TEST REPORT

IEC 60950-1: 2005 and/or EN 60950-1:2006
Information technology equipment – Safety –
Part 1: General requirements

Report Number .....:	T0271606238A	
Tested by (printed name and signature) .....:	William Yen	William Yen
Approved by (printed name and signature) .....:	Sprewell Chien	Sprewell Chien
Date of issue .....:	2016-08-09	
Testing Laboratory .....:	Perfectlink International Corp.	
Address .....:	4F., No. 16-1, Sec. 2, Zhongyang S. Rd., Beitou Dist., Taipei City 112, Taiwan	
Applicant's name .....:	ASRock Rack Incorporation	
Address .....:	4F., No.37, Sec. 2, Jhongyang S. Rd., Beitou Dist., Taipei City 11270, Taiwan (R.O.C.)	
Test specification:		
Standard .....:	IEC 60950-1:2005 + A1:2009 + A2:2013 and/or EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013	
Test procedure .....:	Service of CE Marking in LVD	
Non-standard test method ……..:	N/A	
Test item description .....:	Server	
Trade Mark .....:	ASRock Rack	
Manufacturer .....:	1) ASRock Rack Incorporation 4F., No.37, Sec. 2, Jhongyang S. Rd., Beitou Dist., Taipei City 11270, Taiwan (R.O.C.) 2) ASRock Incorporation 2F., No.37, Sec. 2, Jhongyang S. Rd., Beitou Dist., Taipei City 11270, Taiwan (R.O.C.)	
Model/Type reference .....:	1U2FH SERIES	
Ratings .....:	I/P: 100-127V~/ 7.8A, 200-240V~/ 3.8A, 50Hz-60Hz(X2)	

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.

(Representative)

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 [X] detachable power supply cord [] non-detachable power supply cord [] not directly connected to the mains
Operating condition .....:	[X] continuous [] rated operating / resting time:
Access location .....:	[] operator accessible [X] 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 .....:	[X] Yes [] No
IT testing, phase-phase voltage (V) .....:	230V
Class of equipment .....:	[X] Class I [] Class II [] Class III [] Not classified
Considered current rating of protective device as part of the building installlation (A) .....:	16A (or 13A for UK, 20A for North America)
Pollution degree (PD) .....:	[] PD 1 [X] PD 2 [] PD 3
IP protection class .....:	IPX0
Altitude during operation (m) .....:	Up to 5000 m
Altitude of test laboratory (m) .....:	Up to 2000 m
Mass of equipment (kg) .....:	Approx. 14.5 kg
Possible test case verdicts:	
- test case does not apply to the test object .....:	N/A (or N)
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing:	
Date of receipt of test item .....:	2016-06-30
Date(s) of performance of tests .....:	2016-07-07 to 2016-07-17

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 or point is used as the decimal separator.

Name and address of factory (ies) .....:

1) ASRock Rack Incorporation
4F., No.37, Sec. 2, Jhongyang S. Rd., Beitou Dist.,
Taipei City 11270, Taiwan (R.O.C.)

2) ASRock Incorporation
2F., No.37, Sec. 2, Jhongyang S. Rd., Beitou Dist.,
Taipei City 11270, Taiwan (R.O.C.)

General product information:

This equipment is a server which consists of electronic components mounted on PCB, and housed in metal chassis. The top cover and bottom chassis of this equipment are fixed by screws.

This equipment is intended for installation only in a server room or computer room where both these conditions apply:
- Access can only be gained by SERVICE PERSONS or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.
- Access is through the use of a TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.

Main components of this equipment:

1) PSU (max. two provided)
2) DC Fan (five provided)
3) CPU (max. two provided)
4) 3.5” HDD (max. four provided)

The power source of this equipment:

1) Switching power supply (for detail information see appended table 1.5.1)

Other comments:

This equipment was submitted and evaluated for maximum ambient temperature permitted by the manufacturer specification is 50°C.

The switching power supply (mfr. / model: Delta Electronics, Inc. / DPS-650AB-14 XX (X can by 0-9, A-Z, or blank) for used with this equipment are defined as Tma = 45°C during approval, however, additional heating test has been performed under switching power supply provided power source to this equipment, see appended table 1.5.1 and 4.5 for details.

This equipment is for use with field installable SFPs not provided with the product when shipped from the original equipment manufacturer. This equipment was evaluated with representative SFPs during the Type Test investigation as appended table 1.5.1 for details.

This equipment with SFPs installed is required to comply with EN 60950-1 and EN 60825-1 and EN 60825-2, including any declared national differences.

The decision on certification of the equipment without the SFPs rests with the recognizing NCB.

The optical transceivers only operated with optical transceiver module, it's only for signals transmission and optical transceivers should be covered well by system metal enclosure.

The rack mounting means of this equipment: Slide rails.

Power cord complying with national standard must be provided when shipment.

This report has been changed due to following reasons:

1. Add an alternative approved switching power supply.

For the above described changes, the following was considered to be necessary:

Modification	Testing	Comments
1	1.6.2 - INPUT TEST: SINGLE-PHASE	See appended table 1.6.2 for details.
	2.6.3.4, 2.6.1 - PROTECTIVE BONDING TEST	See appended table 2.6.3.4 for details.
	2.9.1, 2.9.2, 5.2.2 - HUMIDITY TEST	See sub clause 2.9.2 for details.
	4.2.1 - 4.2.4 - STEADY FORCE TESTS	See sub clause 4.2.4 for details.
	4.2.5, 4.2.1, PART 22 10.2 - IMPACT TEST	See sub clause 4.2.5 for details.
	4.5.1, 1.4.12, 1.4.13 - HEATING TEST	See appended table 4.5 for details.
	5.1, ANNEX D - TOUCH CURRENT TEST (SINGLE-PHASE; TN/TT SYSTEM)	See appended table 5.1 for details.
	5.2.2 - ELECTRIC STRENGTH TEST	See appended table 5.2 for details.
	5.3.1 - 5.3.9 - ABNORMAL OPERATION TESTS	See appended table 5.3 for details.

History of amendments and modifications:

Item	Test Report No. / Issue date	Remark
1	T0271601032A / 2016-02-15	Original report

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

Indicate used abbreviations (if any)

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	**GENERAL**		P
1.5	**Components**		P
1.5.1	General	See below.	P
	Comply with IEC 60950-1 or relevant component standard	Components, which were found to affect safety aspects, comply with the requirements of this standard or within the safety aspects of the relevant IEC component standards. See appended table 1.5.1.	P
1.5.2	Evaluation and testing of components	Components certified to IEC standards and/or their harmonized standards, are used within their ratings and are checked for correct application. Components, which no relevant IEC-Standard exists, are used within their ratings and are tested under the conditions occurring in the equipment.	P
1.5.3	Thermal controls	No thermal control.	N/A
1.5.4	Transformers	Evaluated in approved switching power supply.	P
1.5.5	Interconnecting cables	No interconnection cable.	N/A
1.5.6	Capacitors bridging insulation	Evaluated in approved switching power supply.	P
1.5.7	Resistors bridging insulation	Evaluated in approved switching power supply.	P
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Same as above.	P
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 switching power supply.	P
1.5.9	Surge suppressors	Evaluated in approved switching power supply.	P
1.5.9.1	General	Same as above.	P
1.5.9.2	Protection of VDRs	Same as above.	P
1.5.9.3	Bridging of functional insulation by a VDR	Same as above.	P
1.5.9.4	Bridging of basic insulation by a VDR		N/A

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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. IT power system for Norway only.	P
1.6.2	Input current	The maximum normal load of this equipment: The CPU / GPU / DIMM were operated in 100% load condition, continued reading / writing data in each 3.5" HDD, applied load of 0.5 A to each USB 2.0 type A port and applied 0.9 A to each USB 3.0 type A port. 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	Neutral is insulated from body throughout the equipment.	P
1.7	**Marking and instructions**		P
1.7.1	Power rating and identification markings	See below.	P
1.7.1.1	Power rating marking	All relevant markings are provided on the outside surface of equipment.	P
	Multiple mains supply connections.....:	Considered.	P
	Rated voltage(s) or voltage range(s) (V) ..... :	1) 100-127 V~ 2) 200-240 V~	P
	Symbol for nature of supply, for d.c. only..... :	Mains from AC source	N/A
	Rated frequency or rated frequency range (Hz) ... :	50-60 Hz	P
	Rated current (mA or A) ..... :	1) 7.8 A 2) 3.8 A	P
1.7.1.2	Identification markings	See below.	P
	Manufacturer's name or trade-mark or identification mark ..... :	ASRock Rack	P
	Model identification or type reference ..... :	1U2FH SERIES	P
	Symbol for Class II equipment only ..... :	Class I equipment.	N/A
	Other markings and symbols ..... :	Additional symbols or markings do not give rise to misunderstanding.	P
1.7.1.3	Use of graphical symbols	Complied.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2	Safety instructions and marking	See below.	P
1.7.2.1	General	The user manual contains information for operation, installation, servicing, transport, storage and technical data. The operation guide is provided to the user.	P
1.7.2.2	Disconnect devices	Appliance inlet used.	N/A
1.7.2.3	Overcurrent protective device	This equipment is not permanently connected equipment or pluggable equipment B.	N/A
1.7.2.4	IT power distribution systems	It shall be evaluated when submitted for Norway national approval.	N/A
1.7.2.5	Operator access with a tool	A marking (ISO 3864, No.5036) for electric shock hazard is marked on approved switching power supply.	P
1.7.2.6	Ozone	This equipment does not produce ozone.	N/A
1.7.3	Short duty cycles	This equipment is designed for continuous operation.	N/A
1.7.4	Supply voltage adjustment ..... :	No voltage adjustment device.	N/A
	Methods and means of adjustment; reference to installation instructions ..... :	Same as above.	N/A
1.7.5	Power outlets on the equipment ..... :	No power outlet.	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) ..... :	Evaluated in approved switching power supply.	P
1.7.7	Wiring terminals	See below.	N/A
1.7.7.1	Protective earthing and bonding terminals ..... :	Appliance coupler was provided.	N/A
1.7.7.2	Terminals for a.c. mains supply conductors	This equipment is provided with appliance inlet, which is for connection of a detachable type power supply cord.	N/A
1.7.7.3	Terminals for d.c. mains supply conductors	AC mains supply only.	N/A
1.7.8	Controls and indicators	See below.	P
1.7.8.1	Identification, location and marking ..... :	The marking of the stand-by switch is located that indication of function clearly.	P
1.7.8.2	Colours ..... :	No safety relevant control and indicator.	N/A
1.7.8.3	Symbols according to IEC 60417.....:	The stand-by switch marked with the correct IEC 60417-5009 symbol.	P

