TEST REPORT

IEC 60950-1
Information technology equipment – Safety –
Part 1: General requirements

Report Reference No. ..... :	< >	
Tested by (printed name and signature) ..... :	Simon Huang	.....
Approved by (printed name and signature) ..... :	Jess Wang	.....
Date of issue ..... :	January 07, 2013	
Testing Laboratory Name ..... :	Cerpass Technology Corp.	
Address ..... :	9F, No. 200, Gangcian Rd., Neihu District, Taipei City 114, Taiwan	
Applicant's name ..... :	VIVOTEK INC	
Address ..... :	6TH FL, 192 LIEN CHENG RD CHUNG HO TAIPEI HSIEN, 235 TAIWAN	
Test specification:		
Standard ..... :	IEC 60950-1:2005 (2nd Edition); Am 1:2009 and/or EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011	
Test procedure ..... :	Service of CE Marking in LVD	
Non-standard test method…….:	N/A	
Test item description .....:	Network Video Recorder	
Trade Mark ..... :	VIVOTEK	
Manufacturer ..... :	Same as applicant	
Model/Type reference ..... :	NR8401	
Ratings ..... :	100-240Vac, 50-60Hz, 3A	

Particulars: test item vs. test requirements	
Equipment mobility..... :	Movable
Connection to the mains..... :	Pluggable equipment
Operating condition..... :	Continuous
Access location ..... :	Operator accessible
Over voltage category (OVC) ..... :	OVC II
Mains supply tolerance (%) or absolute mains supply values ..... :	± 10 %
Tested for IT power systems ..... :	YES
IT testing, phase-phase voltage (V) ..... :	230V for Norway
Class of equipment ..... :	Class I
Considered current rating (A) ..... :	16A
Pollution degree (PD) ..... :	PD2
IP protection class ..... :	IPX0
Altitude during operation (m) ..... :	Up to 2000
Altitude of test laboratory (m) ..... :	Up to 2000
Mass of equipment (kg) ..... :	8.79kg
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing	
Date of receipt of test item ..... :	December 14, 2012
Date(s) of performance of tests ..... :	December 14, 2012 – January 07, 2013

General remarks:

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

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

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

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

Factor(ies):

VIVOTEK INC
6TH FL, 192 LIEN CHENG RD CHUNG HO TAIPEI HSIEN, 235 TAIWAN

General product information:

This equipment, model NR8401, is a Class I Network Video Storage which is intended to use within information technology equipment.

The equipment consists of building-in power supply and main board housed with metallic enclosure.

Other comments:

The product was submitted and tested for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 40°C.

The power supply cord of the equipment must be evaluated when submitted to national approval.

Copy of marking plate:

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	**GENERAL**		P
1.5	**Components**		P
1.5.1	General	See below.	P
	Comply with IEC 60950-1 or relevant component standard	Components which were found to affect safety aspects comply with the requirements of this standard or with the safety aspects of the relevant IEC/EN component standards. See appended table 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. Components, which no relevant IEC-Standard exists, are used within their ratings and are tested under the conditions occurring in the equipment.	P
1.5.3	Thermal controls	No thermal control.	N/A
1.5.4	Transformers	Evaluated in approved building-in power supply unit.	N/A
1.5.5	Interconnecting cables	Interconnection o/p cable to other device is carrying only SELV on an energy level below 240VA. Except for the insulation material, there are no further requirements for the o/p interconnection cable.	P
1.5.6	Capacitors bridging insulation	Evaluated in approved building-in power supply unit.	N/A
1.5.7	Resistors bridging insulation	No such components provided.	N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Same as above.	N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits	Same as above.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable	Same as above.	N/A
1.5.8	Components in equipment for IT power systems	Evaluated in approved building-in power supply unit.	N/A
1.5.9	Surge suppressors	No such components provided.	N/A
1.5.9.1	General	Same as above.	N/A
1.5.9.2	Protection of VDRs	Same as above.	N/A
1.5.9.3	Bridging of functional insulation by a VDR	Same as above.	N/A
1.5.9.4	Bridging of basic insulation by a VDR	Same as above.	N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR	Same as above.	N/A
1.6	**Power interface**		P
1.6.1	AC power distribution systems	TN power system. IT power system for Norway only.	P
1.6.2	Input current	LAN ports transmitted data and HDD read/write data continuously, USB port loaded 2.5W. See appended table 1.6.2.	P
1.6.3	Voltage limit of hand-held equipment	This appliance is not hand-held equipment.	N/A
1.6.4	Neutral conductor	Evaluated in approved building-in power supply unit.	N/A
1.7	**Marking and instructions**		P
1.7.1	Power rating and identification markings	See below.	P
1.7.1.1	Power rating marking	See below.	P
	Multiple mains supply connections.....:	Single supply connection.	N/A
	Rated voltage(s) or voltage range(s) (V) .....:	100-240Vac	P
	Symbol for nature of supply, for d.c. only .....:	Mains from AC source.	P
	Rated frequency or rated frequency range (Hz) ....:	50-60Hz	P
	Rated current (mA or A) .....:	3A	P
1.7.1.2	Identification markings	See below.	P
	Manufacturer's name or trade-mark or identification mark .....:	VIVOTEK	P
	Model identification or type reference .....:	NR8401	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Symbol for Class II equipment only .....:	Class I equipment.	N/A
	Other markings and symbols .....:	Additional symbols or markings do not give rise to misunderstanding.	P
1.7.2	Safety instructions and marking	See below.	P
1.7.2.1	General	The user's manual contains information for operation, installation, servicing, transport, storage and technical data. The operation guide is provided to the user.	P
1.7.2.2	Disconnect devices	The installation instruction state that the socket-outlet shall be installed near the equipment and shall be easily accessible.	P
1.7.2.3	Overcurrent protective device	This equipment is not permanently connected equipment or pluggable equipment type B.	N/A
1.7.2.4	IT power distribution systems	It shall be evaluated when submitted for Norway national approval.	N/A
1.7.2.5	Operator access with a tool	No operator access areas require the use of a tool.	N/A
1.7.2.6	Ozone	No ozone produces within this 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 adjustment device provided.	N/A
	Methods and means of adjustment; reference to installation instructions .....:	Same as above.	N/A
1.7.5	Power outlets on the equipment .....:	No outlet provided.	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....:	Evaluated in approved building-in power supply unit.	N/A
1.7.7	Wiring terminals	See below.	P
1.7.7.1	Protective earthing and bonding terminals .....:	IEC 60417-5017 marking provide on metal enclosure for identify protective earth.	P

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Clause	Requirement + Test	Result - Remark	Verdict
1.7.7.2	Terminals for a.c. mains supply conductors	The equipment with appliance inlet which is intended to use the detachable type power supply cord.	N/A
1.7.7.3	Terminals for d.c. mains supply conductors	AC mains supply only.	N/A
1.7.8	Controls and indicators	The marking and indication is located that indication of function clearly.	P
1.7.8.1	Identification, location and marking .....:	See below.	P
1.7.8.2	Colours .....:	No safety relevant controls or indicators.	N/A
1.7.8.3	Symbols according to IEC 60417 .....:	"I" and "O" marking on power switch of power supply, and standby marking according to IEC 60417	P
1.7.8.4	Markings using figures .....:	No indicators for different positions of control.	N/A
1.7.9	Isolation of multiple power sources .....:	Only one supply connection.	N/A
1.7.10	Thermostats and other regulating devices .....:	No such device provided.	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 s and then again for 15 s with the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was neither curling nor lifting of the label edge.	P
1.7.12	Removable parts	No required markings placed on removable parts.	P
1.7.13	Replaceable batteries .....:	The R.T.C battery is exchangeable. Warning text provided in user's manual.	P
	Language(s) .....:	English.	—
1.7.14	Equipment for restricted access locations.....:		N/A

