



Test Report

Manufacturer: DK-Technologies A/S

Product: PT5211

Standard: EN 60950-1:2006

Report no: B2013029

Date and Signatur: 2013-05-06

A handwritten signature in black ink, appearing to read "Ain Bolls", is written over the date.

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TEST REPORT

EN 60950-1:2006

Information technology equipment – Safety – Part 1: General requirements

Report reference No: B2013029

Tested by Søren Carlsen

Approved by: Kim Boll Jensen

Date of issue: 06.05.2013

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Applicant's Name: DK-Technologies A/S

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Test specification

Standard.....: EN 60950-1: 2006 (2. edition) + EN 60950-1 A1:2010 + EN 60950-1 A11:2009 + EN 60950-1 A12:2011

CAN/CSA C22.2 No. 60950/UL60950, Third Edition, based on IEC 60950, Third Edition

Test Report Form No.....: IECEN60950 1B

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Test item description:

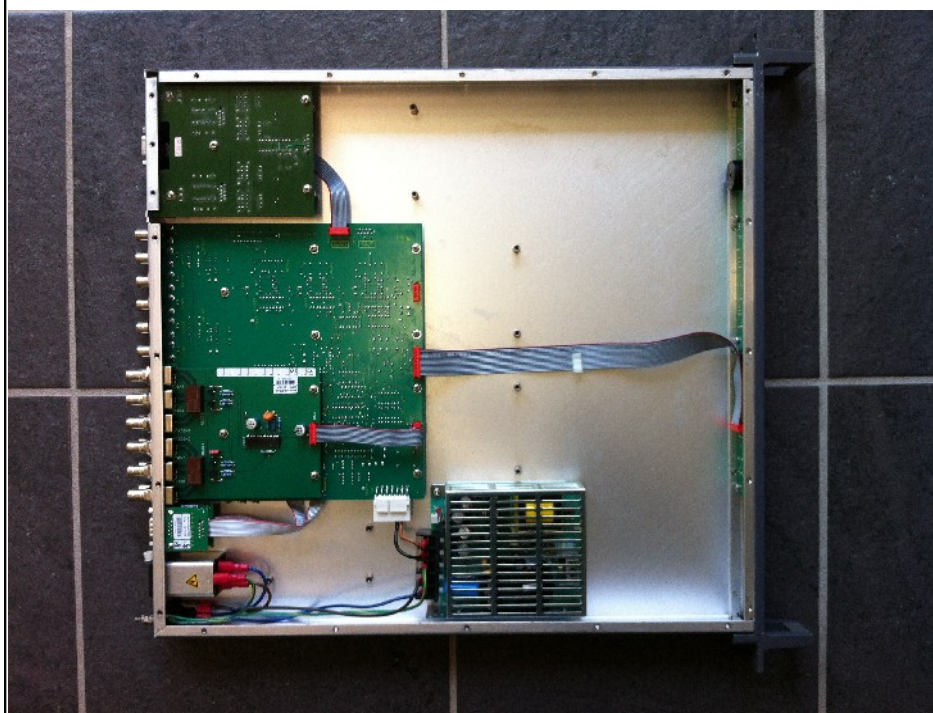
Trademark: DK-Technologies A/S

Manufacturer: DK-Technologies A/S

Model and/or type reference: PT5211

Serial number: KU011169

Rating(s).....: 100-240 VAC, 50/60 Hz, 20 VA

Equipment under test (EUT):

Marking plate:

NB:

Voltage range to be updated with 100-240V

Frequency range to be updated with 50/60 Hz

Particulars: test item vs. test requirements	
Equipment mobility	stationary or fixed
Operating condition.....	Continuous
Mains supply tolerance (%).....	+6 % and -10%
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	-
Class of equipment	Class I
Mass of equipment (kg).....	4,1
Protection against ingress of water	IPX
Test case verdicts	
Test case does not apply to the test object ..	N/A
Test item does meet the requirement	P(ass)
Test item does not meet the requirement ...	F(ail)
Testing	
Date of receipt of test item	
Date(s) of performance of test	19.04 – 03.05.2013
General remarks	
<p>"This report is not valid as a CB Test Report unless appended by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IEC 60076-2".</p> <p>The test result presented in this report relate only to the object(s) tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>"(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma (point) is used as the decimal separator.</p>	
National deviations:	
USA, Canada	
See appended pages at end of report	

General product information:

The PT5211 VanTime™ Changeover unit is designed for use in both serial digital and analogue television environment, including AES3 digital audio signals. The use of the changeover unit improves the reliability of a single SPG by having a back-up unit ready for takeover in the event of an SPG break down. In order to improve the reliability of the complete system it is essential to have a simple changeover unit. This ensures that the system reliability will not be reduced by the complexity of the changeover unit.

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1	GENERAL		P
1.5	Components		P
1.5.1	General	See appended table 1.5.1	P
	Comply with IEC 60950 or relevant component standard		P
1.5.2	Evaluation and testing of components		P
1.5.3	Thermal controls		P
1.5.4	Transformers		P
1.5.5	Interconnecting cables		P
1.5.6	Capacitors bridging insulation		P
1.5.7	Resistors bridging insulation	See appended table 1.5.1	P
1.5.7.1	Resistors bridging functional insulation, basic insulation or supplementary insulation		P
1.5.7.2	Resistors bridging double insulation or reinforced insulation between the a.c. mains supply and other circuits		P
1.5.7.3	Resistors bridging double insulation or reinforced insulation between the a.c. mains supply and circuits connected to an antenna or coaxial cable		P
1.5.8	Components in equipment for IT power systems	See appended table 1.5.1	P
1.5.9	Surge suppressors	See appended table 1.5.1	P
1.5.9.1	General		P
1.5.9.2	Protection of VDRs		P
1.5.9.3	Bridging of functional insulation by a VDR		P
1.5.9.4	Bridging of basic insulation by a VDR		P
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		P
1.6	Power interface		P
1.6.1	AC power distribution systems		P
1.6.2	Input current	See appended table 1.6.2	P
1.6.3	Voltage limit of hand-held equipment		NA
1.6.4	Neutral conductor		P
1.7	Marking and instructions		P
1.7.1	Power rating and identification markings		P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.1.1	Power rating markings		P
	If EUT has multiple mains supply connections, each individual mains supply electrical rating must be marked		NA
	Identification markings readily visible		P
	Rated voltage(s) or voltage range(s) (V)	100-240V	P
	Symbol for nature of supply, for d.c. only.....		NA
	Rated frequency or rated frequency range (Hz)	50-60Hz	P
	Rated current (mA or A)	20VA	P
1.7.1.2	Identification markings	Identification marking on front, rear and side of EUT	P
	Manufacturer's name or trademark or identification mark		P
	Type/model or type reference.....		P
	Symbol for Class II equipment only		NA
	Other markings and symbols	CE-marking, WEEE-marking	P
	Identification markings readily visible	Identification marking on front, rear and side of EUT	P
1.7.2	Safety instructions and markings		P
1.7.2.1	General		P
1.7.2.2	Disconnect devices	2-pole main switch incorporated	NA
1.7.2.3	Overcurrent protective device	1.6 A fuse placed in line in the power supply module, as first component after the mains connector	P
1.7.2.4	IT power distribution systems		NA
1.7.2.5	Operator access with a tool		NA
1.7.2.6	Ozone		NA
1.7.3	Short duty cycles		NA
1.7.4	Supply voltage adjustment		NA
	Methods and means of adjustment; reference to installation instructions		NA
1.7.5	Power outlets on the equipment		NA
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	T1,6 AL/250VAC	P
1.7.7	Wiring terminals		P
1.7.7.1	Protective earthing and bonding terminals	Protective earthing terminal and symbol on the rear of the chassis	P
1.7.7.2	Terminal for a.c. mains supply conductors	Terminals for line and neutral respectively	P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.7.3	Terminals for d.c. mains supply conductors		NA
1.7.8	Controls and indicators		P
1.7.8.1	Identification, location and marking		P
1.7.8.2	Colours	Red colour used for alarm	P
1.7.8.3	Symbols according to IEC 60417.....	Protective earthing conductor, protective bonding conductor, 0 & I	P
1.7.8.4	Markings using figures	0 & I used as OFF & ON	NA
1.7.9	Isolation of multiple power sources		NA
1.7.10	Thermostats and other regulating devices		NA
1.7.11	Durability	See table 1.7.11	P
1.7.12	Removable parts	No marking on removable parts	P
1.7.13	Replaceable batteries		NA
	Language(s)		—
1.7.14	Equipment for restricted access locations		NA