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Clause	Requirement + Test	Result - Remark	Verdict
1.7.8.4	Markings using figures .....:	No indicator for different position of control.	N/A
1.7.9	Isolation of multiple power sources .....:	Adequate marking is provided for isolating the equipment completely and each section of the equipment. Refer to copy of marking plate.	P
1.7.10	Thermostats and other regulating devices .....:	No such device.	N/A
1.7.11	Durability	The label was rubbed by hand for 15 s with a piece of cloth soaked with water and again for 15 s with a piece of cloth soaked with petroleum spirit. After this test, the marking still legible with no damage.	P
1.7.12	Removable parts	No removable part.	N/A
1.7.13	Replaceable batteries .....:	Lithium battery for real time clock is replaceable type, the caution statement are in both the operating and the servicing instructions.	P
	Language(s) .....:	English. Versions in other languages have to be provided during the corresponding national approvals.	—
1.7.14	Equipment for restricted access locations .....:	Relevant effect safety information had been statement in the operating instructions.	N/A

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	See below.	P
	Test by inspection ..... :	No access with test finger to any parts with only basic insulation to ELV or hazardous voltage. The test pin cannot touch hazardous voltage through any openings within the appliance.	P
	Test with test finger (Figure 2A) ..... :	Same as above.	P
	Test with test pin (Figure 2B) ..... :	Same as above.	P
	Test with test probe (Figure 2C) ..... :	No TNV.	N/A
2.1.1.2	Battery compartments	No such battery compartment.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.1.1.3	Access to ELV wiring	No ELV wiring in operator accessible area.	N/A
	Working voltage (Vpeak or Vrms); minimum distance through insulation (mm)	Same as above.	—
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage circuit wiring in operator access area.	N/A
2.1.1.5	Energy hazards ..... :	The equipment was intended to be located in a restricted access location only. Unintentional bridging energy hazard by conductive materials is unlikely. Indication for power off equipment first in installation instruction provided.	P
2.1.1.6	Manual controls	No conductive shafts of operating knob and handle.	N/A
2.1.1.7	Discharge of capacitors in equipment	Evaluated in approved switching power supply.	P
	Measured voltage (V); time-constant (s)..... :	Same as above.	—
2.1.1.8	Energy hazards – d.c. mains supply	AC mains supply only.	N/A
	a) Capacitor connected to the d.c. mains supply .. :	Same as above.	N/A
	b) Internal battery connected to the d.c. mains supply ..... :	Same as above.	N/A
2.1.1.9	Audio amplifiers ..... :	No audio amplifier.	N/A
2.1.2	Protection in service access areas	No maintenance work in operation mode necessary.	N/A
2.1.3	Protection in restricted access locations	Unintentional bridging energy hazard by conductive materials is unlikely. Indication for power off equipment first in installation instruction provided.	P

2.2	**SELV circuits**		P
2.2.1	General requirements	See below.	P
2.2.2	Voltages under normal conditions (V) ..... :	No voltage exceeded 42.4 Vpk or 60 Vdc in any SELV circuits.	P
2.2.3	Voltages under fault conditions (V) ..... :	Single fault didn't cause voltage exceeded 42.4 Vpk or 60 Vdc and 71 Vpk and 120 Vdc (for not longer than 200 ms) in any SELV circuits.	P
2.2.4	Connection of SELV circuits to other circuits .....:	No direct connection between SELV and any primary circuit. See sub-clause 2.2.2 and 2.2.3.	N/A

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

2.3	**TNV circuits**		N/A
2.3.1	Limits	No TNV circuit.	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**		N/A
2.4.1	General requirements	Evaluated in approved switching power supply.	N/A
2.4.2	Limit values		N/A
	Frequency (Hz) ..... :		—
	Measured current (mA) ..... :		—
	Measured voltage (V) ..... :		—
	Measured circuit capacitance (nF or µF) ..... :		—
2.4.3	Connection of limited current circuits to other circuits		N/A

2.5	**Limited power sources**		P
	a) Inherently limited output	See appended table 2.5.	P
	b) Impedance limited output	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) ..... :	See appended table 2.5.	—
	Current rating of overcurrent protective device (A) .:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Use of integrated circuit (IC) current limiters		—
2.6	**Provisions for earthing and bonding**		P
2.6.1	Protective earthing	Accessible conductive parts are reliably connected to protective earth.	P
2.6.2	Functional earthing	Functional earthing is separated from hazardous voltages by reinforced insulation.	P
	Use of symbol for functional earthing .....:	No such symbol.	N/A
2.6.3	Protective earthing and protective bonding conductors	See below.	P
2.6.3.1	General	See below.	P
2.6.3.2	Size of protective earthing conductors	No power cord provided.	N/A
	Rated current (A), cross-sectional area (mm^2), AWG ..... :	Same as above.	—
2.6.3.3	Size of protective bonding conductors	See sub-clause 2.6.3.4	P
	Rated current (A), cross-sectional area (mm^2), AWG ..... :	Same as above.	—
	Protective current rating (A), cross-sectional area (mm^2), AWG ..... :	Same as above.	—
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 ..... :	Evaluated in approved switching power supply.	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.	P
	Rated current (A), type, nominal thread diameter (mm) ..... :	Same as above.	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Evaluated in approved switching power supply.	N/A
2.6.5	Integrity of protective earthing	See below.	P
2.6.5.1	Interconnection of equipment	This equipment has its own earthing connection. Any other units connected via the interconnecting cable to other unit shall provide SELV only.	P

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Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switch or overcurrent protective device provided in earthing conductors and protective bonding conductors.	P
2.6.5.3	Disconnection of protective earth	Complied.	P
2.6.5.4	Parts that can be removed by an operator	The protective earthing connection is made earlier and broken later than the supply connection.	P
2.6.5.5	Parts removed during servicing	Same as above.	P
2.6.5.6	Corrosion resistance	No combination above the line in annex J is used.	P
2.6.5.7	Screws for protective bonding	Self-tapping and spaced thread screws are not used to provide protective bonding.	P
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV circuit.	N/A
2.7	**Overcurrent and earth fault protection in primary circuits**		P
2.7.1	Basic requirements	Protection against overcurrents and short-circuits is provided as an integral part of the equipment. Protection against earth faults is provided as part of the building installation.	P
	Instructions when protection relies on building installation	Pluggable equipment type A.	N/A
2.7.2	Faults not simulated in 5.3.7	Considered.	P
2.7.3	Short-circuit backup protection	Pluggable equipment type A, hence building installation is considered as providing short circuit backup protection.	P
2.7.4	Number and location of protective devices ..... :	Overcurrent protection is provided in approved switching power supply.	P
2.7.5	Protection by several devices	One protective device is in approved switching power supply.	N/A
2.7.6	Warning to service personnel ..... :	No service work necessary.	N/A
2.8	**Safety interlocks**		N/A
2.8.1	General principles	No safety interlock.	N/A
2.8.2	Protection requirements		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
	Protection against extreme hazard		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches, relays and their related circuits		N/A
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) .....:		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A
2.9	**Electrical insulation**		P
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials are not used.	P
2.9.2	Humidity conditioning	Evaluated in approved switching power supply. Humidity treatment performed for 120 hrs.	P
	Relative humidity (%), temperature (°C) ..... :	95% R.H., 40 °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 used.	—
2.10	**Clearances, creepage distances and distances through insulation**		P
2.10.1	General	Approved switching power supply is used. Hence requirements of below sub-clauses are in compliance with IEC/EN 60950-1. See below for details.	P
2.10.1.1	Frequency ..... :	The frequency not exceeding 30 kHz.	P
2.10.1.2	Pollution degrees ..... :	Pollution degree 2 applicable.	P
2.10.1.3	Reduced values for functional insulation	Complied with the requirement of sub-clause 5.3.4.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.1.4	Intervening unconnected conductive parts	Complied.	P
2.10.1.5	Insulation with varying dimensions	No such insulation.	N/A
2.10.1.6	Special separation requirements	No such construction consideration.	N/A
2.10.1.7	Insulation in circuits generating starting pulses	No such circuits.	N/A
2.10.2	Determination of working voltage	Evaluated in approved switching power supply.	P
2.10.2.1	General	Same as above.	P
2.10.2.2	RMS working voltage	Same as above.	P
2.10.2.3	Peak working voltage	Same as above.	P
2.10.3	Clearances	See below.	P
2.10.3.1	General	Annex F is considered.	P
2.10.3.2	Mains transient voltages	See below.	P
	a) AC mains supply ..... :	2500 Vpk considered.	P
	b) Earthed d.c. mains supplies ..... :	Mains from AC source.	N/A
	c) Unearthed d.c. mains supplies ..... :	Same as above.	N/A
	d) Battery operation ..... :	Same as above.	N/A
2.10.3.3	Clearances in primary circuits	See appended table 2.10.3 and 2.10.4.	P
2.10.3.4	Clearances in secondary circuits	Sub-clause 5.3.4 considered.	P
2.10.3.5	Clearances in circuits having starting pulses	No such circuit.	N/A
2.10.3.6	Transients from a.c. mains supply ..... :	1500 Vpk assumed.	P
2.10.3.7	Transients from d.c. mains supply ..... :	Mains from AC source.	N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems ..... :	No such circuit.	N/A
2.10.3.9	Measurement of transient voltage levels	No transient voltage across the clearance lower than normal.	N/A
	a) Transients from a mains supply	Same as above.	N/A
	For an a.c. mains supply ..... :	Same as above.	N/A
	For a d.c. mains supply ..... :	Same as above.	N/A
	b) Transients from a telecommunication network :	Same as above.	N/A
2.10.4	Creepage distances	See below.	P
2.10.4.1	General	Considered.	P
2.10.4.2	Material group and comparative tracking index	CTI rating for all materials of IIIa + IIIb assumed.	P
	CTI tests ..... :	Same as above.	—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.4.3	Minimum creepage distances	See appended table 2.10.3 and 2.10.4.	P
2.10.5	Solid insulation	Evaluated in sub-clauses 2.10.5.2 to 2.10.5.14 and 5.2. However, optical isolators are evaluated in approved switching power supply.	P
2.10.5.1	General	See below.	P
2.10.5.2	Distances through insulation	Evaluated in approved switching power supply.	P
2.10.5.3	Insulating compound as solid insulation		N/A
2.10.5.4	Semiconductor devices		N/A
2.10.5.5.	Cemented joints	Evaluated in approved switching power supply.	P
2.10.5.6	Thin sheet material – General	Same as above.	P
2.10.5.7	Separable thin sheet material	Same as above.	P
	Number of layers (pcs) ..... :	Same as above.	—
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 switching power supply.	P
	Electric strength test	Same as above.	—
2.10.5.11	Insulation in wound components	See below.	P
2.10.5.12	Wire in wound components	Evaluated in approved switching power supply.	P
	Working voltage ..... :	Same as above.	P
	a) Basic insulation not under stress ..... :		N/A
	b) Basic, supplementary, reinforced insulation ..... :	Same as above.	P
	c) Compliance with Annex U ..... :	Same as above.	P
	Two wires in contact inside wound component; angle between 45° and 90° ..... :	Same as above.	P
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
	Electric strength test		—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components		N/A
	Working voltage ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- Basic insulation not under stress ..... :		N/A
	- Supplementary, reinforced insulation ..... :		N/A
2.10.6	Construction of printed boards	See below.	P
2.10.6.1	Uncoated printed boards	See appended table 2.10.3 and 2.10.4.	P
2.10.6.2	Coated printed boards		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	No such consideration.	N/A
2.10.8	Tests on coated printed boards and coated components	No such printed board and component.	N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling	Evaluated in approved switching power supply.	P
2.10.10	Test for Pollution Degree 1 environment and insulating compound	Same as above.	P
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	All internal wires are UL recognized. Cross-sectional area of internal wiring is suitable for current intended to be carried.	P
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges which could damage the insulation and cause hazard.	P
3.1.3	Securing of internal wiring	The wires are secured by soldering and glue so that a 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. For the insulation material see 3.1.1.	P
3.1.5	Beads and ceramic insulators	No bead and ceramic insulator	N/A
3.1.6	Screws for electrical contact pressure	No screw used for electrical contact purpose.	N/A
3.1.7	Insulating materials in electrical connections	No contact pressure through insulating material.	N/A
3.1.8	Self-tapping and spaced thread screws	No such screw.	N/A
3.1.9	Termination of conductors	All conductors are reliably secured.	P
	10 N pull test	Considered.	P
3.1.10	Sleeving on wiring	No sleeving used as supplementary insulation.	N/A
3.2	**Connection to a mains supply**		P
3.2.1	Means of connection	Connection to AC mains with appliance inlet.	P
3.2.1.1	Connection to an a.c. mains supply	Same as above.	P
3.2.1.2	Connection to a d.c. mains supply	Same as above.	N/A
3.2.2	Multiple supply connections	Separate inlets are provided for different circuits. Supply inlets are interchangeable and intended to connect to identical power system, no hazards could be created.	P
3.2.3	Permanently connected equipment	Not such equipment.	N/A
	Number of conductors, diameter of cable and conduits (mm) ..... :	Same as above.	—
3.2.4	Appliance inlets	The appliance inlet complies with IEC/EN 60320-1. The connector of the power cord can be inserted without difficulties and does not support the unit.	P
3.2.5	Power supply cords	See below.	N/A
3.2.5.1	AC power supply cords	No power supply cords provided.	N/A
	Type ..... :	Same as above.	—
	Rated current (A), cross-sectional area (mm^2), AWG ..... :	Same as above.	—
3.2.5.2	DC power supply cords	AC mains supply.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N) ..... :		—
	Longitudinal displacement (mm) ..... :		—
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards		N/A
	Diameter or minor dimension D (mm); test mass (g) ..... :		—
	Radius of curvature of cord (mm) ..... :		—
3.2.9	Supply wiring space		N/A
3.3	**Wiring terminals for connection of external conductors**		N/A
3.3.1	Wiring terminals	Not permanently connected equipment and equipment with ordinary non-detachable power supply cords.	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	Appliance coupler used.	P
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N/A
3.4.4	Parts which remain energized	When plug or appliance inlet is disconnected, no remaining parts with hazardous voltage in the equipment.	P
3.4.5	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 coupler disconnects both poles simultaneously.	P
3.4.7	Number of poles - three-phase equipment	Single phase.	N/A
3.4.8	Switches as disconnect devices	Appliance inlet used.	N/A
3.4.9	Plugs as disconnect devices	Appliance inlet used.	N/A
3.4.10	Interconnected equipment	Interconnection to other devices by secondary connector only.	N/A
3.4.11	Multiple power sources	Adequate caution texts and marking are provided for disconnecting all power sources, refer to copy of marking plate.	P
3.5	**Interconnection of equipment**		P
3.5.1	General requirements	See below.	P
3.5.2	Types of interconnection circuits ..... :	Interconnection circuits of SELV via secondary output connector.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N/A
3.5.4	Data ports for additional equipment	The SELV circuit of data port is supplied by a limited power source that complies with sub-clause 2.5.	P
4	**PHYSICAL REQUIREMENTS**		P
4.1	**Stability**		P
	Angle of 10°	This appliance is of a stable mechanical construction and does not overbalance when tilted to an angle of 10° from its normal upright position.	P
	Test force (N) ..... :	Equipment is not a floor standing unit.	N/A
4.2	**Mechanical strength**		P
4.2.1	General	See below. After tests equipment still complies with sub-clauses 2.1.1, 2.6.1, 2.10 and 4.4.1.	P
	Rack-mounted equipment.	Considered. See sub-clause Annex DD for details.	P
4.2.2	Steady force test, 10 N	10 N forces applied to components and parts other than parts serving as an enclosure.	P

