3.6	Transients from a.c. mains supply .....	Normal transient voltage considered (overvoltage category II for primary circuit)	N/A
2.10.3.7	Transients from d.c. mains supply .....		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
2.10.3.8	Transients from telecommunication networks and cable distribution systems .....		N/A
2.10.3.9	Measurement of transient voltage levels		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply .....		N/A
	For a d.c. mains supply .....		N/A
	b) Transients from a telecommunication network :		N/A
2.10.4	Creepage distances		P
2.10.4.1	General		P
2.10.4.2	Material group and comparative tracking index		P
	CTI tests.....	Material group IIIb is assumed to be used	—
2.10.4.3	Minimum creepage distances	(see appended table 2.10.3 and 2.10.4)	P
2.10.5	Solid insulation		P
2.10.5.1	General		P
2.10.5.2	Distances through insulation	(see appended table 2.10.5)	P
2.10.5.3	Insulating compound as solid insulation		N/A
2.10.5.4	Semiconductor devices	No such part	N/A
2.10.5.5	Cemented joints	No such construction	N/A
2.10.5.6	Thin sheet material – General	Two layers insulation tape used for outer wrap, underside core and insulation of primary winding and secondary winding, each of which complies with the required electric strength test.	P
2.10.5.7	Separable thin sheet material		P
	Number of layers (pcs).....	Reinforced Insulation - 2 layers	—
2.10.5.8	Non-separable thin sheet material		N/A
2.10.5.9	Thin sheet material – standard test procedure		N/A
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure		P
	Electric strength test	(see appended table 5.2)	—
2.10.5.11	Insulation in wound components	Approved triple insulated wire used as secondary winding of T1	P
2.10.5.12	Wire in wound components		P
	Working voltage .....	(see appended table 2.10.2)	P



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Clause	Requirement + Test	Result - Remark	Verdict
	a) Basic insulation not under stress .....		N/A
	b) Basic, supplementary, reinforced insulation .....	Reinforced insulation, three layers extruded tube	P
	c) Compliance with Annex U .....		N/A
	Two wires in contact inside wound component; angle between 45° and 90° .....	Tubing used to relieve mechanical stress at crossover points	P
2.10.5.13	Wire with solvent-based enamel in wound components	Enamel wire considered as bare	N/A
	Electric strength test		—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components		N/A
	Working voltage .....		N/A
	- Basic insulation not under stress .....		N/A
	- Supplementary, reinforced insulation .....		N/A
2.10.6	Construction of printed boards		P
2.10.6.1	Uncoated printed boards	(see appended table 2.10.3 and 2.10.4)	P
2.10.6.2	Coated printed boards	No coated printed boards	N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board	No multi-layer PCBs provided	N/A
2.10.6.4	Insulation between conductors on different layers of a printed board	No multi-layer PCBs provided	N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs).....	Single layer PCB	N/A
2.10.7	Component external terminations		N/A
2.10.8	Tests on coated printed boards and coated components	No such boards and components	N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling		N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N/A
2.10.11	Tests for semiconductor devices and cemented joints	No such components	N/A
2.10.12	Enclosed and sealed parts		N/A
<b>3</b>	<b>WIRING, CONNECTIONS AND SUPPLY</b>		N/A





EN60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>3.1</b>	General		N/A
3.1.1	Current rating and overcurrent protection		N/A
3.1.2	Protection against mechanical damage	No such wiring.	N/A
3.1.3	Securing of internal wiring	No such wiring.	N/A
3.1.4	Insulation of conductors	No such wiring.	N/A
3.1.5	Beads and ceramic insulators	Not used	N/A
3.1.6	Screws for electrical contact pressure		N/A
3.1.7	Insulating materials in electrical connections		N/A
3.1.8	Self-tapping and spaced thread screws	No such screws	N/A
3.1.9	Termination of conductors		N/A
	10 N pull test		N/A
3.1.10	Sleeving on wiring	No sleeving is used as supplementary insulation.	N/A

<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/A
3.2.2	Multiple supply connections	Only one connection with power supply.	N/A
3.2.3	Permanently connected equipment	Pluggable equipment type A	N/A
	Number of conductors, diameter of cable and conduits (mm) .....		—
3.2.4	Appliance inlets		N/A
3.2.5	Power supply cords		N/A
3.2.5.1	AC power supply cords		N/A
	Type .....		—
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....		—
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N) .....		—
	Longitudinal displacement (mm) .....		—
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards		N/A
	Diameter or minor dimension D (mm); test mass (g) .....		—
	Radius of curvature of cord (mm).....		—



EN60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

3.2.9	Supply wiring space		N/A
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<b>3.3</b>	<b>Wiring terminals for connection of external conductors</b>		N/A
3.3.1	Wiring terminals	No wiring terminals	N/A
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals		N/A
3.3.4	Conductor sizes to be connected		N/A
	Rated current (A), cord/cable type, cross-sectional area (mm <sup>2</sup> ).....:		—
3.3.5	Wiring terminal sizes		N/A
	Rated current (A), type, nominal thread diameter (mm) .....		—
3.3.6	Wiring terminal design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A