2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	Operator access areas are the outer parts of EUT. Access to inner parts of EUT only for service persons	P
2.1.1.1	Access to energized parts	Operators have no access to inner parts of EUT.	P
	Test by inspection		P
	Test with test finger		NA
	Test with test pin		NA
	Test with test probe		NA
2.1.1.2	Battery compartments		NA
2.1.1.3	Access to ELV wiring	No operator access to the inside of EUT	NA
	Working voltage (V _{peak} or V _{rms}); minimum distance (mm) through insulation		—
2.1.1.4	Access to hazardous voltage circuit wiring	Hazardous voltage circuit wiring on mains power cable only.	P
2.1.1.5	Energy hazards	No energy hazards in operator access area	NA
2.1.1.6	Manual controls	No energy hazards in operator access area	NA
2.1.1.7	Discharge of capacitors in equipment		P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	Time-constant (s); measured voltage (V).....:	36 Vp after 1 s	—
2.1.1.8	Energy hazards – d.c. mains supply	EUT not supplied from d.c. mains supply	NA
	a) Capacitor connected to the d.c. mains supply :		NA
	b) Internal battery connected to the d.c. mains supply		NA
2.1.1.9	Audio amplifiers in information technology equipment		NA
2.1.2	Protection in service access areas	EUT to be disconnected before service and incorporates no bare parts at hazardous voltages in service access areas. Unintentional bridging by conductive materials considered unlikely during service operations	P
2.1.3	Protection in restricted access locations	EUT not to be installed in restricted access locations	NA

2.2	SELV circuits		P
2.2.1	General requirements	Separate approved. See table 1.5.1	P
2.2.2	Voltages under normal conditions (V).....:		P
2.2.3	Voltages under fault conditions (V).....:		P
2.2.4	Connection of SELV circuits to other circuits.....:		P

2.3	TNV circuits		NA
2.3.1	Limits	No TNV circuit used	NA
	Type of TNV circuits.....:		—
2.3.2	Separation from other circuits and from accessible parts		NA
2.3.2.1	General requirement		NA
2.3.2.2	Protection by basic insulation		NA
2.3.2.3	Protection by earthing		NA
2.3.2.4	Protection by other constructions		NA
2.3.3	Separation from hazardous voltages		NA
	Insulation employed.....:		—
2.3.4	Connection of TNV circuits to other circuits		NA
	Insulation employed.....:		—
2.3.5	Test for operating voltages generated externally		NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.4	Limited current circuits		NA
2.4.1	General requirements	No limited current circuits used	NA
2.4.2	Limit values		NA
	Frequency (Hz).....:		—
	Measured current (mA).....:		—
	Measured voltage (V).....:		—
	Measured circuit capacitance (nF or μ F).....:		—
2.4.3	Connection of limited current circuits to other circuits		NA

2.5	Limited power sources		NA
	a) Inherently limited output	No limited power sources used	NA
	b) Impedance limited output		NA
	c) Regulating network limited output under normal operating and single fault condition		NA
	d) Overcurrent protective device limited output		NA
	Max. output voltage (V), max. output current (A), max. apparent power (VA)		—
	Current rating of overcurrent protective device (A)		—

2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing	EUT chassis connected to protective earth	P
2.6.2	Functional earthing		NA
2.6.3	Protective earthing and protective bonding conductors	Protective earthing conductor from EUT to protective earth has same current-carrying capacity as the line and neutral wires	P
2.6.3.1	General		P
2.6.3.2	Size of protective earthing conductors		P
	Rated current (A), cross-sectional area (mm ²), AWG	EUT rated 20 VA. Requirement according to table 3B: 0.75 mm ²	—
2.6.3.3	Size of protective bonding conductors		P
	Rated current (A), cross-sectional area (mm ²), AWG	EUT rated 20 VA. Requirement according to table 3B: 0.75 mm ²	—
	Protective current rating (A), cross-sectional area (mm ²), AWG		-

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.6.3.4	Resistance of earthing conductors and their terminations, resistance (Ω), voltage drop (V), test current (A), duration (min)	Chassis: 37mohm @ 25A, 1 min PE-connection: 36mohm @ 25A, 1 min Power supply chassis: 30mohm @25A, 1 min	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	EUT incorporates both earthing and bonding terminals	P
	Rated current (A), type, nominal thread diameter (mm)	EUT rated 20 VA. Requirement according to table 3B: 0.75 mm ²	—
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	No power output provided	NA
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No components in protective earthing conductor	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	4 mm screw used	P
2.6.5.8	Reliance on telecommunication network or cable distribution system	Protective earthing of EUT not relying on telecommunication network or cable distribution system	NA

2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	EUT is provided with a fuse in the input on the power inlet. Fuse placed in the line	P
	Instructions when protection relies on building installation	Protection does not rely on building installation	NA
2.7.2	Faults not simulated in 5.3.7	See table 1.5.1 and fire enclosure used	P
2.7.3	Short-circuit backup protection	Backup protection in building installation. Fuse has high-breaking capacity	P
2.7.4	Number and location of protective devices	A fuse, in the line conductor. Line and neutral reliably identified when EUT is installed	P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.7.5	Protection by several devices		NA
2.7.6	Warning to service personnel.....:		NA

2.8	Safety interlocks		NA
2.8.1	General principles	Interlocks not required	NA
2.8.2	Protection requirements		NA
2.8.3	Inadvertent reactivation		NA
2.8.4	Fail-safe operation		NA
2.8.5	Moving parts		NA
2.8.6	Overriding		NA
2.8.7	Switches, relays and their related circuits		NA
2.8.7.1	Separation distances for contact gaps and their related circuits:		NA
2.8.7.2	Overload test		NA
2.8.7.3	Endurance test		NA
2.8.7.4	Electric strength test		NA
2.8.8	Mechanical actuators		N/A

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials		P
2.9.2	Humidity conditioning		NA
	Humidity (%), Temperature (°C)		—
2.9.3	Grade of insulation	Reinforced or double insulation between primary and secondary. Basic insulation between primary and protective earth	P
2.9.4	Separation from hazardous voltages		P
	Method(s) used	Method 1 a)	—