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Clause	Requirement + Test	Result - Remark	Verdict
4.2.3	Steady force test, 30 N	No internal enclosure.	N/A
4.2.4	Steady force test, 250 N	After test, equipment still complies with sub-clause 4.2.1.	P
4.2.5	Impact test	See below. After tests equipment still complies with sub-clauses 2.1.1, 2.6.1, 2.10 and 4.4.1.	P
	Fall test	No hazard as result from steel sphere ball impact test applied for top enclosure.	P
	Swing test	No hazard as result from steel sphere ball impact test for side/rear enclosure.	P
4.2.6	Drop test; height (mm) ..... :	Stationary equipment without telephone handset.	N/A
4.2.7	Stress relief test	Metal chassis.	N/A
4.2.8	Cathode ray tubes	No CRT in the unit.	N/A
	Picture tube separately certified ..... :	Same as above.	N/A
4.2.9	High pressure lamps	No high pressure lamp provided.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N) ..... :	Not wall or ceiling mounted equipment.	N/A
4.3	**Design and construction**		P
4.3.1	Edges and corners	Edges and corners of the enclosure are rounded.	P
4.3.2	Handles and manual controls; force (N) ..... :	No handles or controls used.	N/A
4.3.3	Adjustable controls	No control device.	N/A
4.3.4	Securing of parts	Mechanical fixings are reliable designed to withstand mechanical stress occurring during normal use.	P
4.3.5	Connection by plugs and sockets	No misconnection of plugs, connections or sockets possible.	P
4.3.6	Direct plug-in equipment	Not direct plug-in type.	N/A
	Torque ..... :	Same as above.	—
	Compliance with the relevant mains plug standard ..... :	Same as above.	N/A
4.3.7	Heating elements in earthed equipment	No heating elements.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.8	Batteries	For RTC battery: - Battery charging prevented by series circuit of a diode (SD1) with a 1 K ohm resistor (R35). - Reverse polarity assembly prevented by compartment design.	P
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery	See appended table 4.3.8 and 5.3.	P
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
4.3.9	Oil and grease	The insulation of internal parts is not designed for exposed to oil and grease.	N/A
4.3.10	Dust, powders, liquids and gases	This equipment is not designed for produce dust or use powder, liquid or gase.	N/A
4.3.11	Containers for liquids or gases	No such container.	N/A
4.3.12	Flammable liquids ..... :	No flammable liquid.	N/A
	Quantity of liquid (l) ..... :	Same as above.	N/A
	Flash point (°C) ..... :	Same as above.	N/A
4.3.13	Radiation	No concerned radiation within this equipment.	P
4.3.13.1	General	Same as above.	P
4.3.13.2	Ionizing radiation	No ionizing radiation.	N/A
	Measured radiation (pA/kg) ..... :	Same as above.	—
	Measured high-voltage (kV) ..... :	Same as above.	—
	Measured focus voltage (kV) ..... :	Same as above.	—
	CRT markings ..... :	Same as above.	—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	No ultraviolet radiation.	N/A
	Part, property, retention after test, flammability classification ..... :	Same as above.	N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation ..... :	No ultraviolet 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)	Approval optical transceiver used. See appended table 1.5.1.	P
	Laser class ..... :	Laser Class 1.	—
4.3.13.5.2	Light emitting diodes (LEDs)	The LED used as indicating light.	P

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Clause	Requirement + Test	Result - Remark	Verdict
4.3.13.6	Other types ..... :	No other type.	N/A
4.4	**Protection against hazardous moving parts**		P
4.4.1	General	No moving parts except for DC fan located within equipment which was located in a restricted access location only.	N/A
4.4.2	Protection in operator access areas ..... :	Same as above.	N/A
	Household and home/office document/media shredders	No such device.	N/A
4.4.3	Protection in restricted access locations ..... :	See sub-clause 4.4.1.	N/A
4.4.4	Protection in service access areas	Same as above.	N/A
4.4.5	Protection against moving fan blades	See below.	P
4.4.5.1	General	Adequate protection was provided against risk of personal injury. See sub-clause 4.4.5.2 and 4.4.5.3.	P
	Not considered to cause pain or injury. a) .....:	Same as above.	N/A
	Is considered to cause pain, not injury. b) .....::	Same as above.	N/A
	Considered to cause injury. c) .....:	Same as above.	N/A
4.4.5.2	Protection for users	A warning symbol provided to avoid contacting the moving fan blade was marked on each DC fan, and relevant explanation for warning symbol was also described in installation instruction.  Unintentional contact with inside DC fan is not possible. The warning "When removal of the chassis lid required for servicing: - Turn off power and unplug any power cords/cables, and - Reinstall the chassis lid before restoring power.”	P
	Use of symbol or warning .....:	Same as above.	P

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Clause	Requirement + Test	Result - Remark	Verdict
4.4.5.3	Protection for service persons	A warning symbol provided to avoid contacting the moving fan blade was marked on each DC fan, and relevant explanation for warning symbol was also described in installation instruction. 	P
	Use of symbol or warning .....:	Same as above.	P
4.5	**Thermal requirements**		P
4.5.1	General	See below.	P
4.5.2	Temperature tests	See appended table 4.5.	P
	Normal load condition per Annex L ..... :	See sub-clause 1.6.2.	—
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 ..... :	Evaluated in approved switching power supply.	P
4.6	**Openings in enclosures**		P
4.6.1	Top and side openings	See below.	P
	Dimensions (mm) ..... :	See appended table 4.6.1 and 4.6.2.	—
4.6.2	Bottoms of fire enclosures	See below.	P
	Construction of the bottomm, dimensions (mm) .. :	See appended table 4.6.1 and 4.6.2.	—
4.6.3	Doors or covers in fire enclosures	No door or cover.	N/A
4.6.4	Openings in transportable equipment	Not a transportable equipment.	N/A
4.6.4.1	Constructional design measures	Same as above.	N/A
	Dimensions (mm) ..... :	Same as above.	—
4.6.4.2	Evaluation measures for larger openings	Same as above.	N/A
4.6.4.3	Use of metallized parts	Same as above.	N/A
4.6.5	Adhesives for constructional purposes	No such consideration.	N/A
	Conditioning temperature (°C), time (weeks) ..... :	Same as above.	—
4.7	**Resistance to fire**		P
4.7.1	Reducing the risk of ignition and spread of flame	See below.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Method 1, selection and application of components wiring and materials	Method 1 used.	P
	Method 2, application of all of simulated fault condition tests	Same as above.	N/A
4.7.2	Conditions for a fire enclosure	See below.	P
4.7.2.1	Parts requiring a fire enclosure	With having the following parts: ● Components in primary circuit ● Insulated wiring ● Components in secondary circuit supplied by power sources that exceed the limits specified in 2.5. The fire enclosure is required.	P
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		P
4.7.3.1	General	See below.	P
4.7.3.2	Materials for fire enclosures	See appended table 1.5.1.	P
4.7.3.3	Materials for components and other parts outside fire enclosures		N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	Internal components except small parts are HF-2, V-2 and VTM-2 or better.	P
4.7.3.5	Materials for air filter assemblies	No air filter assemblies.	N/A
4.7.3.6	Materials used in high-voltage components	No high voltage component.	N/A
5	**ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS**		P
5.1	**Touch current and protective conductor current**		P
5.1.1	General	See sub-clauses 5.1.2 to 5.1.7.	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	The EUT two mains connections.	N/A
5.1.2.2	Redundant multiple connections to an a.c. mains supply	Same as above.	N/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply	Considered.	P
5.1.3	Test circuit	Using the test circuit in Figure 5A.	P
5.1.4	Application of measuring instrument	Using the measuring instrument in Annex D.1	P