2	**PROTECTION FROM HAZARDS**	P
2.1	Protection from electric shock and energy hazards	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.1.1	Protection in operator access areas	See below.	P
2.1.1.1	Access to energized parts	See below.	P
	Test by inspection .....:	No access with test finger to any parts with only basic insulation to ELV or hazardous voltage. The test pin cannot touch hazardous voltage through any openings within the appliance.	P
	Test with test finger (Figure 2A) .....:	Same as above.	P
	Test with test pin (Figure 2B) .....:	Same as above.	P
	Test with test probe (Figure 2C) .....:	No TNV.	N/A
2.1.1.2	Battery compartments	No battery compartments and TNV circuits.	N/A
2.1.1.3	Access to ELV wiring	No ELV wiring in operator accessible area.	N/A
	Working voltage (Vpeak or Vrms); minimum distance through insulation (mm)	Same as above.	—
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage wiring in operator accessible area.	N/A
2.1.1.5	Energy hazards .....:	No energy hazard circuit in user accessible parts.	P
2.1.1.6	Manual controls	No conductive shafts of operating knobs and handles.	N/A
2.1.1.7	Discharge of capacitors in equipment	Evaluated in approved building-in power supply unit.	N/A
	Measured voltage (V); time-constant (s) .....:	Same as above.	—
2.1.1.8	Energy hazards – d.c. mains supply	AC mains supply only.	N/A
	a) Capacitor connected to the d.c. mains supply ...:	Same as above.	N/A
	b) Internal battery connected to the d.c. mains supply .....:	Same as above.	N/A
2.1.1.9	Audio amplifiers .....:	No audio amplifier provided.	N/A
2.1.2	Protection in service access areas	No maintenance work in operation mode necessary.	N/A
2.1.3	Protection in restricted access locations	It is not intended to use in restricted locations.	N/A

2.2	**SELV circuits**	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.2.1	General requirements	See below.	P
2.2.2	Voltages under normal conditions (V) .....:	Between any SELV circuits 42.4V peak or 60VDC are not exceeded.	P
2.2.3	Voltages under fault conditions (V) .....:	Single fault did not cause excessive voltage in accessible SELV circuits. Limits of 71V peak and 120V DC were not exceed and SELV limits not for longer than 0.2 seconds.	P
2.2.4	Connection of SELV circuits to other circuits .....:	See 2.2.2 and 2.2.3. No direct connection between SELV and any primary circuits.	N/A
2.3	**TNV circuits** *No TNV circuits.*		N/A
2.3.1	Limits		N/A
	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
2.4	**Limited current circuits** *Evaluated in approved building-in power supply unit.*		N/A
2.4.1	General requirements		N/A
2.4.2	Limit values		N/A
	Frequency (Hz).....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Measured current (mA).....:		—
	Measured voltage (V) .....:		—
	Measured circuit capacitance (nF or µF).....:		—
2.4.3	Connection of limited current circuits to other circuits		N/A
2.5	**Limited power sources**		P
	a) Inherently limited output	Results see appended table 2.5	P
	b) Impedance limited output	Results see appended table 2.5	P
	c) Regulating network limited output under normal operating and single fault condition		N/A
	d) Overcurrent protective device limited output		N/A
	Max. output voltage (V), max. output current (A), max. apparent power (VA).....:	Results see appended table 2.5	—
	Current rating of overcurrent protective device (A) .:		—
	Use of integrated circuit (IC) current limiters		
2.6	**Provisions for earthing and bonding**		P
2.6.1	Protective earthing	One green/yellow wire is hook-in soldering to the PE pin of the appliance inlet with heat shrink tube and fixed to the metal chassis by a screw, star washer and ring terminal.	P
2.6.2	Functional earthing	Secondary functional earthing is separated to primary by reinforced or double insulation.	P
2.6.3	Protective earthing and protective bonding conductors	See below.	P
2.6.3.1	General	See below.	P
2.6.3.2	Size of protective earthing conductors	No power cord provided.	N/A
	Rated current (A), cross-sectional area (mm^2), AWG.....:	Same as above.	—
2.6.3.3	Size of protective bonding conductors	Evaluation by test. See 2.6.3.4.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Rated current (A), cross-sectional area (mm^2), AWG .....:		—
	Protective current rating (A), cross-sectional area (mm^2), AWG .....:		N/A
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min) .....:	Earthed pin of AC inlet to metallic chassis: 6.9mΩ (32A, 2min. Voltage Drop = 0.2208V)	P
2.6.3.5	Colour of insulation .....:	Green/yellow wire used.	P
2.6.4	Terminals	See below.	N/A
2.6.4.1	General	Refer to 2.6.4.2 and 2.6.4.3.	P
2.6.4.2	Protective earthing and bonding terminals	Appliance inlet is used. Screw construction for bonding terminals. See 2.6.4.3.	P
	Rated current (A), type, nominal thread diameter (mm) .....:		—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Appliance inlet provided. Only one protective bonding conductor (green-yellow wire) provided.	P
2.6.5	Integrity of protective earthing	See below.	P
2.6.5.1	Interconnection of equipment	This unit has it's own earthing connection. Any other units connected via the output shall be provided SELV only.	P
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switch or overcurrent protective device in protective bonding conductor and earthing conductor.	P
2.6.5.3	Disconnection of protective earth	Appliance inlet provided.	P
2.6.5.4	Parts that can be removed by an operator	For the appliance coupler, the earth connection is made before and broken after the hazardous voltage. No other operator removable parts.	P
2.6.5.5	Parts removed during servicing	The protective earthing connections of equipment can't be disconnected for servicing unless the relevant hazards is removed.	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.6	Corrosion resistance	All safety earthing connections in compliance with Annex J.	P
2.6.5.7	Screws for protective bonding	No self-tapping or spaced thread screws.	N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV circuits.	N/A
2.7	**Overcurrent and earth fault protection in primary circuits** *Evaluated in approved building-in power supply unit.*		N/A
2.7.1	Basic requirements		N/A
	Instructions when protection relies on building installation		N/A
2.7.2	Faults not simulated in 5.3.7		N/A
2.7.3	Short-circuit backup protection		N/A
2.7.4	Number and location of protective devices ..... :		N/A
2.7.5	Protection by several devices		N/A
2.7.6	Warning to service personnel..... :		N/A
2.8	**Safety interlocks**		N/A
2.8.1	General principles		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
2.9	**Electrical insulation**		P