<b>3.4</b>	<b>Disconnection from the mains supply</b>		P
3.4.1	General requirement	Terminal	P
3.4.2	Disconnect devices	Terminal	N/A
3.4.3	Permanently connected equipment		P
3.4.4	Parts which remain energized		N/A
3.4.5	Switches in flexible cords	No switches	N/A
3.4.6	Number of poles – single-phase and d.c. equipment		P
3.4.7	Number of poles – three-phase equipment	Single-phase equipment	N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices		N/A
3.4.10	Interconnected equipment		N/A
3.4.11	Multiple power sources		N/A

<b>3.5</b>	<b>Interconnection of equipment</b>		P
3.5.1	General requirements		P
3.5.2	Types of interconnection circuits .....	SELV circuits	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection	N/A
3.5.4	Data ports for additional equipment	No such ports	N/A

<b>4</b>	<b>PHYSICAL REQUIREMENTS</b>		P
<b>4.1</b>	<b>Stability</b>		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Angle of 10°		N/A
	Test force (N) .....		N/A

<b>4.2</b>	<b>Mechanical strength</b>		P
4.2.1	General		P
	Rack-mounted equipment.	Not such equipment	N/A
4.2.2	Steady force test, 10 N		P
4.2.3	Steady force test, 30 N	No internal enclosure	N/A
4.2.4	Steady force test, 250 N		P
4.2.5	Impact test		N/A
	Fall test		N/A
	Swing test		N/A
4.2.6	Drop test; height (mm) .....		N/A
4.2.7	Stress relief test		N/A
4.2.8	Cathode ray tubes		N/A
	Picture tube separately certified .....		N/A
4.2.9	High pressure lamps		N/A
4.2.10	Wall or ceiling mounted equipment; force (N) .....		N/A

<b>4.3</b>	<b>Design and construction</b>		P
4.3.1	Edges and corners	All edges and corners are rounded and smooth	P
4.3.2	Handles and manual controls; force (N).....		N/A
4.3.3	Adjustable controls		N/A
4.3.4	Securing of parts	Electrical and mechanical connections can be expected to withstand usual mechanical stress	P
4.3.5	Connection by plugs and sockets	No mismatching of connectors, plugs or sockets possible.	P
4.3.6	Direct plug-in equipment		N/A
	Torque .....		—
	Compliance with the relevant mains plug standard .....		N/A
4.3.7	Heating elements in earthed equipment	No heating elements	N/A
4.3.8	Batteries	No batteries	N/A
	- Overcharging of a rechargeable battery		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
4.3.9	Oil and grease	No Oil and grease	N/A
4.3.10	Dust, powders, liquids and gases	The equipment does not produce dust or employ powders, liquids or gases.	N/A
4.3.11	Containers for liquids or gases	No container for liquids or gases	N/A
4.3.12	Flammable liquids .....	No flammable liquids	N/A
	Quantity of liquid (l) .....		N/A
	Flash point (°C) .....		N/A
4.3.13	Radiation	No Radiation	N/A
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation		N/A
	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/A
	Part, property, retention after test, flammability classification .....		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....		N/A
4.3.13.5	Lasers (including laser diodes) and LEDs		N/A
4.3.13.5.1	Lasers (including laser diodes)		N/A
	Laser class .....		—
4.3.13.5.2	Light emitting diodes (LEDs)		N/A
4.3.13.6	Other types .....		N/A

<b>4.4</b>	<b>Protection against hazardous moving parts</b>		N/A
4.4.1	General	No hazardous moving parts	N/A
4.4.2	Protection in operator access areas .....		N/A
	Household and home/office document/media shredders		N/A
4.4.3	Protection in restricted access locations .....		N/A
4.4.4	Protection in service access areas		N/A
4.4.5	Protection against moving fan blades		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
4.4.5.1	General		N/A
	Not considered to cause pain or injury. A).....:		N/A
	Is considered to cause pain, not injury. B) .....:		N/A
	Considered to cause injury. C) .....:		N/A
4.4.5.2	Protection for users		N/A
	Use of symbol or warning .....:		N/A
4.4.5.3	Protection for service persons		N/A
	Use of symbol or warning .....:		N/A

<b>4.5</b>	<b>Thermal requirements</b>		P
4.5.1	General		P
4.5.2	Temperature tests	The equipment and its component parts did not attain excessive temperatures during normal operation. (see appended table 4.5)	P
	Normal load condition per Annex L ...:	Operated in the most unfavorable way of operation given in the operating instructions until steady conditions established.	—
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>		P
4.6.1	Top and side openings	No openings within the whole enclosure	P
	Dimensions (mm) .....:		—
4.6.2	Bottoms of fire enclosures	No openings within the whole enclosure	P
	Construction of the bottom, dimensions (mm) ...:		—
4.6.3	Doors or covers in fire enclosures	No doors or covers	N/A
4.6.4	Openings in transportable equipment	No openings within the whole enclosure	P
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm) .....:		—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A



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Clause	Requirement + Test	Result - Remark	Verdict

4.6.5	Adhesives for constructional purposes		N/A
	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
	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		N/A
4.7.2	Conditions for a fire enclosure		P
4.7.2.1	Parts requiring a fire enclosure	A fire enclosure cover all parts	P
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		P
4.7.3.1	General	See below	P
4.7.3.2	Materials for fire enclosures	V-0 material used	P
4.7.3.3	Materials for components and other parts outside fire enclosures		P
4.7.3.4	Materials for components and other parts inside fire enclosures	All internal materials are rated V-2 or better or are mounted on a PWB rated V-1 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filter assemblies	N/A
4.7.3.6	Materials used in high-voltage components	No high voltage components	N/A