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

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

5.3	**Abnormal operating and fault conditions**		P
5.3.1	Protection against overload and abnormal operation	See appended table 5.3.	P
5.3.2	Motors	Certified DC Fan and Hard Disk Drive used. See appended table 1.5.1.	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.3.3	Transformers	Evaluated in approved switching power supply.	P
5.3.4	Functional insulation .....:	Method c). See appended table 5.3.	P
5.3.5	Electromechanical components	No such component.	N/A
5.3.6	Audio amplifiers in ITE .....:	No audio amplifier.	N/A
5.3.7	Simulation of faults	Faults in primary/secondary components and operational insulation were already considered during the approval of the switching power supply. Ventilation openings blocked, system fans stalled and PSU fan stalled tested. See appended table 5.3.	P
5.3.8	Unattended equipment	No such component.	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	See below.	P
5.3.9.1	During the tests	No fire occurred beyond the equipment, no molten metal emitted and no deformation of enclosure.	P
5.3.9.2	After the tests	Electric strength test made.	P
6	**CONNECTION TO TELECOMMUNICATION NETWORKS**		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	No telecommunication network within this equipment.	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

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Clause	Requirement + Test	Result - Remark	Verdict
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**	No cable distribution system.	N/A
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N/A
7.3	Protection of equipment users from overvoltages on the cable distribution system		N/A
7.4	Insulation between primary circuits and cable distribution systems		N/A
7.4.1	General		N/A
7.4.2	Voltage surge test		N/A
7.4.3	Impulse test		N/A
A	**ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE**		N/A
A.1	**Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)**		N/A
A.1.1	Samples ..... :		—
	Wall thickness (mm) ..... :		—
A.1.2	Conditioning of samples; temperature (°C) ..... :		N/A
A.1.3	Mounting of samples ..... :		N/A
A.1.4	Test flame (see IEC 60695-11-3)		N/A
	Flame A, B, C or D ..... :		—
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s) ..... :		—
	Sample 2 burning time (s) ..... :		—
	Sample 3 burning time (s) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
A.2	**Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)**		N/A
A.2.1	Samples, material ..... :		—
	Wall thickness (mm) ..... :		—
A.2.2	Conditioning of samples; temperature (°C) ..... :		N/A
A.2.3	Mounting of samples ..... :		N/A
A.2.4	Test flame (see IEC 60695-11-4)		N/A
	Flame A, B or C ..... :		—
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s) ..... :		—
	Sample 2 burning time (s) ..... :		—
	Sample 3 burning time (s) ..... :		—
A.2.7	Alternative test acc. to IEC 60695-11-5, cl. 5 and 9		N/A
	Sample 1 burning time (s) ..... :		—
	Sample 2 burning time (s) ..... :		—
	Sample 3 burning time (s) ..... :		—
A.3	**Hot flaming oil test (see 4.6.2)**		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A

B	**ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)**		N/A
B.1	**General requirements**		N/A
	Position ..... :		—
	Manufacturer ..... :		—
	Type ..... :		—
	Rated values ..... :		—
B.2	**Test conditions**		N/A
B.3	**Maximum temperatures**		N/A
B.4	**Running overload test**		N/A
B.5	**Locked-rotor overload test**		N/A
	Test duration (days) ..... :		—
	Electric strength test: test voltage (V) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
B.6	**Running overload test for d.c. motors in secondary circuits**		N/A
B.6.1	General		N/A
B.6.2	Test procedure		N/A
B.6.3	Alternative test procedure		N/A
B.6.4	Electric strength test; test voltage (V) ..... :		N/A
B.7	**Locked-rotor overload test for d.c. motors in secondary circuits**		N/A
B.7.1	General		N/A
B.7.2	Test procedure		N/A
B.7.3	Alternative test procedure		N/A
B.7.4	Electric strength test; test voltage (V) .....:		N/A
B.8	**Test for motors with capacitors**		N/A
B.9	**Test for three-phase motors**		N/A
B.10	**Test for series motors**		N/A
	Operating voltage (V) ..... :		—
C	**ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)**		N/A
	Position ..... :		—
	Manufacturer ..... :		—
	Type ..... :		—
	Rated values ..... :		—
	Method of protection ..... :		—
C.1	**Overload test**		N/A
C.2	**Insulation**		N/A
	Protection from displacement of windings ..... :		N/A
D	**ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)**		P
D.1	**Measuring instrument**	Figure D.1 used.	P
D.2	**Alternative measuring instrument**		N/A
E	**ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)**		N/A
F	**ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)**		P

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

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

H	**ANNEX H, IONIZING RADIATION (see 4.3.13)**		N/A

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

K	**ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)**		N/A
K.1	Making and breaking capacity		N/A
K.2	Thermostat reliability; operating voltage (V) ..... :		N/A
K.3	Thermostat endurance test; operating voltage (V) :		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
K.4	Temperature limiter endurance; operating voltage (V) ..... :		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation		N/A
L	**ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)**		P
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment	See sub-clause 1.6.2.	P
M	**ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)**		N/A
M.1	Introduction		N/A
M.2	Method A		N/A
M.3	Method B		N/A
M.3.1	Ringing signal		N/A
M.3.1.1	Frequency (Hz) ..... :		—
M.3.1.2	Voltage (V) ..... :		—
M.3.1.3	Cadence; time (s), voltage (V) ..... :		—
M.3.1.4	Single fault current (mA) ..... :		—
M.3.2	Tripping device and monitoring voltage ..... :		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V) ..... :		N/A
N	**ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)**		N/A
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A
P	**ANNEX P, NORMATIVE REFERENCES**		—

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

Q	**ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)**		N/A
	- Preferred climatic categories ..... :		N/A
	- Maximum continuous voltage ..... :		N/A
	- Combination pulse current ..... :		N/A
	Body of the VDR Test according to IEC60695-11-5 ..... :		N/A
	Body of the VDR. Flammability class of material (min V-1) ..... :		N/A

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		

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	See below.	P
V.2	TN power distribution systems	Single-phase TN power system considered and used for the testing.	P

W	**ANNEX W, SUMMATION OF TOUCH CURRENTS**		N/A
W.1	Touch current from electronic circuits		N/A
W.1.1	Floating circuits		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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
CC.4	Test program 3 ..... :		N/A
CC.5	Compliance ..... :		N/A
DD	**ANNEX DD, Requirements for the mounting means of rack-mounted equipment**		P
DD.1	General	See below.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
DD.2	Mechanical strength test, variable N ..... :	A force 41 Kg was applied downwards through the centre of gravity for 1 min by means of a suitable test apparatus providing contact over a circular plane surface of 30 mm in diameter. The equipment and its associated slide rails remain secure during the test. One complete cycle of travel of the equipment on the slide rails was performed after test.	P
DD.3	Mechanical strength test, 250N, including end stops……:	A 250 N static force is applied in every direction except upward to include the most unfavourable position of the equipment for a period of 1 min. The equipment and its associated slide rails remain secure during the test. One complete cycle of travel of the equipment on the slide rails was performed after test.	P
DD.4	Compliance……:	The equipment was completely retracted into the rack. The mounting means did not bend or buckle. End stops retain the equipment in a safe position and do not allow the equipment to slide past the end of the slide rails.	P

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

1.5.1	TABLE: List of critical components				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity [1)]
Switching Power Supply (Max. two provided; min. one provided)	Acbel Polytech Inc.	R1BA2651B	I/P: 100-127 V~, 7.8 A; 200-240 V~, 3.8 A; 50/60 Hz; or 240 Vdc, 4.6 A O/P: +12 Vdc, 54.0 A, +5 Vsb. 3.0 A; Class I; Tma: 50 °C; Altitude: up to 5000 m	IEC 60950-1(ed.2): 2005+A1+A2	CB by TUV RH
(Alt.)	**Delta Electronics, Inc.**	**DPS-650AB-14 XX (X can by 0-9, A-Z, or blank)**	**I/P: 100-240 V~, 9 A; 50-60 Hz; O/P: +12 Vdc, 53.0 A, +5 Vsb. 2.0 A; Class I; Tma: 45 °C; Altitude: up to 5000 m**	**IEC 60950-1(ed.2): 2005+A1+A2**	**CB by TUV RH**
Polyswitch (F17 for VGA1 and FRNT_VGA1 used; U3F7 for IPM1_LAN_USB 3_1_2 used; U3F8 for USB_1 and USB_2 used)	Polytronics Technology Corp.	SPR-P175	6 Vdc, 1.75 A	IEC/EN 60738-1: 2006; IEC/EN 60738-1-1: 2008; IEC/EN 60730-1	TÜV RH
(Alt.)	Polytronics Technology Corp.	SPR-P260T	6 Vdc, 2.6 A	IEC/EN 60738-1: 2006; IEC/EN 60738-1-1: 2008; IEC/EN 60730-1	TÜV RH
(Alt.)	Polytronics Technology Corp.	SMD1812P260 TFT	6 Vdc, 2.6 A	IEC/EN 60738-1: 2006; IEC/EN 60738-1-1: 2008; IEC/EN 60730-1	TÜV RH

System Fan (Five provided)	Sunonwealth Electric Machine Industry Co., Ltd.	VF40561BXZ (Z stands for 30 characters. Each character stands for one of the following signs: 0-9, A-Z, ", ", ".", "/", "-" or blank for marketing purpose only)	12 Vdc, 1.208 A max., 27.6 CFM min.	EN 60950-1: 2006+A11+A1+A12+A2	TÜV RH
3.5" Hard Disk Drive (Max. four provided) (Optional)	HGST Japan, Ltd.	H series, D series, US7S series	DC 5 V / 12 V; 1.5 A / 2.0 A max.	IEC 60950-1(ed.2): 2005+A1+A2	CB (issued by TÜV)
(Alt.)	Interchangeable	Interchangeable	DC 5 V / 12 V; 1.5 A / 2.0 A max.	IEC 60950-1(ed.2): 2005+A1, IEC 60950-1(ed.2): 2005+A1+A2, EN 60950-1: 2006+A11+A1+A12+A2	CB (issued by National Certification Body), VDE or TÜV
SFP+ Optical Transceiver (Two provided) (Optional)	Avago	AFBR-57F5xxxx-yyy (x, y = A-Z, 0-9, blank; not safety-relevant)	DC 3.3 V, Laser Class 1	IEC 60950-1(ed.2): 2005; EN 60950-1: 2006+A11+A1+A12+A2; IEC 60825-1; EN 60825-1:2007; IEC 60825-2; EN 60825-2:2004+A1+A2	TÜV
(Alt.)	Interchangeable	Interchangeable	DC 3.3 V, Laser Class 1	IEC 60950-1(ed.2): 2005; EN 60950-1: 2006+A11+A1+A12+A2; IEC 60825-1; EN 60825-1:2007; IEC 60825-2; EN 60825-2:2004+A1+A2	TÜV, VDE
RTC Battery	Interchangeable	CR2032	Max. abnormal charging current: 5 mA min.	UL 1642	UL
Metal Enclosure	Interchangeable	Interchangeable	Min. 1.0 mm thickness.	--	--
PCB	Interchangeable	Interchangeable	V-1 or better, 105°C min.	UL 796	UL

Supplementary information:
1) Provided evidence ensures the agreed level of compliance.

