Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT

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

Report Number. ..... :	18005046 001
Date of issue ..... :	2014-06-18
Total number of pages	94
CB Testing Laboratory..... :	TÜV Rheinland Singapore Pte. Ltd., Laboratory
Address ..... :	25, International Business Park, #04-03/04, German Centre, Singapore 609916
Applicant's name..... :	Kontron Europe GmbH
Address ..... :	Sudetenstraße 7 87600 Kaufbeuren, Germany
Manufacturer's name..... :	Kontron Europe GmbH
Address ..... :	Sudetenstraße 7 87600 Kaufbeuren, Germany
Test specification:	
Standard..... :	IEC 60950-1:2005 (Second Edition) + Am 1:2009
Test procedure ..... :	CB Scheme
Non-standard test method..... :	N/A
Test Report Form No..... :	IEC60950_1C
Test Report Form(s) Originator..... :	SGS Fimko Ltd
Master TRF ..... :	Dated 2012-08

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Test item description .....:	Industrial computer
Trade Mark .....:	kontron
Manufacturer .....:	See above
Model/Type reference .....:	KISS 2U V2 KTQ87-A
Ratings .....:	100-240 Vac, 4.5A max, 50-60 Hz

Testing procedure and testing location:		
☒	**CB Testing Laboratory:**	TÜV Rheinland Singapore Pte. Ltd., Laboratory
Testing location/ address .....:		25, International Business Park, #04-03/04, German Centre, Singapore 609916
☐	**Associated CB Laboratory:**	
Testing location/ address .....:		(see above)
Tested by (name + signature).....:		Wu Tian Sing
Approved by (name + signature).....:		Than Soe
☐	Testing procedure: **TMP**	
Testing location/ address .....:		
Tested by (name + signature).....:		
Approved by (name + signature).....:		
☐	Testing procedure: **WMT**	
Testing location/ address .....:		
Tested by (name + signature).....:		
Witnessed by (name + signature)....:		
Approved by (name + signature).....:		
☐	Testing procedure: **SMT**	
Testing location/ address .....:		
Tested by (name + signature).....:		
Approved by (name + signature).....:		
Supervised by (name + signature)...:		
☐	Testing procedure: **RMT**	
Testing location/ address .....:		
Tested by (name + signature).....:		
Approved by (name + signature).....:		
Supervised by (name + signature)...:		

List of Attachments (including a total number of pages in each attachment):

- Photo Documentation (total 14 pages)

Summary of testing:

Test sample(s): Production sample with serial number: 123456789

A sample of the equipment was subject of a construction check.

1) All tests were performed at normal load condition unless otherwise specified.
2) All tests were performed at minimum and/or maximum input voltage range specified by manufacturer and were basically reported whichever worse result.
3) All relative tests were performed as using the software provided by manufacturer. This is Pass-mark burn-in test software which continuously sending and receiving USB, Display port, LAN, audio signals in and out.

Tests performed (name of test and test clause):	**Testing location:**
All applicable tests as described in Test Case and Measurement Sections were performed.	(see "testing procedure and testing location" on the previous page)

Clause	Test description	Applicable (Yes/No)	Comments
1.6.2	Input current	Yes	
2.1.1.5	Energy hazards	No	Evaluated by approved power supply
2.1.1.7	Discharge of capacitors in equipment	No	Evaluated by approved power supply
2.1.1.8	Energy hazards – d.c. mains supply	No	
2.2.2	SELV/Voltage measurement under normal condition	No	Evaluated by approved power supply
2.2.3	SELV/Voltage measurement under fault conditions	No	Evaluated by approved power supply
2.3.5	Operating voltages generated externally	No	
2.4.2	Limited current circuits	No	Evaluated by approved power supply
2.5	Limited power sources	Yes	Output ports (USB, display port) of motherboard tested
2.6.3.4	Resistance of earthing conductors and their terminations	Yes	32A, 2 min and 40A, 2 min tested
2.9.2	Humidity conditioning	Yes	48 h, 93%RH, 25'C
2.10	Creepage and Clearances, Distance through Insulation	No	Evaluated by approved power supply
2.10.2.2/	Determination of working voltage	No	Evaluated by approved power supply

2.10.2.3			
2.10.5	Solid insulation	Yes	
2.10.12	Enclosed and sealed parts	No	
3.2.6	Cord anchorages and strain relief	No	
4.1	Stability	Yes	
4.2	Mechanical strength	Yes	
4.3.6	Direct plug-in equipment	No	
4.3.13	Radiation	No	A laser measurement test report reference number 12CA14583, tested for IEC 60825-1: 2007 clause 8 and 9 by UL Japan, Inc.
4.5.2	Maximum Temperatures	Yes	
4.5.5	Resistance to abnormal heat	Yes	CPU fan frame is tested
5.1	Touch current and protective conductor current	Yes	
5.2	Electric strength	Yes	Pri toPE, Pri to Sec
5.3	Abnormal operating and fault conditions	Yes	
6.1.2	Separation of the telecommunication network from earth	No	
6.2	Protection of equipment users from overvoltages on telecom. Networks	No	
6.3	Protection of the telecommunication wiring system from overheating	No	
7.2	Protection of equipment users from overvoltages on cable distribution system	No	
7.3	Insulation between primary and cable distribution system	No	
Annex A	Resistance to heat and fire	No	
Annex B	Locked-rotor overload test	Yes	Front system fan, CPU fan
Annex C	Overload test	No	Evaluated by approved power supply
Annex G	Determining minimum clearances	No	
Annex H	Ionizing radiation	No	
Annex K	Thermal controls	No	
Annex M	Criteria for telephone ringing signals	No	
Annex Q	Voltage dependent resistors (VDRs)	No	Evaluated by approved power supply
Annex U	Insulated wire for use without interleaved	No	

	insulation		
Annex Y	Ultraviolet light conditioning test	No	
Annex CC	Evaluation of Integrated circuit (IC) current limiters	No	
Annex DD	Requirements for the mounting means of rack-mounted equipment	No	
Annex EE	Household and home/office document/media shredders	No	

Summary of compliance with National Differences

List of countries addressed:

EU Group Differences, EU Special National Conditions, EU A-Deviations

CA, DK, FI, DE, SE, GB, US.

CA=Canada, DK=Denmark, FI=Finland, DE=Germany, SE=Sweden, GB=United Kingdom, US=United States of America.

For National Differences see end of this test report

☒ The product fulfils the requirements of EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011.

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

(Additional requirements for markings. See 1.7 NOTE)

Caution labels

1. Laser

Class 1 laser label (at DVD multi-drive)

2. Battery

Warning statement provided in product's user guide

Caution

Danger of explosion when replacing with wrong type of battery. Replace only with the same or equivalent type recommended by the manufacturer. The lithium battery type must be UL recognized.

This is also provided in the PCB motherboard's user guide

Lithium Battery precautions:

CAUTION! Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by manufacturer. Dispose of used batteries according to the manufacturer's instructions.	**VORSICHT!** Explosionsgefahr bei unsachgemäßem Austausch der Batterie. Ersatz nur durch den selben oder einen vom Hersteller empfohlenen gleichwertigen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.
ADVARSEL! Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.	**ADVARSEL** Eksplosjonsfare ved feilaktig skifte av batteri. Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten. Brukte batterier kasseres i henhold til fabrikantens instruksjoner.
VARNING Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.	**VAROITUS** Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

3. Fan symbol for the front system fans

Test item particulars.....:	
Equipment mobility.....:	[] movable [] hand-held [] transportable [X] stationary [] for building-in [] direct plug-in
Connection to the mains .....:	[X] pluggable equipment [X] type A [] type B [] permanent connection [] detachable power supply cord [X] non-detachable power supply cord [] not directly connected to the mains
Operating condition.....:	[X] continuous [] rated operating / resting time:
Access location .....:	[X] operator accessible [] restricted access location
Over voltage category (OVC) .....:	[] OVC I [X] OVC II [] OVC III [] OVC IV [] other:
Mains supply tolerance (%) or absolute mains supply values .....:	±10%
Tested for IT power systems .....:	[] Yes [X] No
IT testing, phase-phase voltage (V) .....:	
Class of equipment .....:	[X] Class I [] Class II [] Class III [] Not classified
Considered current rating of protective device as part of the building installation (A) .....:	16A (20A for Canada and United States)
Pollution degree (PD) .....:	[] PD 1 [X] PD 2 [] PD 3
IP protection class .....:	Not rated, indoor use only
Altitude during operation (m) .....:	Up to 2000m
Altitude of test laboratory (m) .....:	< 1000m
Mass of equipment (kg) .....:	Approximately 11 kg
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..... :	2014.04.14
Date(s) of performance of tests..... :	2014.04.14 to 2014.06.05

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

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

Manufacturer's Declaration per sub-clause 6.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....:

☐ Yes

☒ Not applicable

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... : Kontron Europe GmbH
Lise-Meitner-Str. 3-5
86156 Augsburg
Germany

General product information:

1) Application details / Description of the product:

The product tested is an industrial computer for use in a general office environment. It could be designed to be installed in 19" racks or as a desktop unit by itself. It is intended to connect to PC peripheral interface devices, such as monitor, USB keyboard, mouse, for its proper operation. The USB interface peripherals could be plugged to front side of the USB2.0 type or the rear side of USB3.0 type connectors.

It is composed of a CB and TUV-mark approved switching AC-DC Power Supply unit, primary is isolated by double or reinforced from secondary side. The power supply was tested as part of the overall configuration of the equipment.