<b>5</b>	<b>ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS</b> <i>Not directly connected mains.</i>		P
<b>5.1</b>	<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/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N/A
5.1.3	Test circuit	Test circuit in Figure 5A used	P
5.1.4	Application of measuring instrument	Measuring instruments as in annex D used	P
5.1.5	Test procedure		P
5.1.6	Test measurements	(see appended table 5.1)	P
	Supply voltage (V) .....		—
	Measured touch current (mA) .....		—



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Clause	Requirement + Test	Result - Remark	Verdict
	Max. allowed touch current (mA) .....		—
	Measured protective conductor current (mA) .....		—
	Max. allowed protective conductor current (mA)...		—
5.1.7	Equipment with touch current exceeding 3,5 mA		N/A
5.1.7.1	General .....		N/A
5.1.7.2	Simultaneous multiple connections to the supply		N/A
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	No TNV	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V) .....		—
	Measured touch current (mA) .....		—
	Max. allowed touch current (mA) .....		—
5.1.8.2	Summation of touch currents from telecommunication networks		N/A
	a) EUT with earthed telecommunication ports .....		N/A
	b) EUT whose telecommunication ports have no reference to protective earth		N/A

<b>5.2</b>	<b>Electric strength</b>		P
5.2.1	General	(see appended table 5.2)	P
5.2.2	Test procedure	(see appended table 5.2)	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	No motors used	N/A
5.3.3	Transformers	(see appended Annex C)	P
5.3.4	Functional insulation.....		P
5.3.5	Electromechanical components	No Electromechanical components	N/A
5.3.6	Audio amplifiers in ITE .....	No Audio amplifiers	N/A
5.3.7	Simulation of faults		P
5.3.8	Unattended equipment	Equipment is not intended for unattended use.	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions		P



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Clause	Requirement + Test	Result - Remark	Verdict
5.3.9.1	During the tests	No fire or molten metal was emitted. No overheating of the transformer was encountered	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>		N/A
<b>6.1</b>	<b>Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment</b>		N/A
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements		N/A
	Supply voltage (V) .....		—
	Current in the test circuit (mA) .....		—
6.1.2.2	Exclusions .....		N/A

<b>6.2</b>	<b>Protection of equipment users from overvoltages on telecommunication networks</b>		N/A
6.2.1	Separation requirements		N/A
6.2.2	Electric strength test procedure		N/A
6.2.2.1	Impulse test		N/A
6.2.2.2	Steady-state test		N/A
6.2.2.3	Compliance criteria		N/A

<b>6.3</b>	<b>Protection of the telecommunication wiring system from overheating</b>		N/A
	Max. output current (A) .....		—
	Current limiting method .....		—

<b>7</b>	<b>CONNECTION TO CABLE DISTRIBUTION SYSTEMS</b>		N/A
<b>7.1</b>	<b>General</b>		N/A
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/A
7.3	Protection of equipment users from overvoltages on the cable distribution system		N/A
7.4	Insulation between primary circuits and cable distribution systems		N/A
7.4.1	General		N/A





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Clause	Requirement + Test	Result - Remark	Verdict

7.4.2	Voltage surge test		N/A
7.4.3	Impulse test		N/A

<b>A</b>	<b>ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE</b>		N/A
<b>A.1</b>	<b>Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)</b>		N/A
A.1.1	Samples..... :		—
	Wall thickness (mm)..... :		—
A.1.2	Conditioning of samples; temperature (°C) .....		N/A
A.1.3	Mounting of samples .....		N/A
A.1.4	Test flame (see IEC 60695-11-3)		N/A
	Flame A, B, C or D .....		—
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s)..... :		—
	Sample 2 burning time (s)..... :		—
	Sample 3 burning time (s)..... :		—
<b>A.2</b>	<b>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)</b>		N/A
A.2.1	Samples, material..... :		—
	Wall thickness (mm)..... :		—
A.2.2	Conditioning of samples; temperature (°C) .....		N/A
A.2.3	Mounting of samples .....		N/A
A.2.4	Test flame (see IEC 60695-11-4)		N/A
	Flame A, B or C .....		—
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	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/A
	Sample 1 burning time (s)..... :		—
	Sample 2 burning time (s)..... :		—
	Sample 3 burning time (s)..... :		—
<b>A.3</b>	<b>Hot flaming oil test (see 4.6.2)</b>		N/A



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Clause	Requirement + Test	Result - Remark	Verdict