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Clause	Requirement + Test	Result - Remark	Verdict
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials are not used.	P
2.9.2	Humidity conditioning	Carried out for 48 h.	
	Relative humidity (%), temperature (°C) ..... :	93% R.H., 25°C.	—
2.9.3	Grade of insulation	The adequate levels of safety insulation is provided and maintained to comply with the requirements of this standard.	P
2.9.4	Separation from hazardous voltages	See below.	P
	Method(s) used ..... :	Class I equipment, which is separated from hazardous voltage by double/reinforced insulation though internal power supply.	—
2.10	**Clearances, creepage distances and distances through insulation**		P
2.10.1	General	See below for details.	P
2.10.1.1	Frequency .....:	The frequency not exceeding 30kHz.	P
2.10.1.2	Pollution degrees .....:	Pollution Degree 2.	P
2.10.1.3	Reduced values for functional insualtion	See sub-clause 5.3.4.	P
2.10.1.4	Intervening unconnected conductive parts	Not applicable.	N/A
2.10.1.5	Insulation with varying dimensions	Not applicable.	N/A
2.10.1.6	Special separation requirements	No TNV circuit.	N/A
2.10.1.7	Insulation in circuits generating starting pulses	No such circuits within equipment.	N/A
2.10.2	Determination of working voltage	See below.	N/A
2.10.2.1	General	Evaluated in approved building-in power supply unit.	N/A
2.10.2.2	RMS working voltage	Same as above.	N/A
2.10.2.3	Peak working voltage	Same as above.	N/A
2.10.3	Clearances	See below.	P
2.10.3.1	General	See below.	P
2.10.3.2	Mains transient voltages	Evaluated in approved building-in power supply unit.	N/A
	a) AC mains supply .....:	Same as above.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) Earthed d.c. mains supplies .....:	Same as above.	N/A
	c) Unearthed d.c. mains supplies .....:	Same as above.	N/A
	d) Battery operation .....:	Same as above.	N/A
2.10.3.3	Clearances in primary circuits	Evaluated in approved building-in power supply unit.	N/A
2.10.3.4	Clearances in secondary circuits	Refer to sub-clause 5.3.4.	P
2.10.3.5	Clearances in circuits having starting pulses	No such circuits within equipment.	N/A
2.10.3.6	Transients from a.c. mains supply .....:	Evaluated in approved building-in power supply unit.	N/A
2.10.3.7	Transients from d.c. mains supply .....:	Mains from AC source.	N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems .....:	No such circuits within equipment.	N/A
2.10.3.9	Measurement of transient voltage levels	Evaluated in approved building-in power supply unit.	N/A
	a) Transients from a mains suplply	Same as above.	N/A
	For an a.c. mains supply .....:	Same as above.	N/A
	For a d.c. mains supply .....:	Same as above.	N/A
	b) Transients from a telecommunication network :	Same as above.	N/A
2.10.4	Creepage distances	See below.	P
2.10.4.1	General	See appended table 2.10.3 and 2.10.4. Insulation between other parts in the equipment is functional. For details see sub-clause 5.3.4. Creepage distances inside building-in power supply unit have been evaluated during type approval and are in compliance with the requirements of this standard.	P
2.10.4.2	Material group and caomparative tracking index	Material group IIIb is assumed to be used.	P
	CTI tests .....:	CTI rating for all materials are min. 100.	—
2.10.4.3	Minimum creepage distances	See sub-clause 2.10.4.	P
2.10.5	**Solid insulation**	See below.	P
2.10.5.1	General	See below.	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.2	Distances through insulation	Evaluated in approved building-in power supply unit. Other parts, see appended table 1.5.1 and 2.10.5.	P
2.10.5.3	Insulating compound as solid insulation	Evaluated in approved building-in power supply unit.	N/A
2.10.5.4	Semiconductor devices	Evaluated in approved building-in power supply unit.	N/A
2.10.5.5.	Cemented joints	No such components provided.	N/A
2.10.5.6	Thin sheet material – General	Evaluated in approved building-in power supply unit.	N/A
2.10.5.7	Separable thin sheet material		N/A
	Number of layers (pcs) .....:		—
2.10.5.8	Non-separable thin sheet material	No such components provided.	N/A
2.10.5.9	Thin sheet material – standard test procedure	No such components provided.	N/A
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure	No such components provided.	N/A
	Electric strength test		—
2.10.5.11	Insulation in wound components	Evaluated in approved building-in power supply unit.	N/A
2.10.5.12	Wire in wound components	Evaluated in approved building-in power supply unit.	N/A
	Working voltage .....:	Same as above.	N/A
	a) Basic insulation not under stress .....:	Same as above.	N/A
	b) Basic, supplemetary, reinforced insulation .....:	Same as above.	N/A
	c) Compliance with Annex U .....:	Same as above.	N/A
	Two wires in contact inside wound component; angle between 45° and 90° .....:	Same as above.	N/A
2.10.5.13	Wire with solvent-based enamel in wound components	Evaluated in approved building-in power supply unit.	N/A
	Electric strength test		—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components	Evaluated in approved building-in power supply unit.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Working voltage .....:	Same as above.	N/A
	- Basic insulation not under stress .....:	Same as above.	N/A
	- Supplemetary, reinforced insulation .....:	Same as above.	N/A
2.10.6	**Construction of printed boards**	See below.	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 such printed board.	N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board	No such multi-layer printed board.	N/A
2.10.6.4	Insulation between conductors on different layers of a printed board	No such consideration.	N/A
	Distance through insulation	Same as above.	N/A
	Number of insulation layers (pcs) .....:	Same as above.	N/A
2.10.7	**Component external terminations**	Evaluated in approved building-in power supply unit.	N/A
2.10.8	Tests on coated printed boards and coated components	No such printed boards and compnents provided.	N/A
2.10.8.1	Sample preparation and preliminary inspection	Same as above.	N/A
2.10.8.2	Thermal conditioning	Same as above.	N/A
2.10.8.3	Electric strength test	Same as above.	N/A
2.10.8.4	Abrasion resistance test	Same as above.	N/A
2.10.9	Thermal cycling	No such consideration.	N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound	No such consideration.	N/A
2.10.11	Tests for semiconductor devices and cemented joints	Same as above.	N/A
2.10.12	Enclosed and sealed parts	No hermetically sealed components.	N/A

3	**WIRING, CONNECTIONS AND SUPPLY**		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	All internal wires are UL recognized. Cross-sectional area of internal wiring is suitable for current intended to be carried.	P

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Clause	Requirement + Test	Result - Remark	Verdict
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges or heat sinks, which could damage insulation and cause hazard.	P
3.1.3	Securing of internal wiring	Internal wiring is secured reliable so that loosening of terminal connections is unlikely.	P
3.1.4	Insulation of conductors	Insulation of the conductor is suitable for the application. For insulation material see sub-clause 3.1.1.	P
3.1.5	Beads and ceramic insulators	Not used.	N/A
3.1.6	Screws for electrical contact pressure	No such screws provided.	N/A
3.1.7	Insulating materials in electrical connections	All connections are metal to metal.	N/A
3.1.8	Self-tapping and spaced thread screws	No self-tapping screws are used.	N/A
3.1.9	Termination of conductors	All conductors are reliable secured.	P
	10 N pull test	Break away or pivot on its terminal is unlikely.	P
3.1.10	Sleeving on wiring	Used for internal secondary wiring.	P
3.2	**Connection to a mains supply**		P
3.2.1	Means of connection	See below	P
3.2.1.1	Connection to an a.c. mains supply	Appliance coupler used.	P
3.2.1.2	Connection to a d.c. mains supply	AC mains supply only.	N/A
3.2.2	Multiple supply connections	Only one supply connection.	N/A
3.2.3	Permanently connected equipment	Not permanently connected equipment.	N/A
	Number of conductors, diameter of cable and conduits (mm) .....:	Same as above.	—
3.2.4	Appliance inlets	Appliance coupler complies with IEC 60320-1. The connector can be easily inserted and does not support the equipment.	P
3.2.5	Power supply cords	No power cord provided.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.2.5.1	AC power supply cords	Same as above.	N/A
	Type .....:	Same as above.	—
	Rated current (A), cross-sectional area (mm^2), AWG .....:	Same as above.	—
3.2.5.2	DC power supply cords	AC mains supply.	N/A
3.2.6	Cord anchorages and strain relief	No non-detachable power cords provided.	N/A
	Mass of equipment (kg), pull (N) .....:	Same as above.	—
	Longitudinal displacement (mm) .....:	Same as above.	—
3.2.7	Protection against mechanical damage	No parts under this unit likely to damage the power supply cord. No sharp edge.	P
3.2.8	Cord guards	No cord guard.	N/A
	Diameter or minor dimension D (mm); test mass (g) .....:	Same as above.	—
	Radius of curvature of cord (mm).....:	Same as above.	—
3.2.9	Supply wiring space	Not permanently connector and without non-detachable power supply cord.	N/A
3.3	**Wiring terminals for connection of external conductors** *Not permanently connected equipment and equipment with ordinary non-detachable power supply cords.*		N/A
3.3.1	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^2).....:		—
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