This unit is provided with burn-in software to simulate maximum load conditions.

a) Switching Power supply

CB report number: 11030607 001, issued on 2012 Oct 16, by TUV Rheinland Taiwan Ltd., Taichung Laboratory.
Manufacturer: FSP Group Inc.

TUV-mark report number: 10022615, license number: R 50129938

b) Motherboard PCB used is CB and UL approved.

CB report number: E194252-A30-CB-1, issued on 2014 Jan 10, by UL (Demko),
Manufacturer: Kontron Technology A/S.

UL test report: E194252-A30-UL issued on 2014 Jan 15, certificate number: 20140115-E194252

Detachable power supply cord is not evaluated in this test report.

Max. specified ambient temperature (°C)…..: 50°C

Supply Connection…… …: Appliance Inlet

Laser classification ……: Class 1 laser product

Other conditions for built-in.....	Installed according to Installation Instructions. (see below)
PE connection:	Class I construction, required via appliance inlet.

2) Differences between the models: N/A

3) Options:

The equipment was tested without any optional accessory installed. Hence, this report does not cover parameters that are influenced by the installation of optional accessory that might affect safety in the meaning of this standard.

4) Insulation system:

- Secondary circuits are separated from primary by double/reinforced insulation.
- Primary circuits are separated from earth by at least basic insulation.
- All output / interface voltages are at SELV level.
- Secondary circuits are conductively connected to earth.

4.1) Sub-units (PCB's, ...)

With pri – sec separation .....: SWPS

With pri – parts only .....: (none)

HV-unit(s) .....: (none)

4.2) Pri - sec components, which are not part of the above mentioned sub-units:

(none)

4.3) Non certified pri-components directly mounted to chassis:
(certified components were only checked for correct-application (see 1.5.1)

(none)

Abbreviations used in the report:

- normal conditions	N.C.	- single fault conditions		S.F.C
- functional insulation	OP	- basic insulation		BI
- double insulation	DI	- supplementary insulation		SI
- between parts of opposite polarity	BOP	- reinforced insulation		RI
- protective earth/protective bonding	PE/PB	- primary		Pri
- (switching) power supply	(SW)PS	- secondary		sec
- high voltage	HV	- ground		gnd
- printed circuit (wiring) board	PCB	- input/output	I/O	
- triple insulated wire	TIW	- installation instruction		ii
- built-in application	B/I			

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

1	**GENERAL**	P

1.5	**Components**		P
1.5.1	General		P
	Comply with IEC 60950-1 or relevant component standard	(see appended tables 1.5.1)	P
1.5.2	Evaluation and testing of components	Components certified to IEC/EN standards and/or their harmonized standards, are used within their ratings and are checked for correct application.	P
1.5.3	Thermal controls	Approved thermistor	P
1.5.4	Transformers	Transformers are part of already certified power supply.	N/A
1.5.5	Interconnecting cables	UL approved interconnecting cable used.	P
1.5.6	Capacitors bridging insulation	All capacitors between lines and between primary to secondary are part of approved power supply and certified according to IEC 60384-14:2005	N/A
1.5.7	Resistors bridging insulation	See below.	N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Bridging components are part of already approved and certified power supply.	N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N/A
1.5.8	Components in equipment for IT power systems	Evaluated in approved power supply	N/A
1.5.9	Surge suppressors	See above.	N/A
1.5.9.1	General	See above.	N/A
1.5.9.2	Protection of VDRs	See above.	N/A
1.5.9.3	Bridging of functional insulation by a VDR	See above.	N/A
1.5.9.4	Bridging of basic insulation by a VDR		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A
1.6	**Power interface**		P
1.6.1	AC power distribution systems	TN power system	P
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	Not hand-held equipment.	N/A
1.6.4	Neutral conductor	Evaluated in approved power supply	N/A
1.7	**Marking and instructions**		P
1.7.1	Power rating and identification markings	Marking label is pasted on metal enclosure.	P
1.7.1.1	Power rating marking		P
	Multiple mains supply connections.....:	Single supply	N/A
	Rated voltage(s) or voltage range(s) (V) .....:	100-240V	P
	Symbol for nature of supply, for d.c. only .....:		N/A
	Rated frequency or rated frequency range (Hz) ...:	50 - 60 Hz	P
	Rated current (mA or A) .....:	4.5A max	P
1.7.1.2	Identification markings	See below.	P
	Manufacturer's name or trade-mark or identification mark .....:	Kontron	P
	Model identification or type reference .....:	KISS 2U V2 KTQ87-A	P
	Symbol for Class II equipment only .....:		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
	Operating Instructions provided to the operator, containing necessary instructions and caution information. English version checked. At least the safety relevant information will be given in other applicable languages; to be confirmed during the respective national approval.		—
1.7.2.1	General	See below.	P
1.7.2.2	Disconnect devices	Approved appliance inlet used.	P
1.7.2.3	Overcurrent protective device		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.4	IT power distribution systems	For Norway compliance has to be evaluated during the national approval.	N/A
1.7.2.5	Operator access with a tool	Operator is not instructed to use any tool for access.	N/A
1.2.7.6	Ozone		N/A
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N/A
1.7.4	Supply voltage adjustment ..... :	Full range voltage design, no necessary adjustment.	N/A
	Methods and means of adjustment; reference to installation instructions ..... :	See above.	N/A
1.7.5	Power outlets on the equipment ..... :	No power outlets provided.	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) ..... :	Evaluated in approved power supply	N/A
1.7.7	Wiring terminals	See below.	N/A
1.7.7.1	Protective earthing and bonding terminals ..... :	Evaluated in approved power supply	N/A
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 supplied equipment.	N/A
1.7.8	Controls and indicators	No safety relevant control nor indicator.	N/A
1.7.8.1	Identification, location and marking ..... :		N/A
1.7.8.2	Colours ..... :		N/A
1.7.8.3	Symbols according to IEC 60417 ..... :	Marking Symbol (IEC 60417-5007) for "ON" of the power supply switch, symbol (IEC 60417-5008) for "OFF" of the approved power supply. Marking Symbol (IEC 60417-5009) for on/off of the power switch for the motherboard, used for functional purpose.	P
1.7.8.4	Markings using figures ..... :	Not used.	N/A
1.7.9	Isolation of multiple power sources ..... :	Only one supply from the mains.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.10	Thermostats and other regulating devices ..... :	Thermistor used in the CB approved motherboard.	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 no curling nor lifting of the label edge.	P
1.7.12	Removable parts	No required marking placed on removable part (top cover of the enclosure)	N/A
1.7.13	Replaceable batteries ..... :	Lithium Battery CR2032 not replaceable by user. Warning statement provided in servicing instructions of user manual.	P
	Language(s) ..... :	English	—
1.7.14	Equipment for restricted access locations..... :	Not intended for restricted access location.	N/A

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

2	**PROTECTION FROM HAZARDS**		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	See below.	P
2.1.1.1	Access to energized parts	Only SELV circuits are accessible	P
	Test by inspection ..... :	Operator cannot contact any hazardous bare parts or parts with only basic insulation to hazardous voltage. Protection established by approved power supply.	P
	Test with test finger (Figure 2A) ..... :	No access to hazardous parts.	P
	Test with test pin (Figure 2B) ..... :	The test pin cannot touch hazardous bare parts through any openings in the external enclosure.	P
	Test with test probe (Figure 2C) ..... :	No TNV circuits.	N/A
2.1.1.2	Battery compartments	No battery compartment. No TNV circuits.	N/A
2.1.1.3	Access to ELV wiring	No ELV circuits.	N/A
	Working voltage (Vpeak or Vrms); minimum distance through insulation (mm)	Not applicable.	—
2.1.1.4	Access to hazardous voltage circuit wiring	Not accessible. Refer to clause 2.1.1 above.	N/A
2.1.1.5	Energy hazards ..... :	Evaluated in approved power supply	N/A
2.1.1.6	Manual controls	No manual controls.	N/A
2.1.1.7	Discharge of capacitors in equipment	Evaluated in approved power supply	N/A
	Measured voltage (V); time-constant (s) ..... :		—
2.1.1.8	Energy hazards – d.c. mains supply	No dc mains supply	N/A
	a) Capacitor connected to the d.c. mains supply . :		N/A
	b) Internal battery connected to the d.c. mains supply ..... :		N/A
2.1.1.9	Audio amplifiers ..... :	Not provided.	N/A
2.1.2	Protection in service access areas	No hazardous voltage used.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.1.3	Protection in restricted access locations	Not intended to be installed in a restricted access location.	N/A
2.2	**SELV circuits** *CB approved power supply and UL CB approved motherboard PCB used.*		N/A
2.2.1	General requirements		N/A
2.2.2	Voltages under normal conditions (V) ..... :		N/A
2.2.3	Voltages under fault conditions (V) ..... :		N/A
2.2.4	Connection of SELV circuits to other 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** *Evaluation done in approved power supply. Output circuit of power supply as limited current circuit connected to motherboard PCB.*		N/A
2.4.1	General requirements		N/A
2.4.2	Limit values		N/A
	Frequency (Hz)..... :		—
	Measured current (mA)..... :		—
	Measured voltage (V) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	b) Impedance limited output	Approved PTC used. (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)..... :	Considered are following ports: USB 2.0 type (at the front enclosure), USB 3.0 type and DisplayPort (at rear enclosure) (see appended table 2.5)	—
	Current rating of overcurrent protective device (A) .:	Not applicable	—
	Use of integrated circuit (IC) current limiters	Not applicable.	
2.6	**Provisions for earthing and bonding**		P
2.6.1	Protective earthing	PE connection through earthing pin of appliance inlet of approved power supply. Ground connection to motherboard is by output wires of the power supply.	P
2.6.2	Functional earthing	No functional earthing provided.	N/A
2.6.3	Protective earthing and protective bonding conductors	See clause 2.6.1 above.	P
2.6.3.1	General	See below.	N/A
2.6.3.2	Size of protective earthing conductors		N/A
	Rated current (A), cross-sectional area (mm^2), AWG ..... :		—
2.6.3.3	Size of protective bonding conductors		N/A
	Rated current (A), cross-sectional area (mm^2), AWG ..... :		—