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General		P
2.10.1.1	Frequency		P
2.10.1.2	Pollution degrees	Pollution degree 2 used	P
2.10.1.3	Reduced values for functional insulation		P
2.10.1.4	Intervening unconnected conductive parts	Insulation of transformers separate approved. See table 1.5.1	P
2.10.1.5	Insulation with varying dimensions		NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.10.1.6	Special separation requirements	Relevant only for products with TNV	NA
2.10.1.7	Insulation in circuits generating starting pulses		NA
2.10.2	Determination of working voltage	See table 1.5.1. Secondary voltage is SELV	P
2.10.2.1	General		P
2.10.2.2	RMS working voltage	See table 1.5.1. Secondary voltage is SELV	P
2.10.2.3	Peak working voltage	See table 1.5.1. Secondary voltage is SELV	P
2.10.3	Clearances		P
2.10.3.1	General	EUT to be used up to 2000 m above sea level. EUT to be used in Overvoltage Category II	P
2.10.3.2	Mains transient voltages		P
	a) AC mains supply	EUT to be used in Overvoltage Category II	P
	b) Earthed d.c. mains supplies		NA
	c) Unearthed d.c. mains supplies		NA
	d) Battery operation	Applicable only to products being supplied from a dedicated battery that has no provision for charging from an external mains supply	NA
2.10.3.3	Clearances in primary circuits	See table 1.5.1.	P
2.10.3.4	Clearances in secondary circuits	Requirements deemed to be fulfilled without measurement. Max voltage in secondary circuit: < 71 V _{peak}	P
2.10.3.5	Clearances in circuits having starting pulses		NA
2.10.3.6	Transients from a.c. mains supply	EUT deemed to fulfill the requirements without test. Transients on AC mains deemed to be suppressed in the primary circuit of EUT and not be transmitted to the secondary	P
2.10.3.7	Transients from d.c. mains supply		NA
2.10.3.8	Transients from telecommunication networks and cable distribution systems		NA
2.10.3.9	Measurement of transient voltage levels		NA
	a) Transients from a mains supply		NA
	For an a.c. mains supply		NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	For a d.c. mains supply		NA
	b) Transients from a telecommunication network :		NA
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	Only applicable to main power supply. See table 1.5.1	—
2.10.5	Solid insulation	Printed circuit boards are solid insulation. Solid insulation on wires and in transformers and in plastic spacer between screws and PCB in power supply module	P
2.10.5.1	General		P
2.10.5.2	Distances through insulation	No requirements for functional and basic insulation. See appended table 1.5.1	P
2.10.5.3	Insulating compound as solid insulation	Insulating compound used as solid insulation in previously approved components only. See appended table 1.51	P
2.10.5.4	Semiconductor devices	Optocouplers are previously approved components. See appended table 1.5.1	P
2.10.5.5.	Cemented joints	EUT incorporates no cemented joints	NA
2.10.5.6	Thin sheet material – General	Thin sheet material used on wires in transformers. See appended table 1.5.1. The thin sheet material used to fulfills the requirements	P
2.10.5.7	Separable thin sheet material	No separable thin sheet materials used in EUT	NA
	Number of layers (pcs).....		—
2.10.5.8	Non-separable thin sheet material	See appended table 1.5.1	P
2.10.5.9	Thin sheet material – standard test procedure		P
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure		P
	Electric strength test		—
2.10.5.11	Insulation in wound components	See appended table 1.5.1	P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.10.5.12	Wire in wound components	See appended table 1.5.1	P
	Working voltage	Working voltage exceed 71 V	P
	a) Basic insulation not under stress	See appended table 1.5.1	P
	b) Basic, supplementary, reinforced insulation ..	See appended table 1.5.1	P
	c) Compliance with Annex U		P
	Two wires in contact inside wound component; angle between 45° and 90°		P
2.10.5.13	Wire with solvent-based enamel in wound components	Applicable only to TNV circuits	NA
	Electric strength test		—
	Routine test		NA
2.10.5.14	Additional insulation in wound components	See appended table 1.5.1	P
	Working voltage	Working voltage exceeds 71 V	P
	- Basic insulation not under stress	See appended table 1.5.1	P
	- Supplementary, reinforced insulation	See appended table 1.5.1	P
2.10.6	Construction of printed boards		P
2.10.6.1	Uncoated printed boards	See appended table 1.5.1	P
2.10.6.2	Coated printed boards	EUT incorporates no printed boards that are coated in the standard's meaning of "coated"	NA
2.10.6.3	Insulation between conductors on the same inner surface of a printed board	PCB in power supply having hazardous voltage only. PCB is not multi-layer but single layer PCB	NA
2.10.6.4	Insulation between conductors on different layers of a printed board	PCB in power supply having hazardous voltage only. PCB is not multi-layer but single layer PCB	NA
	Distance through insulation		NA
	Number of insulation layers (pcs).....		NA
2.10.7	Component external terminations	Coating not used to increase clearances and creepage distances	NA
2.10.8	Tests on coated printed boards and coated components		NA
2.10.8.1	Sample preparation and preliminary inspection		NA
2.10.8.2	Thermal conditioning		NA
2.10.8.3	Electric strength test		NA
2.10.8.4	Abrasion resistance test		NA
2.10.9	Thermal cycling		NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.10.10	Test for Pollution Degree 1 environment and insulating compound	EUT designed for pollution degree 2 environment	NA
2.10.11	Tests for semiconductor devices and cemented joints	See appended table 1.5.1	P
2.10.12	Enclosed and sealed parts	Hermetic sealed components are previously certified	P

3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and overcurrent protection		P
3.1.2	Protection against mechanical damage	Wireways are smooth and free from sharp edges	P
3.1.3	Securing of internal wiring	Inside EUT the wiring are run smoothly	P
3.1.4	Insulation of conductors		P
3.1.5	Beads and ceramic insulators	See appended table 1.5.1	P
3.1.6	Screws for electrical contact pressure	Screws engage min. two threads into a metal part	P
3.1.7	Insulating materials in electrical connections	Connection to protective earth by means of a nut engaged with more than two threads.	P
3.1.8	Self-tapping and spaced thread screws	Self-tapping screws not used	P
3.1.9	Termination of conductors		P
	10 N pull test	230 VAC conductors and PE-conductor subjected to 10 N pull test	P
3.1.10	Sleeving on wiring	Sleeving on wires in transformers, retained in position by other means (tape, or the like)	P

3.2	Connection to a mains supply		P
3.2.1	Means of connection		P
3.2.1.1	Connection to an a.c. mains supply	EUT equipped with appliance inlet	P
3.2.1.2	Connection to a d.c. mains supply		NA
3.2.2	Multiple supply connections		NA
3.2.3	Permanently connected equipment		NA
	Number of conductors, diameter (mm) of cable and conduits	Mains cable having three conductors.	—
3.2.4	Appliance inlets	See appended table 1.5.1	P
3.2.5	Power supply cords	Power supply cord specified in installation manual	P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
3.2.5.1	AC power supply cords	Power supply cord specified in installation manual	P
	Type.....:		—
	Rated current (A), cross-sectional area (mm ²), AWG.....:		—
3.2.5.2	DC power supply cords		NA
3.2.6	Cord anchorages and strain relief	EUT not provided with a non-detachable power supply cord.	NA
	Mass of equipment (kg), pull (N)		—
	Longitudinal displacement (mm)		—
3.2.7	Protection against mechanical damage	Power cord not subjected to sharp points or cutting edges	P
3.2.8	Cord guards	Requirements applicable only to products having a non-detachable power supply cord and being hand-held or intended to be moved while in operation	NA
	Diameter or minor dimension D (mm); test mass (g)		—
	Radius of curvature of cord (mm).....:		—
3.2.9	Supply wiring space	Mains supply conductors easily introduced and connected. Conductors unlikely to become free from their terminals.	P

3.3	Wiring terminals for connection of external conductors		P
3.3.1	Wiring terminals	EUT provided with terminals in which connection is made by effective devices	P
3.3.2	Connection of non-detachable power supply cords	Requirements applicable only to products having special non-detachable power supply	NA
3.3.3	Screw terminals	Protective earth is clamped by means of a nut. Other screw terminals refer to appended table 1.5.1	P
3.3.4	Conductor sizes to be connected	AC mains input wires used: 0.75 mm ²	P
	Rated current (A), cord/cable type, cross-sectional area (mm ²).....:	Mains input cables: Up to 1.6 A	—
3.3.5	Wiring terminal sizes	Protective earth and mains supply conductors clamped by means of a nut on a stud with a diameter > 3 mm	P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	Rated current (A), type and nominal thread diameter (mm)		—
3.3.6	Wiring terminals design	Wiring terminals for mains cables previously certified terminals. See appended table 1.5.1	P
3.3.7	Grouping of wiring terminals	AC mains supply terminals located close to each other. Protective earthing terminal at the rear of the enclosure.	P
3.3.8	Stranded wire	Terminals located so that an escaping strand of a flexible conductor is unlikely to make accidental contact to accessible conductive parts. No soldering at places where the conductor is subjected to contact pressure	P