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		

1.6.2	TABLE: Electrical data (in normal conditions)					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
EUT was powered by one power supply (Acbel Polytech Inc. / R1BA2651B) and measured on left PSU slot (PSU1)						
90 / 50Hz	3.24	--	294.4	F1	3.24	Maximum normal load.
90 / 60Hz	3.24	--	294.4	F1	3.24	Maximum normal load.
100 / 50Hz	2.94	7.8	290.7	F1	2.94	Maximum normal load.
100 / 60Hz	2.94	7.8	290.7	F1	2.94	Maximum normal load.
127 / 50Hz	2.34	7.8	288.5	F1	2.34	Maximum normal load.
127 / 60Hz	2.34	7.8	288.5	F1	2.34	Maximum normal load.
140 / 50Hz	2.14	--	285.0	F1	2.07	Maximum normal load.
140 / 60Hz	2.14	--	285.0	F1	2.07	Maximum normal load.
180 / 50Hz	1.63	--	289.5	F1	1.63	Maximum normal load.
180 / 60Hz	1.63	--	289.5	F1	1.63	Maximum normal load.
200 / 50Hz	1.44	3.8	284.9	F1	1.44	Maximum normal load.
200 / 60Hz	1.44	3.8	284.9	F1	1.44	Maximum normal load.
240 / 50Hz	1.23	3.8	280.2	F1	1.23	Maximum normal load.
240 / 60Hz	1.23	3.8	280.2	F1	1.23	Maximum normal load.
264 / 50Hz	1.16	--	277.9	F1	1.12	Maximum normal load.
264 / 60Hz	1.16	--	277.9	F1	1.12	Maximum normal load.

EUT was powered by one power supply (Acbel Polytech Inc. / R1BA2651B) and measured on right PSU slot (PSU2)						
90 / 50Hz	3.23	--	290.6	F1	3.23	Maximum normal load.
90 / 60Hz	3.23	--	290.6	F1	3.23	Maximum normal load.
100 / 50Hz	2.89	7.8	288.3	F1	2.89	Maximum normal load.
100 / 60Hz	2.89	7.8	288.3	F1	2.89	Maximum normal load.
127 / 50Hz	2.23	7.8	285.0	F1	2.23	Maximum normal load.
127 / 60Hz	2.23	7.8	285.0	F1	2.23	Maximum normal load.
140 / 50Hz	2.09	--	283.4	F1	2.09	Maximum normal load.
140 / 60Hz	2.09	--	283.4	F1	2.09	Maximum normal load.
180 / 50Hz	1.62	--	287.0	F1	1.62	Maximum normal load.
180 / 60Hz	1.62	--	287.0	F1	1.62	Maximum normal load.
200 / 50Hz	1.43	3.8	280.6	F1	1.43	Maximum normal load.
200 / 60Hz	1.43	3.8	280.6	F1	1.43	Maximum normal load.
240 / 50Hz	1.20	3.8	276.7	F1	1.20	Maximum normal load.
240 / 60Hz	1.20	3.8	276.7	F1	1.20	Maximum normal load.
264 / 50Hz	1.12	--	273.8	F1	1.12	Maximum normal load.
264 / 60Hz	1.12	--	273.8	F1	1.12	Maximum normal load.
EUT was powered by one power supply (Delta Electronics, Inc. / DPS-650AB-14 XX (X can by 0-9, A-Z, or blank)) and measured on left PSU slot (PSU1)						
90 / 50Hz	3.77	--	341.92	F1	3.77	Maximum normal load.
90 / 60Hz	3.77	--	341.65	F1	3.77	Maximum normal load.
100 / 50Hz	3.33	7.8	336.31	F1	3.33	Maximum normal load.
100 / 60Hz	3.33	7.8	336.31	F1	3.33	Maximum normal load.
127 / 50Hz	2.60	7.8	334.58	F1	2.60	Maximum normal load.
127 / 60Hz	2.61	7.8	334.65	F1	2.61	Maximum normal load.
140 / 50Hz	2.39	--	333.90	F1	2.39	Maximum normal load.
140 / 60Hz	2.39	--	333.87	F1	2.39	Maximum normal load.
180 / 50Hz	1.85	--	332.04	F1	1.85	Maximum normal load.
180 / 60Hz	1.85	--	331.29	F1	1.85	Maximum normal load.
200 / 50Hz	1.65	3.8	328.13	F1	1.65	Maximum normal load.
200 / 60Hz	1.65	3.8	328.80	F1	1.65	Maximum normal load.
240 / 50Hz	1.37	3.8	327.43	F1	1.37	Maximum normal load.
240 / 60Hz	1.37	3.8	327.47	F1	1.37	Maximum normal load.
254 / 50Hz	1.28	--	325.45	F1	1.28	Maximum normal load.

254 / 60Hz	1.29	--	327.42	F1	1.29	Maximum normal load.
264 / 50Hz	1.23	--	326.78	F1	1.23	Maximum normal load.
264 / 60Hz	1.23	--	326.89	F1	1.23	Maximum normal load.
Supplementary information:						
Maximum normal load: The CPU / GPU / DIMM were operated in 100% load condition, continued reading / writing data in each 3.5" HDD, applied load of 0.5 A to each USB 2.0 type A port and applied 0.9 A to each USB 3.0 type A port.						

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

Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)
Supplementary information:				

2.1.1.5 c) 2)	**TABLE: stored energy**	N/A

Capacitance C (µF)	Voltage U (V)	Energy E (J)
Supplementary information:		

2.1.1.7	**TABLE: Discharge test**			N/A

Condition	τ calculated (s)	τ measured (s)	t u→ 0V (s)	Comments
Supplementary information:				

2.2	**TABLE: evaluation of voltage limiting components in SELV circuits**	N/A

Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components
	V peak	V d.c.	

Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)
Supplementary information:	

2.4.2	**TABLE: Limited current circuit measurement**	N/A

Location	Voltage (V)	Current (mA)	Freq. (Hz)	Limit (mA)	Comments
Supplementary information:					

2.5	**TABLE: limited power sources**	P

Circuit output tested: See below.

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

Components	Test condition (Single fault)	Uoc (V)	I_{sc} (A)		VA	
			Meas.	Limit	Meas.	Limit
For Main Board						
IPMI_LAN_USB3_1_2 (USB 3.0 type A) Pin 1,10 to GND	Normal	5.00	4.2	8	19.02	100
IPMI_LAN_USB3_1_2 (USB 3.0 type A) Pin 2-9,11-18 to GND	Normal	0	--	8	--	100
IPMI_LAN_USB3_1_2 (RJ-45) Pin 20-27 to GND	Normal	0	--	8	--	100
VGA1 (D-sub) Pin 13 to GND	Normal	4.48	0	8	--	100
VGA1 (D-sub) Pin 14 to GND	Normal	4.94	0	8	--	100
VGA1 (D-sub) Pin 1-12,15 to GND	Normal	0	--	8	--	100
COM1 (RS-232) Pin 1-9 to GND	Normal	0	--	8	--	100

For Front USB Board						
USB_1 (USB 2.0 type A) Pin 1 to GND	Normal	5.01	5.7	8	19.83	100
USB_1 (USB 2.0 type A) Pin 2-4 to GND	Normal	0	--	8	--	100
USB_2 (USB 2.0 type A) Pin 1 to GND	Normal	5.01	5.7	8	19.72	100
USB_2 (USB 2.0 type A) Pin 2-4 to GND	Normal	0	--	8	--	100
Front D-sub Pin 13 to GND	Normal	4.48	0	8	--	100
Front D-sub Pin 14 to GND	Normal	4.94	0	8	--	100
Front D-sub Pin 1-12,15 to GND	Normal	0	--	8	--	100
For LAN Card (Mfr.: ASRock Rack / Model: M350R)						
LAN1 (RJ-45) Pin 1-8 to GND	Normal	0	--	8	--	100
LAN2 (RJ-45) Pin 1-8 to GND	Normal	0	--	8	--	100
For LAN Card (Mfr.: ASRock Rack / Model: M540R)						
LAN1 (RJ-45) Pin 1-8 to GND	Normal	0	--	8	--	100
LAN2 (RJ-45) Pin 1-8 to GND	Normal	0	--	8	--	100
Supplementary information:						

2.6.3.4	**TABLE: Resistance of earthing measurement**	P
Location	Resistance measured (mΩ)	Comments
Tested with power supply (Acbel Polytech Inc. / R1BA2651B)		
Earthing pin of AC inlet to metallic chassis	3	32 A, 2 minutes.

Earthing pin of AC inlet to metallic chassis	5	40 A, 2 minutes, voltage drop = 0.20 V
Tested with power supply (Delta Electronics, Inc. / DPS-650AB-14 XX (X can by 0-9, A-Z, or blank)		
Earthing pin of AC inlet to metallic chassis	4	32 A, 2 minutes.
Earthing pin of AC inlet to metallic chassis	4	40 A, 2 minutes, voltage drop = 0.16 V
Supplementary information:		

2.10.2	**Table: working voltage measurement**	N/A

Location	RMS voltage (V)	Peak voltage (V)	Comments
Supplementary information:			
1) Evaluated in approved switching power supply.			

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)
Supplementary information:						
1) Evaluated in approved switching power supply.						

2.10.5	**TABLE: Distance through insulation measurements**				N/A

Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)
Supplementary information:					
1) Evaluated in approved switching power supply.					

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

	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intenttonal charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.