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Protective current rating (A), cross-sectional area (mm^2), AWG..... :		
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)..... :	See appended table 2.6.3.4	P
2.6.3.5	Colour of insulation ..... :	See clause 2.6.3.2	N/A
2.6.4	Terminals	See below	P
2.6.4.1	General	See below.	P
2.6.4.2	Protective earthing and bonding terminals	The earthing terminal in the appliance inlet is regarded as the main protective earthing terminal. The protective bonding conductors are evaluated by 2.6.3.4 test for approved power supply	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 was considered as protective earthing conductor. Protective bonding conductors separation from protective earthing conductor of approved power supply.	P
2.6.5	Integrity of protective earthing	See below.	P
2.6.5.1	Interconnection of equipment	The equipment has its own earthing connection; any other units interconnected to it via the output connector shall provide SELV only.	P
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switch or overcurrent protective device in protective earthing or protective bonding conductor.	P
2.6.5.3	Disconnection of protective earth	It is not possible to disconnect earth without disconnecting mains as an appliance inlet is used.	N/A
2.6.5.4	Parts that can be removed by an operator	The earth connection made earlier and broken later than the supply connections.	P
2.6.5.5	Parts removed during servicing	It is not necessary to disconnect earthing except for the removing of the earthed parts itself.	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	Only ISO thread screw used in metal chassis for protective bonding. Metal thickness at least twice the pitch of the screw. No self-tapping or spaced thread screws.	N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV.	N/A
2.7	**Overcurrent and earth fault protection in primary circuits**		P
2.7.1	Basic requirements	Evaluated in approved power supply.	P
	Instructions when protection relies on building installation	See above.	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** *No operator accessible areas which presents hazards in the meaning of this standard*		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

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Clause	Requirement + Test	Result - Remark	Verdict
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
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials are not used.	P
2.9.2	Humidity conditioning	Tested for 48 hrs	P
	Relative humidity (%), temperature (°C) ..... :	93%. 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 ..... :	Method 1	—
2.10	**Clearances, creepage distances and distances through insulation**		P
2.10.1	General	Evaluated in approved power supply.	N/A
2.10.1.1	Frequency ..... :		N/A
2.10.1.2	Pollution degrees ..... :		N/A
2.10.1.3	Reduced values for functional insulation		N/A
2.10.1.4	Intervening unconnected conductive parts	No such conductive parts.	N/A
2.10.1.5	Insulation with varying dimensions		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 lamps.	N/A
2.10.2	Determination of working voltage	Evaluated in approved power supply	N/A
2.10.2.1	General		N/A
2.10.2.2	RMS working voltage		N/A
2.10.2.3	Peak working voltage		N/A
2.10.3	Clearances	No further creepage and clearance measurements necessary, refer to clause 2.10.1	P
2.10.3.1	General	See above.	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.3.2	Mains transient voltages	Normal transient voltage considered.	P
	a) AC mains supply ..... :	Overvoltage category II for primary circuit and transient voltage 2500Vpeak.	P
	b) Earthed d.c. mains supplies ..... :		N/A
	c) Unearthed d.c. mains supplies ..... :		N/A
	d) Battery operation ..... :		N/A
2.10.3.3	Clearances in primary circuits	refer to clause 2.10.1	N/A
2.10.3.4	Clearances in secondary circuits		N/A
2.10.3.5	Clearances in circuits having starting pulses	No lamps	N/A
2.10.3.6	Transients from a.c. mains supply ..... :	See sub-clause 2.10.3.2.	P
2.10.3.7	Transients from d.c. mains supply ..... :		N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems ..... :		N/A
2.10.3.9	Measurement of transient voltage levels	See sub-clause 2.10.3.2.	N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply ..... :		N/A
	For a d.c. mains supply ..... :		N/A
	b) Transients from a telecommunication network :		N/A
2.10.4	Creepage distances	refer to clause 2.10.1	P
2.10.4.1	General		P
2.10.4.2	Material group and comparative tracking index	Material group IIIb is assumed to be used	P
	CTI tests..... :		—
2.10.4.3	Minimum creepage distances	refer to clause 2.10.1	N/A
2.10.5	Solid insulation		P
2.10.5.1	General		P
2.10.5.2	Distances through insulation	(see appended table 2.10.5)	P
2.10.5.3	Insulating compound as solid insulation	Certified sources of photo couplers used in approved power supply.	N/A
2.10.5.4	Semiconductor devices	See above.	N/A
2.10.5.5.	Cemented joints		N/A
2.10.5.6	Thin sheet material – General	Evaluated in approved power supply.	N/A
2.10.5.7	Separable thin sheet material	See above.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Number of layers (pcs) ..... :		—
2.10.5.8	Non-separable thin sheet material		N/A
2.10.5.9	Thin sheet material – standard test procedure		N/A
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure	Evaluated in approved power supply.	N/A
	Electric strength test	See above.	—
2.10.5.11	Insulation in wound components		N/A
2.10.5.12	Wire in wound components		N/A
	Working voltage ..... :		N/A
	a) Basic insulation not under stress ..... :		N/A
	b) Basic, supplementary, reinforced insulation ..... :		N/A
	c) Compliance with Annex U ..... :		N/A
	Two wires in contact inside wound component; angle between 45° and 90° ..... :		N/A
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
	Electric strength test	(see appended table 2.10.5)	—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components		N/A
	Working voltage ..... :		N/A
	- Basic insulation not under stress ..... :		N/A
	- Supplementary, reinforced insulation ..... :		N/A
2.10.6	**Construction of printed boards**		N/A
2.10.6.1	Uncoated printed boards		N/A
2.10.6.2	Coated printed boards		N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N/A
2.10.6.4	Insulation between conductors on different layers of a printed board		N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs)..... :		N/A
2.10.7	**Component external terminations**	Evaluated by approved power supply	N/A
2.10.8	Tests on coated printed boards and coated components		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling	Certified sources of photo couplers used in approved power supply.	N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N/A
2.10.11	Tests for semiconductor devices and cemented joints		N/A
2.10.12	Enclosed and sealed parts		N/A
3	**WIRING, CONNECTIONS AND SUPPLY**		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	Internal wirings are UL recognized wiring which is PVC insulated, rated VW-1, 300V, min.80°C and considered for approved power supply lead wires of L/N min. 105°C. The wiring gauge is suitable for current intended to be carried.	P
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges. Where they touch heatsinks additional tubing or cable tie is provided so that the heatsink cannot damage the insulation and cause hazard.	P
3.1.3	Securing of internal wiring	The wiring is so routed and fixed that there is not excessive strength on the wire and terminal connections. Damage of the conductor insulation or loosening of the terminal connection is unlikely.	P

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Clause	Requirement + Test	Result - Remark	Verdict
3.1.4	Insulation of conductors	The insulation of the individual conductors is suitable for the application and the working voltage considered for approved power supply. For the 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 screws of insulating material.	N/A
3.1.7	Insulating materials in electrical connections	Not used.	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	10N pull test performed for all relevant conductors. No hazards observed.	P
3.1.10	Sleeving on wiring	The power switch, LED indicators and wirings are sleeved by the sufficient length of heat shrinkage tube.	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 inlet provided.	P
3.2.1.2	Connection to a d.c. mains supply	Only a.c. mains supply.	N/A
3.2.2	Multiple supply connections	Single supply	N/A
3.2.3	Permanently connected equipment	Unit is not a permanently connected equipment.	N/A
	Number of conductors, diameter of cable and conduits (mm) ..... :		—
3.2.4	Appliance inlets	Evaluated by approved power supply	N/A
3.2.5	Power supply cords		N/A
3.2.5.1	AC power supply cords		N/A
	Type ..... :		—
	Rated current (A), cross-sectional area (mm^2), AWG ..... :		—
3.2.5.2	DC power supply cords	AC mains supply.	N/A
3.2.6	Cord anchorages and strain relief		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Mass of equipment (kg), pull (N) ..... :		—
	Longitudinal displacement (mm) ..... :		—
3.2.7	Protection against mechanical damage	There are no parts of this equipment that may damage the power supply cord to be provided.	N/A
3.2.8	Cord guards		N/A
	Diameter or minor dimension D (mm); test mass (g) ..... :		—
	Radius of curvature of cord (mm)..... :		—
3.2.9	Supply wiring space		N/A
3.3	**Wiring terminals for connection of external conductors**		N/A
3.3.1	Wiring terminals	No wiring terminals for connection of external conductors.	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
3.4	**Disconnection from the mains supply**		P
3.4.1	General requirement	See below.	P
3.4.2	Disconnect devices	Approved appliance inlet used are considered disconnect devices.	P
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N/A
3.4.4	Parts which remain energized	None	N/A
3.4.5	Switches in flexible cords	No switches in flexible cords.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.4.6	Number of poles - single-phase and d.c. equipment	The disconnect device disconnects both poles simultaneously.	P
3.4.7	Number of poles - three-phase equipment		N/A
3.4.8	Switches as disconnect devices	The switch not as disconnect devices.	N/A
3.4.9	Plugs as disconnect devices		N/A
3.4.10	Interconnected equipment	The equipment is interconnected to other devices by secondary output only.	N/A
3.4.11	Multiple power sources	Single supply.	N/A
3.5	**Interconnection of equipment**		P
3.5.1	General requirements	The unit is not considered for connection to TNV.	P
3.5.2	Types of interconnection circuits ..... :	Interconnection circuits of SELV via secondary output connectors.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N/A
3.5.4	Data ports for additional equipment	Front USB2.0, rear USB3.0, Display port, RS232 data ports supplied from LPS. Tested accordance to clause 2.5.	P
4	**PHYSICAL REQUIREMENTS**		P
4.1	Stability		P
	Angle of 10°	Unit does not fall over.	P
	Test force (N) ..... :	Not floor standing unit	P
4.2	**Mechanical strength**		P
4.2.1	General	Outer metal enclosure shows sufficient strength to withstand expected handling conditions.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Rack-mounted equipment.	Equipment fixed in place and provided with equipment subassemblies or racks having a top installation position less than 1 m in height from the supporting surface.	N/A
4.2.2	Steady force test, 10 N	10N force applied to components. No hazard observed.	P
4.2.3	Steady force test, 30 N	30N applied to front panel of the enclosure. No crack and distortion are observed.	P
4.2.4	Steady force test, 250 N	250 N force applied to the external sides of the unit: front, left, right, top and bottom. No crack and distortion are observed.	P
4.2.5	Impact test	Impact force applied. No damage, no crack observed.	P
	Fall test	Top, bottom	P
	Swing test	Front, left, right	P
4.2.6	Drop test; height (mm) .....:		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 .....:		N/A
4.2.9	High pressure lamps		N/A
4.2.10	Wall or ceiling mounted equipment; force (N) .....:		N/A