3.4	Disconnection from the mains supply		P
3.4.1	General requirement		P
3.4.2	Disconnect devices	EUT equipped with a isolating switch	P
3.4.3	Permanently connected equipment	External disconnect device prescribed in installation instructions	NA
3.4.4	Parts which remain energized		NA
3.4.5	Switches in flexible cords	No switch in flexible cords	P
3.4.6	Number of poles - single-phase and d.c. equipment	2-pole switch used	P
3.4.7	Number of poles - three-phase equipment		NA
3.4.8	Switches as disconnect devices	Switch marked "0" and "I"	P
3.4.9	Plugs as disconnect devices	Plug not used as disconnecting device	NA
3.4.10	Interconnected equipment	EUT not part of interconnected equipment	NA
3.4.11	Multiple power sources		NA

3.5	Interconnection of equipment		P
3.5.1	General requirements	EUT intended to be connected to other equipment	P
3.5.2	Types of interconnection circuits.....	Power supply is considered SELV circuit	P
3.5.3	ELV circuits as interconnection circuits		NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
3.5.4	Data ports for additional equipment	Max. power supply output is 6 A	P

4	PHYSICAL REQUIREMENTS		P
4.1	Stability		P
	Angle of 10°	Tested	P
	Test: force (N).....:	Not floor standing	NA

4.2	Mechanical strength		P
4.2.1	General		P
4.2.2	Steady force test, 10 N	Tested by inspection. Metal enclosure	P
4.2.3	Steady force test, 30 N	Applicable only to parts of an enclosure located in an operator access area protected by a cover or door	NA
4.2.4	Steady force test, 250 N	Tested on enclosure	P
4.2.5	Impact test	EUT checked by inspection Enclosure made of 2 mm aluminium	P
	Fall test	EUT checked by inspection Enclosure made of 2 mm aluminium	P
	Swing test	EUT checked by inspection Enclosure made of 2 mm aluminium	P
4.2.6	Drop test; height (mm)		NA
4.2.7	Stress relief test		NA
4.2.8	Cathode ray tubes		NA
	Picture tube separately certified.....:		NA
4.2.9	High pressure lamps		NA
4.2.10	Wall or ceiling mounted equipment; force (N) . . .	EUT checked by inspection. Enclosure made of 2 mm aluminium	P
4.2.11	Rotating solid media		NA

4.3	Design and construction		P
4.3.1	Edges and corners		P
4.3.2	Handles and manual controls; force (N).....:	EUT checked by inspection. Rack handles subjected to 50 N testing	P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
4.3.3	Adjustable controls	Change in settings only by service personnel. Settings only accessible by opening the box with a tool	P
4.3.4	Securing of parts		P
4.3.5	Connection by plugs and sockets	Plugs and sockets employed only in a manner unlikely to create a hazard	P
4.3.6	Direct plug-in equipment		NA
	Torque		-
	Compliance with the relevant mains plug standard		NA
4.3.7	Heating elements in earthed equipment		NA
4.3.8	Batteries	Batteries not operator-replaceable	P
	- Overcharging of a rechargeable battery		NA
	- Unintentional charging of a non-rechargeable battery		P
	- Reverse charging of a rechargeable battery		NA
	- Excessive discharging rate for any battery		NA
4.3.9	Oil and grease		NA
4.3.10	Dust, powders, liquids and gases		NA
4.3.11	Containers for liquids or gases		NA
4.3.12	Flammable liquids.....		NA
	Quantity of liquid (l).....		NA
	Flash point (°C).....		NA
4.3.13	Radiation	EUT so designed that there is no risk of harmful effects of radiation	P
4.3.13.1	General	EUT not generating ionizing radiation	NA
4.3.13.2	Ionizing radiation		NA
	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		NA
	Part, property, retention after test, flammability classification		NA
4.3.13.4	Human exposure to ultraviolet (UV) radiation . . .		NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
4.3.13.5	Lasers (including laser diodes) and LEDs	All diodes are inherently Class I laser products. Laser labelling not required	P
4.3.13.5.1	Lasers (including laser diodes)	EUT not incorporating lasers or laser diodes	NA
	Laser class		—
4.3.13.5.2	Light emitting diodes (LEDs)	EUT not incorporating LEDs that produce optical radiation in excess of the limits specified in IEC 62471 in the wavelength range 200 to 3000 nm.	—
4.3.13.6	Other types		NA

4.4	Protection against hazardous moving parts		NA
4.4.1	General	EUT incorporating no moving parts	NA
4.4.2	Protection in operator access areas	EUT incorporating no moving parts	NA
4.4.3	Protection in restricted access locations		NA
4.4.4	Protection in service access areas		NA
4.4.5	Protection against moving fan blades	No fan blade	NA
4.4.5.1	General		NA
4.4.5.2	Protection for users		NA
4.4.5.3	Protection for service persons		NA

4.5	Thermal requirements		P
4.5.1	General		P
4.5.2	Temperature tests		P
	Normal load condition per Annex L		—
4.5.3	Temperature limits for materials	See appended table 4.5	P
4.5.4	Touch temperature limits	See appended table 4.5	P
4.5.5	Resistance to abnormal heat	Parts at hazardous voltage mounted on thermoplastic parts. See appended table 1.5.1	P

4.6	Openings in enclosures		P
4.6.1	Top and side openings	Opening unlikely to create hazard	P
	Dimensions (mm)		—

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
4.6.2	Bottoms of fire enclosures	No openings in bottom	P
	Construction of the bottom, dimensions (mm). .:		—
4.6.3	Doors or covers in fire enclosures	EUT incorporates no door leading to an operator access area	NA
4.6.4	Openings in transportable equipment		NA
4.6.4.1	Constructional design measures		NA
	Dimensions (mm):		—
4.6.4.2	Evaluation measures for larger openings		NA
4.6.4.3	Use of metallized parts	No metalized parts	NA
4.6.5	Adhesives for constructional purposes	No adhesives used for constructional purposes	NA
	Conditioning temperature (°C)/time (weeks).....:		—

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	Aluminium enclosure used and no flammability test required	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		NA
4.7.2	Conditions for a fire enclosure	A fire enclosure is required	P
4.7.2.1	Parts requiring a fire enclosure		P
4.7.2.2	Parts not requiring a fire enclosure		NA
4.7.3	Materials		P
4.7.3.1	General		P
4.7.3.2	Materials for fire enclosures	Fire enclosure made of aluminium.	P
4.7.3.3	Materials for components and other parts outside fire enclosures	Decorative parts made of HB75 materials	P
4.7.3.4	Materials for components and other parts inside fire enclosures	Power supply connectors (230V, 5) are made of material with 94V-2 flammability rating. See appended table 1.5.1	P
4.7.3.5	Materials for air filter assemblies		NA
4.7.3.6	Materials used in high-voltage components		NA