A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A

<b>B</b>	<b>ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)</b>		N/A
<b>B.1</b>	<b>General requirements</b>	No motors	N/A
	Position .....		—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
<b>B.2</b>	<b>Test conditions</b>		N/A
<b>B.3</b>	<b>Maximum temperatures</b>		N/A
<b>B.4</b>	<b>Running overload test</b>		N/A
<b>B.5</b>	<b>Locked-rotor overload test</b>		N/A
	Test duration (days) .....		—
	Electric strength test: test voltage (V) .....		—
<b>B.6</b>	<b>Running overload test for d.c. motors in secondary circuits</b>		N/A
B.6.1	General		N/A
B.6.2	Test procedure		N/A
B.6.3	Alternative test procedure		N/A
B.6.4	Electric strength test; test voltage (V) .....		N/A
<b>B.7</b>	<b>Locked-rotor overload test for d.c. motors in secondary circuits</b>		N/A
B.7.1	General		N/A
B.7.2	Test procedure		N/A
B.7.3	Alternative test procedure		N/A
B.7.4	Electric strength test; test voltage (V) .....		N/A
<b>B.8</b>	<b>Test for motors with capacitors</b>		N/A
<b>B.9</b>	<b>Test for three-phase motors</b>		N/A
<b>B.10</b>	<b>Test for series motors</b>		N/A
	Operating voltage (V) .....		—

<b>C</b>	<b>ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)</b>		P
	Position .....	T1	—
	Manufacturer .....	(see appended table 1.5.1)	—



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Clause	Requirement + Test	Result - Remark	Verdict

	Type .....	(see appended table 1.5.1)	—
	Rated values .....	Overcurrent protection	—
	Method of protection.....	Overcurrent protection	—
<b>C.1</b>	<b>Overload test</b>	(see appended table 5.3)	P
<b>C.2</b>	<b>Insulation</b>	(see appended tables 5.2 and C2)	P
	Protection from displacement of windings.....	Triple insulated wire used	P

<b>D</b>	<b>ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)</b>		P
<b>D.1</b>	<b>Measuring instrument</b>	Measuring instrument D.1 used	P
<b>D.2</b>	<b>Alternative measuring instrument</b>		N/A

<b>E</b>	<b>ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)</b>		N/A
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<b>F</b>	<b>ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)</b>		P
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<b>G</b>	<b>ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES</b>		N/A
<b>G.1</b>	<b>Clearances</b>		N/A
G.1.1	General		N/A
G.1.2	Summary of the procedure for determining minimum clearances		N/A
<b>G.2</b>	<b>Determination of mains transient voltage (V)</b>		N/A
G.2.1	AC mains supply .....		N/A
G.2.2	Earthed d.c. mains supplies .....		N/A
G.2.3	Unearthed d.c. mains supplies .....		N/A
G.2.4	Battery operation .....		N/A
<b>G.3</b>	<b>Determination of telecommunication network transient voltage (V) .....</b>		N/A
<b>G.4</b>	<b>Determination of required withstand voltage (V)</b>		N/A
G.4.1	Mains transients and internal repetitive peaks .....		N/A
G.4.2	Transients from telecommunication networks .....		N/A
G.4.3	Combination of transients		N/A
G.4.4	Transients from cable distribution systems		N/A
<b>G.5</b>	<b>Measurement of transient voltages (V)</b>		N/A
	a) Transients from a mains supply		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A
	b) Transients from a telecommunication network		N/A
<b>G.6</b>	<b>Determination of minimum clearances .....</b> :		N/A

<b>H</b>	<b>ANNEX H, IONIZING RADIATION (see 4.3.13)</b>		N/A
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<b>J</b>	<b>ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)</b>		N/A
	Metal(s) used .....		—

<b>K</b>	<b>ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)</b>		N/A
K.1	Making and breaking capacity		N/A
K.2	Thermostat reliability; operating voltage (V) .....		N/A
K.3	Thermostat endurance test; operating voltage (V) .....		N/A
K.4	Temperature limiter endurance; operating voltage (V) .....		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation	(see appended table 5.3)	N/A

<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/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment		P
<b>M</b>	<b>ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)</b>		N/A
M.1	Introduction		N/A
M.2	Method A		N/A
M.3	Method B		N/A
M.3.1	Ringling signal		N/A
M.3.1.1	Frequency (Hz) .....		—
M.3.1.2	Voltage (V) .....		—
M.3.1.3	Cadence; time (s), voltage (V) .....		—



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Clause	Requirement + Test	Result - Remark	Verdict
M.3.1.4	Single fault current (mA) .....		—
M.3.2	Tripping device and monitoring voltage .....		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V) .....		N/A
<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/A
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A
<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/A
	- Maximum continuous voltage .....		N/A
	- Combination pulse current .....		N/A
	Body of the VDR Test according to IEC60695-11-5.....		N/A
	Body of the VDR. Flammability class of material ( min V-1).....		N/A
<b>R</b>	<b>ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES</b>		N/A
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		N/A
R.2	Reduced clearances (see 2.10.3)		N/A
<b>S</b>	<b>ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)</b>		N/A
S.1	Test equipment		N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing		N/A
<b>T</b>	<b>ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)</b>		N/A
		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



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Clause	Requirement + Test	Result - Remark	Verdict

		See separate test report	—
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<b>V</b>	<b>ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)</b>		P
V.1	Introduction		P
V.2	TN power distribution systems		P

<b>W</b>	<b>ANNEX W, SUMMATION OF TOUCH CURRENTS</b>		N/A
W.1	Touch current from electronic circuits		N/A
W.1.1	Floating circuits		N/A
W.1.2	Earthed circuits		N/A
W.2	Interconnection of several equipments		N/A
W.2.1	Isolation		N/A
W.2.2	Common return, isolated from earth		N/A
W.2.3	Common return, connected to protective earth		N/A