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Clause	Requirement + Test	Result - Remark	Verdict
3.4	**Disconnection from the mains supply**		P
3.4.1	General requirement	See below.	P
3.4.2	Disconnect devices	Appliance inlet used.	P
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N/A
3.4.4	Parts which remain energized	When plug or inlet is disconnected no remaining parts with hazardous voltage in the equipment.	P
3.4.5	Switches in flexible cords	Not provided.	N/A
3.4.6	Number of poles - single-phase and d.c. equipment	The inlet disconnects both poles simultaneously.	P
3.4.7	Number of poles - three-phase equipment	Single-phase equipment.	N/A
3.4.8	Switches as disconnect devices	Appliance inlet used. No switch as disconnect device.	N/A
3.4.9	Plugs as disconnect devices	Appliance inlet used. No plugs as disconnect device.	N/A
3.4.10	Interconnected equipment	Interconnection with other equipment only via SELV outputs.	N/A
3.4.11	Multiple power sources	Only one supply connection provided.	N/A
3.5	**Interconnection of equipment**		P
3.5.1	General requirements	See below.	P
3.5.2	Types of interconnection circuits .....:	Interconnection circuits of SELV and LCC via secondary output connector.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N/A
3.5.4	Data ports for additional equipment	Results see appended table 2.5.	P
4	**PHYSICAL REQUIREMENTS**		P
4.1	Stability		N/A
	Angle of 10°		P
	Test force (N) .....:	Equipment is not a floor-standing unit.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.2	**Mechanical strength**		P
4.2.1	General	See below. After tests equipment still complies with sub-clauses 2.1.1, 2.6.1, 2.10.	P
	Rack-mounted equipment.	Not such equipment.	N/A
4.2.2	Steady force test, 10 N	10N force applied to components and parts other than parts serving as an enclosure.	P
4.2.3	Steady force test, 30 N	No internal enclosure.	N/A
4.2.4	Steady force test, 250 N	250 N applied to outer enclosure. No energy or other hazards.	P
4.2.5	Impact test	See below.	P
	Fall test	No crack and hazardous part could be user access.	P
	Swing test	No crack and hazardous part could be user access.	P
4.2.6	Drop test; height (mm) .....:	Not direct plug-in equipment.	N/A
4.2.7	Stress relief test	Metal enclosure used.	N/A
4.2.8	Cathode ray tubes	No CRT in the unit.	N/A
	Picture tube separately certified .....:	Same as above.	N/A
4.2.9	High pressure lamps	No high pressure lamp provided.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N) .....:		N/A
4.2.11	Rotating solid media	No such components provide.	N/A
	Test to cover on the door.....:		N/A

4.3	**Design and construction**		P
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded.	P
4.3.2	Handles and manual controls; force (N)..... :	No handles or controls used.	N/A
4.3.3	Adjustable controls	No control device.	N/A
4.3.4	Securing of parts	Mechanical fixings are reliable designed to withstand mechanical stress occurring during normal use.	P

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.5	Connection by plugs and sockets	No misconnection of plugs, connections or sockets possible.	P
4.3.6	Direct plug-in equipment	Not direct plug-in type.	N/A
	Torque .....:	Same as above.	—
	Compliance with the relevant mains plug standard .....:	Same as above.	N/A
4.3.7	Heating elements in earthed equipment	No heating elements.	N/A
4.3.8	Batteries	See below.	P
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery	For R.T.C Battery (BTH1) Result see appended table 5.3	P
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery	See appended table 5.3	P
4.3.9	Oil and grease	Insulation in intended use not considered to be exposed to oil and grease.	N/A
4.3.10	Dust, powders, liquids and gases	EUT in intended use does not produce dust or use powders, liquids or gases.	N/A
4.3.11	Containers for liquids or gases	No such containers provided.	N/A
4.3.12	Flammable liquids .....:	No flammable liquids used.	N/A
	Quantity of liquid (l) .....:	Same as above.	N/A
	Flash point (°C) .....:	Same as above.	N/A
4.3.13	Radiation	See below.	P
4.3.13.1	General	Same as above.	P
4.3.13.2	Ionizing radiation	No ionizing radiation or flammable liquids present.	N/A
	Measured radiation (pA/kg) .....:	Same as above.	—
	Measured high-voltage (kV) .....:	Same as above.	—
	Measured focus voltage (kV) .....:	Same as above.	—
	CRT markings .....:	Same as above.	—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	No UV radiation.	N/A
	Part, property, retention after test, flammability classification .....:	Same as above.	N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....:	No UV radiation.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.13.5	Lasers (including laser diodes) and LEDs	See below.	P
4.3.13.5.1	Lasers (including laser laser diodes)	No such components provided.	N/A
	Laser class .....:		—
4.3.13.5.2	Light emitting diodes (LEDs)	AEL of LED far below the limiting values for LED Class 1.	P
4.3.13.6	Other types .....:	No such consideration.	N/A
4.4	**Protection against hazardous moving parts**		P
4.4.1	General	See below.	P
4.4.2	Protection in operator access areas .....:	See below.	P
	Household and home/office document/media shredders	No moving parts except for DC fans located within equipment which was no operator accessible area inside.	P
4.4.3	Protection in restricted access locations .....:	Not for restricted access locations used	N/A
4.4.4	Protection in service access areas	Unintentional contact with inside DC fan is possible. However, indication for power off equipment first in service manual provided.	P
4.4.5	Protection against moving fan blades	No moving parts except for DC fans located within equipment which was no operator accessible area inside.	N/A
4.4.5.1	General	Same as above.	N/A
	Not considered to cause pain or injury. a).....:	Same as above.	N/A
	Is considered to cause pain, not injury. b) .....:	Same as above.	N/A
	Considered to cause injury. c) .....:	Same as above.	N/A
4.4.5.2	Protection for users	Same as above.	N/A
	Use of symbol or warning .....:	Same as above.	N/A
4.4.5.3	Protection for service persons	Same as above.	N/A
	Use of symbol or warning .....:	Same as above.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.5	**Thermal requirements**		P
4.5.1	General	See below.	P
4.5.2	Temperature tests	See appended table 4.5.	P
	Normal load condition per Annex L .....:	See Annex L.	—
4.5.3	Temperature limits for materials	See appended table 4.5.	P
4.5.4	Touch temperature limits	See appended table 4.5.	P
4.5.5	Resistance to abnormal heat .....:	See appended table 4.5.5 for primary connector, other material evaluated in approved building-in power supply unit	P
4.6	**Openings in enclosures**		P
4.6.1	Top and side openings	Several openings provided, no hazardous parts within 5° projection area.	P
	Dimensions (mm) .....:	See appended table 4.6.1 & 4.6.2.	—
4.6.2	Bottoms of fire enclosures	No openings.	P
	Construction of the bottomm, dimensions (mm) ..:	See appended table 4.6.1 & 4.6.2.	—
4.6.3	Doors or covers in fire enclosures	No doors or covers are provided.	N/A
4.6.4	Openings in transportable equipment	Not such equipment.	N/A
4.6.4.1	Constructional design measures	Same as above.	N/A
	Dimensions (mm) .....:	Same as above.	—
4.6.4.2	Evaluation measures for larger openings	Same as above.	N/A
4.6.4.3	Use of metallized parts	Same as above.	N/A
4.6.5	Adhesives for constructional purposes	No such construction.	N/A
	Conditioning temperature (°C), time (weeks) .....:	Same as above.	—
4.7	**Resistance to fire**		P
4.7.1	Reducing the risk of ignition and spread of flame	Use of materials with the required flammability classes.	P
	Method 1, selection and application of components wiring and materials	Method 1 used.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Method 2, application of all of simulated fault condition tests	Same as above.	N/A
4.7.2	Conditions for a fire enclosure	See below.	P
4.7.2.1	Parts requiring a fire enclosure	With having the following components: - Components in primary circuits - Insulated wiring - Components in secondary (not supplied by LPS) The fire enclosure is required.	P
4.7.2.2	Parts not requiring a fire enclosure	See sub-clause 4.7.2.1.	N/A
4.7.3	Materials		P
4.7.3.1	General	See appended table 1.5.1.	P
4.7.3.2	Materials for fire enclosures	See appended table 1.5.1.	P
4.7.3.3	Materials for components and other parts outside fire enclosures	None outside fire enclosure.	N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	Internal components except small parts are V-2, HF-2 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filter provided.	N/A
4.7.3.6	Materials used in high-voltage components	No high voltage components provided.	N/A
5	**ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS**		**P**
5.1	**Touch current and protective conductor current**		P
5.1.1	General	See sub-clauses 5.1.2 to 5.1.6.	P
5.1.2	Configuration of equipment under test (EUT)	See below.	P
5.1.2.1	Single connection to an a.c. mains supply	EUT has only single AC mains connection.	P
5.1.2.2	Redundant multiple connections to an a.c. mains supply	Same as above.	P
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply	Same as above.	N/A
5.1.3	Test circuit	Equipment of figure 5A used.	P
5.1.4	Application of measuring instrument	Using measuring instrument in annex D.	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.1.5	Test procedure	The touch current was measured from primary to enclosure and output terminal (SELV).	P
5.1.6	Test measurements	See appended table 5.1.6.	P
	Supply voltage (V) .....:	Same as above.	—
	Measured touch current (mA) .....:	Same as above.	—
	Max. allowed touch current (mA) .....:	Same as above.	—
	Measured protective conductor current (mA) .....:	Same as above.	—
	Max. allowed protective conductor current (mA) ...:	Same as above.	—
5.1.7	Equipment with touch current exceeding 3,5 mA	The touch current does not exceed 3.5mA.	N/A
5.1.7.1	General .....:	Same as above.	N/A
5.1.7.2	Simultaneous multiple connections to the supply	Only one supply connection.	N/A
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	No TNV circuits within the equipment.	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system	No TNV circuits within the equipment.	N/A
	Supply voltage (V) .....:	Same as above.	—
	Measured touch current (mA) .....:	Same as above.	—
	Max. allowed touch current (mA) .....:	Same as above.	—
5.1.8.2	Summation of touch currents from telecommunication networks	No TNV circuits within the equipment.	N/A
	a) EUT with earthed telecommunication ports .....:	Same as above.	N/A
	b) EUT whose telecommunication ports have no reference to protective earth	Same as above.	N/A