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		P
5.1.1	General		P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
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		NA
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		NA
5.1.3	Test circuit		P
5.1.4	Application of measuring instrument	Measuring instrument according to annex D.1	P
5.1.5	Test procedure		P
5.1.6	Test measurements		P
	Test voltage (V)	265 mV	—
	Measured touch current (mA)	0.6	—
	Max. allowed touch current (mA)	3.5	—
	Measured protective conductor current (mA) ...		—
	Max. allowed protective conductor current (mA)		—
5.1.7	Equipment with touch current exceeding 3.5 mA		NA
5.1.7.1	General		NA
5.1.7.2	Simultaneous multiple connections to the supply		NA
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	No telecommunication networks and cable distribution systems	NA
5.1.8.1	Limitation of the touch current to a telecommunication network and a cable distribution system		NA
	Test voltage (V)		—
	Measured touch current (mA)		—
	Max. allowed touch current (mA)		—
5.1.8.2	Summation of touch currents from telecommunication networks.....		NA
	a) EUT with earthed telecommunication ports . :		NA
	b) EUT whose telecommunication ports have no reference to protective earth		NA
5.2	Electric strength		P
5.2.1	General	See appended table 5.2	P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
5.2.2	Test procedure	Test voltages according to table 5B. See appended table 1.5.1 for power supply Test performed with at voltage of 1500 VACrms on power supply inlet	P

5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	See appended table 5.3	P
5.3.2	Motors	(see appended Annex B)	P
5.3.3	Transformers	(see appended Annex C)	P
5.3.4	Functional insulation.....:	Functional insulation on electronic modules except for the power supply module. Considered to fulfil the requirements without test	P
5.3.5	Electromechanical components		NA
5.3.6	Audio amplifiers in ITE		NA
5.3.7	Simulation of faults	See table 1.5.1 and fire enclosure used	P
5.3.8	Unattended equipment	Applicable for products having thermostats, temperature limiters or thermal cut-outs	NA
5.3.9	Compliance criteria for abnormal operating and fault conditions	See table 1.5.1 and fire enclosure used	P
5.3.9.1	During the tests		P
5.3.9.2	After the tests		P

6	CONNECTION TO TELECOMMUNICATION NETWORKS		NA
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		NA
6.1.1	Protection from hazardous voltages	No connection to TNV-circuits	NA
6.1.2	Separation of the telecommunication network from earth		NA
6.1.2.1	Requirements		NA
	Test voltage (V)		—
	Current in the test circuit (mA)		—
6.1.2.2	Exclusions.....:		NA

6.2	Protection of equipment users from overvoltages on telecommunication networks		NA
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IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
6.2.1	Separation requirements		NA
6.2.2	Electric strength test procedure		NA
6.2.2.1	Impulse test		NA
6.2.2.2	Steady-state test		NA
6.2.2.3	Compliance criteria		NA

6.3	Protection of the telecommunication wiring system from overheating		NA
	Max. output current (A).....:	No power provided	—
	Current limiting method.....:		—

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		P
7.1	General		P
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment	Manual states protective earth conductor must be used	P
7.3	Protection of equipment users from overvoltages on the cable distribution system	SELV circuit used	P
7.4	Insulation between primary circuits and cable distribution systems	SELV circuit used	P
7.4.1	General	Manual states protective earth conductor must be used	P
7.4.2	Voltage surge test	No test performed as manual states protective earth conductor must be used	NA
7.4.3	Impulse test	No test performed as manual states protective earth conductor must be used	NA

A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		P
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		NA
A.1.1	Samples.....:		—
	Wall thickness (mm).....:		—
A.1.2	Conditioning of samples; temperature (°C).....:		NA
A.1.3	Mounting of samples.....:		NA
A.1.4	Test flame (see IEC 60695-11-3)		NA
	Flame A, B, C or D		—
A.1.5	Test procedure		NA
A.1.6	Compliance criteria		NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	Sample 1 burning time (s)		—
	Sample 2 burning time (s)		—
	Sample 3 burning time (s)		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		P
A.2.1	Samples, material.....:	Aluminium, therefore no flammability test performed	—
	Wall thickness (mm).....:	2 mm	—
A.2.2	Conditioning of samples		NA
A.2.3	Mounting of samples		NA
A.2.4	Test flame (see IEC 60695-11-4)		NA
	Flame A, B or C		—
A.2.5	Test procedure		NA
A.2.6	Compliance criteria		NA
	Sample 1 burning time (s)		—
	Sample 2 burning time (s)		—
	Sample 3 burning time (s)		—
A.2.7	Alternative test acc. to IEC 60695-2-2, cl. 4 and 8		NA
	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)		NA
A.3.1	Mounting of samples		NA
A.3.2	Test procedure		NA
A.3.3	Compliance criterion		NA

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		NA
B.1	General requirements	No motor incorporated	NA
	Position		—
	Manufacturer		—
	Type		—
	Rated values		—
B.2	Test conditions		NA
B.3	Maximum temperatures		NA
B.4	Running overload test		NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
B.5	Locked-rotor overload test		NA
	Test duration (days)		—
	Electric strength test: test voltage (V)		—
B.6	Running overload test for d.c. motors in secondary circuits		NA
B.6.1	General		NA
B.6.2	Test procedure		NA
B.6.3	Alternative test procedure		NA
B.6.4	Electric strength test; test voltage (V) :		NA
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		NA
B.7.1	Test procedure		NA
B.7.2	Alternative test procedure; test time (h).....		NA
B.7.3	Electric strength test		NA
B.7.4	Electric strength test; test voltage (V)		NA
B.8	Test for motors with capacitors		NA
B.9	Test for three-phase motors		NA
B.10	Test for series motors		NA
	Operating voltage (V)		—

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position	Transformer in power supply separate approved. See appended table 1.5	—
	Manufacturer		—
	Type		—
	Rated values		—
	Method of protection.....		—
C.1	Overload test	See appended table 1.5	P
C.2	Insulation	See appended table 1.5	P
	Protection from displacement of windings.....	See appended table 1.5	P

D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		P
D.1	Measuring instrument	P	—
D.2	Alternative measuring instrument	NA	—

E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		NA
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IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10)		P
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G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		NA
G.1	Clearances		NA
G.1.1	General		NA
G.1.2	Summary of the procedure for determining minimum clearances		NA
G.2	Determination of mains transient voltage (V).....:		NA
G.2.1	AC mains supply		NA
G.2.2	Earthed d.c. mains supplies		NA
G.2.3	Unearthed d.c. mains supplies		NA
G.2.4	Battery operation		NA
G.3	Determination of telecommunication network transient voltage (V).....:		NA
G.4	Determination of required withstand voltage (V)		NA
G.4.1	Mains transients and internal repetitive peaks ..:		NA
G.4.2	Transients from telecommunication networks ..:		NA
G.4.3	Combination of transients		NA
G.4.4	Transients from cable distribution systems		NA
G.5	Measurement of transient levels (V).....:		NA
	a) Transients from a mains supply		NA
	For an a.c. mains supply		NA
	For a d.c. mains supply		NA
	b) Transients from a telecommunication network		NA
G.6	Determination of minimum clearances.....:		NA

H	ANNEX H, IONIZING RADIATION (see 4.3.13)		NA
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J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		P
	Metal used	Aluminium (Al) and chrome (Cr) used	—

K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7)		P
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IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
K.1	Making and breaking capacity	EUT incorporates no thermostats or temperature limiters	NA
K.2	Thermostat reliability; operating voltage (V).....:		NA
K.3	Thermostat endurance test; operating voltage (V)		NA
K.4	Temperature limiter endurance; operating voltage (V)		NA
K.5	Thermal cut-out reliability	Thermal cut-out deemed to fulfil the requirements without test. See appended table 1.5.1	P
K.6	Stability of operation	EUT deemed to fulfil the requirements without test	P

L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.1)		P
L.1	Typewriters		NA
L.2	Adding machines and cash registers		NA
L.3	Erasers		NA
L.4	Pencil sharpeners		NA
L.5	Duplicators and copy machines		NA
L.6	Motor-operated files		NA
L.7	Other business equipment		P