<b>X</b>	<b>ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)</b>		N/A
X.1	Determination of maximum input current		N/A
X.2	Overload test procedure		N/A

<b>Y</b>	<b>ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)</b>		N/A
Y.1	Test apparatus .....		N/A
Y.2	Mounting of test samples .....		N/A
Y.3	Carbon-arc light-exposure apparatus .....		N/A
Y.4	Xenon-arc light exposure apparatus .....		N/A

<b>Z</b>	<b>ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)</b>		P
<b>AA</b>	<b>ANNEX AA, MANDREL TEST (see 2.10.5.8)</b>		P

<b>BB</b>	<b>ANNEX BB, CHANGES IN THE SECOND EDITION</b>		—
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<b>CC</b>	<b>ANNEX CC, Evaluation of integrated circuit (IC) current limiters</b>		N/A
CC.1	General		N/A
CC.2	Test program 1.....		N/A
CC.3	Test program 2.....		N/A
CC.4	Test program 3.....		N/A
CC.5	Compliance.....		N/A



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Clause	Requirement + Test	Result - Remark	Verdict

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

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



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Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT IEC 60950-1</b> <b>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b> Information technology equipment – Safety – <b>PART 1: GENERAL REQUIREMENTS</b>			
Differences according to.....: EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013			
Attachment Form No.....: EU_GD_IEC60950_1F			
Attachment Originator.....: SGS Fimko Ltd			
Master Attachment.....: Date 2014-02			
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**EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS**

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Clauses, subclauses, notes, tables and figures which are additional to those in IEC60950-1 and it's amendmets are prefixed "Z"		
Contents  (A2:2013)	Add the following annexes:  Annex ZA (normative)                      Normative references to international publications with their corresponding European publications  Annex ZB (normative)                      Special national conditions Annex ZD (informative)                    IEC and CENELEC code designations for flexible cords		--
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 4.7.3.1Note 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		--
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		--
General (A2:2013)	Delete all the "country" notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list:  2.7.1            Note *            2.10.3.1            Note 2  6.2.2.            Note * Note of secretary: Text of Common Modification remains unchanged.		--





EN60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
1.1.1 (A1:2010)	<b>Replace</b> the text of NOTE 3 by the following. NOTE 3 The requirements of EN 60065 may also be used to meet safety requirements for multimedia equipment. See IEC Guide 112, Guide on the safety of multimedia equipment. For television sets EN 60065 applies.		--
1.3.Z1	Add the following subclause:  1.3.Z1 Exposure to excessive sound pressure  The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones.  NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for "one package equipment", and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.		N/A
(A12:2011)	In EN 60950-1:2006/A12:2011  Delete the addition of 1.3.Z1 / EN 60950-1:2006  Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010		--
1.5.1  (Added info*)	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC. New Directive 2011/65/11 *		--
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.		N/A
1.7.2.1 (A12.2011)	In EN 60950-1:2006/A12:2011 Delete NOTE Z1 and the addition for Portable Sound System. Add the following clause and annex to the existing standard and amendments.		N/A
	<b>Zx Protection against excessive sound pressure from personal music players</b>		



EN60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

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



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Clause	Requirement + Test	Result - Remark	Verdict

<b>IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
	<p><b>Zx.2 Equipment requirements</b> No safety provision is required for equipment that complies with the following:</p> <ul style="list-style-type: none"><li>– equipment provided as a package (personal music player with its listening device), where the acoustic output <math>L_{Aeq,T}</math> is <math>\leq 85</math> dBA measured while playing the fixed “programme simulation noise” as described in EN 50332-1; and</li><li>– a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is <math>\leq 27</math> mV measured as described in EN 50332-2, while playing the fixed “programme simulation noise” as described in EN 50332-1.</li></ul> <p>NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level <math>L_{Aeq,T}</math> is meant. See also Zx.5 and Annex Zx.</p> <p>All other equipment shall:</p> <ul style="list-style-type: none"><li>a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and</li><li>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</li></ul>		N/A




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Clause	Requirement + Test	Result - Remark	Verdict

**IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)**

Clause	Requirement + Test	Result - Remark	Verdict
	<p>c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and</p> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always required.</p> <p>NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off.</p> <p>d) have a warning as specified in Zx.3; and</p> <p>e) not exceed the following:</p> <ol style="list-style-type: none"> <li>1) equipment provided as a package (player with its listening device), the acoustic output shall be <math>\leq 100</math> dBA measured while playing the fixed "programme simulation noise" described in EN 50332-1; and</li> <li>2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be <math>\leq 150</math> mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" described in EN 50332-1.</li> </ol> <p>For music where the average sound pressure (long term <math>L_{Aeq,T}</math>) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song.</p> <p>NOTE 4 Classical music typically has an average sound pressure (long term <math>L_{Aeq,T}</math>) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA.</p> <p>For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dBA.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