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

	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intenttonal 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 A [1)]	--	--	--	--	--	--
Max. current during fault condition	--	--	[1)]	--	--	--	--	--	--

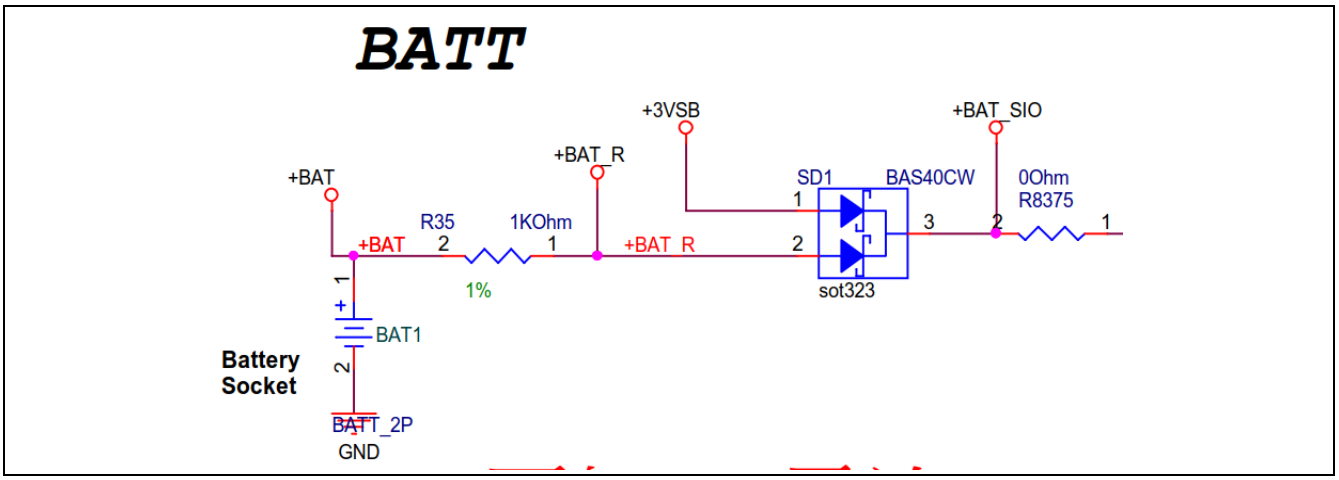
Test results:		Verdict
- Chemical leaks	No chemical leaks.	P
- Explosion of the battery	No explosion of the battery.	P
- Emission of flame or expulsion of molten metal	No emission of flame or expulsion of molten metal.	P
- Electric strength tests of equipment after completion of tests	No breakdown.	P

Supplementary information:

1) The unintentional charging of RTC battery is prevented by circuit design (a diode SD1 in series with a 1k of resistor R35), refer to appended table 5.3 for details.

4.3.8	TABLE: Batteries	P

Battery category .....:	Lithium
Manufacturer .....:	See appended table 1.5.1.
Type / model .....:	See appended table 1.5.1.
Voltage .....:	See appended table 1.5.1.
Capacity .....:	See appended table 1.5.1.
Tested and Certified by (incl. Ref. No.) .....:	See appended table 1.5.1.
Circuit protection diagram:	See below.



MARKINGS AND INSTRUCTIONS (1.7.13)	
Location of replaceable battery	User replaceable battery type.
Language(s) ……:	English.
Close to the battery ……:	No.
In the servicing instructions ……:	Yes.
In the operating instructions ……:	Yes.

4.5	TABLE: Thermal requirements					P
	Supply voltage (V) ..... :	90Vac	140Vac	180Vac	264Vac	—
	Ambient T_{min} (°C) ..... :	--	--	--	--	—
	Ambient T_{max} (°C) ..... :	--	--	--	--	—
Maximum measured temperature T of part/at::		T (°C)				Allowed T_{max} (°C)
EUT were installed two power supplies and powered by one power supply (Acbel Polytech Inc. / R1BA2651B) and measured on left PSU slot (PSU1)						
Appliance inlet (PSU)		69.3	68.3	66.4	65.9	70
L1 coil (PSU)		78.4	74.4	73.4	72.3	130
L2 coil (PSU)		77.9	75.7	75.3	74.3	130
L5 coil (PSU)		89.9	85.0	82.7	78.8	130
L6 coil (PSU)		89.8	87.4	86.5	82.6	130
L3 coil (PSU)		85.9	87.4	88.6	89.2	130
T1 coil (PSU)		78.7	80.1	81.2	81.1	110
T2 coil (PSU)		72.6	73.9	75.0	74.8	110
T201 coil (PSU)		72.5	73.5	74.5	74.3	110
T202 coil (PSU)		72.7	73.9	75.0	74.8	110
T4 coil (PSU)		78.9	80.6	82.1	81.6	110

PCB near CPU1 (Main board)	65.9	66.0	66.9	67.1	105
PCB near CPU2 (Main board)	60.2	60.2	61.0	61.0	105
PCB near U1 (Main board)	63.0	63.1	64.1	64.2	105
RTC battery body (Main board)	53.4	53.4	54.2	54.3	--
HDD body	53.4	53.4	54.2	54.2	70
Enclosure outside, above CPU	53.2	53.3	54.2	54.3	70
Enclosure outside, near PSU	57.3	57.5	58.3	58.4	70
Tma	50.0	50.0	50.0	50.0	--
Tamb	24.3	24.2	22.9	23.1	--
EUT were installed two power supplies and powered by one power supply (Delta Electronics, Inc. / DPS-650AB-14 XX (X can by 0-9, A-Z, or blank)) and measured on left PSU slot (PSU1)					
Appliance inlet (PSU)	67.1	--	--	63.0	70
L1 coil (PSU)	74.5	--	--	66.4	130
FL2 coil (PSU)	76.1	--	--	67.1	130
L800 coil (PSU)	77.7	--	--	70.5	130
T900 coil (PSU)	60.5	--	--	59.2	110
T1 coil (PSU)	72.5	--	--	70.8	110
CT200 (PSU)	65.8	--	--	64.2	90
PCB near CPU1 (Main board)	56.4	--	--	56.0	105
PCB near CPU2 (Main board)	54.8	--	--	54.5	105
PCB near U1 (Main board)	65.6	--	--	65.3	105
RTC battery body (Main board)	52.9	--	--	52.7	100
HDD body	53.0	--	--	52.8	--
Enclosure outside, above CPU	54.1	--	--	53.8	70
Enclosure outside, near PSU	55.0	--	--	54.3	70
Tma	50.0	--	--	50.0	--
Tamb	24.7	--	--	25.1	--

Supplementary information:

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

Supplementary information:

1) The temperatures were measured under worst case normal mode defined in 1.2.2.1 and as described in 1.6.2 at voltages as above. 2) The maximum ambient temperature (Tma) permitted by the manufacturer's specification is 50°C. 3) Winding components (providing safety isolation): - Class A Tmax = 100°C - 10°C = 90°C - Class B Tmax = 120°C - 10°C = 110°C - Class F Tmax = 140°C - 10°C = 130°C 4) All values for T (°C) are re-calculated from Tamb respectively.

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

Part	Test temperature (°C)	Impression diameter (mm)
Supplementary information:		

4.6.1, 4.6.2	**Table: Enclosure opening measurements**		P
Location	Size (mm)	Comments	
Top / Bottom / Right / Left sides	--	No openging provided.	
Front side	Approx. 5.6 x 4.0	Several square openings provided, No hazardous parts within 5° projection area.	
Rear side	Approx. 4.0 x 4.0	Several rounded square openings provided, and diagonal 4.8 mm does not exceed 5 mm in any dimension.	
	Approx. Ø4.0	Several circular openings provided. Not exceed 5.0 mm in any dimension for each opening.	
Rear side (For Switch Power Supply)	Approx. 8.9 x 6.9	Several square openings provided, and covered by DC fan. No hazardous parts within 5° projection area.	
Supplementary information:			

4.7	**TABLE: Resistance to fire**				P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
Enclosure	Interchangeable	Interchangeable	1.0	Metal	1)
PCB	Interchangeable	Interchangeable	--	Min. V-1	1)
Supplementary information:					
1) See appended table 1.5.1 for details.					

5.1	TABLE: touch current measurement			P
Measured between:		Measured (mA)	Limit (mA)	Comments/conditions
EUT were powered by two power supplies (Acbel Polytech Inc. / R1BA2651B) simultaneously				
Line and I/O Terminal (Earthed)		1.32	3.5	System on; Switch "e" opened.
Neutral and I/O Terminal (Earthed)		1.28	3.5	System on; Switch "e" opened.
Line and I/O Terminal (Unearthed)		0.12	0.25	System on; Switch "e" closed.
Neutral and I/O Terminal (Unearthed)		0.12	0.25	System on; Switch "e" closed.
Line and Metal enclosure (Earthed)		1.32	3.5	System on; Switch "e" opened.
Neutral and Metal enclosure (Earthed)		1.28	3.5	System on; Switch "e" opened.
EUT were powered by two power supplies (Delta Electronics, Inc. / DPS-650AB-14 XX (X can by 0-9, A-Z, or blank) simultaneously				
Line and I/O Terminal (Earthed)		1.29	3.5	System on; Switch "e" opened.
Neutral and I/O Terminal (Earthed)		1.28	3.5	System on; Switch "e" opened.
Line and I/O Terminal (Unearthed)		0.002	0.25	System on; Switch "e" closed.
Neutral and I/O Terminal (Unearthed)		0.002	0.25	System on; Switch "e" closed.
Line and Metal enclosure (Earthed)		1.29	3.5	System on; Switch "e" opened.
Neutral and Metal enclosure (Earthed)		1.27	3.5	System on; Switch "e" opened.
Supplementary information:				
1) Test voltage: 264V, 60Hz 2) Overall capacity: In approved switching power supply.				

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
Tested with power supply (Acbel Polytech Inc. / R1BA2651B)				
Unit: primary and metal chassis (Earthed)		DC	2678	No
Unit: primary and secondary		DC	4242	No
Tested with power supply (Delta Electronics, Inc. / DPS-650AB-14 XX (X can by 0-9, A-Z, or blank)				
Unit: primary and metal chassis (Earthed)		AC	1864	No
Unit: primary and secondary		DC	4242	No
Supplementary information:				

5.3	TABLE: Fault condition tests		P
	Ambient temperature (°C) ..... :	25°C, if no others states	—

	Power source for EUT: Manufacturer, model/type, output rating ..... :		See appended table 1.5.1.			—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
SD1 Pin 1 to 2	s-c	240 Vac	10 mins.	--	--	For RTC battery test Maximum abnormal charging current: 3.46 mA
EUT were installed two power supplies and powered by one power supply (Acbel Polytech Inc. / R1BA2651B) and measured on left PSU slot (PSU1)						
Ventilation Openings	Blocked	240 Vac	1.5 hrs.	F1	1.23 to 1.28	Unit operated normally. The max. temp. of T1 coil = 59.1°C, T2 coil = 54.1°C, T201 coil = 53.6°C, T202 coil = 53.3°C, T4 coil = 61.3°C, Tamb = 23.3°C. No damage, no hazard.
PSU Fan	Stalled	240 Vac	2.0 hrs.	F1	1.23 to 0.20	Unit shut down. The max. temp. of T1 coil = 40.8°C, T2 coil = 51.0°C, T201 coil = 41.9°C, T202 coil = 43.9°C, T4 coil = 43.0°C, Tamb = 23.6°C. No damage, no hazard.
System Fan 1 & 2	Stalled	240 Vac	1.0 hrs.	F1	1.23 to 1.23	Unit operated normally.The max. temp. of T1 coil = 54.5°C, T2 coil = 48.9°C, T201 coil = 48.8°C, T202 coil = 49.4°C, T4 coil = 54.3°C, Tamb = 25.0°C. No damage, no hazard.
System Fan 3 & 4	Stalled	240 Vac	1.0 hrs.	F1	1.23 to 1.23	Unit operated normally.The max. temp. of T1 coil = 53.9°C, T2 coil = 49.2°C, T201 coil = 49.3°C, T202 coil = 49.5°C, T4 coil = 53.3°C, Tamb = 25.3°C. No damage, no hazard.
System Fan 5	Stalled	240 Vac	1.0 hrs.	F1	1.23 to 1.23	Unit operated normally.The max. temp. of T1 coil = 56.4°C, T2 coil = 52.4°C, T201 coil = 52.3°C, T202 coil = 52.6°C, T4 coil = 56.8°C, Tamb = 25.8°C. No damage, no hazard.
EUT were installed two power supplies and powered by one power supply (Delta Electronics, Inc. / DPS-650AB-14 XX (X can by 0-9, A-Z, or blank)) and measured on left PSU slot (PSU1)						
Ventilation Openings	Blocked	240 Vac	1.0 hr.	F1	1.37 to 1.41	Unit operated normally. The max. temp. of T1 coil = 56.7°C, T900 coil = 47.0°C, Tamb = 23.5°C. No damage, no hazard.