4.3	**Design and construction**		P
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded and smooth.	P
4.3.2	Handles and manual controls; force (N).....:	No safety related handles or controls to indicate the position of switch.	N/A
4.3.3	Adjustable controls	No adjustable controls.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.4	Securing of parts	Electrical and mechanical connections can be expected to withstand usual mechanical stress. No loosening or clearance and creepage impairing distances likely to occur.	P
4.3.5	Connection by plugs and sockets	Mismatching of connectors either not possible or does not result in any hazard.	N/A
4.3.6	Direct plug-in equipment	Not direct plug-in type.	N/A
	Torque ..... :		—
	Compliance with the relevant mains plug standard ..... :		N/A
4.3.7	Heating elements in earthed equipment	No heating elements.	N/A
4.3.8	Batteries	Non-rechargable approved litium battery used	P
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery	No hazard observed. (see appended tables 4.3.8)	P
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery	No hazard observed. (see appended tables 4.3.8)	P
4.3.9	Oil and grease	Insulation in intended use not considered to be exposed to oil or grease.	N/A
4.3.10	Dust, powders, liquids and gases	Equipment in intended use not considered to be exposed to these.	N/A
4.3.11	Containers for liquids or gases	No container for liquid or gas provided.	N/A
4.3.12	Flammable liquids ..... :	No flammable liquids provided.	N/A
	Quantity of liquid (l) ..... :		N/A
	Flash point (°C) ..... :		N/A
4.3.13	Radiation		P
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg) ..... :		—
	Measured high-voltage (kV) ..... :		—
	Measured focus voltage (kV) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	CRT markings ..... :		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification ..... :		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation ..... :		N/A
4.3.13.5	Lasers (including laser diodes) and LEDs	See below.	P
4.3.13.5.1	Lasers (including laser diodes)	For laser, see IEC 60950-1 test report E75017-A53-CB-1 from UL Japan, Inc. In this report, it shows a laser measurement test report reference number 12CA14583, tested for IEC 60825-1: 2007 clause 8 and 9 on DVD multi drive, by UL Japan, Inc. LED used for indicating only.	P
	Laser class ..... :	Class 1 laser product.	—
4.3.13.5.2	Light emitting diodes (LEDs)	LED is low power and for status indication.	
4.3.13.6	Other types ..... :		N/A

4.4	**Protection against hazardous moving parts**		P
4.4.1	General	Access to hazardous moving parts prevented by construction. The secondary DC Fans at the front enclosure are protected by the fan guard. DC fans and CPU fan are fully enclosed inside enclosure and not accessible to operator.	P
4.4.2	Protection in operator access areas ..... :	See above.	P
	Household and home/office document/media shredders	Not shredder	N/A
4.4.3	Protection in restricted access locations ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.4.4	Protection in service access areas	Hazardous moving parts in service area are adequately covered to prevent unintentional contact during servicing. Refer to Cl. 4.4.1	P
4.4.5	Protection against moving fan blades	No user accessible fan blade.	P
4.4.5.1	General	1) DC ventilation system Fan (PSD1207PTB1-A) m=0.096kg, r=35mm, N=5100rpm, K=1835.27 2) CPU fan (R128015BU) m=0.053kg, r=40mm, N=4200rpm, K=897.52	P
	Not considered to cause pain or injury. a)……..:	$\frac{r/\min}{15000} + \frac{K\ \text{factor}}{2400}$ 1) 1.10, 2) 0.65	P
	Is considered to cause pain, not injury. b) ……:	$\frac{r/\min}{22000} + \frac{K\ \text{factor}}{3600}$ 1) 0.74	P
	Considered to cause injury. c) ……:	No operator serviceable parts inside.	N/A
4.4.5.2	Protection for users	Fans are enclosed inside of equipment adequately by enclosure, which can remove by using the tool. No user accessible fan blade under normal operation.	P
	Use of symbol or warning ……:		N/A
4.4.5.3	Protection for service persons	Fan blade classified as 4.4.5.1 b)	P
	Use of symbol or warning ……:	A triangular shaped warning sign similar to ISO 3864-2 will be used.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4.5	**Thermal requirements**		P
4.5.1	General	No exceeding temperature.	P
4.5.2	Temperature tests	See appended table 4.5.	P
	Normal load condition per Annex L ..... :	(See Annex L.7)	—
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 CPU fan frame enclosure. Other material evaluated in approved built-in power supply.	P

4.6	**Openings in enclosures**		P
4.6.1	Top and side openings	All openings comply with the 5° angle projection. No hazardous parts within 5° projection area from the openings. No hazardous voltage in unit except closed frame built-in power supply. SELV for PCB motherboard.	P
	Dimensions (mm) ..... :	3.8mm, 6.89 mm circular holes.	—
4.6.2	Bottoms of fire enclosures	Protection against emission of flame, molten metal, flaming or glowing particles or drops by constructions.	P
	Construction of the bottomm, dimensions (mm) .. :	No openings below parts requiring fire enclosure.	—
4.6.3	Doors or covers in fire enclosures	Not used.	N/A
4.6.4	Openings in transportable equipment	Not transportable equipment.	N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm) ..... :		—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature (°C), time (weeks) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict

4.7	**Resistance to fire**		P
4.7.1	Reducing the risk of ignition and spread of flame	Metal enclosure used.	P
	Method 1, selection and application of components wiring and materials	(see appended table 1.5.1)	P
	Method 2, application of all of simulated fault condition tests	Not considered.	N/A
4.7.2	Conditions for a fire enclosure	See below.	P
4.7.2.1	Parts requiring a fire enclosure		N/A
4.7.2.2	Parts not requiring a fire enclosure	PCB motherboard's output was evaluated and comply with limited power source requirement. PCB is of min V-1 material. See clause 2.5. So no fire enclosure required.	P
4.7.3	Materials		P
4.7.3.1	General	See appended table 1.5.1 for details.	P
4.7.3.2	Materials for fire enclosures	Metal enclosure used.	N/A
4.7.3.3	Materials for components and other parts outside fire enclosures	Refer to clause 4.7.3.5	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	Evaluated in 4.6.2	N/A
4.7.3.6	Materials used in high-voltage components		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

5	**ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS**		**P**
5.1	**Touch current and protective conductor current**		P
5.1.1	General	(see appended Table 5.1)	P
5.1.2	Configuration of equipment under test (EUT)	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		N/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		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
5.1.5	Test procedure	The touch current was measured from primary to earth and to output connector	P
5.1.6	Test measurements	See below.	P
	Supply voltage (V) ..... :	(see appended Table 5.1)	—
	Measured touch current (mA) ..... :	(see appended Table 5.1)	—
	Max. allowed touch current (mA) ..... :	(see appended Table 5.1)	—
	Measured protective conductor current (mA) ..... :	(see appended Table 5.1)	—
	Max. allowed protective conductor current (mA) .. :	(see appended Table 5.1)	—
5.1.7	Equipment with touch current exceeding 3,5 mA	Not exceeded.	N/A
5.1.7.1	General ..... :		N/A
5.1.7.2	Simultaneous multiple connections to the supply	Single supply equipment.	N/A
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	No TNV circuit connection.	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V) ..... :		—
	Measured touch current (mA) ..... :		—
	Max. allowed touch current (mA) ..... :		—
5.1.8.2	Summation of touch currents from telecommunication networks		N/A
	a) EUT with earthed telecommunication ports ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) EUT whose telecommunication ports have no reference to protective earth		N/A
5.2	**Electric strength**		P
5.2.1	General	(see appended table 5.2)	P
5.2.2	Test procedure		P
5.3	**Abnormal operating and fault conditions**		P
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	P
5.3.2	Motors	DC fan and CPU fan locked. Temperature limits of Annex B not exceeded. (see appended table 5.3)	P
5.3.3	Transformers	Trasnformers are part of approved power supply.	N/A
5.3.4	Functional insulation ..... :	Evaluated in approved power supply.	N/A
5.3.5	Electromechanical components	No electromechanical component provided.	N/A
5.3.6	Audio amplifiers in ITE ..... :		N/A
5.3.7	Simulation of faults	See appended table 5.3.	P
5.3.8	Unattended equipment	Approved thermistor used on approved motherboard.	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	See below.	P
5.3.9.1	During the tests	Neither fire burns the equipment nor molten metal.	P
5.3.9.2	After the tests	Electric strength test primary to secondary and primary to PB were passed.	P