<b>IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
	<p><b>Zx.3 Warning</b>            The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following:</p> <ul style="list-style-type: none"> <li>– the symbol of Figure 1 with a minimum height of 5 mm; and</li> <li>– the following wording, or similar:</li> </ul> <p>“To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p> <div style="text-align: center;">  </div> <p><b>Figure 1 – Warning label (IEC 60417-6044)</b></p> <p>Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.</p>		N/A
	<p><b>Zx.4 Requirements for listening devices (headphones and earphones)</b></p>		N/A
	<p><b>Zx.4.1 Wired listening devices with analogue input</b>            With 94 dBA sound pressure output <math>L_{Aeq,T}</math>, the input voltage of the fixed “programme simulation noise” described in EN 50332-2 shall be <math>\geq 75</math> mV.</p> <p>This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control).</p> <p>NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.</p>		N/A



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Clause	Requirement + Test	Result - Remark	Verdict

<b>IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
	<p><b>Zx.4.2 Wired listening devices with digital input</b>            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 <math>L_{Aeq,T}</math> of the listening device shall be <math>\leq 100</math> dBA.</p> <p>This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.).</p> <p>NOTE An example of a wired listening device with digital input is a USB headphone.</p>		N/A
	<p><b>Zx.4.3 Wireless listening devices</b>            In wireless mode:</p> <ul style="list-style-type: none"> <li>– with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and</li> <li>– respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and</li> <li>– with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output <math>L_{Aeq,T}</math> of the listening device shall be <math>\leq 100</math> dBA.</li> </ul> <p>NOTE An example of a wireless listening device is a Bluetooth headphone.</p>		N/A
	<p><b>Zx.5 Measurement methods</b>            Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s.</p> <p>NOTE Test method for wireless equipment provided without listening device should be defined.</p>		N/A



EN60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

**IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)**

Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	<p>Replace the subclause as follows:</p> <p>Basic requirements</p> <p>To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p>	The equipment is provided with fuse complies with a).	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/A
2.7.2	This subclause has been declared 'void'.		--
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		N/A
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> <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  </p> <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>	Power supply cord has not been check, refer to Summary of Testing.	N/A



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Clause	Requirement + Test	Result - Remark	Verdict

<b>IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.5.1 (A2:2013)	NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD	Power supply cord has not been check, refer to Summary of Testing.	N/A
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:  Over 10 up to and including 16   1,5 to 2,5   1,5 to 4    Delete the fifth line: conductor sizes for 13 to 16 A	Power supply cord has not been check, refer to Summary of Testing.	N/A
4.3.13.6 (A1:2010)	Replace the existing NOTE by the following: NOTE Z1 Attention is drawn to:  1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and  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).		N/A
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N/A
Annex H	Replace the last paragraph of this annex by:  At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level.  Replace the notes as follows:  NOTE These values appear in Directive 96/29/Euratom.  Delete NOTE 2.	The unit does not emit X-ray radiation.	N/A
Bibliography	Additional EN standards.		—

<b>ZA</b>	<b>NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS</b>	—
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<b>ZB ANNEX (normative)</b>			
<b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
1.2.4.1	In <b>Denmark</b> , certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.		N/A
1.2.13.14 (A11:2009)	In <b>Norway</b> and <b>Sweden</b> , for requirements see 1.7.2.1 and 7.3 of this annex.		N/A







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Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>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> <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 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:            "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>	Should be considered when market into these countries	N/A
1.7.2.1 (A2:2013)	<p>In <b>Denmark</b>, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.</p> <p>The marking text in <b>Denmark</b> shall be as follows:            In <b>Denmark</b>: "Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord."</p>	Should be considered when market into these countries	N/A



EN60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ZB ANNEX (normative)</b>			
<b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
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.		N/A
1.7.5 (A11:2009)	For <b>CLASS II EQUIPMENT</b> the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		
1.7.5 (A2:2013)	In <b>Denmark</b> , socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011. For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a. Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with by DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b. Justification the Heavy Current Regulations, 6c		N/A
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/A
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/A
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/A
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/A
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/A
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/A



EN60950-1			
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 <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:</p> <p>SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A</p>		N/A
	<p>SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A</p> <p>SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A</p> <p>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:</p> <p>SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A</p> <p>SEV 5933-2.1998: Plug Type 21, L+N, 250 V, 16A</p> <p>SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 16 A</p>		N/A
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/A



EN60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ZB ANNEX (normative)</b>			
<b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1 (A2:2013)	<p>In <b>Denmark</b>, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Justification the Heavy Current Regulations, 6c</p>		N/A
3.2.1.1	<p>In <b>Spain</b>, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p>		N/A
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/A



EN60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ZB ANNEX (normative)</b>			
<b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
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/A
3.2.4	In <b>Switzerland</b> , for requirements see 3.2.1.1 of this annex.		N/A
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/A
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: <ul style="list-style-type: none"><li>• 1,25 mm<sup>2</sup> to 1,5 mm<sup>2</sup> nominal cross-sectional area.</li></ul>		N/A
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/A
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/A



EN60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ZB ANNEX (normative)</b>			
<b>SPECIAL NATIONAL CONDITIONS (EN)</b>			
Clause	Requirement + Test	Result - Remark	Verdict
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/A
6.1.2.1 (A1:2010)	<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> <li>- one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li> </ul> <p>Alternatively for components, there is no distance through insulation requirements for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> <li>- passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 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/A