5.2	**Electric strength**		P
5.2.1	General	See appended table 5.2	P
5.2.2	Test procedure	Table 5B used.	P

5.3	**Abnormal operating and fault conditions**		P
5.3.1	Protection against overload and abnormal operation	Abnormal operation test performed. (See appended table 5.3.)	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.3.2	Motors	Certified DC fans used and other motors are used in the certified H.D.Ds. See appended table 1.5.1 for details.	P
5.3.3	Transformers	Investigated as an element of power supply certification.	N/A
5.3.4	Functional insulation .....:	Method c). Test results see appended table 5.3.	P
5.3.5	Electromechanical components	No electromechanical components provided.	N/A
5.3.6	Audio amplifiers in ITE .....:	No audio amplifiers provided.	N/A
5.3.7	Simulation of faults	See appended table 5.3.	P
5.3.8	Unattended equipment	None of the listed components provided.	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	See below.	P
5.3.9.1	During the tests	No fire occurred beyond the equipment, no molten metal emitted and no deformation of enclosure.	P
5.3.9.2	After the tests	Electric strength test made.	P
6	**CONNECTION TO TELECOMMUNICATION NETWORKS** *No TNV circuit within the equipment.*		N/A
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		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
6.2	**Protection of equipment users from overvoltages on telecommunication networks**		N/A
6.2.1	Separation requirements		N/A
6.2.2	Electric strength test procedure		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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
6.3	**Protection of the telecommunication wiring system from overheating**		N/A
	Max. output current (A) .....:		—
	Current limiting method .....:		—
7	**CONNECTION TO CABLE DISTRIBUTION SYSTEMS**		N/A
7.1	General		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
7.4.2	Voltage surge test		N/A
7.4.3	Impulse test		N/A
A	**ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE**		N/A
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N/A
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) .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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
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) .....:		—
A.3	Hot flaming oil test (see 4.6.2)		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A

B	**ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)**		N/A
B.1	General requirements		N/A
	Position .....:		—
	Manufacturer .....:		—
	Type .....:		—
	Rated values .....:		—
B.2	Test conditions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days) .....:		—
	Electric strength test: test voltage (V) .....:		—
B.6	Running overload test for d.c. motors in secondary circuits		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.7	Locked-rotor overload test for d.c. motors in secondary circuits		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.8	Test for motors with capacitors		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Operating voltage (V) .....:		—
C	**ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)**		N/A
	Position .....:		—
	Manufacturer .....:		—
	Type .....:		—
	Rated values .....:		—
	Method of protection.....:		—
C.1	Overload test		N/A
C.2	Insulation		N/A
	Protection from displacement of windings.....:		N/A
D	**ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)**		P

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Clause	Requirement + Test	Result - Remark	Verdict
D.1	Measuring instrument	Figure D.1 used.	P
D.2	Alternative measuring instrument		N/A
E	**ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)**		N/A
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/A
G.1	Clearances		N/A
G.1.1	General		N/A
G.1.2	Summary of the procedure for determining minimum clearances		N/A
G.2	Determination of mains transient voltage (V)		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
G.3	Determination of telecommunication network transient voltage (V) .....:		N/A
G.4	Determination of required withstand voltage (V)		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
G.5	Measurement of transient voltages (V)		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
G.6	Determination of minimum clearances .....:		N/A
H	**ANNEX H, IONIZING RADIATION (see 4.3.13)**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

J	**ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)**		P
	Metal(s) used .....:	Metallic alloy.	—

K	**ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)**		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		N/A

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/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	See sub-clause 1.6.2.	P

M	**ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)**		N/A
M.1	Introduction		N/A
M.2	Method A		N/A
M.3	Method B		N/A
M.3.1	Ringing signal		N/A
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/A

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Clause	Requirement + Test	Result - Remark	Verdict
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
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/A
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A
P	**ANNEX P, NORMATIVE REFERENCES**		—
Q	**ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)**		N/A
	a) Preferred climatic categories .....:		N/A
	b) Maximum continuous voltage .....:		N/A
	c) Pulse current .....:		N/A
R	**ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES**		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
S	**ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)**		N/A
S.1	Test equipment		N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing		N/A
T	**ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)**		N/A
			—
U	**ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.12)**		N/A
			—

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Clause	Requirement + Test	Result - Remark	Verdict

V	**ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)**		N/A
V.1	Introduction		N/A
V.2	TN power distribution systems		N/A

W	**ANNEX W, SUMMATION OF TOUCH CURRENTS**		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

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

Y	**ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)**		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