PSU Fan	Stalled	240 Vac	1.0 hr.	F1	1.37 to 14	Unit auto recycle protection. The max. temp. of T1 coil = 53.7°C, T900 coil = 45.3°C, Tamb = 24.6°C. No damage, no hazard.
System Fan 1 & 2	Stalled	240 Vac	1.0 hr.	F1	1.37	Unit operated normally. The max. temp. of T1 coil = 44.0°C, T900 coil = 33.3°C, Tamb = 24.1°C. No damage, no hazard.
System Fan 3 & 4	Stalled	240 Vac	1.0 hr.	F1	1.37	Unit operated normally. The max. temp. of T1 coil = 46.1°C, T900 coil = 36.0°C, Tamb = 23.8°C. No damage, no hazard.
System Fan 5	Stalled	240 Vac	1.0 hr.	F1	1.37	Unit operated normally. The max. temp. of T1 coil = 49.9°C, T900 coil = 40.6°C, Tamb = 23.8°C. No damage, no hazard.
Supplementary information:						
1) In fault column: s-c=short-circuited, o-c=open-circuited, o-l= overload 2) The temperatures were measured under worst case normal mode defined in 1.2.2.1 and as described in 1.6.2 at voltages as above.						

C.2	**TABLE: transformers**	N/A

Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required distance thr. insul. (2.10.5)

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

Supplementary information:

C.2	**TABLE: transformers**	N/A
Transformer Mfr.:		
Transformer Type:		
Bobbin:		
Primary/input pins .....:		

Secondary/output pins .....:	
Material (manufacturer, type, ratings).....:	
Thickness (mm) .....:	

M.2	**TABLE: Criteria for telephone ringing signals (European method)**								N/A
Condition	I_{DC} (mA)	I_P (mA)	I_{PP} (mA)	t_1 (ms)	t_2 (ms)	I_{TS1} (mA)	Limit (mA)	I_{TS2} (mA)	Limit (mA)
Supplementary information:									

ATTACHMENT TO TEST REPORT
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/A2:2013

EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Clauses, subclauses, notes, tables and figures which are additional to those in IEC60950-1 and it´s amendmets are prefixed “Z”		
Contents (A2:2013)	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZD (informative) IEC and CENELEC code designations for flexible cords		P
General	Delete all the “country” notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2; 1.5.1 Note 2 & 3; 1.5.7.1 Note 1.5.8 Note 2; 1.5.9.4 Note; 1.7.2.1 Note 4, 5 & 6 2.2.3 Note; 2.2.4 Note; 2.3.2 Note 2.3.2.1 Note 2; 2.3.4 Note 2; 2.6.3.3 Note 2 & 3 2.7.1 Note; 2.10.3.2 Note 2; 2.10.5.13 Note 3 3.2.1.1 Note; 3.2.4 Note 3.; 2.5.1 Note 2 4.3.6 Note 1 & 2; 4.7 Note 4; 4.7.2.2 Note 4.7.3.1 Note 2; 5.1.7.1 Note 3 & 4; 5.3.7 Note 1 6 Note 2 & 5; 6.1.2.1 Note 2; 6.1.2.2 Note 6.2.2 Note; 6.2.2.1 Note 2; 6.2.2.2 Note 7.1 Note 3; 7.2 Note; 7.3 Note 1 & 2 G.2.1 Note 2; Annex H Note 2		P
General (A1:2010)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A1:2010) according to the following list: 1.5.7.1 Note; 6.1.2.1 Note 2 6.2.2.1 Note 2; EE.3 Note		P
General (A2:2013)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list: 2.7.1 Note *; 2.10.3.1 Note 2 6.2.2. Note * Note of secretary: Text of Common Modification remains unchanged.		P

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
General (A2:2013)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list: 2.7.1 Note * 2.10.3.1 Note 2 6.2.2. Note * Note of secretary: Text of Common Modification remains unchanged.		P
1.1.1 (A1:2010)	**Replace** the text of NOTE 3 by the following. NOTE 3 The requirements of EN 60065 may also be used to meet safety requirements for multimedia equipment. See IEC Guide 112, Guide on the safety of multimedia equipment. For television sets EN 60065 applies.		P
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for “one package equipment”, and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.	Not such equipment.	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		N/A
1.5.1 (Added info*)	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC. New Directive 2011/65/11 *		N/A
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.	Not such equipment.	N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
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.	Same as above.	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.	Not such 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.	Same as above.	N/A
	Zx.2 Equipment requirements No safety provision is required for equipment that complies with the following: – equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T}$ is ≤ 85 dBA measured while playing the fixed “programme simulation noise” as described in EN 50332-1; and – a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 mV measured as described in EN 50332-2, while playing the fixed “programme simulation noise” as described in EN 50332-1. NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level $L_{Aeq,T}$ is meant. See also Zx.5 and Annex Zx. All other equipment shall: a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and b) have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; and	Same as above.	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.	Same as above.	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.	Same as above.	N/A
	Zx.4 Requirements for listening devices (headphones and earphones)		N/A
	Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output $L_{Aeq,T}$, the input voltage of the fixed "programme simulation noise" described in EN 50332-2 shall be ≥ 75 mV. This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control). NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.	Same as above.	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 $L_{Aeq,T}$ 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.	Same as above.	N/A
	Zx.4.3 Wireless listening devices In wireless mode: – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA. NOTE An example of a wireless listening device is a Bluetooth headphone.	Same as above.	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.	Same as above.	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.	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.	Replaced.	N/A
2.7.2	This subclause has been declared ‘void’.	Void.	N/A
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.	No power supply cord provided.	N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.5.1	Replace "60245 IEC 53" by "H05 RR-F"; "60227 IEC 52" by "H03 VV-F or H03 VVH2-F"; "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2". In Table 3B, replace the first four lines by the following: Up to and including 6 | 0,75 [a] | Over 6 up to and including 10| (0,75) [b] 1,0 | Over 10 up to and including 16| (1,0) [c] 1,5 | In the conditions applicable to Table 3B delete the words "in some countries" in condition [a]. In NOTE 1, applicable to Table 3B, delete the second sentence.	No power supply cord provided.	N/A
3.2.5.1 (A2:2013)	NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD	Same as above.	N/A
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: Over 10 up to and including 16 | 1,5 to 2,5 | 1,5 to 4 | Delete the fifth line: conductor sizes for 13 to 16 A	Same as above.	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).	No such consideration.	N/A
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.	Same as above.	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.	No ionizing radiation	N/A
Bibliography	Additional EN standards.		—

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

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

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.2.4.1	In **Denmark**, certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.	Appliance inlet used.	N/A
1.2.13.14 (A11:2009)	In **Norway** and **Sweden**, for requirements see 1.7.2.1 and 7.3 of this annex.	Not applied for.	N/A
1.5.7.1 (A11:2009)	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.	No such component provided.	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).	Evaluated in approved switching power supply.	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.	Not applied for.	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”	Shall be evaluated when submitted to national approval.	N/A
1.7.2.1 (A11:2009)	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).”		

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.”		
1.7.2.1 (A2:2013)	In **Denmark**, 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 **Denmark** shall be as follows: In **Denmark**: “Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.”	Same as above.	N/A
1.7.5 1.7.5 (A11:2009)	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-outlets.	N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.5 (A2:2013)	In **Denmark**, socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011. For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a. Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with by DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b. Justification the Heavy Current Regulations, 6c	Same as above.	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.	Not applied for.	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.	Not applied for.	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.	Not applied for.	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.	Considered.	P
2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.	Not direct plug-in equipment.	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.	Not applied for.	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	No power supply cord provided.	N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	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		
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.	Same as above.	N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1 (A2:2013)	In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1. 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 a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2. Justification the Heavy Current Regulations, 6c	Same as above.	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.	Same as above.	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.	Same as above.	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.	Same as above.	N/A
3.2.4	In **Switzerland**, for requirements see 3.2.1.1 of this annex.	Same as above.	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.	Same as above.	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.	Same as above.	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.	Not direct plug-in equipment.	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.	Same as above.	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.	Not applied for.	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.	Not applied for.	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.	Not applied for.	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.	Not such equipment.	N/A
7.3 (A11:2009)	In **Norway** and **Sweden**, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.	Same as above.	N/A

Annex ZD
(informative)

IEC and CENELEC code designations for flexible cords

Type of flexible cord	Code designations	
	IEC	CENELEC
PVC insulated cords		
Flat twin tinsel cord	60227 IEC 41	H03VH-Y
Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F
Ordinary polyvinyl chloride sheathed flexible cord	60277 IEC 53	H05VV-F H05VVH2-F
Rubber insulated cords		
Braided cord	60245 IEC 51	H03RT-F
Ordinary tough rubber sheathed flexible cord	60245 IEC 53	H05RR-F
Ordinary polychloroprene sheathed flexible cord	60245 IEC 57	H05RN-F
Heavy polychloroprene sheathed flexible cord	60245 IEC 66	H07RN-F
Cords having high flexibility		
Rubber insulated and sheathed cord	60245 IEC 86	H03RR-H
Rubber insulated, crosslinked PVC sheathed cord	60245 IEC 87	H03RV4-H
Crosslinked PVC insulated and sheathed cord	60245 IEC 88	H03V4V4-H