EN60950-1			
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"> <li>- the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1;</li> <li>- the additional testing shall be performed on all the test specimens as described in EN 60384-14:</li> <li>- the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.</li> </ul>		N/A
6.1.2.2	In <b>Finland, Norway and Sweden</b> , the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.		N/A
7.2	In <b>Finland, Norway and Sweden</b> , for requirements see 6.1.2.1 and 6.1.2.2 of this annex.  The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		N/A
7.3 (A11:2009)	In <b>Norway and Sweden</b> , for requirements see 1.2.13.14 and 1.7.2.1 of this annex.		N/A





1.5.1	TABLE: List of critical components					P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity <sup>1)</sup>	
PCB	Interchangeable	Interchangeable	V-1 min, min. 130°C	UL 796	UL	
Transformer	Shenzhen BCZW Technology Co.Ltd	SP5220- 8PGE2GE2GF	Class B	IEC/EN 60950-1	Tested with appliance	
-Bobbin	SUMITOMO BAKELITE CO LTD	PM-9820	Phenolic, rated V-0, 150 degree C, minimum 0.45 mm thick.	UL 94, UL746C	UL	
-Magnet wire	Interchangeable	Interchangeable	Min. 130°C	UL 1446	UL	
-Insulating Tape	TERAOKA SEISAKUSHO CO LTD	831S	130°C	UL 510	UL	
(alternative)	SUMITOMO 3M LTD	2245	130°C	UL 510	UL	
-Insulation tube	GREAT HOLDING INDUSTRIAL CO LTD	TFL	200°C	UL 224	UL	
(alternative)	DAIKIN AMERICA INC	EP520	180°C	UL 224	UL	
-Varnish	HITACHI CHEMICAL CO LTD	WP-2952F-2G	130°C	UL 1446	UL	
(alternative)	MEIDEN CHEMICAL CO LTD	#880	130°C	UL 1446	UL	
Glue	Interchangeable	Interchangeable	Min. V-2	UL94, UL746C	UL	
<b>Supplementary information:</b> <sup>1)</sup> Provided evidence ensures the agreed level of compliance. See OD-CB2039.						



1.6.2		TABLE: Electrical data (in normal conditions)					P
U (V)	I <sub>rated</sub> (A)	I (A)	P (W)	Fuse #	I <sub>fuse</sub> (A)	Condition/status	
90V/50Hz	--	0.243	28.3	--	0.243	Normal operation	
90V/60Hz	--	0.242	28.9	--	0.242	Normal operation	
100V/50Hz	5	0.218	28.3	--	0.218	Normal operation	
100V/60Hz	5	0.217	27.1	--	0.217	Normal operation	
240V/50Hz	5	0.128	28.3	--	0.128	Normal operation	
240V/60Hz	5	0.127	27.0	--	0.127	Normal operation	
264V/50Hz	--	0.095	28.4	--	0.095	Normal operation	
264V/60Hz	--	0.096	27.1	--	0.096	Normal operation	
Supplementary information:							

2.1.1.5 c) 1)		TABLE: max. V, A, VA test			N/A
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)					

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

2.2		TABLE: evaluation of voltage limiting components in SELV circuits		N/A
Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components	
	V peak	V d.c.		
Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)			
supplementary information:				
Input voltage:				
S-C=short circuit.				



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

<b>2.10.2</b>	<b>Table: working voltage measurement</b>	P	
Location	RMS voltage (V)	Peak voltage (V)	Comments
L to N	240	325	Maximum voltage
supplementary information:			
The highest measured working voltages in transformer are indicated with bold characters. 240V, 60Hz			

<b>2.10.3 and 2.10.4</b>	<b>TABLE: Clearance and creepage distance measurements</b>	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)
Between L to N	420	250	2.0	3.1	2.5	3.1
Primary traces to secondary traces	520	250	4.4	6.5	5.0	6.5
Primary traces to secondary traces under transformer	520	250	2.2	6.3	2.5	6.3
Primary winding to secondary winding of transformer	520	250	4.4	6.0	5.0	6.0
Primary winding to core of transformer	520	250	2.2	3.0	2.5	3.0
Secondary winding to core of transformer	520	250	2.2	3.0	2.5	3.0
Primary trace to enclosure	520	250	4.4	6.8	5.0	6.8
Supplementary information: supply voltage: 240V/50Hz						

<b>2.10.5</b>	<b>TABLE: Distance through insulation measurements</b>	P			
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)
Optocoupler	420	240	3000 Vac	Min 1.5	0.4
Supplementary information:--					



<b>4.3.8</b>	<b>TABLE: Batteries</b>								N/A	
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:								Verdict		
- Chemical leaks								N/A		
- Explosion of the battery								N/A		
- Emission of flame or expulsion of molten metal								N/A		
- Electric strength tests of equipment after completion of tests								N/A		
Supplementary information:										

<b>4.3.8</b>	<b>TABLE: Batteries</b>								N/A	
Battery category..... :								--		
Manufacturer..... :								--		
Type / model..... :								--		
Voltage..... :								--		
Capacity..... :								--		
Tested and Certified by (incl. Ref. No.)..... :								--		
Circuit protection diagram:								--		

<b>4.5</b>	<b>TABLE: Thermal requirements</b>					P
Supply voltage (V) .....		90/60Hz	Shift to 40	264V/50Hz	Shift to 40	—
Maximum measured temperature T of part/at::		T (°C)				Allowed T <sub>max</sub> (°C)
AC inlet		42.7	57.5	46.3	60.7	Ref.
Winding of transformer		74.2	89.0	72.4	86.8	110
Core of transformer		66.9	81.7	65.4	79.8	Ref.
Winding of line filter		36.6	51.4	35.1	49.5	120