Z	**ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)**	N/A

AA	**ANNEX AA, MANDREL TEST (see 2.10.5.8)**	N/A

BB	**ANNEX BB, CHANGES IN THE SECOND EDITION**	—

CC	**ANNEX CC, Evaluation of integrated circuit (IC) current limiters**		N/A
CC.1	General		N/A
CC.2	Test program 1.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
CC.3	Test program 2……:		N/A
DD	**ANNEX DD, Requirements for the mounting means of rack-mounted equipment**		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
EE	**ANNEX EE, Household and home/office document/media shredders**		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

EN 60950-1:2006/A11:2009/A1:2010/A12:2011 – CENELEC COMMON MODIFICATIONS			
Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions		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		P
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for “one package equipment”, and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
(A12:2011)	In EN 60950-1:2006/A12:2011 Delete the addition of 1.3.Z1 / EN 60950-1:2006 Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010		N/A
1.5.1	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC		N/A
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
	Zx Protection against excessive sound pressure from personal music players		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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. 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. 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. 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. The requirements in this sub-clause are valid for music or video mode only. 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. 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. The requirements do not apply to: – hearing aid equipment and professional equipment; 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.		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	– 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. 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. For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.		N/A
	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. 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. 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		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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. d) have a warning as specified in Zx.3; and e) not exceed the following: 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. 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. 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. 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.		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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."  **Figure 1 – Warning label (IEC 60417-6044)** 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.		N/A
	Zx.4 Requirements for listening devices (headphones and earphones)		N/A
	Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output $L_{Aeq,T}$, 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.		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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 $\leqslant$ 100 dBA. 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.). NOTE An example of a wired listening device with digital input is a USB headphone.		N/A
	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 $\leqslant$ 100 dBA. NOTE An example of a wireless listening device is a Bluetooth headphone.		N/A
	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. NOTE Test method for wireless equipment provided without listening device should be defined.		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	Replace the subclause as follows: Basic requirements To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;		N/A
	c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.		N/A
2.7.2	This subclause has been declared ‘void’.		N/A
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.5.1	Replace “60245 IEC 53” by “H05 RR-F”; “60227 IEC 52” by “H03 VV-F or H03 VVH2-F”; “60227 IEC 53” by “H05 VV-F or H05 VVH2-F2”. In Table 3B, replace the first four lines by the following: Up to and including 6 | 0,75 [a] | Over 6 up to and including 10| (0,75) [b] 1,0 | Over 10 up to and including 16| (1,0) [c] 1,5 | In the conditions applicable to Table 3B delete the words “in some countries” in condition [a]. In NOTE 1, applicable to Table 3B, delete the second sentence.		N/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		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 (artifical 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.		N/A
Bibliography	Additional EN standards.		—

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

ZA	**NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS**	—

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/A
1.2.13.14	In **Norway** and **Sweden**, for requirements see 1.7.2.1 and 7.3 of this annex.		N/A
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/A
1.5.8	In **Norway**, due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N/A
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/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1	In **Finland**, **Norway** and **Sweden**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway: “Apparatet må tilkoples jordet stikkontakt” In Sweden: “Apparaten skall anslutas till jordat uttag” 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. 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. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11).”		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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. 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.” 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.”		N/A
1.7.5	In **Denmark**, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a. For **CLASS II EQUIPMENT** the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		N/A
2.2.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.2	In **Finland**, **Norway** and **Sweden** there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.6.3.3	In the **United Kingdom**, the current rating of the circuit shall be taken as 13 A, not 16 A.		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.		N/A
2.10.5.13	In **Finland**, **Norway** and **Sweden**, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		N/A
3.2.1.1	In **Switzerland**, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998:Plug Type 21, L+N, 250 V, 16A SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 1		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.		N/A
3.2.1.1	In **Spain**, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.		N/A
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/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In **Ireland**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.		N/A
3.2.4	In **Switzerland**, for requirements see 3.2.1.1 of this annex.		N/A
3.2.5.1	In the **United Kingdom**, a power supply cord with conductor of 1,25 mm2 is allowed for equipment with a rated current over 10 A and up to and including 13 A.		N/A
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/A
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/A
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/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.7.1	In **Finland**, **Norway** and **Sweden** TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.1 (A1:2010)	In **Finland**, **Norway** and **Sweden**, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. 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 - 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.		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b). It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: - 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/A
6.1.2.2	In **Finland**, **Norway** and **Sweden**, the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.		N/A
7.2	In **Finland**, **Norway** and **Sweden**, for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		N/A
7.3	In **Norway** and **Sweden**, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.		N/A
7.3	In **Norway**, for installation conditions see EN 60728-11:2005.		N/A

1.5.1	TABLE: List of critical components				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Stan-dard (Edition / year)	Mark(s) of conformity[1])
Enclosure	--	--	Metallic, 1,0mm thick min	--	--
Internal power supply	FSP	FSP150-50LG	I/P: 100-240V~ 60-50Hz, 3-1.5A; O/P: 10A +3.3V, 13A +5V, 10A +12V, 2A +5Vsb, 0.3A -12V. +3.3V & +5V max. 85W. Total 150W max. Tma: 50℃	IEC 60950-1:2005+A1:2009 EN 60950-1:2006+A11:2009+A1:2010+A12:2011	CB
PCB	--	--	V-1 or better, minimum 105 degree C.	UL796	UL
DC Fan (two provided)	Sunonwealth	MB40201V2-0000-A99	12Vdc, 0.05A, 7.7CFM	EN 60950-1:2006+A11	TUV
HDD (Four provided at most) (Optional)	Seagate or equivalent	ST3 series or equivalent	Generic, 5 or 12Vdc / 1.5A maximum	IEC 60950-1 EN 60950-1+A11:2009 or later version	TUV, Semko, Nemko, Fimko, CB or equivalent certified body
R.T.C. Battery (BTH1)	Energizer	LR1130	Max. abnormal charge current ?? mA.	UL 1642	UL (請提供證書)
Poly switch (FS2, FS3, FS4) for USB used	Bourns Inc	MF-MSMF110 (請確認型號)	6V, 1.1A	EN 60730-1, IEC 60730-1	TUV
Poly switch (F1) for Terminal used	Bourns Inc	MF-SMDF050 (請確認型號)	6V, 1.1A	EN 60730-1, IEC 60730-1	TUV (請提供證書)
Supplementary information: [1]) An asterisk indicates a mark that assures the agreed level of surveillance.					

1.6.2	TABLE: Electrical data (in normal conditions)					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
90/50Hz	0.648	--	58.0	F1	0.648	Maximum normal load.
90/60Hz	0.650	--	58.1	F1	0.650	Maximum normal load.
100/50Hz	0.590	3	58.0	F1	0.590	Maximum normal load.
100/60Hz	0.591	3	58.0	F1	0.591	Maximum normal load.
240/50Hz	0.310	3	56.4	F1	0.310	Maximum normal load.