M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		NA
M.1	Introduction		NA
M.2	Method A		NA
M.3	Method B		NA
M.3.1	Ringing signal		NA
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.....		NA
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		NA
M.3.2.2	Tripping device		NA
M.3.2.3	Monitoring voltage (V).....		NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
N	ANNEX N, IMPULSE TEST GENERATORS (see 2.10.3.4, 6.2.2.1, 7.3.2 and clause G.5)		NA
N.1	ITU-T impulse test generators		NA
N.2	IEC 60065 impulse test generator		NA
P	ANNEX P, NORMATIVE REFERENCES		P
Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		P
	a) Preferred climatic categories :	See table 1.5.1	P
	b) Maximum continuous voltage :		P
	c) Pulse current :		P
R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		NA
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6)		NA
R.2	Reduced clearances (see 2.10.3)		NA
S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		NA
S.1	Test equipment		NA
S.2	Test procedure		NA
S.3	Examples of waveforms during impulse testing		NA
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		NA
			—
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		P
		See table 1.5.1	—
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		P
V.1	Introduction		P
V.2	TN power distribution systems		P
W	ANNEX W, SUMMATION OF TOUCH CURRENTS		P
W.1	Touch current from electronic circuits		P
W.1.2	Earthed circuits		P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
W.2	Interconnection of several equipments		NA
W.2.1	Isolation		NA
W.2.2	Common return, isolated from earth		NA
W.2.3	Common return, connected to protective earth	Common return used	P

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

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

Z	Annex Z, Overvoltage categories (see 2.10.3.2 and Clause G.2)		P
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AA	Annex AA, Mandrel test (see 2.10.5.8)		NA
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BB	Annex BB, Changes in the second edition		-
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CC	Evaluation of integrated circuit (IC) current limiters		
CC.1	Integrated circuit (IC) current limiters		
CC.2	Test program 1		
CC.3	Test program 2		

DD	Requirements for the mounting means of rack-mounted equipment		
DD.1	General		
DD.2	Mechanical strength test, variable N		

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
DD.3	Mechanical strength test, 250 N, including end stops		
DD.4	Compliance		
EE	Household and home/office document/media shredders		
EE.1	General		
EE.2	Markings and instructions		
EE.3	Inadvertent reactivation		
EE.4	Disconnection of power to hazardous moving parts		
EE.5	Protection against hazardous moving parts		

EN 60950-1:2006 – CENELEC COMMON MODIFICATIONS				P																																																																								
CONTENTS	ADD THE FOLLOWING ANNEXES: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations			P																																																																								
General	Delete all the “country” notes in the reference document according to the following list: <table><tr><td>1.4.8</td><td>Note 2</td><td>1.5.1</td><td>Note 2 & 3</td><td>1.5.7.1</td><td>Note</td></tr><tr><td>1.5.8</td><td>Note 2</td><td>1.5.9.4</td><td>Note</td><td>1.7.2.1</td><td>Note 4, 5 & 6</td></tr><tr><td>2.2.3</td><td>Note</td><td>2.2.4</td><td>Note</td><td>2.3.2</td><td>Note</td></tr><tr><td>2.3.2.1</td><td>Note 2</td><td>2.3.4</td><td>Note 2</td><td>2.6.3.3</td><td>Note 2 & 3</td></tr><tr><td>2.7.1</td><td>Note</td><td>2.10.3.2</td><td>Note 2</td><td>2.10.5.13</td><td>Note 3</td></tr><tr><td>3.2.1.1</td><td>Note</td><td>3.2.4</td><td>Note 3.</td><td>2.5.1</td><td>Note 2</td></tr><tr><td>4.3.6</td><td>Note 1 & 2</td><td>4.7</td><td>Note 4</td><td>4.7.2.2</td><td>Note</td></tr><tr><td>4.7.3.1</td><td>Note 2</td><td>5.1.7.1</td><td>Note 3 & 4</td><td>5.3.7</td><td>Note 1</td></tr><tr><td>6</td><td>Note 2 & 5</td><td>6.1.2.1</td><td>Note 2</td><td>6.1.2.2</td><td>Note</td></tr><tr><td>6.2.2</td><td>Note 6.</td><td>2.2.1</td><td>Note 2</td><td>6.2.2.2</td><td>Note</td></tr><tr><td>7.1</td><td>Note 3</td><td>7.2</td><td>Note</td><td>7.3</td><td>Note 1 & 2</td></tr><tr><td>G.2.1</td><td>Note 2</td><td>Annex H</td><td>Note 2</td><td></td><td></td></tr></table>			1.4.8	Note 2	1.5.1	Note 2 & 3	1.5.7.1	Note	1.5.8	Note 2	1.5.9.4	Note	1.7.2.1	Note 4, 5 & 6	2.2.3	Note	2.2.4	Note	2.3.2	Note	2.3.2.1	Note 2	2.3.4	Note 2	2.6.3.3	Note 2 & 3	2.7.1	Note	2.10.3.2	Note 2	2.10.5.13	Note 3	3.2.1.1	Note	3.2.4	Note 3.	2.5.1	Note 2	4.3.6	Note 1 & 2	4.7	Note 4	4.7.2.2	Note	4.7.3.1	Note 2	5.1.7.1	Note 3 & 4	5.3.7	Note 1	6	Note 2 & 5	6.1.2.1	Note 2	6.1.2.2	Note	6.2.2	Note 6.	2.2.1	Note 2	6.2.2.2	Note	7.1	Note 3	7.2	Note	7.3	Note 1 & 2	G.2.1	Note 2	Annex H	Note 2			P
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																																																																									
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			P																																																																								
2.7.1	Replace the subclause as follows: Basic requirements			P																																																																								

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	<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> <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>		
	S (GB): To protect against excessive currents and short-circuits in the PRIMARY CIRCUIT OF DIRECT PLUG-IN EQUIPMENT, protective device shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT.		NA
2.7.2	Void.		P
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		P

IEC 60950-1 / EN 60950-1															
Clause	Requirement – Test	Result – Remark	Verdict												
3.2.5.1	<p>Replace “60245 IEC 53” by “H05 RR-F”; “60227 IEC 52” by “H03 VV-F or H03 VVH2-F”; “60227 IEC 53” by “H05 VV-F or H05 VVH2-F2”.</p> <p>In Table 3B, replace the first four lines by the following:</p> <table><tr><td> Up to and including 6</td><td> </td></tr><tr><td>0,75 ^{a)} </td><td></td></tr><tr><td> Over 6 up to and including 10</td><td> (0,75) ^{b)}</td></tr><tr><td>1,0 </td><td></td></tr><tr><td> Over 10 up to and including 16</td><td> (1,0) ^{c)}</td></tr><tr><td>1,5 </td><td></td></tr></table> <p>In the conditions applicable to Table 3B delete the words “in some countries” in condition ^{a)}.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p>	Up to and including 6		0,75 ^{a)}		Over 6 up to and including 10	(0,75) ^{b)}	1,0		Over 10 up to and including 16	(1,0) ^{c)}	1,5			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															
3.3.4	<p>C: In table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:</p> <table><tr><td>"Over 10 up to and including 16</td><td> 1,5 to 2,5 1,5 to 4"</td></tr></table> <p>Delete the fifth line: conductor sizes for 13 to 16 A.</p>	"Over 10 up to and including 16	1,5 to 2,5 1,5 to 4"		NA										
"Over 10 up to and including 16	1,5 to 2,5 1,5 to 4"														
4.3.13.6	<p>Add the following note:</p> <p>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. Standards taking into account this Recommendation which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.</p>		P												
Zx (Amd 12:2011)	Protection against excessive sound pressure from personal music players		NA												
Zx.1	General		NA												
Zx.2	Equipment requirements		NA												
Zx.3	Warning		NA												
Zx.4	Requirements for listening devices (headphones and earphones)		NA												
Zx.4.1	Wired listening devices with analogue input		NA												
Zx.4.2	Wired listening devices with digital input		NA												
Zx.4.3	Wireless listening devices		NA												
Zx.5	Measurement methods		NA												