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Clause	Requirement + Test	Result - Remark	Verdict
6	**CONNECTION TO TELECOMMUNICATION NETWORKS**		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
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

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Clause	Requirement + Test	Result - Remark	Verdict
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)..... :		—
	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)..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
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)**		P
B.1	General requirements	EN approved secondary DC fans used. UL approved fan used for CPU.	P
	Position ..... :	(see appended table 1.5.1)	—
	Manufacturer ..... :	(see appended table 1.5.1)	—
	Type ..... :	(see appended table 1.5.1)	—
	Rated values ..... :	(see appended table 1.5.1)	—
B.2	Test conditions		N/A
B.3	Maximum temperatures	(see appended table 5.3)	P
B.4	Running overload test	DC fans in secondary only	N/A
B.5	Locked-rotor overload test	DC fans in secondary only	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		P
B.7.1	General		P
B.7.2	Test procedure	Rotor of CPU fan and system ventilation fans are locked for 7 hours. See appended table 5.3. Temperatures do not exceed the values in table B.1	P
B.7.3	Alternative test procedure		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B.7.4	Electric strength test; test voltage (V) ..... :	Fan motor is located in SELV circuit.	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)** *Evaluated in approved power supply.*		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
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)** *Evaluated in approved power supply.*		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

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Clause	Requirement + Test	Result - Remark	Verdict
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
J	**ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)**		P
	Metal(s) used ..... :	Metals which the combination electrochemical potential is less than 0.6V	—
K	**ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)** *Approved thermistor used.*		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

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Clause	Requirement + Test	Result - Remark	Verdict
K.6	Stability of operation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

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	The equipment is operated according to the most unfavorable way of operation.	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
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

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Clause	Requirement + Test	Result - Remark	Verdict
P	**ANNEX P, NORMATIVE REFERENCES**		—
Q	**ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)** *Evaluated in approved power supply.*		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 2.10.5.4)**		N/A
			—
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**		N/A
W.1	Touch current from electronic circuits		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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)**		P
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
CC.3	Test program 2……:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

DD	**ANNEX DD, Requirements for the mounting means of rack-mounted equipment**		N/A
DD.1	General	Installed less than 1 m	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

1.5.1	TABLE: List of critical components				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity[1])
DVD multi-drive	TEAC CORP	DV-W5600S	12V, 5V, 40°C, class I laser product	IEC 60950-1: 2005 + A1, EN 60950-1: 2006 + A11 + A1 + A12	UL (certificate: JP-11109-UL, report: E75017-A53-CB-1) TUV (license: R50254867, report: 12030136)
Hard disk drive (HDD)	Interchangeable	Interchangeable	12 Vdc, 5Vdc, 55°C	IEC/EN/UL 60950-1	Tested within the equipment
System Fan (for ventilation inside the enclosure)	Sunonwealth Electric Machine Industry Co., Ltd.	PSD1207PTB1-A	DC 12V, 280mA, 44.3 CFM	EN 60950-1:2006+A11+A1 +A12, UL507	TUV (license: 50171004), UL (E77551)
Fan (for CPU)	Everflow Precision Electronic (Dong Guan) Co Ltd	R128015BU	DC 12V, 0.50A, 46.57 CFM	UL 507	UL (E236658)
PCB (motherboard)	Interchangeable	Interchangeable	Min V-1, 105°C	UL 796	UL
Other PCBs (network interface card, DDR card, PCI2 cable extender PB-PEX16B-12, front dual USB2.0 card)	Interchangeable	Interchangeable	Min V-1, 105°C	UL 796	UL

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Clause	Requirement + Test	Result - Remark	Verdict

Internal Wiring (between power supply and PCB motherboard)	interchangeable	interchangeable	FEP, PTFE, PVC, TFE, neoprene, polymide or marked VW-1, min 300V, 80°C, 18 AWG. Wiring is fixed by cable ties or other means	UL 758	UL
SATA cable (red flat cable between PCB motherboard to DVD drive or HDD)	Interchangeable	interchangeable	VW-1, 26 AWG, 80°C, 30V	UL 758	UL (E189529)
Metal enclosure	---	---	dimension 473 mm X 430 mm X 88 mm, thickness 12 mm	---	Tested within equipment
Insulating foil sheet (between the bottom of motherboard and internal enclosure bottom, color black)	Mianyang Longhua Film Co Ltd	PC1870	VTM-0, 80°C	UL 94	UL
Heat shrinkable tube for secondary wiring, LED indicators and front power switch for motherboard	Interchangeable	Interchangeable	VW-1, min 150V, 125°C	UL 224	UL

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Clause	Requirement + Test	Result - Remark	Verdict

Switching Power Supply	FSP Group Inc	FSP400-60EVF	Rated input: 100-240Vac, 60-50Hz, 7-3.5A, Rated output: +3.3V/16A, +5V/19A, +12V1/16A, +12V2/16A, -12V/0.3A, +5Vsb/2A, +3.3V & 5V/105W, +12V1 & +12V2/25A, 400W, 50°C, Protection Class 1	IEC 60950-1: 2005 + A1, UL 60950-1, EN 60950-1:2006+A11+A1 +A12	CB (certificate: JPTUV-046838, report: 11030607 001), UL (E190414), TUV (R 50129938, report: 10022615)
- Description:	PCB (motherboard)				
Motherboard	Kontron Technology A/S	KTQ87/Flex, KTH81/Flex (a downgraded version of KTQ87/Flex with lesser ports attached to PCB motherboard)	Rating: +3.3 Vdc, + 5Vdc, +12 Vdc, -12Vdc (optional), 60°C, class III, input: SELV, Output: SELV, LPS (USB ports and display ports)	IEC 60950-1:2005 + Am1:2009, EN 60950-1: 2006 + A1 +A11+A12	UL (CB report number: E194252-A30-CB-1, cert number: DK-36599-UL), UL (report number: E194252-A30-UL, E194252)
PTC thermistor or PTC resistor (F14,F15,F16,F17,F18,F19,F20, F21,F22,F23,F24,F25,F26,F27,F28,F29,F30) (F24, F26 and F27 optional on KTH81/Flex)	Littelfuse Inc	1206L150PR	8Vdc, 1.5A	UL1434, IEC60738-1	UL (E183209), TUV (50119118)
PTC thermistor or PTC resistor (alternate)	Littelfuse Inc.	1206L150TH	8Vdc, 1.5A	UL1434, IEC60738-1	UL (E183209), TUV (50119118)

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

PTC thermistor or PTC resistor (alternate)	PTTC (Polytronics Technology Corp.)	SMD1206P150TFT	8Vdc, 1.5A	UL 1434, IEC/EN 60738-1, IEC/EN 60730-1	UL (E201431), TUV(50099121)
PTC thermistor or PTC resistor (alternate)	TE (Tyco Electronics, Raychem Circuit Protection Division)	NANOSMDC150F-2	6Vdc, 1.5A	UL 1434, EN60730-1	UL (E74889) TUV (72112088)
NTC Thermistor (TH1, TH2)	Thinking Electronic Industrial Co Ltd	TSM0B224	220 kohm at 25°C	UL1434, EN 60539-1, EN 60539-2, EN 60730-1	UL (E138827), TUV (R 50167657)
Lithium Battery	Panasonic	CR-2032	Rated 3.0 V, max abnormal charging current 10 mA, 60°C, non-rechargable , max current under continuous discharge = 4mA	UL1642	UL (MH 12210)
Supplementary information: [1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

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

1.5.1	TABLE: Opto Electronic Devices	N/A
Manufacturer ..... : Type..... : Separately tested ..... : Bridging insulation ..... : External creepage distance..... : Internal creepage distance..... : Distance through insulation..... : Tested under the following conditions..... :		
Input..... : Output..... :		
supplementary information		
Approved photo-coupler used in approved power supply.		

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Clause	Requirement + Test	Result - Remark	Verdict

1.6.2	TABLE: Electrical data (in normal conditions)					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
90	1.2	---	105.3	*1	1.2	50Hz
90	1.3	---	113.4	*1	1.3	60Hz
100	1.2	4.5A	116.9	*1	1.2	50Hz
100	1.2	4.5A	115.2	*1	1.2	60Hz
240	0.5	4.5A	107.4	*1	0.5	50Hz
240	0.5	4.5A	104.6	*1	0.5	60Hz
264	0.5	---	106.2	*1	0.5	50Hz
264	0.5	---	106.6	*1	0.5	60Hz

Supplementary information:

*1: fuse of approved power supply

Tested with the following conditions below for the least favourable conditions, according to the manufacturer.