240/60Hz	0.327	3	56.7	F1	0.327	Maximum normal load.
254/50Hz	0.308	--	56.4	F1	0.308	Maximum normal load.
254/60Hz	0.325	--	56.6	F1	0.325	Maximum normal load.
264/50Hz	0.311	--	56.0	F1	0.311	Maximum normal load.
264/60Hz	0.327	--	56.2	F1	0.327	Maximum normal load.
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:				

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:	

2.5	TABLE: limited power sources	P

Circuit output tested: See below

Measured Uoc (V) with all load circuits disconnected: See below

	I_{sc} (A)		VA	
	Meas.	Limit	Meas.	Limit
Normal condition, LAN port(LAN1), Pin P1-P4, P7-P10 to GND; Uoc=0Vdc	0	8	0	100
Normal condition, LAN port(LAN2), Pin P1-P4, P7-P10 to GND; Uoc=0Vdc	0	8	0	100
Normal condition, USB port(B_USB1), Pin P2-4 to GND; Uoc=0Vdc	0	8	0	100
Normal condition, USB port(B_USB2), Pin P2-4 to GND; Uoc=0Vdc	0	8	0	100
Normal condition, USB port(F_USB), Pin P2-4 to GND; Uoc=0Vdc	0	8	0	100
Normal condition, E-SATA port(E_SATA1), Pin P1-14 to GND; Uoc=0Vdc	0	8	0	100
Normal condition, USB port(B_USB1), Pin P1 to GND; Uoc=5.13Vdc	2	8	8.98	100
Normal condition, USB port(B_USB2), Pin P1 to GND; Uoc=5.13Vdc	1.7	8	7.58	100
Normal condition, USB port(F_USB), Pin P1 to GND; Uoc=5.13Vdc	1.9	8	8.19	100
Normal condition, Terminal (DIDO1), Pin 2, 4, 6, 8, 10, 12-16 to GND; Uoc=0Vdc	0	8	0	100
Normal condition, Terminal (DIDO1), Pin 3, 5, 7, 9 to GND; Uoc=6.70Vdc	0	8	0	100
Normal condition, Terminal (DIDO1), Pin1 to GND; Uoc=12.27Vdc	0.2	8	2.44	100
Fault condition, L14 Chock; Terminal (DIDO1), Pin1 to GND; Uoc=0Vdc	0	8	0	100

supplementary information:

2.10.2	Table: working voltage measurement	N/A

Location	RMS voltage (V)	Peak voltage (V)	Comments
supplementary information:			

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements	N/A

Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Primary trace of power supply to SELV board						
Primary component to bottom metal enclosure						
Primary component to top metal enclosure						
Supplementary information:						

2.10.5	TABLE: Distance through insulation measurements	N/A

Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test volt-age (V)	Required DTI (mm)	DTI (mm)
Supplementary information:					

4.3.8	TABLE: Batteries	P
The tests of 4.3.8 are applicable only when appropriate battery data is not available	Approval RTC battery used.	--
Is it possible to install the battery in a reverse polarity position?	No	--

	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.

4.3.8	TABLE: Batteries	P
The tests of 4.3.8 are applicable only when appropriate battery data is not available	Approval RTC battery used.	--
Is it possible to install the battery in a reverse polarity position?	No	--

	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 1)	--	--	--	--	--	--	--	--	--
Max. current during fault condition 2)	--	--	--	--	--	--	--	--	--

Test results:	See below.	Verdict
- Chemical leaks	No	P
- Explosion of the battery	No	P
- Emission of flame or expulsion of molten metal	No	P
- Electric strength tests of equipment after completion of tests	No	P

Supplementary information:

For RTC battery, see appended table 5.3.

4.3.8	TABLE: Batteries	P

Battery category .....: See appended table 1.5.1.

Manufacturer .....: See appended table 1.5.1.

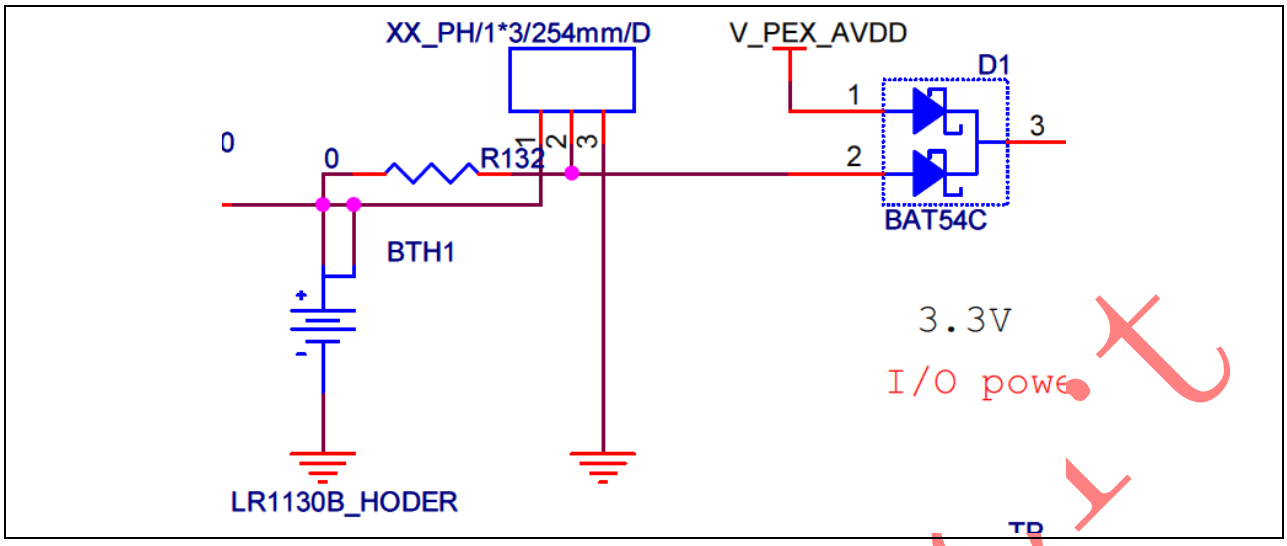
Type / model.....: See appended table 1.5.1.

Voltage .....: See appended table 1.5.1.

Capacity .....: See appended table 1.5.1.

Tested and Certified by (incl. Ref. No.) .....: See appended table 1.5.1.

Circuit protection diagram:



MARKINGS AND INSTRUCTIONS(*1.7.2.1, 1.7.13*)	
Location of replaceable battery	BTH1
Language(s) ……:	English
Close to the battery ……:	See user's manual.
In the servicing instructions ……:	Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instruction
In the operating instructions ……:	Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instruction

4.5	TABLE: Thermal requirements			P
	Supply voltage (V) ..... :	90Vac/60Hz	264Vac/60Hz	—
	Ambient T_{min} (°C) ..... :	See below.	See below.	—
	Ambient T_{max} (°C) ..... :	See below.	See below.	—
Maximum measured temperature T of part/at::		T (°C)		Allowed T_{max} (°C)
T3 coil (Power)		69.3	68.6	105
T1 coil (Power)		59.2	58.8	110
T2 coil (Power)		58.6	58.2	110
PCB near U23		60.5	59.9	105
PCB near U33		64.4	63.7	105
PCB near U1		66.3	66.1	105
PCB near U10		58.3	58.1	105
PCB near U4		58.2	57.8	105
RTC Battery		57.7	57.4	--
H.D.D		50.5	50.5	--
Metal enclosure outside near power		48.2	47.6	70
Tma		40.0	40.0	--
Tamb		22.0	22.4	--

Supplementary information:

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
--	--	--	--	--	--	--	--

Supplementary information:

1. The temperature were measured under the worst case normal mode defined in 1.2.2.1 and as described in sub-clause 1.6.2 at voltage as described above.
2. All values for T(°C) are re-calculated from Tamb respectively.
3. The maximum ambient temperature (Tma) permitted by the manufacturer's specification is 40°C.
4. The system fan had been stalled when testing.