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
Annex H	<p>C: Replace the last paragraph of this annex by:</p> <p>At any point 10 cm from the surface of the operator access area, the dose rate shall not exceed 1 μSv/h (0,1 mR/h) (see note). Account is taken of the background level.</p> <p>Replace the notes as follows:</p> <p>NOTE These values appear in Directive 96/29/Euratom.</p> <p>Delete Note 2.</p>		NA
Annex Zx	Significance of $L_{Aeq, T}$ in EN 50332-1 and additional information		-
Bibliography	Additional EN standards		-
ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		-
ZB	SPECIAL NATIONAL CONDITIONS		P
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.	Both national and Schuko plug	P
1.2.13.14	In Norway and Sweden , for requirements see 1.7.2.1 and 7.3 of this annex		P
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.	See table 1.5.1	NA
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).	See table 1.5.1	P
1.5.9.4	In Finland , Norway and Sweden , the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.2.1	<p>In Finland, Norway and Sweden, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Finland: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p>	No surge suppressors used	NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.2.1	<p>In Norway and Sweden, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>“Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11).”</p> <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>	No such cable distribution system	NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
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.	No socket-outlet	NA
2.2.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		NA
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.	Applicable only to products with TNV circuits	NA
2.3.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	Applicable only to products with TNV circuits	NA
2.6.3.3	In the United Kingdom , the current rating of the circuit shall be taken as 13 A, not 16 A.	Current <1A	P
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.	Current <1A	NA
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.	Applicable only to products with TNV circuits	NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
3.2.1.1	<p>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:</p> <p>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</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 SEV 5933-2.1998 Plug Type 21 L+N 250 V, 16 A SEV 5934-2.1998 Plug Type 23 L+N+PE 250 V, 16 A</p>	Relevant plug not used	NA
3.2.1.1	<p>In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.</p>		P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
3.2.1.1	<p>In Spain, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p>	Schuko plug accepted	P
3.2.1.1	<p>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.</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>	National plug available	P
3.2.1.1	<p>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</p>	National plug available	P
3.2.4	In Switzerland , for requirements see 3.2.1.1 of this annex.		P
3.2.5.1	In the United Kingdom , a power supply cord with conductor of 1,25 mm ² is allowed for equipment with a rated current over 10 A and up to and including 13 A.	Current <1A	NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
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.	Current <1A	NA
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.	Direct plug equipment only	NA
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.	Direct plug equipment only	NA
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.	Current < 3,5 mA	P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
6.1.2.1	<p>In Finland, Norway and Sweden, add the following text between the first and second paragraph of the compliance clause:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. <p>Alternatively for components, there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearance and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition.</p> <ul style="list-style-type: none"> - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV. <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 60384-14; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14. 	SELV circuit used	NA

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
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.	SELV circuit used	NA
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.		NA
7.3	In Norway and Sweden , for requirements see 1.2.13.14 and 1.7.2.1 of this annex.		NA
7.3	In Norway , for installation conditions see EN 60728-11:2005.		NA
ZC	A-DEVIATIONS (INFORMATIVE)		P
1.5.1	Switzerland (Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7, Mercury - Annex 1.7 of SR 814.81 applies for mercury.) Add the following: NOTE In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.		P
1.7.2.1	Germany (Gesetz über technische Arbeitsmittel und Verbraucherprodukte (Geräte- und Produktsicherheitsgesetz – GPSG) [Law on technical labour equipment and consumer products], of 6th January 2004, Section 2, Article 4, Clause (4), Item 2). If for the assurance of safety and health certain rules during use, amending or maintenance of a technical labour equipment or readymade consumer product are to be followed, a manual in German language has to be delivered when placing the product on the market. Of this requirement, rules for use even only by SERVICE PERSONS are not exempted.		P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.13	Switzerland (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries) Annex 2.15 of SR 814.81 applies for batteries.		P

1.5.1	TABLE: list of critical components				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾
Main cord with plugs	Various	Various	National	National	VDE, S, UL, CSA or equivalent
Appliance plug	Schurter	KFA 4301.5012	250VAC, 50/60Hz, 2A	EN 133200:199 9, UL 1283	VDE,S,UL,CSA
Fuse	Any	5x20	T1,6 AL/250VAC	IEC60127	UL, CSA, VDE
Switch	Carlingswitch	621.5919	125VAC/8A/T85 250VAC/4A/T85	IEC/EN/UL/ CSA 61058- 1 ANSI/UL 1054	UL,CSA,VDE,S
Power supply	ETA	WRT05SX-U	85-264VAC	EN/IEC/UL 60950-1 CSA 22.2 no. 60950-1	TÜV, UL
Internal wire	Various	1015	105 deg C 0.75mm ² 600V	STYLE 1015	UL
Crimps female	Various	5.7mm	-	ANSI/UL 486	UL
Crimps female	Various	6.3mm	-	ANSI/UL 486	UL
Crimps circular	Various	4mm	-	ANSI/UL 486	UL
Crimps circular	Various	3mm	-	ANSI/UL 486	UL
Terminal block	Various	-	-	94V-2	UL
PCB	Various	-	-	94V-1	UL
1) an asterisk indicates a mark which assures the agreed level of surveillance					

1.6.2	TABLE: electrical data (in normal conditions)					P
fuse #	I rated (A)	U (V)	P (W)	I (mA)	I fuse (mA)	condition/status
1	1.6	115	1,3	41		Normal operation
1	1.6	230	2,1	46		Normal operation

1.7.11	TABLE: Durability of markings					P
Marking method (see NOTE)					Agent	
1) Printing					A Water	
2) Label					B Petroleum spirit	
3)					C	
NOTE – Where applicable include print method, label material, ink or paint type, fixing method, adhesive and surface to which marking is fixed.						
Marking location				Marking method (see above)		
Side marking				Label		
Rear position				Printing		
Method	Test agent	Remains legible Verdict	Label loose Verdict	Curled edges Verdict	Comments	
Label	A,B	Yes	No	No	Test passed	
Printing	A,B	Yes	No	No	Test passed	

2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements					NA
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
*1: power supply previously approved component, see table 1.5.1						

2.10.5	TABLE: distance through insulation measurements	NA
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distance through insulation di at/of:	Up (V)	test voltage (V)	required di (mm)	di (mm)

4.3.8	TABLE: Batteries								P	
The tests of 4.3.8 are applicable only when appropriate battery data is not available					Data available, no test required				P	
Is it possible to install the battery in a reverse polarity position?					No				P	
	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										
- Explosion of the battery										
- Emission of flame or expulsion of molten metal										
- Electric strength tests of equipment after completion of tests										
Supplementary information:										

4.5	TABLE: thermal requirements				P
	Supply voltage (V)	115VAC	230 VAC		—
	t _{amb1} (°C)	23	23		—
	t _{amb2} (°C)	23	23		—

maximum temperature T of part/at::	T (°C)			allowed T _{max} (°C) (*2)
	*1	*1		
PCB near DC-converter	25	25		83
Power inlet filter	23	23		62
Power supply PCB near switch semiconductor	27	29		83
Power supply low-voltage capacitor	27	28		83
Power supply switch transformer	27	29		83
Power supply high-voltage capacitor	26	28		83
Chassis cover bottom under power supply	25	25		47
Chassis cover top over PCB equipped with in-outlet no. 5	24	24		47
Chassis cover top over power supply	24	24		47
Keypad “Sync Gen1”	23	24		63
Keypad “Manual”	23	23		63
Supplementary information:				
*1: Normal operation				
*2: Allowed temperature corrected for allowed ambient temperature of 45°C. Correction means that the allowed temperature is lowered by 22°C (45 – 23 = 22°C)				