- burn-in software running
- DVD multi-drive inserted with CD media.
- connected output loads as below

1) Front USB 2.0 type connectors: 10 ohm resistors between 5V and ground

2) Rear USB 3.0 type connectors: 5 ohm resistors between 5V and ground

3) DisplayPort connector: to a monitor

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:					
Evaluation in approved power supply.					

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

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:	
Evaluation in approved power supply.	

2.5	**TABLE: Limited power sources**	P

Circuit output tested: USB front and rear, DisplayPort

Note: Measured Uoc (V) with all load circuits disconnected:

Components	Sample No.	Uoc (V)	I_{sc} (A)		VA	
			Meas.	Limit	Meas.	Limit
USB2.0 front	1	5.1	5.5	8	28.1	100
USB3.0 rear	1	5.1	3.0	8	15.3	100
DisplayPort	1	3.3	3.4	8	10.2	100

supplementary information:

Sc=Short circuit, Oc=Open circuit

Test voltage / frequency: 264V / 60 Hz

PTCs are used for the data ports, I_{sc} is equal to I_{TRIP}

Using each type of data ports as representative for other ports due to USB ports are using the same voltage points. This also applies to display ports.

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Clause	Requirement + Test	Result - Remark	Verdict

2.6.3.4	TABLE: Resistance of earthing measurement		P
Location		Resistance measured (mΩ)	Comments
PE pin of AC inlet to top enclosure		40	32A, 2 minute, Vdrop = 1.29V
PE pin of AC inlet to rear enclosure (at data ports area)		40	32A, 2 minute, Vdrop = 1.28V
PE pin of AC inlet to rear enclosure (above build in power supply)		40	32A, 2 minute, Vdrop = 1.29V
PE pin of AC inlet to front enclosure		42	32A, 2 minute, Vdrop = 1.33V
PE pin of AC inlet to handle (front)		55	32A, 2 minute, Vdrop = 1.76V
PE pin of AC inlet to front cover		51	32A, 2 minute, Vdrop = 1.64V
PE pin of AC inlet to top enclosure		29	40A, 2 minute, Vdrop = 1.14V
PE pin of AC inlet to rear enclosure (at data ports area)		30	40A, 2 minute, Vdrop = 1.18V
PE pin of AC inlet to rear enclosure (above build in power supply)		30	40A, 2 minute, Vdrop = 1.20V
PE pin of AC inlet to front enclosure		29	40A, 2 minute, Vdrop = 1.17V
PE pin of AC inlet to handle (front)		37	40A, 2 minute, Vdrop = 1.47V
PE pin of AC inlet to front cover		55	40A, 2 minute, Vdrop = 2.18V
Supplementary information:			

2.10.2	Table: working voltage measurement		N/A
Location	RMS voltage (V)	Peak voltage (V)	Comments
supplementary information: Evaluation done in approved power supply.			

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

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)
Functional:						
Basic/supplementary:						
Reinforced:						
Supplementary information: Evaluation done in approved power supply.						

2.10.5	TABLE: Distance through insulation measurements				P
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)
Heat shrinkable tube for wiring, LED indicators and power switch (functional insulation, 1 layer)	420	240	AC 1922 *(1)	—	0.30
Insulating foil sheet between the bottom of motherboard and internal enclosure bottom (color black, basic insulation, 1 layer)	420	240	AC 1922 *(1)	—	0.24
Supplementary information: *(1) highest test voltage for basic insulation (primary to PE or primary to core or secondary to core) obtained from the CB test report table 5.2 of the approved power supply					

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

4.3.8	TABLE: Batteries								P
The tests of 4.3.8 are applicable only when appropriate battery data is not available						Refer below			P
Is it possible to install the battery in a reverse polarity position?						No, using special socket			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	0.61 uA	0.2 mA	Prevented						
Max. current during fault condition	2.83 mA (1)	4 mA	0.13 mA (2)						

(1) Worst case is short circuit point C (cathode) of diode D20 to ground (chassis).

(2) Worst case is short circuit point A2 (anode) to C (cathode) of diode D20. Charged for 7 hours

Internal circuit prevents unintentional charging of a non-rechargeable battery.

For manufacturer data and data from UL database, refer to Lithium Battery on table 1.5.1 List of critical components

A new battery is used for each test.

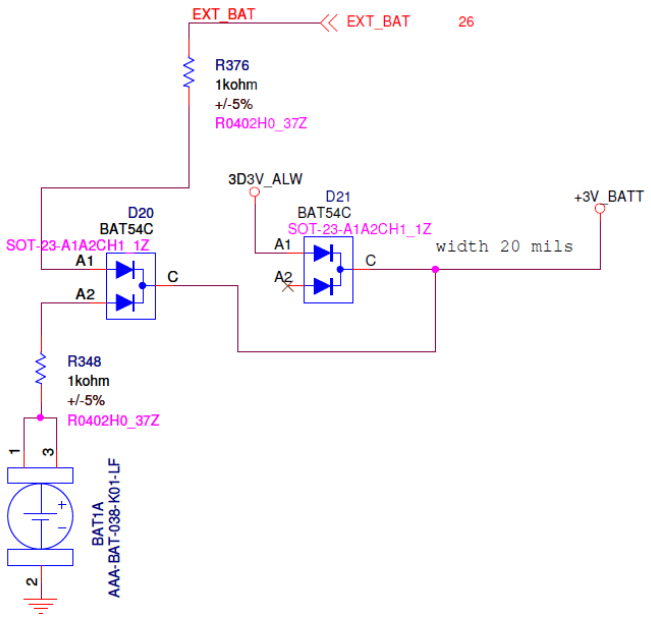
Test results:		Verdict
- Chemical leaks	No leaks	P
- Explosion of the battery	No explosion	P
- Emission of flame or expulsion of molten metal	No flame or molten metal	P
- Electric strength tests of equipment after completion of tests	See appended table 5.2	P
Supplementary information:		

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

4.3.8	TABLE: Batteries	P

Battery category	:	Lithium
Manufacturer	:	Panasonic
Type / model	:	CR-2032
Voltage	:	3.0 Vdc
Capacity	:	210 mAh
Tested and Certified by (incl. Ref. No.)	:	UL 1642 (MH 12210)

Circuit protection diagram:



MARKINGS AND INSTRUCTIONS (1.7.13)	
Location of replaceable battery	BAT1A on the motherboard
Language(s) ……:	English
Close to the battery ……:	PCB, D20, R348
In the servicing instructions ……:	N/A
In the operating instructions ……:	N/A

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

4.5	TABLE: Temperature rise measurements					P
Temperatures were measured according cl. 1.4.5. Test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of ____50____ °C(T_{ma}), as specified by the manufacturer.						
test voltage(s) (V):			A: 90 V, 50 Hz		B: 90 V, 60 Hz	
t_{amb1} (°C):	A: 20.5 B: 19.3		t_{amb2} (°C):		A: 19.8 B: 19.5	
Temperature of part/at: (measured with thermocouples)	Measured temperature at T_{amb}		Calculated temperature at T_{ma}		Allowed T_{max} (°C)	
	A T (°C)	B T (°C)	A T (°C)	B T (°C)		
Enclosure Top cover (point above CPU fan)	29.1	29.6	59.3	60.1	70	
Enclosure Left (point near ventilation inlet system fan)	19.8	19.7	50.0	50.2	70	
Enclosure Right (point near power supply)	24.7	24.7	54.3	55.2	70	
Enclosure Front (point near USB port)	20.8	21.0	51.0	51.5	70	
Enclosure Rear (point near USBLAN1 port)	31.4	31.8	61.6	62.3	70	
Hard disk drive	35.8	36.1	66.0	66.6	70	
DVD multi-drive (near rotating media)	29.3	29.8	59.5	60.3	70	
Wire (internal, between motherboard PCB and power supply)	33.1	33.5	63.3	64.0	80	
Enclosure of power supply (near its inlet fan)	29.6	29.9	59.8	60.4	70	
Appliance inlet	28.1	28.6	58.3	59.1	70	
Top of Motherboard PCB (near heatsink of CPU)	35.2	35.6	65.4	66.1	105	
Heatsink fins of CPU	35.6	35.9	65.8	66.4	70	
PTC fuse (F21) on motherboard for USBLAN2 port	35.5	36.0	65.7	66.5	85	
USBLAN2 port at rear of enclosure	34.5	35.1	64.7	65.6	70	
USB2.0 port at front of enclosure	20.5	20.8	50.7	51.3	70	
DisplayPort DP1	33.9	34.4	64.1	64.9	70	
Ventilation system fan at front of enclosure	23.0	23.5	53.2	54.0	70	
Power switch surface of power supply	31.0	31.3	61.2	61.8	95	

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

Surface of Power switch (for motherboard, located at front of enclosure)	20.7	21.1	50.9	51.6	95
Network card (top of this PCB facing the motherboard)	29.3	29.6	59.5	60.1	130
Handle at the front side of the enclosure	19.8	19.6	50.0	50.1	60

Supplementary information:

The temperatures were measured under worst case normal mode defined in 1.2.2.1 and as described in appended table 1.6.2 and at voltages as described above.

- Temperature rise was measured with thermocouples.

- All values for T(°C) are re-calculated from Tamb respectively.

Evaluation is also done in approved power supply.