4.5.5	TABLE: Ball pressure test of thermoplastic parts		N/A
	Allowed impression diameter (mm) .....:	≤ 2 mm	—

Part	Test temperature (°C)	Impression diameter (mm)

Supplementary information:

4.6.1, 4.6.2	Table: enclosure openings	P

Location	Size (mm)	Comments
Top / Front / Side / Bottom	--	No opening.
Rear	Max. 30 diameter.	Several rectangle openings provided below DC fans. No hazardous parts within 5° projection area.
	Each diagonal 3mm max.	Several hexagonal openings provided on internal power supply. Each opening did not exceed 5 mm in any dimension.
Note(s):		

4.7	TABLE: Resistance to fire	P

Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
PCB	--	--	--	Min. V-1	1)
Enclosure	--	--	1.0 mm min.	Metallic	1)

Supplementary information:

1. See appended table 1.5.1.

5.1	TABLE: touch current measurement	P

Measured between:	Measured (mA)	Limit (mA)	Comments/conditions
Primary to metal enclosure	1.3	3.5	Switch “e” open, power switch on
Primary to output terminal (unearthed)	0.005	0.25	Switch “e” close, power switch on
Primary to output terminal (earthed)	1.3	3.5	Switch “e” open. power switch on
Primary to metal enclosure	0.005	3.5	Switch “e” open, power switch off
Primary to output terminal (unearthed)	0.005	0.25	Switch “e” close, power switch off
Primary to output terminal (earthed)	0.005	3.5	Switch “e” open. power switch off
supplementary information:			
Supply voltage: 264Vac / 60Hz			

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests		P
Test voltage applied between:	Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Primary to SELV	DC	4242	No
Primary to metal enclosure (Earth)	DC	3000	No
Supplementary information:			

5.3	TABLE: Fault condition tests		P
	Ambient temperature (°C) ..... :	25°C, if no others states	—
	Power source for EUT: Manufacturer, model/type, output rating ..... :	--	—

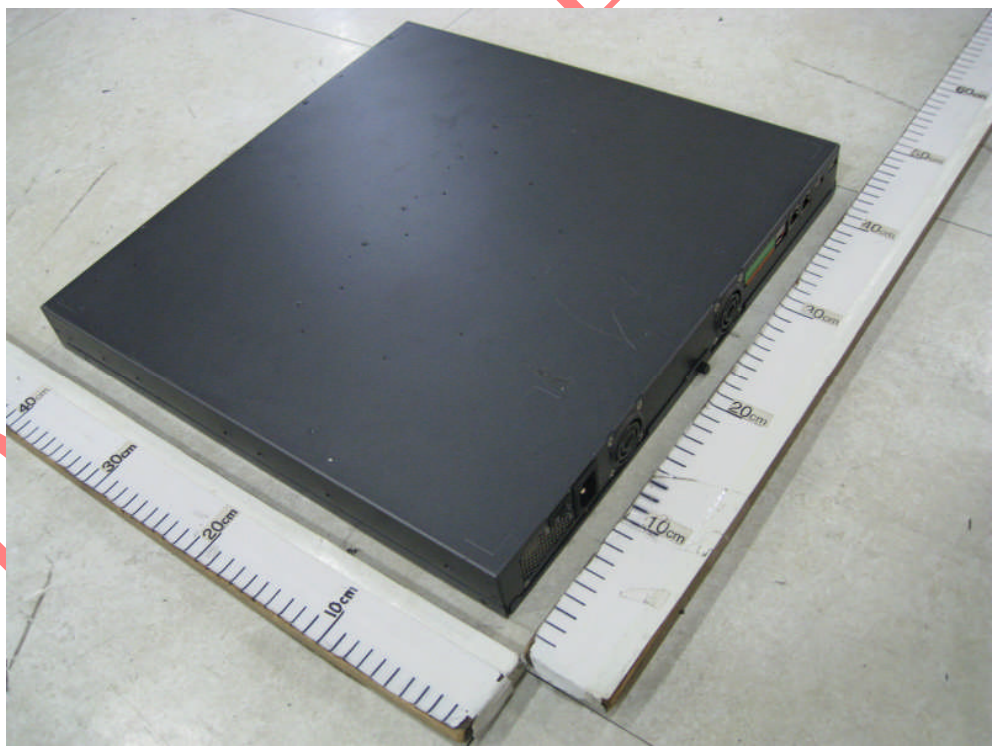
Com-ponent No.	Fault	Supply vol-tage (V)	Test time	Fuse #	Fuse cur-rent (A)	Observation
Ventilation openings	Blocked	240Vac	3.5hr	F1	0.327A	Unit operated normally, No hazards, No damage. The maxinum temperature of T1 coil: 54.8°C T2 coil: 53.8°C Ambient: 22.5°C
Fan (near main board)	Stalled	240Vac	1hr	F1	0.327A	Unit operated normally, No hazards, No damage. The maxinum temperature of T1 coil: 42.9°C T2 coil: 42.3°C Ambient: 22.7°C
Fan (near power)	Stalled	240Vac	1hr	F1	0.327A	Unit operated normally, No hazards, No damage. The maxinum temperature of T1 coil: 42.7°C T2 coil: 42.2°C Ambient: 22.9°C
Power Fan	Stalled	240Vac	1.5hr	F1	0.327A	Unit operated normally, No hazards, No damage. The maxinum temperature of T1 coil: 65.4°C T2 coil: 67.9°C Ambient: 22.9°C
Tested for RTC battery circuit						
D1 pin1 to pin2	Short	240Vac	7hr	--	--	Maximum abnormal charge current=156.8mA, no hazard
D1 pin2 to pin3	Short	240Vac	10mins	--	--	Maximum abnormal charge current=112.3mA, no hazard
Supplementary information:						

C.2	TABLE: transformers						N/A
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required distance thr. insul. (2.10.5)

Loc.	Tested insulation	Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers
supplementary information:					

C.2	TABLE: transformers	N/A

Photo(s)



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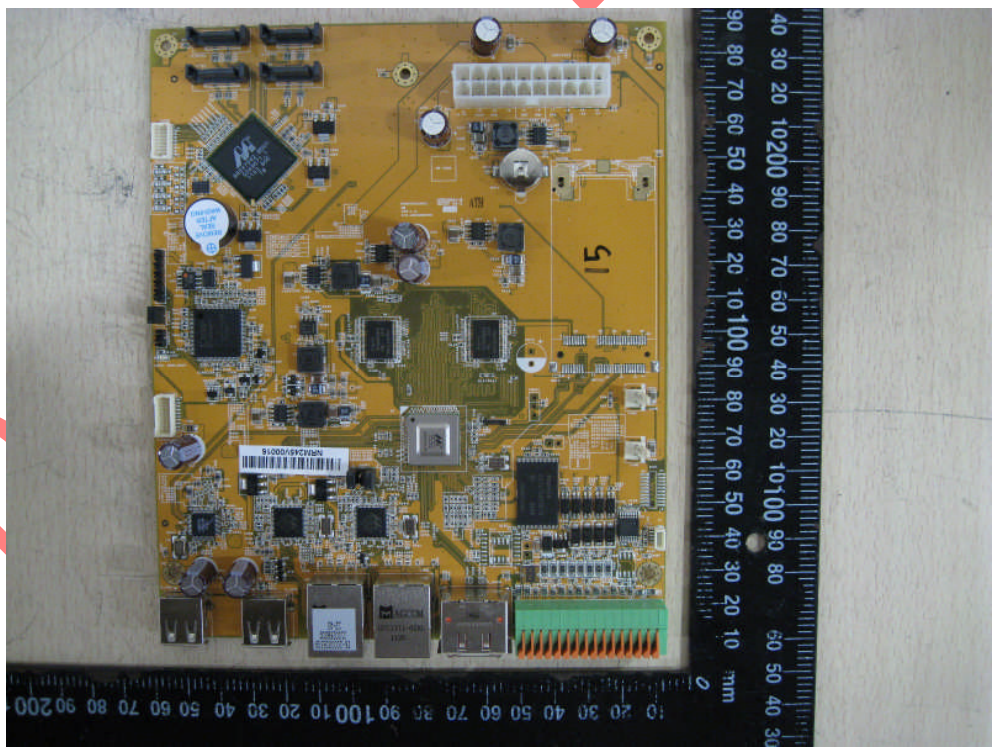

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