Primary E-cap.	34.5	49.3	32.7	47.1	125		
Secondary E-cap.	37.5	52.3	38.6	53.0	125		
Optocoupler	42.9	57.7	44.3	58.7	100		
PCB near bridge diode	52.7	67.5	54.5	68.9	130		
Ambient	25.2	40.0	25.6	40.0	--		
Temperature T of winding:	t <sub>1</sub> (°C)	R <sub>1</sub> (Ω)	t <sub>2</sub> (°C)	R <sub>2</sub> (Ω)	T (°C)	Allowed T <sub>max</sub> (°C)	Insulation class
--	--	--	--	--	--	--	--
Supplementary information:							

<b>4.5.5</b>	<b>TABLE: Ball pressure test of thermoplastic parts</b>			P
	Allowed impression diameter (mm) .....	≤ 2 mm		—
Part	Test temperature (°C)		Impression diameter (mm)	
Connector	125		1.1	
Supplementary information:--				

<b>5.1</b>	<b>TABLE: touch current measurement</b>			P
Measured between:	Measured (mA)	Limit (mA)	Comments/conditions	
Live-Enclosure (GND)	1.20	3.5	Normal load condition	
Neutral -Enclosure (GND)	1.20	3.5	Normal load condition	
supplementary information:				
Input voltage: 264V/50Hz				

<b>5.2</b>	<b>TABLE: Electric strength tests, impulse tests and voltage surge tests</b>			P
Test voltage applied between:	Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No	
Line to Netural	AC	1500	No	
L/N to output terminal	AC	3000	No	
L/N to plastic enclosure with metal foil	AC	3000	No	
Transformer: Primary to Secondary	AC	3000	No	
Transformer: Core to Secondary	AC	3000	No	
Transformer: One layer insulation tape	AC	3000	No	
supplementary information:--				

<b>5.3</b>	<b>TABLE: Fault condition tests</b>			P
	Ambient temperature (°C) .....	25.3		—
	Power source for EUT: Manufacturer, model/type, output rating .....	--		—



Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Bridge diode	s-c	240	1s	FUSE	0	Fuse opened immediately, no hazards
E-cap. (primary)	s-c	240	1s	FUSE	0	Fuse opened immediately, no hazards
Optocoupler pin 1-2	s-c	240	10mins	FUSE	0.005	Unit shutdown immediately, recoverable, no hazards
Optocoupler pin 3-4	s-c	240	10mins	FUSE	0.005	Unit shutdown immediately, recoverable, no hazards
Optocoupler pin 1	o-c	240	10mins	FUSE	0.005	Unit shutdown immediately, recoverable, no hazards
Optocoupler pin 2	o-c	240	10mins	FUSE	0.005	Unit shutdown immediately, recoverable, no hazards
Diode (secondary)	s-c	240	10mins	FUSE	0.005	Unit shutdown immediately, recoverable, no hazards
E-cap. (secondary)	s-c	240	10mins	FUSE	0.005	Unit shutdown immediately, recoverable, no hazards

Supplementary information: o-c: open-circuit s-c: short-circuit

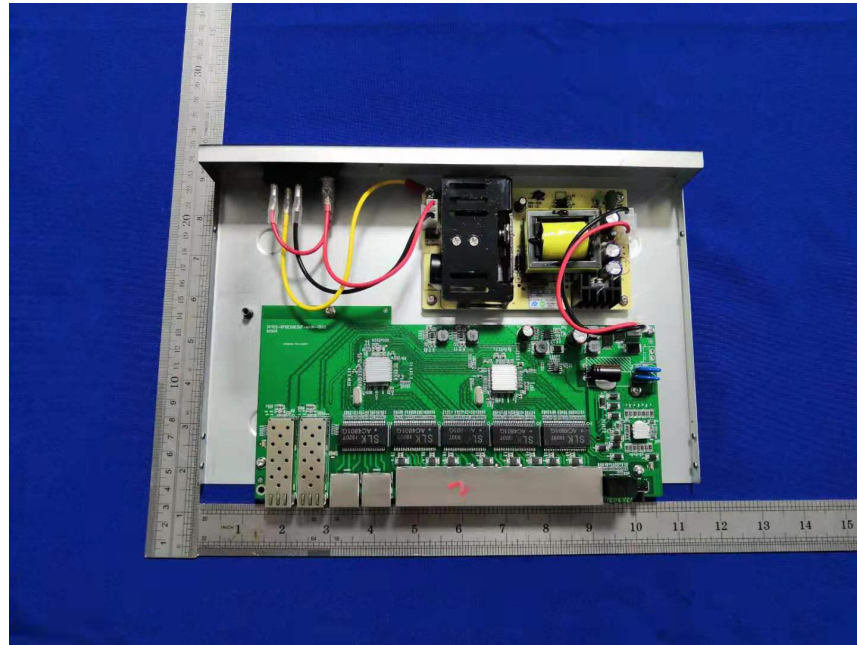
### PHOTO

Model: SP5220-8PGE2GE2GF









**\*\*\*End of Test Report\*\*\*\*\***