Temperatures measured with winding resistance method: Not used

temperature T of winding: (winding resistance method)	(V)	R_1 (Ω)	R_2 (Ω)	T (°C)	allowed T_{max} (°C)	insulation class

Supplementary information:

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

4.5	TABLE: Temperature rise measurements					P
Temperatures were measured according cl. 1.4.5. Test in condition A and B at continuous normal operation as for power input measurements of table 1.6 resulted in highest temperature values. Temperatures are calculated according cl. 1.4.12.3 with regard to the maximum ambient operation temperature of ____50____ °C(T_{ma}), as specified by the manufacturer.						
test voltage(s) (V):			A: 264 V, 50 Hz		B: 264 V, 60 Hz	
t_{amb1} (°C):	A: 19.8 B: 19.7		t_{amb2} (°C):		A: 19.8 B: 23.6	
Temperature of part/at: (measured with thermocouples)	Measured temperature at T_{amb}		Calculated temperature at T_{ma}		Allowed T_{max} (°C)	
	A T (°C)	B T (°C)	A T (°C)	B T (°C)		
Enclosure Top cover (point above CPU fan)	28.9	32.3	59.1	58.6	70	
Enclosure Left (point near ventilation inlet system fan)	19.8	23.6	50.0	50.0	70	
Enclosure Right (point near power supply)	24.5	26.6	54.7	53.0	70	
Enclosure Front (point near USB port)	21.2	24.8	51.4	51.2	70	
Enclosure Rear (point near USBLAN1 port)	31.3	34.1	61.5	60.5	70	
Hard disk drive	35.2	37.1	65.4	63.5	70	
DVD multi-drive (near rotating media)	29.4	31.4	59.6	57.8	70	
Wire (internal, between motherboard PCB and power supply)	32.9	35.8	63.1	62.2	80	
Enclosure of power supply (near its inlet fan)	29.4	31.8	59.6	57.7	70	
Appliance inlet	27.4	29.3	57.6	55.7	70	
Top of Motherboard PCB (near heatsink of CPU)	35.0	38.4	65.2	64.8	105	
Heatsink fins of CPU	35.3	38.7	65.5	65.1	70	
PTC fuse (F21) on motherboard for USBLAN2 port	35.4	38.7	65.6	65.1	85	
USBLAN2 port at rear of enclosure	34.5	37.6	64.7	64.0	70	
USB2.0 port at front of enclosure	20.9	24.9	51.1	51.3	70	
DisplayPort DP1	33.6	36.6	63.8	63.0	70	
Ventilation system fan at front of enclosure	23.3	27.9	53.5	54.3	70	
Power switch surface of power supply	29.9	32.0	60.1	58.4	95	

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

Surface of Power switch (for motherboard, located at front of enclosure)	21.9	25.0	52.1	51.4	95
Network card (top of this PCB facing the motherboard)	29.4	32.2	59.6	58.6	130
Handle at the front side of the enclosure	19.8	23.6	50.0	50.0	60

Supplementary information:

The temperatures were measured under worst case normal mode defined in 1.2.2.1 and as described in appended table 1.6.2 and at voltages as described above.

- Temperature rise was measured with thermocouples.

- All values for T(°C) are re-calculated from Tamb respectively.

Evaluation is also done in approved power supply.

Temperatures measured with winding resistance method: Not used

temperature T of winding: (winding resistance method)	(V)	R_1 (Ω)	R_2 (Ω)	T (°C)	allowed T_{max} (°C)	insulation class

Supplementary information:

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

4.5.5	**TABLE: Ball pressure test of thermoplastic parts**		P
	Allowed impression diameter (mm) .....:	≤ 2 mm	—

Part	Test temperature (°C)	Impression diameter (mm)
CPU fan housing (material:PBT plastic)	125	1.5
Supplementary information: Tested for UL approved CPU fan		

4.6.1, 4.6.2	Table: Enclosure opening measurements		P
Location	Size (mm)	Comments	
Top, bottom	--	No openings	
Front side	3.80 mm	Air filter assembly holes after the filter	
Right side	--	No openings except hole for screws	
Left side	6.89 mm	Several circle openings. No hazardous parts within 5° projection area from the openings.	
Rear	3.80 mm	Circle openings for ventilation.	
Supplementary information: Refer to clause 4.6.1 and 4.6.2. Thickness of metal enclosure > 1.0 mm.			

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

4.7	TABLE: Resistance to fire				P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
Supplementary information: see table 1.5.1 for details.					

5.1	TABLE: touch current measurement		P
Measured between:	Measured (mA)	Limit (mA)	Comments/conditions
terminal A connected to…			
metal enclosure (rear ventilation openings)	1.42	3.5	Polarity normal, Switch “e” opened.
metal enclosure (rear ventilation openings)	1.5	3.5	Polarity reverse, Switch “e” opened.
output connector	0.0	0.25	Polarity normal, Switch “e” closed.
output connector	0.0	0.25	Polarity reverse, Switch “e” closed.
supplementary information:			
Test voltage / frequency: 264V / 60 Hz Polarity normal :L/N, reverse: N/L Evaluation also done in approved power supply.			

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

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
Functional:				

Basic/supplementary:				
Insulating foil sheet (between the bottom of motherboard and internal enclosure bottom, color black)		AC	1922 *(1)	No
Heat shrinkable/insulation tube for wiring, LED indicators and power switch		AC	1922 *(1)	No
Primary to Ground (PE)		AC	1922 *(1)	No
Reinforced:				
Primary to Secondary		AC	3000	No
Supplementary information: Evaluation also done in approved power supply. *(1) highest test voltage for basic insulation (primary to PE or primary to core or secondary to core) obtained from the CB test report table 5.2 of the approved power supply				

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

5.3	**TABLE: Fault condition tests**		P
	Ambient temperature (°C) .....:	See below.	—
	Power source for EUT: Manufacturer, model/type, output rating .....:	--	—

Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Ventilation openings at rear enclosure	B	264V, 60 Hz	4 hr	F1	0.46A	Fan outlet of the power supply (located at the rear enclsoure) is also blocked. Temperature saturated within limits. No hazards observed. Ambient = 24.3°C, PCB top surface on Motherboard = 42.4°C, CPU heatsink center = 47.1°C, Battery surface = 40.7°C
CPU fan	L	264V, 60 Hz	7 hr	F1	0.49A	Temperature saturated within limits. No hazards observed. Ambient = 20.3°C, PCB top surface on Motherboard = 43.9°C, CPU heatsink center = 82.4°C, Battery surface = 51.9°C, CPU fan = 86.9°C, System Fan front = 25.4°C, Ambient (Inside) = 21.7°C
Front system fan	L	264V, 60 Hz	7 hr	F1	0.45A	Temperature saturated within limits. No hazards observed. Ambient = 20.2°C, PCB top surface on Motherboard = 42.3°C, CPU heatsink center = 46.0°C, Battery surface = 39.8°C, CPU fan = 50.6°C, System Fan front = 38.5°C, Ambient (Inside) = 24.3°C

Supplementary information:

S = shorted, O=open, OL = overloaded, B= Blocked, L = Locked, in continuous operation, Charging = C, Dis-charging = D

The insulation system could withstand the dielectric strength after fault conditions.

Other evaluation also done in approved power supply.

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

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:							
Evaluation done in approved power supply.							

C.2	TABLE: transformers	N/A
Transformer		

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

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

No listing of test equipment used necessary for chosen test procedure.

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60950-1
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

Information technology equipment – Safety –

Part 1: General requirements

Differences according to .....: EN 60950-1:2006/A11:2009/A1:2010/A12:2011

Attachment Form No.....: EU_GD_IEC60950_1C_II

Attachment Originator.....: SGS Fimko Ltd

Master Attachment.....: Date 2011-08

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EN 60950-1:2006/A11:2009/A1:2010/A12:2011 – CENELEC COMMON MODIFICATIONS

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 4.7.3.1Note 2, 5.1.7.1 Note 3 & 4, 5.3.7 Note 1 6 Note 2 & 5, 6.1.2.1 Note 2, 6.1.2.2 Note 6.2.2 Note, 6.2.2.1 Note 2, 6.2.2.2 Note 7.1 Note 3, 7.2 Note, 7.3 Note 1 & 2 G.2.1 Note 2, Annex H Note 2	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

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for “one package equipment”, and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.		N/A
(A12:2011)	In EN 60950-1:2006/A12:2011 Delete the addition of 1.3.Z1 / EN 60950-1:2006 Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010	Deleted.	P
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
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, GROUP DIFFERENCES (CENELEC common modifications EN)			
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, GROUP DIFFERENCES (CENELEC common modifications EN)			
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 LAeq,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 LAeq,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, GROUP DIFFERENCES (CENELEC common modifications EN)			
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, GROUP DIFFERENCES (CENELEC common modifications EN)			
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 LAeq,T, the input voltage of the fixed "programme simulation noise" described in EN 50332-2 shall be ≥ 75 mV. This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control). NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
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 LAeq,T of the listening device shall be ≤ 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 LAeq,T of the listening device shall be ≤ 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, GROUP DIFFERENCES (CENELEC common modifications EN)			
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;	Replaced. Evaluated in approved power supply which complied with item a)	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. 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
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

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
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.		—

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

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
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.	No cable distribution systems	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.	Evaluated in approved power supply. No such resistor bridging basic insulation.	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, GROUP DIFFERENCES (CENELEC common modifications EN)			
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, GROUP DIFFERENCES (CENELEC common modifications EN)			
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.”		
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	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.	No TNV	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.	No TNV	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, GROUP DIFFERENCES (CENELEC common modifications EN)			
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.	No TNV.	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, 16 A		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
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, GROUP DIFFERENCES (CENELEC common modifications EN)			
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, GROUP DIFFERENCES (CENELEC common modifications EN)			
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
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, GROUP DIFFERENCES (CENELEC common modifications EN)			
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.		
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.	No 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

IEC 60950_1C ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60950-1
CANADA NATIONAL DIFFERENCES
Information technology equipment – Safety –
Part 1: General requirements

Differences according to.....: CAN/CSA-C22.2 NO. 60950-1A-07

Attachment Form No.....: CA_ND_IEC60950_1C
Attachment Originator .....: TÜV SÜD Product Service GmbH
Master Attachment.....: Date (2012-08)

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	Special national conditions		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.	Unit was evaluated according to IEC 60950-1. The requirements have to be checked during National approval.	P
	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.	Considered.	P
1.5.5	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.	Less than 3.0 m	N/A
	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.	Interconnecting cord located in limited power source and rated VW-1 or better.	P
1.7.1	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.	Single phase conductor.	N/A
	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."		