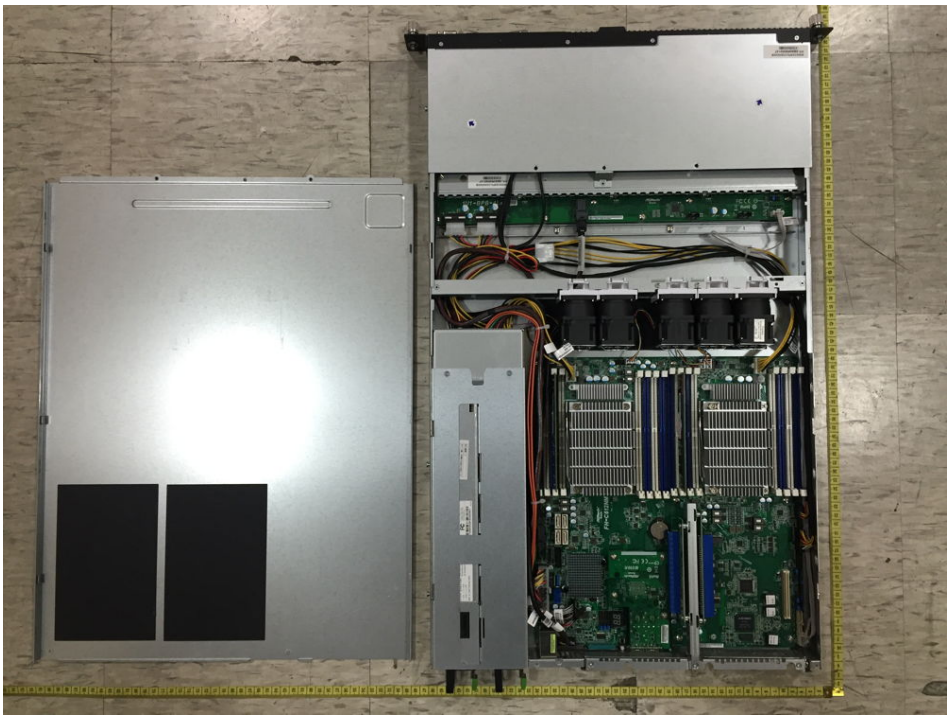
Photo(s)

External View

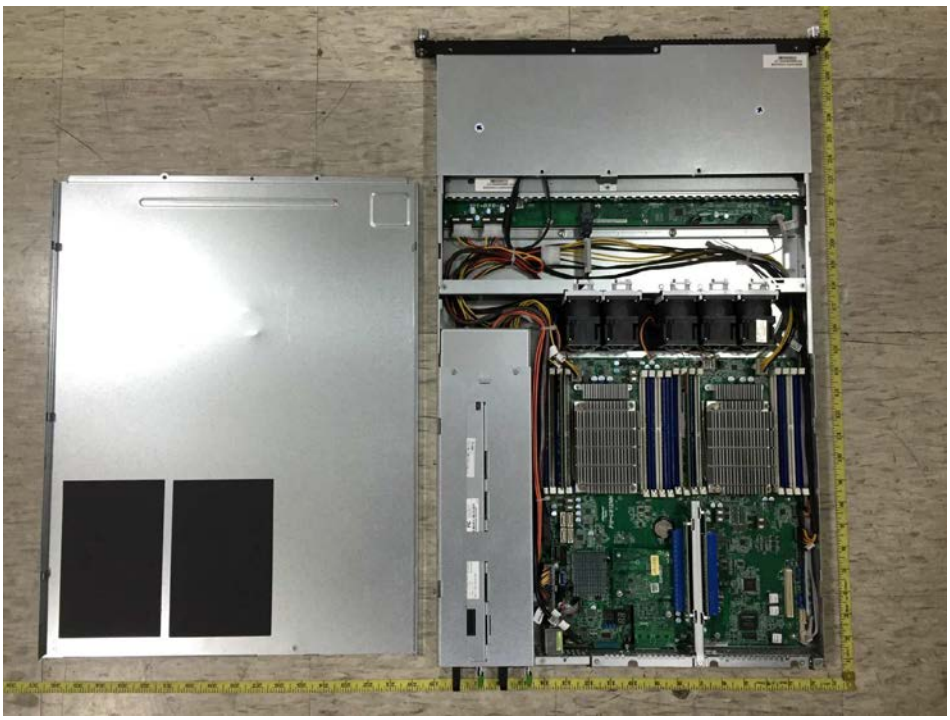
External View

Photo(s)

Internal View (with M599R SFP+ Card)

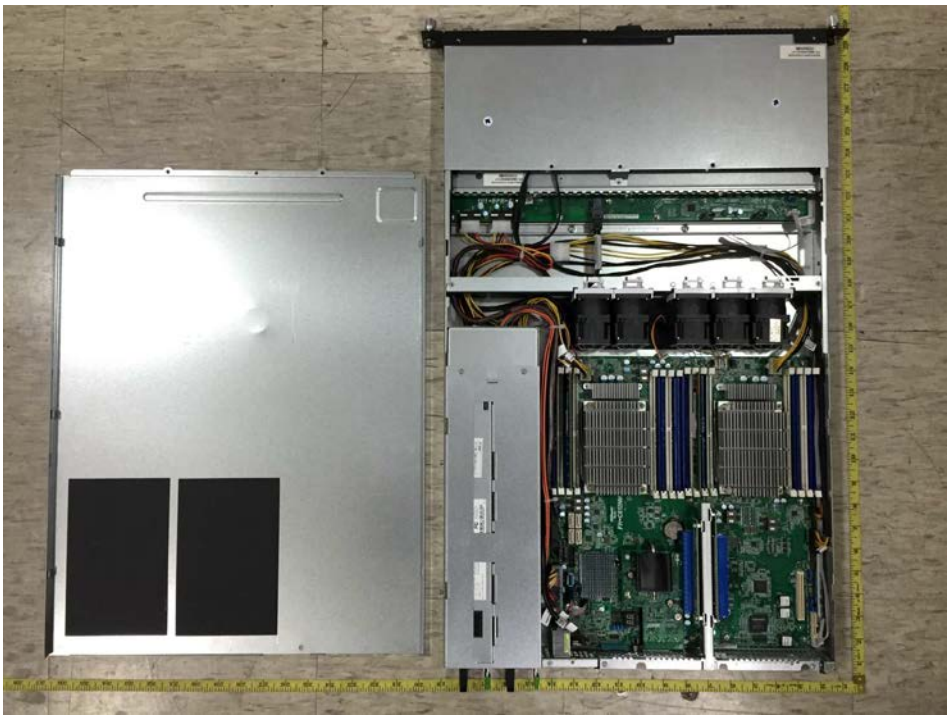


Internal View (with M350R RJ-45 Card)



Photo(s)

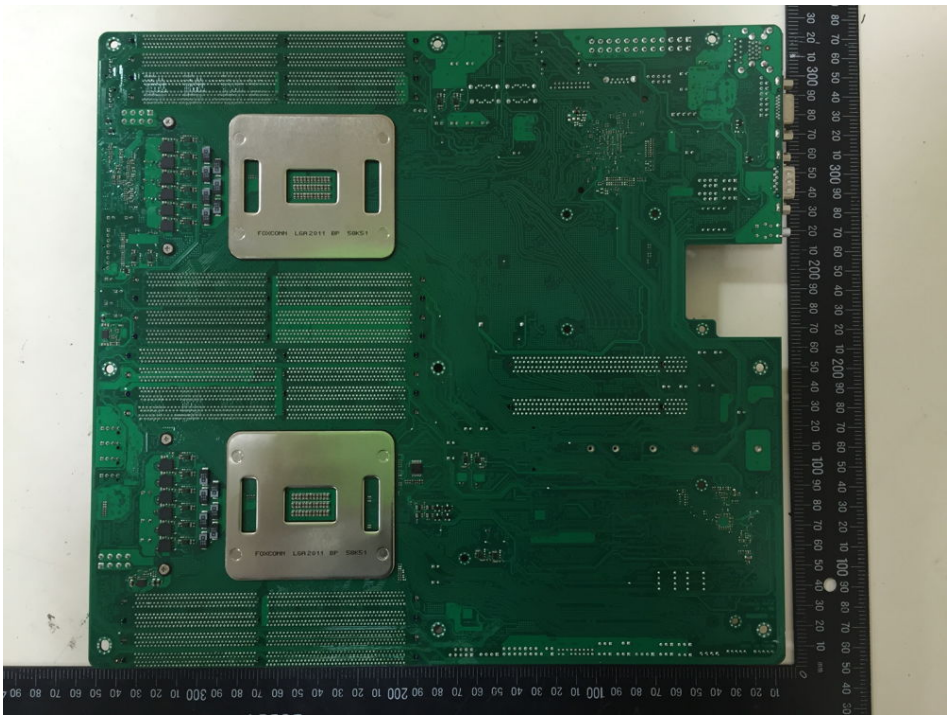
Internal View (with M540R RJ-45 Card)



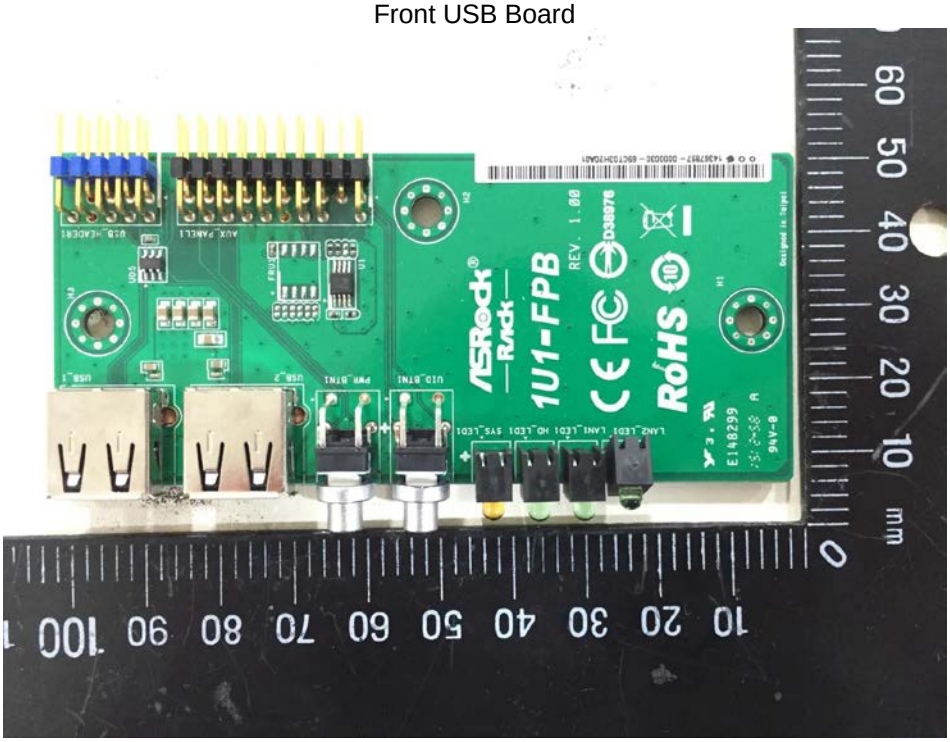
Main Board

Photo(s)

Main Board



Front USB Board



Photo(s)

Front USB Board