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:							

4.5.5	TABLE: Ball pressure test of thermoplastic parts			NA
	Allowed impression diameter (mm):	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	
Supplementary information:				

4.7	TABLE: Resistance to fire					P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence	
Enclosure	Any	Aluminium	2			
Supplementary information: No test required						

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) a.c. / d.c.	breakdown Yes / No
Functional:				
Basic/supplementary:				
L/N – PE		AC	1500 Vrms	No
Reinforced				
Supplementary information				

5.3	TABLE: fault condition tests					NA
	ambient temperature (°C)		23			—
	Power source for EUT: Manufacturer, model/type, output rating :					—
component No.	fault	Supply voltage (V)	test time	fuse No.	fuse current (A)	Observation
supplementary information						

EN / IEC60950-1			
Clause	Requirement - Test	Result	Verdict
USA/Canada			
CAN/CSA C22.2 No. 60950/UL60950, Third Edition, based on IEC 60950, Third Edition			
	<p><i>"CEC" denotes Canadian Electrical Code</i></p> <p><i>"NEC" denotes US National Electrical Code.</i></p>		-
	<p>SPECIAL NATIONAL CONDITIONS</p> <p>The following is a summary of the key national differences based on national regulatory requirements, such as the Canadian Electrical Code (CEC) Part I and the Canadian Building Code, which are referenced in legislation and which form the basis for the rules and practices followed in electrical and building installations</p>		-
1.1.1	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.		P
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.	Type B used	NA
1.5.5	<p>For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the CEC/NEC.</p> <p>For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the CEC are required to have special construction features and identification markings.</p>	Interconnecting cables not supplied	NA
1.7.1	<p>Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings.</p> <p>A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235, and if it is part of a range that extends into the Table 2 "Normal Operating Conditions." Likewise, a voltage rating shall not be lower than the specified "Normal Operating Conditions," unless it is part of a range</p>	One phase used only	NA

EN / IEC60950-1			
Clause	Requirement - Test	Result	Verdict
	that extends into the "Normal Operating Conditions."		
1.7.7	Wiring terminals intended to supply Class 2 outputs in accordance with CEC Part 1 or NEC shall be marked with the voltage rating and "Class 2" or equivalent. Marking shall be located adjacent to the terminals and shall be visible during wiring.		NA
2.5	Where a fuse is used to provide Class 2, Limited Power Source, or TNV current limiting, it shall not be operator-accessible unless it is not interchangeable.		NA
2.6.3.3	The first column on Table 2D modified to require, "Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration."		P
2.7.1	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable. Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.	Not a distribution unit	NA
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains shall be in accordance with the NEC/CEC.	National plug used	P
3.2.1	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	Supply cord rated >125% than rated current of 1.6A	P
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.	No d.c. power used	NA
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.		NA
3.2.5	Power supply cords are required to be no longer than 4.5 m in length. Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Flexible power supply cords are required to be compatible with Article 400 of the NEC, and	Power cord min. 1.5m and max. 4.5m	P

EN / IEC60950-1			
Clause	Requirement - Test	Result	Verdict
	Tables 11 and 12 of the CEC.		
3.2.9	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.		NA
3.3	Wiring terminals and associated spacings for field wiring connections shall comply with CSA C22.2 No. 0.	No field wiring connection, appliance coupler used	NA
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ²). Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ²).		NA
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for Canadian/US wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified (1.7.7).		NA
3.3.5	First column of Table 3E revised to require "Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration."		NA
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the equipment is rated more than 12 A, or if the motor has a nominal voltage rating greater than 120 V, or is rated more than 1/3 hp (locked rotor current over 43 A).	No motor control device	NA
3.4.8	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.	"I"-symbol used in the up position as "on"	P
3.4.11	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.	No d.c. supply used	NA
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.	No liquid store	NA
4.3.13.5	Equipment with lasers is required to meet the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations 21 CFR 1040, as applicable.	No laser used	NA
4.7	For computer room applications, automated information storage systems with combustible media greater than 0.76 m ³ (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	No combustible media used	NA
4.7.3.1	For computer room applications, enclosures with		NA

EN / IEC60950-1			
Clause	Requirement - Test	Result	Verdict
	combustible material measuring greater than 0.9 m ² (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.		
Annex H	Equipment that produces ionizing radiation is required to comply with the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations, 21 CFR 1020, as applicable.	No ionizing radiation	NA
	OTHER DIFFERENCES		
1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (Canadian and/or U.S.) component or material standard requirements. These components include: attachment plugs, battery packs (rechargeable type, used with transportable equipment), cathode ray tubes, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), cord sets and power supply cords, direct plug-in equipment, enclosures (outdoor), flexible cords and cables, fuses (branch circuit), fuseholders, ground-fault current interrupters, industrial control equipment, insulating tape, interconnecting cables, lampholders, limit controls, printed wiring, protectors for communications circuits, receptacles, solid state controls, supplementary protectors, switches (including interlock switches), thermal cutoffs, thermostats, (multi-layer) transformer winding wire, transient voltage surge suppressors, tubing, wire connectors, and wire and cables.	Flexible cord, fuse, interconnecting cables, PCB, transformer winding wire, wire and wire connectors are rated ref. relevant requirements. See table 1.5.1	P
1.6.1.2	A circuit for connection to the DC Mains Supply is classified as either a SELV Circuit, TNV-2 Circuit or Hazardous Voltage Circuit depending on the maximum operating voltage of the supply. This maximum operating voltage shall include consideration of the battery charging "float voltage" associated with the intended supply system, regardless of the marked power rating of the equipment.	No DC Mains used	NA
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4	No TNV-2 or TNV-3 circuits	NA

EN / IEC60950-1			
Clause	Requirement - Test	Result	Verdict
	V _{peak} or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.	used	
2.3.2.1	In the event of a single fault between TNV and SELV circuits, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts.	Only SELV circuit used	NA
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRT used	NA
4.3.2	Equipment with handles is required to comply with special loading tests.	Rack handles subjected to 50 N testing	P
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	No telecommunication	NA
5.3.7	Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are to be overloaded. During abnormal operating testing, if a circuit is interrupted by the opening of a component, the test shall be repeated twice (three tests total) using new components as necessary.	No power output	NA
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.	No telecommunication	NA
Annex EE	Articulated accessibility probe (Fig EE.3) required for assessing accessibility to document/media shredders instead of the Figure 2A test finger.	No shredder	NA
M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.	No telecommunication	NA
Annex NAD	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.	No earphone	NA

List of test equipment used:

(Note: This is an example of the required attachment. Other forms with a different layout but containing similar information are also acceptable.)

Clause	Measurement / testing	Testing / measuring equipment / material used	Range used	Calibration date
1.6.2	Input	Wattmeter Chroma 66202 A81	300 V 2 A / 0.1 A	11.03.2014
2.1.1.7	Residual voltage	Oscilloscope Tektronix TDS 2022B A44	Channel 1, 100 V/250 ms Storage single sequence	29.04.2015
		Test box BI. A96		
2.6.3.4	Earth bond	HP 6032A DC-power supply A43	11V/25A	25.04.2015
		Multimeter Fluke 189 A38	mVDC	04.06.2014
4.3.2	Design and construction	SHIMPO FGE-100X pull meter	100N	08.03.2015
4.5	Temperature	Thermo coupler connecting box Pico XFY16/513	8 channels	-
		Thermo coupler connecting box Pico HJL29/188	8 channels	-
5.1	Touch current	Multimeter Fluke 189 A38	VAC	04.06.2014
		Test box BI. A111		02.01.2014
5.2	High voltage	HV generator GW Instek GPT-715A A120	AC	22.02.2015