IEC 60950_1C ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	A voltage rating is not be lower than the specified "Normal Operating Conditions," unless it is part of a range 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.	No such terminals.	N/A
	- Marking is located adjacent to the terminals.		N/A
	- Marking is visible during wiring.		N/A
2.5	Fuse providing Class 2, Limited Power Source, or TNV current limiting is not operator-accessible unless it is not interchangeable.	PTC to provide LPS not operator-accessible.	P
2.6.3.3	Modify first column on Table 2D to “Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration.”		N/A
2.7.1	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is provided for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.	No standard supply outlets.	N/A
	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, provided with special transformer overcurrent protection.	No such transformers.	N/A
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains is in accordance with the NEC/CEC.	Overall acceptance has to be evaluated during the National approval process.	N/A
3.2.1	Attachment plugs of power supply cords are rated not less than 125 percent of the rated current of the equipment.	Power supply cord not provided.	N/A
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 comply with special earthing, wiring, marking and installation instruction requirements.	Not connected to DC mains.	N/A
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.	Not permanent connection.	N/A
3.2.5	Power supply cords are required to be no longer than 4.5 m in length.	Power supply cord not provided.	N/A
	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.		N/A

Canadian differences

IEC 60950_1C ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Flexible power supply cords are compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		N/A
3.2.9	Permanently connected equipment have a suitable wiring compartment and wire bending space.	Appliance inlet used.	N/A
3.3	Wiring terminals and associated spacings for field wiring connections comply with CSA C22.2 No. 0.	Appliance inlet used.	N/A
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).		N/A
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are suitable for Canadian/US wire gauge sizes, are		N/A
	- rated 125 percent of the equipment rating, and		N/A
	- are specially marked when specified (1.7.7).		N/A
3.3.5	Revise first column of Table 3E to “Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration.”	Revised.	P
3.4.2	Motor control devices are provided for cord-connected equipment with a motor if the equipment is rated more than 12 A,	No such motors.	N/A
	- or if the motor has a nominal voltage rating greater than 120 V,		N/A
	- or is rated more than 1/3 hp (locked rotor current over 43 A).		N/A
3.4.8	Vertically-mounted disconnect switches and circuit breakers have the "on" position indicated by the handle in the up position.	No such switches or breakers.	N/A
3.4.11	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes have a battery disconnect means that may be connected to the computer room remote power-off circuit.	No such battery.	N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment complyies with NFPA 30.	No flammable liquid.	N/A
4.3.13.5	Equipment with lasers meet the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations 21 CFR 1040, as applicable.		P
4.7	For computer room applications, automated information storage systems with combustible media greater than 0.76 m^3 (27 cu ft) have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	No such systems.	N/A

Canadian differences

IEC 60950_1C ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9 m^2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) have a flame spread rating of 50 or less.	No such enclosures.	N/A
	For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.		N/A
Annex H	Equipment that produces ionizing radiation comply with the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations, 21 CFR 1020, as applicable.	No ionizing radiation source.	N/A
	Other National Differences		P
1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury have component or material ratings in accordance with the applicable national (Canadian and/or U.S.) component or material standard requirements.	(see appended 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.	No connection to DC mains.	N/A
	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.		N/A
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak 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.	No TNV circuits.	N/A
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.		N/A
2.6.3.4	Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) may be subjected to the additional limited short circuit test conditions specified.	No such constructions.	N/A
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more reduce the risk of injury due to the implosion of the CRT.	No CRTs.	N/A
4.3.2	Equipment with handles complies with special loading tests.	No safety related handles.	N/A
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	No TNV circuits	N/A

Canadian differences

IEC 60950_1C ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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 overloaded.	Complied and tested by approved power supply.	P
	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	Considered.	P
6.4	Equipment intended for connection to telecommunication network outside plant cable is protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.	No TNV circuits.	N/A
Annex EE	Articulated accessibility probe (Fig EE.3) is used for assessing accessibility to document/media shredders instead of the Figure 2A test finger.	Not shredders.	N/A
Annex M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.	No TNV circuits.	N/A
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 comply with special acoustic pressure requirements.	No TNV circuits.	N/A

Canadian differences

IEC 60950_1C ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60950-1
US NATIONAL DIFFERENCES
Information technology equipment – Safety –
Part 1: General requirements

Differences according to.....: UL 60950-1-07

Attachment Form No.....: US_ND_IEC60950_1C
Attachment Originator .....: TÜV SÜD Product Service GmbH
Master Attachment .....: Date (2012-08)

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	Special national conditions		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.	Unit was evaluated according to IEC 60950-1. The requirements have to be checked during National approval.	P
	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.	Considered.	P
1.5.5	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.	Less than 3.0 m	N/A
	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.	Interconnecting cord located in limited power source and rated VW-1 or better.	P
1.7.1	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.	Single phase conductor.	N/A
	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."		

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Clause	Requirement + Test	Result - Remark	Verdict
	A voltage rating is not be lower than the specified "Normal Operating Conditions," unless it is part of a range 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.	No such terminals.	N/A
	- Marking is located adjacent to the terminals.		N/A
	- Marking is visible during wiring.		N/A
2.5	Fuse providing Class 2, Limited Power Source, or TNV current limiting is not operator-accessible unless it is not interchangeable.	PTC to provide LPS not operator-accessible.	P
2.6.3.3	Modify first column on Table 2D to “Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration.”		N/A
2.7.1	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is provided for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.	No standard supply outlets.	N/A
	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, provided with special transformer overcurrent protection.	No such transformers.	N/A
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains is in accordance with the NEC/CEC.	Overall acceptance has to be evaluated during the National approval process.	N/A
3.2.1	Attachment plugs of power supply cords are rated not less than 125 percent of the rated current of the equipment.	Power supply cord not provided.	N/A
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 comply with special earthing, wiring, marking and installation instruction requirements.	Not connected to DC mains.	N/A
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.	Not permanent connection.	N/A
3.2.5	Power supply cords are required to be no longer than 4.5 m in length.	Power supply cord not provided.	N/A
	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.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Flexible power supply cords are compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		N/A
3.2.9	Permanently connected equipment have a suitable wiring compartment and wire bending space.	Appliance inlet used.	N/A
3.3	Wiring terminals and associated spacings for field wiring connections comply with CSA C22.2 No. 0.	Appliance inlet used.	N/A
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).		N/A
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are suitable for Canadian/US wire gauge sizes, are		N/A
	- rated 125 percent of the equipment rating, and		N/A
	- are specially marked when specified (1.7.7).		N/A
3.3.5	Revise first column of Table 3E to “Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration.”	Revised.	P
3.4.2	Motor control devices are provided for cord-connected equipment with a motor if the equipment is rated more than 12 A,	No such motors.	N/A
	- or if the motor has a nominal voltage rating greater than 120 V,		N/A
	- or is rated more than 1/3 hp (locked rotor current over 43 A).		N/A
3.4.8	Vertically-mounted disconnect switches and circuit breakers have the "on" position indicated by the handle in the up position.	No such switches or breakers.	N/A
3.4.11	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes have a battery disconnect means that may be connected to the computer room remote power-off circuit.	No such battery.	N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment complyies with NFPA 30.	No flammable liquid.	N/A
4.3.13.5	Equipment with lasers meet the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations 21 CFR 1040, as applicable.		P
4.7	For computer room applications, automated information storage systems with combustible media greater than 0.76 m^3 (27 cu ft) have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	No such systems.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9 m^2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) have a flame spread rating of 50 or less.	No such enclosures.	N/A
	For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.		N/A
Annex H	Equipment that produces ionizing radiation comply with the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations, 21 CFR 1020, as applicable.	No ionizing radiation source.	N/A
	Other National Differences		P
1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury have component or material ratings in accordance with the applicable national (Canadian and/or U.S.) component or material standard requirements.	(see appended 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.	No connnection to DC mains.	N/A
	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.		N/A
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak 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.	No TNV circuits.	N/A
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.		N/A
2.6.3.4	Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) may be subjected to the additional limited short circuit test conditions specified.	No such constructions.	N/A
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more reduce the risk of injury due to the implosion of the CRT.	No CRTs.	N/A
4.3.2	Equipment with handles complies with special loading tests.	No safety related handles.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	No TNV circuits	N/A
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 overloaded.	Complied and tested by approved power supply.	P
	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	Considered.	P
6.4	Equipment intended for connection to telecommunication network outside plant cable is protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.	No TNV circuits.	N/A
Annex EE	Articulated accessibility probe (Fig EE.3) is used for assessing accessibility to document/media shredders instead of the Figure 2A test finger.	Not shredders.	N/A
Annex M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.	No TNV circuits.	N/A
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 comply with special acoustic pressure requirements.	No TNV circuits.	N/A

US National Differences